1818

REPORT NO. TRC-92-N04

NEW CAR ASSESSMENT PROGRAM (NCAP)

FRONTAL BARRIER IMPACT TEST

CHRYSLER CORPORATION

1993 DODGE STEALTH

3-DOOR HATCHBACK

NHTSA NO. MP0305

TRC TEST NO. 921216

PREPARED BY:

TRANSPORTATION RESEARCH CENTER INC.

10820 STATE ROUTE 347

EAST LIBERTY, OHIO 43319

JANUARY 8, 1993

FINAL REPORT

PREPARED FOR:

U. S. DEPARTMENT OF TRANSPORTATION

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

OFFICE OF MARKET INCENTIVES

ROOM NO. 5313 (NRM-22)

400 SEVENTH STREET, S.W.

WASHINGTON, D.C. 20590

This Final Test Report was prepared for the U.S. Department of Transportation, National Highway Traffic Safety Administration, under Contract No. DTNH22-90-D-22121. This document is disseminated under the sponsorship of the U.S. Department of Transportation in the interest of information exchange. The United States Government assumes no liability for its contents or use thereof.

This publication is distributed by the U. S. Department of Transportation, National Highway Traffic Safety Administration, in the interest of information exchange. The opinions, findings and conclusions expressed in this publication are those of the author(s) and not necessarily those of the Department of Transportation or the National Highway Traffic Safety Administration. The United States Government assumes no liability for its contents or use thereof. If trade or manufacturers' names or products are mentioned, it is only because they are considered essential to the object of the publication and should not be construed as an endorsement. The United States Government does not endorse products or manufacturers.

REPORT PREPARED BY:

Jeffery W. Sankey Date 1/6/93

Jeffery W. Sankey, Engineering Supervisor
Transportation Research Center Inc.

REPORT APPROVED BY:

Kay Latimer Date 1-6-93

C. Kay Latimer, Project Manager
Transportation Research Center Inc.

FINAL REPORT ACCEPTED BY:

APR 08 1993

Date

Manager, New Car Assessment Program
NHTSA, Office of Market Incentives

Ha Su Cha Date APR 08 1993

Contracting Officer's Technical Representative (COTR),
NHTSA, Office of Market Incentives

Technical Report Documentation Page

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.
TRC-92-N04		

4. Title and Subtitle	5. Report Date
NEW CAR ASSESSMENT PROGRAM (NCAP), FRONTAL BARRIER IMPACT TEST OF A 1993 DODGE STEALTH 3-DOOR HATCHBACK, NHTSA NO. MP0305	JANUARY 8, 1993
	6. Performing Organization Code
7. Author(s)	8. Performing Organization Report No.
J. W. Sankey, Engineering Supervisor, TRC	TRC-92-N04
9. Performing Organization Name and Address	10. Work Unit No. (TRAIS)
Transportation Research Center Inc. 10820 State Route 347 East Liberty, Ohio 43319	11. Contract or Grant No. DTNH22-90-D-22121
12. Sponsoring Agency Name and Address	13. Type of Report and Period Covered
U.S. Department of Transportation National Highway Traffic Safety Administration Office of Market Incentives, Room No. 5313, (NRM-22) 400 Seventh St., S.W., Washington, DC 20590	FINAL REPORT DECEMBER 1992-JANUARY 1993
	14. Sponsoring Agency Code NRM-22

15. Supplementary Notes

16. Abstract

A 56 kph (35 mph) frontal load cell barrier impact test was conducted on a 1993 Dodge Stealth 3-door hatchback, NHTSA No. MP0305, at the Transportation Research Center Inc. on December 16, 1992. This test was conducted to obtain new car assessment and research data indicant of FMVSS No. 208 performance. The barrier impact velocity was 56.2 kph. The vehicle's maximum crush was 616 millimeters. The ambient temperature was 23° C.

The driver's head injury criteria (HIC) was 273. The driver's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 45.1 g. The driver's chest maximum deflection was 35 mm. The driver's left and right femur maximum axial forces were 4691 N and 5403 N, respectively (See DATA ACQUISITION EXPLANATIONS).

The passenger's head injury criteria (HIC) was 985. The passenger's chest maximum resultant accceleration with three (3) milliseconds minimum duration was 40.5 g. The passenger's chest maximum deflection was 49 millimeters. The passenger's left and right femur maximum axial forces were 8910 N and 5590 N, respectively.

17. Key Words	18. Distribution Statement
56.3 kph (35 mph) Frontal Barrier Impact test: New Car Assessment Program (NCAP) FMVSS 208, "Occupant Crash Protection"	Copies of this report are available from Technical Reference Division National Highway Traffic Safety Admin. Nassif Building, Room 5108 400 Seventh St., S.W., Wash. D.C. 20590

19. Security Classif. (of this report)	20. Security Classif. (of this page)	21. No. of Pages	22. Price
Unclassified	Unclassified	273	

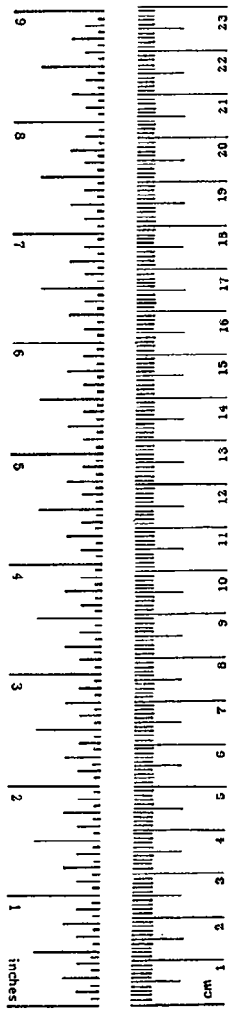
Form DOT F 1700.7 (8-72) Reproduction of completed page authorized

METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures

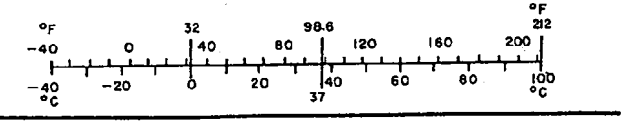
Symbol	When You Know	Multiply by	To Find	Symbol
		LENGTH		
in	inches	*2.5	centimeters	cm
ft	feet	30	centimeters	cm
yd	yards	0.9	meters	m
mi	miles	1.6	kilometers	km
		AREA		
in^2	square inches	6.5	square centimeters	cm^2
ft^2	square feet	0.09	square meters	m^2
yd^2	square yards	0.8	square meters	m^2
mi^2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

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



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	tonnes (1000 kg)	1.1	short tons	
		VOLUME		
ml	milliliters	0.03	fluid ounces	fl oz
l	liters	2.1	pints	pt
l	liters	1.06	quarts	qt
l	liters	0.26	gallons	gal
m^3	cubic meters	35	cubic feet	ft^3
m^3	cubic meters	1.3	cubic yards	yd^3
		TEMPERATURE (exact)		
°C	Celsius temperature	9/5 (then add 32)	Fahrenheit temperature	°F



1.

921216

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF PHOTOGRAPHS

LIST OF PHOTOGRAPHS, CONTINUED

SECTION 1.0

PURPOSE AND TEST PROCEDURE

PURPOSE

This 56 kph (35 mph) frontal barrier impact test is part of the New Car Assessment Program (NCAP) conducted for the National Highway Traffic Safety Administration's (NHTSA) Office of Market Incentives by the Transportation Research Center Inc. (TRC) under Contract No. DTNH22-90-D-22121.

The purpose of this test was to obtain new car assessment and research data for vehicle crashworthiness and occupant restraint system performance for the subject vehicle, a 1993 Dodge Stealth 3-door hatchback, NHTSA No. MP0305, at an impact speed in excess of the current 48 kph (30 mph) FMVSS 208 requirements.

TEST PROCEDURE

This test was conducted in accordance with NHTSA's Laboratory Indicant Test Procedure, New Car Assessment Program, dated January 1, 1990. Data was obtained indicant of FMVSS 208, "Occupant Crash Protection" performance.

The test vehicle was instrumented with nine (9) accelerometers to measure longitudinal axis accelerations. The driver's and passenger's restraint systems were instrumented with four (4) seat belt load cells to measure lap belt tension and shoulder belt tension, two (2) string potentiometers to measure shoulder belt displacement, and two (2) linear potentiometers to measure shoulder belt stretch. The vehicle impacted a frontal load cell barrier instrumented with thirty-six (36) barrier face load cells. The vehicle's specified impact velocity range was 55.5 to 57.1 kph.

The test vehicle contained two (2) Part 572E 50th percentile adult male anthropomorphic test devices (dummies). The dummies were positioned in the front outboard designated seating positions according to the dummy placement procedures specified in Appendices VII and VIII of the Laboratory Indicant Test Procedure.

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

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

The crash event was recorded by one (1) real-time panning motion picture camera and fourteen (14) high-speed motion picture cameras. The pre- and post-test conditions were recorded by one (1) real-time motion picture camera.

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

SECTION 2.0

FRONTAL BARRIER IMPACT TEST SUMMARY

TEST RESULTS SUMMARY

This frontal load cell barrier test was conducted at TRC on December 16, 1992.

The test vehicle, a 1993 Dodge Stealth 3-door hatchback, NHTSA No. MP0305, was equipped with a 3.0 liter transverse engine, automatic transmission, power steering, and power brakes. The vehicle's test weight was 1654 KG. The vehicle's impact speed was 56.2 kph. The vehicle sustained 616 mm of static crush during the impact.

The driver's head injury criteria (HIC) was 273. The driver's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 45.1 g. The driver's chest maximum deflection was 35 mm. The driver's left and right femur maximum axial forces were 4691 N and 5403 N, respectively (See DATA ACQUISITION EXPLANATIONS).

The passenger's HIC was 985. The passenger's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 40.5 g. The passenger's chest maximum deflection was 49 mm. The passenger's left and right femur maximum axial forces were 8910 N and 5590 N, respectively.

DATA ACQUISITION EXPLANATIONS

The driver's left femur force load cell, LFMF1, recorded a questionable data spike at 112 milliseconds.

The driver's right femur force load cell, RFMF1, recorded questionable data spikes at 16, 24, 25, 36, and 44 milliseconds.

The driver's shoulder belt spoolout potentiometer, SHBD1, data was lost due to the driver dummy's data cable moving the potentiometer string, causing the potentiometer to indicate additional motion.

TABLE 1 CRASH TEST SUMMARY

NHTSA NO.: MP0305 TEST TYPE: Frontal Load Cell Barrier

TEST DATE: 12/16/92 TEST TIME: 1410 AMBIENT TEMP.: 23° C

VEHICLE YEAR/MAKE/MODEL/BODY STYLE: 1993/Dodge/Stealth/3-door hatchback

VEHICLE TEST WEIGHT (KG): 1654

IMPACT ANGLE (DEG)*: 0

IMPACT VELOCITY (KPH)**: PRIMARY = 56.2 SECONDARY = 56.0

MAXIMUM STATIC CRUSH (MM): 616

AVERAGE REBOUND (MM): 316

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

NUMBER OF DATA CHANNELS: 83

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

*With respect to tow track centerline.
**Speed trap measurement (± .08 kph accuracy)

TABLE 2 TEST VEHICLE INFORMATION

VEHICLE MANUFACTURER: Mitsubishi Motors Corporation

MAKE/MODEL: Dodge/Stealth VIN: JB3BM44H8PY009708

BODY STYLE: 3-door hatchback MODEL YEAR: 1993

NHTSA NO.: MP0305 COLOR: White

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

TRANSMISSION DATA: _4_SPEED, ___MANUAL, _X_AUTOMATIC, _X_FWD, ___RWD, _X_4WD

DATE VEHICLE RECEIVED: 11/18/92 ODOMETER READING: 191.0

DEALER'S NAME AND ADDRESS: Spitzer Motor City Inc.
13001 Brookpark Road
Cleveland, OH 44142

ACCESSORIES:

POWER STEERING	No	AUTOMATIC TRANSMISSION	Yes
POWER BRAKES	Yes	AUTOMATIC SPEED CONTROL	Yes
POWER SEATS	No	TILTING STEERING WHEEL	Yes
POWER WINDOWS	Yes	TELESCOPING STEERING WHEEL	No
TINTED GLASS	Yes	AIR CONDITIONING	Yes
RADIO	Yes	ANTI-SKID BRAKE	No
CLOCK	Yes	REAR WINDOW DEFROSTER	Yes
OTHER	Customer preferred group (22B)		

REMARKS:

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

CERTIFICATION DATA FROM VEHICLE'S LABEL:

VEHICLE MANUFACTURED BY: Mitsubishi Motors Corporation

DATE OF MANUFACTURE: 08/92 VIN: JB3BM44H8PY009708

GVWR: 1840 KG

GAWR: FRONT: 1100 KG, REAR: 850 KG

TABLE 2 TEST VEHICLE INFORMATION CONT'D

TIRES ON VEHICLE (MFR., LINE, SIZE): Goodyear, Eagle +4, P205/65R15

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

SPARE TIRE (MFR., LINE, SIZE): T125/90D16

TYPE OF SEATS: FRONT: Bucket
REAR: Bench

TYPE OF FRONT SEAT BACKS: Manually-adjustable

MAXIMUM WIDTH: 1840 MM

WHEELBASE: 2464 MM

LOCATION OF LABEL STATING TIRE DATA:

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

TIRE & CAPACITY DATA FROM VEHICLE'S LABEL:

RECOMMENDED TIRE SIZE: P205/65R15

RECOMMENDED COLD TIRE PRESSURE: FRONT: 200 kPa; REAR: 180 kPa

DESIGNATED SEATING CAPACITY: 2 FRONT 2 REAR 4 TOTAL

VEHICLE CAPACITY WEIGHT: 300 KG LUGGAGE WEIGHT: 28 KG

TEST VEHICLE ATTITUDE (ALL MEASUREMENTS ARE IN MILLIMETERS):

DELIVERED ATTITUDE:	LF	730;	RF	737;	LR	737;	RR 737
PRE-TEST ATTITUDE:	LF	724;	RF	734;	LR	713;	RR 725
POST-TEST ATTITUDE:	LF	810;	RF	832;	LR	679;	RR 703

TABLE 2 TEST VEHICLE INFORMATION CONT'D

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

RIGHT FRONT	441 KG	RIGHT REAR	296 KG
LEFT FRONT	448 KG	LEFT REAR	298 KG
TOTAL FRONT WEIGHT	889 KG	(59.9% OF TOTAL VEHICLE WEIGHT)	
TOTAL REAR WEIGHT	594 KG	(40.1% OF TOTAL VEHICLE WEIGHT)	
TOTAL DELIVERED WEIGHT	1483 KG		

CALCULATION OF TEST VEHICLE'S TARGET TEST WEIGHT:

RCLW = RATED CARGO AND LUGGAGE WEIGHT*

UDW = UNLOADED DELIVERED WEIGHT (1483 KG)

VCW = VEHICLE CAPACITY WEIGHT (300 KG)

DSC = DESIGNATED SEATING CAPACITY (4)

RCLW*= VCW - 68 (DSC) = 300 - 68 (4) = 28 KG

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

TARGET TEST WEIGHT = 1483 + 28 + 152

TARGET TEST WEIGHT = 1663 KG

WEIGHT OF TEST VEHICLE WITH REQUIRED DUMMIES AND 35 KG OF CARGO WEIGHT:

RIGHT FRONT	467 KG	RIGHT REAR	352 KG
LEFT FRONT	481 KG	LEFT REAR	354 KG
TOTAL FRONT WEIGHT	948 KG	(57.3% OF TOTAL VEHICLE WEIGHT)	
TOTAL REAR WEIGHT	706 KG	(42.7% OF TOTAL VEHICLE WEIGHT)	
TOTAL TEST WEIGHT	1654 KG	(0.5 KG UNDER TARGET TEST WEIGHT)	

WEIGHT OF BALLAST SECURED IN VEHICLE: 0

COMPONENTS REMOVED TO MEET TARGET TEST WEIGHT: Tail lights, rear bumper facia, onboard cameras

CG = 1052 MM REARWARD OF FRONT WHEEL CENTERLINE

*Cargo weight for multi-purpose passenger vehicles, trucks, and buses is the vehicle's rated cargo and luggage weight from the vehicle's label or 136 KG, whichever is less.

TABLE 3 POST-IMPACT DATA

TEST NUMBER: 921216 NHTSA NO.: MP0305

TEST DATE: 12/16/92 TEST TIME: 1410

TEST TYPE: Frontal load cell barrier IMPACT ANGLE: 0°

AMBIENT TEMPERATURE AT IMPACT AREA: 23° C

TEMPERATURE IN OCCUPANT COMPARTMENT: 22° C

IMPACT VELOCITY: PRIMARY = 56.2 KPH SECONDARY = 56.2 KPH

(SPECIFIED RANGE = 55.5 TO 57.1 KPH)

DISTANCE FROM VEHICLE TO BARRIER: ENTERING VELOCITY TRAP = 660 MM

EXITING VELOCITY TRAP = 51 MM

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

OVERALL LENGTH OF TEST VEHICLE: PRE-TEST: L 4395; C 4530; R 4410

POST-TEST: L 3870; C 3980; R 3880

TOTAL CRUSH: L 525; C 550; R 530

AVERAGE CRUSH: 535

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

DISTANCE FROM TEST VEHICLE TO BARRIER: L 360; C 257; R 331; AVG. 316

TABLE 4 FUEL SYSTEM DATA

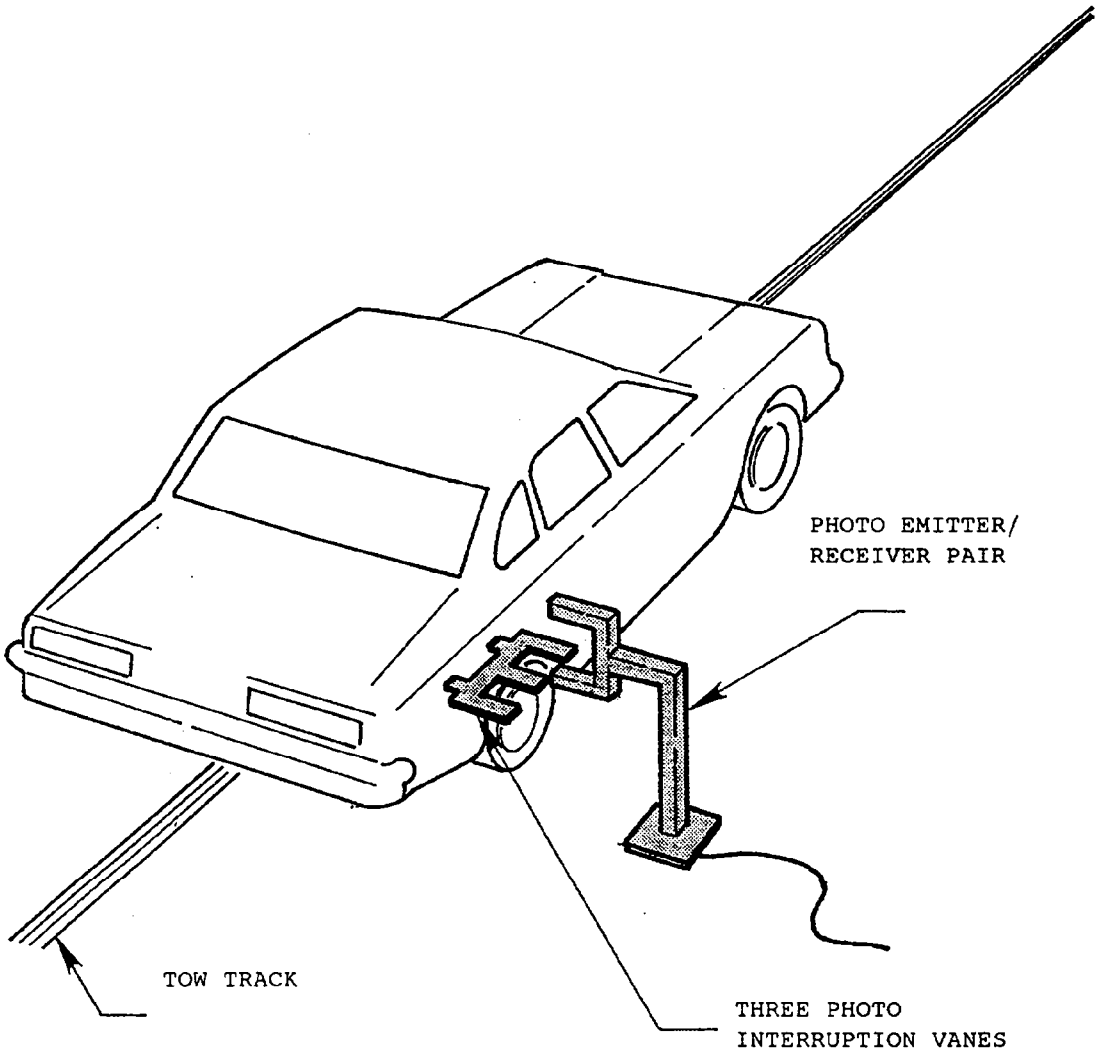
MAKE/MODEL:	Dodge/Stealth
NHTSA NO.:	MP0305
FUEL SYSTEM CAPACITY:	75.0 LITERS (FROM OWNER'S MANUAL)
USABLE CAPACITY:	74.9 LITERS (FURNISHED BY COTR)
TEST VOLUME RANGE:	68.9 LITERS TO 70.4 LITERS (92-94% OF USABLE)
ACTUAL TEST VOLUME:	70.0 LITERS (WITH ENTIRE FUEL SYSTEM FILLED)
TEST FLUID TYPE:	STODDARD SOLVENT
SPECIFIC GRAVITY:	0.764
KINEMATIC VISCOSITY:	0.99 CENTISTOKES
TEST FLUID COLOR:	PURPLE

DETAILS OF FUEL SYSTEM: The fuel filler is on the right side. The fuel lines run along the right frame rail to the front. The fuel tank is behind the rear axle.

ELECTRIC FUEL PUMP: Yes FUEL INJECTION: Yes

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

FIGURE 1 IMPACT VELOCITY MEASUREMENT SYSTEM



The final vane clears emitter/receiver 51 millimeters before impact.

The vanes have 305 millimeter spacing.

FIGURE 2 ACCIDENT INVESTIGATION DIVISION DATA
FOR 56 KPH (35 MPH) FRONTAL BARRIER IMPACT

VEHICLE MAKE/MODEL/BODY STYLE: Dodge/Stealth/3-door hatchback

VEHICLE NHTSA NO.: MP0305 ; VIN: JB3BM44H8PY009708

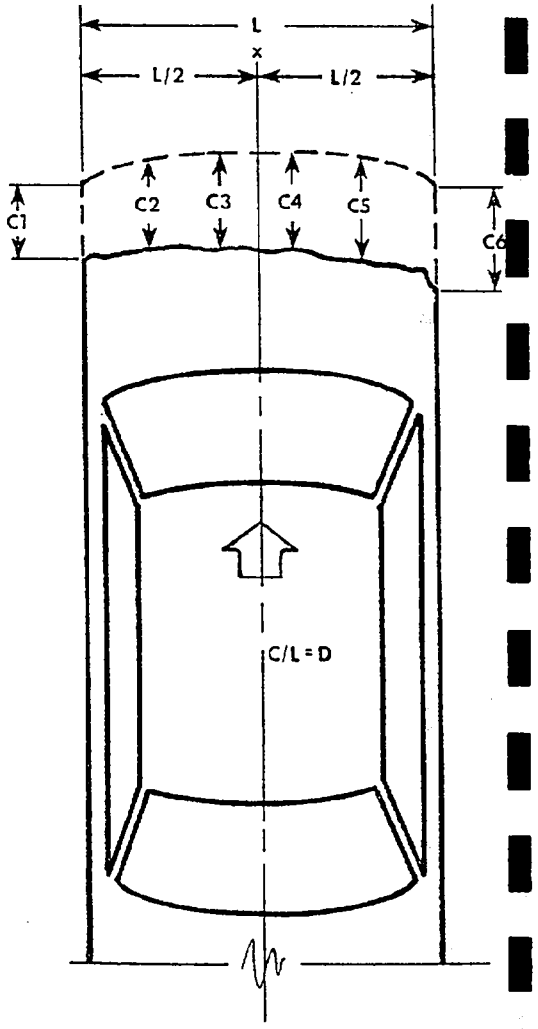
MODEL YEAR: 1993 ; BUILD DATE: 08/92 ; TEST DATE: 12/16/92

VEHICLE SIZE CATEGORY: Subcompact ; TEST WEIGHT: 1654 KG

VEHICLE WHEELBASE: 2464 MM

MAXIMUM WIDTH: 1840 MM

FRONT OVERHANG: 1026 MM



COLLISION DEFORMATION
CLASSIFICATION (CDC) CODE: 12FDEW3

CRUSH DEPTH MEASUREMENTS:

C1 = 525 MM

C2 = 616 MM

C3 = 565 MM

C4 = 540 MM

C5 = 528 MM

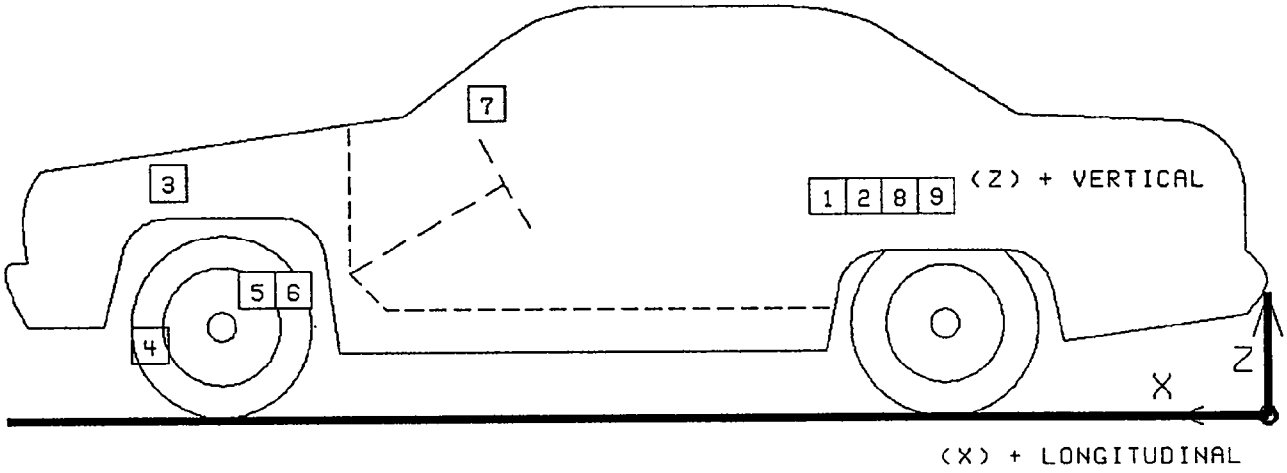
C6 = 530 MM

MIDPOINT OF DAMAGE: D = VEHICLE CENTERLINE (LONGITUDINAL)

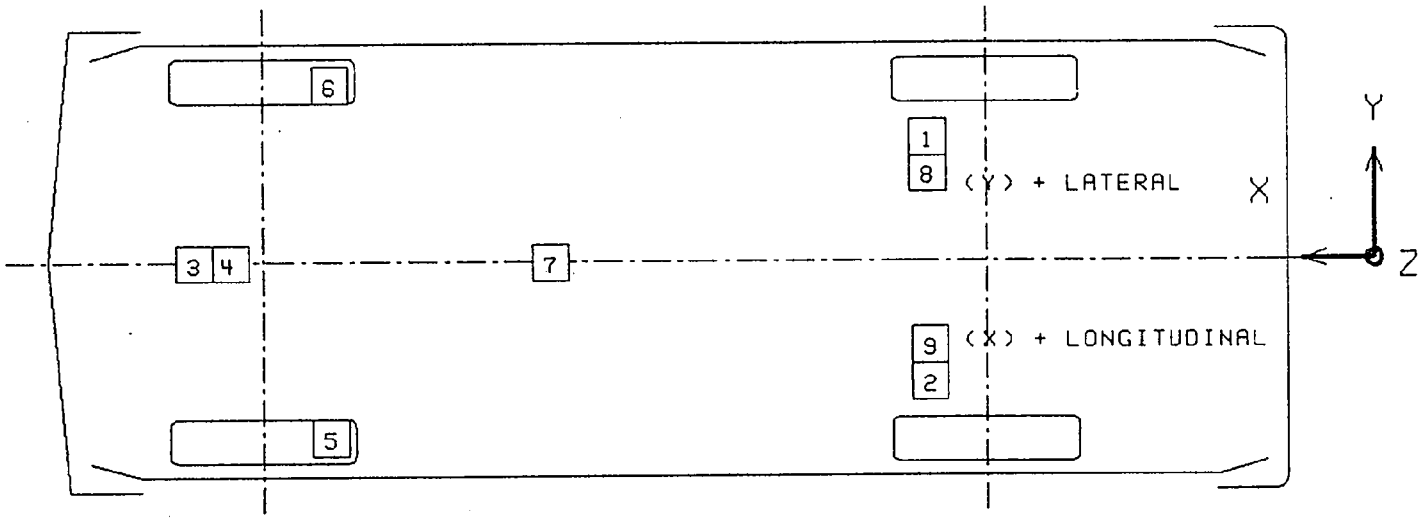
LENGTH OF DAMAGED REGION: L = 1320 MM

FIGURE 3

VEHICLE ACCELEROMETER PLACEMENT



SIDE VIEW



BOTTOM VIEW

TABLE 5

VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

TEST NUMBER 921216

No.	LOCATION	X*	Y*	Z*	POSITIVE DIRECTION MAX G	POSITIVE DIRECTION MSEC	NEGATIVE DIRECTION MAX G	NEGATIVE DIRECTION MSEC
1	LEFT REAR SEAT CROSSMEMBER LONGITUDINAL	2780	470	352	3.4	123.8	37.8	68.0
2	RIGHT REAR SEAT CROSSMEMBER LONGITUDINAL	2778	-470	349	3.2	131.5	34.4	69.
3	ENGINE TOP LONGITUDINAL	670	20	761	14.8	52.4	98.3	39.
4	ENGINE BOTTOM LONGITUDINAL	915	342	266	46.3	40.4	145.9	33.0
5	RIGHT BRAKE CALIPER LONGITUDINAL	930	-689	244	59.5	67.4	131.0	43.5
6	LEFT BRAKE CALIPER LONGITUDINAL	925	689	254	69.1	67.3	91.5	53.4
7	INSTRUMENT PANEL CENTER LONGITUDINAL	1775	-15	913	13.0	25.8	50.0	58.1
8	LEFT REAR SEAT CROSSMEMBER REDUNDANT LONGITUDINAL	2780	505	352	12.2	136.5	37.9	68.
9	RIGHT REAR SEAT CROSSMEMBER REDUNDANT LONGITUDINAL	2778	-515	349	3.5	120.8	35.0	69.

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

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

TABLE 6 POST-IMPACT DUMMY/VEHICLE DATA

VISIBLE DUMMY CONTACT POINTS:

	DRIVER #142	PASSENGER #192
HEAD	Airbag	Chest and both knees
CHEST	Airbag	None
ABDOMEN	None	None
LEFT KNEE	Instrument panel	Instrument panel
RIGHT KNEE	Instrument panel	Instrument panel

DOOR OPENING:

	LEFT	RIGHT
FRONT	Easy	Easy
REAR	NA	NA

SEAT MOVEMENT:

	SEAT BACK FAILURE	SEAT SHIFT
FRONT	None	None
REAR	NA	NA

GLAZING DAMAGE:

Both lower corner areas of the windshield were cracked upon impact.

OTHER NOTABLE IMPACT EFFECTS:

None

TABLE 7 FMVSS 208 DATA SUMMARY

VEH. YR./MAKE/MODEL/BODY STYLE: 1993/Dodge/Stealth/3-door hatchback

VEH. NHTSA NO.: MP0305 ; TEST DATE: 12/16/92

MAXIMUM ACCELERATIONS (G):	DRIVER DUMMY #142	PASSENGER DUMMY #192
HEAD X-AXIS	-45.8	-81.8
HEAD Y-AXIS	9.9	-22.3
HEAD Z-AXIS	20.0	-63.6
HEAD RESULTANT	46.6	89.8
CHEST X-AXIS	-46.0	-41.2
CHEST Y-AXIS	-6.8	7.5
CHEST Z-AXIS	22.2	-18.7
CHEST RESULTANT*	45.1	40.5
CHEST RESULTANT TIME INTERVAL (SEC.)*	.003	.003
HEAD INJURY CRITERIA (HIC) VALUES:		
HIC**	273	985
HIC STARTING TIME (SEC.)	.050	.068
HIC ENDING TIME (SEC.)	.086	.104
AVG. HEAD RESULTANT ACCEL. DURING HIC TIME INTERVAL (G)	35.6	59.4
MAXIMUM CHEST DEFLECTIONS (MM):		
CHEST X-AXIS	35	49
MAXIMUM CHEST DEFLECTION TIME (SEC.)	.076	.091
MAXIMUM COMPRESSIVE FEMUR FORCES (N):		
LEFT FEMUR	4691 Y	8910
RIGHT FEMUR	5403 Y	5590
MAXIMUM SEAT BELT FORCES (N):		
LAP BELT	1601	2462
SHOULDER BELT	4619	8215

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

*0.003 SEC. MINIMUM DURATION.

**THE MAXIMUM HIC TIME INTERVAL IS 36 MILLISECONDS.

Y See DATA ACQUISITION EXPLANATIONS

TABLE 8 HYBRID III NECK DATA SUMMARY

VEHICLE YR./MAKE/MODEL/BODY STYLE: 1993/Dodge/Stealth/3-door hatchback

VEHICLE NHTSA NO.: MP0305 ; TEST DATE: 12/16/92

MAXIMUM VALUES:	DRIVER DUMMY #142	PASSENGER DUMMY #192
NECK X-AXIS FORCE (N)	-435	1694
NECK Y-AXIS FORCE (N)	196	-313
NECK Z-AXIS FORCE (N)	1669	2793
NECK MOMENT ABOUT X AXIS (N-M)	10	17
NECK MOMENT ABOUT Y AXIS (N-M)	23	112
NECK MOMENT ABOUT Z AXIS (N-M)	5	6

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

DUMMY KINEMATIC SUMMARY

DRIVER DUMMY

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

RIGHT FRONT PASSENGER DUMMY

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

TABLE 9 SEAT BELT PERFORMANCE ASSESSMENT TEST DATA

	DRIVER	PASSENGER
BELT LENGTH DATA:		
BELT LENGTH FROM TRIM PANEL EXIT TO BOLT HOLE ANCHOR POINT FOR CONTINUOUS WEBBING SYSTEMS.	104	103
SHOULDER BELT LENGTH AS MEASURED ON PART 572 DUMMY.	1150	1011
LAP BELT LENGTH AS MEASURED ON PART 572 DUMMY.	885	850
SHOULDER BELT SPOOL-OFF LENGTH:		
AS DETERMINED BY FILM ANALYSIS	NA*	NA*
AS DETERMINED MECHANICALLY	63	45
AS DETERMINED ELECTRONICALLY	NA$^{\gamma}$	139
BELT STRETCH LENGTH (MM/M):		
AS MEASURED MECHANICALLY	0	0
AS MEASURED ELECTRONICALLY		
RETRACTOR LOCK-UP TIME (MS):		
AS DETERMINED BY SHOULDER BELT SPOOL-OFF	NA*	NA*

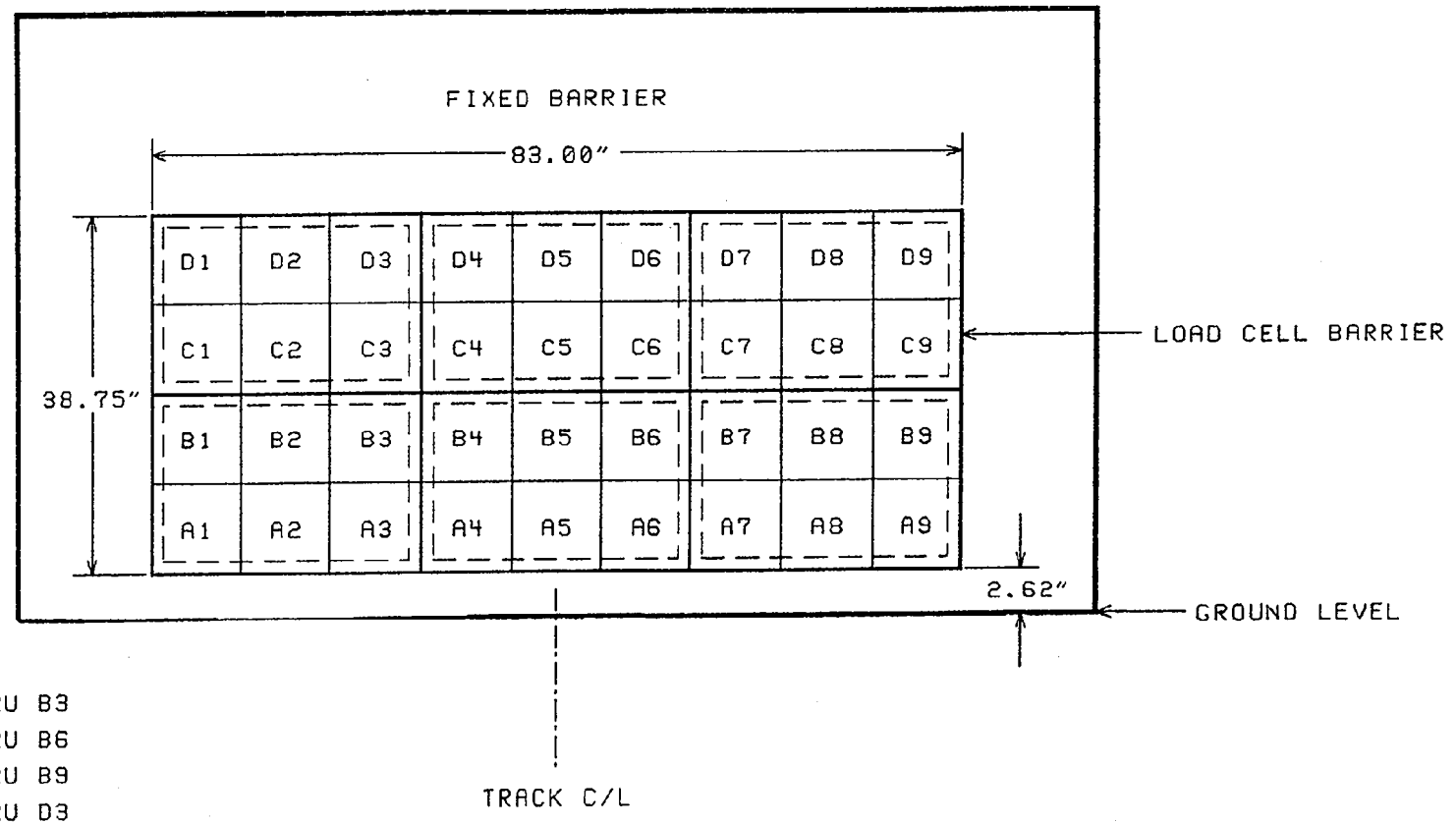
ALL MEASUREMENTS ARE IN MILLIMETERS UNLESS OTHERWISE NOTED.
*The onboard cameras were removed to achieve the test weight.
$^{\gamma}$ See DATA ACQUISITION EXPLANATIONS

FIGURE 4

LOAD CELL BARRIER CONFIGURATION

FRONT VIEW

36 LOAD CELLS
4 ROWS
9 COLUMNS



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

TABLE 10

LOAD CELL BARRIER DATA SUMMARY

TEST NUMBER 921216

LOCATION	POSITIVE DIRECTION KN	POSITIVE DIRECTION MSEC	NEGATIVE DIRECTION KN	NEGATIVE DIRECTION MSEC
TOTAL GROUP 1	2.5	3.0	117.1	28.0
TOTAL GROUP 2	1.4	137.8	277.7	35.1
TOTAL GROUP 3	1.6	5.1	98.2	13.6
TOTAL GROUP 4	1.8	3.3	51.5	50.6
TOTAL GROUP 5	2.0	303.4	59.0	81.5
TOTAL GROUP 6	1.9	251.0	41.6	80.1
TOTAL LOAD CELL FORCE	4.5	304.0	523.2	33.9

TENSION IS POSITIVE
COMPRESSION IS NEGATIVE

SECTION 3.0

OCCUPANT, CAMERA, & VEHICLE MEASUREMENTS

FIGURE 5

DUMMY MEASUREMENT LOCATIONS FOR FRONT SEAT OCCUPANTS

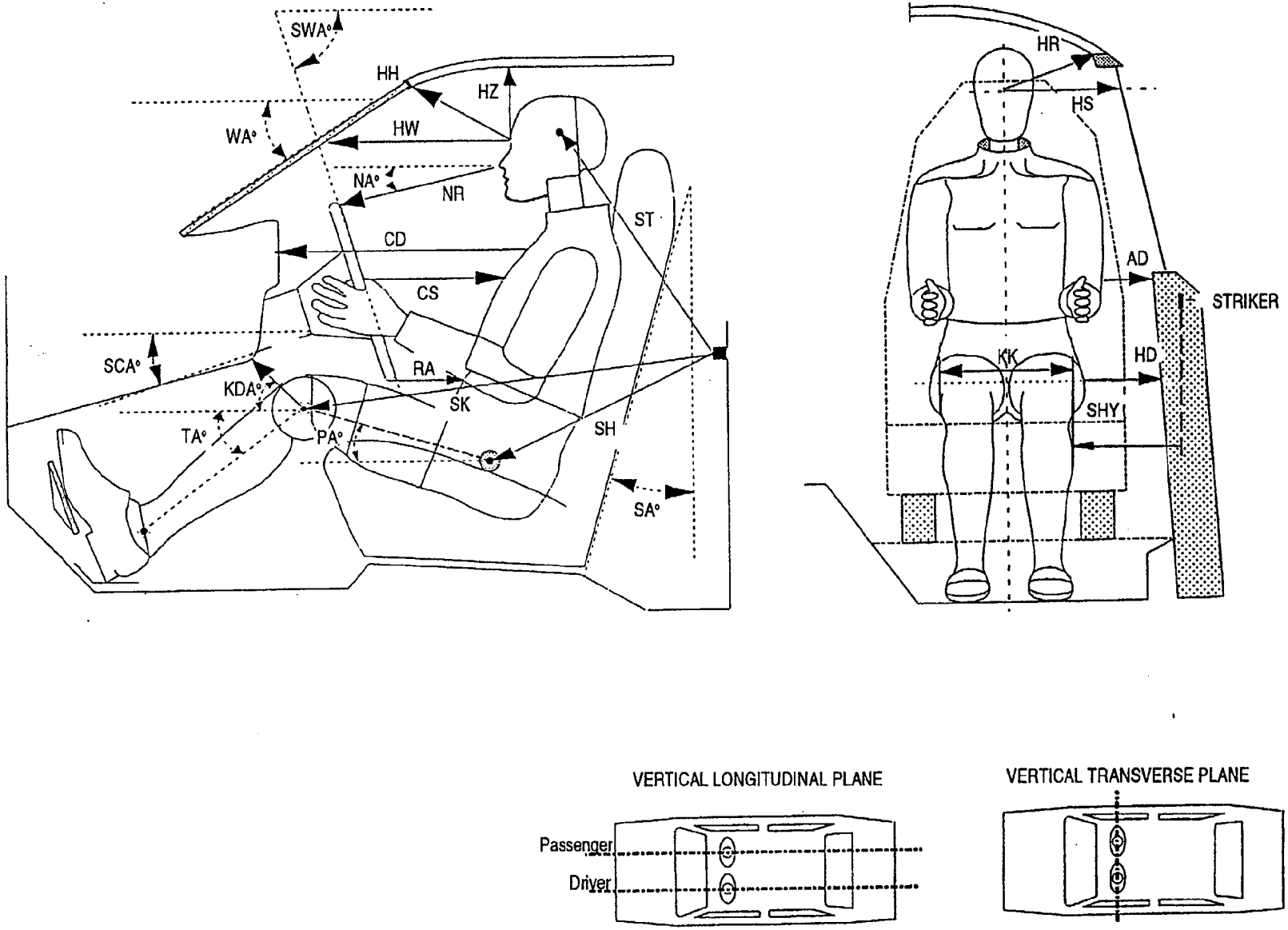


TABLE 11 DUMMY MEASUREMENT DATA FOR FRONT SEAT OCCUPANTS

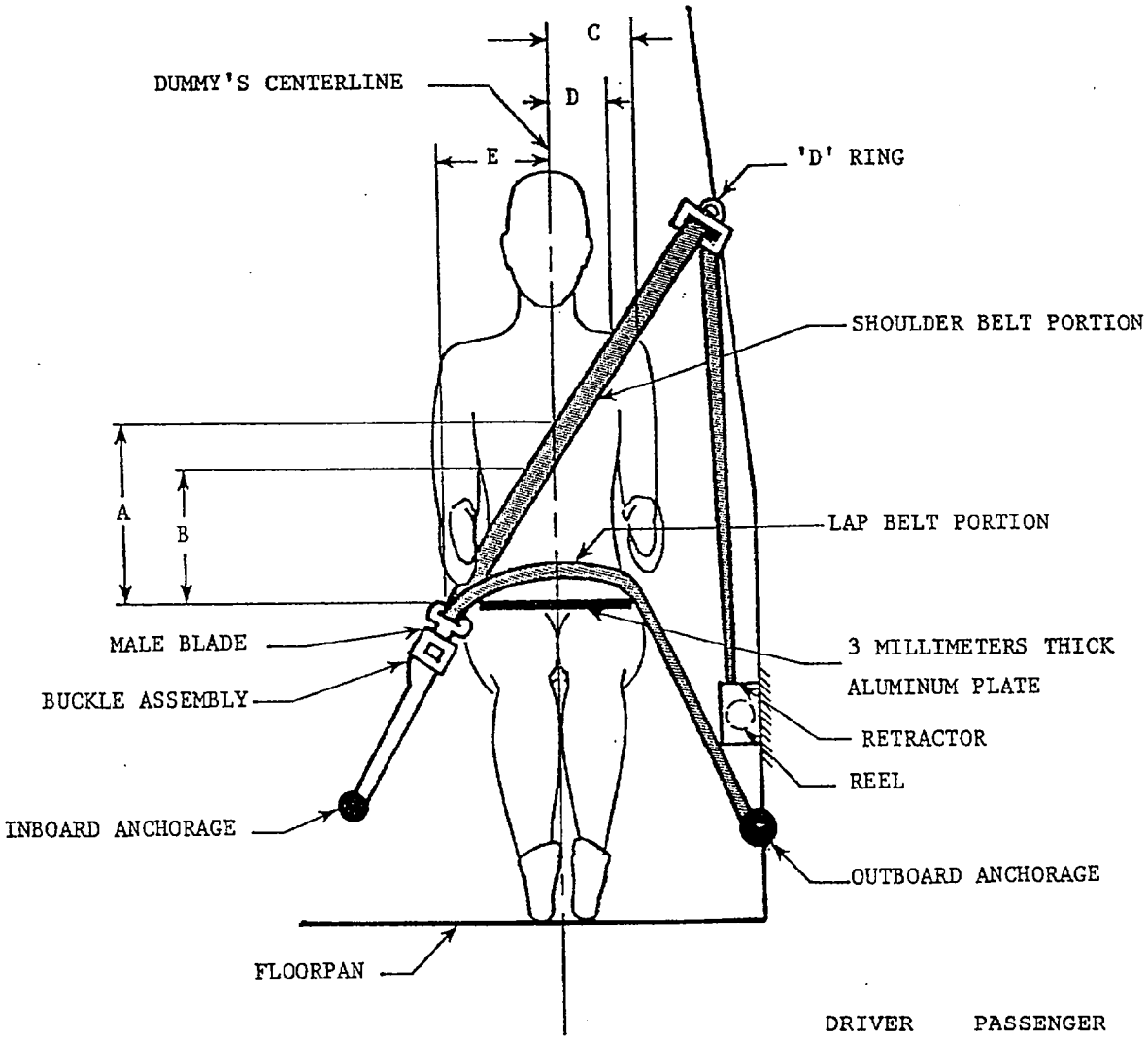
DESIGNATION	TYPE OF MEASUREMENT	DRIVER (SERIAL #142)	PASSENGER (SERIAL #192)
WA°	WINDSHIELD ANGLE	22°	NA
SWA°	STEERING WHEEL ANGLE	75°	NA
SCA°	STEERING COLUMN ANGLE	17°	NA
SA°	SEAT BACK ANGLE	21°	21°
HZ	HEAD TO ROOF	106	134
HH	HEAD TO HEADER	214	247
HW	HEAD TO WINDSHIELD	430	500
HR	HEAD TO SIDE HEADER	178	184
NR	NOSE TO RIM	337	NA
NA	NOSE TO RIM ANGLE	12°	NA
CD	CHEST TO DASH	478	670
CS	STEERING WHEEL TO CHEST	289	NA
RA	RIM TO ABDOMEN	199	NA
KDL	LEFT KNEE TO DASH	163	200
KDR	RIGHT KNEE TO DASH	192	179
KDA	OUTBOARD KNEE TO DASH ANGLE	33°	37°
PA°	PELVIC ANGLE	20°	24°
TA°	TIBIAL ANGLE	25°	24°
KK	KNEE TO KNEE	287	280
ST*	STRIKER TO HEAD	575	529
	STRIKER TO HEAD ANGLE	-40°	-50°
SK*	STRIKER TO KNEE	863	837
	STRIKER TO KNEE ANGLE	8°	10°
SH*	STRIKER TO H-POINT	532	475
	STRIKER TO H-POINT ANGLE	23°	31°
SHY	STRIKER TO H-POINT (Y DIR.)	230	215
HS	HEAD TO SIDE WINDOW	300	267
HD	H-POINT TO DOOR	134	135
AD	ARM TO DOOR	95	104

THE SEAT BACK ANGLE (SA°) IS MEASURED RELATIVE TO VERTICAL, ALL OTHER ANGLES ARE MEASURED RELATIVE TO HORIZONTAL.

*A negative angle indicates the measurement point was located above the striker.

ALL DISTANCE MEASUREMENTS ARE IN MILLIMETERS.

FIGURE 6 SEAT BELT POSITIONING DATA



	DRIVER DUMMY	PASSENGER DUMMY
A - TOP SURFACE OF ALUMINUM PLATE TO BELT UPPER EDGE	364	370
B - TOP SURFACE OF ALUMINUM PLATE TO BELT LOWER EDGE	275	266
C - DUMMY CENTERLINE TO OUTER EDGE OF BELT AT CHEST FLESH TOP	65	78
D - DUMMY CENTERLINE TO INNER EDGE OF BELT AT CHEST FLESH TOP	10	20
LAPBELT TENSION (N)	18	18
SHOULDER BELT TENSION (N)	18	18

ALL DISTANCE MEASUREMENTS ARE IN MILLIMETERS.

FIGURE 7

CAMERA POSITIONS

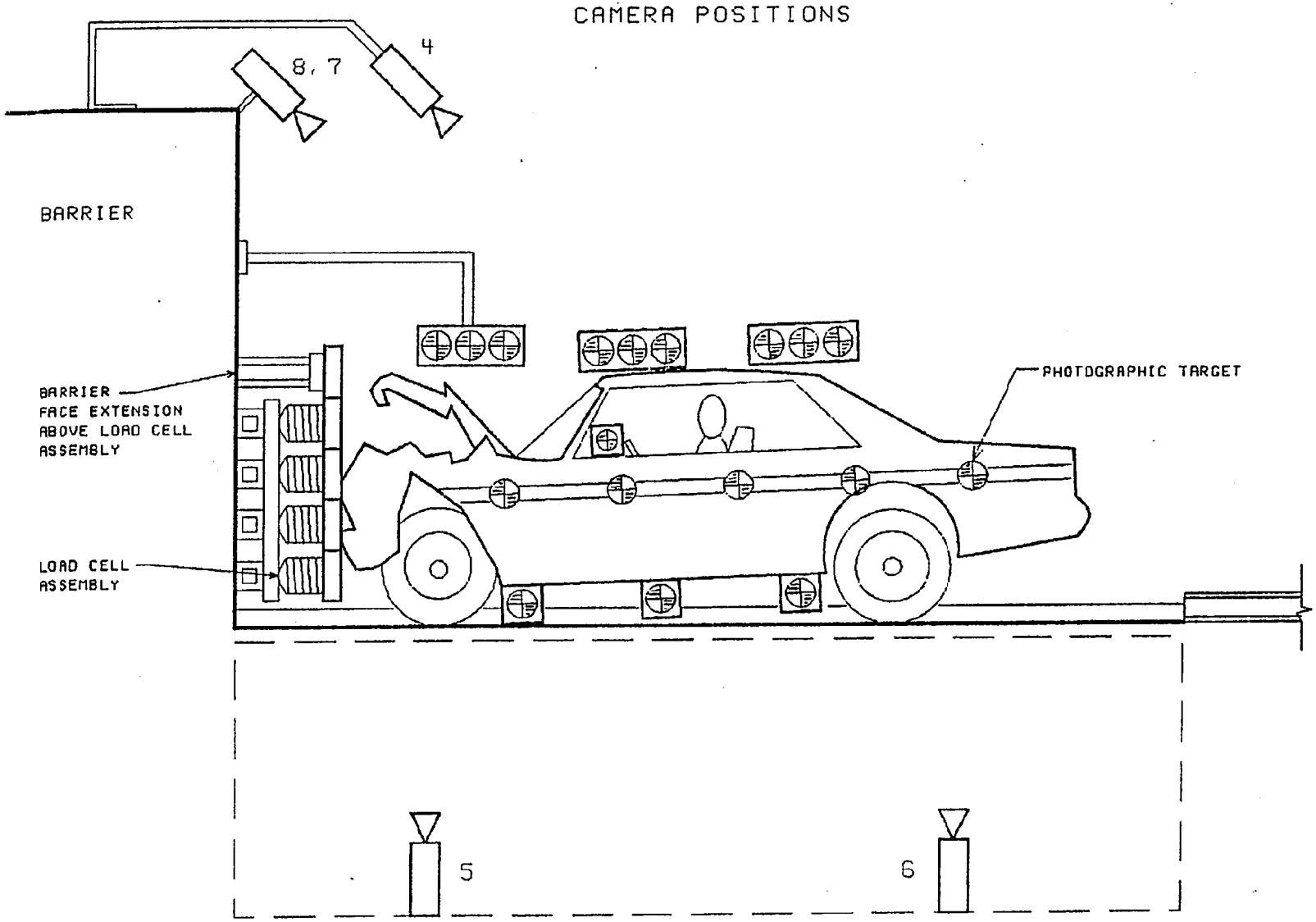


FIGURE 7

CAMERA POSITIONS, CONTINUED

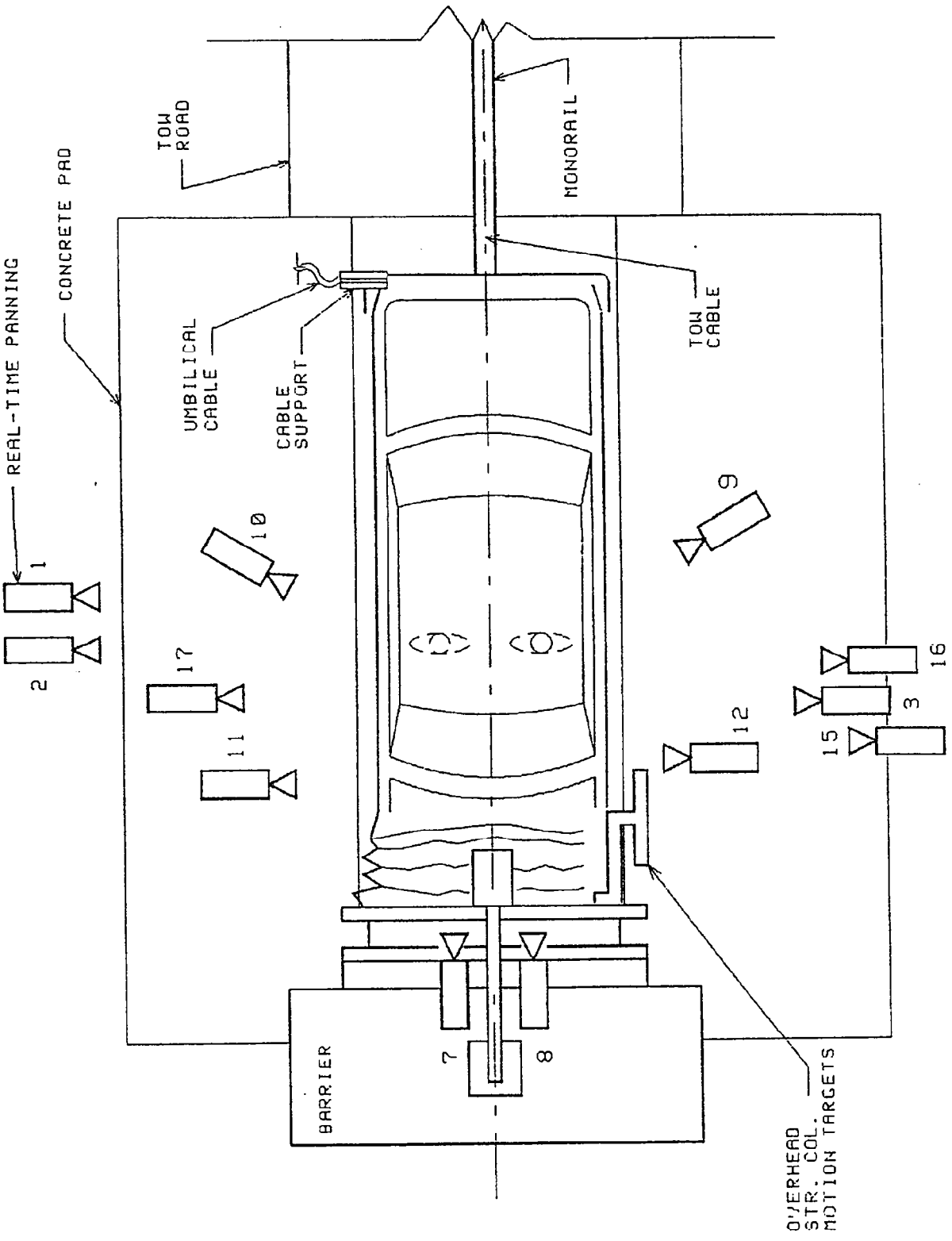


TABLE 12 MOTION PICTURE CAMERA LOCATIONS

TEST NO.: 921216 VEHICLE: 1993 Dodge Stealth 3-door hatchback

CAMERA NO.	VIEW	CAMERA POSITIONS (MM)* X	Y	Z	ANGLE** (DEG)	FILM PLANE TO HEAD TARGET	LENS (MM)	FILM SPEED (FPS)
1	Real-time panning	-3607	-12802	1549	NA	NA	16	24
2	Vehicle crush	-2065	-6767	942	-2	NA	13	500
3	Dummy kinematics	-1054	7493	1118	-12	5207	25	1015
4	Windshield damage	-925	0	2489	-40	NA	13	500
5	Crush & fluid spillage	-1283	0	-2347	90	NA	13	1002
6	Fluid spillage	-2522	0	-2515	90	NA	13	998
7	Passenger kinematics	-114	-351	2159	-40	NA	17	510
8	Driver kinematics	-173	368	2159	-41	NA	17	505
9	Driver kinematics	-4572	1854	2591	-27	2743	25	500
10	Passenger kinematics	-4674	-1880	2540	-26	2464	25	505
11	Windshield intrusion	-968	-7775	1118	0	NA	50	495
12	Windshield intrusion	-1346	7859	1074	0	NA	50	495
13	Driver seatbelt movement	NA	NA	NA	NA	NA	13	***
14	Passenger seatbelt movement	NA	NA	NA	NA	NA	13	***
15	Column movement	-3658	7264	2616	-14	NA	25	498
16	Column movement	-3658	7264	1908	-9	NA	25	498
17	Passenger kinematics	-986	-5354	1151	7	5715	25	1020

*+X = Film plane forward of barrier face

+Y = Film plane to left of monorail centerline

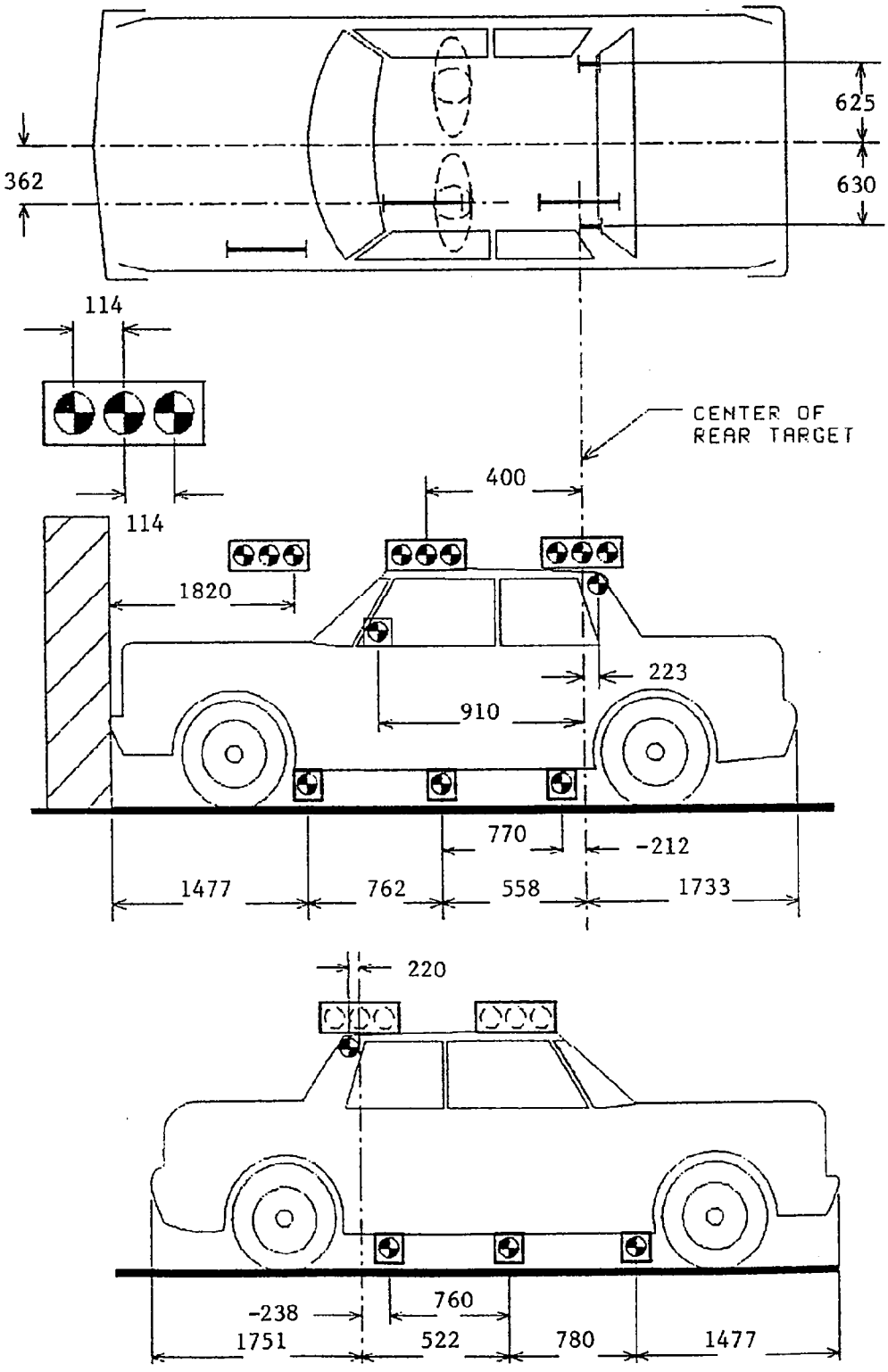
+Z = Film plane above ground level

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

***These cameras were removed to achieve the test weight.

FIGURE 8

VEHICLE TARGET LOCATIONS



ALL MEASUREMENTS ARE IN MILLIMETERS.

921216

FIGURE 9

PRE-TEST AND POST-TEST MEASUREMENT POINTS

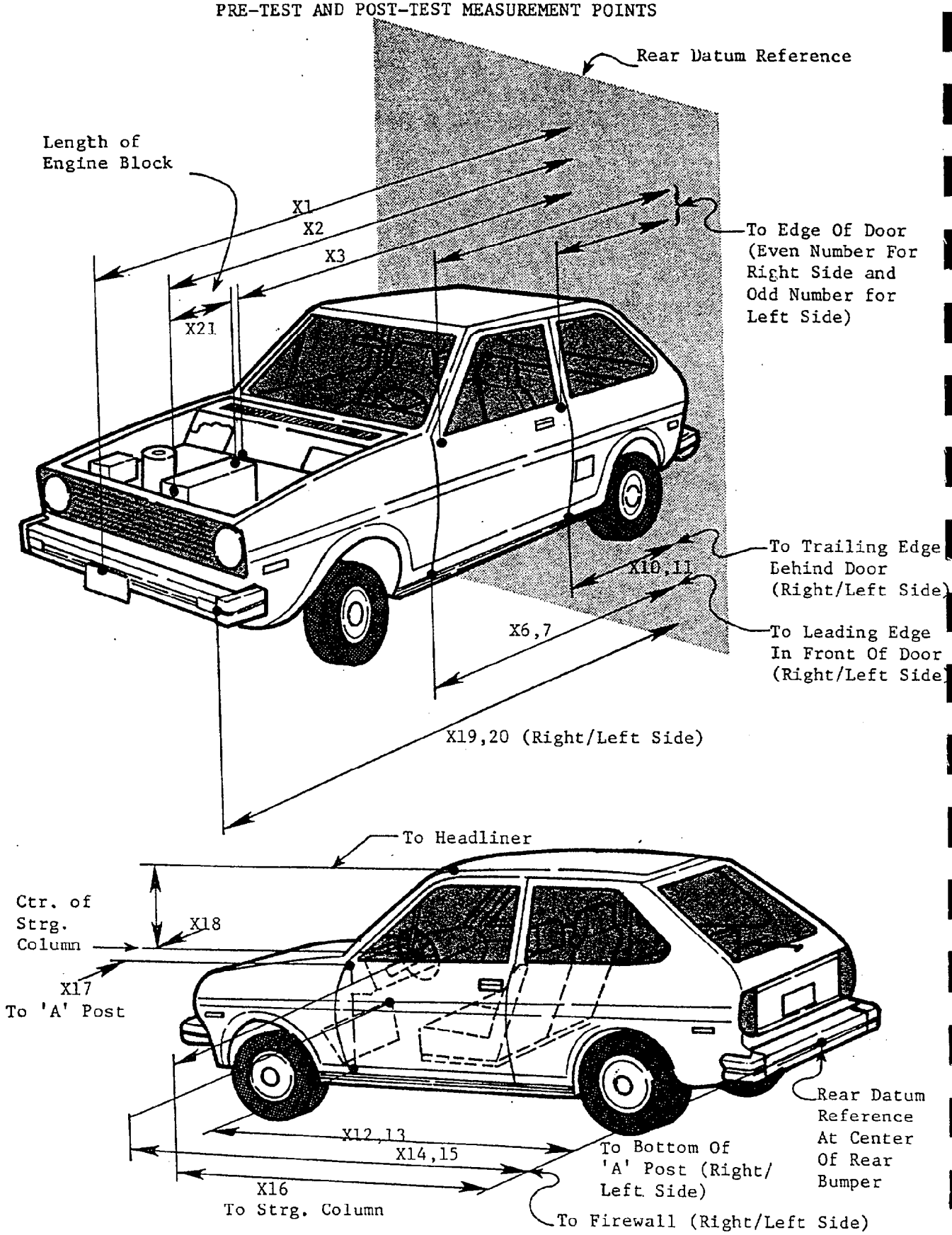


TABLE 13 IMPACTED VEHICLE MEASUREMENTS

VEHICLE MAKE/MODEL: Dodge/Stealth TEST NUMBER: 921216

NO.	TYPE OF MEASUREMENT	ALL MEASUREMENTS ARE IN MM PRE-TEST	POST-TEST	DIFF.
X1	TOTAL LENGTH OF VEHICLE AT CENTERLINE	4530	3980	550
X2	REAR SURFACE OF VEHICLE TO FRONT OF ENGINE BLOCK	3955	3790	165
X3	REAR SURFACE OF VEHICLE TO FIREWALL	3250	3160	90
X4	REAR SURFACE OF VEHICLE TO UPPER LEADING EDGE OF RIGHT DOOR	2905	2922	-17
X5	REAR SURFACE OF VEHICLE TO UPPER LEADING EDGE OF LEFT DOOR	2905	2889	16
X6	REAR SURFACE OF VEHICLE TO LOWER LEADING EDGE OF RIGHT DOOR	2888	2891	-3
X7	REAR SURFACE OF VEHICLE TO LOWER LEADING EDGE OF LEFT DOOR	2905	2895	10
X8	REAR SURFACE OF VEHICLE TO UPPER TRAILING EDGE OF RIGHT DOOR	1599	1595	4
X9	REAR SURFACE OF VEHICLE TO UPPER TRAILING EDGE OF LEFT DOOR	1598	1588	10
X10	REAR SURFACE OF VEHICLE TO LOWER TRAILING EDGE OF RIGHT DOOR	1752	1757	-5
X11	REAR SURFACE OF VEHICLE TO LOWER TRAILING EDGE OF LEFT DOOR	1760	1753	7
X12	REAR SURFACE OF VEHICLE TO BOTTOM OF "A" POST ON RIGHT SIDE	2896	2909	-13
X13	REAR SURFACE OF VEHICLE TO BOTTOM OF "A" POST ON LEFT SIDE	2915	2889	26
X14	REAR SURFACE OF VEHICLE TO FIREWALL - RIGHT SIDE	3255	3190	65
X15	REAR SURFACE OF VEHICLE TO FIREWALL - LEFT SIDE	3236	3200	36
X16	REAR SURFACE OF VEHICLE TO STEERING WHEEL CENTER	2535	2489	46
X17	CENTER OF STEERING COLUMN TO "A" POST	310	322	-12
X18	CENTER OF STEERING COLUMN TO HEADLINER	397	399	-2
X19	REAR SURFACE OF VEHICLE TO RIGHT SIDE OF FRONT BUMPER	4410	3880	530
X20	REAR SURFACE OF VEHICLE TO LEFT SIDE OF FRONT BUMPER	4395	3970	525
X21	LENGTH OF ENGINE BLOCK	400	400	0

APPENDIX A

PHOTOGRAPHS

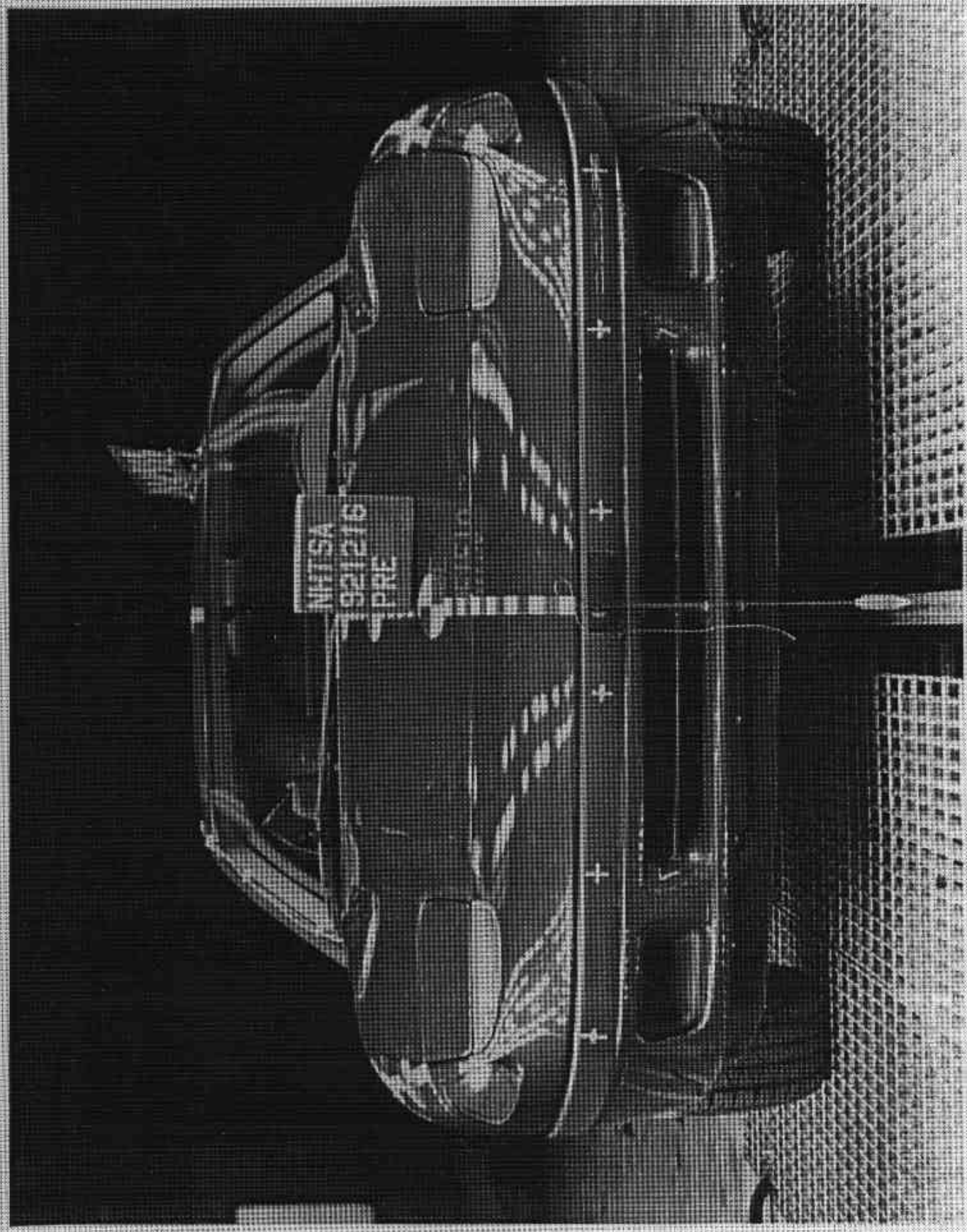


FIGURE A-1. PRE-TEST FRONT VIEW

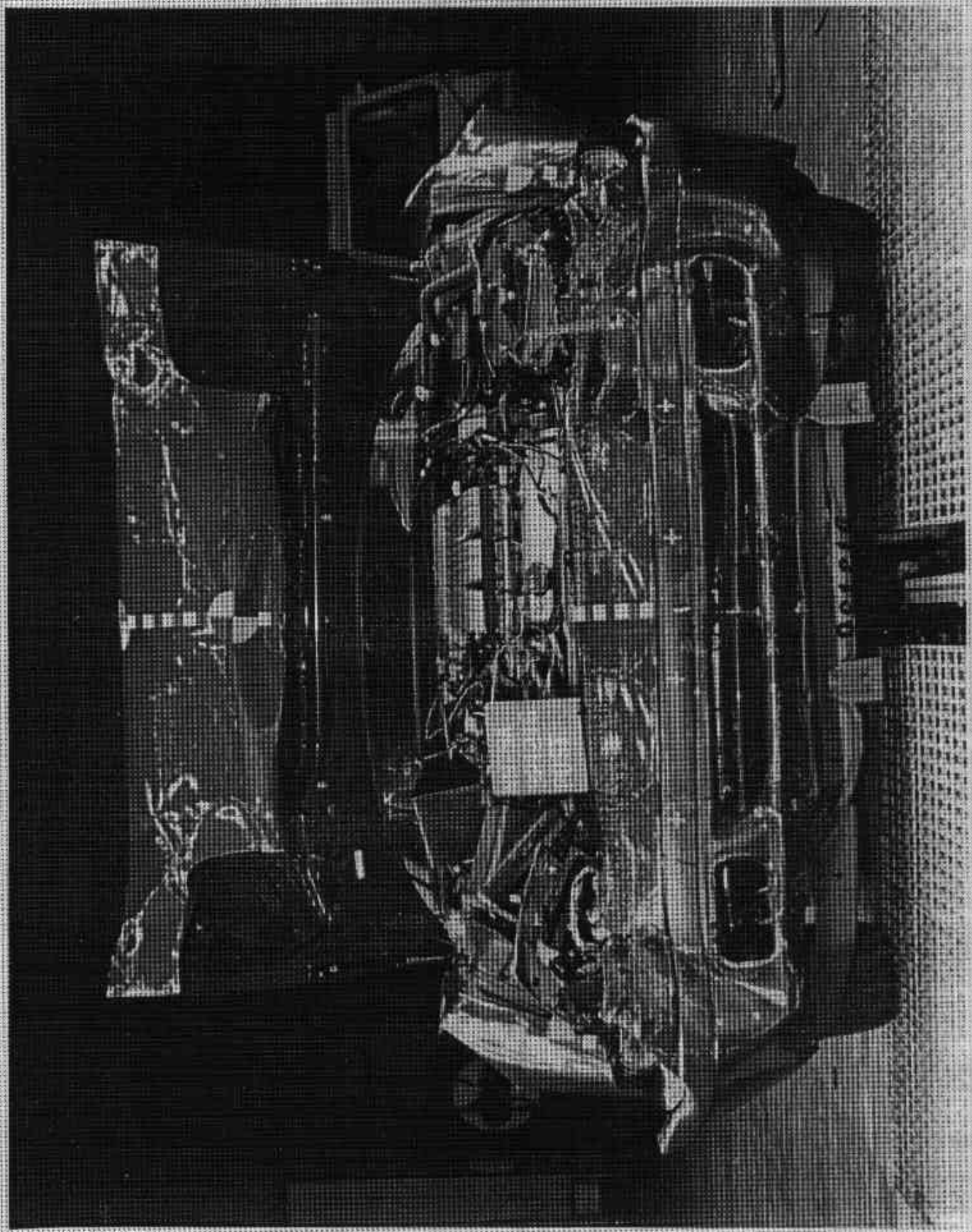


FIGURE A-2. POST-TEST FRONT VIEW

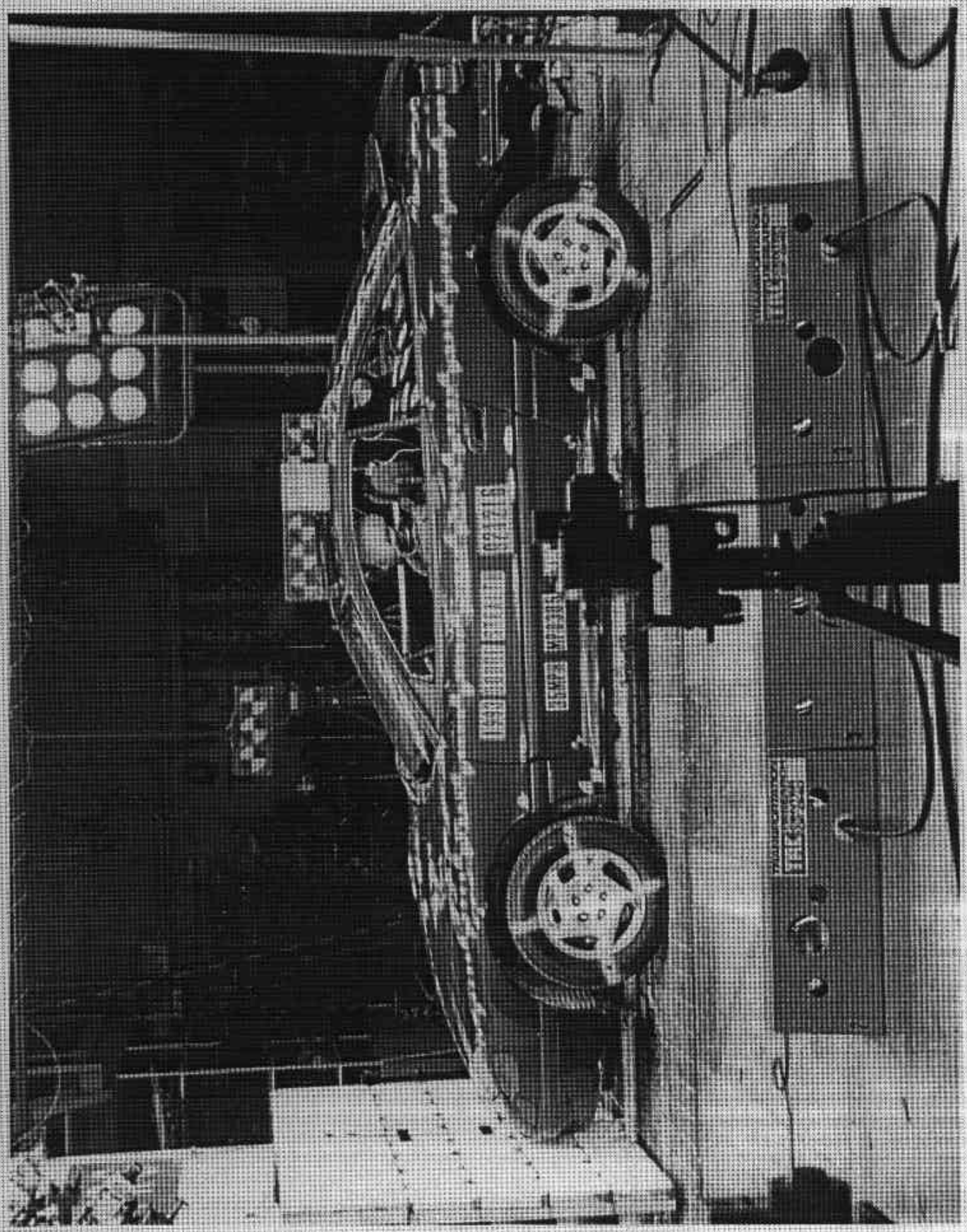


FIGURE A-3. PRE-TEST LEFT SIDE VIEW

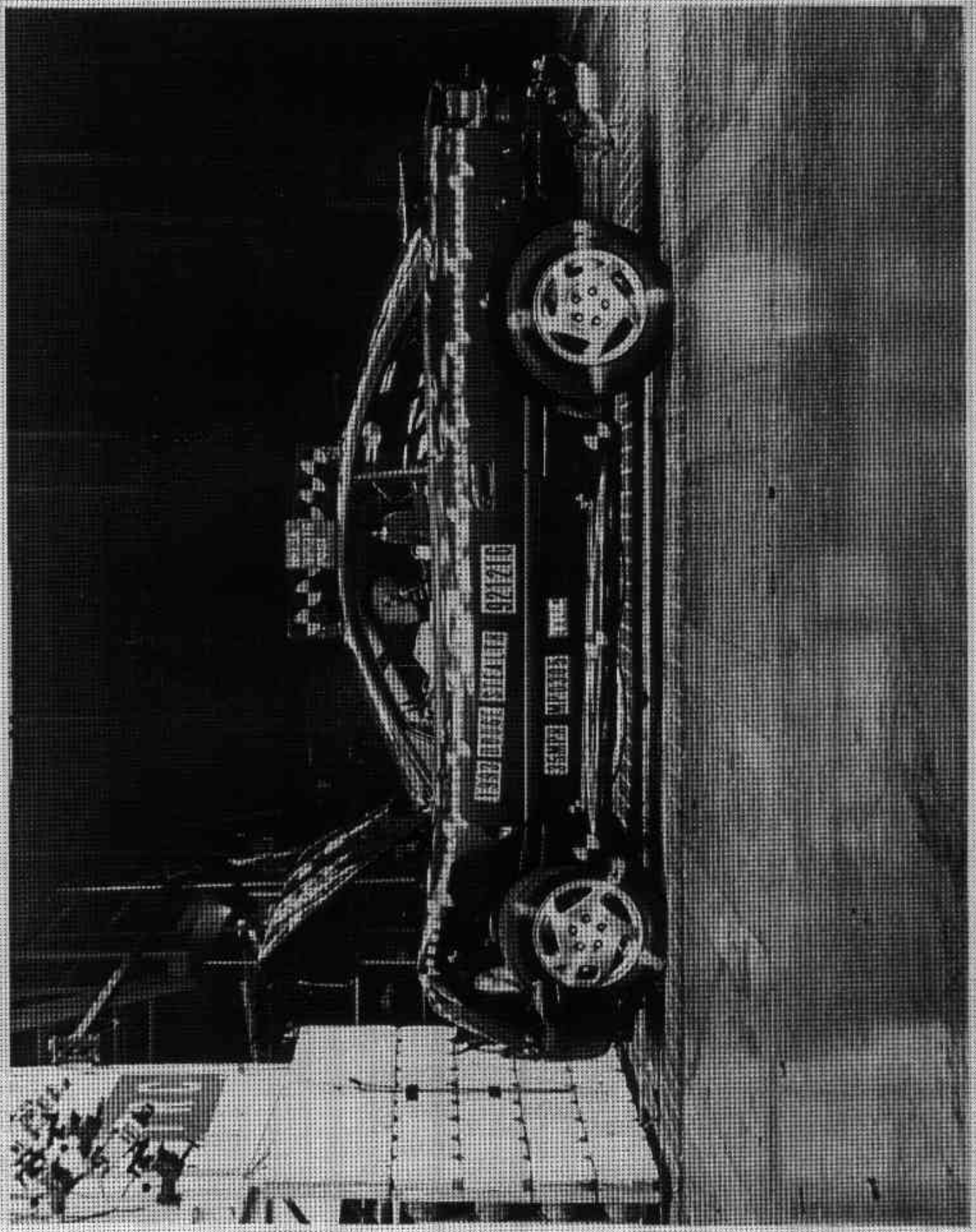


FIGURE A-4. POST-TEST LEFT SIDE VIEW

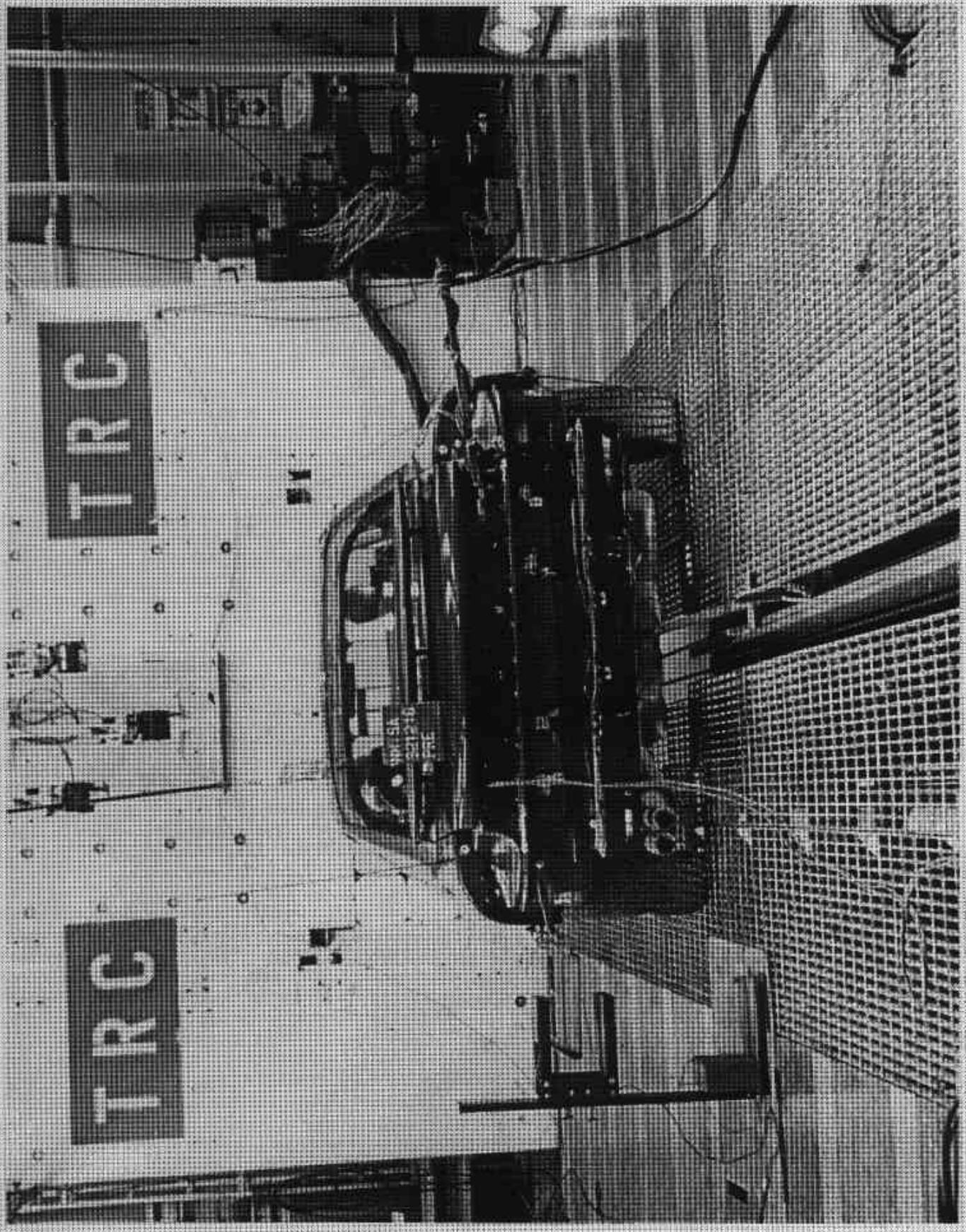


FIGURE A-5. PRE-TEST REAR VIEW

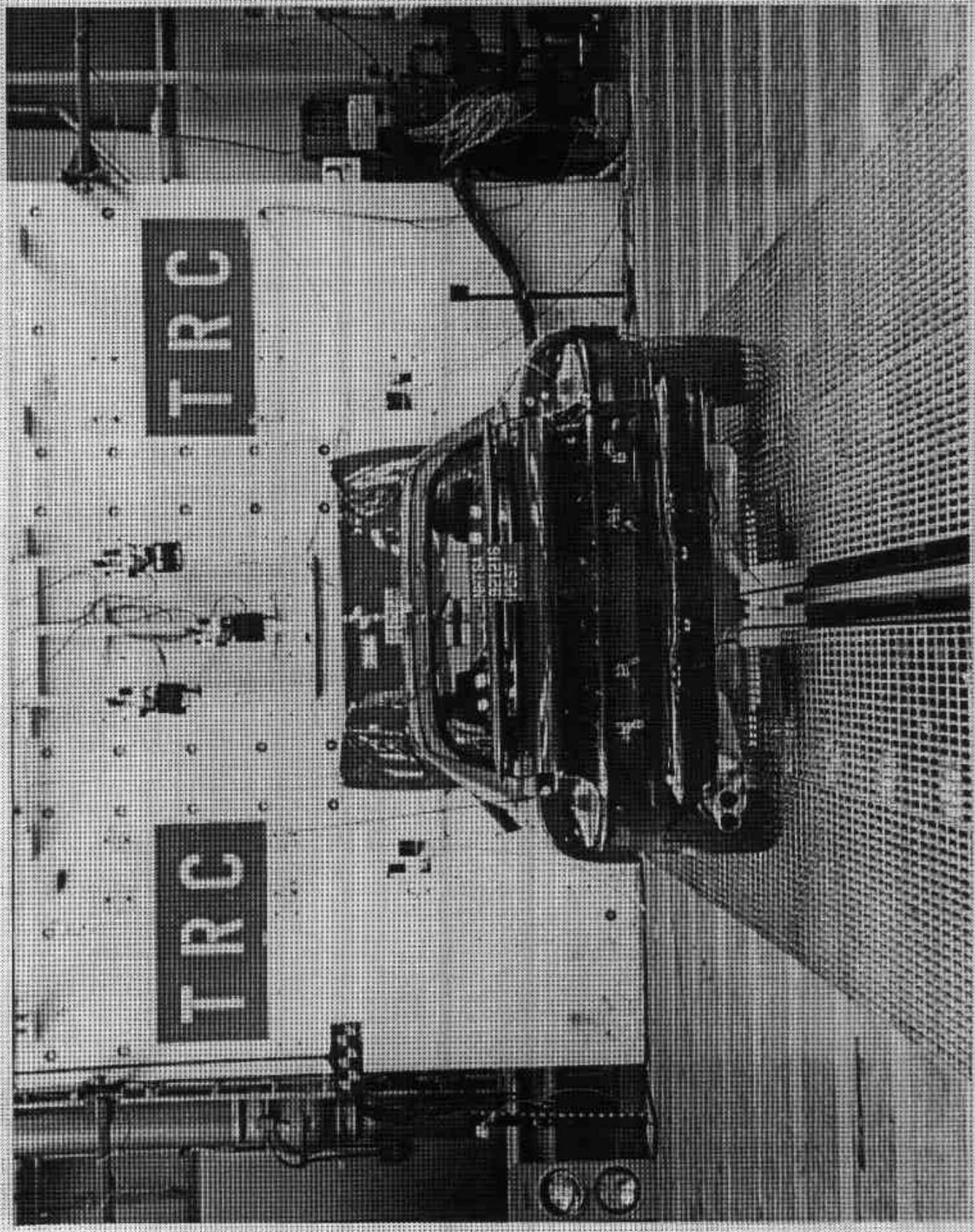


FIGURE A-6. POST-TEST REAR VIEW

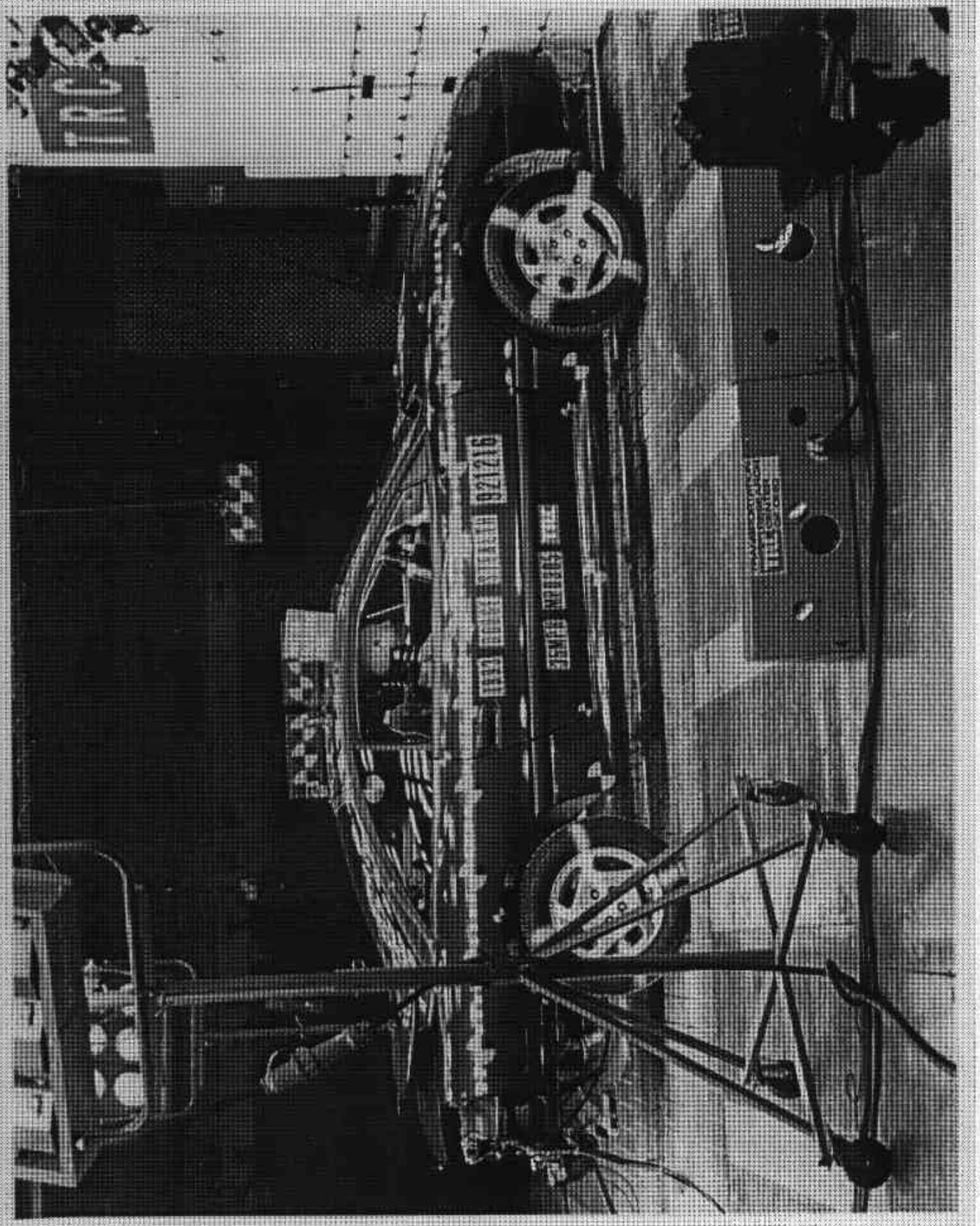


FIGURE A-7. PRE-TEST RIGHT SIDE VIEW

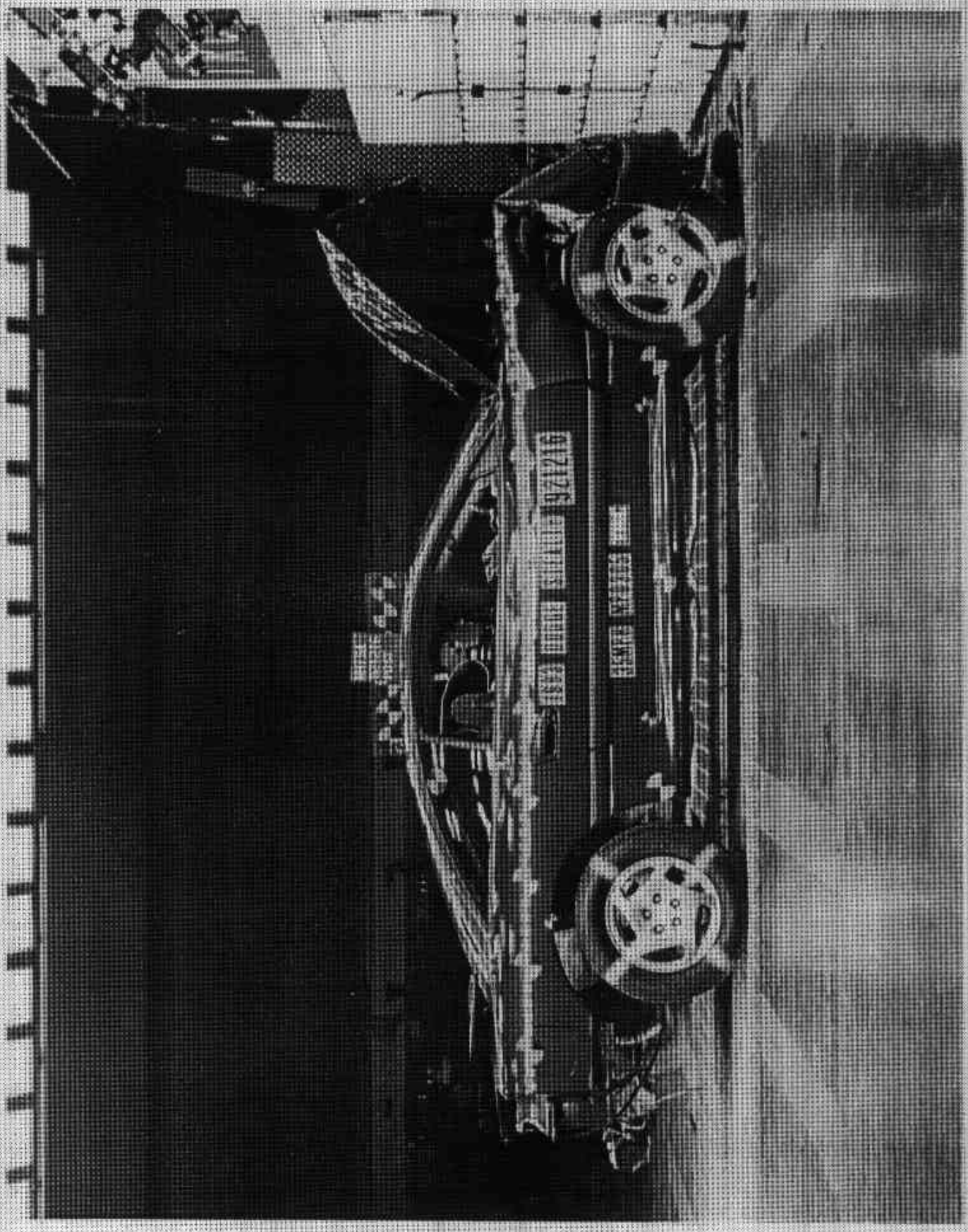


FIGURE A-8. POST-TEST RIGHT SIDE VIEW

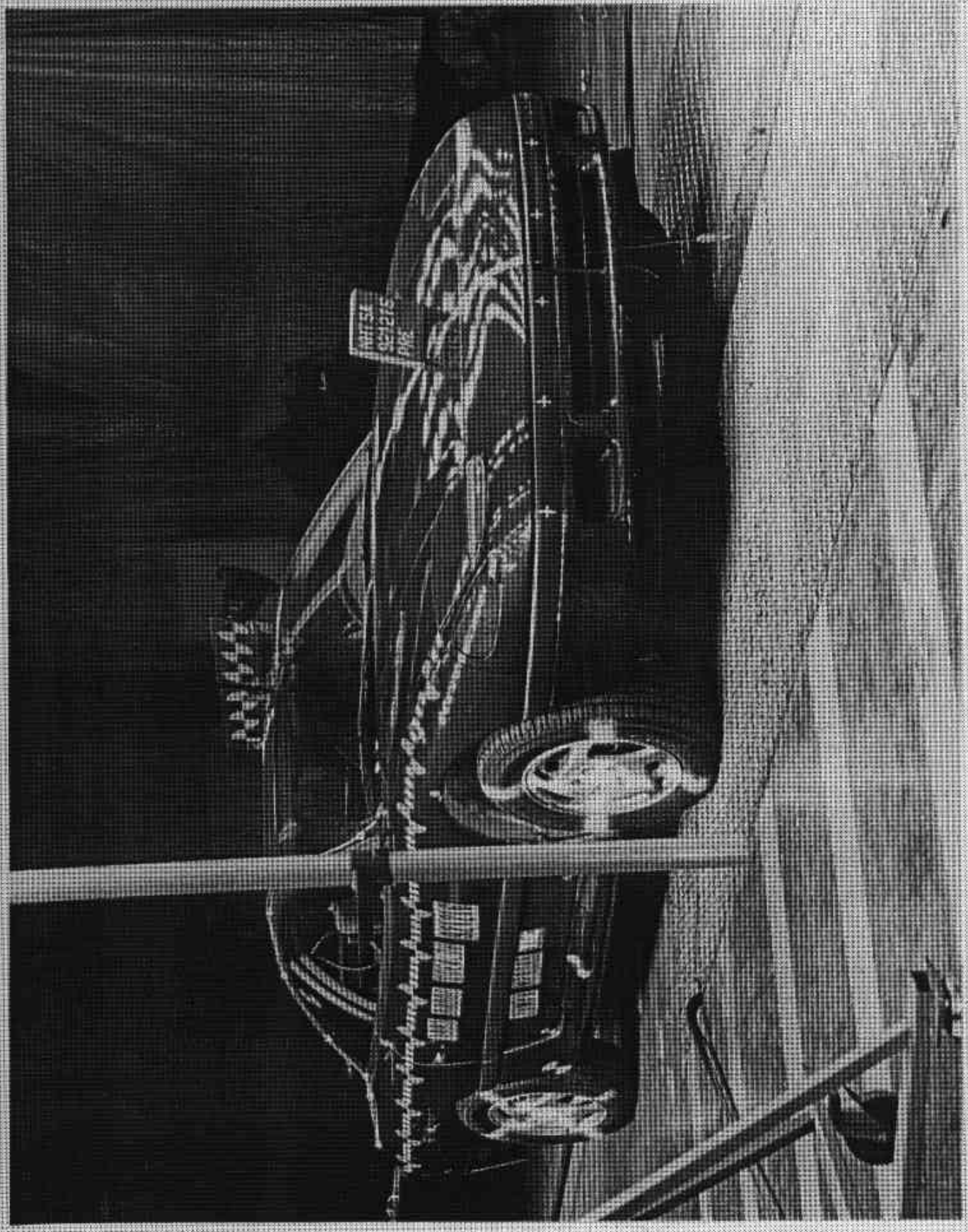


FIGURE A-9. PRE-TEST RIGHT FRONT THREE-QUARTER VIEW

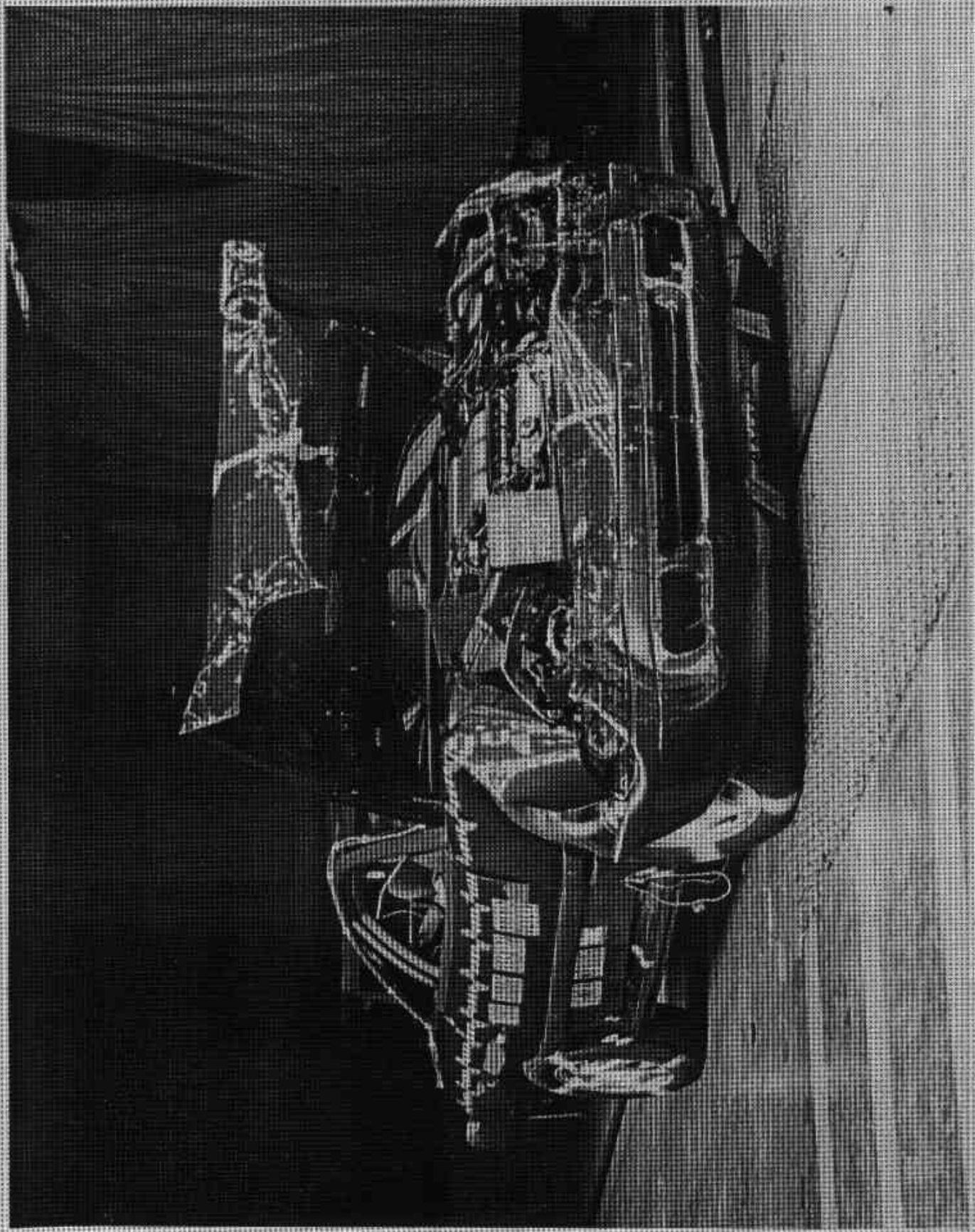


FIGURE A-10. POST-TEST RIGHT FRONT THREE-QUARTER VIEW

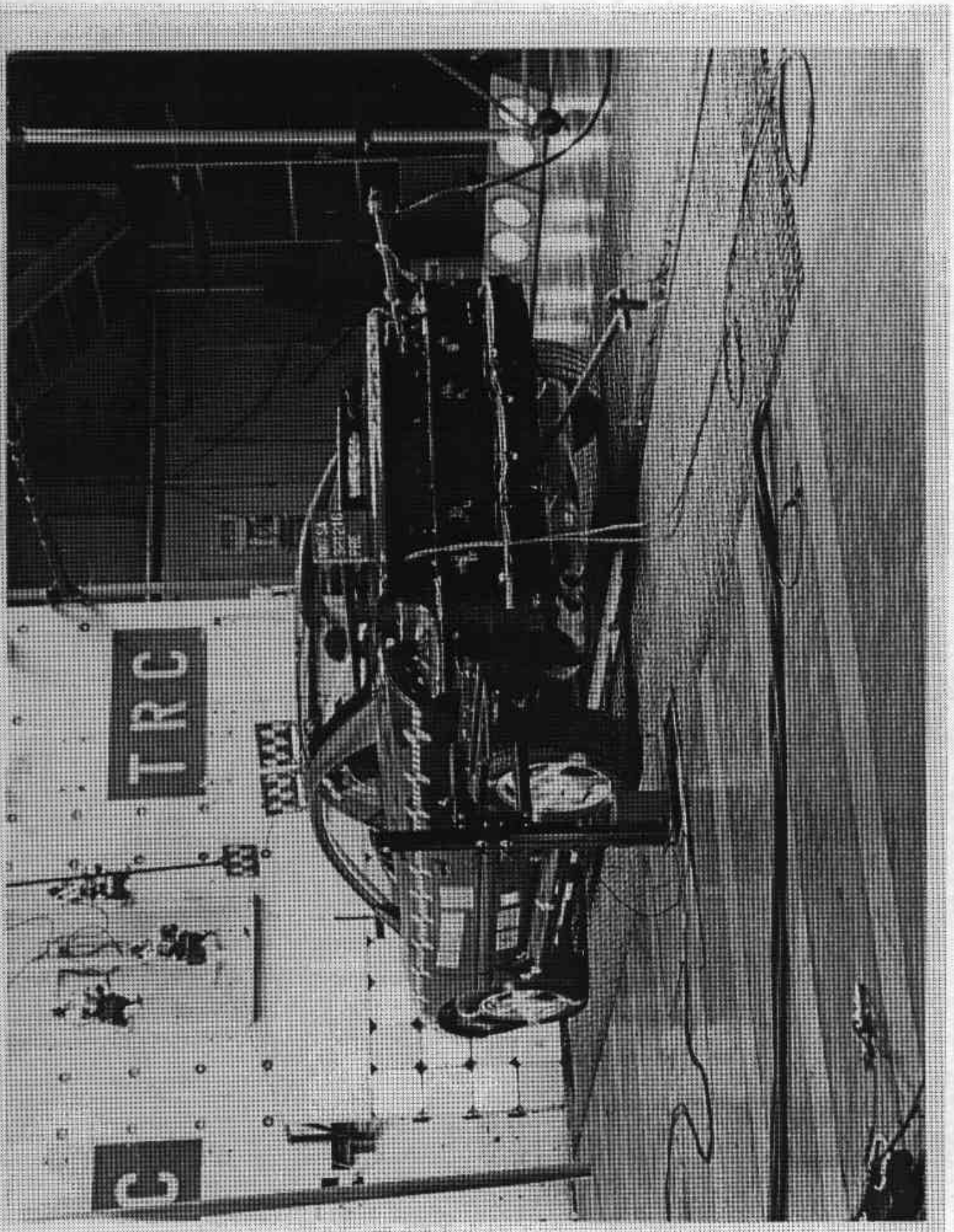


FIGURE A-11. PRE-TEST LEFT REAR THREE-QUARTER VIEW

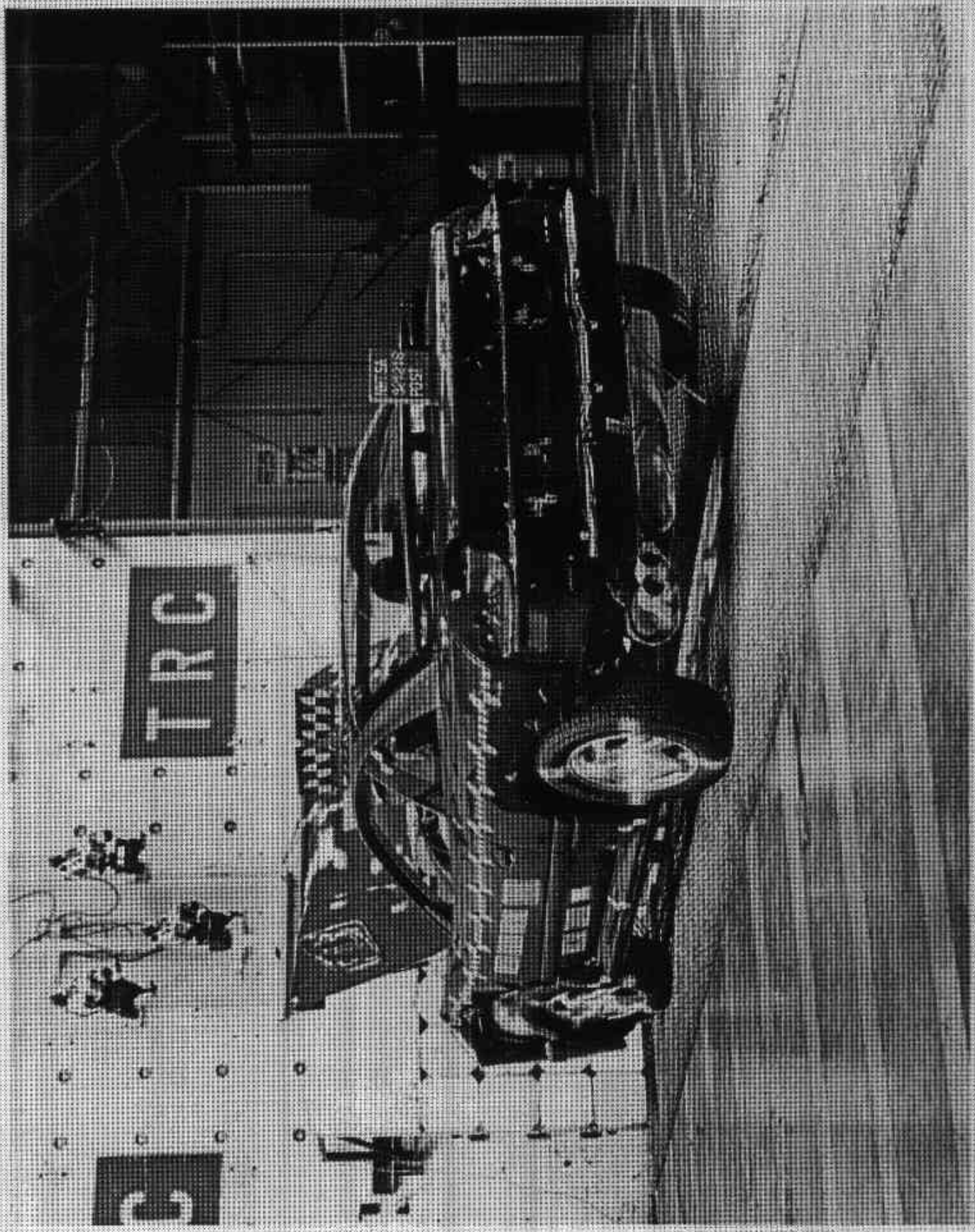


FIGURE A-12. POST-TEST LEFT REAR THREE-QUARTER VIEW

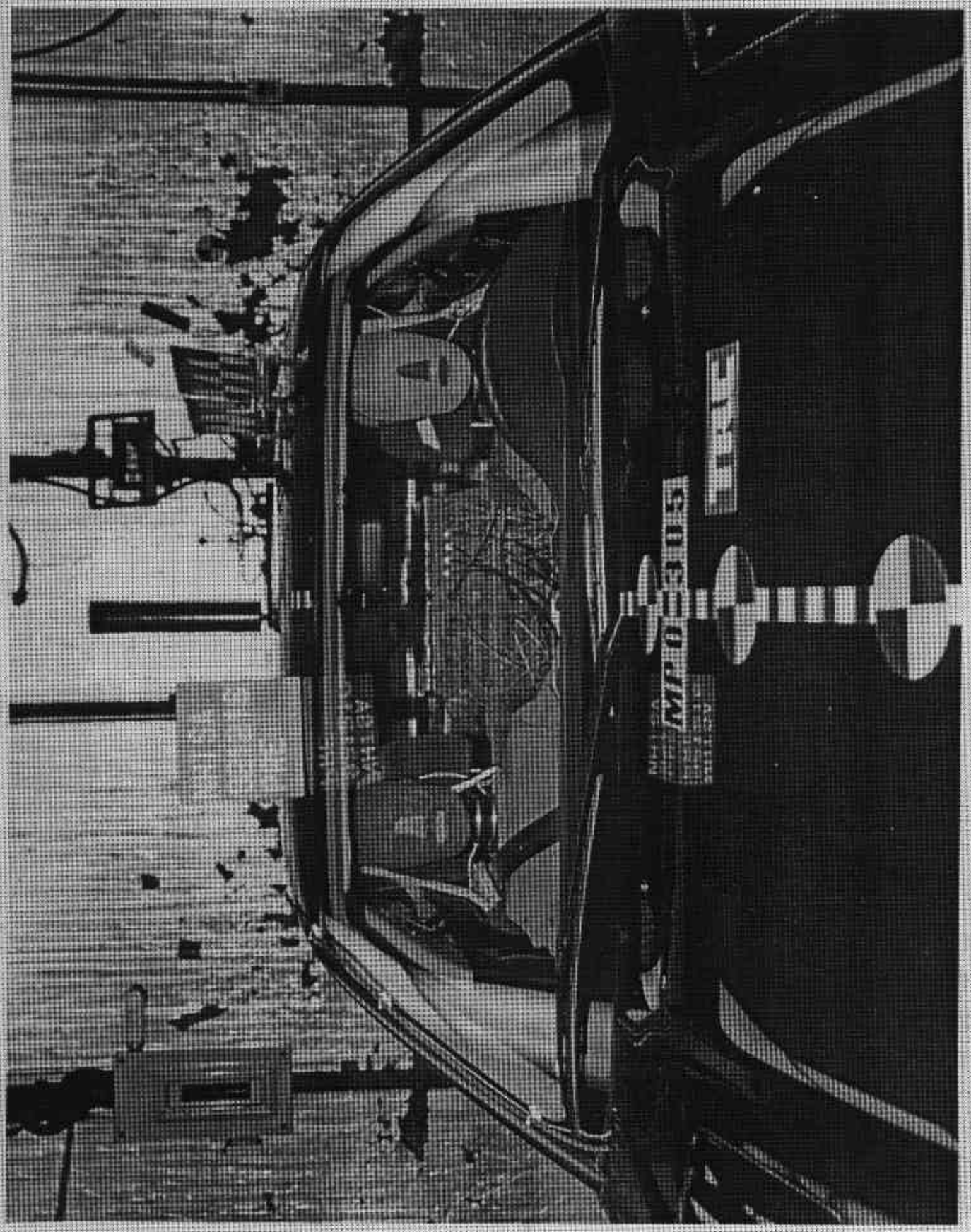


FIGURE A-13. PRE-TEST WINDSHIELD VIEW

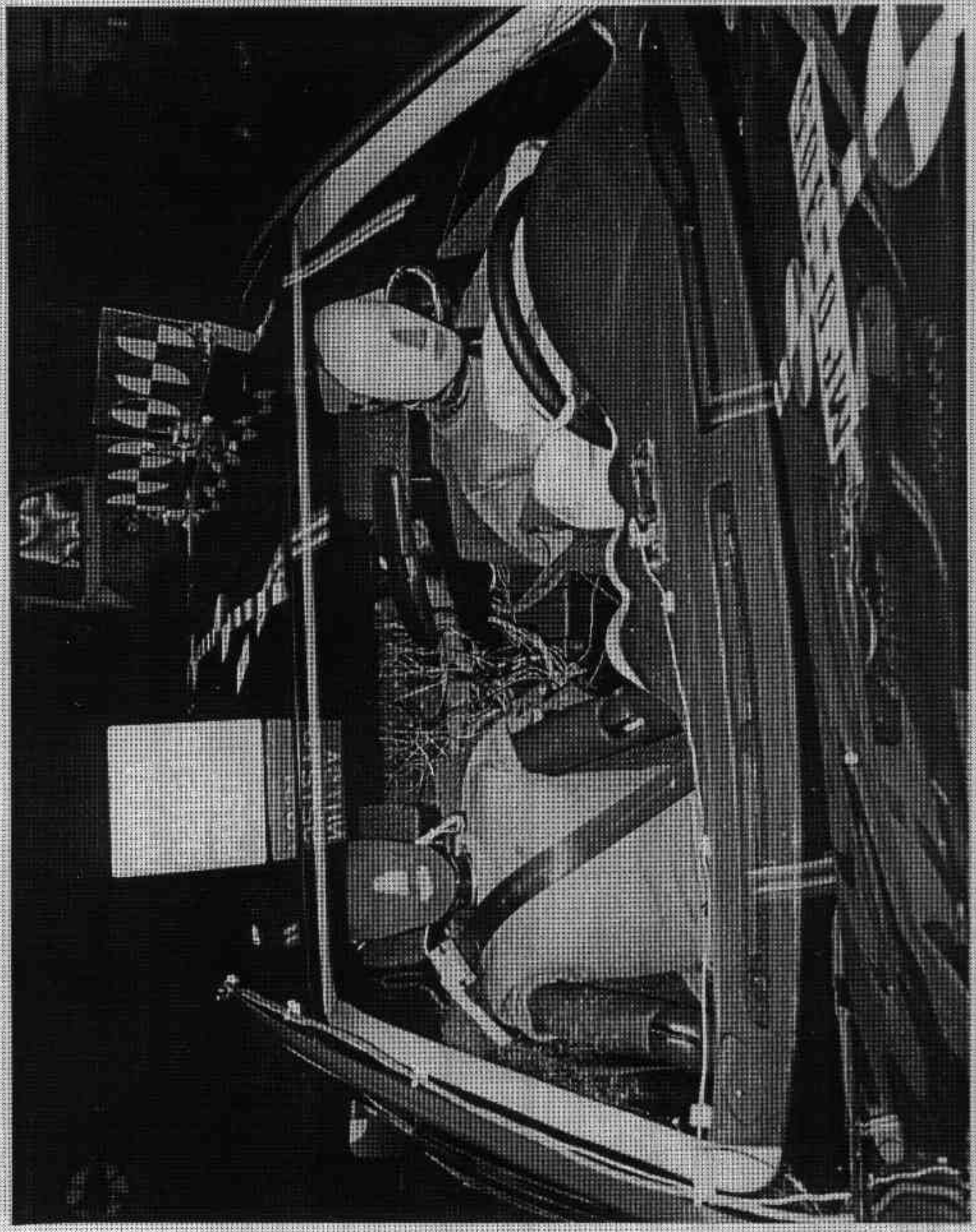


FIGURE A-14. POST-TEST WINDSHIELD VIEW

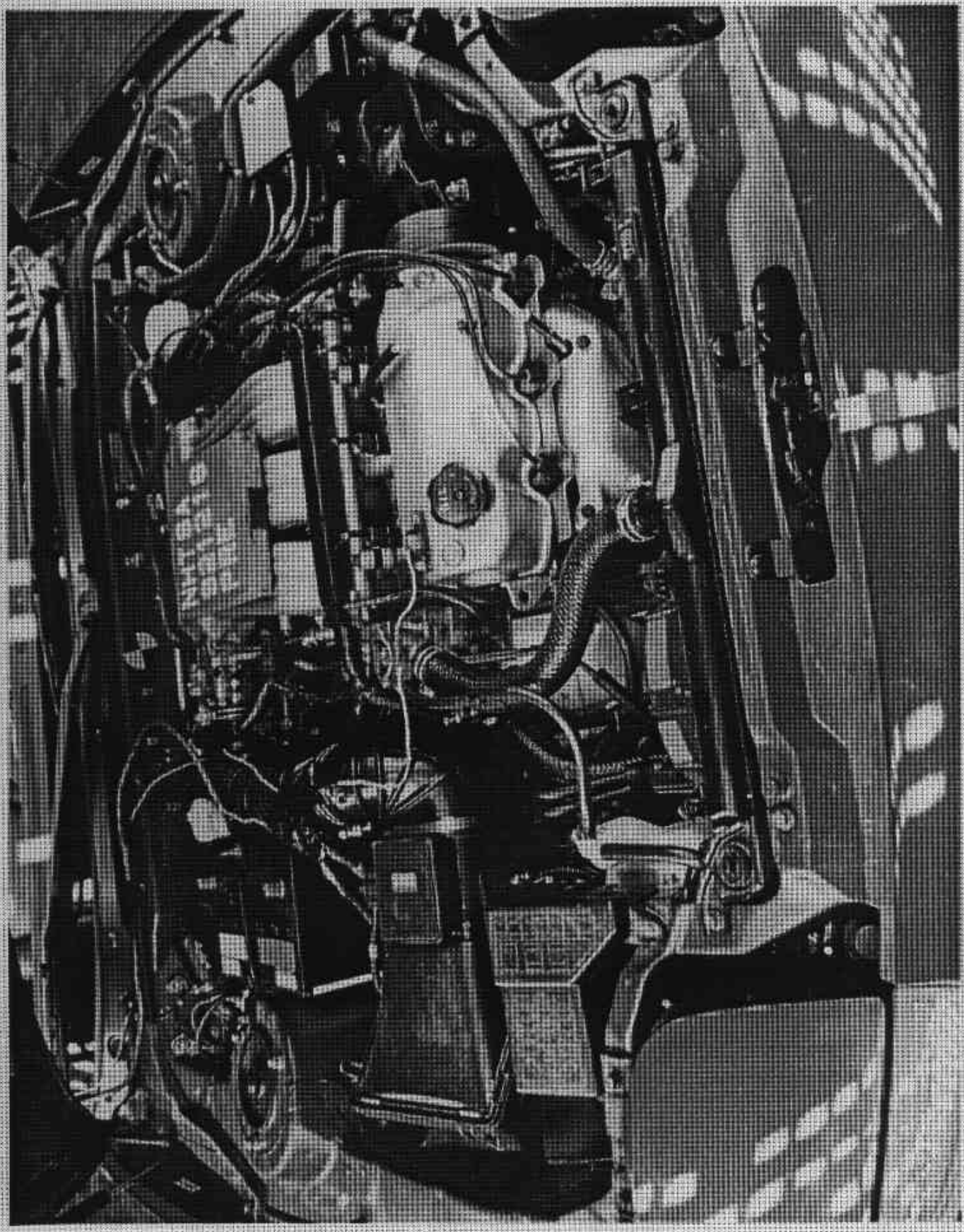


FIGURE A-15. PRE-TEST ENGINE COMPARTMENT VIEW

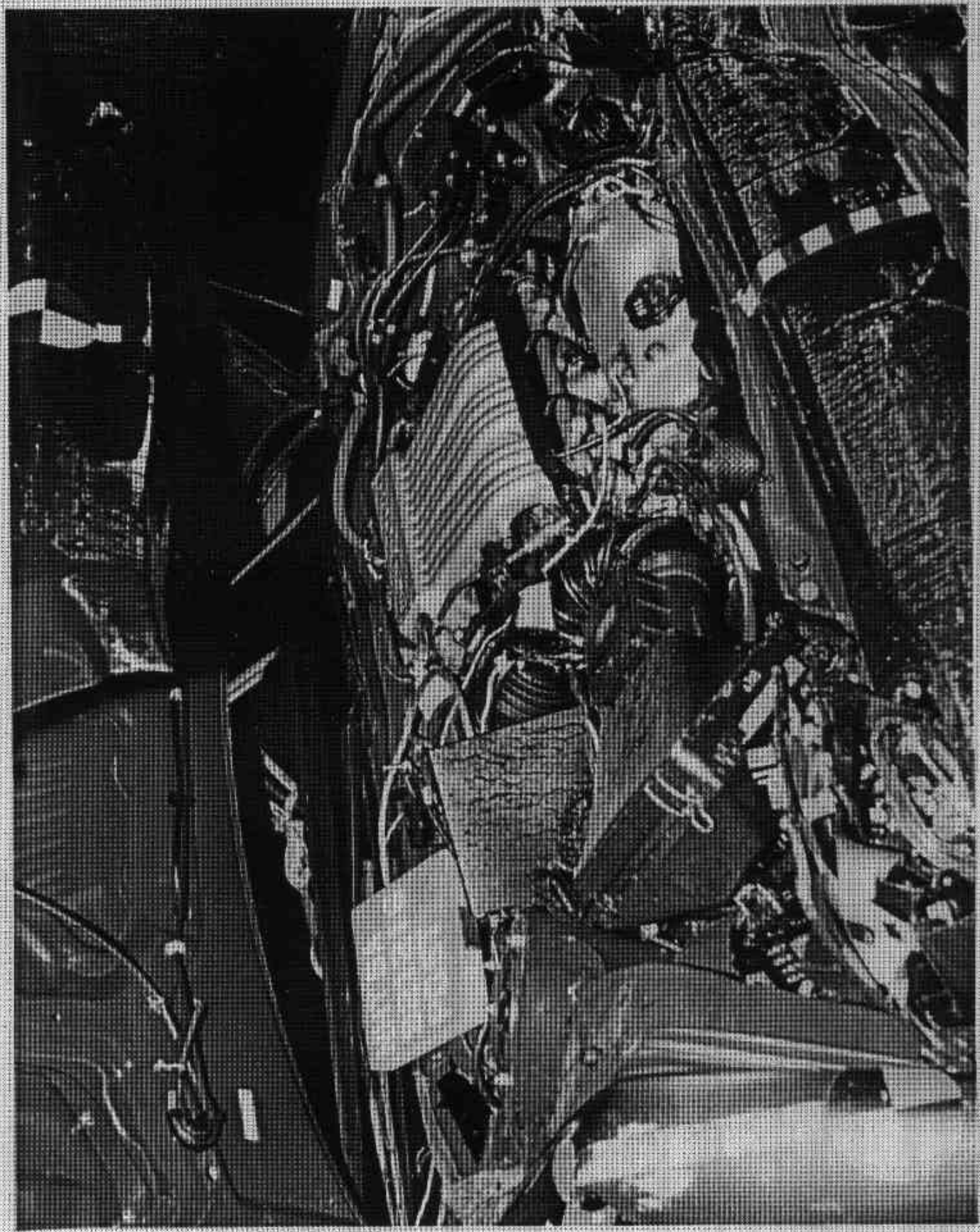


FIGURE A-16. POST-TEST ENGINE COMPARTMENT VIEW

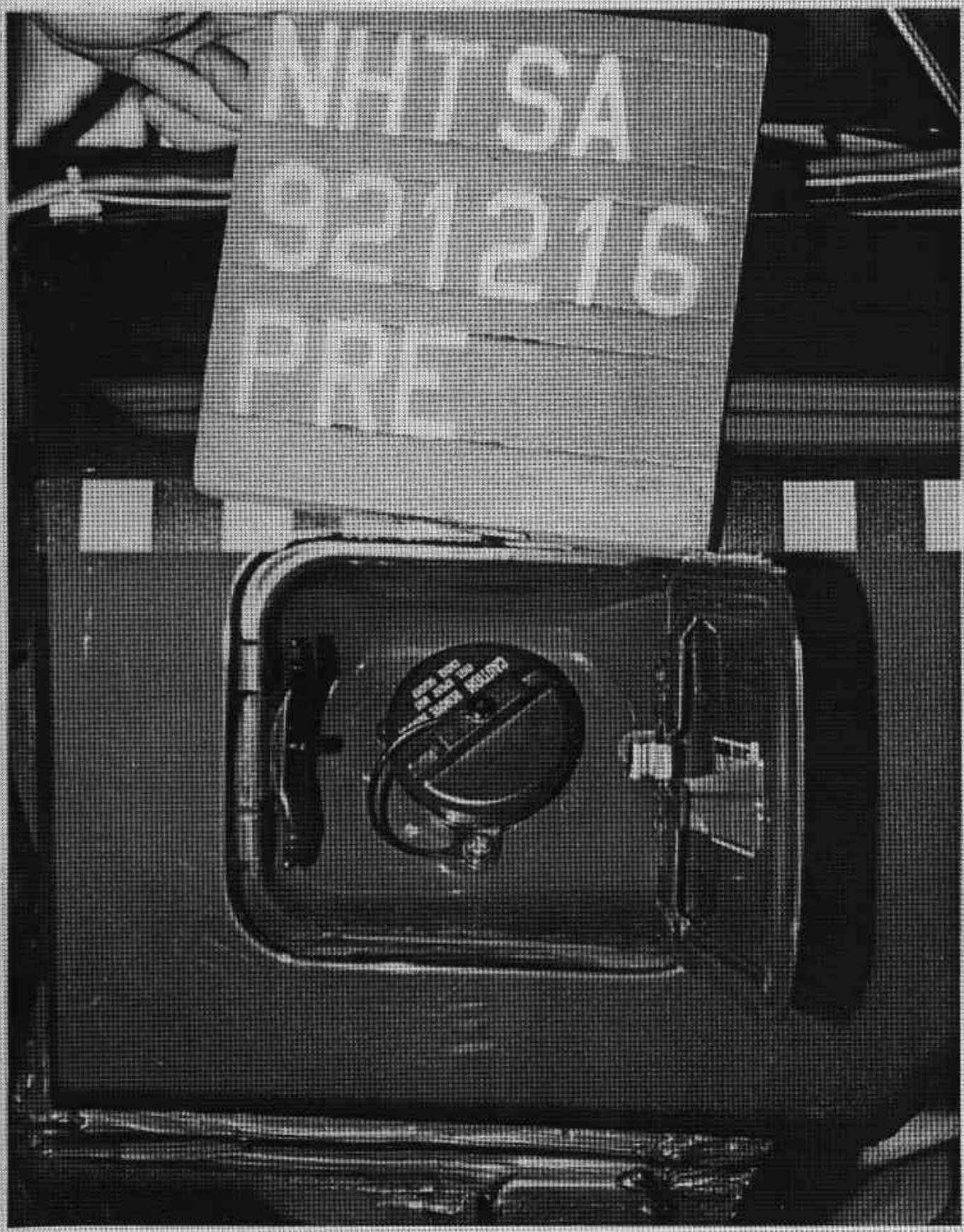


FIGURE A-17. PRE-TEST FUEL FILLER CAP VIEW

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

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

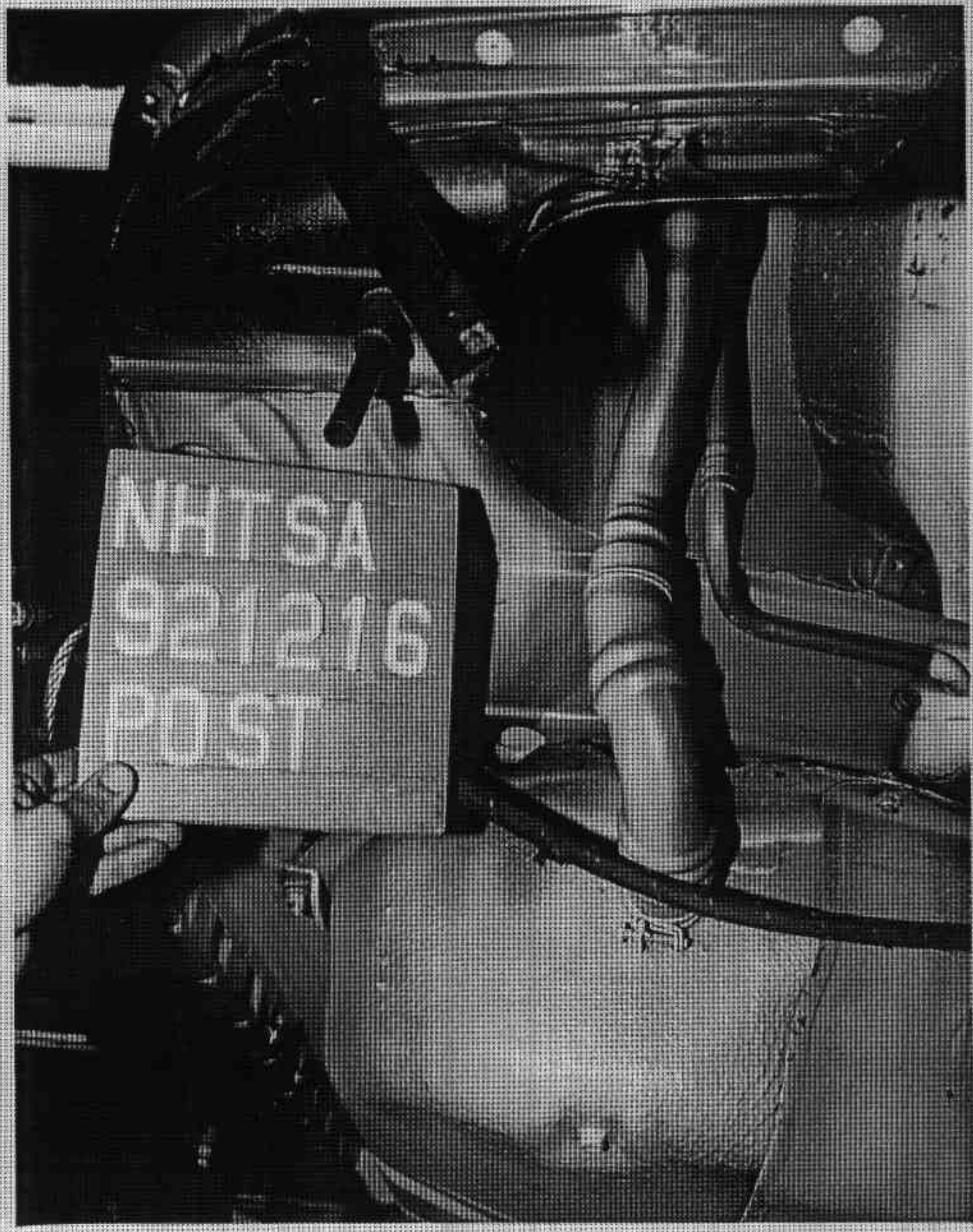


FIGURE A-20. POST-TEST FUEL FILLER NECK VIEW

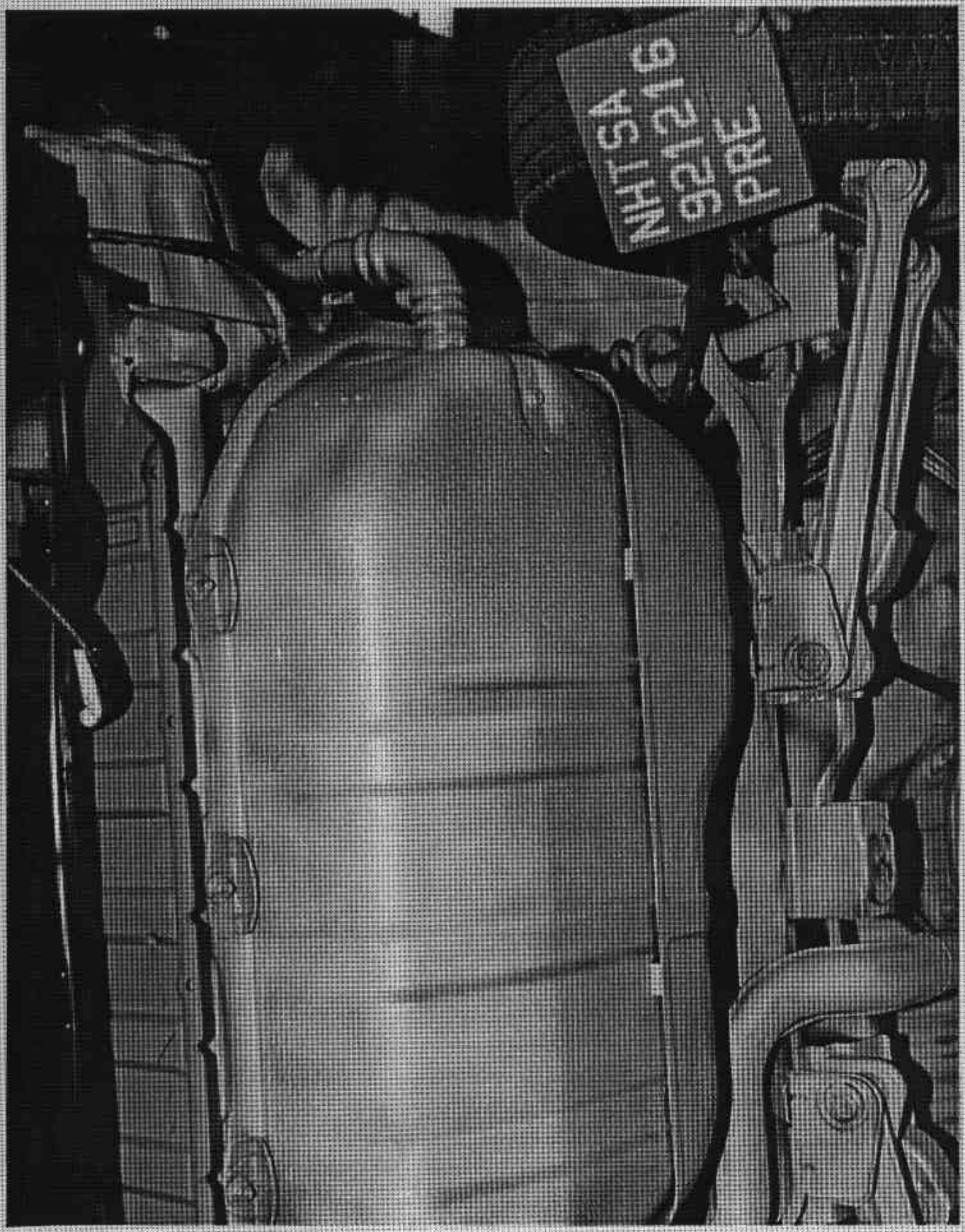


FIGURE A-21. PRE-TEST FUEL TANK VIEW

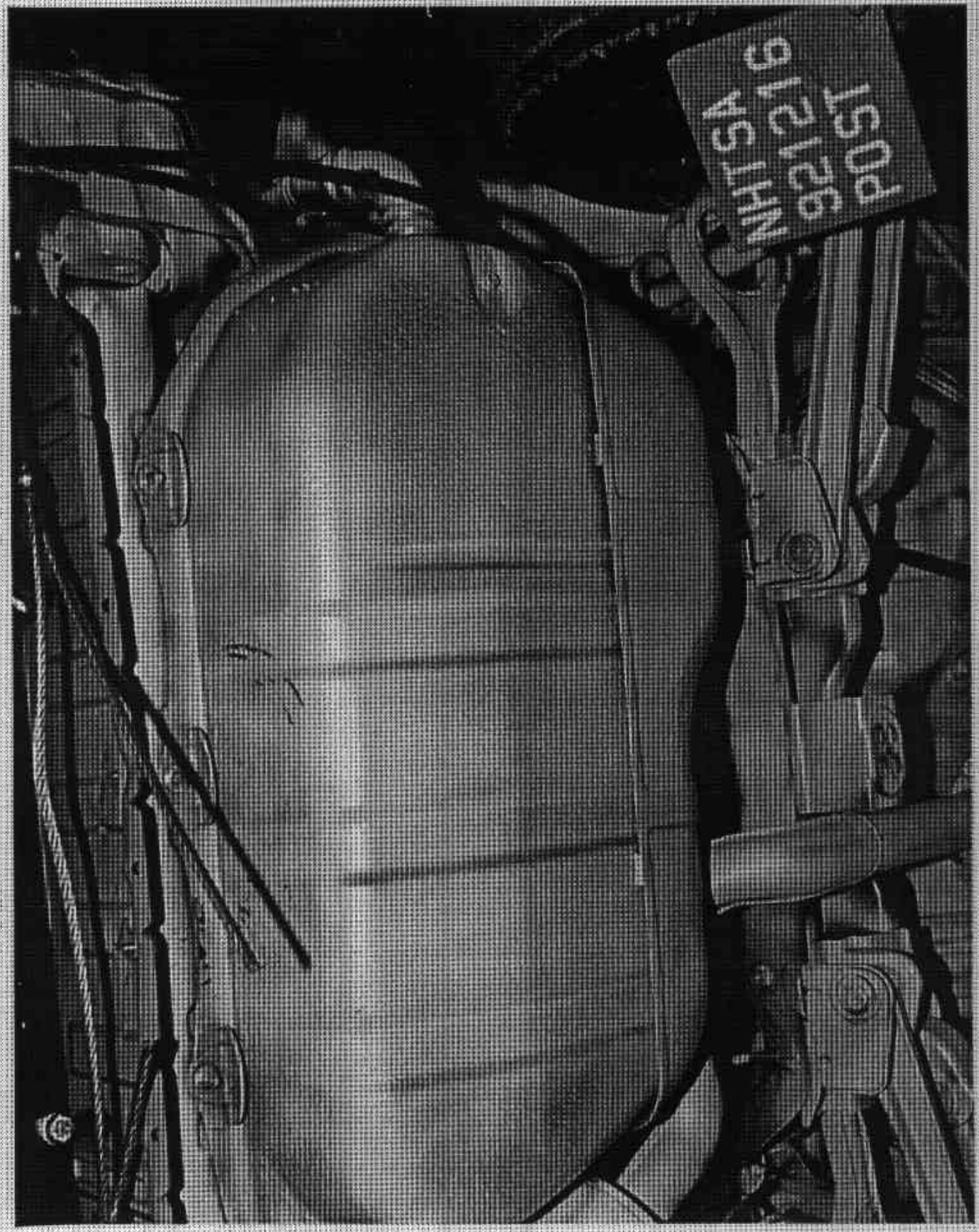


FIGURE A-22. POST-TEST FUEL TANK VIEW

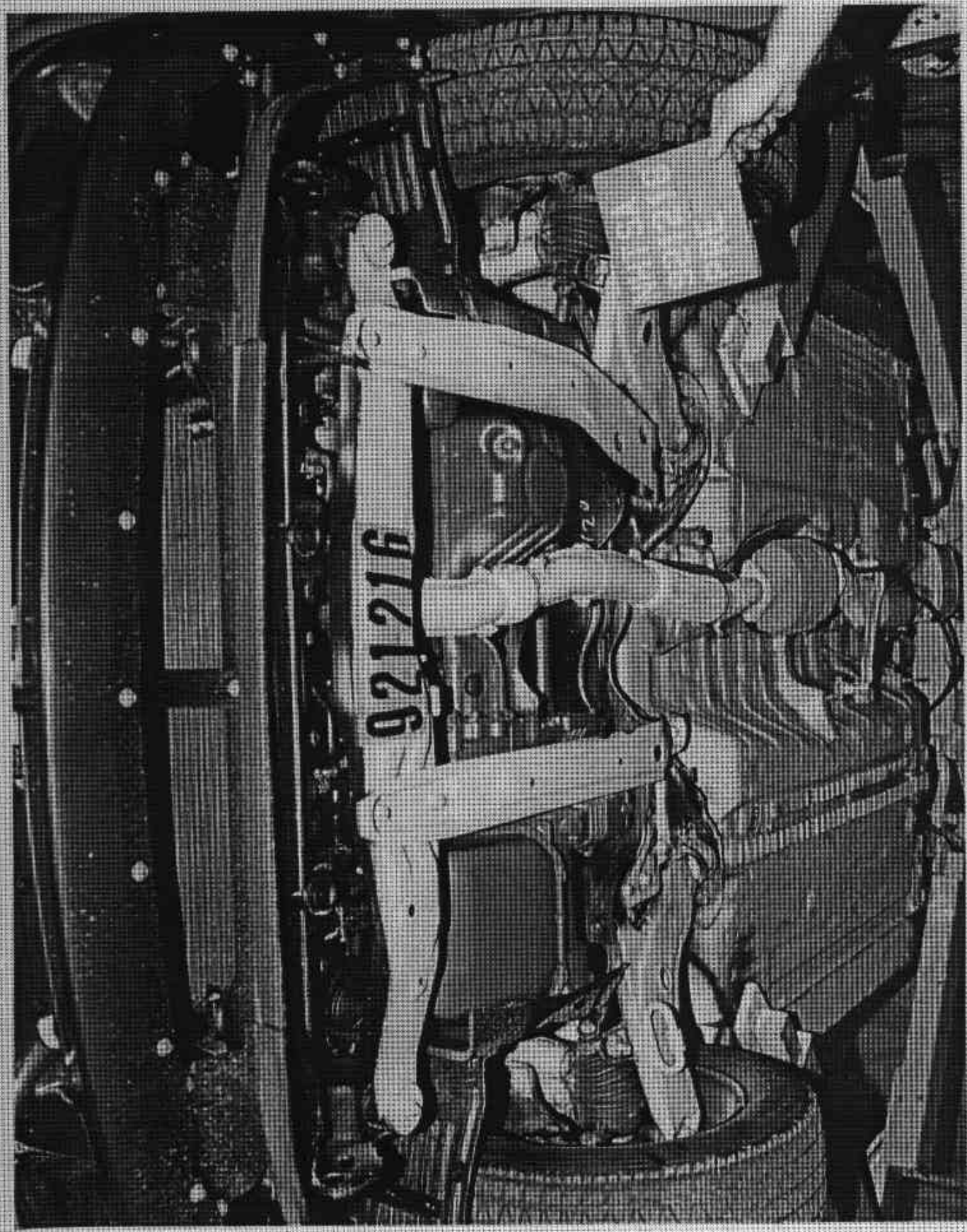


FIGURE A-23. PRE-TEST FRONT UNDERBODY VIEW

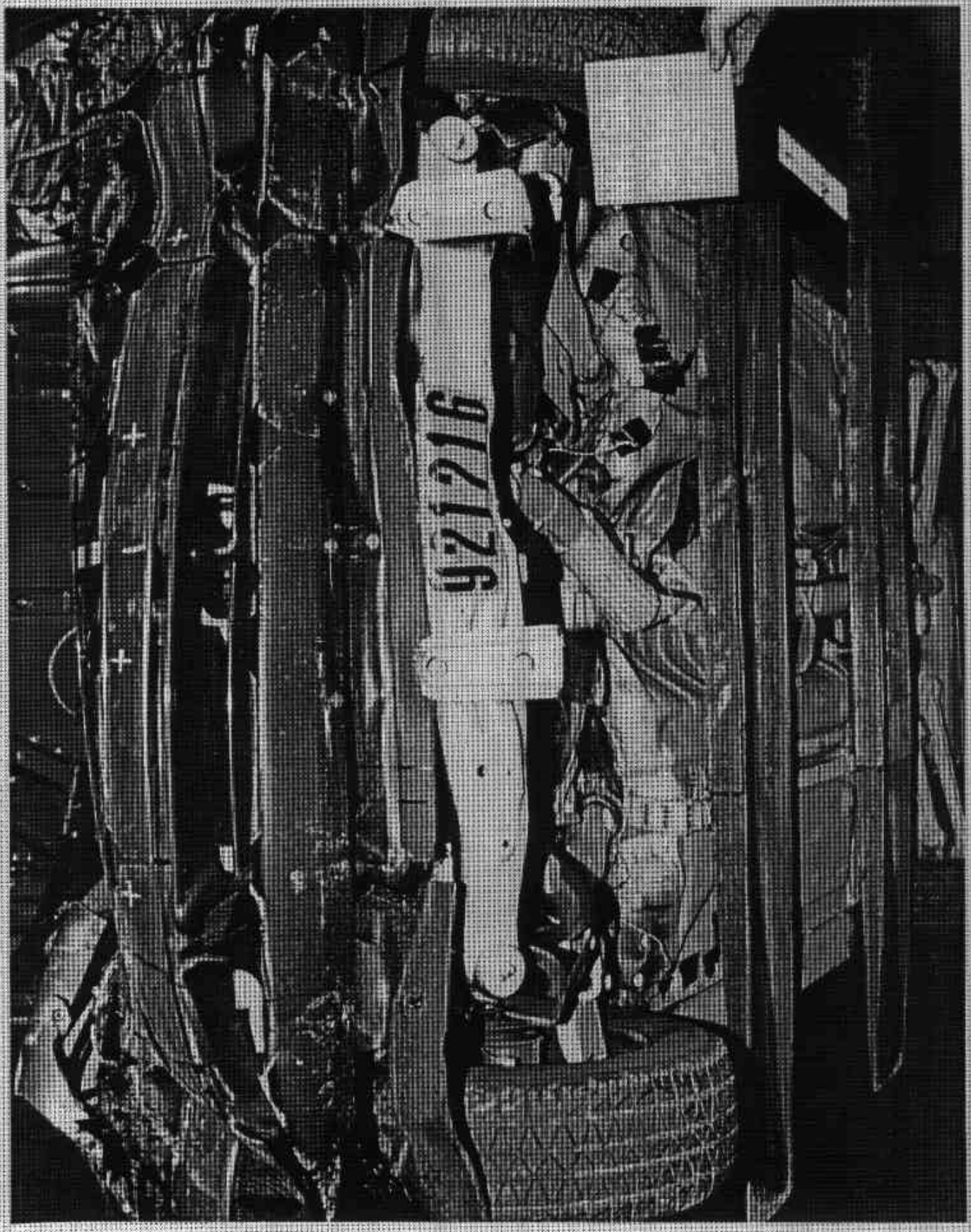


FIGURE A-24. POST-TEST FRONT UNDERBODY VIEW

FIGURE A-25. PRE-TEST REAR UNDERBODY VIEW

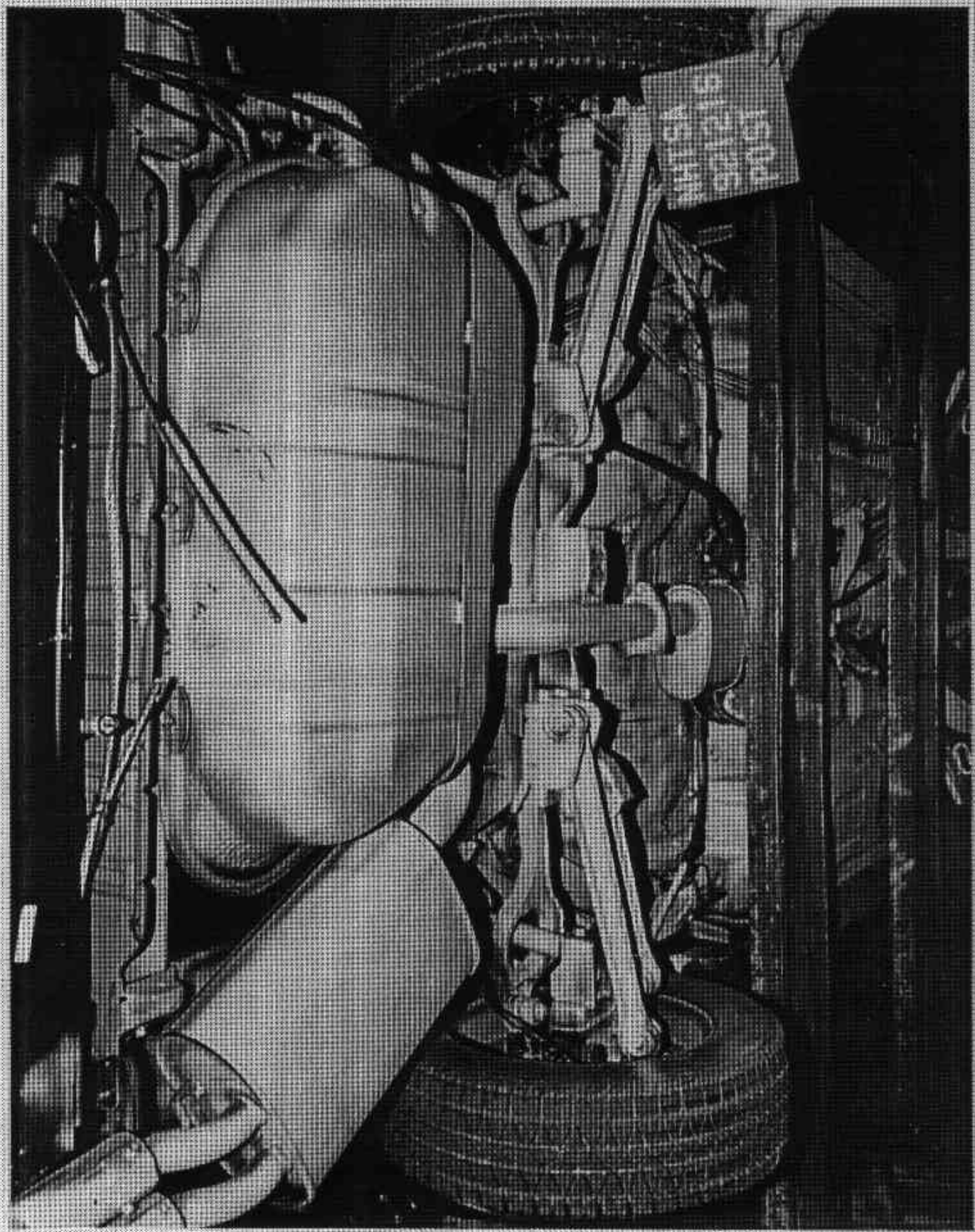


FIGURE A-26. POST-TEST REAR UNDERBODY VIEW

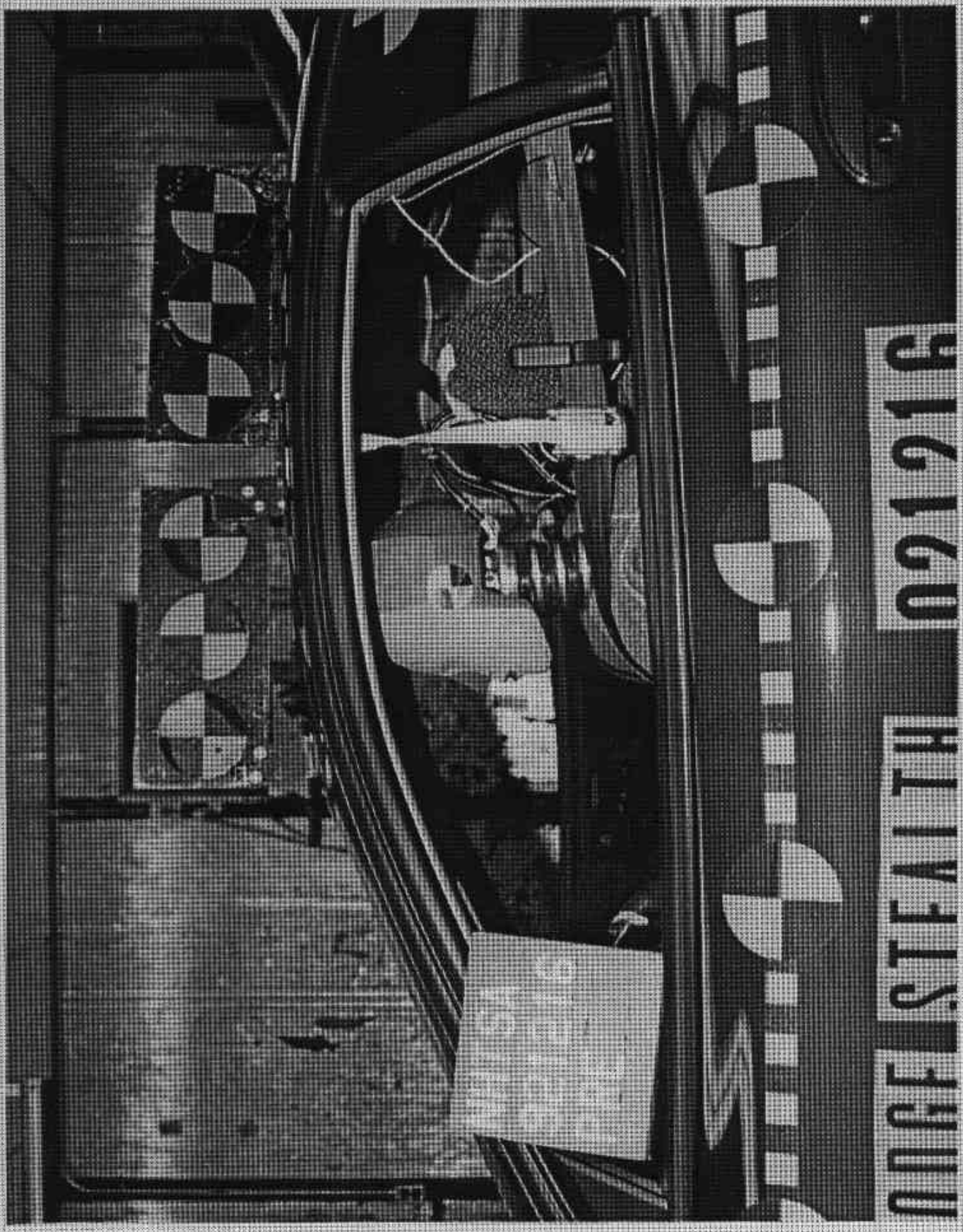


FIGURE A-27. PRE-TEST DRIVER DUMMY POSITION VIEW

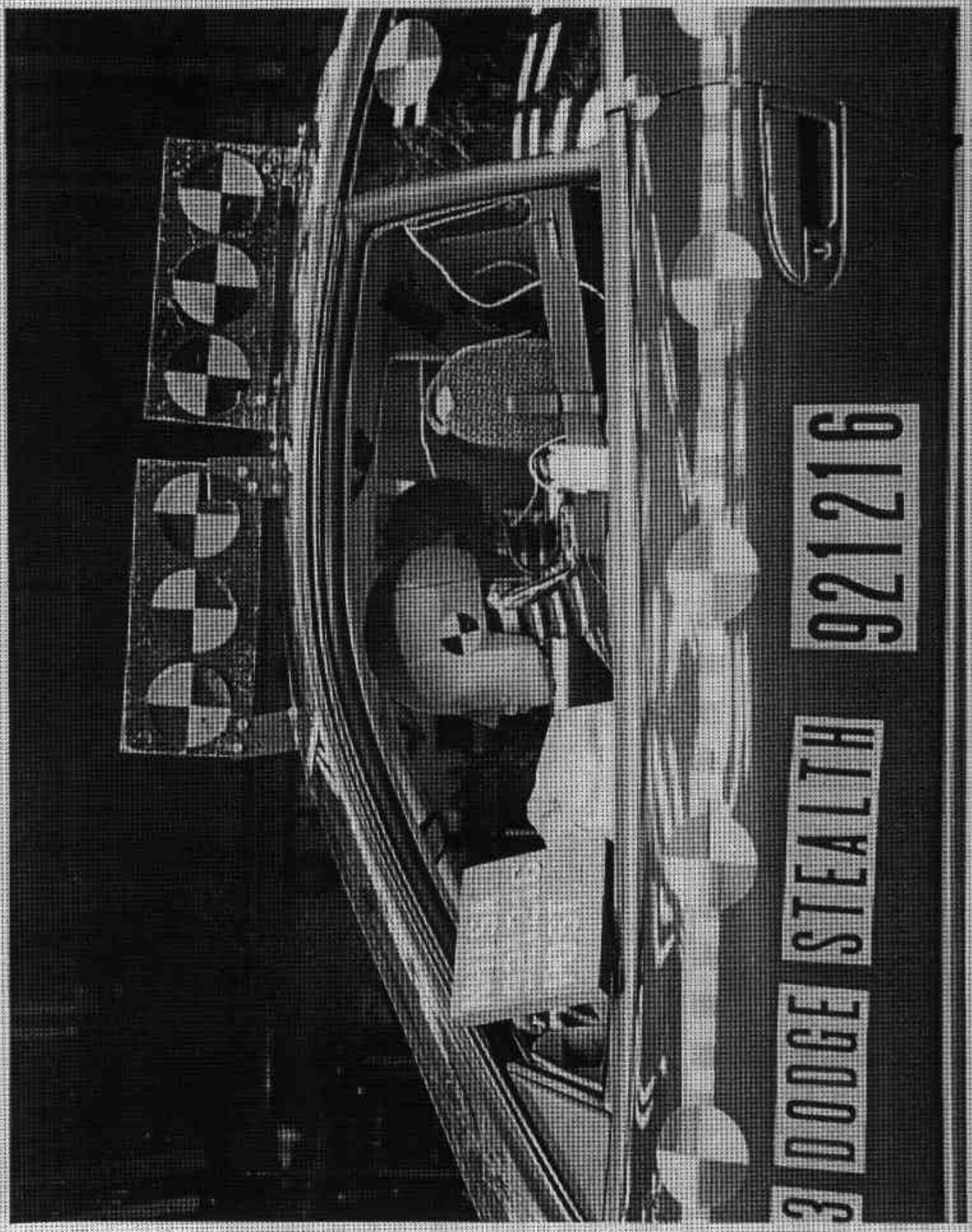


FIGURE A-28. POST-TEST DRIVER DUMMY POSITION VIEW

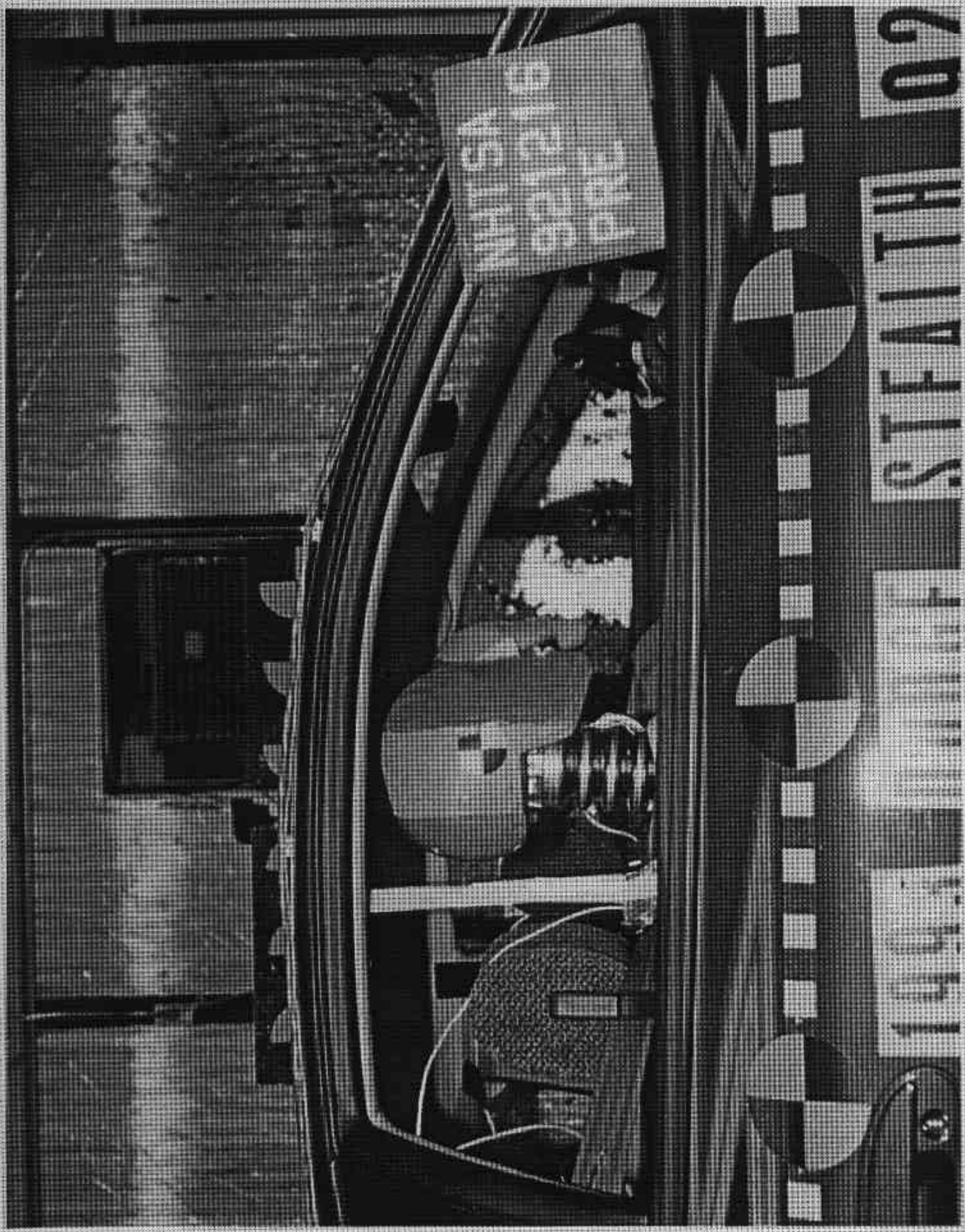


FIGURE A-29. PRE-TEST PASSENGER DUMMY POSITION VIEW

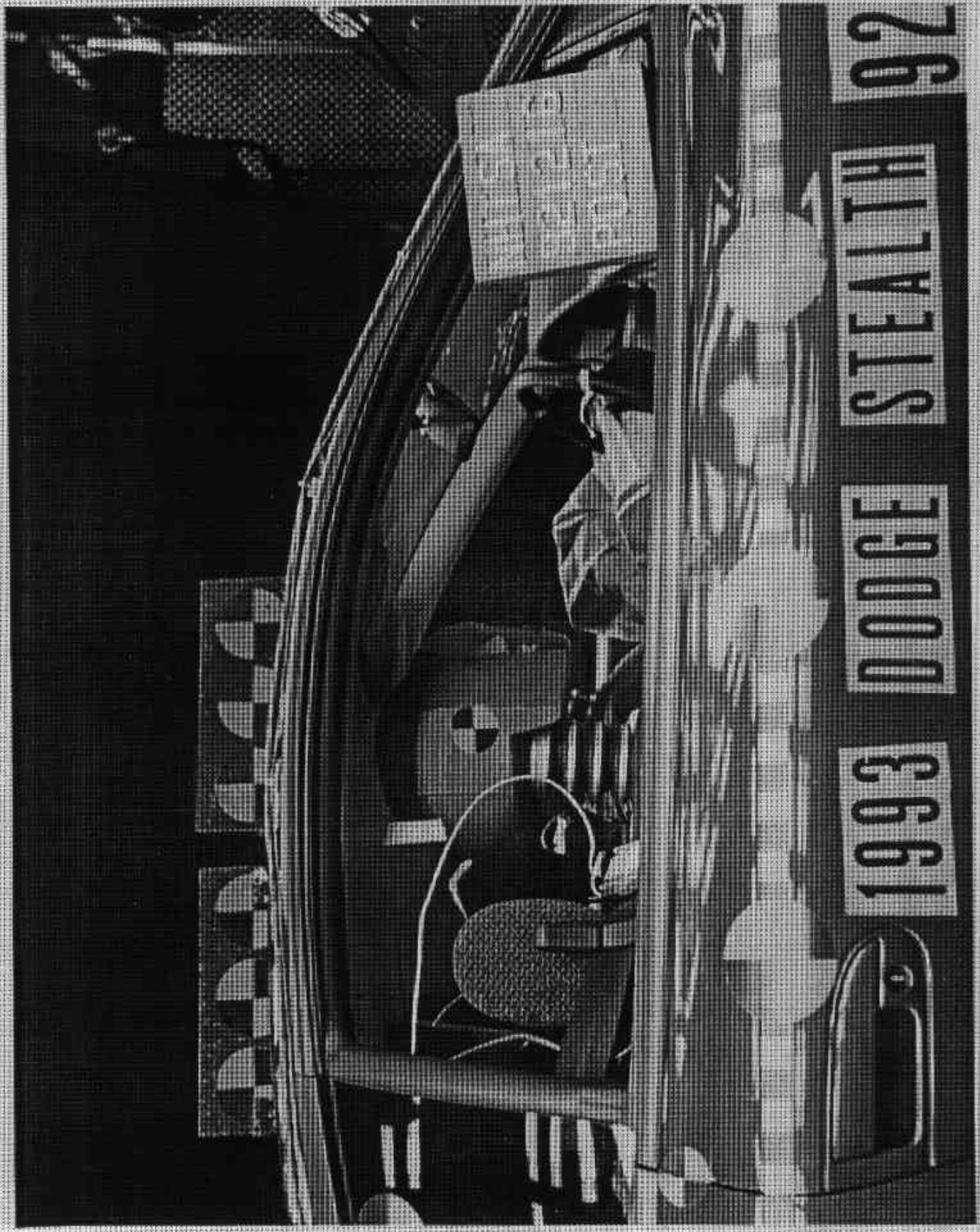


FIGURE A-30. POST-TEST PASSENGER DUMMY POSITION VIEW

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

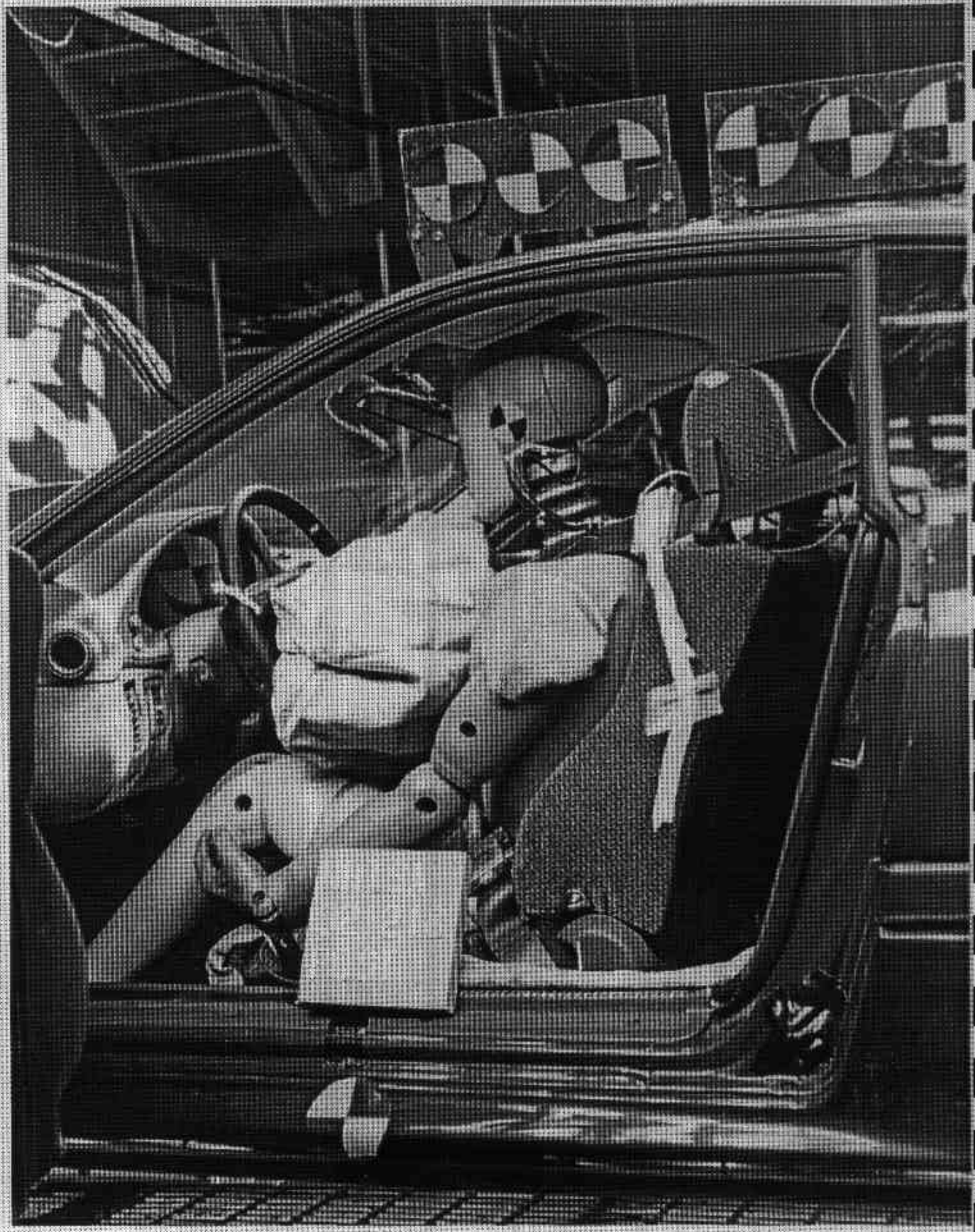


FIGURE A-32. POST-TEST DRIVER DUMMY & VEHICLE INTERIOR - VIEW 1

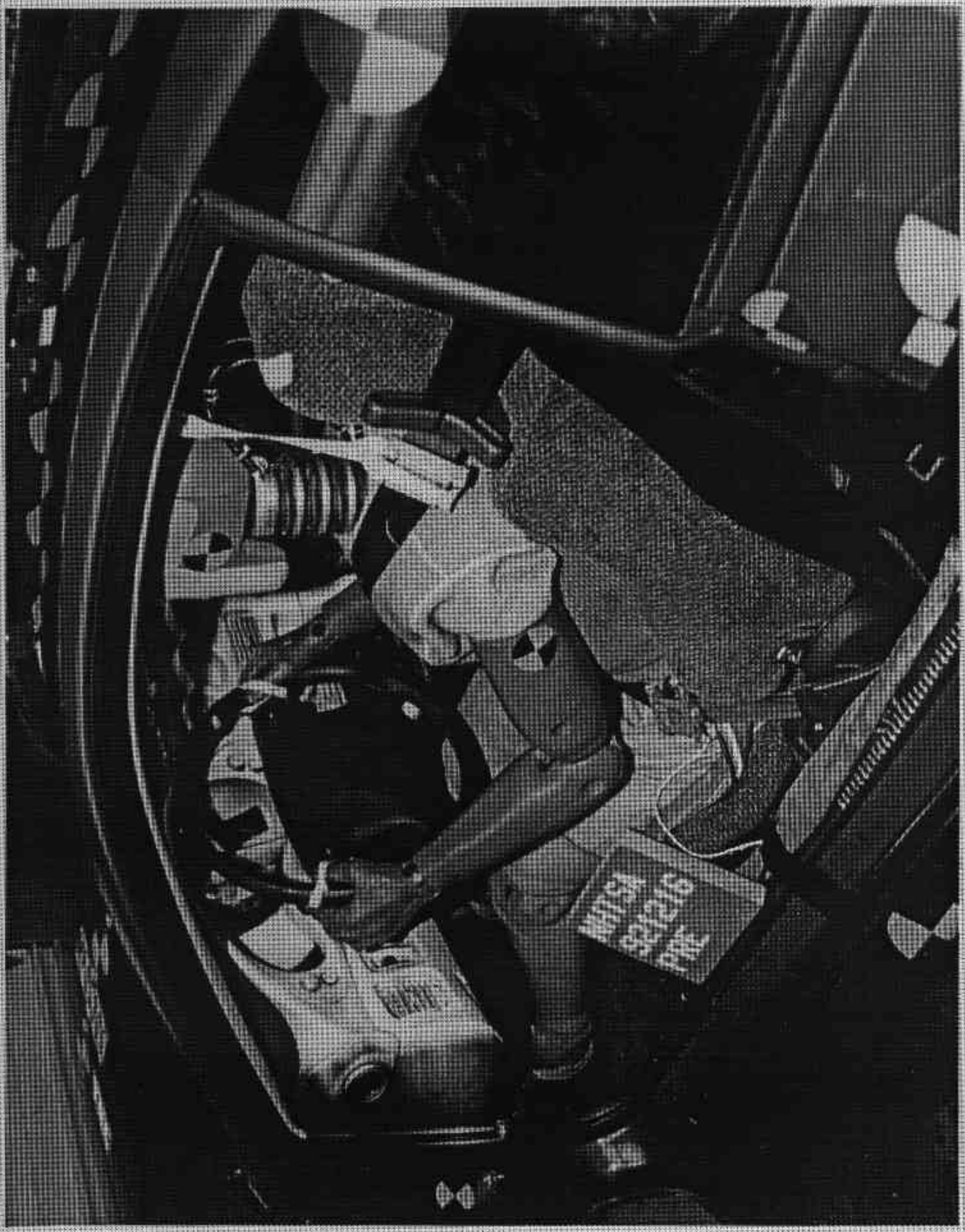


FIGURE A-33. PRE-TEST DRIVER DUMMY & VEHICLE INTERIOR - VIEW 2

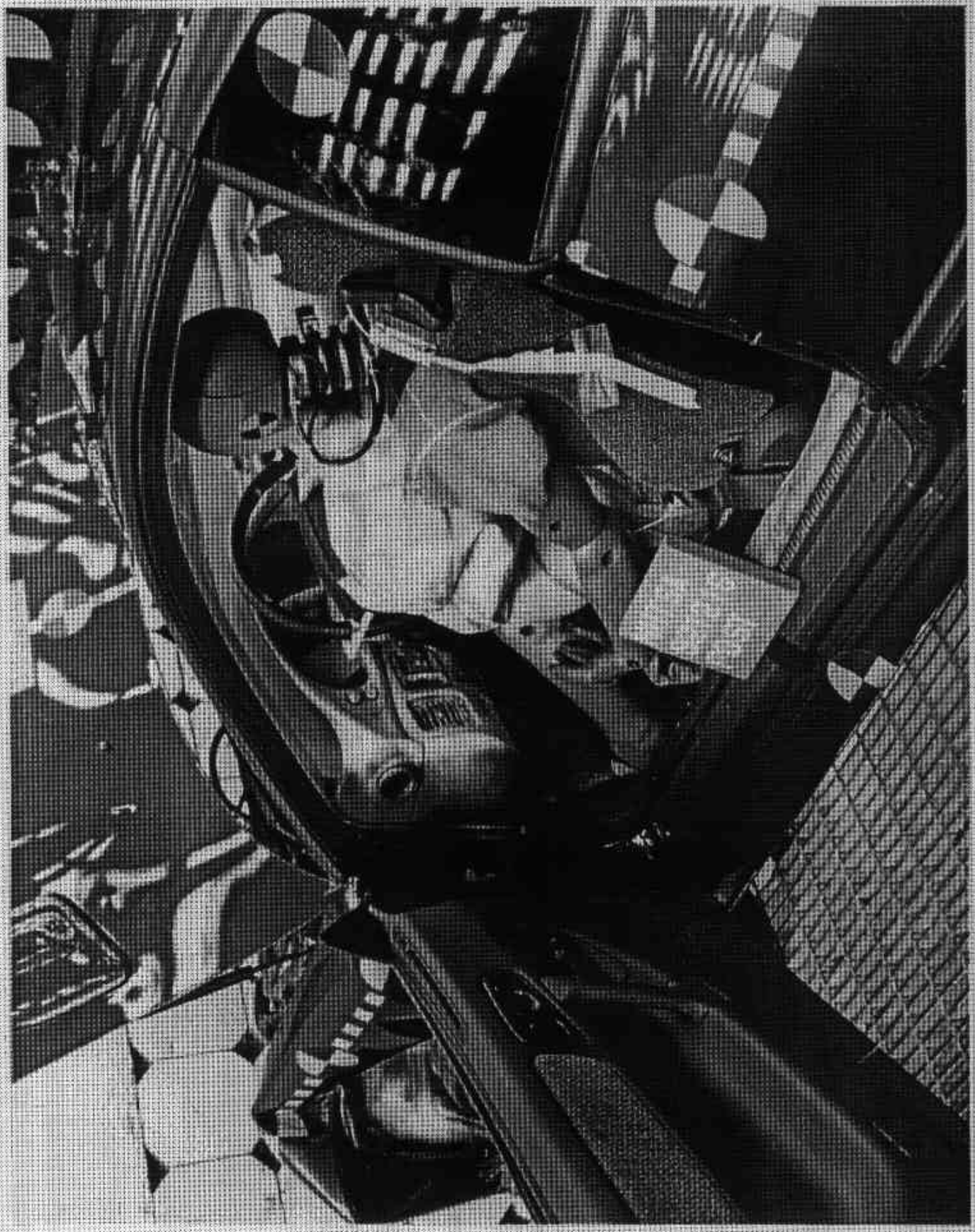


FIGURE A-34. POST-TEST DRIVER DUMMY & VEHICLE INTERIOR - VIEW 2

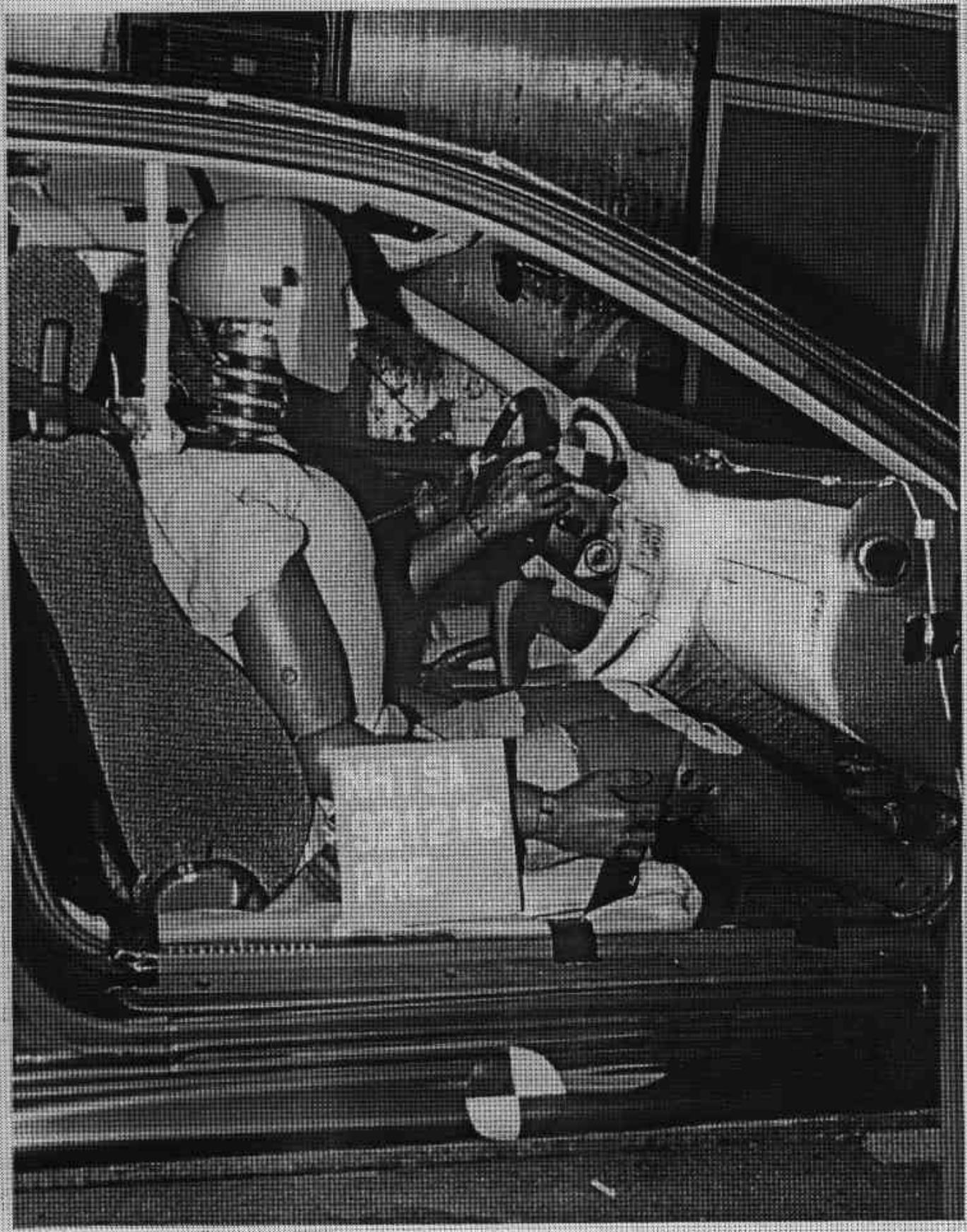


FIGURE A-35. PRE-TEST PASSENGER DUMMY & VEHICLE INTERIOR - VIEW 1

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

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

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

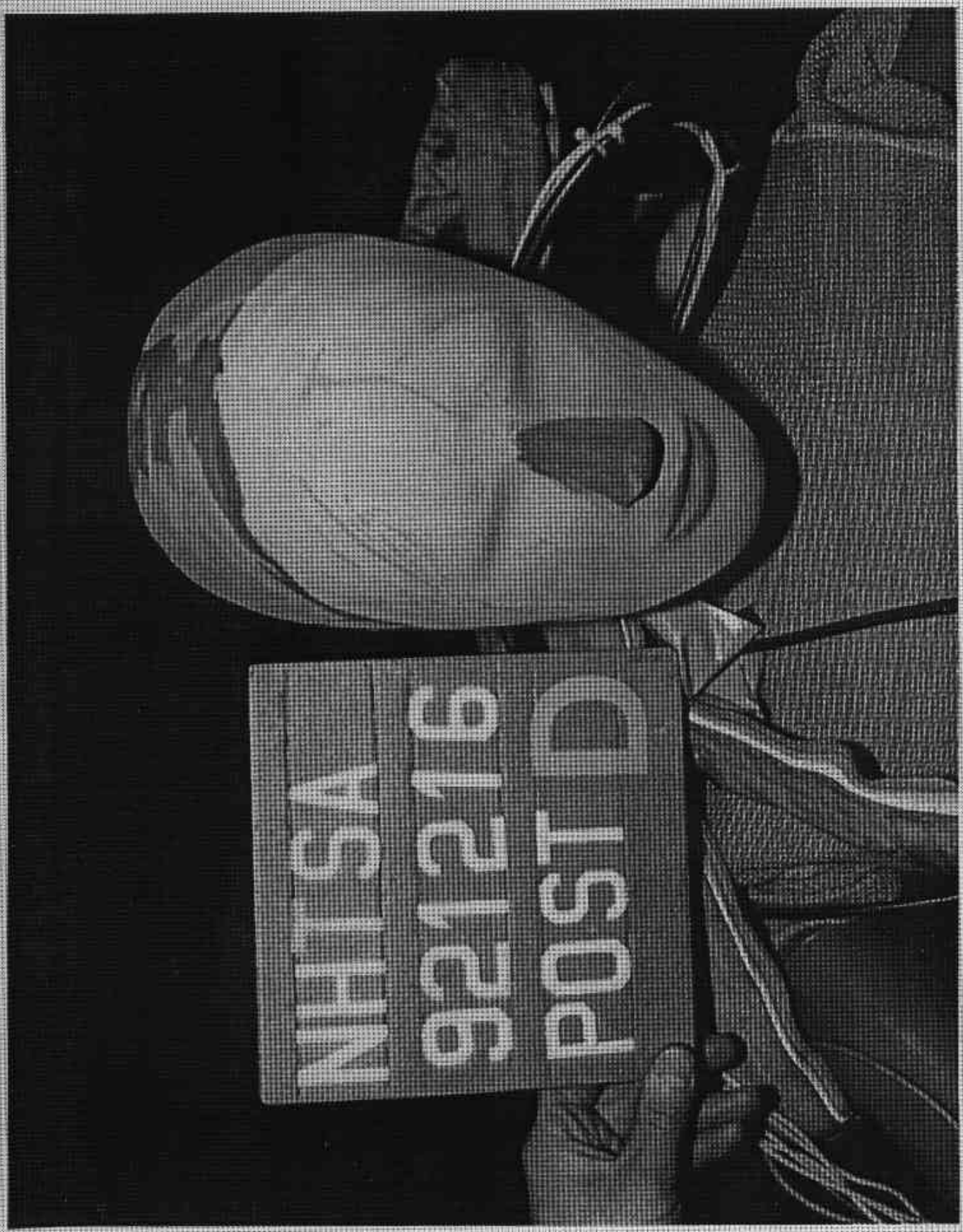


FIGURE A-39. POST-TEST DRIVER DUMMY HEAD CONTACT - VIEW 1

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

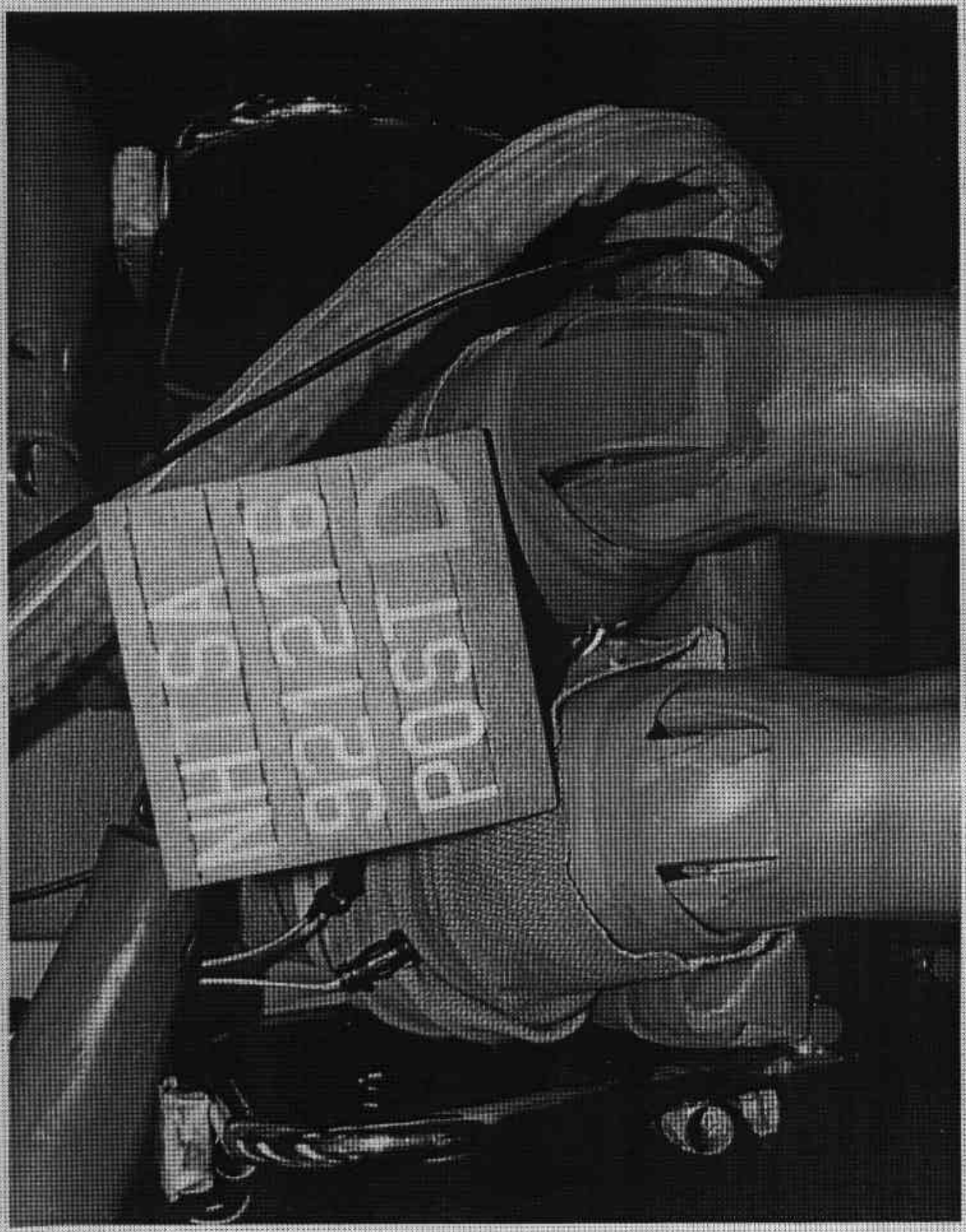


FIGURE A-41. POST-TEST DRIVER DUMMY KNEE CONTACT - VIEW 1

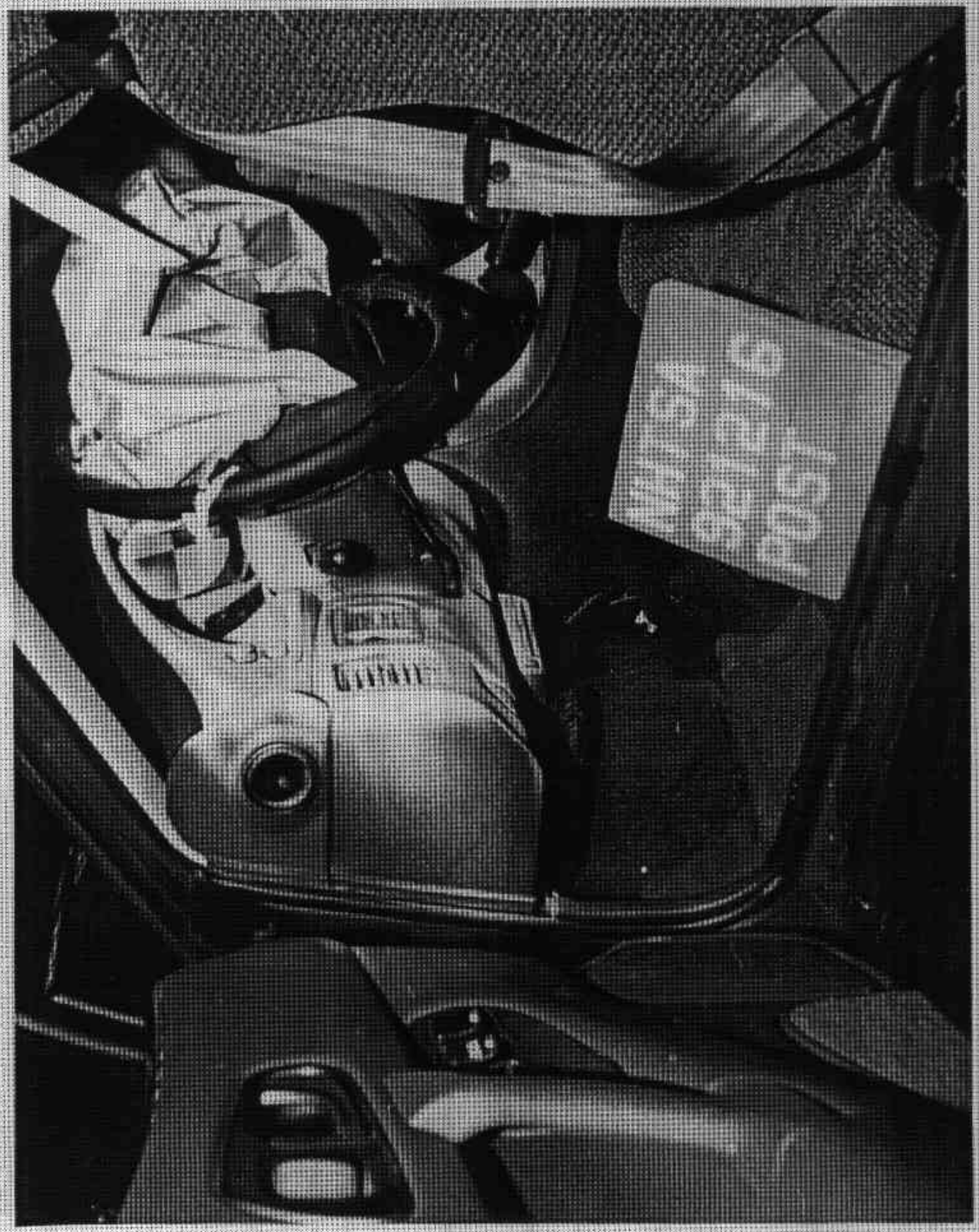


FIGURE A-42. POST-TEST DRIVER DUMMY KNEE CONTACT - VIEW 2

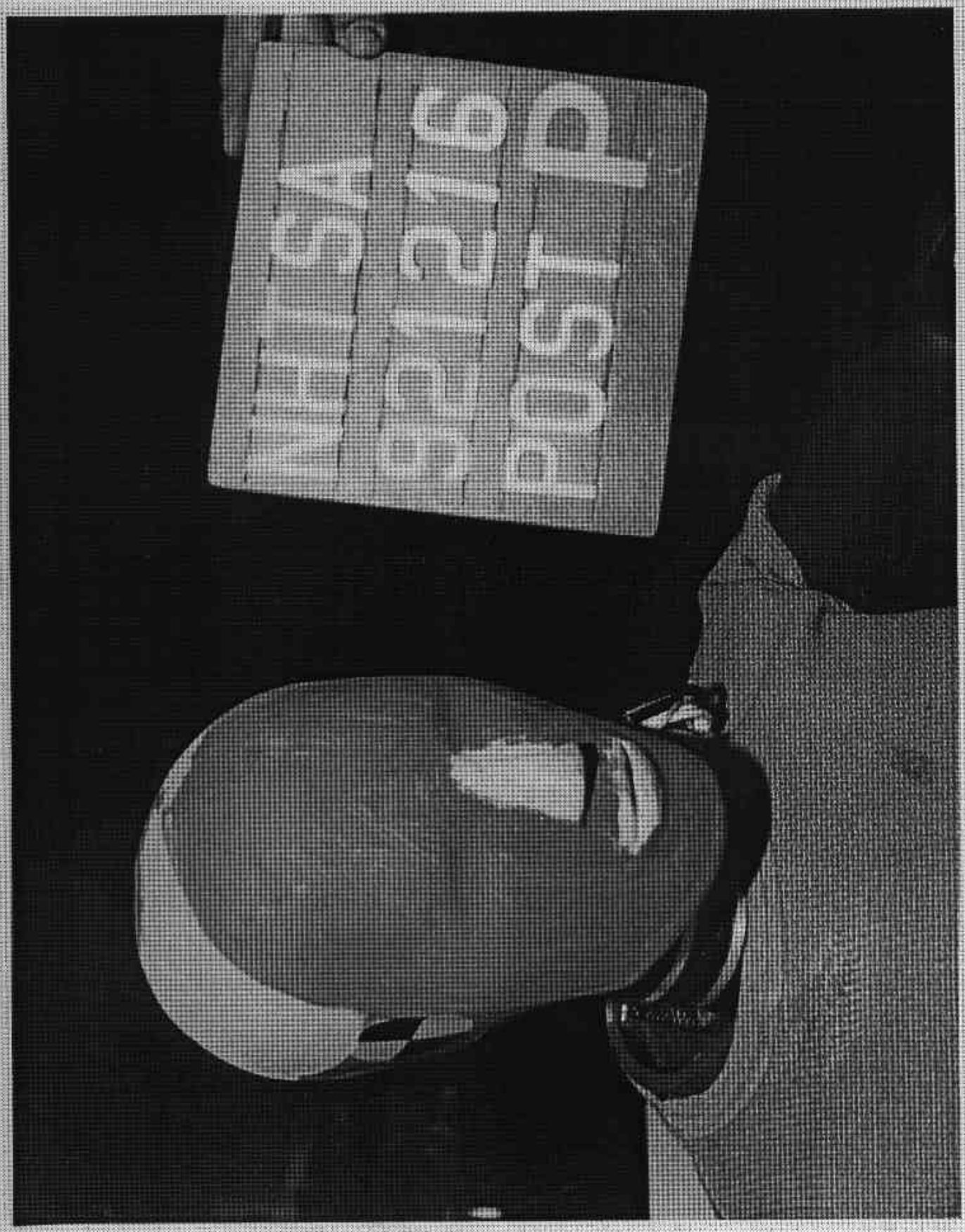


FIGURE A-43. POST-TEST PASSENGER DUMMY HEAD CONTACT VIEW

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

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

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

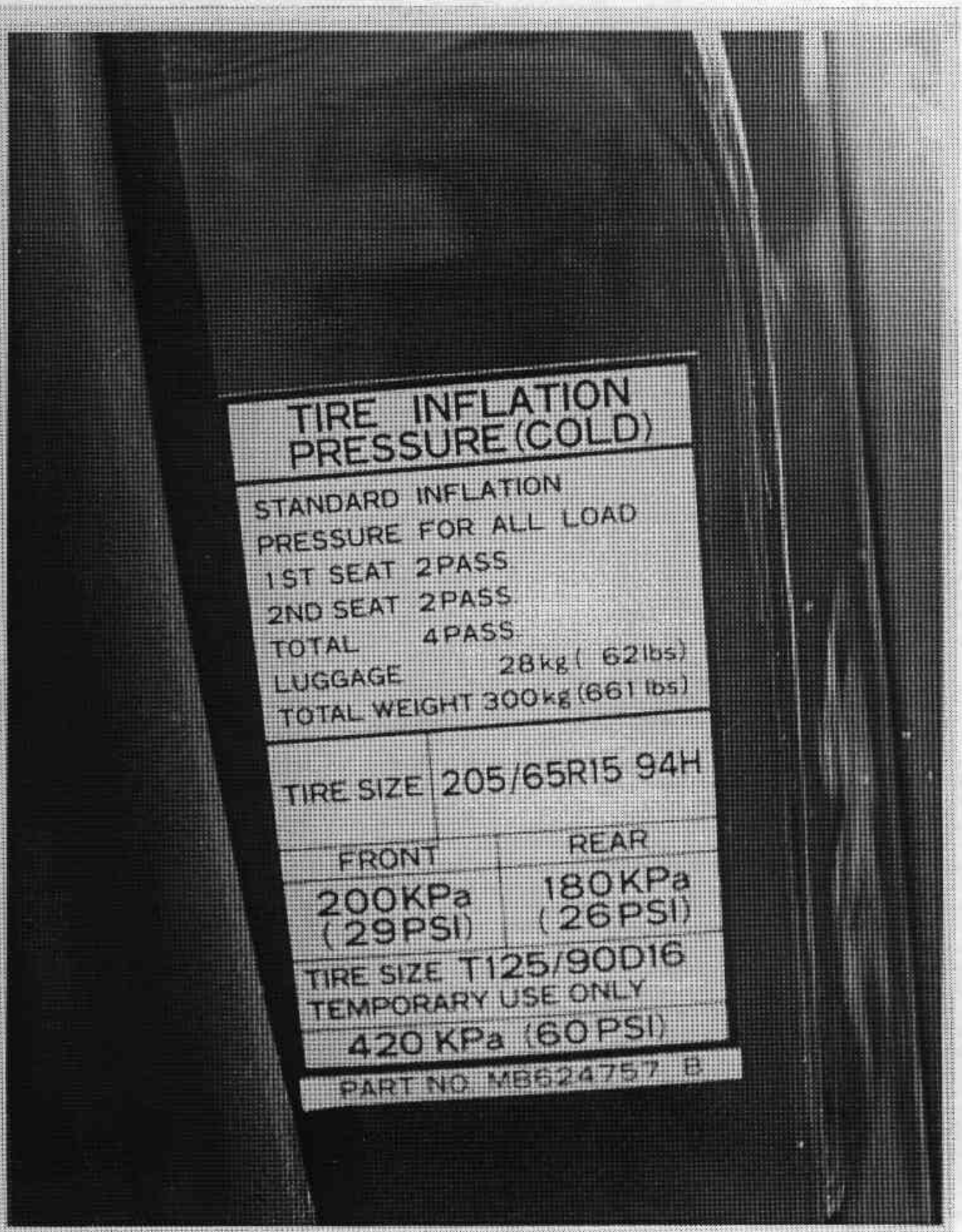
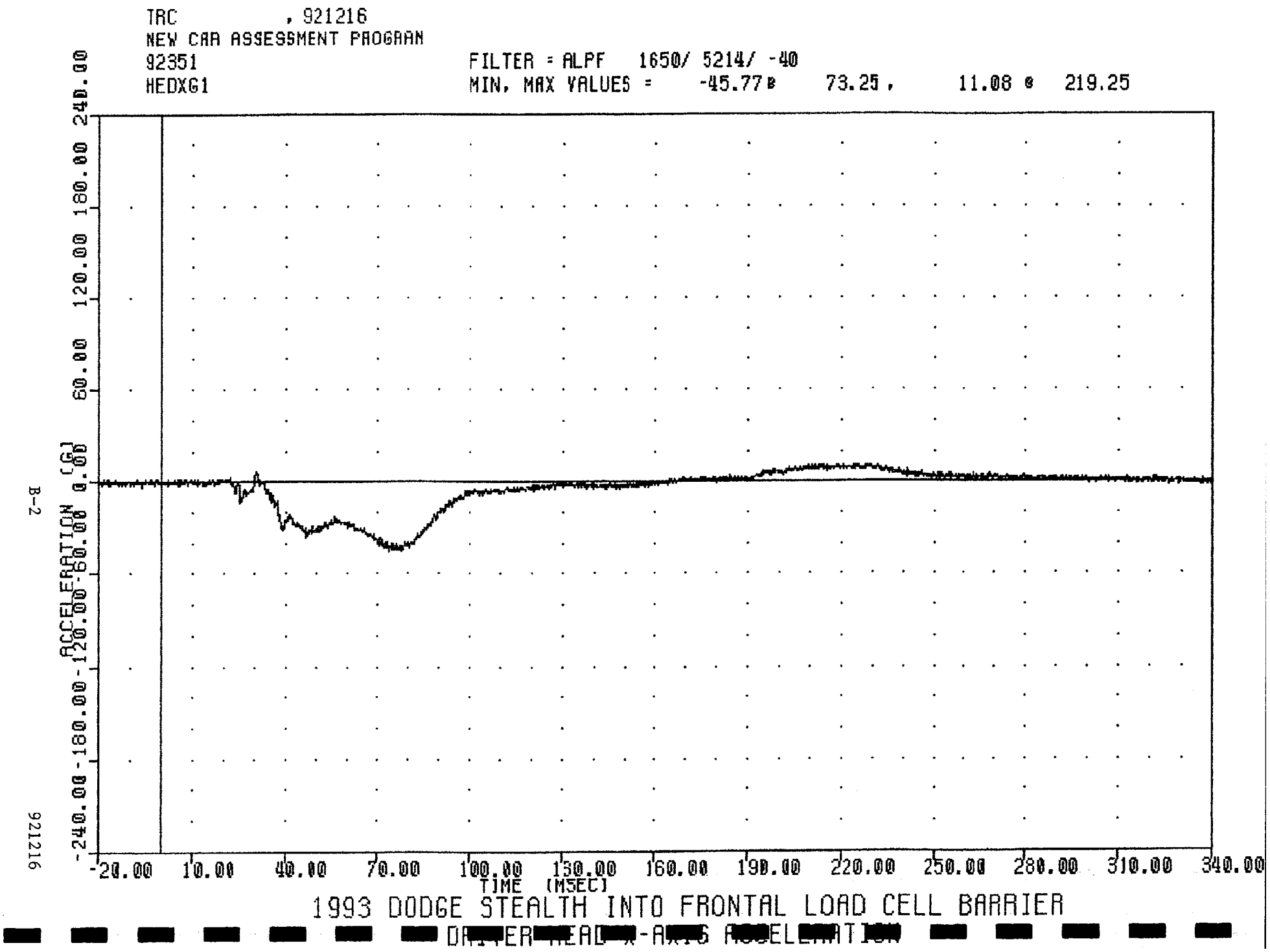


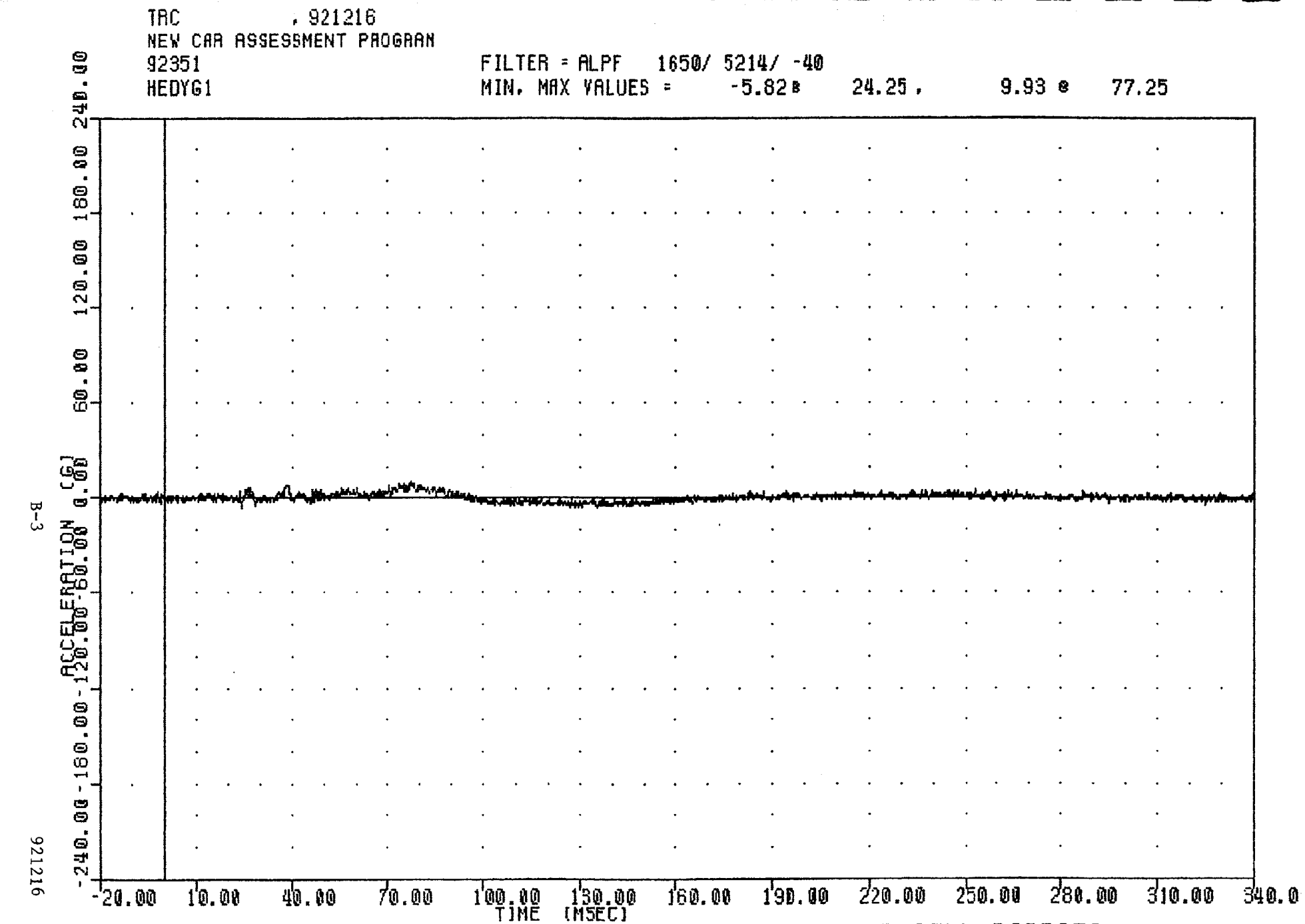
FIGURE A-47. PRE-TEST VEHICLE RECOMMENDED TIRE PRESSURE LABEL VIEW

Intentionally Left Blank

APPENDIX B

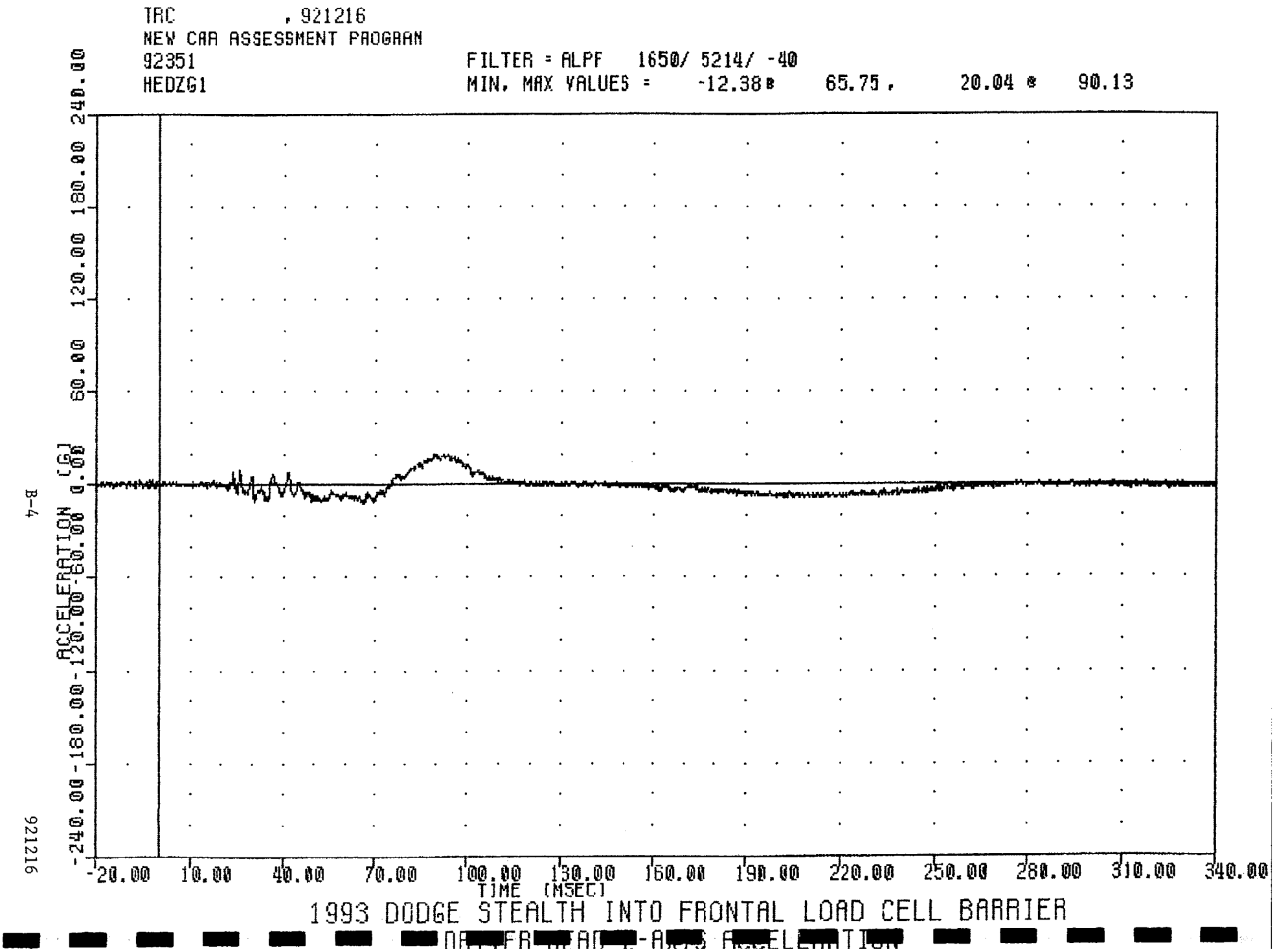
DATA PLOTS

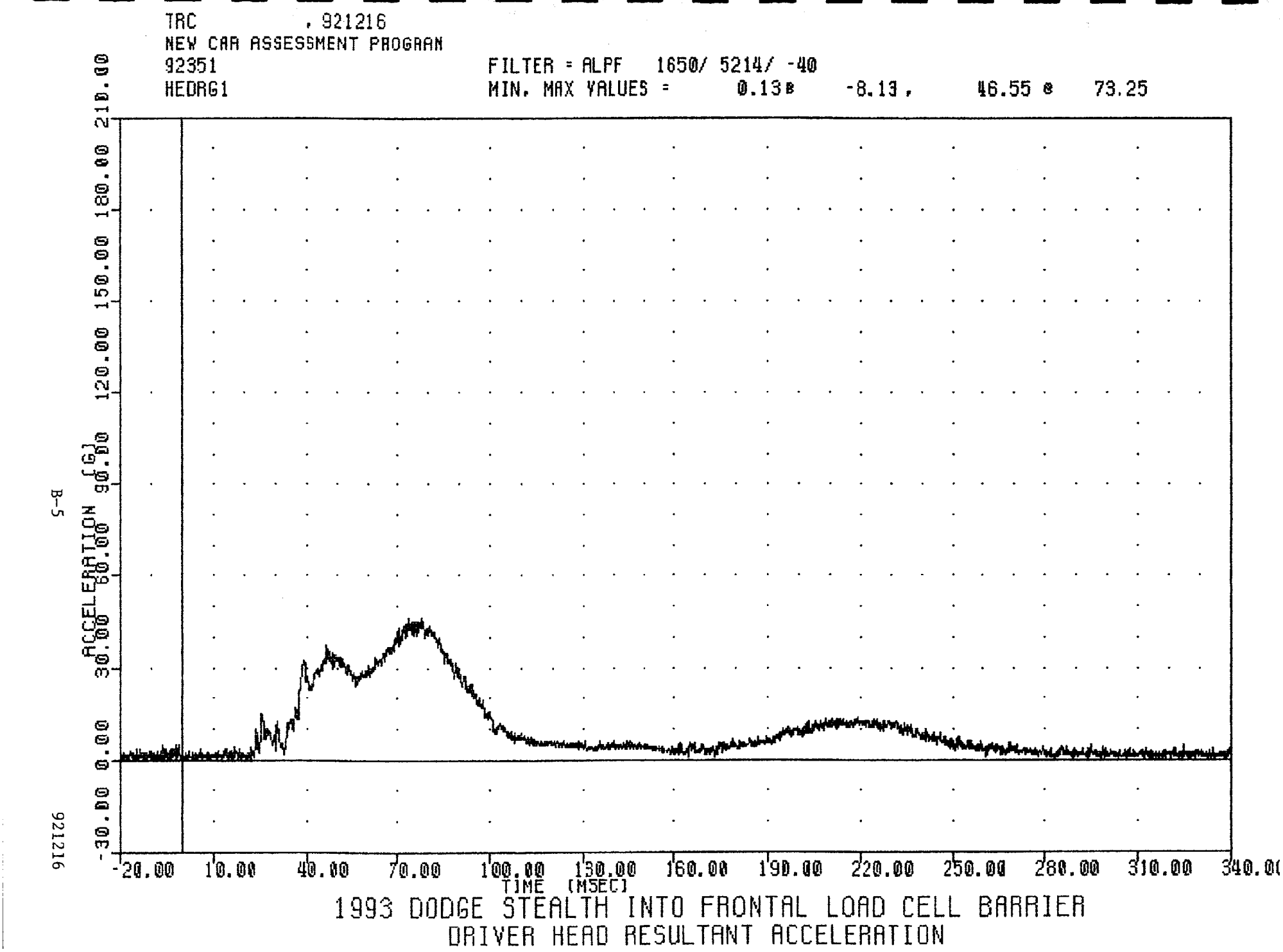

TRC , 921216
NEW CAR ASSESSMENT PROGRAM
92351
HEDXG1
FILTER = ALPF 1650/ 5214/ -40
MIN, MAX VALUES = -45.77 @ 73.25 , 11.08 @ 219.25
240.00
180.00
120.00
60.00
0.00
-60.00
-120.00
-180.00
-240.00
ACCELERATION (G)
-20.00
10.00
40.00
70.00
100.00
130.00
160.00
190.00
220.00
250.00
280.00
310.00
340.00
TIME (MSEC)
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER



1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
DRIVER HEAD Y-AXIS ACCELERATION

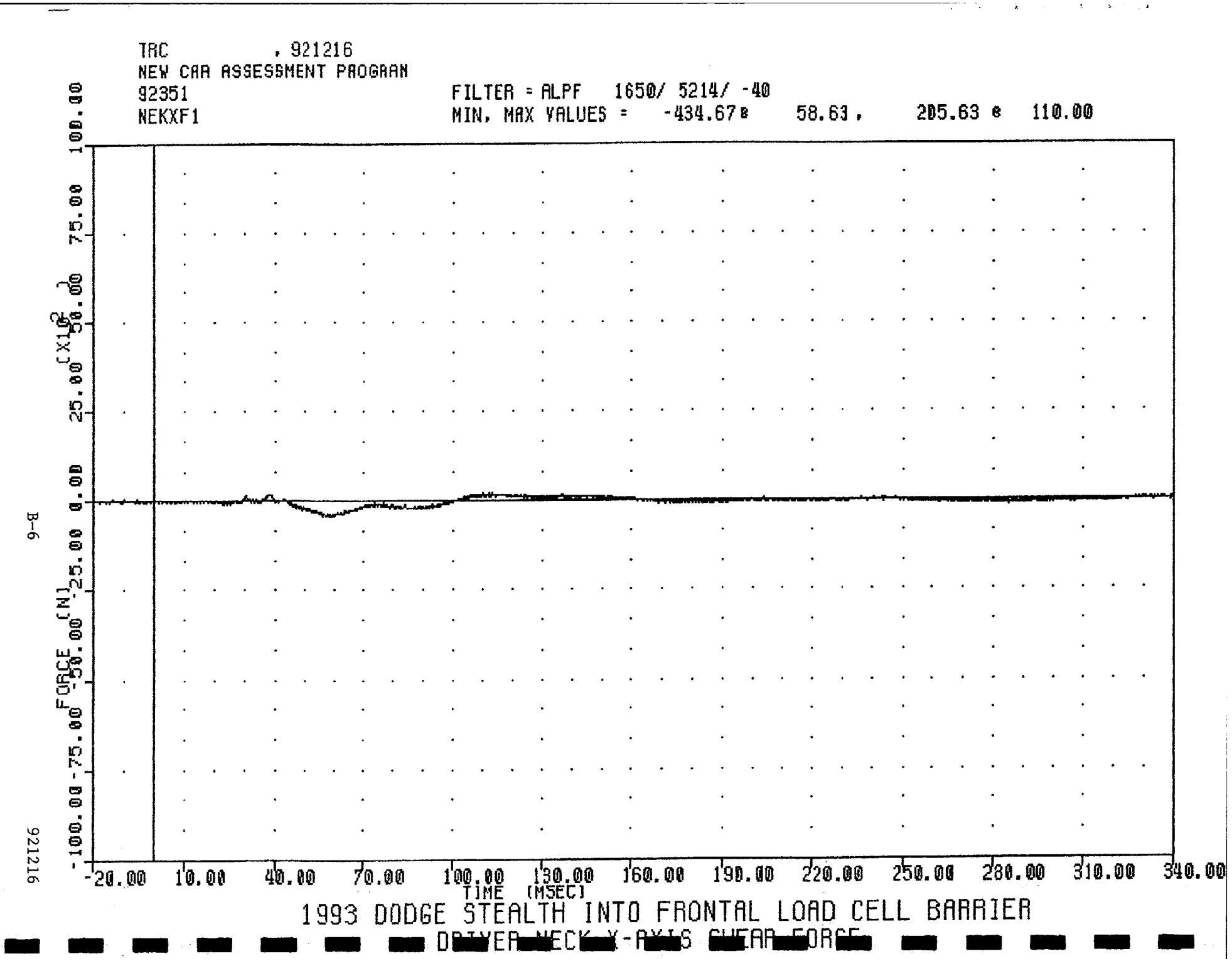
921216


TRC , 921216
NEW CAR ASSESSMENT PROGRAM
92351
HEDZG1
FILTER = CFC 1650/ 5214/ -40
MIN, MAX VALUES = -12.38 @ 65.75 , 20.04 @ 90.13
240.00
180.00
120.00
60.00
0.00
-60.00
-120.00
-180.00
-240.00
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)
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER

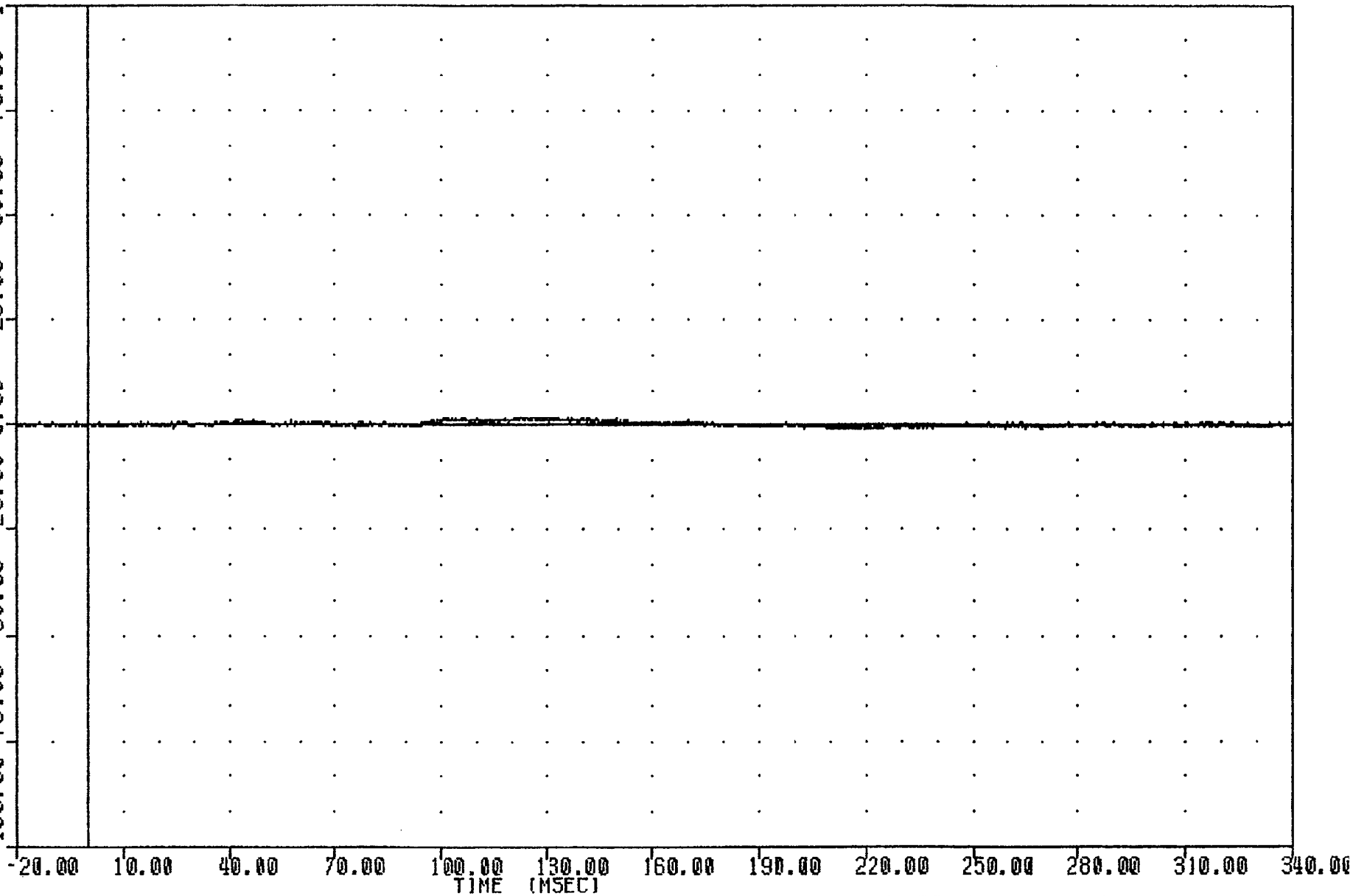


1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
DRIVER HEAD RESULTANT ACCELERATION

921216

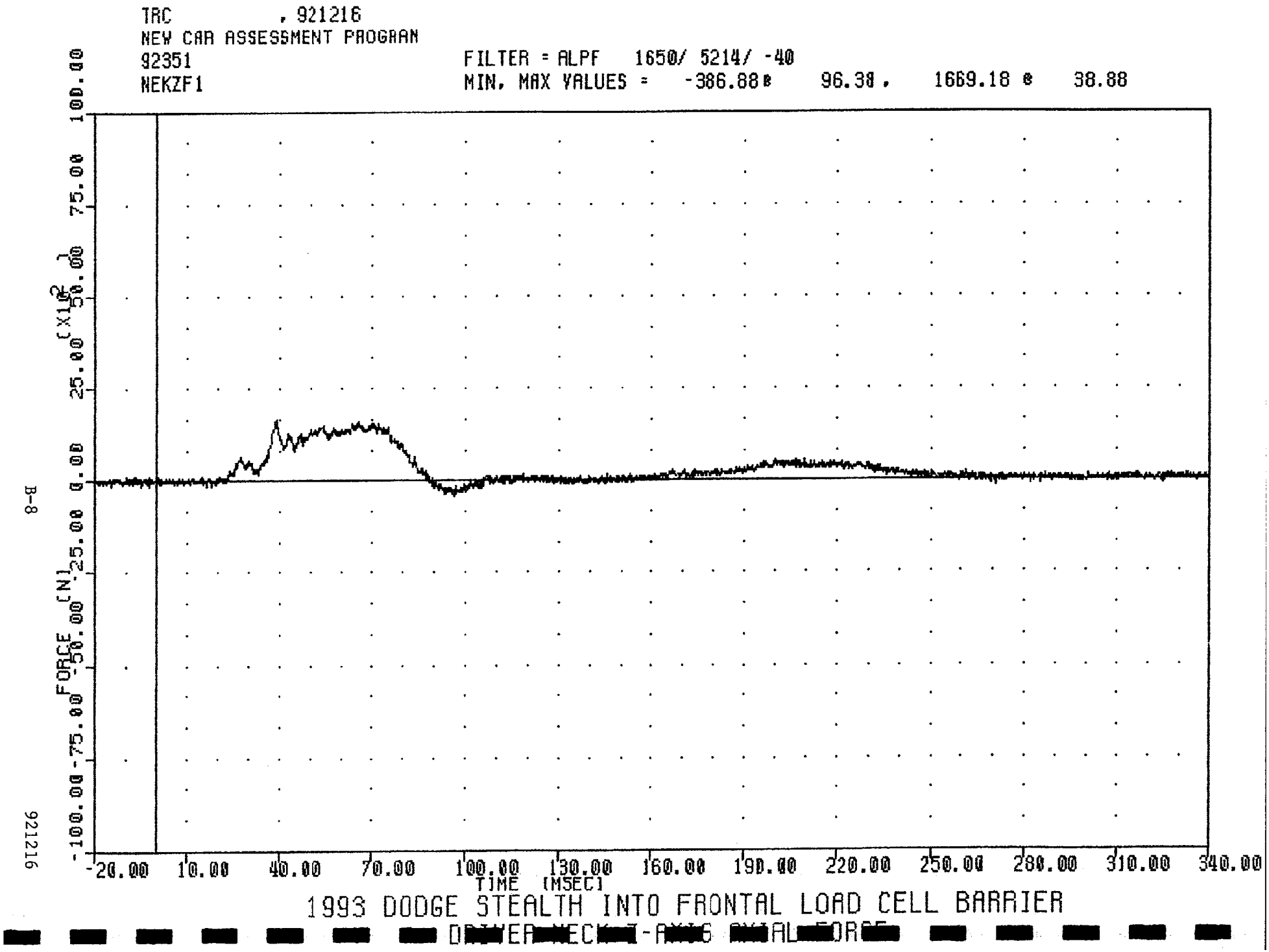

TRC , 921216
NEW CAR ASSESSMENT PROGRAM
92351
NEKXF1
FILTER = ALPF 1650/ 5214/ -40
MIN, MAX VALUES = -434.67 @ 58.63 , 205.63 @ 110.00
100.00
75.00
50.00
25.00
0.00
-25.00
-50.00
-75.00
-100.00
FORCE (N) (X10^2)
-20.00
10.00
40.00
70.00
100.00
130.00
160.00
190.00
220.00
250.00
280.00
310.00
340.00
TIME (MSEC)
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
DRIVER NECK X-AXIS SHEAR FORCE

TRC , 921216
NEW CAR ASSESSMENT PROGRAM
92351 FILTER = CFC 1650/ 5214/ -40
NEKYF1 MIN, MAX VALUES = -109.36 @ 211.25 , 196.47 @ 123.75

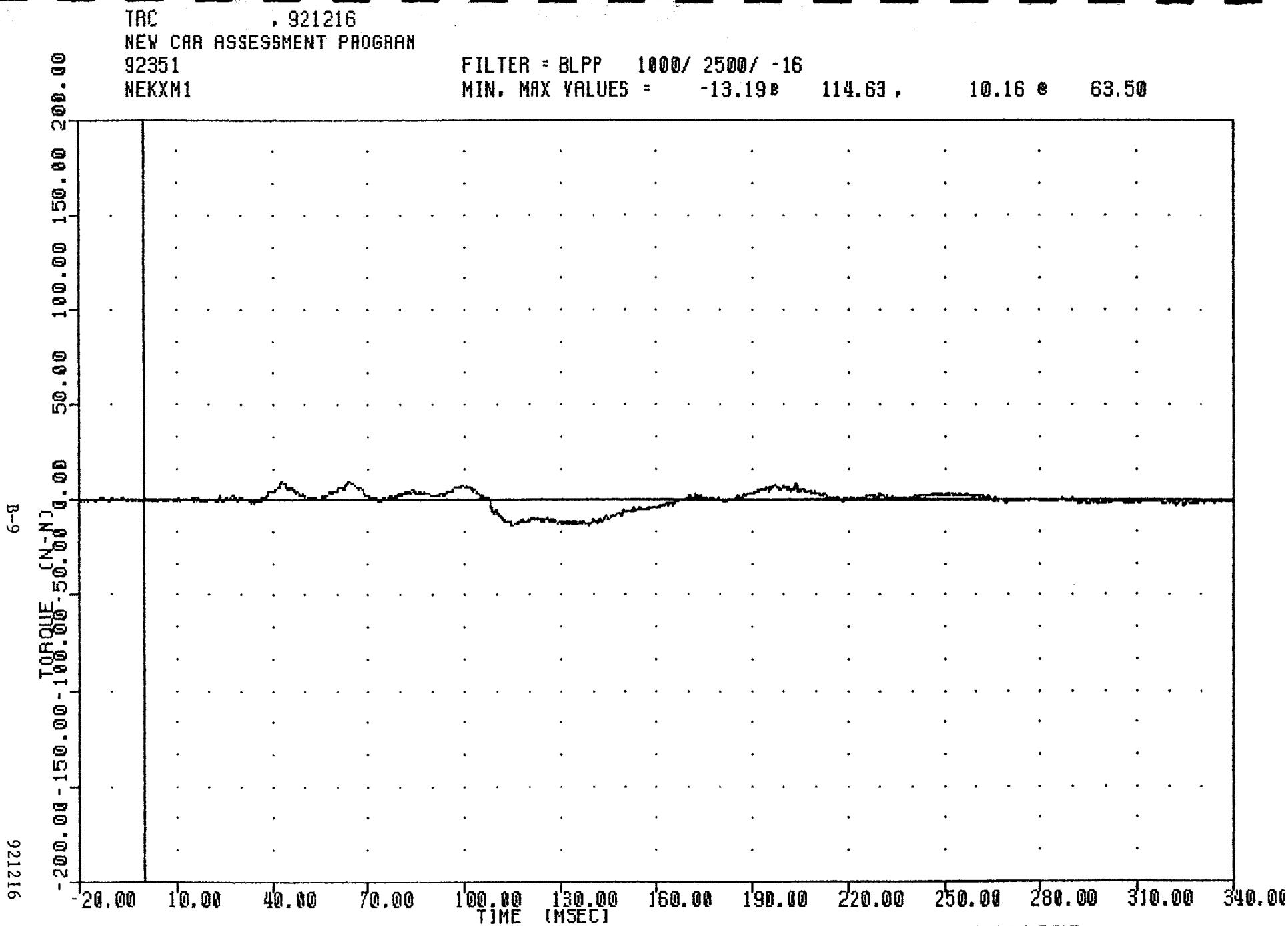


1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
DRIVER NECK Y-AXIS SHEAR FORCE

921216

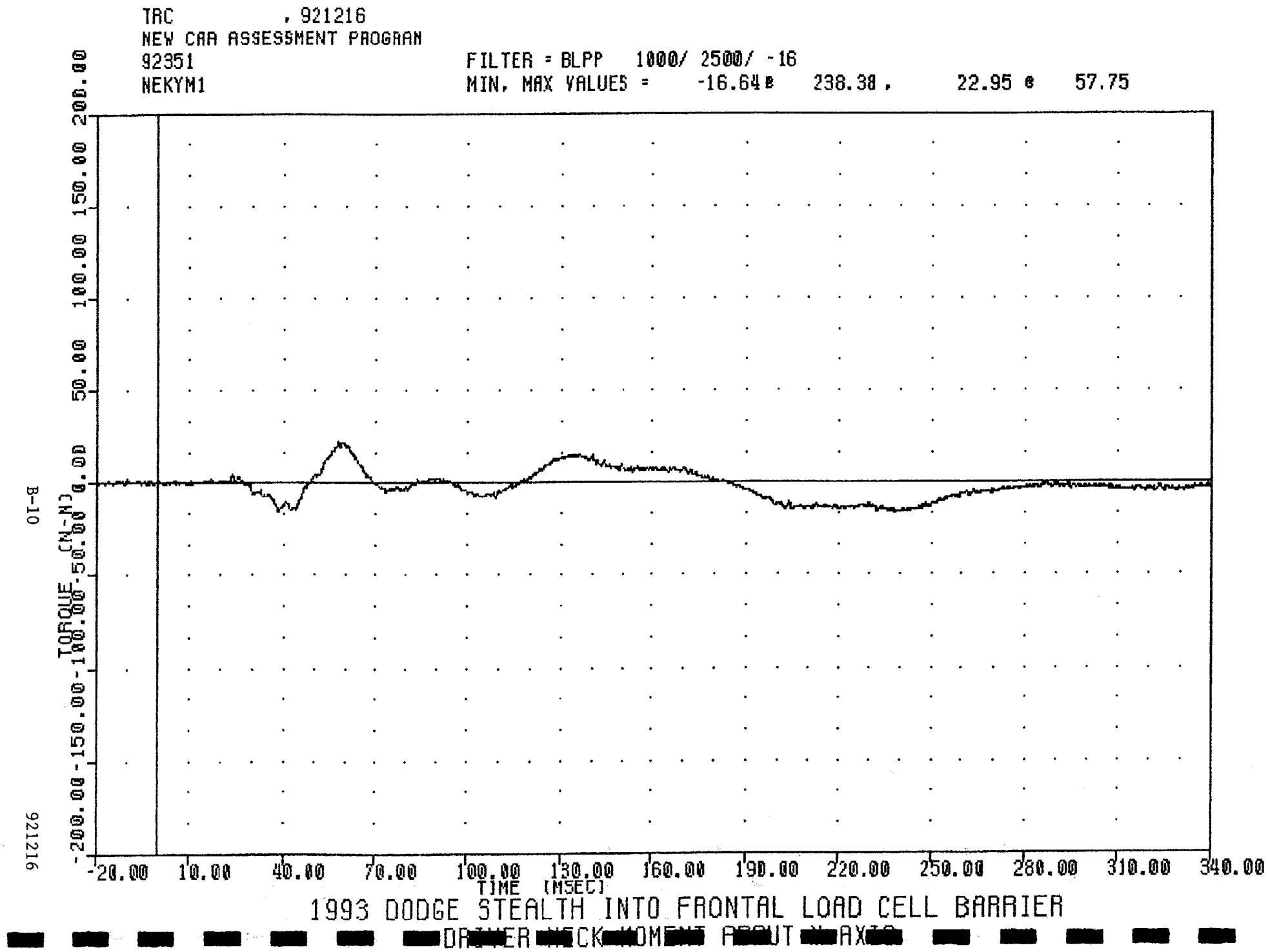

TRC , 921216
NEW CAR ASSESSMENT PROGRAN
92351
NEKZF1
FILTER = ALPF 1650/ 5214/ -40
MIN, MAX VALUES = -386.88 @ 96.38 , 1669.18 @ 38.88
FORCE (N) (X10^2)
100.00
75.00
50.00
25.00
0.00
-25.00
-50.00
-75.00
-100.00
-20.00
10.00
40.00
70.00
100.00
130.00
160.00
190.00
220.00
250.00
280.00
310.00
340.00
TIME (MSEC)
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
DRIVER NECK T-AXIS AXIAL FORCE

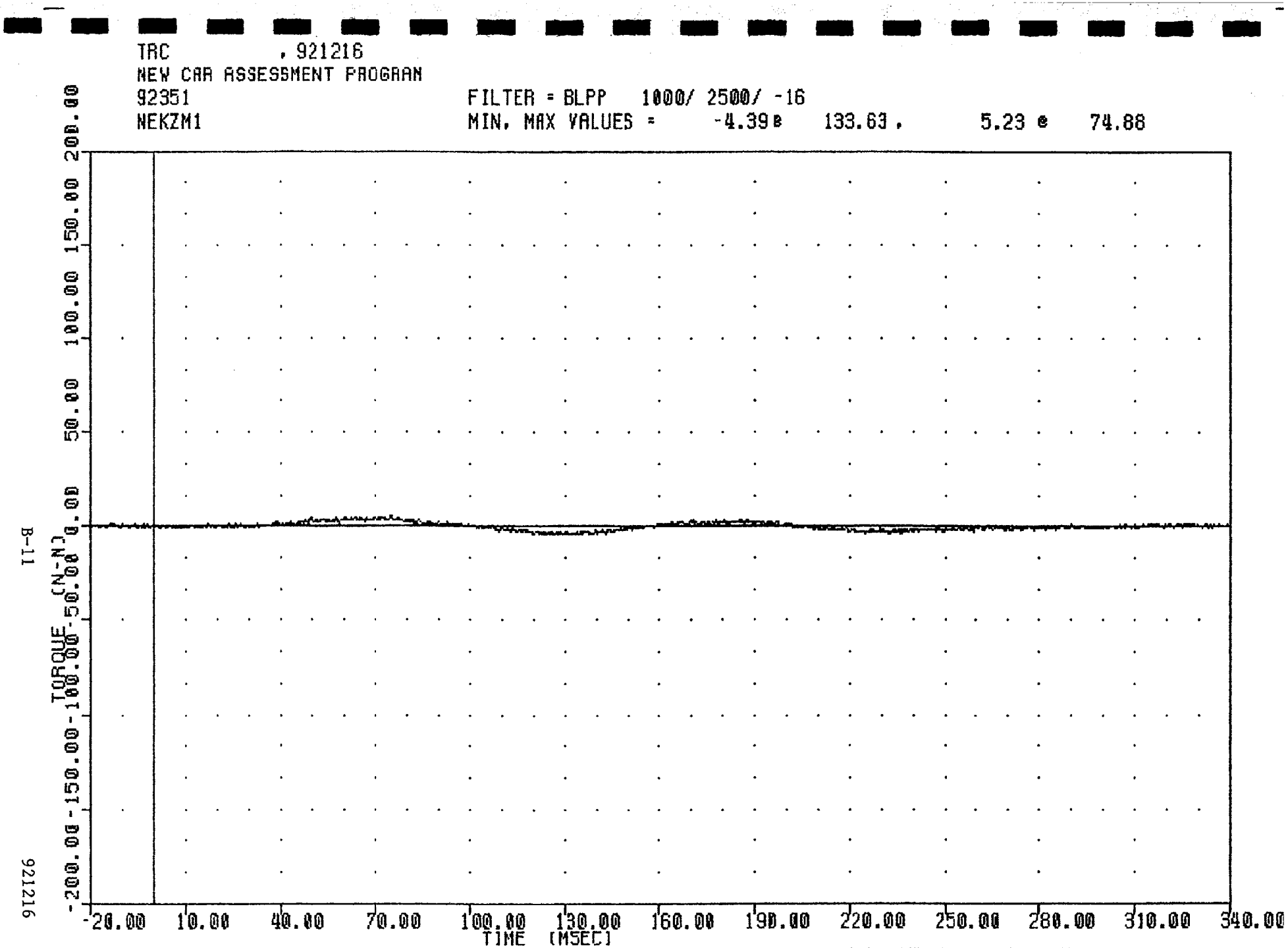
921216



1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
DRIVER NECK MOMENT ABOUT X AXIS

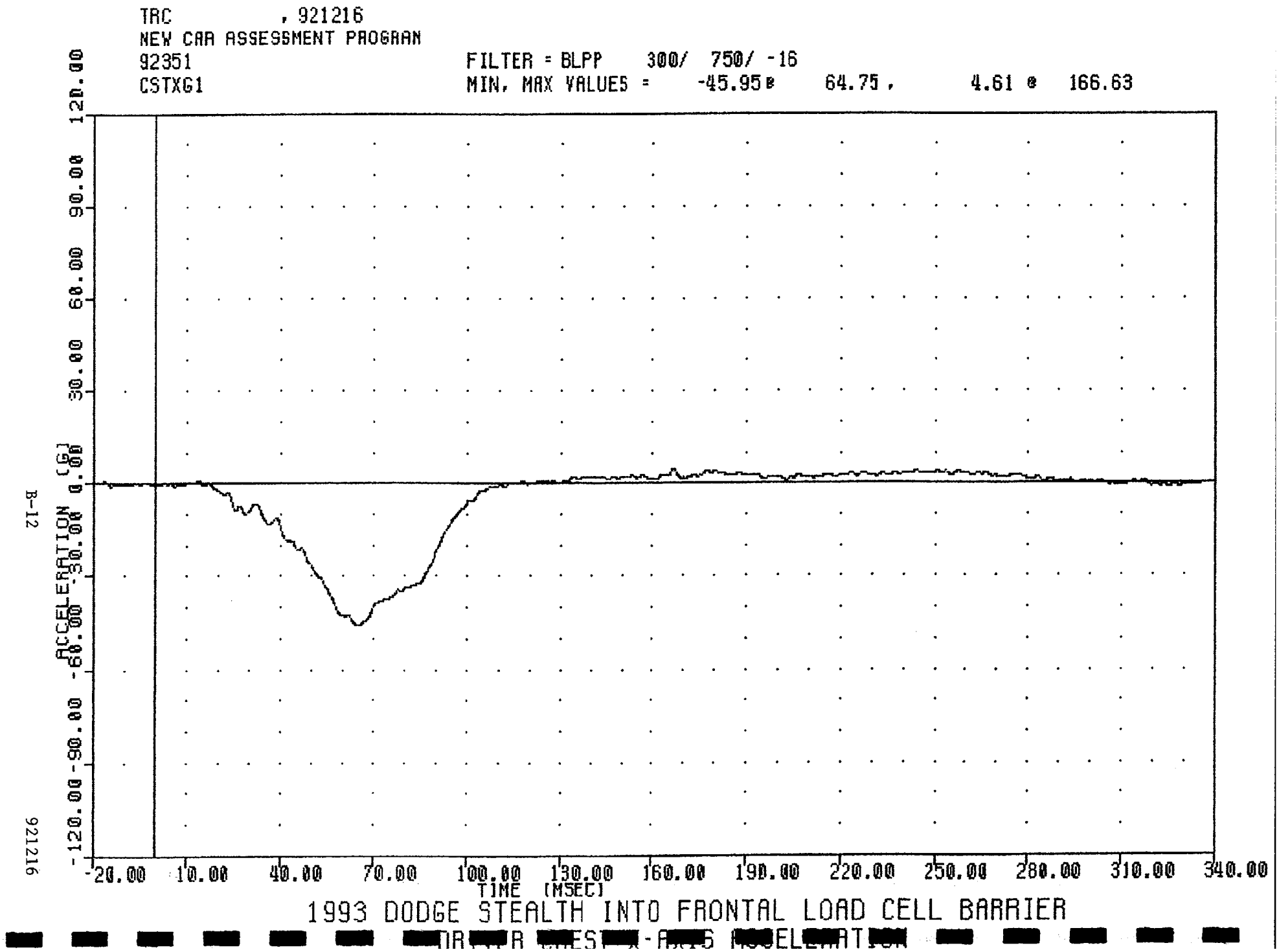
921216


TRC , 921216
NEW CAR ASSESSMENT PROGRAM
92351
NEKYM1
FILTER = BLPP 1000/ 2500/ -16
MIN, MAX VALUES = -16.64 @ 238.38 , 22.95 @ 57.75
200.00
150.00
100.00
50.00
0.00
-50.00
-100.00
-150.00
-200.00
TORQUE (N-M)
-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)
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER



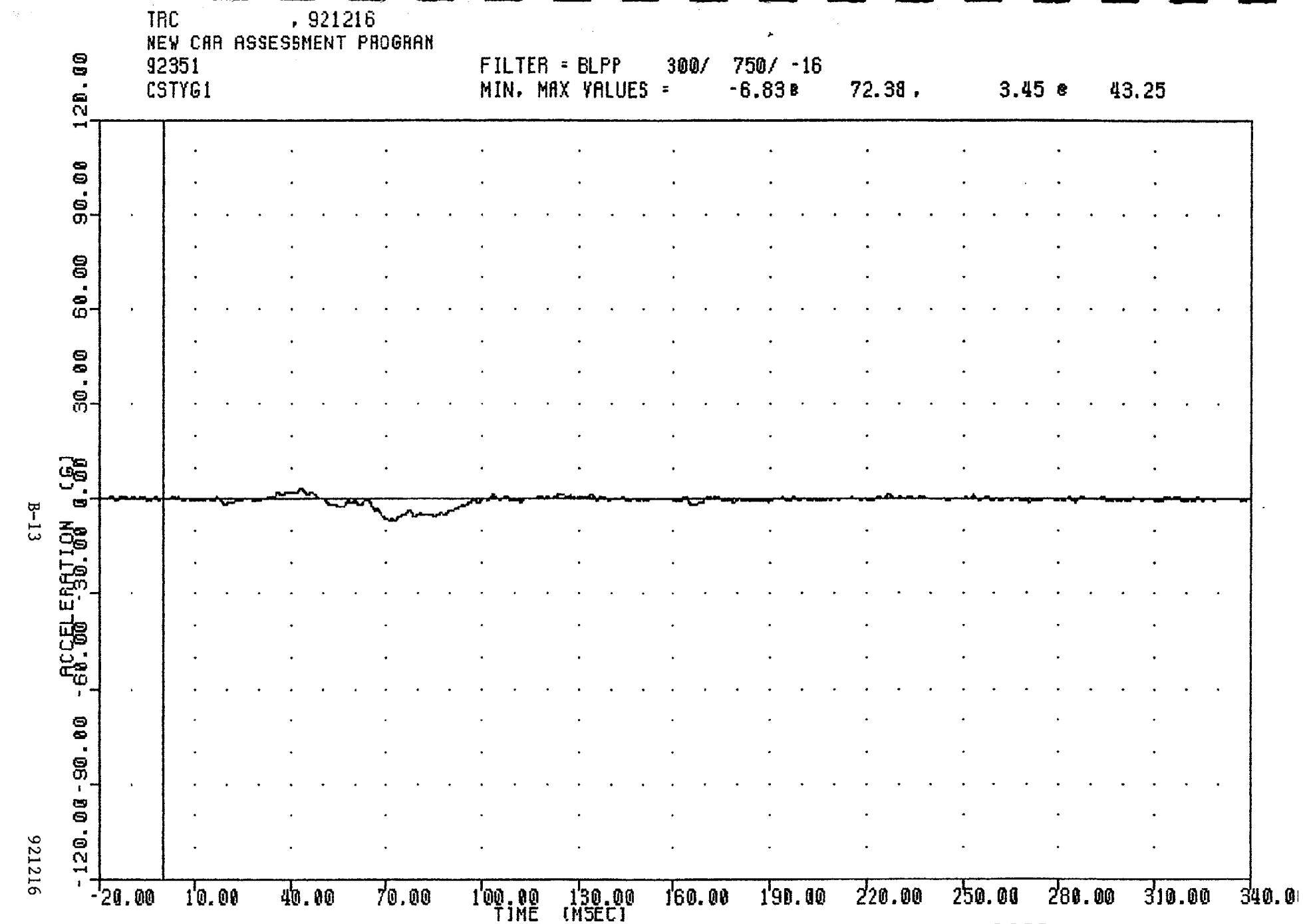
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
DRIVER NECK MOMENT ABOUT Z AXIS

921216



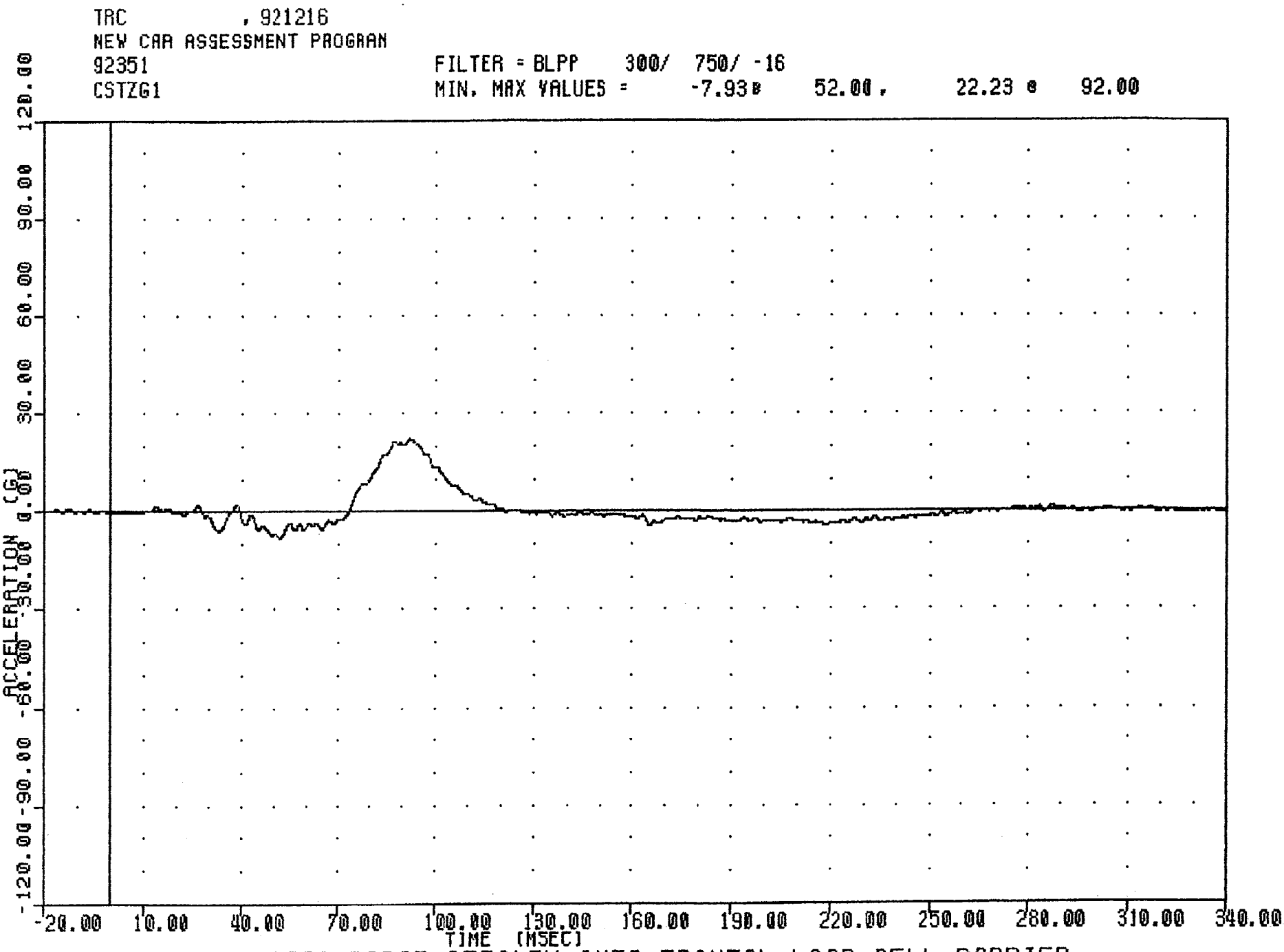
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER

[redacted]



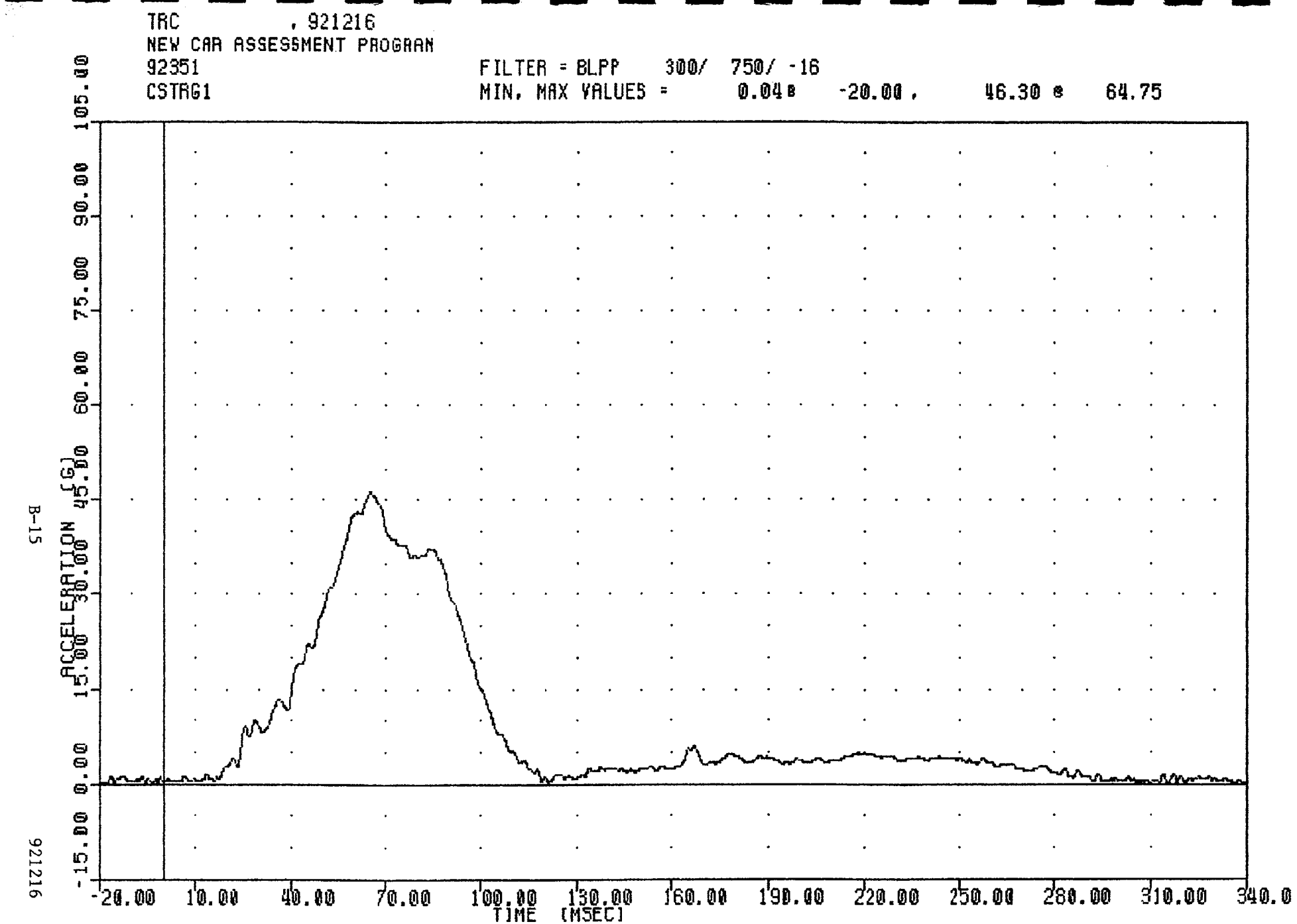
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
DRIVER CHEST Y-AXIS ACCELERATION

921216



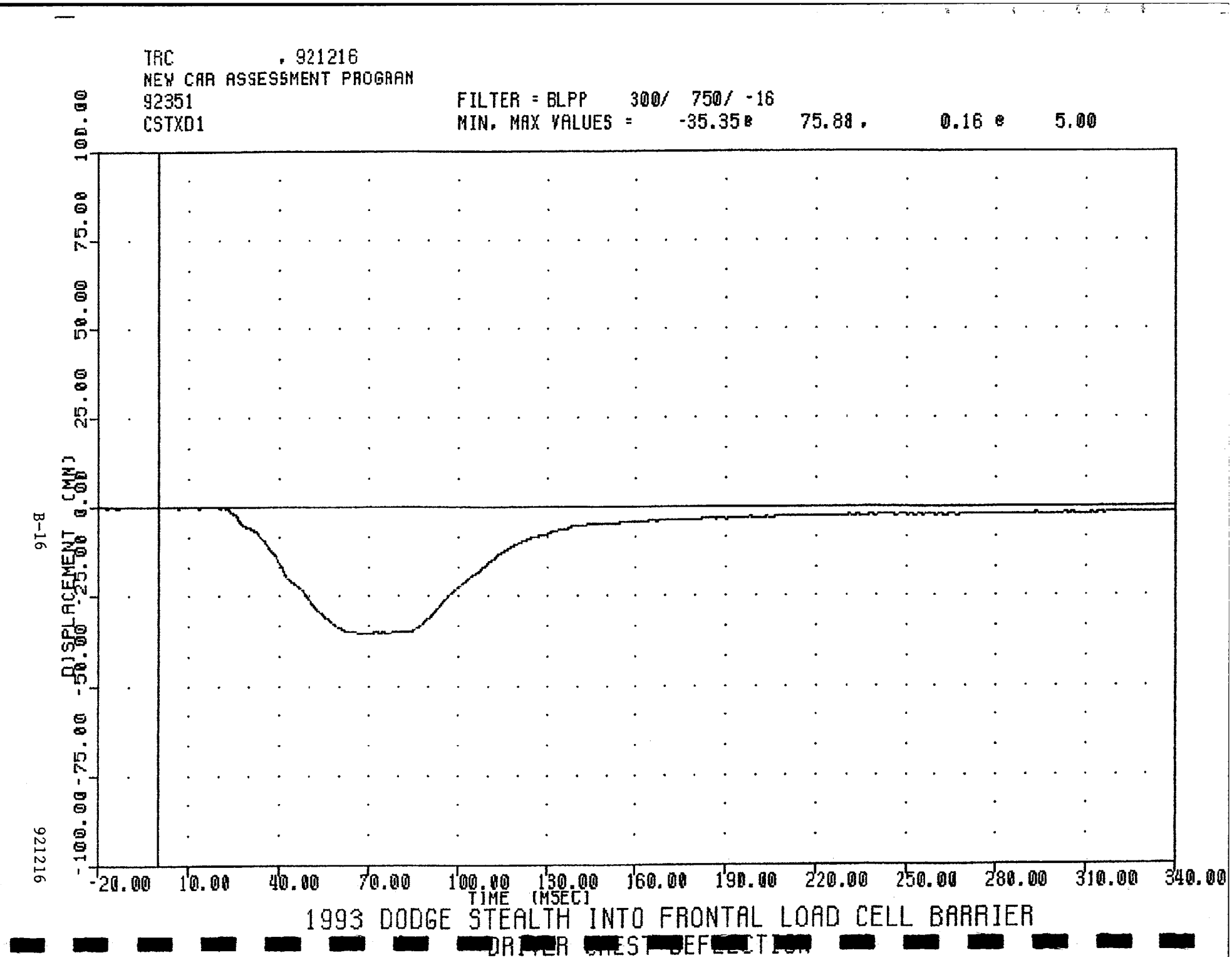
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER

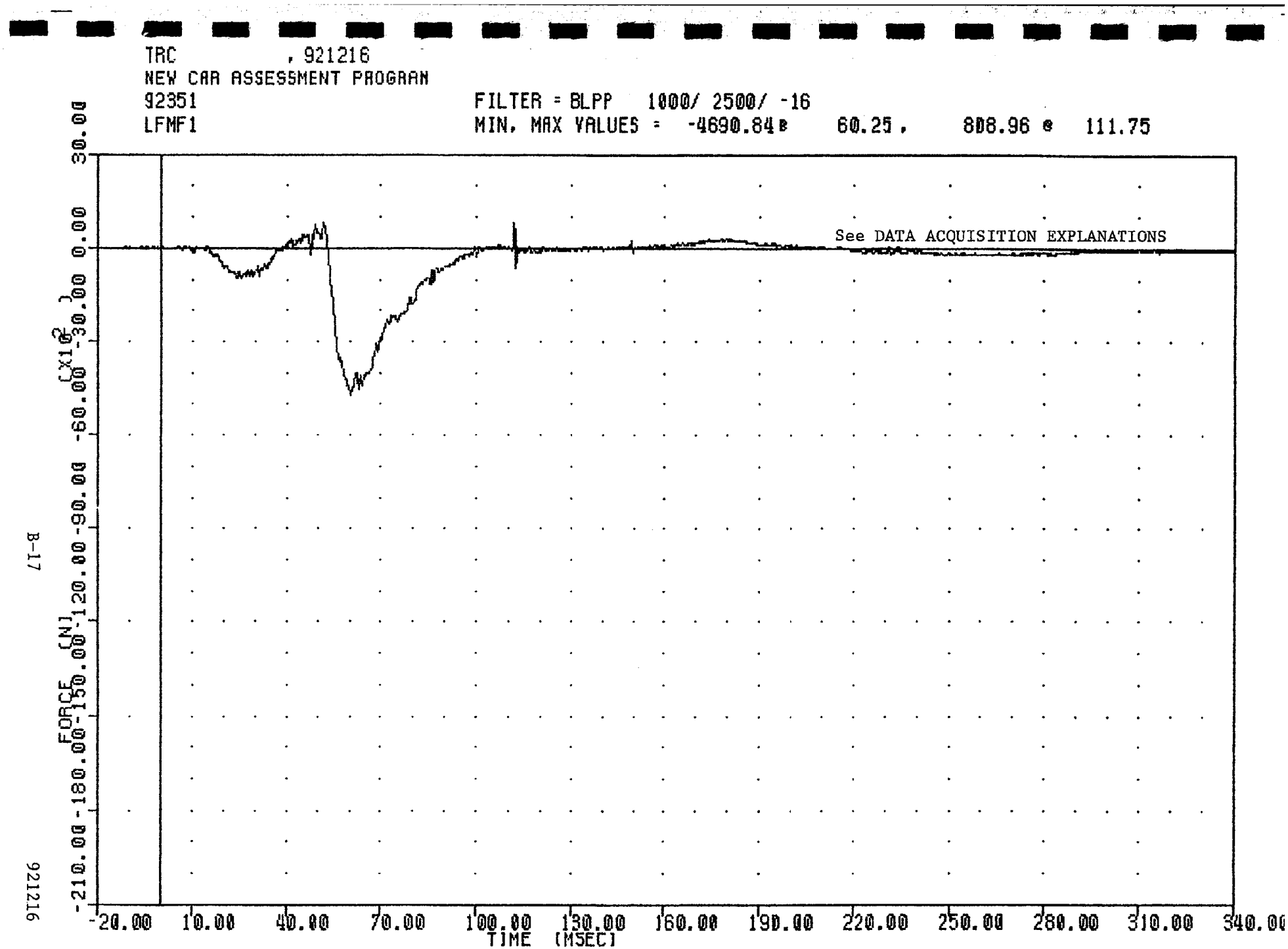
[redacted]



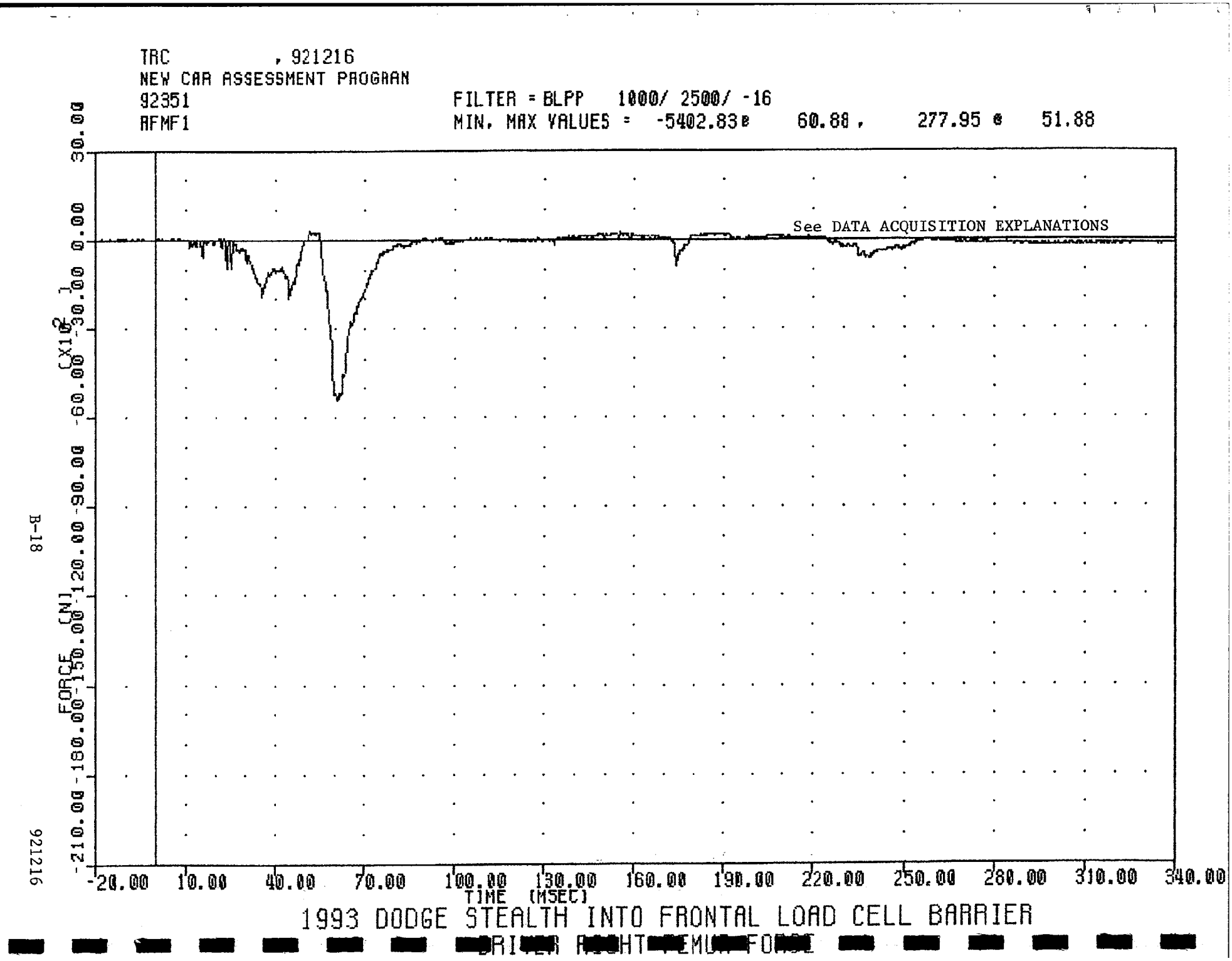
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
DRIVER CHEST RESULTANT ACCELERATION

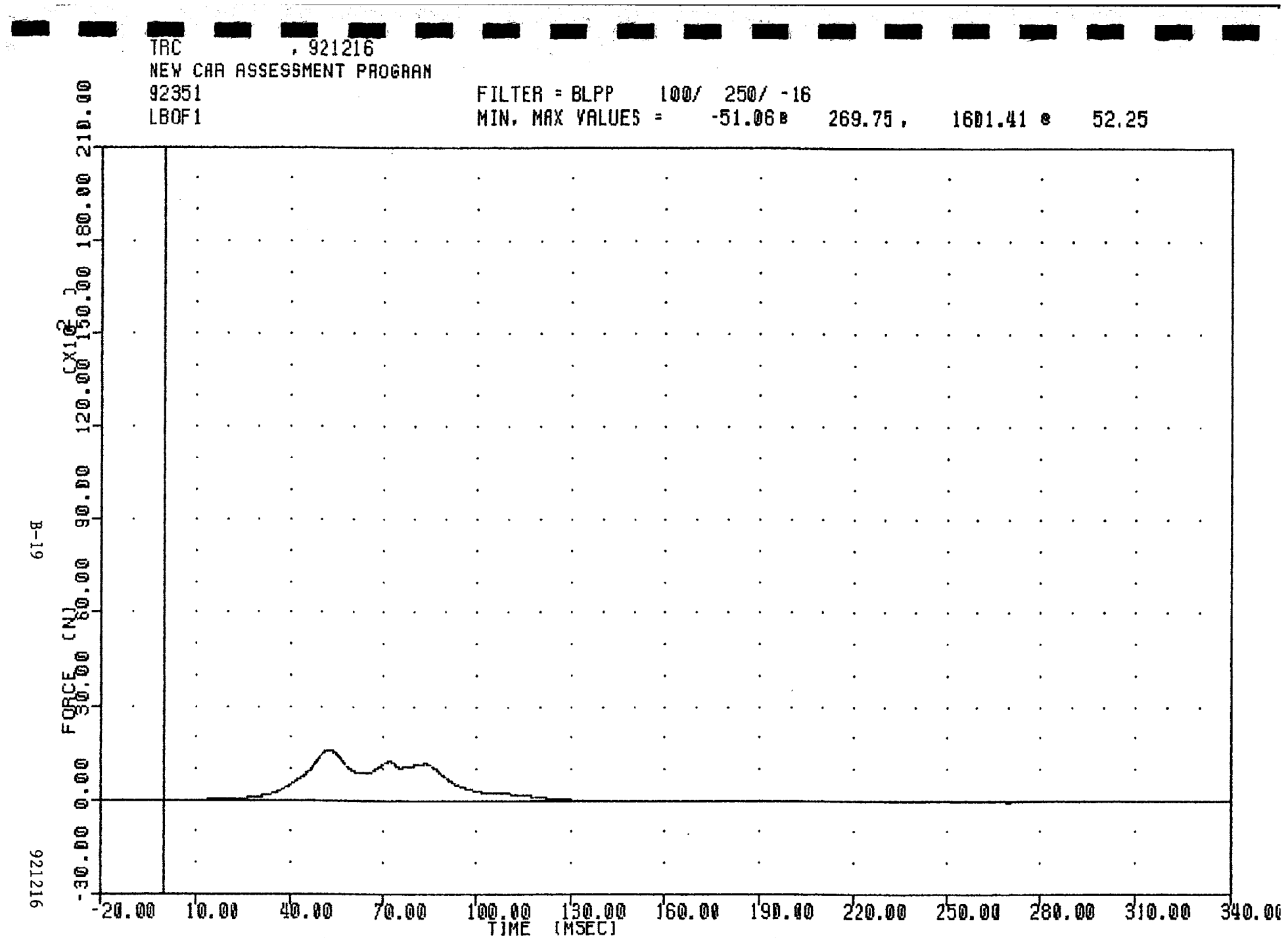
921216


TRC , 921216
NEW CAR ASSESSMENT PROGRAN
92351
CSTXD1
FILTER = BLPP 300/ 750/ -16
MIN. MAX VALUES = -35.35 @ 75.88 , 0.16 @ 5.00
100.00
75.00
50.00
25.00
0.00
-25.00
-50.00
-75.00
-100.00
DISPLACEMENT (MM)
-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)
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
DRIVER [redacted]



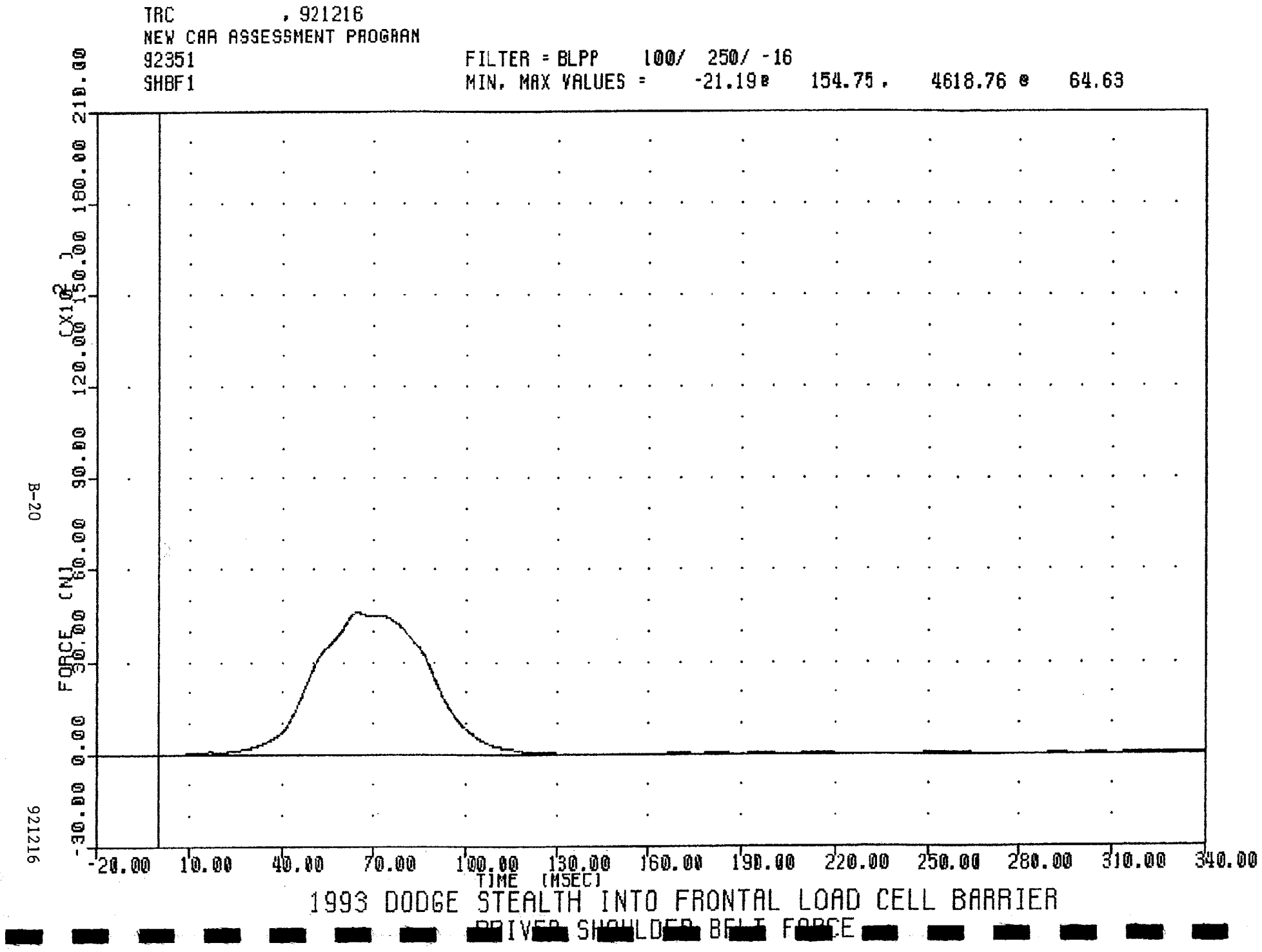
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
DRIVER LEFT FEMUR FORCE

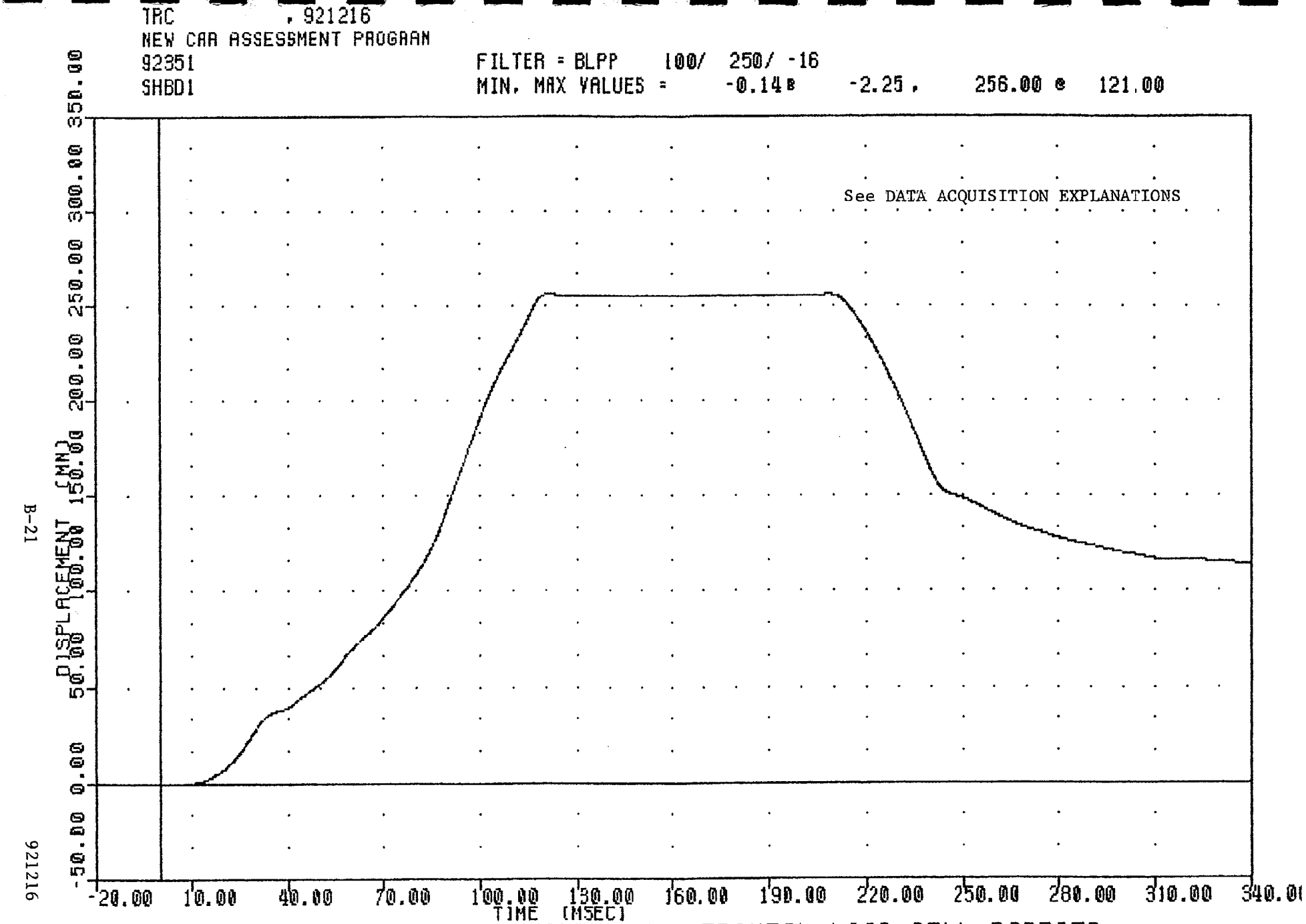

TRC , 921216
NEW CAR ASSESSMENT PROGRAM
92351
RFMF1
FILTER = BLPP 1000/ 2500/ -16
MIN, MAX VALUES = -5402.83 @ 60.88 , 277.95 @ 51.88
See DATA ACQUISITION EXPLANATIONS
FORCE (N) (X10^2)
30.00
0.00
-30.00
-60.00
-90.00
-120.00
-150.00
-180.00
-210.00
-20.00
10.00
40.00
70.00
100.00
130.00
160.00
190.00
220.00
250.00
280.00
310.00
340.00
TIME (MSEC)
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER



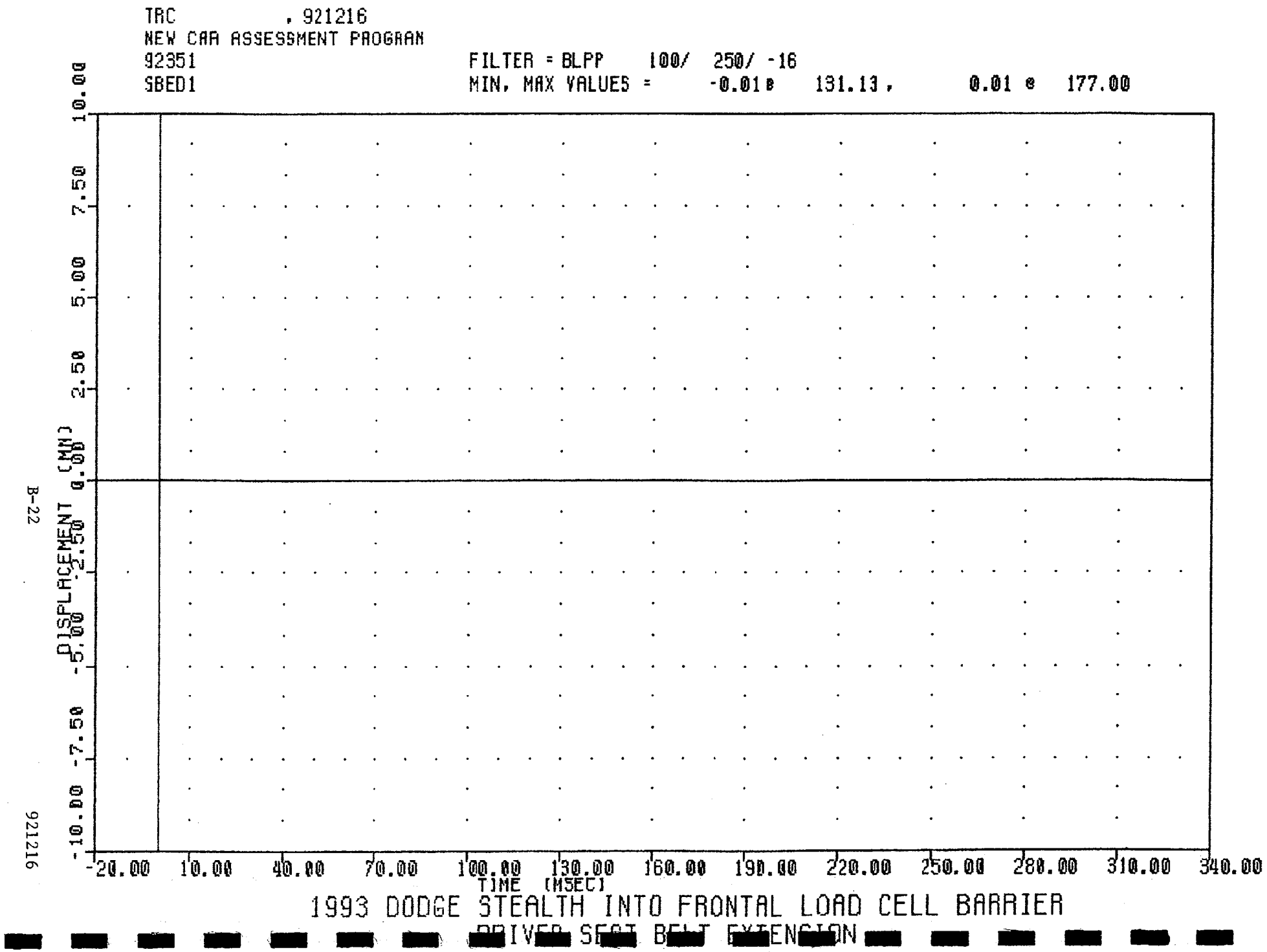
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
DRIVER LAP BELT OUTBOARD FORCE

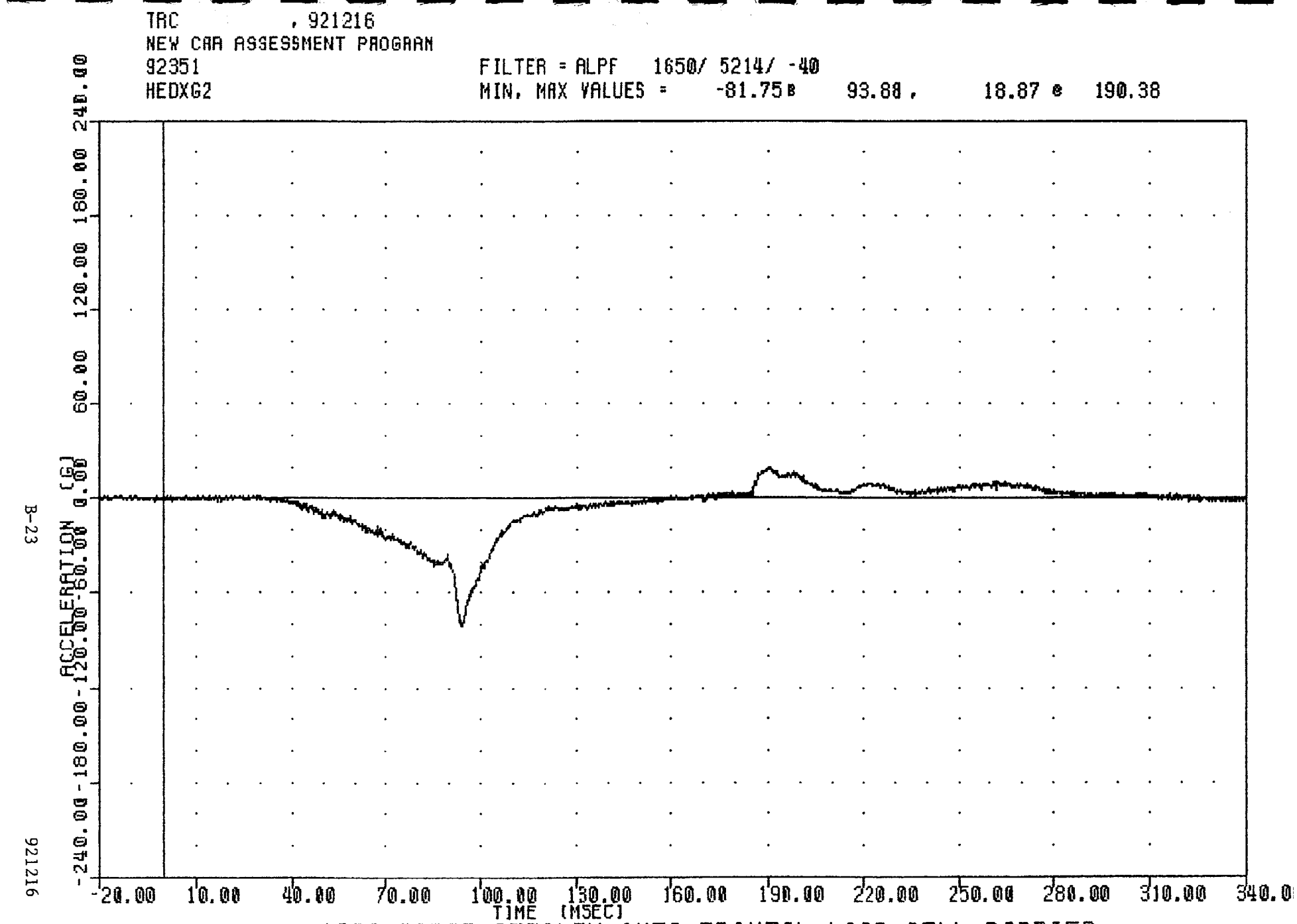
921216


TRC , 921216
NEW CAR ASSESSMENT PROGRAN
92351
SHBF1
FILTER = BLPP 100/ 250/ -16
MIN, MAX VALUES = -21.19 @ 154.75 , 4618.76 @ 64.63
FORCE (N) (X10^2)
-30.00 0.00 30.00 60.00 90.00 120.00 150.00 180.00 210.00
-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)
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
DRIVER SHOULDER BELT FORCE



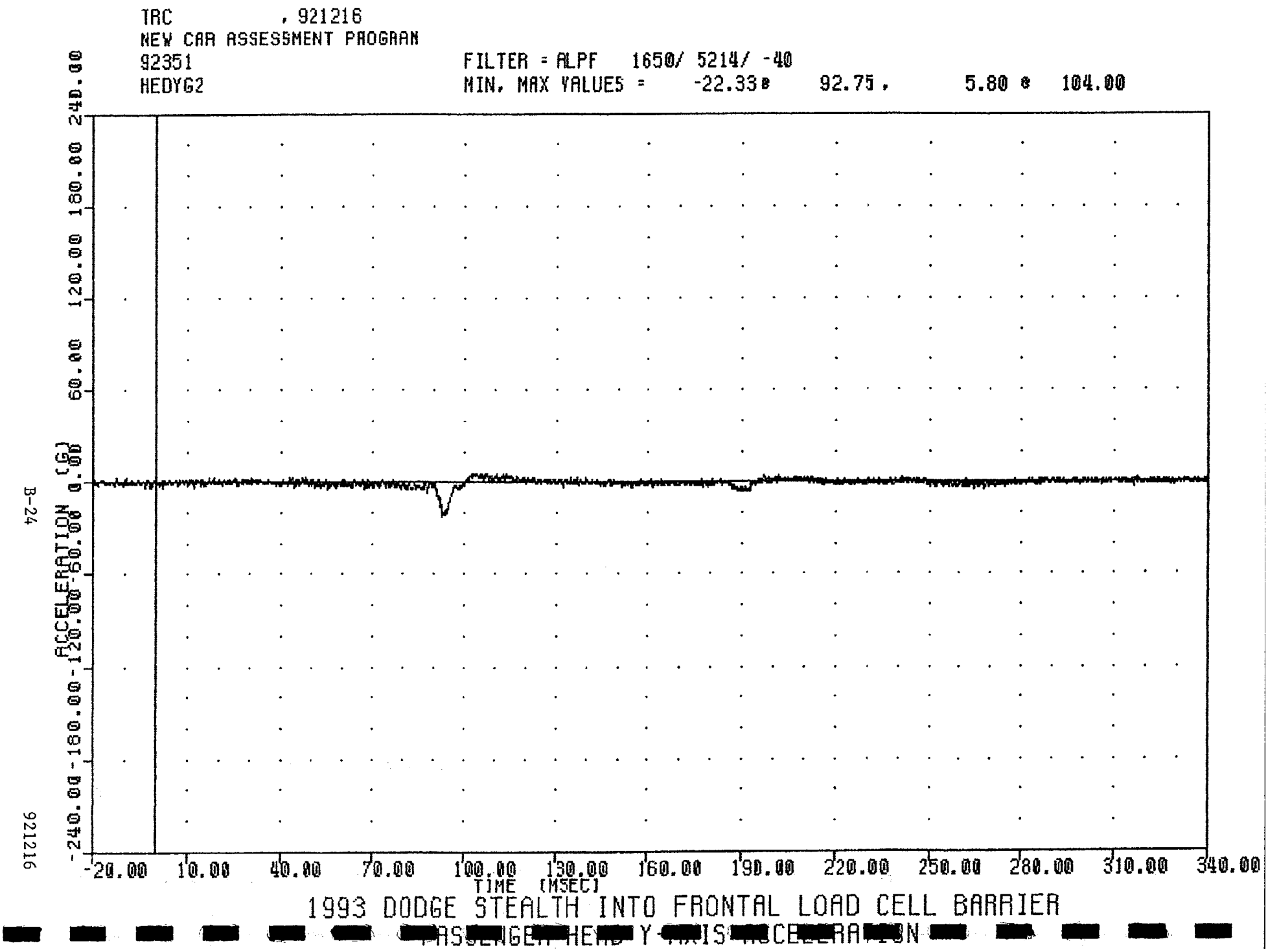
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
DRIVER SHOULDER BELT DISPLACEMENT

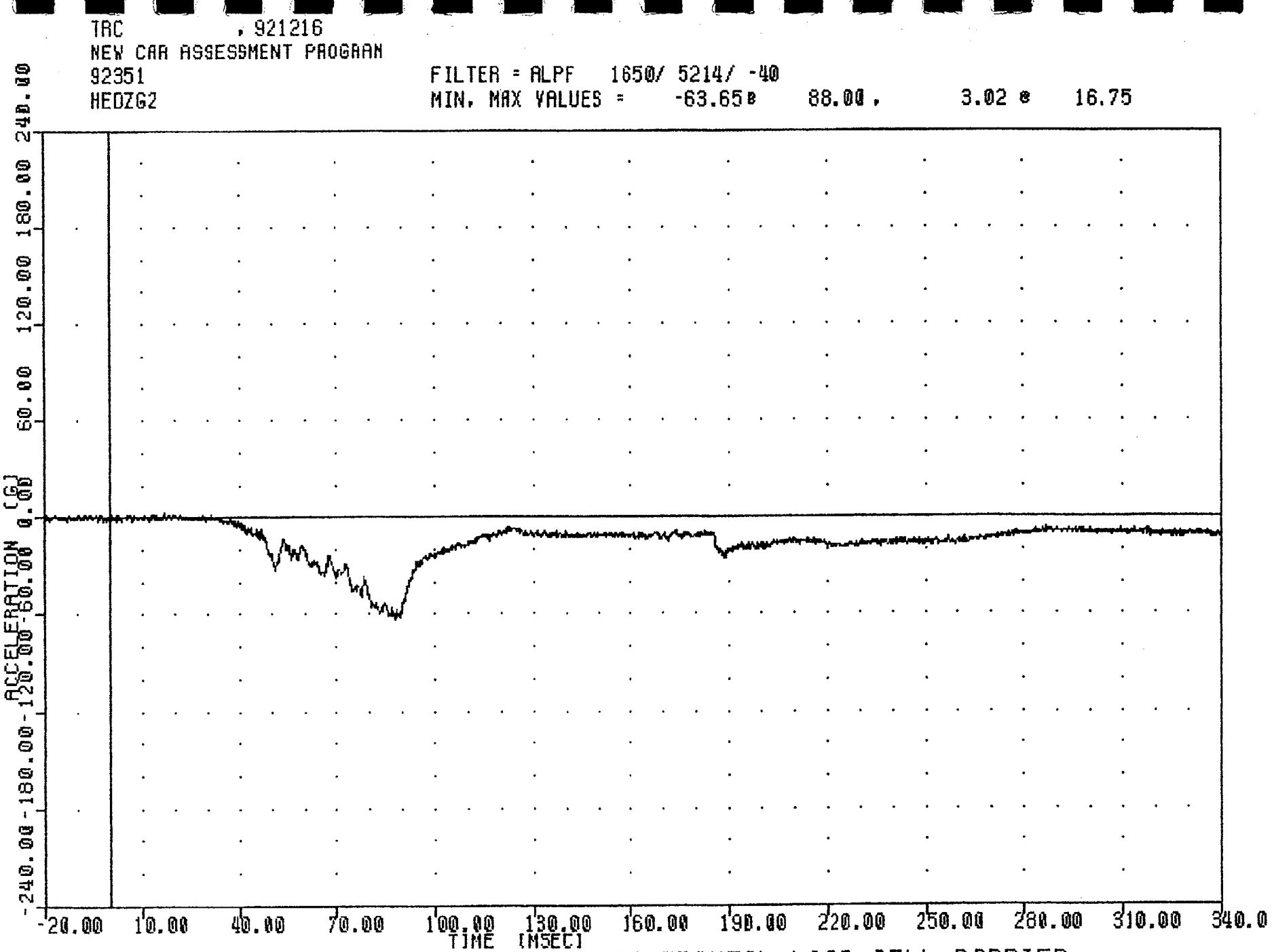

TRC , 921216
NEW CAR ASSESSMENT PROGRAM
92351
SBED1
FILTER = BLPP 100/ 250/ -16
MIN, MAX VALUES = -0.01 @ 131.13 , 0.01 @ 177.00
10.00
7.50
5.00
2.50
0.00
-2.50
-5.00
-7.50
-10.00
DISPLACEMENT (MM)
-20.00
10.00
40.00
70.00
100.00
130.00
160.00
190.00
220.00
250.00
280.00
310.00
340.00
TIME (MSEC)
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
DRIVER SEAT BELT EXTENSION



1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
PASSENGER HEAD X-AXIS ACCELERATION

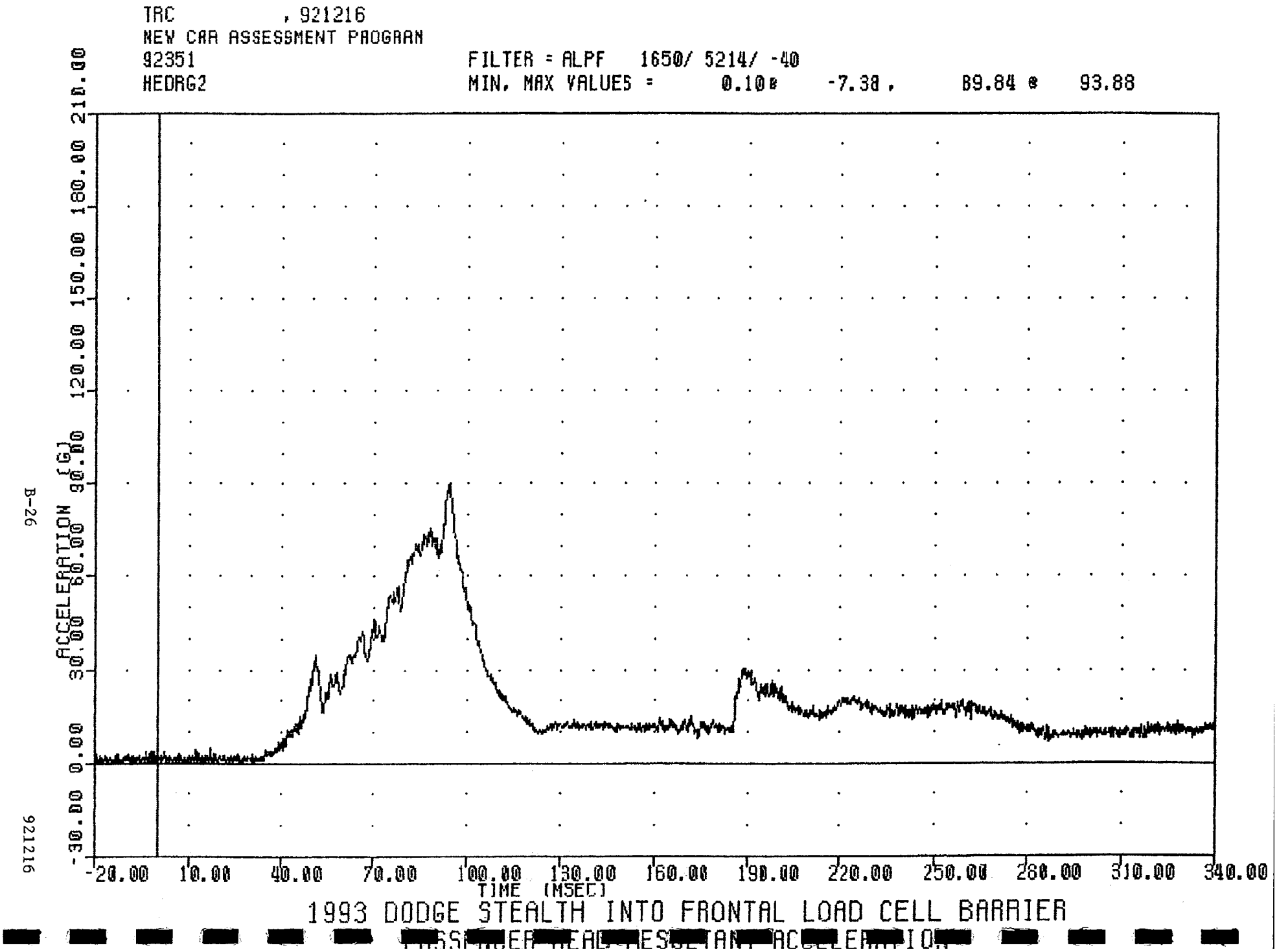
921216


TRC , 921216
NEW CAR ASSESSMENT PROGRAN
92351
HEDYG2
FILTER = ALPF 1650/ 5214/ -40
MIN, MAX VALUES = -22.33 @ 92.75 , 5.80 @ 104.00
240.00
180.00
120.00
60.00
0.00
-60.00
-120.00
-180.00
-240.00
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)
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
PASSENGER HEAD Y AXIS ACCELERATION

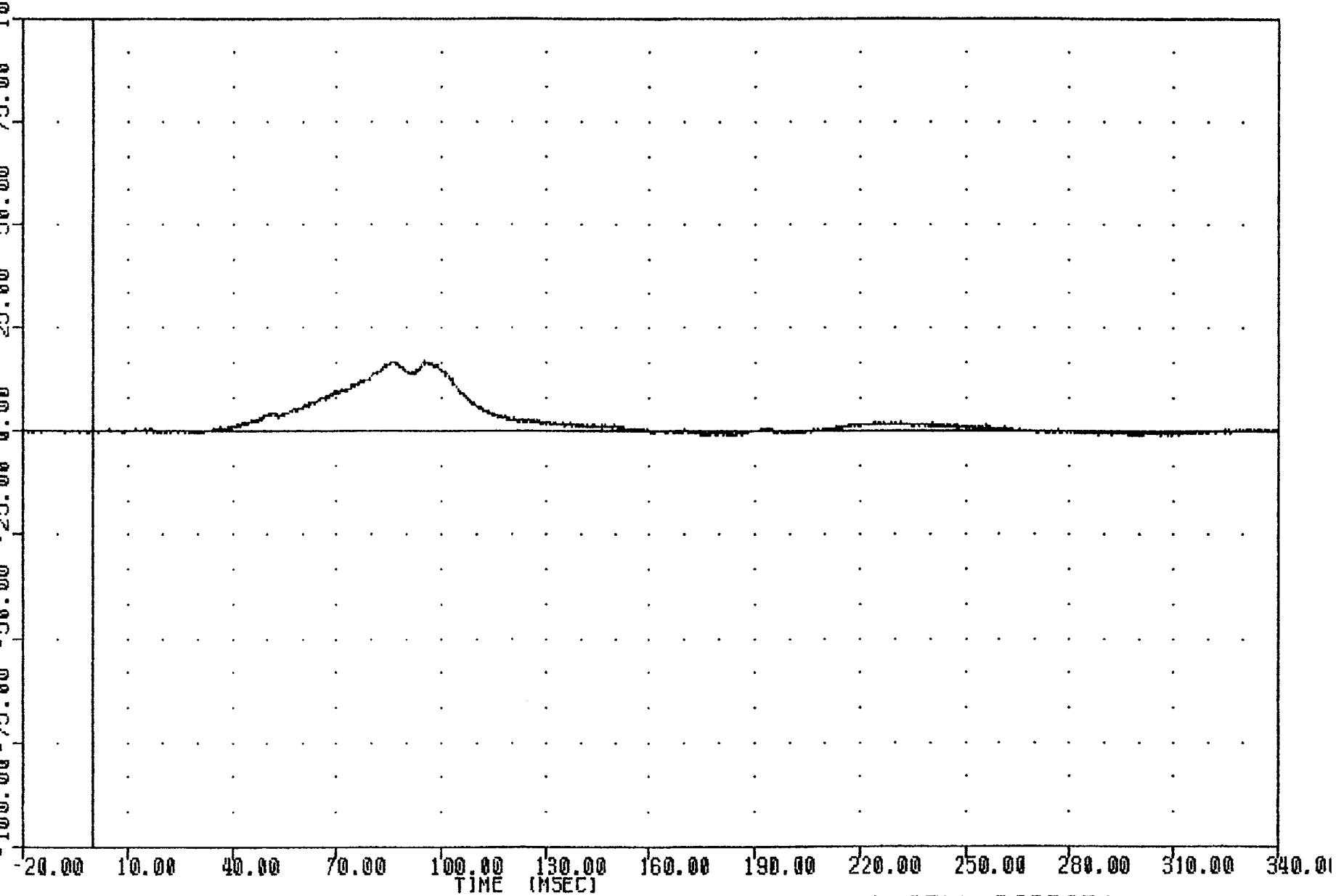


1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
PASSENGER HEAD Z-AXIS ACCELERATION

921216

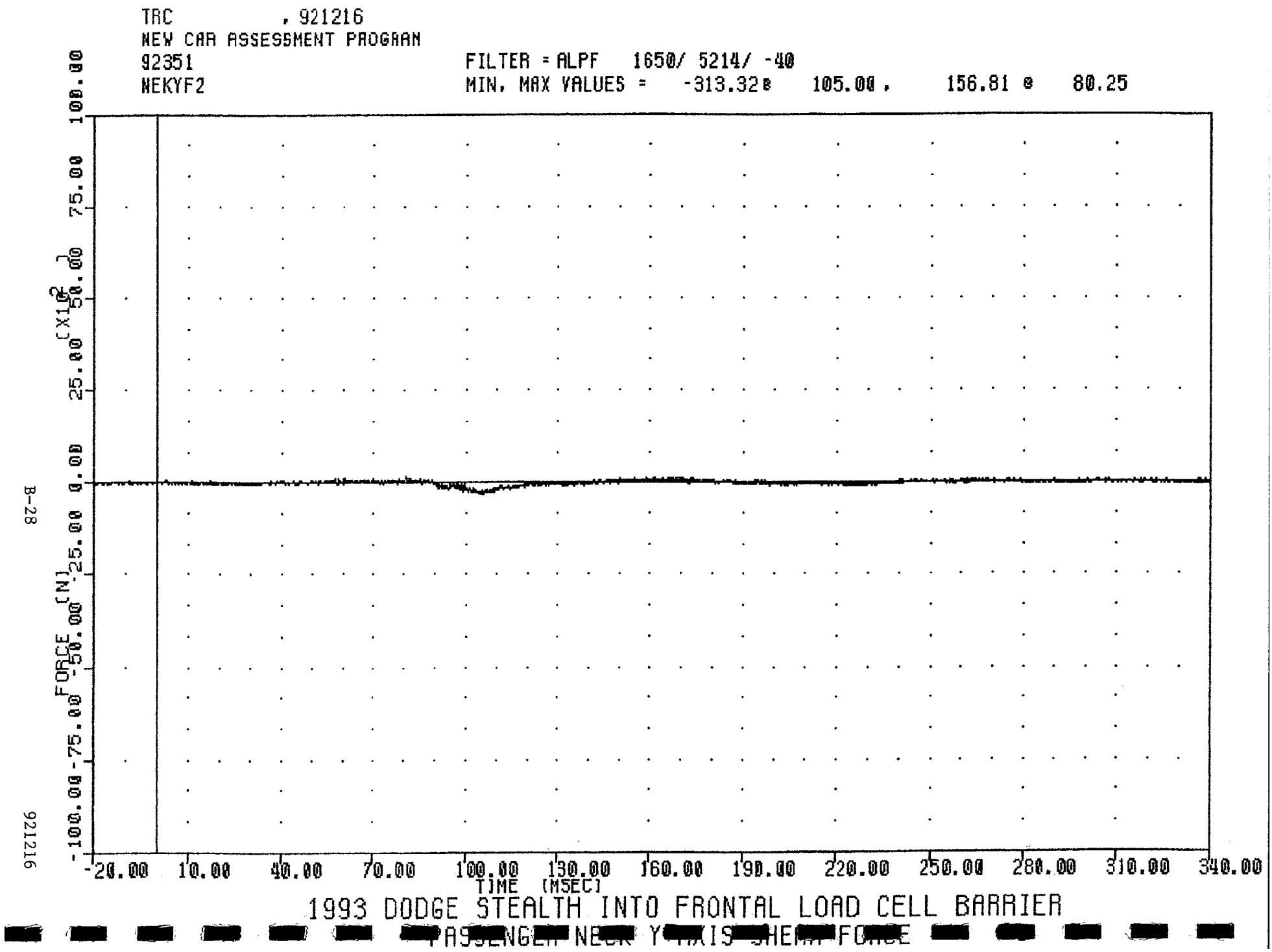

TRC , 921216
NEW CAR ASSESSMENT PROGRAM
92351
HEDRG2
FILTER = ALPF 1650/ 5214/ -40
MIN, MAX VALUES = 0.10@ -7.38, 89.84 @ 93.88
ACCELERATION (G)
210.00
180.00
150.00
120.00
90.00
60.00
30.00
0.00
-30.00
-20.00
10.00
40.00
70.00
100.00
130.00
160.00
190.00
220.00
250.00
280.00
310.00
340.00
TIME (MSEC)
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER

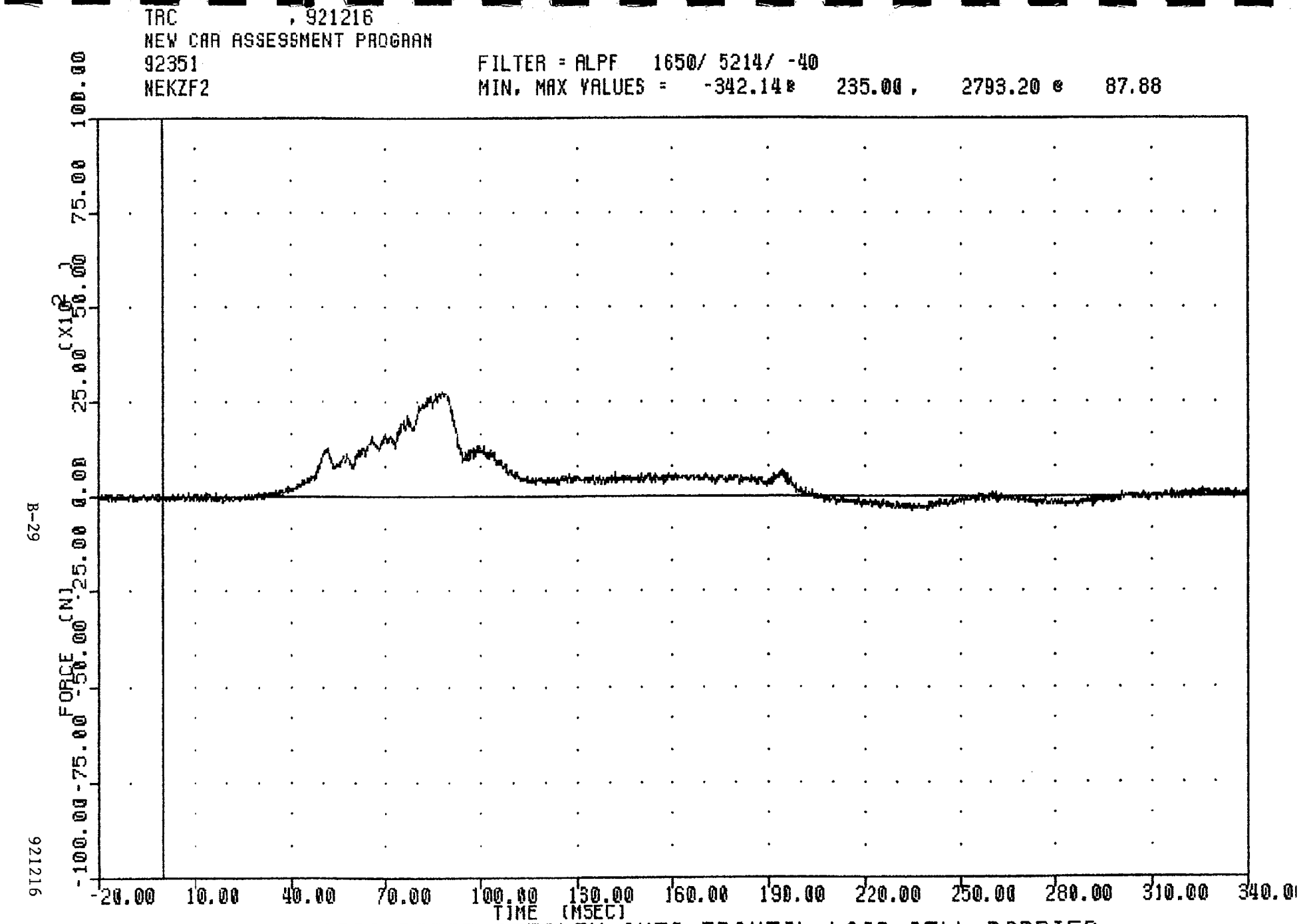
TRC , 921216
NEW CAR ASSESSMENT PROGRAM
92351
NEKXF2
FILTER = ALPF 1650/ 5214/ -40
MIN, MAX VALUES = -88.68 @ 184.63 , 1694.50 @ 95.25



1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
PASSENGER NECK X-AXIS SHEAR FORCE

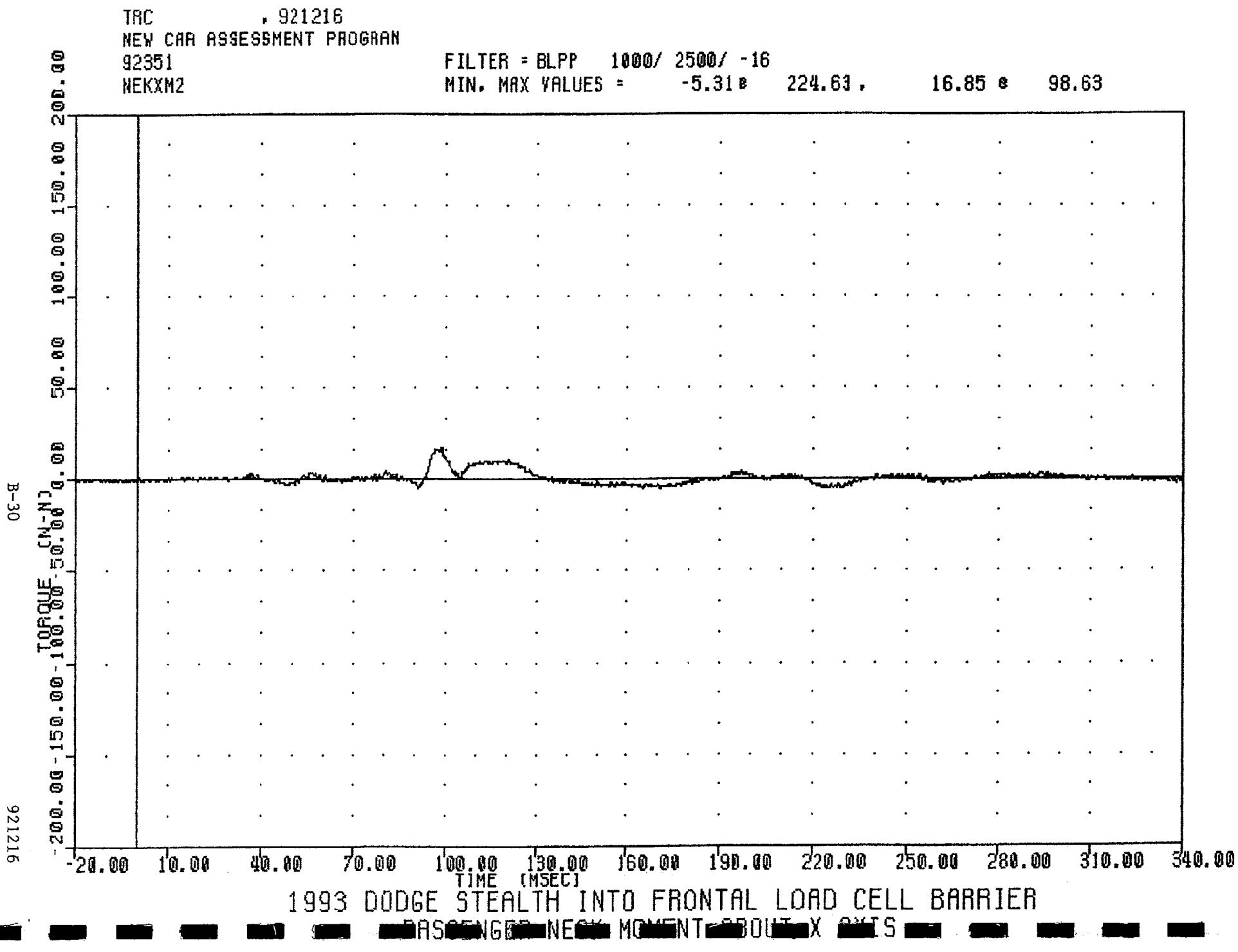
921216

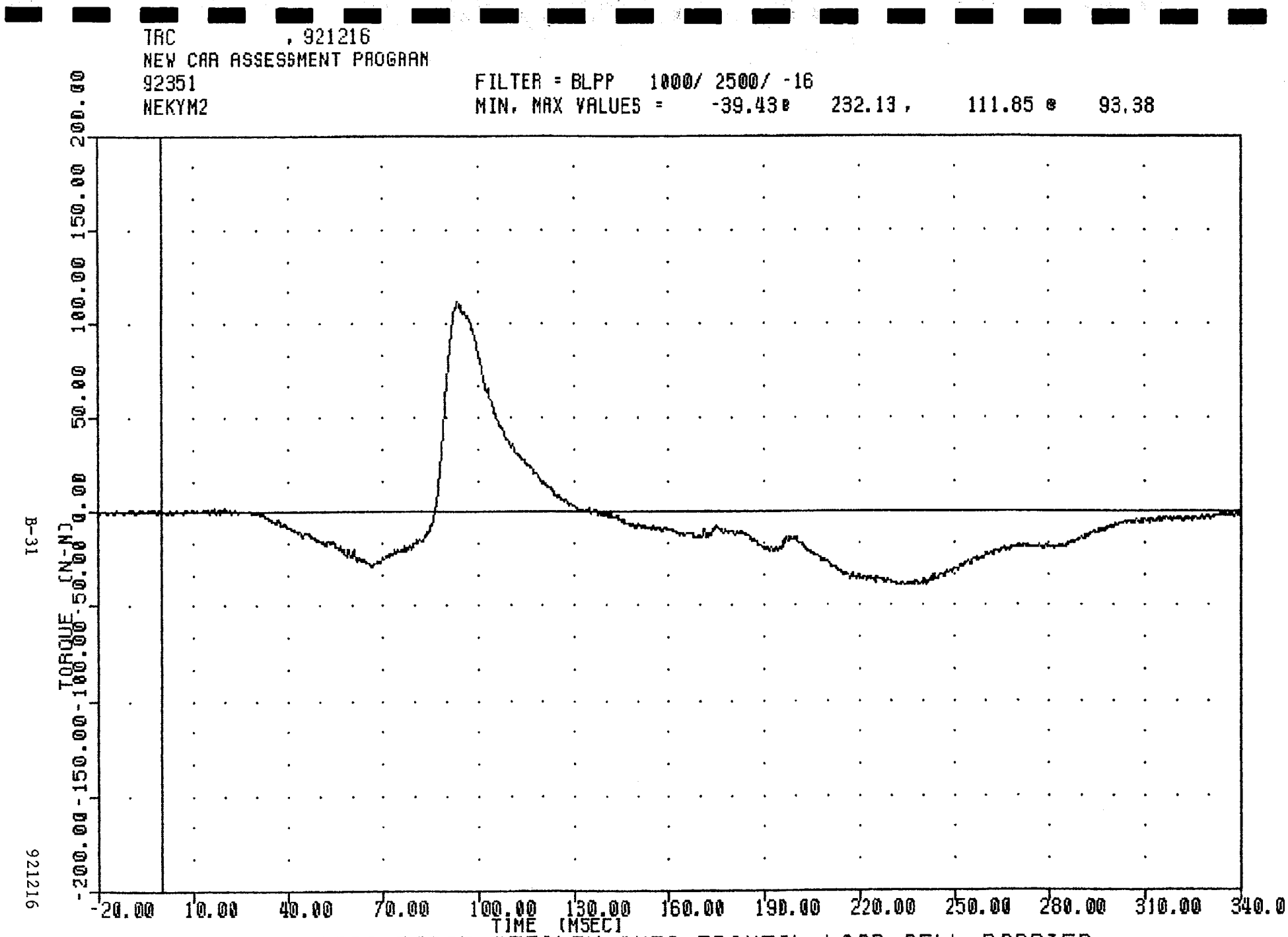

TRC , 921216
NEW CAR ASSESSMENT PROGRAM
92351
NEKYF2
FILTER = ALPF 1650/ 5214/ -40
MIN, MAX VALUES = -313.32 @ 105.00 , 156.81 @ 80.25
100.00
75.00
50.00
25.00
0.00
-25.00
-50.00
-75.00
-100.00
FORCE (N) (X10^2)
-20.00
10.00
40.00
70.00
100.00
130.00
160.00
190.00
220.00
250.00
280.00
310.00
340.00
TIME (MSEC)
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
PASSENGER NECK Y AXIS SHEAR FORCE



1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
PASSENGER NECK Z-AXIS AXIAL FORCE

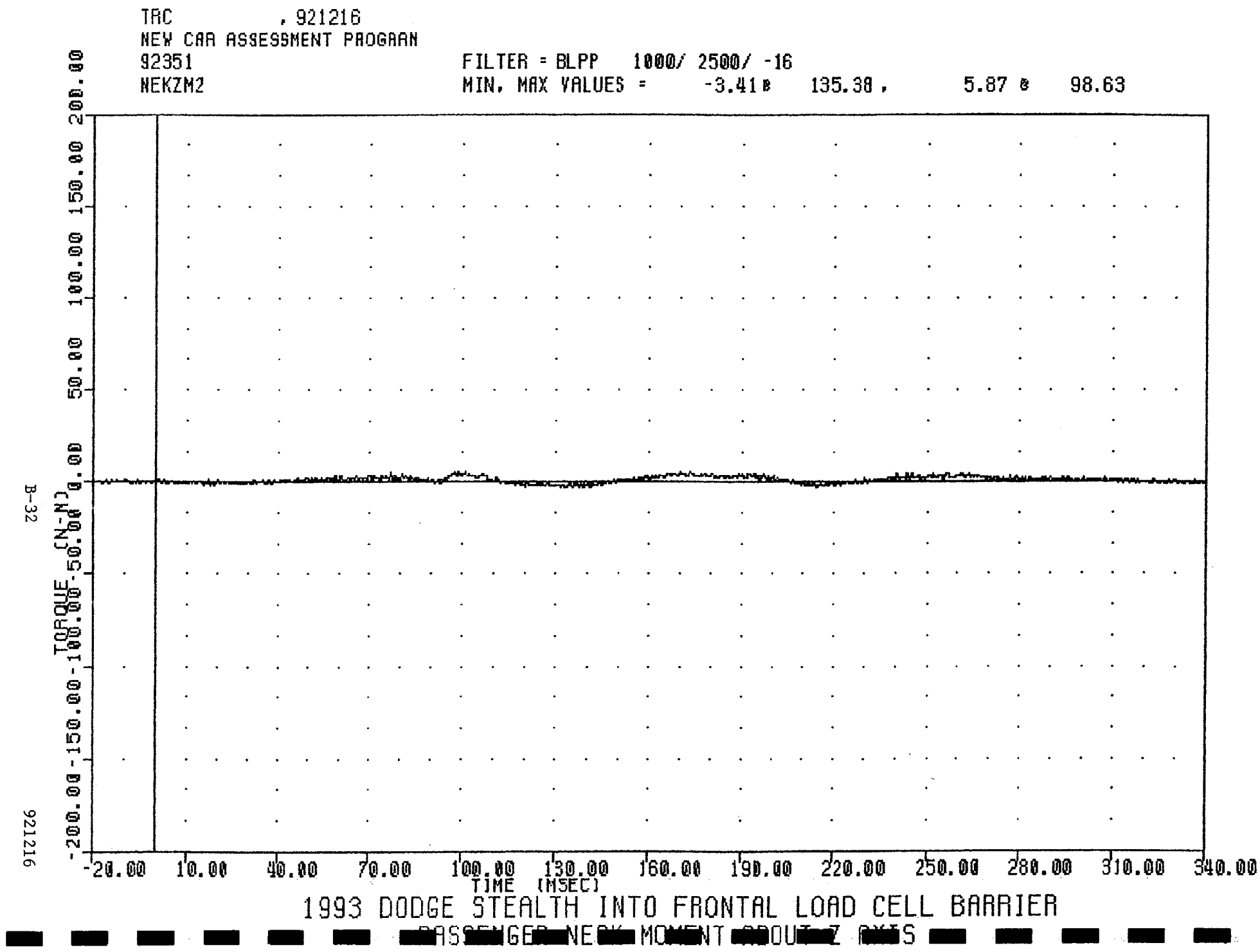
921216


TRC , 921216
NEW CAR ASSESSMENT PROGRAM
92351
NEKXM2
FILTER = BLPP 1000/ 2500/ -16
MIN, MAX VALUES = -5.31 @ 224.63 , 16.85 @ 98.63
200.00
150.00
100.00
50.00
0.00
-50.00
-100.00
-150.00
-200.00
TORQUE (N-M)
-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)
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
PASSENGER NECK MOMENT ABOUT X AXIS



1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
PASSENGER NECK MOMENT ABOUT Y AXIS

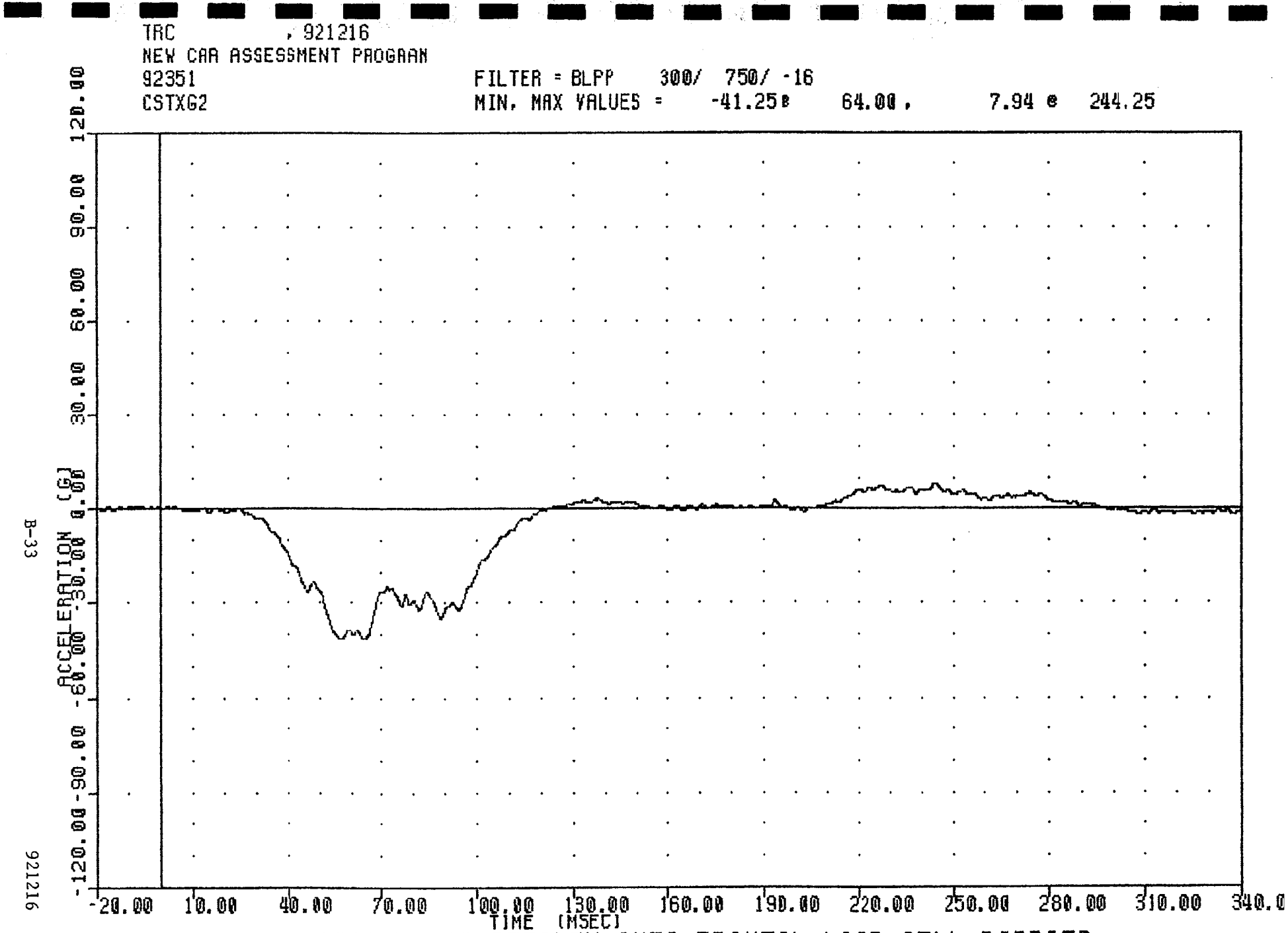
921216



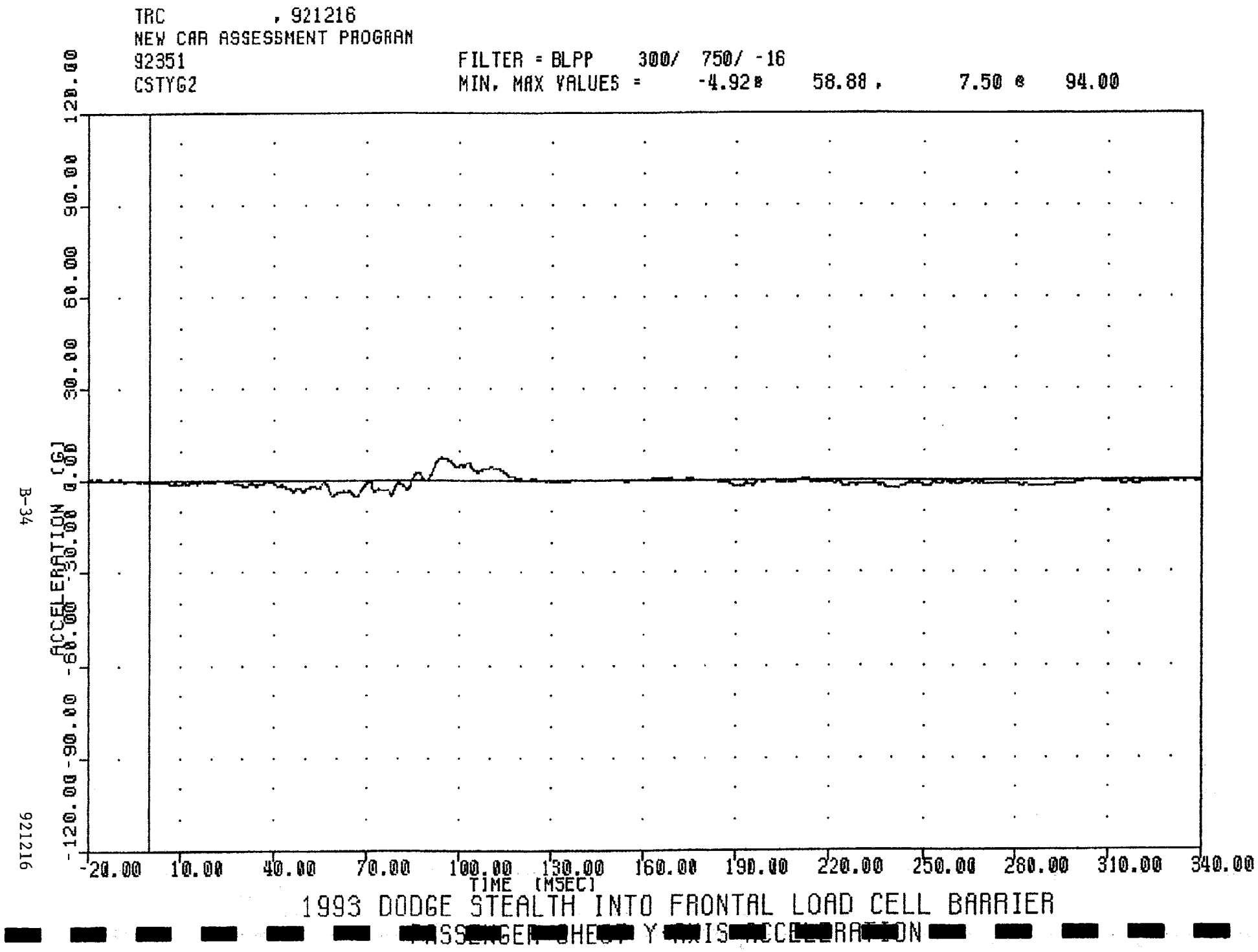
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER

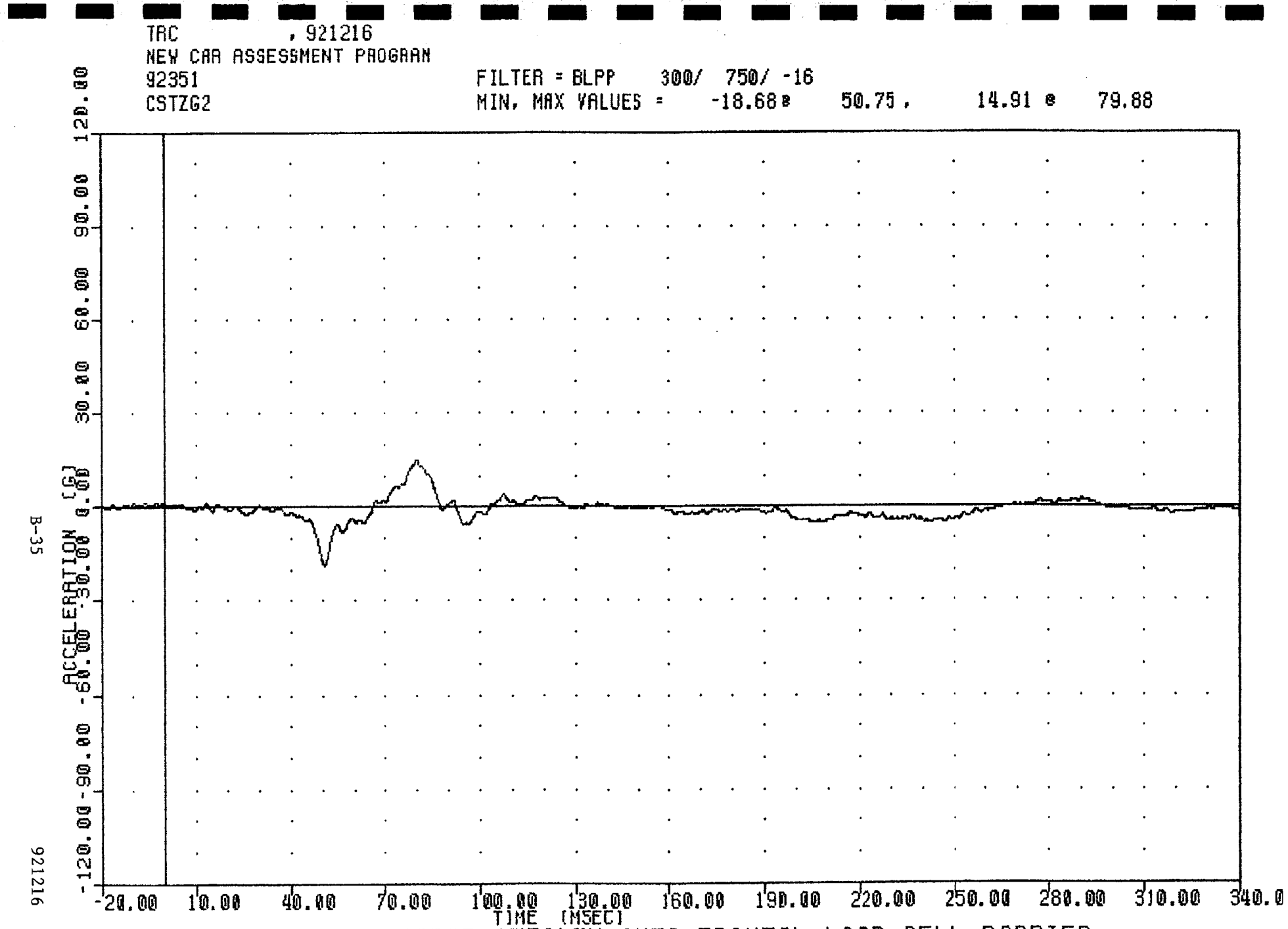
PASSENGER NECK MOMENT ABOUT Z AXIS

921216



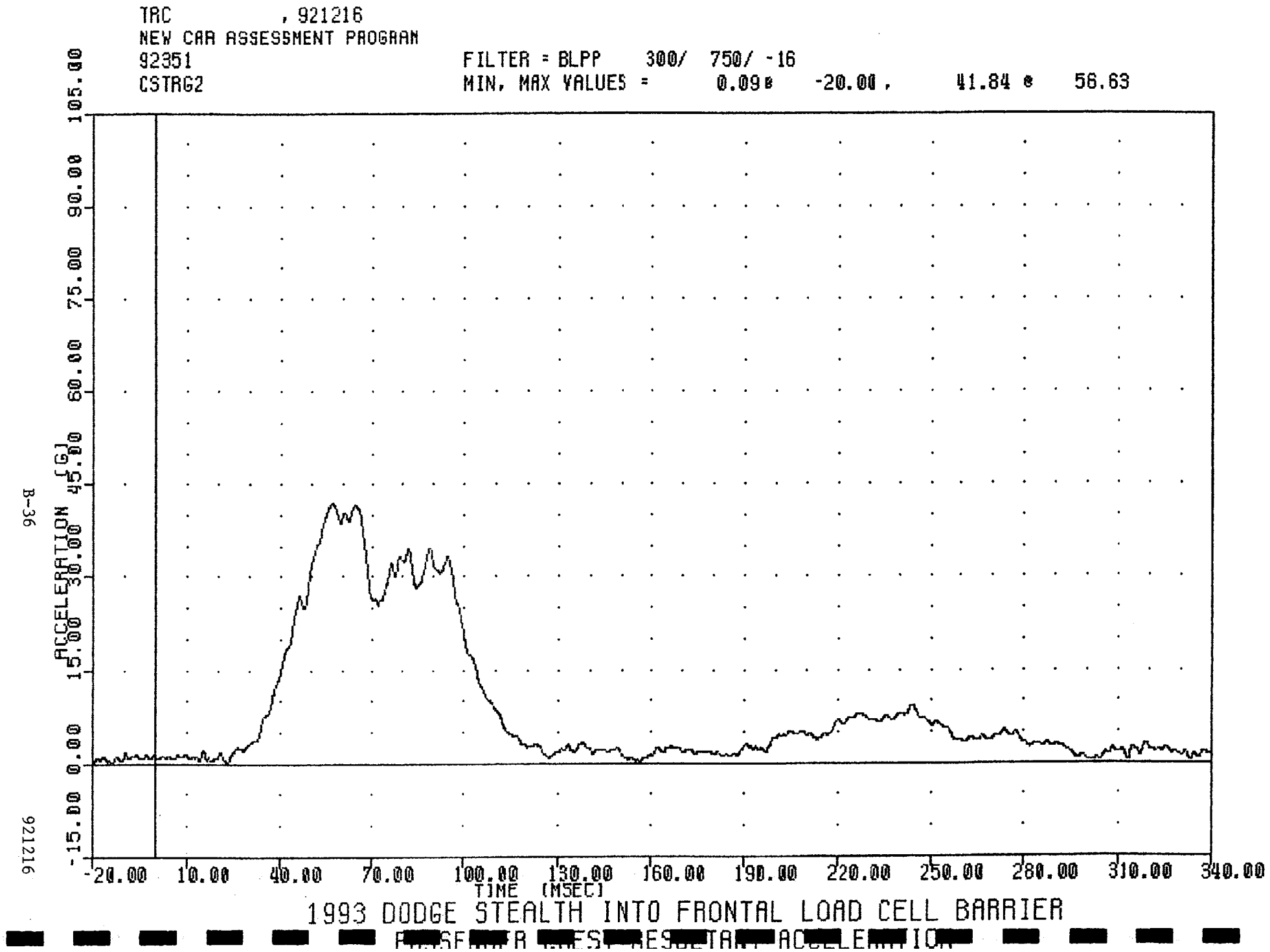
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
PASSENGER CHEST X-AXIS ACCELERATION

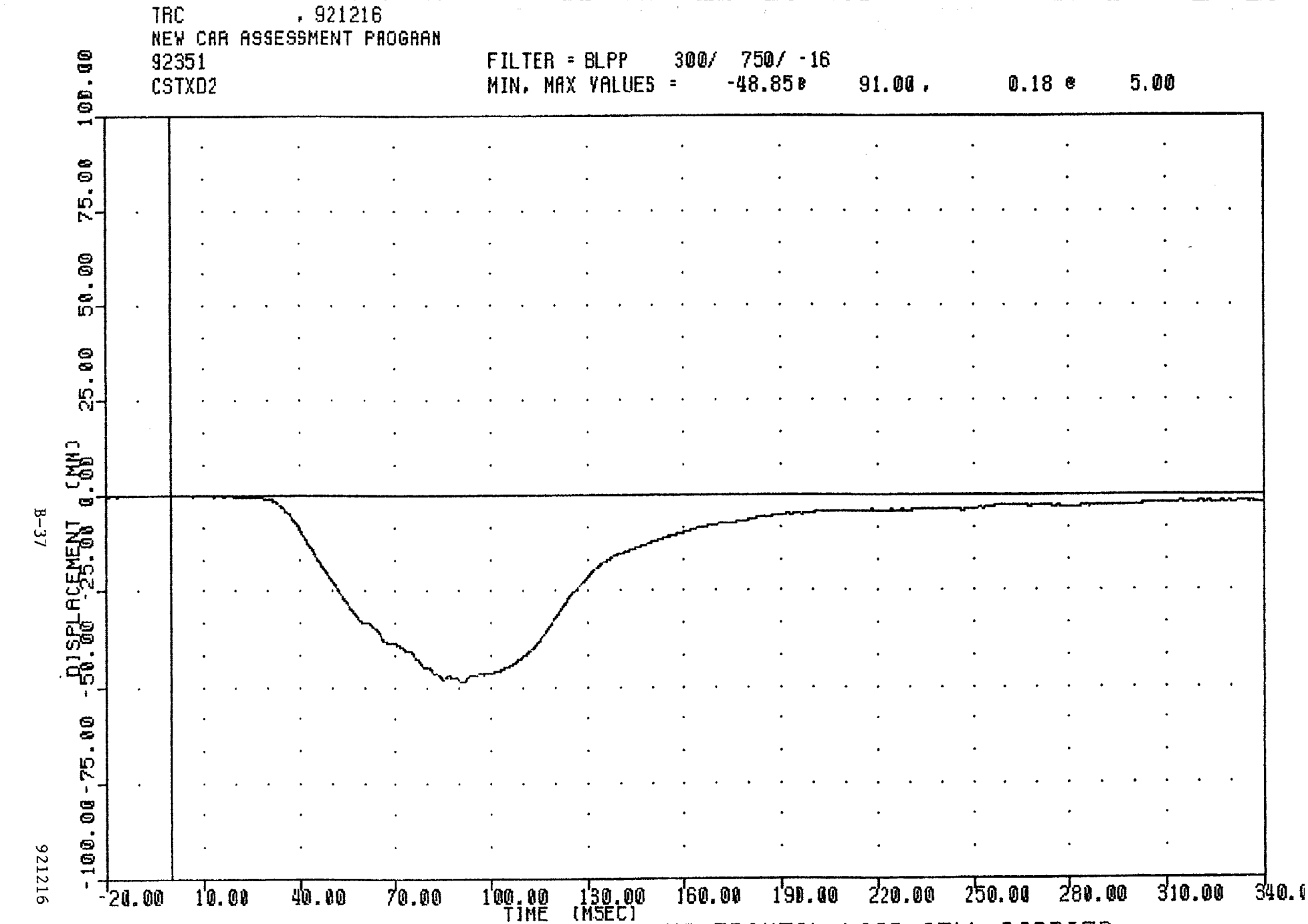

TRC , 921216
NEW CAR ASSESSMENT PROGRAM
92351
CSTYG2
FILTER = BLPP 300/ 750/ -16
MIN, MAX VALUES = -4.92 @ 58.88 , 7.50 @ 94.00
120.00
90.00
60.00
30.00
0.00
-30.00
-60.00
-90.00
-120.00
ACCELERATION [G]
-20.00
10.00
40.00
70.00
100.00
130.00
160.00
190.00
220.00
250.00
280.00
310.00
340.00
TIME (MSEC)
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER



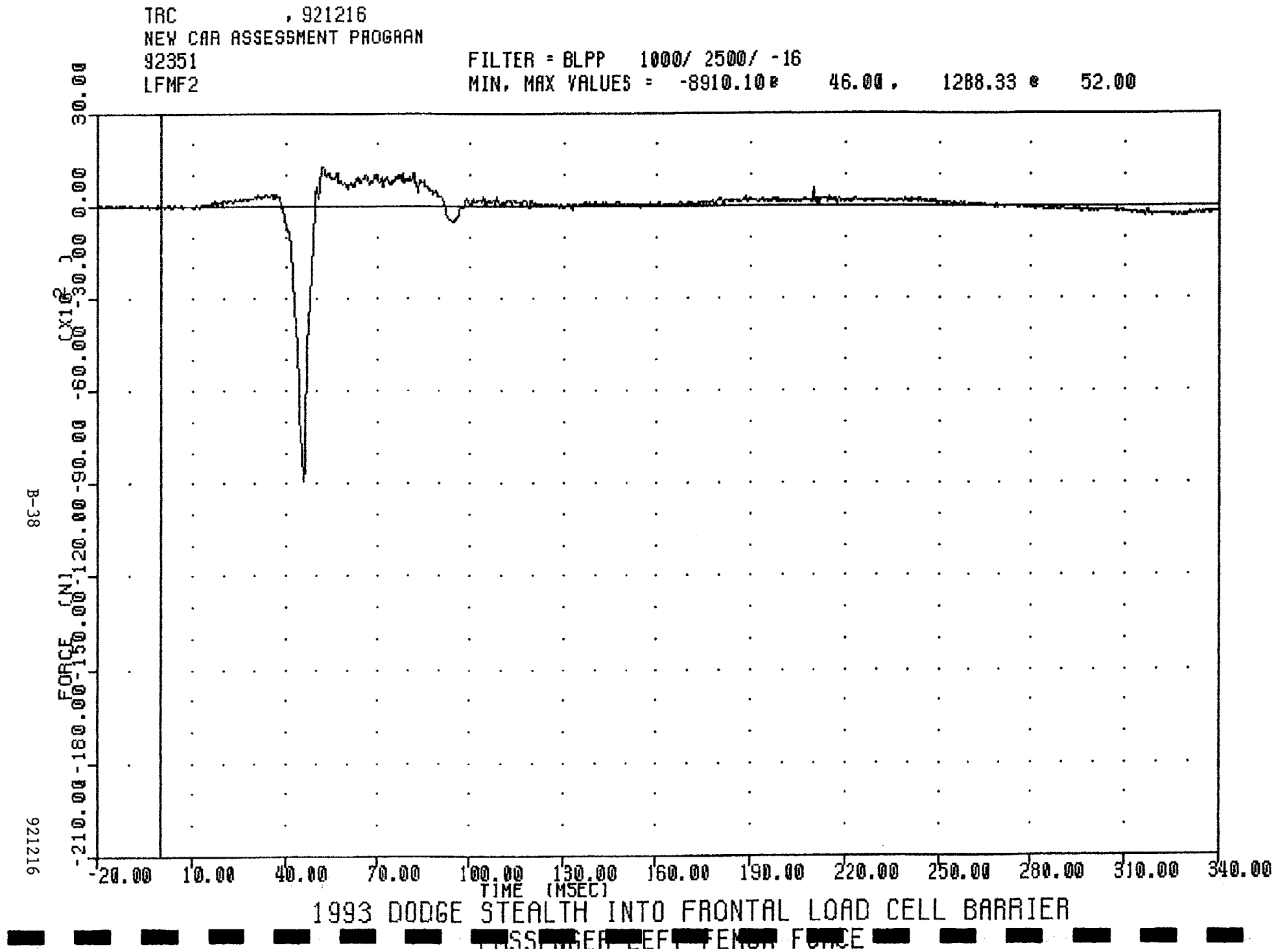
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
PASSENGER CHEST Z-AXIS ACCELERATION

921216


TRC , 921216
NEW CAR ASSESSMENT PROGRAM
92351
CSTRG2
FILTER = BLPP 300/ 750/ -16
MIN, MAX VALUES = 0.09 @ -20.00 , 41.84 @ 56.63
ACCELERATION [G]
105.00
90.00
75.00
60.00
45.00
30.00
15.00
0.00
-15.00
-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)
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER

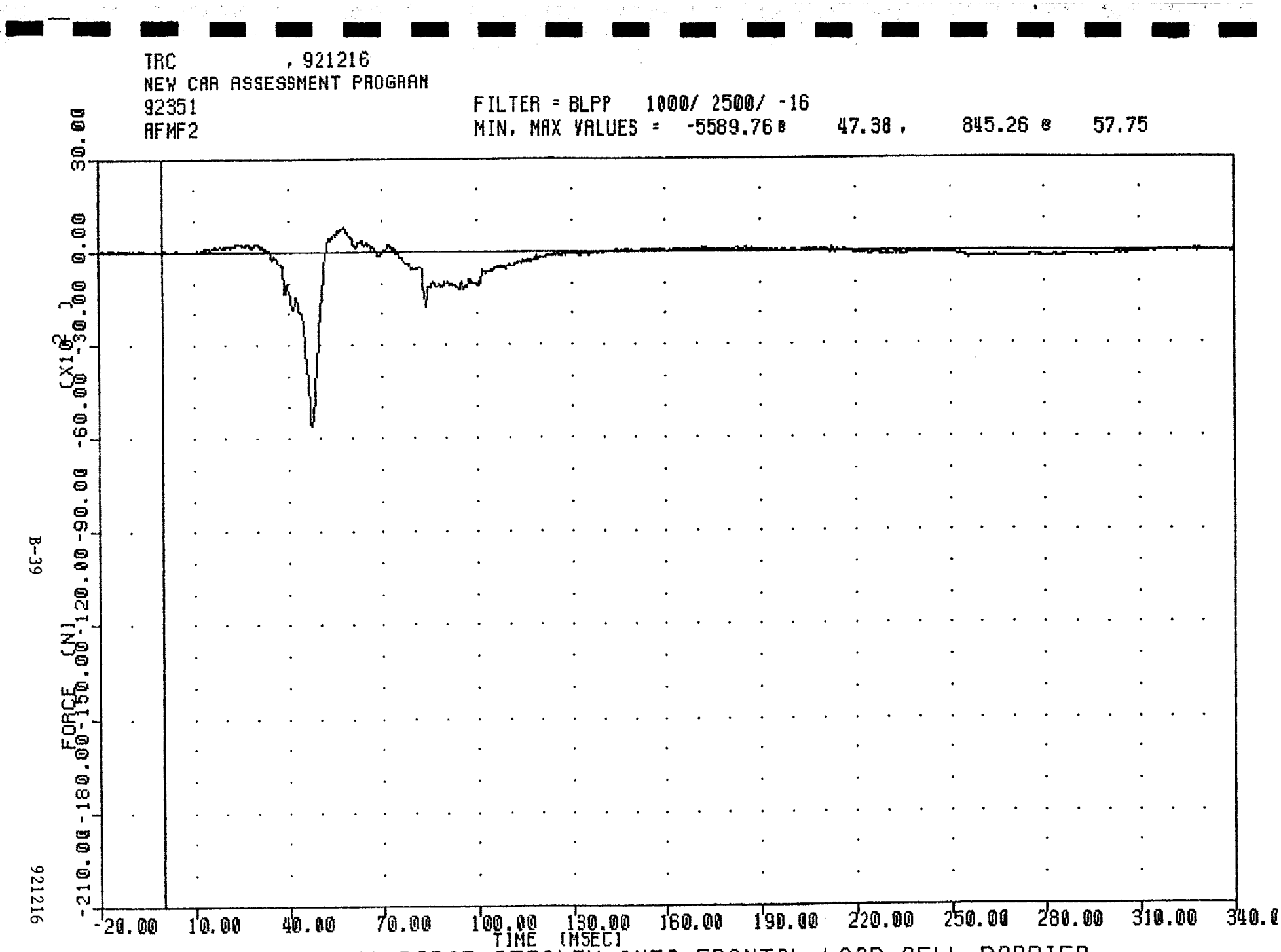


1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
PASSENGER CHEST DEFLECTION

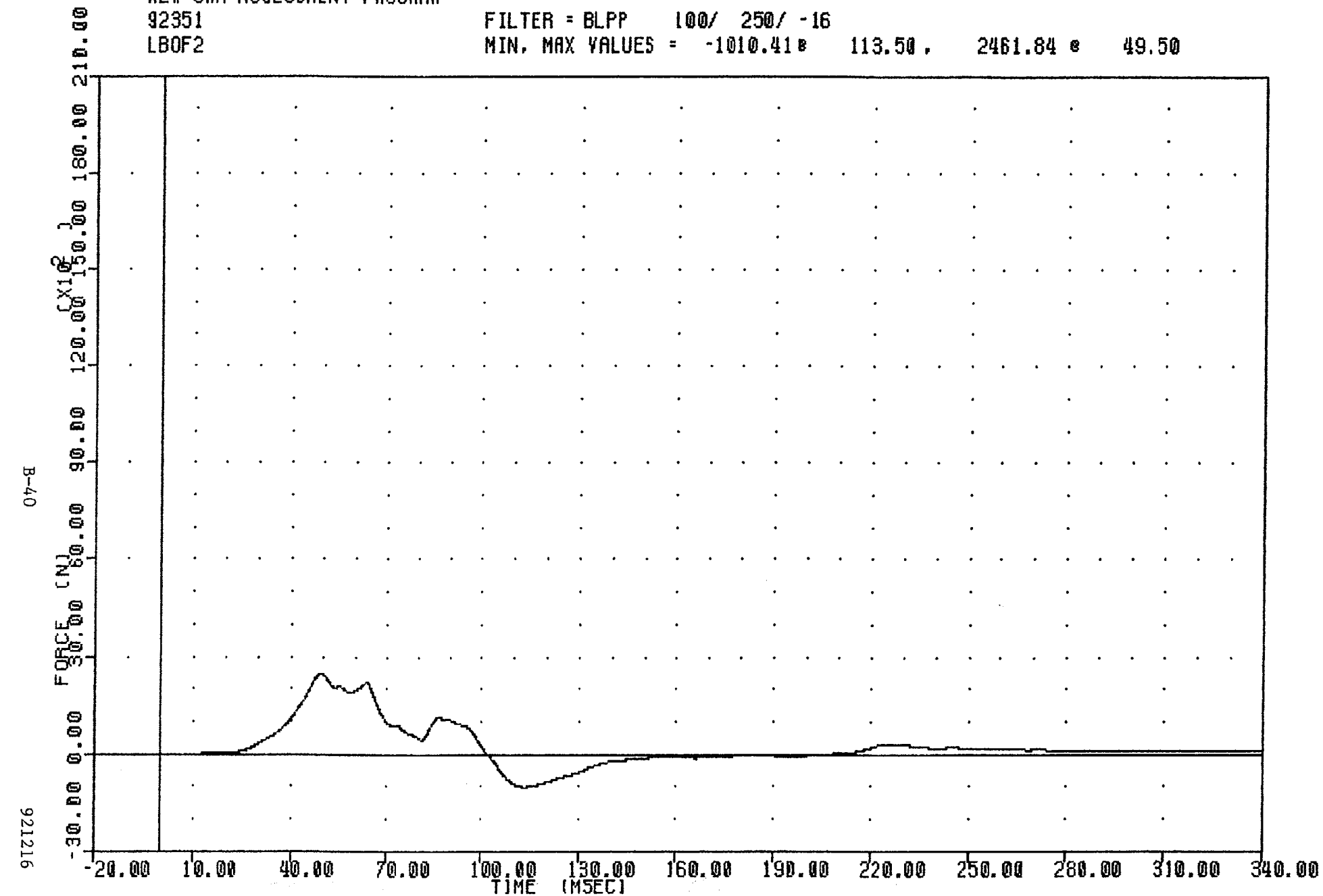


1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER

[redacted]



1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
PASSENGER RIGHT FEMUR FORCE

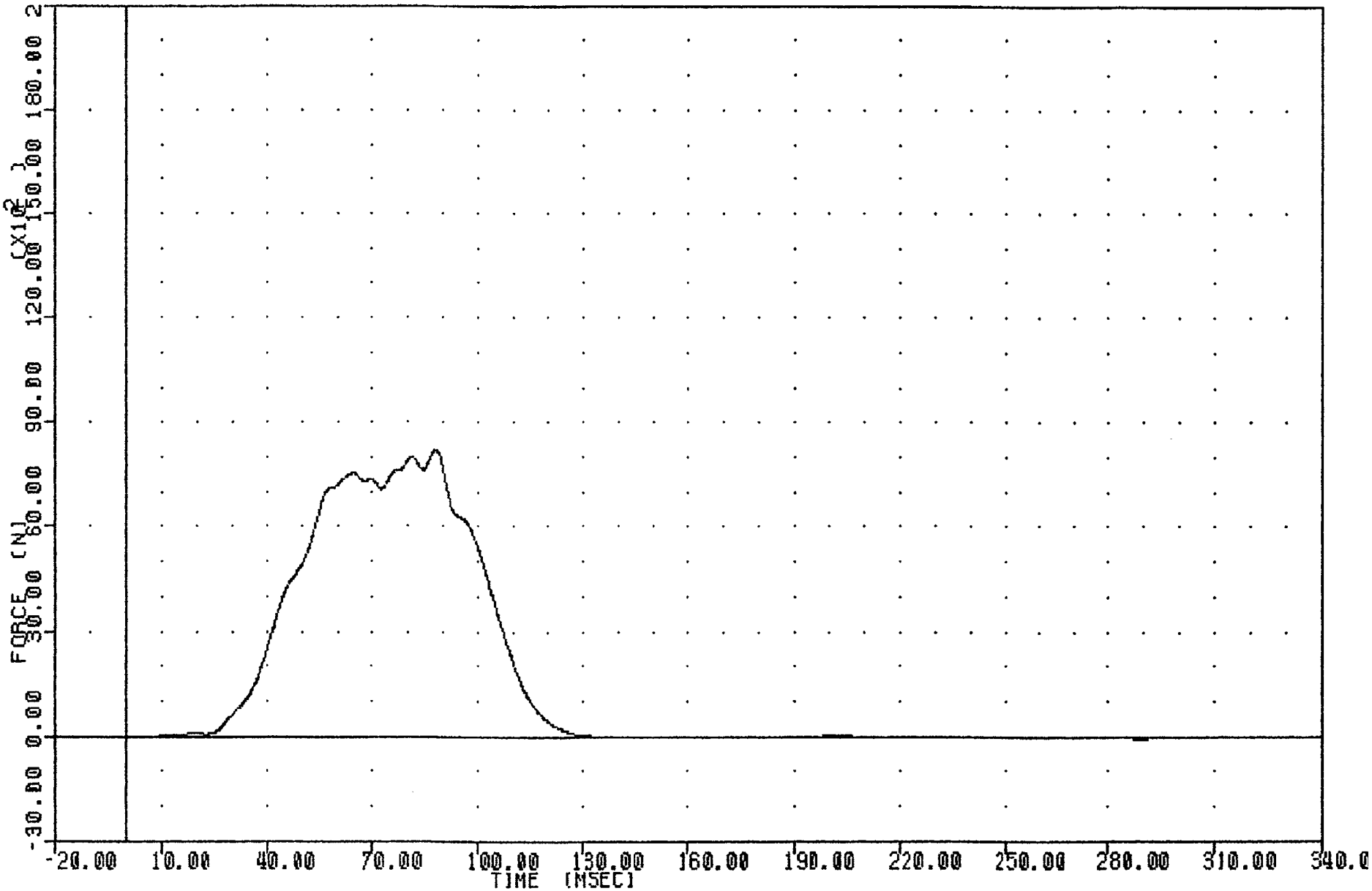


1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER

PASSENGER LAP BELT OUTBOARD FORCE

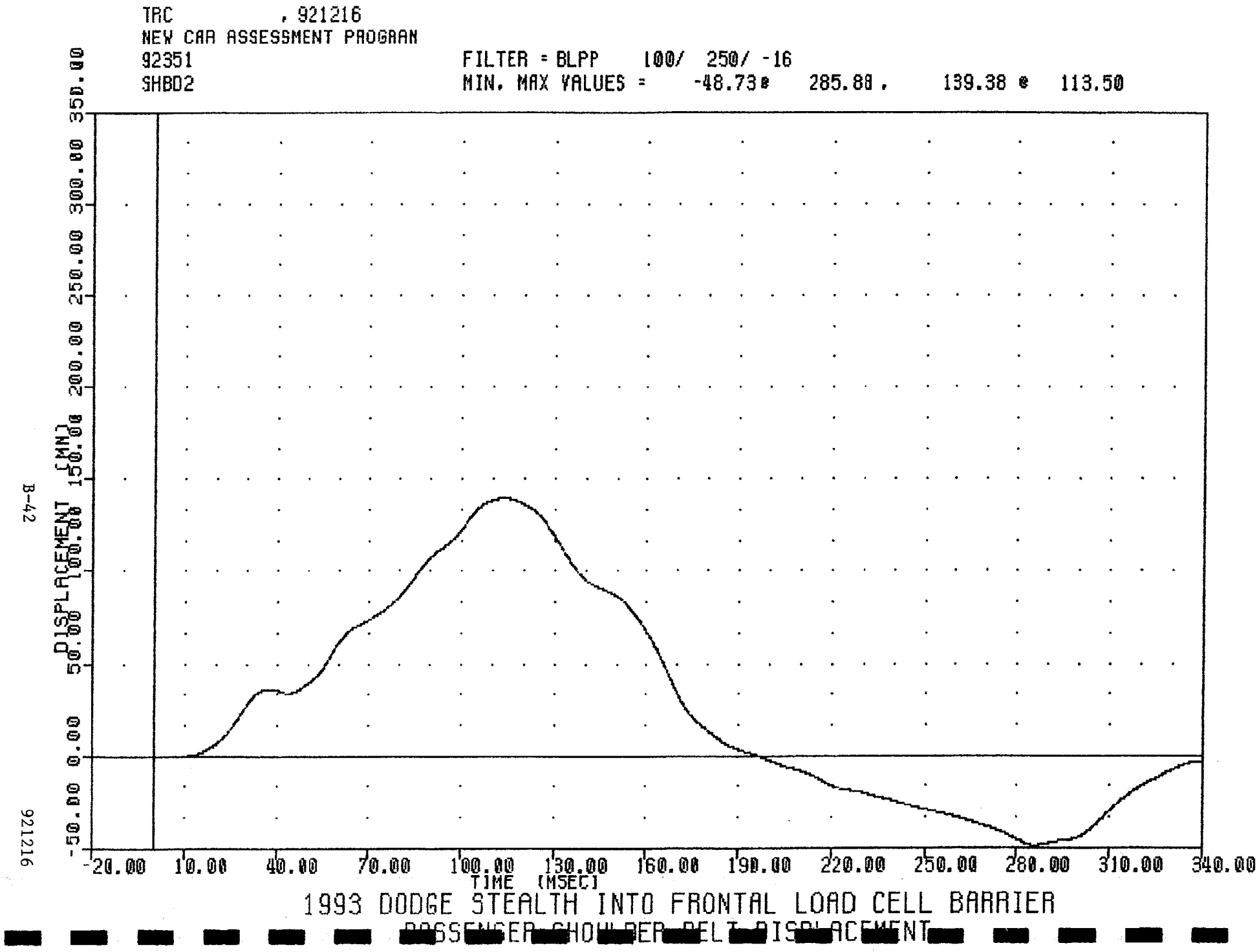
921216

TRC , 921216
NEW CAR ASSESSMENT PROGRAM
92351
SHBF2
FILTER = BLPP 100/ 250/ -16
MIN, MAX VALUES = -57.58@ 289.25 , 8215.04 @ 87.88



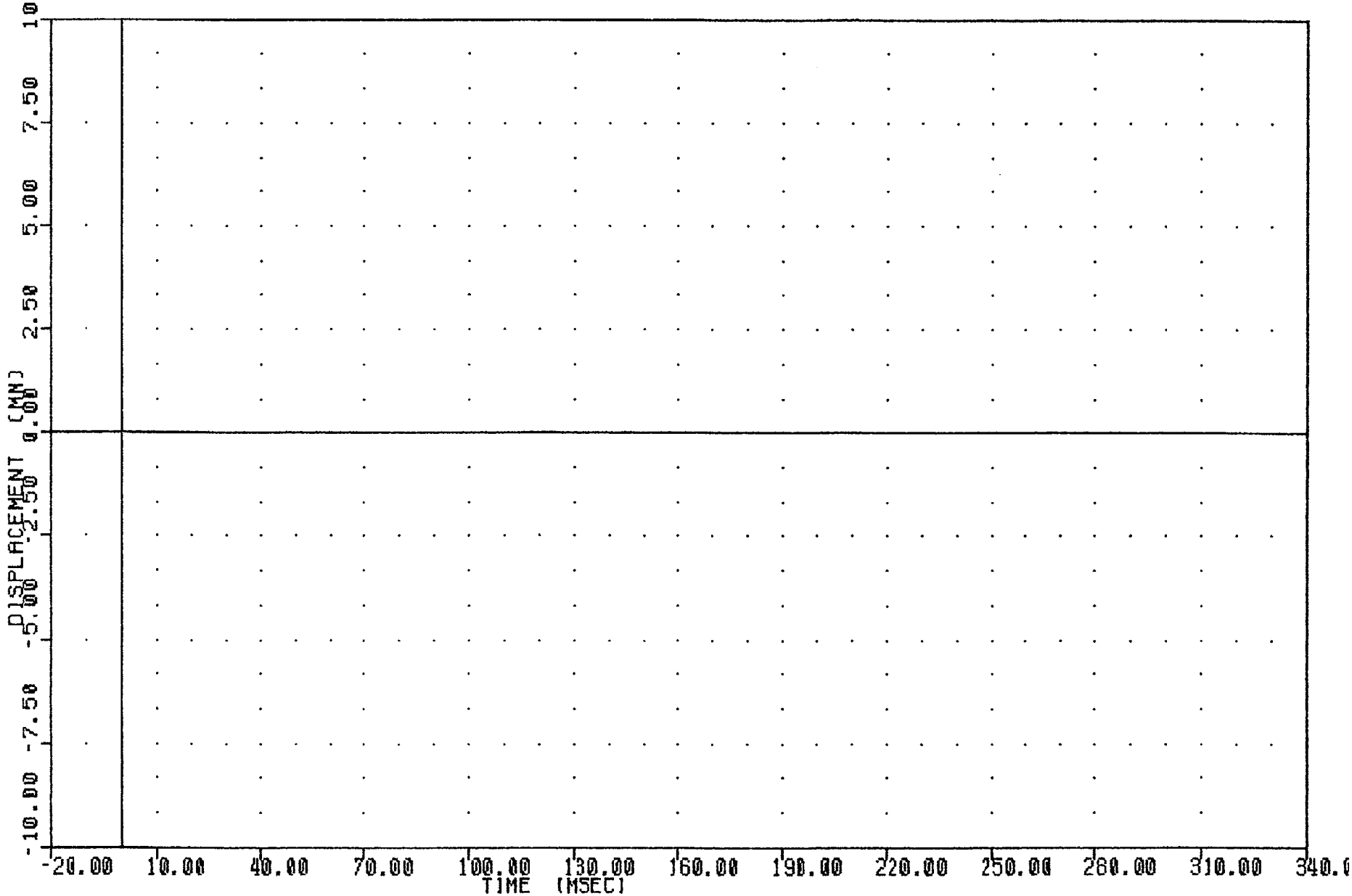
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
PASSENGER SHOULDER BELT FORCE

921216

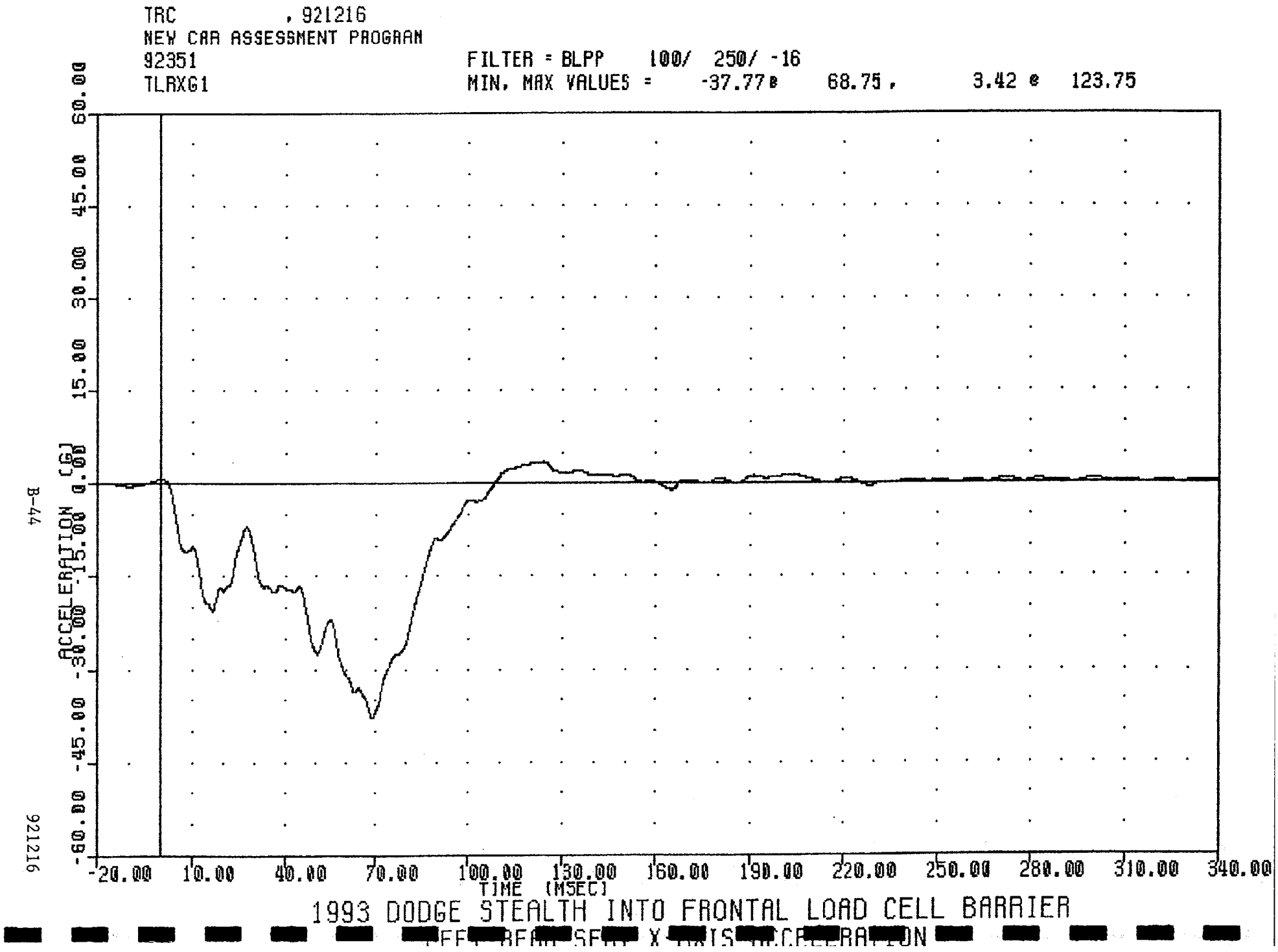

TRC , 921216
NEW CAR ASSESSMENT PROGRAM
92351
SHBD2
FILTER = BLPP 100/ 250/ -16
MIN. MAX VALUES = -48.73 @ 285.88 , 139.38 @ 113.50
DISPLACEMENT [MM]
350.00
300.00
250.00
200.00
150.00
100.00
50.00
0.00
-50.00
-20.00
10.00
40.00
70.00
100.00
130.00
160.00
190.00
220.00
250.00
280.00
310.00
340.00
TIME (MSEC)
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
PASSENGER SHOULDER BELT DISPLACEMENT

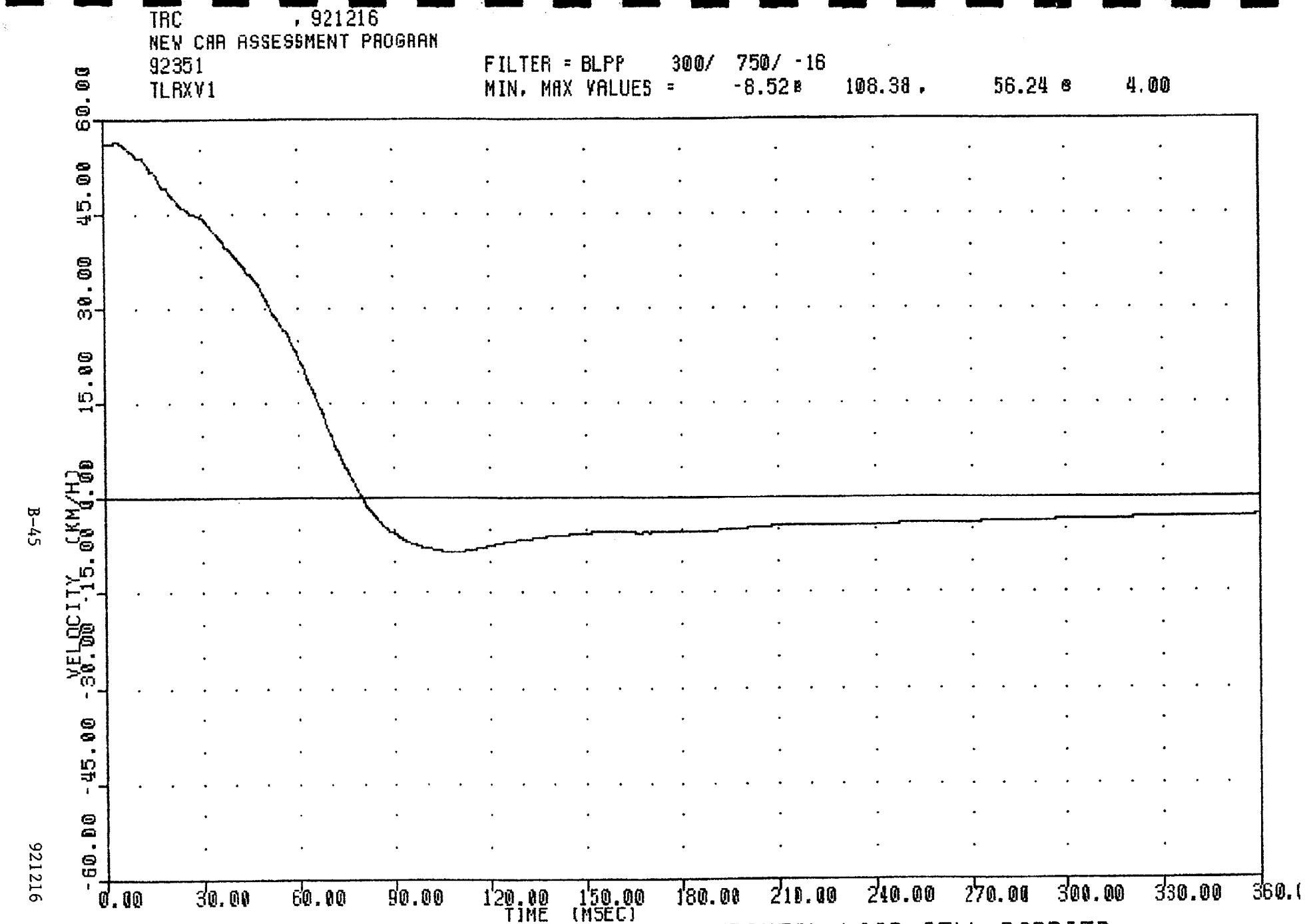
921216

TRC . 921216
NEW CAR ASSESSMENT PROGRAM
92351 FILTER = BLPP 100/ 250/ -16
SBED2 MIN, MAX VALUES = -0.01 @ 7.25 , 0.01 @ 305.00



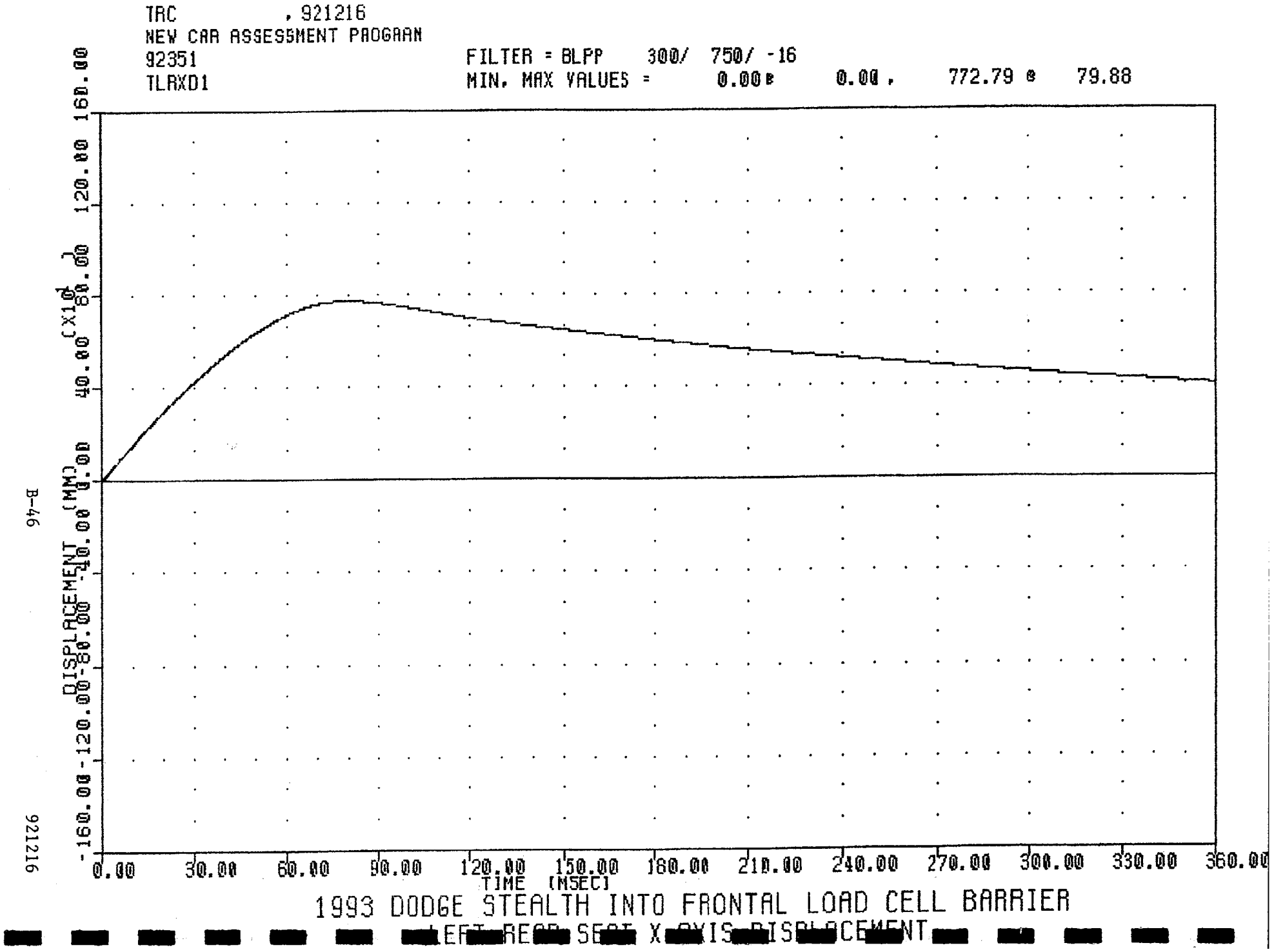
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
PASSENGER SEAT BELT EXTENSION

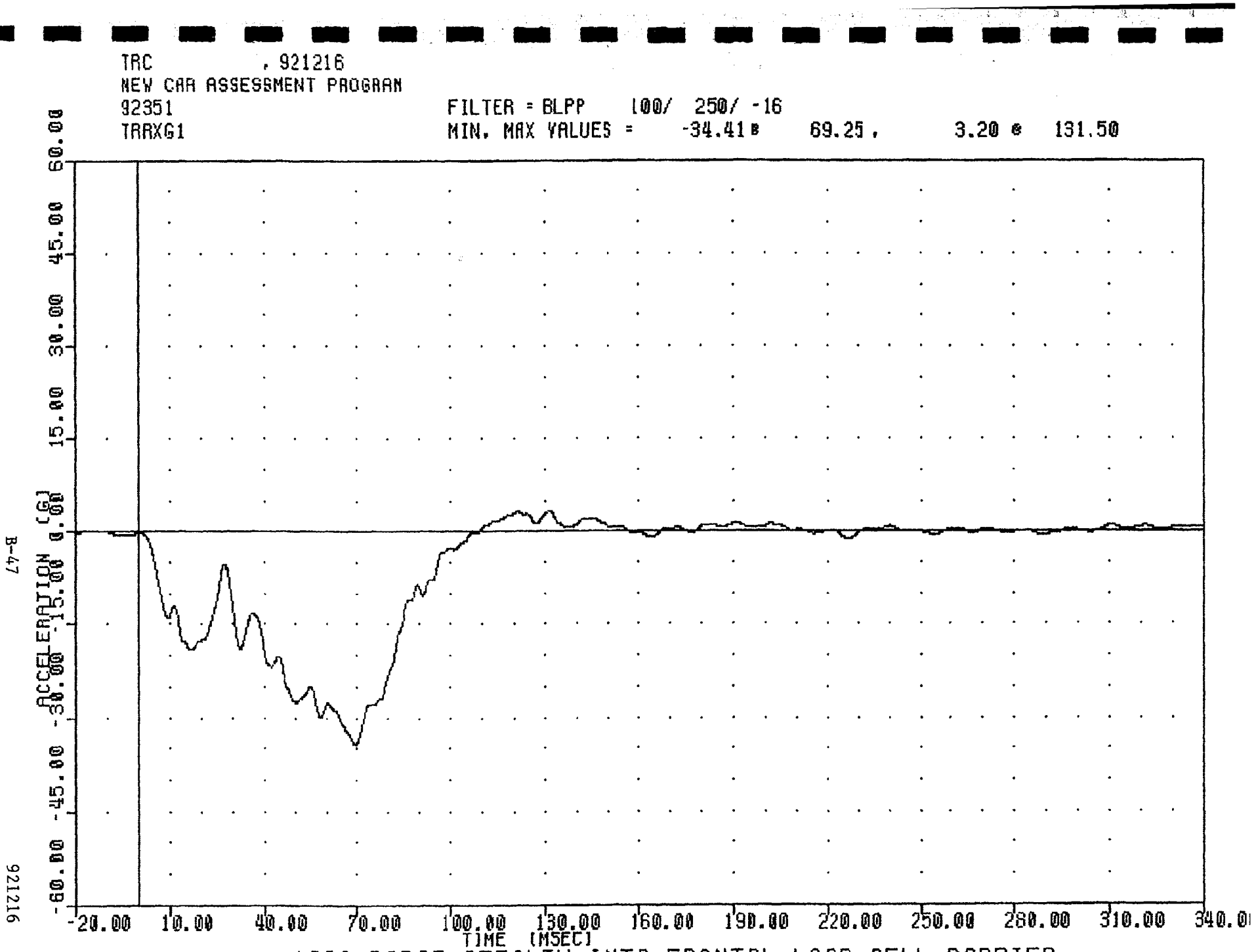

TRC , 921216
NEW CAR ASSESSMENT PROGRAM
92351
TLRXG1
FILTER = BLPP 100/ 250/ -16
MIN, MAX VALUES = -37.77 @ 68.75 , 3.42 @ 123.75
60.00
45.00
30.00
15.00
0.00
-15.00
-30.00
-45.00
-60.00
ACCELERATION (G)
-20.00
10.00
40.00
70.00
100.00
130.00
160.00
190.00
220.00
250.00
280.00
310.00
340.00
TIME (MSEC)
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER



1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
LEFT REAR SEAT X-AXIS VELOCITY

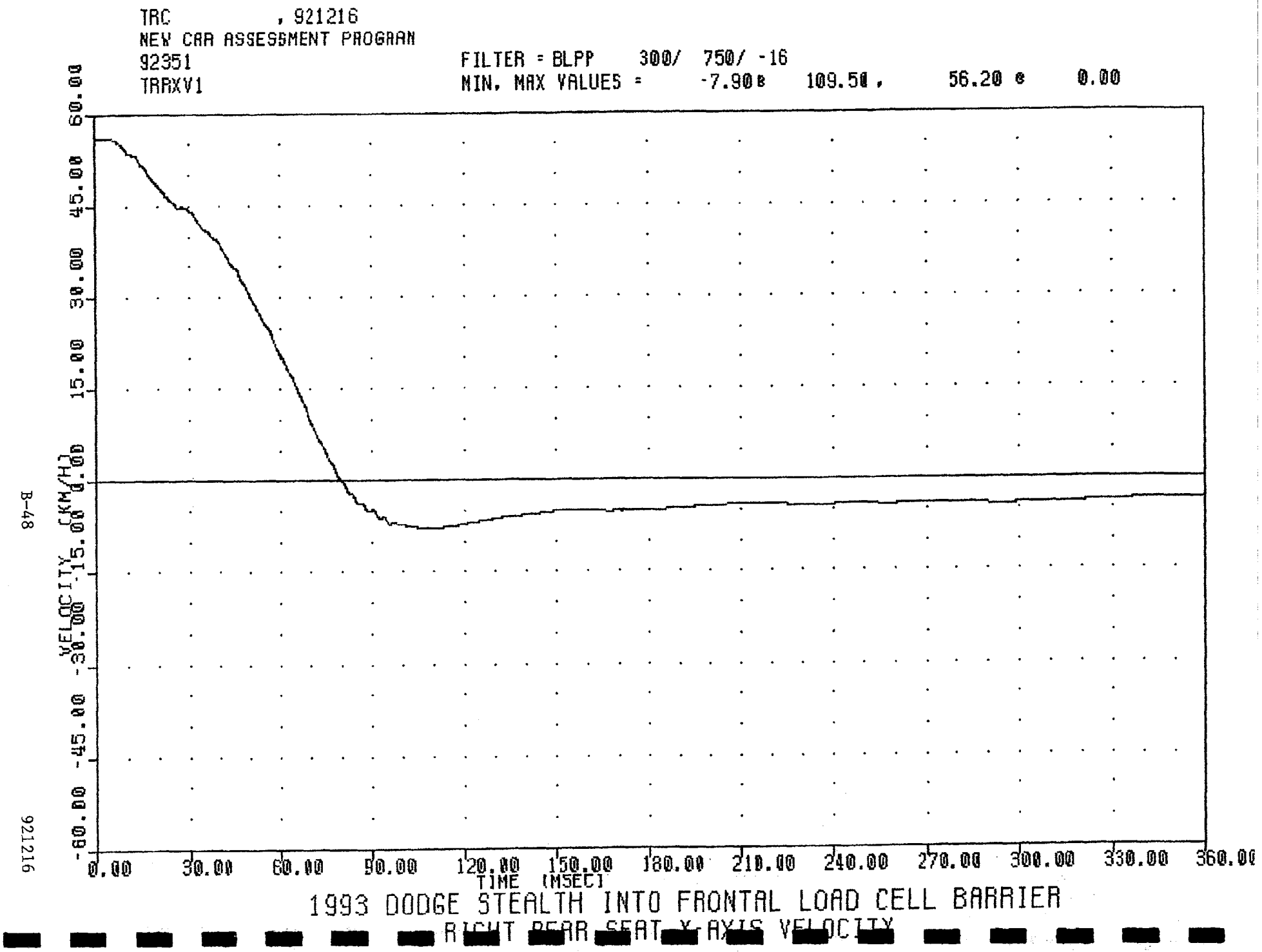
921216


TRC , 921216
NEW CAR ASSESSMENT PROGRAM
92351
TLRXD1
FILTER = BLPP 300/ 750/ -16
MIN, MAX VALUES = 0.00 @ 0.00 , 772.79 @ 79.88
160.00
120.00
80.00
40.00
0.00
-40.00
-80.00
-120.00
-160.00
DISPLACEMENT (MM) (X10)
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
TIME (MSEC)
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
LEFT REAR SEAT X AXIS DISPLACEMENT

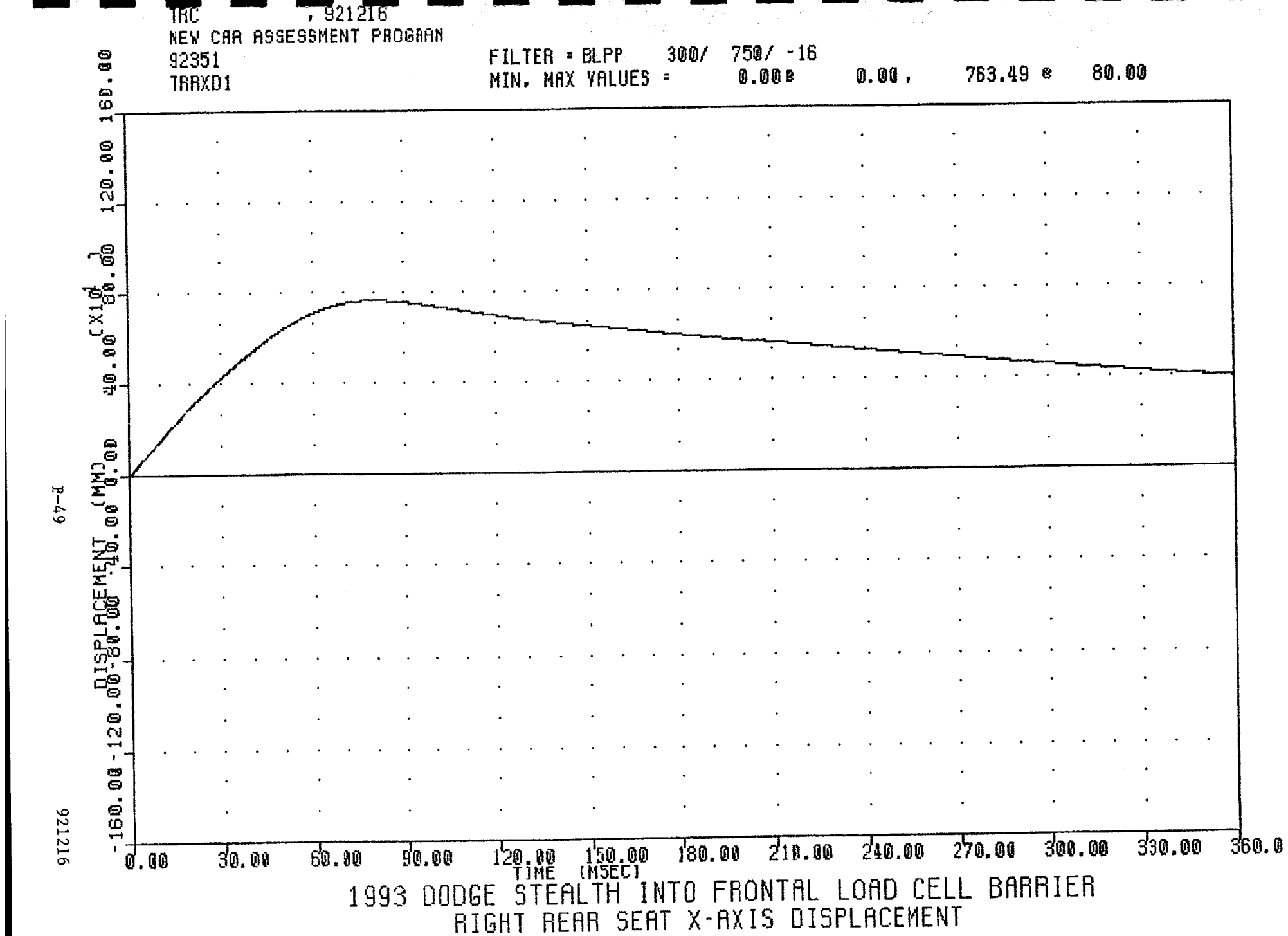


1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
RIGHT REAR SEAT X-AXIS ACCELERATION

921216

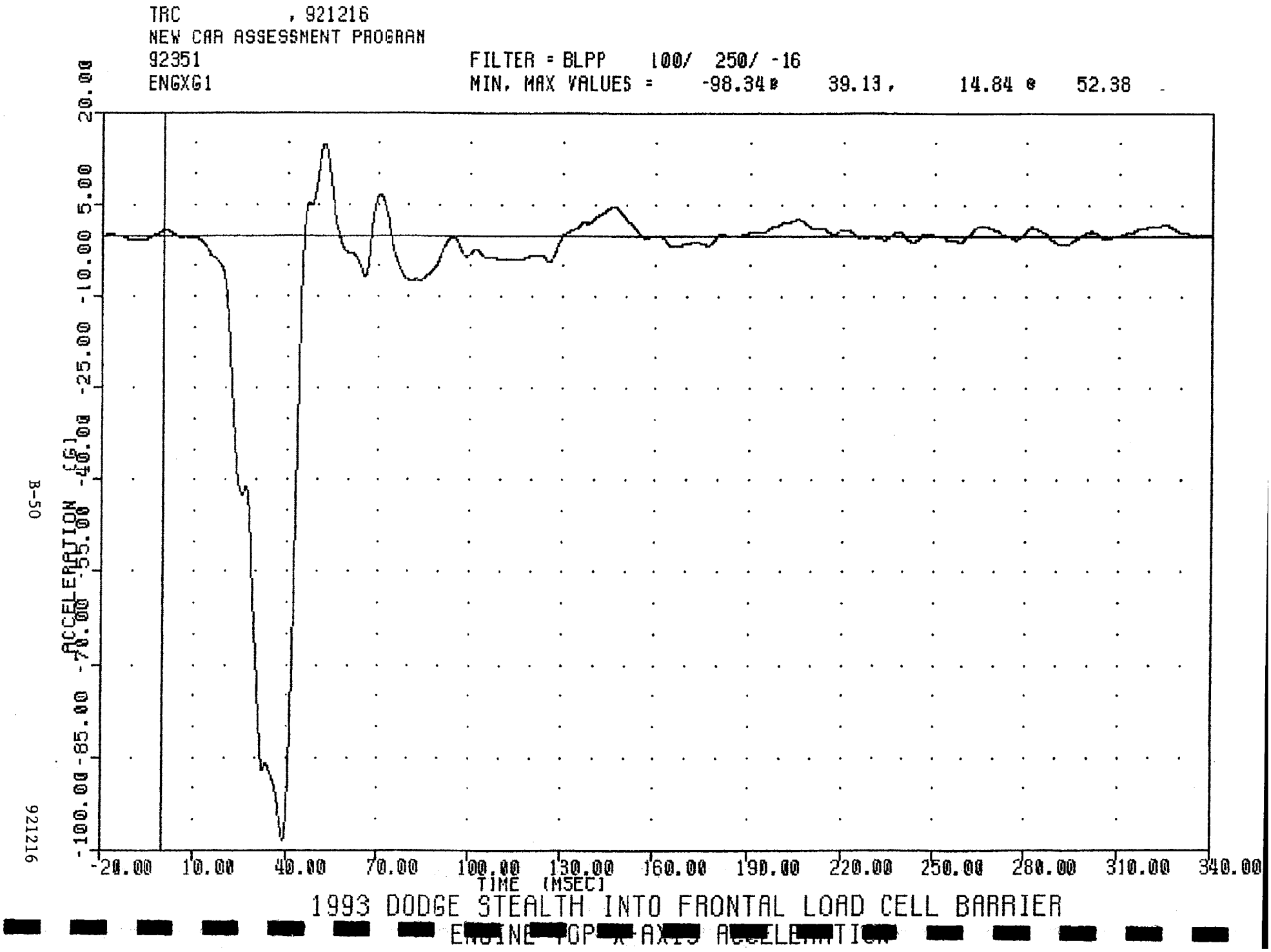

TRC , 921216
NEW CAR ASSESSMENT PROGRAM
92351
TRRXV1
FILTER = BLPP 300/ 750/ -16
MIN, MAX VALUES = -7.90 @ 109.50 , 56.20 @ 0.00
60.00
45.00
30.00
15.00
0.00
-15.00
-30.00
-45.00
-60.00
VELOCITY (KM/H)
0.00
30.00
60.00
90.00
120.00
150.00
180.00
210.00
240.00
270.00
300.00
330.00
360.00
TIME (MSEC)
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
RIGHT REAR SEAT X-AXIS VELOCITY

921216



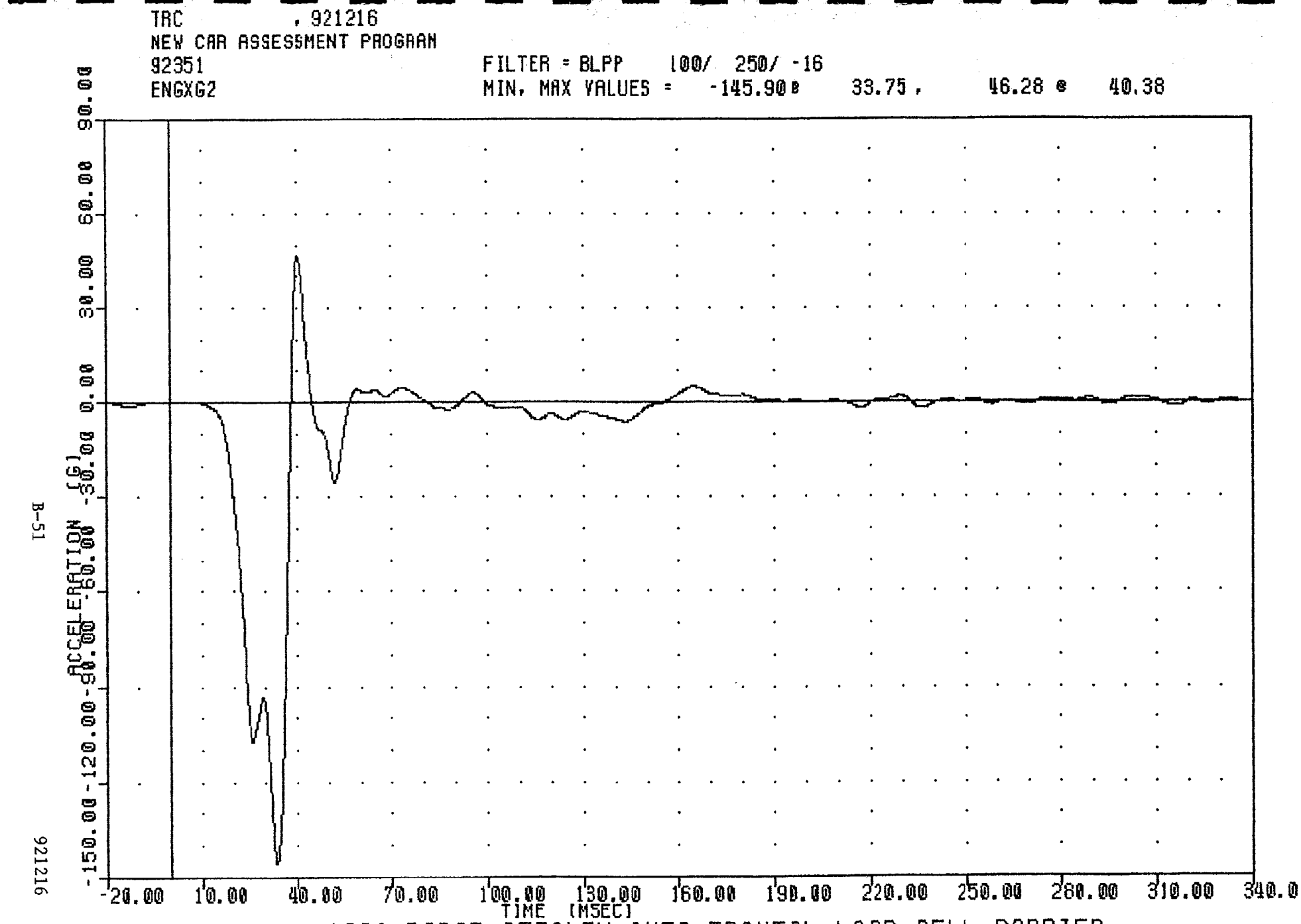
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
RIGHT REAR SEAT X-AXIS DISPLACEMENT

921216



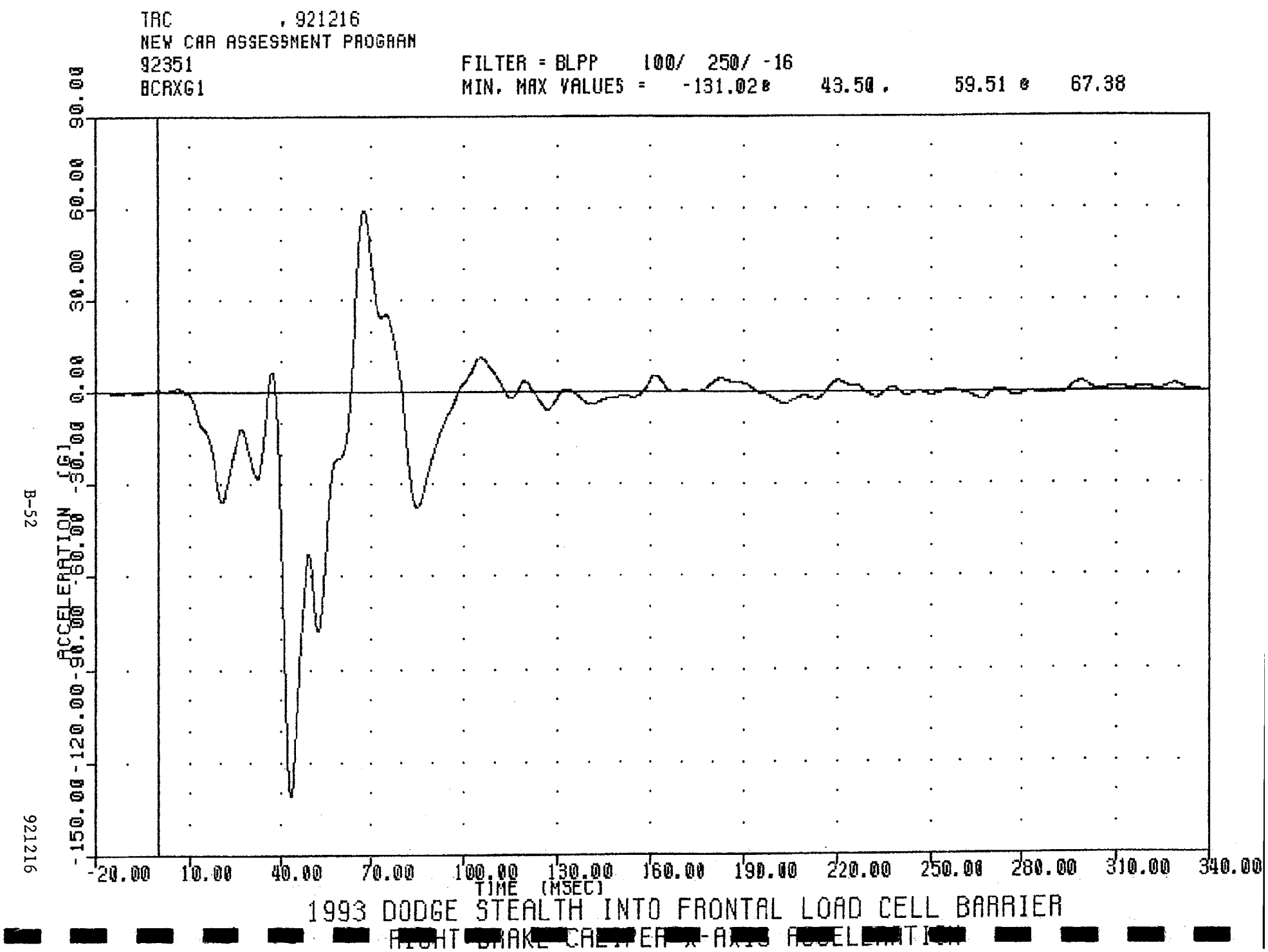
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER

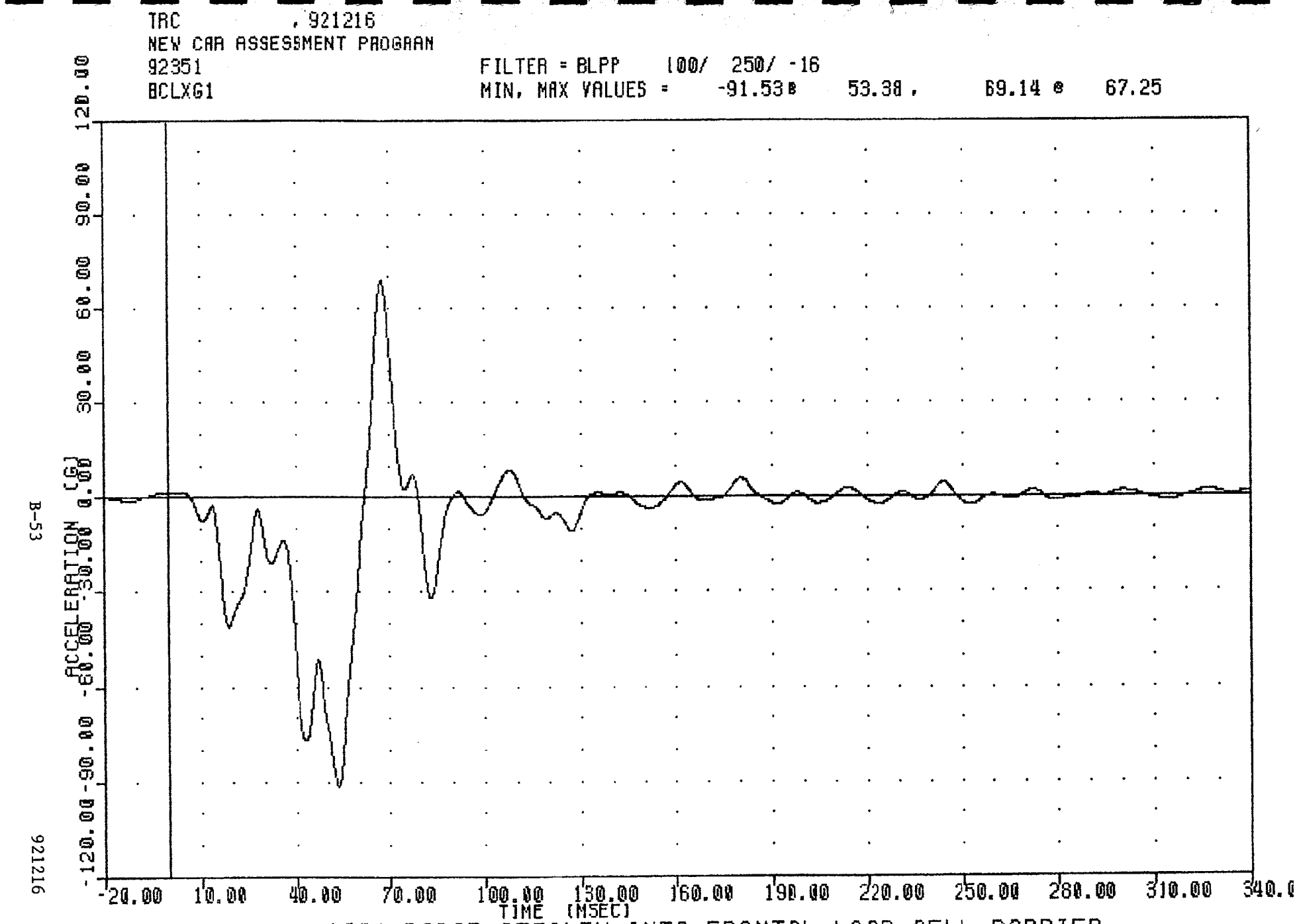
ENGINE TOP X AXIS ACCELERATION



1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
ENGINE BOTTOM X-AXIS ACCELERATION

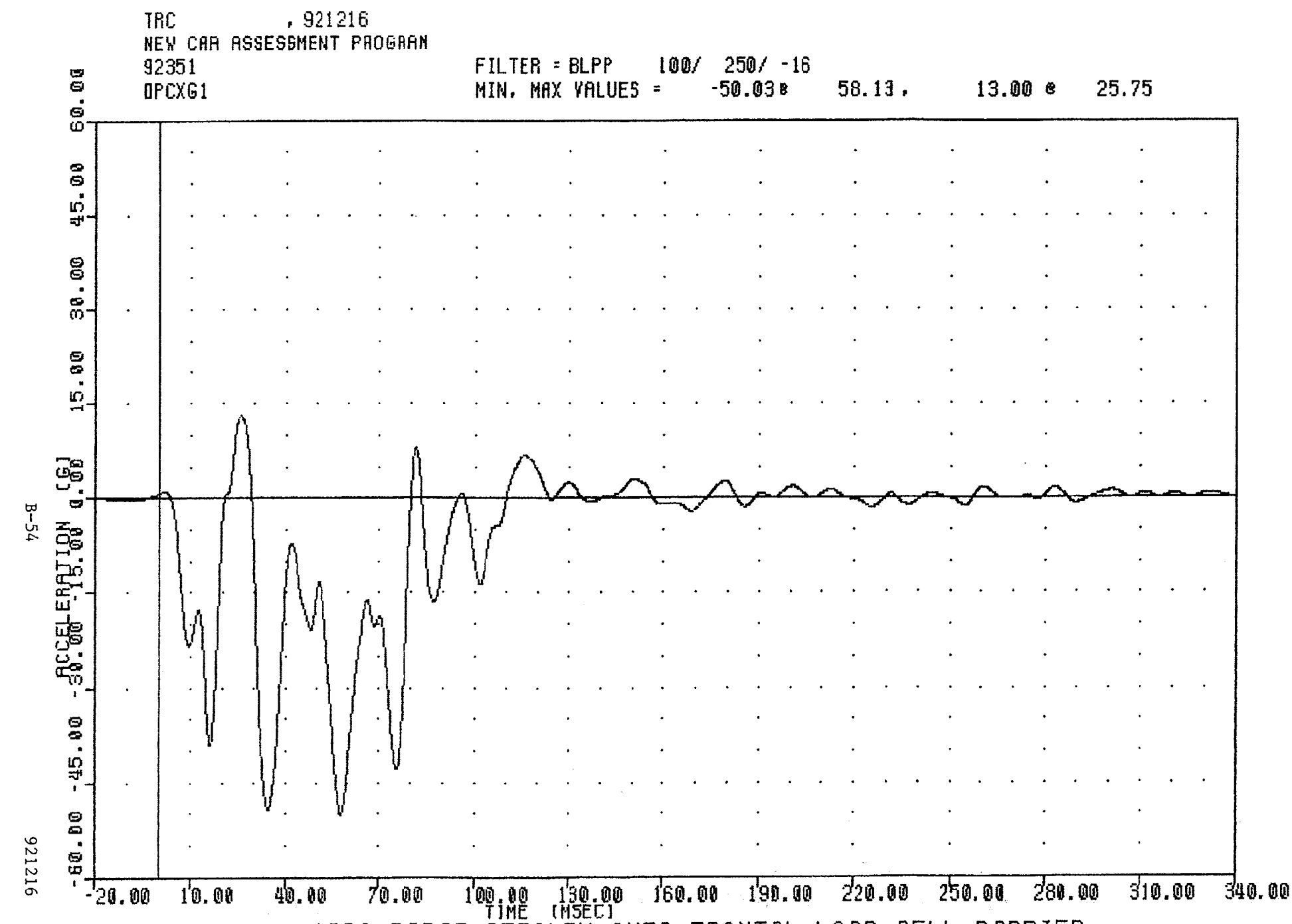
921216


TRC , 921216
NEW CAR ASSESSMENT PROGRAM
92351
BCRXG1
FILTER = BLPP 100/ 250/ -16
MIN, MAX VALUES = -131.02 @ 43.50 , 59.51 @ 67.38
90.00
60.00
30.00
0.00
-30.00
-60.00
-90.00
-120.00
-150.00
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)
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER



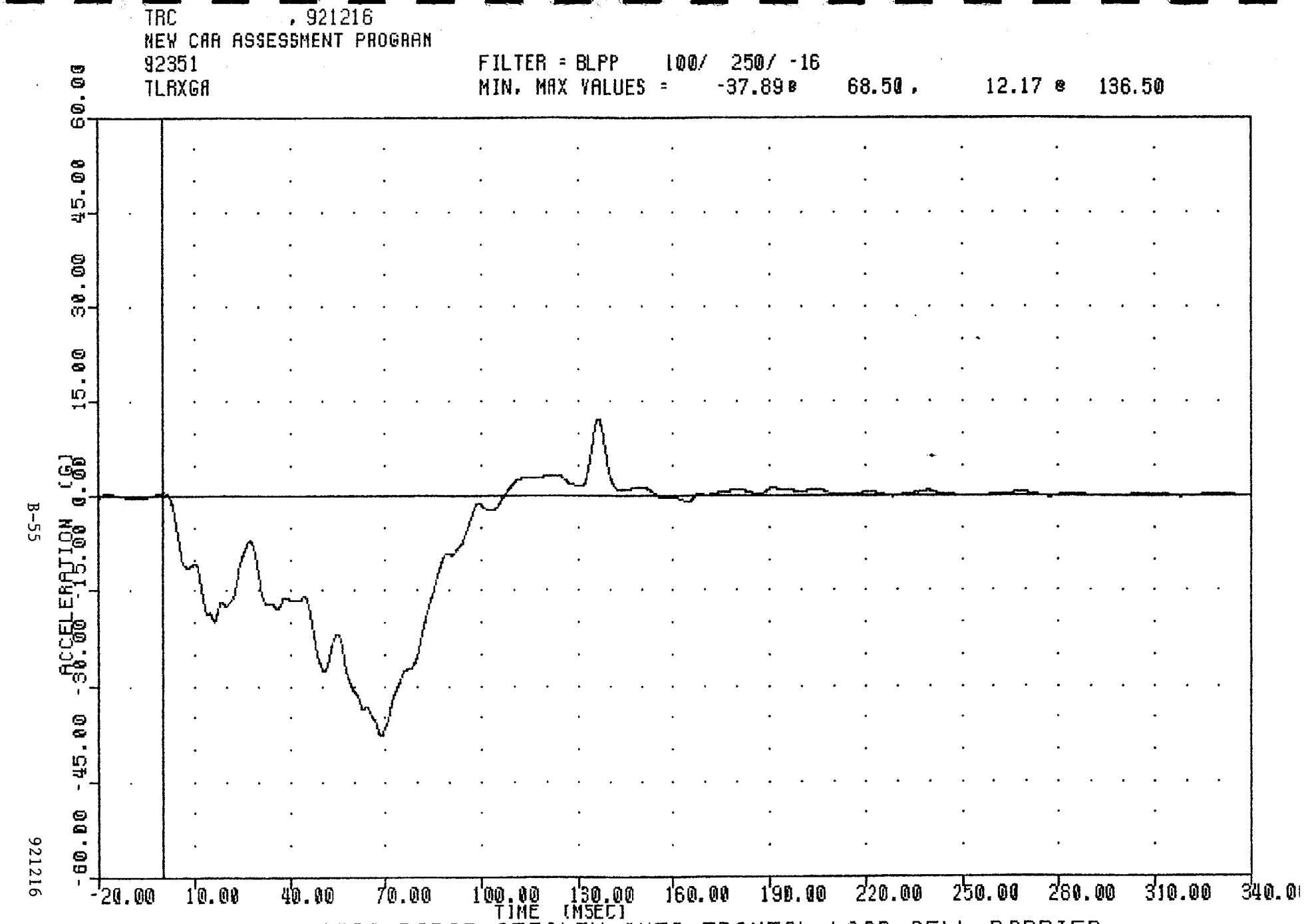
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
LEFT BRAKE CALIPER X-AXIS ACCELERATION

921216



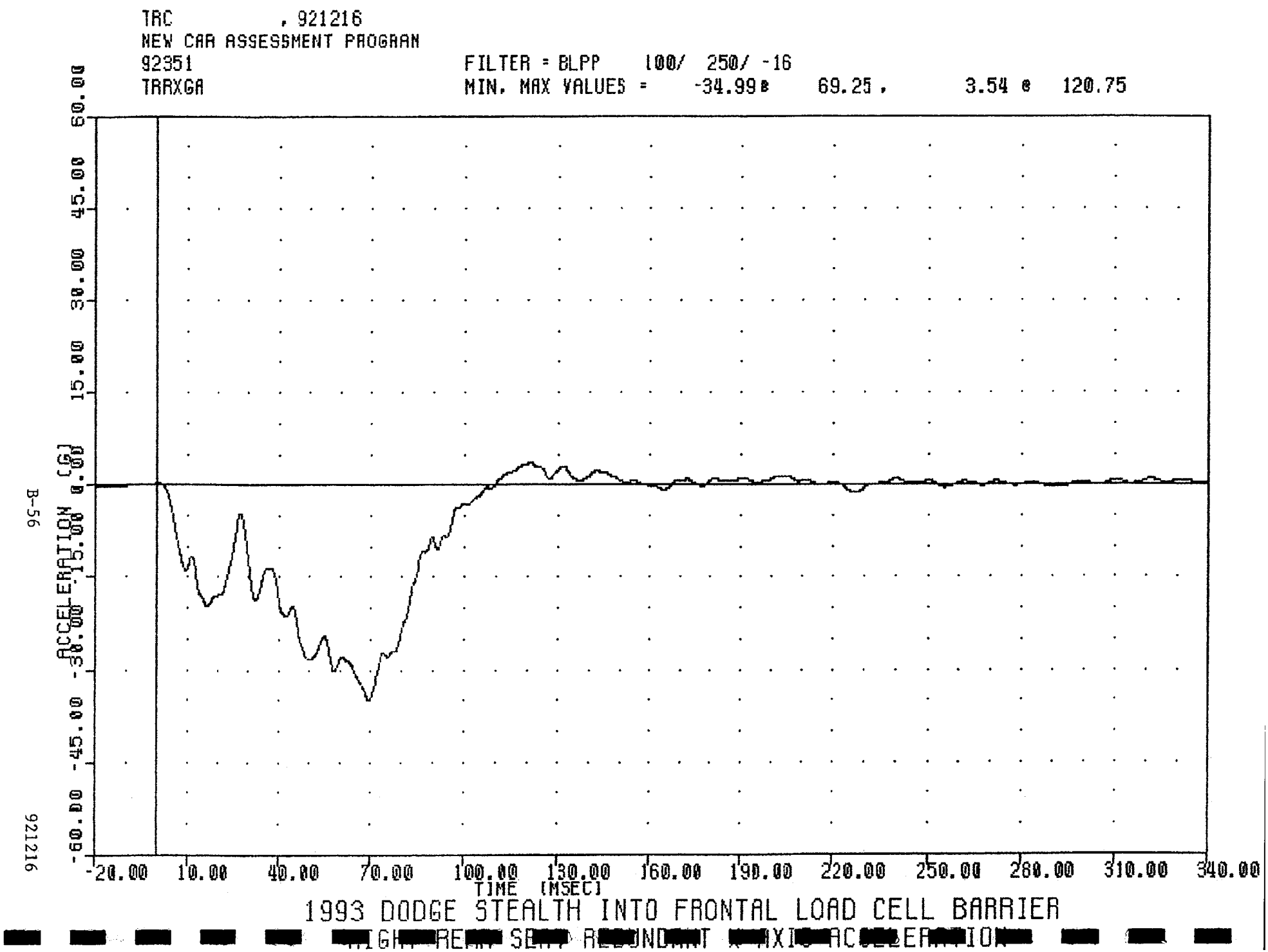
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER

[redacted]

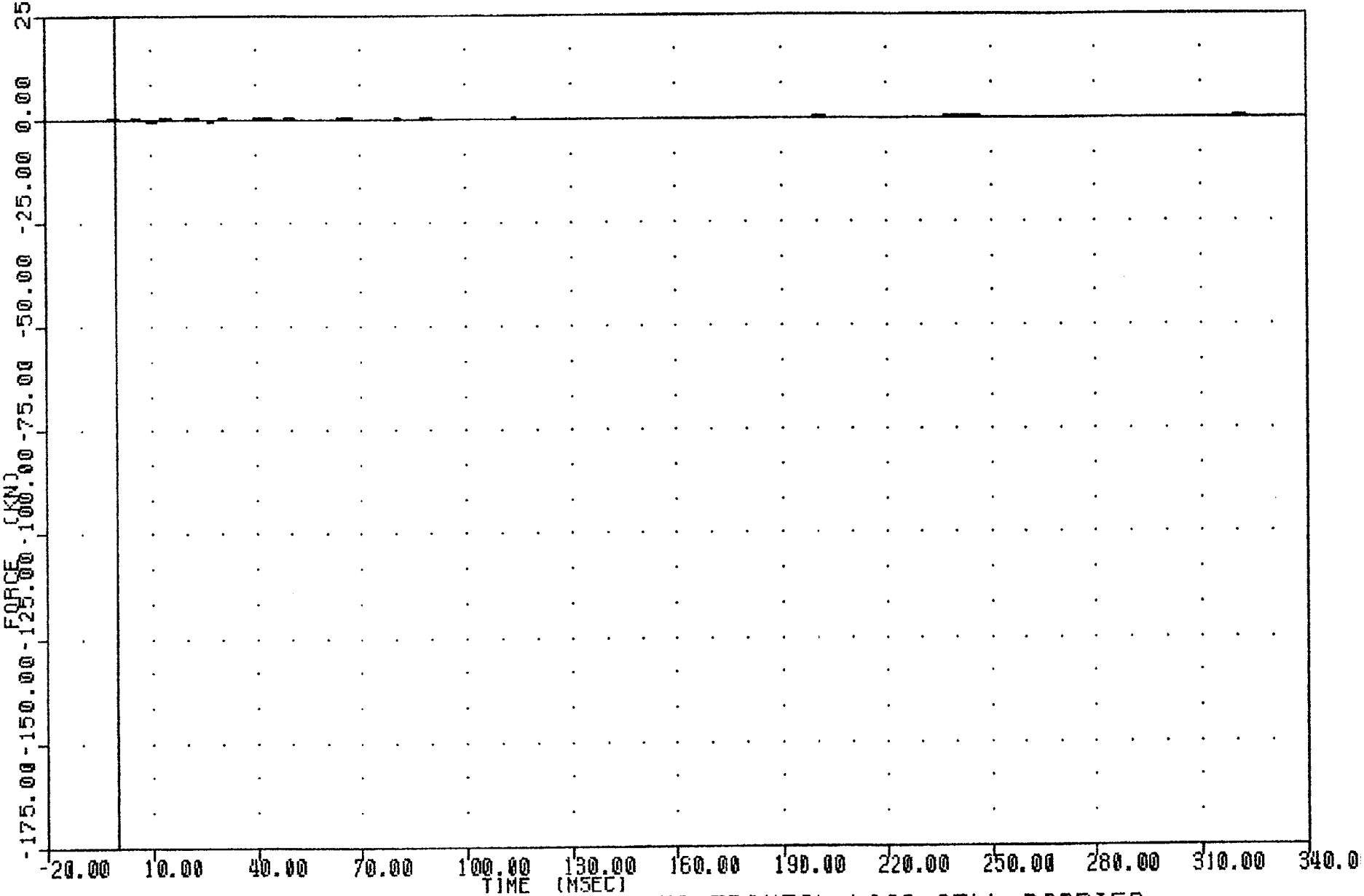


1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
LEFT REAR SEAT REDUNDANT X-AXIS ACCELERATION

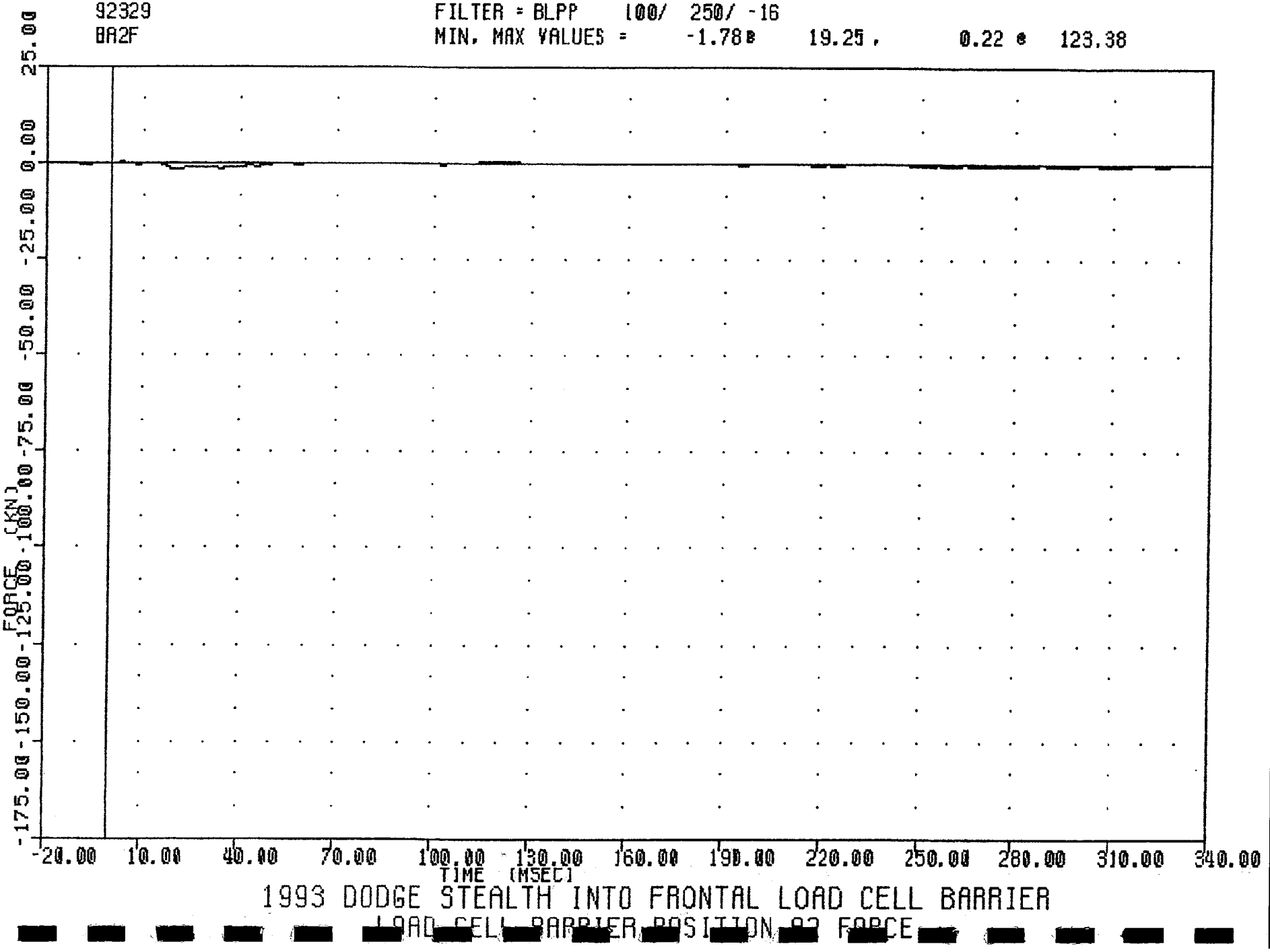
921216


TRC , 921216
NEW CAR ASSESSMENT PROGRAM
92351
TRRXGA
FILTER = BLPP 100/ 250/ -16
MIN, MAX VALUES = -34.99 @ 69.25 , 3.54 @ 120.75
60.00
45.00
30.00
15.00
0.00
-15.00
-30.00
-45.00
-60.00
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)
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER

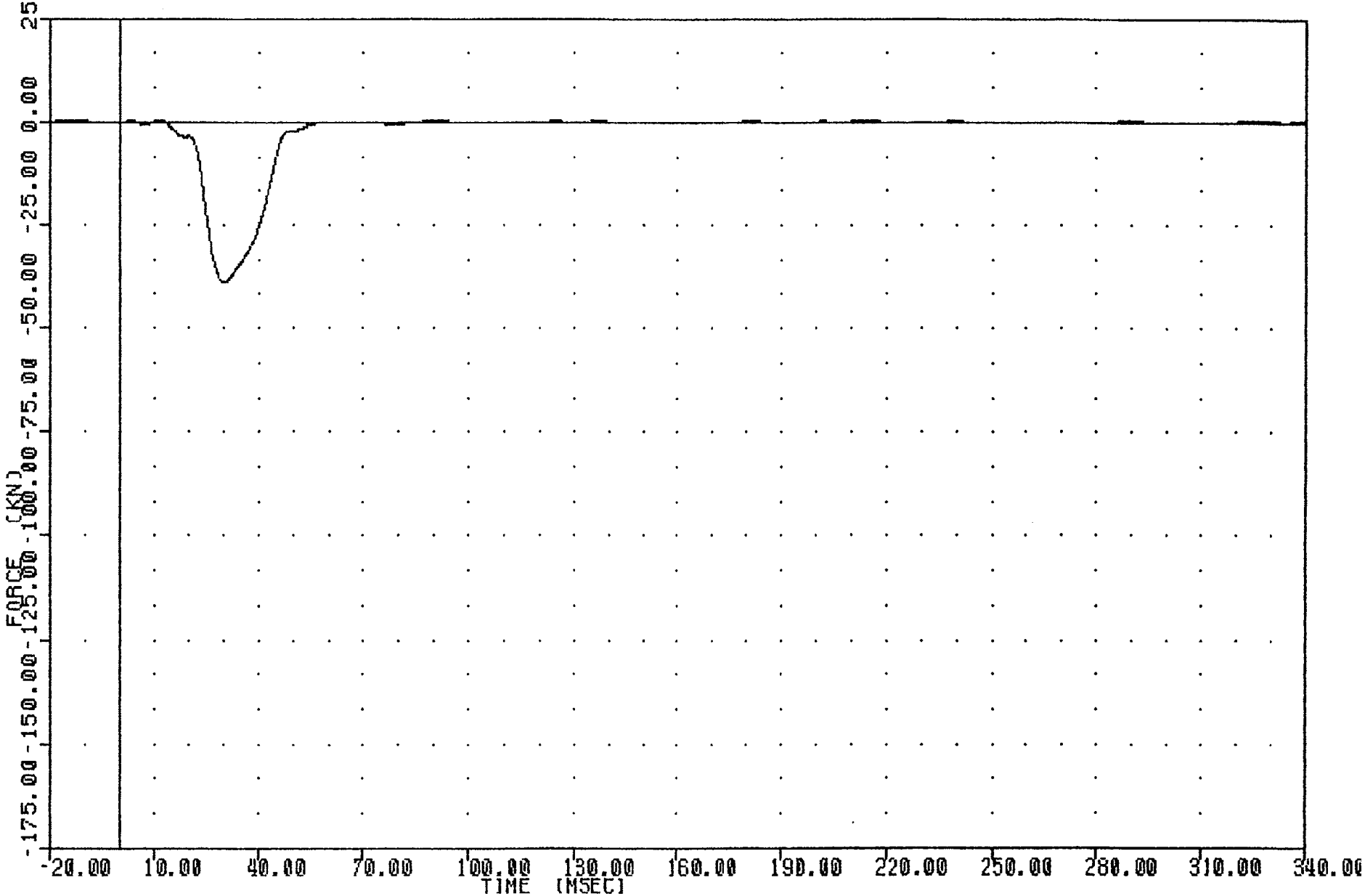
TRC , 921216
NEW CAR ASSESSMENT PROGRAM
92329
BA1F
FILTER = BLPP 100/ 250/ -16
MIN, MAX VALUES = -0.72 @ 10.25 , 0.53 @ 14.38



1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION A1 FORCE

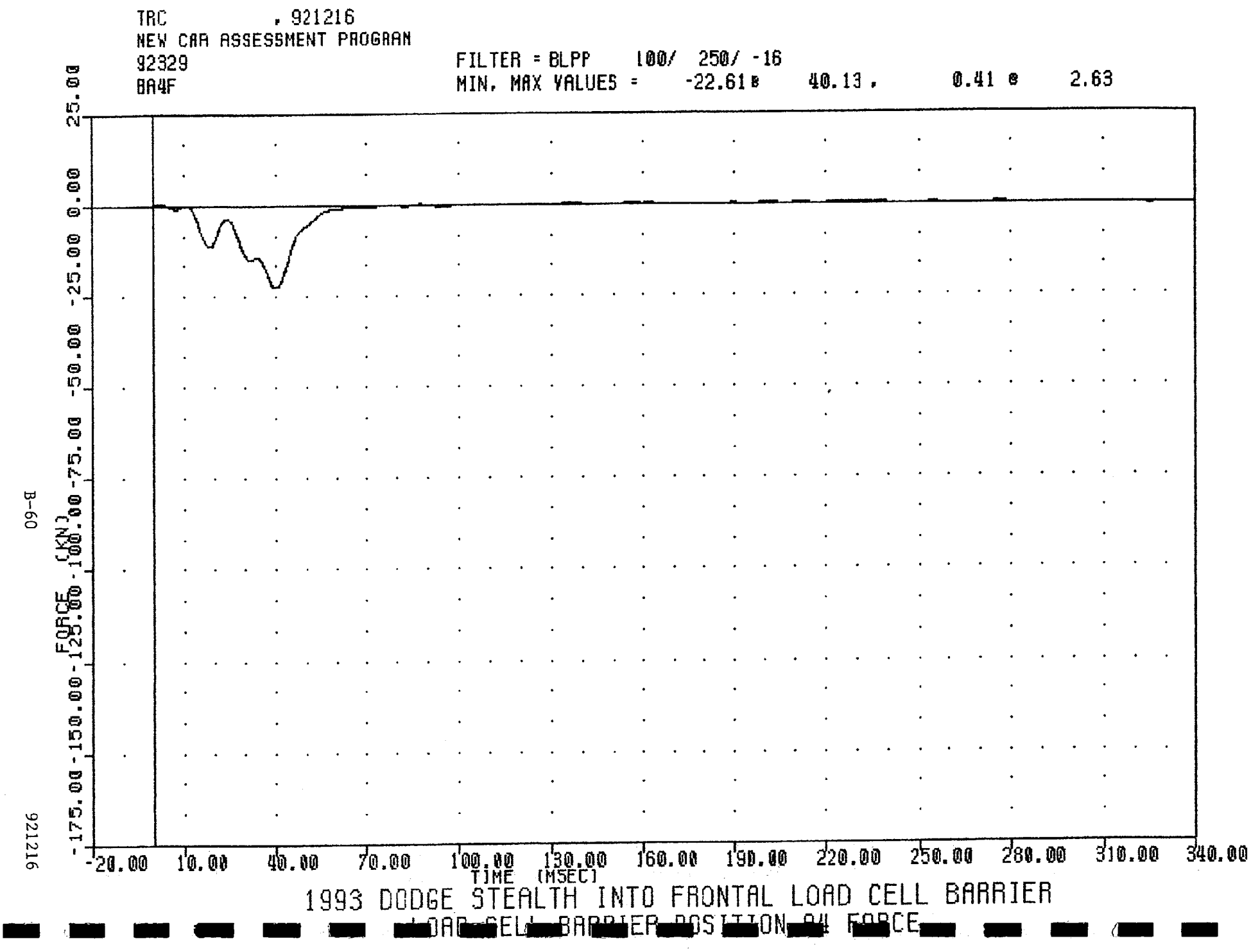

TRC , 921216
NEW CAR ASSESSMENT PROGRAM
92329
BA2F
FILTER = BLPP 100/ 250/ -16
MIN, MAX VALUES = -1.78 @ 19.25 , 0.22 @ 123.38
25.00
0.00
-25.00
-50.00
-75.00
-100.00
-125.00
-150.00
-175.00
FORCE (KN)
-20.00
10.00
40.00
70.00
100.00
130.00
160.00
190.00
220.00
250.00
280.00
310.00
340.00
TIME (MSEC)
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION 03 FORCE

TRC , 921216
NEW CAR ASSESSMENT PROGRAM
92329 FILTER = BLPP 100/ 250/ -16
BA3F MIN, MAX VALUES = -38.96 @ 30.13 , 0.48 @ 11.38



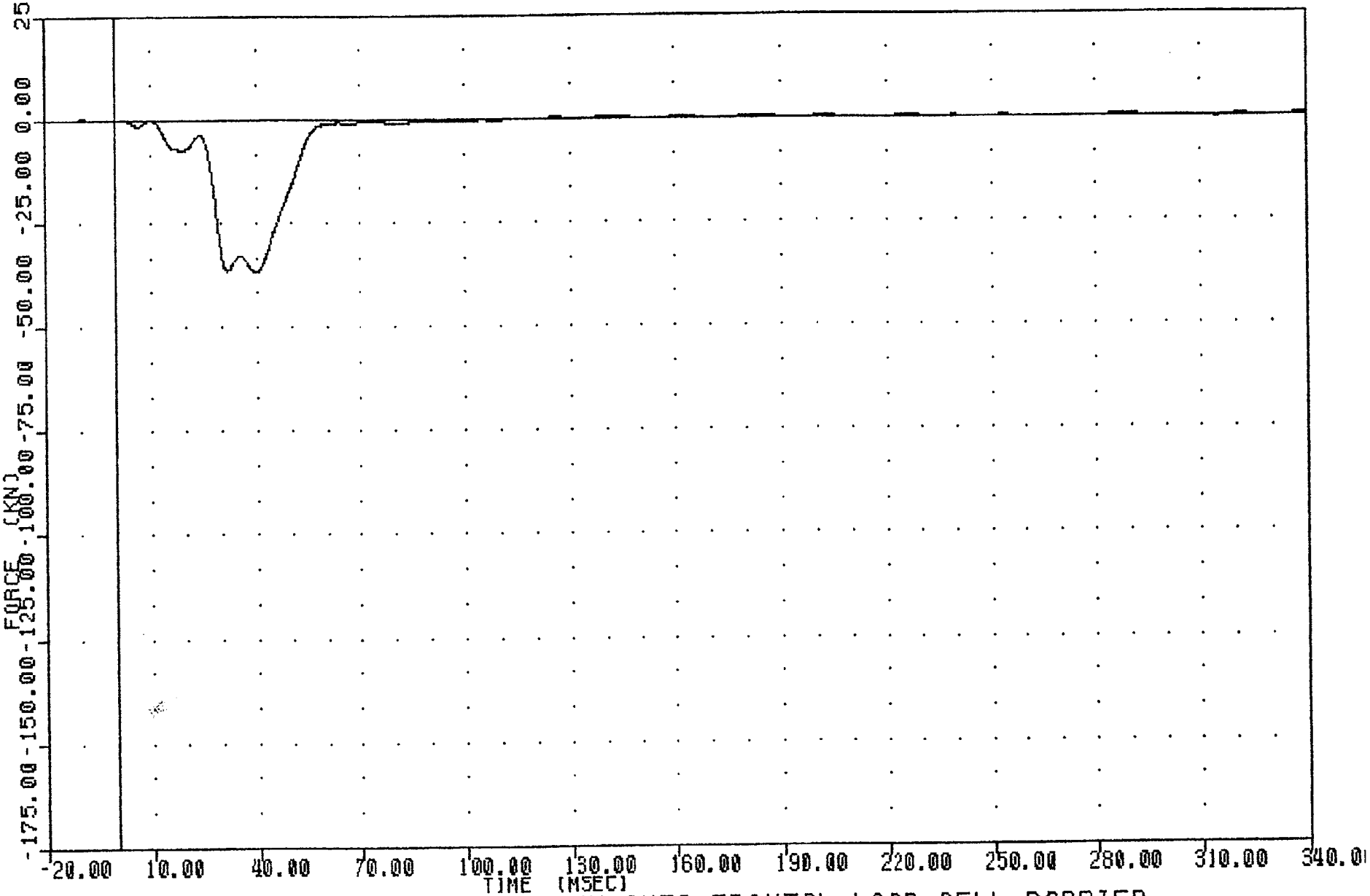
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION A3 FORCE

921216


TRC , 921216
NEW CAR ASSESSMENT PROGRAM
92329
BA4F
FILTER = BLPP 100/ 250/ -16
MIN, MAX VALUES = -22.61 @ 40.13 , 0.41 @ 2.63
25.00
0.00
-25.00
-50.00
-75.00
-100.00
-125.00
-150.00
-175.00
FORCE (KN)
-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)
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION 0% FORCE

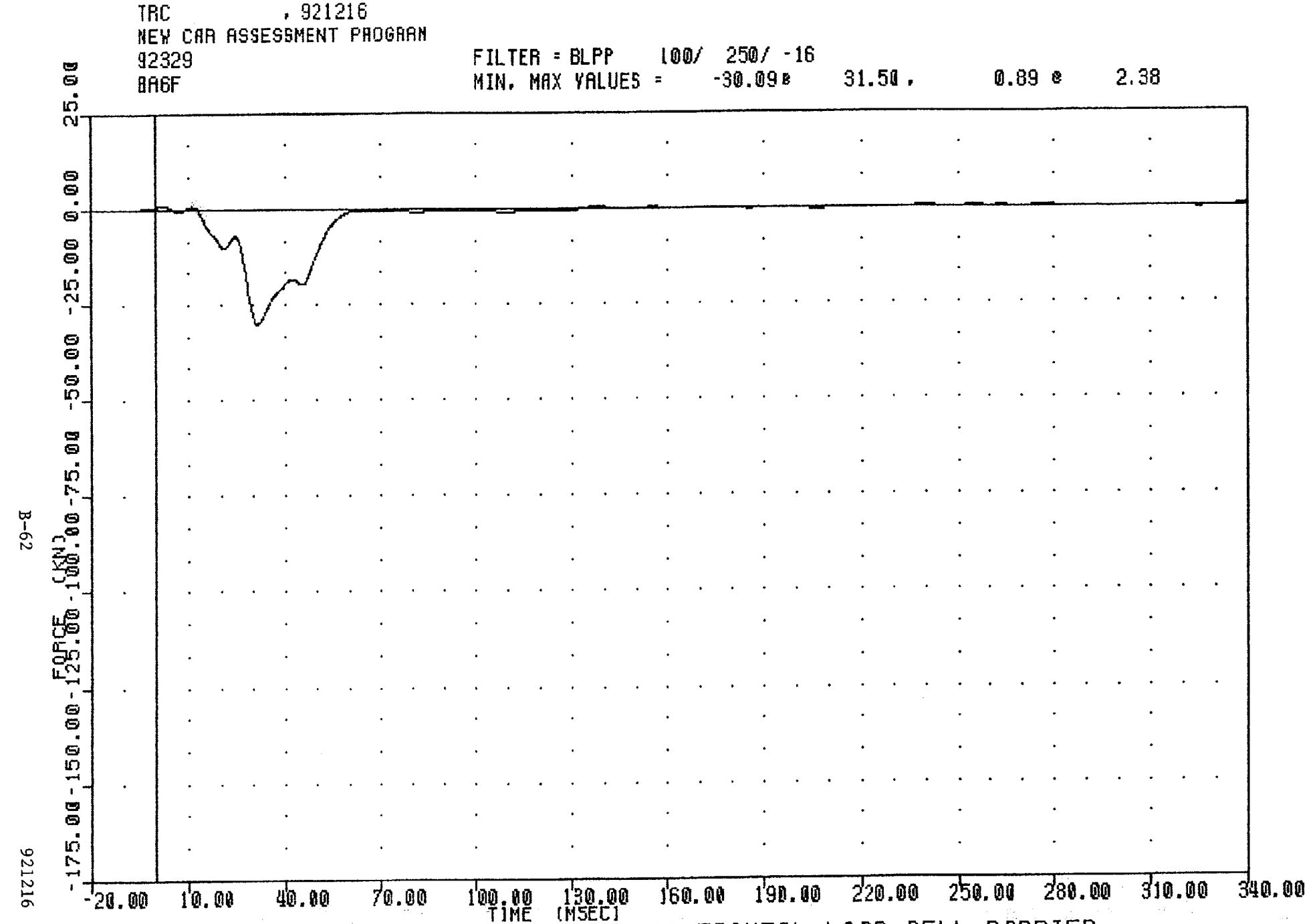
TRC , 921216
NEW CAR ASSESSMENT PROGRAM
92329
BA5F

FILTER = BLPP 100/ 250/ -16
MIN, MAX VALUES = -36.77 @ 39.75 , 0.68 @ 182.38



1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION A5 FORCE

921216

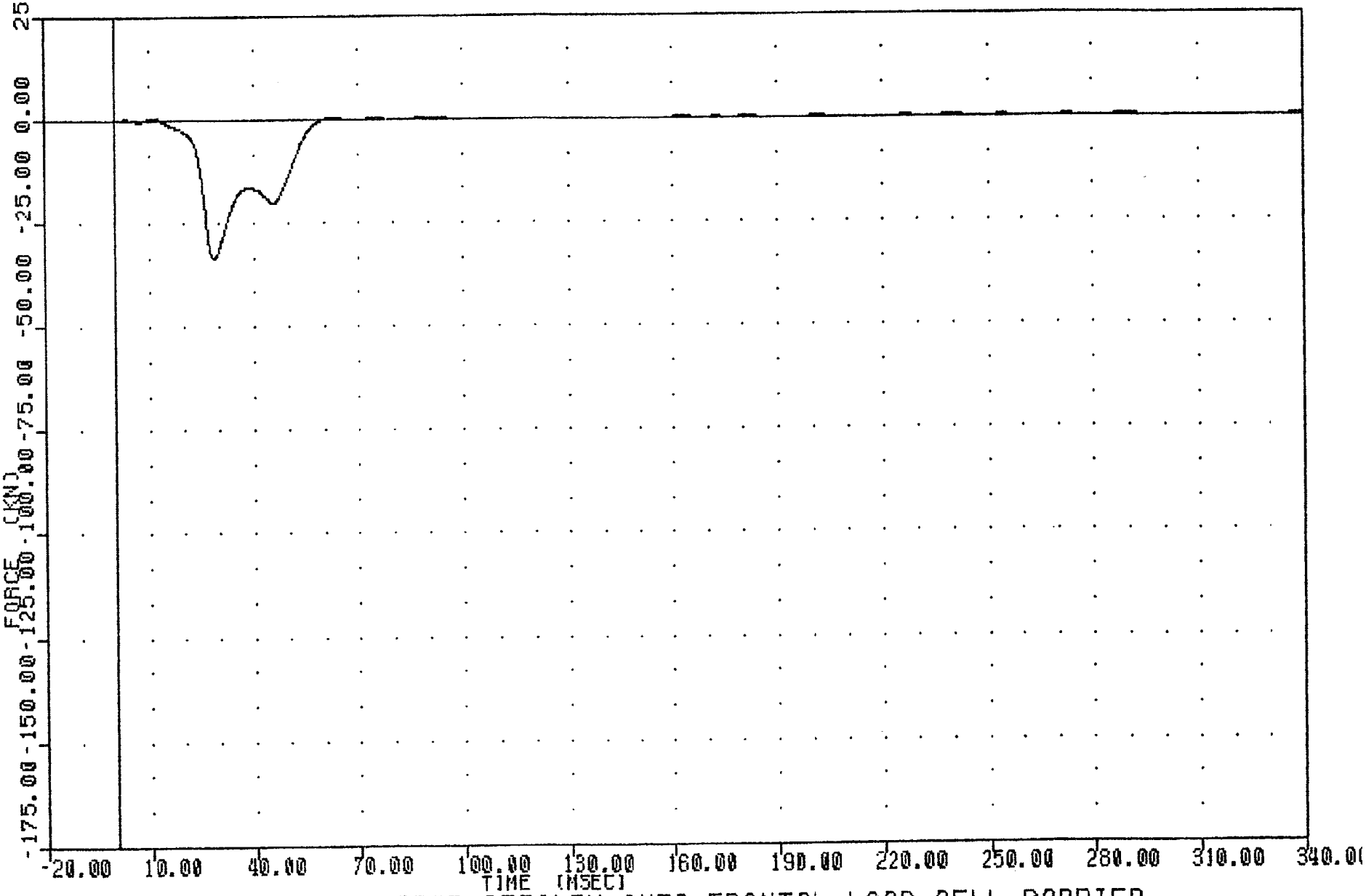


1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER

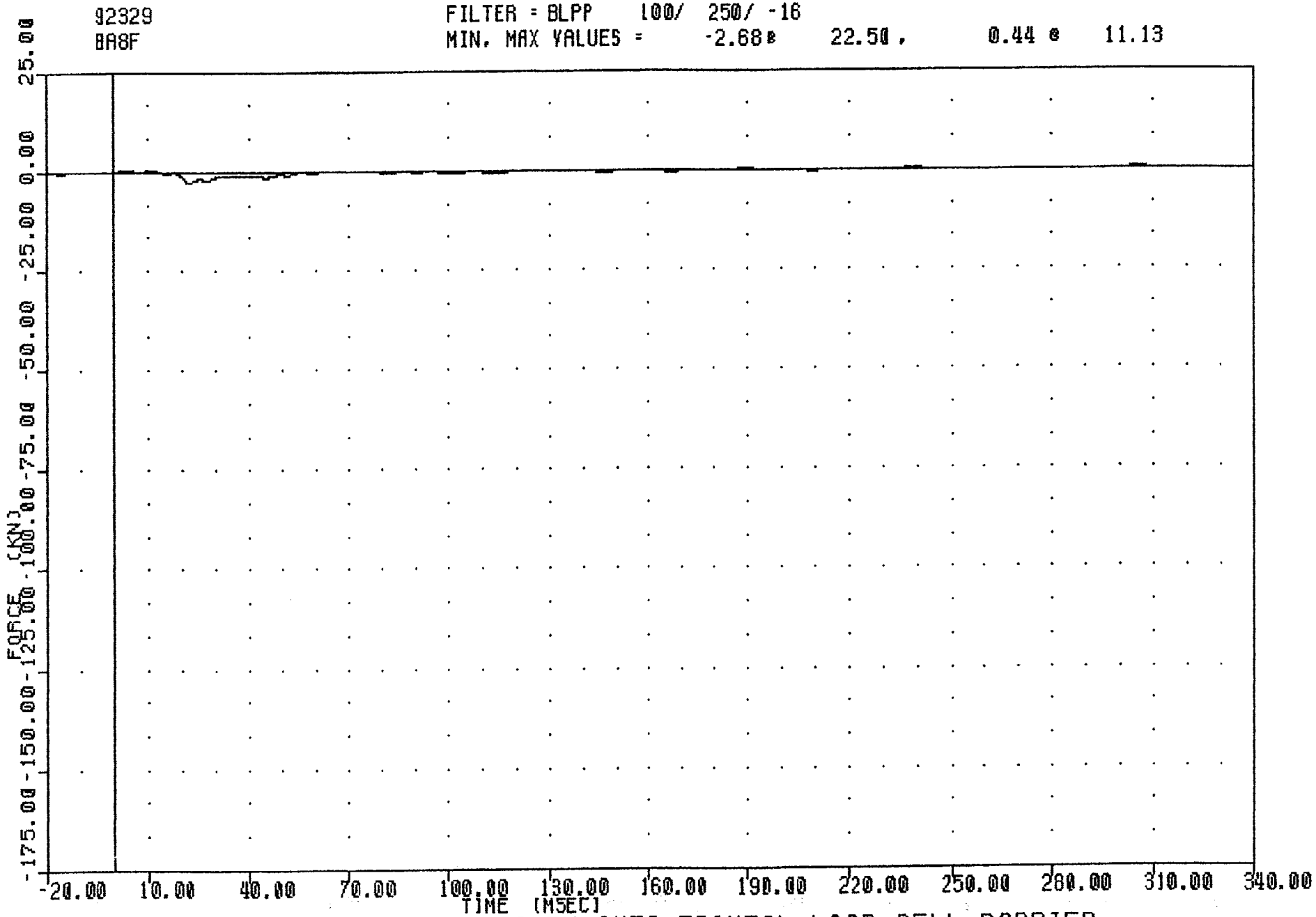
LOAD CELL BARRIER POSITION 06 FORCE

TRC , 921216
NEW CAR ASSESSMENT PROGRAM
92329
BA7F

FILTER = BLPP 100/ 250/ -16
MIN, MAX VALUES = -33.64 @ 28.63 , 0.53 @ 11.13



1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION A7 FORCE

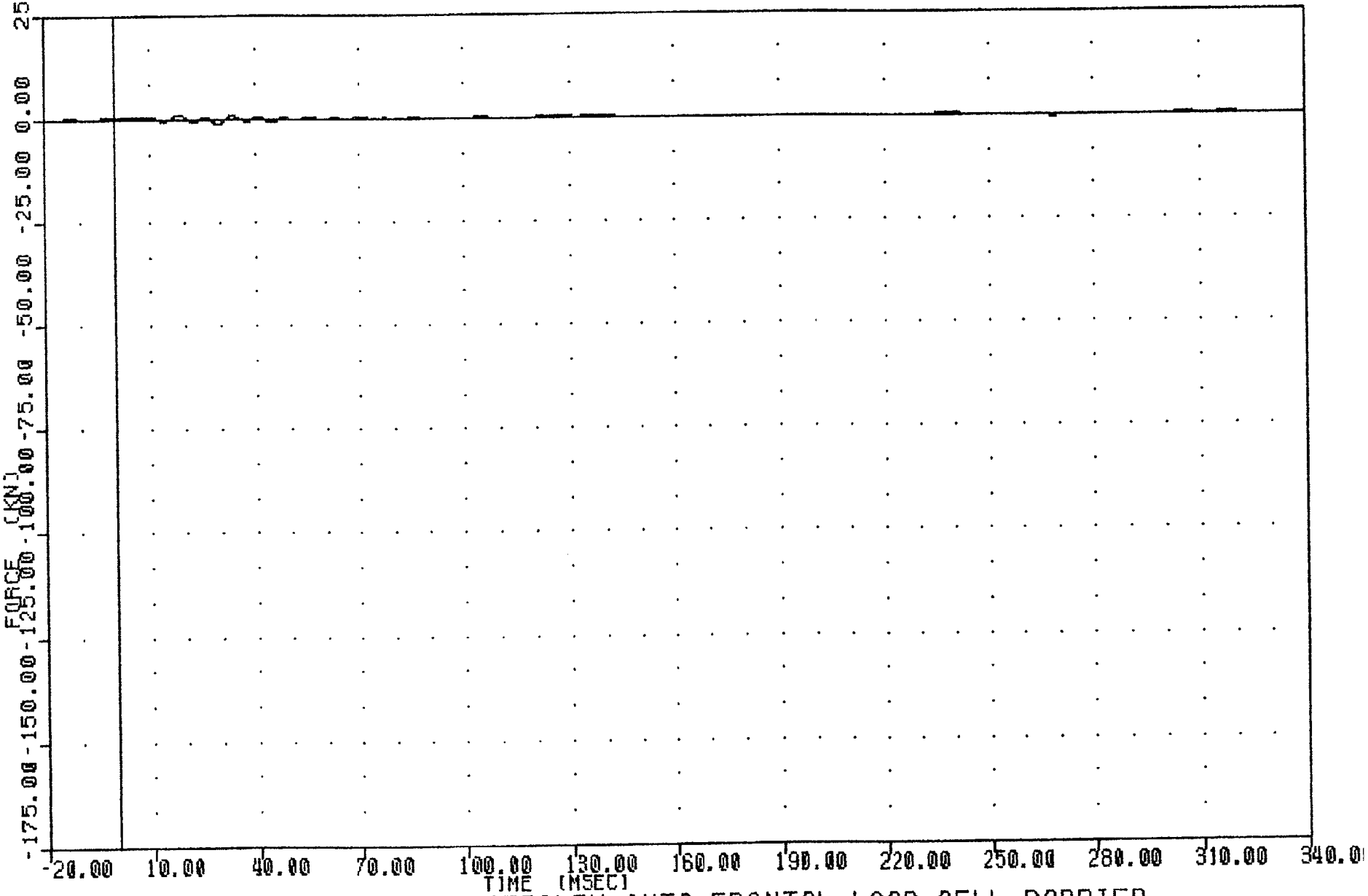


1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER

LOAD CELL BARRIER POSITION 00 FORCE

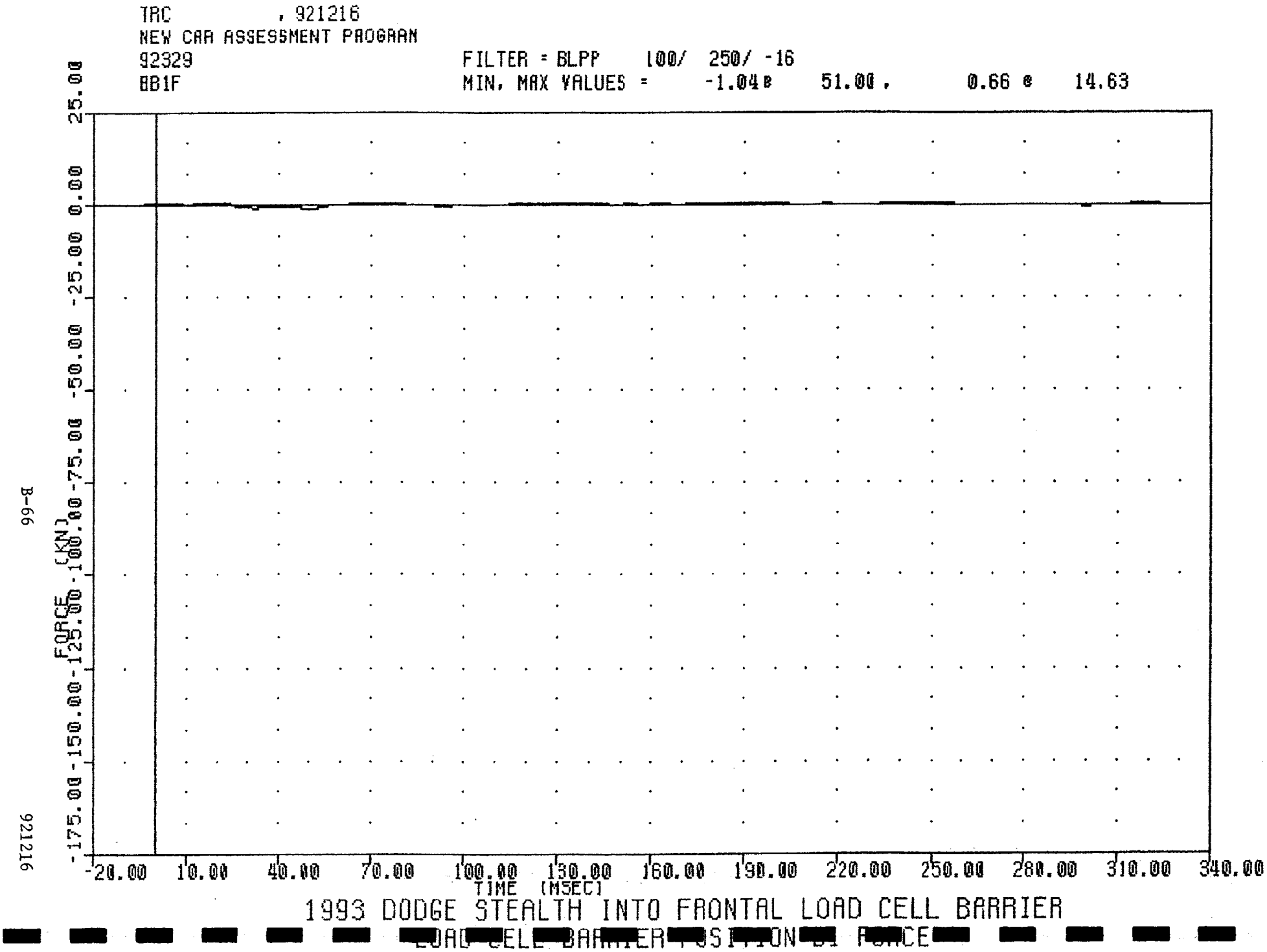
TRC , 921216
NEW CAR ASSESSMENT PROGRAM
92329
BA9F

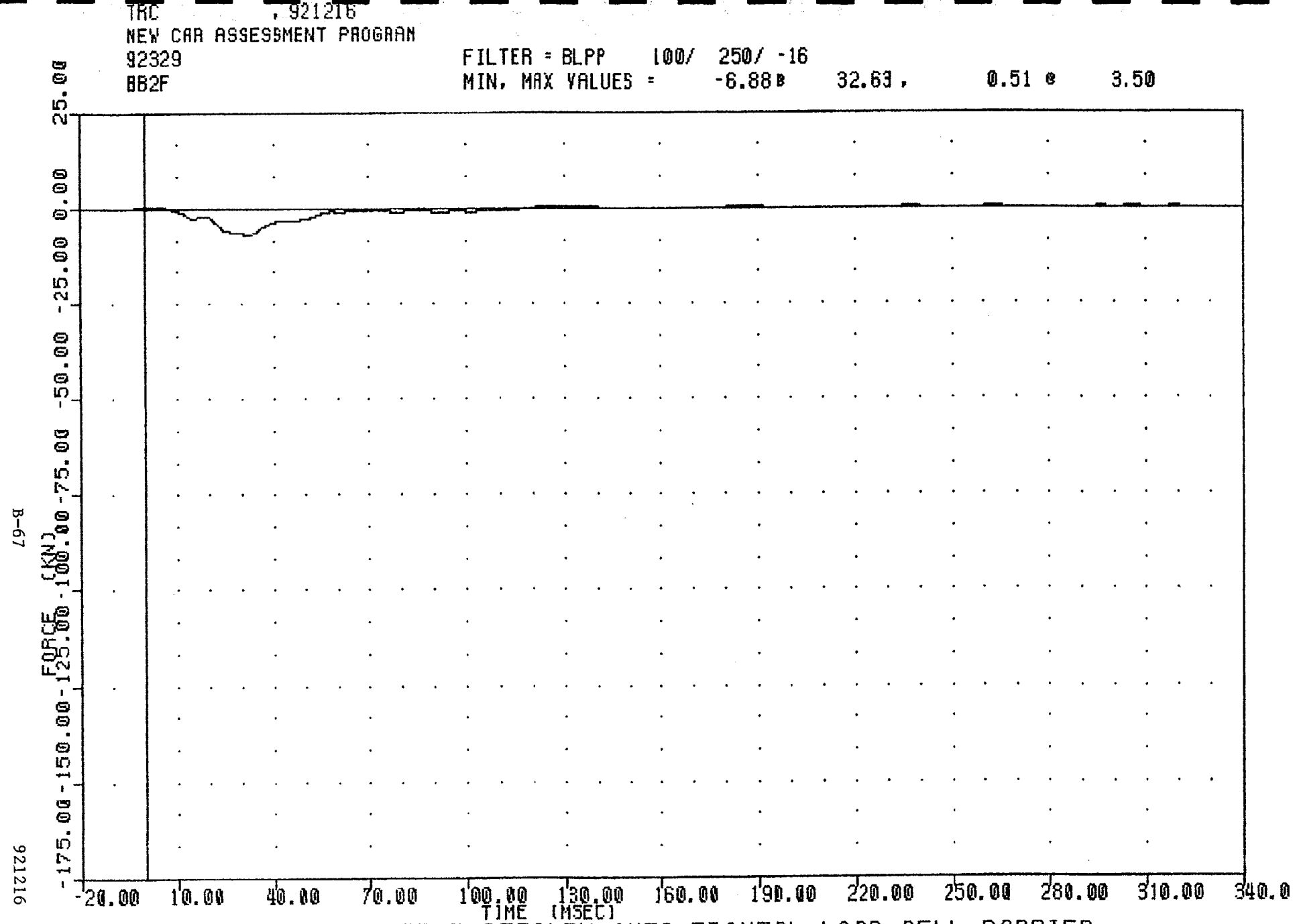
FILTER = BLPP 100/ 250/ -16
MIN. MAX VALUES = -1.22 @ 29.50 , 1.09 @ 18.38



1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION A9 FORCE

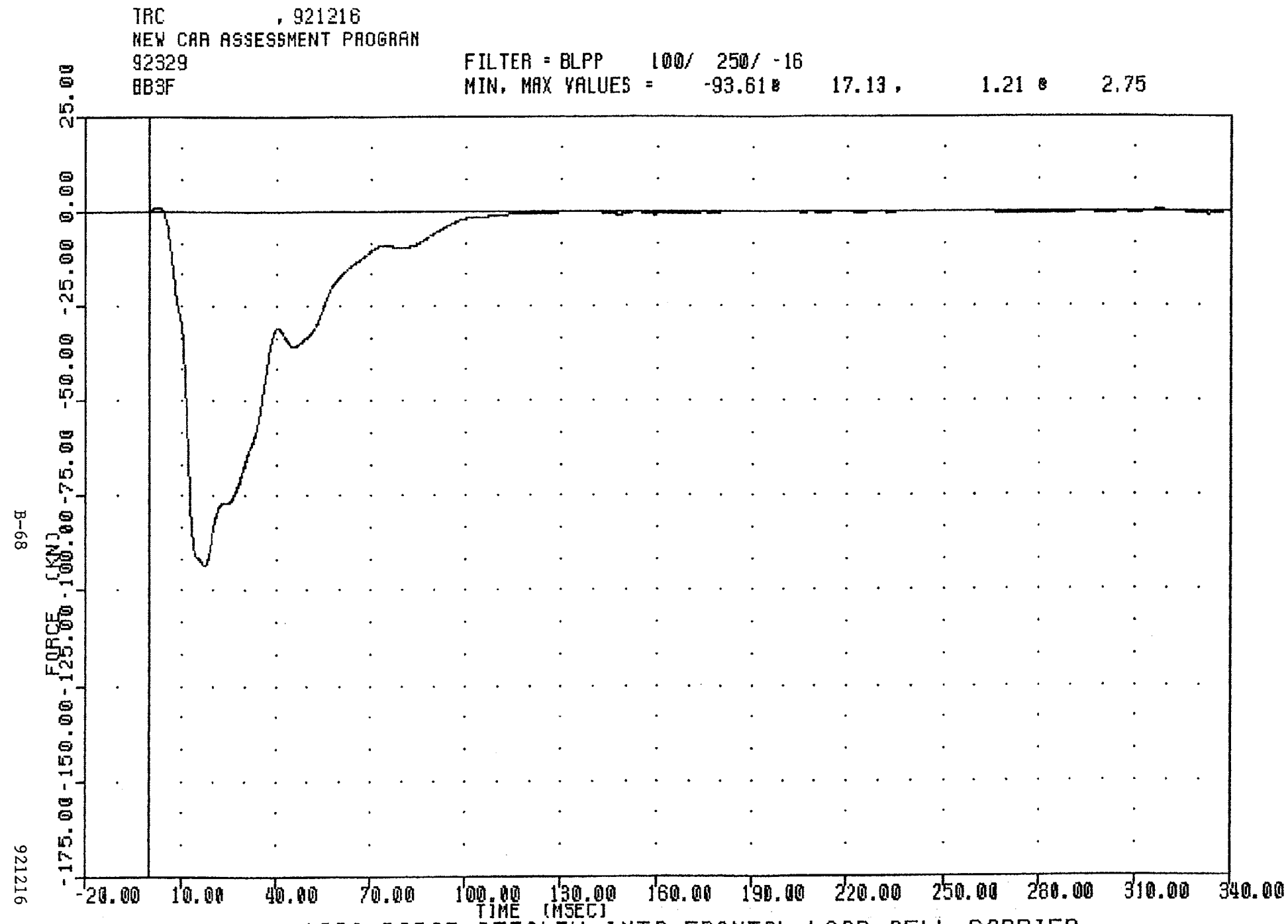
921216


TRC , 921216
NEW CAR ASSESSMENT PROGRAM
92329
BB1F
FILTER = BLPP 100/ 250/ -16
MIN, MAX VALUES = -1.04 @ 51.00 , 0.66 @ 14.63
25.00
0.00
-25.00
-50.00
-75.00
-100.00
-125.00
-150.00
-175.00
FORCE (KN)
-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)
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION 01 FORCE



1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION B2 FORCE

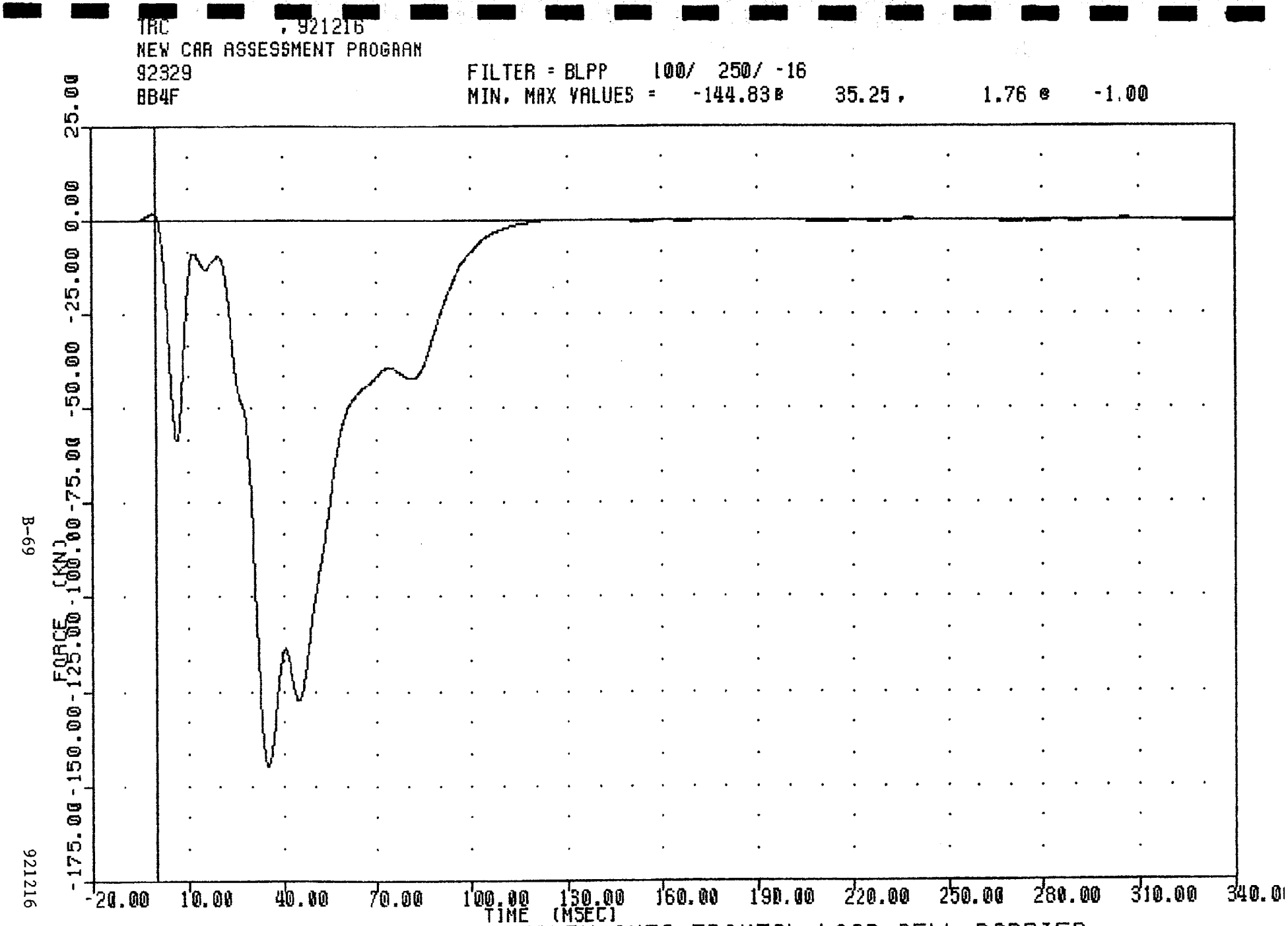
921216



1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER

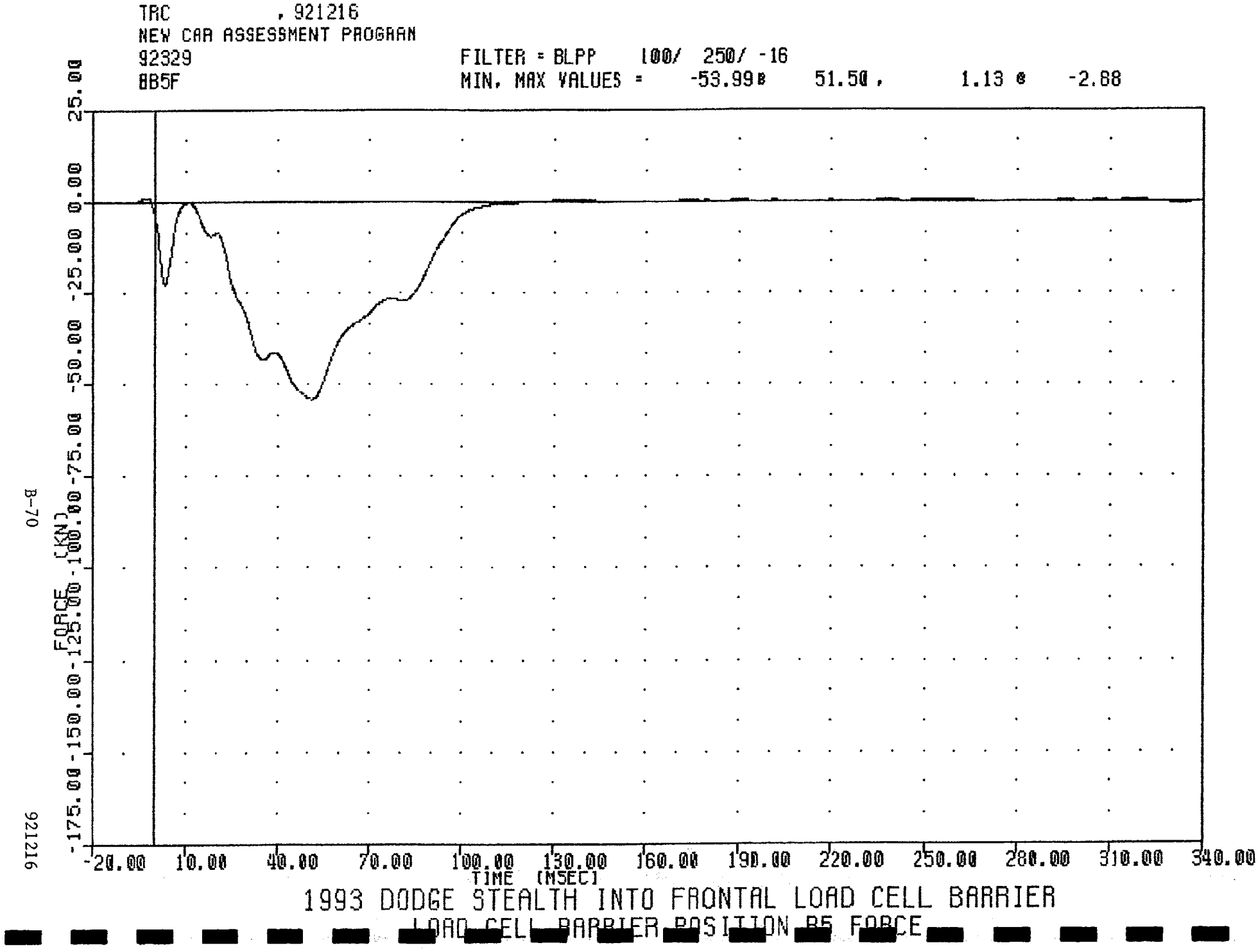
LOAD CELL BARRIER POSITION B3 FORCE

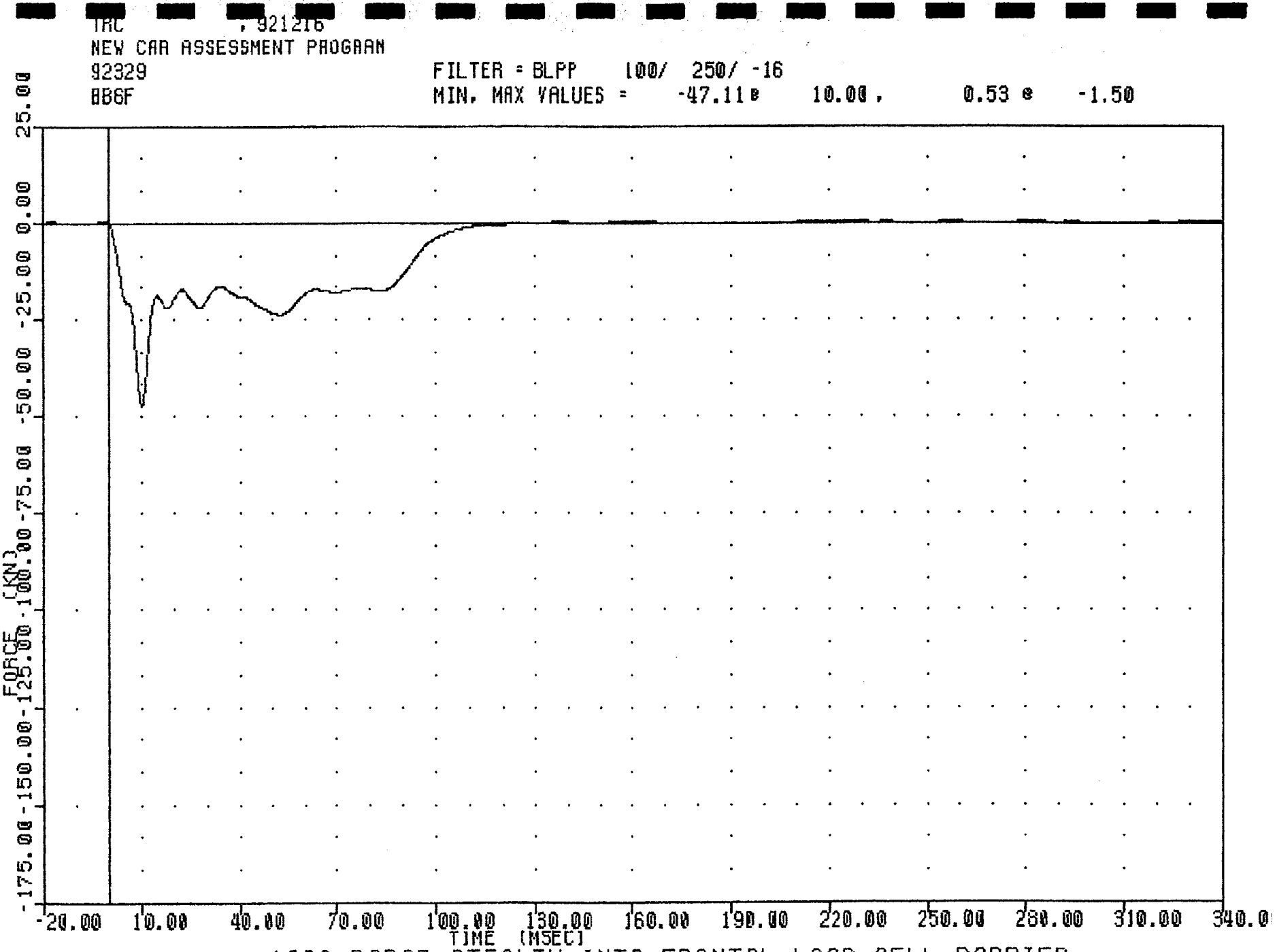
921216



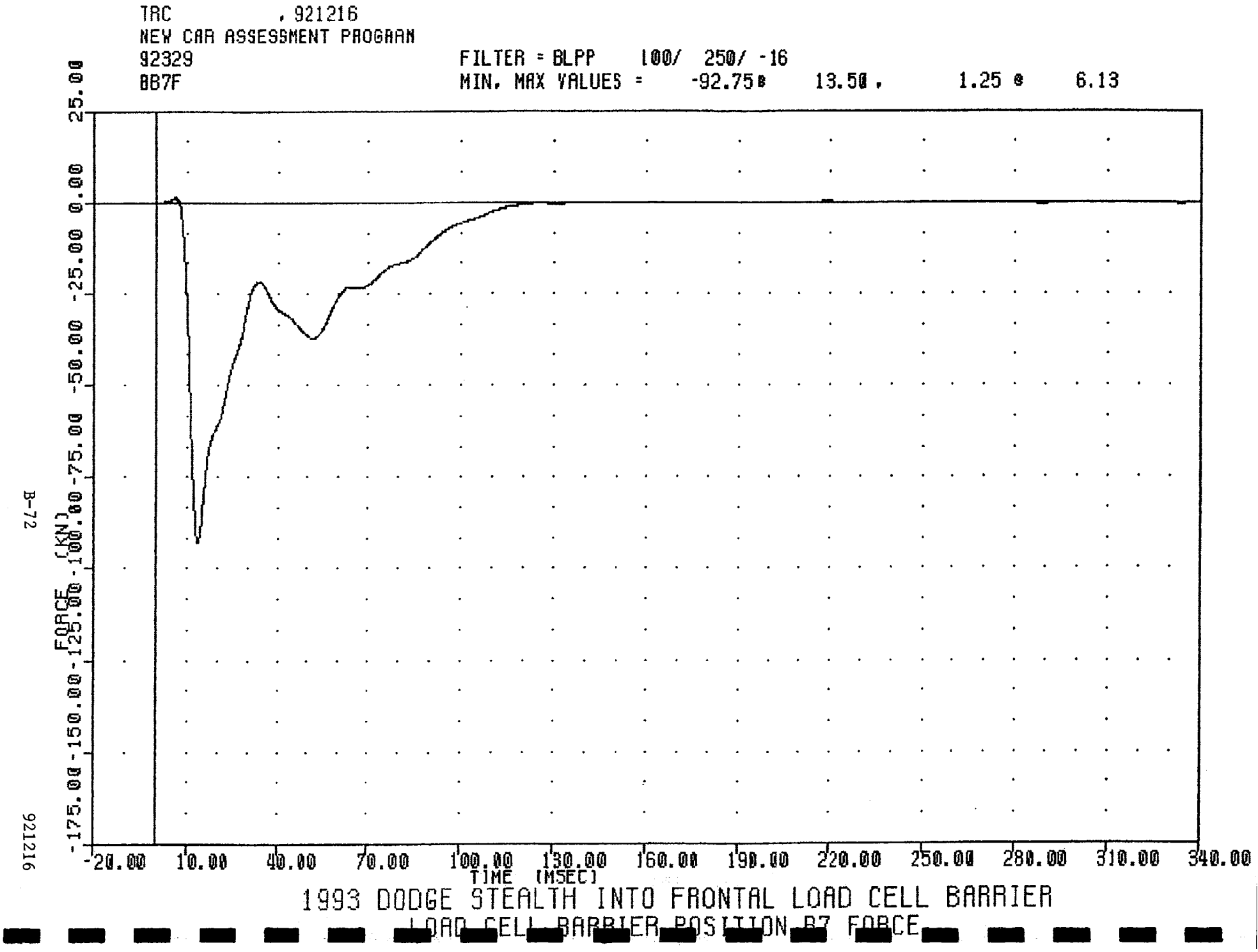
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION B4 FORCE

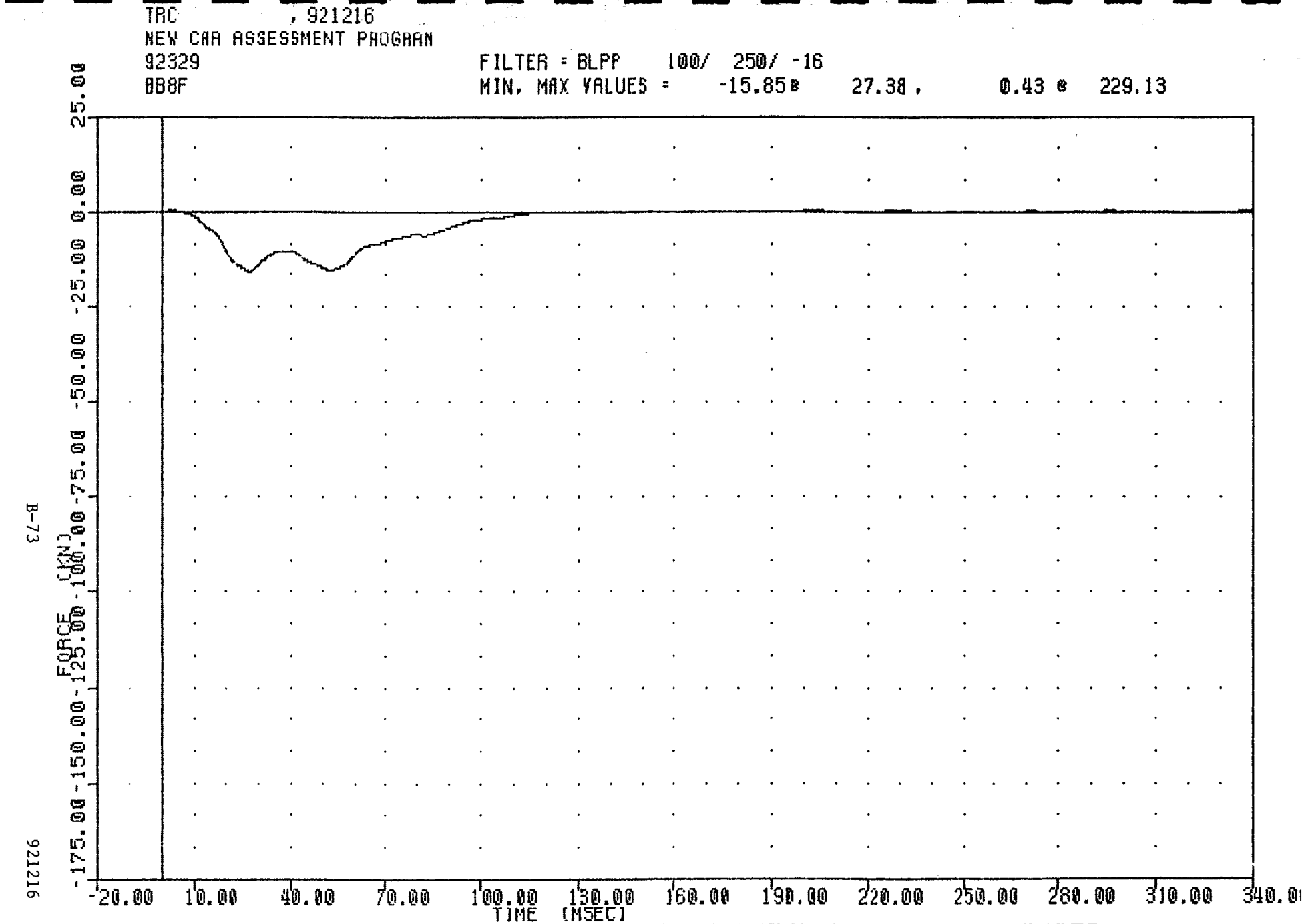
921216


TRC , 921216
NEW CAR ASSESSMENT PROGRAM
92329
8B5F
FILTER = BLPP 100/ 250/ -16
MIN, MAX VALUES = -53.99 @ 51.50 , 1.13 @ -2.88
25.00
0.00
-25.00
-50.00
-75.00
-100.00
-125.00
-150.00
-175.00
FORCE (KN)
-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)
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION B5 FORCE



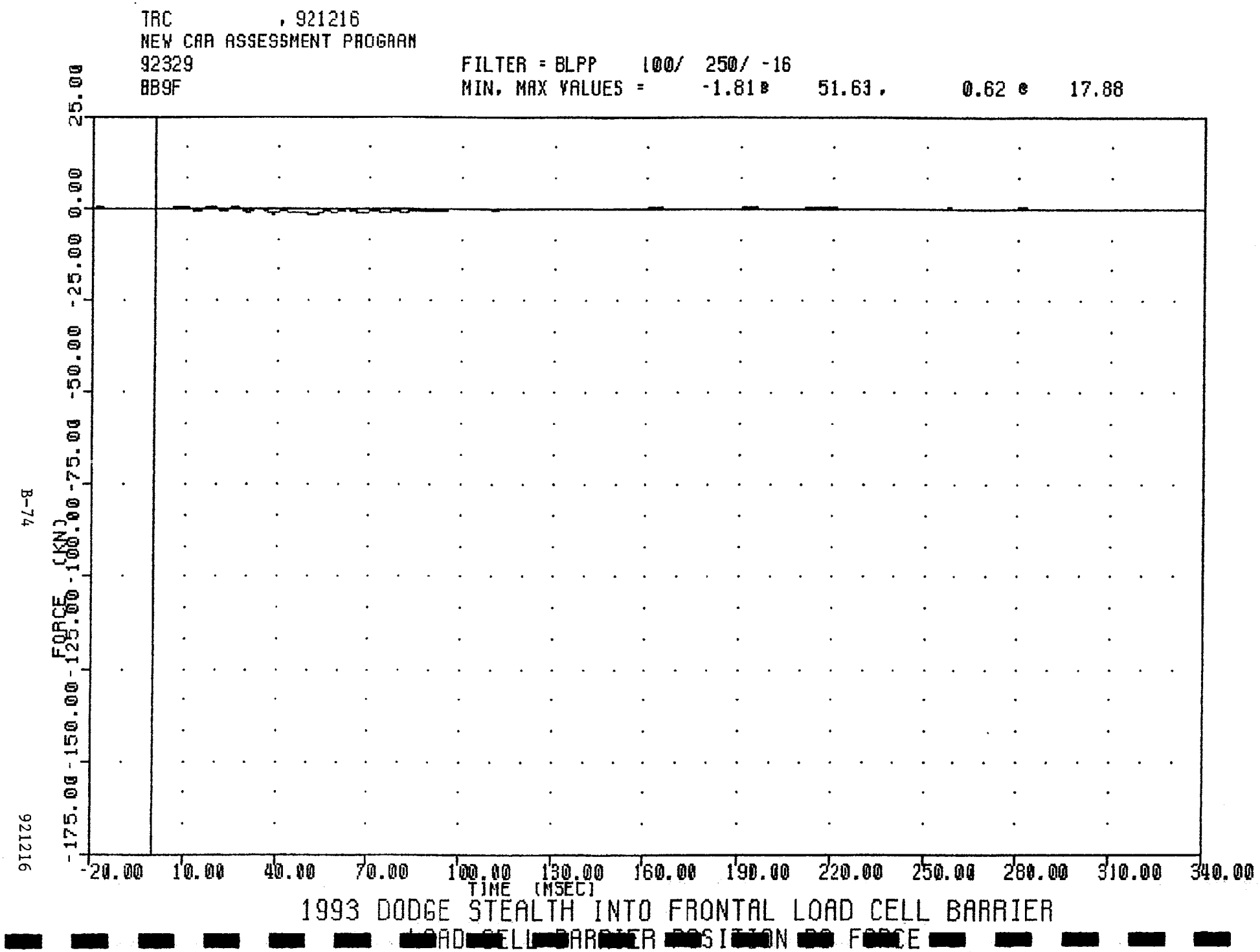
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION B6 FORCE

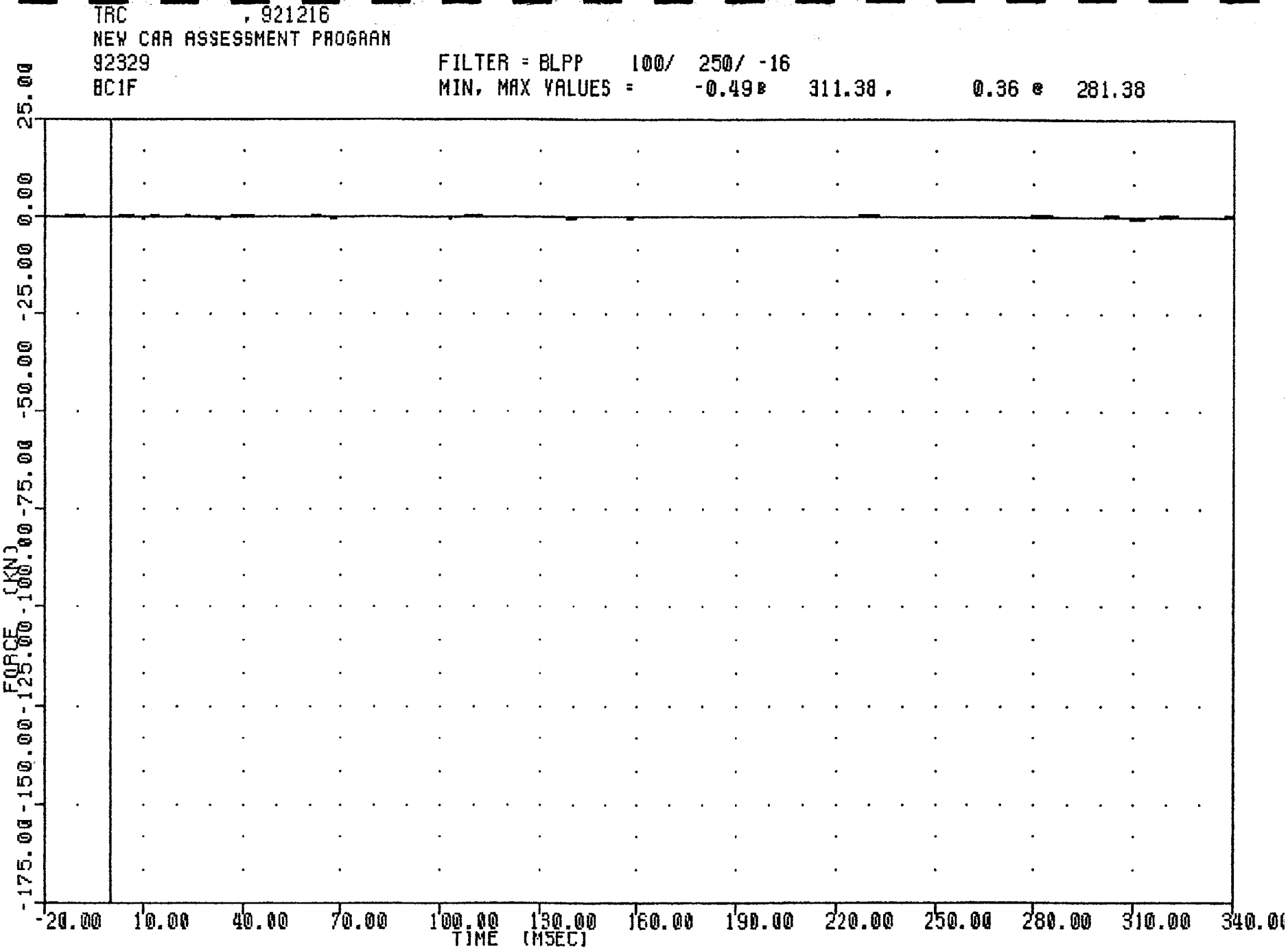

TRC , 921216
NEW CAR ASSESSMENT PROGRAM
92329
BB7F
FILTER = BLPP 100/ 250/ -16
MIN, MAX VALUES = -92.75 @ 13.50 , 1.25 @ 6.13
25.00
0.00
-25.00
-50.00
-75.00
-100.00
-125.00
-150.00
-175.00
FORCE (KN)
-20.00
10.00
40.00
70.00
100.00
130.00
160.00
190.00
220.00
250.00
280.00
310.00
340.00
TIME (MSEC)
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION B7 FORCE



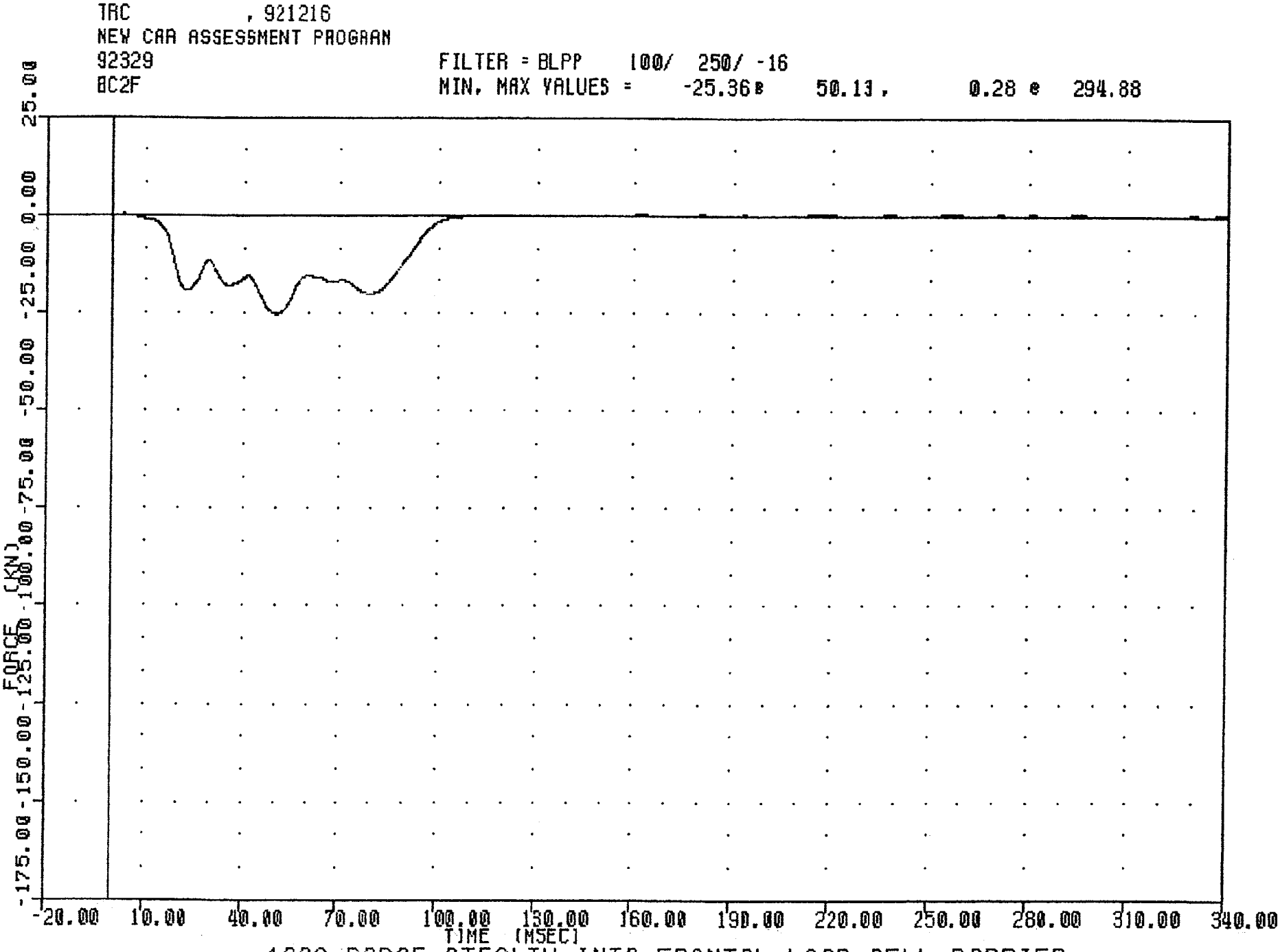
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION B8 FORCE

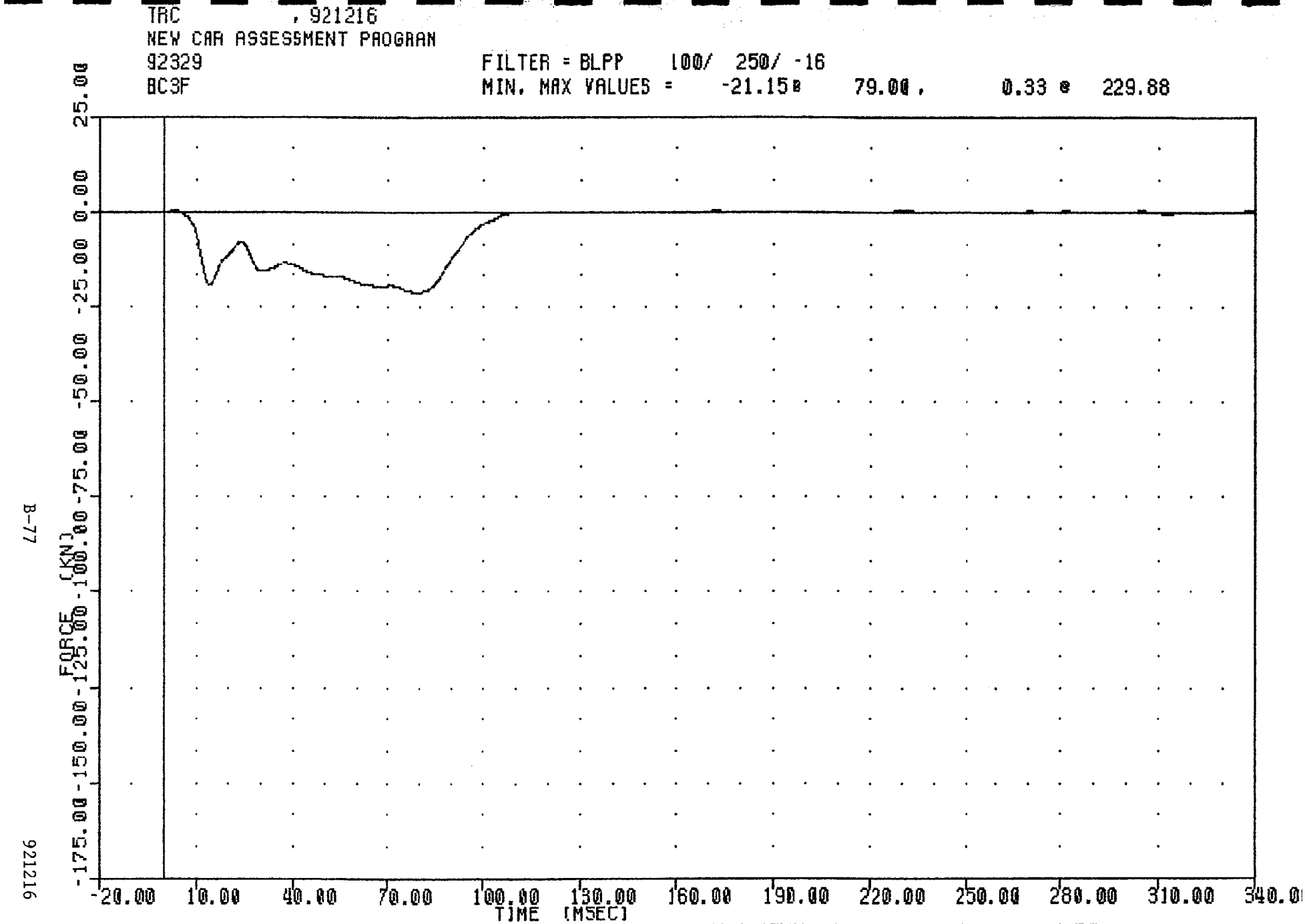
921216


TRC , 921216
NEW CAR ASSESSMENT PROGRAM
92329
8B9F
FILTER = BLPP 100/ 250/ -16
MIN, MAX VALUES = -1.81 @ 51.63 , 0.62 @ 17.88
25.00
0.00
-25.00
-50.00
-75.00
-100.00
-125.00
-150.00
-175.00
FORCE (KN)
-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)
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION VS FORCE

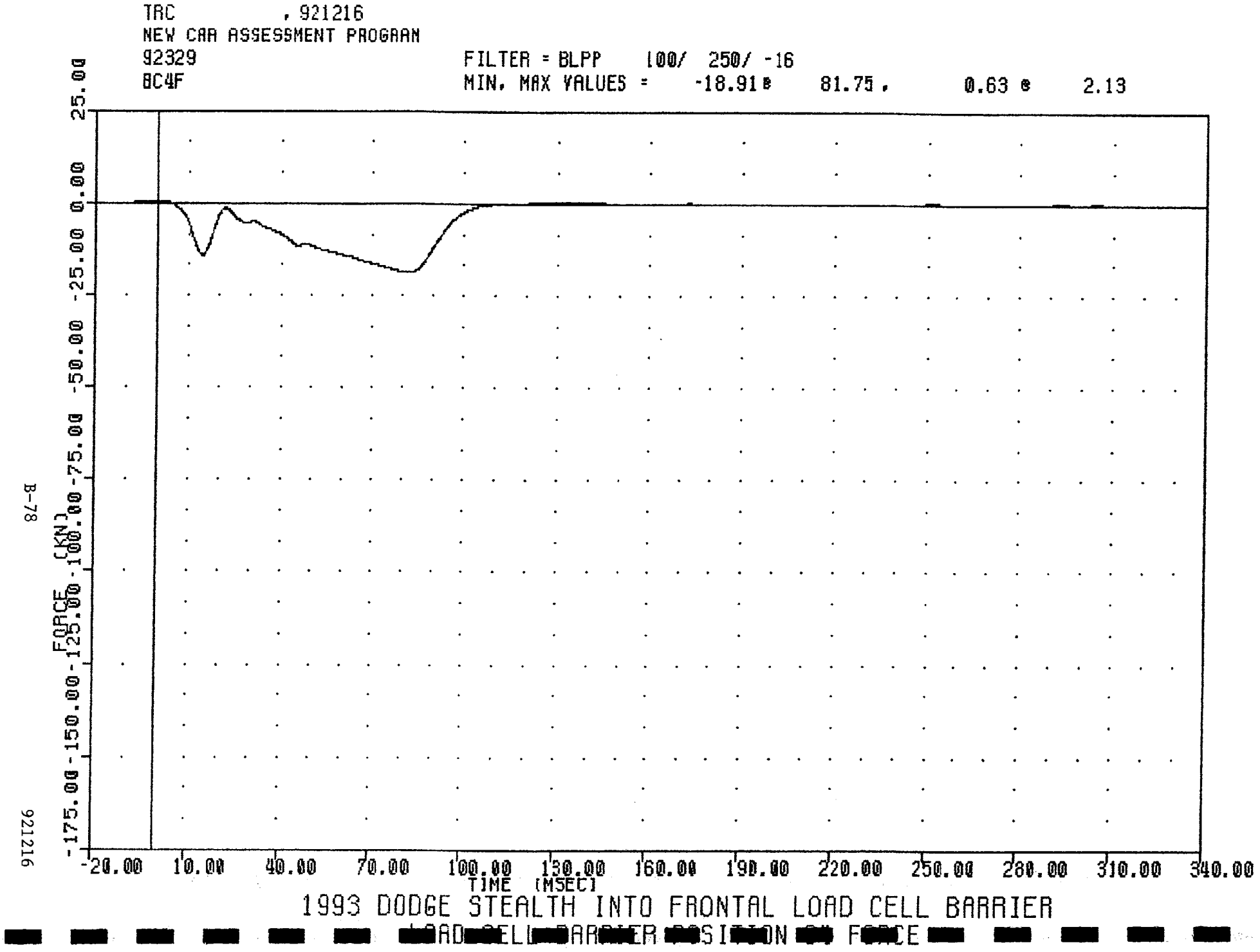


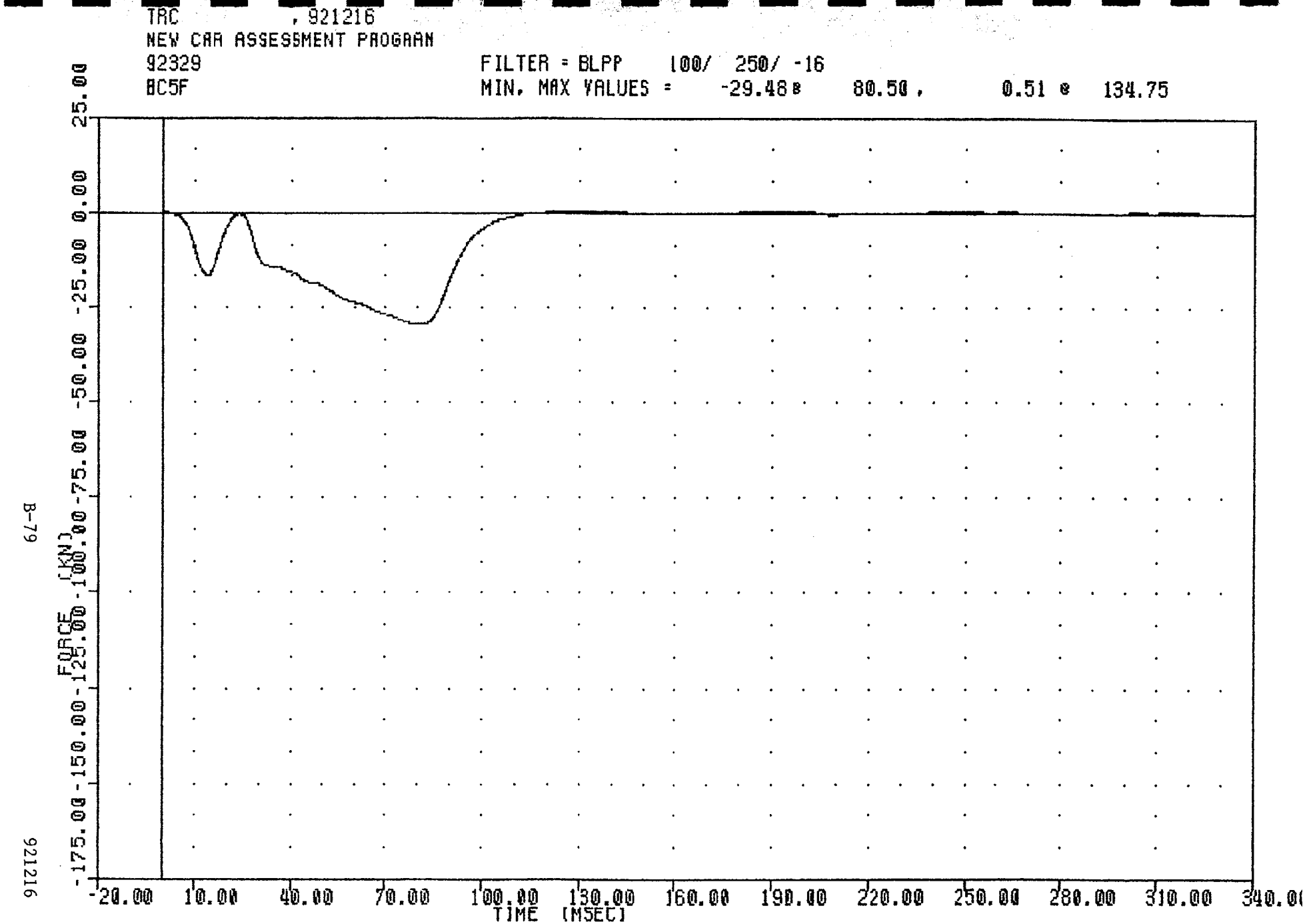
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION C1 FORCE


TRC , 921216
NEW CAR ASSESSMENT PROGRAM
92329
BC2F
FILTER = BLPP 100/ 250/ -16
MIN, MAX VALUES = -25.36 @ 50.13 , 0.28 @ 294.88
25.00
0.00
-25.00
-50.00
-75.00
-100.00
-125.00
-150.00
-175.00
FORCE (KN)
-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)
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION FORCE

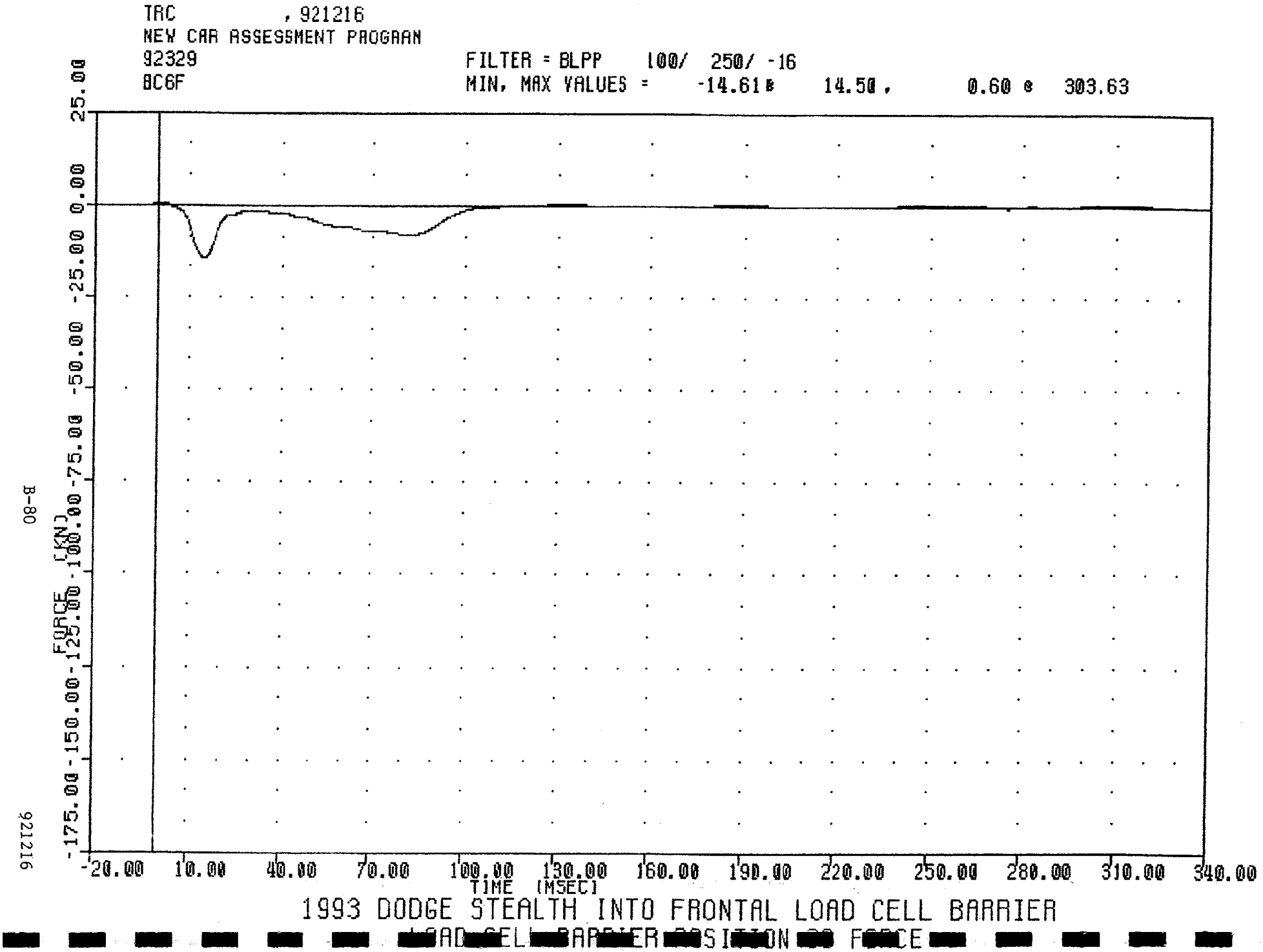


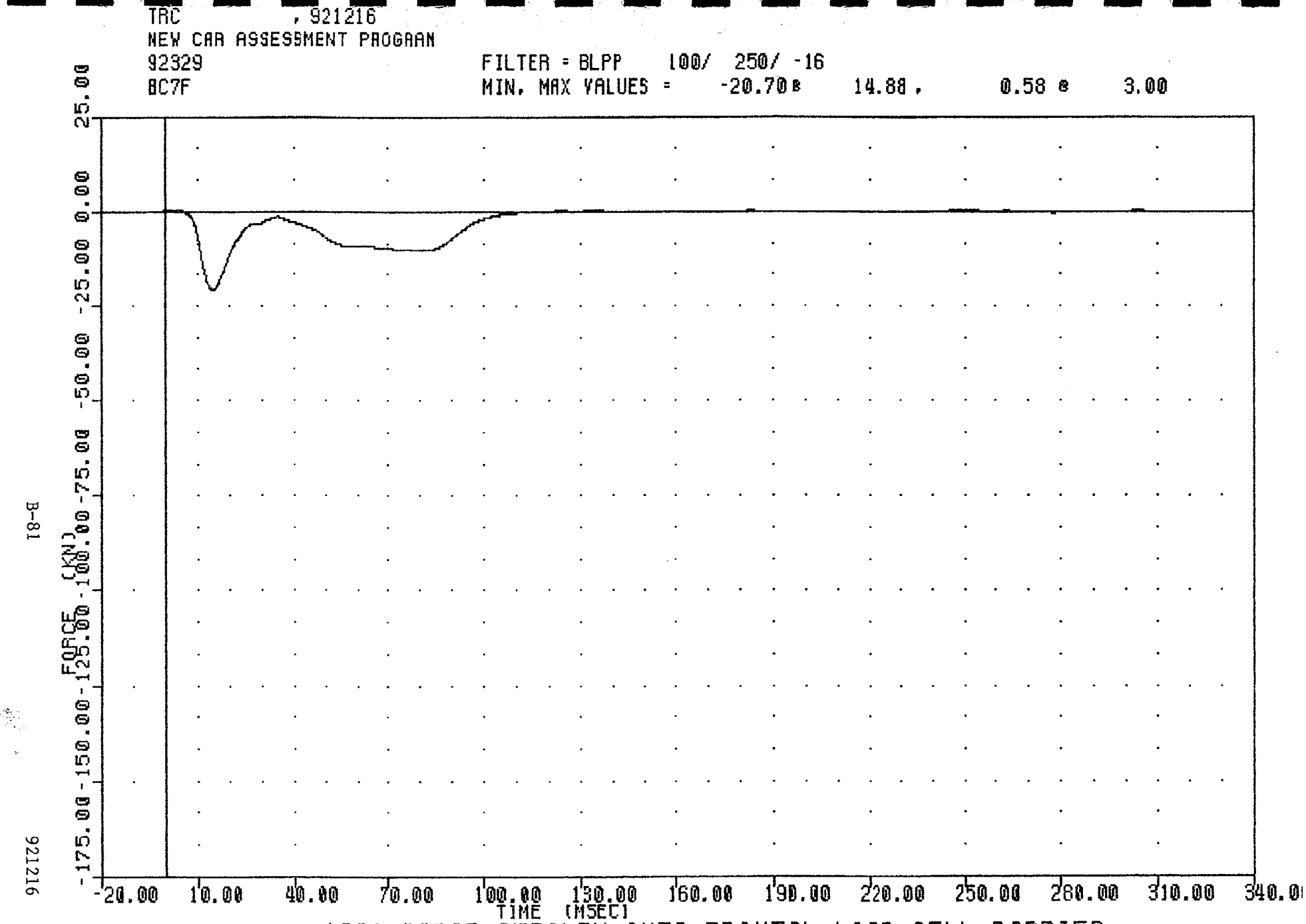
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION C3 FORCE


TRC , 921216
NEW CAR ASSESSMENT PROGRAM
92329
8C4F
FILTER = BLPP 100/ 250/ -16
MIN, MAX VALUES = -18.91 @ 81.75 , 0.63 @ 2.13
25.00
0.00
-25.00
-50.00
-75.00
-100.00
-125.00
-150.00
-175.00
FORCE (KN)
-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)
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION VS FORCE

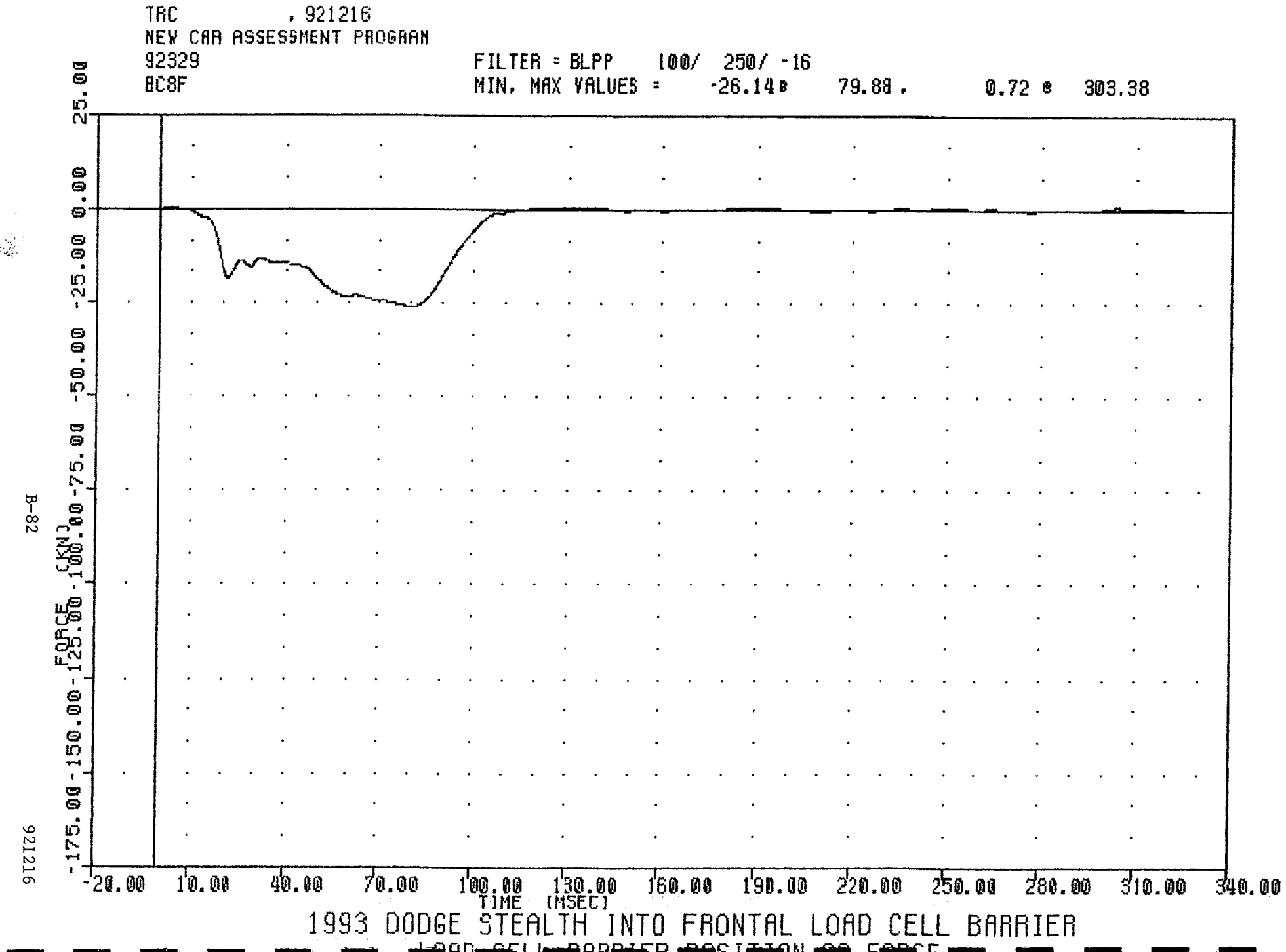


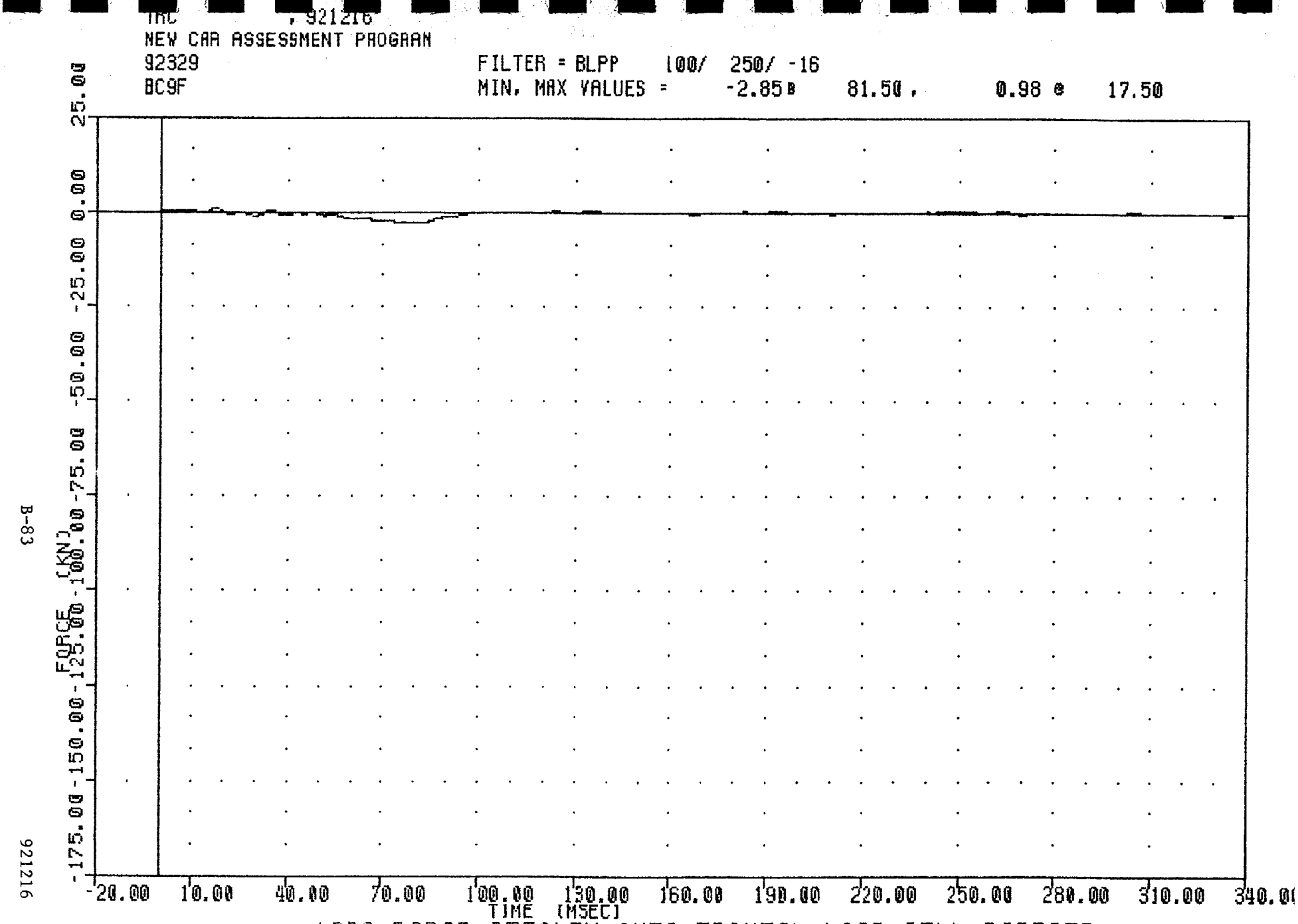
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION C5 FORCE


TRC , 921216
NEW CAR ASSESSMENT PROGRAM
92329
BC6F
FILTER = BLPP 100/ 250/ -16
MIN, MAX VALUES = -14.61 @ 14.50 , 0.60 @ 303.63
25.00
0.00
-25.00
-50.00
-75.00
-100.00
-125.00
-150.00
-175.00
FORCE (KN)
-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)
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION FORCE

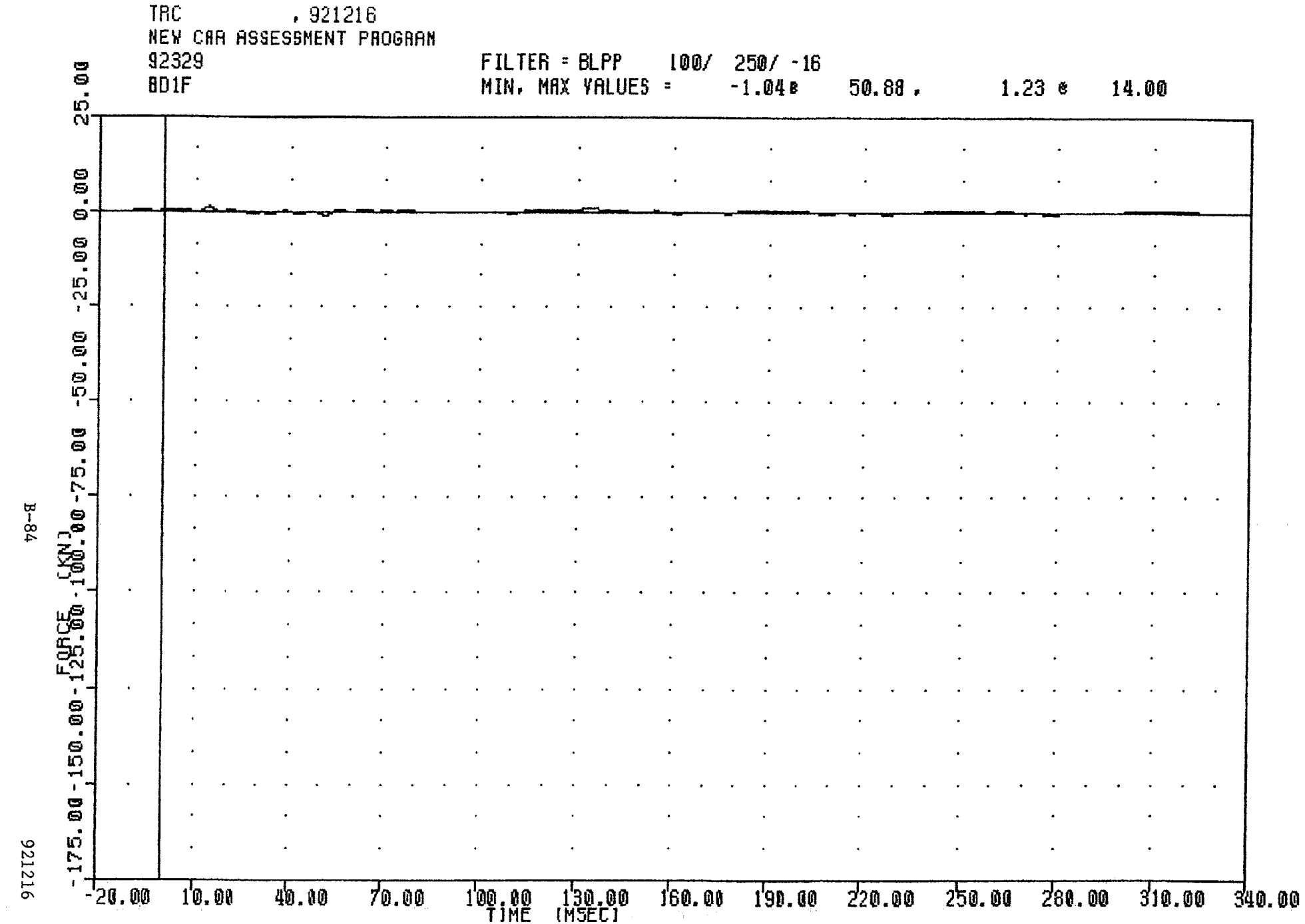


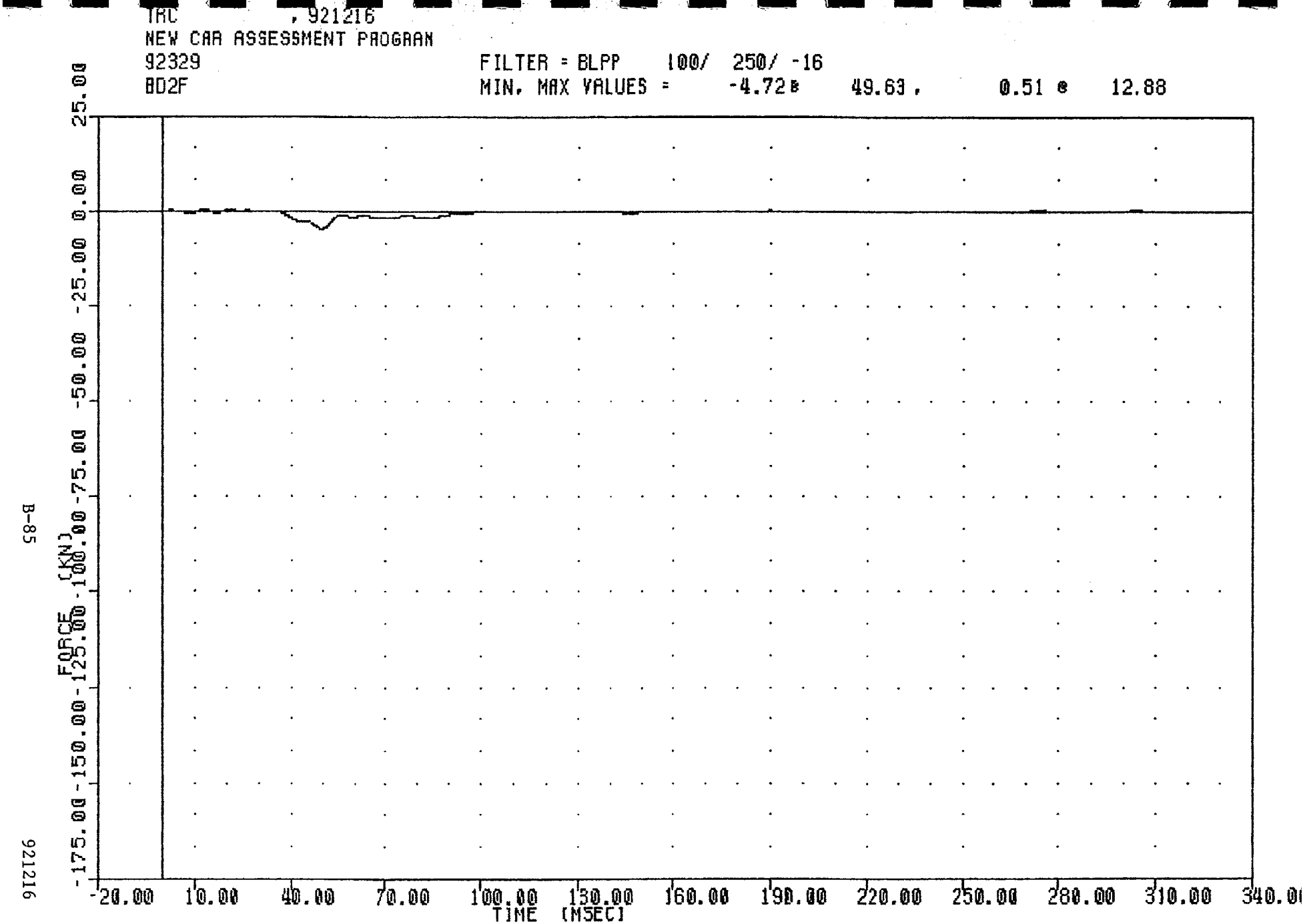
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION C7 FORCE


TRC , 921216
NEW CAR ASSESSMENT PROGRAM
92329
BC8F
FILTER = BLPP 100/ 250/ -16
MIN, MAX VALUES = -26.14 @ 79.88 , 0.72 @ 303.38
25.00
0.00
-25.00
-50.00
-75.00
-100.00
-125.00
-150.00
-175.00
FORCE (KN)
-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)
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER

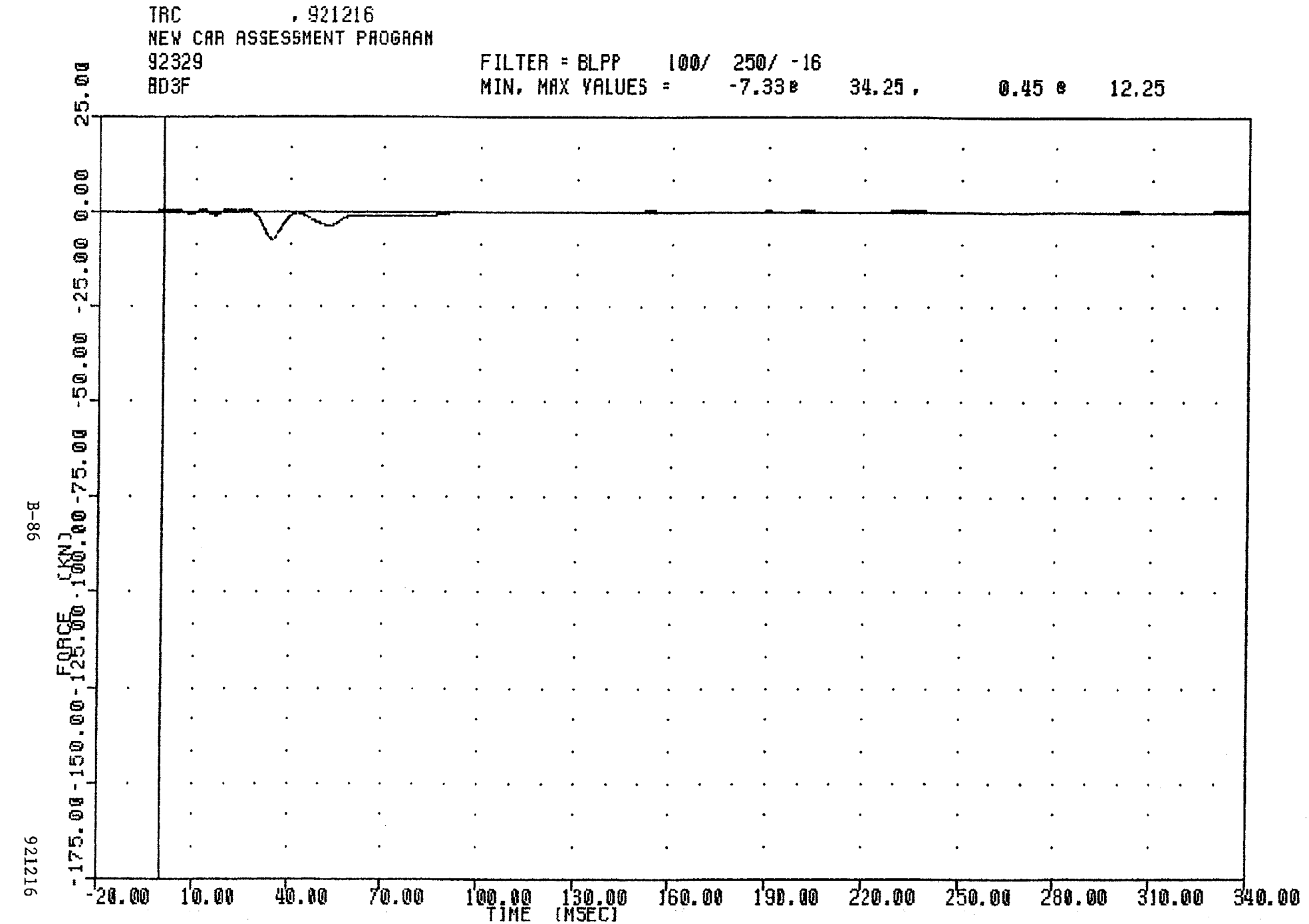


1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION C9 FORCE


TRC , 921216
NEW CAR ASSESSMENT PROGRAM
92329
8D1F
FILTER = BLPP 100/ 250/ -16
MIN, MAX VALUES = -1.04 @ 50.88 , 1.23 @ 14.00
25.00
0.00
-25.00
-50.00
-75.00
-100.00
-125.00
-150.00
-175.00
FORCE (KN)
-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)
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER

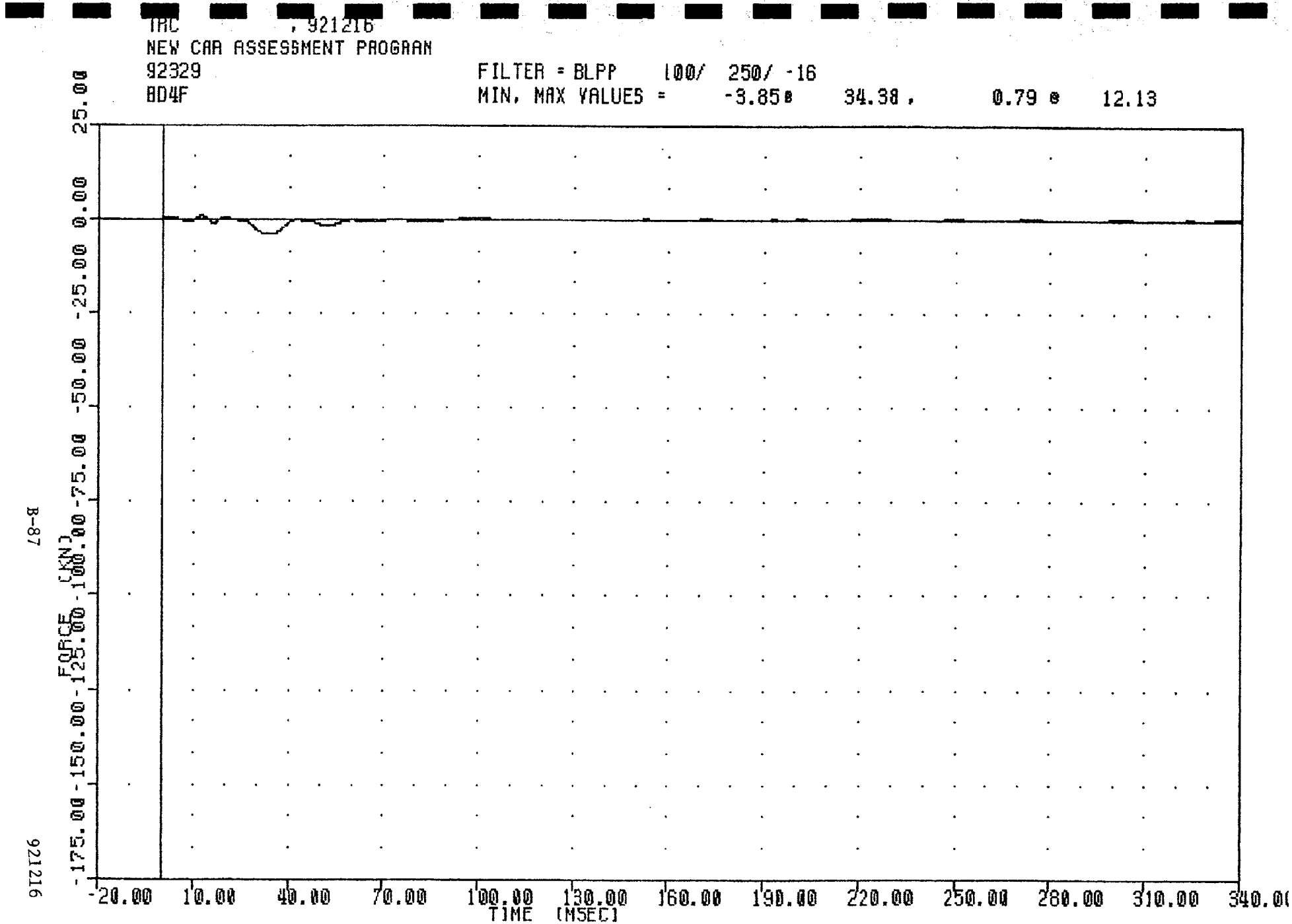


1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION D2 FORCE

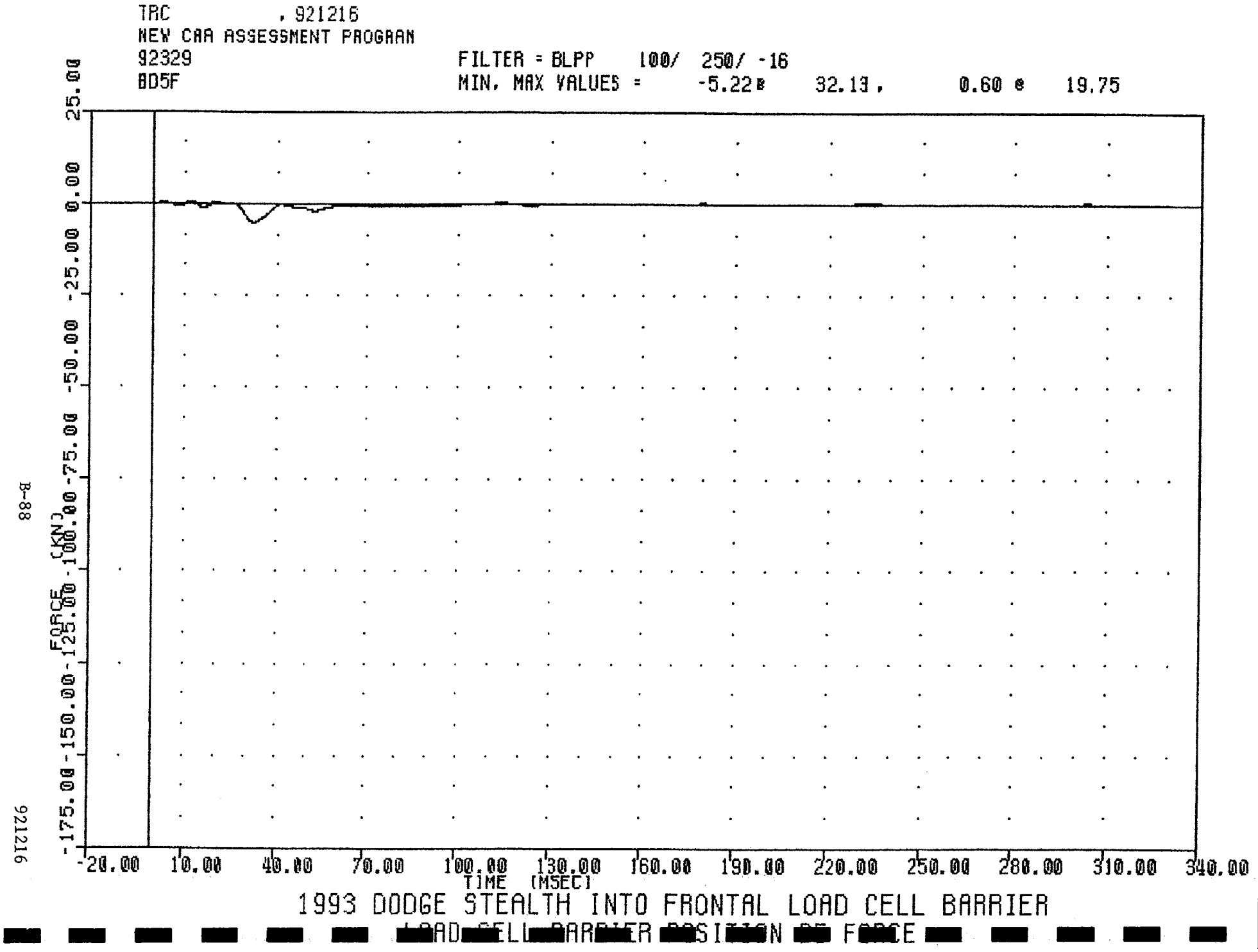


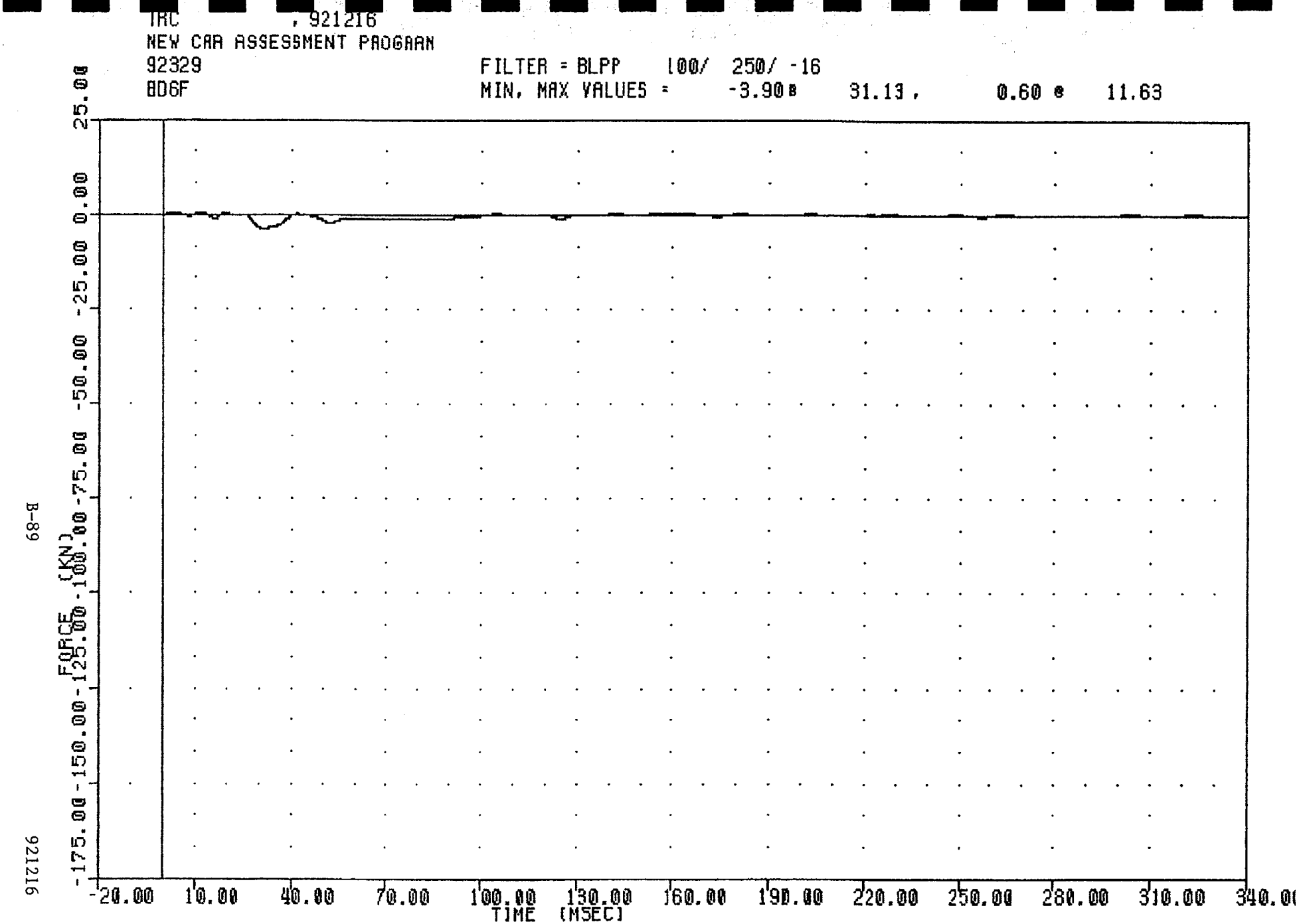
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER

LOAD CELL BARRIER POSITION 22 FORCE



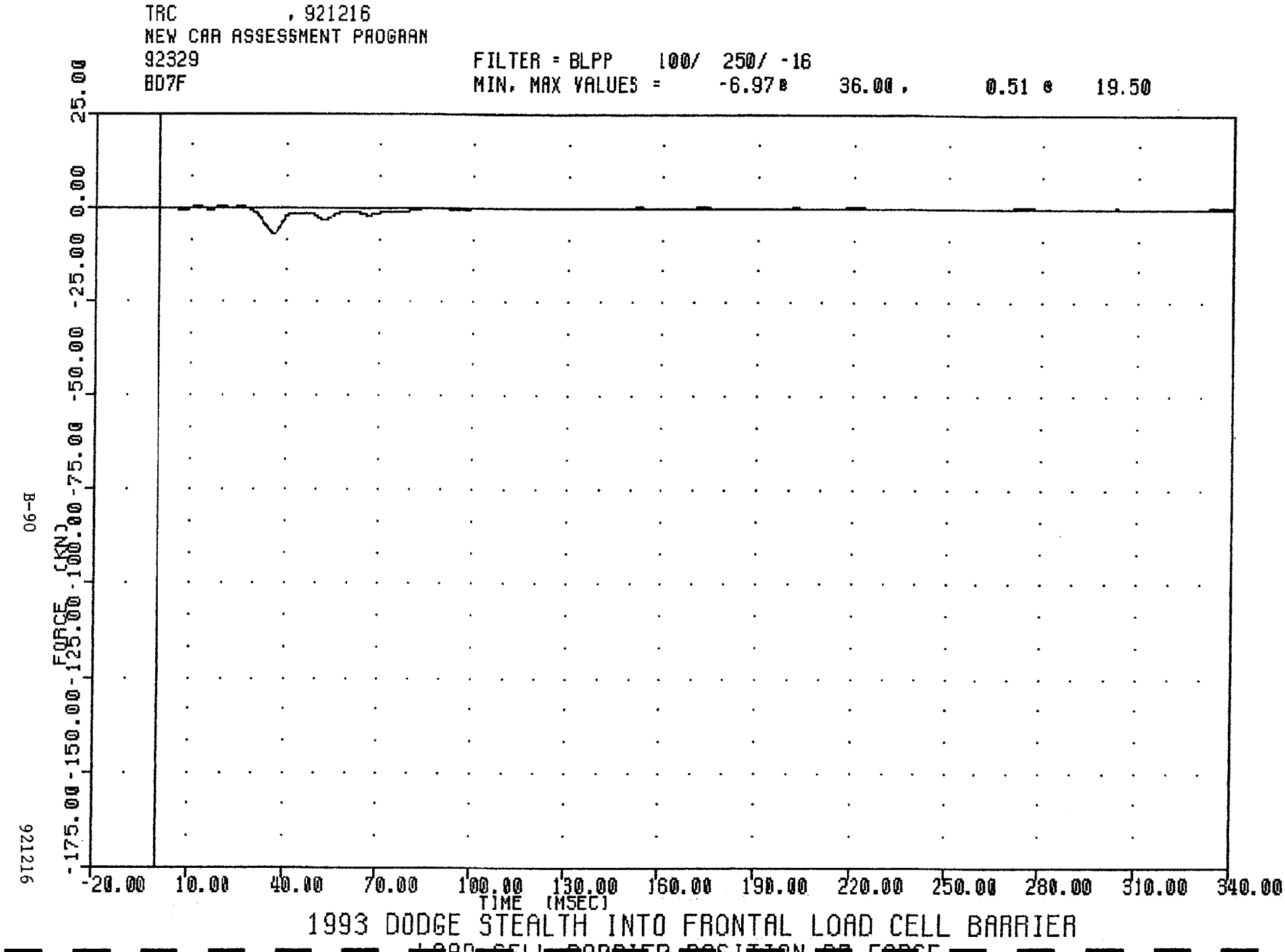
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION D4 FORCE


TRC , 921216
NEW CAR ASSESSMENT PROGRAM
92329
BD5F
FILTER = BLPP 100/ 250/ -16
MIN, MAX VALUES = -5.22 @ 32.13 , 0.60 @ 19.75
25.00
0.00
-25.00
-50.00
-75.00
-100.00
-125.00
-150.00
-175.00
FORCE (KN)
-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)
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION OF FORCE



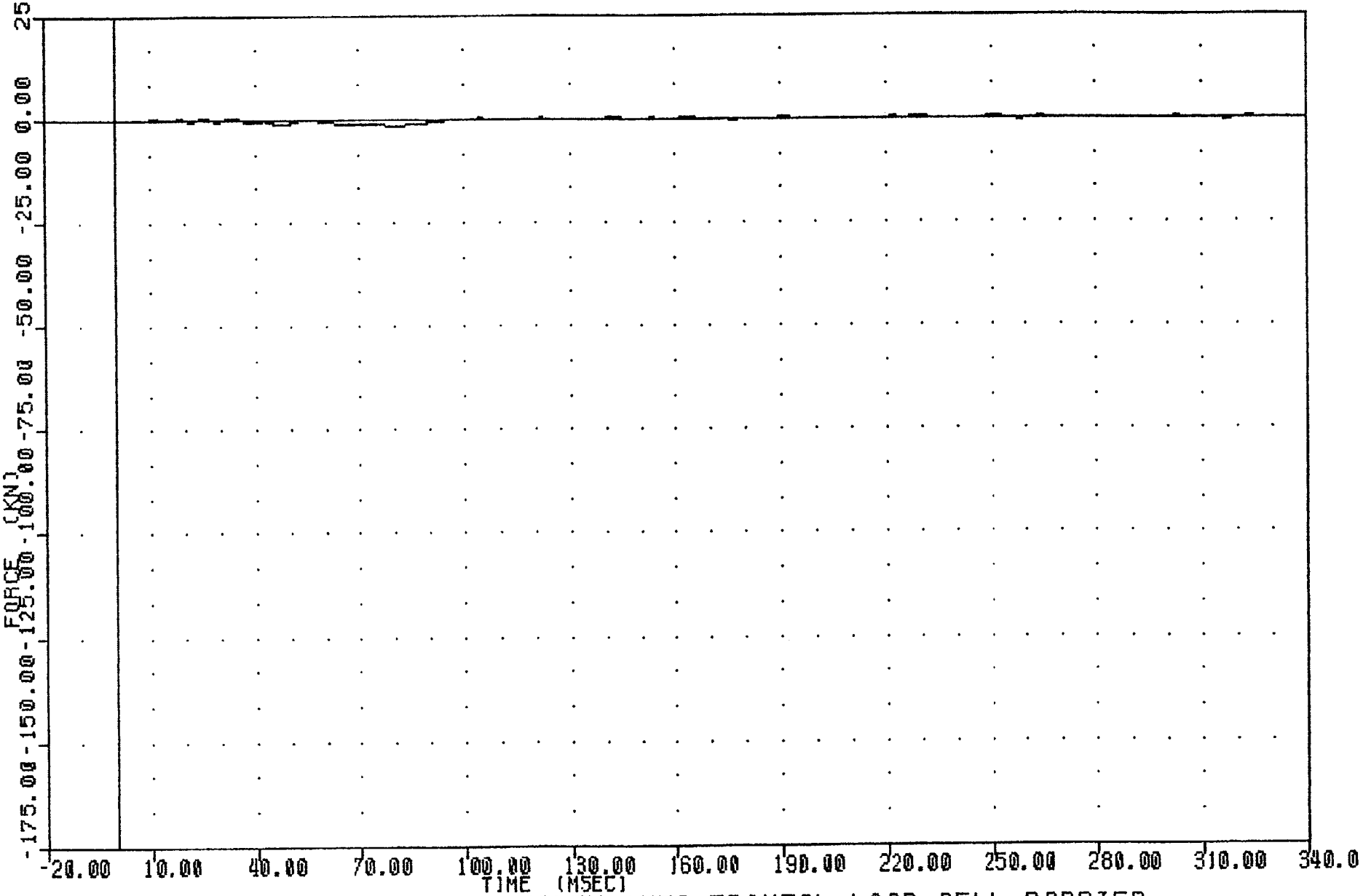
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION D6 FORCE

921216


TRC , 921216
NEW CAR ASSESSMENT PROGRAM
92329
BD7F
FILTER = BLPP 100/ 250/ -16
MIN, MAX VALUES = -6.97 @ 36.00 , 0.51 @ 19.50
25.00
0.00
-25.00
-50.00
-75.00
-100.00
-125.00
-150.00
-175.00
FORCE (KN)
-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)
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION OF FORCE

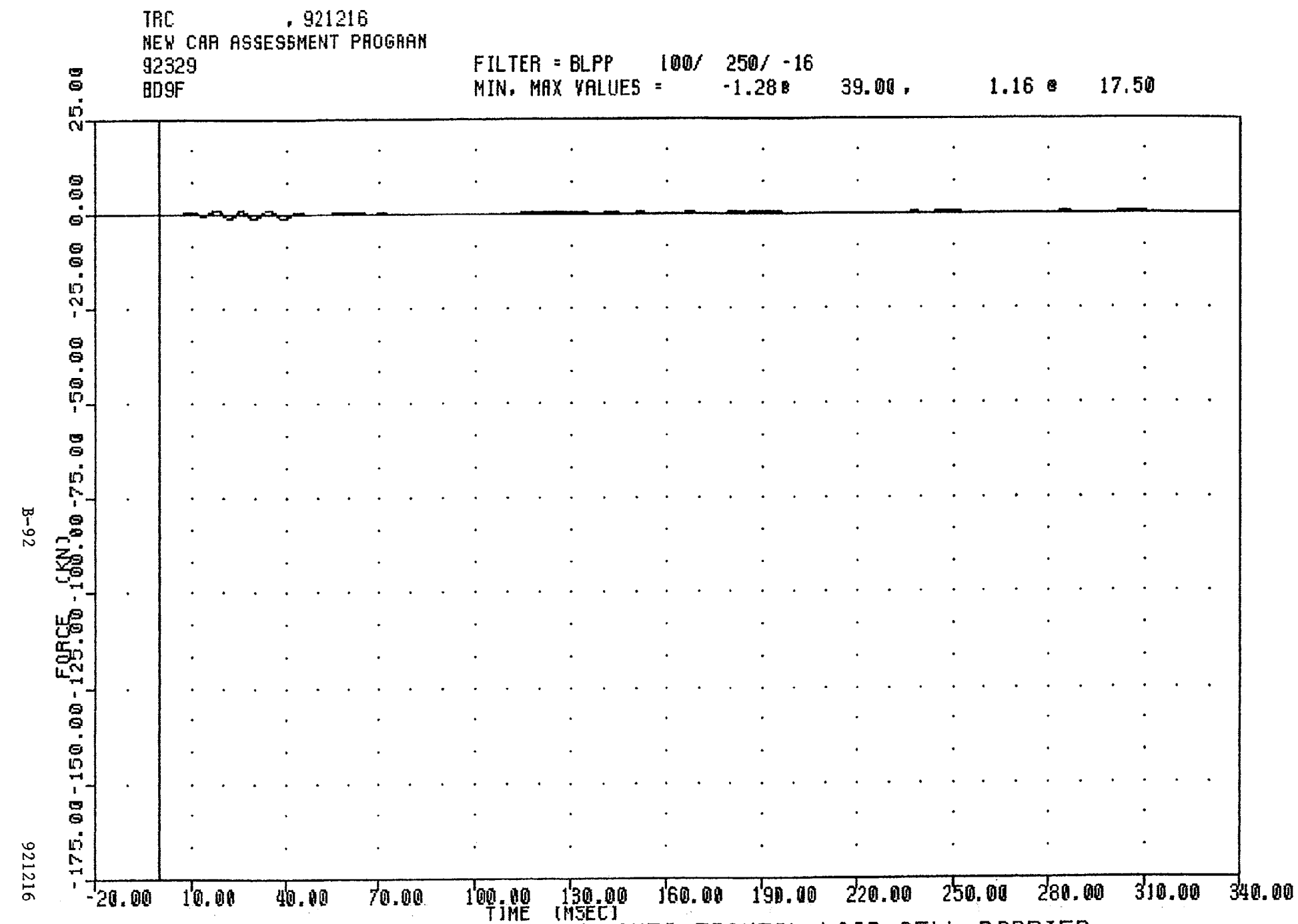
TRC , 921216
NEW CAR ASSESSMENT PROGRAM
92329
BD8F

FILTER = BLPP 100/ 250/ -16
MIN. MAX VALUES = -1.57 @ 81.50 , 0.63 @ 33.50



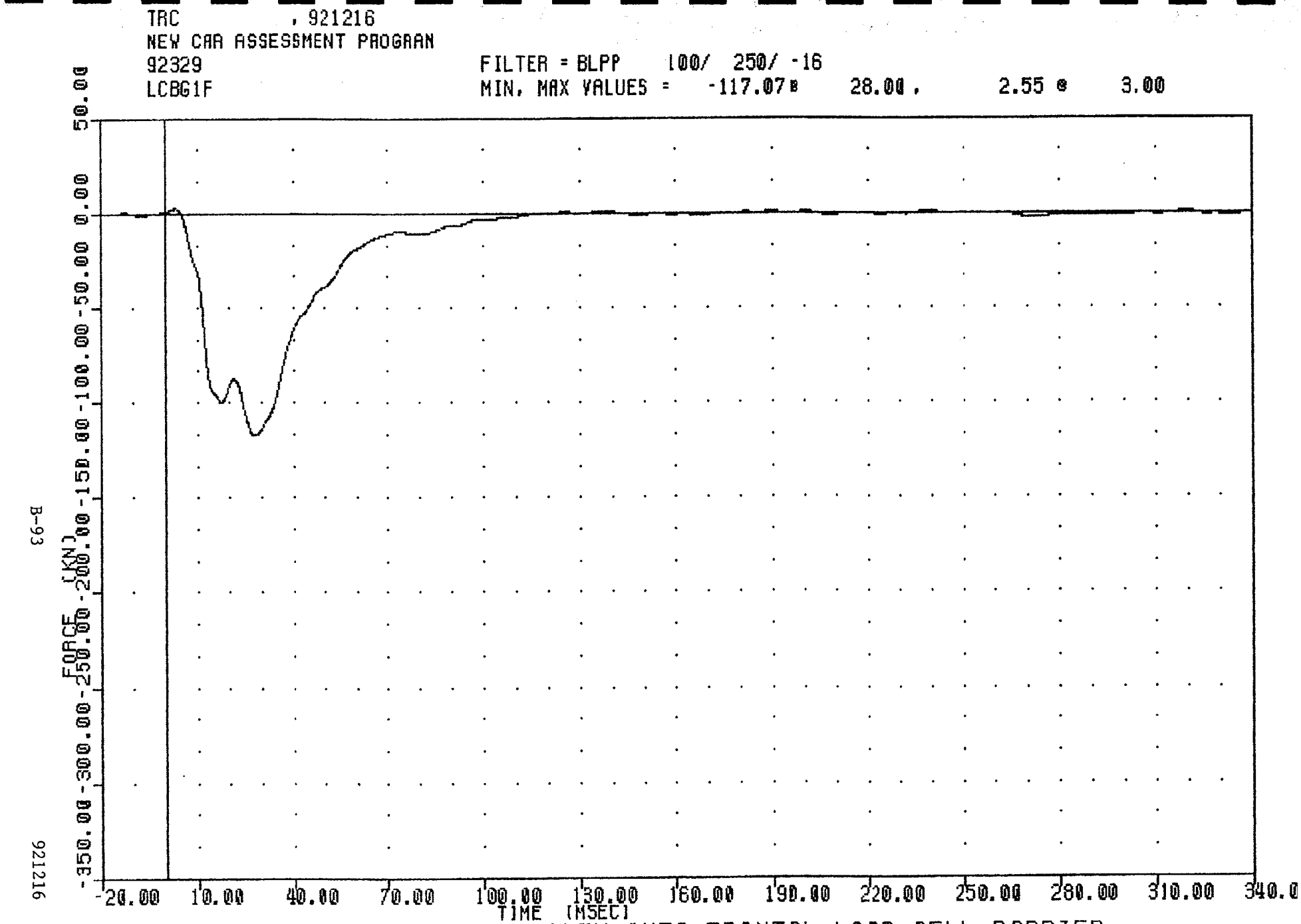
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER POSITION D8 FORCE

921216



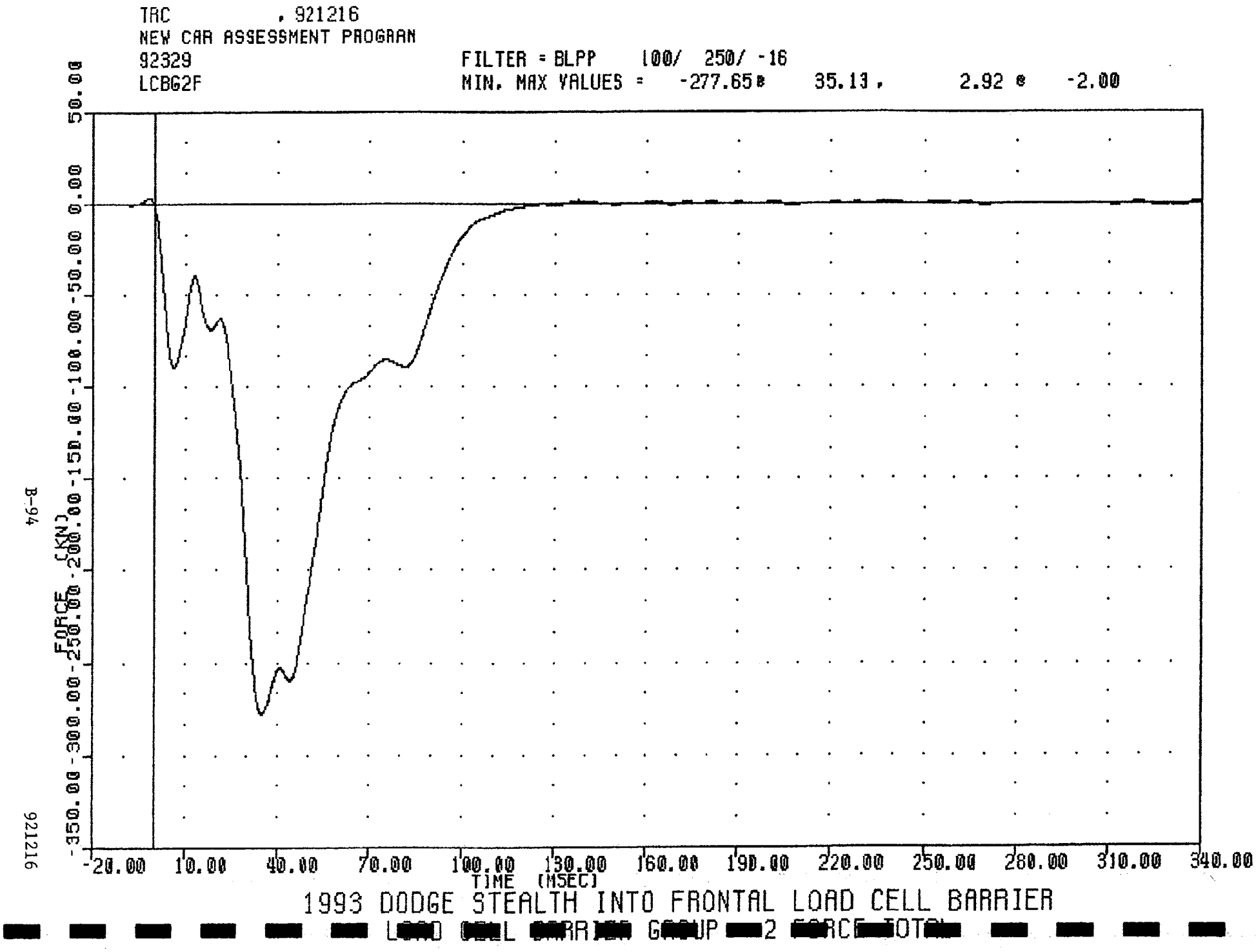
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER

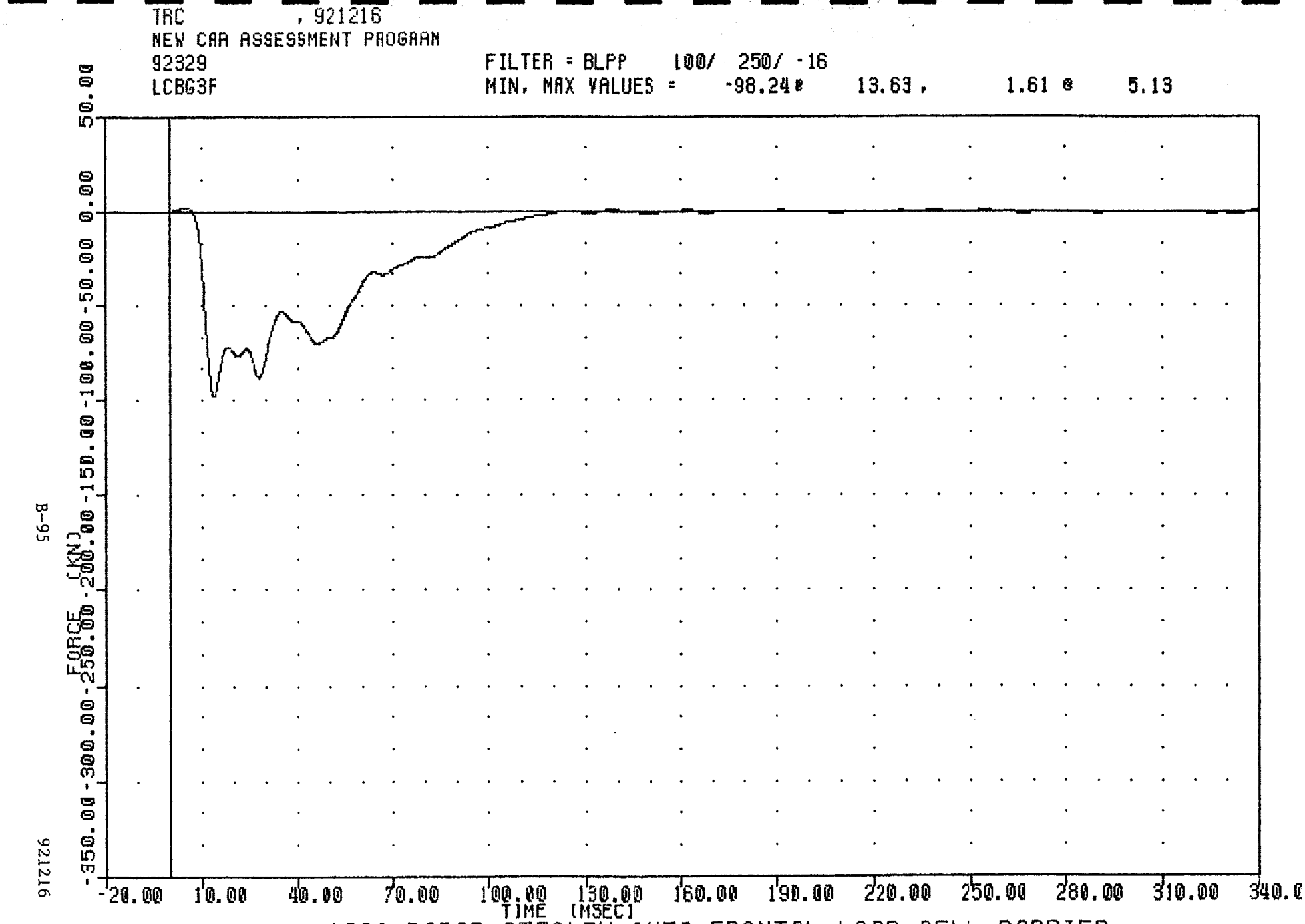
LOAD CELL BARRIER POSITION VS FORCE



1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER GROUP - 1 FORCE TOTAL

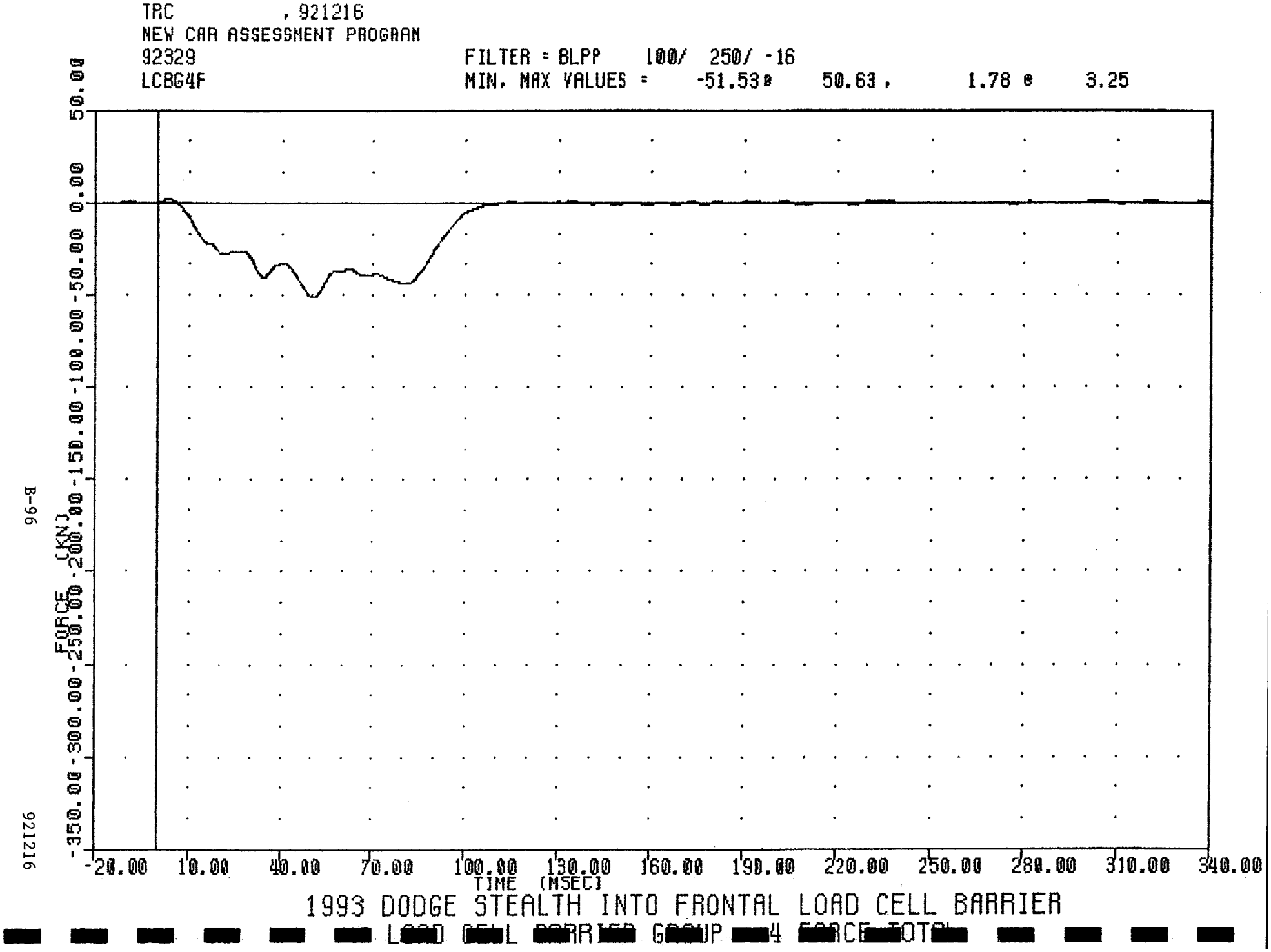
921216


TRC , 921216
NEW CAR ASSESSMENT PROGRAN
92329
LCBG2F
FILTER = BLPP 100/ 250/ -16
MIN. MAX VALUES = -277.65 @ 35.13 , 2.92 @ -2.00
50.00
0.00
-50.00
-100.00
-150.00
-200.00
-250.00
-300.00
-350.00
FORCE (KN)
-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)
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
GROUP 2



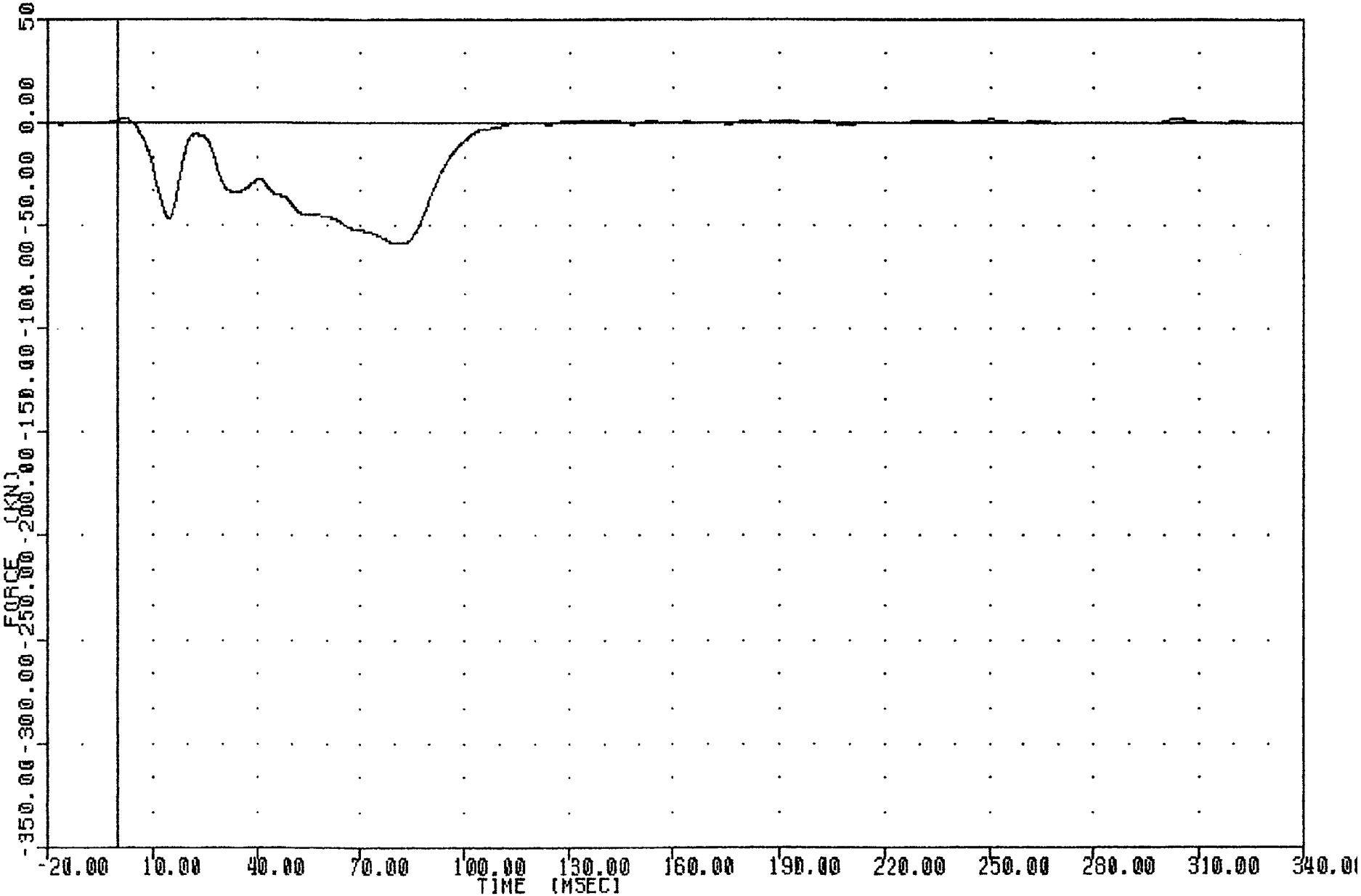
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER GROUP - 3 FORCE TOTAL

921216

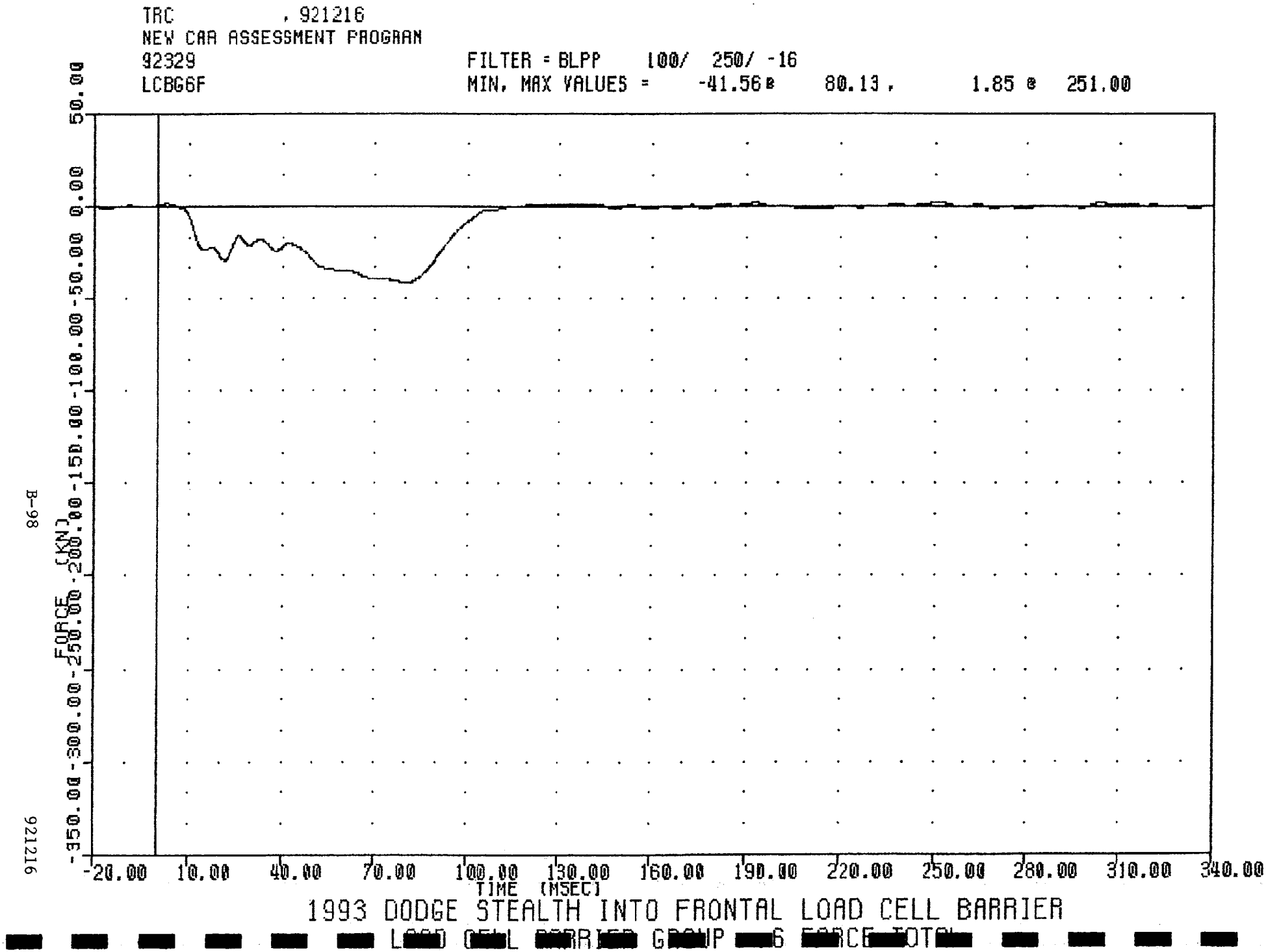

TRC , 921216
NEW CAR ASSESSMENT PROGRAM
92329
LCBG4F
FILTER = BLPP 100/ 250/ -16
MIN, MAX VALUES = -51.53 @ 50.63 , 1.78 @ 3.25
50.00
0.00
-50.00
-100.00
-150.00
-200.00
-250.00
-300.00
-350.00
FORCE (KN)
-20.00
10.00
40.00
70.00
100.00
130.00
160.00
190.00
220.00
250.00
280.00
310.00
340.00
TIME (MSEC)
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER

921216

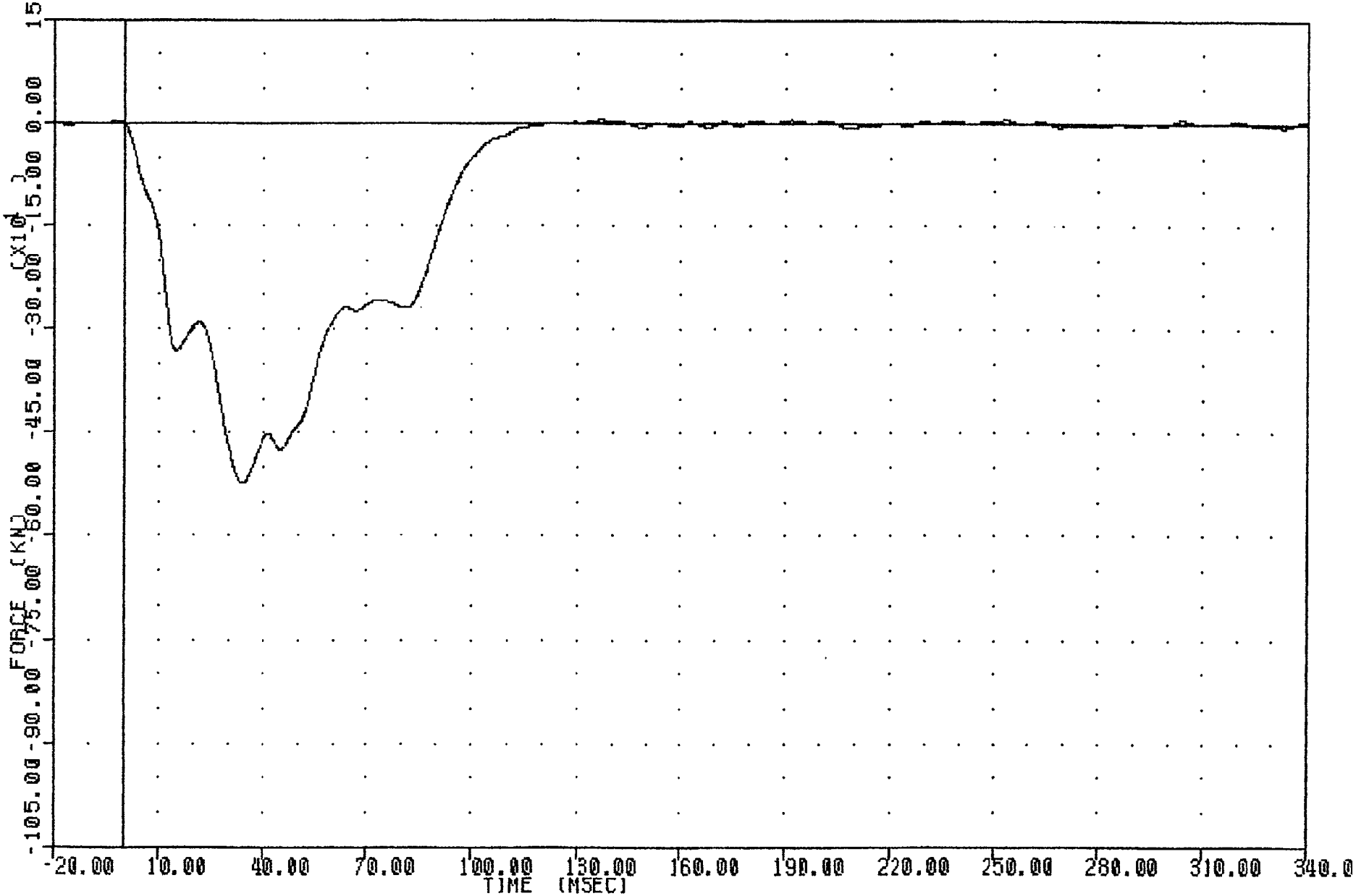
TRC , 921216
NEW CAR ASSESSMENT PROGRAM
92329 FILTER = BLPP 100/ 250/ -16
LCBG5F MIN. MAX VALUES = -59.00 @ 81.50 , 2.01 @ 303.38



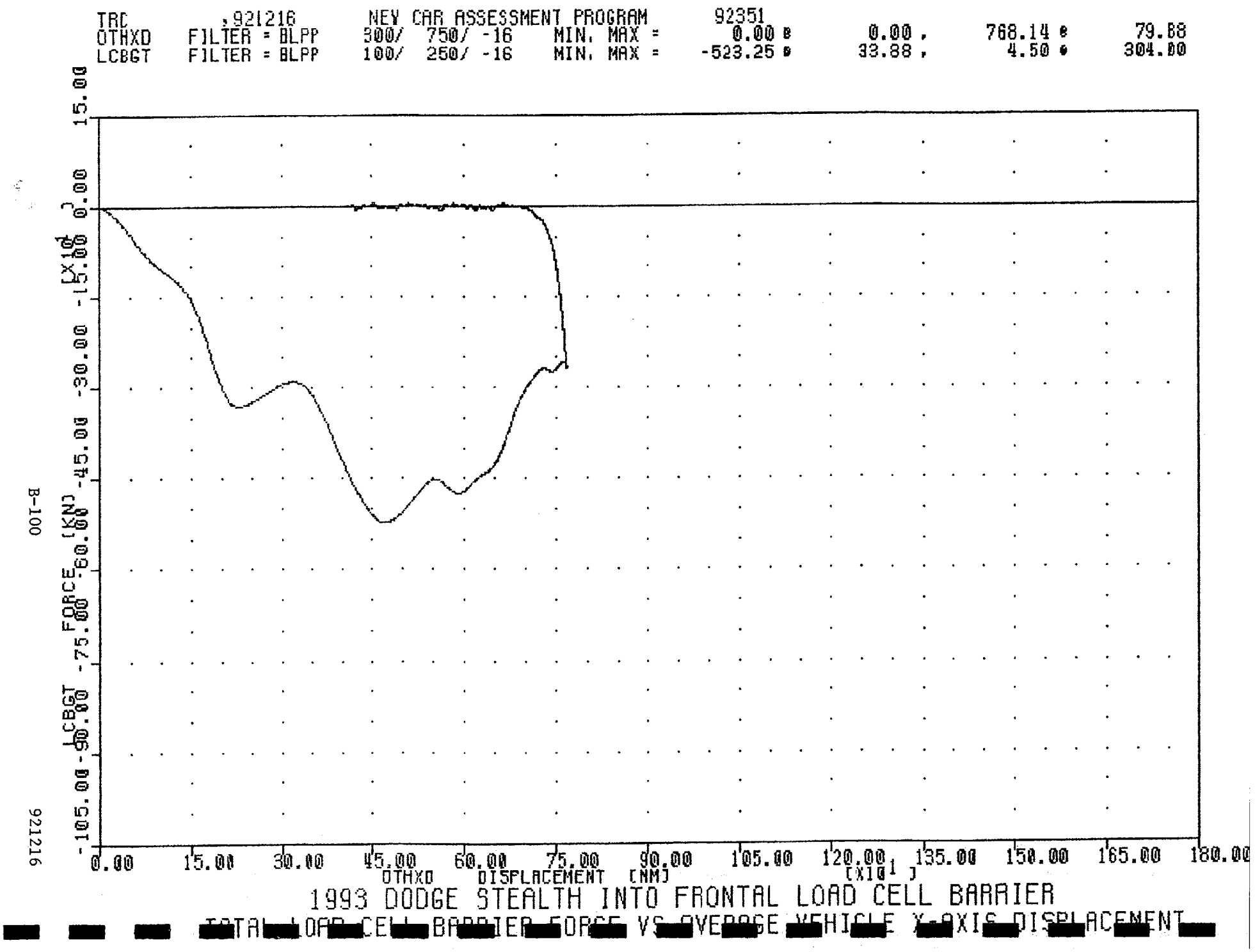
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
LOAD CELL BARRIER GROUP - 5 FORCE TOTAL


TRC , 921216
NEW CAR ASSESSMENT PROGRAM
92329
LCBG6F
FILTER = BLPP 100/ 250/ -16
MIN, MAX VALUES = -41.56 @ 80.13 , 1.85 @ 251.00
50.00
0.00
-50.00
-100.00
-150.00
-200.00
-250.00
-300.00
-350.00
FORCE (KN)
-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)
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER

TRC , 921216
NEW CAR ASSESSMENT PROGRAM
92329 FILTER = BLPP 100/ 250/ -16
LCBGT MIN, MAX VALUES = -523.25 @ 33.88 , 4.50 @ 304.00



1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
TOTAL LOAD CELL BARRIER FORCE


TRC ,921216 NEV CAR ASSESSMENT PROGRAM 92351
OTHXD FILTER = BLPP 300/ 750/ -16 MIN, MAX = 0.00 @ 0.00 , 768.14 @ 79.88
LCBGT FILTER = BLPP 100/ 250/ -16 MIN, MAX = -523.25 @ 33.88 , 4.50 @ 304.00
15.00
0.00
-15.00
-30.00
-45.00
-60.00
-75.00
-90.00
-105.00
[X10]
LCBGT FORCE [KN]
0.00
15.00
30.00
45.00
60.00
75.00
90.00
105.00
120.00
135.00
150.00
165.00
180.00
OTHXD DISPLACEMENT [MM]
[X10]
1993 DODGE STEALTH INTO FRONTAL LOAD CELL BARRIER
TOTAL LOAD CELL BARRIER FORCE VS AVERAGE VEHICLE X-AXIS DISPLACEMENT

B-100

921216

APPENDIX C

DUMMY CERTIFICATION DATA

PRE-TEST CERTIFICATION DATA

DRIVER DUMMY S/N: 142

TRANSPORTATION RESEARCH CENTER OF OHIO
HYBRID III EXTERNAL DIMENSIONS
HUMANOID 142

12-NOV-92

TRC 142C12ED1 572E SN142 EXT. DIMENSION CAL12

TEST PARAMETER	(DIMEN.)	SPECIFICATION	TEST RESULTS
TEMPERATURE			20.6 DEG. C
RELATIVE HUMIDITY			59.0 %
LOCATION FOR CHEST CIRCUMFERENCE	(AA)	429- 434 MM	432. MM
LOCATION FOR WAIST CIRCUMFERENCE	(BB)	226- 231 MM	229. MM
CHEST CIRCUMFERENCE	(Y)	970-1001 MM	983. MM
WAIST CIRCUMFERENCE	(Z)	836- 866 MM	846. MM
CHEST DEPTH	(O)	213- 229 MM	218. MM
H-POINT HEIGHT	(C)	84- 89 MM	86. MM
H-POINT FROM SEATBACK	(D)	135- 140 MM	137. MM
SKULL CAP TO BACKLINE	(H)	41- 46 MM	43. MM
TOTAL SITTING HEIGHT	(A)	879- 889 MM	886. MM
THIGH CLEARANCE	(F)	140- 155 MM	145. MM
BUTTOCK KNEE LENGTH	(K)	579- 605 MM	597. MM
BUTTOCK POPLITEAL LENGTH	(N)	452- 478 MM	475. MM
POPLITEAL HEIGHT	(L)	429- 455 MM	452. MM
KNEE PIVOT HEIGHT	(M)	485- 500 MM	490. MM
FOOT LENGTH	(P)	252- 267 MM	257. MM
FOOT BREADTH	(W)	91- 107 MM	97. MM
SHOULDER PIVOT FROM BACKLINE	(E)	84- 94 MM	86. MM
SHOULDER BREADTH	(V)	422- 437 MM	427. MM
SHOULDER PIVOT HEIGHT	(B)	506- 521 MM	511. MM
ELBOW REST HEIGHT	(J)	191- 211 MM	211. MM
SHOULDER-ELBOW LENGTH	(I)	330- 345 MM	345. MM
BACK OF ELBOW TO WRIST PIVOT	(G)	290- 305 MM	292. MM

TEST MEETS SPECIFICATIONS

TECHNICIAN Pete Faust

921216

TRANSPORTATION RESEARCH CENTER OF OHIO

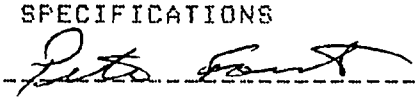
HEAD DROP TEST

HYBRID III 13-NOV-92

TRC 142C12HD1 572E SN142 HEAD DROP CAL 12

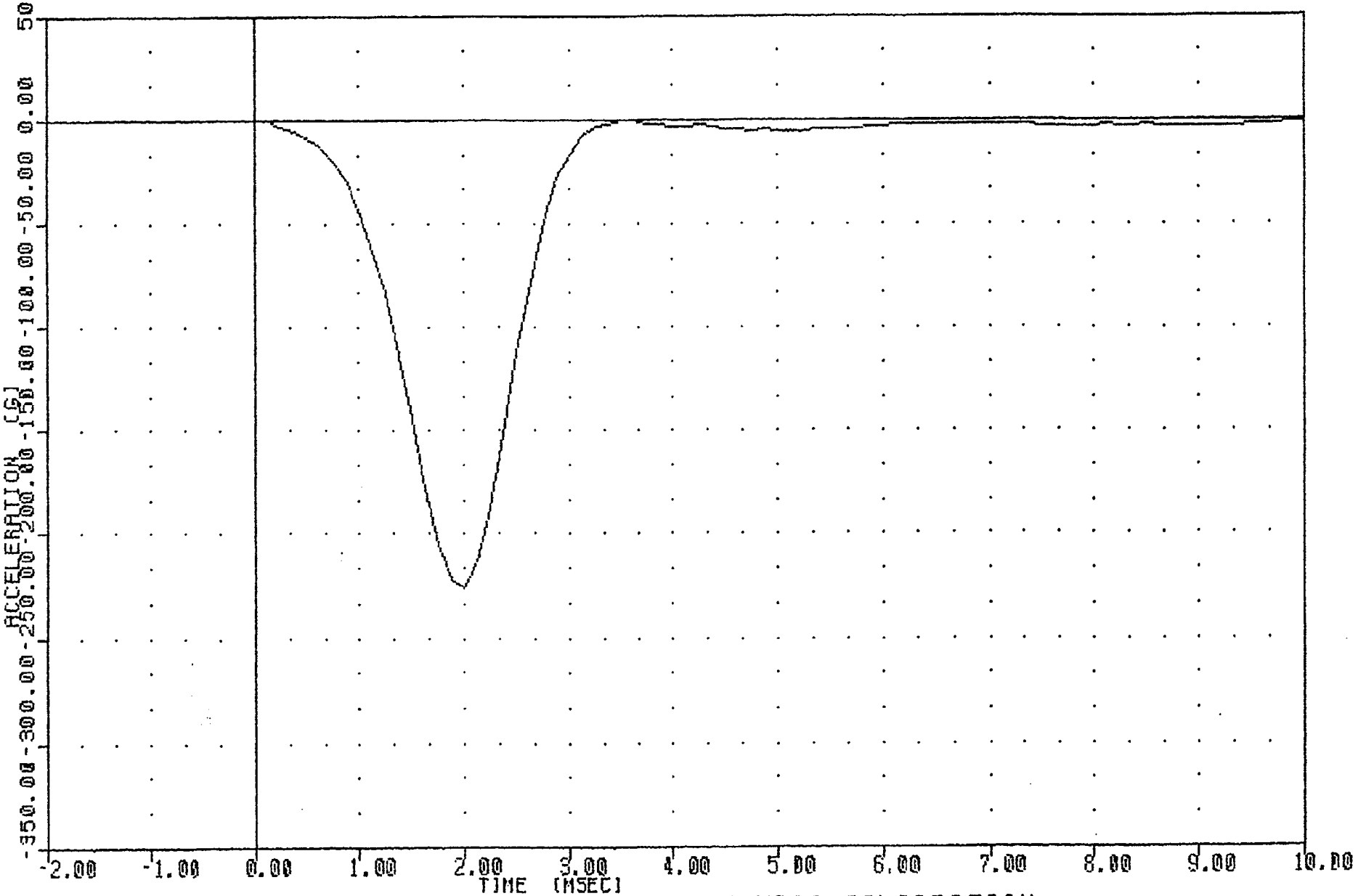
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	20.6-22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10% - 70%	51.0 %
PEAK RESULTANT ACCELERATION	225 - 275 G	264.51 G
PEAK LATERAL ACCELERATION	15 G MAX	5.36 G
IS ACCELERATION CURVE UNIMODAL?	YES	YES

TEST MEETS SPECIFICATIONS

TECHNICIAN 

TRC , 142C12HD1
572E SN142 HEAD DROP CAL 12
92318
HEDXG

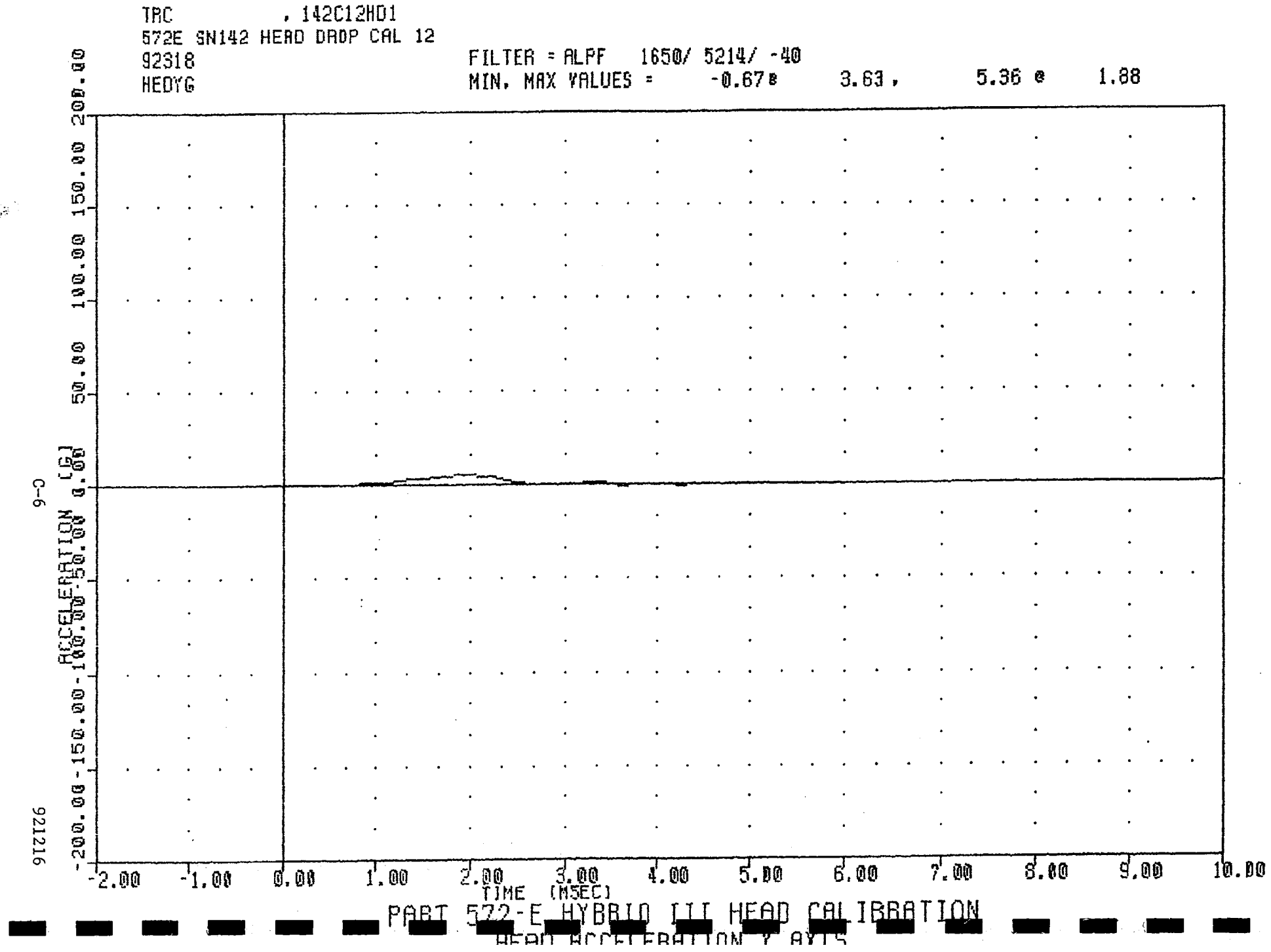
FILTER = ALPF 1650/ 5214/ -40
MIN, MAX VALUES = -225.66 @ 2.00 , 0.31 @ 3.63



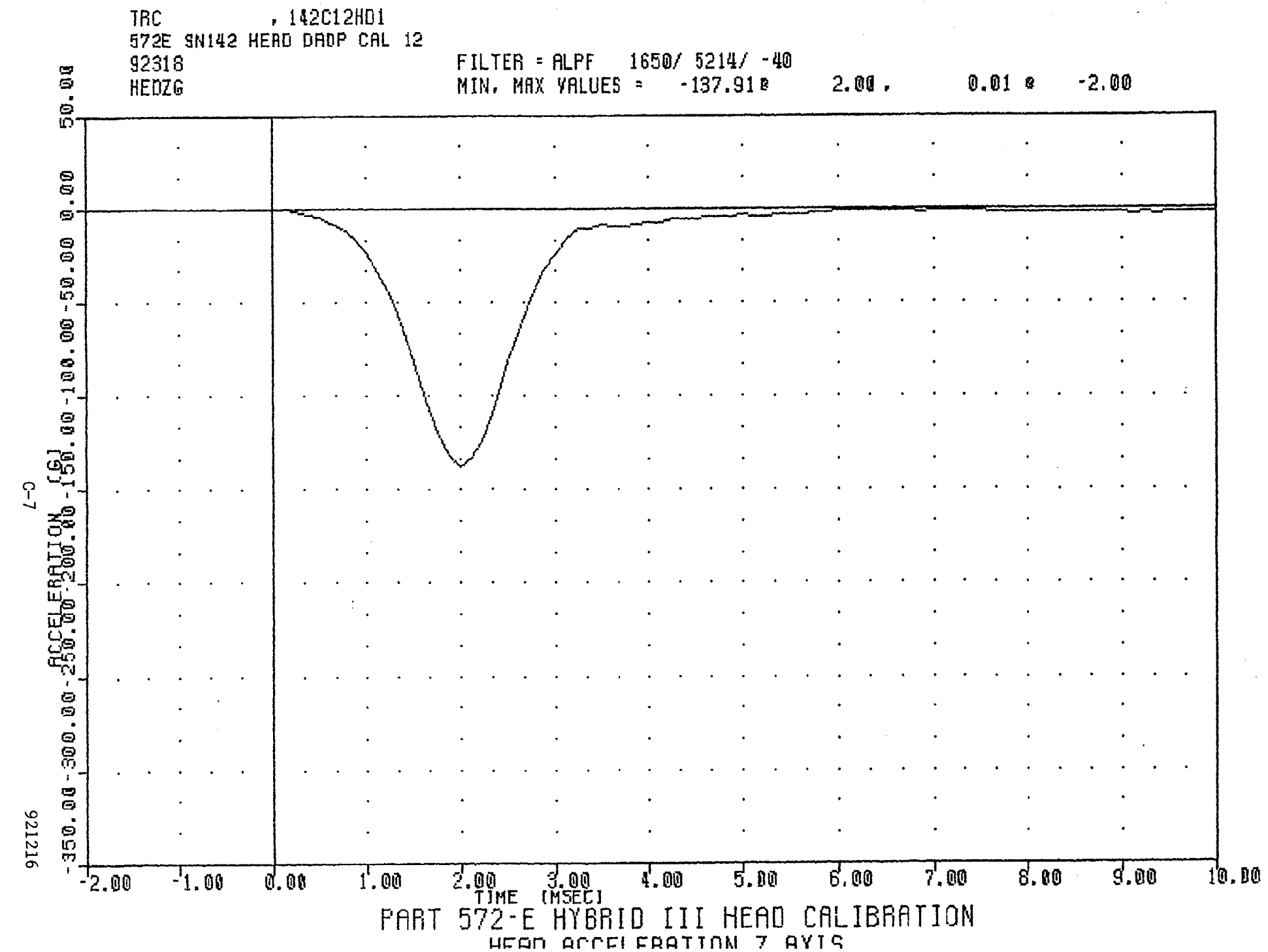
PART 572-E HYBRID III HEAD CALIBRATION
HEAD ACCELERATION X AXIS

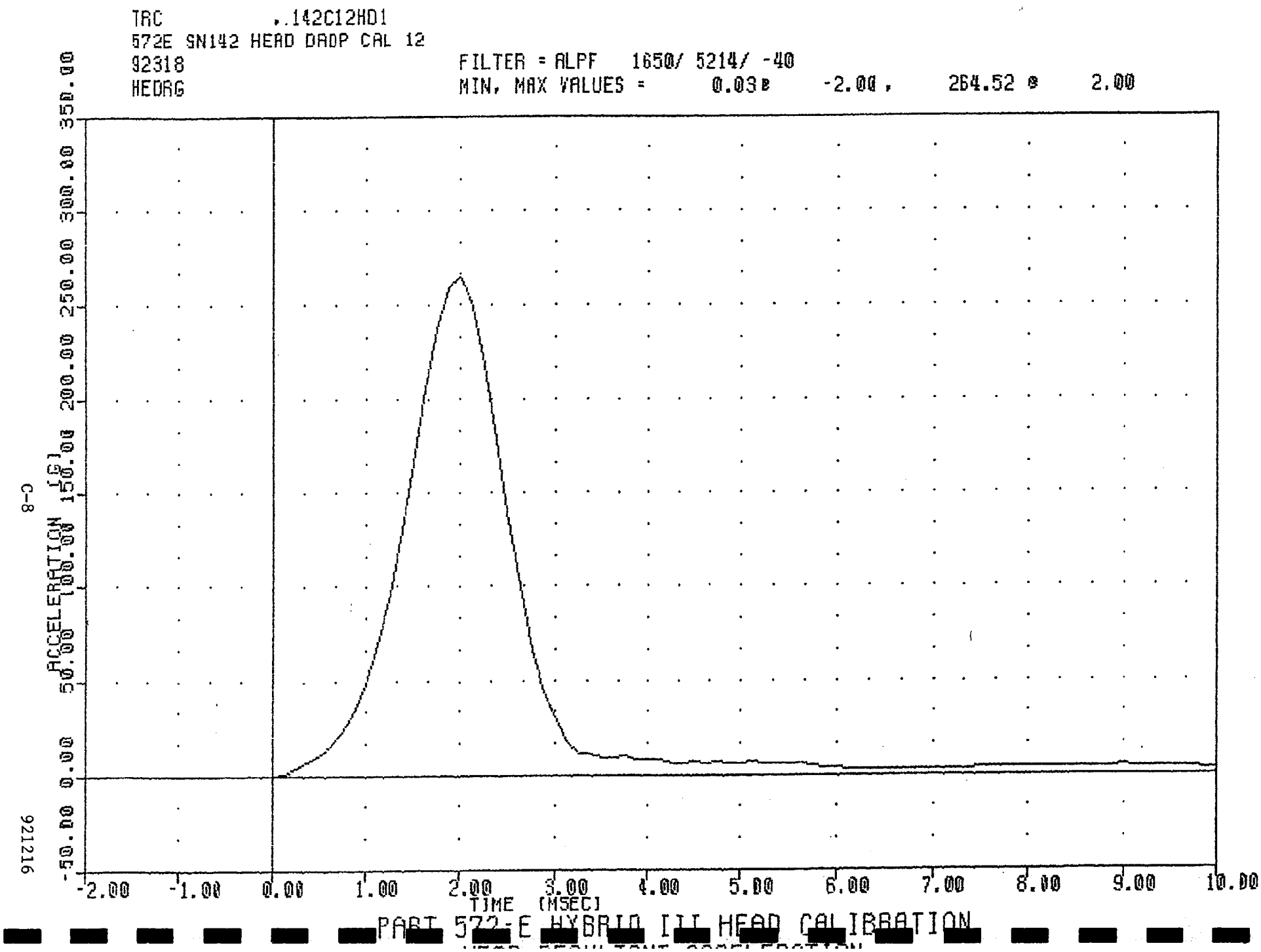
C-5

921216


TRC , 142C12HD1
572E SN142 HEAD DROP CAL 12
92318
HEDYG
FILTER = ALPF 1650/ 5214/ -40
MIN, MAX VALUES = -0.67@ 3.63, 5.36 @ 1.88
ACCELERATION (G)
200.00
150.00
100.00
50.00
0.00
-50.00
-100.00
-150.00
-200.00
-2.00
-1.00
0.00
1.00
2.00
3.00
4.00
5.00
6.00
7.00
8.00
9.00
10.00
TIME (MSEC)
PART 572-E HYBRID III HEAD CALIBRATION
HEAD ACCELERATION Y AXIS

921216


TRC , 142C12HD1
572E SN142 HEAD DROP CAL 12
92316
HEDZG
FILTER = ALPF 1650/ 5214/ -40
MIN, MAX VALUES = -137.91 @ 2.00 , 0.01 @ -2.00
ACCELERATION [G]
50.00
0.00
-50.00
-100.00
-150.00
-200.00
-250.00
-300.00
-350.00
-2.00
-1.00
0.00
1.00
2.00
3.00
4.00
5.00
6.00
7.00
8.00
9.00
10.00
TIME (MSEC)
PART 572-E HYBRID III HEAD CALIBRATION
HEAD ACCELERATION Z AXIS



PART 572-E HYBRID III HEAD CALIBRATION

TRANSPORTATION RESEARCH CENTER OF OHIO

NECK FLEXION TEST

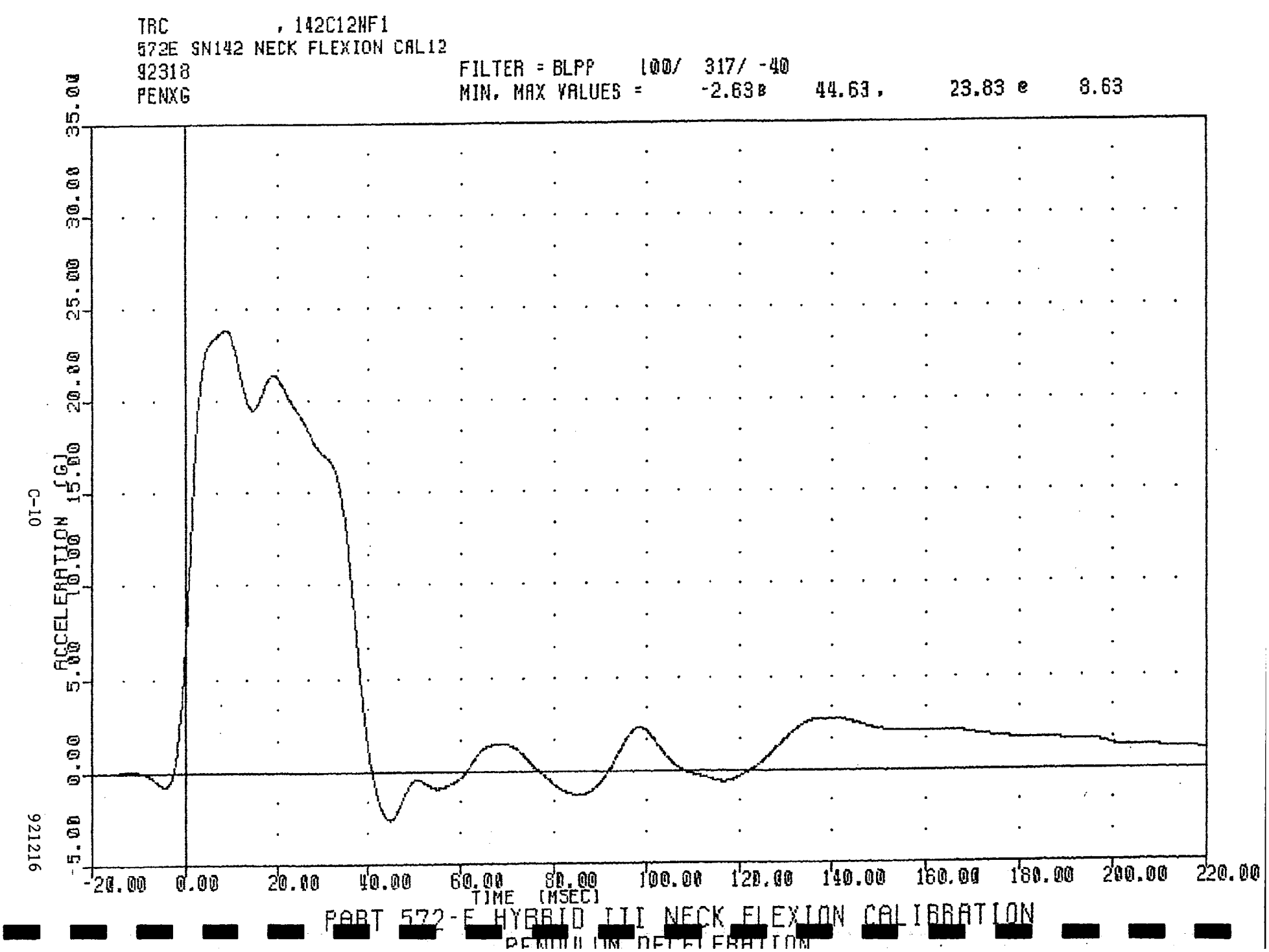
HYBRID III 13-NOV-92

6 AXIS NECK TRANSDUCER
TRC 142C12NF1 572E SN142 NECK FLEXION CAL12

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6-22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY		10% - 70%	51.0 %
IMPACT VELOCITY		6.89 - 7.13 M/SEC	7.03 M/SEC
PENDULUM DECELERATION	10 MS	22.50 - 27.50 G	23.39 G
	20 MS	17.60 - 22.60 G	21.24 G
	30 MS	12.50 - 18.50 G	17.04 G
MAX PENDULUM G ABOVE 30 MS		29 G MAX	17.02 G
DECELERATION-TIME CURVE DECAY TIME TO 5 G		34 - 42 MS	38.13 MS
D PLANE ROTATION	MAX	64 - 78 DEG.	74.35 DEG.
	TIME	57 - 64 MS	61.50 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MAX	88.2 - 108.5 NM	92.86 NM
	TIME	47 - 58 MS	50.38 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		113 - 128 MS	117.00 MS
POSITIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		97 - 107 MS	106.50 MS

TEST MEETS SPECIFICATIONS

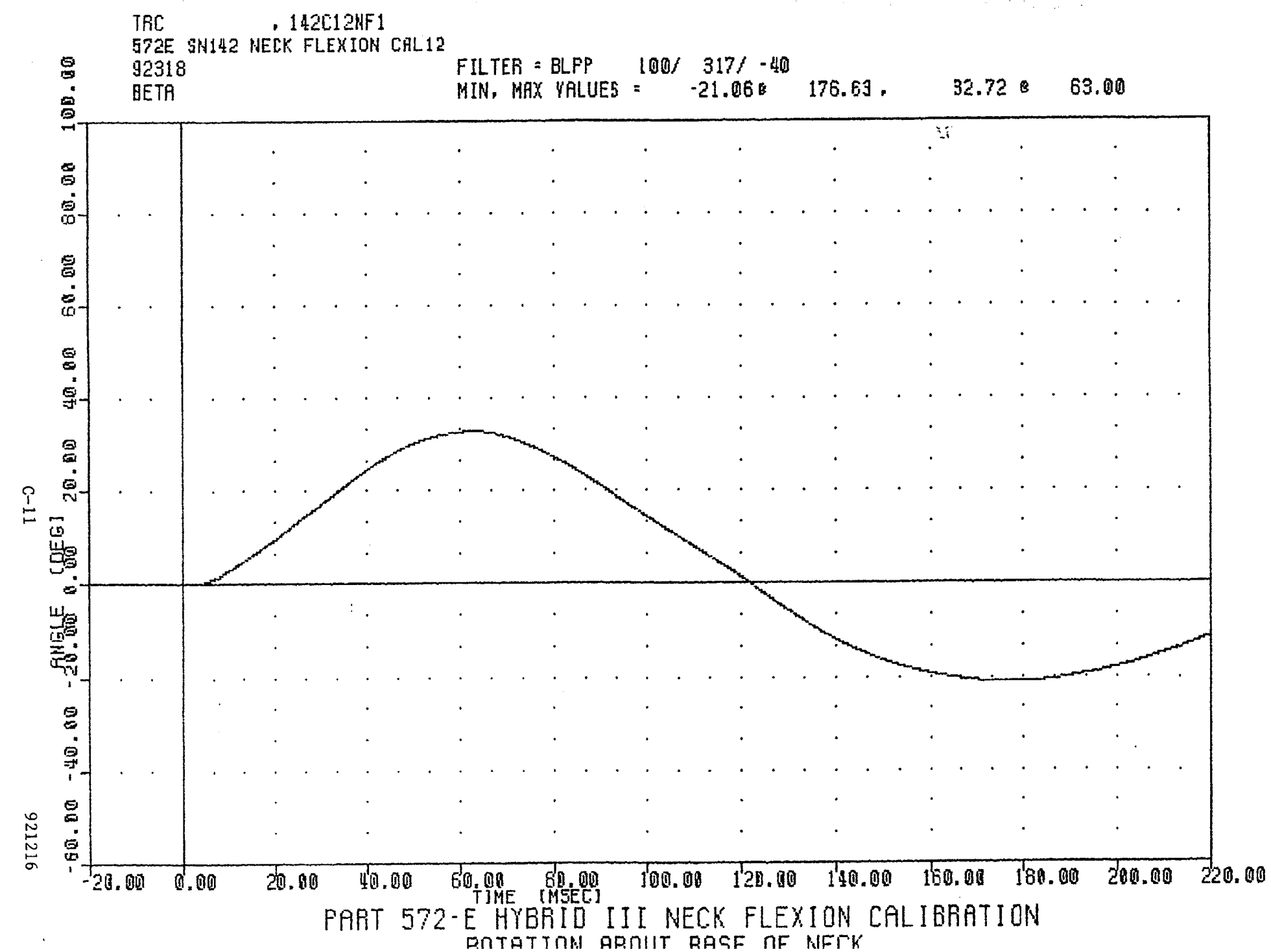
TECHNICIAN Pete Foust



PART 572-E HYBRID III NECK FLEXION CALIBRATION

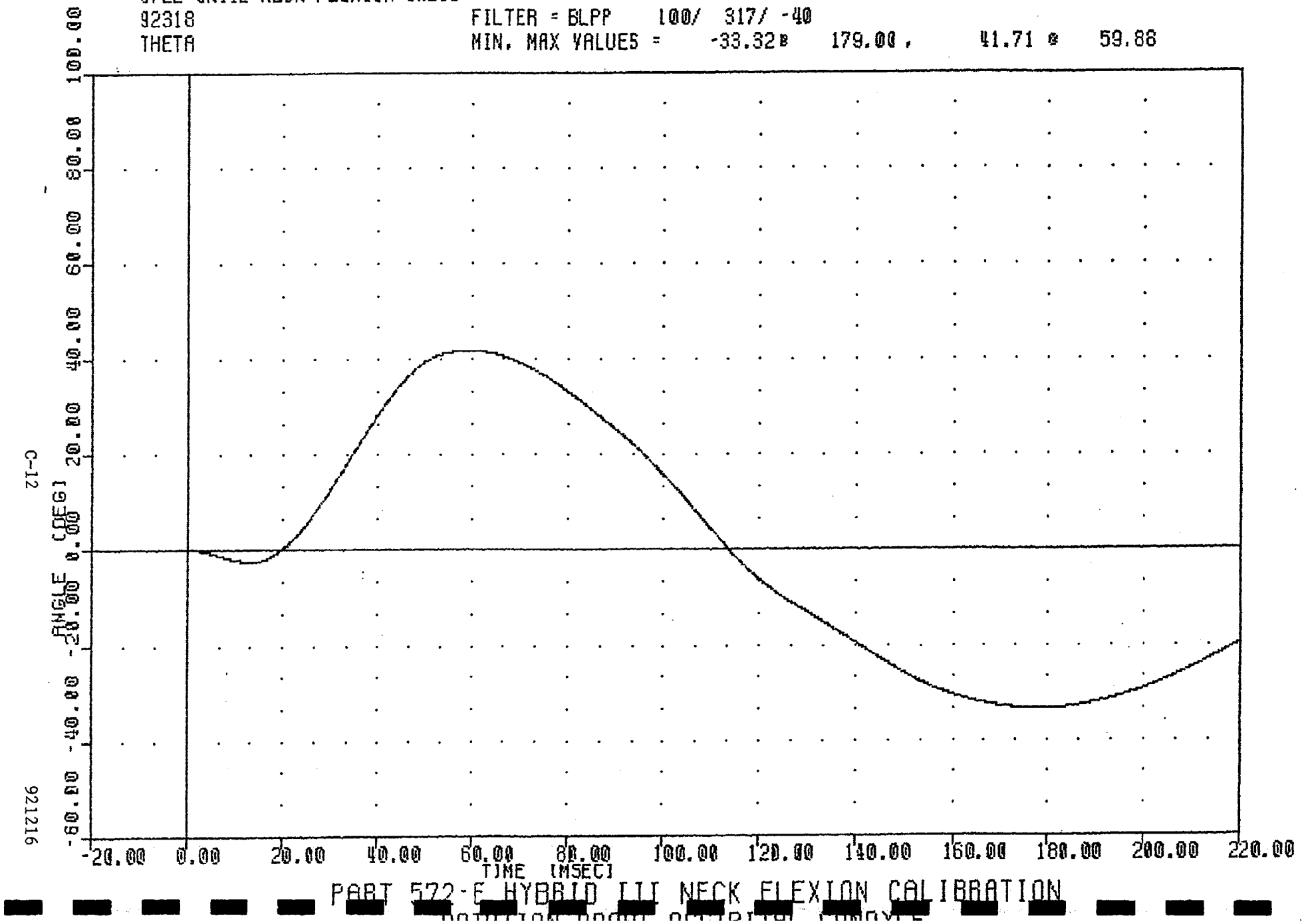
PENDULUM DECELERATION

921216

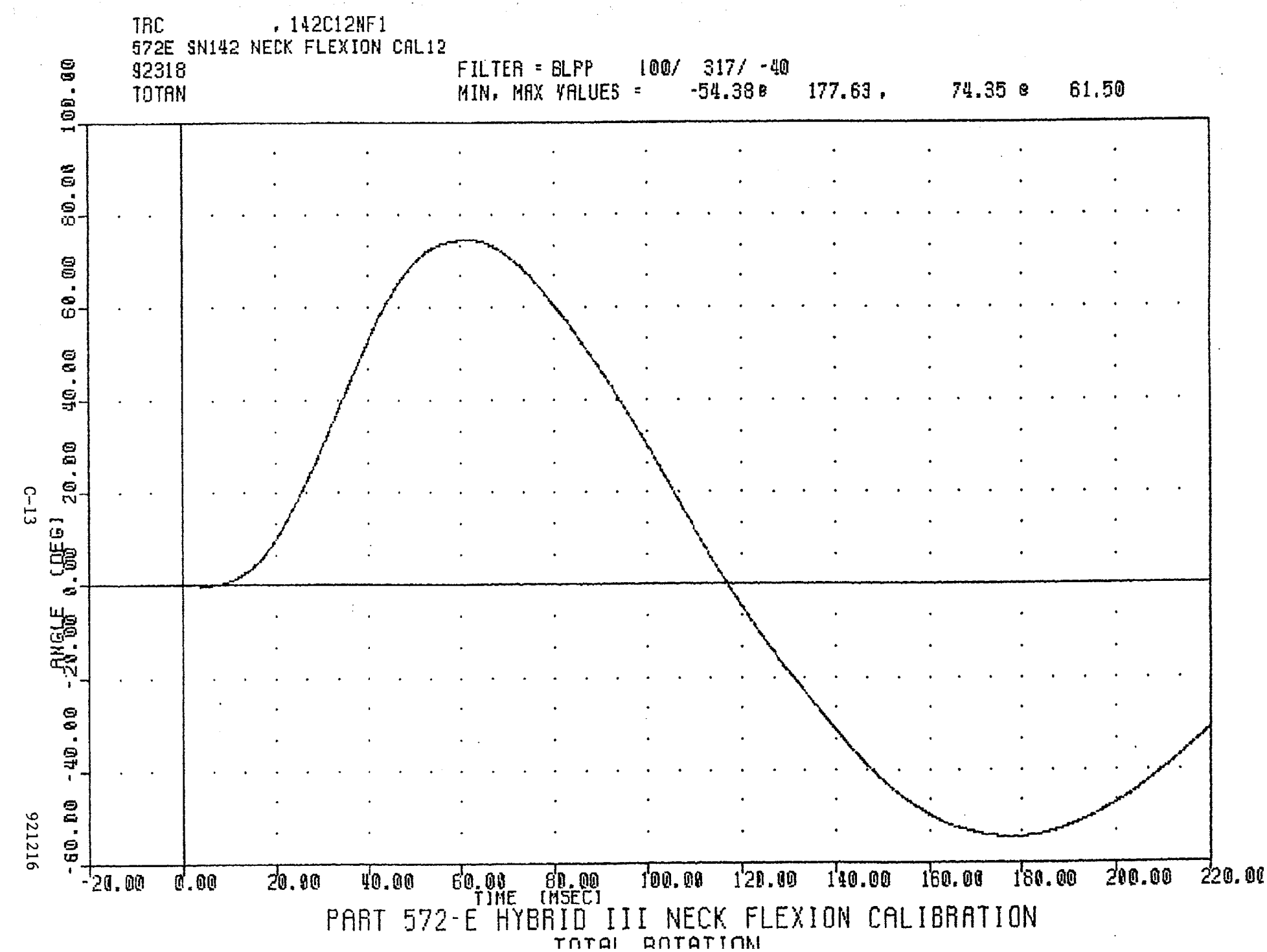


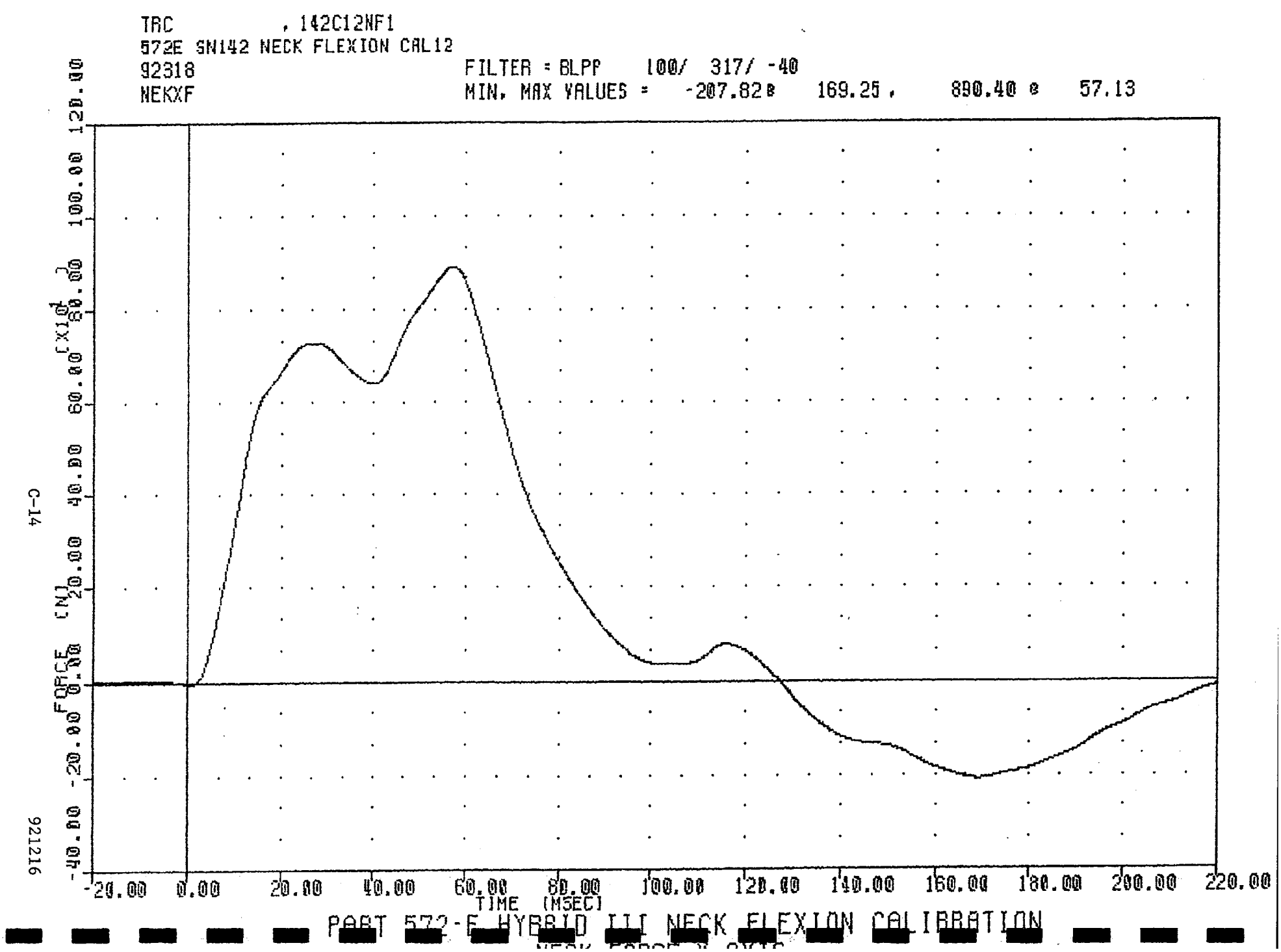
PART 572-E HYBRID III NECK FLEXION CALIBRATION

ROTATION ABOUT BASE OF NECK

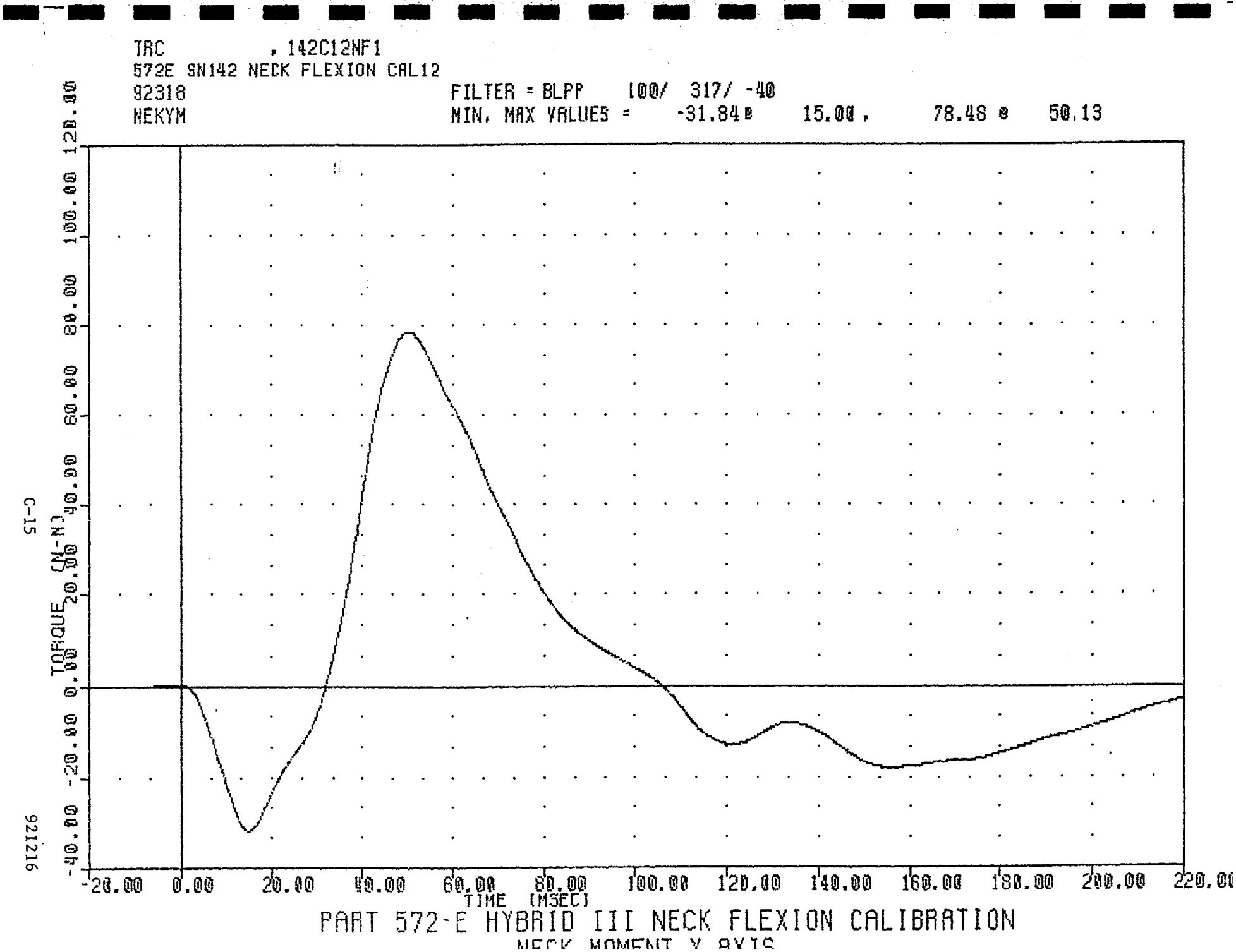


PART 572-E HYBRID III NECK FLEXION CALIBRATION

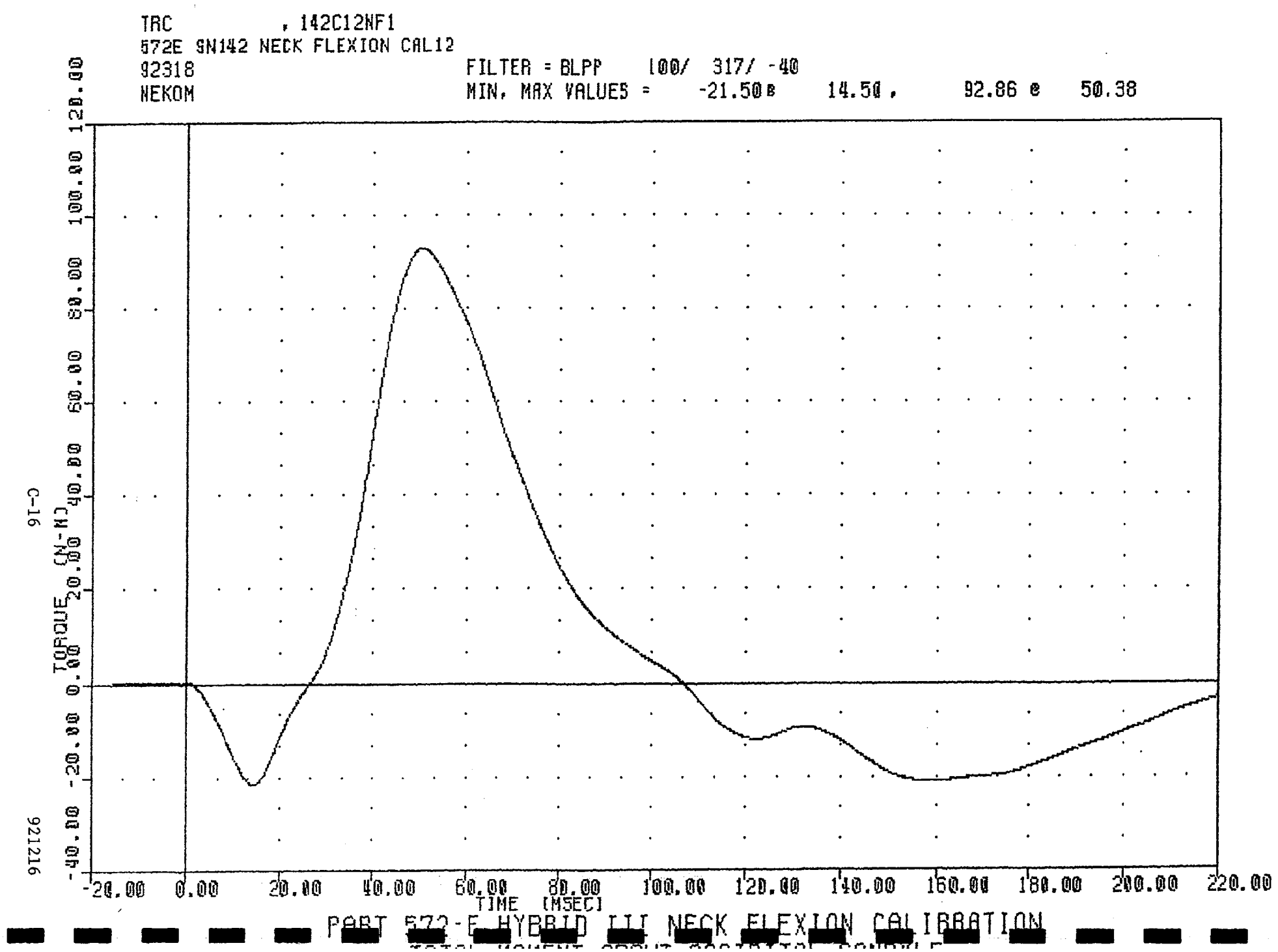

TRC , 142C12NF1
572E SN142 NECK FLEXION CAL12
92318
TOTAN
FILTER = BLPP 100/ 317/ -40
MIN, MAX VALUES = -54.38 @ 177.63 , 74.35 @ 61.50
100.00
80.00
60.00
40.00
20.00
0.00
-20.00
-40.00
-60.00
ANGLE (DEG)
-20.00
0.00
20.00
40.00
60.00
80.00
100.00
120.00
140.00
160.00
180.00
200.00
220.00
TIME (MSEC)
PART 572-E HYBRID III NECK FLEXION CALIBRATION
TOTAL ROTATION



PART 572-E HYBRID III NECK FLEXION CALIBRATION


TRC , 142C12NF1
572E SN142 NECK FLEXION CAL12
92318
NEKYM
FILTER = BLPP 100/ 317/ -40
MIN, MAX VALUES = -31.84 @ 15.00 , 78.48 @ 50.13
TORQUE (N-M)
120.00
100.00
80.00
60.00
40.00
20.00
0.00
-20.00
-40.00
-20.00
0.00
20.00
40.00
60.00
80.00
100.00
120.00
140.00
160.00
180.00
200.00
220.00
TIME (MSEC)
PART 572-E HYBRID III NECK FLEXION CALIBRATION
NECK MOMENT Y AXIS

921216



PART 572-E HYBRID III NECK FLEXION CALIBRATION

921216

TRANSPORTATION RESEARCH CENTER OF OHIO

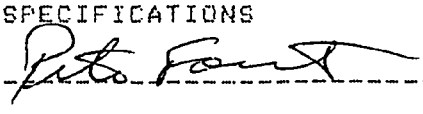
NECK EXTENSION TEST

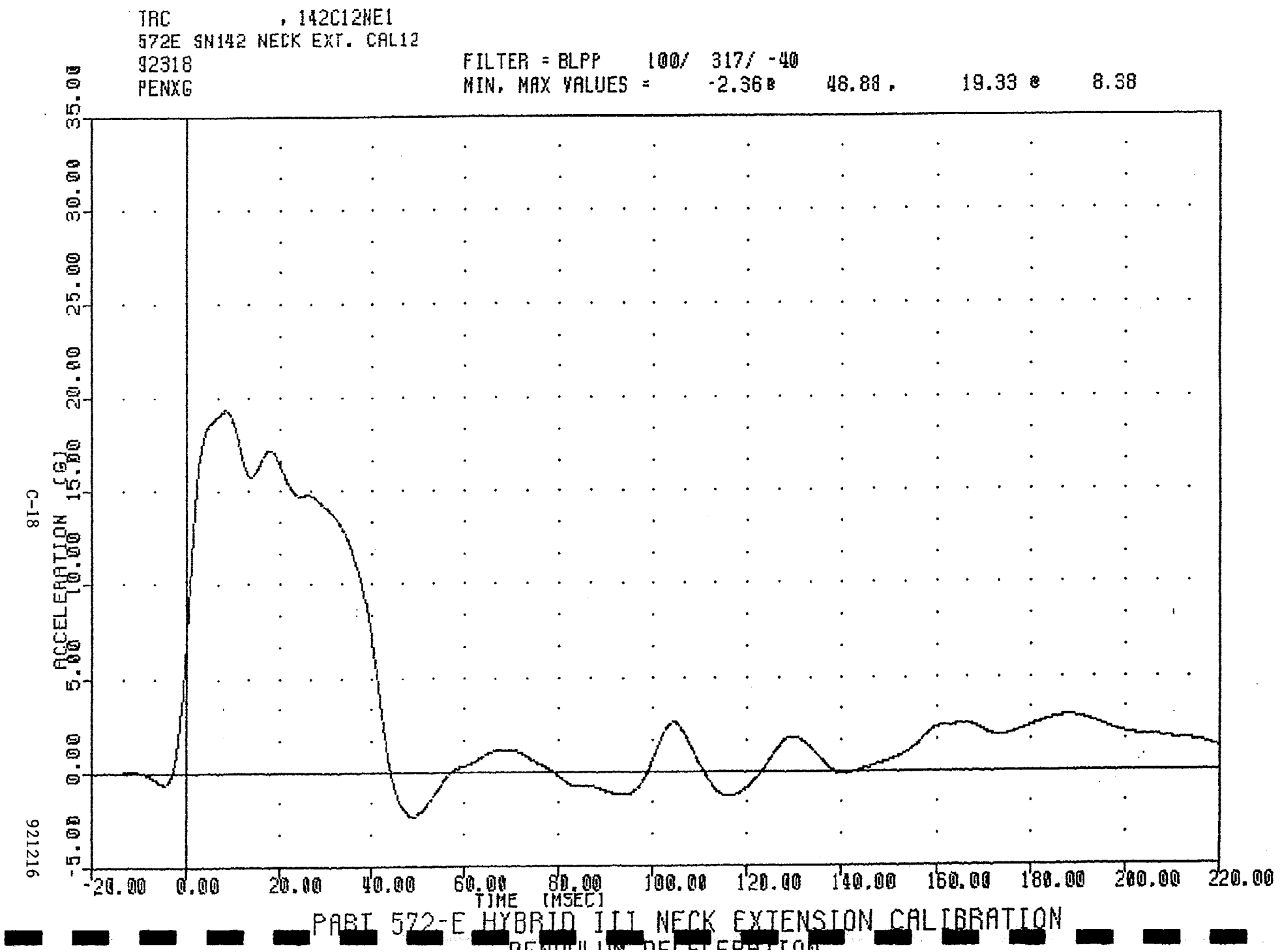
HYBRID III 13-NOV-92

6 AXIS NECK TRANSDUCER
TRC 142C12NE1 572E SN142 NECK EXT. CAL12

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6-22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY		10% - 70%	51.0 %
IMPACT VELOCITY		5.95 - 6.19 M/SEC	6.05 M/SEC
PENDULUM DECELERATION	10 MS	17.20 - 21.20 G	18.79 G
	20 MS	14.00 - 19.00 G	16.46 G
	30 MS	11.00 - 16.00 G	14.09 G
MAX PENDULUM G ABOVE 30 MS		22 G MAX	14.06 G
DECELERATION-TIME CURVE DECAY TIME TO 5 G		38 - 46 MS	40.88 MS
D PLANE ROTATION	MAX	81 - 106 DEG.	97.70 DEG.
	TIME	72 - 82 MS	75.88 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MIN	-80.0/-52.9 NM	-70.49 NM
	TIME	65 - 79 MS	71.25 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		147 - 174 MS	154.75 MS
NEGATIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		120 - 148 MS	139.38 MS

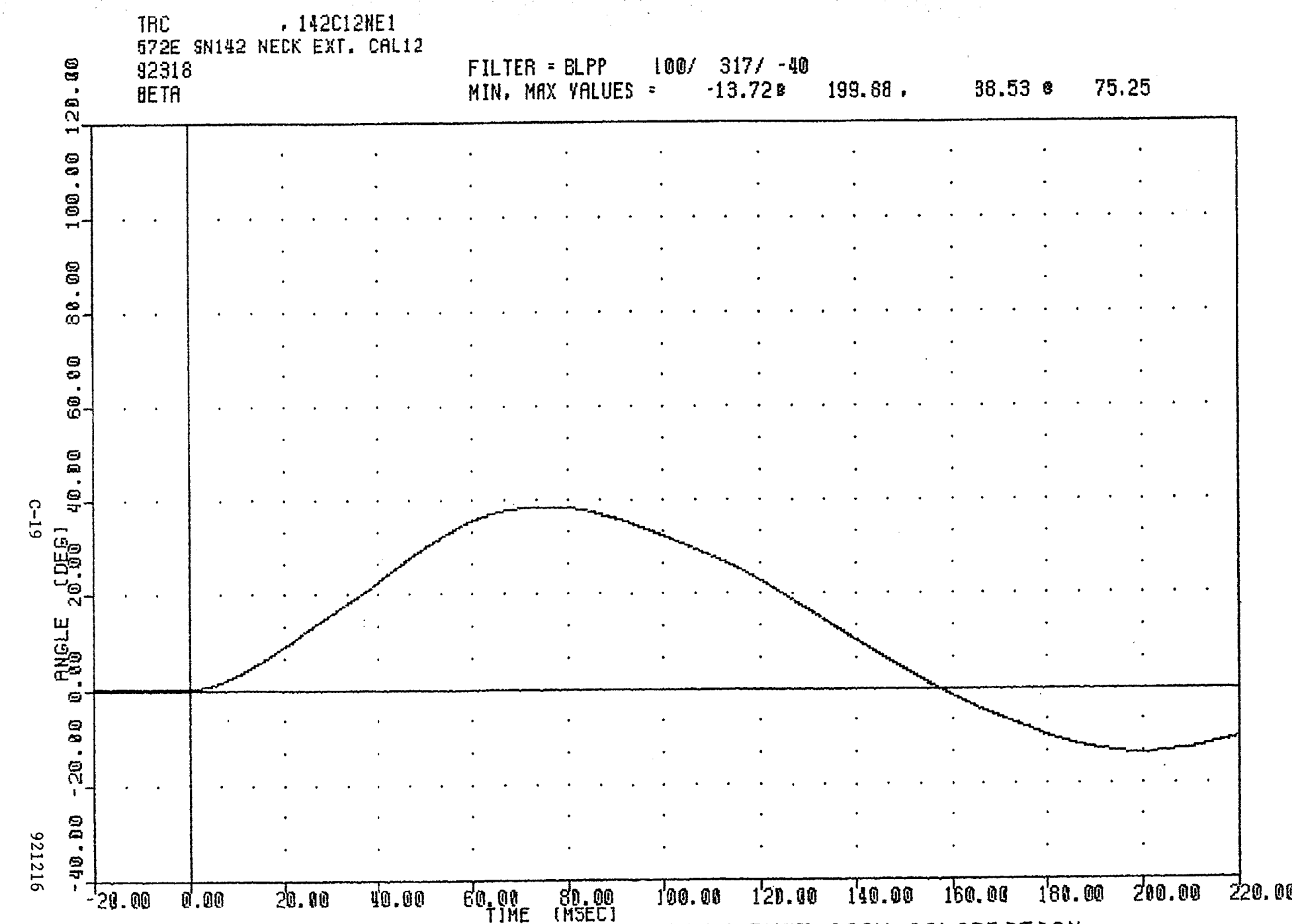
TEST MEETS SPECIFICATIONS

TECHNICIAN 



PART 572-E HYBRID III NECK EXTENSION CALIBRATION

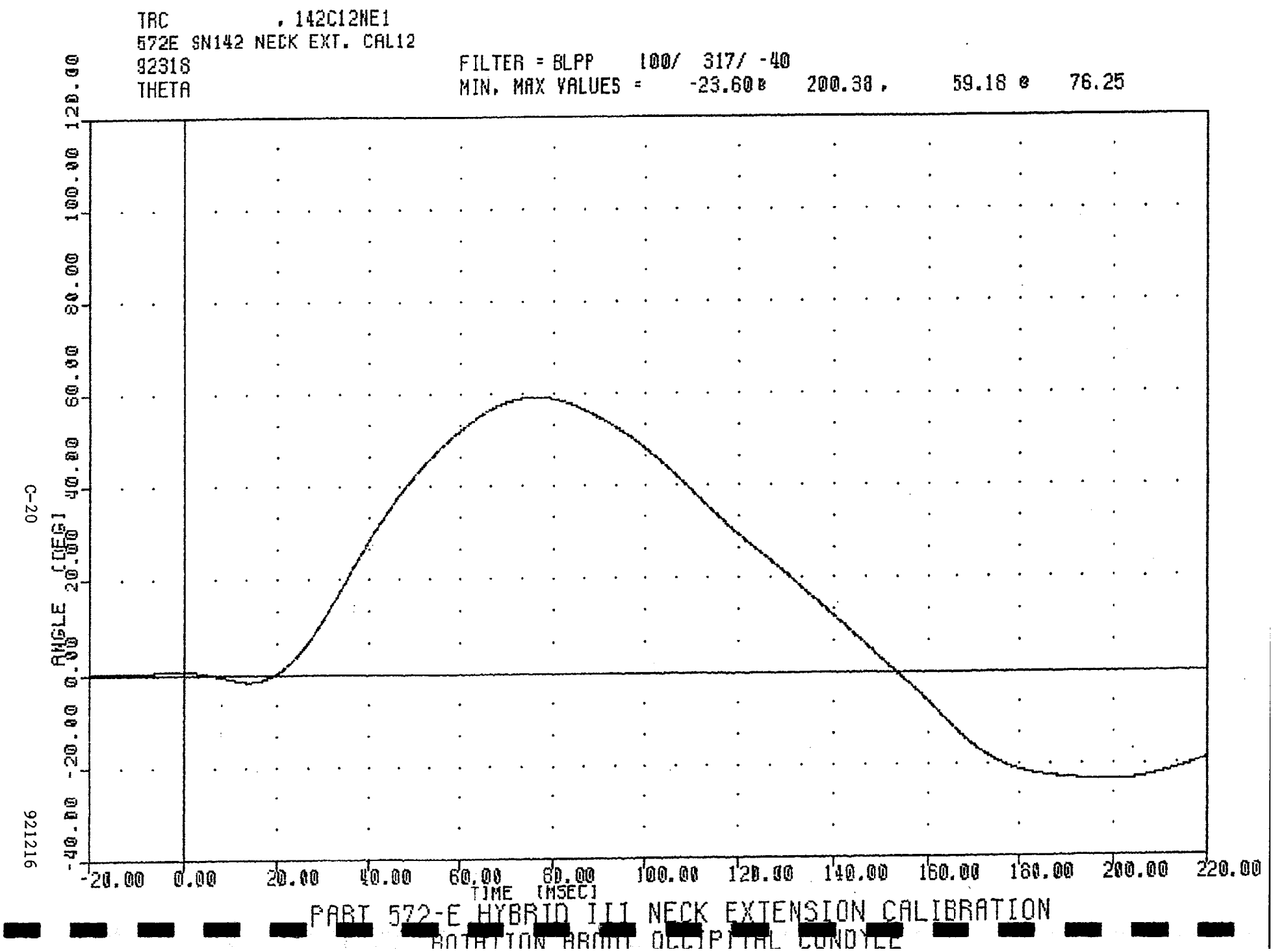
921216



PART 572-E HYBRID III NECK EXTENSION CALIBRATION

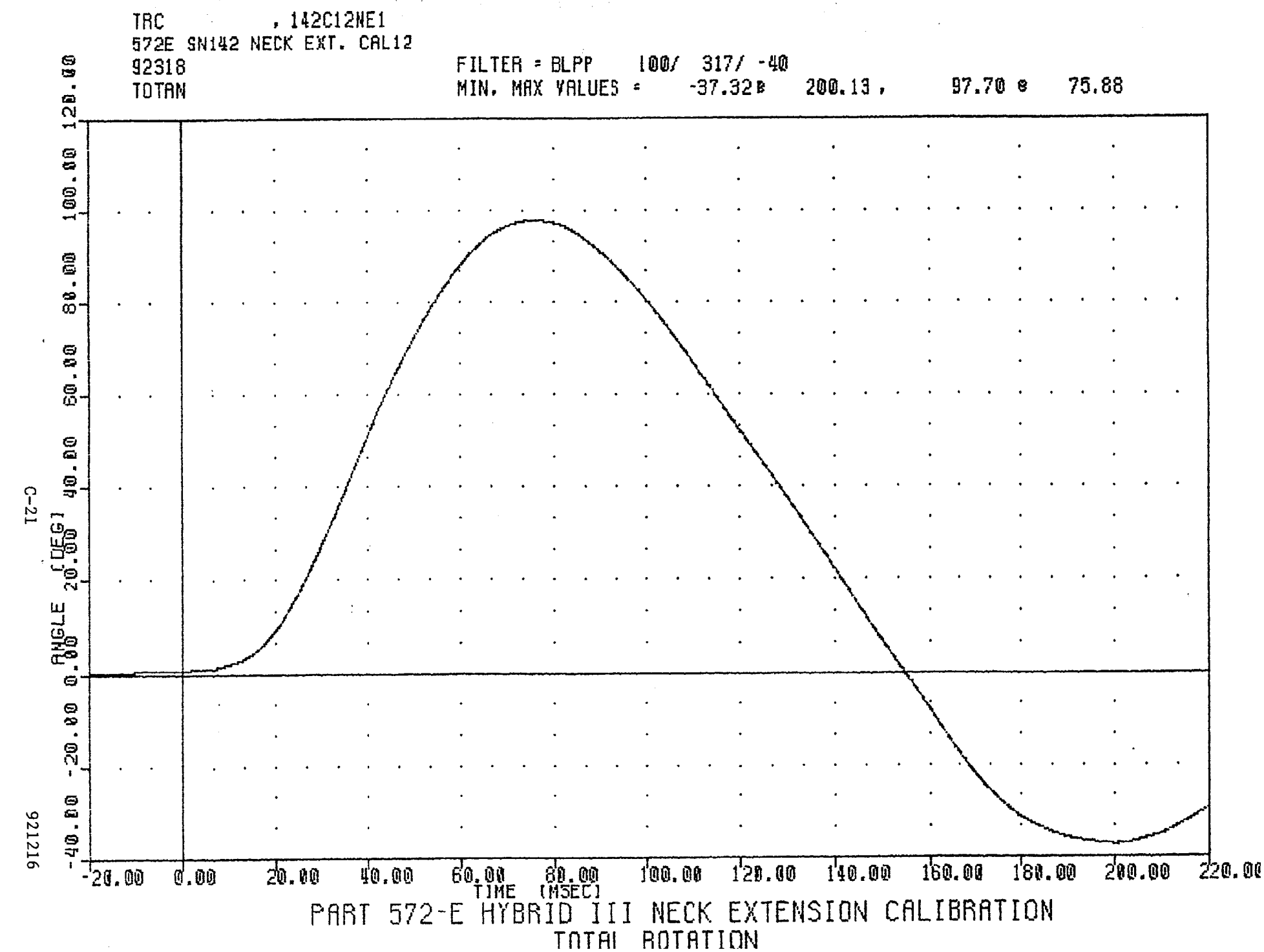
ROTATION ABOUT BASE OF NECK

921216

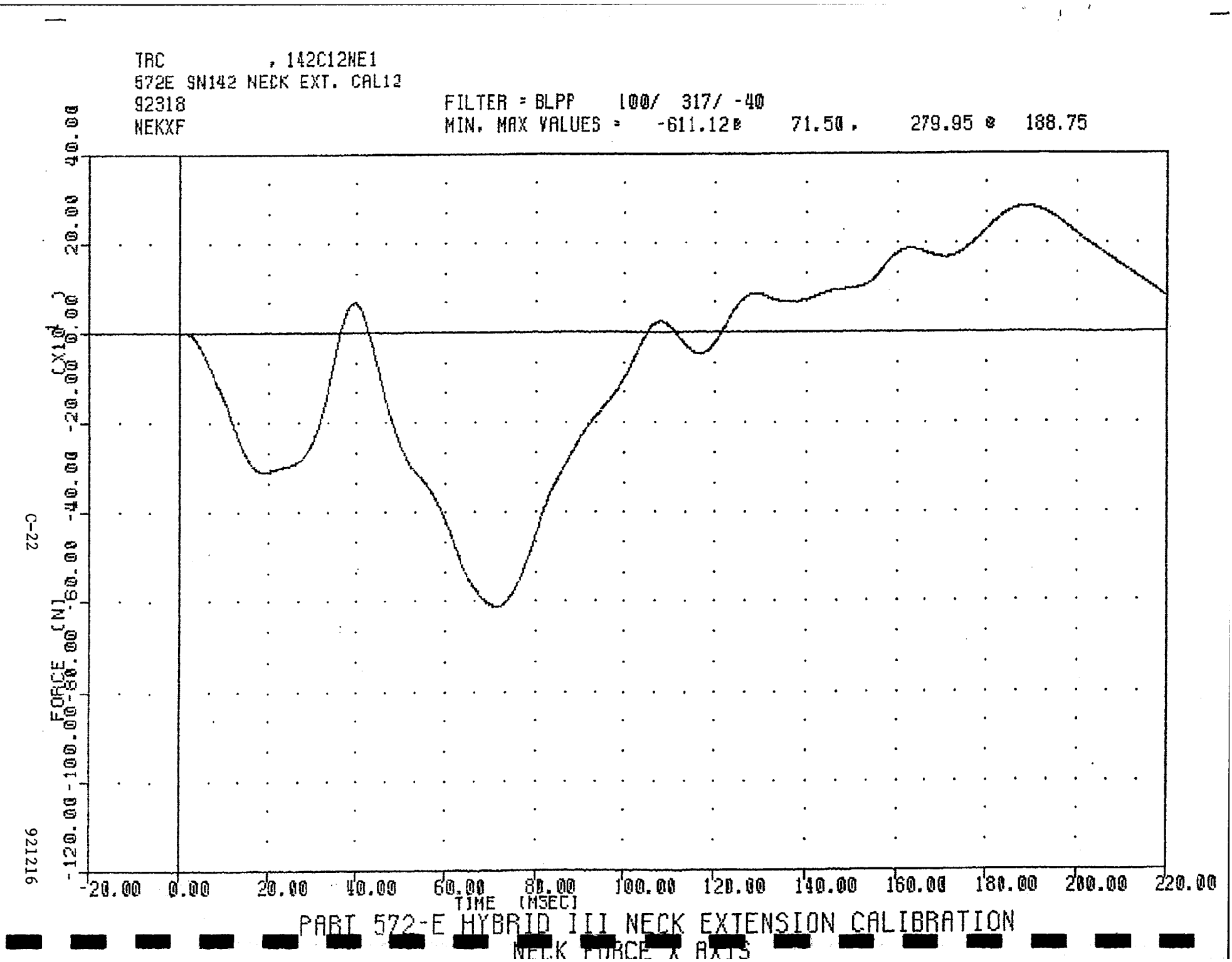


PART 572-E HYBRID III NECK EXTENSION CALIBRATION

ROTATION ABOUT OCCIPITAL CONDYLE



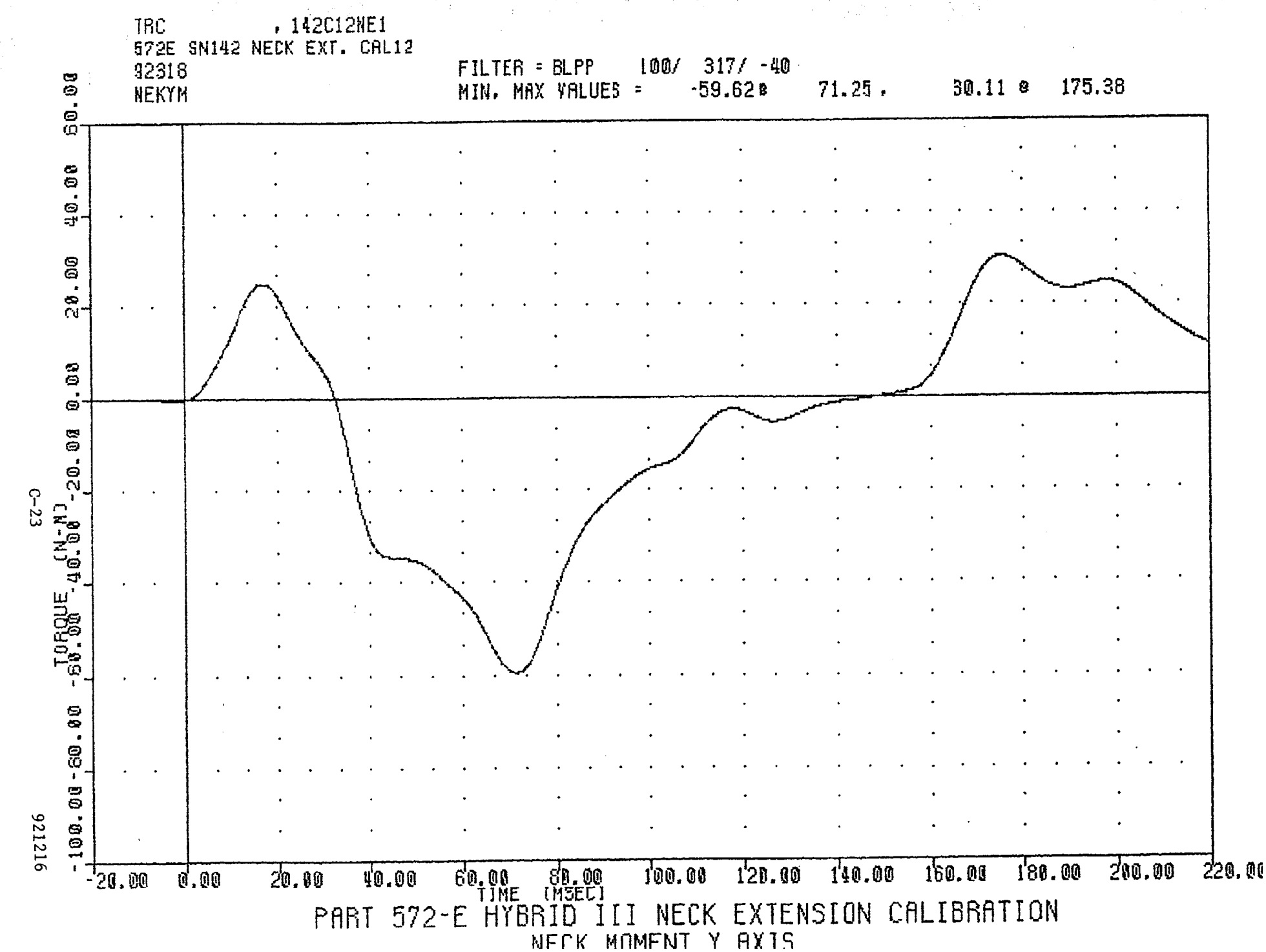
PART 572-E HYBRID III NECK EXTENSION CALIBRATION
TOTAL ROTATION



PART 572-E HYBRID III NECK EXTENSION CALIBRATION

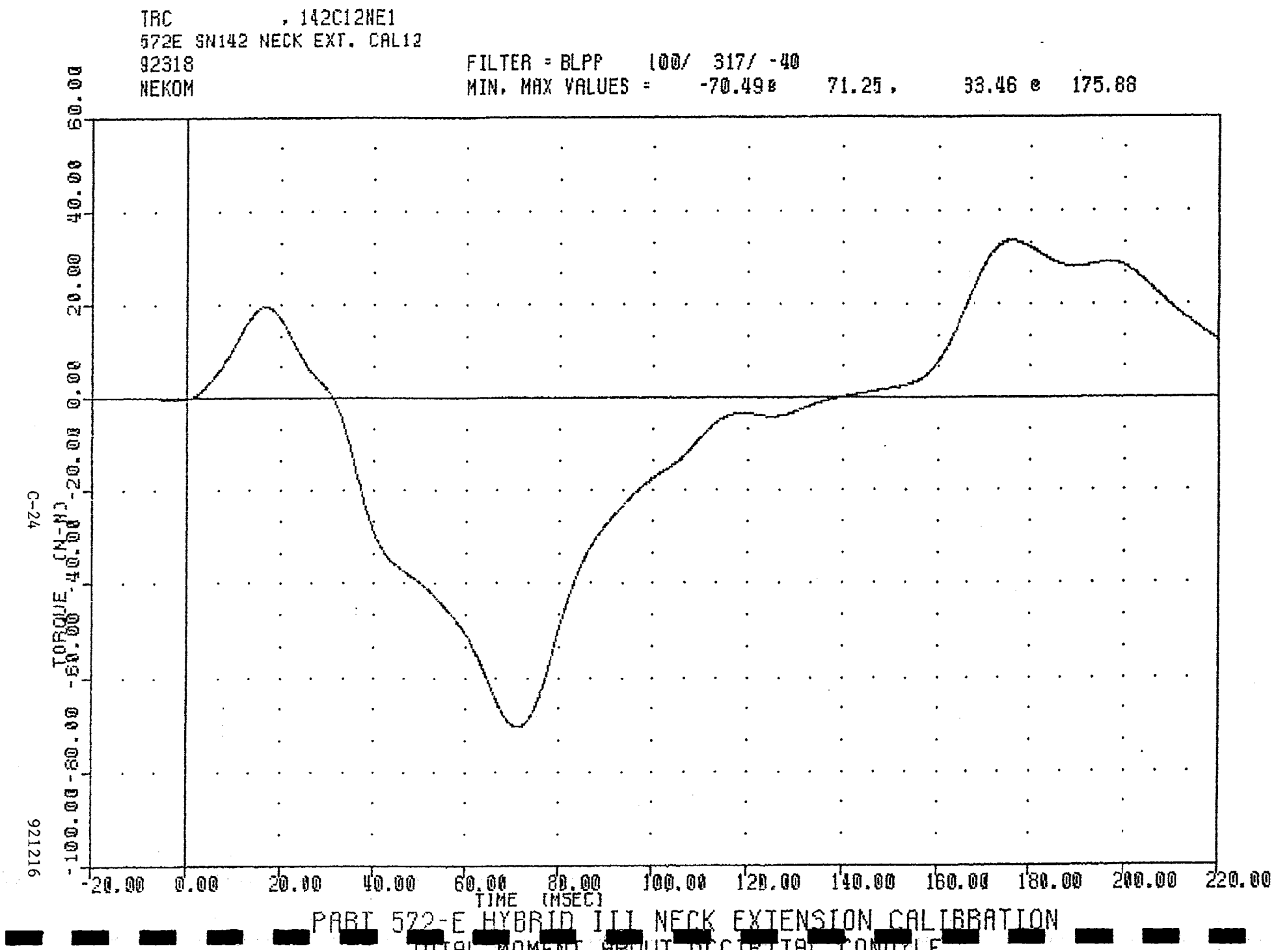
NECK FORCE X AXIS

921216



PART 572-E HYBRID III NECK EXTENSION CALIBRATION

NECK MOMENT Y AXIS


TRC , 142C12NE1
572E SN142 NECK EXT. CAL12
92318
NEKOM
FILTER = BLPP (00/ 317/ -40
MIN, MAX VALUES = -70.49@ 71.25 , 33.46 @ 175.88
TORQUE (N-M)
TIME (MSEC)
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

TRANSPORTATION RESEARCH CENTER OF OHIO

THORAX IMPACT TEST

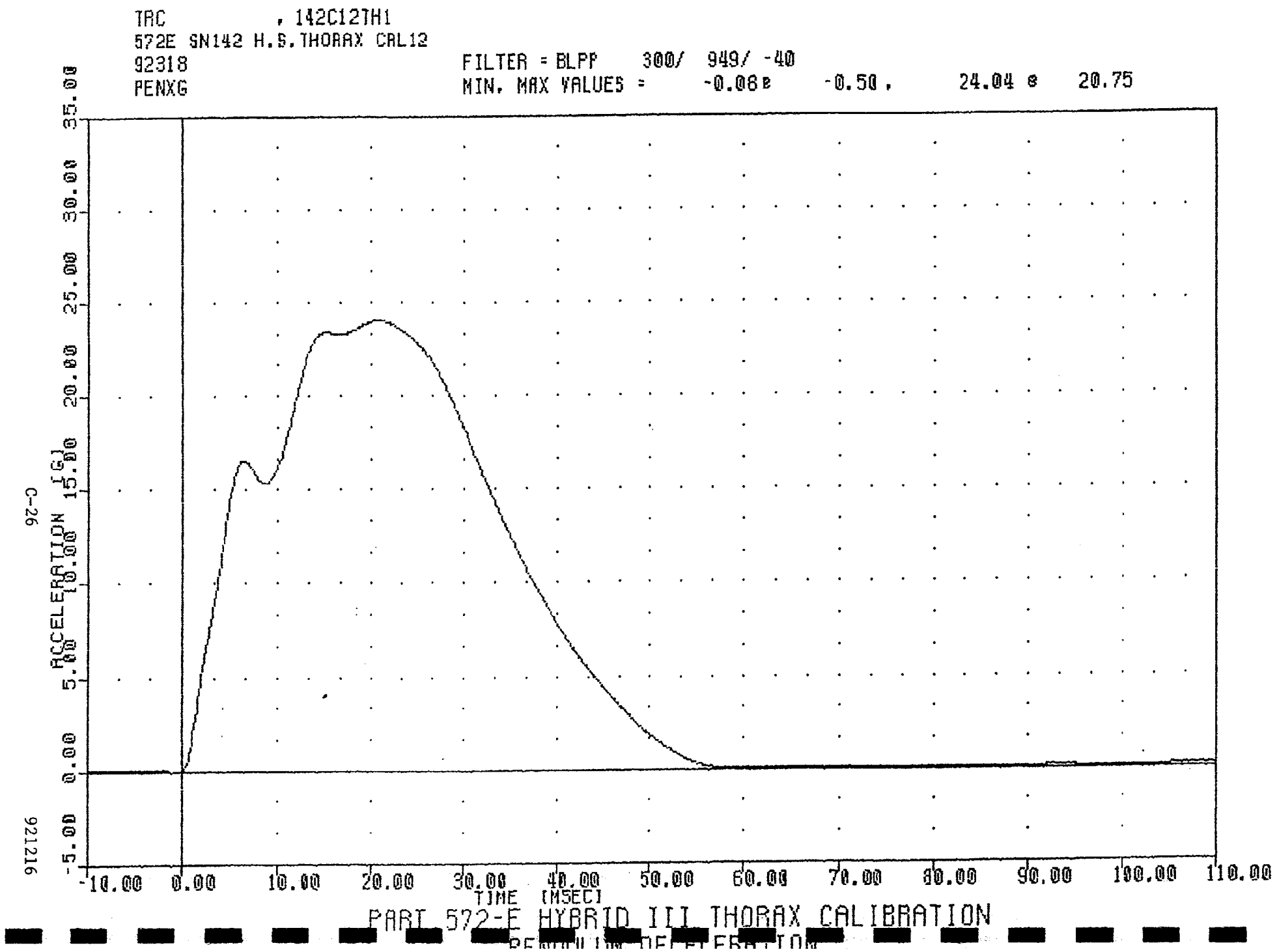
HYBRID III 13-NOV-92

TRC 142C12TH1 572E SN142 H.S.THORAX CAL12

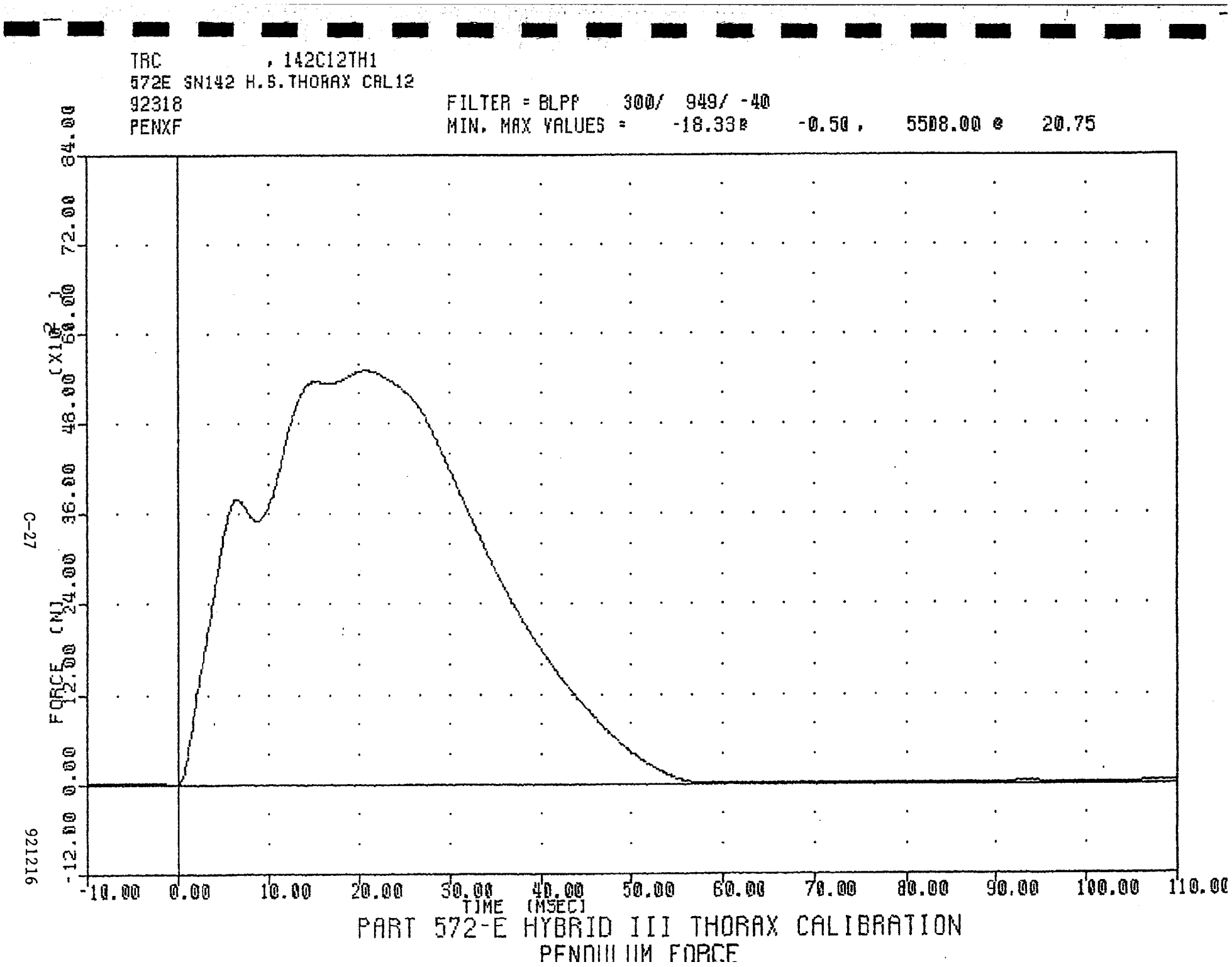
TEST PARAMETER	HIGH SPEED TEST SPECIFICATION	TEST RESULTS
TEMPERATURE	20.6-22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10% - 70%	51.0 %
PENDULUM VELOCITY	6.59 - 6.83 M/SEC	6.68 M/SEC
MAXIMUM DEFLECTION	63.5 - 72.6 MM	70.5 MM
MAXIMUM RESISTIVE FORCE	5159 - 5894 N	5508. N
INTERNAL HYSTERESIS	69% - 85%	70.7%

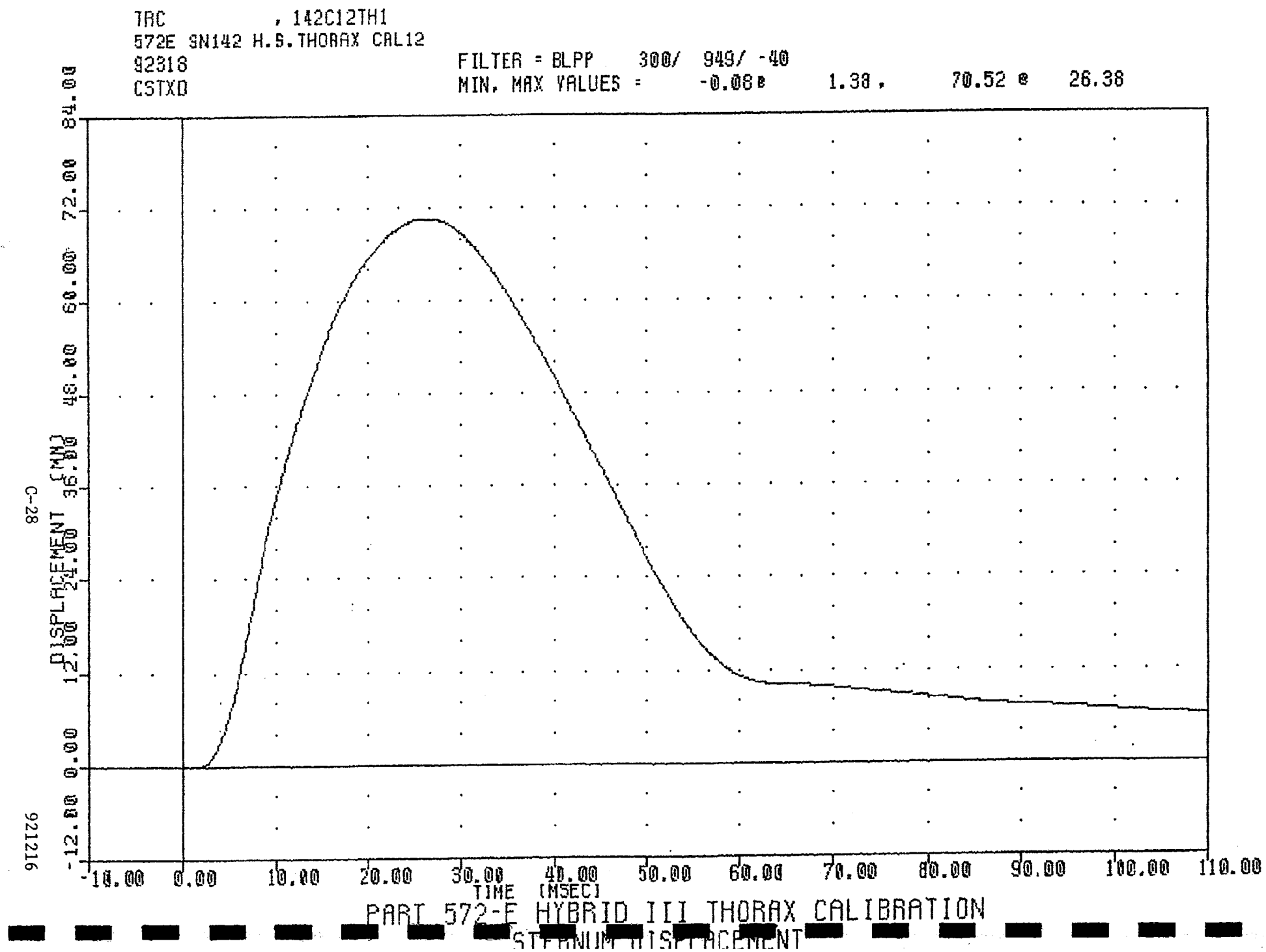
TEST MEETS SPECIFICATIONS

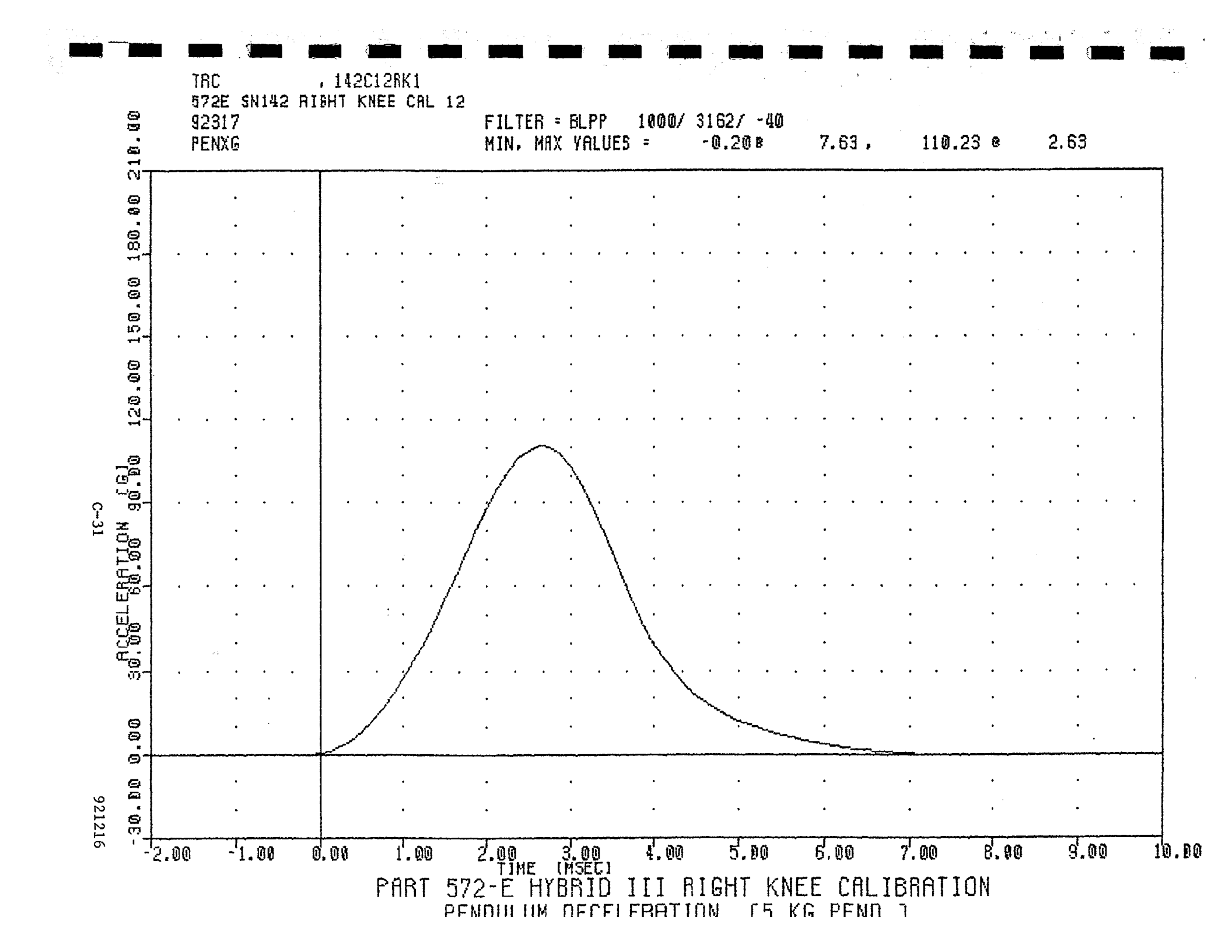
TECHNICIAN

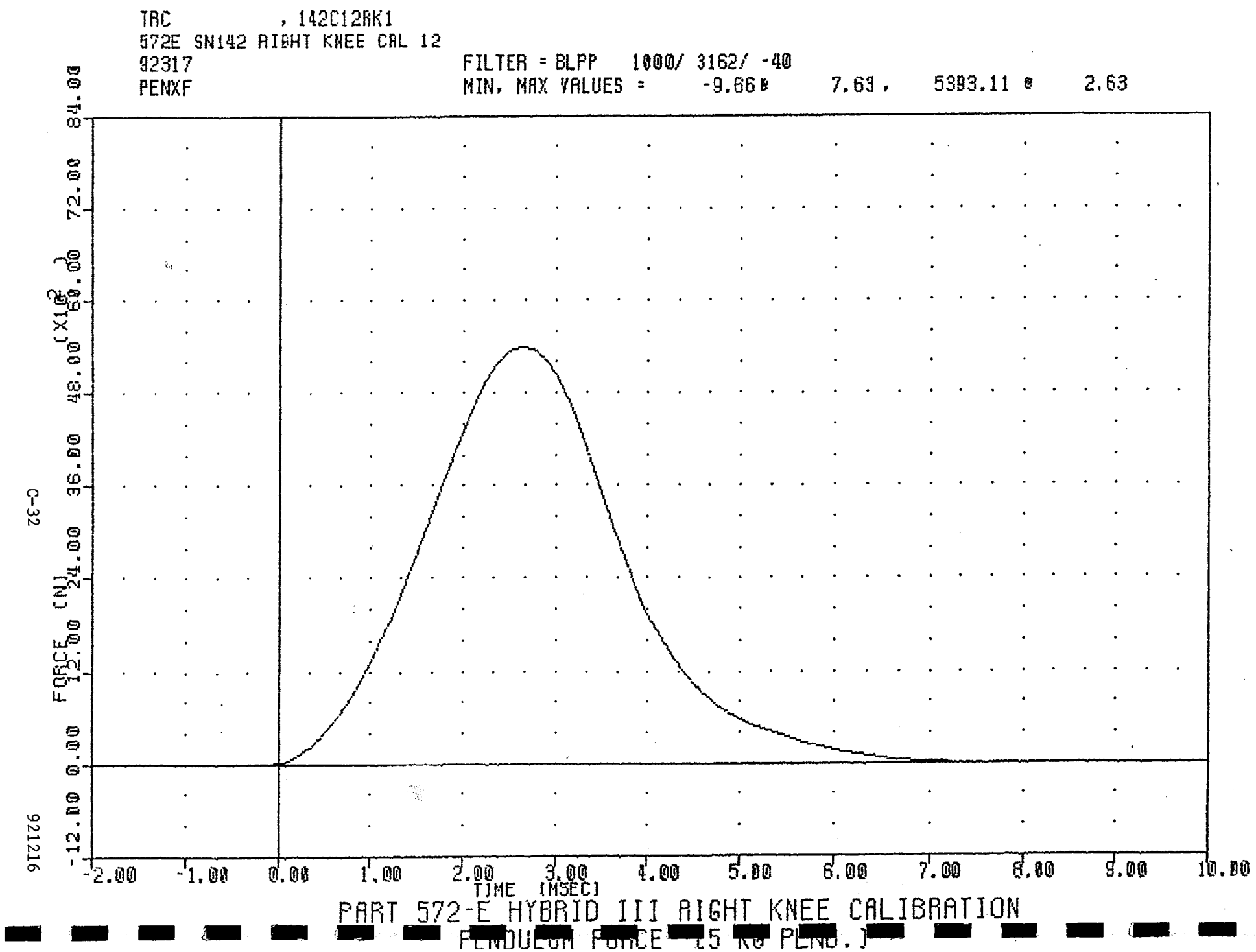


PART 572-E HYBRID III THORAX CALIBRATION


TRC , 142C12TH1
572E SN142 H.S.THORAX CAL12
92318
PENXF
FILTER = BLPF 300/ 949/ -40
MIN. MAX VALUES = -18.33 @ -0.50 , 5508.00 @ 20.75
FORCE (N) (X10^2)
84.00
72.00
60.00
48.00
36.00
24.00
12.00
0.00
-12.00
-10.00
0.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
80.00
90.00
100.00
110.00
TIME (MSEC)
PART 572-E HYBRID III THORAX CALIBRATION
PENDULUM FORCE


TRC , 142C12TH1
572E SN142 H.S.THORAX CRL12
92318
CSTXD
FILTER = BLPP 300/ 949/ -40
MIN, MAX VALUES = -0.08 @ 1.38 , 70.52 @ 26.38
DISPLACEMENT (MM)
84.00
72.00
60.00
48.00
36.00
24.00
12.00
0.00
-12.00
-10.00
0.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
80.00
90.00
100.00
110.00
TIME (MSEC)
PART 572-E HYBRID III THORAX CALIBRATION
STERNUM DISPLACEMENT


TRC , 142C12RK1
572E SN142 RIGHT KNEE CAL 12
92317
PENXG
FILTER = BLPP 1000/ 3162/ -40
MIN, MAX VALUES = -0.20 @ 7.63 , 110.23 @ 2.63
ACCELERATION [G]
-30.00 0.00 30.00 60.00 90.00 120.00 150.00 180.00 210.00
-2.00 -1.00 0.00 1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00 9.00 10.00
TIME (MSEC)
PART 572-E HYBRID III RIGHT KNEE CALIBRATION
PENDULUM DECELERATION (5 KG PEND.)
C-31
921216



PART 572-E HYBRID III RIGHT KNEE CALIBRATION

PENDULUM FORCE (5 KG PEND.)

921216

TRANSPORTATION RESEARCH CENTER OF OHIO

KNEE IMPACT TEST

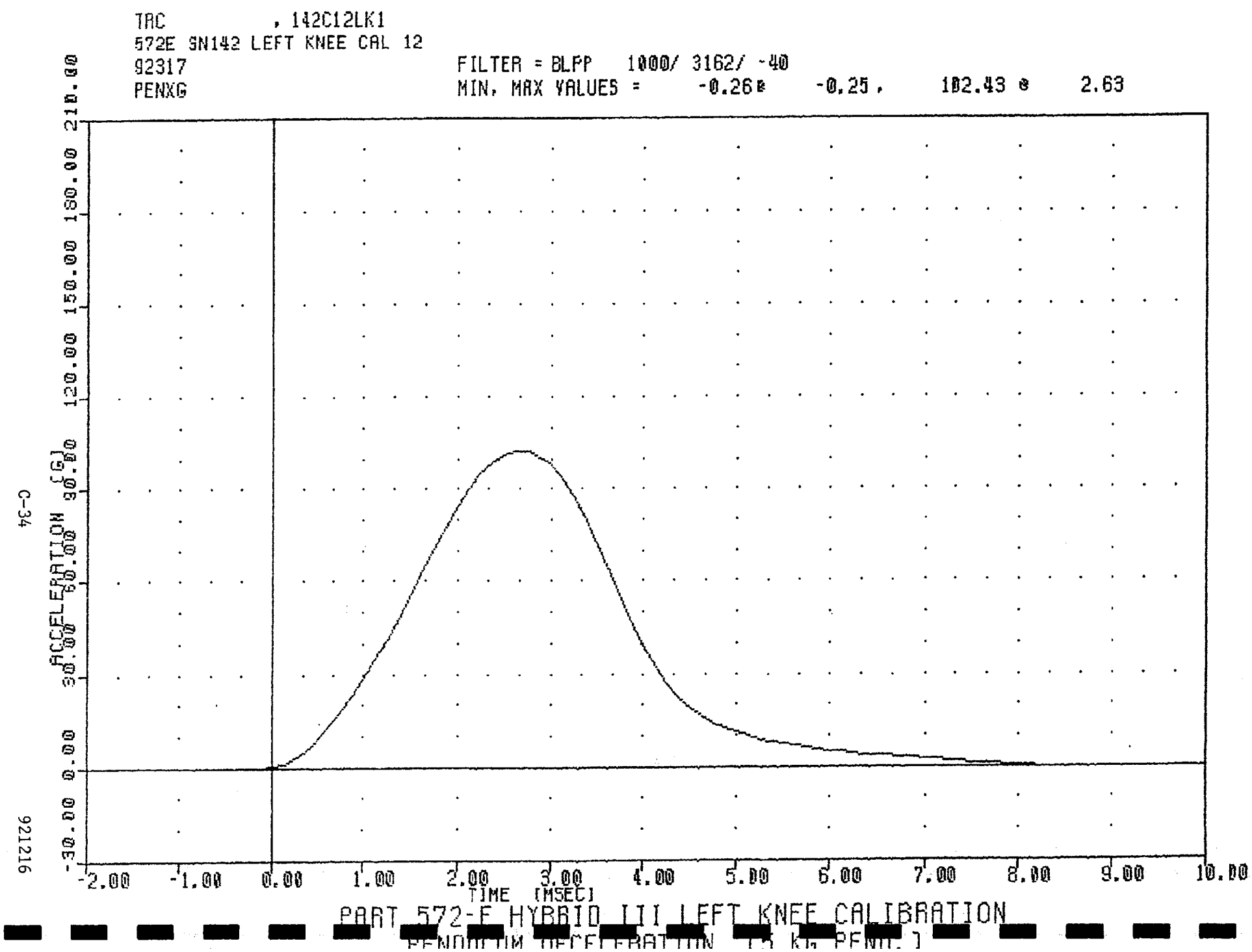
HYBRID III 12-NOV-92

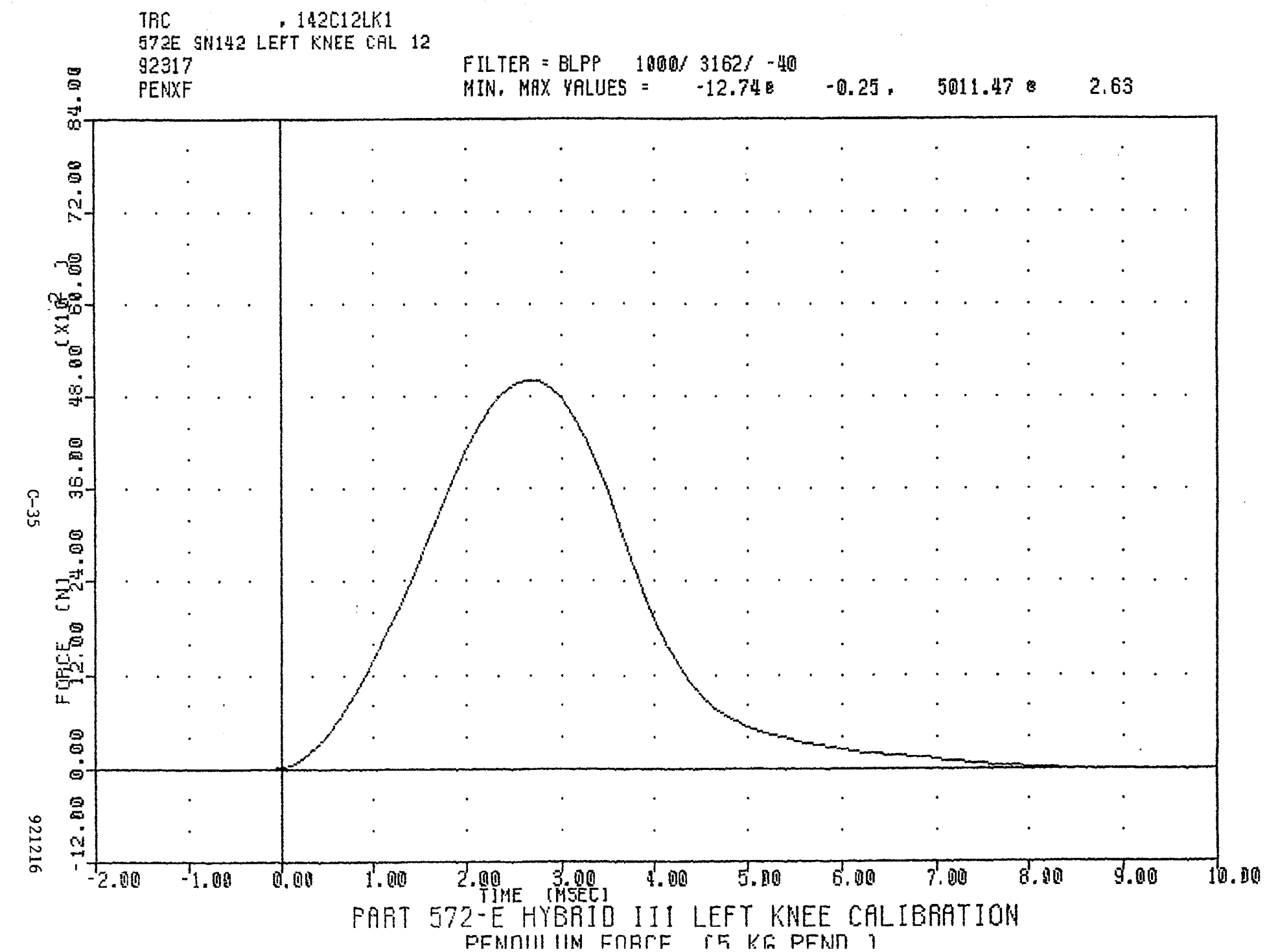
LEFT KNEE
TRC 142C12LK1 572E SN142 LEFT KNEE CAL 12

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	20.6-22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10% - 70%	51.0 %
PROBE VELOCITY	2.07 - 2.13 M/SEC	2.08 M/SEC
PEAK KNEE IMPACT FORCE	4714-5783 N	5011.5 N
PROBE WEIGHT	5.0 KG	

TEST MEETS SPECIFICATIONS

TECHNICIAN _____


TRC , 142C12LK1
572E SN142 LEFT KNEE CAL 12
92317
PENXG
FILTER = BLPP 1000/ 3162/ -40
MIN, MAX VALUES = -0.26 @ -0.25 , 102.43 @ 2.63
ACCELERATION [G]
210.00
180.00
150.00
120.00
90.00
60.00
30.00
0.00
-30.00
-2.00
-1.00
0.00
1.00
2.00
3.00
4.00
5.00
6.00
7.00
8.00
9.00
10.00
TIME [MSEC]
PART 572-F HYBRID III LEFT KNEE CALIBRATION
PENDULUM DECELERATION [5 KG PEND.]


TRC , 142C12LK1
572E SN142 LEFT KNEE CAL 12
92317
PENXF
FILTER = BLPP 1000/ 3162/ -40
MIN, MAX VALUES = -12.74 @ -0.25 , 5011.47 @ 2.63
FORCE (N) (X10^2)
84.00
72.00
60.00
48.00
36.00
24.00
12.00
0.00
-12.00
-2.00
-1.00
0.00
1.00
2.00
3.00
4.00
5.00
6.00
7.00
8.00
9.00
10.00
TIME (MSEC)
PART 572-E HYBRID III LEFT KNEE CALIBRATION
PENDULUM FORCE (5 KG PEND.)

921216

PRE-TEST CERTIFICATION DATA

PASSENGER DUMMY S/N: 192

TRANSPORTATION RESEARCH CENTER OF OHIO
HYBRID III EXTERNAL DIMENSIONS
ALDERSON 192

12-NOV-92

TRC 192C10ED1 572E SN192 EXT. DIMENSION CAL10

TEST PARAMETER	(DIMEN.)	SPECIFICATION	TEST RESULTS
TEMPERATURE			20.6 DEG. C
RELATIVE HUMIDITY			59.0 %
LOCATION FOR CHEST CIRCUMFERENCE	(AA)	429- 434 MM	432. MM
LOCATION FOR WAIST CIRCUMFERENCE	(BB)	226- 231 MM	229. MM
CHEST CIRCUMFERENCE	(Y)	970-1001 MM	983. MM
WAIST CIRCUMFERENCE	(Z)	836- 866 MM	848. MM
CHEST DEPTH	(D)	213- 229 MM	218. MM
H-POINT HEIGHT	(C)	84- 89 MM	86. MM
H-POINT FROM SEATBACK	(D)	135- 140 MM	137. MM
SKULL CAP TO BACKLINE	(H)	41- 46 MM	43. MM
TOTAL SITTING HEIGHT	(A)	879- 889 MM	884. MM
THIGH CLEARANCE	(F)	140- 155 MM	147. MM
BUTTOCK KNEE LENGTH	(K)	579- 605 MM	602. MM
BUTTOCK POPLITEAL LENGTH	(N)	452- 478 MM	472. MM
POPLITEAL HEIGHT	(L)	429- 455 MM	450. MM
KNEE PIVOT HEIGHT	(M)	485- 500 MM	493. MM
FOOT LENGTH	(P)	252- 267 MM	259. MM
FOOT BREADTH	(W)	91- 107 MM	102. MM
SHOULDER PIVOT FROM BACKLINE	(E)	84- 94 MM	91. MM
SHOULDER BREADTH	(V)	422- 437 MM	427. MM
SHOULDER PIVOT HEIGHT	(B)	506- 521 MM	513. MM
ELBOW REST HEIGHT	(J)	191- 211 MM	206. MM
SHOULDER-ELBOW LENGTH	(I)	330- 345 MM	340. MM
BACK OF ELBOW TO WRIST PIVOT	(G)	290- 305 MM	295. MM

TEST MEETS SPECIFICATIONS

TECHNICIAN Pete Faust

TRANSPORTATION RESEARCH CENTER OF OHIO

HEAD DROP TEST

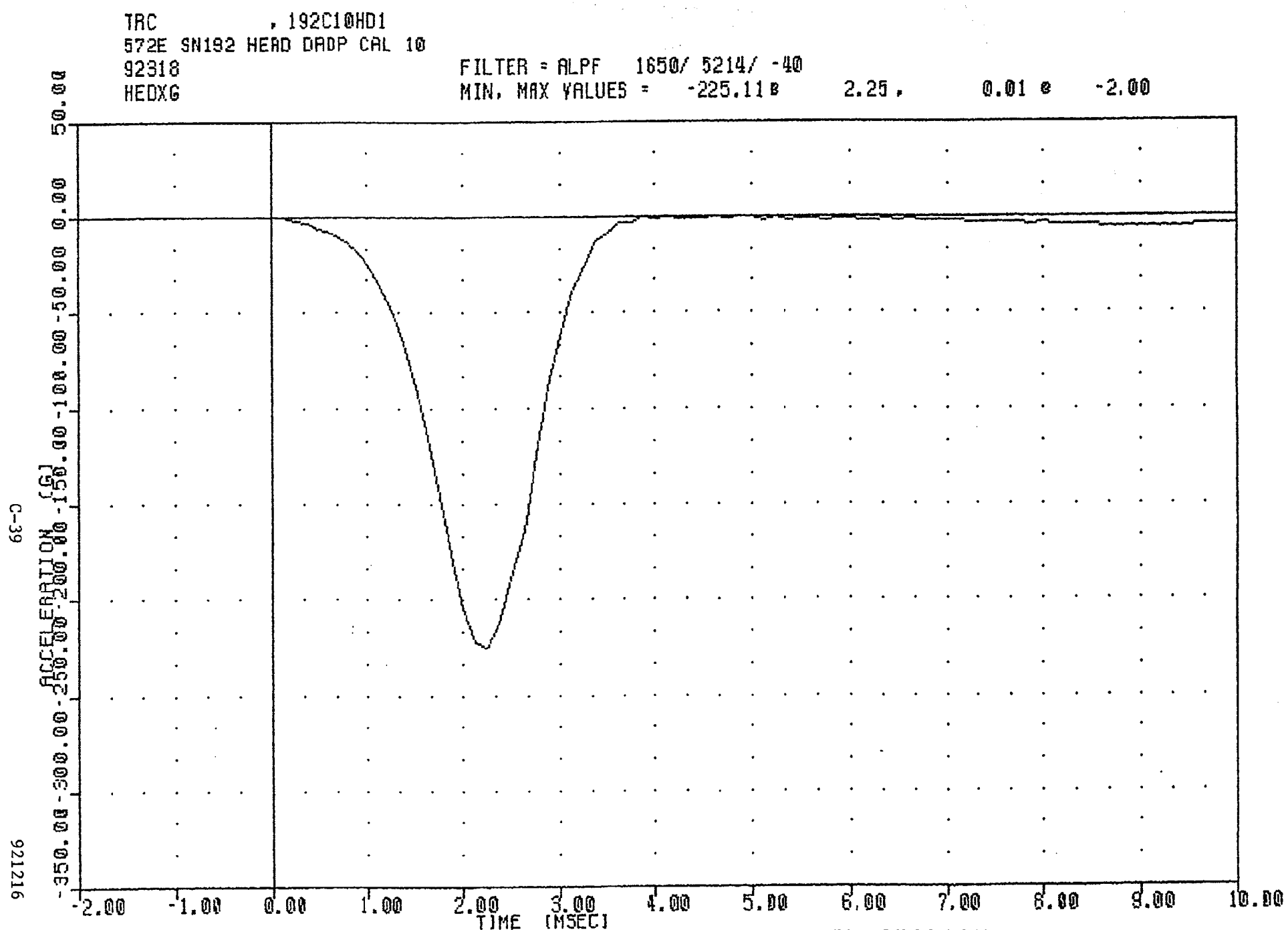
HYBRID III 13-NOV-92

TRC 192C10HD1 572E SN192 HEAD DROP CAL 10

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	20.6-22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10% - 70%	51.0 %
PEAK RESULTANT ACCELERATION	225 - 275 G	262.58 G
PEAK LATERAL ACCELERATION	15 G MAX	-10.17 G
IS ACCELERATION CURVE UNIMODAL?	YES	YES

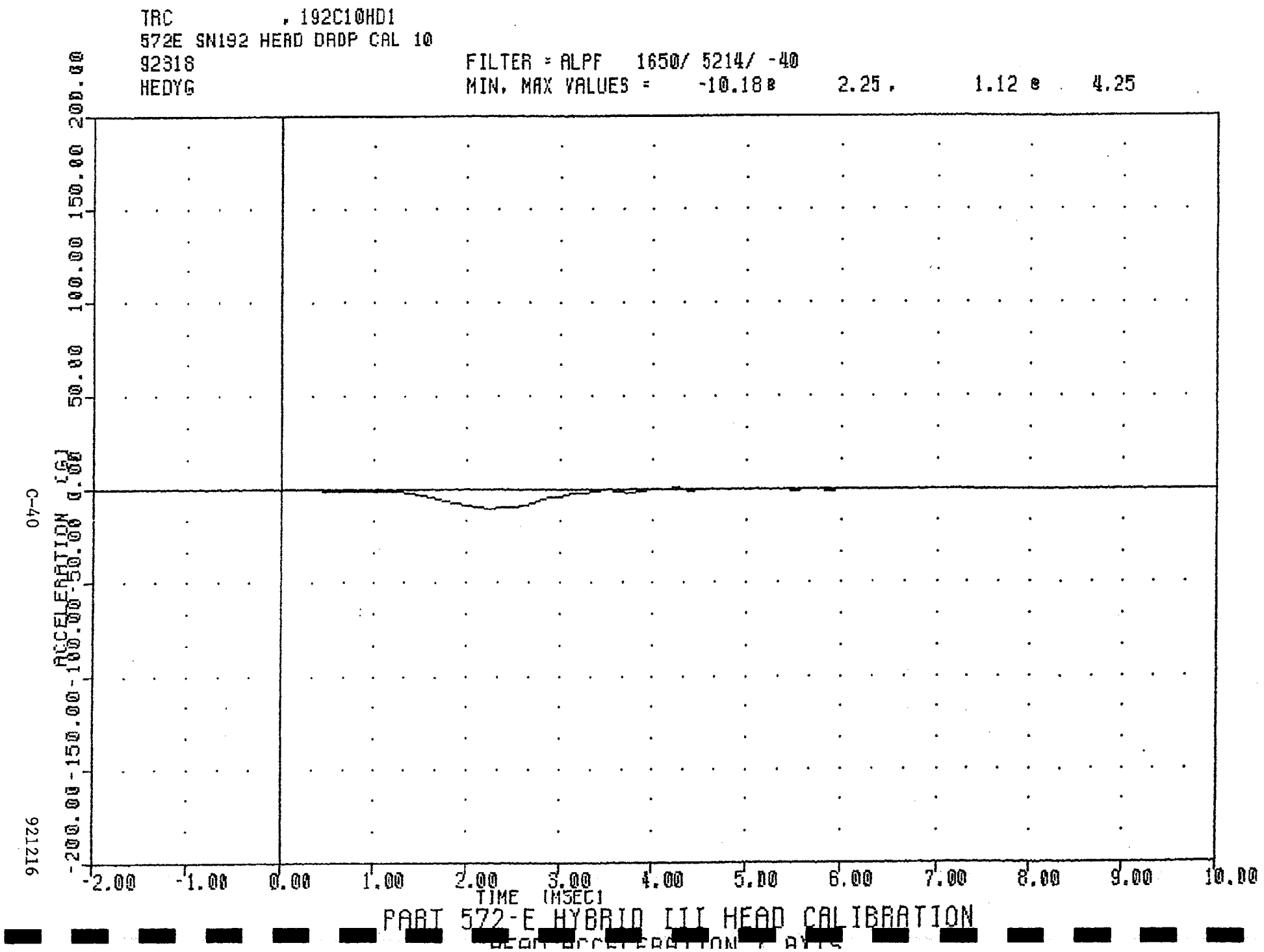
TEST MEETS SPECIFICATIONS

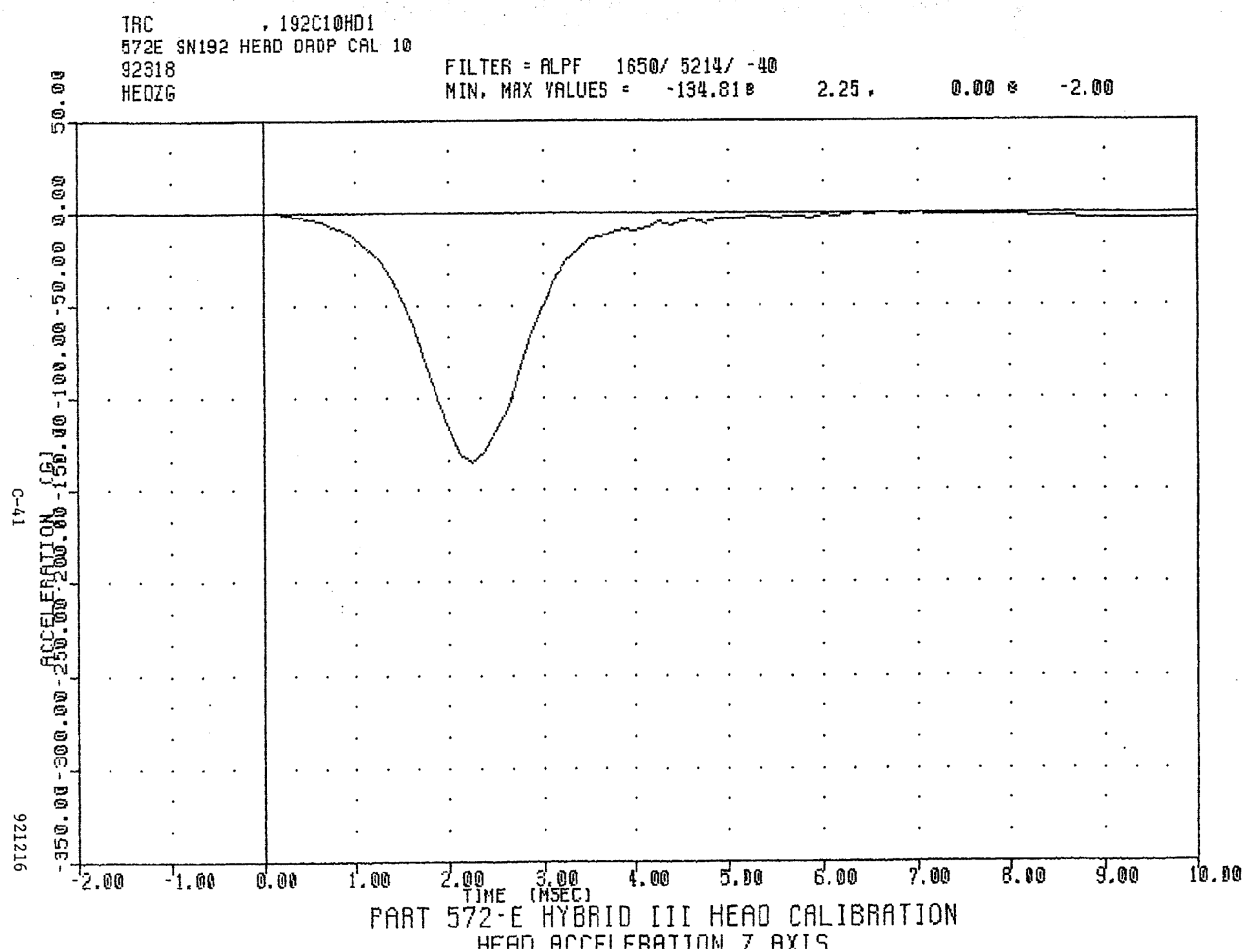
TECHNICIAN Peter Foust



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

921216

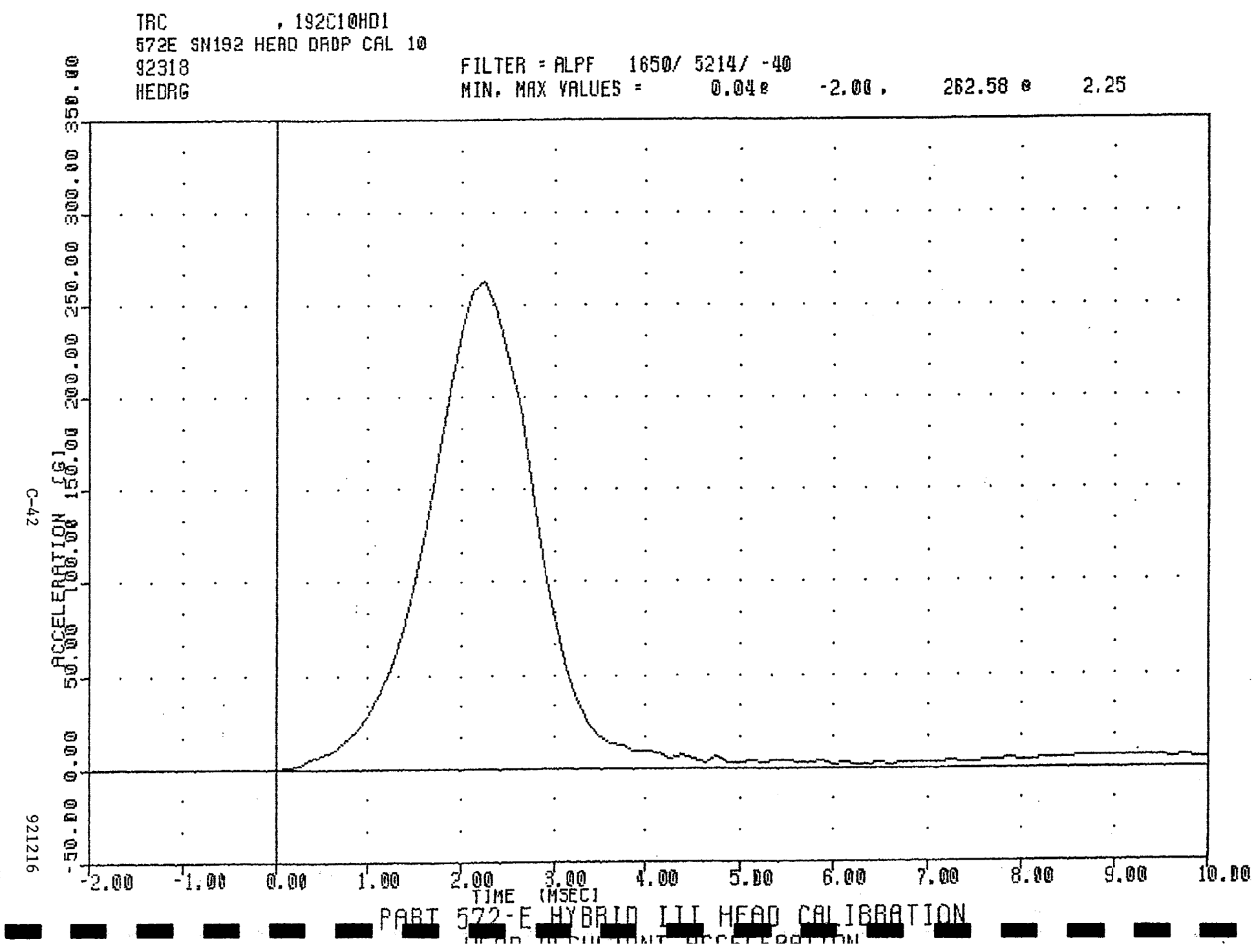

TRC . 192C10HD1
572E SN192 HEAD DROP CAL 10
92318
HEDYG
FILTER = ALPF 1650/ 5214/ -40
MIN, MAX VALUES = -10.18 2.25 , 1.12 4.25
200.00
150.00
100.00
50.00
0.00
-50.00
-100.00
-150.00
-200.00
ACCELERATION (G)
-2.00
-1.00
0.00
1.00
2.00
3.00
4.00
5.00
6.00
7.00
8.00
9.00
10.00
TIME (MSEC)
PART 572-E HYBRID III HEAD CALIBRATION



PART 572-E HYBRID III HEAD CALIBRATION

HEAD ACCELERATION Z AXIS

921216



PART 572-E HYBRID III HEAD CALIBRATION

TRANSPORTATION RESEARCH CENTER OF OHIO

NECK FLEXION TEST

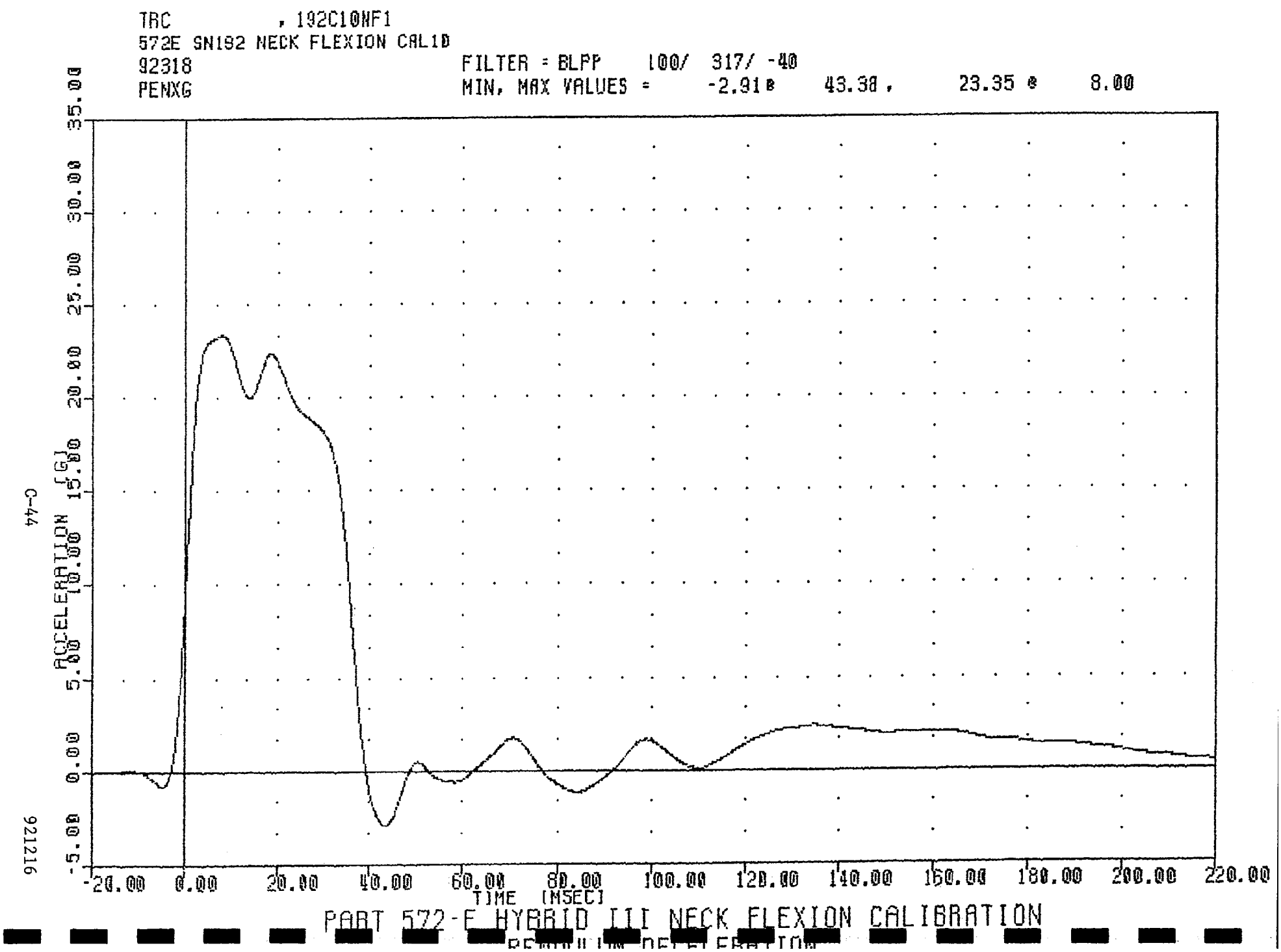
HYBRID III 13-NOV-92

6 AXIS NECK TRANSDUCER
TRC 192C10NF1 572E SN192 NECK FLEXION CAL10

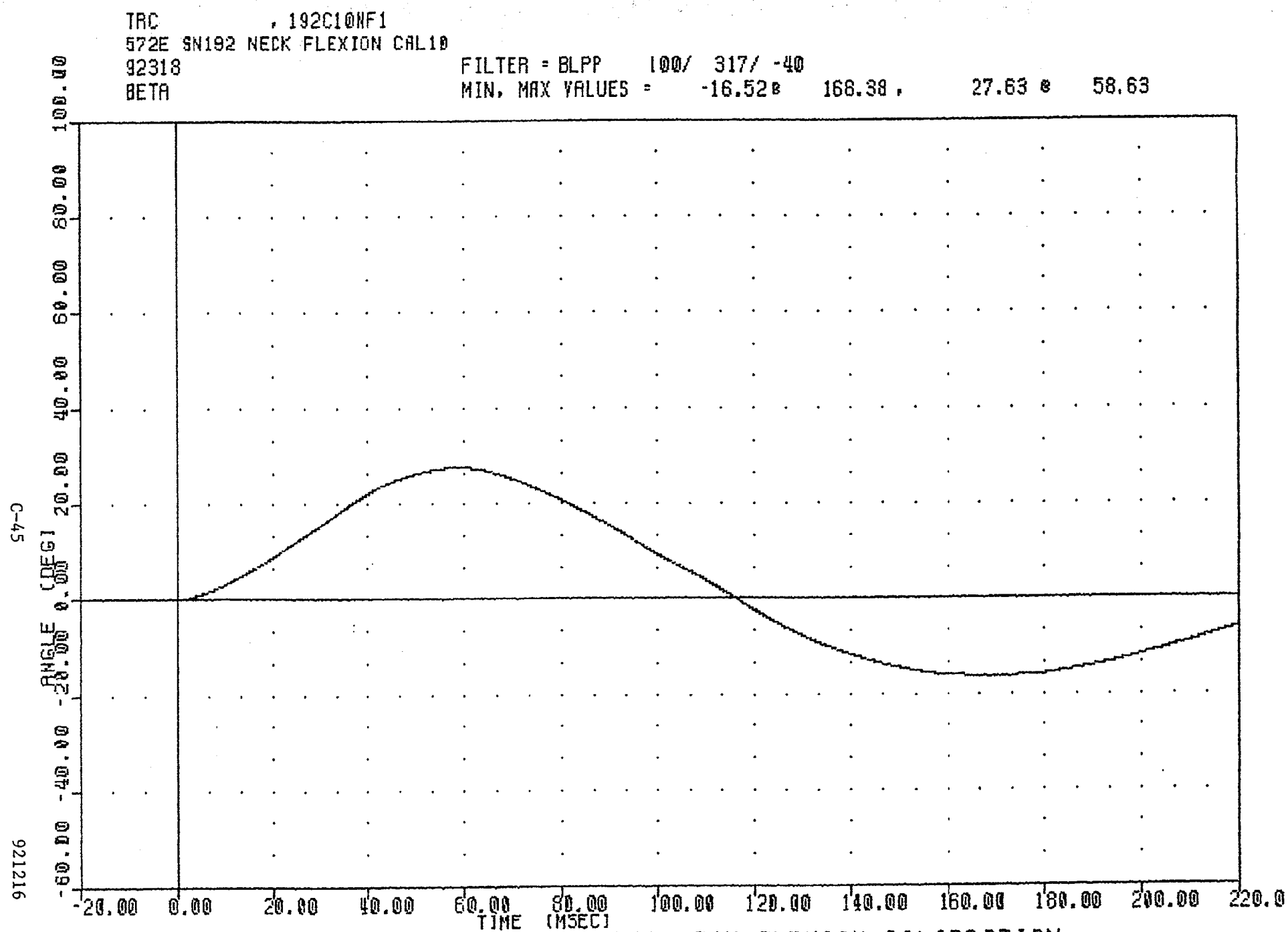
TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6-22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY		10% - 70%	51.0 %
IMPACT VELOCITY		6.89 - 7.13 M/SEC	7.10 M/SEC
PENDULUM DECELERATION	10 MS	22.50 - 27.50 G	22.60 G
	20 MS	17.60 - 22.60 G	21.92 G
	30 MS	12.50 - 18.50 G	18.12 G
MAX PENDULUM G ABOVE 30 MS		29 G MAX	18.08 G
DECELERATION-TIME CURVE DECAY TIME TO 5 G		34 - 42 MS	37.00 MS
D PLANE ROTATION	MAX	64 - 78 DEG.	69.48 DEG.
	TIME	57 - 64 MS	57.75 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MAX	88.2 - 108.5 NM	96.28 NM
	TIME	47 - 58 MS	48.75 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		113 - 128 MS	113.13 MS
POSITIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		97 - 107 MS	99.50 MS

TEST MEETS SPECIFICATIONS

TECHNICIAN



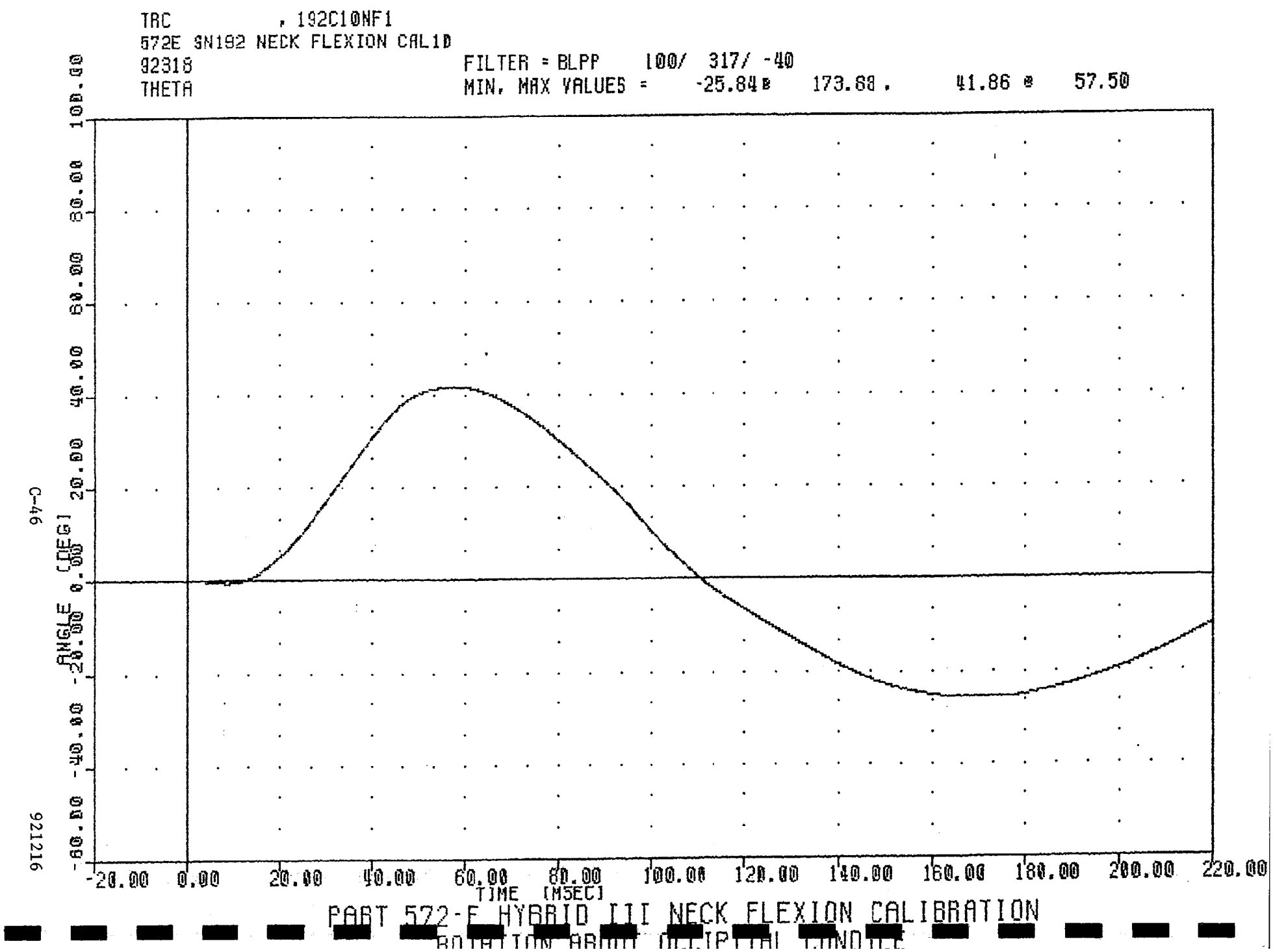
PART 572-E HYBRID III NECK FLEXION CALIBRATION



PART 572-E HYBRID III NECK FLEXION CALIBRATION

ROTATION ABOUT BASE OF NECK

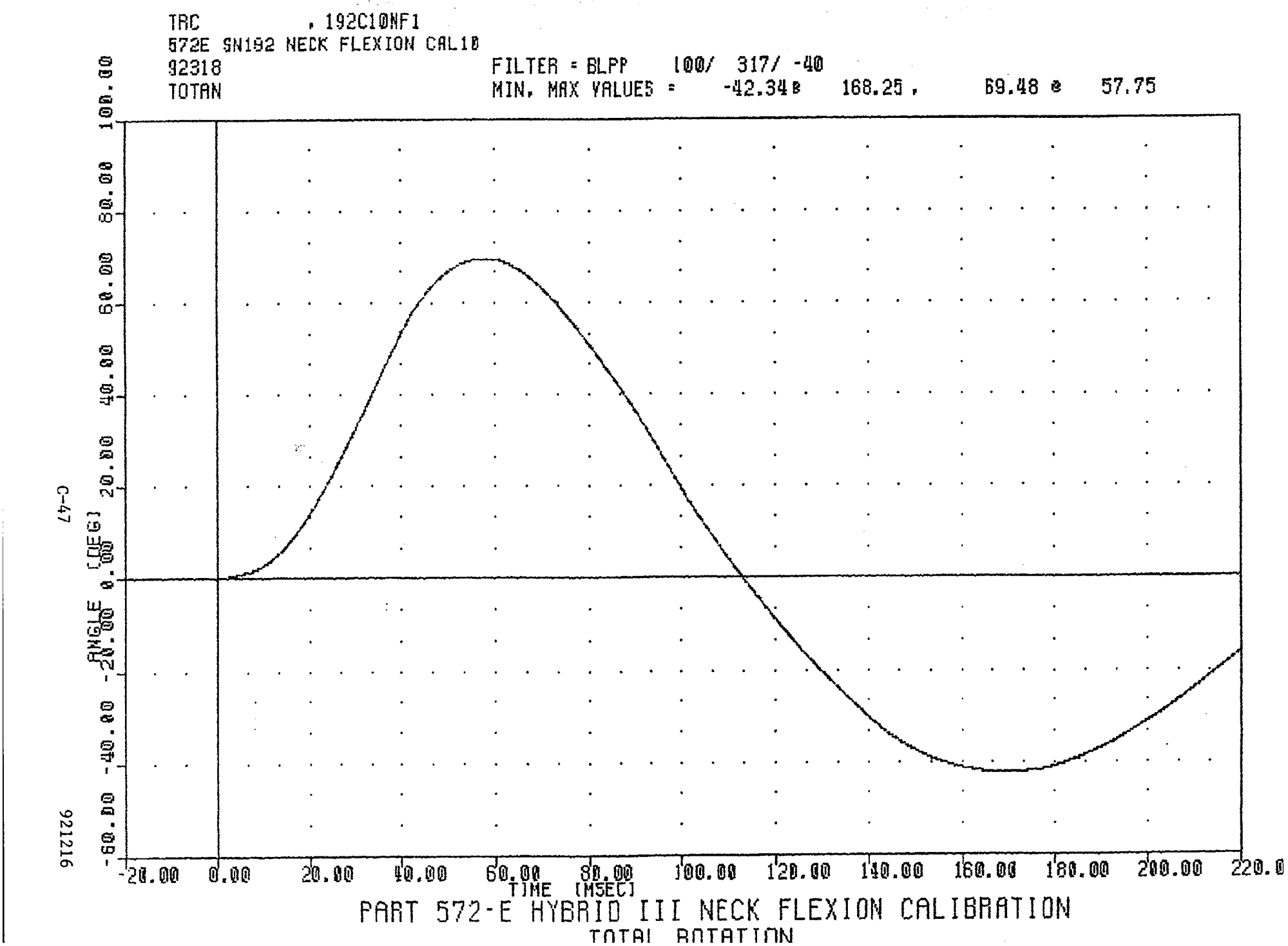
921216



PART 572-E HYBRID III NECK FLEXION CALIBRATION

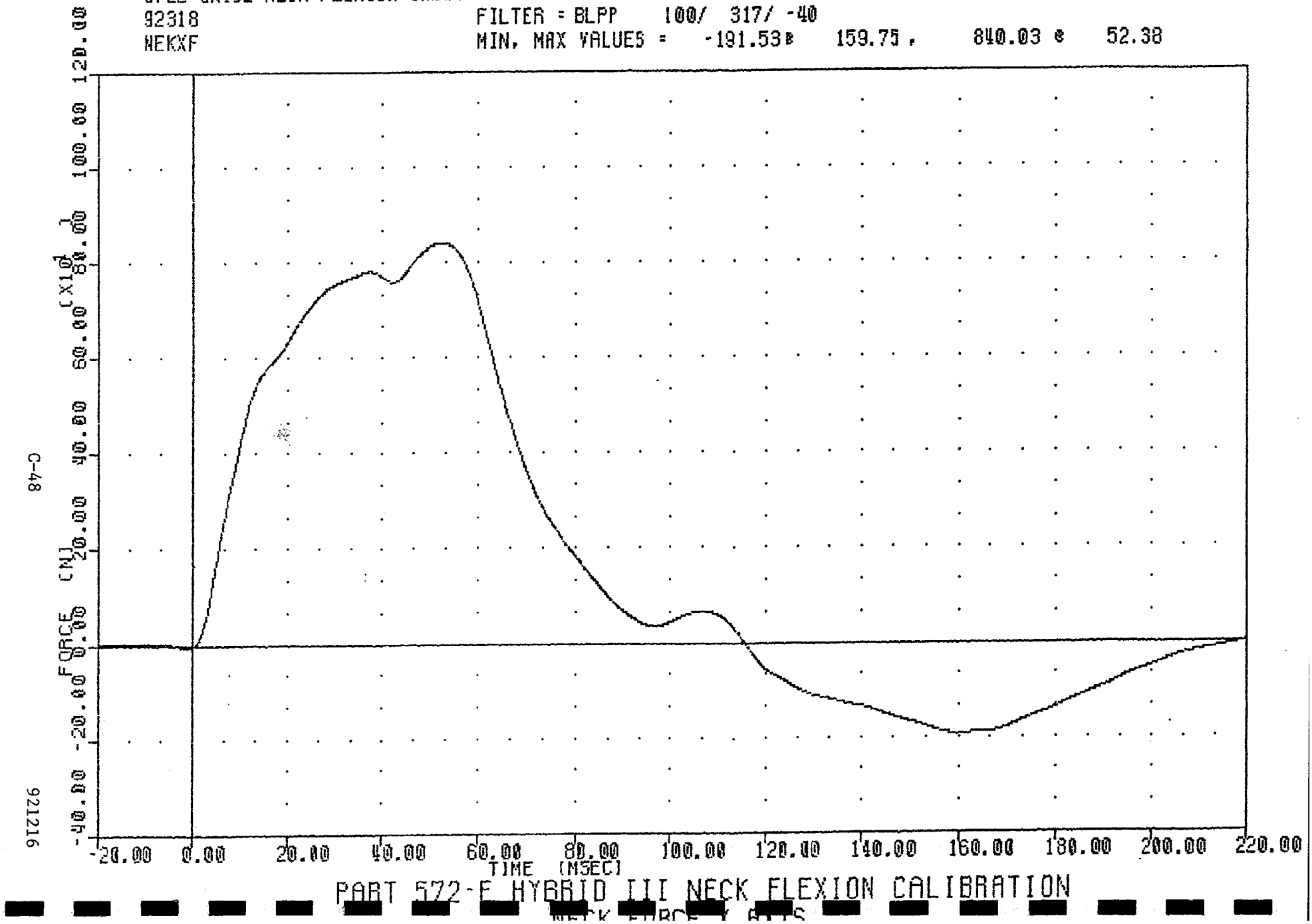
ROTATION ABOUT ORIGINAL CONDYLE

921216



PART 572-E HYBRID III NECK FLEXION CALIBRATION

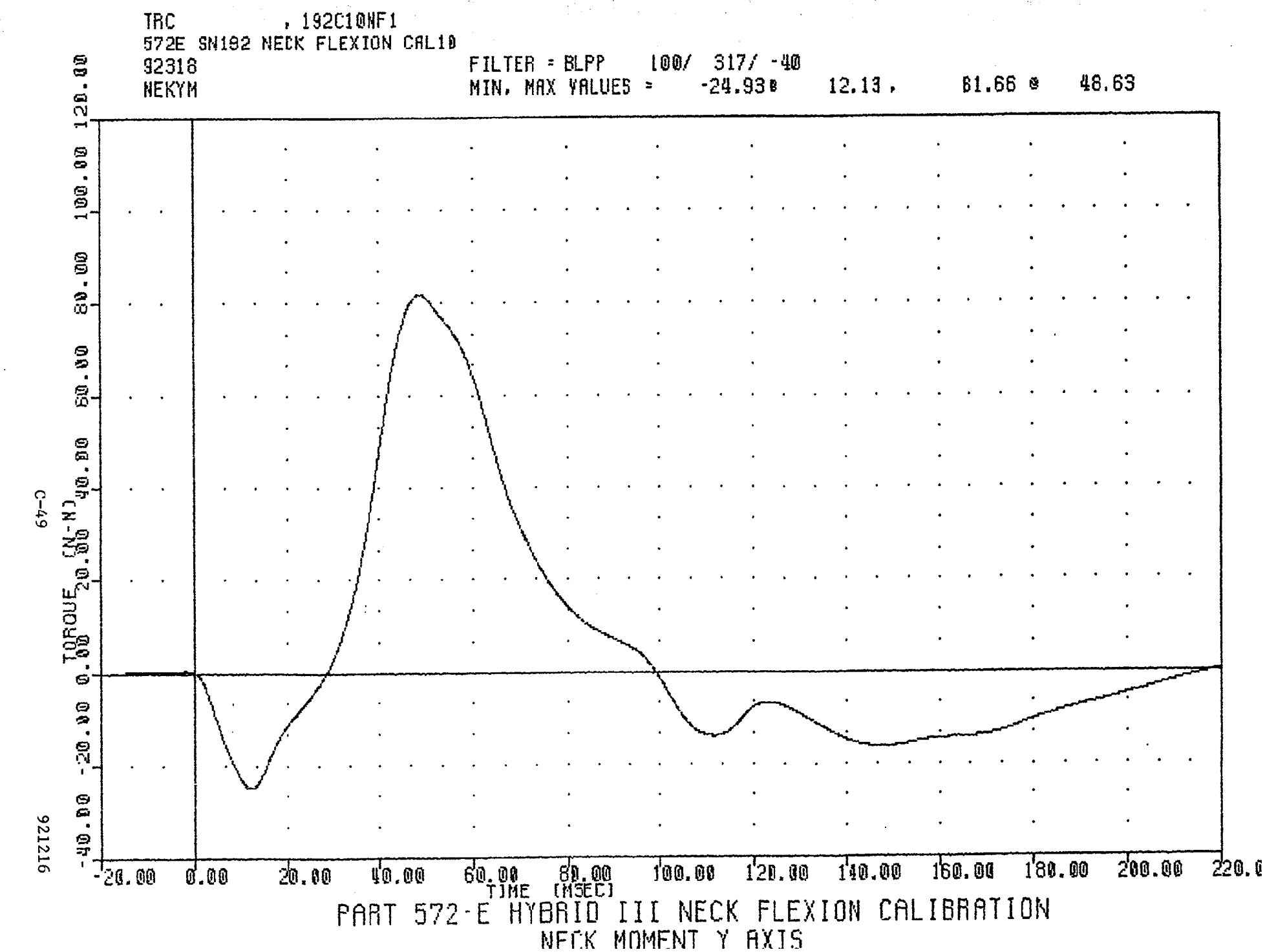
TOTAL ROTATION



PART 572-E HYBRID III NECK FLEXION CALIBRATION

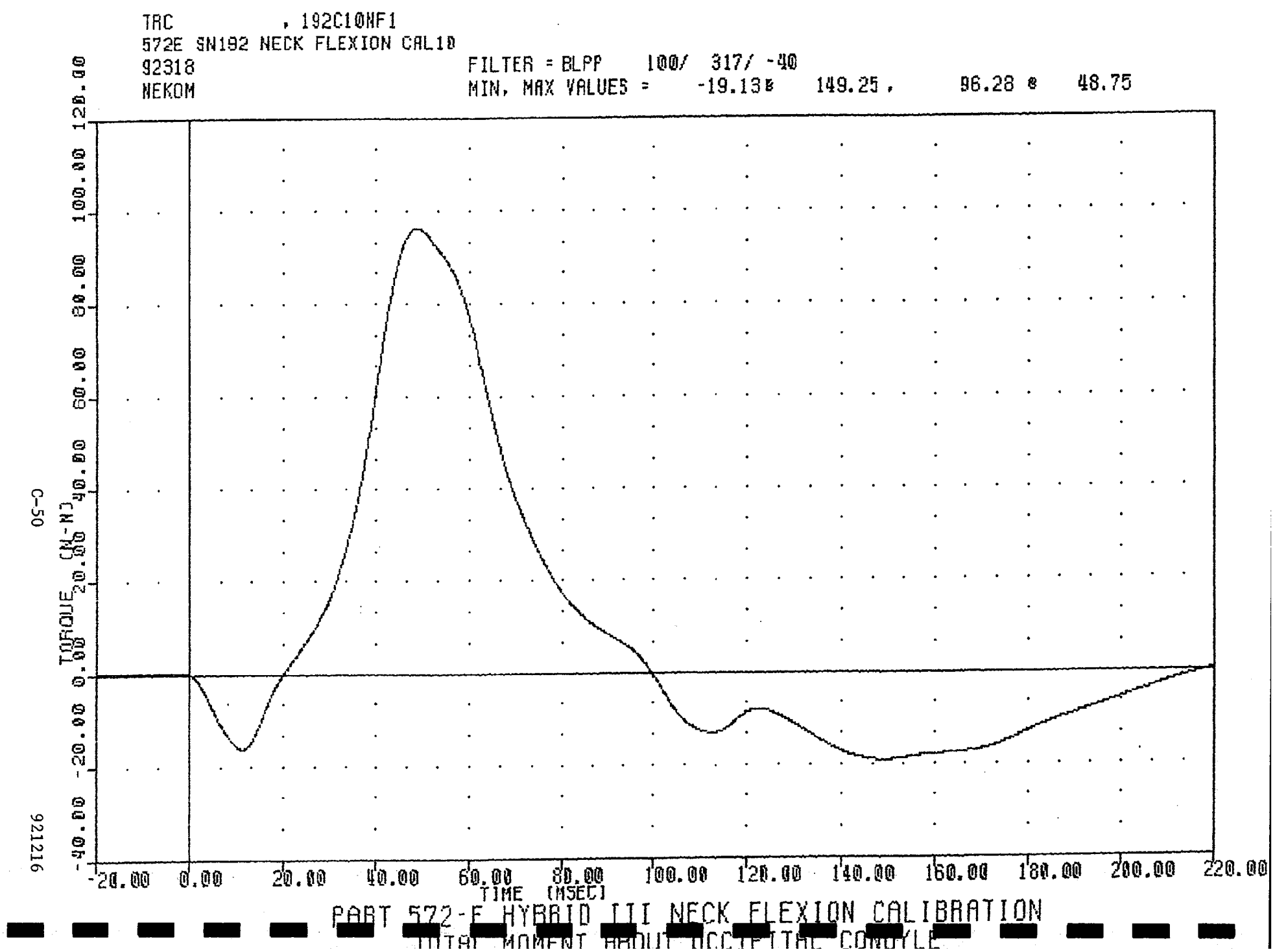
NECK FORCE Y AXIS

921216



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

921216



C-50

PART 572-E HYBRID III NECK FLEXION CALIBRATION

TOTAL MOMENT ABOUT OCCIPITAL CONDYLE

TRANSPORTATION RESEARCH CENTER OF OHIO

NECK EXTENSION TEST

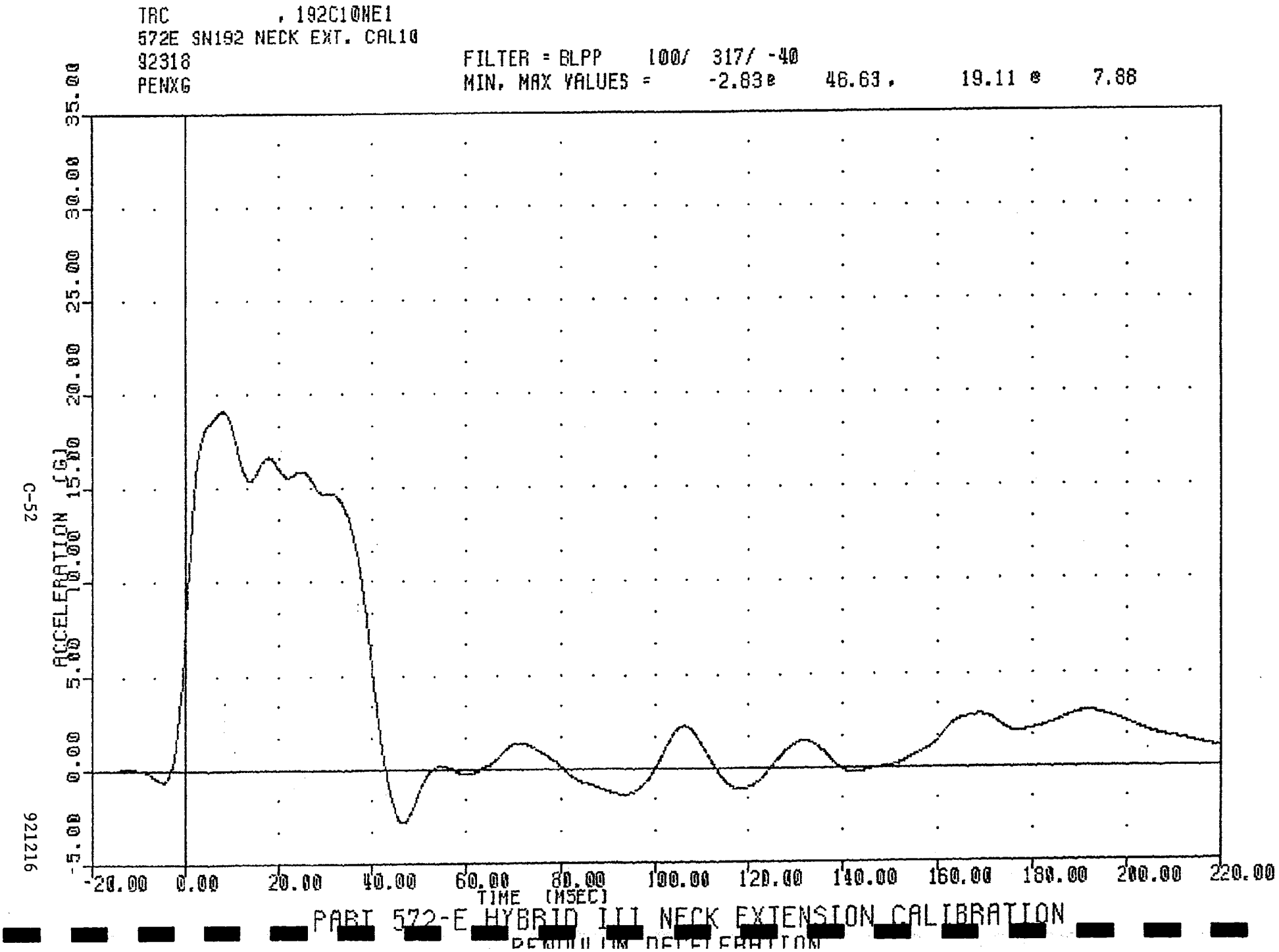
HYBRID III 13-NOV-92

6 AXIS NECK TRANSDUCER
TRC 192C10NE1 572E SN192 NECK EXT, CAL10

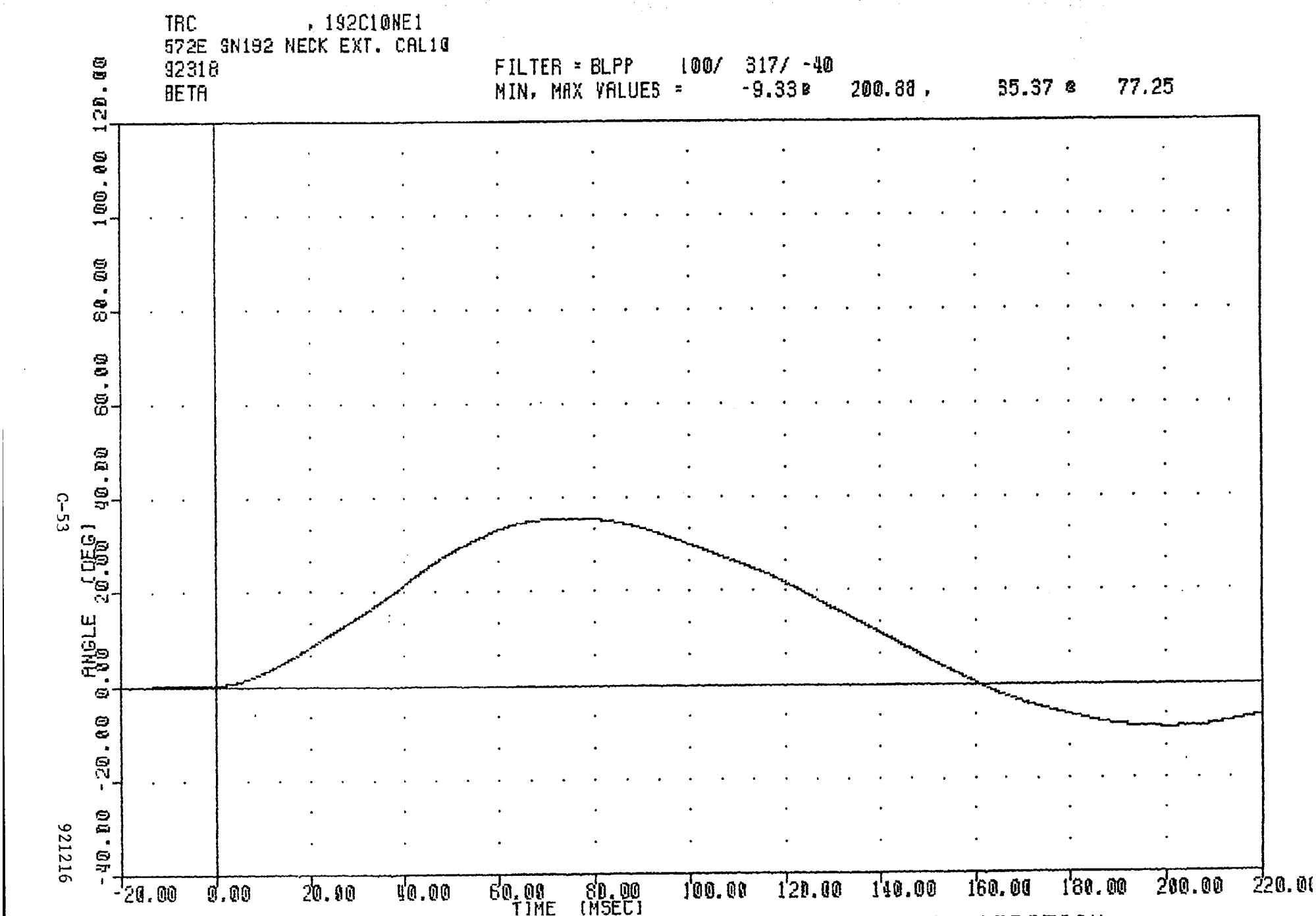
TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		20.6-22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY		10% - 70%	51.0 %
IMPACT VELOCITY		5.95 - 6.19 M/SEC	6.05 M/SEC
PENDULUM DECELERATION	10 MS	17.20 - 21.20 G	18.22 G
	20 MS	14.00 - 19.00 G	16.08 G
	30 MS	11.00 - 16.00 G	14.67 G
MAX PENDULUM G ABOVE 30 MS		22 G MAX	14.70 G
DECELERATION-TIME CURVE DECAY TIME TO 5 G		38 - 46 MS	40.00 MS
D PLANE ROTATION	MAX	81 - 106 DEG.	91.40 DEG.
	TIME	72 - 82 MS	77.88 MS
MOMENT ABOUT OCCIPITAL CONDYLE	MIN	-80.0/-52.9 NM	-55.65 NM
	TIME	65 - 79 MS	70.88 MS
ROTATION ANGLE-TIME CURVE DECAY TIME TO ZERO		147 - 174 MS	159.50 MS
NEGATIVE MOMENT-TIME CURVE DECAY TIME TO ZERO		120 - 148 MS	138.25 MS

TEST MEETS SPECIFICATIONS

TECHNICIAN 


TRC , 192C10NE1
572E SN192 NECK EXT. CAL10
92318
PENXG
FILTER = BLPP 100/ 317/ -40
MIN, MAX VALUES = -2.83@ 46.63, 19.11 @ 7.88
ACCELERATION (G)
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
-5.00
-20.00
0.00
20.00
40.00
60.00
80.00
100.00
120.00
140.00
160.00
180.00
200.00
220.00
TIME (MSEC)
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

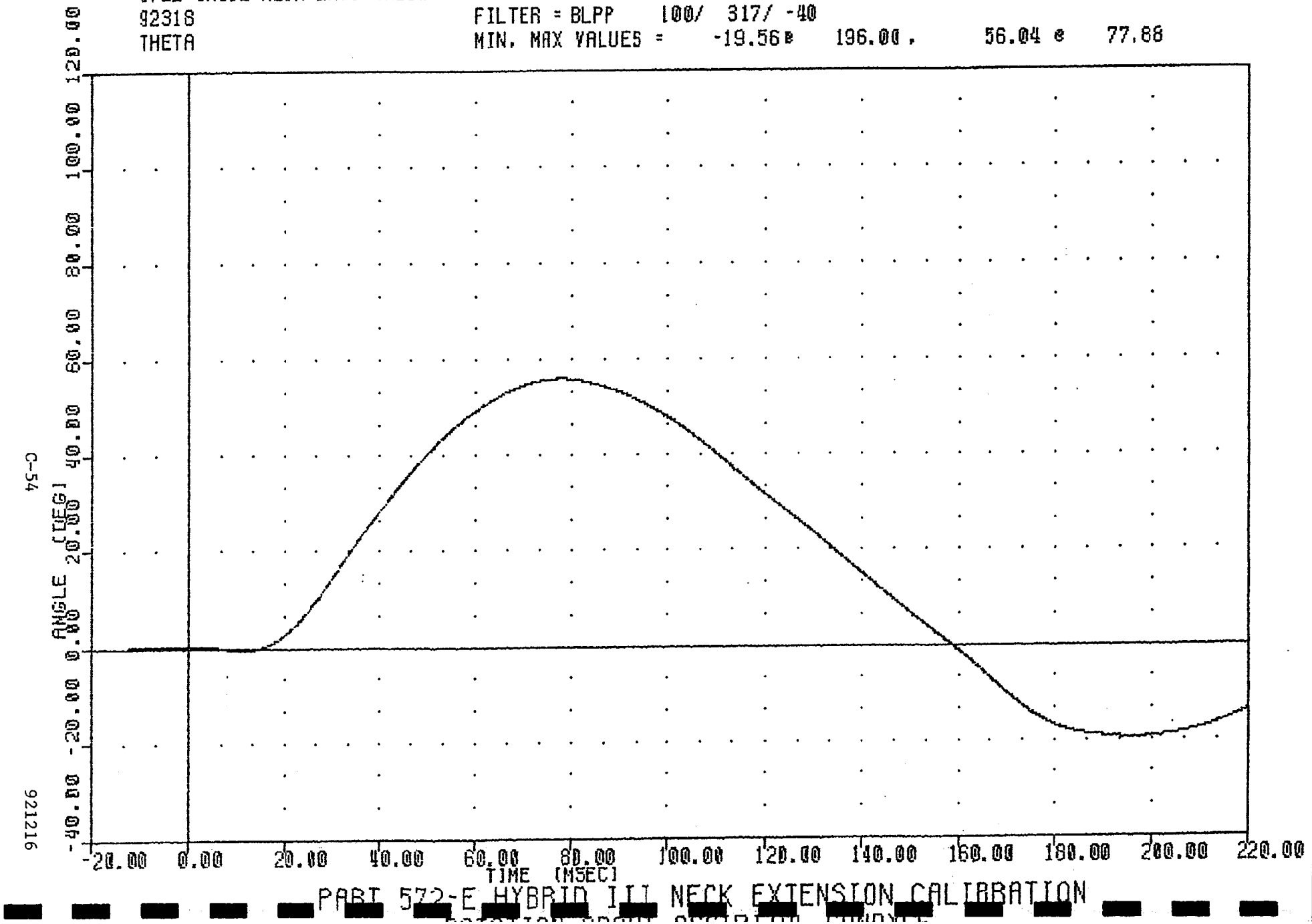
921216



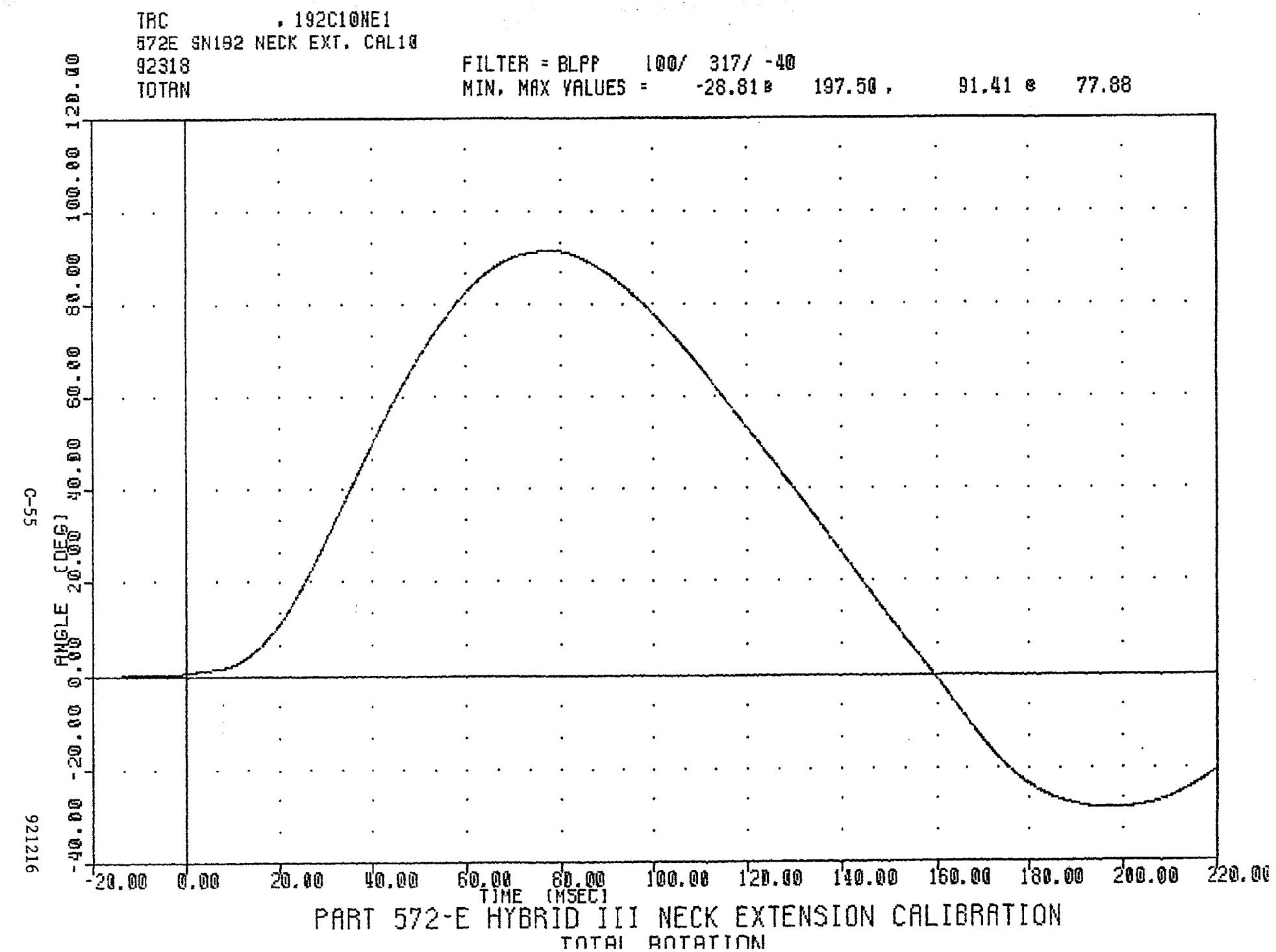
PART 572-E HYBRID III NECK EXTENSION CALIBRATION

ROTATION ABOUT BASE OF NECK

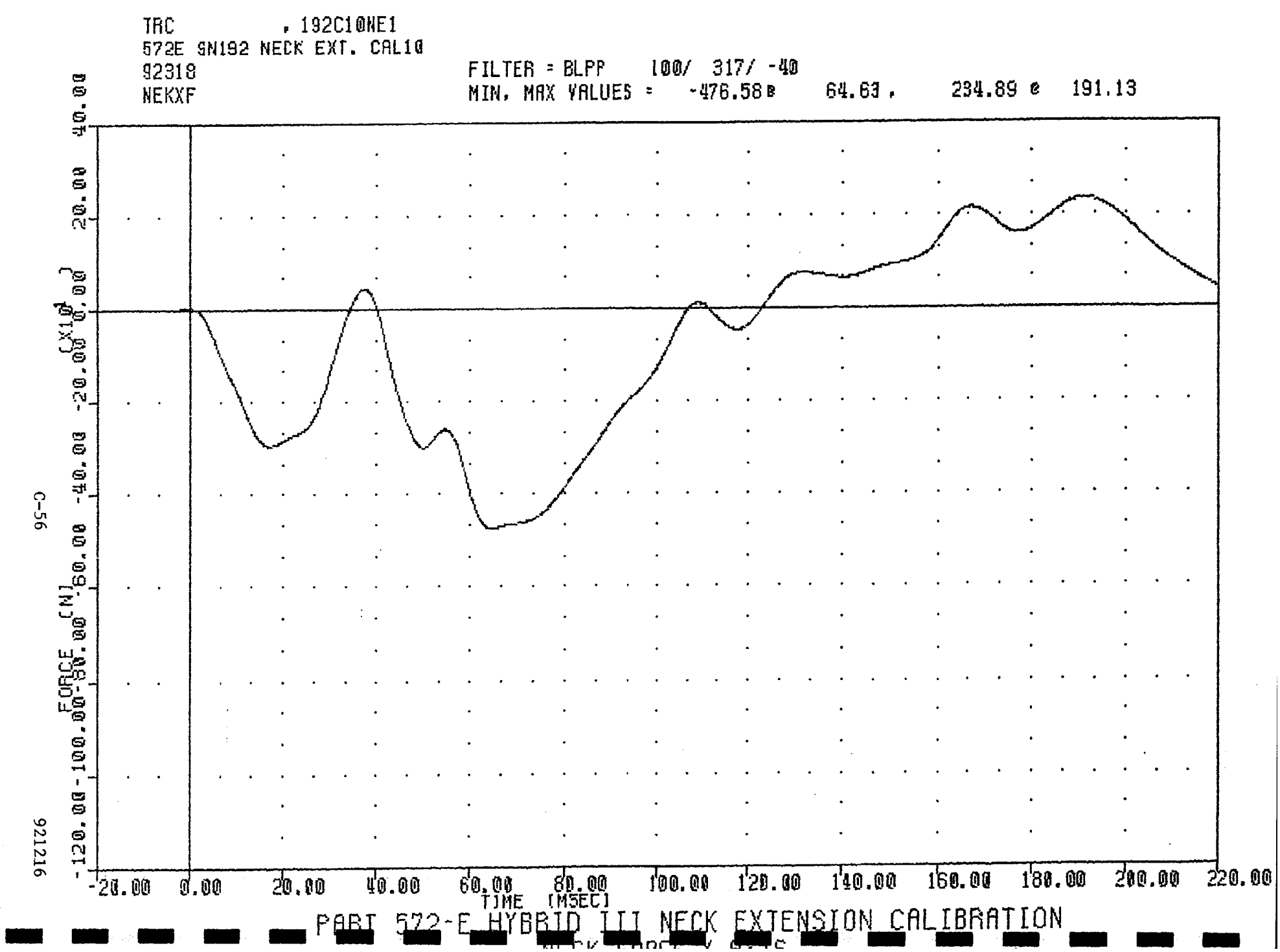
921216



PART 572-E HYBRID III NECK EXTENSION CALIBRATION

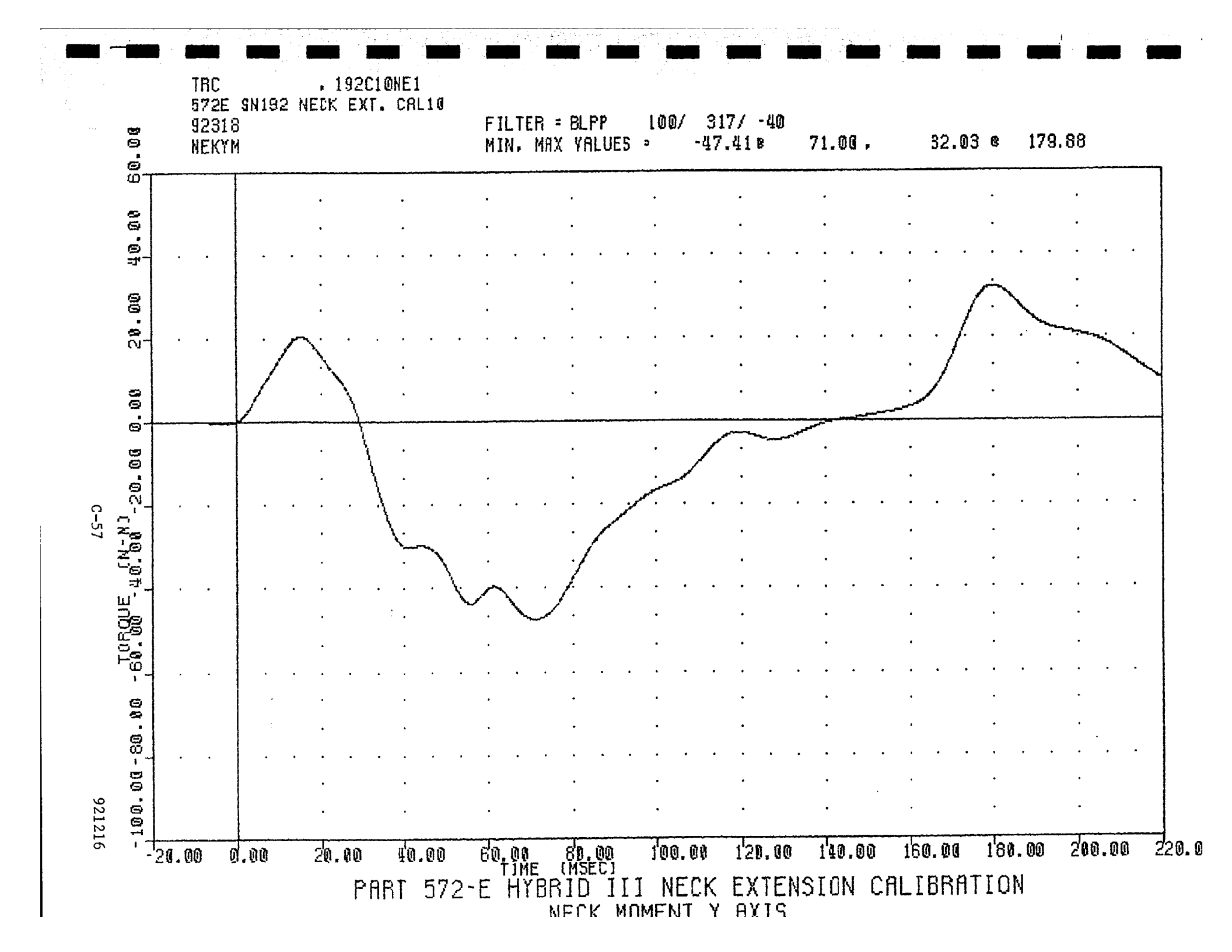

TRC , 192C10NE1
572E SN192 NECK EXT. CAL10
92318
TOTAN
FILTER = BLPP 100/ 317/ -40
MIN, MAX VALUES = -28.81 @ 197.50 , 91.41 @ 77.88
ANGLE (DEG)
120.00
100.00
80.00
60.00
40.00
20.00
0.00
-20.00
-40.00
-20.00
0.00
20.00
40.00
60.00
80.00
100.00
120.00
140.00
160.00
180.00
200.00
220.00
TIME (MSEC)
PART 572-E HYBRID III NECK EXTENSION CALIBRATION
TOTAL ROTATION

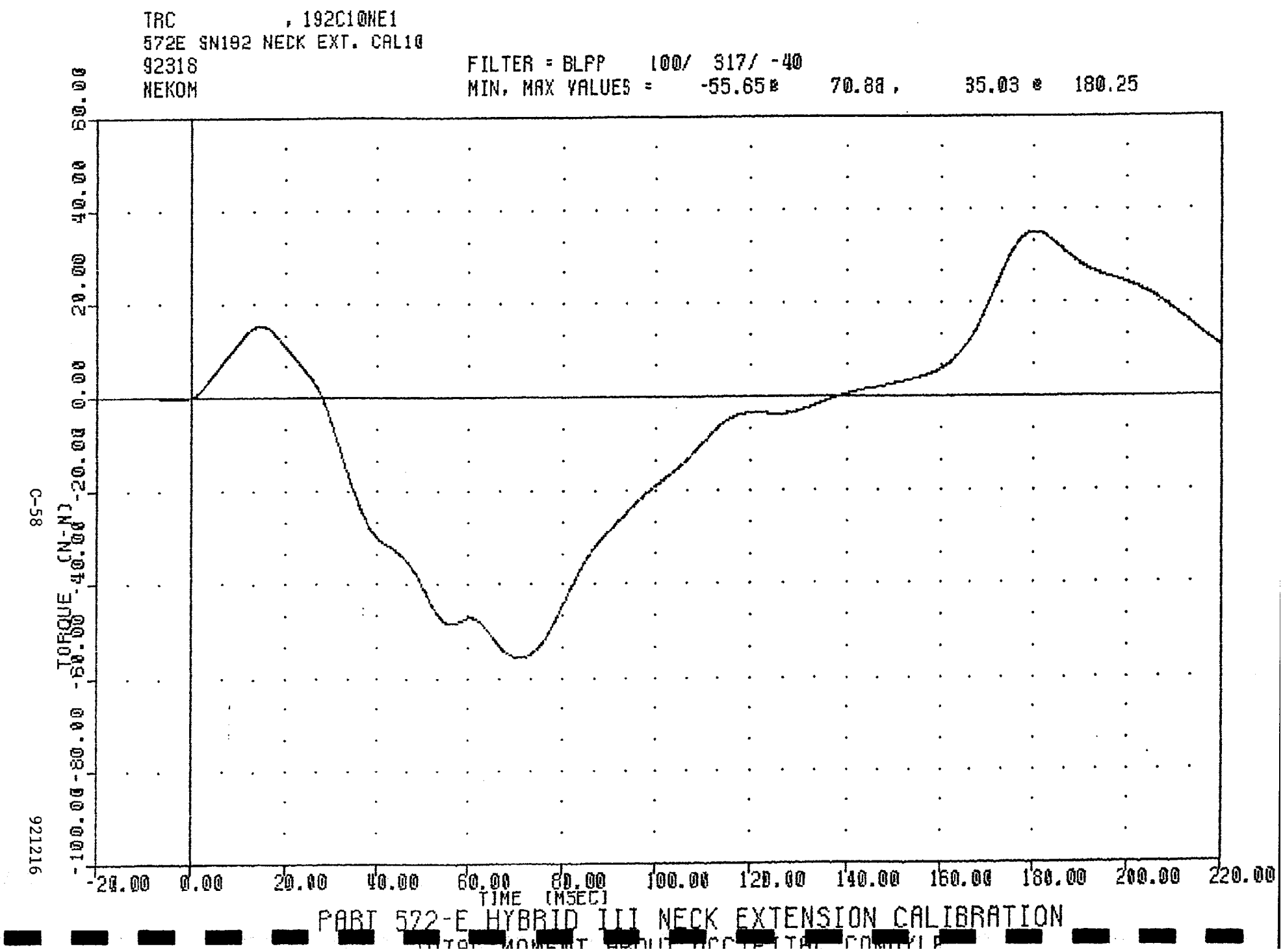
921216



PART 572-E HYBRID III NECK EXTENSION CALIBRATION

921216


TRC . 192C10NE1
572E SN192 NECK EXT. CAL10
92318
NEKYM
FILTER = BLPP 100/ 317/ -40
MIN, MAX VALUES = -47.41 @ 71.00 , 32.03 @ 179.88
60.00
40.00
20.00
0.00
-20.00
-40.00
-60.00
-80.00
-100.00
TORQUE (N-M)
-20.00
0.00
20.00
40.00
60.00
80.00
100.00
120.00
140.00
160.00
180.00
200.00
220.0
TIME (MSEC)
PART 572-E HYBRID III NECK EXTENSION CALIBRATION
NECK MOMENT Y AXIS
C-57
921216



PART 572-E HYBRID III NECK EXTENSION CALIBRATION

TRANSPORTATION RESEARCH CENTER OF OHIO

THORAX IMPACT TEST

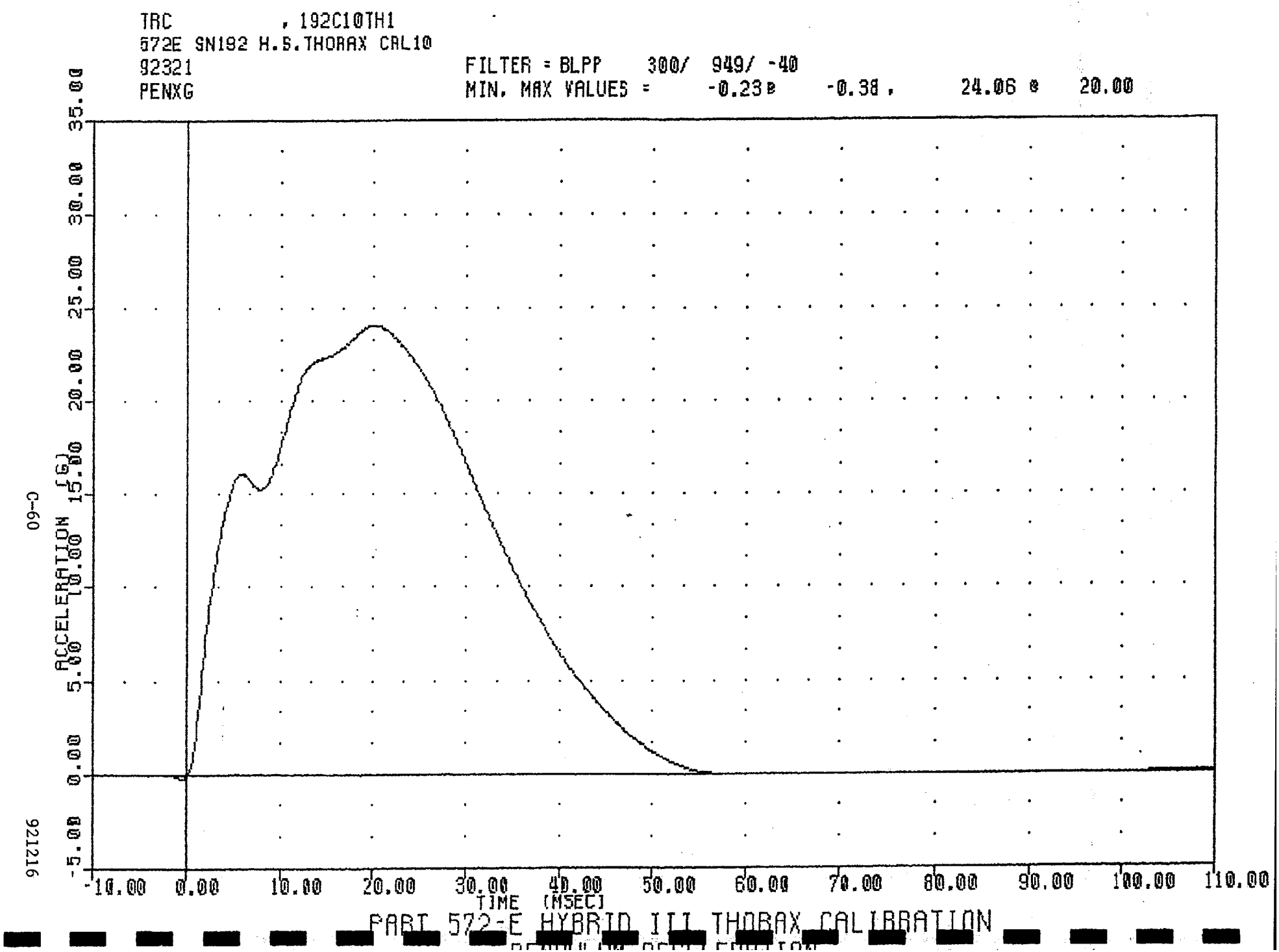
HYBRID III 16-NOV-92

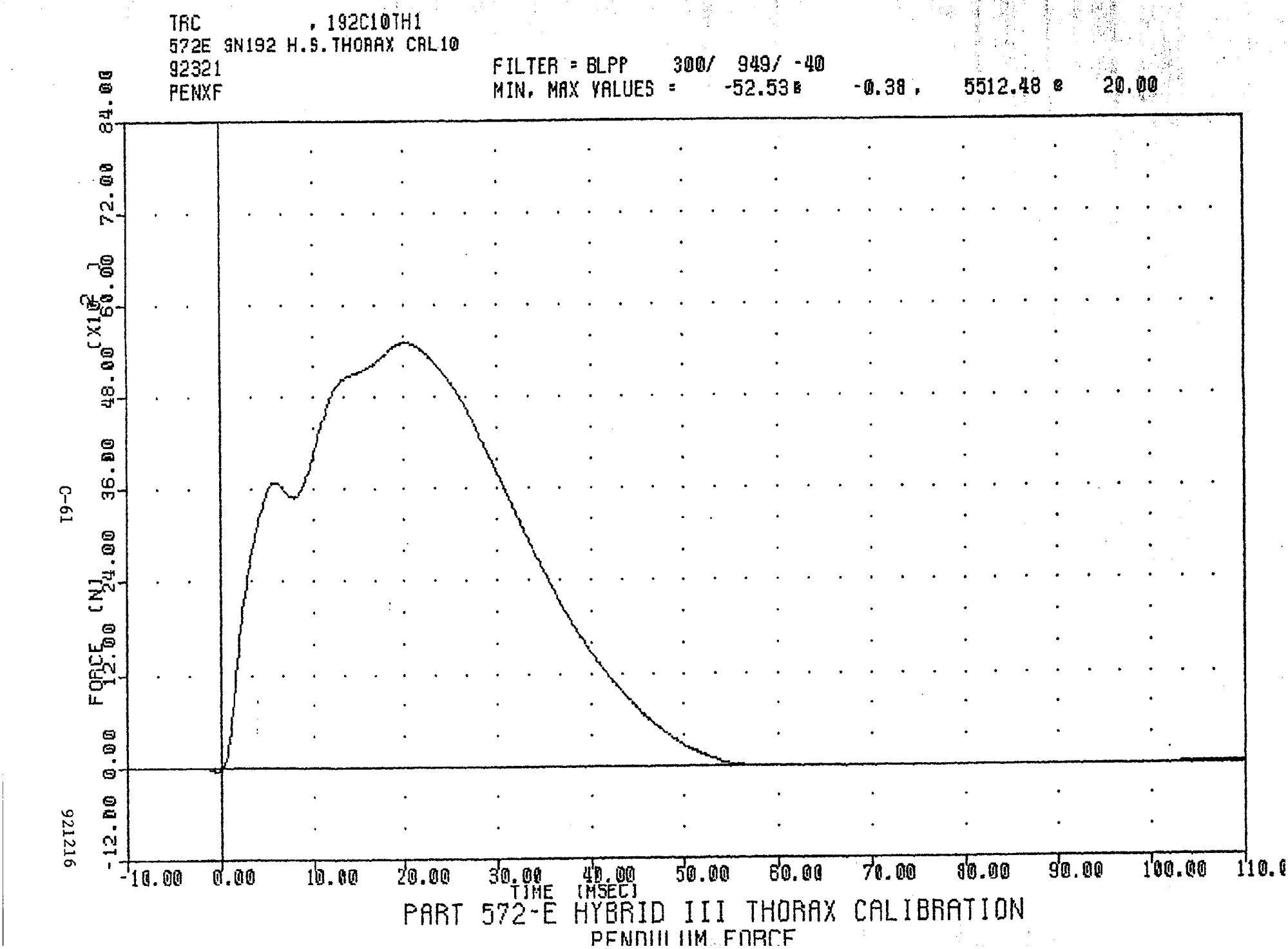
TRC 192C10TH1 572E SN192 H.S.THORAX CAL10

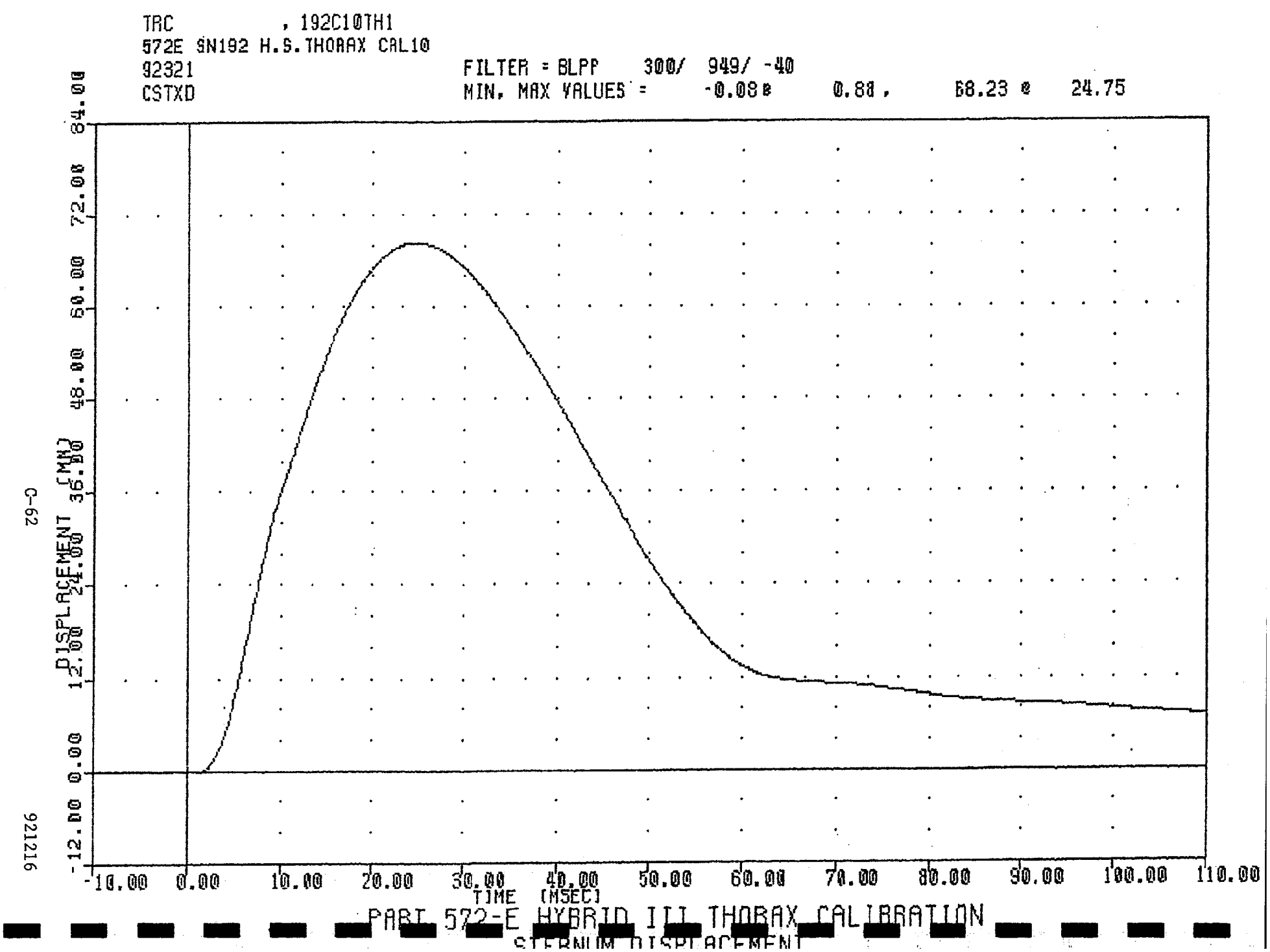
TEST PARAMETER	HIGH SPEED TEST SPECIFICATION	TEST RESULTS
TEMPERATURE	20.6-22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10% - 70%	46.0 %
PENDULUM VELOCITY	6.59 - 6.83 M/SEC	6.68 M/SEC
MAXIMUM DEFLECTION	63.5 - 72.6 MM	68.2 MM
MAXIMUM RESISTIVE FORCE	5159 - 5894 N	5512. N
INTERNAL HYSTERESIS	69% - 85%	74.0%

TEST MEETS SPECIFICATIONS

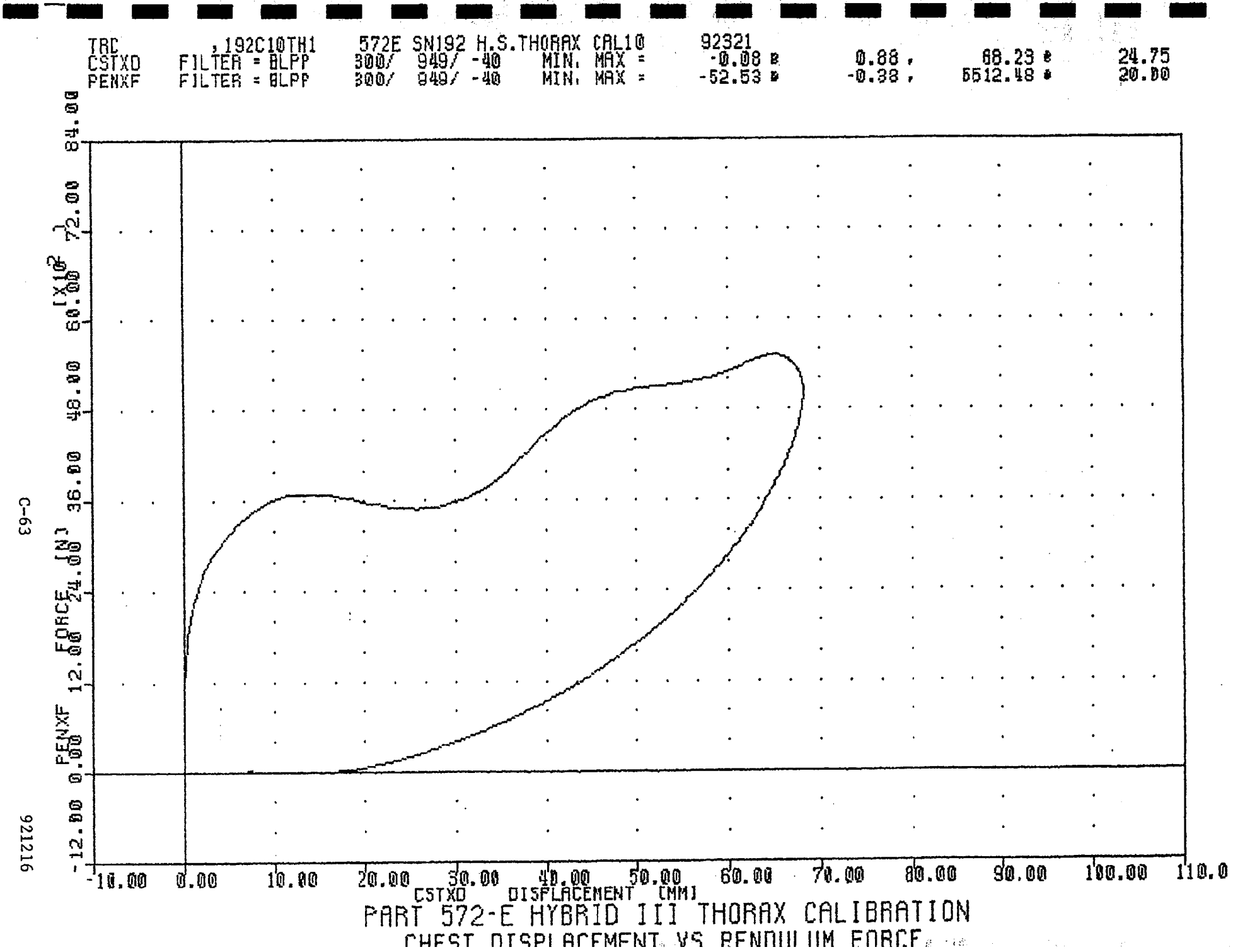
TECHNICIAN


TRC , 192C10TH1
572E SN192 H.S.THORAX CAL10
92321
PENXG
FILTER = BLPP 300/ 949/ -40
MIN, MAX VALUES = -0.23 @ -0.38 , 24.06 @ 20.00
ACCELERATION (G)
35.00
30.00
25.00
20.00
15.00
10.00
5.00
0.00
-5.00
-10.00
0.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
80.00
90.00
100.00
110.00
TIME (MSEC)
PART 572-E HYBRID III THORAX CALIBRATION
C-60
921216


TRC , 192C10TH1
572E 9N192 H.S.THORAX CAL10
92321
PENXF
FILTER = BLPP 300/ 949/ -40
MIN, MAX VALUES = -52.53 @ -0.38 , 5512.48 @ 20.00
FORCE [N] [X10^2]
84.00
72.00
60.00
48.00
36.00
24.00
12.00
0.00
-12.00
-10.00
0.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
80.00
90.00
100.00
TIME [MSEC]
PART 572-E HYBRID III THORAX CALIBRATION
PENDULUM FORCE


TRC , 192C10TH1
572E SN192 H.S.THORAX CAL10
92321
CSTXD
FILTER = BLPF 300/ 949/ -40
MIN, MAX VALUES = -0.08 @ 0.88 , 68.23 @ 24.75
DISPLACEMENT (MM)
84.00
72.00
60.00
48.00
36.00
24.00
12.00
0.00
-12.00
-10.00
0.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
80.00
90.00
100.00
110.00
TIME (MSEC)
PART 572-E HYBRID III THORAX CALIBRATION
STERNUM DISPLACEMENT

921216


TRC ,192C10TH1 572E SN192 H.S.THORAX CAL10 92321
CSTXD FILTER = BLPP 300/ 949/ -40 MIN, MAX = -0.08 @ 0.88 , 68.23 @ 24.75
PENXF FILTER = BLPP 300/ 949/ -40 MIN, MAX = -52.53 @ -0.38 , 5512.48 @ 20.00
PENXF FORCE [N] [X10^2]
84.00
72.00
60.00
48.00
36.00
24.00
12.00
0.00
-12.00
-10.00
0.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
80.00
90.00
100.00
110.0
CSTXD DISPLACEMENT [MM]
PART 572-E HYBRID III THORAX CALIBRATION
CHEST DISPLACEMENT VS PENDULUM FORCE

TRANSPORTATION RESEARCH CENTER OF OHIO

KNEE IMPACT TEST

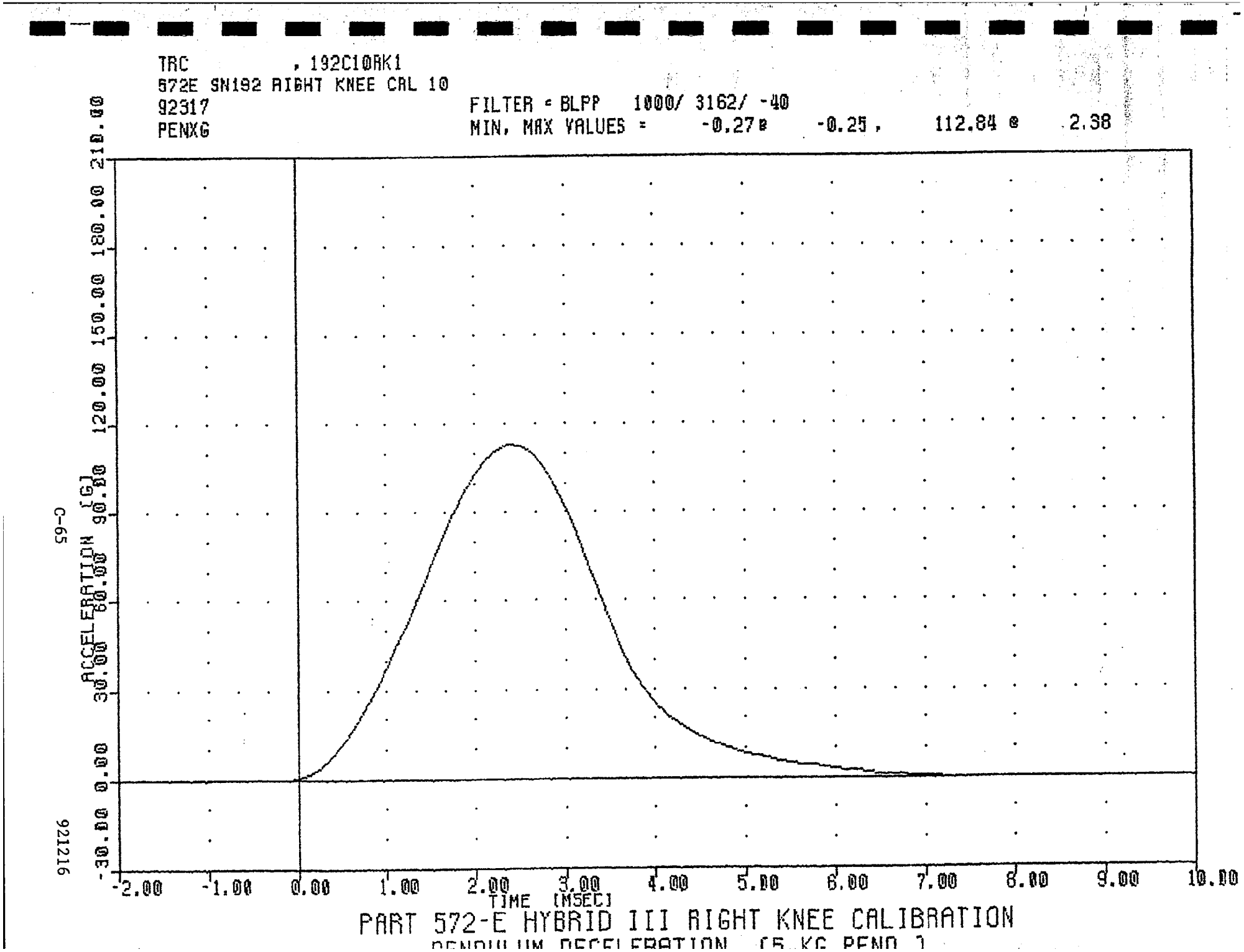
HYBRID III 12-NOV-92

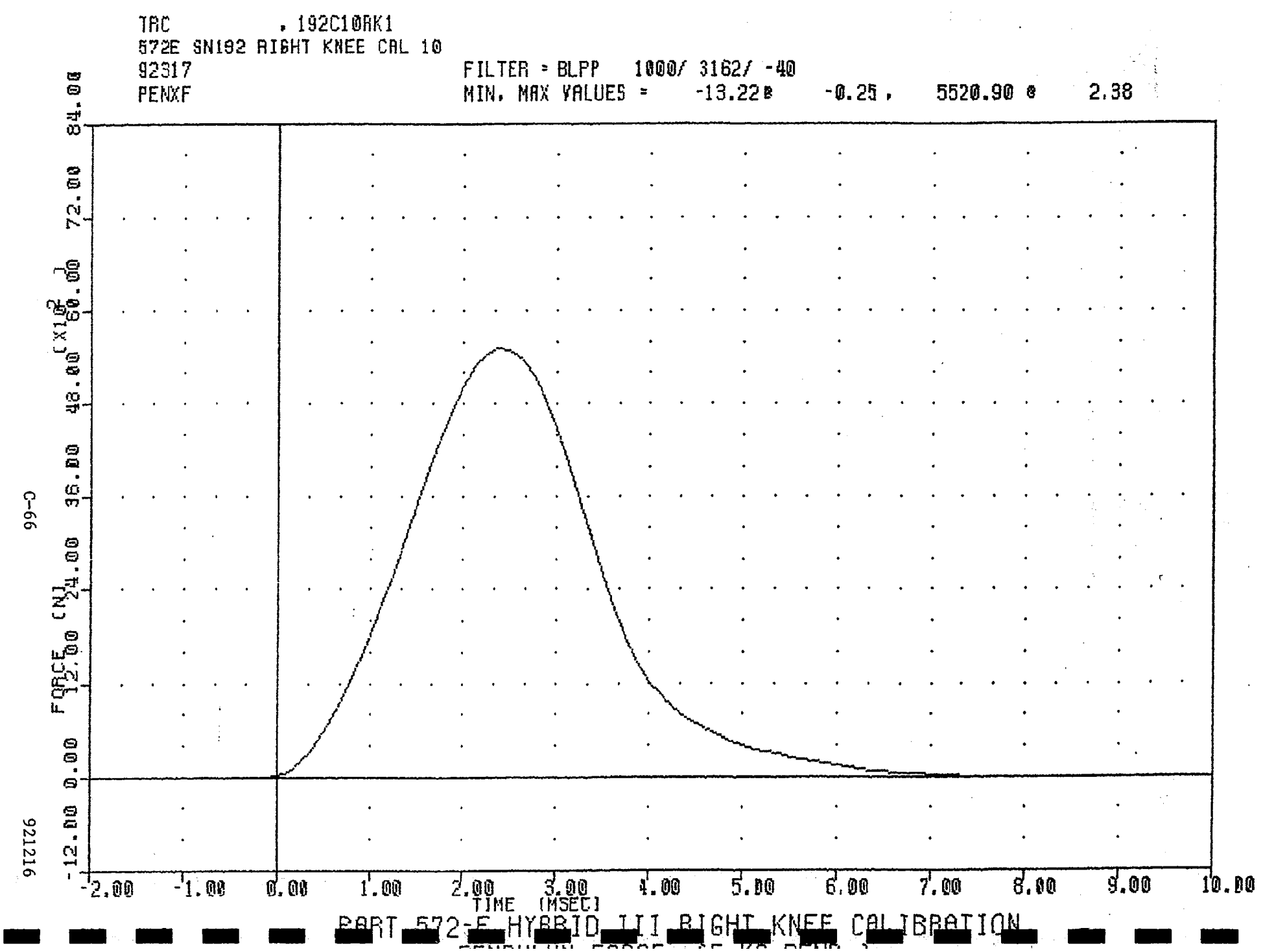
RIGHT KNEE
TRC 192C10RK1 572E SN192 RIGHT KNEE CAL 10

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	20.6-22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10% - 70%	51.0 %
PROBE VELOCITY	2.07 - 2.13 M/SEC	2.09 M/SEC
PEAK KNEE IMPACT FORCE	4714-5783 N	5520.9 N
PROBE WEIGHT	5.0 KG	

TEST MEETS SPECIFICATIONS

TECHNICIAN_____


TRC , 192C10RK1
572E SN192 RIGHT KNEE CAL 10
92317
PENXG
FILTER = BLPP 1000/ 3162/ -40
MIN, MAX VALUES = -0.27 @ -0.25 , 112.84 @ 2.38
ACCELERATION [G]
210.00
180.00
150.00
120.00
90.00
60.00
30.00
0.00
-30.00
-2.00
-1.00
0.00
1.00
2.00
3.00
4.00
5.00
6.00
7.00
8.00
9.00
10.00
TIME [MSEC]
C-65
921216
PART 572-E HYBRID III RIGHT KNEE CALIBRATION
PENDULUM ACCELERATION (5 KG PEND.)


TRC , 192C10RK1
572E SN192 RIGHT KNEE CAL 10
92317
PENXF
FILTER = BLPP 1000/ 3162/ -40
MIN, MAX VALUES = -13.22 @ -0.25 , 5520.90 @ 2.38
FORCE [N] [X10^2]
84.00
72.00
60.00
48.00
36.00
24.00
12.00
0.00
-12.00
-2.00
-1.00
0.00
1.00
2.00
3.00
4.00
5.00
6.00
7.00
8.00
9.00
10.00
TIME [MSEC]
PART 572-E HYBRID III RIGHT KNEE CALIBRATION

921216

TRANSPORTATION RESEARCH CENTER OF OHIO

KNEE IMPACT TEST

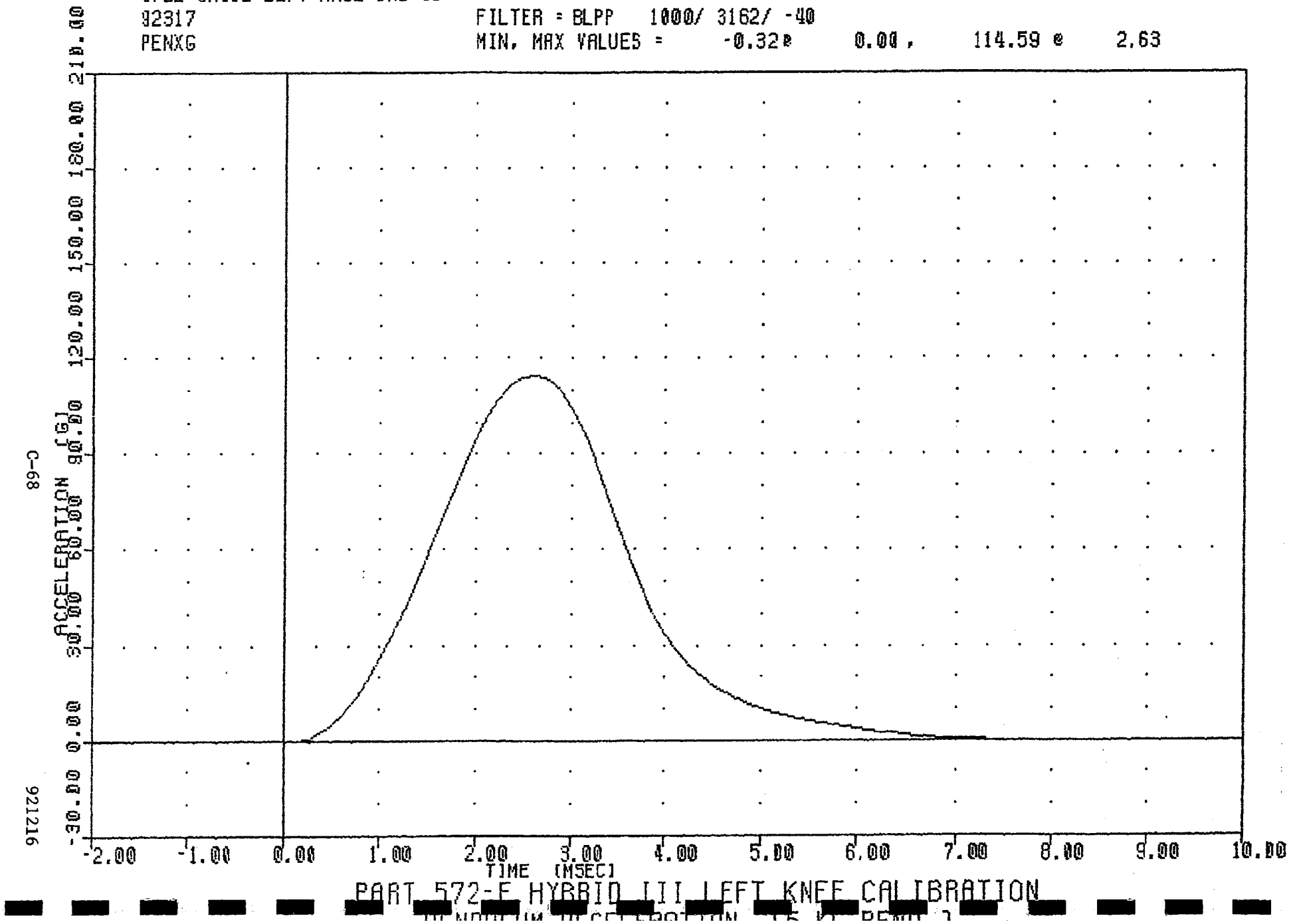
HYBRID III 12-NOV-92

LEFT KNEE
TRC 192C10LK1 572E SN192 LEFT KNEE CAL 10

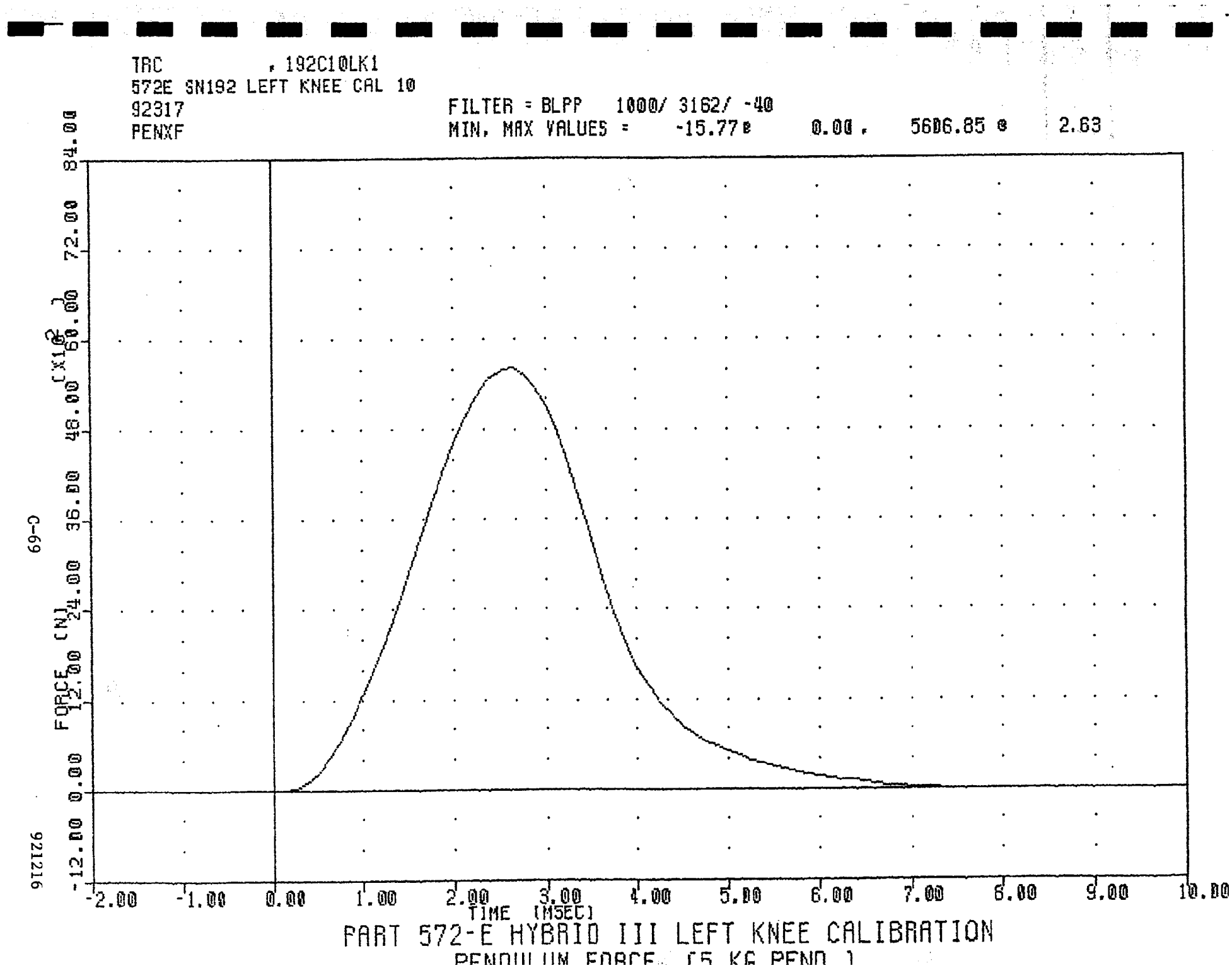
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	20.6-22.2 DEG. C	21.1 DEG. C
RELATIVE HUMIDITY	10% - 70%	51.0 %
PROBE VELOCITY	2.07 - 2.13 M/SEC	2.09 M/SEC
PEAK KNEE IMPACT FORCE	4714-5783 N	5606.8 N
PROBE WEIGHT	5.0 KG	

TEST MEETS SPECIFICATIONS

TECHNICIAN Pete Fonta



PART 572-F HYBRID III LEFT KNEE CALIBRATION


TRC , 192C10LK1
572E SN192 LEFT KNEE CAL 10
92317
PENXF
FILTER = BLPP 1000/ 3162/ -40
MIN, MAX VALUES = -15.77 @ 0.00 , 5606.85 @ 2.63
FORCE (N) (X10^2)
84.00
72.00
60.00
48.00
36.00
24.00
12.00
0.00
-12.00
-2.00
-1.00
0.00
1.00
2.00
3.00
4.00
5.00
6.00
7.00
8.00
9.00
10.00
TIME (MSEC)
C-69
921216
PART 572-E HYBRID III LEFT KNEE CALIBRATION
PENDULUM FORCE (5 KG PEND.)

APPENDIX D

MISCELLANEOUS TEST INFORMATION

DUMMY INSTRUMENT CALIBRATIONS

DRIVER DUMMY #142

	SERIAL NO.	MODEL NO.	MFR.	CALIBRATION DATE LAST	DUE
HEAD X-AXIS ACCEL.	CR59H	7264	ENDEVCO	07/28/92	01/28/93
Y-AXIS ACCEL.	CR99H	7264	ENDEVCO	07/28/92	01/28/93
Z-AXIS ACCEL.	CH44H	7264	ENDEVCO	07/28/92	01/28/93
CHEST X-AXIS ACCEL.	DA88H	7264	ENDEVCO	07/30/92	01/30/93
Y-AXIS ACCEL.	DT02JT	7264	ENDEVCO	08/04/92	02/04/93
Z-AXIS ACCEL.	CH74H	7264	ENDEVCO	07/30/92	01/30/93
LEFT FEMUR FORCE LOAD CELL	829	2430	GSE	08/03/92	02/03/93
RIGHT FEMUR FORCE LOAD CELL	610	2430	GSE	08/03/92	02/03/93
*NECK X-AXIS FORCE LOAD CELL	0280	1716	DENTON	07/30/92	01/30/93
Y-AXIS FORCE LOAD CELL	0280	1716	DENTON	07/30/92	01/30/93
Z-AXIS FORCE LOAD CELL	0280	1716	DENTON	07/30/92	01/30/93
*NECK MOMENT ABOUT X-AXIS LOAD CELL	0280	1716	DENTON	07/30/92	01/30/93
MOMENT ABOUT Y-AXIS LOAD CELL	0280	1716	DENTON	07/30/92	01/30/93
MOMENT ABOUT Z-AXIS LOAD CELL	0280	1716	DENTON	07/30/92	01/30/93
*CHEST DEFLECTION POTENTIOMETER	90320B	81422A	VERNITECH	07/29/92	01/29/93
LAP BELT FORCE LOAD CELL	615	3419	LEBOW	10/06/92	04/06/93
SHOULDER BELT FORCE LOAD CELL	616	3419	LEBOW	10/06/92	04/06/93
SHOULDER BELT SPOOL-OUT POTENTIOMETER	A12889	PT-101-40A	CELESCO	10/28/92	04/28/93
SHOULDER BELT STRETCH POTENTIOMETER	2690	2051414101	BOURNES	10/28/92	04/28/93

*HYBRID III USE ONLY.

DUMMY INSTRUMENT CALIBRATIONS

PASSENGER DUMMY #192

	SERIAL NO.	MODEL NO.	MFR.	CALIBRATION DATE LAST	DUE
HEAD X-AXIS ACCEL.	CY19H	7264	ENDEVCO	07/28/92	01/28/93
Y-AXIS ACCEL.	DH74J	7264	ENDEVCO	07/28/92	01/28/93
Z-AXIS ACCEL.	CW16H	7264	ENDEVCO	09/23/92	03/23/93
CHEST X-AXIS ACCEL.	DW04J	7264	ENDEVCO	07/30/92	01/30/93
Y-AXIS ACCEL.	DA15H	7264	ENDEVCO	09/23/92	03/23/93
Z-AXIS ACCEL.	DK56J	7264	ENDEVCO	07/30/92	01/30/93
LEFT FEMUR FORCE LOAD CELL	889	2430	GSE	11/09/92	05/09/93
RIGHT FEMUR FORCE LOAD CELL	827	2430	GSE	08/03/92	02/03/93
*NECK X-AXIS FORCE LOAD CELL	085	1716	DENTON	08/03/92	02/03/93
Y-AXIS FORCE LOAD CELL	085	1716	DENTON	08/03/92	02/03/93
X-AXIS FORCE LOAD CELL	085	1716	DENTON	08/03/92	02/03/93
*NECK MOMENT ABOUT X-AXIS LOAD CELL	085	1716	DENTON	08/03/92	02/03/93
MOMENT ABOUT Y-AXIS LOAD CELL	085	1716	DENTON	08/03/92	02/03/93
MOMENT ABOUT Z-AXIS LOAD CELL	085	1716	DENTON	08/03/92	02/03/93
*CHEST DEFLECTION POTENTIOMETER	87313-96	81422A	VERNITECH	07/29/92	01/29/93
LAP BELT FORCE LOAD CELL	127	3419	LEBOW	10/06/92	04/06/93
SHOULDER BELT FORCE LOAD CELL	571	3419	LEBOW	10/06/92	04/06/93
SHOULDER BELT SPOOL-OUT POTENTIOMETER	0586136	PT-101-40A	CELESCO	10/28/92	04/28/93
SHOULDER BELT STRETCH POTENTIOMETER	1291	2051414101	BOURNES	10/28/92	04/28/93

*HYBRID III USE ONLY.

VEHICLE AND CALIBRATION LABORATORY INSTRUMENT CALIBRATIONS

VEHICLE ACCELEROMETERS

	SERIAL NO.	MODEL NO.	MFR.	CALIBRATION DATE LAST	DUE
LEFT REAR SEAT CROSSMEMBER X-AXIS	CK87H	7264	ENDEVCO	11/20/92	05/20/93
LEFT REAR SEAT CROSSMEMBER X-AXIS REDUN	BY97H	7264	ENDEVCO	11/20/92	05/20/93
RIGHT REAR SEAT CROSSMEMBER X-AXIS	CP37H	7264	ENDEVCO	07/14/92	01/14/93
RIGHT REAR SEAT CROSSMEMBER X-AXIS REDUN	BW77J	7264	ENDEVCO	11/23/92	05/23/93
ENGINE TOP X-AXIS	CE72H	7264	ENDEVCO	11/20/92	05/20/93
ENGINE BOTTOM X-AXIS	DG40J	7264	ENDEVCO	07/14/92	01/14/93
RIGHT BRAKE CALIPER X-AXIS	BY03J	7264	ENDEVCO	10/13/92	04/13/93
LEFT BRAKE CALIPER X-AXIS	CJ37H	7264	ENDEVCO	07/22/92	01/22/93
INSTRUMENT PANEL CENTER X-AXIS	CK01H	7264	ENDEVCO	07/22/92	01/22/93

CALIBRATION LABORATORY INSTRUMENTS

	SERIAL NO.	MODEL NO.	MFR.	CALIBRATION DATE LAST	DUE
NECK BENDING PENDULUM ACCEL.	CC44	7232	ENDEVCO	10/05/92	04/05/93
NECK BENDING ROTARY POTENTIOMETER	NA	35435-1-102	BOURNES	MFR. SPECIFICATION	
NECK BENDING LINEAR POTENTIOMETER	NA	5184-2051846003	BOURNES	10/06/92	04/06/93
THORAX/HYBRID II FEMUR PEND. ACCEL.	CC64	7232	ENDEVCO	10/05/92	04/05/93
LUMBAR FLEXION FORCE GAUGE	NA	DPPH-50	CHATILLON	05/03/89	REPAIRED
LUMBAR FLEXION ROTATION GAUGE	CP17-0601-1	7020	HUMPHREY	MFR. SPECIFICATION	
ABDOMEN COMPRESSION DISPL. GAUGE	4075-172	80294-2051941504	BOURNES	10/06/92	04/06/93
ABDOMEN COMPRESSION FORCE GAUGE	1261	3167	LEBOW	10/05/92	04/05/93
HYBRID III FEMUR PEND. ACCEL.	CG83	7232	ENDEVCO	10/06/92	04/06/93

SIGN CONVENTION

NHTSA DATA TAPE REFERENCE GUIDE

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

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

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

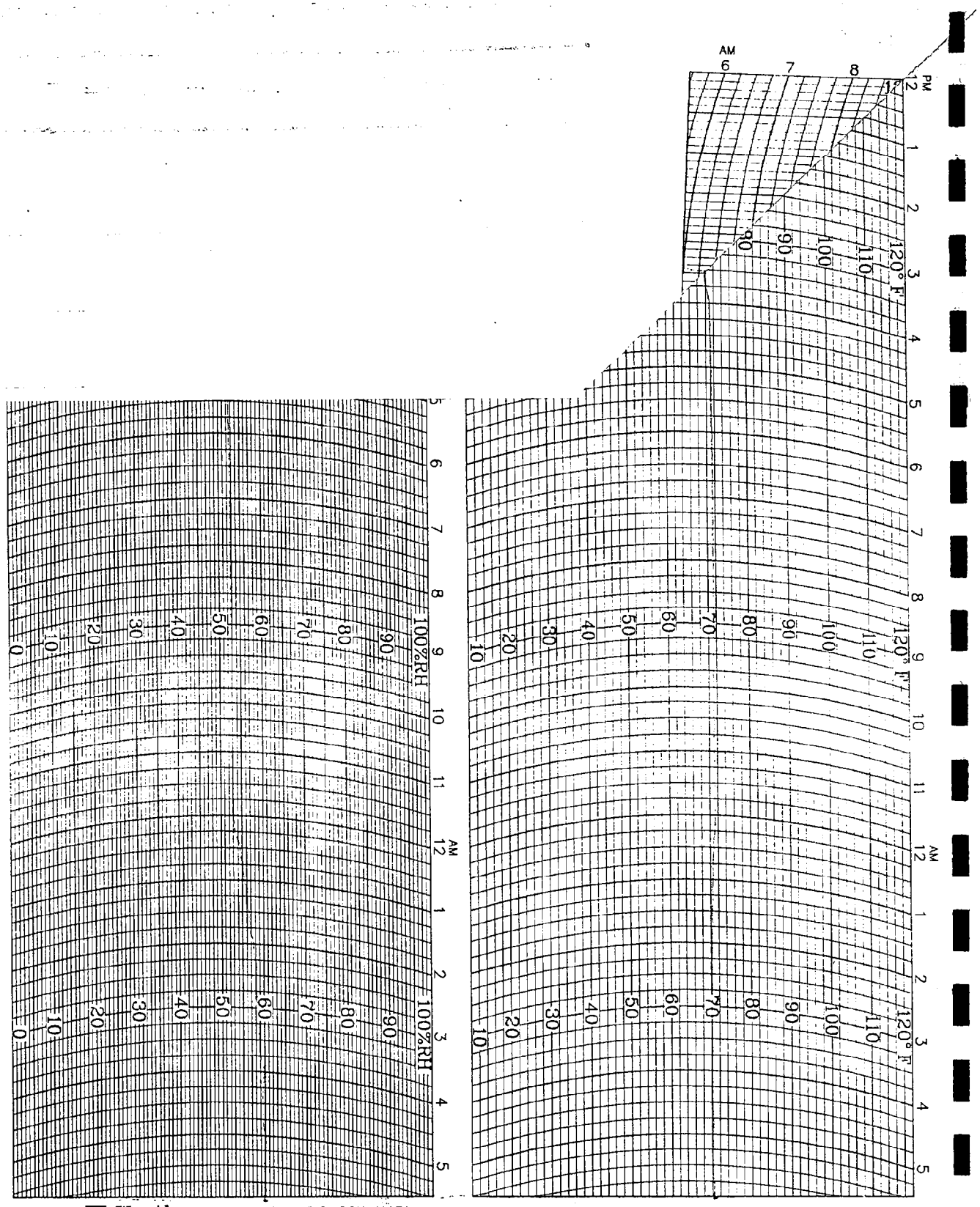
NECK LOAD CELLS:	+X FORCE:	HEAD PUSHED FORWARD
	+Y FORCE:	HEAD PUSHED LEFTWARD
	+Z FORCE:	HEAD PULLED UPWARD (TENSION ON NECK)
	+X MOMENT:	RIGHT EAR ROTATING TOWARD RIGHT SHOULDER
	+Y MOMENT:	CHIN ROTATING TOWARD CHEST
	+Z MOMENT:	CHIN ROTATING TOWARD LEFT SHOULDER

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

FREQUENCY RESPONSE CLASSES

SAE J211 OCT88

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



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

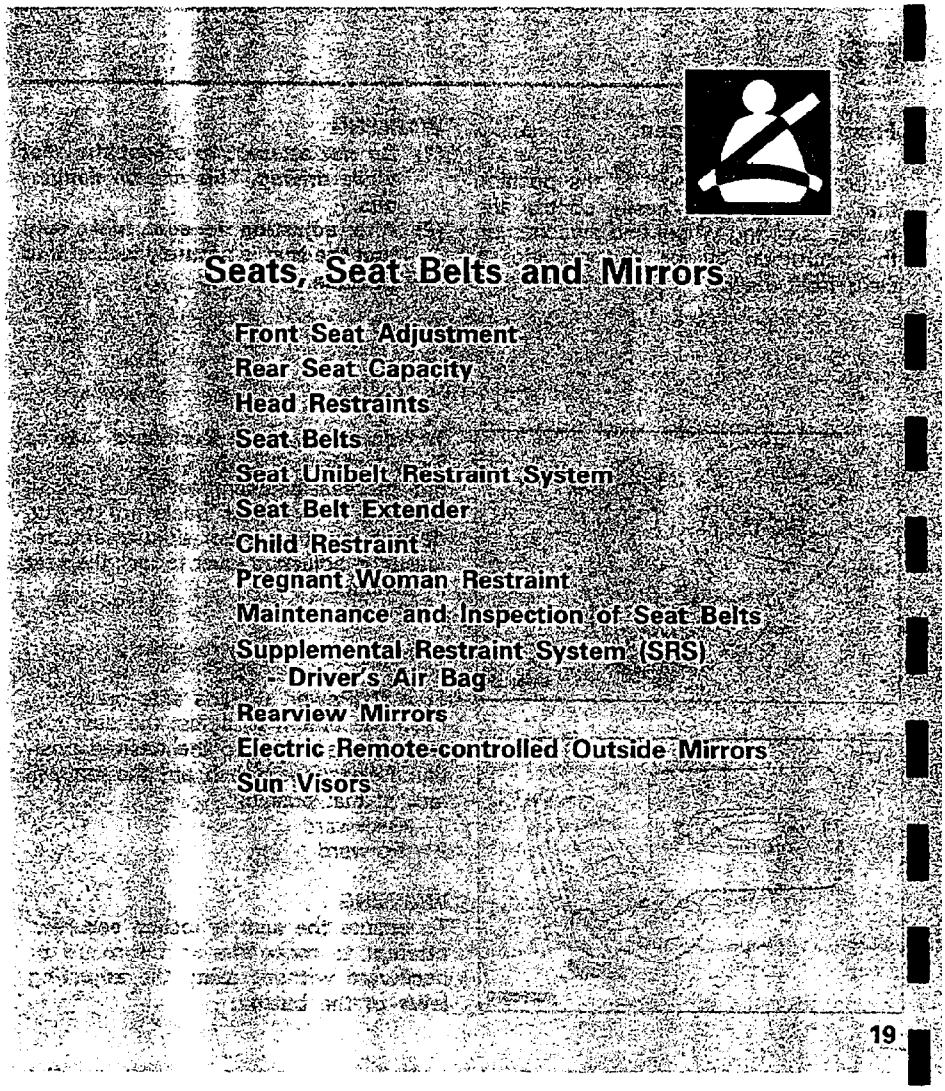
HYGROTHERMOGRAPH
1 DAY

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

STATION_____DATE ON_____DATE OFF_____

APPENDIX E

RESTRAINT SYSTEM INSTRUCTIONS FROM OWNER'S MANUAL



Seats, Seat Belts and Mirrors

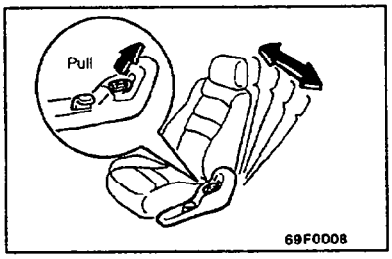
Front Seat Adjustment
Rear Seat Capacity
Head Restraints
Seat Belts
Seat Unibelt Restraint System
Seat Belt Extender
Child Restraint
Pregnant Woman Restraint
Maintenance and Inspection of Seat Belts
Supplemental Restraint System (SRS)
- Driver's Air Bag
Rearview Mirrors
Electric Remote-controlled Outside Mirrors
Sun Visors

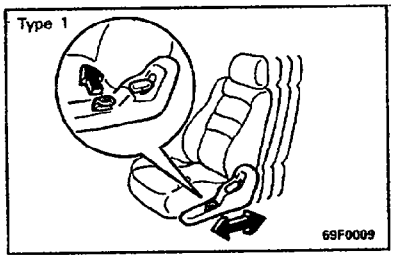
19

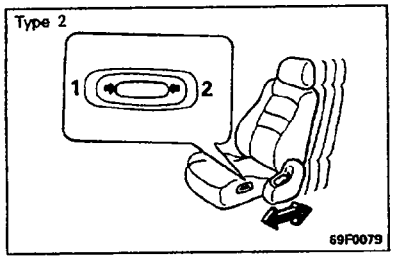
Front Seat Adjustment ND01A-Ab

Adjust the driver's seat to the position that allows you to easily control the pedals, steering wheel and switches on the instrument panel, and provides a clear front view.

WARNING
(1) Do not attempt to adjust the seat while driving. This can be dangerous.
(2) After adjusting the seat, make sure that the seat is securely locked into position.

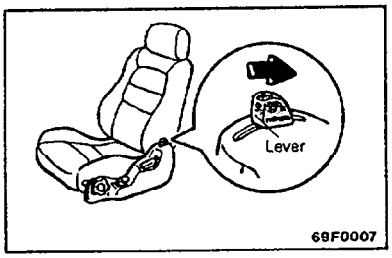






To Adjust Forward or Backward ND01B-E

Type 1 (Manual)
Pull the seat adjusting lever and adjust the seat forward or backward to the desired position. After adjustment, release the adjusting lever to lock the seat in position.



Type 2 (Power, driver's side only)
Push the button to adjust the seat forward or backward to the desired position. Release the switch, and the seat will lock at that position.
1 – Backward
2 – Forward

WARNING
To ensure the seat is locked securely, attempt to move the seat forward or backward without using the adjusting lever or the button.

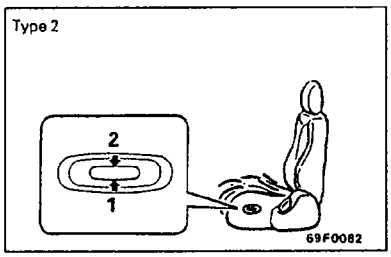
To Recline the Seatback ND01C-Ba

In order to recline the seatback, lean forward slightly, pull the seatback lock lever up, and then lean backward to the desired position and release the lever. The seatback will lock in that position.

WARNING
To minimize risk of personal injury in the event of a collision or sudden stop, both the driver and passenger seatbacks should remain in a nearly upright position while the car is in motion. The protection provided by the seat belts may be reduced significantly when the seatback is reclined. There is greater risk that the seat occupant will slide under the belt, resulting in serious injury, when the seatback is reclined.

Memory Reclining Lever (driver's side only)
The reclined position of the driver's seat is kept in memory so that, before starting the car, the seat may be set to the desired position with a touch of the knob.

1. Use the lock lever to place the seatback to the desired reclined position.
2. Pull up the memory reclining knob until a click is heard, and the reclined position will be put in memory.
3. If the seatback is folded down to access the rear seat, it will return to the memorized position when you push it back.



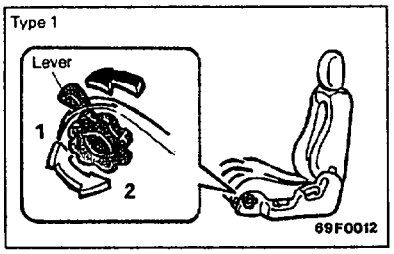
Height Adjustment (driver's side only) ND01H-Ba

Front and/or rear part of the seat cushion height can be adjusted.

And in case of type 2, the whole seat cushion height can be adjusted.

Push the center of the button to raise or lower the whole seat cushion.

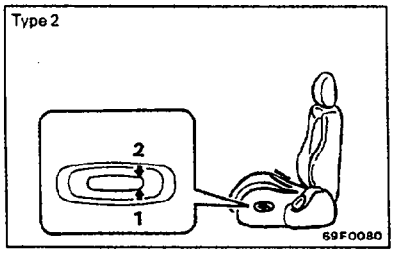
1 – Raise
2 – Lower

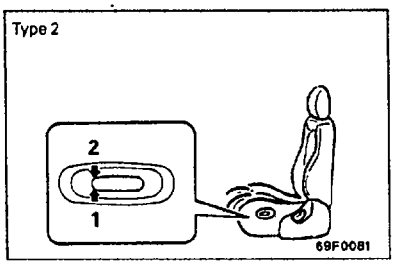


Front part of the seat cushion

Type 1 (Manual)
With lever down, turn the knob to raise or lower the front part of the seat cushion.

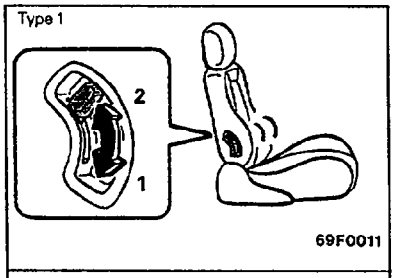
1 – Raise
2 – Lower

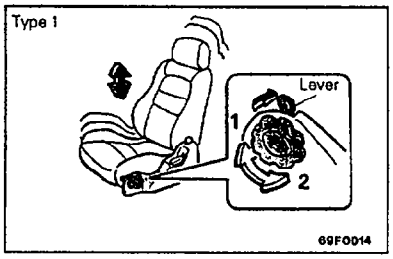




Type 2 (Power)
Push the button to raise or lower the front part of the seat cushion.

1 – Raise
2 – Lower

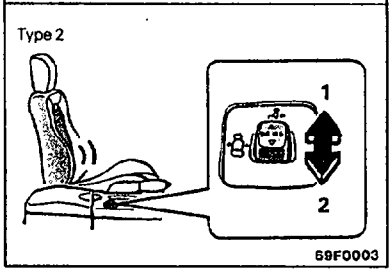




Rear part of the seat cushion ND01D-E

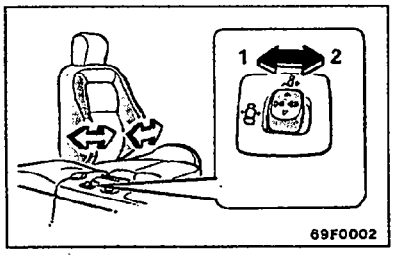
Type 1 (Manual)
With the lever pulled up, turn the knob to raise or lower the rear part of the seat cushion height.

1 – Raise
2 – Lower



Type 2 (Power)
Push the button to raise or lower the rear part of the seat cushion height.

1 – Raise
2 – Lower



Side Support Adjustment (driver side only, if so equipped) ND01G-C

The position of both sides of the seatback can be adjusted to increase or decrease the degree of lateral support when the ignition key is in the "ON" position.

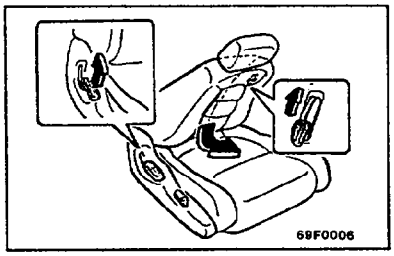
1 – Increase
2 – Decrease

Lumbar Support Adjustment (driver side only) ND01F-C

A lumbar support adjustment is located in the seatback of the driver's seat.

Type 1 (Manual)
Raise or lower the lever to adjust the lumbar support.

1 – Increase
2 – Decrease



For Access to the Rear Seat ND01E-H

To permit rear seat entry or exit, the front seatback will fold down and forward when the seatback lock lever is pulled up or when the walk-in lever of the front passenger seat is pulled up. To return the seat to the original position, push it backward until there is a "click" and the seat locks in position.

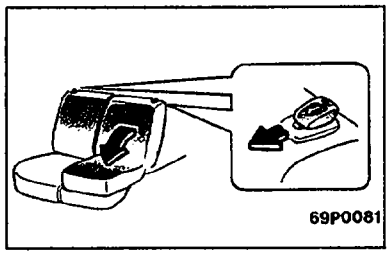
Type 2 (Power)
Lumbar support adjustment can be operated when the ignition key is in the "ON" position.

1 – Increase
2 – Decrease

Rear Seat Capacity ND02A-Ab

The rear seating capacity of this car is two people; three people should not occupy the rear seat.

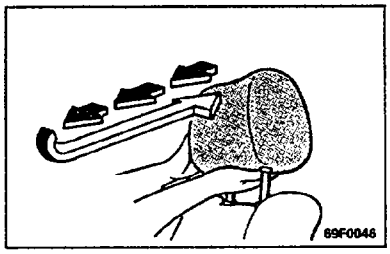
WARNING
The rear seat occupants should always wear their seat belts when the car is in motion.

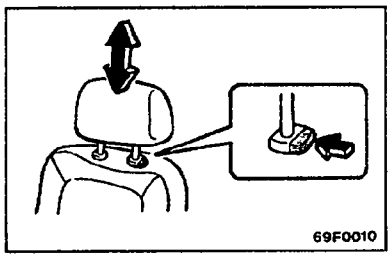


Fold Down Rear Seatbacks ND02C-Fa

The rear seatbacks can be folded forward to provide additional cargo area. Pull the left and/or right release knobs, and fold the rear seatbacks forward.

WARNING
The cargo area in the rear of the car should never be used as a play area by children. Children should be seated with seat belts fastened when the car is in motion. Be sure that the rear seatbacks are returned to their fully upright position and locked in place.

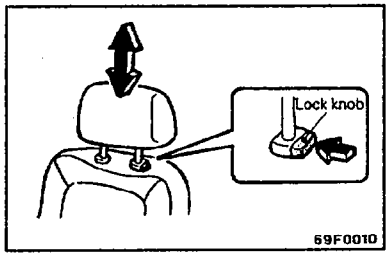




Head Restraints ND05A-Na

Padded head restraints for the front seats reduce the risk of whiplash injury in the event of impact from the rear.

Height Adjustment
To reduce the chance of injury in the event of collision, adjust the head restraint height so that the center of the restraint is as close as possible to the eye level.
To raise the restraint, pull it straight up while pressing the lock knob. To lower the restraint, push it down while pressing the lock knob in the direction indicated by the arrow. After adjusting the height and releasing the knob, push down on the restraint to confirm that it is locked in position.



Angle Adjustment (if so equipped)
The position of the head restraint can be adjusted by moving it forward.
It will return to original position after the front most position has been passed.

Removal of the Head Restraint ND058-G
To remove the head restraints, press the lock knob in the direction indicated by the arrows and pull the head restraints up.
To remount the head restraints, first confirm that they are facing the correct direction, and then insert them into the seatback and push down while pressing the lock knob until they lock. Confirm that the lock knobs are correct as shown in the illustration, and also pull the head restraints up to confirm that they do not come out of the seatback.

WARNING
Driving with the head restraints removed is dangerous. Always have them mounted when operating the car. Failure to having them properly mounted may increase the chance of injury in the event of a collision.

Seat Belts ND06A-Ae

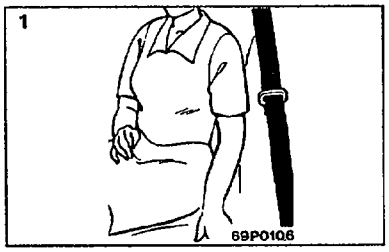
Seat belts are installed in your car for the protection of the driver and passengers. **Always use the seat belts.** In the event of an accident, injury to the driver and passengers may be reduced if seat belts are properly used.
The following pages contain the recommended procedure for fastening, adjusting, and wearing of the belts for comfort and safety.

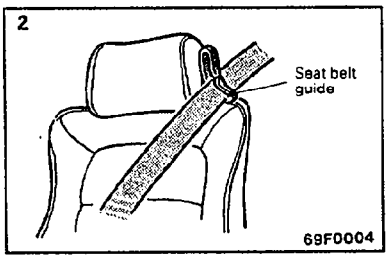
WARNING
(1) Never use one seat belt for more than one occupant.
(2) Never wear the shoulder belt under the arm or otherwise out of position.
Always wear both the seat and shoulder belt and in the proper position.
(3) Do not make any modifications that could change the effectiveness of the seat belts.
(4) Never attempt to repair or replace the seat belt assemblies on your own. All repairs and replacements should be made by an authorized dealer.

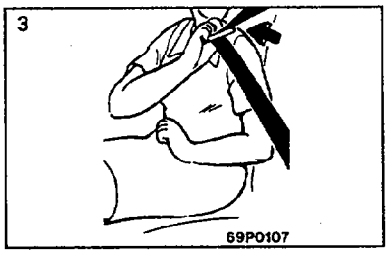
NOTE
Legislation in your state may require seat belt usage, but even if not required they should always be used.

Seat Unibelt Restraint System ND069-Pa
All seats are equipped with a UNIBELT system which uses a single belt and an emergency locking retractor.
This system is designed to provide comfort and safety by permitting full extension and automatic retraction of the belts during normal car operation. A sensing device inside the belt retractor is designed to lock the retractor in the event of an abrupt change in car motion.

NOTE
For instruction on how to install a child restraint system, see "Installing a Child Restraint System with a UNIBELT" on page 28.







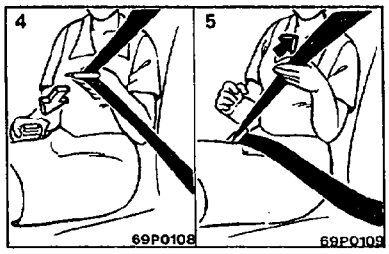
Unibelt Instructions ND06D-Ka

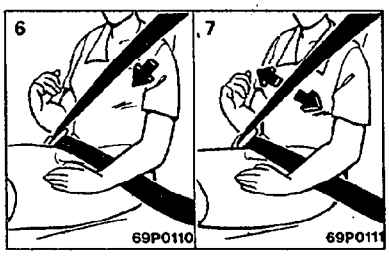
1. Get in the car and sit in the normal correct posture.

   WARNING
   To minimize risk of personal injury in event of a collision or sudden stop both the driver and passenger seatbacks should always be in a nearly upright position while the car is in motion.
   The protection provided by the seat belts may be reduced significantly when the seatback is reclined. There is greater risk that the passenger will slide under the belt, resulting in serious injury, when the seatback is reclined.

2. When wearing the front seat belt, pass the shoulder belt through the seat belt guide for smoother operation.

3. Grasp the movable latch plate and slide it up the webbing as far as necessary so that it will be easy to pull across your body.
   After a couple of tries this will become an automatic one-handed operation.



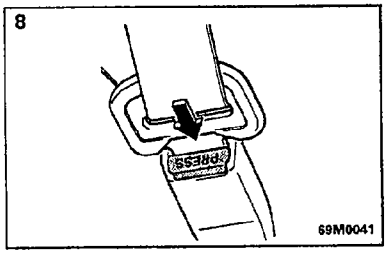


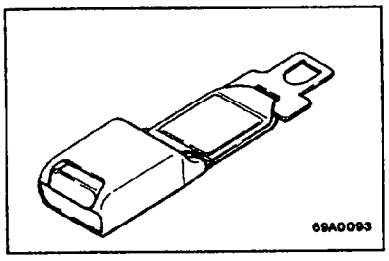
4. Pull the webbing, and move the movable latch plate toward the buckle. This system will not lock up if you stop or hesitate, so relax and continue to "buckle-up".
   Push the latch plate into the buckle until a "click" is heard.

5. Pull up on the shoulder belt to insure that there is no slack in the lap belt. The lap belt will not tighten during use; therefore you can set it right now to safe, comfortable snugness.

   WARNING
   Be sure the lap belt portion is fitted snugly and as low as possible around the hips, not around the waist. Failure to do so may increase the chance or severity of injury in the event of a collision.

6. Check the belt slackness. The belt will retain the small amount of slack necessary for comfort when you return to your normal seating position. If the belt is still too tight, pull out 6" or 8" of webbing, let it return to your chest, and repeat the above motion.
7. The shoulder belt will allow unrestricted movement under normal conditions. The belt will lock in the event of an abrupt change in car motion.





8. To release the belt, push the button on the buckle. To return the belt to its stowed position, pull the shoulder belt down slightly and release immediately.

   WARNING
   Be sure to lock all doors before driving. Locking the doors and properly using the seat belts provided will minimize the risk of injury or ejection in an accident.

Seat Belt Extender (for Unibelt) ND06J-Ac

If the seat belt is too short, even when fully extended, a seat belt extender is available from your dealer. The extender may be used for either front seating position.
This extender should only be used if the existing belt is not long enough. When not required, it must be removed and stowed because the use of the extender when not required may deactivate the seat belt locking mechanism.

WARNING
Persons who can use the standard seat belt should not use an extender. Such unnecessary use could result in serious personal injury in the event of an accident.