

V1705

REPORT NO. TRC-91-N10

NEW CAR ASSESSMENT PROGRAM (NCAP)

FRONTAL BARRIER IMPACT TEST

GENERAL MOTORS CORPORATION

1992 CADILLAC SEVILLE

NHTSA NO. MN0101

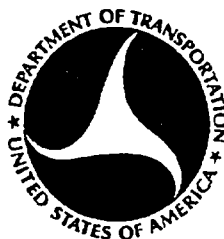
TRC TEST NO. 920324

PREPARED BY:

TRANSPORTATION RESEARCH CENTER INC.

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APRIL 16, 1992

FINAL REPORT

PREPARED FOR:

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NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

OFFICE OF MARKET INCENTIVES

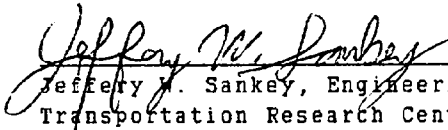
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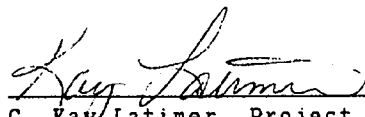
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16. Abstract A 35 mph frontal load cell barrier impact test was conducted on a 1992 Cadillac Seville, 4-door sedan NHTSA No. MN0101, at the Transportation Research Center Inc. on March 24, 1992. This test was conducted to obtain new car assessment and research data indicant of FMVSS No. 208 performance. The barrier impact velocity was 35.2 mph. The vehicle's maximum crush was 32.2 inches. The ambient temperature was 76° F. The driver's head injury criteria (HIC) was 598. The driver's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 46.3 g. The driver's chest maximum deflection was 1.5 inches. The driver's left and right femur maximum axial forces were 1058 pounds and 766 pounds, respectively. The passenger's head injury criteria (HIC) was 900. The passenger's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 42.3 g. The passenger's chest maximum deflection was 2.1 inches. The passenger's left and right femur maximum axial forces were 919 pounds and 715 pounds, respectively.			
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METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures

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

* 1 m = 2.54 inch (exactly). For other exact conversions and more detailed tables, see NIST Spec. Publ. 286, Units of Weights and Measures, Price \$2.25, SO Call for No. C13.10286.

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

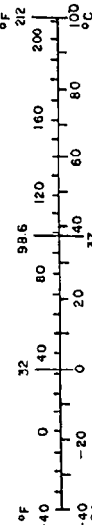


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SECTION 1.0

PURPOSE AND TEST PROCEDURE

PURPOSE

This 35 mph frontal barrier impact test is part of the New Car Assessment Program (NCAP) conducted for the National Highway Traffic Safety Administration's (NHTSA) Office of Market Incentives by the Transportation Research Center Inc. (TRC) under Contract No. DTNH22-90-D-22121.

The purpose of this test was to obtain new car assessment and research data for vehicle crashworthiness and occupant restraint system performance for the subject vehicle, a 1992 Cadillac Seville 4-door sedan, NHTSA No. MN0101, 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 572E 50th percentile adult male anthropomorphic test devices (dummies). The dummies were positioned in the front outboard designated seating positions according to the dummy placement procedures specified in Appendices VII and VIII of the Laboratory Indicant Test Procedure.

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

The eighty-three (83) data channels were multiplexed and recorded on two (2) 14-track tape drives. The data was digitally sampled at 8000 samples per second and processed per section IP11 of the Laboratory Indicant Test Procedure.

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

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

SECTION 2.0

FRONTAL BARRIER IMPACT TEST SUMMARY

TEST RESULTS SUMMARY

This frontal load cell barrier test was conducted at TRC on March 24, 1992.

The test vehicle, a 1992 Cadillac Seville 4-door sedan, NHTSA No. MNO101, was equipped with a 4.9 liter transverse engine, automatic transmission, power steering, and power brakes. The vehicle's test weight was 4123 pounds. The vehicle's impact speed was 35.2 mph. The vehicle sustained 32.2 inches of static crush during the impact.

The driver's head injury criteria (HIC) was 598. The driver's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 46.3 g. The driver's chest maximum deflection was 1.5 inches. The driver's left and right femur maximum axial forces were 1058 pounds and 766 pounds, respectively.

The passenger's HIC was 900. The passenger's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 42.3 g. The passenger's chest maximum deflection was 2.1 inches. The passenger's left and right femur maximum axial forces were 919 pounds and 715 pounds, respectively.

DATA ACQUISITION EXPLANATIONS

The right front passenger's chest Y-axis and Z-axis accelerometers, CSTYG2 and CSTZG2, recorded a spike at 116 milliseconds. The right front passenger's chest resultant acceleration calculation, CSTRGZ, was affected by these spikes. The right front passenger's chest resultant acceleration with three milliseconds minimum duration calculation was not affected by these spikes.

The right front passenger's left femur force load cell, LFMF2, recorded questionable data after 110 milliseconds. The peak femur force was recorded prior to 110 milliseconds.

The engine top X-axis accelerometer, ENGXG1, recorded questionable data from 39 to 50 milliseconds due to the vehicle's crush pinching the accelerometer cable.

The engine bottom X-axis accelerometer, ENGXG2, lost data after 72 milliseconds due to the vehicle's crush cutting the accelerometer cable.

The left brake caliper X-axis accelerometer, BCLXG1, lost data after 61 milliseconds due to the vehicle's crush cutting the accelerometer cable.

TABLE 1 CRASH TEST SUMMARY

NHTSA NO.: MN0101 TEST TYPE: Frontal Load Cell Barrier

TEST DATE: 03/24/92 TEST TIME: 1600 AMBIENT TEMP. (°F): 76

VEHICLE YEAR/MAKE/MODEL/BODY STYLE: 1992/Cadillac/Seville/4-door sedan

VEHICLE TEST WEIGHT (LBS): 4123

IMPACT ANGLE (DEG)*: 0

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

MAXIMUM STATIC CRUSH (IN): 32.2

AVERAGE REBOUND (IN): 28.4

DUMMIES:	Driver #142	Passenger #192
TYPE:	Part 572 E	Part 572 E
LOCATION:	Left front	Right front
RESTRAINT:	Driver's airbag & 3-point Unibelt	3-point Unibelt

NUMBER OF DATA CHANNELS: 83

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

*With respect to tow track centerline.

**Speed trap measurement ($\pm$.05 mph accuracy)

TABLE 2 TEST VEHICLE INFORMATION

VEHICLE MANUFACTURER: General Motors Corporation

MAKE/MODEL: Cadillac/Seville

VIN: 1G6KS53B4NU803393

BODY STYLE: 4-door sedan

MODEL YEAR: 1992

NHTSA NO.: MN0101

COLOR: White

ENGINE DATA: TYPE: transverse CYLINDERS: 8 DISPLACEMENT: 4.9 liter

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

DATE VEHICLE RECEIVED: 01/23/92

ODOMETER READING: 221.0

DEALER'S NAME AND ADDRESS: Columbus Motor Car
600 East Long St.
Columbus, OH 43215

ACCESSORIES:

POWER STEERING	Yes	AUTOMATIC TRANSMISSION	Yes
POWER BRAKES	Yes	AUTOMATIC SPEED CONTROL	Yes
POWER SEATS	Yes	TILTING STEERING WHEEL	Yes
POWER WINDOWS	Yes	TELESCOPING STEERING WHEEL	No
TINTED GLASS	Yes	AIR CONDITIONING	Yes
RADIO	Yes	ANTI-SKID BRAKE	Yes
CLOCK	Yes	REAR WINDOW DEFROSTER	Yes
OTHER	Leather seating area		
	Accent striping		
	Option package 1SB		

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: General Motors Corporation

DATE OF MANUFACTURE: 09/91

VIN: 1G6KS53B4NU803393

GVWR: 4639 LBS

GAWR: FRONT: 2570 LBS., REAR: 2069 LBS.

TABLE 2 TEST VEHICLE INFORMATION CONT'D

TIRES ON VEHICLE (MFR., LINE, SIZE): Michelin, XGT4, P225/60R16

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

SPARE TIRE (MFR., LINE, SIZE): Goodyear, Temp, T125/70R15

TYPE OF SEATS: FRONT: Bucket
REAR: Bench

TYPE OF FRONT SEAT BACKS: Manually-adjustable

MAXIMUM WIDTH: 74.5 INCHES

WHEELBASE: 110.8 INCHES

LOCATION OF LABEL STATING TIRE DATA:

The label was located on the driver's door.

TIRE & CAPACITY DATA FROM VEHICLE'S LABEL:

RECOMMENDED TIRE SIZE: P225/60R16

RECOMMENDED COLD TIRE PRESSURE: FRONT: 28 PSI; REAR: 26 PSI

DESIGNATED SEATING CAPACITY: 2 FRONT 3 REAR 5 TOTAL

VEHICLE CAPACITY WEIGHT: 926 LBS.

TEST VEHICLE ATTITUDE (ALL MEASUREMENTS ARE IN INCHES):

DELIVERED ATTITUDE: LF 29.6; RF 29.1; LR 30.2; RR 30.0

PRE-TEST ATTITUDE: LF 28.1; RF 28.0; LR 26.2; RR 26.1

POST-TEST ATTITUDE: LF 33.2; RF 32.8; LR 27.6; RR 25.4

TABLE 2 TEST VEHICLE INFORMATION CONT'D

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

RIGHT FRONT	1150 LBS.	RIGHT REAR	662 LBS.
LEFT FRONT	1151 LBS.	LEFT REAR	667 LBS.
TOTAL FRONT WEIGHT	2301 LBS.	(63.4% OF TOTAL VEHICLE WEIGHT)	
TOTAL REAR WEIGHT	1329 LBS.	(36.6% OF TOTAL VEHICLE WEIGHT)	
TOTAL DELIVERED WEIGHT 3630 LBS.			

CALCULATION OF TEST VEHICLE'S TARGET TEST WEIGHT:

RCLW = RATED CARGO AND LUGGAGE WEIGHT*

UDW = UNLOADED DELIVERED WEIGHT (3630 LBS)

VCW = VEHICLE CAPACITY WEIGHT (926 LBS)

DSC = DESIGNATED SEATING CAPACITY (5)

$RCLW* = VCW - 150 (DSC) = 926 - 150 (5) = 176$

$TARGET\ TEST\ WEIGHT = UDW + RCLW* + (NO.\ OF\ HYBRID\ III\ DUMMIES\ X\ 167\ LBS/DUMMY)$

$TARGET\ TEST\ WEIGHT = 3630 + 176 + 334$

$TARGET\ TEST\ WEIGHT = 4140\ LBS$

WEIGHT OF TEST VEHICLE WITH REQUIRED DUMMIES AND 159 LBS. OF CARGO WEIGHT:

RIGHT FRONT	1204 LBS.	RIGHT REAR	866 LBS.
LEFT FRONT	1188 LBS.	LEFT REAR	865 LBS.
TOTAL FRONT WEIGHT	2392 LBS.	(58.0% OF TOTAL VEHICLE WEIGHT)	
TOTAL REAR WEIGHT	1731 LBS.	(42.0% OF TOTAL VEHICLE WEIGHT)	
TOTAL TEST WEIGHT	4123 LBS.	(0.4% UNDER TARGET TEST WEIGHT)	

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

COMPONENTS REMOVED TO MEET TARGET TEST WEIGHT: Tail lights

CG = 46.5 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: 920324 NHTSA NO.: MN0101
TEST DATE: 03/24/92 TEST TIME: 1600
TEST TYPE: Frontal load cell barrier IMPACT ANGLE: 0°
AMBIENT TEMPERATURE AT IMPACT AREA: 76° F
TEMPERATURE IN OCCUPANT COMPARTMENT: 70° F
IMPACT VELOCITY: PRIMARY = 35.2 MPH SECONDARY = 35.2 MPH

(SPECIFIED RANGE = 34.5 TO 35.5 MPH)

DISTANCE FROM VEHICLE TO BARRIER: ENTERING VELOCITY TRAP = 26.0 IN.

EXITING VELOCITY TRAP = 2.0 IN.

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

OVERALL LENGTH OF TEST VEHICLE: PRE-TEST: L 196.5; C 205.1; R 196.8

POST-TEST: L 173.2; C 172.9; R 172.0

TOTAL CRUSH: L 23.3; C 32.2; R 24.8

AVERAGE CRUSH: 27.1

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

DISTANCE FROM TEST VEHICLE TO BARRIER: L 28.6; C 28.0; R 28.6; AVG. 28.4

TABLE 4 FUEL SYSTEM DATA

MAKE/MODEL: Cadillac/Seville

NHTSA NO.: MN0101

FUEL SYSTEM CAPACITY: 18.8 GALLONS (FROM OWNER'S MANUAL)

USABLE CAPACITY: 18.8 GALLONS (FURNISHED BY COTR)

TEST VOLUME RANGE: 17.3 GALLONS TO 17.7 GALLONS (92-94% OF USABLE)

ACTUAL TEST VOLUME: 17.5 GALLONS (WITH ENTIRE FUEL SYSTEM FILLED)

TEST FLUID TYPE: STODDARD SOLVENT

SPECIFIC GRAVITY: 0.764

KINEMATIC VISCOSITY: 0.99 CENTISTOKES

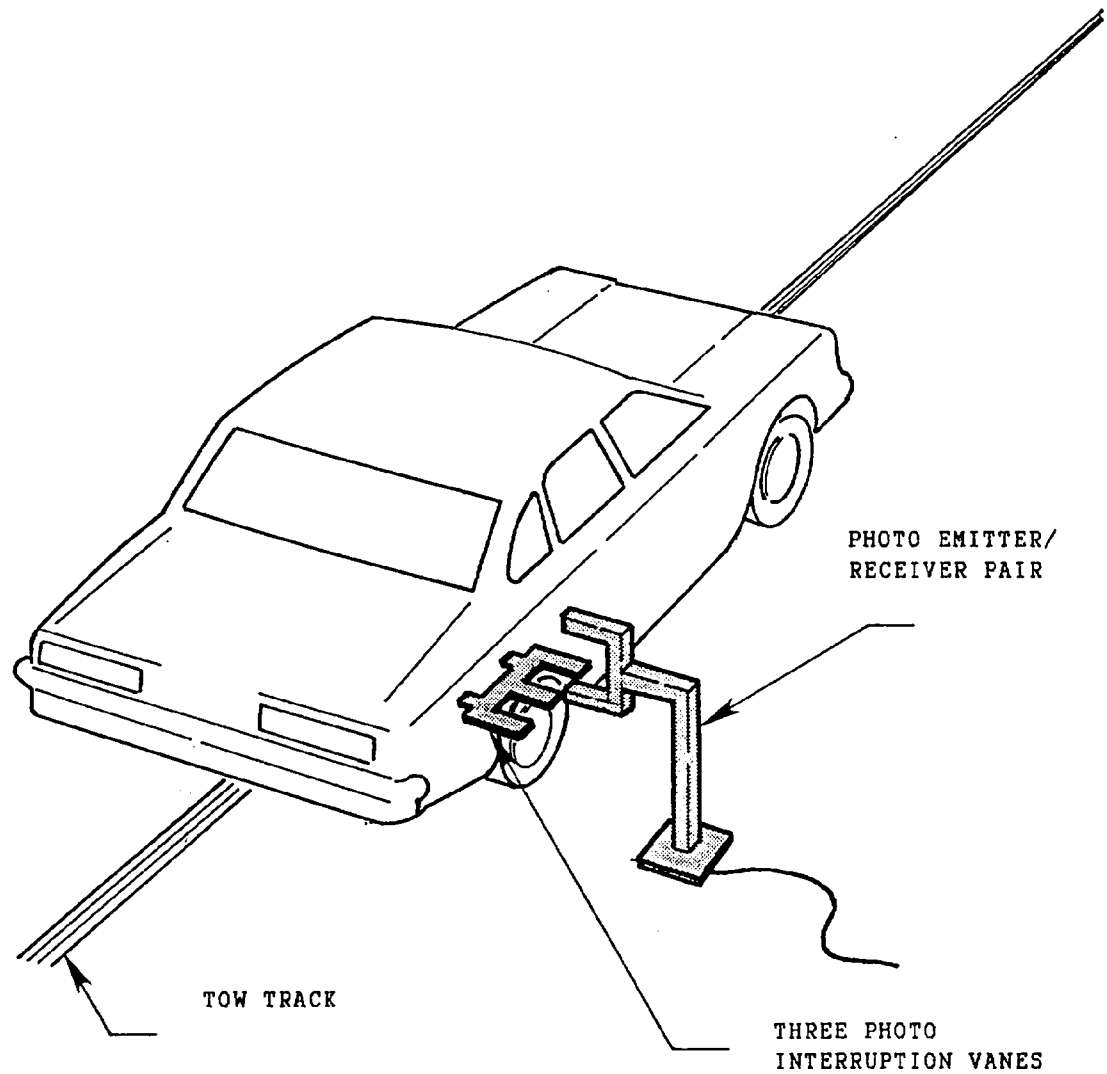
TEST FLUID COLOR: PURPLE

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

ELECTRIC FUEL PUMP: Yes FUEL INJECTION: Yes

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

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: Cadillac/Seville/4-door sedan

VEHICLE NHTSA NO.: MN0101; VIN: 1G6KS53B4NU803393

MODEL YEAR: 1992; BUILD DATE: 09/91; TEST DATE: 03/24/92

VEHICLE SIZE CATEGORY: Mid-size; TEST WEIGHT: 4123 LBS.

VEHICLE WHEELBASE: 110.8 INCHES

MAXIMUM WIDTH: 74.5 INCHES

FRONT OVERHANG: 46.4 INCHES

COLLISION DEFORMATION

CLASSIFICATION (CDC) CODE: 12FDEW3

CRUSH DEPTH

MEASUREMENTS:

C1 = 23.3 INCHES

C2 = 27.7 INCHES

C3 = 31.8 INCHES

C4 = 31.8 INCHES

C5 = 28.2 INCHES

C6 = 24.8 INCHES

VEHICLE CENTERLINE

MIDPOINT OF DAMAGE: D = (LONGITUDINAL)

LENGTH OF DAMAGED

REGION:

L = 60.0 INCHES

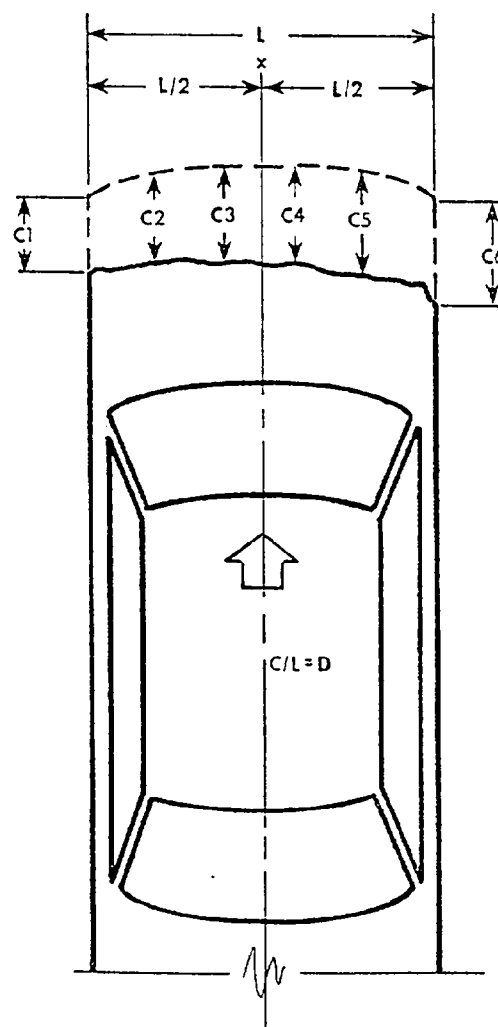
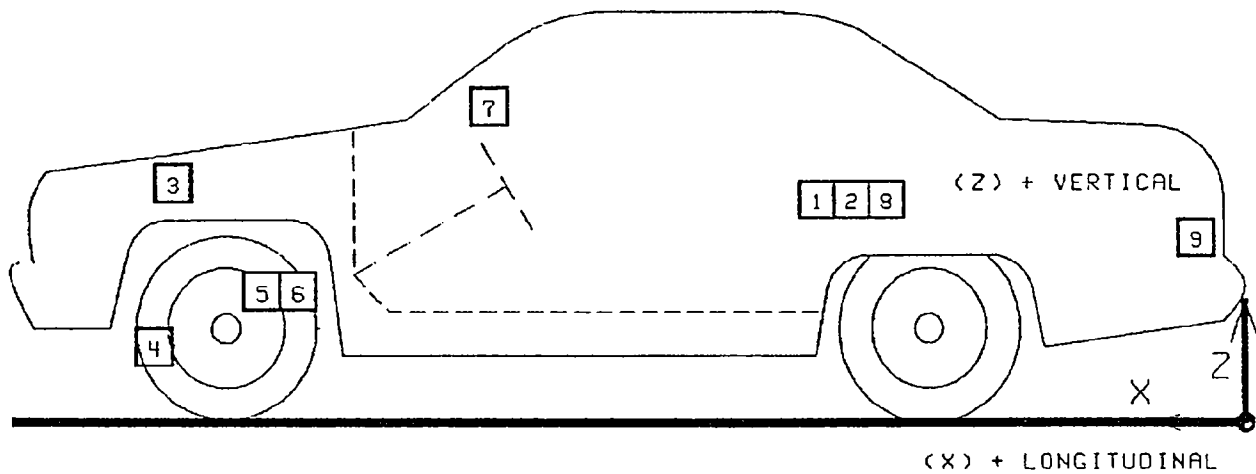
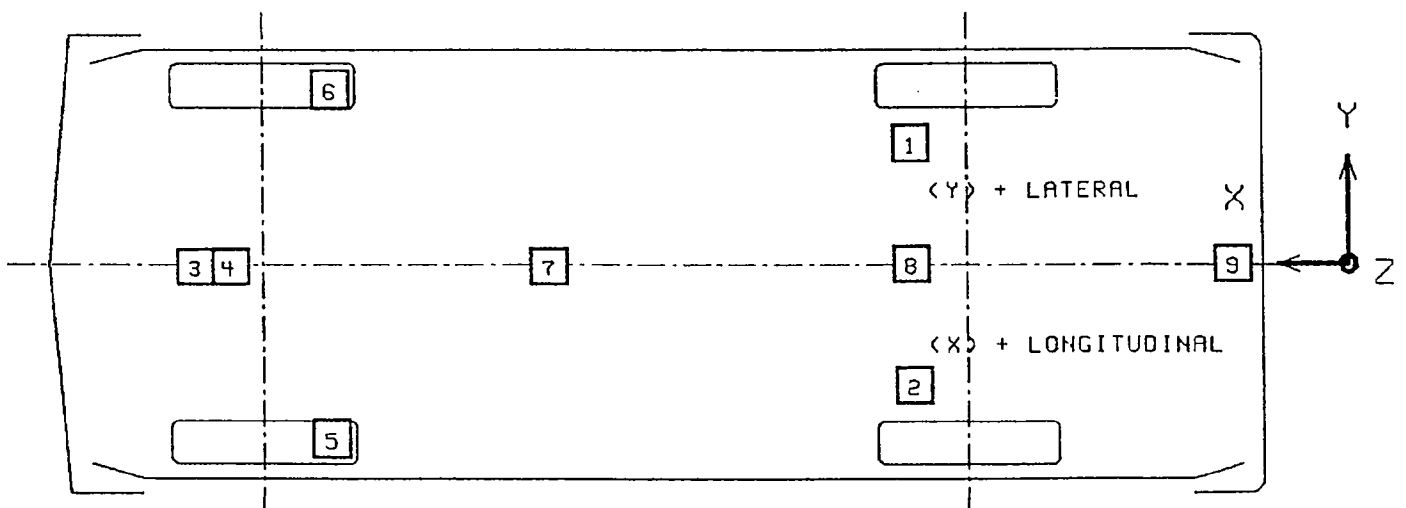


FIGURE 3
VEHICLE ACCELEROMETER PLACEMENT



SIDE VIEW



BOTTOM VIEW

TABLE 5

VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

TEST NUMBER 920324

No.	LOCATION	X*	Y*	Z*	POSITIVE DIRECTION		NEGATIVE DIRECTION	
					MAX	G MSEC	MAX	G MSEC
1	LEFT REAR SEAT CROSSMEMBER LONGITUDINAL	123.9	17.1	13.1	4.9	9.5	37.3	73.9
2	RIGHT REAR SEAT CROSSMEMBER LONGITUDINAL	123.9	-17.9	12.8	6.2	9.5	39.1	73.4
3	ENGINE TOP LONGITUDINAL	28.0	-1.6	20.0	---	---Y	---	---Y
4	ENGINE BOTTOM LONGITUDINAL	40.9	-5.2	9.4	---	---Y	---	---Y
5	RIGHT BRAKE CALIPER LONGITUDINAL	39.7	-25.5	14.4	75.9	73.1	81.6	53.6
6	LEFT BRAKE CALIPER LONGITUDINAL	40.1	25.5	14.2	---	---Y	---	---Y
7	INSTRUMENT PANEL CENTER LONGITUDINAL	68.2	0.0	37.9	7.4	32.0	35.8	75.5
8	REAR SEAT CROSSMEMBER CENTER VERTICAL	123.9	0.0	13.4	26.1	62.9	11.3	8.4
9	VEHICLE REAR CENTER VERTICAL	192.9	-0.2	16.8	14.8	72.0	6.5	169.1

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

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

Y See DATA ACQUISITION EXPLANATIONS

TABLE 6 POST-IMPACT DUMMY/VEHICLE DATA

VISIBLE DUMMY CONTACT POINTS:

	DRIVER #142	PASSENGER #192
HEAD	<u>Airbag</u>	<u>Dummy's chest</u>
CHEST	<u>Airbag</u>	<u>None</u>
ABDOMEN	<u>None</u>	<u>None</u>
LEFT KNEE	<u>Instrument panel</u>	<u>Instrument panel</u>
RIGHT KNEE	<u>Instrument panel</u>	<u>Instrument panel</u>

DOOR OPENING:

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

SEAT MOVEMENT:

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

GLAZING DAMAGE:

The windshield was cracked along each side upon
impact.

OTHER NOTABLE IMPACT EFFECTS:

Both front tires were flattened upon impact.

TABLE 7 FMVSS 208 DATA SUMMARY

VEH. YR./MAKE/MODEL/BODY STYLE: 1992/Cadillac/Seville/4-door sedan

VEH. NHTSA NO.: MN0101; TEST DATE: 03/24/92

	DRIVER	PASSENGER
<u>MAXIMUM ACCELERATIONS (G):</u>	<u>DUMMY #142</u>	<u>DUMMY #192</u>
HEAD X-AXIS	-60.2	-51.1
HEAD Y-AXIS	-9.2	-7.5
HEAD Z-AXIS	-21.2	-65.0
HEAD RESULTANT	61.5	75.7
CHEST X-AXIS	-46.8	-43.1
CHEST Y-AXIS	-4.9	3.9
CHEST Z-AXIS	20.7	-13.9
CHEST RESULTANT*	46.3	42.3
CHEST RESULTANT TIME INTERVAL (SEC.)*	.003	.003

HEAD INJURY CRITERIA (HIC) VALUES:

HIC**	598	900
HIC STARTING TIME (SEC.)	.070	.095
HIC ENDING TIME (SEC.)	.106	.131
AVG. HEAD RESULTANT ACCEL. DURING HIC TIME INTERVAL (G)	48.7	57.4

MAXIMUM CHEST DEFLECTIONS (IN):

CHEST X-AXIS	1.5	2.1
MAXIMUM CHEST DEFLECTION TIME (SEC.)	.100	.112

MAXIMUM COMPRESSIVE FEMUR FORCES (LBS):

LEFT FEMUR	1058	919
RIGHT FEMUR	766	715

MAXIMUM SEAT BELT FORCES (LBS):

LAP BELT	1534	1592
SHOULDER BELT	1363	2111

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

TABLE 8. HYBRID III NECK DATA SUMMARY

VEHICLE YR./MAKE/MODEL/BODY STYLE: 1992/Cadillac/Seville/4-door sedan

VEHICLE NHTSA NO.: MN0101; TEST DATE: 03/24/92

<u>MAXIMUM VALUES:</u>	<u>DRIVER DUMMY #142</u>	<u>PASSENGER DUMMY #192</u>
NECK X-AXIS FORCE (LBS.)	-137	387
NECK Y-AXIS FORCE (LBS.)	-60	49
NECK Z-AXIS FORCE (LBS.)	448	622
NECK MOMENT ABOUT X AXIS (FT.-LBS.)	-5	10
NECK MOMENT ABOUT Y AXIS (FT.-LBS.)	25	71
NECK MOMENT ABOUT Z AXIS (FT.-LBS.)	-6	7

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

DUMMY KINEMATIC SUMMARY

DRIVER DUMMY

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

RIGHT FRONT PASSENGER DUMMY

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

TABLE 9 SEAT BELT PERFORMANCE ASSESSMENT TEST DATA

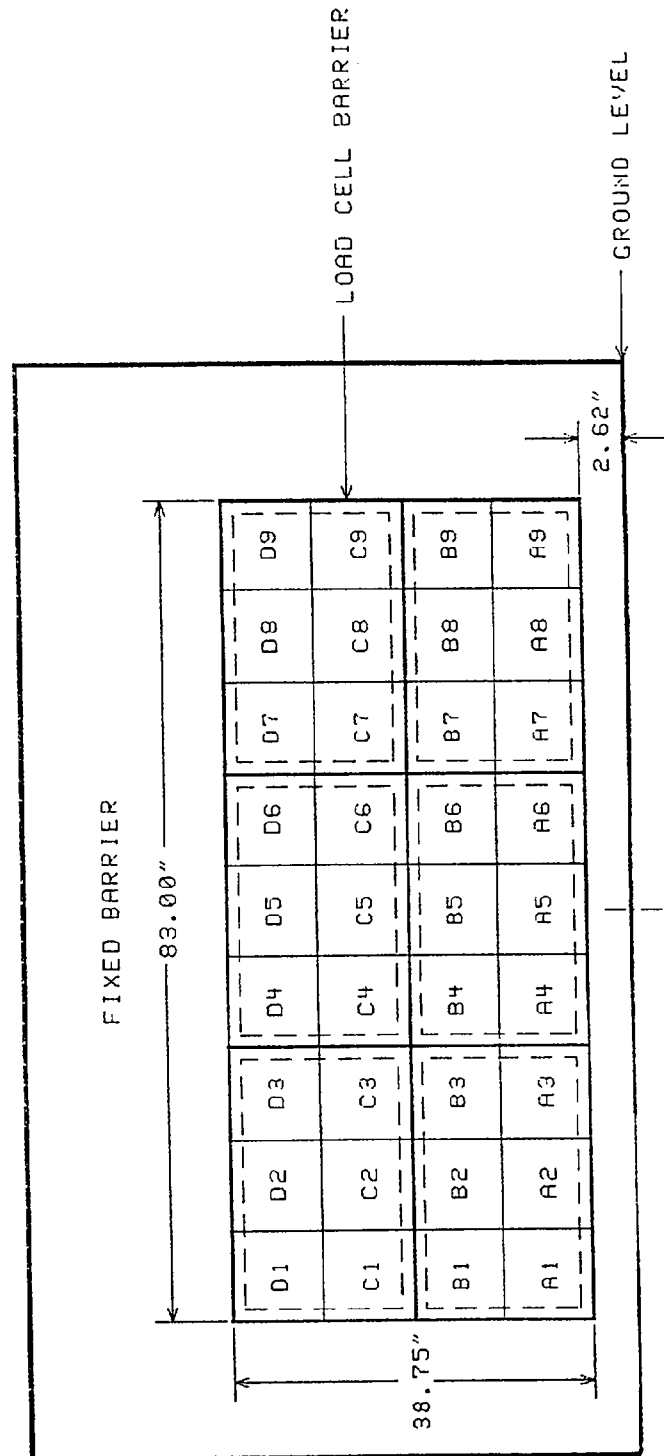
	DRIVER	PASSENGER
<u>BELT LENGTH DATA:</u>		
BELT LENGTH FROM TRIM PANEL EXIT TO BOLT HOLE ANCHOR POINT FOR CONTINUOUS WEBBING SYSTEMS.	96.2	98.5
SHOULDER BELT LENGTH AS MEASURED ON PART 572 DUMMY.	45.0	45.5
LAP BELT LENGTH AS MEASURED ON PART 572 DUMMY.	24.2	24.6
<u>SHOULDER BELT SPOOL-OFF LENGTH:</u>		
AS DETERMINED BY FILM ANALYSIS	2.2	3.0
AS DETERMINED MECHANICALLY	2.3	3.9
AS DETERMINED ELECTRONICALLY	3.2	5.5
<u>BELT STRETCH LENGTH (IN/FT):</u>		
AS MEASURED MECHANICALLY	0.0	0.0
AS MEASURED ELECTRONICALLY	0.0	0.2
<u>RETRACTOR LOCK-UP TIME (MS):</u>		
AS DETERMINED BY SHOULDER BELT SPOOL-OFF	90	96

ALL MEASUREMENTS ARE IN INCHES UNLESS OTHERWISE NOTED.

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 10

LOAD CELL BARRIER DATA SUMMARY

TEST NUMBER 920324

LOCATION	POSITIVE DIRECTION		NEGATIVE DIRECTION	
	LB	MSEC	LB	MSEC
TOTAL GROUP 1	212	1.9	23355	44.0
TOTAL GROUP 2	246	249.4	58536	43.9
TOTAL GROUP 3	388	260.8	22013	41.1
TOTAL GROUP 4	325	284.8	9256	34.0
TOTAL GROUP 5	460	2.3	25844	43.6
TOTAL GROUP 6	327	10.5	22123	42.0
TOTAL LOAD CELL FORCE	1039	261.1	153078	43.3
TENSION IS POSITIVE COMPRESSION IS NEGATIVE				

SECTION 3.0

OCCUPANT, CAMERA, & VEHICLE MEASUREMENTS

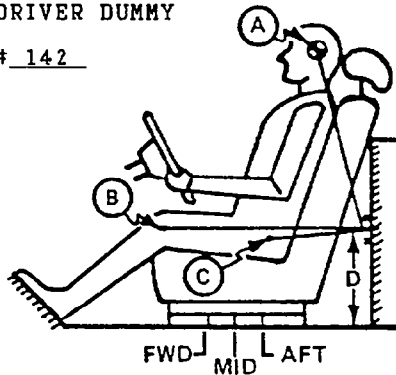
FIGURE 5 DUMMY AND SEAT POSITIONING DATA

TEST NO.: 920324; VEHICLE: 1992 Cadillac Seville

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

DRIVER DUMMY

142

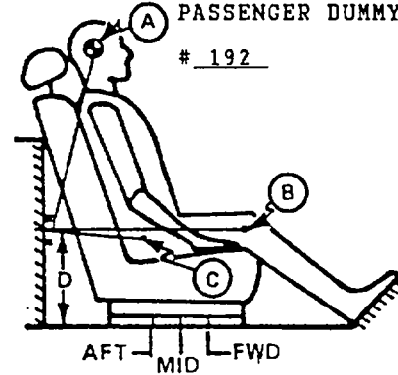


MEASUREMENT
LOCATION

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

PASSENGER DUMMY

192



A = 18.4 IN. 19 DEGREES

B = 25.2 IN. 98 DEGREES

C = 10.1 IN. 133 DEGREES

D = 11.8 IN.

A = 17.8 IN. 17 DEGREES

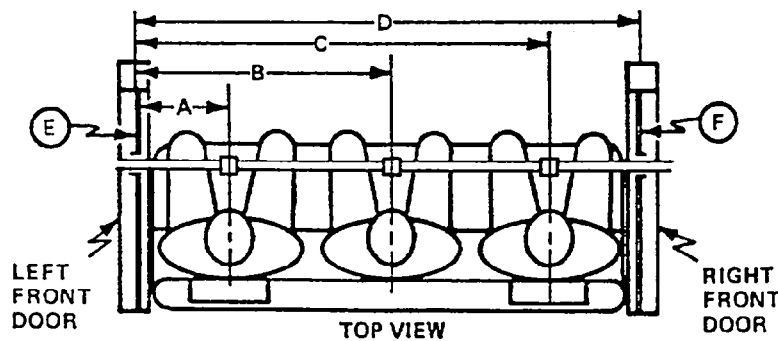
B = 26.1 IN. 101 DEGREES

C = 12.2 IN. 135 DEGREES

D = 11.6 IN.

SEAT TRACK REARWARD: 4 NOTCHES

SEAT TRACK REARWARD: 4 NOTCHES



A = LEFT DOOR TO DRIVER CENTERLINE 13.9 IN.

B = LEFT DOOR TO CENTER PASSENGER CENTERLINE NA IN.

C = LEFT DOOR TO RIGHT PASSENGER CENTERLINE 43.8 IN.

D = LEFT DOOR TO RIGHT DOOR 57.0 IN.

E, F = WINDOW GLASS HEIGHT (RIGHT AND LEFT MUST BE EQUAL) 5.8 IN.

ALL ANGLES ARE RELATIVE TO VERTICAL PLANE THROUGH DOOR STRIKER.

FIGURE 6 DUMMY IN-VEHICLE POSITIONING DATA

	DRIVER	PASSENGER
HH	12.0	11.8
HW	23.2	23.0
CD	19.0	21.2
CS	9.5	NA
KDL	4.5	5.4
KDR	5.8	4.8
TA	20°	26°
SA	26°	26°
HSW	15.1	NA

	DRIVER	PASSENGER
HR	7.4	6.6
HS	10.2	8.4
AD	5.2	4.9
HD	6.6	5.4
KK	8.7	7.5
AA	10.0	6.8
HA	20.5	20.3

KNEE OUTER CLEVIS TO OUTER
CLEVIS SPACING:

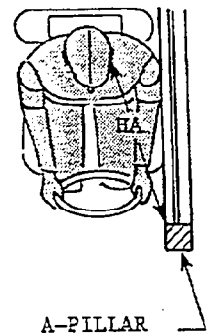
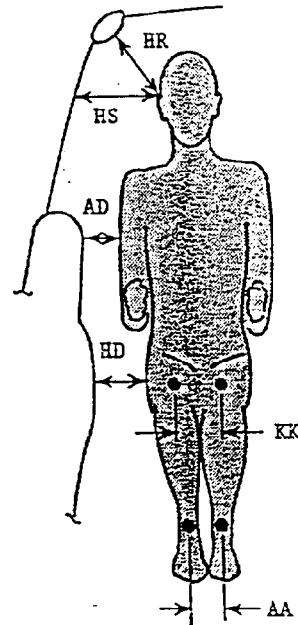
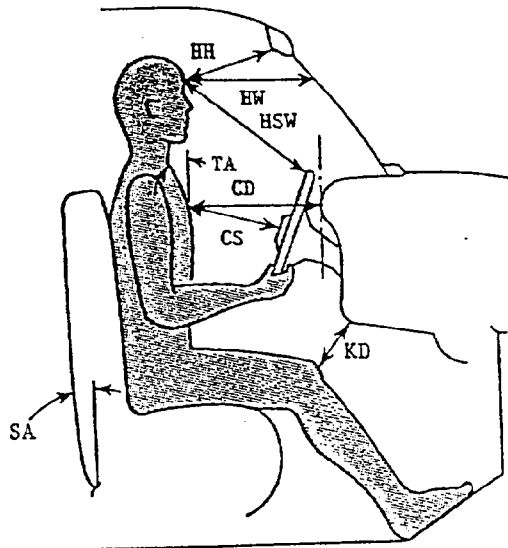
PASSENGER = 10.6

DRIVER = 10.6

PELVIS ANGLE:

PASSENGER = 23°

DRIVER = 22.5°

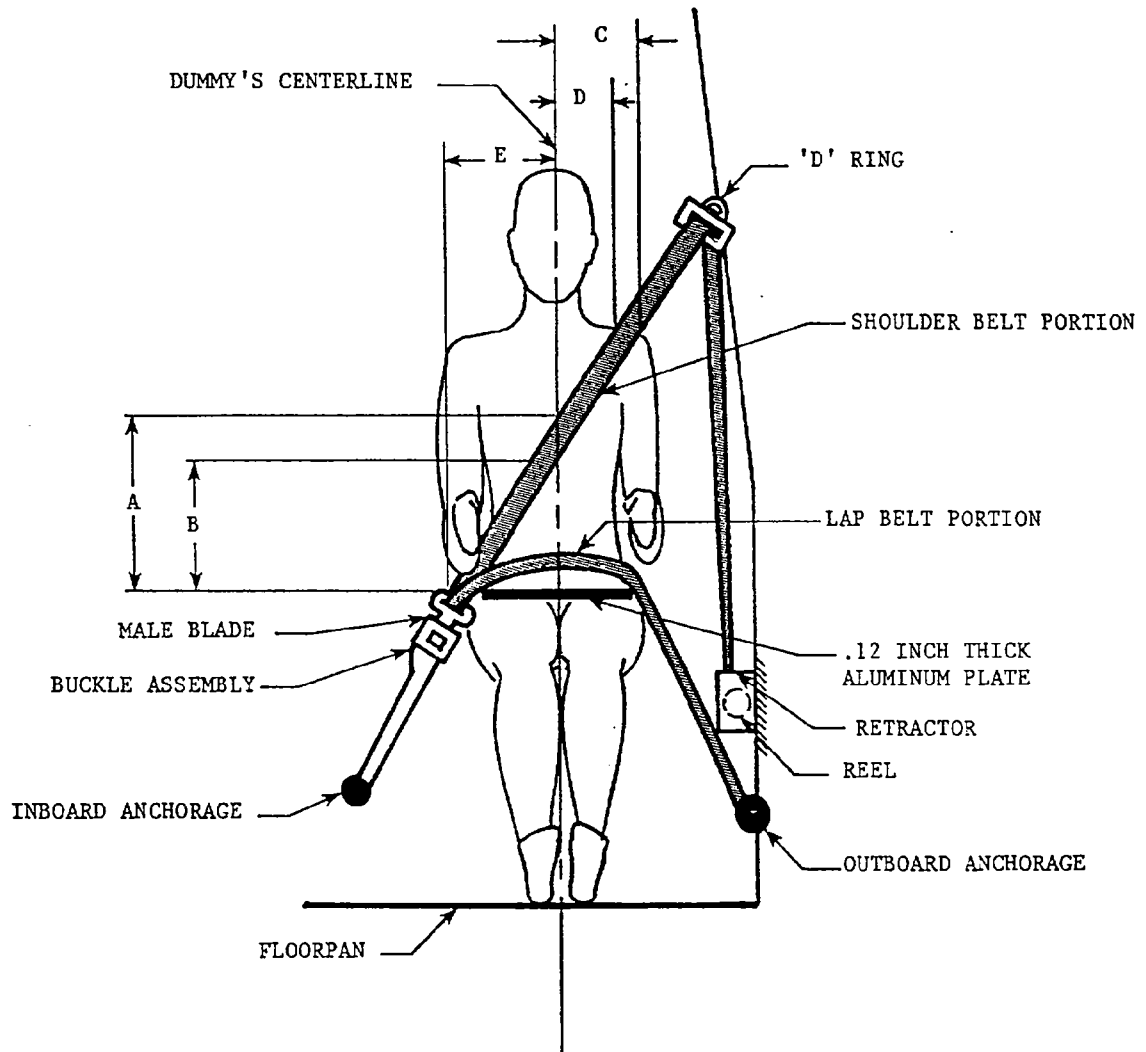


HH = HEAD TO WINDSHIELD HEADER
HW = HEAD TO WINDSHIELD
CD = CHEST TO DASH
CS = CHEST TO STEERING WHEEL
KD = KNEE TO DASH
TA = TORSO ANGLE
SA = SEAT BACK ANGLE
HSW = HEAD TO STEERING WHEEL

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.

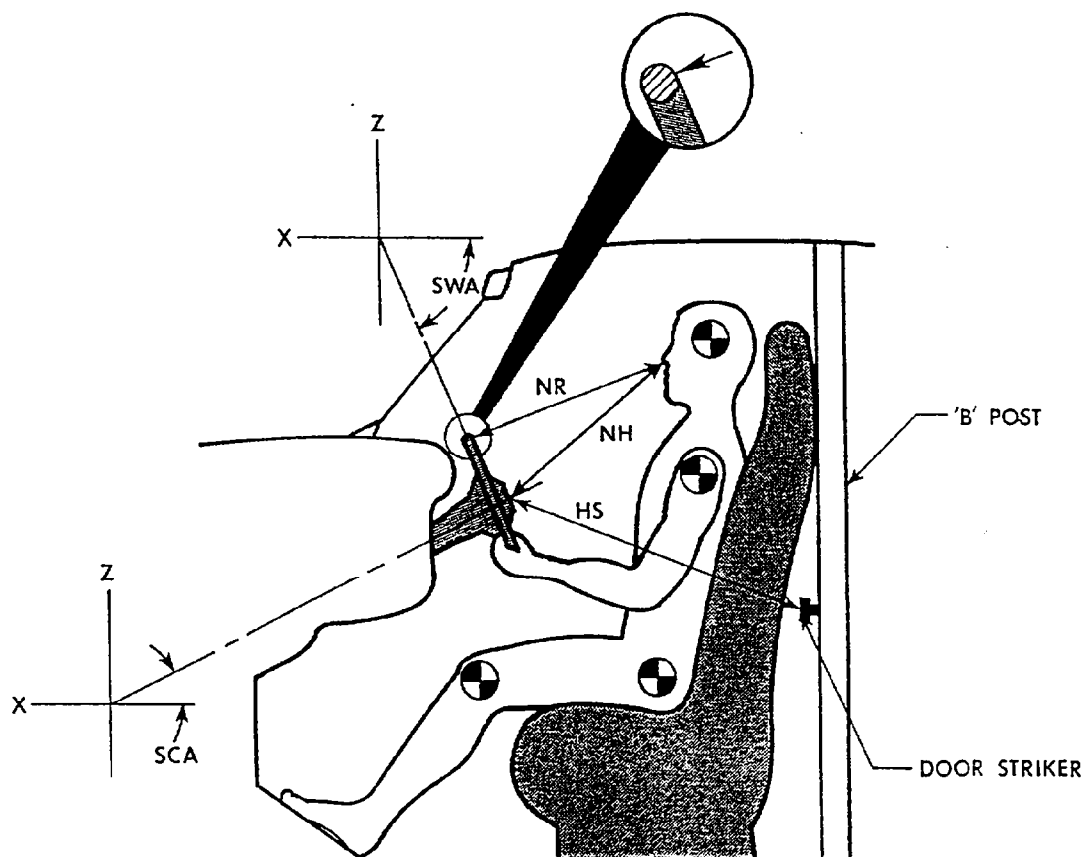
FIGURE 7 SEAT BELT POSITIONING DATA



	DRIVER DUMMY	PASSENGER DUMMY
A - TOP SURFACE OF ALUMINUM PLATE TO BELT UPPER EDGE	13.1	13.8
B - TOP SURFACE OF ALUMINUM PLATE TO BELT LOWER EDGE	9.1	10.0
C - DUMMY CENTERLINE TO OUTER EDGE OF BELT AT CHEST FLESH TOP	4.8	4.6
D - DUMMY CENTERLINE TO INNER EDGE OF BELT AT CHEST FLESH TOP	2.4	2.3
LAP BELT TENSION (LBS)	4	4
SHOULDER BELT TENSION (LBS)	4	4

ALL DISTANCE MEASUREMENTS ARE IN INCHES.

FIGURE 8 DRIVER DUMMY TO STEERING COLUMN/WHEEL ASSEMBLY DATA



POSITION OF STEERING COLUMN TILTING AND TELESCOPING ADJUSTMENTS, IF ANY:
The steering column was adjusted in the third latch position from the top.

MEASUREMENTS

NR	- DISTANCE FROM TIP OF DUMMY'S NOSE TO TOP REAR SURFACE OF STEERING WHEEL RIM.	13.6
NH	- DISTANCE FROM TIP OF DUMMY'S NOSE TO CENTER OF STEERING COLUMN HUB.	14.2
HS	- DISTANCE FROM CENTER OF STEERING COLUMN HUB TO THE FORWARD SURFACE OF THE DOOR LOCK STRIKER PIN.	22.1
SCA	- ANGLE OF STEERING COLUMN RELATIVE TO THE HORIZONTAL X AXIS	15°
SWA	- ANGLE OF STEERING WHEEL RELATIVE TO THE HORIZONTAL X AXIS	72°

ALL DISTANCE MEASUREMENTS ARE IN INCHES.

FIGURE 9
CAMERA POSITIONS

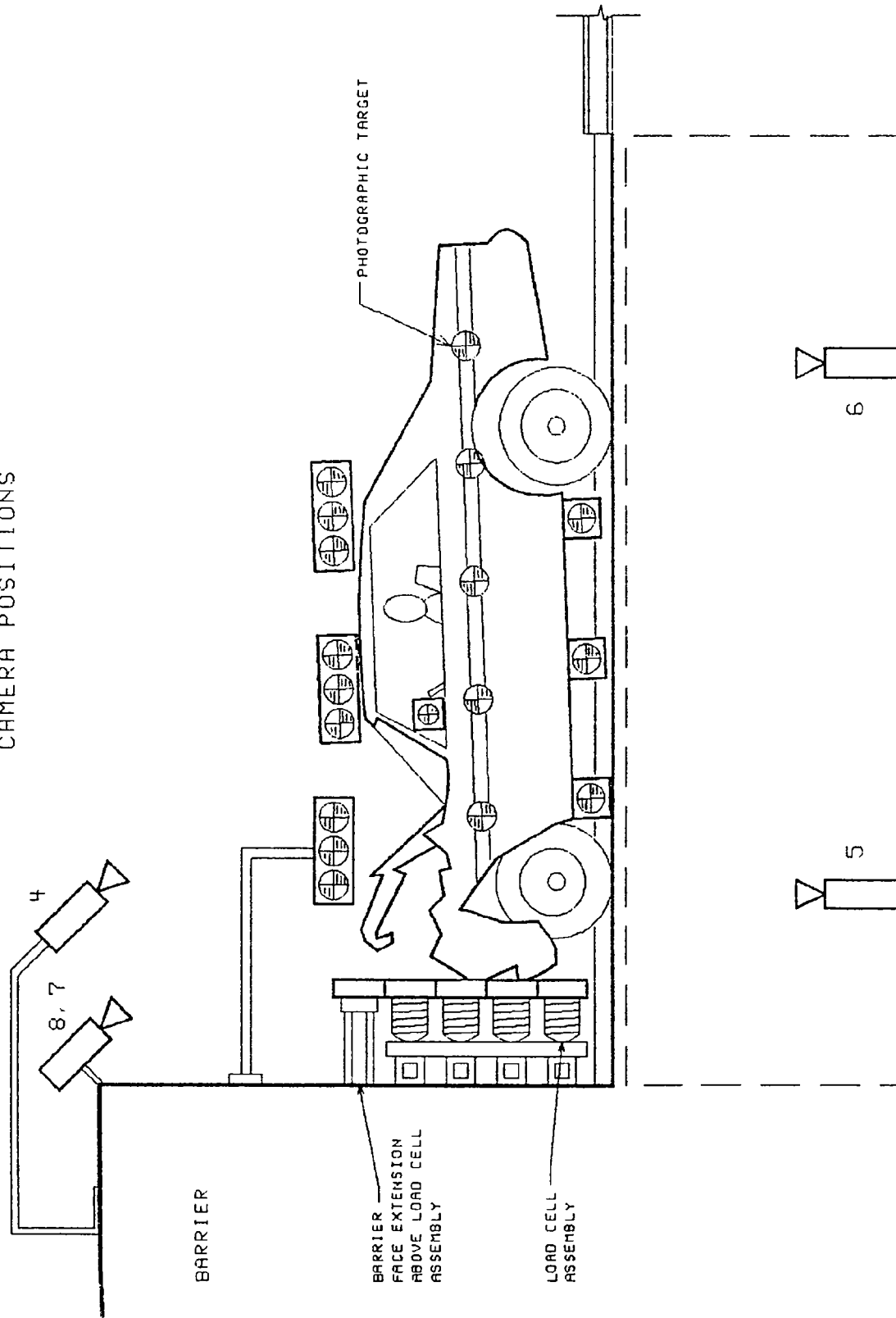


FIGURE 9

CAMERA POSITIONS, CONTINUED

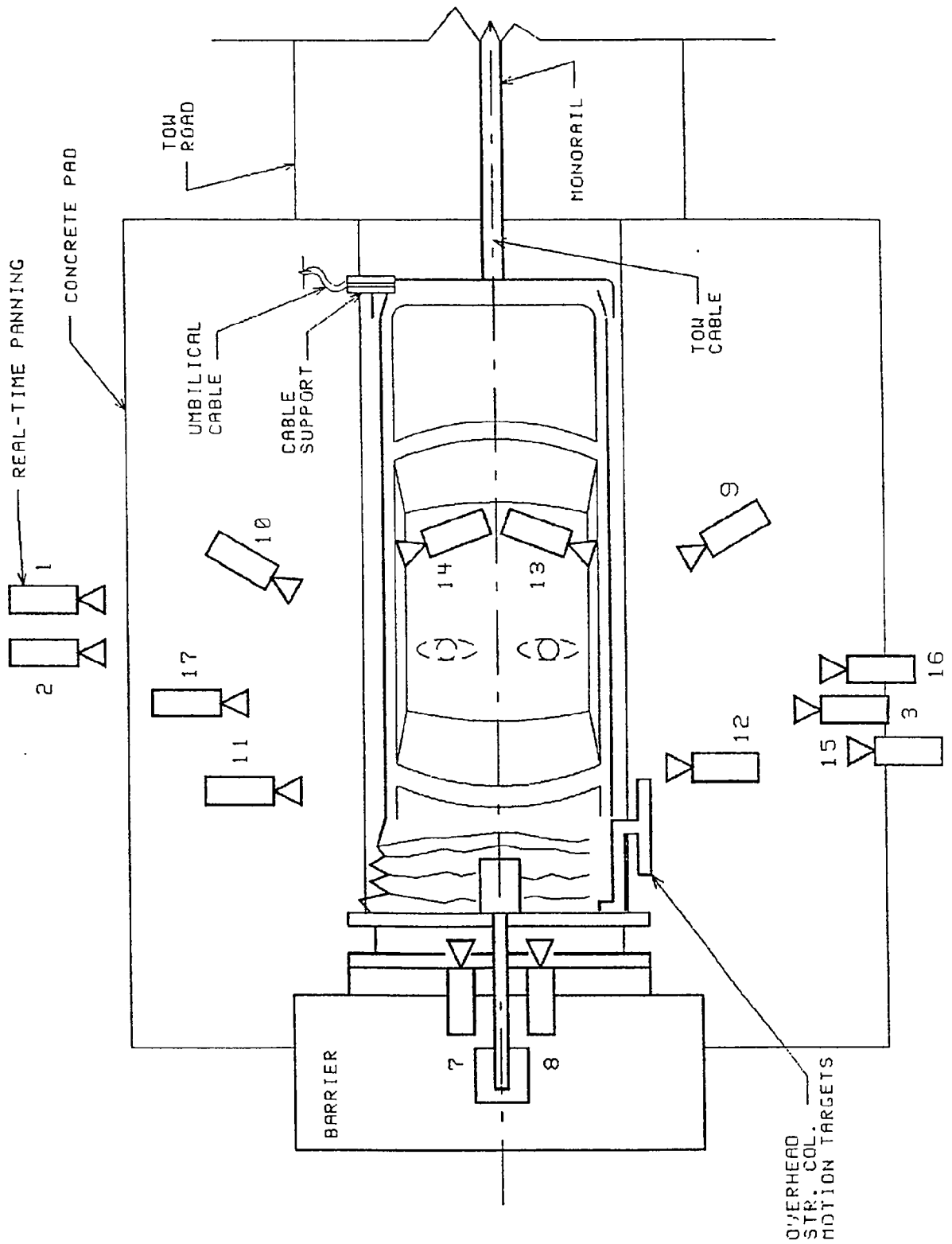


TABLE 11 MOTION PICTURE CAMERA LOCATIONS

TEST NO.: 920324		VEHICLE: 1992 Cadillac Seville 4-door sedan					FILM PLANE		FILM SPEED
CAMERA NO.	VIEW	CAMERA POSITIONS (IN)*			ANGLE** (DEG)	TO HEAD TARGET (IN)	LENS (MM)	SPEED (FPS)	
		X	Y	Z					
1	Real-time panning	-142.0	-504.0	61.0	NA	NA	16	24	
2	Vehicle crush	-81.3	-266.4	37.1	-2	NA	13	512	
3	Dummy kinematics	-41.5	295.0	44.0	-12	207.0	25	1002	
4	Windshield damage	-36.4	0.0	98.0	-40	NA	13	498	
5	Crush & fluid spillage	-50.5	0.0	-92.4	90	NA	13	1000	
6	Fluid spillage	-99.3	0.0	-99.0	90	NA	13	998	
7	Passenger kinematics	-4.5	-13.8	85.0	-40	NA	17	498	
8	Driver kinematics	-6.8	14.5	85.0	-41	NA	17	495	
9	Driver kinematics	-180.0	73.0	102.0	-27	100.0	25	498	
10	Passenger kinematics	-184.0	-74.0	100.0	-26	89.0	25	502	
11	Windshield intrusion	-38.1	-306.1	44.0	0	NA	50	512	
12	Windshield intrusion	-53.0	309.4	42.3	0	NA	50	500	
13	Driver seatbelt movement	NA	NA	NA	NA	NA	13	498	
14	Passenger seatbelt movement	NA	NA	NA	NA	NA	13	498	
15	Column movement	-166.0	286.0	103.0	-14	NA	25	502	
16	Column movement	-166.0	286.0	75.1	-9	NA	25	500	
17	Passenger kinematics	-38.8	-210.8	45.3	7	226.0	25	1012	

**X = Film plane forward of barrier face

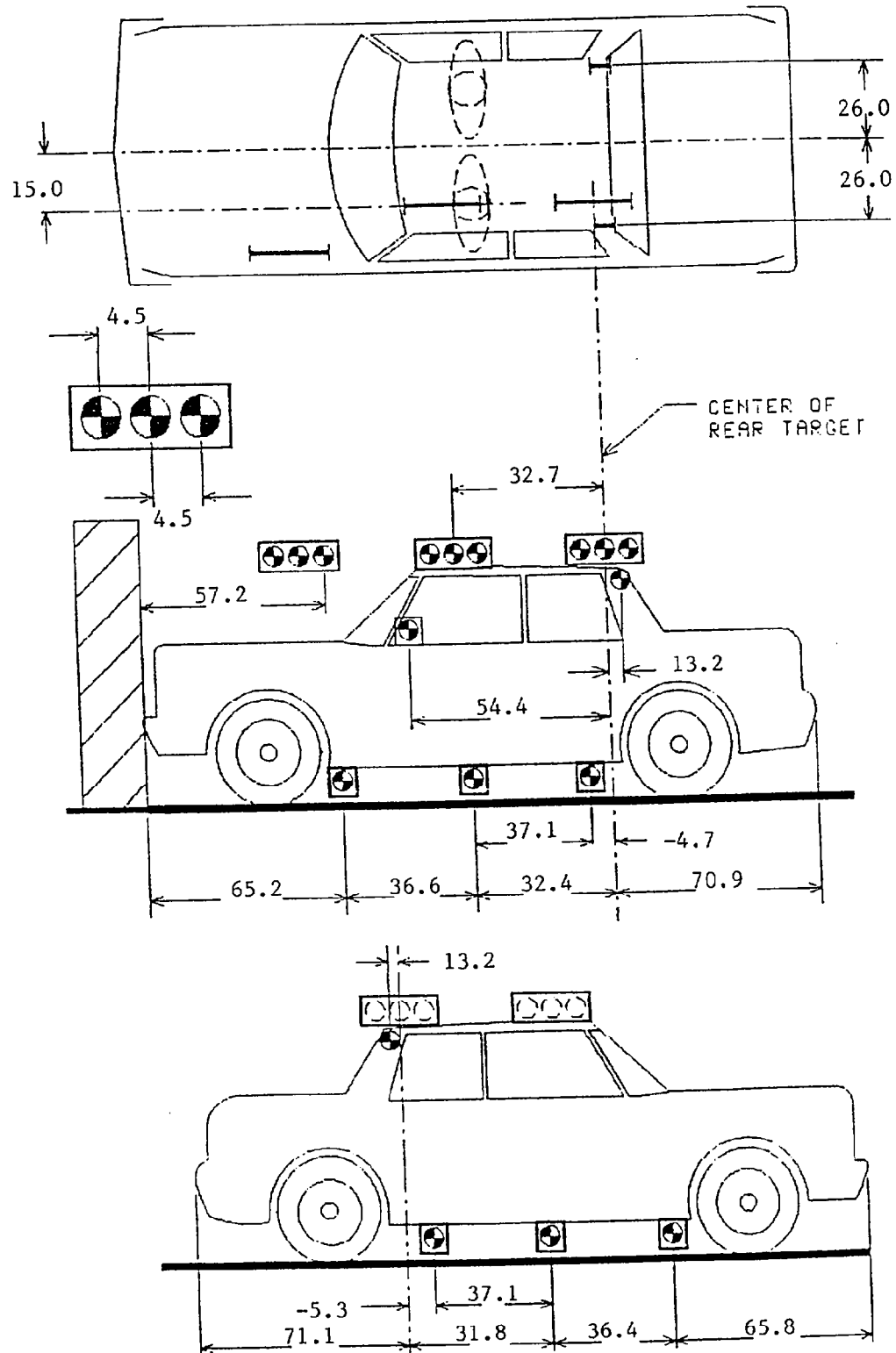
+Y = Film plane to left of monorail centerline

+Z = Film plane above ground level

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

FIGURE 10

VEHICLE TARGET LOCATIONS



ALL DISTANCE MEASUREMENTS ARE IN INCHES.

FIGURE 11

PRE-TEST AND POST-TEST MEASUREMENT POINTS

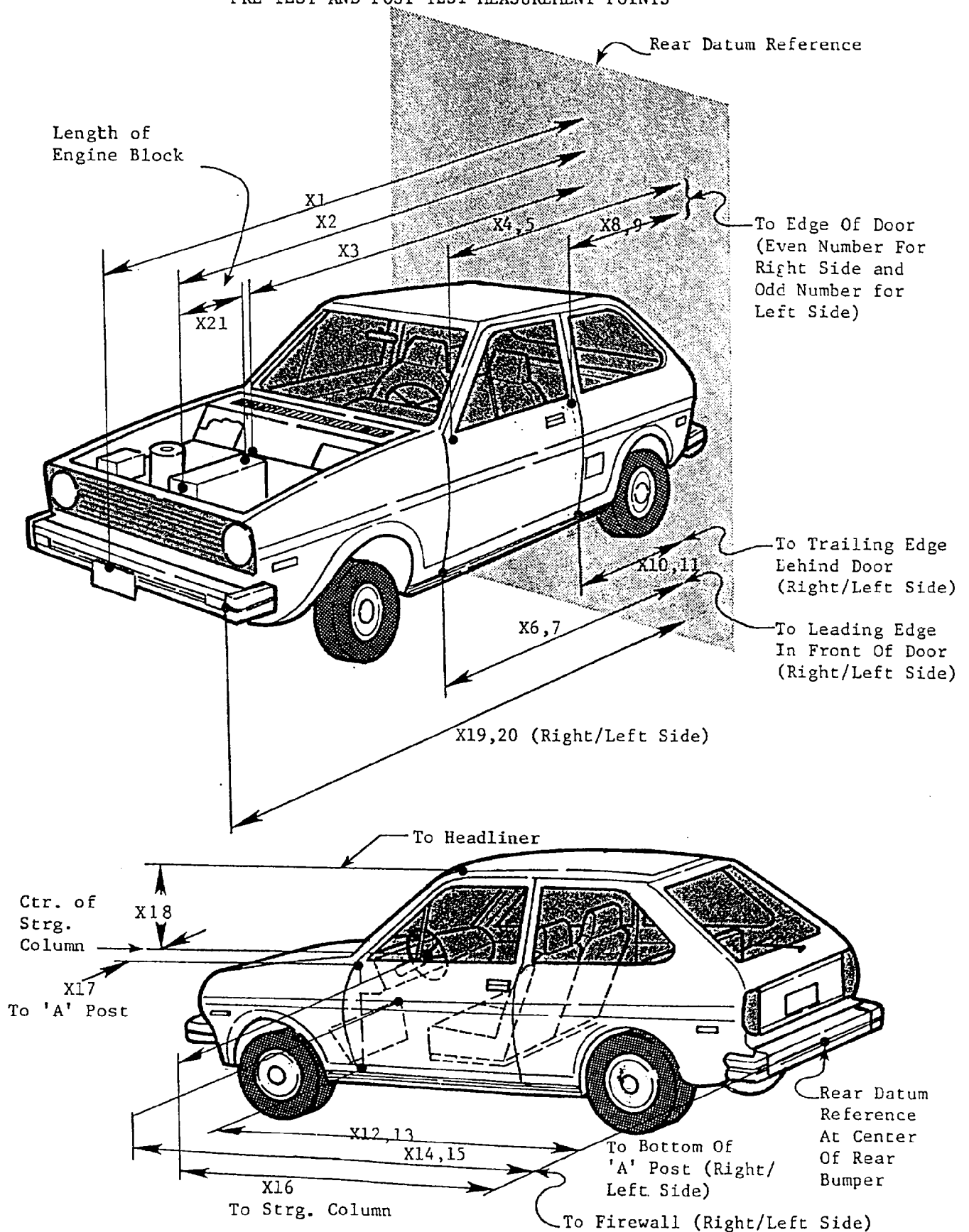


TABLE 12 IMPACTED VEHICLE MEASUREMENTS

VEHICLE MAKE/MODEL: Cadillac/Seville		TEST NUMBER: 920324		ALL MEASUREMENTS ARE IN INCHES		
NO.	TYPE OF MEASUREMENT	PRE-TEST	POST-TEST	DIFF.		
X1	TOTAL LENGTH OF VEHICLE AT CENTERLINE	205.1	172.9	32.2		
X2	REAR SURFACE OF VEHICLE TO FRONT OF ENGINE BLOCK	179.4	168.1	11.3		
X3	REAR SURFACE OF VEHICLE TO FIREWALL	150.9	149.5	1.4		
X4	REAR SURFACE OF VEHICLE TO UPPER LEADING EDGE OF RIGHT DOOR	138.3	138.6	-0.5		
X5	REAR SURFACE OF VEHICLE TO UPPER LEADING EDGE OF LEFT DOOR	139.0	138.8	0.2		
X6	REAR SURFACE OF VEHICLE TO LOWER LEADING EDGE OF RIGHT DOOR	136.2	136.5	-0.3		
X7	REAR SURFACE OF VEHICLE TO LOWER LEADING EDGE OF LEFT DOOR	137.2	136.6	0.6		
X8	REAR SURFACE OF VEHICLE TO UPPER TRAILING EDGE OF RIGHT DOOR	93.2	93.8	-0.6		
X9	REAR SURFACE OF VEHICLE TO UPPER TRAILING EDGE OF LEFT DOOR	94.0	93.8	0.2		
X10	REAR SURFACE OF VEHICLE TO LOWER TRAILING EDGE OF RIGHT DOOR	92.9	92.8	0.1		
X11	REAR SURFACE OF VEHICLE TO LOWER TRAILING EDGE OF LEFT DOOR	93.8	92.8	1.0		
X12	REAR SURFACE OF VEHICLE TO BOTTOM OF "A" POST ON RIGHT SIDE	135.5	134.9	0.6		
X13	REAR SURFACE OF VEHICLE TO BOTTOM OF "A" POST ON LEFT SIDE	136.4	135.9	0.5		
X14	REAR SURFACE OF VEHICLE TO FIREWALL - RIGHT SIDE	149.2	147.5	1.7		
X15	REAR SURFACE OF VEHICLE TO FIREWALL - LEFT SIDE	148.0	145.9	2.1		
X16	REAR SURFACE OF VEHICLE TO STEERING WHEEL CENTER	118.2	118.5	0.3		
X17	CENTER OF STEERING COLUMN TO "A" POST	13.1	9.8	3.3		
X18	CENTER OF STEERING COLUMN TO HEADLINER	18.0	15.2	2.8		
X19	REAR SURFACE OF VEHICLE TO RIGHT SIDE OF FRONT BUMPER	196.8	172.0	24.8		
X20	REAR SURFACE OF VEHICLE TO LEFT SIDE OF FRONT BUMPER	196.5	173.2	23.3		
X21	LENGTH OF ENGINE BLOCK	19.0	19.0	0.0		

APPENDIX A

PHOTOGRAPHS

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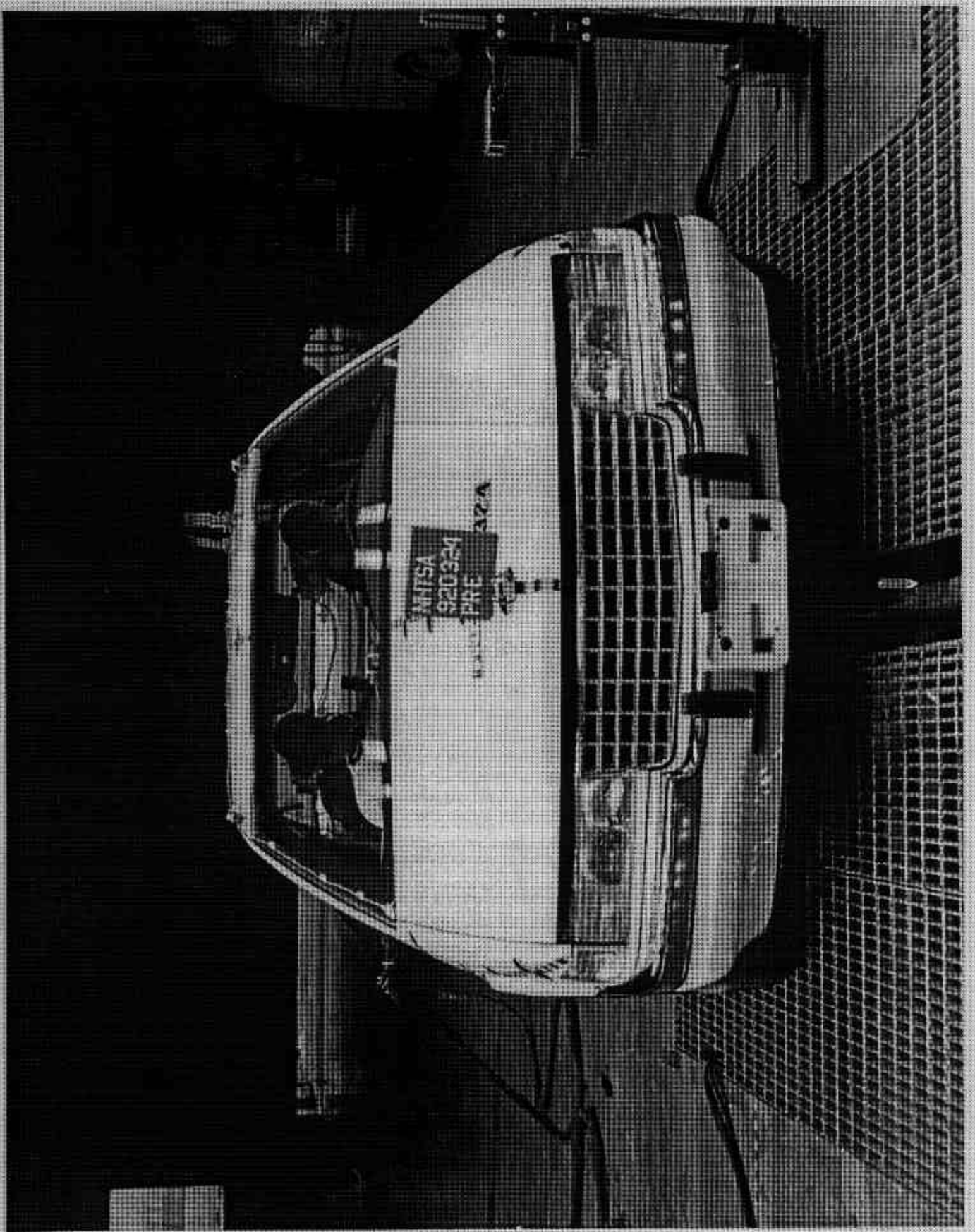


FIGURE A-1. PRE-TEST FRONT VIEW

A-2

920324

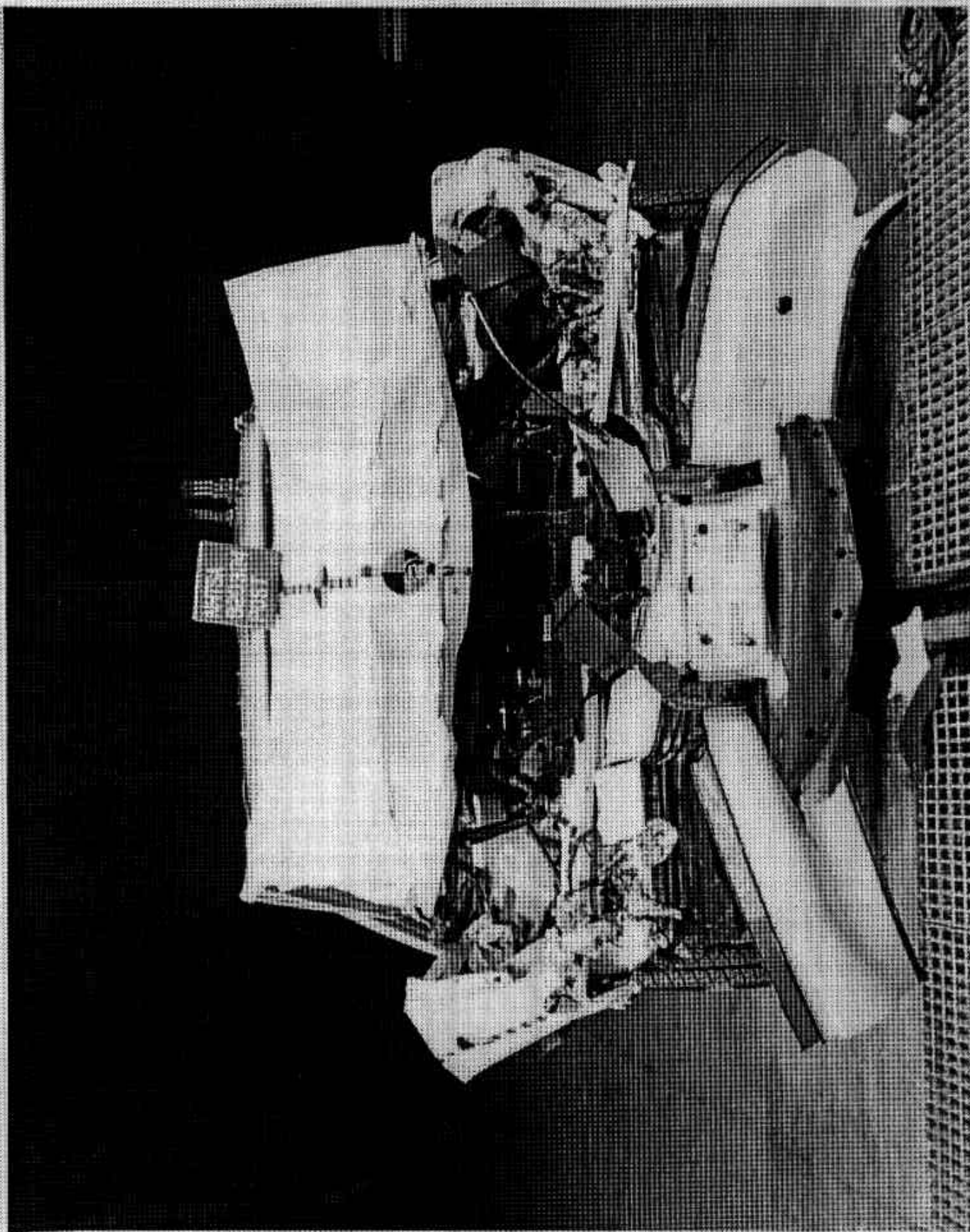


FIGURE A-2. POST-TEST FRONT VIEW

A-3

920324

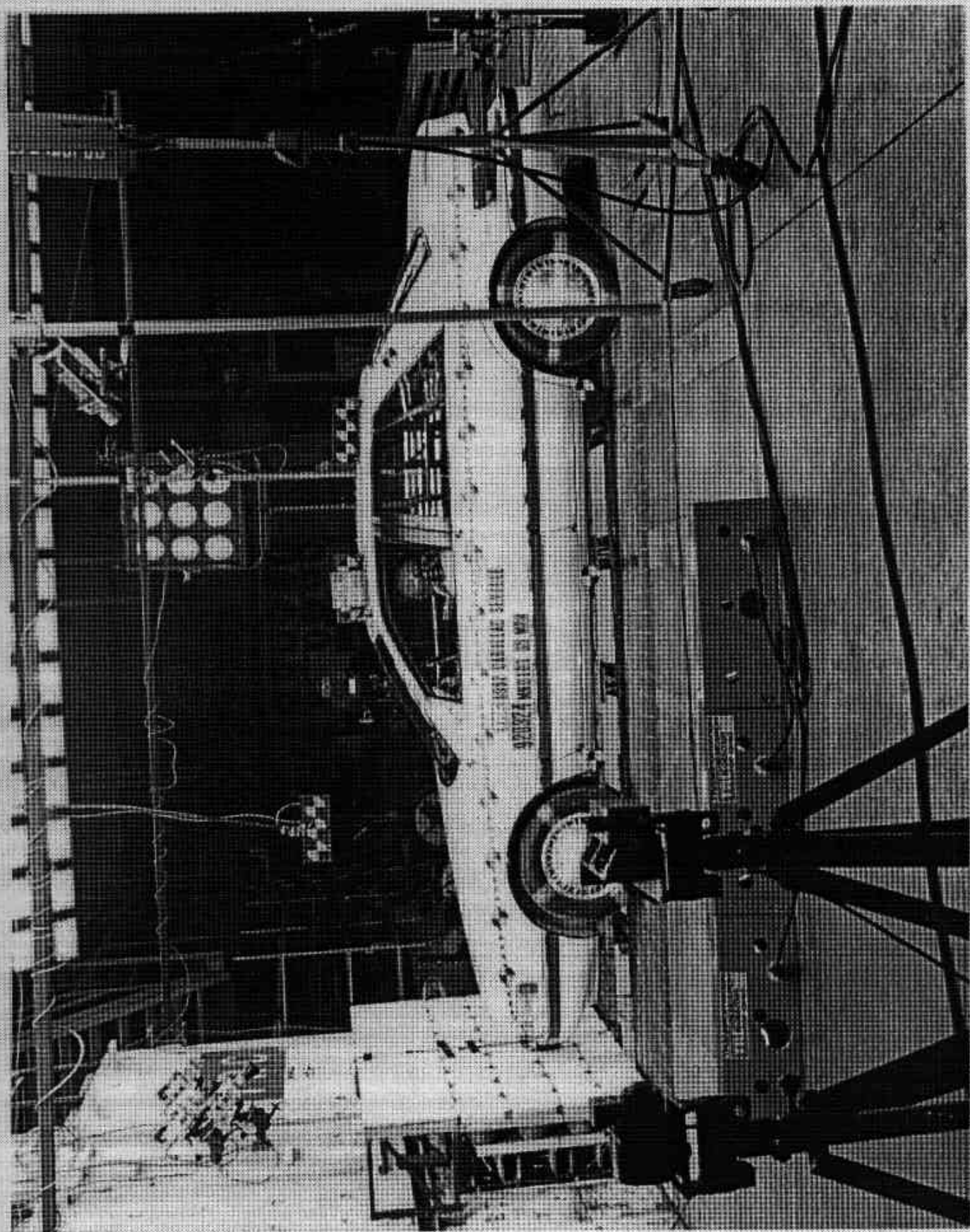


FIGURE A-3. PRE-TEST LEFT SIDE VIEW
A-4

920324

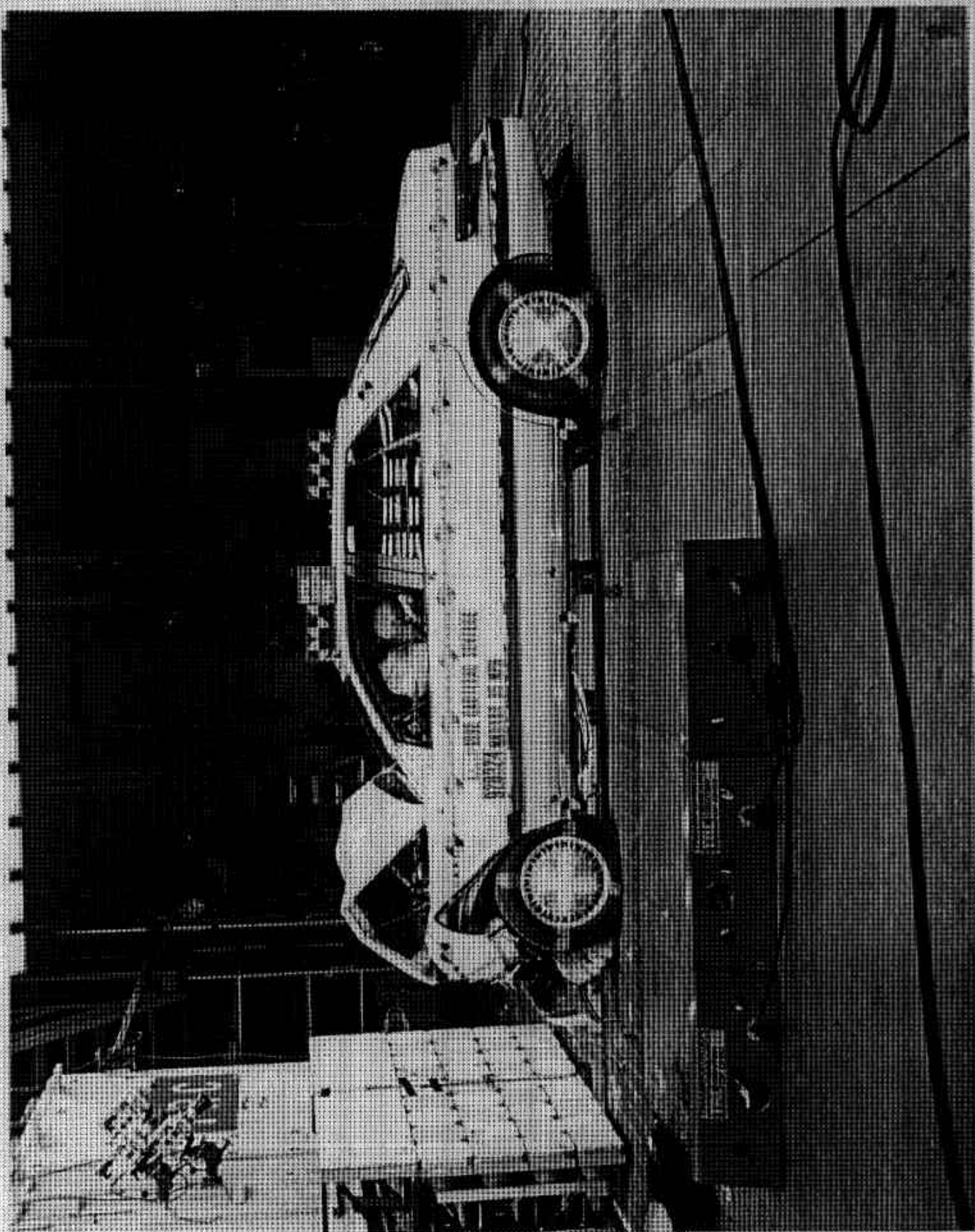


FIGURE A-4. POST-TEST LEFT SIDE VIEW
A-5

920324

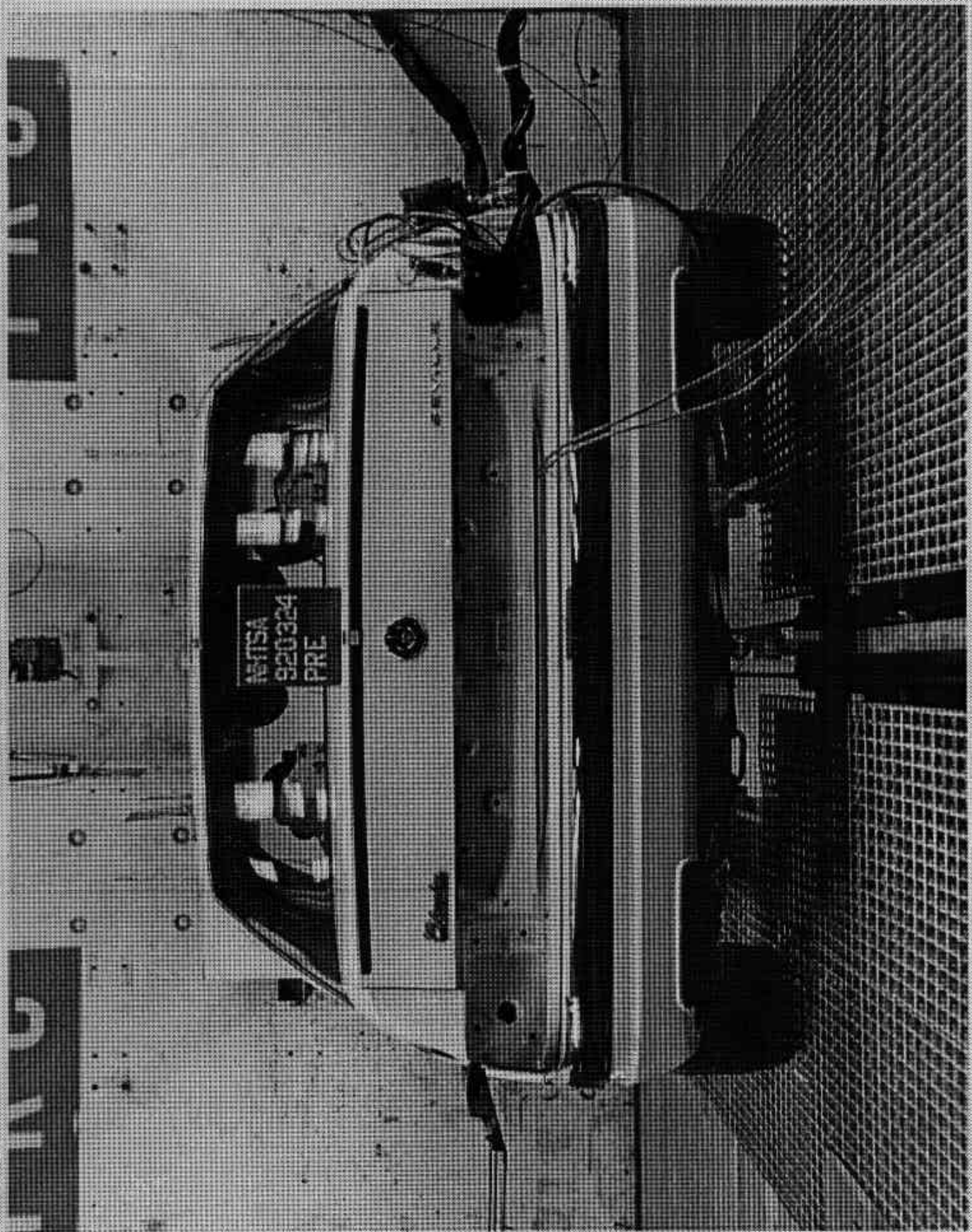


FIGURE A-5. PRE-TEST REAR VIEW

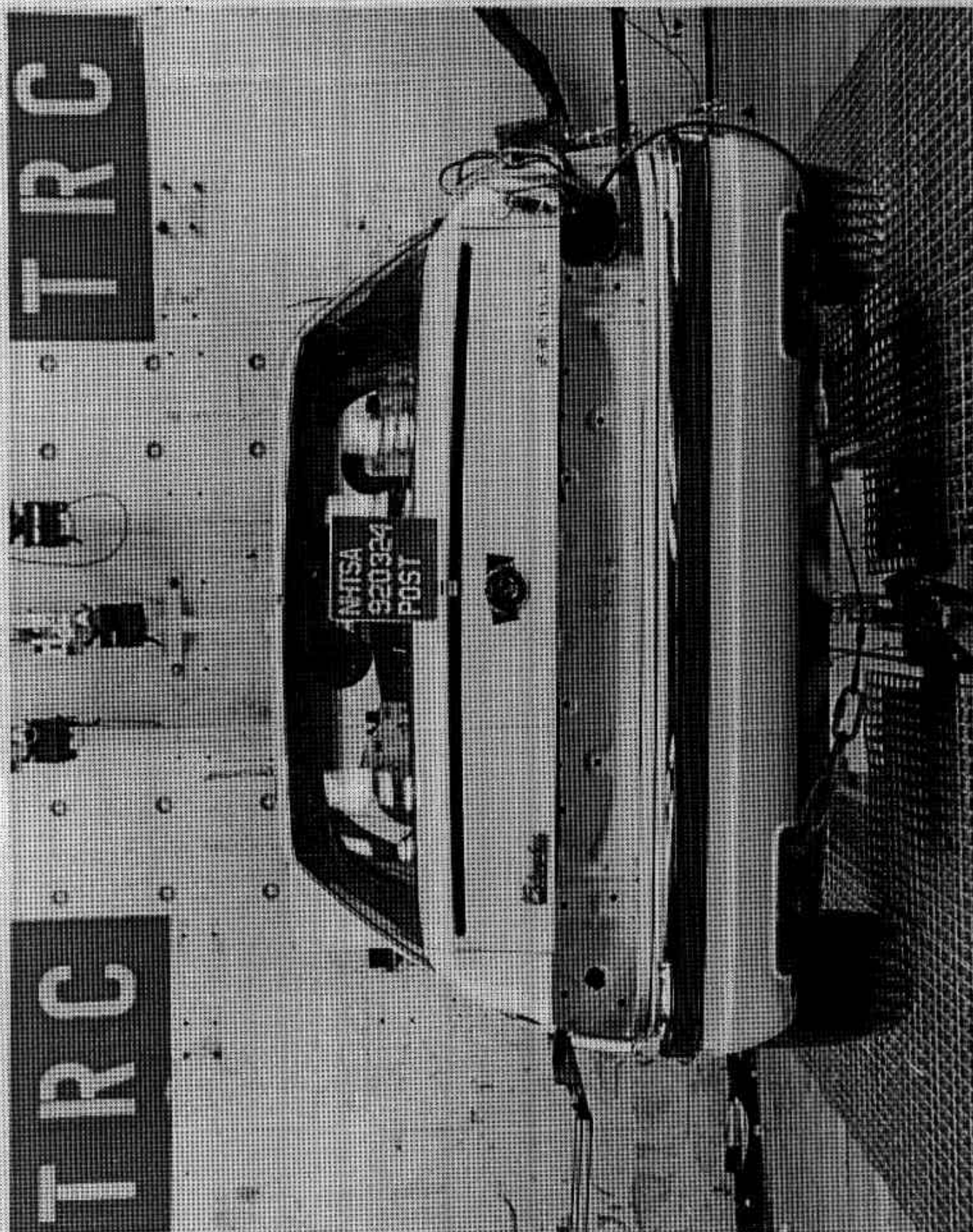


FIGURE A-6. POST-TEST REAR VIEW

A-7

920324



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

920324

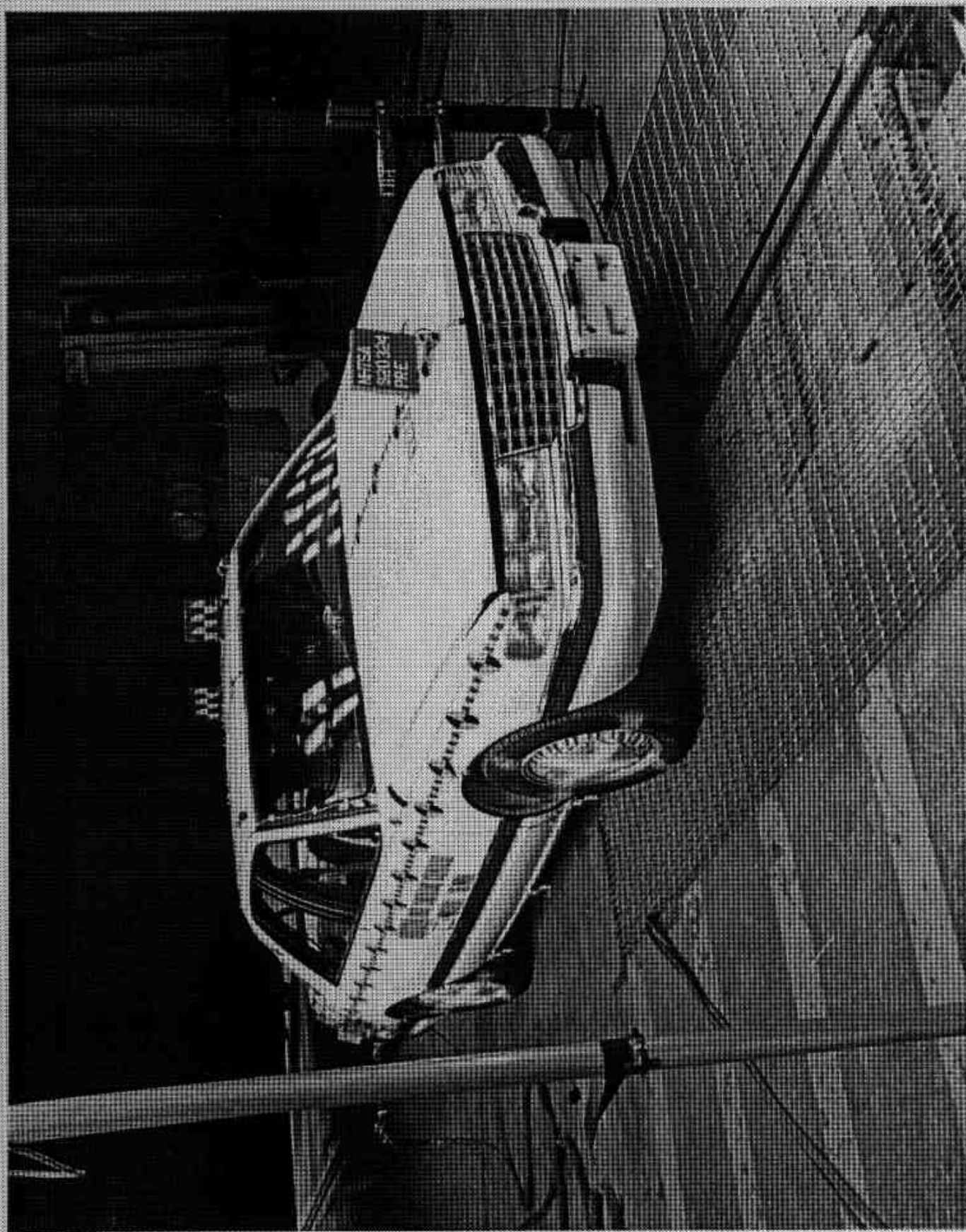


FIGURE A-9. PRE-TEST RIGHT FRONT THREE-QUARTER VIEW

A-10

920324

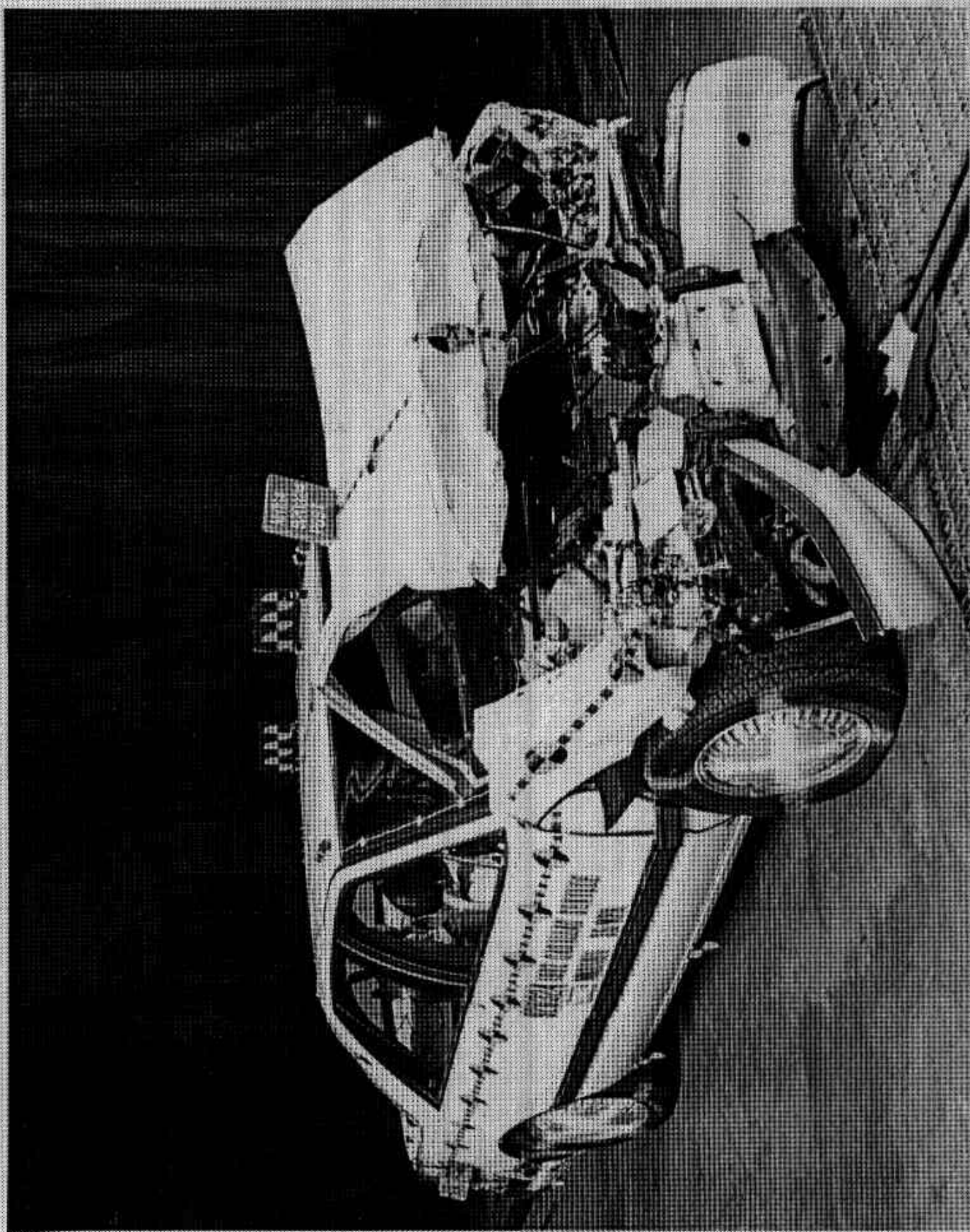


FIGURE A-10. POST-TEST RIGHT FRONT THREE-QUARTER VIEW

A-11

920324



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

A-12

920324



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

A-13

920324



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

920324

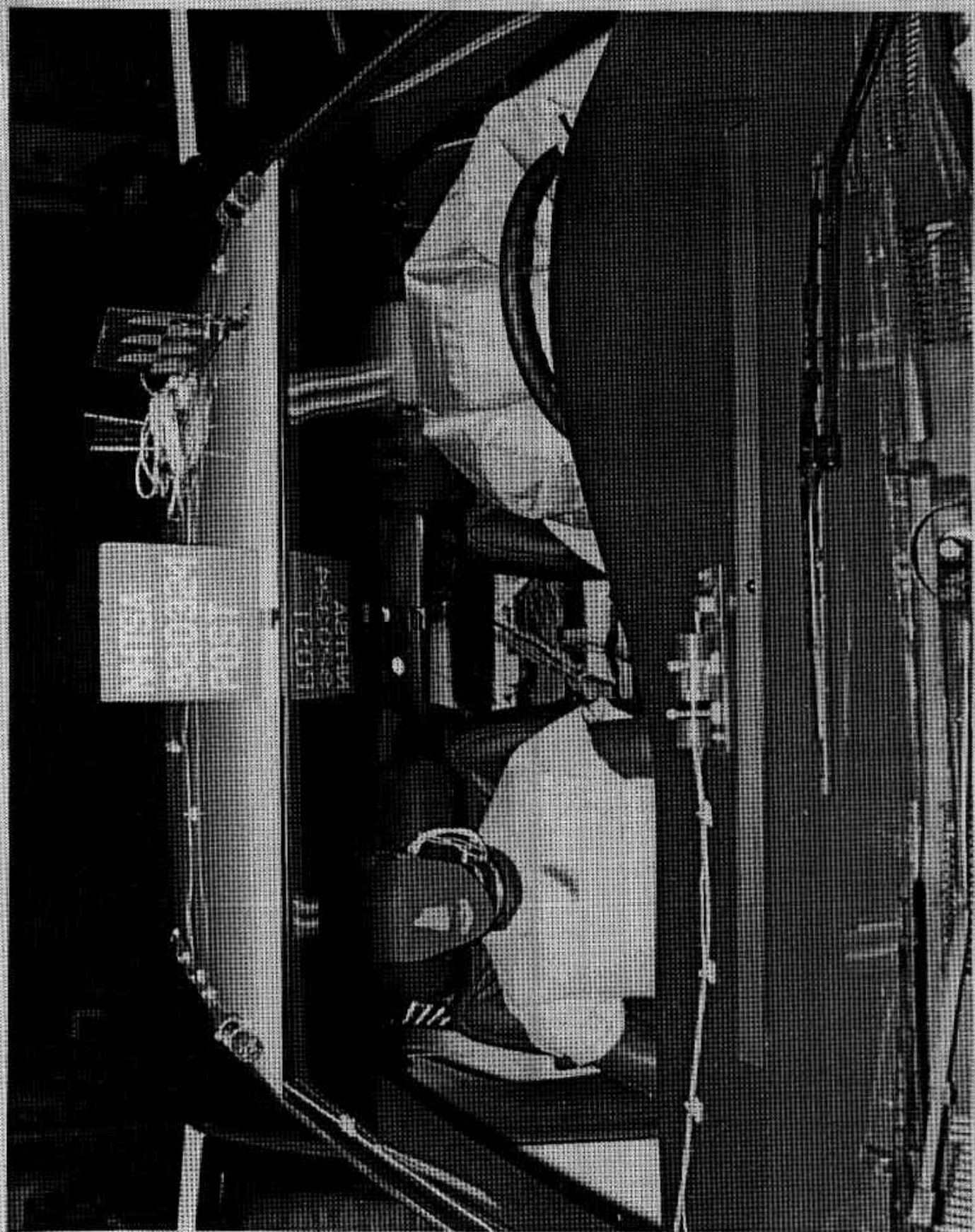


FIGURE A-14. POST-TEST WINDSHIELD VIEW
A-15

920324

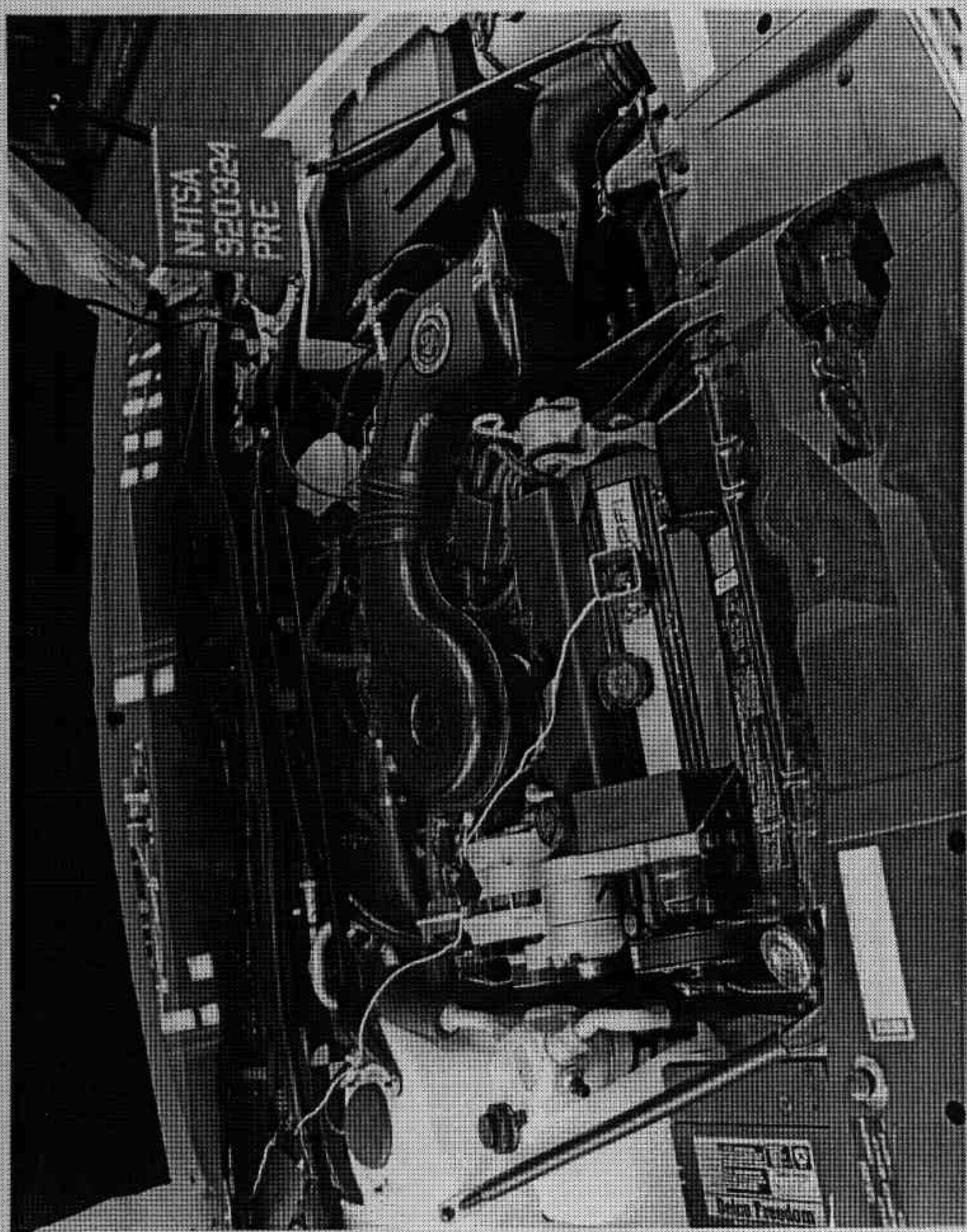


FIGURE A-15. PRE-TEST ENGINE COMPARTMENT VIEW

A-16

920324

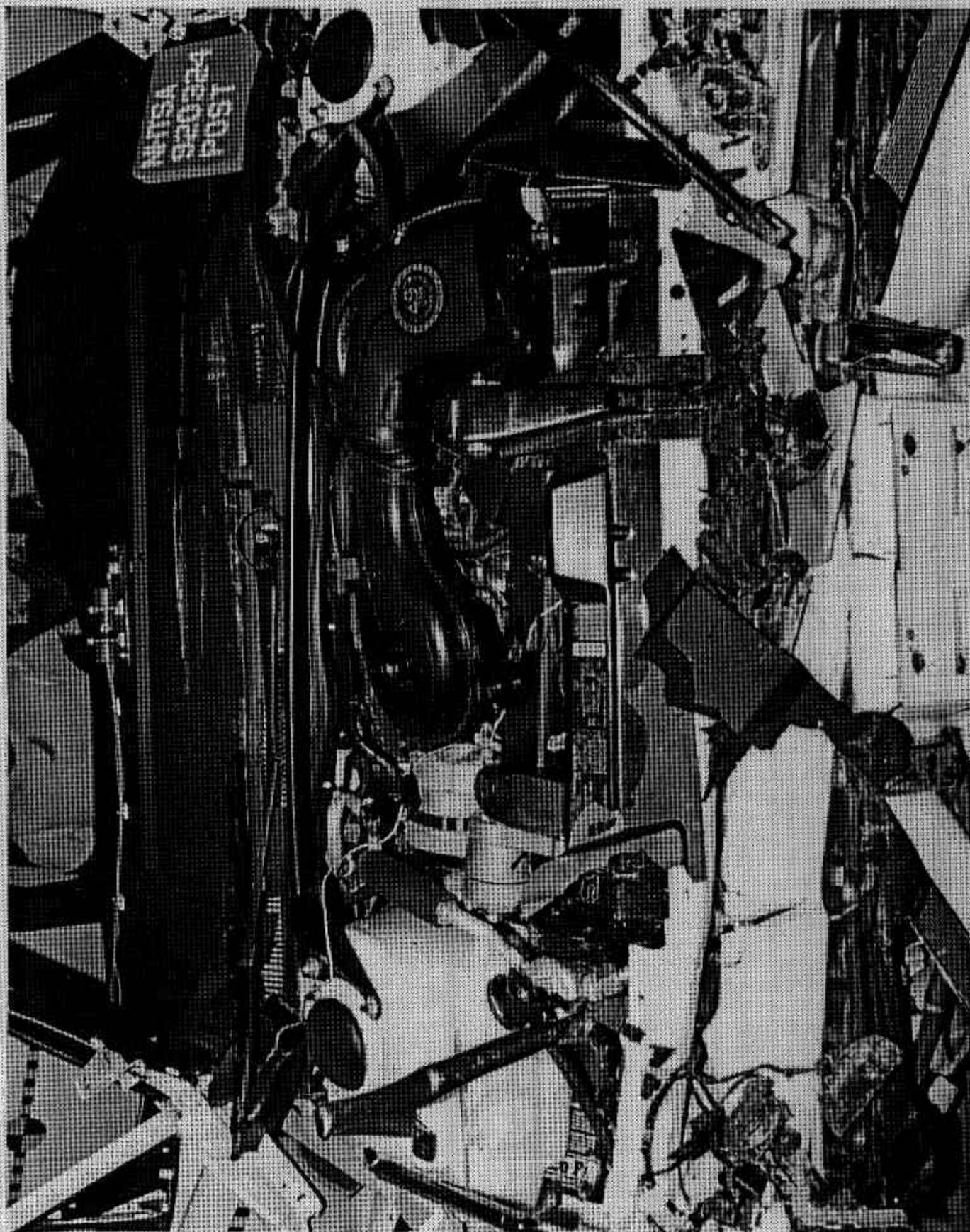


FIGURE A-16, POST-TEST ENGINE COMPARTMENT VIEW

A-17

920324



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

A-18

920324

NHTSA
920324
POST

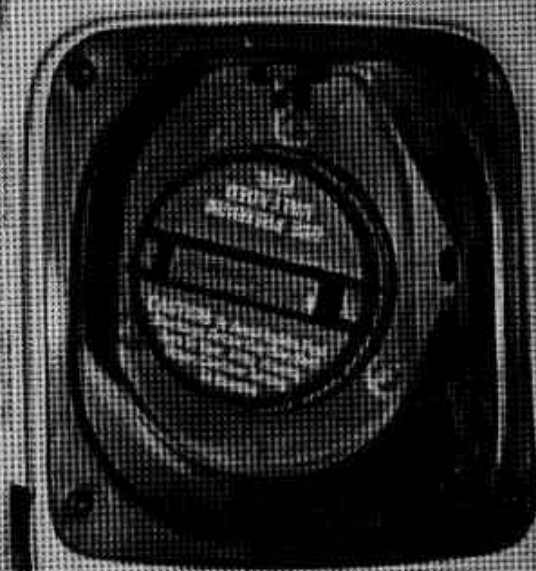


FIGURE A-18. POST-TEST FUEL FILLER CAP VIEW
A-19

920324



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

A-20

920324



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

A-21

920324



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

920324

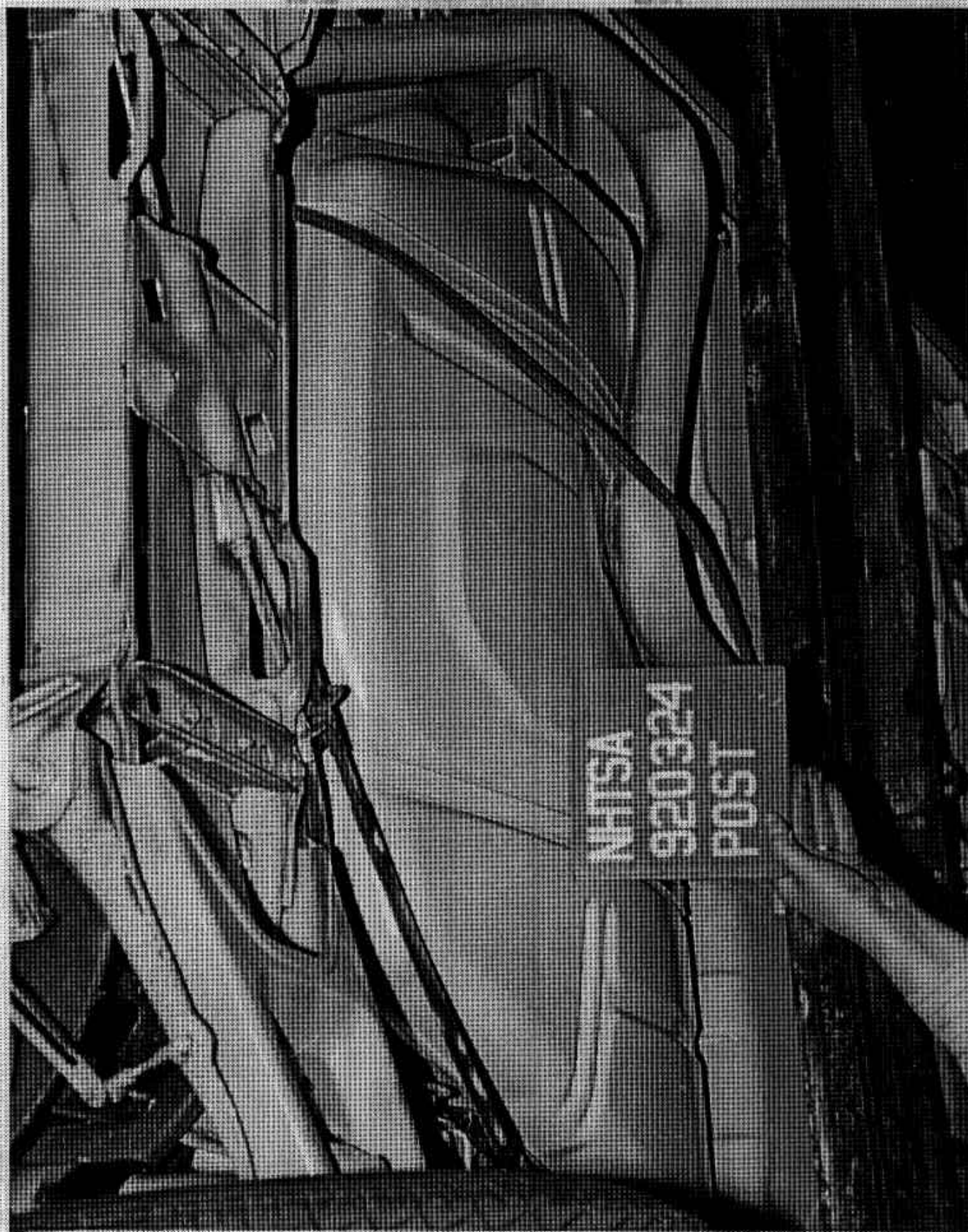


FIGURE A-22. POST-TEST FUEL TANK VIEW

A-23

920324

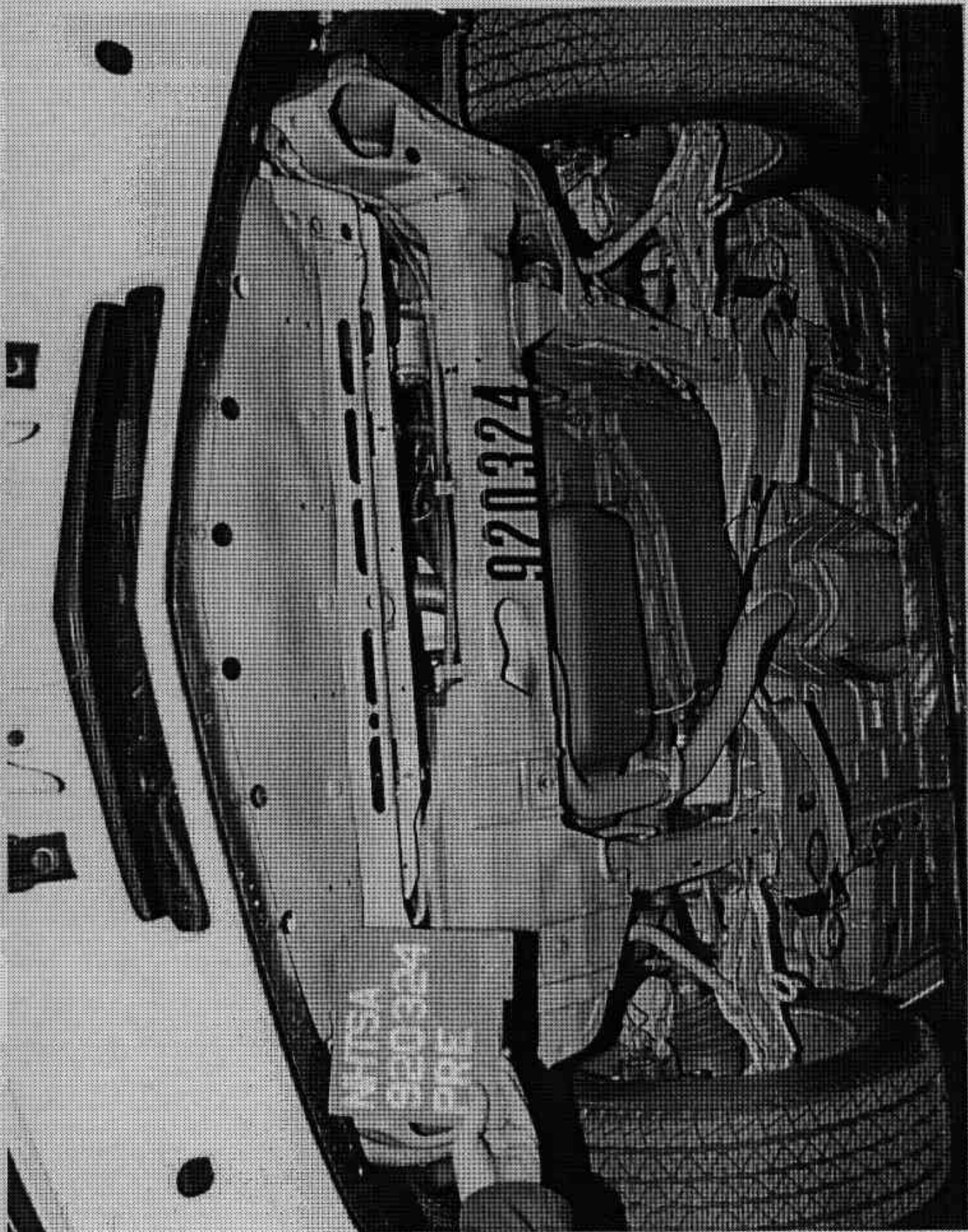


FIGURE A-23. PRE-TEST FRONT UNDERBODY VIEW

A-24

920324



FIGURE A-24. POST-TEST FRONT UNDERBODY VIEW

A-25

920324

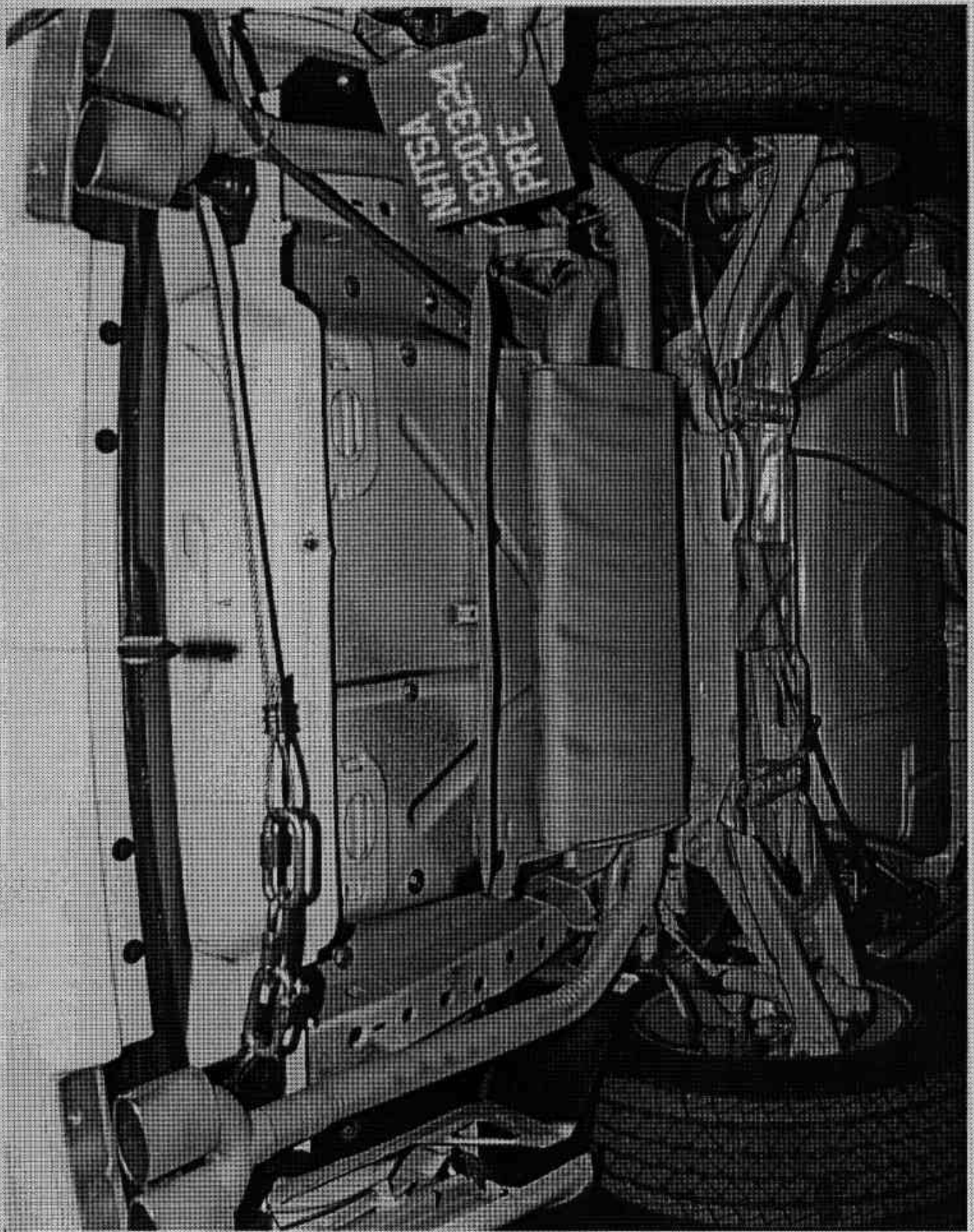


FIGURE A-25. PRE-TEST REAR UNDERBODY VIEW

A-26

920324



FIGURE A-26. POST-TEST REAR UNDERBODY VIEW
A-27

920324

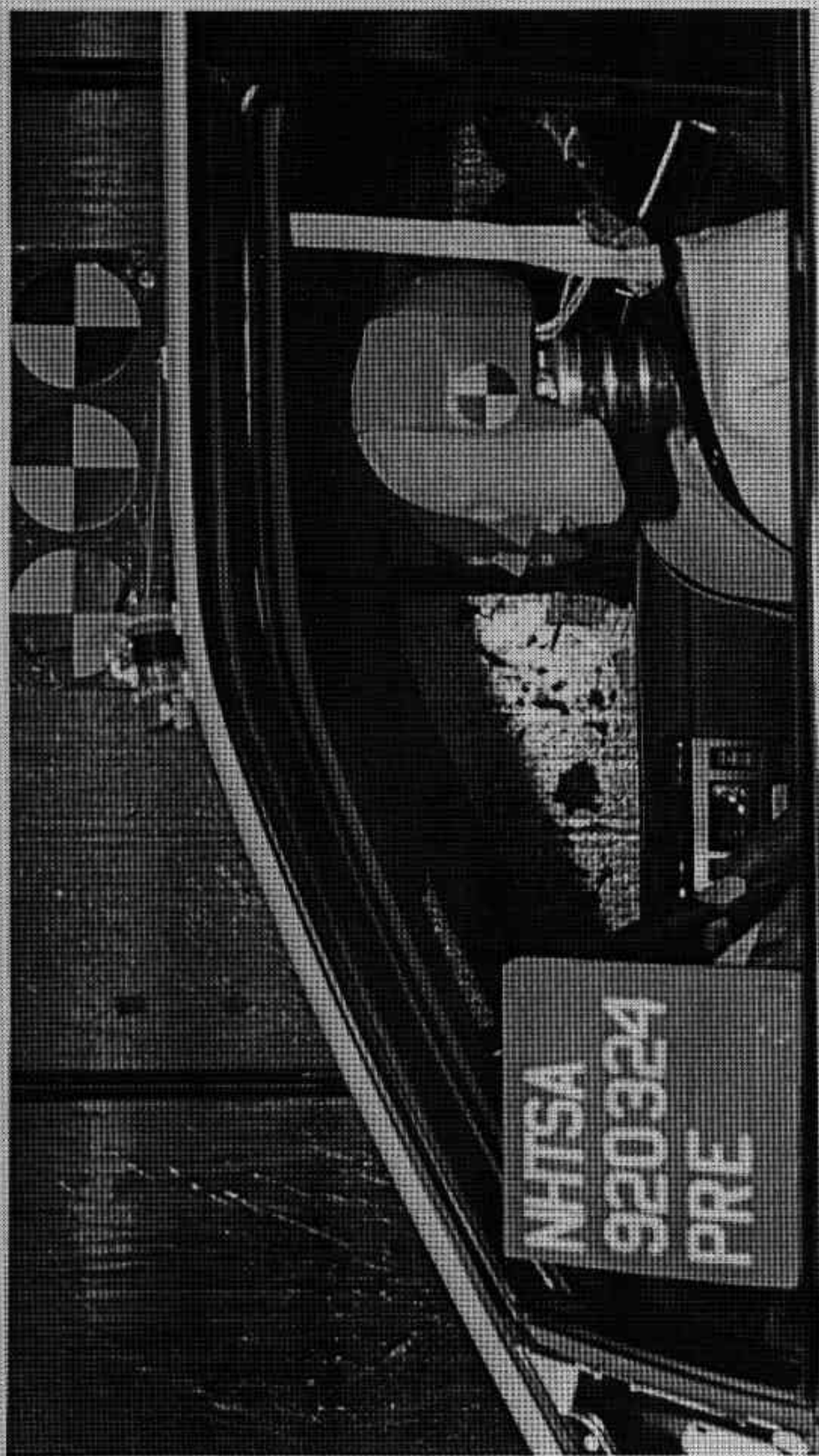


FIGURE A-27. PRE-TEST DRIVER DUMMY POSITION VIEW

A-28

920324



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



FIGURE A-29. PRE-TEST PASSENGER DUMMY POSITION VIEW
A-30

920324

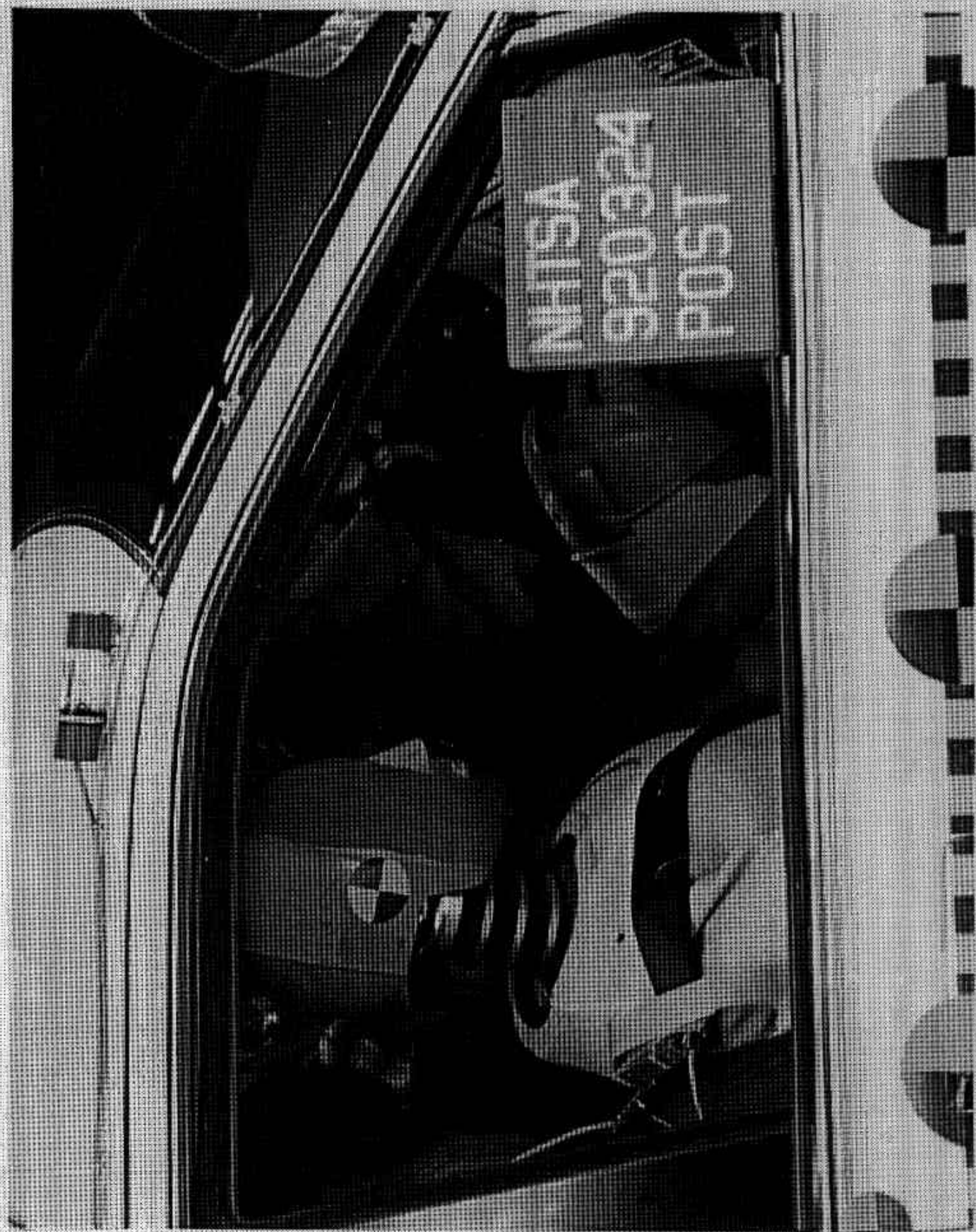


FIGURE A-30, POST-TEST PASSENGER DUMMY POSITION VIEW

A-31

920324

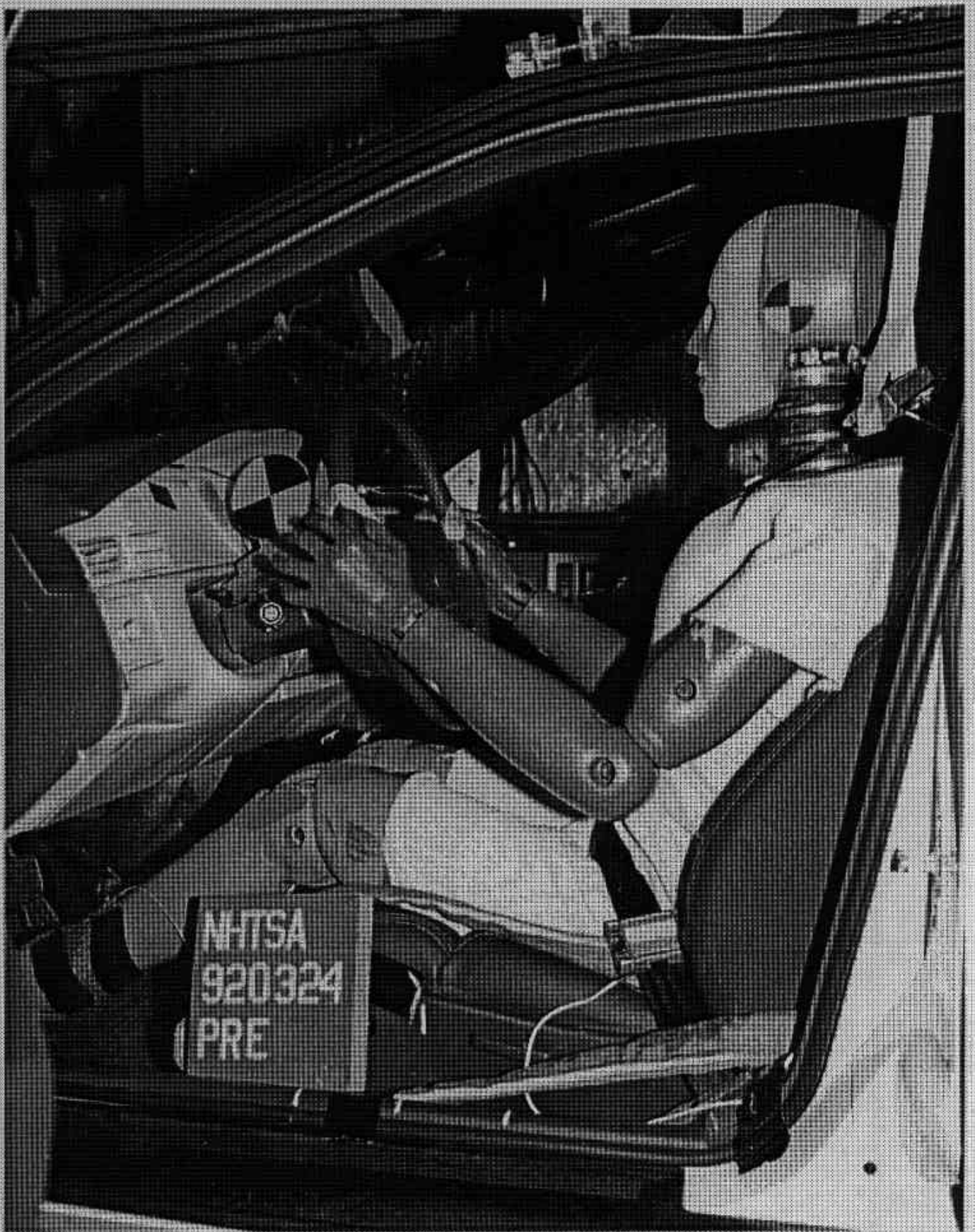


FIGURE A-31. PRE-TEST DRIVER DUMMY & VEHICLE INTERIOR - VIEW 1

A-32

920324



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

A-33

920324

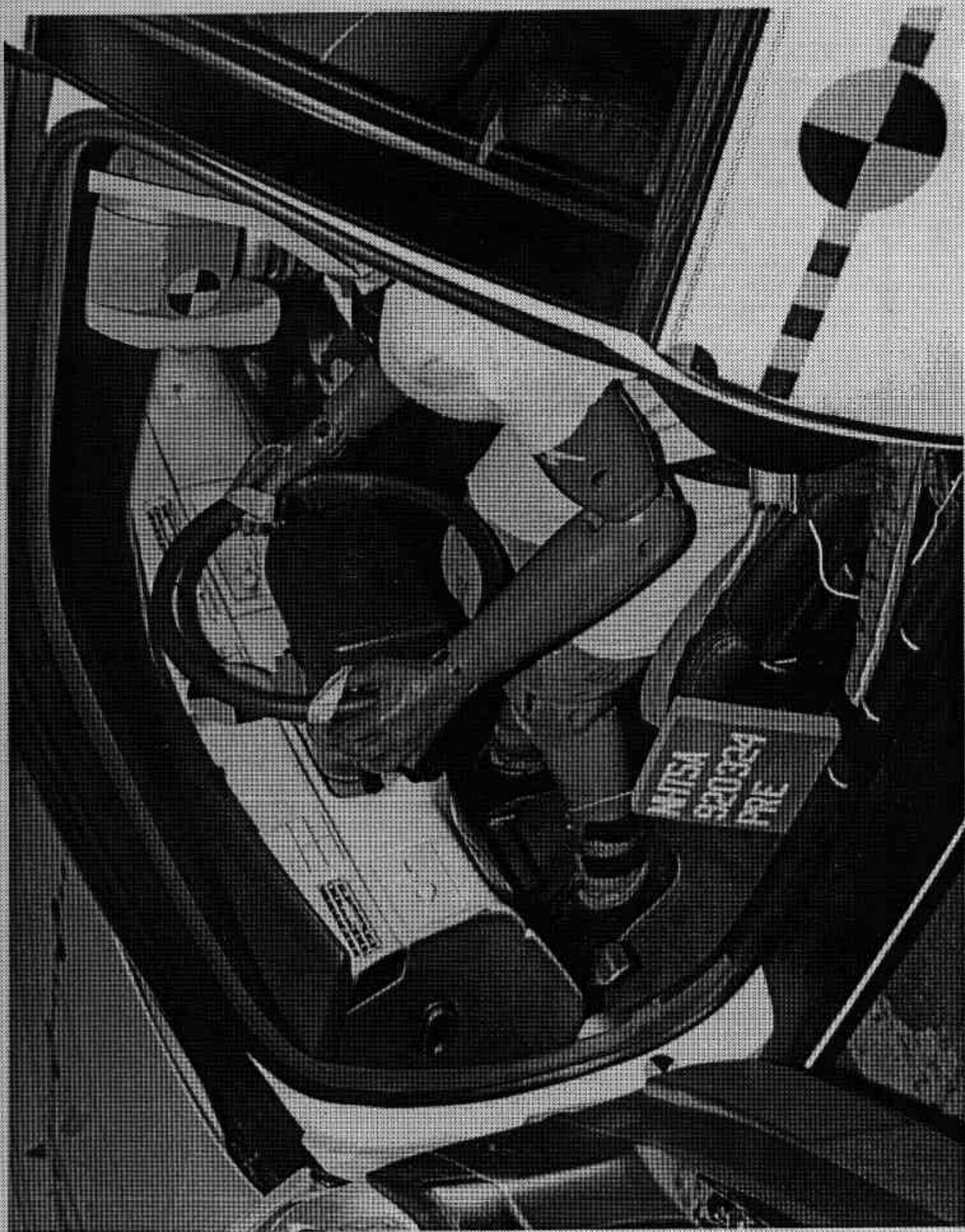


FIGURE A-33. PRE-TEST DRIVER DUMMY & VEHICLE INTERIOR - VIEW 2

A-34

920324



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

A-35

920324

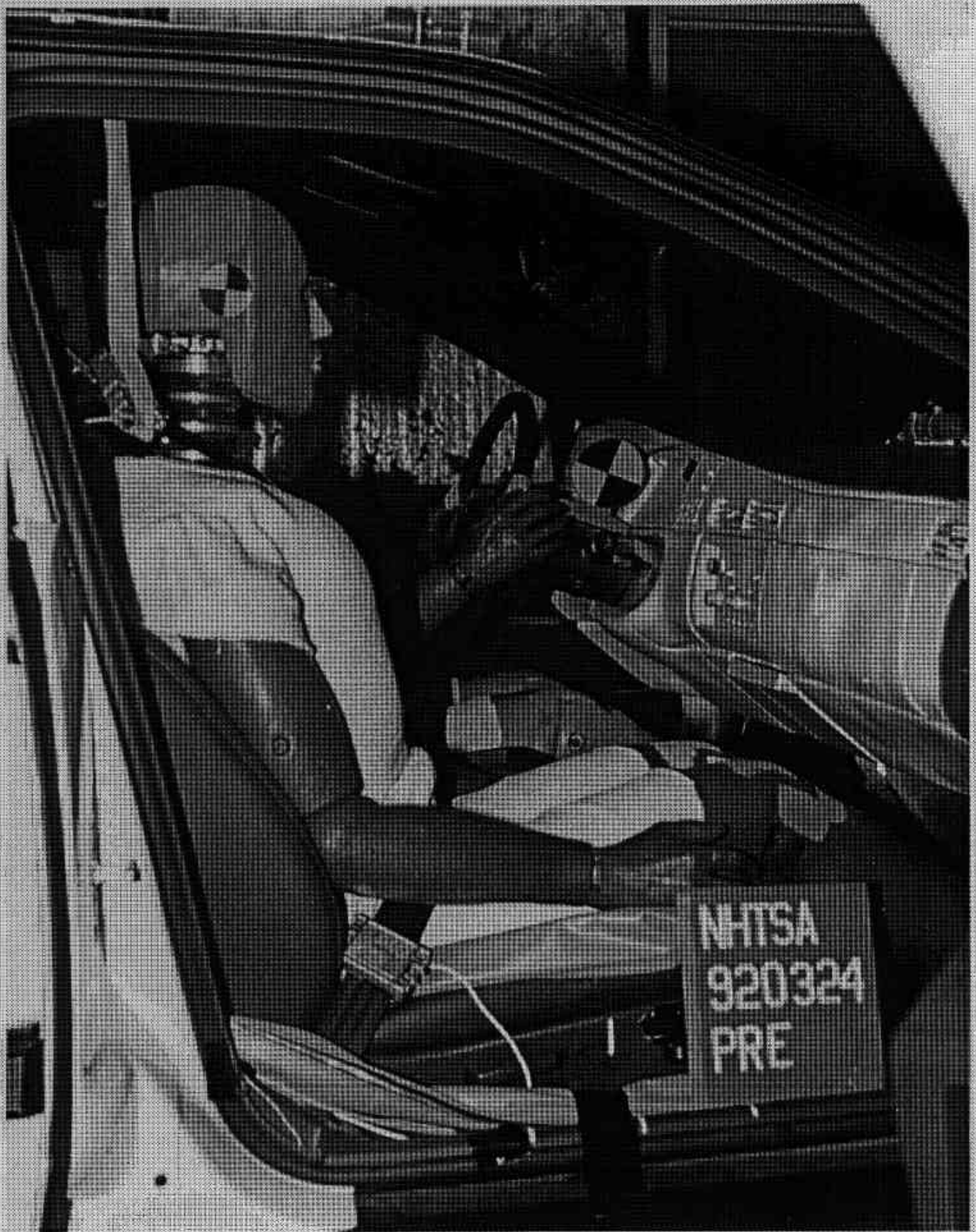


FIGURE A-35, PRE-TEST PASSENGER DUMMY & VEHICLE INTERIOR - VIEW 1
A-36 920324



FIGURE A-36. POST-TEST PASSENGER DUMMY & VEHICLE INTERIOR - VIEW 1
A-37 920324

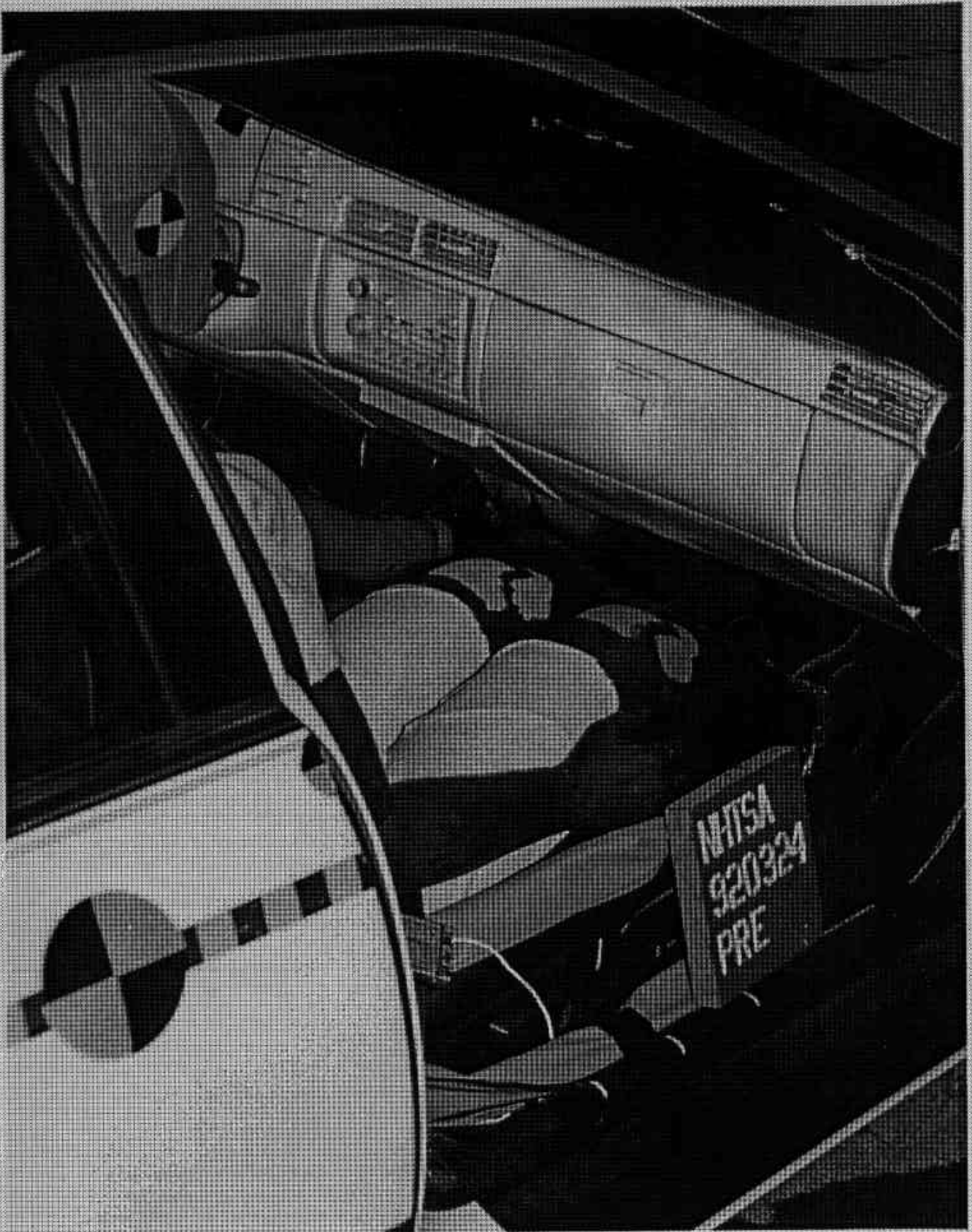


FIGURE A-37. PRE-TEST PASSENGER DUMMY & VEHICLE INTERIOR - VIEW 2
A-38 920324



FIGURE A-38. POST-TEST PASSENGER DUMMY & VEHICLE INTERIOR - VIEW 2
A-39 920324



FIGURE A-39. POST-TEST PASSENGER D-RING SEAT BELT VIEW

A-40

920324

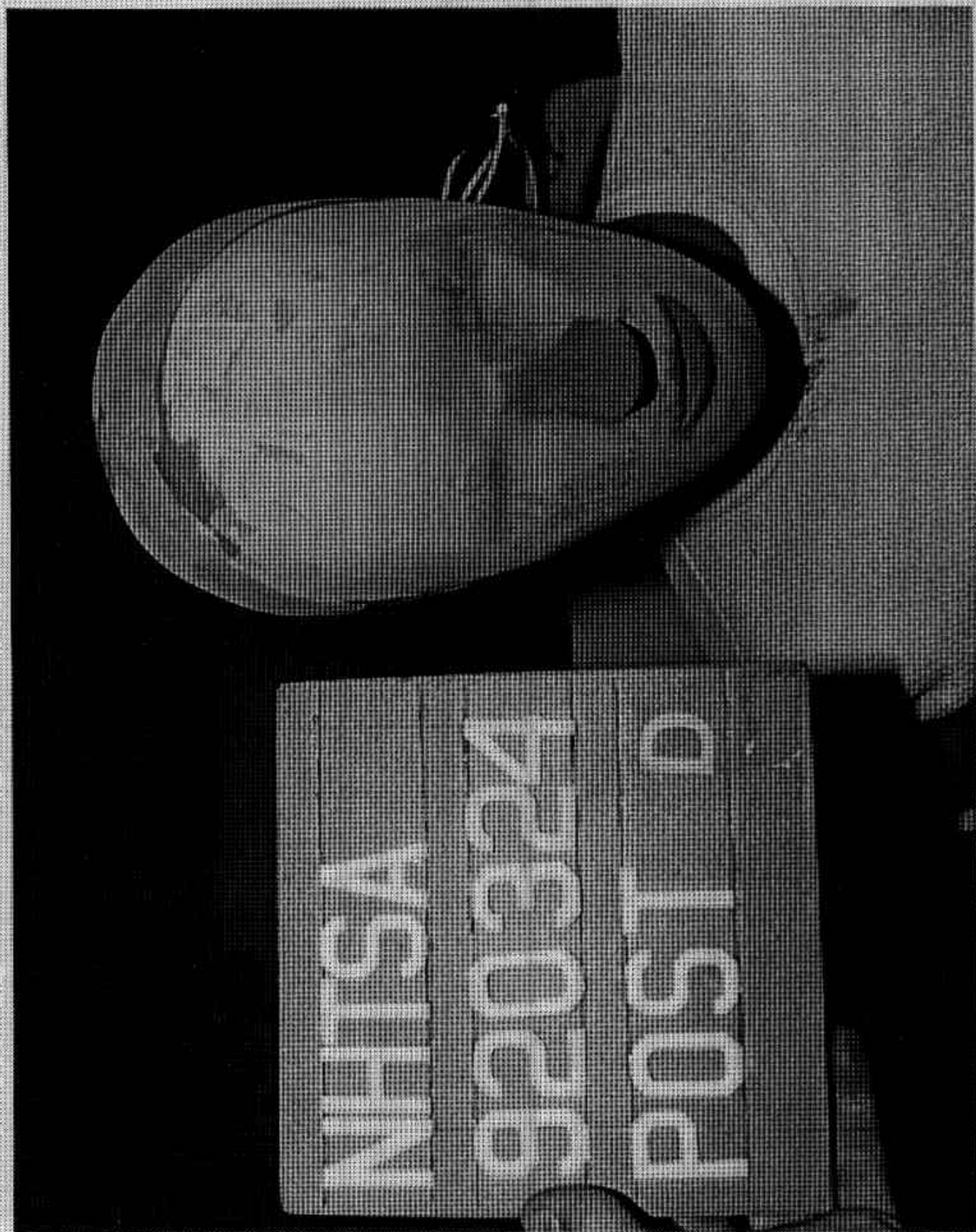


FIGURE A-40. POST-TEST DRIVER DUMMY HEAD CONTACT - VIEW 1

A-41

920324



FIGURE A-41. POST-TEST DRIVER DUMMY HEAD CONTACT - VIEW 2



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

A-43

920324



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

A-44

920324



FIGURE A-44. POST-TEST PASSENGER DUMMY HEAD CONTACT VIEW

A-45

920324

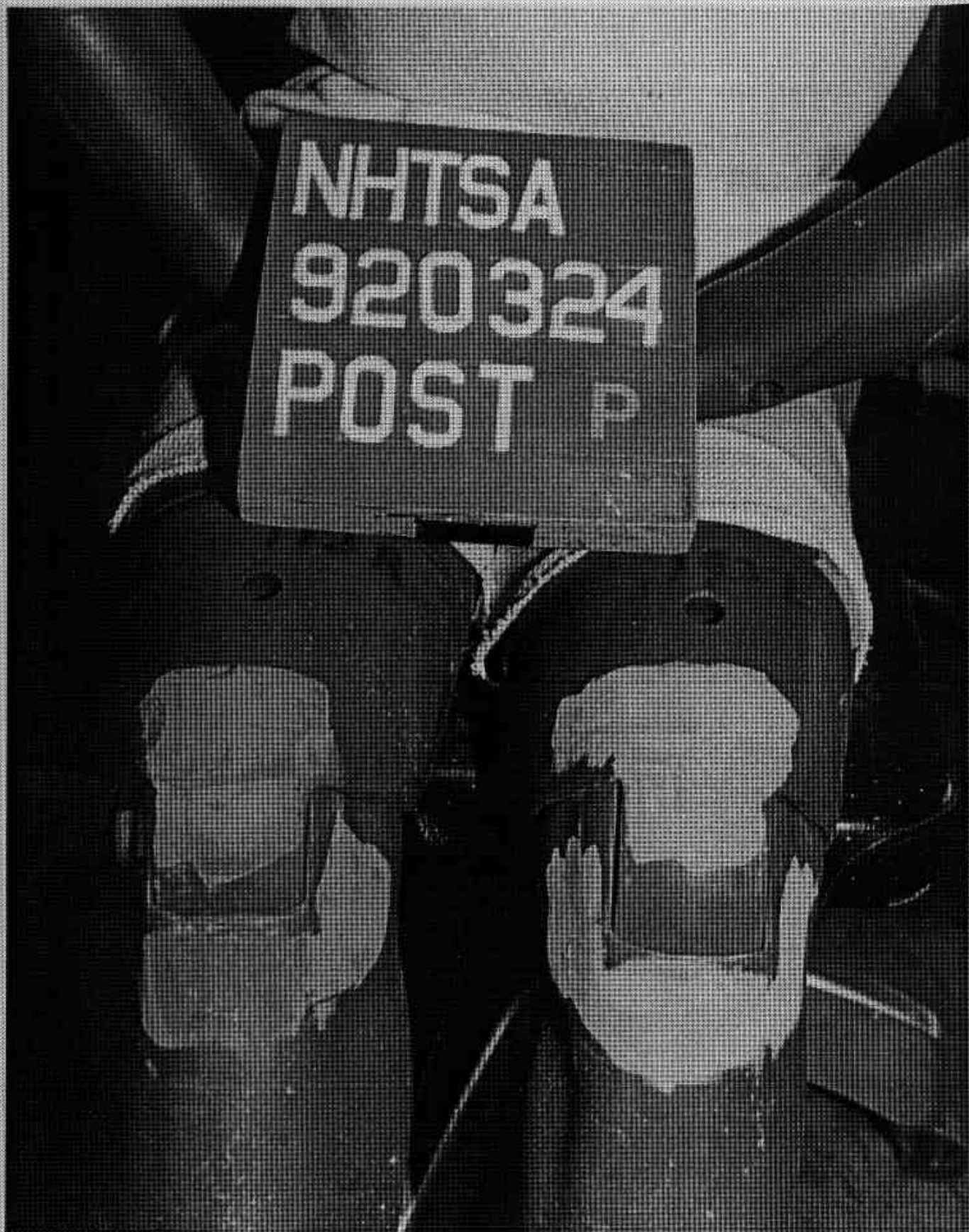


FIGURE A-45. POST-TEST PASSENGER DUMMY KNEE CONTACT - VIEW 1

A-46

920324



FIGURE A-46. POST-TEST PASSENGER DUMMY KNEE CONTACT - VIEW 2

A-47

920324

TIRE INFLATION PRESSURE INFORMATION
FOR HIGH SPEED USAGE
COLD TIRE INFLATION PRESSURE
 FRT: 35 PSI/240 KPa RR: 35 PSI/240 KPa
SEE OWNER'S MANUAL FOR MORE INFORMATION



MADE BY GENERAL MOTORS CORP.

DATE	GVWR	GAWR FRT	GAWR RR
09/91	4639LB	2570LB	2069LB
	02104KG	01166KG	00938KG

THIS VEHICLE CONFORMS TO ALL APPLICABLE U.S. FEDERAL MOTOR VEHICLE SAFETY, BUMPER, AND THEFT PREVENTION STANDARDS IN EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE.

1G6K35384NU803595 PASS CAR

GEN CORP

10130543A

FIGURE A-47. PRE-TEST VEHICLE CERTIFICATION LABEL VIEW

 TIRE-LOADING INFORMATION

OCCUPANTS		VEHICLE CAP. WT.	
FRONT	REAR	TOTAL LBS	KG
2	3	926	420

MAX. LOADINGS & GVWR SAME AS VEHICLE
CAPACITY WEIGHT

TIRE SIZE		SPEED PRESSURE	
FRONT	REAR	MPH	PSI/KPA
P225/60R16	S	5	28/190
P225/60R16	S	5	26/180
P225/70R15	M	60/420	

IF TIRES ARE NOT ADD 4PSI/28KPA
SEE OWNER'S MANUAL FOR ADDITIONAL
INFORMATION

REAR

Figure A-48, PRE-TEST VEHICLE RECOMMENDED TIRE PRESSURE LABEL VIEW

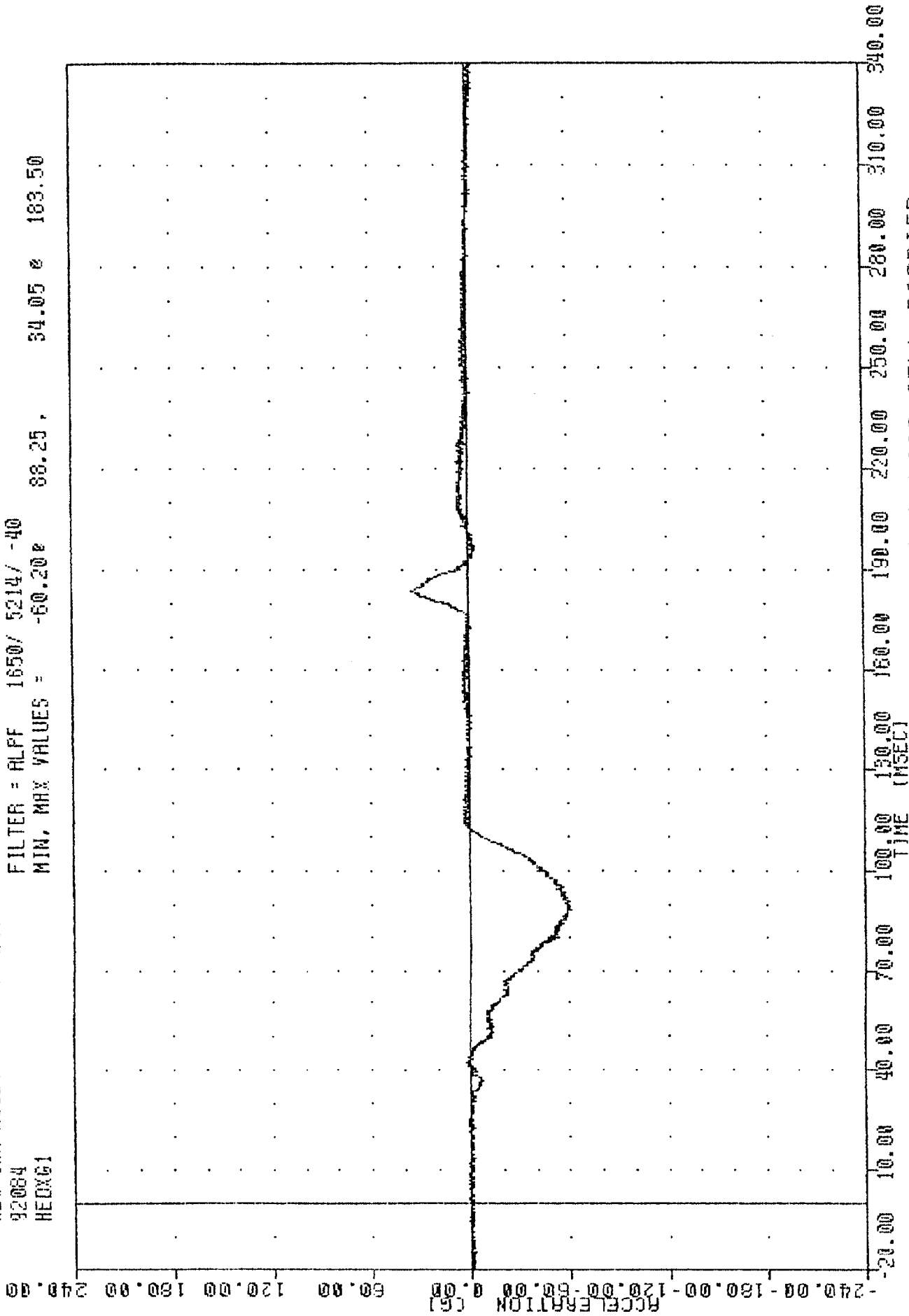
APPENDIX B

DATA PLOTS

TRC
NEW CAR ASSESSMENT PROGRAM
92084
HEXG1

920324

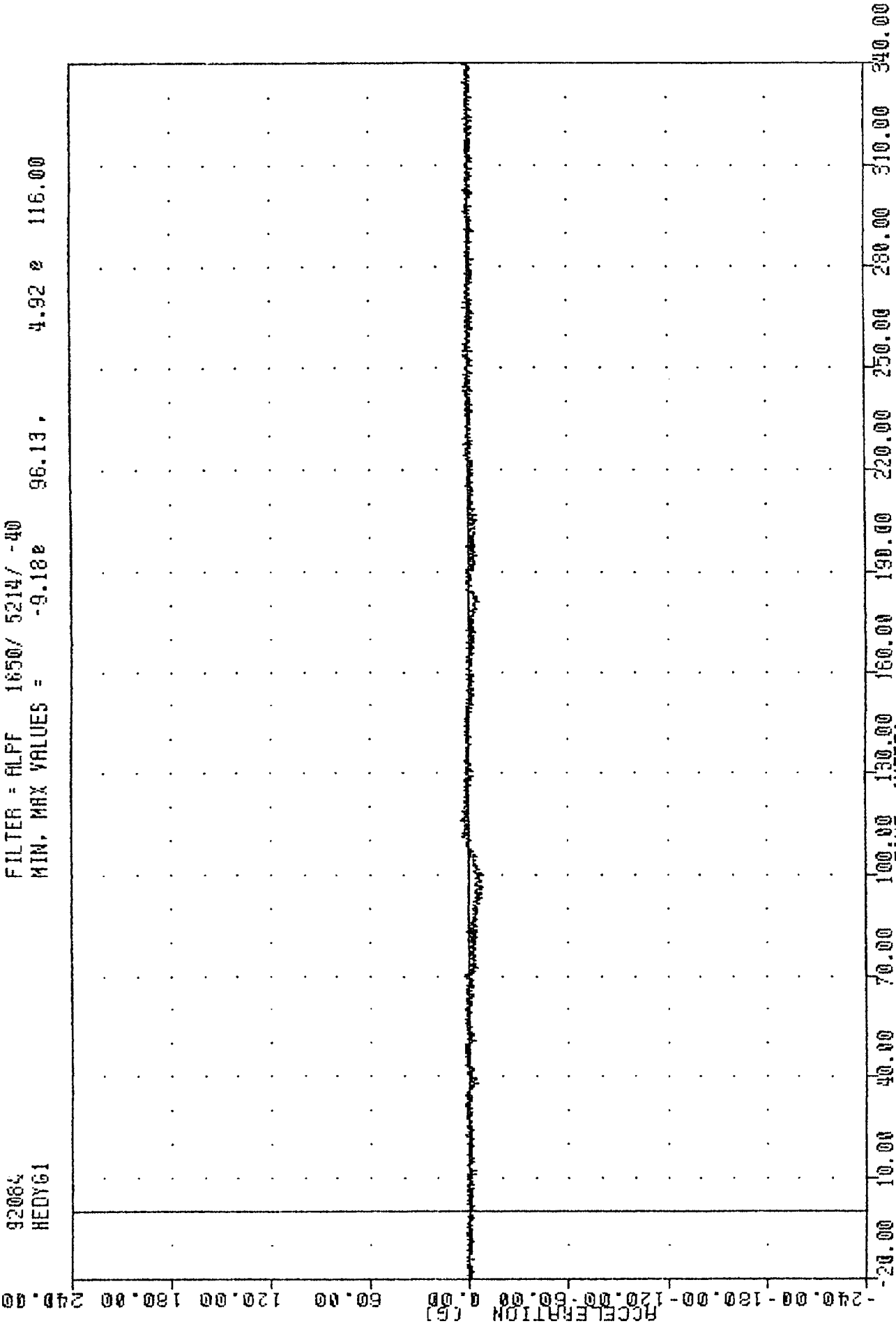
FILTER = ALPF 1650/ 5214/ -40
MIN, MAX VALUES = -60.20 34.05 183.50



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
DRIVER HEAD X-AXIS ACCELERATION

IRC, 920324
 NEW CAR ASSESSMENT PROGRAM
 92064
 HEDY61

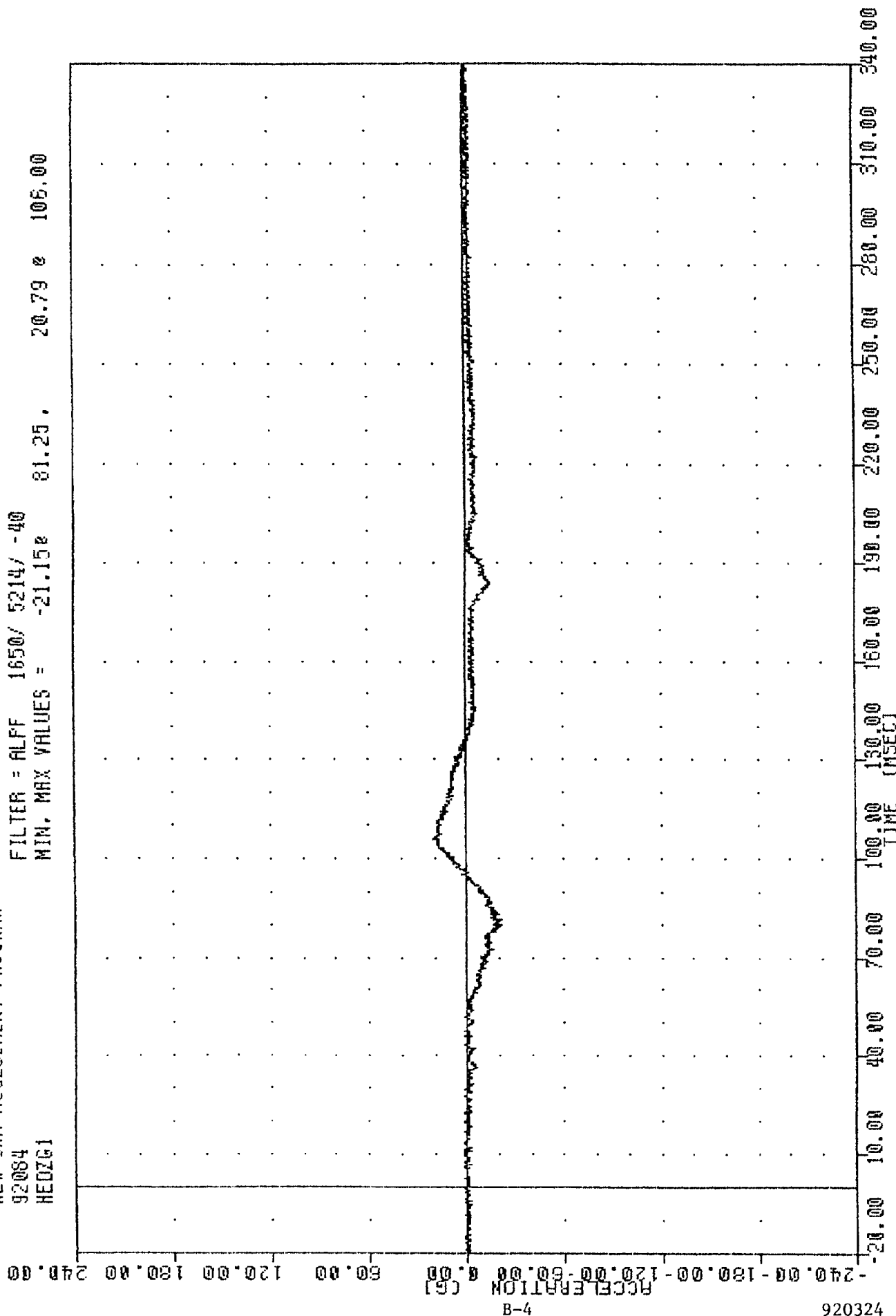
FILTER = ALPF 1650/ 5214/ -40
 MIN. MAX VALUES = -9.18e 96.13, 4.92 e 116.00



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 DRIVER HEAD Y-AXIS ACCELERATION

TRC , 920324
 NEW CAR ASSESSMENT PROGRAM
 92084
 HEDZG1

FILTER = ALPF 1650/ 5214/ -40
 MIN, MAX VALUES = -21.15e 81.25, 20.79 e 105.00



TRC

920324

NEW CAR ASSESSMENT PROGRAM

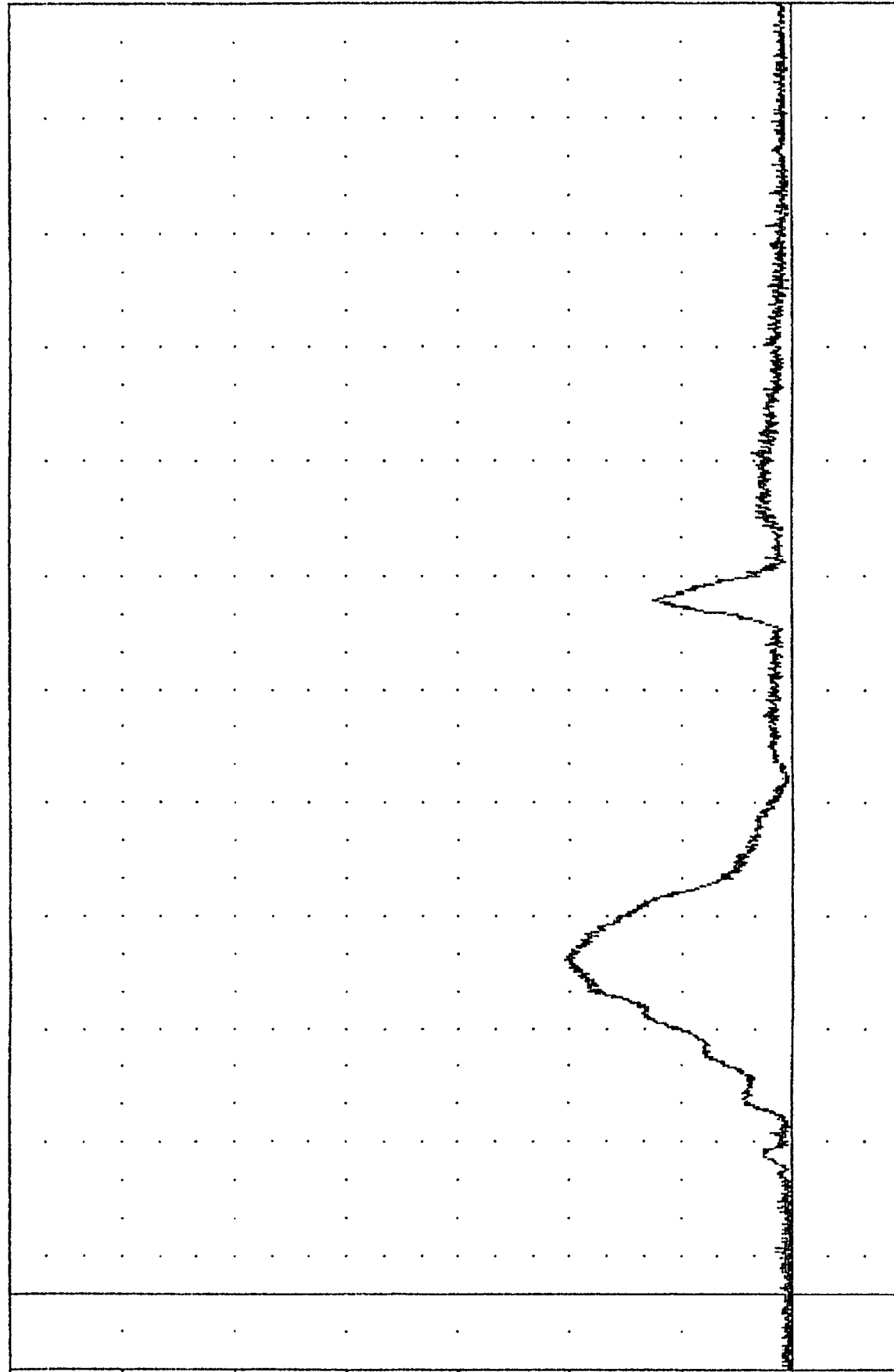
92084

HEAD01

FILTER = ALPF 1650/ 5214/ -40

MIN, MAX VALUES = 0.17e 27.75, 61.50 e 88.25

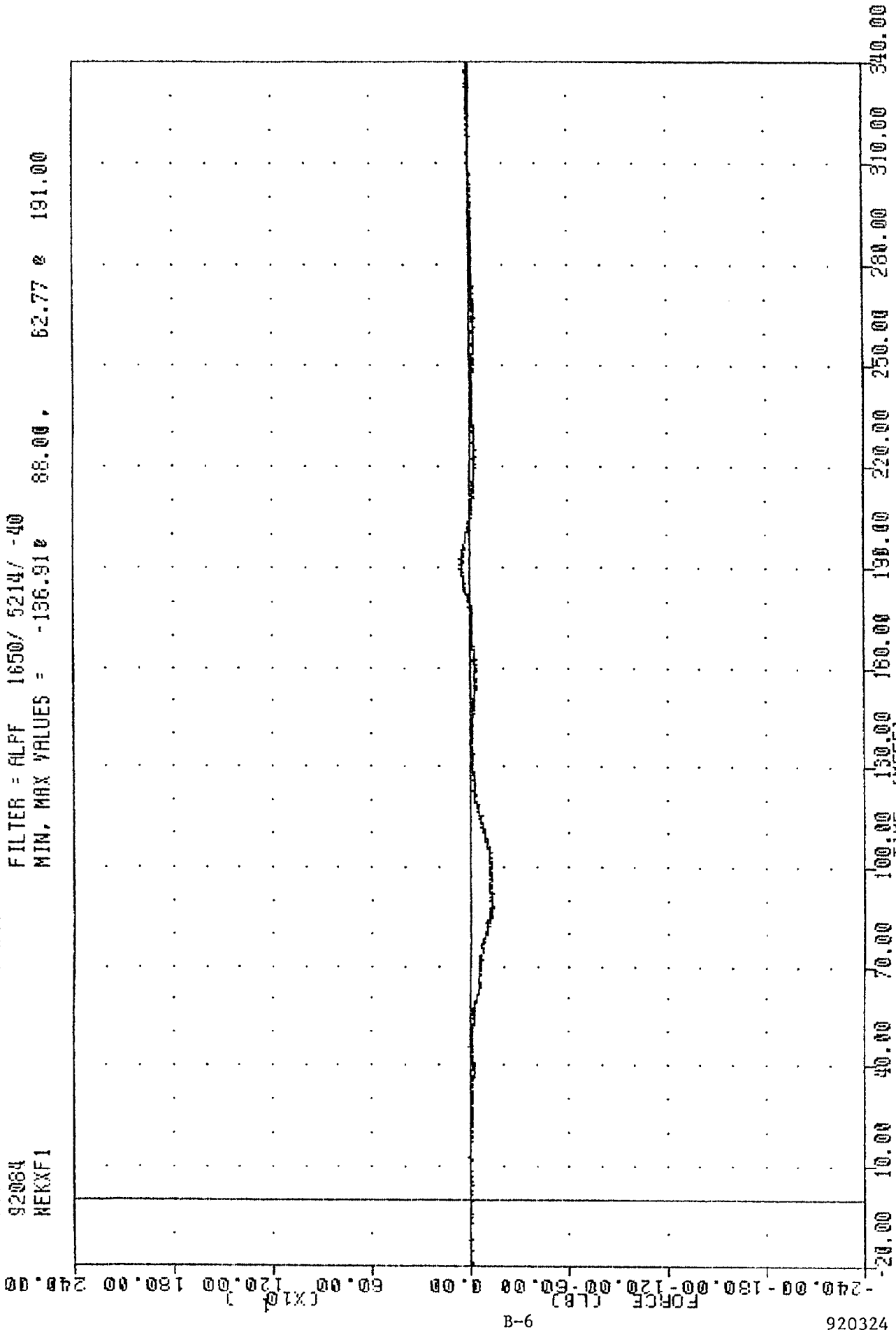
ACCELERATION (G)



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
DRIVER HEAD RESULTANT ACCELERATION

TRC , 920324
 NEW CRA ASSESSMENT PROGRAM
 92084
 HEKXF1

FILTER = ALFF 1650/ 5214/ -40
 MIN, MAX VALUES = -136.910 88.00 , 62.77 191.00



TRC

920324

NEW CAR ASSESSMENT PROGRAM

92084

NEKVF1

FILTER = ALPF 1650/ 5214/ -40

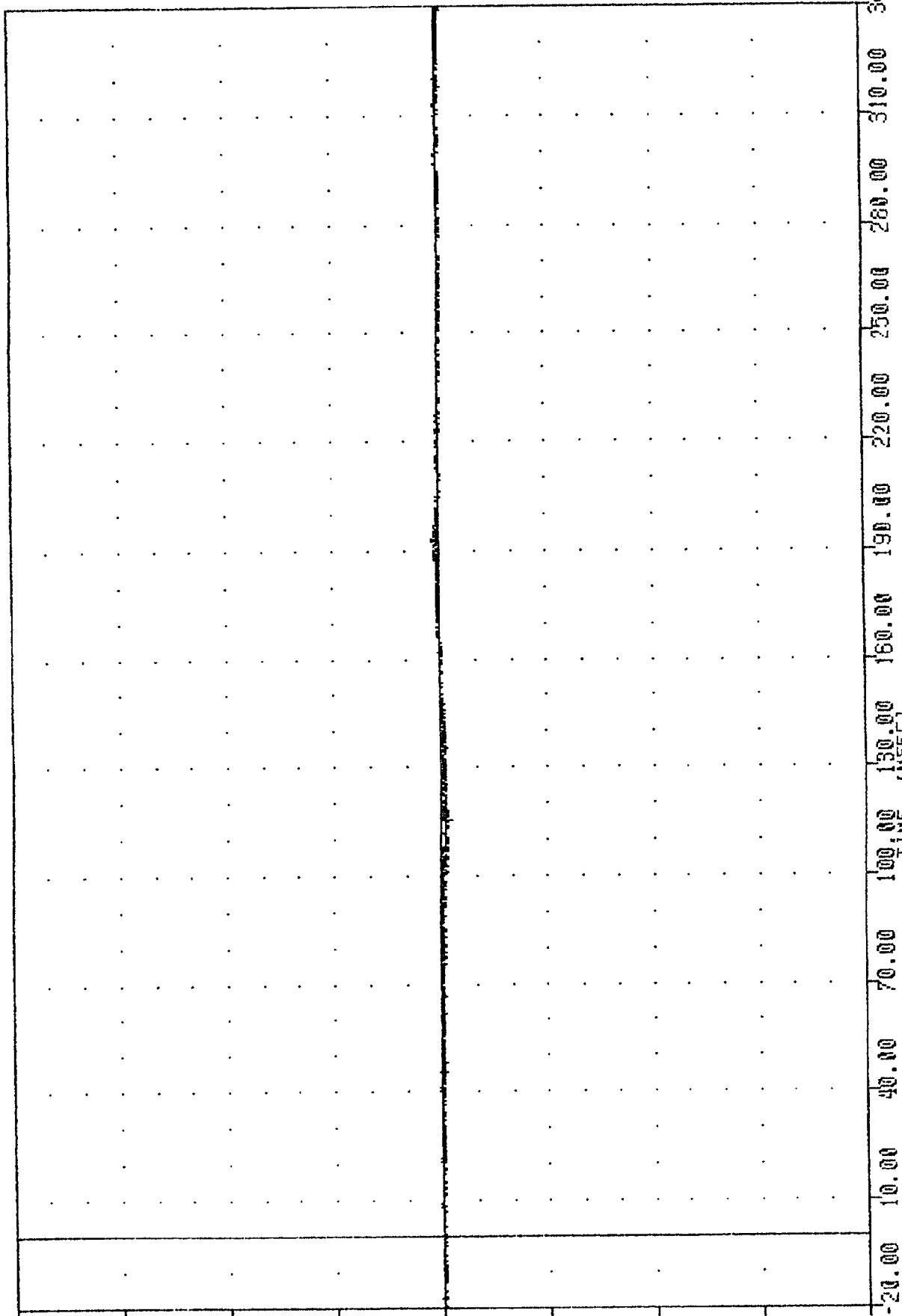
MIN, MAX VALUES = -59.750 115.25 ,

38.48 0 192.88

240.00 180.00 120.00 60.00 0.00 -60.00 -120.00 -180.00 -240.00

B-7

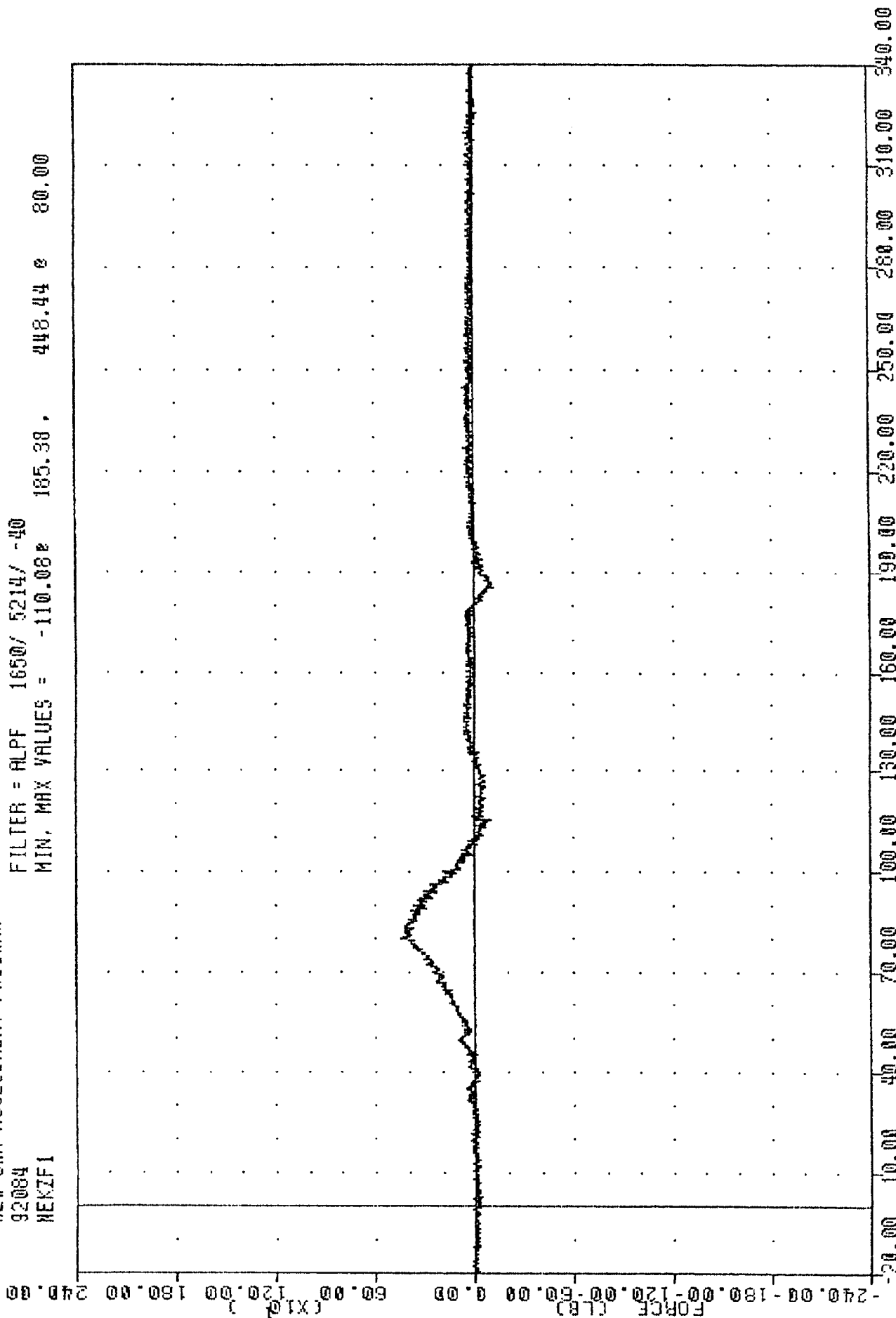
920324



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
DRIVER NECK Y-AXIS SHEAR FORCE

TRC , 920324
 NEW CAR ASSESSMENT PROGRAM
 92084
 MEKIF1

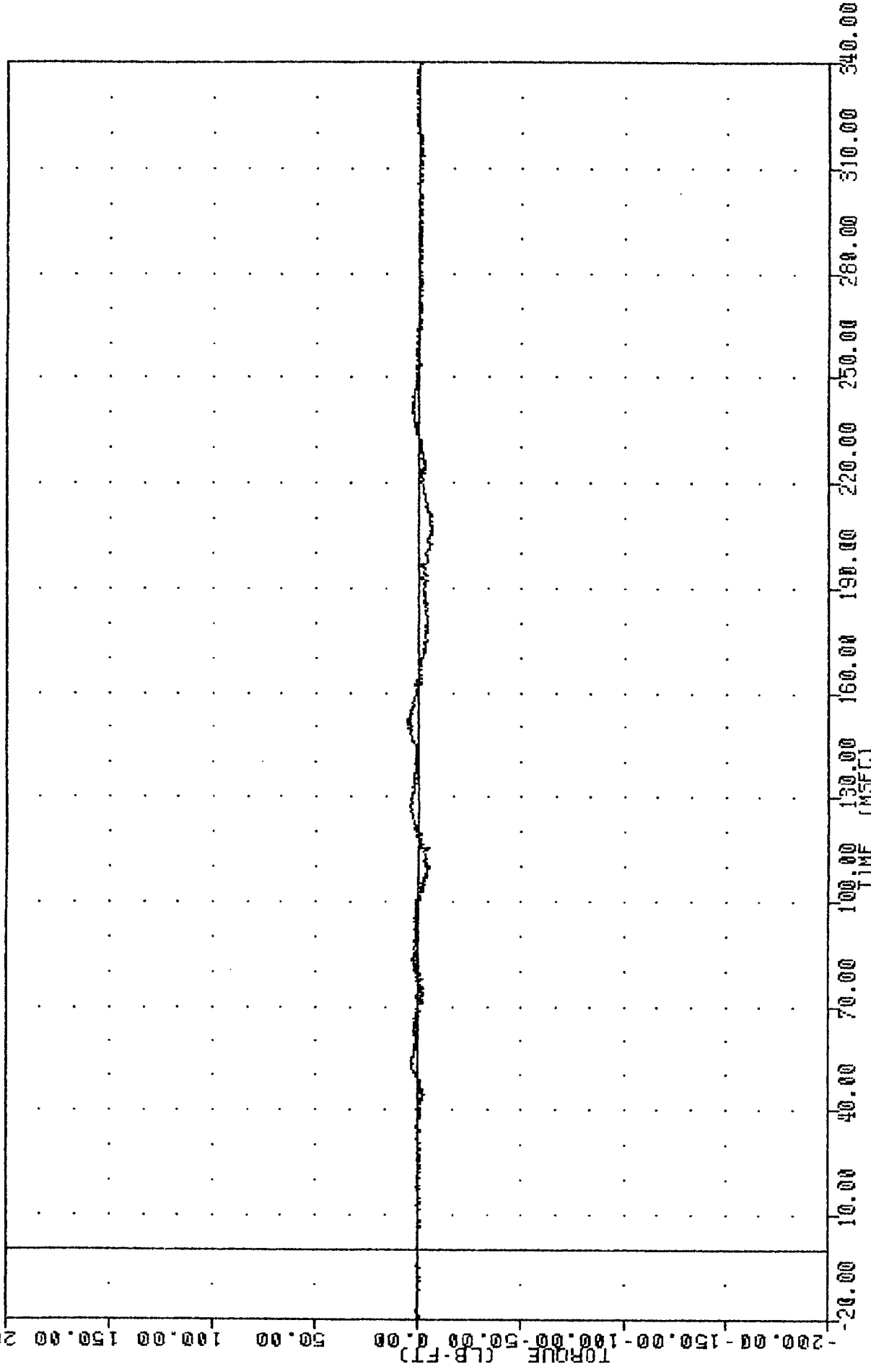
FILTER = ALPF 1650/ 5214/ -40
 MIN, MAX VALUES = -110.082 185.38 , 448.44 2 80.00



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 DRIVER NECK Z-AXIS AXIAL FORCE

RC 92084
 NEW CAR ASSESSMENT PROGRAM
 92084
 NEKXM1

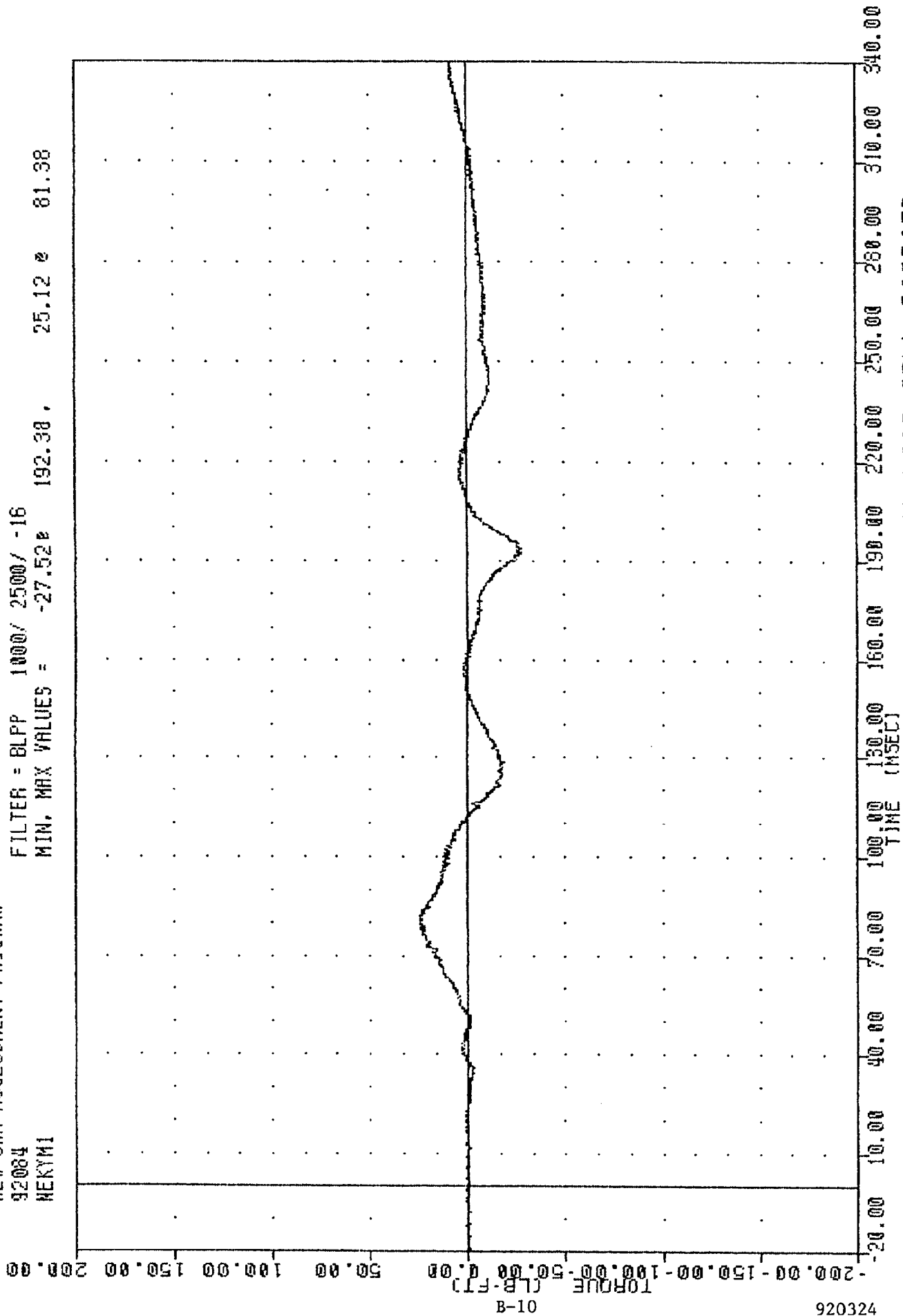
FILTER = BLPP 1000/ 2500/ -16
 MIN, MAX VALUES = -5.918 205.75, 5.48 149.75



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 DRIVER NECK MOMENT ABOUT X AXIS

TRC , 920324
 NEW CAR ASSESSMENT PROGRAM
 92084
 HEKYM1

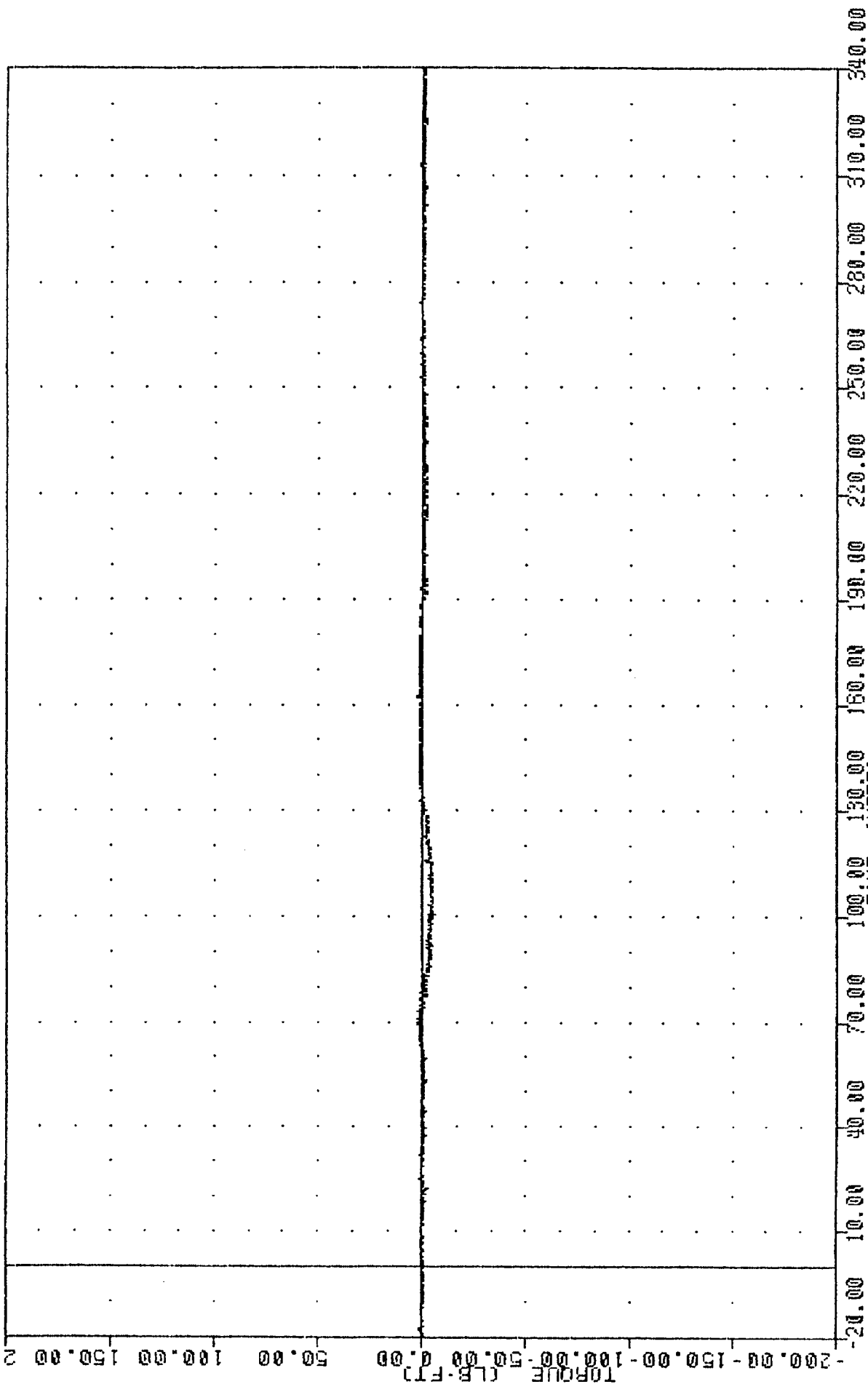
FILTER = BLPP 1000/ 2500/ -16
 MIN. MAX VALUES = -27.52 192.38 , 25.12 81.38



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 DRIVER NECK MOMENT ABOUT Y AXIS

RC 920324
 NEW CAR ASSESSMENT PROGRAM
 92084
 REKZM1

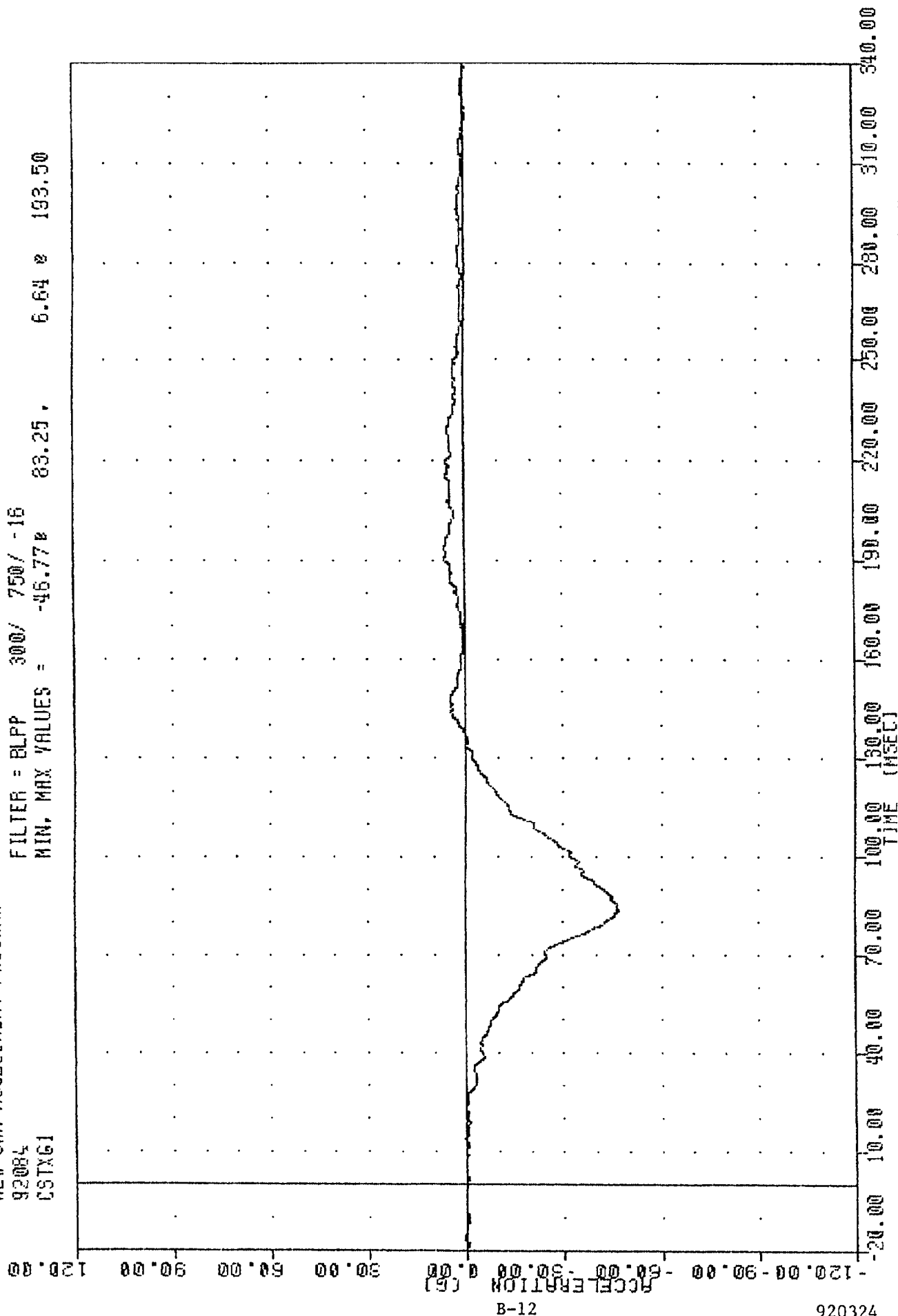
FILTER = BLPP 1000/ 2500/ -16
 MIN. MAX VALUES = -5.68e 100.63, 2.38 e 69.25



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 DRIVER NECK MOMENT ABOUT Z AXIS

TRC , 920324
 NEW CAR ASSESSMENT PROGRAM
 92084
 CSTXG1

FILTER = BLPP 300/ 750/ -18
 MIN, MAX VALUES = -46.770 83.25 , 6.64 0 193.50



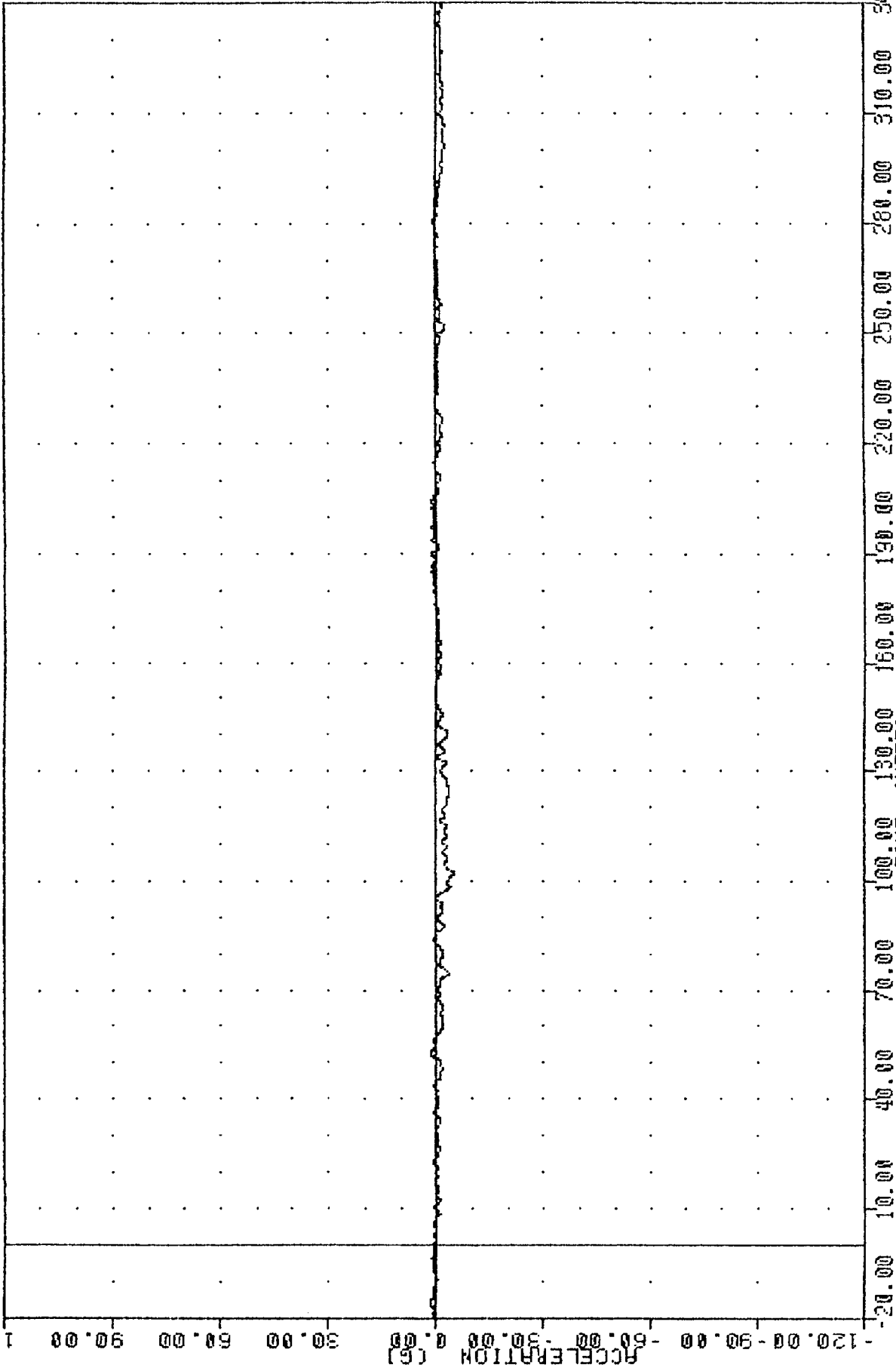
B-12

920324

1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 DRIVER CHEST X-AXIS ACCELERATION

TRC 920324
 NEW CAR ASSESSMENT PROGRAM
 92084
 CSTY61

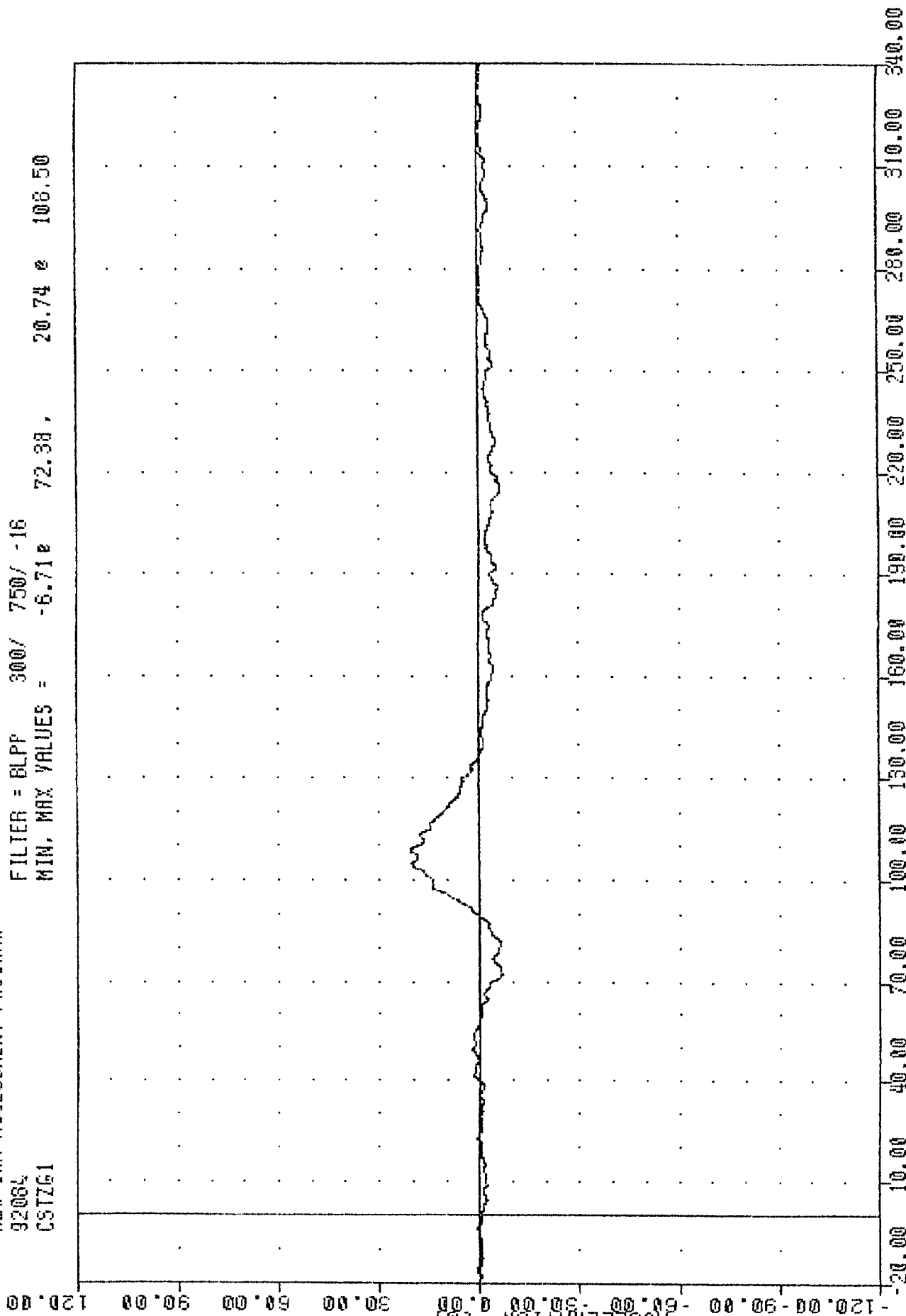
FILTER = BLPP 300/ 750/ -16
 MIN. MAX VALUES = -4.91E 102.00, 1.45 E 52.38



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 DRIVER CHEST Y-AXIS ACCELERATION

TRC , 920324
 NEW CAR ASSESSMENT PROGRAM
 92084
 CSTZG1

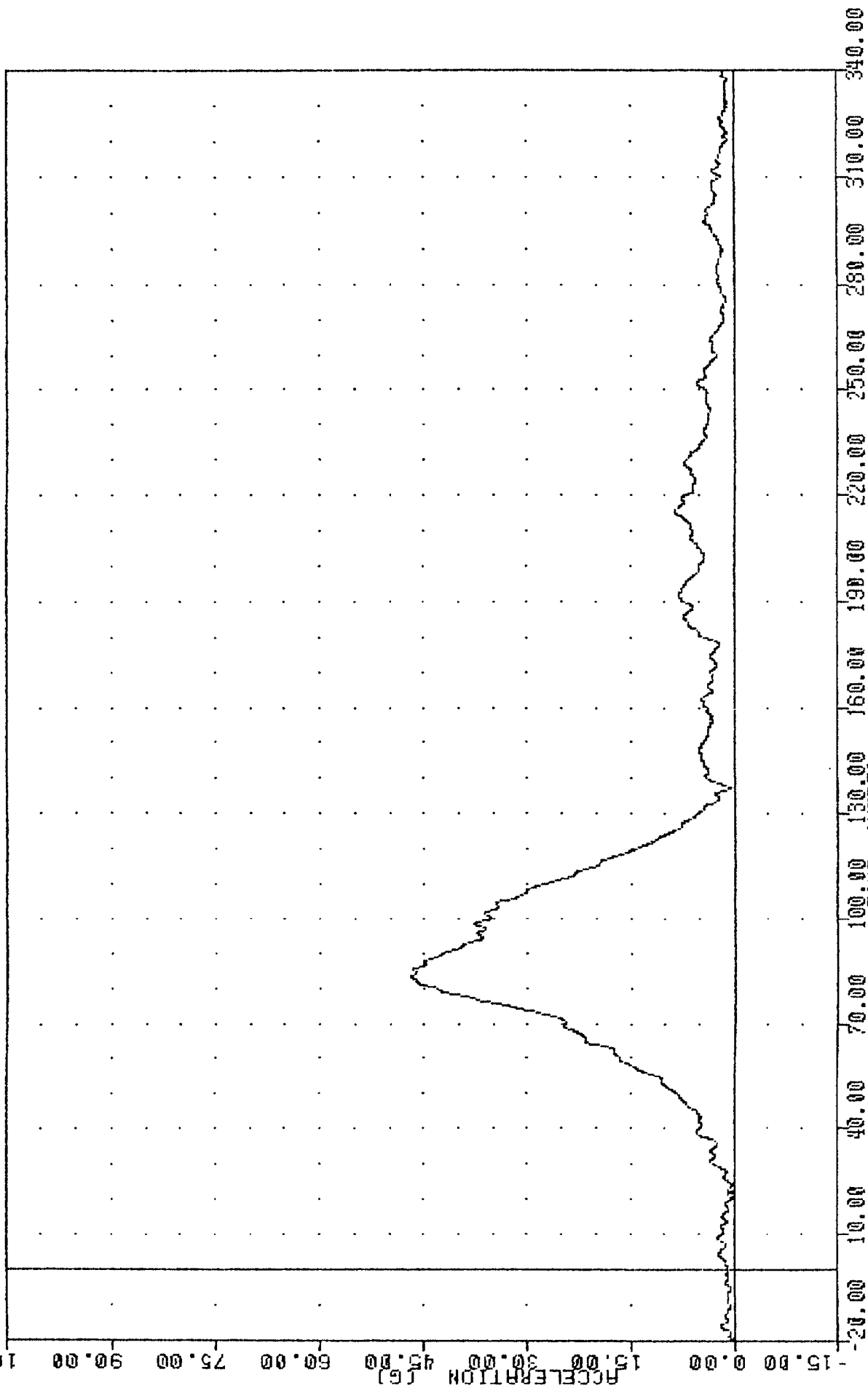
FILTER = BLPP 300/ 750/ -16
 MIN. MAX VALUES = -6.71e 72.38 , 20.74 e 108.50



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 DRIVER CHEST Z-AXIS ACCELERATION

TRC 920324
 NEW CAR ASSESSMENT PROGRAM
 92084
 CSTRG1

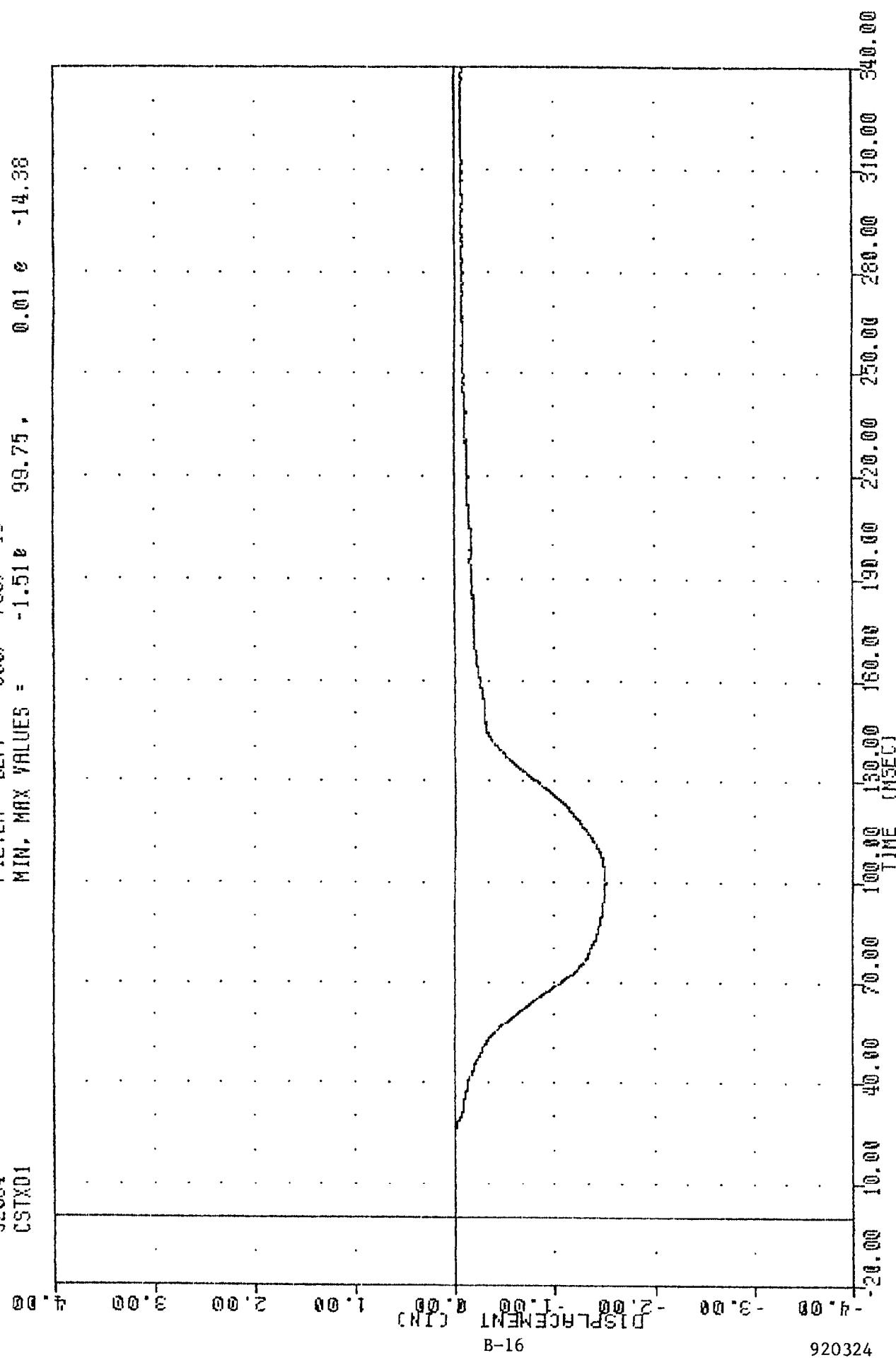
FILTER = BLPP 300/ 750/ -16
 MIN. MAX VALUES = 0.10e 24.00 46.99 83.25



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 DRIVER CHEST RESULTANT ACCELERATION

TRC , 920324
 NEW CAR ASSESSMENT PROGRAM
 92084
 CSTXD1

FILTER = BLPP 300/ 750/ -16
 MIN. MAX VALUES = -1.510 99.75, 0.010 -14.38



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 DRIVER CHEST DEFLECTION

TRC 920324

NEW CAR ASSESSMENT PROGRAM

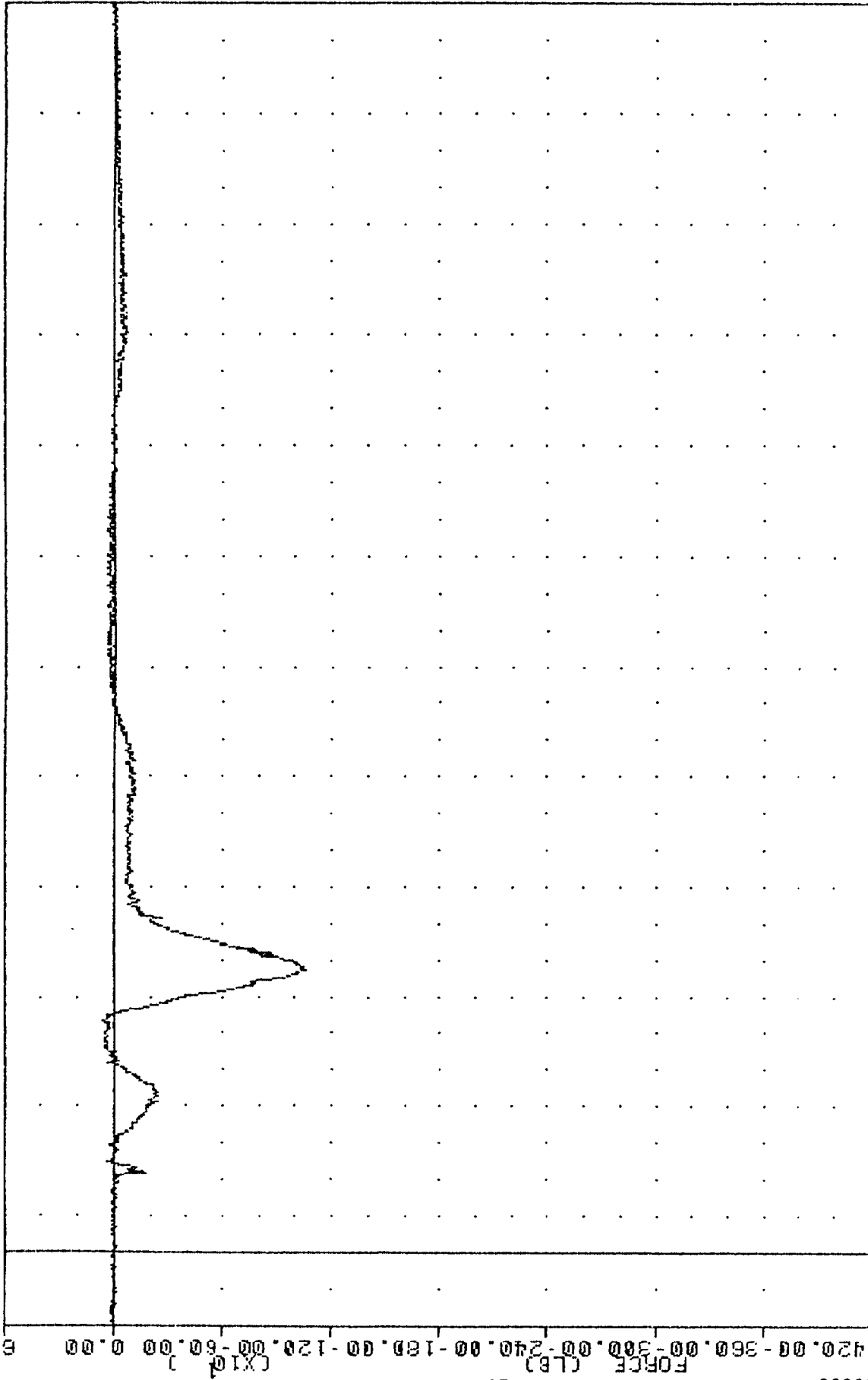
92084

LFMF1

FILTER = BLPP 1000/ 2500/ -16

MIN. MAX VALUES = -1058.380 77.25 , 57.47 0 63.25

50.00



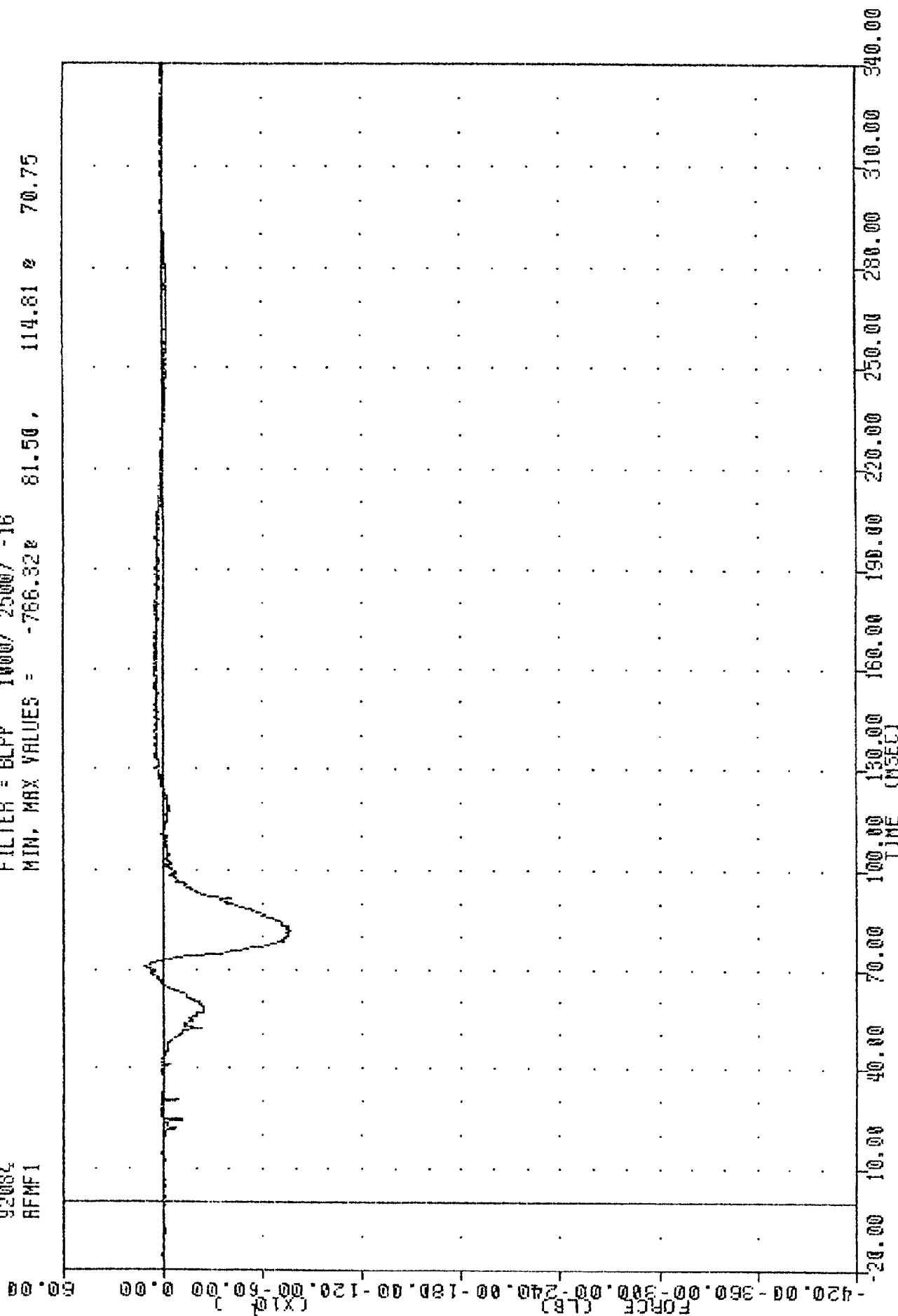
-20.00 10.00 20.00 30.00 40.00 50.00 60.00 70.00 80.00 90.00 100.00 110.00 120.00 130.00 140.00 150.00 160.00 170.00 180.00 190.00 200.00 210.00 220.00 230.00 240.00 250.00 260.00 270.00 280.00 290.00 300.00 310.00 320.00 330.00 340.00

1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
DRIVER LEFT FEMUR FORCE

TRC
 NEW CAR ASSESSMENT PROGRAM
 920324
 AFMF1

, 920324

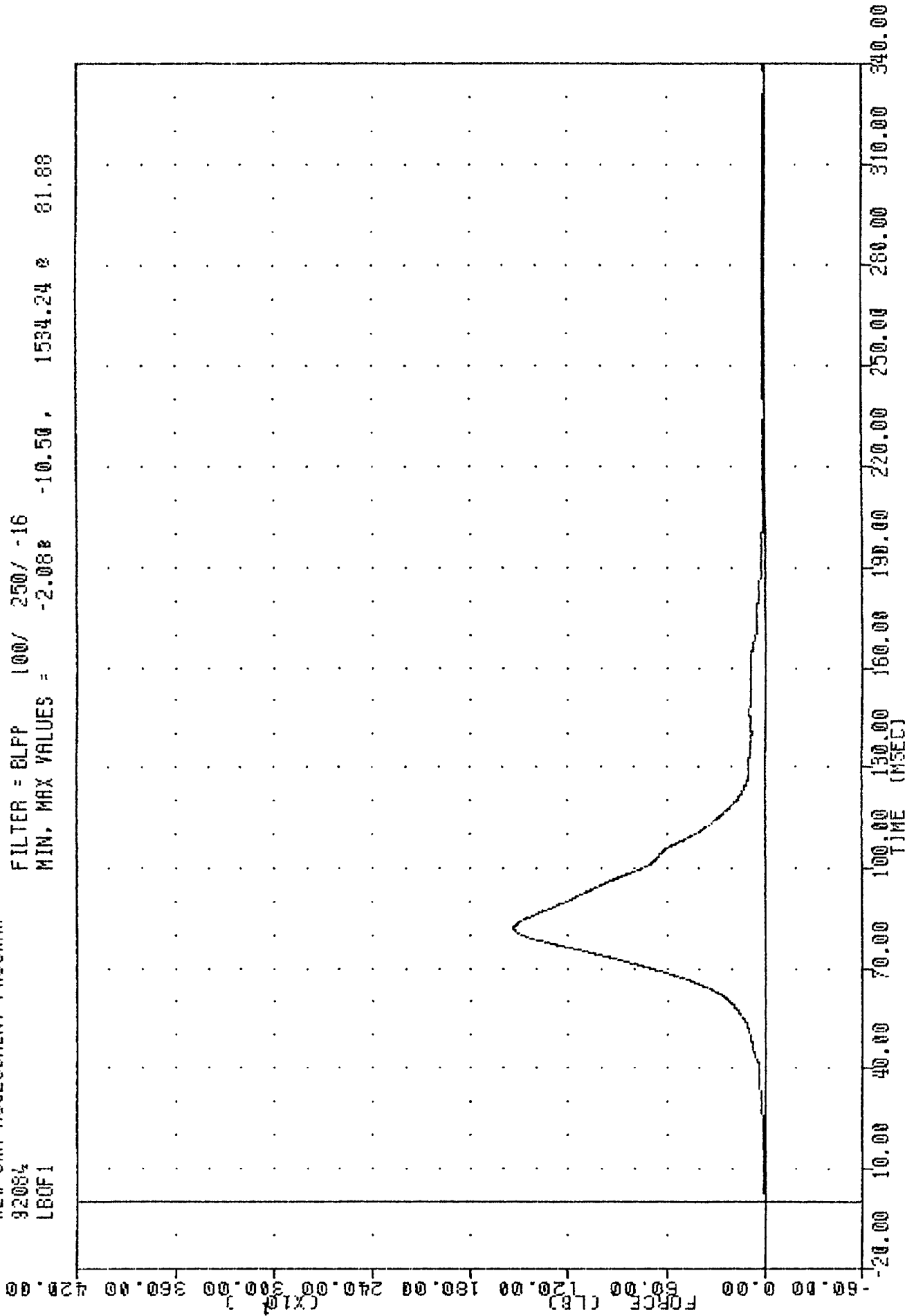
FILTER = BLPP 1000/ 2500/ -16
 MIN, MAX VALUES = -766.32e 81.50, 114.81 e 70.75



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 DRIVER RIGHT FEMUR FORCE

TRC
 NEW CAR ASSESSMENT PROGRAM
 92084
 LBQF1

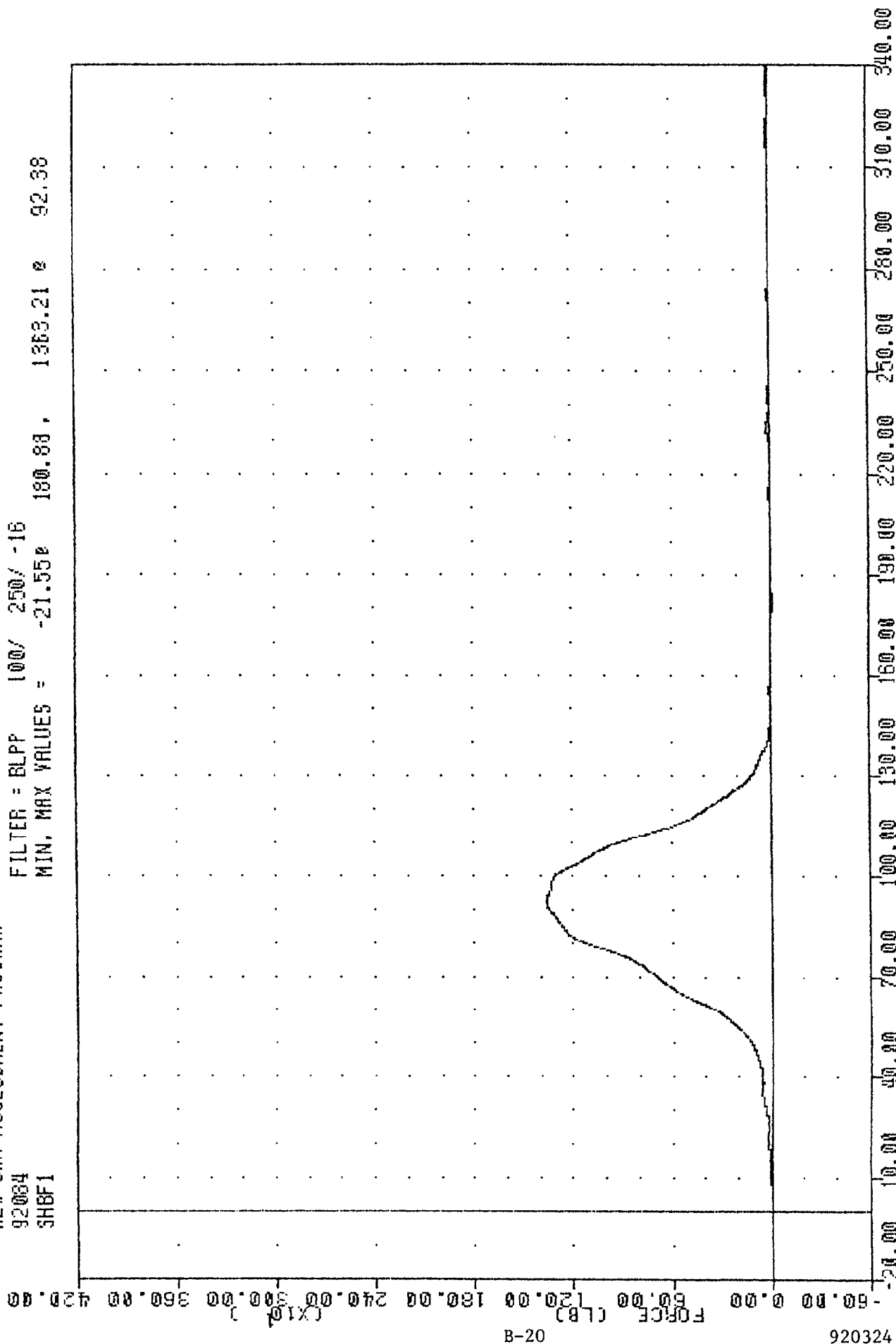
FILTER = BLFP 100/ 250/ -16
 MIN. MAX VALUES = -2.088 -10.50 1534.24 81.88



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 DRIVER LAP BELT OUTBOARD FORCE

TRC , 920324
 NEW CAR ASSESSMENT PROGRAM
 92034
 SHBF1

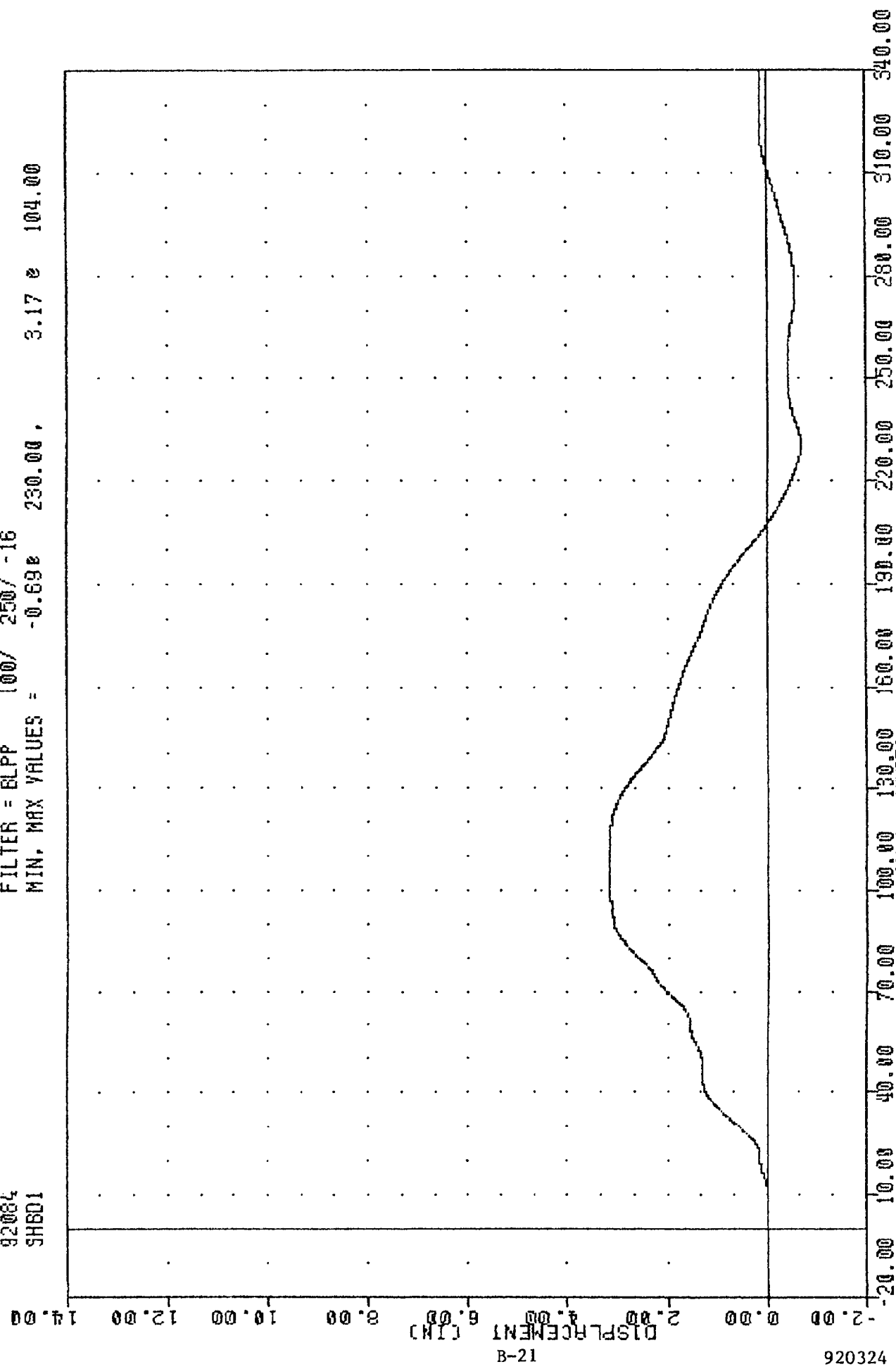
FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -21.55% 180.88, 1363.21 @ 92.38



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 DRIVER SHOULDER BELT FORCE

TRC
 NEW CAR ASSESSMENT PROGRAM
 920324
 SHBD1

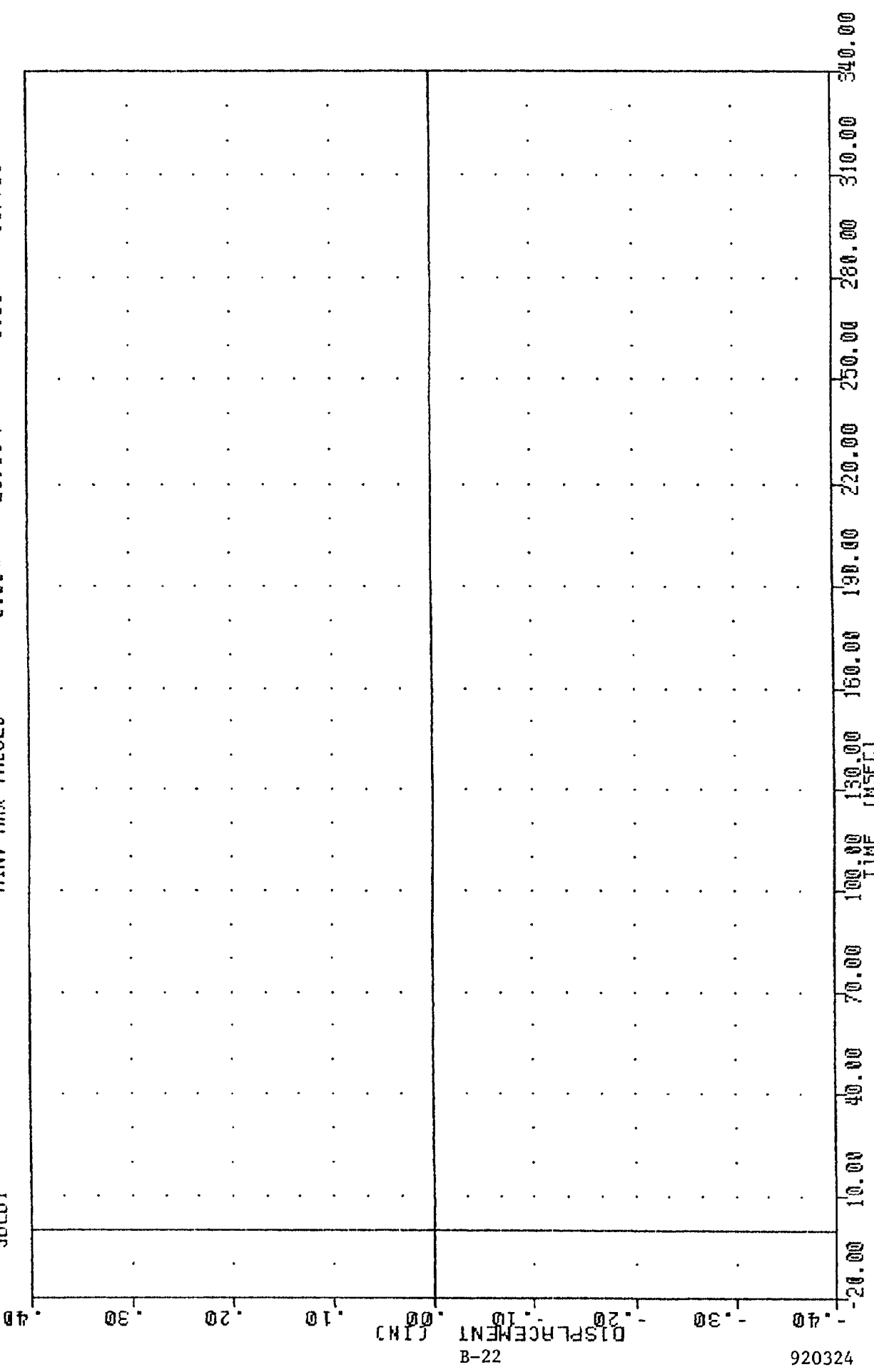
FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -0.69e 230.00, 3.17 e 104.00



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 DRIVER SHOULDER BELT DISPLACEMENT

TRC , 920324
 NEW CAR ASSESSMENT PROGRAM
 92084
 SBED1

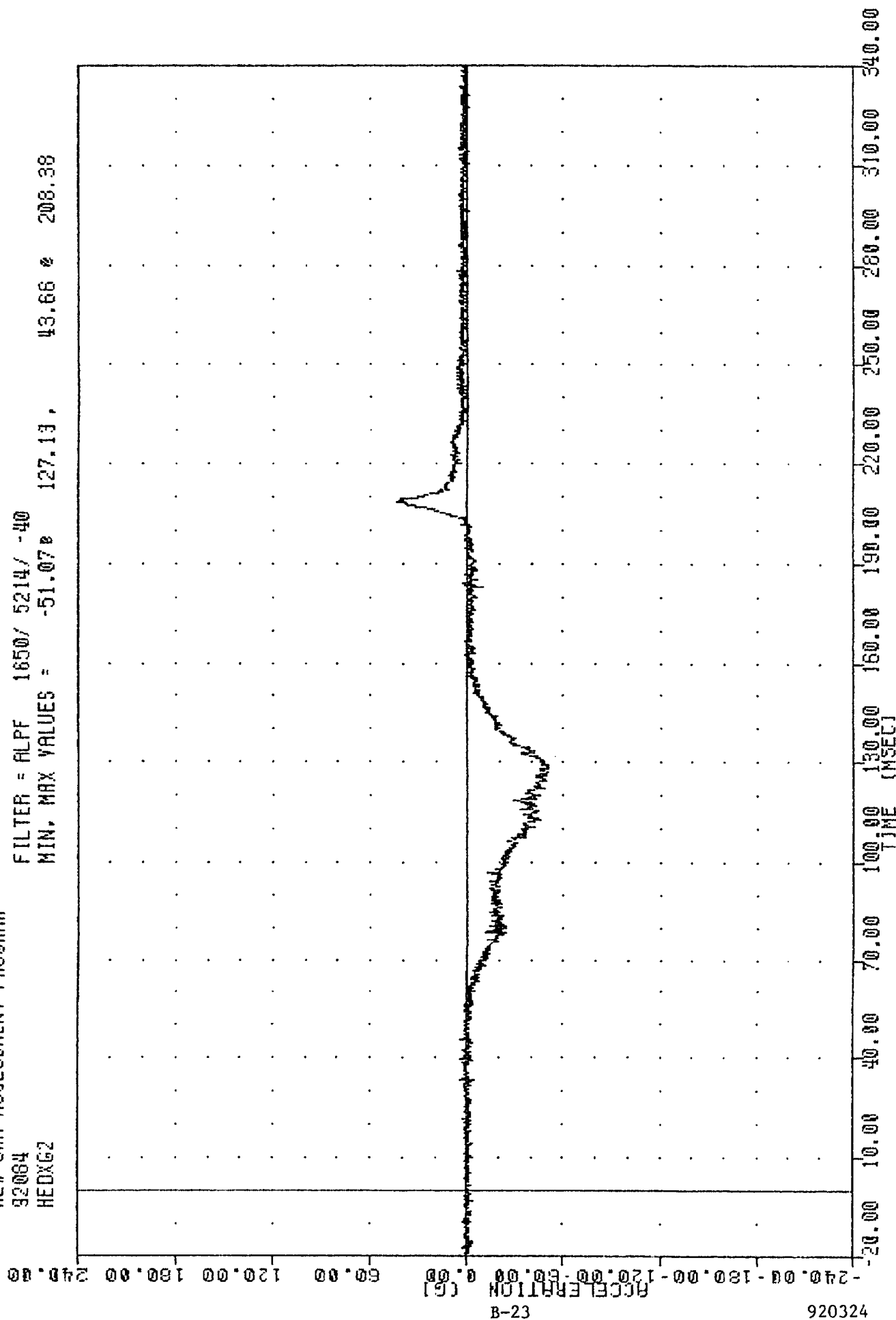
FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = 0.00 25.13 0.00 147.38



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 DRIVER SEAT BELT EXTENSION

IRC
NEW CAR ASSESSMENT PROGRAM
92084
HEDXG2

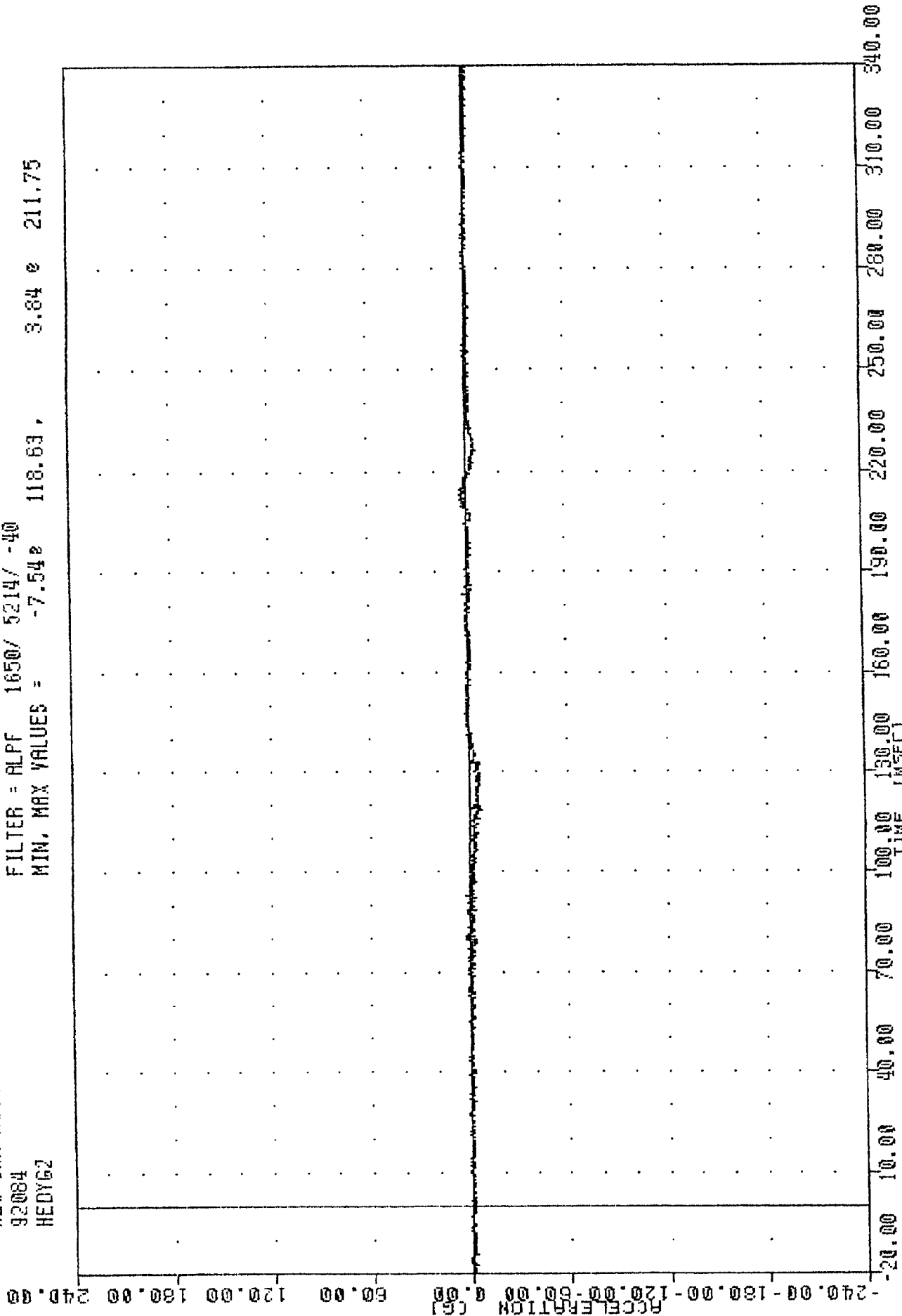
FILTER = ALPF 1650/ 5214/ -40
MIN. MAX VALUES = -51.07e 127.13, 43.66 e 208.38



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
PASSENGER HEAD X-AXIS ACCELERATION

TRC , 920324
 NEW CAR ASSESSMENT PROGRAM
 92084
 HEDYG2

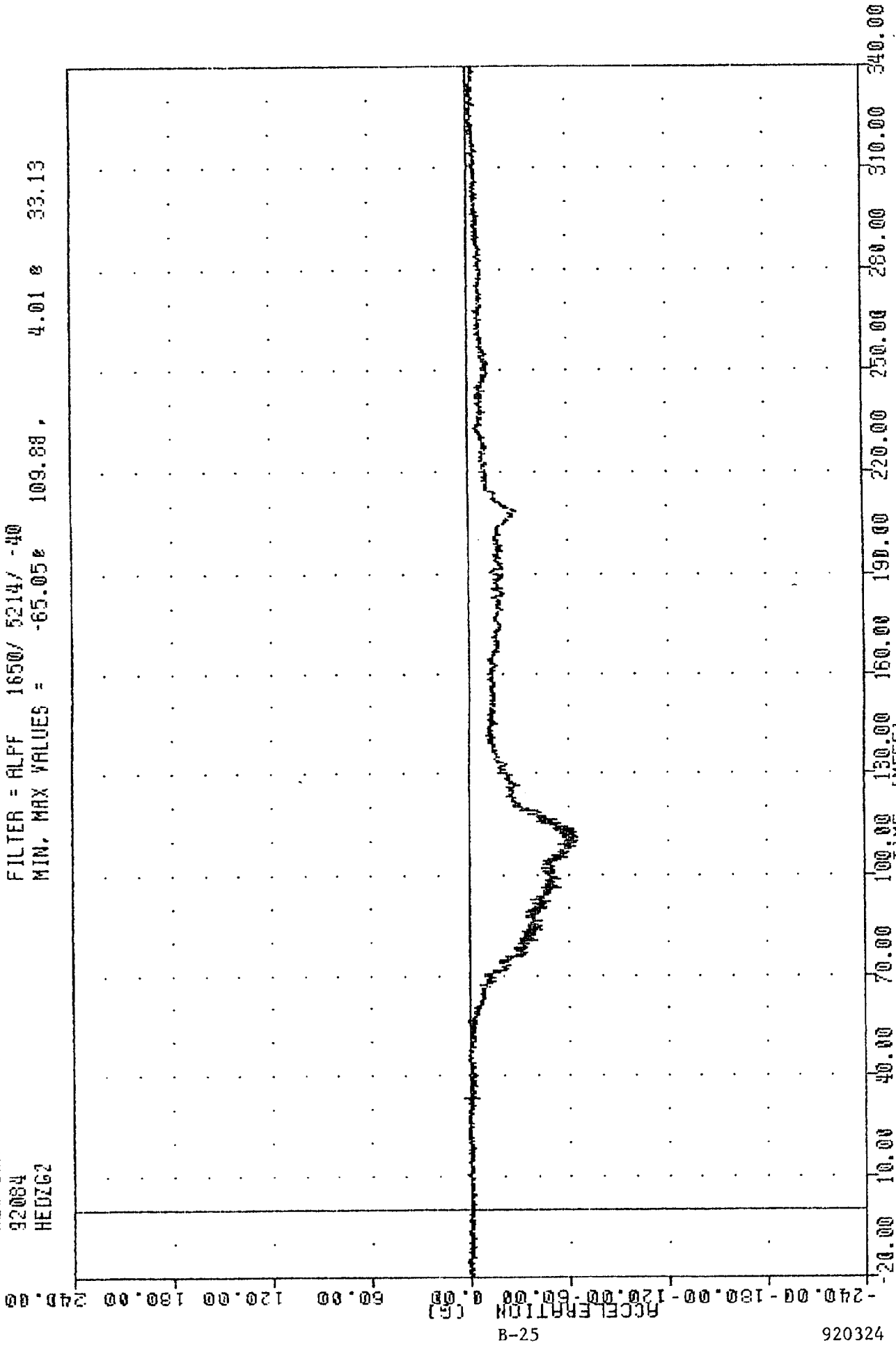
FILTER = ALPF 1650/ 5214/ -40
 MIN. MAX VALUES = -7.54e 118.63 , 3.84 e 211.75



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 PASSENGER HEAD Y-AXIS ACCELERATION

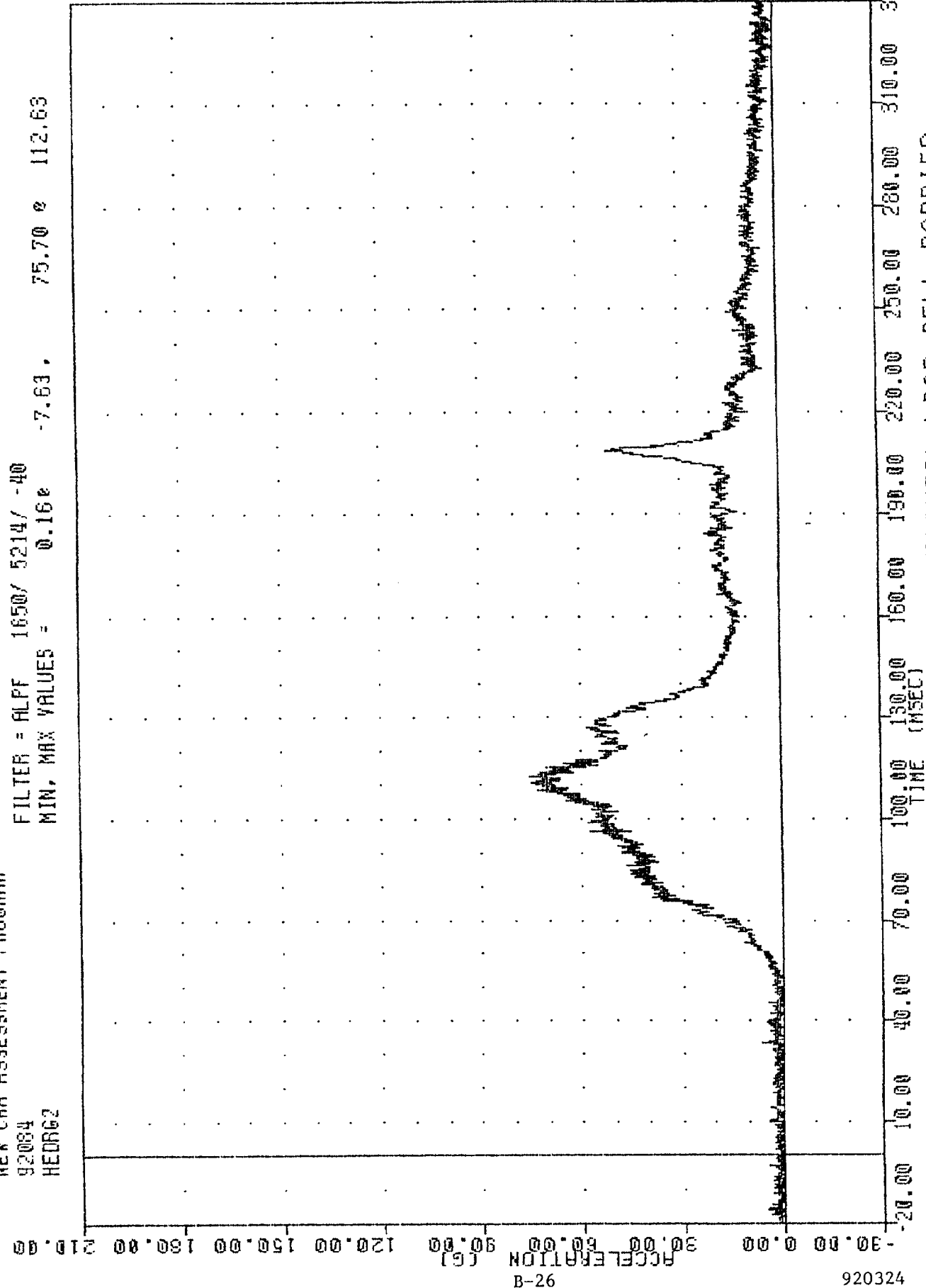
TRC 920324
 NEW CAR ASSESSMENT PROGRAM
 92084
 HEDIG2

FILTER = ALPF 1650/ 5214/ -40
 MIN, MAX VALUES = -65.05% 109.88, 4.01 % 33.13



TRC , 920324
 NEW CAR ASSESSMENT PROGRAM
 92084
 HEDRG2

FILTER = ALPF 1650/ 5214/ -40
 MIN, MAX VALUES = 0.16e -7.63. 75.70 e 112.63



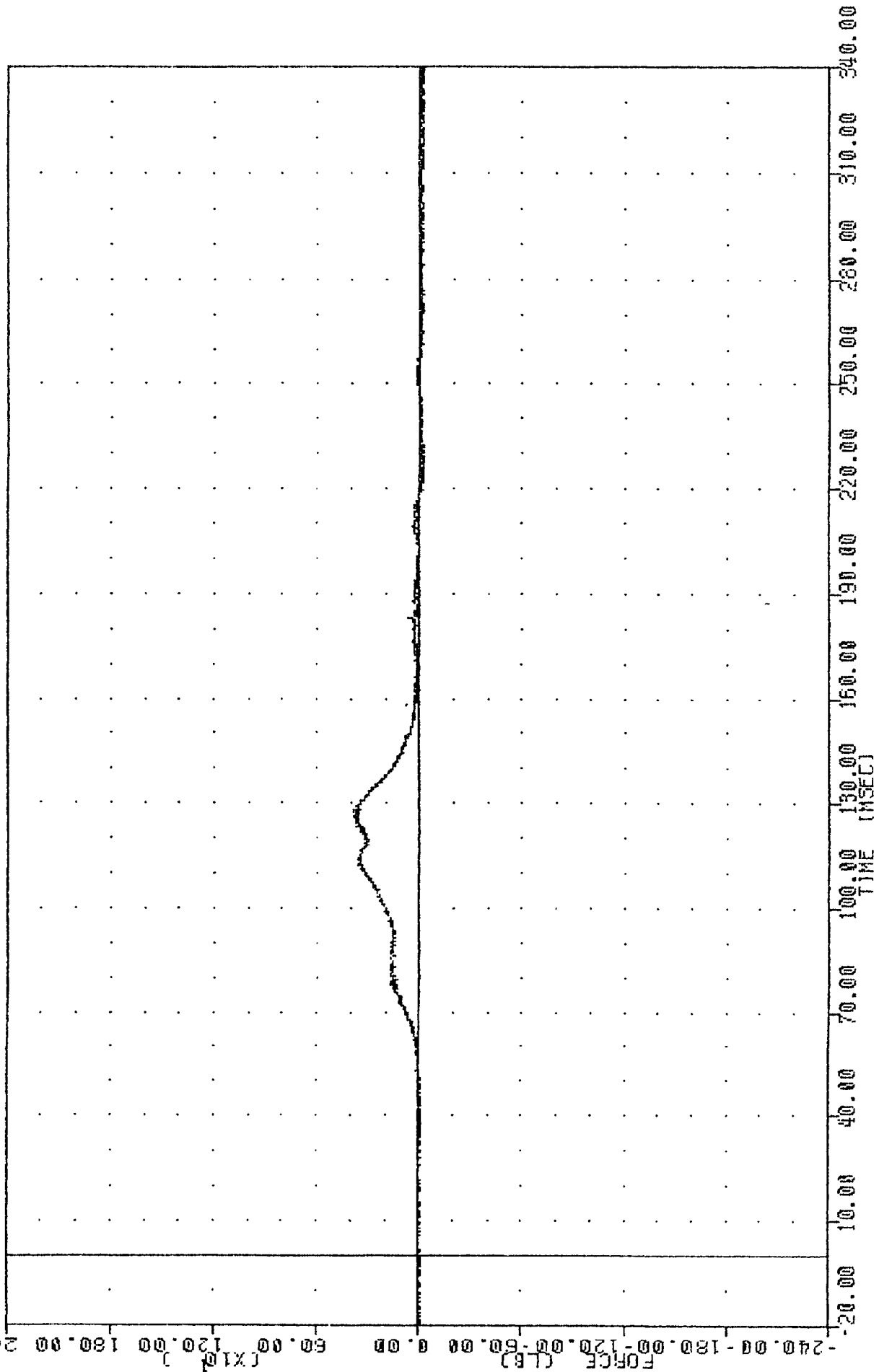
920324

B-26

1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 PASSENGER HEAD RESULTANT ACCELERATION

RC 920324
 NEW CAR ASSESSMENT PROGRAM
 92084
 HEXF2

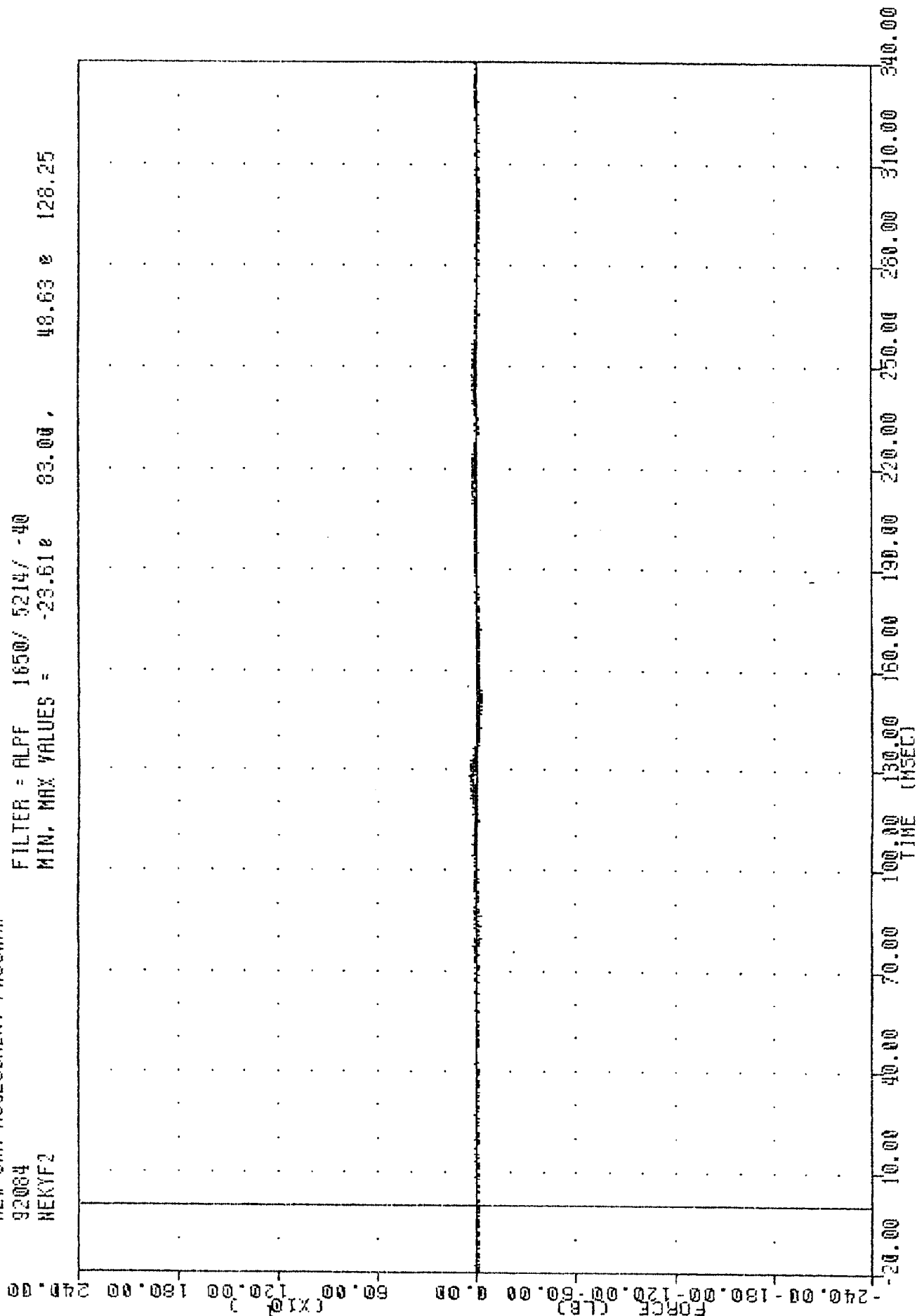
FILTER = ALFF 1650/ 5214/ -40
 MIN. MAX VALUES = -28.19% 319.63, 366.72 @ 127.63



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 PASSENGER NECK X-AXIS SHEAR FORCE

TRC , 920324
 NEW CAR ASSESSMENT PROGRAM
 92084
 HEKYP2

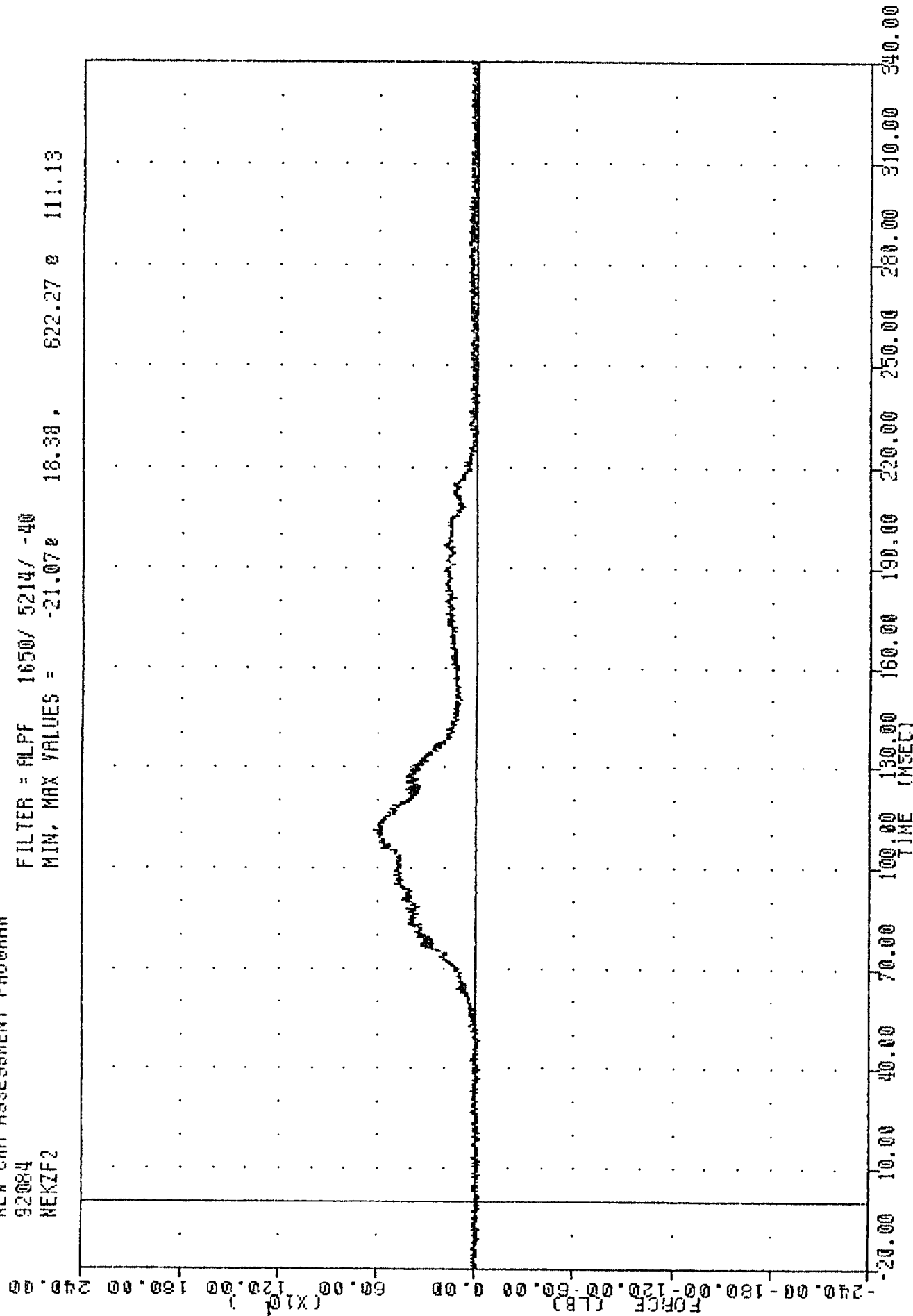
FILTER = ALPF 1650/ 5214/ -40
 MIN. MAX VALUES = -23.510 83.00 , 48.63 e 128.25



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 PASSENGER NECK Y-AXIS SHEAR FORCE

RC 920324
NEW CRA ASSESSMENT PROGRAM
92084
HEKZF2

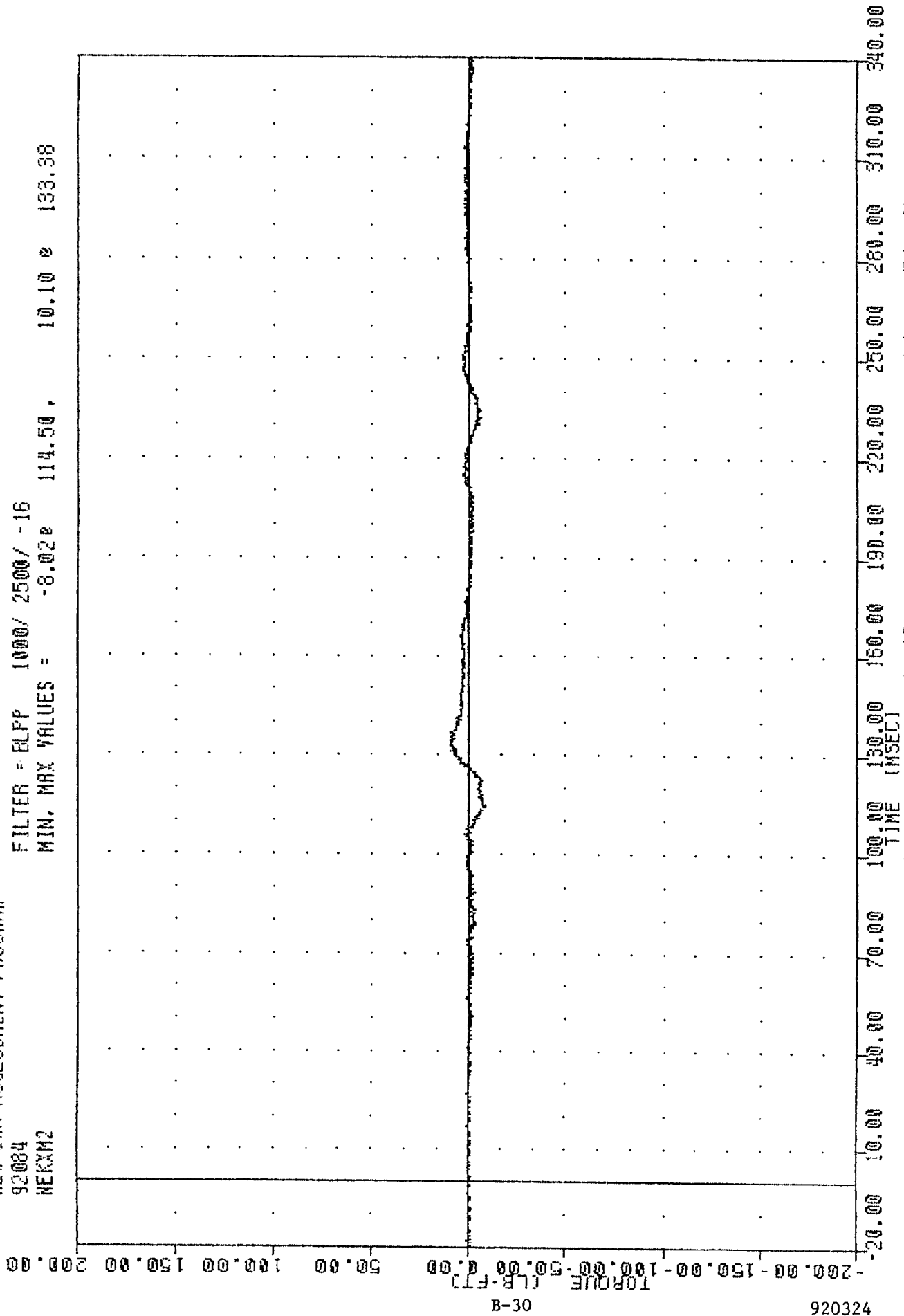
FILTER = ALPF 1650/ 5214/ -40
MIN, MAX VALUES = -21.07% 18.38, 622.27 @ 111.13



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
PASSENGER NECK Z-AXIS AXIAL FORCE

TRC , 920324
 NEW CAR ASSESSMENT PROGRAM
 92084
 NEXM2

FILTER = BLPP 1000/ 2500/ -16
 MIN. MAX VALUES = -8.020 114.50 , 10.10 133.38

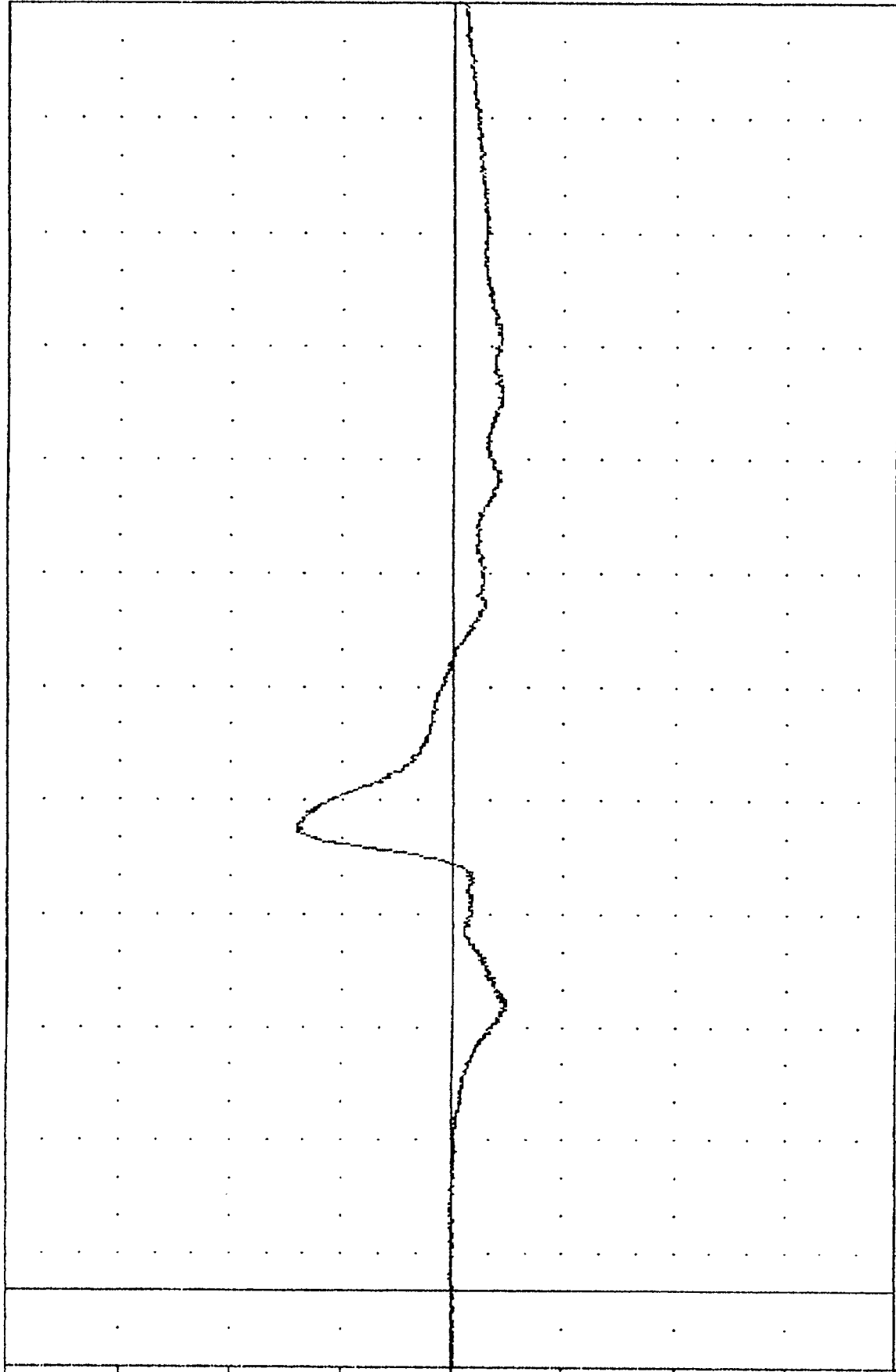


1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 PASSENGER NECK MOMENT ABOUT X AXIS

RC, 920324
NEW CAR ASSESSMENT PROGRAM
92084
REKYM2

FILTER = BLPP 1000/ 2500/ -16
MIN. MAX VALUES = -24.22 74.50, 70.66 123.38

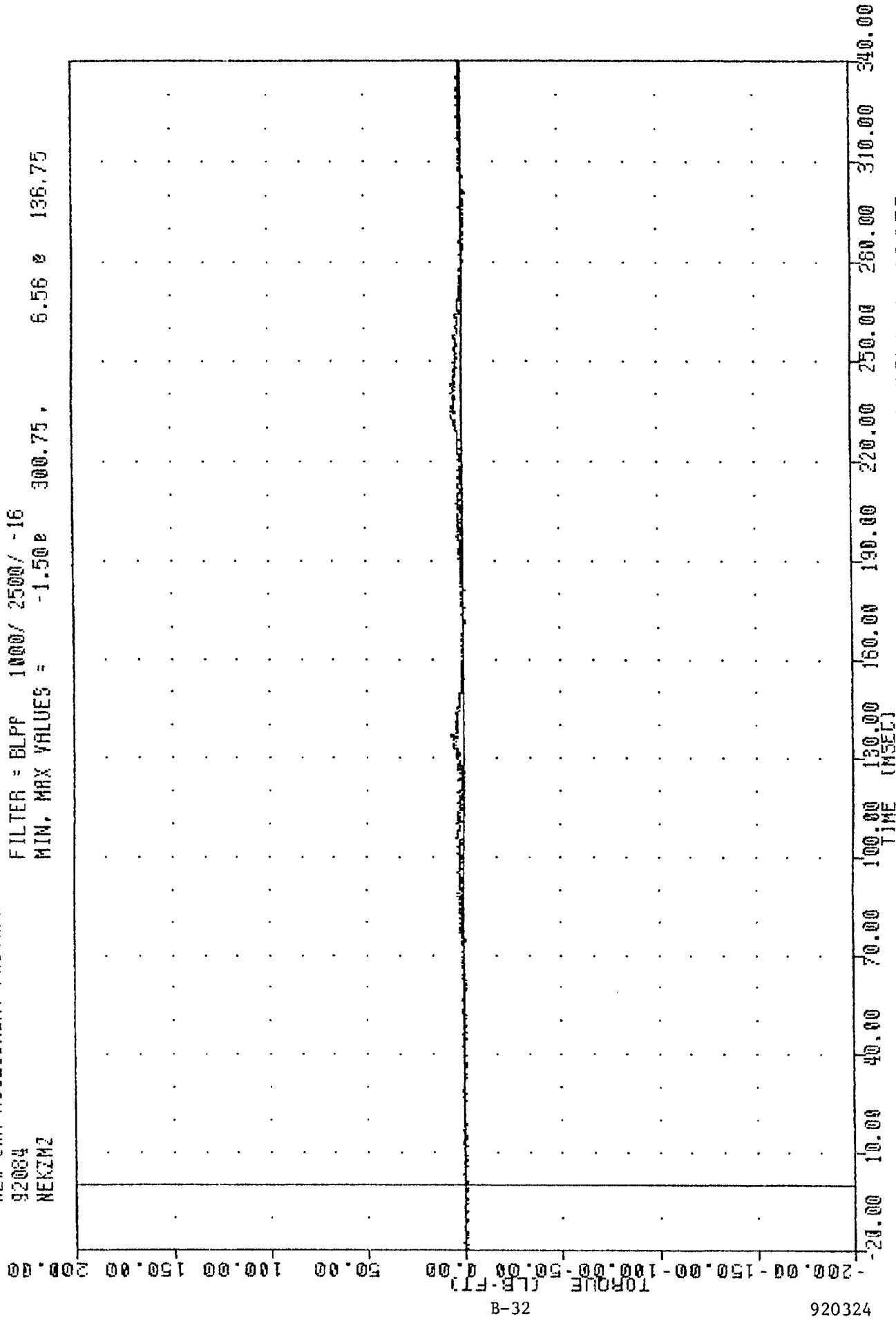
TORQUE (LB-FT)



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
PASSENGER NECK MOMENT ABOUT Y AXIS

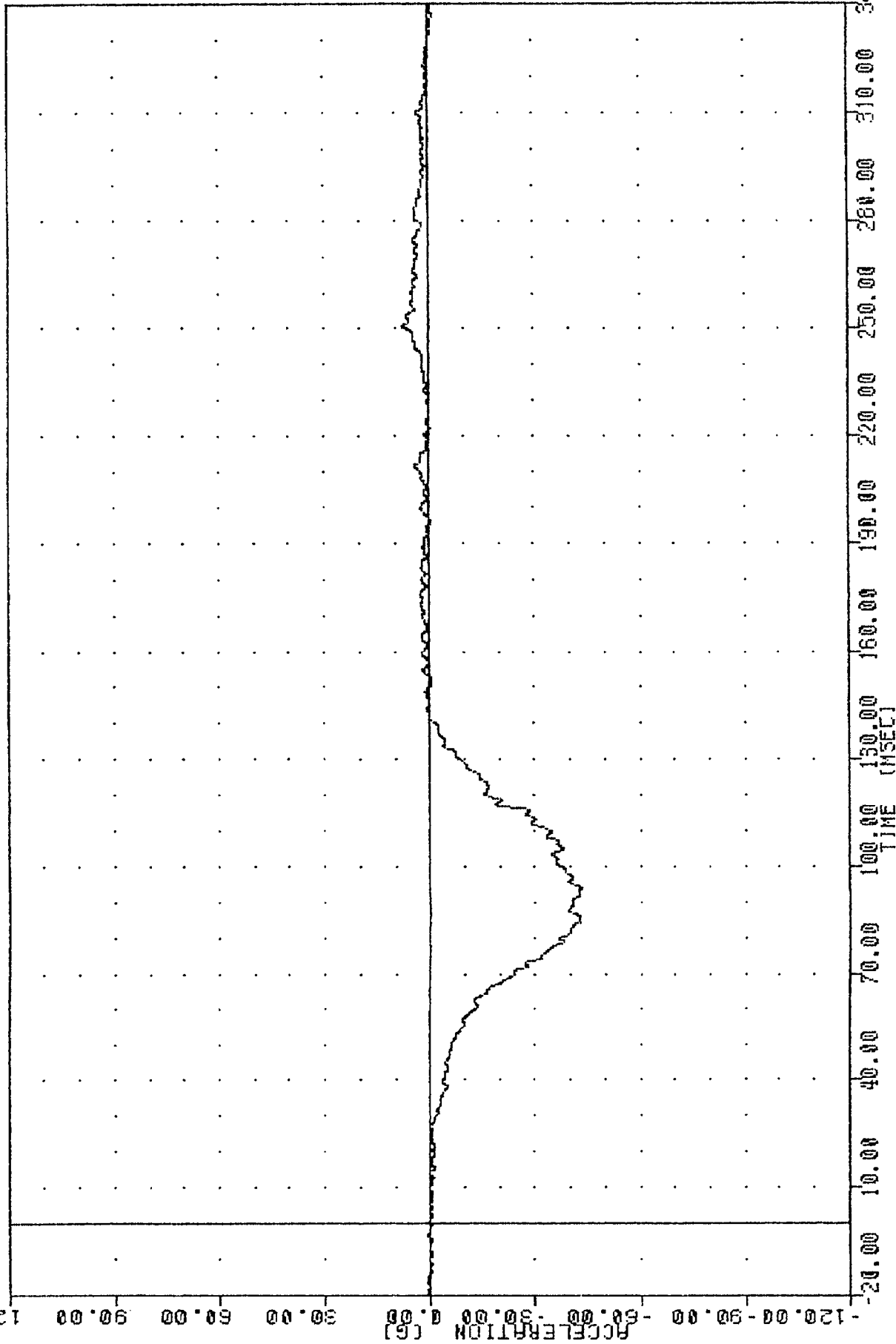
TRC , 920324
 NEW CAR ASSESSMENT PROGRAM
 92084
 NEK2M2

FILTER = BLPP 1000/ 2500/ -16
 MIN. MAX VALUES = -1.50e 300.75 , 6.56 e 136.75



TRC
NEW CAR ASSESSMENT PROGRAM
92084
CSTX62

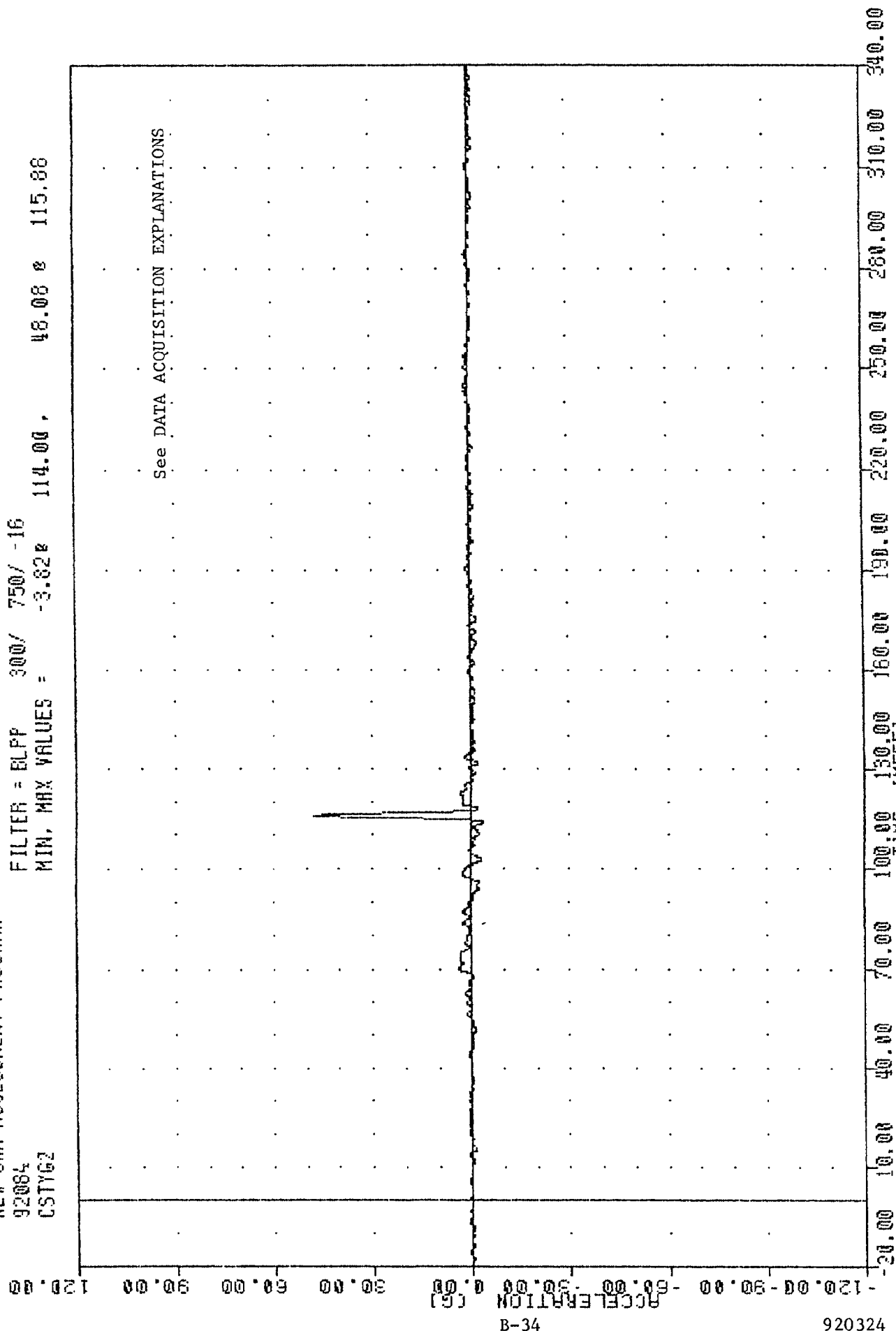
FILTER = BLPP 300/ 750/ -16
MIN, MAX VALUES = -43.078 93.88 7.72 250.63



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
PASSENGER CHEST X-AXIS ACCELERATION

TRC , 920324
 NEW CAR ASSESSMENT PROGRAM
 92084
 CSTYG2

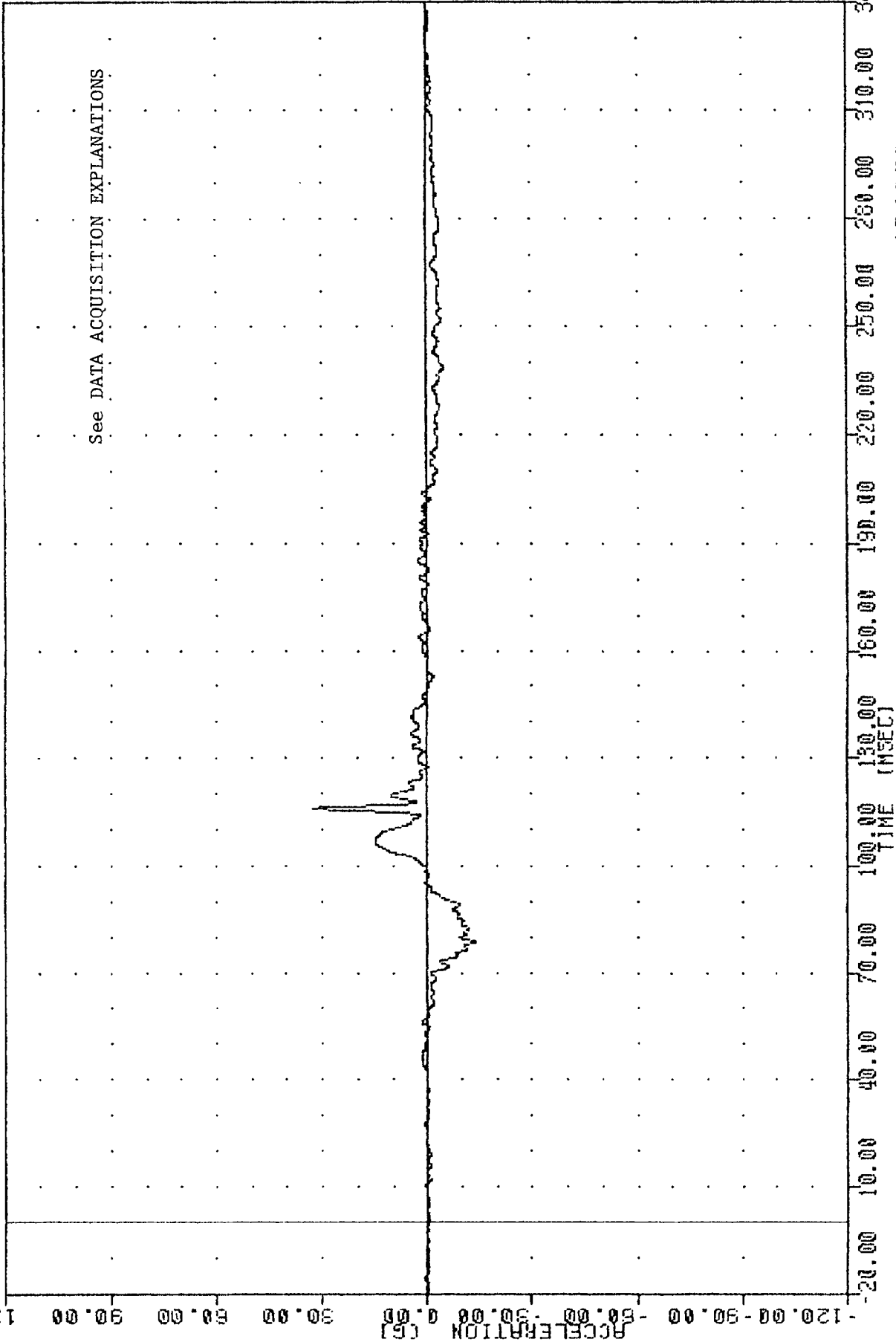
FILTER = BLPP 300/ 750/ -16
 MIN, MAX VALUES = -3.82 114.00 48.08 115.88



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 PASSENGER CHEST Y-AXIS ACCELERATION

TRC 920324
 NEW CAR ASSESSMENT PROGRAM
 92084
 CSTZ62

FILTER = BLPF 300/ 750/ -16
 MIN. MAX VALUES = -13.87e 78.50. 32.91 e 115.88

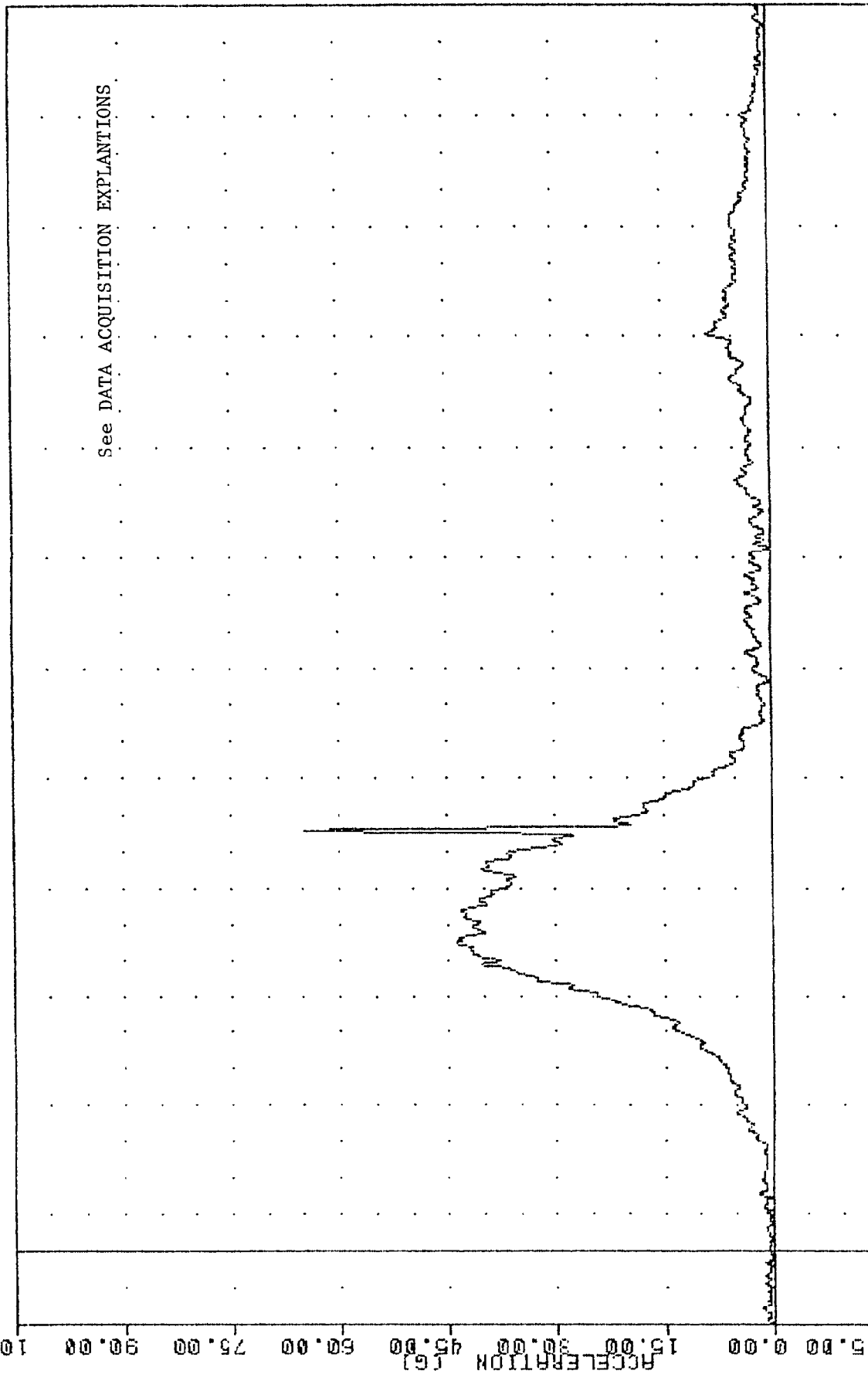


1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 PASSENGER CHEST Z-AXIS ACCELERATION

TRC . 920324
 NEW CAR ASSESSMENT PROGRAM
 92084
 CSTR62

FILTER = BLPP 300/ 750/ -16
 MIN, MAX VALUES = 0.118 -20.00, 64.74 @ 115.68

107.00



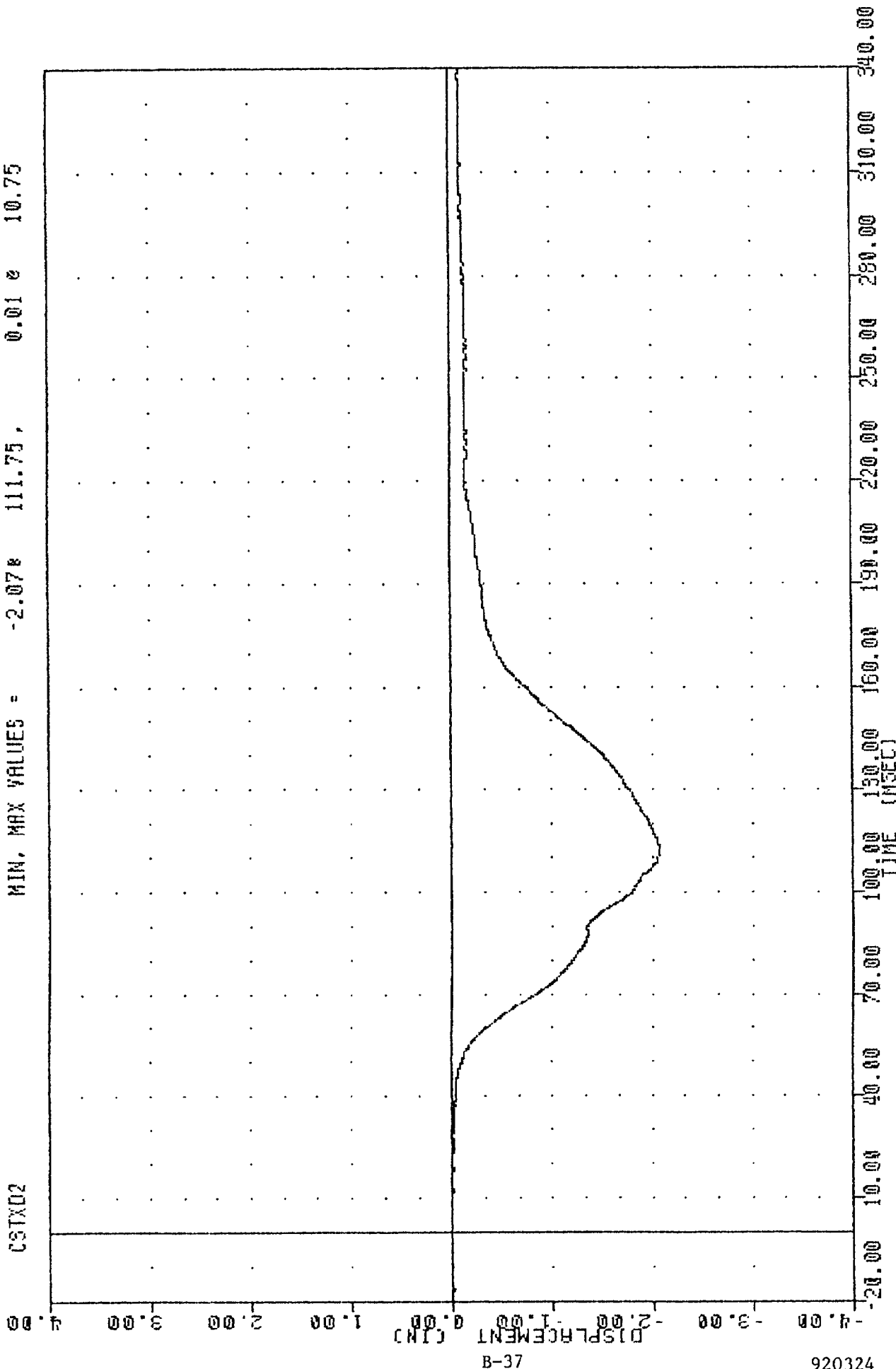
-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00

920324

1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 PASSENGER CHEST RESULTANT ACCELERATION

TRC 920324
 NEW CAR ASSESSMENT PROGRAM
 92084
 CSTXD2

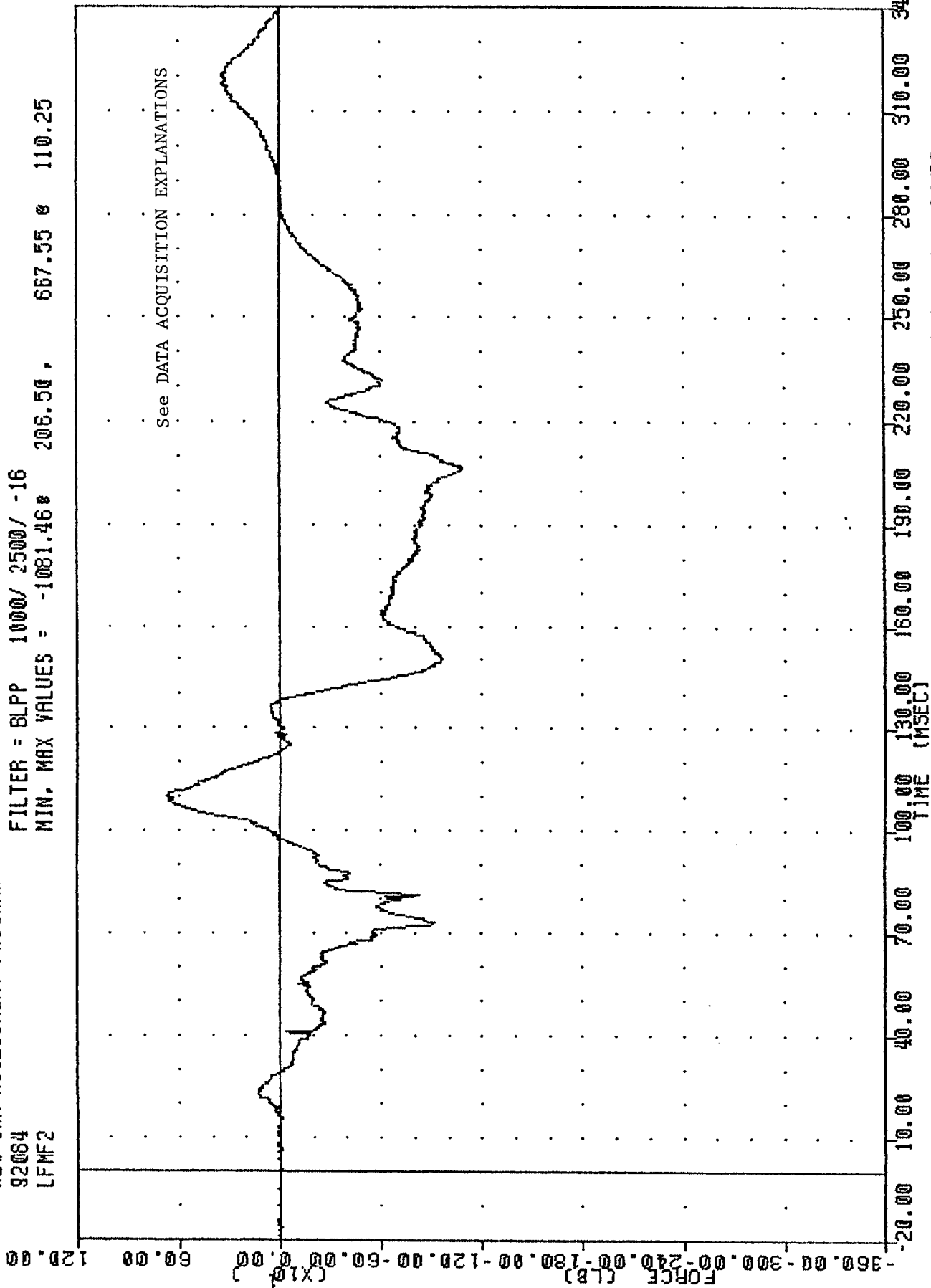
FILTER = BLFP 300/ 750/ -16
 MIN, MAX VALUES = -2.07e 0.01 e 10.75



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 PASSENGER CHEST DEFLECTION

TRC , 920324
 NEW CAR ASSESSMENT PROGRAM
 92084
 LFMF2

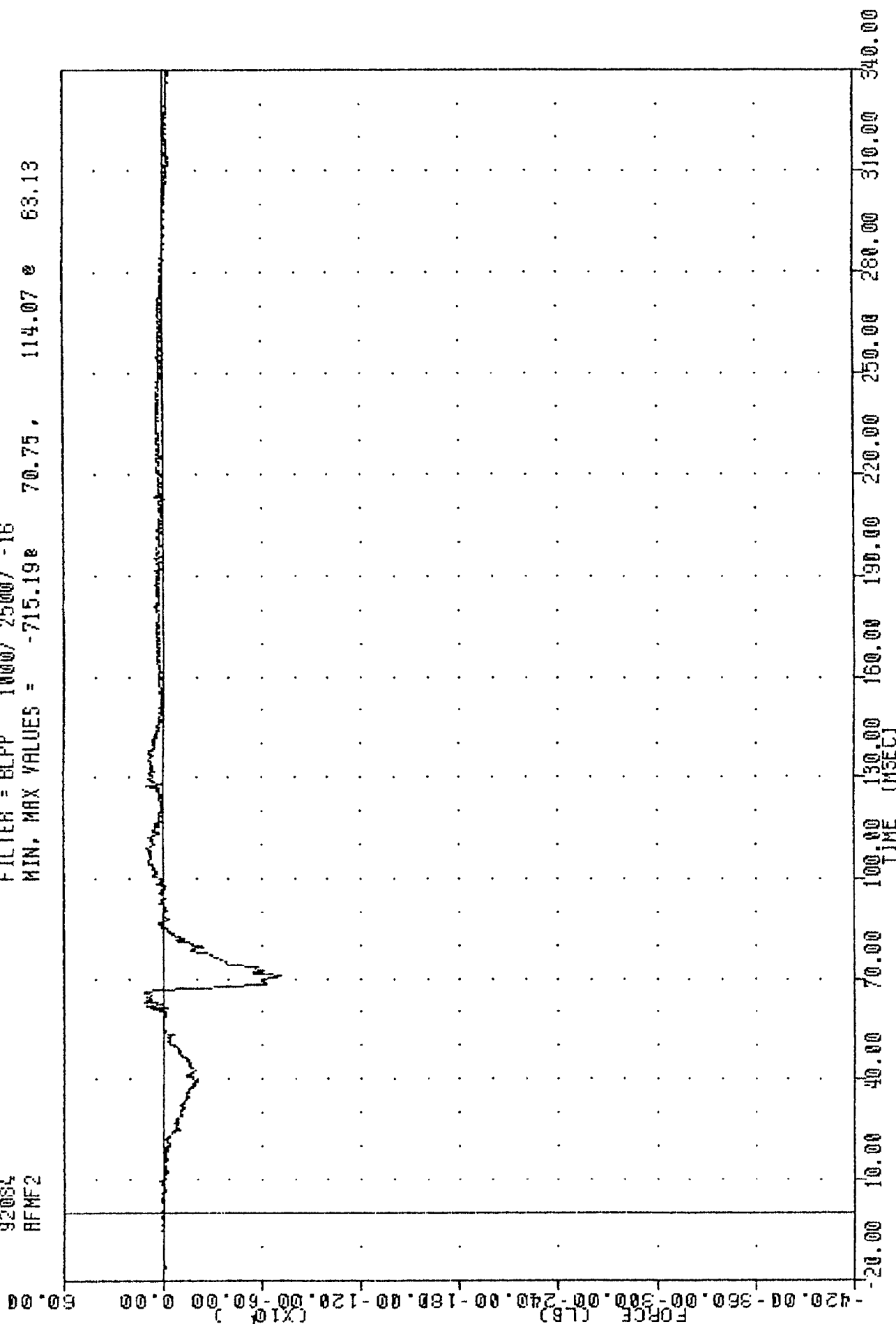
FILTER = BLPP 1000/ 2500/ -16
 MIN, MAX VALUES = -1081.46 206.50 , 667.55 @ 110.25



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 PASSENGER LEFT FEMUR FORCE

TRC , 920324
 NEW CAR ASSESSMENT PROGRAM
 92034
 RFMF2

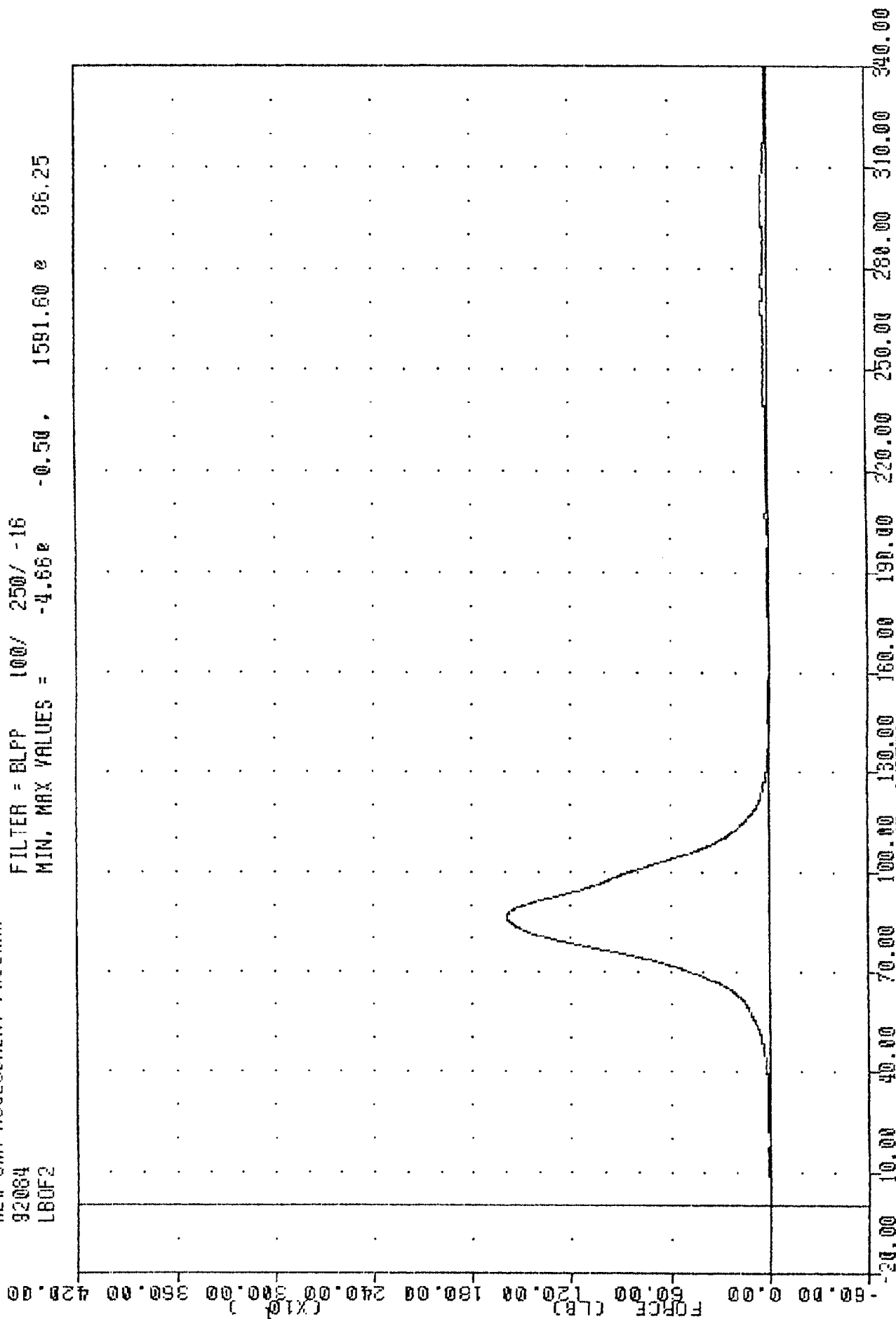
FILTER = BLPP 1000/ 2500/ -16
 MIN, MAX VALUES = -715.19e 70.75, 114.07 e 63.13



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 PASSENGER RIGHT FEMUR FORCE

TRC , 920324
 NEW CAR ASSESSMENT PROGRAM
 92034
 LBUF2

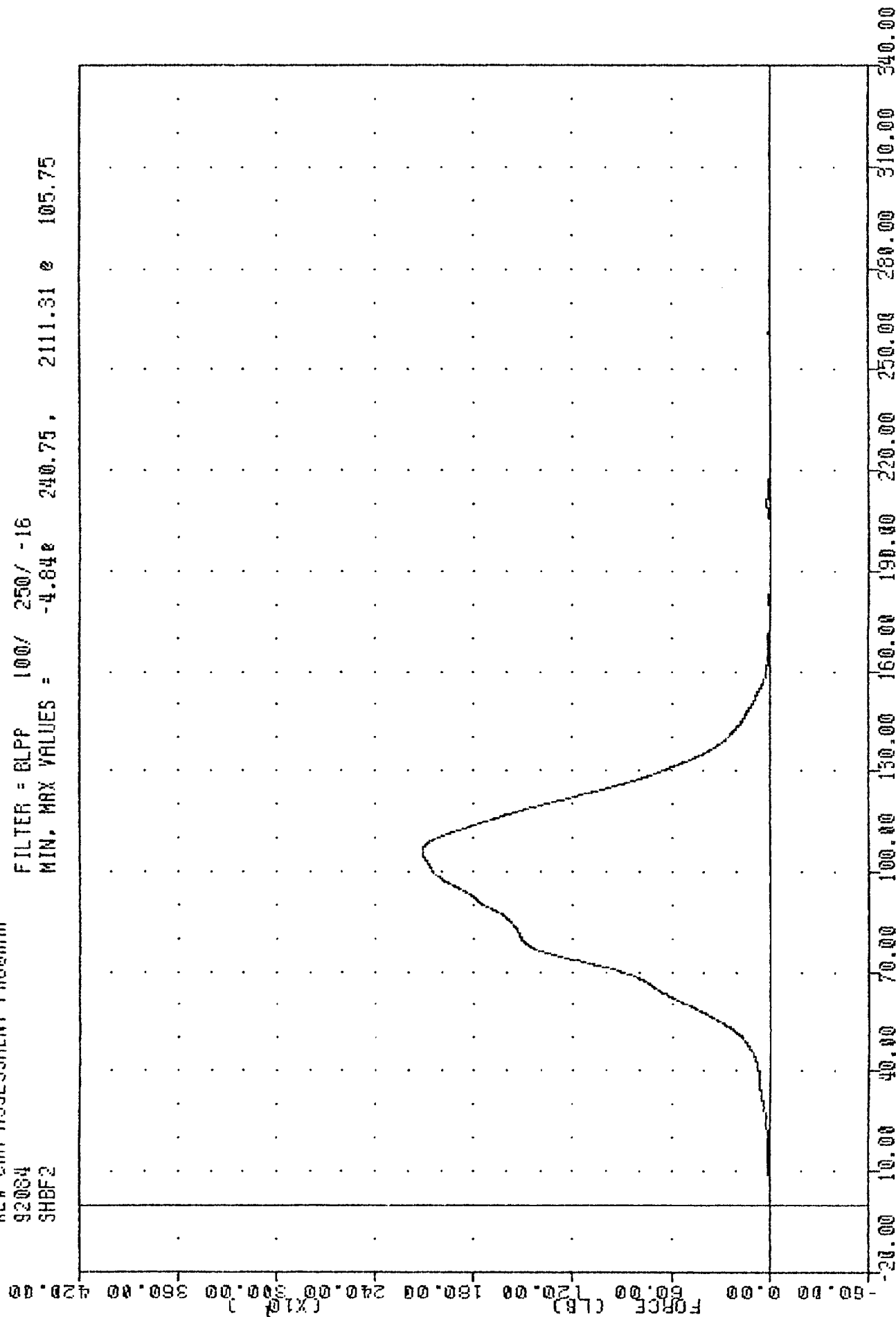
FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -4.66 1591.60 0 86.25
 -0.50



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 PASSENGER LAP BELT OUTBOARD FORCE

TRC 920324
 NEW CAR ASSESSMENT PROGRAM
 92034
 SHBF2

FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -4.84e 240.75, 2111.31 e 105.75



TRC , 920324
 NEW CAR ASSESSMENT PROGRAM
 92034
 SH802

FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = 0.00 6.63 , 5.48 e 112.38

14.00

12.00

10.00

8.00

6.00

4.00

2.00

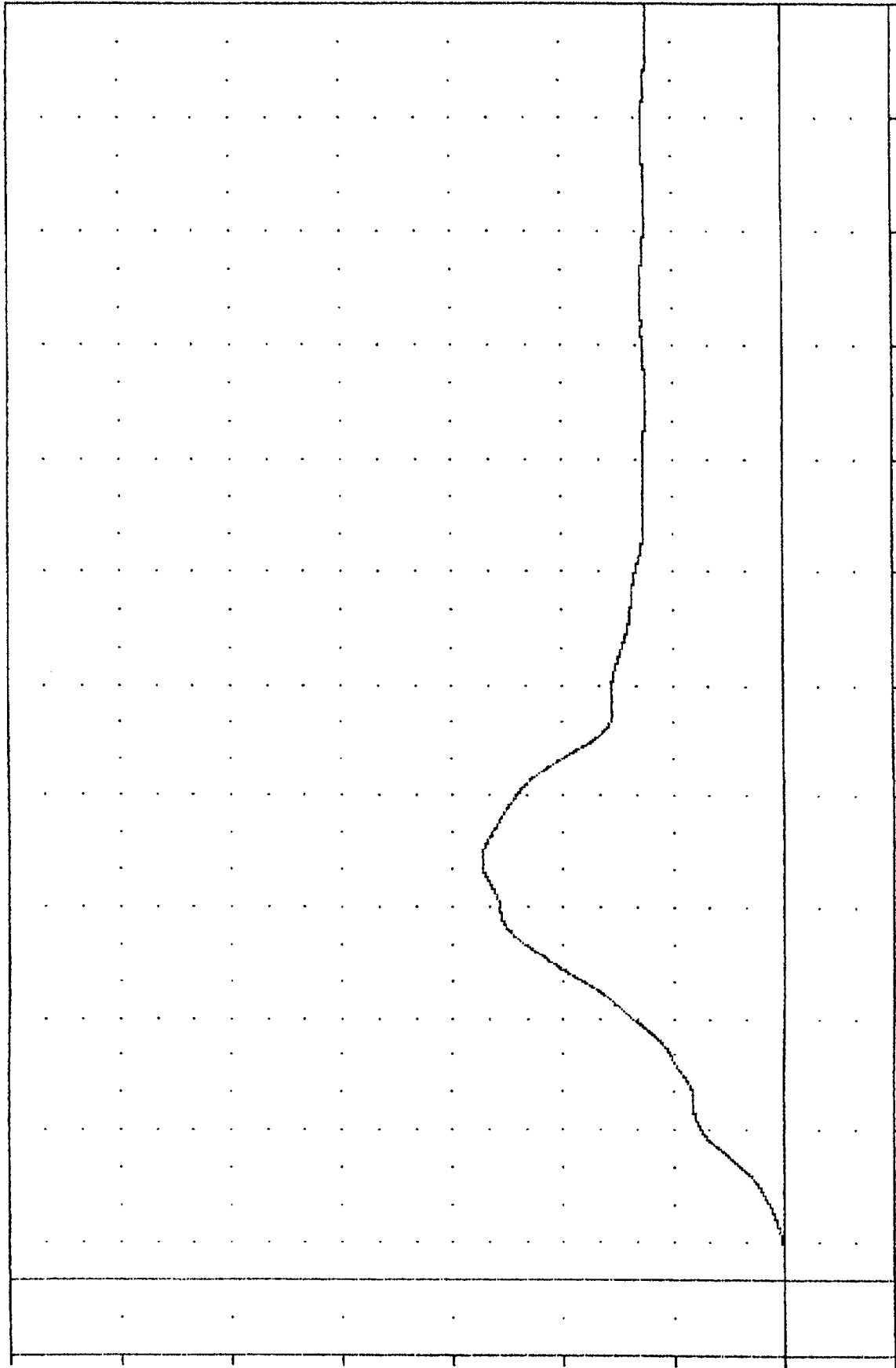
0.00

-2.00

DISPLACEMENT (IN)

B-42

920324

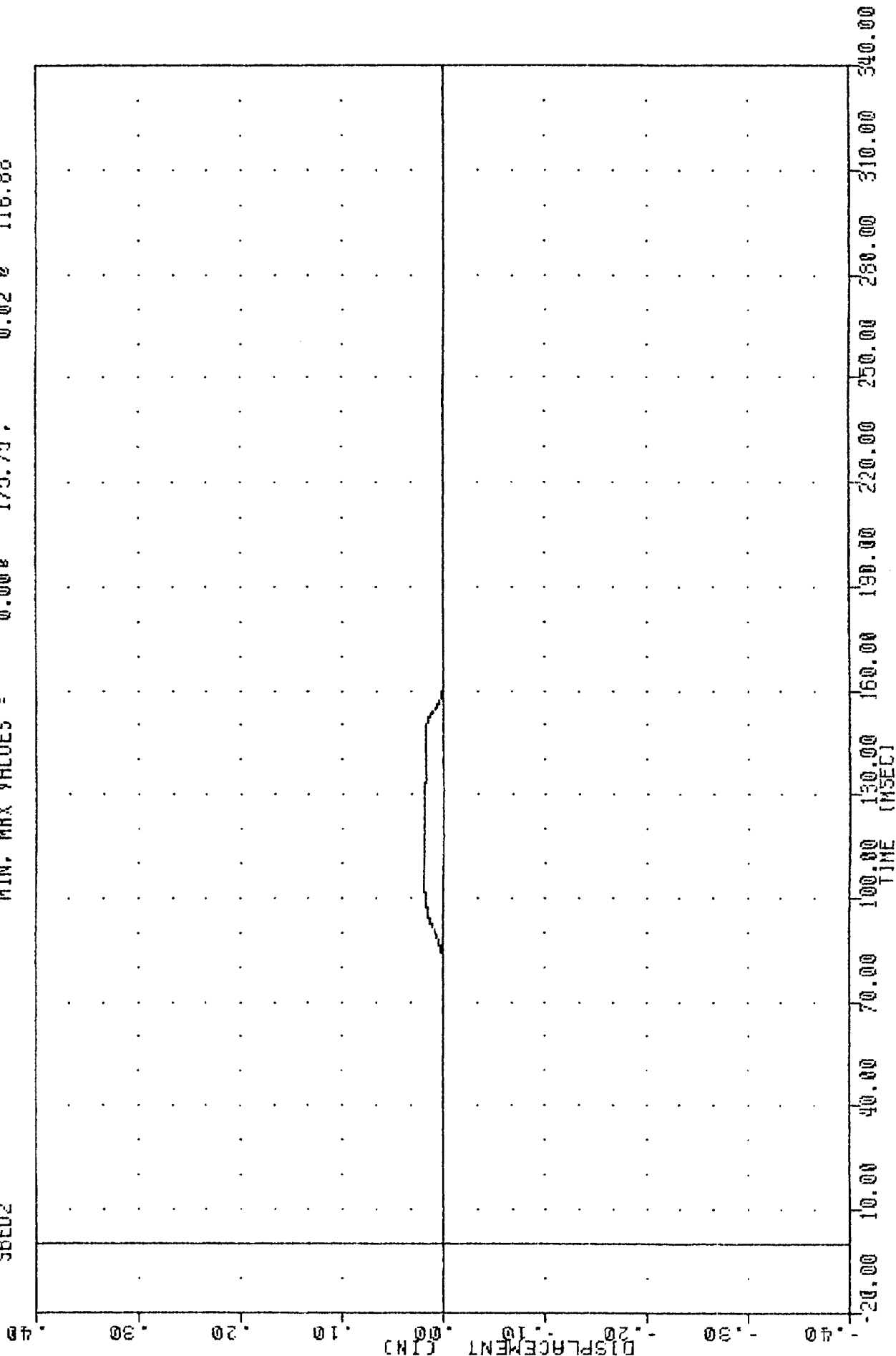


20.00 40.00 60.00 80.00 100.00 120.00 140.00 160.00 180.00 200.00 220.00 240.00 260.00 280.00 300.00 320.00 340.00

1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 PASSENGER SHOULDER BELT DISPLACEMENT

TRC 920324
 NEW CAR ASSESSMENT PROGRAM
 92084
 SBE02

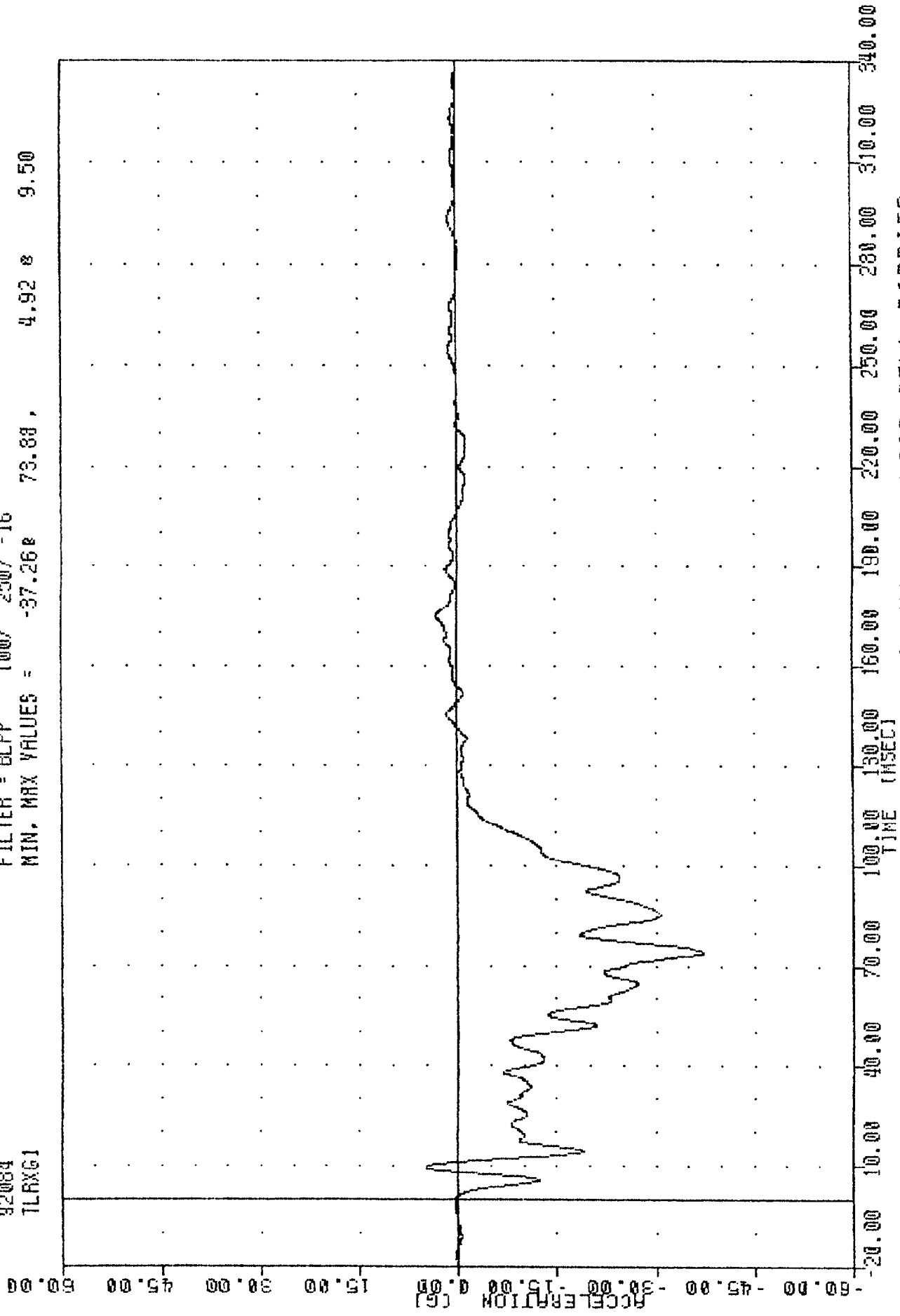
FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = 0.000 175.75, 0.02 116.88



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 PASSENGER SEAT BELT EXTENSION

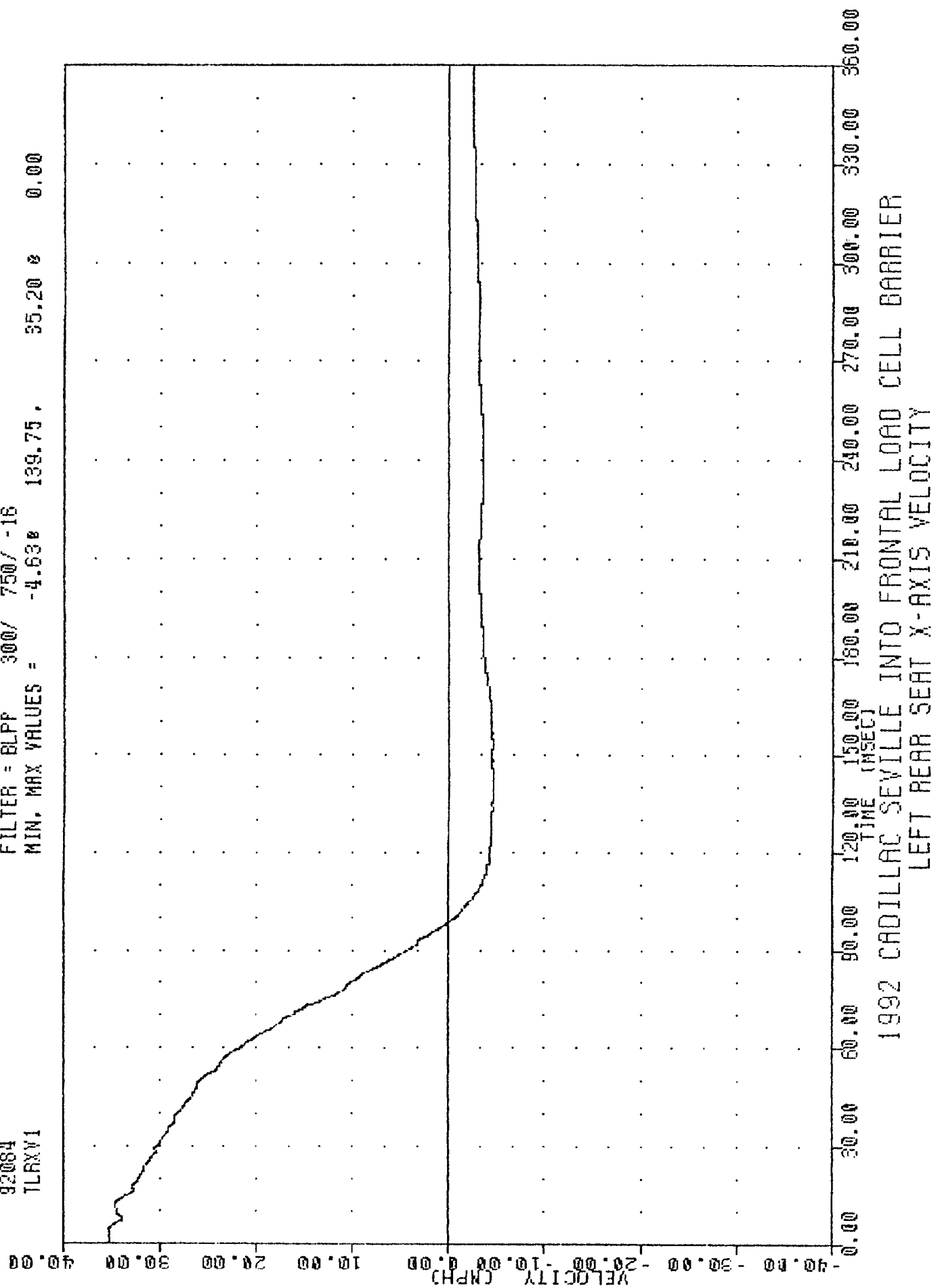
TRC , 920324
NEW CAR ASSESSMENT PROGRAM
92084
TLRXG1

FILTER = BLPP 100/ 250/ -16
MIN. MAX VALUES = -37.26e 73.88 , 4.92 e 9.50



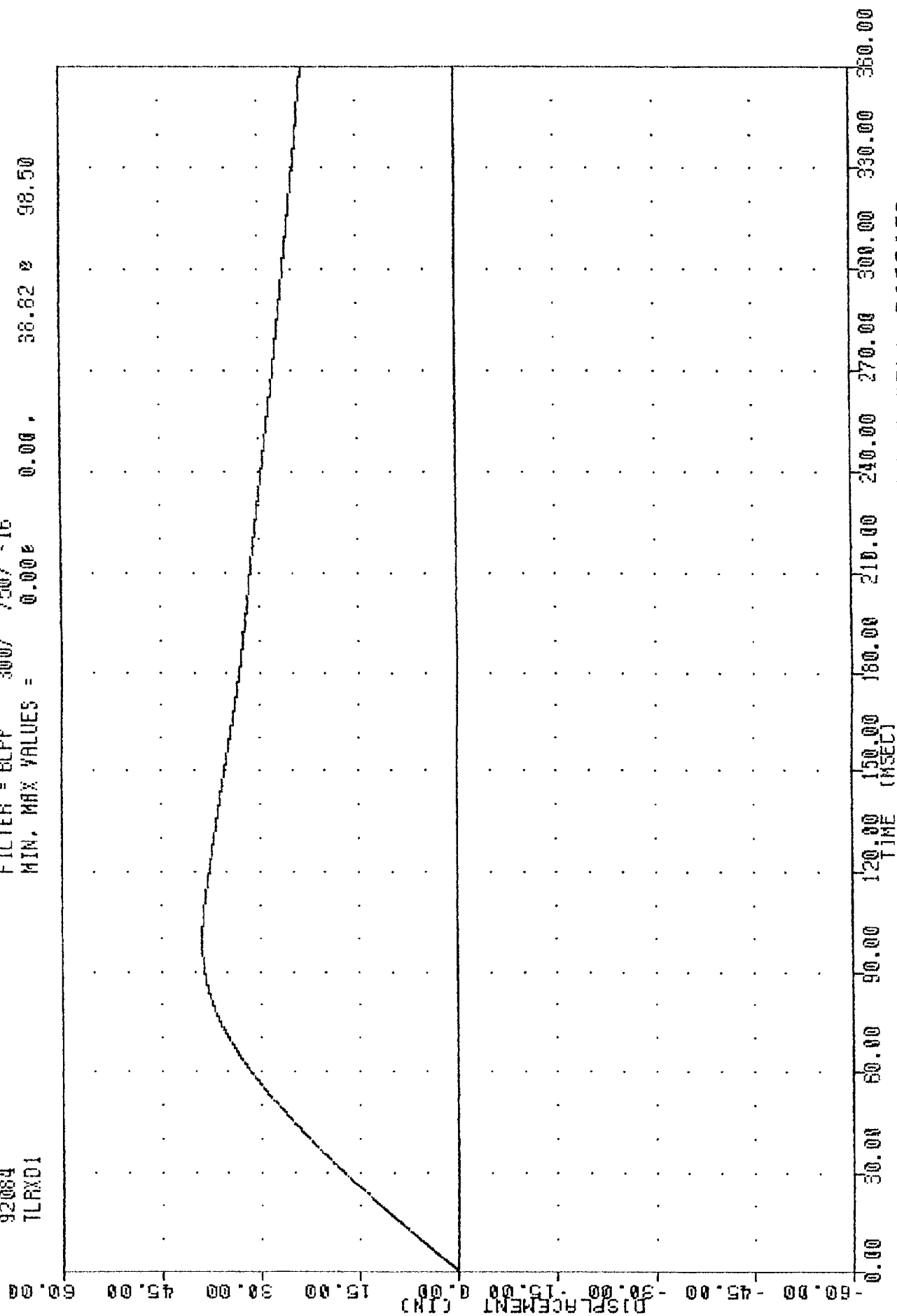
TRC 920324
NEW CAR ASSESSMENT PROGRAM
92084
TLRXV1

FILTER = BLPP 300/ 750/ -16
MIN. MAX VALUES = -4.63% 139.75, 35.20 & 0.00



TRC , 920324
 NEW CAR ASSESSMENT PROGRAM
 92084
 TLRYD1

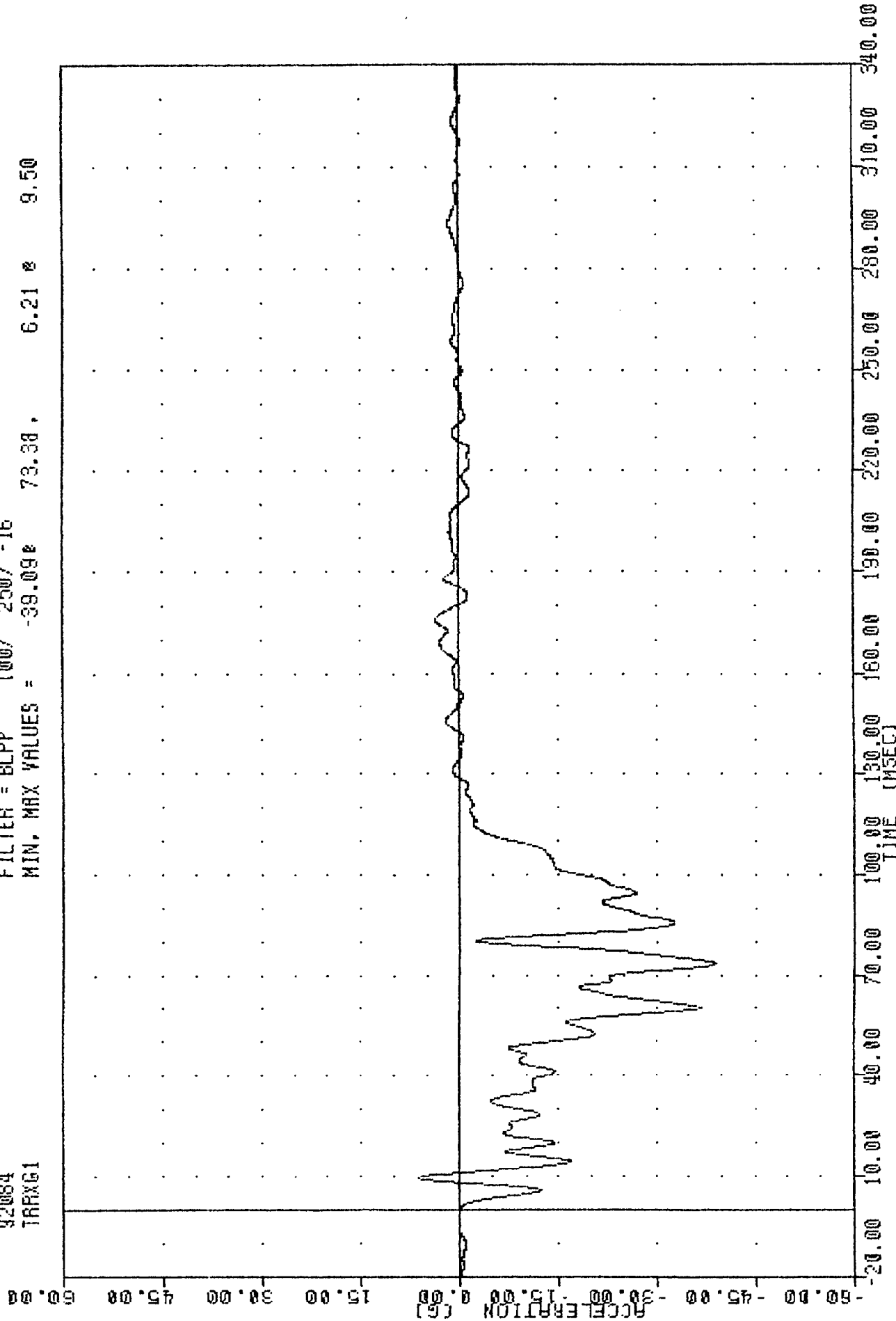
FILTER = BLPP 300/ 750/ -16
 MIN. MAX VALUES = 0.00 0.00 38.82 98.50



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 LEFT REAR SEAT X-AXIS DISPLACEMENT

IRC , 920324
NEW CAR ASSESSMENT PROGRAM
92084
TRRXG1

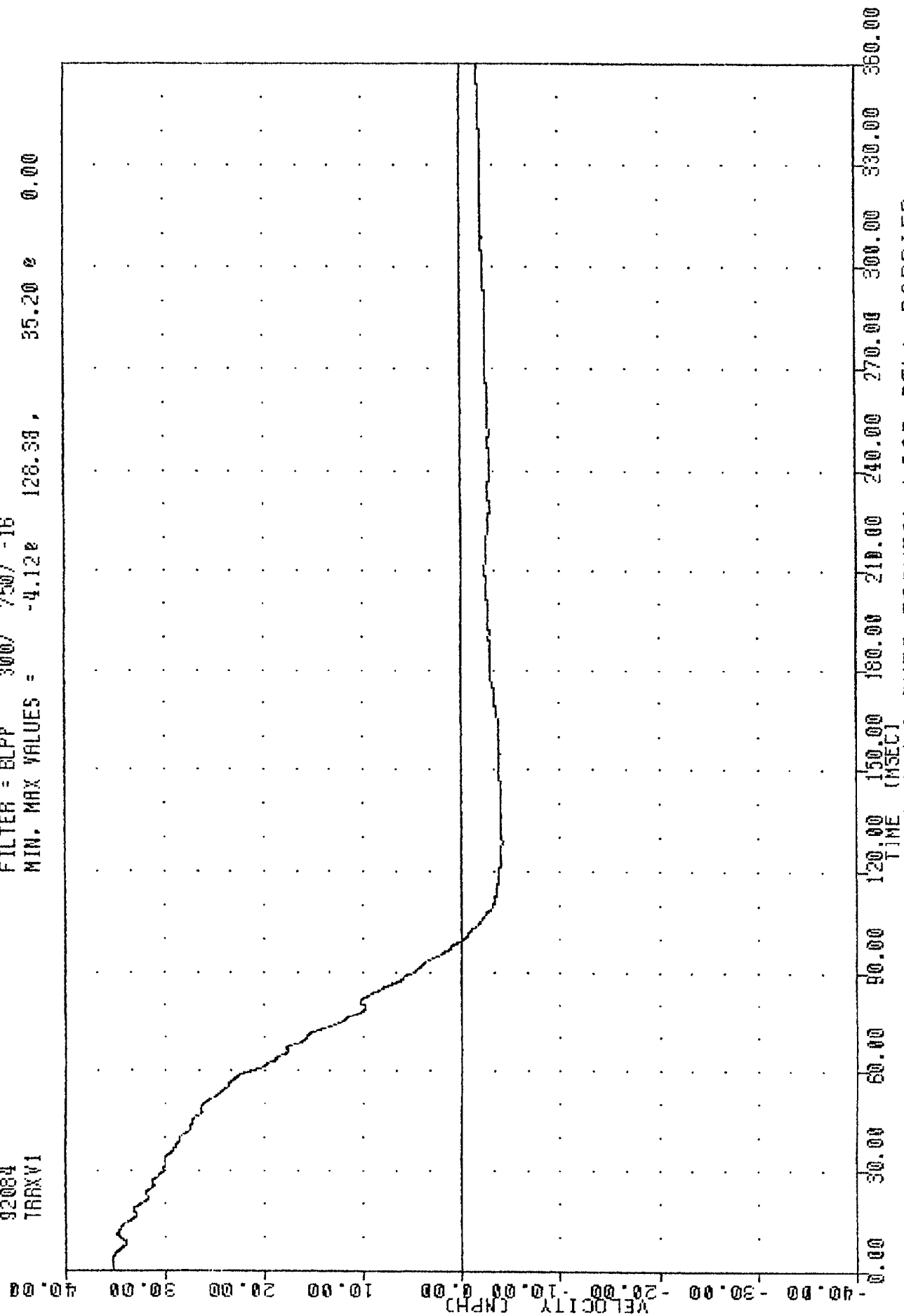
FILTER = BLPP 100/ 250/ -16
MIN. MAX VALUES = -39.09 73.38 , 6.21 9.50



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
RIGHT REAR SEAT X-AXIS ACCELERATION

TRC , 920324
 NEW CAR ASSESSMENT PROGRAM
 92084
 TRRXV1

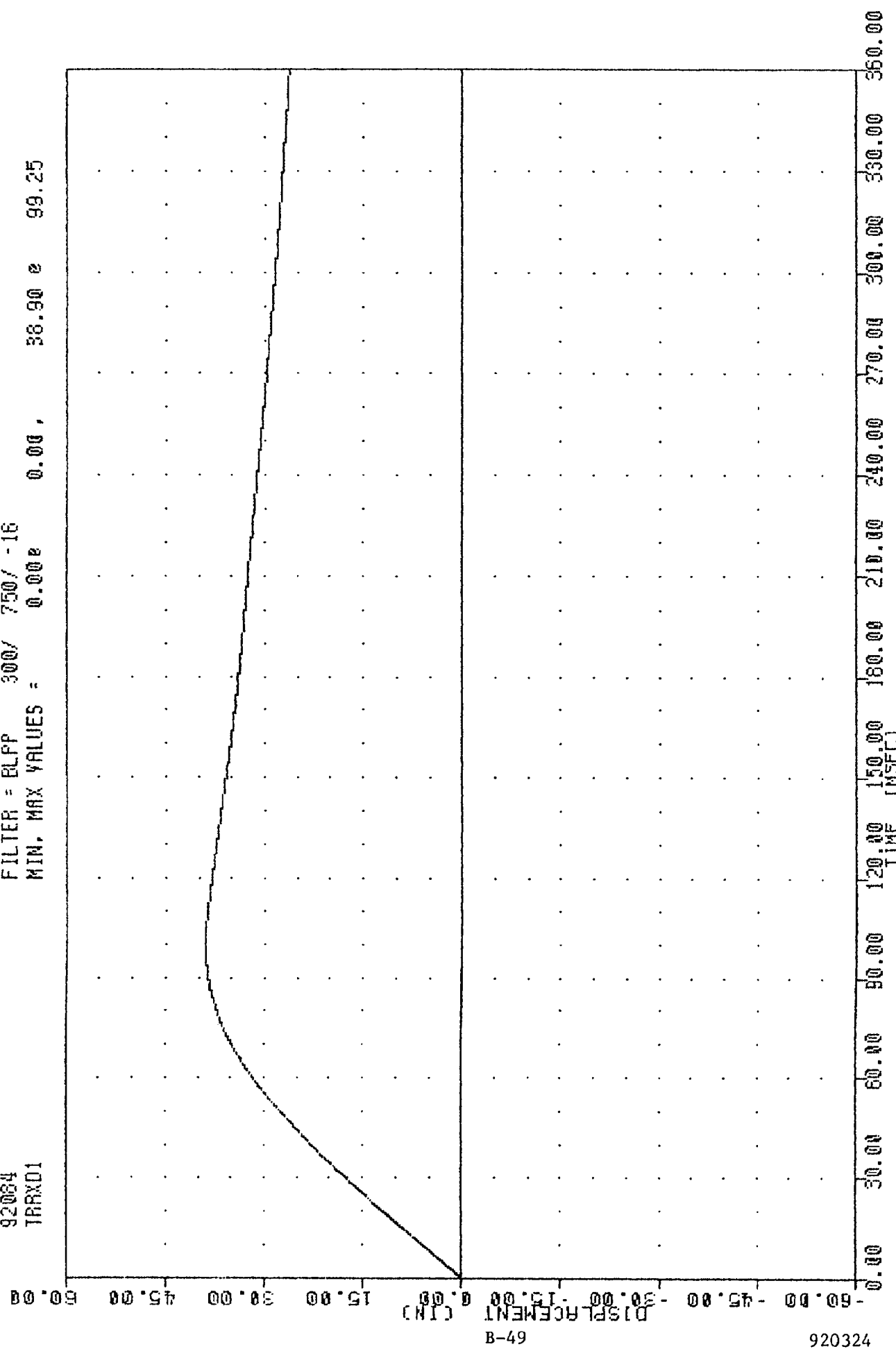
FILTER = BLPP 300/ 750/ -16
 MIN. MAX VALUES = -4.12e 128.38 , 35.20 e 0.00



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 RIGHT REAR SEAT X-AXIS VELOCITY

TRC 920324
 NEW CAR ASSESSMENT PROGRAM
 92034
 TRRX01

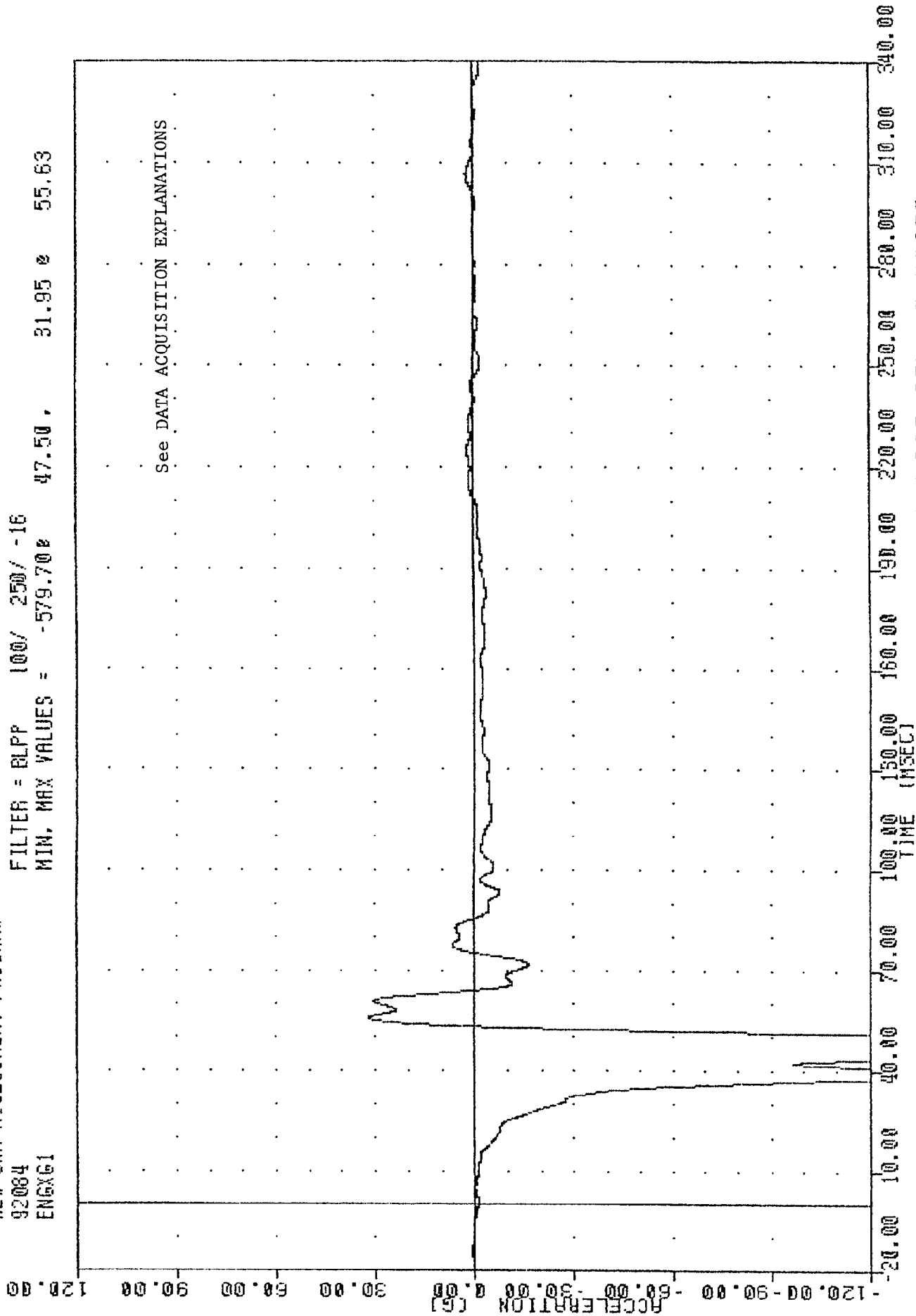
FILTER = BLPP 300/ 750/ -16
 MIN, MAX VALUES = 0.00e 0.00, 38.90 e 99.25



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 RIGHT REAR SEAT X-AXIS DISPLACEMENT

TRC . 920324
 NEW CAR ASSESSMENT PROGRAM
 92084
 ENGCG1

FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -579.700 47.50 , 31.95 0 55.63



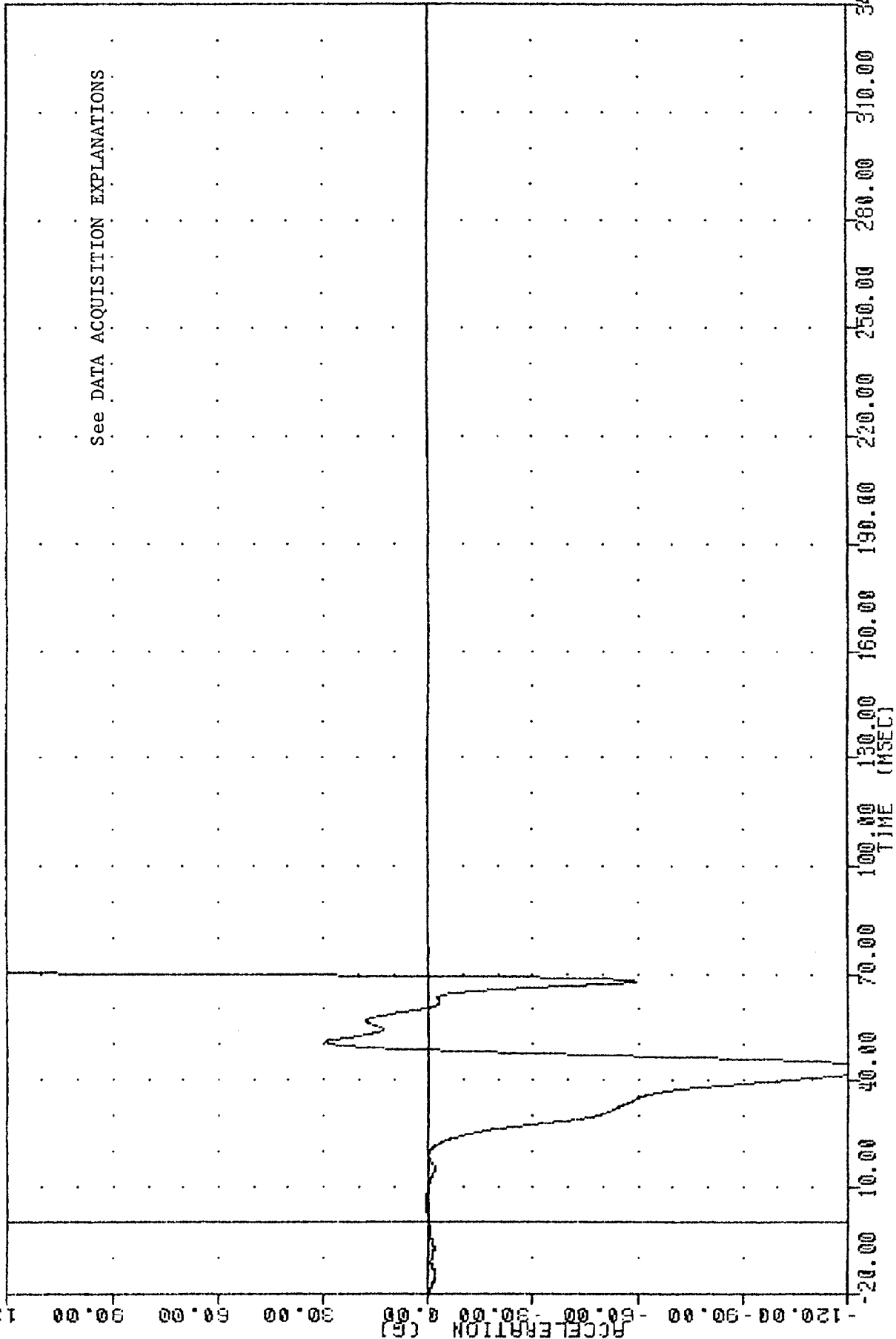
B-50

920324

1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 ENGINE TOP X-AXIS ACCELERATION

IRC 920324
 NEW CAR ASSESSMENT PROGRAM
 92084
 ENG62

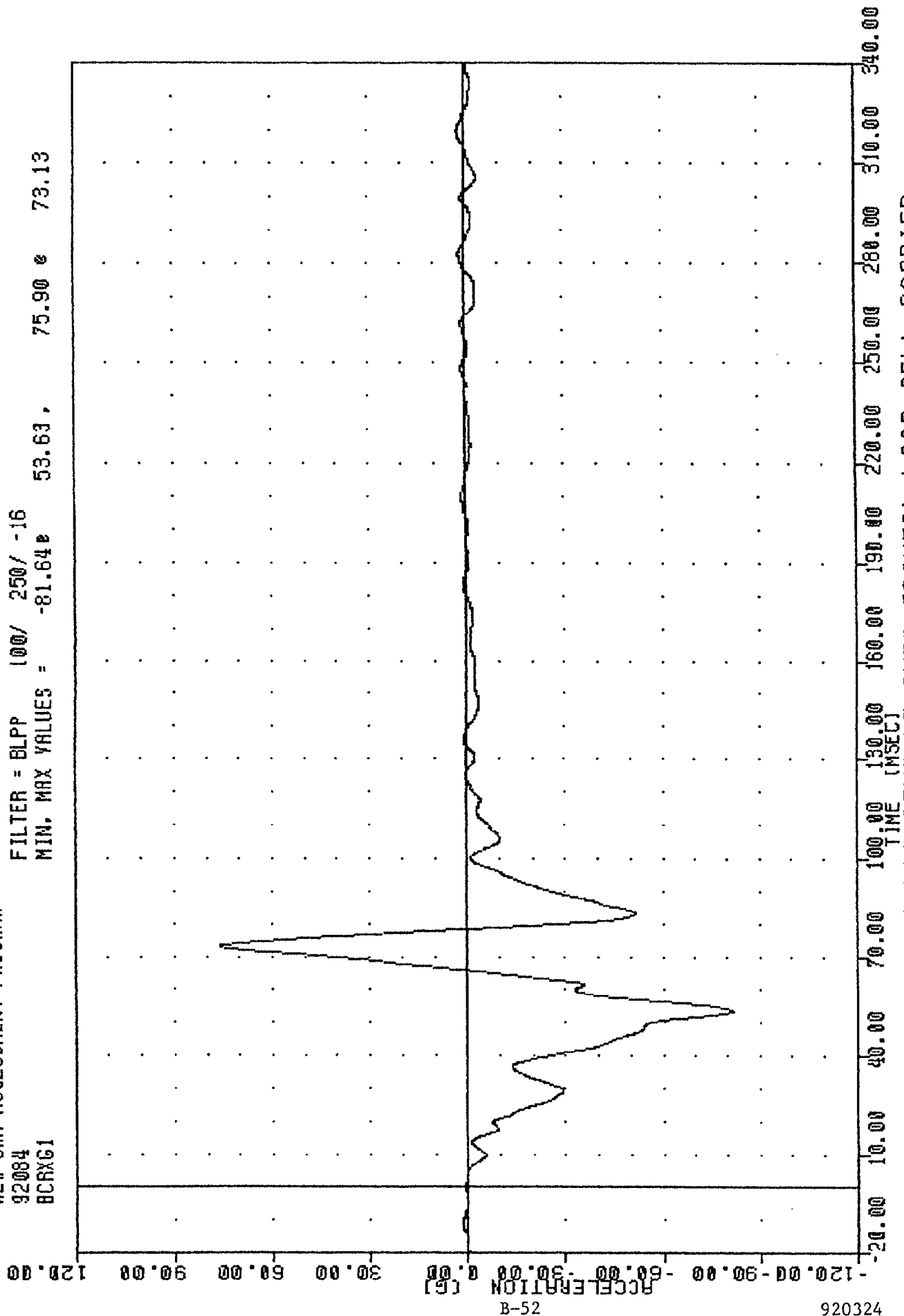
FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -134.17e 43.50 . 1572.06 e 75.88



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 ENGINE BOTTOM X-AXIS ACCELERATION

TRC , 920324
NEW CAR ASSESSMENT PROGRAM
92084
BCRXG1

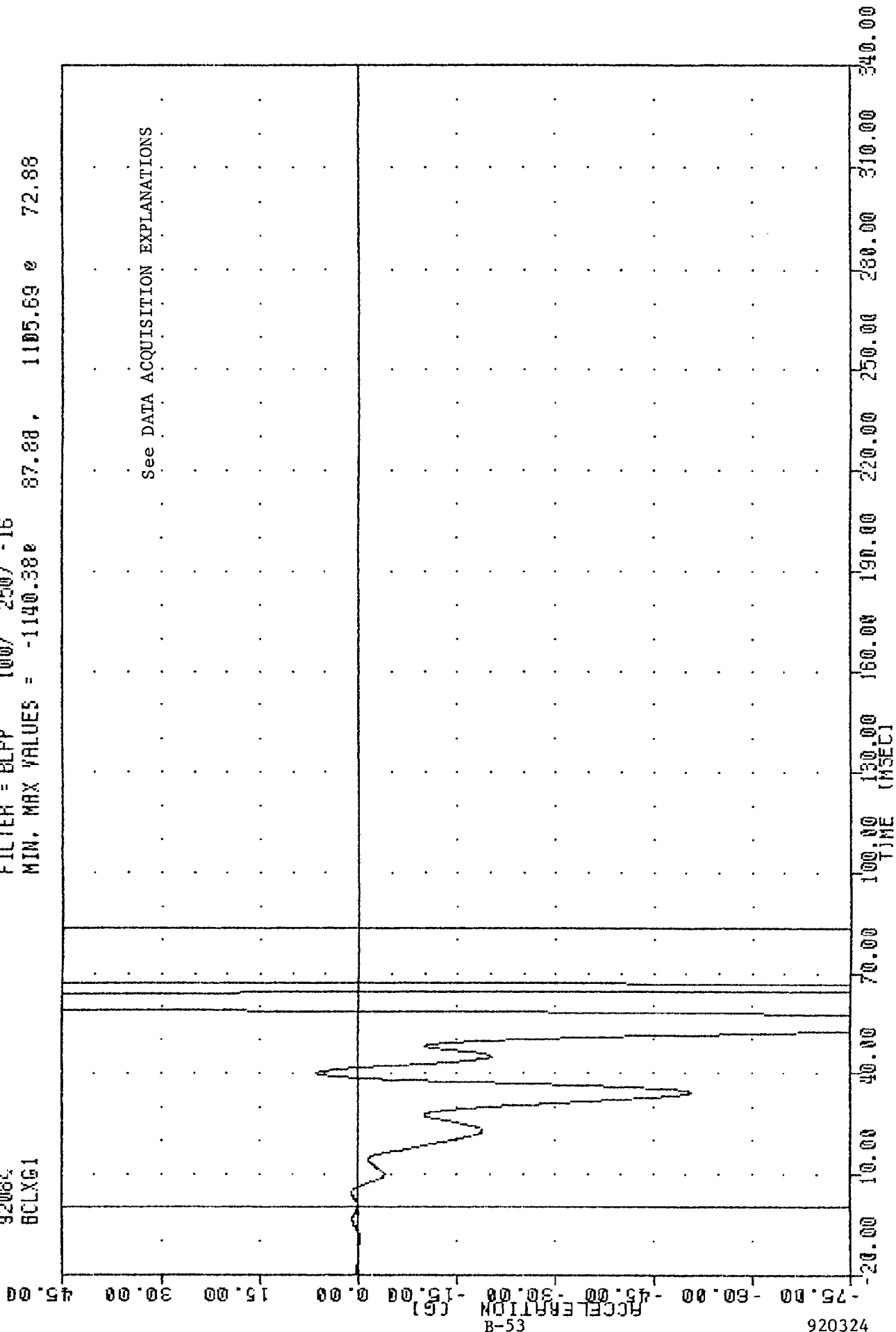
FILTER = BLPP 100/ 250/ -16
MIN. MAX VALUES = -81.640 53.63 , 75.90 0 73.13



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
RIGHT BRAKE CALIPER X-AXIS ACCELERATION

TRC 920324
 NEW CAR ASSESSMENT PROGRAM
 92084
 BCLXG1

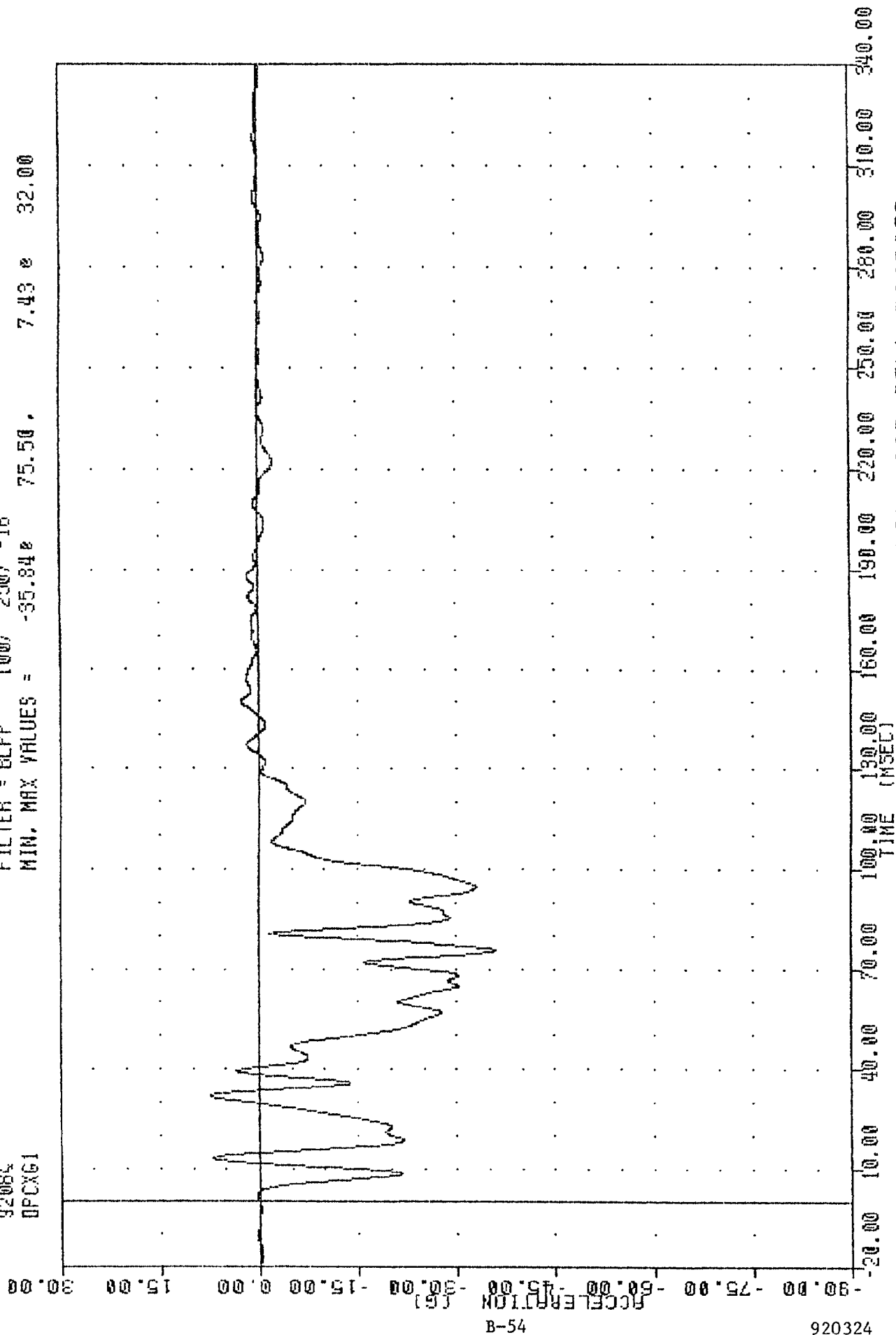
FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -1140.38e 87.88, 1105.69 e 72.88



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 LEFT BRAKE CALIPER X-AXIS ACCELERATION

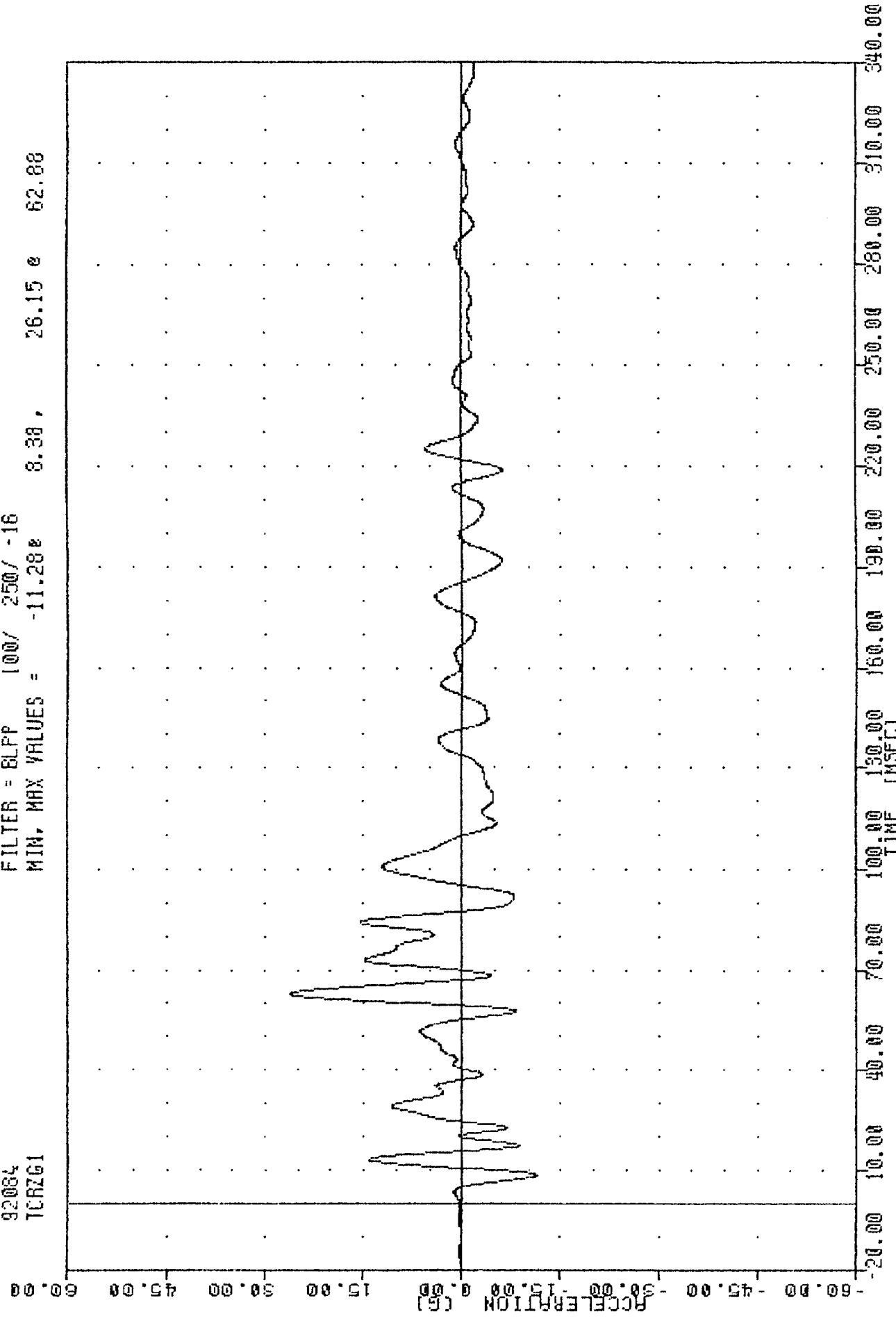
TRC 920324
NEW CAR ASSESSMENT PROGRAM
92084
OPCX61

FILTER = BLPP 100/ 250/ -16
MIN. MAX VALUES = -35.84e 75.50e 7.43e 32.00



IRC, 920324
 NEW CAR ASSESSMENT PROGRAM
 92084
 TORIG1

FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -11.28e 8.38, 26.15 e 62.88



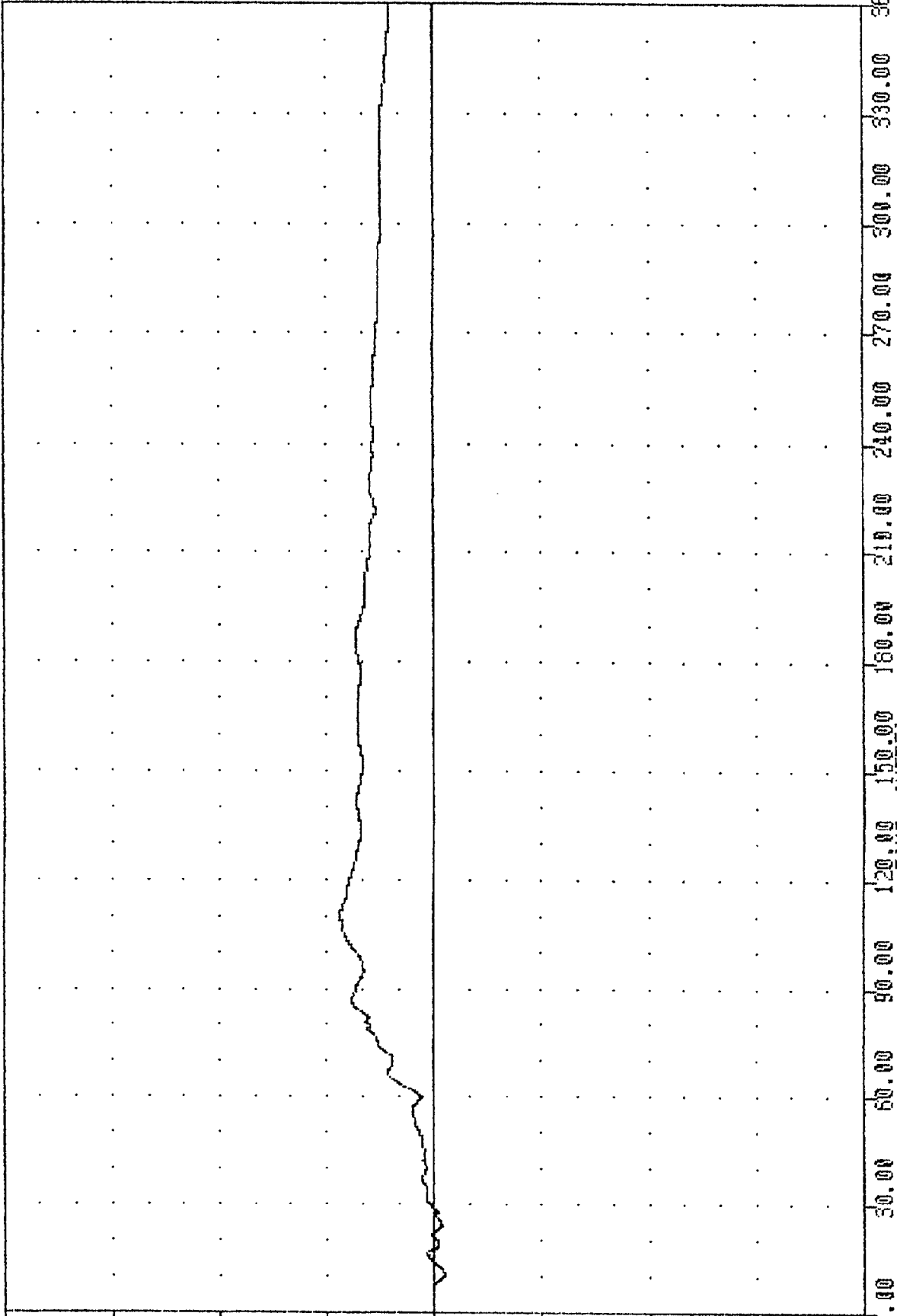
1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 REAR SEAT CROSSMEMBER Z-AXIS ACCELERATION

TRC
NEW CAR ASSESSMENT PROGRAM
92084
TCRZV1

920324

FILTER = BLFF 300/ 750/ -16
MIN. MAX VALUES = -0.94 10.38 8.70 110.13

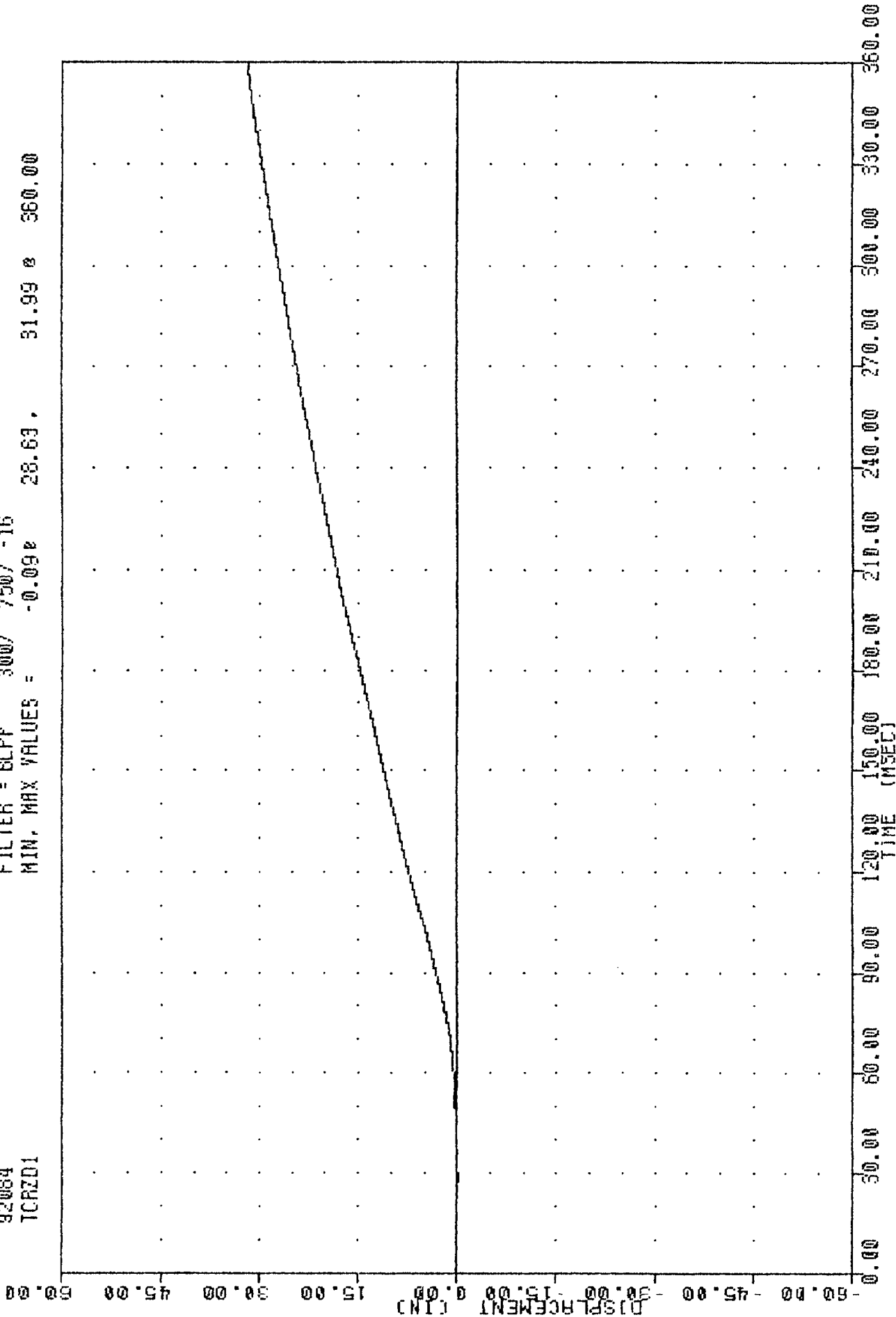
VELOCITY (MPH)



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
REAR SEAT CROSSMEMBER Z-AXIS VELOCITY

TRC 920324
 NEW CAR ASSESSMENT PROGRAM
 92084
 TCARD1

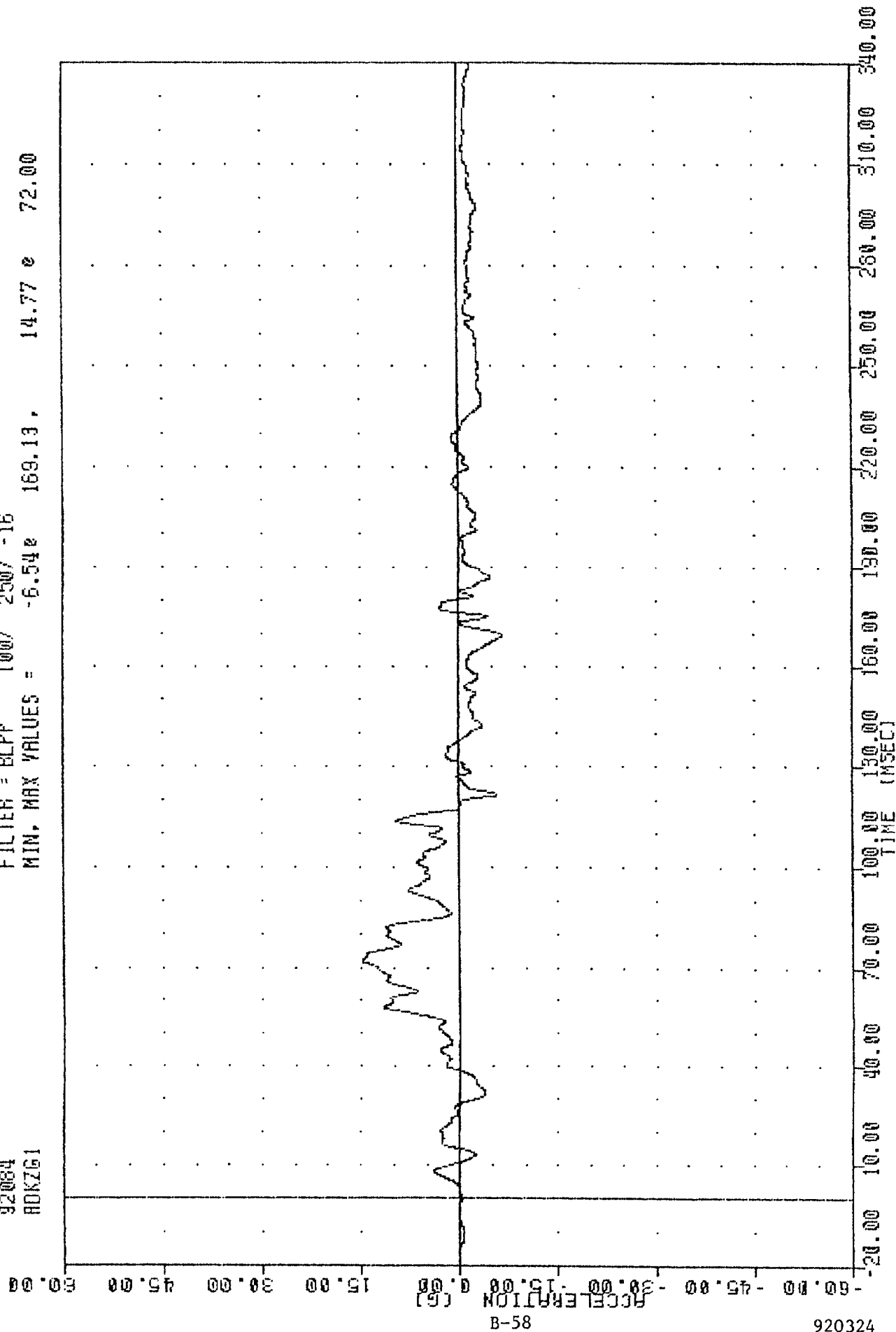
FILTER = BLPP 300/ 750/ -16
 MIN. MAX VALUES = -0.09 28.63 31.99 360.00



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 REAR SEAT CROSSMEMBER Z-AXIS DISPLACEMENT

TRC , 920324
NEW CAR ASSESSMENT PROGRAM
92084
RDKZG1

FILTER = BLPP 100/ 250/ -16
MIN. MAX VALUES = -6.54e 169.13 , 14.77 e 72.00



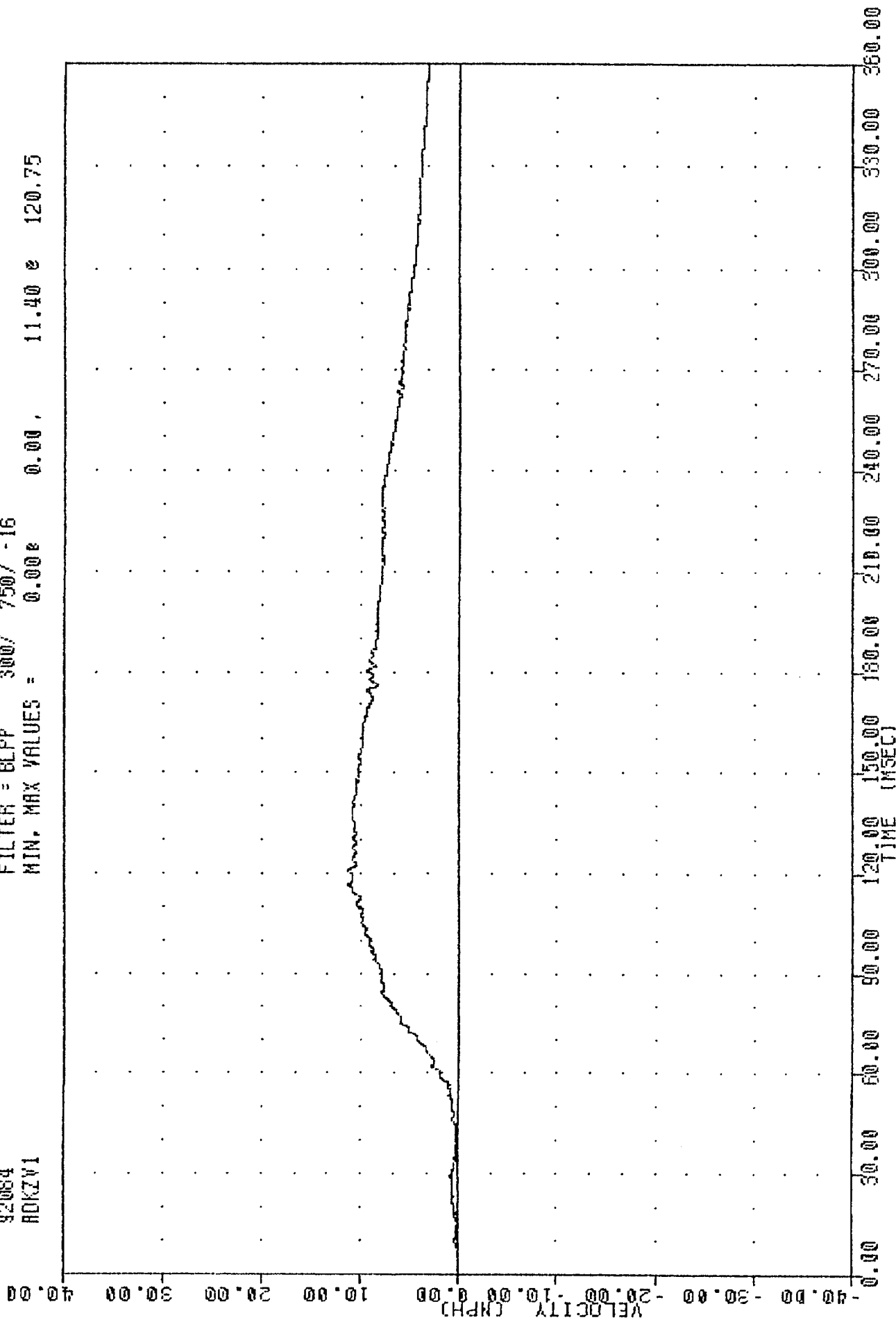
B-58

920324

1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
VEHICLE REAR CENTER Z-AXIS ACCELERATION

ARC, 920324
NEW CAR ASSESSMENT PROGRAM
92084
ADKZV1

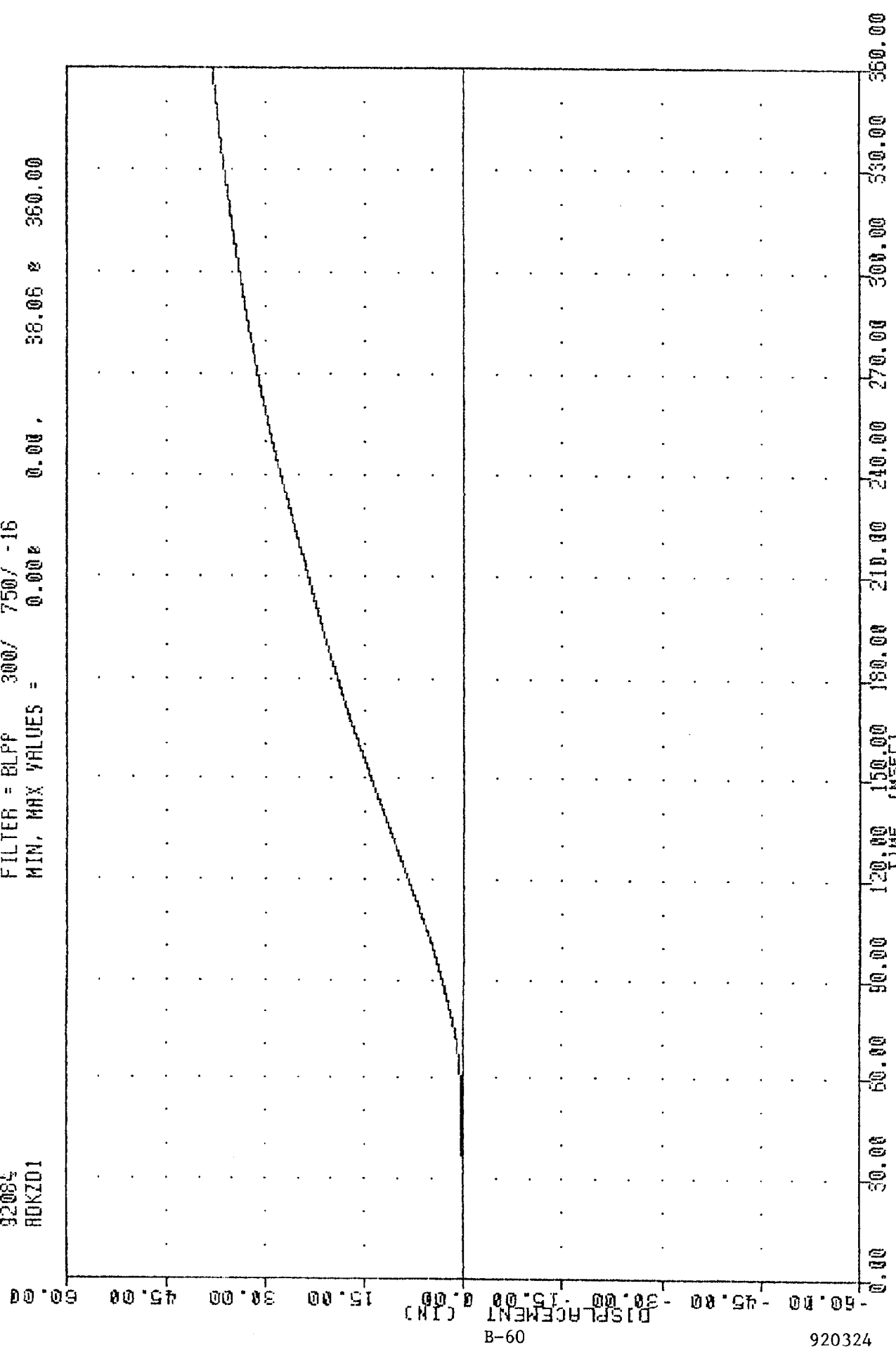
FILTER = BLPP 300/ 750/ -16
MIN. MAX VALUES = 0.00 0.00 , 11.40 120.75



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
VEHICLE REAR CENTER Z-AXIS VELOCITY

TRC 920324
 NEW CRA ASSESSMENT PROGRAM
 92084
 ADKZD1

FILTER = BLPP 300/ 750/ -16
 MIN, MAX VALUES = 0.00 36.06 360.00

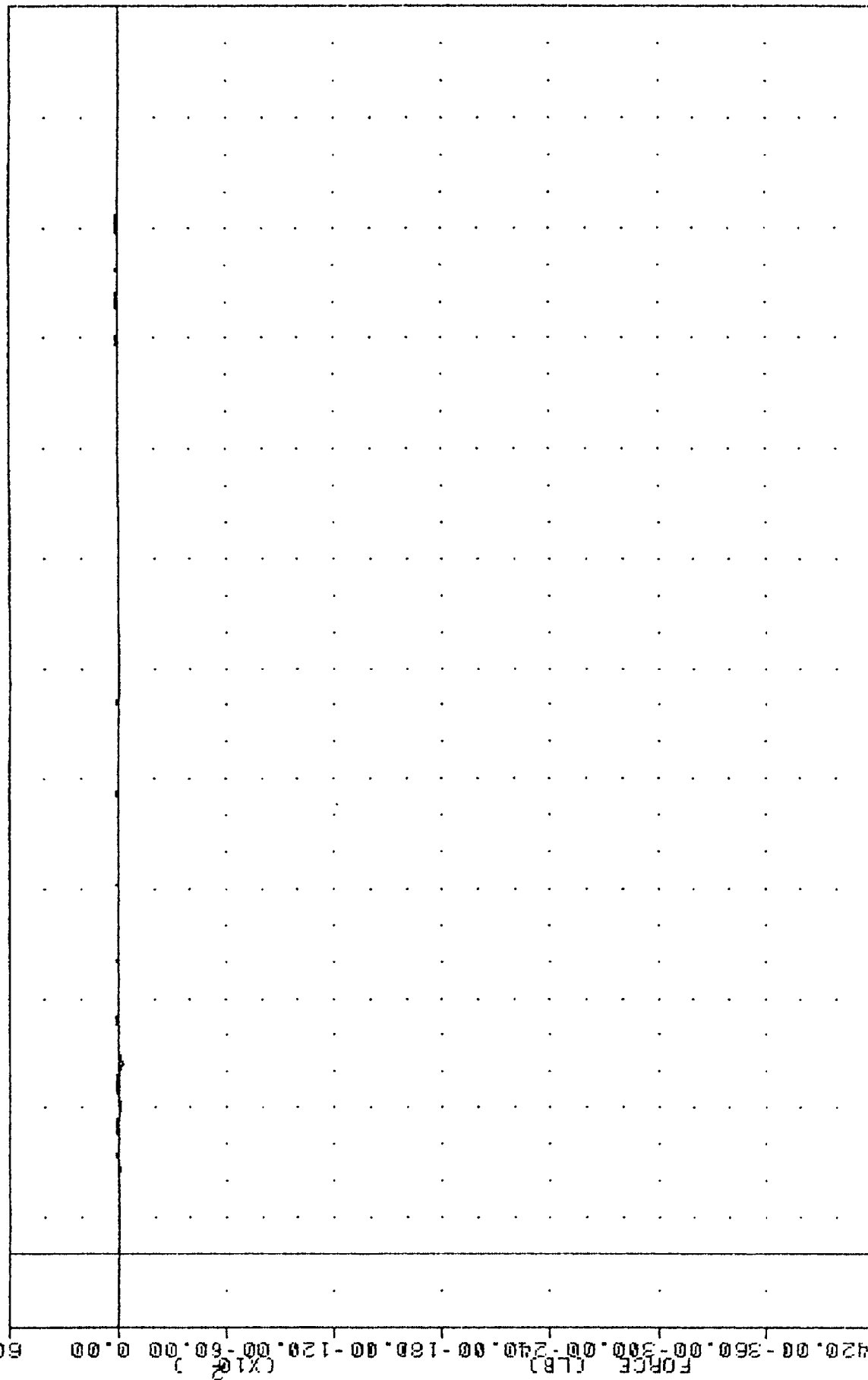


1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 VEHICLE REAR CENTER Z-AXIS DISPLACEMENT

TRC
NEW CAR ASSESSMENT PROGRAM
920324
BRI1F

FILTER = BLPP 100% 250/-16
MIN. MAX VALUES = -232.07% 52.38% 102.96% 47.75

50.00



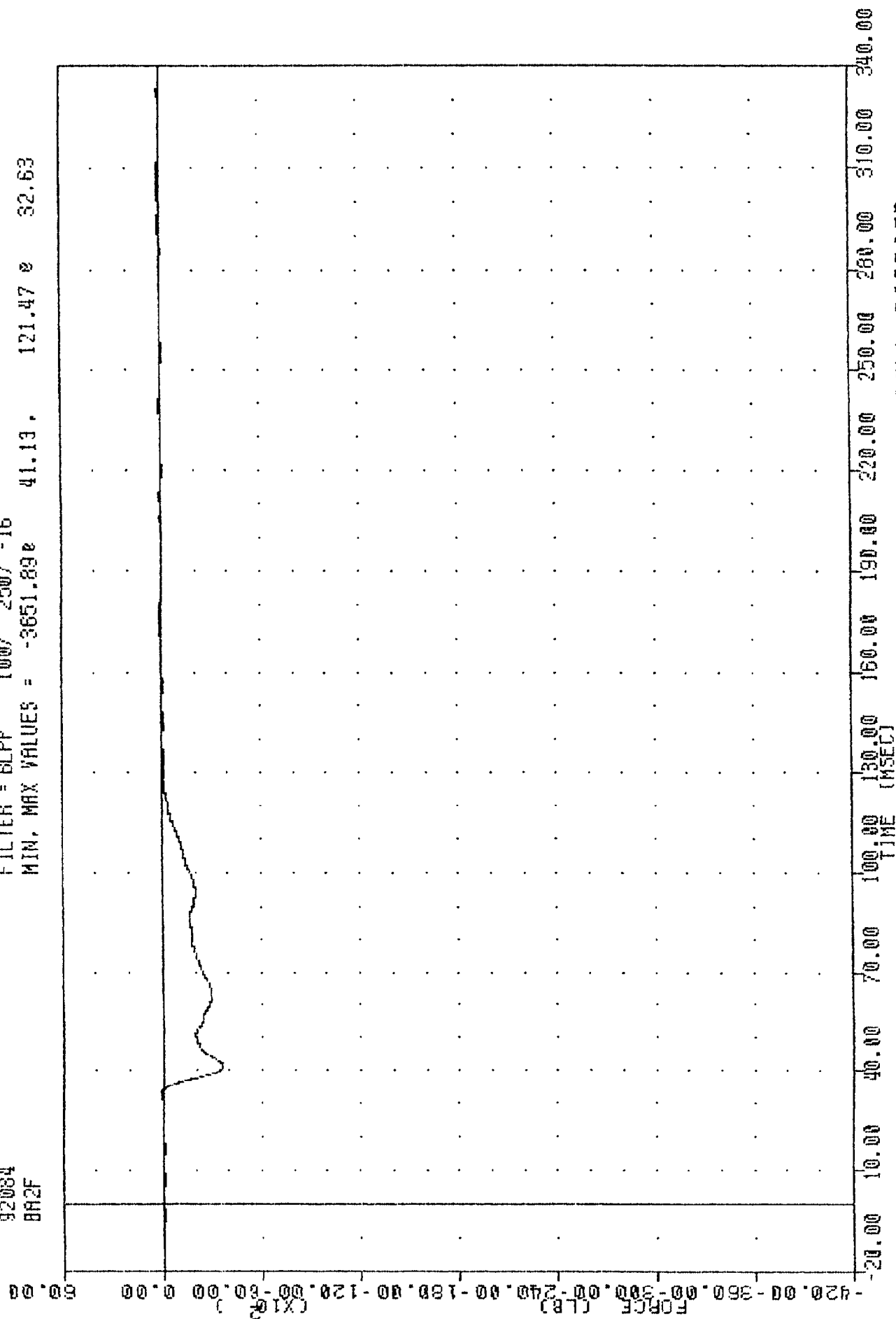
B-61

920324

20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
TIME (MSEC)
1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION A1 FORCE

TRC , 920324
 NEW CAR ASSESSMENT PROGRAM
 92084
 BA2F

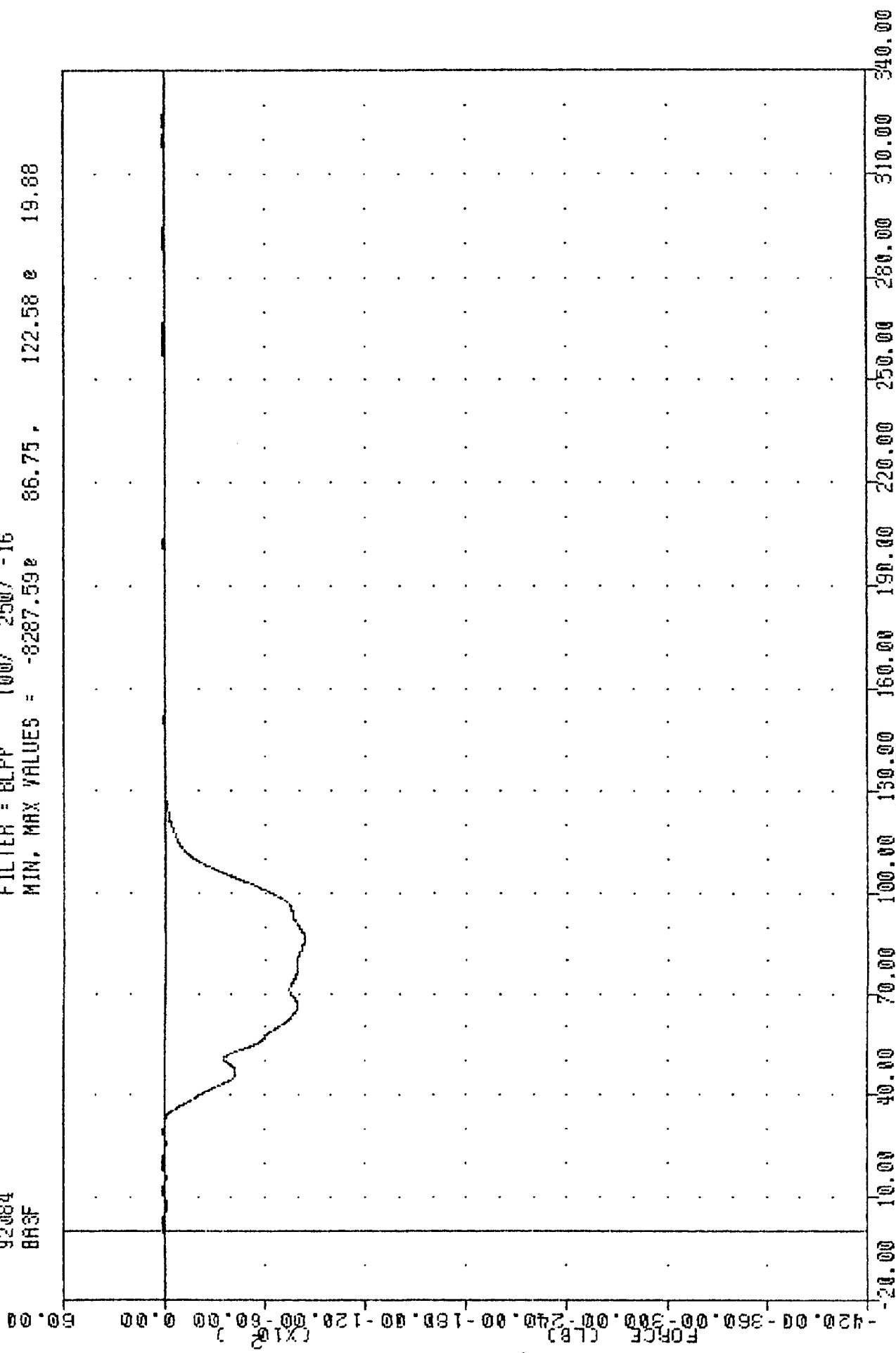
FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -3651.89e 41.13. 121.47 e 32.63



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION A2 FORCE

TRC 920324
 NEW CAR ASSESSMENT PROGRAM
 92084
 BA3F

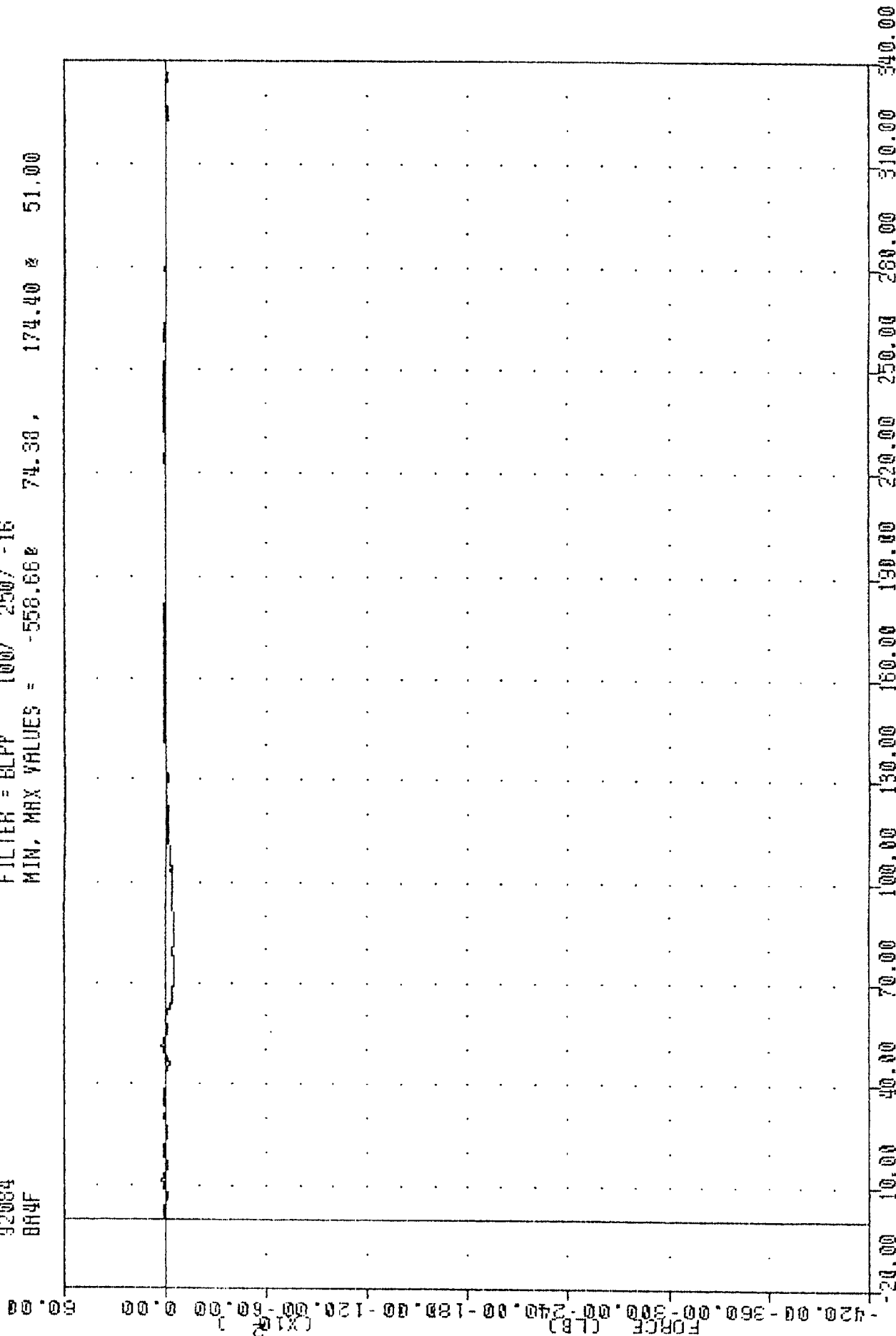
FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -8287.59 86.75, 122.58 19.88



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION A3 FORCE

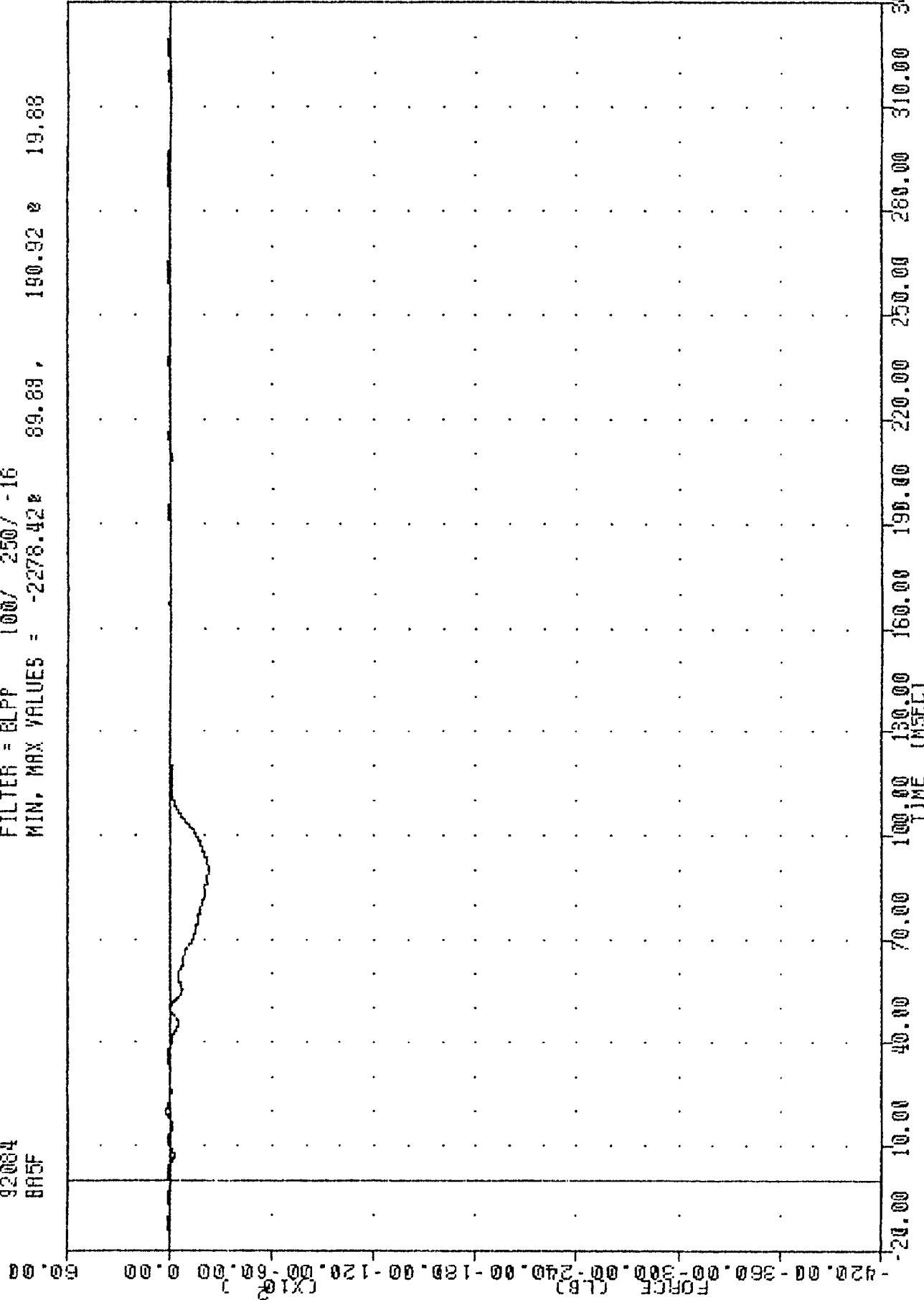
TBC
NEW CAR ASSESSMENT PROGRAM
920324
BR4F

FILTER = BLPP 100/ 250/ -16
MIN, MAX VALUES = -558.662 74.38, 174.40 & 51.00



INC 920324
 NEW CAR ASSESSMENT PROGRAM
 92084
 BR5F

FILTER = ELPP 100/ 250/ -16
 MIN. MAX VALUES = -2278.42 89.88, 190.92 19.88



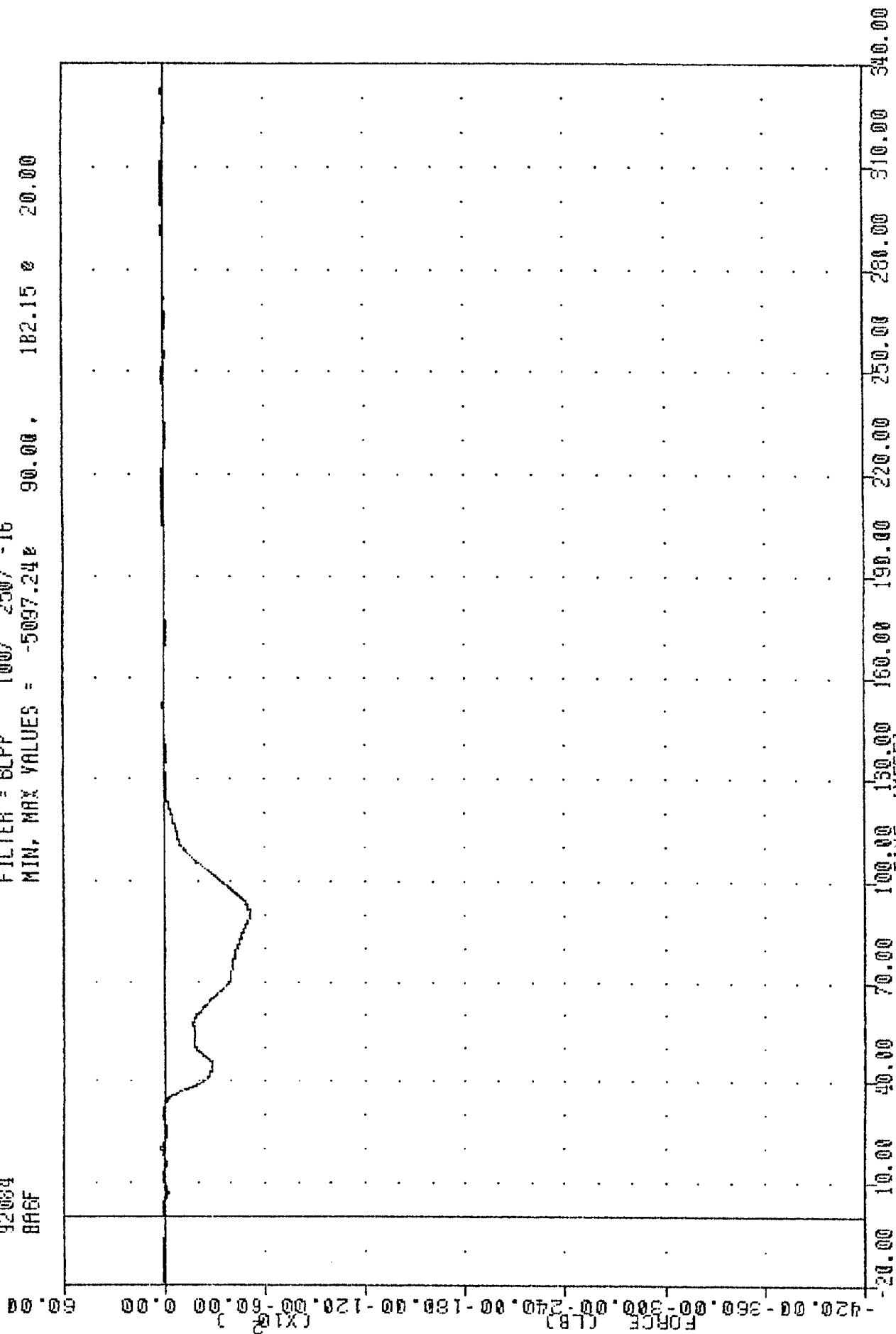
1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION A5 FORCE

TRC
NEW CAR ASSESSMENT PROGRAM
92084
BREF

920324

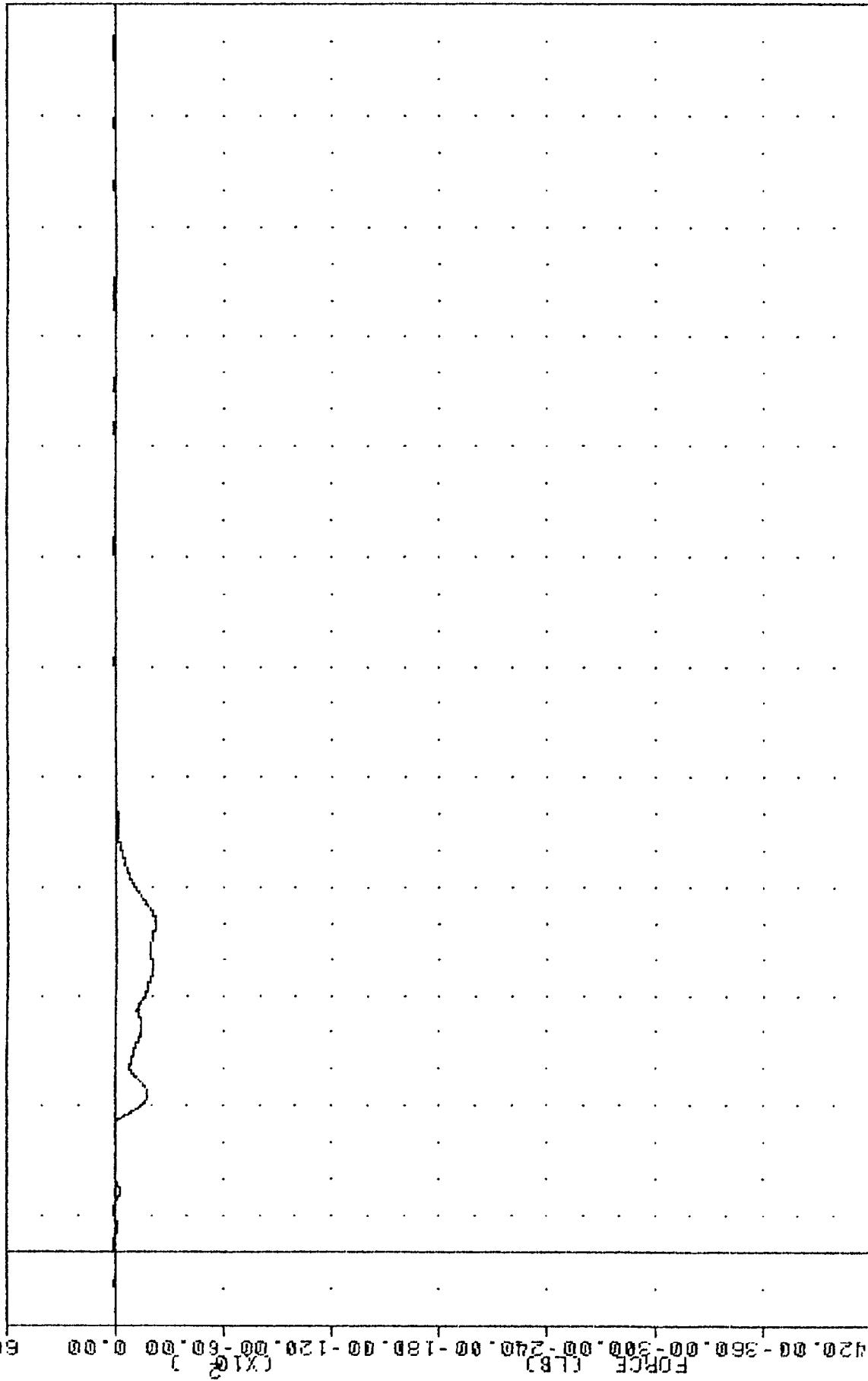
FILTER = BLPP 100/ 250/ -16

MIN, MAX VALUES = -5097.24 90.00, 182.15 20.00



INC 920324 NEW CAR ASSESSMENT PROGRAM 92084 BR7F

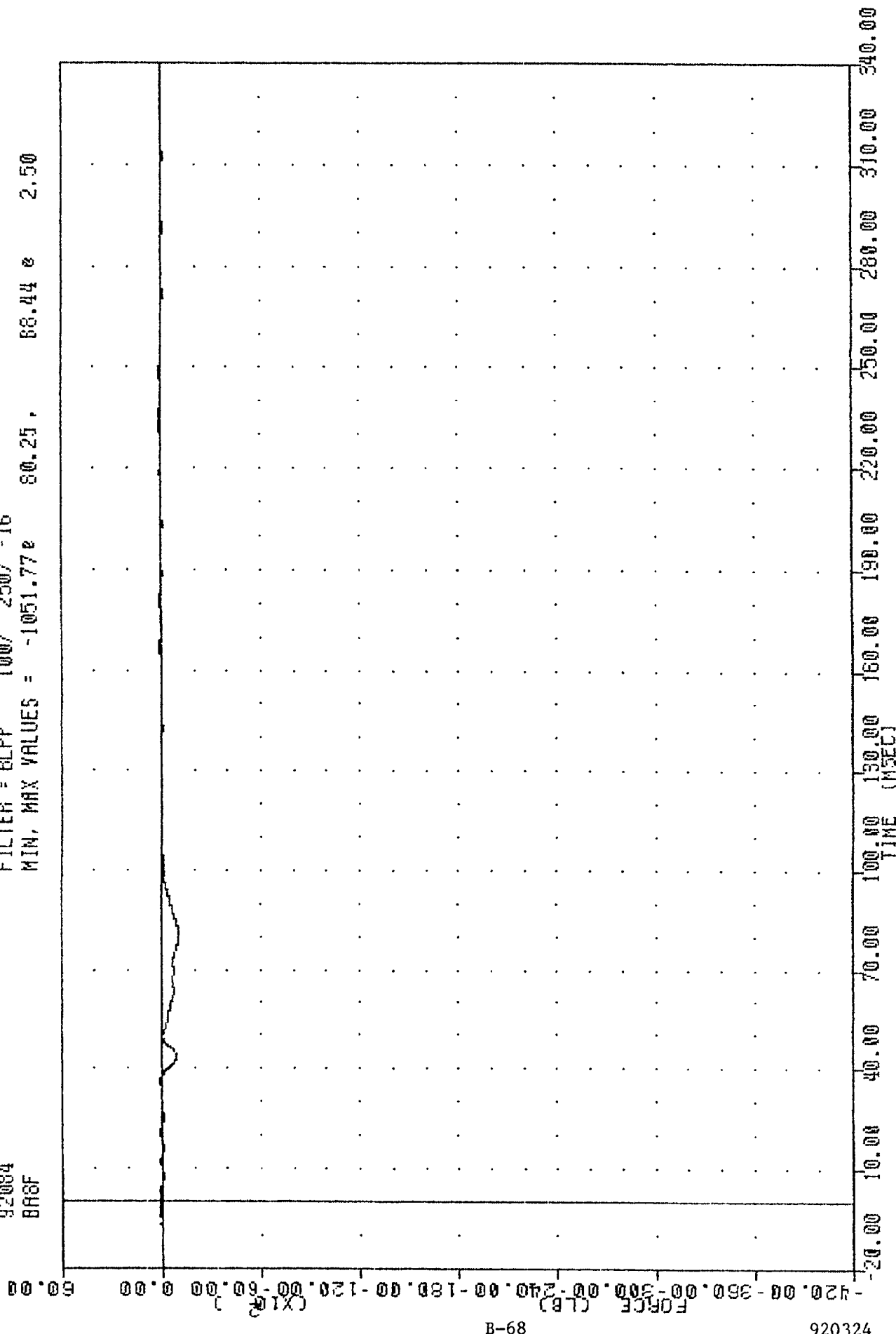
FILTER = BLPP 100/ 250/ -16
MIN. MAX VALUES = -2191.83e 90.13, 114.90 e 11.50



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION A7 FORCE

TRC , 920324
 NEW CAR ASSESSMENT PROGRAM
 92084
 BR8F

FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -1051.77e 80.25 , 88.44 e 2.50



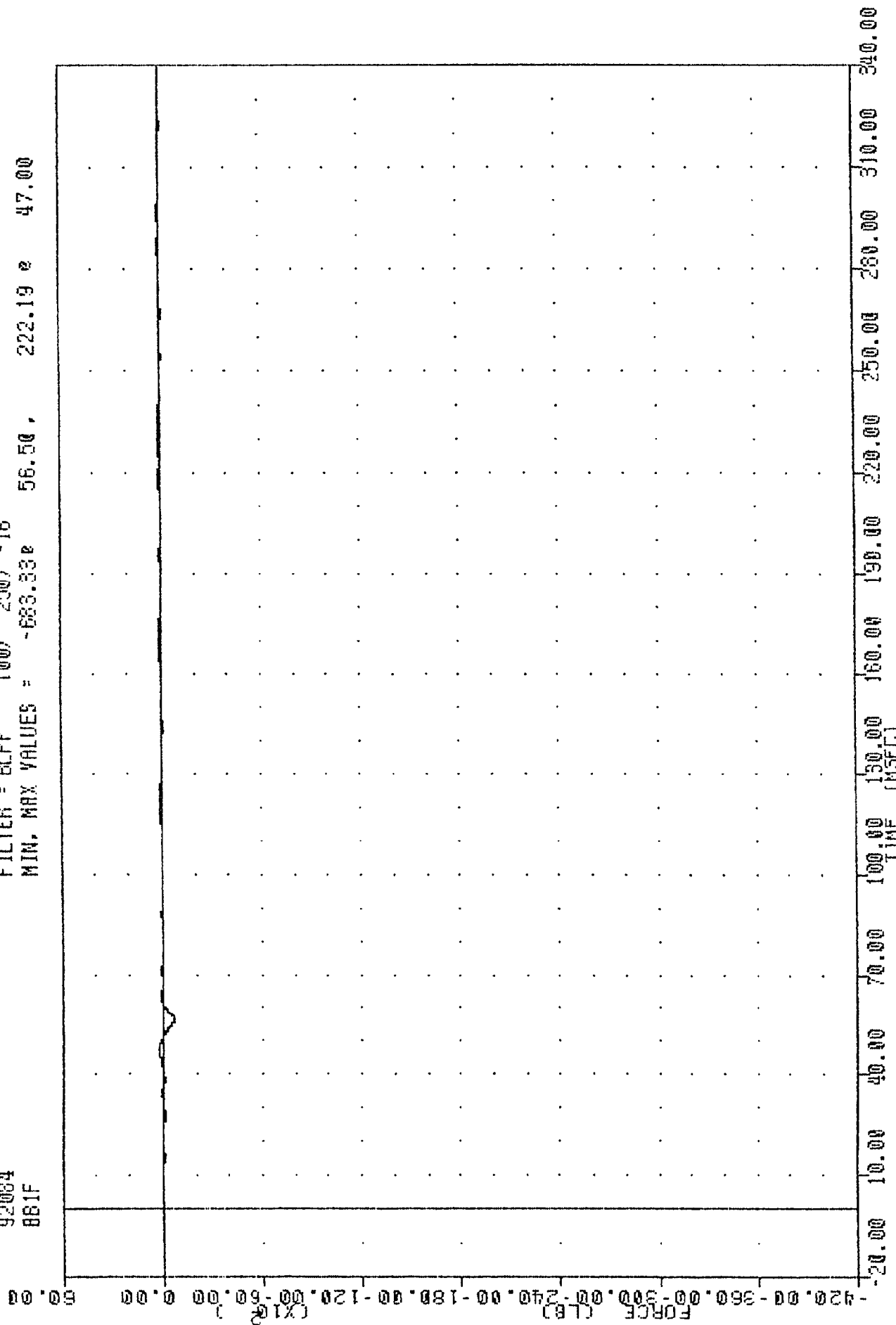
TRC , 920324
 NEW CAR ASSESSMENT PROGRAM
 92084
 BR9F

FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -243.05 52.13 , 121.90 65.75

TIME (MSEC)	100.00	150.00	160.00	190.00	220.00	250.00	280.00	310.00	340.00
FORCE (LB)	-420.00	-360.00	-300.00	-240.00	-180.00	-120.00	-60.00	0.00	50.00
TIME (MSEC)	10.00	40.00	70.00	100.00	130.00	160.00	190.00	220.00	250.00
TIME (MSEC)	280.00	310.00	340.00	370.00	400.00	430.00	460.00	490.00	520.00
TIME (MSEC)	550.00	580.00	610.00	640.00	670.00	700.00	730.00	760.00	790.00
TIME (MSEC)	820.00	850.00	880.00	910.00	940.00	970.00	1000.00	1030.00	1060.00
TIME (MSEC)	1090.00	1120.00	1150.00	1180.00	1210.00	1240.00	1270.00	1300.00	1330.00
TIME (MSEC)	1360.00	1390.00	1420.00	1450.00	1480.00	1510.00	1540.00	1570.00	1600.00
TIME (MSEC)	1630.00	1660.00	1690.00	1720.00	1750.00	1780.00	1810.00	1840.00	1870.00
TIME (MSEC)	1900.00	1930.00	1960.00	1990.00	2020.00	2050.00	2080.00	2110.00	2140.00
TIME (MSEC)	2170.00	2200.00	2230.00	2260.00	2290.00	2320.00	2350.00	2380.00	2410.00
TIME (MSEC)	2440.00	2470.00	2500.00	2530.00	2560.00	2590.00	2620.00	2650.00	2680.00
TIME (MSEC)	2710.00	2740.00	2770.00	2800.00	2830.00	2860.00	2890.00	2920.00	2950.00
TIME (MSEC)	2980.00	3010.00	3040.00	3070.00	3100.00	3130.00	3160.00	3190.00	3220.00
TIME (MSEC)	3250.00	3280.00	3310.00	3340.00	3370.00	3400.00	3430.00	3460.00	3490.00
TIME (MSEC)	3520.00	3550.00	3580.00	3610.00	3640.00	3670.00	3700.00	3730.00	3760.00
TIME (MSEC)	3790.00	3820.00	3850.00	3880.00	3910.00	3940.00	3970.00	4000.00	4030.00
TIME (MSEC)	4060.00	4090.00	4120.00	4150.00	4180.00	4210.00	4240.00	4270.00	4300.00
TIME (MSEC)	4330.00	4360.00	4390.00	4420.00	4450.00	4480.00	4510.00	4540.00	4570.00
TIME (MSEC)	4600.00	4630.00	4660.00	4690.00	4720.00	4750.00	4780.00	4810.00	4840.00
TIME (MSEC)	4870.00	4900.00	4930.00	4960.00	4990.00	5020.00	5050.00	5080.00	5110.00
TIME (MSEC)	5140.00	5170.00	5200.00	5230.00	5260.00	5290.00	5320.00	5350.00	5380.00
TIME (MSEC)	5410.00	5440.00	5470.00	5500.00	5530.00	5560.00	5590.00	5620.00	5650.00
TIME (MSEC)	5680.00	5710.00	5740.00	5770.00	5800.00	5830.00	5860.00	5890.00	5920.00
TIME (MSEC)	5950.00	5980.00	6010.00	6040.00	6070.00	6100.00	6130.00	6160.00	6190.00
TIME (MSEC)	6220.00	6250.00	6280.00	6310.00	6340.00	6370.00	6400.00	6430.00	6460.00
TIME (MSEC)	6490.00	6520.00	6550.00	6580.00	6610.00	6640.00	6670.00	6700.00	6730.00
TIME (MSEC)	6760.00	6790.00	6820.00	6850.00	6880.00	6910.00	6940.00	6970.00	7000.00
TIME (MSEC)	7030.00	7060.00	7090.00	7120.00	7150.00	7180.00	7210.00	7240.00	7270.00
TIME (MSEC)	7300.00	7330.00	7360.00	7390.00	7420.00	7450.00	7480.00	7510.00	7540.00
TIME (MSEC)	7570.00	7600.00	7630.00	7660.00	7690.00	7720.00	7750.00	7780.00	7810.00
TIME (MSEC)	7840.00	7870.00	7900.00	7930.00	7960.00	7990.00	8020.00	8050.00	8080.00
TIME (MSEC)	8110.00	8140.00	8170.00	8200.00	8230.00	8260.00	8290.00	8320.00	8350.00
TIME (MSEC)	8380.00	8410.00	8440.00	8470.00	8500.00	8530.00	8560.00	8590.00	8620.00
TIME (MSEC)	8650.00	8680.00	8710.00	8740.00	8770.00	8800.00	8830.00	8860.00	8890.00
TIME (MSEC)	8920.00	8950.00	8980.00	9010.00	9040.00	9070.00	9100.00	9130.00	9160.00
TIME (MSEC)	9190.00	9220.00	9250.00	9280.00	9310.00	9340.00	9370.00	9400.00	9430.00
TIME (MSEC)	9460.00	9490.00	9520.00	9550.00	9580.00	9610.00	9640.00	9670.00	9700.00
TIME (MSEC)	9730.00	9760.00	9790.00	9820.00	9850.00	9880.00	9910.00	9940.00	9970.00
TIME (MSEC)	10000.00	10030.00	10060.00	10090.00	10120.00	10150.00	10180.00	10210.00	10240.00
TIME (MSEC)	10270.00	10300.00	10330.00	10360.00	10390.00	10420.00	10450.00	10480.00	10510.00
TIME (MSEC)	10540.00	10570.00	10600.00	10630.00	10660.00	10690.00	10720.00	10750.00	10780.00
TIME (MSEC)	10810.00	10840.00	10870.00	10900.00	10930.00	10960.00	10990.00	11020.00	11050.00
TIME (MSEC)	11080.00	11110.00	11140.00	11170.00	11200.00	11230.00	11260.00	11290.00	11320.00
TIME (MSEC)	11350.00	11380.00	11410.00	11440.00	11470.00	11500.00	11530.00	11560.00	11590.00
TIME (MSEC)	11620.00	11650.00	11680.00	11710.00	11740.00	11770.00	11800.00	11830.00	11860.00
TIME (MSEC)	11890.00	11920.00	11950.00	11980.00	12010.00	12040.00	12070.00	12100.00	12130.00
TIME (MSEC)	12160.00	12190.00	12220.00	12250.00	12280.00	12310.00	12340.00	12370.00	12400.00
TIME (MSEC)	12430.00	12460.00	12490.00	12520.00	12550.00	12580.00	12610.00	12640.00	12670.00
TIME (MSEC)	12700.00	12730.00	12760.00	12790.00	12820.00	12850.00	12880.00	12910.00	12940.00
TIME (MSEC)	12970.00	13000.00	13030.00	13060.00	13090.00	13120.00	13150.00	13180.00	13210.00
TIME (MSEC)	13240.00	13270.00	13300.00	13330.00	13360.00	13390.00	13420.00	13450.00	13480.00
TIME (MSEC)	13510.00	13540.00	13570.00	13600.00	13630.00	13660.00	13690.00	13720.00	13750.00
TIME (MSEC)	13780.00	13810.00	13840.00	13870.00	13900.00	13930.00	13960.00	13990.00	14020.00
TIME (MSEC)	14050.00	14080.00	14110.00	14140.00	14170.00	14200.00	14230.00	14260.00	14290.00
TIME (MSEC)	14320.00	14350.00	14380.00	14410.00	14440.00	14470.00	14500.00	14530.00	14560.00
TIME (MSEC)	14590.00	14620.00	14650.00	14680.00	14710.00	14740.00	14770.00	14800.00	14830.00
TIME (MSEC)	14860.00	14890.00	14920.00	14950.00	14980.00	15010.00	15040.00	15070.00	15100.00
TIME (MSEC)	15130.00	15160.00	15190.00	15220.00	15250.00	15280.00	15310.00	15340.00	15370.00
TIME (MSEC)	15400.00	15430.00	15460.00	15490.00	15520.00	15550.00	15580.00	15610.00	15640.00
TIME (MSEC)	15670.00	15700.00	15730.00	15760.00	15790.00	15820.00	15850.00	15880.00	15910.00
TIME (MSEC)	15940.00	15970.00	16000.00	16030.00	16060.00	16090.00	16120.00	16150.00	16180.00
TIME (MSEC)	16210.00	16240.00	16270.00	16300.00	16330.00	16360.00	16390.00	16420.00	16450.00
TIME (MSEC)	16480.00	16510.00	16540.00	16570.00	16600.00	16630.00	16660.00	16690.00	16720.00
TIME (MSEC)	16750.00	16780.00	16810.00	16840.00	16870.00	16900.00	16930.00	16960.00	16990.00
TIME (MSEC)	17020.00	17050.00	17080.00	17110.00	17140.00	17170.00	17200.00	17230.00	17260.00
TIME (MSEC)	17290.00	17320.00	17350.00	17380.00	17410.00	17440.00	17470.00	17500.00	17530.00
TIME (MSEC)	17560.00	17590.00	17620.00	17650.00	17680.00	17710.00	17740.00	17770.00	17800.00
TIME (MSEC)	17830.00	17860.00	17890.00	17920.00	17950.00	17980.00	18010.00	18040.00	18070.00
TIME (MSEC)	18100.00	18130.00	18160.00	18190.00	18220.00	18250.00	18280.00	18310.00	18340.00
TIME (MSEC)	18370.00	18400.00	18430.00	18460.00	18490.00	18520.00	18550.00	18580.00	18610.00
TIME (MSEC)	18640.00	18670.00	18700.00	18730.00	18760.00	18790.00	18820.00	18850.00	18880.00
TIME (MSEC)	18910.00	18940.00	18970.00	19000.00	19030.00	19060.00	19090.00	19120.00	19150.00
TIME (MSEC)	19180.00	19210.00	19240.00	19270.00	19300.00	19330.00	19360.00	19390.00	19420.00
TIME (MSEC)	19450.00	19480.00	19510.00	19540.00	19570.00	19600.00	19630.00	19660.00	19690.00
TIME (MSEC)	19720.00	19750.00	19780.00	19810.00	19840.00	19870.00	19900.00	19930.00	19960.00
TIME (MSEC)	19990.00	20020.00	20050.00	20080.00	20110.00	20140.00	20170.00	20200.00	20230.00
TIME (MSEC)	20260.00	20290.00	20320.00	20350.00	20380.00	20410.00	20440.00	20470.00	20500.00
TIME (MSEC)	20530.00	20560.00	20590.00	20620.00	20650.00	20680.00	20710.00	20740.00	20770.00
TIME (MSEC)	20800.00	20830.00	20860.00	20890.00	20920.00	20950.00	20980.00	21010.00	21040.00
TIME (MSEC)	21070.00	21100.00	21130.00	21160.00	21190.00	21220.00	21250.00	21280.00	21310.00
TIME (MSEC)	21340.00	21370.00	21400.00	21430.00	21460.00	21490.00	21520.00	21550.00	21580.00
TIME (MSEC)	21610.00	21640.00	21670.00	21700.00	21730.00	21760.00	21790.00	21820.00	21850.00
TIME (MSEC)	21880.00	21910.00	21940.00	21970.00	22000.00	22030.00	22060.00	22090.00	22120.00
TIME (MSEC)	22150.00	22180.00	22210.00	22240.00	22270.00	22300.00	22330.00	22360.00	22390.00
TIME (MSEC)	22420.00	22450.00	22480.00	22510.00	22540.00	22570.00	22600.00	22630.00	22660.00
TIME (MSEC)	22690.00	22720.00	22750.00	22780.00	22810.00	22840.00	22870.00	22900.00	22930.00
TIME (MSEC)	22960.00	22990.00	23020.00	23050.00	23080.00	23110.00	23140.00	23170.00	23200.00
TIME (MSEC)	23230.00	23260.00	23290.00	23320.00	23350.00	23380.00	23410.00	23440.00	23470.00
TIME (MSEC)	23500.00	23530.00	23560.00	23590.00	23620.00	23650.00	23680.00	23710.00	23740.00
TIME (MSEC)	23770.00	23800.00	23830.00	23860.00	23890.00	23920.00	23950.00	23980.00	24010.00
TIME (MSEC)	24040.00	24070.00	24100.00	24130.00	24160.00	24190.00	24220.00	24250.00	24280.00
TIME (MSEC)	24310.00	24340.00	24370.00	24400.00	24430.00	24460.00	24490.00	24520.00	24550.00
TIME (MSEC)	24580.00	24610.00	24640.00	24670.00	24700.00	24730.00	24760.00	24790.00	24820.00
TIME (MSEC)	24850.00	24880.00	24910.00	24940.00	24970.00	25000.00	25030.00	25060.00	25090.00
TIME (MSEC)	25120.00	25150.00	25180.00	25210.00					

TRC , 920324
 NEW CAR ASSESSMENT PROGRAM
 92034
 881F

FILTER = BLFF 100/ 250/ -16
 MIN. MAX VALUES = -683.33e 56.50 , 222.19 e 47.00



TRC 920324

NEW CAR ASSESSMENT PROGRAM

92084

BB2F

FILTER = BLPP 100/ 250/ -16

MIN, MAX VALUES = -6435.208

19.88,

63.12

0.75

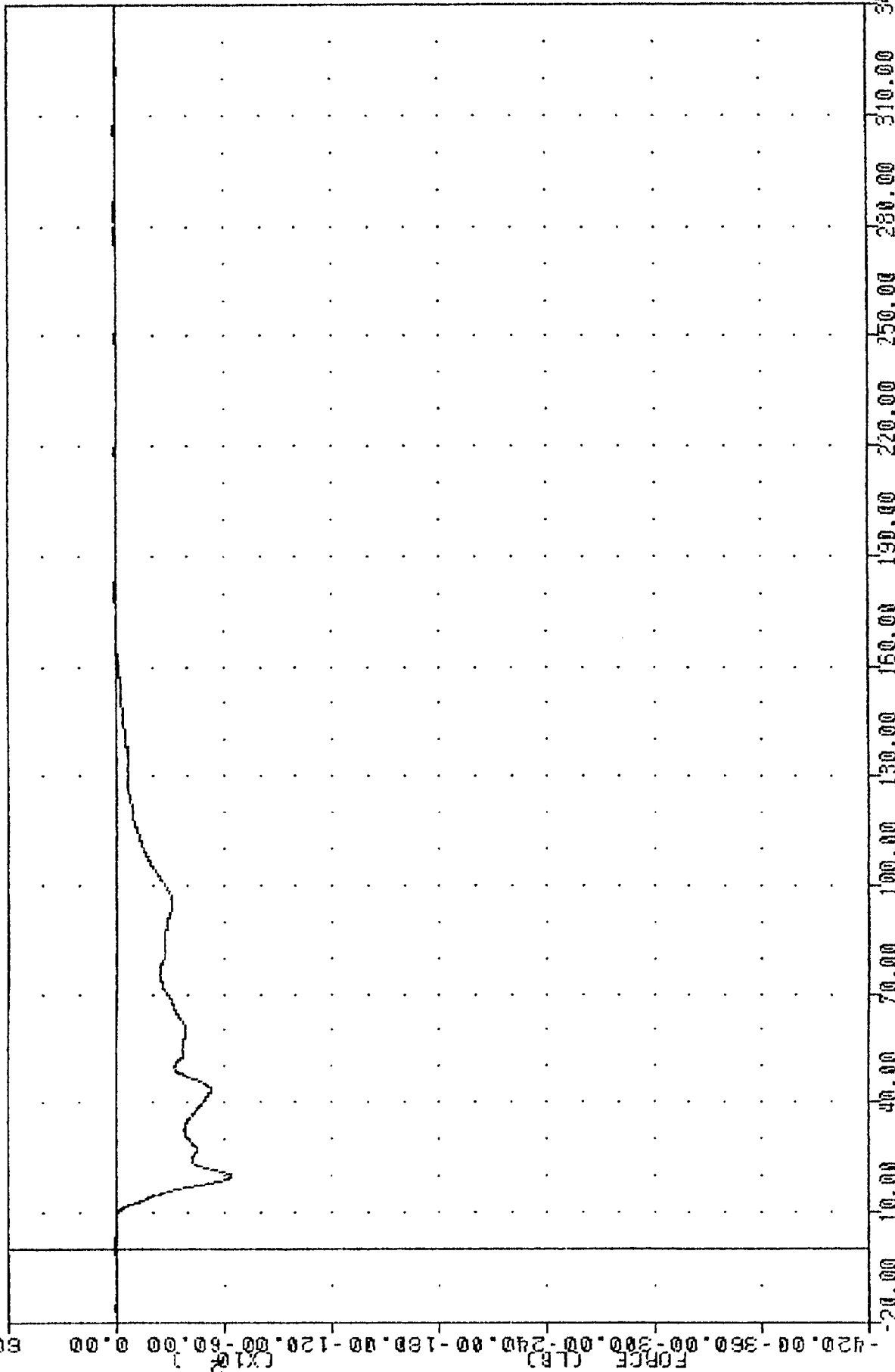
50.00

0.00

100.00

B-71

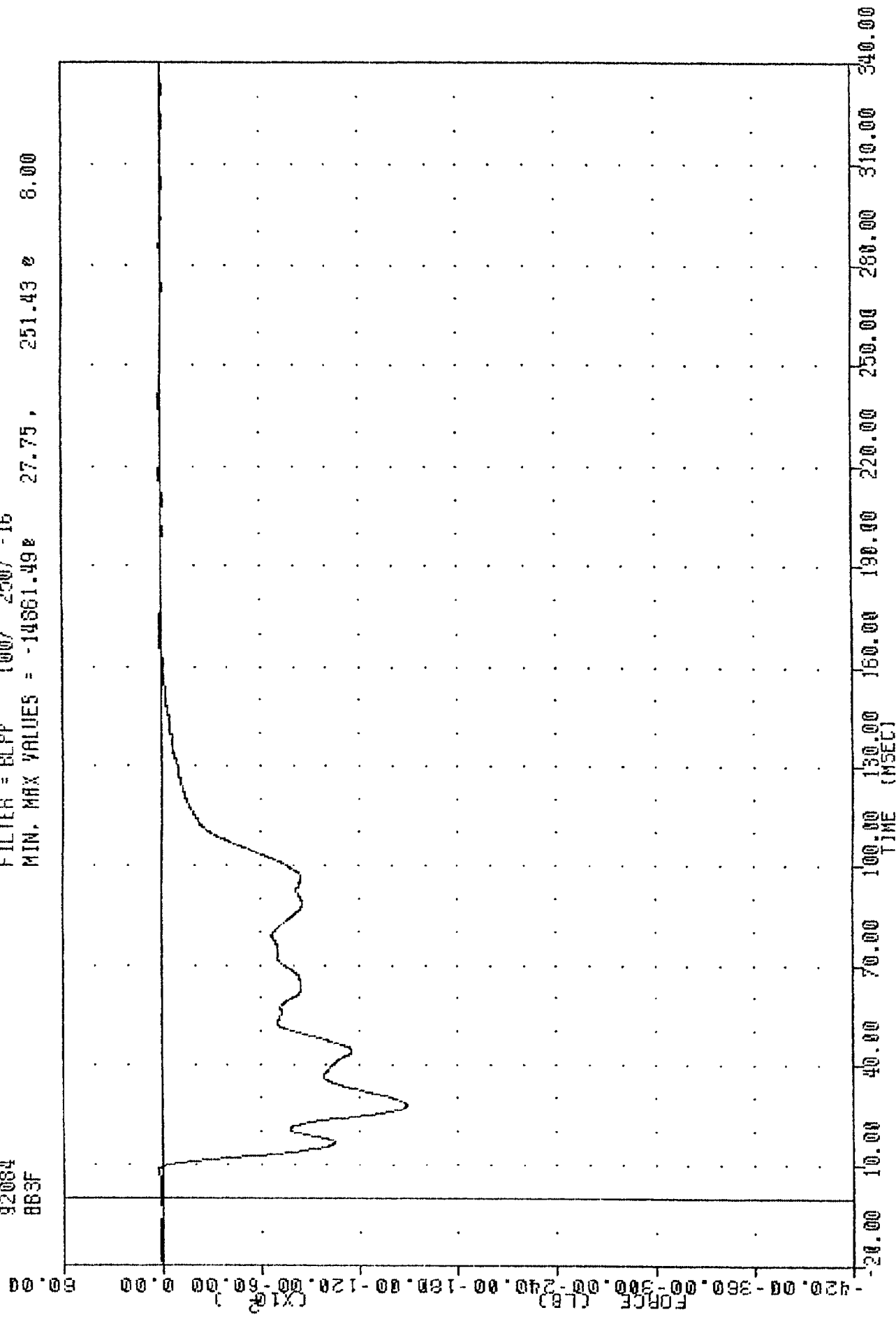
920324



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION B2 FORCE

TRC , 920324
 NEW CAR ASSESSMENT PROGRAM
 92084
 BB3F

FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -14861.49 27.75, 251.43 0 6.00



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION B3 FORCE

TRC 920324

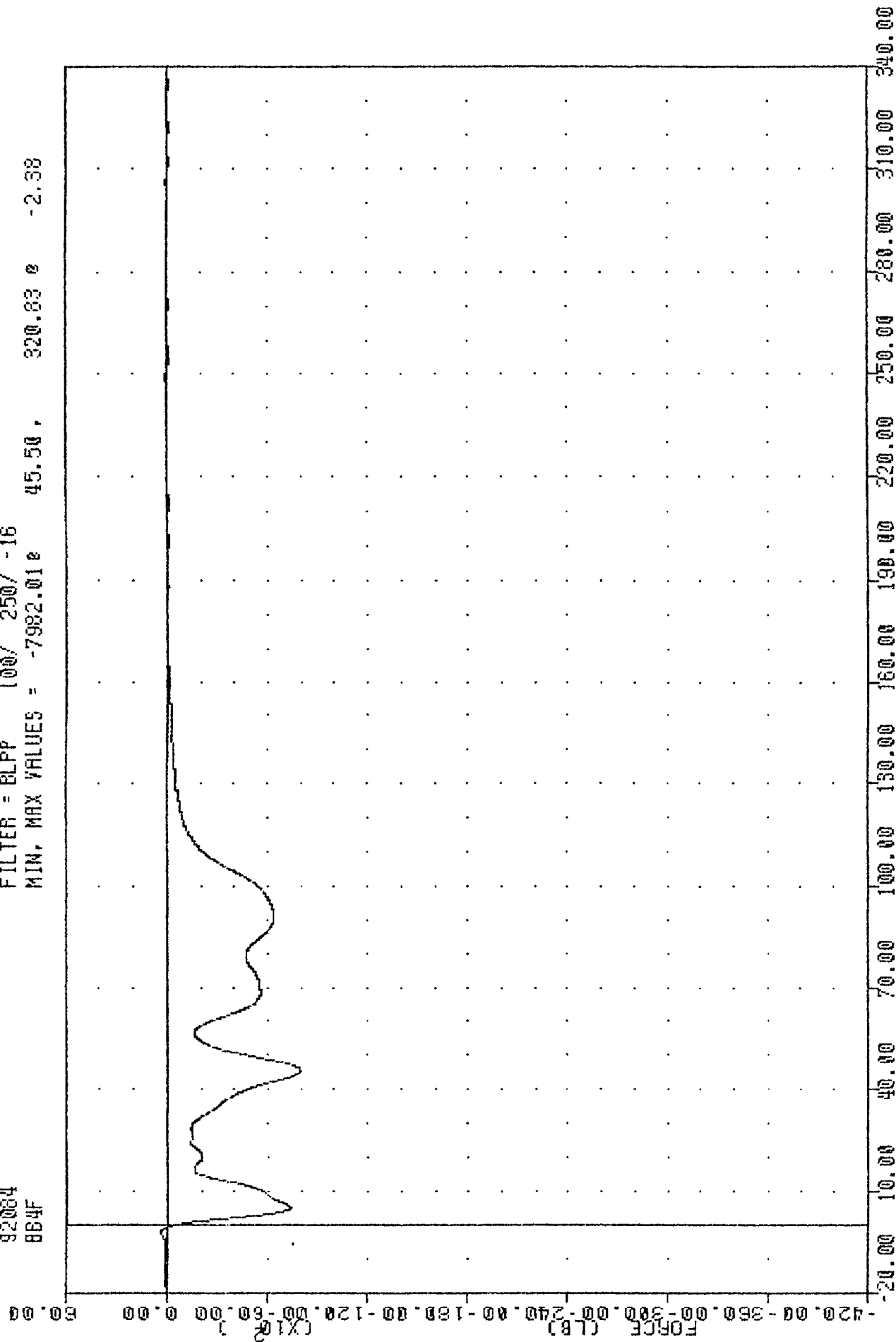
NEW CAR ASSESSMENT PROGRAM

92084

BB4F

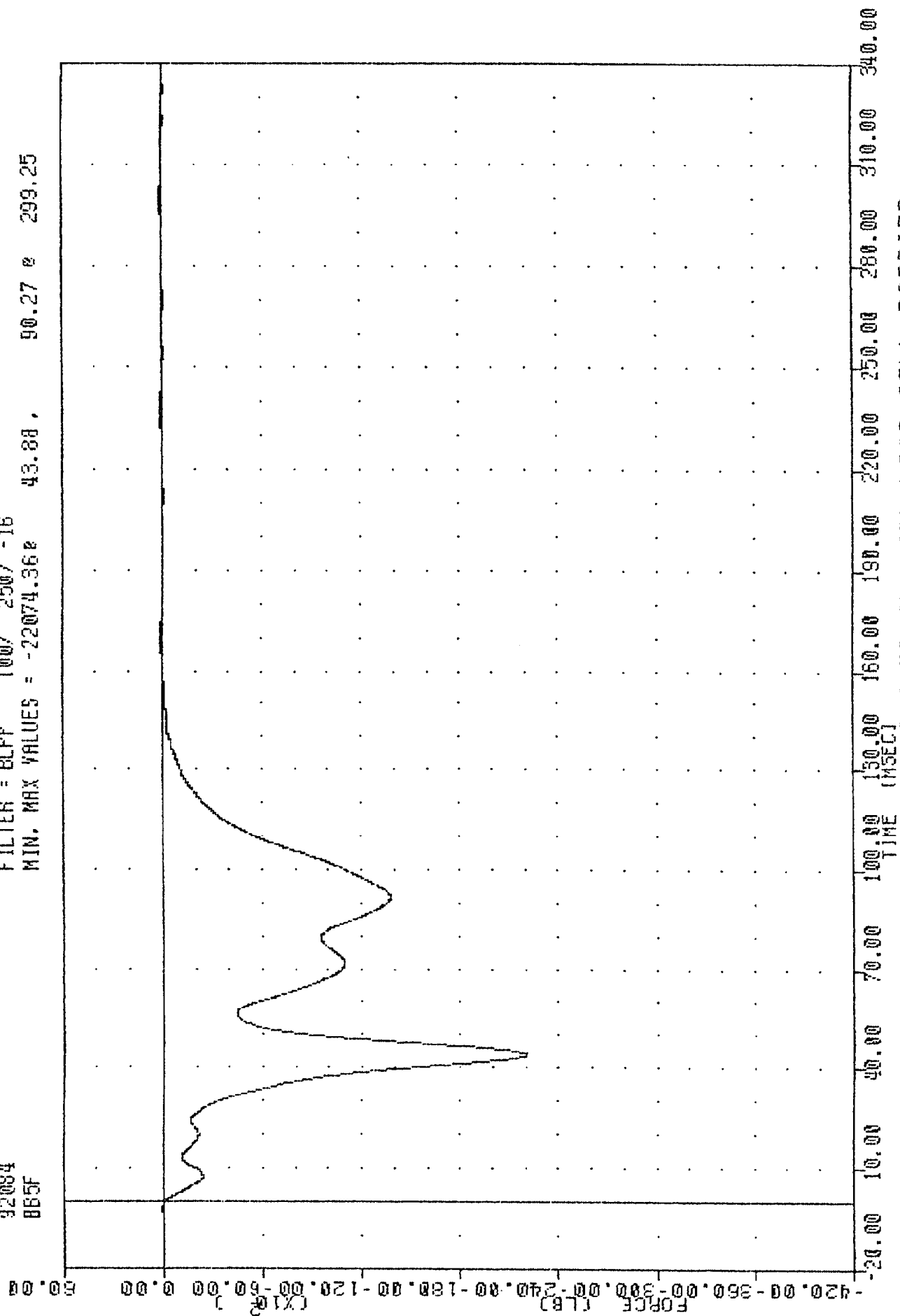
FILTER = BLPP 100/ 250/ -16

MIN, MAX VALUES = -7982.01e 45.50, 320.83 e -2.38



TRC , 920324
 NEW CAR ASSESSMENT PROGRAM
 92084
 BB5F

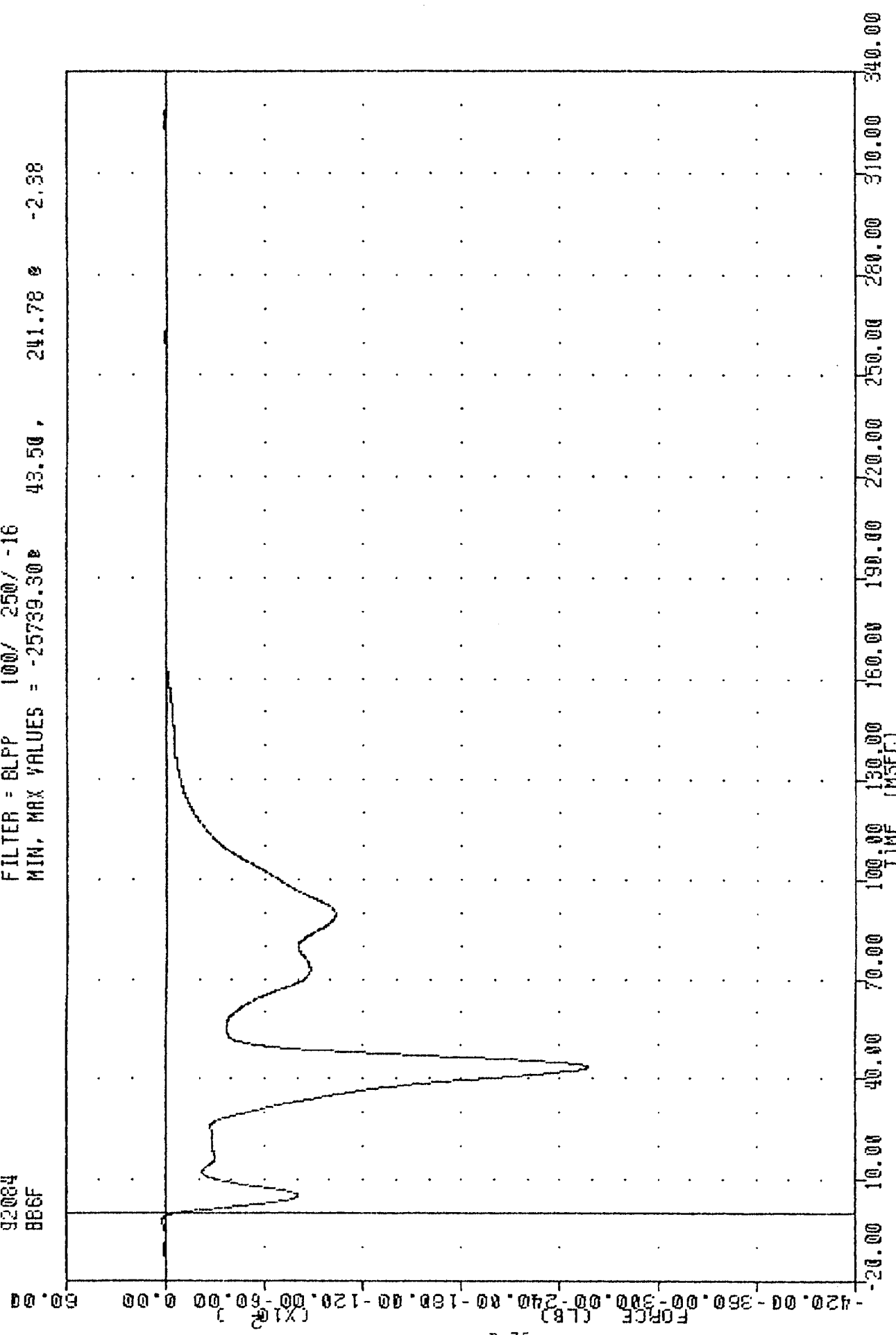
FILTER = BLPF 100/ 250/ -16
 MIN. MAX VALUES = -22074.360 43.88 , 90.27 299.25



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION 85 FORCE

TRC 920324
 NEW CAR ASSESSMENT PROGRAM
 92084
 BB6F

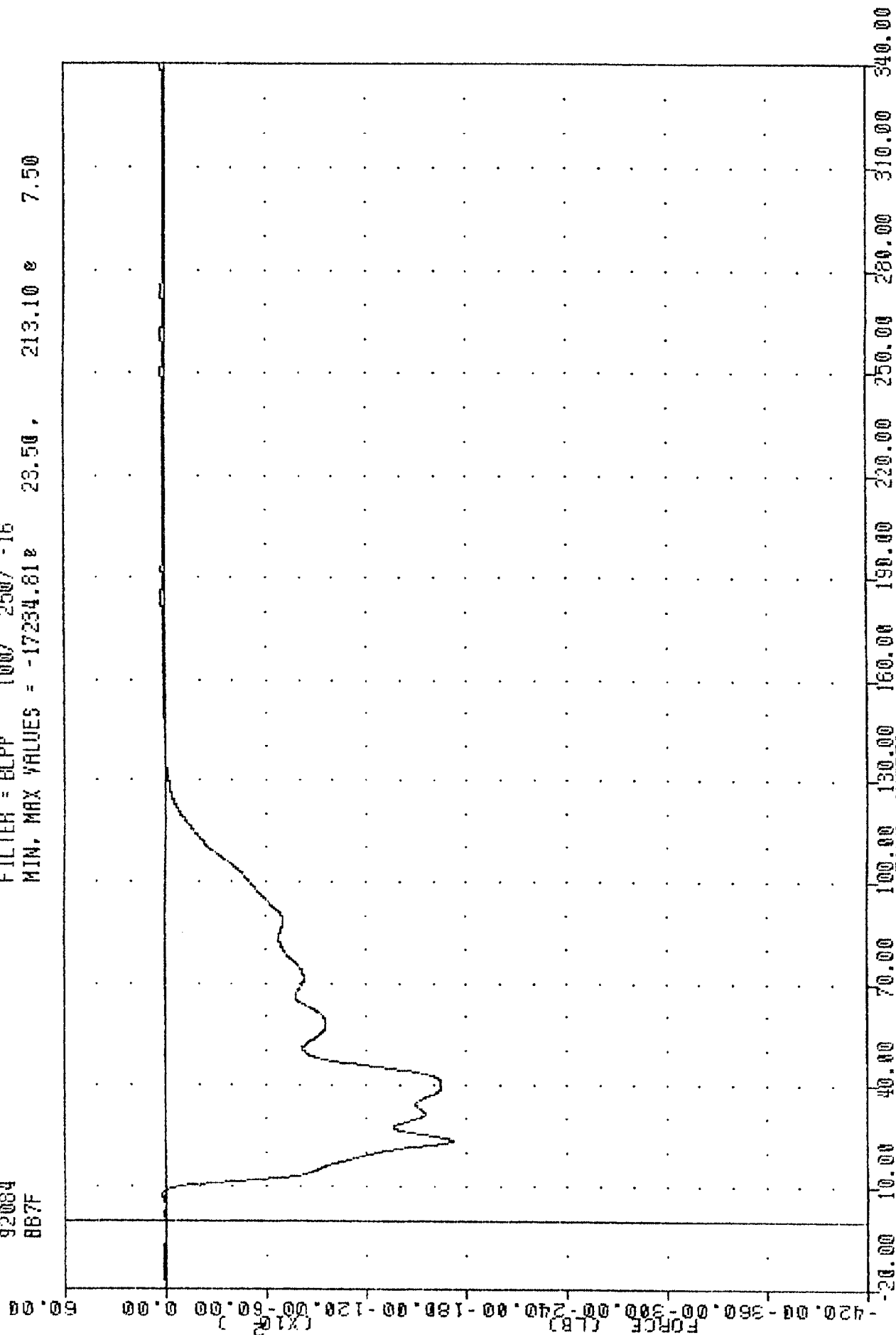
FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -25739.30e 43.50, 241.78 e -2.38



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION 86 FORCE

TRC , 920324
 NEW CAR ASSESSMENT PROGRAM
 92084
 BB7F

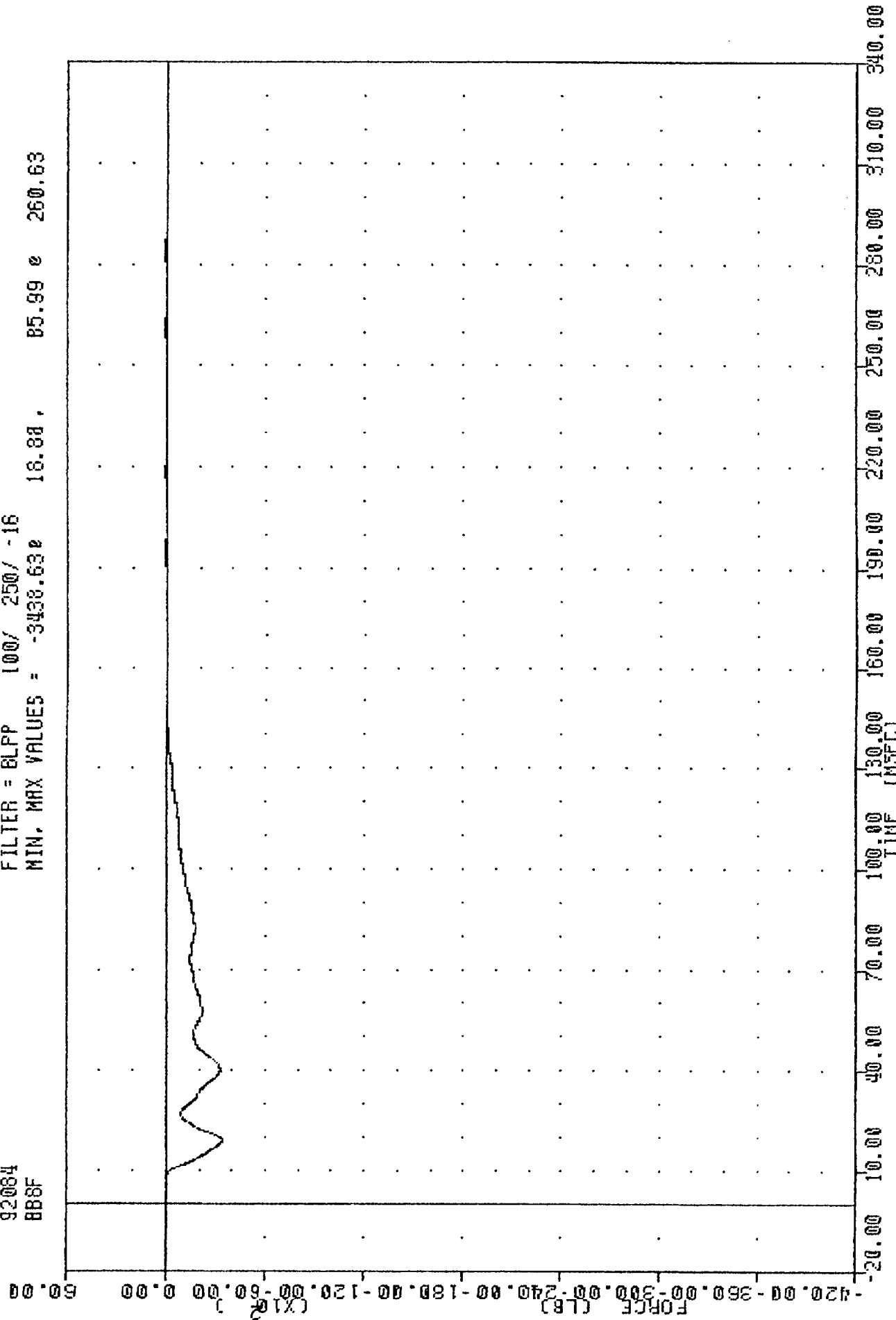
FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -17234.61e 23.50, 213.10 e 7.50



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION B7 FORCE

1RC
 NEW CAR ASSESSMENT PROGRAM
 920324
 BB8F

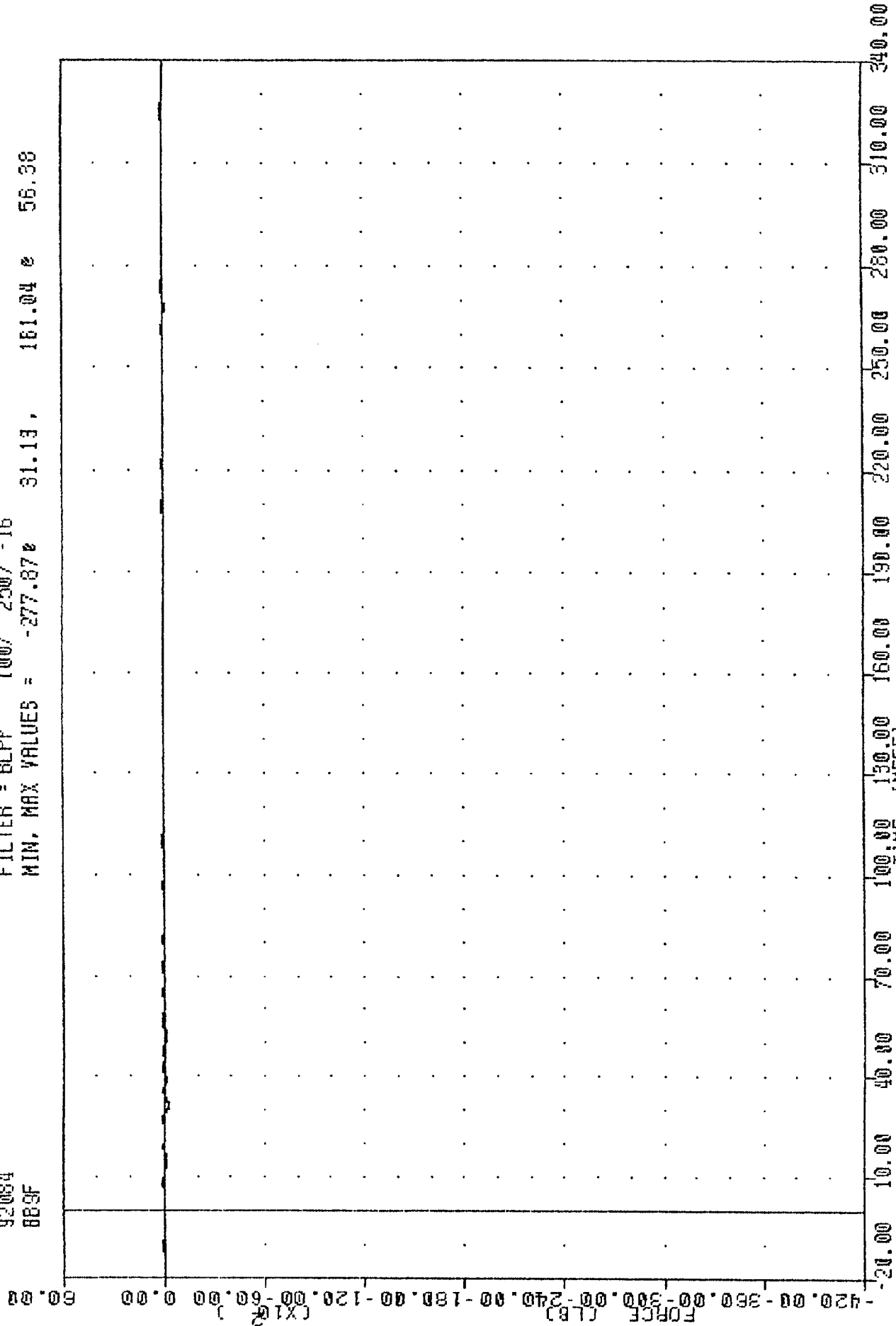
FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -3430.630 18.80, 85.99 0 260.63



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION B8 FORCE

TRC , 920324
 NEW CAR ASSESSMENT PROGRAM
 92034
 883F

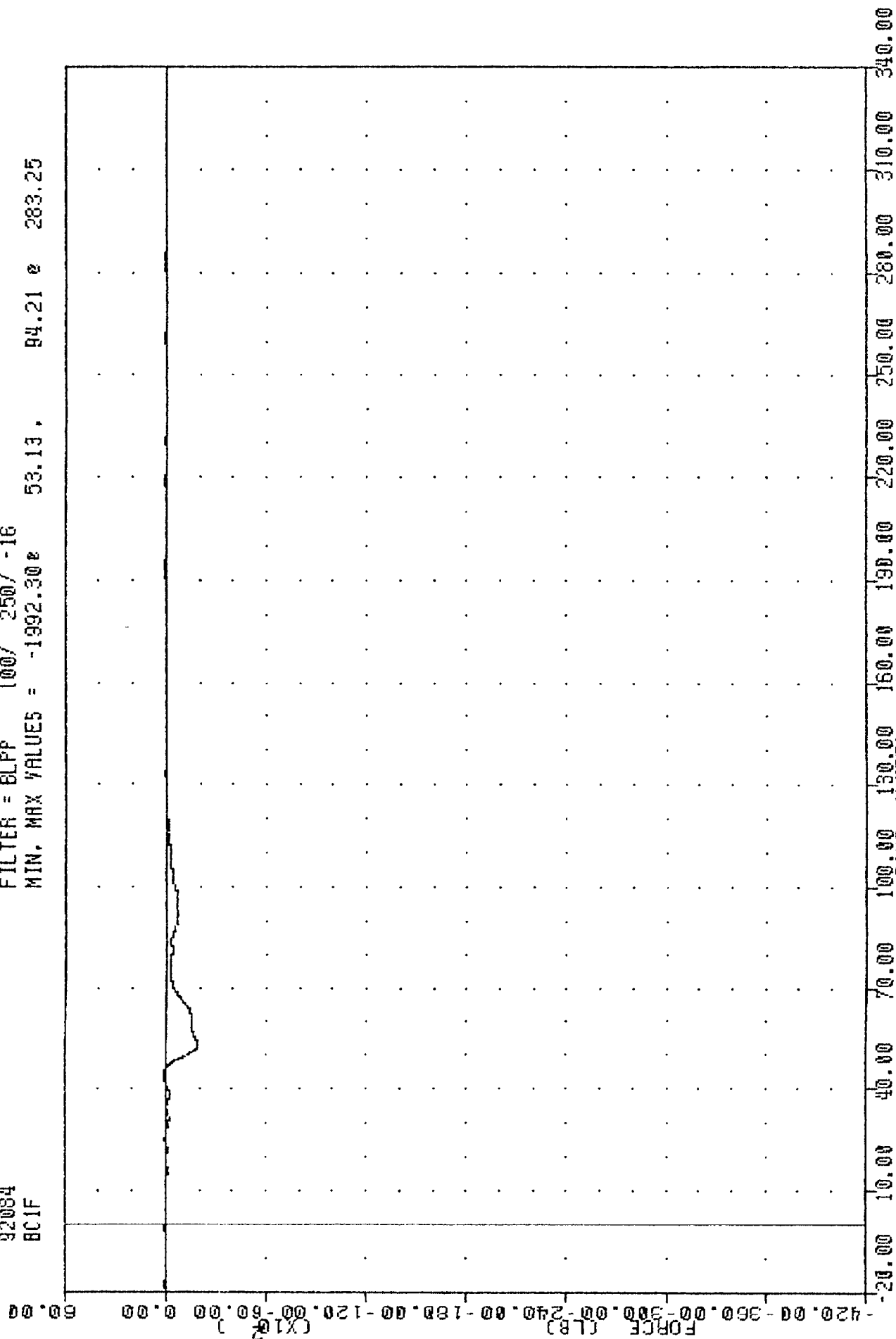
FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -277.87 31.13, 161.04 56.38



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION B9 FORCE

IRC 920324
 NEW CAR ASSESSMENT PROGRAM
 92034
 BCIF

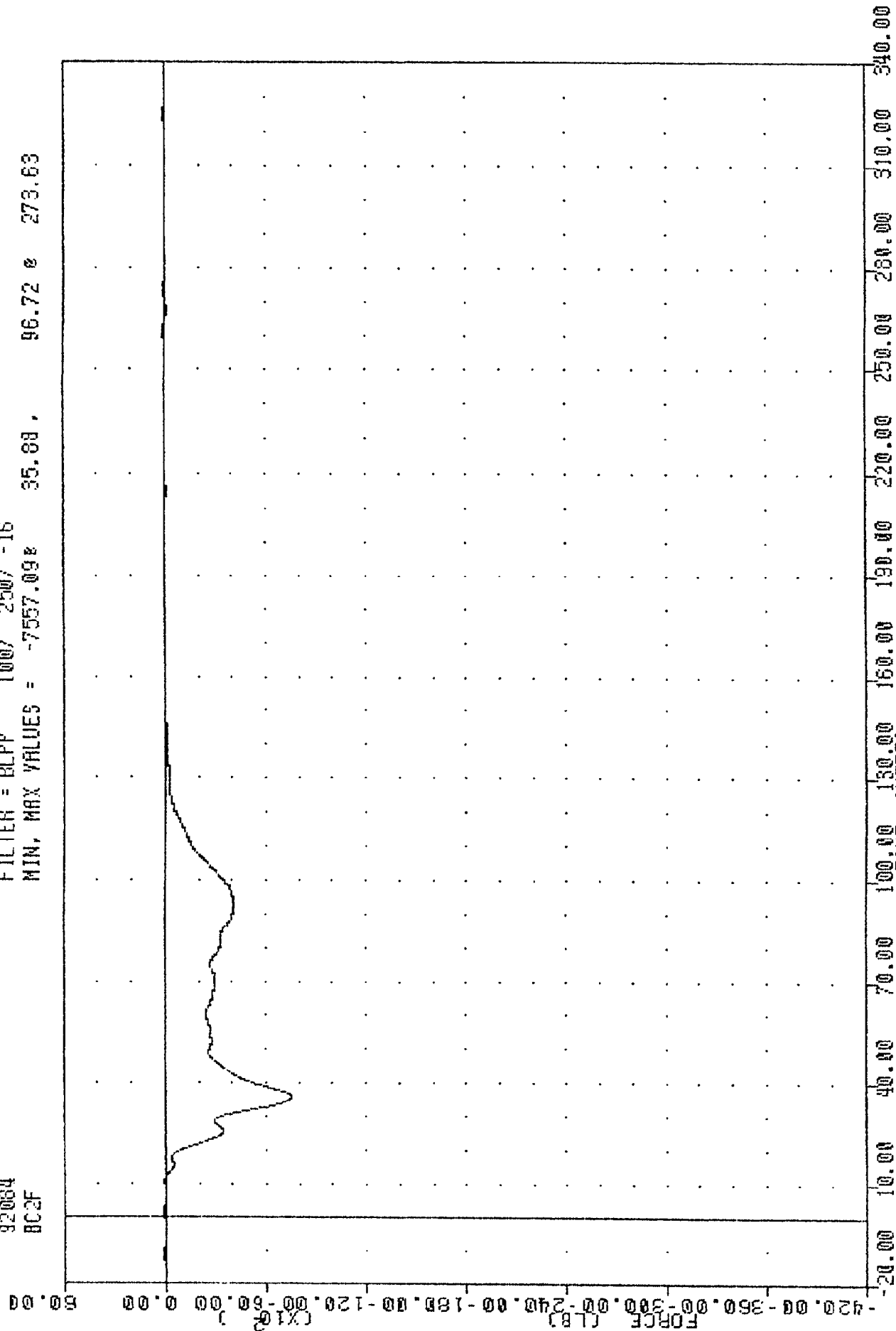
FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -1992.30 53.13 94.21 283.25



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION C1 FORCE

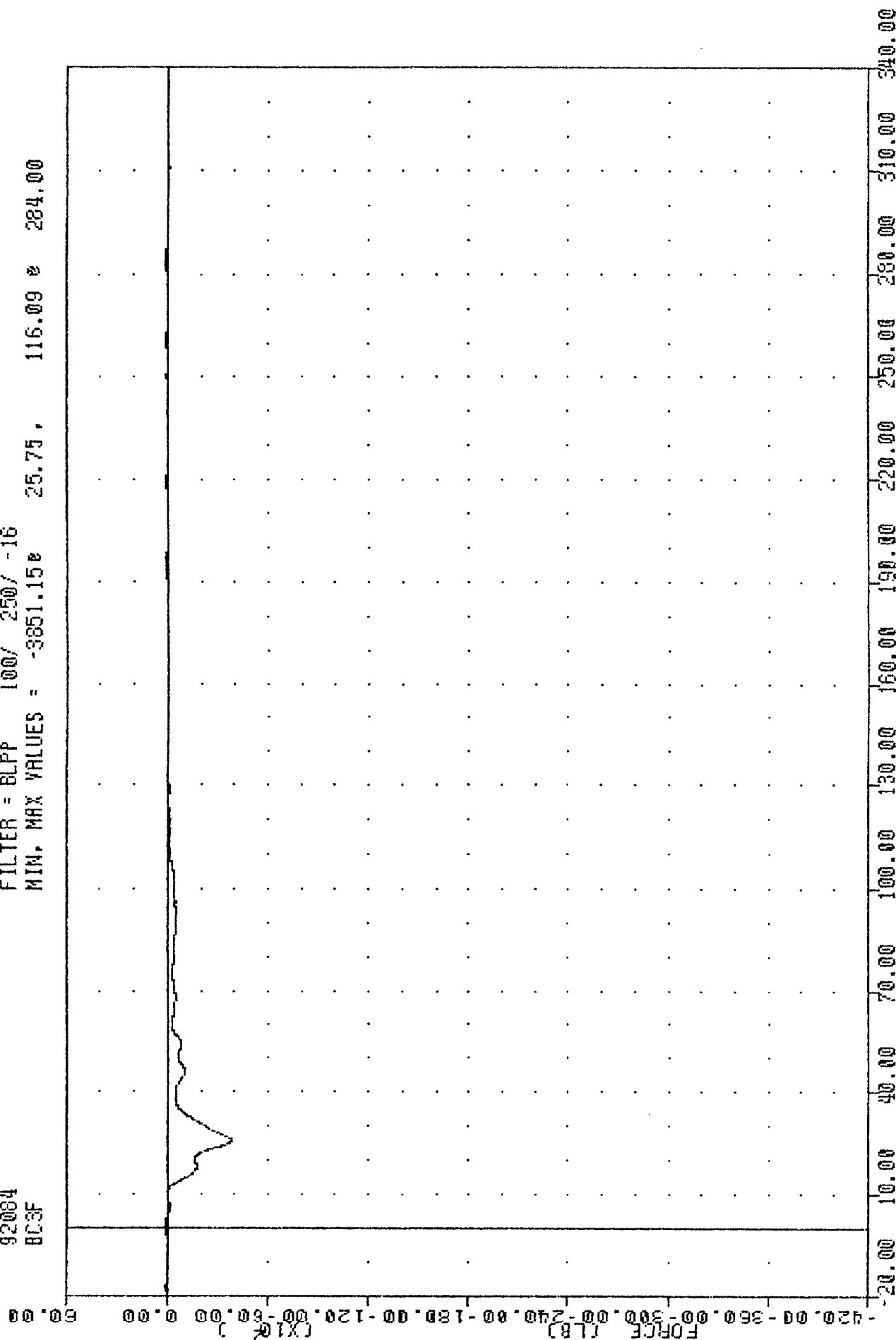
TRC , 920324
 NEW CAR ASSESSMENT PROGRAM
 92034
 BC2F

FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -7557.09% 35.88, 96.72 @ 273.63



TRC 920324
 NEW CAR ASSESSMENT PROGRAM
 92084
 BC3F

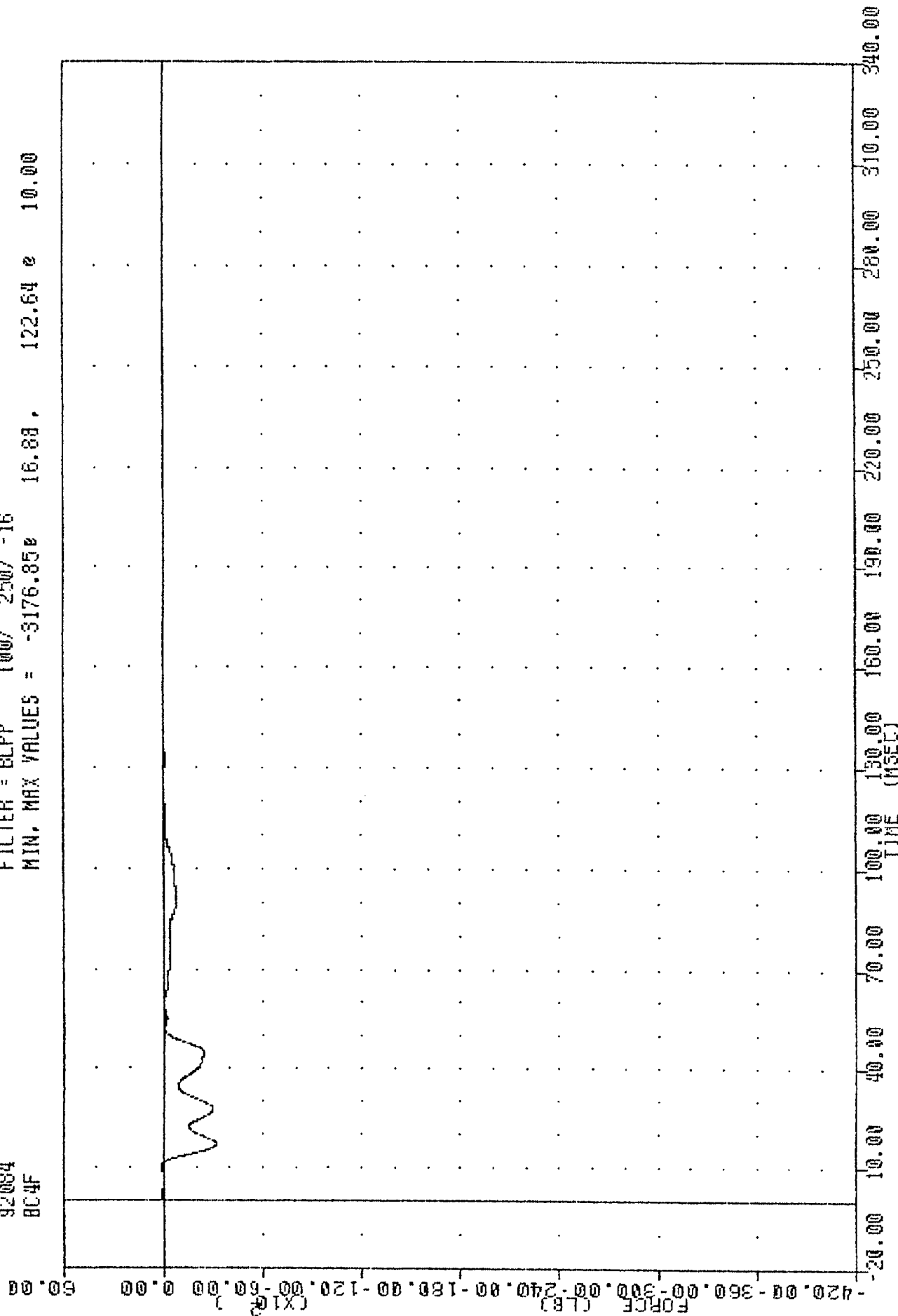
FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -3851.15 25.75, 116.09 284.00



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION C3 FORCE

TRC 920324
 NEW CAR ASSESSMENT PROGRAM
 92034
 BC4F

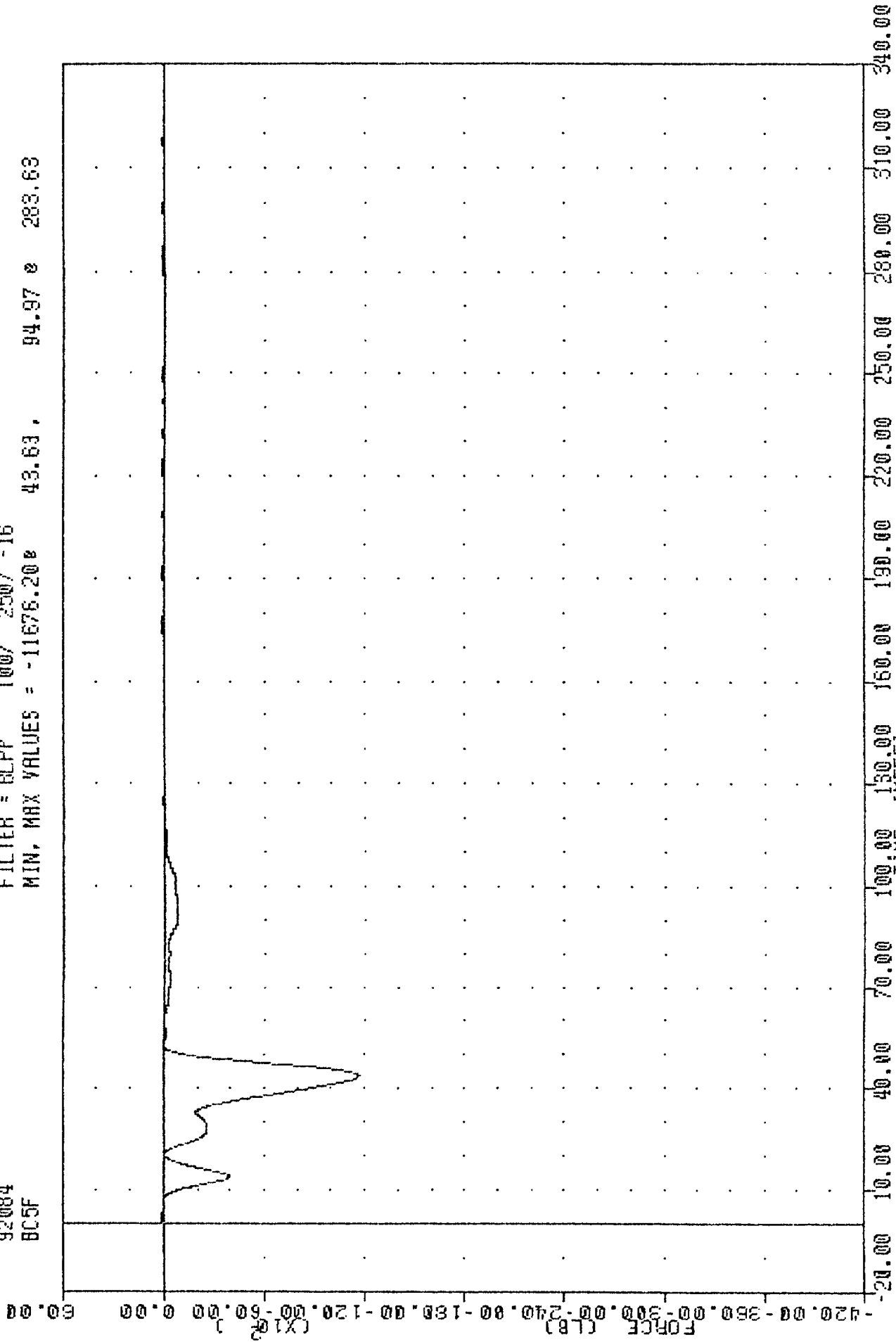
FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -3176.85 122.64 10.00



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION C4 FORCE

IRC
 NEW CAR ASSESSMENT PROGRAM
 92084
 BC5F

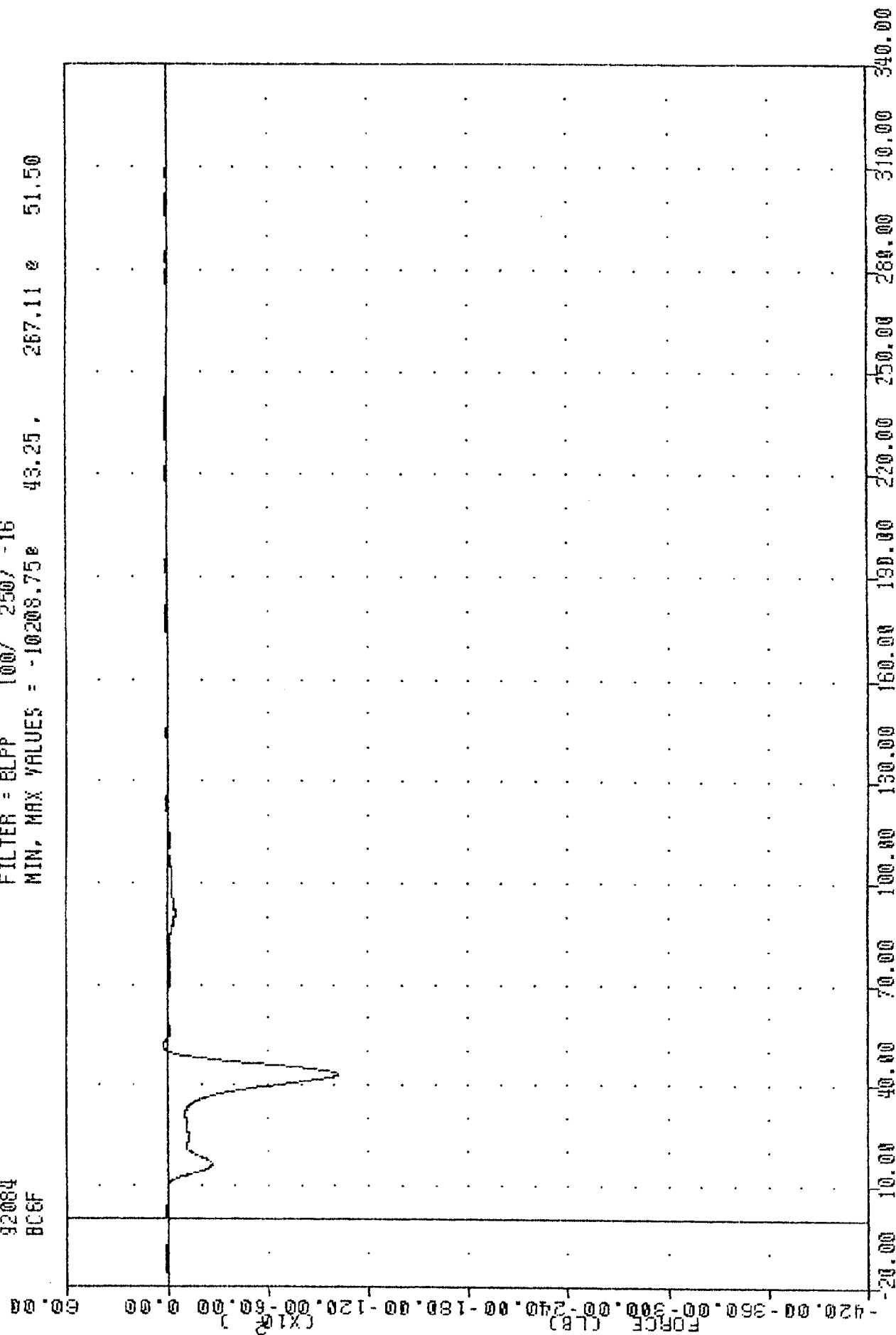
FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -11676.200 43.63, 94.97 @ 283.63



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION C5 FORCE

TRC , 920324
 NEW CAR ASSESSMENT PROGRAM
 92084
 BC6F

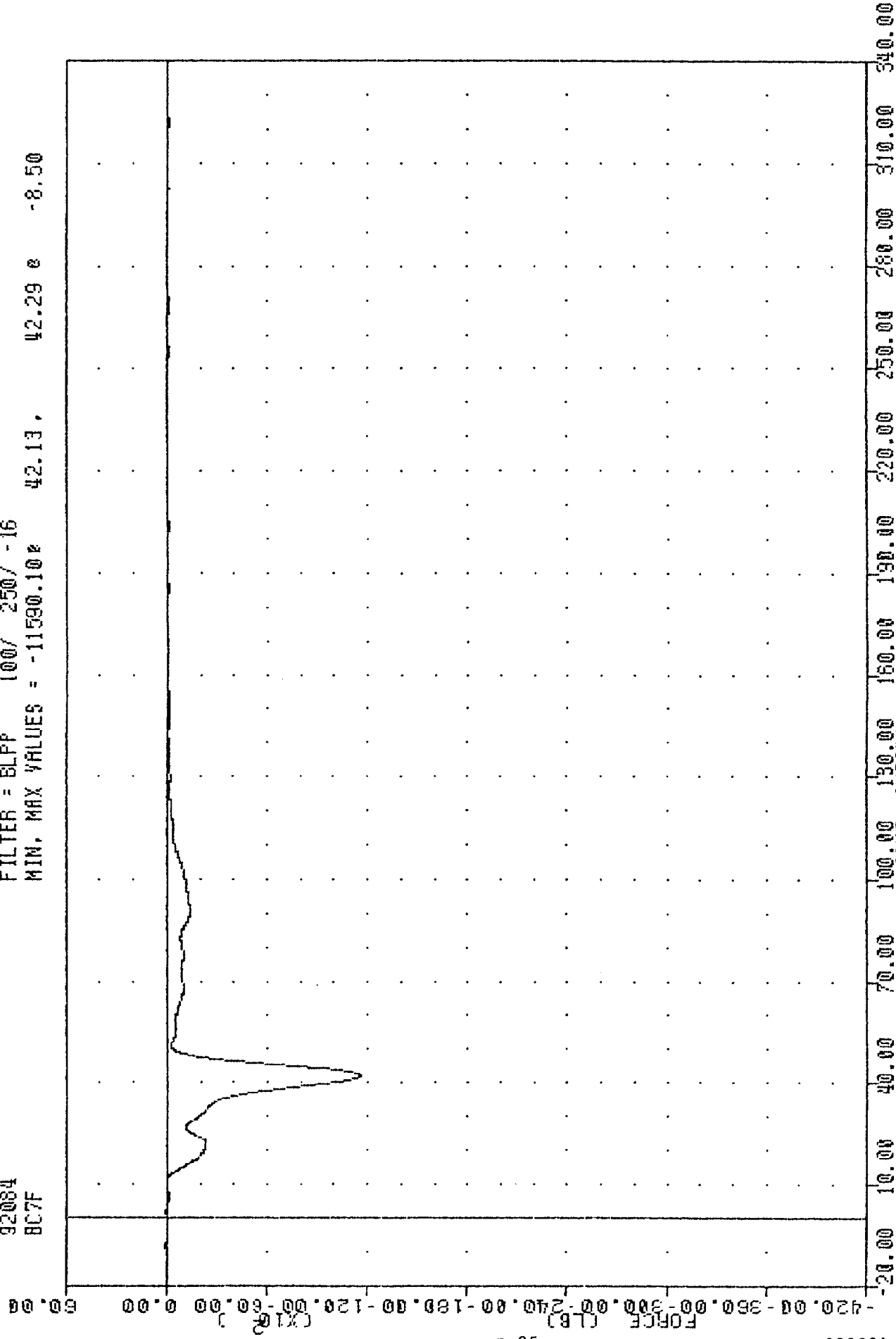
FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -10208.75 43.25, 267.11 51.50



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION 06 FORCE

IRC
 NEW CAR ASSESSMENT PROGRAM
 920324
 BC7F

FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -11590.10 42.13 42.29 e -8.50



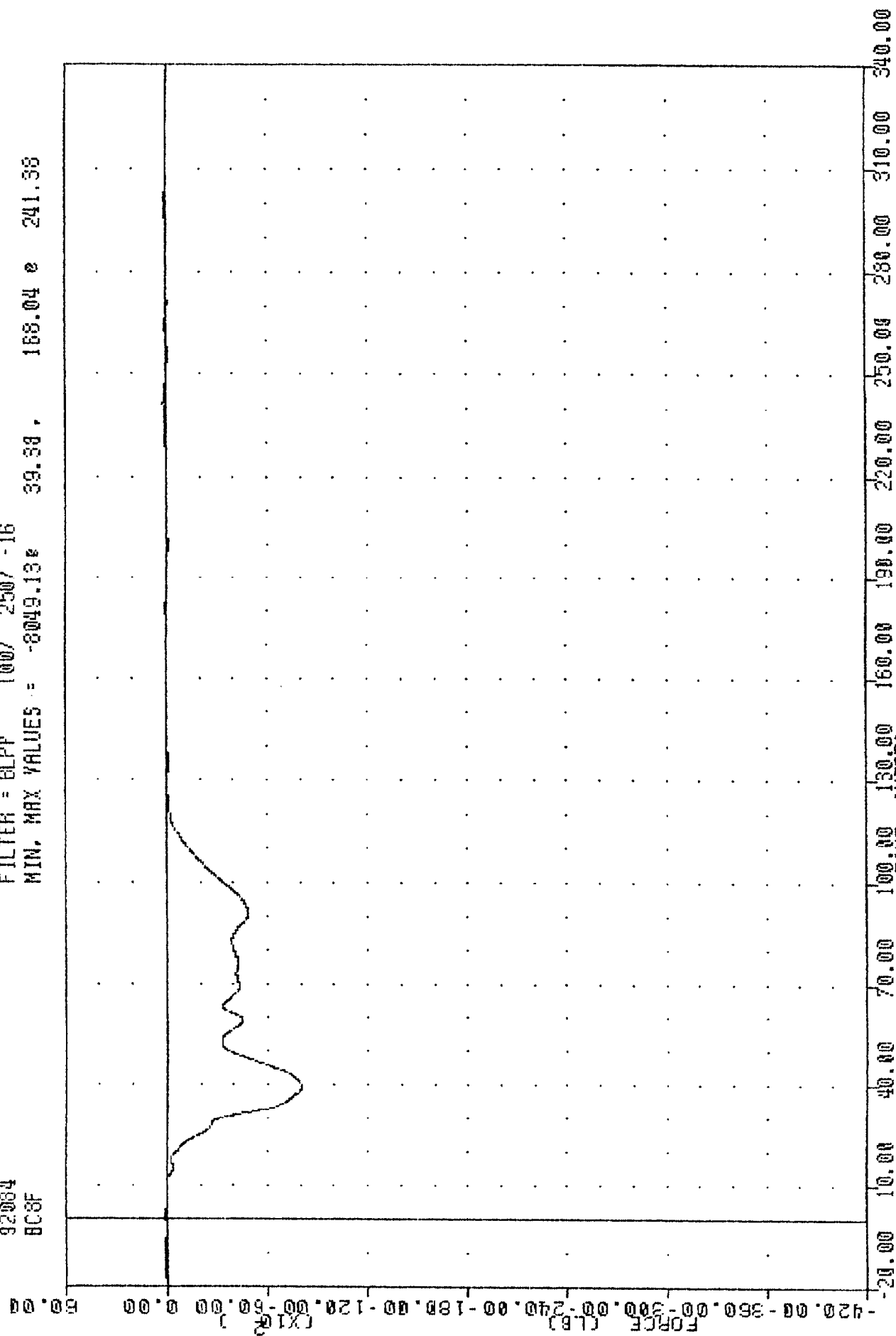
1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION C7 FORCE

TRC
NEW CAR ASSESSMENT PROGRAM
92084
BC8F

, 920324

FILTER = BLPP 100/ 250/ -16

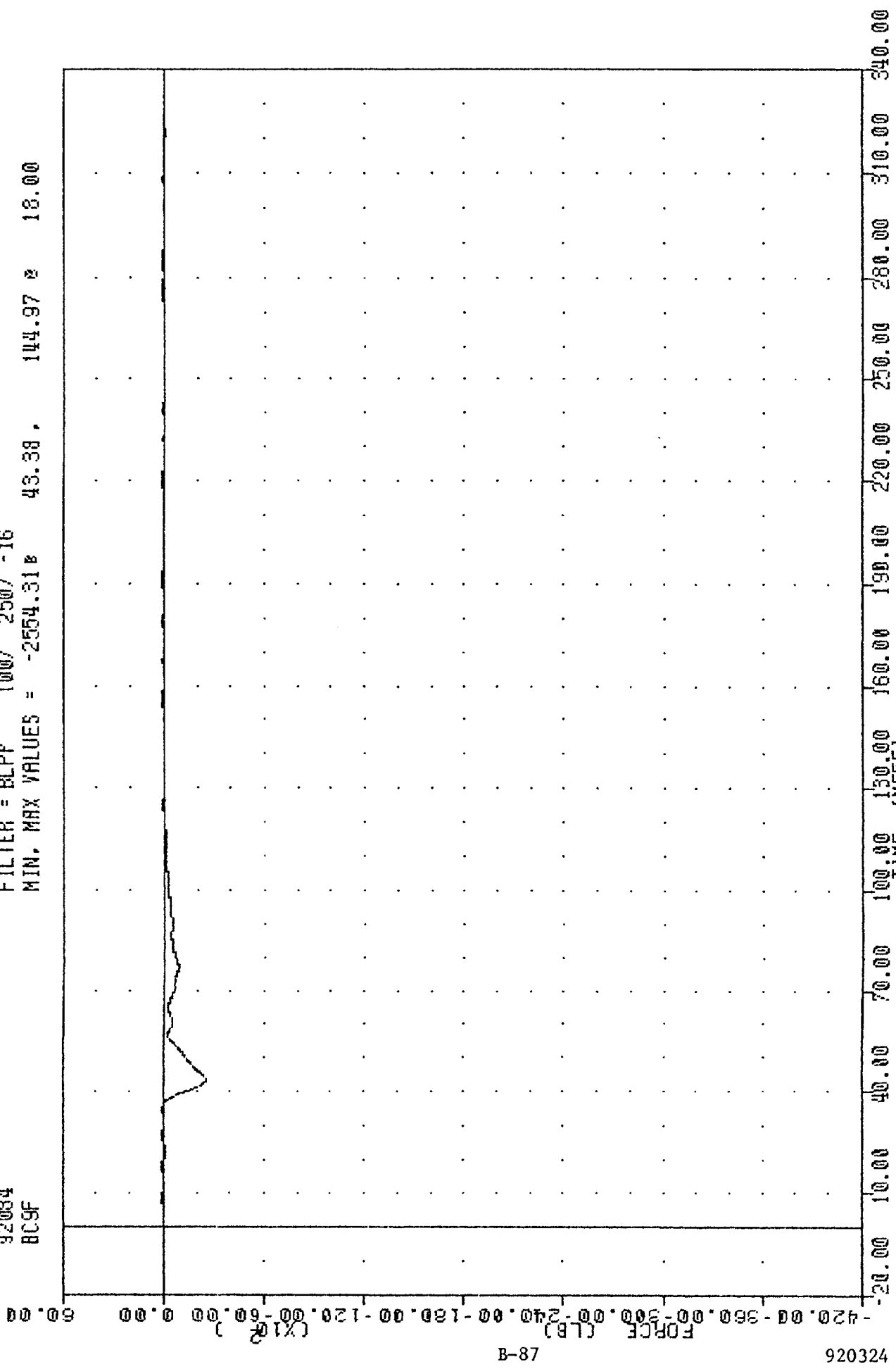
MIN. MAX VALUES = -8049.13e 39.38 , 158.04 e 241.38



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION C8 FORCE

920324
 NEW CAR ASSESSMENT PROGRAM
 92034
 BC9F

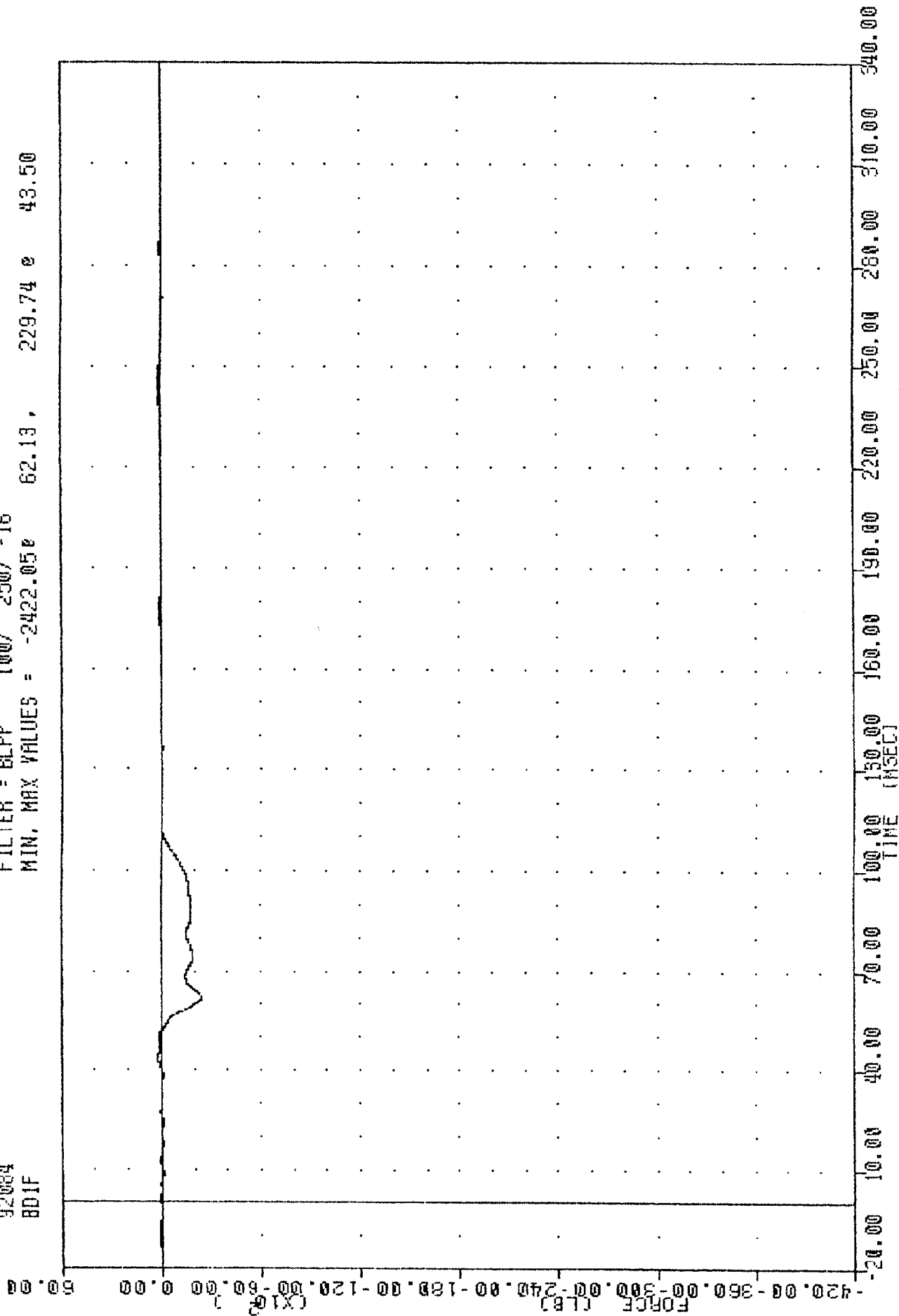
FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -2554.31 43.38 144.97 18.00



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION C9 FORCE

TRC 920324
 NEW CRA ASSESSMENT PROGRAM
 920324
 BDI F

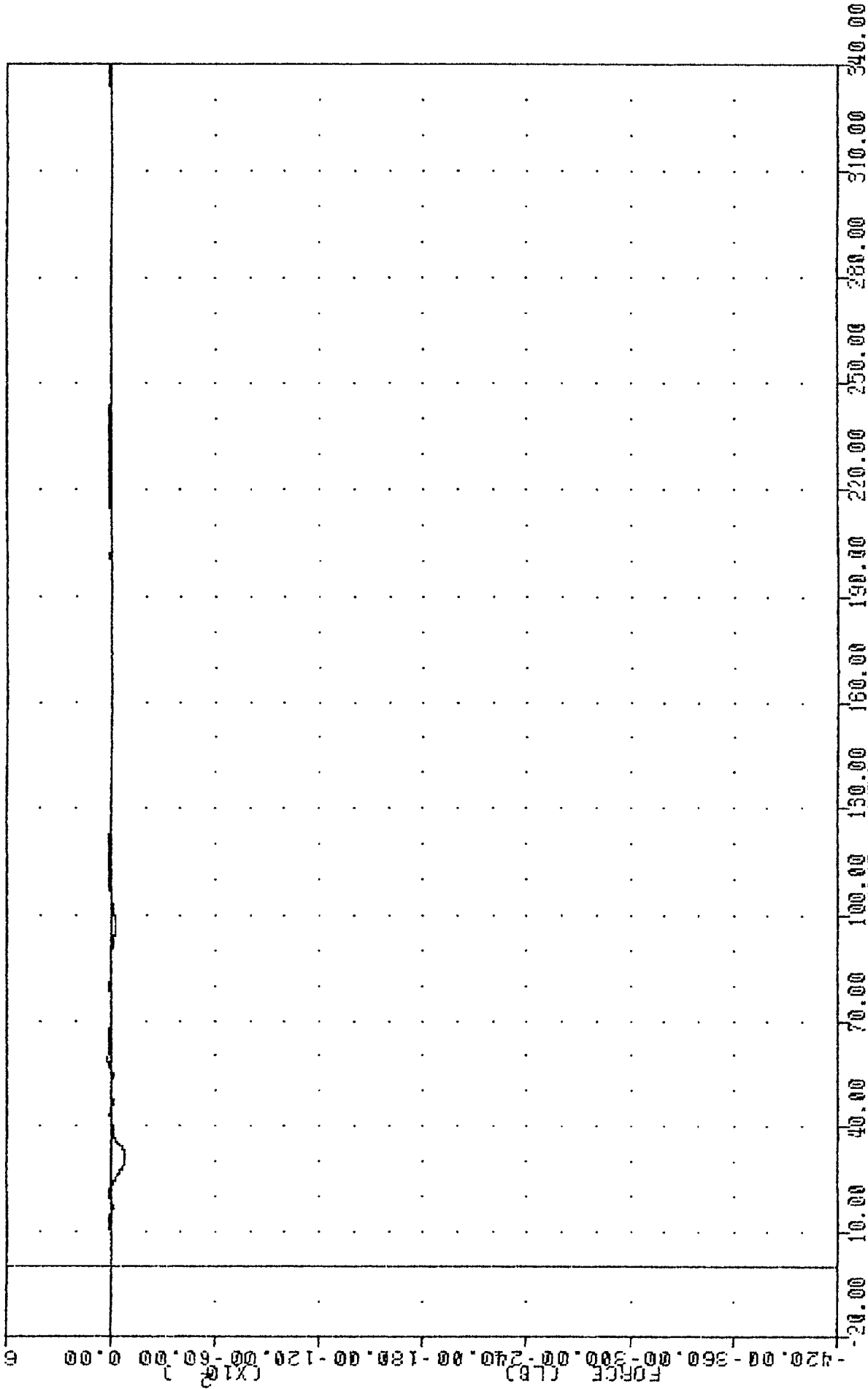
FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -2422.05% 62.13, 229.74 @ 43.50



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION 01 FORCE

IRC
 NEW CAR ASSESSMENT PROGRAM
 920324
 BD2F

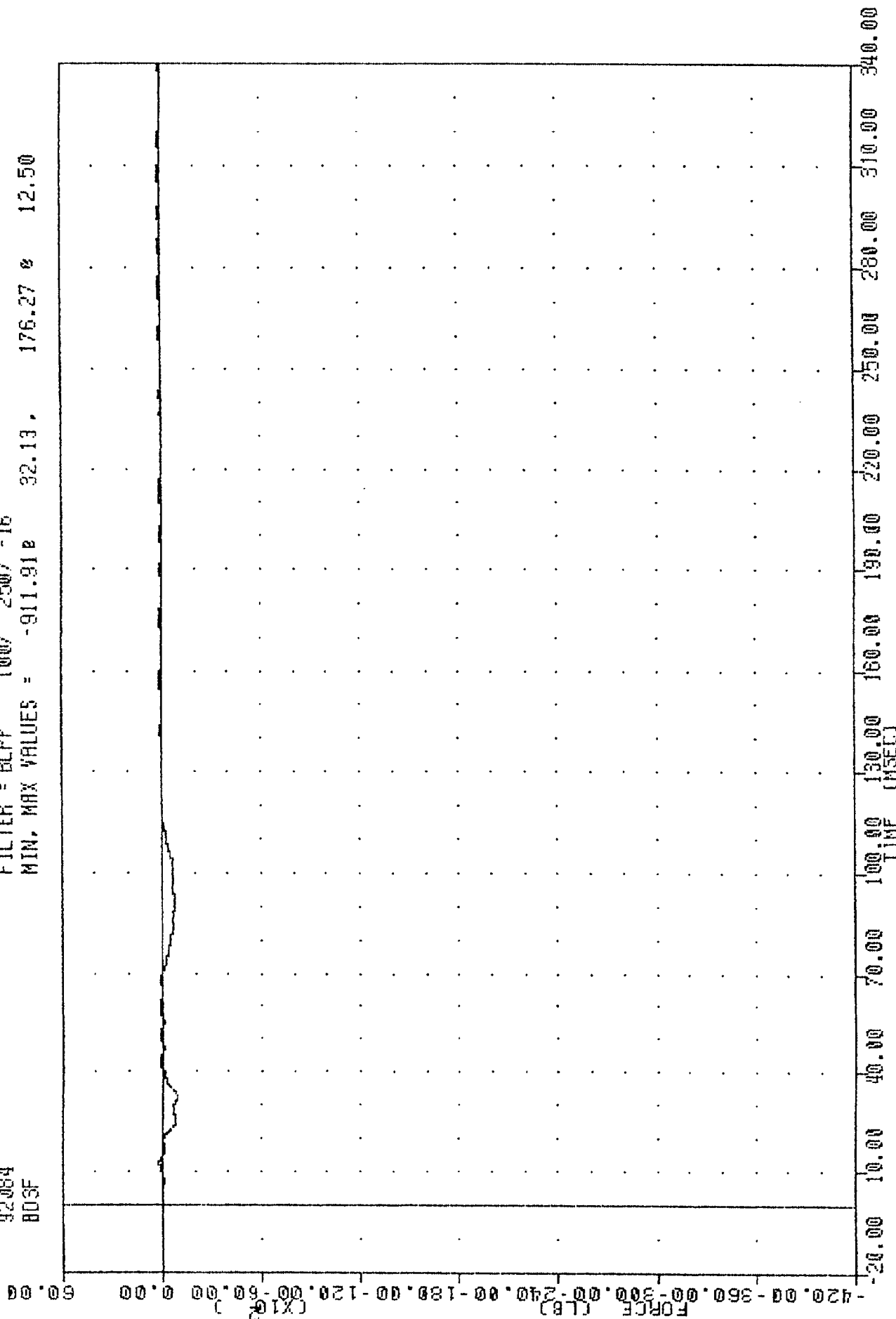
FILTER = BLFF 100/ 250/ -16
 MIN. MAX VALUES = -852.32e 31.13. 185.63 e 58.88



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION D2 FORCE

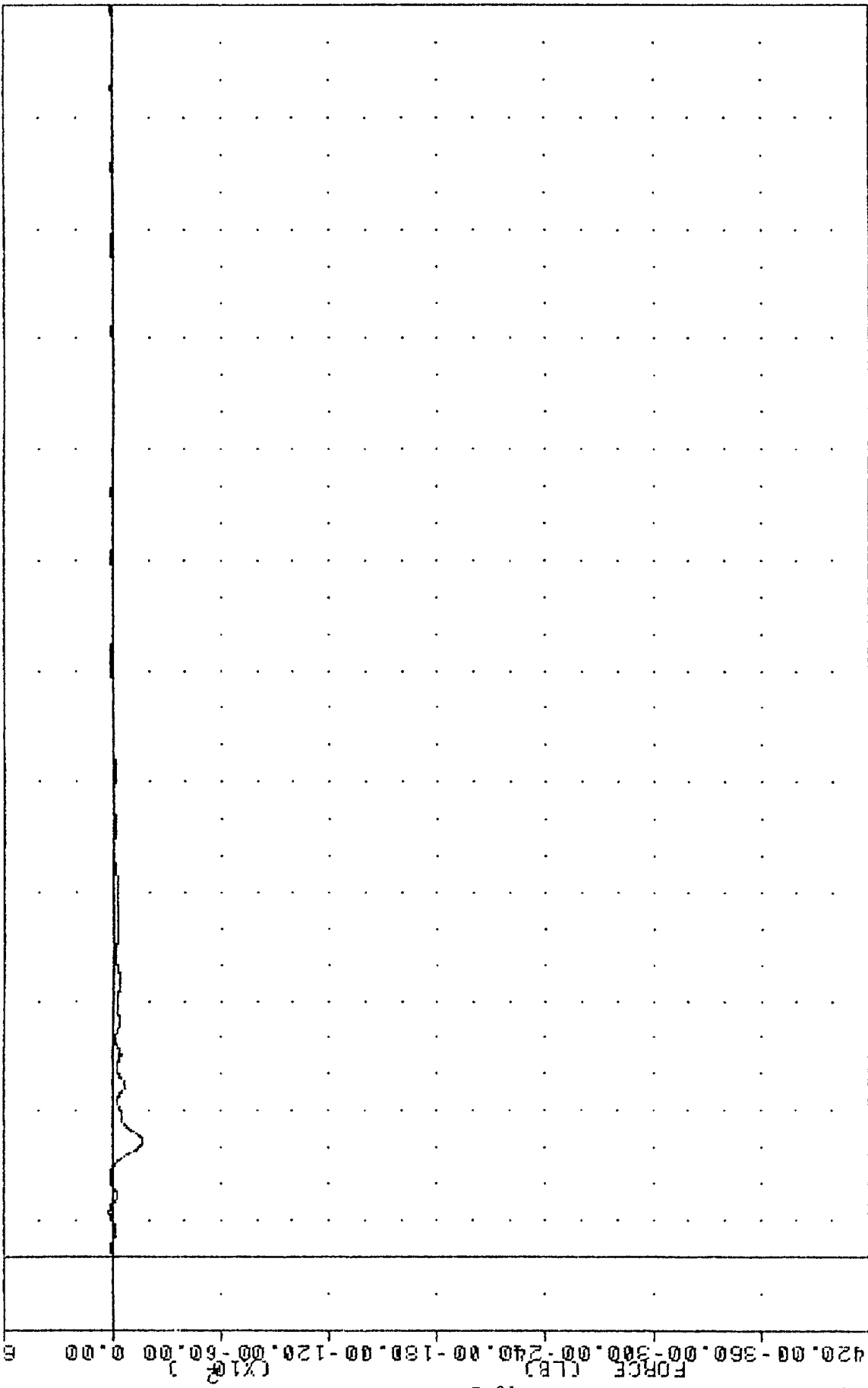
TRC , 920324
 NEW CAR ASSESSMENT PROGRAM
 92084
 B03F

FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -911.91e 32.13, 176.27 e 12.50



IRC 920324
 NEW CAR ASSESSMENT PROGRAM
 92084
 804F

FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -1707.58e 31.63, 175.44 e 12.25

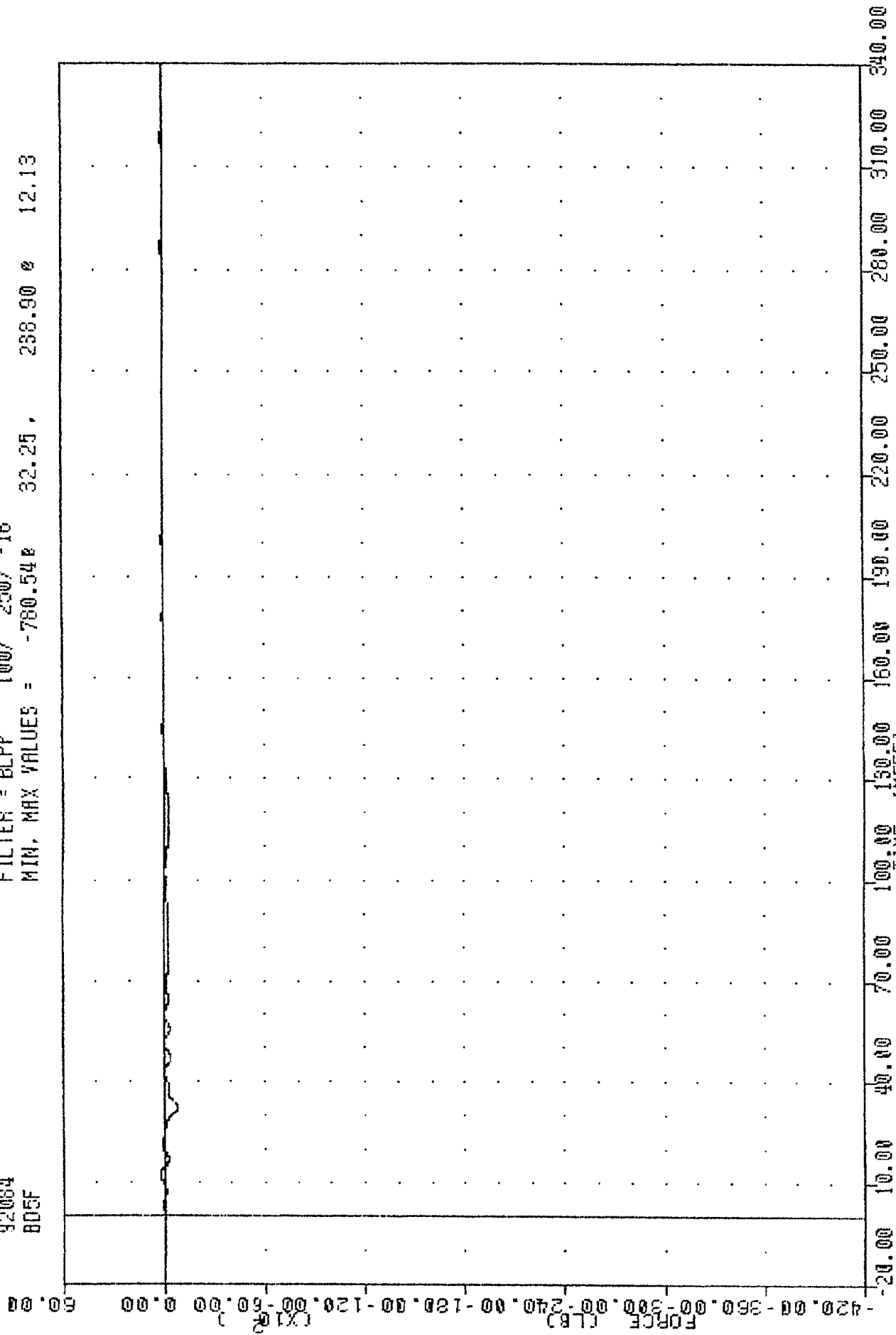


-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
 TIME (msec)
 1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION 04 FORCE

TRC
 NEW CAR ASSESSMENT PROGRAM
 92084
 B05F

, 920324

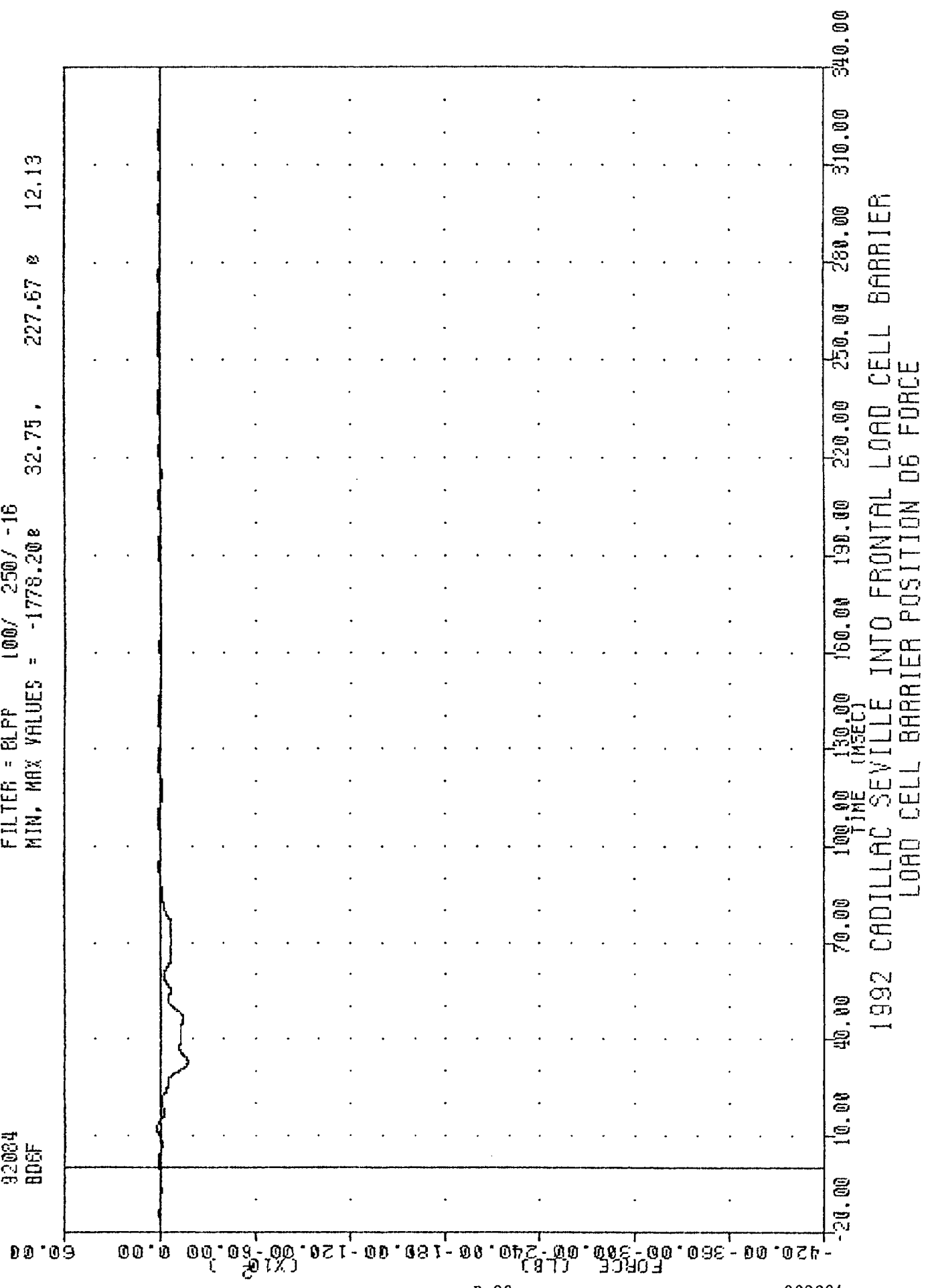
FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -780.54# 32.25, 238.90 # 12.13



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION 05 FORCE

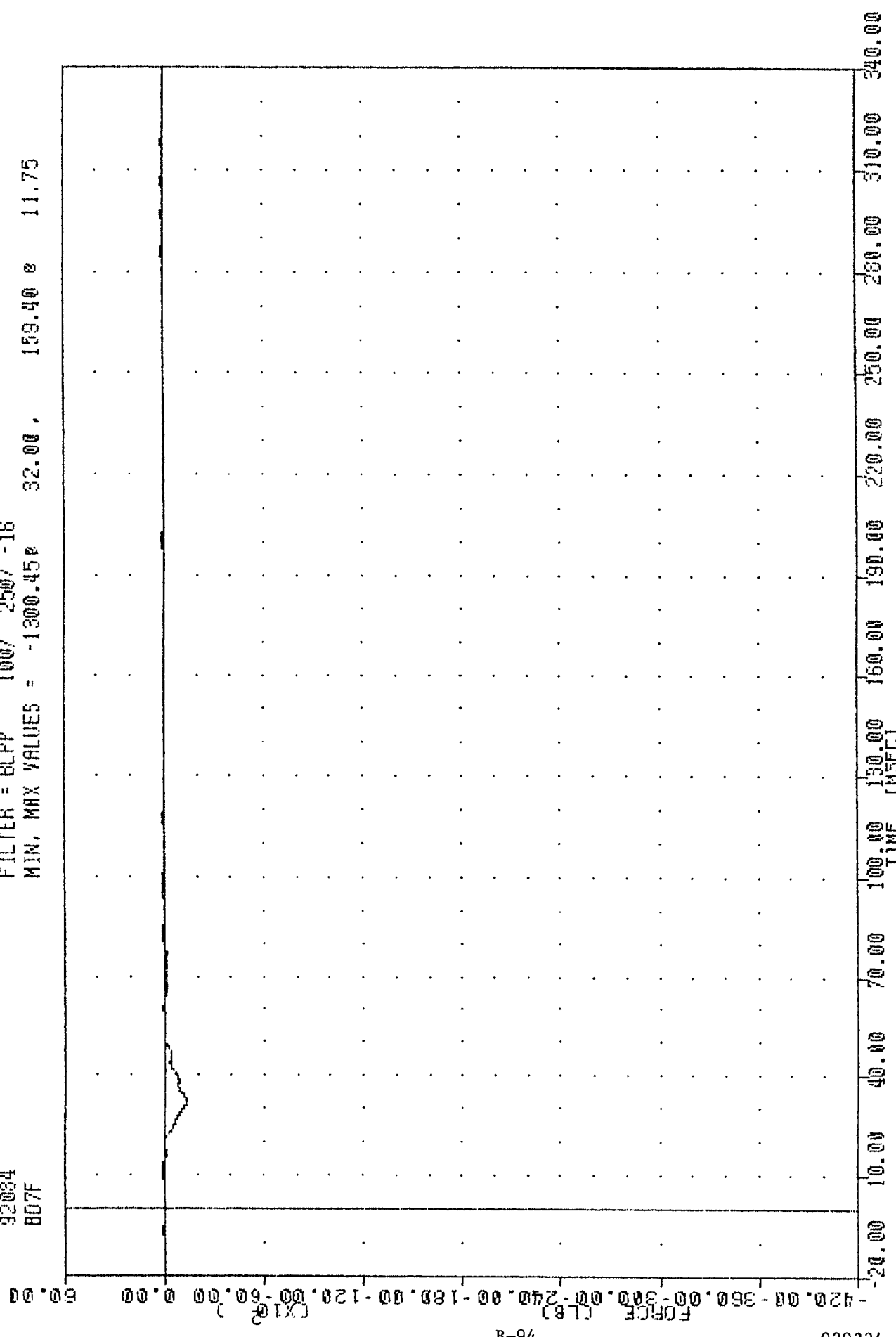
TRC 920324
 NEW CAR ASSESSMENT PROGRAM
 92084
 B06F

FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -1778.20e 32.75, 227.67 e 12.13



TRC
 920324
 NEW CAR ASSESSMENT PROGRAM
 920324
 BD7F

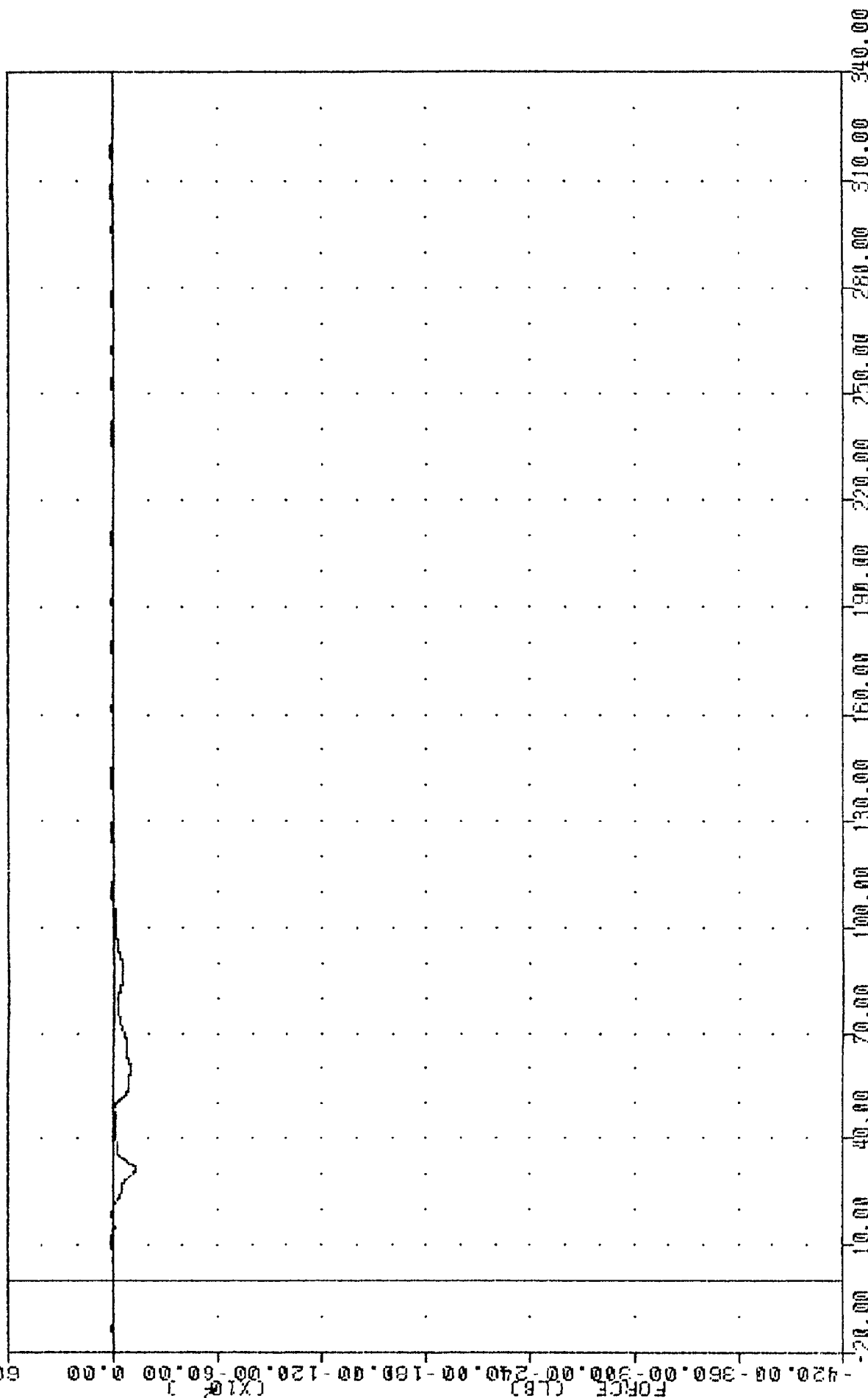
FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -1300.45% 32.00, 159.40 @ 11.75



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION 07 FORCE

IRC 920324
 NEW CAR ASSESSMENT PROGRAM
 92084
 BD8F

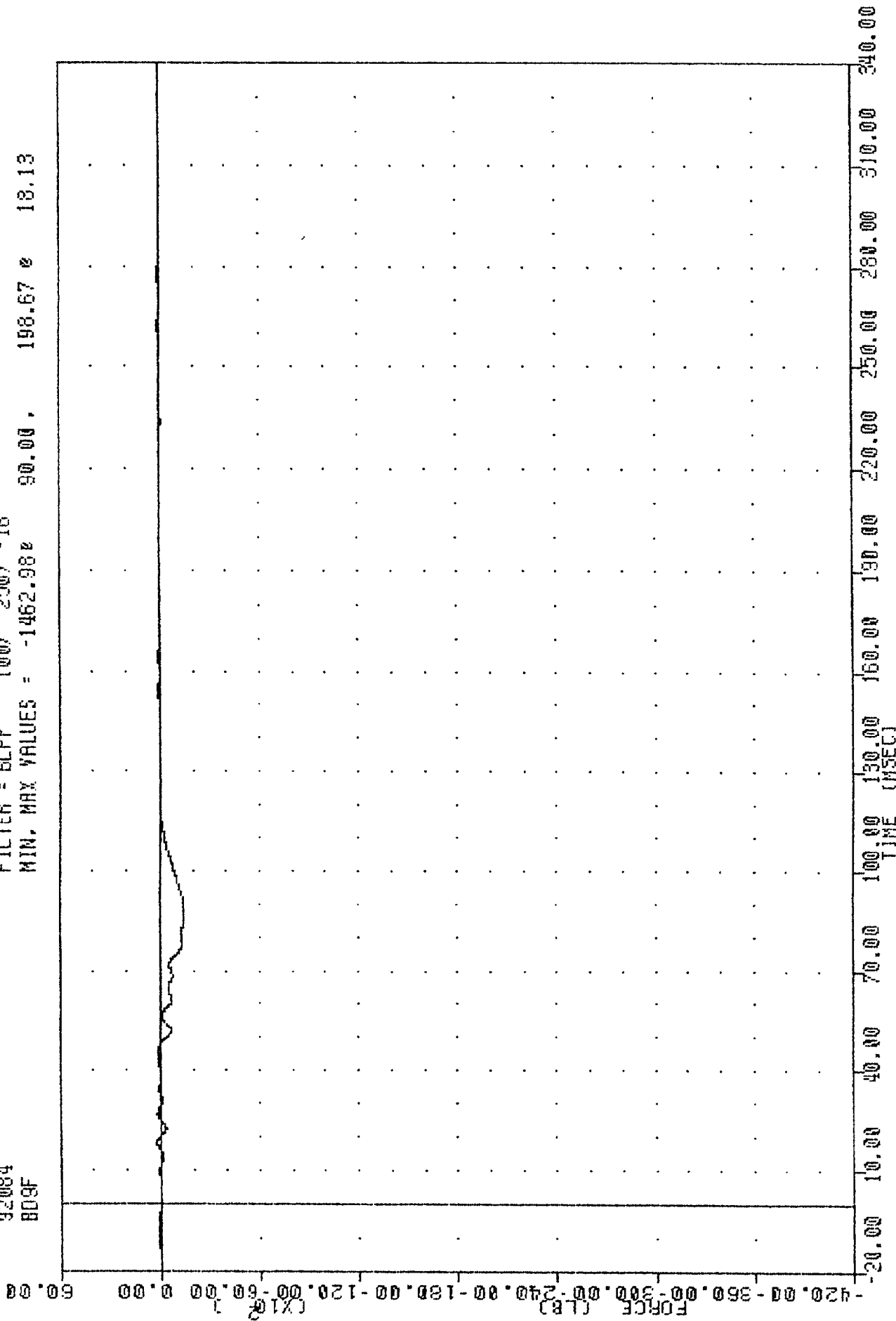
FILTER = ELPP 100/ 250/ -16
 MIN, MAX VALUES = -1312.610 31.25, 109.87 & 126.83



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION D8 FORCE

TRC , 920324
 NEW CAR ASSESSMENT PROGRAM
 92084
 809F

FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -1462.98% 90.00 , 198.67 % 18.13



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION 09 FORCE

TRC , 920324

NEW CAR ASSESSMENT PROGRAM

92084

LCB61F

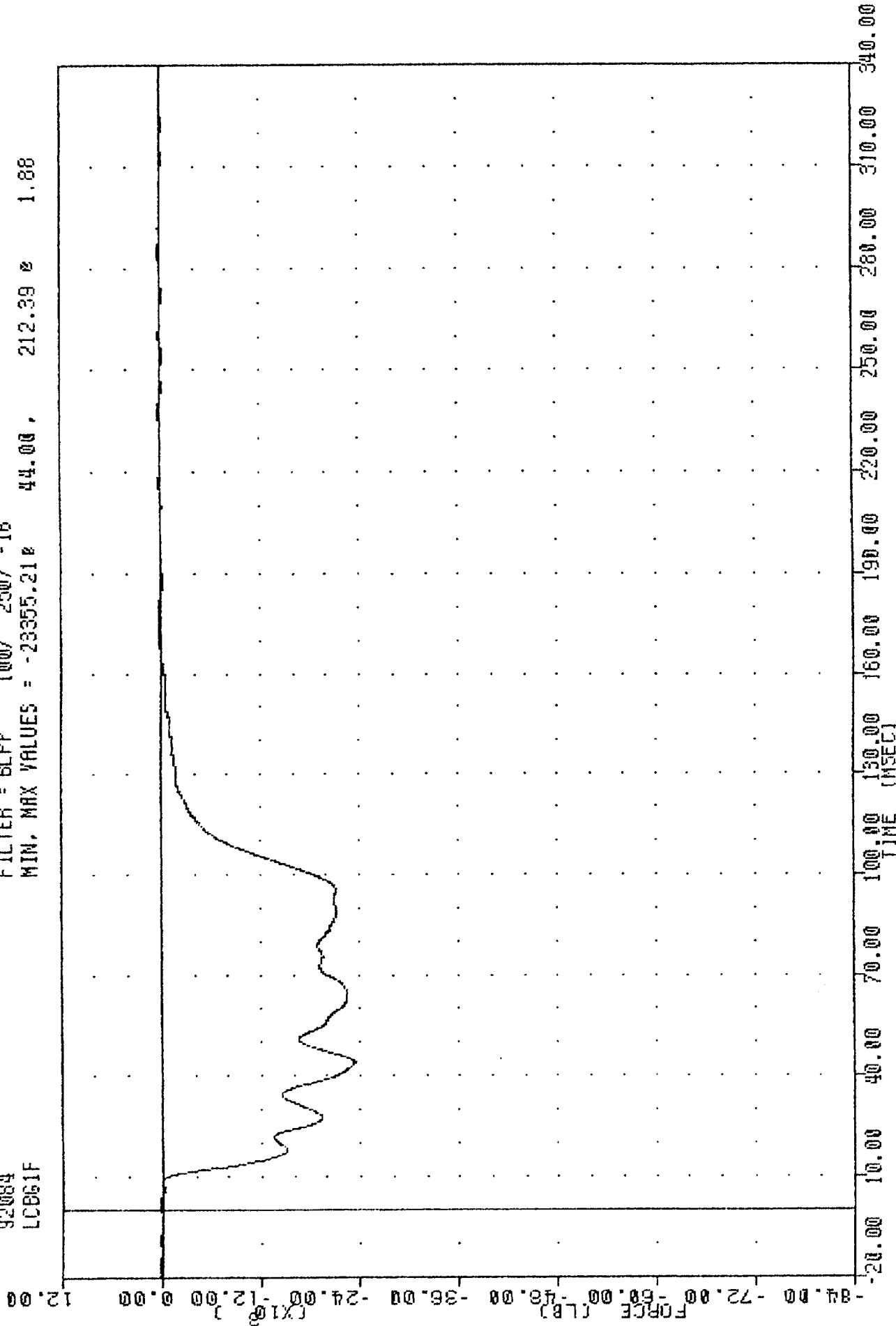
FILTER = BLPP 100/ 250/ -16

MIN. MAX VALUES = -23355.218

44.00 ,

212.39

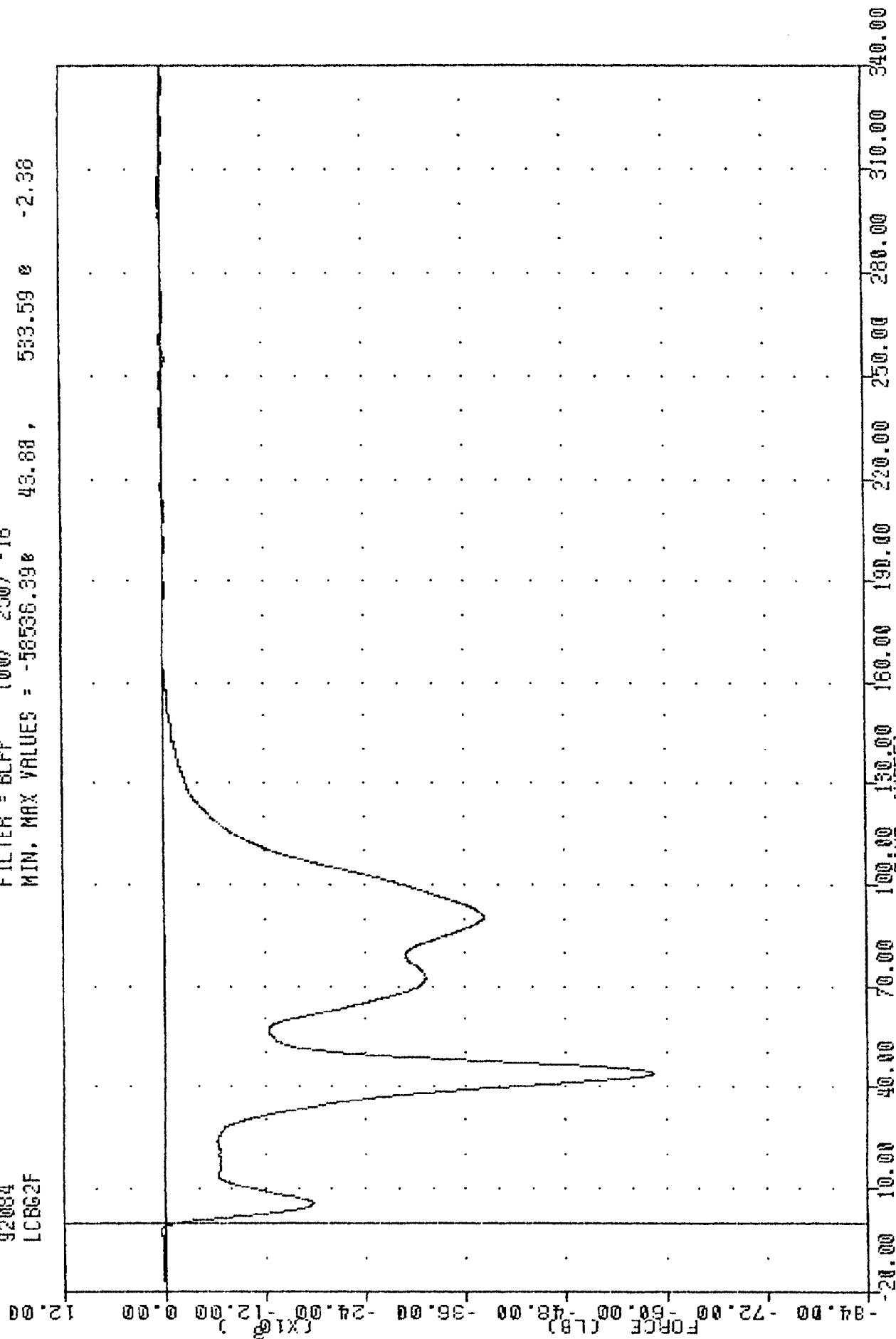
1.88



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER GROUP - 1 FORCE TOTAL

TRC
NEW CAR ASSESSMENT PROGRAM
920324
LCR02F

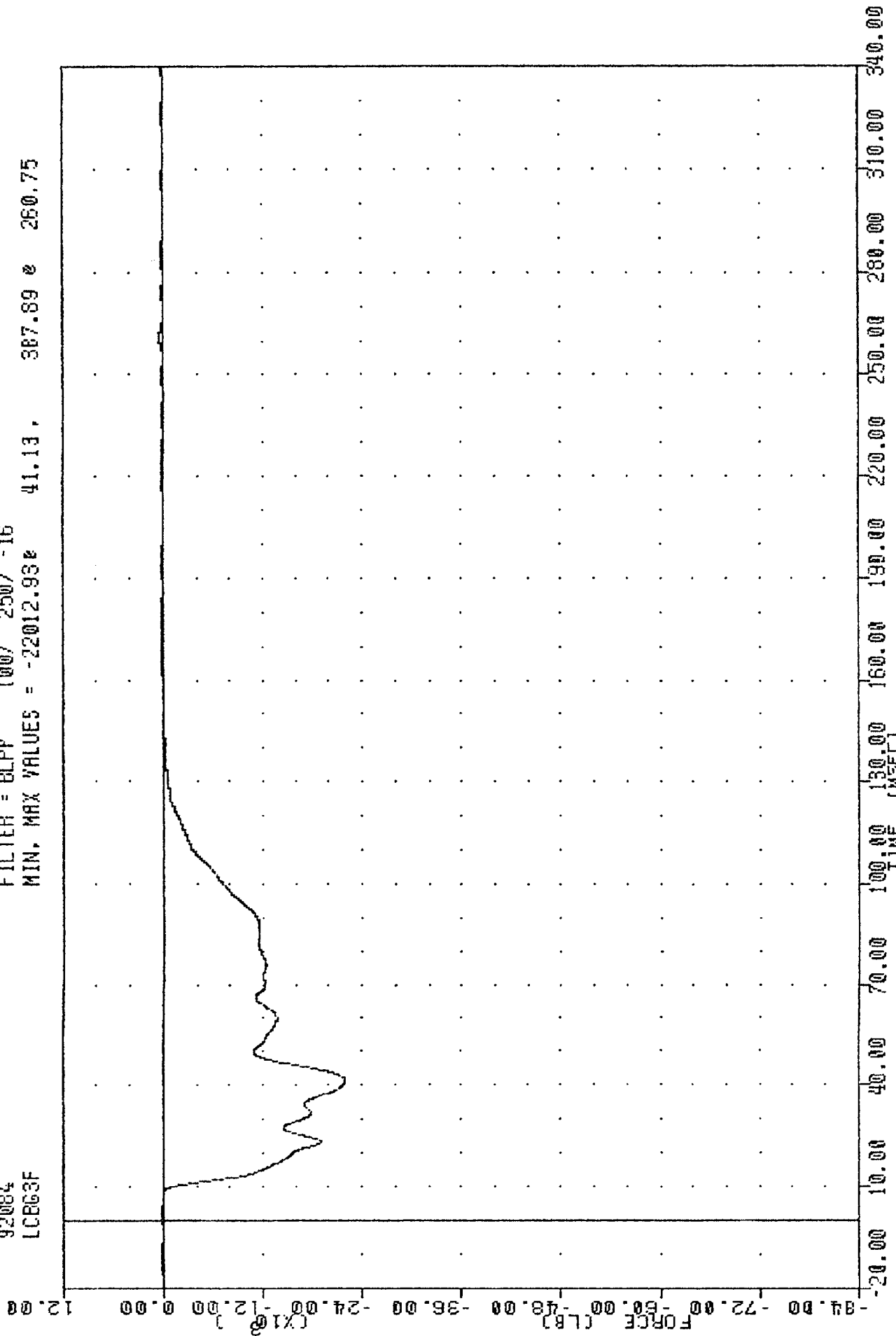
FILTER = BLPP 100/ 250/ -16
MIN. MAX VALUES = -50536.39% 43.88, 533.59 0 -2.38



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER GROUP - 2 FORCE TOTAL

TRC , 920324
 NEW CAR ASSESSMENT PROGRAM
 92084
 LCBG3F

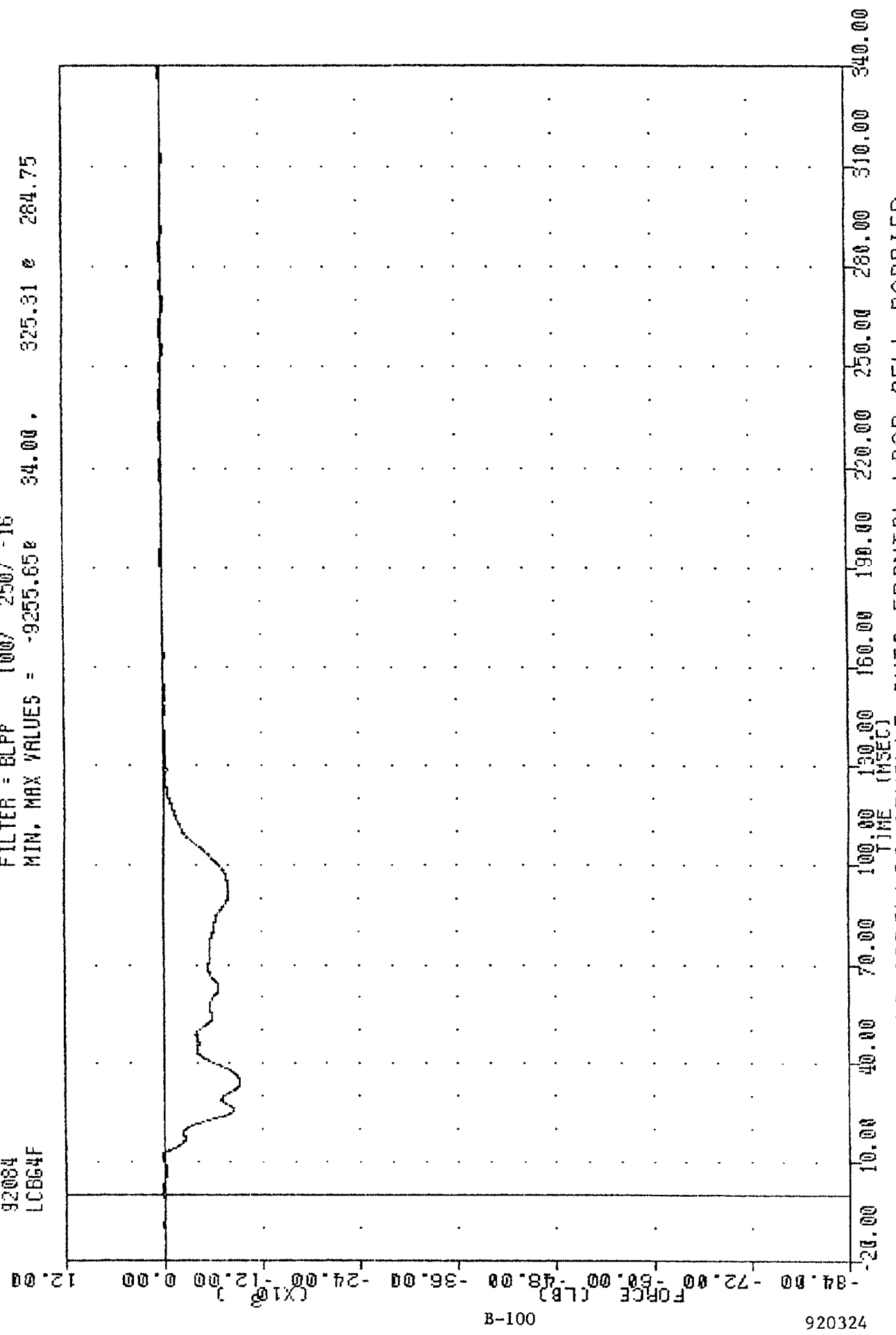
FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -22012.93 41.13 , 387.89 260.75



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER GROUP - 3 FORCE TOTAL

TRC , 920324
 NEW CAR ASSESSMENT PROGRAM
 92084
 LCBG4F

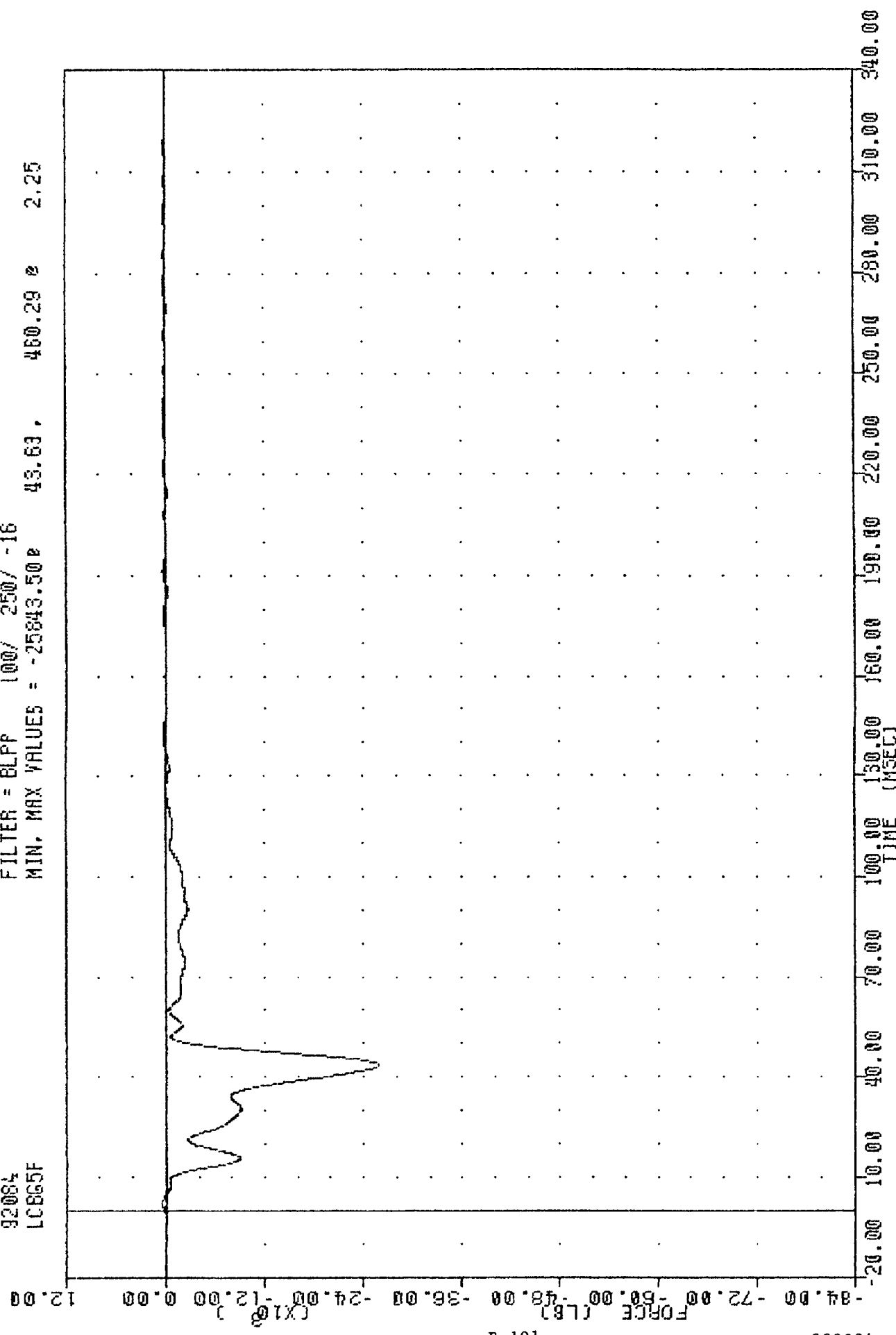
FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -9255.650 34.00 325.31 0 284.75



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER GROUP - 4 FORCE TOTAL

TRC 920324
 NEW CAR ASSESSMENT PROGRAM
 92084
 LCBG5F

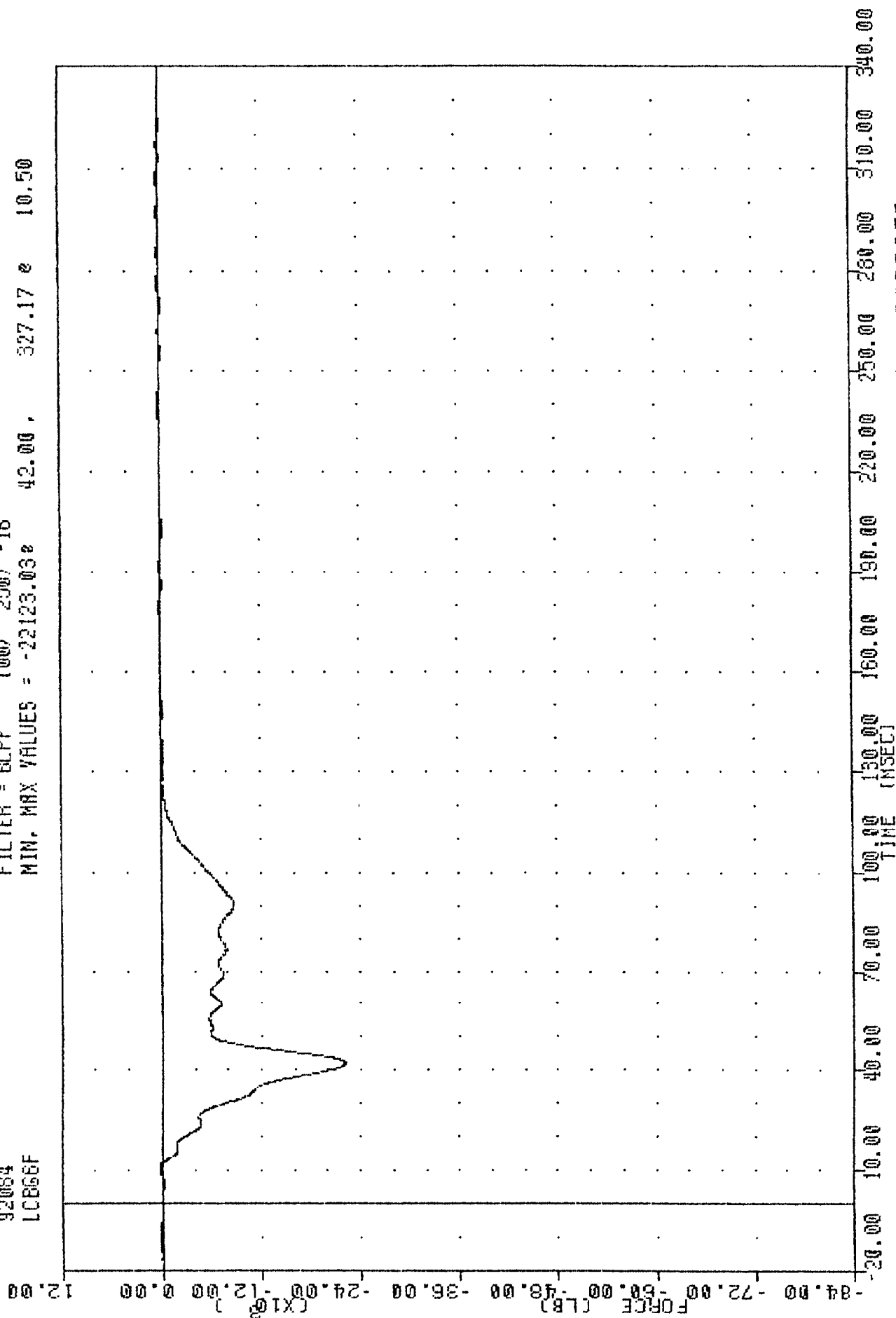
FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -25843.50# 43.63, 480.29 # 2.25



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER GROUP - 5 FORCE TOTAL

TRC , 920324
 NEW CAR ASSESSMENT PROGRAM
 92084
 LCB66F

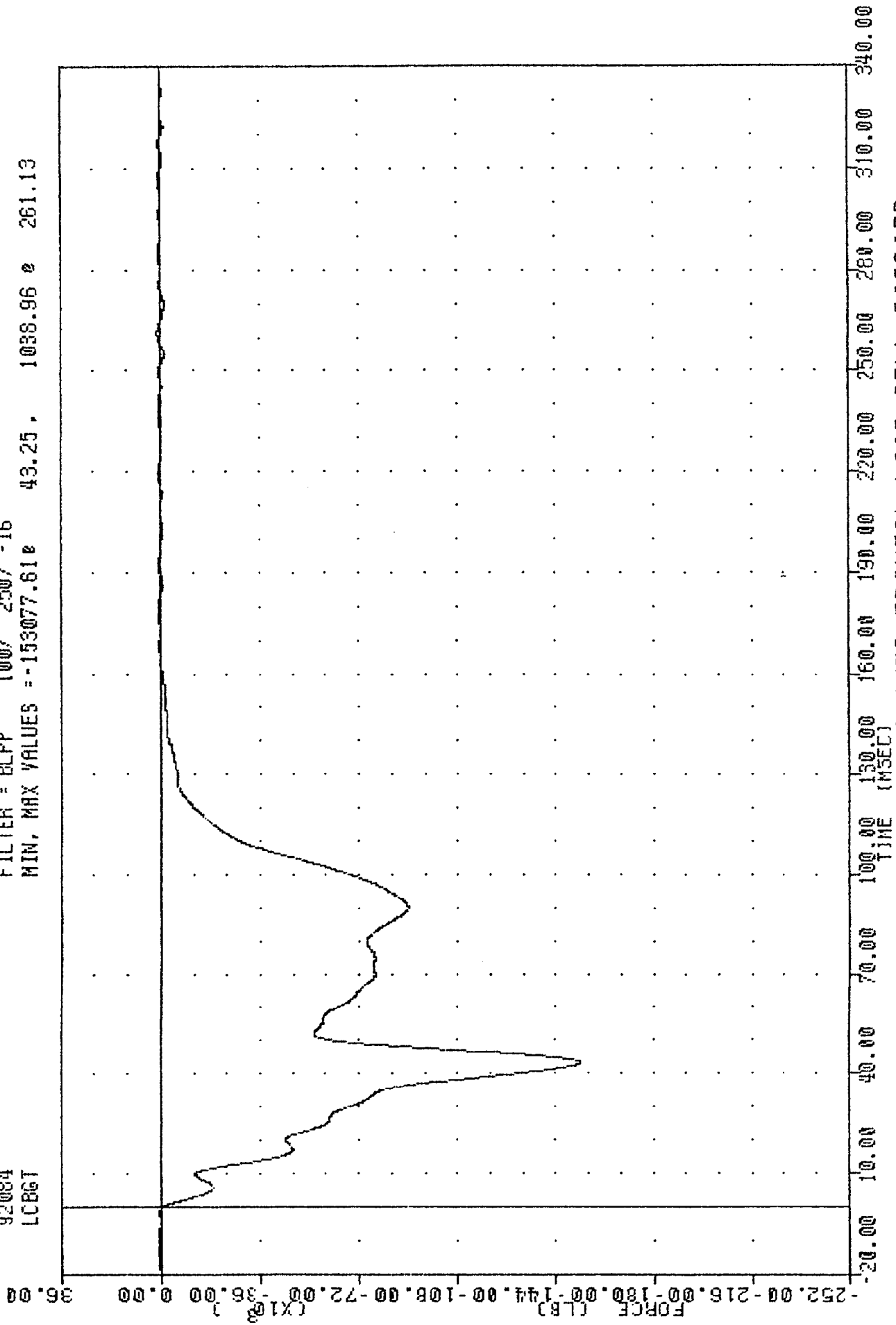
FILTER = BLPP 100/ 250/ -16
 MIN. MAX VALUES = -22123.03e 42.00 , 327.17 e 10.50



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 LOAD CELL BARRIER GROUP - 6 FORCE TOTAL

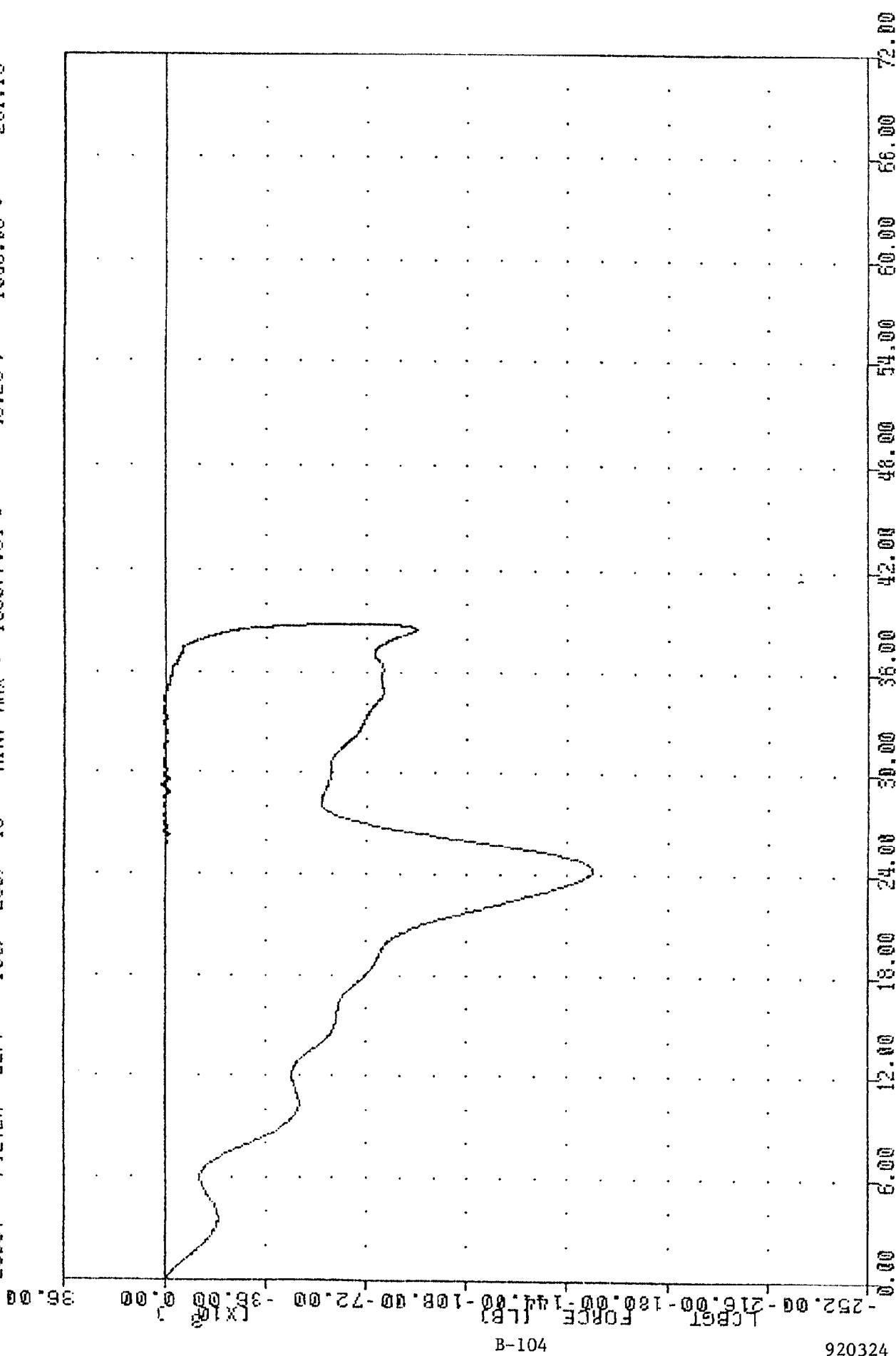
IRC
 NEW CAR ASSESSMENT PROGRAM
 92084
 LCBGT

FILTER = BLPP 100/ 250/ -16
 MIN, MAX VALUES = -153077.61e 43.25. 1038.96 e 261.13



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 TOTAL LOAD CELL BARRIER FORCE

TRC 920324 NEW CAR ASSESSMENT PROGRAM 920324
 DTHXD FILTER = ELPP 300/ 750/ -16 MIN. MAX = 0.00 38.86 99.00
 LCBGT FILTER = BLPP 100/ 250/ -16 MIN. MAX = -153077.61 43.25 1038.96 261.13



1992 CADILLAC SEVILLE INTO FRONTAL LOAD CELL BARRIER
 TOTAL LOAD CELL BARRIER FORCE VS VEHICLE X-AXIS DISPLACEMENT

APPENDIX C

DUMMY CERTIFICATION DATA

PRE-TEST CERTIFICATION DATA

DRIVER DUMMY S/N: 142

TRANSPORTATION RESEARCH CENTER OF OHIO
HYBRID III EXTERNAL DIMENSIONS
SN 142 HUMANOID

18-MAR-92

TRC 142C10ED1 572E SN142 EXT. DIMENSION CAL10

TEST PARAMETER	(DIMEN.)	SPECIFICATION	TEST RESULTS
TEMPERATURE			70.0 DEG. F
RELATIVE HUMIDITY			44.0 %
LOCATION FOR CHEST CIRCUMFERENCE (AA)		16.9-17.1 IN	17.0 IN
LOCATION FOR WAIST CIRCUMFERENCE (BB)		8.9- 9.1 IN	9.0 IN
CHEST CIRCUMFERENCE (Y)		38.2-39.4 IN	38.7 IN
WAIST CIRCUMFERENCE (Z)		32.9-34.1 IN	33.3 IN
CHEST DEPTH (O)		8.4- 9.0 IN	8.6 IN
H-POINT HEIGHT (C)		3.3- 3.5 IN	3.4 IN
H-POINT FROM SEATBACK (D)		5.3- 5.5 IN	5.4 IN
SKULL CAP TO BACKLINE (H)		1.6- 1.8 IN	1.7 IN
TOTAL SITTING HEIGHT (A)		34.6-35.0 IN	34.9 IN
THIGH CLEARANCE (F)		5.5- 6.1 IN	5.7 IN
BUTTOCK KNEE LENGTH (K)		22.8-23.8 IN	23.5 IN
BUTTOCK POPLITEAL LENGTH (N)		17.8-18.8 IN	18.7 IN
POPLITEAL HEIGHT (L)		16.9-17.9 IN	17.8 IN
KNEE PIVOT HEIGHT (M)		19.1-19.7 IN	19.3 IN
FOOT LENGTH (P)		9.9-10.5 IN	10.1 IN
FOOT BREADTH (W)		3.6- 4.2 IN	3.8 IN
SHOULDER PIVOT FROM BACKLINE (E)		3.3- 3.7 IN	3.4 IN
SHOULDER BREADTH (V)		16.6-17.2 IN	16.8 IN
SHOULDER PIVOT HEIGHT (B)		19.9-20.5 IN	20.1 IN
ELBOW REST HEIGHT (J)		7.5- 8.3 IN	8.3 IN
SHOULDER-ELBOW LENGTH (I)		13.0-13.6 IN	13.6 IN
BACK OF ELBOW TO WRIST PIVOT (G)		11.4-12.0 IN	11.5 IN

TEST MEETS SPECIFICATIONS

TECHNICIAN

Kevin Watkins

TRANSPORTATION RESEARCH CENTER OF OHIO

HEAD DROP TEST

HYBRID III

18-MAR-92

TRC

142C10HD1

5774 SN142 HEAD DROP CAL 10

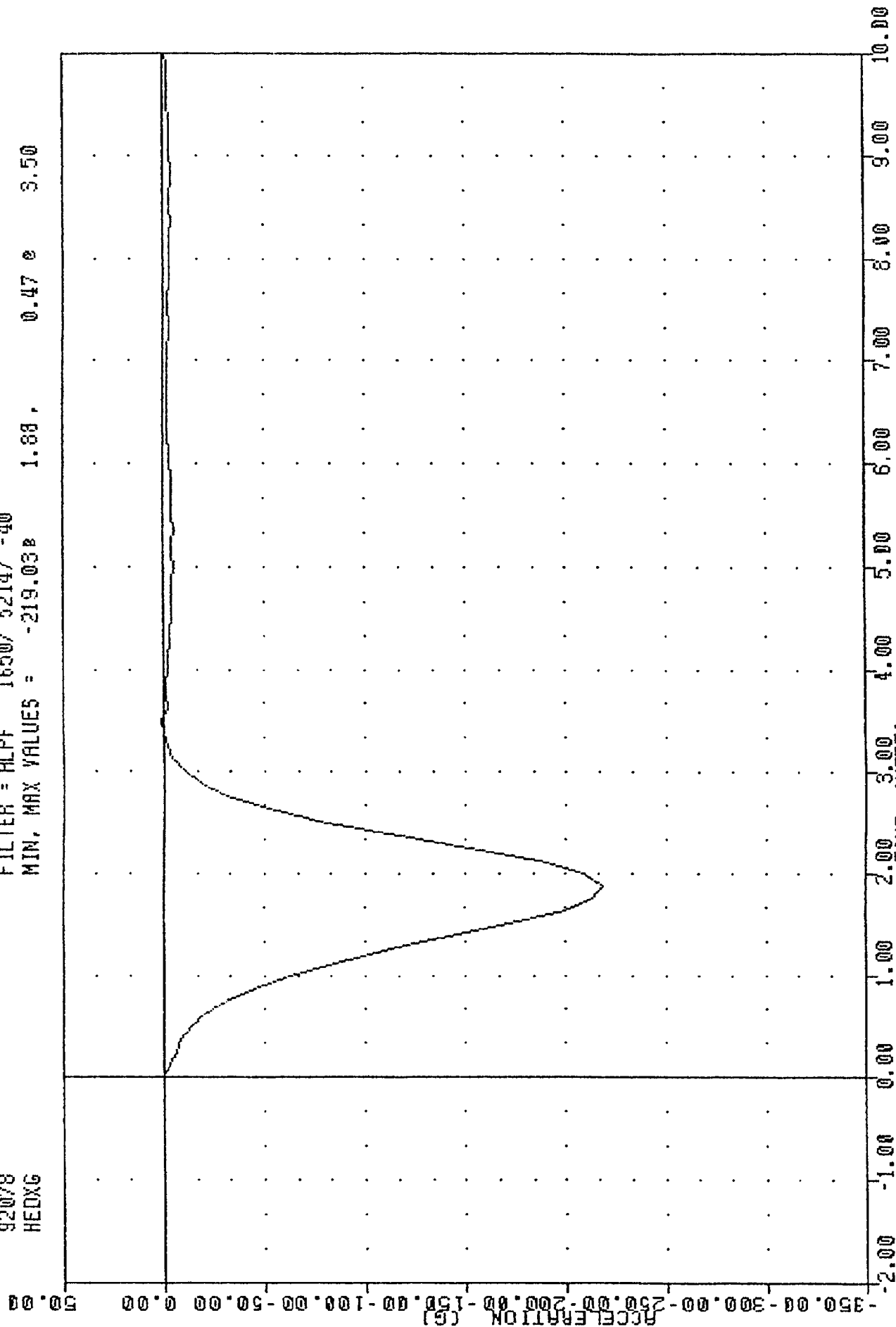
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78 DEG. F	70.0 DEG. F
RELATIVE HUMIDITY	10% - 70%	44.0 %
PEAK RESULTANT ACCELERATION	125 - 275 G	255.49 G
PEAK LATERAL ACCELERATION	15 G MAX	1.79 G
IS ACCELERATION CURVE UNIMODAL?	YES	YES

TEST MEETS SPECIFICATIONS

TECHNICIAN Kevin Watkins

TRC .142C10HD1
 572E SN142 HERC GRJP CAL 10
 92078
 HEDXG

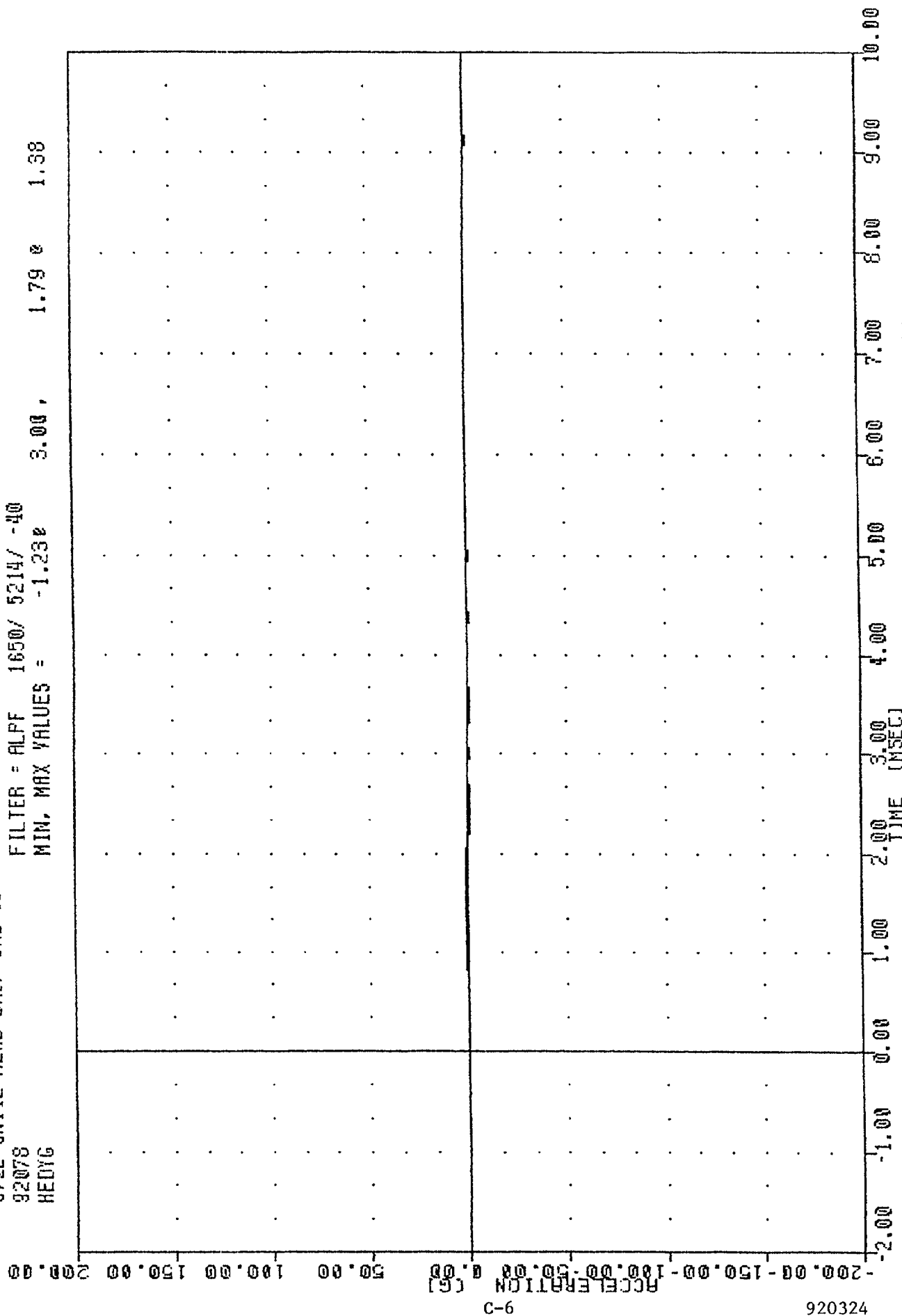
FILTER = ALPF 1650/ 5214/ -40
 MIN, MAX VALUES = -219.03 1.88, 0.47 @ 3.50



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

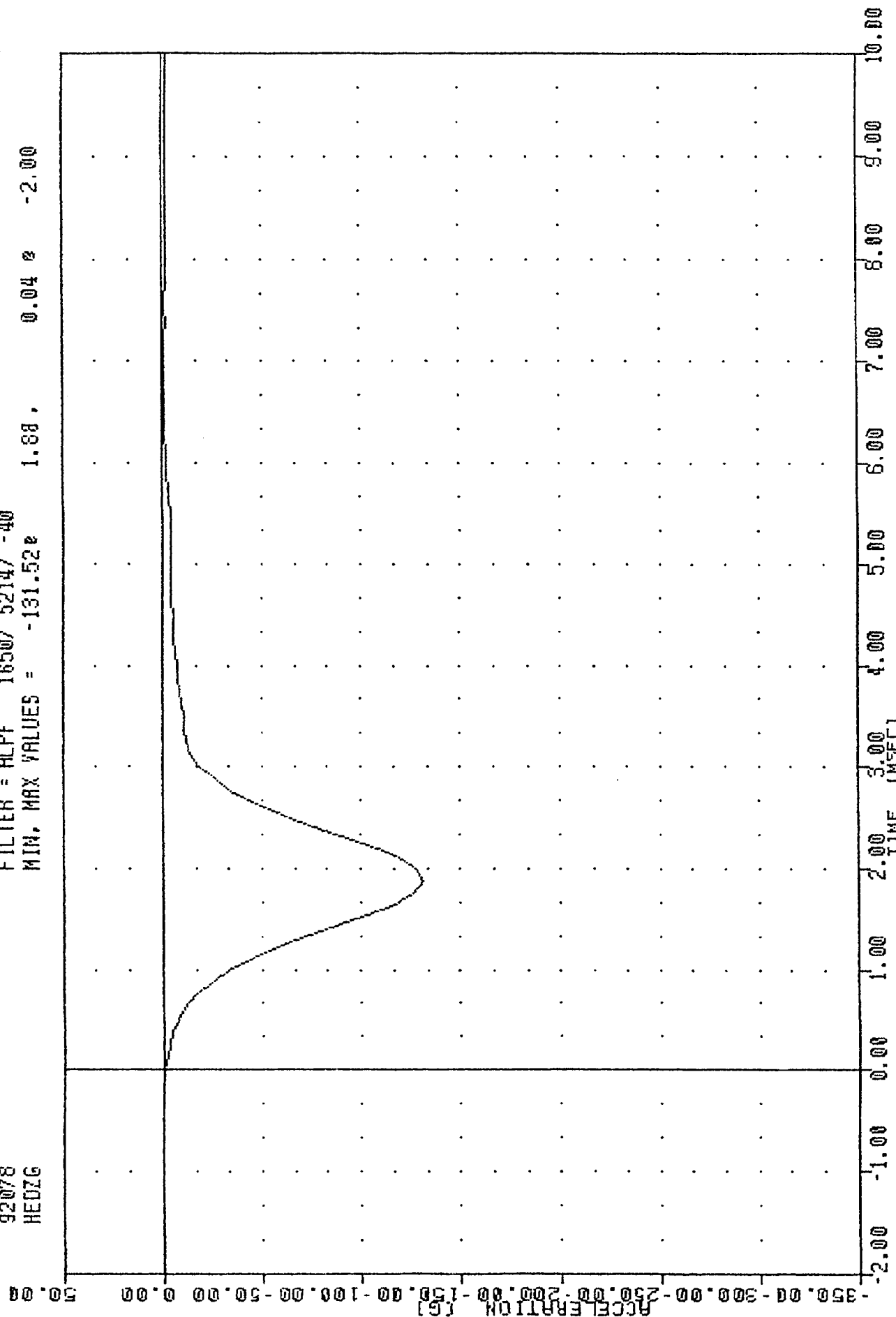
TRC
572E SN142 HEAD DRDP CAL 13
92078
HEDYG

FILTER = ALPF 1650/ 5214/ -40
MIN, MAX VALUES = -1.23e 3.00, 1.79 e 1.38



TRC , 142C10HD1
 572E SN142 HEAD DROP CAL 10
 92078
 HEADZG

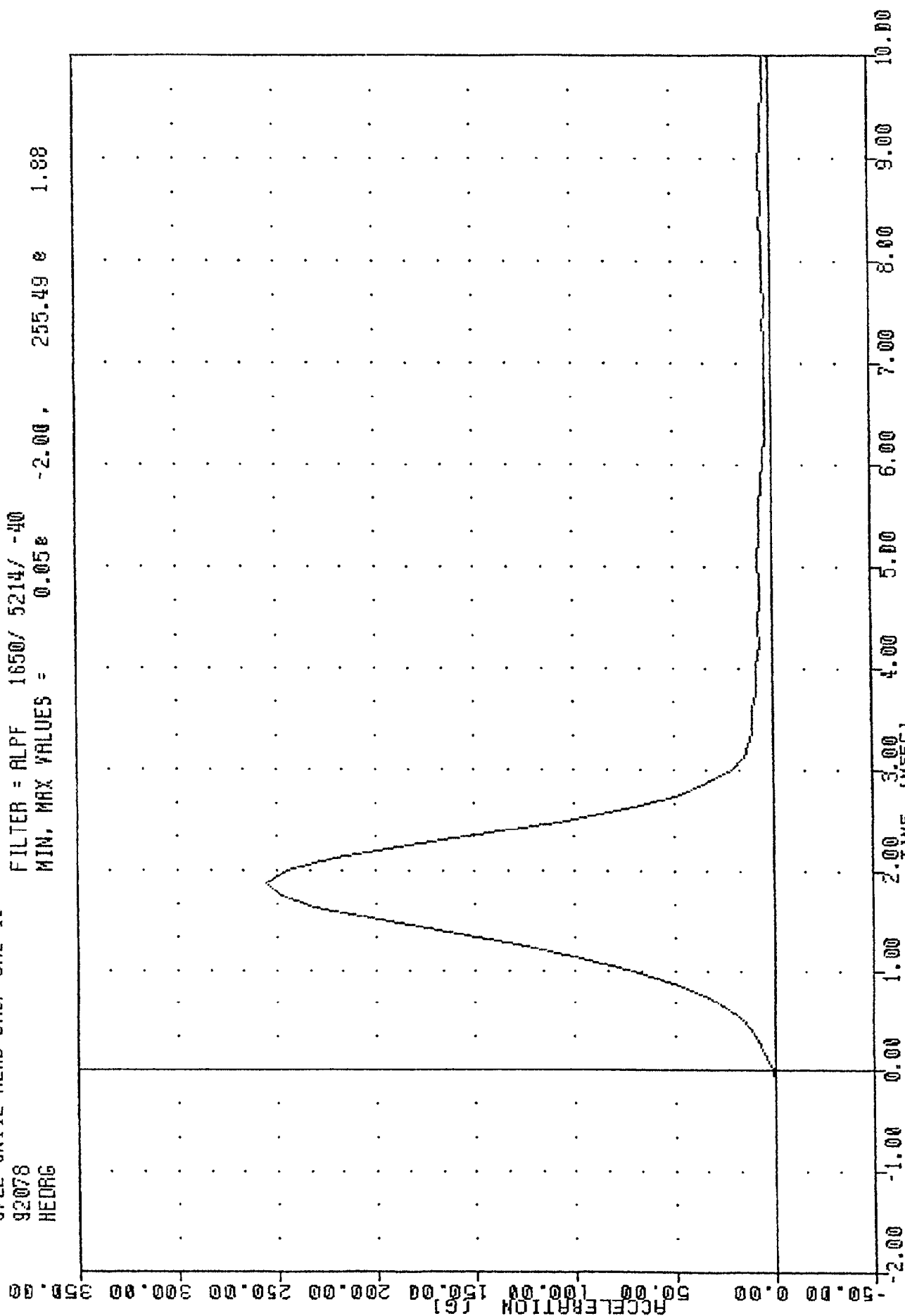
FILTER = ALPF 1650/ 5214/ -40
 MIN. MAX VALUES = -131.52 1.88 , 0.04 s -2.00



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

TRC
572E SN142 HEAD DRG CAL 13
92078
HEADG

FILTER = ALPF 1650/ 5214/ -40
MIN. MAX VALUES = 0.05e -2.00 , 255.49 e 1.88



PART 572-E HYBRID III HEAD CALIBRATION

HEAD RESULTANT ACCELERATION

TRANSPORTATION RESEARCH CENTER OF OHIO

NECK FLEXION TEST

HYBRID III

18-MAR-92

6 AXIS NECK TRANSDUCER
TRC 142C10NF1

572E SN142 NECK FLEXION CAL10

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	69 - 72 DEG. F	70.0 DEG. F
RELATIVE HUMIDITY	10% - 70%	44.0 %
IMPACT VELOCITY	22.6-23.4 FT/SEC	23.08 FT/SEC
PENDULUM	10 MS 22.50 - 27.50 G	23.93 G
DECELERATION	20 MS 17.60 - 22.60 G	20.41 G
	30 MS 12.50 - 18.50 G	15.51 G
MAX PENDULUM G ABOVE 30 MS	29 G MAX	15.45 G
DECELERATION-TIME CURVE		
DECAY TIME TO 5 G	34 - 42 MS	37.75 MS
D PLANE	MAX 64 - 78 DEG.	76.28 DEG.
ROTATION	TIME 57 - 64 MS	60.25 MS
MOMENT ABOUT OCCIPITAL	MAX 65 - 80 FT.LBS	69.14 FT.LBS
CONDYLE	TIME 47 - 58 MS	50.88 MS
ROTATION ANGLE-TIME CURVE		
DECAY TIME TO ZERO	113 - 128 MS	116.38 MS
POSITIVE MOMENT-TIME CURVE		
DECAY TIME TO ZERO	97 - 107 MS	106.88 MS

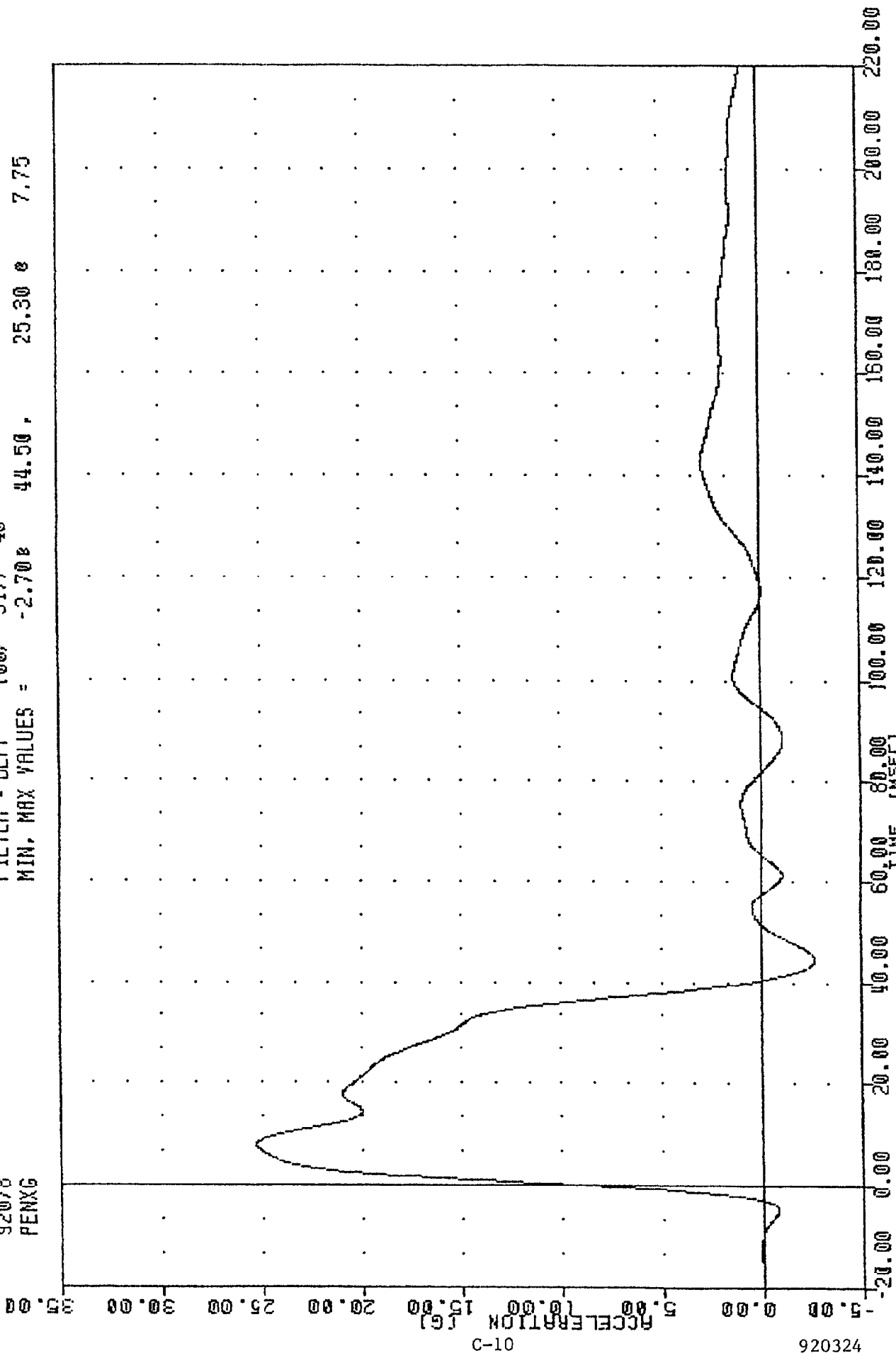
TEST MEETS SPECIFICATIONS

TECHNICIAN

Kevin Watkins

TRC , 142C10HF1
572E SM142 NECK FLEXION CAL10
92078
PENXG

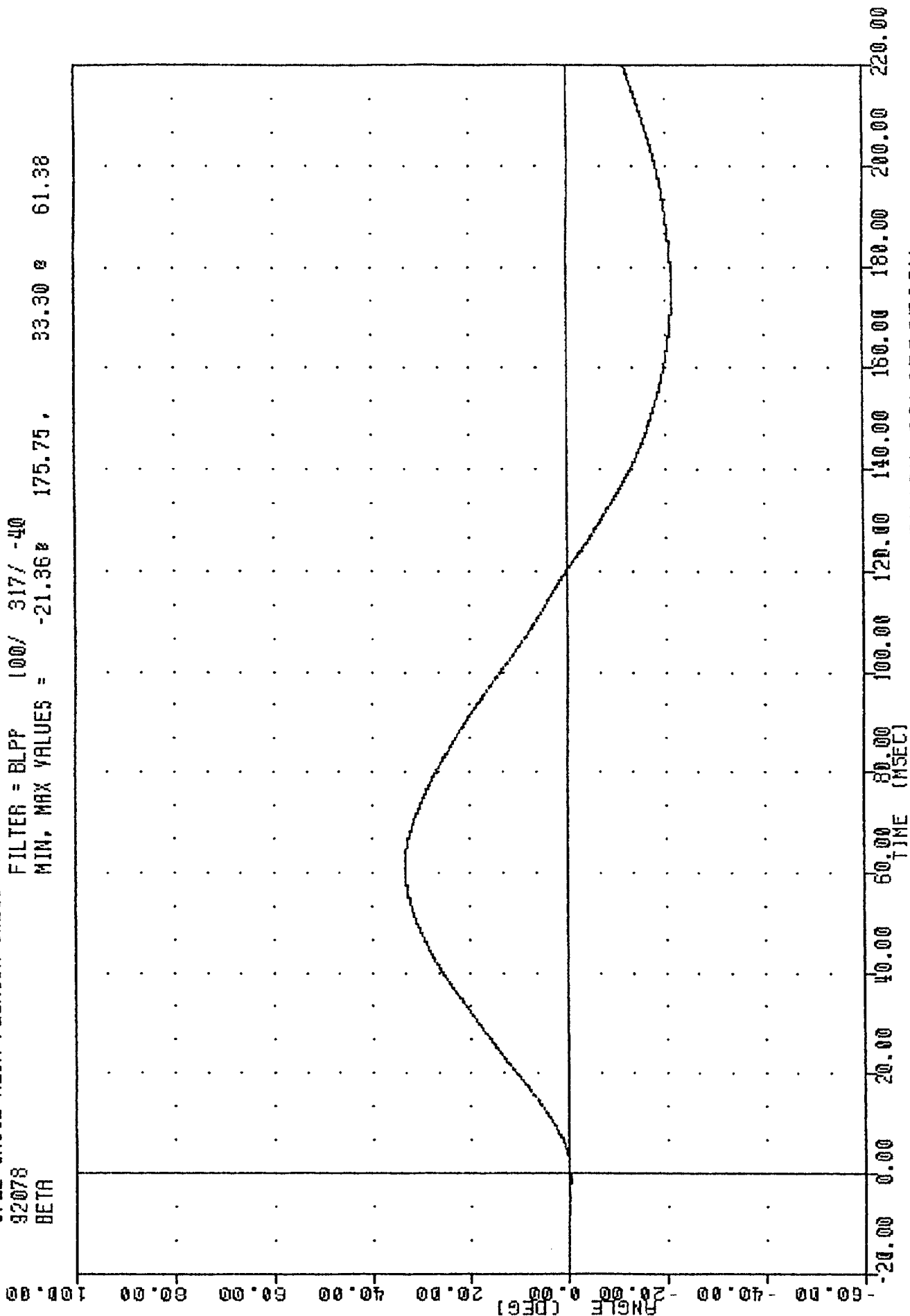
FILTER = BLPP 100/ 317/ -40
MIN, MAX VALUES = -2.70 44.50 25.30 7.75



PART 572-E HYBRID III NECK FLEXION CALIBRATION
RANDOM VIBRATION

TRC , 142C10HF1
 572E SN142 NECK FLEXION CALIB
 92078
 BETA

FILTER = BLPP 100/ 317/ -40
 MIN. MAX VALUES = -21.36% 175.75, 33.30 % 61.38

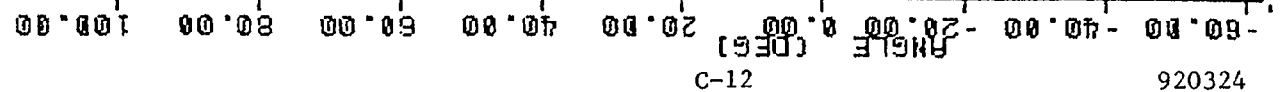


PART 572-E HYBRID III NECK FLEXION CALIBRATION
 ROTATION ABOUT BASE OF NECK

TRC . 142C10HF1

FILTER = BLPP 100% 317% -40

20-67

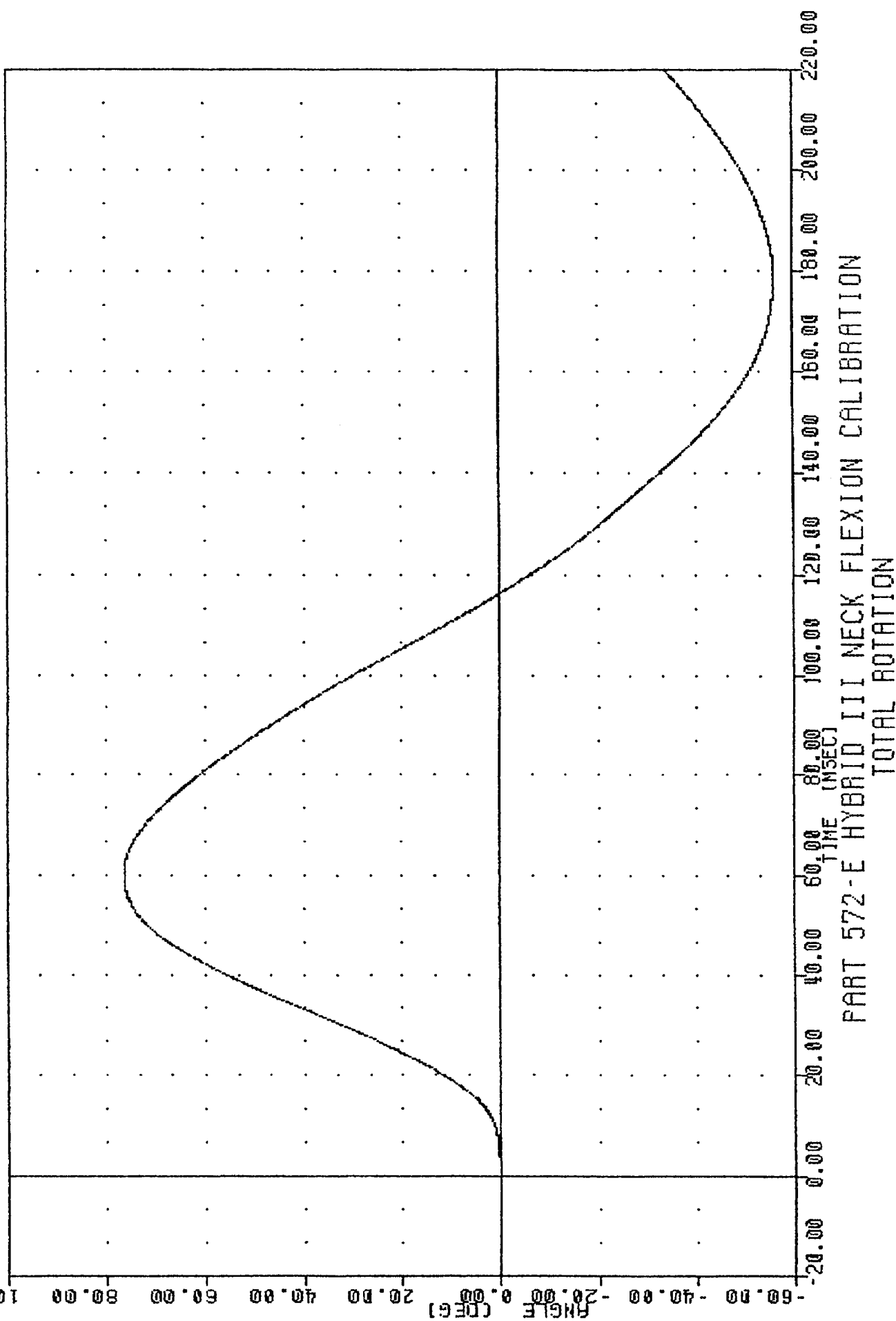


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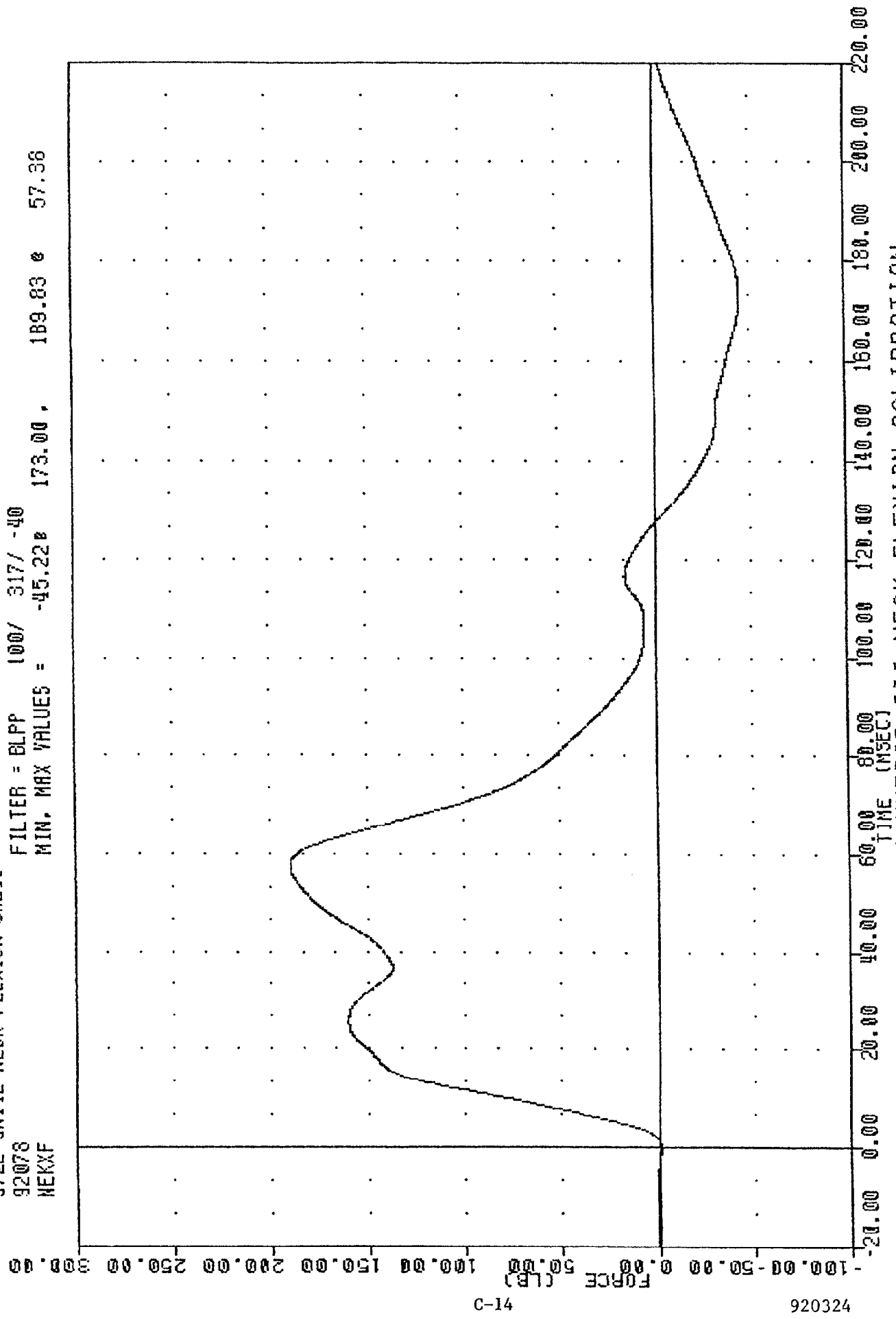
TRC
 572E SN142 NECK FLEXION CAL10
 92078
 TOTAL

FILTER = BLPP 100/ 317/ -40
 MIN. MAX VALUES = -56.42 179.63 76.28 60.25



TRC , 142C10HF1
 572E SN142 NECK FLEXION CAL10
 92078
 NEKXF

FILTER = BLPP 100/ 317/ -40
 MIN. MAX VALUES = -45.22 173.00 , 189.83 57.38



C-14

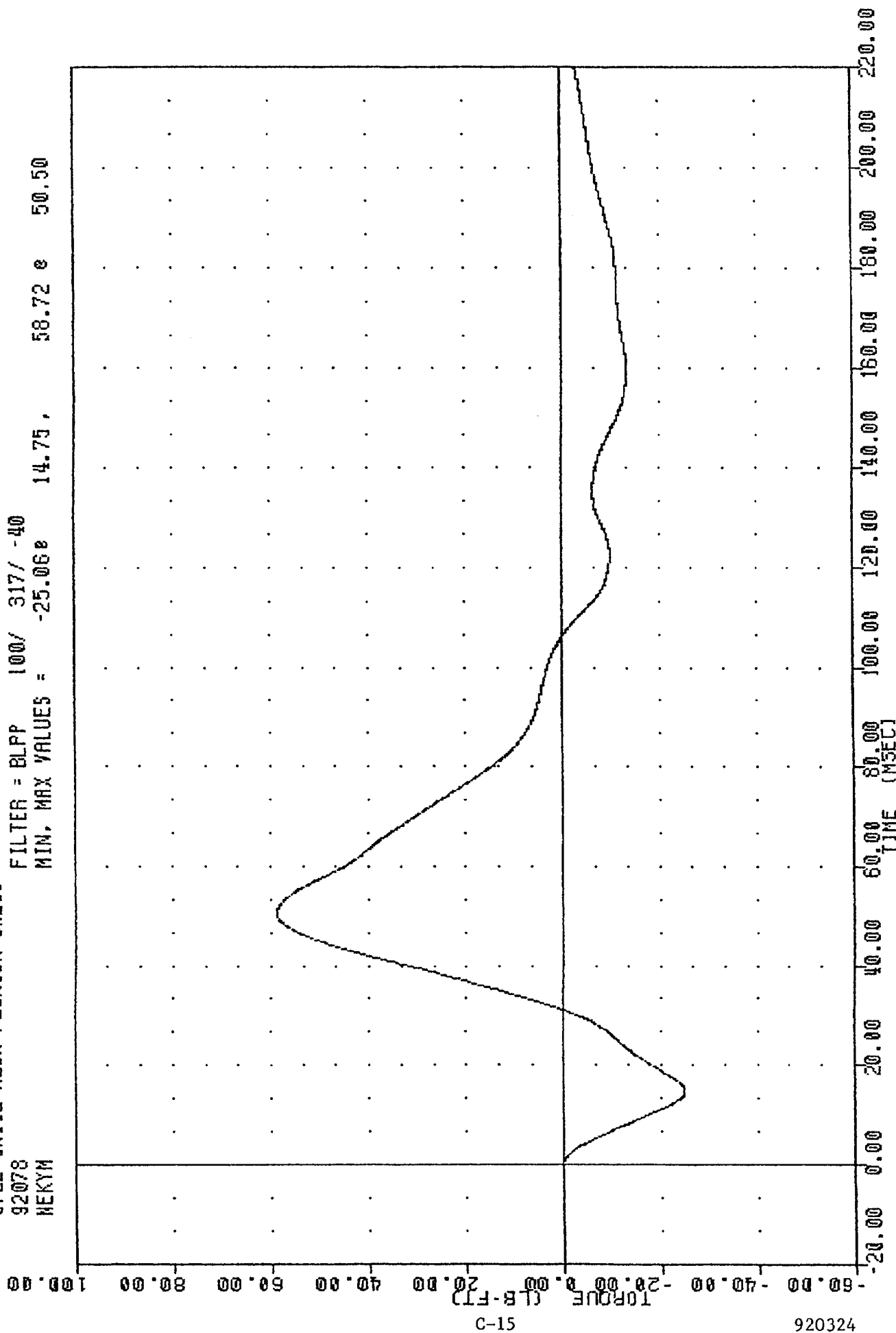
920324

PART 572-E HYBRID III NECK FLEXION CALIBRATION

NECK FORCE AXIS

TRC , 142C10NF1
 572E SN142 NECK FLEXION CAL10
 92078
 MEKYM

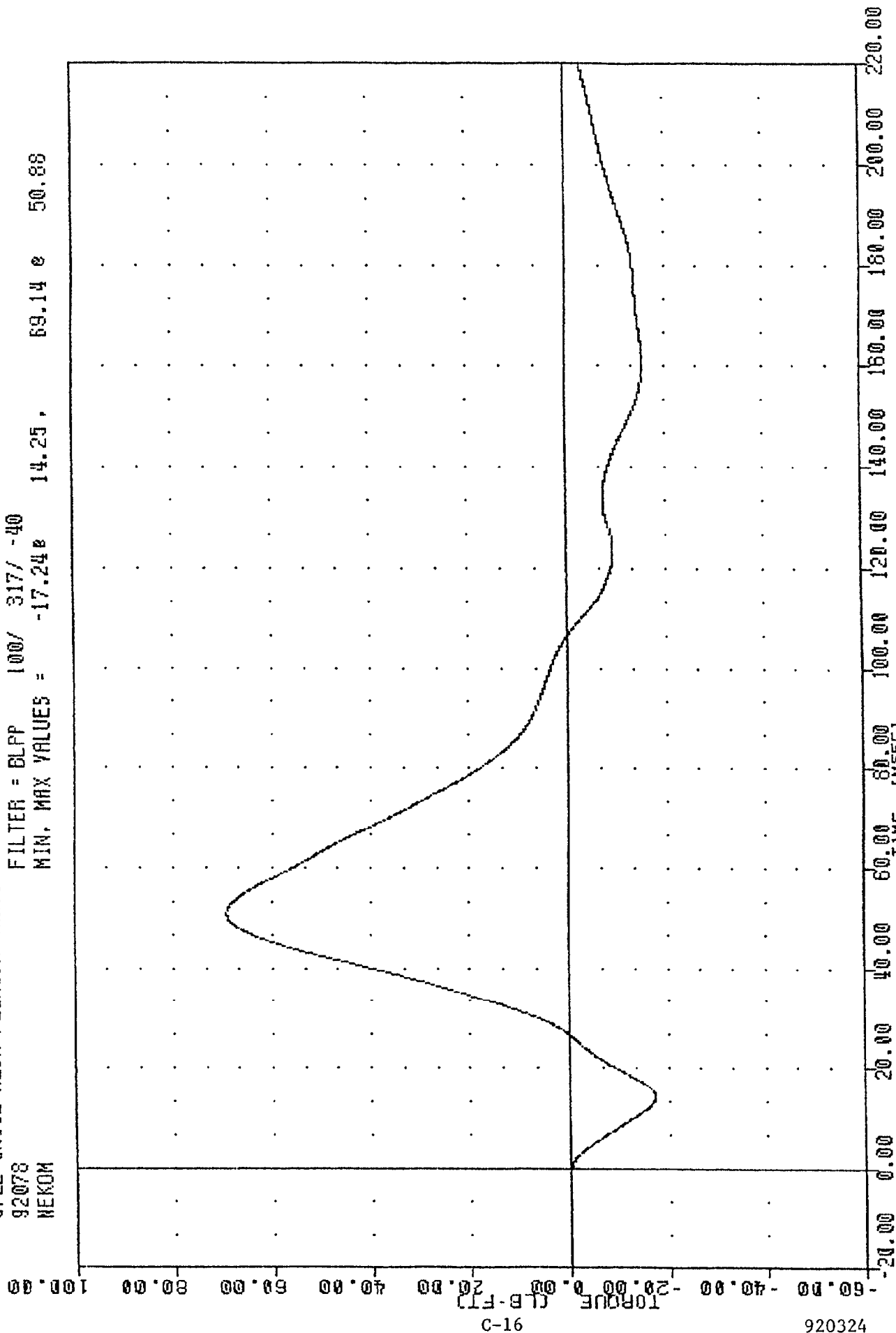
FILTER = BLPP 100/ 317/ -40
 MIN. MAX VALUES = -25.06e 14.75, 58.72 e 50.50



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

TRC , 142C10HF1
 572E SN142 NECK FLEXION CAL10
 92078
 NEKOM

FILTER = BLPP 100/ 317/ -40
 MIN, MAX VALUES = -17.24 14.25, 69.14 e 50.88



920324

PART 572-E HYBRID III NECK FLEXION CALIBRATION

TOTAL MOMENT ABOUT JIPITAL ANGLE

TRANSPORTATION RESEARCH CENTER OF OHIO

NECK EXTENSION TEST

HYBRID III

18-MAR-92

6 AXIS NECK TRANSDUCER
TRC 142C10NE1

572E SN142 NECK EXT. CAL10

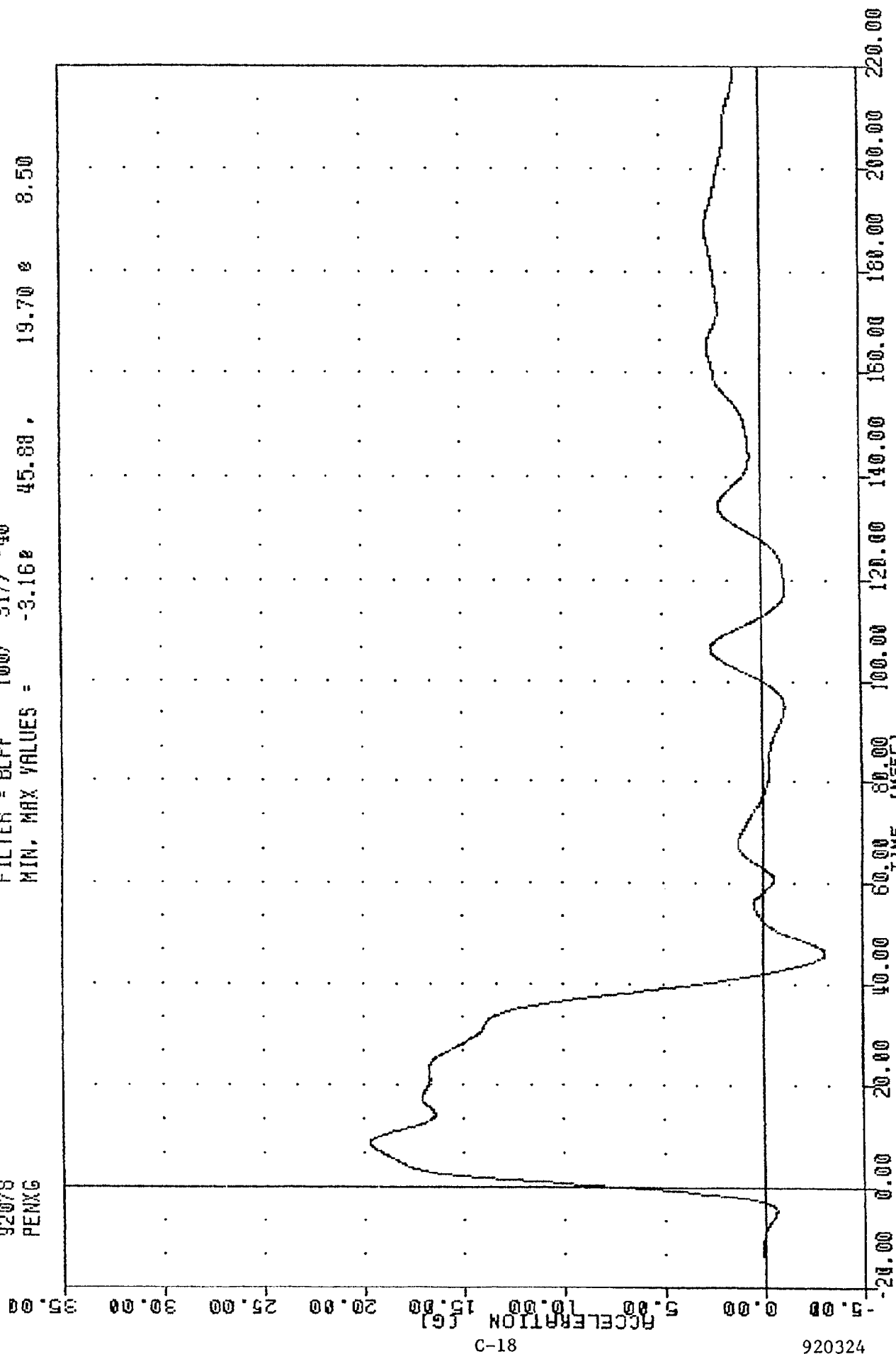
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	69 - 72 DEG. F	70.0 DEG. F
RELATIVE HUMIDITY	10% - 70%	44.0 %
IMPACT VELOCITY	19.50-20.30 FT/SEC	19.83 FT/SEC
PENDULUM	10 MS 17.20 - 21.20 G	19.12 G
DECELERATION	20 MS 14.00 - 19.00 G	16.73 G
	30 MS 11.00 - 16.00 G	14.25 G
MAX PENDULUM G ABOVE 30 MS	22 G MAX	14.22 G
DECELERATION-TIME CURVE		
DECAY TIME TO 5 G	38 - 46 MS	39.00 MS
D PLANE	MAX 81 - 106 DEG.	99.76 DEG.
ROTATION	TIME 72 - 82 MS	75.00 MS
MOMENT ABOUT OCCIPITAL	MIN -59.0/-39.0 FT.LBS	-56.76 FT.LBS
CONDYLE	TIME 65 - 79 MS	70.50 MS
ROTATION ANGLE-TIME CURVE		
DECAY TIME TO ZERO	147 - 174 MS	152.75 MS
NEGATIVE MOMENT-TIME CURVE		
DECAY TIME TO ZERO	120 - 148 MS	138.25 MS

TEST MEETS SPECIFICATIONS

TECHNICIAN *Kevin Watkins*

TRC , 142C10RE1
 572E SN142 NECK EXT. CAL10
 92078
 PENXG

FILTER = BLPP 100/ 317/ -40
 MIN. MAX VALUES = -3.16 45.88 , 19.70 8.50



C-18

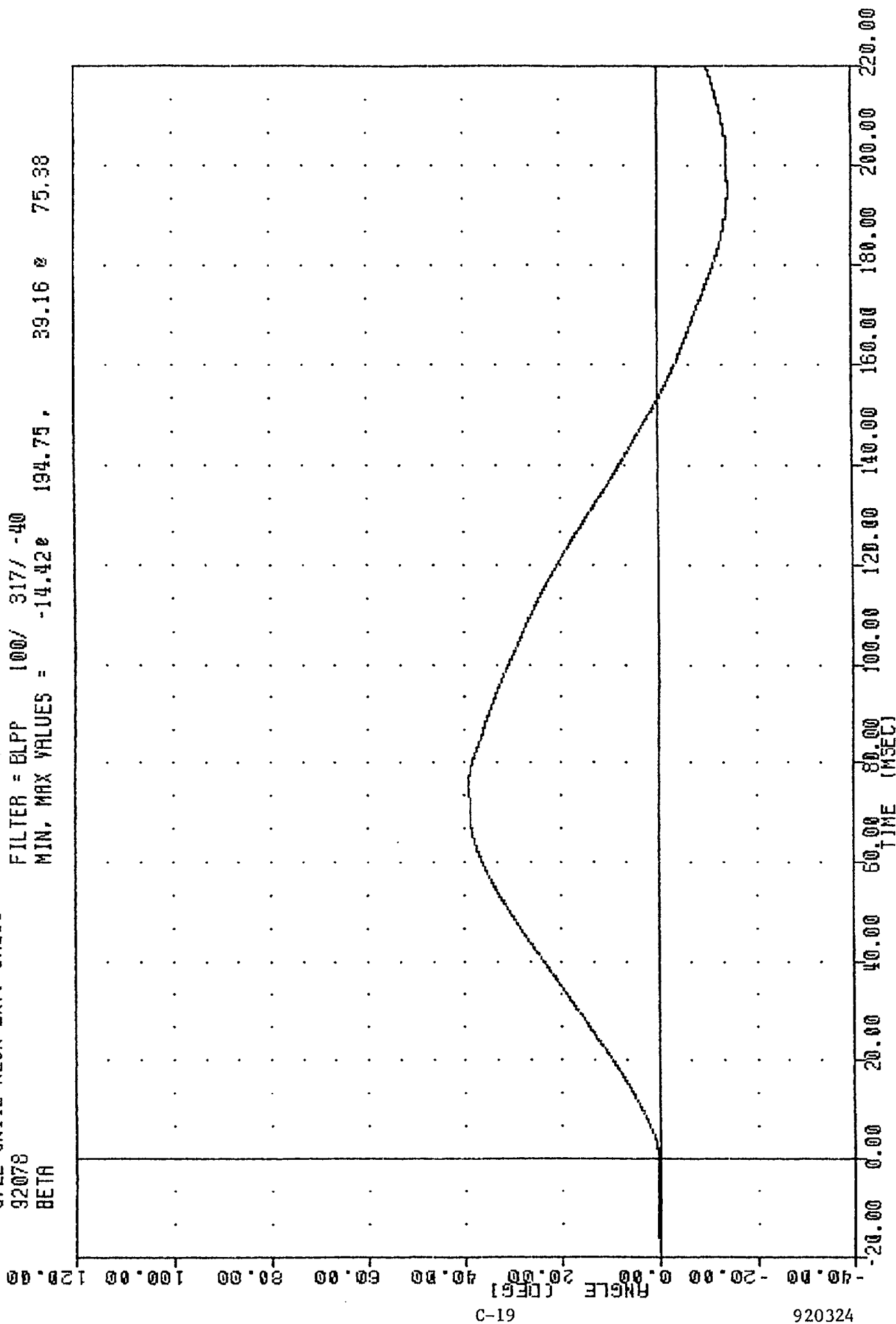
920324

PART 572-E HYBRID III NECK EXTENSION CALIBRATION

UNRECORDED

TRC
572E SN142 NECK EXT. CAL10
92078
BETA

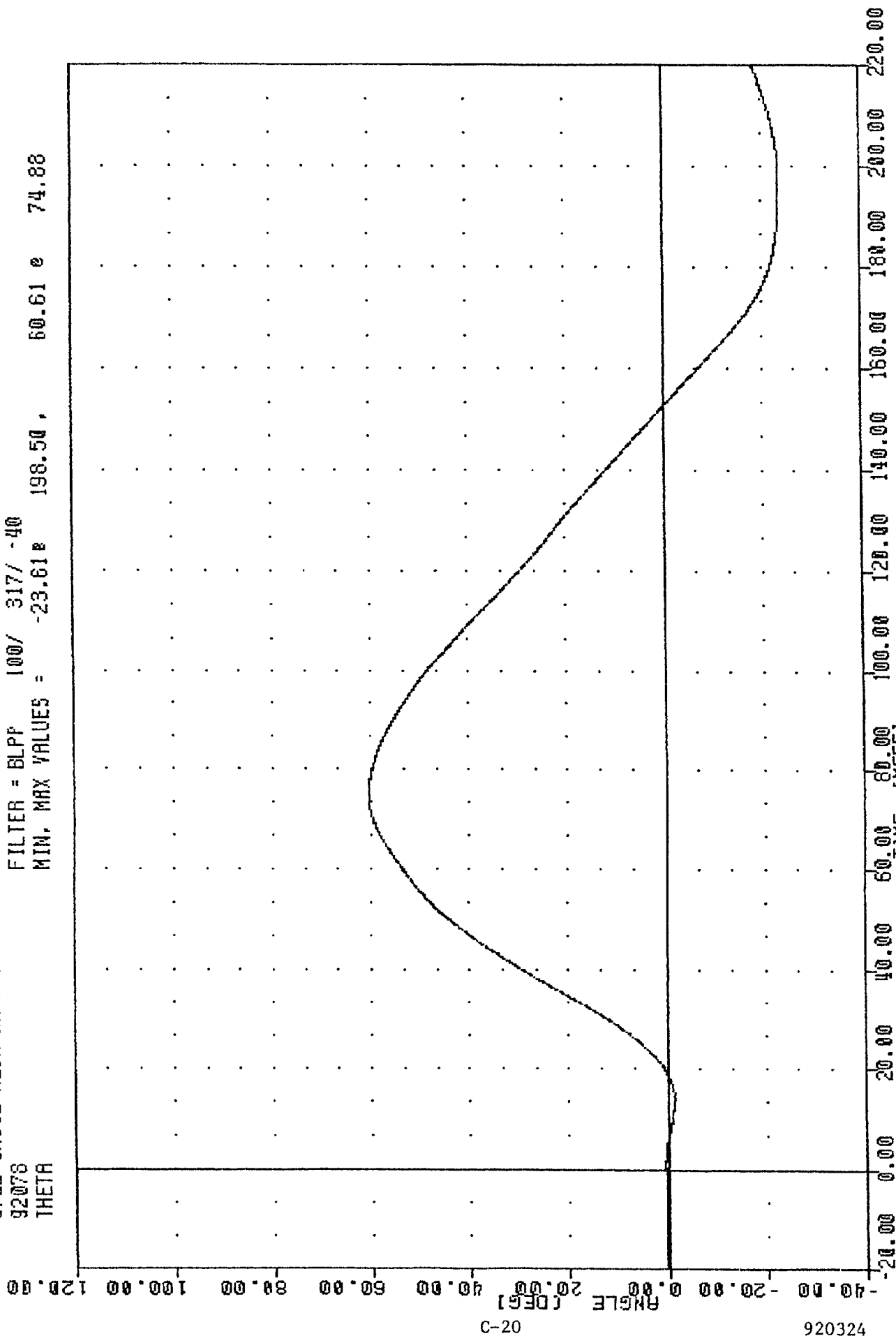
FILTER = BLPP 100/ 317/ -40
MIN, MAX VALUES = -14.42e 194.75, 39.16 e 75.38



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

TRC
572E SN142 NECK EXT. CALIB
92078
THETA

FILTER = BLPP 100/ 317/ -40
MIN. MAX VALUES = -23.61 198.50, 60.61 74.88



C-20

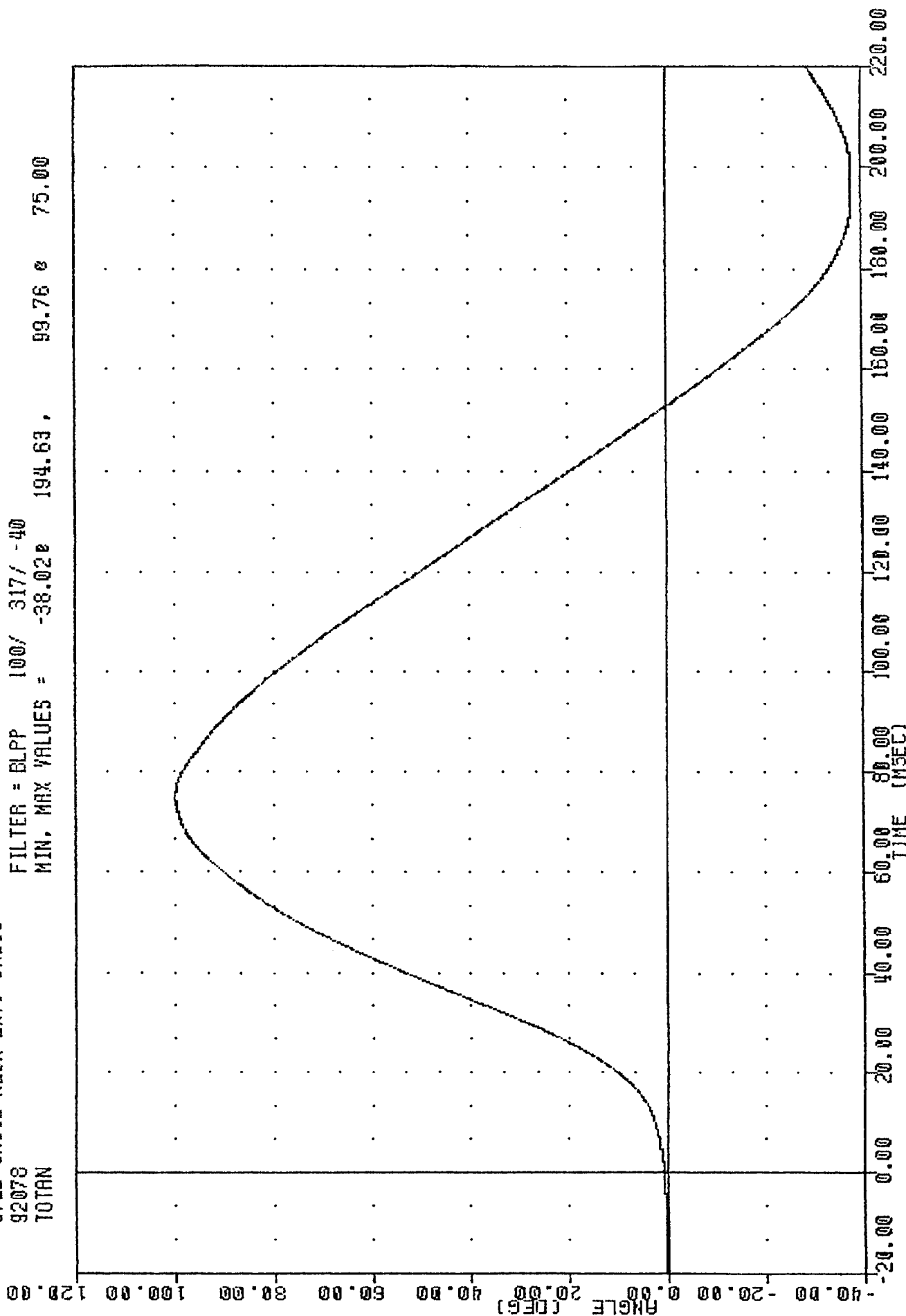
920324

PART 572-E HYBRID III NECK EXTENSION CALIBRATION

ROTATION ABOUT COORDINATE C-20

TRC
 572E SN142 NECK EXT. CAL13
 92078
 TOTAL

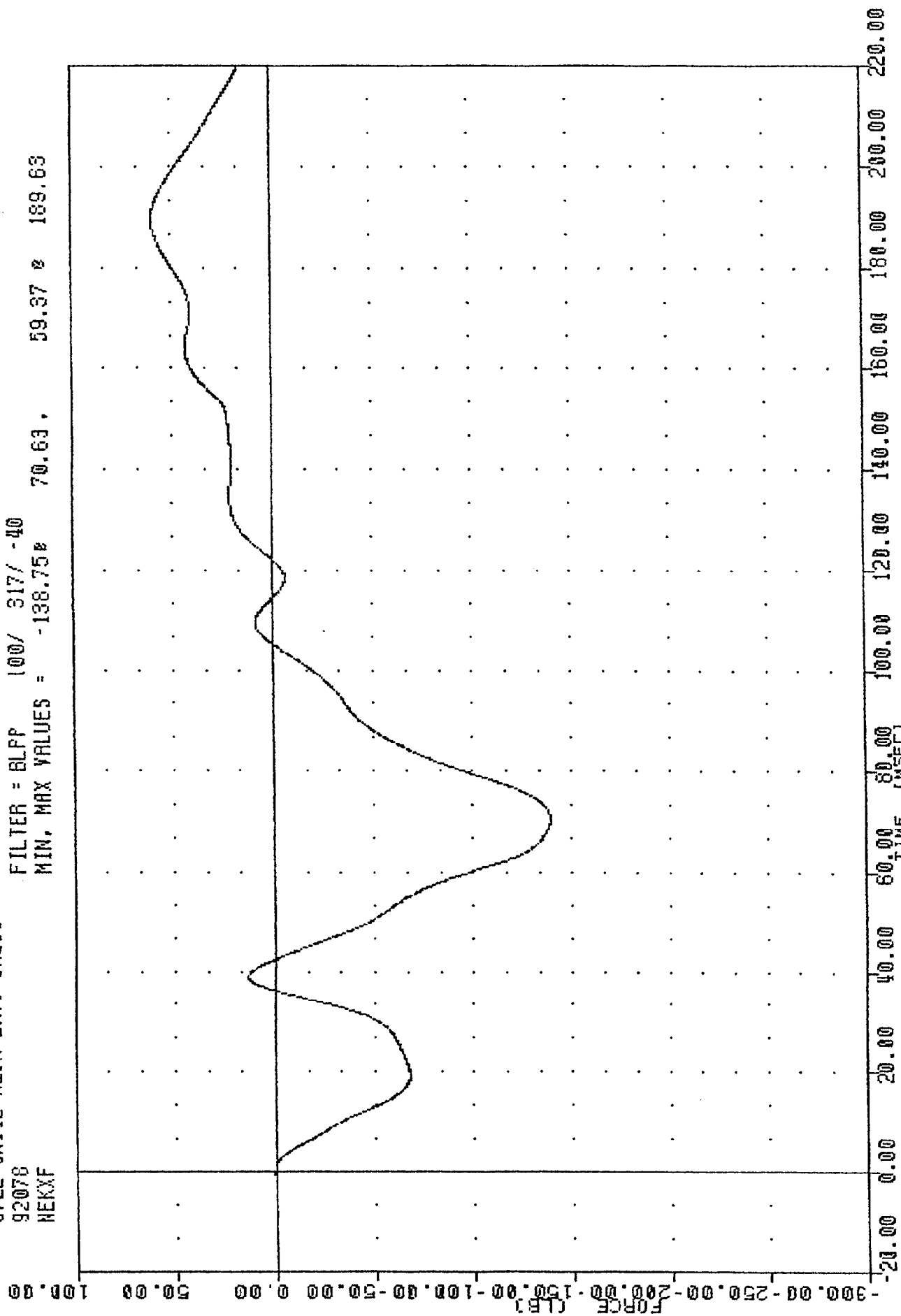
FILTER = BLPP 100/ 317/ -40
 MIN. MAX VALUES = -38.02e 194.63, 99.76 e 75.00



PART 572-E HYBRID III NECK EXTENSION CALIBRATION
 TOTAL ROTATION

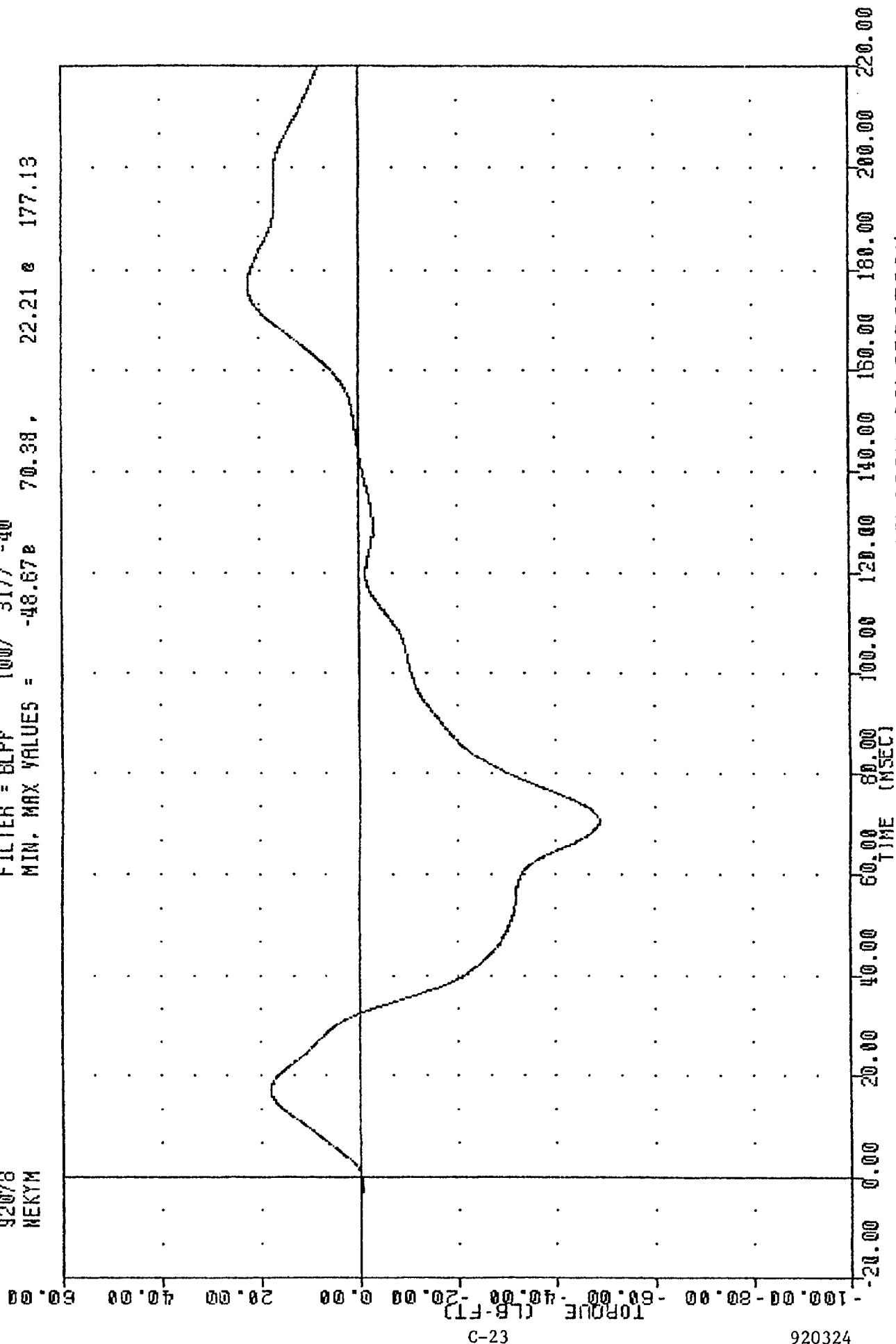
TRC , 142C10NE1
 572E 3N142 NECK EXT. CAL10
 92078
 NEKXF

FILTER = BLPP 100/ 317/ -40
 MIN. MAX VALUES = -138.75% 70.63, 59.37 % 189.63



TRC , 142C10NE1
 572E 5N142 NECK EXT. CAL10
 92078
 NEKYM

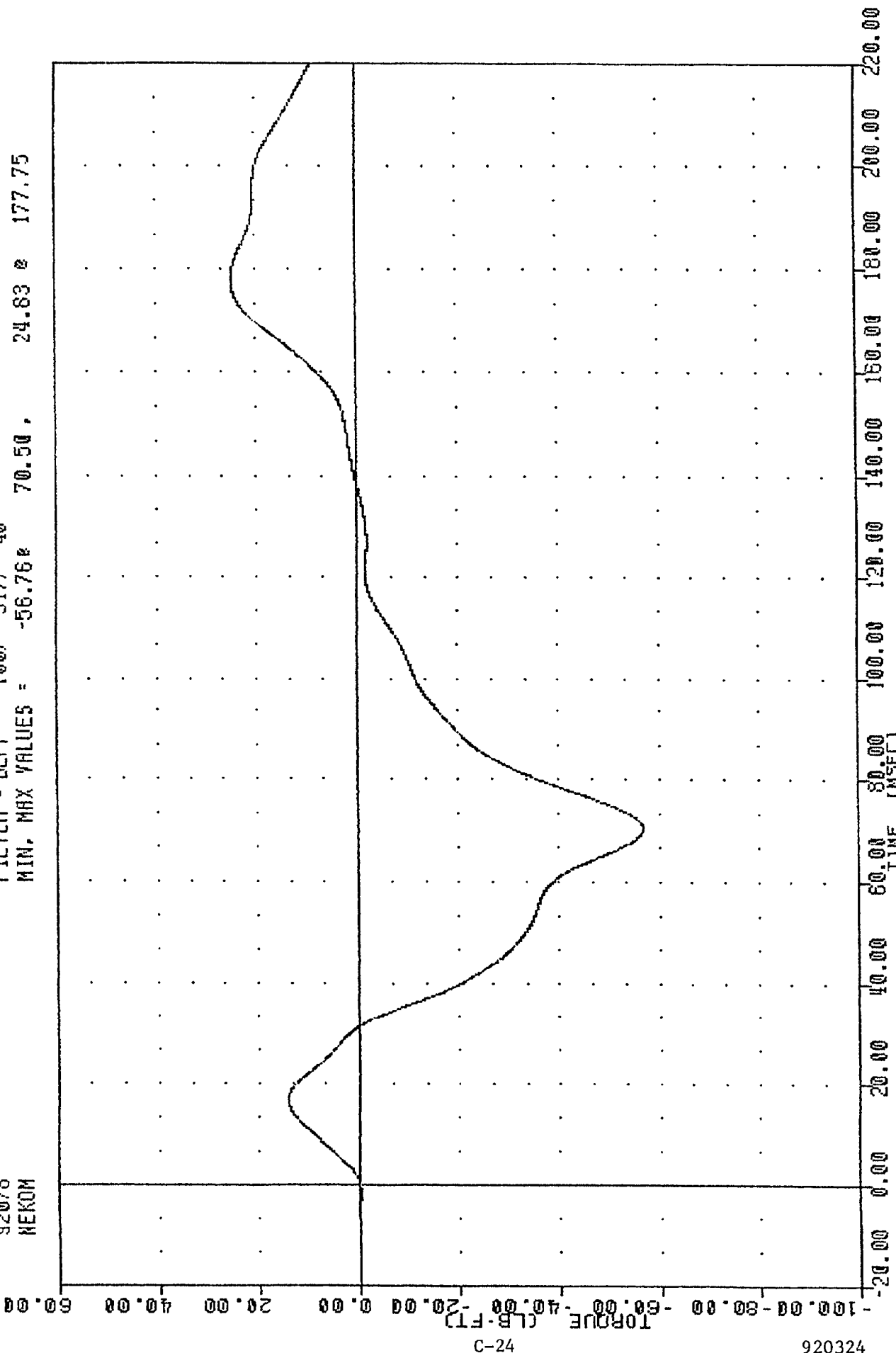
FILTER = BLPP 100/ 317/ -40
 MIN. MAX VALUES = -48.67e 70.38e 22.21 e 177.13



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

TRC , 142C10HE1
 572E SN142 NECK EXT. CAL10
 92078
 NEKOM

FILTER = ELPP 100/ 317/ -40
 MIN, MAX VALUES = -56.76 70.50 , 24.63 177.75



PART 572-E HYBRID III NECK EXTENSION CALIBRATION
 TOTAL MOMENT ABOUT ORIGINAL GROUNDLINE

TRANSPORTATION RESEARCH CENTER OF OHIO

THORAX IMPACT TEST

HYBRID III

18-MAR-92

TRC

142C10TH1

572E SN142 H.S.THORAX CAL10

		HIGH SPEED TEST	

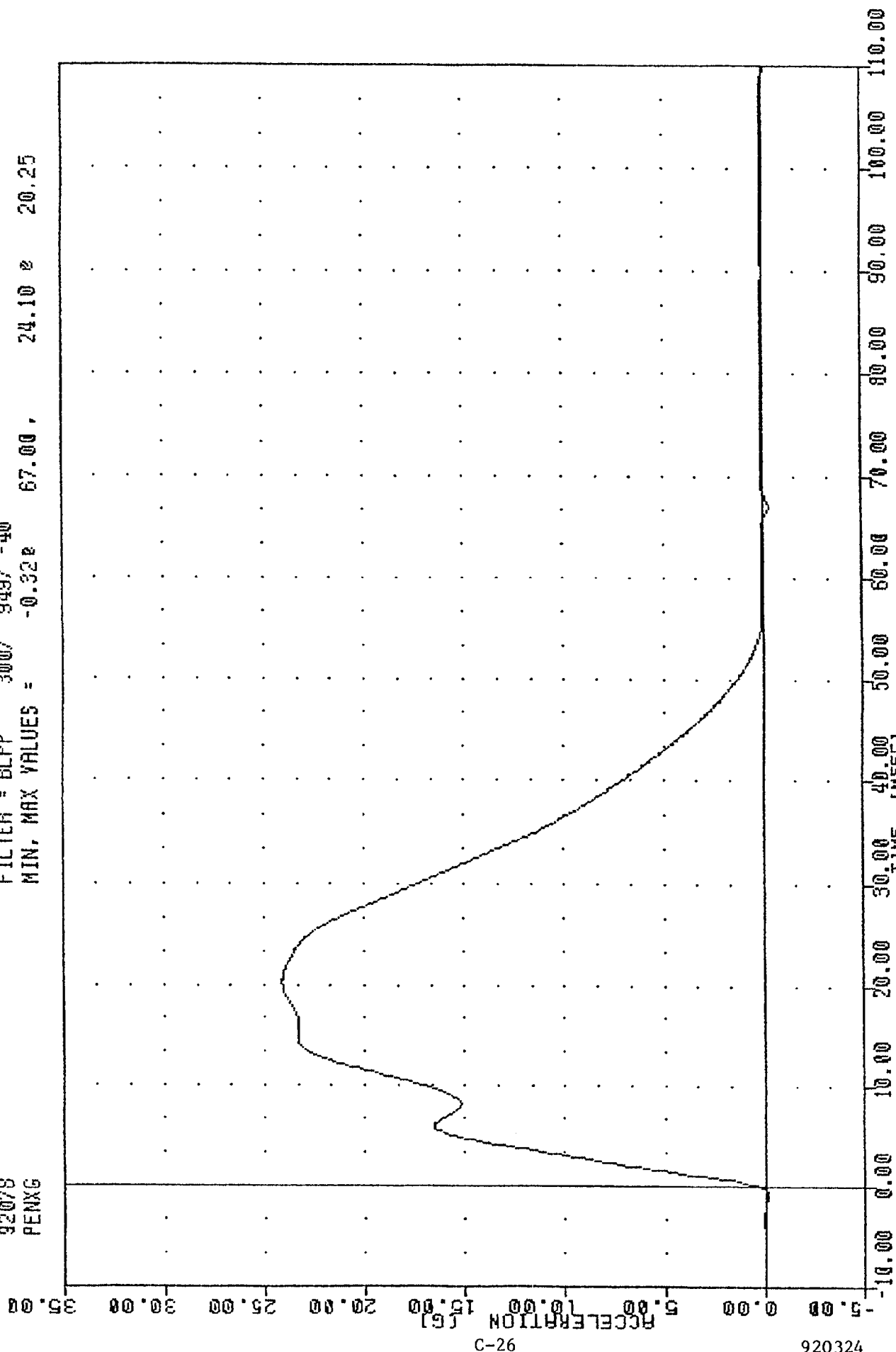
	TEST PARAMETER	SPECIFICATION	TEST RESULTS
	TEMPERATURE	69 - 72 DEG. F	70.0 DEG. F
	RELATIVE HUMIDITY	10% - 70%	43.0 %
	PENDULUM VELOCITY	21.6-22.4 FT/SEC	21.92 FT/SEC
	MAXIMUM DEFLECTION	2.50 - 2.86 IN	2.81 IN
	MAXIMUM RESISTIVE FORCE	1160 - 1325 LBS	1241.0 LBS
	INTERNAL HYSTERESIS	69% - 85%	71.2%

TEST MEETS SPECIFICATIONS

TECHNICIAN Kevin Watkins

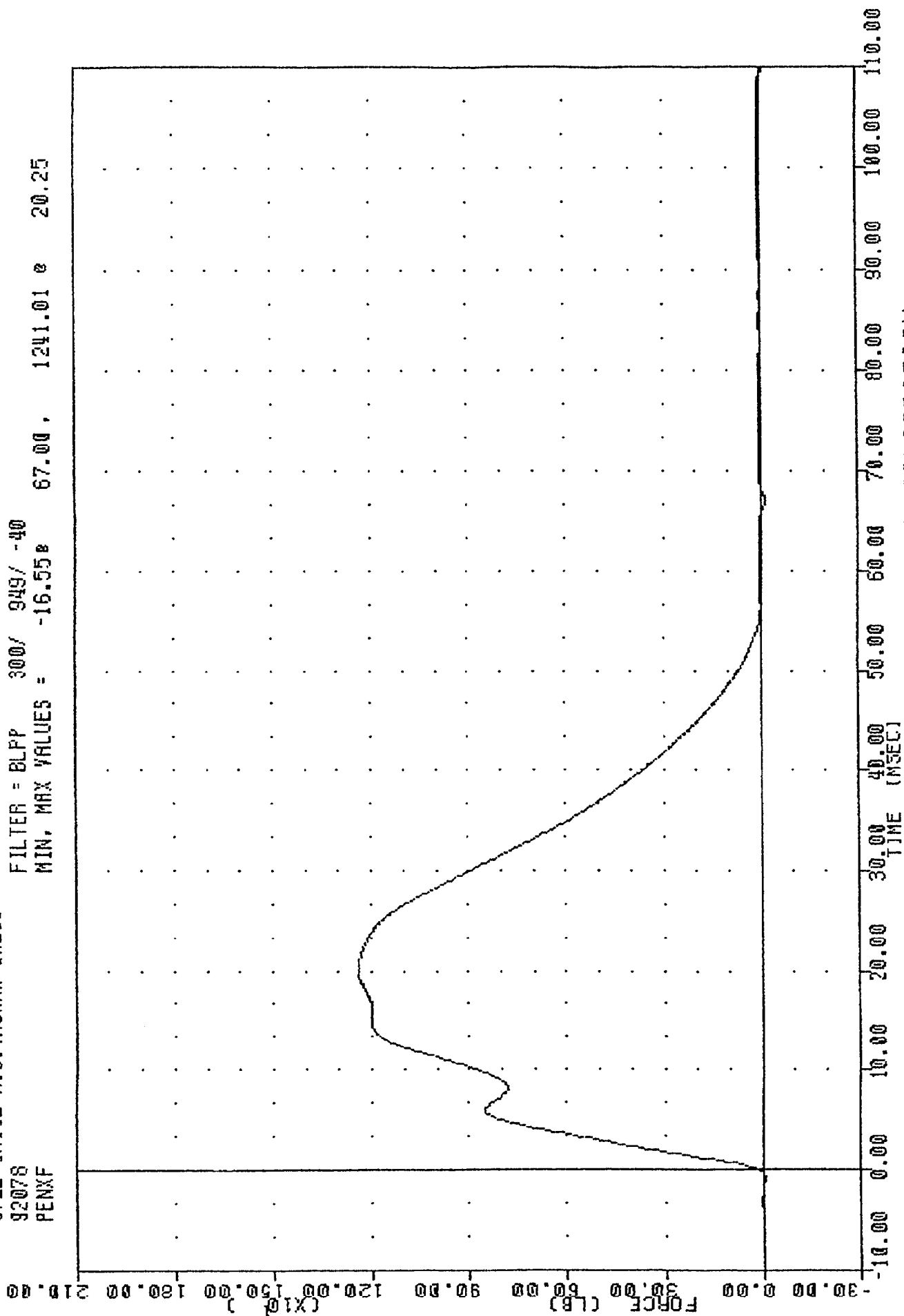
TRC
572E SN142 H.S. THORAX CAL13
92078
PENXG

FILTER = BLPP 300/ 949/ -40
MIN, MAX VALUES = -0.32e 67.00, 24.10 e 20.25



TRC
 572E SN142 H.5.THORAX CAL10
 92078
 PENXF

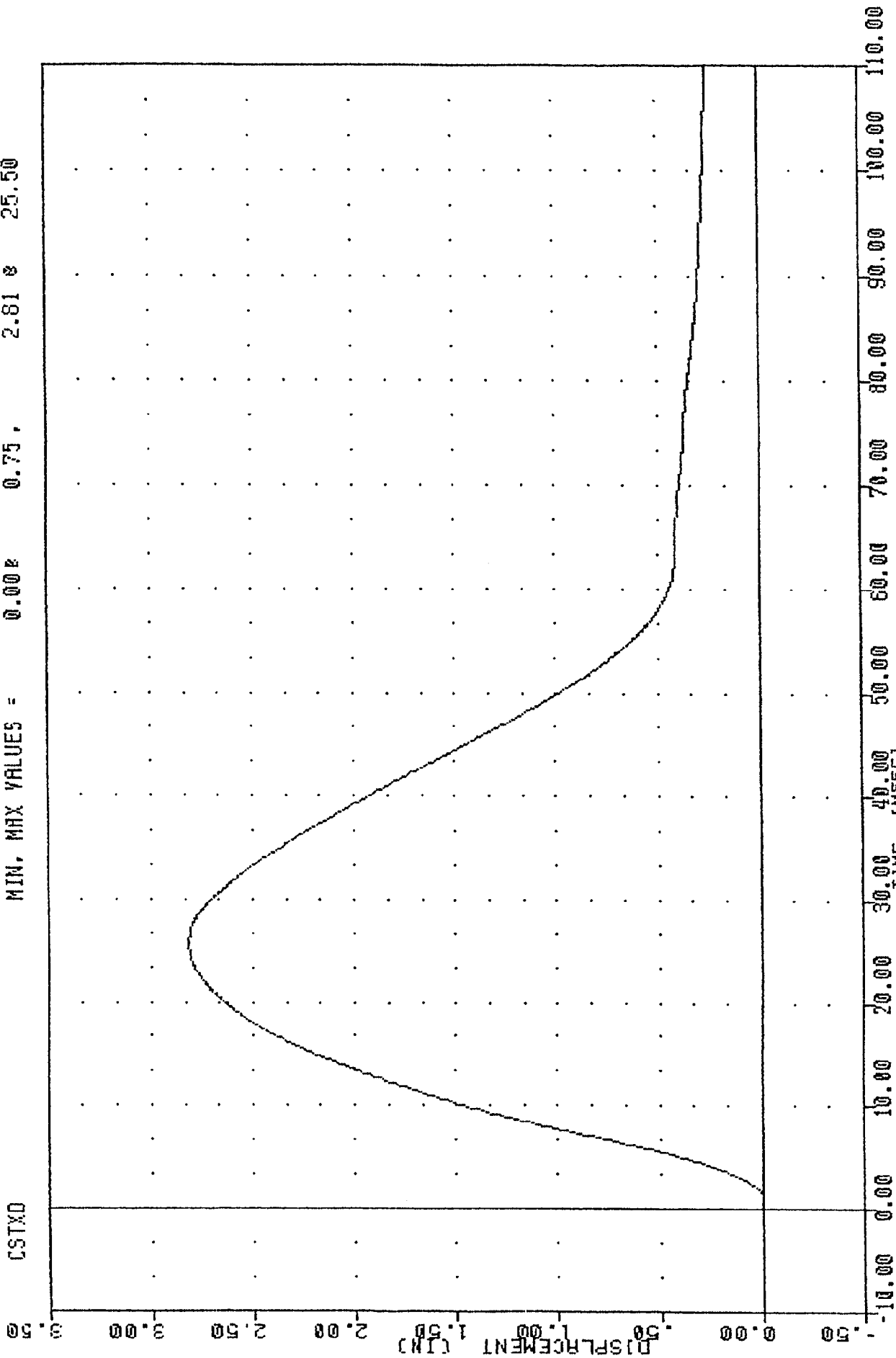
FILTER = BLPP 300/ 949/ -40
 MIN. MAX VALUES = -16.55 67.00, 1241.01 20.25



PART 572-E HYBRID III THORAX CALIBRATION
 PENDULUM FORCE

TRC , 142C10TH1
 572E SN142 H.S. THORAX CAL10
 92078
 CSTXD

FILTER = BLPP 300/ 949/ -40
 MIN, MAX VALUES = 0.00 0.75, 2.81 25.50



PART 572-E HYBRID III THORAX CALIBRATION

SYSTEM DISPLACEMENT

TRC
CSTXD
PENXF

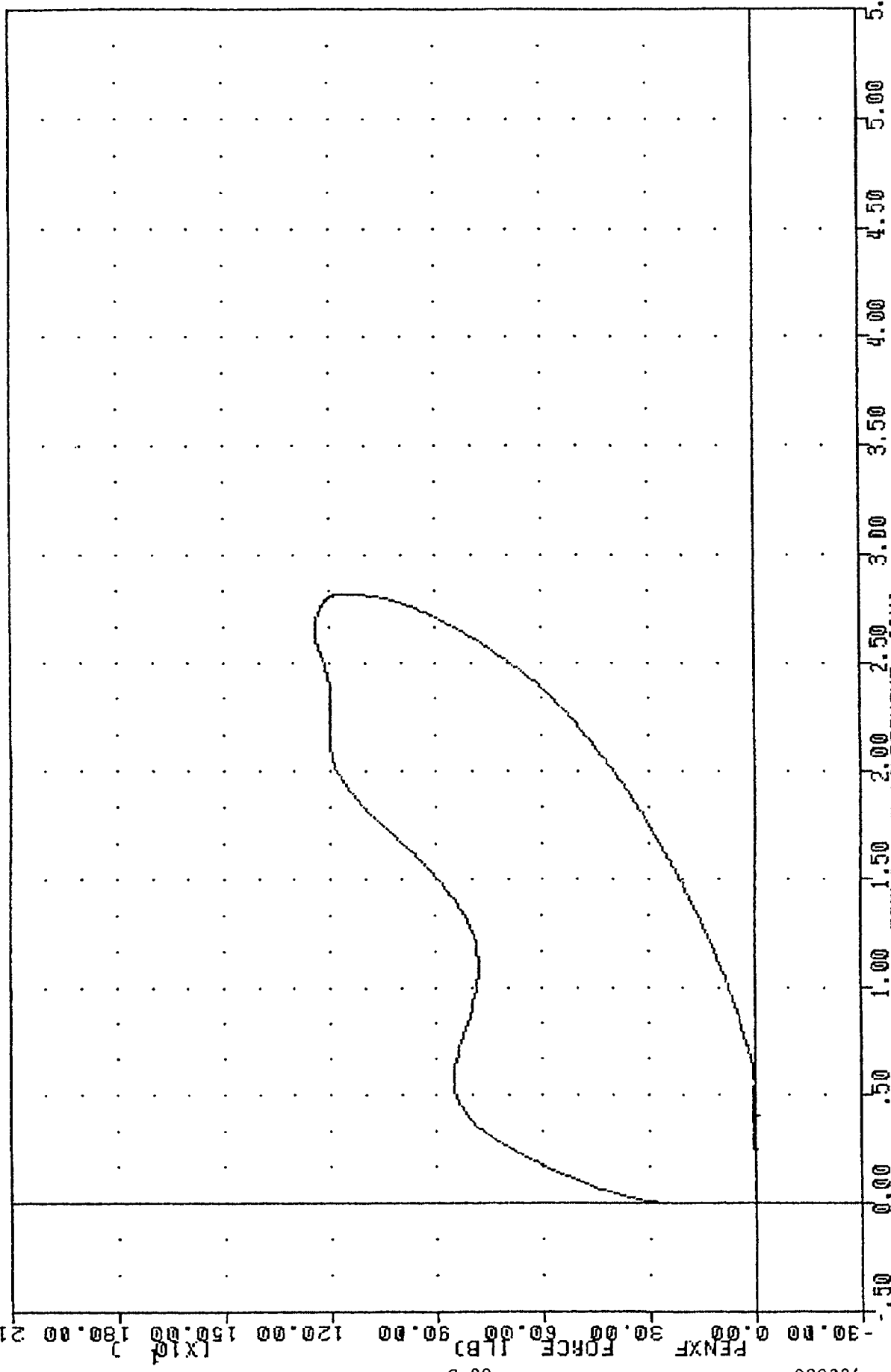
142C10TH1
FILTER = BLPP
FILTER = BLPP

572E SN142 H.S. THORAX CAL10
300/ 949/ -40 MIN. MAX =
300/ 949/ -40 MIN. MAX =

92078
0.00 s
-18.55 s

0.75 ;
67.00 ;
2.81 s
1241.81 s
25.50
20.25

210.00
180.00
150.00
120.00
90.00
60.00
30.00
0.00
-30.00
-60.00
-90.00
-120.00
-150.00
-180.00
-210.00



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

TRANSPORTATION RESEARCH CENTER OF OHIO

KNEE IMPACT TEST

HYBRID III

18-MAR-92

LEFT KNEE

TRC

142C10LK1

572E SN142 L.KNEE 11LB CAL 10

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78 DEG. F	70.0 DEG. F
RELATIVE HUMIDITY	10% - 70%	44.0 %
PROBE VELOCITY	6.8 - 7.0 FT/SEC	6.94 FT/SEC
PEAK KNEE IMPACT FORCE	1060 - 1300 LBS	1093.75 LBS
PROBE WEIGHT	11.0 LBS	

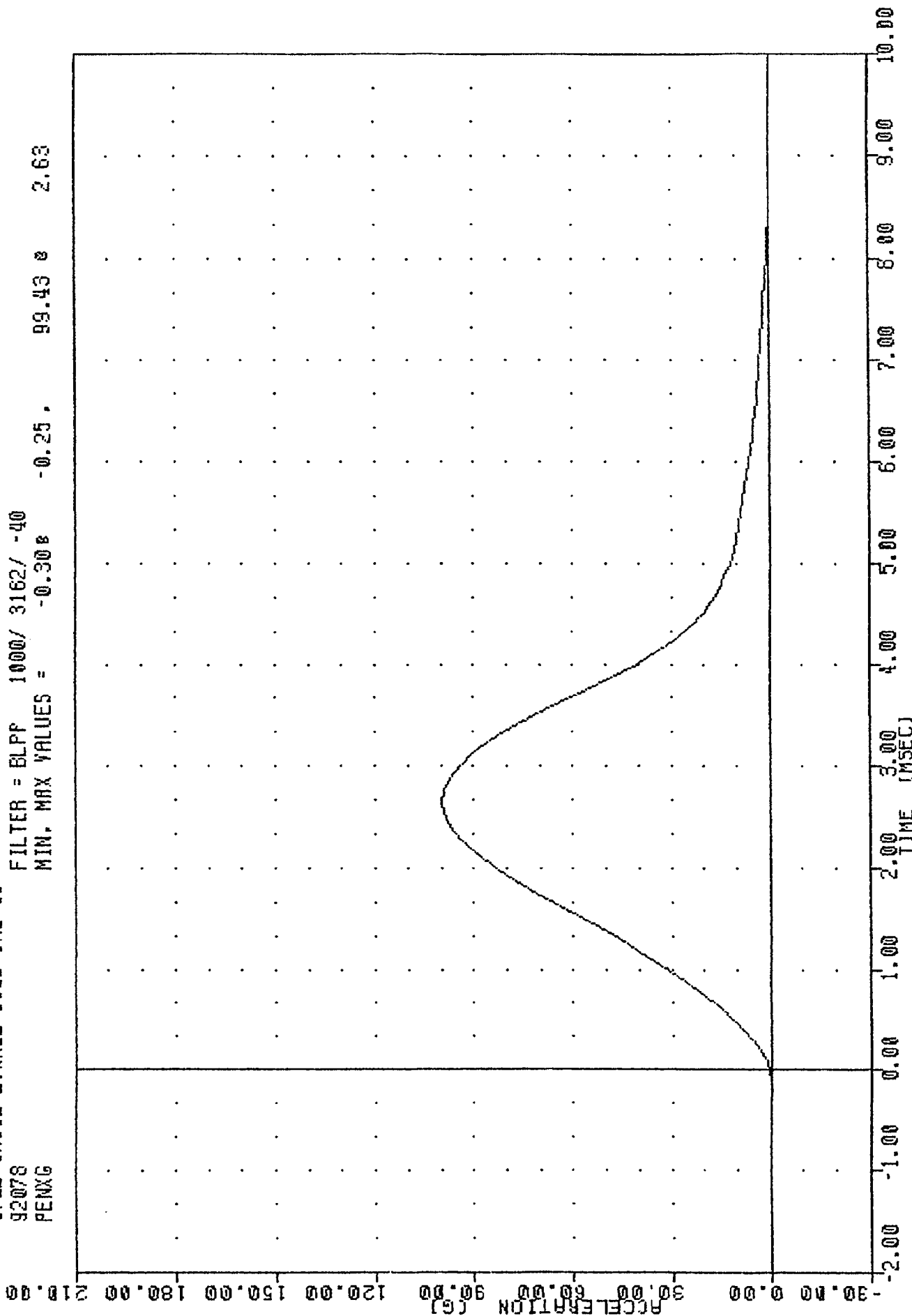
TEST MEETS SPECIFICATIONS

TECHNICIAN

Kevin Watkins

TRC
 572E SN142 L.KNEE 11LB CAL 10
 92078
 PENXG

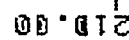
FILTER = BLPP 1000/ 3162/ -40
 MIN. MAX VALUES = -0.308 99.43 2.63



PART 572-E HYBRID III LEFT KNEE CALIBRATION
 PENDULUM DECELERATION (11 LB PEND.)

TPC, 142C10LKI

FILTER = GLPP 1000/ 3162/ -40



NEW YORK, N.Y. (AP) —

TRANSPORTATION RESEARCH CENTER OF OHIO

KNEE IMPACT TEST

HYBRID III

18-MAR-92

RIGHT KNEE
TRC

142C10RK1

572E SN142 R.KNEE 11LB CAL 10

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78 DEG. F	70.0 DEG. F
RELATIVE HUMIDITY	10% - 70%	44.0 %
PROBE VELOCITY	6.8 - 7.0 FT/SEC	6.91 FT/SEC
PEAK KNEE IMPACT FORCE	1060 - 1300 LBS	1203.17 LBS
PROBE WEIGHT	11.0 LBS	

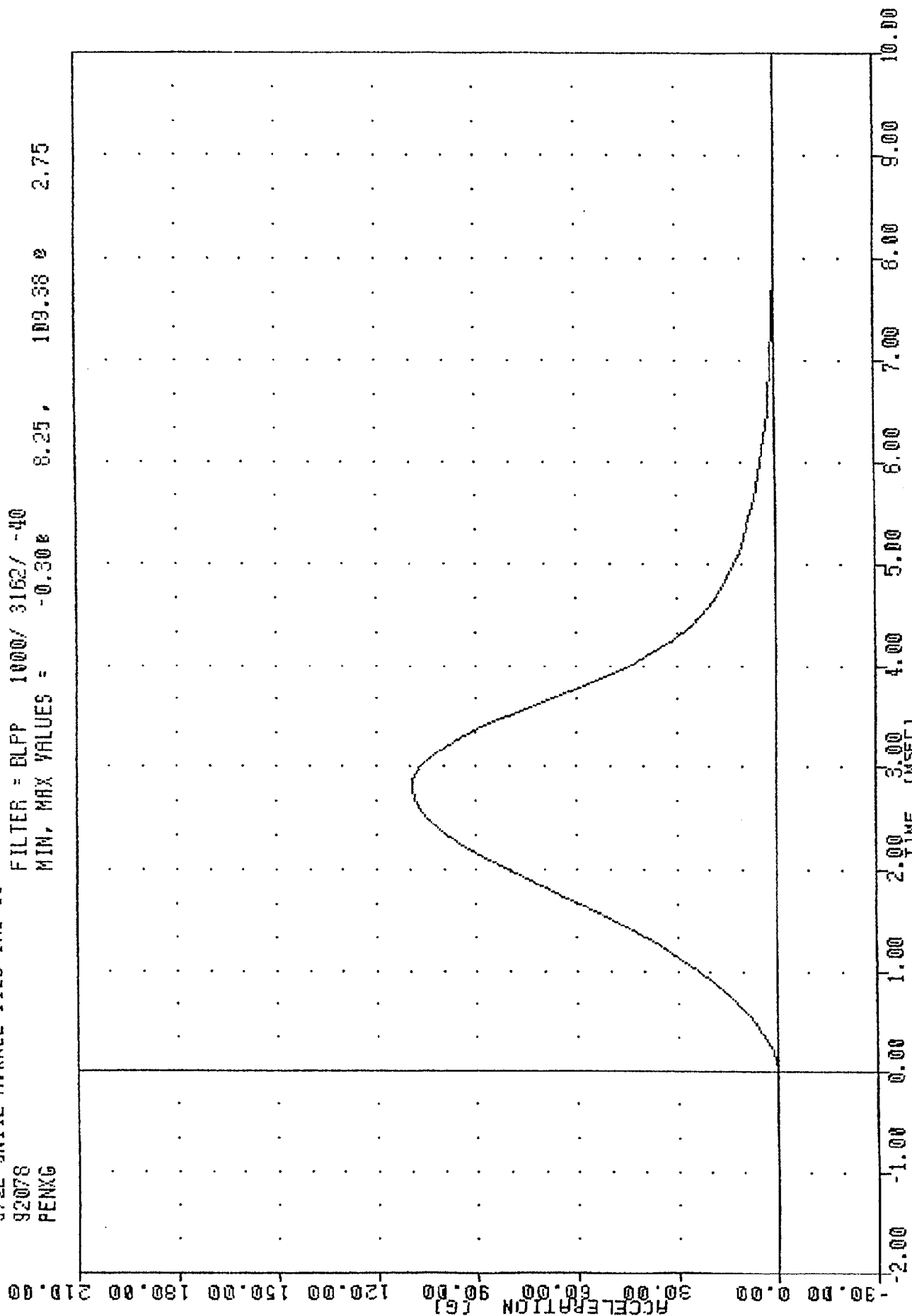
TEST MEETS SPECIFICATIONS

TECHNICIAN

Kevin Watkins

TRC
572E SN142 A.KNEE 11LB CAL 10
92078
PENXG

FILTER = BLPP 1000/ 3162/ -40
MIN, MAX VALUES = -0.30 8.25, 109.38 2.75

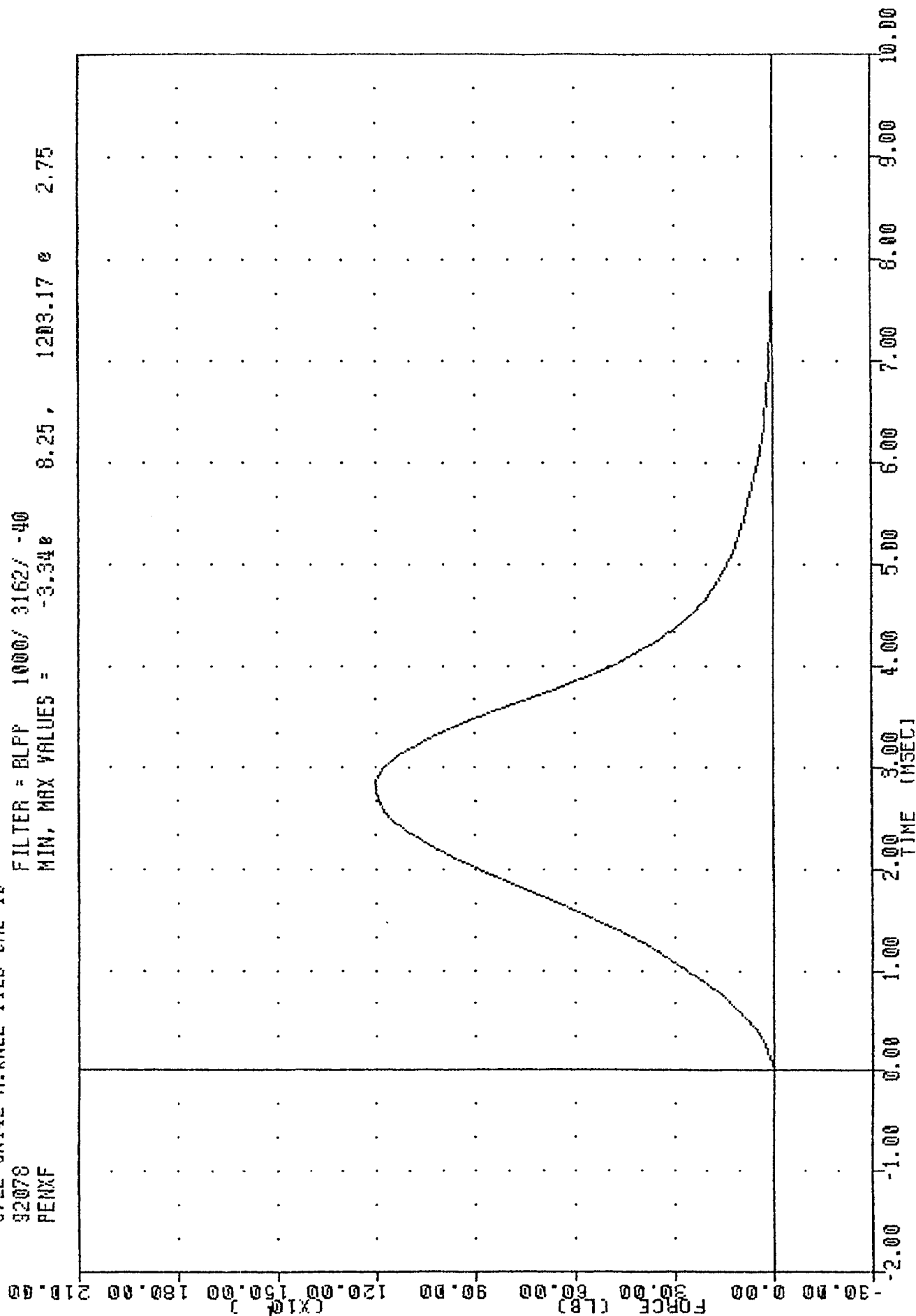


PART 572-E HYBRID III RIGHT KNEE CALIBRATION
PENXG DECELERATION (PENXG)

TRC
572E SN142 R.KNEE 11LB CAL 10
92078
PENXF

FILTER = BLPP 1000/ 3162/ -40
MIN, MAX VALUES = -3.34e

8.25, 1203.17 e 2.75



PART 572-E HYBRID III RIGHT KNEE CALIBRATION
PENDULUM FORCE (11 LB PEND.)

PRE-TEST CERTIFICATION DATA

PASSENGER DUMMY S/N: 192

TRANSPORTATION RESEARCH CENTER OF OHIO
HYBRID III EXTERNAL DIMENSIONS
SN 192 HUMANOID

18-MAR-92

TRC 192C8ED1 572E SN192 EXT. DIMENSION CAL09

TEST PARAMETER	(DIMEN.)	SPECIFICATION	TEST RESULTS
TEMPERATURE			70.0 DEG. F
RELATIVE HUMIDITY			44.0 %
LOCATION FOR CHEST CIRCUMFERENCE (AA)		16.9-17.1 IN	17.0 IN
LOCATION FOR WAIST CIRCUMFERENCE (BB)		8.9- 9.1 IN	9.0 IN
CHEST CIRCUMFERENCE (Y)		38.2-39.4 IN	38.7 IN
WAIST CIRCUMFERENCE (Z)		32.9-34.1 IN	33.4 IN
CHEST DEPTH (O)		8.4- 9.0 IN	8.6 IN
H-POINT HEIGHT (C)		3.3- 3.5 IN	3.4 IN
H-POINT FROM SEATBACK (D)		5.3- 5.5 IN	5.4 IN
SKULL CAP TO BACKLINE (H)		1.6- 1.8 IN	1.7 IN
TOTAL SITTING HEIGHT (A)		34.6-35.0 IN	34.8 IN
THIGH CLEARANCE (F)		5.5- 6.1 IN	5.8 IN
BUTTOCK KNEE LENGTH (K)		22.8-23.8 IN	23.7 IN
BUTTOCK POPLITEAL LENGTH (N)		17.8-18.8 IN	18.6 IN
POPLITEAL HEIGHT (L)		16.9-17.9 IN	17.7 IN
KNEE PIVOT HEIGHT (M)		19.1-19.7 IN	19.4 IN
FOOT LENGTH (P)		9.9-10.5 IN	10.2 IN
FOOT BREADTH (W)		3.6- 4.2 IN	4.0 IN
SHOULDER PIVOT FROM BACKLINE (E)		3.3- 3.7 IN	3.6 IN
SHOULDER BREADTH (V)		16.6-17.2 IN	16.8 IN
SHOULDER PIVOT HEIGHT (B)		19.9-20.5 IN	20.2 IN
ELBOW REST HEIGHT (J)		7.5- 8.3 IN	8.1 IN
SHOULDER-ELBOW LENGTH (I)		13.0-13.6 IN	13.4 IN
BACK OF ELBOW TO WRIST PIVOT (G)		11.4-12.0 IN	11.6 IN

TEST MEETS SPECIFICATIONS

TECHNICIAN *Kevin Watkins*

TRANSPORTATION RESEARCH CENTER OF OHIO

HEAD DROP TEST

HYBRID III

18-MAR-92

TRC

192C8HD1

572E SN192 HEAD DROP CAL 08

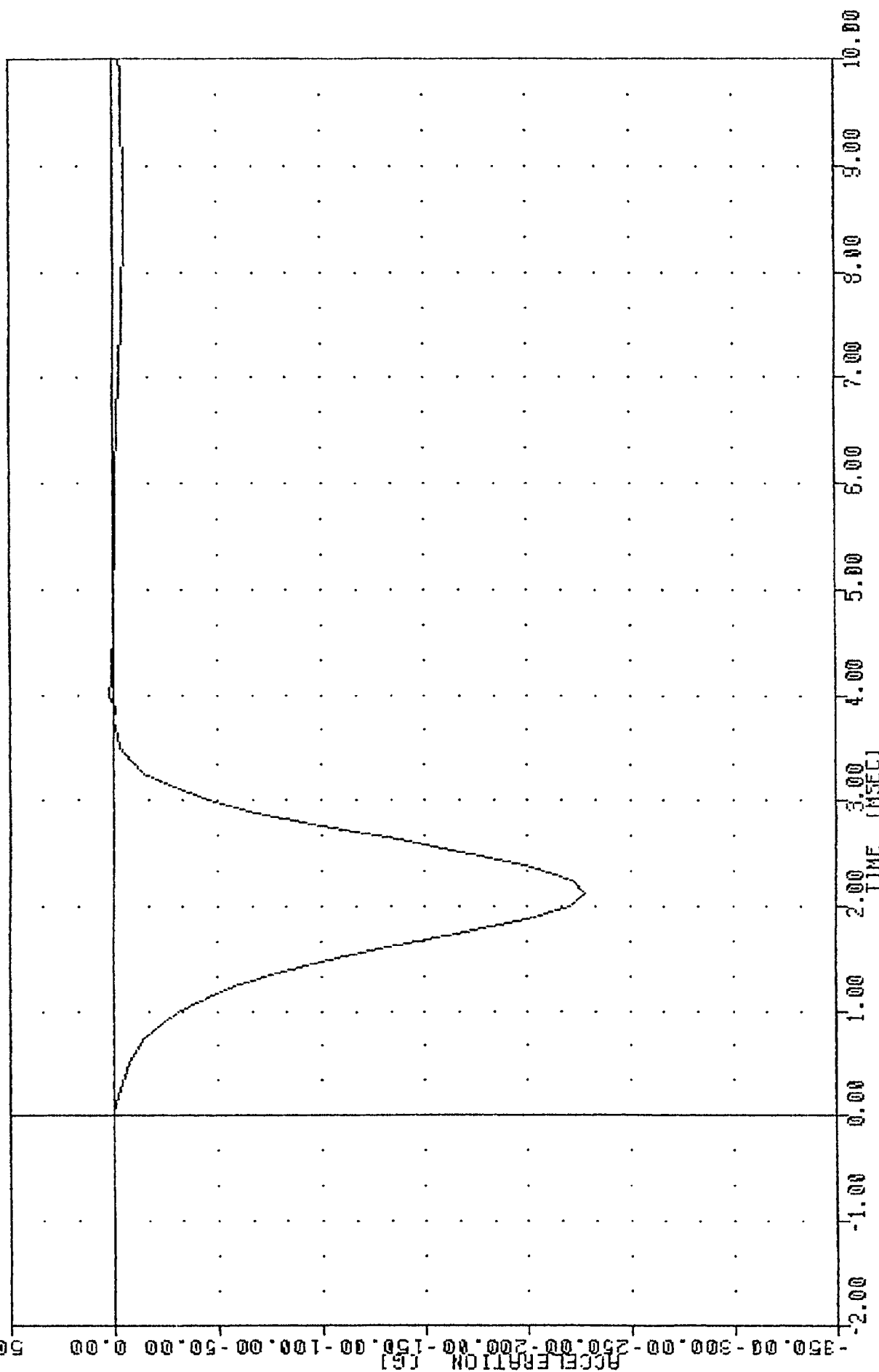
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78 DEG. F	70.0 DEG. F
RELATIVE HUMIDITY	10% - 70%	44.0 %
PEAK RESULTANT ACCELERATION	225 - 275 G	263.83 G
PEAK LATERAL ACCELERATION	15 G MAX	-2.85 G
IS ACCELERATION CURVE UNIMODAL?	YES	YES

TEST MEETS SPECIFICATIONS

TECHNICIAN Kevin Watkins

TRC
572E SN192 HEAD DRDF CAL 06
92078
HEADG

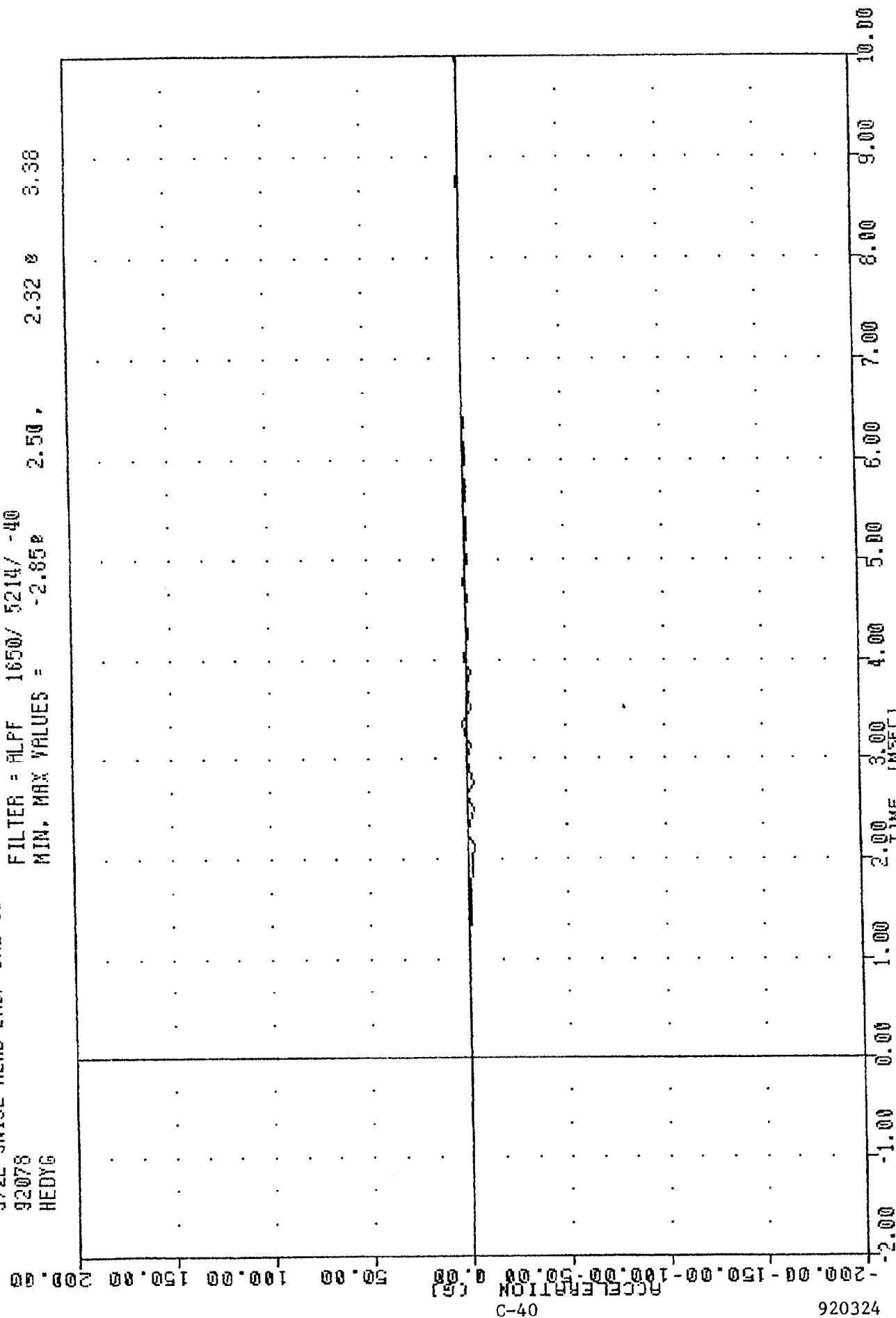
FILTER = ALPF 1650/ 5214/ -40
MIN. MAX VALUES = -227.97e 2.13, 1.80 e 4.00



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

TRC
572E SN192 HEAD CROP CAL 06
92078
HEDYG

FILTER = ALPF 1650/ 5214/ -40
MIN. MAX VALUES = 2.50 2.32 0 3.38

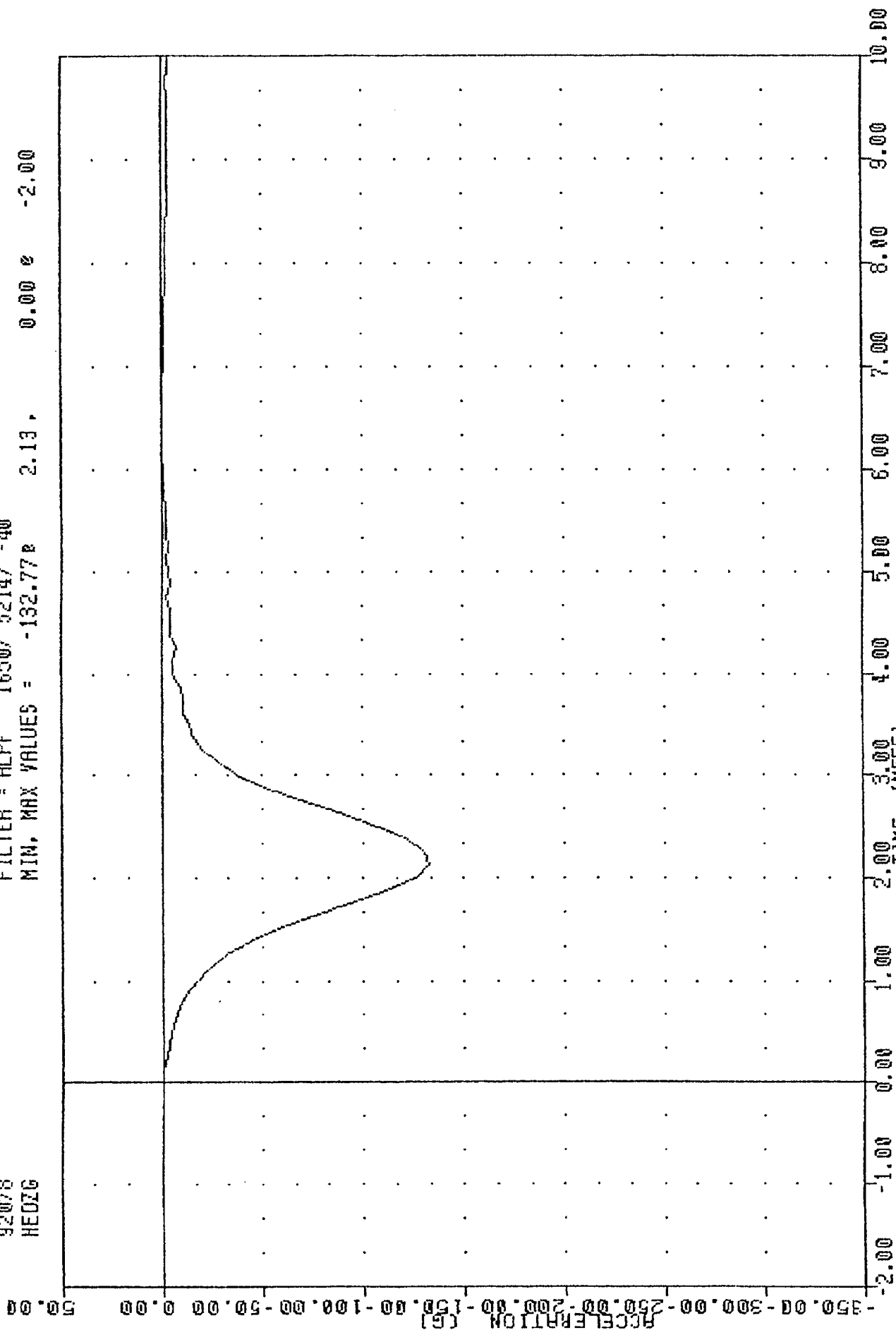


PART 572-E HYBRID III HEAD CALIBRATION

HEAD ACCELERATION Y-Axis

TRC
572E SN192 HEAD DROP CAL 30
92078
HEADZG

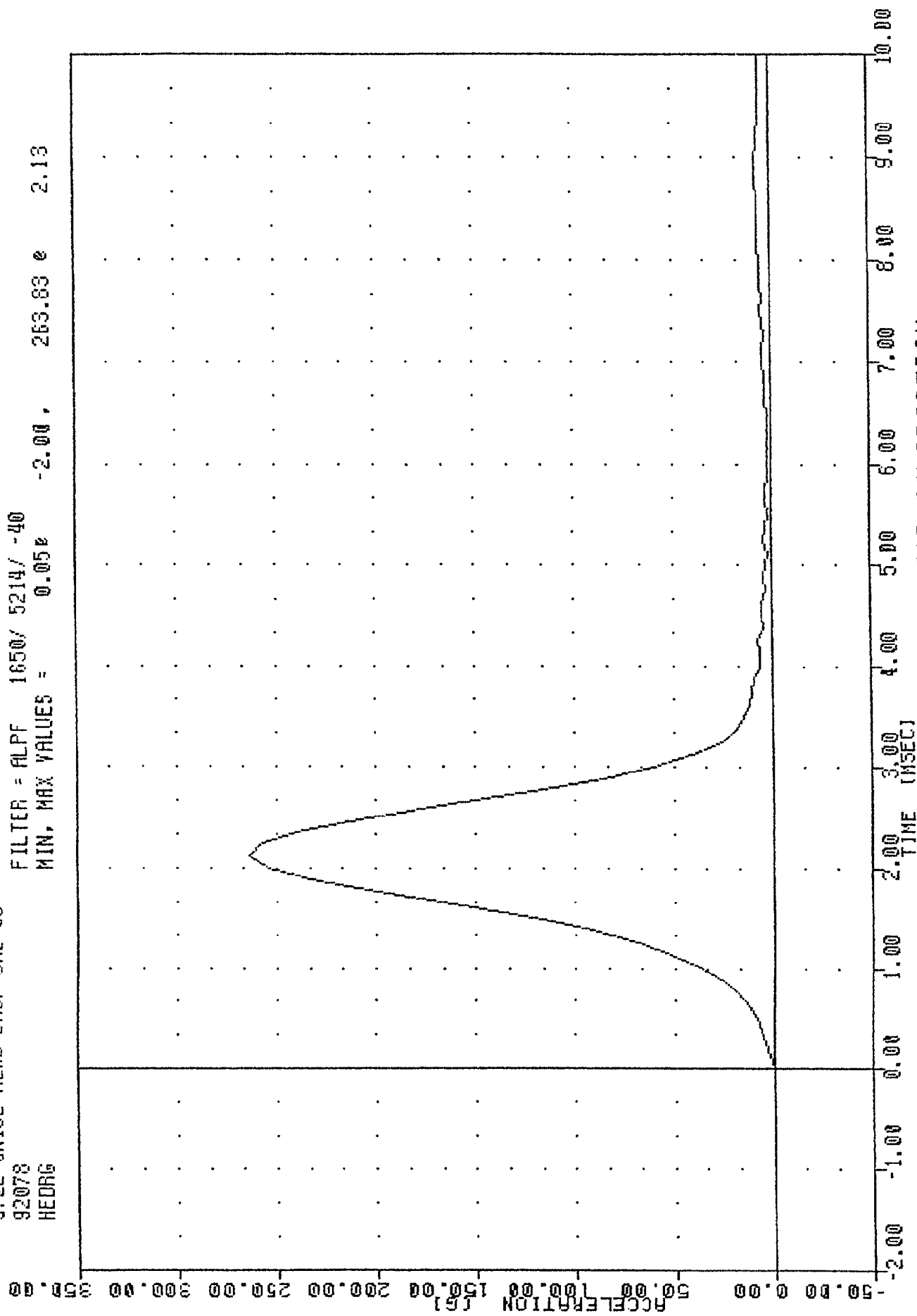
FILTER = ALPF 1650/ 5214/ -40
MIN, MAX VALUES = -132.77 2.13 0.00 -2.00



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

TRC
572E 3M192 HEAD DRDF CAL 06
92078
HEADG

FILTER = ALPF 1650/ 5214/ -40
MIN, MAX VALUES = 0.05% -2.00, 263.83 e 2.13



TRANSPORTATION RESEARCH CENTER OF OHIO

NECK FLEXION TEST

HYBRID III

18-MAR-92

6 AXIS NECK TRANSDUCER
TRC 192C8NF1

572E SN192 NECK FLEXION CAL08

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	69 - 72 DEG. F	70.0 DEG. F
RELATIVE HUMIDITY	10% - 70%	44.0 %
IMPACT VELOCITY	22.6-23.4 FT/SEC	23.08 FT/SEC
PENDULUM	10 MS 22.50 - 27.50 G	24.00 G
DECELERATION	20 MS 17.60 - 22.60 G	19.60 G
	30 MS 12.50 - 18.50 G	16.41 G
MAX PENDULUM G ABOVE 30 MS	29 G MAX	17.20 G
DECELERATION-TIME CURVE		
DECAY TIME TO 5 G	34 - 42 MS	37.63 MS
D PLANE	MAX 64 - 78 DEG.	73.07 DEG.
ROTATION	TIME 57 - 64 MS	59.25 MS
MOMENT ABOUT OCCIPITAL	MAX 65 - 80 FT. LBS	70.61 FT. LBS
CONDYLE	TIME 47 - 58 MS	50.88 MS
ROTATION ANGLE-TIME CURVE		
DECAY TIME TO ZERO	113 - 128 MS	115.63 MS
POSITIVE MOMENT-TIME CURVE		
DECAY TIME TO ZERO	97 - 107 MS	101.88 MS

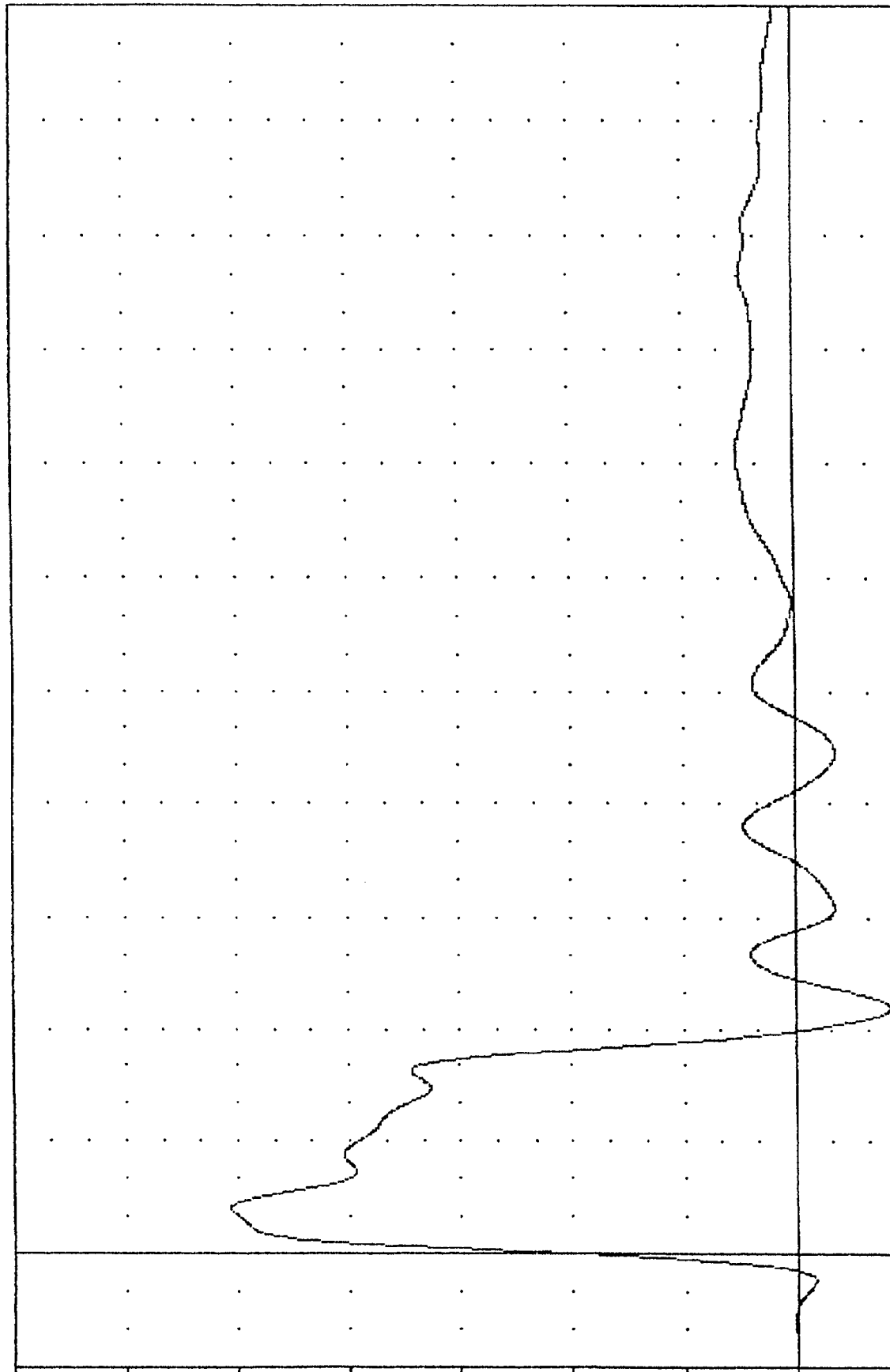
TEST MEETS SPECIFICATIONS

TECHNICIAN Kevin Watkins

TRC
572E SN192 NECK FLEXION CAL00
92078
PENXG

FILTER = BLPP 100/ 317/ -40
MIN, MAX VALUES = -4.31e 43.88, 25.31 e 8.00

ACCELERATION [G]
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
-5.00



920324

C-44

PART 572-E HYBRID III NECK FLEXION CALIBRATION

PENDULUM ACCELERATION

TRC
572E SN192 NECK FLEXION CAL08
92073
BETA

, 192C8NF1

FILTER = BLPP 100/ 317/ -40
MIN. MAX VALUES = -19.798 175.88, 31.42 59.25

100.00

80.00

60.00

40.00

20.00

ANGLE (DEG)

0.00

-20.00

-40.00

-60.00

-80.00

TIME (MSEC)

-20.00

0.00

20.00

40.00

60.00

80.00

100.00

120.00

140.00

160.00

180.00

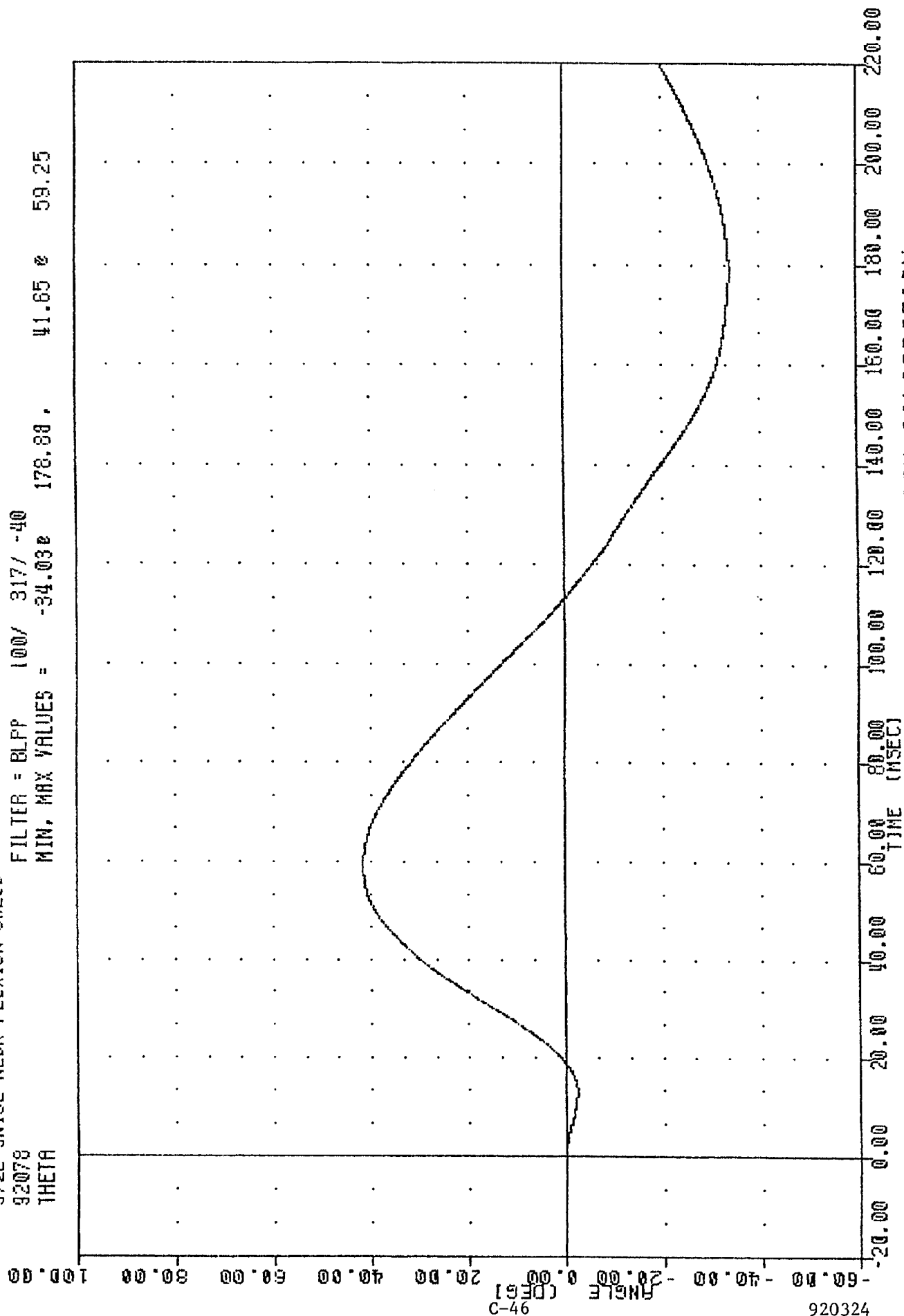
200.00

220.00

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

TRC , 192C8NF1
 572E SN192 NECK FLEXION CALIB
 92078
 THETA

FILTER = BLFP 100/ 317/ -40
 MIN, MAX VALUES = -34.03e 178.80 , 41.65 e 59.25



920324

C-46

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

TRC
572E SN192 NECK FLEXION CAL08
92078
TOTAL

, 192C8NF1
FILTER = BLPP 100/ 317/ -40
MIN, MAX VALUES = -53.61e 178.38, 73.07 e 59.25

100.00

80.00

60.00

40.00

20.00

0.00

-20.00

-40.00

-60.00

-80.00

-100.00

-120.00

-140.00

-160.00

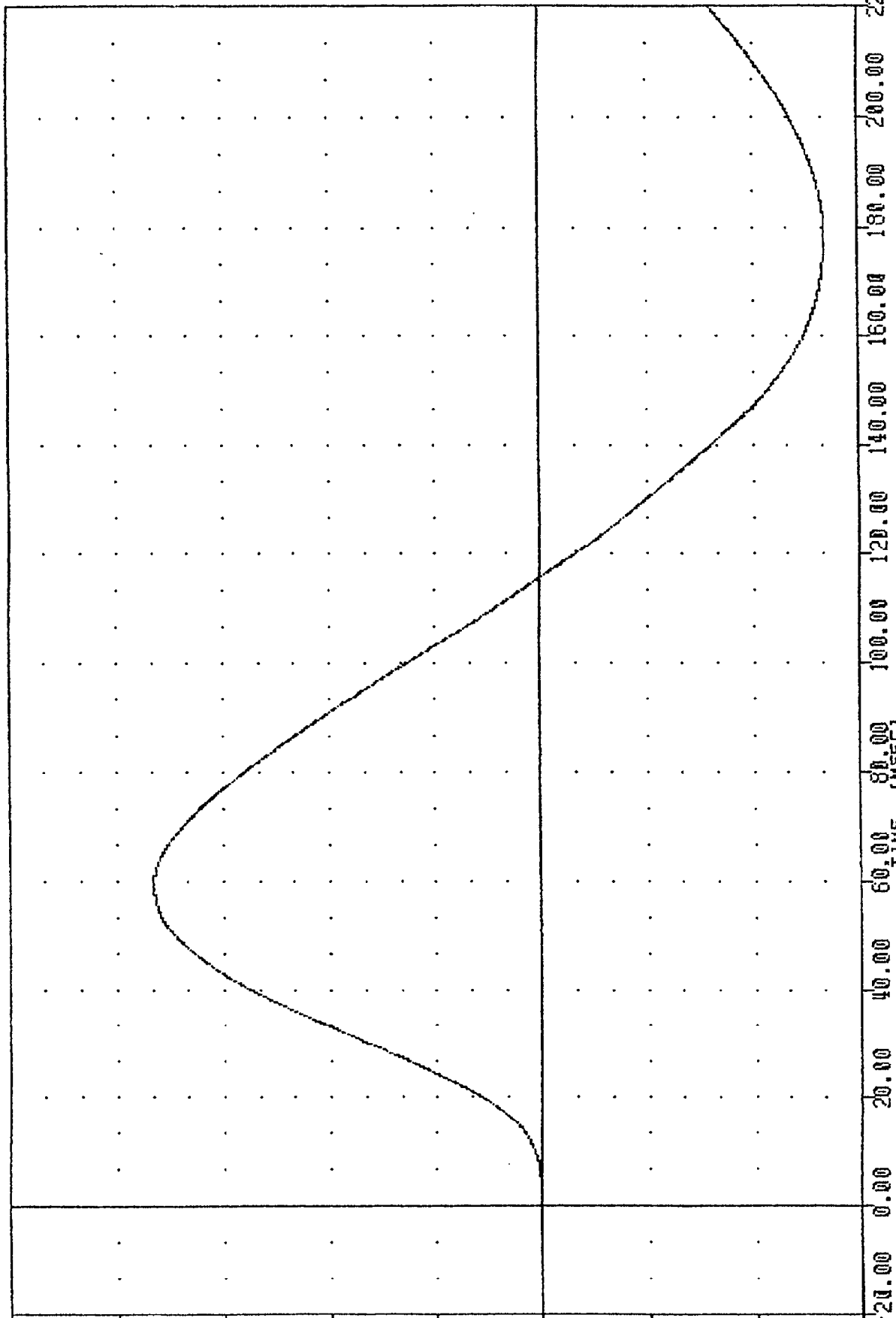
-180.00

-200.00

-220.00

C-47

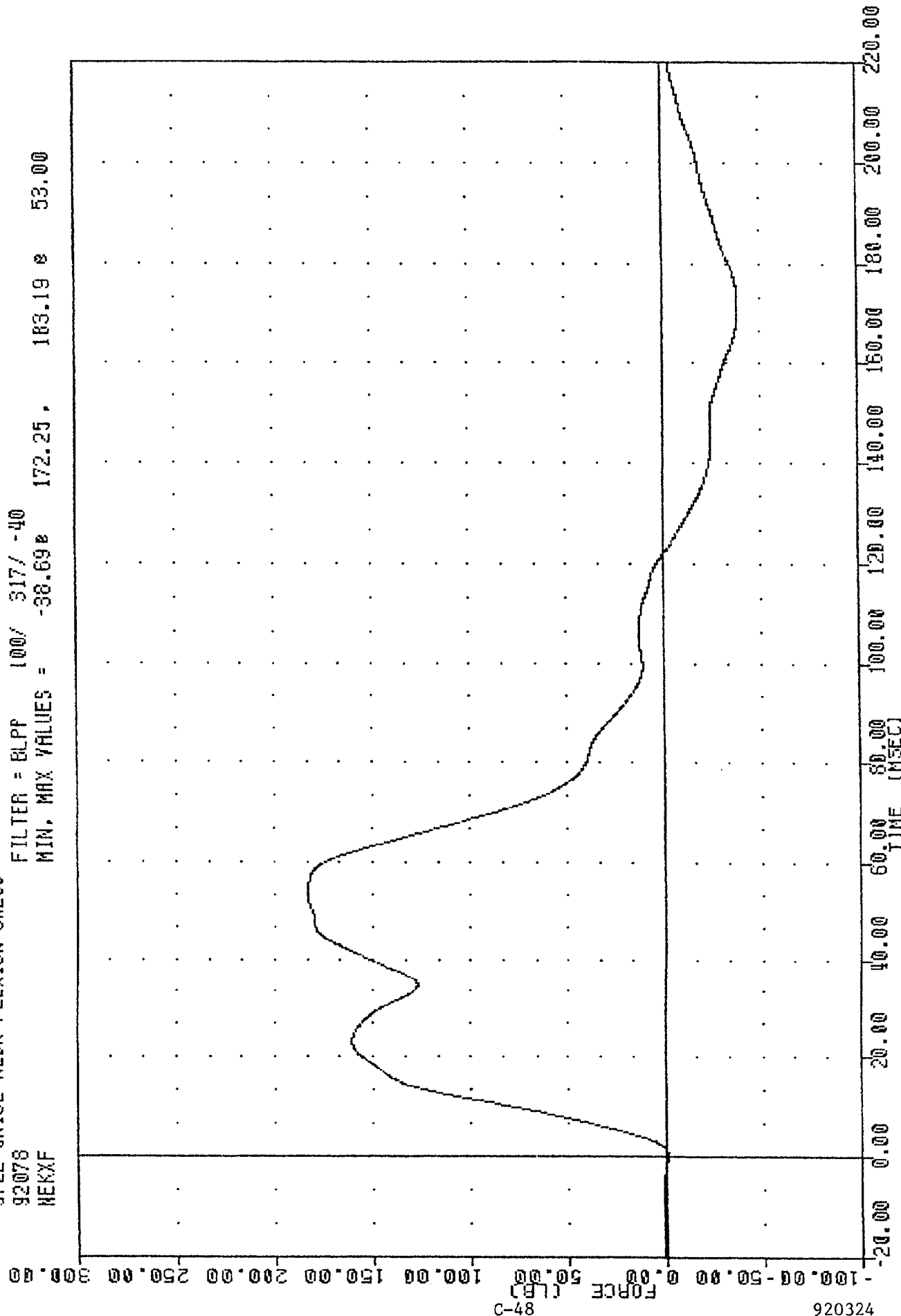
920324



PART 572-E HYBRID III NECK FLEXION CALIBRATION
TOTAL ROTATION

TRC
572E 3N192 NECK FLEXION CAL00
92078
HEKXF

FILTER = BLPP 100/ 317/ -40
MIN. MAX VALUES = -38.69 172.25 183.19 53.00



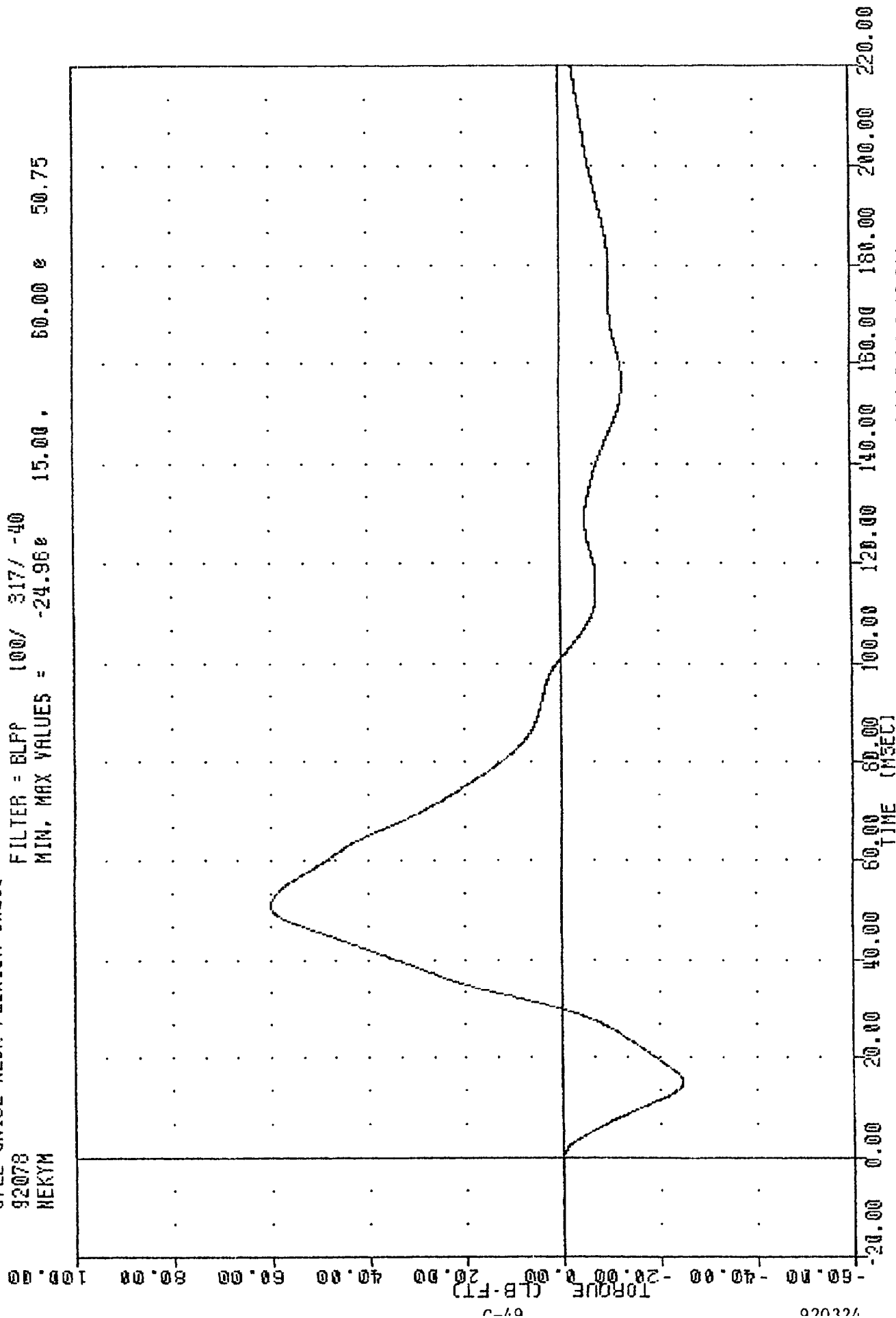
PART 572-E HYBRID III NECK FLEXION CALIBRATION

NECK FORCE X AXIS

TRC
572E SN192 NECK FLEXION CAL08
92078
NEKYM

, 192C8NF1

FILTER = BLPP 100/ 317/ -40
MIN, MAX VALUES = -24.96e 15.00, 50.00 e 50.75

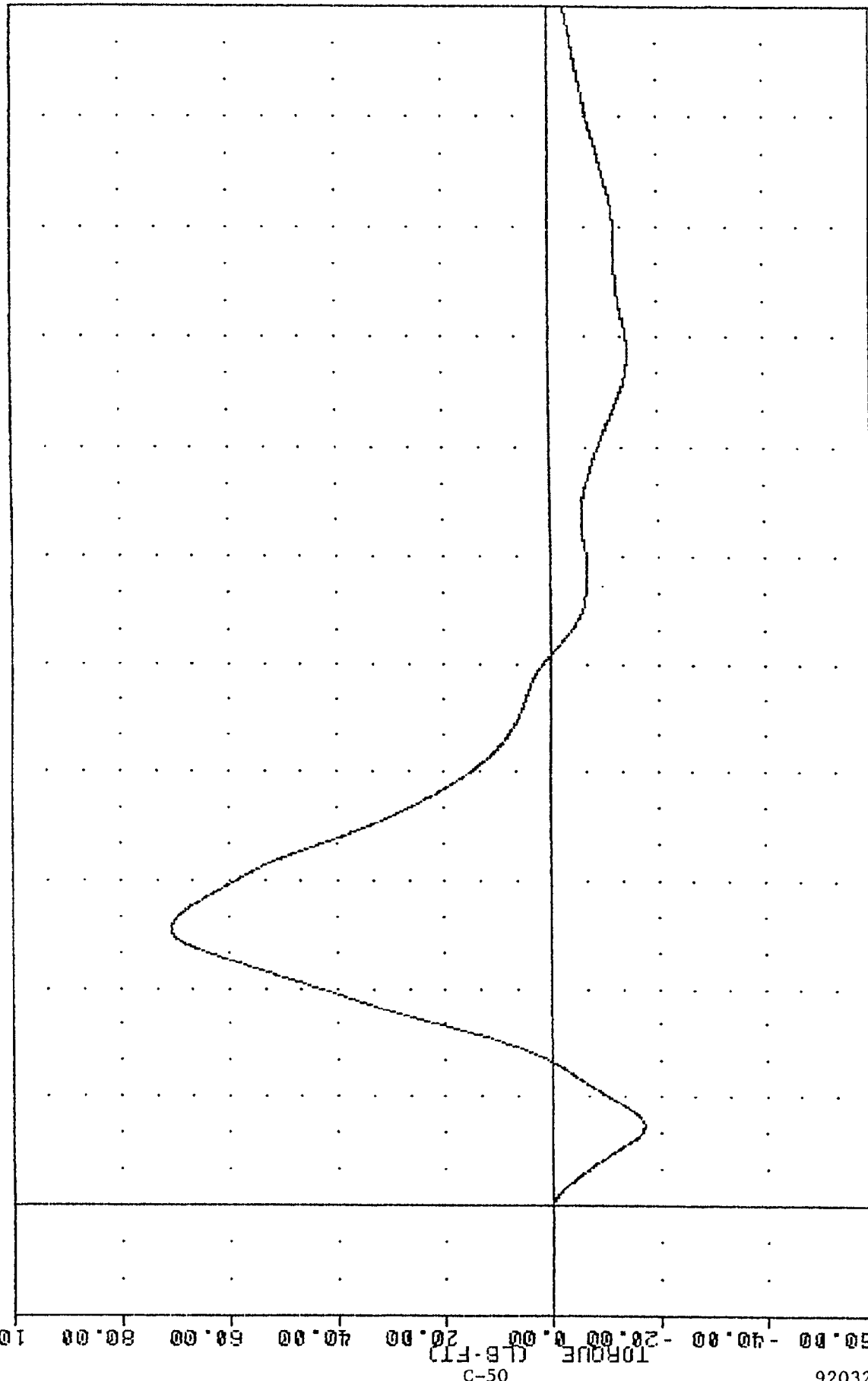


PART 572-E HYBRID III NECK FLEXION CALIBRATION
NECK MOMENT Y AXIS

TRC , 192C8MF1
 572E 8N192 NECK FLEXION CAL06
 92078
 NEKOM

FILTER = BLPP 100/ 317/ -40
 MIN. MAX VALUES = -17.07e 14.50. 70.61 e 50.88

100.00



920324

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

TRANSPORTATION RESEARCH CENTER OF OHIO

NECK EXTENSION TEST

HYBRID III

18-MAR-92

6 AXIS NECK TRANSDUCER
TRC 192C8NE1

572E SN192 NECK EXT. CAL08

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	69 - 72 DEG. F	70.0 DEG. F
RELATIVE HUMIDITY	10% - 70%	44.0 %
IMPACT VELOCITY	19.50-20.30 FT/SEC	19.83 FT/SEC
PENDULUM	10 MS 17.20 - 21.20 G	18.86 G
DECELERATION	20 MS 14.00 - 19.00 G	16.20 G
	30 MS 11.00 - 16.00 G	14.56 G
MAX PENDULUM G ABOVE 30 MS	22 G MAX	14.54 G
DECELERATION-TIME CURVE		
DECAY TIME TO 5 G	38 - 46 MS	39.00 MS
D PLANE	MAX 81 - 106 DEG.	104.07 DEG.
ROTATION	TIME 72 - 82 MS	76.50 MS
MOMENT ABOUT OCCIPITAL	MIN -59.0/-39.0 FT. LBS	-52.89 FT. LBS
CONDYLE	TIME 65 - 79 MS	72.88 MS
ROTATION ANGLE-TIME CURVE		
DECAY TIME TO ZERO	147 - 174 MS	160.88 MS
NEGATIVE MOMENT-TIME CURVE		
DECAY TIME TO ZERO	120 - 148 MS	143.38 MS

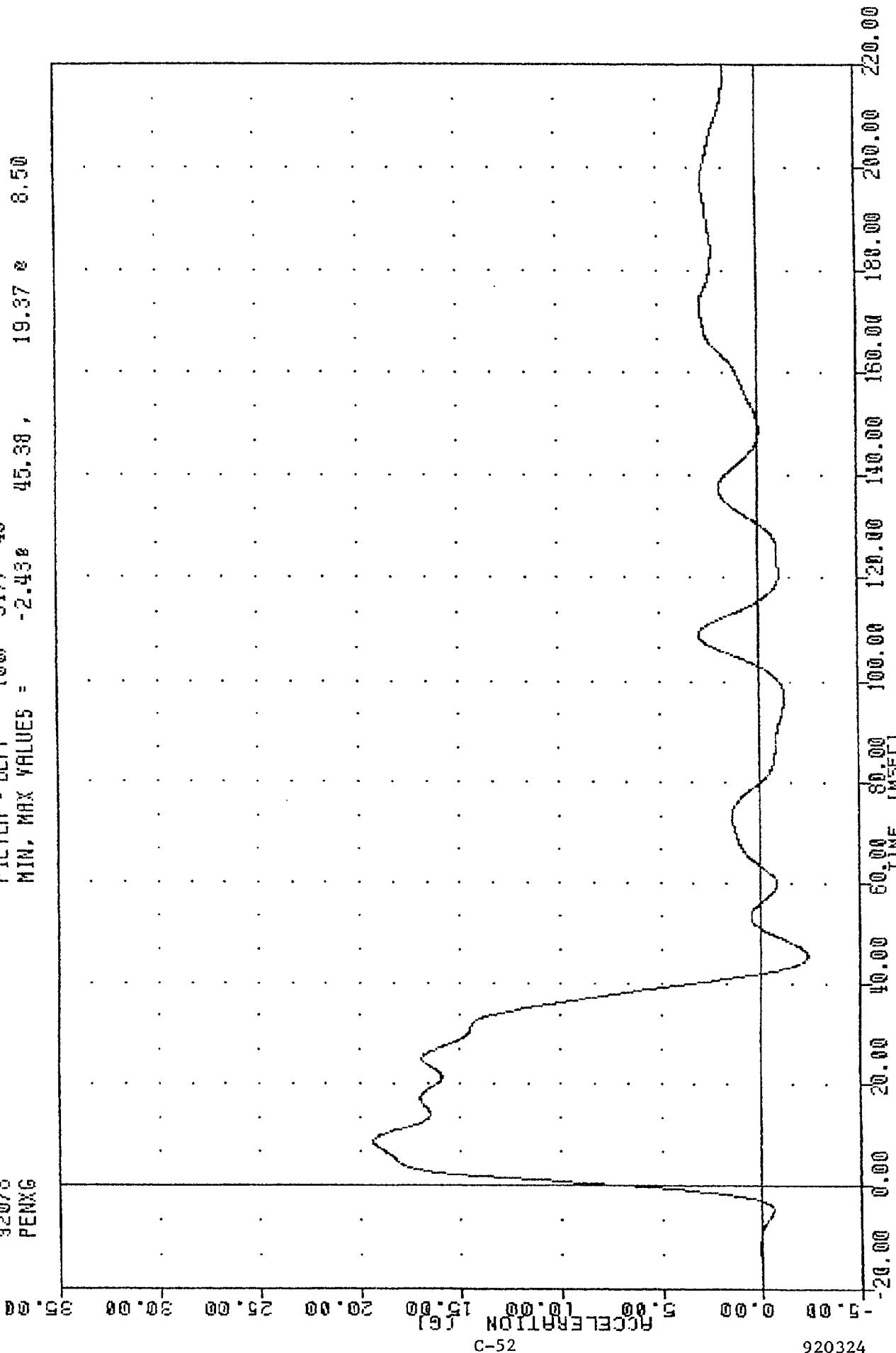
TEST MEETS SPECIFICATIONS

TECHNICIAN

Kevin Watkins

TRC
572E SN192 NECK EXT. CALIB
92078
PENXG

FILTER = BLPP 100/ 317/ -40
MIN, MAX VALUES = -2.430 45.38 , 19.37 @ 8.50



C-52

920324

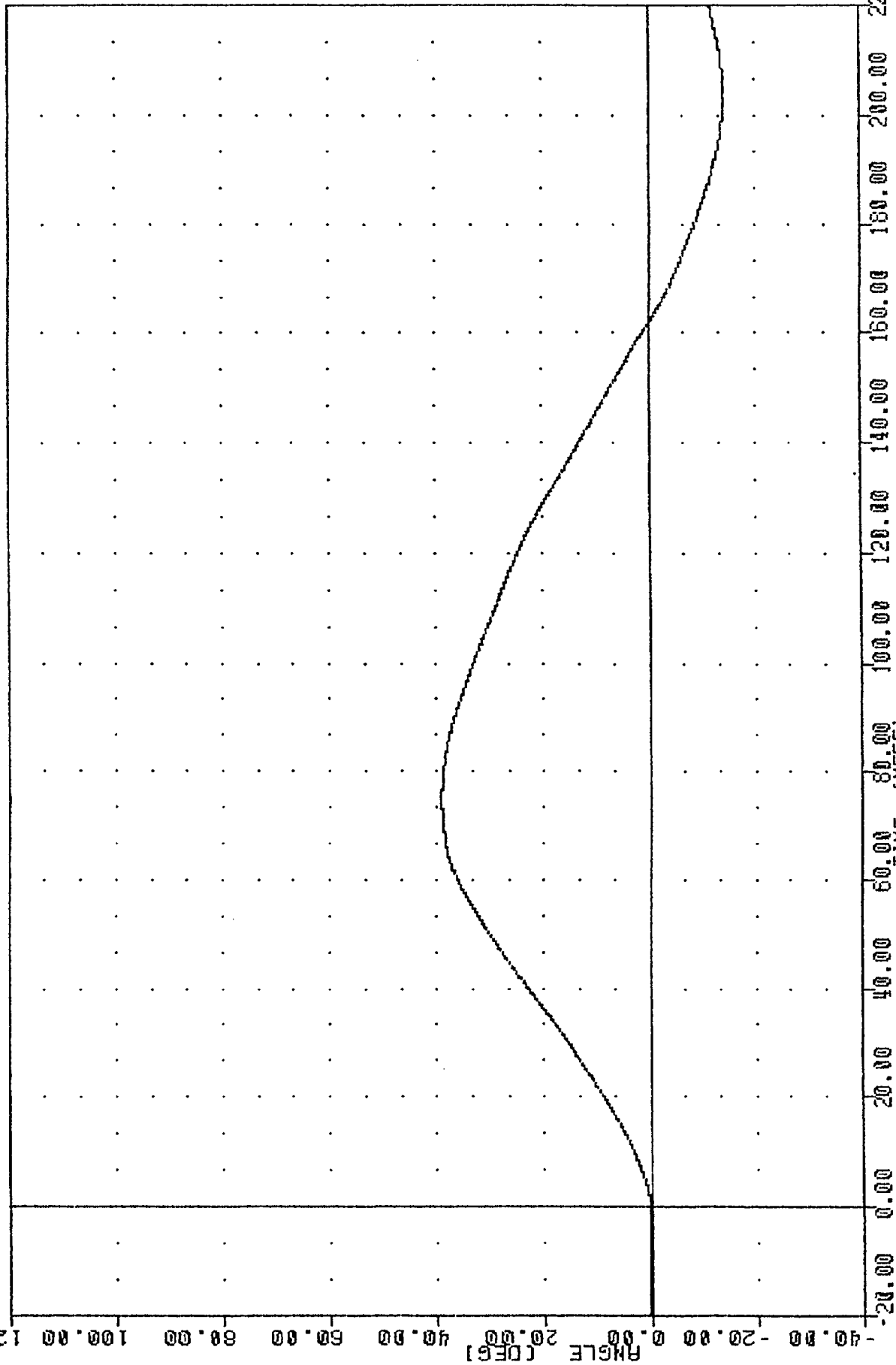
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

REPRODUCED FROM ORIGINAL RECORDING

TRC
572E SN192 NECK EXT. CALIB

FILTER = BLPP 100/ 317/ -40
MIN. MAX VALUES = -14.07% 204.80, 39.12 & 74.75

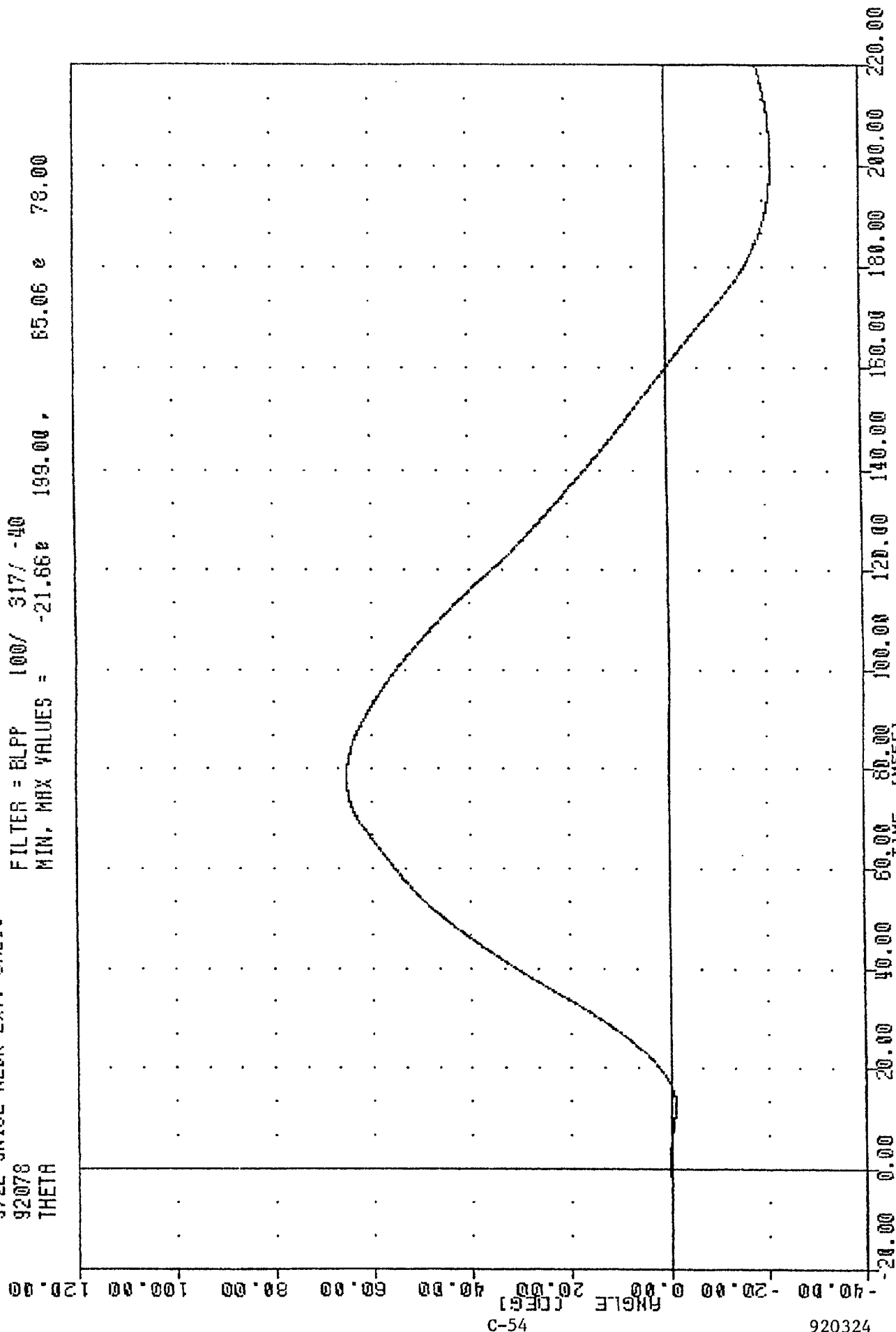
92078
BETA



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

TAC
572E SN192 NECK EXT. CAL08
92078
THETA

FILTER = BLPP 100/ 317/ -40
MIN. MAX VALUES = -21.66 199.00 , 65.06 e 78.00



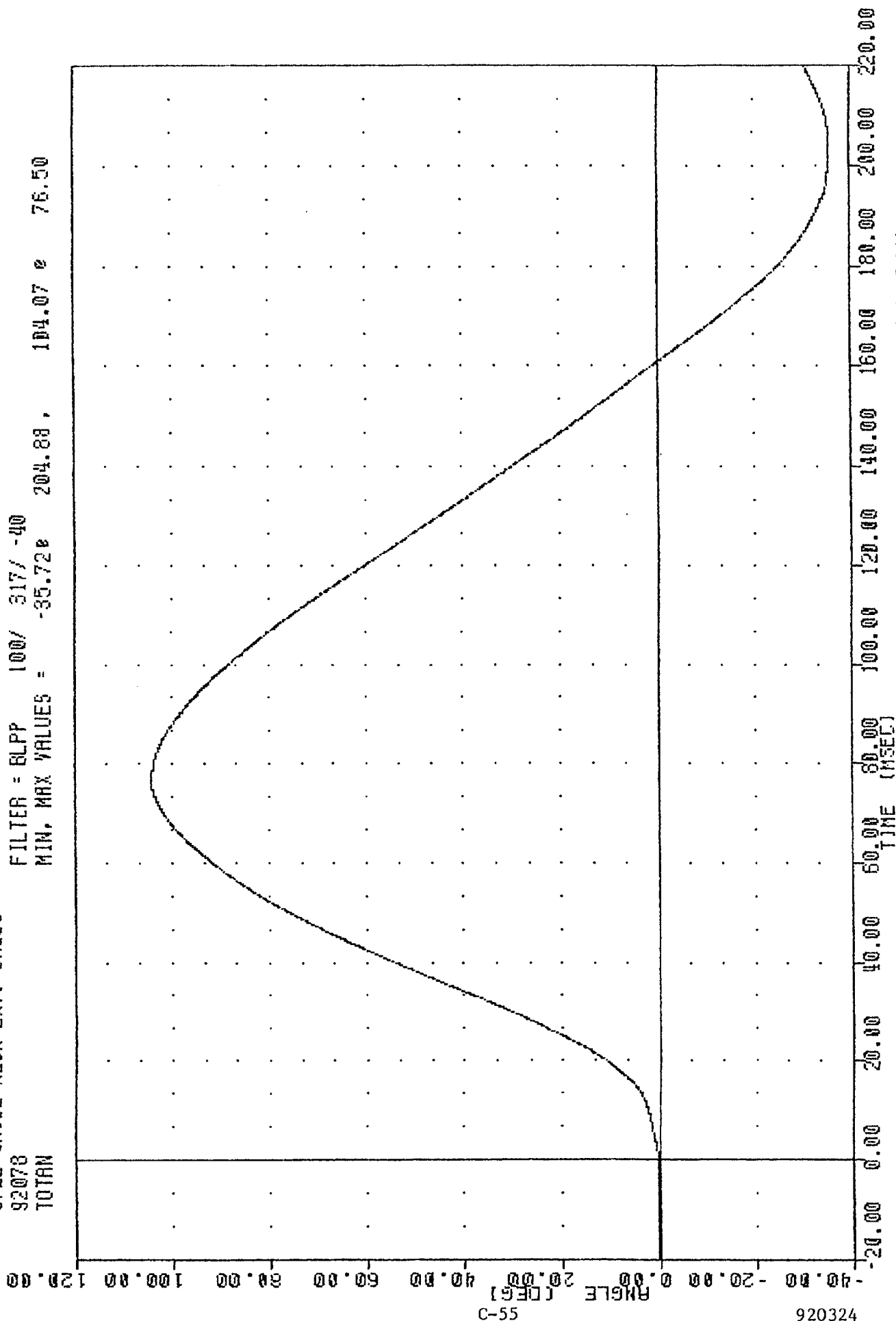
C-54

920324

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

TRC
572E SN152 NECK EXT. CAL08
92078
TOTAL

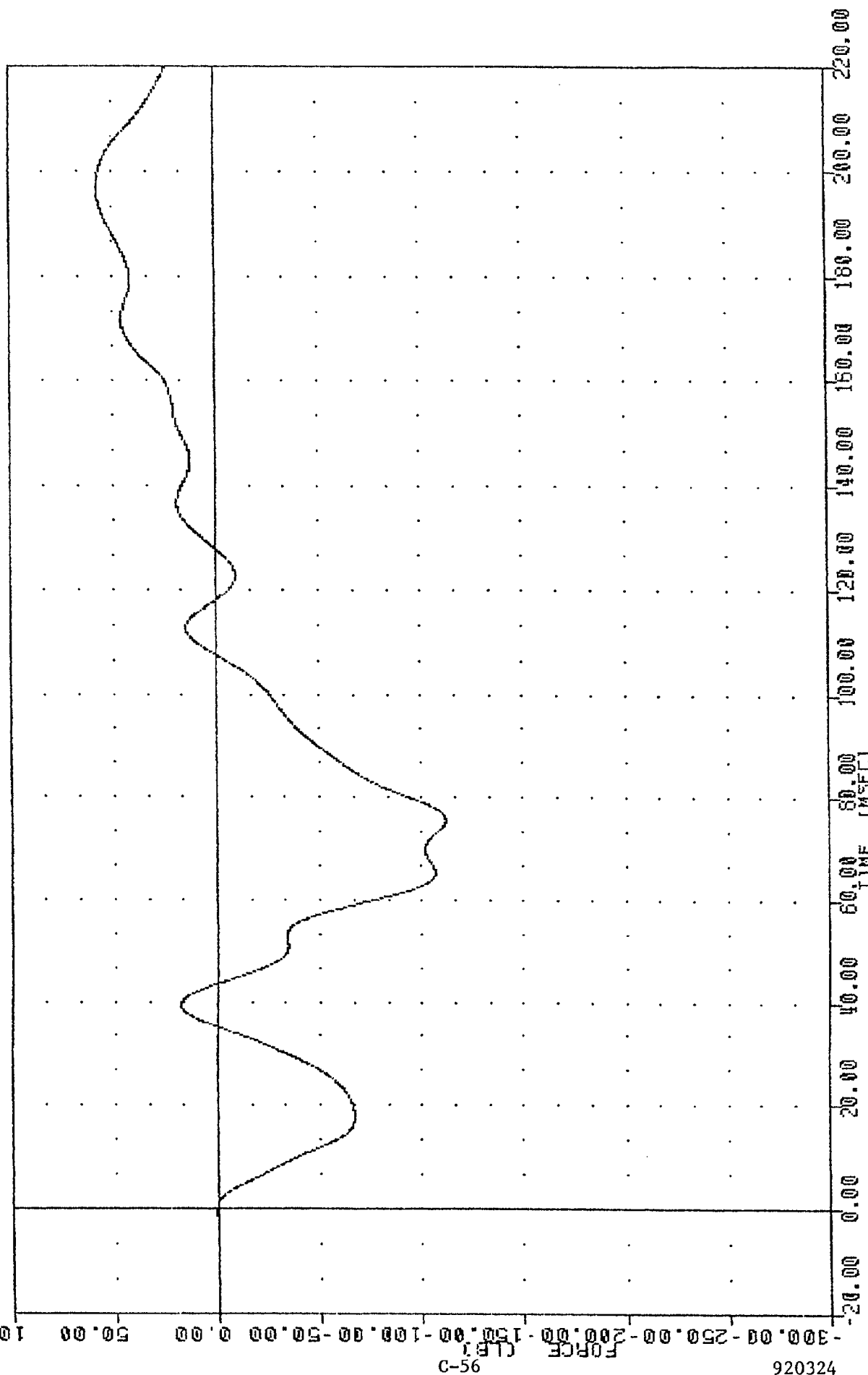
FILTER = BLPP 100/ 317/ -40
MIN, MAX VALUES = -35.720 204.80, 104.07 0 76.50



PART 572-E HYBRID III NECK EXTENSION CALIBRATION
TOTAL ROTATION

TRC , 192C8NE1
 572E SN192 NECK EXT. CAL08
 92078
 NEKXF

FILTER = BLPP 100/ 317/ -40
 MIN. MAX VALUES = -112.07 75.63, 57.57 197.13

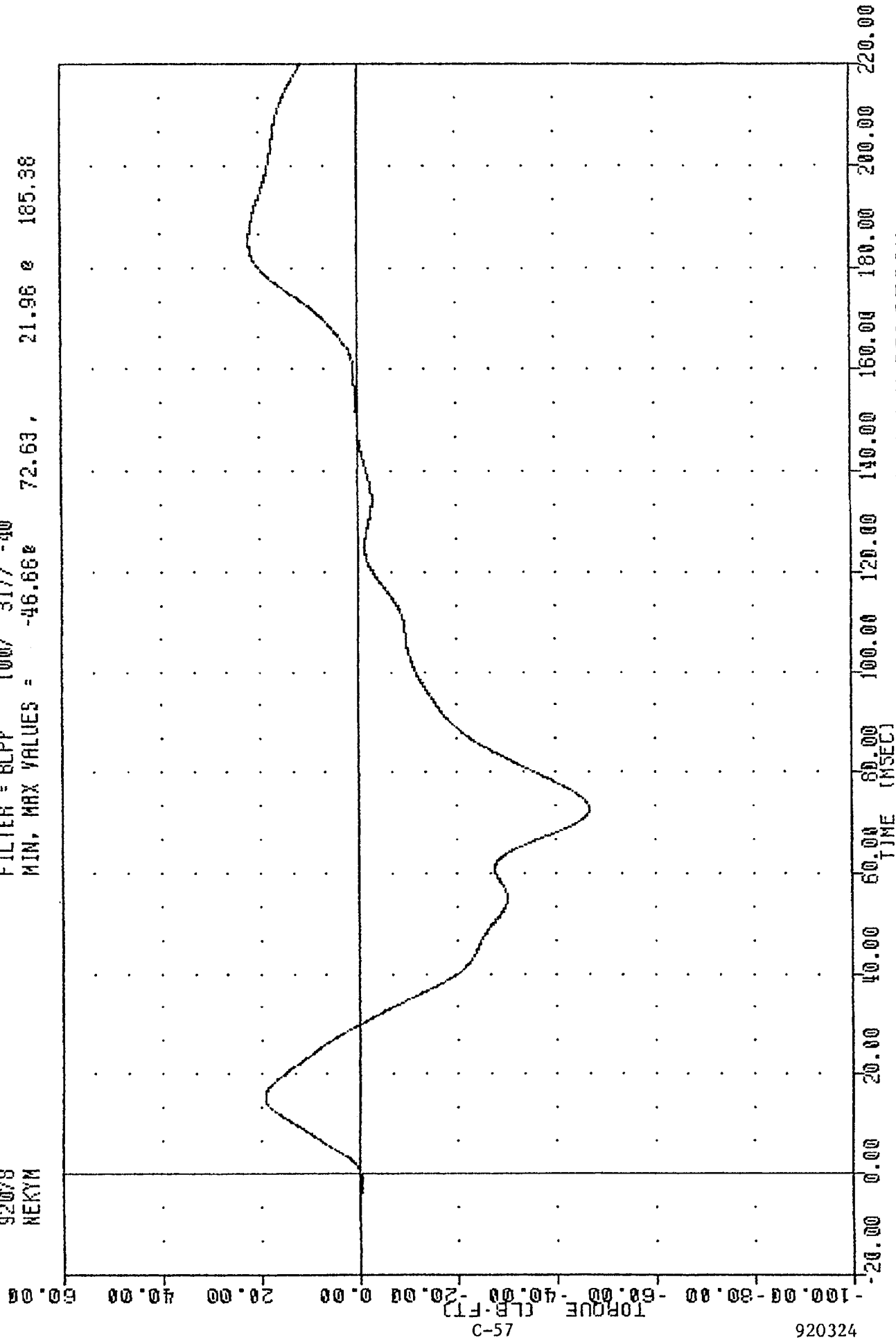


PART 572-E HYBRID III NECK EXTENSION CALIBRATION

NECK FORCE X AXIS

TRC
572E SN152 NECK EXT. CALIB
92078
NEKYM

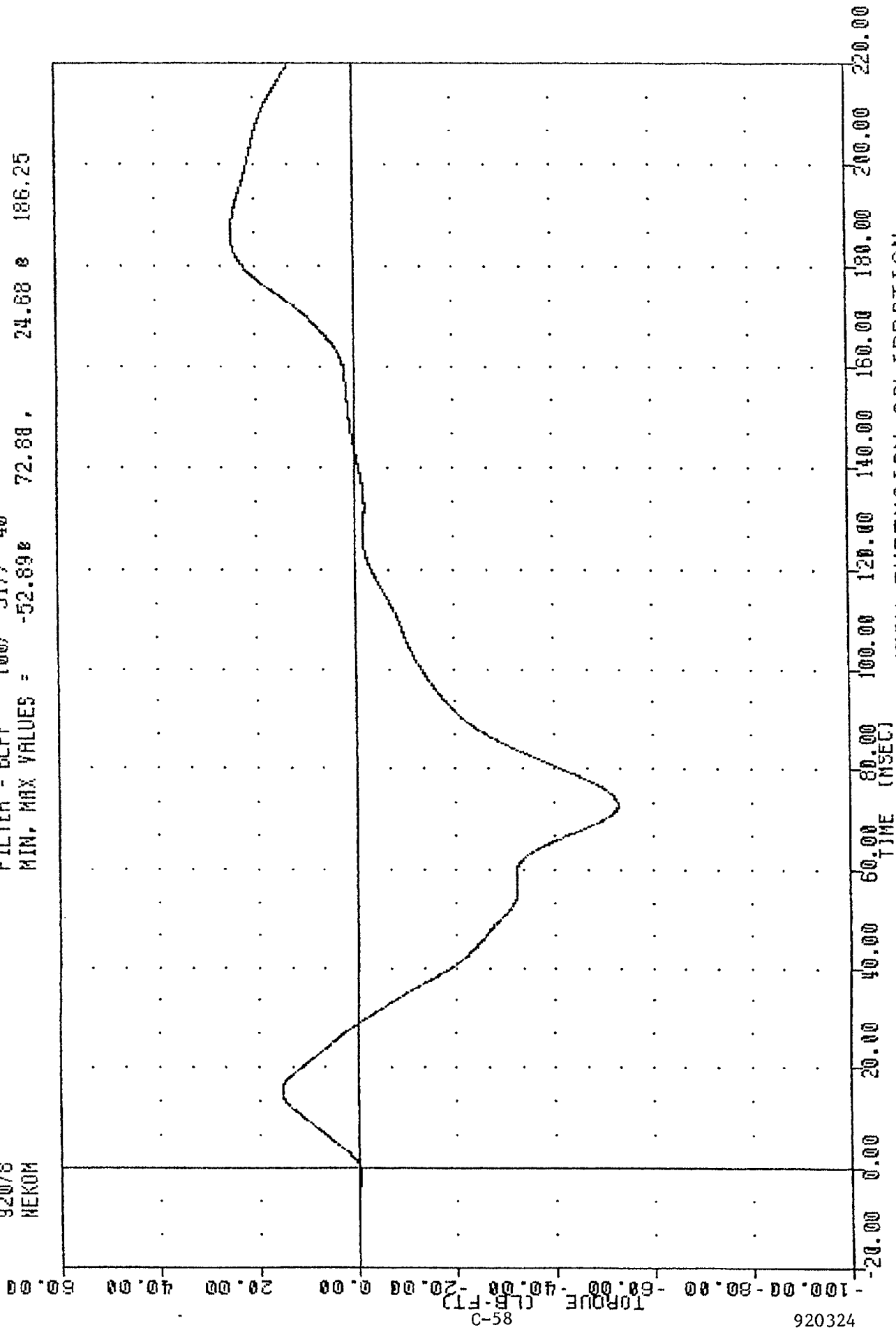
FILTER = BLPP 100/ 317/ -40
MIN, MAX VALUES = -46.66 72.63, 21.96 @ 185.38



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

TRC
572E 5N192 NECK EXT. CAL00
92078
HEK00

FILTER = BLPP 100/ 317/ -40
MIN, MAX VALUES = -52.89 72.88 24.88 186.25



920324

PART 572-E HYBRID III NECK EXTENSION CALIBRATION

TO TOTAL MOMENT ABOUT OCCIPITAL CONDYLE

TRANSPORTATION RESEARCH CENTER OF OHIO

THORAX IMPACT TEST

HYBRID III

18-MAR-92

TRC

192C8TH1

572E SN192 H.S.THORAX CAL08

	HIGH SPEED TEST	
TEST PARAMETER	SPECIFICATION	TEST RESULTS
=====		
TEMPERATURE	69 - 72 DEG. F	70.0 DEG. F

RELATIVE HUMIDITY	10% - 70%	43.0 %

PENDULUM VELOCITY	21.6-22.4 FT/SEC	21.92 FT/SEC

MAXIMUM DEFLECTION	2.50 - 2.86 IN	2.77 IN

MAXIMUM RESISTIVE FORCE	1160 - 1325 LBS	1239.1 LBS

INTERNAL HYSTERESIS	69% - 85%	73.1%

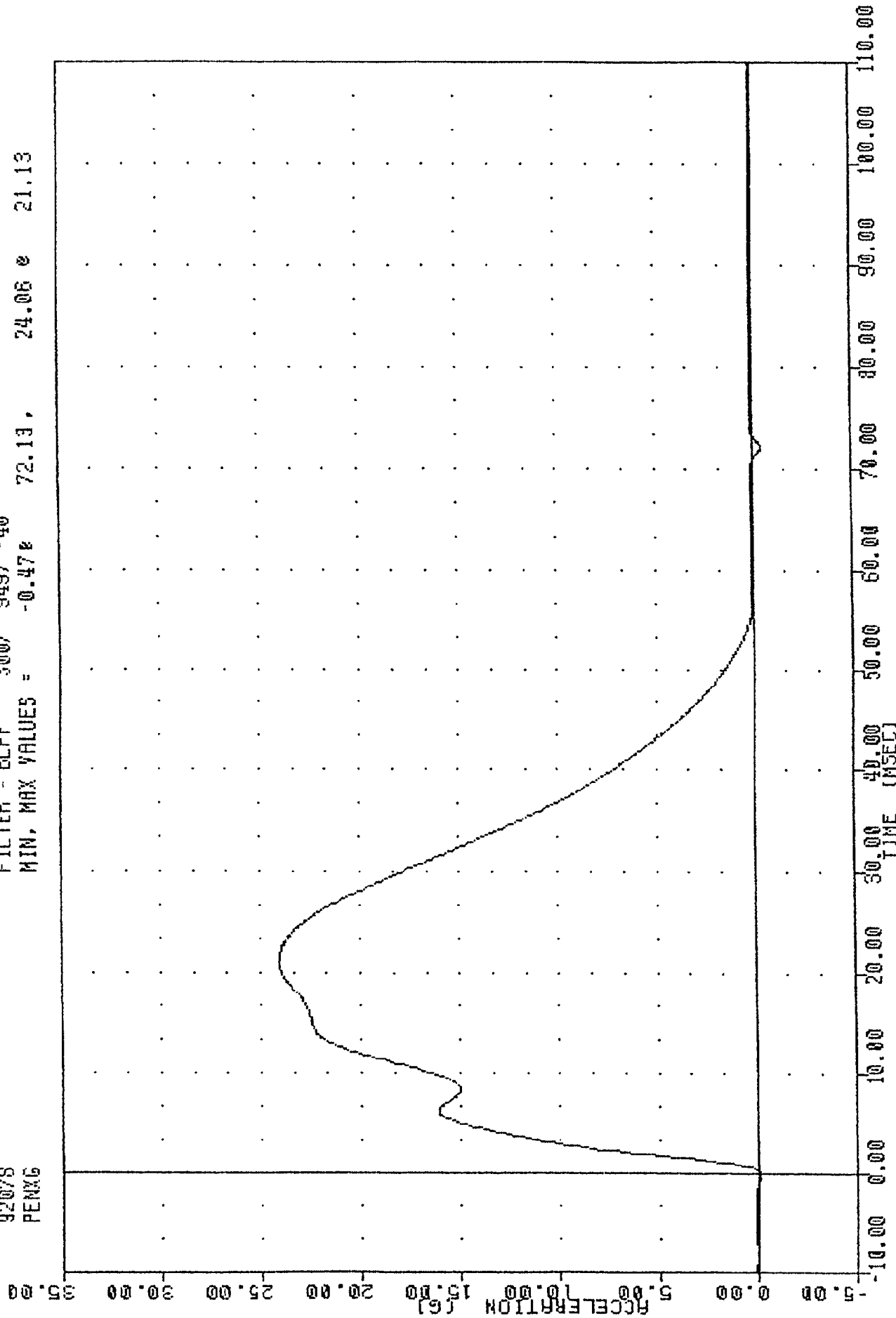
TEST MEETS SPECIFICATIONS

TECHNICIAN

Kevin Watkins

TRC
572E SN192 H.S. THORAX CAL30
9207S
PENXG

FILTER = BLPP 300/ 949/ -40
MIN, MAX VALUES = 72.13, 24.06 e 21.13



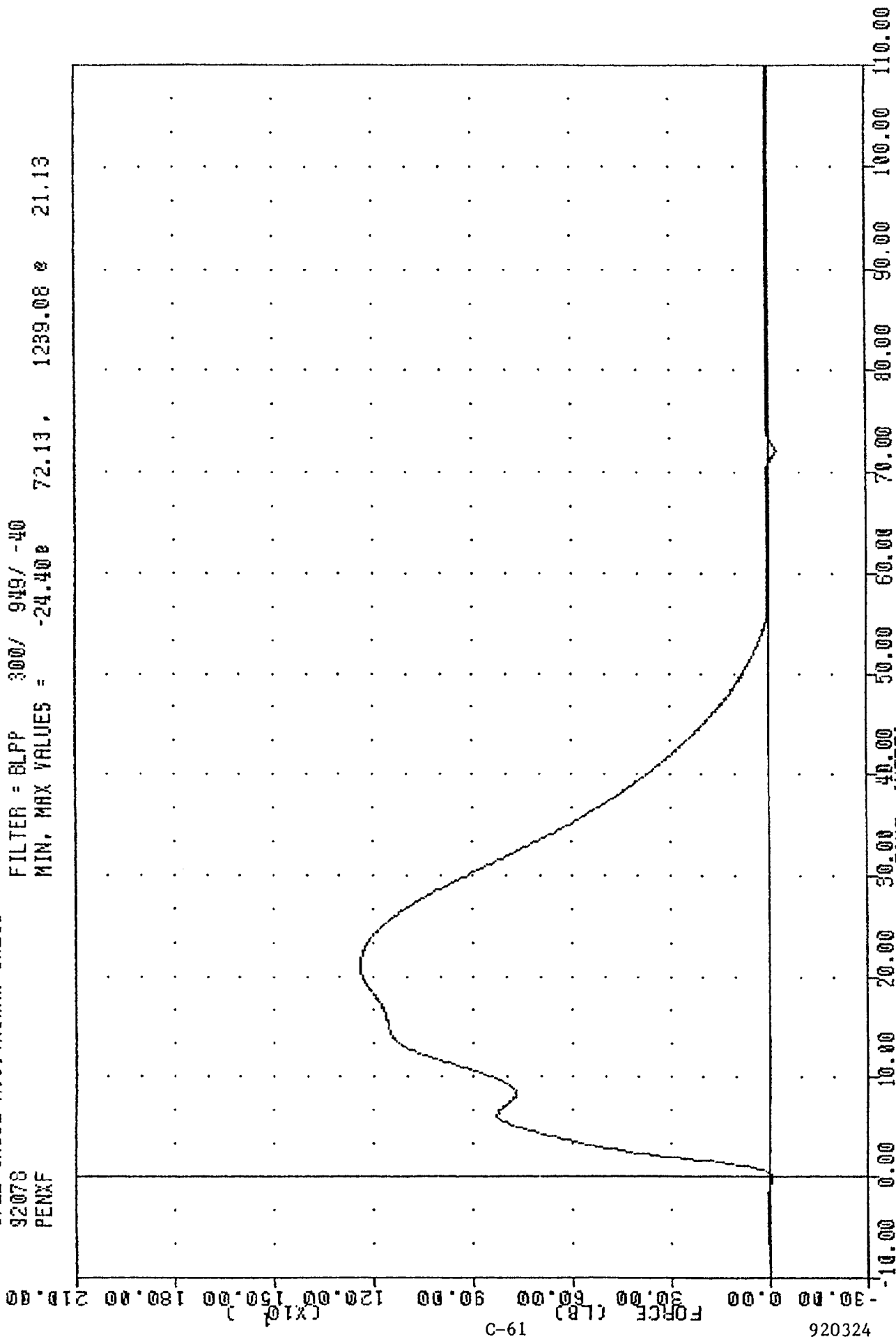
C-60

920324

PART 572-E HYBRID III THORAX CALIBRATION
PENDULUM ACCELERATION

TRC
 572E SN192 H.S. THORAX CAL00
 92078
 PENXF

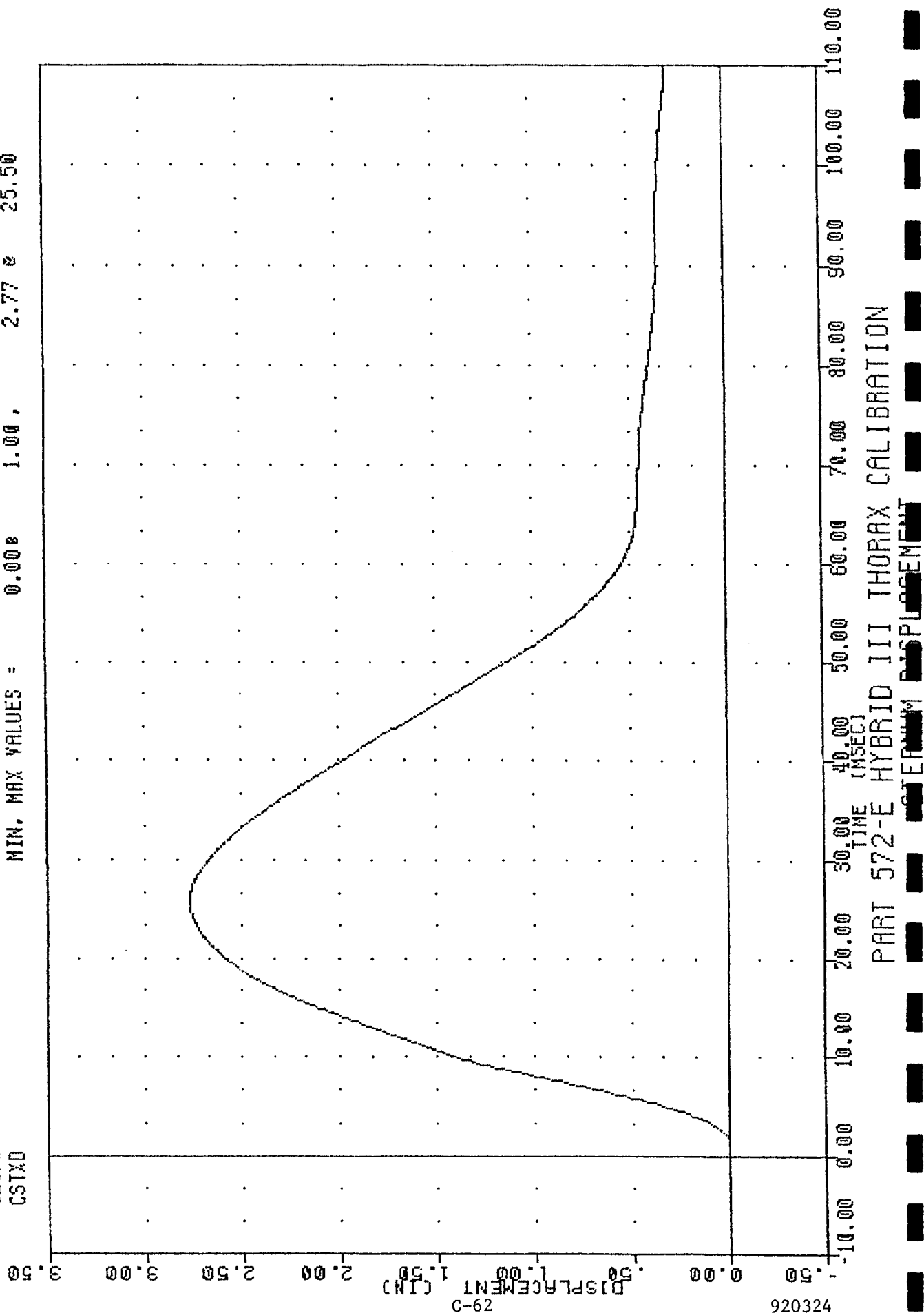
FILTER = BLPP 300/ 949/ -40
 MIN. MAX VALUES = -24.40e 72.13, 1239.08 e 21.13



PART 572-E HYBRID III THORAX CALIBRATION
 PENDULUM FORCE

TRC , 192C8TH1
 572E 3N192 H.S. THORAX CRL06
 92078
 CSTXD

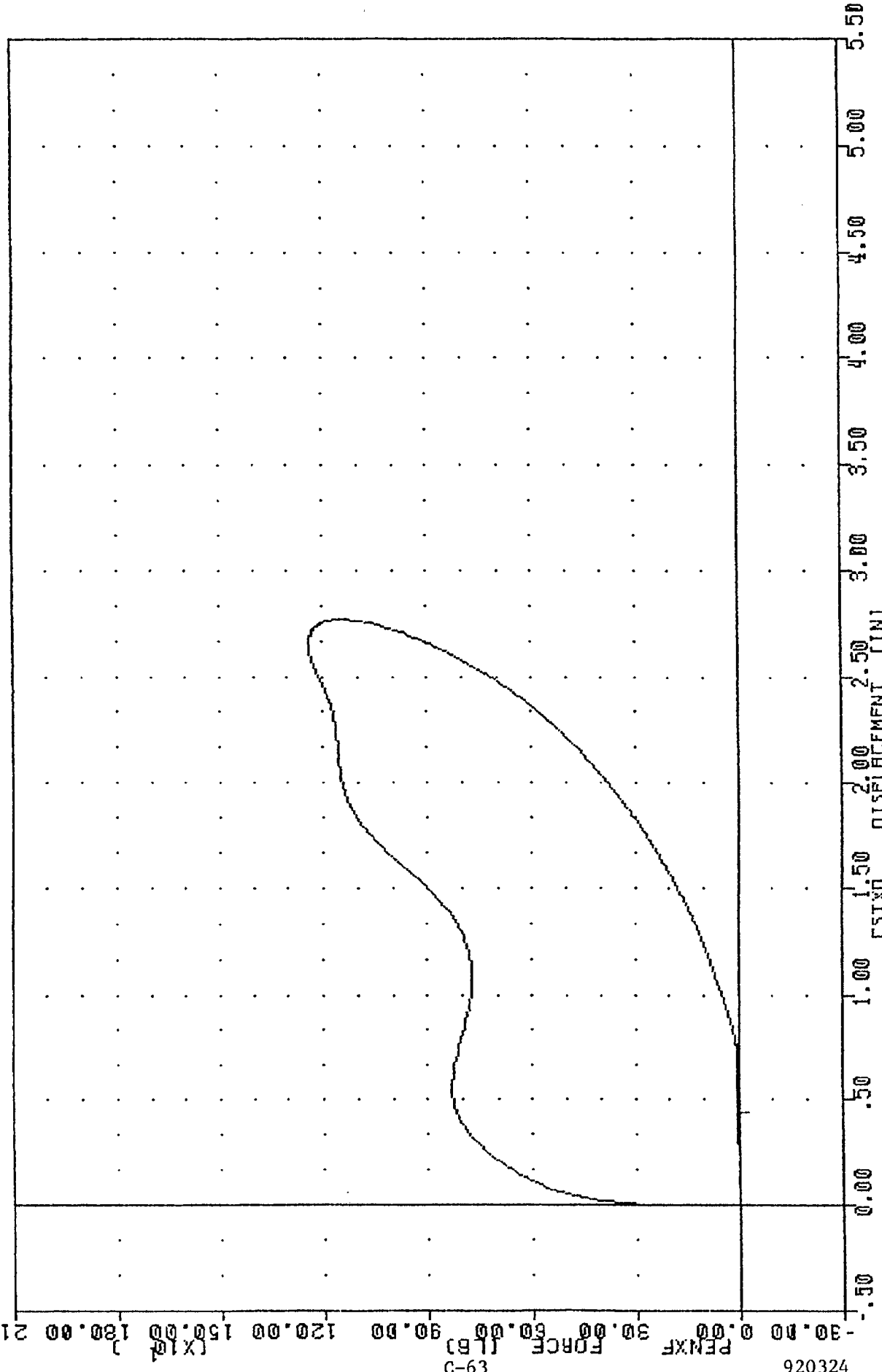
FILTER = BLPP 300/ 949/ -40
 MIN. MAX VALUES = 0.000 1.00 , 2.77 25.50



920324

C-62

TRC
 CSTXD
 PENXF
 '192C8THL
 FILTER = BLPP
 FILTER = BLPP
 572E SM192 H.S. THORAX CAL08
 300/ 949/ -40 MIN, MAX =
 300/ 949/ -40 MIN, MAX =
 92078
 0.008
 -24.408
 1.00
 72.13
 2.77
 1239.88
 25.50
 21.13



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

TRANSPORTATION RESEARCH CENTER OF OHIO

KNEE IMPACT TEST

HYBRID III

18-MAR-92

LEFT KNEE
TRC

192C8LK1

572E SN192 L.KNEE 11LB CAL 08

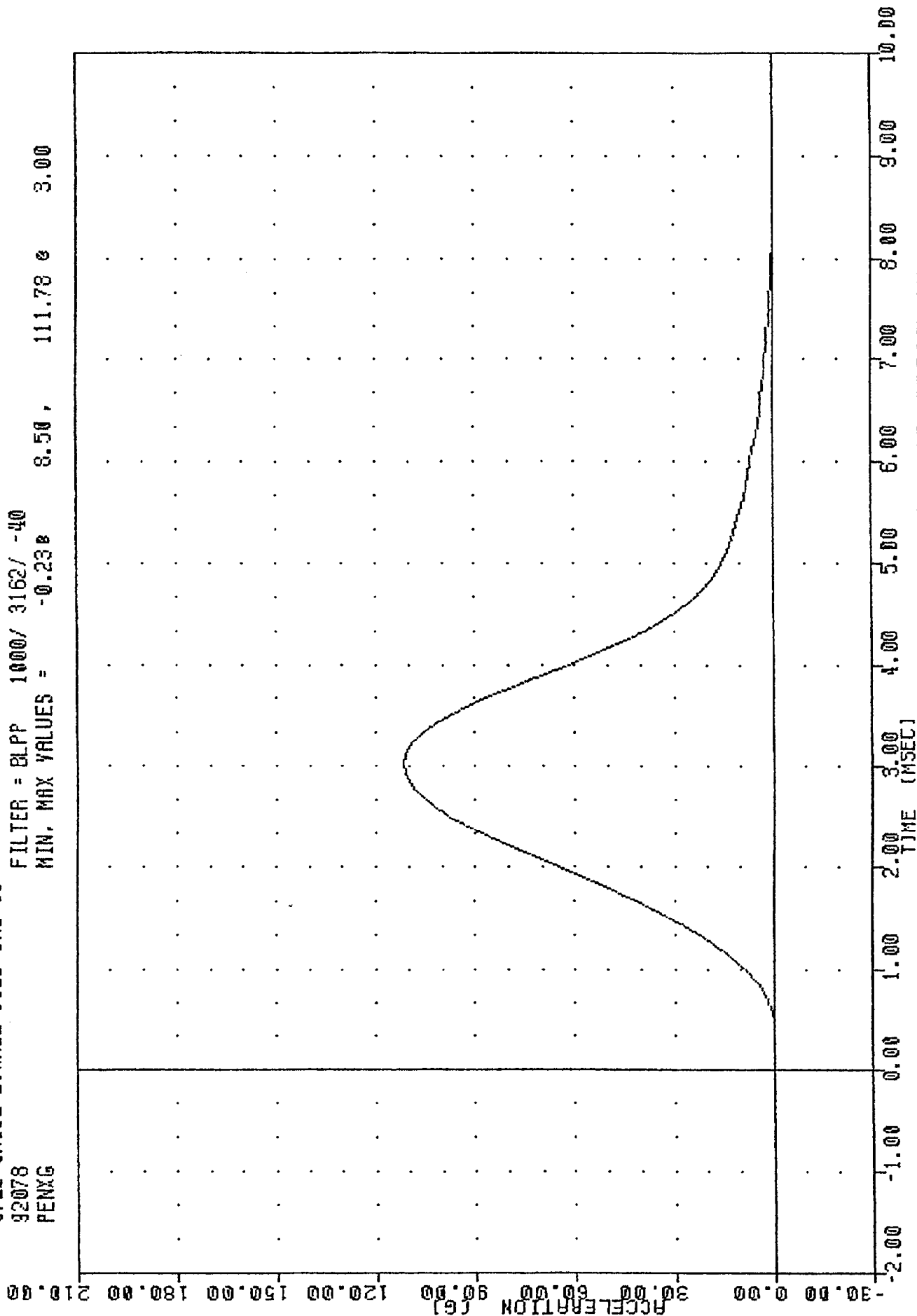
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78 DEG. F	70.0 DEG. F
RELATIVE HUMIDITY	10% - 70%	44.0 %
PROBE VELOCITY	6.8 - 7.0 FT/SEC	6.93 FT/SEC
PEAK KNEE IMPACT FORCE	1060 - 1300 LBS	1229.61 LBS
PROBE WEIGHT	11.0 LBS	

TEST MEETS SPECIFICATIONS

TECHNICIAN *Kevin Watkins*

TRC , 18202LK1
 572E SN192 L.KNEE 111LB CAL 08
 92078
 PENXG

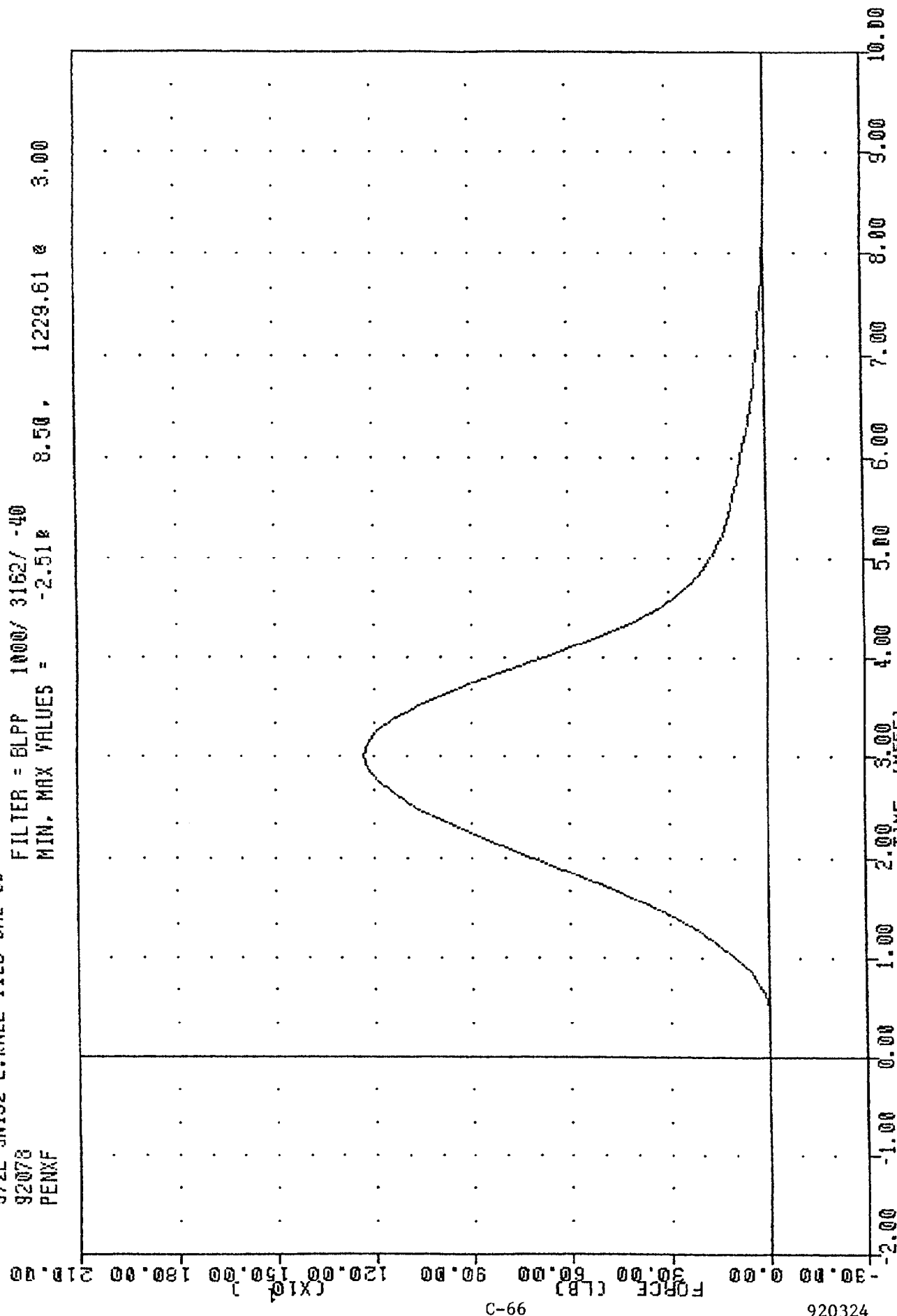
FILTER = BLPP 1000/ 3162/ -40
 MIN. MAX VALUES = -0.238 8.50 , 111.78 @ 3.00



PART 572-E HYBRID 111 LEFT KNEE CALIBRATION
 PENDULUM DECELERATION (11 LB PEND.)

TRC
572E SN192 L.KNEE 111B CAL 08
92078
PENXF

FILTER = BLPP 1000/ 3162/ -40
MIN. MAX VALUES = -2.512 8.50 1229.61 3.00



C-66

920324

PART 572-E HYBRID III LEFT KNEE CALIBRATION
[11] L.PENF

TRANSPORTATION RESEARCH CENTER OF OHIO

KNEE IMPACT TEST

HYBRID III

18-MAR-92

RIGHT KNEE

TRC

192CSRK1

572E SN192 R.KNEE 11LB CAL 08

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78 DEG, F	70.0 DEG, F
RELATIVE HUMIDITY	10% - 70%	44.0 %
PROBE VELOCITY	6.8 - 7.0 FT/SEC	6.93 FT/SEC
PEAK KNEE IMPACT FORCE	1060 - 1300 LBS	1108.43 LBS
PROBE WEIGHT	11.0 LBS	

TEST MEETS SPECIFICATIONS

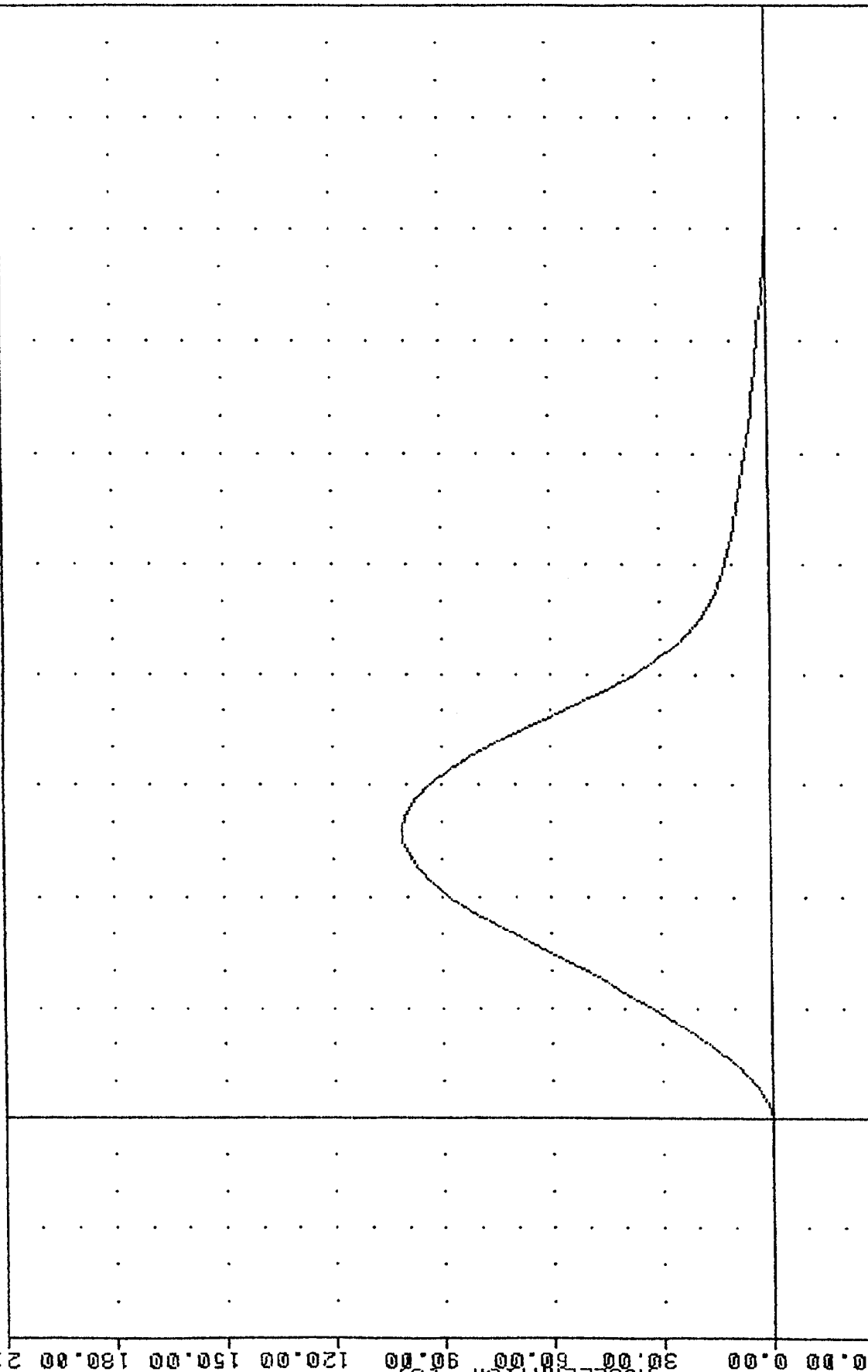
TECHNICIAN

Kevin Watkins

TRC
572E SN192 R.KNEE 1110 CAL 00
92078
PENXG

FILTER = BLPP 1000/ 3162/ -40
MIN. MAX VALUES = -0.30% 100.77 % 2.63
-0.13 ,

210.00



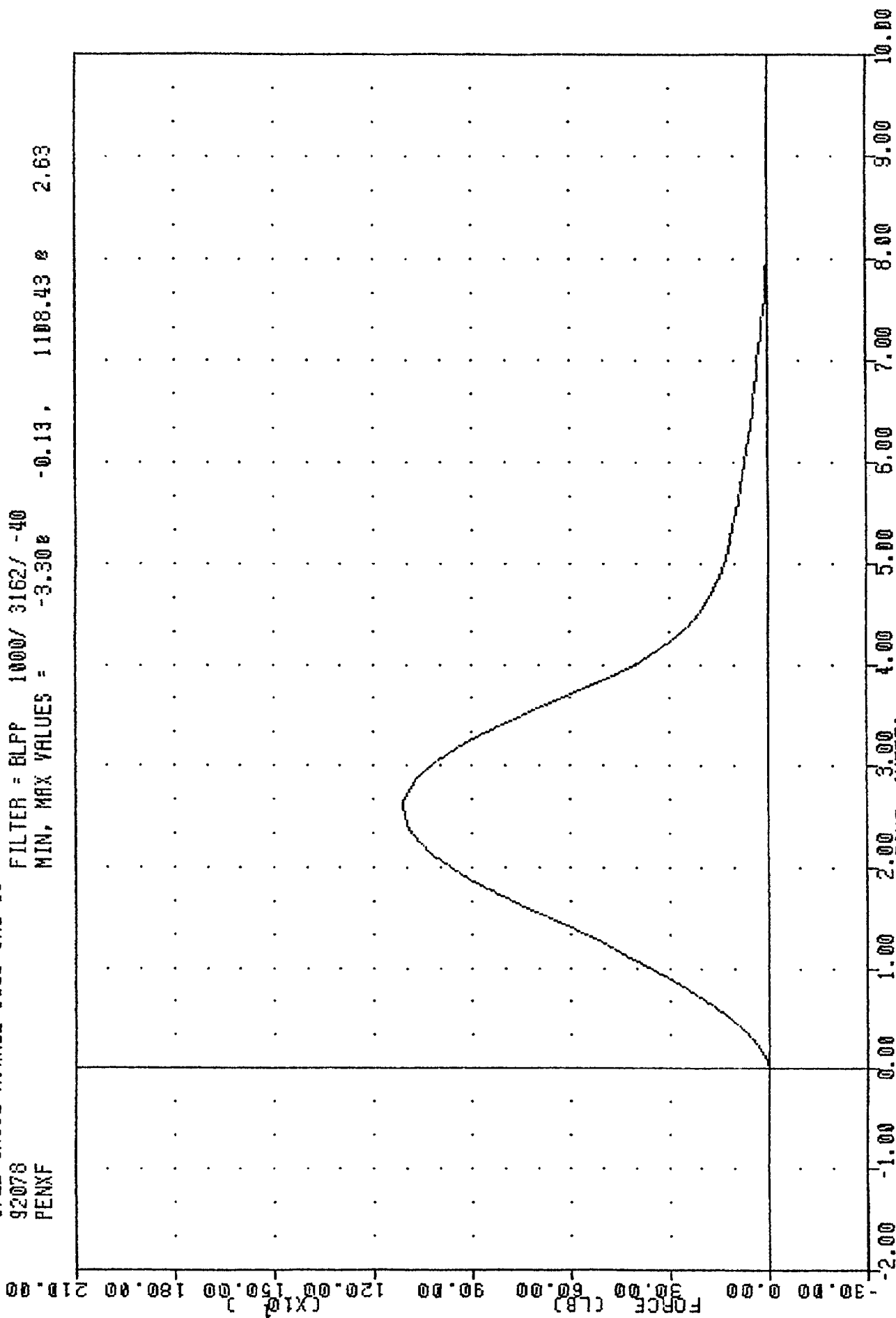
C-68

920324

PART 572-E HYBRID III RIGHT KNEE CALIBRATION
PENXG UNDETERMINED (1110) B 25ND

TRC
572E SN192 R.KNEE 11LB CAL 3B
92078
PENXF

FILTER = BLPP 1000/ 3162/ -40
MIN, MAX VALUES = -3.30e -0.13, 1108.43 e 2.63



PART 572-E HYBRID III RIGHT KNEE CALIBRATION
PENDULUM FORCE [11 LB PEND.]

APPENDIX D

MISCELLANEOUS TEST INFORMATION

DUMMY INSTRUMENT CALIBRATIONS

DRIVER DUMMY #142

	SERIAL NO.	MODEL NO.	MFR.	CALIBRATION DATE	
				LAST	DUE
HEAD X-AXIS ACCEL.	CR59H	7264	ENDEVCO	11/07/91	05/07/92
Y-AXIS ACCEL.	CR99H	7264	ENDEVCO	11/07/91	05/07/92
Z-AXIS ACCEL.	CH44H	7264	ENDEVCO	11/07/91	05/07/92
CHEST X-AXIS ACCEL.	DA88H	7264	ENDEVCO	11/07/91	05/07/92
Y-AXIS ACCEL.	CLO9H	7264	ENDEVCO	11/07/91	05/07/92
Z-AXIS ACCEL.	CH74H	7264	ENDEVCO	11/07/91	05/07/92
LEFT FEMUR FORCE LOAD CELL	829	2430	GSE	11/06/91	05/06/92
RIGHT FEMUR FORCE LOAD CELL	610	2430	GSE	11/06/91	05/06/92
*NECK X-AXIS FORCE LOAD CELL	0280	1716	DENTON	11/06/91	05/06/92
Y-AXIS FORCE LOAD CELL	0280	1716	DENTON	11/06/91	05/06/92
Z-AXIS FORCE LOAD CELL	0280	1716	DENTON	11/06/91	05/06/92
*NECK MOMENT ABOUT X-AXIS LOAD CELL	0280	1716	DENTON	11/06/91	05/06/92
MOMENT ABOUT Y-AXIS LOAD CELL	0280	1716	DENTON	11/06/91	05/06/92
MOMENT ABOUT Z-AXIS LOAD CELL	0280	1716	DENTON	11/06/91	05/06/92
*CHEST DEFLECTION POTENTIOMETER	90320B	81422A	VERNITECH	11/15/91	05/15/92
LAP BELT FORCE LOAD CELL	236	3419	LEBOW	10/04/91	04/04/92
SHOULDER BELT FORCE LOAD CELL	612	3419	LEBOW	11/20/92	05/20/92
SHOULDER BELT SPOOL-OUT POTENTIOMETER	A48391	PT-101-40A	CELESCO	03/16/92	09/16/92
SHOULDER BELT STRETCH POTENTIOMETER	2087	2051414101	BOURNES	11/27/91	05/27/92

*HYBRID III USE ONLY.

DUMMY INSTRUMENT CALIBRATIONS

PASSENGER DUMMY #192

	SERIAL NO.	MODEL NO.	MFR.	CALIBRATION DATE	
				LAST	DUE
HEAD X-AXIS ACCEL.	CY19H	7264	ENDEVCO	11/07/91	05/07/92
Y-AXIS ACCEL.	DH74J	7264	ENDEVCO	11/07/91	05/07/92
Z-AXIS ACCEL.	AJ9FJ	7264	ENDEVCO	11/19/91	05/19/92
CHEST X-AXIS ACCEL.	DW04J	7264	ENDEVCO	11/07/91	05/07/92
Y-AXIS ACCEL.	A91CJ	7264	ENDEVCO	11/22/91	05/22/92
Z-AXIS ACCEL.	DK56J	7264	ENDEVCO	11/07/91	05/07/92
LEFT FEMUR FORCE LOAD CELL	613	2430	GSE	11/06/91	05/06/92
RIGHT FEMUR FORCE LOAD CELL	827	2430	GSE	11/06/91	05/06/92
*NECK X-AXIS FORCE LOAD CELL	085	1716	DENTON	11/06/91	05/06/92
Y-AXIS FORCE LOAD CELL	085	1716	DENTON	11/06/91	05/06/92
X-AXIS FORCE LOAD CELL	085	1716	DENTON	11/06/91	05/06/92
*NECK MOMENT ABOUT X-AXIS LOAD CELL	085	1716	DENTON	11/06/91	05/06/92
MOMENT ABOUT Y-AXIS LOAD CELL	085	1716	DENTON	11/06/91	05/06/92
MOMENT ABOUT Z-AXIS LOAD CELL	085	1716	DENTON	11/06/91	05/06/92
*CHEST DEFLECTION POTENTIOMETER	87313-96	81422A	VERNITECH	11/15/91	05/15/92
LAP BELT FORCE LOAD CELL	610	3419	LEBOW	01/18/92	07/18/92
SHOULDER BELT FORCE LOAD CELL	590	3419	LEBOW	01/18/92	07/18/92
SHOULDER BELT SPOOL-OUT POTENTIOMETER	0586135	PT-101-40A	CELESCO	11/27/91	05/27/92
SHOULDER BELT STRETCH POTENTIOMETER	2690	2051414101	BOURNES	11/27/91	05/27/92

*HYBRID III USE ONLY.

VEHICLE AND CALIBRATION LABORATORY INSTRUMENT CALIBRATIONS

VEHICLE ACCELEROMETERS

	SERIAL NO.	MODEL NO.	MFR.	CALIBRATION DATE	
				LAST	DUE
LEFT SEAT REAR CROSSMEMBER X-AXIS	CK87H	7264	ENDEVCO	01/15/92	07/15/92
RIGHT REAR SEAT CROSSMEMBER X-AXIS	CG67H	7264	ENDEVCO	12/16/91	06/16/92
ENGINE TOP X-AXIS	CH24H	7264	ENDEVCO	12/02/91	06/02/92
ENGINE BOTTOM X-AXIS	CJ21J	7264	ENDEVCO	12/02/91	06/02/92
RIGHT BRAKE CALIPER X-AXIS	CJ30H	7264	ENDEVCO	12/18/91	06/18/92
LEFT BRAKE CALIPER X-AXIS	CC02H	7264	ENDEVCO	01/15/92	07/15/92
INSTRUMENT PANEL CENTER X-AXIS	CR83H	7264	ENDEVCO	12/18/91	06/18/92
REAR SEAT CROSSMEMBER CENTER Z-AXIS	CJ37H	7264	ENDEVCO	01/15/92	07/15/92
VEHICLE REAR CENTER Z-AXIS	CK16H	7264	ENDEVCO	01/12/92	07/12/92

CALIBRATION LABORATORY INSTRUMENTS

	SERIAL NO.	MODEL NO.	MFR.	CALIBRATION DATE	
				LAST	DUE
NECK BENDING PENDULUM ACCEL.	CC59	7232	ENDEVCO	10/08/91	04/08/92
NECK BENDING ROTARY POTENTIOMETER	NA	35435-1-102	BOURNES	MFR. SPECIFICATION	
NECK BENDING LINEAR POTENTIOMETER	NA	5184-2051846003	BOURNES	10/08/91	04/08/92
THORAX/HYBRID II FEMUR PEND. ACCEL.	CG64	7232	ENDEVCO	10/08/91	04/08/92
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	10/08/91	04/08/92
ABDOMEN COMPRESSION FORCE GAUGE	1261	3167	LEBOW	10/08/91	04/08/92
HYBRID III FEMUR PEND. ACCEL.	CG83	7232	ENDEVCO	10/08/91	04/08/92

SIGN CONVENTION
NHTSA DATA TAPE REFERENCE GUIDE

ACCELEROMETERS:

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

POTENTIOMETERS:

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

LOAD CELLS:

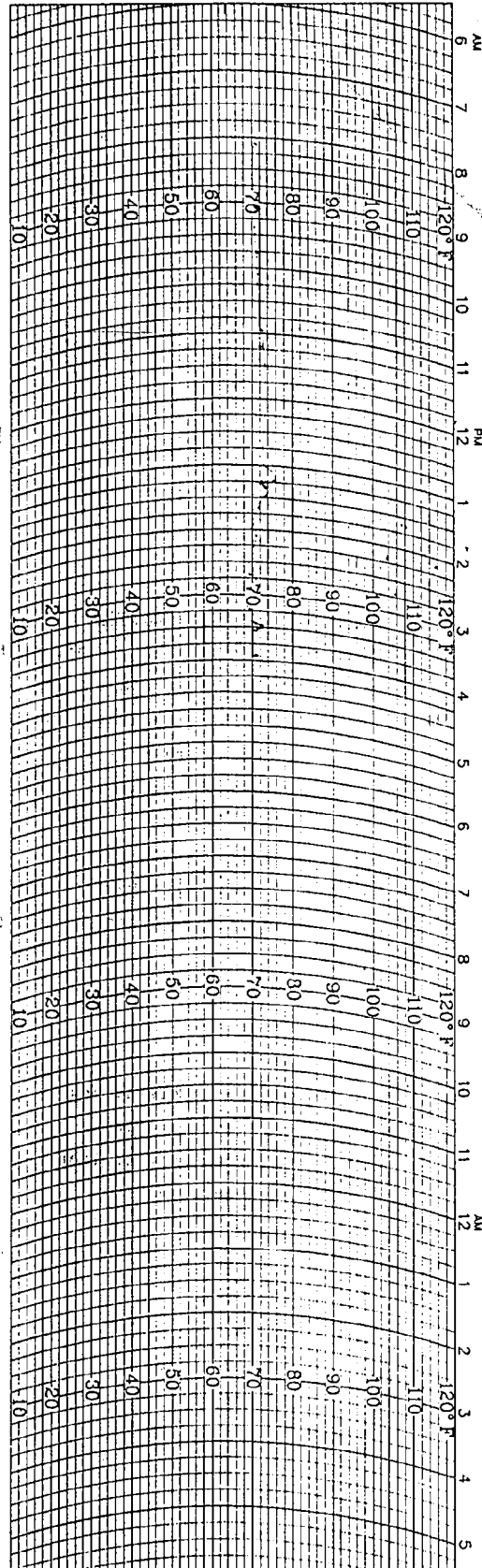
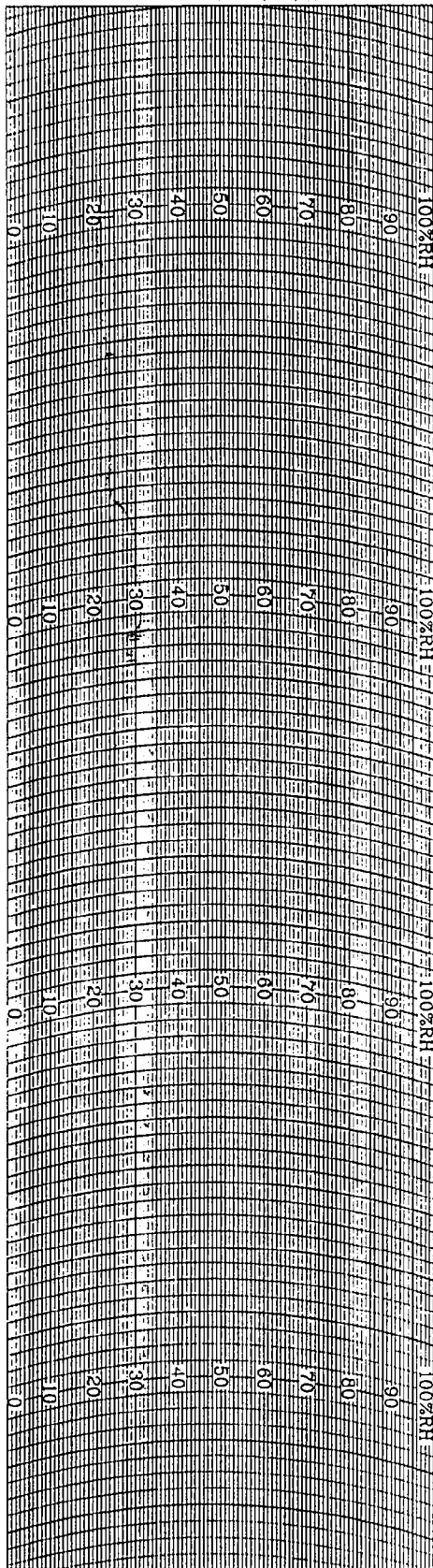
+FEMUR FORCE: TENSION
+SEAT BELT FORCE: TENSION
+BARRIER FORCE: TENSION

NECK LOAD CELLS:

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

TIBIA LOAD CELLS:

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



WeatherMeasure P.O. BOX 41039
WEATHERtronics SACRAMENTO, CA 95841
 Division of QUALITYTRONICS, Inc. PHONE: (916) 923-0055

HYGROTHERMOGRAPH
 1 DAY
 110

CHART NO. M699123
 C311-D-HF
 ECN 2717
 6-9-87

STATION CADILLAC SEVILLE DATE ON 3/24/92 DATE OFF 3/29/92

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

APPENDIX E

RESTRAINT SYSTEM INSTRUCTIONS FROM OWNER'S MANUAL



SECTION 1

SEATS AND SAFETY BELTS

Here you'll find information about the seats in your Cadillac and how to use your safety belts properly. You can also learn about some things you should not do with safety belts.

SEATS AND SEAT CONTROLS

This section tells you about the seats -- and how to adjust them, and also about reclining front seatbacks, lumbar adjustments, heated seats, and head restraints.

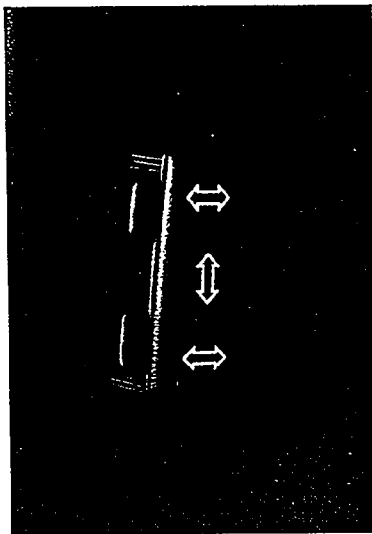
Power Seat Control



The power seat control switch is located on the outboard side of the seat cushion.

The power control switch moves the seat forward and backward, up and down, and adjusts the angle of the seat.

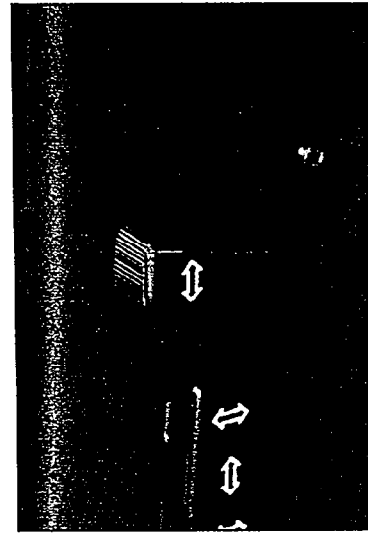
Power Seat



- Move the front of the switch in the direction of the arrows to make the front part of the cushion move up or down.
- Move the rear of the switch in the direction of the arrows to make the rear part of the cushion move up or down.

- Move the whole switch in the direction of both arrows to move the seat up or down.
- Move the switch forward or backward to move the whole seat forward or backward.

Power Seatback Recliner Option



Move the switch in the direction of the arrows to move the seatback forward or backward.

SEATS AND SEAT CONTROLS (Continued)

Manual Seat Back Recliner



Lift the lever to release the seatback, then tilt the seatback forward or backward as desired. Release the lever to lock the seatback in place.

The manual seat recliner is operated by a fluidic seat recliner system, similar to those used in aircraft. This system will eliminate backlash found on other spring based recliners. However, the dampening action will require more time to operate.

But don't have a seatback reclined if your vehicle is moving.

CAUTION:

Sitting in a reclined position when your vehicle is in motion can be dangerous. Even if you buckle up, your safety belts can't do their job when you're reclined like this.

CAUTION (Continued)

CAUTION (Continued)



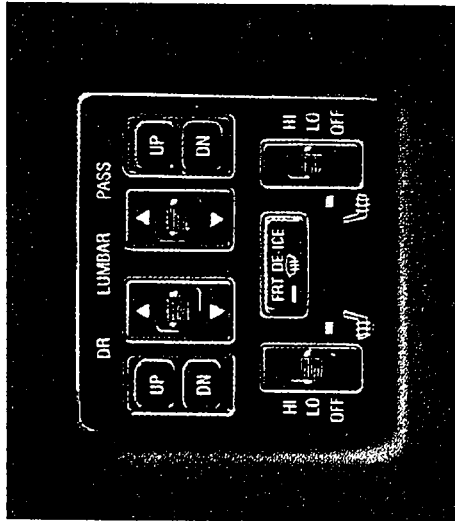
The shoulder belt can't do its job because it won't be against your body. Instead, it will be in front of you. In a crash you could go into it, receiving neck or other injuries.

The lap belt can't do its job either. In a crash the belt could go up over your abdomen. The belt forces would be there, not at your pelvic bones. This could cause serious internal injuries.

For proper protection when the vehicle is in motion, have the seatback upright. Then sit well back in the seat and wear your safety belt properly.

SEATS AND SEAT CONTROLS (Continued)

Lumbar/Heated Seats



Lumbar Control Option

If you have this feature, you can change the shape of the driver and passenger seats. It works independently of the other seat controls. Use the power seat control first to get the proper position. Then proceed with the lumbar adjustment.

The LUMBAR control switches are located on the center console. You can control either the DR (Driver) or PASS (Passenger) seat.

- Move the switch ▲ to inflate or ▼ to deflate the pillow to reshape the lower seatback.
- Push the switch UP or DN (down) to raise or lower the pillow to suit your preference.

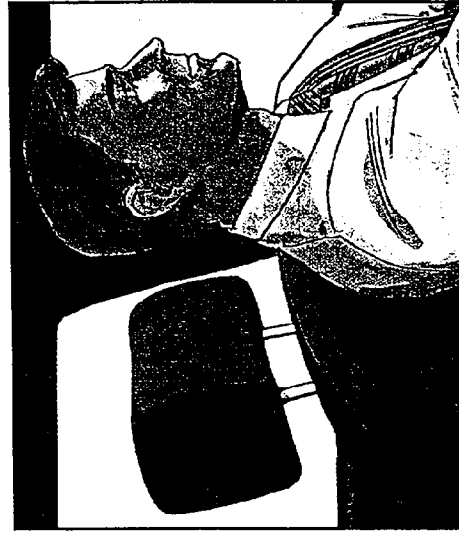
Heated Seat Option

Move the switch to either LO or HI to turn on the heating element in the seat.

Designed primarily for use on damp and chilly days, the LO setting warms the seatback and cushion until the seat approximates body temperature. On colder days, the HI setting heats the seats to an even

higher temperature. To prevent uncomfortable overheating of the seats, the heating elements are thermostatically regulated to automatically maintain the temperature at the setting selected. A telltale light in the control switch reminds you that the heating system is in use. To preserve the battery, the heated seats can only be used when the ignition is turned on, and are deactivated when the ignition is turned off.

Head Restraints



Slide head restraint up or down so that the top of the restraint is closest to the top of your ears.

This position reduces the chance of a neck injury in a crash. The head restraints tilt forward and rearward also.

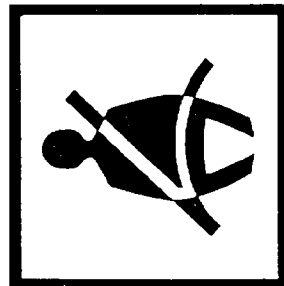
SAFETY BELTS: THEY'RE FOR EVERYONE

This part of the manual tells you how to use safety belts properly. It also tells you some things you should not do with safety belts. And it explains the Supplemental Inflatable Restraint, or "air bag" system.

SAFETY BELTS: THEY'RE FOR EVERYONE (Continued)

⚠ CAUTION:

Don't let anyone ride where they can't wear a safety belt properly. If you are in a crash and you're not wearing a safety belt, your injuries can be much worse. You can hit things inside the vehicle or be ejected from it. You can be seriously injured or killed. In the same crash, you might not be if you are buckled up. Always fasten your safety belt, and check that your passengers' belts are fastened properly too.



This figure lights up when you turn the key to "Run" or "Start" when your safety belt isn't buckled, and you'll hear a chime, too. It's the reminder to buckle up.

In many states and Canadian provinces, the law says to wear safety belts. Here's why: They work.

You never know if you'll be in a crash. If you do have a crash, you don't know if it will be a bad one.

A few crashes are very mild. In them, you won't get hurt even if you're not buckled up. And some crashes can be so serious, like being hit by a train, that even buckled up a person wouldn't survive. But most crashes are in between. In many of them, people who buckle up can survive and sometimes walk away. Without belts they could be badly hurt or killed.

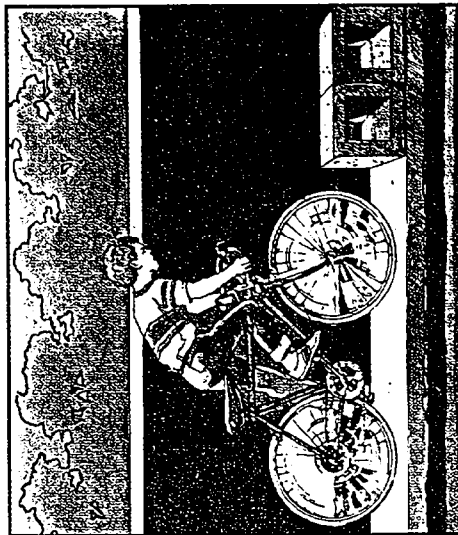
After 25 years of safety belts in vehicles, the facts are clear. In most crashes buckling up does matter ... a lot!



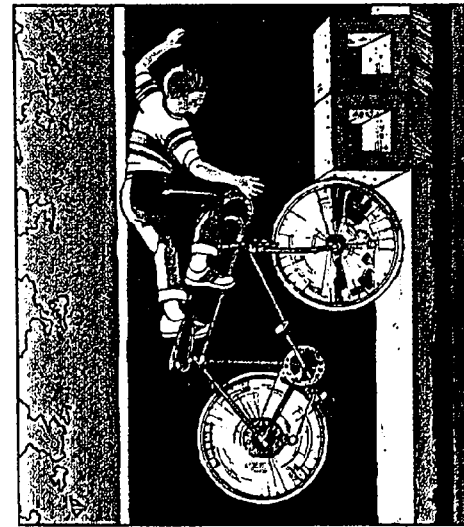
WHY SAFETY BELTS WORK

When you ride in or on anything, you go as fast as it goes.

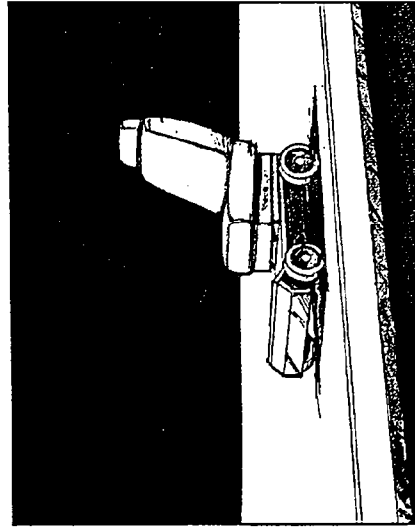
For example, if the bike is going 10 mph (16 km/h), so is the child.



WHY SAFETY BELTS WORK (Continued)

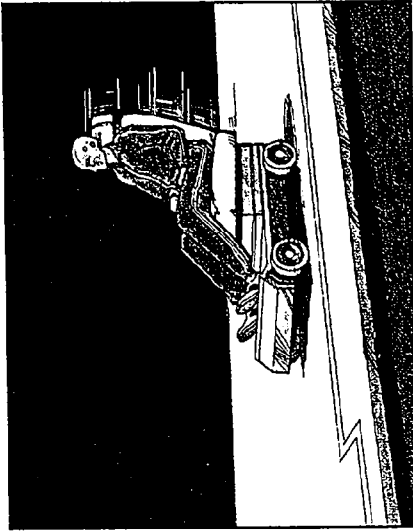


When the bike hits the block, it stops. But the child keeps going!

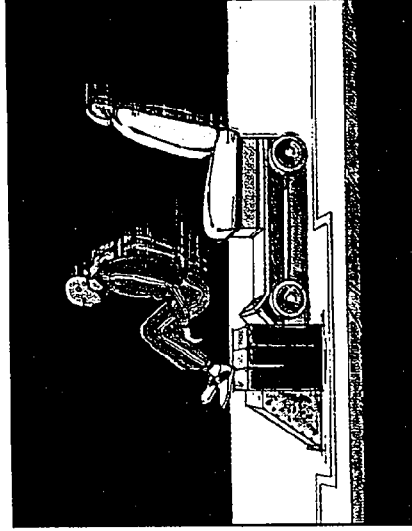


Take the simplest "car." Suppose it's just a seat on wheels.

Put someone on it.



Get it up to speed. "Then stop the "car." The rider doesn't stop.



WHY SAFETY BELTS WORK (Continued)



The person keeps going until stopped by something.
In a real vehicle, it could be the windshield ...



or the instrument panel ...



or the safety belts!

With safety belts, you slow down as the vehicle does. You get more time to stop. You stop over more distance, and your strongest bones take the forces. That's why safety belts make such good sense.

Here Are Questions Many People Ask About Safety Belts -- and the Answers

Q: Won't I be trapped in the vehicle after an accident if I'm wearing a safety belt?

A: You could be -- whether you're wearing a safety belt or not. But you can easily unbuckle a safety belt, even if you're upside down. And your chance of being conscious during and after an accident, so you can unbuckle and get out, is much greater if you are belted.

Q: Why don't they just put in air bags so people won't have to wear safety belts?

A: "Air bags," or Supplemental Inflatable Restraint systems, are in some vehicles today and will be in more of them in the future. But they are supplemental systems only -- so they work with safety belts, not instead of them. Every "air bag" system ever offered for sale has required the use of safety belts. Even if you're in a vehicle that has

WHY SAFETY BELTS WORK (Continued)

"air bags," you still have to buckle up to get the most protection. That's true not only in frontal collisions, but especially in side and other collisions.

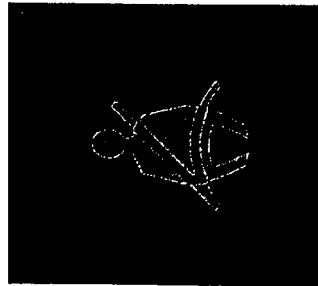
Q: If I'm a good driver, and I never drive far from home, why should I wear safety belts?

A: You may be an excellent driver, but if you're in an accident -- even one that isn't your fault -- you and your passengers can be hurt. Being a good driver doesn't protect you from things beyond your control, such as bad drivers.

Most accidents occur within 25 miles (40 km) of home. And the greatest number of serious injuries and deaths occur at speeds of less than 40 mph (65 km/h).

Safety belts are for everyone.

Safety Belt Reminder Light



When the key is turned to "Run" or "Start," a light will come on for about eight seconds to remind people to fasten their safety belts. Unless the driver's safety belt is buckled, a chime will also sound.

HOW TO WEAR SAFETY BELTS PROPERLY

Adults

This section is only for people of adult size.



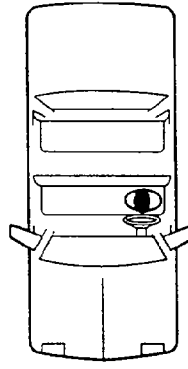
CAUTION:

There are special things to know about safety belts and children. And there are different rules for babies and smaller children. If a child will be riding in your Cadillac, see the section after this one, called "Children." Follow those rules for everyone's protection.

First, you'll want to know which restraint systems your vehicle has. We'll start with the driver position.

Driver Position

This section describes the driver's restraint system.



HOW TO WEAR SAFETY BELTS PROPERLY (Continued)

Lap-Shoulder Belt



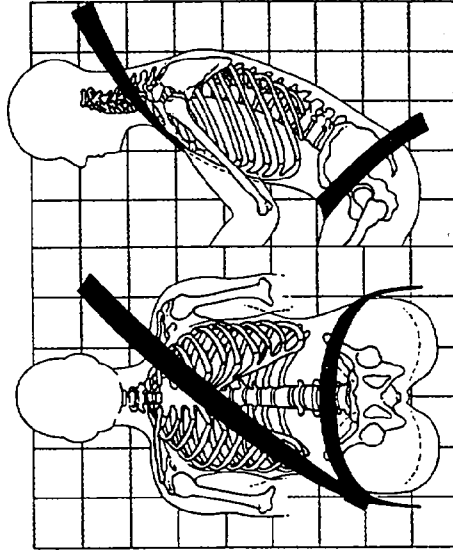
The driver has a lap-shoulder belt. Here's how to wear it properly.

1. Close and lock the door.
2. Adjust the seat (to see how, see Index under "Seats") so you can sit up straight.

3. Pick up the latch plate and pull the belt across you. Don't let it get twisted.
4. Push the latch plate into the buckle until it clicks. If the belt isn't long enough, see "Safety Belt Extender" at the end of this section.



Make sure the release button on the buckle faces upward or outward so you would be able to unbuckle it quickly if you ever had to.

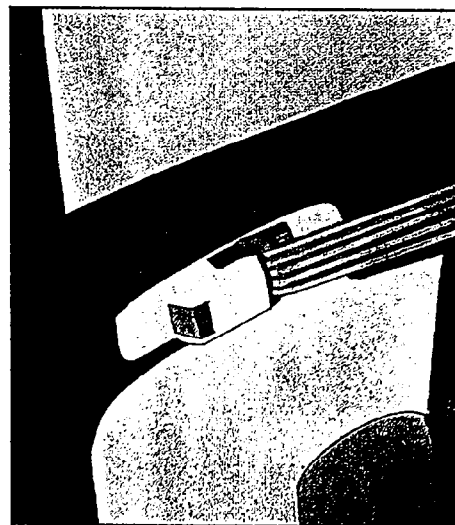


HOW TO WEAR SAFETY BELTS PROPERLY (Continued)

The lap part of the belt should be low and snug below the hips, just touching the thighs. In a crash, this applies force to the strong pelvic bones. And you'd be less likely to slide under the lap belt. If you slid under it, the belt would apply force at your abdomen. This could cause serious or even fatal injuries. The shoulder belt should go over the shoulder and across the chest. These parts of the body are best able to take belt restraining forces.

The safety belt locks if there's a sudden stop or a crash.

Shoulder Belt Height Adjuster



You can move the shoulder belt adjuster to the height that is right for you.



To move it up or down, squeeze the release handle. When you release the handle, try to move it down a little to make sure it has locked into position.

You can move the adjuster up from a lower position by pushing the bottom of the release handle.



Adjust the height so that the shoulder portion of the belt is properly positioned on your shoulder, away from your face and neck.

To help you find a height that is right for you, follow these guidelines:

For a tall person: Use the upper or upper-middle position.

For a person of average height: Use a position somewhere in the middle.

For a short person: Use the lower or lower-middle position.

Shoulder Belt Tightness Adjustment

Your Seville may have this feature. The way to tell if it does is, pull the belt out. Just before it reaches the end, give it a quick pull. Then as you let the belt retract, listen for a slight clicking sound. If you do, you have this feature and you can adjust it like this:

1. Sit well back in the seat.



2. Start pulling the shoulder belt out.



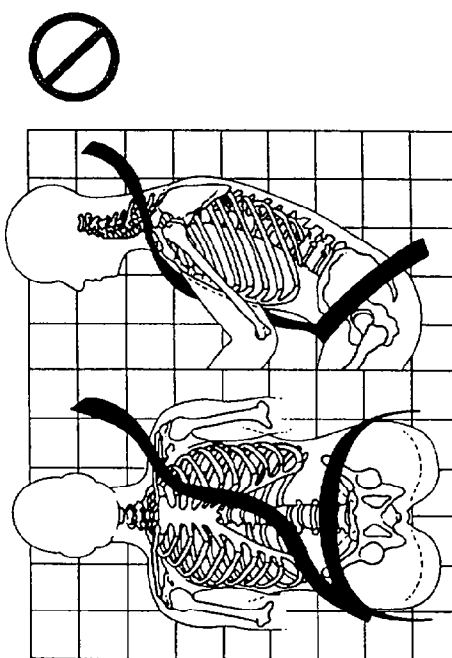
3. Just before it reaches the end, give it a quick pull.
4. Let the belt go back all the way. You should hear a slight clicking sound. If you don't, the adjustment feature didn't set, and you'll have to start again.



5. Now you can add a small amount of slack. Lean forward slightly, then sit back. If you've added more than 1 inch (25mm) of slack, pull the shoulder belt out as you did before and start again.

If you move around in the vehicle enough, or if you pull out the shoulder belt, the belt will become tight again. If this happens, you can reset it.

Q: What's wrong with this?



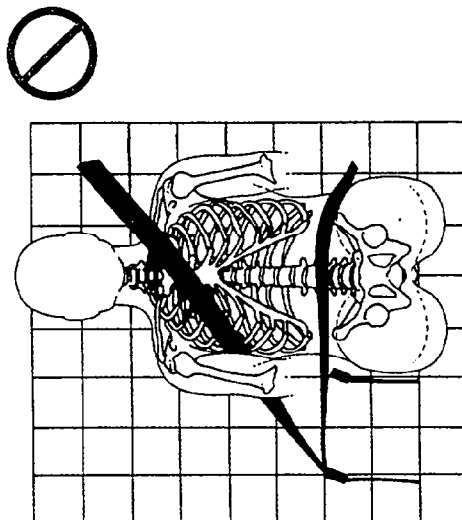
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A: The shoulder belt is too loose. It won't give nearly as much protection this way.

⚠ CAUTION:

You can be seriously hurt if your shoulder belt is too loose. In a crash you would move forward too much, which could increase injury. The shoulder belt should fit against your body.

Q: What's wrong with this?



A: The belt is buckled in the wrong place.

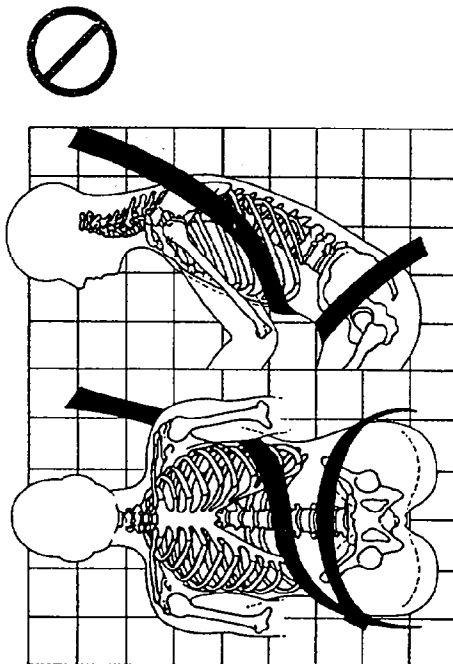
⚠ CAUTION:

You can be seriously injured if your belt is buckled in the wrong place like this. In a crash, the belt would go up over your abdomen. The belt forces would be there, not at the pelvic bones. This could cause serious internal injuries. Always buckle your belt into the buckle nearest you.

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HOW TO WEAR SAFETY BELTS PROPERLY (Continued)

Q: What's wrong with this?

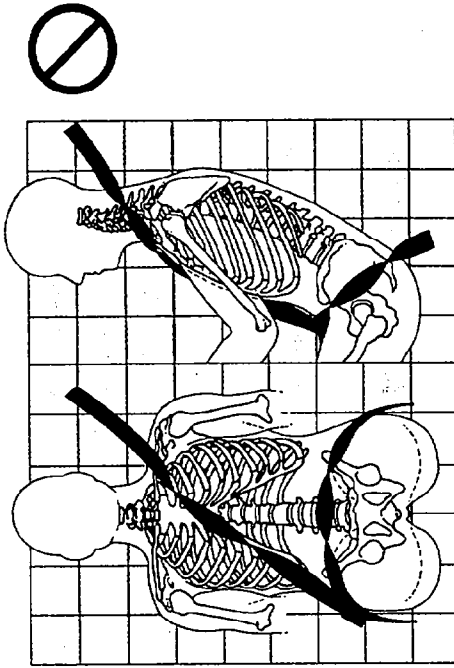


A: The shoulder belt is worn under the arm. It should be worn over the shoulder at all times.

⚠ CAUTION:

You can be seriously injured if you wear the shoulder belt under your arm. In a crash, your body would move too far forward, which would increase the chance of head and neck injury. Also, the belt would apply too much force to the ribs, which aren't as strong as shoulder bones. You could also severely injure internal organs like your liver or spleen.

Q: What's wrong with this?



A: The belt is twisted across the body.

⚠ CAUTION:

You can be seriously injured by a twisted belt. In a crash, you wouldn't have the full width of the belt to take impact forces. If a belt is twisted, make it straight so it can work properly, or ask your dealer to fix it.

To unlatch the belt, just push the button on the buckle. The belt should go back out of the way.

HOW TO WEAR SAFETY BELTS PROPERLY (Continued)



Before you close the door, be sure the belt is out of the way. If you slam the door on it, you can damage both the belt and your vehicle.

Supplemental Inflatable Restraint System

This section explains the driver's "air bag," or Supplemental Inflatable Restraint (SIR) system. Here's the most important thing to know:

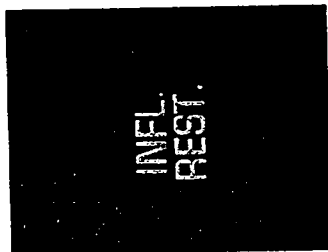
CAUTION:

If you are ever in a crash and you're not wearing a safety belt, your injuries may be much worse. You can hit things inside the vehicle or be ejected from it. You can be seriously injured or killed. In the same crash, you might not be if you're buckled up. That's true even when you have the SIR system. And, a driver whose body is against or very close to the steering wheel when the "air bag" inflates can be injured. For protection in frontal and all other collisions, everyone in the vehicle, including children, should be properly restrained.

Supplemental Inflatable Restraint Light

There is an inflatable restraint light on the instrument panel. The system checks itself and the light tells you if there is a problem.

You will see this light flash for a few seconds when you turn your ignition to "Run" or "Start." Then the light should go out, which means the system is ready.



CAUTION:

If the inflatable restraint light doesn't come on, or stays on, or comes on when you are driving, your inflatable restraint system may not work properly. Have your vehicle serviced right away.

HOW TO WEAR SAFETY BELTS PROPERLY (Continued)

How The SIR System Works



The "air bag" part of the SIR system is in the middle of the steering wheel.

The "air bag" system is intended to inflate only in moderate and severe frontal crashes. The "air bag" inflates in a fraction of a second. It is not designed to inflate during rear or side impacts, rollovers or low speed frontal crashes, so always wear your safety belt. The "air bag" helps restrain the driver, and then it quickly deflates. Some gray "smoke" is normal when this happens, and some people have reported mild coughing and watery eyes from it. But all of these have been temporary. The "air bag" can give extra protection for the driver's upper body.

CAUTION:

- Don't attach anything to the steering wheel pad. It might injure the driver if the SIR inflates.
- The SIR is designed to inflate only once. After it inflates, you'll need some new parts for your SIR system. If you don't get them, the SIR system won't be there to help protect you in another crash. A new system will include the "air bag" module and possibly other parts. The service manual has information about the need to replace other parts.
- Let only qualified technicians work on your SIR system. Improper service can mean that your SIR system won't work properly. See your dealer for service.

Servicing Your Cadillac with the SIR System

Please tell or remind anyone who works on your Cadillac that it has the SIR system. There are parts of the SIR system in several places around your vehicle. You don't want the system to inflate while someone is working on your car. The SIR system does not need regular maintenance. Your Cadillac dealer and the 1992 Cadillac Service Manual have information about the SIR system, including repair or disposal.

CAUTION:

For up to 10 minutes after the ignition key is turned off and the battery disconnected, an "air bag" can still inflate during improper service. You can be injured if you are close to an "air bag" when it inflates. Be sure to follow the proper service procedures.

HOW TO WEAR SAFETY BELTS PROPERLY (Continued)

When electrical work is done under the hood or inside the car, the ignition should be in "Lock" if possible. Avoid wires wrapped with yellow tape, or yellow connectors. They are probably part of the SIR system.

But if the ignition has to be on for electrical work, or if the steering column is to be disassembled, the SIR system must be disconnected. To do this:

- Remove the SIR fuse (see Index under "Fuses and Circuit Breakers").
- Disconnect the yellow connector at the base of the steering column.

When the work is complete, if the SIR system was disconnected, be sure to reattach everything and replace the fuse before turning the ignition on. When you turn the ignition key on, be sure you see the inflatable restraint light on the instrument panel. If you don't see this light flash and then go out as usual, have your SIR system repaired.

Safety Belt Use During Pregnancy

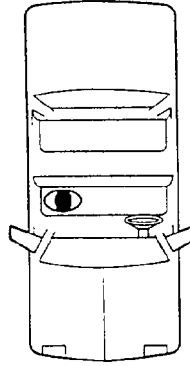
Safety belts work for everyone, including pregnant women. Like all occupants, they are more likely to be seriously injured if they don't wear safety belts.

A pregnant woman should wear a lap-shoulder belt, and the lap portion should be worn as low as possible throughout the pregnancy.

The best way to protect the fetus is to protect the mother. When a safety belt is worn properly, it's more likely that the fetus won't be hurt in a crash. For pregnant women, as for anyone, the key to making safety belts effective is wearing them properly.



Right Front Passenger Position



The right front passenger's safety belt works the same way as the driver's safety belt. See "Driver Position," earlier in this section.

When the lap belt is pulled out all the way, it will lock. If it does, let it go back all the way and start again.

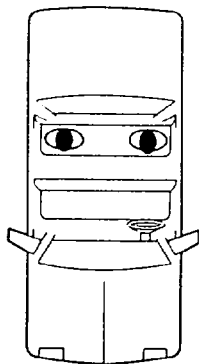
Rear Seat Passengers

It's very important for rear seat passengers to buckle up! Accident statistics show that unbelted people in the rear seat are hurt more often in crashes than those who are wearing safety belts.

Rear passengers who aren't safety belted can be thrown out of the vehicle in a crash. And they can strike others in the vehicle who are wearing safety belts.

HOW TO WEAR SAFETY BELTS PROPERLY (Continued)

Rear Seat Outside Passenger Positions



The positions next to the windows have lap-shoulder belts. Here's how to wear one properly.



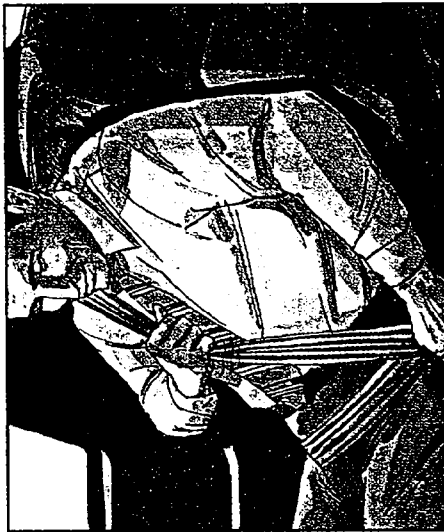
1. Pick up the latch plate and pull it across you. Don't let it get twisted.

2. Push the latch plate into the buckle until it clicks. If the belt stops before it reaches the buckle, tilt the latch plate and keep pulling until you can buckle it.

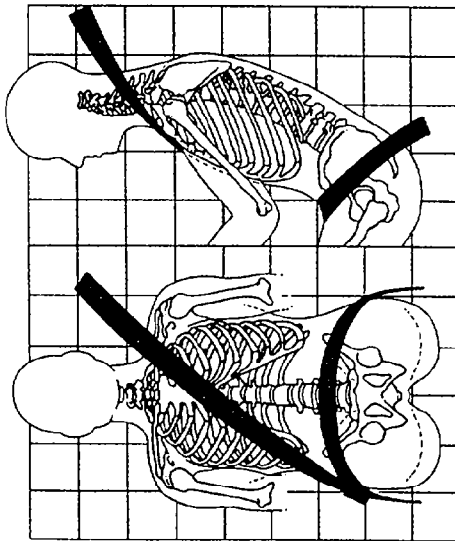
3. If the belt is not long enough, see "Safety Belt Extender" at the end of this section. Make sure the release button on the buckle faces upward or outward so you would be able to unbuckle it quickly if you ever had to.



4. To make the lap part tight, pull down on the buckle end of the belt as you pull up on the shoulder part.



HOW TO WEAR SAFETY BELTS PROPERLY (Continued)



The lap part of the belt should be low and snug below the hips, just touching the thighs. In a crash, this applies force to the strong pelvic bones. And you'd be less likely to slide under the lap belt. If you slid under it, the belt would apply force at your abdomen. This could cause serious or even fatal injuries. The shoulder belt should go over the shoulder and across the chest. These parts of the body are best able to take belt restraining forces. The safety belt locks if there's a sudden stop or a crash.

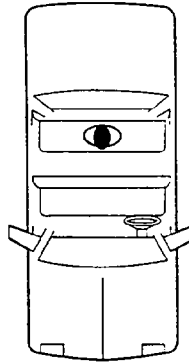
⚠ CAUTION:

You can be seriously hurt if your shoulder belt is too loose. In a crash you would move forward too much, which could increase injury. The shoulder belt should fit against your body.

To unlatch the belt, just push the button on the buckle.

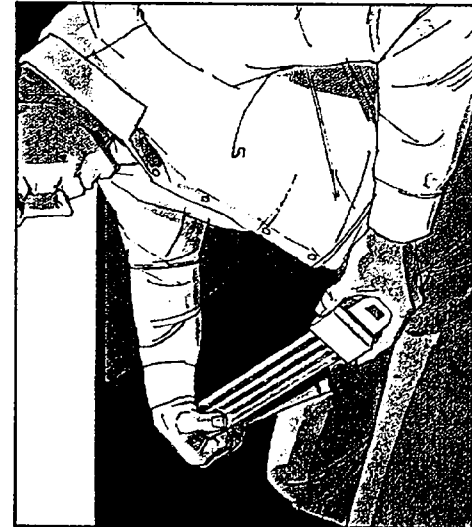


Center Passenger Position



Your vehicle has a rear bench seat. Someone can sit in the center position.

HOW TO WEAR SAFETY BELTS PROPERLY (Continued)



When you sit in a center seating position, you have a lap safety belt, which has no retractor. To make the belt longer, tilt the latch plate and pull it along the belt.



To make the belt shorter, pull its free end as shown until the belt is snug.

Buckle, position and release it the same way as a lap-shoulder belt. If the belt isn't long enough, see "Safety Belt Extender" at the end of this section.

Make sure the release button on the buckle faces upward or outward so you would be able to unbuckle it quickly if you ever had to.

Children



Everyone in a vehicle needs protection! That includes infants and all children smaller than adult size. In fact, the law in every state and Canadian province says children up to some age must be restrained while in a vehicle.

HOW TO WEAR SAFETY BELTS PROPERLY (Continued)

Smaller Children and Babies

⚠ CAUTION:

Smaller children and babies should always be restrained in a child or infant restraint. The instructions for the restraint will say whether it is the right type and size for your child. A very young child's hip bones are so small that a regular belt might not stay low on the hips, as it should. Instead, the belt will likely be over the child's abdomen. In a crash the belt would apply force right on the child's abdomen, which could cause serious or fatal injuries. So, be sure that any child small enough for one is always properly restrained in a child or infant restraint.

⚠ CAUTION:

Never hold a baby in your arms while riding in a vehicle. A baby doesn't weigh much -- until a crash. During a crash a baby will become so heavy you can't hold it. For example, in a crash at only 25 mph (40 km/h), a 12-pound (5.5 kg) baby will suddenly become a 240-pound (110 kg) force on your arms. The baby would be almost impossible to hold.

CAUTION (Continued)

CAUTION (Continued)



Secure the baby in an infant restraint.



HOW TO WEAR SAFETY BELTS PROPERLY (Continued)

Child Restraints

Be sure to follow the instructions for the restraint. You may find these instructions on the restraint itself or in a booklet, or both. These restraints use the belt system in your vehicle, but the child also has to be secured within the restraint to help reduce the chance of personal injury. The instructions that come with the infant or child restraint will show you how to do that.

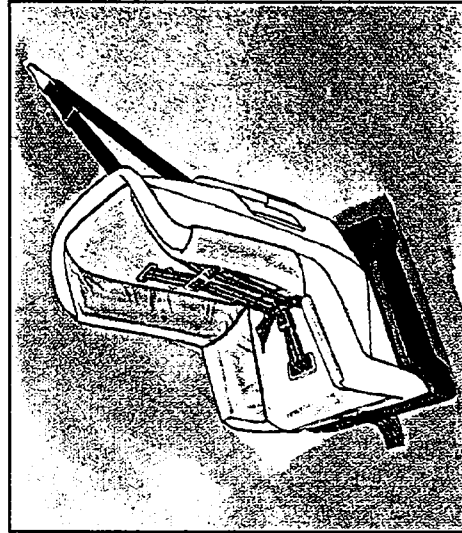
Where to Put the Restraint

Accident statistics show that children are safer if they are restrained in the rear rather than the front seat. We at General Motors therefore recommend that you put your child restraint in the rear seat unless the child is an infant and you're the only adult in the vehicle. In that case, you might want to secure the restraint in the front seat where you can keep an eye on the baby. Wherever you install it, be sure to secure the child restraint properly.

⚠ CAUTION:

An unsecured child restraint can move around in a collision or sudden stop and injure people in the vehicle. Be sure to properly secure any child restraint in your vehicle -- even when no child is in it.

Top Strap



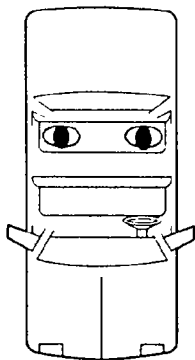
If your child restraint has a top strap, it should be anchored.

If you need to have an anchor installed, you can ask your Cadillac dealer to put it in for you. If you want to install an anchor yourself, your dealer can tell you how to do it.

Vehicles first sold in Canada have child restraint anchor bracket hardware in the glove box, along with instructions for installing it. This should be used only with a child restraint, and only to secure a child restraint at the center rear seating position. Additional anchor brackets for child restraints at one or both of the rear outside seating positions are available at Cadillac dealerships in Canada.

HOW TO WEAR SAFETY BELTS PROPERLY (Continued)

Securing a Child Restraint in a Rear Outside Position



You'll be using the lap-shoulder belt. See the earlier section about the top strap if the child restraint has one.

1. Put the restraint on the seat. Follow the instructions for the child restraint.
2. Secure the child in the child restraint as the instructions say.
3. Pull out the vehicle's safety belt and run the lap part through or around the restraint. The child restraint instructions will show you how.
4. Tilt the latch plate to adjust the belt if needed.

See if the shoulder belt would go in front of the child's face or neck. If so, put it behind the child restraint.



5. Buckle the belt. Make sure the release button faces upward or outward, so you'll be able to unbuckle it quickly if you ever need to.



6. To tighten the belt, pull up on the shoulder belt while you push down on the child restraint.

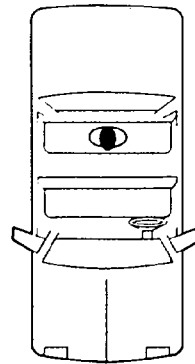
HOW TO WEAR SAFETY BELTS PROPERLY (Continued)



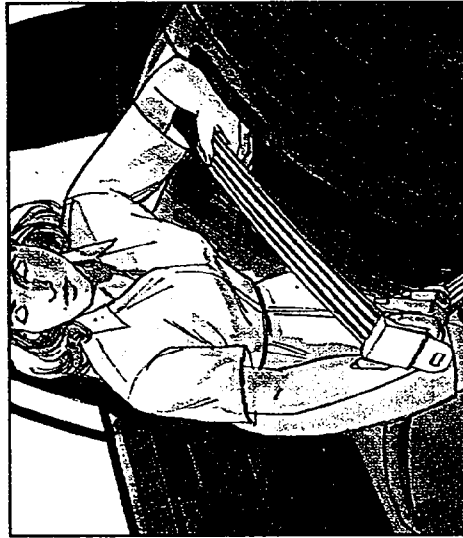
7. Push and pull the child restraint in different directions to be sure it is secure.

To remove the child restraint, just unbuckle the vehicle's safety belt and let it go back all the way. The safety belt will move freely again and be ready to work for an adult or larger child passenger.

Securing a Child Restraint in the Center Rear Seat Position



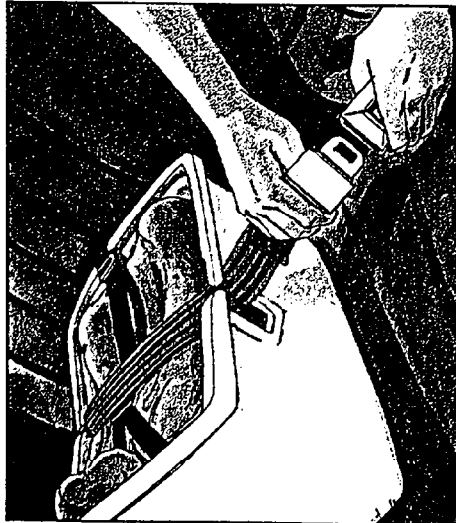
When you secure a child restraint in a center seating position, you'll be using the lap belt. See the earlier section about the top strap if the child restraint has one.



1. Make the belt as long as possible by tilting the latch plate and pulling it along the belt.

2. Put the restraint on the seat. Follow the instructions for the child restraint.
3. Secure the child in the child restraint as the instructions say.

HOW TO WEAR SAFETY BELTS PROPERLY (Continued)

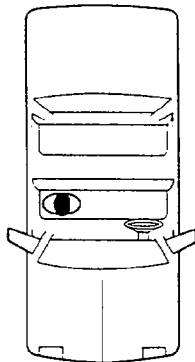


4. Run the vehicle's safety belt through or around the restraint. The child restraint instructions will show you how.

5. Buckle the belt. Make sure the release button faces upward or outward, so you'll be able to unbuckle it quickly if you ever need to.
6. To tighten the belt, pull its free end while you push down on the child restraint.
7. Push and pull the child restraint in different directions to be sure it is secure. If the child restraint isn't secure, turn the latch plate over and buckle it again. Then see if it is secure. If it isn't, secure the restraint in a different place in the vehicle and contact the child restraint maker for their advice.

To remove the child restraint, just unbuckle the vehicle's safety belt. It will be ready to work for an adult or larger child passenger.

Securing a Child Restraint in the Right Front Seat



You'll be using the lap-shoulder belt. See the earlier section about the top strap if the child restraint has one.

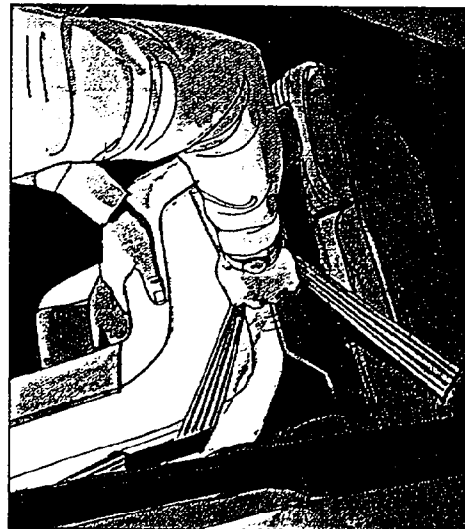
1. Put the restraint on the seat. Follow the instructions for the child restraint.
2. Secure the child in the child restraint as the instructions say.



3. Pull out the vehicle's safety belt and run the lap part through or around the restraint. The child restraint instructions will show you how. See if the shoulder belt would go in front of the child's face or neck. If so, put it behind the child restraint.

4. Buckle the belt. Make sure the release button faces upward or outward, so you'll be able to unbuckle it quickly if you ever need to.

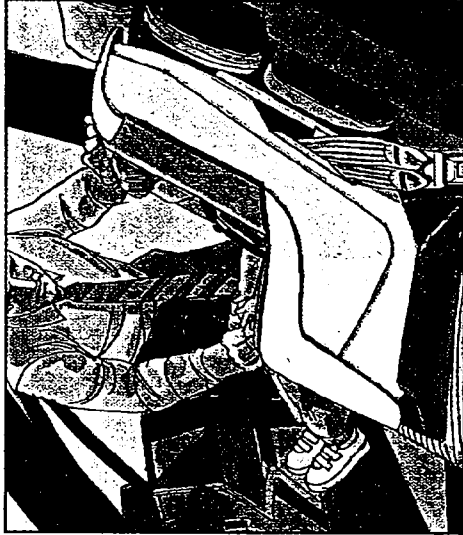
HOW TO WEAR SAFETY BELTS PROPERLY (Continued)



5. Pull the rest of the lap belt all the way out of the retractor to set the lock.



6. To tighten the belt, feed the lap belt back into the retractor while you push down on the child restraint.



7. Push and pull the child restraint in different directions to be sure it is secure.

To remove the child restraint, just unbuckle the vehicle's safety belt and let it go back all the way. The safety belt will move freely again and be ready to work for an adult or larger child passenger.

HOW TO WEAR SAFETY BELTS PROPERLY (Continued)

Larger Children



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Children who have outgrown child restraints should wear the vehicle's safety belts. If you have the choice, a child should sit next to a window so the child can wear a lap-shoulder belt and get the additional restraint a shoulder belt can provide.

Accident statistics show that children are safer if they are restrained in the rear seat. But they need to use the safety belts properly.

- Children who aren't buckled up can be thrown out in a crash.

- Children who aren't buckled up can strike other people who are.



HOW TO WEAR SAFETY BELTS PROPERLY (Continued)

CAUTION:

Never do this.



Here two children are wearing the same belt. The belt can't properly spread the impact forces. In a crash, the two children can be crushed together and seriously injured. A belt must be used by only one person at a time.

Q: What if a child is wearing a lap-shoulder belt, but the child is so small that the shoulder belt is very close to the child's face or neck?

A: Move the child toward the center of the vehicle, but be sure that the shoulder belt still is on the child's shoulder, so that in a crash the child's upper body would have the restraint that belts provide. If the child is so small that the shoulder belt is still very close to the child's face or neck, you might want to place the child in the center seat position, the one that has only a lap belt.

CAUTION:

Never do this.



Here a child is sitting in a seat that has a lap-shoulder belt, but the shoulder part is behind the child. If the child wears the belt in this way, in a crash the child might slide under the belt. The belt's force would then be applied right on the child's abdomen. That could cause serious or fatal injuries.

Wherever the child sits, the lap portion of the belt should be worn low, snug below the hips, and just touching the child's thighs. This applies belt force to the child's pelvic bones in a crash.

SAFETY BELT EXTENDER

If the vehicle's safety belt will fasten around you, you should use it.

But if a safety belt isn't long enough to fasten, your dealer will order you an extender. It's free. When you go in to order it, take the heaviest coat you will wear, so the extender will be long enough for you. The extender will be just for you, and just for the seat in your vehicle that you choose. Don't let someone else use it, and use it only for the seat it is made to fit. To wear it, just attach it to the regular safety belt.

CHECKING YOUR RESTRAINT SYSTEMS

Now and then, make sure all your belts, buckles, latch plates, retractors, anchorages and reminder systems are working properly. Look for any loose parts or damage. If you see anything that might keep a restraint system from doing its job, have it repaired.

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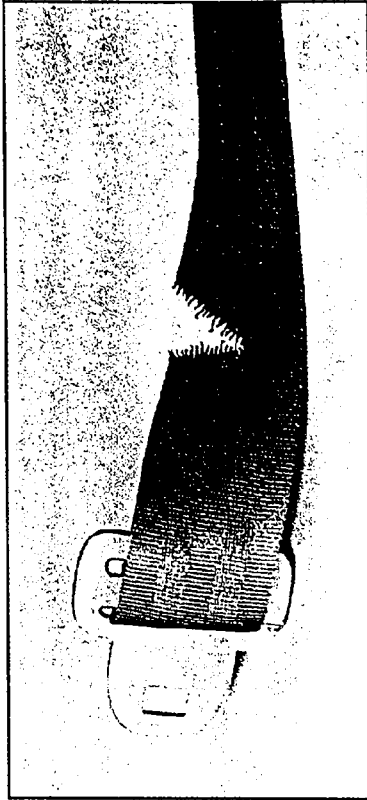
Replacing Safety Belts After a Crash

If you've had a crash, do you need new belts?

After a very minor collision, nothing may be necessary. But if the belts were stretched, as they would be if worn during a more severe crash, then you need new belts.

If belts are cut or damaged, replace them. Collision damage also may mean you will have to have safety belt parts, like the retractor, replaced or anchorage locations repaired -- even if the belt wasn't being used at the time of the collision.

Q: What's wrong with this?



A: The belt is torn.



CAUTION:

Torn or frayed belts may not protect you in a crash. They can rip apart under impact forces. If a belt is torn or frayed, get a new one right away.