

DOT 815

FRONTAL CRASH RESPONSES

A FULL FRONTAL CRASH TEST
OF A 1982 AMERICAN MOTORS CONCORD
INTO A 1984 HONDA ACCORD WITH A
CLOSING VELOCITY OF 54.9 MPH

PREPARED BY:
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TEST REPORT
JUNE 1985

PREPARED FOR:
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16. Abstract This test report documents one of a series of crash tests conducted to evaluate Part 572 and Hybrid III dummy responses in both the restrained and unrestrained environment, and to catalog vehicle structural responses from a variety of crash configurations. Testing was conducted with a 1984 American Motors Concord 4-door sedan and a 1984 Honda Accord 4-door Sedan at the TRCO Crash Test Facility, East Liberty, Ohio. The American Motors Concord was towed into the Honda Accord at 0° with a closing velocity of 54.9 mph. One Hybrid III dummy was located in the driver's designated seating position and one Hybrid III dummy was located in the right front seating position in the subject vehicle. One Hybrid III dummy was located in the driver's designated seating position and one Hybrid III dummy was located in the right front seating position in the partner vehicle. The test date was April 2, 1985 and the ambient temperature was 46° F.			
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METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
LENGTH				
in	inches	2.5	centimeters	cm
ft	feet	30	centimeters	cm
yd	yards	0.9	meters	m
mi	miles	1.6	kilometers	km
AREA				
in ²	square inches	6.5	square centimeters	cm ²
ft ²	square feet	0.09	square meters	m ²
yd ²	square yards	0.8	square meters	m ²
mi ²	square miles	2.6	square kilometers	km ²
	acres	0.4	hectares	ha
MASS (weight)				
oz	ounces	28	grams	g
lb	pounds	0.45	kilograms	kg
	short tons	0.9	metric ton	t
	(2000 lb)			
VOLUME				
tsp	teaspoons	5	milliliters	ml
Tbsp	tablespoons	15	milliliters	ml
in ³	cubic inches	16	milliliters	ml
fl oz	fluid ounces	30	milliliters	ml
c	cups	0.24	liters	L
pt	pints	0.47	liters	L
qt	quarts	0.95	liters	L
gal	gallons	3.8	liters	L
ft ³	cubic feet	0.03	cubic meters	m ³
yd ³	cubic yards	0.76	cubic meters	m ³

TEMPERATURE (exact)

°F	degrees Fahrenheit	5/9 (after subtracting 32)	degrees Celsius	°C
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Approximate Conversions from Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
LENGTH				
mm	millimeters	0.04	inches	in
cm	centimeters	0.4	inches	in
m	meters	3.3	feet	ft
m	meters	1.1	yards	yd
km	kilometers	0.6	miles	mi
AREA				
cm ²	square centimeters	0.16	square inches	in ²
m ²	square meters	1.2	square yards	yd ²
km ²	square kilometers	0.4	square miles	mi ²
ha	hectares	2.5	acres	ac
	(10 000 m ²)			
MASS (weight)				
g	grams	0.035	ounces	oz
kg	kilograms	2.2	pounds	lb
t	metric ton	1.1	short tons	
	(1000 kg)			
VOLUME				
ml	milliliters	0.03	fluid ounces	fl oz
ml	milliliters	0.06	cubic inches	in ³
L	liters	2.1	pints	pt
L	liters	1.06	quarts	qt
L	liters	0.26	gallons	gal
m ³	cubic meters	35	cubic feet	ft ³
m ³	cubic meters	1.3	cubic yards	yd ³
TEMPERATURE (exact)				
°C	degrees Celsius	9/5 (then add 32)	degrees Fahrenheit	°F

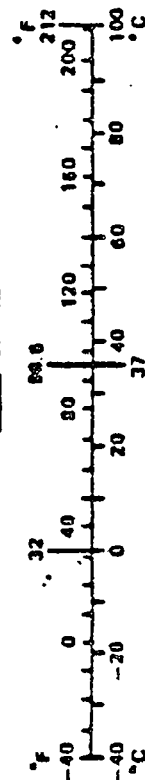


TABLE OF CONTENTS

	<u>Page</u>
1.0 PURPOSE AND INTRODUCTION	1-1
2.0 GENERAL TEST AND VEHICLE PARAMETER DATA	2-1
3.0 DATA REQUIRED BY R&D	3-1
APPENDIX A PHOTOGRAPHS	A-1
APPENDIX B DATA PLOT PRESENTATION	B-1
APPENDIX C DUMMY CERTIFICATION	C-1
APPENDIX D MISCELLANEOUS TEST INFORMATION	D-1

LIST OF PHOTOGRAPHS

<u>Figure</u>		<u>Page</u>
A-1.	PRE-TEST GENERAL OVERALL	A-2
A-2.	POST-TEST GENERAL OVERALL	A-2
A-3.	PRE-TEST GENERAL CLOSEUP	A-3
A-4.	POST-TEST PARTNER VEHICLE UNDERBODY VIEW	A-3
A-5.	PRE-TEST SUBJECT VEHICLE LEFT SIDE	A-4
A-6.	POST-TEST SUBJECT VEHICLE LEFT SIDE	A-4
A-7.	PRE-TEST SUBJECT VEHICLE RIGHT SIDE	A-5
A-8.	POST-TEST SUBJECT VEHICLE RIGHT SIDE	A-5
A-9.	PRE-TEST SUBJECT VEHICLE FRONT VIEW	A-6
A-10.	POST-TEST SUBJECT VEHICLE FRONT VIEW	A-6
A-11.	PRE-TEST SUBJECT VEHICLE UNDERBODY VIEW	A-7
A-12.	POST-TEST SUBJECT VEHICLE UNDERBODY VIEW	A-7
A-13.	PRE-TEST SUBJECT VEHICLE DRIVER DUMMY - VIEW 1	A-8
A-14.	POST-TEST SUBJECT VEHICLE DRIVER DUMMY - VIEW 1	A-8
A-15.	PRE-TEST SUBJECT VEHICLE DRIVER DUMMY - VIEW 2	A-9
A-16.	POST-TEST SUBJECT VEHICLE DRIVER DUMMY - VIEW 2	A-9
A-17.	PRE-TEST SUBJECT VEHICLE PASSENGER DUMMY - VIEW 1	A-10
A-18.	POST-TEST SUBJECT VEHICLE PASSENGER DUMMY - VIEW 1	A-10
A-19.	PRE-TEST SUBJECT VEHICLE PASSENGER DUMMY - VIEW 2	A-11
A-20.	POST-TEST SUBJECT VEHICLE PASSENGER DUMMY - VIEW 2	A-11
A-21.	PRE-TEST SUBJECT VEHICLE PASSENGER DUMMY - VIEW 3	A-12
A-22.	POST-TEST SUBJECT VEHICLE PASSENGER DUMMY - VIEW 3	A-12
A-23.	PRE-TEST SUBJECT VEHICLE GLAZING	A-13
A-24.	POST-TEST SUBJECT VEHICLE GLAZING	A-13

LIST OF PHOTOGRAPHS CONTD

<u>Figure</u>	<u>Page</u>
A-25. POST-TEST SUBJECT VEHICLE INTERIOR DAMAGE - VIEW 1	A-14
A-26. POST-TEST SUBJECT VEHICLE INTERIOR DAMAGE - VIEW 2	A-14
A-27. POST-TEST SUBJECT VEHICLE DRIVER DUMMY - VIEW 3	A-15
A-28. POST-TEST SUBJECT VEHICLE PASSENGER DUMMY - VIEW 4	A-15
A-29. PRE-TEST PARTNER VEHICLE LEFT SIDE	A-16
A-30. POST-TEST PARTNER VEHICLE LEFT SIDE	A-16
A-31. PRE-TEST PARTNER VEHICLE RIGHT SIDE	A-17
A-32. POST-TEST PARTNER VEHICLE RIGHT SIDE	A-17
A-33. PRE-TEST PARTNER VEHICLE FRONT VIEW	A-18
A-34. POST-TEST PARTNER VEHICLE FRONT VIEW	A-18
A-35. PRE-TEST PARTNER VEHICLE DRIVER DUMMY - VIEW 1	A-19
A-36. POST-TEST PARTNER VEHICLE DRIVER DUMMY - VIEW 1	A-19
A-37. PRE-TEST PARTNER VEHICLE DRIVER DUMMY - VIEW 2	A-20
A-38. POST-TEST PARTNER VEHICLE DRIVER DUMMY - VIEW 2	A-20
A-39. PRE-TEST PARTNER VEHICLE DRIVER DUMMY - VIEW 3	A-21
A-40. POST-TEST PARTNER VEHICLE DRIVER DUMMY - VIEW 3	A-21
A-41. PRE-TEST PARTNER VEHICLE PASSENGER DUMMY - VIEW 1	A-22
A-42. POST-TEST PARTNER VEHICLE PASSENGER DUMMY - VIEW 1	A-22
A-43. PRE-TEST PARTNER VEHICLE PASSENGER DUMMY - VIEW 2	A-23
A-44. POST-TEST PARTNER VEHICLE PASSENGER DUMMY - VIEW 2	A-23
A-45. PRE-TEST PARTNER VEHICLE PASSENGER DUMMY - VIEW 3	A-24
A-46. POST-TEST PARTNER VEHICLE PASSENGER DUMMY - VIEW 3	A-24
A-47. PRE-TEST PARTNER VEHICLE GLAZING	A-25
A-48. POST-TEST PARTNER VEHICLE GLAZING	A-25
A-49. POST-TEST PARTNER VEHICLE INTERIOR DAMAGE - VIEW 1	A-26
A-50. POST-TEST PARTNER VEHICLE INTERIOR DAMAGE - VIEW 2	A-26
A-51. POST-TEST PARTNER VEHICLE DRIVER DUMMY - VIEW 4	A-27
A-52. POST-TEST PARTNER VEHICLE PASSENGER DUMMY - VIEW 4	A-27

SECTION 1.0
PURPOSE AND INTRODUCTION

PURPOSE

This test was conducted as part of an overall test matrix with the purpose of evaluating Part 572 and Hybrid III dummies in both the restrained and unrestrained crash environments. Vehicle structural responses from a variety of crash configurations are also being cataloged.

INTRODUCTION

A 1982 American Motors Concord 4-door sedan and a 1984 Honda Accord 4-door sedan were used in a full frontal impact with a closing velocity of 54.9 mph on April 2, 1985. The Honda Accord was stationary. The intended impact speed of the American Motors Concord was 54.9 mph. The actual test speed of the American Motors Concord was 54.9 mph. The vehicle centerlines were mismatched at impact by one inch.

Section 2 contains General Test and Vehicle Parameter Data. Section 3 contains vehicle crush and dummy response data. Appendix A contains pre-test and post-test vehicle and dummy photographs. Appendix B contains data plots. Appendix C contains dummy certification. Appendix D contains miscellaneous test information.

SECTION 2.0
GENERAL TEST AND VEHICLE PARAMETER DATA

The following data sheets describe the General Test and Vehicle
Parameter Data.

SUBJECT VEHICLE INFORMATION

VEHICLE MANUFACTURER: Honda Motor Company of Japan

MAKE/MODEL: Honda Accord

VIN: AD5424EC091778

BODY STYLE: 4-door Sedan

MODEL YEAR: 1984

NHTSA NO.: R & D

COLOR: Blue

ENGINE DATA: TYPE: Transverse CYLINDERS: 4 DISPLACEMENT 112 CID

TRANSMISSION DATA: 5-Speed Manual

DATE VEHICLE RECEIVED: 3/21/85

ODOMETER READING: 2386

DEALER'S NAME AND ADDRESS: NA

ACCESSORIES:

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

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

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

VEHICLE MANUFACTURED BY: Honda Motor Company of Japan

DATE OF MANUFACTURE: 3/84

GVWR: 3310 LBS.,

GAWR: FRONT 1730 LBS., REAR 1630 LBS.

SUBJECT VEHICLE TIRE DATA

RECOMMENDED COLD TIRE PRESSURE: FRONT 26 psi; REAR 26 psi

TIRES ON VEHICLE (MFGR. & LINE, SIZE): P185/70R13

BIAS PLY, BELTED, OR RADIAL: Steel Belted Radials

PLY RATING: 3

IS SPARE TIRE "SPACE SAVER"? Yes

IS SPARE TIRE STANDARD EQUIPMENT? Yes

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

RIGHT FRONT	694	LBS.	RIGHT REAR	423	LBS.
LEFT FRONT	720	LBS.	LEFT REAR	457	LBS.
TOTAL FRONT WEIGHT	1414	LBS.	(61.6 % OF TOTAL VEHICLE WEIGHT)		
TOTAL REAR WEIGHT	880	LBS.	(38.4 % OF TOTAL VEHICLE WEIGHT)		
TOTAL DELIVERED WEIGHT	2294	LBS.			

VEHICLE ATTITUDE (ALL DIMENSIONS IN INCHES):

DELIVERED ATTITUDE:	RF 26 1/2	;LF 26 1/4	;RR 25 13/16	;LR 25 5/8
PRE-TEST ATTITUDE:	RF 25 3/4	;LF 25 7/8	;RR 25 3/16	;LR 25 1/2
POST-TEST ATTITUDE:	RF 29 7/8	;LF 25 1/8	;RR 25 3/4	;LR 24 5/8

WEIGHT OF TEST VEHICLE WITH REQUIRED DUMMIES AND 288 LBS. CARGO:

RIGHT FRONT	801	LBS.	RIGHT REAR	655	LBS.
LEFT FRONT	777	LBS.	LEFT REAR	683	LBS.
TOTAL FRONT WEIGHT	1578	LBS.	(54.1 % OF TOTAL VEHICLE WEIGHT)		
TOTAL REAR WEIGHT	1338	LBS.	(45.9 % OF TOTAL VEHICLE WEIGHT)		
TOTAL TEST WEIGHT	2916	LBS.			

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

SUBJECT VEHICLE TEST WEIGHT CALCULATION

Calculated Test Weight = Unloaded Delivered Weight +
 (Number of Hybrid III Dummies X 167 lbs.) +
 Cargo Weight
 = 2294 + (2 X 167) + 100 lbs.
 = 2728 lbs.*

Actual Test Weight = 2916 lbs.

Target Test Weight = 2930 lbs.

To achieve test weight, 15.8 gallons of stoddard solvent were added in the fuel tank. The weight of the test vehicle was measured by placing each wheel on a Force Place manufactured by K.J. Law Engineers, Inc., Detroit, Michigan.

*This weight is a calculated test weight based on the unloaded delivered weight (curb weight) plus two dummies, plus the calculated cargo weight from the label on each vehicle. This weight would normally be used as the target test weight, with instrumentation, camera, etc. in place. The vehicle would have to be adjusted to match the calculated weight to a 5% tolerance. The target weight was determined from one car in each class. The small car target weight was determined for the Dodge Omnis, Honda Accords, and Renault Fuegos by getting the heaviest small car, Fuego, to its lowest possible test ready weight. The same was done for the large cars, Chevrolet Celebrity and AMC Concord, and the Concord was used to determine target weight. Both target weights were given a range of $\pm 5\%$ for the other car to achieve as final weight.

SUBJECT VEHICLE TEST FLUID DATA

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

KINEMATIC VISCOSITY: 0.99 CENTISTOKES

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

TEST VOLUME: 15.8 GALLONS (92-94% OF USEABLE)

FUEL SYSTEM CAPACITY (DATA FROM OWNERS MANUAL): 15.8 GALLONS

DETAILS OF FUEL SYSTEM: DNA

ELECTRIC FUEL PUMP: Yes

FUEL INJECTION: No

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

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

VEHICLE LOAD (UP TO CAPACITY): FRONT 26 psi; REAR 26 psi

RECOMMENDED TIRE SIZE: P 185/70 R 13 LOAD RANGE X B, C, A

VEHICLE CAPACITY: TYPES OF SEATS: Front - Bucket
Rear - Bench

NUMBER OF OCCUPANTS (DESIGNATED SEATING CAPACITY): 2 FRONT

 3 REAR

CARGO LOAD 100 LBS. 5 TOTAL

TOTAL 850 LBS.

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

SUBJECT VEHICLE TEST CONDITIONS

TEST NUMBER: 850402

DATE OF TEST: April 2, 1985

TIME OF TEST: 15:48

WIND VELOCITY: 10-15 mph 243° W

HUMIDITY: NA

AMBIENT TEMPERATURE AT IMPACT AREA:

46°F

TEMPERATURE IN OCCUPANT COMPARTMENT:

74°F

DRIVER DUMMY TEMPERATURE

74°F

PASSENGER DUMMY TEMPERATURE

72°F

SUBJECT VEHICLE DATA

	<u>ACTUAL</u>	<u>INTENDED</u>
TEST WEIGHT (LBS.)	2916	2930*
VEHICLE ORIENTATION (DEGREES)	0	0
VEHICLE VELOCITY (MPH)	0	0
MAXIMUM CRUSH (INCHES)	24 1/2	DNA

DUMMIES

	<u>DRIVER</u>	<u>MIDDLE PASSENGER</u>	<u>RT. FRONT PASSENGER</u>	<u>LEFT REAR PASSENGER</u>	<u>RT. REAR PASSENGER</u>
TYPE:	IIII		IIII		
SERIAL NO.:	43		48		
INSTRUMENTATION:					
HEAD ACCEL.:	3		9		
CHEST ACCEL.:	3		3		
FEMUR L.C.'S:	2		2		
OTHER:	3 Neck Channels 1 Chest Disp.		6 Neck Channels 1 Chest Disp. 16 Lower Leg Channels		

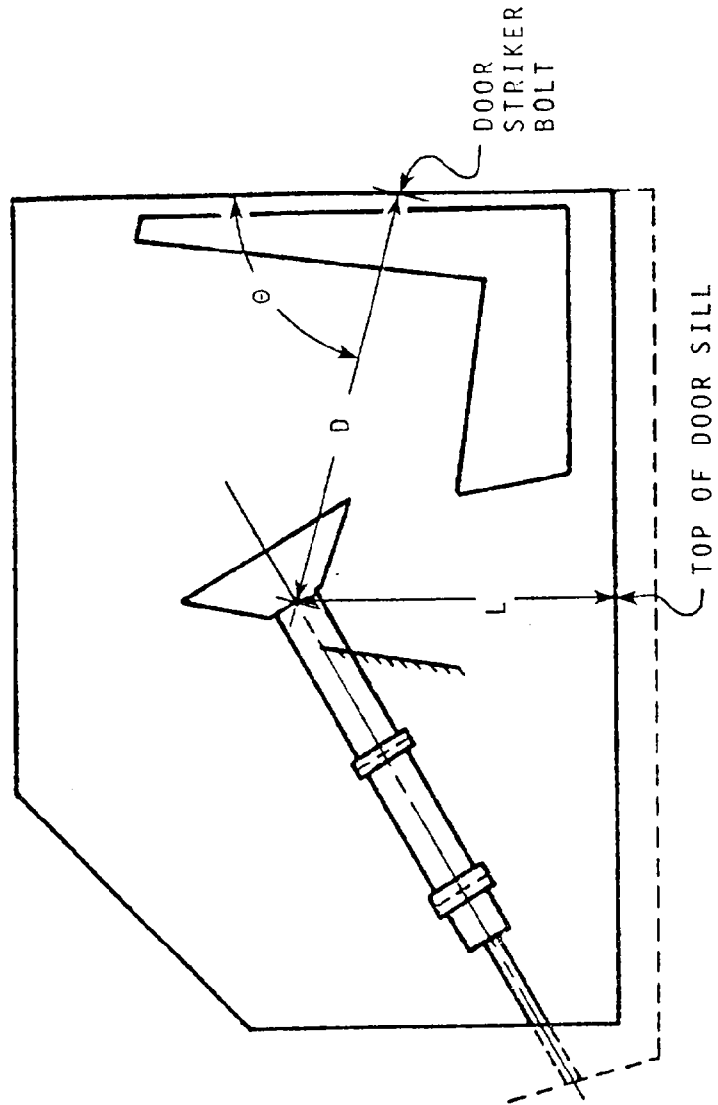
RESTRAINT SYSTEM: Driver dummy was restrained, Passenger dummy was unrestrained.

REMARKS: Chamois on dummy heads per chamois procedure in Appendix D.

*INTENDED TEST WEIGHT IS BASED ON THE WEIGHT OF A RENAULT FUEGO.

SUBJECT VEHICLE
STEERING COLUMN MEASUREMENTS

	PRE-TEST	POST-TEST
D	22 3/8"	19 3/8"
θ	25°	28°
L	21 9/16"	21 3/4"



PARTNER VEHICLE INFORMATION

VEHICLE MANUFACTURER: American Motors Corporation

MAKE/MODEL: AMC Concord

VIN: 1AMCA0553CK112566

BODY STYLE: 4-Door Sedan

MODEL YEAR: 1982

NHTSA NO.: R & D

COLOR: White

ENGINE DATA: TYPE: Inline CYLINDERS: 6 DISPLACEMENT 258 CID

TRANSMISSION DATA: Automatic

DATE VEHICLE RECEIVED: 3/21/85

ODOMETER READING: 39776

DEALER'S NAME AND ADDRESS: NA

ACCESSORIES:

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

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

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

VEHICLE MANUFACTURED BY: American Motors Corporation

DATE OF MANUFACTURE: 8/81

GVWR: 4436 LBS.,

GAWR: FRONT 2180 LBS., REAR 2284 LBS.

PARTNER VEHICLE TIRE DATA

RECOMMENDED COLD TIRE PRESSURE: FRONT 35 psi; REAR 35 psi

TIRES ON VEHICLE (MFGR. & LINE, SIZE): Goodyear Arriva P195 75/R14

BIAS PLY, BELTED, OR RADIAL: Radial

PLY RATING: 4

IS SPARE TIRE "SPACE SAVER"? Yes

IS SPARE TIRE STANDARD EQUIPMENT? Yes

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

RIGHT FRONT	900	LBS.	RIGHT REAR	690	LBS.
LEFT FRONT	850	LBS.	LEFT REAR	710	LBS.
TOTAL FRONT WEIGHT	1750		LBS. (55.6 % OF TOTAL VEHICLE WEIGHT)		
TOTAL REAR WEIGHT	1400		LBS. (44.4 % OF TOTAL VEHICLE WEIGHT)		
TOTAL DELIVERED WEIGHT	3150		LBS.		

VEHICLE ATTITUDE (ALL DIMENSIONS IN INCHES):

DELIVERED ATTITUDE:	RF 27 1/8	;LF 27 5/16	;RR 27 1/4	;LR 27 9/16
PRE-TEST ATTITUDE:	RF 26 1/2	;LF 26 7/8	;RR 26	;LR 26 3/16
POST-TEST ATTITUDE:	RF 26 3/16	;LF 26 1/4	;RR 26	;LR 26 5/8

WEIGHT OF TEST VEHICLE WITH REQUIRED DUMMIES AND 22 LBS. CARGO:

RIGHT FRONT	1030	LBS.	RIGHT REAR	746	LBS.
LEFT FRONT	988	LBS.	LEFT REAR	742	LBS.
TOTAL FRONT WEIGHT	2018		LBS. (57.6 % OF TOTAL VEHICLE WEIGHT)		
TOTAL REAR WEIGHT	1488		LBS. (42.4 % OF TOTAL VEHICLE WEIGHT)		
TOTAL TEST WEIGHT	3506		LBS.		

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

PARTNER VEHICLE TEST WEIGHT CALCULATION

$$\begin{aligned} \text{Calculated Test Weight} &= \text{Unloaded Delivered Weight} + \\ &\quad (\text{Number of Hybrid III Dummies} \times 167 \text{ lbs.}) + \\ &\quad \text{Cargo Weight} \\ &= 3150 + (2 \times 167) + 175 \text{ lbs.} \\ &= 3659 \text{ lbs.*} \end{aligned}$$

Actual Test Weight = 3506 lbs.

Target Test Weight = 3577 lbs.

To achieve test weight, the rear bumper, rear window, tail light assemblies and the trunk lid were removed. The weight of the test vehicle was measured by placing each wheel on a Force Plate manufactured by K.J. Law Engineers, Inc., Detroit, Michigan.

*This weight is a calculated test weight based on the unloaded delivered weight (curb weight) plus two dummies, plus the calculated cargo weight from the label on each vehicle. This weight would normally be used as the target test weight, with instrumentation, camera, etc. in place. The vehicle would have to be adjusted to match the calculated weight to a 5% tolerance. The target weight was determined from one car in each class. The small car target weight was determined for the Dodge Omnis, Honda Accords, and Renault Fuegos by getting the heaviest small car, Fuego, to its lowest possible test ready weight. The same was done for the large cars, Chevrolet Celebrity and AMC Concord, and the Concord was used to determine target weight. Both target weights were given a range of + 5% for the other car to achieve as final weight.

PARTNER VEHICLE TEST FLUID DATA

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

KINEMATIC VISCOSITY: 0.99 CENTISTOKES

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

TEST VOLUME: 0 GALLONS (92-94% OF USEABLE)

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

DETAILS OF FUEL SYSTEM: DNA

ELECTRIC FUEL PUMP: No

FUEL INJECTION: No

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

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

VEHICLE LOAD (UP TO CAPACITY): FRONT 35 psi; REAR 35 psi

RECOMMENDED TIRE SIZE: P205/70R14 LOAD RANGE X B, C, A

VEHICLE CAPACITY: TYPES OF SEATS: Bucket

NUMBER OF OCCUPANTS (DESIGNATED SEATING CAPACITY): 3 FRONT

3 REAR

CARGO LOAD 175 LBS.

6 TOTAL

TOTAL 1075 LBS.

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

PARTNER VEHICLE TEST CONDITIONS

TEST NUMBER: 850402

DATE OF TEST: April 2, 1985

TIME OF TEST: 15:48

WIND VELOCITY: 10-15 mph 243° W

HUMIDITY: NA

AMBIENT TEMPERATURE AT IMPACT AREA:

46°F

TEMPERATURE IN OCCUPANT COMPARTMENT:

70°F

DRIVER DUMMY TEMPERATURE

69°F

PASSENGER DUMMY TEMPERATURE

69°F

PARTNER VEHICLE DATA

	<u>ACTUAL</u>	<u>INTENDED</u>
TEST WEIGHT (LBS.)	3506	3577*
VEHICLE ORIENTATION (DEGREES)	0	0
VEHICLE VELOCITY (MPH)	54.9	54.9
MAXIMUM CRUSH (INCHES)	12 3/4	DNA
STEERING COLUMN (INCHES)**	PRE: 7 1/4	POST: 4
		COLLAPSE: 3 1/4

DUMMIES

	<u>DRIVER</u>	<u>MIDDLE PASSENGER</u>	<u>RT. FRONT PASSENGER</u>	<u>LEFT REAR PASSENGER</u>	<u>RT. REAR PASSENGER</u>
TYPE:	HIII		HIII		
SERIAL NO.:	45		61		
INSTRUMENTATION:					
HEAD ACCEL.:	4		3		
CHEST ACCEL.:	3		3		
FEMUR L.C.'S:	2		2		
OTHER:	1 Chest Disp. 3 Neck 14 Lower Leg		1 Chest Disp. 3 Neck		

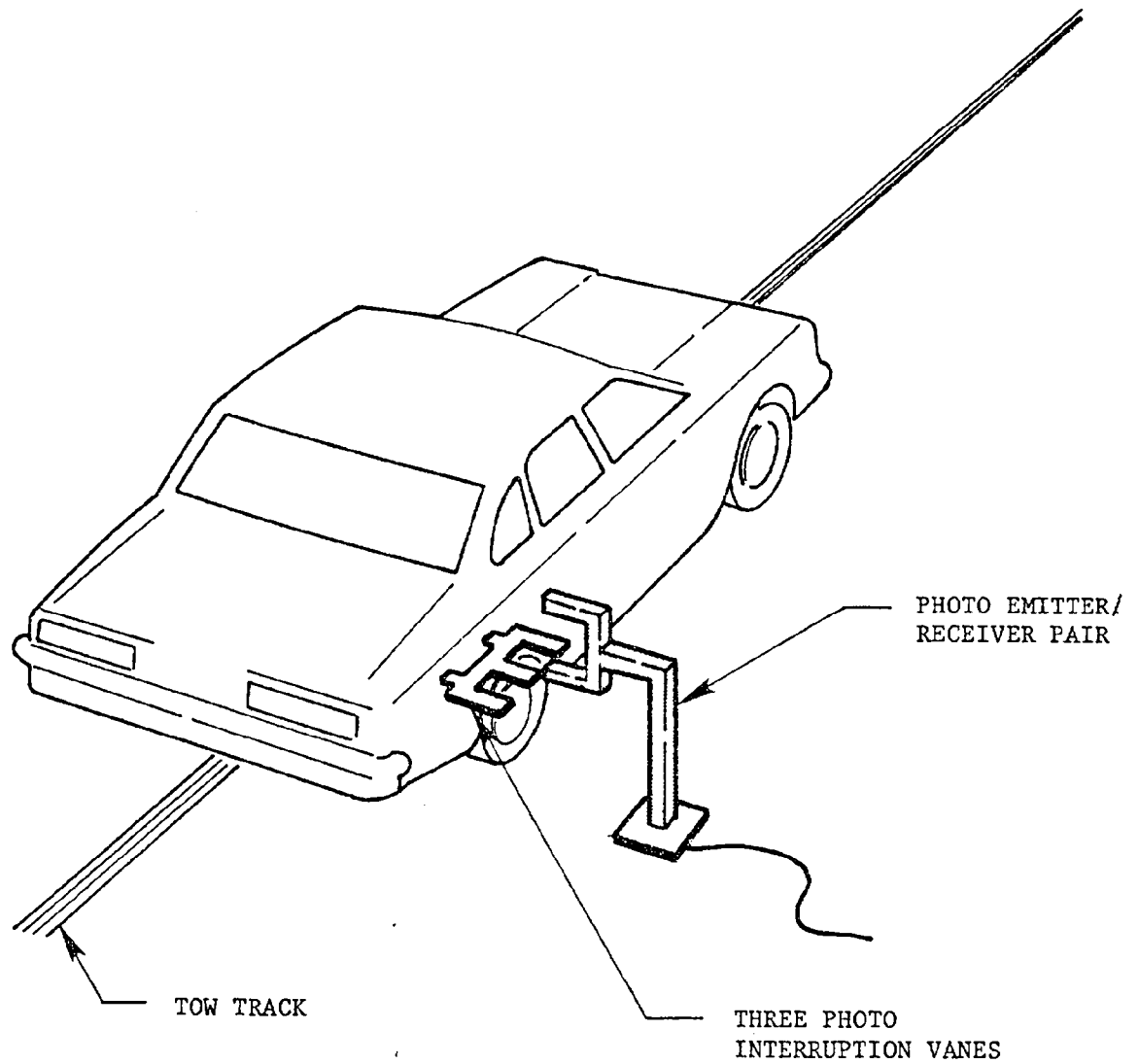
RESTRAINT SYSTEM: Driver dummy was unrestrained, passenger dummy was restrained.

REMARKS: Chamois on dummy heads per chamois procedure in Appendix D.

*INTENDED TEST WEIGHT IS BASED ON THE WEIGHT OF AN AMC CONCORD.

**MEASUREMENTS TAKEN FROM REFERENCE MARKS ON STEERING COLUMN.

IMPACT VELOCITY MEASUREMENT SYSTEM



The final vane clears emitter/receiver 24 inches before impact.
The vanes have one foot spacing.

SECTION 3.0
DATA REQUIRED BY R & D

The following pages are included in this section:

1. Dummy temperature control and position data
2. Dummy kinematic summary
3. Vehicle crush data
4. Dummy and vehicle accelerometer location and data summary
5. High speed camera information

SUBJECT VEHICLE DUMMY DATA SUMMARY

	DRIVER DUMMY				PASSENGER DUMMY			
	SN: 43				SN: 48			
	POSITIVE		NEGATIVE		POSITIVE		NEGATIVE	
	DIRECTION*		DIRECTION**		DIRECTION*		DIRECTION**	
	MAX	TIME	MAX	TIME	MAX	TIME	MAX	TIME
HEAD ACCELERATION (g)								
LONGITUDINAL	13.61	227.63	93.99	77.00	11.50	320.13	75.75	91.63
LATERAL	8.33	244.88	23.61	98.00	25.02	99.88	29.97	106.25
VERTICAL	3.75	16.00	47.78	76.75	98.36	105.88	69.22	91.50
RESULTANT		104.05 @ 77.00				117.21 @ 105.88		
HIC	665.07	from 63.25 to 105.00			924.59	from 85.25 to 113.88		
HEAD ANGULAR ACCELERATION								
POSITION 1								
LONGITUDINAL	---	--- α	---	--- α	99.79	105.88	74.30	91.25
VERTICAL	---	--- α	---	--- α	9.76	320.13	74.79	100.63
POSITION 2								
LATERAL	---	--- α	---	--- α	42.88	99.88	28.18	106.50
VERTICAL	---	--- α	---	--- α	106.28	105.88	86.26	91.63
POSITION 3								
LONGITUDINAL	---	--- α	---	--- α	16.03	320.13	98.26	82.33
LATERAL	---	--- α	---	--- α	32.11	100.50	28.28	107.88
NECK LOADS (lb)								
SHEAR (X)	157.07	78.13	45.69	233.00	334.08	106.88	52.70	87.38
SHEAR (Y)	---	--- α	---	--- α	---	--- Y	---	--- Y
AXIAL (Z)	476.63	87.13	7.28	19.75	628.62	95.63	53.45	166.13
NECK MOMENTS (lb-ft)								
ABOUT LONGITUDINAL	---	--- α	---	--- α	19.28	105.75	5.41	204.13
ABOUT LATERAL	34.42	96.50	25.80	69.00	50.56	161.25	96.61	107.00
ABOUT VERTICAL	---	--- α	---	--- α	5.56	155.13	7.95	105.25
CHEST ACCELERATION (g)								
LONGITUDINAL	4.40	211.50	40.25	77.13	4.60	171.63	98.27	93.50
LATERAL	2.03	158.00	12.80	84.50	21.86	96.25	8.05	87.38
VERTICAL	7.05	106.63	7.64	53.88	3.46	72.75	62.17	91.50
RESULTANT		40.53 @ 77.13				100.82 @ 93.50		
3 MSEC CLIP		39.94				90.32		
CHEST DISPLACEMENT (in)	0.77	@ 89.88				0.91	@ 96.63	
FEMUR LOADS (lb)								
LEFT	65.01	108.50	567.92	61.50	124.10	8.63	2742.94	86.63
RIGHT	186.91	97.13	465.92	60.63	63.98	133.75	2288.23	81.50

SUBJECT VEHICLE DUMMY DATA SUMMARY CONTD

PASSENGER DUMMY				
SN: 48				
	POSITIVE DIRECTION*		NEGATIVE DIRECTION**	
	MAX	TIME	MAX	TIME
KNEE LOADS (lb)				
LEFT LEG				
LEFT SENSOR	244.24	96.25	440.68	60.63
RIGHT SENSOR	41.55	157.25	366.21	58.63
RIGHT LEG				
LEFT SENSOR	131.42	99.13	385.57	49.88
RIGHT SENSOR	46.24	81.25	393.55	49.13
KNEE DISPLACEMENT (in)				
LEFT KNEE	0.46	74.75	0.02	37.88
RIGHT KNEE	0.05	76.88	0.02	108.13
TIBIA MOMENTS (lb-ft)				
LEFT LEG				
ABOUT LONGITUDINAL	---	--- Y	---	--- Y
ABOUT LATERAL	---	--- Y	---	--- Y
RIGHT LEG				
ABOUT LONGITUDINAL	33.95	53.25	30.14	56.50
ABOUT LATERAL	100.72	50.25	54.05	75.63
ANKLE LOADS (lb)				
LEFT LEG				
LATERAL	82.17	99.50	125.85	59.75
VERTICAL	---	--- Y	---	--- Y
RIGHT LEG				
LATERAL	115.06	56.88	92.57	54.75
VERTICAL	1121.91	49.38	91.02	101.38
ANKLE MOMENTS (lb-ft)				
LEFT LEG				
ABOUT LONGITUDINAL	62.59	61.00	94.20	60.38
RIGHT LEG				
ABOUT LONGITUDINAL	25.63	50.38	78.94	55.75

* LONGITUDINAL: FORWARD
 LATERAL: LEFTWARD
 VERTICAL: UPWARD

**LONGITUDINAL: REARWARD
 LATERAL: RIGHTWARD
 VERTICAL: DOWNWARD

α There was no instrumentation at this location

Y See TEST ANOMALIES

PARTNER VEHICLE DUMMY DATA SUMMARY

	DRIVER DUMMY				PASSENGER DUMMY			
	SN: 45				SN: 61			
	POSITIVE DIRECTION*		NEGATIVE DIRECTION**		POSITIVE DIRECTION*		NEGATIVE DIRECTION**	
	MAX	TIME	MAX	TIME	MAX	TIME	MAX	TIME
HEAD ACCELERATION (g)								
LONGITUDINAL	60.43	86.25	141.98	85.88	7.27	222.75	57.11	108.00
LATERAL	23.63	86.25	30.84	86.75	6.75	121.63	9.06	67.13
VERTICAL	104.03	86.13	54.48	84.75	---	---	56.67	87.88
RESULTANT		146.31	@ 85.88			60.93	@ 90.00	
HIC	530.30	from 82.88 to 104.00			738.17	from 68.12 to 119.38		
POSITION 2	176.49	86.00	40.84	83.00	---	---	α	---
NECK LOADS (lb)								
SHEAR	87.45	96.75	111.39	113.75	474.13	113.00	35.87	287.00
AXIAL	73.76	84.63	476.12	91.63	506.18	93.88	3.28	22.13
NECK MOMENTS (lb-ft)								
ABOUT LATERAL	18.16	192.75	62.41	107.88	98.05	108.38	38.54	73.13
CHEST ACCELERATION (g)								
LONGITUDINAL	2.19	177.88	36.36	77.88	3.49	276.25	40.03	65.88
LATERAL	3.91	73.25	8.97	89.38	1.46	82.88	4.49	86.88
VERTICAL	12.33	70.38	20.41	103.63	11.31	86.50	9.06	49.63
RESULTANT		37.49	@ 77.88			40.19	@ 65.88	
3 MSEC CLIP		36.18				39.62		
CHEST DISPLACEMENT (in)	0.63	@ 108.63			---	@	---	γ
FEMUR LOADS (lb)								
LEFT	230.32	127.50	1313.88	74.50	351.52	67.13	493.23	40.63
RIGHT	100.91	128.75	1796.63	70.38	326.92	63.75	150.03	42.63

PARTNER VEHICLE DUMMY DATA SUMMARY CONTD

DRIVER DUMMY				
SN: 45				
	POSITIVE		NEGATIVE	
	DIRECTION*		DIRECTION**	
	MAX	TIME	MAX	TIME
KNEE LOADS (lb)				
LEFT LEG				
LEFT SENSOR	190.33	73.63	256.79	39.63
RIGHT SENSOR	66.79	75.63	198.72	48.13
RIGHT LEG				
LEFT SENSOR	54.02	104.50	414.05	48.63
RIGHT SENSOR	125.59	95.88	403.40	51.63
TIBIA MOMENTS (lb-ft)				
LEFT LEG				
ABOUT LONGITUDINAL	27.60	108.25	15.43	81.63
ABOUT LATERAL	68.55	38.88	14.94	71.63
RIGHT LEG				
ABOUT LONGITUDINAL	22.13	104.38	15.93	94.88
ABOUT LATERAL	89.41	48.38	97.40	71.13
ANKLE LOADS (lb)				
LEFT LEG				
LATERAL	41.21	107.63	22.21	41.00
VERTICAL	599.94	46.25	92.13	75.63
RIGHT LEG				
LATERAL	53.71	48.00	39.72	95.38
VERTICAL	1150.56	50.25	49.77	28.50
ANKLE MOMENTS (lb-ft)				
LEFT LEG				
ABOUT LONGITUDINAL	11.66	113.75	5.48	145.63
RIGHT LEG				
ABOUT LONGITUDINAL	16.00	71.13	26.71	50.88

* LONGITUDINAL: FORWARD
 LATERAL: LEFTWARD
 VERTICAL: UPWARD

**LONGITUDINAL: REARWARD
 LATERAL: RIGHTWARD
 VERTICAL: DOWNWARD

* There were no positive values in the time interval of interest.

Y See TEST ANOMALIES

α There was no instrumentation at this location.

SUBJECT VEHICLE

VISIBLE DUMMY CONTACT POINTS:

	DRIVER 43	PASSENGER 48
Head	<u>Upper Steering Wheel Rim & Hub</u>	<u>Windshield</u>
Chest	<u>None</u>	<u>Upper Instrument Panel</u>
Abdomen	<u>None</u>	<u>None</u>
Left Knee	<u>Lower Instrument Panel</u>	<u>Glove Box</u>
Right Knee	<u>Lower Instrument Panel</u>	<u>Glove Box</u>

DOOR OPENING:

	LEFT	RIGHT
Front	<u>Tools Required</u>	<u>Tools Required</u>
Rear	<u>Easy</u>	<u>Easy</u>

SEAT MOVEMENT:

	SEAT BACK FAILURE	SEAT SHIFT
Front	<u>Forward Movement 7/8"</u>	<u>None</u>
Rear	<u>DNA</u>	<u>DNA</u>

GLAZING DAMAGE:

Windshield broken through

OTHER NOTABLE IMPACT EFFECTS:

The steering wheel rim was broken loose from hub, at

the hub.

PARTNER VEHICLE

VISIBLE DUMMY CONTACT POINTS:

	DRIVER 45	PASSENGER 61
Head	<u>Windshield</u>	<u>None</u>
Chest	<u>Steering Wheel Hub</u>	<u>None</u>
Abdomen	<u>Lower Rim of Wheel</u>	<u>None</u>
Left Knee	<u>Lower Instrument Panel</u>	<u>None</u>
Right Knee	<u>Lower Instrument Panel</u>	<u>None</u>

DOOR OPENING:

	LEFT	RIGHT
Front	<u>No Tools Required</u>	<u>No Tools Required</u>
Rear	<u>No Tools, Easy Open</u>	<u>No Tools, Easy Open</u>

SEAT MOVEMENT:

	SEAT BACK FAILURE	SEAT SHIFT
Front	<u>None</u>	<u>None</u>
Rear	<u>None</u>	<u>None</u>

GLAZING DAMAGE:

Head impact broke through windshield.

OTHER NOTABLE IMPACT EFFECTS:

Upper wheel rim impacted upper thorax and neck.

SUBJECT VEHICLE DUMMY KINEMATIC SUMMARY

DRIVER

Upon impact the driver moved forward until the seat belt stopped him as his knees contacted the lower instrument panel. While the dummy's torso had stopped its forward motion, its head continued forward until it struck the steering wheel. The dummy then rebounded and came to rest sitting upright in the driver's seat.

PASSENGER

During impact, the passenger moved forward as his knees went into the glove box and his head hit the windshield. The dummy's head rotated backward while his chest came in contact with the upper instrument panel. The dummy came to rest sitting in the passenger's seat, leaning back with his knees still in the glove box.

PARTNER VEHICLE DUMMY KINEMATIC SUMMARY

DRIVER

During impact, the driver moved forward as his knees went into the lower instrument panel and his neck and chest hit the steering wheel. The dummy's head continued forward until it struck the windshield. The driver dummy came to rest sitting upright in the driver's seat.

PASSENGER

During impact, the passenger moved forward until the seat belt stopped the torso's forward motion. The dummy's head rotated forward about the neck as his chin appeared to contact his chest. The dummy rebounded and came to rest sitting upright in the passenger's seat.

DUMMY TEMPERATURE CONTROL AND POSITIONING

Both vehicles were taken outside to the impact area between 13:00 and 13:30 AM the day of the test. At this point heaters were placed inside the vehicles to maintain the temperature. The vehicles remained in this position until approximately 15:00. The partner vehicle was then moved back into the barrier building to be hooked to the tow track. The subject vehicle was left at the impact point until the test at 15:48.

The Hybrid III dummies were seated per the General Motors Procedure but no coordinates for the H-point were used to seat the dummy because the H-point coordinates are unique to General Motors testing. The GM seating procedure is in Appendix D of this report.

SUBJECT VEHICLE
DUMMY IN-VEHICLE POSITION
RECORDING SHEET

VEHICLE NHTSA NO. R & D

MFR./MAKE/MODEL: Honda Accord

SEAT TYPE: Bench
X Bucket
Split Bench

ADJUSTER TYPE: X Manual
Power

TECHNICIANS:

BUCKET SEAT BACK TYPE: Fixed
X Adjustable Reclining

1. D. Carpenter

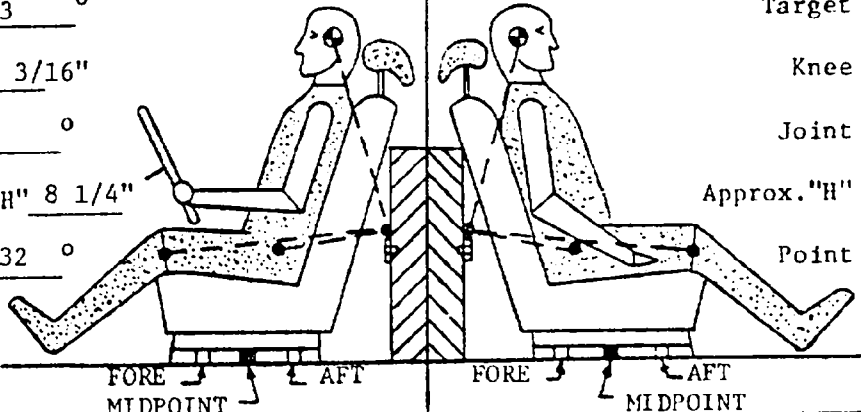
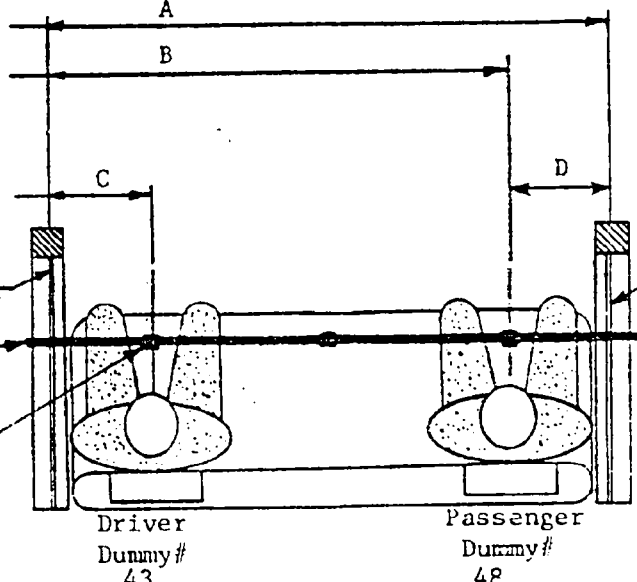
2. N. Echeverria

POSITIONING DATE: April 2, 1985

3. R. Benavides

AMBIENT TEMP.: 70 ° F. TIME: 7:30

4. _____

DRIVER DUMMY # <u>43</u> TYPE <u>HIII</u> Pelvis Angle <u>21°</u> Head <u>18 13/16"</u> Target <u>3°</u> Knee <u>22 3/16"</u> Joint <u>95°</u> Approx. "H" <u>8 1/4"</u> Point <u>132°</u>	PASSENGER DUMMY # <u>48</u> TYPE <u>HIII</u> Pelvis Angle <u>22°</u> Head <u>19 3/16"</u> Target <u>2°</u> Knee <u>21 7/8"</u> Joint <u>96°</u> Approx. "H" <u>7 1/2"</u> Point <u>138°</u>
 The diagram shows two side-view illustrations of crash test dummies seated in a vehicle. The driver dummy is on the left, and the passenger dummy is on the right. They are seated in front seats with a central console between them. Labels 'FORE' and 'AFT' are placed under the front and rear of the seats respectively. 'MIDPOINT' is labeled under the center of each seat base.	
A = <u>50 1/8"</u> B = <u>37 15/16"</u> C = <u>13 7/16"</u> D = <u>12 3/16"</u>  This diagram shows a top-down view of the front interior of the vehicle. It illustrates the positions of the driver and passenger dummies relative to the front doors and the center console. Dimensions A, B, C, and D are marked with arrows. A horizontal line labeled 'Lateral Bar' runs across the width of the seats. 'Adjustable Pointer' labels point to the dummies. The front doors are labeled 'Left Front Door' and 'Right Front Door'. The dummies are labeled 'Driver Dummy # 43' and 'Passenger Dummy # 48'. 'Door Glass Height*' is indicated on both sides with arrows pointing to the upper part of the door frames.	

* Door glass height is equal on the right and left side of vehicle.

PARTNER VEHICLE
DUMMY IN-VEHICLE POSITION
RECORDING SHEET

VEHICLE NHTSA NO. R & D

MFR./MAKE/MODEL: AMC CONCORD

SEAT TYPE: Bench
X Bucket
Split Bench

ADJUSTER TYPE: Manual
X Power

TECHNICIANS:

BUCKET SEAT BACK TYPE: X Fixed
Adjustable Reclining

1. D. Carpenter

2. N. Echeverria

POSITIONING DATE: April 2, 1985

3. _____

AMBIENT TEMP.: 70° F. TIME: 6:25

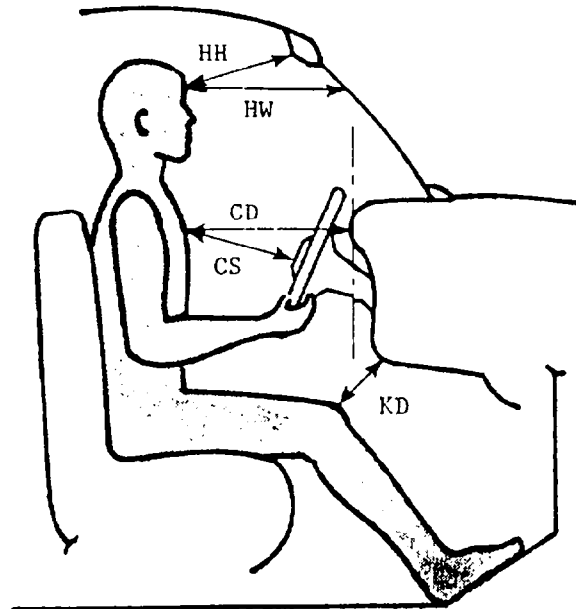
4. _____

DRIVER DUMMY # <u>45</u> TYPE <u>HIII</u> Pelvis Angle <u>22°</u> Head <u>20 1/2"</u> Target <u>3</u> ° Knee <u>22 5/8"</u> Joint <u>94</u> ° Approx. "H" <u>9 1/8"</u> Point <u>120</u> °	PASSENGER DUMMY # <u>61</u> TYPE <u>HIII</u> Pelvis Angle <u>23°</u> Head <u>20 3/8"</u> Target <u>3</u> ° Knee <u>23 3/4"</u> Joint <u>92</u> ° Approx. "H" <u>9 1/2"</u> Point <u>114</u> °
A = <u>54 1/8"</u> B = <u>40 5/8"</u> C = <u>13 13/16"</u> D = <u>13 1/2"</u> Door Glass Height* <u>8 7/8"</u> Lateral Bar Adjustable Pointer Left Front Door Driver Dummy # <u>45</u> Passenger Dummy # <u>61</u> Right Front Door	

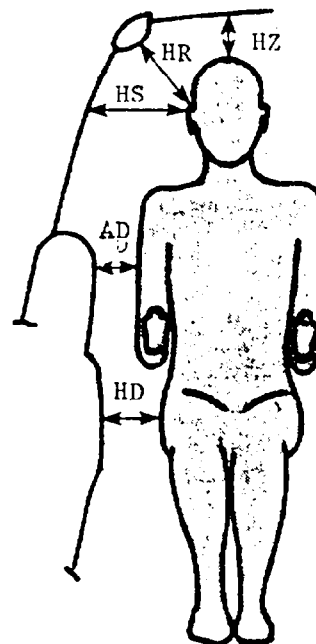
* Door glass height is equal on the right and left side of vehicle.

SUBJECT VEHICLE
DUMMY IN-VEHICLE POSITION RECORDING SHEET

	DRIVER 43	PASSENGER 48
HH	14 3/4	15 1/8
HW	19 5/8	20 1/8
CD	22 9/16	21 7/16
CS	15 1/4	NA
KDL	4 15/16	5 9/16
KDR	4 15/16	6 1/16



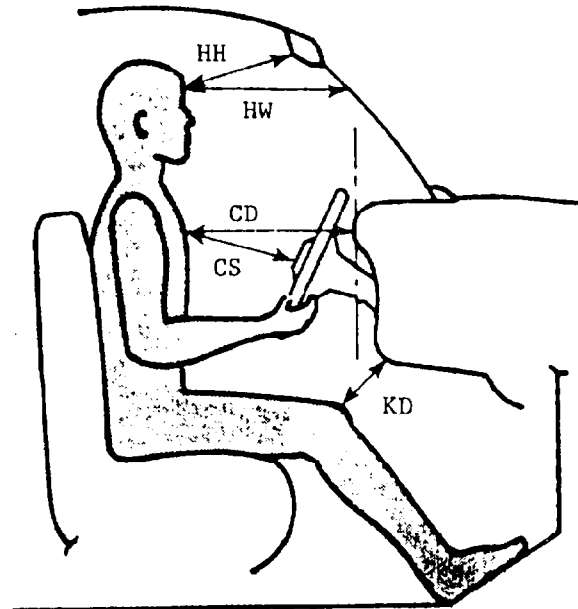
	DRIVER 43	PASSENGER 48
HR	7 3/8	6 11/16
HS	9 15/16	9 3/8
AD	3 13/16	4 7/16
HD	6 1/4	6 9/16
HZ	4 1/16	3 1/2



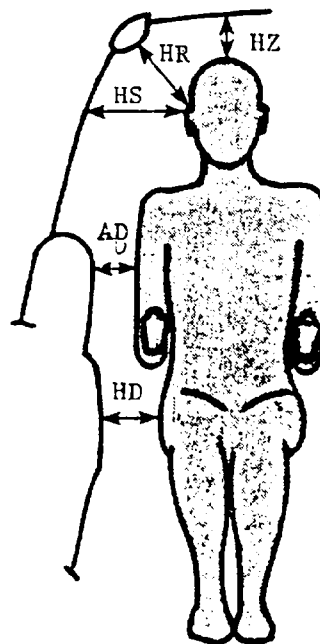
ALL MEASUREMENTS IN INCHES

PARTNER VEHICLE
DUMMY IN-VEHICLE POSITION RECORDING SHEET

	DRIVER 45	PASSENGER 61
HH	12	12
HW	19	18 3/4
CD	22 7/8	22 5/16
CS	14 1/8	NA
KDL	10 11/16	9 13/16
KDR	9 13/16	9 7/8

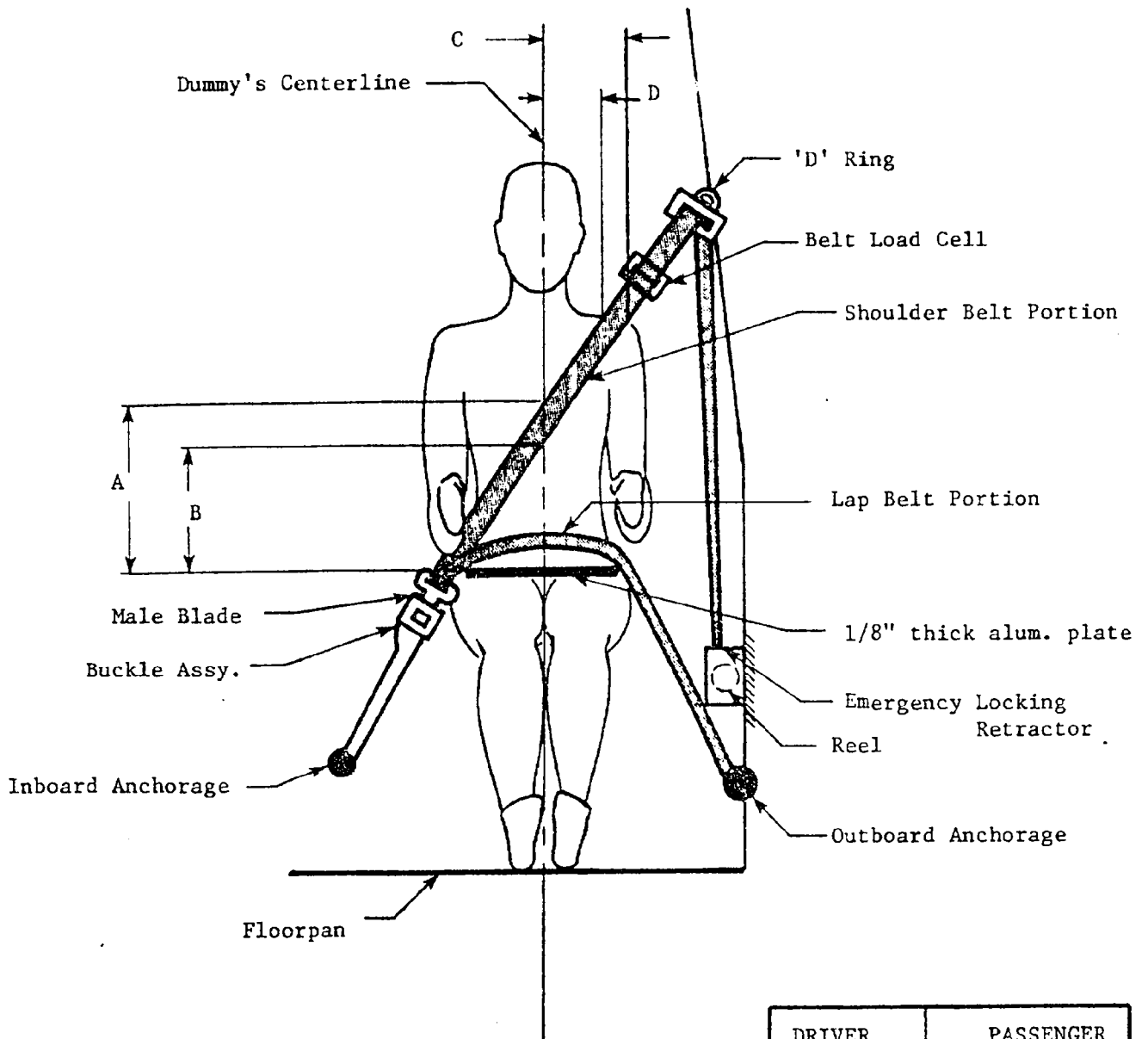


	DRIVER 45	PASSENGER 61
HR	7 1/8	6 3/8
HS	10 7/8	10 1/2
AD	5	4 1/8
HD	7 15/16	6 9/16
HZ	3 15/16	3 3/16



ALL MEASUREMENTS IN INCHES

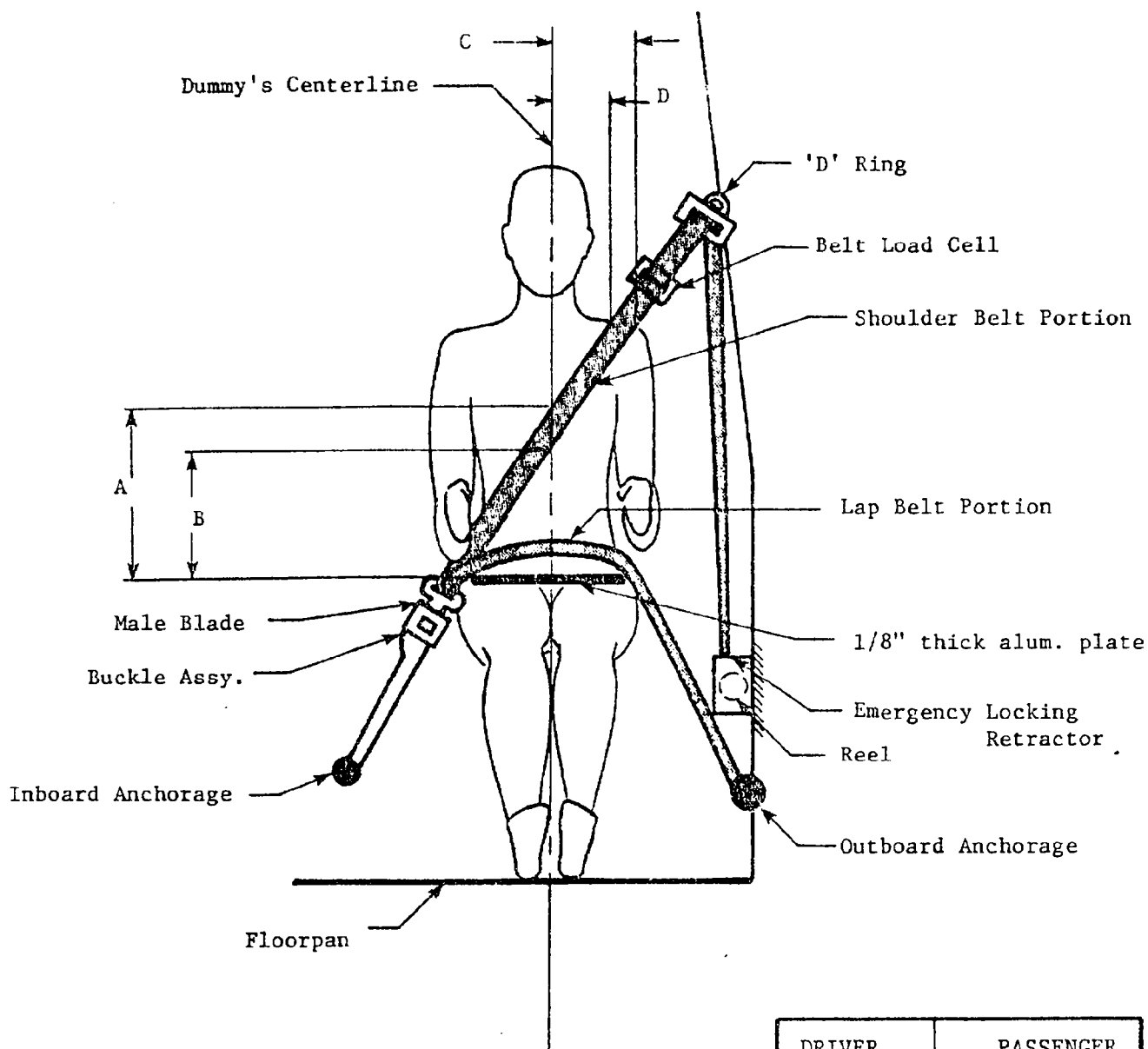
SUBJECT VEHICLE
SEAT BELT POSITIONING DATA



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

PARTNER VEHICLE

SEAT BELT POSITIONING DATA



	DRIVER DUMMY	PASSENGER DUMMY
A - Top surface of alum. plate to belt upper edge (in)	DNA	13 11/16"
B - Top surface of alum. plate to belt lower edge (in)	DNA	10 11/16"
C - Dummy centerline to outer edge of belt at chest flesh top (in)	DNA	5 3/4"
D - Dummy centerline to inner edge of belt at chest flesh top (in)	DNA	3 1/4"
LAP BELT TENSION (lbs)	DNA	3
SHOULDER BELT TENSION (lbs)	DNA	1

SUBJECT VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

NO.	LOCATION	X*	Y*	Z*	POSITIVE DIRECTION***		NEGATIVE DIRECTION***	
					MAX (g)	TIME (msec)	MAX (g)	TIME (msec)
1	FORWARD FRAME RAIL (LONGITUDINAL)	146.9	-17.8	20.8	17.07	13.75	66.44	8.13
2	FRONT FRAME CROSSMEMBER (LONGITUDINAL)	130.1	-5.0	10.1	44.30	15.13	96.47	52.63
3	BRAKE CALIPER; FRONT RIGHT (LONGITUDINAL)	142.8	-25.8	10.6	6.01	21.13	43.82	52.88
4	ENGINE BOTTOM (LONGITUDINAL)	145.0	9.1	6.0	28.58	53.13	99.02	42.75
5	ENGINE BLOCK TOP (LONGITUDINAL)	150.9	6.0	30.3	28.63	58.13	92.25	38.00
6	STEERING COLUMN; LOWER (A-P AXIS)	128.5	12.0	18.4	54.81	83.50	121.05	53.88
7	STEERING WHEEL HUB (A-P AXIS) (I-S AXIS)	106.0 104.8	11.9 12.0	30.5 28.5	54.54 46.49	85.00 102.25	105.73 61.76	79.88 73.50
8	STEERING COLUMN DISPLACEMENT (A-P AXIS)				---	--- α	---	--- α
9	DASH PANEL (LONGITUDINAL) (VERTICAL)	115.9	0.0	33.0	25.05 58.36	90.63 98.25	56.41 29.53	52.50 57.00
10	PITCH RATE GYRO	91.9	0.0	19.0	---	--- γ	---	--- γ
11	B-PILLAR SILL - LEFT (LONGITUDINAL) (VERTICAL) $\Delta V = 33.0 \text{ mph @ } 121.88 \text{ msec}$	83.3	24.9	11.5	2.67 8.03	158.00 93.38	29.12 9.33	52.13 44.13
12	B-PILLAR SILL - RIGHT (LONGITUDINAL) $\Delta V = 36.3 \text{ mph @ } 108.00 \text{ msec}$	83.4	-24.9	11.5	2.95	138.38	32.77	27.63
13	REAR SEAT LEFT CROSSMEMBER (LONGITUDINAL) (VERTICAL) $\Delta V = 34.4 \text{ mph @ } 116.88 \text{ msec}$	68.3	13.5	13.8	2.75 11.62	163.75 59.13	24.71 10.02	54.25 52.50
14	REAR SEAT LEFT CROSSMEMBER (LONGITUDINAL) $\Delta V = 34.4 \text{ mph @ } 116.88 \text{ msec}$	56.3	13.9	13.8	---	--- γ	---	--- γ

SUBJECT VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY CONTD

NO.	LOCATION	X*	Y*	Z*	POSITIVE DIRECTION***		NEGATIVE DIRECTION***	
					MAX (g)	TIME (msec)	MAX (g)	TIME (msec)
15	REAR SEAT RIGHT CROSSMEMBER (LONGITUDINAL)P**	68.4	-13.8	12.5	$\Delta V = 34.5 \text{ mph @ } 102.38 \text{ msec}$			
					2.71	140.38	25.66	56.00
16	REAR SEAT RIGHT CROSSMEMBER (LONGITUDINAL)R**	56.4	-13.8	13.0	3.08	139.88	25.26	69.63
17	REAR AXLE CENTERLINE (LONGITUDINAL)	40.4	0.0	9.3	2.94	165.00	27.52	56.63

* REFERENCE: X - REAR BUMPER (+ FORWARD), Y - VEHICLE CENTERLINE (+ TO LEFT),
Z - GROUND LEVEL (+ UP)

** (P) = PRIMARY SENSOR, (R) = REDUNDANT SENSOR

*** POSITIVE DIRECTION LONGITUDINAL: FORWARD
LATERAL: LEFTWARD
VERTICAL: UPWARD
NEGATIVE DIRECTION LONGITUDINAL: REARWARD
LATERAL: RIGHTWARD
VERTICAL: DOWNWARD

ALL MEASUREMENTS OF ACCELEROMETER LOCATIONS IN INCHES.

^a There was no instrumentation at this location.

^Y See TEST ANOMALIES

PARTNER VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

NO.	LOCATION	X*	Y*	Z*	POSITIVE DIRECTION***		NEGATIVE DIRECTION***	
					MAX (g)	TIME (msec)	MAX (g)	TIME (msec)
1	FORWARD FRAME RAIL (LONGITUDINAL)	155.9	-14.8	16.8	3.31	13.63	39.89	48.50
2	FRONT FRAME CROSSMEMBER (LONGITUDINAL)	146.9	0.0	6.3	---	--- Y	---	--- Y
3	BRAKE CALIPER; FRONT RIGHT (LONGITUDINAL)	150.4	-22.3	13.5	5.64	180.50	39.04	38.25
4	ENGINE BOTTOM (LONGITUDINAL)	159.4	0.0	9.9	2.88	184.88	35.46	48.25
5	ENGINE BLOCK TOP (LONGITUDINAL)	156.7	3.0	27.6	2.32	65.38	53.38	43.38
6	STEERING COLUMN; LOWER (A-P AXIS)	152.8	12.5	15.6	21.77	151.13	28.26	34.00
7	STEERING WHEEL HUB (A-P AXIS) (I-S AXIS)	107.2	12.9	34.0	35.94 34.94	73.13 36.13	52.14 24.45	95.38 50.13
8	STEERING COLUMN DISPLACEMENT (A-P AXIS)				---	--- α	---	--- α
9	DASH PANEL (LONGITUDINAL) (VERTICAL)	114.5	0.0	41.0	4.76 36.64	205.38 98.13	31.19 80.87	91.25 91.88
10	PITCH RATE GYRO	115.5	0.0	23.5	---	--- Y	---	--- Y
11	B-PILLAR SILL - LEFT (LONGITUDINAL) (VERTICAL) Δ V = 29.5 mph @ 140.13 msec	86.1	25.5	12.5	1.68 ---	170.75 --- α	25.60 ---	36.00 --- α
12	B-PILLAR SILL - RIGHT (LONGITUDINAL) Δ V = 28.8 mph @ 340.00 msec	84.9	-25.5	12.9	1.13	172.88	28.60	49.75
13	REAR SEAT LEFT CROSSMEMBER (LONGITUDINAL)P** (VERTICAL) Δ V = 30.0 mph @ 137.75 msec	67.1	16.6	12.8	1.61 10.84	166.50 45.63	25.11 8.87	35.75 33.50
14	REAR SEAT LEFT CROSSMEMBER (LONGITUDINAL)R**	59.1	15.7	13.0	1.76	171.00	24.94	35.75

PARTNER VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY CONTD

NO.	LOCATION	X*	Y*	Z*	POSITIVE DIRECTION***		NEGATIVE DIRECTION***	
					MAX (g)	TIME (msec)	MAX (g)	TIME (msec)
15	REAR SEAT RIGHT CROSSMEMBER (LONGITUDINAL)P**	66.8	-16.9	13.4	5.46	127.88	25.15	50.50
	$\Delta V = 28.3 \text{ mph @ } 122.75 \text{ msec}$							
16	REAR SEAT RIGHT CROSSMEMBER (LONGITUDINAL)R**				---	--- α	---	--- α
17	REAR AXLE CENTERLINE (LONGITUDINAL)				---	--- α	---	--- α

* REFERENCE: X - REAR BUMPER (+ FORWARD), Y - VEHICLE CENTERLINE (+ TO LEFT),
Z - GROUND LEVEL (+ UP)

** (P) = PRIMARY SENSOR, (R) = REDUNDANT SENSOR

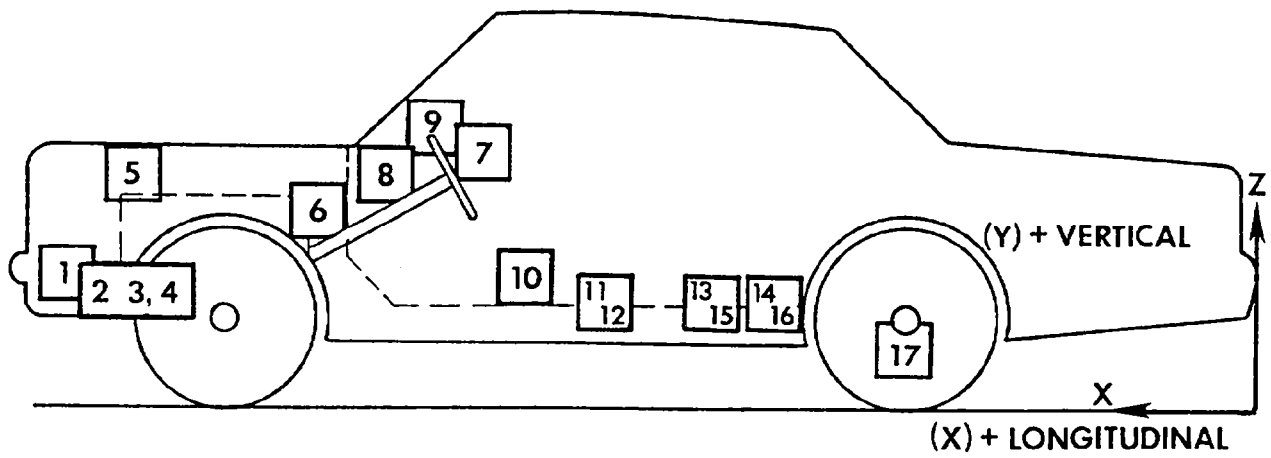
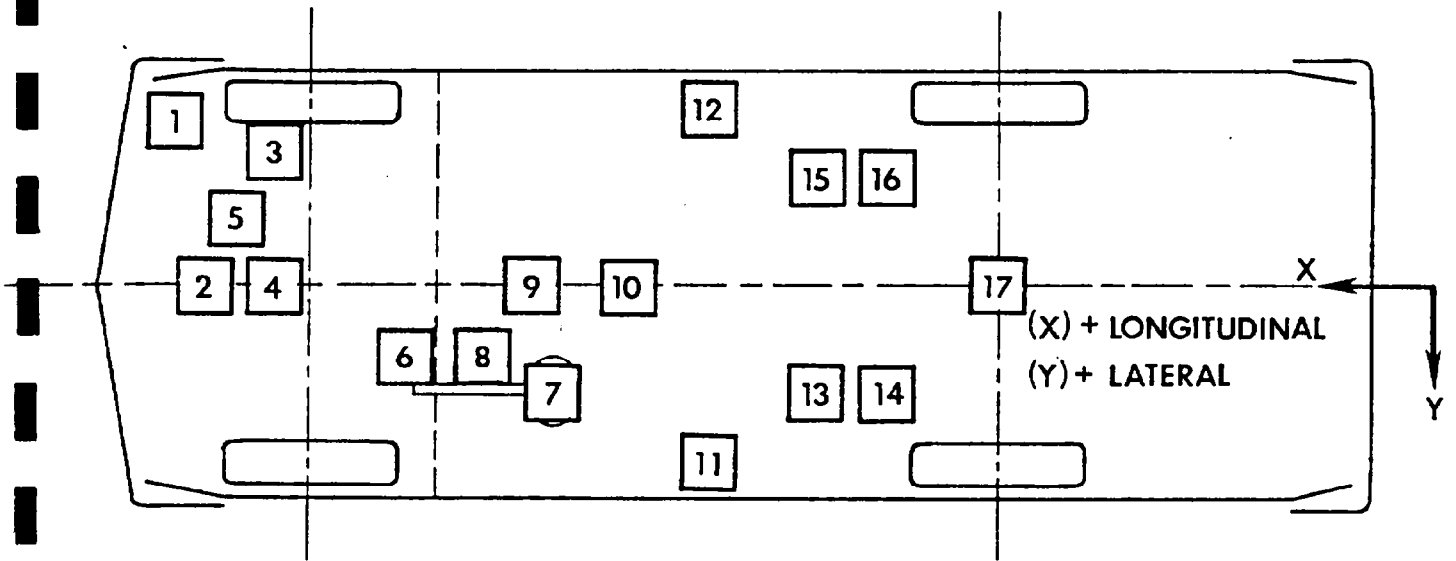
*** POSITIVE DIRECTION LONGITUDINAL: FORWARD
LATERAL: LEFTWARD
VERTICAL: UPWARD
NEGATIVE DIRECTION LONGITUDINAL: REARWARD
LATERAL: RIGHTWARD
VERTICAL: DOWNWARD

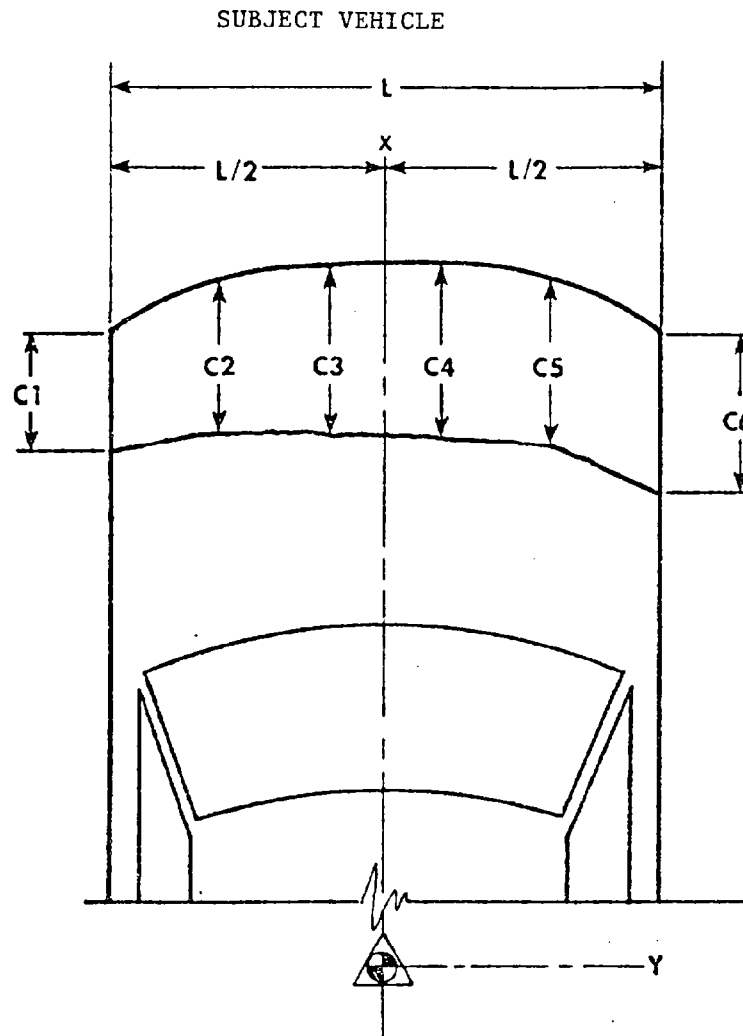
ALL MEASUREMENTS OF ACCELEROMETER LOCATIONS IN INCHES.

Y See TEST ANOMALIES

α There was no instrumentation at this location.

VEHICLE ACCELEROMETER LOCATIONS



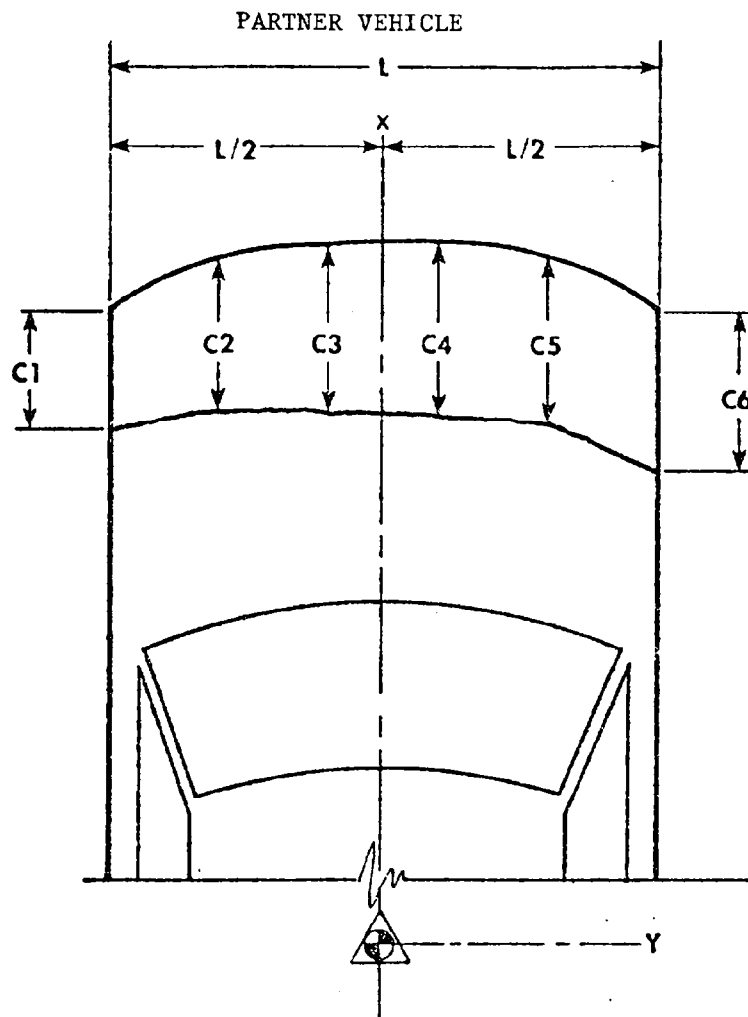


NOTE: C1 through C6 are spaced equally apart
All measurements in inches

VEHICLE HONDA ACCORD

PRE-TEST		POST-TEST		CRUSH	
L	<u>62 3/8</u>	L	<u>59 1/2</u>	L	<u>2 7/8</u>
C1	<u>171 1/8</u>	C1	<u>149 1/2</u>	C1	<u>21 5/8</u>
C2	<u>174 1/2</u>	C2	<u>150</u>	C2	<u>24 1/2</u>
C3	<u>175 3/8</u>	C3	<u>151</u>	C3	<u>24 3/8</u>
C4	<u>175 3/8</u>	C4	<u>152</u>	C4	<u>23 3/8</u>
C5	<u>174 3/4</u>	C5	<u>151</u>	C5	<u>23 3/4</u>
C6	<u>171 3/8</u>	C6	<u>154 1/2</u>	C6	<u>16 7/8</u>
D	<u>0</u>	D	<u>0</u>	D	<u>0</u>

Reference point is from the rear bumper forward.



NOTE: C1 through C6 are spaced equally apart
All measurements in inches

VEHICLE AMC CONCORD

<u>PRE-TEST</u>	<u>POST-TEST</u>	<u>CRUSH</u>
L <u>59 15/16</u>	L <u>60 1/8</u>	L <u>3/16</u>
C1 <u>179 7/8</u>	C1 <u>167 1/8</u>	C1 <u>12 3/4</u>
C2 <u>181</u>	C2 <u>168 1/2</u>	C2 <u>12 1/2</u>
C3 <u>181 7/16</u>	C3 <u>169 1/2</u>	C3 <u>11 15/16</u>
C4 <u>181 7/16</u>	C4 <u>169 3/4</u>	C4 <u>11 11/16</u>
C5 <u>180 3/4</u>	C5 <u>169</u>	C5 <u>11 3/4</u>
C6 <u>179 1/8</u>	C6 <u>168 7/8</u>	C6 <u>10 1/4</u>
D <u>0</u>	D <u>0</u>	D <u>0</u>

Reference point is from the rear bumper forward.

SUBJECT VEHICLE

Page 1 of 2

IMPACTED VEHICLE MEASUREMENTS

TEST NUMBER 850402

Honda Accord

VEHICLE MAKE/MODEL

		DIMENSIONS IN INCHES	
NO.	TYPE OF MEASUREMENT	PRE-TEST	POST-TEST
X 1	TOTAL LENGTH OF VEHICLE AT CENTERLINE	175 1/2	151 1/2
X 2	REAR SURFACE OF VEHICLE TO FRONT OF ENGINE BLOCK	153 1/4	143 1/4
X 3	REAR SURFACE OF VEHICLE TO FIREWALL	131	123 1/4
X 4	REAR SURFACE OF VEHICLE TO UPPER LEADING EDGE OF RIGHT DOOR	116 3/16	115 1/2
X 5	REAR SURFACE OF VEHICLE TO UPPER LEADING EDGE OF LEFT DOOR	116 5/16	114 7/8
X 6	REAR SURFACE OF VEHICLE TO LOWER LEADING EDGE OF RIGHT DOOR	118 7/8	117 3/4
X 7	REAR SURFACE OF VEHICLE TO LOWER LEADING EDGE OF LEFT DOOR	118 9/16	117 3/4
X 8	REAR SURFACE OF VEHICLE TO UPPER TRAILING EDGE OF RIGHT DOOR	80 9/16	80
X 9	REAR SURFACE OF VEHICLE TO UPPER TRAILING EDGE OF LEFT DOOR	80 9/16	79 3/4
X10	REAR SURFACE OF VEHICLE TO LOWER TRAILING EDGE OF RIGHT DOOR	81	80
X11	REAR SURFACE OF VEHICLE TO LOWER TRAILING EDGE OF LEFT DOOR	80 7/8	80 1/16
X12	REAR SURFACE OF VEHICLE TO BOTTOM OF "A" POST OF RIGHT SIDE	117 3/4	116 3/4
X13	REAR SURFACE OF VEHICLE TO BOTTOM OF "A" POST OF LEFT SIDE	117 3/4	116 3/4
X14	REAR SURFACE OF VEHICLE TO FIREWALL - RIGHT SIDE	130 3/4	128 3/4
X15	REAR SURFACE OF VEHICLE TO FIREWALL - LEFT SIDE	130 3/4	125 1/2
X16	REAR SURFACE OF VEHICLE TO STEERING WHEEL CENTER	103 3/4	98 5/16
X17	STEERING COLUMN TO "A" POST	15	14 7/8

SUBJECT VEHICLE

Page 2 of 2

IMPACTED VEHICLE MEASUREMENTS CONTD

VEHICLE MAKE/MODEL Honda Accord TEST NUMBER 850402

		DIMENSIONS IN INCHES	
NO.	TYPE OF MEASUREMENT	PRE-TEST	POST-TEST
Z18	REAR OF WINDSHIELD HEADER TO STEERING WHEEL CENTER	16 3/4	16 13/16
X19	REAR SURFACE OF VEHICLE TO RIGHT SIDE OF FRONT BUMPER	171 3/8	154 1/2
X20	REAR SURFACE OF VEHICLE TO LEFT SIDE OF FRONT BUMPER	171 1/8	149 1/2
X21	WIDTH OF ENGINE BLOCK	5 9/16	5 9/16
Z22	RIGHT FRONT SILL TO GROUND PLANE	8 5/16	7 5/16
Z23	LEFT FRONT SILL TO GROUND PLANE	8 3/16	5 3/8
Z24	RIGHT REAR SILL TO GROUND PLANE	8 7/16	9
Z25	LEFT REAR SILL TO GROUND PLANE	8 11/16	7 1/2
X26	FIREWALL TO ENGINE OR TRANSAXLE	16 11/16	14 7/16
Z27	VERTICAL DIMENSION FROM DOOR SILL TO CENTERLINE OF STEERING COLUMN	21 1/16	22 1/2
X28	WHEELBASE OF VEHICLE	96 1/2	91 1/2
Y29	WIDTH OF VEHICLE AT MAXIMUM WIDTH POINT	65 7/8	59 7/8
X30	REAR SURFACE OF VEHICLE TO ENGINE TARGET	NR*	NR*
X31	REAR SURFACE OF VEHICLE TO COMPARTMENT TARGET	NR*	NR*
X32	REAR SURFACE OF VEHICLE TO BUMPER TARGET	NR*	NR*
X33	REAR SURFACE OF VEHICLE TO FRAME CROSSMEMBER	NR*	NR*

*The Subject Vehicle did not have targets at this location.

PARTNER VEHICLE

Page 1 of 2

IMPACTED VEHICLE MEASUREMENTS

VEHICLE MAKE/MODEL AMC Concord

TEST NUMBER 850402

		DIMENSIONS IN INCHES	
NO.	TYPE OF MEASUREMENT	PRE-TEST	POST-TEST
X 1	TOTAL LENGTH OF VEHICLE AT CENTERLINE	182	169 1/2
X 2	REAR SURFACE OF VEHICLE TO FRONT OF ENGINE BLOCK	161 15/16	159 1/4
X 3	REAR SURFACE OF VEHICLE TO FIREWALL	134 7/16	131 3/4
X 4	REAR SURFACE OF VEHICLE TO UPPER LEADING EDGE OF RIGHT DOOR	124 7/8	124
X 5	REAR SURFACE OF VEHICLE TO UPPER LEADING EDGE OF LEFT DOOR	124 7/8	124 1/2
X 6	REAR SURFACE OF VEHICLE TO LOWER LEADING EDGE OF RIGHT DOOR	124 9/16	123 5/8
X 7	REAR SURFACE OF VEHICLE TO LOWER LEADING EDGE OF LEFT DOOR	124 5/8	124
X 8	REAR SURFACE OF VEHICLE TO UPPER TRAILING EDGE OF RIGHT DOOR	81 7/8	81
X 9	REAR SURFACE OF VEHICLE TO UPPER TRAILING EDGE OF LEFT DOOR	81 7/8	81 1/2
X10	REAR SURFACE OF VEHICLE TO LOWER TRAILING EDGE OF RIGHT DOOR	81 3/8	80 1/2
X11	REAR SURFACE OF VEHICLE TO LOWER TRAILING EDGE OF LEFT DOOR	81 3/8	80 15/16
X12	REAR SURFACE OF VEHICLE TO BOTTOM OF "A" POST OF RIGHT SIDE	122 7/8	122 7/16
X13	REAR SURFACE OF VEHICLE TO BOTTOM OF "A" POST OF LEFT SIDE	122 3/4	122 9/16
X14	REAR SURFACE OF VEHICLE TO FIREWALL - RIGHT SIDE	134 5/16	132 1/4
X15	REAR SURFACE OF VEHICLE TO FIREWALL - LEFT SIDE	134 11/16	132 7/8
X16	REAR SURFACE OF VEHICLE TO STEERING WHEEL CENTER	106 1/2	108 11/16
Y17	STEERING COLUMN TO "A" POST	15 5/16	14 3/8

PARTNER VEHICLE

Page 2 of 2

IMPACTED VEHICLE MEASUREMENTS CONTD

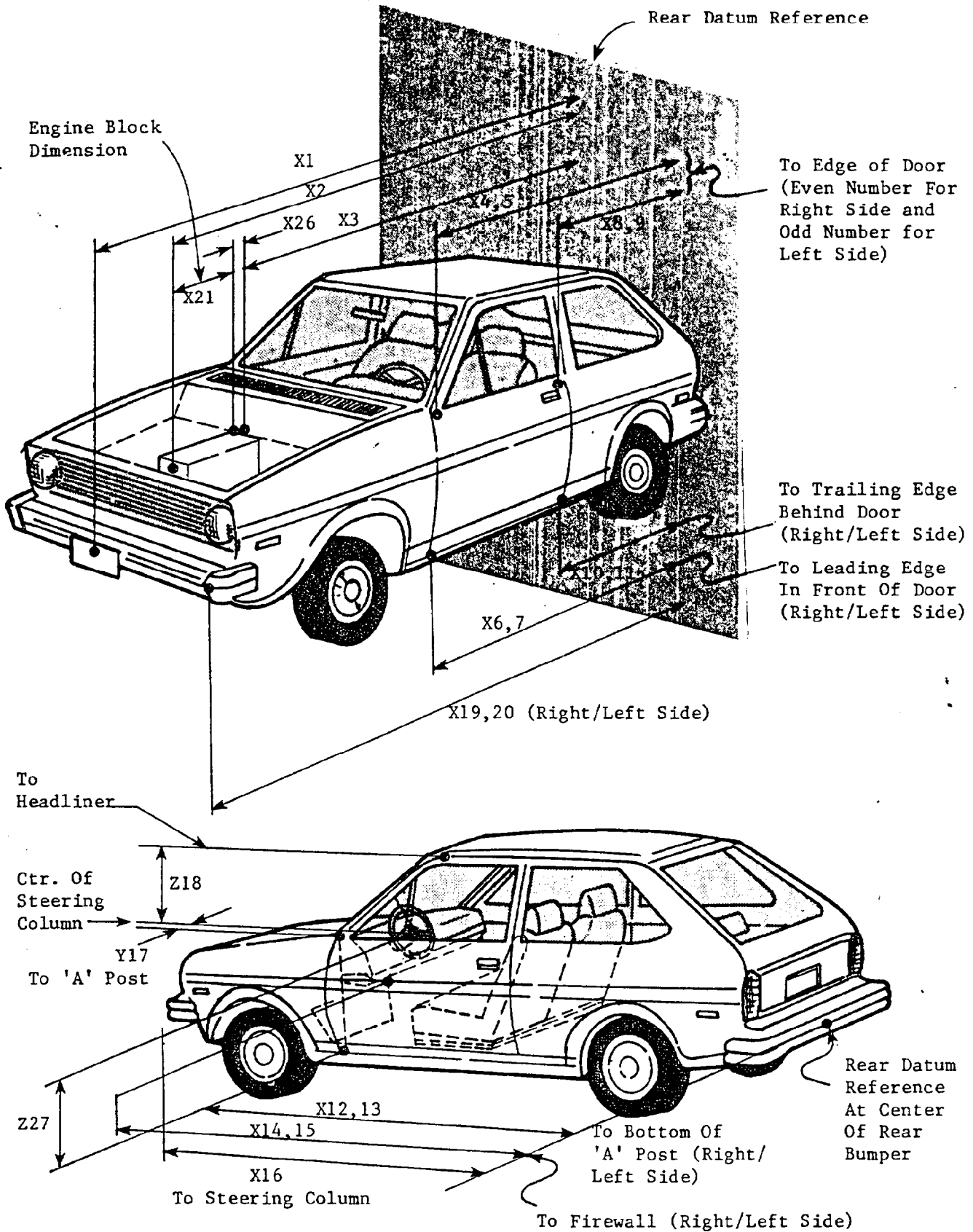
VEHICLE MAKE/MODEL AMC Concord

TEST NUMBER 050402

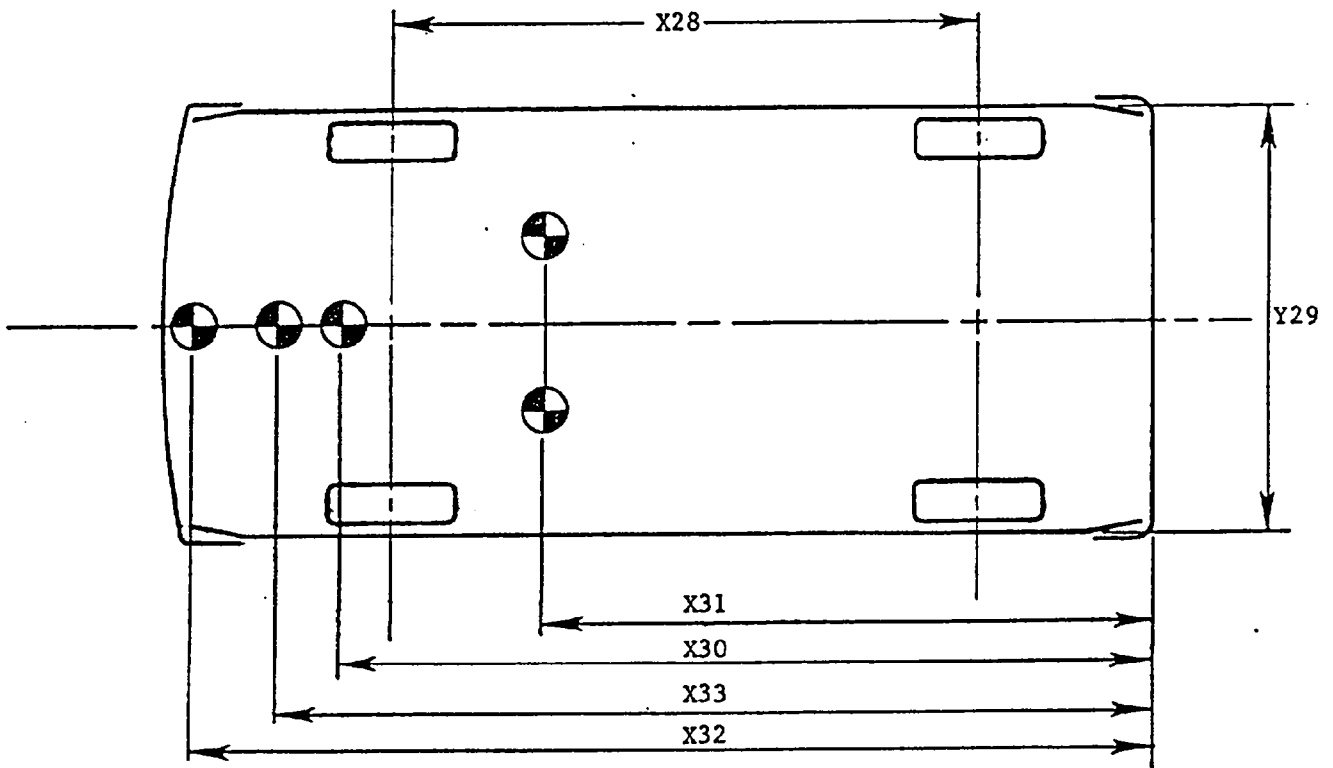
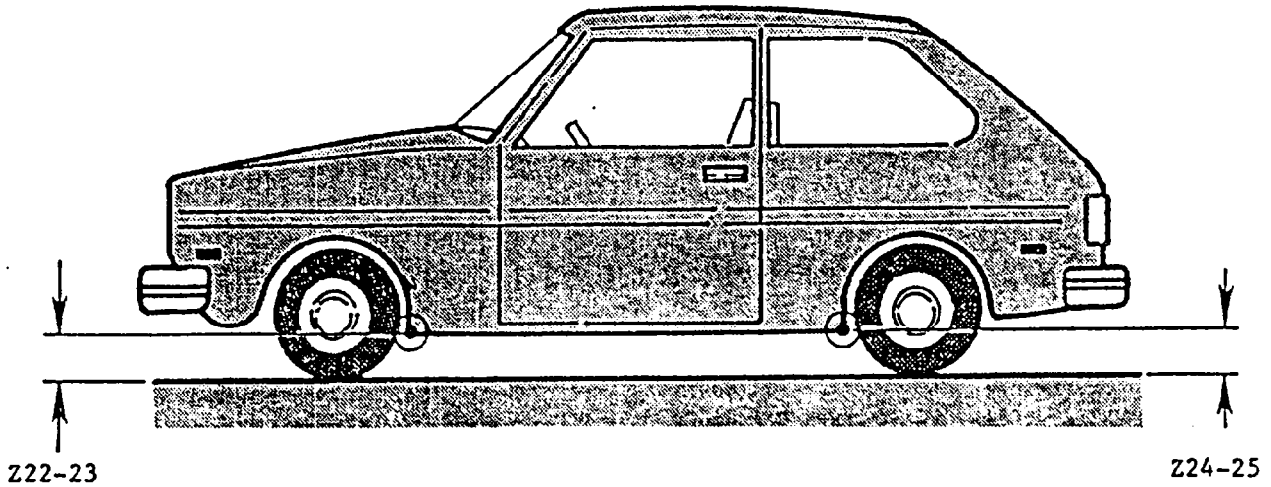
		DIMENSIONS IN INCHES	
NO.	TYPE OF MEASUREMENT	PRE-TEST	POST-TEST
Z18	REAR OF WINDSHIELD HEADER TO STEERING WHEEL CENTER	17 7/8	19 3/16
X19	REAR SURFACE OF VEHICLE TO RIGHT SIDE OF FRONT BUMPER	179 1/8	168 7/8
X20	REAR SURFACE OF VEHICLE TO LEFT SIDE OF FRONT BUMPER	179 7/8	167 1/8
X21	LENGTH OF ENGINE BLOCK	26 1/2	26 1/2
Z22	RIGHT FRONT SILL TO GROUND PLANE	9 3/8	8 3/8
Z23	LEFT FRONT SILL TO GROUND PLANE	9 3/4	8 5/8
Z24	RIGHT REAR SILL TO GROUND PLANE	8 11/16	8 5/8
Z25	LEFT REAR SILL TO GROUND PLANE	9 3/16	9 1/8
X26	FIREWALL TO ENGINE OR TRANSAXLE	1/4	0
Z27	VERTICAL DIMENSION FROM DOOR SILL TO CENTERLINE OF STEERING COLUMN	19 7/16	18 1/4
X28	WHEELBASE OF VEHICLE	108 5/8	108 3/4
Y29	WIDTH OF VEHICLE AT MAXIMUM WIDTH POINT	70	71
X30	REAR SURFACE OF VEHICLE TO ENGINE TARGET	NR*	NR*
X31	REAR SURFACE OF VEHICLE TO COMPARTMENT TARGET	NR*	NR*
X32	REAR SURFACE OF VEHICLE TO BUMPER TARGET	NR*	NR*
X33	REAR SURFACE OF VEHICLE TO FRAME CROSSMEMBER	NR*	NR*

*The Partner Vehicle did not have targets at this location.

PRE-TEST AND POST-TEST MEASUREMENT POINTS



PRE-TEST AND POST-TEST MEASUREMENT POINTS CONTD.



CAMERA INFORMATION

CAMERA NO.	LOCATION	TYPE	LENS (mm)	SPEED (fps)	PURPOSE OF CAMERA DATA
1	Left Closeup	Photosonic 1B	25	995	Bumper Engagement
2	Left	Photosonic 1B	13	950	Vehicle Crush
3	Left Closeup - Partner	Photosonic 1B	25	1008	Dummy Kinematics
4	Onboard Partner - Driver	Photosonic 1B	8	995	Dummy Kinematics
5	Right	Photosonic 1B	17	925	Bumer Engagement
6	Onboard Subject - Passenger	Photosonic 1B	8	1003	Dummy Kinematics
7	Right Overall	Hycam	16	975	Vehicle Dynamics
8	Right Closeup - Partner	Photosonic 1B	50	970	Dummy Kinematics
9	Onboard Partner - Passenger	Photosonic 1B	8	998	Dummy Kinematics
10	Right Closeup Subject	Hycam	50	982	Dummy Kinematics
11	Onboard Subject - Driver	Photosonic 1B	8	1010	Dummy Kinematics
12	Left Closeup - Subject	Photosonic 1B	50	883	Dummy Kinematics
13	Overhead	Photosonic 1B	13	995	Vehicle Crush
14	Right	Kodak	16	24	Real Time

Camera orientation is referenced to the dummy positions in the subject vehicle.

NOTE: See page D-15 for camera LED information.

HIGH SPEED CAMERA INFORMATION

CAMERA NO.	X*	Y*	Z*
1	8"	-21'11"	36"
2	13'	-24'4"	34"
3	-11'8"	-23'5"	78"
5	-4'6"	38'4"	36"
7	2'	47'	47"
8	-18'7"	41'6"	74"
10	13'5"	16'6"	74"
12	13'	-17'3"	73"
13	3'	0	30'
14	-1'6"	54'	56"

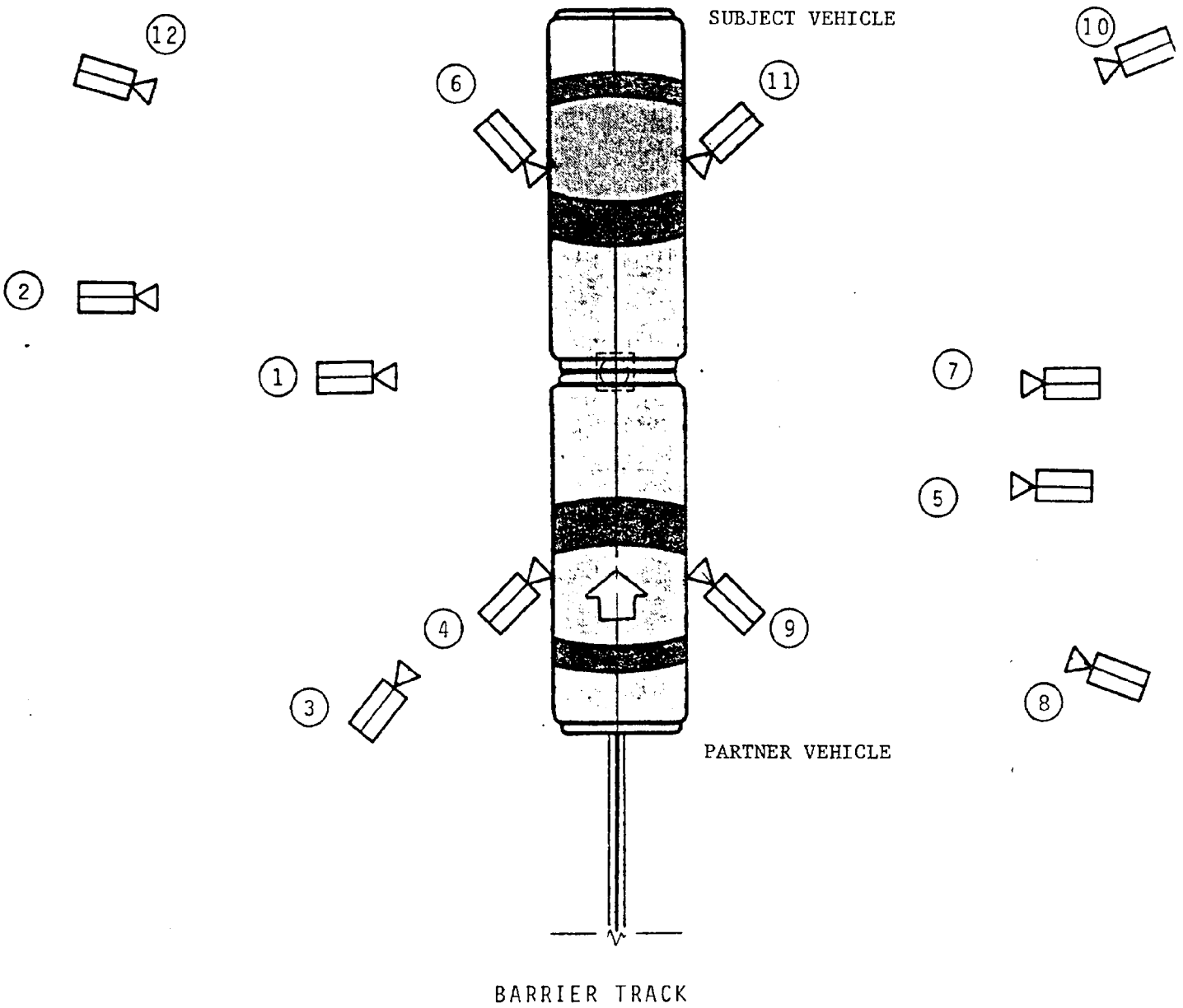
*Reference

+X = Forward with respect to the partner vehicle impact point.

+Y = Rightward from intended vehicle centerlines.

+Z = Upward from ground level

CAMERA POSITION DIAGRAM



TEST ANOMALIES

SUBJECT VEHICLE

The passenger's left lower tibia Z-axis force transducer, ANLZF2, recorded invalid data around 100 msec due to a faulty electronics card.

The passenger's left upper X-axis tibia moment, TBLXM2, and the passenger's left upper Y-axis tibia moment, TBLYM2, did not record data throughout the test due to faulty connectors.

The left rear seat X-axis redundant accelerometer, TLRXGD, did not record accurate data due to a faulty electronics card.

The pitch rate gyro, VCGV, did not record data throughout the test due to a faulty connector.

The passenger's neck Y-axis force transducer, NEKYF2, did not record accurate data throughout the test due to a faulty connector.

PARTNER VEHICLE

The passenger's chest displacement transducer, CSTXD2, did not record data throughout the test due to incorrect installation of the transducer.

The pitch rate gyro, VCGV, did not record any data throughout the test due to a faulty connector.

The front frame crossmember X-axis accelerometer, FFCXG, did not record data throughout the test due to a cut cable.

APPENDIX A
PHOTOGRAPHS

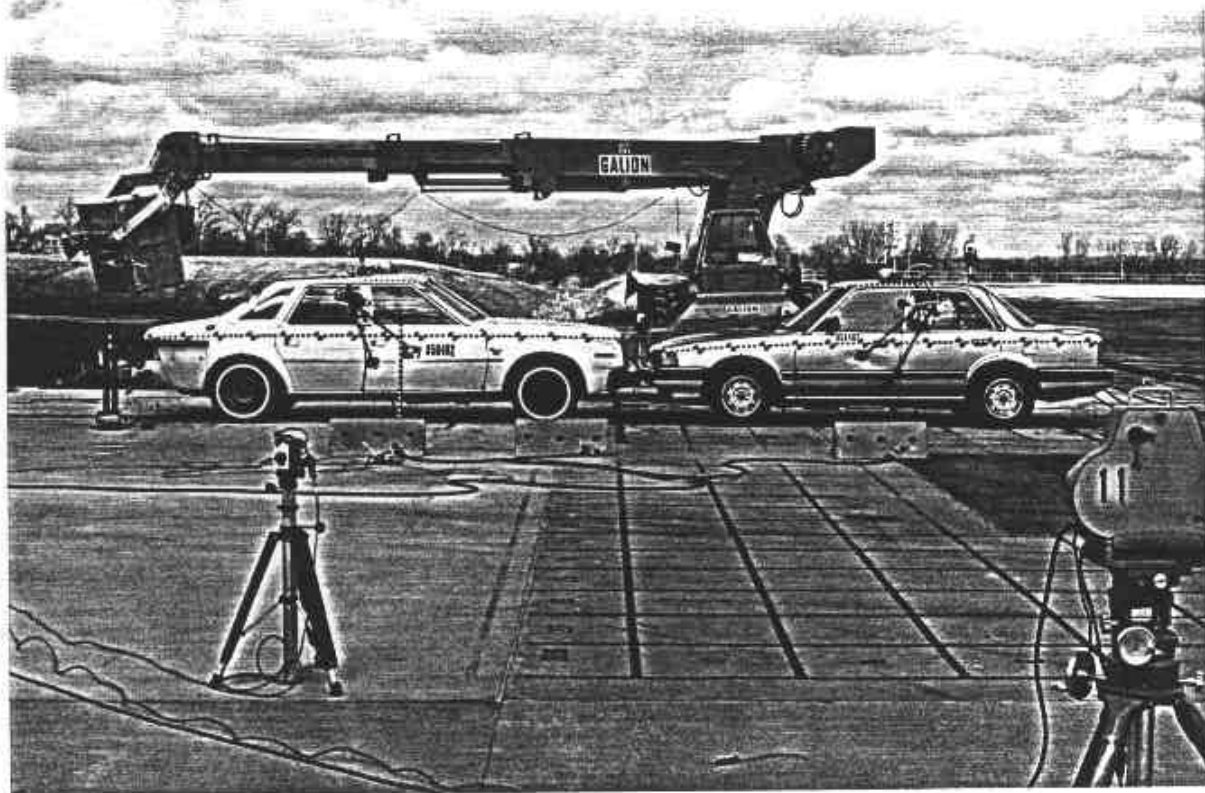


Figure A-1. PRE-TEST GENERAL OVERALL



Figure A-2. POST-TEST GENERAL OVERALL
A-2



Figure A-3. PRE-TEST GENERAL CLOSEUP

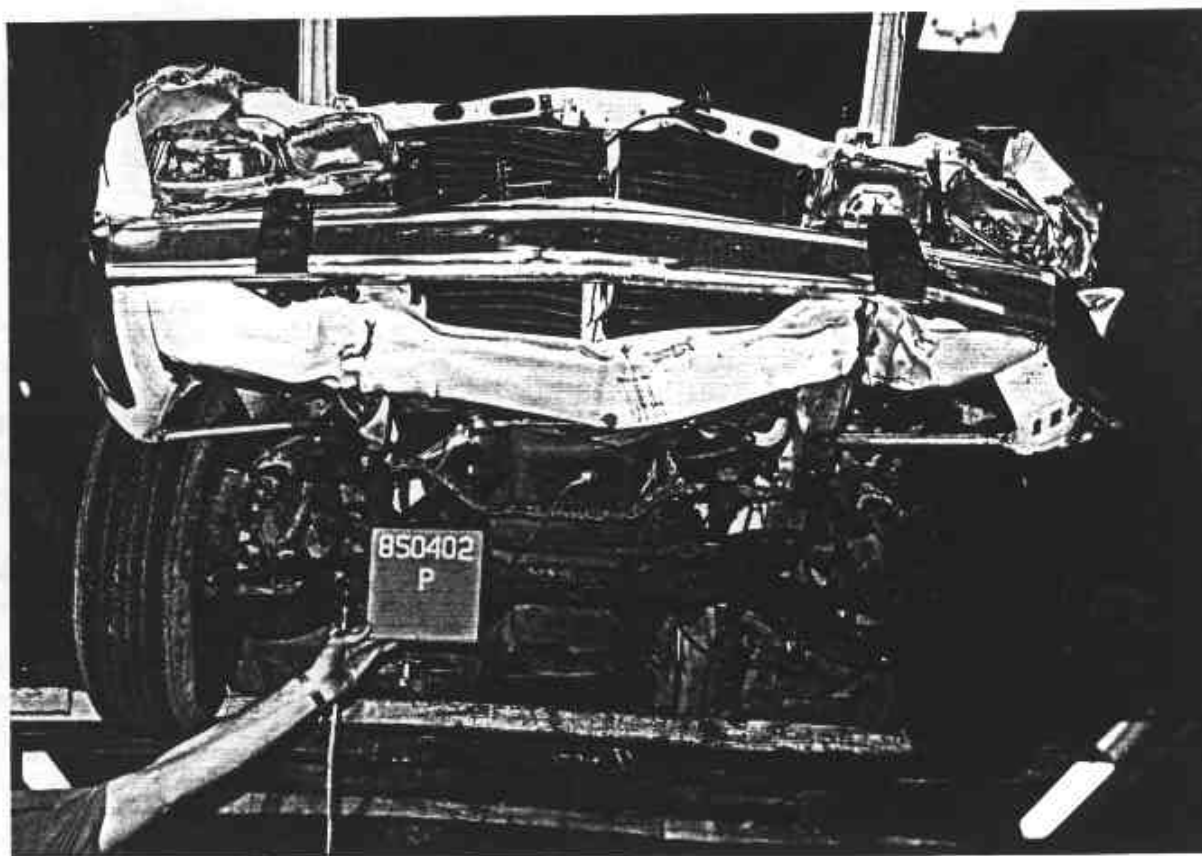


Figure A-4. POST-TEST PARTNER VEHICLE UNDERBODY VIEW
A-3

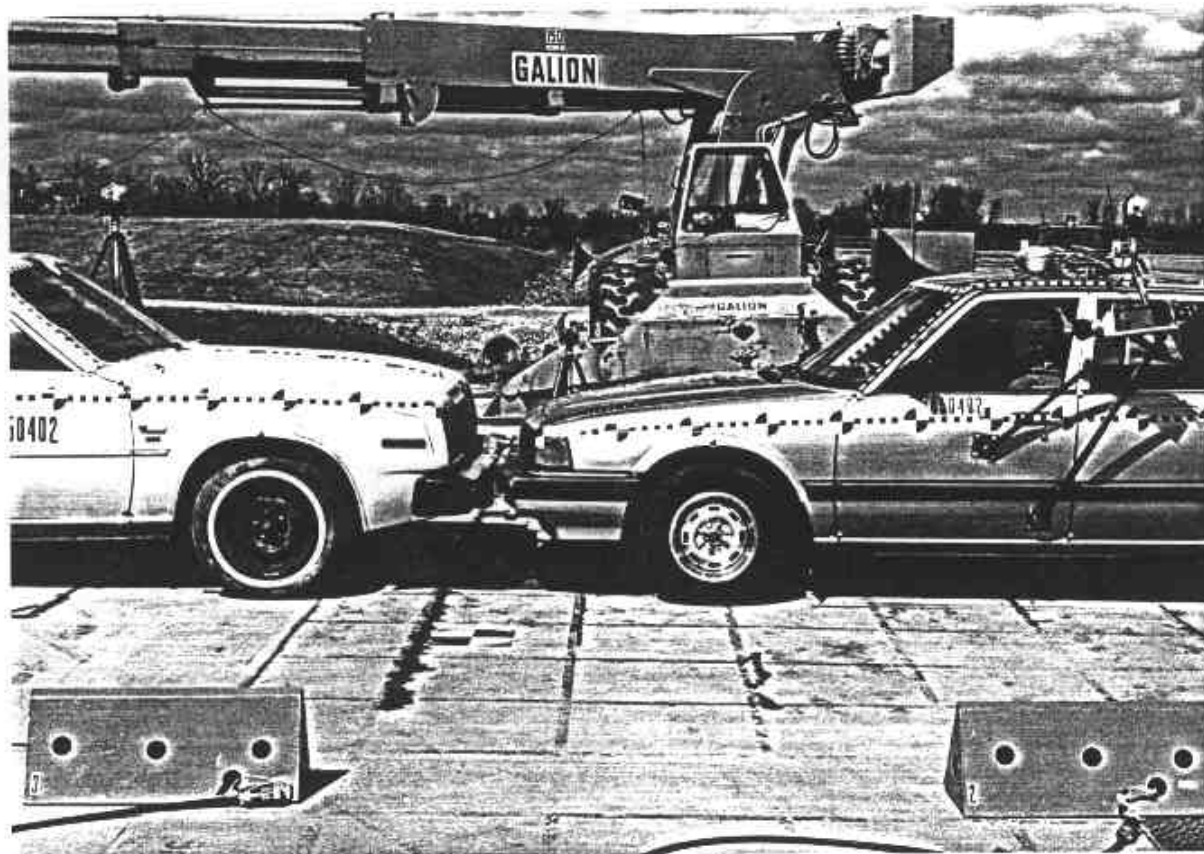


Figure A-5. PRE-TEST SUBJECT VEHICLE LEFT SIDE



Figure A-6. POST-TEST SUBJECT VEHICLE LEFT SIDE
A-4



Figure A-7. PRE-TEST SUBJECT VEHICLE RIGHT SIDE



Figure A-8. POST-TEST SUBJECT VEHICLE RIGHT SIDE
A-5



Figure A-9. PRE-TEST SUBJECT VEHICLE FRONT VIEW



Figure A-10. POST-TEST SUBJECT VEHICLE FRONT VIEW
A-6

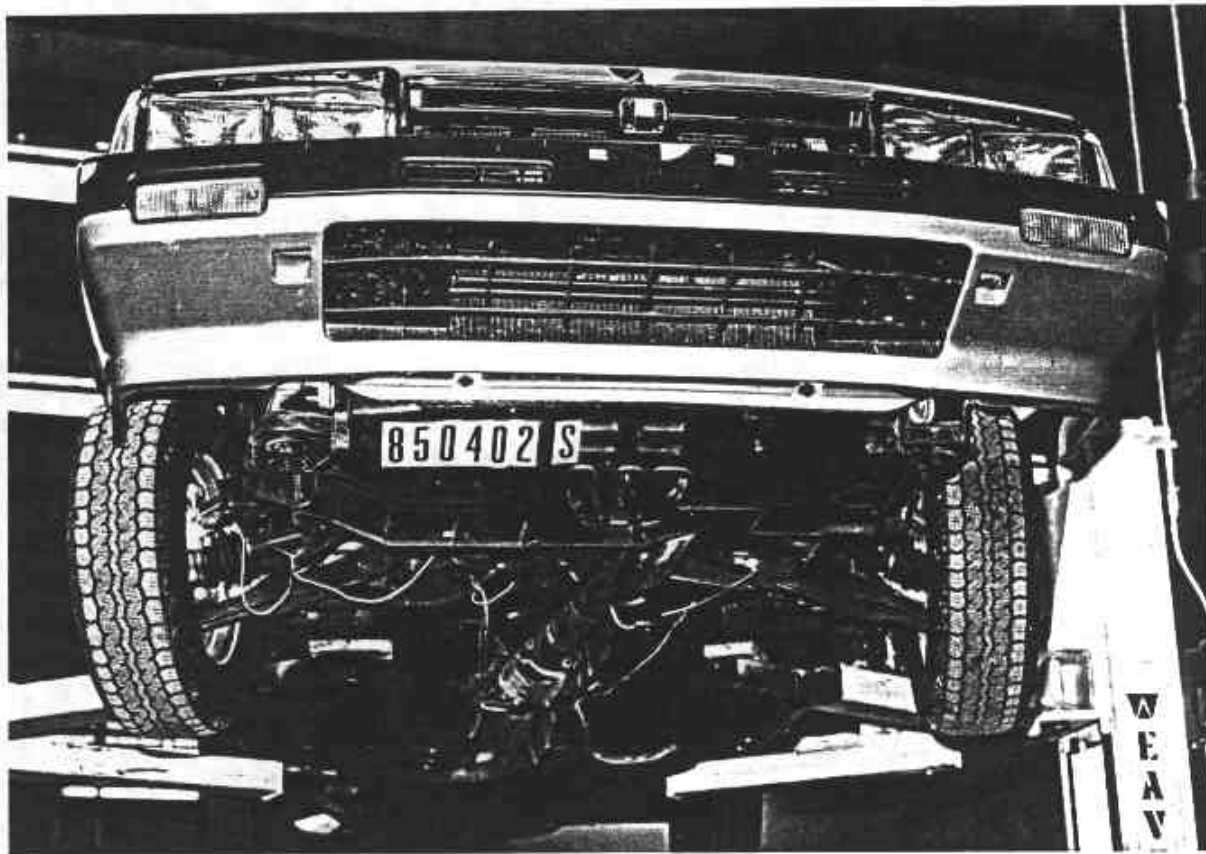


Figure A-11. PRE-TEST SUBJECT VEHICLE UNDERBODY VIEW

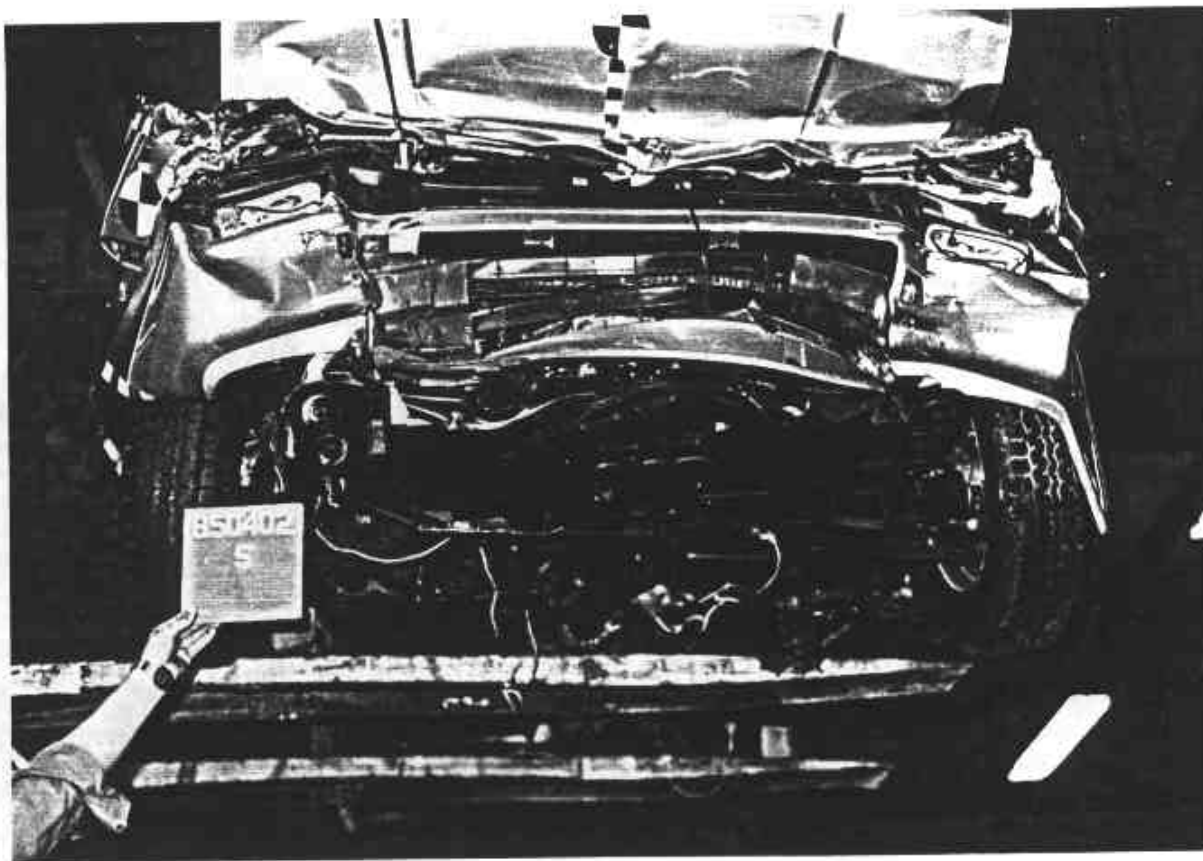


Figure A-12. POST-TEST SUBJECT VEHICLE UNDERBODY VIEW
A-7

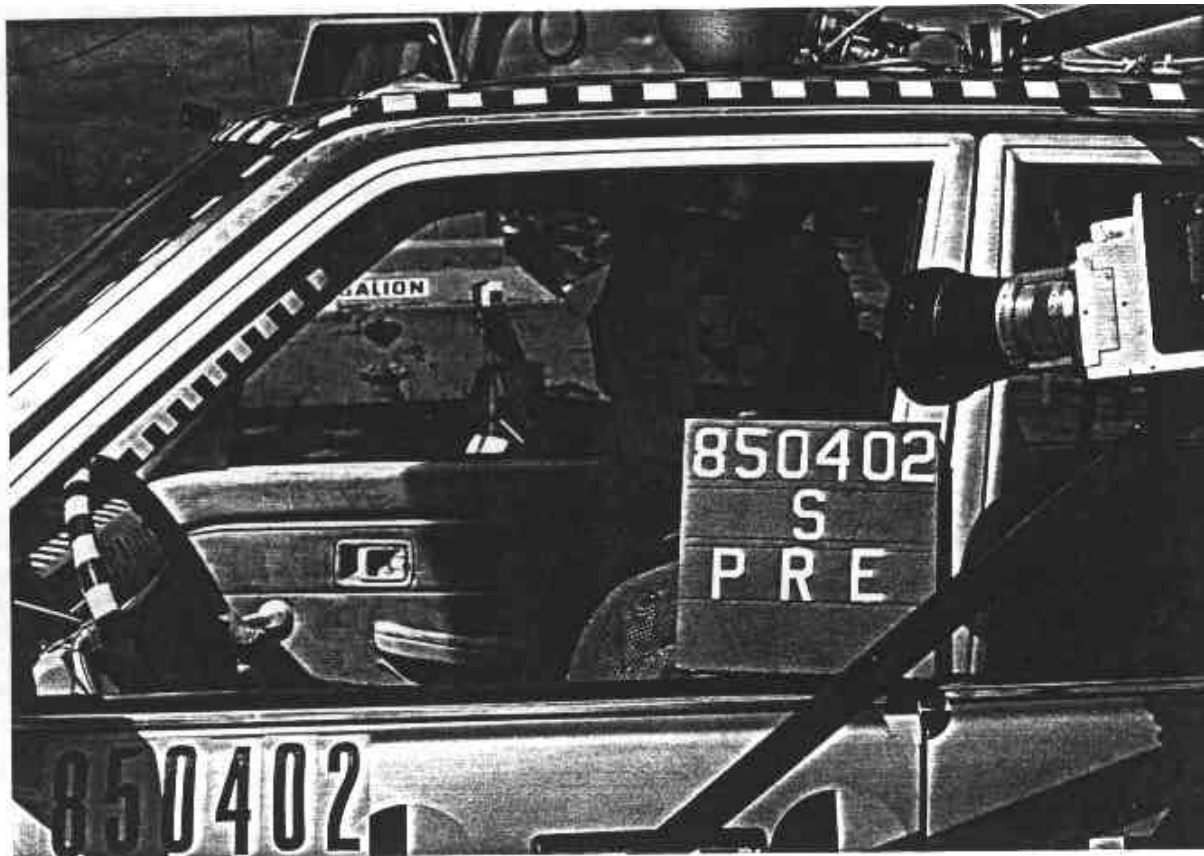


Figure A-13. PRE-TEST SUBJECT VEHICLE DRIVER DUMMY - VIEW 1



Figure A-14. POST-TEST SUBJECT VEHICLE DRIVER DUMMY - VIEW 1

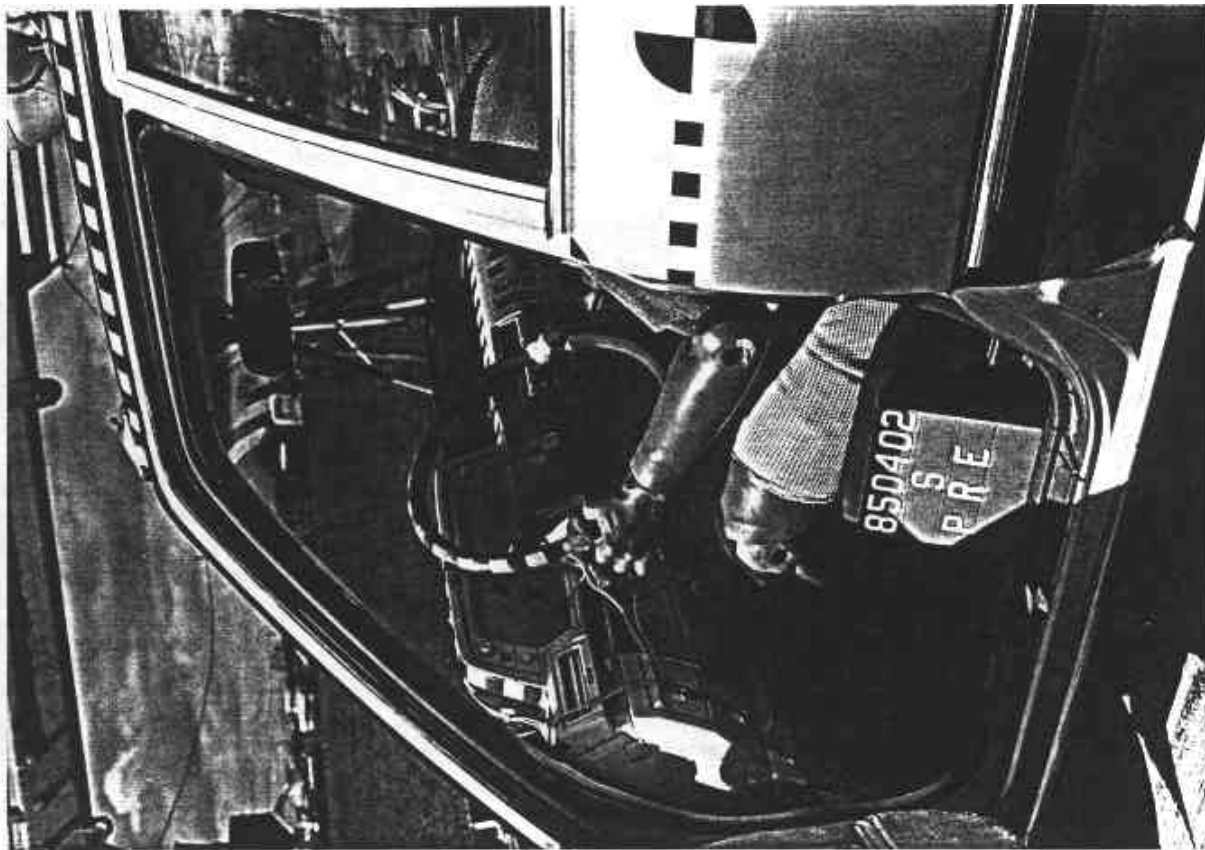


Figure A-15. PRE-TEST SUBJECT VEHICLE DRIVER DUMMY - VIEW 2

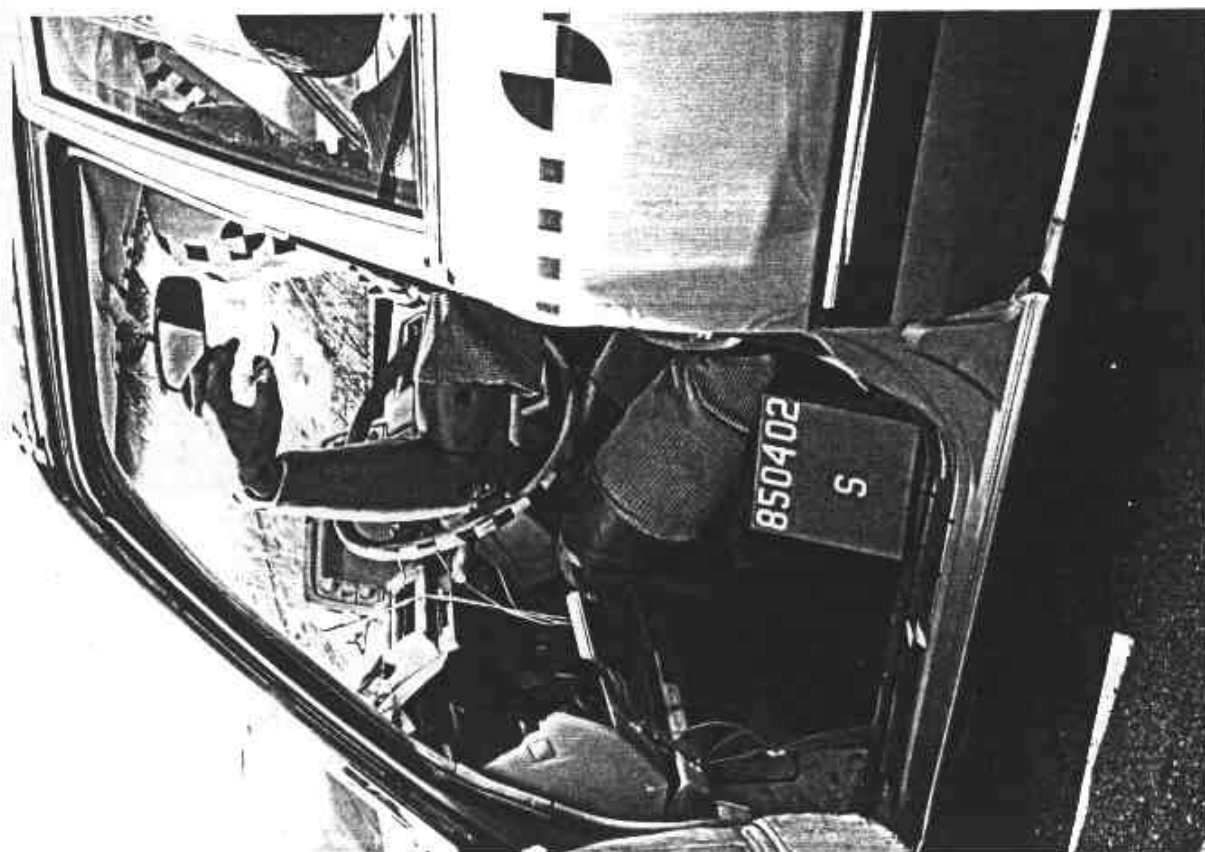


Figure A-16. POST-TEST SUBJECT VEHICLE DRIVER DUMMY - VIEW 2



Figure A-17. PRE-TEST SUBJECT VEHICLE PASSENGER DUMMY - VIEW 1



Figure A-18. POST-TEST SUBJECT VEHICLE PASSENGER DUMMY - VIEW 1
A-10

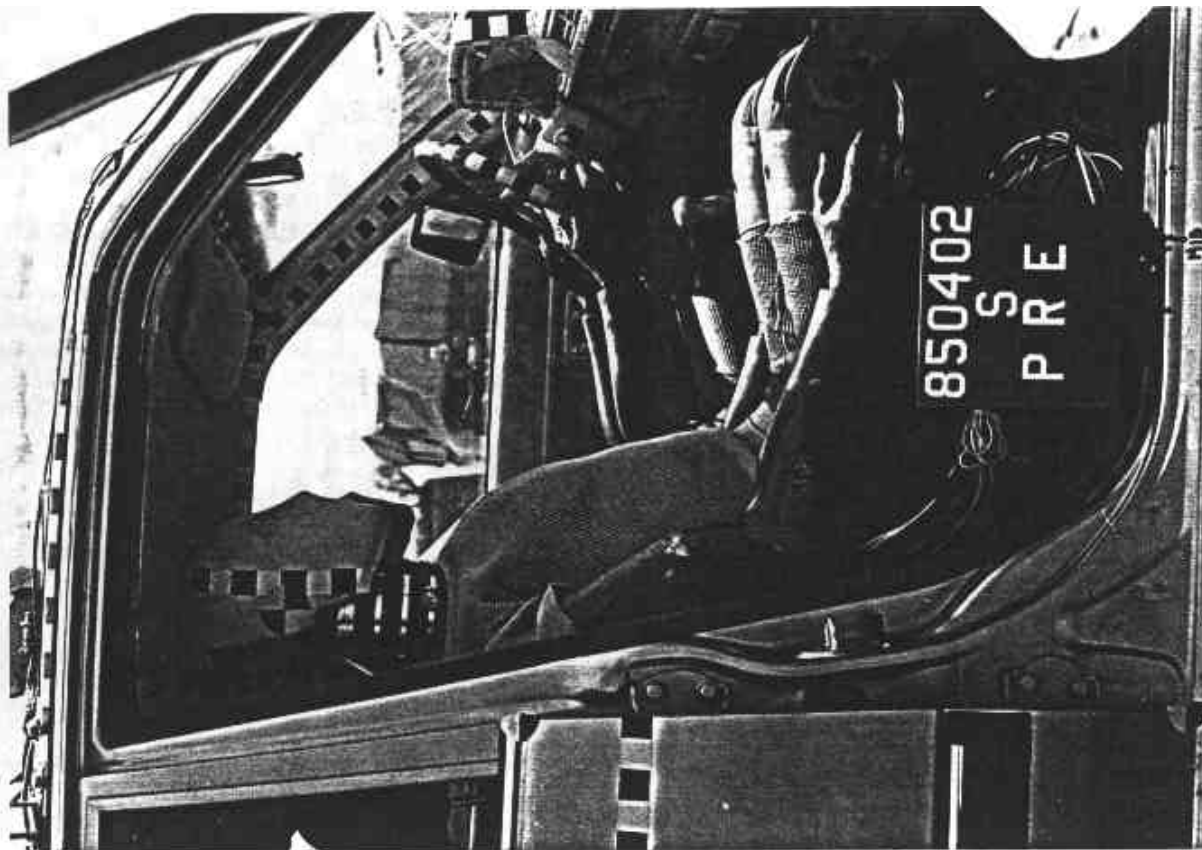


Figure A-19. PRE-TEST SUBJECT VEHICLE PASSENGER DUMMY - VIEW 2



Figure A-20. POST-TEST SUBJECT VEHICLE PASSENGER DUMMY - VIEW 2



Figure A-21. PRE-TEST SUBJECT VEHICLE PASSENGER DUMMY - VIEW 3



Figure A-22. POST-TEST SUBJECT VEHICLE PASSENGER DUMMY - VIEW 3
A-12



Figure A-23. PRE-TEST SUBJECT VEHICLE GLAZING



Figure A-24. POST-TEST SUBJECT VEHICLE GLAZING
A-13

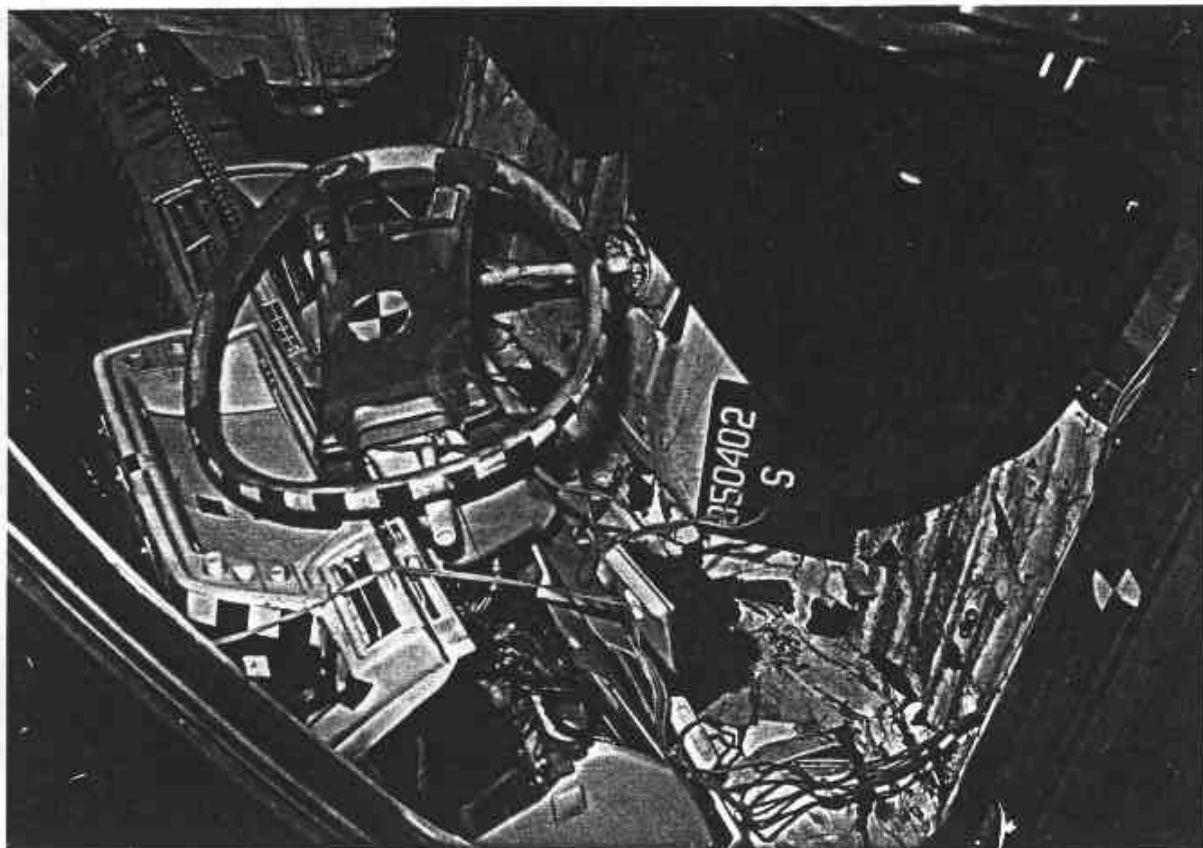


Figure A-25. POST-TEST SUBJECT VEHICLE INTERIOR DAMAGE - VIEW 1



Figure A-26. POST-TEST SUBJECT VEHICLE INTERIOR DAMAGE - VIEW 2
A-14

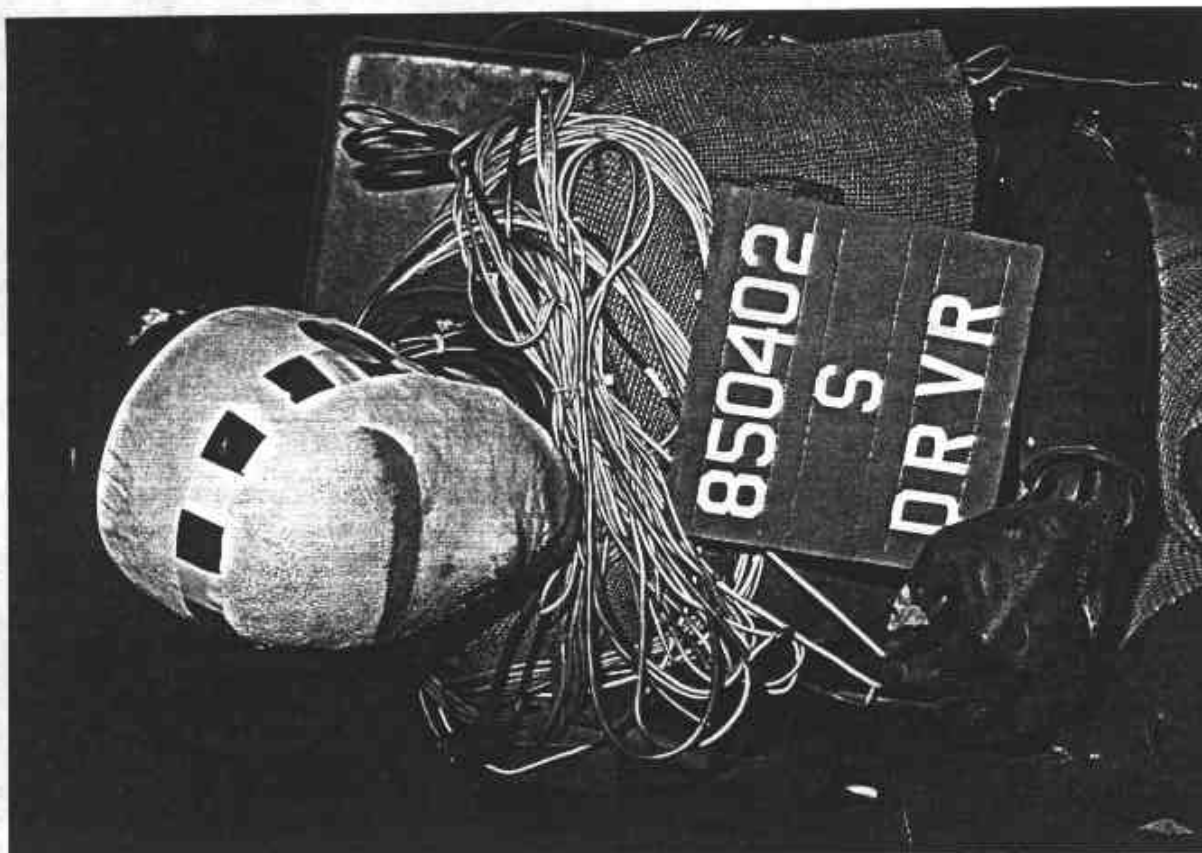


Figure A-27. POST-TEST SUBJECT VEHICLE DRIVER DUMMY - VIEW 3

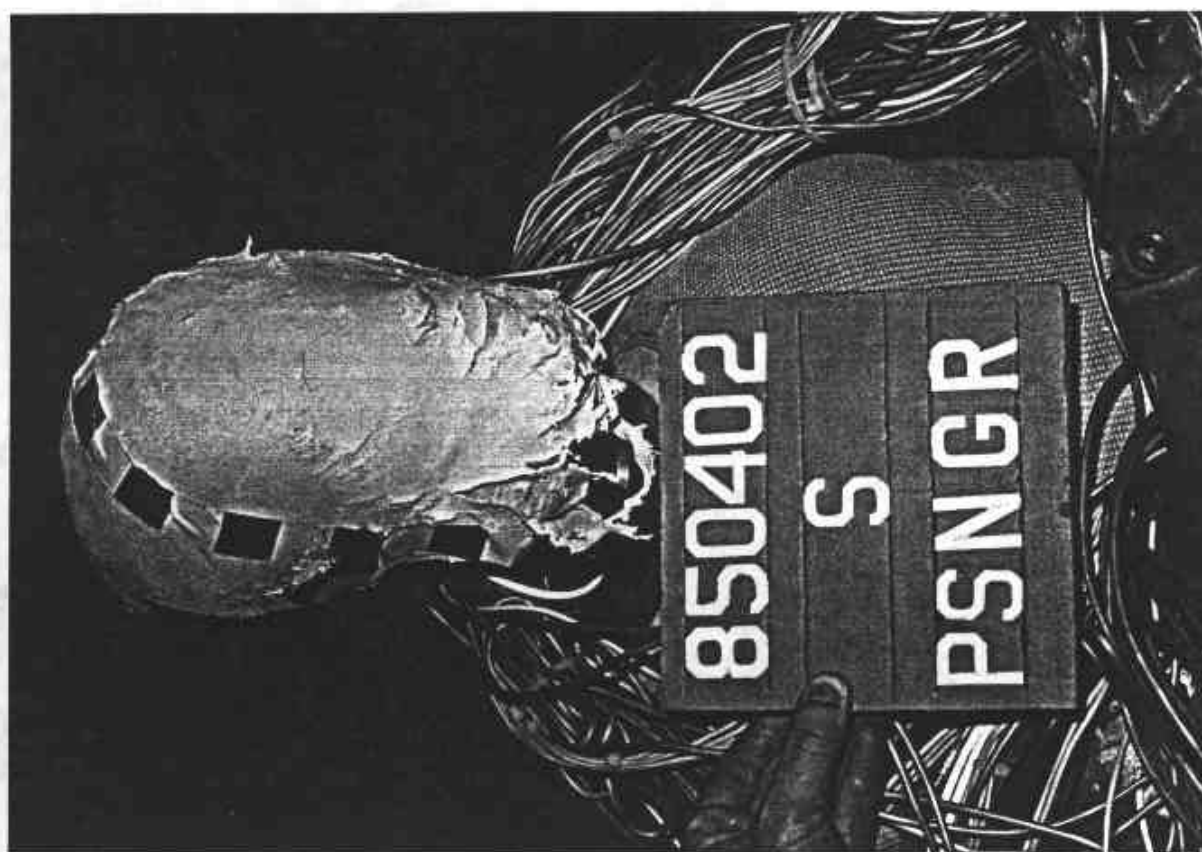


Figure A-28. POST-TEST SUBJECT VEHICLE PASSENGER DUMMY - VIEW 4

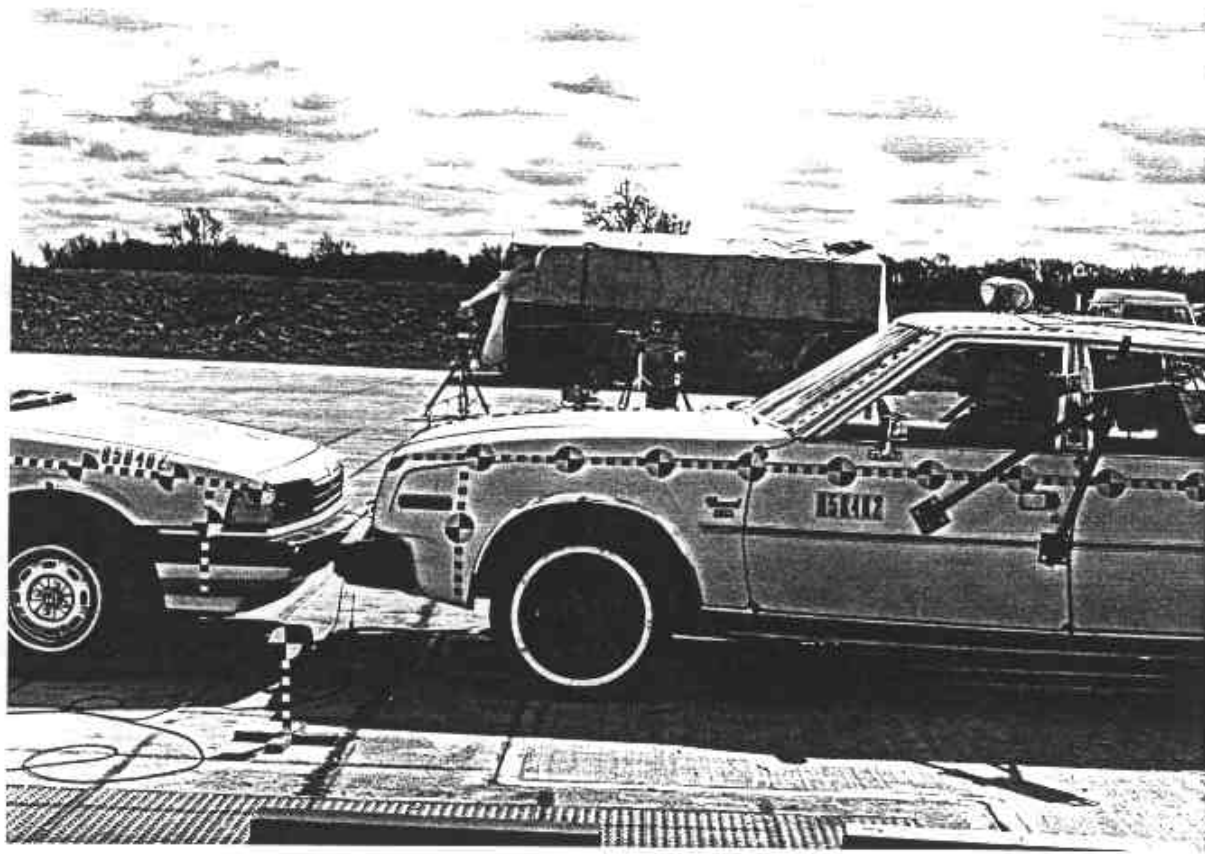


Figure A-29. PRE-TEST PARTNER VEHICLE LEFT SIDE



Figure A-30. POST-TEST PARTNER VEHICLE LEFT SIDE
A-16



Figure A-31. PRE-TEST PARTNER VEHICLE RIGHT SIDE



Figure A-32. POST-TEST PARTNER VEHICLE RIGHT SIDE



Figure A-33. PRE-TEST PARTNER VEHICLE FRONT VIEW



Figure A-34. POST-TEST PARTNER VEHICLE FRONT VIEW
A-18



Figure A-35. PRE-TEST PARTNER VEHICLE DRIVER DUMMY - VIEW 1



Figure A-36. POST-TEST PARTNER VEHICLE DRIVER DUMMY - VIEW 1
A-19

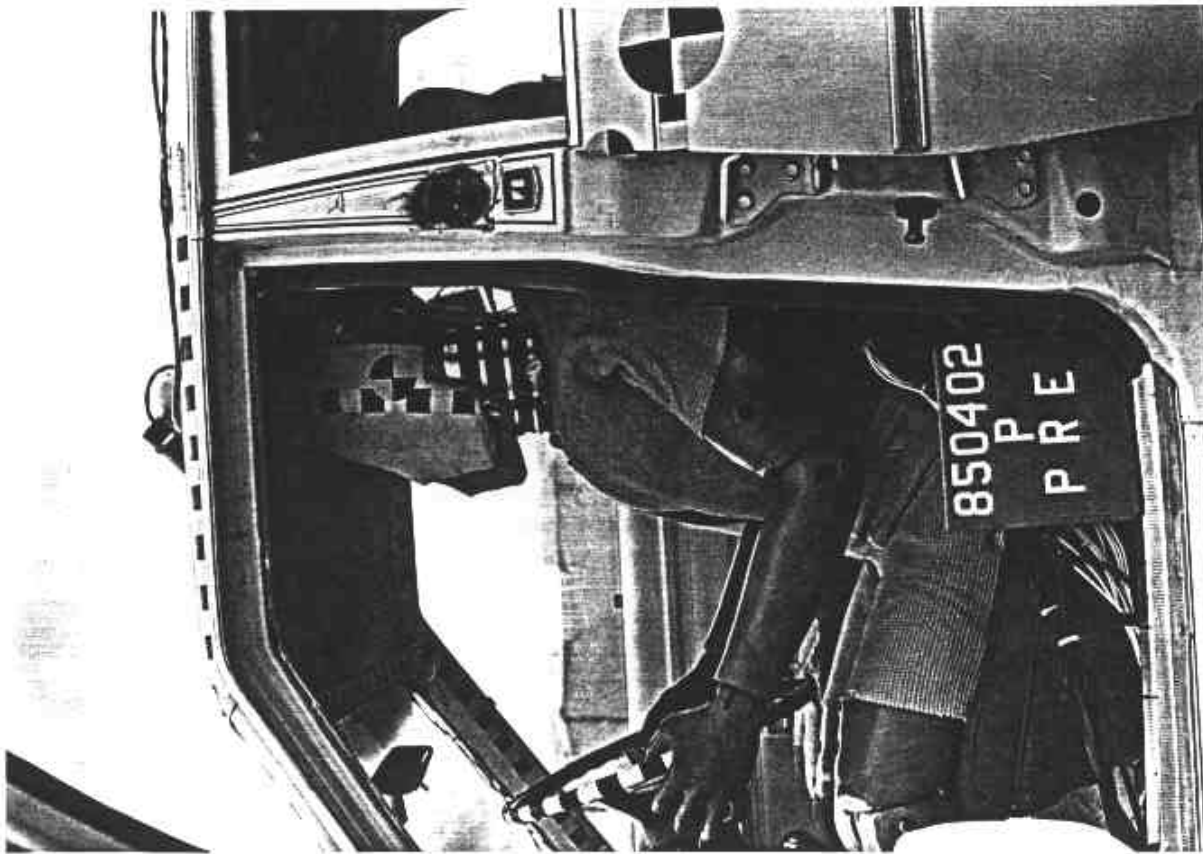


Figure A-37. PRE-TEST PARTNER VEHICLE DRIVER DUMMY - VIEW 2

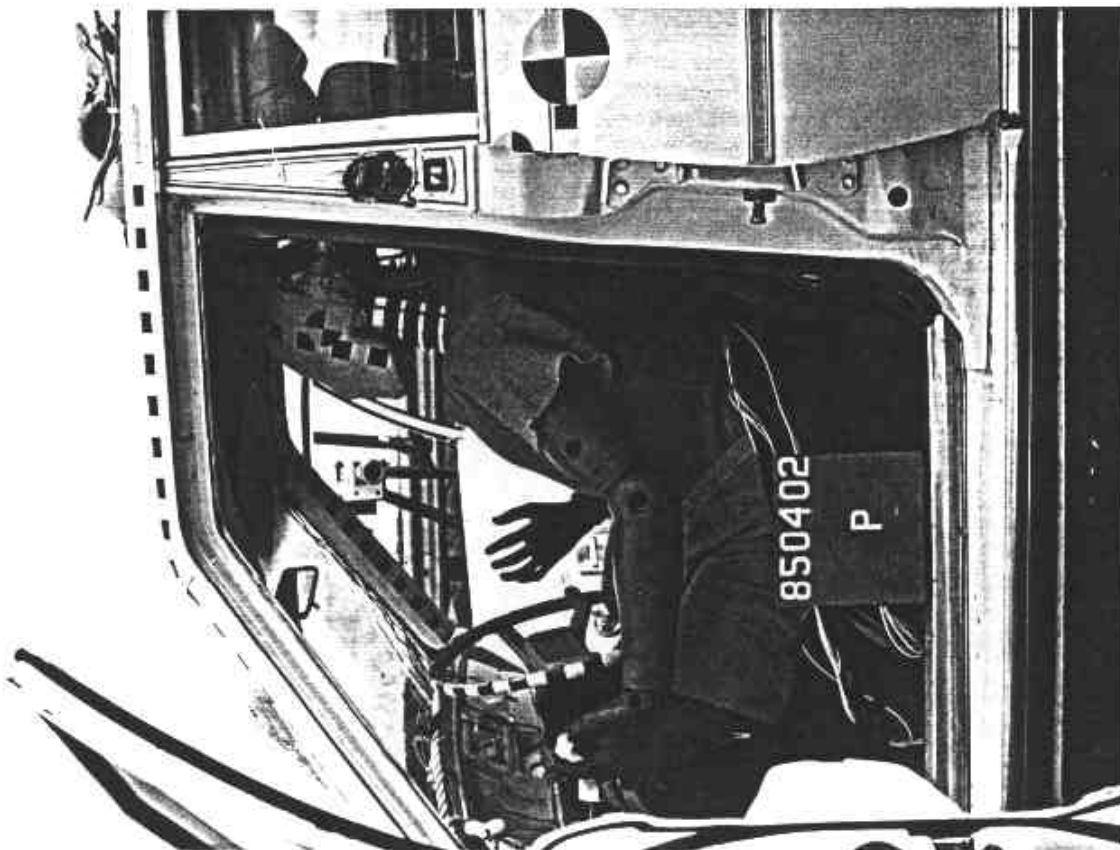


Figure A-38. POST-TEST PARTNER VEHICLE DRIVER DUMMY - VIEW 2

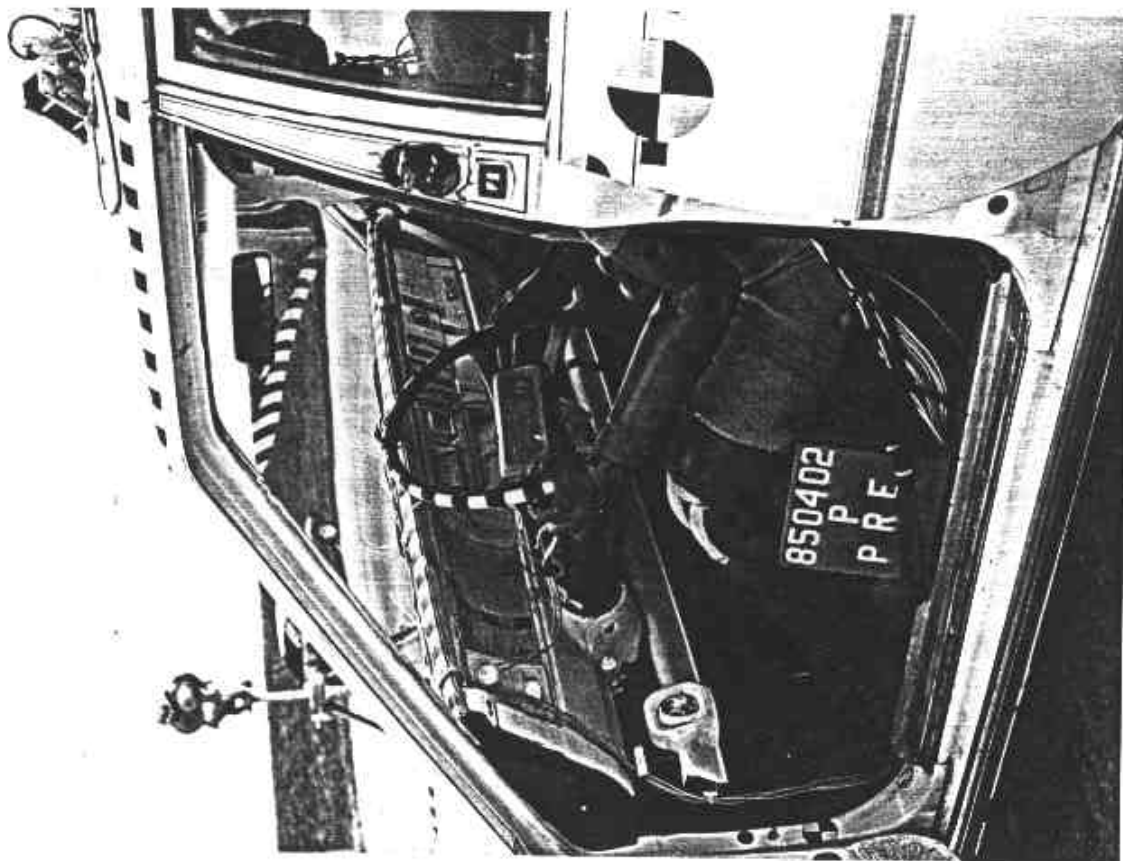


Figure A-39. PRE-TEST PARTNER VEHICLE DRIVER DUMMY - VIEW 3

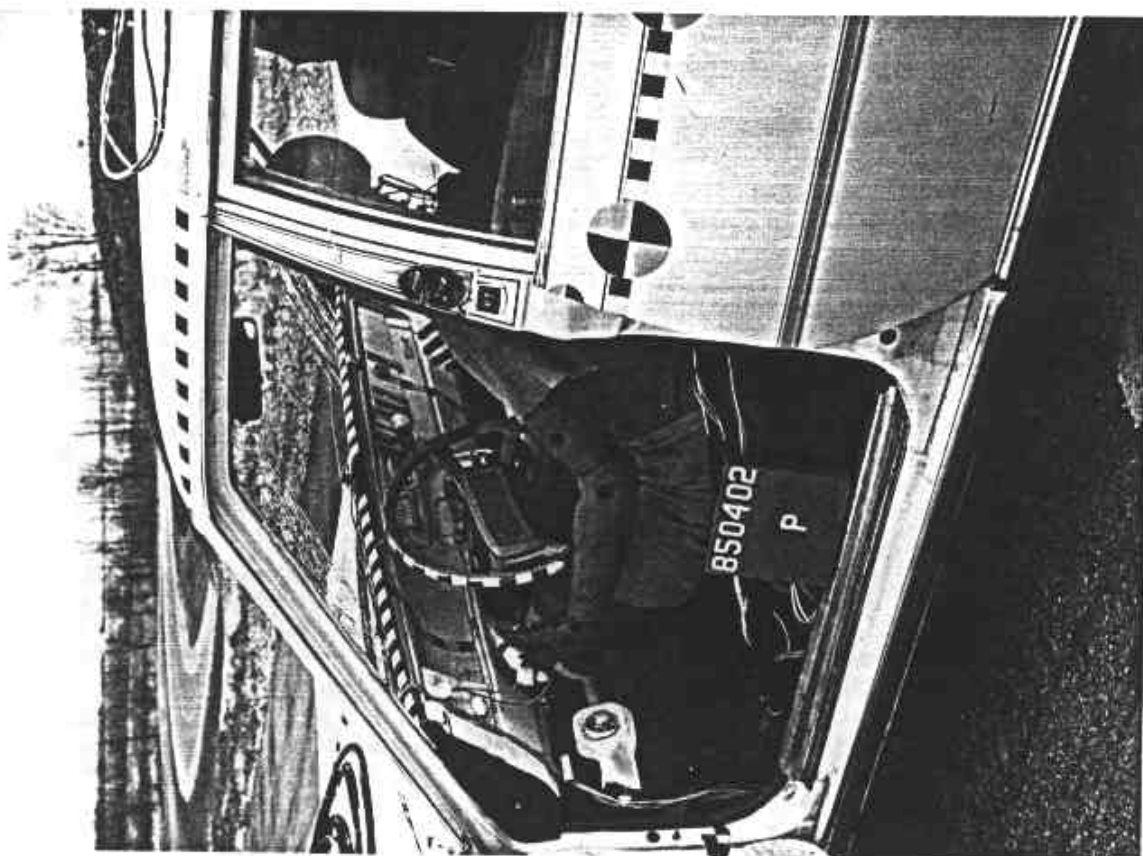


Figure A-40. POST-TEST PARTNER VEHICLE DRIVER DUMMY - VIEW 3



Figure A-41. PRE-TEST PARTNER VEHICLE PASSENGER DUMMY - VIEW 1



Figure A-42. POST-TEST PARTNER VEHICLE PASSENGER DUMMY - VIEW 1
A-22



Figure A-43. PRE-TEST PARTNER VEHICLE PASSENGER DUMMY - VIEW 2

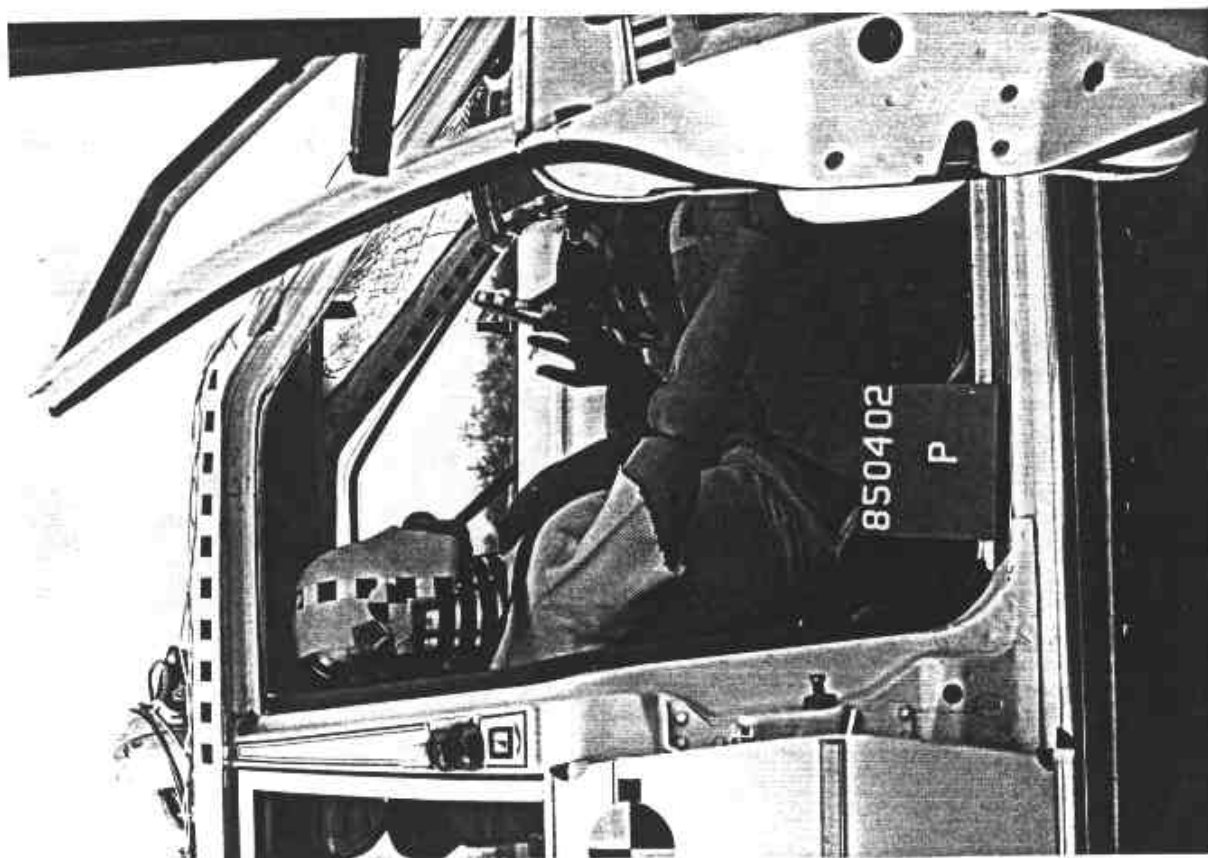


Figure A-44. POST-TEST PARTNER VEHICLE PASSENGER DUMMY - VIEW 2



Figure A-45. PRE-TEST PARTNER VEHICLE PASSENGER DUMMY - VIEW 3



Figure A-46. POST-TEST PARTNER VEHICLE PASSENGER DUMMY - VIEW 3
A-24

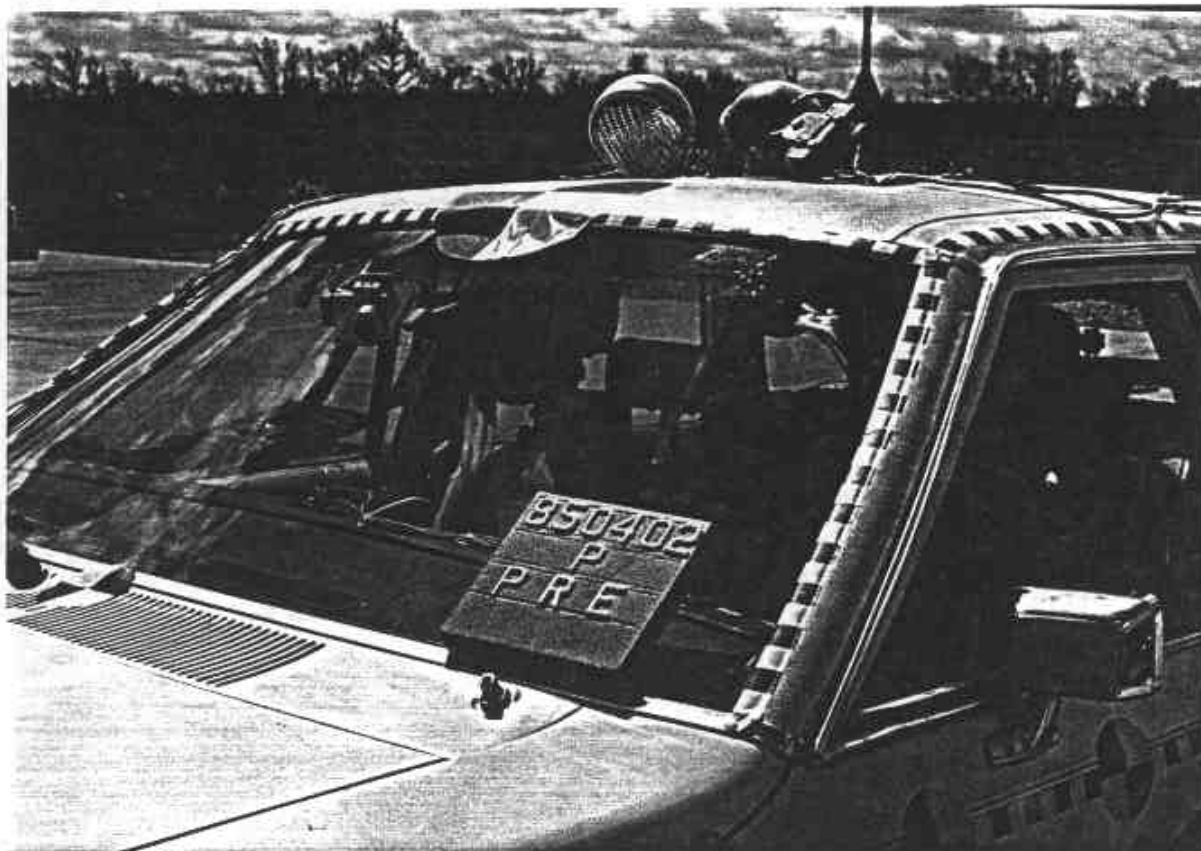


Figure A-47. PRE-TEST PARTNER VEHICLE GLAZING DAMAGE

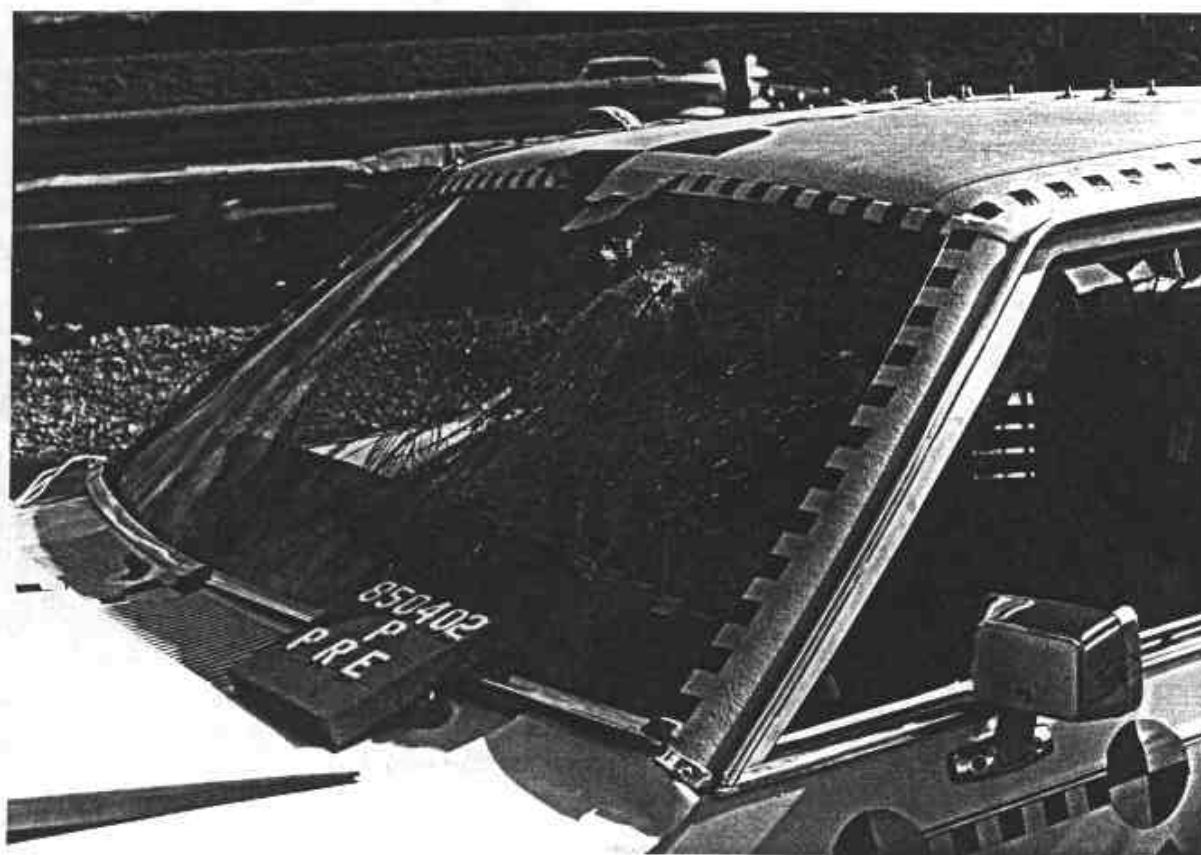


Figure A-48. POST-TEST PARTNER VEHICLE GLAZING
A-25

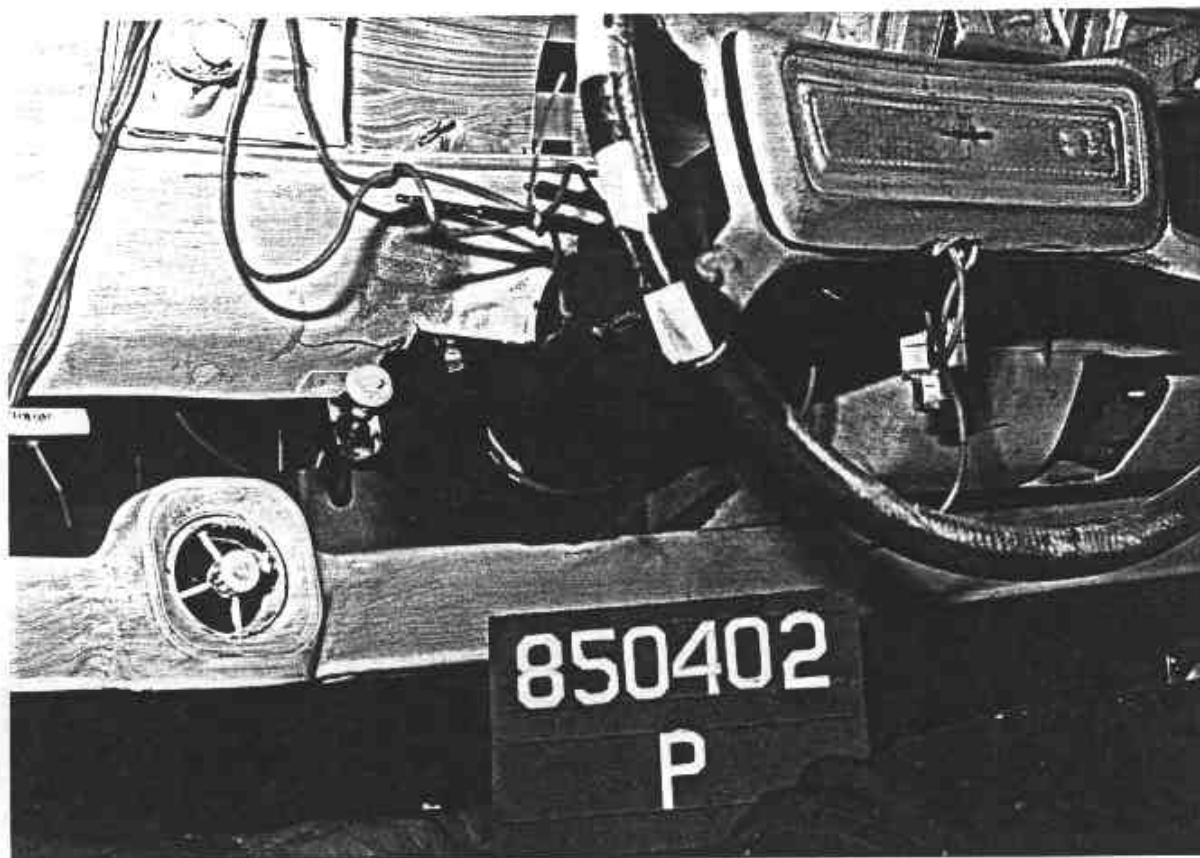


Figure A-49. POST-TEST PARTNER VEHICLE INTERIOR DAMAGE - VIEW 1



Figure A-50. POST-TEST PARTNER VEHICLE INTERIOR DAMAGE - VIEW 2

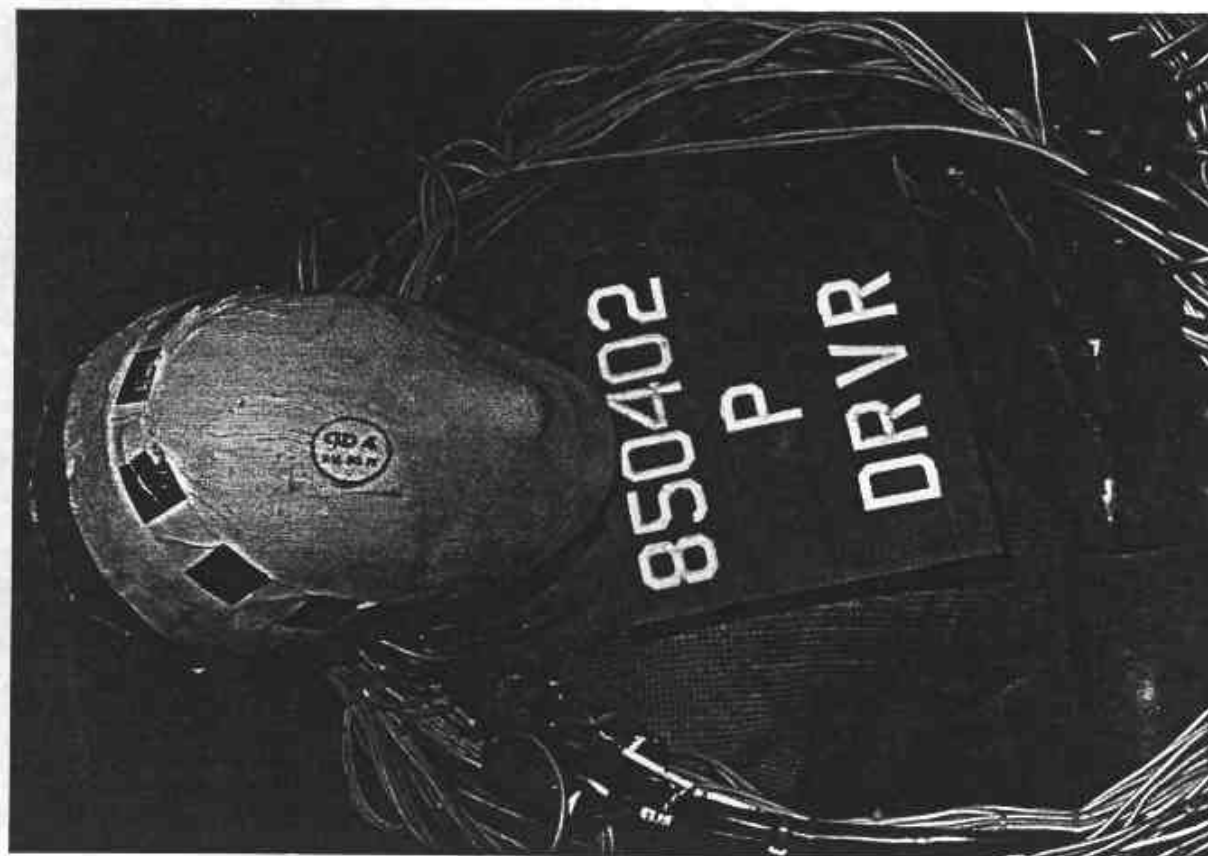


Figure A-51. POST-TEST PARTNER VEHICLE DRIVER DUMMY - VIEW 4



Figure A-52. POST-TEST PARTNER VEHICLE PASSENGER DUMMY - VIEW 4

APPENDIX B
DATA PLOT PRESENTATION

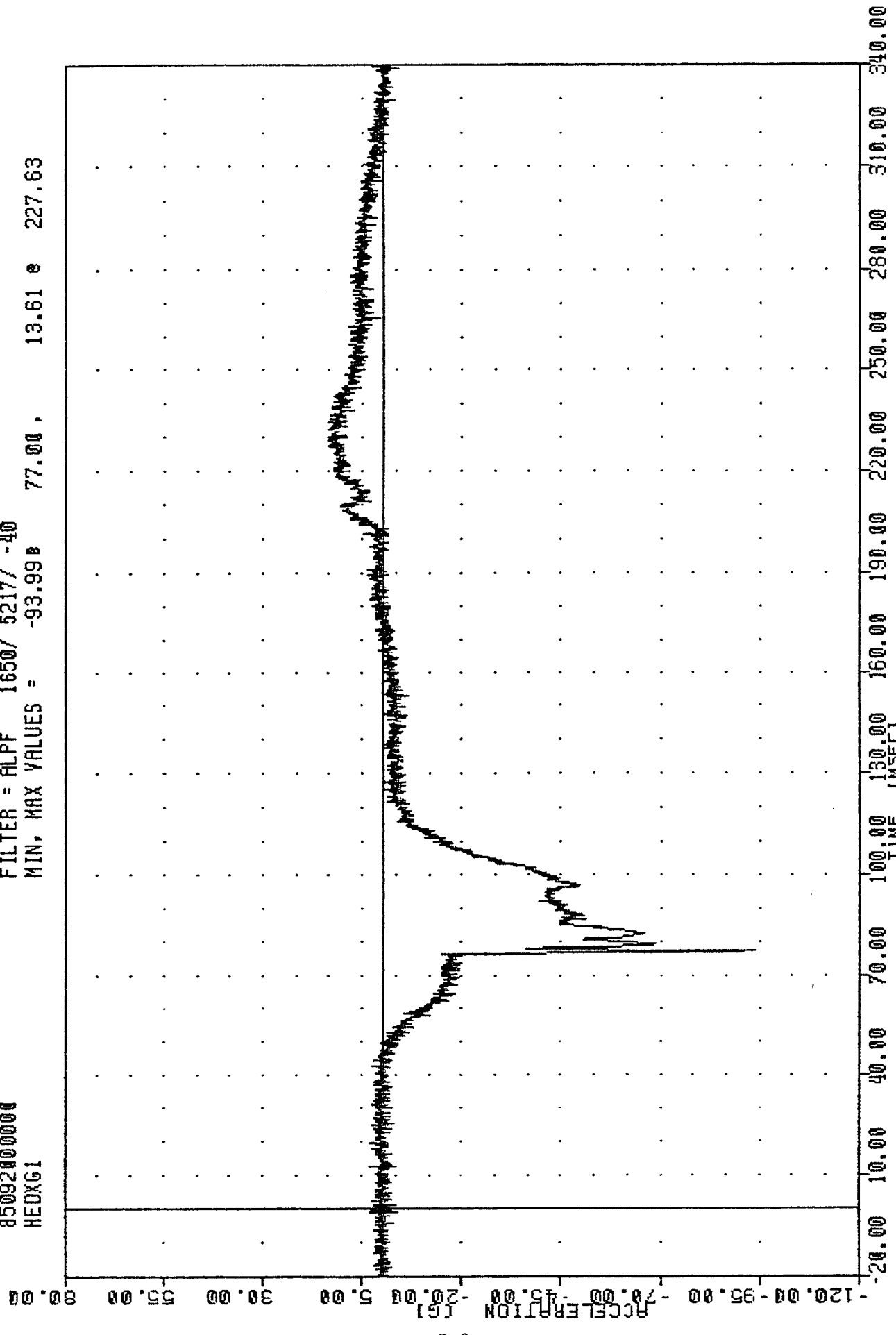
Data plots generated from the crash test data are presented on the following pages. All data are recorded on magnetic tape for inclusion in the NHTSA crash test data base system. The data was filtered according to SAE J211.

SUBJECT VEHICLE DATA PLOTS

VRT 8504023
 CAR TO CAR FRONTAL IMPACT
 850924000000
 HDXG1

PLOT DATE 24-APR-85 16:25:28

FILTER = ALPF 1650/ 5217/ -40
 MIN, MAX VALUES = -93.99 77.00, 13.61 227.63

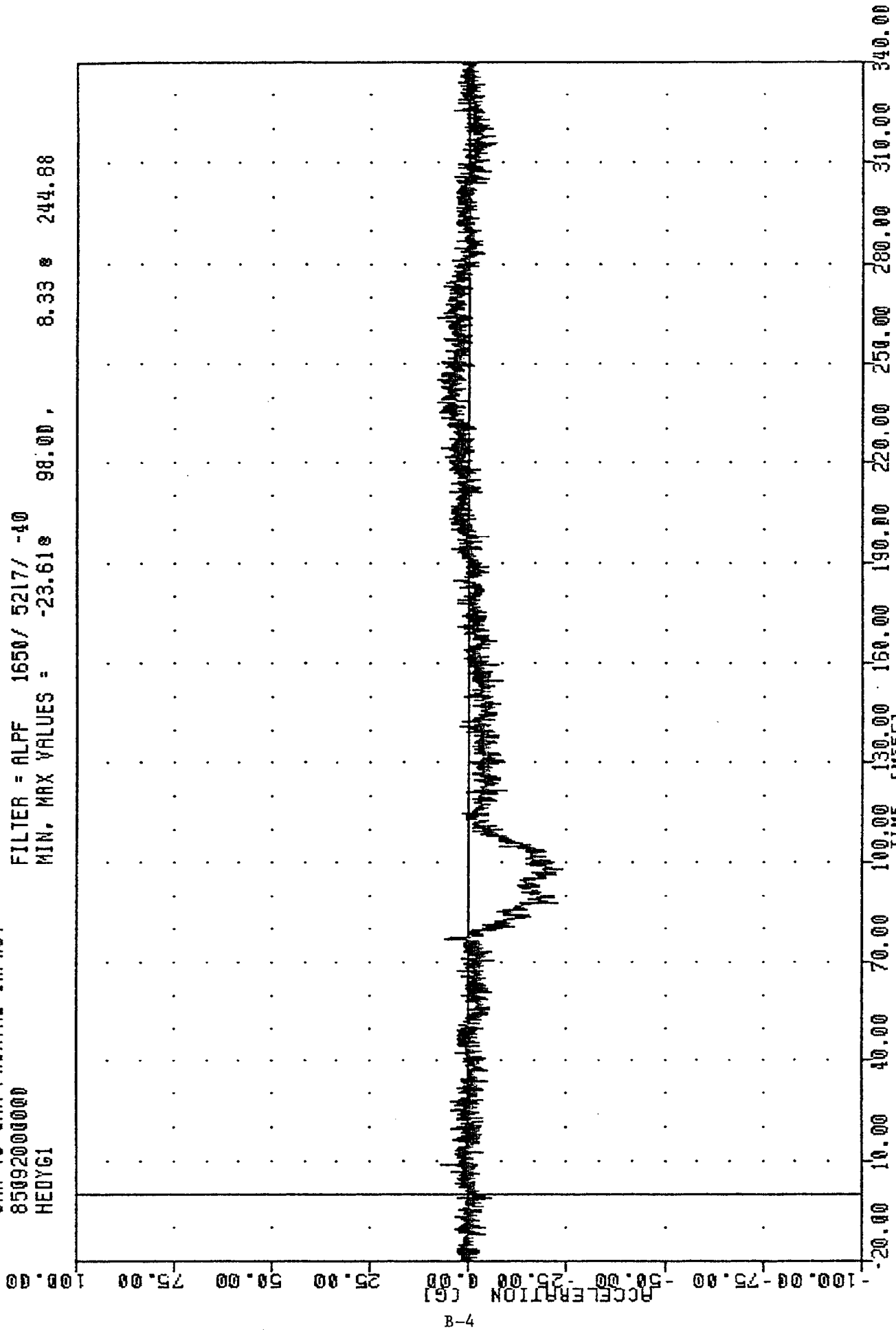


SUBJECT VEHICLE - ACCORD
 DRIVER HEAD ACCELERATION X AXIS

VR1
CAR TO CAR FRONTAL IMPACT
85092000000
HEDYG1

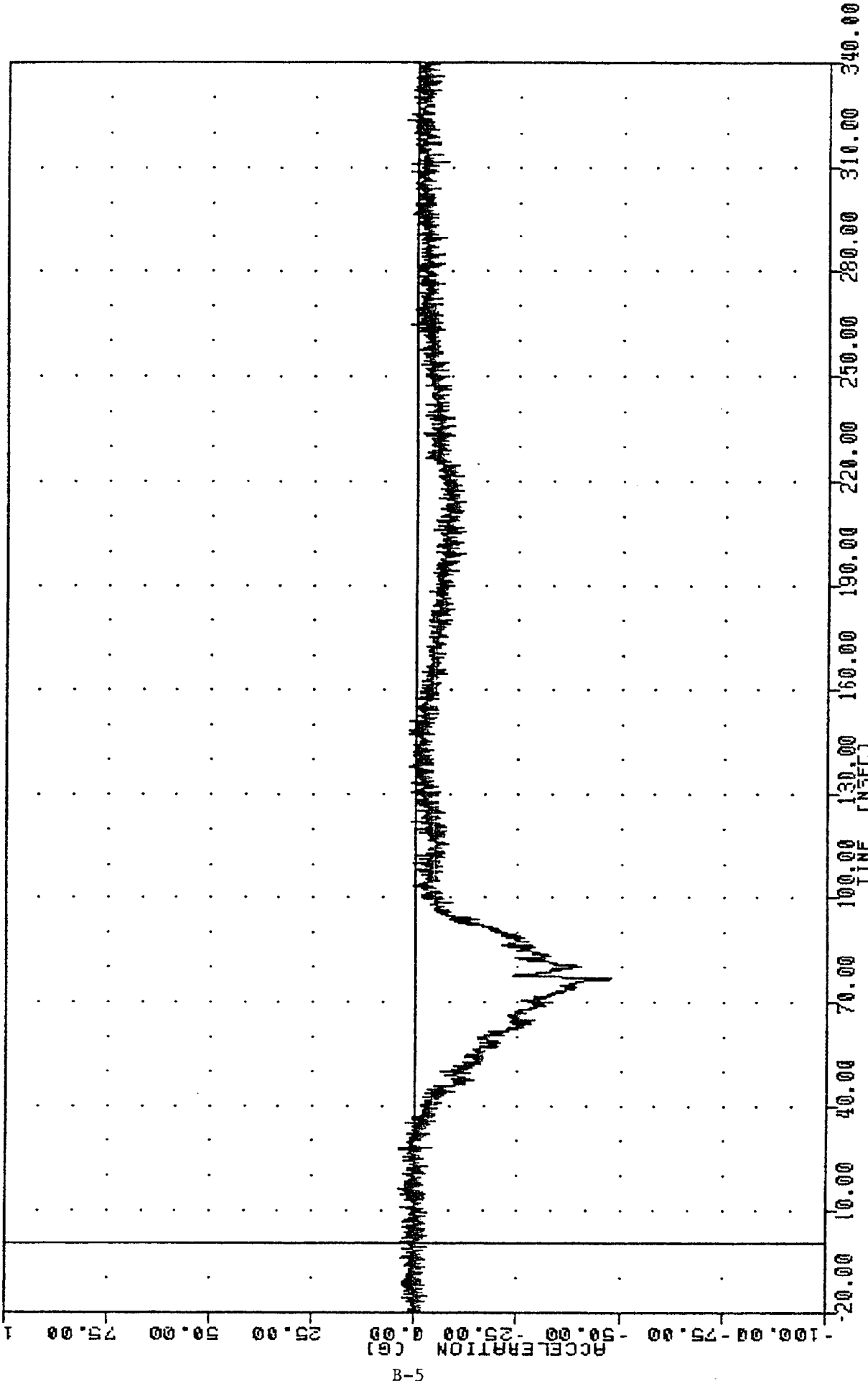
PLOT DATE 24-APR-85 16:25:28

FILTER = ALPF 1650/ 5217/ -40
MIN, MAX VALUES = -23.618 98.00, 8.33 244.88



SUBJECT VEHICLE - ACCORD
DRIVER HEAD ACCELERATION Y AXIS

VRT 850920000000
 CAR TO CAR FRONTAL IMPACT
 850920000000
 HEDZ61
 FILTER = ALPF 1650/ 5217/ -40
 MIN, MAX VALUES = -47.78 76.75, 3.75 15.00
 PLOT DATE 24-APR-85 16:25:28



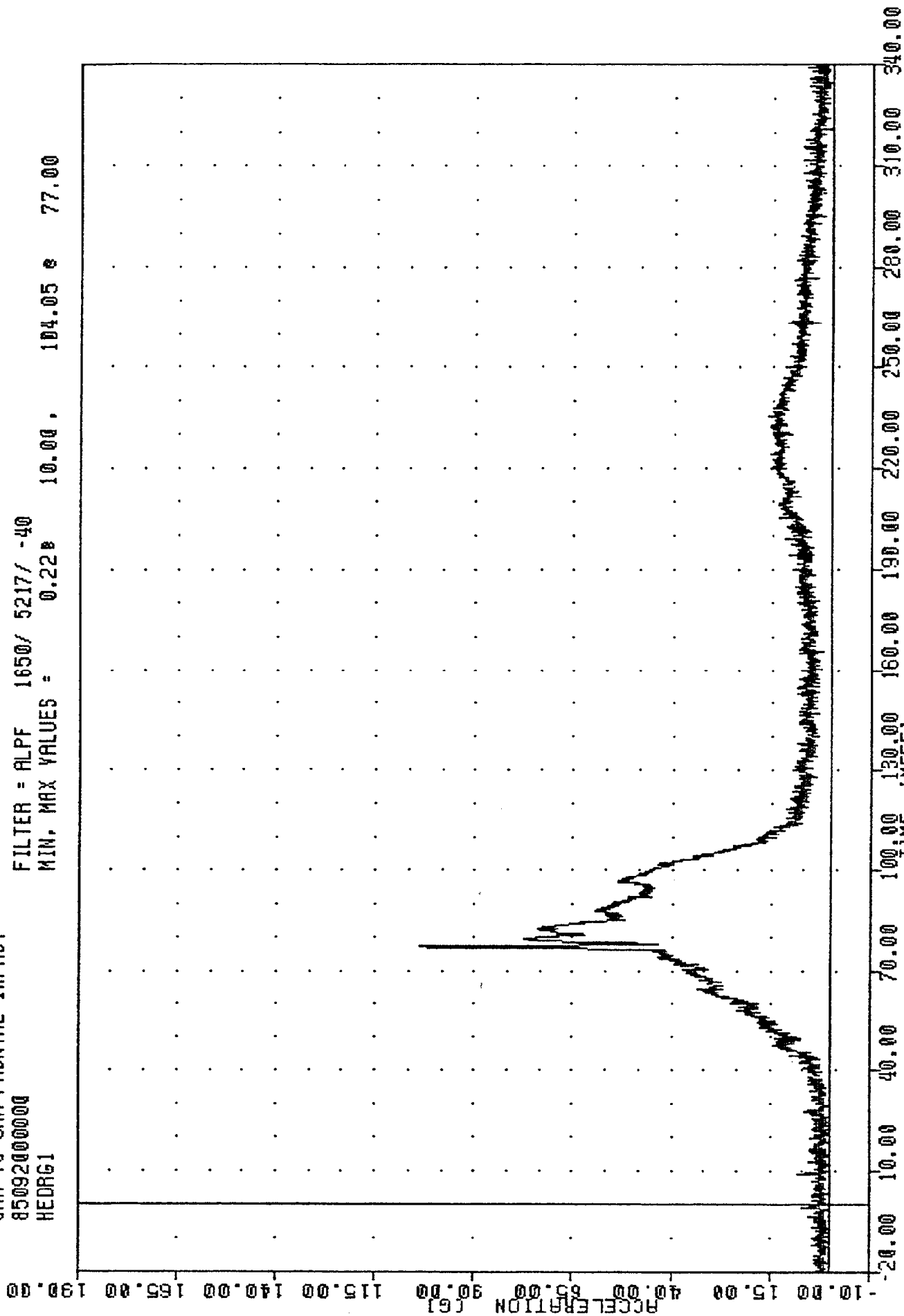
SUBJECT VEHICLE - ACCORD
 DRIVER HEAD ACCELERATION Z AXIS

VRI
 CAR TO CAR FRONTAL IMPACT
 850920000000
 HEDRG1

PLOT DATE 24-APR-85 16:25:28

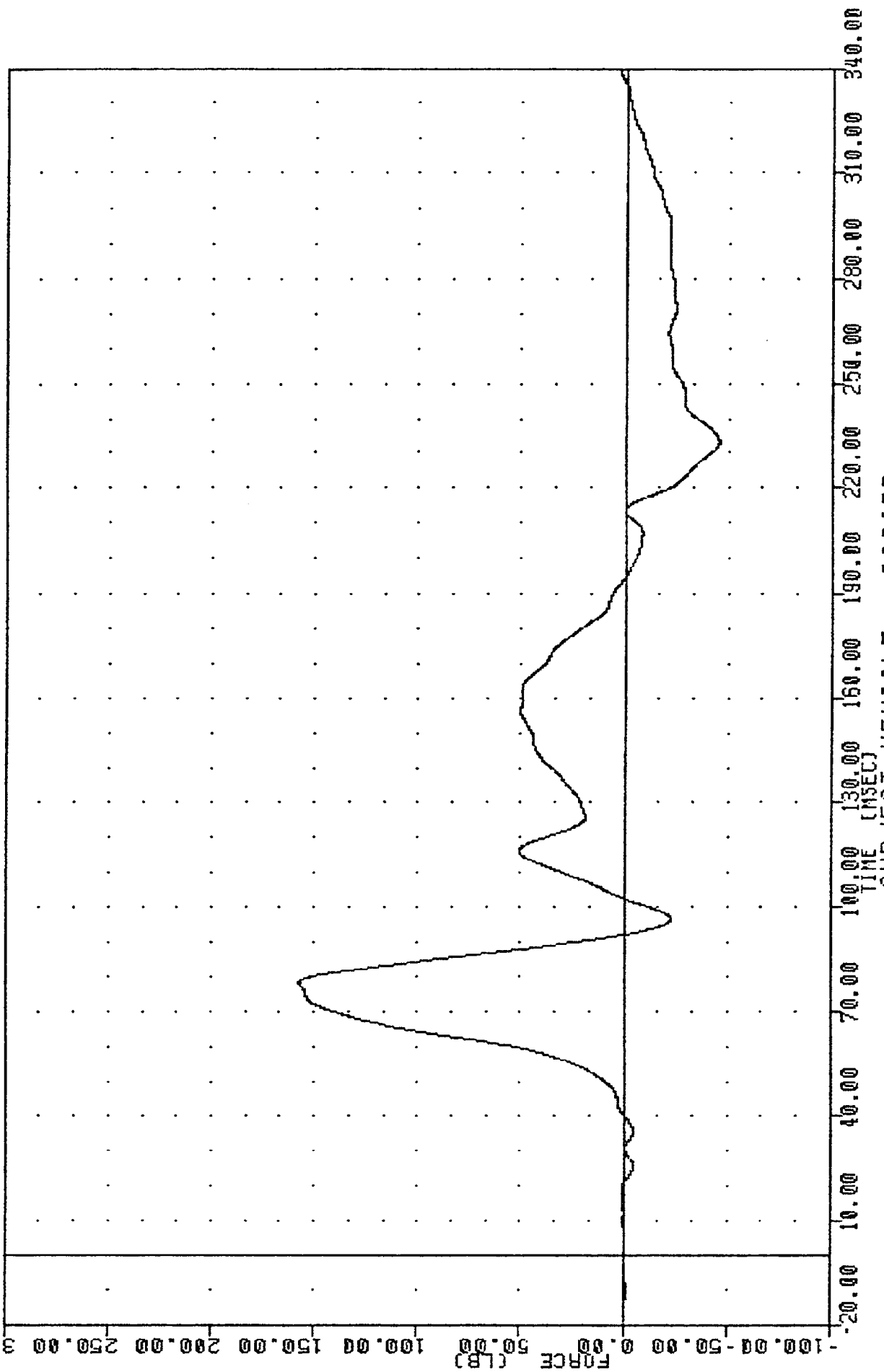
FILTER = ALPF 1650/ 5217/ -40

MIN, MAX VALUES = 0.22 10.00, 104.05 77.00



SUBJECT VEHICLE - ACCORD
 DRIVER HEAD RESULTANT

VRT 8504025, 8504025 PLOT DATE 24-APR-85 16:25:28
 CAR TO CAR FRONTAL IMPACT
 850920000000
 NEKXF1
 FILTER = 8LPF 100/ 316/ -40
 MIN, MAX VALUES = -45.69e 233.00, 157.07 e 78.13



SUBJECT VEHICLE - ACCORD
 DRIVER NECK FORCE X AXIS (SHEAR)

VRT 8504025
 CAR TO CAR FRONTAL IMPACT
 85092000000
 NEKZF1

PLOT DATE 24-APR-85 16:25:28

FILTER = BLPF 100/ 316/ -40

MIN, MAX VALUES = -7.28 19.75 476.63 87.13

500.00

425.00

350.00

275.00

200.00

125.00

50.00

25.00

0

-25.00

-50.00

-75.00

-100.00

-125.00

-150.00

-175.00

-200.00

-225.00

-250.00

-275.00

-300.00

-325.00

-350.00

-375.00

-400.00

-425.00

-450.00

-475.00

-500.00

-525.00

-550.00

-575.00

-600.00

-625.00

-650.00

-675.00

-700.00

-725.00

-750.00

-775.00

-800.00

-825.00

-850.00

-875.00

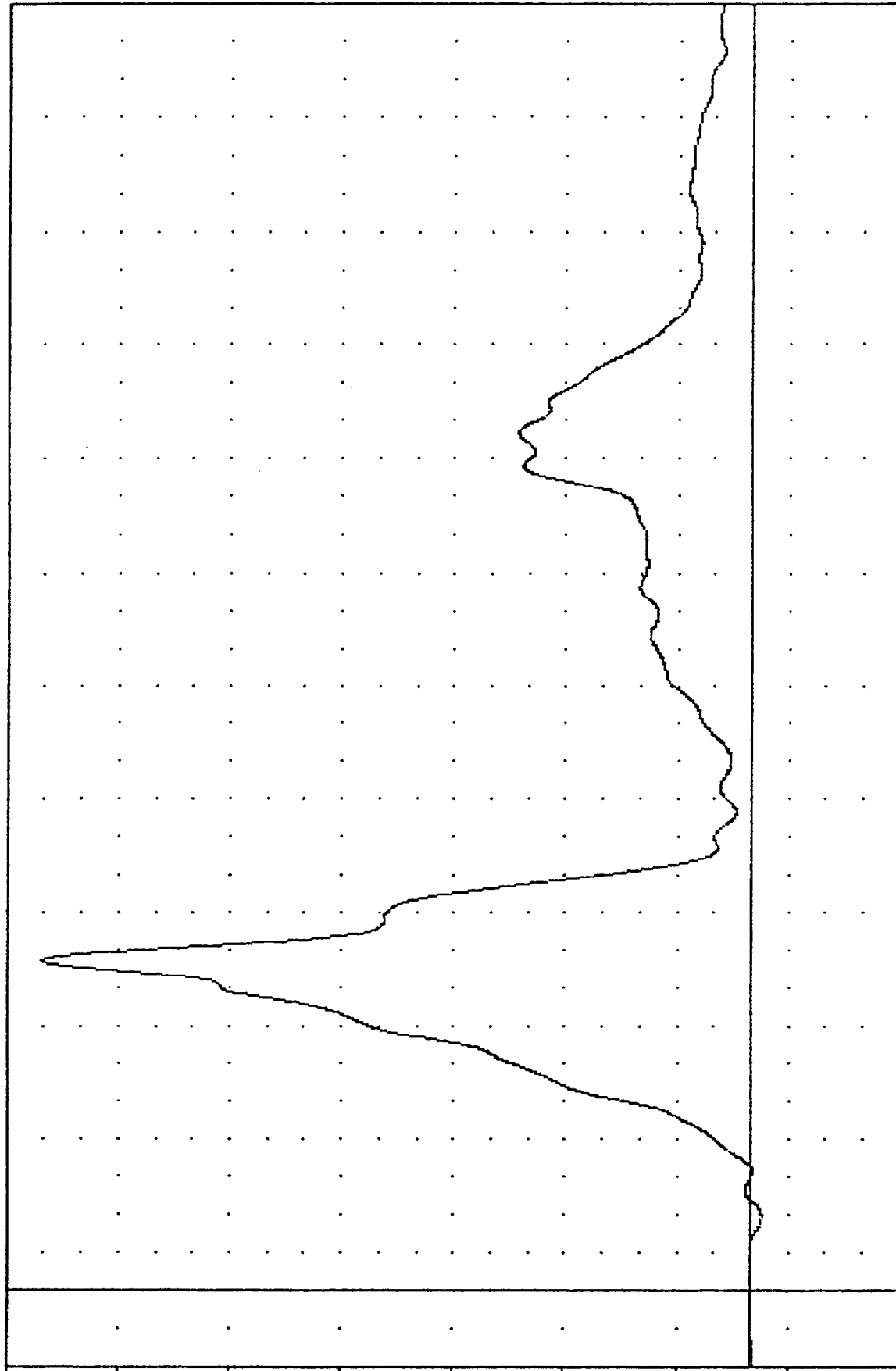
-900.00

-925.00

-950.00

-975.00

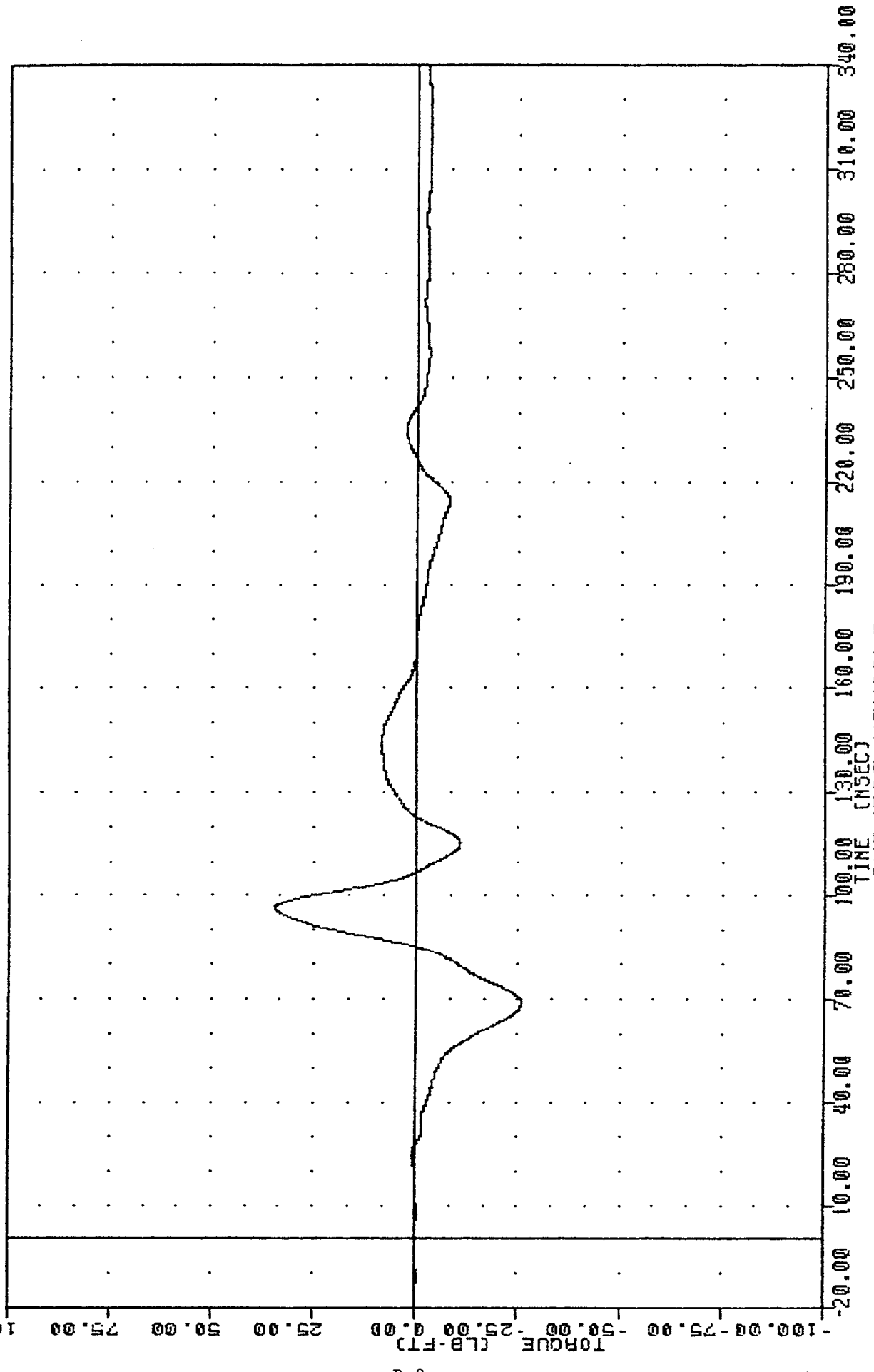
-1000.00



-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)

SUBJECT VEHICLE - ACCORD
 DRIVER NECK FORCE Z AXIS LBS (AXIAL)

VRT 85W4025, 85W4025
 CAR TO CAR FRONTAL IMPACT
 850920000000
 NEKYH1
 FILTER = BLPF 100/ 316/ -40
 MIN, MAX VALUES = -25.800 69.00 34.42 96.50
 PLOT DATE 24-HPH-85 16:25:28

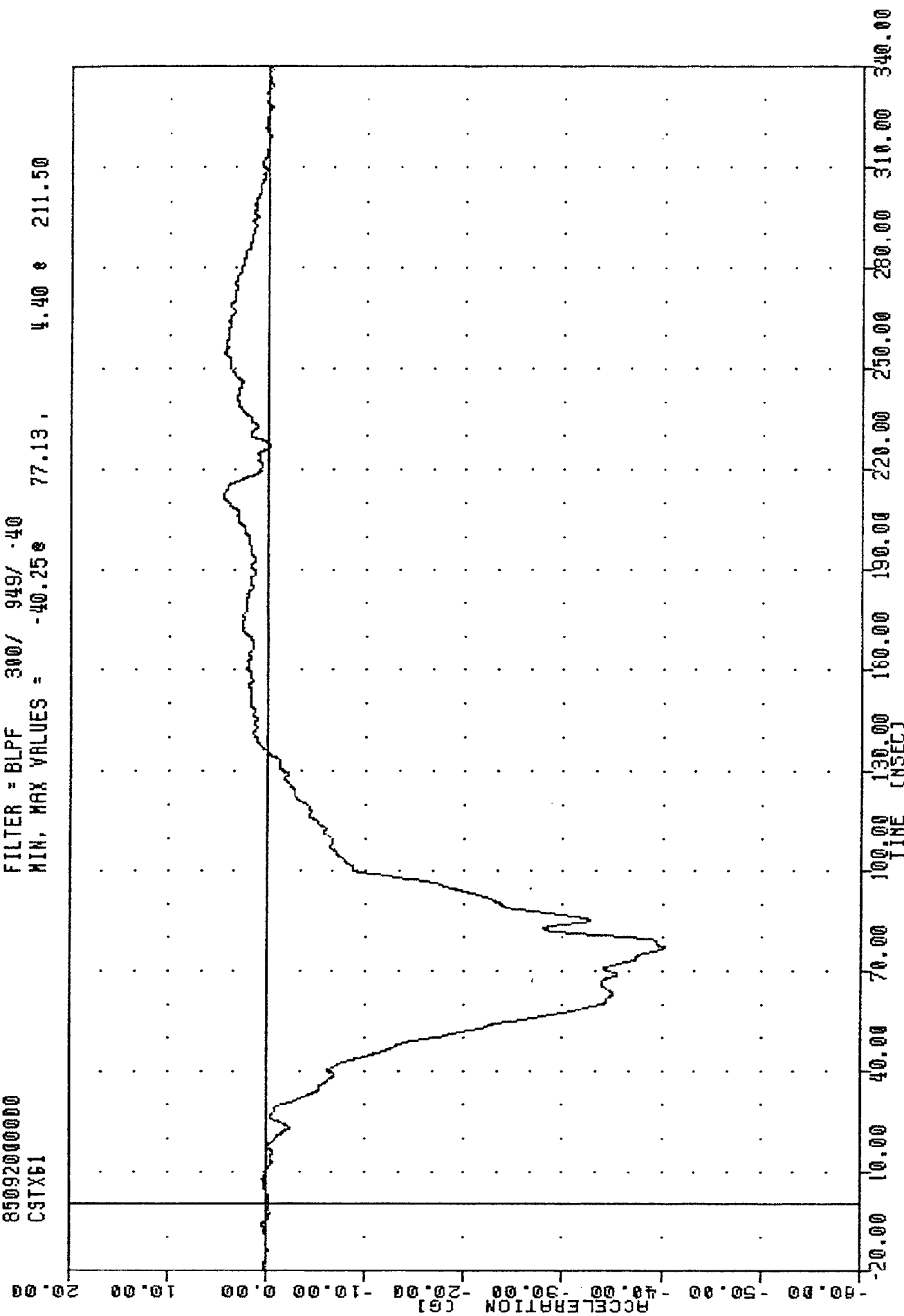


SUBJECT VEHICLE - ACCORD
 DRIVER NECK MOMENT Y AXIS FT-LBS

VAT 8509025
 CAR TO CAR FRONTAL IMPACT
 85092000000
 CSTX61

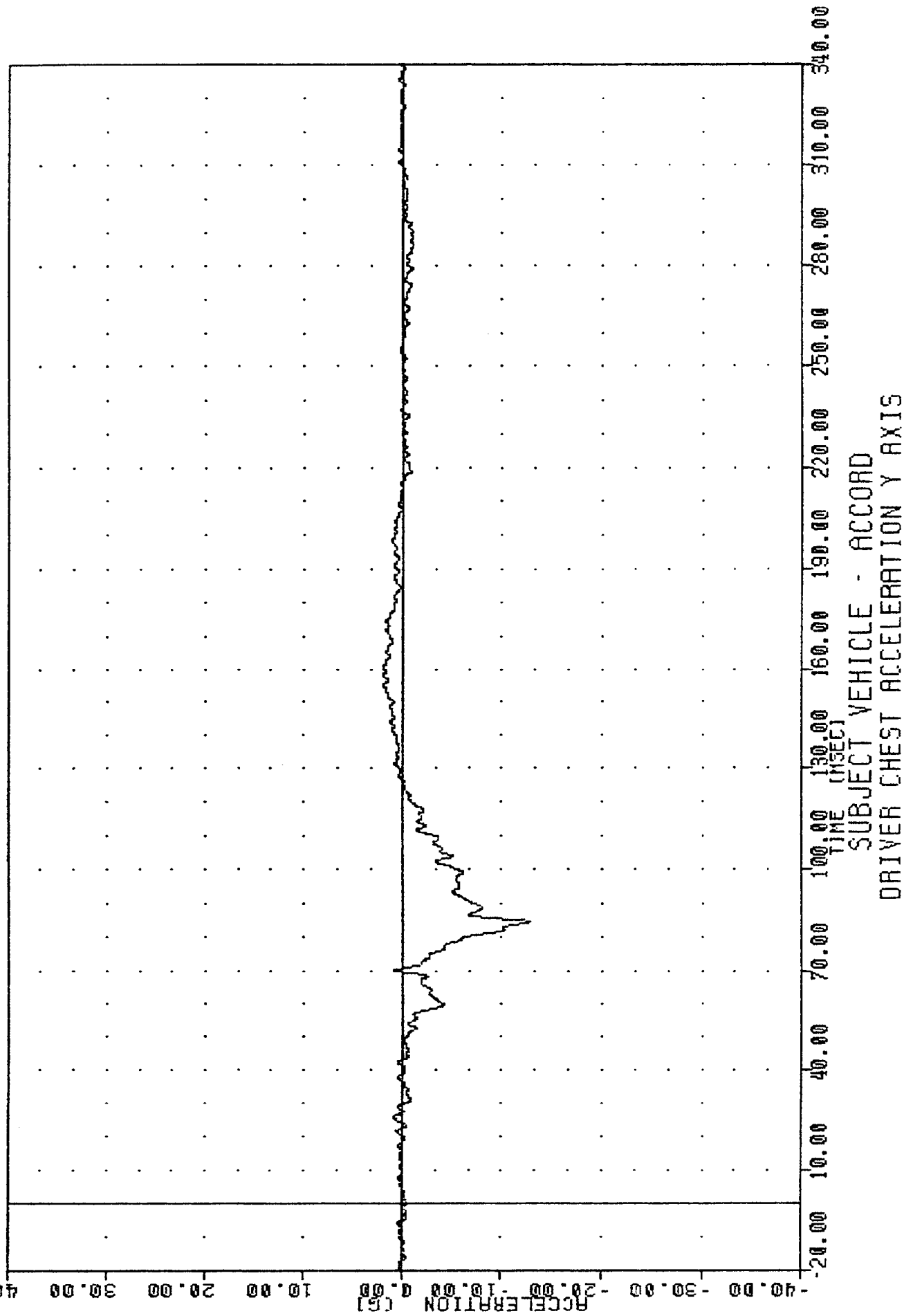
PLOT DATE 24-APR-85 16:25:28

FILTER = BLPF 300/ 949/ -40
 MIN, MAX VALUES = -40.25 77.13, 4.40 211.50



SUBJECT VEHICLE - ACCORD
 DRIVER CHEST ACCELERATION X AXIS

VRT 8504025
 CAR TO CAR FRONTAL IMPACT
 85092000000
 CSTY61
 PLOT DATE 24-APR-85 16:25:28
 FILTER = BLPF 300/ 949/ -40
 MIN. MAX VALUES = -12.80 84.50 2.03 158.00

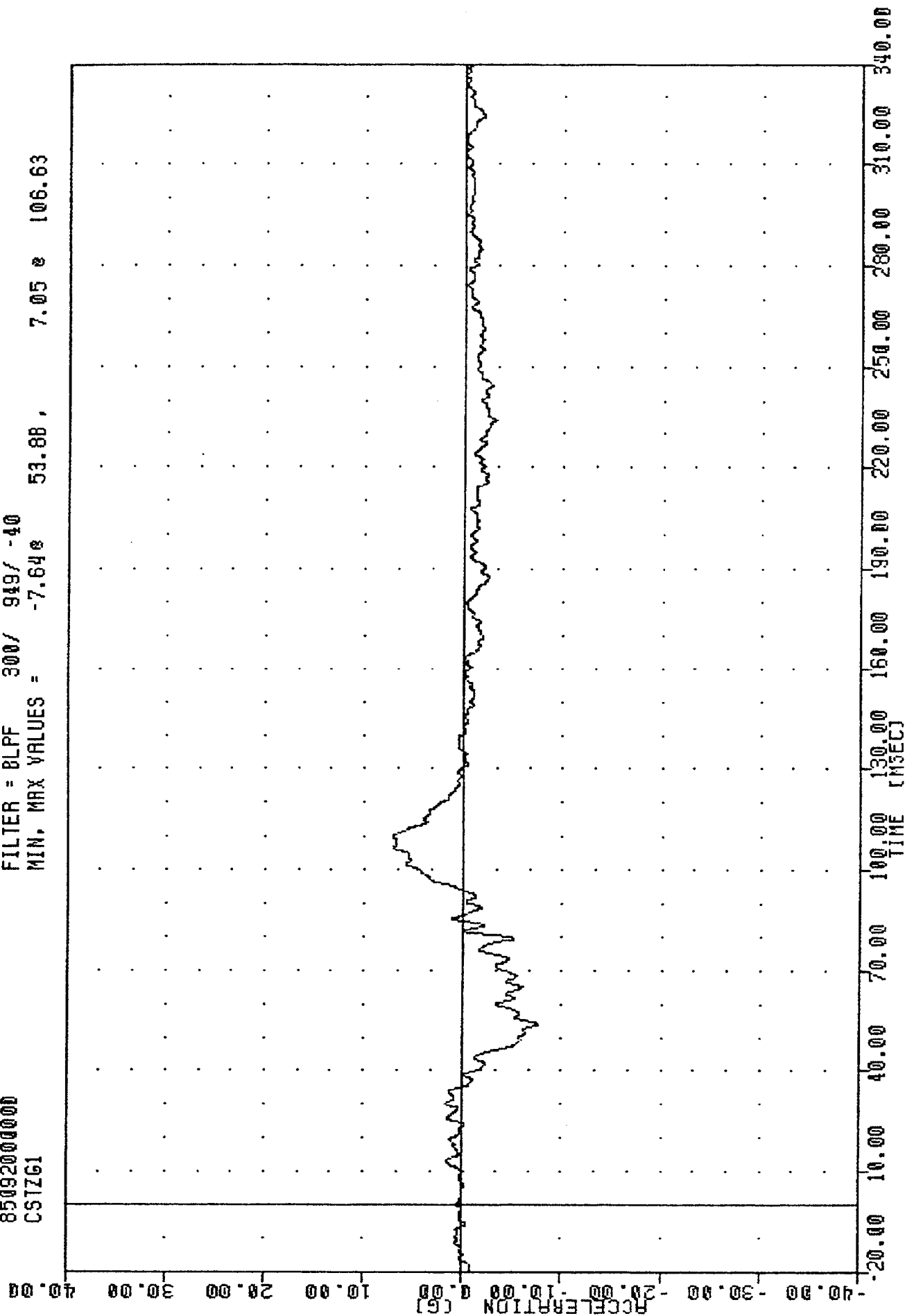


VR1 8504025
 CAR TO CAR FRONTAL IMPACT
 85092000000
 CS1ZG1

PLOT DATE 24-APR-85 16:25:28

FILTER = BLPF 300/ 949/ -40

MIN. MAX VALUES = -7.64e 53.88, 7.05 e 106.63



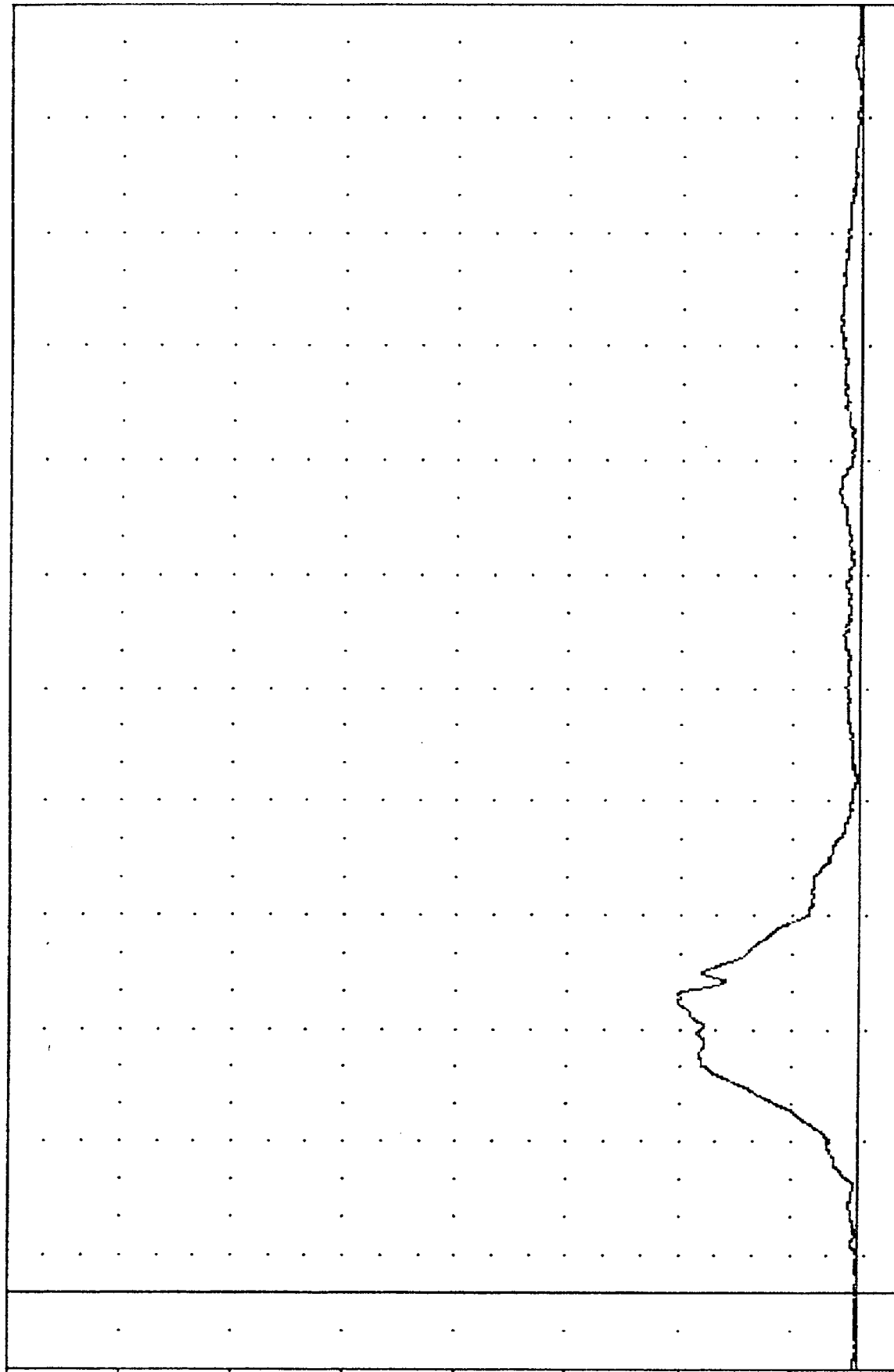
SUBJECT VEHICLE - ACCORD
 DRIVER CHEST ACCELERATION Z AXIS

VRI
 CAR TO CAR FRONTAL IMPACT
 850920000000
 CSTRG1

PLOT DATE 24-APR-85 16:25:28

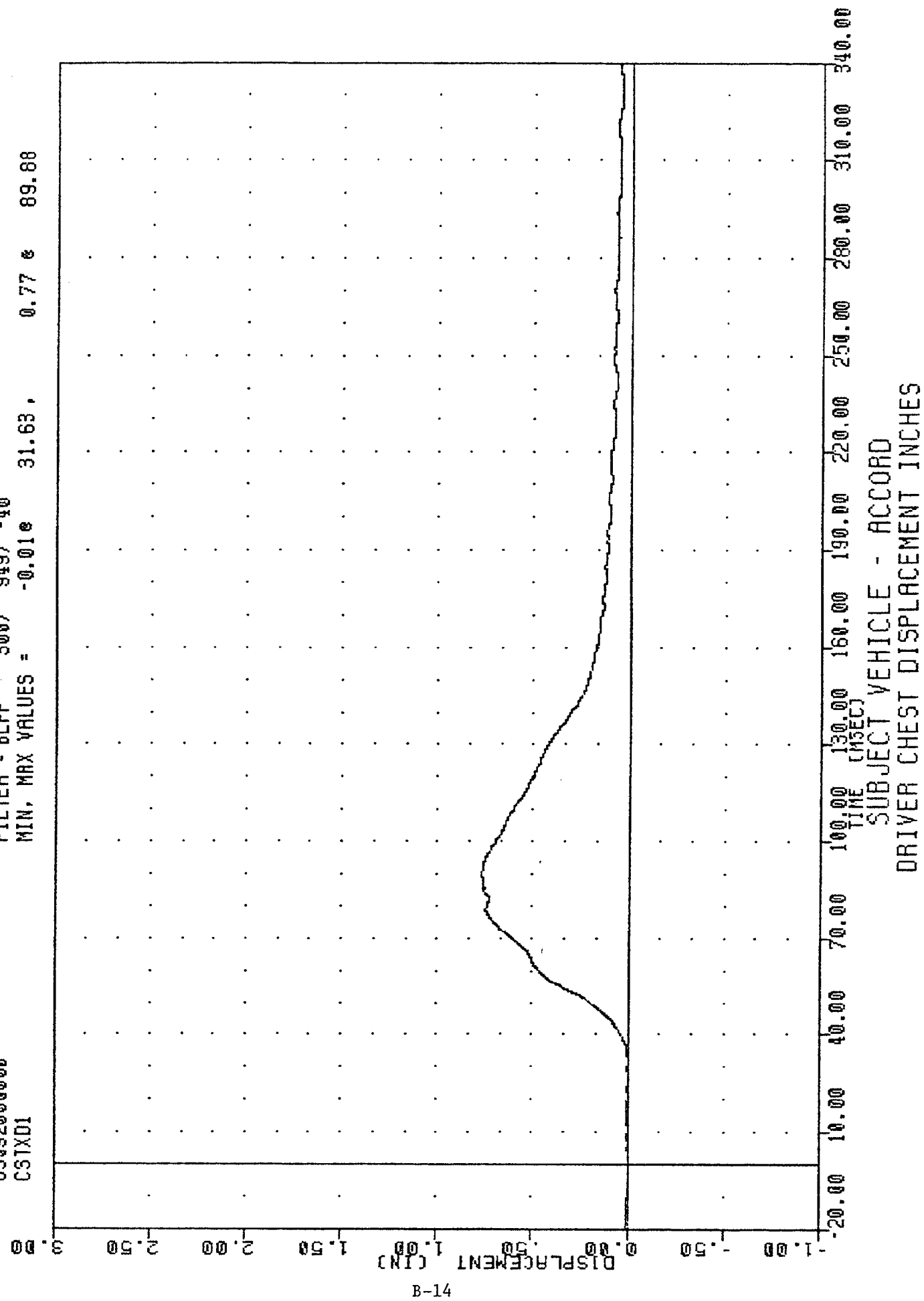
FILTER = BLPF 300/ 949/ -40
 MIN. MAX VALUES = 0.048 -14.75, 40.53 77.13

ACCELERATION (G)
 -10.00
 -15.00
 -20.00
 40.00
 45.00
 50.00
 55.00
 60.00
 65.00
 70.00
 75.00
 80.00
 85.00
 90.00
 95.00
 100.00
 105.00
 110.00
 115.00
 120.00
 125.00
 130.00
 135.00
 140.00
 145.00
 150.00
 155.00
 160.00
 165.00
 170.00
 175.00
 180.00
 185.00
 190.00



SUBJECT VEHICLE - ACCORD
 DRIVER CHEST RESULTANT

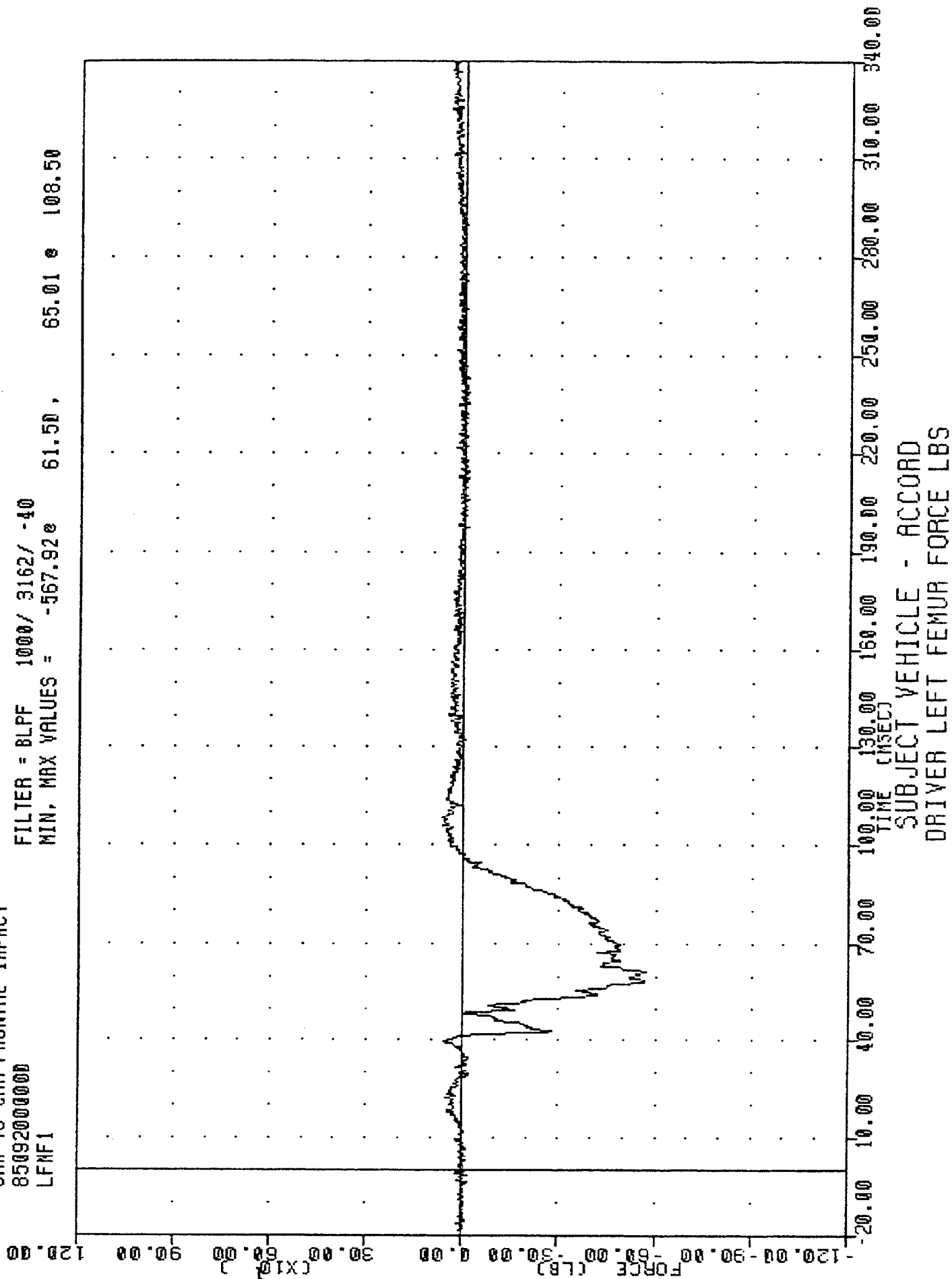
VRP 0001025
 CAR TO CAR FRONTAL IMPACT
 850920000000
 CSIXD1
 PLOT DATE 24-APR-85 16:27:57
 FILTER = BLPF 300/ 949/ -40
 MIN, MAX VALUES = -0.01e 31.63, 0.77 e 89.88



VR1
CAR TO CAR FRONTAL IMPACT
85092000000
LFNF1

PLOT DATE 24-APR-85 16:25:28

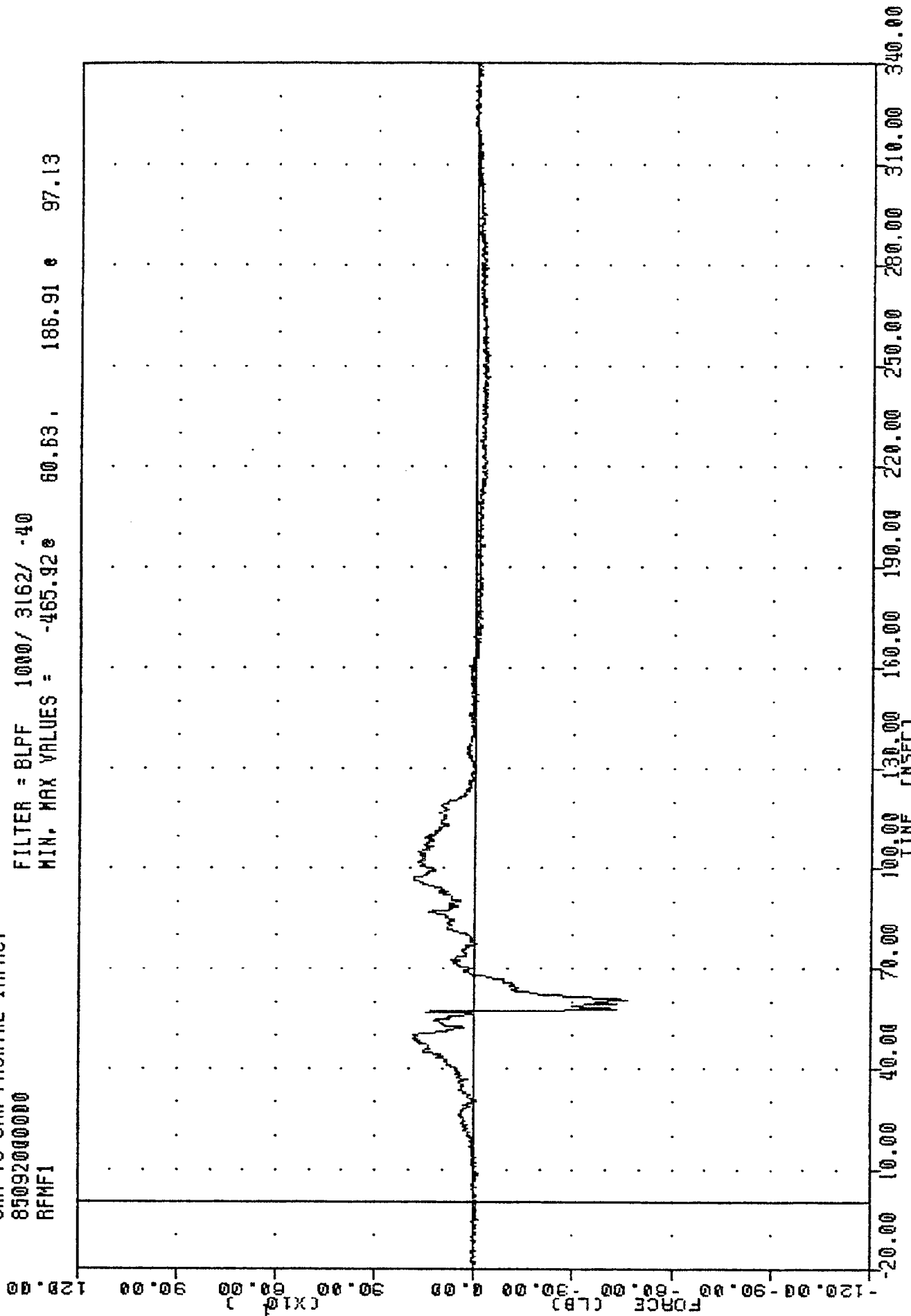
FILTER = BLPF 1000/ 3162/ -40
MIN, MAX VALUES = -567.92e 61.50, 65.01 e 108.50



VRT
CAR TO CAR FRONTAL IMPACT
850920000000
RFMF1

PLOT DATE 24-APR-85 16:25:28

FILTER = BLPF 1000/ 3162/ -40
MIN, MAX VALUES = -465.92 80.63, 186.91 97.13



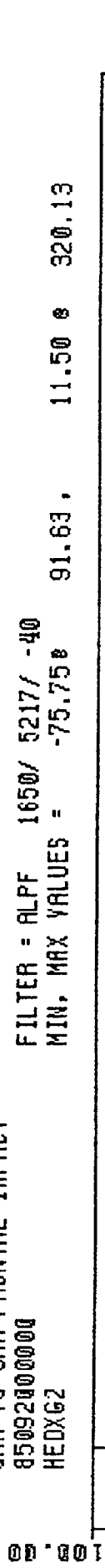
SUBJECT VEHICLE - ACCORD
DRIVER RIGHT FEMUR FORCE LBS

VR1
CAR TO CAR FRONTAL IMPACT
85092000000
HEDXG2

PLOT DATE 24-APR-85 16:25:28

FILTER = ALPF 1650/ 5217/ -40

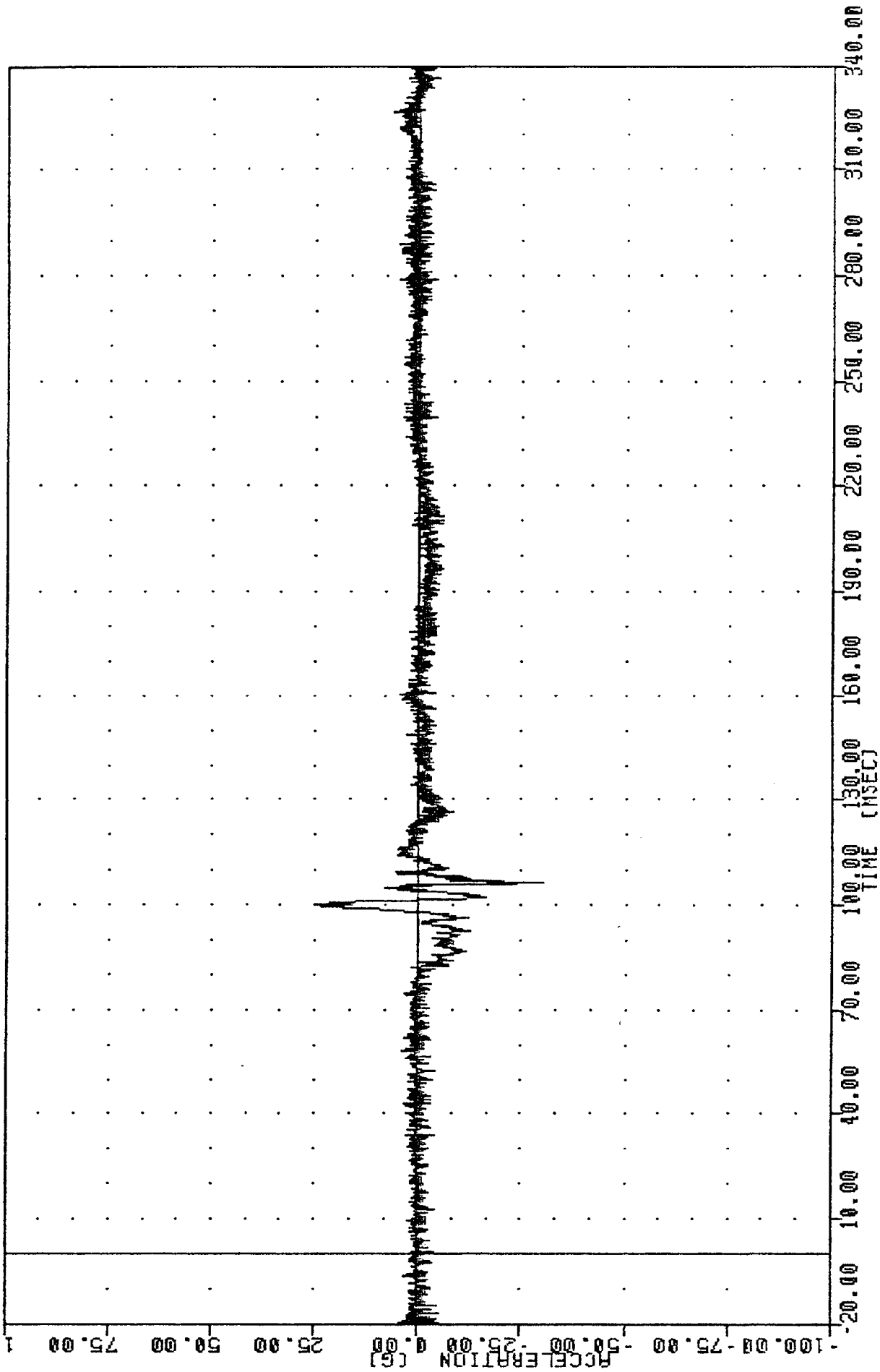
MIN. MAX VALUES = -75.75e 91.63, 11.50 e 320.13



VRT 8504025
 CAR TO CAR FRONTAL IMPACT
 85092000000
 HEDYG2

PLOT DATE 24-APR-85 16:25:28

FILTER = ALPF 1650/ 5217/ -40
 MIN, MAX VALUES = -29.97 106.25, 25.02 99.88

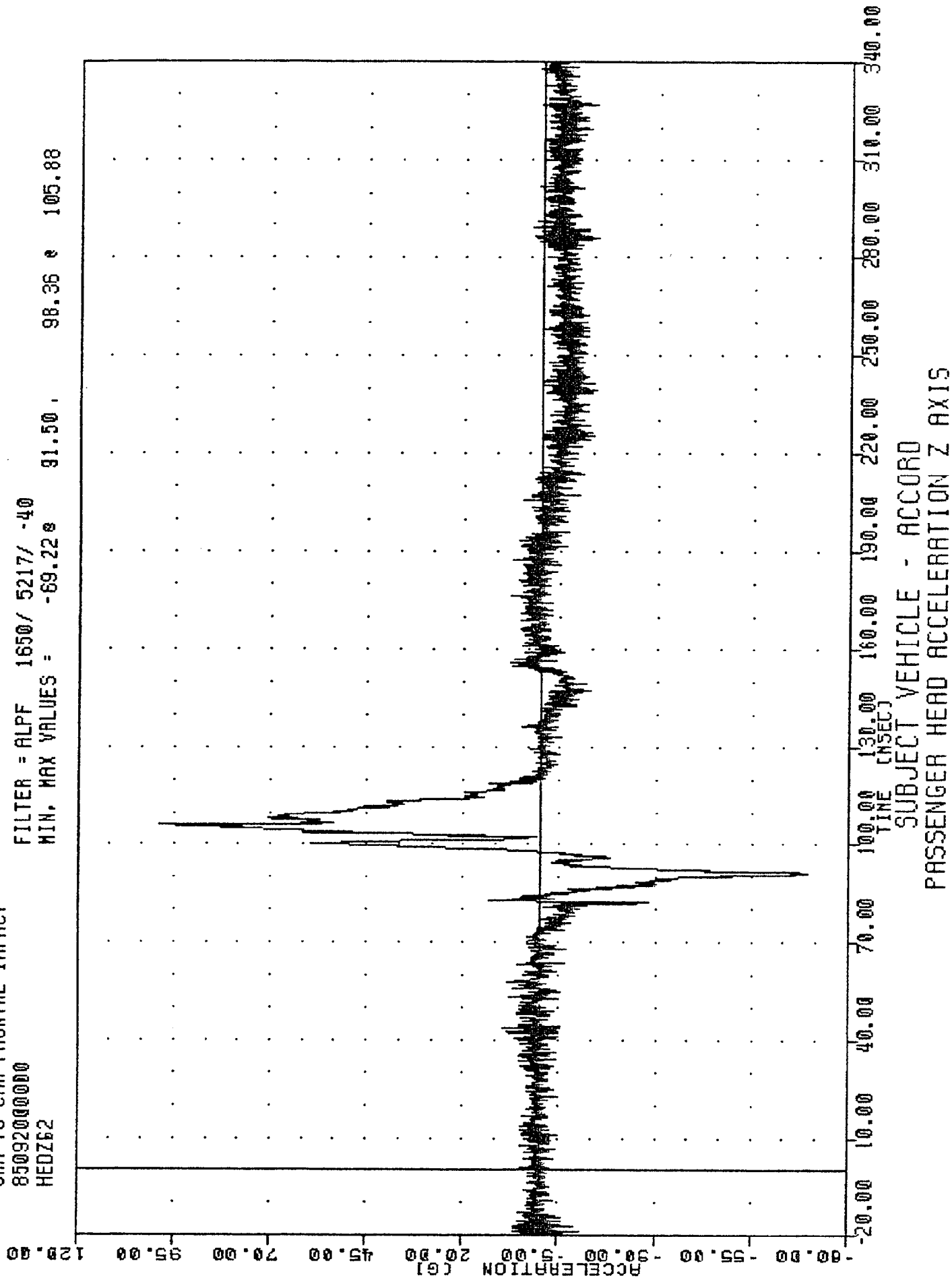


SUBJECT VEHICLE - ACCORD
 PASSENGER HEAD ACCELERATION Y AXIS

VRT 850920000000
 CAR TO CAR FRONTAL IMPACT
 850920000000
 HEDZ62

PL01 DATE 24-APR-85 16:25:28

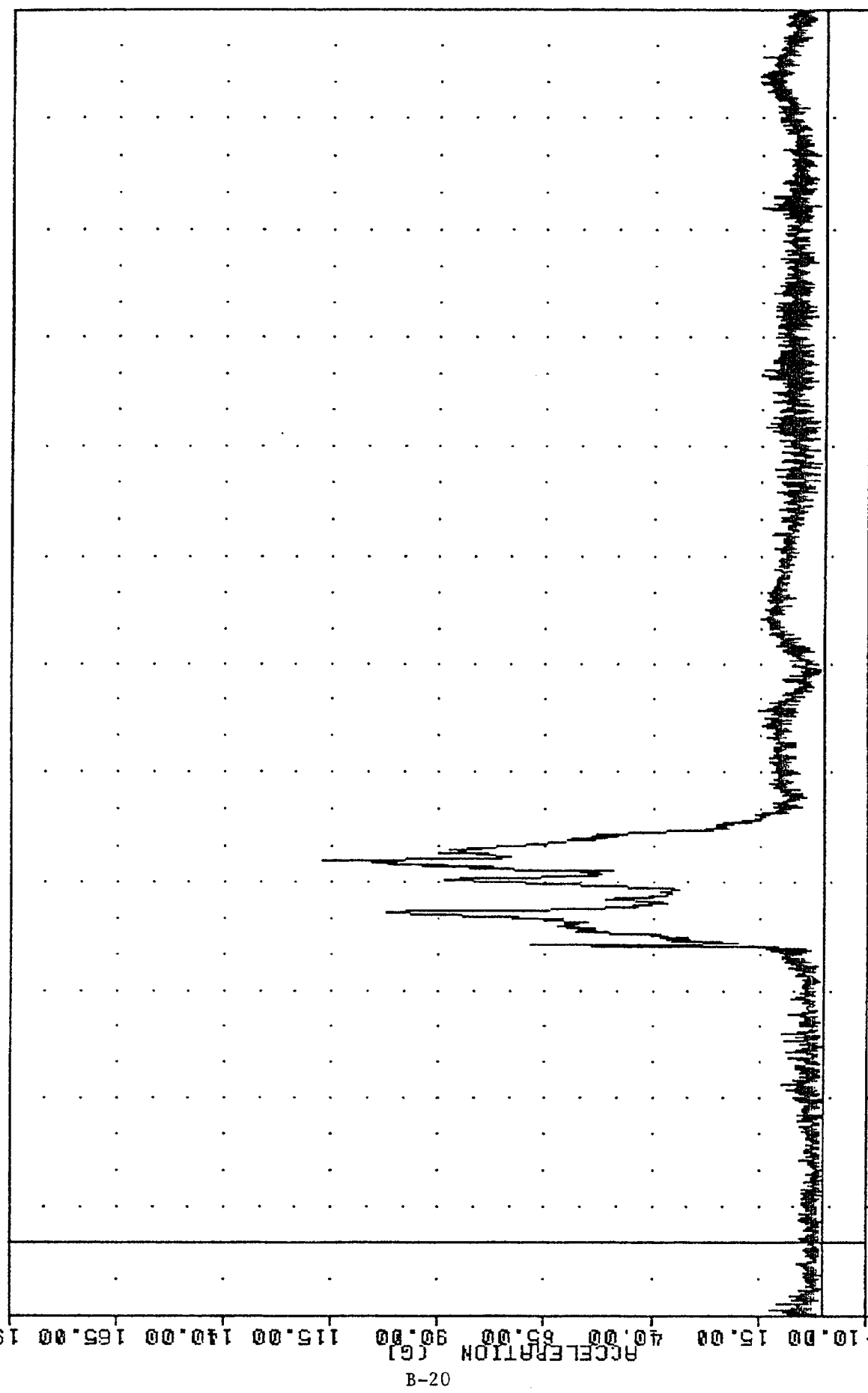
FILTER = ALPF 1650/ 5217/ -40
 MIN, MAX VALUES = -69.22 91.50 98.36 105.88



VRT 8504025
 CAR TO CAR FRONTAL IMPACT
 85092000000
 HEADG2

PLOT DATE 24-APR-85 16:25:28

FILTER = ALPF 1650/ 5217/ -40
 MIN. MAX VALUES = 0.48 117.21 105.88

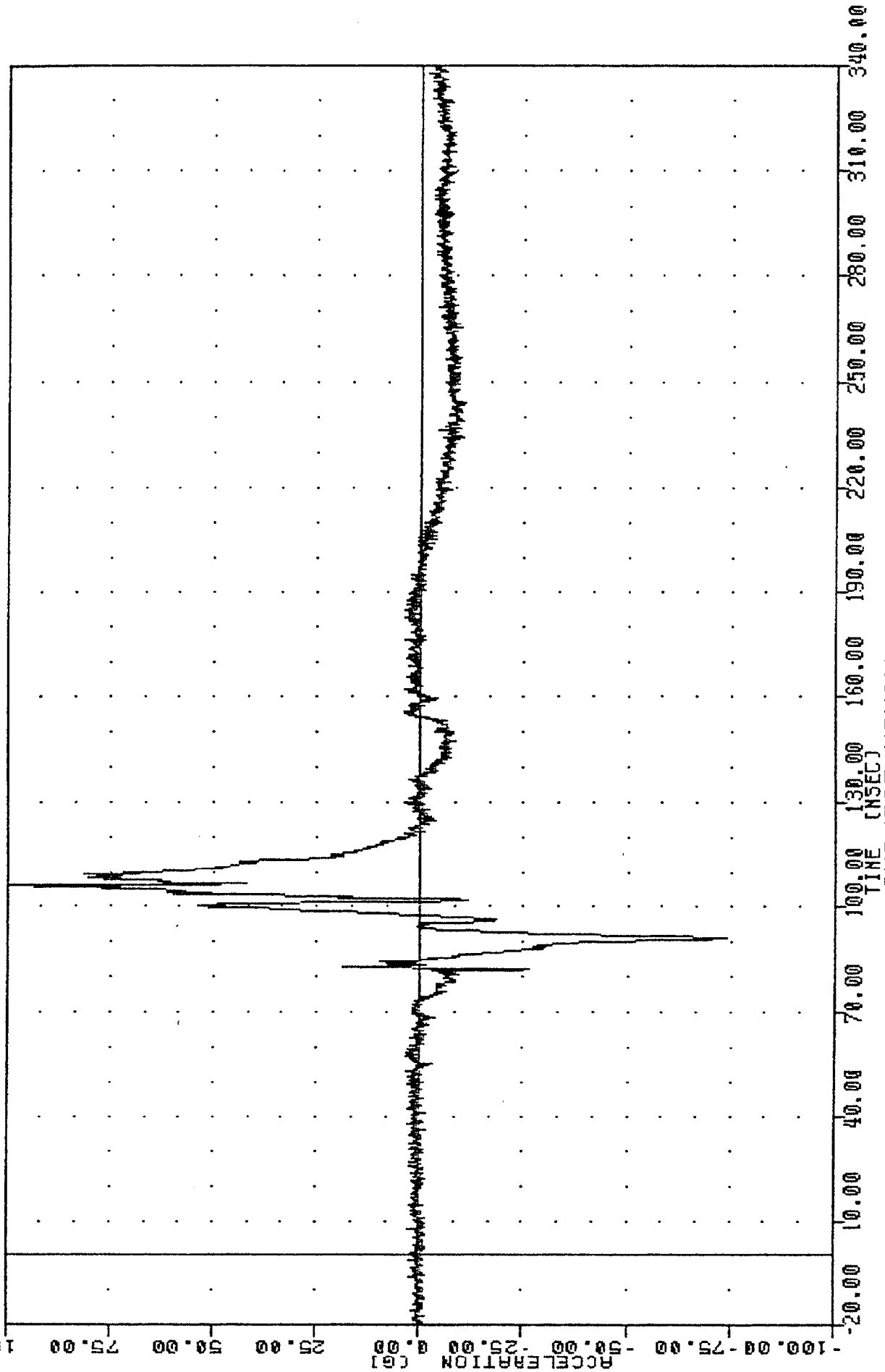


SUBJECT VEHICLE - ACCORD
 PASSENGER HEAD RESULTANT

VH1 8500023
 CAR TO CAR FRONTAL IMPACT
 85092000000
 HD1X62

24-85 16 38

FILTER = ALPF 1650/ 5217/ -40
 MIN. MAX VALUES = -74.30 91.25, 99.79 & 105.88

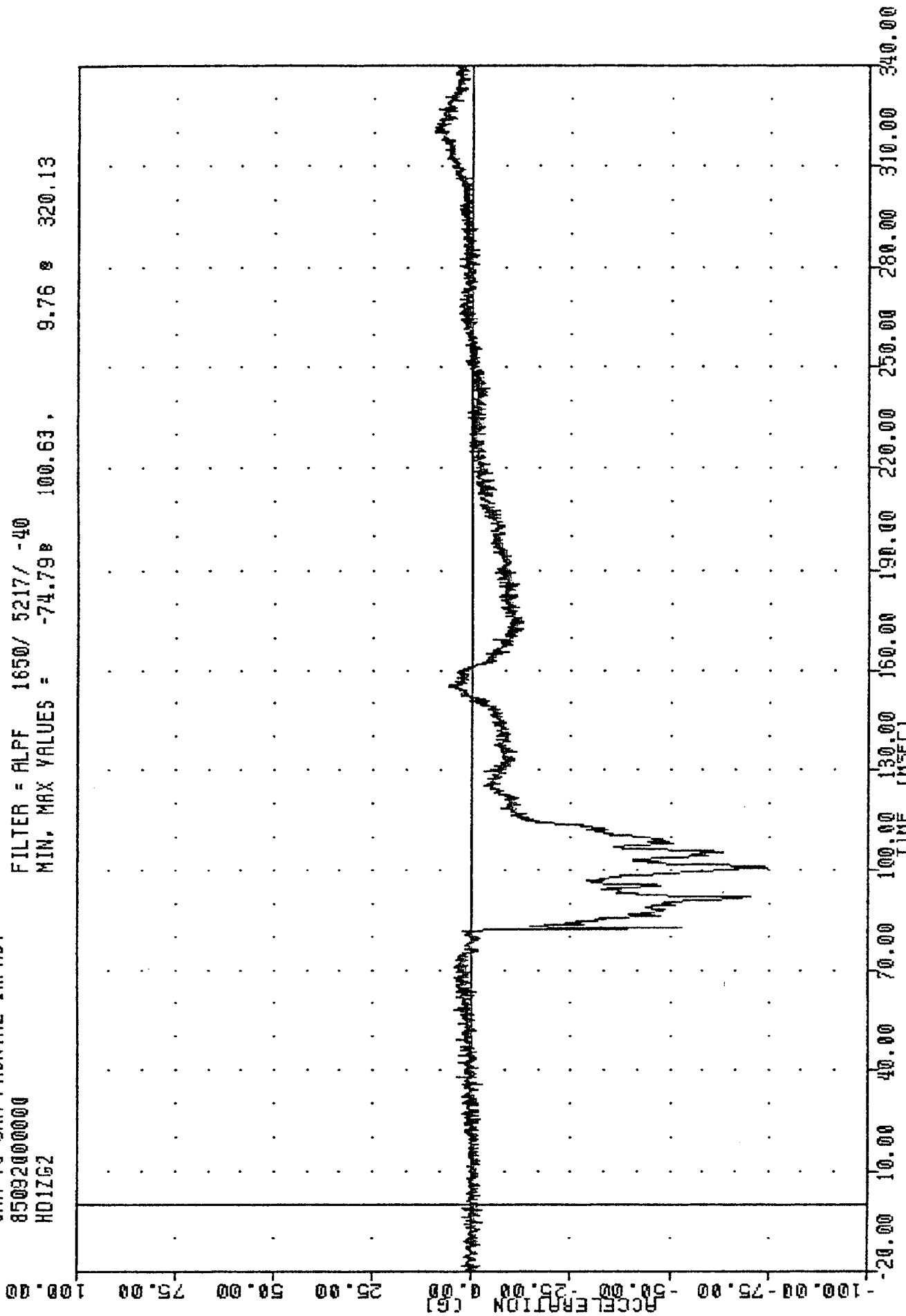


SUBJECT VEHICLE - ACCORD
 PASSENGER HEAD ACCELERATION X AXIS (POSITION 1)

YRT 8304023
CAR TO CAR FRONTAL IMPACT
85032000000
H01ZG2

PLOT DATE 24-APR-85 16:20:38

FILTER = ALPF 1650/ 5217/ -40
MIN, MAX VALUES = -74.79 100.63, 9.76 320.13

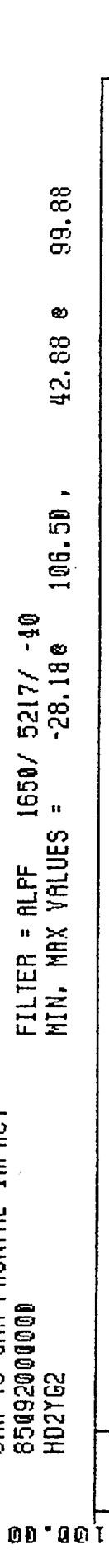


SUBJECT VEHICLE - ACCORD
PASSENGER HEAD ACCELERATION Z AXIS (POSITION 1)

VRT 8504025
CAR TO CAR FRONTAL IMPACT
85092000000
HD2YG2

PLOT DATE 24-APR-85 16:20:38

FILTER = ALPF 1650/ 5217/ -40
MIN, MAX VALUES = -28.18e 106.50, 42.88 e 99.88



TIME (msec)

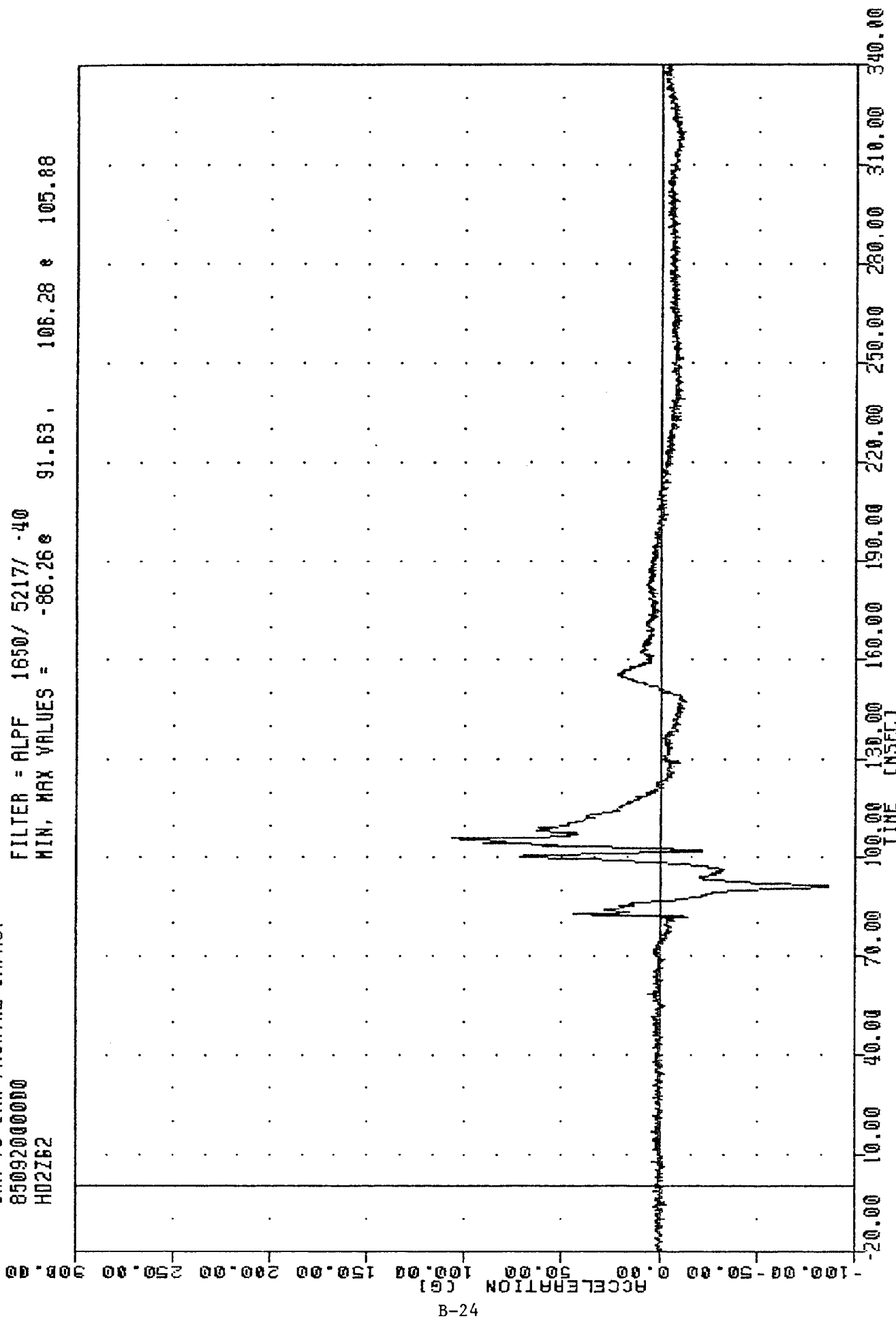
SUBJECT VEHICLE - ACCORD

PASSENGER HEAD ACCELERATION Y AXIS (POSITION 2)

VAT 8504025
 CAR TO CAR FRONTAL IMPACT
 85092000000
 HD2Z62

PLT DATE 24-APR-85 16:20:38

FILTER = ALPF 1650/ 5217/ -40
 MIN, MAX VALUES = -86.26 91.63, 106.28 & 105.88

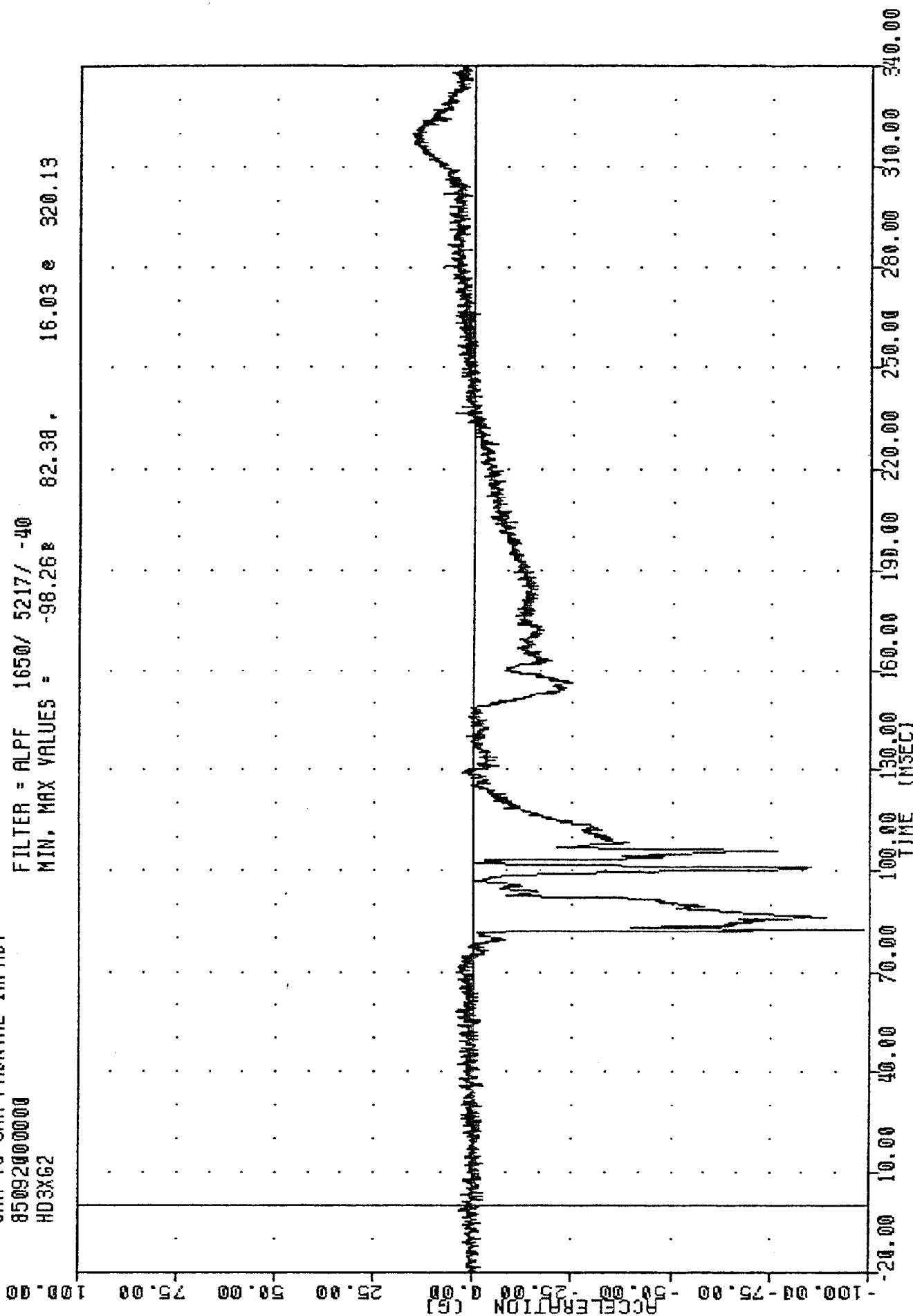


SUBJECT VEHICLE - ACCORD
 PASSENGER HEAD ACCELERATION Z AXIS (POSITION 2)

VR1, 0304023
 CAR TO CAR FRONTAL IMPACT
 85092000000
 HD3XG2

PLOT DATE 24 MAR 85 16:20:38

FILTER = ALPF 1650/ 5217/ -40
 MIN. MAX VALUES = -98.26 82.38, 16.03 e 320.13

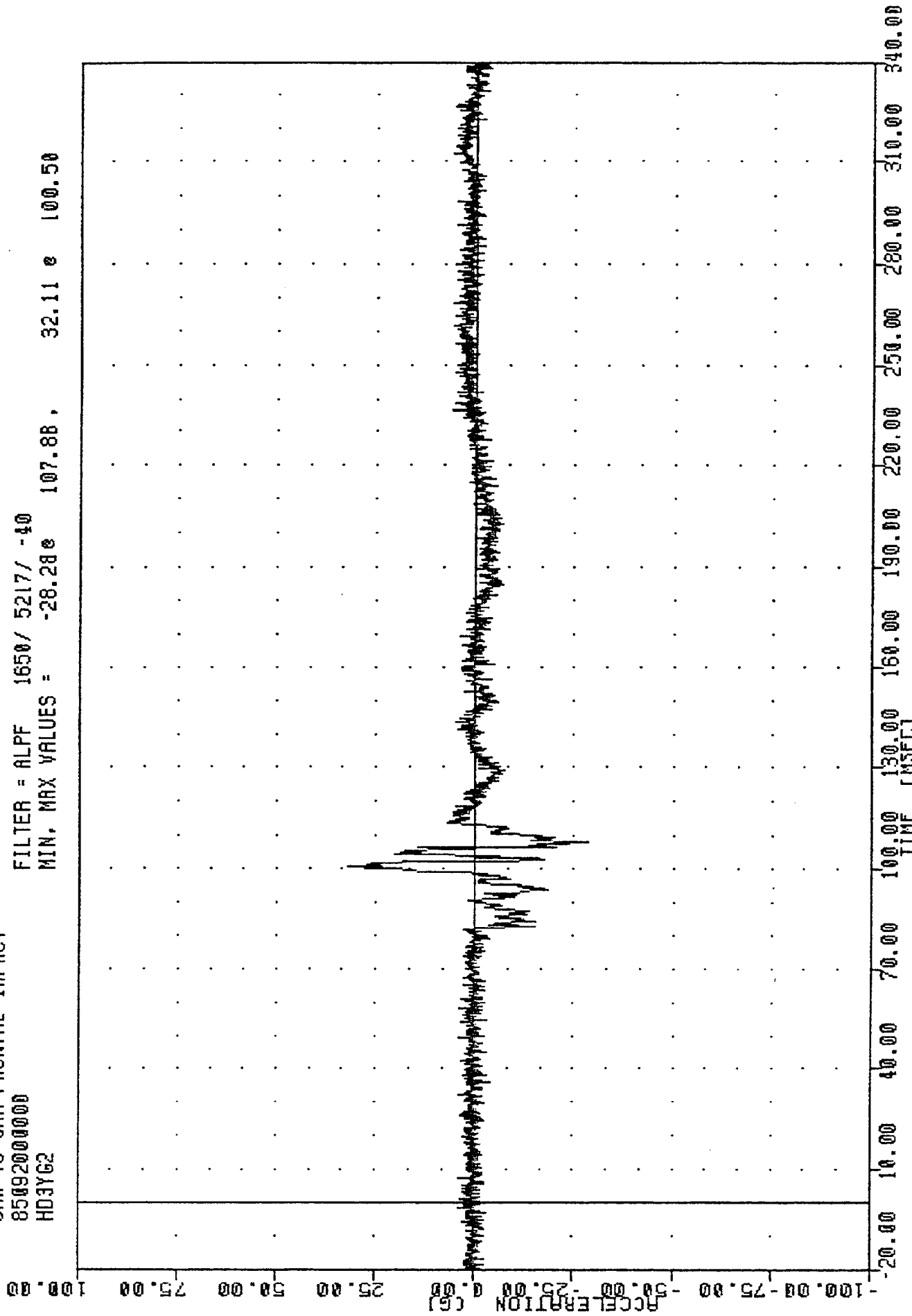


SUBJECT VEHICLE - ACCORD
 PASSENGER HEAD ACCELERATION X AXIS (POSITION 3)

VRT 0501025
 CAR TO CAR FRONTAL IMPACT
 850920000000
 HD3YG2

PLOT DATE 24 APR 85 16:20:38

FILTER = ALPF 1650/ 5217/ -40
 MIN. MAX VALUES = -28.28 107.88, 32.11 100.50

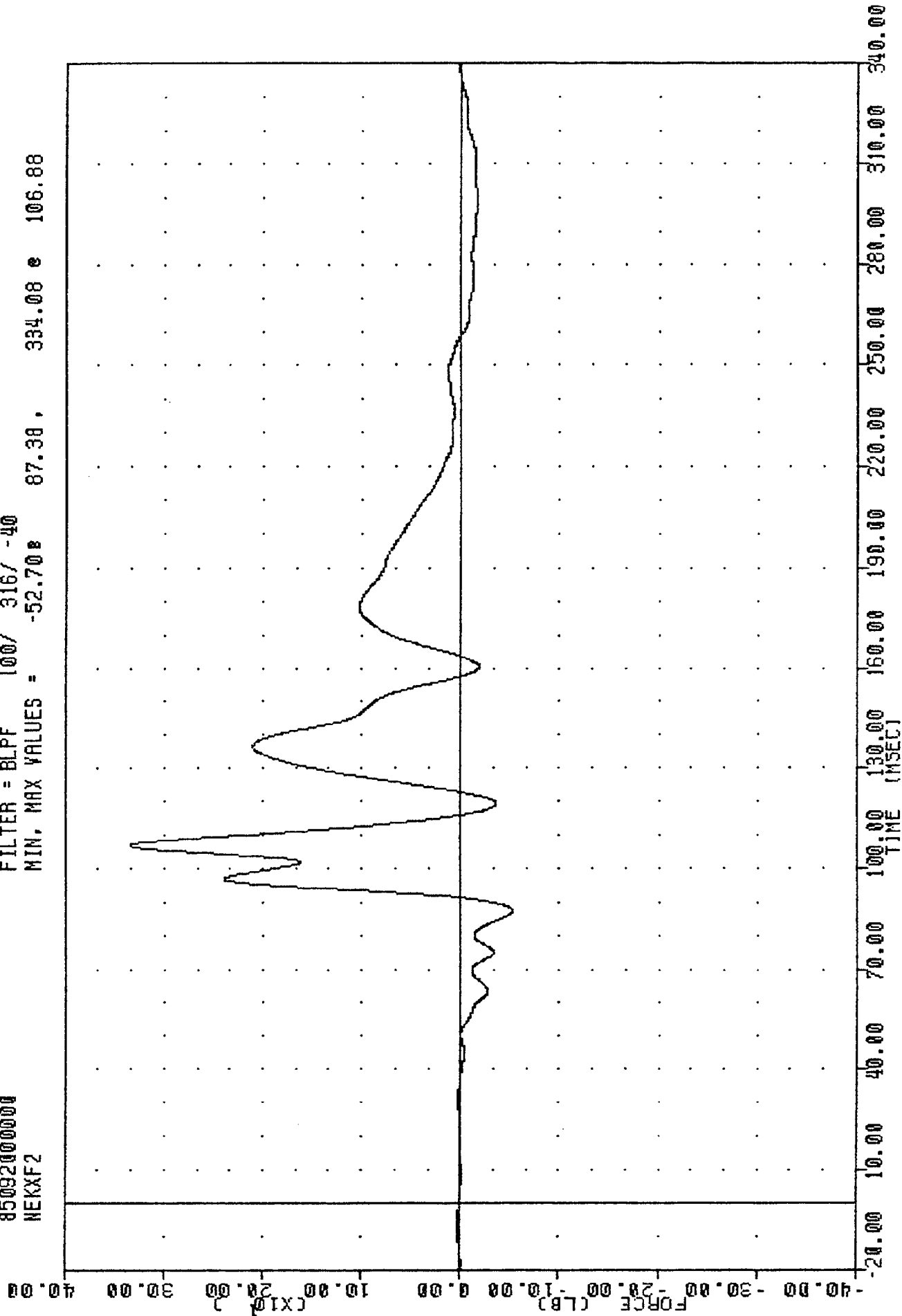


SUBJECT VEHICLE - ACCORD
 PASSENGER HEAD ACCELERATION Y AXIS (POSITION 3)

VRT , 8504025
CAR TO CAR FRONTAL IMPACT
85092000000
NEKXF2

PLOT DATE 24-APR-85 16:20:38

FILTER = BLPF 100/ 316/ -40
MIN. MAX VALUES = -52.70 87.38 , 334.08 e 106.88

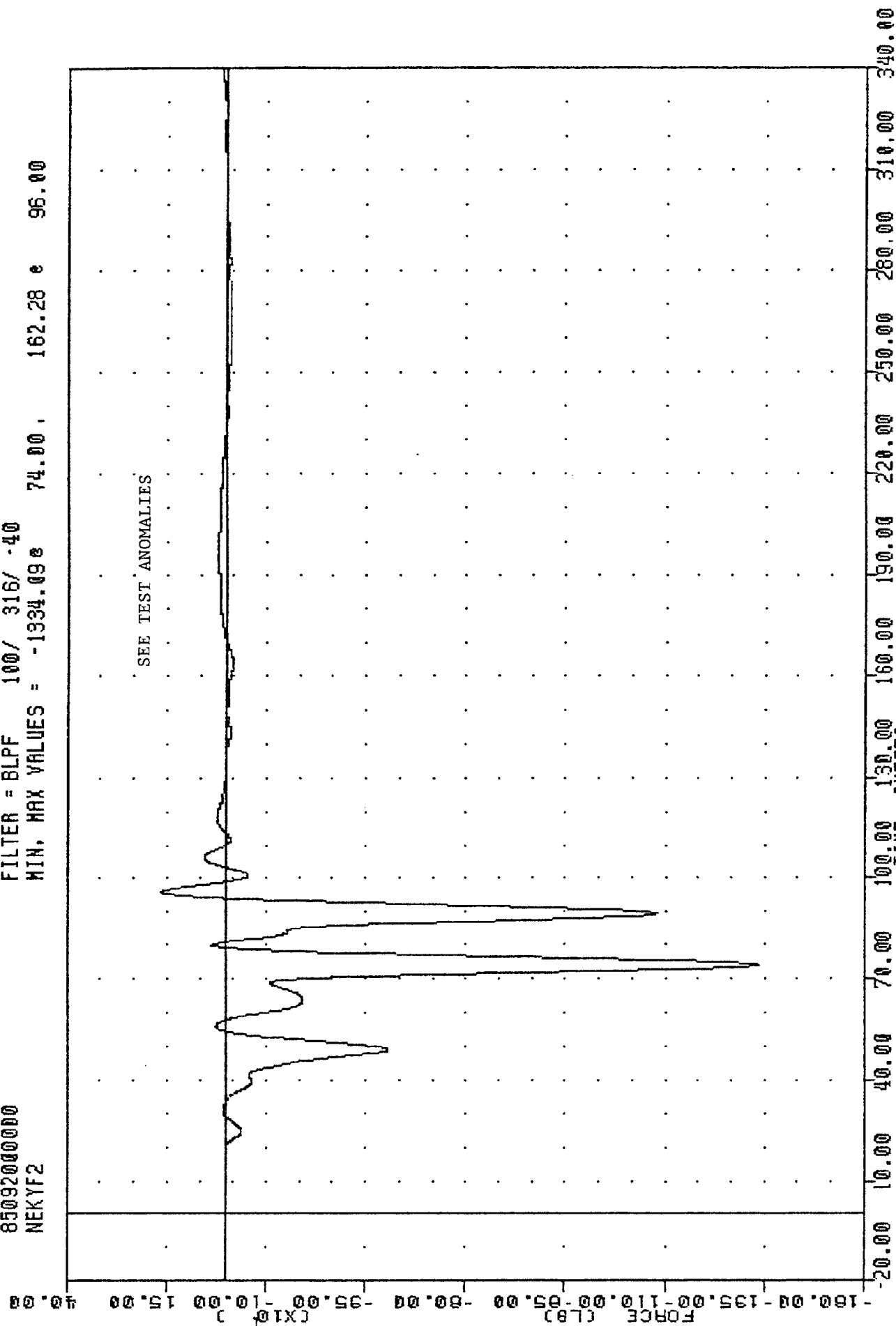


SUBJECT VEHICLE - ACCORD
PASSENGER NECK FORCE X AXIS LBS (SHEAR)

VAT 8504025
 CAR TO CAR FRONTAL IMPACT
 85092000000
 NEKYF2

PLT DATE 24-APR-85 16.20.38

FILTER = BLPF 100/ 316/ -40
 MIN, MAX VALUES = -1334.09 74.00, 162.28 96.00

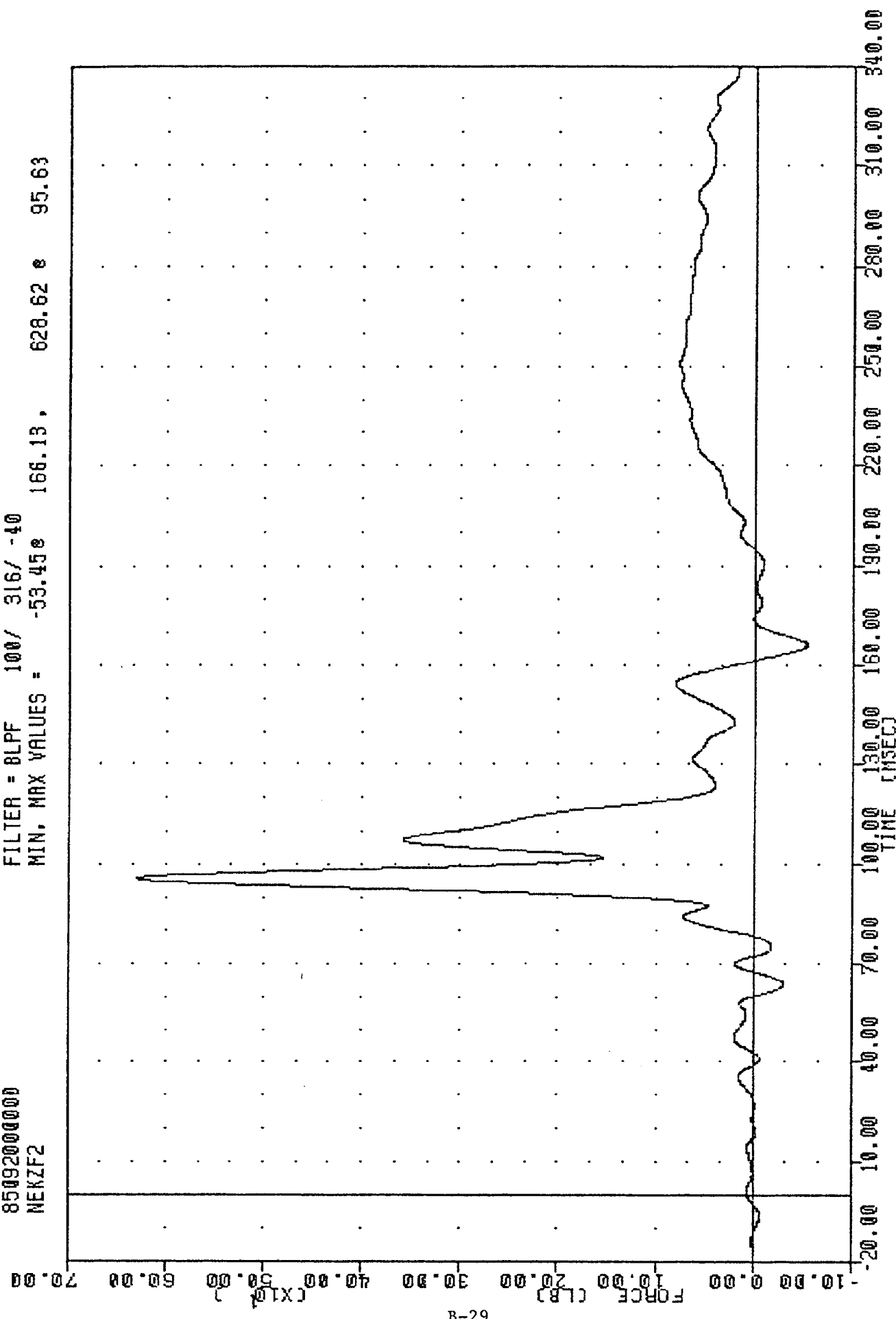


SUBJECT VEHICLE - ACCORD
 PASSENGER NECK FORCE Y AXIS LBS

VRT 023
 CAR TO CAR FRONTAL IMPACT
 850920000000
 NEKZF2

PLOT DATE 24 MAR 85 16:20:38

FILTER = 8LPE 100/ 316/ -40
 MIN. MAX VALUES = -53.45 166.13 628.62 95.63

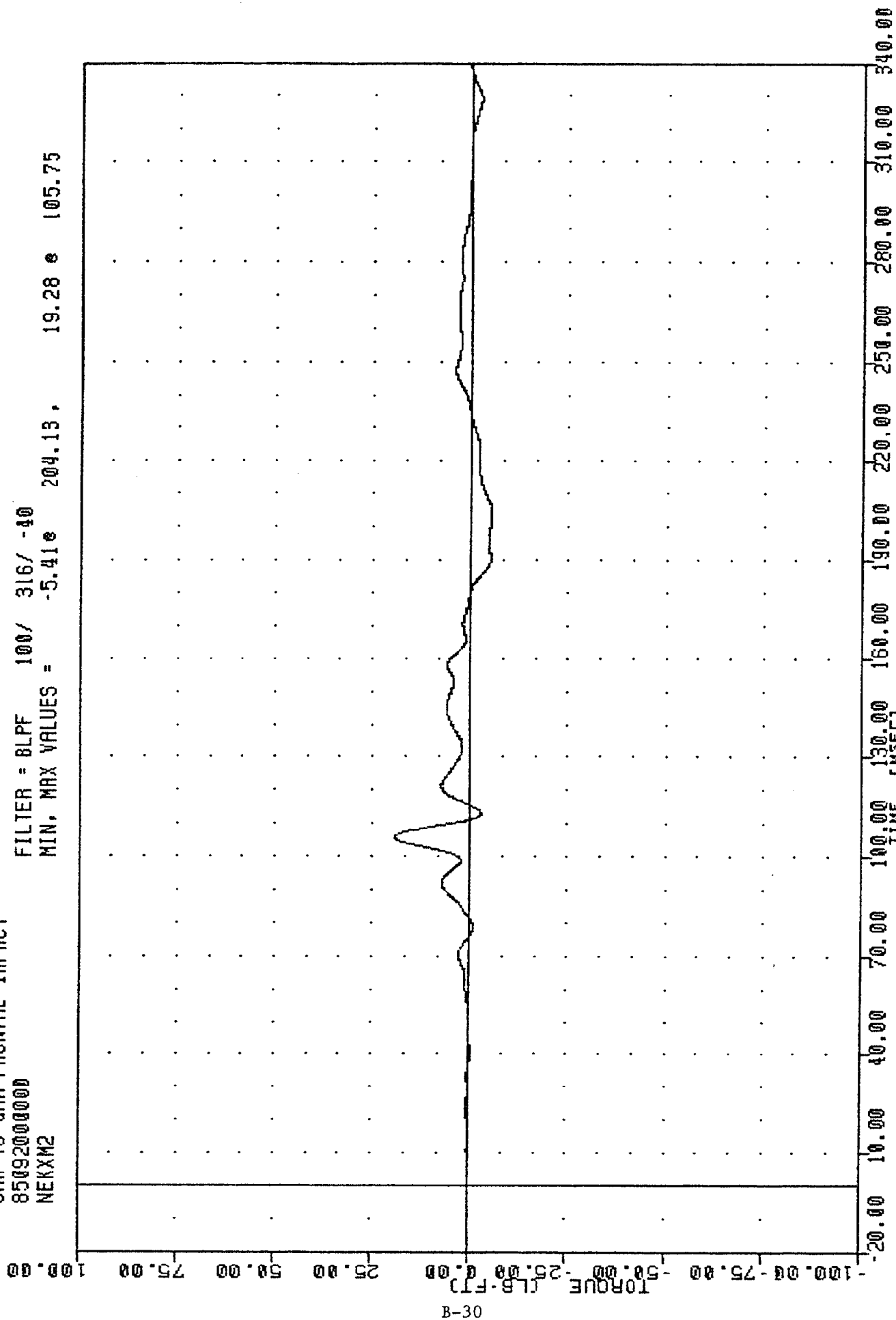


SUBJECT VEHICLE - ACCORD
 PASSENGER NECK FORCE Z AXIS LBS (AXIAL)

VR1 8504025
 CAR TO CAR FRONTAL IMPACT
 85092000000
 NEXM2

PLOT DATE 24-APR-85 16:20:38

FILTER = 8LPF 100/ 316/ -40
 MIN, MAX VALUES = -5.41e 204.13, 19.28 e 105.75

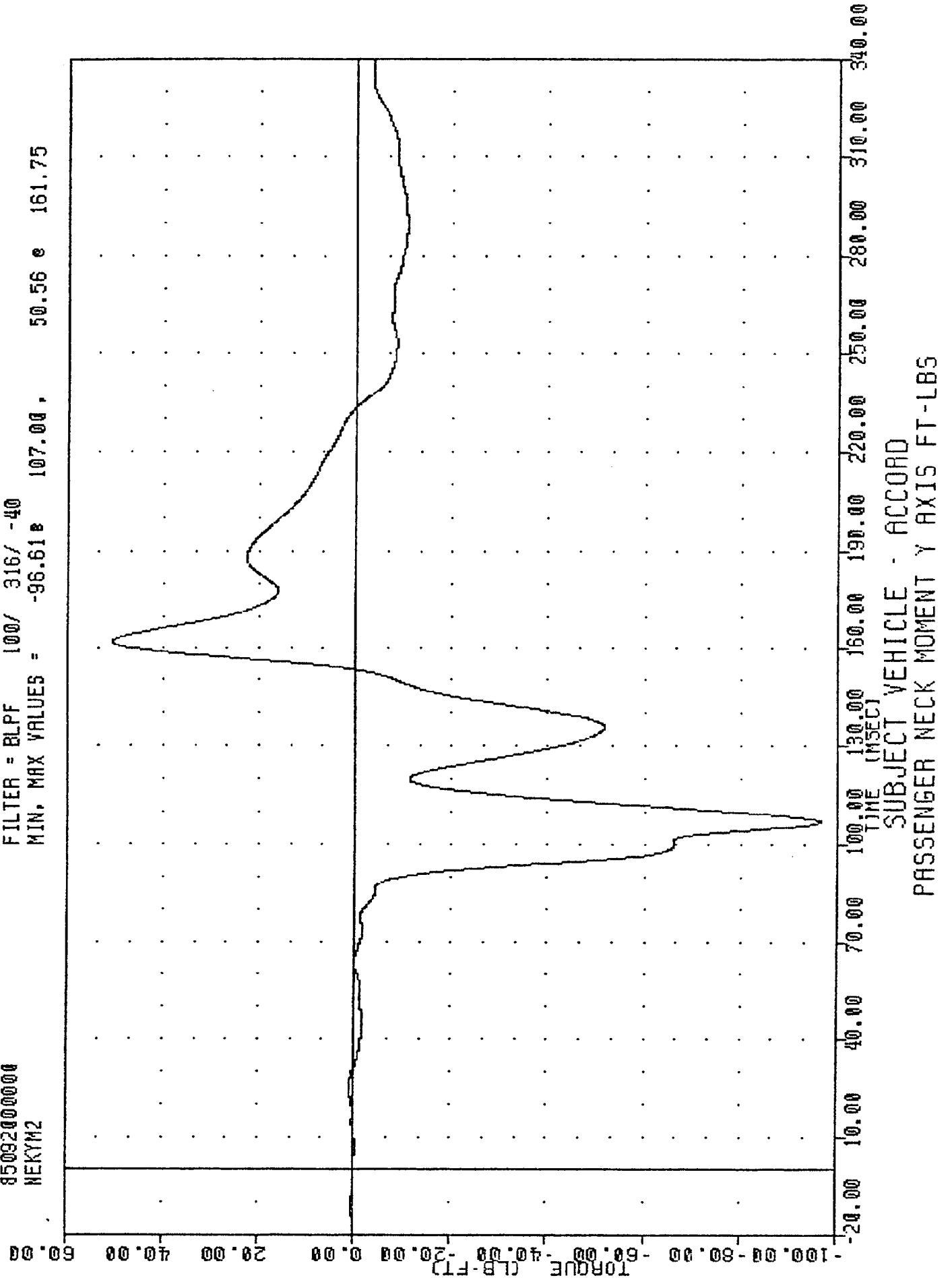


SUBJECT VEHICLE - ACCORD
 PASSENGER NECK MOMENT X AXIS FT-LBS

VR 0004025
 CAR TO CAR FRONTAL IMPACT
 850920000000
 NEKYM2

PLOT DATE 24 MAR 85 16:20:38

FILTER = BLPF 100/ 316/ -40
 MIN, MAX VALUES = -96.61e 107.00, 50.56 e 161.75



VRT 8504023
 CAR TO CAR FRONTAL IMPACT
 85092000000
 NEKZM2

PLOT DATE

1-JUL-85

08:51:33

FILTER = BLPF 100/ 316/ -40
 MIN, MAX VALUES = -7.95E 105.25, 5.56 E 155.13

100.00

75.00

50.00

25.00

0.00

TORQUE (LB-FT)

-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

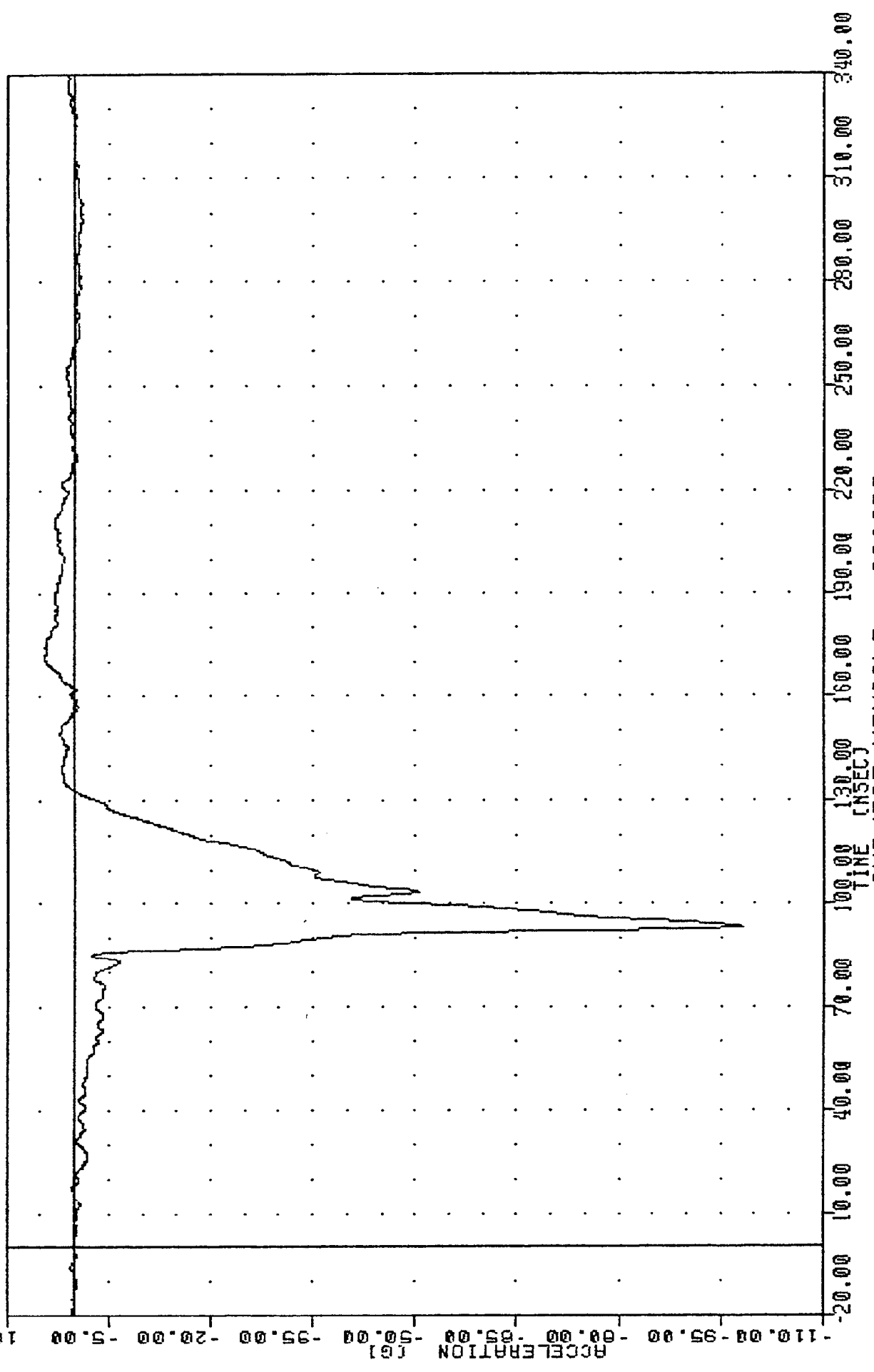
340.00

TIME (MSEC)

SUBJECT VEHICLE - ACCORD
 PASSENGER NECK MOMENT Z AXIS FT-LBS

VRT 850920000000
 CAR TO CAR FRONTAL IMPACT
 850920000000
 CSTX62

PLOT DATE 24-APR-85 16:25:28
 FILTER = BLPF 300/ 949/ -40
 MIN, MAX VALUES = -98.27 93.50, 4.60 171.63

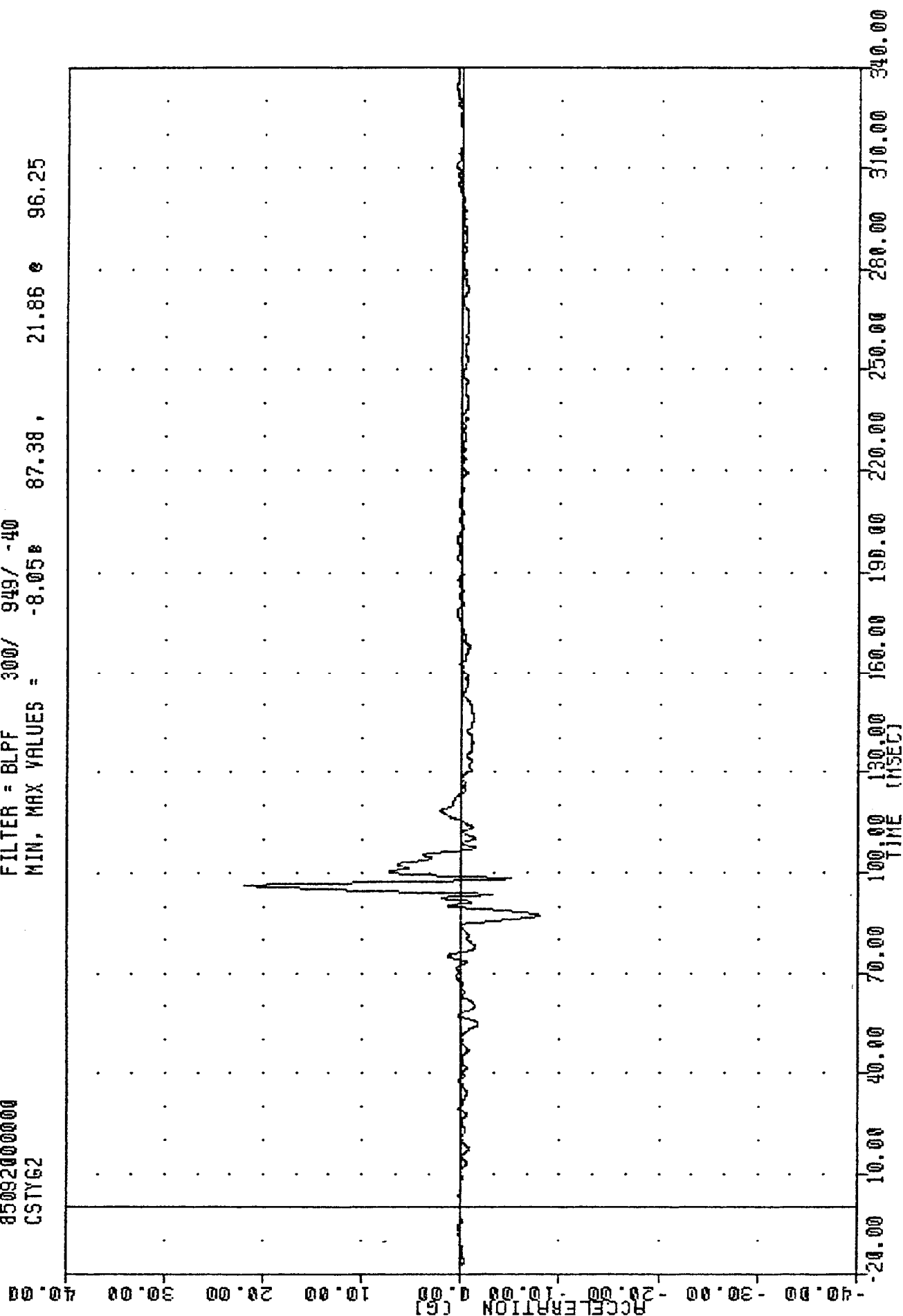


SUBJECT VEHICLE - ACCORD
 PASSENGER CHEST ACCELERATION X AXIS

VR1
CAR TO CAR FRONTAL IMPACT
850920000000
CSTYG2

PLOT DATE 24-APR-85 16:25:28

FILTER = BLPF 300/ 949/ -40
MIN, MAX VALUES = -8.058 87.38, 21.86 96.25



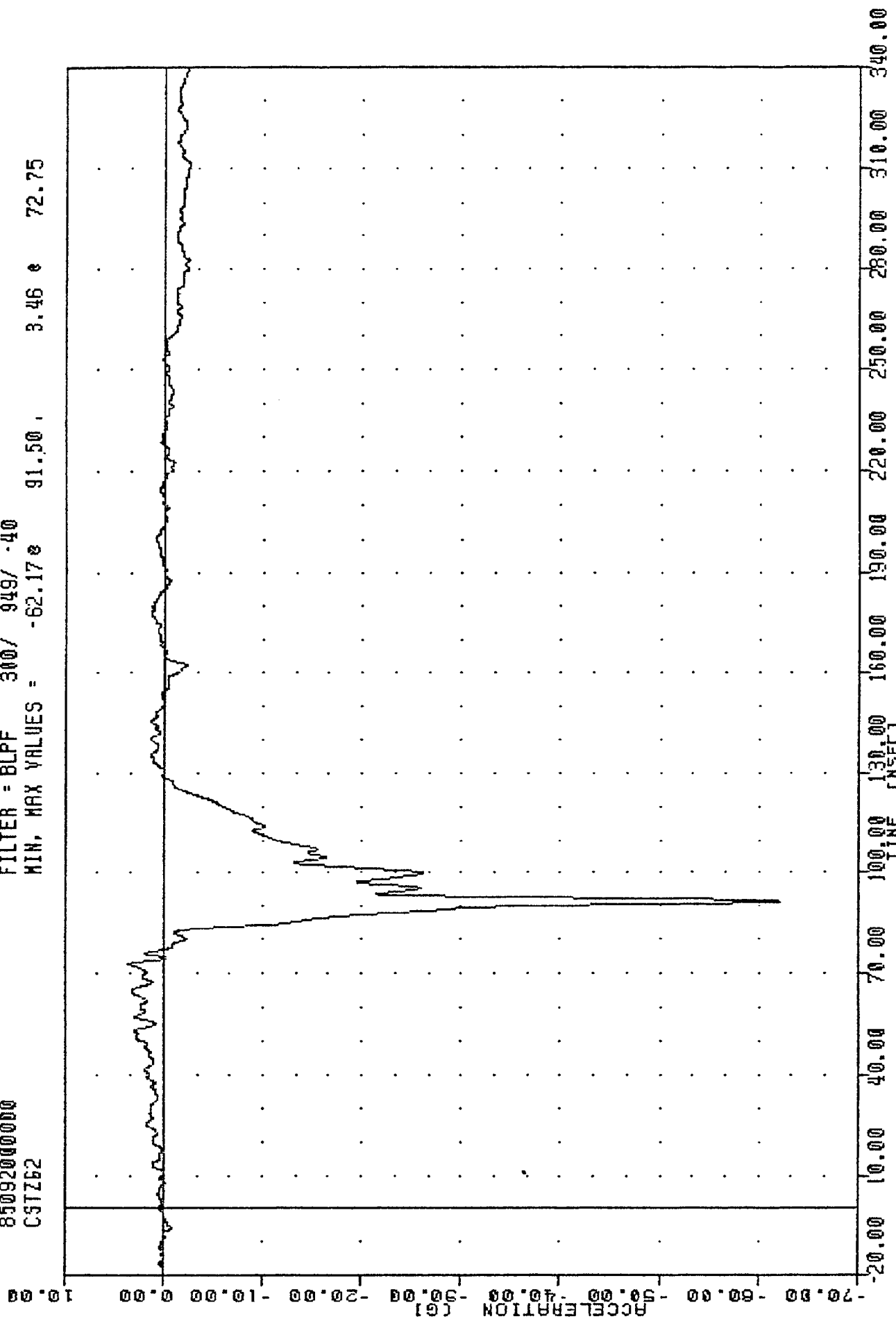
SUBJECT VEHICLE - ACCORD
PASSENGER CHEST ACCELERATION Y AXIS

VAT , 8504025
CAR TO CAR FRONTAL IMPACT
850920000000
CSTZE2

PLOT DATE 24-HPR-85 16:25:28

FILTER = BLPF 300/ 949/ .40

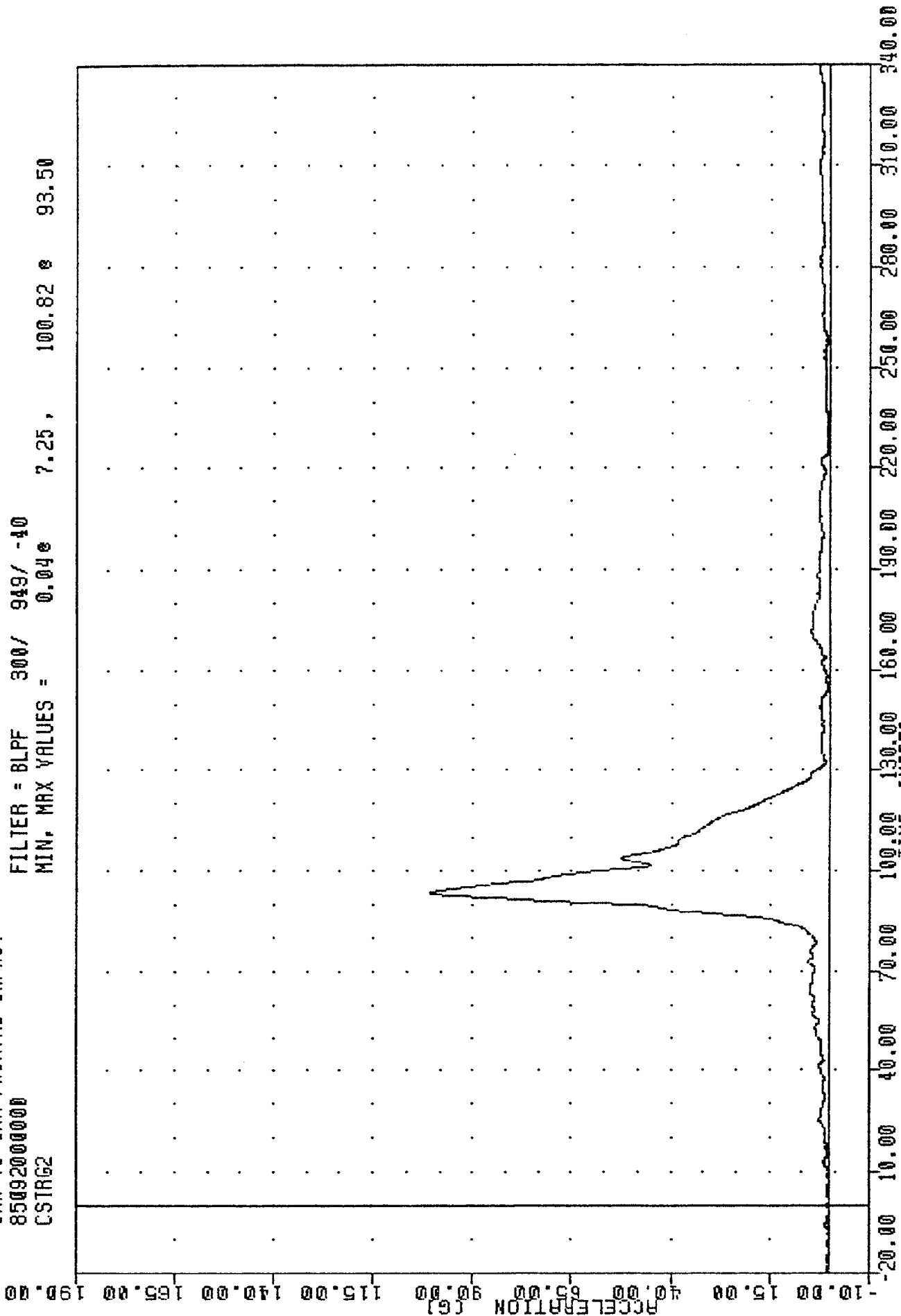
MIN, MAX VALUES = -62.17 91.50 3.46 72.75



VRT , 8504025
 CAR TO CAR FRONTAL IMPACT
 850920000000
 CSTRG2

PLOT DATE 24-APR-85 16:25:28

FILTER = BLPF 300/ 949/ -40
 MIN. MAX VALUES = 0.04e 7.25, 100.82 e 93.50



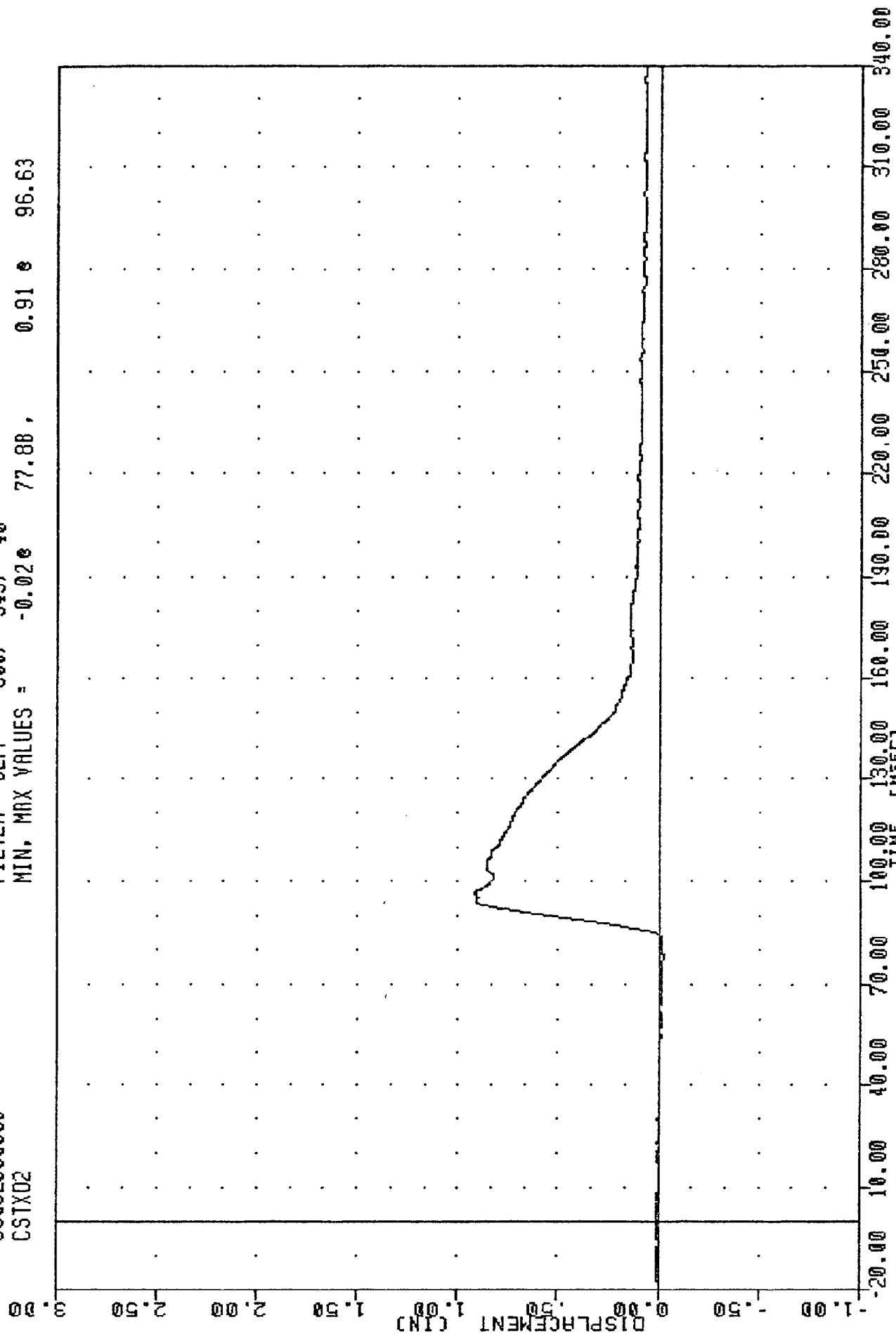
SUBJECT VEHICLE - ACCORD
 PASSENGER CHEST RESULTANT

VRT , 8504025
CAR TO CAR FRONTAL IMPACT
85092000000
CSTXD2

PLOT DATE 24-APR-85 16:25:28

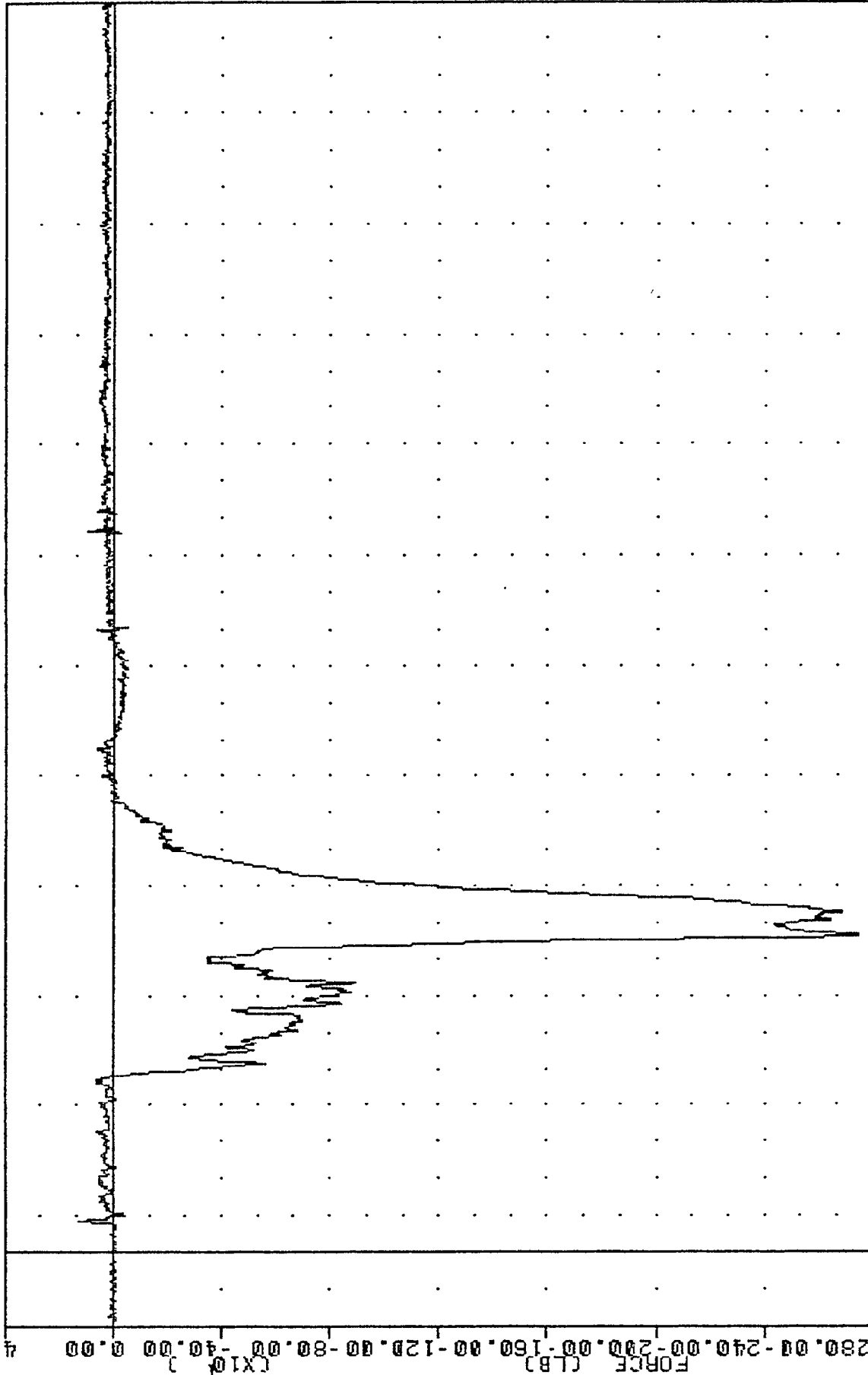
FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = -0.020 77.88, 0.91 96.63



SUBJECT VEHICLE - ACCORD
PASSENGER CHEST DISPLACEMENT INCHES

VRT 8504025
 CAR TO CAR FRONTAL IMPACT
 85092000000
 LFNF2
 PLOT DATE 24-HPH-85 16:25:28
 FILTER = BLPF 1000/ 3162/ -40
 MIN, MAX VALUES = -2742.94e 86.63, 124.10 e 8.63

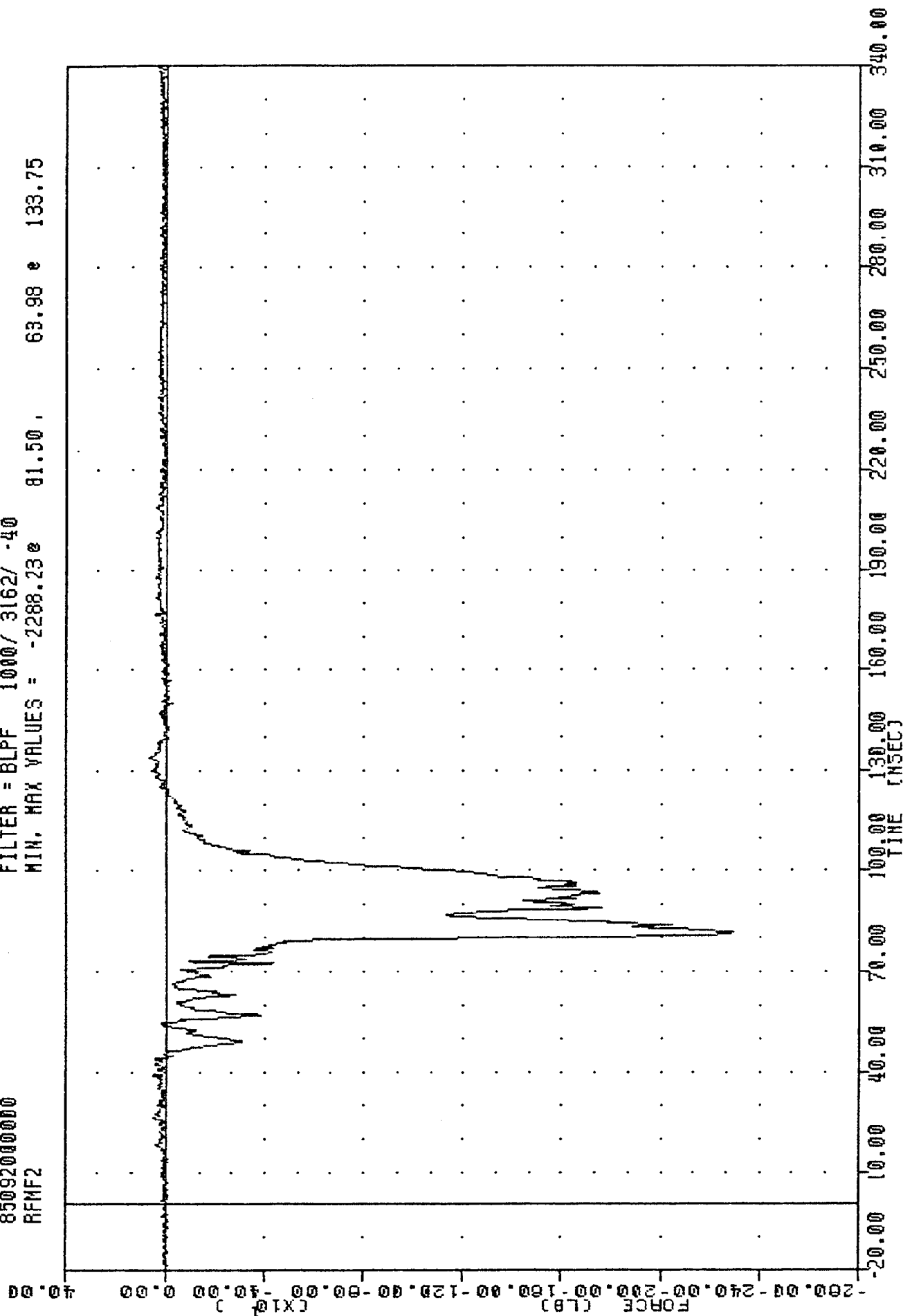


SUBJECT VEHICLE - ACCORD
 PASSENGER LEFT FEMUR FORCE LBS

VAT 850402S
 CAR TO CAR FRONTAL IMPACT
 85092000000
 RFMF2

PLOT DATE 24-APR-85 16:25:28

FILTER = BLPF 1000/ 3162/ -40
 MIN, MAX VALUES = -2288.23 81.50, 63.98 133.75



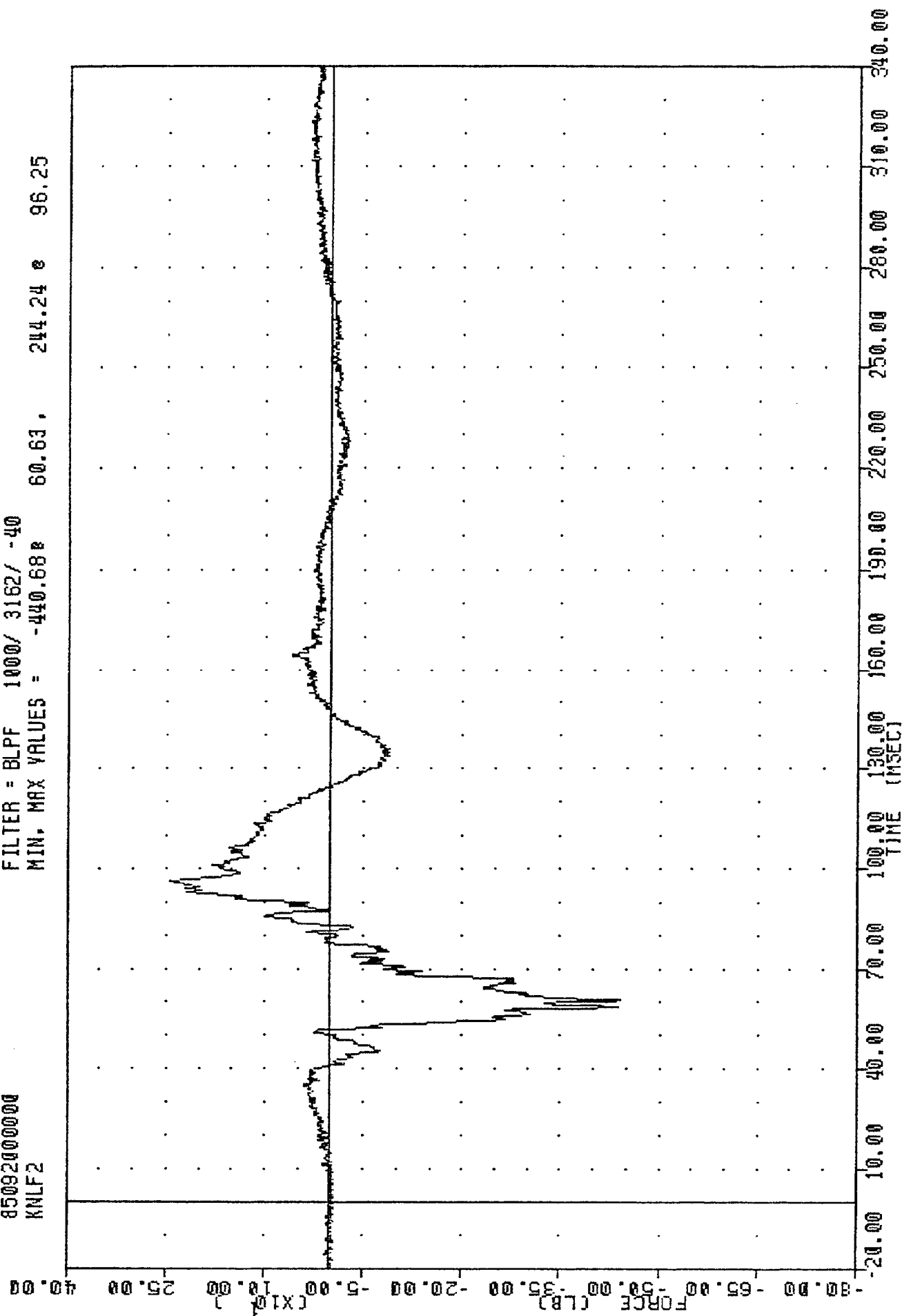
SUBJECT VEHICLE - ACCORD
 PASSENGER RIGHT FEMUR FORCE LBS

VRI , 8504025
 CAR TO CAR FRONTAL IMPACT
 850920000000
 KNLF2

PLOT DATE 24-APR-85 16:25:28

FILTER = BLPF 1000/ 3162/ -40

MIN. MAX VALUES = -440.68 60.63, 244.24 96.25

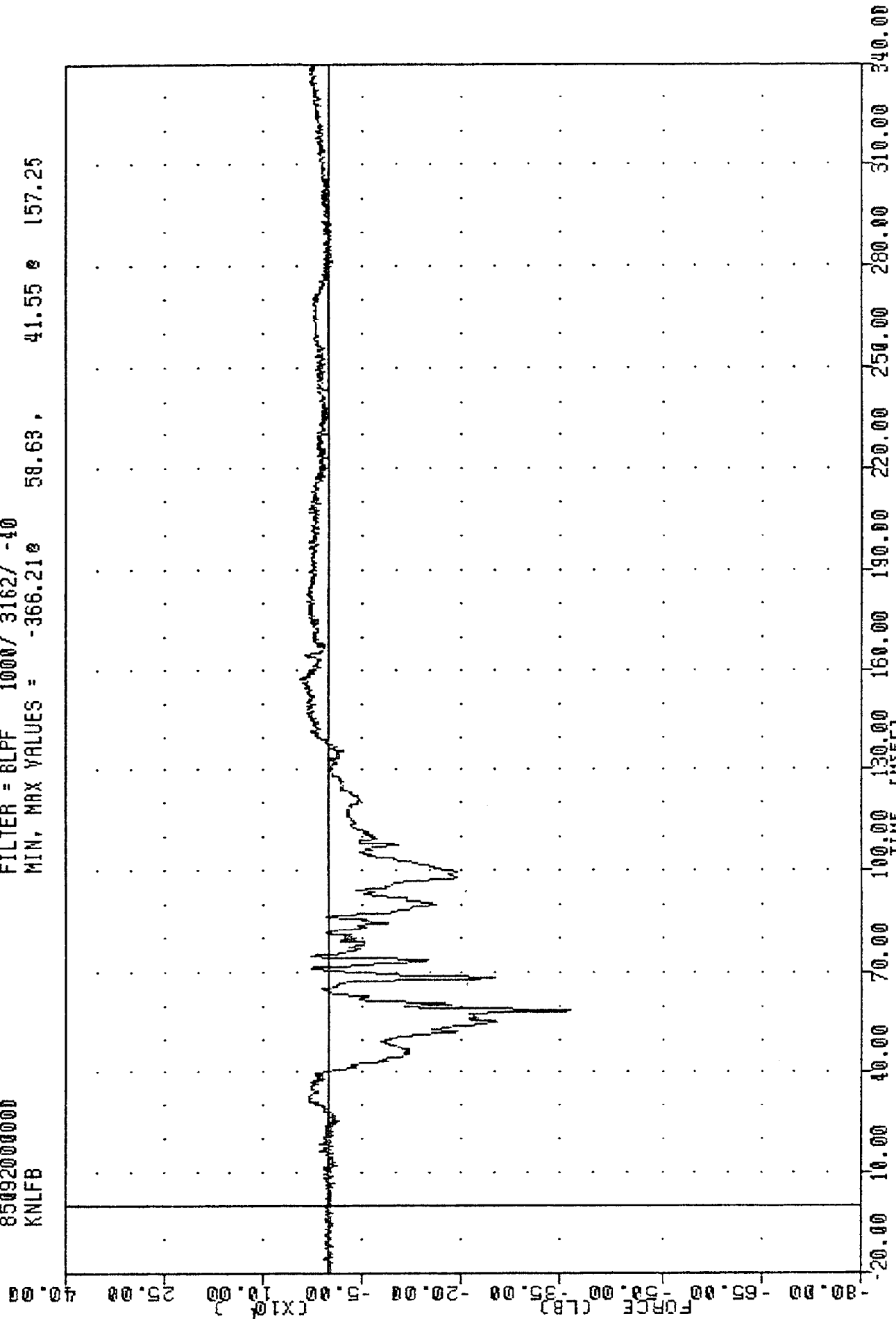


SUBJECT VEHICLE - ACCORD
 PASSENGER LEFT KNEE / LEFT SENSOR LBS

VRT , 8504025
 CAR TO CAR FRONTAL IMPACT
 85092000000
 KNLFB

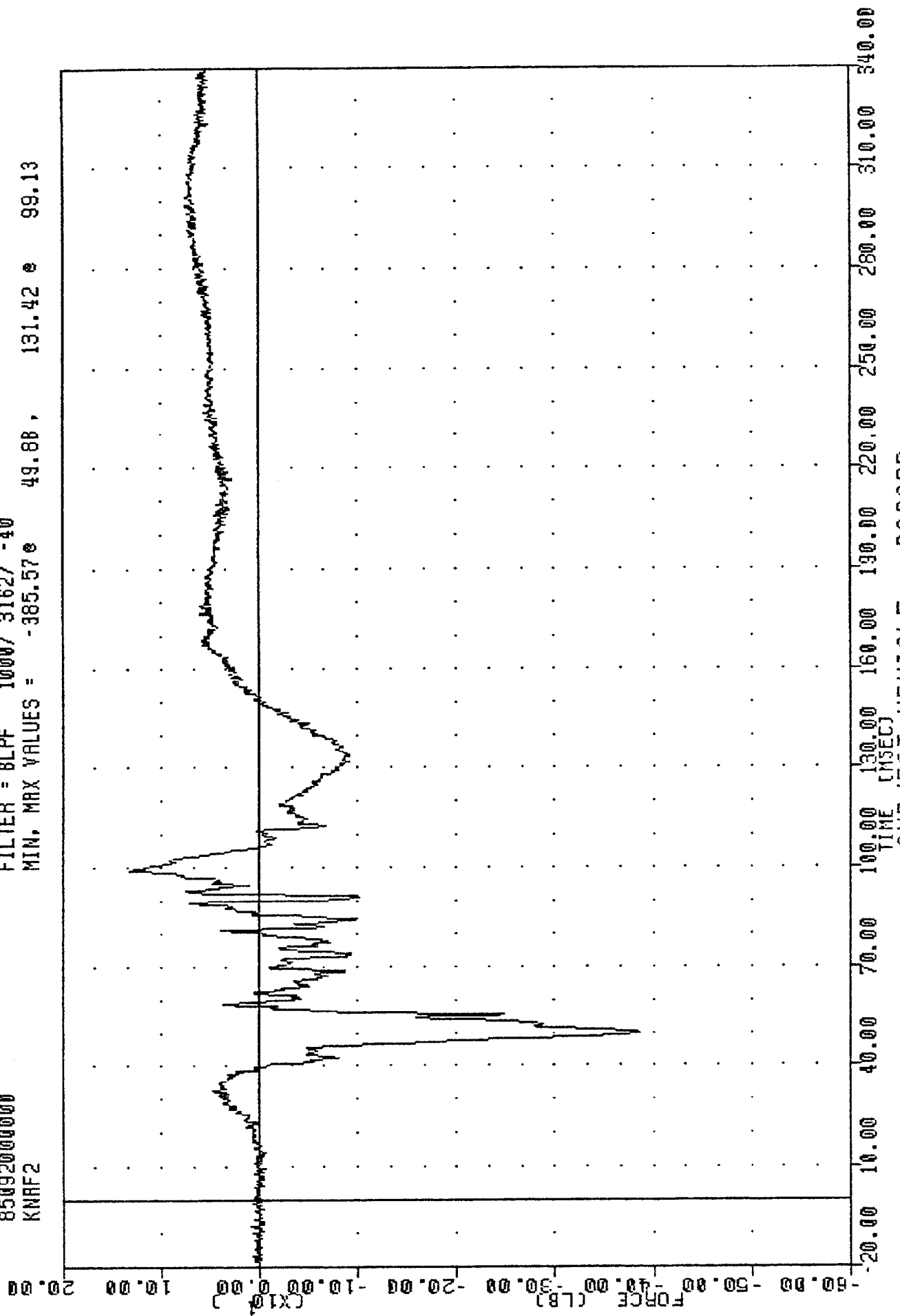
PLOT DATE 24-APR-85 16:25:28

FILTER = 8LPF 1000/ 3162/ -40
 MIN, MAX VALUES = -366.218 58.63, 41.55 157.25



SUBJECT VEHICLE - ACCORD
 PASSENGER LEFT KNEE / RIGHT SENSOR LBS

VRT [REDACTED], 8500023 [REDACTED] PLOT DATE [REDACTED] 24 JAN 85 [REDACTED] 16.23.28 [REDACTED]
 CAR TO CAR FRONTAL IMPACT
 850920000000
 KNRF2
 FILTER = BLPF 1000/ 3162/ -40
 MIN, MAX VALUES = -385.57e 49.88, 131.42 e 99.13



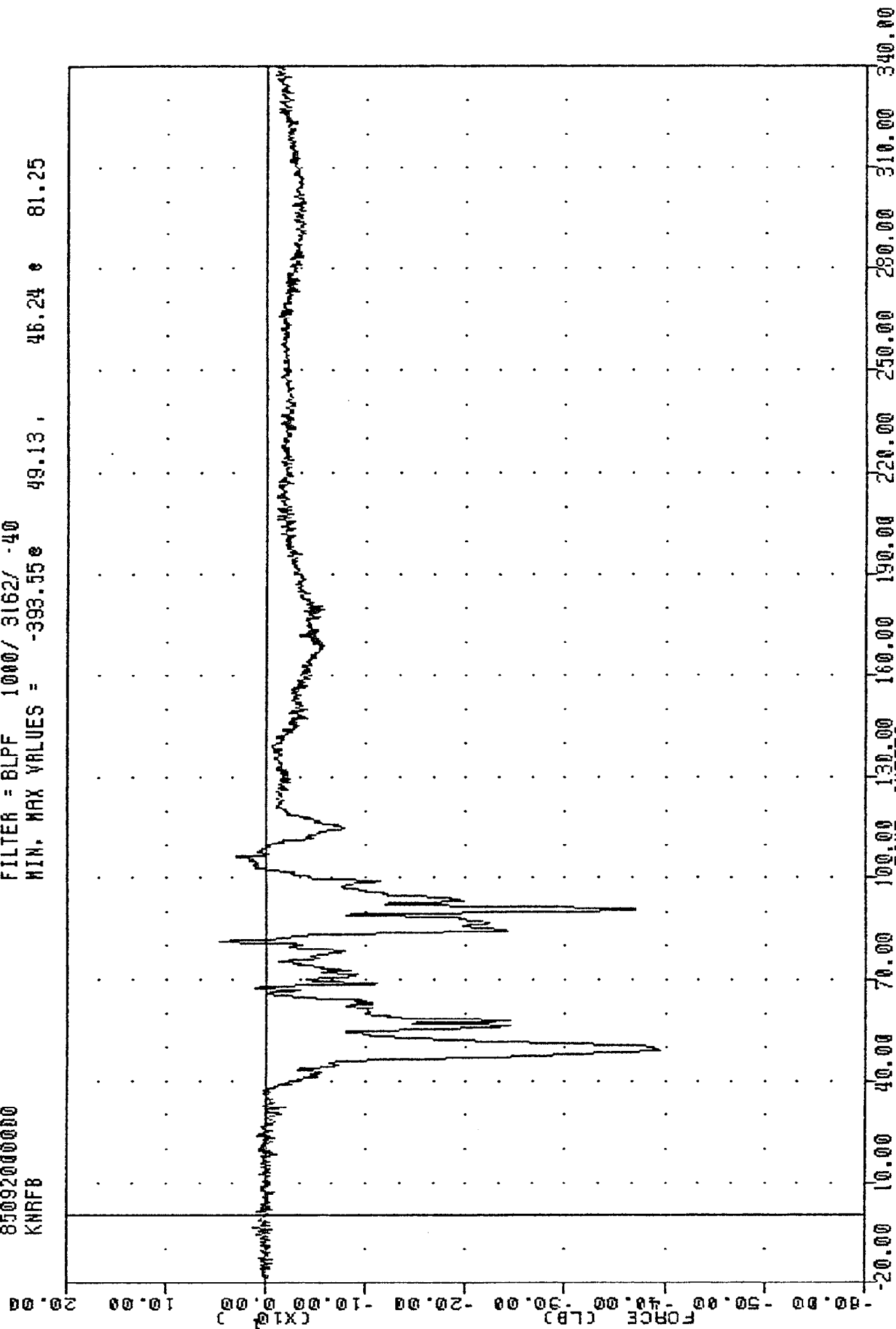
SUBJECT VEHICLE - ACCORD
 PASSENGER RIGHT KNEE / LEFT SENSOR LBS

VAT 850920000000
 CAR TO CAR FRONTAL IMPACT
 850920000000
 KNRFB

PLT DATE 24-MAR-85 16:23:28

FILTER = BLPF 1000/ 3162/ -40

MIN. MAX VALUES = -393.55 49.13 46.24 81.25

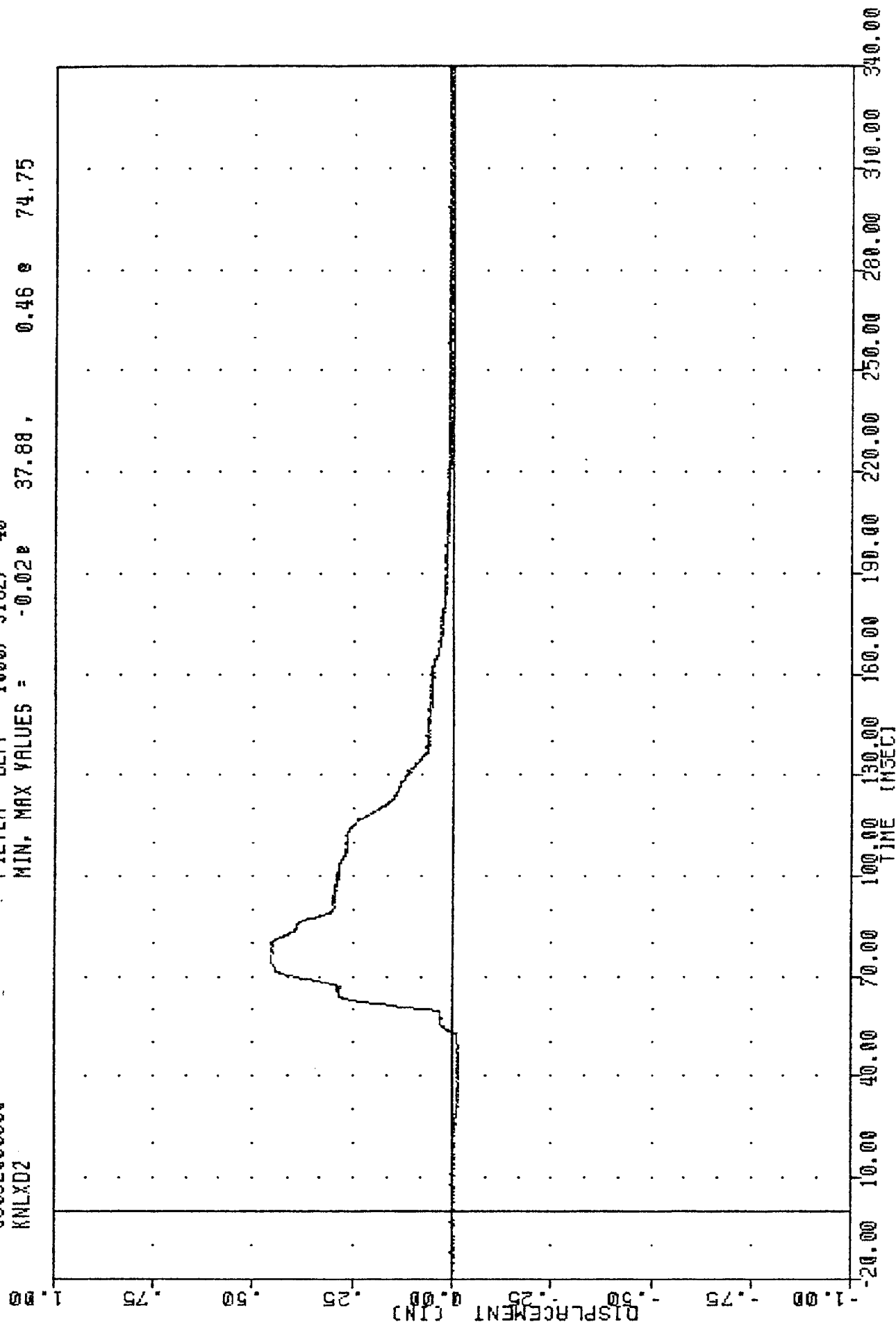


SUBJECT VEHICLE - ACCORD
 PASSENGER RIGHT KNEE / RIGHT SENSOR LBS

VR1
CAR TO CAR FRONTAL IMPACT
850920000000
KNLXD2

PLOT DATE 24-APR-85 16:20:38

FILTER = BLPF 1000/ 3162/ -40
MIN, MAX VALUES = -0.02e 37.88, 0.46 e 74.75

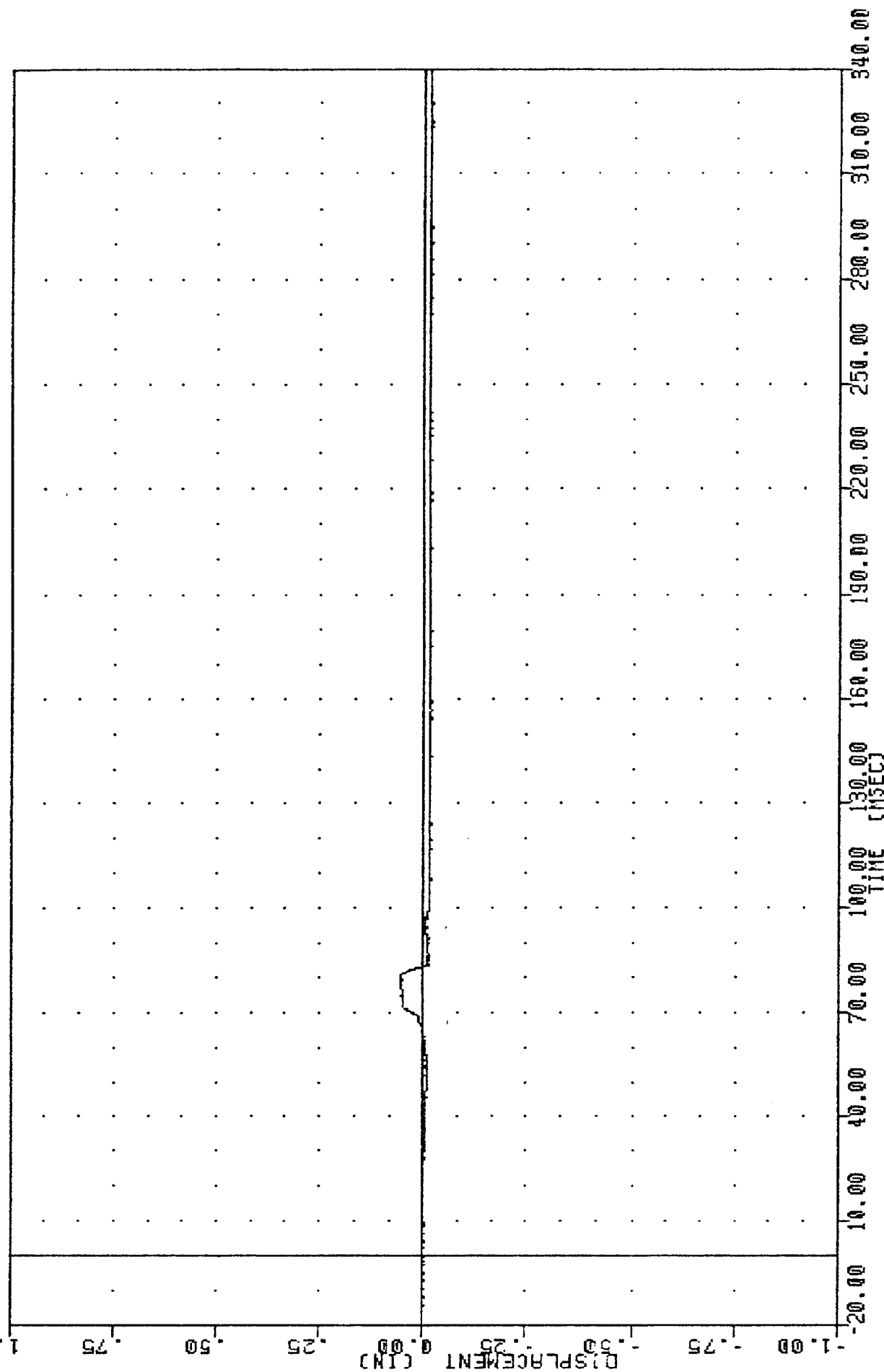


SUBJECT VEHICLE - ACCORD
PASSENGER LEFT KNEE DISPLACEMENT INCHES

VRT 850920000000
CAR TO CAR FRONTAL IMPACT
850920000000
KNRXD2

PLOT DATE 24-APR-85 16:20:38

FILTER = 8LPF 1000/ 3162/ -40
MIN. MAX VALUES = -0.028 108.13, 0.05 76.88



SUBJECT VEHICLE - ACCORD
PASSENGER RIGHT KNEE DISPLACEMENT INCHES

VAT , 8504025
 CAR TO CAR FRONTAL IMPACT
 850920000000
 TBLXN2

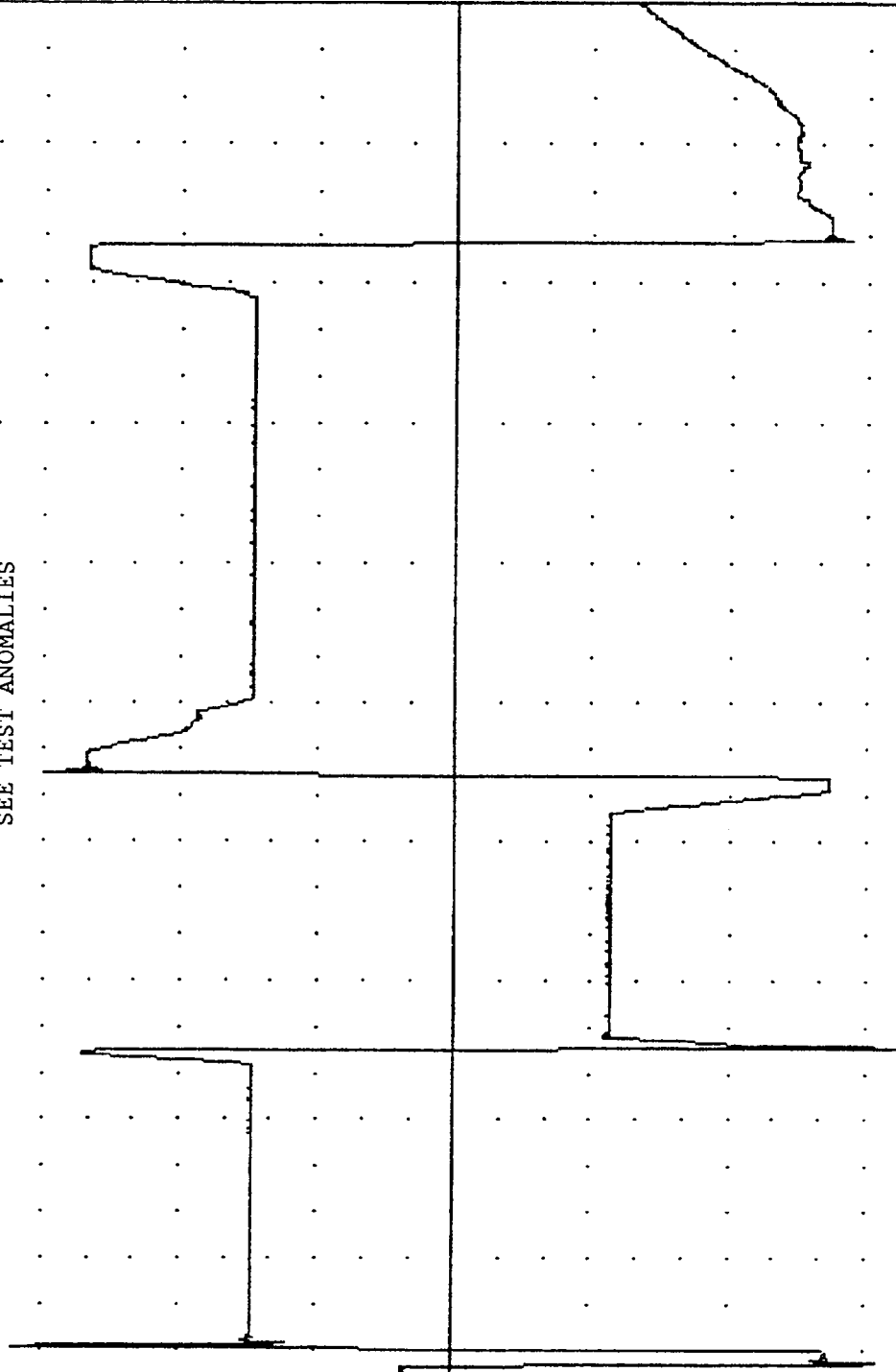
PLOT DATE 24-APR-85 16:25:28

FILTER = BLPF 1000/ 3162/ -40

MIN, MAX VALUES = -323.46e 115.75, 320.99 e 50.75

40.00
 30.00
 20.00
 10.00
 0.00
 -10.00
 -20.00
 -30.00
 -40.00

SEE TEST ANOMALIES



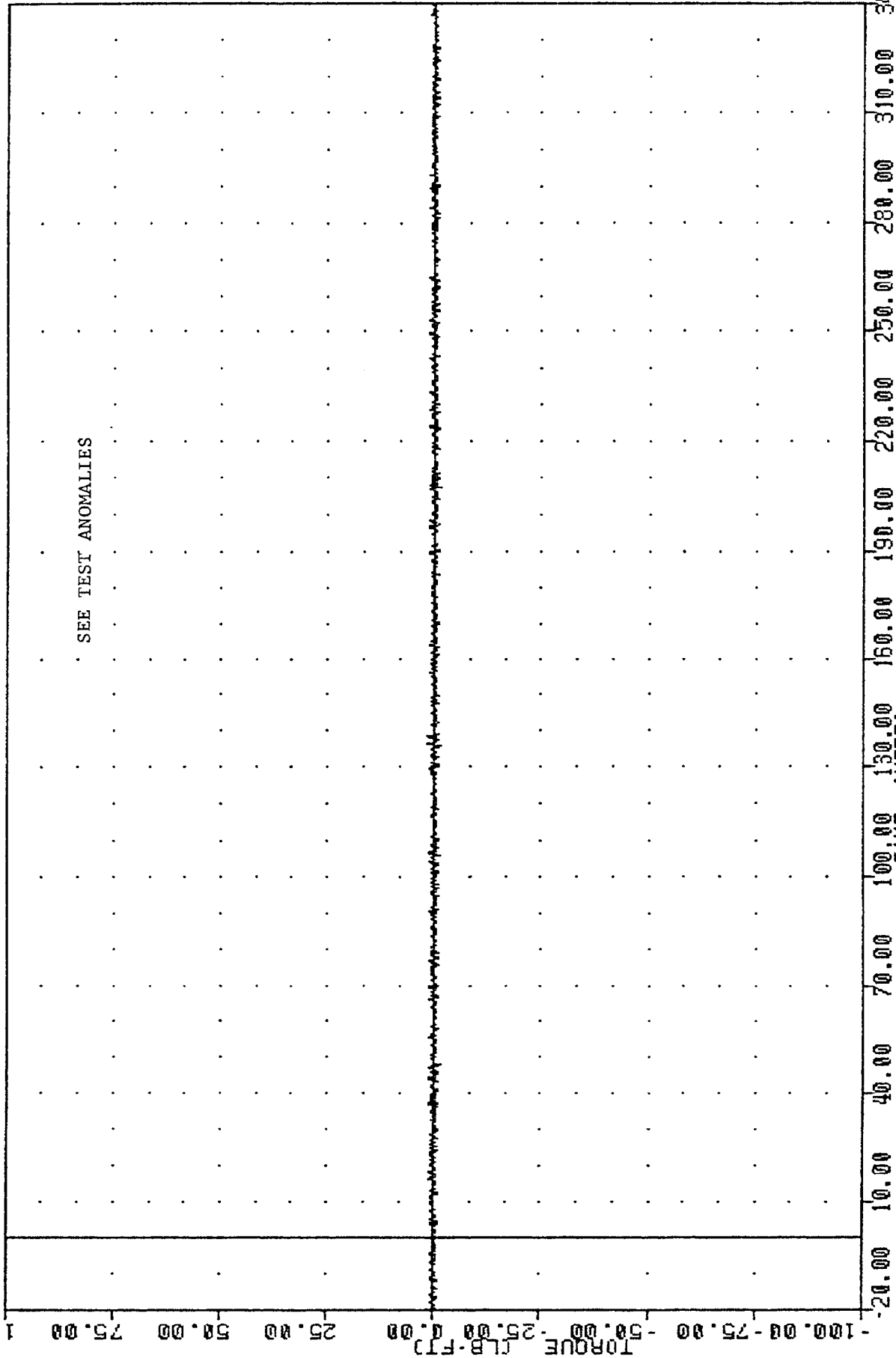
TIME (MSEC) 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00

SUBJECT VEHICLE - ACCORD
 PASSENGER LEFT UPPER TIBIA MOMENT X AXIS LB-FT

VRT 8504025
 CAR TO CAR FRONTAL IMPACT
 850920000000
 TBLYN2

PLOT DATE 24-APR-85 16:25:28

FILTER = BLPF 1000/ 3162/ -40
 MIN. MAX VALUES = -1.42 47.88, 1.75 136.38



SUBJECT VEHICLE - ACCORD

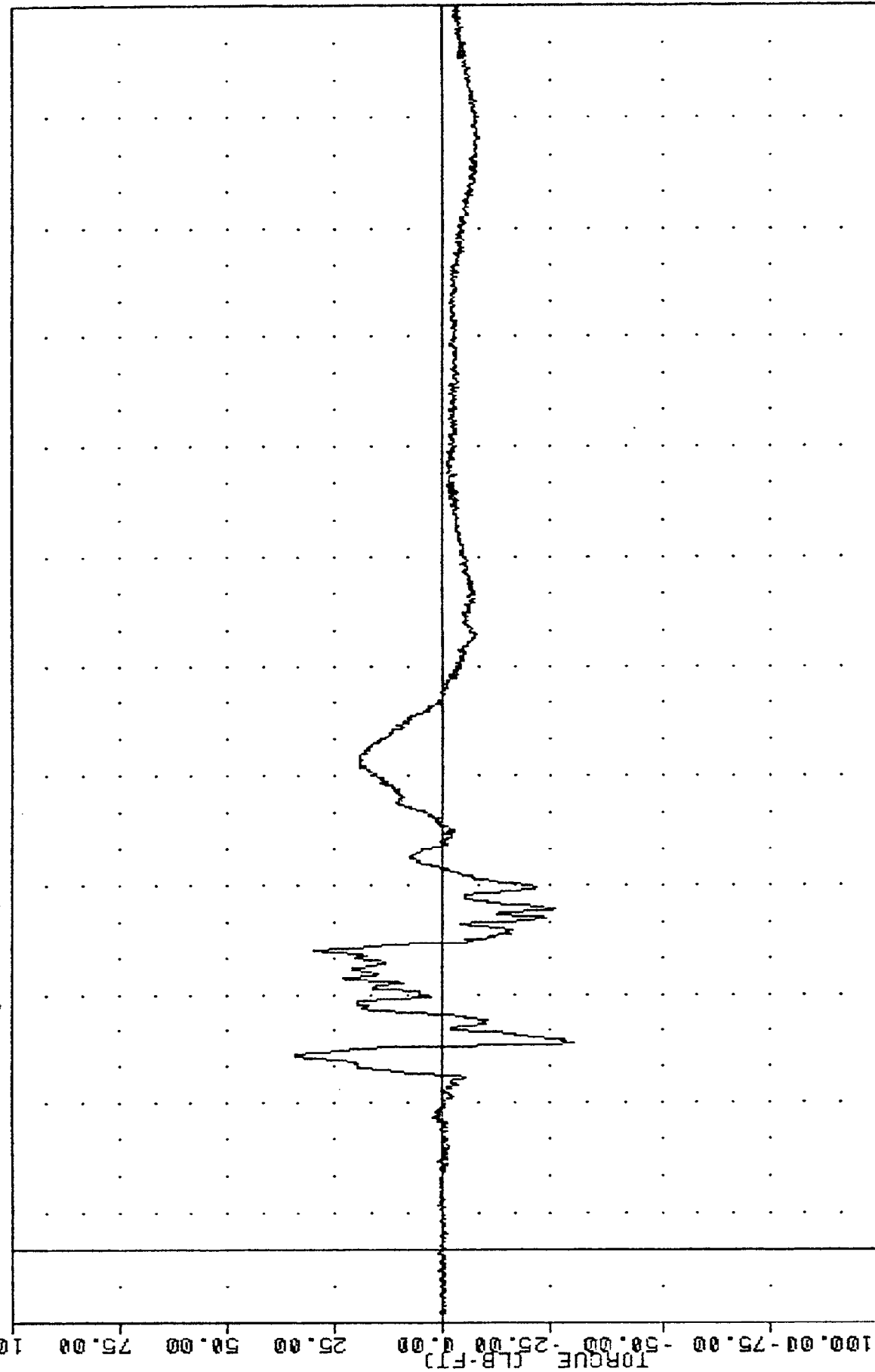
PASSENGER LEFT UPPER TIBIA MOMENT Y AXIS LB-FT

VRT 850402S
CAR TO CAR FRONTAL IMPACT
85092000000
TBRXM2

PLOT DATE 24-APR-85 16:23:28

FILTER = BLPF 1000/ 3162/ -40
MIN, MAX VALUES = -30.148 56.50, 33.95 53.25

100.00



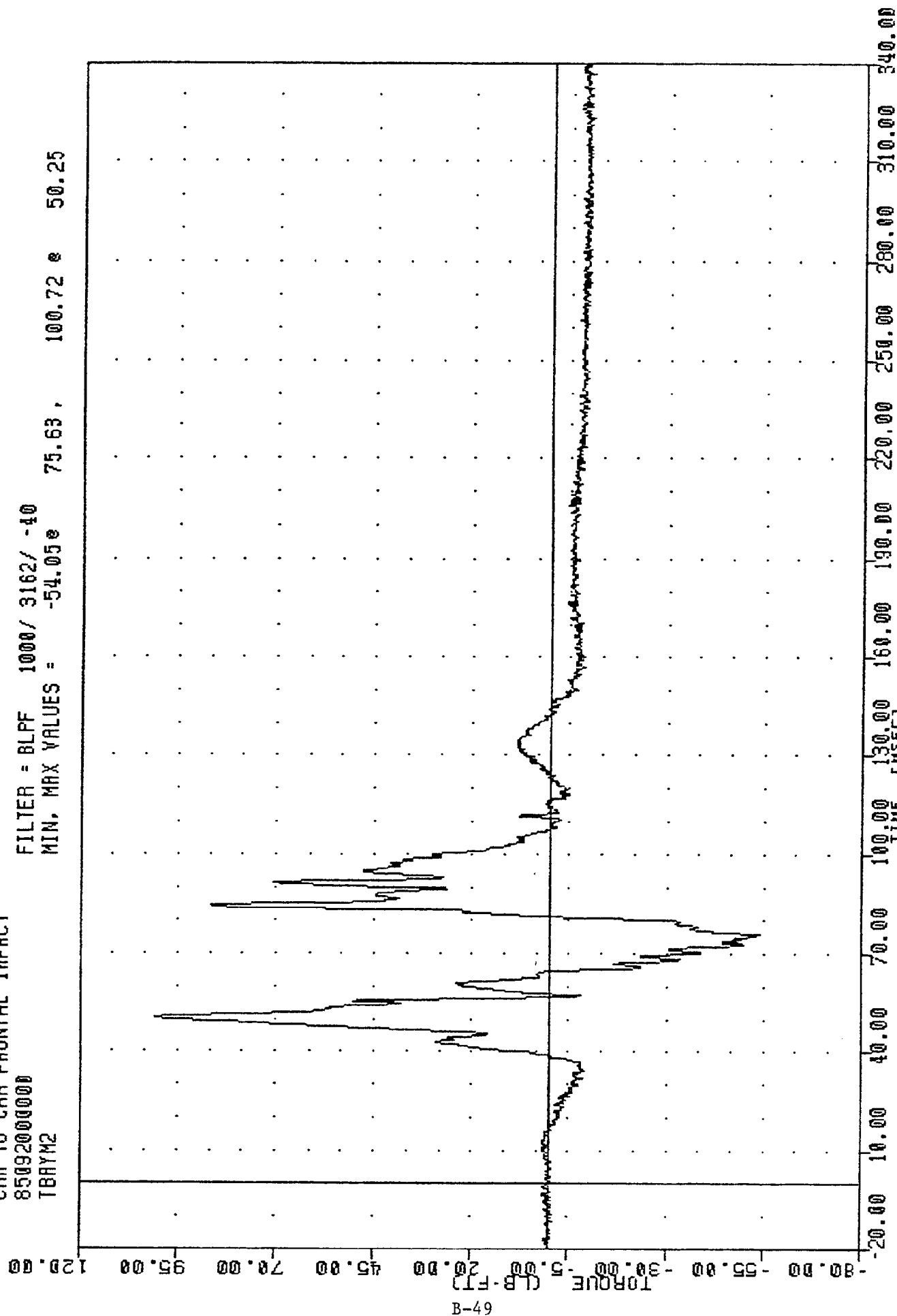
-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
TIME (MSEC)

SUBJECT VEHICLE - ACCORD
PASSENGER RIGHT UPPER TIBIA MOMENT X AXIS LB-FT

VRT 0001023
CAR TO CAR FRONTAL IMPACT
850920000000
TBRM2

PLOT DATE 24-APR-85 16:23:28

FILTER = BLPF 1000/ 3162/ -40
MIN, MAX VALUES = -54.05e 75.63, 100.72 e 50.25



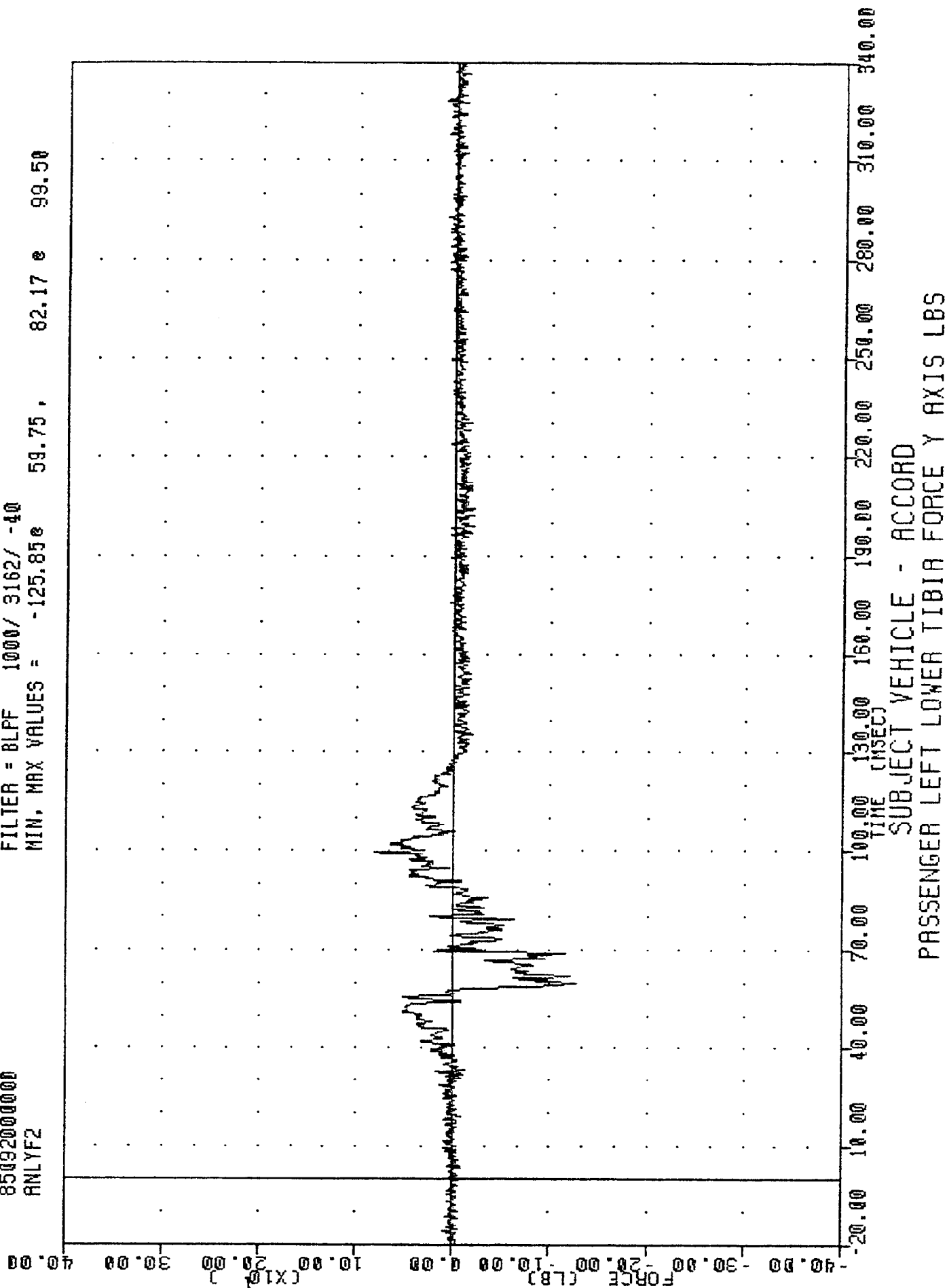
B-49

SUBJECT VEHICLE - ACCORD
PASSENGER RIGHT UPPER TIBIA MOMENT Y AXIS LB-FT

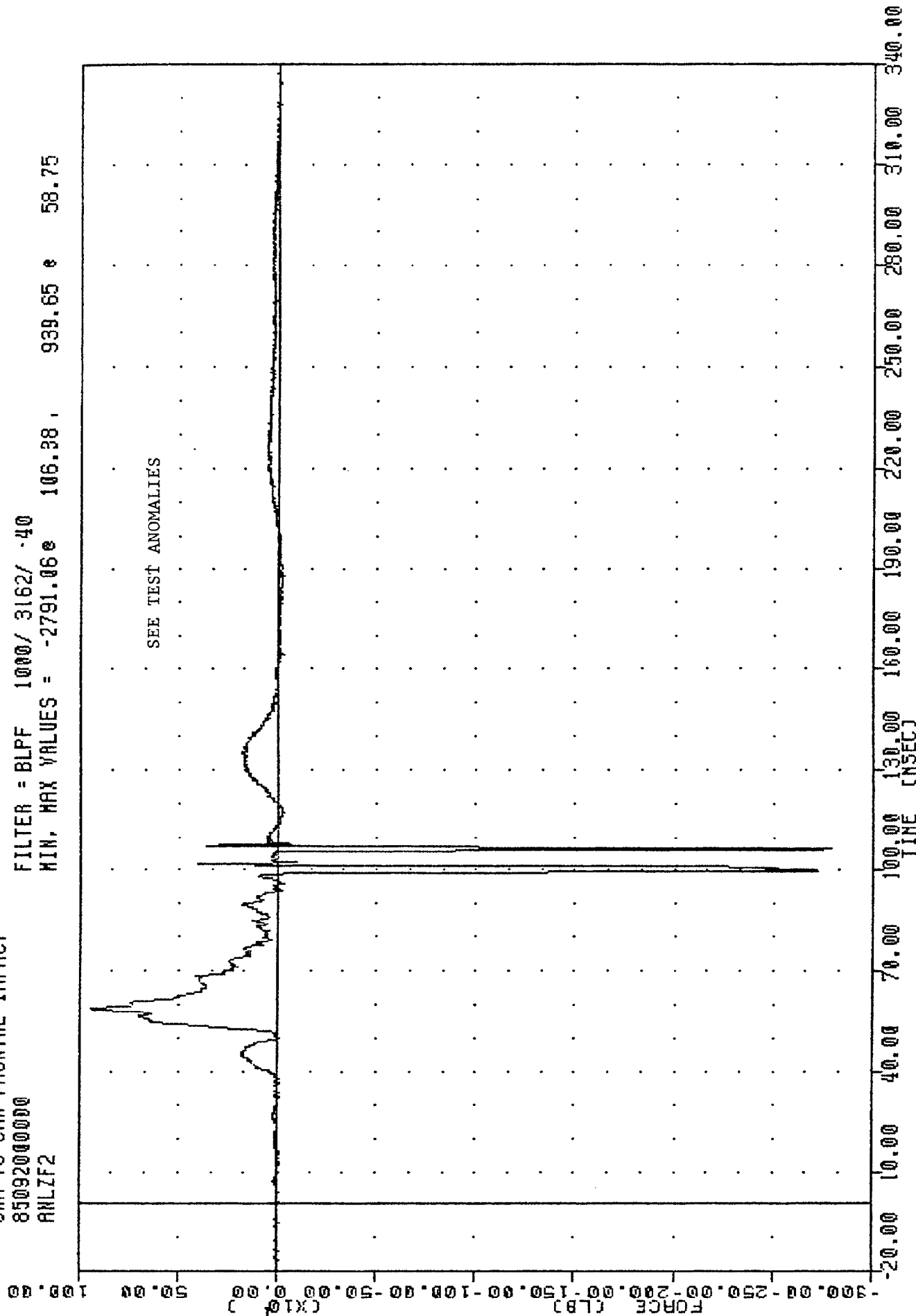
VR1, 0000025
 CAR TO CAR FRONTAL IMPACT
 850920000000
 RNLYF2

PLOT DATE 24 APR 85 16:23:28

FILTER = 8LPF 1000/ 3162/ -40
 MIN. MAX VALUES = -125.85e 59.75, 82.17 e 99.50



VRT 8504025
 CAR TO CAR FRONTAL IMPACT
 85092000000
 ANLZF2
 PLOT DATE 24-APR-85 16:25:28
 FILTER = BLPF 1000/ 3162/ .40
 MIN, MAX VALUES = -2791.06e 106.38 , 939.65 e 58.75



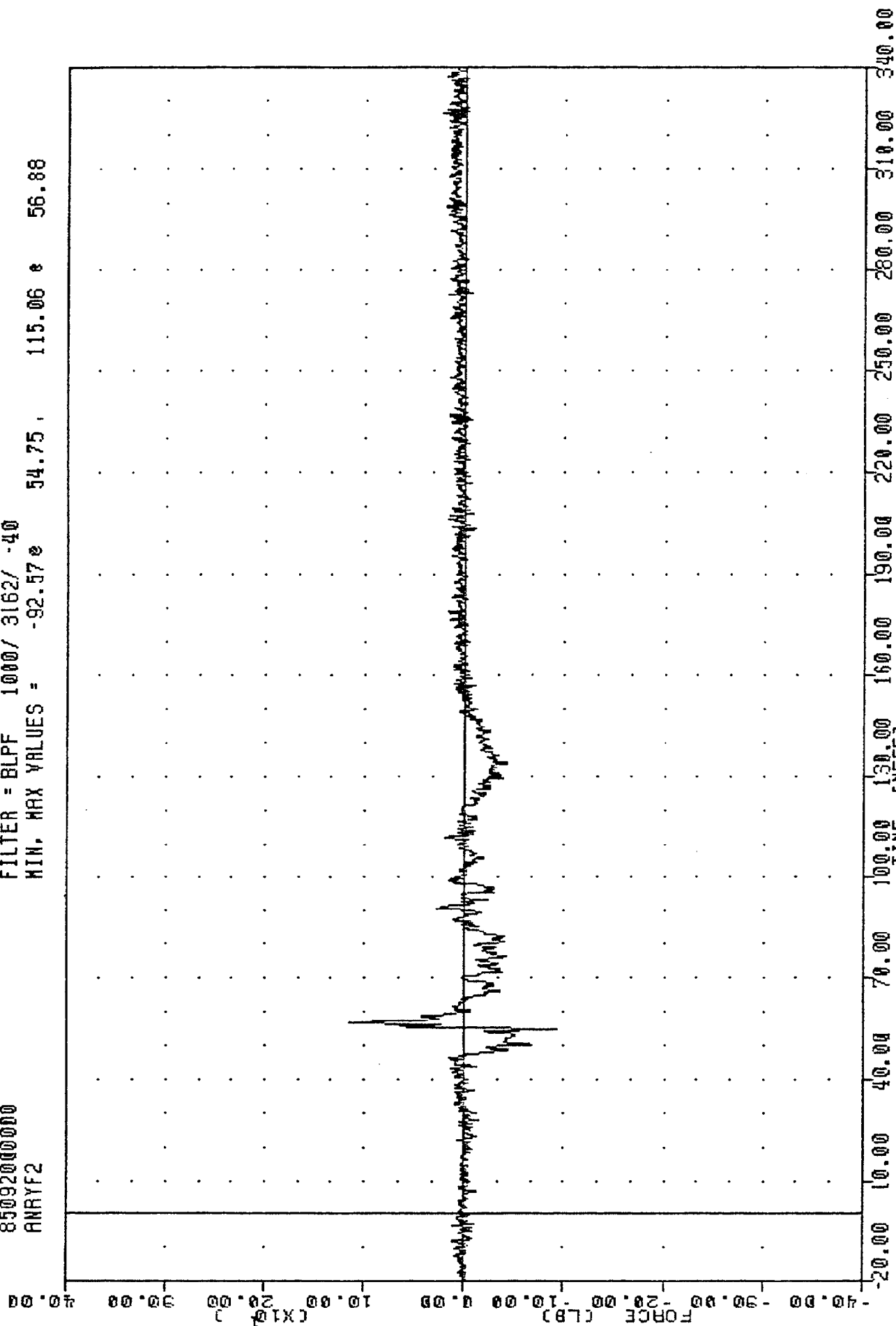
SUBJECT VEHICLE - ACCORD
 PASSENGER LEFT LOWER TIBIA FORCE Z AXIS LBS

VAT , 8504025
CAR TO CAR FRONTAL IMPACT
850920000000
ANRYF2

PLOT DATE 24-APR-85 16:25:28

FILTER = BLPF 1000/ 3162/ -40

MIN, MAX VALUES = -92.57e 54.75 , 115.06 e 56.88



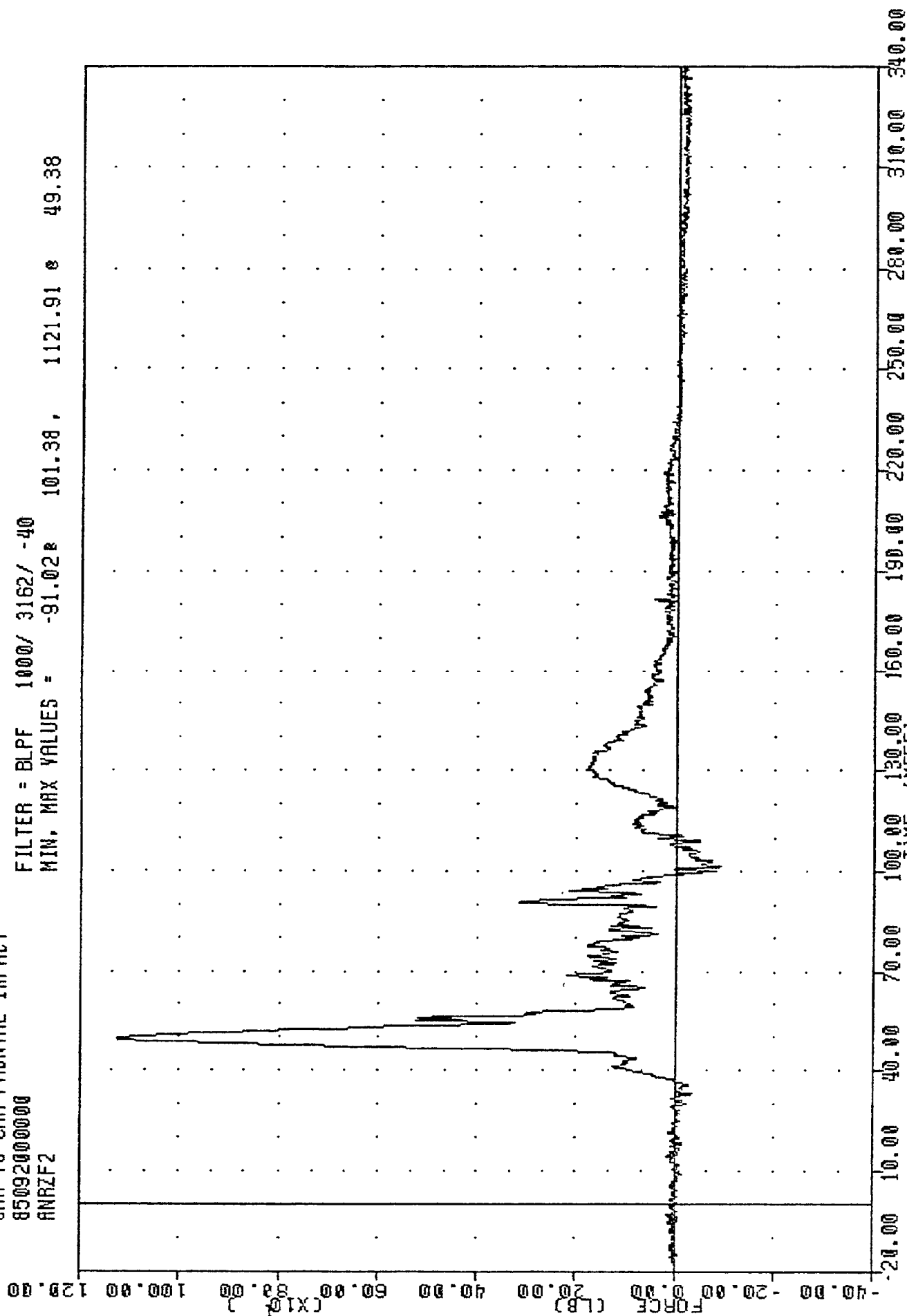
SUBJECT VEHICLE - ACCORD
PASSENGER RIGHT LOWER TIBIA FORCE Y AXIS LBS

VRI , 8504025
 CAR TO CAR FRONTAL IMPACT
 850920000000
 ANRZF2

PLOT DATE 24-APR-85 16:25:28

FILTER = BLPF 1000/ 3162/ -40

MIN. MAX VALUES = -91.028 101.38, 1121.91 8 49.38

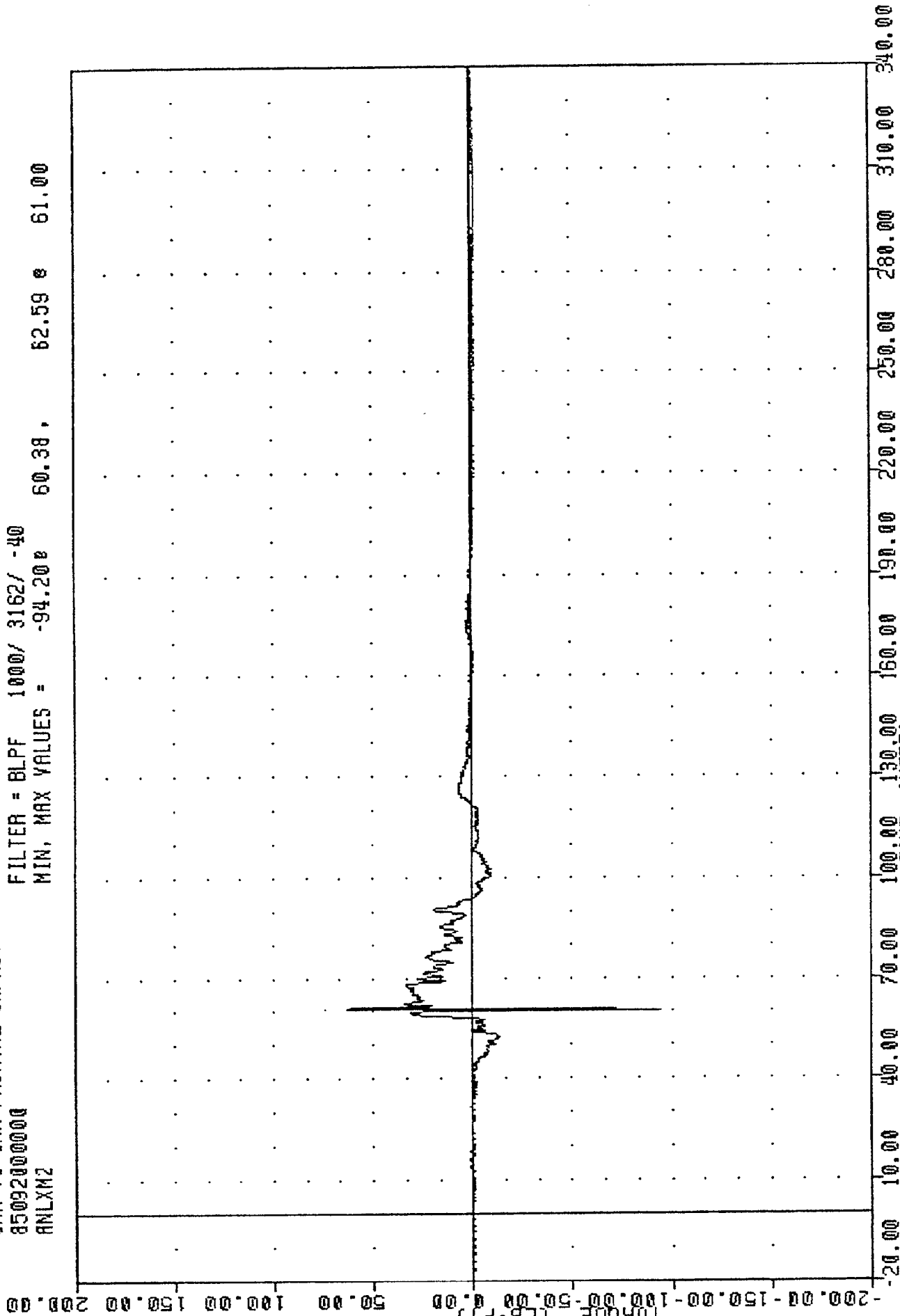


SUBJECT VEHICLE - ACCORD
 PASSENGER RIGHT LOWER TIBIA FORCE Z AXIS LBS

YRT , 850402S
CAR TO CAR FRONTAL IMPACT
85092000000
ANLXM2

PLOT DATE 24-APR-85 16:25:28

FILTER = BLPF 1000/ 3162/ -40
MIN, MAX VALUES = -94.20 60.38, 62.59 61.00

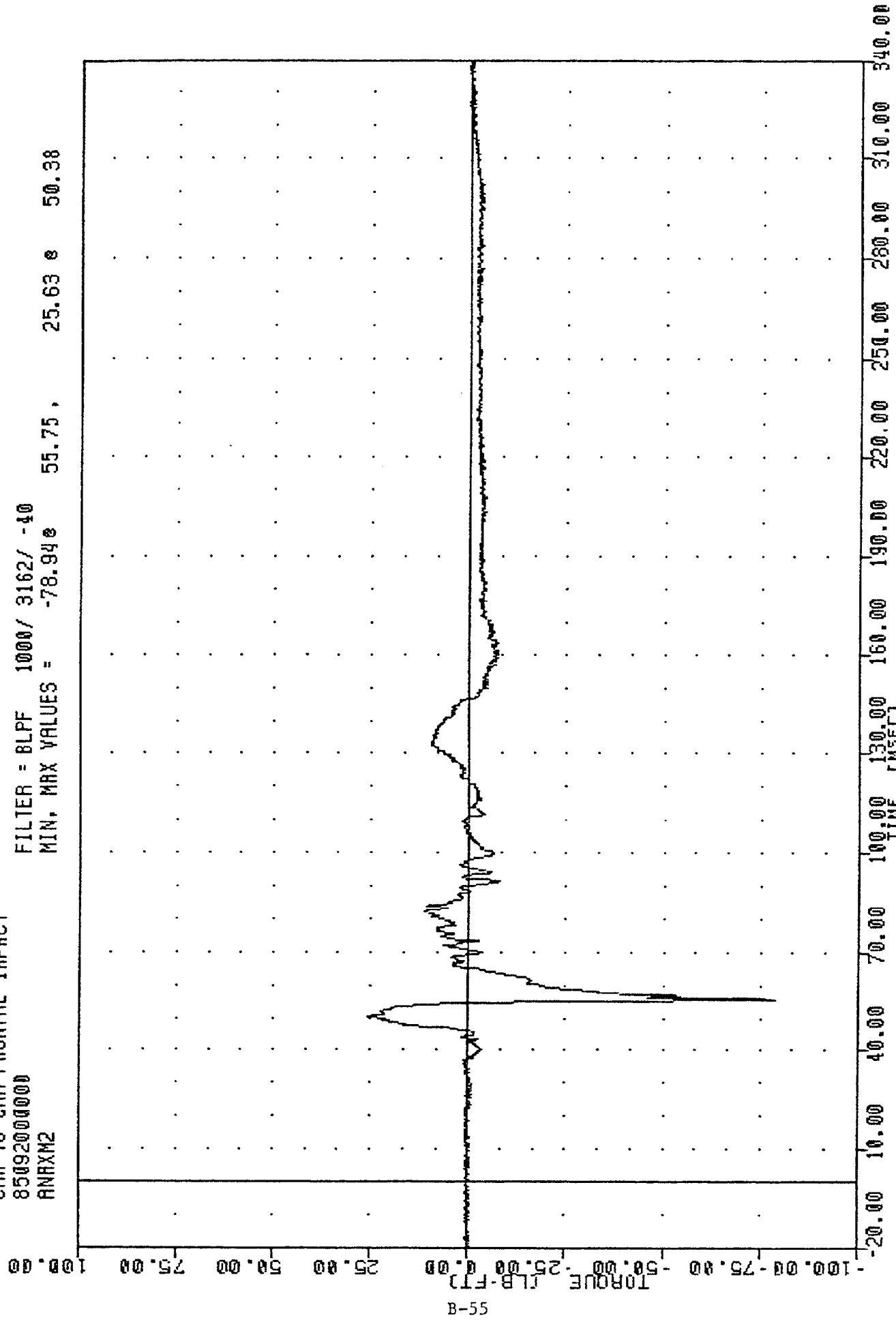


SUBJECT VEHICLE - ACCORD
PASSENGER LEFT LOWER TIBIA MOMENT X AXIS LB-FT

VR1 8504025
CAR TO CAR FRONTAL IMPACT
850920000000
ANRXM2

PLOT DATE 24-APR-85 16:25:28

FILTER = BLPF 1000/ 3162/ -40
MIN, MAX VALUES = -78.94e 55.75, 25.63 e 50.38



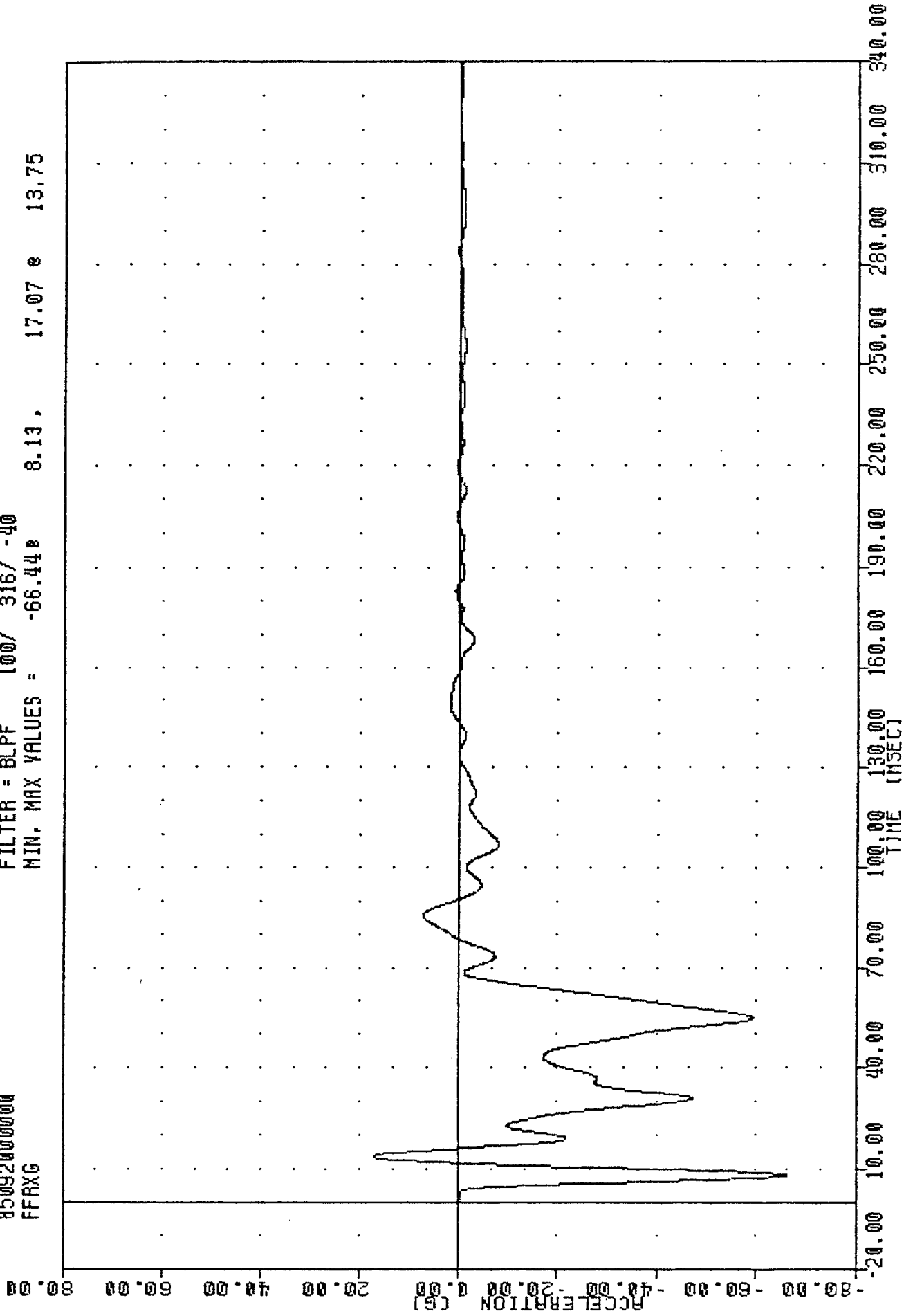
B-55

SUBJECT VEHICLE - ACCORD
PASSENGER RIGHT LOWER TIBIA MOMENT X AXIS LB-FT

VRT 0304025
 CAR TO CAR FRONTAL IMPACT
 85092000000
 FFRXG

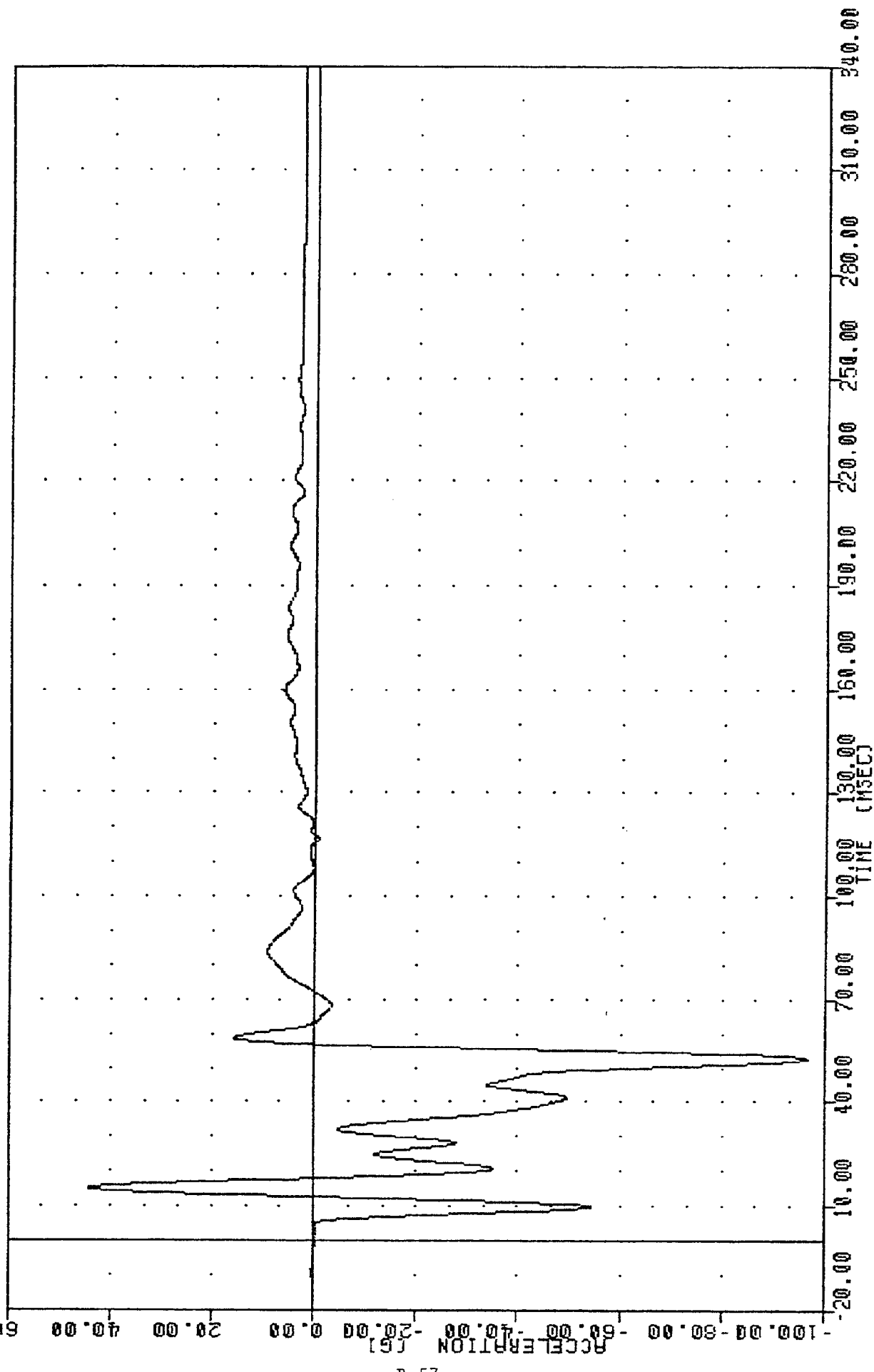
PLOT DATE 24-MAR-85 16:27:57

FILTER = BLPF 100/ 316/ -40
 MIN, MAX VALUES = -66.44 8.13, 17.07 e 13.75



SUBJECT VEHICLE - ACCORD
 RIGHT FRONT FRAME RAIL ACCELERATION X AXIS

VR 1026 24 APR 85 10:27:57
 CAR TO CAR FRONTAL IMPACT
 85092000000
 FFCXG
 FILTER = 8LPF 100/ 316/ -40
 MIN. MAX VALUES = -96.47e 52.63 , 44.30 e 15.13

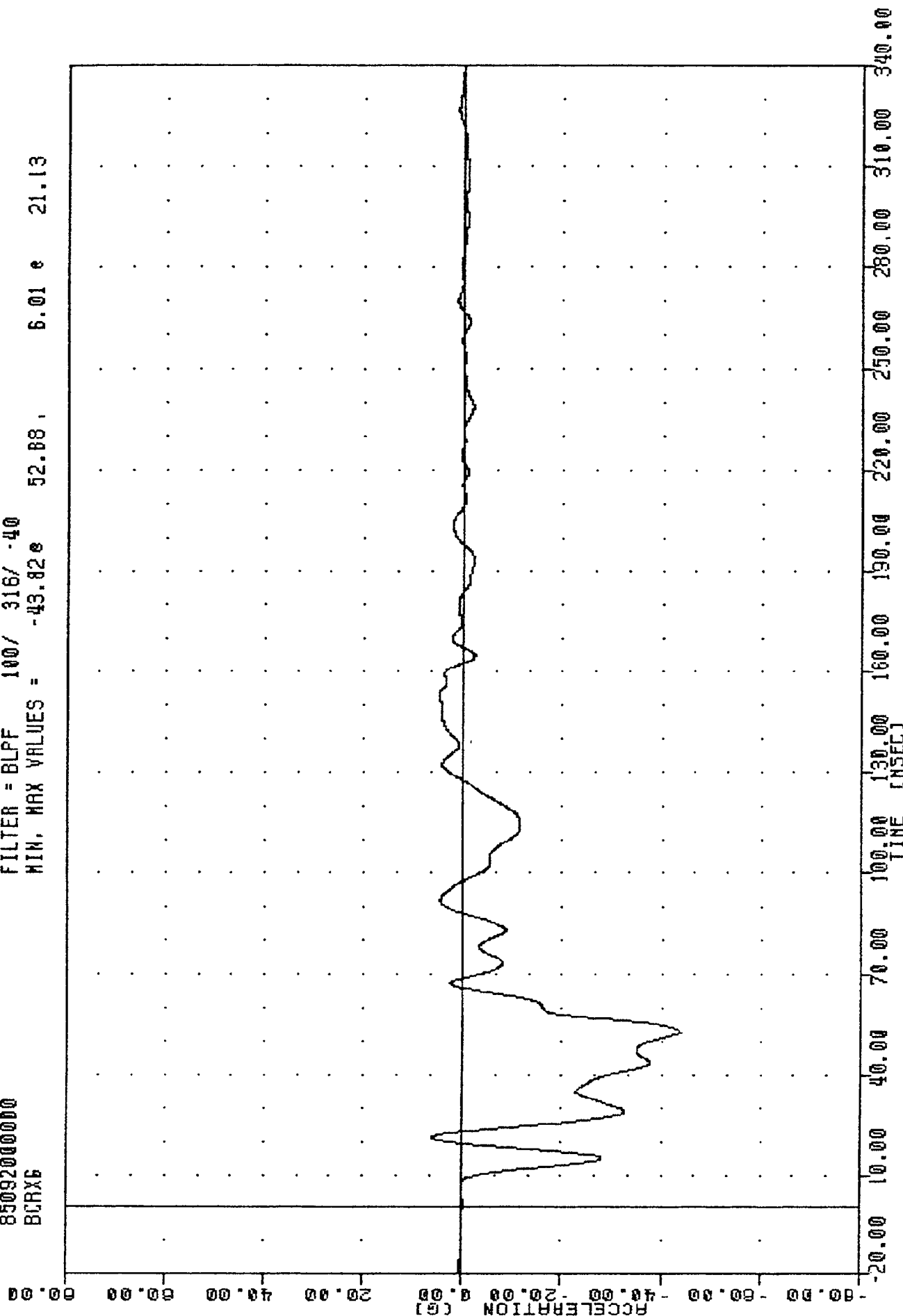


SUBJECT VEHICLE - ACCORD
 FRONT FRAME CROSSMEMBER ACCELERATION X AXIS

VAT, 85092025
 CAR TO CAR FRONTAL IMPACT
 85092000000
 BCRX6

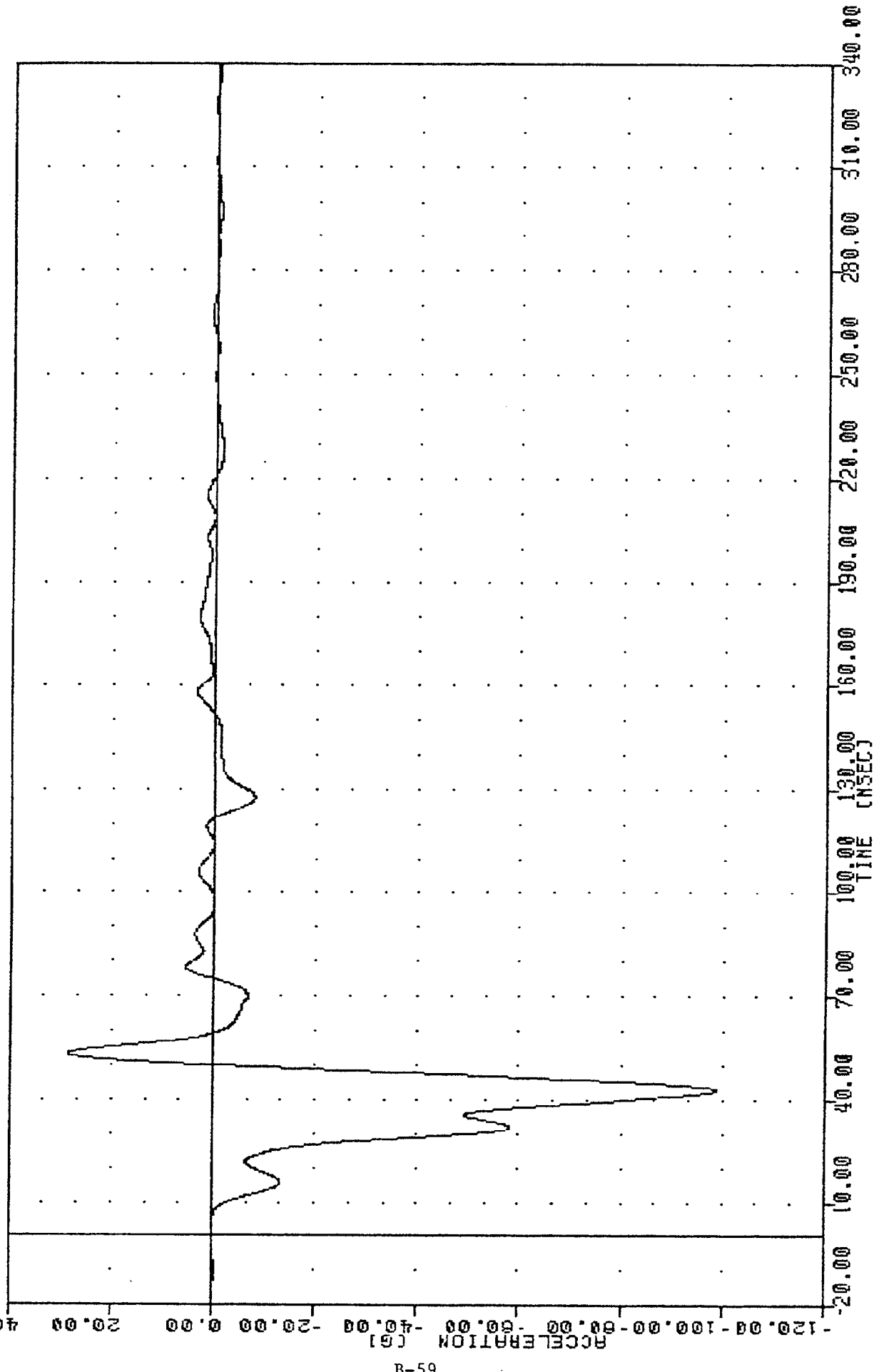
PL01 DATE 24 APR 85 16:27:57

FILTER = BLPF 100/ 316/ -40
 MIN. MAX VALUES = -43.82 52.88, 6.01 21.13



SUBJECT VEHICLE - ACCORD
 RIGHT BRAKE CALIPER ACCELERATION X AXIS

VARI, 850920000000
 CAR TO CAR FRONTAL IMPACT
 850920000000
 ENG62
 FILTER = BLPF 100/ 316/ -40
 MIN, MAX VALUES = -99.02 42.75, 28.58 53.13
 PLOT DATE 24 MAR 83 16:27:57

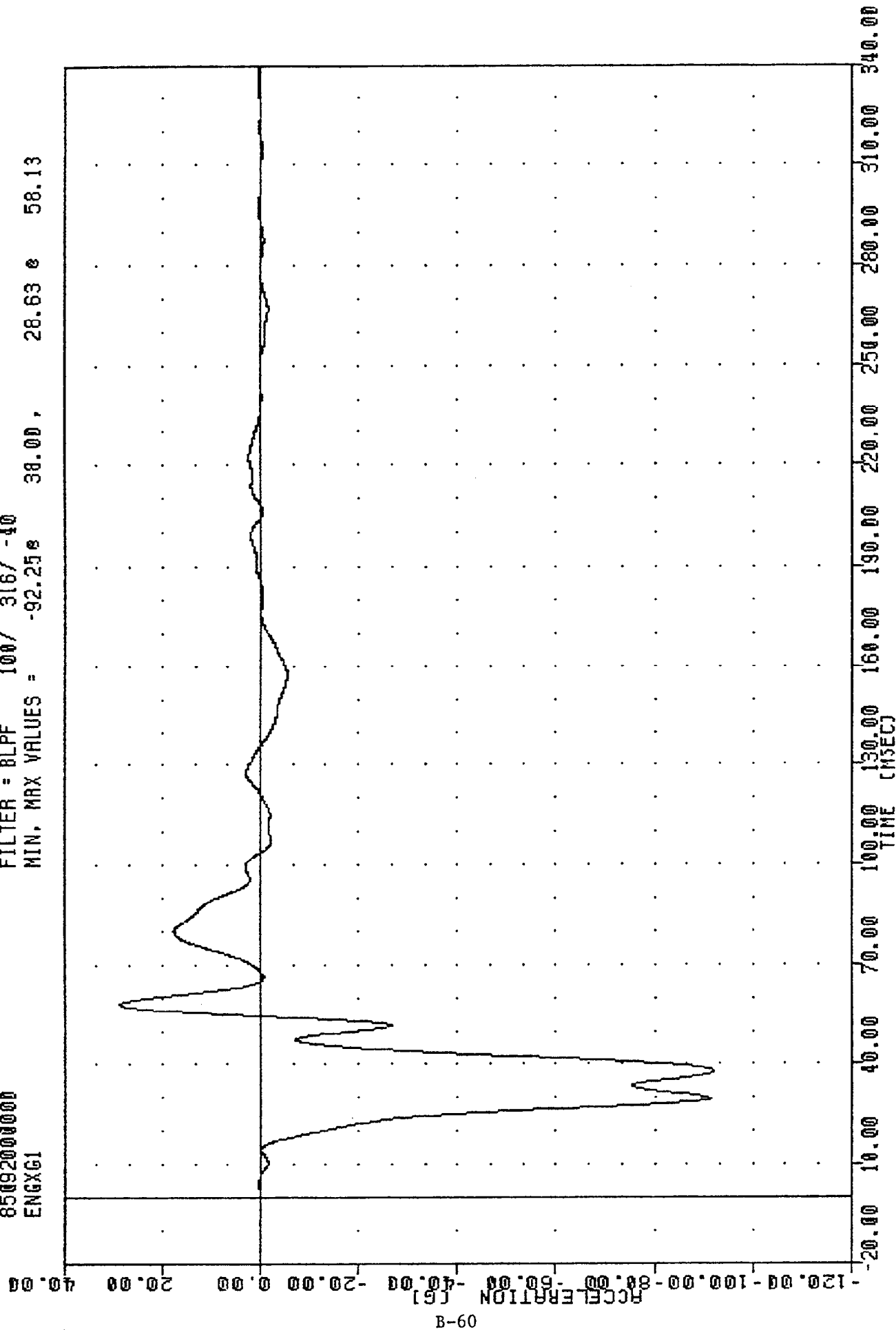


SUBJECT VEHICLE - ACCORD
 ENGINE BLOCK LOWER ACCELERATION X AXIS

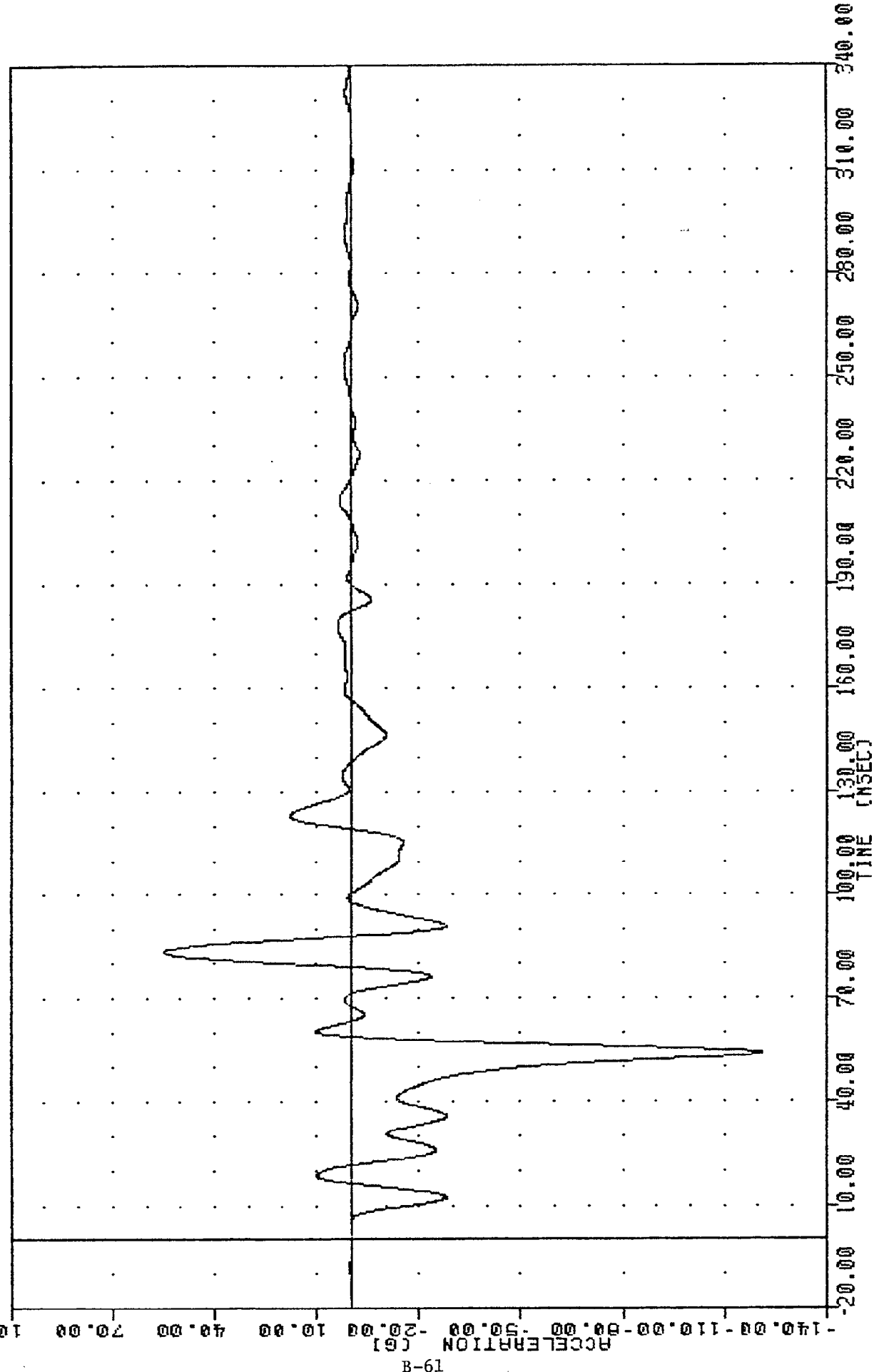
PLOT DATE 24-APR-85 16:27:57

VRT , 8504025
CAR TO CAR FRONTAL IMPACT
850920000000
ENGXG1

FILTER = 8LPF 100/ 316/ -10
MIN. MAX VALUES = -92.25g 38.00, 28.63 g 58.13



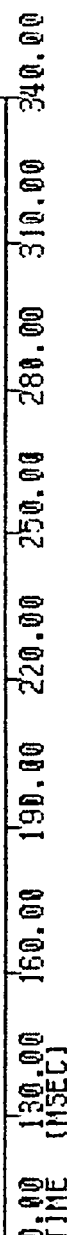
VRT 830402S 24-APR-85 16:27:57
 CAR TO CAR FRONTAL IMPACT
 85092000000
 SCAP6
 FILTER = BLPF 100/ 316/ -40
 MIN. MAX VALUES = -121.05 53.88 , 54.81 83.50



SUBJECT VEHICLE - ACCORD
 STEERING COLUMN ACCELERATION A-P AXIS

16:27:57

FILTER = BLPF 100/ 316/ -40
MIN. MAX VALUES = -105.738

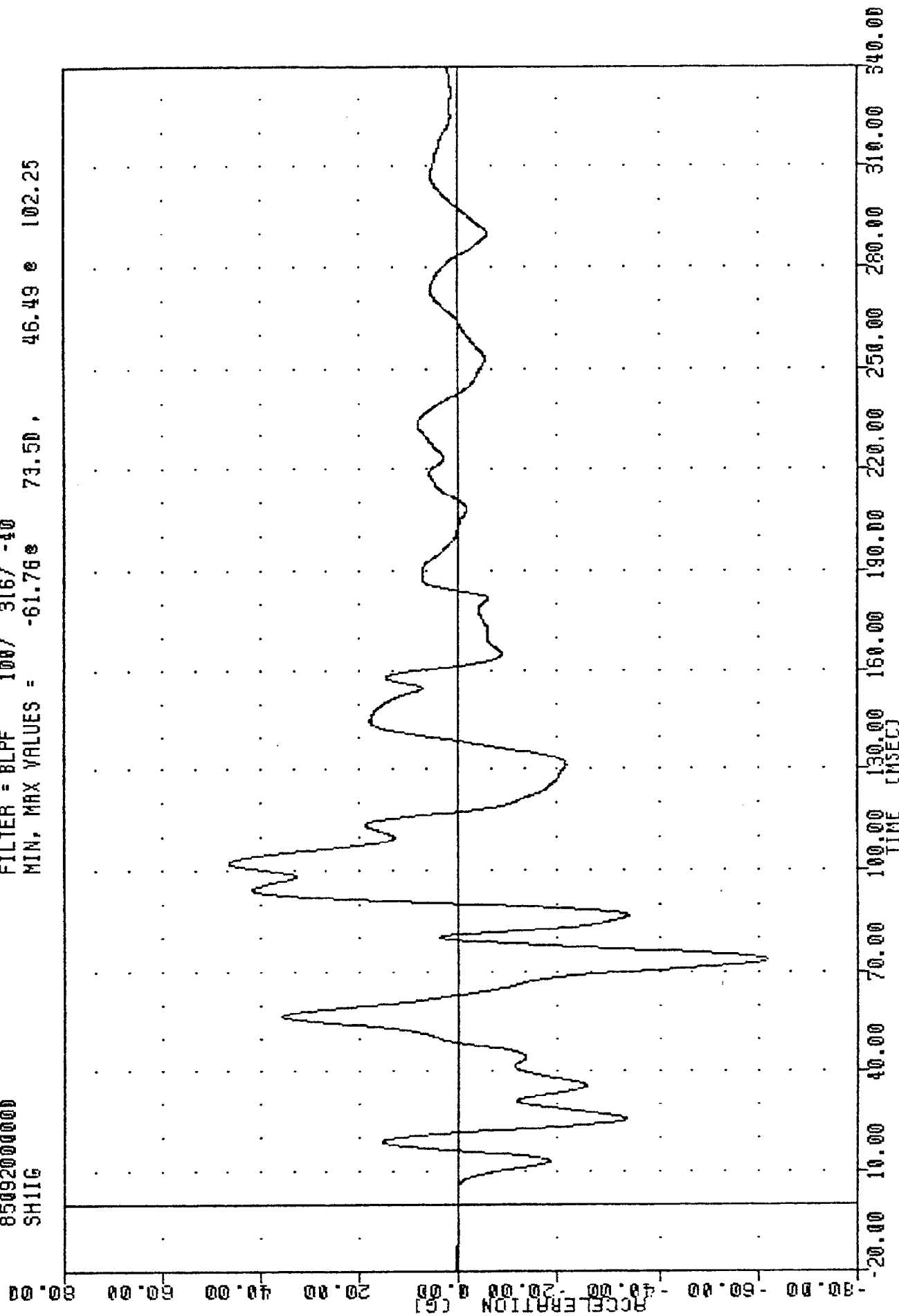


SUBJECT VEHICLE - ACCORD

/R1
 CAR TO CAR FRONTAL IMPACT
 85092000000
 SH11G

710
 24-
 16-
 57

FILTER = BLPF 100/ 316/ -40
 MIN, MAX VALUES = -61.76e 73.50, 46.49 e 102.25

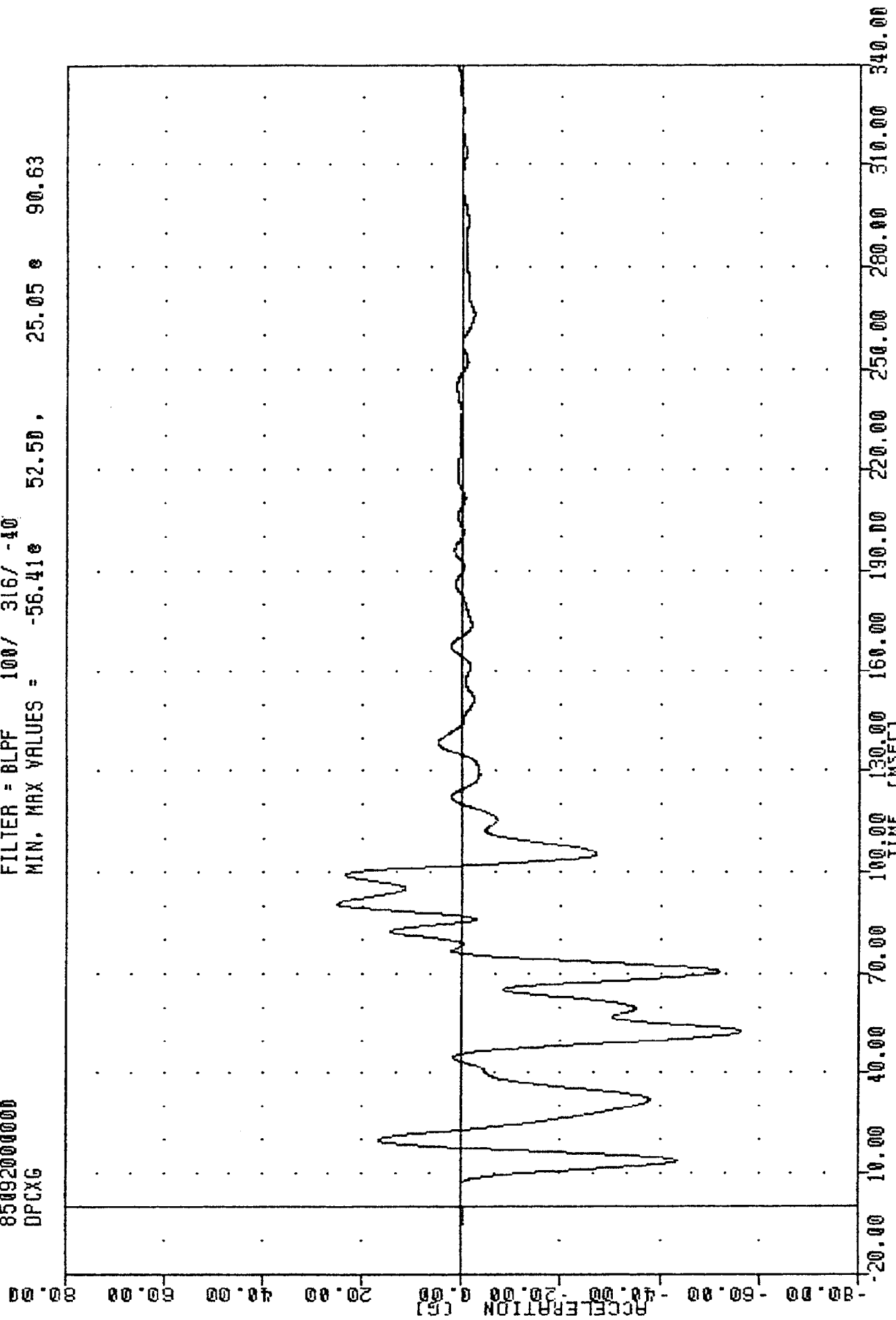


SUBJECT VEHICLE - ACCORD
 STEERING WHEEL HUB ACCELERATION I-S AXIS

VR1, 8501025
CAR TO CAR FRONTAL IMPACT
850920000000
DPCXG

PLOT DATE 24-APR-85 16:27:57

FILTER = BLPF 100/ 316/ -40
MIN. MAX VALUES = -56.41e 52.50, 25.05 e 90.63



B-64

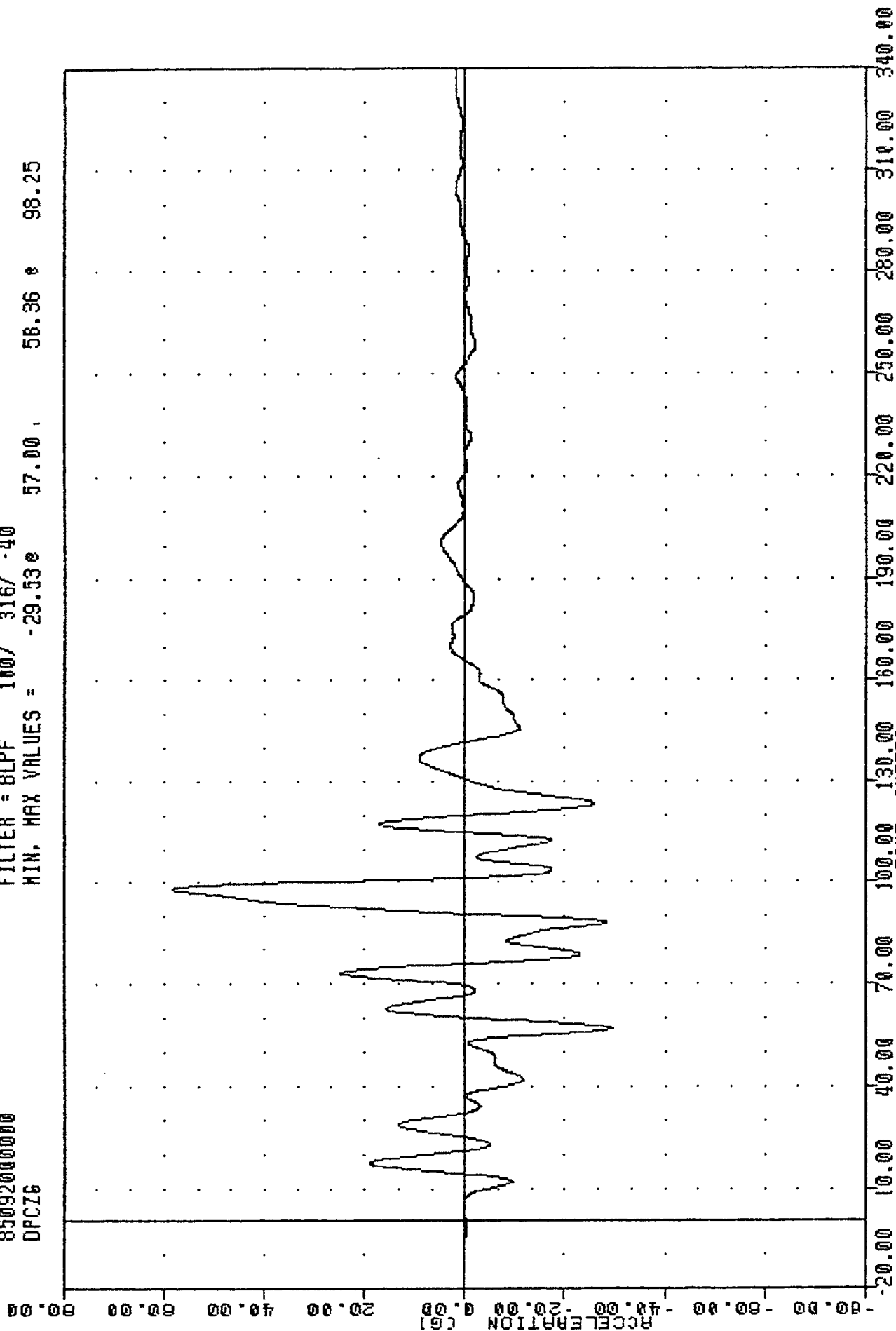
SUBJECT VEHICLE - ACCORD
DASH PANEL CENTER ACCELERATION X AXIS

VAT 850402S
CAR TO CAR FRONTAL IMPACT
850920000000
DPCZ6

PLOT DATE 24-APR-85 16:27:57

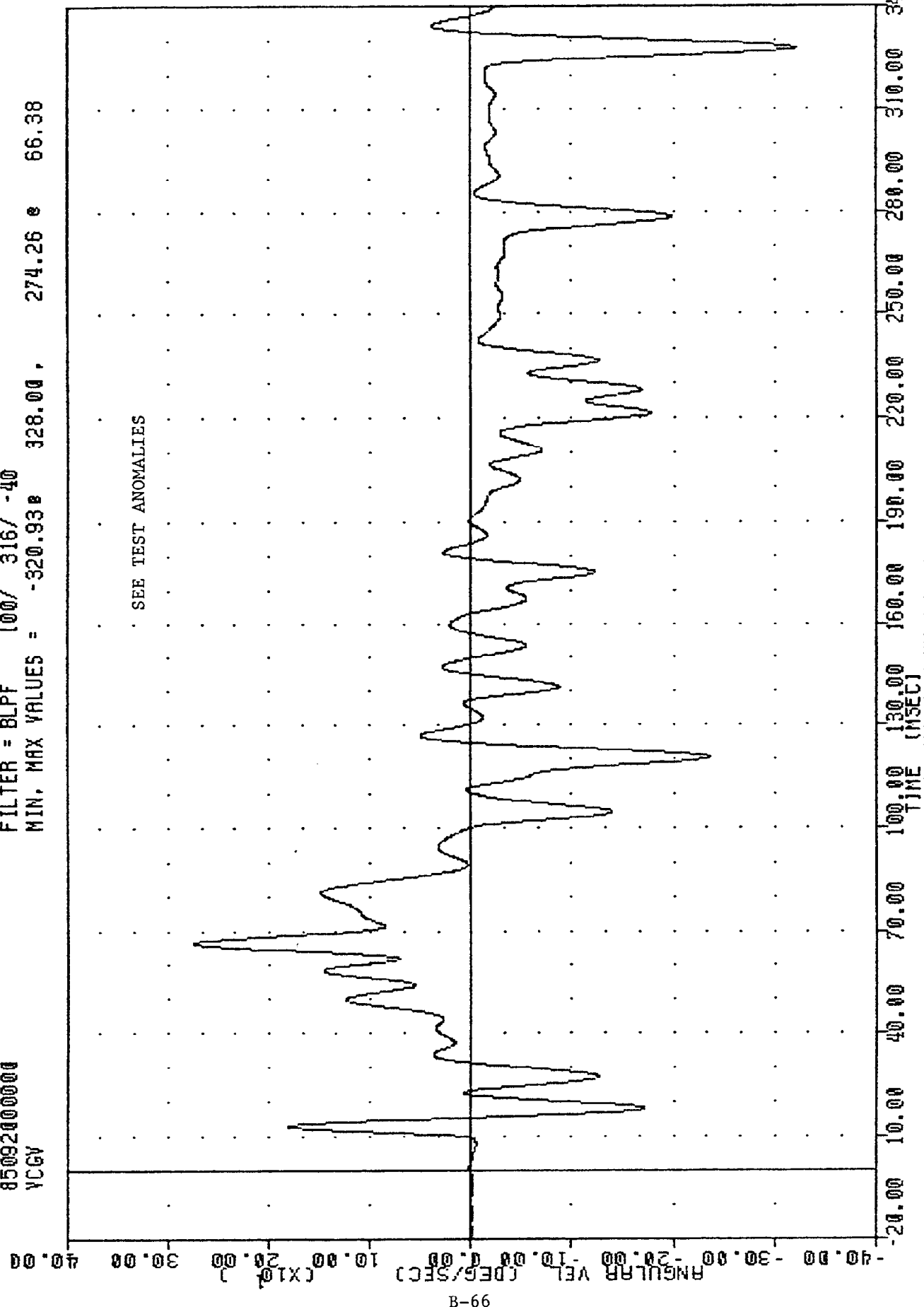
FILTER = BLPF 100/ 316/ -40

MIN. MAX VALUES = -29.53 57.00 58.36 98.25



SUBJECT VEHICLE - ACCORD
DASH PANEL CENTER ACCELERATION Z AXIS

VRT 850402S
 CAR TO CAR FRONTAL IMPACT
 85092000000
 YCGV
 PLOT DATE 24-APR-85 16:27:57
 FILTER = BLPF 100/ 316/ -40
 MIN, MAX VALUES = -320.93 328.00, 274.26 66.38

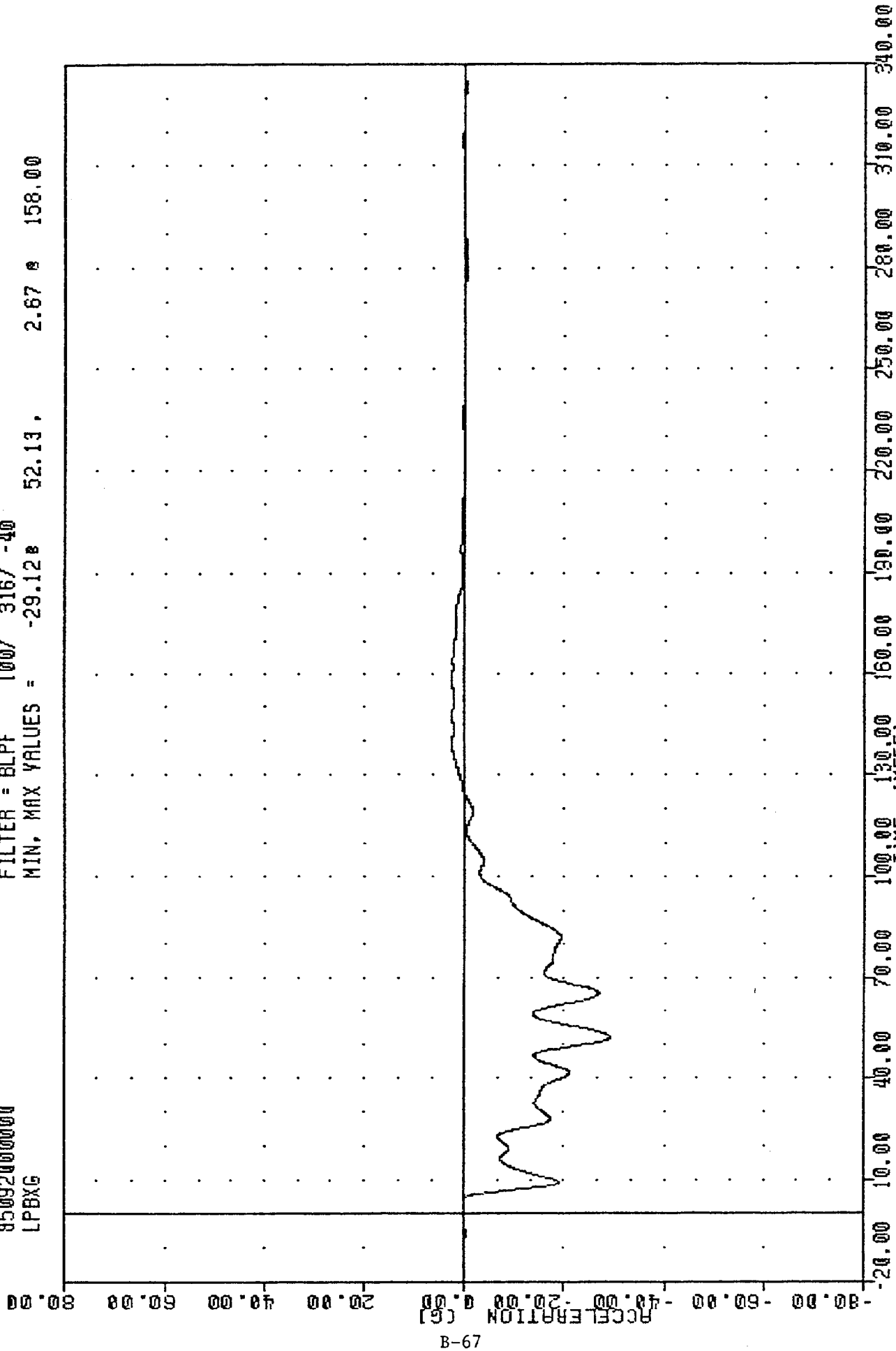


SUBJECT VEHICLE - ACCORD
 VEHICLE PITCH RATE DEGREES/SECOND

VRT , 850402S
CAR TO CAR FRONTAL IMPACT
850920000000
LPBXG

PLOT DATE 24-APR-85 16:27:57

FILTER = BLPF 100/ 316/ -40
MIN, MAX VALUES = -29.12e 52.13, 2.87 e 158.00

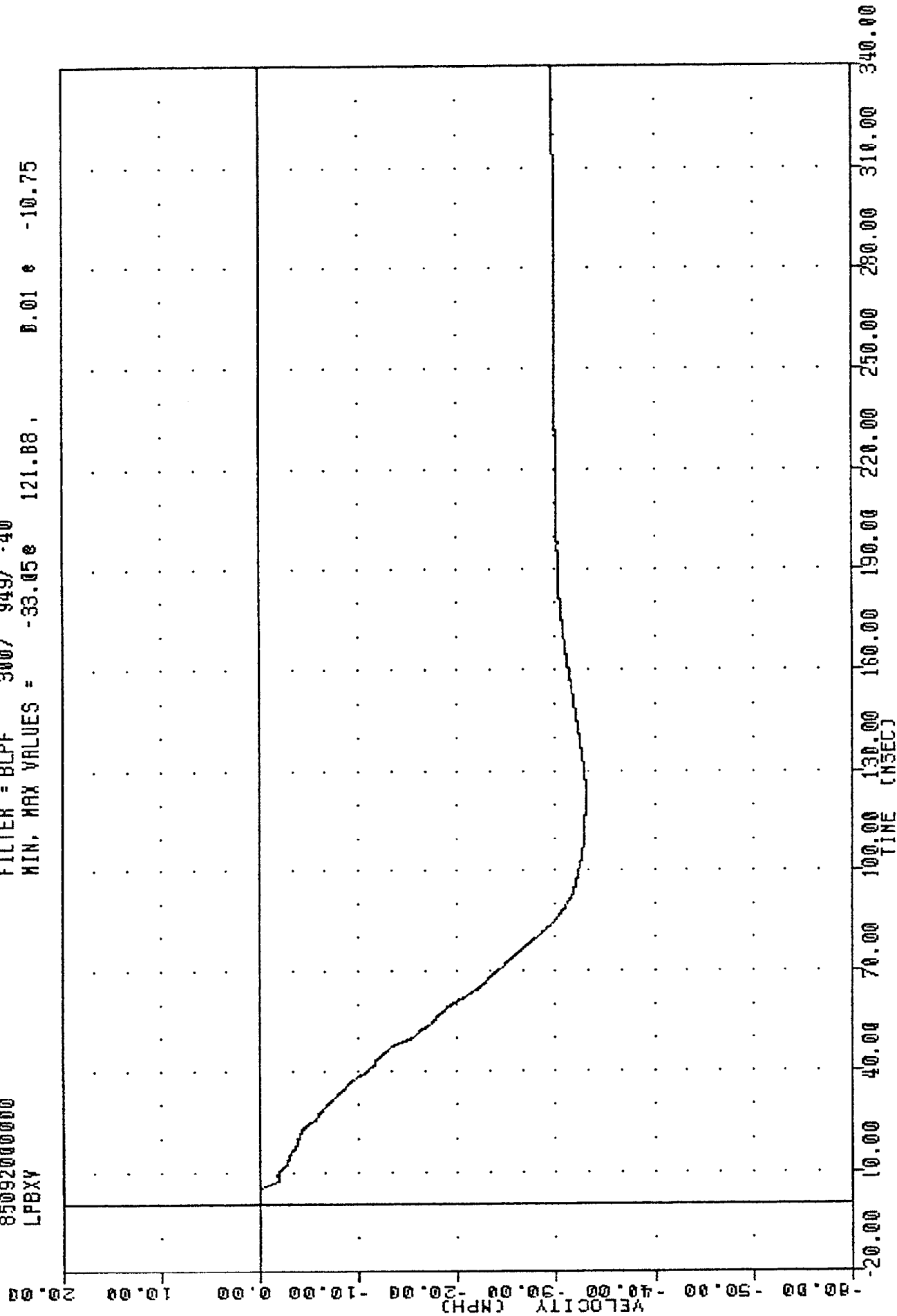


SUBJECT VEHICLE - ACCORD
LEFT B PILLAR ACCELERATION X AXIS

VAT, 850402S
 CAR TO CAR FRONTAL IMPACT
 85092000000
 LPBXV

PLOT DATE 24-APR-85 16:21:48

FILTER = BLPF 300/ 949/ -40
 MIN, MAX VALUES = -33.05e 121.88, 0.01 e -10.75



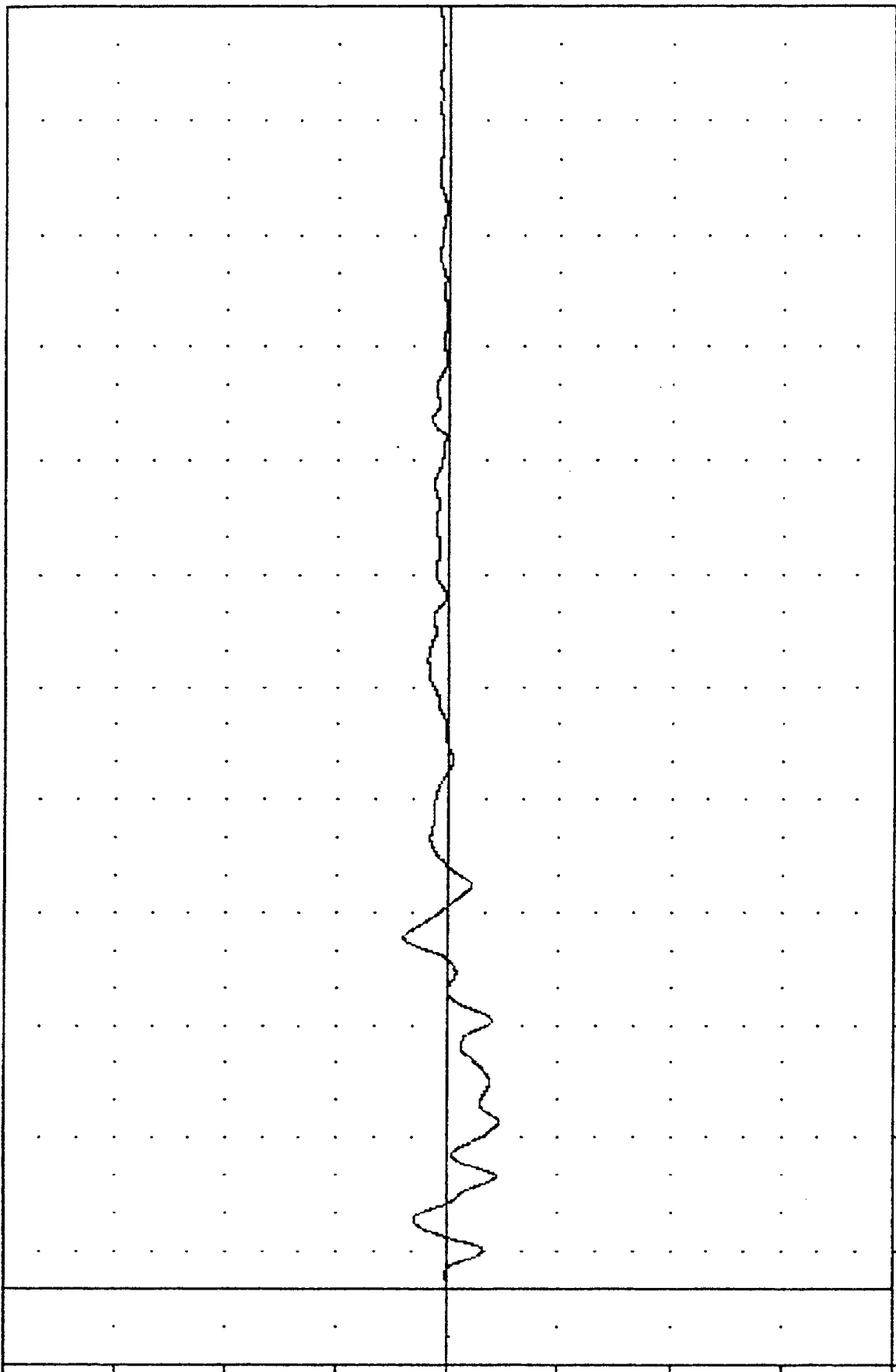
SUBJECT VEHICLE - ACCORD
 DELTA V USING LPBXG

VRT , 8504025
 CAR TO CAR FRONTAL IMPACT
 85092000000
 LPEZG

PLOT DATE 24-APR-85 16:27:57

FILTER = BLPF 100/ 316/ -40
 MIN, MAX VALUES = -9.33e 44.13, 8.03e 93.38

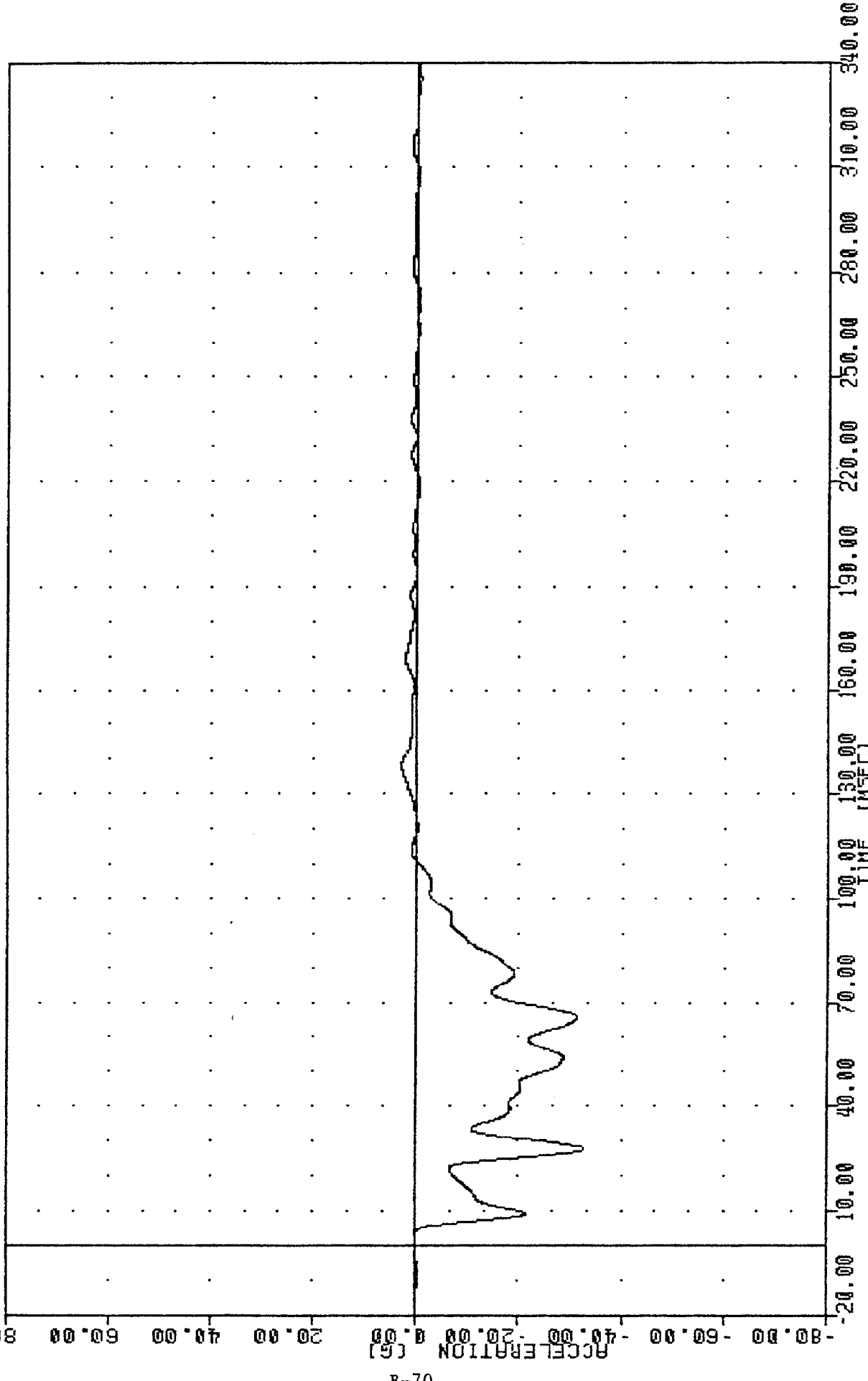
ACCELERATION (G)



100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
 TIME (MSEC)

SUBJECT VEHICLE - ACCORD
 LEFT B PILLAR ACCELERATION Z AXIS

YRT , 8504025
 CAR TO CAR FRONTAL IMPACT
 850920000000
 APBKG
 PLOT DATE 24-APR-85 16:27:57
 FILTER = BLPF 100/ 316/ -40
 MIN, MAX VALUES = -32.77 27.63, 2.95 138.38

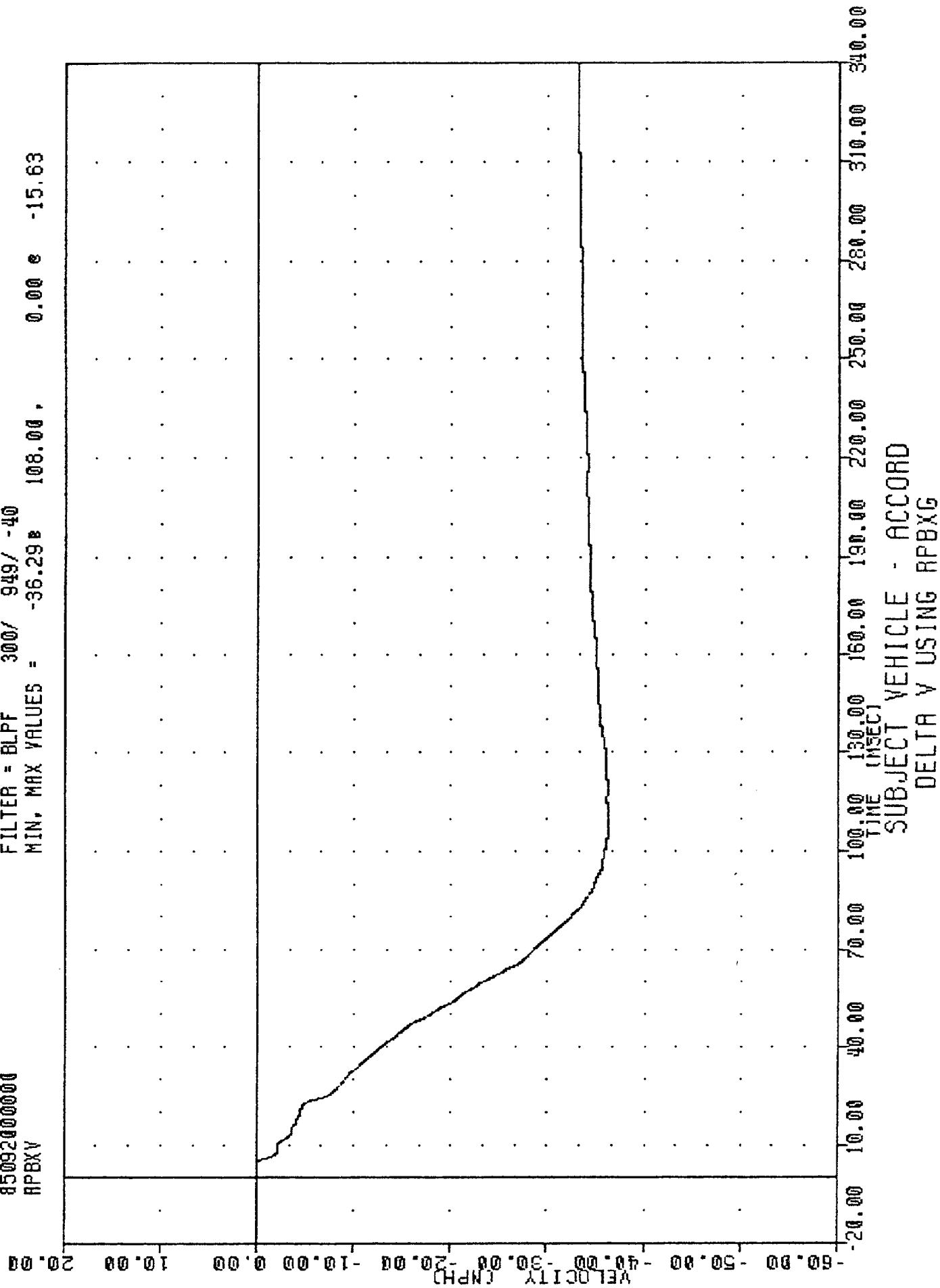


SUBJECT VEHICLE - ACCORD
 RIGHT B PILLAR ACCELERATION X AXIS

VR1
CAR TO CAR FRONTAL IMPACT
850920000000
APBXV

PLOT DATE 24-APR-85 16:21:48

FILTER = BLPF 300/ 949/ -40
MIN, MAX VALUES = -36.298 108.00, 0.00 e -15.63

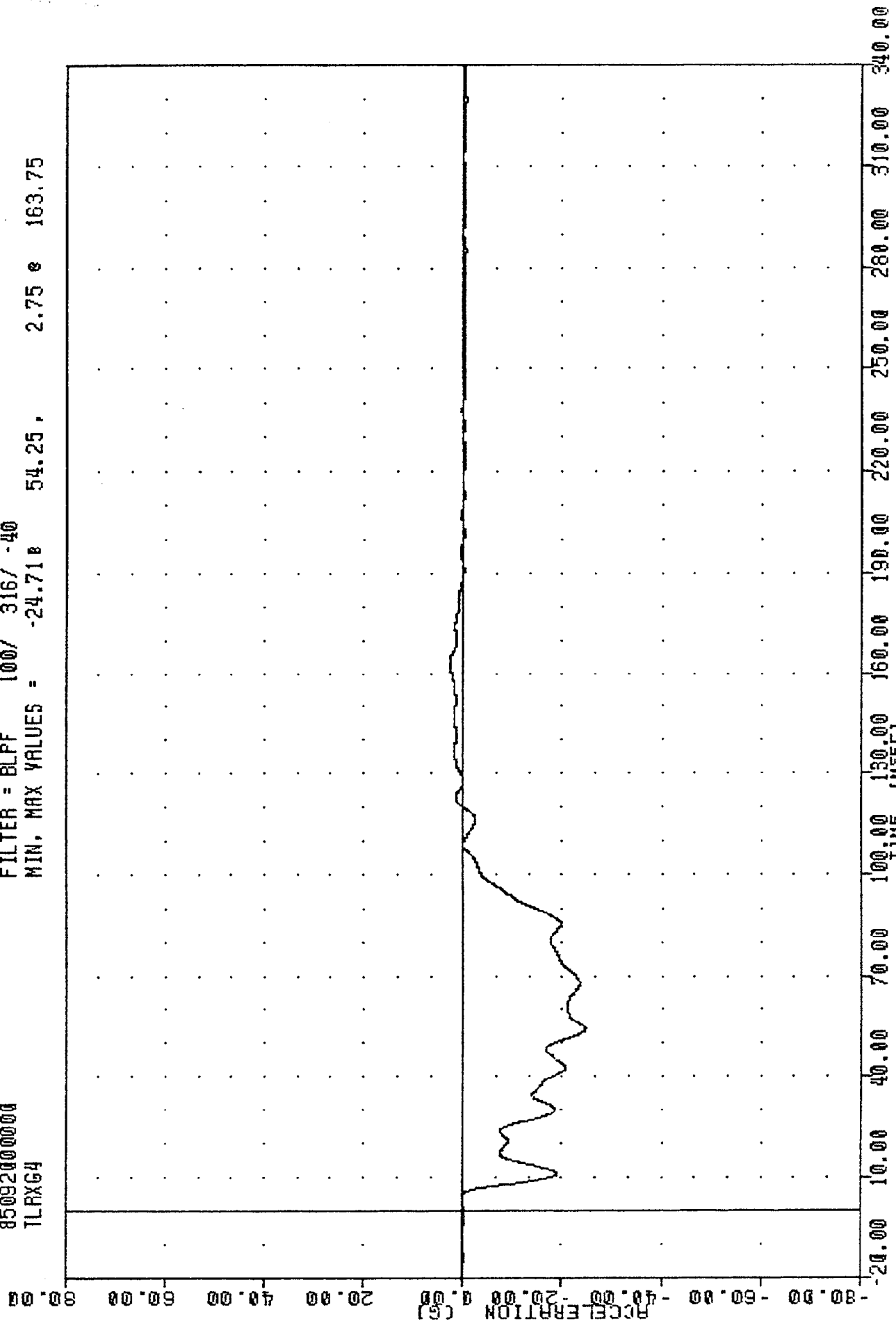


VR1, 8504025
CAR TO CAR FRONTAL IMPACT
85092000000
TLRXG4

PLOT DATE 24-APR-85 16:27:57

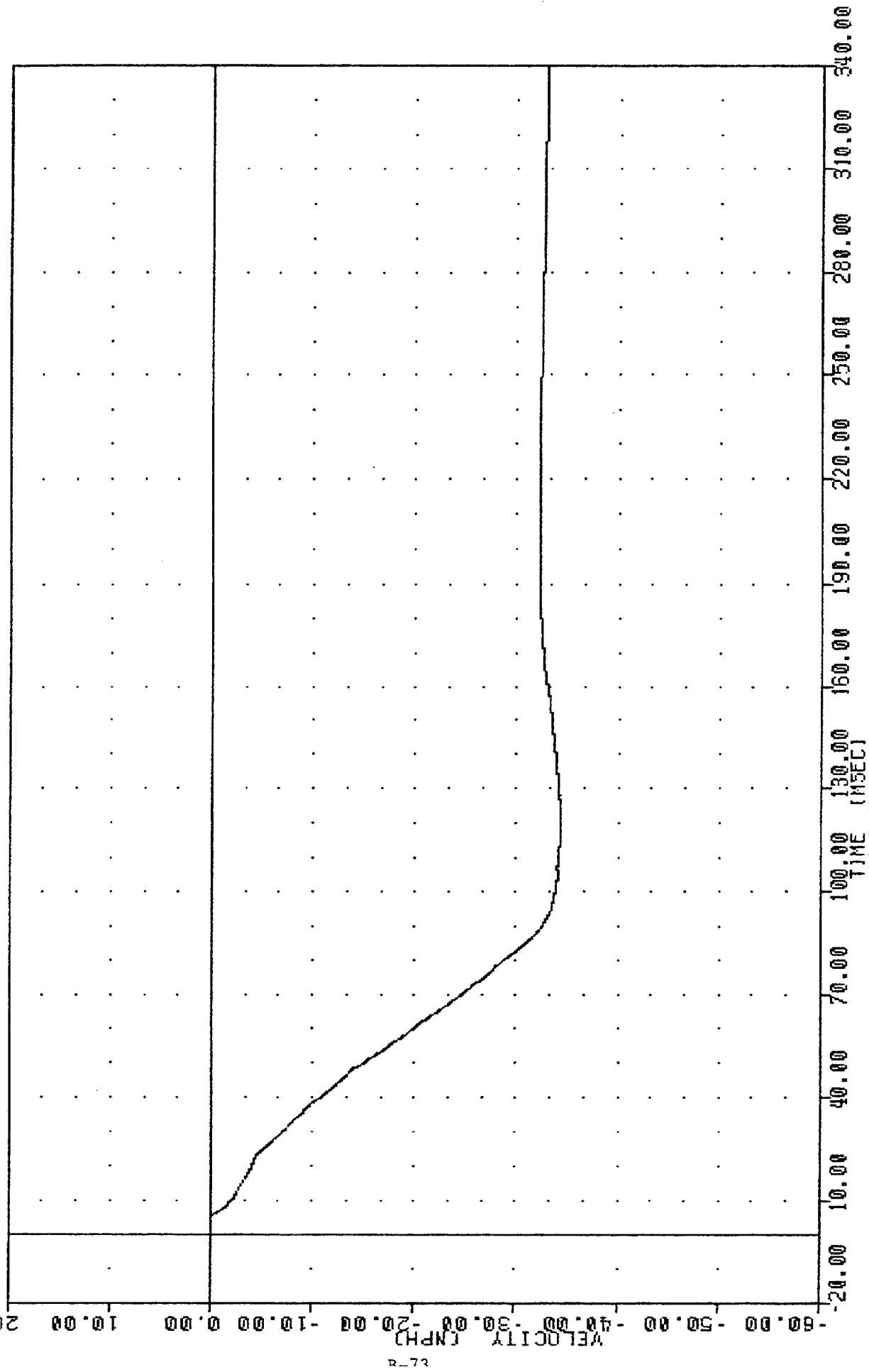
FILTER = BLPF 100/ 316/ -40

MIN, MAX VALUES = -24.71 54.25, 2.75 163.75



SUBJECT VEHICLE - ACCORD
LEFT REAR SEAT ACCELERATION X AXIS

VRT [REDACTED], 8504025
 CAR TO CAR FRONTAL IMPACT
 850920000000
 TLRXV4
 PLOT DATE 24-APR-85 16:21:48
 FILTER = BLPF 300/ 949/ -40
 MIN. MAX VALUES = -34.43 116.88, 0.01 e -8.00

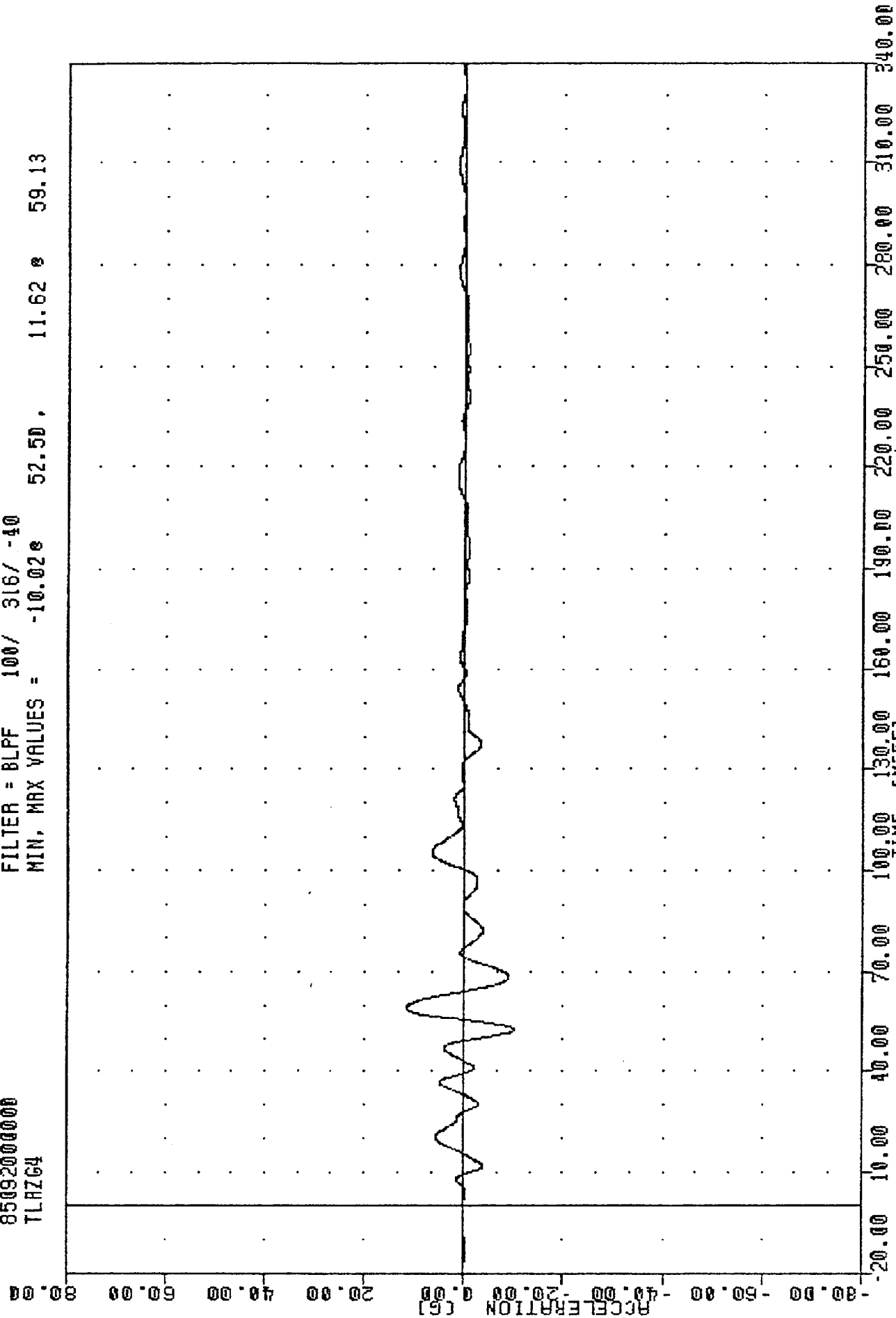


SUBJECT VEHICLE - ACCORD
 DELTA V USING TLRXG4

VR1, 8504025
CAR TO CAR FRONTAL IMPACT
85092000000
TLHZG4

PLOT DATE 24-APR-85 16:27:57

FILTER = BLPF 100/ 316/ -40
MIN, MAX VALUES = -10.02g 52.50, 11.62g 59.13



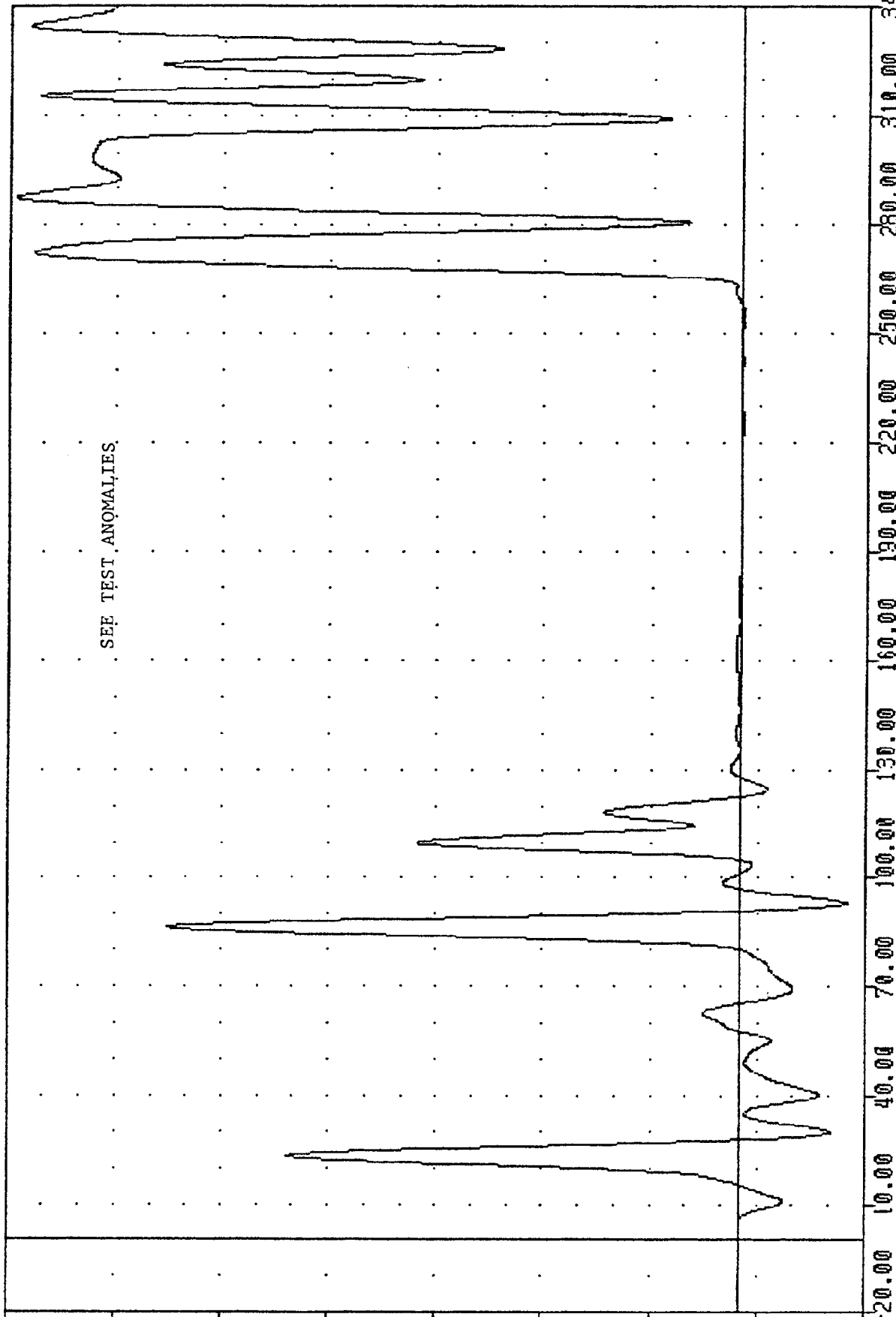
SUBJECT VEHICLE - ACCORD
LEFT REAR SEAT ACCELERATION Z AXIS

VAT 8504025
CAR TO CAR FRONTAL IMPACT
850920000000
TLRX6D

PLOT DATE 24-APR-85 16:27:57

FILTER = BLPF 100/ 316/ -40
MIN. MAX VALUES = -59.78e 93.00 405.66 e 287.63

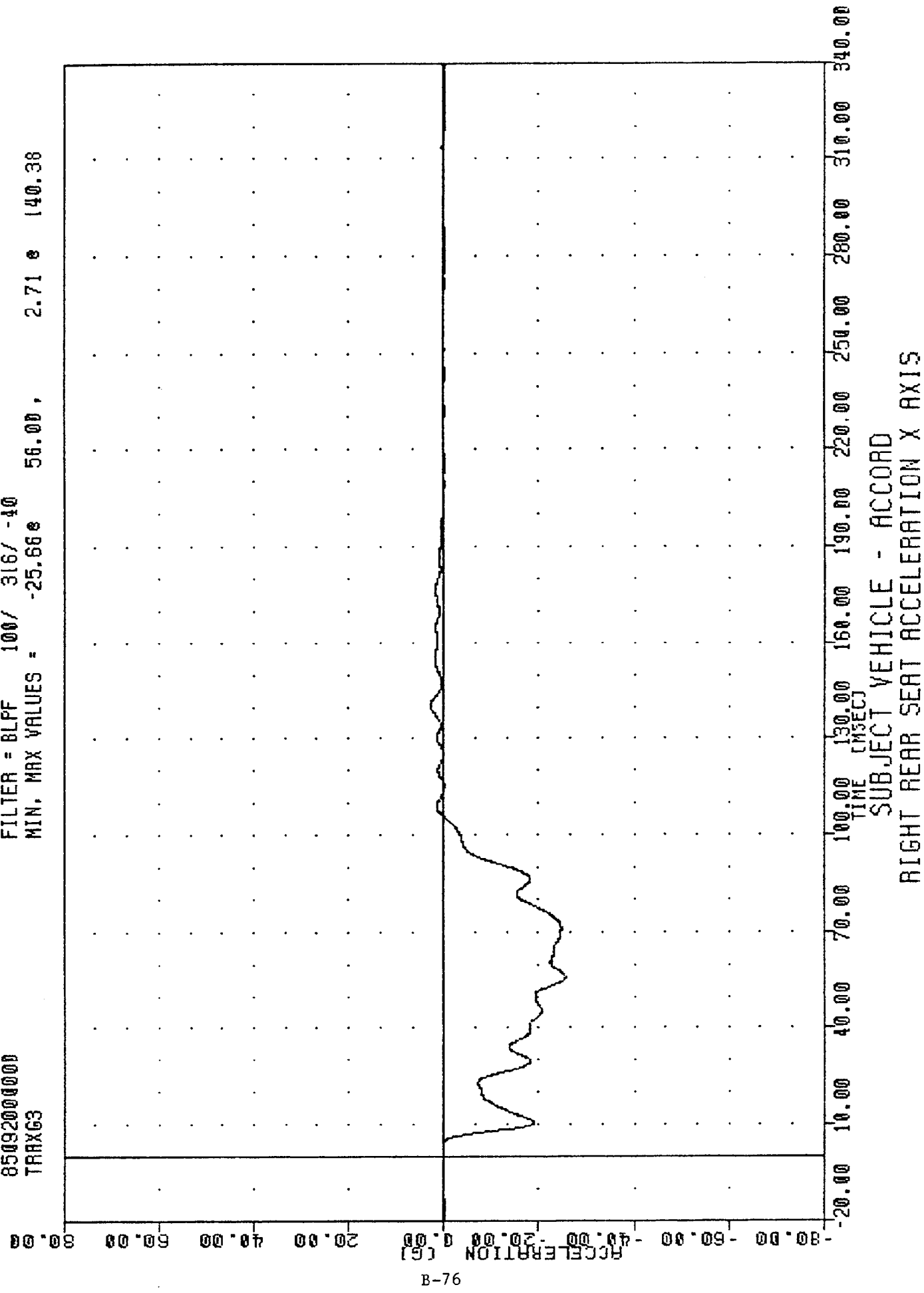
ACCELERATION (G)



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

SUBJECT VEHICLE - ACCORD
LEFT REAR SEAT ACCELERATION - 2 X AXIS

VRT [REDACTED], 8501025 [REDACTED] PLOT DATE [REDACTED] 24-APR-85 [REDACTED] 16:27:57 [REDACTED]
 CAR TO CAR FRONTAL IMPACT
 850920000000
 TRAX63
 FILTER = BLPF 100/ 316/ -40
 MIN. MAX VALUES = -25.66e 56.00, 2.71 e 140.38

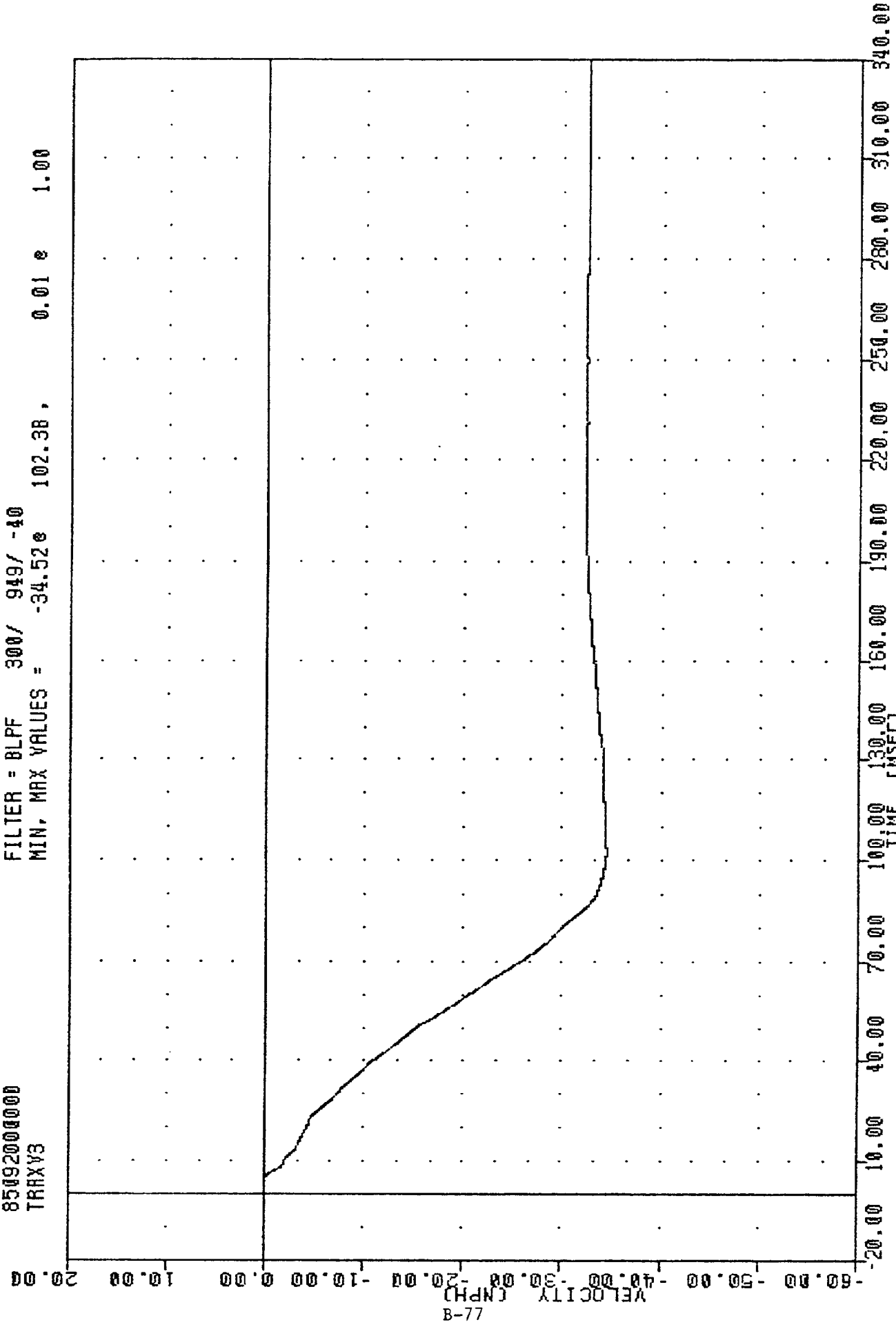


SUBJECT VEHICLE - ACCORD
 RIGHT REAR SEAT ACCELERATION X AXIS

VR1, 6504023
 CAR TO CAR FRONTAL IMPACT
 85092000000
 TRRXV3

PLOT DATE 24-APR-85 16:21:48

FILTER = BLPF 300/ 949/ -40
 MIN, MAX VALUES = -34.52e 102.38, 0.01 e 1.00

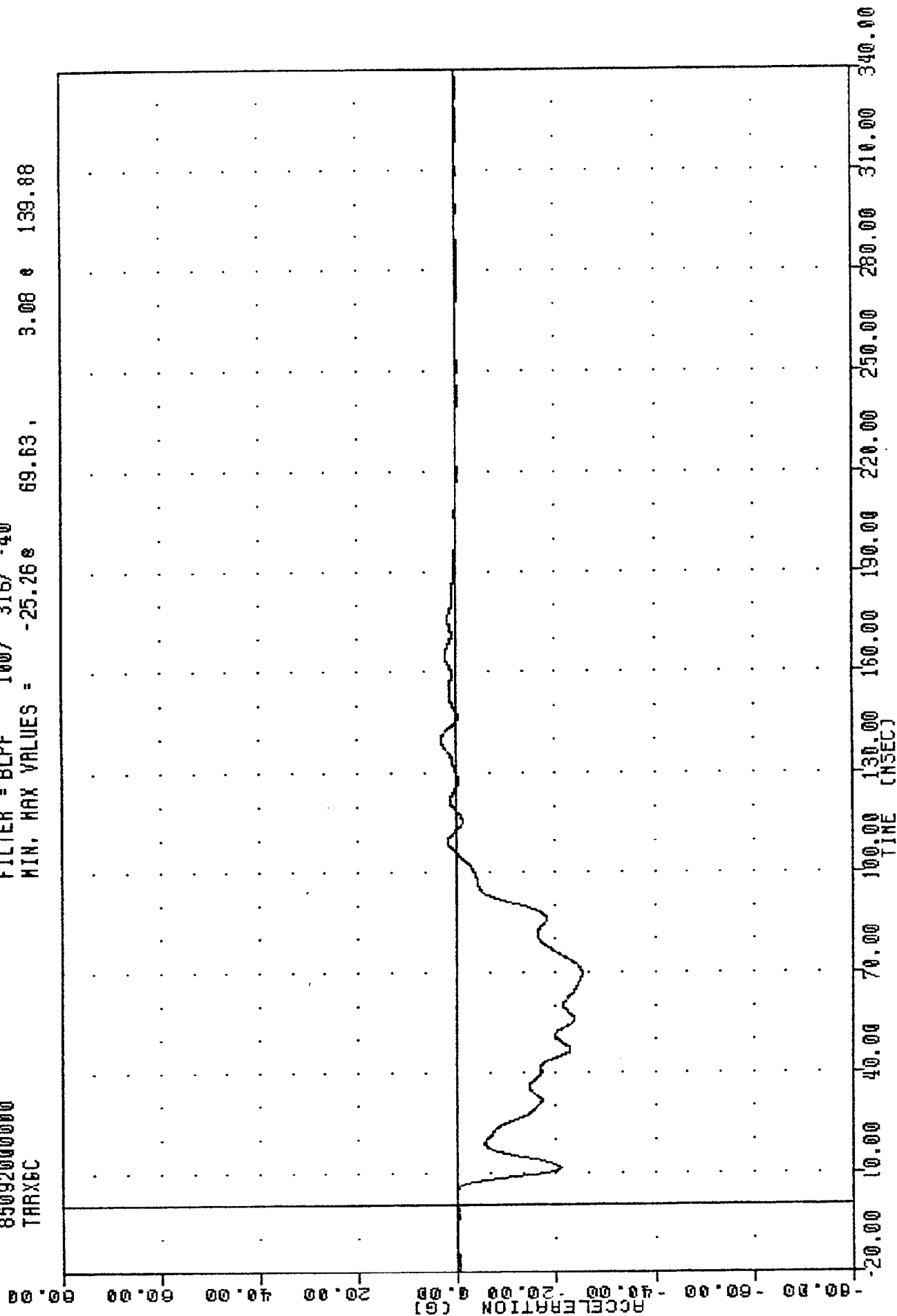


SUBJECT VEHICLE - ACCORD
 DELTA V USING TRRXG3

VAT 8509023
CAR TO CAR FRONTAL IMPACT
85092000000
TRX6C

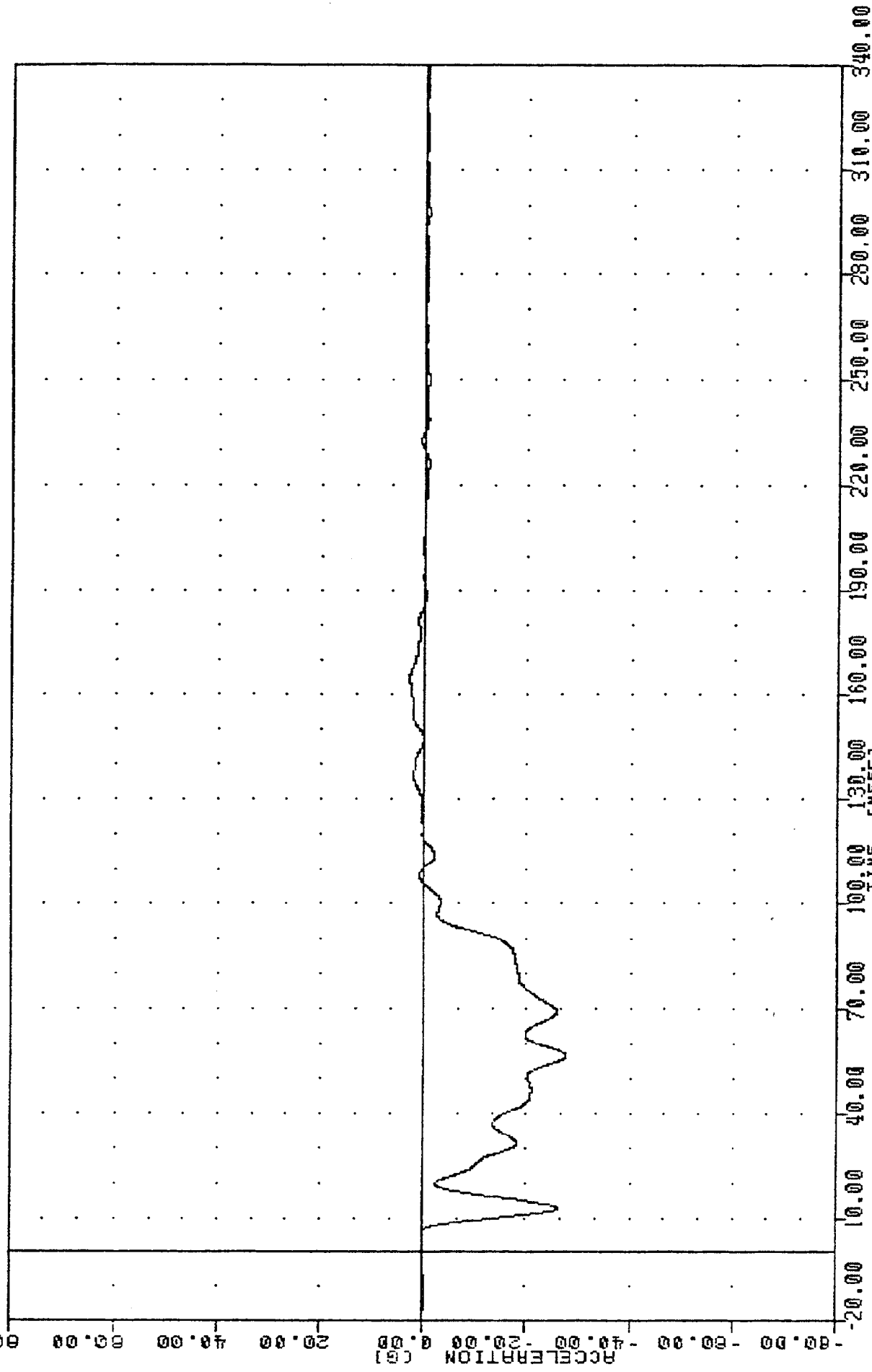
PLOT DATE 24 APR 85 16:27:57

FILTER = BLPF 100/ 316/ -40
MIN, MAX VALUES = -25.26 69.63, 3.08 139.88



SUBJECT VEHICLE - ACCORD
RIGHT REAR SEAT ACCELERATION - 2 X AXIS

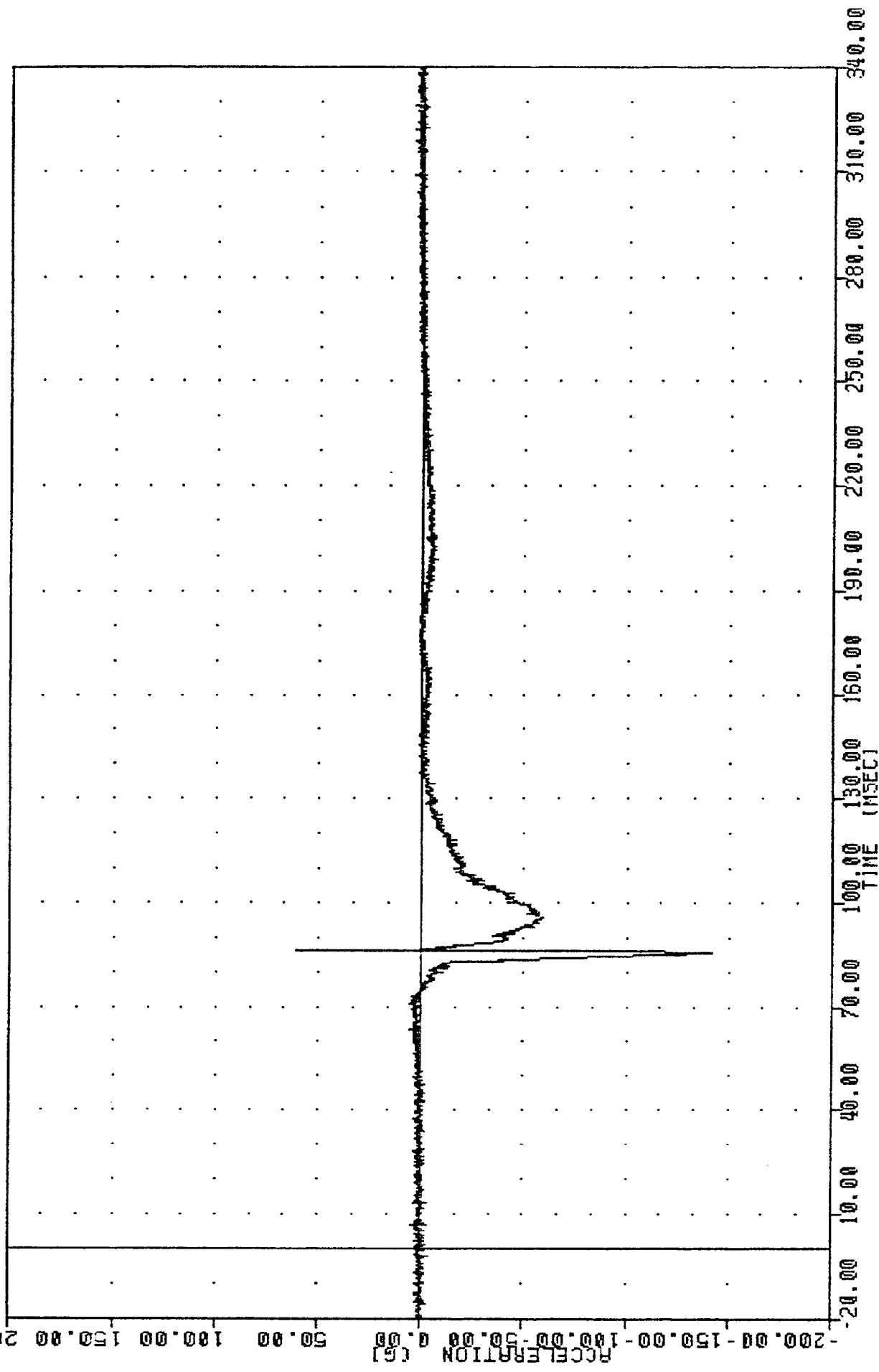
VAT [REDACTED], 8504025 [REDACTED] PLOT DATE 24-APR-85 16:27:57
 CAR TO CAR FRONTAL IMPACT
 85092000000
 RAXX6
 FILTER = BLPF 100/ 316/ -40
 MIN, MAX VALUES = -27.52 56.63, 2.94 165.00



SUBJECT VEHICLE - ACCORD
 REAR AXLE ACCELERATION X AXIS

PARTNER VEHICLE DATA PLOTS

YR [REDACTED], 830402P [REDACTED] PLOT DATE [REDACTED] 24-APR-85 [REDACTED] 16:18:42
 CAR TO CAR FRONTAL IMPACT
 85092000000
 HEDXG1
 FILTER = ALPF 1650/ 5217/ -40
 MIN, MAX VALUES = -141.98 85.88, 60.43 86.25

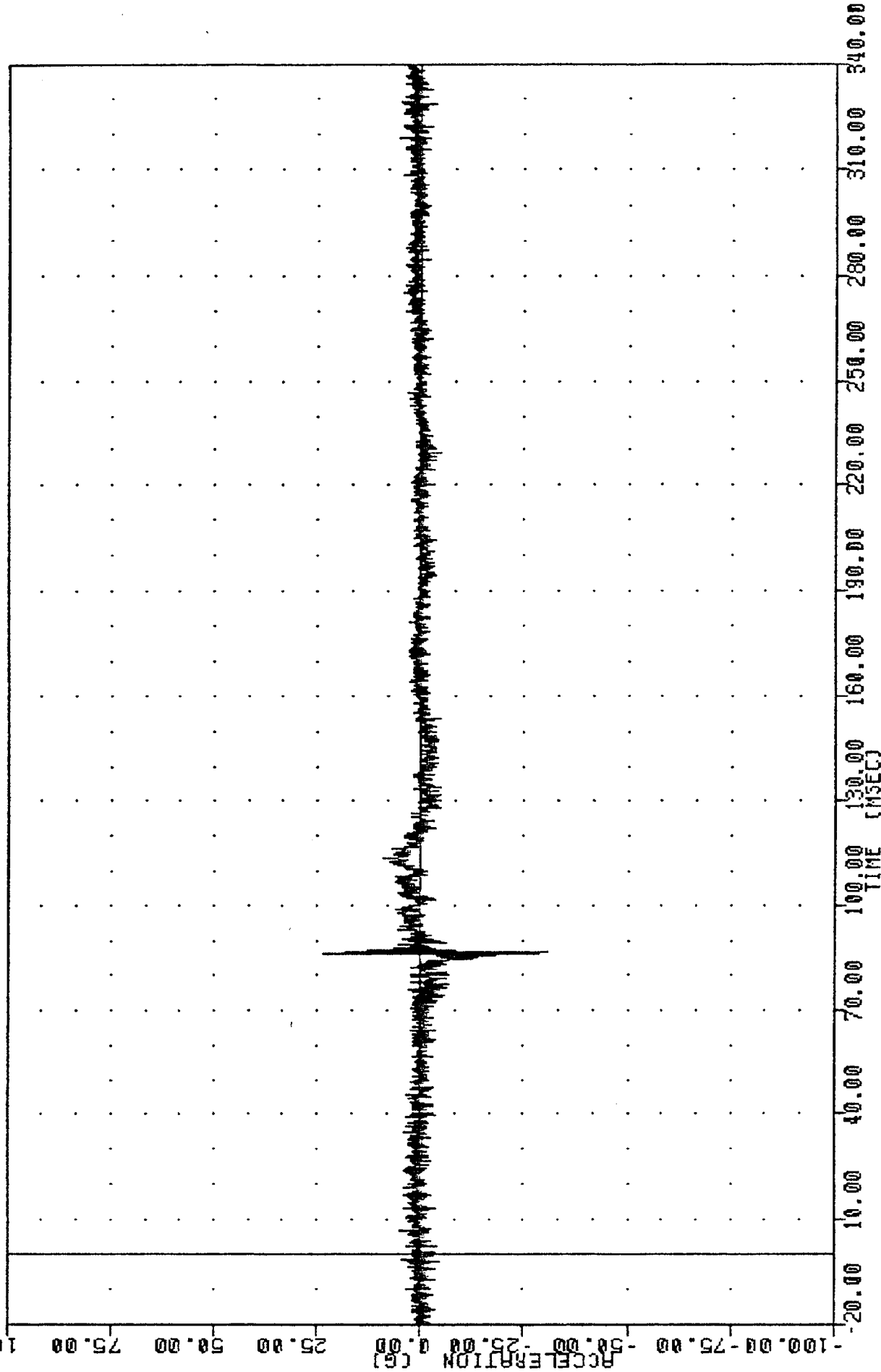


PARTNER VEHICLE - CONCORD
 DRIVER HEAD ACCELERATION X AXIS

VRT , 850402P
CAR TO CAR FRONTAL IMPACT
850920000000
HEDYG1

PLOT DATE 24-APR-85 16:18:42

FILTER = ALPF 1650/ 5217/ -40
MIN. MAX VALUES = -30.84e 86.75, 23.63 e 86.25

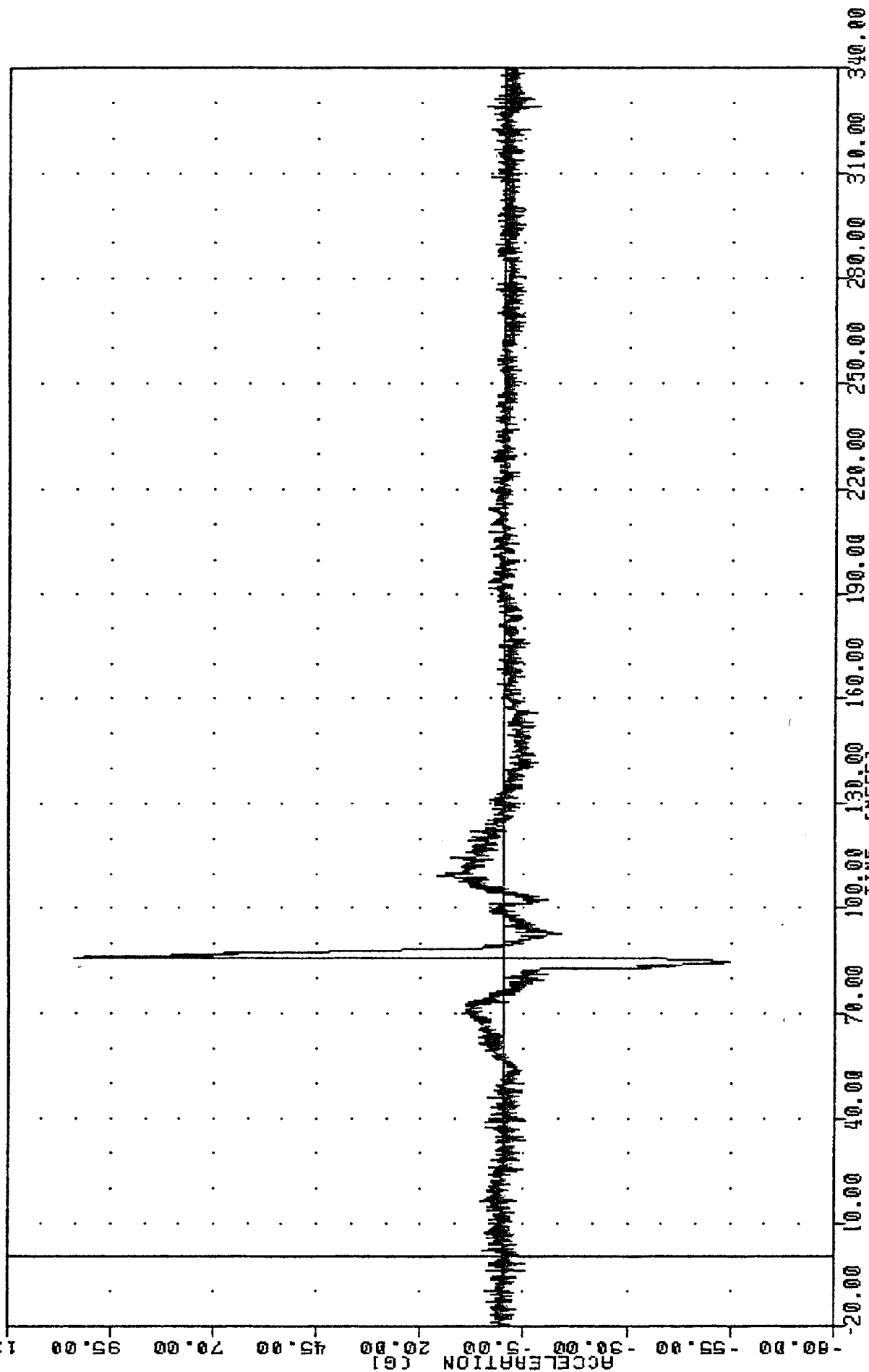


PARTNER VEHICLE - CONCORD
DRIVER HEAD ACCELERATION Y AXIS

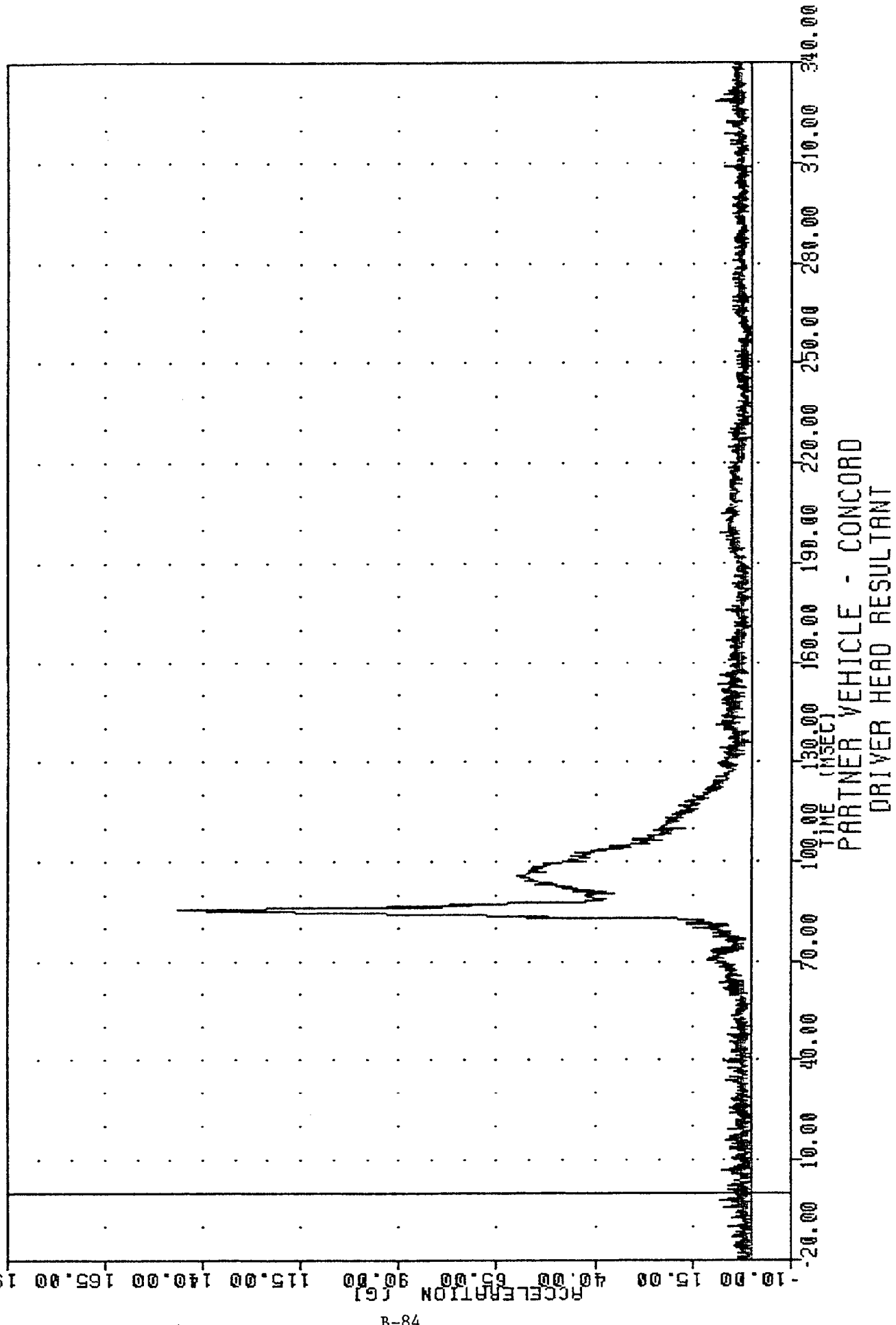
VAT , 850402P
CAR TO CAR FRONTAL IMPACT
850920000000
HEDZ61

PLOT DATE 24-APR-85 16:18:42

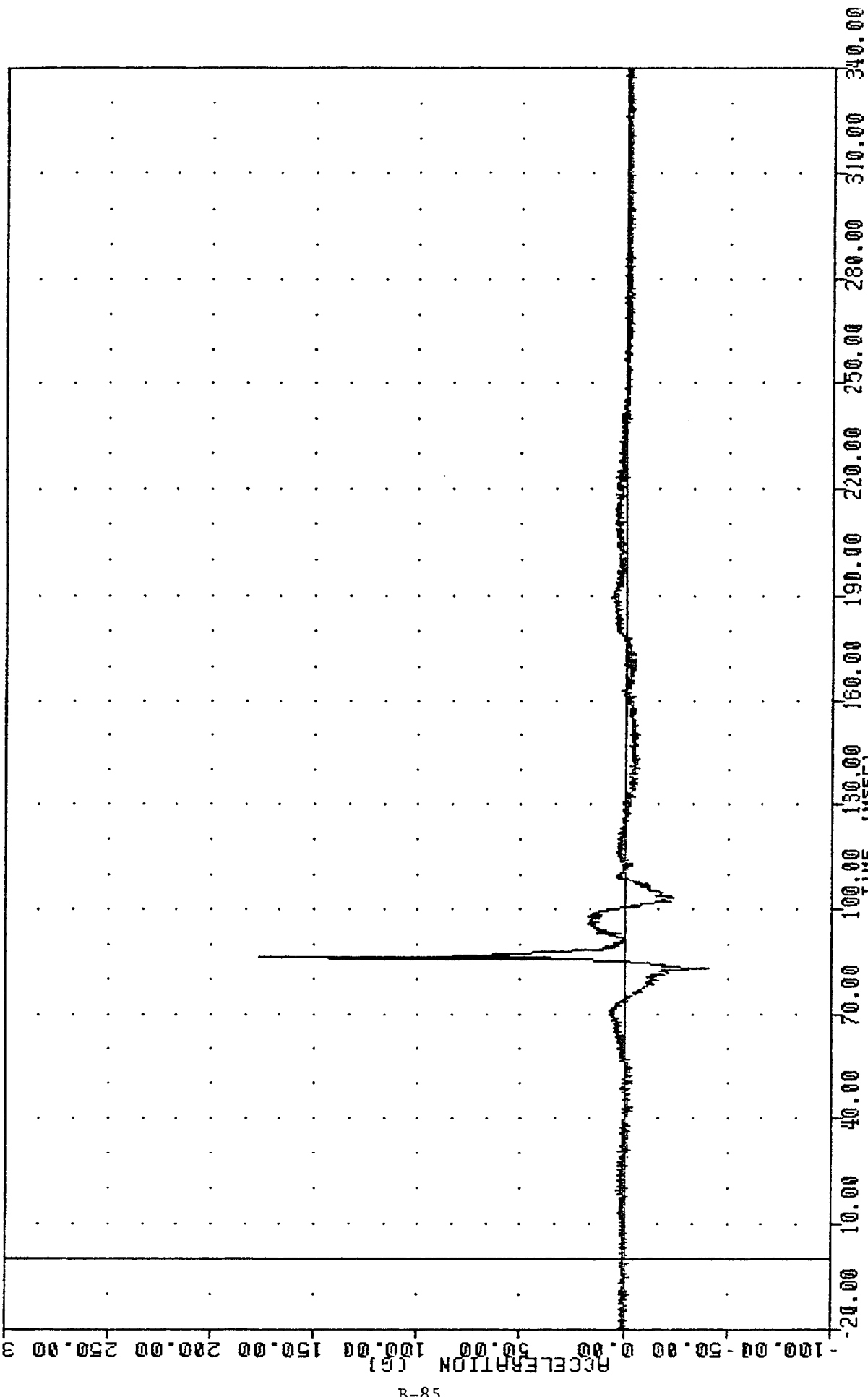
FILTER = ALPF 1650/ 5217/ -40
MIN. MAX VALUES = -54.48 84.75 , 104.03 86.13



VRT [REDACTED], 850402P [REDACTED] PLOT DATE [REDACTED] 24-APR-85 [REDACTED] 16:18:42 [REDACTED]
 CAR TO CAR FRONTAL IMPACT
 85032000000
 HEDRG1
 FILTER = ALPF 1650/ 5217/ -40
 MIN. MAX VALUES = 0.14g 40.50, 146.31 g 85.88



VR1 [REDACTED], 850402P [REDACTED] PLOT DATE 24-APR-85 16:24:22
 CAR TO CAR FRONTAL IMPACT
 850920000000
 HD2G1
 FILTER = ALPF 1650/ 5217/ -40
 MIN, MAX VALUES = -40.84e 83.00, 176.49 e 86.00



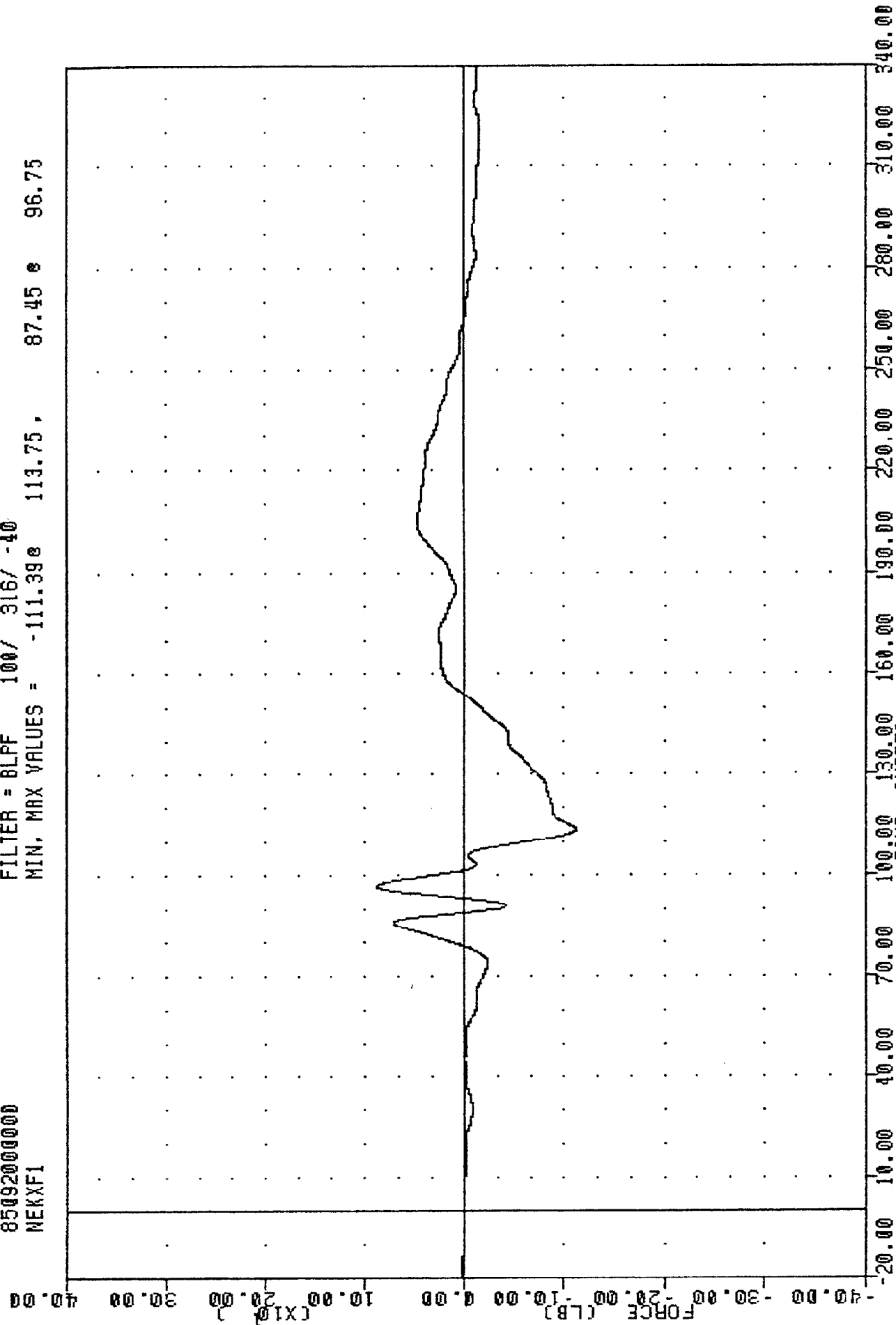
PARTNER VEHICLE - CONCORD
 DRIVER HEAD ACCELERATION Z AXIS (POSITION 2)

VRT , 850402P
CAR TO CAR FRONTAL IMPACT
850920000000
MEKXF1

PLOT DATE 24-APR-85 16:18:42

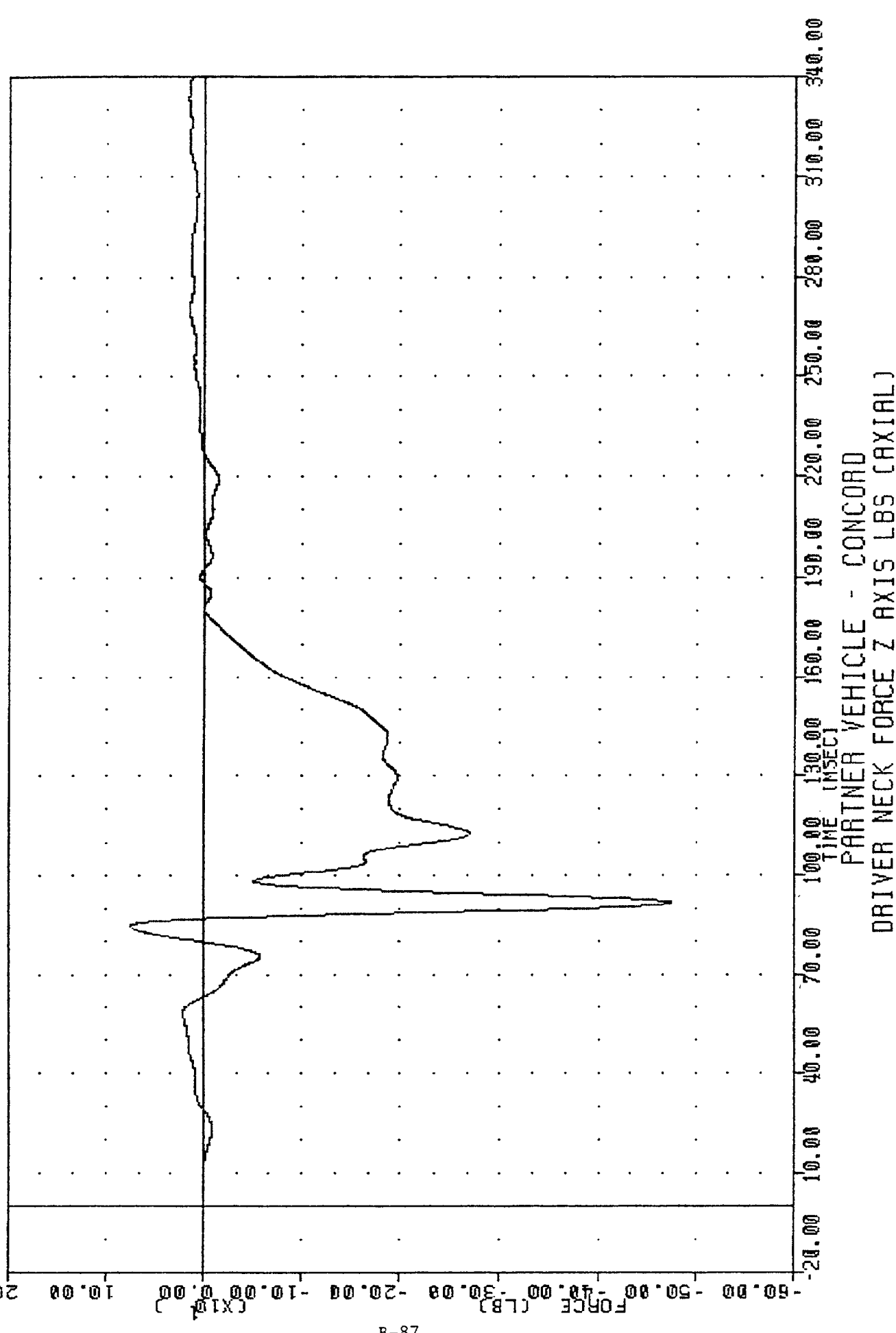
FILTER = 8LPF 100/ 316/ -40

MIN. MAX VALUES = -111.398 113.75, 87.45 96.75

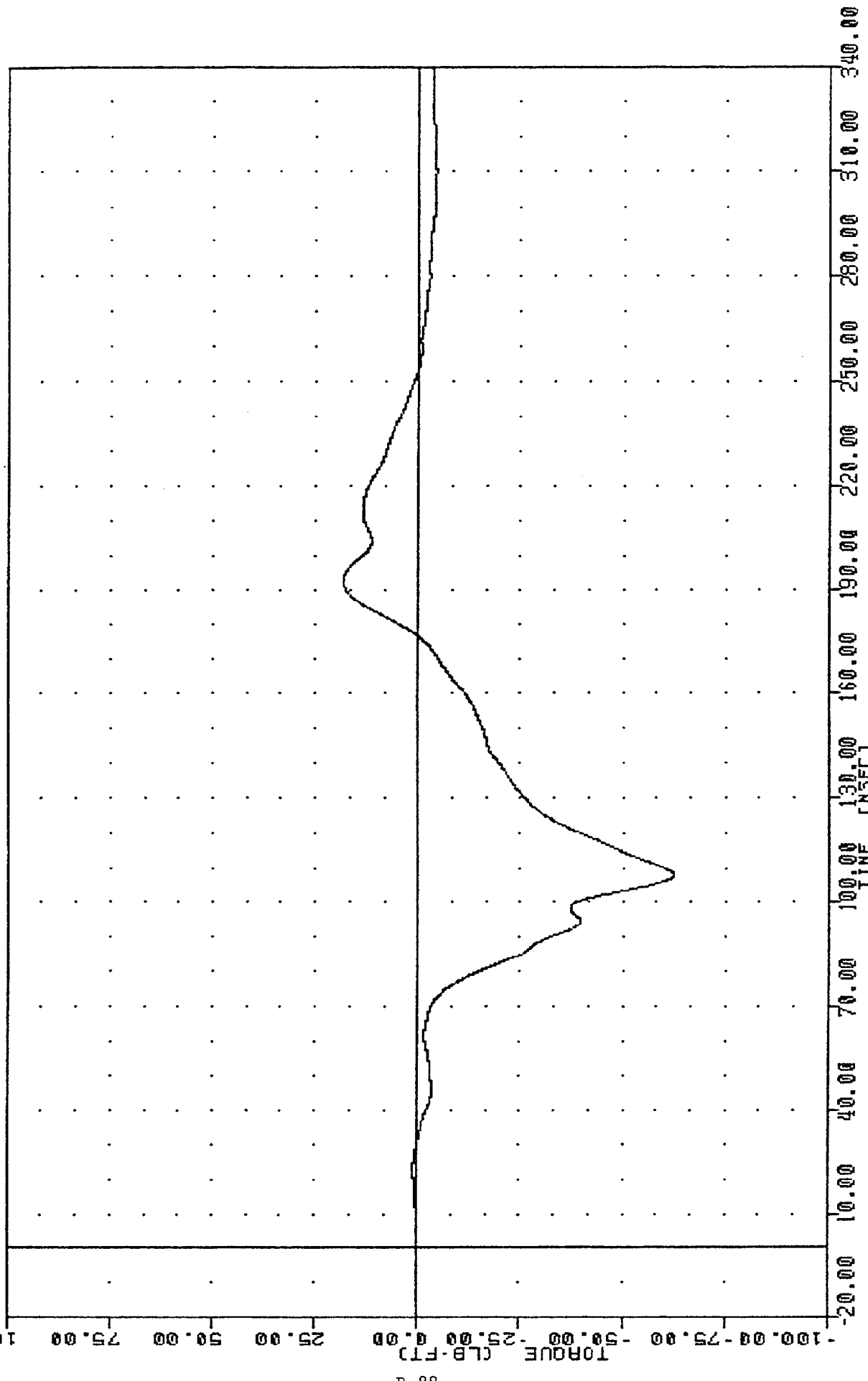


PARTNER VEHICLE - CONCORD
DRIVER NECK FORCE X AXIS (SHEAR)

VR1 [REDACTED], 850402P [REDACTED] PLOT DATE 24-APR-85 16:18:42
 CAR TO CAR FRONTAL IMPACT
 85092000000
 NEKZF1
 FILTER = BLPF 100/ 316/ -40
 MIN, MAX VALUES = -476.12e 91.63, 73.76 e 84.63



VRT 850920000000, 850920000000
 CAR TO CAR FRONTAL IMPACT
 850920000000
 NEKYM1
 FILTER = BLPF 100/ 316/ -40
 MIN, MAX VALUES = -62.41 107.88, 18.16 192.75
 PLOT DATE 24-APR-85 16:18:42



PARTNER VEHICLE - CONCORD
 DRIVER NECK MOMENT Y AXIS FT-LBS

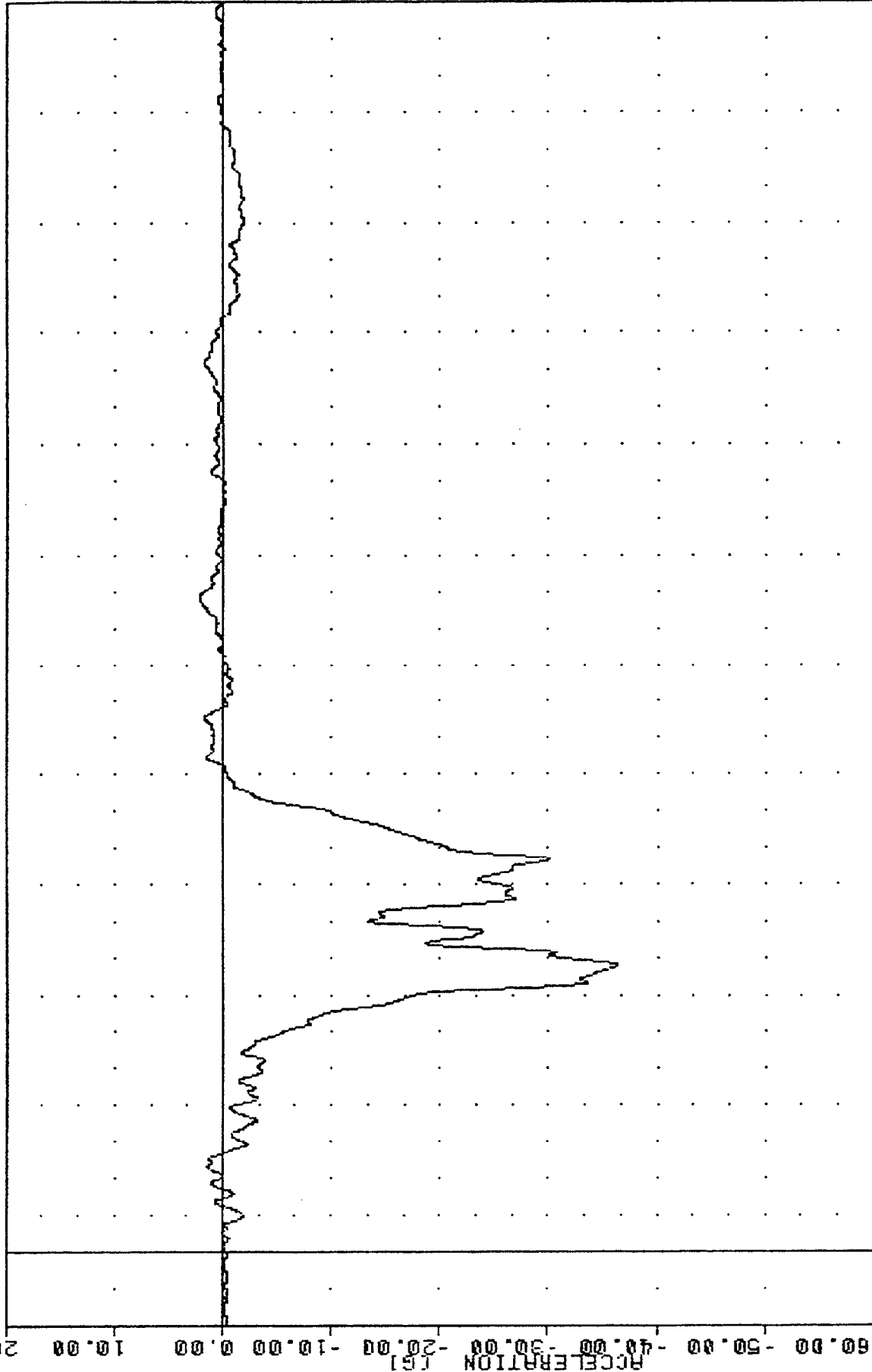
VRT , 850402P
CAR TO CAR FRONTAL IMPACT
85092000000
CSTXG1

PLOT DATE 24-APR-85 16:18:42

FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = -36.36 77.88, 2.19 177.88

20.00



B-89

-60.00 -50.00 -40.00 -30.00 -20.00 -10.00 0.00 10.00 20.00

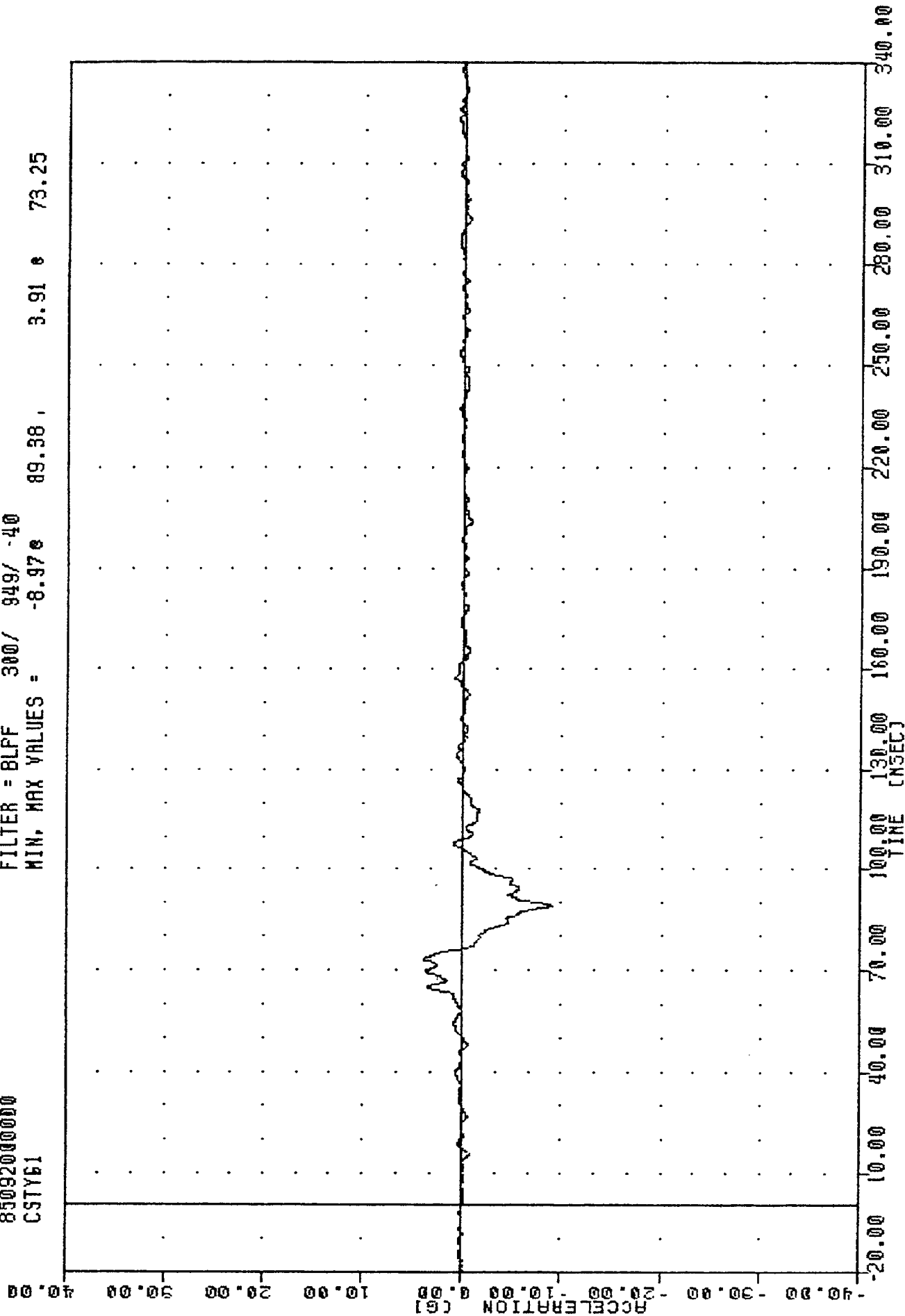
-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00

PARTNER VEHICLE - CONCORD
DRIVER CHEST ACCELERATION X AXIS

VAT 83W402F
CAR TO CAR FRONTAL IMPACT
850920000000
CSTY61

PLOT DATE 24-APR-85 16:18:42

FILTER = BLPF 300/ 949/ -40
MIN, MAX VALUES = -8.97e 89.38 , 3.91 e 73.25

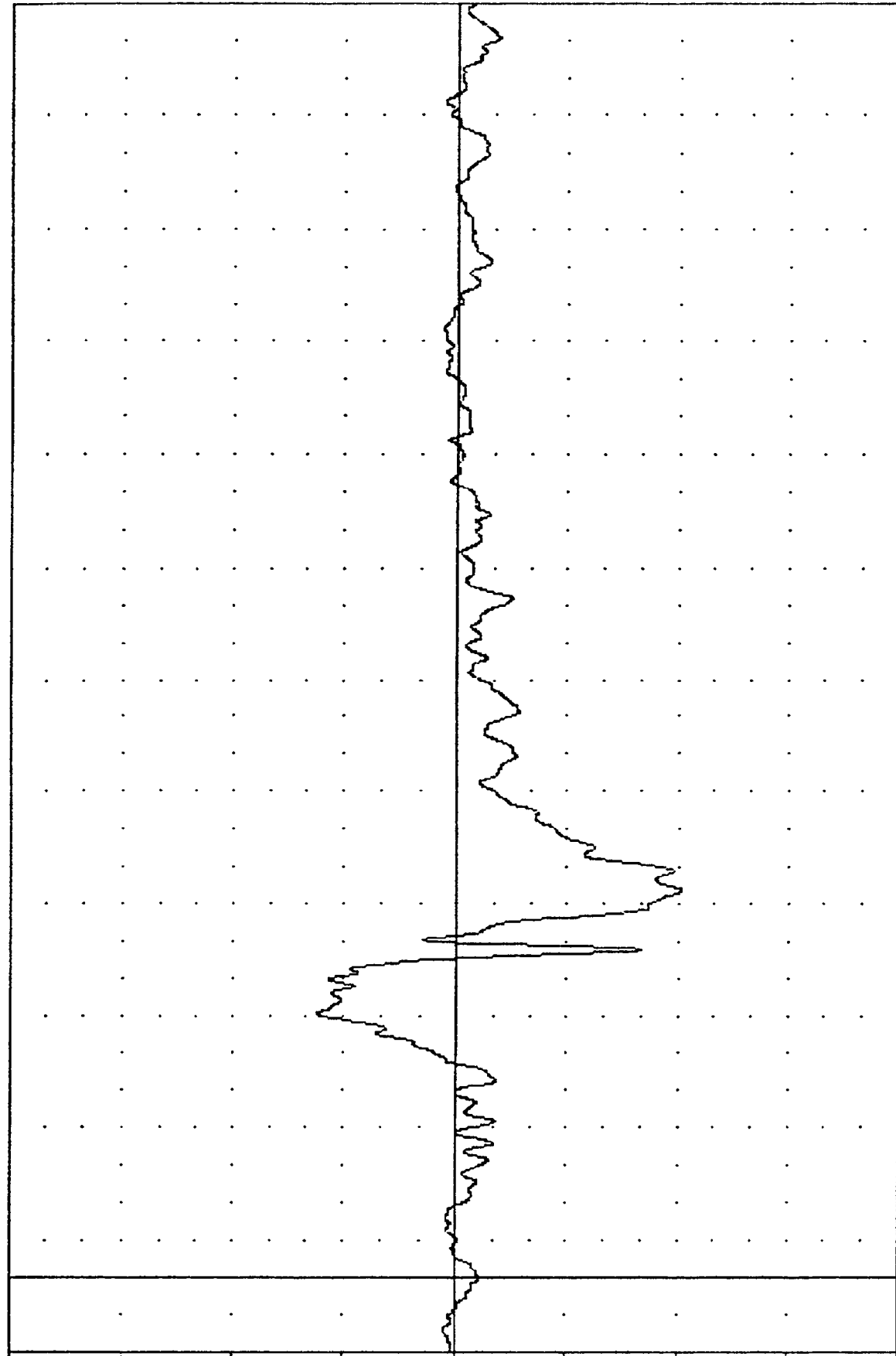


PARTNER VEHICLE - CONCORD
DRIVER CHEST ACCELERATION Y AXIS

VR [REDACTED], 830402F
CAR TO CAR FRONTAL IMPACT
850920000000
CSTZG1

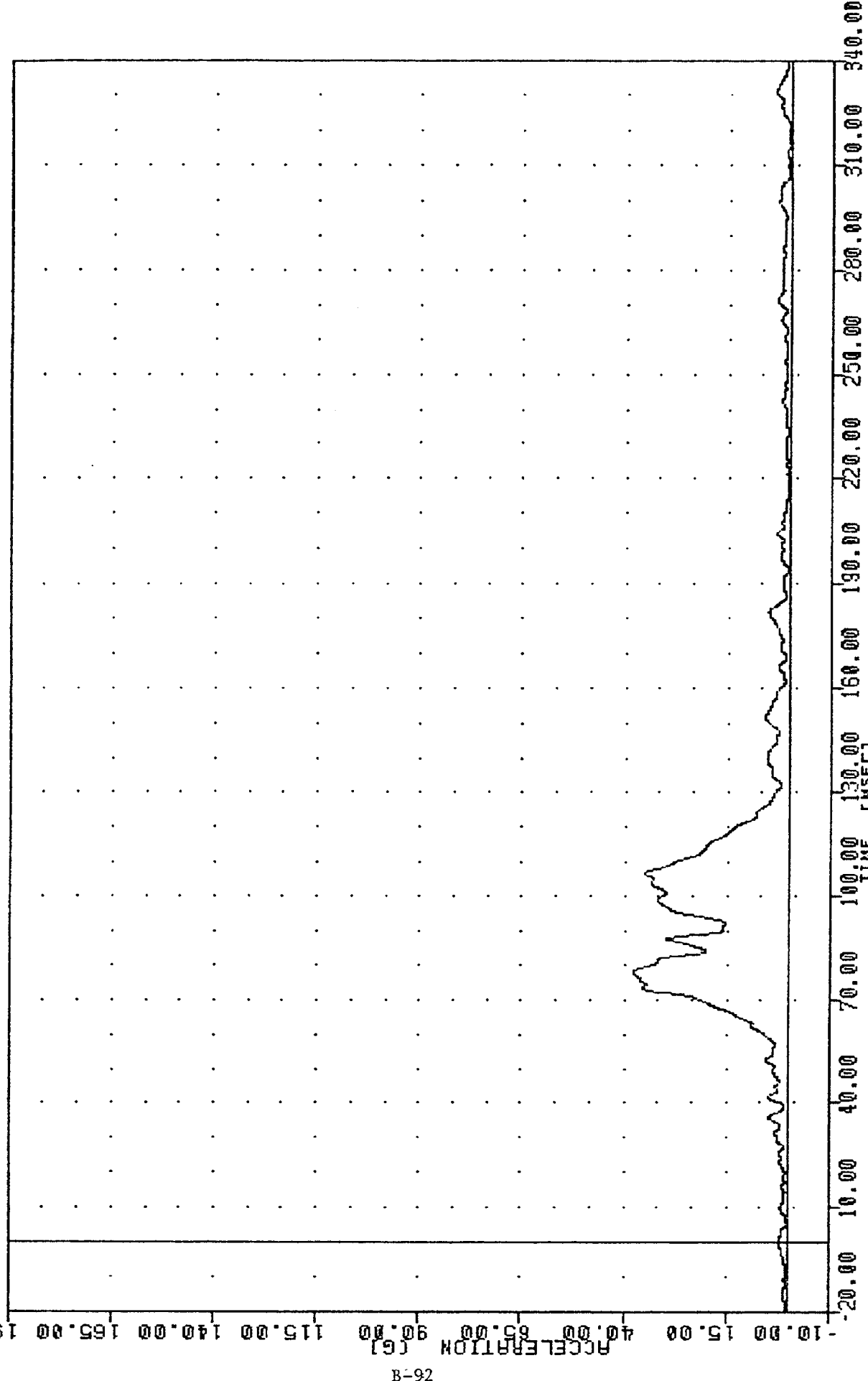
PLOT DATE 24-APR-85 16:18:42
FILTER = BLPF 300/ 949/ -40
MIN. MAX VALUES = -20.41 103.63 12.33 70.38

16-91
ACCELERATION (G)
-40.00
-30.00
-20.00
-10.00
0.00
10.00
20.00
30.00
40.00



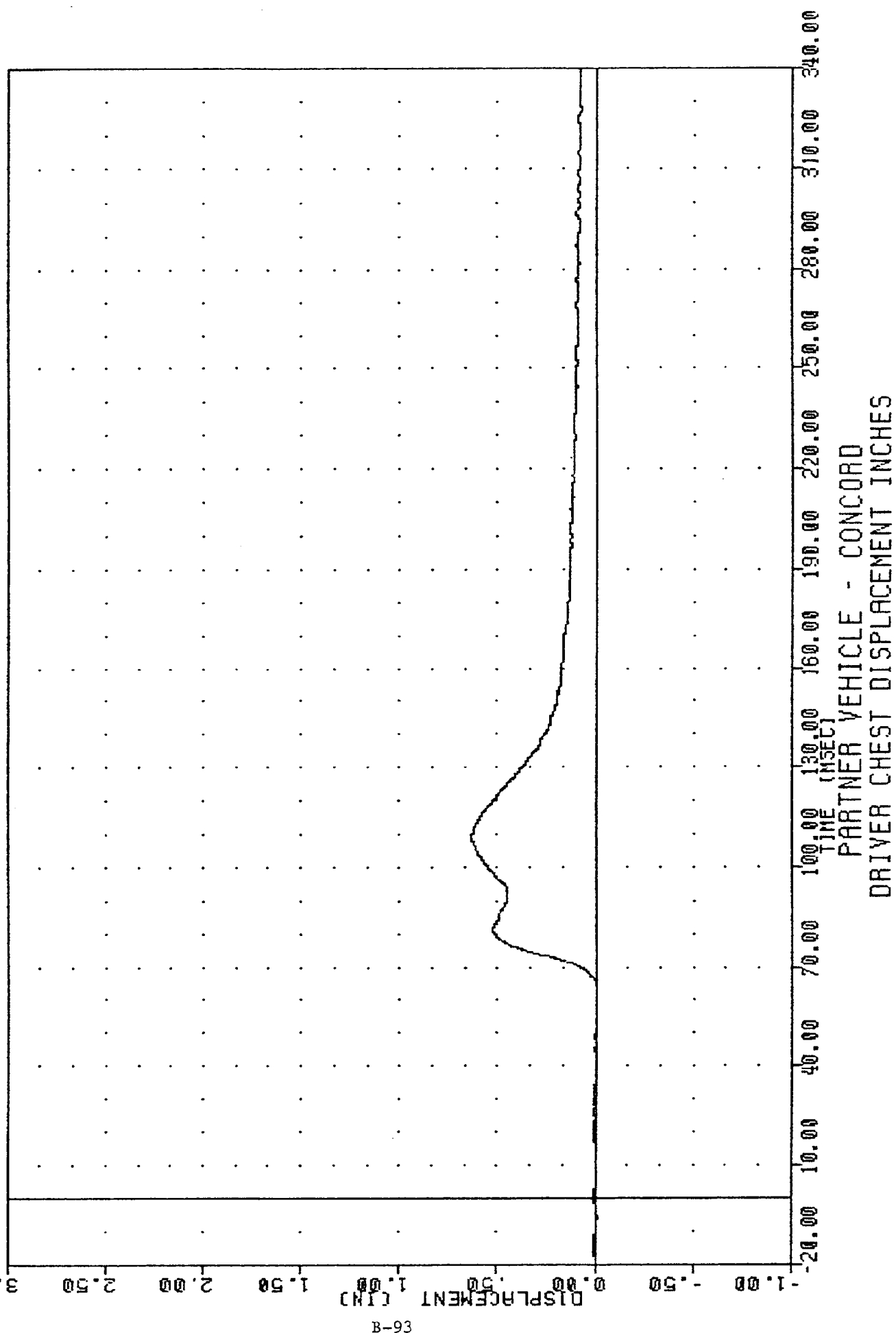
TIME (MSEC) 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
PARTNER VEHICLE - CONCORD
DRIVER CHEST ACCELERATION Z AXIS

VR [REDACTED], 850402P [REDACTED] PLOT DATE [REDACTED] 24-APR-85 [REDACTED] 16:18:42 [REDACTED]
 CAR TO CAR FRONTAL IMPACT
 850920000000
 CSIRG1
 FILTER = BLPF 300/ 949/ -40
 MIN. MAX VALUES = 0.06e 5.38, 37.49 e 77.88



PARTNER VEHICLE - CONCORD
 DRIVER CHEST RESULTANT

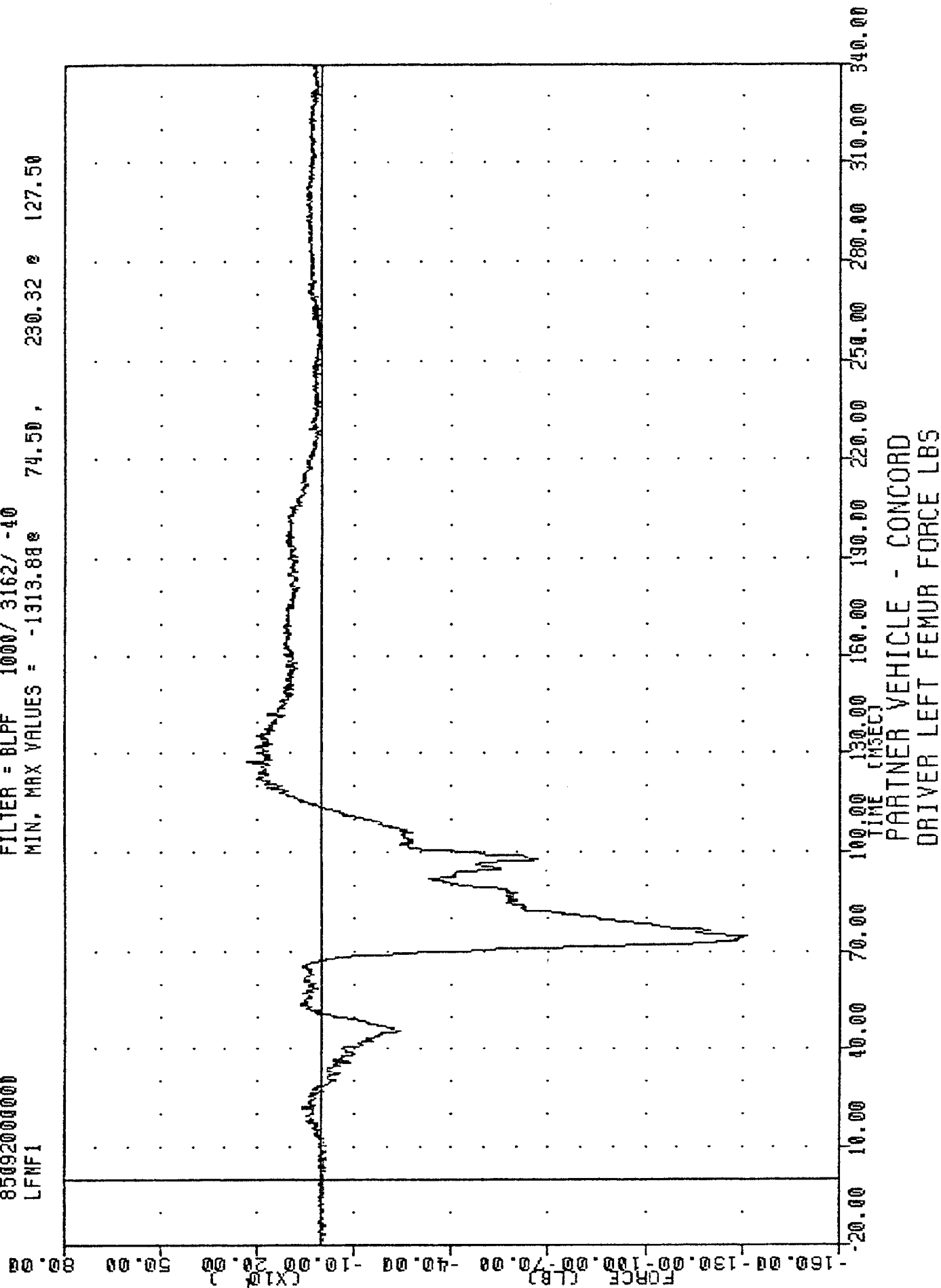
VR [REDACTED], 830402P [REDACTED] PLOT DATE [REDACTED] 24 APR 85 [REDACTED] 16:18:42 [REDACTED]
 CAR TO CAR FRONTAL IMPACT
 85092000000
 CSTXD1
 FILTER = BLPF 300/ 949/ -40
 MIN, MAX VALUES = -0.018 -6.00, 0.63 e 108.63



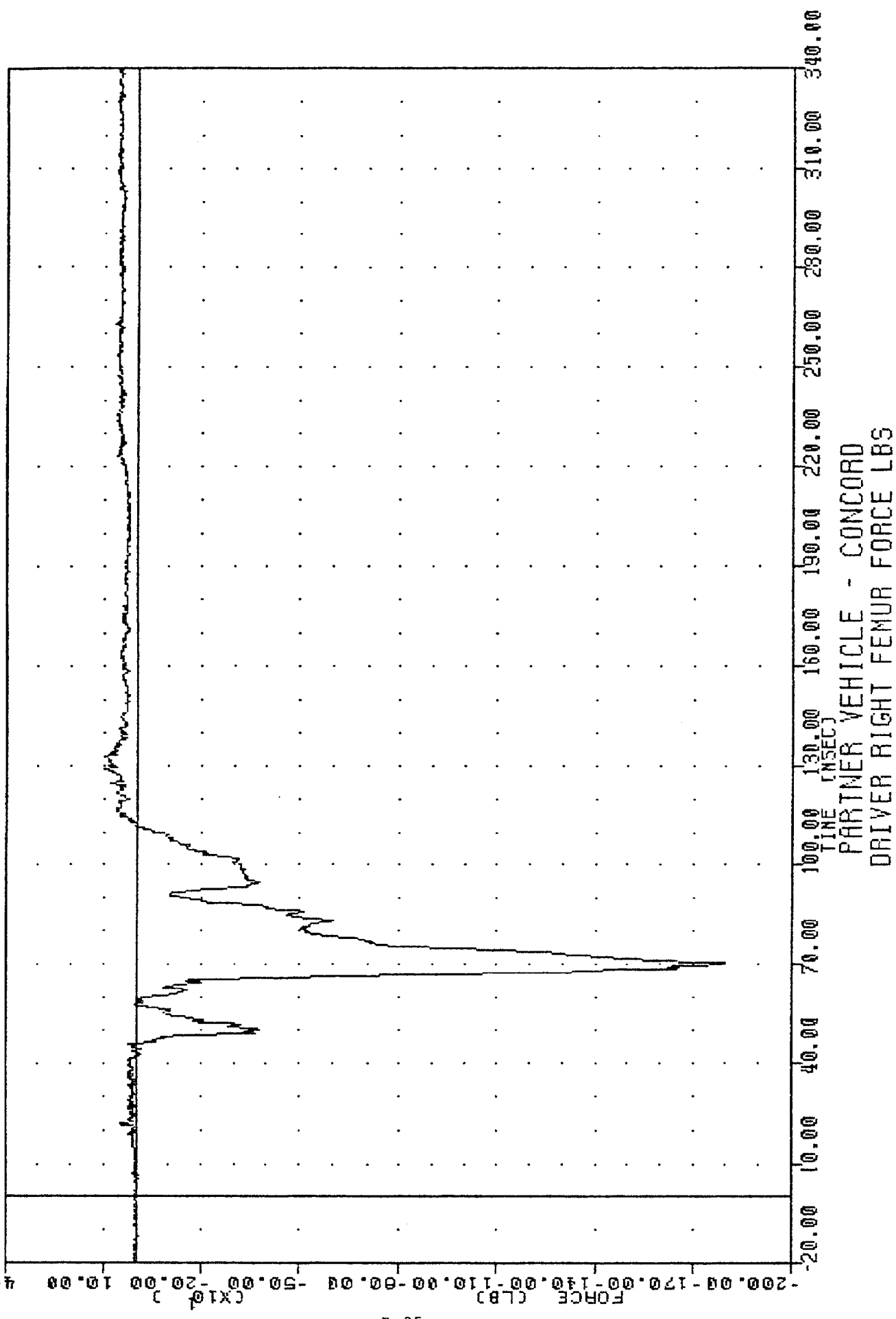
VRT , 850102P
CAR TO CAR FRONTAL IMPACT
850920000000
LFMF1

PLOT DATE 24-APR-85 16:18:42

FILTER = BLPF 1000/ 3162/ -40
MIN. MAX VALUES = -1313.888 74.50 , 230.32 127.50



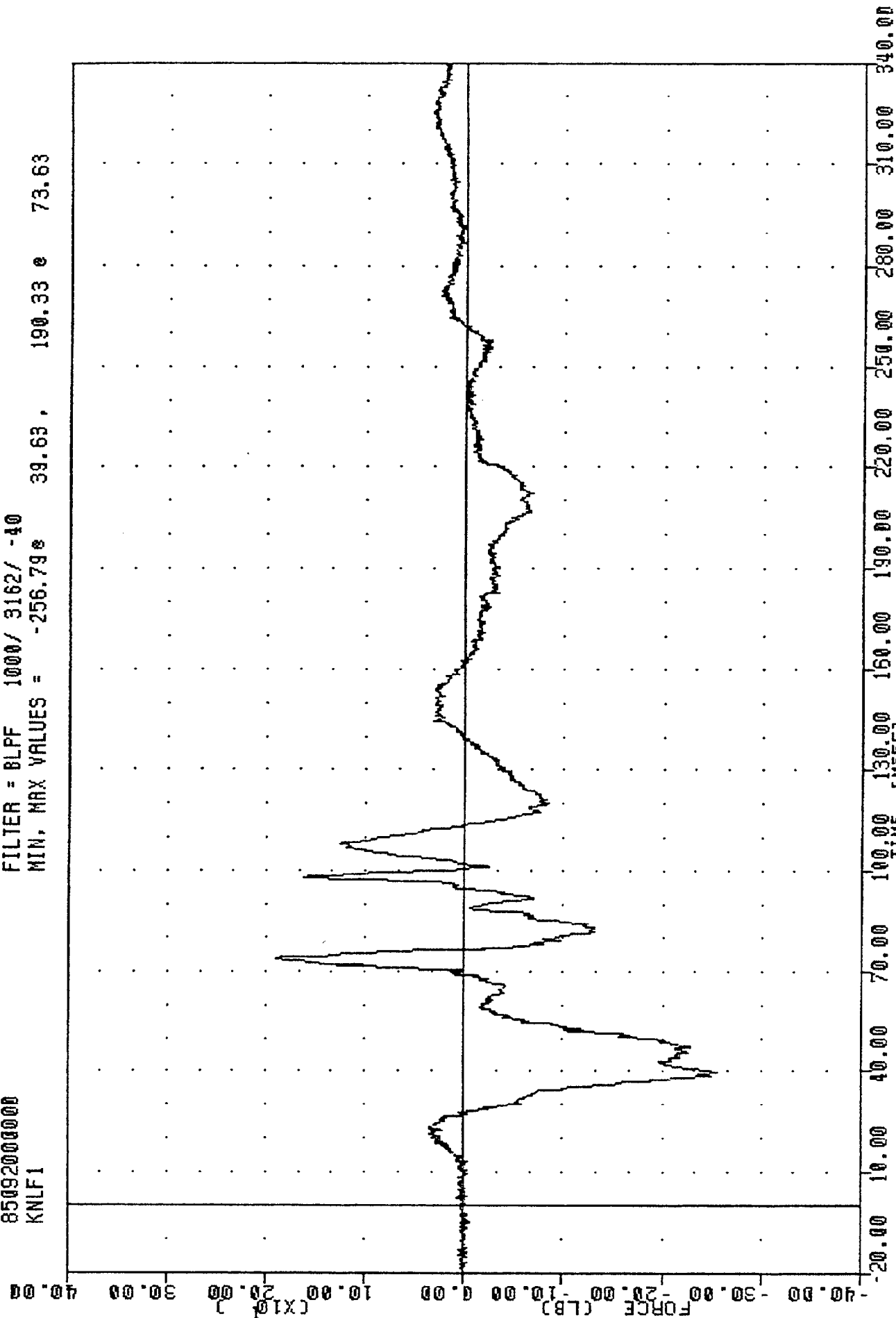
VRT 8509202F 24-APR-85 16:18:42
 CAR TO CAR FRONTAL IMPACT
 850920000000
 RFMF1
 FILTER = BLPF 1000/ 3162/ -40
 MIN. MAX VALUES = -1796.63e 70.38 , 100.91 e 128.75



VRI , 850402P
CAR TO CAR FRONTAL IMPACT
850920000000
KNLF1

PLOT DATE 24-APR-85 16:18:42

FILTER = BLPF 1000/ 3162/ -40
MIN. MAX VALUES = -256.79 39.63, 190.33 73.63



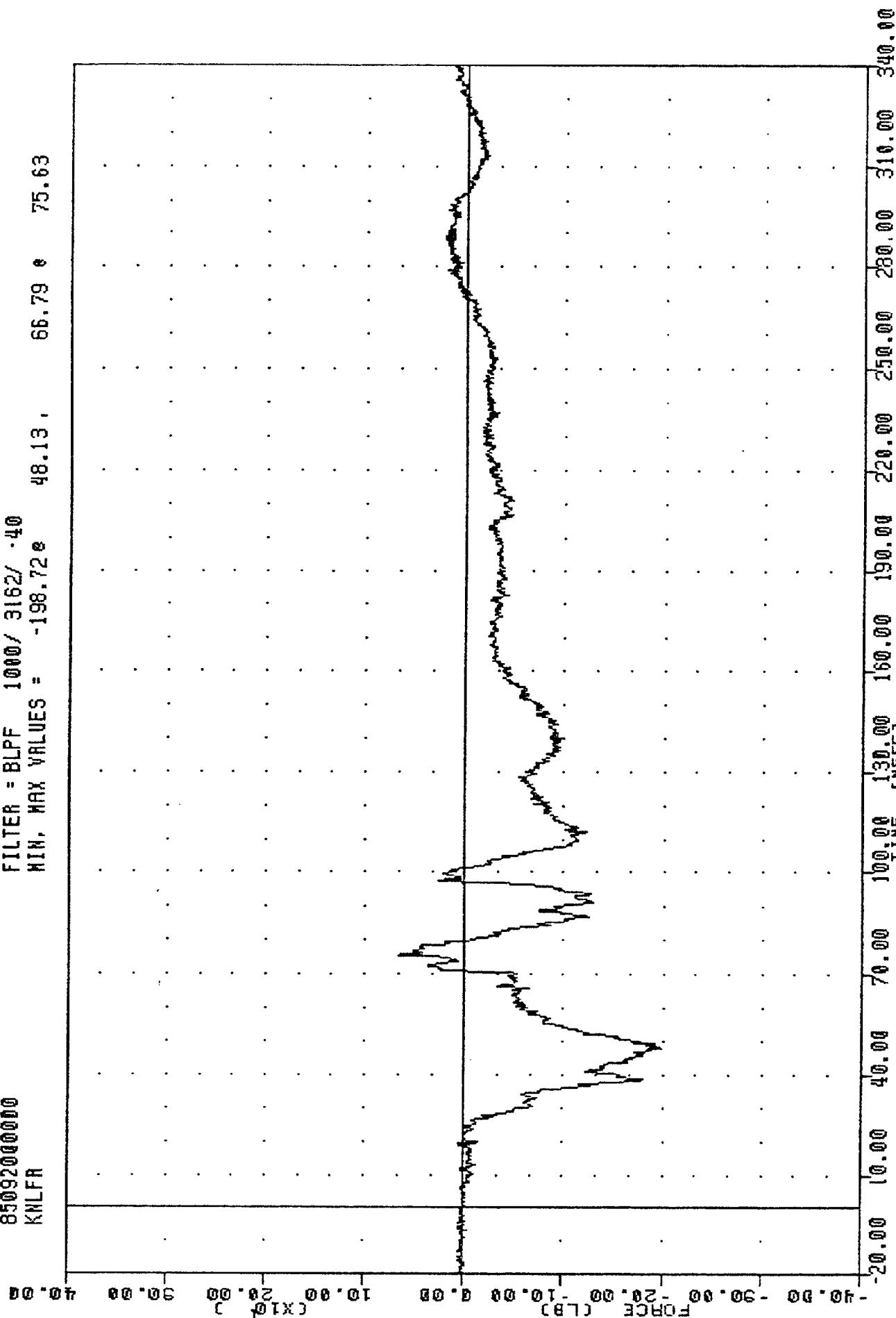
PARTNER VEHICLE - CONCORD
DRIVER LEFT KNEE / LEFT SENSOR LBS

VAT , 850402P
CAR TO CAR FRONTAL IMPACT
850920000000
KNLFR

PLOT DATE 24-APR-85 16:18:42

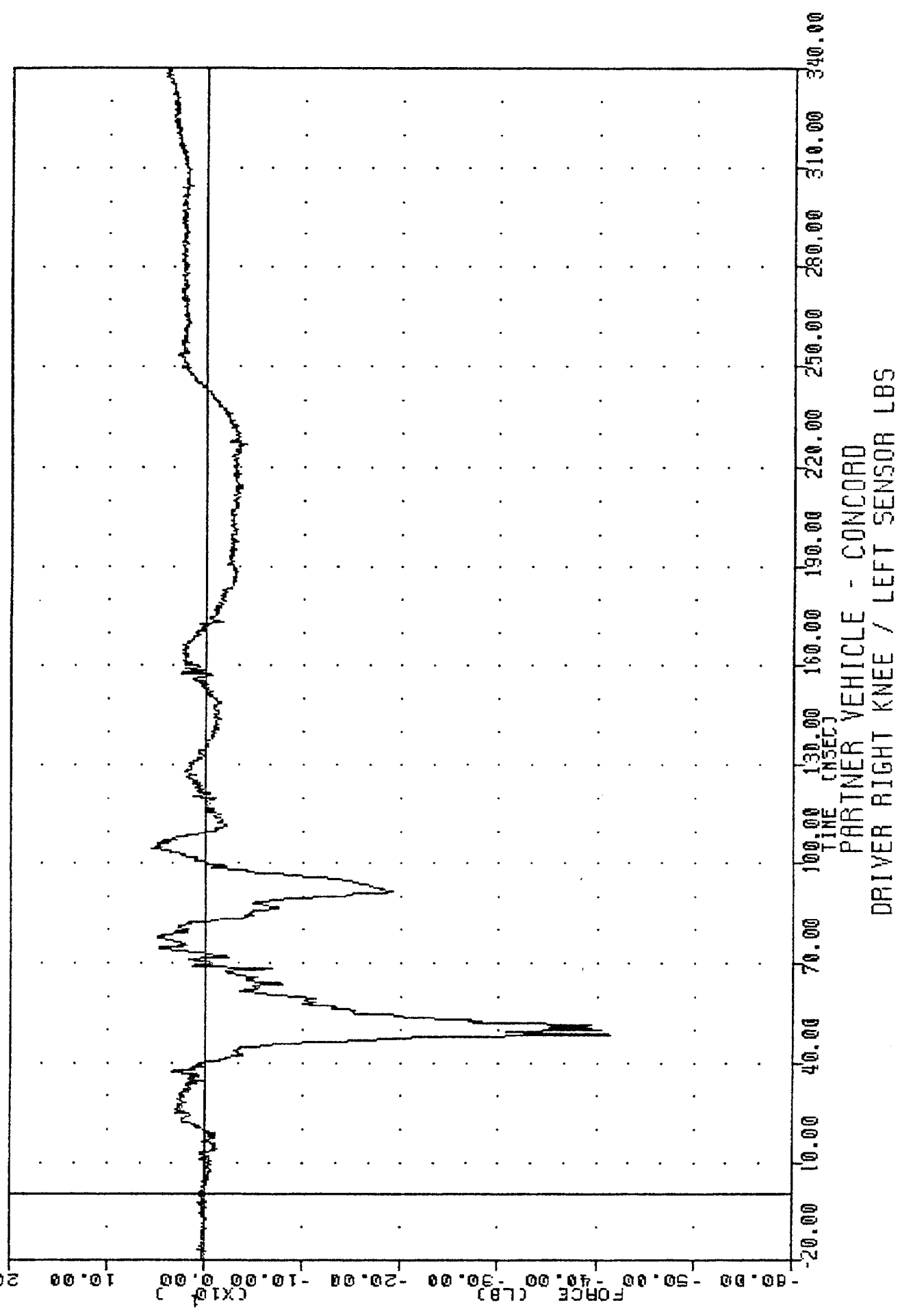
FILTER = BLPF 1000/ 3162/ .40

MIN, MAX VALUES = -198.72 48.13, 66.79 75.63



PARTNER VEHICLE - CONCORD
DRIVER LEFT KNEE / RIGHT SENSOR LBS

VRT, 850402P, 24-APR-85 16:18:42
 CAR TO CAR FRONTAL IMPACT
 850920000000
 KNR1
 FILTER = BLPF 1000/ 3162/ -40
 MIN. MAX VALUES = -414.05 48.63, 54.02 104.50



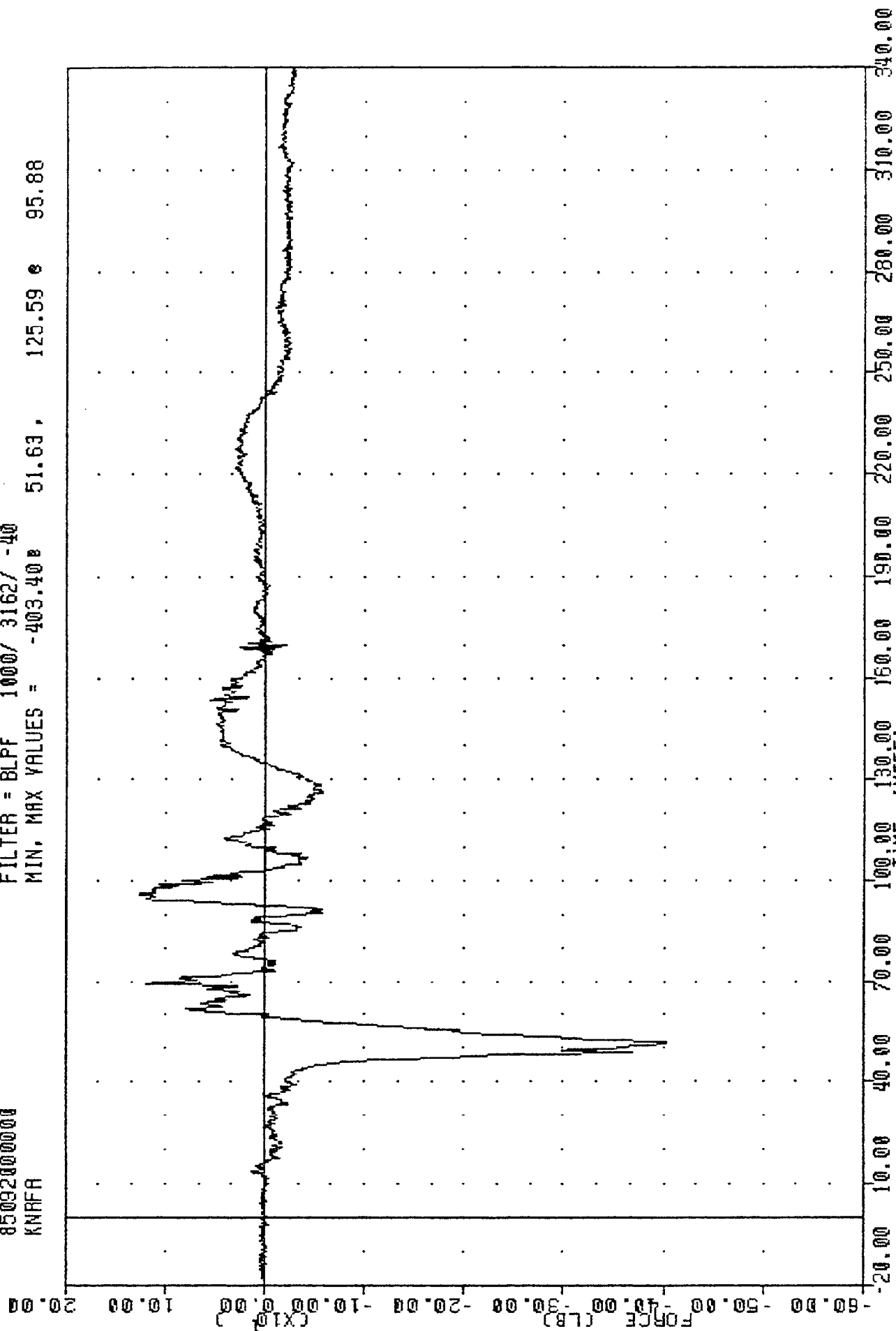
PARTNER VEHICLE - CONCORD
 DRIVER RIGHT KNEE / LEFT SENSOR LBS

VRT , 850402P
CAR TO CAR FRONTAL IMPACT
85092000000
KNRFA

PLOT DATE 24-APR-85 16:18:42

FILTER = BLPF 1000/ 3162/ -40

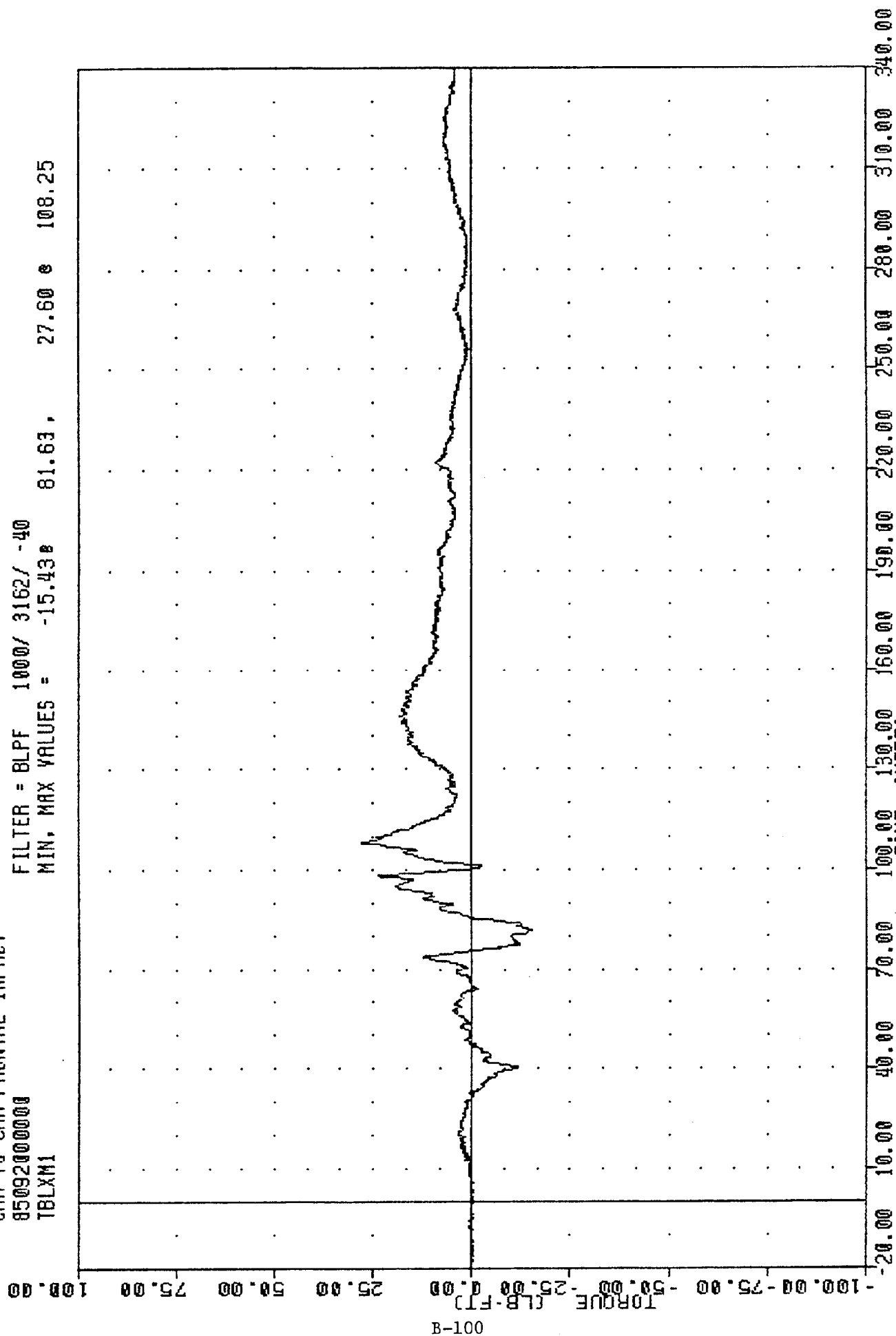
MIN, MAX VALUES = -403.40 51.63, 125.59 95.88



VRT , 850402P
CAR TO CAR FRONTAL IMPACT
85092000000
TBLXM1

PLOT DATE 24-APR-85 16:18:42

FILTER = BLPF 1000/ 3162/ -40
MIN, MAX VALUES = -15.43 81.63, 27.60 108.25

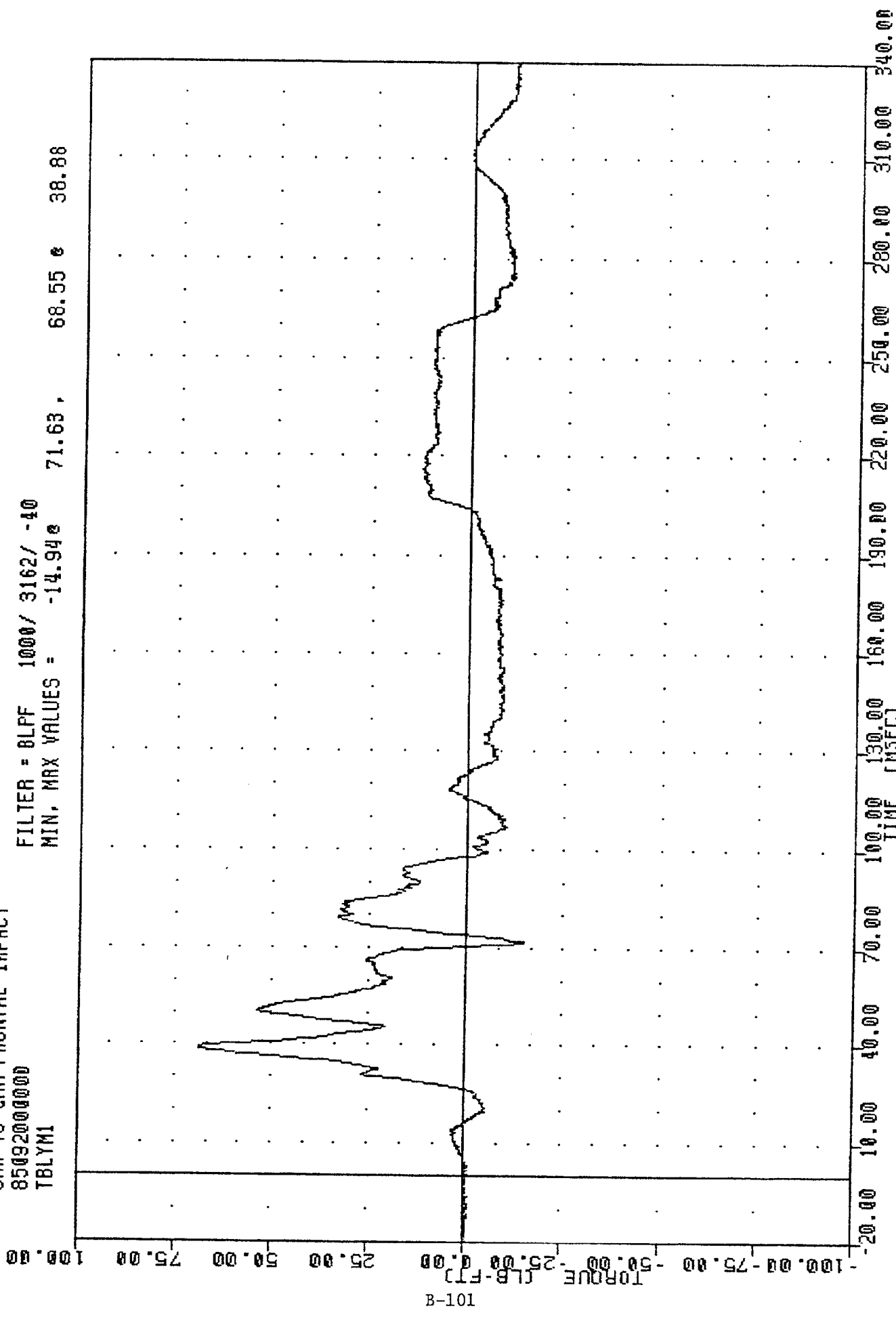


PARTNER VEHICLE - CONCORD
DRIVER LEFT UPPER TIBIA MOMENT X AXIS LB-FT

VR1 850402P
CAR TO CAR FRONTAL IMPACT
85092000000
TBLYM1

PLOT DATE 24-APR-85 16:18:42

FILTER = 8LPF 1000/ 3162/ -40
MIN, MAX VALUES = -14.94e 71.63, 68.55 e 38.88



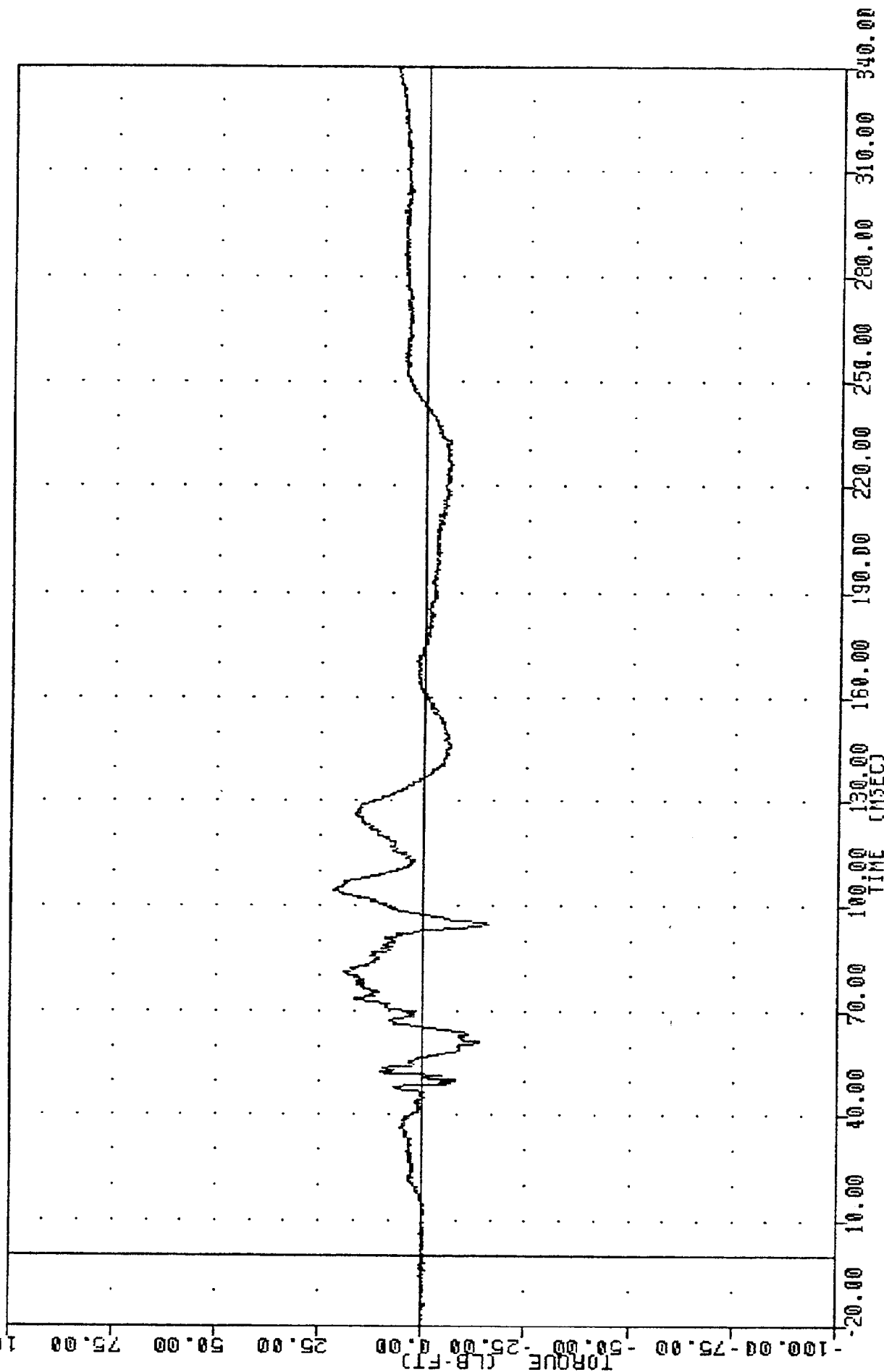
B-101

PARTNER VEHICLE - CONCORD
DRIVER LEFT UPPER TIBIA MOMENT Y AXIS LB-FT

VRT 850102P
CAR TO CAR FRONTAL IMPACT
850920000000
TBRXN1

PLOT DATE 24-APR-85 16:18:42

FILTER = BLPF 1000/ 3162/ -40
MIN. MAX VALUES = -15.93 94.88, 22.13 104.38



B-102

PARTNER VEHICLE - CONCORD
DRIVER RIGHT UPPER TIBIA MOMENT X AXIS LB-FT

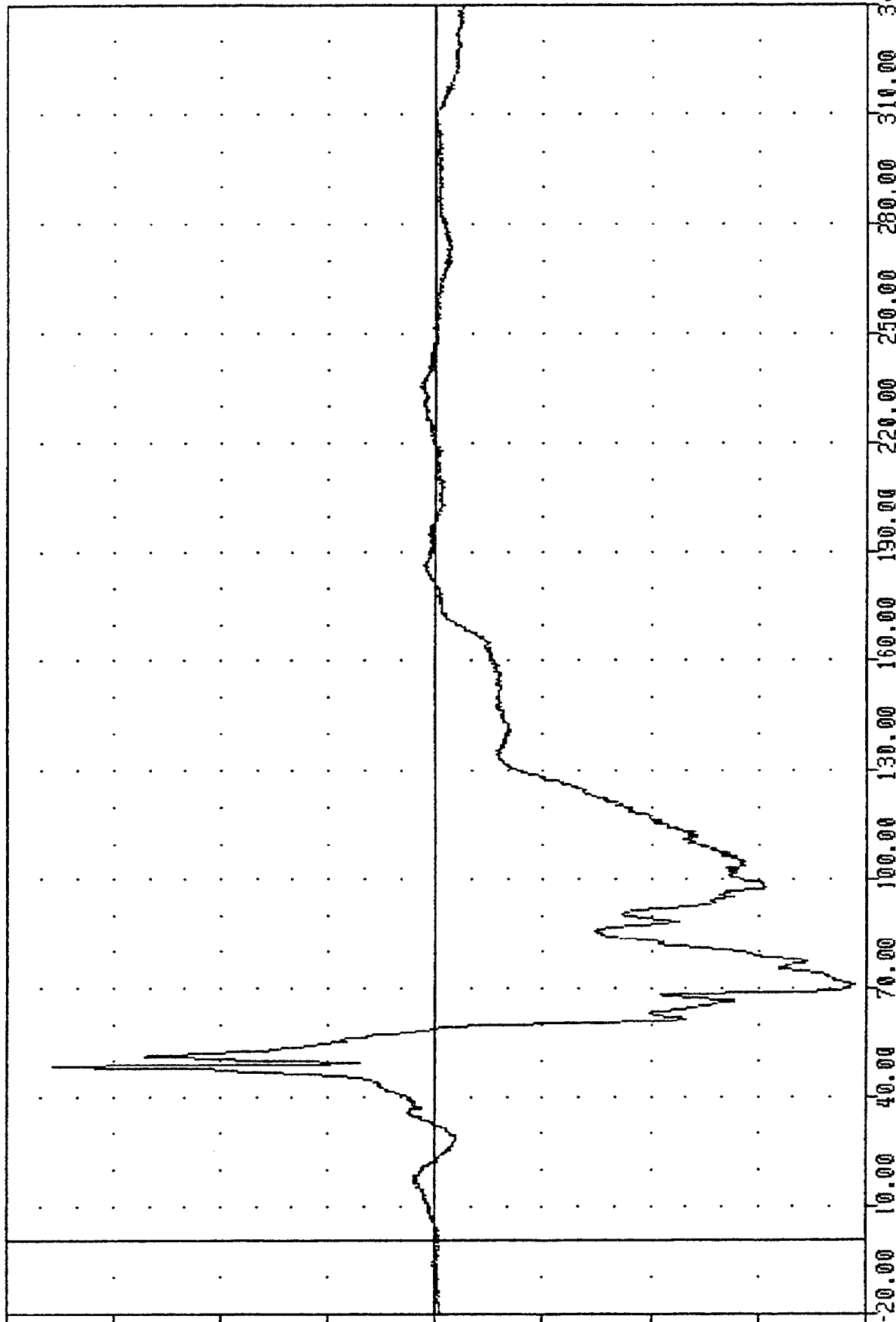
VAT , 850402P
CAR TO CAR FRONTAL IMPACT
85092000000
TBRM1

PLOT DATE 24-APR-85 16:18:42

FILTER = BLPF 1000/ 3162/ -40

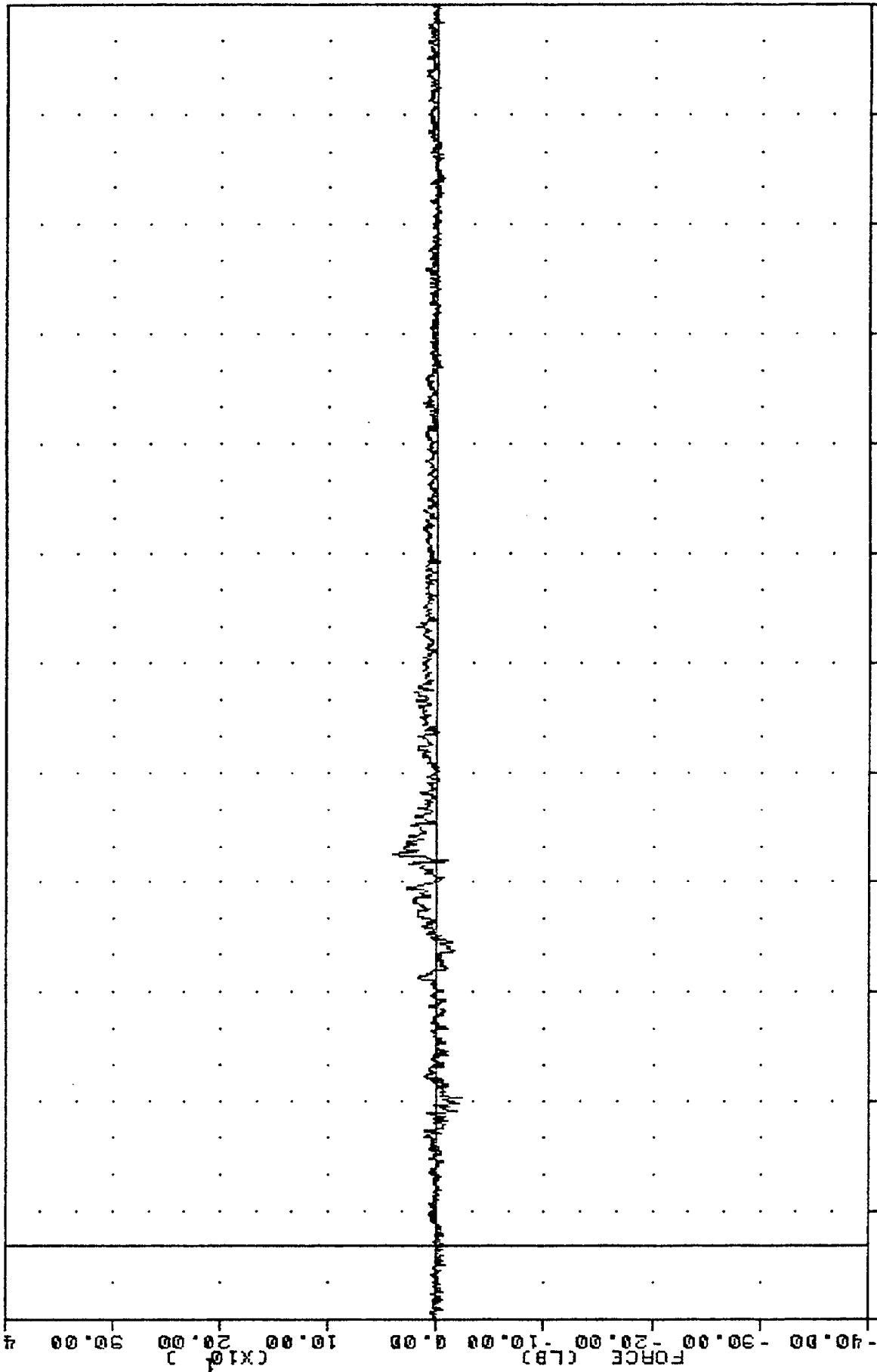
MIN, MAX VALUES = -97.400 71.13 , 89.41 e 48.38

TORQUE (LB-FT)

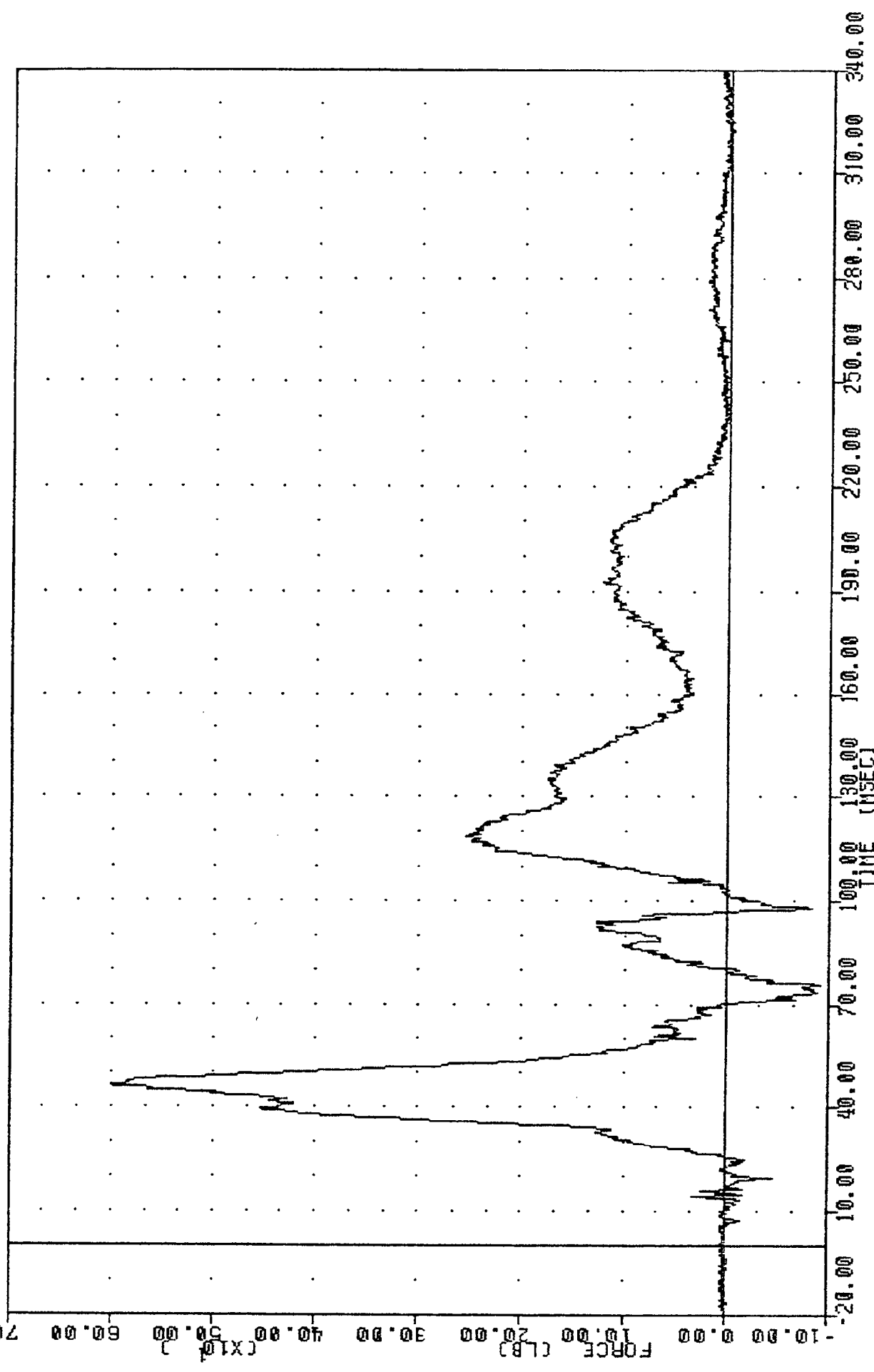


PARTNER VEHICLE - CONCORD
DRIVER RIGHT UPPER TIBIA MOMENT Y AXIS LB-FT

VAT , 850402P
 CAR TO CAR FRONTAL IMPACT
 850920000000
 ANALYF1
 FILTER = BLPF 1000/ 3162/ -40
 MIN. MAX VALUES = -22.21 41.00 41.21 107.63
 PLOT DATE 24-APR-85 16:18:42



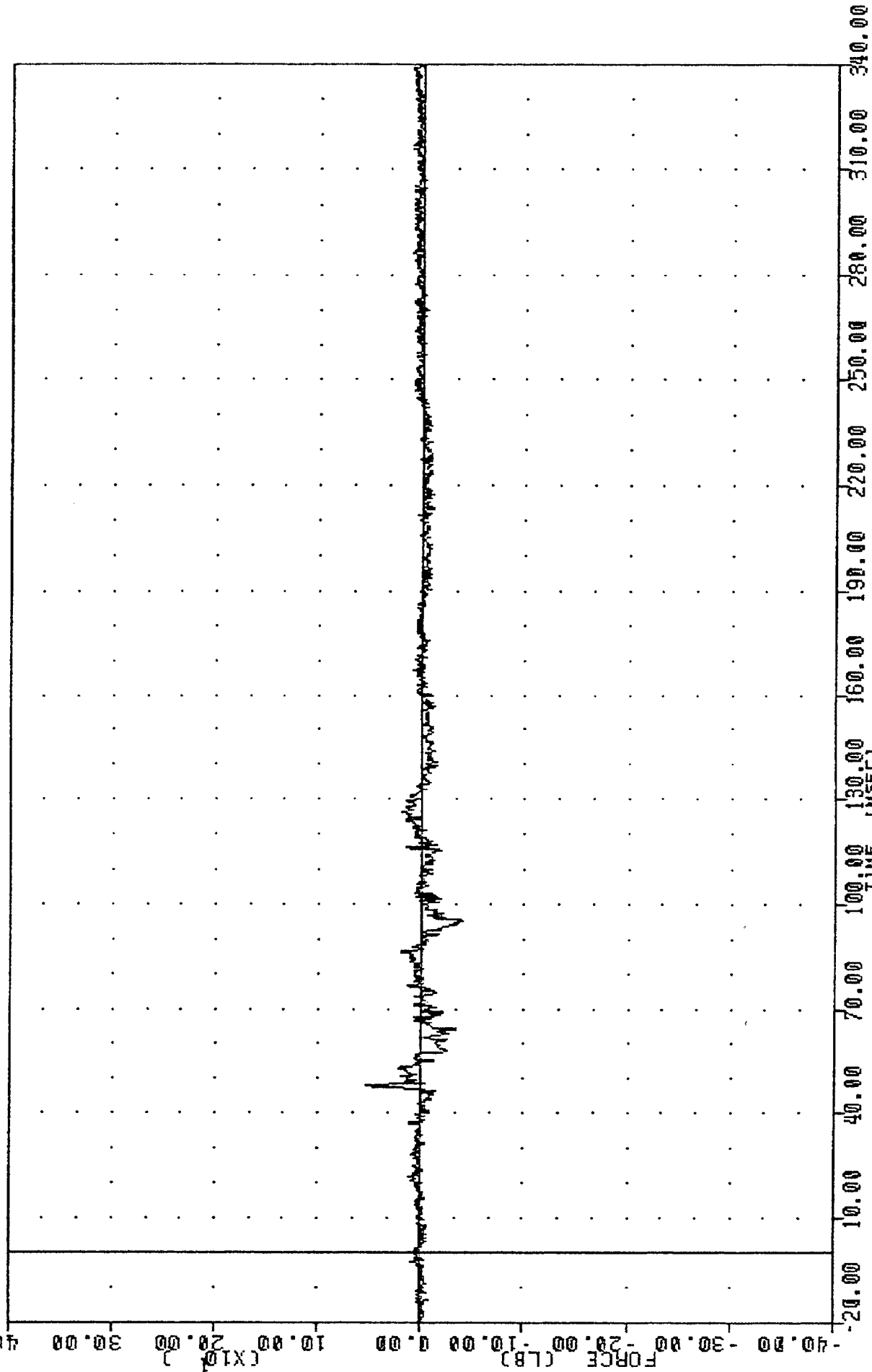
YR [REDACTED], 0304021
 CAR TO CAR FRONTAL IMPACT
 85092000000
 ANLZF1
 PLOT DATE 24 APR 85 16:18:42
 FILTER = BLPF 1000/ 3162/ -40
 MIN, MAX VALUES = -92.13 75.63, 599.94 e 46.25



B-105

PARTNER VEHICLE - CONCORD
 DRIVER LEFT LOWER TIBIA FORCE Z AXIS LBS

VR1, 850402P
 CAR TO CAR FRONTAL IMPACT
 850920000000
 ANRYF1
 PLOT DATE 24-HPR-85 16:18:42
 FILTER = BLPF 1000/ 3162/ -40
 MIN. MAX VALUES = -39.72 95.38, 53.71 48.00

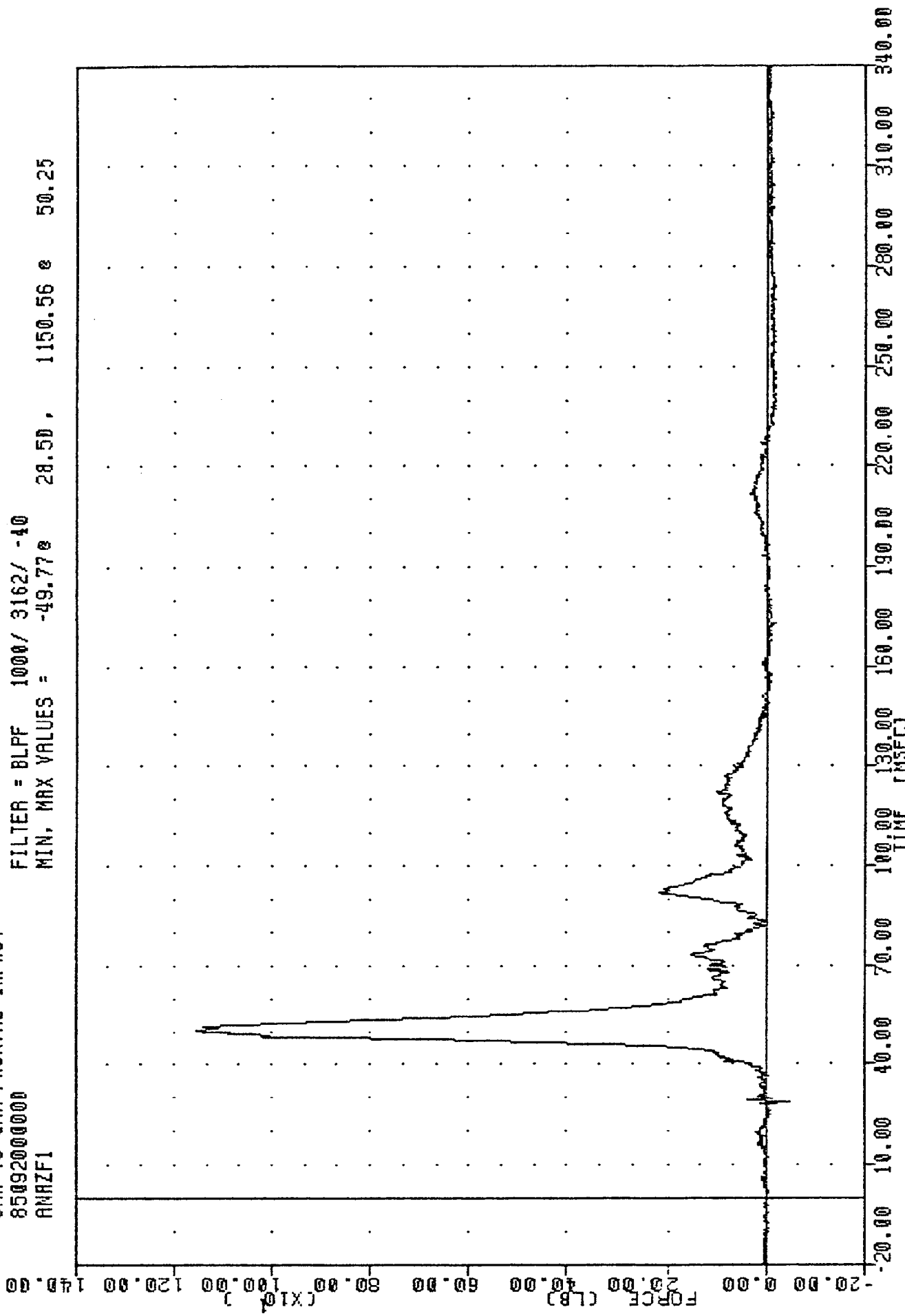


PARTNER VEHICLE - CONCORD
 DRIVER RIGHT LOWER TIBIA FORCE Y AXIS LBS

VRT , 850102P
 CAR TO CAR FRONTAL IMPACT
 850920000000
 ANRZF1

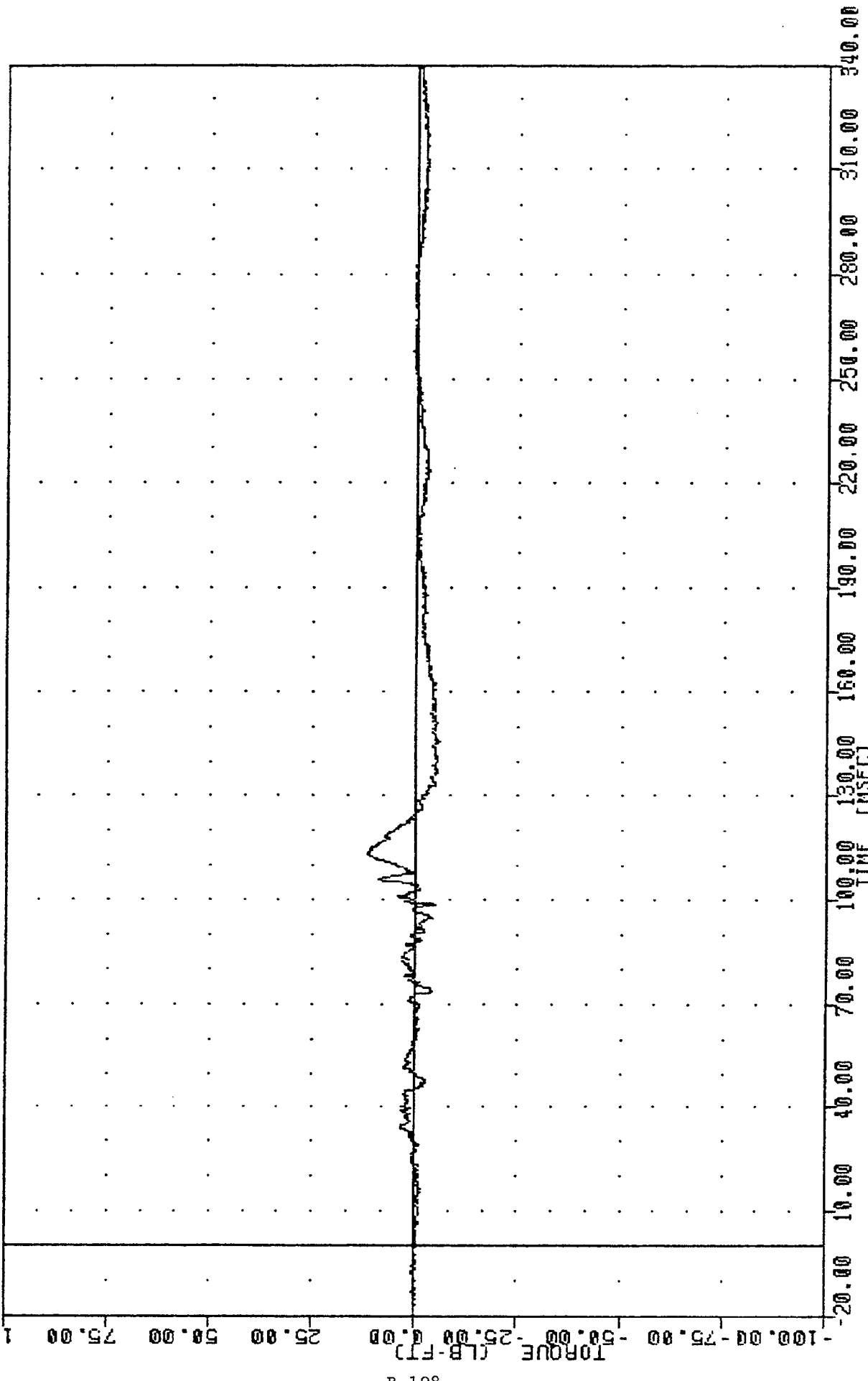
PLOT DATE 24-APR-85 16:18:42

FILTER = BLPF 1000/ 3162/ -40
 MIN, MAX VALUES = -49.77 28.50 , 1150.56 50.25



PARTNER VEHICLE - CONCORD
 DRIVER RIGHT LOWER TIBIA FORCE Z AXIS LBS

VR1 [REDACTED], 030102 [REDACTED] PLOT DATE [REDACTED] 24 APR 85 [REDACTED] 16:18:42 [REDACTED]
 CAR TO CAR FRONTAL IMPACT
 850920000000
 ANLXM1
 FILTER = BLPF 1000/ 3162/ -40
 MIN, MAX VALUES = -5.48e 145.63, 11.66 e 113.75

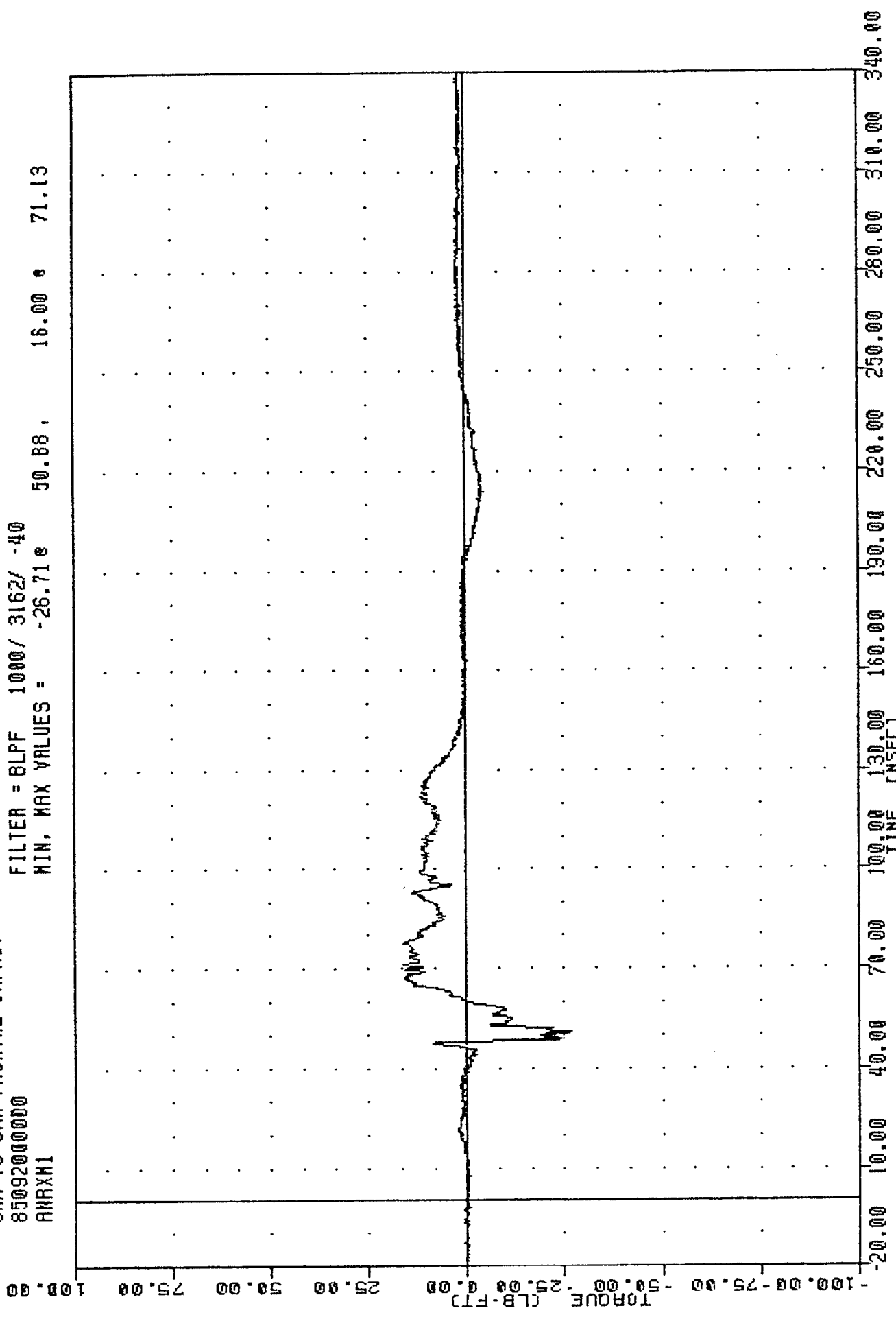


PARTNER VEHICLE - CONCORD
 DRIVER LEFT LOWER TIBIA MOMENT X AXIS LB-FT

WAT 8509021 24-APR-85 16:18:42

CAR TO CAR FRONTAL IMPACT
85092000000
ANRXH1

FILTER = BLPF 1000/ 3162/ -40
MIN, MAX VALUES = -26.71e 50.88, 16.00 e 71.13



PARTNER VEHICLE - CONCORD
DRIVER RIGHT LOWER TIBIA MOMENT X AXIS LB-FT

VRT , 850402P
CAR TO CAR FRONTAL IMPACT
850920000000
HEDXG2

PLOT DATE 24-APR-85 16:18:42

FILTER = ALPF 1650/ 5217/ -40
MIN, MAX VALUES = -57.11e 108.00, 7.27 e 222.75

100.00

75.00

50.00

25.00

0.00

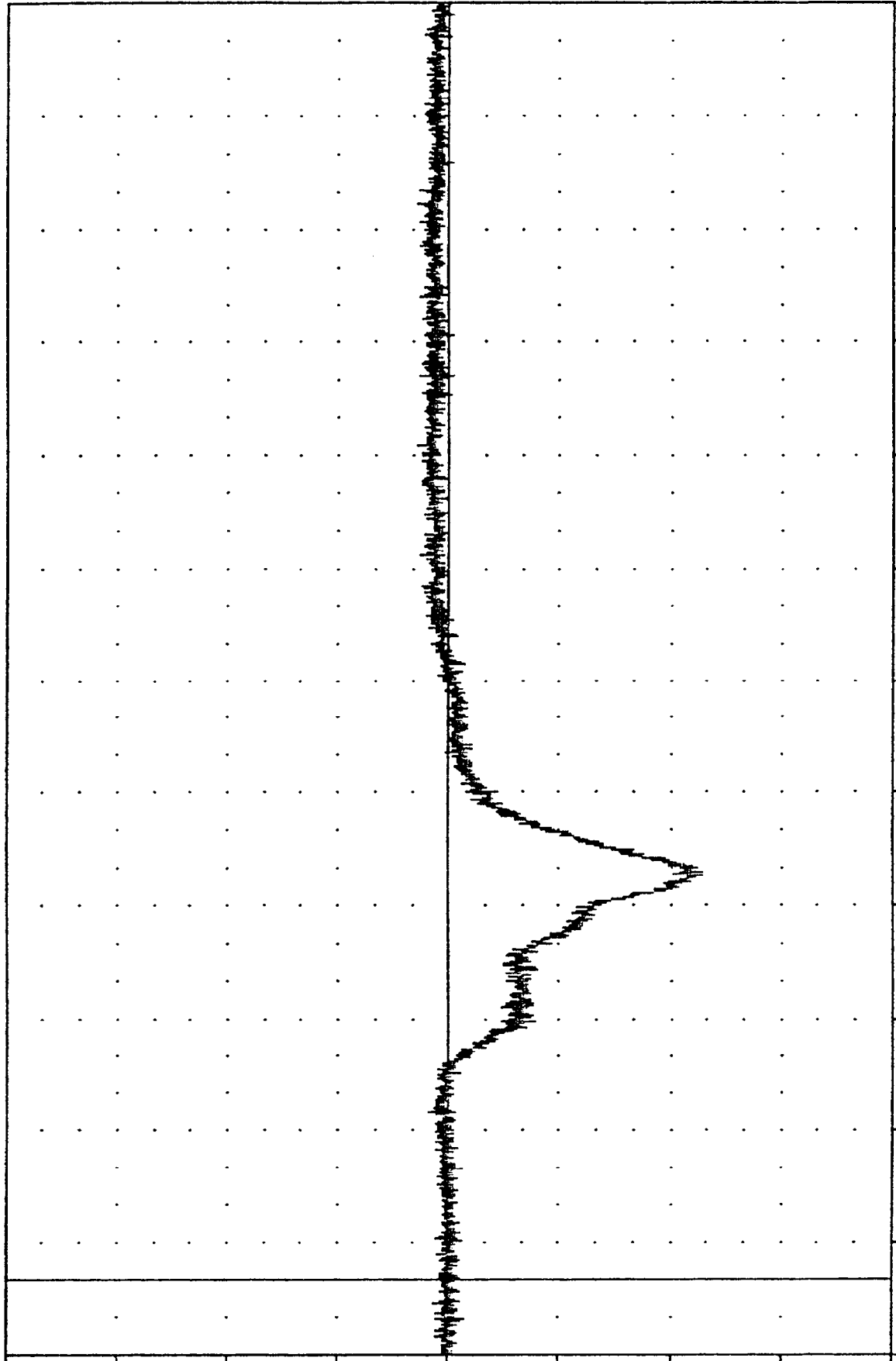
-25.00

-50.00

-75.00

-100.00

B-110



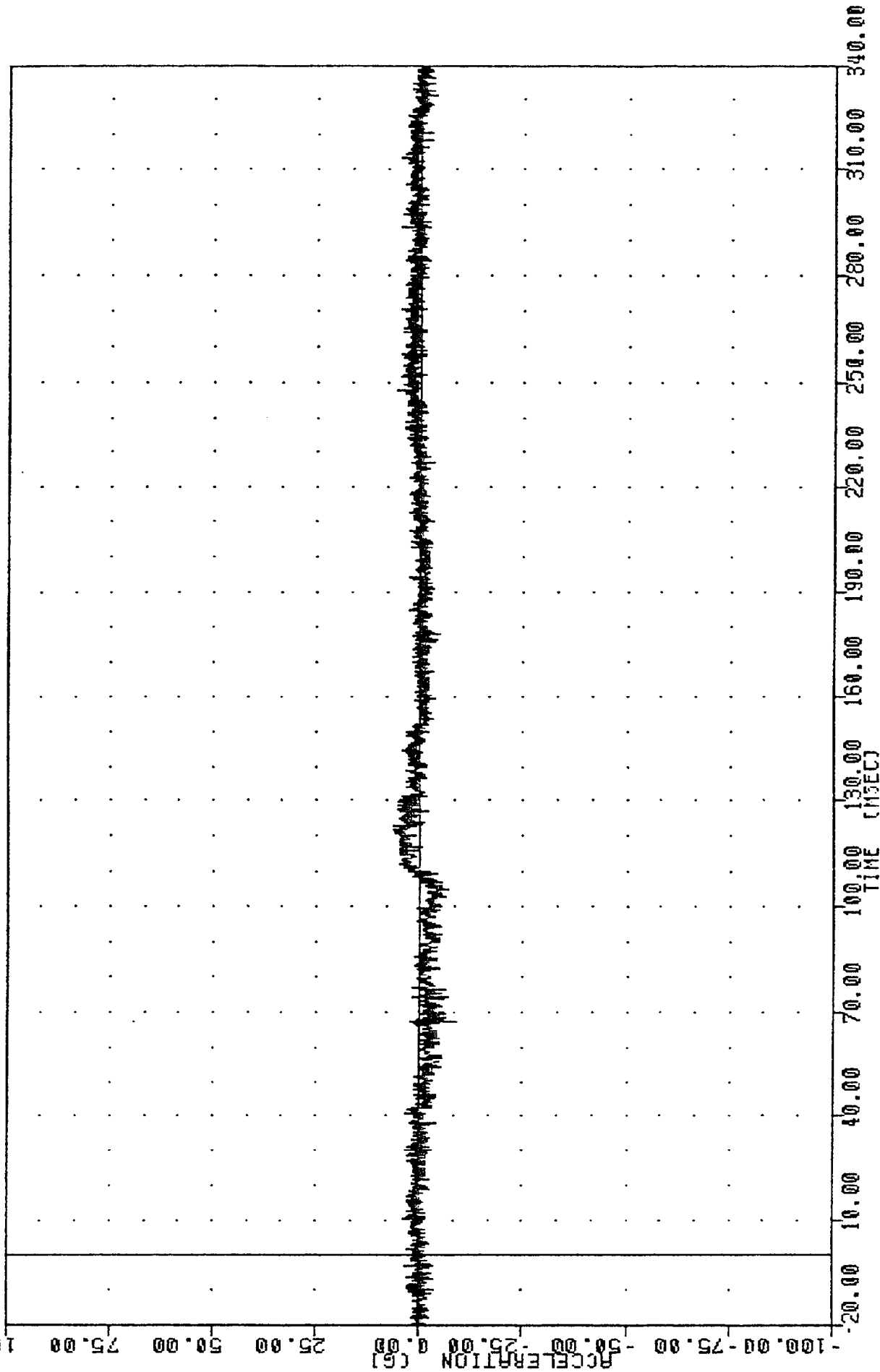
-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00

PARTNER VEHICLE - CONCORD
PASSENGER HEAD ACCELERATION X AXIS

VRI 850A02P
 CAR TO CAR FRONTAL IMPACT
 850920000000
 HEDYG2

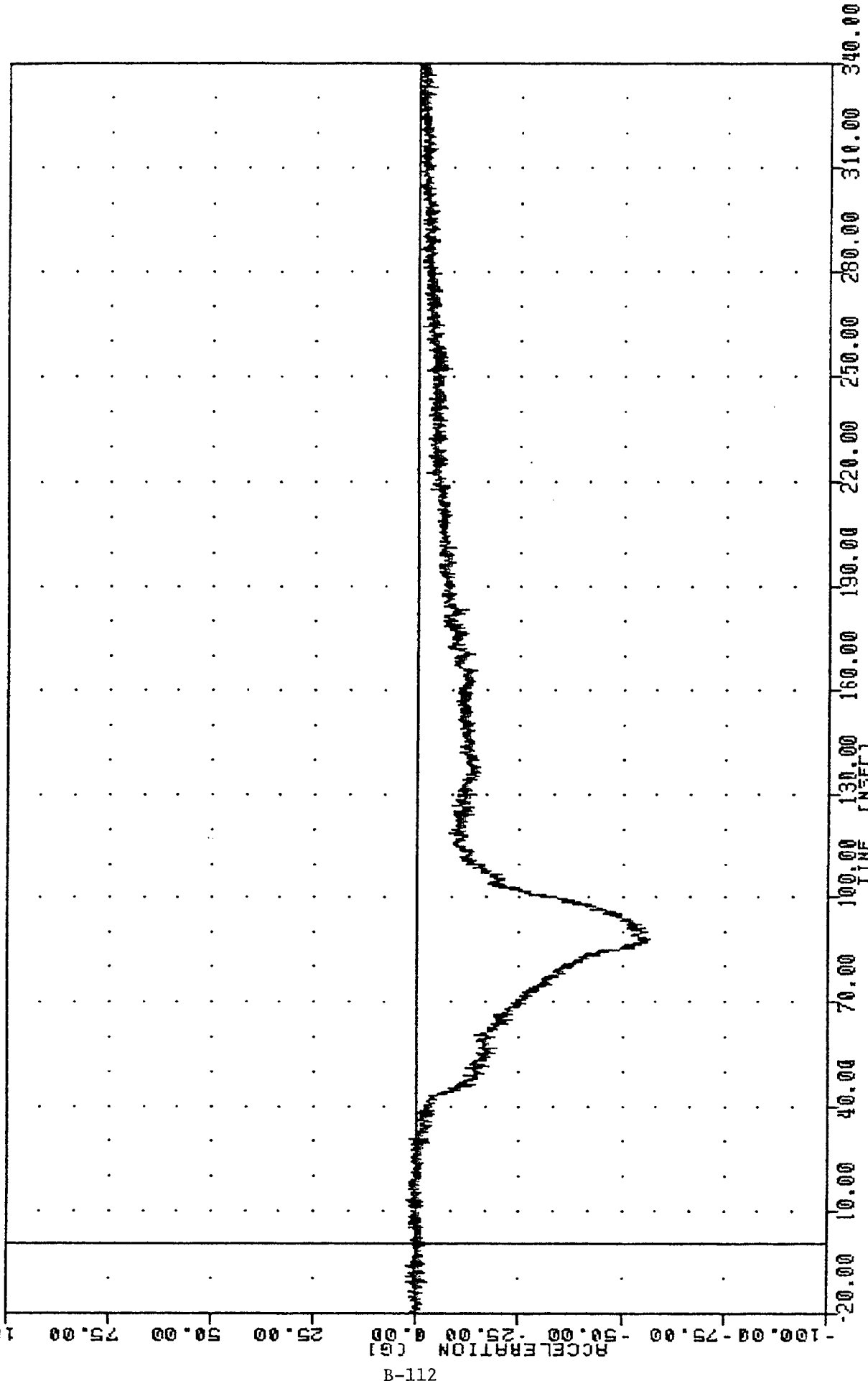
PLOT DATE 24-APR-85 16:18:42

FILTER = ALPF 1650/ 5217/ -40
 MIN. MAX VALUES = -9.06e 67.13, 6.75e 121.63



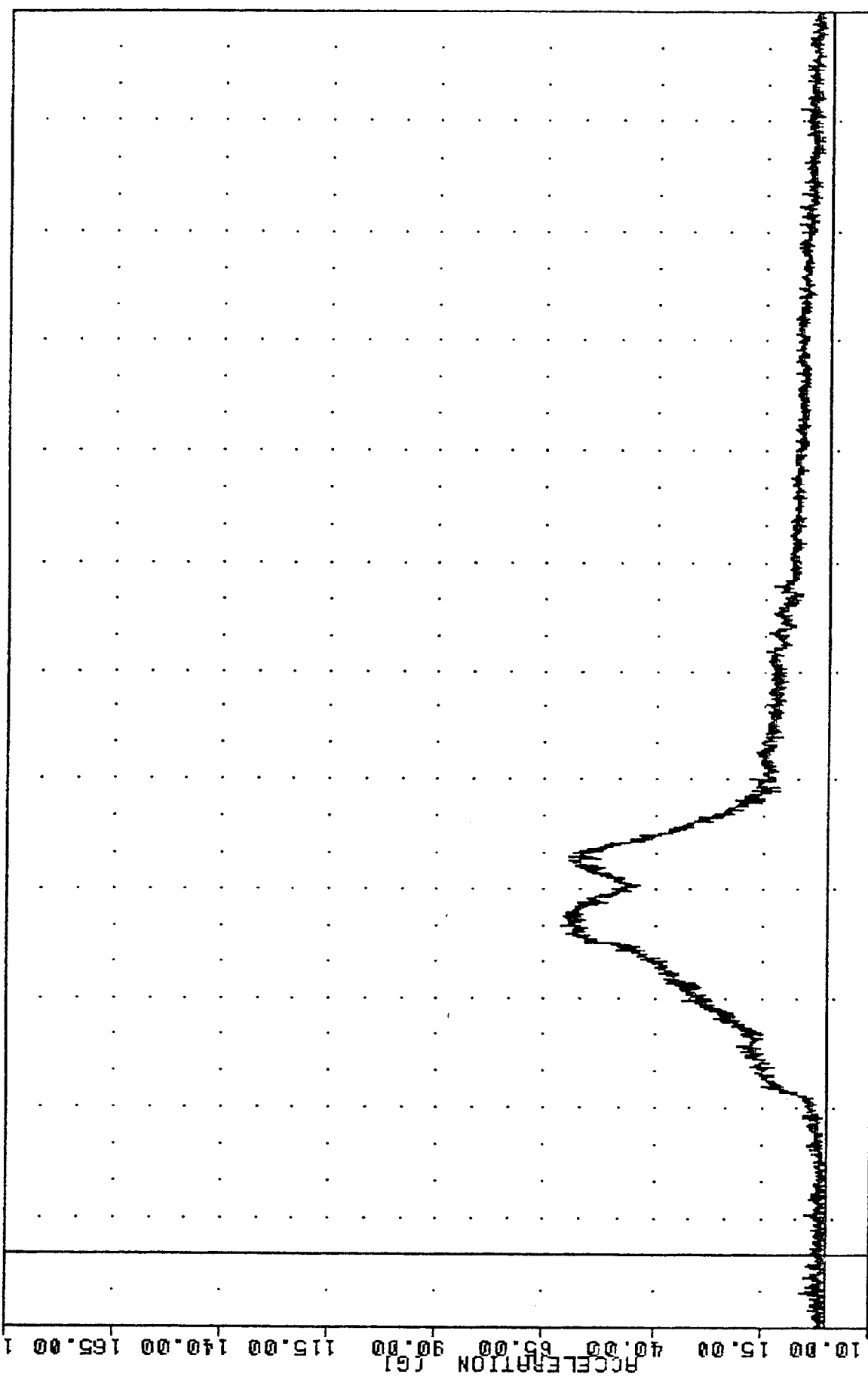
PARTNER VEHICLE - CONCORD
 PASSENGER HEAD ACCELERATION Y AXIS

VRT 850920000000
 CAR TO CAR FRONTAL IMPACT
 850920000000
 HEDZ62
 FILTER = ALPF 1650/ 5217/ -40
 MIN, MAX VALUES = -56.67 87.88 2.24 -10.63
 24-APR-85 16:18:42



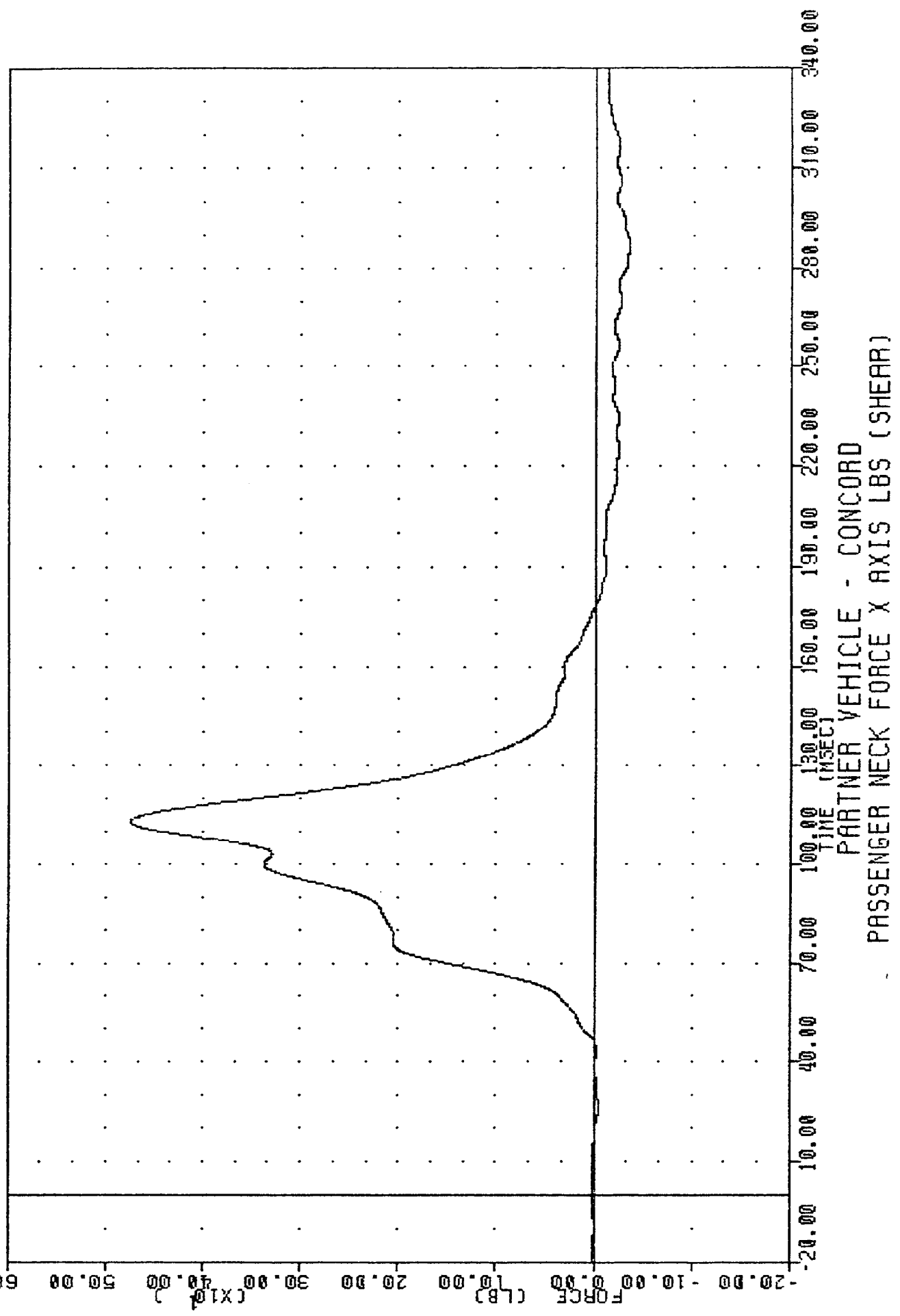
PARTNER VEHICLE - CONCORD
 PASSENGER HEAD ACCELERATION Z AXIS

YR 0304021
 CAR TO CAR FRONTAL IMPACT
 85092000000
 HEDRG2
 PLOT DATE 24 APR 85 15:18:42
 FILTER = ALPF 1650/ 5217/ -40
 MIN, MAX VALUES = 0.16B -13.88, 60.93 e 90.00



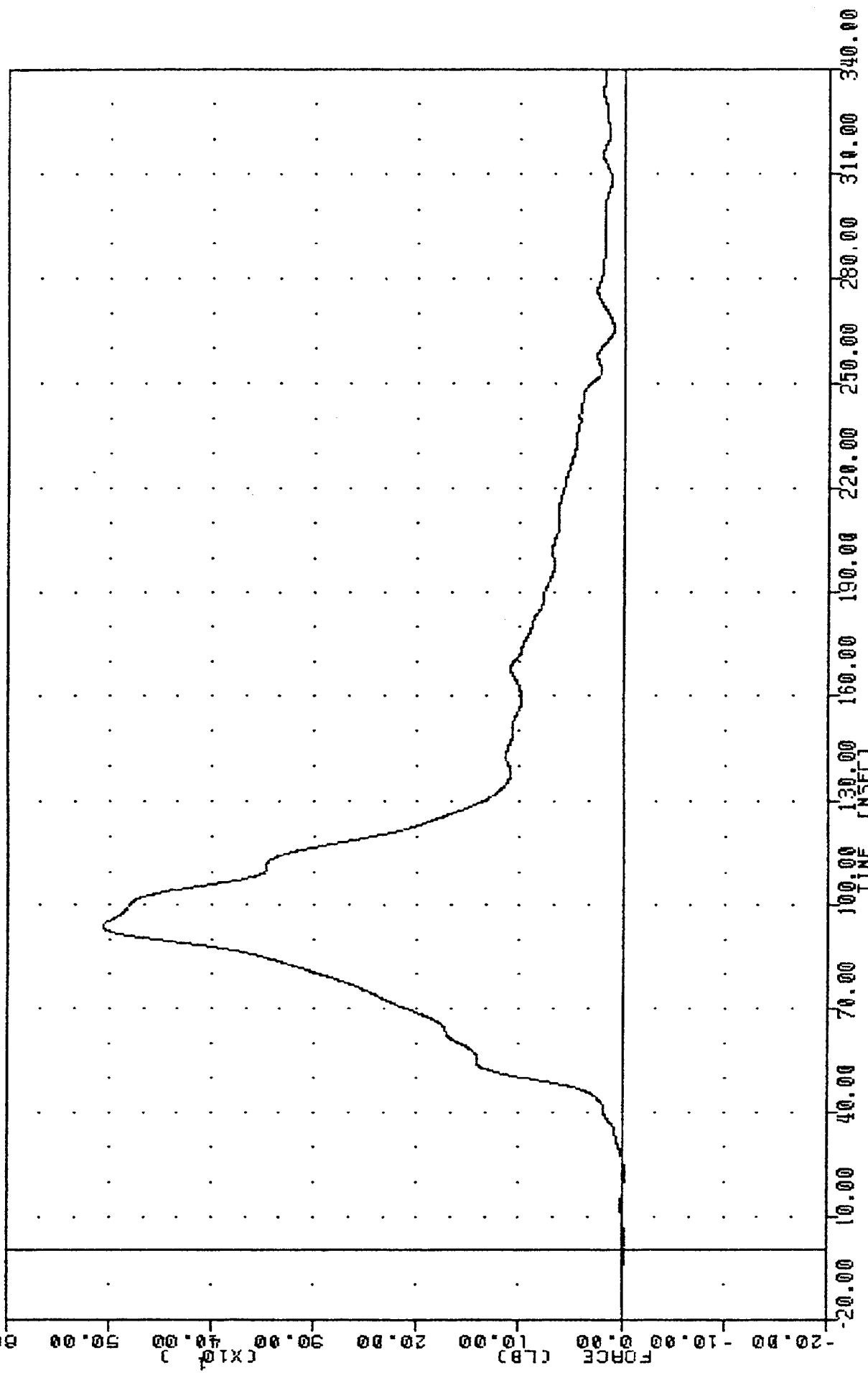
TIME (MSEC)
 PARTNER VEHICLE - CONCORD
 PASSENGER HEAD RESULTANT

VR [REDACTED], 830402P [REDACTED] PLOT DATE 24-APR-85 16:24:22
 CAR TO CAR FRONTAL IMPACT
 85092000000
 NEKXF2
 FILTER = BLPF 100/ 316/ -40
 MIN, MAX VALUES = -35.87 287.00, 474.13 113.00



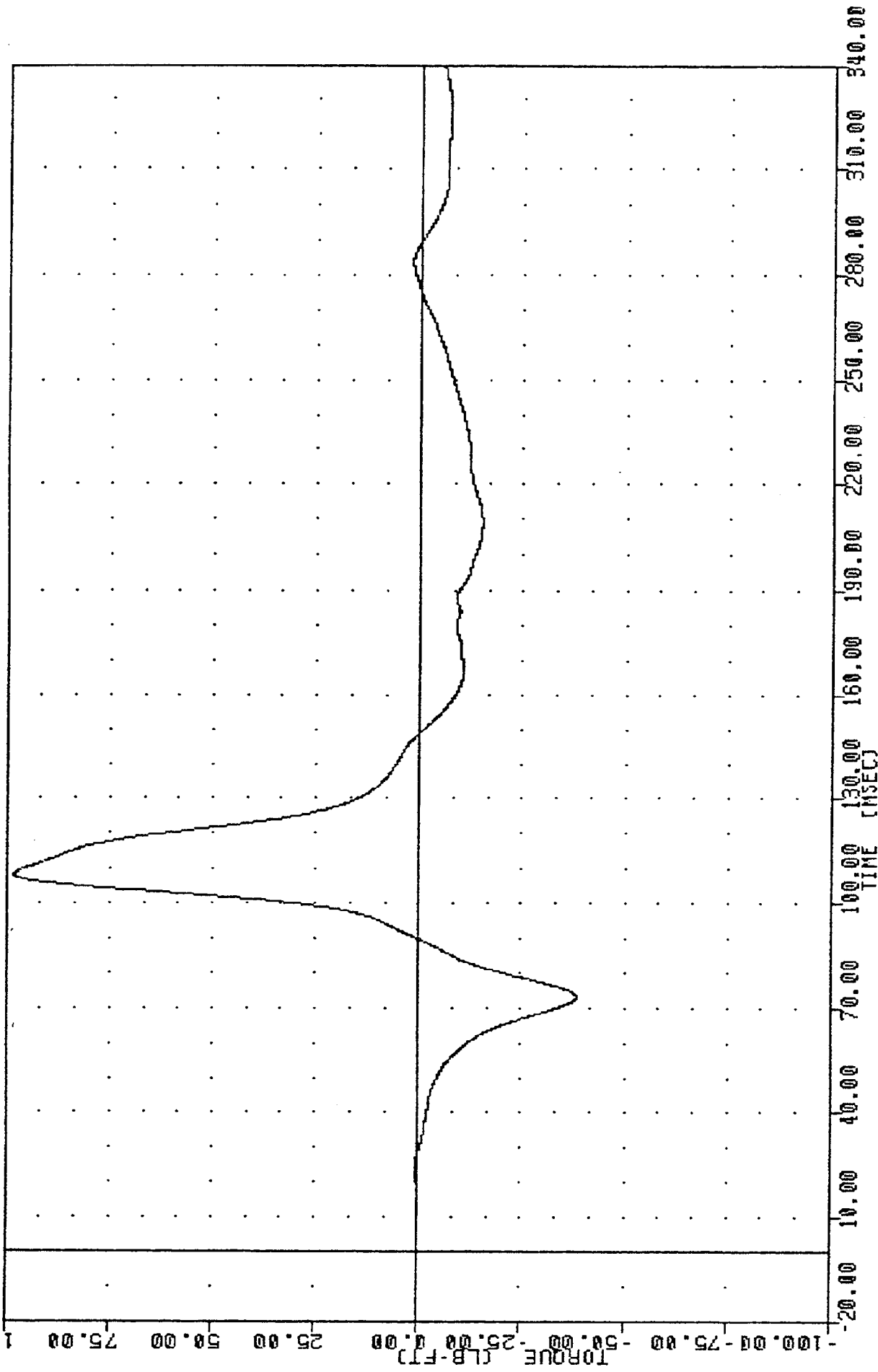
VRT ████████, 850402 ████████ PLOT DATE ████████ 24 APR 85 ████████ 16:24:22 ████████
 CAR TO CAR FRONTAL IMPACT
 85092000000
 NEKZF2

FILTER = BLPF 100/ 316/ -40
 MIN, MAX VALUES = -3.28e 22.13, 506.18 e 93.88



PARTNER VEHICLE - CONCORD
 PASSENGER NECK FORCE Z AXIS LBS (AXIAL)

VRI , 030402
 CAR TO CAR FRONTAL IMPACT
 85092000000
 NEKYM2
 PLOT DATE 24-HR-85 16:24:22
 FILTER = BLPF 100/ 316/ -40
 MIN. MAX VALUES = -38.540 73.13 , 98.05 e 108.38

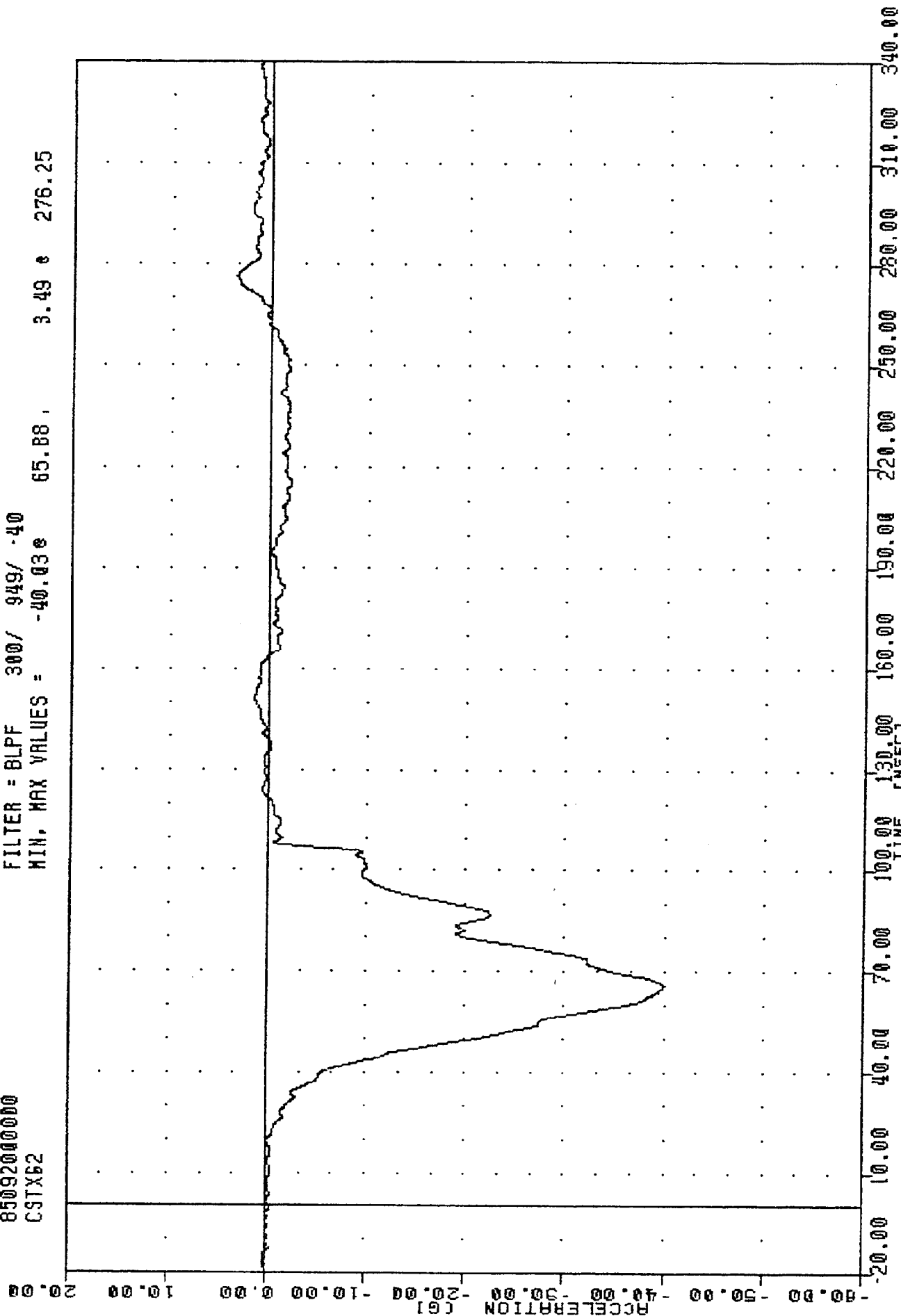


PARTNER VEHICLE - CONCORD
 PASSENGER NECK MOMENT Y AXIS FT-LBS

VRI , 850402P
CAR TO CAR FRONTAL IMPACT
850920000000
CSTX62

PLOT DATE 24-APR-85 16:18:42

FILTER = BLPF 300/ 949/ .40
MIN. MAX VALUES = -40.03 65.88 , 3.49 276.25



PARTNER VEHICLE - CONCORD
PASSENGER CHEST ACCELERATION X AXIS

VRT , 850402P
CAR TO CAR FRONTAL IMPACT
850920000000
CSTYG2

PLOT DATE 24-APR-85 16:18:42

FILTER = 8LPF 300/ 949/ -40
MIN. MAX VALUES = -4.49e 86.88, 1.46 e 82.88

40.00

30.00

20.00

10.00

0.00

-10.00

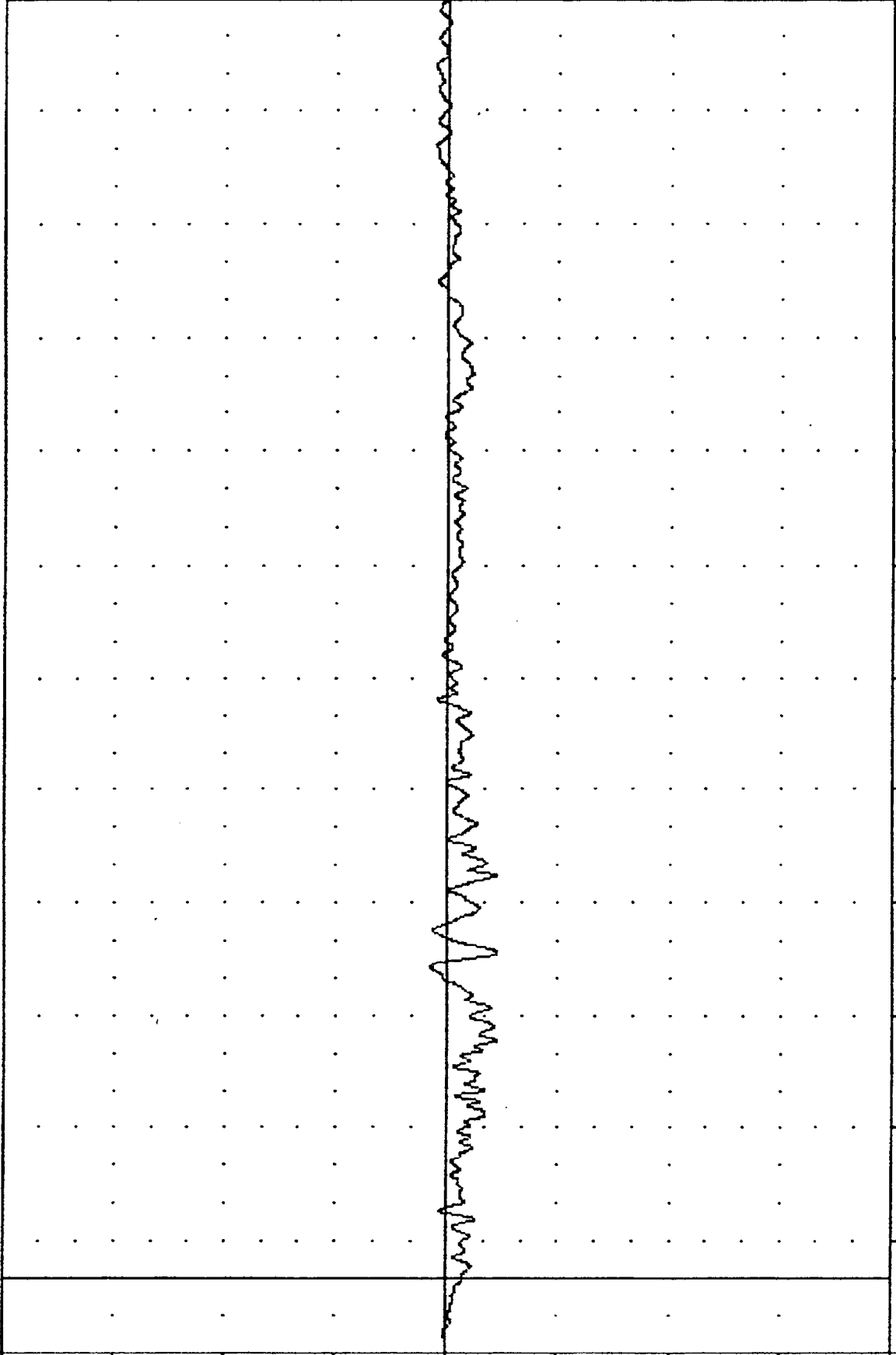
-20.00

-30.00

-40.00

811-2

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

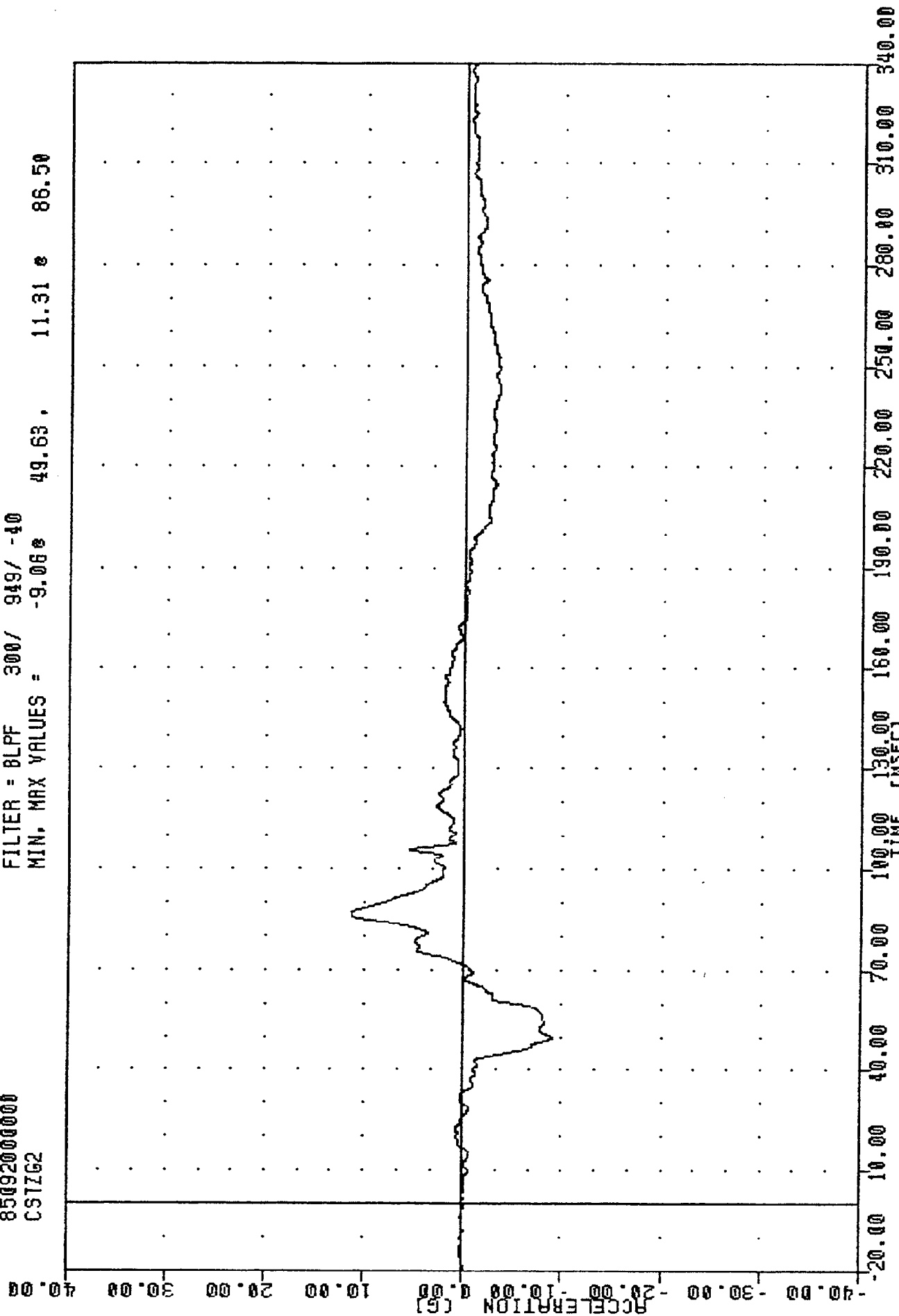
PARTNER VEHICLE - CONCORD
PASSENGER CHEST ACCELERATION Y AXIS

VR1 , 850402P
CAR TO CAR FRONTAL IMPACT
850920000000
CSTZG2

PLOT DATE 24-APR-85 16:18:42

FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = -9.06e 49.63, 11.31 e 86.50



PARTNER VEHICLE - CONCORD
PASSENGER CHEST ACCELERATION Z AXIS

VRT , 850402P
CAR TO CAR FRONTAL IMPACT
85092000000
C3T862

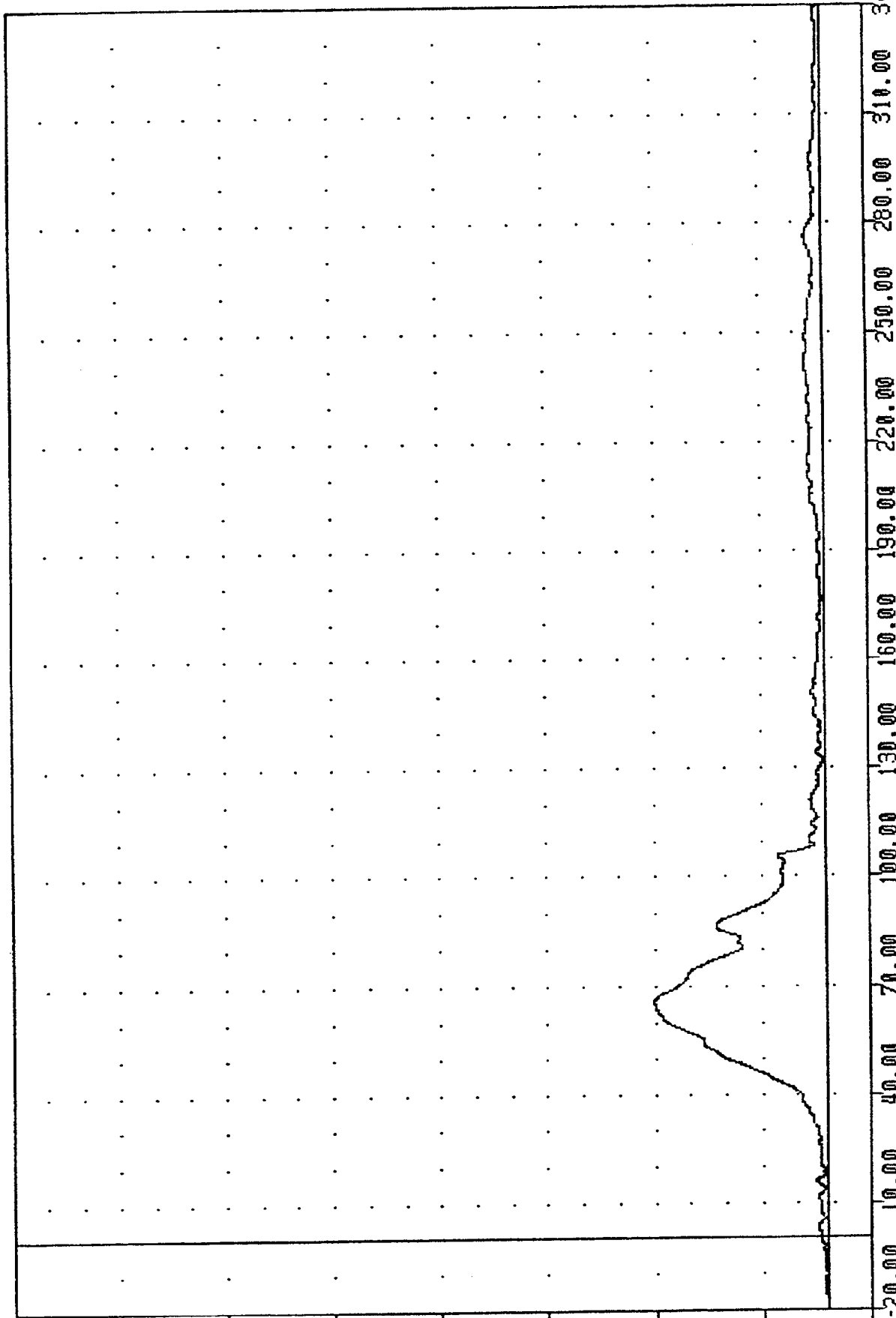
PLOT DATE 24-APR-85 16:18:42

FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = 0.14e -17.88, 40.19 e 65.88

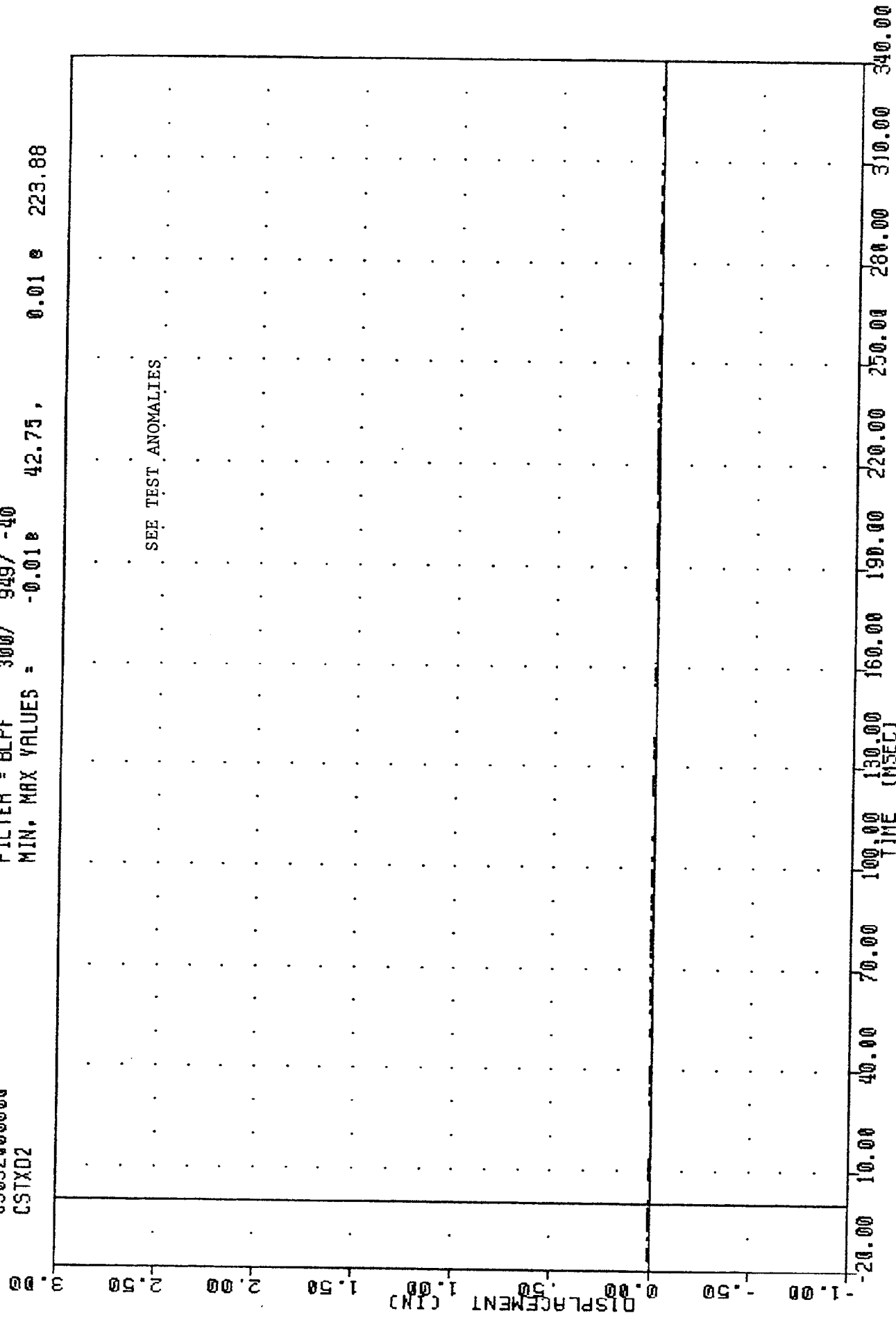
ACCELERATION (G)

B-120



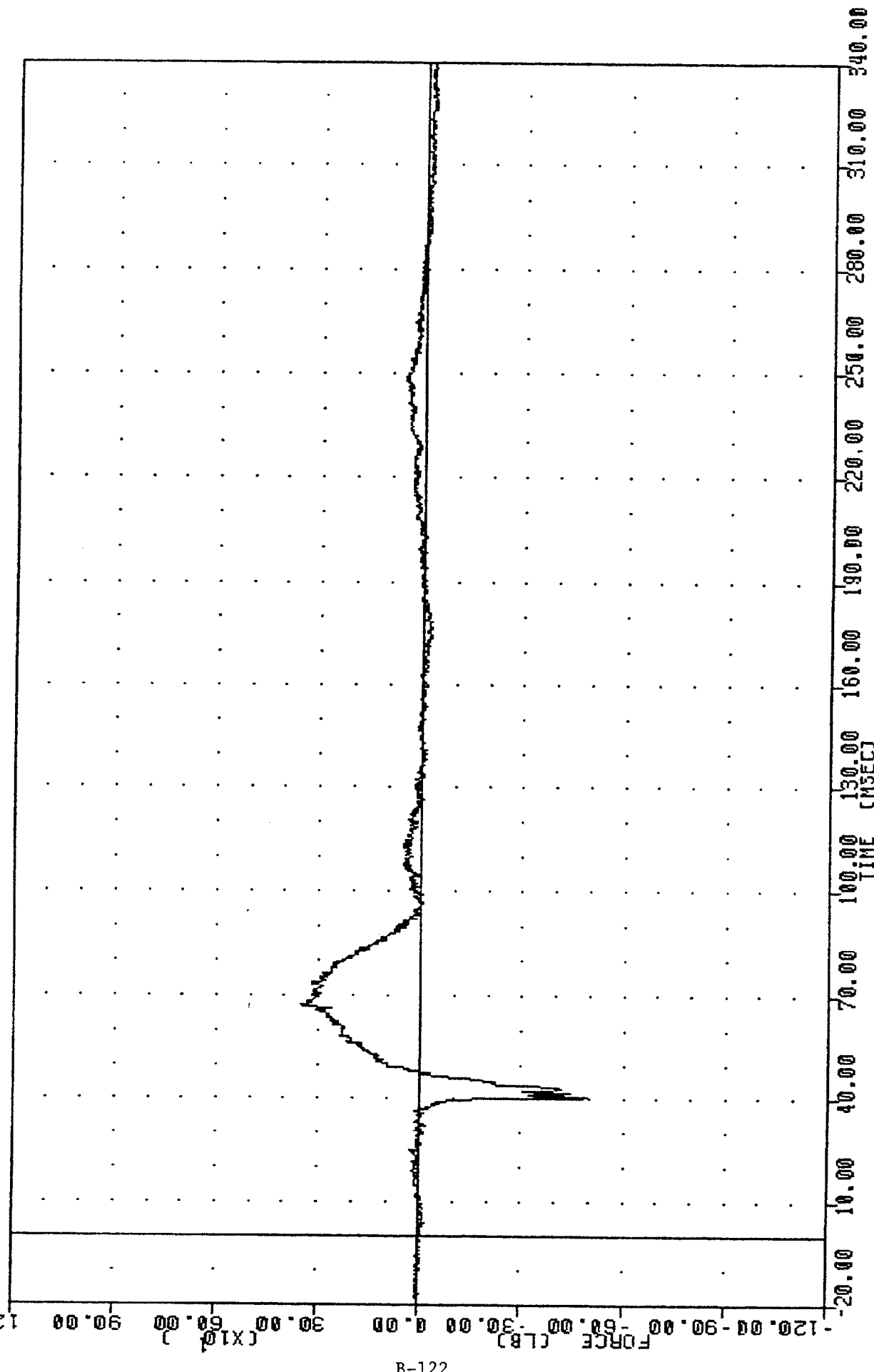
PARTNER VEHICLE - CONCORD
PASSENGER CHEST RESULTANT

VHT 030402Z
 CAR TO CAR FRONTAL IMPACT
 85092000000
 CSTXD2
 PLOT DATE 24-APR-85 16:18:42
 FILTER = BLPF 300/ 949/ -40
 MIN. MAX VALUES = -0.018 42.75, 0.018 223.88



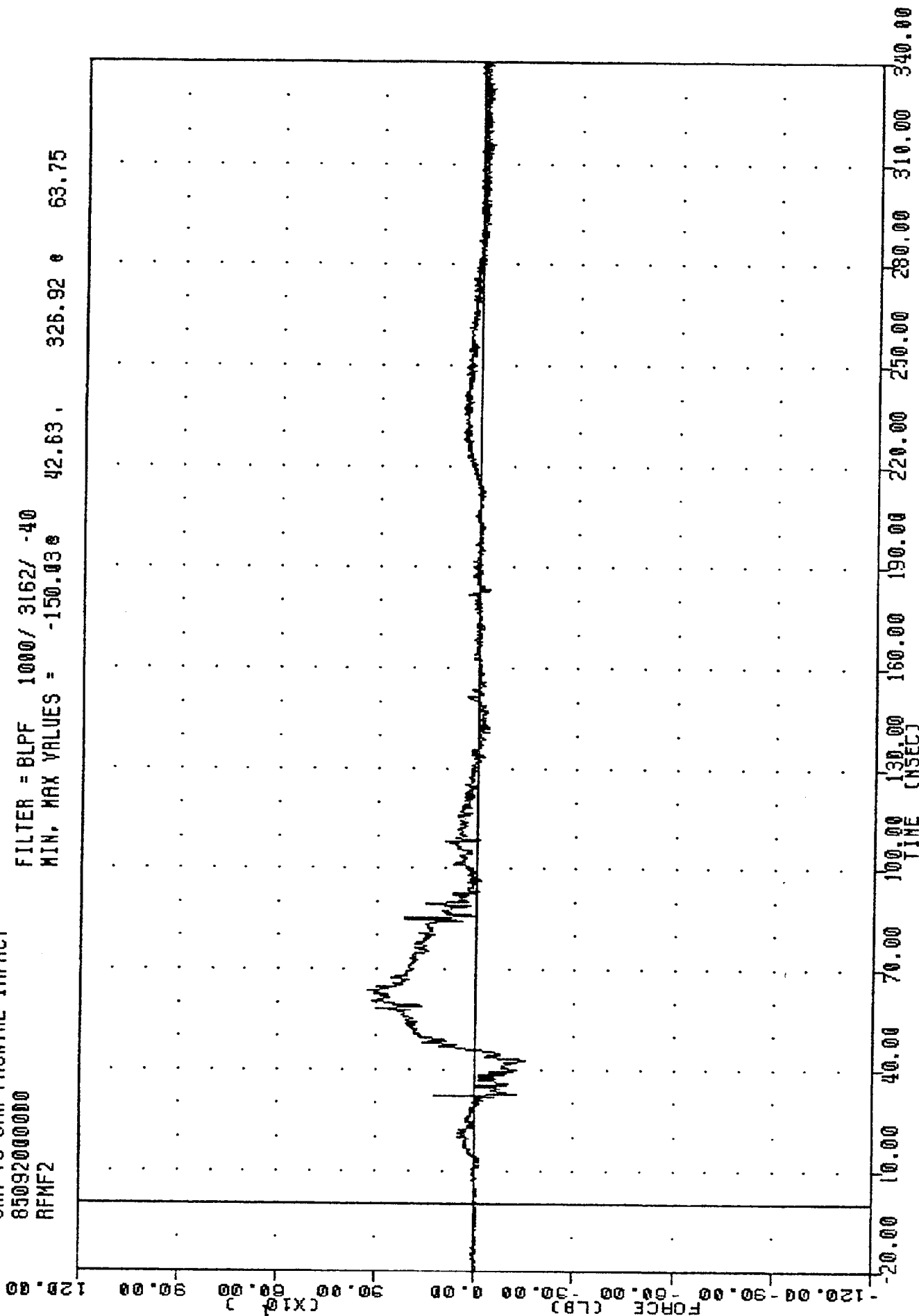
PARTNER VEHICLE - CONCORD
 PASSENGER CHEST DISPLACEMENT INCHES

VR1, 004021, 21 APR 83 16:18:42
 CAR TO CAR FRONTAL IMPACT
 85092000000
 LFNF2
 FILTER = BLPF 1000/ 3162/ -40
 MIN. MAX VALUES = -493.23e 40.63, 351.52 e 67.13



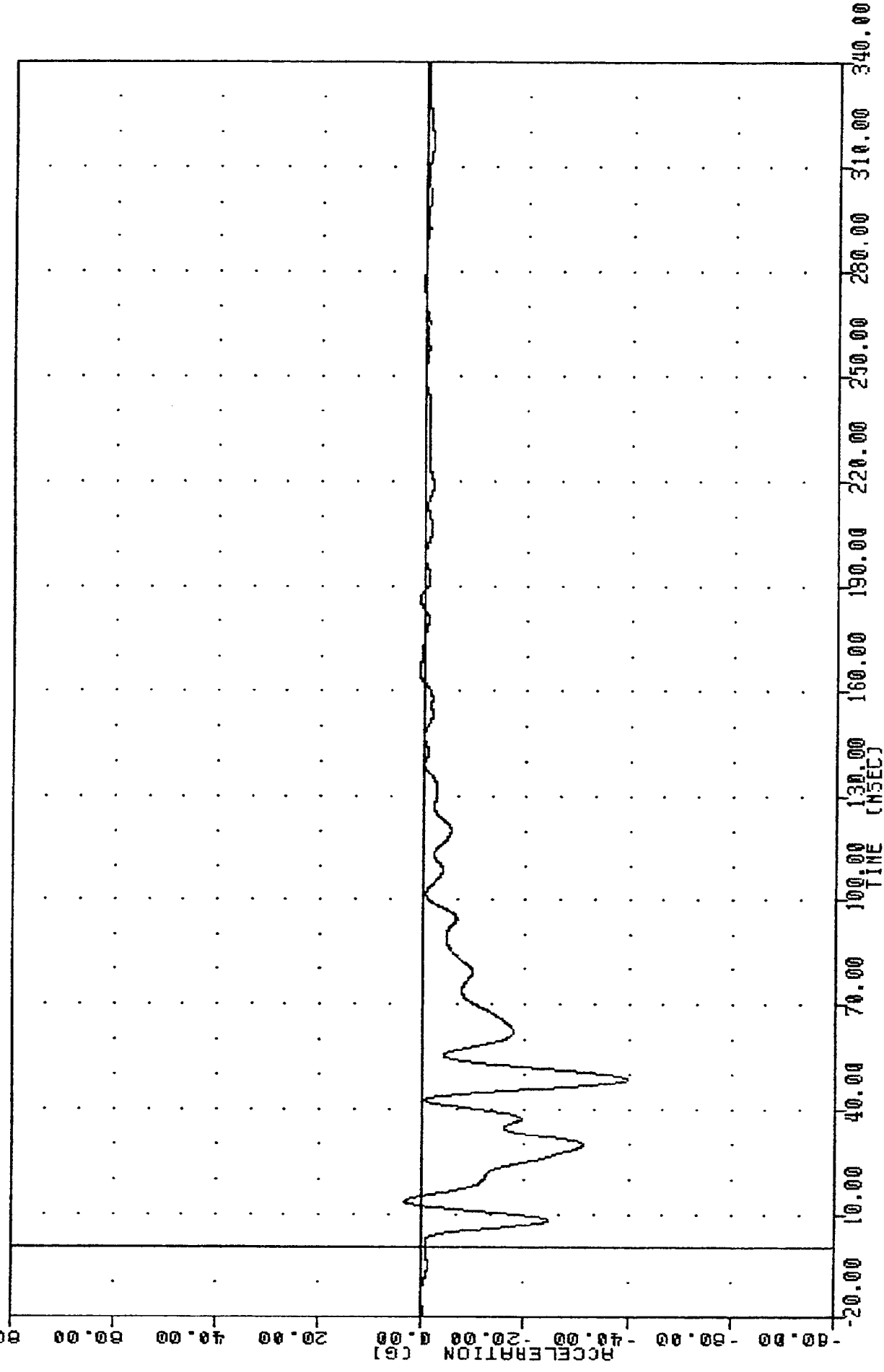
PARTNER VEHICLE - CONCORD
 PASSENGER LEFT FEMUR FORCE LBS

VAR 000002, 000002
 CAR TO CAR FRONTAL IMPACT
 850920000000
 RFMF2
 PLOT DATE 24-APR-85 16:18:42
 FILTER = BLPF 1000/ 3162/ -40
 MIN, MAX VALUES = -150.03 42.63 326.92 63.75



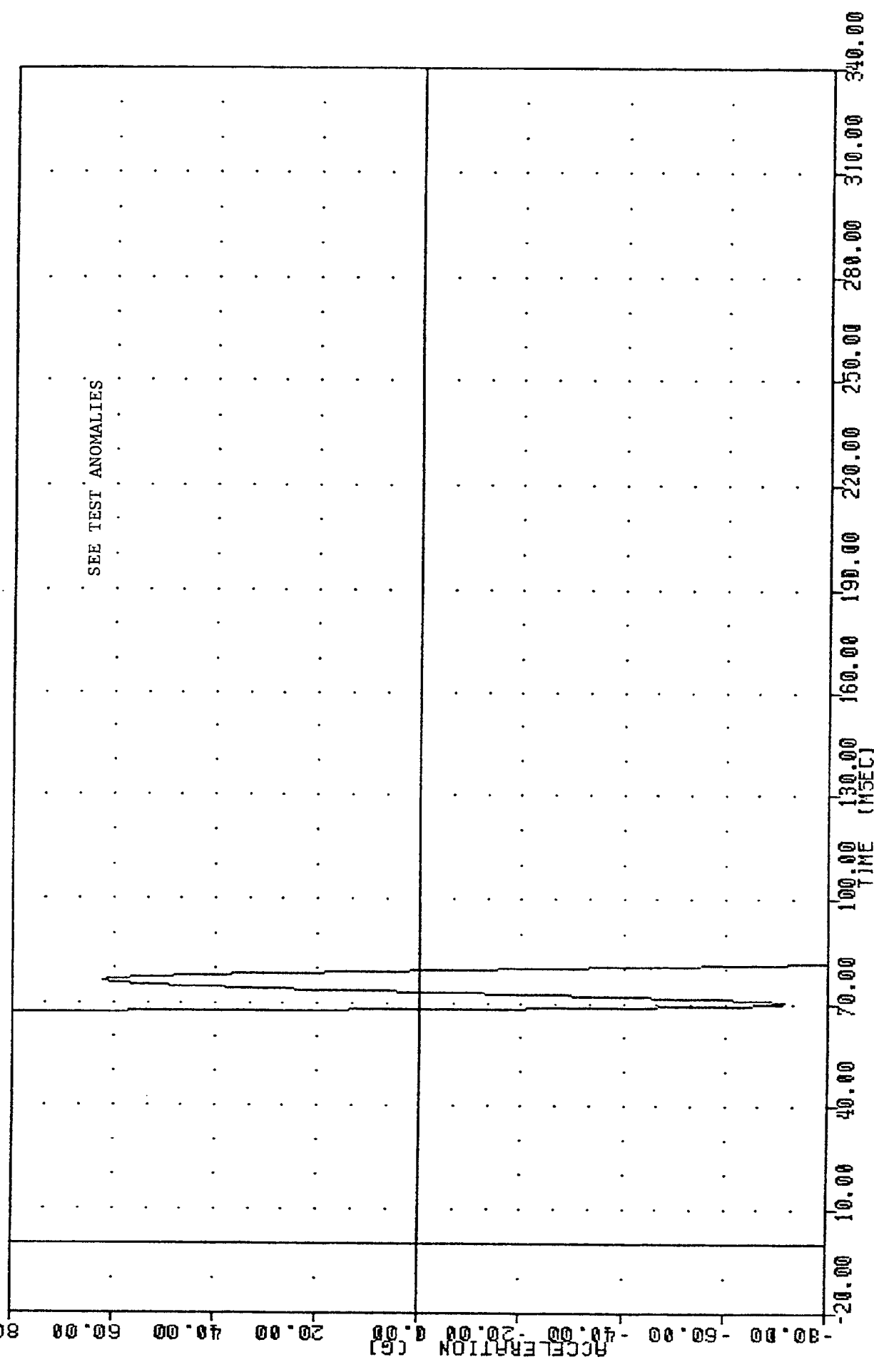
PARTNER VEHICLE - CONCORD
 PASSENGER RIGHT FEMUR FORCE LBS

VARI, 800102, 24 MAR 83 16:24:22
 CAR TO CAR FRONTAL IMPACT
 85092000000
 FFRX6
 FILTER = BLPF 100/ 316/ -40
 MIN, MAX VALUES = -39.89 48.50 3.31 13.63



PARTNER VEHICLE - CONCORD
 RIGHT FRONT FRAME RAIL ACCELERATION X AXIS

VAR [REDACTED], 000402
 CAR TO CAR FRONTAL IMPACT
 85092000000
 FFCXG
 FILTER = BLPF 100/ 316/ -40
 MIN. MAX VALUES = -345.72 290.88, 427.39 20.00
 PLT DATE 24 MAR 83 10:21:22

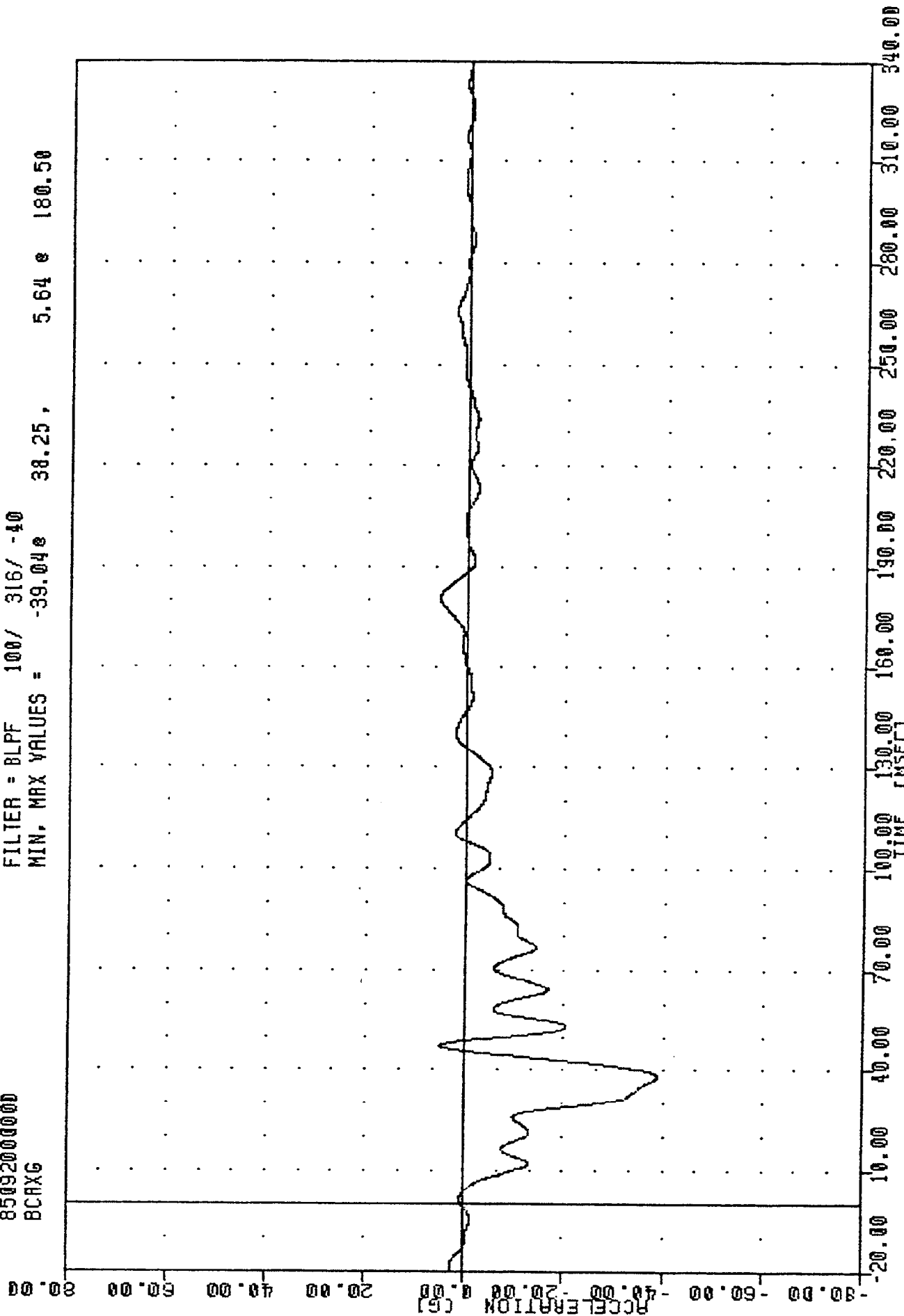


PARTNER VEHICLE - CONCORD
 FRONT FRAME CROSSMEMBER ACCELERATION X AXIS

VR 402
 CAR TO CAR FRONTAL IMPACT
 85092000000
 BCXG

PLT DATE 24 MAR 85 10:24:22

FILTER = BLPF 100/ 316/ -40
 MIN. MAX VALUES = -39.04e 38.25, 5.64 e 180.50



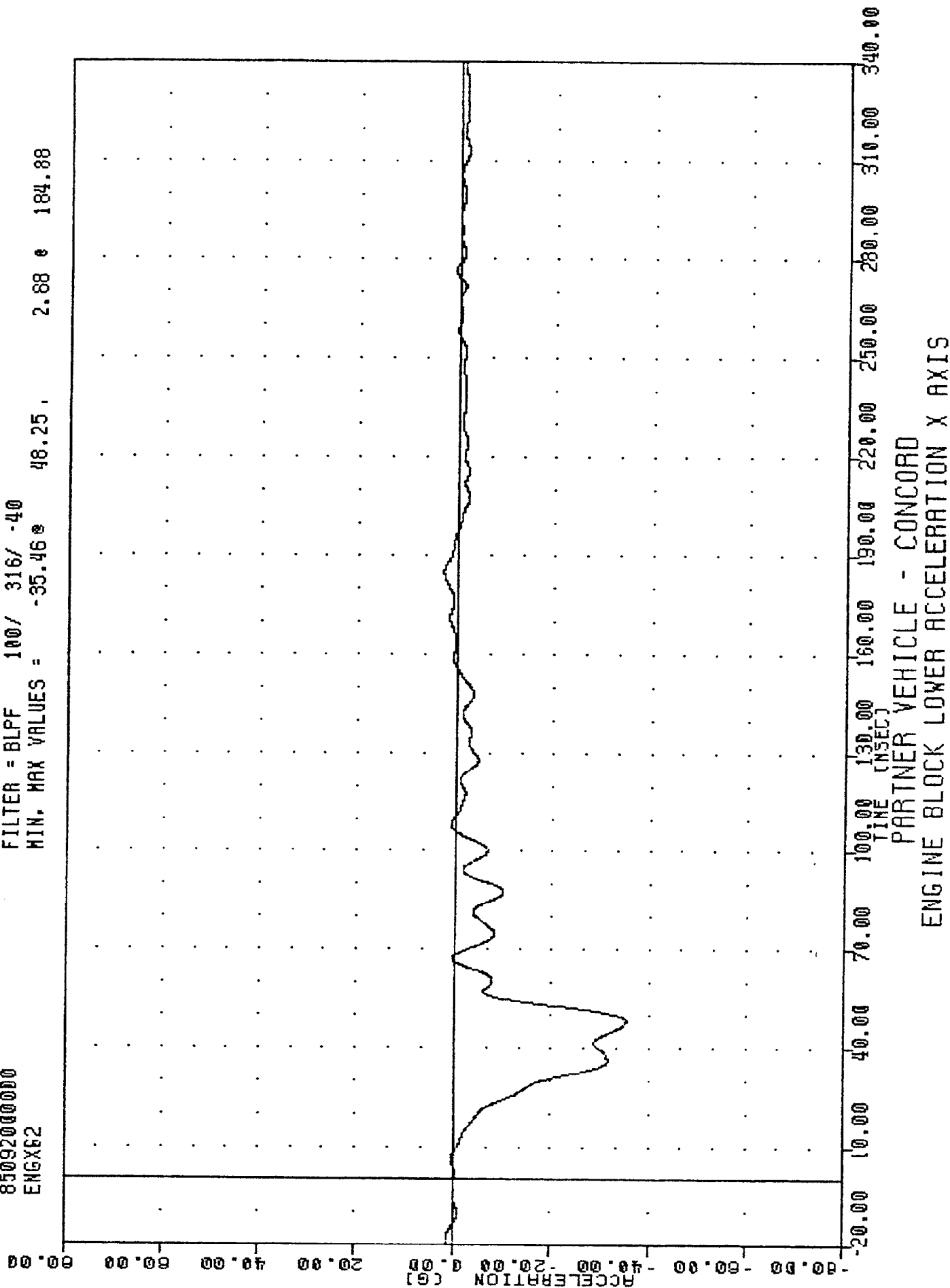
R-176

PARTNER VEHICLE - CONCORD
 RIGHT BRAKE CALIPER ACCELERATION X AXIS

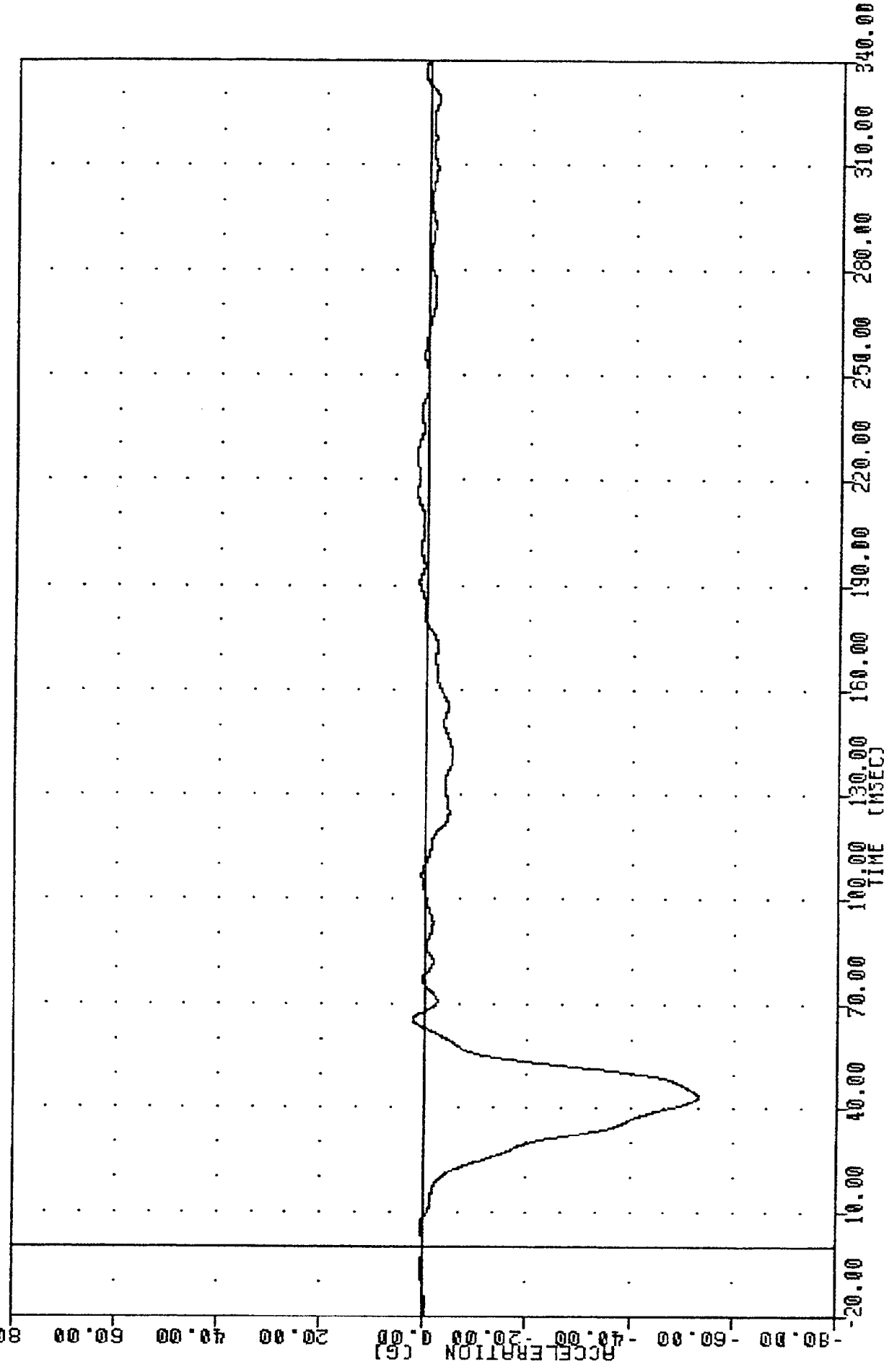
YR 000002
 CAR TO CAR FRONTAL IMPACT
 850920000000
 ENG X62

PLOT DATE 24 MAR 85 16:23:22

FILTER = BLPF 100/ 316/ -40
 MIN. MAX VALUES = -35.46 48.25 2.88 184.88

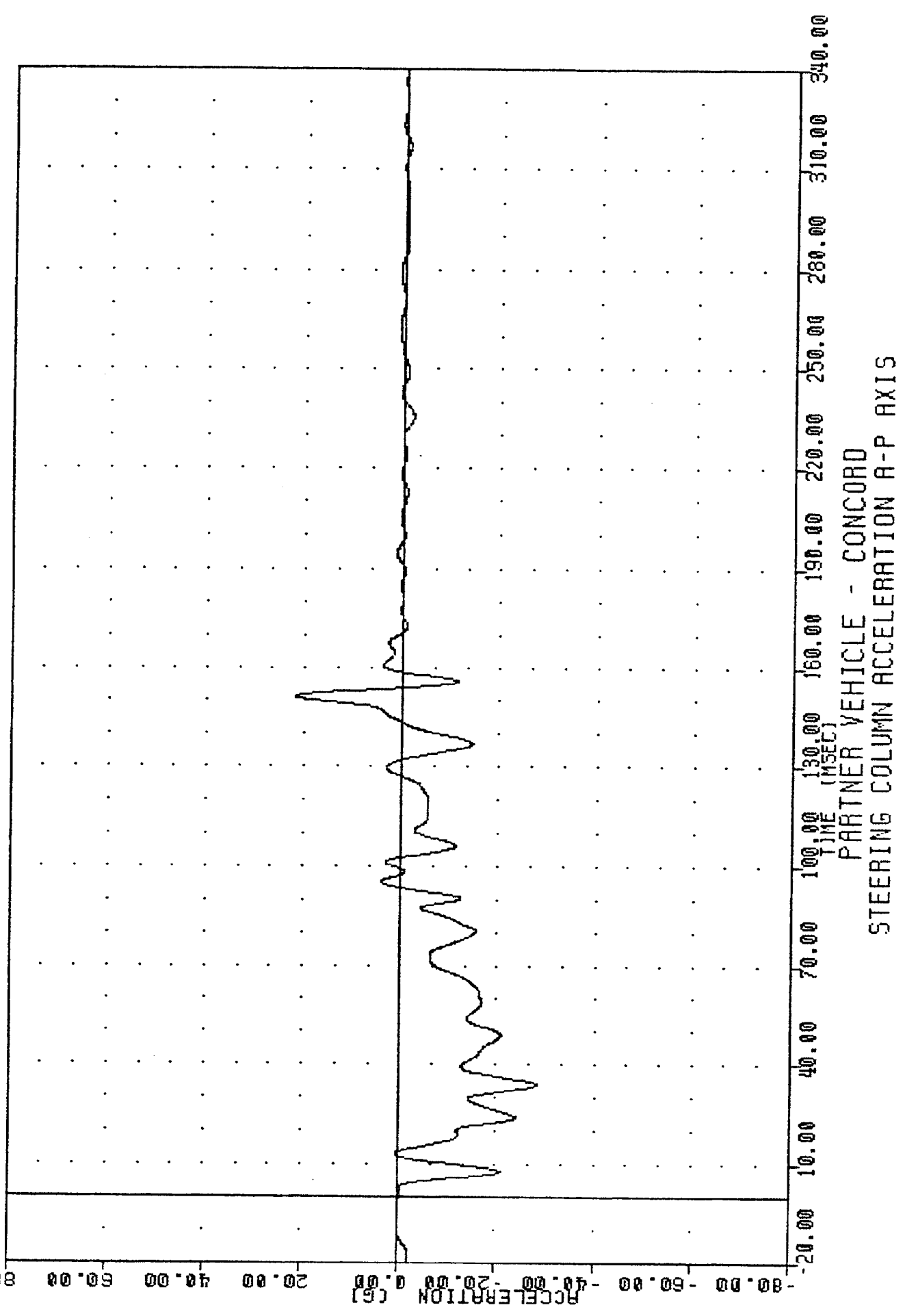


VR [REDACTED], 000402 [REDACTED] PLOT DATE 24 MAR 83 10:24:22
 CAR TO CAR FRONTAL IMPACT
 850920000000
 ENGCG1
 FILTER = BLPF 100/ 316/ -40
 MIN. MAX VALUES = -53.38e 43.38, 2.32 e 65.38

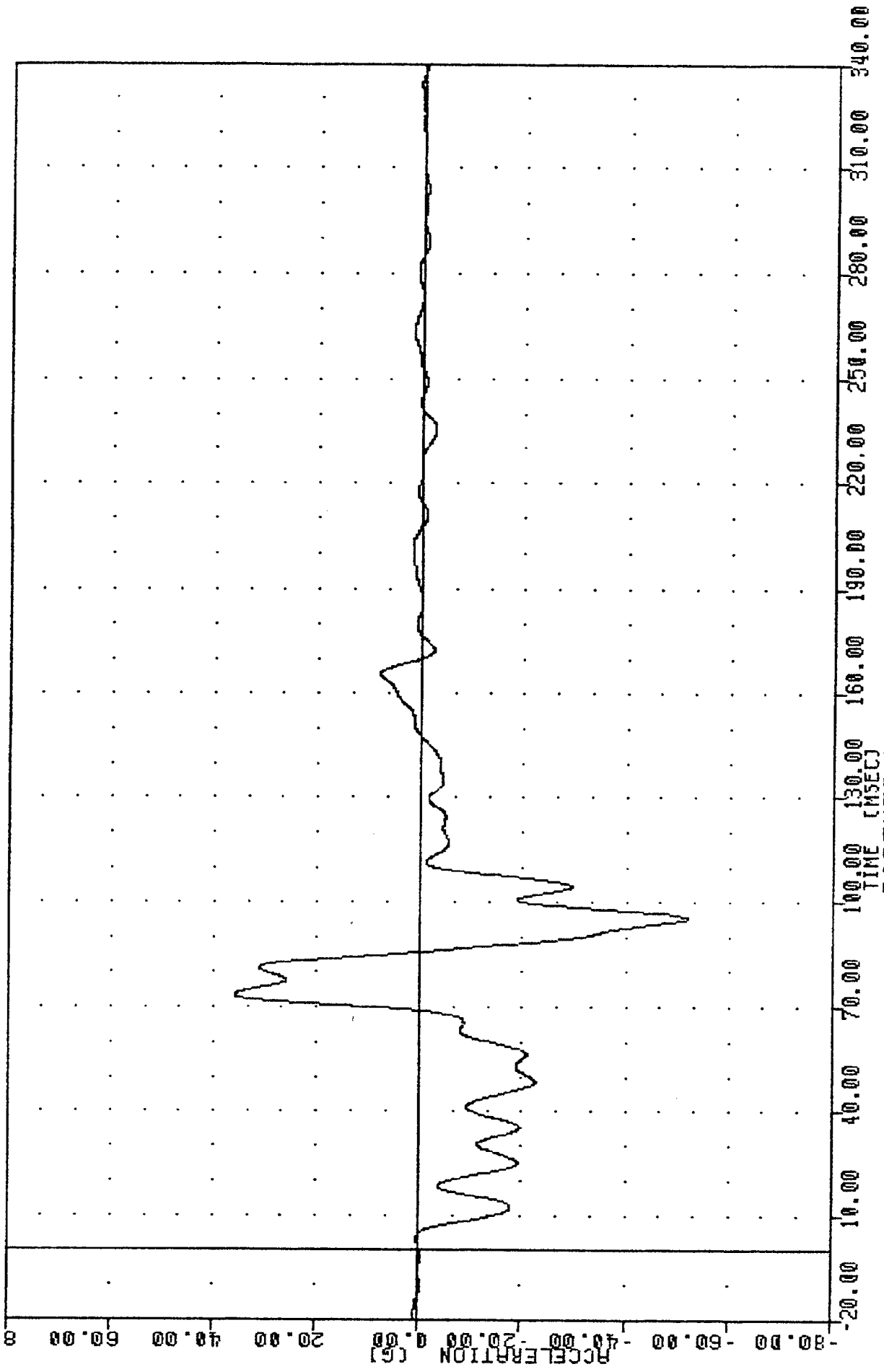


PARTNER VEHICLE - CONCORD
 ENGINE BLOCK UPPER ACCELERATION X AXIS

VR 40, 24 MAR 80 10:24:22
 CAR TO CAR FRONTAL IMPACT
 85092000000
 SCAPG
 FILTER = BLPF 100/ 316/ -40
 MIN. MAX VALUES = -28.268 34.00, 21.77 151.13

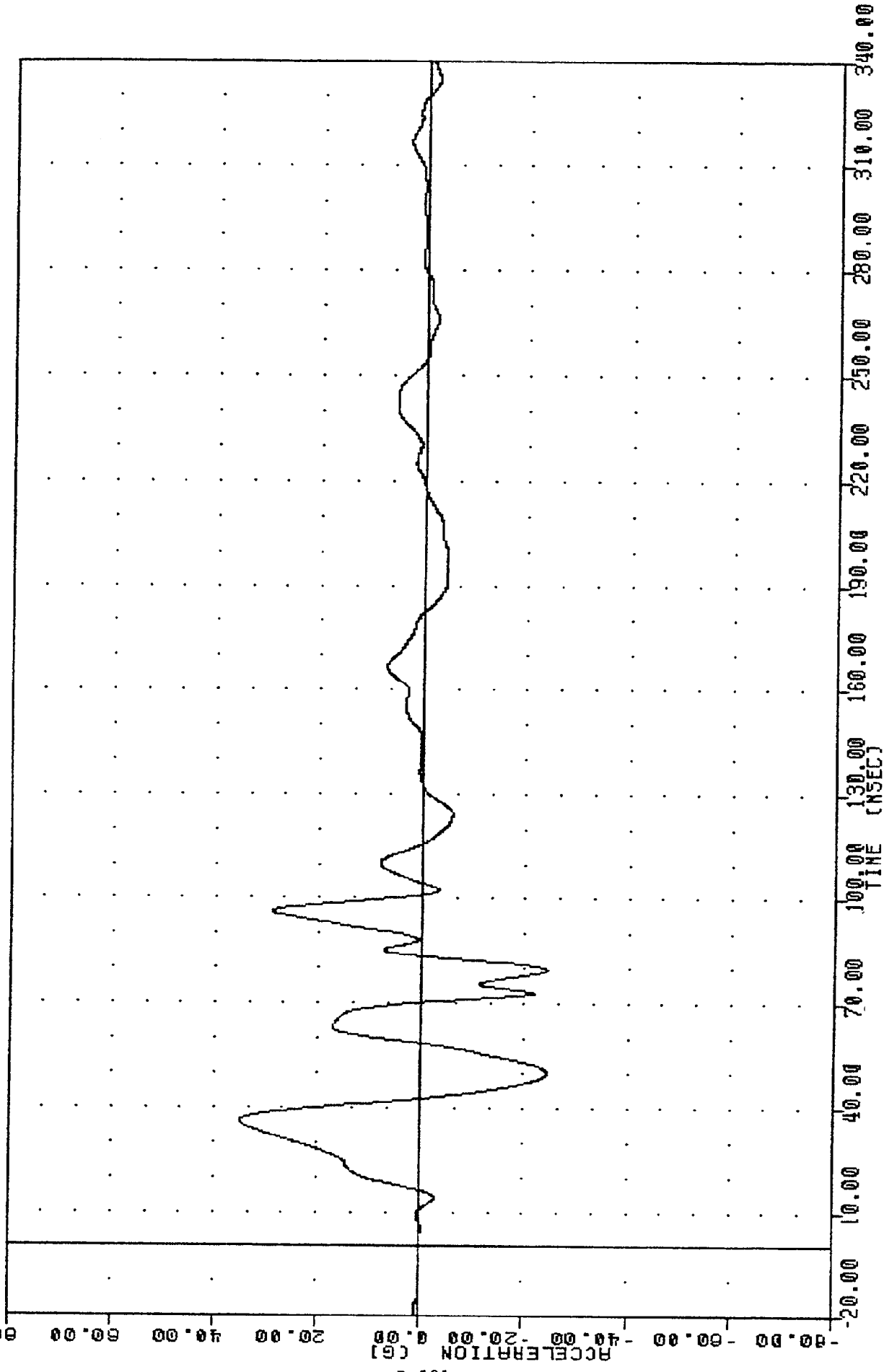


VRI [REDACTED], 030402 [REDACTED] PLT DATE [REDACTED] 24 APR 83 10:24:22
 CAR TO CAR FRONTAL IMPACT
 850920000000
 SHIPG
 FILTER = BLPF 100/ 316/ -40
 MIN. MAX VALUES = -52.14 95.38, 35.94 73.13



PARTNER VEHICLE - CONCORD
 STEERING WHEEL HUB ACCELERATION A-P AXIS

VEHICLE ID: 402, DATE: 24 MAR 89, TIME: 16:21:22
 CAR TO CAR FRONTAL IMPACT
 85092000000
 SH116
 FILTER = BLPF 100/ 316/ -40
 MIN. MAX VALUES = -24.45e 50.13, 34.94 e 36.13



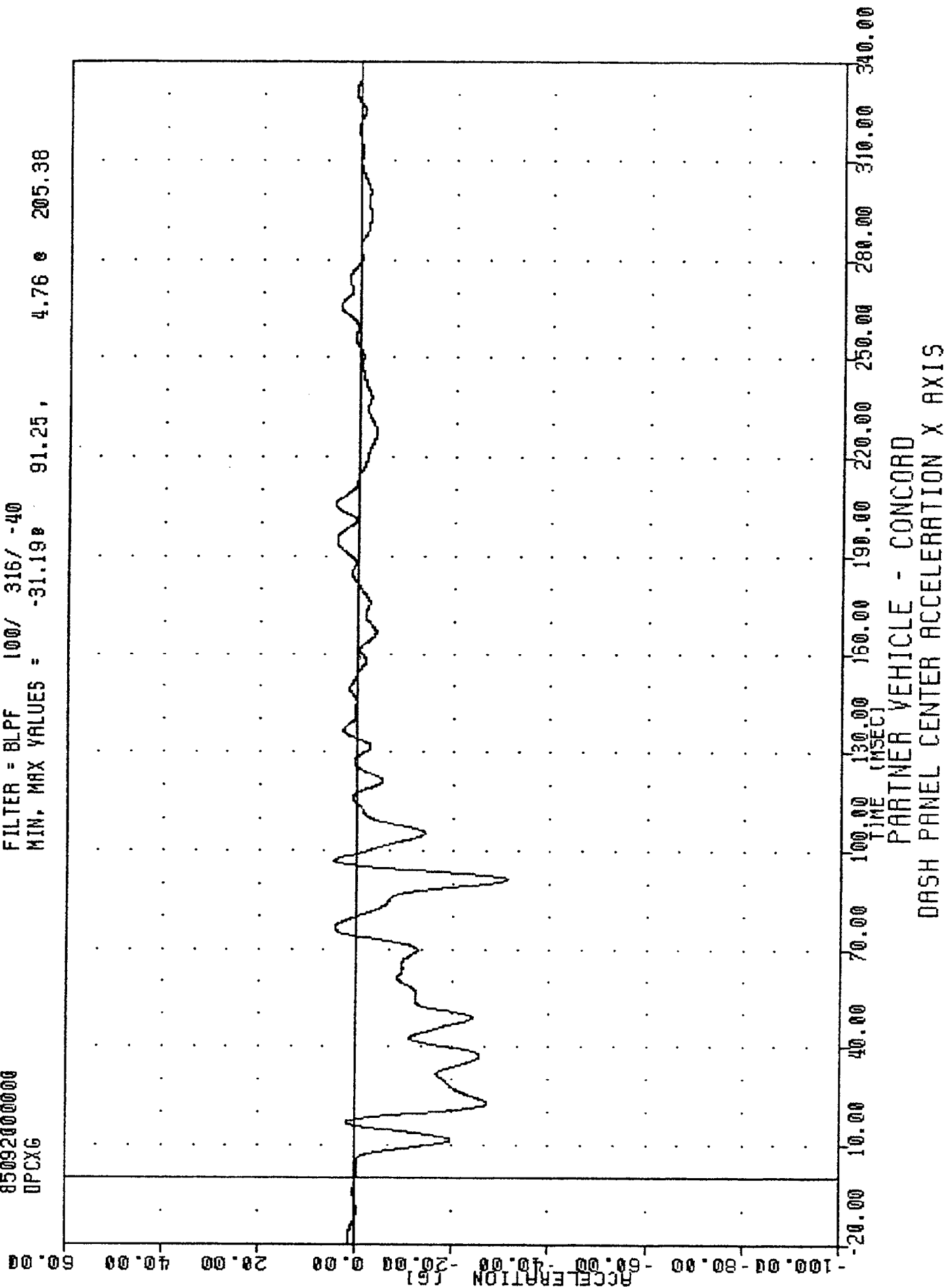
PARTNER VEHICLE - CONCORD
 STEERING WHEEL HUB ACCELERATION I-S AXIS

VRP, 050402
CAR TO CAR FRONTAL IMPACT
85092000000
DPCXG

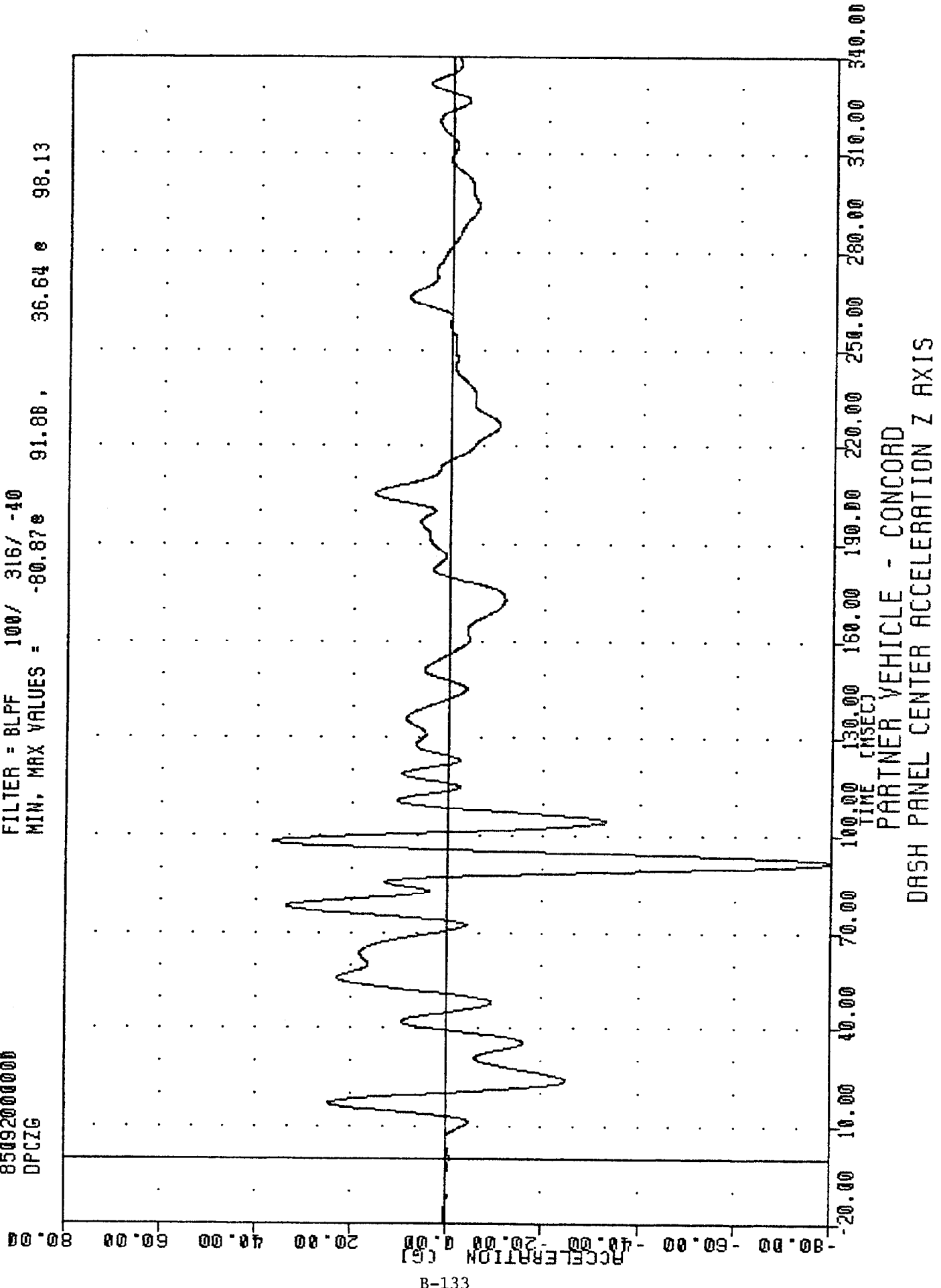
PLT DATE 24 MAR 83 16:24:22

FILTER = BLPF 100/ 316/ -40

MIN. MAX VALUES = -31.198 91.25, 4.76 205.38

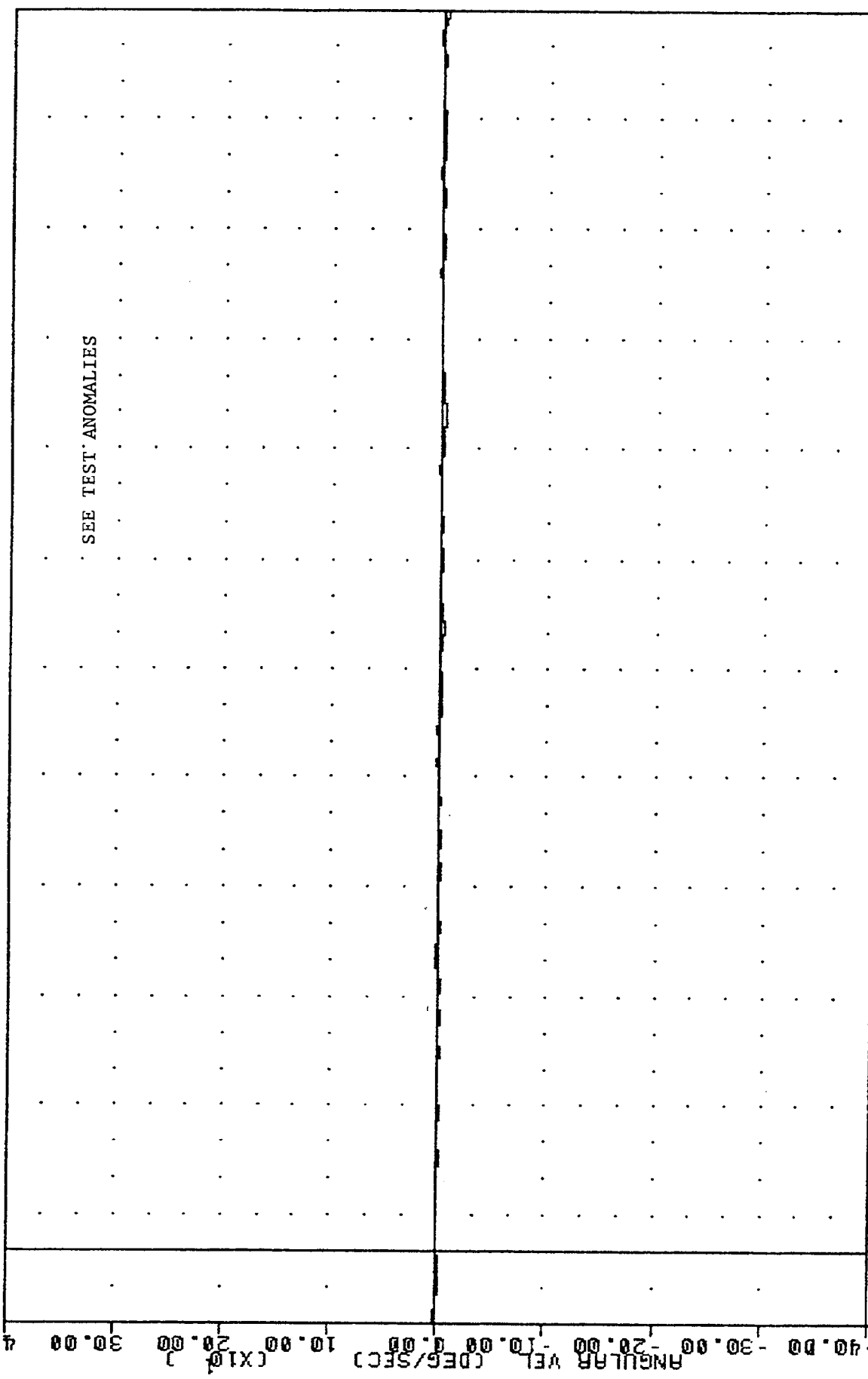


VPI [REDACTED], 030402Z [REDACTED] 24 APR 83 16:24:22
 CAR TO CAR FRONTAL IMPACT
 85092000000
 DPCZG
 FILTER = BLPF 100/ 316/ -40
 MIN, MAX VALUES = -80.87e 91.88, 36.64 e 98.13



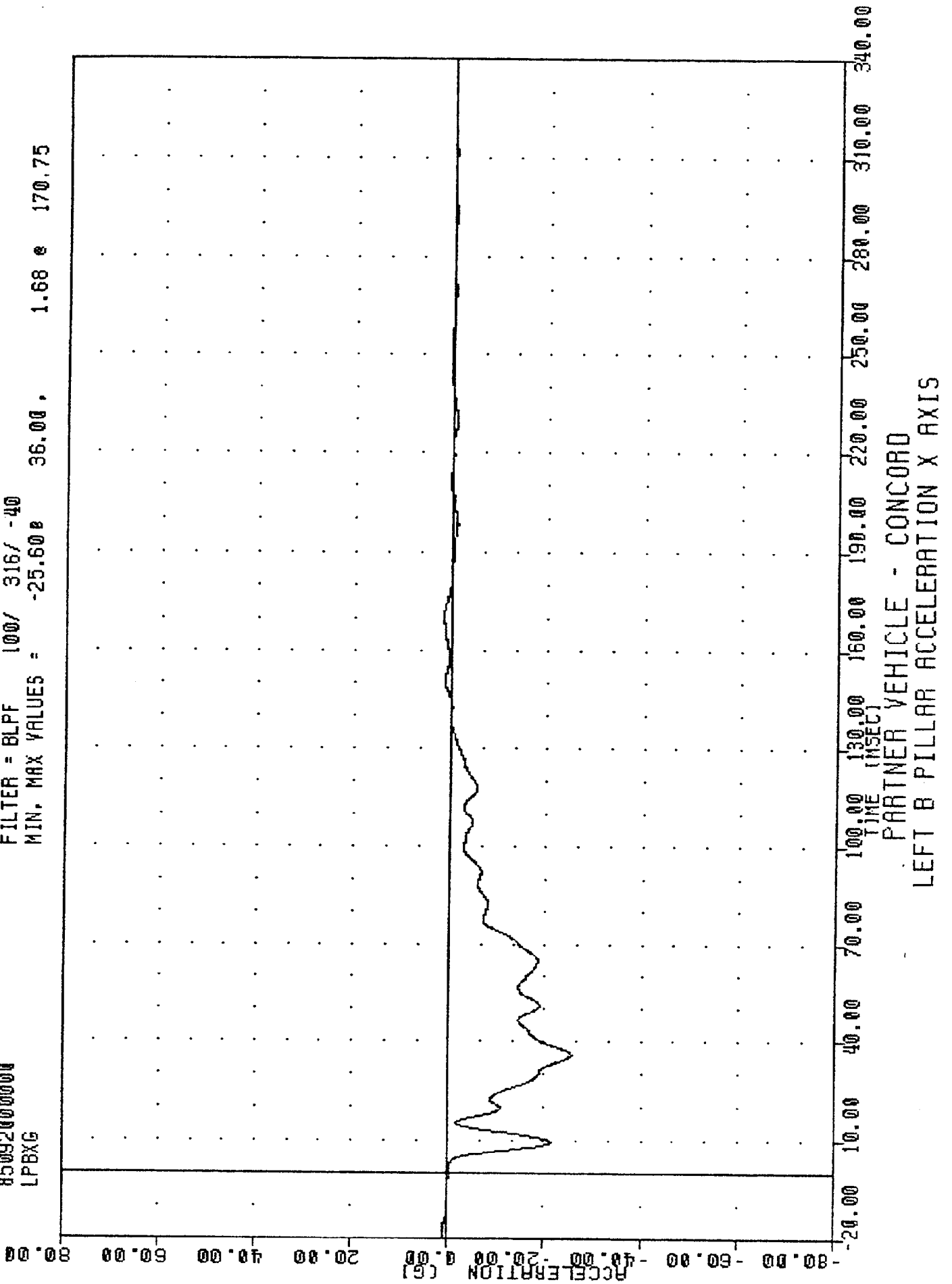
PARTNER VEHICLE - CONCORD
 DASH PANEL CENTER ACCELERATION Z AXIS

VRY [REDACTED] 630402 [REDACTED] PLOT DATE 24 APR 85 16:24:22
 CAR TO CAR FRONTAL IMPACT
 85092000000
 YCGV
 FILTER = 8LPF 100/ 316/ -40
 MIN, MAX VALUES = -4.53e 340.00. 2.79 e 80.50



-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)
 PARTNER VEHICLE - CONCORD
 VEHICLE PITCH RATE DEGREES/SECOND

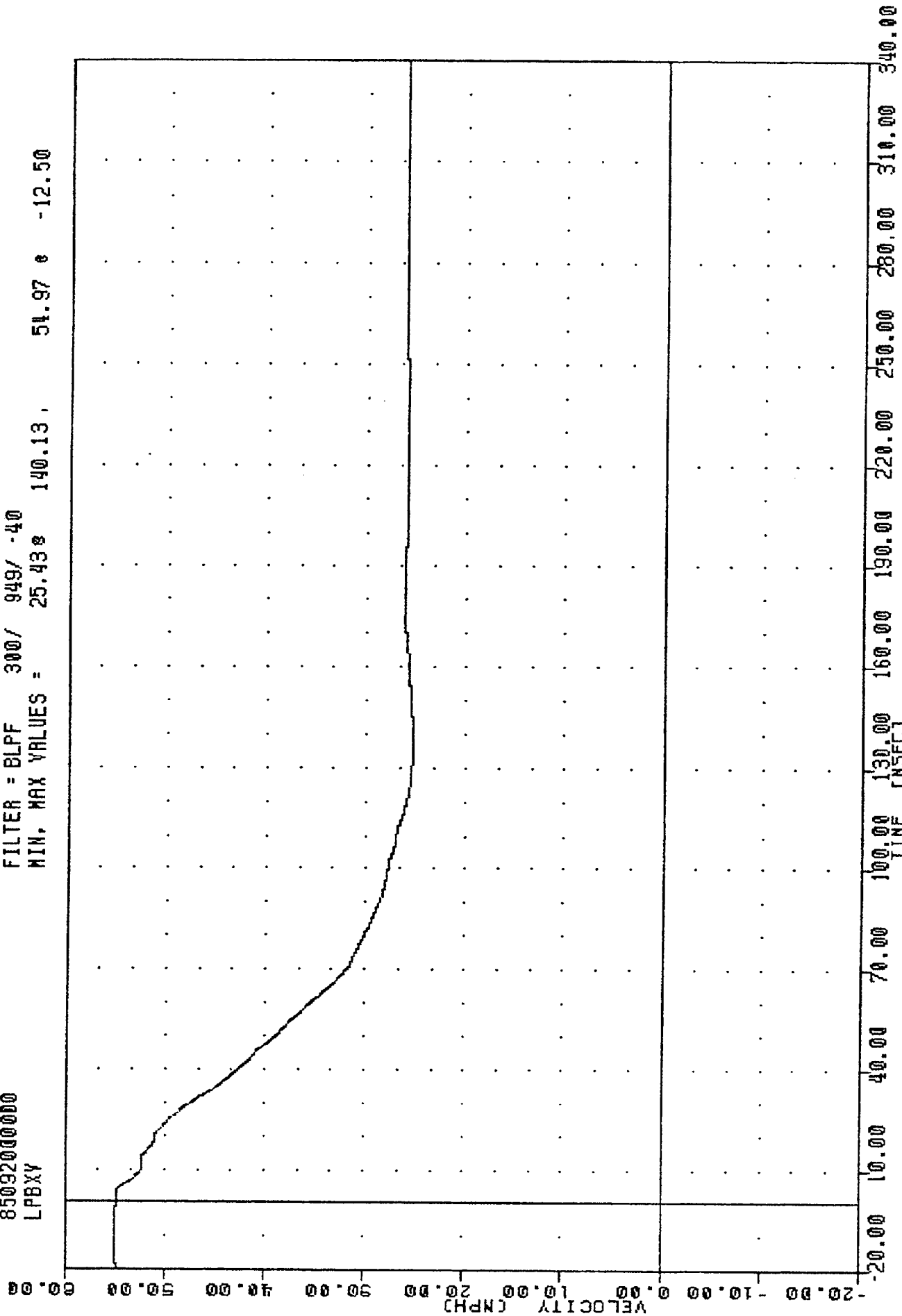
VR 40, 24:22 10:24:22
 CAR TO CAR FRONTAL IMPACT
 85092000000
 LPBXC
 FILTER = BLPF 100/ 316/ -40
 MIN. MAX VALUES = -25.600 36.00, 1.68 170.75



VRT
 CAR TO CAR FRONTAL IMPACT
 85092000000
 LPBX

PLOT DATE 24-APR-83 14:38:34

FILTER = BLPF 300/ 949/ -40
 MIN. MAX VALUES = 25.43 140.13, 51.97 e -12.50

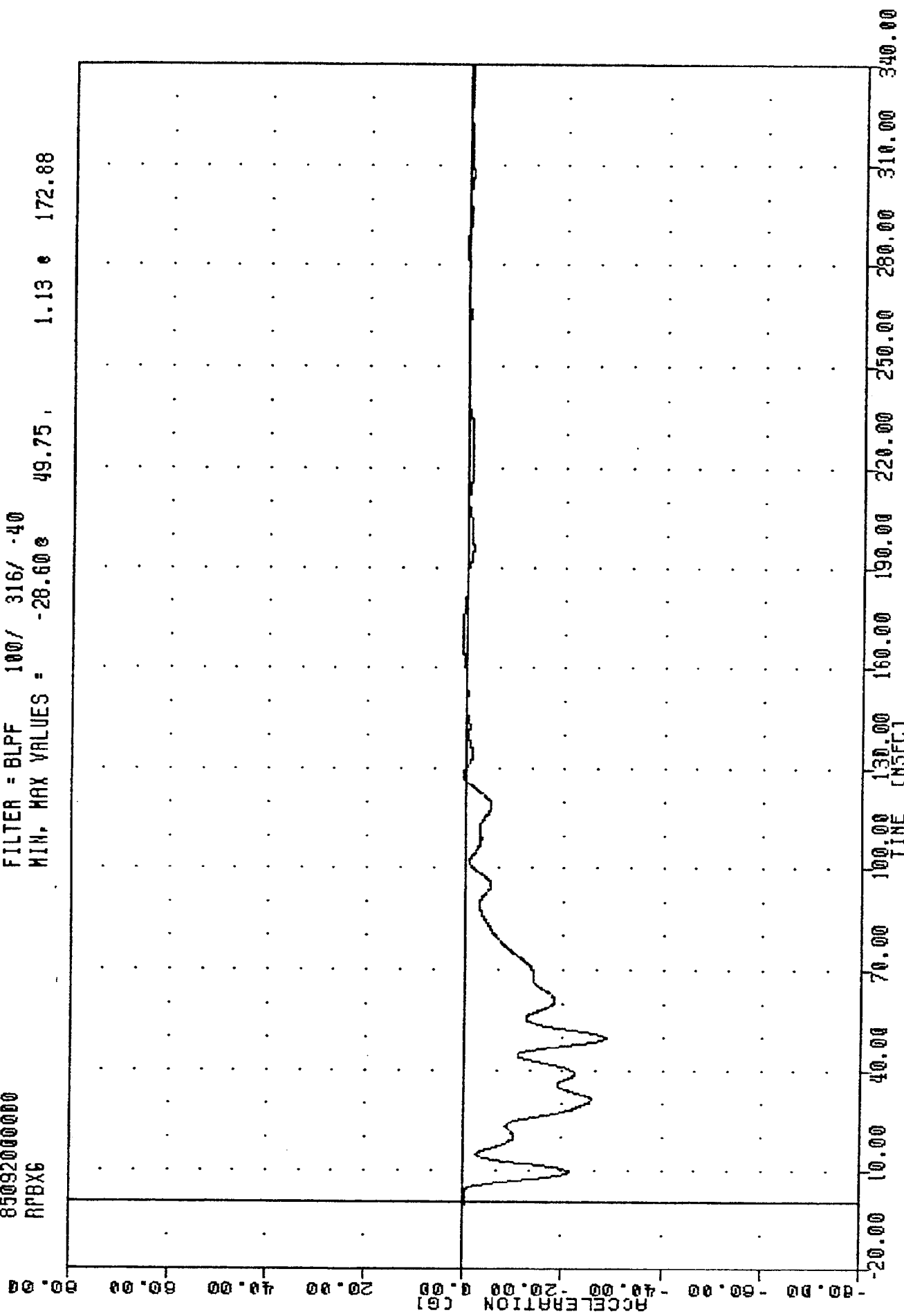


PARTNER VEHICLE - CONCORD
 DELTA Y USING LPBXG

VBI
 CAR TO CAR FRONTAL IMPACT
 850920000000
 RPBX6

PLOT DATE 24-APR-85 16:24:22

FILTER = BLPF 100/ 316/ -40
 MIN, MAX VALUES = -28.60 49.75 1.13 172.88



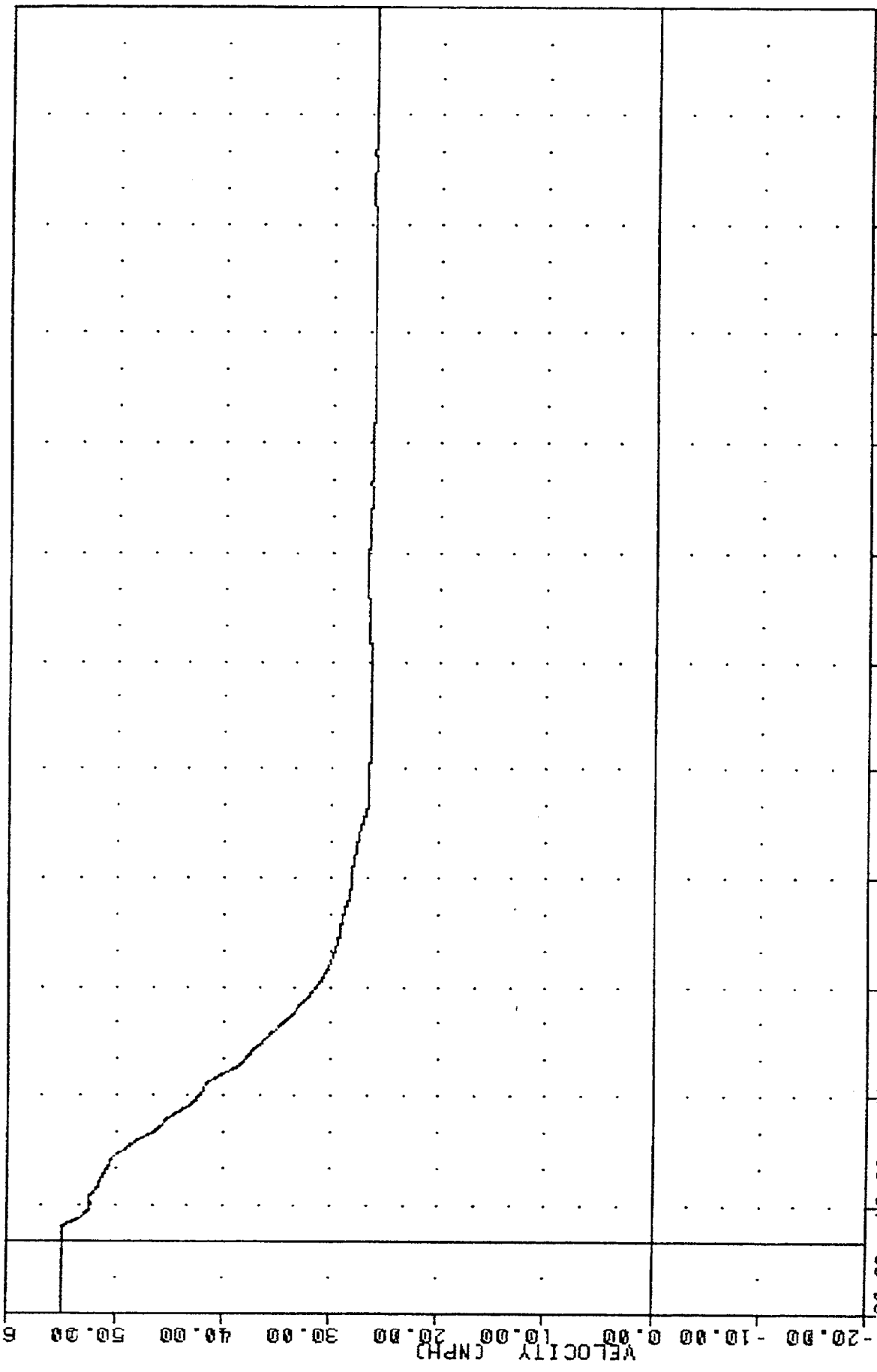
PARTNER VEHICLE - CONCORD
 RIGHT B PILLAR ACCELERATION X AXIS

VRT
 CAR TO CAR FRONTAL IMPACT
 850920000000
 RPBXV

PLOT DATE 24-APR-85 14:38:34

FILTER = 8LPF 300/ 949/ -40
 MIN. MAX VALUES = 26.10e 340.00, 54.91 e -12.25

50.00

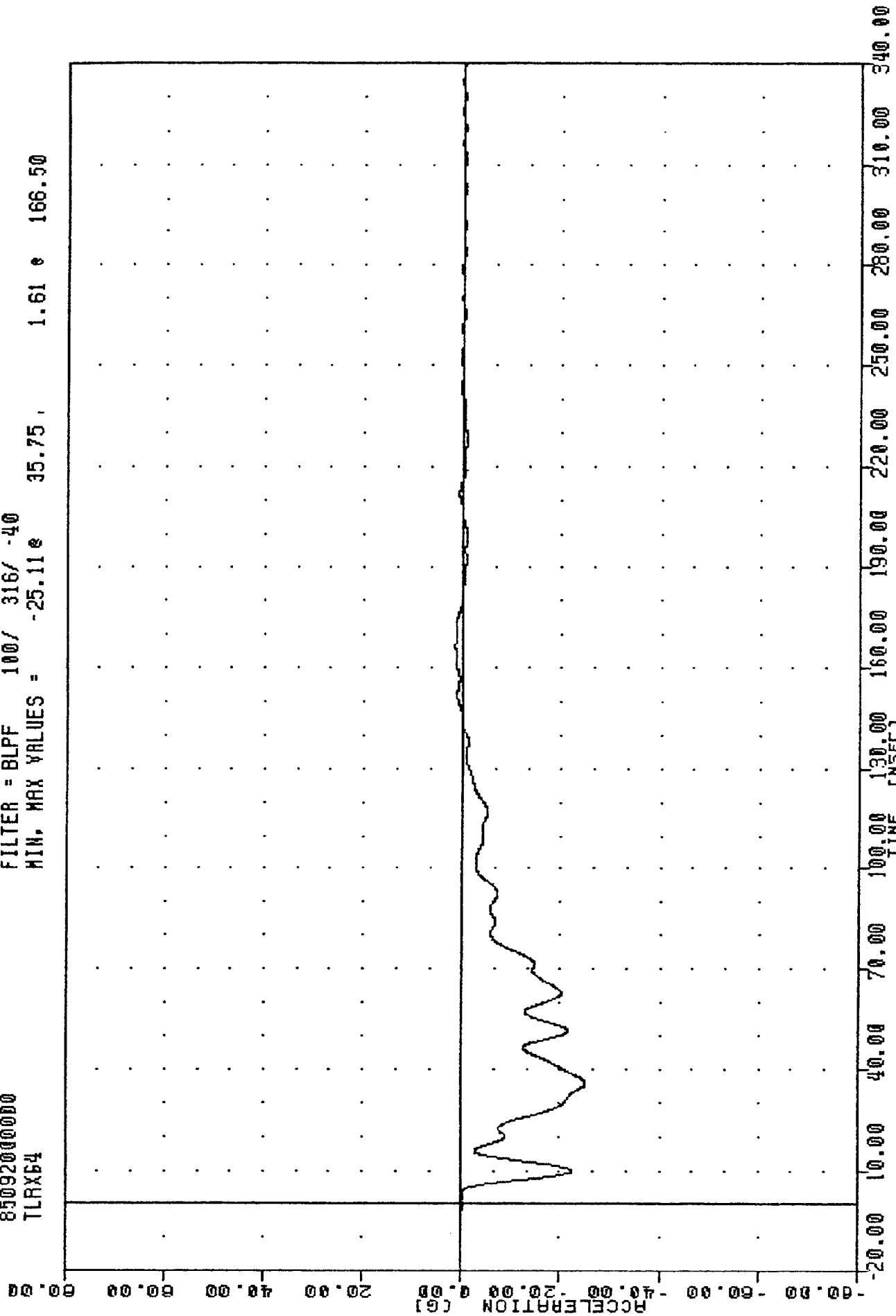


PARTNER VEHICLE - CONCORD
 DELTA V USING RPBXG

VAI 850402P
CAR TO CAR FRONTAL IMPACT
850920000000
TLRX64

PLOT DATE 24-APR-85 16:24:22

FILTER = BLPF 100/ 316/ -40
MIN, MAX VALUES = -25.11e 35.75, 1.61 e 166.50

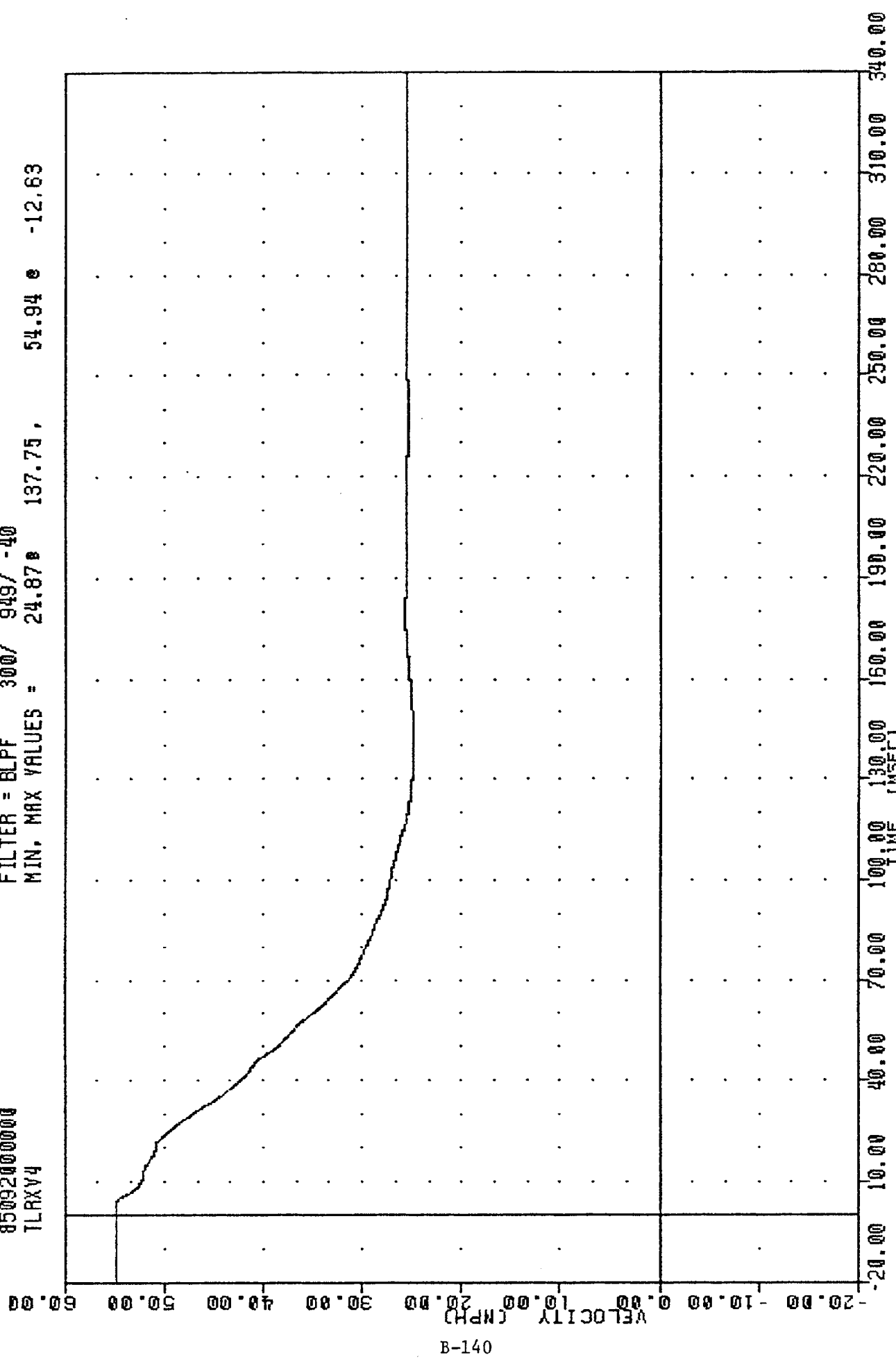


PARTNER VEHICLE - CONCORD
LEFT REAR SEAT ACCELERATION X AXIS

VRT 830402P
 CAR TO CAR FRONTAL IMPACT
 85092000000
 TLRXV4

PLOT DATE 24-APR-85 14:38:34

FILTER = BLPF 300/ 949/ -40
 MIN. MAX VALUES = 24.87 137.75, 54.94 -12.63



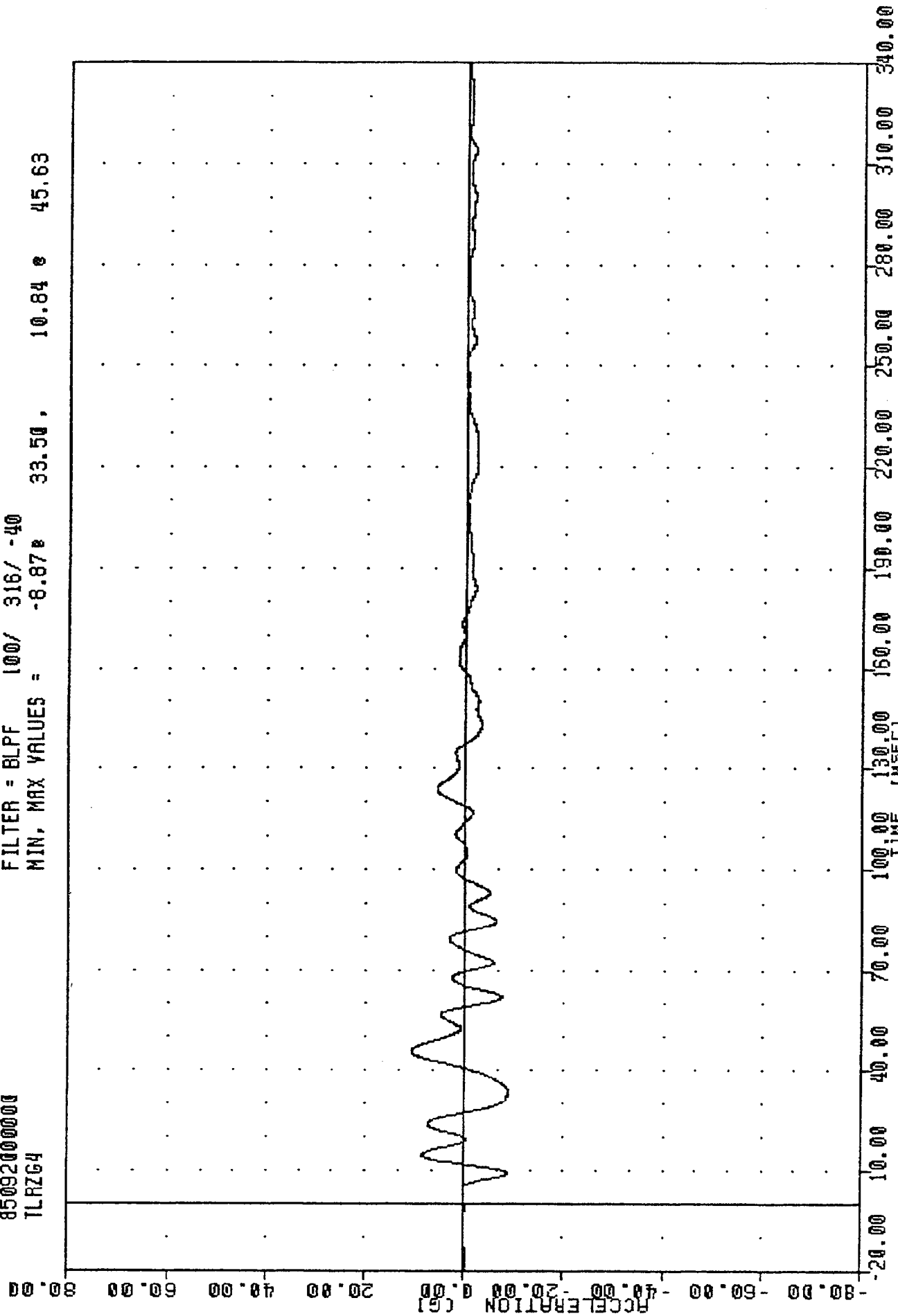
B-140

PARTNER VEHICLE - CONCORD
 DELTA V USING TLRXG4

VAT , 850402P
CAR TO CAR FRONTAL IMPACT
85092000000
TLRZG4

PLOT DATE 24-APR-85 16:24:22

FILTER = BLPF 100/ 316/ -40
MIN, MAX VALUES = -8.87e 33.50, 10.84 e 45.63



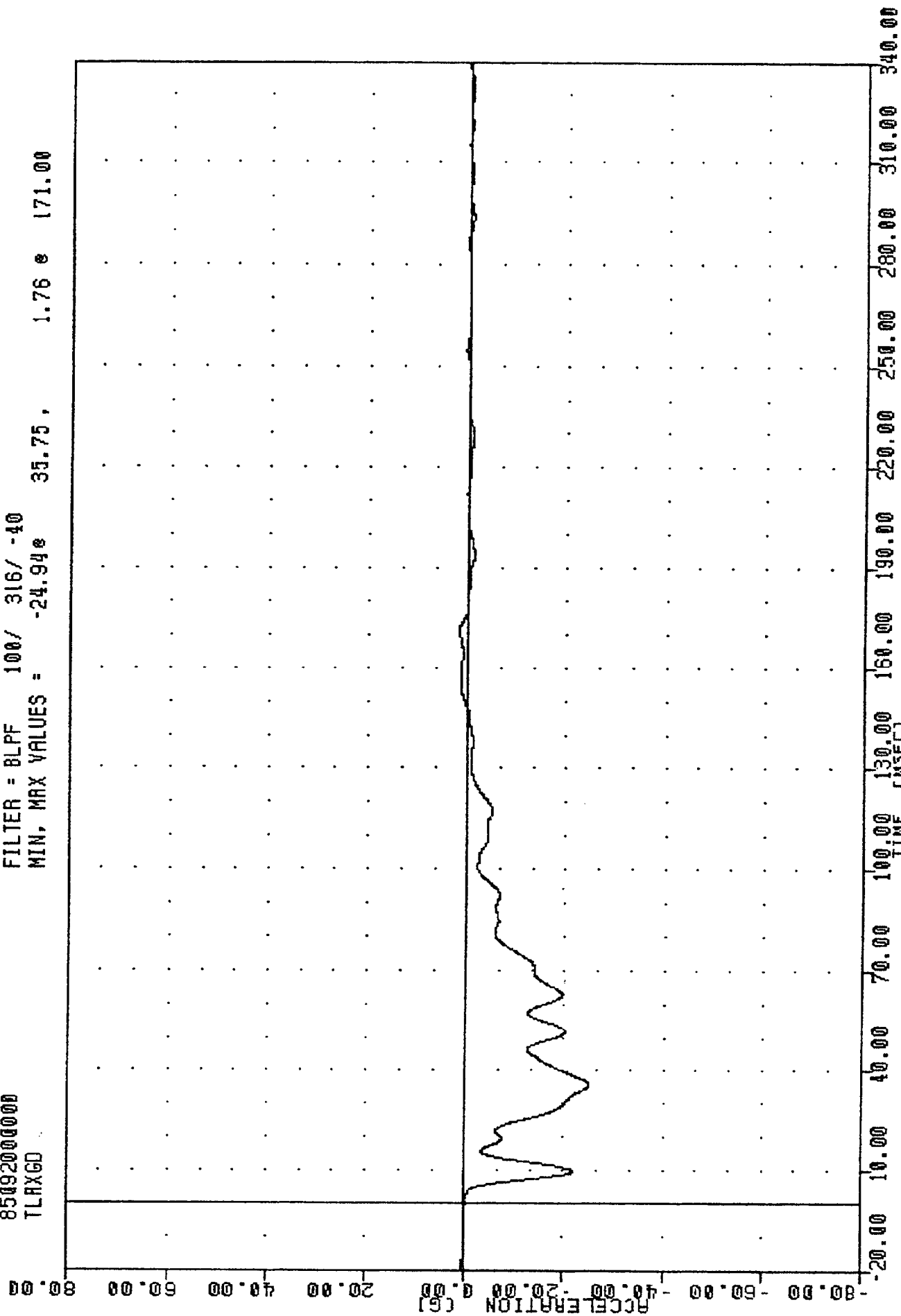
B-141

PARTNER VEHICLE - CONCORD
LEFT REAR SEAT ACCELERATION Z AXIS

VR1
 CAR TO CAR FRONTAL IMPACT
 850920000000
 TLXGD

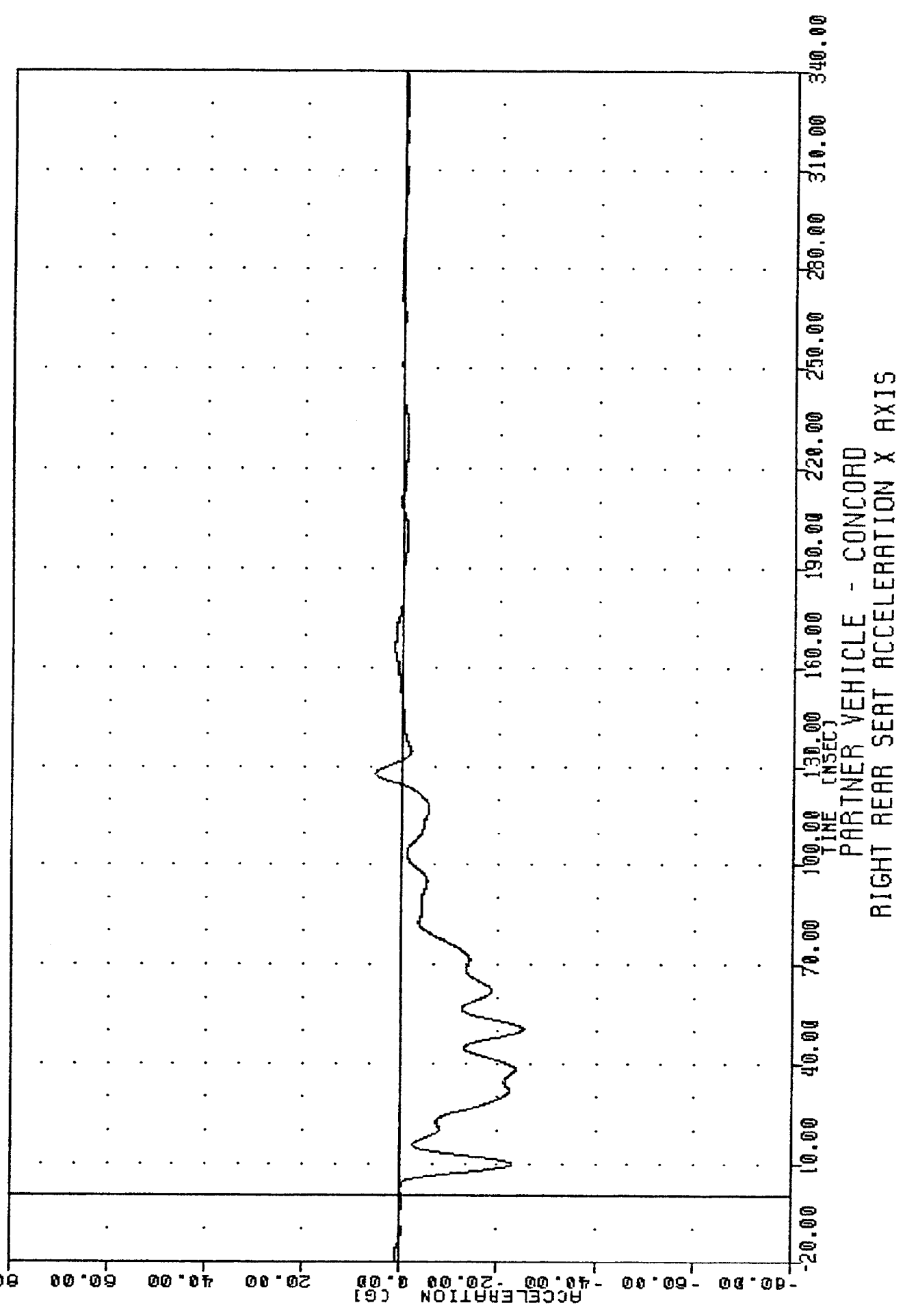
PLOT DATE 24-APR-85 16:24:22

FILTER = BLPF 100/ 316/ -40
 MIN, MAX VALUES = -24.94e 35.75, 1.76 e 171.00

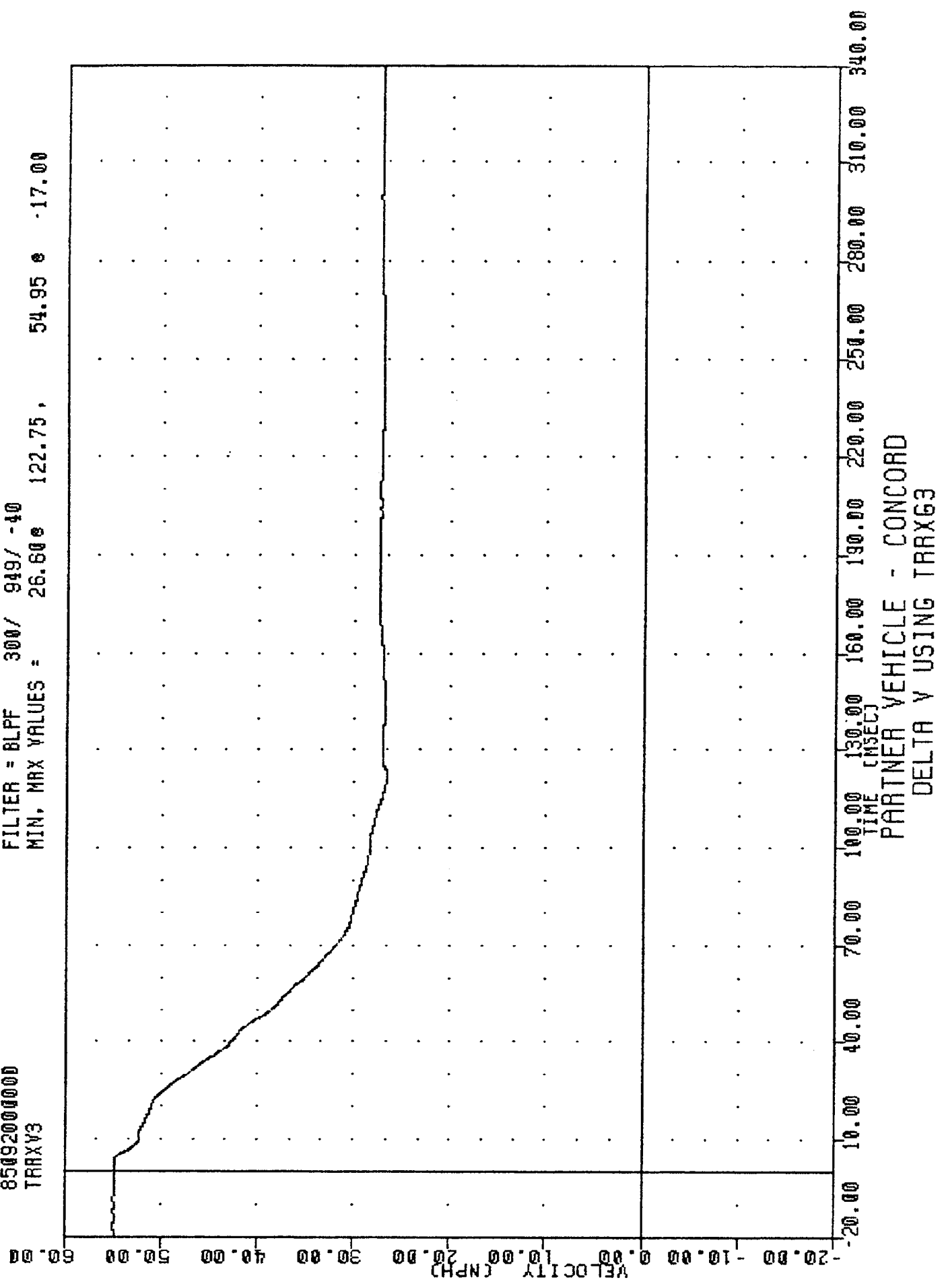


PARTNER VEHICLE - CONCORD
 LEFT REAR SEAT ACCELERATION -2 X AXIS

VEHICLE ID: 850920000000
 CAR TO CAR FRONTAL IMPACT
 TRX63
 FILTER = BLPF 100/ 316/ -40
 MIN. MAX VALUES = -25.15 50.50 5.46 127.88
 PLOT DATE: 24 MAR 85 16:24:22



VBI 850402F
 CAR TO CAR FRONTAL IMPACT
 85092000000
 TRRXV3
 PLOT DATE 21 APR 83 14:38:34
 FILTER = BLPF 300/ 949/ -40
 MIN, MAX VALUES = 26.60e 122.75, 54.95 e -17.00



APPENDIX C
DUMMY CERTIFICATION

PRE-TEST CALIBRATION

SUBJECT VEHICLE

This section contains dummy calibration data for the passenger dummy in the subject vehicle. The driver dummy was not calibrated prior to this test. The dummies used in this program are now scheduled for recalibration after each dummy has been through two crash tests. Between times in which the dummy is not scheduled to be calibrated a post-test inspection is completed. If no parts are needed, the dummy is ready to be used in the next crash test.

TRANSPORTATION RESEARCH CENTER OF OHIO

HEAD DROP TEST

HYBRID III

27-MAR-85

VRTC SRL98 48C10HD1

HY3 SN48/HEAD#48 CAL 10

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78 DEGREES	75.00 DEGREES
RELATIVE HUMIDITY	10% - 70%	55.00 %
PEAK RESULTANT ACCELERATION	225 - 275 G	261.91 G
PEAK LATERAL ACCELERATION	15 G MAX	-3.72 G
IS ACCELERATION CURVE UNIMODAL?	YES	YES

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN Larry L. PhelpsTEST SUPERVISOR P. J. Winters

TRANSPORTATION RESEARCH CENTER OF OHIO

NECK FLEXION TEST

HYBRID III

6 AXIS NECK TRANSDUCER

28-MAR-85

VRTC SRL98 48C10NF1

HY3 SN48 CAL10 NECK FLEXION

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78 DEGREES	73.00 DEGREES
RELATIVE HUMIDITY	10% - 70%	70.00 %
IMPACT VELOCITY	22.53 - 22.97 FPS	22.87 FPS
PENDULUM	10 MS 22.50 - 27.50 G	27.44 G
DECELERATION	20 MS 17.40 - 22.60 G	19.93 G
	30 MS 12.50 - 18.50 G	17.49 G
MAXIMUM PENDULUM G	29 G MAX	27.71 G
DECELERATION-TIME CURVE		
DECAY TIME TO 5 G	34 - 46 MS	41.75 MS
D PLANE	MAX 67 - 79 DEGREES	77.00 DEGREES
ROTATION	TIME 54 - 64 MS	60.63 MS
MOMENT ABOUT	MAX 70 - 90 FT.LBS	74.76 FT.LBS
OCCIPITAL	TIME 46 - 56 MS	54.75 MS
CONDYLES	MIN -22.2/-14.0 FT.LBS	-15.27 FT.LBS
	TIME 12 - 16 MS	15.63 MS
ROTATION ANGLE-TIME CURVE		
DECAY TIME TO ZERO	109 - 119 MS	118.75 MS
POSITIVE MOMENT-TIME CURVE		
DECAY TIME TO ZERO	95 - 105 MS	103.75 MS

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN

TEST SUPERVISOR

TRANSPORTATION RESEARCH CENTER OF OHIO

NECK EXTENSION TEST

HYBRID III

6 AXIS NECK TRANSDUCER

28-MAR-85

VRTC SRL98 48C10NE1

HY3 SN48 CAL10 NECK EXTENSION

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78 DEGREES	74.00 DEGREES
RELATIVE HUMIDITY	10% - 70%	70.00 %
IMPACT VELOCITY	19.50 - 19.90 FPS	19.51 FPS
PENDULUM	10 MS 17.20 - 21.20 G	18.81 G
DECELERATION	20 MS 14.00 - 19.00 G	16.68 G
	30 MS 11.00 - 16.00 G	14.69 G
MAXIMUM PENDULUM G	22 G MAX	18.81 G
DECELERATION-TIME CURVE		
DECAY TIME TO 5 G	38 - 50 MS	43.75 MS
D PLANE	MAX 94 - 106 DEGREES	96.68 DEGREES
ROTATION	TIME 72 - 82 MS	79.13 MS
MOMENT ABOUT	MAX 11.75 - 17.75 FT.LBS	14.19 FT.LBS
OCCIPITAL	TIME 12 - 18 MS	15.63 MS
CONDYLES	MIN -61.2/-50.8 FT.LBS	-49.53 FT.LBS **
	TIME 69 - 77 MS	75.88 MS
ROTATION ANGLE-TIME CURVE		
DECAY TIME TO ZERO	151 - 167 MS	163.25 MS
NEGATIVE MOMENT-TIME CURVE		
DECAY TIME TO ZERO	120 - 144 MS	141.25 MS

*** TEST DOES NOT MEET SPECIFICATIONS ***

TECHNICIAN

TEST SUPERVISOR

TRANSPORTATION RESEARCH CENTER OF OHIO

THORAX IMPACT TEST

HYBRID III

28-MAR-85

VRTC SRL98 48C10TH1

HY3 SN48 CAL10 H.S.THORAX 01

HIGH SPEED TEST		
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78 DEGREES	72.00 DEGREES
RELATIVE HUMIDITY	10% - 70%	65.00 %
PENDULUM VELOCITY	21.78-22.22 FT/SEC	21.78 FT/SEC
DEFLECTION AT 25 MSEC	2.51 - 2.75 INCHES	2.838 INCHES *
RESISTIVE FORCE AT 19 MSEC	1186 - 1298 POUNDS	1140.0 POUNDS *
INTERNAL HYSTERESIS	75% - 85%	72.2% *

*** TEST DOES NOT MEET SPECIFICATIONS ***

TECHNICIAN

Gary L. Phelps

TEST SUPERVISOR

V. E. Winters

TRANSPORTATION RESEARCH CENTER OF OHIO

KNEE IMPACT TEST

HYBRID III

28-MAR-85

RIGHT KNEE
VRTC SRL98 48C10RK1

HY3 SN48 R.KNEE 11LB CAL 10

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78 DEGREES	77.00 DEGREES
RELATIVE HUMIDITY	10% - 70%	65.00 %
PROBE VELOCITY	6.83 - 6.96 FT/SEC	6.96 FT/SEC
PEAK KNEE IMPACT FORCE	1000 - 1560 LBS.	1372.81 LBS.
PROBE WEIGHT	11.0 LBS.	

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN *Harry L. Phelps*

TEST SUPERVISOR *V.L. Withers*

TRANSPORTATION RESEARCH CENTER OF OHIO

KNEE IMPACT TEST

HYBRID III

28-MAR-85

LEFT KNEE
VRTC SRL98 48C10LK1

HY3 SN48 L.KNEE 11LB CAL 10

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78 DEGREES	77.00 DEGREES
RELATIVE HUMIDITY	10% - 70%	65.00 %
PROBE VELOCITY	6.83 - 6.96 FT/SEC	6.96 FT/SEC
PEAK KNEE IMPACT FORCE	1000 - 1560 LBS.	1364.13 LBS.
PROBE WEIGHT	11.0 LBS.	

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN *Harry L. Phelps*

TEST SUPERVISOR *K.L. Winters*

PRE-TEST CALIBRATION

PARTNER VEHICLE

This section contains dummy calibration data for the driver dummy in the partner vehicle. The passenger dummy was not calibrated prior to this test. The dummies used in this program are now scheduled for recalibration after each dummy has been through two crash tests. Between times in which the dummy is not scheduled to be calibrated a post-test inspection is completed. If no parts are needed, the dummy is ready to be used in the next crash test..

TRANSPORTATION RESEARCH CENTER OF OHIO

HEAD DROP TEST

HYBRID III

27-MAR-85

VRTC SRL98 45C7HD1

HY3 SN45 HEAD#U1 CAL 07

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78 DEGREES	74.00 DEGREES
RELATIVE HUMIDITY	10% - 70%	52.00 %
PEAK RESULTANT ACCELERATION	225 - 275 G	257.75 G
PEAK LATERAL ACCELERATION	15 G MAX	-5.00 G
IS ACCELERATION CURVE UNIMODAL?	YES	YES

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN

TEST SUPERVISOR

TRANSPORTATION RESEARCH CENTER OF OHIO

NECK FLEXION TEST

HYBRID III

3 AXIS NECK TRANSDUCER

27-MAR-85

VRTC SRL98 45C7NF1

HY3 SN45 CAL7 NECK FLEXION 01

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78 DEGREES	75.00 DEGREES
RELATIVE HUMIDITY	10% - 70%	56.00 %
IMPACT VELOCITY	22.53 - 22.97 FPS	22.86 FPS
PENDULUM	10 MS 22.50 - 27.50 G	25.77 G
DECELERATION	20 MS 17.40 - 22.60 G	20.44 G
	30 MS 12.50 - 18.50 G	17.31 G
MAXIMUM PENDULUM G	29 G MAX	27.39 G
DECELERATION-TIME CURVE		
DECAY TIME TO 5 G	34 - 46 MS	43.63 MS
D PLANE	MAX 67 - 79 DEGREES	77.78 DEGREES
ROTATION	TIME 54 - 64 MS	61.50 MS
MOMENT ABOUT	MAX 70 - 90 FT.LBS	75.37 FT.LBS
OCCIPITAL	TIME 46 - 56 MS	55.88 MS
CONDYLES	MIN -22.2/-14.0 FT.LBS	-15.99 FT.LBS
	TIME 12 - 16 MS	14.88 MS
ROTATION ANGLE-TIME CURVE		
DECAY TIME TO ZERO	109 - 119 MS	123.38 MS **
POSITIVE MOMENT-TIME CURVE		
DECAY TIME TO ZERO	95 - 105 MS	105.00 MS

*** TEST DOES NOT MEET SPECIFICATIONS ***

TECHNICIAN *Harry J. Hilges*

TEST SUPERVISOR *[Signature]*

TRANSPORTATION RESEARCH CENTER OF OHIO

NECK EXTENSION TEST

HYBRID III

3 AXIS NECK TRANSDUCER

27-MAR-85

VRTC SRL98 45C7NE1

HY3 SN45 CAL7 NECK EXTEN. 01

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78 DEGREES	75.00 DEGREES
RELATIVE HUMIDITY	10% - 70%	57.00 %
IMPACT VELOCITY	19.50 - 19.90 FPS	19.90 FPS
PENDULUM	10 MS 17.20 - 21.20 G	18.33 G
DECELERATION	20 MS 14.00 - 19.00 G	16.51 G
	30 MS 11.00 - 16.00 G	15.29 G
MAXIMUM PENDULUM G	22 G MAX	18.84 G
DECELERATION-TIME CURVE		
DECAY TIME TO 5 G	38 - 50 MS	44.00 MS
D PLANE	MAX 94 - 106 DEGREES	91.71 DEGREES **
ROTATION	TIME 72 - 82 MS	76.50 MS
MOMENT ABOUT	MAX 11.75 - 17.75 FT.LBS	13.80 FT.LBS
OCCIPITAL	TIME 12 - 18 MS	14.50 MS
CONDYLES	MIN -61.2/-50.8 FT.LBS	-50.93 FT.LBS
	TIME 69 - 77 MS	72.25 MS
ROTATION ANGLE-TIME CURVE		
DECAY TIME TO ZERO	151 - 167 MS	159.13 MS
NEGATIVE MOMENT-TIME CURVE		
DECAY TIME TO ZERO	120 - 144 MS	135.00 MS

*** TEST DOES NOT MEET SPECIFICATIONS ***

TECHNICIAN *Gary L. Phelps*

TEST SUPERVISOR *V. F. Williams*

TRANSPORTATION RESEARCH CENTER OF OHIO

THORAX IMPACT TEST

HYBRID III

28-MAR-85

VRTC SRL98 45C7TH1

HY3 SN45 CAL07 H.S.THORAX 01

TEST PARAMETER	HIGH SPEED TEST	
	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78 DEGREES	71.00 DEGREES
RELATIVE HUMIDITY	10% - 70%	63.00 %
PENDULUM VELOCITY	21.78-22.22 FT/SEC	21.78 FT/SEC
DEFLECTION AT 25 MSEC	2.51 - 2.75 INCHES	2.595 INCHES
RESISTIVE FORCE AT 19 MSEC	1186 - 1298 POUNDS	1186.6 POUNDS
INTERNAL HYSTERESIS	75% - 85%	74.4% *

*** TEST DOES NOT MEET SPECIFICATIONS ***

TECHNICIAN Mary L. PhelpsTEST SUPERVISOR P. L. Winters

TRANSPORTATION RESEARCH CENTER OF OHIO

KNEE IMPACT TEST

HYBRID III

28-MAR-85

RIGHT KNEE
VRTC SRL98 45C7RK1

HY3 SN45 R.KNEE 11LB CAL 07

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78 DEGREES	77.00 DEGREES
RELATIVE HUMIDITY	10% - 70%	65.00 %
PROBE VELOCITY	6.83 - 6.96 FT/SEC	6.96 FT/SEC
PEAK KNEE IMPACT FORCE	1000 - 1560 LBS.	1277.16 LBS.
PROBE WEIGHT	11.0 LBS.	

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN *Larry J. Phelps*

TEST SUPERVISOR *V.L. Watters*

TRANSPORTATION RESEARCH CENTER OF OHIO

KNEE IMPACT TEST

HYBRID III

28-MAR-85

LEFT KNEE
VRTC SRL98 45C7LK1

HY3 SN45 L.KNEE 11LB CAL 07

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78 DEGREES	77.00 DEGREES
RELATIVE HUMIDITY	10% - 70%	65.00 %
PROBE VELOCITY	6.83 - 6.96 FT/SEC	6.96 FT/SEC
PEAK KNEE IMPACT FORCE	1000 - 1560 LBS.	1344.19 LBS.
PROBE WEIGHT	11.0 LBS.	

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN *Gary S. Phelps*

TEST SUPERVISOR *K. L. Watters*

POST-TEST CALIBRATION

SUBJECT VEHICLE

~~FORM~~ Dummy Damage Checklist
 146 43

OK	Damaged	
<u> / </u>	<u> </u>	Outer skin on entire dummy (gashes, rips, etc.)
<u> / </u>	<u> </u>	Head - Gashes, rips, general appearance, etc.
<u> / </u>	<u> </u>	Neck - broken or cracks in rubber
<u> </u>	<u> </u>	Spine - broken or cracks in rubber
<u> </u>	<u> X </u>	Ribs - check all ribs for damage (bent or broken), damping material separation.
<u> </u>	<u> </u>	Rib Attach Leather - breaks in leather at ribs
<u> </u>	<u> </u>	Pourns Pot. - bent shaft - electrical discontinuity
<u> </u>	<u> </u>	Accelerometer Leads - torn cables
<u> </u>	<u> </u>	Accelerometer Mountings (Head, Thorax, Pelvis) - check for secure mounting
<u> </u>	<u> </u>	Retrofit Kit (Calspan) - check for bent brackets, sagging rib cage
<u> </u>	<u> </u>	Thorax support wire and springs - check for damage
<u> </u>	<u> </u>	Overall smooth stroking of thorax left to right (no interference)
<u> </u>	<u> </u>	Other

If upon visual examination, damage is apparent in any of these areas, a VRTC representative is to be consulted for a decision on repair or replacement of parts.

Repair or Replacement Approved By:

 Signature Date

Comments on repair or replacement of parts:

RIBS #1 LHSide LARGE CRACK.
SMALL CRACKS in RH 3+4 LH 3+4 VERY SMALL

TRC Personnel
 Checked By:

[Signature] 2 APR 85
 Signature Date

VRTC Personnel
 Checked and Approved for Testing BY:

 Signature Date

TRANSPORTATION RESEARCH CENTER OF OHIO

HEAD DROP TEST

HYBRID III

03-APR-85

VRTC SRL98 43C7HD1

HY3 SN43/HEAD#45 CAL 07

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78 DEGREES	74.00 DEGREES
RELATIVE HUMIDITY	10% - 70%	46.00 %
PEAK RESULTANT ACCELERATION	225 - 275 G	243.65 G
PEAK LATERAL ACCELERATION	15 G MAX	-2.72 G
IS ACCELERATION CURVE UNIMODAL?	YES	YES

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN

Gary S. Phelps

TEST SUPERVISOR

V.L. Williams

TRANSPORTATION RESEARCH CENTER OF OHIO

NECK FLEXION TEST

HYBRID III

3 AXIS NECK TRANSDUCER

04-APR-85

VRTC SRL98 43C7NF1

HY3 SN43 CAL7 NECK FLEXION 01

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE		66 - 78 DEGREES	75.00 DEGREES
RELATIVE HUMIDITY		10% - 70%	57.00 %
IMPACT VELOCITY		22.53 - 22.97 FPS	22.86 FPS
PENDULUM DECELERATION	10 MS	22.50 - 27.50 G	23.42 G
	20 MS	17.40 - 22.60 G	19.22 G
	30 MS	12.50 - 18.50 G	17.40 G
MAXIMUM PENDULUM G		29 G MAX	25.42 G
DECELERATION-TIME CURVE			
DECAY TIME TO 5 G		34 - 46 MS	41.75 MS
I. D PLANE ROTATION	MAX	67 - 79 DEGREES	74.19 DEGREES
	TIME	54 - 64 MS	61.13 MS
MOMENT ABOUT OCCIPITAL CONDYLES	MAX	70 - 90 FT.LBS	71.91 FT.LBS
	TIME	46 - 56 MS	55.38 MS
	MIN	-22.2/-14.0 FT.LBS	-16.30 FT.LBS
	TIME	12 - 16 MS	16.00 MS
ROTATION ANGLE-TIME CURVE			
DECAY TIME TO ZERO		109 - 119 MS	124.63 MS **
POSITIVE MOMENT-TIME CURVE			
DECAY TIME TO ZERO		95 - 105 MS	103.75 MS

*** TEST DOES NOT MEET SPECIFICATIONS ***

TECHNICIAN

Larry S. Phelps

TEST SUPERVISOR

R. L. Witter

TRANSPORTATION RESEARCH CENTER OF OHIO

NECK EXTENSION TEST

HYBRID III

3 AXIS NECK TRANSDUCER

04-APR-85

VRTC SRL98 43C7NE1

HY3 SN43 CAL7 NECK EXTEN. 01

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78 DEGREES	76.00 DEGREES
RELATIVE HUMIDITY	10% - 70%	61.00 %
IMPACT VELOCITY	19.50 - 19.90 FPS	19.90 FPS
PENDULUM	10 MS 17.20 - 21.20 G	19.54 G
DECELERATION	20 MS 14.00 - 19.00 G	17.28 G
	30 MS 11.00 - 16.00 G	15.59 G
MAXIMUM PENDULUM G	22 G MAX	20.72 G
DECELERATION-TIME CURVE		
DECAY TIME TO 5 G	38 - 50 MS	42.00 MS
D PLANE	MAX 94 - 106 DEGREES	95.37 DEGREES
ROTATION	TIME 72 - 82 MS	80.00 MS
MOMENT ABOUT	MAX 11.75 - 17.75 FT.LBS	14.28 FT.LBS
OCCIPITAL	TIME 12 - 18 MS	16.25 MS
CONDYLES	MIN -61.2/-50.8 FT.LBS	-49.21 FT.LBS **
	TIME 69 - 77 MS	75.63 MS
ROTATION ANGLE-TIME CURVE		
DECAY TIME TO ZERO	151 - 167 MS	168.38 MS **
NEGATIVE MOMENT-TIME CURVE		
DECAY TIME TO ZERO	120 - 144 MS	142.88 MS

*** TEST DOES NOT MEET SPECIFICATIONS ***

TECHNICIAN

Gary L. Phelps

TEST SUPERVISOR

V.L. Watters

TRANSPORTATION RESEARCH CENTER OF OHIO

THORAX IMPACT TEST

HYBRID III

05-APR-85

VRTC SRL98 43C7TH1

HY3 SN43 CAL07 H.S. THORAX 01

HIGH SPEED TEST		
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78 DEGREES	70.00 DEGREES
RELATIVE HUMIDITY	10% - 70%	61.00 %
PENDULUM VELOCITY	21.78-22.22 FT/SEC	22.22 FT/SEC
DEFLECTION AT 25 MSEC	2.51 - 2.75 INCHES	2.823 INCHES *
RESISTIVE FORCE AT 19 MSEC	1186 - 1298 POUNDS	1179.6 POUNDS *
INTERNAL HYSTERESIS	75% - 85%	72.4% *

*** TEST DOES NOT MEET SPECIFICATIONS ***

TECHNICIAN

Gary L. Phelps

TEST SUPERVISOR

V.L. Watters

TRANSPORTATION RESEARCH CENTER OF OHIO

KNEE IMPACT TEST

HYBRID III

05-APR-85

RIGHT KNEE
VRTC SRL9B 43C7RK1

HY3 SN43 R.KNEE 11LB CAL 07

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78 DEGREES	74.00 DEGREES
RELATIVE HUMIDITY	10% - 70%	59.00 %
PROBE VELOCITY	6.83 - 6.96 FT/SEC	6.90 FT/SEC
PEAK KNEE IMPACT FORCE	1000 - 1560 LBS.	1515.70 LBS.
PROBE WEIGHT	11.0 LBS.	

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN Mary L. Phelps

TEST SUPERVISOR V.L. Watter

TRANSPORTATION RESEARCH CENTER OF OHIO

KNEE IMPACT TEST

HYBRID III

05-APR-85

LEFT KNEE
VRTC SRL98 43C7LK1

HY3 SN43 L.KNEE 11LB CAL 07

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78 DEGREES	74.00 DEGREES
RELATIVE HUMIDITY	10% - 70%	59.00 %
PROBE VELOCITY	6.83 - 6.96 FT/SEC	6.96 FT/SEC
PEAK KNEE IMPACT FORCE	1000 - 1560 LBS.	1231.38 LBS.
PROBE WEIGHT	11.0 LBS.	

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN

Gary L. Phelps

TEST SUPERVISOR

V.L. Watters

"48" Dummy Damage Checklist

48

OK	Damaged	
✓		Outer skin on entire dummy (gashes, rips, etc.)
	✓	Head - Gashes, rips, general appearance, etc.
✓		Neck - broken or cracks in rubber
✓		Spine - broken or cracks in rubber
	✓	Ribs - check all ribs for damage (bent or broken), dampening material separation.
✓		Rib Attach Leather - breaks in leather at ribs
✓		Bourns Pot. - bent shift - electrical discontinuity
✓		Accelerometer Leads - torn cables
✓		Accelerometer Mountings (Head, Thorax, Pelvic) - check for secure mounting
✓		Retrofit Kit (Calspan) - check for bent brackets, sagging rib cage
✓		Thorax support wire and springs - check for damage
✓		Overall smooth stroking of thorax left to right (no interference)
✓		Other

If upon visual examination, damage is apparent in any of these areas, a VRTC representative is to be consulted for a decision on repair or replacement of parts.

Repair or Replacement Approved By:

Signature

Date

Comments on repair or replacement of parts:

(RIP #1 2 CRACKS - RH.) (LH 1" RIB CRACKS)
LH RIBS 2 THRU 5 SMALL SURFACE CRACKS RH RIBS
#4-5-6 SURFACE CRACKS

(Chin cut)

No calibration data; full calibration
every other test.

TRC Personnel

Checked By:

Signature

Date

VRTC Personnel

Checked and Approved for Testing BY:

Signature

Date

POST-TEST CALIBRATION

PARTNER VEHICLE

1/5

VRTC Dummy Damage Checklist

Hyb III

OK	Damaged	
☒	☐	Outer skin on entire dummy (gashes, rips, etc.)
☒	☐	Head - Gashes, rips, general appearance, etc.
☒	☐	Neck - broken or cracks in rubber
☒	☐	Spine - broken or cracks in rubber
☒	☐	Ribs - check all ribs for damage (bent or broken), damping material separation.
☒	☐	Rib Attach Leather - breaks in leather at ribs
☒	☐	Bourns Pot. - bent shaft - electrical discontinuity
☒	☐	Accelerometer Leads - torn cables
☒	☐	Accelerometer Mountings (Head, Thorax, Pelvis) - check for secure mounting
☒	☐	Retrofit Kit (Calspan) - check for bent brackets, sagging rib cage
☒	☐	Thorax support wire and springs - check for damage
☒	☐	Overall smooth stroking of thorax left to right (no interference)
☒	☐	Other

If upon visual examination, damage is apparent in any of these areas, a VRTC representative is to be consulted for a decision on repair or replacement of parts.

Repair or Replacement Approved By:

Signature

Date

Comments on repair or replacement of parts:

No calibration data; full calibration after every other test.

TRC Personnel

Checked By:

Luzy Will
Signature

3 April 85
Date

VRTC Personnel

Checked and Approved for Testing BY:

Signature

Date
C-26

"SID" Dummy Damage Checklist

Hyb 61

OK	Damaged	
☒	☐	Outer skin on entire dummy (gashes, rips, etc.)
☒	☐	Head - Gashes, rips, general appearance, etc.
☒	☐	Neck - broken or cracks in rubber
☒	☐	Spine - broken or cracks in rubber
☒	☐	Ribs - check all ribs for damage (bent or broken), damping material separation.
☒	☐	Rib Attach Leather - breaks in leather at ribs
☒	☐	Bourns Pot. - bent shaft - electrical discontinuity
☒	☐	Accelerometer Leads - torn cables
☒	☐	Accelerometer Mountings (Head, Thorax, Pelvis) - check for secure mounting
☒	☐	Retrofit Kit (Calspan) - check for bent brackets, sagging rib cage
☒	☐	Thorax support wire and springs - check for damage
☒	☐	Overall smooth stroking of thorax left to right (no interference)
☒	☐	Other

If upon visual examination, damage is apparent in any of these areas, a VRTC representative is to be consulted for a decision on repair or replacement of parts.

Repair or Replacement Approved By:

Signature Date

Comments on repair or replacement of parts:

6 SUP' OK - TO PH 1713

TRC Personnel
Checked By:

[Signature] 2-2-80
Signature Date

VRTC Personnel
Checked and Approved for Testing BY:

Signature Date

TRANSPORTATION RESEARCH CENTER OF OHIO

HEAD DROP TEST

HYBRID III

03-APR-85

VRTC SRL98 61C9HD1

HY3 SN61 HEAD DROP CAL 09

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78 DEGREES	74.00 DEGREES
RELATIVE HUMIDITY	10% - 70%	49.00 %
PEAK RESULTANT ACCELERATION	225 - 275 G	256.26 G
PEAK LATERAL ACCELERATION	15 G MAX	3.05 G
IS ACCELERATION CURVE UNIMODAL?	YES	YES

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN Ray L. Phelps

TEST SUPERVISOR V.L. Wething

TRANSPORTATION RESEARCH CENTER OF OHIO

NECK FLEXION TEST

HYBRID III

3 AXIS NECK TRANSDUCER

03-APR-85

VRTC SRL98 61C9NF1

HY3 SN61 CAL9 NECK FLEXION

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78 DEGREES	73.00 DEGREES
RELATIVE HUMIDITY	10% - 70%	45.00 %
IMPACT VELOCITY	22.53 - 22.97 FPS	22.86 FPS
PENDULUM	10 MS 22.50 - 27.50 G	26.40 G
DECELERATION	20 MS 17.40 - 22.60 G	20.91 G
	30 MS 12.50 - 18.50 G	17.42 G
MAXIMUM PENDULUM G	29 G MAX	27.92 G
DECELERATION-TIME CURVE		
DECAY TIME TO 5 G	34 - 46 MS	41.25 MS
D PLANE	MAX 67 - 79 DEGREES	77.78 DEGREES
ROTATION	TIME 54 - 64 MS	60.50 MS
MOMENT ABOUT	MAX 70 - 90 FT.LBS	67.95 FT.LBS **
OCCIPITAL	TIME 46 - 56 MS	54.13 MS
CONDYLES	MIN -22.2/-14.0 FT.LBS	-13.47 FT.LBS **
	TIME 12 - 16 MS	15.13 MS
ROTATION ANGLE-TIME CURVE		
DECAY TIME TO ZERO	109 - 119 MS	120.88 MS **
POSITIVE MOMENT-TIME CURVE		
DECAY TIME TO ZERO	95 - 105 MS	103.25 MS

*** TEST DOES NOT MEET SPECIFICATIONS ***

TECHNICIAN

Harry L. Phelps

TEST SUPERVISOR

V.L. Watters

TRANSPORTATION RESEARCH CENTER OF OHIO

NECK FLEXION TEST

HYBRID III

3 AXIS NECK TRANSDUCER

04-APR-85

VRTC SRL98 61C9NF2

HY3 SN61 CAL9 NECK FLEXION

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78 DEGREES	74.00 DEGREES
RELATIVE HUMIDITY	10% - 70%	51.00 %
IMPACT VELOCITY	22.53 - 22.97 FPS	22.86 FPS
PENDULUM	10 MS 22.50 - 27.50 G	26.72 G
DECELERATION	20 MS 17.40 - 22.60 G	20.31 G
	30 MS 12.50 - 18.50 G	17.16 G
MAXIMUM PENDULUM G	29 G MAX	27.67 G
DECELERATION-TIME CURVE		
DECAY TIME TO 5 G	34 - 46 MS	41.13 MS
D PLANE	MAX 67 - 79 DEGREES	64.54 DEGREES **
ROTATION	TIME 54 - 64 MS	60.13 MS
MOMENT ABOUT	MAX 70 - 90 FT.LBS	69.90 FT.LBS **
OCCIPITAL	TIME 46 - 56 MS	53.88 MS
CONDYLES	MIN -22.2/-14.0 FT.LBS	-14.39 FT.LBS
	TIME 12 - 16 MS	14.13 MS
ROTATION ANGLE-TIME CURVE		
DECAY TIME TO ZERO	109 - 119 MS	120.50 MS **
POSITIVE MOMENT-TIME CURVE		
DECAY TIME TO ZERO	95 - 105 MS	102.63 MS

*** TEST DOES NOT MEET SPECIFICATIONS ***

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

NOTE: New front nodding block installed to improve moment about the occipital condyles. Old nodding block was somewhat compressed.

TRANSPORTATION RESEARCH CENTER OF OHIO

NECK EXTENSION TEST

HYBRID III

3 AXIS NECK TRANSDUCER

03-APR-85

VRTC SRL98 61C9NE1

HY3 SN61 CAL9 NECK EXTENSION

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78 DEGREES	73.00 DEGREES
RELATIVE HUMIDITY	10% - 70%	45.00 %
IMPACT VELOCITY	19.50 - 19.90 FPS	19.90 FPS
PENDULUM	10 MS 17.20 - 21.20 G	20.49 G
DECELERATION	20 MS 14.00 - 19.00 G	16.66 G
	30 MS 11.00 - 16.00 G	14.90 G
MAXIMUM PENDULUM G	22 G MAX	20.80 G
DECELERATION-TIME CURVE		
DECAY TIME TO 5 G	38 - 50 MS	44.00 MS
D PLANE	MAX 94 - 106 DEGREES	89.48 DEGREES **
ROTATION	TIME 72 - 82 MS	79.25 MS
MOMENT ABOUT	MAX 11.75 - 17.75 FT.LBS	13.44 FT.LBS
OCCIPITAL	TIME 12 - 18 MS	15.00 MS
CONDYLES	MIN -61.2/-50.8 FT.LBS	-42.62 FT.LBS **
	TIME 69 - 77 MS	75.13 MS
ROTATION ANGLE-TIME CURVE		
DECAY TIME TO ZERO	151 - 167 MS	161.00 MS
NEGATIVE MOMENT-TIME CURVE		
DECAY TIME TO ZERO	120 - 144 MS	140.88 MS

*** TEST DOES NOT MEET SPECIFICATIONS ***

TECHNICIAN

Larry S. Phelps

TEST SUPERVISOR

V.L. Witting

TRANSPORTATION RESEARCH CENTER OF OHIO

THORAX IMPACT TEST

HYBRID III

05-APR-85

VRTC SRL98 61C9TH1

HY3 SN61 CAL 09 H.S.THORAX 01

TEST PARAMETER	HIGH SPEED TEST	
	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78 DEGREES	70.00 DEGREES
RELATIVE HUMIDITY	10% - 70%	61.00 %
PENDULUM VELOCITY	21.78-22.22 FT/SEC	22.22 FT/SEC
DEFLECTION AT 25 MSEC	2.51 - 2.75 INCHES	2.796 INCHES *
RESISTIVE FORCE AT 19 MSEC	1186 - 1298 POUNDS	1137.4 POUNDS *
INTERNAL HYSTERESIS	75% - 85%	73.9% *

*** TEST DOES NOT MEET SPECIFICATIONS ***

TECHNICIAN Larry L. Phelps

TEST SUPERVISOR V.L. Watter

TRANSPORTATION RESEARCH CENTER OF OHIO

KNEE IMPACT TEST

HYBRID III

05-APR-85

RIGHT KNEE
VRTC SRL98 61C9RK1

HY3 SN61 R.KNEE 11LB CAL 09

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78 DEGREES	74.00 DEGREES
RELATIVE HUMIDITY	10% - 70%	59.00 %
PROBE VELOCITY	6.83 - 6.96 FT/SEC	6.90 FT/SEC
PEAK KNEE IMPACT FORCE	1000 - 1560 LBS.	1419.71 LBS.
PROBE WEIGHT	11.0 LBS.	

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN Gary L. Phelps

TEST SUPERVISOR K. L. Winters

TRANSPORTATION RESEARCH CENTER OF OHIO

KNEE IMPACT TEST

HYBRID III

05-APR-85

LEFT KNEE
VRTC SRL98 6109LK1

HY3 SN61 L.KNEE 11LB CAL 09

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE	66 - 78 DEGREES	74.00 DEGREES
RELATIVE HUMIDITY	10% - 70%	59.00 %
PROBE VELOCITY	6.83 - 6.96 FT/SEC	6.90 FT/SEC
PEAK KNEE IMPACT FORCE	1000 - 1560 LBS.	1402.91 LBS.
PROBE WEIGHT	11.0 LBS.	

DUMMY COMPONENT MEETS SPECIFICATIONS

TECHNICIAN

Gary L. Phelps

TEST SUPERVISOR

V.L. Wetters

APPENDIX D
MISCELLANEOUS TEST INFORMATION

GM HYBRID III DUMMY POSITIONING

The following procedure was used for positioning a Hybrid III dummy (GM50H) in the vehicle seat for impact testing. The procedure utilizes seat parameters for a specific vehicle body style, and if available, parameters for the individual seat being used in the test. The dummy head is positioned to keep the longitudinal accelerometers horizontal.

1. Preliminary Data

1.1 Obtain the body coordinates for the S.A.E. three dimensional manikin (Oscar) H-point at the specific seat travel location used for the test. Typically when using the Hybrid III dummy, this will be the manual seat adjuster mid travel position. If no detent is available at mid travel, use the position which would lock the seat adjuster one notch rear of mid.

1.2 If specific Oscar data is not available, design drawing information will be used to determine the design H-point location at a specified seat adjuster position.

2. Initial Dummy Placement

2.1 The Hybrid III dummies are placed in the seats of the test buck or vehicle. The pelvis is positioned such that a lateral line passing through the dummy H-point is perpendicular to the longitudinal centerplane of the vehicle.

2.1.1 Vehicle equipped with front bucket seats. The dummy is centered on the seat cushion of the bucket seat and its midsagittal plane is vertical and longitudinal.

2.1.1.1 Driver position placement. At the driver's position, the knees of the dummy are initially set 370 mm apart, measured between the outer surfaces of the knee pivot bolt heads, with the left outer surface 150 mm from the midsagittal plane of the dummy.

2.1.1.2 Passenger position placement. At the right front designated seating position, the femur, tibia, and foot centerlines of each of the dummy's legs fall in a vertical longitudinal plane. The knees are spaced 215 mm centerline to centerline.

2.1.2 Vehicle equipped with bench seating.

2.1.2.1 Driver position placement. The dummy is placed at the left front outboard designated seating position so that its midsagittal plane is vertical and longitudinal, and passes through the center point of the plane described by the steering wheel rim.

2.1.2.2 Passenger position placement. The dummy is placed at the right front outboard designated seating position as specified in 2.1.1.2, except that the midsagittal plane of the dummy is vertical, longitudinal, and the same distance from the longitudinal centerline as the midsagittal plane of the dummy at the driver's position.

2.2 Measure the seat back angle by placing an inclinometer against the rear of the seat back cushion. Measure the angle at a point midway up the cushion and supported by a rigid portion of the seat back pan.

3. Initial Dummy Positioning

3.1 H-point positioning.

3.1.1 With the dummy laterally positioned as described in Section 2, insert the pelvis angle indicator bar in the hole provided above, and to the rear of the dummy H-point. Position the longitudinal pelvis angle between 20° and 25° to the horizontal. This may be accomplished by raising the legs or flexing the upper torso forward and allowing the pelvis to rotate. The lateral pelvis angle should be horizontal.

3.1.2 Apply sufficient force on the lower torso in a horizontal and vertical direction to place the dummy H-point at the coordinates obtained in Section 1.

3.1.3 If the H-point cannot be placed at the desired coordinates, adjust the pelvis angle within the 5° band and reposition to the coordinates. After repositioning the H-point, any deviation from the desired coordinates should be recorded and used to indicate actual H-point locations.

3.2 Head CG positioning. While maintaining the H-point location, adjust the Hybrid III upper torso so as to place the head accelerometer mounting surface level.

3.2.1 Remove the rear skull cap to expose the machined surface of the head. Place an inclinometer on this surface. The skull surface should be within $.5^{\circ}$ of vertical to maintain a proper head orientation.

4. Final Positioning

4.1 Place the dummy feet in contact with the toe pan with the heel placed at the intersection of the toe pan and floor pan. The driver right foot should be placed on the undepressed accelerator pedal, with the heel in contact with the floor pan.

If the feet cannot be placed against the toe pan without causing hip and head movement, the knee will have to be positioned first. Press down on the knees until the underside of knee joint contacts the seat cushion, or the thighs behind the joint depress the seat cushion. Place the foot perpendicular to the tibia and allow the lower leg to pivot at the knee until the heel rests on the floor pan.

4.2 The driver dummy hands are raised from the seat and, without moving the dummy are placed on the steering wheel. The hands are placed at the horizontal centerline of the steering wheel with the thumbs over the wheel rim. The wrists are outside of the steering wheel plane. Planes described by each upper and lower arm should be at or near vertical.

4.3 Prior to conducting the test, the dummy is visually checked to make certain the dummy midsagittal plane is vertical and longitudinal, the desired head, hip and knee coordinates have been maintained, the pelvis is laterally horizontal and longitudinally within the pelvis angle range, and the engineer responsible for the test is satisfied with the dummy position.

HEAD CHAMOIS USE PROCEDURE

1. Using the GM template, two 0.125 inch thick chamois from Hydra-Sponge, St. Louis, MO. were cut.
2. The chamois were soaked in water to make them soft and pliable.
3. The chamois were molded around the facial features of the dummy head and pulled taut. Both pieces of chamois were placed in the same manner.
4. Periphery of chamois were taped to the dummy's head.
5. Both chamois were allowed to dry prior to the test.

SUBJECT VEHICLE ACCELEROMETER PLACEMENT

Dummy Chest Humanoid 43, in Body Humanoid 43
(MFR) (S/N) (MFR) (S/N)

Mnemonic	Label No.	Location	Orientation (+Sensing)	Serial No.	Mfr/Model
<u>LFMF1</u>	<u>718</u>	Left Femur	Tension	<u>718</u>	<u>2430</u>
<u>RFMF1</u>	<u>761</u>	Right Femur	Tension	<u>761</u>	<u>2430</u>
<u>CSTXG1</u>	<u>X</u>	Chest (X)	Front	<u>AK58</u>	<u>7264</u>
<u>CSTYG1</u>	<u>X</u>	Chest (Y)	Right	<u>AE04</u>	<u>7264</u>
<u>CSTZG1</u>	<u>Y</u>	Chest (Z)	Up	<u>AA33</u>	<u>7264</u>
<u>HEDXG1</u>	<u>A</u>	Head (X)	Front	<u>AK29</u>	<u>7264</u>
<u>HEDYG1</u>	<u>B</u>	Head (Y)	Left	<u>AJ34</u>	<u>7264</u>
<u>HEDZG1</u>	<u>C</u>	Head (Z)	Up	<u>AH89</u>	<u>7264</u>
<u>NEKXF1</u>	<u>XF</u>	Neck (X)	Front	<u>050</u>	<u>186</u>
<u>NEKYM1</u>	<u>YM</u>	Neck (Y)	Left	<u>050</u>	<u>186</u>
<u>NEKZF1</u>	<u>ZF</u>	Neck (Z)	Tension	<u>050</u>	<u>186</u>
<u>CSTXD1</u>	<u>CP1</u>	Chest		<u>CP1</u>	<u>Bournes</u>

*With 10 Vdc input (2000 g range).

SUBJECT VEHICLE ACCELEROMETER PLACEMENT

Dummy Chest Humanoid 48, In Body Humanoid 48
(MFR) (S/N) (MFR) (S/N)

Mnemonic	Label No.	Location	Orientation (+Sensing)	Serial No.	Mfr/Model
<u>LFMF2</u>	<u>756</u>	Left Femur	Tension	<u>756</u>	<u>2430</u>
<u>RFMF2</u>	<u>721</u>	Right Femur	Tension	<u>721</u>	<u>2430</u>
<u>CSTXG2</u>	<u>10</u>	Chest (X)	Rear	<u>AB62</u>	<u>7264</u>
<u>CSTYG2</u>	<u>11</u>	Chest (Y)	Right	<u>AL08</u>	<u>7264</u>
<u>CSTZG2</u>	<u>12</u>	Chest (Z)	Up	<u>AL46</u>	<u>7264</u>
<u>HEDXG2</u>	<u>8</u>	Head (X)	Front	<u>AH58</u>	<u>7264</u>
<u>HEDYG2</u>	<u>9</u>	Head (Y)	Left	<u>AH77</u>	<u>7264</u>
<u>HEDZG2</u>	<u>13</u>	Head (Z)	Up	<u>AH88</u>	<u>7264</u>
<u>HD1XG</u>	<u>4</u>	Head (X)	Front	<u>AK52</u>	<u>7264</u>
<u>HD1ZG</u>	<u>6</u>	Head (Z)	Up	<u>AU49</u>	<u>7264</u>
<u>HD2YG</u>	<u>2</u>	Head (Y)	Left	<u>AC88</u>	<u>7264</u>
<u>HD2ZG</u>	<u>3</u>	Head (Z)	Up	<u>AK48</u>	<u>7264</u>
<u>HD3XG</u>	<u>1</u>	Head (X)	Front	<u>AJ37</u>	<u>7264</u>
<u>HD3YG</u>	<u>5</u>	Head (Y)	Left	<u>AK30</u>	<u>7264</u>
<u>NEKXF2</u>		Neck (X)	Front	<u>076</u>	<u>1716</u>
<u>NEKXM2</u>		Neck (X)	Right	<u>076</u>	<u>1716</u>

*With 10 Vdc input (2000 g range).

SUBJECT VEHICLE ACCELEROMETER PLACEMENT CONTD

Dummy Chest Humanoid 48, in Body Humanoid 48
(MFR) (S/N) (MFR) (S/N)

Mnemonic	Label No.	Location	Orientation (+Sensing)	Serial No.	Mfr/Model
<u>NEKYM2</u>		Neck (Y)	Front	<u>076</u>	<u>1716</u>
<u>NEKYF2</u>		Neck (Y)	Left	<u>076</u>	<u>1716</u>
<u>NEKZF2</u>		Neck (Z)	Tension	<u>076</u>	<u>1716</u>
<u>NEKZM2</u>		Neck (Z)	Tension	<u>076</u>	<u>1716</u>
<u>KNLRF2</u>	<u>14L</u>	Left Knee	Tension	<u>014</u>	<u>1587</u>
<u>KNLFB</u>	<u>14R</u>	Left Knee	Tension	<u>014</u>	<u>1587</u>
<u>KNLXD</u>		Left Knee			<u>Carter</u>
<u>KNRFF2</u>	<u>22L</u>	Right Knee	Tension	<u>022</u>	<u>1587</u>
<u>KNRFB</u>	<u>22R</u>	Right Knee	Tension	<u>022</u>	<u>1587</u>
<u>KNRXD</u>		Right Knee			<u>Carter</u>
<u>TBLXM2</u>	<u>16X</u>	Left Tibia	Left	<u>016</u>	<u>1583</u>
<u>TBLYM2</u>	<u>16Y</u>	Left Tibia	Rear	<u>016</u>	<u>1583</u>
<u>TBRXM2</u>	<u>23X</u>	Right Tibia	Left	<u>023</u>	<u>1583</u>
<u>TBYRM2</u>	<u>23Y</u>	Right Tibia	Rear	<u>023</u>	<u>1583</u>
<u>ANLYF2</u>	<u>12Y</u>	Left Ankle	Left	<u>012</u>	<u>1584</u>
<u>ANLZF2</u>	<u>12Z</u>	Left Ankle	Tension	<u>012</u>	<u>1584</u>
<u>ANLXM2</u>	<u>12X</u>	Left Ankle	Left	<u>012</u>	<u>1584</u>
<u>ANRYF2</u>	<u>19Y</u>	Right Ankle	Left	<u>019</u>	<u>1584</u>
<u>NARZF2</u>	<u>19Z</u>	Right Ankle	Tension	<u>019</u>	<u>1584</u>
<u>ANRXM2</u>	<u>19X</u>	Right Ankle	Left	<u>019</u>	<u>1584</u>
<u>CSTXD2</u>		Chest			<u>Bournes</u>

*With 10 Vdc input (2000 g range).

PARTNER VEHICLE ACCELEROMETER PLACEMENT

Dummy Chest Humanoid 45, in Body Humanoid 45
(MFR) (S/N) (MFR) (S/N)

Mnemonic	Label No.	Location	Orientation (+Sensing)	Serial No.	Mfr/Model
LFMF1	716	Left Femur	Tension	716	2430
RFMF1	726	Right Femur	Tension	726	2430
CSTXG1	U	Chest (X)	Front	AN03	7264
CSTYG1	V	Chest (Y)	Right	AP96	7264
CSTZG1	W	Chest (Z)	Up	AD12	7264
HEDXG1	X	Head (X)	Front	AP48	7264
HEDYG1	Y	Head (Y)	Left	AN71	7264
HEDZG1	Z	Head (Z)	Up	AN92	7264
NEKXF1	XF	Neck (X)	Front	049	186
NEKYM1	YM	Neck (Y)	Left	049	186
NEKZF1	ZF	Neck (Z)	Up	049	186
KNLF1	13L	Left Knee	Tension	013	1587
KNLFA	13R	Left Knee	Tension	013	1587
KNRF1	21L	Right Knee	Tension	021	1587
KNRFA	21R	Right Knee	Tension	021	1587
TBLXM1	15X	Left Tibia	Left	015	1583
TBLYM1	15Y	Left Tibia	Rear	015	1583
TBRXM1	24X	Right Tibia	Left	024	1583
TBRYM1	24Y	Right Tibia	Rear	024	1583

*With 10 Vdc input (2000 g range).

PARTNER VEHICLE ACCELEROMETER PLACEMENT CONTD

Dummy Chest Humanoid 45, in Body Humanoid 45
(MFR) (S/N) (MFR) (S/N)

Mnemonic	Label No.	Location	Orientation (+Sensing)	Serial No.	Mfr/Model
<u>ANLYF1</u>	<u>11Y</u>	Left Ankle	Left	<u>011</u>	<u>1584</u>
<u>ANLZF1</u>	<u>11Z</u>	Left Ankle	Tension	<u>011</u>	<u>1584</u>
<u>ANLXM1</u>	<u>11X</u>	Left Ankle	Left	<u>011</u>	<u>1584</u>
<u>ANRYF1</u>	<u>20Y</u>	Right Ankle	Left	<u>020</u>	<u>1584</u>
<u>ANRZF1</u>	<u>20Z</u>	Right Ankle	Tension	<u>020</u>	<u>1584</u>
<u>ANRXM1</u>	<u>20X</u>	Right Ankle	Left	<u>020</u>	<u>1584</u>
<u>CSTXD1</u>	<u>CP2</u>	Chest		<u>CP2</u>	<u>Bournes</u>

*With 10 Vdc input (2000 g range).

PARTNER VEHICLE ACCELEROMETER PLACEMENT

Dummy Chest Humanoid 61, in Body Humanoid 61
(MFR) (S/N) (MFR) (S/N)

Mnemonic	Label No.	Location	Orientation (+Sensing)	Serial No.	Mfr/Model
<u>LFMF2</u>	<u>742</u>	Left Femur	Tension	<u>742</u>	<u>2430</u>
<u>RFMF2</u>	<u>610</u>	Right Femur	Tension	<u>610</u>	<u>2430</u>
<u>CSTXG2</u>	<u>B</u>	Chest (X)	Front	<u>AR17</u>	<u>7264</u>
<u>CSTYG2</u>	<u>C</u>	Chest (Y)	Left	<u>AH65</u>	<u>7264</u>
<u>CSTZG2</u>	<u>E</u>	Chest (Z)	Up	<u>AP62</u>	<u>7264</u>
<u>HEDXG2</u>	<u>13</u>	Head (X)	Front	<u>AB67</u>	<u>7264</u>
<u>HEDYG2</u>	<u>14</u>	Head (Y)	Left	<u>AA05</u>	<u>7264</u>
<u>HEDZG2</u>	<u>15</u>	Head (Z)	Up	<u>AK96</u>	<u>7264</u>
<u>NEKXF2</u>		Neck (X)	Front	<u>051</u>	<u>186</u>
<u>NEKYM2</u>		Neck (Y)	Left	<u>051</u>	<u>186</u>
<u>NEKZF2</u>		Neck (Z)	Up	<u>051</u>	<u>186</u>

*With 10 Vdc input (2000 g range).

SUBJECT VEHICLE ACCELEROMETER INFORMATION

<u>MNEMONIC</u>	<u>DESCRIPTION</u>	<u>SERIAL NO.</u>	<u>MODEL NO.</u>
FFRXG	FRONT FRAME RAIL X-DIR	AL31	2264
FFCXG	FRONT CROSS MEMBER X-DIR	AL43	2264
BCRXG	BRAKE CALIPER; RIGHT X-DIR	AN06	2264
ENGXG2	ENGINE BOTTOM X-DIR	AN02	2264
ENGXG1	ENGINE BLOCK TOP X-DIR	AK87	7264
SCAPG	STEERING COLUMN LOWER A-P AXIS	AJ02	2264
SH1PG	STEERING WHEEL HUB A-P AXIS	AG02	2264
SH1IG	STEERING WHEEL HUB I-S AXIS	BA33	2264
DPCXG	DASH PANEL X-DIR	AL14	7264
DPCZG	DASH PANEL Z-DIR	AS86	2264
VCGV	PITCH RATE GYRO		
LPBXG	LEFT B-PILLAR X-DIR	BA99	2264
LPBZG	LEFT B-PILLAR Z-DIR	AK61	2264
RPBXG	RIGHT B-PILLAR X-DIR	AJ45	2264
TLRXG4	LEFT REAR CROSS MEMBER X-DIR	AR87	2264
TLRZG4	LEFT REAR CROSS MEMBER Z-DIR	AF22	2264
TLRXGD	LEFT REAR CROSS MEMBER RED.	AJ92	2264
TRRXG3	RIGHT REAR CROSS MEMBER X-DIR	AT75	2264
TRRXGC	RIGHT REAR CROSS MEMBER RED.	BA51	2264
RAXXG	REAR AXLE X-DIR	AK66	2264

PARTNER VEHICLE ACCELEROMETER INFORMATION

<u>MNEMONIC</u>	<u>DESCRIPTION</u>	<u>SERIAL NO.</u>	<u>MODEL NO.</u>
FFRXG	FRONT FRAME RAIL X-DIR	BK30	2264
FFCXG	FRONT CROSS MEMBER X-DIR	AT89	7264
BCRXG	BRAKE CALIPER; RIGHT X-DIR	AN36	2264
ENGXG2	ENGINE BOTTOM X-DIR	AU15	7264
ENGXG1	ENGINE BLOCK TOP X-DIR	AA34	7264
SCAPG	STEERING COLUMN LOWER A-P AXIS	AS95	2264
SH1PG	STEERING WHEEL HUB A-P AXIS	AU19	2264
SH1IP	STEERING WHEEL HUB I-S AXIS	AK68	2264
DPCXG	DASH PANEL X-DIR	AL38	7264
DPCZG	DASH PANEL Z-DIR	AT11	2264
VCGV	PITCH RATE GYRO		
LPBXG	LEFT B-PILLAR X-DIR	AT21	2264
RPBXG	RIGHT B-PILLAR X-DIR	AS36	2264
TLRXG4	LEFT REAR CROSS MEMBER X-DIR	AK78	2264
TLRZG4	LEFT REAR CROSS MEMBER Z-DIR	AJ31	7264
TLRXGD	LEFT REAR CROSS MEMBER RED.	AA32	7264
TRRXG3	RIGHT REAR CROSS MEMBER X-DIR	AJ90	2264

CAMERA INFORMATION

CAMERA IDENTIFICATION

TIME ZERO ON HIGH SPEED FILM

Photosonics

Circular timing pulses on one side, verticle event bar on other side.

Back 4 frames from frame where verticle event bar stops.

Hycam

Square shaped timing pulses on one side, verticle event bar on other side.

Back 5 frames from frame where vertical event bar stops.

Stalex

Square shaped timing pulses on one side, verticle event bar on other side.

Back 2 frames from frame where vertical event bar stops.

SIGN CONVENTION

Sign convention for SRL 98 neck load cells and transducers.

Compression (-) on femur load cells and load cells in barrier face.

Neck Transducer Notation

3 channel neck transducer

F_x (shear force)	(+) head translating forward
	(-) head translating rearward
F_z (axial force)	(+) tension on neck
	(-) compression on neck
M_y (moment)	(+) forward rotation about neck (chin to thorax, flexion)
	(-) rearward rotation about neck (back of head to spine, extension)

6 channel neck transducers

F_x (shear force)	(+) same as 3 channel transducer
	(-) same as 3 channel transducer
F_y (latereal force)	(+) head translating to left relative to top of neck
	(-) head translating to right relative to top of neck
F_z (axial force)	(+) same as 3 channel transducer
	(-) same as 3 channel transducer
M_x (moment)	(+) head rotation toward right shoulder
	(-) head rotation toward left shoulder
M_y (moment)	(+) same as 3 channel transducer
	(-) same as 3 channel transducer
M_z (moment)	(+) chin rotation to left shoulder
	(-) chin rotation to right shoulder

All other channels in dummies or vehicle are to follow right hand rule.

(+) Forward	X
(+) Left	Y
(+) Up	Z
(+) Pitch Rate (nose down)	

SIGN CONVENTION CONTD

Knee loads are measured along a line between the knee pivot and the ankle pivot.

F_z (axial force) (+) tension
 (-) compression

Tibia Moments

M_x (moment about X) (+) tibia rotation to dummy's left
 (-) tibia rotation to dummy's right

M_y (moment about Y) (+) tibia rotation rearward
 (-) tibia rotation forward

Ankle Loads

F_y (force in Y dir.) (+) ankle translation to dummy's left
 (-) ankle translation to dummy's right

F_z (force in Z dir.) (+) tension
 (-) compression

Ankle Moments

M_x (moment about X) (+) ankle rotation to dummy's left
 (-) ankle rotation to dummy's right

FILTERING DATA

J211 SAE

Vehicle structural accelerations Class 60

Occupant

Head Accelerometer Class 1000

Chest Accelerometer Class 180

Chest Deflection Class 180

Femur Force Class 600

Pelvis Accelerometer Class 180

Lower Leg Class 600