

DOT 4823

REPORT NO. TRC-85-N08

NEW CAR ASSESSMENT PROGRAM (NCAP)
FRONTAL BARRIER IMPACT TEST

TOYOTA MOTOR CORPORATION

1985 TOYOTA MR2
2-DOOR SEDAN
NHTSA NO. CF5102
TRCO TEST NO. 850520

THE TRANSPORTATION RESEARCH CENTER OF OHIO
ST. RT. 33, LOGAN COUNTY
EAST LIBERTY, OHIO 43319



JUNE 1985
TEST REPORT

PREPARED FOR:
U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
OFFICE OF MARKET INCENTIVES
400 SEVENTH STREET, S.W.
ROOM NO. 5313 (NRM-22)
WASHINGTON, DC 20590

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16. Abstract A 35 mph frontal barrier impact test using a load cell barrier was conducted on a 1985 Toyota MR2 2-door sedan at the Transportation Research Center of Ohio in East Liberty, Ohio on May 20, 1985. The barrier impact velocity was 35.3 mph, and the ambient temperature at the barrier face at the time of impact was 76° F. The post-test vehicle crush maximum was 24.8 inches and intrusion of the firewall into the compartment was 4.5 inches. The test vehicle appeared to comply with the indicant requirements of the following Federal Motor Vehicle Safety Standards: 1. FMVSS No. 212, "Windshield Mounting" 2. FMVSS No. 301-75, "Fuel System Integrity" Driver HIC: 654.6 Passenger HIC: 514.7					
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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	metric ton	t

VOLUME

tsp	teaspoons	5	milliliters	ml
Tbsp	tablespoons	15	milliliters	ml
in ³	cubic inches	16	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	degrees Fahrenheit	5/9 (after subtracting 32)	degrees Celsius	°C
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Approximate Conversions from Metric Measures

Symbol When You Know Multiply by To Find Symbol

LENGTH

mm	millimeters	0.04	inches	in
cm	centimeters	0.4	inches	in
m	meters	3.3	feet	ft
m	meters	1.1	yards	yd
km	kilometers	0.6	miles	mi

AREA

cm ²	square centimeters	0.16	square inches	in ²
m ²	square meters	1.2	square yards	yd ²
km ²	square kilometers	0.4	square miles	mi ²
ha	hectares (10 000 m ²)	2.5	acres	

MASS (weight)

g	grams	0.035	ounces	oz
kg	kilograms	2.2	pounds	lb
t	metric ton (1000 kg)	1.1	short tons	

VOLUME

ml	milliliters	0.03	fluid ounces	fl oz
ml	milliliters	0.06	cubic inches	in ³
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	degrees Celsius	9/5 (then add 32)	degrees Fahrenheit	°F
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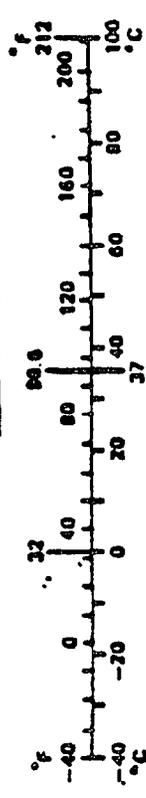


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SECTION 1.0
PURPOSE AND TEST PROCEDURE

This 35 mph frontal barrier impact test is part of the Composite FY'85 Vehicle Barrier Impact Testing Program sponsored by the National Highway Traffic Safety Administration (NHTSA) under Contract No. DTNH22-84-D-11149. The purpose of this test was to obtain vehicle crashworthiness and occupant restraint system performance data for an impact speed in excess of the current 30 mph FMVSS 212/219/301-75 requirements.

The 35 mph frontal barrier impact test was conducted in accordance with the Office of Market Incentives (OMI) Laboratory Indicant Test Procedure. Standards Enforcement Indicant Test Program data for FMVSS No. 212, "Windshield Mounting", FMVSS No. 219 (Partial), "Windshield Zone Intrusion", FMVSS No. 301-75, "Fuel System Integrity", as well as occupant performance data are provided herein.

SECTION 2.0
SUMMARY OF TEST NUMBER CF5102

A load cell barrier consisting of 36 load cells was impacted by a 1985 Toyota MR2 2-door sedan at a velocity of 35.3 mph. The test was performed at the Transportation Research Center of Ohio on May 20, 1985. Pre- and post-test photographs of the vehicle and occupants can be found in Appendix A.

Two Part 572, 50th percentile male anthropomorphic test devices (ATDs) were placed in the driver and right-front passenger designated seating positions, according to dummy placement procedures specified in Laboratory Indicant Test Procedure dated April 1, 1985.

Both ATDs were instrumented with head and chest triaxial accelerometers and right/left femur load cells. In addition, load cells were placed on the driver's and passenger's lap and shoulder belts to measure dummy upper torso and pelvic section loading. A summary of dummy calibration test data can be found in Appendix C.

The crash event was recorded by one real-time camera and 16 high-speed cameras. Camera locations and other pertinent camera information are found in Section 4 of this report.

The 67 channels of data were recorded on two 14 track tape drives. Appendix B contains the vehicle, load cell barrier and dummy response data plots.

CRASH TEST SUMMARY

TEST NO. 850520 PROJECT: CF5102
DATE: May 20, 1985 TIME: 18:32 TEMP: 76°F
VEHICLE: Toyota MR2 2-door Sedan
TEST WEIGHT (LBS): 2918
IMPACT ANGLE (DEG)*: 0
IMPACT VELOCITY (MPH)**: 35.3
MAX CRUSH (IN) STATIC: 24.8

DUMMIES

TYPE:	Part 572	Part 572
LOCATION:	Front Left	Front Right
RESTRAINT:	3-pt. Production Seat Belt	3-pt. Production Seat Belt
NUMBER OF DATA CHANNELS:	67	
NUMBER OF HIGH SPEED CAMERAS:	16 and 1 real-time camera	

*With respect to tow track centerline.

**Speed trap measurement (\pm .05% accuracy).

GENERAL COMMENTS

The 1985 Toyota MR2 2-door sedan was equipped with a 1586 cubic centimeter, 4-cylinder transverse mid-position engine and manual 5-speed transmission. The total test weight with two 50th percentile male dummies, instrumentation and two on-board cameras was 2918 pounds.

The test vehicle impacted the frontal load cell barrier at a velocity of 35.3 mph and appeared to comply with FMVSS Nos. 212, "Windshield Mounting" and 301-75, "Fuel System Integrity". There was 92.1 percent windshield retention and no fuel leakage after impact or any phase of the rollover test. Relative to FMVSS No. 219 (partial), "Windshield Zone Intrusion", there was windshield penetration into the occupant compartment at the lower edge of the penetration zone on the passenger side.

The vehicle sustained 24.8 inches of static crush. Maximum load cell barrier force measured by the 36 load cells was 82799.9 pounds at 32.0 milliseconds.

The driver's "Head Injury Criteria" was 654.6. The maximum chest deceleration over 3 milliseconds was 33.9 g's, and right and left femur loads were 61.1 and 238.2 pounds respectively.

The right-front passenger's HIC was 514.7, the maximum chest deceleration over 3 milliseconds was 33.8 g's, and the right and left femur loads were 326.8 and 611.5 pounds respectively.

The belt-related data for each occupant are presented in Section 4.0 of this report.

TEST ANOMALIES

Cable separation occurred in data channel BCRXG1 - Right Brake Caliper Acceleration X-axis. No peak levels are reported.

High speed cameras numbers 3 and 17 failed to operate. These cameras were Stalex cameras that were improperly loaded.

TEST VEHICLE INFORMATION

VEHICLE MANUFACTURER: Toyota Motor Corporation

MAKE/MODEL: Toyota MR2

VIN: JT2AW15C4F0013878

BODY STYLE: 2-door Sedan

MODEL YEAR: 1985

NHTSA NO.: CF5102

COLOR: White

ENGINE DATA: TYPE: Transverse Mid-position CYLINDERS: 4 DISPLACEMENT: 1586 cc

X GAS, DIESEL, TURBOCHARGE

TRANSMISSION DATA: 5 SPEED, X MANUAL, AUTOMATIC, FWD X RWD

DATE VEHICLE RECEIVED: 5-1-85

ODOMETER READING: 107

DEALER'S NAME AND ADDRESS: Jon Maroon Toyota Inc.
2550 Walden Avenue
Checktowaga NY 14225

ACCESSORIES:

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

DATA FROM CERTIFICATION LABEL ON LEFT DOOR FACE OR "B" POST:

VEHICLE MANUFACTURED BY: Toyota Motor Company

DATE OF MANUFACTURE: 12/84

GVWR: 2810 LBS.,

GAWR: FRONT 1455 LBS., REAR 1785 LBS.

DATA FROM "RECOMMENDED TIRE PRESSURE" LABEL ON DOOR, POST, GLOVEBOX, ETC.

VEHICLE LOAD (UP TO CAPACITY): FRONT 30 psi; REAR 30 psi

RECOMMENDED TIRE SIZE: 185/60R14 LOAD RANGE X B, C, D

TIRES ON VEHICLE (MFR., LINE, SIZE): Yokohama Radial 185/60R14 82H

IS SPARE TIRE A "SPACE SAVER": Yes

IS SPARE TIRE STANDARD EQUIPMENT: Yes

VEHICLE CAPACITY: TYPES OF SEATS Front - Bucket
Rear - None

TYPE OF FRONT SEAT BACKS Adjustable, Manual

NUMBER OF OCCUPANTS 2 FRONT 0 REAR 2 TOTAL

CARGO LOAD 100 LBS. TOTAL 400 LBS.

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

RIGHT FRONT	528	LBS.	RIGHT REAR	645	LBS.
LEFT FRONT	524	LBS.	LEFT REAR	669	LBS.
TOTAL FRONT WEIGHT	1052	LBS.	(44.5 % OF TOTAL VEHICLE WEIGHT)		
TOTAL REAR WEIGHT	1314	LBS.	(55.5 % OF TOTAL VEHICLE WEIGHT)		
TOTAL DELIVERED WEIGHT	2366	LBS.			

CALCULATION FOR TARGET TEST WEIGHT:

RCLW = RATED CARGO AND LUGGAGE WEIGHT

UDW = UNLOADED DELIVERED WEIGHT (2366 LBS)

VCW = VEHICLE CAPACITY WEIGHT (400 LBS)

DSC = DESIGNATED SEATING CAPACITY (2)

RCLW = VCW - 150 (DCS) =

= 400 - 300 = 100 LBS

TARGET TEST WEIGHT = UDW + RCLW + (2 DUMMIES X 164 LBS/DUMMY)

= 2366 + 100 + 328 LBS

TARGET TEST WEIGHT = 2794 LBS

WEIGHT OF TEST VEHICLE WITH REQUIRED DUMMIES AND 224 LBS. CARGO:

RIGHT FRONT	600	LBS.	RIGHT REAR	865	LBS.
LEFT FRONT	605	LBS.	LEFT REAR	848	LBS.
TOTAL FRONT WEIGHT	1205		LBS. (41.3 % OF TOTAL VEHICLE WEIGHT)		
TOTAL REAR WEIGHT	1713		LBS. (58.7 % OF TOTAL VEHICLE WEIGHT)		
TOTAL TEST WEIGHT	2918		LBS. (4.4 % OVER TARGET WEIGHT)		

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

COMPONENTS REMOVED TO MEET TARGET WEIGHT: None

VEHICLE ATTITUDE (ALL DIMENSIONS IN INCHES):

DELIVERED ATTITUDE:	RF 24 7/8	;LF 25 1/16	;RR 24 1/2	;LR 24 5/8
PRE-TEST ATTITUDE:	RF 22 3/8	;LF 23 5/16	;RR 22 7/8	;LR 22 3/4
POST-TEST ATTITUDE:	RF 26 1/2	;LF 26 3/4	;RR 22 3/4	;LR 23 3/4
WHEELBASE:	91.5	INCHES		

CG = 53.7 INCHES REARWARD OF FRONT WHEEL CENTERLINE

TEST CONDITIONS

TEST NUMBER: 850520

DATE OF TEST: May 20, 1985 TIME OF TEST: 18:32

TYPE OF TEST: Frontal Load Cell Barrier Impact IMPACT ANGLE: 0 °

AMBIENT TEMPERATURE AT IMPACT AREA: 76 °F

TEMPERATURE IN OCCUPANT COMPARTMENT: 78 °F

IMPACT VELOCITY: PRIMARY = 35.3 MPH

(SPECIFIED RANGE = 34.5 TO 35.5 MPH)

VEHICLE REBOUND AND CRUSH (ALL DIMENSIONS IN INCHES)

OVERALL LENGTH OF TEST VEHICLE:	PRE-TEST:	R 151 1/4	;C 155	;L 151 3/16
	POST-TEST:	R 129	;C 130 3/8	;L 128 3/4
	TOTAL CRUSH:	R 22 1/4	;C 24 5/8	;L 22 7/16

FOR FRONTAL IMPACTS, DISTANCE FROM FRONT OF TEST VEHICLE TO BARRIER AFTER IMPACT: R: 41 1/2 ;C: 38 5/8 ;L: 39 1/4

VISIBLE DUMMY CONTACT POINTS:

	DRIVER 411	PASSENGER A09
Head	<u>Steering Wheel Hub</u>	<u>None</u>
Chest	<u>None</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>DNA</u>	<u>DNA</u>

SEAT MOVEMENT:

	SEAT BACK FAILURE	SEAT SHIFT
Front	<u>No</u>	<u>No</u>
Rear	<u>DNA</u>	<u>DNA</u>

GLAZING DAMAGE: Entire windshield cracked; no other glazing damage.

OTHER NOTABLE IMPACT EFFECTS:

SECTION 3.0

SUMMARY OF RESULTS FOR - - -

FMVSS 212, "Windshield Mounting"

FMVSS 219 (Partial), "Windshield Zone Intrusion"

FMVSS 301-75, "Fuel System Integrity"

SUMMARY OF FMVSS 212 AND 301 DATA

PRE-IMPACT DATA

MAKE/MODEL: Toyota MR2

BODY STYLE: 2-door Sedan

MODEL YEAR: 1985

NHTSA NO.: CF5102

COLOR: White

DATA FROM CERTIFICATION LABEL

VEHICLE MANUFACTURER: Toyota Motor Corporation

DATE OF MANUFACTURE: 12/84

VIN: JT2AW15C4F0013878

GVWR: 2810 LBS., GAWR: FRONT 1455 LBS., REAR 1785 LBS.

POST-IMPACT DATA

TYPE OF TEST: Frontal Load Cell Barrier Impact

DATE OF TEST: 5/20/85

TIME: 18:32

TEMP:

76°F

REQUIRED IMPACT VELOCITY RANGE: 34.5 MPH TO 35.5 MPH

IMPACT VELOCITY: PRIMARY = 35.3 MPH

TEST WEIGHT = 2918 LBS., STATIC CRUSH MAX. = 24.8 IN., REBOUND = 41.5 IN.

FUEL SYSTEM DATA

TEST FLUID TYPE: RED STODDARD SOLVENT #2; SPEC. GRAVITY: 0.764

KINEMATIC VISCOSITY: 0.99 CENTISTOKES

"USEABLE" CAPACITY*: 10.1 GALLONS (FURNISHED BY CTM)

TEST VOLUME: 9.3 GALLONS (92-94% OF USEABLE)

FUEL SYSTEM CAPACITY (DATA FROM OWNERS MANUAL): 10.8 GALLONS

DETAILS OF FUEL SYSTEM: DNA

ELECTRIC FUEL: Yes

FUEL INJECTION: Yes

DOES ELECTRIC FUEL PUMP OPERATE WITH IGNITION SWITCH "ON" AND THE ENGINE NOT OPERATING? Yes

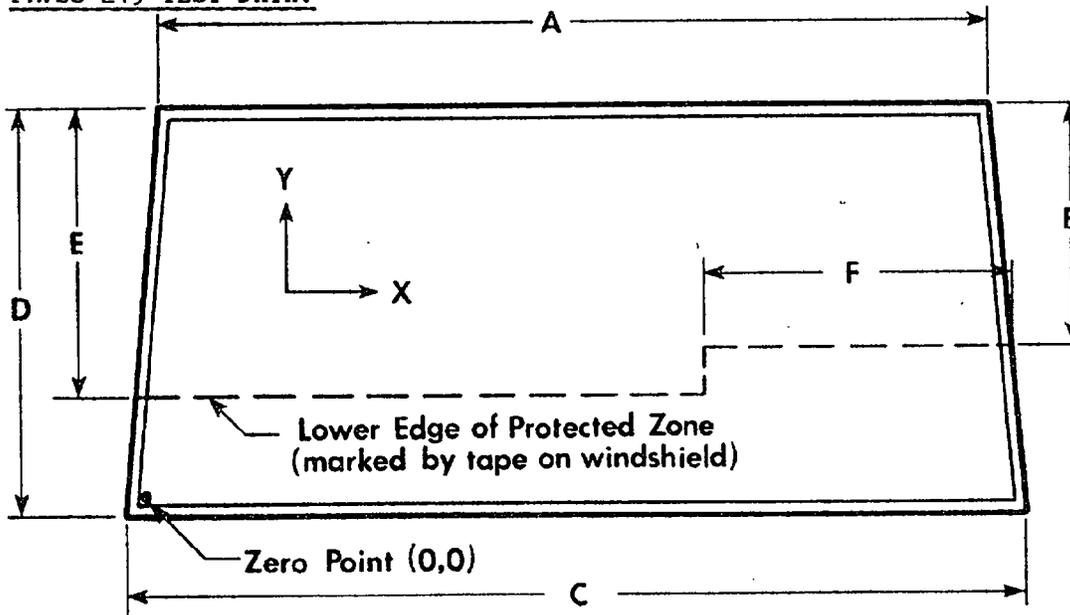
*WITH ENTIRE FUEL SYSTEM FILLED FROM FUEL TANK THROUGH CARBURETOR BOWL.

FMVSS NO. 219, "WINDSHIELD ZONE INTRUSION", DATA SHEET

PROTECTED ZONE LOWER EDGE REQUIREMENT:

The lower edge of the protected zone is determined by placing a 6.5" dia. rigid sphere weighing 15 pounds in a position such that it simultaneously contacts the inner surface of the windshield and the top surface of the instrument panel including padding. Draw the locus of points on the inner surface of the windshield contactable by the sphere across the width of the instrument panel. From the outermost contactable points, extend the locus line horizontally to the edges of the windshield, and then draw a line on the inner surface of the windshield below and 1/2" distant from the locus line. The LOWER EDGE OF THE PROTECTED ZONE is the longitudinal projection onto the outer surface of the windshield of this line.

FMVSS 219 TEST DATA:



FRONT VIEW

A = 43.6

C = 57.5

E = 23.0

B = 18.5

D = 31.3

F = 23.8

DETAILS OF WINDSHIELD GLASS PENETRATION GREATER THAN 1/4":
(Show location of penetration on above sketch)

COORDINATES

Penetration failure due to local windshield buckling.

	X	Y
1.	7.5	8.3
2.		
3.		
4.		

2.

3.

4.

FMVSS NO. 212, "WINDSHIELD MOUNTING", DATA SHEET

Details of windshield mounting such as retention method, trim type, etc.:

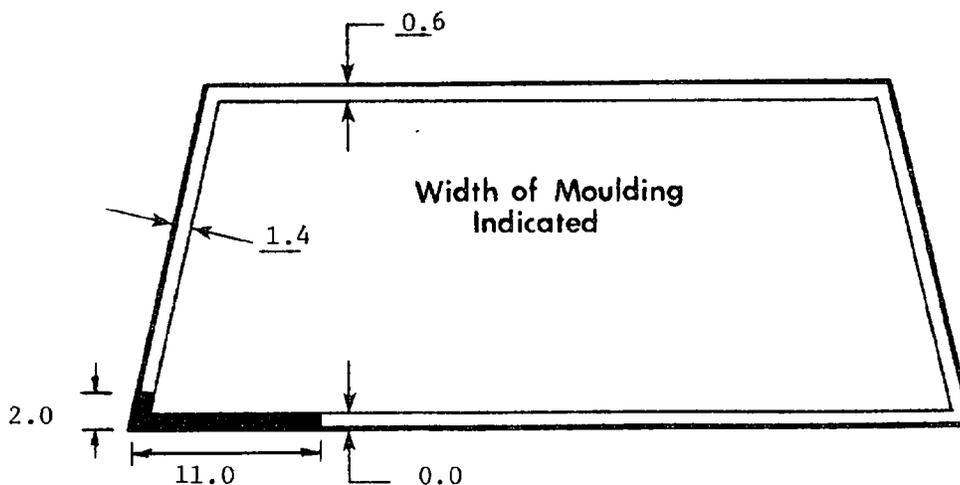
FMVSS 212 REQUIREMENTS: The Post-Test periphery retention amount must be at least 75% of the Pre-Test periphery measurement for vehicles NOT equipped with automatic restraints, and 50% for each side of windshield for vehicles equipped with automatic restraint systems for front occupants.

FMVSS 212 TEST DATA:

WINDSHIELD PERIPHERY

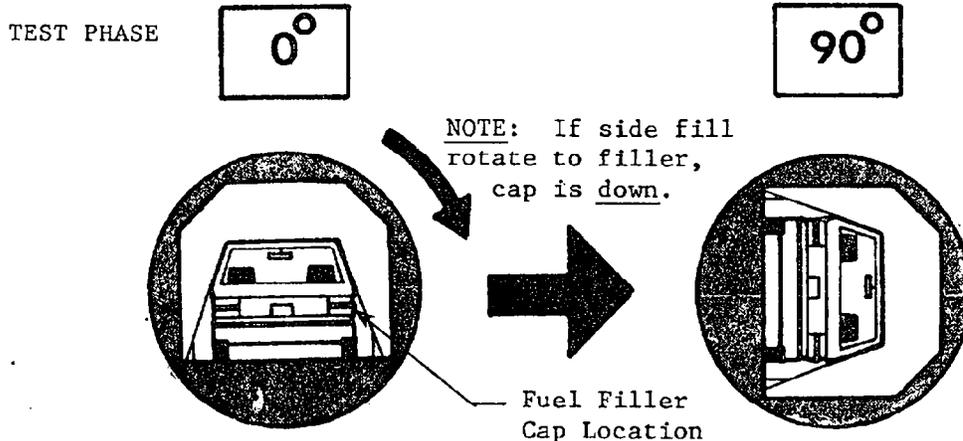
	PRE-TEST (in.)	POST-TEST (in.)	PERCENT RETENTION
RIGHT SIDE	82.5	69.5	84.2%
LEFT SIDE	82.0	82.0	100%
TOTAL	164.5	151.5	92.1%

AREA OF RETENTION FAILURE:



FAILURE DETAILS: Retention failure due to local windshield buckling.

FMVSS NO. 301-75 STATIC ROLLOVER DATA SHEET



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

Time req. for machine to rotate 90° = 2 minutes, 00 seconds
 FMVSS 301-75 Position Hold Time = 5 minutes, 00 seconds
 TOTAL - - - - - = 7 minutes, 00 seconds
 Next Whole Minute Interval - - - - = 7 minutes

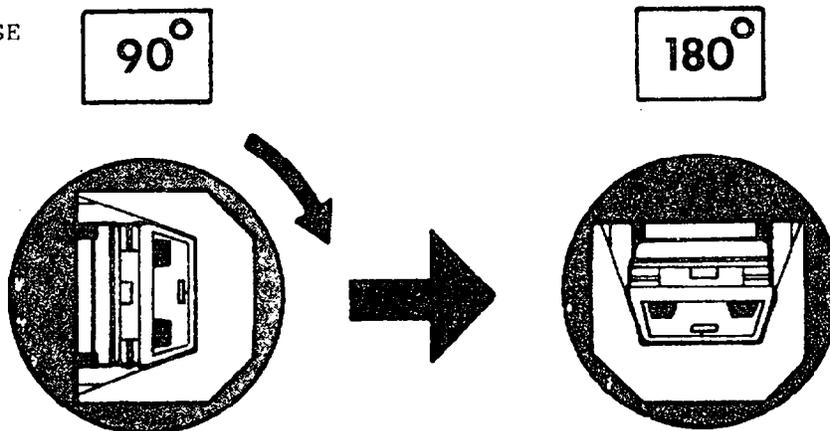
FMVSS 301-75 REQUIREMENTS

	First 5 Minutes FROM ONSET OF ROTATION	6th Minute	7th Minute
Maximum Allowable Solvent Spillage - -	5 oz.	1 oz.	1 oz.
0 to 90° (filler cap down) - - - - -	0	0	0

SOLVENT SPILLAGE LOCATION(S)

FMVSS NO. 301-75 STATIC ROLLOVER DATA SHEET

TEST PHASE



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

Time req. for machine to rotate 90° = 2 minutes, 00 seconds
 FMVSS 301-75 Position Hold Time = 5 minutes, 00 seconds
 TOTAL - - - - - = 7 minutes, 00 seconds
 Next Whole Minute Interval - - - - = 14 minutes

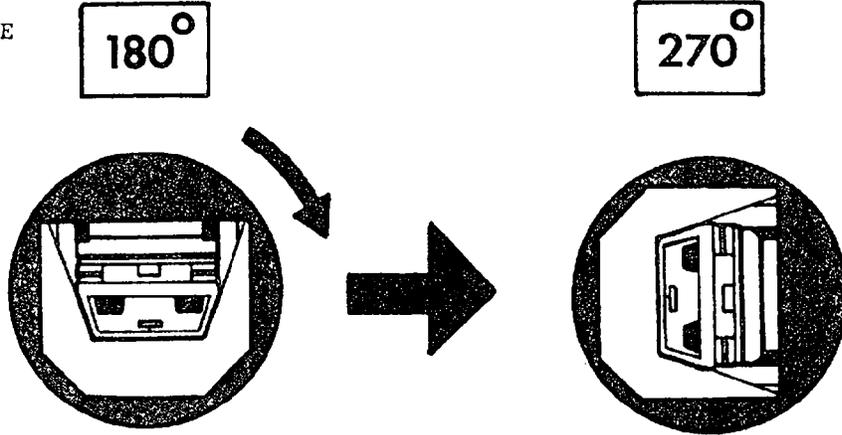
FMVSS 301-75 REQUIREMENTS

	First 5 Minutes FROM ONSET OF ROTATION	6th Minute	7th Minute
Maximum Allowable Solvent Spillage -	5 oz.	1 oz.	1 oz.
90° to 180° (filler cap down) - - -	0	0	0

SOLVENT SPILLAGE LOCATION(S)

FMVSS NO. 301-75 STATIC ROLLOVER DATA SHEET

TEST PHASE



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

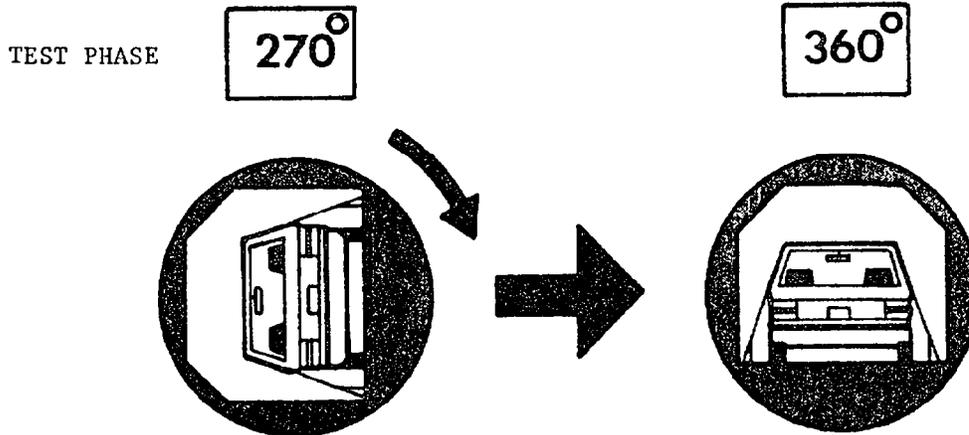
Time req. for machine to rotate 90° = 2 minutes, 00 seconds
 FMVSS 301-75 Position Hold Time = 5 minutes, 00 seconds
 TOTAL - - - - - = 7 minutes, 00 seconds
 Next Whole Minute Interval - - - - = 21 minutes

FMVSS 301-75 REQUIREMENTS

	First 5 Minutes FROM ONSET OF ROTATION	6th Minute	7th Minute
Maximum Allowable Solvent Spillage - -	5 oz.	1 oz.	1 oz.
180° to 270° (filler cap down) - - - -	0	0	0

SOLVENT SPILLAGE LOCATION(S)

FMVSS NO. 301-75 STATIC ROLLOVER DATA SHEET



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

Time req. for machine to rotate 90° = 2 minutes, 00 seconds
 FMVSS 301-75 Position Hold Time = 5 minutes, 00 seconds
 TOTAL - - - - - = 7 minutes, 00 seconds
 Next Whole Minute Interval - - - - = 28 minutes

FMVSS 301-75 REQUIREMENTS

	First 5 Minutes FROM ONSET OF ROTATION	6th Minute	7th Minute
Maximum Allowable Solvent Spillage - -	5 oz.	1 oz.	1 oz.
270° to 360° (filler cap down) - - -	0	0	0

SOLVENT SPILLAGE LOCATION(S)

VEHICLE STATIC ROLLOVER DATA SUMMARY:

<u>MAXIMUM ALLOWABLE SOLVENT SPILLAGE</u>	<u>FIRST 5 MINUTES FROM ONSET OF ROTATION 5 OZ</u>	<u>6TH MIN. 1 OZ</u>	<u>7TH MIN. 1 OZ</u>
0 TO 90° (FILLER CAP DOWN) - - - - -	0	0	0
90 TO 180° - - - - -	0	0	0
180 to 270° - - - - -	0	0	0
270 to 360° - - - - -	0	0	0

SECTION 4.0
OCCUPANT, VEHICLE AND LOAD CELL BARRIER INFORMATION

DUMMY INJURY CRITERIA

	MAXIMUM ACCELERATION ('G')							
	HEAD				CHEST			
	X	Y	Z	R	X	Y	Z	R*
DRIVER	-50.6	-17.6	-63.9	81.0	-34.9	-9.8	12.7	33.9
PASSENGER	-26.6	13.3	-47.7	52.1	-35.0	11.5	12.3	33.8

	MAXIMUM FORCE-FEMUR LOAD (LBS)	
	RIGHT FEMUR	LEFT FEMUR
DRIVER	61.1	238.2
PASSENGER	326.8	611.5

	MAXIMUM FORCE-SEAT BELT LOADS (LBS)		
	SHOULDER STRAP UPPER BELT LOAD	LAP STRAP RIGHT BELT LOAD	LAP STRAP LEFT BELT LOAD
DRIVER	1669.8	---	1145.6
PASSENGER	1409.0	1081.8	---

	HEAD INJURY CRITERIA**		
	HIC	t ₁ (MSEC)	t ₂ (MSEC)
DRIVER	654.6	48.8	114.9
PASSENGER	514.7	53.0	131.6

*Defined as exceeding 0.003 sec. duration

**As defined in FMVSS No. 208

DUMMY KINEMATIC SUMMARY

DRIVER

During impact, the knees translated forward and struck the instrument panel. The dummy's head and upper torso rotated forward until the dummy's face struck the steering wheel hub. There was no chest contact. The dummy rebounded rearward and to the left into the seatback until the left side of the head struck the left B-pillar and the head restraint. The dummy came to rest seated upright and facing forward.

PASSENGER

During impact, the knees translated forward and struck the instrument panel. The head and upper torso rotated forward. Forward rotation was halted by the restraint system such that there was no head or chest contact with any vehicle interior structure. The dummy's head rotated forward until its chin struck its chest. The dummy rebounded rearward into the seatback until the head struck the head restraint. The dummy came to rest seated upright and facing forward.

DUMMY IN-VEHICLE POSITION
RECORDING SHEET

VEHICLE NHTSA NO. CF5102

MFR./MAKE/MODEL: Toyota MR2

SEAT TYPE: Bench
X Bucket
Split Bench

ADJUSTER TYPE: X Manual
Power

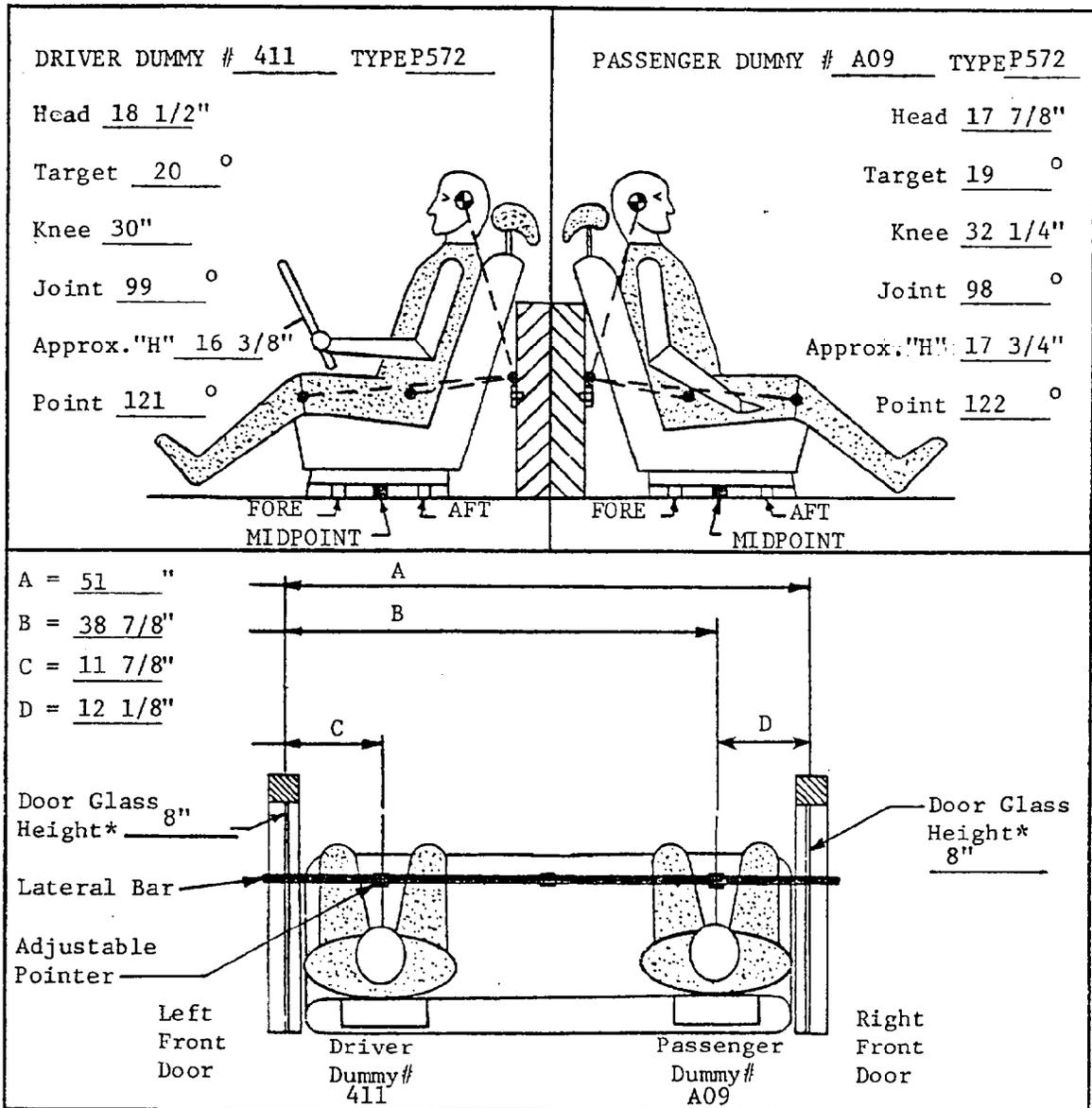
BUCKET SEAT BACK TYPE: Fixed
X Adjustable Reclining

TECHNICIANS:

1. D. Carpenter
2. B. Miller
3. B. Fishbaugh
4. R. Benavides

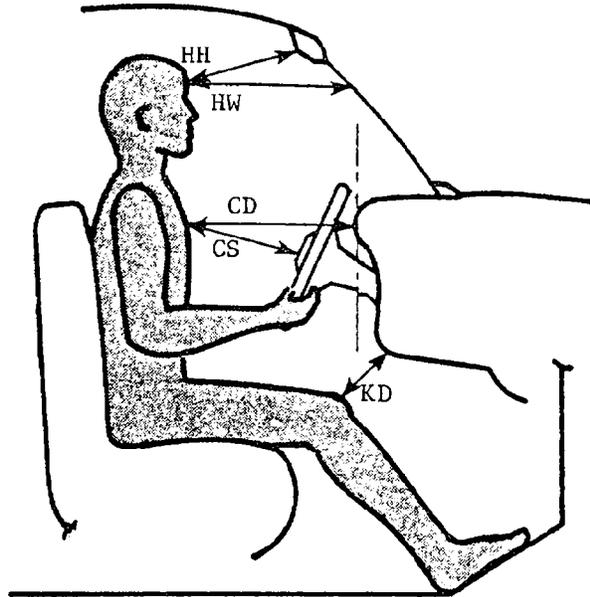
POSITIONING DATE: May 20, 1985

AMBIENT TEMP.: 76° F. TIME: 14:00

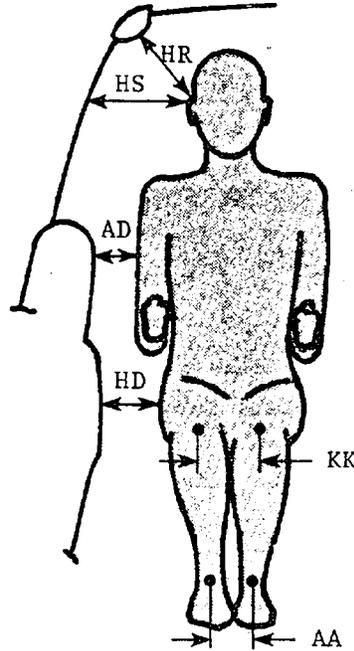


DUMMY IN-VEHICLE POSITION RECORDING SHEET

	DRIVER 411	PASSENGER A09
HH	13 1/8	13 1/2
HW	18 5/8	18 3/4
CD	22 1/16	24 1/2
CS	16 1/8	DNA
KDL	7 1/16	6 1/4
KDR	5	6 1/4
TA	23°	22°
SA	22°	21°



	DRIVER 411	PASSENGER A09
HR	4	4 1/4
HS	9	9 3/8
AD	4	4 5/8
HD	5	5 3/16
KK	9 1/2	8
AA	10 1/4	7



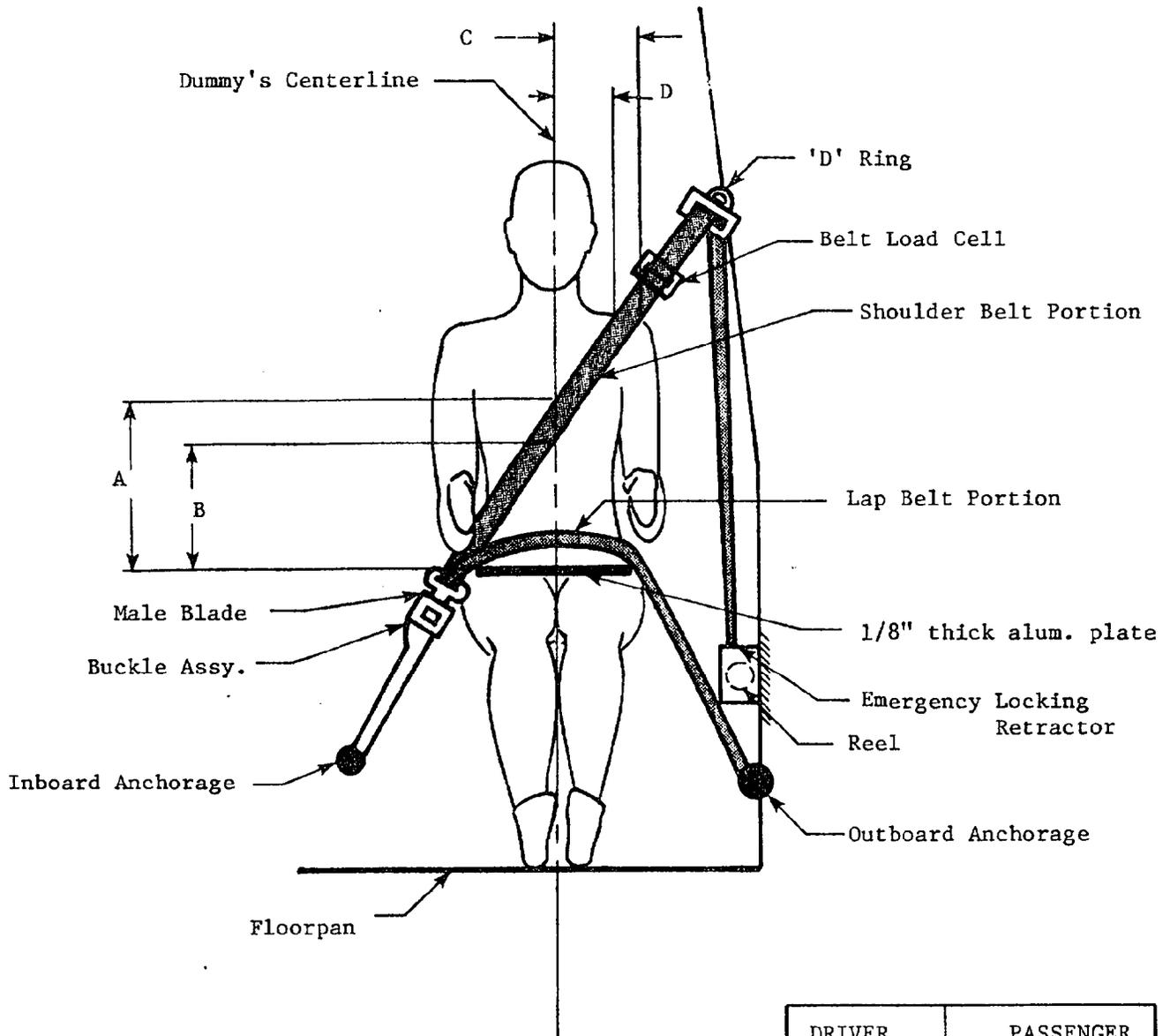
HH = Head to Windshield Header
 HW = Head to Windshield
 CD = Chest to Dash
 CS = Chest to Steering Wheel
 KD = Knees to Dash
 TA = Torso Angle
 SA = Seat Back Angle

HR = Head to Side Roof
 HS = Head to Side Window
 AD = Arm to Door
 HD = Hip to Door
 KK = Knee to Knee
 AA = Ankle to Ankle

Torso and seat back angles are relative to vertical.

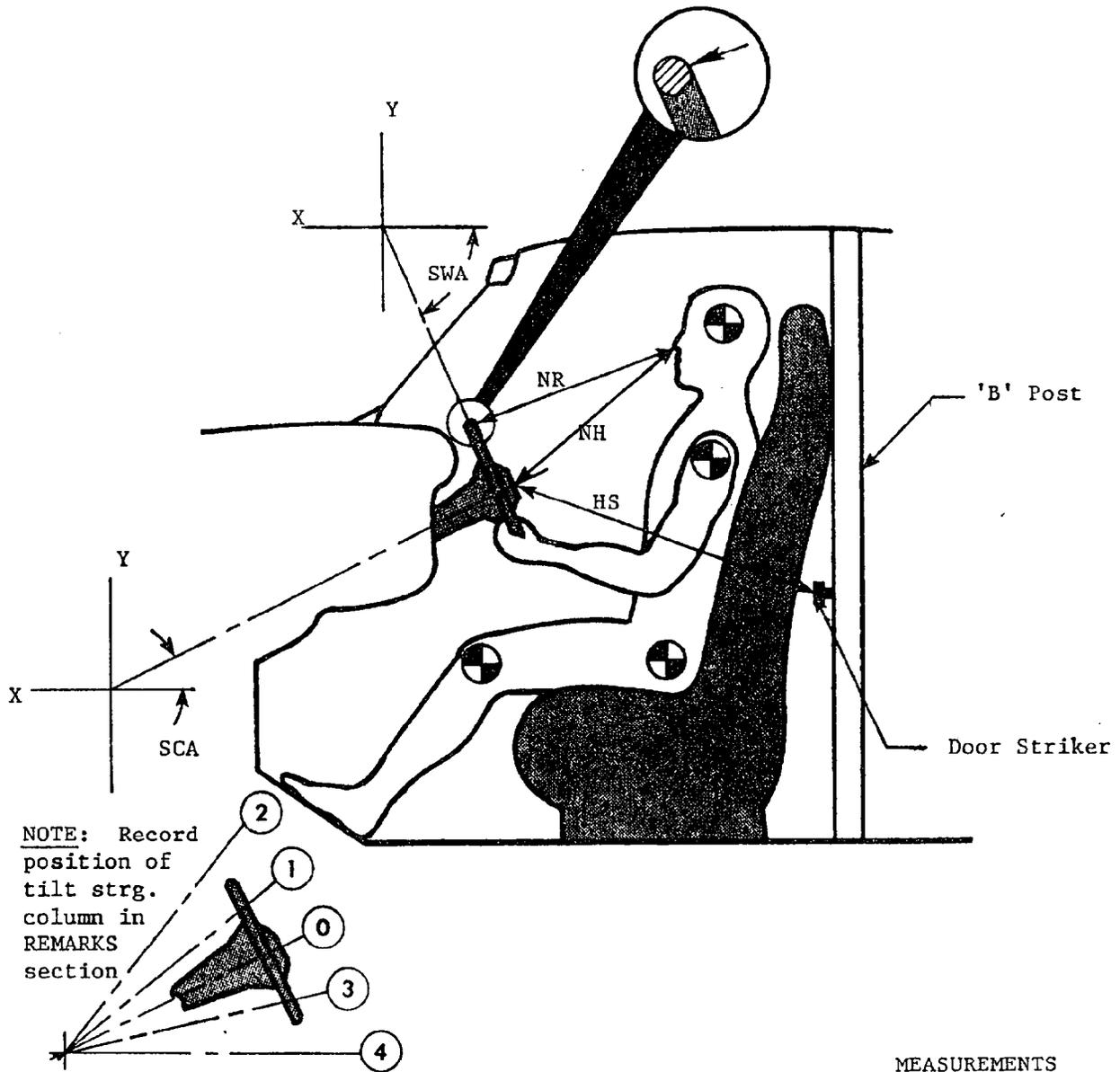
ALL MEASUREMENTS IN INCHES

SEAT BELT POSITIONING DATA



	DRIVER DUMMY	PASSENGER DUMMY
A - Top surface of alum. plate to belt upper edge (in)	12 5/8"	13"
B - Top surface of alum. plate to belt lower edge (in)	9 3/8"	9 1/2"
C - Dummy centerline to outer edge of belt at chest flesh top (in)	6 5/8"	6"
D - Dummy centerline to inner edge of belt at chest flesh top (in)	3 7/8"	3 3/4"
LAP BELT TENSION (lbs)	4	4
SHOULDER BELT TENSION (lbs)	4	4

DRIVER DUMMY TO STEERING COLUMN/WHEEL ASSY. REFERENCE DIMENSIONS



NOTE: Record position of tilt strg. column in REMARKS section

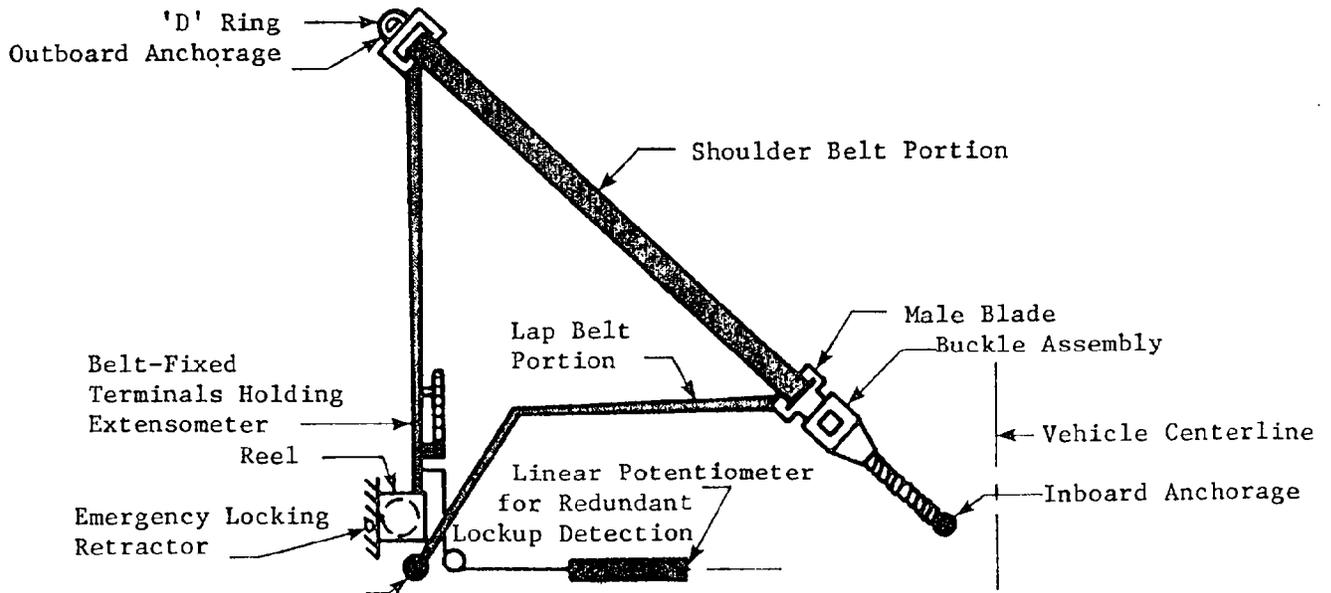
MEASUREMENTS

NR - Distance from tip of dummy's nose to top rear surface of steering wheel rim.	17 1/8"
NH - Distance from tip of dummy's nose to center of steering column hub.	19 1/16"
HS - Distance from center of steering column hub to the forward surface of the door lock striker pin.	26 1/4"
SCA - Angle of steering column relative to the horizontal X axis.	23°
SWA - Angle of steering wheel relative to the horizontal X axis.	67°

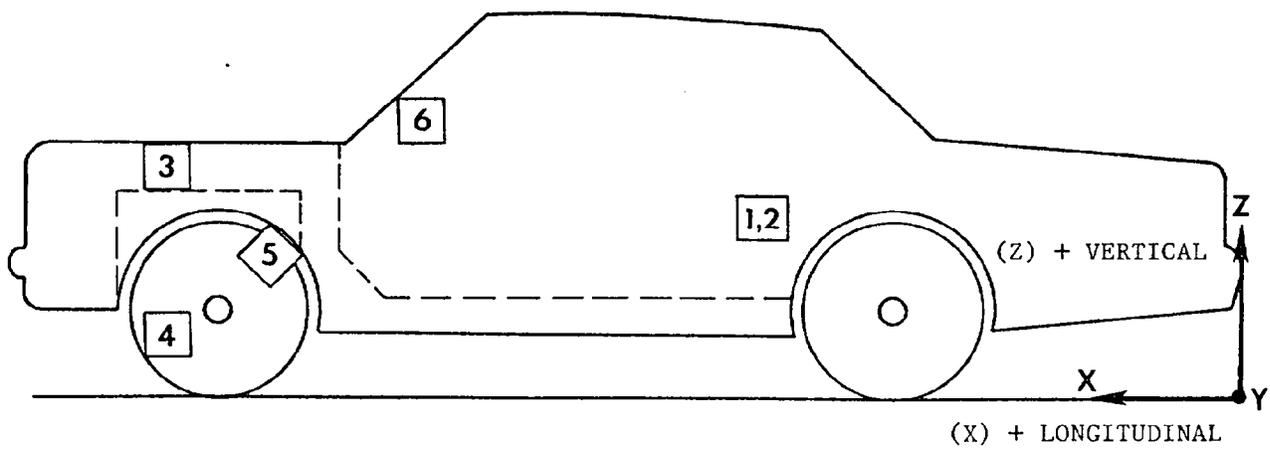
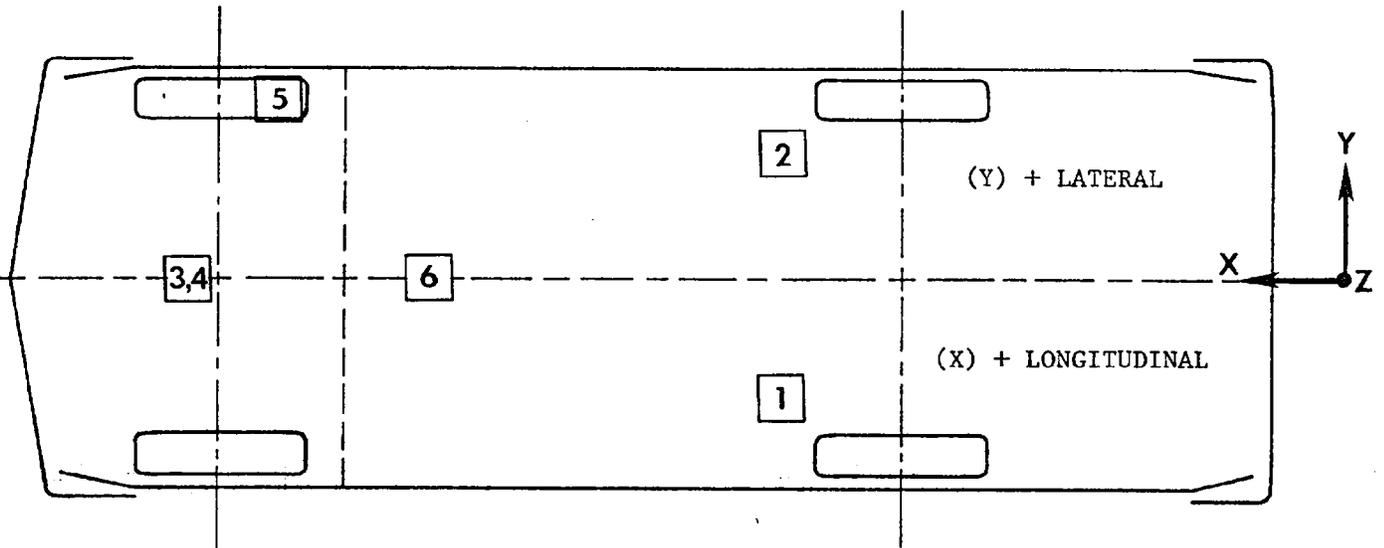
SEAT BELT PERFORMANCE ASSESSMENT TEST DATA

BELT LENGTH DATA:

	DRIVER SIDE		PASSENGER SIDE	
	PRE-TEST	POST-TEST	PRE-TEST	POST-TEST
Total belt length from retractor reel to bolt hole anchor point for continous webbing systems.	94.8	95.0	108.6	108.6
Retractor reel to 'D' ring as measured on Part 572 dummy.	10.1	10.1	10.2	10.1
Shoulder belt length as measured on Part 572 dummy.	34.4	34.6	34.4	34.8
Lap belt length as measured on Part 572 dummy.	28.3	29.3	29.5	30.3
Remainder of belt webbing left on retractor reel.	22.0	21.0	34.5	33.4
<u>BELT SPOOL-OFF DATA:</u>				
As determined by film analysis	DNA	2.1	DNA	2.5
As determined electronically	DNA	2.2	DNA	2.5
<u>BELT STRAIN DATA:</u>				
Measured between retractor reel and 'D' ring.	2.0	2.0	2.0	2.1



VEHICLE ACCELEROMETER LOCATIONS



VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

NO.	LOCATION	X*	Y*	Z*	POSITIVE DIRECTION**		NEGATIVE DIRECTION**	
					MAX (g)	TIME (msec)	MAX (g)	TIME (msec)
1	REAR SEAT X-MEMBER AT LEFT SIDE LONGITUDINAL	67.6	16.4	7.3	25.7	34.5	27.1	25.5
2	REAR SEAT X-MEMBER AT RIGHT SIDE LONGITUDINAL	67.4	-15.9	7.3	2.2	139.4	32.8	12.1
3	TOP OF ENGINE BLOCK LONGITUDINAL	38.5	6.0	28.8	19.2	155.0	37.8	75.6
4	BOTTOM OF ENGINE BLOCK LONGITUDINAL	37.4	8.8	5.0	6.8	137.6	38.0	67.8
5	BRAKE CALIPER AT RIGHT SIDE LONGITUDINAL	124.6	-24.8	11.8	---	---Y	---	---Y
6	DASH PANEL LONGITUDINAL	95.5	0.0	29.0	5.4	90.5	42.8	79.4

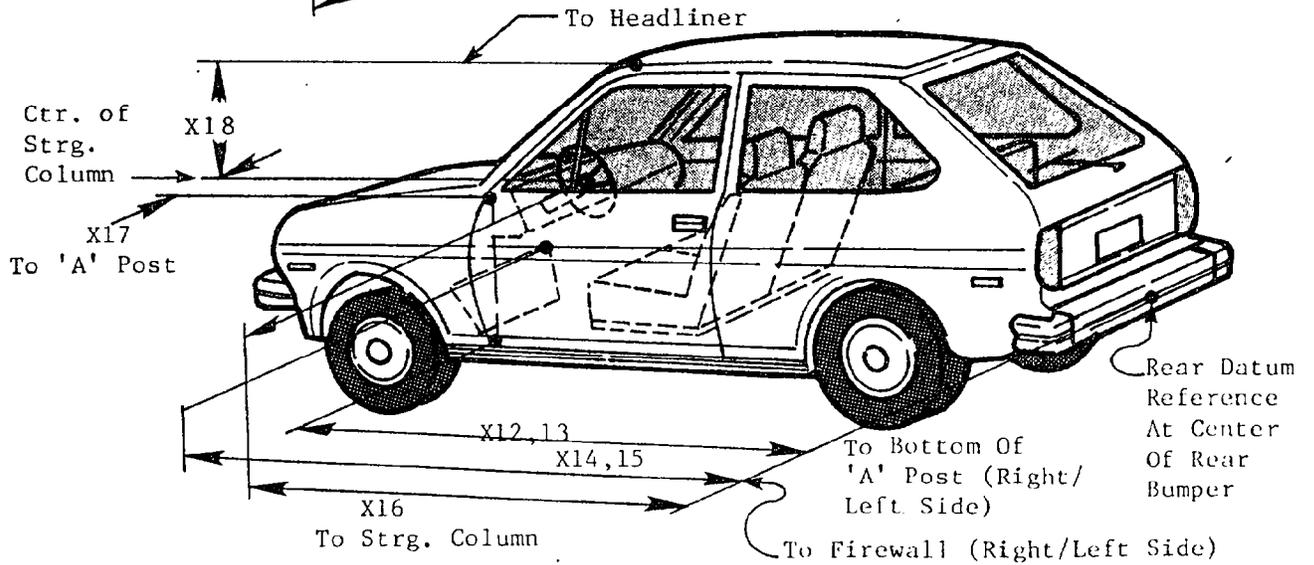
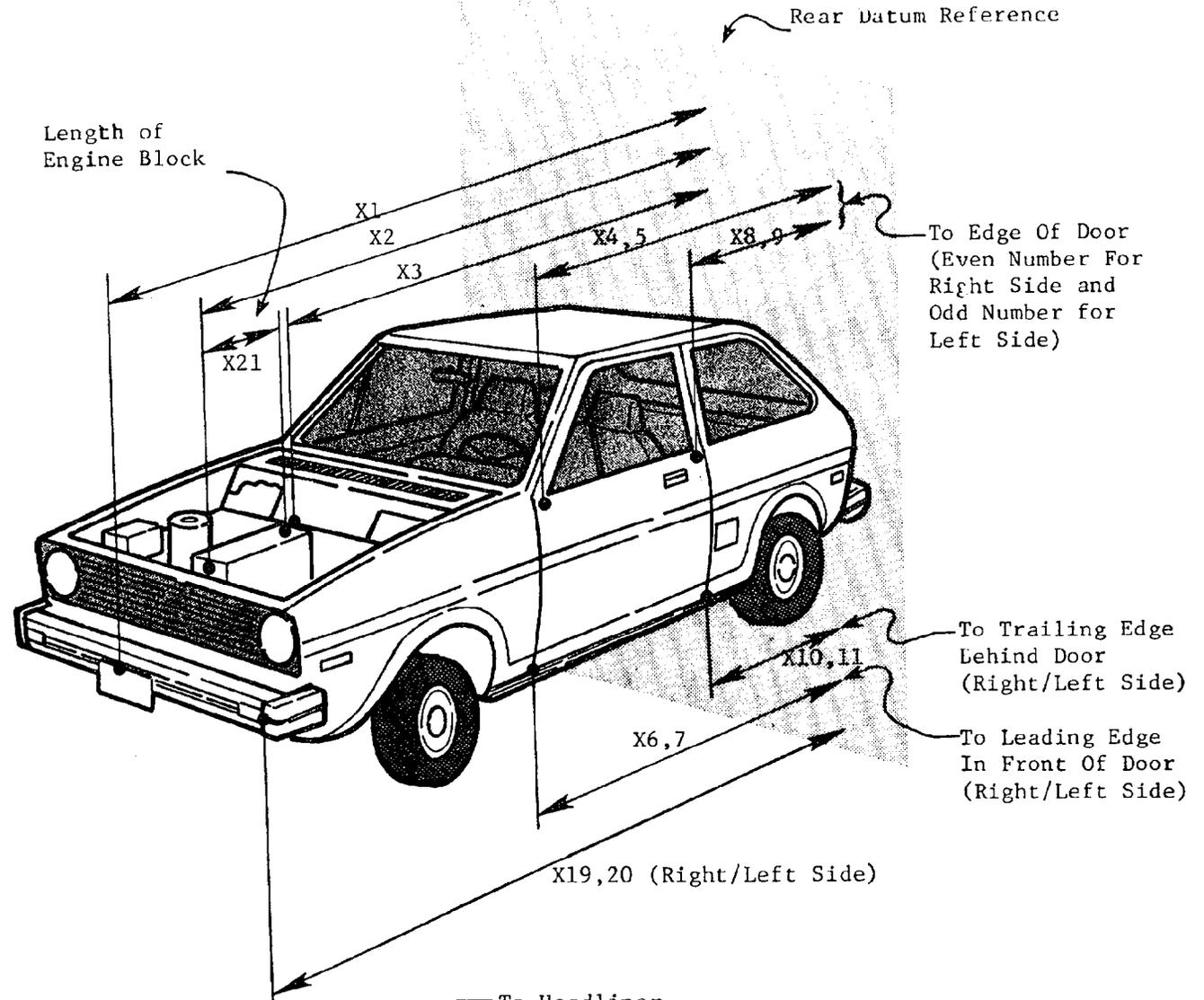
* X + Forward from rear bumper
Y + Left vehicle centerline
Z + Up from ground

** LONGITUDINAL: FORWARD
LATERAL: LEFTWARD
VERTICAL: UPWARD

MEASUREMENTS IN INCHES

Y See TEST ANOMALIES

PRE-TEST AND POST-TEST MEASUREMENT POINTS



IMPACTED VEHICLE MEASUREMENTS

VEHICLE MAKE/MODEL Toyota MR2

TEST NUMBER 850520

		DIMENSIONS IN INCHES		
NO.	TYPE OF MEASUREMENT	PRE-TEST	POST-TEST	DIFF.
X 1	TOTAL LENGTH OF VEHICLE AT CENTERLINE	155.0	130.4	24.6
X 2	REAR SURFACE OF VEHICLE TO FRONT OF ENGINE BLOCK	43.3	44.3	-1.0
X 3	REAR SURFACE OF VEHICLE TO FIREWALL	115.1	111.8	3.3
X 4	REAR SURFACE OF VEHICLE TO UPPER LEADING EDGE OF RIGHT DOOR	100.8	100.6	0.2
X 5	REAR SURFACE OF VEHICLE TO UPPER LEADING EDGE OF LEFT DOOR	100.8	100.5	0.3
X 6	REAR SURFACE OF VEHICLE TO LOWER LEADING EDGE OF RIGHT DOOR	102.3	100.9	1.4
X 7	REAR SURFACE OF VEHICLE TO LOWER LEADING EDGE OF LEFT DOOR	102.1	100.8	1.3
X 8	REAR SURFACE OF VEHICLE TO UPPER TRAILING EDGE OF RIGHT DOOR	56.9	56.8	0.1
X 9	REAR SURFACE OF VEHICLE TO UPPER TRAILING EDGE OF LEFT DOOR	57.2	57.0	0.2
X10	REAR SURFACE OF VEHICLE TO LOWER TRAILING EDGE OF RIGHT DOOR	58.1	56.8	1.3
X11	REAR SURFACE OF VEHICLE TO LOWER TRAILING EDGE ON LEFT DOOR	57.9	56.9	1.0
X12	REAR SURFACE OF VEHICLE TO BOTTOM OF "A" POST ON RIGHT SIDE	102.1	100.9	1.2
X13	REAR SURFACE OF VEHICLE TO BOTTOM OF "A" POST ON LEFT SIDE	102.1	101.0	1.1
X14	REAR SURFACE OF VEHICLE TO FIREWALL - RIGHT SIDE	112.8	108.3	4.5
X15	REAR SURFACE OF VEHICLE TO FIREWALL - LEFT SIDE	113.3	109.8	3.5
X16	REAR SURFACE OF VEHICLE TO STEERING WHEEL CENTER	87.9	86.3	1.6
X17	CENTER OF STEERING COLUMN TO "A" POST	13.0	14.0	-1.0

IMPACTED VEHICLE MEASUREMENTS CONTD

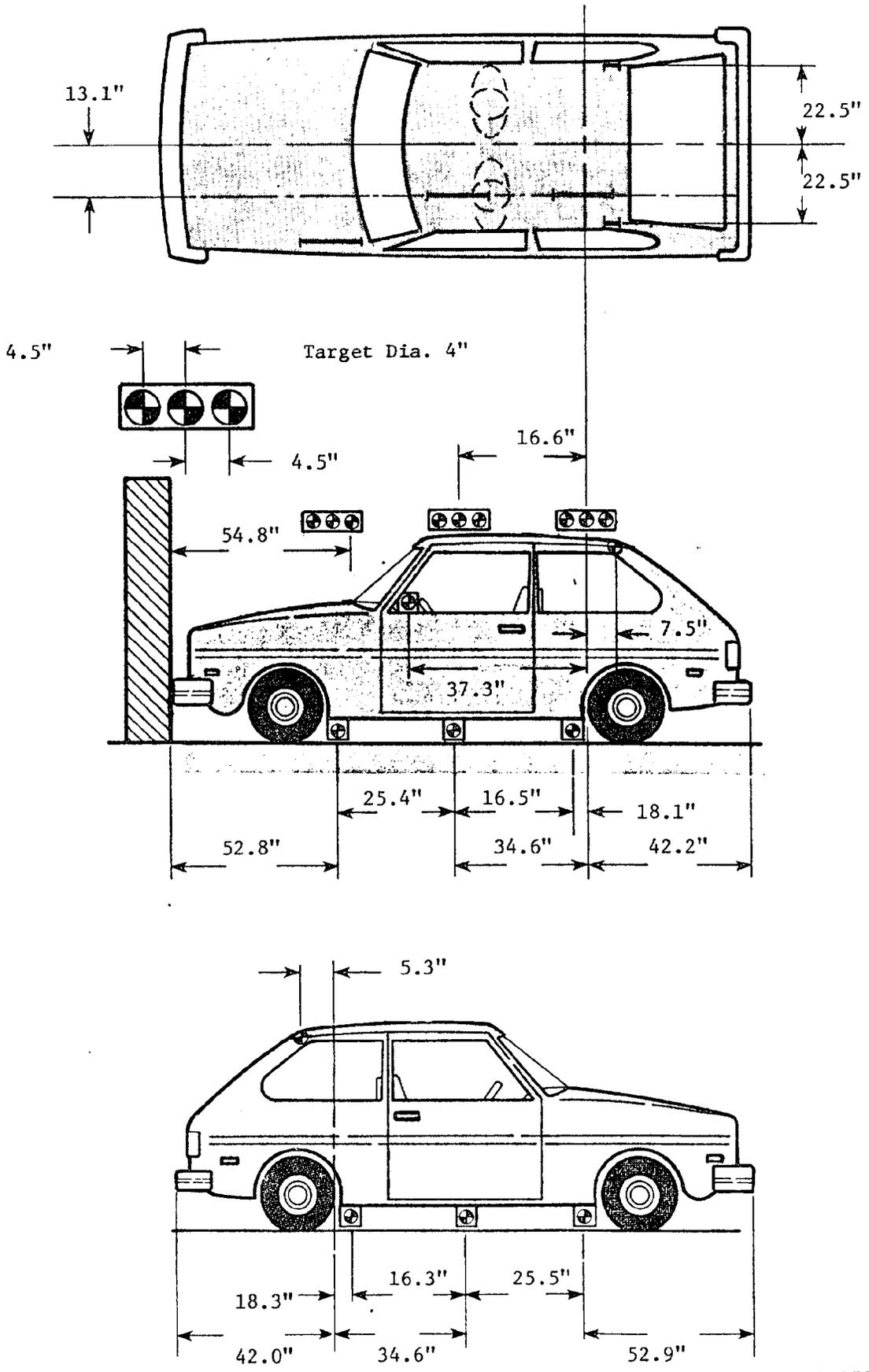
VEHICLE MAKE/MODEL Toyota MR2

TEST NUMBER 850520

DIMENSIONS IN INCHES

NO.	TYPE OF MEASUREMENT	PRE-TEST	POST-TEST	DIFF.
X18	CENTER OF STEERING COLUMN TO HEADLINING	17.2	16.9	0.3
X19	REAR SURFACE OF VEHICLE TO RIGHT SIDE OF FRONT BUMPER	151.3	129.0	22.3
X20	REAR SURFACE OF VEHICLE TO LEFT SIDE OF FRONT BUMPER	151.2	128.8	22.4
X21	LENGTH OF ENGINE BLOCK	8.0	8.0	0.0

VEHICLE TARGET LOCATIONS



ACCIDENT INVESTIGATION DIVISION DATA
FOR 35 MPH FRONTAL BARRIER IMPACT

VEHICLE MAKE/MODEL/BODY STYLE: Toyota MR2
 VEH. NHTSA NO.: CF5102; VIN: JT2AW15C4P0013878
 MODEL YEAR: 1985; BUILD DATE: 12/84; TEST DATE 5/20/85
 VEH. SIZE CATEGORY: Sub-compact; TEST WEIGHT: 2918
 VEH. WHEELBASE: 91.5

COLLISION DEFORMATION CLASSIFICATION (CDC) CODE: 12FDEW3

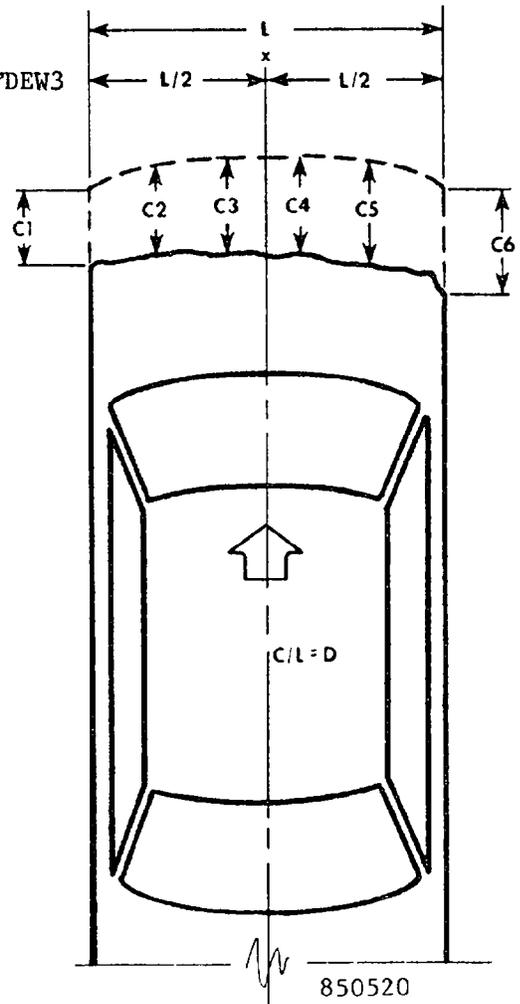
F (Frontal)

CRUSH DEPTH
DIMENSIONS:

C1 = 22.4 inches
 C2 = 24.5 inches
 C3 = 24.0 inches
 C4 = 23.7 inches
 C5 = 24.8 inches
 C6 = 22.3 inches

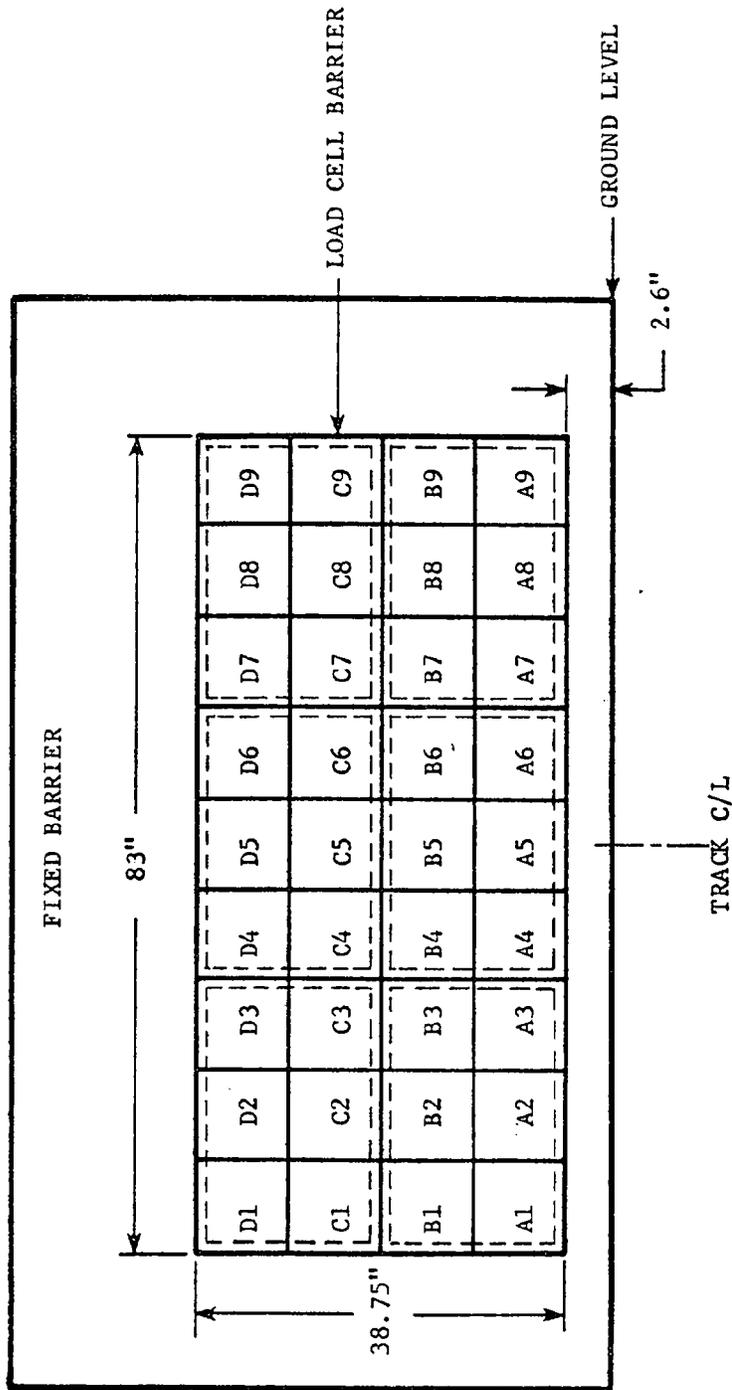
MIDPOINT OF DAMAGE: D = Vehicle Centerline
(Longitudinal)

LENGTH OF DAMAGED
REGION: L = 53.4 inches



36 LOAD CELLS
 4 ROWS
 9 COLUMNS

FRONT VIEW



BARRIER LOAD CELL CONFIGURATION

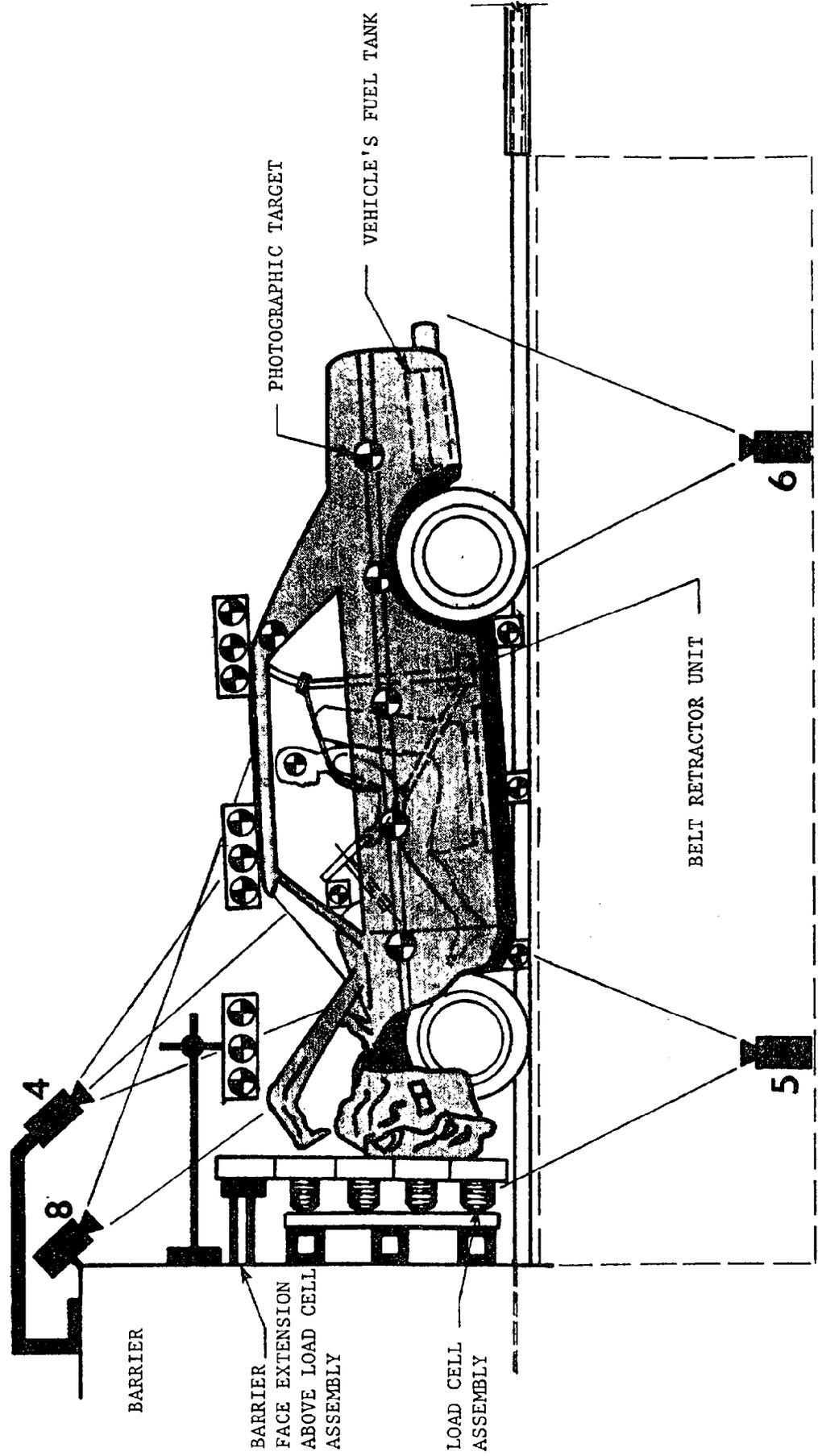
- GROUP 1: D1 thru C3
- GROUP 2: D4 thru C6
- GROUP 3: D7 thru C9
- GROUP 4: B1 thru A3
- GROUP 5: B4 thru A6
- GROUP 6: B7 thru A9

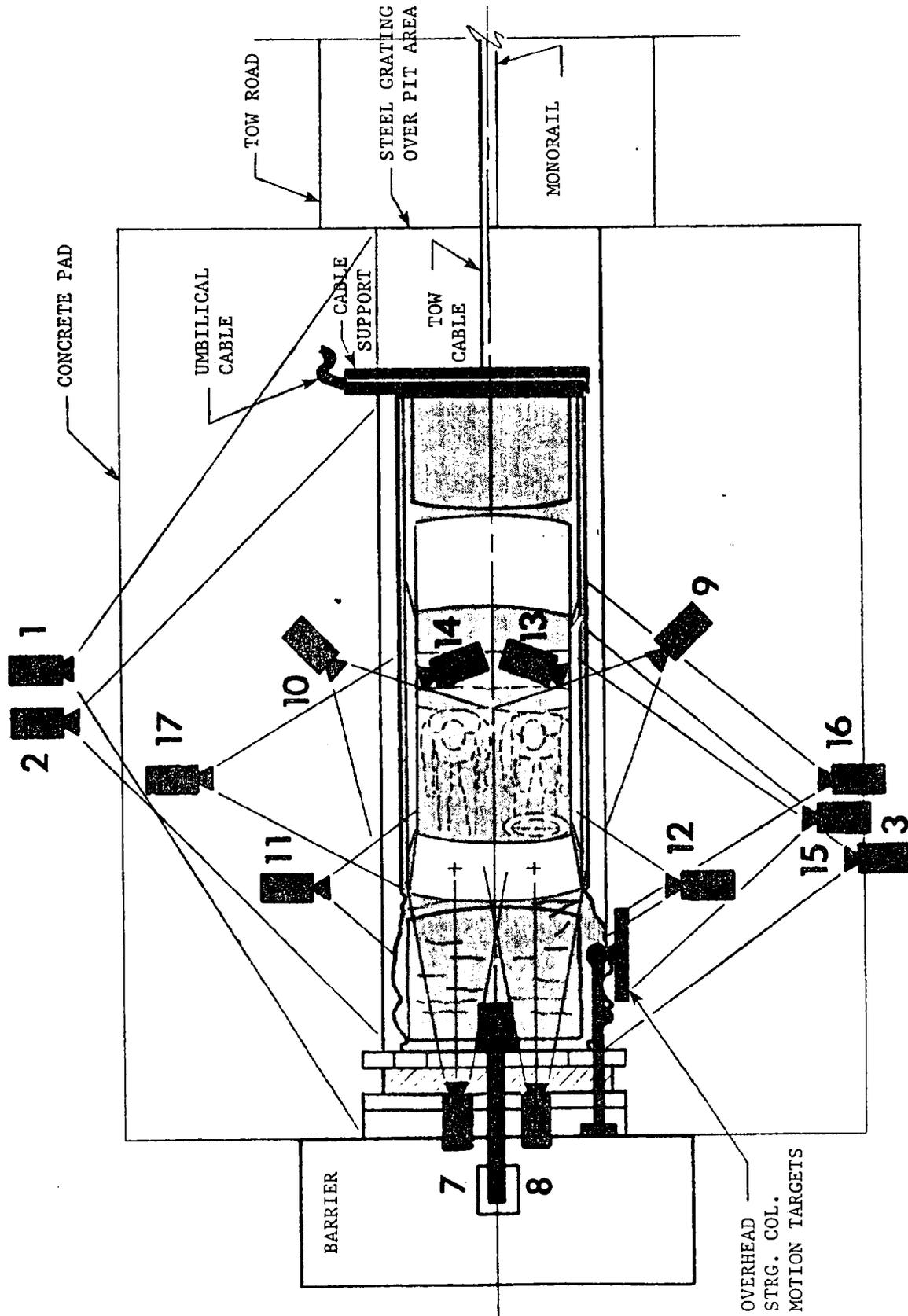
LOAD CELL BARRIER SUMMARY

POSITION	POSITIVE DIRECTION*		NEGATIVE DIRECTION*	
	MAX (lb)	TIME (msec)	MIN (lb)	TIME (msec)
TOTAL GROUP 1	4543.8	42.5	152.2	123.9
TOTAL GROUP 2	6990.2	16.6	180.0	7.4
TOTAL GROUP 3	5955.1	28.1	183.9	262.8
TOTAL GROUP 4	7673.8	81.8	161.4	149.1
TOTAL GROUP 5	44135.6	31.8	167.7	170.5
TOTAL GROUP 6	28562.2	33.4	165.8	164.0
TOTAL LOAD CELL FORCE	82799.9	32.0	438.2	262.9

*REFERENCE: COMPRESSION IS POSITIVE
TENSION IS NEGATIVE

CAMERA POSITIONS





CAMERA POSITIONS

HIGH SPEED CAMERA LOCATIONS

TEST NO.: 850520 VEHICLE: Toyota MR2

CAMERA NO.	VIEW	CAMERA POSITIONS (IN)*			ANGLE ** (DEG)	FILM PLANE TO HEAD TARGET	LENS (MM)	SPEED (FPS)
		X	Y	Z				
1	Real-time Panning	-142	504	61	NA	NA	16	24
2	Vehicle Crush	-81.3	266.4	37.1	0	NA	13	500
3	Dummy Kinematics	-41.5	-295	44	-3	278 1/2	25	---Y
4	Windshield Damage	-36.4	0	120	-85	NA	13	498
5	Crush & Fluid Spillage	-50.5	0	-92.4	90	NA	13	465
6	Fluid Spillage	-99.3	0	-99	90	NA	13	498
7	Passenger Kinematics	4.5	13.8	115	-55	NA	17	488
8	Driver Kinematics	6.8	-14.5	113.3	-55	NA	17	510
9	Driver Kinematics	-157.3	-166.9	74.1	-13	163 1/4	25	508
10	Passenger Kinematics	-152.1	167.9	76	-15	161 3/4	25	510
11	Windshield Intrusion	-53.9	306.1	44	0	NA	50	498
12	Windshield Intrusion	-53	-309.4	42.3	0	NA	50	498
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	-150	-286	100	-15	NA	25	503
16	Column Movement	-150	-286	72.5	-10	NA	25	488
17	Passenger Kinematics	-38.8	210.8	45.3	5	194 1/4	13	---Y

Y See TEST ANOMALIES

* X = Film plane to plane of barrier face
 Y = Film plane to monorail centerline
 Z = Film plane to ground
 ** Referenced to horizontal plane

APPENDIX A
PHOTOGRAPHS

1. PRE-TEST FRONT VIEW
2. POST-TEST FRONT VIEW
3. PRE-TEST LEFT SIDE VIEW
4. POST-TEST LEFT SIDE VIEW
5. PRE-TEST RIGHT SIDE VIEW
6. POST-TEST RIGHT SIDE VIEW
7. PRE-TEST RIGHT FRONT THREE-QUARTER VIEW
8. POST-TEST RIGHT FRONT THREE-QUARTER VIEW
9. PRE-TEST LEFT REAR THREE-QUARTER VIEW
10. POST-TEST LEFT REAR THREE-QUARTER VIEW
11. POST-TEST TOP VIEW (VEHICLE ON ROLLOVER MACHINE)
12. PRE-TEST WINDSHIELD VIEW
13. POST-TEST WINDSHIELD VIEW
14. POST-TEST WINDSHIELD INTRUSION VIEW
15. PRE-TEST ENGINE COMPARTMENT VIEW
16. PRE-TEST FUEL FILLER CAP VIEW
17. PRE-TEST FRONT UNDERBODY VIEW
18. POST-TEST FRONT UNDERBODY VIEW
19. PRE-TEST REAR UNDERBODY VIEW
20. POST-TEST REAR UNDERBODY VIEW
21. PRE-TEST DRIVER DUMMY POSITION VIEW
22. POST-TEST DRIVER DUMMY POSITION VIEW
23. PRE-TEST PASSENGER DUMMY POSITION VIEW
24. POST-TEST PASSENGER DUMMY POSITION VIEW
25. PRE-TEST DRIVER DUMMY & VEHICLE INTERIOR VIEW (DOOR OPEN)
26. POST-TEST DRIVER DUMMY & VEHICLE INTERIOR VIEW (DOOR OPEN)
27. PRE-TEST PASSENGER DUMMY & VEHICLE INTERIOR VIEW (DOOR OPEN)
28. POST-TEST PASSENGER DUMMY & VEHICLE INTERIOR VIEW (DOOR OPEN)
29. POST-TEST DRIVER DUMMY HEAD CONTACT AREA
30. POST-TEST PASSENGER DUMMY HEAD/KNEE CONTACT



Figure 1. PRE-TEST FRONT VIEW

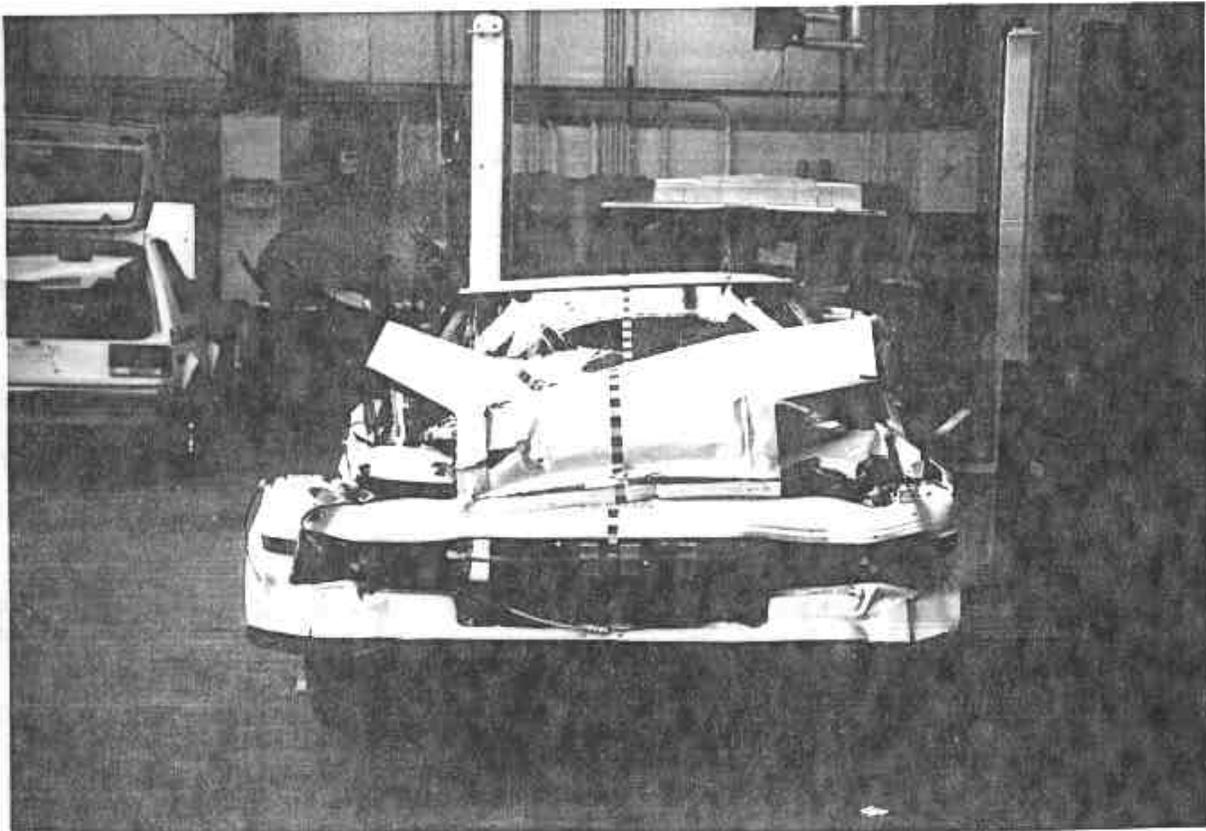


Figure 2. POST-TEST FRONT VIEW
A-2

850520



Figure 3. PRE-TEST LEFT SIDE VIEW

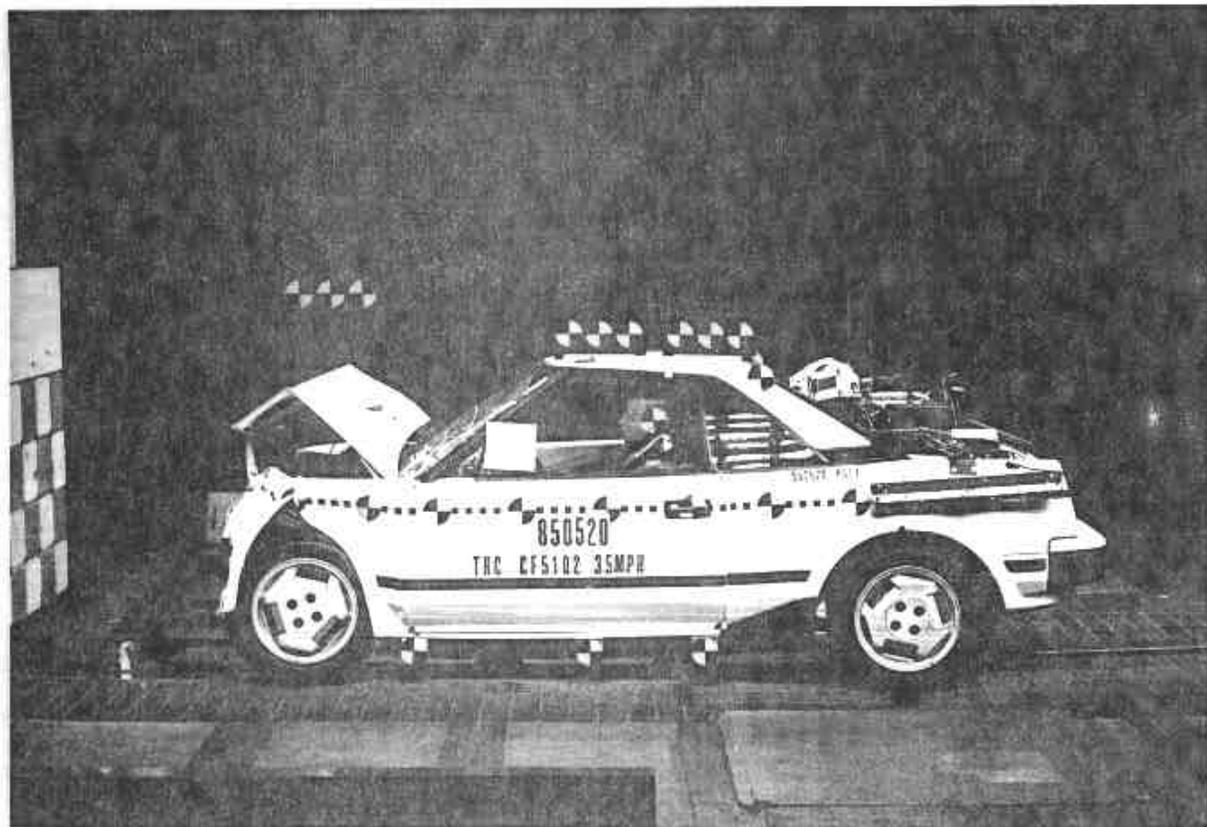


Figure 4. POST-TEST LEFT SIDE VIEW

A-3

850520



Figure 5. PRE-TEST RIGHT SIDE VIEW



Figure 6. POST-TEST RIGHT SIDE VIEW

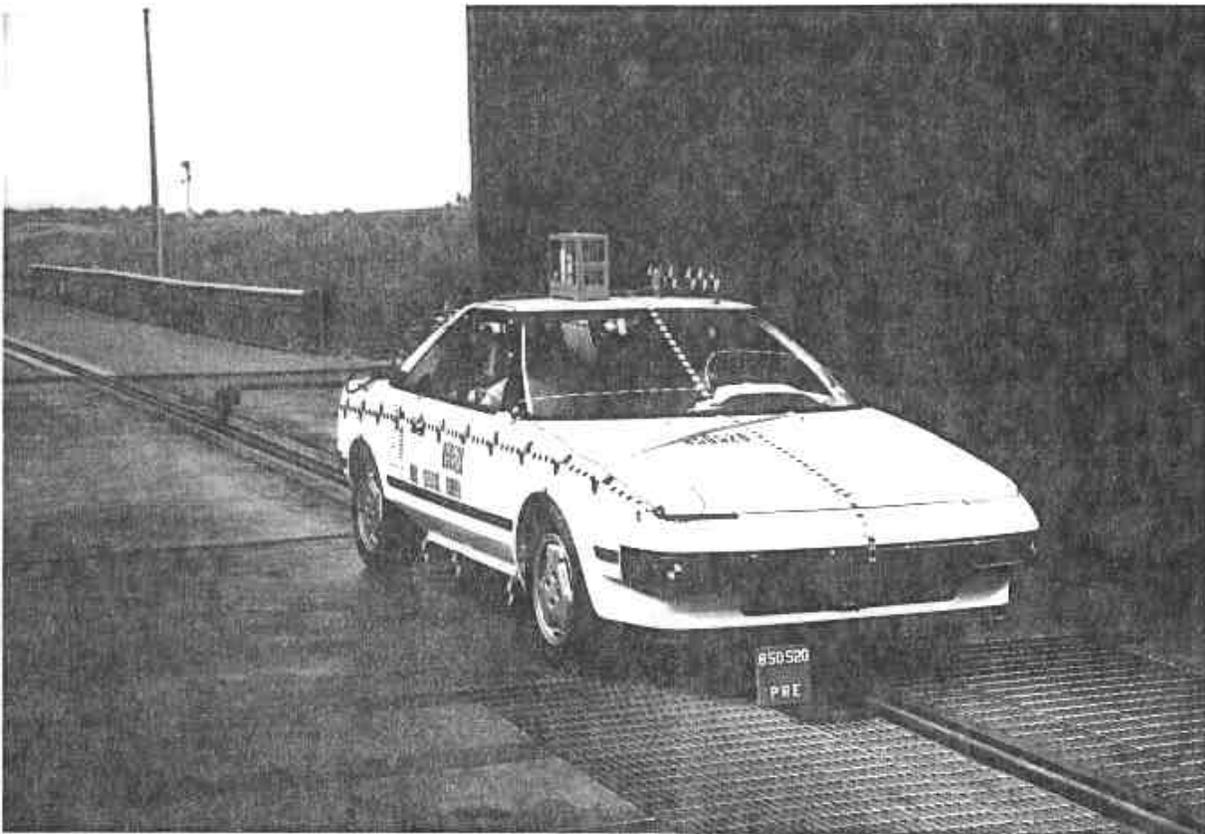


Figure 7. PRE-TEST RIGHT FRONT THREE-QUARTER VIEW

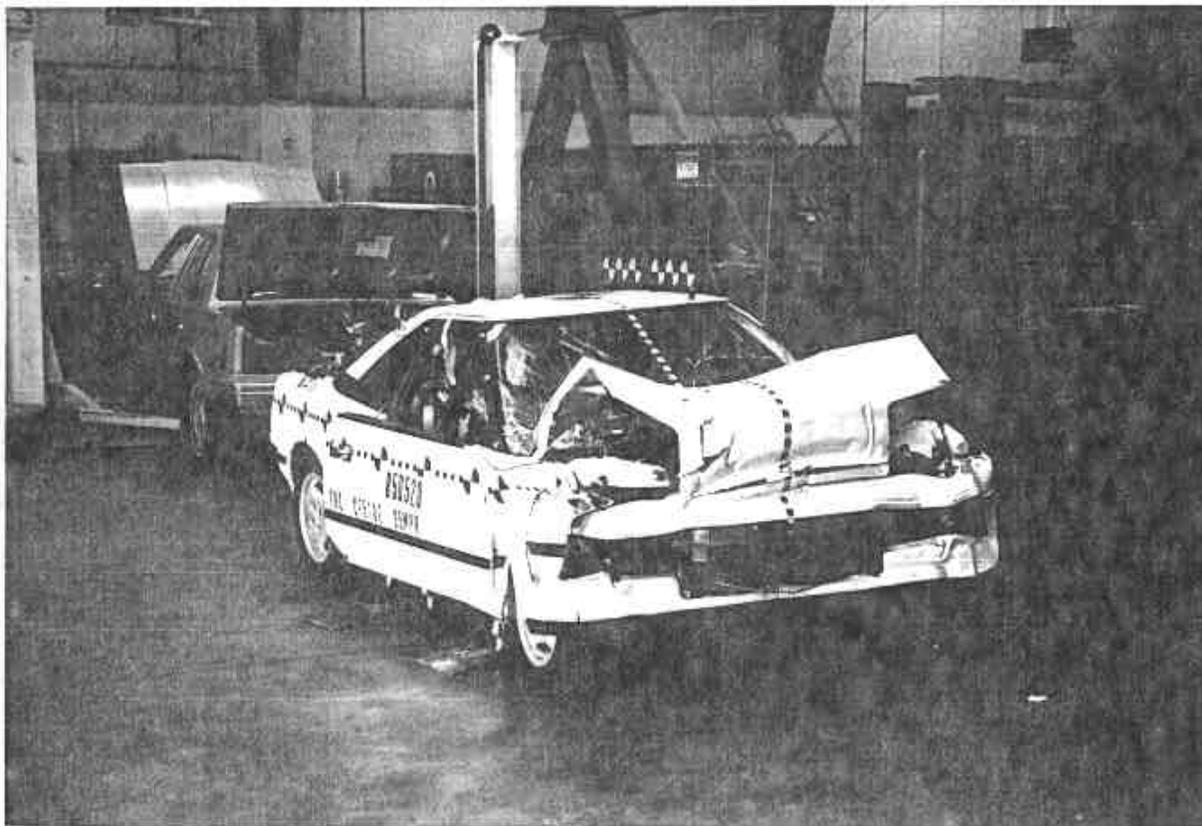


Figure 8. POST-TEST RIGHT FRONT THREE-QUARTER VIEW

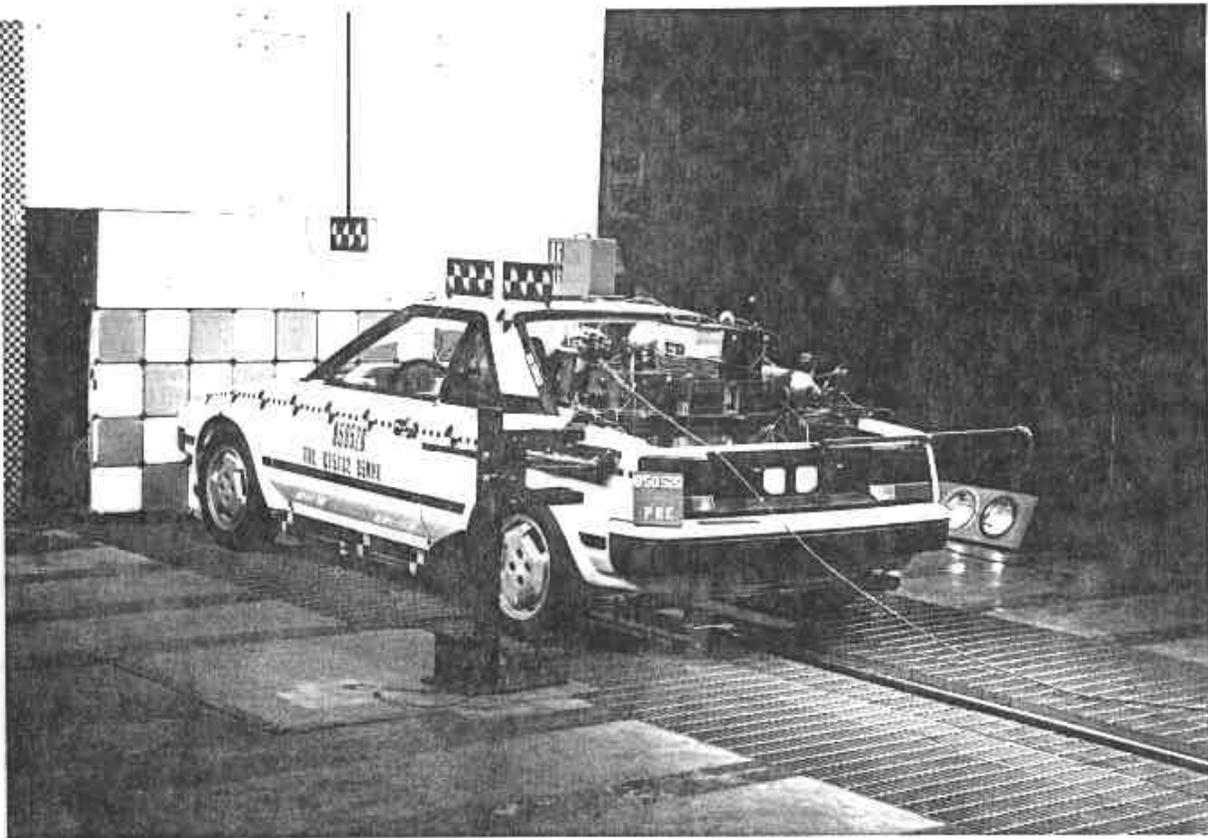


Figure 9. PRE-TEST LEFT REAR THREE-QUARTER VIEW



Figure 10. POST-TEST LEFT REAR THREE-QUARTER VIEW
A-6

850520

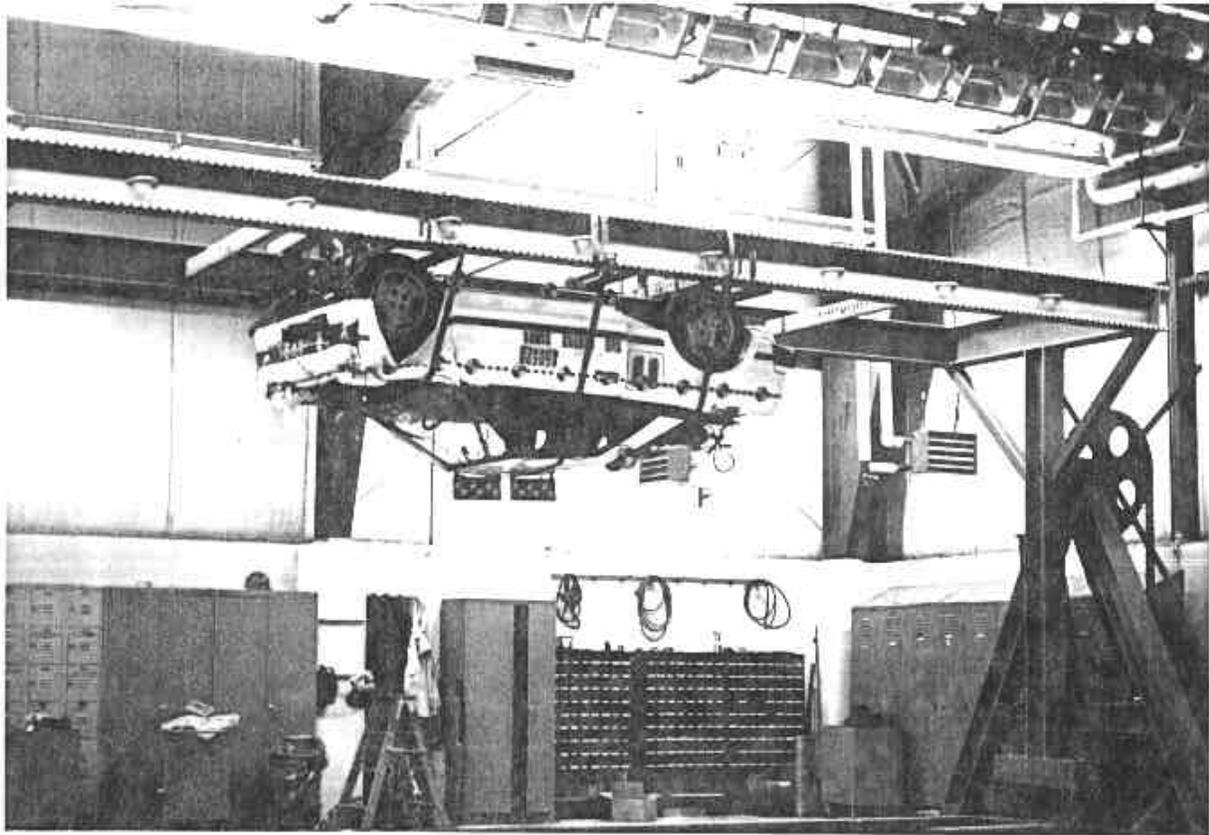


Figure 11. POST-TEST TOP VIEW (VEHICLE ON ROLLOVER MACHINE)



Figure 12. PRE-TEST WINDSHIELD VIEW

A-7

850520

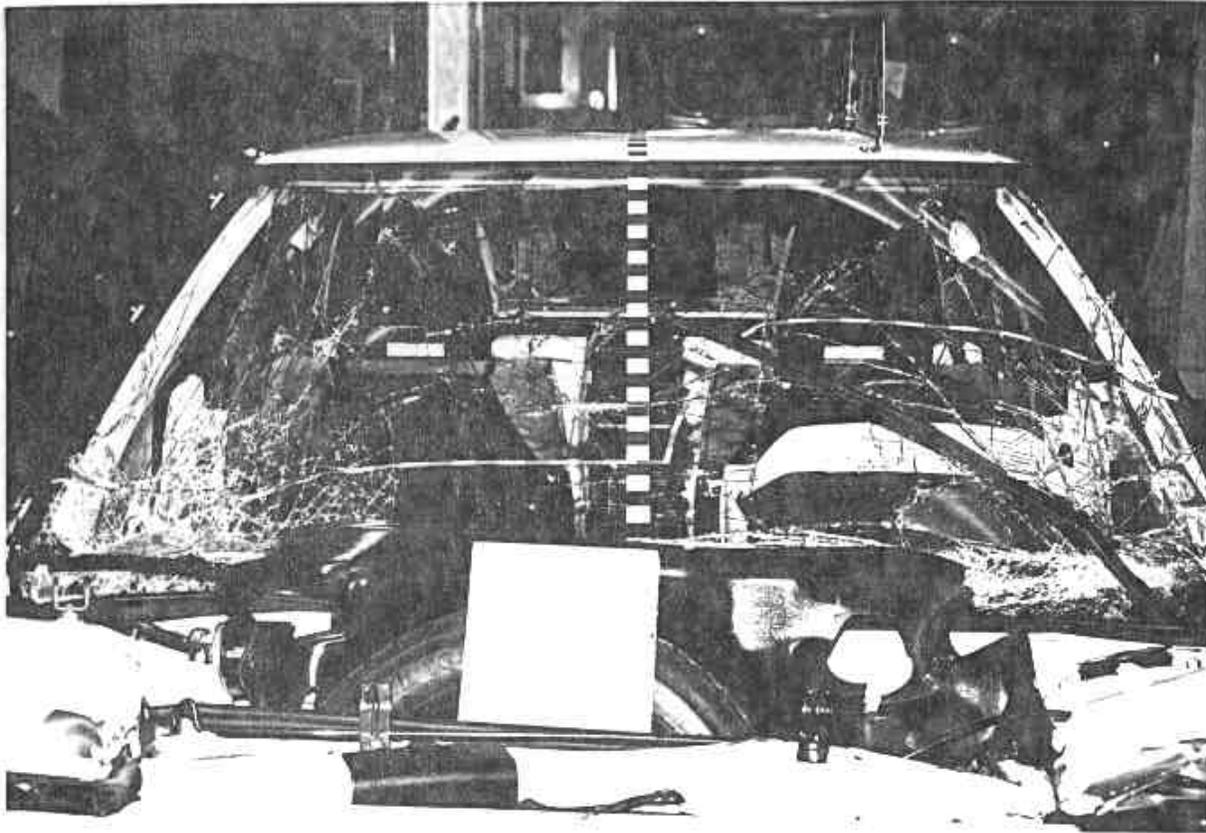


Figure 13. POST-TEST WINDSHIELD VIEW

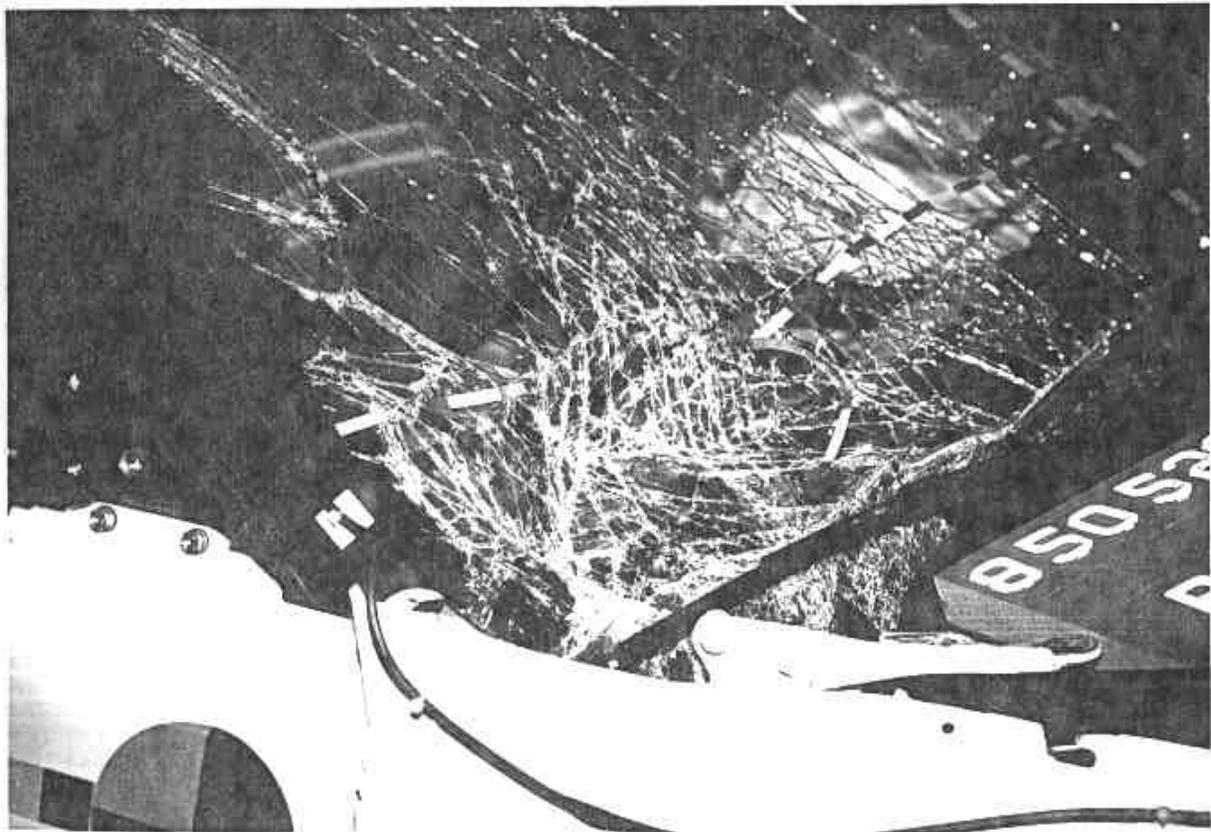


Figure 14. POST-TEST WINDSHIELD INTRUSION VIEW
A-8

850520

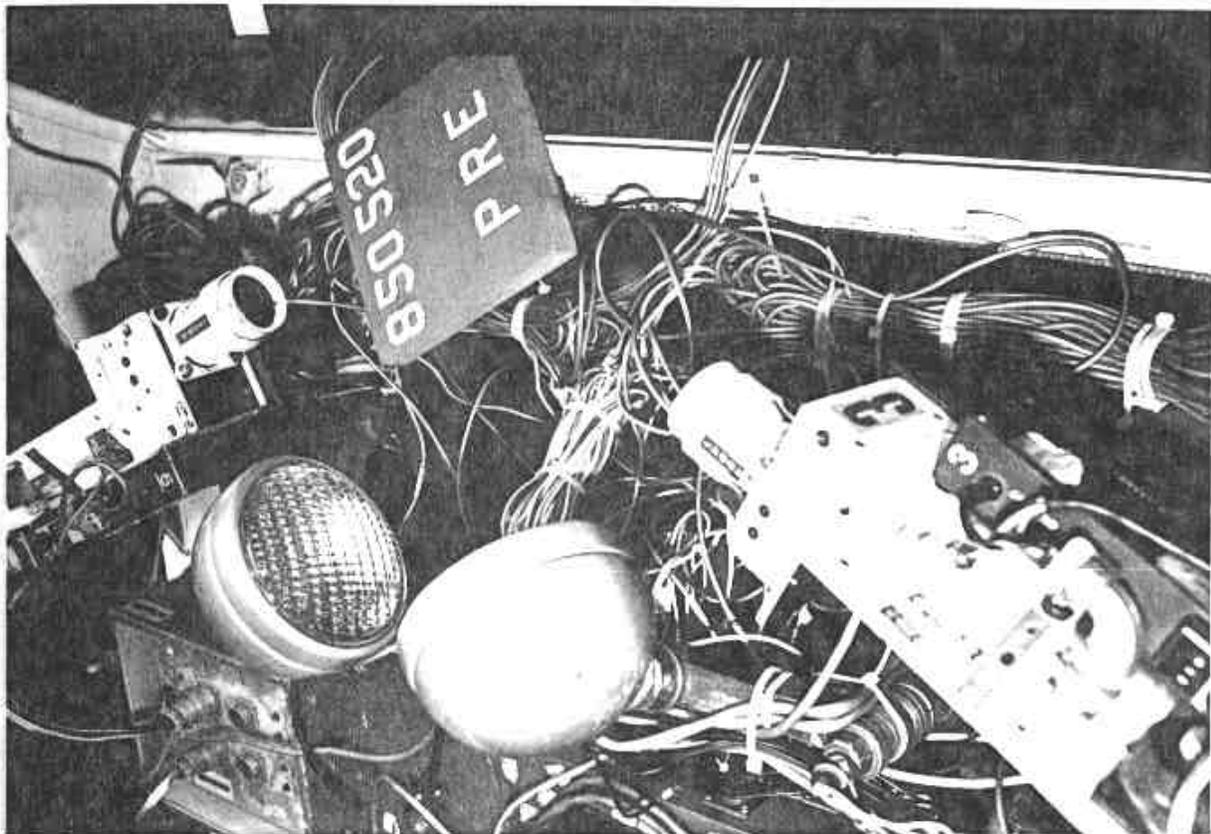


Figure 15. PRE-TEST ENGINE COMPARTMENT VIEW

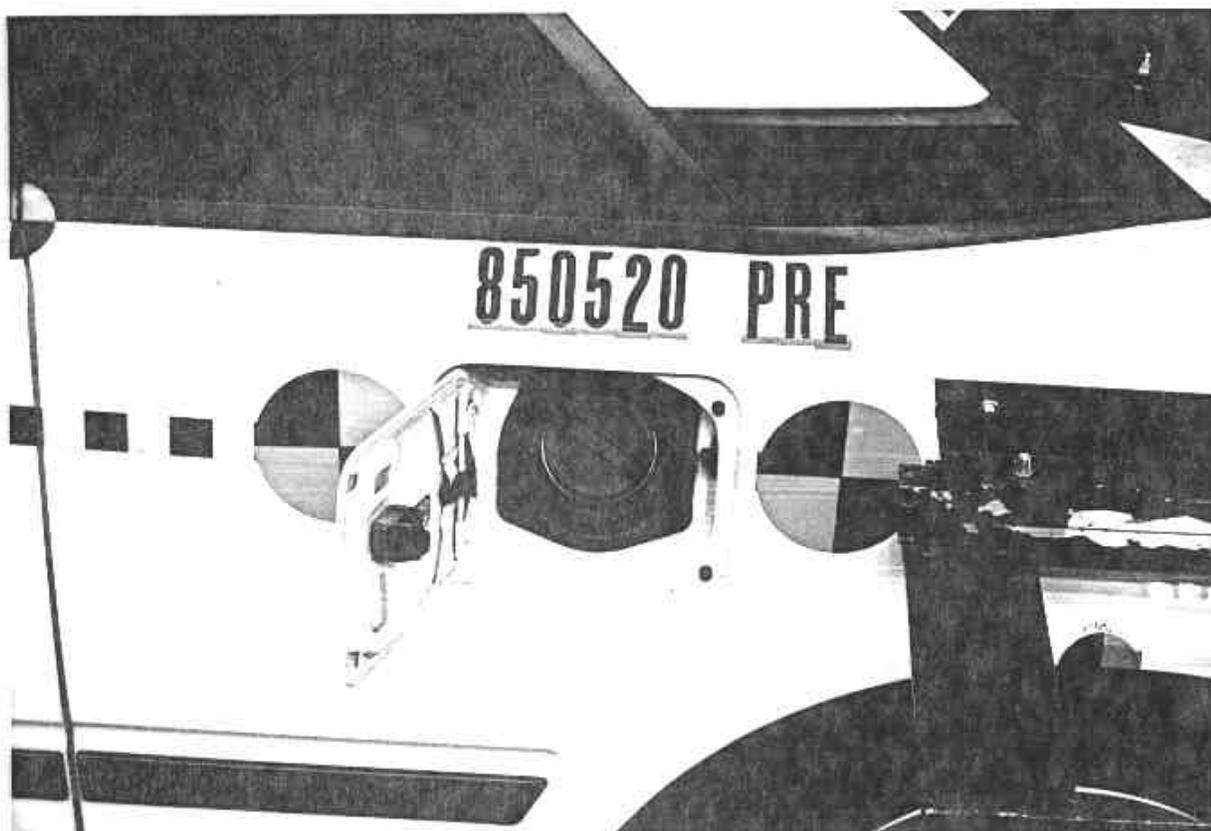


Figure 16. PRE-TEST FUEL FILLER CAP VIEW

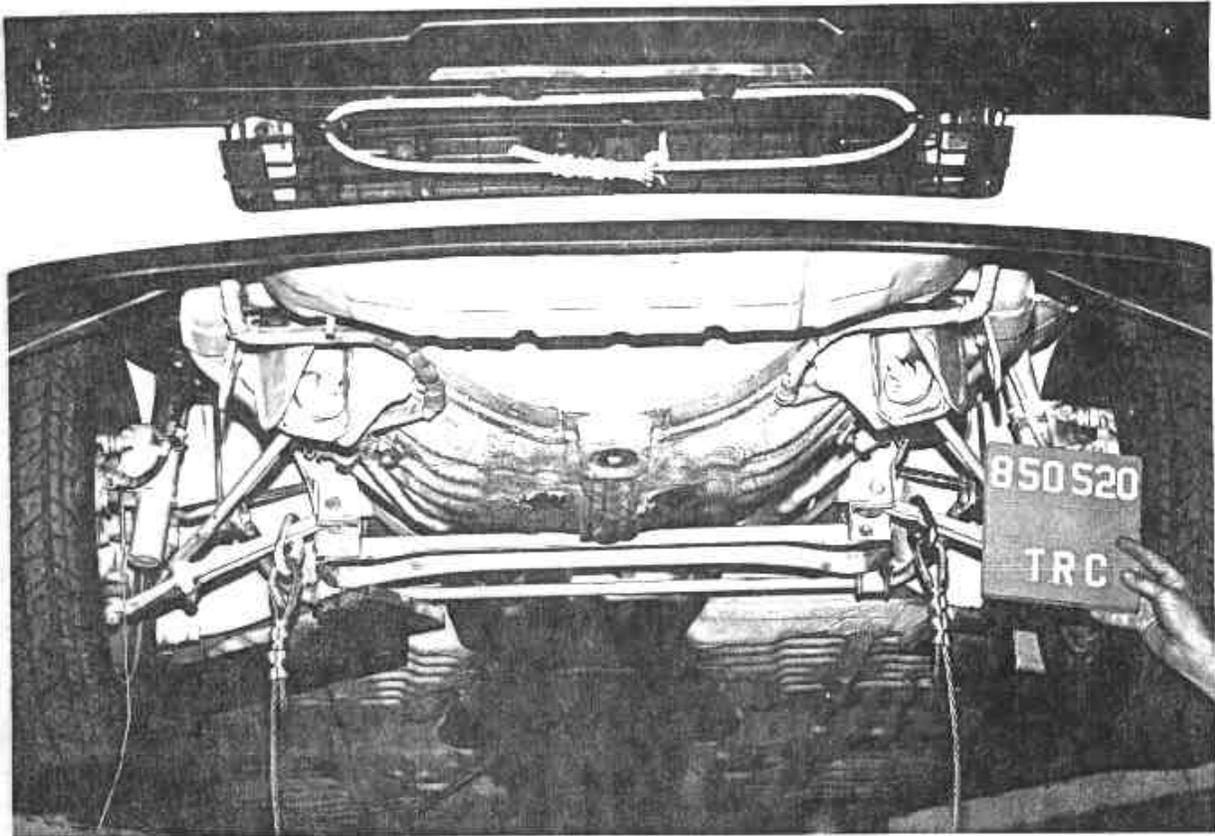


Figure 17. PRE-TEST FRONT UNDERBODY VIEW

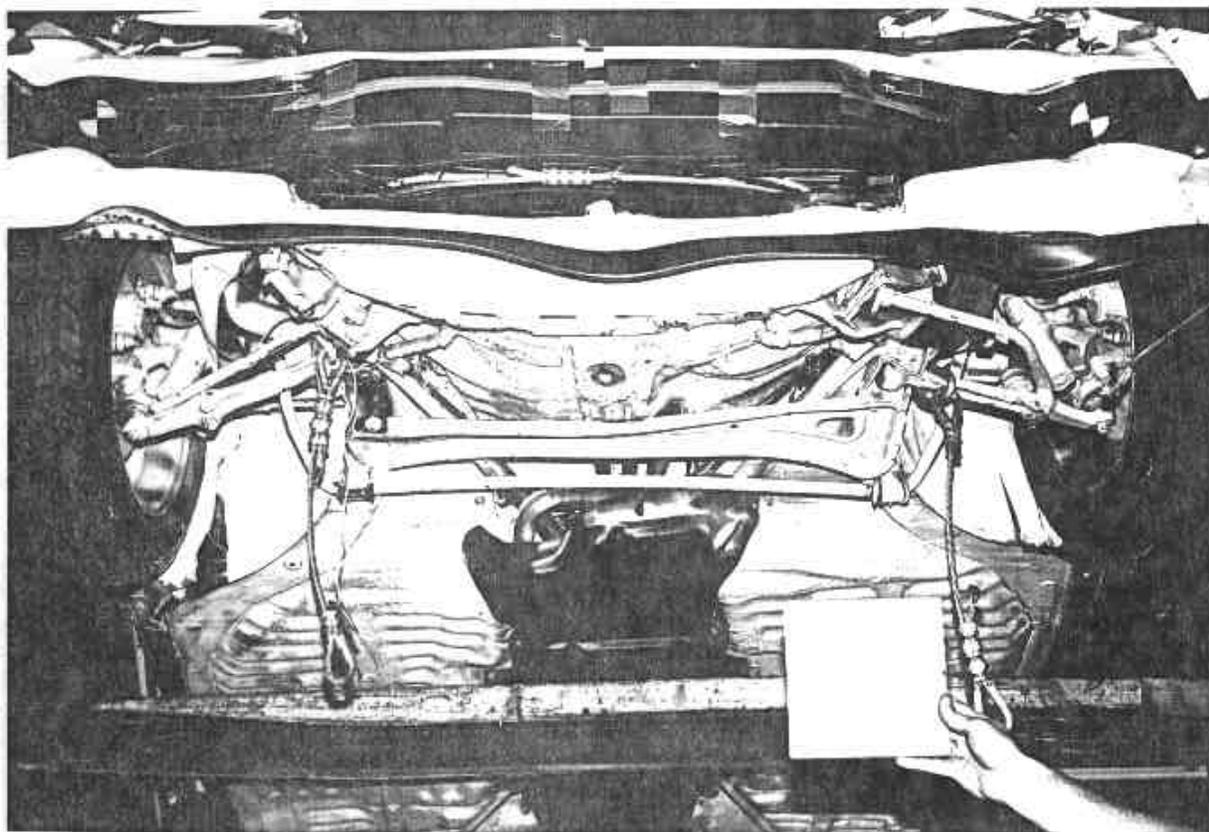


Figure 18. POST-TEST FRONT UNDERBODY VIEW

A-10

850520

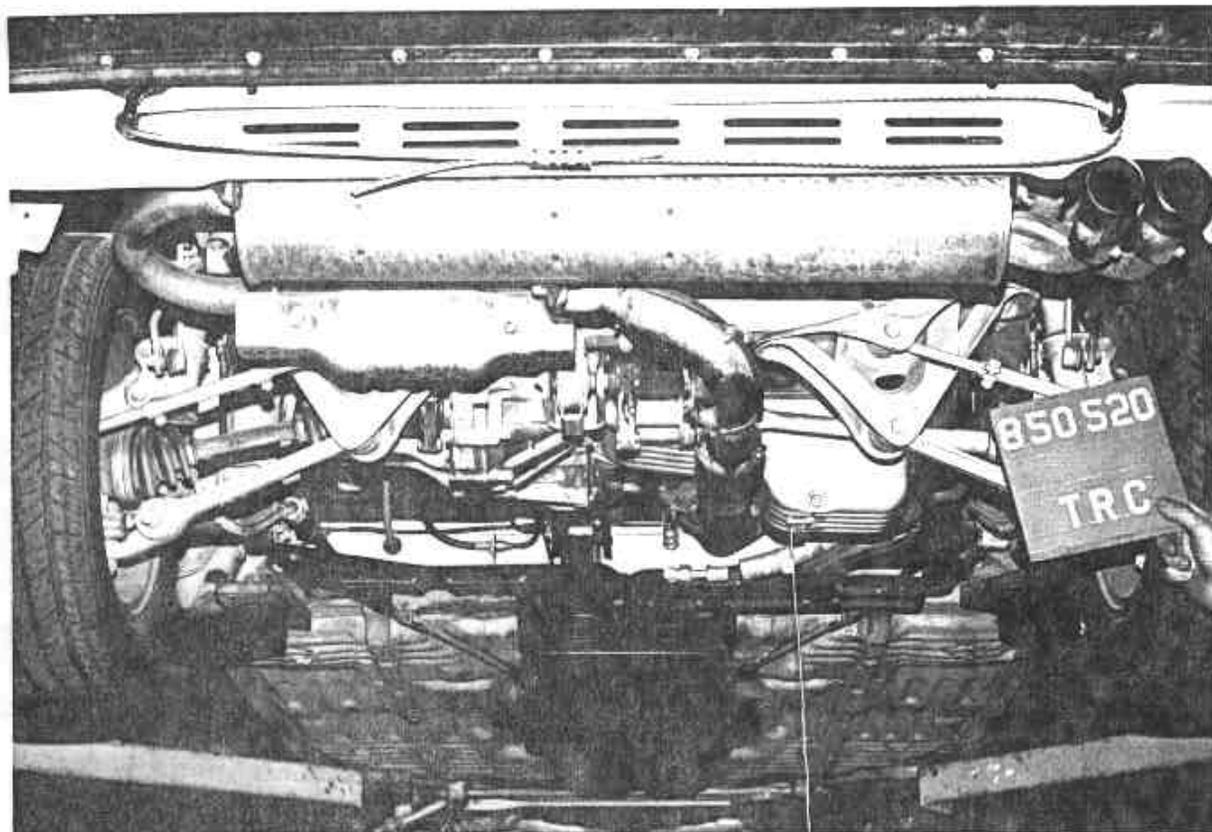


Figure 19. PRE-TEST REAR UNDERBODY VIEW

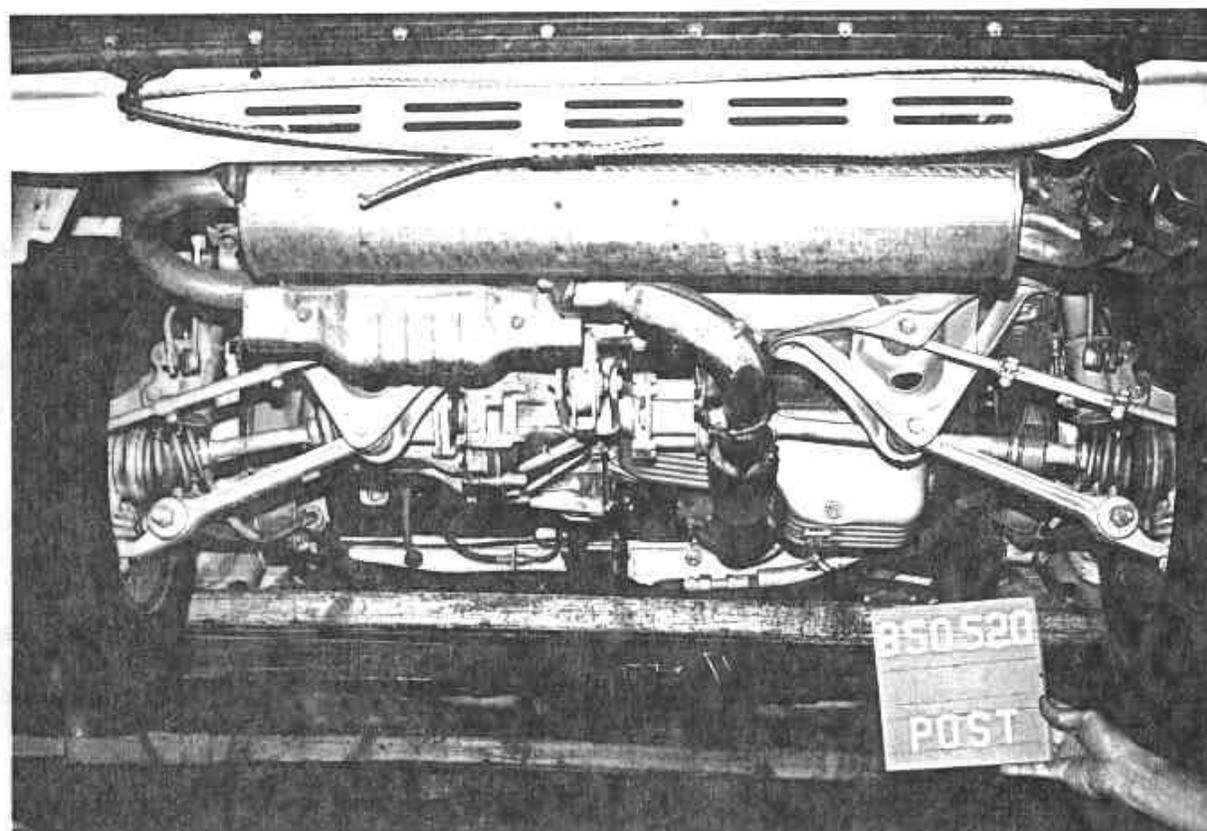


Figure 20. POST-TEST REAR UNDERBODY VIEW
A-11

850520



Figure 21. PRE-TEST DRIVER DUMMY POSITION VIEW

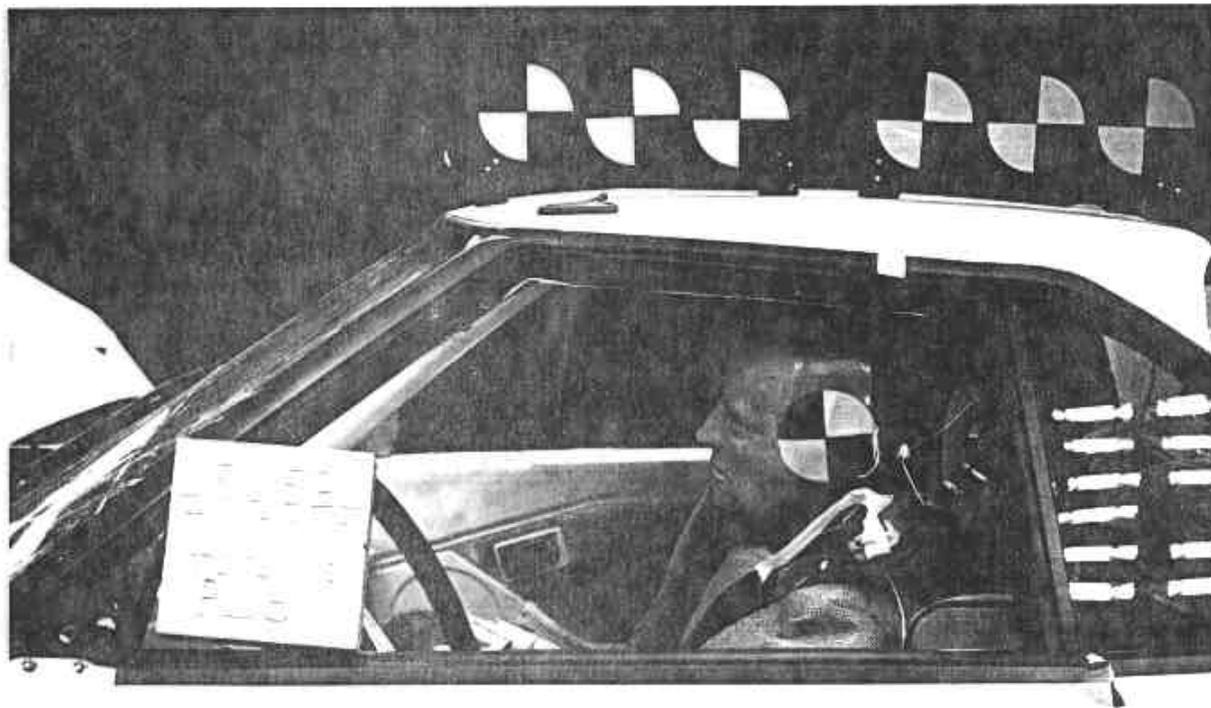


Figure 22. POST-TEST DRIVER DUMMY POSITION VIEW

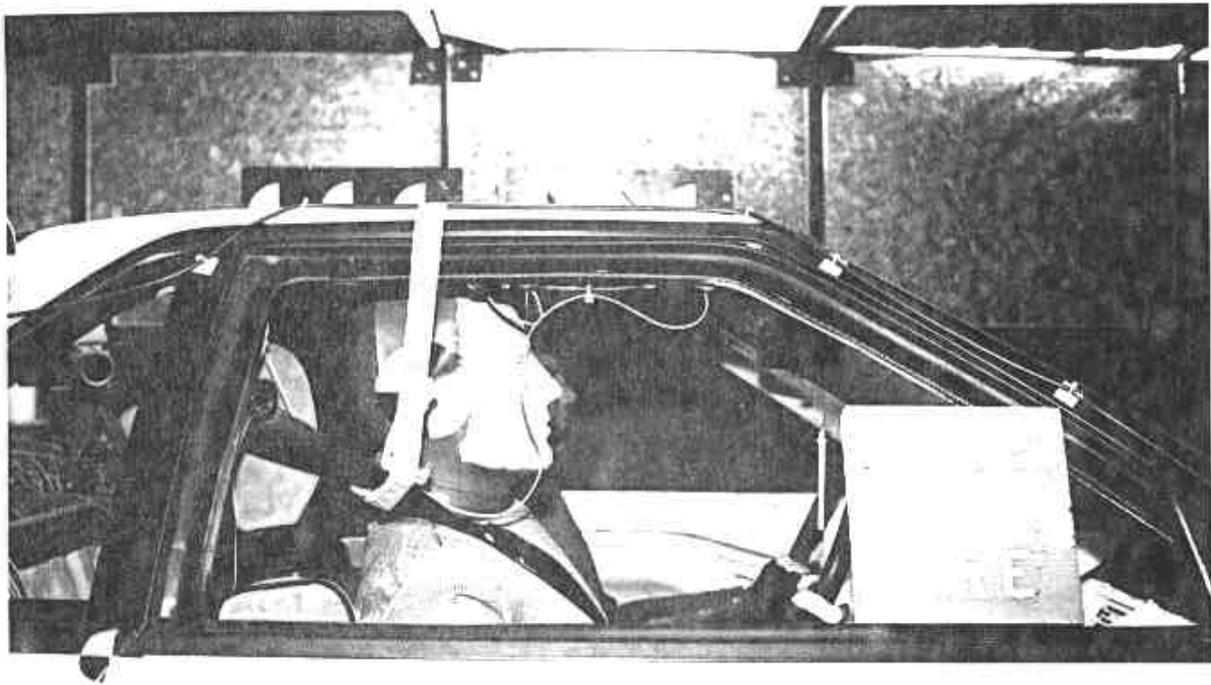


Figure 23. PRE-TEST PASSENGER DUMMY POSITION VIEW



Figure 24. POST-TEST PASSENGER DUMMY POSITION VIEW

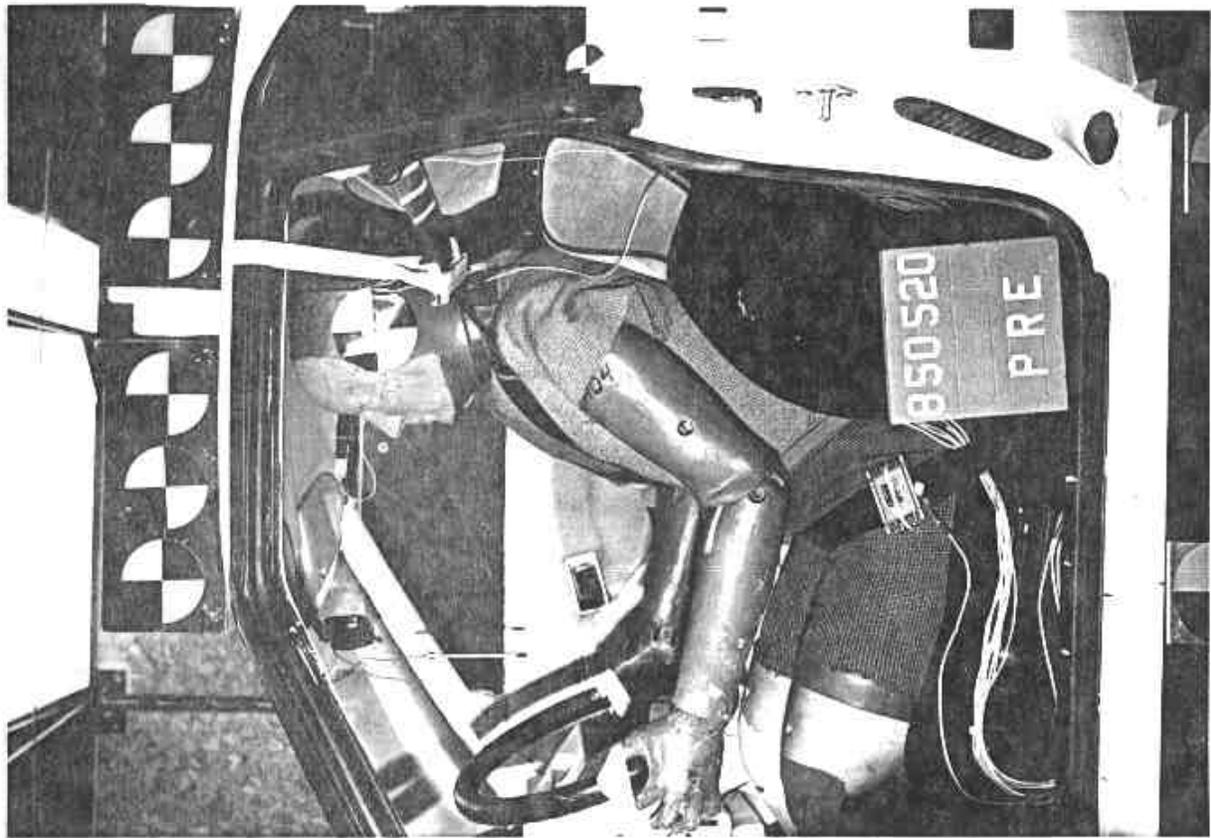


Figure 25. POST-TEST DRIVER DUMMY & VEHICLE INTERIOR VIEW (DOOR OPEN)

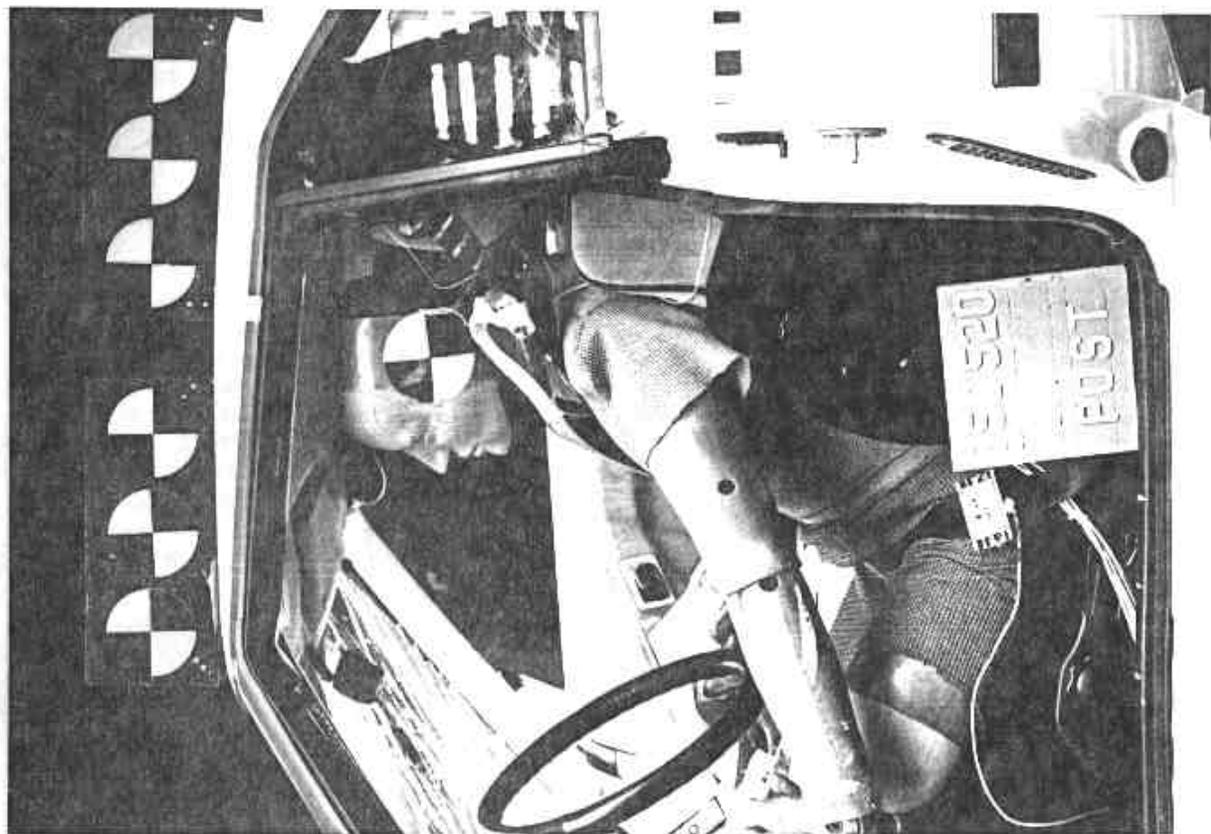


Figure 26. POST-TEST DRIVER DUMMY & VEHICLE INTERIOR VIEW (DOOR OPEN)

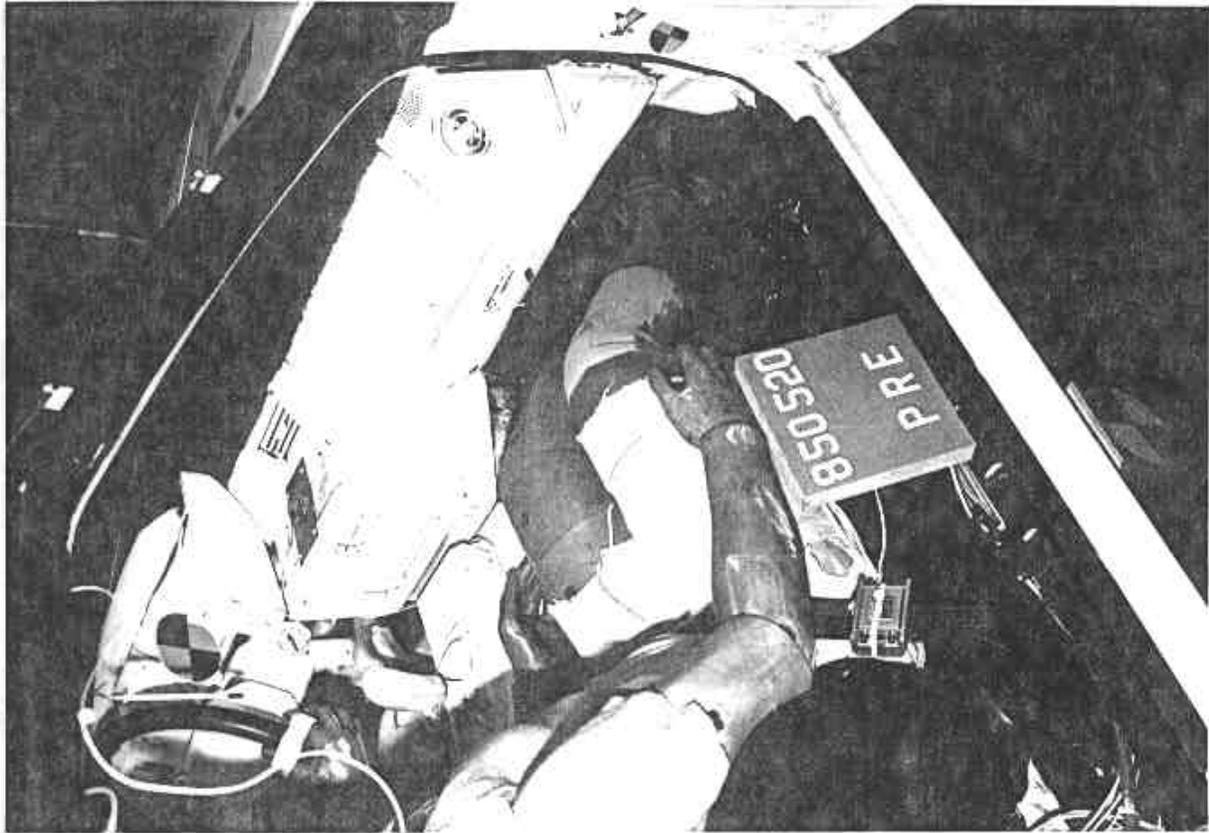


Figure 27. PRE-TEST PASSENGER DUMMY & VEHICLE INTERIOR VIEW (DOOR OPEN)

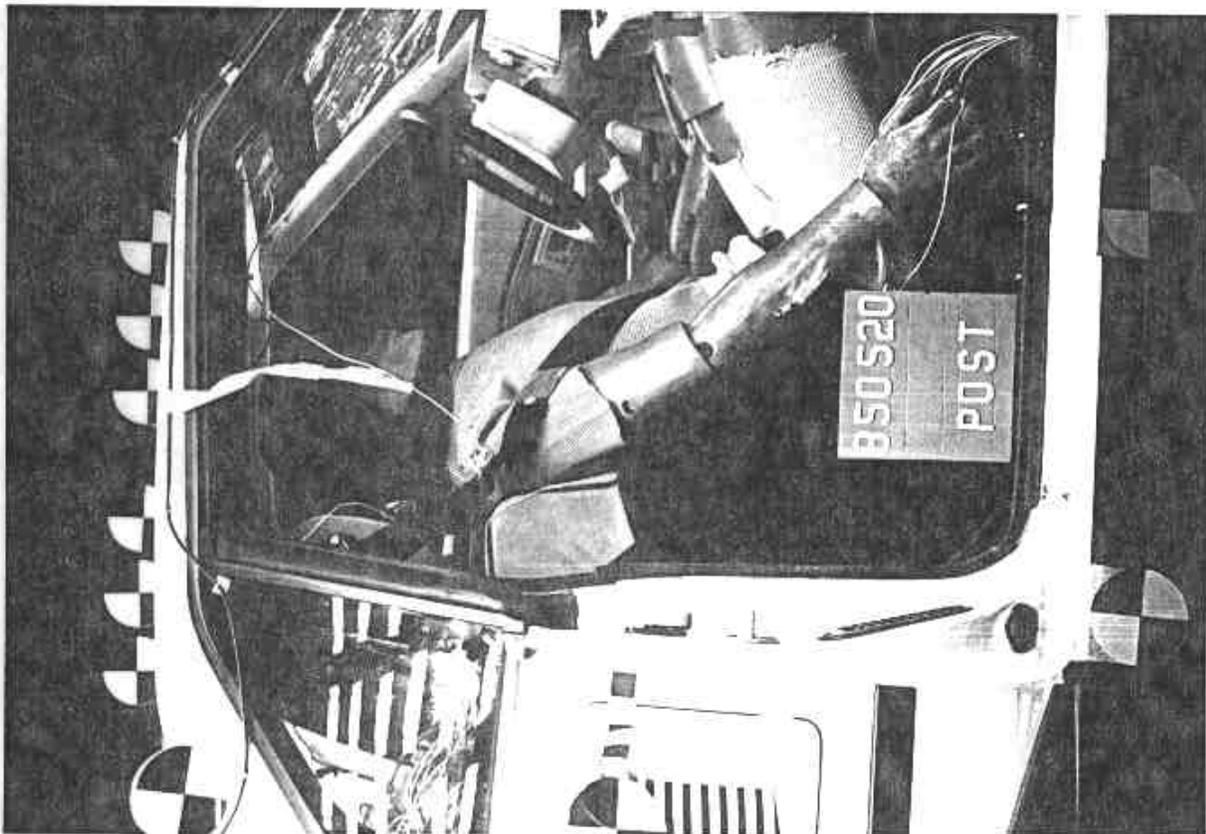


Figure 28. POST-TEST PASSENGER DUMMY & VEHICLE INTERIOR VIEW (DOOR OPEN)

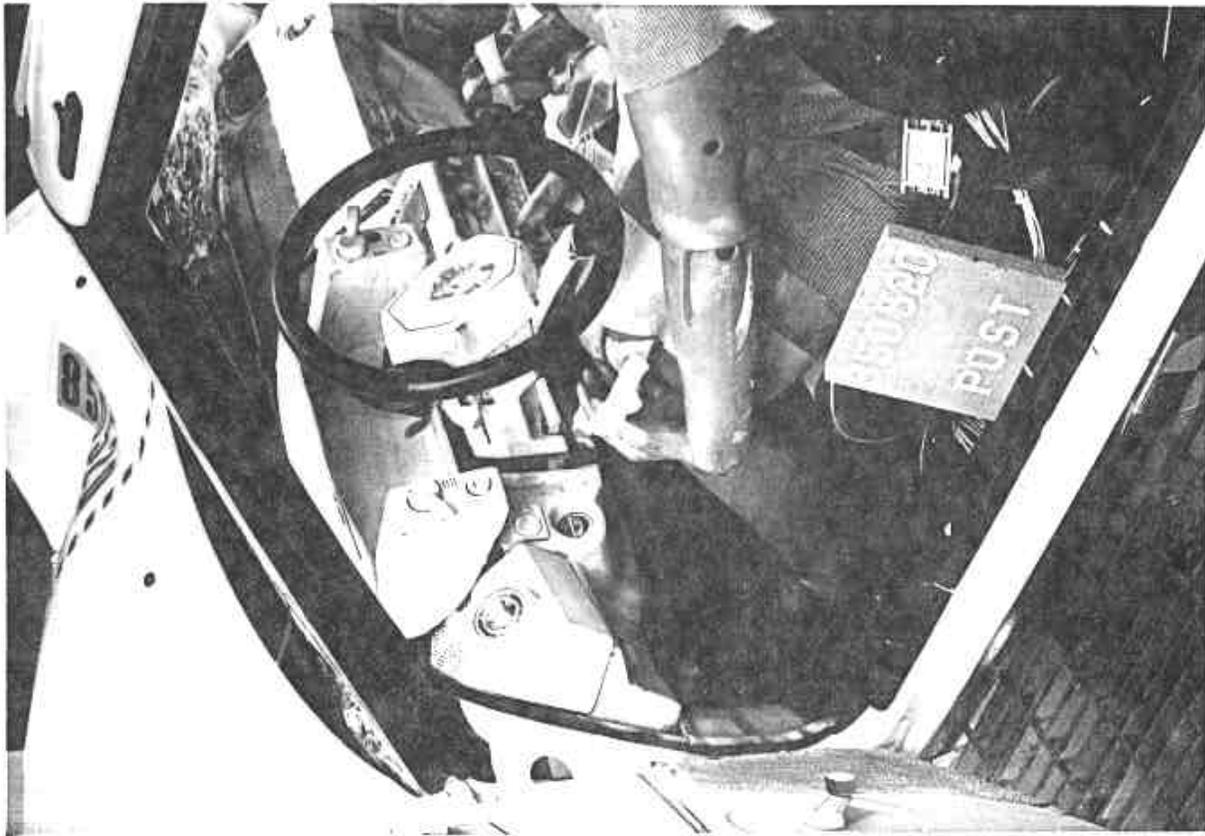


Figure 29. POST-TEST DRIVER DUMMY HEAD CONTACT AREA

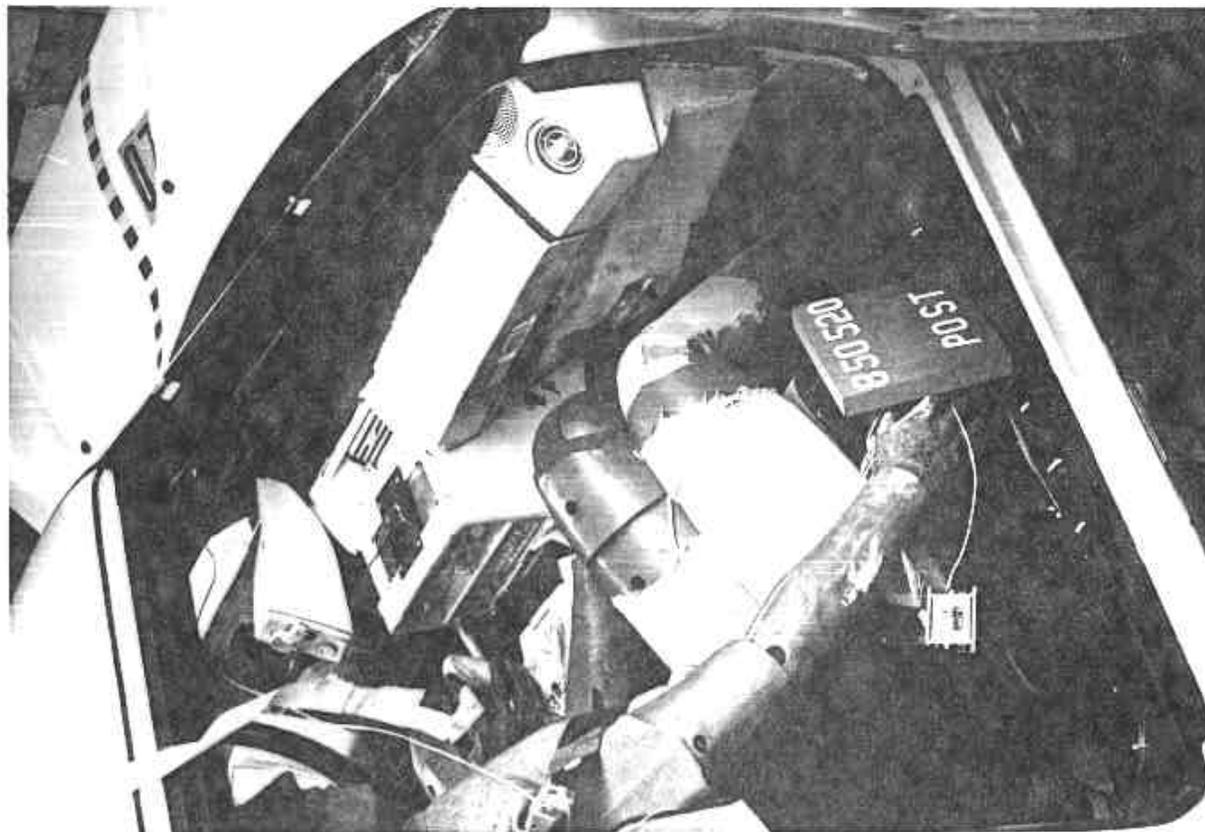


Figure 30. POST-TEST PASSENGER DUMMY HEAD/KNEE CONTACT

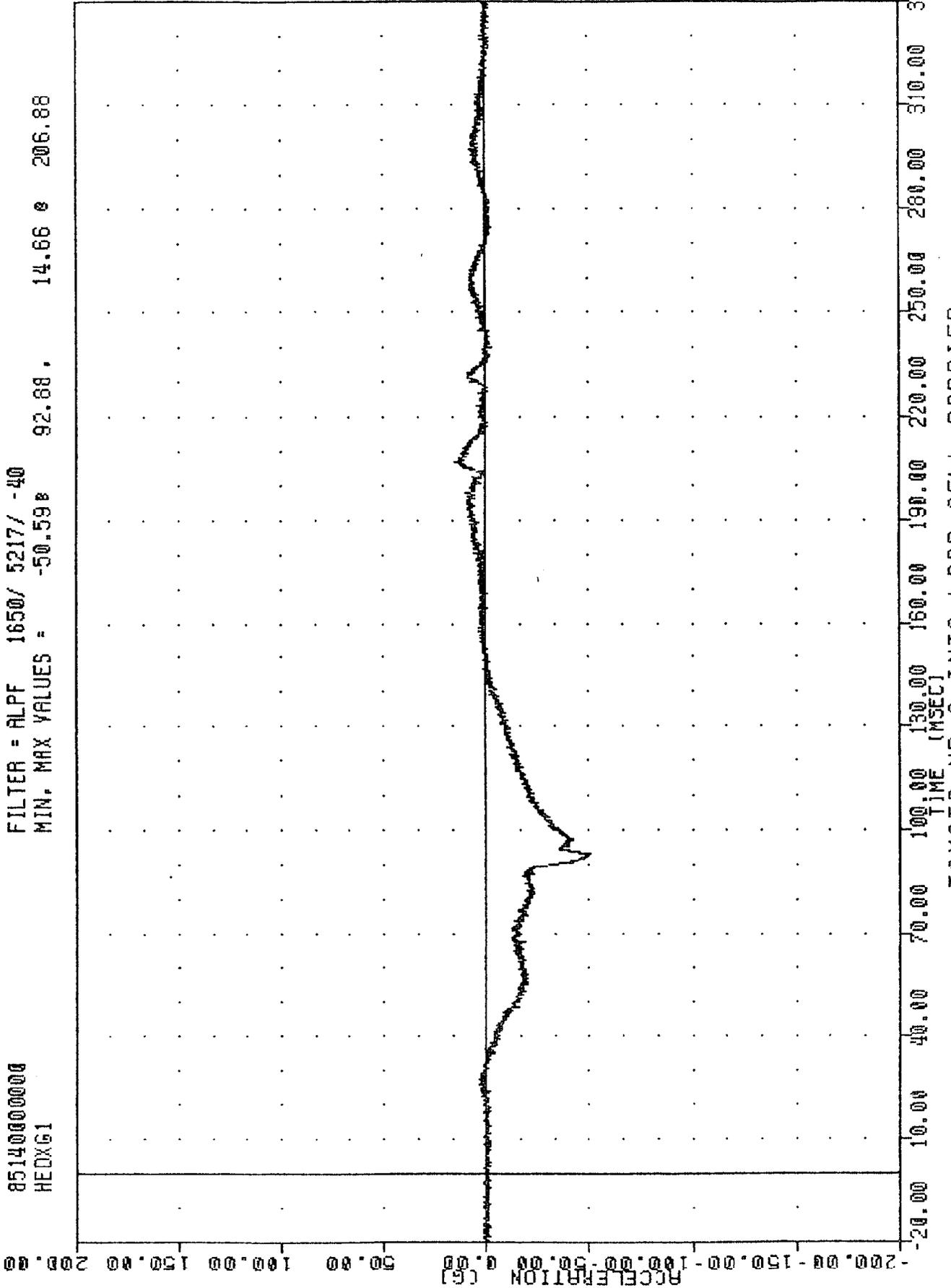
APPENDIX B
DATA PLOTS

TRC 850520
NEW CAR ASSESSMENT PROGRAM
85140000000
HEXG1

PLOT DATE 22-MAY-85 14:40:09

FILTER = ALPF 1650/ 5217/ -40

MIN, MAX VALUES = -50.598 92.88, 14.66 @ 206.88



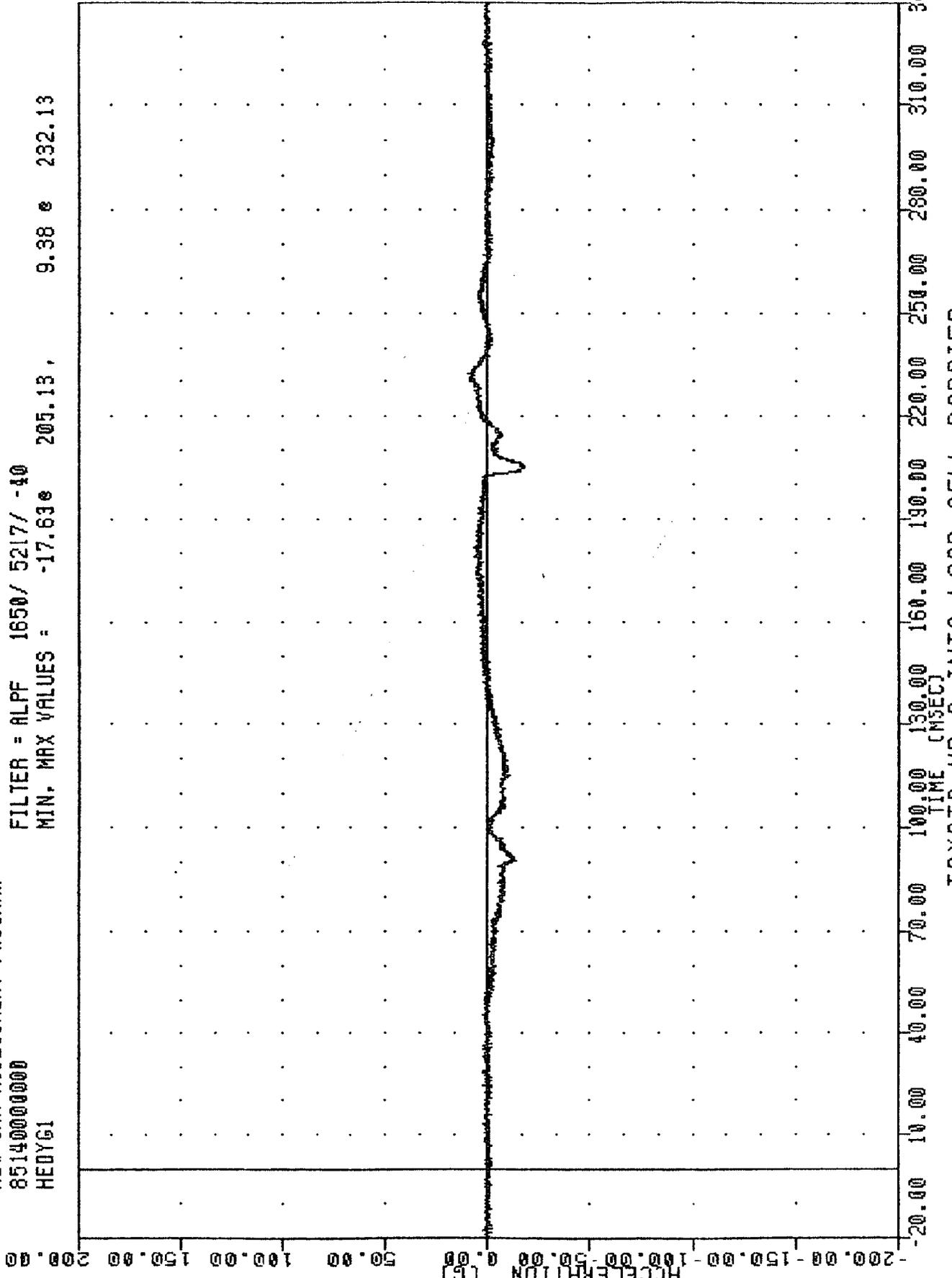
TOYOTA NR-2 INTO LOAD CELL BARRIER
NOTED UPON ACCELERATION Y AXIS

TRC , 850520
NEW CAR ASSESSMENT PROGRAM
8514000000
HEDYG1

PLOT DATE 22-MAY-85 14:40:09

FILTER = ALPF 1650/ 5217/ -40

MIN. MAX VALUES = -17.63e 205.13, 9.38 e 232.13



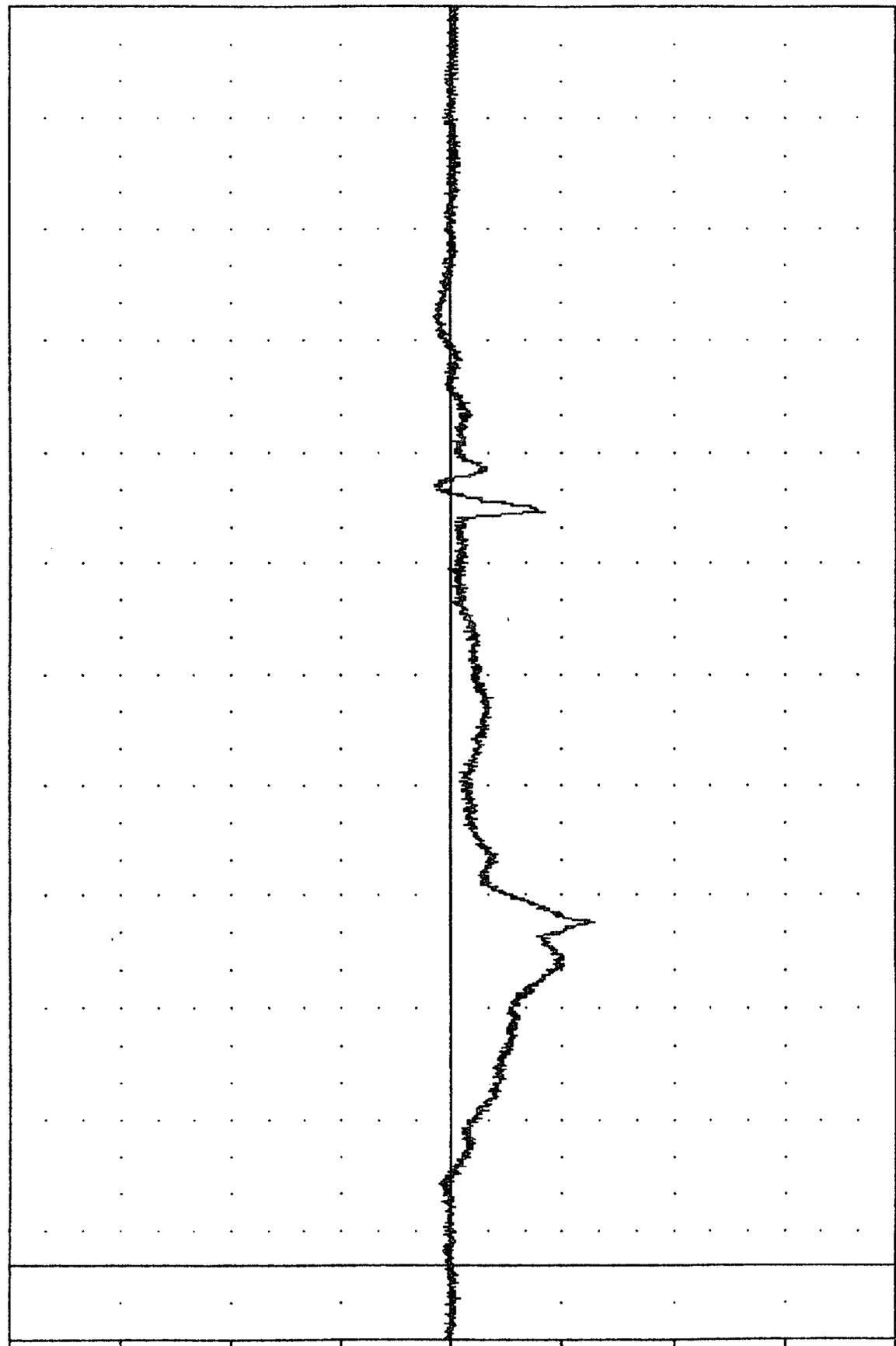
TOYOTA MR-2 INTO LOAD CELL BARRIER
DRIVER HEAD ACCELERATION Y AXIS

TAC
 , 850520
 NEW CAR ASSESSMENT PROGRAM
 85140000000
 HEDZ61

PLOT DATE 22-MAY-85 14:40:09

FILTER = ALPF 1650 / 5217 / -40
 MIN, MAX VALUES = -63.93e 93.00 , 7.86 e 256.38

ACCELERATION (G)
 200.00
 150.00
 100.00
 50.00
 0.00
 -50.00
 -100.00
 -150.00
 -200.00



-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
 TIME INSEC

TOYOTA MR-2 INTO LOAD CELL BARRIER
 DRIVER HEAD ACCELERATION 7 BYTE

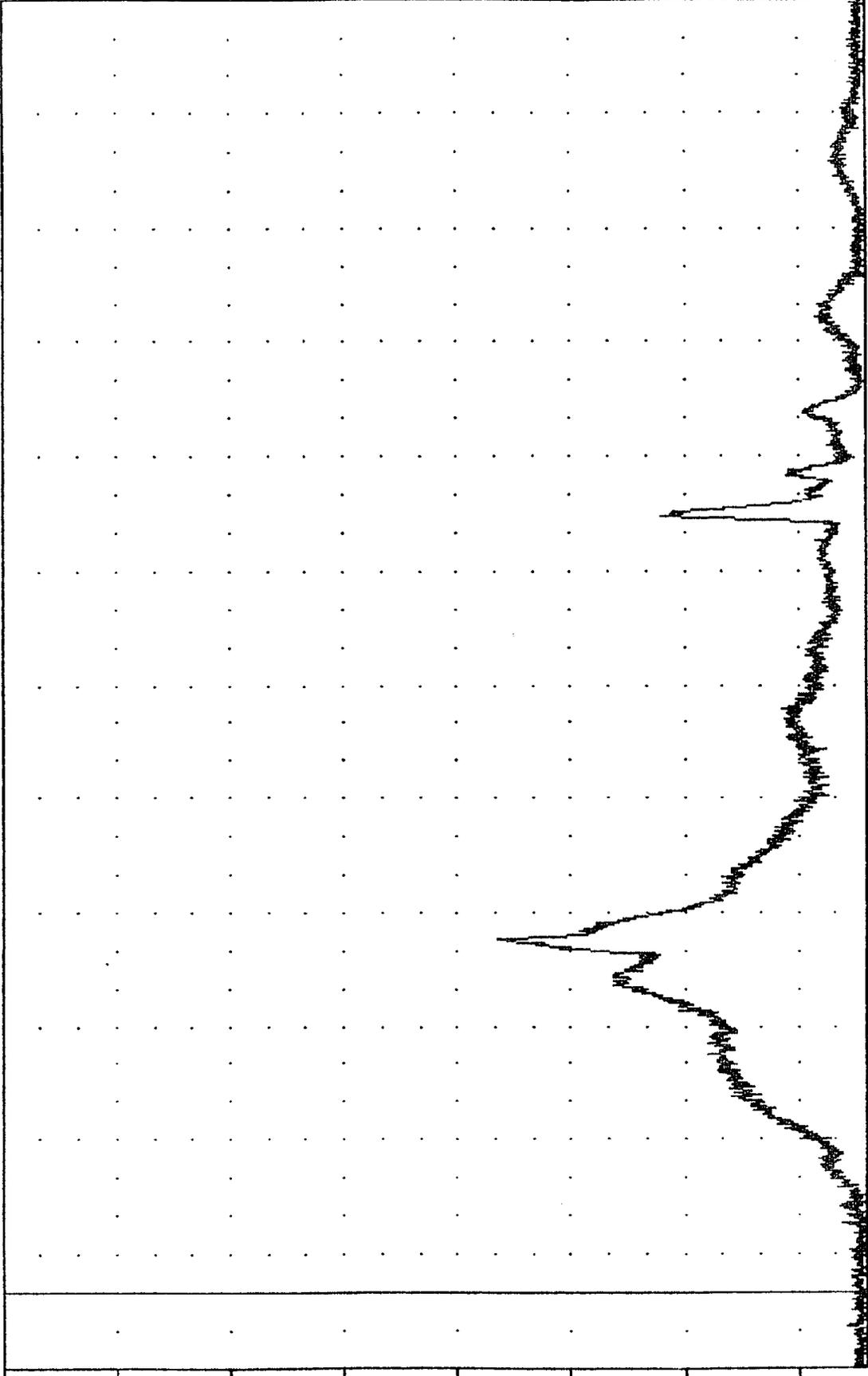
TRC 850520
NEW CAR ASSESSMENT PROGRAM
8514000000
HEDRG1

PLOT DATE 22-MAY-85 14:40:09

FILTER = ALPF 1650/ 5217/ -40

MIN, MAX VALUES = 0.15g 239.50, 81.00 g 93.00

ACCELERATION (G)



-10.00 15.00 20.00 25.00 30.00 35.00 40.00 45.00 50.00 55.00 60.00 65.00 70.00 75.00 80.00 85.00 90.00 95.00 100.00 105.00 110.00 115.00 120.00 125.00 130.00 135.00 140.00 145.00 150.00 155.00 160.00 165.00 170.00 175.00 180.00 185.00 190.00 195.00 200.00 205.00 210.00 215.00 220.00 225.00 230.00 235.00 240.00 245.00 250.00 255.00 260.00 265.00 270.00 275.00 280.00 285.00 290.00 295.00 300.00 305.00 310.00 315.00 320.00 325.00 330.00 335.00 340.00

TOYOTA MR-2 INTO LOAD CELL BARRIER

DATA FILE: 850520.DAT



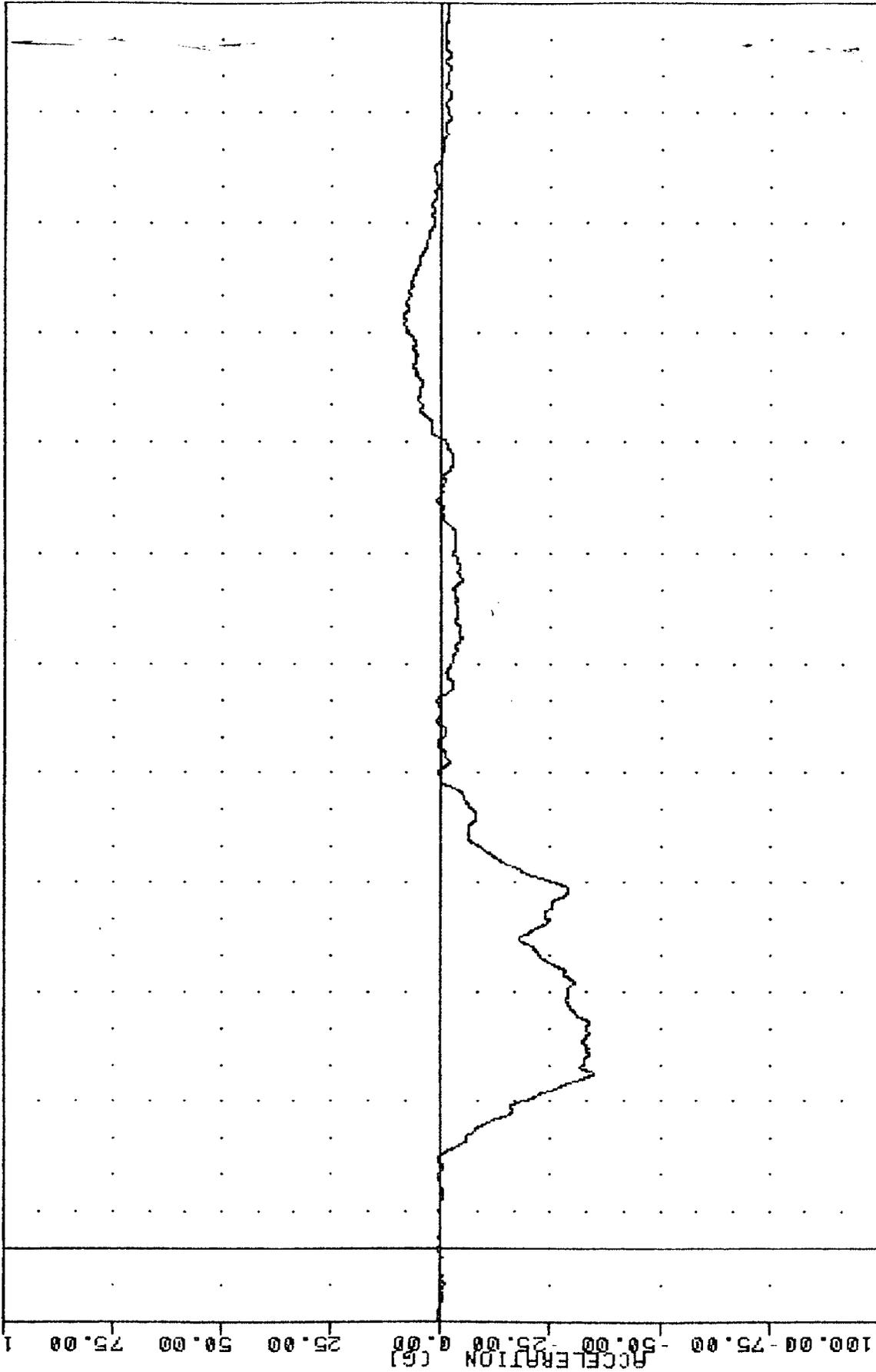
TRC , 850520
 NEW CAR ASSESSMENT PROGRAM
 8514000000
 CSTXG1

PLOT DATE 22-MAY-85 14:40:09

FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = -34.94e 47.63, 8.66 e 254.38

100.00



B-6

850520

-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)

TOYOTA MR-2 INTO LOAD CELL BARRIER

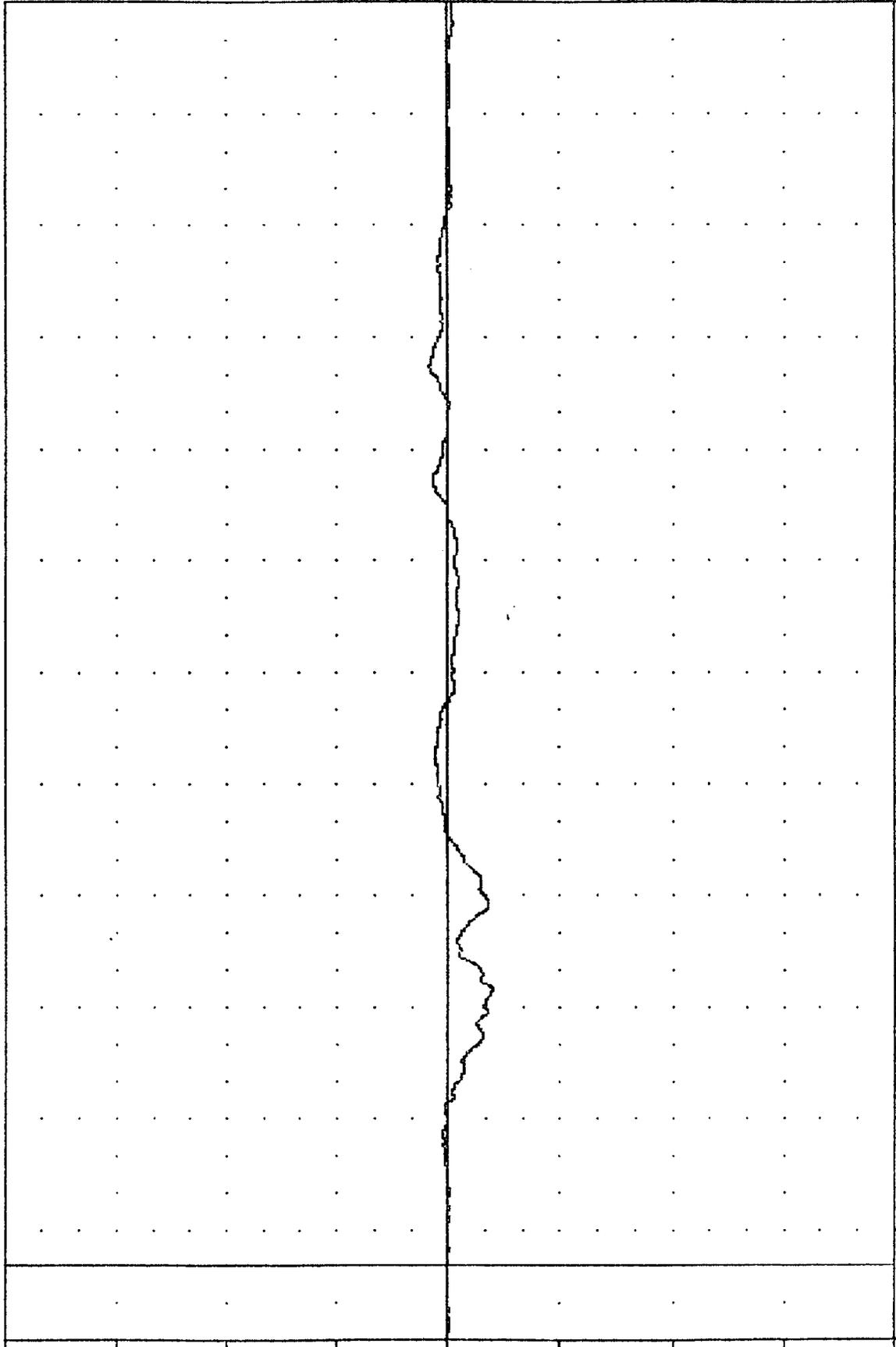
DATA FILE: C:\DATA\PROTON\1\5120.DAT

TAC
NEW CAR ASSESSMENT PROGRAM
85140000000
CSTY61

PLOT DATE 22-MAY-85 14:40:09

FILTER = BLPF 300/ 949/ -40
MIN, MAX VALUES = -9.78e 74.88, 1.14 e 242.13

ACCELERATION (G)
-100.00 -75.00 -50.00 -25.00 0 25.00 50.00 75.00 100.00



-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
TIME (MSEC)

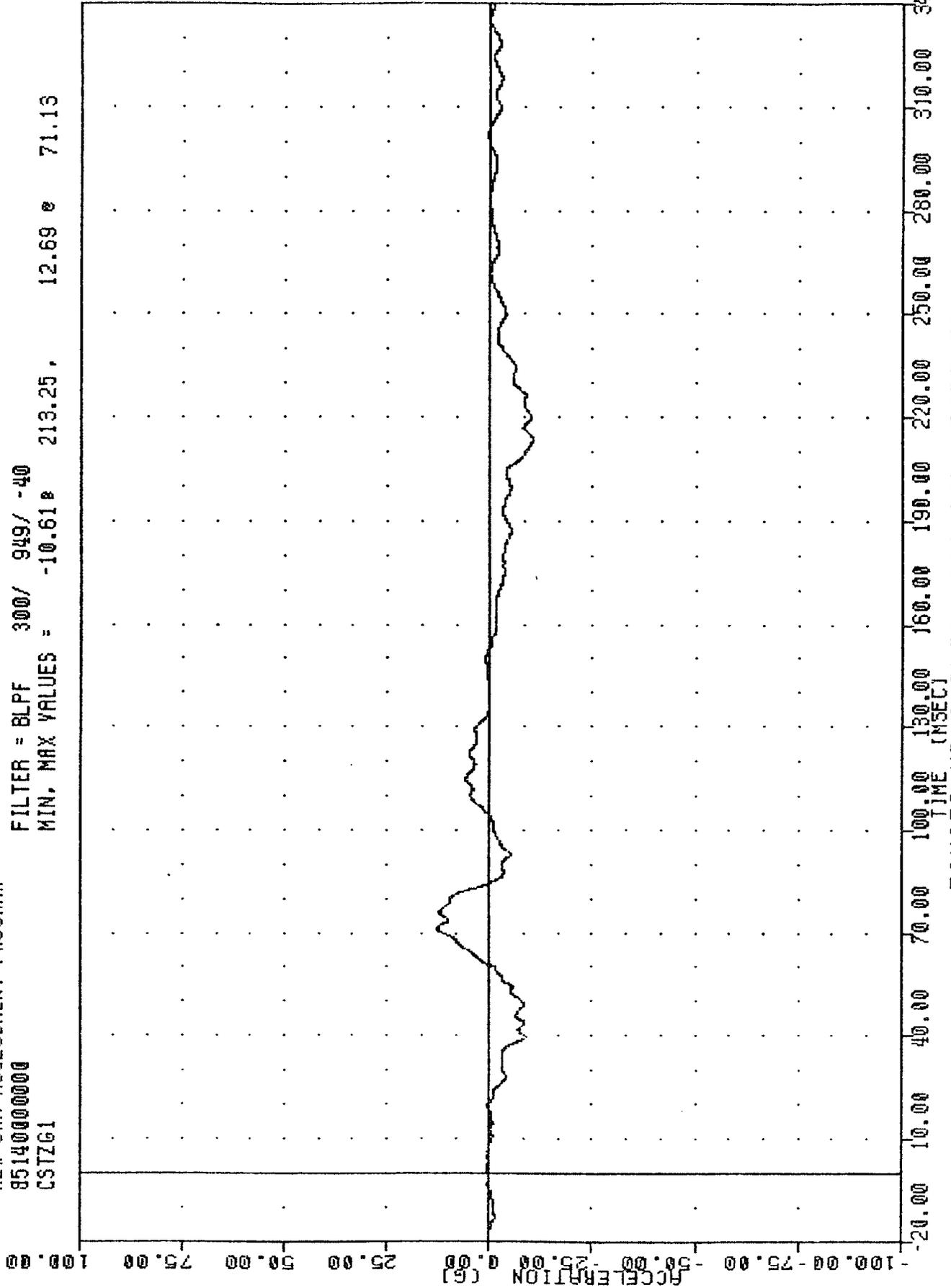
TOYOTA MR-2 INTO LOAD CELL BARRIER
DRIVER CHEST ACCELERATION Y AXIS

TRC , 850520
NEW CAR ASSESSMENT PROGRAM
8514000000
CSTZG1

PLOT DATE 22-MAY-85 14:40:09

FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = -10.61E 213.25, 12.69E 71.13



TOYOTA MR-2 INTO LOAD CELL BARRIER

ORIENTED UPWARD ACCELERATION TOWARD

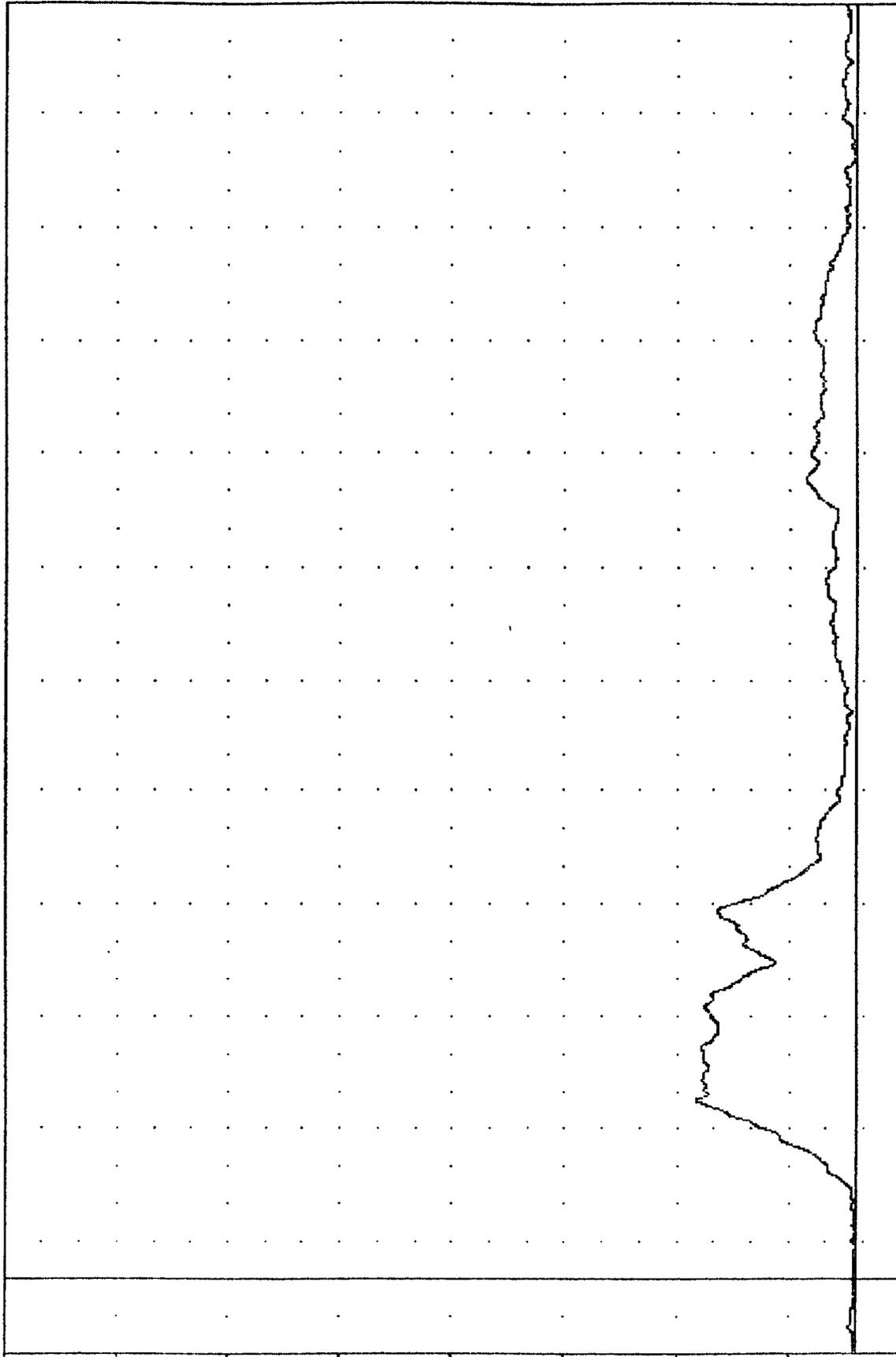
TRC
NEW CAR ASSESSMENT PROGRAM
8514000000
CSTRG1

PLOT DATE 22-MAY-85 14:40:09

FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = 0.09e -4.88, 35.71 e 47.63

ACCELERATION (G)



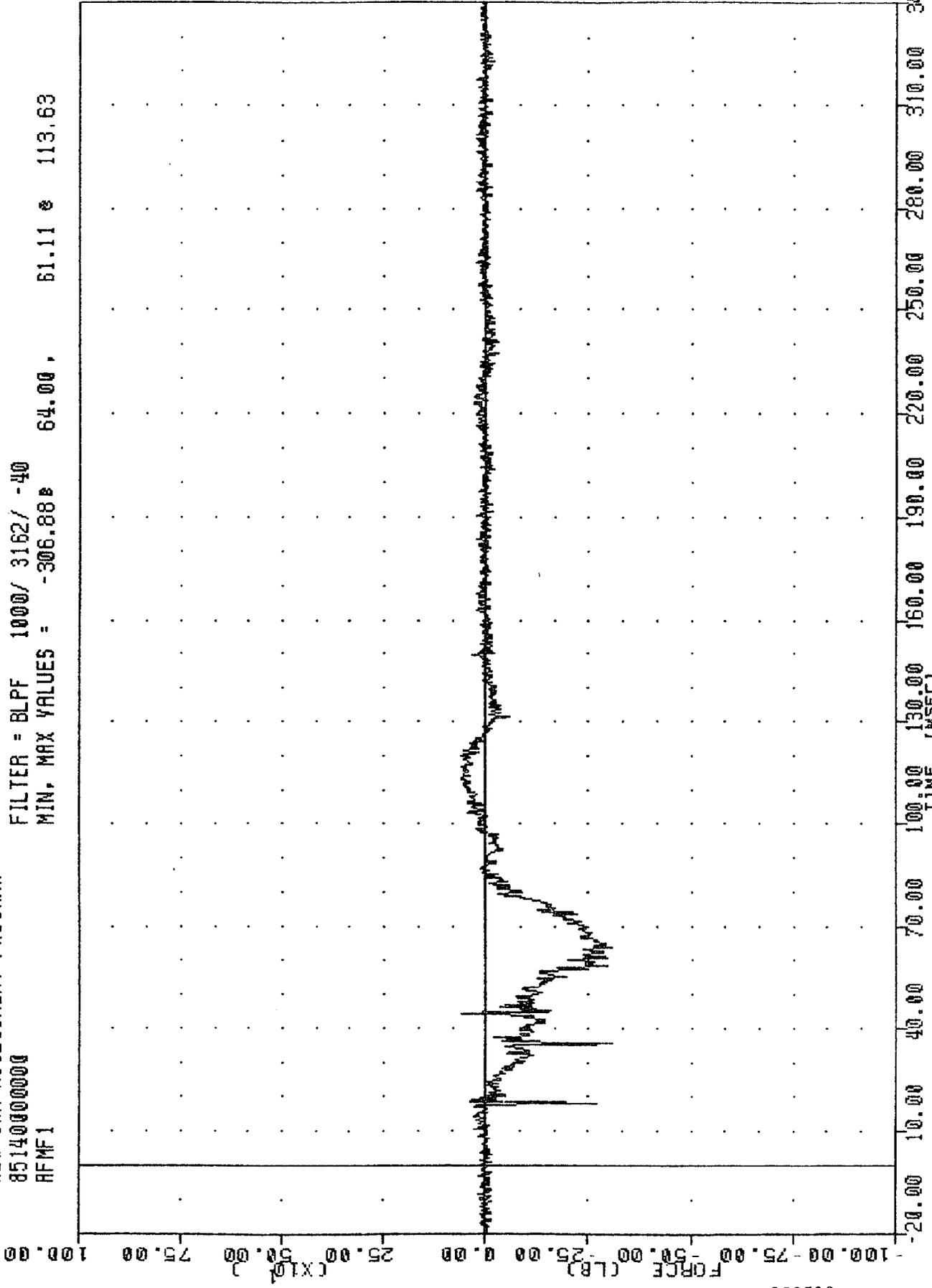
TOYOTA MR-2 INTO LOAD CELL BARRIER

NO TIVED SPECT DECIIT TANT

TRC , 850520
 NEW CAR ASSESSMENT PROGRAM
 85140000000
 AFMF1

PLOT DATE 22-MAY-85 14:40:09

FILTER = BLPF 1000/ 3162/ -40
 MIN. MAX VALUES = -306.88 64.00 , 61.11 113.63



B-10

850520

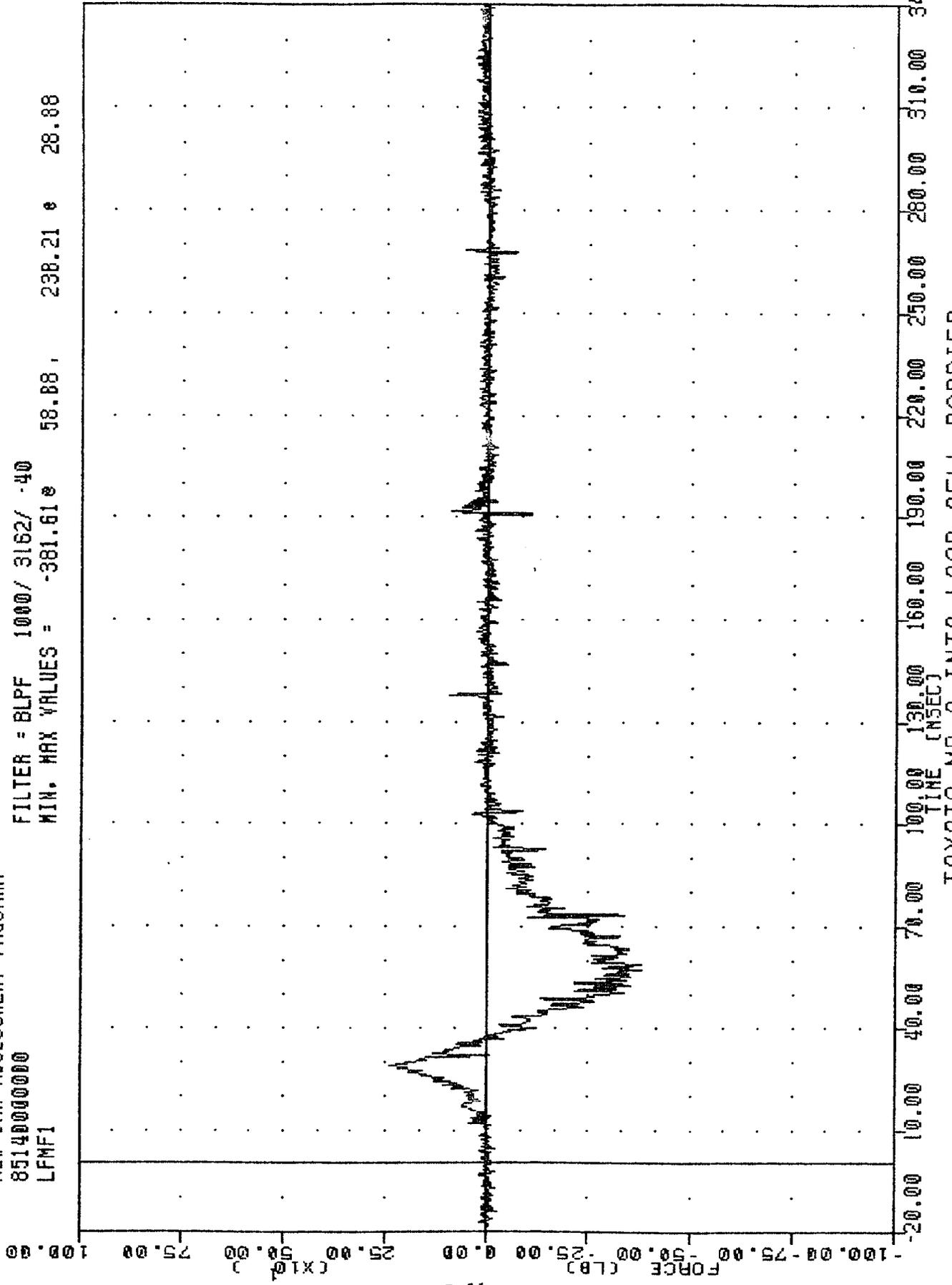
TOYOTA MR-2 INTO LOAD CELL BARRIER
 DRIVER RCUT SEMI D CRORE 1 DC

TRC , 850520
NEW CAR ASSESSMENT PROGRAM
8514000000
LFMF1

PLOT DATE 22-MAY-85 14:40:09

FILTER = BLPF 1000/ 3162/ .40

MIN. MAX VALUES = -381.61e 58.88, 238.21 e 28.88



B-11

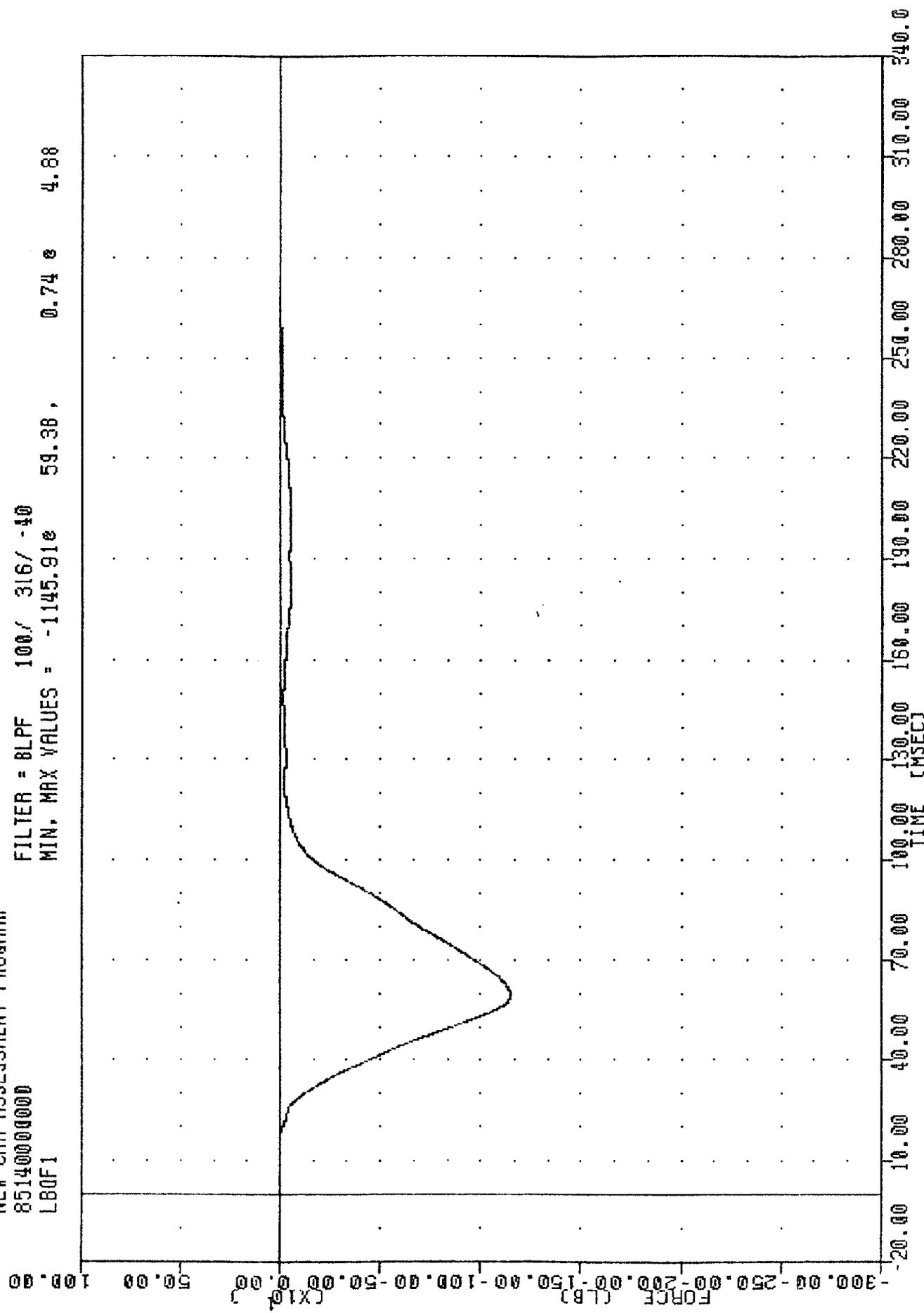
850520

TOYOTA MR-2 INTO LOAD CELL BARRIER

TAC , 850520
 NEW CAR ASSESSMENT PROGRAM
 8514000000
 LB0F1

PLOT DATE 22-MAY-85 14:40:09

FILTER = 8LPF 100/ 316/ -40
 MIN. MAX VALUES = -1145.91e 59.38, 0.74 e 4.88

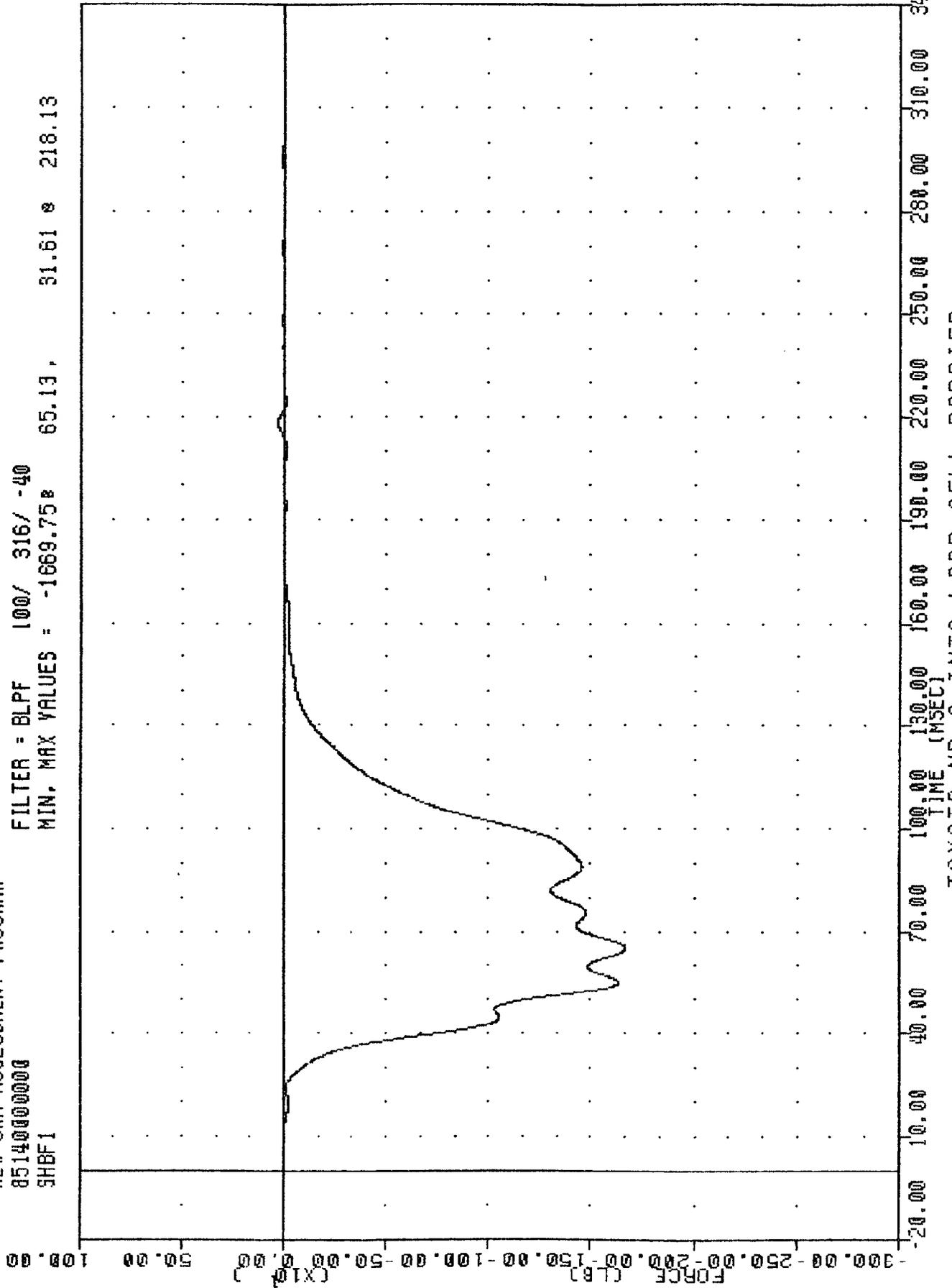


TOYOTA MR-2 INTO LOAD CELL BARRIER
 IAP RFLT OUTBOARD FORCE #1 IAS

TRC , 850520
NEW CAR ASSESSMENT PROGRAM
85140000000
SHBF1

PLOT DATE 22-MAY-85 14:40:09

FILTER = BLPF 100/ 316/ -40
MIN. MAX VALUES = -1669.75 65.13 31.61 218.13

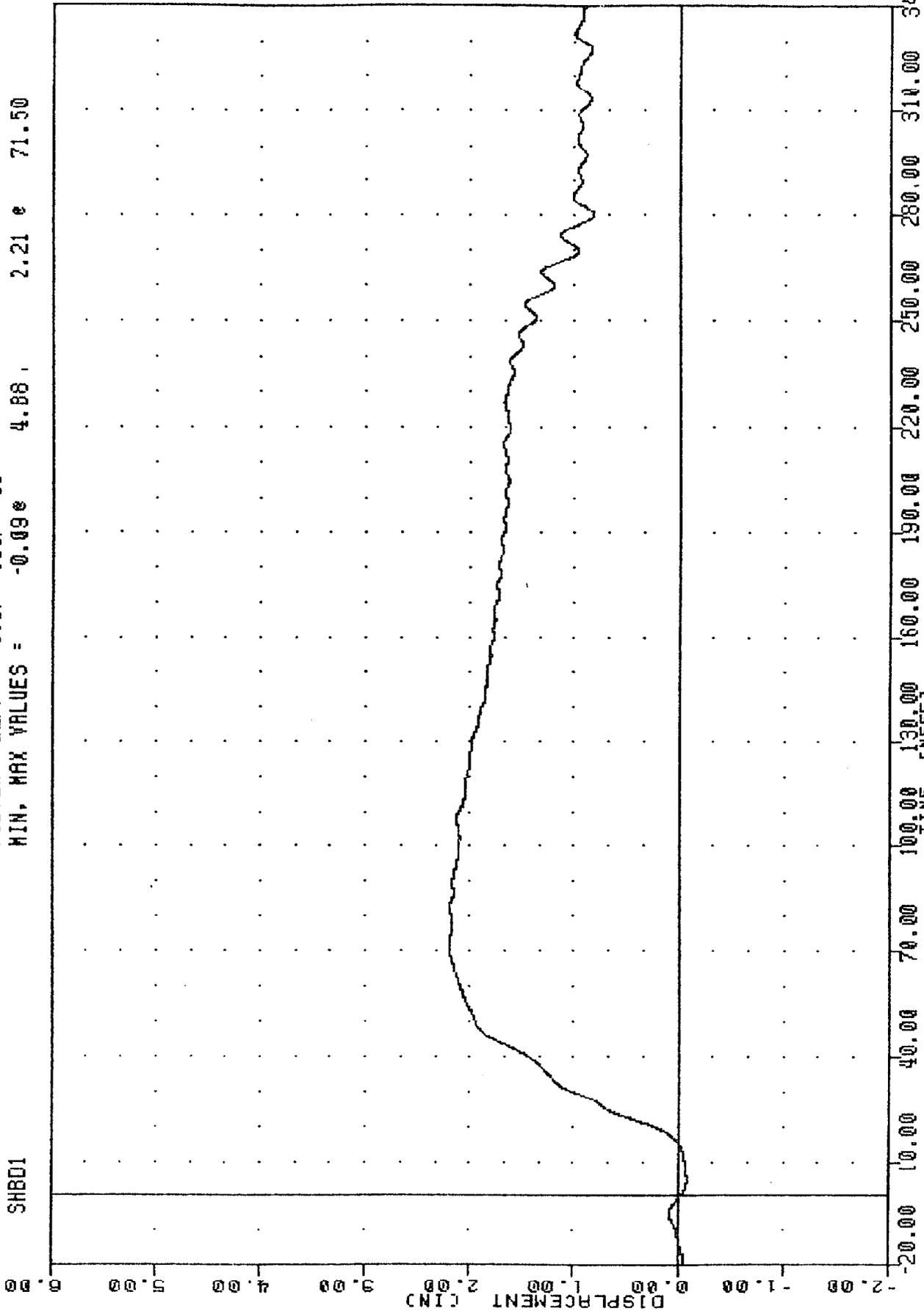


TOYOTA MR-2 INTO LOAD CELL BARRIER
SHOII NFR REIT FORFF #1 IRS

TAC , 850520
NEW CAR ASSESSMENT PROGRAM
85140000000
SH801

PLOT DATE 22-MAY-85 14:40:09

FILTER = BLPF 100/ 316/ -40
MIN, MAX VALUES = -0.09 e 4.88 , 2.21 e 71.50



B-14

850520

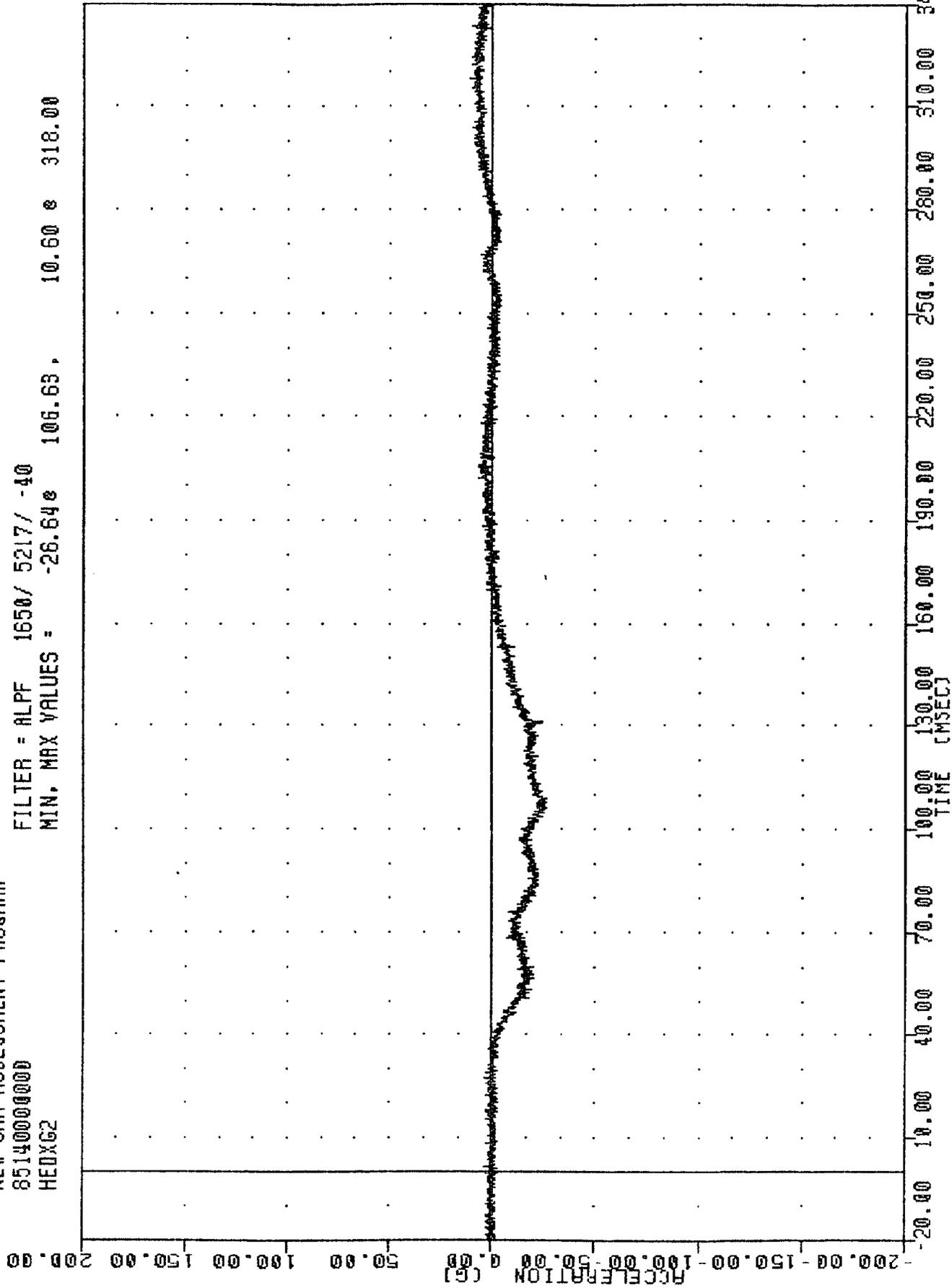
TOYOTA MR-2 INTO LOAD CELL BARRIER
SHOULDER REIT #1 DISPLACEMENT INCHES

TRC , 850520
NEW CAR ASSESSMENT PROGRAM
85140000000
HEDXG2

PLOT DATE 22-MAY-85 14:40:09

FILTER = ALPF 1650/ 5217/ -40

MIN, MAX VALUES = -26.64e 106.63, 10.60 e 318.00

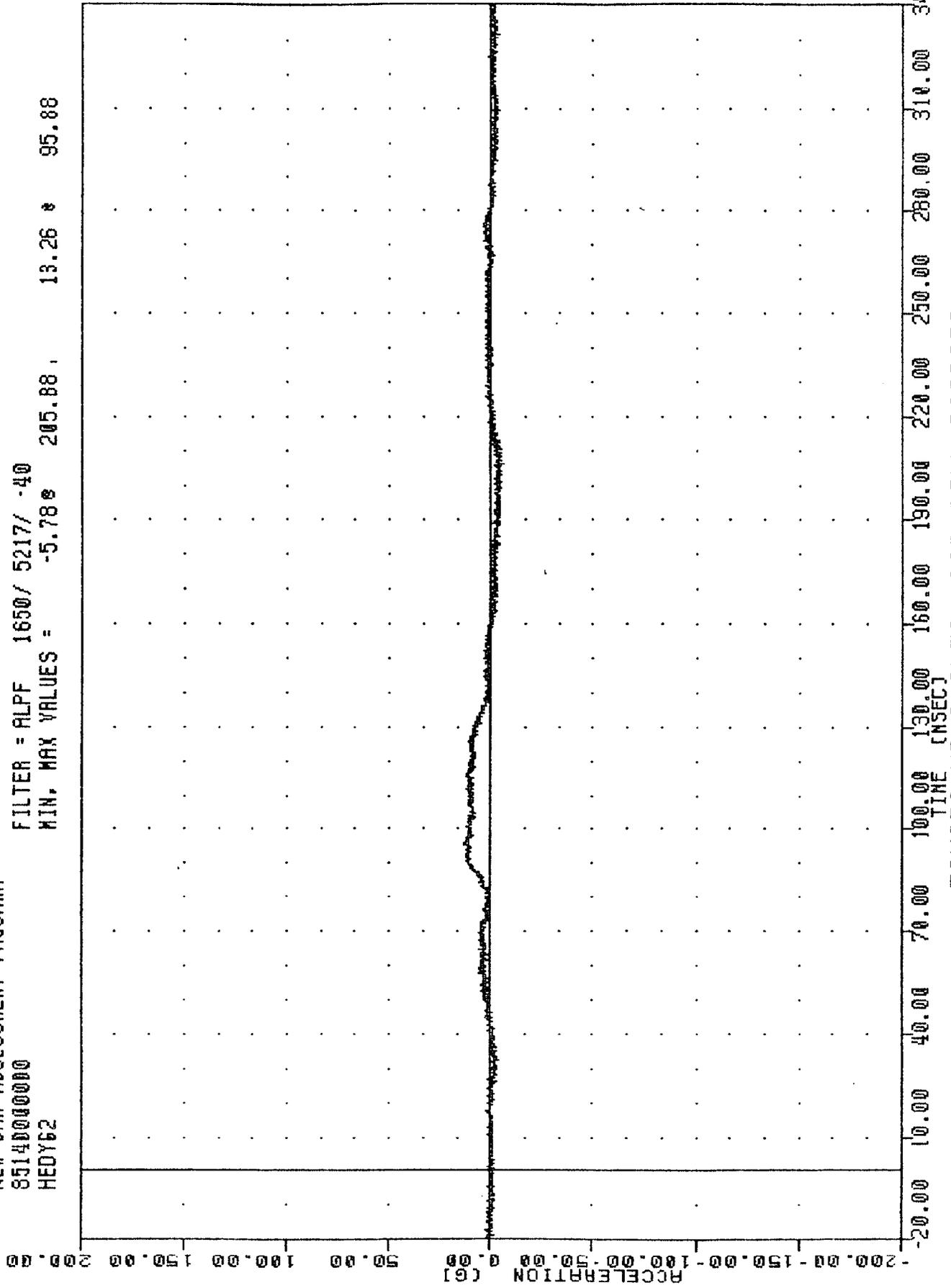


TOYOTA MR-2 INTO LOAD CELL BARRIER
RECORDED FROM ACCELERATION UNIT

TRC
NEW CAR ASSESSMENT PROGRAM
8514000000
HEDY62

PLOT DATE 22-MAY-85 14:40:09

FILTER = ALPF 1650/ 5217/ -40
MIN. MAX VALUES = -5.78 205.88 13.26 95.88

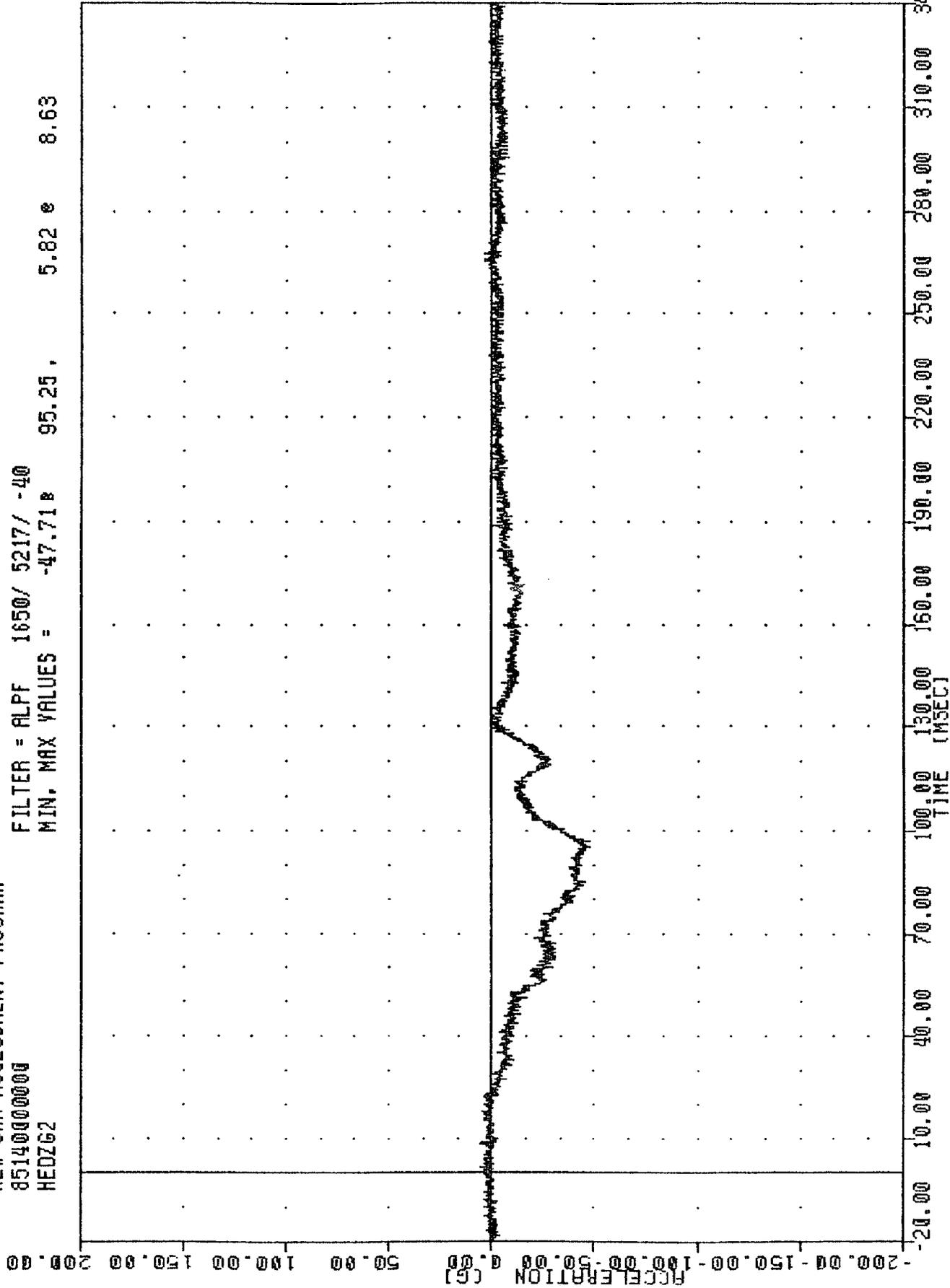


TOYOTA MR-2 INTO LOAD CELL BARRIER
PASSENGER HEAD ACCELERATION Y AXIS

TRC
NEW CAR ASSESSMENT PROGRAM
85140000000
HEDZG2

PLOT DATE 22-MAY-85 14:40:09

FILTER = ALPF 1650/ 5217/ -40
MIN. MAX VALUES = -47.71 B 95.25 . 5.82 e 8.63



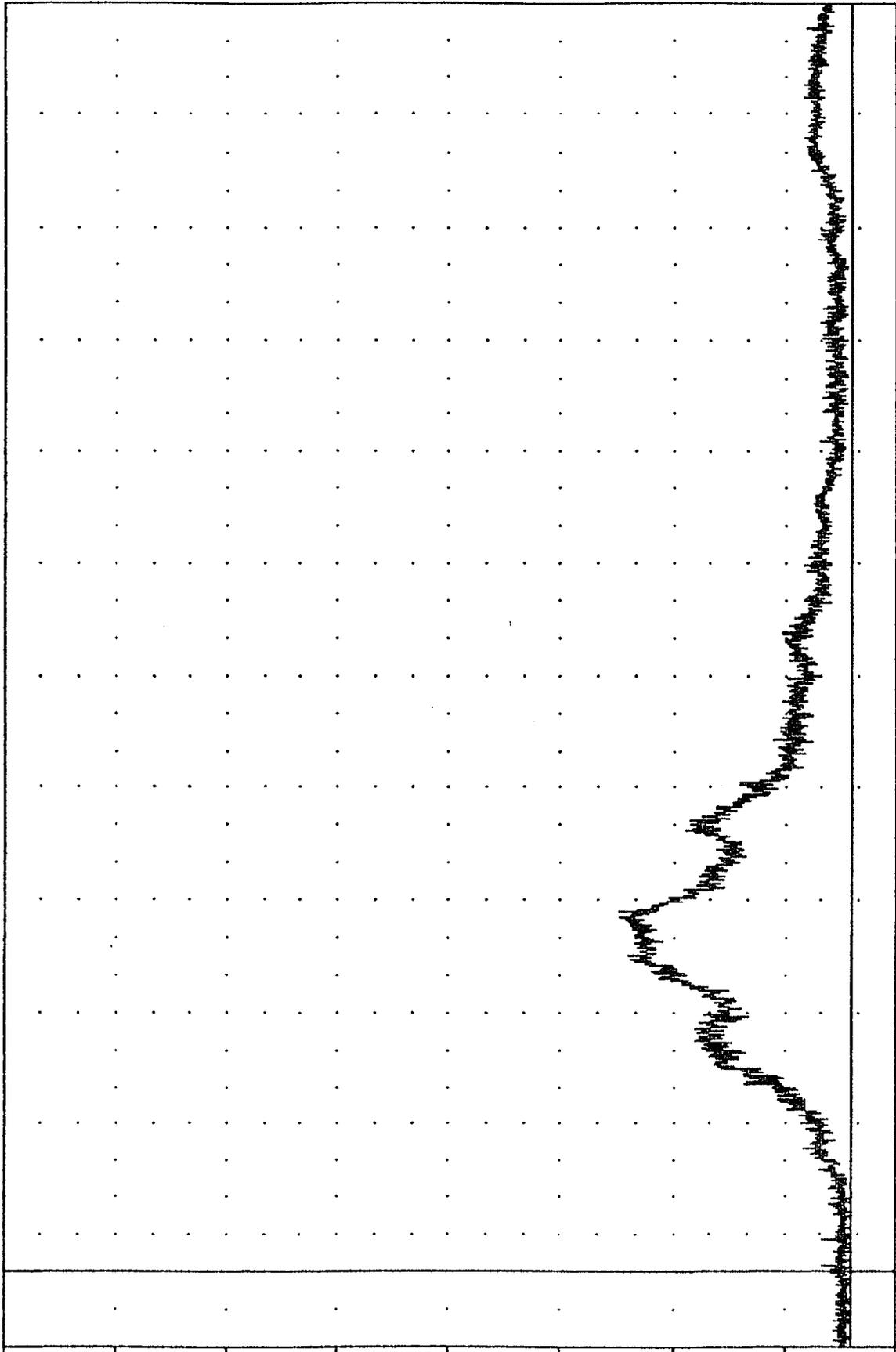
TOYOTA MR-2 INTO LOAD CELL BARRIER
PASSENGER HEAD ACCELERATION 7 AYTS

TAC 850520
NEW CAR ASSESSMENT PROGRAM
851400000000
HEDRG2

PLOT DATE 22-MAY-85 14:40:09

FILTER = ALPF 1650/ 5217/ -40
MIN. MAX VALUES = 0.28e -11.63, 52.10 e 95.25

ACCELERATION (G)



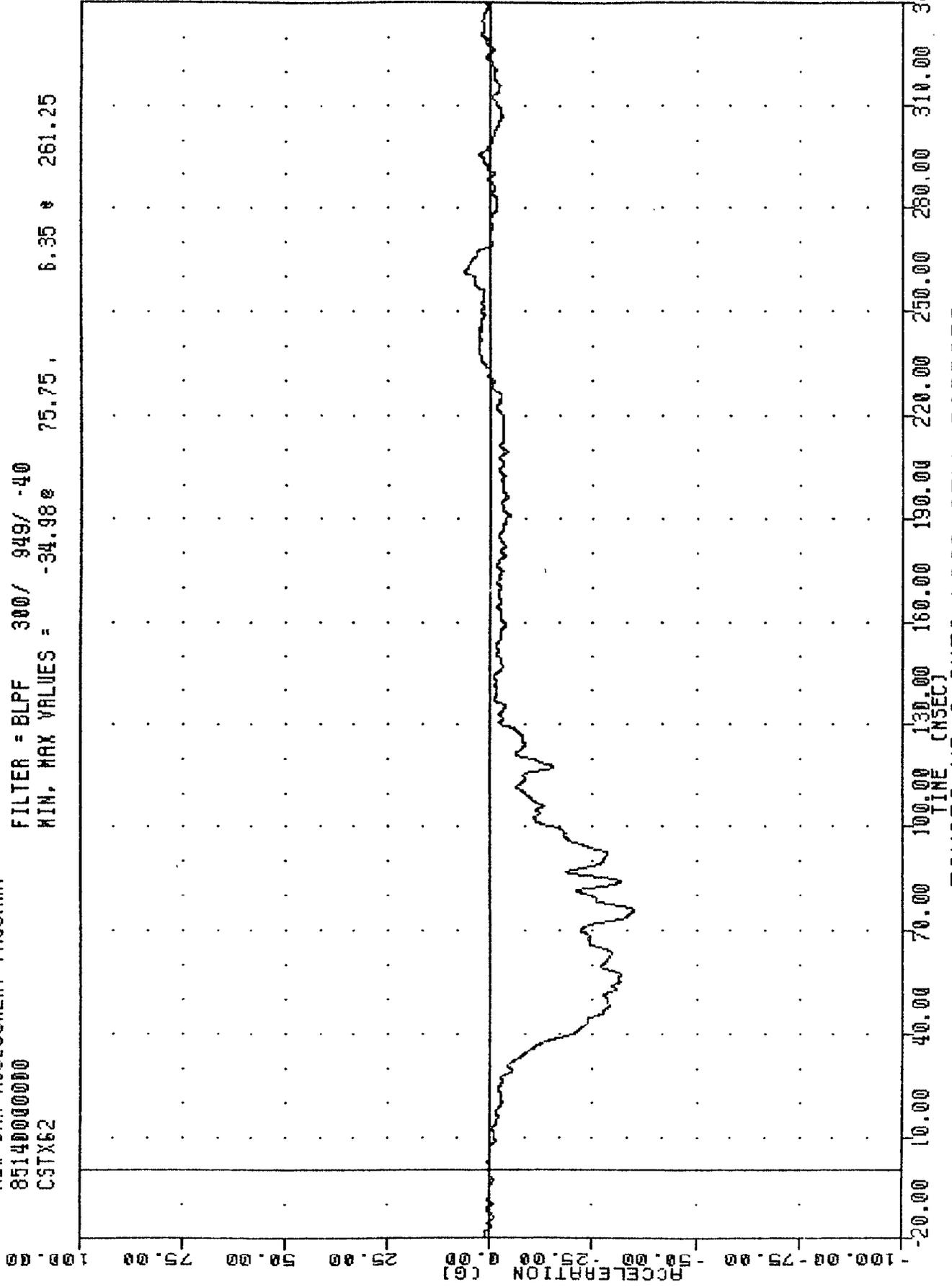
TIME (MSEC)

TOYOTA MR-2 INTO LOAD CELL BARRIER
PASSENGER HEAD REFRUITANT

TRC
850520
NEW CAR ASSESSMENT PROGRAM
85140000000
CSTX62

PLOT DATE 22-MAY-85 14:40:09

FILTER = BLPF 300/ 949/ -40
MIN. MAX VALUES = -34.98 75.75, 6.35 261.25

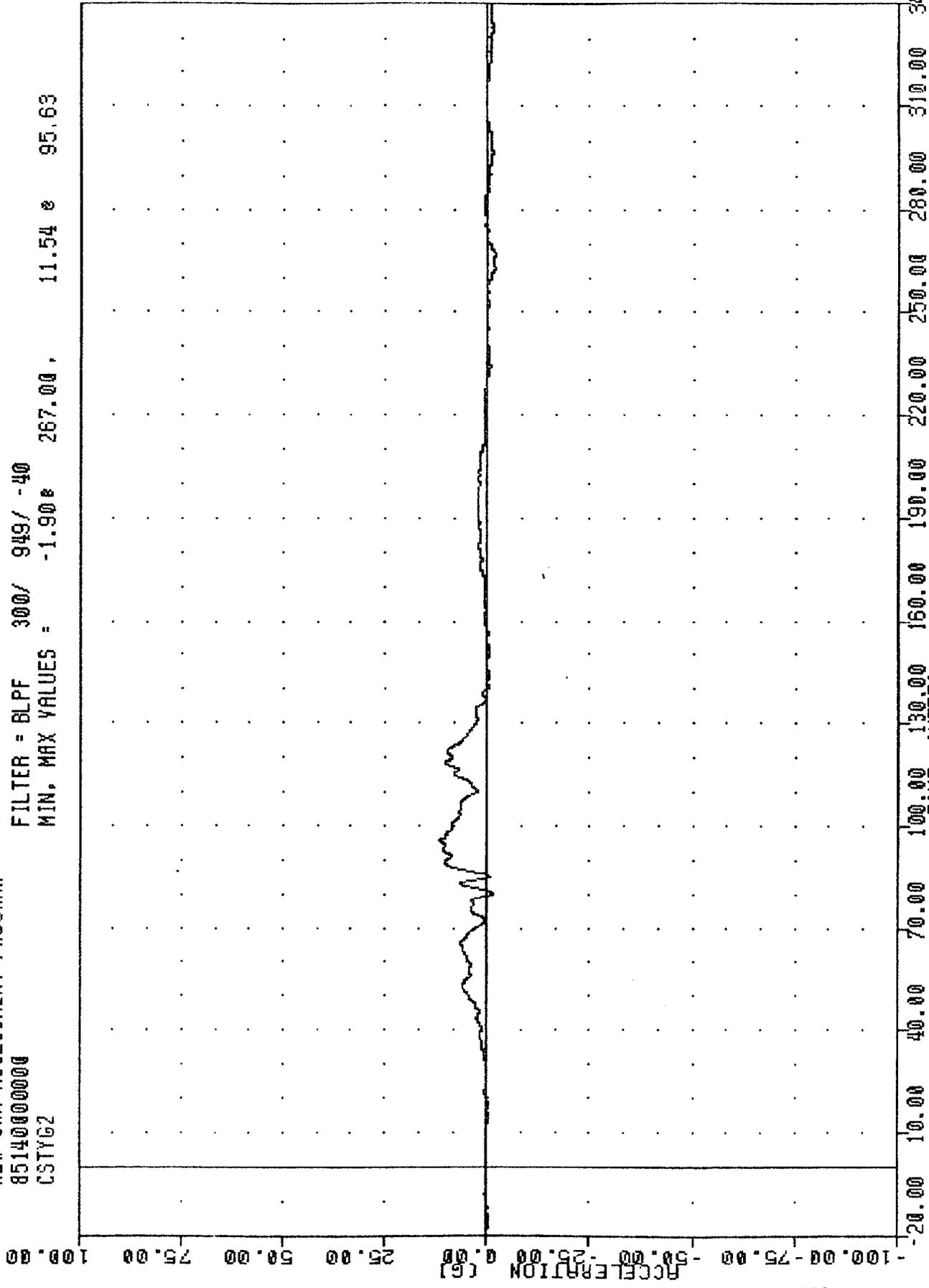


TOYOTA MR-2 INTO LOAD CELL BARRIER
PASSENGER CHEST ACCELERATION Y AXIS

TRC 850520
NEW CAR ASSESSMENT PROGRAM
8514000000
CSTYG2

PLOT DATE 22-MAY-85 14:40:09

FILTER = BLPF 300/ 949/ -40
MIN, MAX VALUES = -1.90e 267.00, 11.54 e 95.63



B-20

850520

TOYOTA MR-2 INTO LOAD CELL BARRIER
PASSENGER CHEST ACCELERATION Y AXIS

TRC
NEW CAR ASSESSMENT PROGRAM
8514000000
CSTZ62

PLOT DATE 22-MAY-85 14:40:09

FILTER = BLPF 300 / 949 / -40

MIN, MAX VALUES = -8.09e 54.00, 12.30 e 80.88

100.00

75.00

50.00

25.00

0.00

-25.00

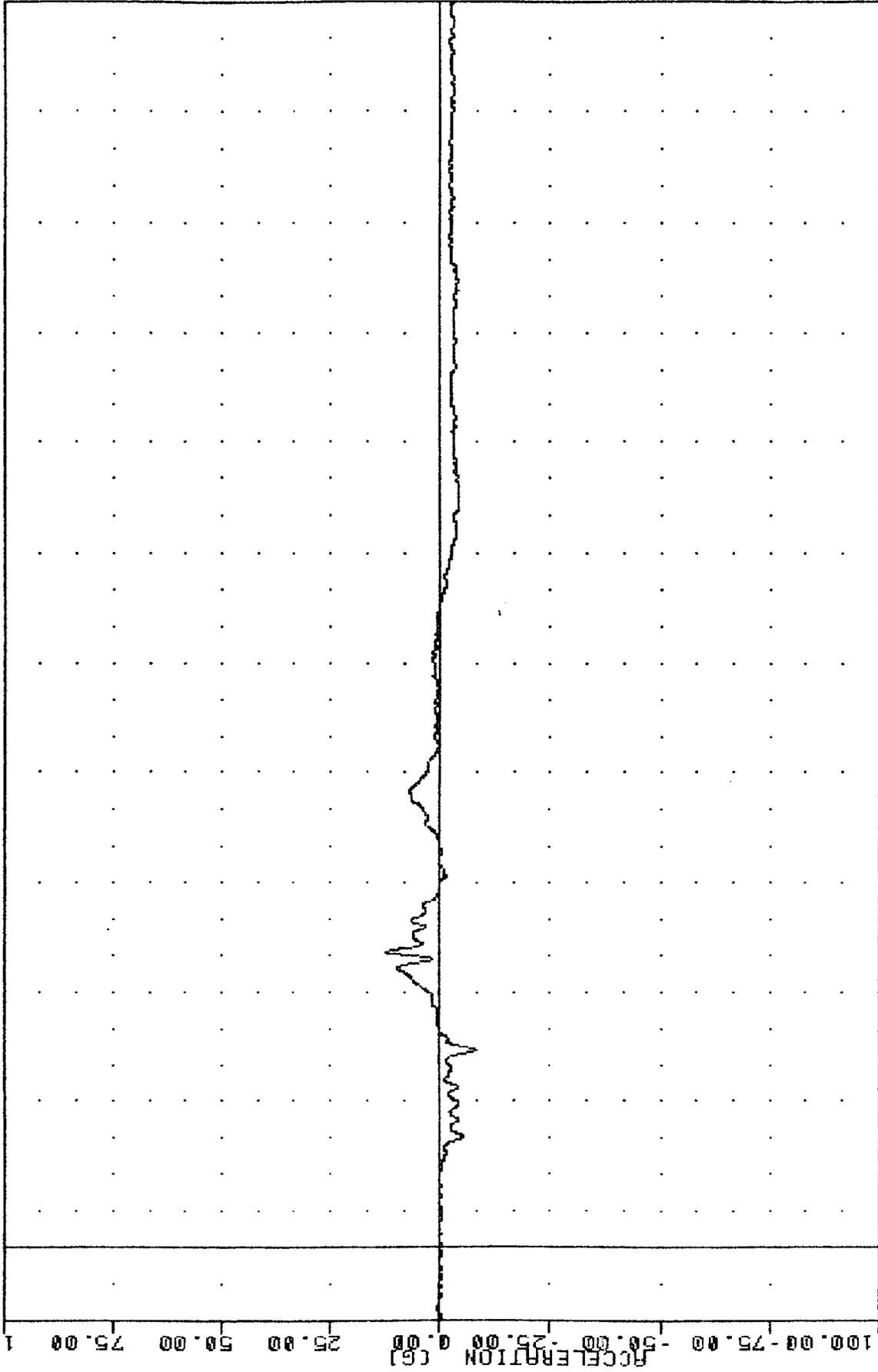
-50.00

-75.00

-100.00

B-21

850520



ACCELERATION [G] 310.00 340.00
TIME [MSEC] 280.00 250.00 220.00 190.00 160.00 130.00 100.00 70.00 40.00 10.00 -20.00

TOYOTA MR-2 INTO LOAD CELL BARRIER
DACCENEC SUBJECT ACCELERATION 7 CVTC

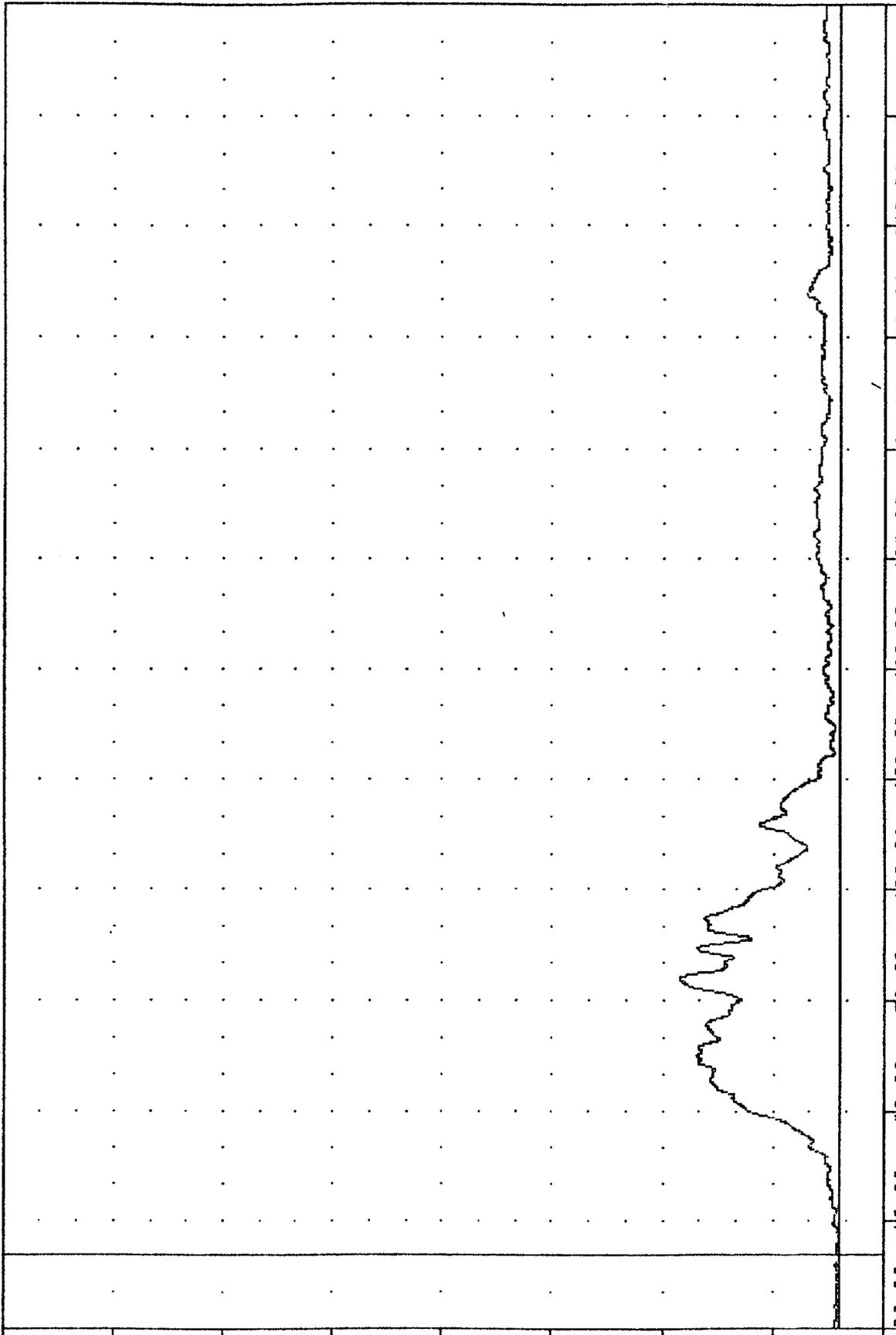
TRC
NEW CAR ASSESSMENT PROGRAM
85140000000
CSTR62

PLOT DATE 22-MAY-85 14:40:09

FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = 0.04e -1.00, 36.31 e 75.88

ACCELERATION [G]



-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]

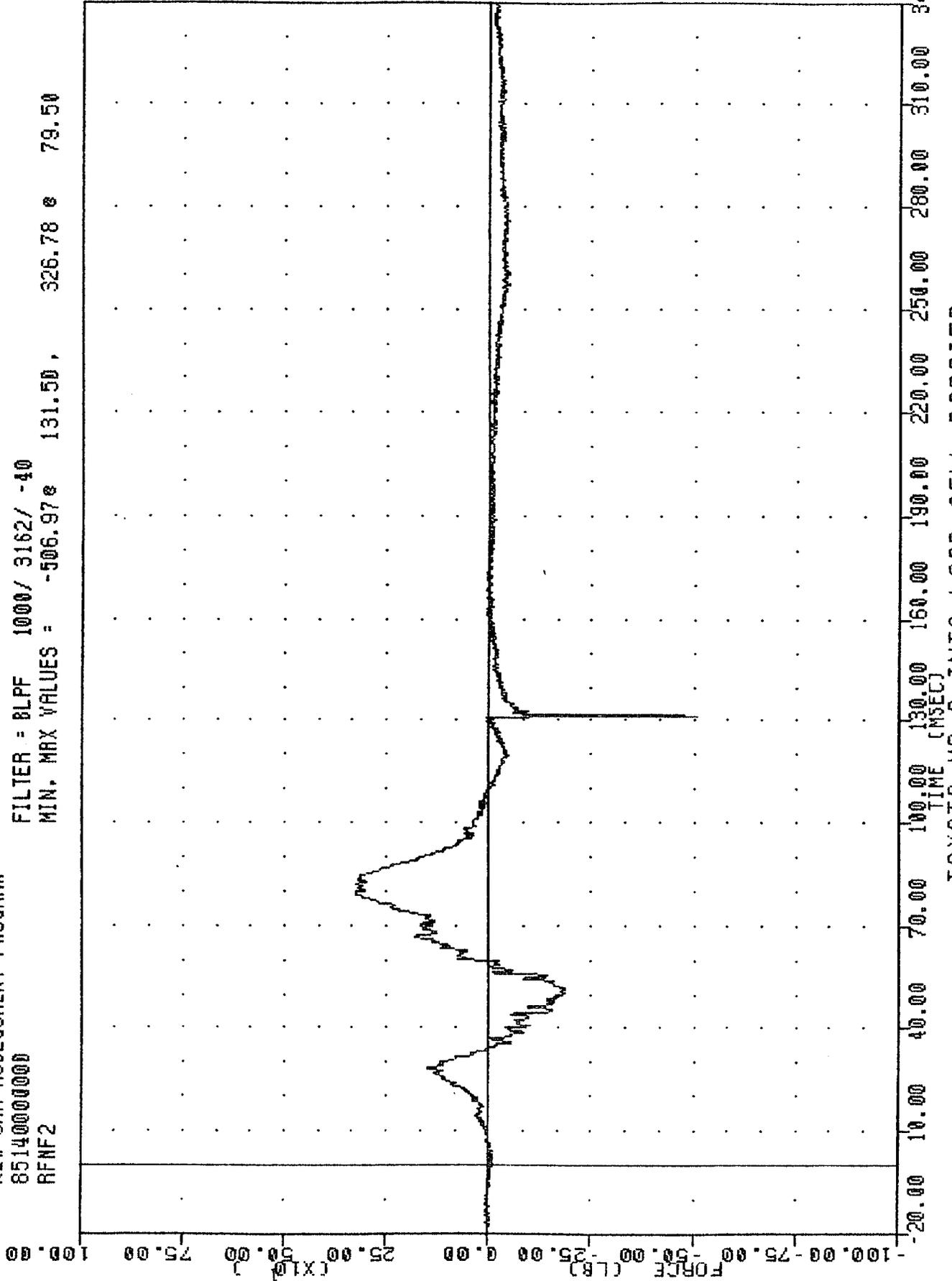
TOYOTA MR-2 INTO LOAD CELL BARRIER

RECORDED DIRECT FROM TANT

TRC
 850520
 NEW CAR ASSESSMENT PROGRAM
 85140000000
 RFNF2

PLOT DATE 22-MAY-85 14:40:09

FILTER = 8LPF 1000/ 3162/ -40
 MIN. MAX VALUES = -506.97 326.78 79.50



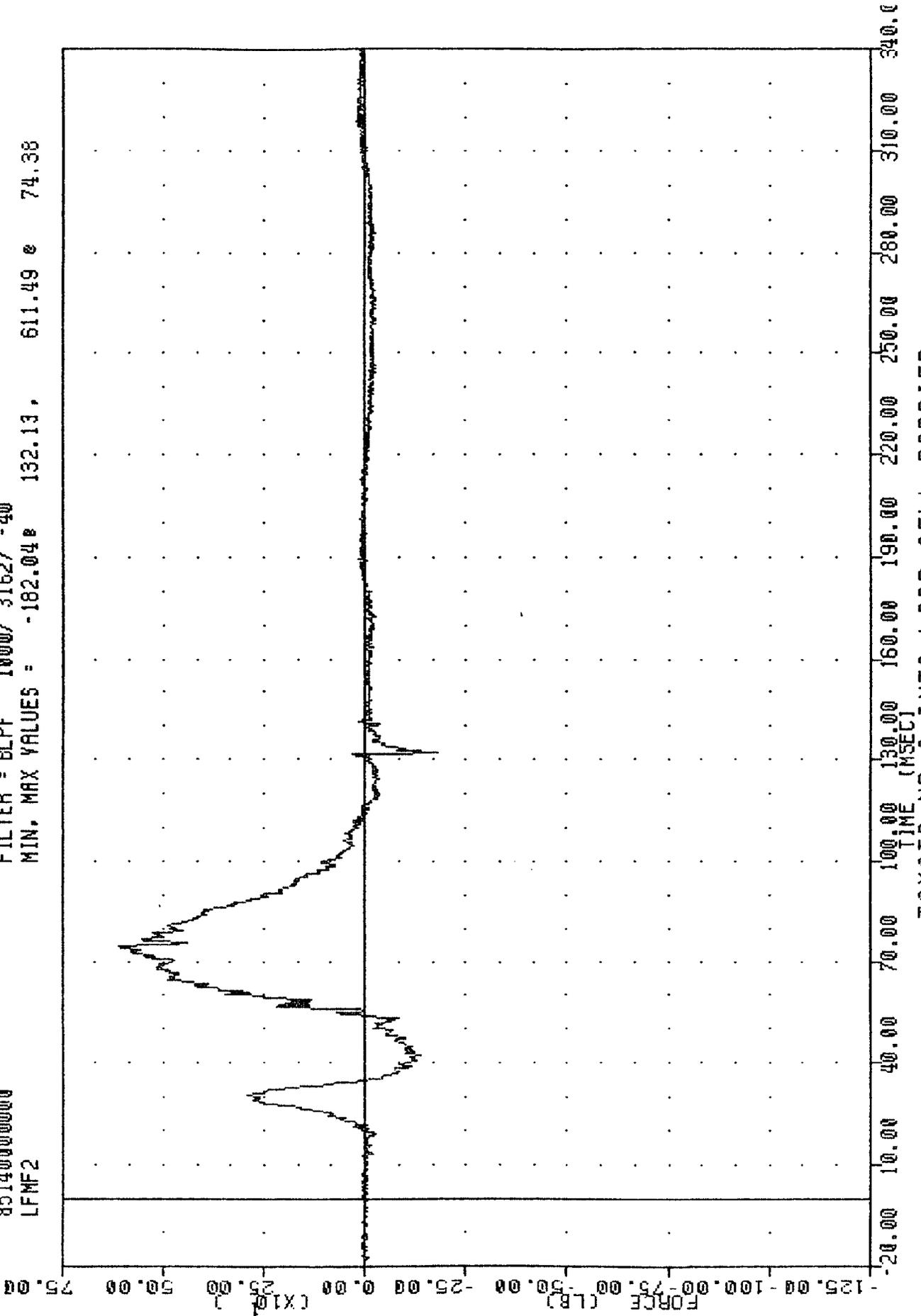
TOYOTA MR-2 INTO LOAD CELL BARRIER
 PASSENGER RIGHT FEMUR FORCE IRS

TRC , 850520
NEW CAR ASSESSMENT PROGRAM
85140000000
LFMF2

PLOT DATE 23-MAY-85 08:34:56

FILTER = BLPF 1000/ 3162/ -40

MIN. MAX VALUES = -182.04 e 132.13, 611.49 e 74.38



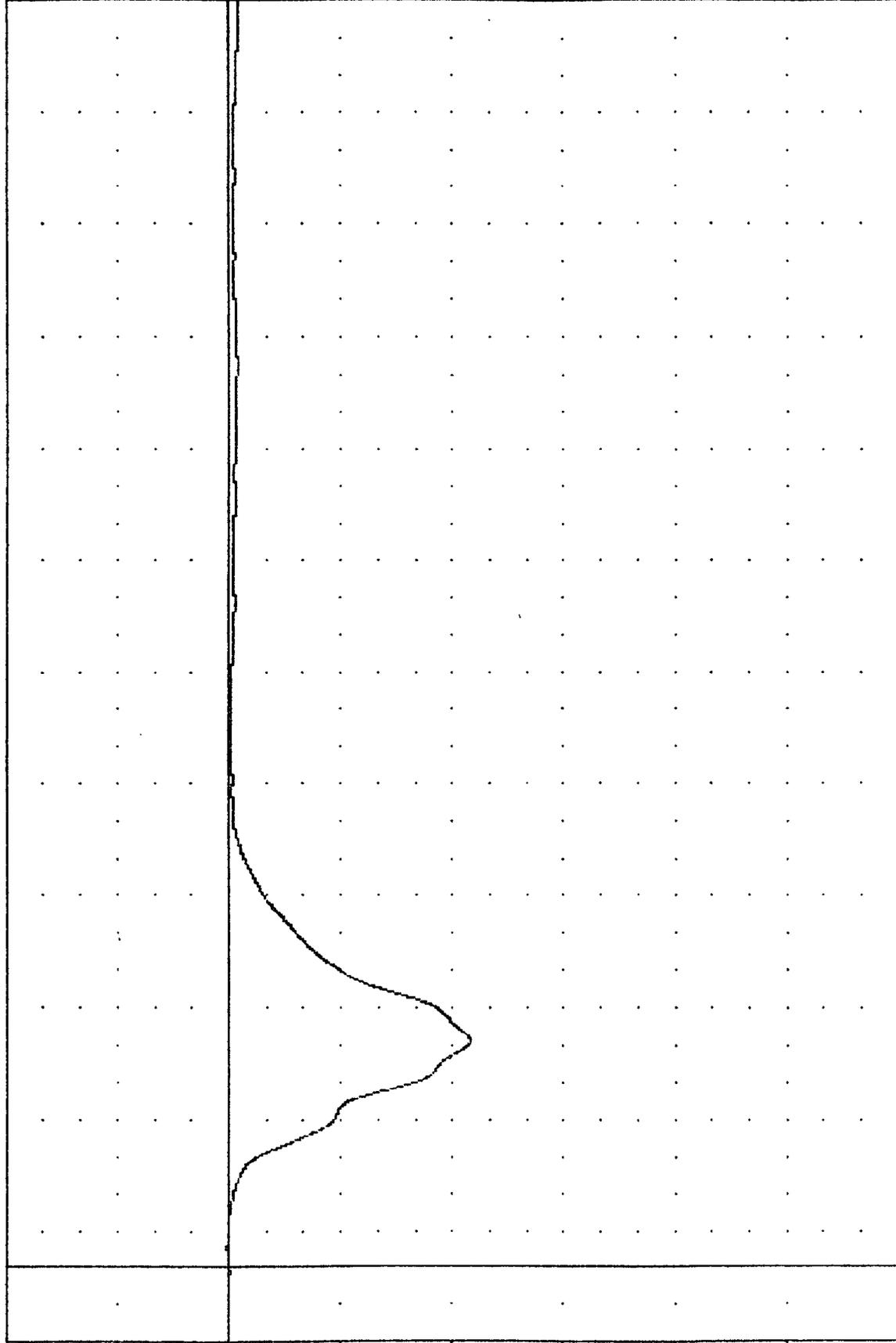
TOYOTA MR-2 INTO LOAD CELL BARRIER
PASSENGER LEFT FEMUR FORCE 1 RS

TAC , 850520
 NEW CAR ASSESSMENT PROGRAM
 8514000000
 LB0F2

PLOT DATE 22-MAY-85 14:40:09

FILTER = BLPF 100/ 316/ .40
 MIN. MAX VALUES = -1081.76 61.38 , 5.22 5.50

FORCE (LBS) (X10⁴)
 -300.00 -250.00 -200.00 -150.00 -100.00 -50.00 0.00 50.00 100.00



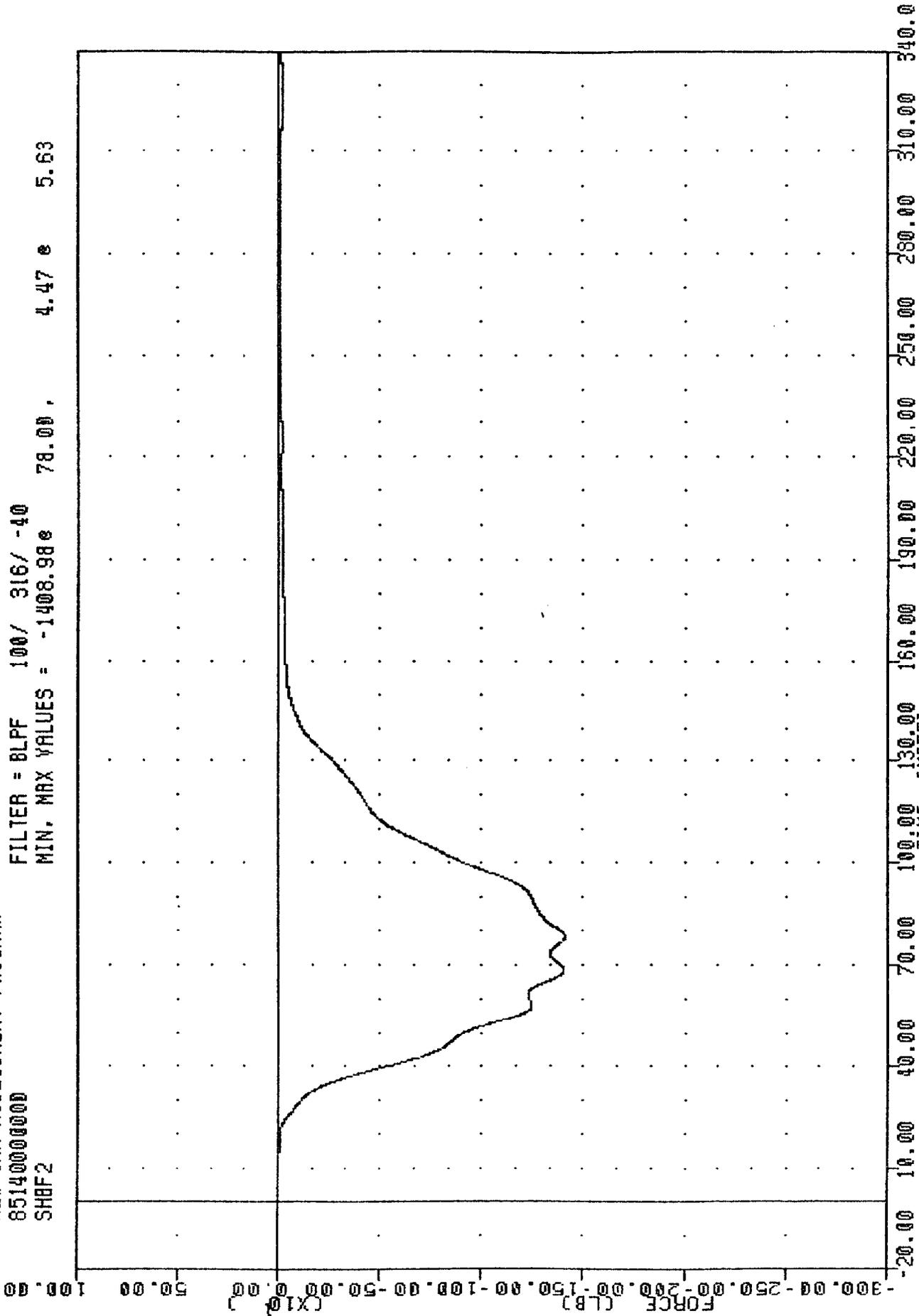
-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
 TIME (MSEC)

TOYOTA MR-2 INTO LOAD CELL BARRIER
 LAP BEIT OUTWARD FORCE 2 IRS

TRC , 850520
NEW CAR ASSESSMENT PROGRAM
85140000000
SHBF2

PLOT DATE 22-MAY-85 14:40:09

FILTER = BLPF 100/ 316/ -40
MIN, MAX VALUES = -1408.98e 78.00, 4.47 e 5.63



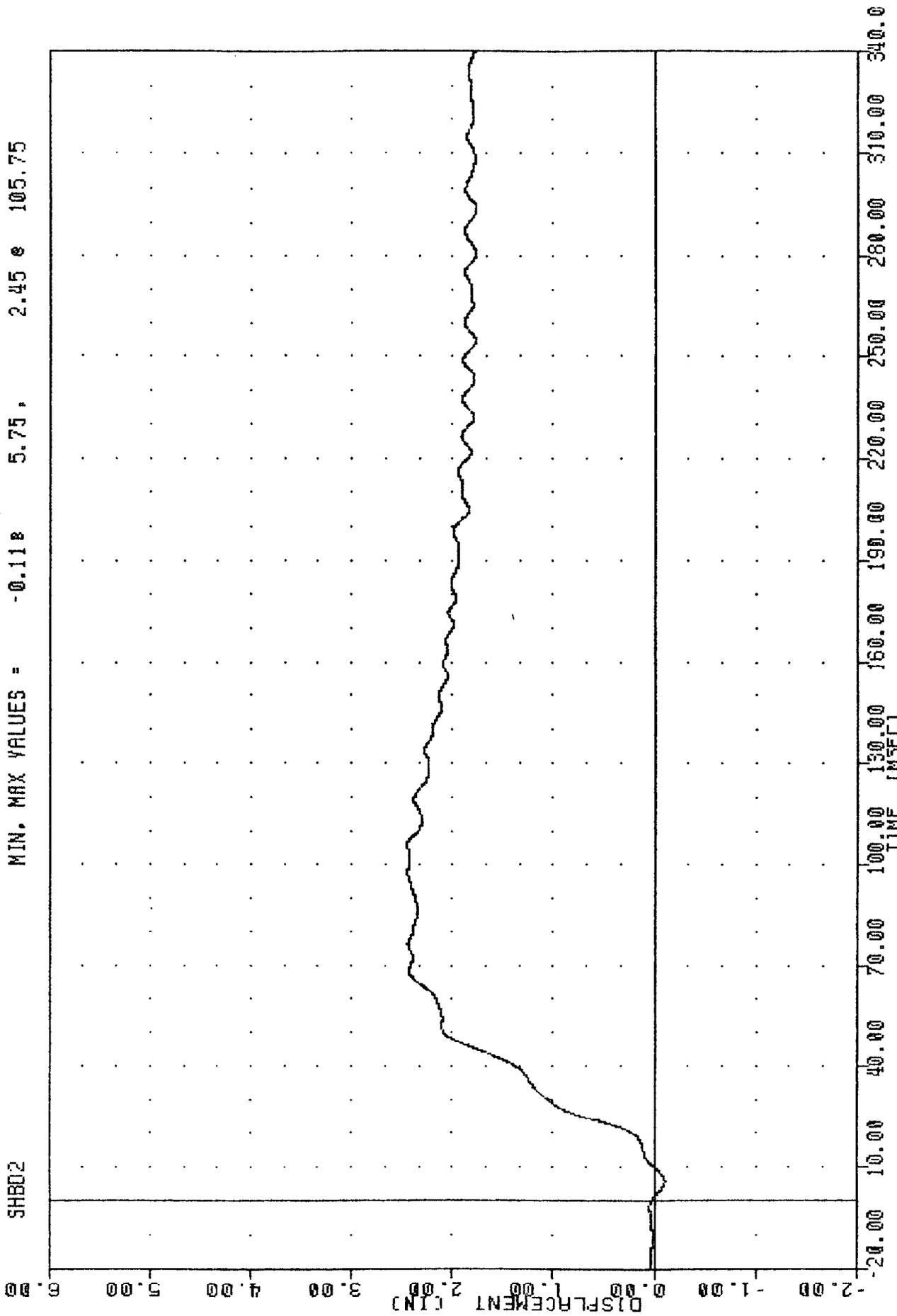
TOYOTA MR-2 INTO LOAD CELL BARRIER
SHOULDER BELT FORCE #2 LBS

TRC , 850520
NEW CAR ASSESSMENT PROGRAM
85140000000
SHB02

PLOT DATE 22-MAY-85 14:40:09

FILTER = BLPF 100/ 316/ -40

MIN. MAX VALUES = -0.118 5.75, 2.45 e 105.75



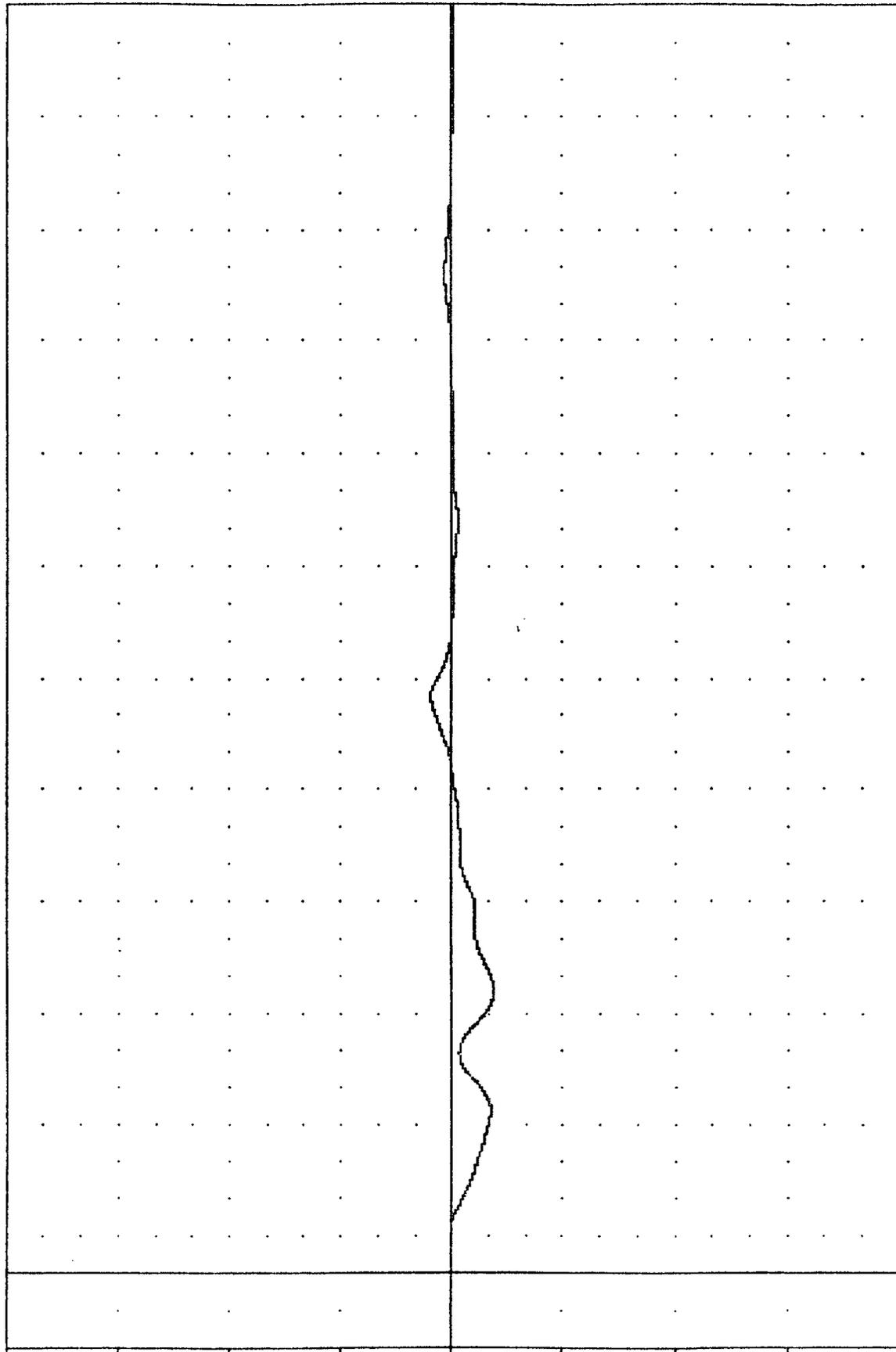
TOYOTA MR-2 INTO LOAD CELL BARRIER
CURVED BEIT DISPLACEMENT TRACE

TRC
NEW CAR ASSESSMENT PROGRAM
85140000000
ENGXG1

PLOT DATE 22-MAY-85 14:40:09

FILTER = BLPF 100/ 316/ -40
MIN, MAX VALUES = -37.80 75.63, 19.21 155.00

ACCELERATION (G)
(X10⁻⁴)

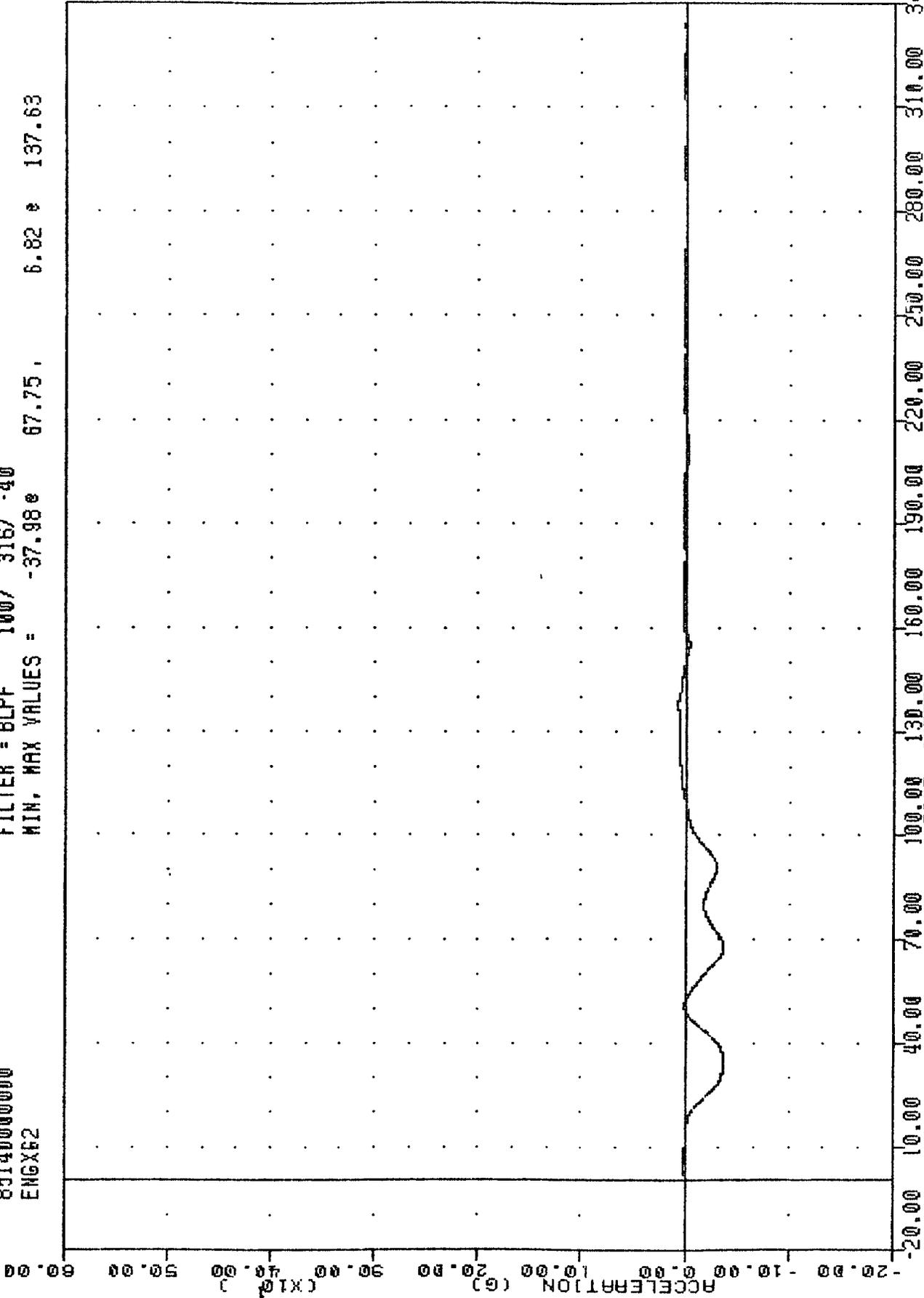


TOYOTA MR-2 INTO LOAD CELL BARRIER
ENGINF BLOCK ACCELERATION #1 X AXIS

TRC
 NEW CAR ASSESSMENT PROGRAM
 8514000000
 ENGX62

PLOT DATE 22-MAY-85 14:40:09

FILTER = BLPF 100/ 316/ -40
 MIN, MAX VALUES = -37.98e 67.75, 6.82 e 137.63



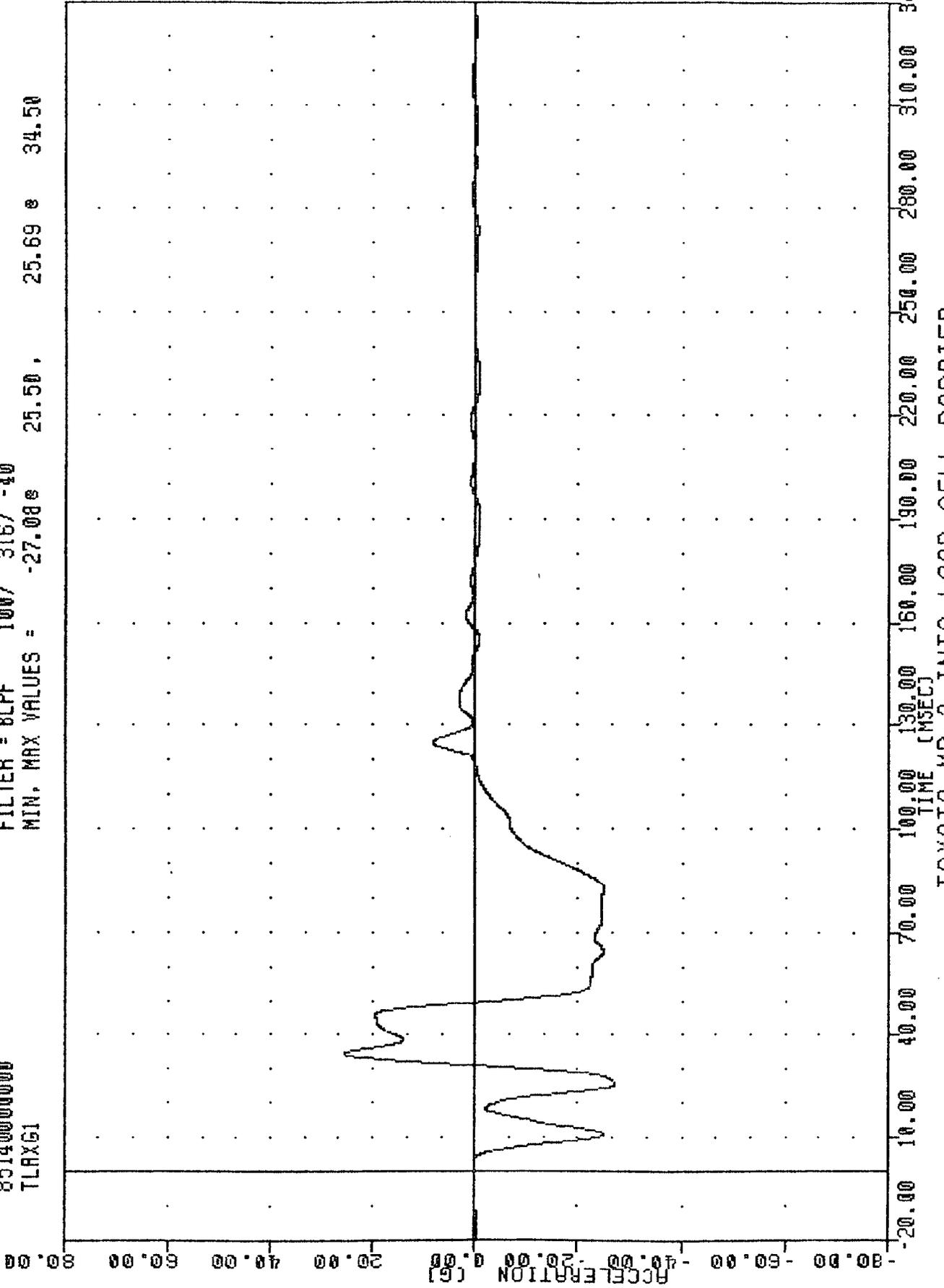
TOYOTA MR-2 INTO LOAD CELL BARRIER
 ENGINE BLOCK ACCELERATION -2 X AXIS

TRC , 850520
NEW CAR ASSESSMENT PROGRAM
85140000000
TLRXG1

PLOT DATE 22-MAY-85 14:40:09

FILTER = BLPF 100/ 316/ -40

MIN. MAX VALUES = -27.08g 25.50g 25.69g 34.50g



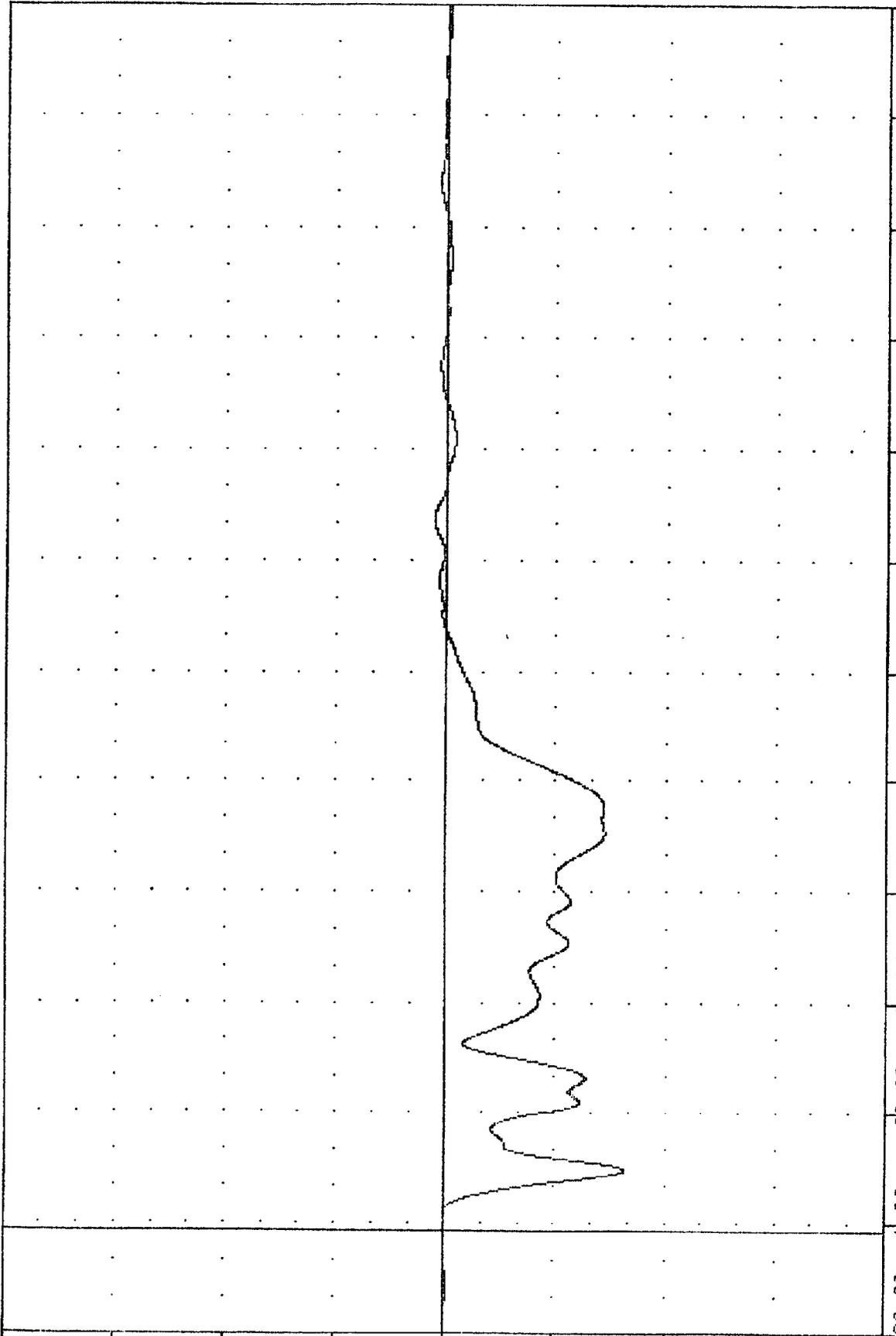
TOYOTA MR-2 INTO LOAD CELL BARRIER
LEFT REAR SEAT ACCELERATION Y AXIS

TRC
 , 850520
 NEW CAR ASSESSMENT PROGRAM
 8514000000
 TRRXG1

PLOT DATE 18-JUN-85 09:59:01

FILTER = BLPF 100/ 316/ -40
 MIN. MAX VALUES = -32.75 12.13 2.23 139.38

ACCELERATION (G)



B-31

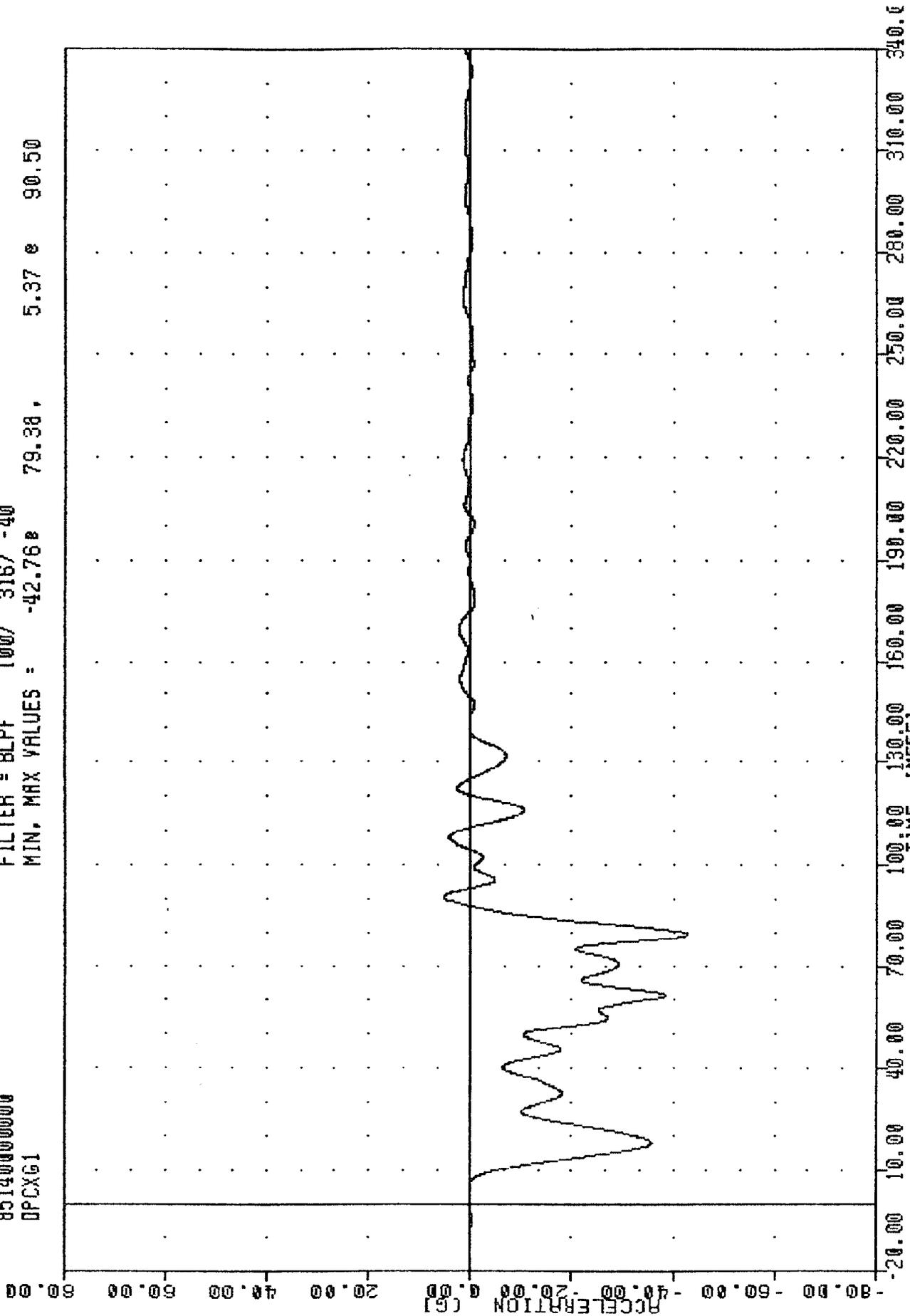
850520

TOYOTA MR2 INTO LOAD CELL BARRIER
 RIGHT REAR SEAT ACCELERATION Y AXYS

TRC
NEW CAR ASSESSMENT PROGRAM
85140000000
DPCXG1

PLOT DATE 22-MAY-85 14:40:09

FILTER = 8LPF 100/ 316/ -40
MIN. MAX VALUES = -42.76 79.38, 5.37 90.50

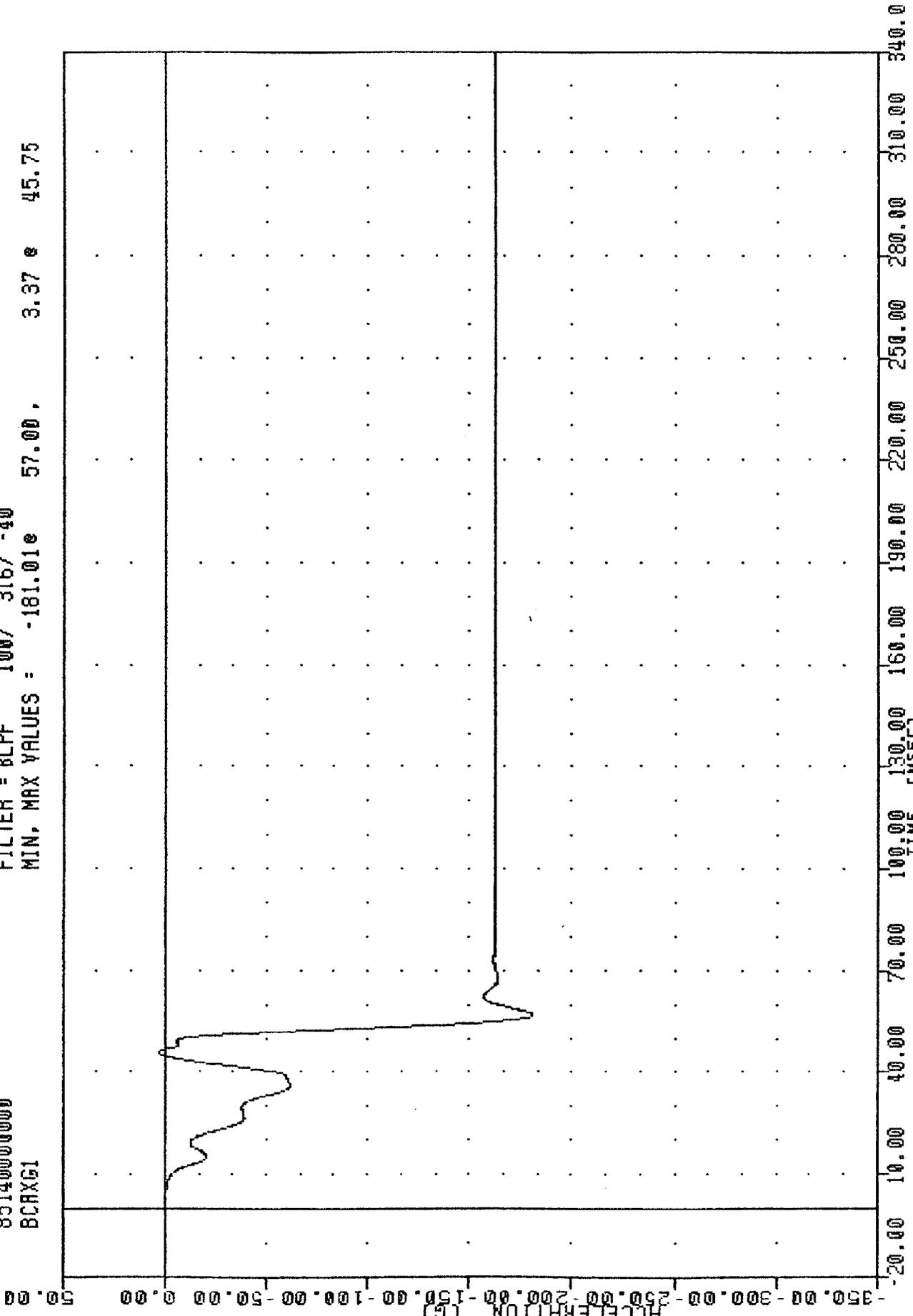


TOYOTA MR-2 INTO LOAD CELL BARRIER
DASH PANEL CENTER ACCELERATION X AXIS

TRC
NEW CAR ASSESSMENT PROGRAM
85140000000
BCRXG1

PLOT DATE 22-MAY-85 14:40:09

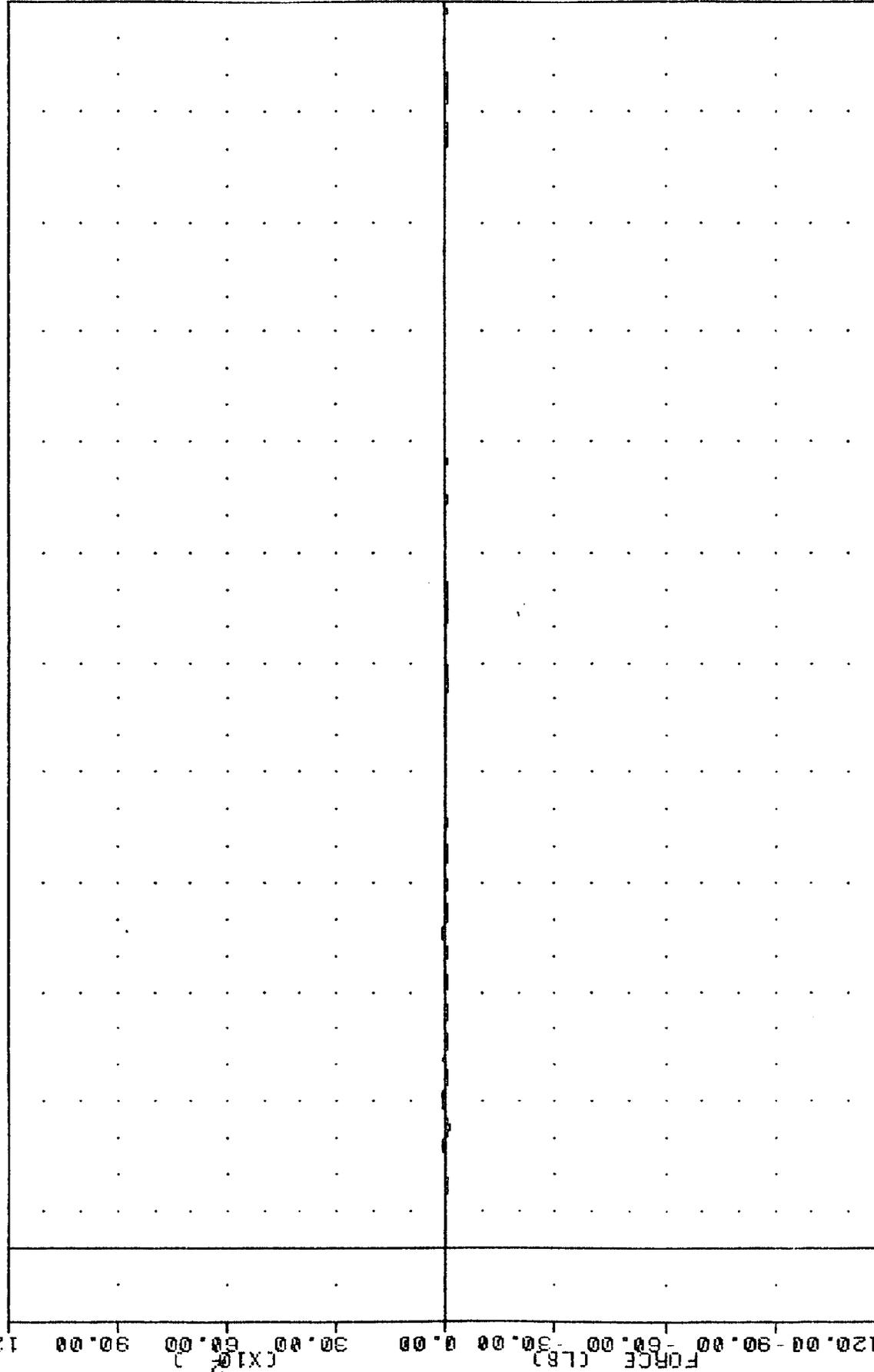
FILTER = BLPF 100/ 316/ -40
MIN. MAX VALUES = -181.01e 57.00, 3.37 e 45.75



TOYOTA MR-2 INTO LOAD CELL BARRIER
RIGHT BRAKE CALIPER ACCELERATION X AXIS

TRC 850520 PLOT DATE 22-MAY-85 14:48:56
 NEW CAR ASSESSMENT PROGRAM
 85140000000
 BD1F

FILTER = BLPF 100/ 316/ -40
 MIN, MAX VALUES = -91.50e 103.35 e 40.63

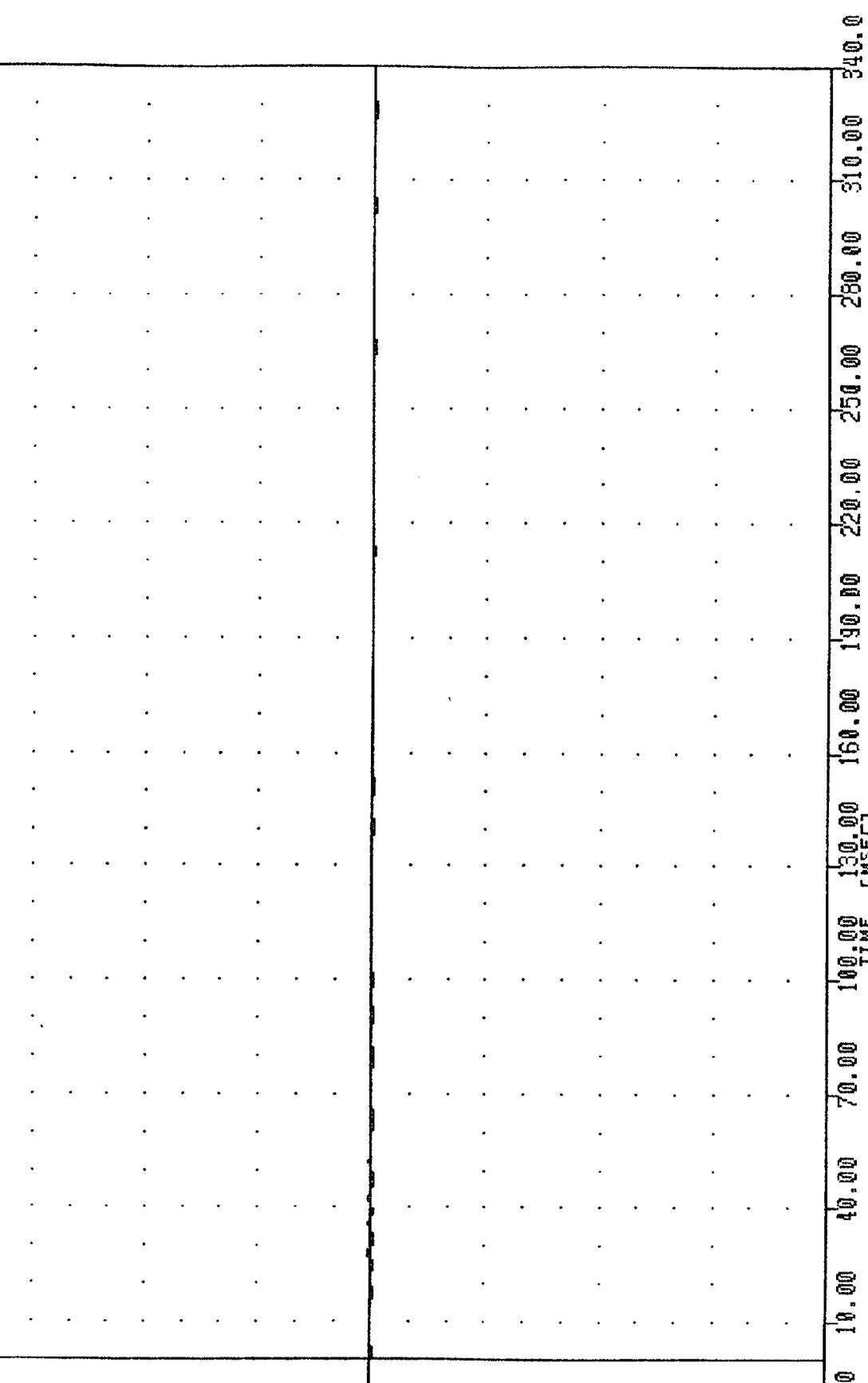


-120.00 90.00 60.00 30.00 0.00 -30.00 -60.00 -90.00 -120.00
 120.00 90.00 60.00 30.00 0.00 -30.00 -60.00 -90.00 -120.00
 -20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
 TIME (MSEC)

TOYOTA MR-2 INTO LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION 01 LBS

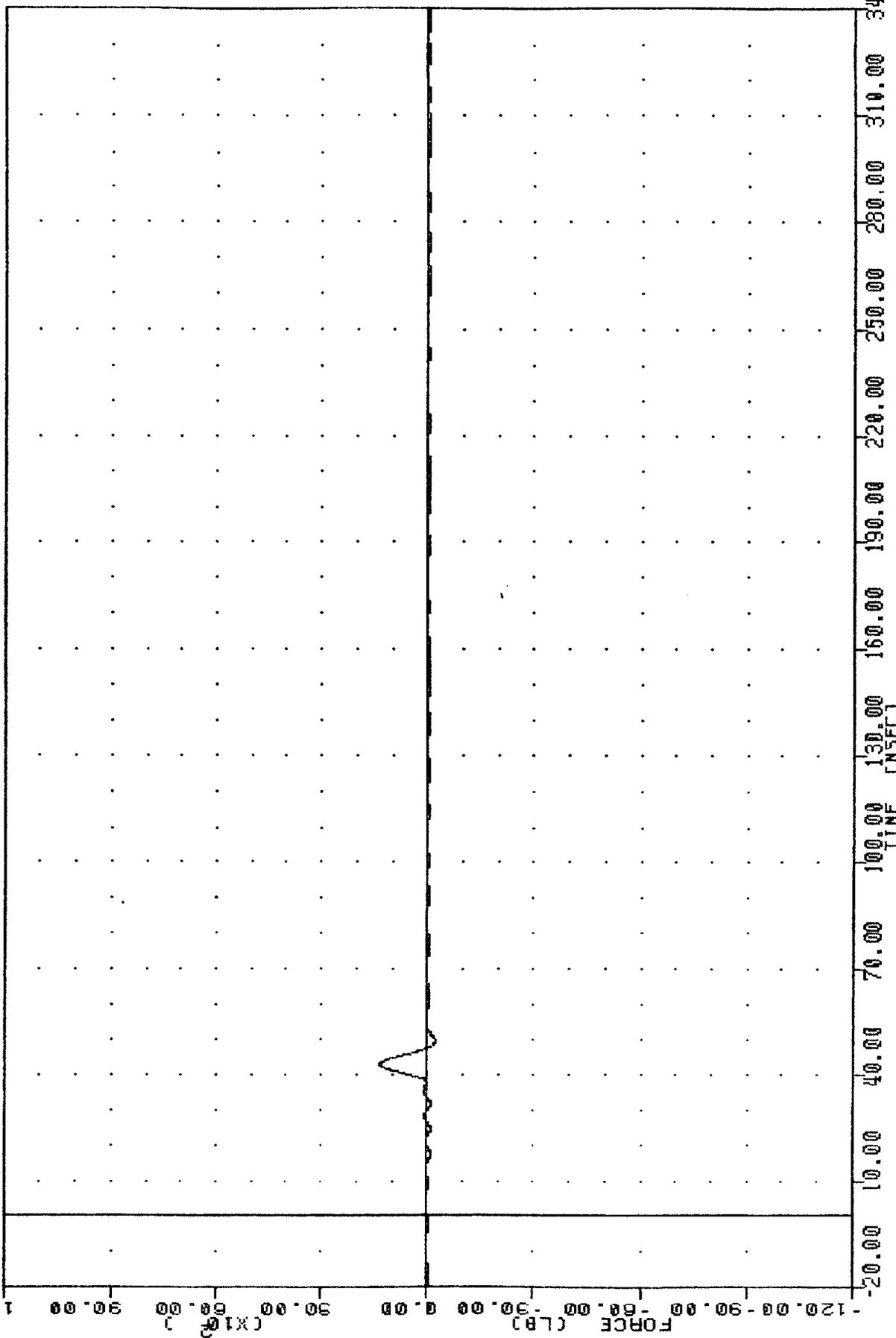
TRC , 850520
 NEW CAR ASSESSMENT PROGRAM
 85140000000
 802F

PLOT DATE 22-MAY-85 14:48:58
 FILTER = BLPF 100/ 316/ -40
 MIN. MAX VALUES = -74.10e 31.88, 63.63 e 28.13



TOYOTA MR-2 INTO LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION D2 LBS

TRC 851400000000
 NEW CAR ASSESSMENT PROGRAM
 851400000000
 B03F
 PLOT DATE 22 MAY 83 14:48:58
 FILTER = BLPF 100/ 316/ -40
 MIN, MAX VALUES = -230.31 49.50 1324.00 42.88



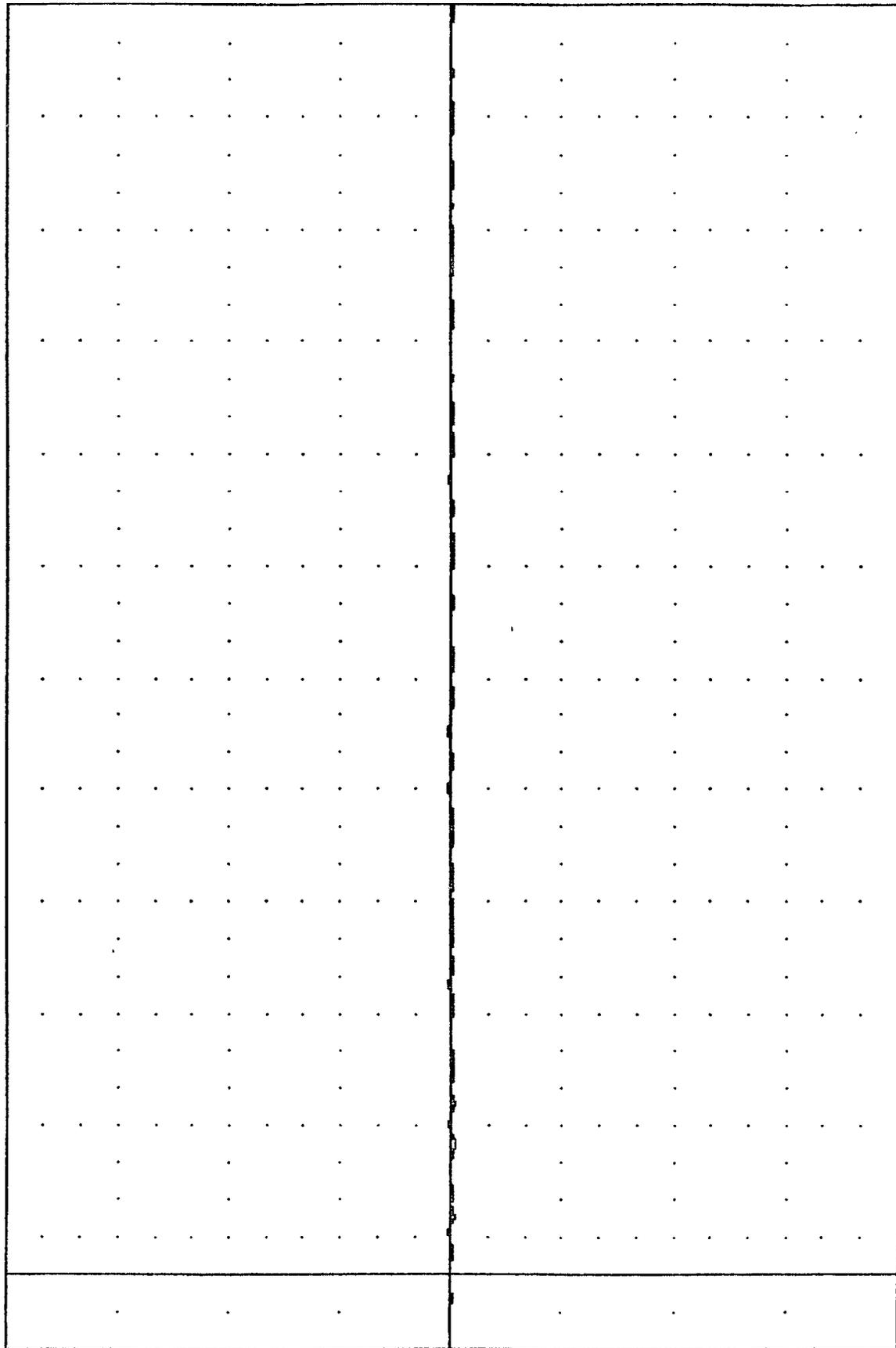
TOYOTA MR-2 INTO LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION D3 LBS

TRC , 850520
 NEW CAR ASSESSMENT PROGRAM
 85140000000
 BCIF

PLOT DATE 22-MAY-85 14:48:58

FILTER = BLPF 100/ 316/ -40
 MIN. MAX VALUES = -104.328 35.00 , 60.28 e 77.88

120.00
 90.00
 60.00
 30.00
 0.00
 -30.00
 -60.00
 -90.00
 -120.00



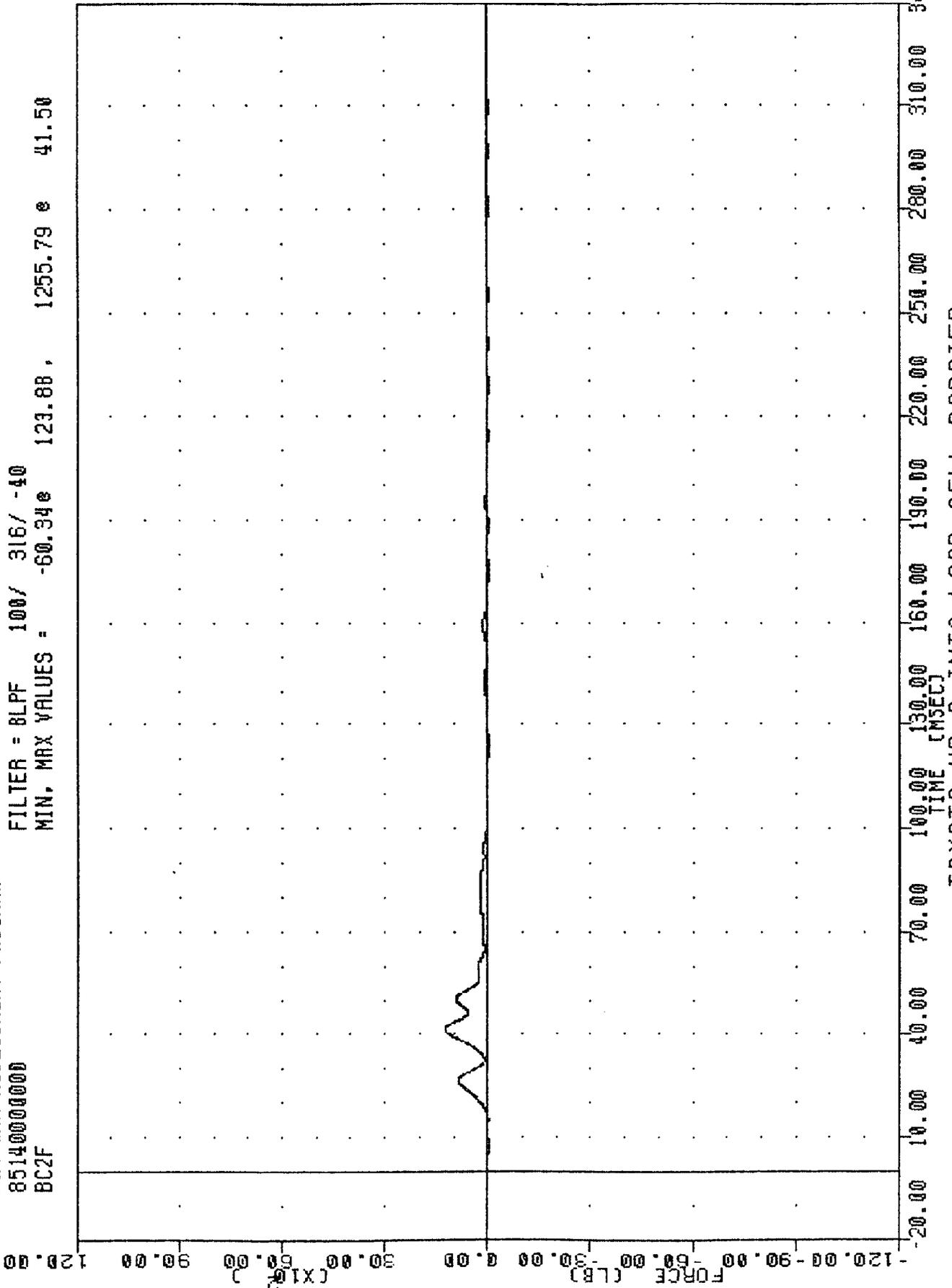
-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
 TIME (MSEC)

TOYOTA MR-2 INTO LOAD CELL BARRIER
 IN AN CELL BARRIER POSITION C11 PC

TRC
 NEW CAR ASSESSMENT PROGRAM
 85140000000
 BC2F

PLOT DATE 22-MAY-85 14:48:58

FILTER = 8LPF 100/ 316/ -40
 MIN, MAX VALUES = -60.34e 123.88, 1255.79 e 41.50



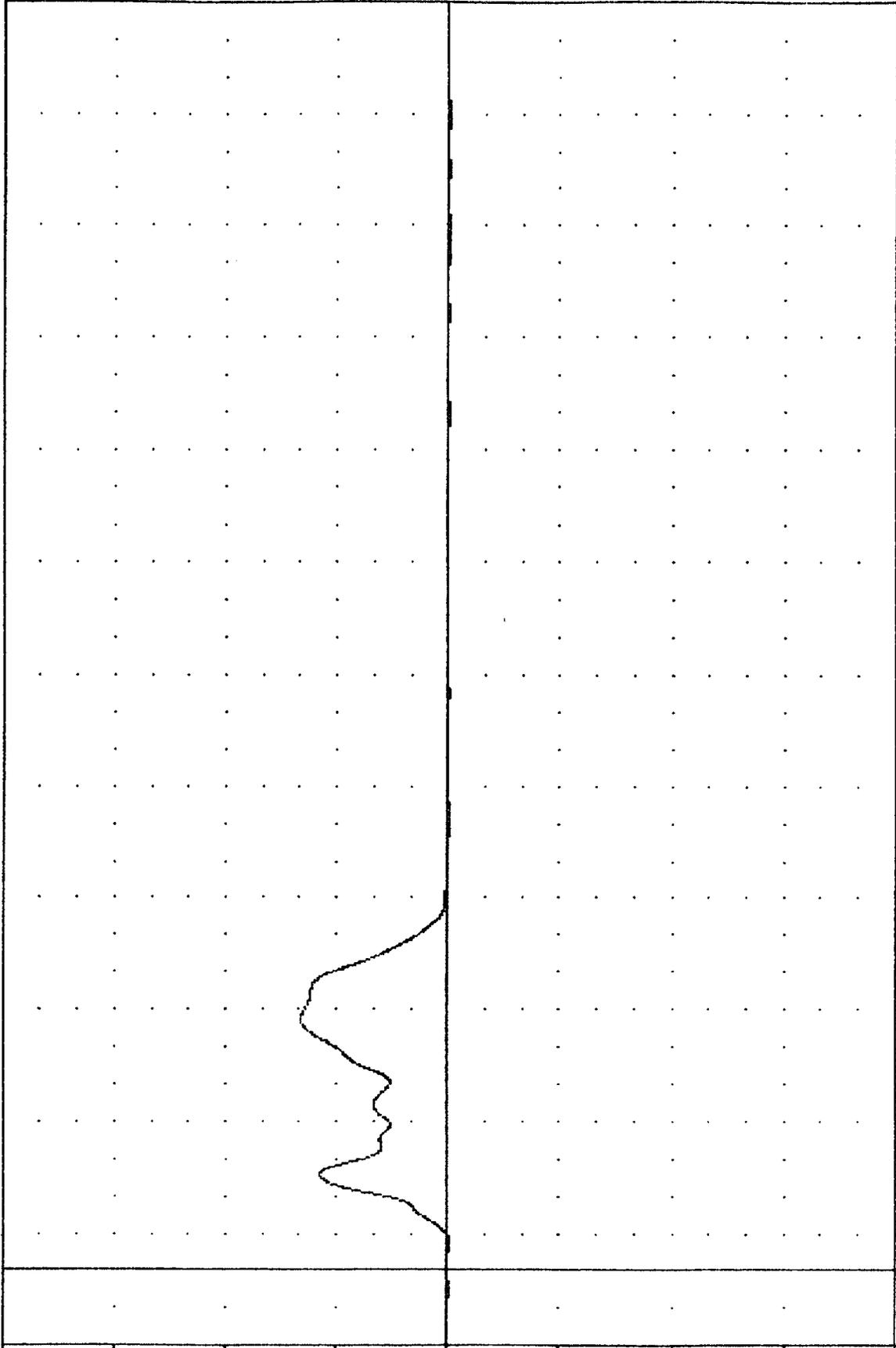
TOYOTA MR-2 INTO LOAD CELL BARRIER
 LOAD CELL BODDED DIRECTION 100

TAC
 NEW CAR ASSESSMENT PROGRAM
 85140000000
 BC3F

PLOT DATE 22-MAY-85 14:48:58

FILTER = BLPF 100/ 316/ -40
 MIN, MAX VALUES = -47.38 7.63, 3952.22 67.38

120.00
 90.00
 60.00
 30.00
 0.00
 -30.00
 -60.00
 -90.00
 -120.00



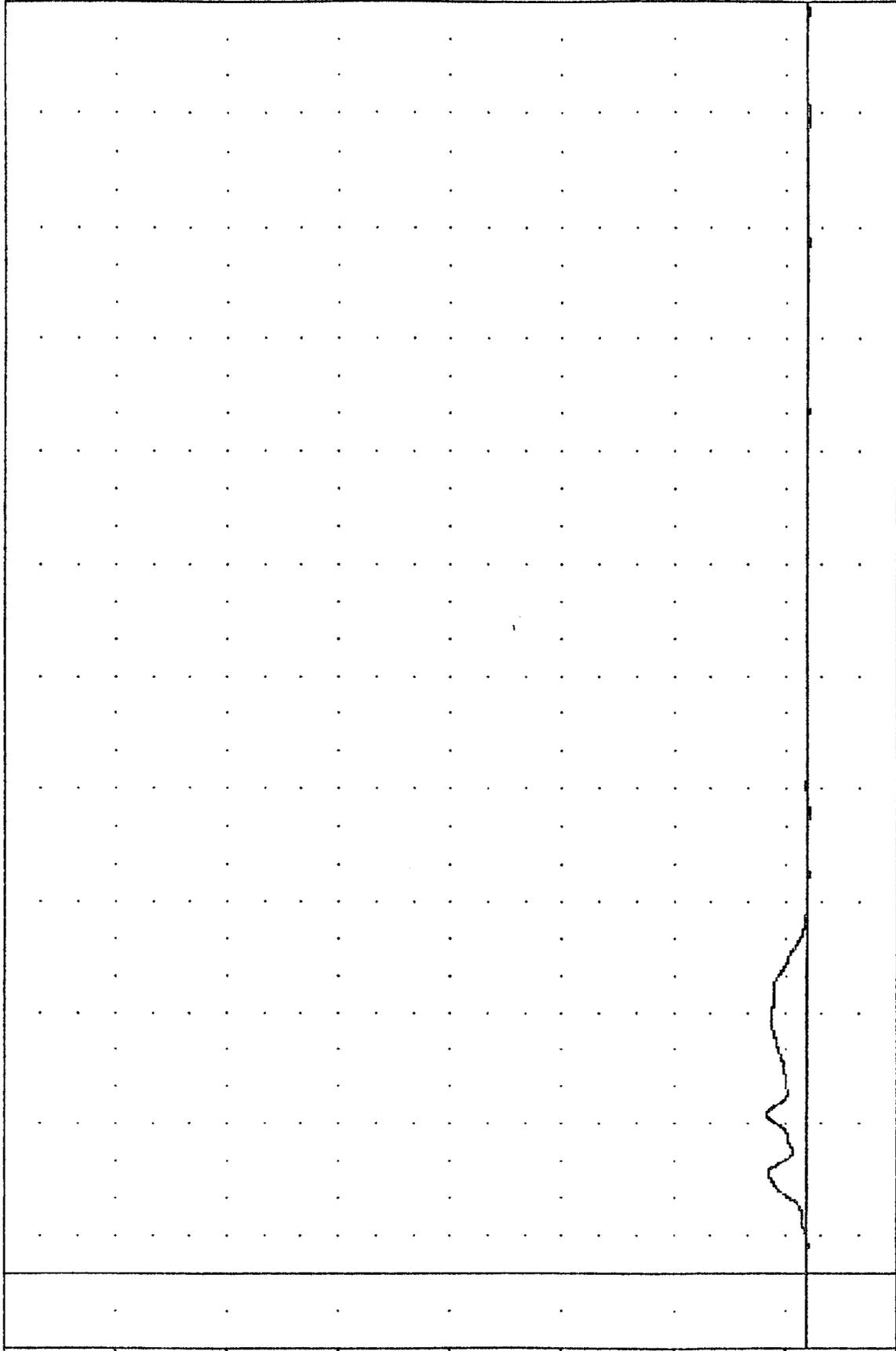
TOYOTA MR-2 INTO LOAD CELL BARRIER
 LOAD CELL DIRECTION 3100

TRC 850520
 NEW CAR ASSESSMENT PROGRAM
 8514000000
 LCBG1F

PLOT DATE 22-MAY-85 14:54:10

FILTER = BLPF 100/ 316/ -40
 MIN, MAX VALUES = -152.228 123.88, 4543.83 e 42.50

90.00
 77.50
 65.00
 52.50
 40.00
 27.50
 15.00
 2.50
 -10.00
 -20.00



-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

TOYOTA MR-2 INTO LOAD CELL BARRIER
 LOAD CELL BARRIER GROUP #1 FORCE TOTAL

TRC 850520
 NEW CAR ASSESSMENT PROGRAM
 85140000000
 BD4F

PLOT DATE 22-MAY-85 14:48:58

FILTER = 8LPF 100/ 316/ -40
 MIN. MAX VALUES = -242.22 49.88 , 1426.27 43.13

120.00

90.00

60.00

30.00

0.00

-30.00

-60.00

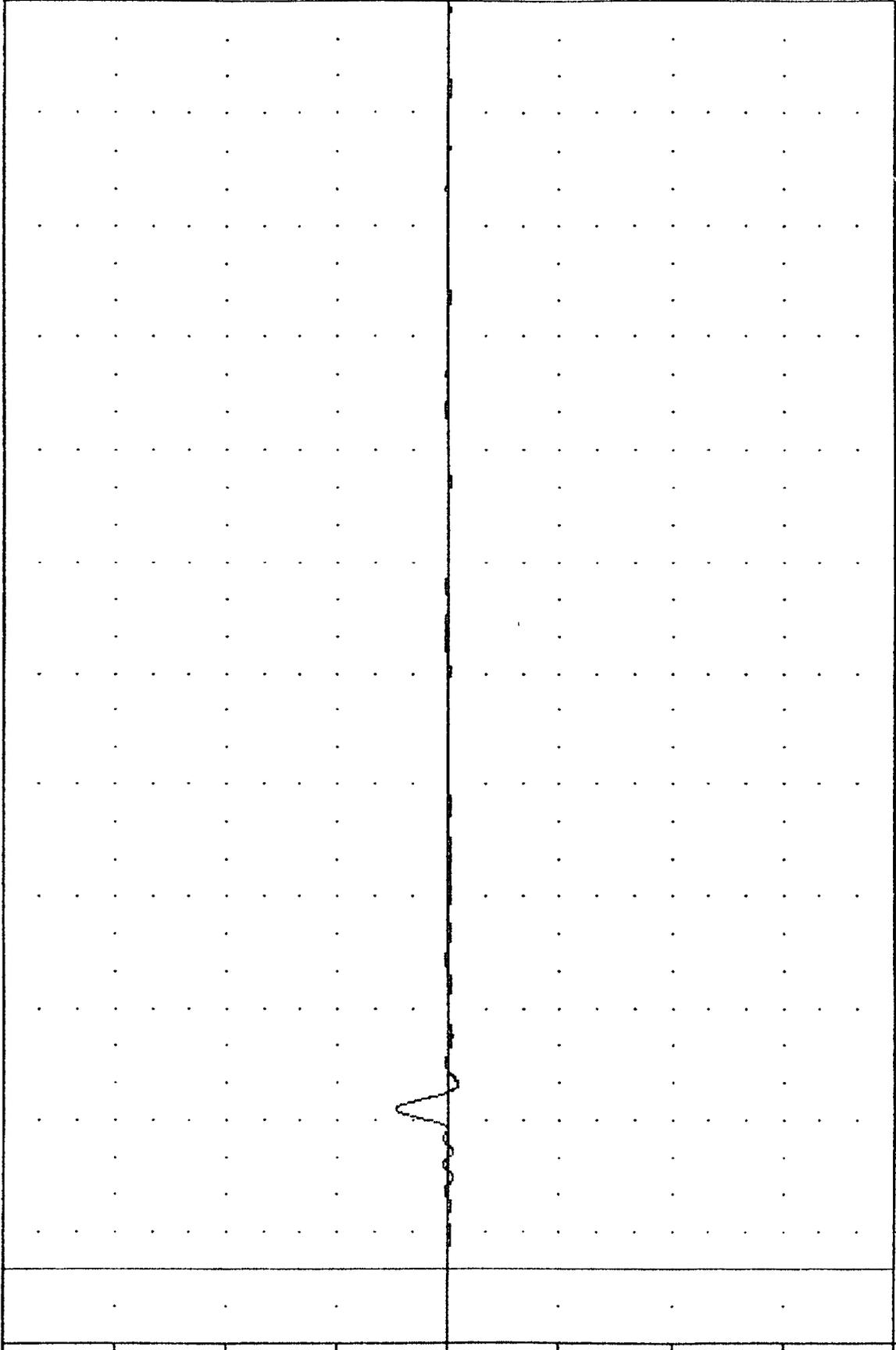
-90.00

-120.00

(X10²)

B-41

850520



-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

TOYOTA MR-2 INTO LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION 04 LBS

TRC , 850520
 NEW CAR ASSESSMENT PROGRAM
 85140000000
 B05F

PLOT DATE 22-MAY-85 14:48:58

FILTER = 8LPF 100/ 316/ -10
 MIN. MAX VALUES = -114.12e 31.63, 188.29 e 43.50

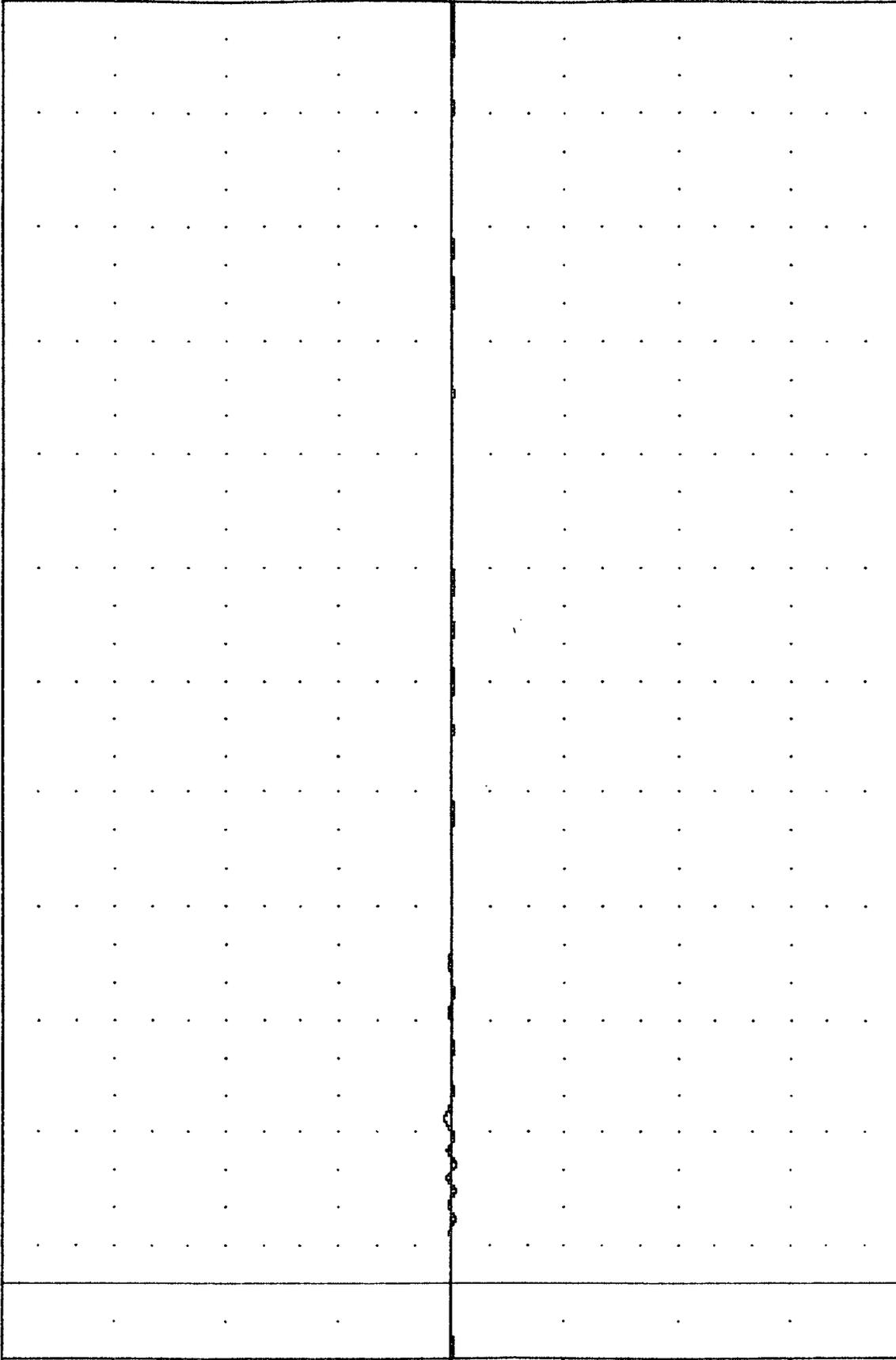
120.00

90.00

60.00
 (X10²)

0.00

FORCE (LB)
 -30.00
 -60.00
 -90.00
 -120.00



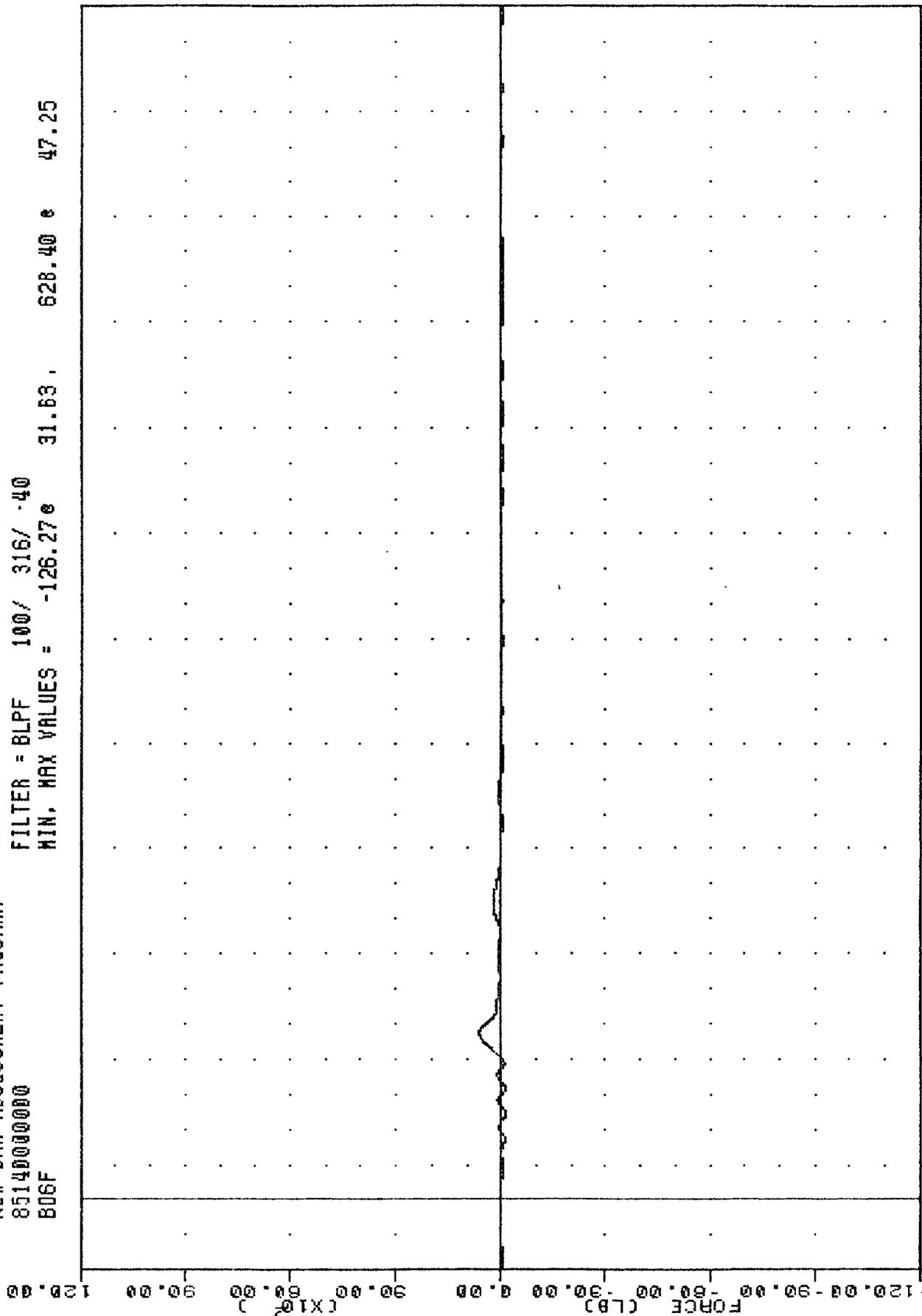
-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
 TIME (MSEC)

TOYOTA MR-2 INTO LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION 05 IRS

TAC , 850520
 NEW CAR ASSESSMENT PROGRAM
 85140000000
 B06F

PLOT DATE 22-MAY-85 14:48:58

FILTER = BLPF 100/ 316/ .40
 MIN. MAX VALUES = -126.27 e 31.53 . 628.40 e 47.25

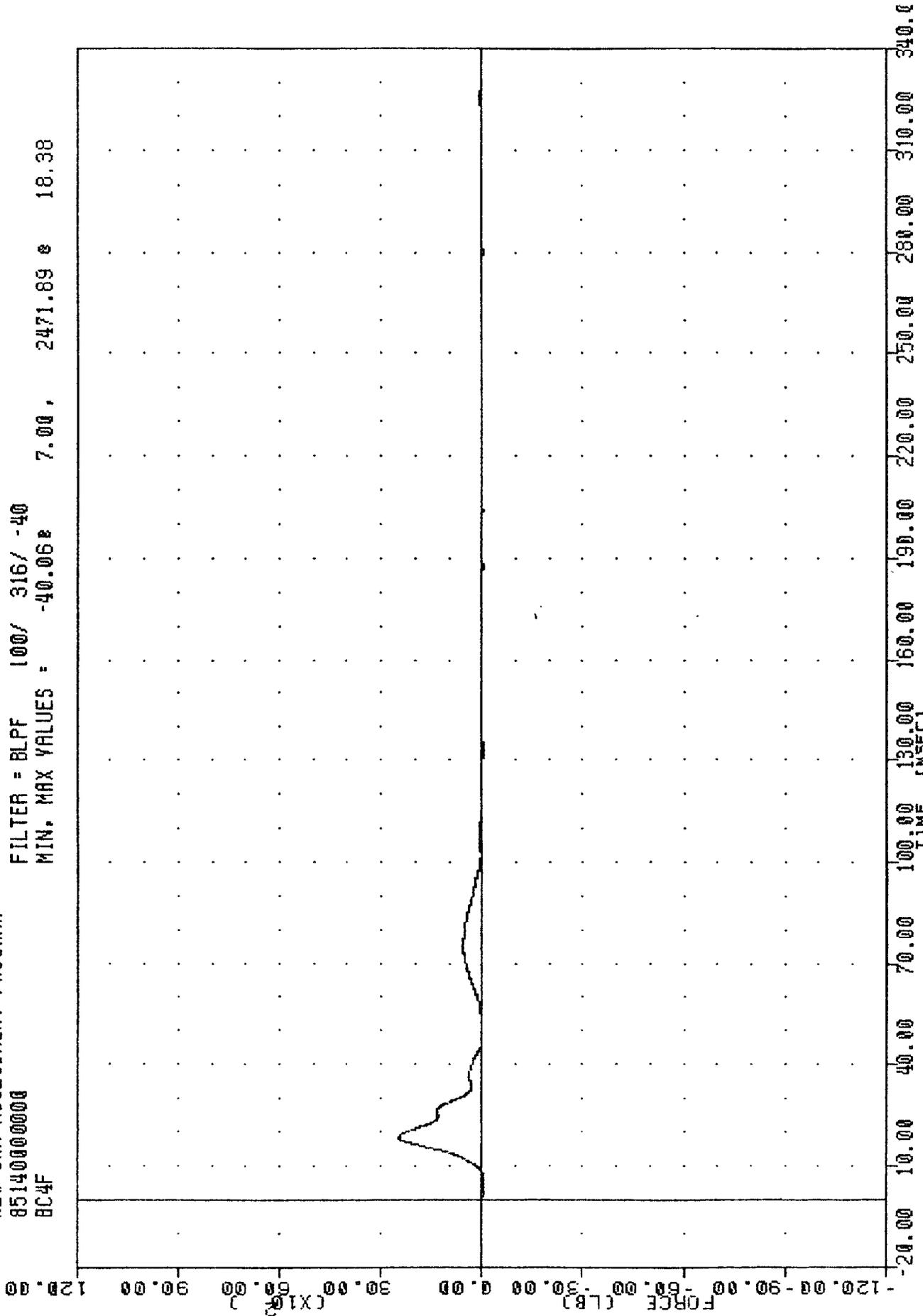


-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
 TIME (MSEC)
 TOYOTA MR-2 INTO LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION IN IAS

TRC 850520
NEW CAR ASSESSMENT PROGRAM
85140000000
BC4F

PLOT DATE 22-MAY-85 14:48:58

FILTER = BLPF 100/ 316/ -40
MIN. MAX VALUES = -40.06E 7.00, 2471.89E 18.38



B-44

850520

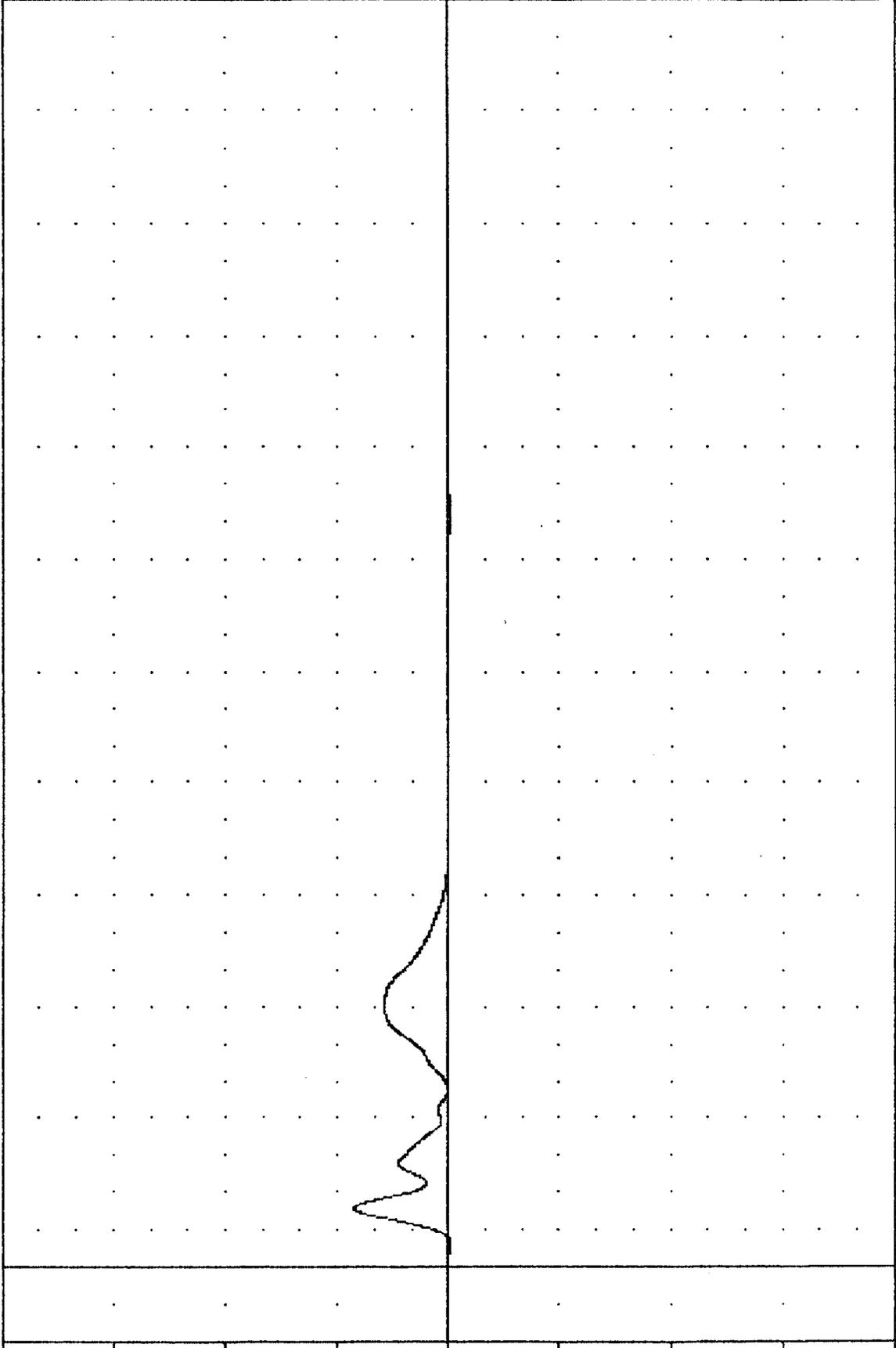
TOYOTA MR-2 INTO LOAD CELL BARRIER
LOAD CELL BARRIER POSITION C4 1RS

TRC
NEW CAR ASSESSMENT PROGRAM
85140000000
BC5F

PLOT DATE 22-MAY-85 14:46:58

FILTER = BLPF 100/ 316/ -40
MIN, MAX VALUES = -53.49e 7.00, 2539.24 e 15.63

120.00
90.00
60.00
30.00
0.00
-30.00
-60.00
-90.00
-120.00



B-45

850520

TOYOTA MR-2 INTO LOAD CELL BARRIER
LOAD CELL POSITION OF 1 DC

TRC , 850520
NEW CAR ASSESSMENT PROGRAM
85140000000
BC6F

PLOT DATE 22-MAY-85 14:48:58

FILTER = BLPF 100/ 316/ -40
MIN, MAX VALUES = -54.38e 39.13, 2694.44 e 16.38

120.00

90.00

60.00

30.00

0.00

-30.00

-60.00

-90.00

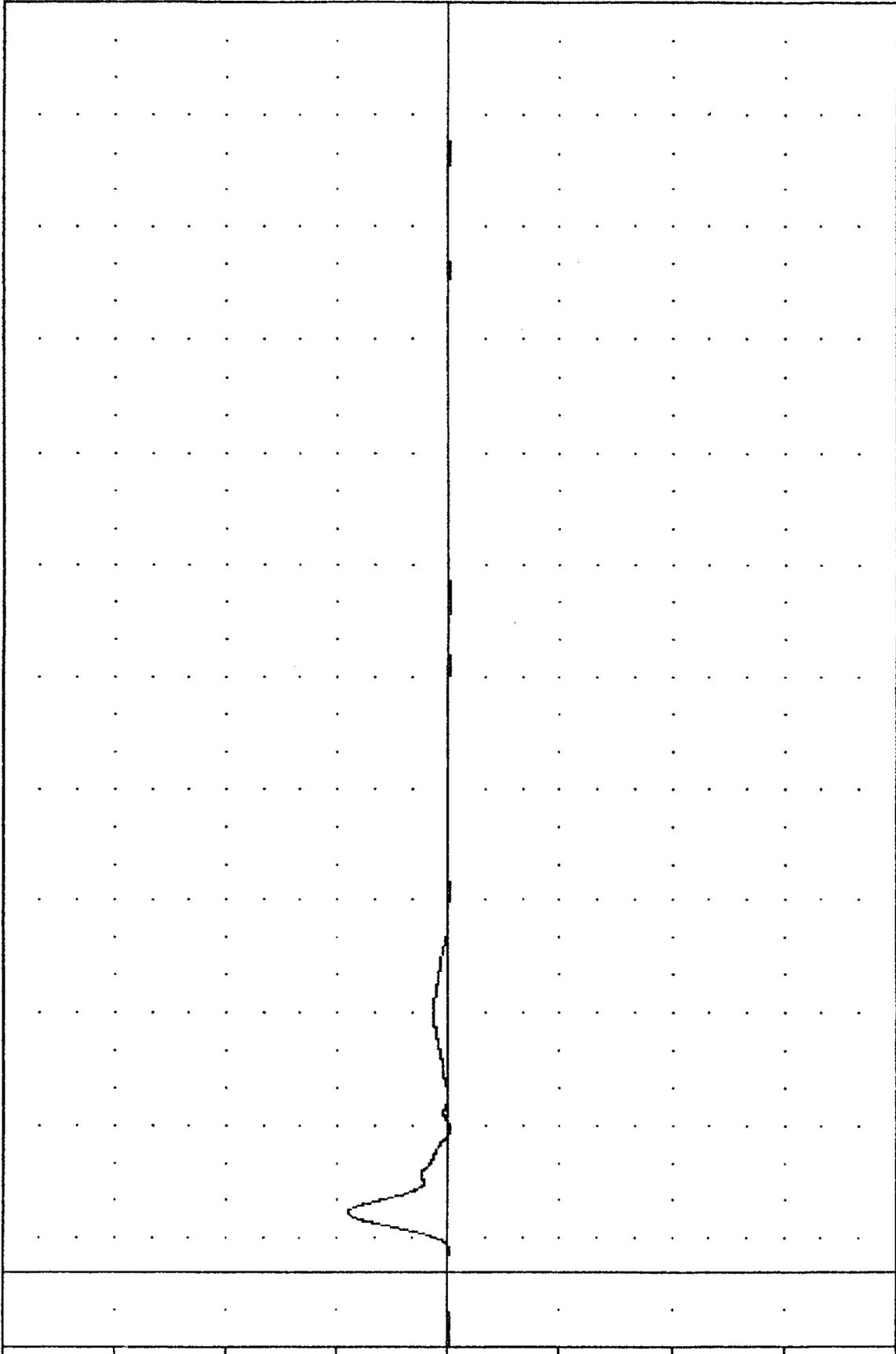
-120.00

(X10³)

FORCE (LB)

B-46

850520



20.00 10.00 0.00 -20.00 -30.00 -40.00 -50.00 -60.00 -70.00 -80.00 -90.00 -100.00 -110.00 -120.00

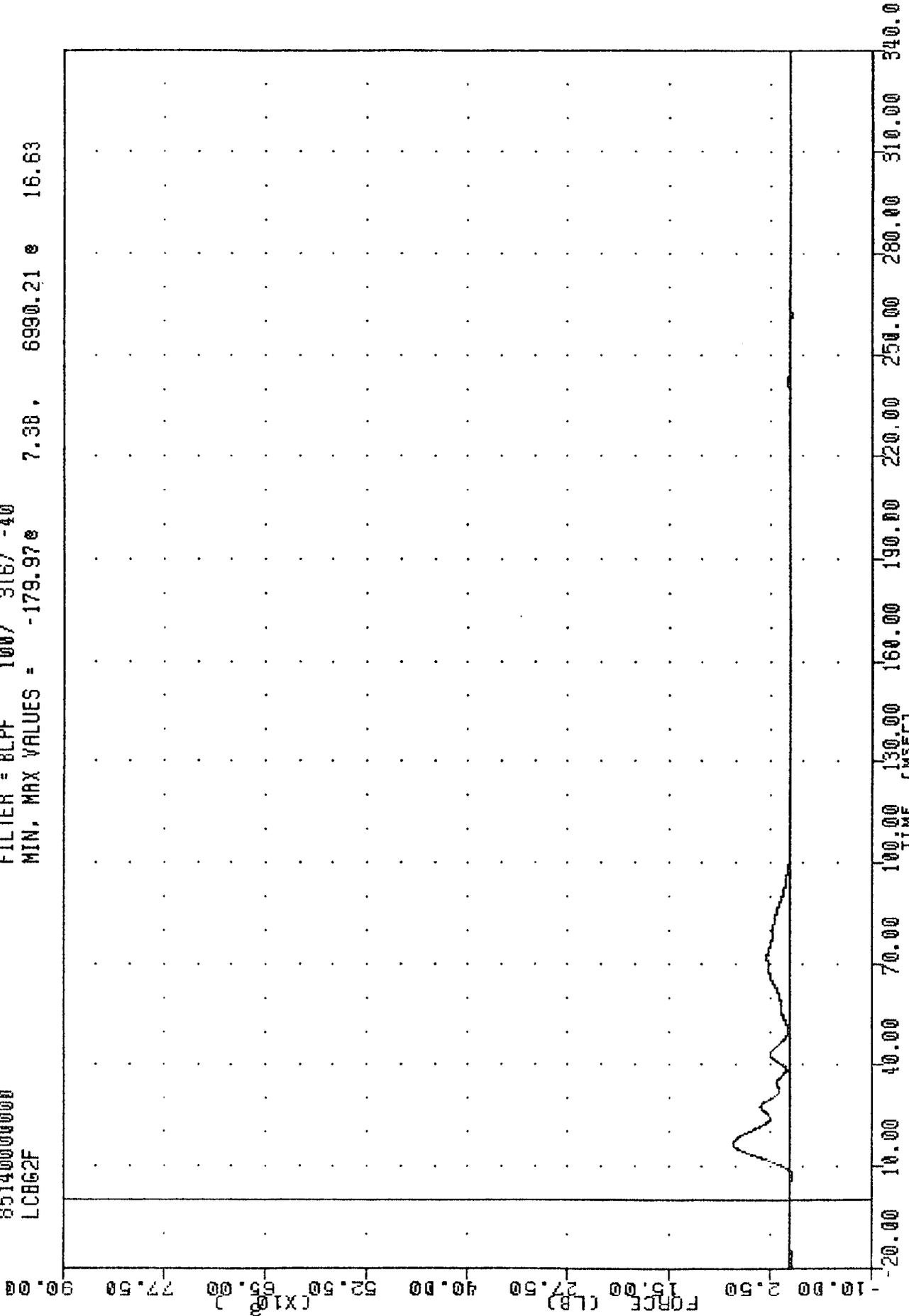
0.00 10.00 20.00 30.00 40.00 50.00 60.00 70.00 80.00 90.00 100.00 110.00 120.00 130.00 140.00 150.00 160.00 170.00 180.00 190.00 200.00 210.00 220.00 230.00 240.00 250.00 260.00 270.00 280.00 290.00 300.00 310.00 320.00 330.00 340.00

TOYOTA MA-2 INTO LOAD CELL BARRIER
LOAD CELL DOTTED DIRECTION CC 1 DC

TRC 850520
 NEW CAR ASSESSMENT PROGRAM
 85140000000
 LCB62F

PLOT DATE 22-MAY-85 14:54:10

FILTER = BLPF 100/ 316/ -40
 MIN, MAX VALUES = -179.97e 7.38, 6990.21 e 16.63

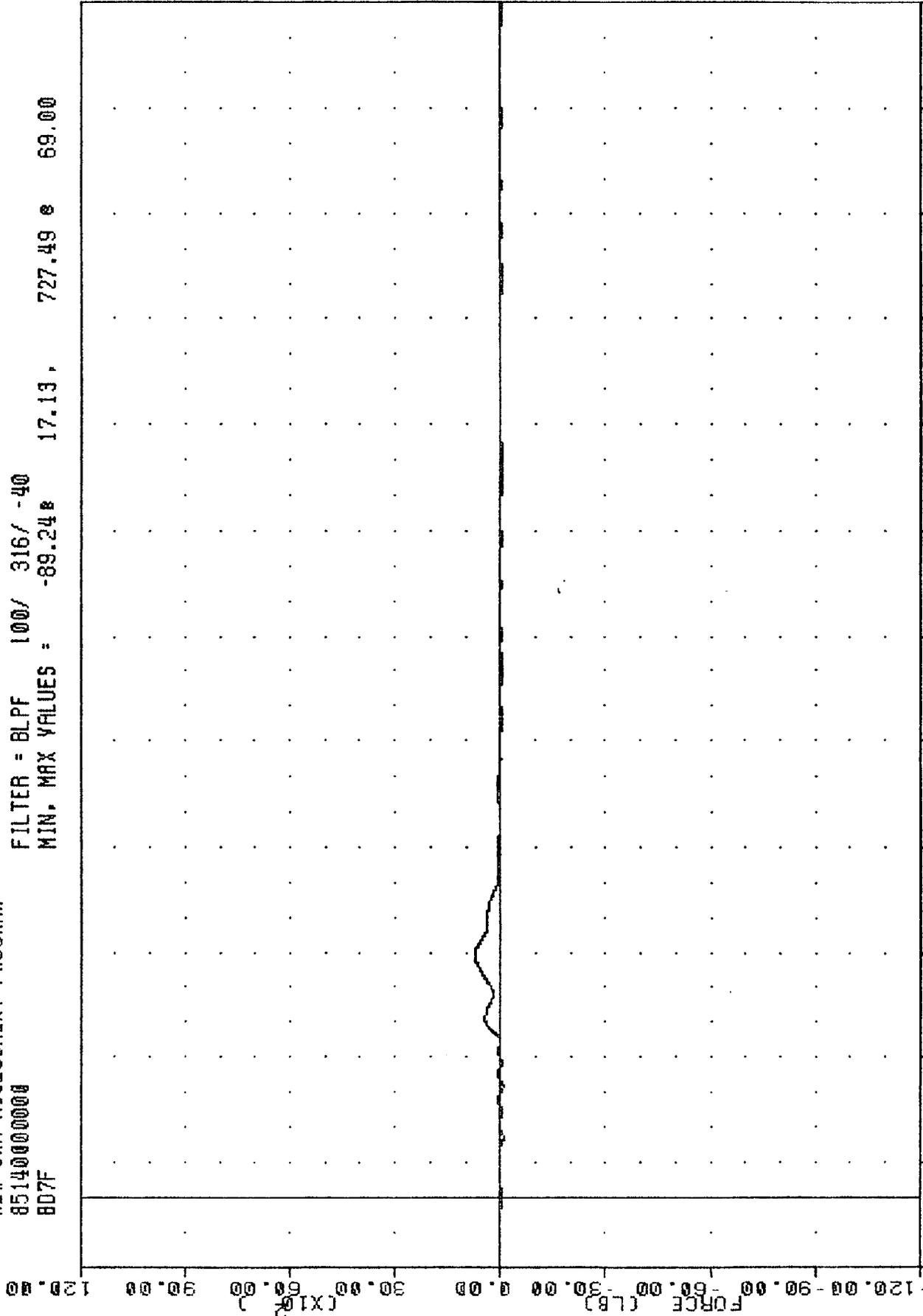


TOYOTA MR-2 INTO LOAD CELL BARRIER
 LOAD CELL BARRIER GROUP 2 FORCE TOTAL

TRC
NEW CAR ASSESSMENT PROGRAM
8514000000
807F

PLOT DATE 22-MAY-85 14:48:58

FILTER = BLPF 100/ 316/ -40
MIN. MAX VALUES = -89.24 727.49 e 69.00



TOYOTA MR-2 INTO LOAD CELL BARRIER
LOAD CELL BARRIER POSITION 071RS

TRC
 NEW CAR ASSESSMENT PROGRAM
 85140000000
 BDBF

PLOT DATE 22-MAY-85 14:48:58

FILTER = BLPF 100/ 316/ -40
 MIN. MAX VALUES = -87.25e 108.09 e 41.38

120.00

90.00

60.00

30.00

0.00

0.00

-30.00

-60.00

-90.00

-120.00

(X10²)

FORCE (LB)

-20.00

10.00

40.00

70.00

100.00

130.00

160.00

190.00

220.00

250.00

280.00

310.00

340.00

TIME (MSEC)

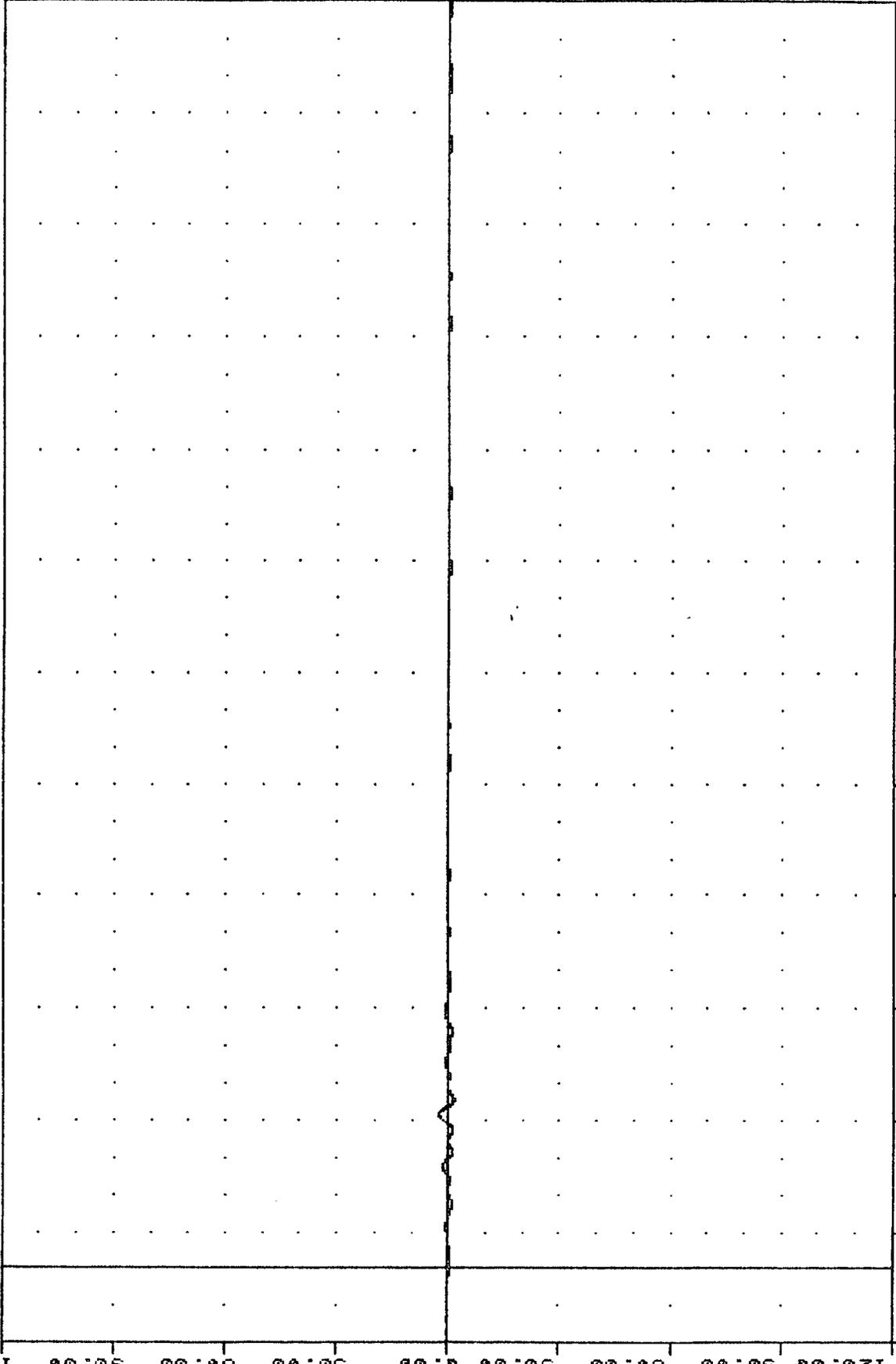
TOYOTA MR-2 INTO LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION DS 1RS

TAC , 850520
NEW CAR ASSESSMENT PROGRAM
85140000000
B09F

PLOT DATE 22-MAY-85 14:48:58

FILTER = BLPF 100/ 316/ -40
MIN, MAX VALUES = -148.19 45.50 , 257.47 41.38

120.00
90.00
60.00
30.00
0.00
-30.00
-60.00
-90.00
-120.00



B-50

850520

-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)

TOYOTA MR-2 INTO LOAD CELL BARRIER
LOAD CELL ADDED DIRECTION NO 100

TRC
NEW CAR ASSESSMENT PROGRAM
85140000000
BC7F

PLOT DATE 22-MAY-85 14:48:58

FILTER = BLPF 100/ 316/ -40

MIN, MAX VALUES = -51.698 7.88 3201.24 20.25

120.00

90.00

60.00

30.00

0.00

-30.00

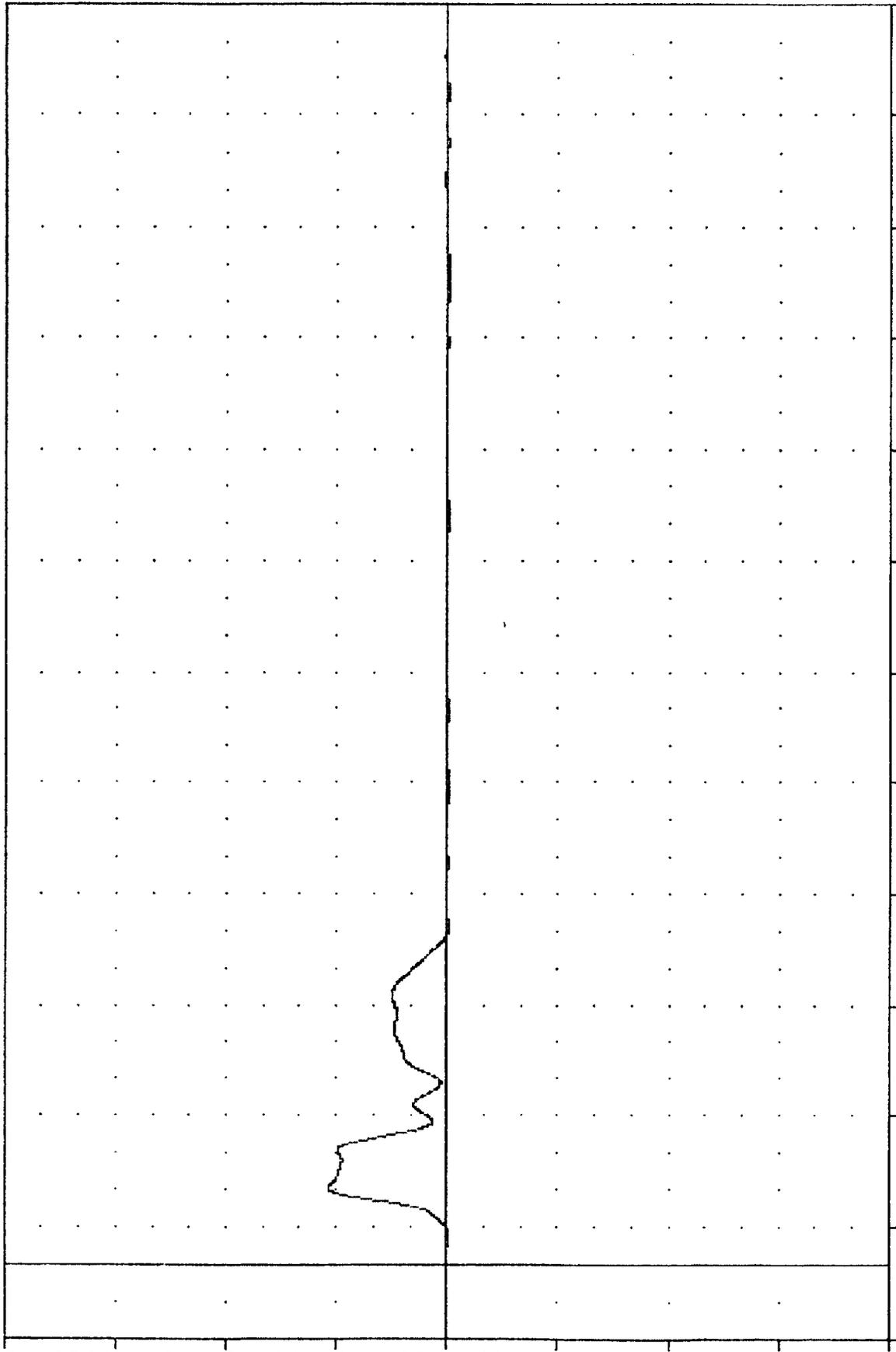
-60.00

-90.00

-120.00

B-51

850520



-20.00 10.00 40.00 70.00 100.00 150.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00

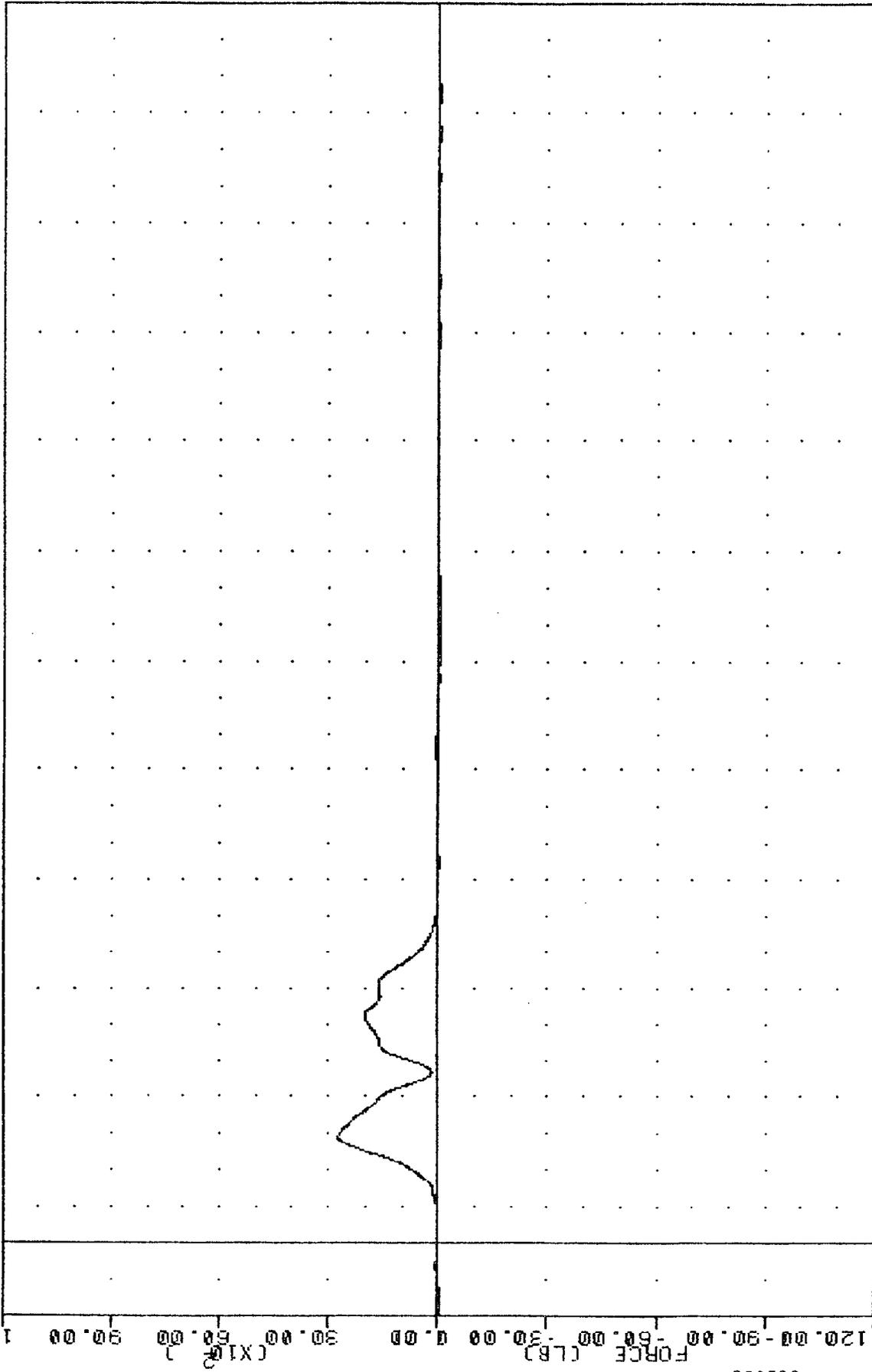
TOYOTA MR-2 INTO LOAD CELL BARRIER
LOAD CELL POSITION C71DC

TRC , 850520
 NEW CAR ASSESSMENT PROGRAM
 85140000000
 BC8F

PLOT DATE 22-MAY-85 14:48:58

FILTER = BLPF 100/ 316/ -40
 MIN, MAX VALUES = -69.15e 163.75, 2727.46 e 29.13

120.00
90.00
60.00
30.00
0.00
-30.00
-60.00
-90.00
-120.00



B-52

850520

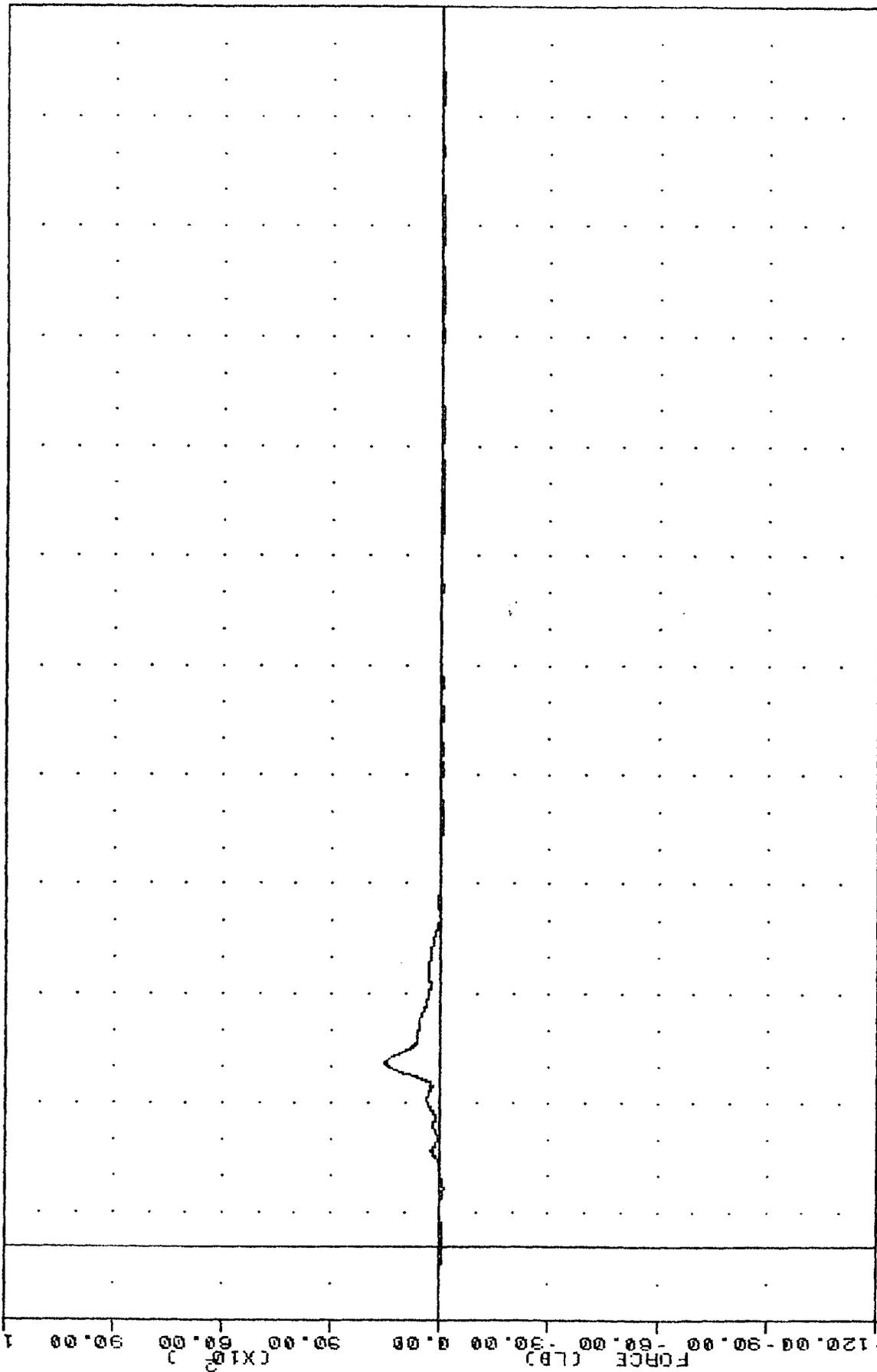
TOYOTA MR-2 INTO LOAD CELL BARRIER
 1 IN AN CELL BARRIER POSITION CG 1 DC

TAC
 NEW CAR ASSESSMENT PROGRAM
 85140000000
 BC9F

PLOT DATE 22-MAY-85 14:48:58

FILTER = BLPF 100/ 316/ -40
 MIN. MAX VALUES = -83.52e 16.88, 1515.15 e 50.88

120.00



-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

TOYOTA MR-2 INTO LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION CALS

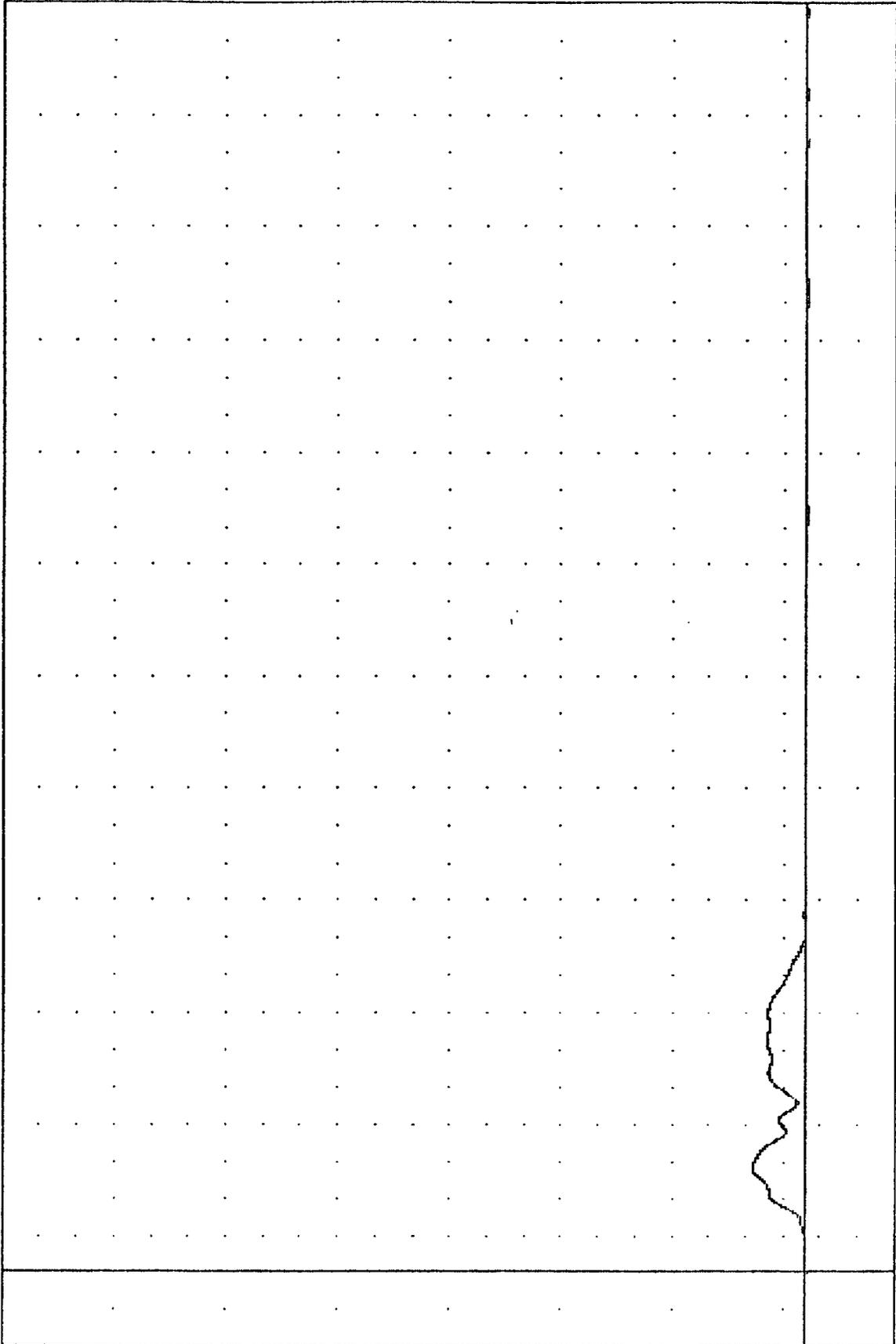
TAC , 850520
NEW CAR ASSESSMENT PROGRAM
85140000000
LCBG3F

PLOT DATE 22-MAY-85 14:54:10

FILTER = BLPF 100/ 316/ -40

MIN, MAX VALUES = -183.94 262.75 , 5955.12 28.13

90.00
77.50
65.00
52.50
40.00
27.50
15.00
2.50
-10.00



850520

B-54

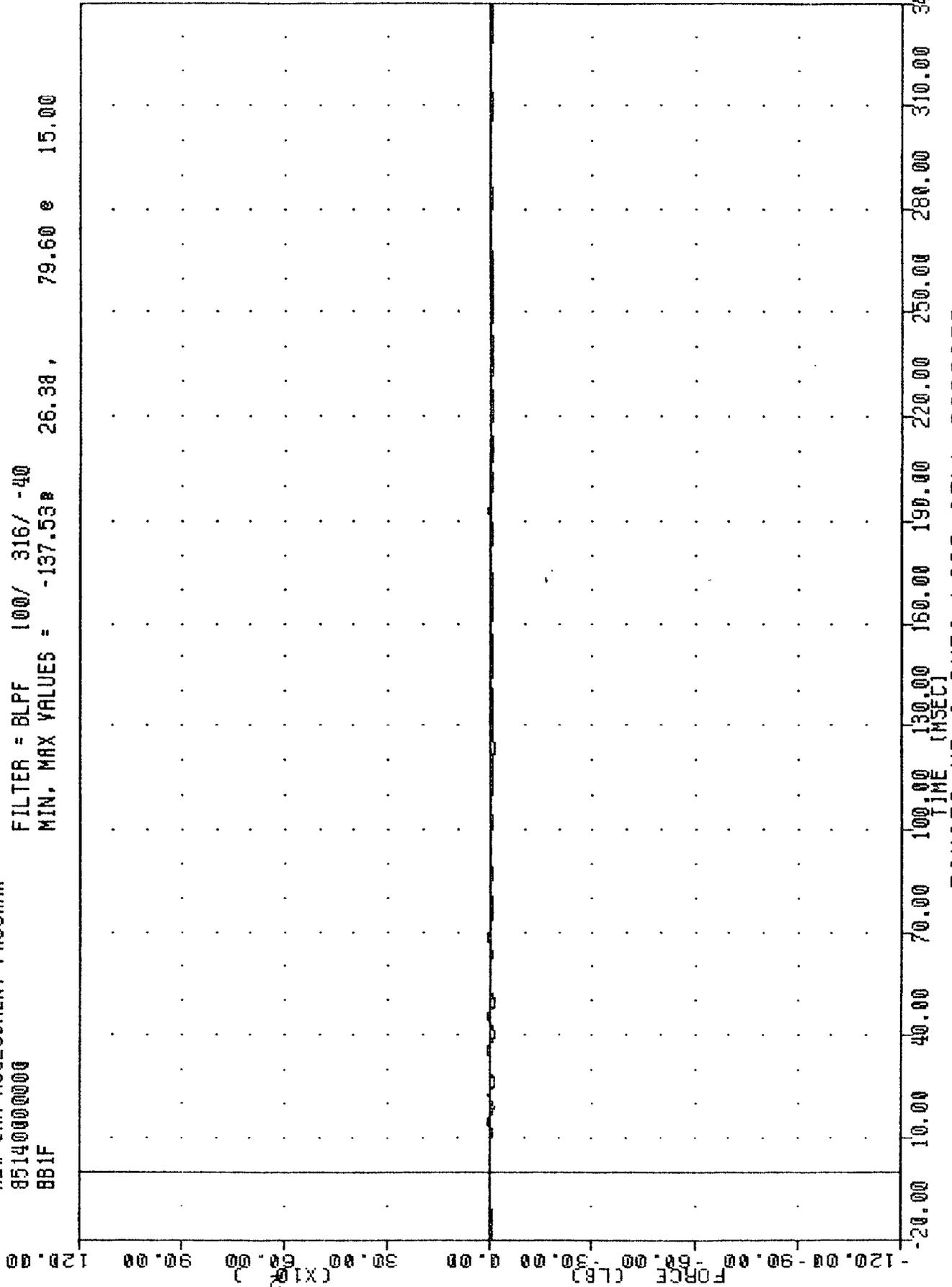
-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00

TIME (MSEC)
TOYOTA MR-2 INTO LOAD CELL BARRIER
LOAD CELL DROPTED BEHIND IN FORCE TOTAL

TRC , 850520
NEW CAR ASSESSMENT PROGRAM
851400000000
881F

PLOT DATE 22-MAY-85 14:48:58

FILTER = BLPF 100/ 316/ -40
MIN. MAX VALUES = -137.53 26.38 , 79.60 15.00

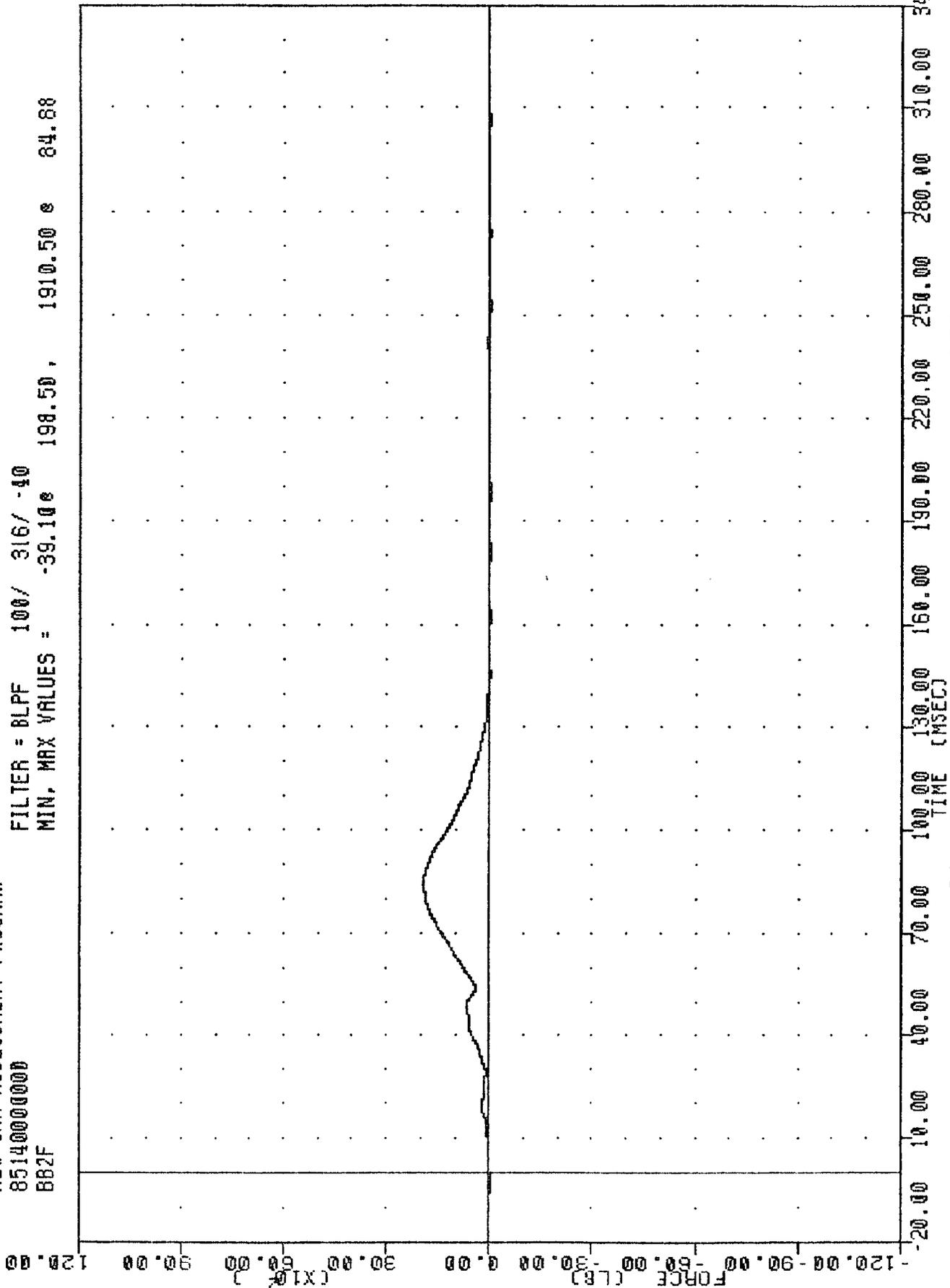


TOYOTA MR-2 INTO LOAD CELL BARRIER
LOAD CELL BARRIER POSITION R1 IRS

TRC , 850520
 NEW CAR ASSESSMENT PROGRAM
 85140000000
 882F

PLOT DATE 22-MAY-85 14:48:58

FILTER = BLPF 100/ 316/ -40
 MIN, MAX VALUES = -39.10e 198.50 , 1910.50 e 84.88

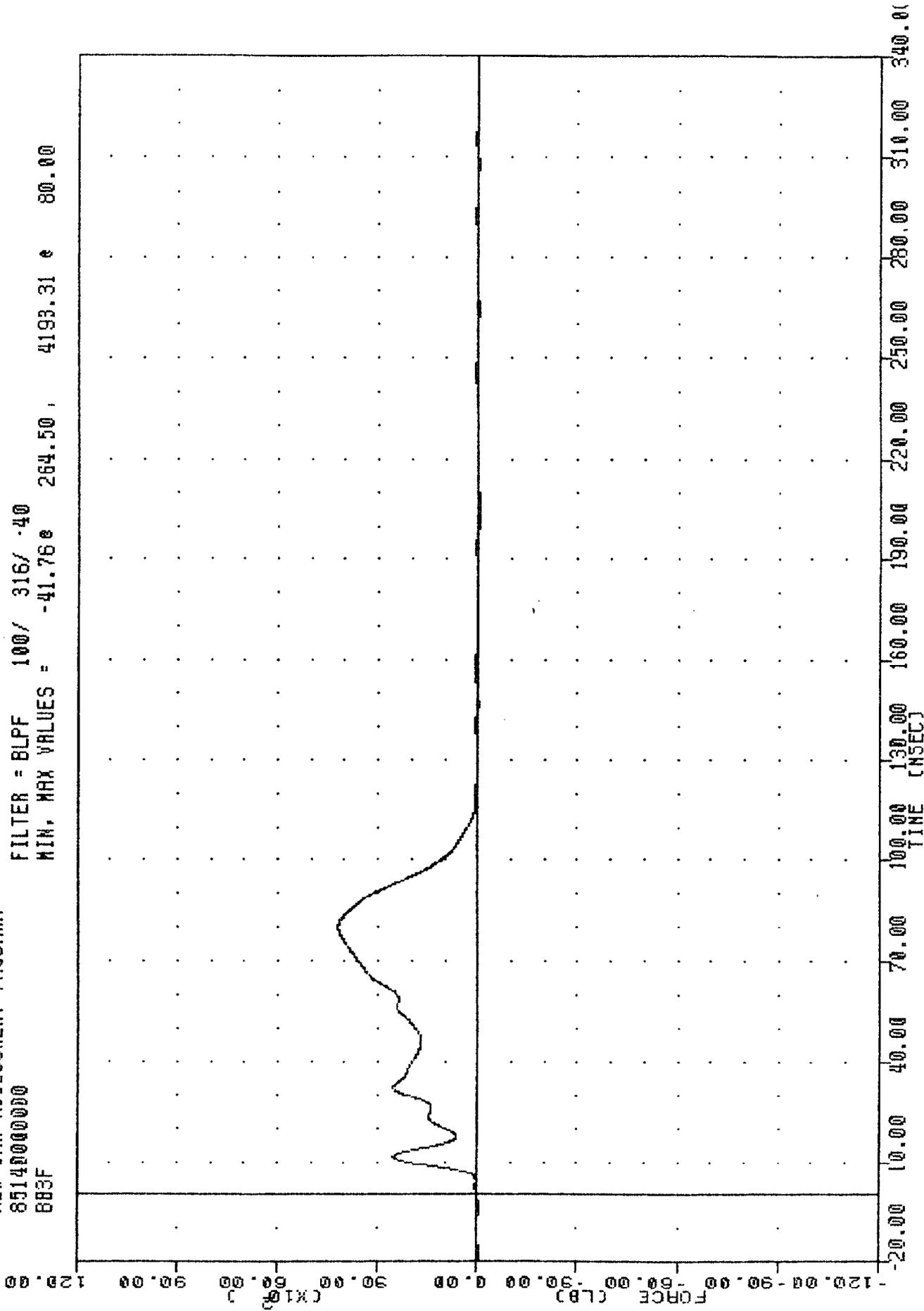


TOYOTA MR-2 INTO LOAD CELL BARRIER
 INAD CFI BARRIER POSITION R2 IRS

TAC , 850520
NEW CAR ASSESSMENT PROGRAM
85140000000
883F

PLOT DATE 22-MAY-85 14:48:58

FILTER = BLPF 100/ 316/ .40
MIN, MAX VALUES = -41.76e 264.50 , 4193.31 e 80.00

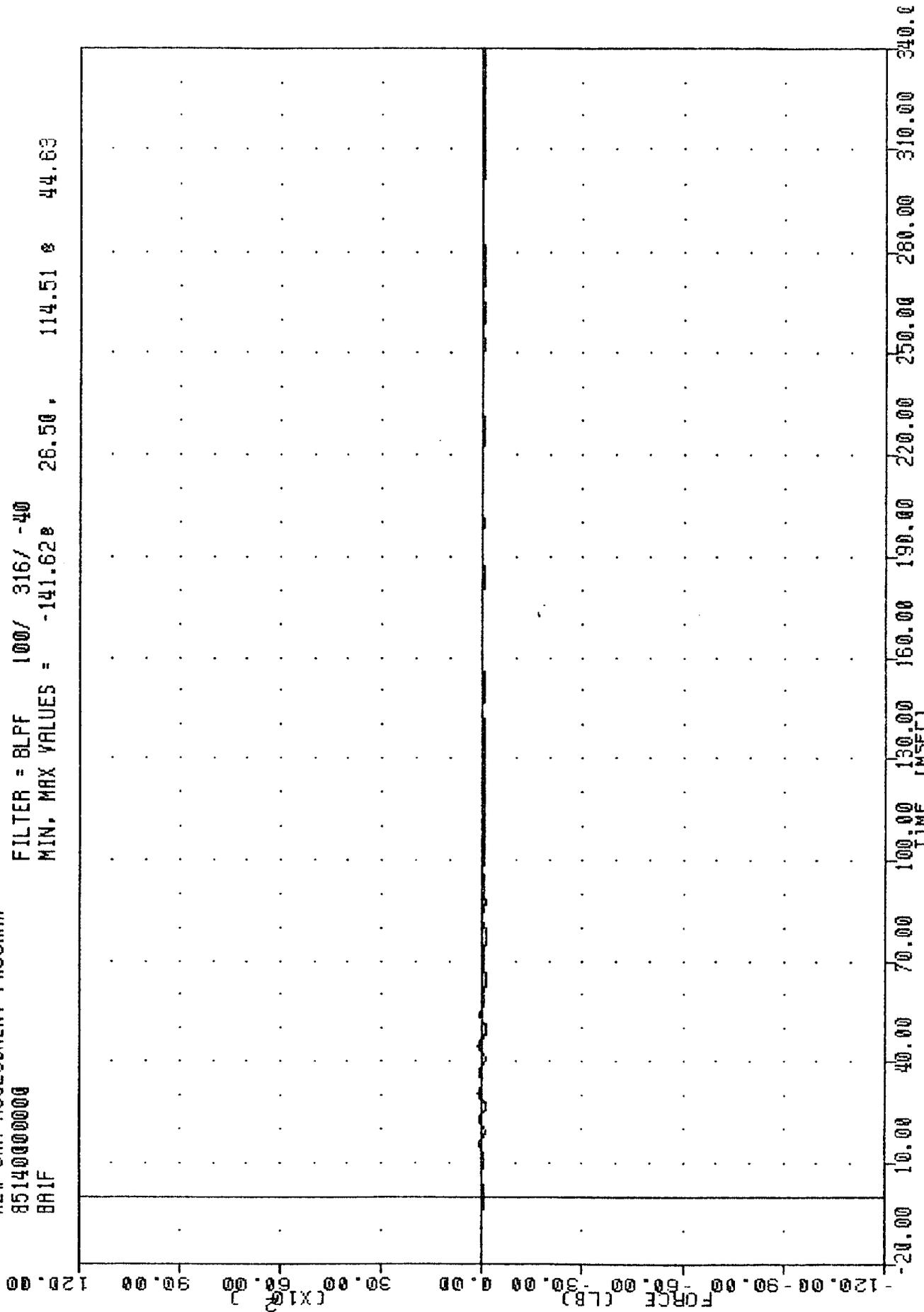


TOYOTA MR-2 INTO LOAD CELL BARRIER
LOAD CELL BARRIER POSITION R3 1AS

TRC
 NEW CAR ASSESSMENT PROGRAM
 8514000000
 BR1F

PLOT DATE 22-MAY-85 14:48:58

FILTER = BLPF 100/ 316/ -40
 MIN. MAX VALUES = -141.62e 26.50, 114.51 e 44.63

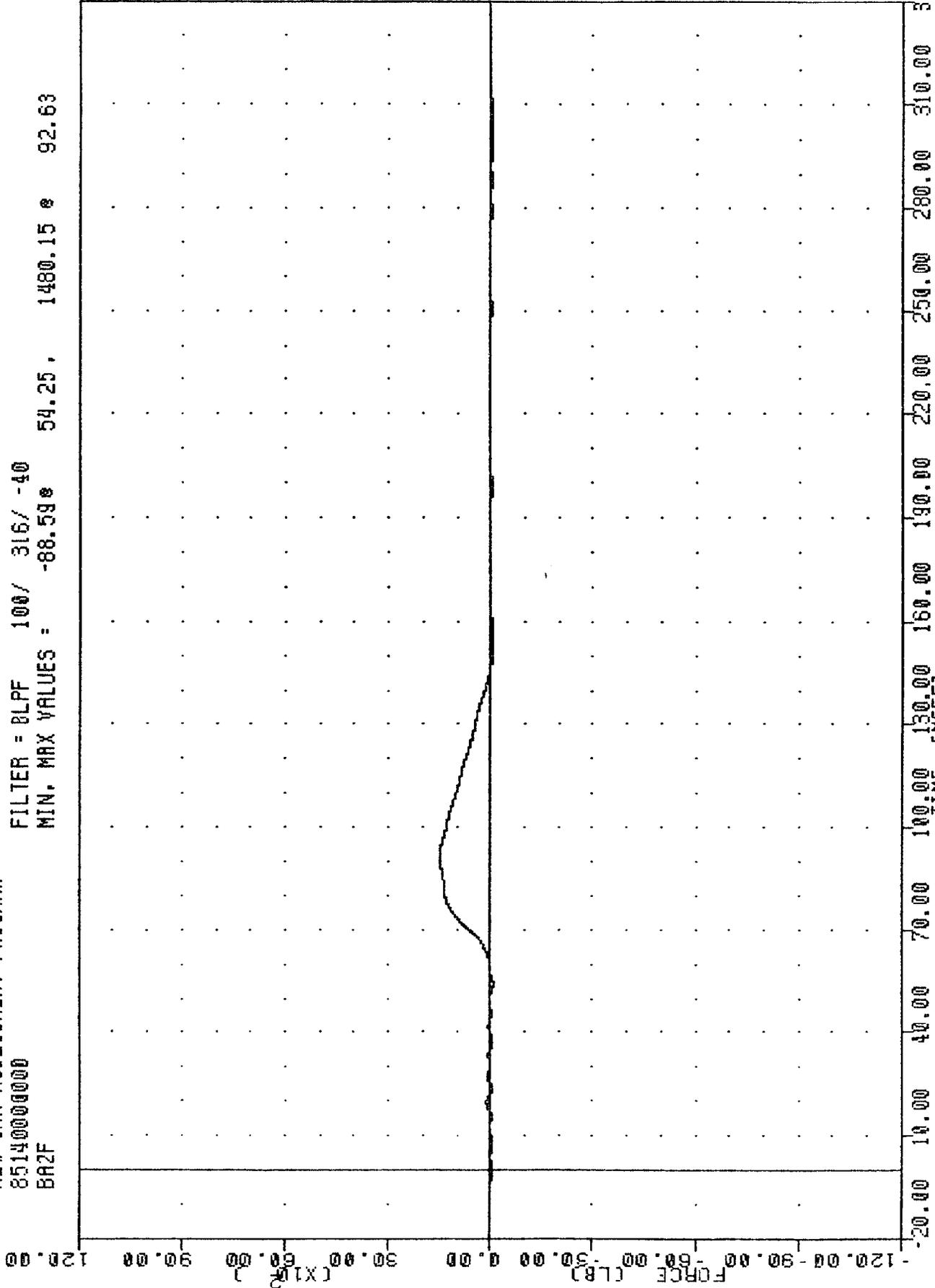


TOYOTA MR-2 INTO LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION A1 RS

TRC , 850520
NEW CAR ASSESSMENT PROGRAM
851400000000
BAZF

PLOT DATE 22-MAY-85 14:48:58

FILTER = 8LPF 100/ 316/ -40
MIN. MAX VALUES = -88.59 54.25 , 1480.15 92.63



TOYOTA MR-2 INTO LOAD CELL BARRIER
LOAD CELL BARRIER POSITION 80 IRS

TAC , 850520
 NEW CAR ASSESSMENT PROGRAM
 85140000000
 BAZF

PLOT DATE 22-MAY-85 14:48:58

FILTER = BLPF 100/ 316/ -40
 MIN. MAX VALUES = -112.94e 24.50 , 536.67 e 19.38

120.00

90.00

60.00

30.00

0.00

30.00

60.00

90.00

120.00

150.00

180.00

210.00

240.00

270.00

300.00

330.00

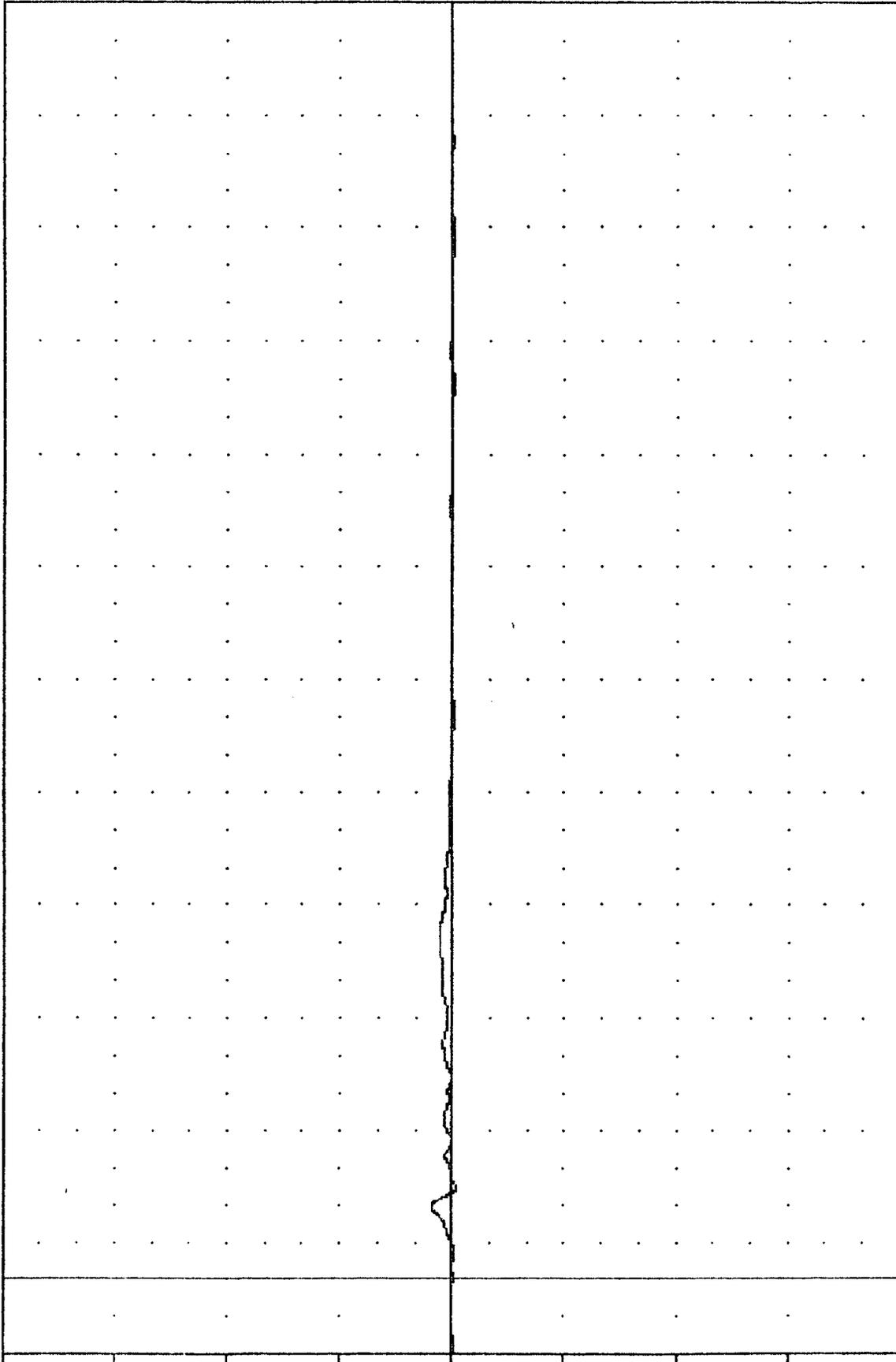
360.00

390.00

420.00

450.00

480.00



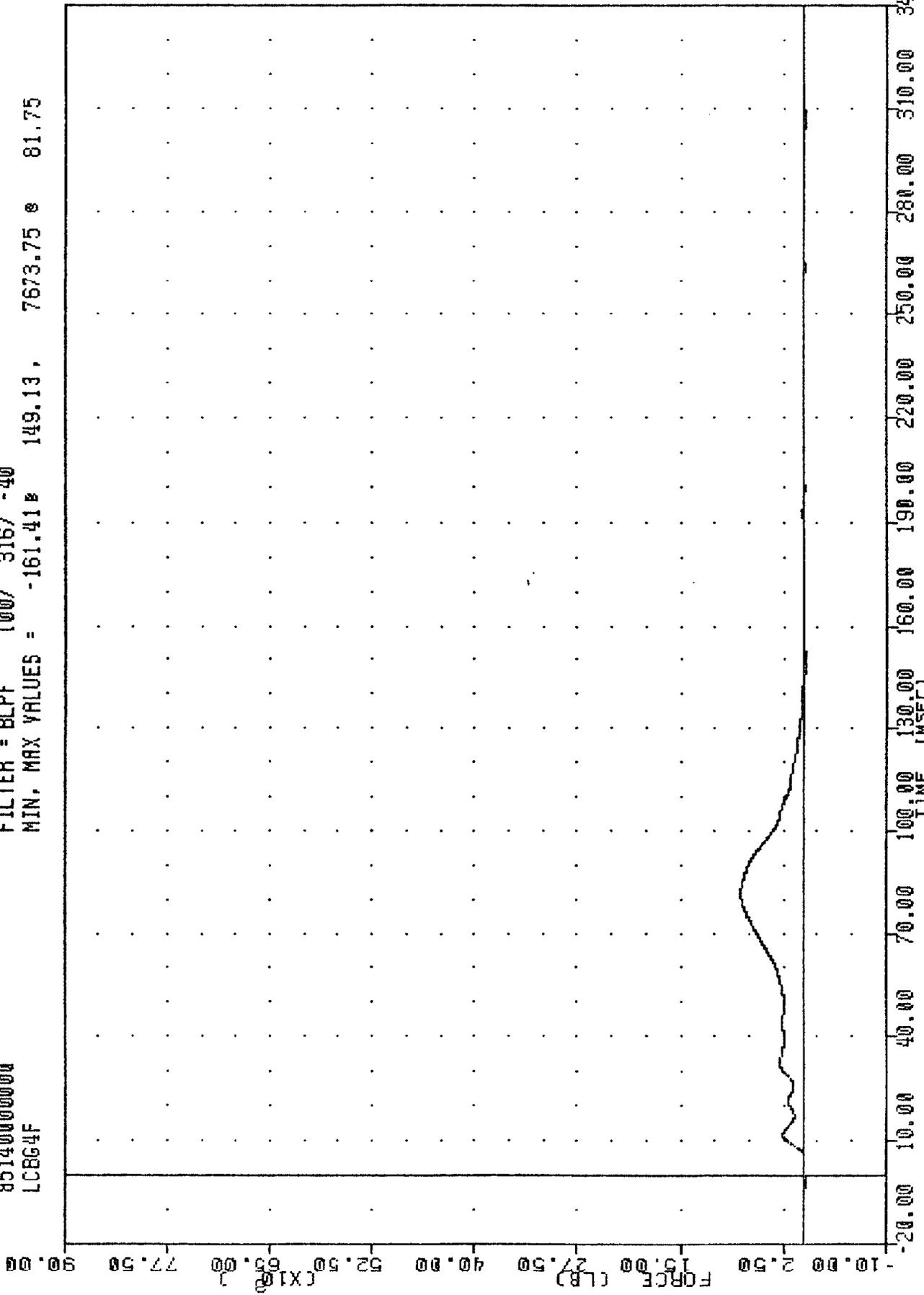
-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00

TOYOTA MR-2 INTO LOAD CELL BARRIER
 INAN CFI BARRIER POSITION AR 1RS

TRC , 850520
 NEW CAR ASSESSMENT PROGRAM
 85140000000
 LCB64F

PLOT DATE 22-MAY-85 14:54:10

FILTER = BLPF 100/ 316/ -40
 MIN. MAX VALUES = -161.41# 149.13, 7673.75 # 81.75

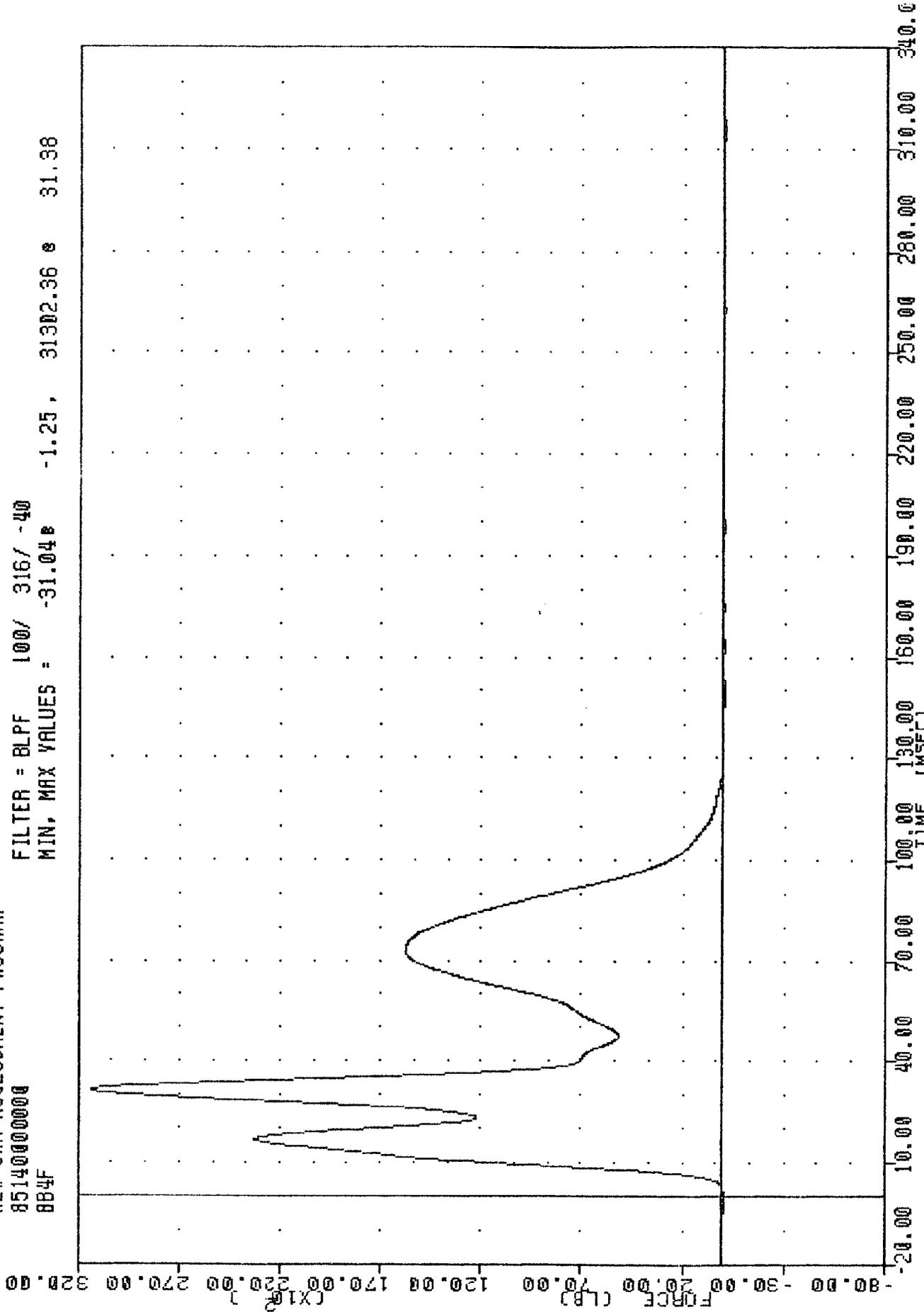


TOYOTA MR-2 INTO LOAD CELL BARRIER
 INAN CELL BARRIER GROUP #11 FORCE TOTAL

TRC , 850520
NEW CAR ASSESSMENT PROGRAM
85140000000
884F

PLOT DATE 22-MAY-85 14:48:58

FILTER = BLPF 100/ 316/ -40
MIN, MAX VALUES = -31.048 -1.25, 31302.36 31.38



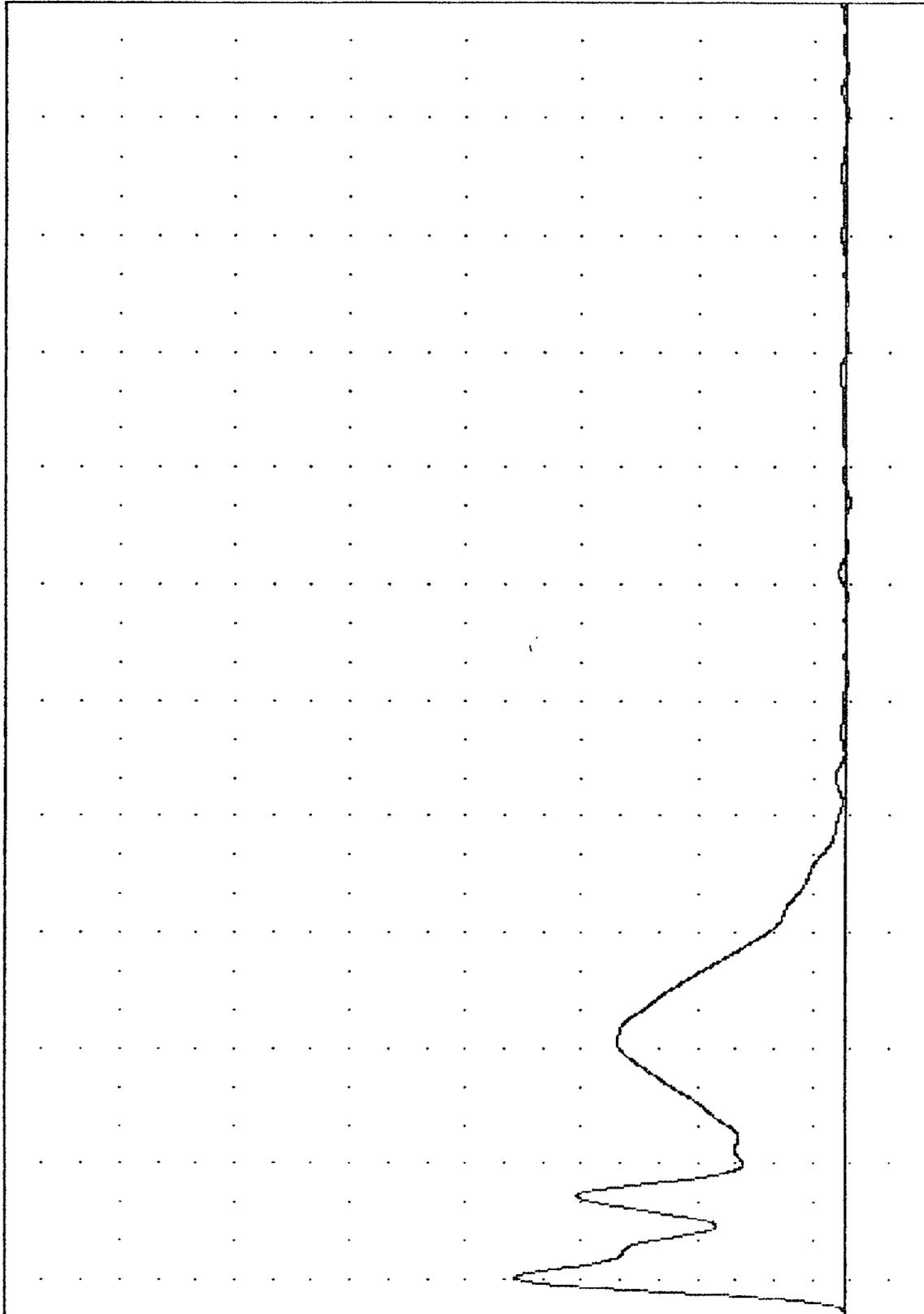
TOYOTA MR-2 INTO LOAD CELL BARRIER
LOAD CELL BARRIER POSITION R4 IRS

TRC , 850520
 NEW CAR ASSESSMENT PROGRAM
 85140000000
 885F

PLOT DATE 22-MAY-85 14:48:58

FILTER = 8LFF 100/ 316/ -40
 MIN. MAX VALUES = -77.46 4708.39 10.50

120.00
103.50
87.00
70.50
54.00
37.50
21.00
4.50
-12.00

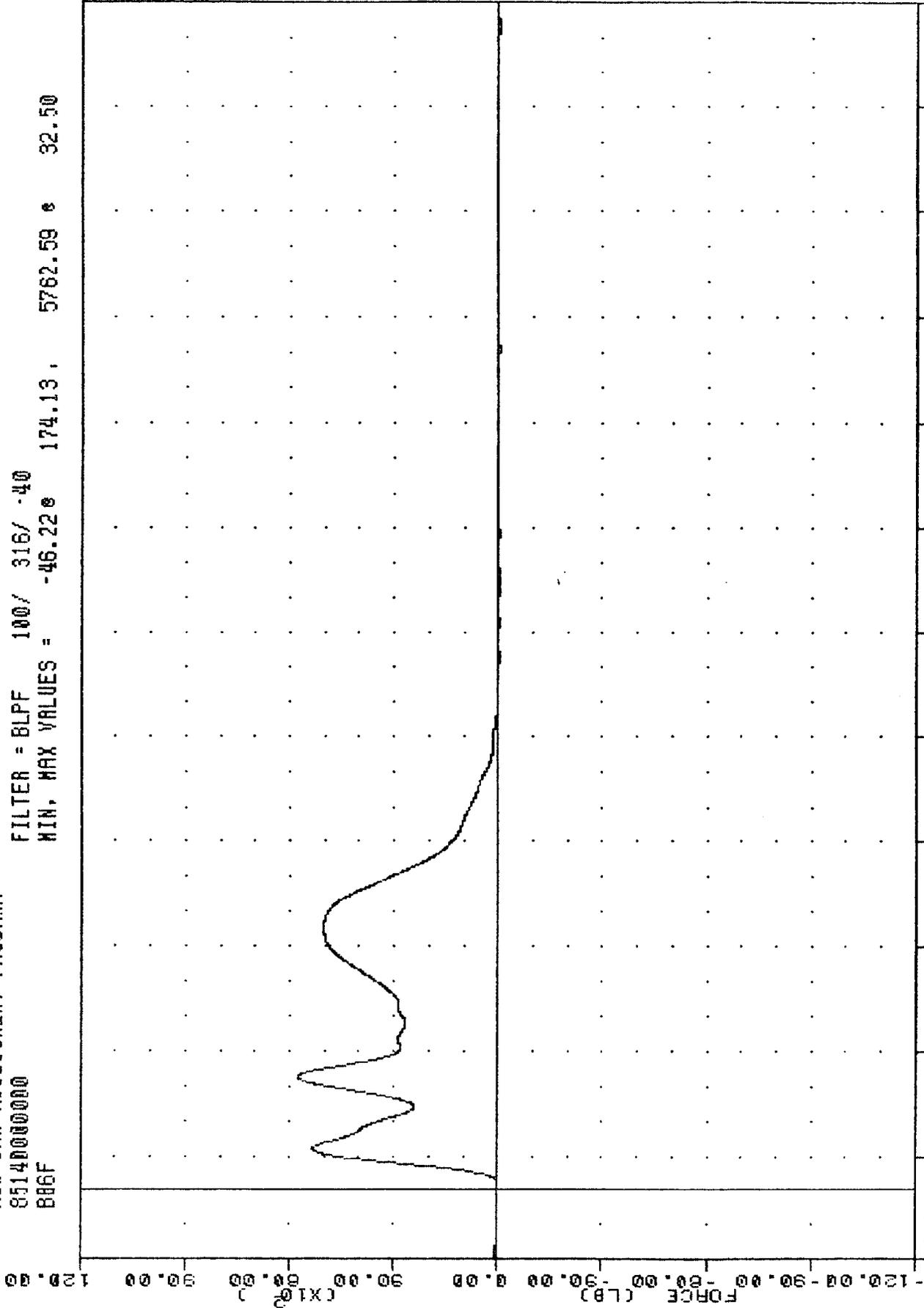


-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
 TIME (MSEC)
 TOYOTA MR-2 INTO LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION R5 IRS

TAC
 NEW CAR ASSESSMENT PROGRAM
 85140000000
 B86F

PLUT DATE 22-MAY-85 14:48:58

FILTER = BLPF 100/ 316/ .40
 MIN. MAX VALUES = -46.22e 174.13, 5762.59 e 32.50



B-64

850520

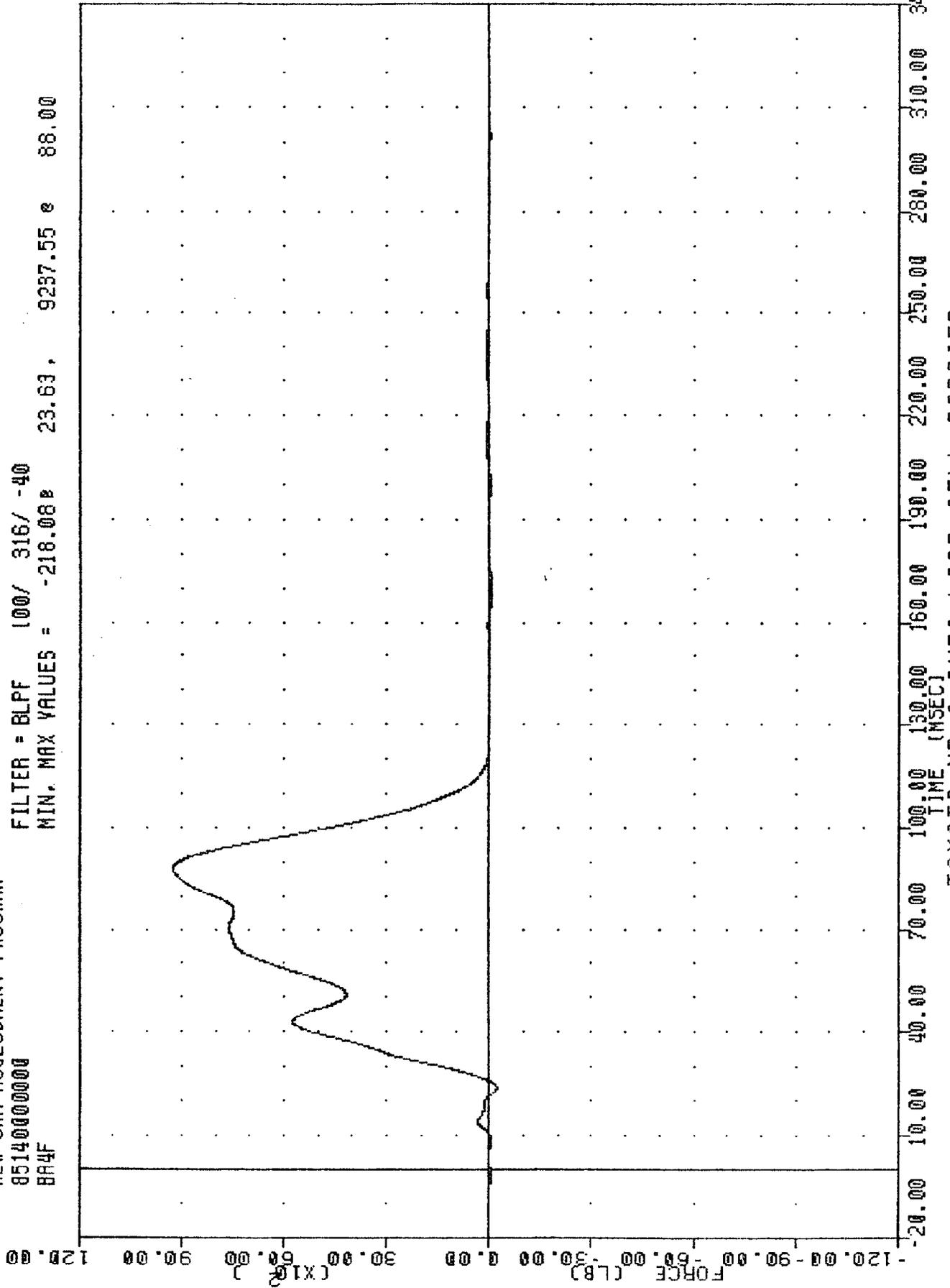
TOYOTA MR-2 INTO LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION RE IRS

TRC .850520
NEW CAR ASSESSMENT PROGRAM
85140000000
BR4F

PLOT DATE 22-MAY-85 14:48:58

FILTER = BLPF 100/ 316/ -40

MIN. MAX VALUES = -218.088 23.63, 9287.55 e 88.00



B-65

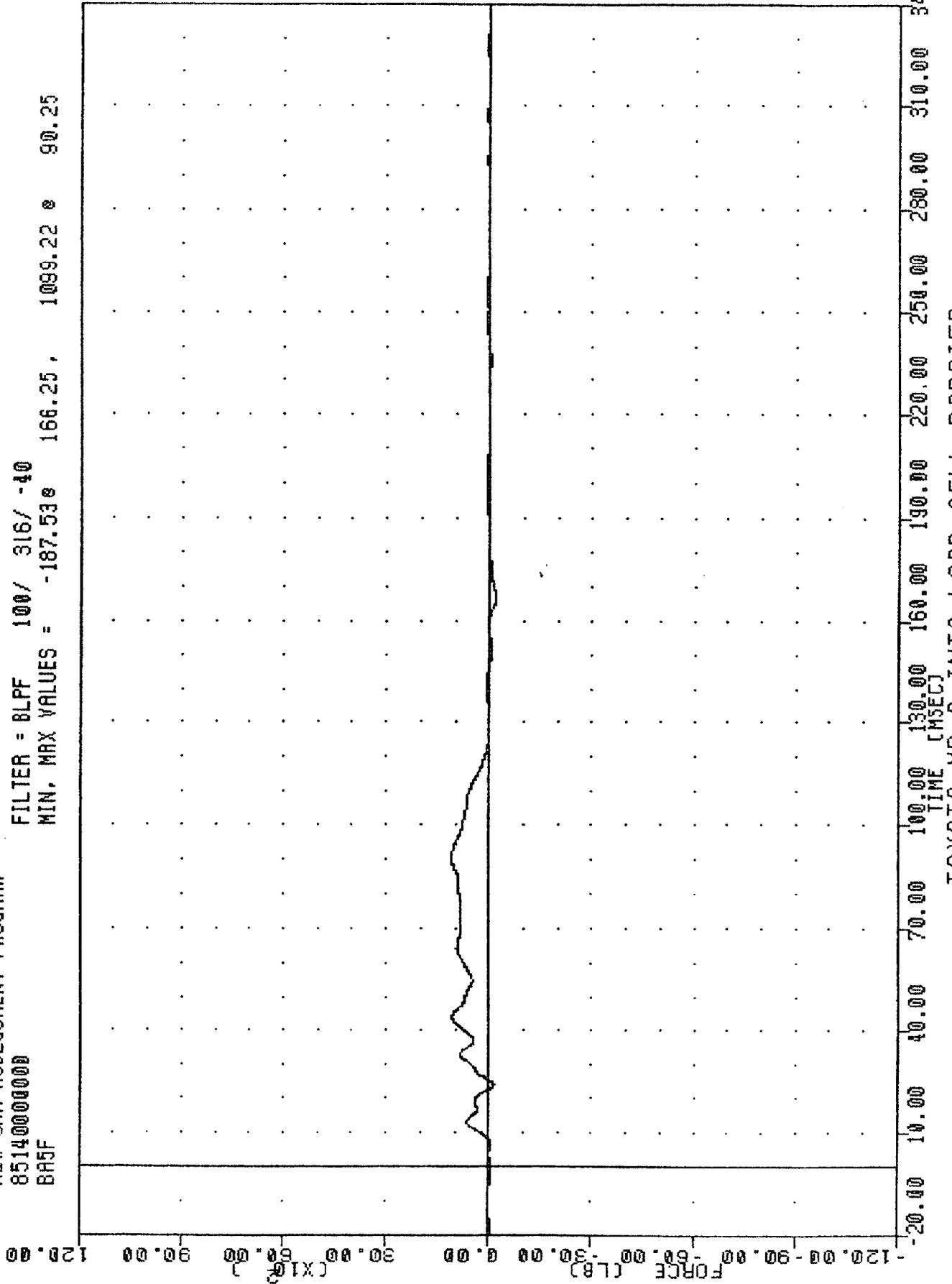
850520

TOYOTA MR-2 INTO LOAD CELL BARRIER
LOAD CELL NUMBER POSITION ON LOG

TRC , 850520
NEW CAR ASSESSMENT PROGRAM
85140000000
BA5F

PLOT DATE 22-MAY-85 14:48:58

FILTER = BLPF 100/ 316/ -40
MIN. MAX VALUES = -187.53e 166.25, 1099.22 e 90.25



B-66

850520

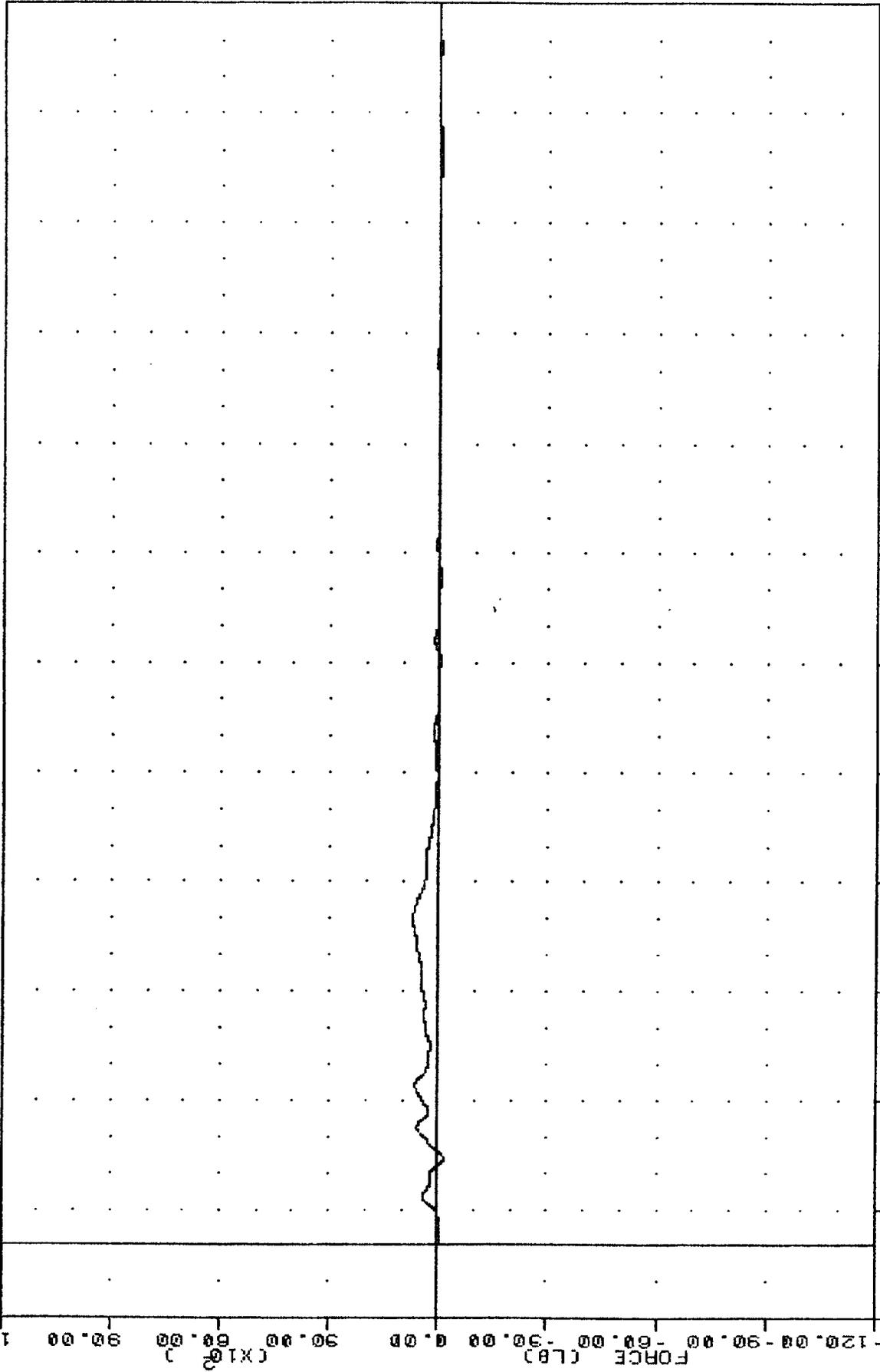
TOYOTA MR-2 INTO LOAD CELL BARRIER
LOAD CELL BARRIER POSITION AS IRS

TAC
NEW CAR ASSESSMENT PROGRAM
85140000000
BAGF

PLOT DATE 22-MAY-85 14:48:58

FILTER = BLPF 100/ 316/ -40
MIN, MAX VALUES = -157.43e 704.03 e 89.88

129.00



B-67

850520

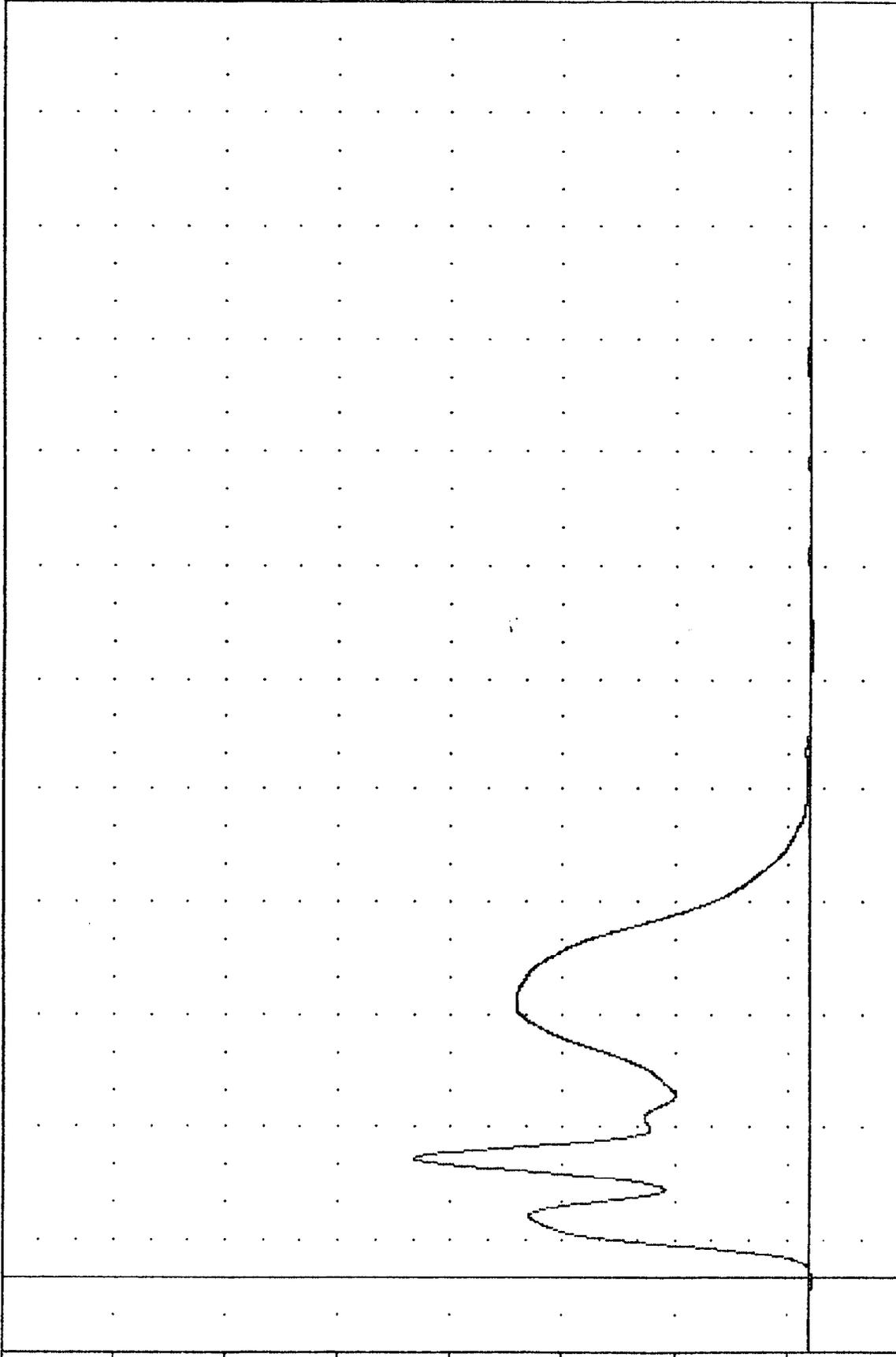
TOYOTA MR-2 INTO LOAD CELL BARRIER
LOAD CELL BARRIER POSITION DE 1 DC

TRC , 850520
 NEW CAR ASSESSMENT PROGRAM
 85140000000
 LC8G5F

PLOT DATE 22-MAY-85 14:54:10

FILTER = BLPF 100/ 316/ -40
 MIN, MAX VALUES = -167.67e 170.50, 44135.61 e 31.75

90.00
 77.50
 65.00
 52.50
 40.00
 27.50
 15.00
 2.50
 -10.00
 (X10³)
 FORCE (LB)



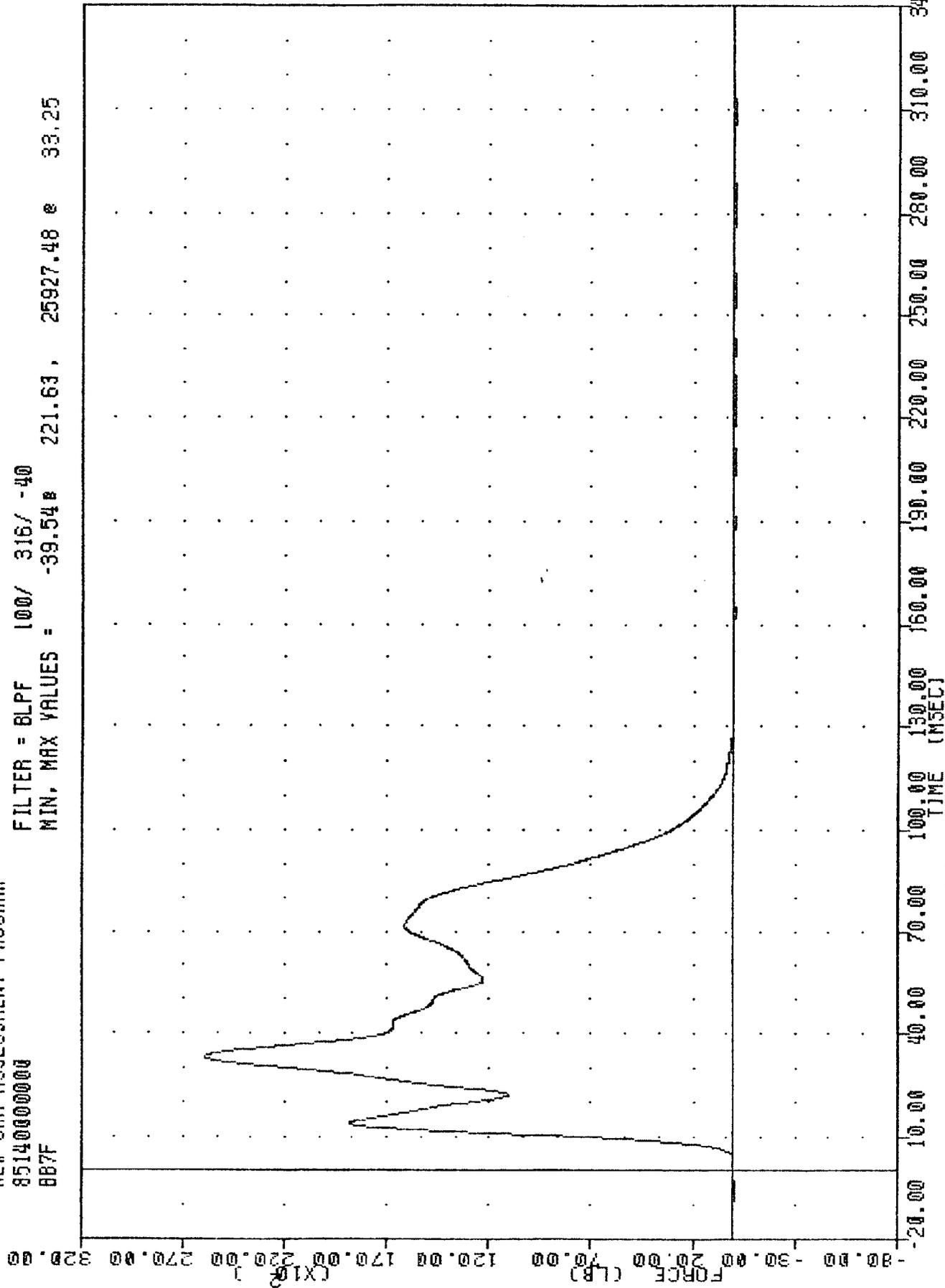
-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
 TIME (MSEC)

TOYOTA MR-2 INTO LOAD CELL BARRIER
 INAD CFI BARRIER GROUP #5 FORCE TOTAL

TAC , 850520
NEW CAR ASSESSMENT PROGRAM
851400000000
887F

PLOT DATE 22-MAY-85 14:48:58

FILTER = BLPF 100/ 316/ -40
MIN, MAX VALUES = -39.54# 221.63, 25927.48 @ 33.25

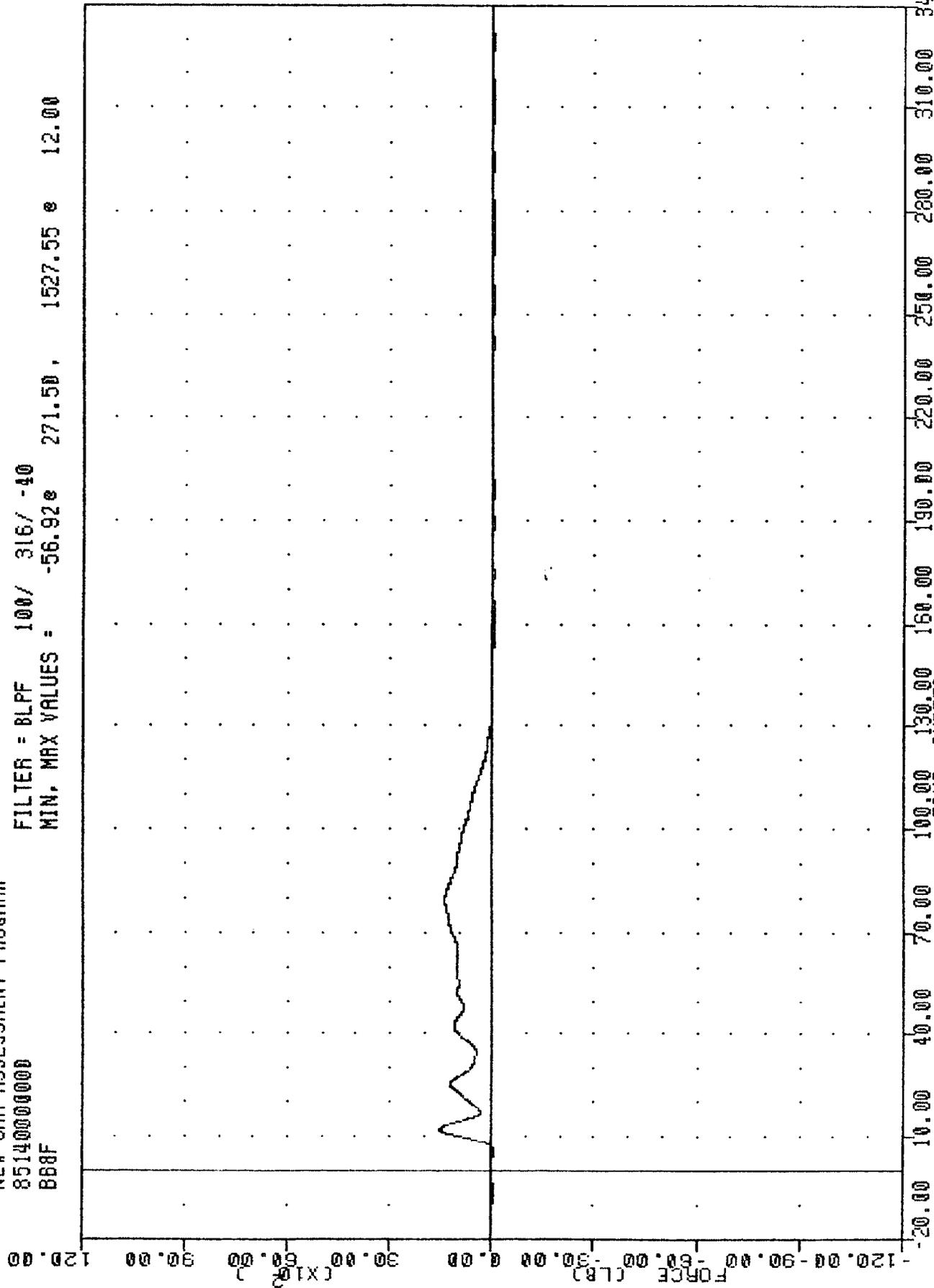


TOYOTA MR-2 INTO LOAD CELL BARRIER
LOAD CELL BARRIER POSITION R7 IRS

TRC , 850520
 NEW CAR ASSESSMENT PROGRAM
 85140000000
 B68F

PLOT DATE 22-MAY-85 14:48:58

FILTER = BLPF 100/ 316/ -40
 MIN. MAX VALUES = -56.92e 271.50 , 1527.55 e 12.00



B-70

850520

TOYOTA MR-2 INTO LOAD CELL BARRIER
 INAN CELL BARRIER POSITION R21PC

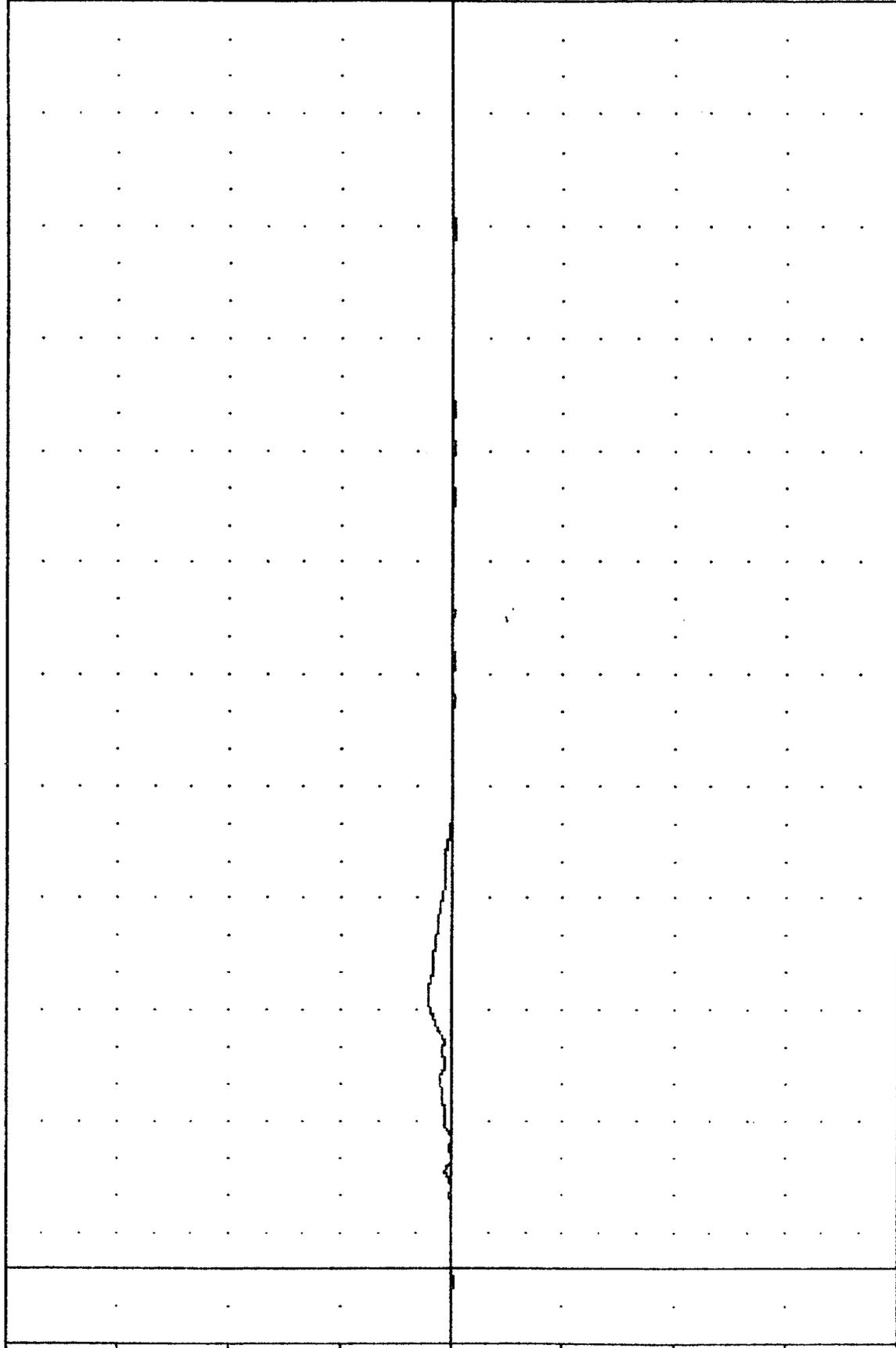
TRC 850520
NEW CAR ASSESSMENT PROGRAM
85140000000
689F

PLOT DATE 22-MAY-85 14:48:58

FILTER = BLPF 100/ 316/ .40

MIN, MAX VALUES = -35.70 164.00 638.07 72.50

120.00
90.00
60.00
30.00
0.00
-30.00
-60.00
-90.00
-120.00



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

TIME (MSEC)

TOYOTA MR-2 INTO LOAD CELL BARRIER

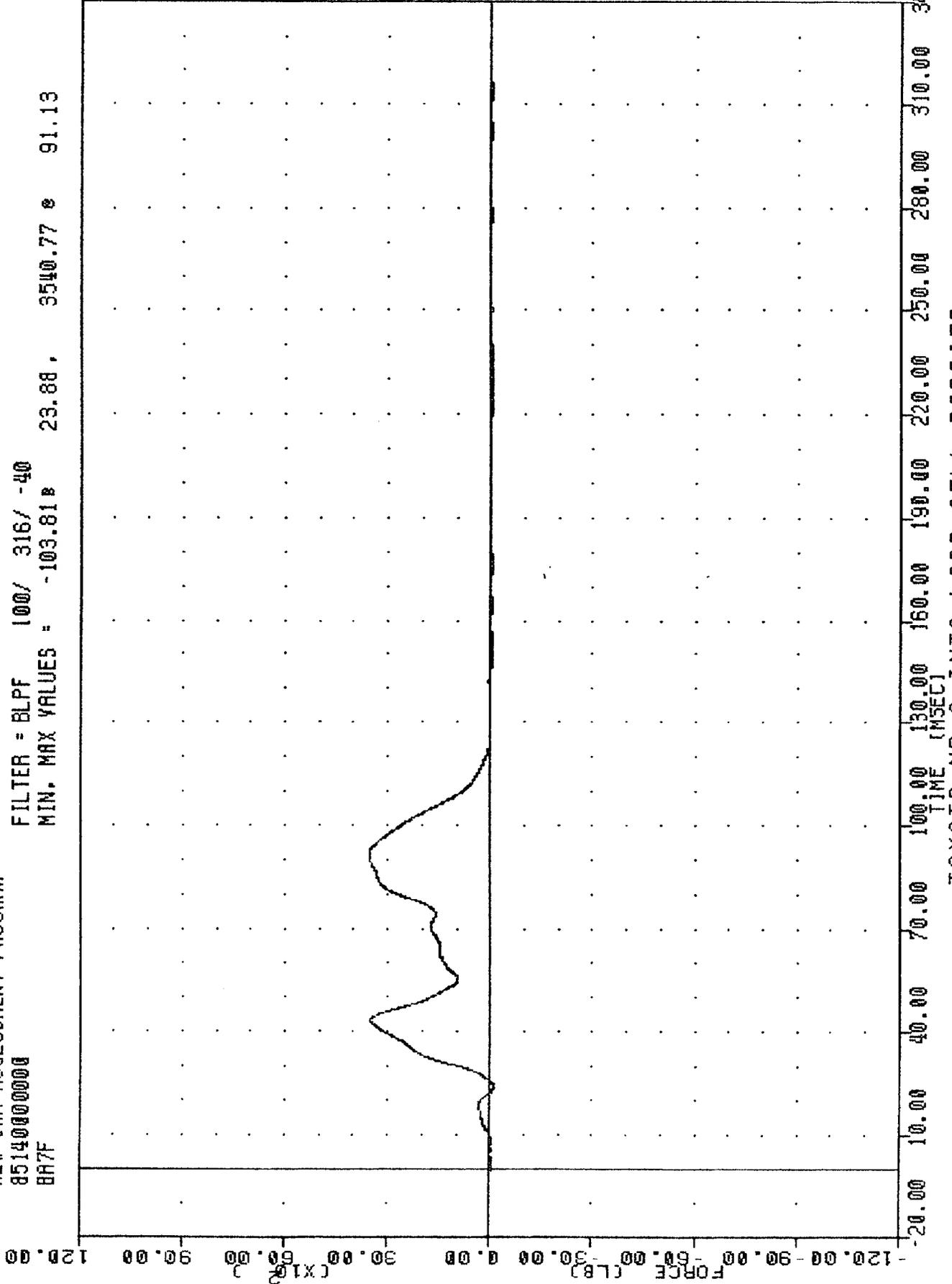
LOAD CELL REPORT POSITION 00 100

TRC , 850520
 NEW CAR ASSESSMENT PROGRAM
 8514000000
 BR7F

PLOT DATE 22-MAY-85 14:48:58

FILTER = BLPF 100/ 316/ -40

MIN. MAX VALUES = -103.81B 23.88, 3540.77 e 91.13

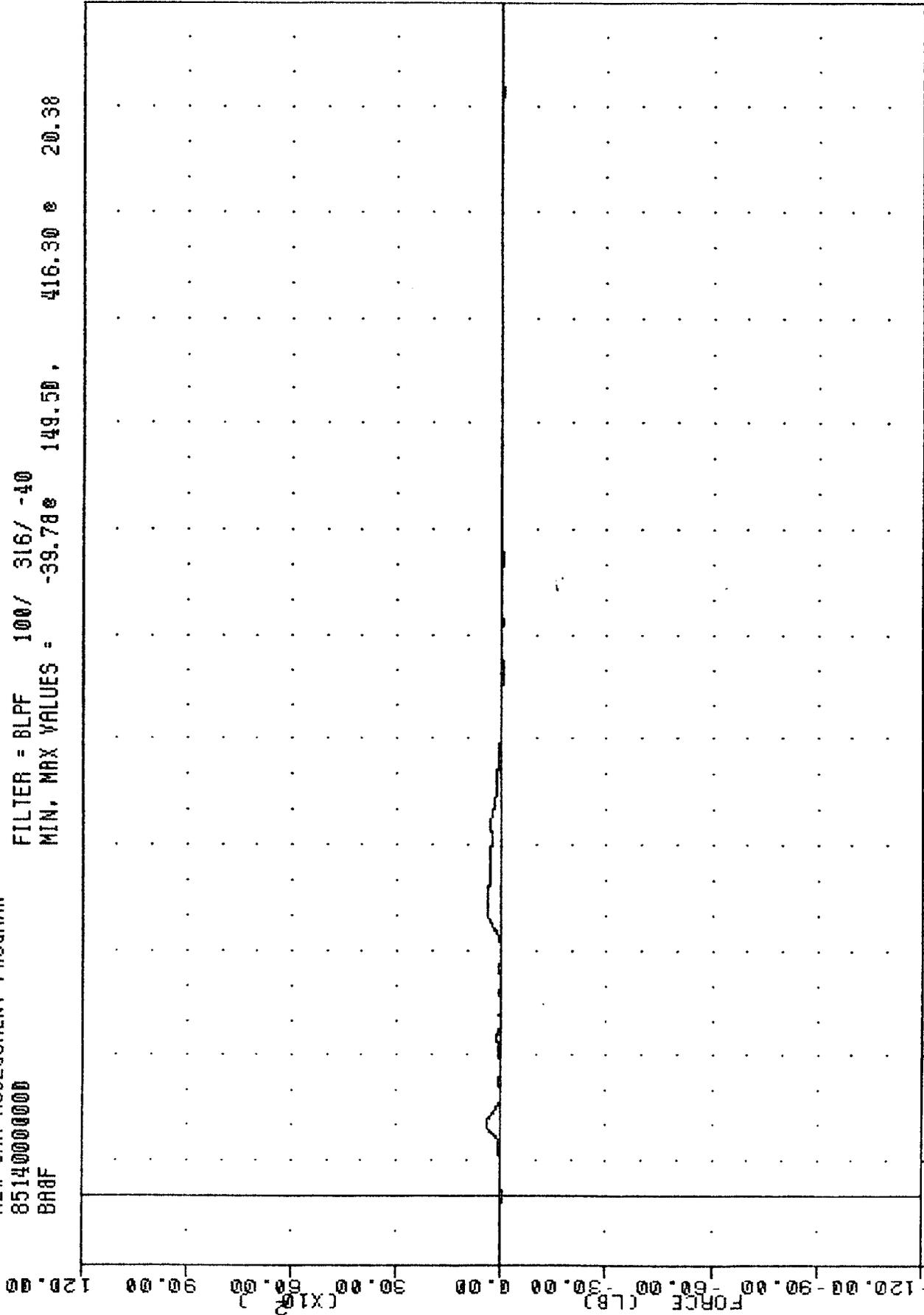


TOYOTA MR-2 INTO LOAD CELL BARRIER
 LOAD CELL POSITION AT END

TRC
 NEW CAR ASSESSMENT PROGRAM
 8514000000
 BRBF

PLOT DATE 22-MAY-85 14:48:58

FILTER = BLPF 100/ 316/ -40
 MIN. MAX VALUES = -39.78e 149.50, 416.30 e 20.38



-120.00
-90.00
-60.00
-30.00
0.00
30.00
60.00
90.00
120.00

0.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00

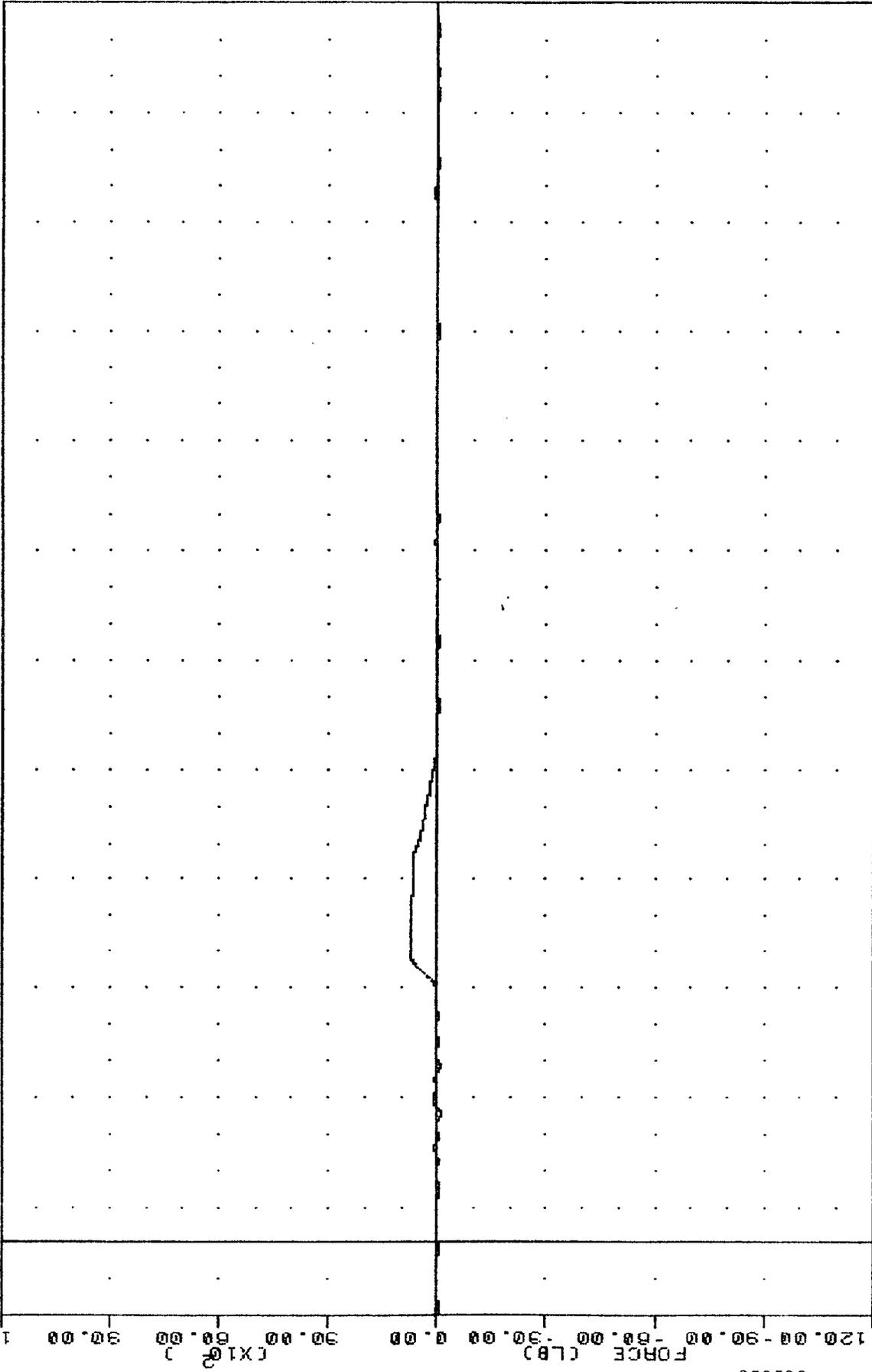
TOYOTA MR-2 INTO LOAD CELL BARRIER
 INAD CELL BARRIER POSITION AR 1 AS

TRC , 850520
 NEW CAR ASSESSMENT PROGRAM
 85140000000
 BR9F

PLOT DATE 22-MAY-85 14:48:58

FILTER = BLPF 100/ 316/ -40
 MIN. MAX VALUES = -96.05e 721.90 e 84.63

120.00



B-74

850520

-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

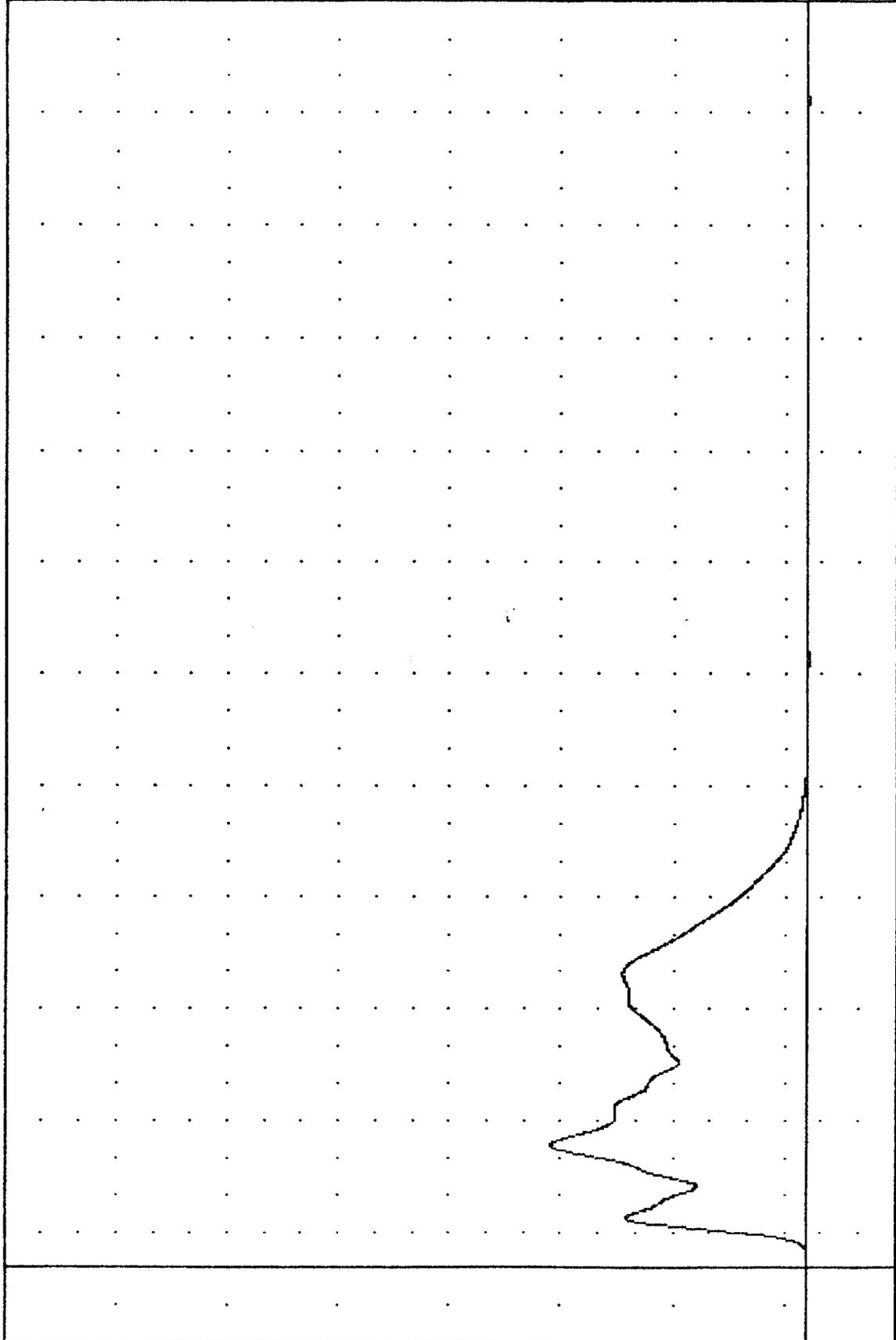
TOYOTA MR-2 INTO LOAD CELL BARRIER
 LOAD CELL BARRIER POSITION AQ 1 RS

TAC , 850520
 NEW CAR ASSESSMENT PROGRAM
 85140000000
 LCB66F

PLOT DATE 22-MAY-85 14:54:10

FILTER = BLPF 100/ 316/ -40
 MIN, MAX VALUES = -165.77e 164.00 , 28562.19 e 33.38

90.00



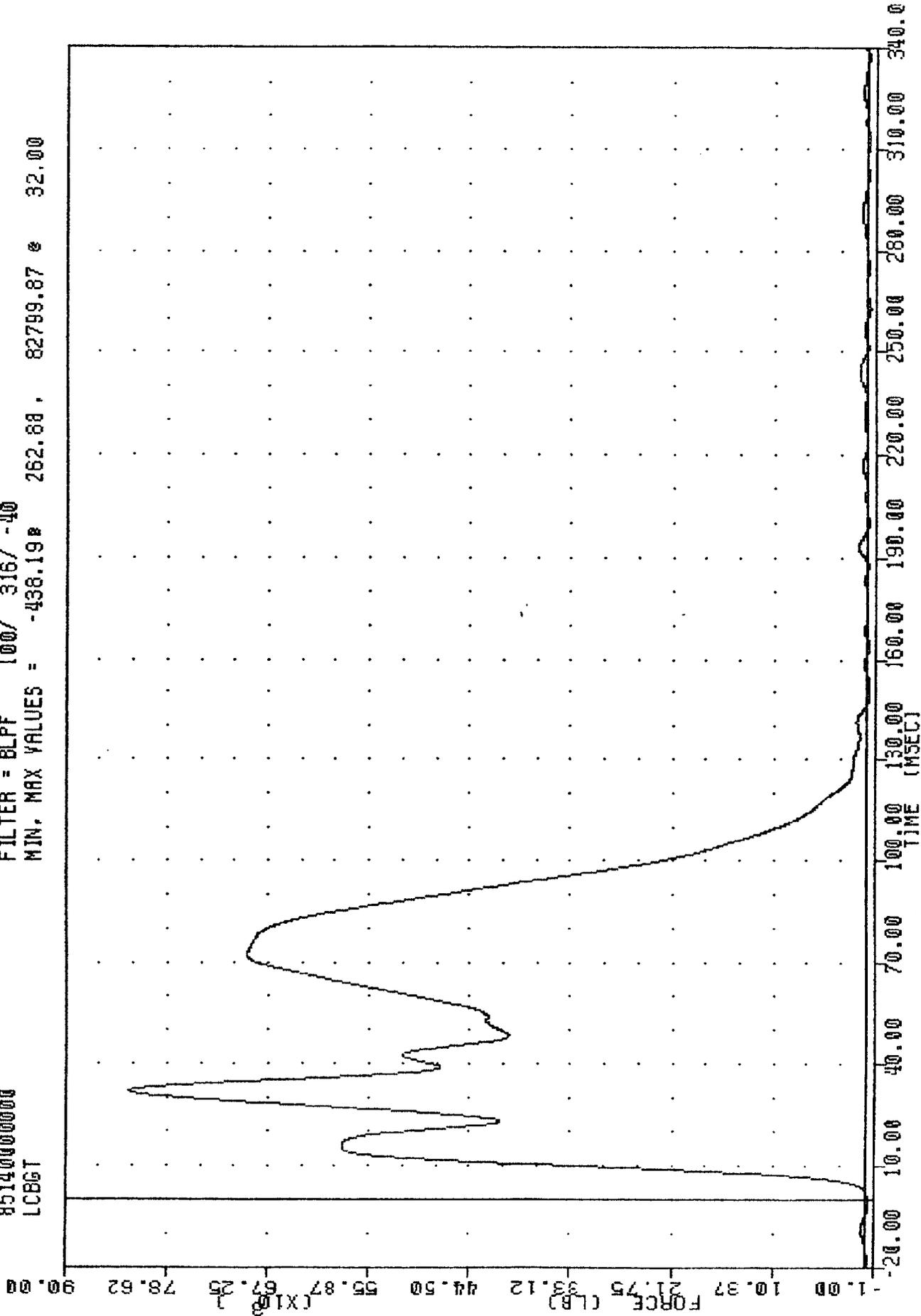
-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00

TOYOTA MR-2 INTO LOAD CELL BARRIER
 LOAD CELL BARRIER GROUP VS FORCE TOTAL

TAC , 850520
NEW CAR ASSESSMENT PROGRAM
85140000000
LCBGT

PLOT DATE 22-MAY-85 14:54:10

FILTER = BLPF 100/ 316/ -40
MIN. MAX VALUES = -438.19# 262.68# 82799.87 @ 32.00



TOYOTA MR-2 INTO LOAD CELL BARRIER
SUM OF 1000 CFI BARRIER FORCES

APPENDIX C
DUMMY CERTIFICATION

TRANSPORTATION RESEARCH CENTER OF OHIO

EXTERNAL DIMENSIONS

PART 572

TEMPERATURE 71.00 F
NHTSA NCA ED41102

RELATIVE HUMIDITY 39.00 %
572 SN411 EXT. DIMENSIONS 02

DESCRIPTION	SPECIFICATION	TEST RESULTS
SN HUMANOID 411		
Sitting Height	35.6 - 35.8IN	35.7 INS
Shoulder Pivot Height	21.8 - 22.4IN	22.4 INS
Hip Pivot Height	3.9 IN (ref.)	3.9 INS
Hip Pivot From Backline	4.8 IN (ref.)	4.8 INS
Knee Pivot From Backline	20.1 - 20.7IN	20.4 INS
Rear of Head From Backline	1.7 IN (ref)	1.7 INS
Chest Depth	9.1 - 9.6IN	9.3 INS
Shoulder Width	17.8 - 18.4IN	17.9 INS
Chest Circumference Over Nipples	36.8 - 40.0IN	37.7 INS
Waist Circumference at Min. Girth	31.4 - 32.6IN	31.7 INS
Hip Width	14.0 - 15.4IN	14.9 INS
Knee Pivot From Floor	19.3 - 19.9IN	19.6 INS

TECHNICIAN *Larry L. Phelps*

TEST SUPERVISOR *K.L. Witting*

TRANSPORTATION RESEARCH CENTER OF OHIO

LUMBAR FLEXION TEST

PART 572

TEMPERATURE 72.00 F
NHTSA NCA LF41102

RELATIVE HUMIDITY 39.00 %
572 SN 411 LUMBAR FLEX CAL02

DEFLECTION	SPECIFICATION	TEST RESULTS
0 Deg.	0 LBS	0.00 LBS
20 Deg	22.00 - 34.00 LBS	32.00 LBS
30 Deg	34.00 - 46.00 LBS	40.00 LBS
40 Deg	46.00 - 58.00 LBS	51.00 LBS
NET RETURN ANGLE	< 12 DEG	8.70 DEG

TECHNICIAN Mary L. Phelps
TEST SUPERVISOR V.L. Waters

TRANSPORTATION RESEARCH CENTER OF OHIO

ABDOMINAL COMPRESSION TEST

PART 572

TEMPERATURE 71.00 F
 NHTSA NCA AB41102

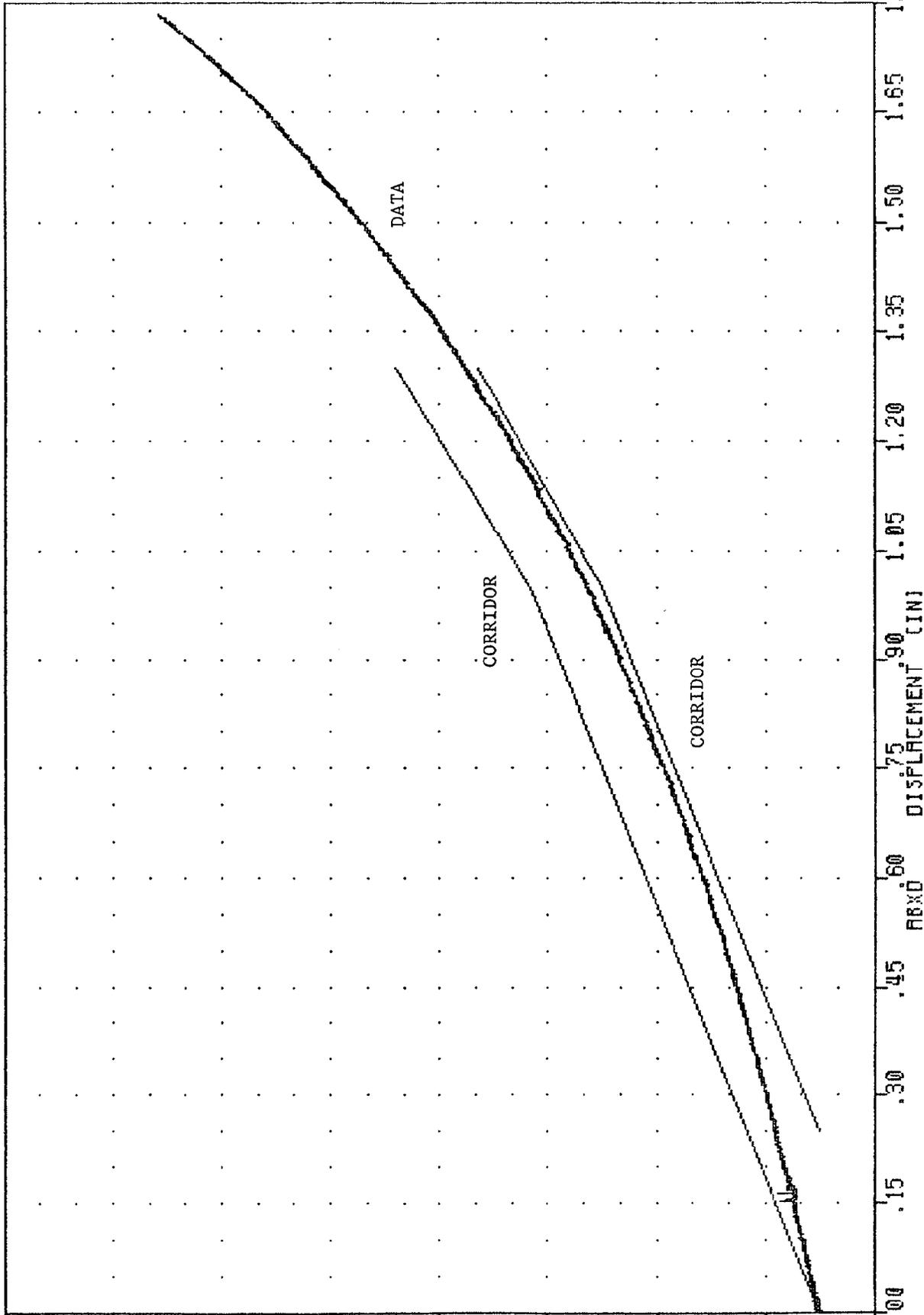
RELATIVE HUMIDITY 39.00 %
 572 SN411 ABDOM COMPR CAL 02

TEST CORRIDORS		
DISPLACEMENT	FORCE	TEST RESULTS
0 IN.	10 LBS	10 LBS
.50 IN.	23.00 - 36.00 LBS	27.24 LBS
.75 IN.	36.00 - 50.00 LBS	38.52 LBS
1.00 IN.	50.00 - 63.00 LBS	53.02 LBS
1.30 IN.	73.00 - 88.00 LBS	75.14 LBS

TECHNICIAN *Mary L. Phelps*
 TEST SUPERVISOR *V. J. Watten*

NHTSA NCA : AB41102
 FILTER = ALPF
 FILTER = ALPF
 572 SN411 ABDOM COMP CAL 02
 1650/ 5214/ -40
 1650/ 5214/ -40
 85035
 0.00 e
 9.81 e
 0.00 ;
 0.00 ;
 1.78 e
 131.39 e
 1.78

0.00 20.00 40.00 60.00 80.00 100.00 120.00 140.00 160.00 180.00
 FORCE (LB)
 0.00 .15 .30 .45 .60 .75 .90
 DISPLACEMENT (IN)



ABDOMINAL COMPRESSION VS DISPLACEMENT

TRANSPORTATION RESEARCH CENTER OF OHIO

HEAD DROP TEST

PART 572

TEMPERATURE 71 F
NHTSA NCA HD41102

RELATIVE HUMIDITY 39 %
572 SN 411 HEAD DROP CAL 02

TEST PARAMETER	SPECIFICATION	TEST RESULTS
PEAK RESULTANT ACCELERATION	210 - 260 G	241.91 G
TIME ABOVE 100 G LEVEL	0.9 - 1.5 MS	1.25 MS
PEAK LATERAL ACCELERATION	10 G MAX	5.80 G
IS ACCELERATION CURVE UNIMODAL?		YES

TECHNICIAN *Harry J. Phelps*

TEST SUPERVISOR *V.L. Watters*

TRANSPORTATION RESEARCH CENTER OF OHIO

NECK PENDULUM TEST

PART 572

TEMPERATURE 72.00 F
NHTSA NCA HN41102

RELATIVE HUMIDITY 40.00 %
572 SN 411 HEAD/NECK CAL 02

Test Parameter	Specification	Test Results
Pendulum velocity	21.5 to 25.5 fps	22.41 fps
Pendulum Deceleration:		
T1 - T2: 5 - 20 G	3 ms. max	1.59 ms.
T2 - T3: 20 - 20 G	25 - 30 ms.	26.83 ms.
T3 - T4: 20 - 5 G	10 ms. max	6.38 ms.
Avs. G level T2 - T3	20 - 24 G	23.24 G
Maximum Rotation Angle	63 - 73 deg.	68.30 deg.
Peak Head Resultant Accel	26 G max	25.34 G

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

TECHNICIAN *Harry L. Phelps*

TEST SUPERVISOR *V. J. Walter*

TRANSPORTATION RESEARCH CENTER OF OHIO

THORAX IMPACT TEST

PART 572

TEMPERATURE 72 F
 NHTSA NCA TH41102

RELATIVE HUMIDITY 40 %
 572 SN 411 H.S.THORAX CAL 02

HIGH SPEED TEST		
TEST PARAMETER	SPECIFICATION	TEST RESULTS
PENDULUM VELOCITY	21.78-22.22 FT/SEC	21.78 FT/SEC
PEAK DEFLECTION	1.7 INCHES MAX.	1.41 INCHES
PEAK RESISTIVE FORCE	2,250. POUNDS MAX.	1996. POUNDS
INTERNAL HYSTERESIS	50% - 70%	59.9%

TECHNICIAN *Mary L. Phelps*

TEST SUPERVISOR *V.L. Waters*

TRANSPORTATION RESEARCH CENTER OF OHIO

THORAX IMPACT TEST

PART 572

TEMPERATURE 72 F
NHTSA NCA TL41102

RELATIVE HUMIDITY 40 %
572 SN 411 L.S.THORAX CAL 02

LOW SPEED TEST		
TEST PARAMETER	SPECIFICATION	TEST RESULTS
PENDULUM VELOCITY	13.86-14.14 FT/SEC	14.04 FT/SEC
PEAK DEFLECTION	1.1 INCHES MAX.	0.91 INCHES
PEAK RESISTIVE FORCE	1,450. POUNDS MAX.	1350. POUNDS
INTERNAL HYSTERESIS	50% - 70%	63.6%

TECHNICIAN *Mary L Phelps*

TEST SUPERVISOR *V.L. Waters*

TRANSPORTATION RESEARCH CENTER OF OHIO

KNEE IMPACT TEST

PART 572

TEMPERATURE 71 F
LEFT KNEE
NHTSA NCA LK41102

RELATIVE HUMIDITY 41 %
572 SN 411 L.KNEE IMP CAL 02

TEST PARAMETER	SPECIFICATION	TEST RESULTS
PROBE VELOCITY	6.76 - 7.04 FT/SEC	6.90 FT/SEC
PEAK KNEE IMPACT FORCE	1850 - 2500 LBS.	2115.61 LBS.
DURATION ABOVE 1000 LBS.	≥ 1.7 MS.	1.77 MS.

TECHNICIAN Gary J. Phelps

TEST SUPERVISOR V.L. Watten

TRANSPORTATION RESEARCH CENTER OF OHIO

KNEE IMPACT TEST

PART 572

TEMPERATURE 72 F
RIGHT KNEE
NHTSA NCA RK41102

RELATIVE HUMIDITY 41 %
572 SN 411 R.KNEE IMP CAL 02

TEST PARAMETER	SPECIFICATION	TEST RESULTS
PROBE VELOCITY	6.76 - 7.04 FT/SEC	6.96 FT/SEC
PEAK KNEE IMPACT FORCE	1850 - 2500 LBS.	1910.24 LBS.
DURATION ABOVE 1000 LBS.	≥ 1.7 MS.	1.74 MS.

TECHNICIAN Gary L. Phelps

TEST SUPERVISOR V.J. Watter

TRANSPORTATION RESEARCH CENTER OF OHIO

EXTERNAL DIMENSIONS

PART 572

TEMPERATURE 71.00 F
NHTSA NCA EDA0910

RELATIVE HUMIDITY 39.00 %
572 SNA09 EXT. DIMENSIONS 10

DESCRIPTION	SPECIFICATION	TEST RESULTS
SN ALDERSON RESEARCH LAB #A09		
Sitting Height	35.6 - 35.8 IN	35.6 INS
Shoulder Pivot Height	21.8 - 22.4 IN	22.3 INS
Hip Pivot Height	3.9 IN (ref.)	3.9 INS
Hip Pivot From Backline	4.8 IN (ref.)	4.8 INS
Knee Pivot From Backline	20.1 - 20.7 IN	20.7 INS
Rear of Head From Backline	1.7 IN (ref)	1.7 INS
Chest Depth	9.1 - 9.6 IN	9.5 INS
Shoulder Width	17.8 - 18.4 IN	17.8 INS
Chest Circumference Over Nipples	36.8 - 40.0 IN	37.3 INS
Waist Circumference at Min. Girth	31.4 - 32.6 IN	32.0 INS
Hip Width	14.0 - 15.4 IN	14.6 INS
Knee Pivot From Floor	19.3 - 19.9 IN	19.6 INS

TECHNICIAN

Mary S. Phelps

TEST SUPERVISOR

V.L. Waters

C-12

850520

TRANSPORTATION RESEARCH CENTER OF OHIO

LUMBAR FLEXION TEST

PART 572

TEMPERATURE 68.00 F
 NHTSA NCA LFA0910B

RELATIVE HUMIDITY 41.00 %
 572 SN A09 LUMBAR FLEX CAL10B

DEFLECTION	SPECIFICATION	TEST RESULTS
0 Deg.	0 LBS	0.00 LBS
20 Deg	22.00 - 34.00 LBS	34.00 LBS
30 Deg	34.00 - 46.00 LBS	45.00 LBS
40 Deg	46.00 - 58.00 LBS	57.00 LBS
NET RETURN ANGLE	< 12 DEG	9.30 DEG

TECHNICIAN *Gary S. Phelps*
 TEST SUPERVISOR *V.L. Waters*

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TRANSPORTATION RESEARCH CENTER OF OHIO

ABDOMINAL COMPRESSION TEST

PART 572

TEMPERATURE 71.00 F
 NHTSA NCA ABA0910B

RELATIVE HUMIDITY 40.00 %
 572 SNA09 ABDOM COMPR CAL 10B

TEST CORRIDORS		
DISPLACEMENT	FORCE	TEST RESULTS
0 IN.	10 LBS	10 LBS
.50 IN.	23.00 - 36.00 LBS	31.87 LBS
.75 IN.	36.00 - 50.00 LBS	46.06 LBS
1.00 IN.	50.00 - 63.00 LBS	61.85 LBS
1.30 IN.	73.00 - 88.00 LBS	86.12 LBS

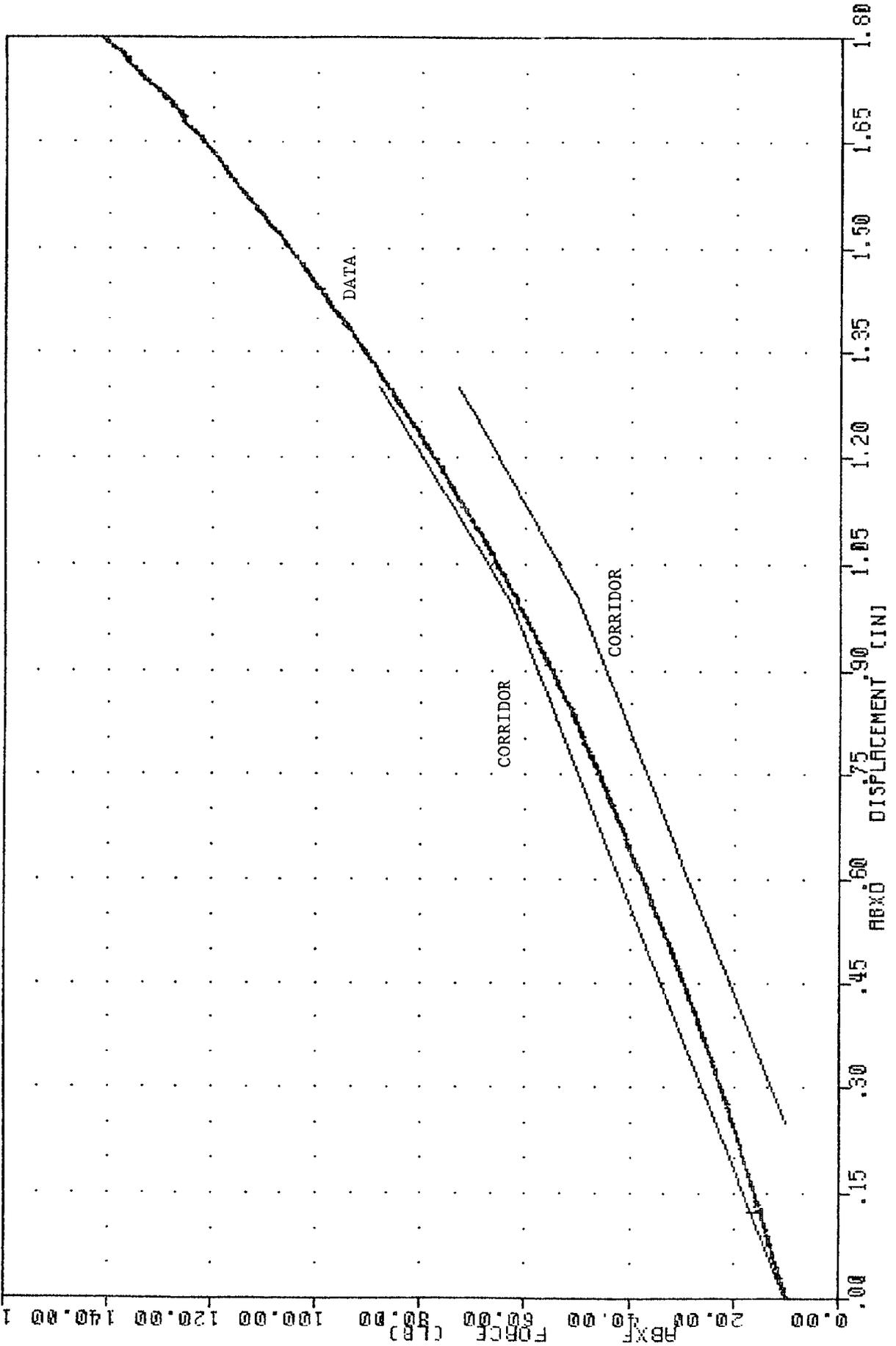
TECHNICIAN *Larry L. Phelps*
 TEST SUPERVISOR *V.L. Watters*

NHTSA NCA : ABA0910B
ABXD FILTER = ALPF
ABXF FILTER = ALPF

572 SNA09 ABDOM COMPRA CAL 10B
1650/ 5214/ -40 MIN, MAX =
1650/ 5214/ -40 MIN, MAX =

85038
0.00 #
9.85 #

0.00 : 1.80 e
0.00 : 141.99 e
140.80
1.80



TRANSPORTATION RESEARCH CENTER OF OHIO

HEAD DROP TEST

PART 572

TEMPERATURE 73 F
NHTSA NCA HDA0910

RELATIVE HUMIDITY 39 %
572 SN A09 HEAD DROP CAL 10

TEST PARAMETER	SPECIFICATION	TEST RESULTS
PEAK RESULTANT ACCELERATION	210 - 260 G	228.87 G
TIME ABOVE 100 G LEVEL	0.9 - 1.5 MS	1.26 MS
PEAK LATERAL ACCELERATION	10 G MAX	7.47 G
IS ACCELERATION CURVE UNIMODAL?		YES

TECHNICIAN *Larry J. Phelps*

TEST SUPERVISOR *V.L. Watters*

TRANSPORTATION RESEARCH CENTER OF OHIO

NECK PENDULUM TEST

PART 572

TEMPERATURE 72.00 F
NHTSA NCA HNA0910

RELATIVE HUMIDITY 40.00 %
572 SN A09 HEAD/NECK CAL 10

Test Parameter	Specification	Test Results
Pendulum velocity	21.5 to 25.5 fps	23.60 fps
Pendulum Deceleration:		
T1 - T2: 5 - 20 G	3 ms. max	1.75 ms.
T2 - T3: 20 - 20 G	25 - 30 ms.	27.10 ms.
T3 - T4: 20 - 5 G	10 ms. max	7.52 ms.
Avg. G level T2 - T3	20 - 24 G	23.54 G
Maximum Rotation Angle	63 - 73 deg.	66.06 deg.
Peak Head Resultant Accel	26 G max	22.49 G

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

TECHNICIAN *Mary L. Phelps*

TEST SUPERVISOR *V.L. Watters*

TRANSPORTATION RESEARCH CENTER OF OHIO

THORAX IMPACT TEST

PART 572

TEMPERATURE 72 F
 NHTSA NCA TLA0910B

RELATIVE HUMIDITY 41 %
 572 SN A09 L.S.THORAX CAL 10B

LOW SPEED TEST		
TEST PARAMETER	SPECIFICATION	TEST RESULTS
PENDULUM VELOCITY	13.86-14.14 FT/SEC	14.04 FT/SEC
PEAK DEFLECTION	1.1 INCHES MAX.	0.89 INCHES
PEAK RESISTIVE FORCE	1,450. POUNDS MAX.	1342. POUNDS
INTERNAL HYSTERESIS	50% - 70%	55.8%

TECHNICIAN Ray J. Phelps

TEST SUPERVISOR V.L. Watters

TRANSPORTATION RESEARCH CENTER OF OHIO

THORAX IMPACT TEST

PART 572

TEMPERATURE 72 F
 NHTSA NCA THA0910B

RELATIVE HUMIDITY 41 %
 572 SN A09 H.S.THORAX CAL 10B

HIGH SPEED TEST		
TEST PARAMETER	SPECIFICATION	TEST RESULTS
PENDULUM VELOCITY	21.78-22.22 FT/SEC	22.22 FT/SEC
PEAK DEFLECTION	1.7 INCHES MAX.	1.46 INCHES
PEAK RESISTIVE FORCE	2,250. POUNDS MAX.	2054. POUNDS
INTERNAL HYSTERESIS	50% - 70%	56.2%

TECHNICIAN Ray S. Phelps

TEST SUPERVISOR V.L. Watters

TRANSPORTATION RESEARCH CENTER OF OHIO

KNEE IMPACT TEST

PART 572

TEMPERATURE 72 F
RIGHT KNEE
NHTSA NCA RKA0910

RELATIVE HUMIDITY 41 %
572 SN A09 R.KNEE IMP CAL 10

TEST PARAMETER	SPECIFICATION	TEST RESULTS
PROBE VELOCITY	6.76 - 7.04 FT/SEC	6.96 FT/SEC
PEAK KNEE IMPACT FORCE	1850 - 2500 LBS.	1920.13 LBS.
DURATION ABOVE 1000 LBS.	>=1.7 MS.	1.84 MS.

TECHNICIAN *Larry L. Phelps*

TEST SUPERVISOR *V.L. Walters*

TRANSPORTATION RESEARCH CENTER OF OHIO

KNEE IMPACT TEST

PART 572

TEMPERATURE 72 F
LEFT KNEE
NHTSA NCA LKA0910

RELATIVE HUMIDITY 41 %
572 SN A09 L.KNEE IMP CAL 10

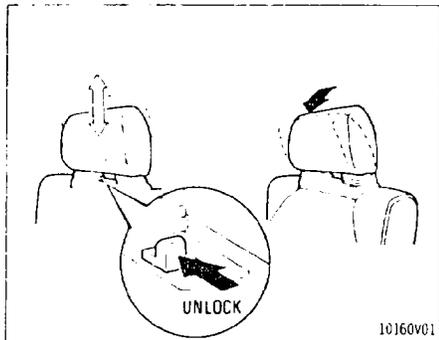
TEST PARAMETER	SPECIFICATION	TEST RESULTS
PROBE VELOCITY	6.76 - 7.04 FT/SEC	6.96 FT/SEC
PEAK KNEE IMPACT FORCE	1850 - 2500 LBS.	1980.55 LBS.
DURATION ABOVE 1000 LBS.	>=1.7 MS.	1.83 MS.

TECHNICIAN *Mary S. Phelps*

TEST SUPERVISOR *K.H. Walters*

APPENDIX D
RESTRAINT INSTRUCTION FROM OWNER'S MANUAL

Headrests



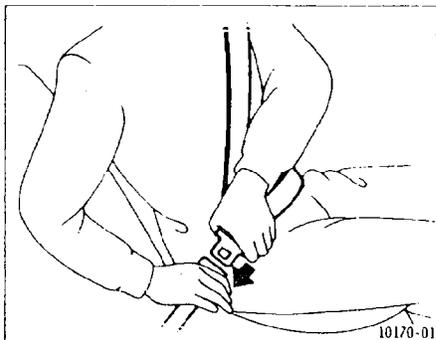
To raise the headrest, pull it up. To lower it, press the lock release button and push the headrest down. To move the headrest forward, pull on the top.

Pulling the top of the headrest as far as it can go will return it to the upright position.

Adjust the top of the headrest so that it is closest to the top of your ears, and lock it into position. Do not drive with the headrests removed.

The headrest is most effective when it is close to your head. Therefore, using a cushion on the seatback is not recommended.

Seat belts



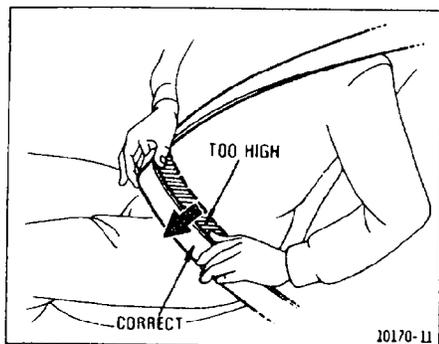
To fasten your belt, pull it out of the retractor and insert the tab into the buckle.

You will hear a click when the tab locks into the buckle. Make sure that the connection is secure and the belt is not twisted.

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

The retractor will lock the belt during a sudden stop or on impact. At other times you can move around freely.

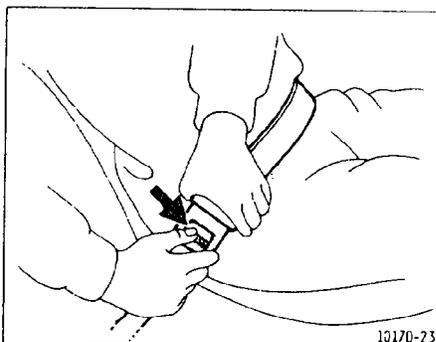
Passenger's belt — the belt will automatically lock by fully extending the maximum length of this belt and allowing to retract. Once set, the belt will not extend again until released and fully retracted. This feature is included for use with infant carrier or child seat.



Adjust the position of the lap and shoulder belts.

Position the lap belt as low as possible on your hips — not on your waist. Failure to do so could increase the chance of injury due to sliding under the lap belt during an accident.

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



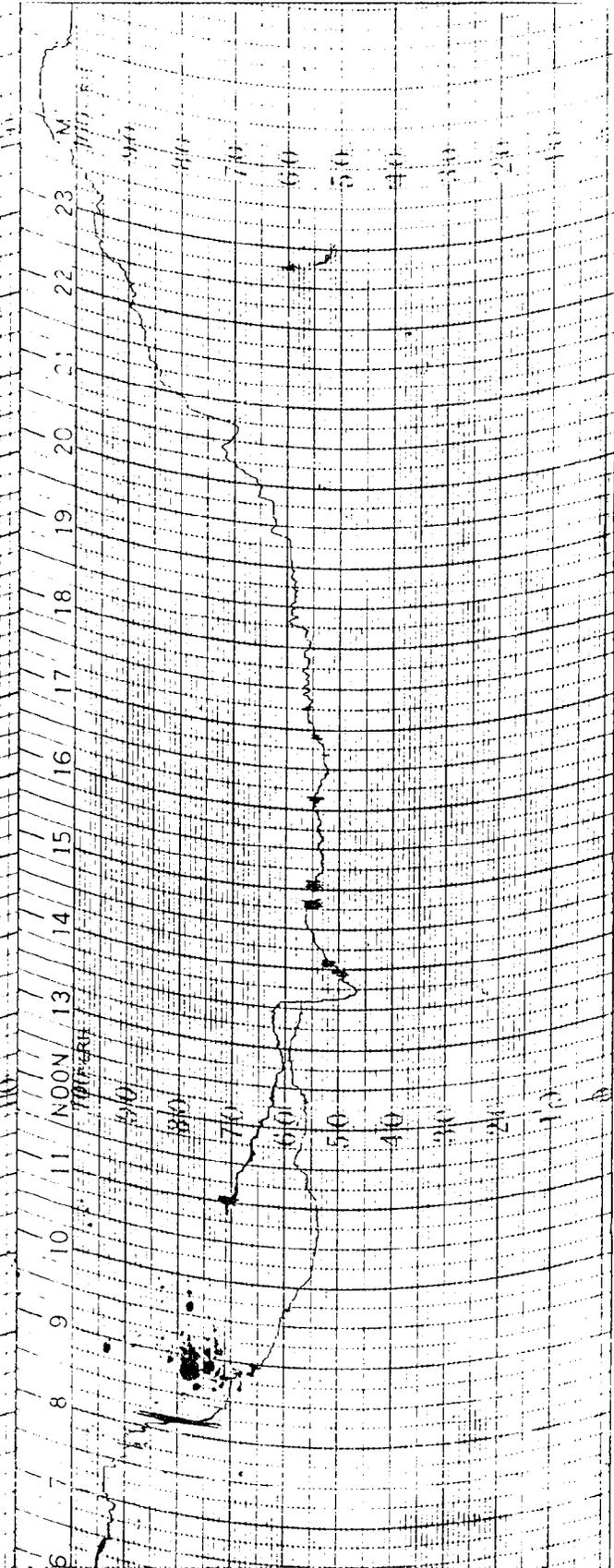
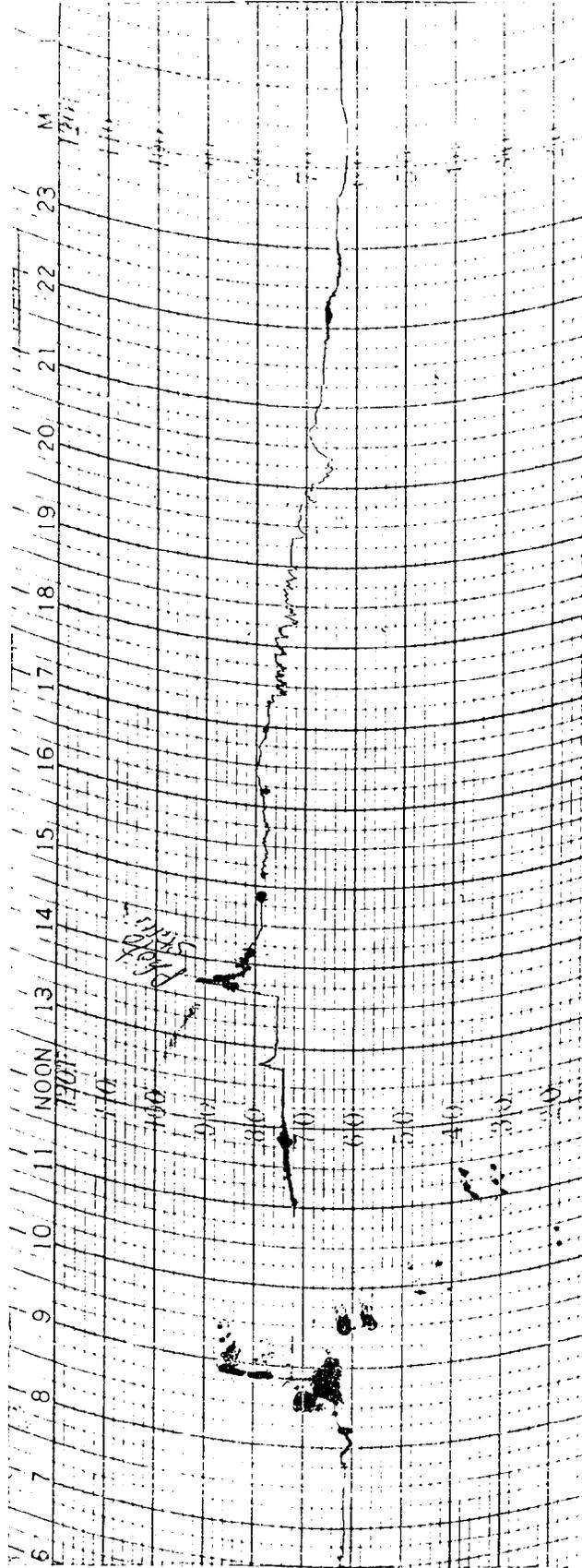
To release the belt, press the buckle-release button and allow the belt to retract.

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

Seat belt precautions

Toyota recommends that the driver² and passengers in the vehicle be properly restrained at all times with the seat belts provided. Failure to do so could increase the chance of injury and/or the severity of injury in accidents.

- **Children.** Do not allow the child to stand up or kneel on the seat, and *your child must be restrained by the seat belt.*
- **Baby or small child.** Use an infant carrier or child seat which fits your vehicle. See information for the child restraint system in this section.
- **Pregnant woman.** Toyota recommends the use of a seat belt. Ask your doctor for specific recommendations. The lap belt should be worn securely and as low as possible over the hips and not on the waist.
- **Injured person.** Toyota recommends the use of a seat belt. Depending on the injury, however, first check with your doctor.
- **Only one person per belt.** Do not use a single belt for two or more people — even children.



STATION MR-2

DATE ON MAY 20, 1985

DATE OFF MAY 20, 1985