

EVALUATION OF NHTSA MODIFIED
VOLKSWAGEN RABBITS

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MAR 6 - 1985

MDB-TO-CAR SIDE IMPACT TEST OF
A 19⁰ CRABBED MOVING DEFORMABLE BARRIER
TO A 1976 VOLKSWAGEN RABBIT
AT 34.4 MPH

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FINAL REPORT
NOVEMBER 1983

PREPARED FOR:
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16. Abstract This test report documents one of a series of twelve crash tests to evaluate the NHTSA's Modified Volkswagen Rabbits. Testing was conducted on a 1976 Volkswagen Rabbit 2-door hatchback with structural modification designated as Optimized at the TRCO Crash Test Facility, East Liberty, Ohio. The test vehicle was impacted on the left side by a moving deformable barrier, crabbled to 19 ⁰ , at 34.4 mph. Occupant responses of two side impact dummies were measured. One dummy was located in the driver's designated seating position and one was located in the left rear seating position. The test date was October 19, 1983 and the ambient temperature was 56 ⁰ F.			
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METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures
 Symbol When You Know Multiply by To Find Symbol

I. LENGTH		
in	inches	2.5 centimeters
ft	feet	30 centimeters
yd	yards	0.9 meters
mi	miles	1.6 kilometers
AREA		
in ²	square inches	6.5 square centimeters
ft ²	square feet	0.09 square meters
yd ²	square yards	0.8 square meters
mi ²	square miles	2.6 square kilometers
ac	acres	0.4 hectares
MASS (weight)		
oz	ounces	28 grams
lb	pounds	0.45 kilograms
	short tons	0.9 metric ton
	(2000 lb)	

VOLUME		
tsp	teaspoons	5 milliliters
Tbsp	tablespoons	15 milliliters
in ³	cubic inches	16 milliliters
fl oz	fluid ounces	30 milliliters
c	cups	0.24 liters
pt	pints	0.47 liters
qt	quarts	0.95 liters
gal	gallons	3.8 liters
ft ³	cubic feet	0.03 cubic meters
yd ³	cubic yards	0.76 cubic meters

TEMPERATURE (exact)		
°F	degrees Fahrenheit	5/9 (after subtracting 32)
°C	degrees Celsius	

Approximate Conversions from Metric Measures
 Symbol When You Know Multiply by To Find Symbol

I. LENGTH		
mm	millimeters	0.04 inches
cm	centimeters	0.4 inches
m	meters	3.3 feet
m	meters	1.1 yards
km	kilometers	0.6 miles
AREA		
cm ²	square centimeters	0.16 square inches
m ²	square meters	1.2 square yards
km ²	square kilometers	0.4 square miles
ha	hectares	2.5 acres
	(10 000 m ²)	

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

VOLUME		
mL	milliliters	0.03 fluid ounces
mL	milliliters	0.06 cubic inches
L	liters	2.1 pints
L	liters	1.06 quarts
L	liters	0.26 gallons
m ³	cubic meters	35 cubic feet
m ³	cubic meters	1.3 cubic yards

TEMPERATURE (exact)		
°C	degrees Celsius	9/5 (then degrees add 32) Fahrenheit
°F	degrees Fahrenheit	

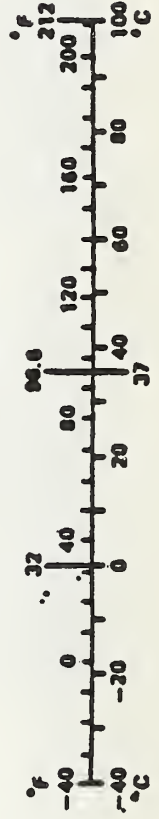
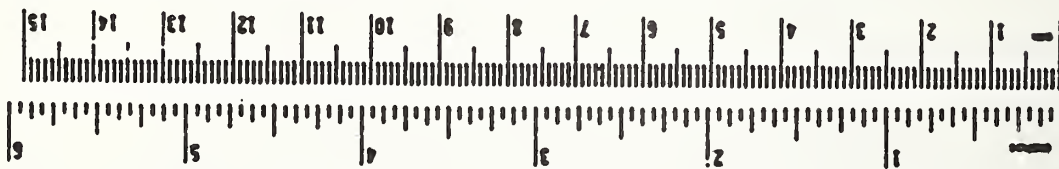


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SECTION 1.0
PURPOSE AND INTRODUCTION

PURPOSE

The main purpose of this test was to evaluate the NHTSA fleet of modified Volkswagen Rabbits with and without padding. The vehicle was tested using conditions not currently contained in a Federal Motor Vehicle Safety Standard.

INTRODUCTION

A stationary 1976 Volkswagen Rabbit 2-door hatchback was impacted on the left side by a Moving Deformable Barrier (MDB) on October 19, 1983. The test was to simulate an intersection collision with the striking vehicle traveling at 26 mph and the struck vehicle traveling at 13 mph. The orientation angle of the striking vehicle was 60° counterclockwise with respect to the longitudinal axis of the struck vehicle. The impact point was to be 37 inches forward of the vehicle center of gravity which is defined by accident investigation to be the midpoint of the wheelbase.

To simulate this collision, the MDB was to be towed into the stationary Volkswagen Rabbit at 34.4 mph with the MDB's wheels crabbed clockwise to 19°. The actual test speed was 34.4 mph and the actual impact point was 38.5 inches forward of the midpoint of the Volkswagen Rabbit's wheelbase.

The vehicle was structurally modified to the level designated "Optimized". The driver door and left rear occupant wall were unpadded.

Section 2 contains General Test and Vehicle Parameter Data. Section 3 contains data required by R & D. Appendix A contains pre-test and post-test vehicle and dummy photographs. Appendix B contains Data Plots. Appendix C contains Dummy Certification Data.

SECTION 2.0
GENERAL TEST AND VEHICLE PARAMETER DATA

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

TEST VEHICLE INFORMATION

VEHICLE MANUFACTURER: Volkswagenwerk AG

MAKE/MODEL: Volkswagen Rabbit

VIN: 1763165017

BODY STYLE: 2-Door Hatchback

MODEL YEAR: 1976

NHTSA NO.: R & D

COLOR: Green

ENGINE DATA: TYPE: Transverse

CYLINDERS: 4

DISPLACEMENT 97 CID

TRANSMISSION DATA: 3 Speed Automatic

DATE VEHICLE RECEIVED: 10/3/83

ODOMETER READING: 35741

DEALER'S NAME AND ADDRESS: NA

ACCESSORIES:

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

REMARKS:

1. IS THE VEHICLE STOCK THROUGHOUT? No - Structurally optimized modification
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: Volkswagenwerk AG

DATE OF MANUFACTURE: 3/76

GVWR: 2777 LBS.,

GAWR: FRONT 1609 LBS., REAR 1276 LBS.

VEHICLE TIRE DATA

RECOMMENDED COLD TIRE PRESSURE: FRONT 27 psi; REAR 27 psi

TIRES ON VEHICLE (MFG. & LINE, SIZE): Front - Uniroyal Rallye 280 - 155SR13
Rear - Uniroyal Rallye 180 - 155SR13

BIAS PLY, BELTED, OR RADIAL: Radial

PLY RATING: 3

IS SPARE TIRE "SPACE SAVER"? No

IS SPARE TIRE STANDARD EQUIPMENT? Yes

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

RIGHT FRONT	620	LBS.	RIGHT REAR	350	LBS.
LEFT FRONT	650	LBS.	LEFT REAR	370	LBS.
TOTAL FRONT WEIGHT	1270	LBS.	(63.8 % OF TOTAL VEHICLE WEIGHT)		
TOTAL REAR WEIGHT	720	LBS.	(36.2 % OF TOTAL VEHICLE WEIGHT)		
TOTAL DELIVERED WEIGHT	1990	LBS.			

VEHICLE ATTITUDE (ALL DIMENSIONS IN INCHES):

DELIVERED ATTITUDE:	RF 25 13/16	;LF 25 13/16	;RR 25 7/16	;LR 25 1/8
PRE-TEST ATTITUDE:	RF 24 3/8	;LF 24 3/8	;RR 22 7/8	;LR 22 7/8
POST-TEST ATTITUDE:	RF 22 1/8	;LF 24 7/8	;RR 23 7/8	;LR 24 1/8

WEIGHT OF TEST VEHICLE WITH REQUIRED DUMMIES AND 147 LBS. CARGO:

RIGHT FRONT	675	LBS.	RIGHT REAR	535	LBS.
LEFT FRONT	745	LBS.	LEFT REAR	530	LBS.
TOTAL FRONT WEIGHT	1420	LBS.	(57.1 % OF TOTAL VEHICLE WEIGHT)		
TOTAL REAR WEIGHT	1065	LBS.	(42.9 % OF TOTAL VEHICLE WEIGHT)		
TOTAL TEST WEIGHT	2485	LBS.			

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

TEST FLUID DATA

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

KINEMATIC VISCOSITY: 0.99 CENTISTOKES

"USEABLE" CAPACITY*: 10.5 GALLONS

TEST VOLUME: 3.0 GALLONS

FUEL SYSTEM CAPACITY (DATA FROM OWNERS MANUAL): 10.0 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?

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

VEHICLE LOAD (UP TO CAPACITY): FRONT 27 psi; REAR 27 psi

RECOMMENDED TIRE SIZE: 155 SR 13 LOAD RANGE X B, C,

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

NUMBER OF OCCUPANTS (DESIGNATED SEATING CAPACITY): 2 FRONT

CARGO LOAD 142 LBS. 2 REAR

TOTAL 742 LBS. 4 TOTAL

TOTAL 742 LBS.

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

TEST CONDITIONS

TEST NUMBER: 831019

DATE OF TEST: October 19, 1983

TIME OF TEST: 13:00

WIND VELOCITY: 4-8 mph 54⁰ NE

HUMIDITY: NA

AMBIENT TEMPERATURE AT IMPACT AREA: 56⁰ F

TEMPERATURE IN OCCUPANT COMPARTMENT: 68⁰ F

SUBJECT VEHICLE DATA

	<u>ACTUAL</u>	<u>INTENDED</u>
VEHICLE TEST WEIGHT (LBS.)	2485	2480
MDB TEST WEIGHT (LBS.)	2990	3000
MDB VELOCITY (MPH)*	34.4	34.4
IMPACT POINT (INCHES)**	38.5	37

DUMMIES

	<u>DRIVER</u>	<u>MIDDLE PASSENGER</u>	<u>RT. FRONT PASSENGER</u>	<u>LEFT REAR PASSENGER</u>	<u>RT. REAR PASSENGER</u>
TYPE:	SID			SID	
SERIAL NO.:	06			UC2	
INSTRUMENTATION:					
HEAD ACCEL.:	Yes			Yes	
CHEST ACCEL.:	Yes (Upper/Lower)			Yes (Upper/Lower)	
FEMUR L.C.'S:	No			No	
OTHER:	Pelvis/Ribs			Pelvis/Ribs	

RESTRAINT SYSTEM: Both dummies were unrestrained

* As measured over final one foot of travel.

** As measured forward of the midpoint of the Volkswagen's wheelbase.

GENERAL TEST AND VEHICLE PARAMETER DATA

VISIBLE DUMMY CONTACT POINTS:

	DRIVER #	PASSENGER #
Head	<u>Side window</u>	<u>Side header, side window</u>
Chest	<u>Side wall</u>	<u>Side wall</u>
Abdomen	<u>Side wall</u>	<u>Side wall</u>
Left Knee	<u>Driver's door panel</u>	<u>Left quarter panel</u>
Right Knee	<u>Left knee</u>	<u>Left knee</u>

DOOR OPENING:

	LEFT	RIGHT
Front	<u>Tools required</u>	<u>Easy</u>
Rear	<u>DNA</u>	<u>DNA</u>

SEAT MOVEMENT:

	SEAT BACK FAILURE	SEAT SHIFT
Front	<u>No</u>	<u>Driver's seat separated</u> from mounts
Rear	<u>No</u>	<u>No</u>

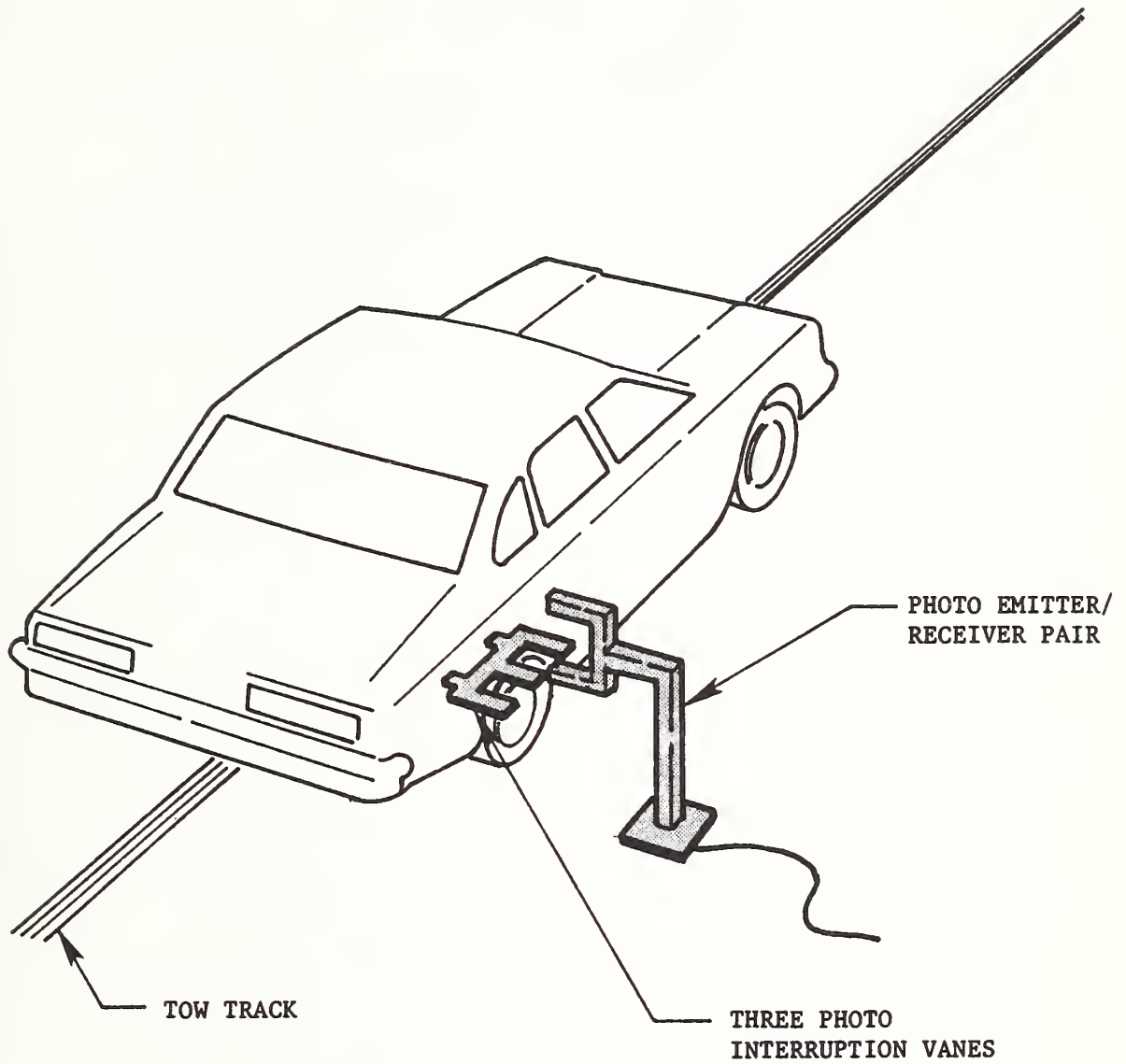
GLAZING DAMAGE:

Left side of windshield cracked, left side
windows separated intact, no backlight damage.

OTHER NOTABLE IMPACT EFFECTS:

Driver's left leg severed at knee.

IMPACT VELOCITY MEASUREMENT SYSTEM



The final vane is located two inches before impact.

The vanes have one foot spacing.

VEHICLE TEST WEIGHT CALCULATION

$$\begin{aligned} \text{Test Weight} &= \text{Unloaded Delivered Weight} + \\ &\quad \text{Number of Dummies} \times 174 \text{ lbs.} + \\ &\quad \text{Cargo Weight} \\ &= 1990 + 2 \times 174 + 142 \text{ lbs.} \\ &= 2480 \text{ lbs.} \end{aligned}$$

To achieve test weight, the exhaust system and battery were removed and 3 gallons of Stoddard Solvent were added in the fuel tank. The weight of the test vehicle was measured by placing each wheel on a Loadmeter Corporation Hiway Loadometer.

SECTION 3.0
DATA REQUIRED BY R&D

The following pages are included in this section:

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

DUMMY TEMPERATURE CONTROL AND POSITIONING

The vehicle was kept inside the temperature controlled crash test building until approximately 2 hours prior to the test. Temperature inside the vehicle and ambient temperature at the crash area were recorded. Dummy temperature while outside the crash test building was maintained portably until approximately 1 minute prior to the test.

The following table summarizes the steps taken to position the instrumented, calibrated dummies in the test vehicle.

DUMMY PLACEMENT AND POSITIONING

SIDE IMPACT
DUMMY*

DRIVER DSP

REAR PASSENGER DSP

HEAD Surface of transverse instrument mounting platform is as horizontal as possible without inducing torso movement & midsagittal plane falls in longitudinal plane.

Surface of transverse instrument mounting platform is as horizontal as possible without inducing torso movement & midsagittal plane falls in longitudinal plane.

UPPER TORSO Placed against seat back. Midsagittal plane is vertical and centered on bucket seat.

Placed against seat back. Midsagittal plane is vertical and contained in the same longitudinal plane as the driver's midsagittal plane.

LOWER TORSO Midsagittal plane is vertical and centered on bucket seat.

Midsagittal plane is vertical and contained in the same longitudinal plane as the driver's midsagittal plane.

UPPER LEGS (thighs or femurs) Placed against seat cushion. Planes defined by femur and tibia centerlines are as close as possible to vertical.

Placed against seat cushion. Planes defined by femur and tibia centerlines are as close as possible to vertical.

KNEES Knees set 14.5" apart between pivot bolt head outer surfaces. Outer surface of right knee pivot bolt is 8.6" from midsagittal plane of dummy. Outer surface of left knee pivot bolt is 5.9" from midsagittal plane of dummy.

Located so that planes defined by femur and tibia centerlines are as close as possible to vertical.

LOWER LEGS Plane defined by femur and tibia centerlines are as close as possible to vertical longitudinal plane.

Plane defined by femur and tibia centerlines are as close as possible to vertical longitudinal plane.

RIGHT FOOT Placed on undepressed accelerator pedal -- rearmost point of heel on floorplan in plane of pedal.

Centerline falls in vertical longitudinal plane. Placed on floor as far forward as possible without front seat interference.

LEFT FOOT ** Placed on toeboard -- rearmost point of heel on floorpan as close as possible to intersection of toeboard and floorpan. Centerline falls in vertical longitudinal plane.

Centerline falls in vertical longitudinal plane. Placed on floor as far forward as possible without front seat interference.

*NOTE: THE SIDE IMPACT DUMMY DOES NOT INCLUDE ARMS.

**Due to structural modifications, the left foot was turned inward.

DUMMY IN-VEHICLE POSITION RECORDING SHEET

VEHICLE NHTSA NO. R&D

MFR./MAKE/MODEL: Volkswagen Rabbit

FRONT SEAT TYPE: BENCH
X BUCKET
SPLIT BENCH

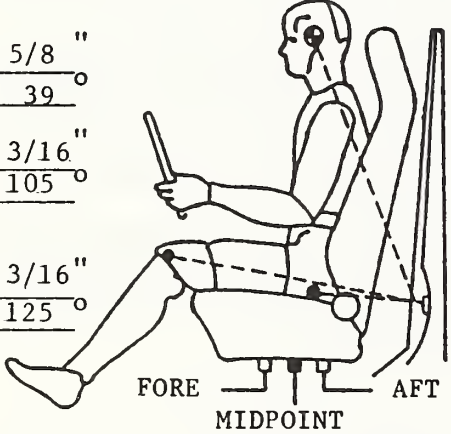
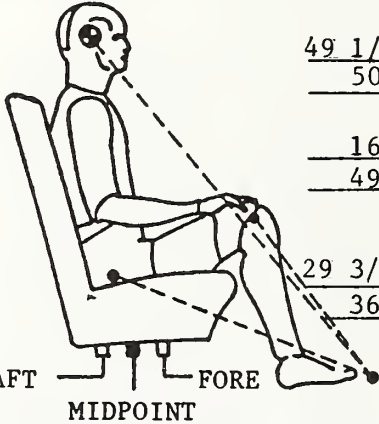
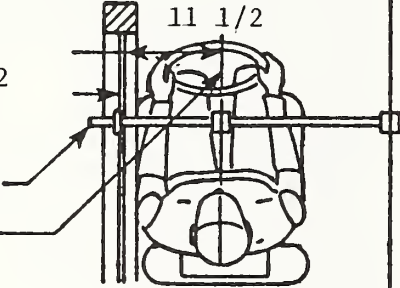
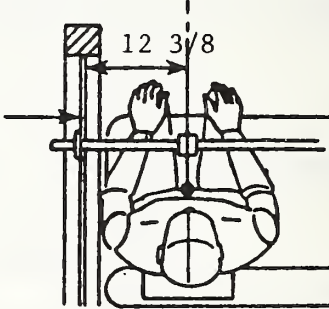
ADJUSTER TYPE: X MANUAL
POWER

BUCKET SEAT BACK TYPE: FIXED
X ADJUSTABLE

TECHNICIANS:
 1. J. Kokoruda
 2. M. Garrison
 3. N. Echeverria

POSITIONING DATE: 10-19-83

AMBIENT TEMP.: 66° F. TIME: 7:30

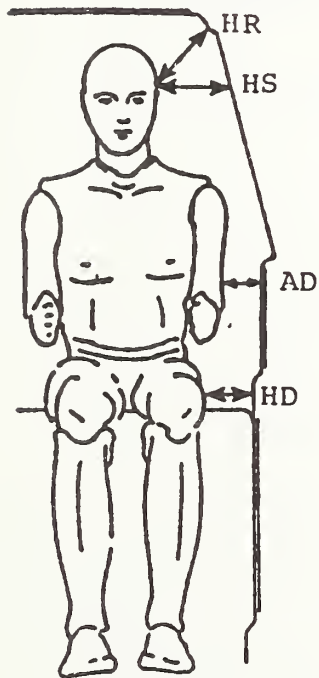
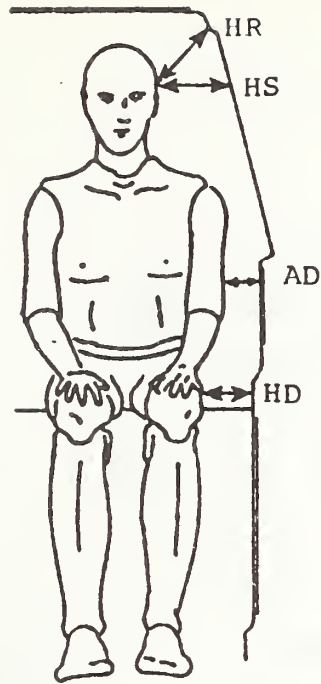
<p>DRIVER DUMMY # 06</p>  <p>HEAD <u>22 5/8</u> " TARGET* <u>39</u> °</p> <p>KNEE <u>31 3/16</u> " JOINT <u>105</u> °</p> <p>APPROX. "H" <u>18 3/16</u> " POINT <u>125</u> °</p> <p>FORE MIDPOINT AFT</p>	<p>REAR PASSENGER DUMMY # U02</p>  <p><u>49 1/16</u> "HEAD <u>50</u> °TARGET**</p> <p><u>16</u> "KNEE <u>49</u> °JOINT</p> <p>APPROX. "H" <u>29 3/8</u> " POINT † <u>36</u> °</p> <p>AFT MIDPOINT FORE</p>
<p>DOOR GLASS HEIGHT*** <u>9 1/2</u></p>  <p><u>11 1/2</u></p> <p>LATERAL BAR ADJUSTABLE POINTER</p> <p>DRIVER DUMMY # 06</p>	<p>DOOR GLASS HEIGHT <u>DNA</u></p>  <p><u>12 3/8</u></p> <p>PASSENGER DUMMY # U02</p>

*All driver dummy dimensions referenced to top of striker bolt and all angles referenced to vertical.

**All passenger dummy dimensions referenced to front seat back latch bolt with front seat in mid-position and all angles referenced to vertical.

***Door glass height is equal on the right and left side of vehicle at dummy nose level.

† Due to structural modifications interference, the "H" point location was estimated

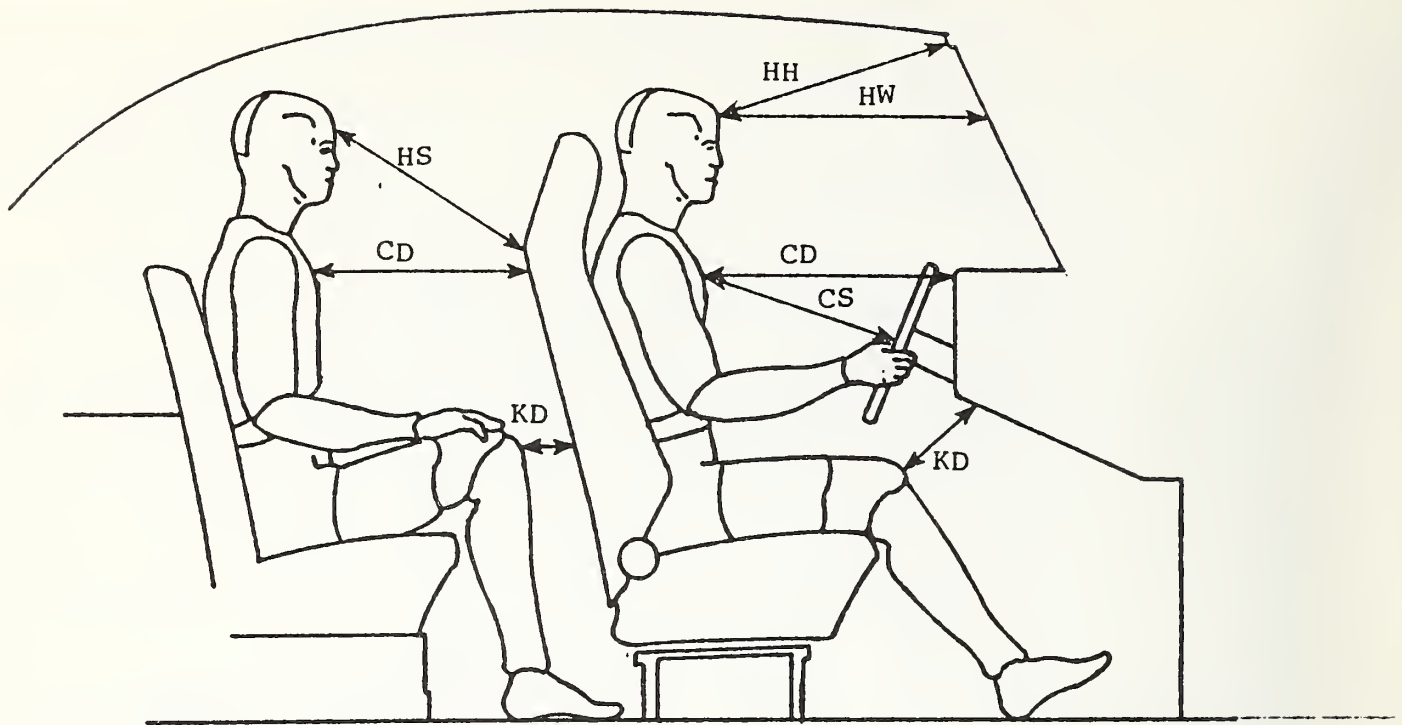


06 *U02

	DRIVER	PASSENGER
HR	5 1/16	8 11/16
HS	6 1/4	9 5/8
AD	3 3/4	4 1/2
HD	5 5/8	6 1/4

NOTE: ALL MEASUREMENTS IN INCHES

DUMMY LATERAL CLEARANCE DIMENSIONS



06

U02

	DRIVER	PASSENGER
HH	12 1/4	DNA
HW	16 3/4	DNA
HS	DNA	25 13/16
CD	20 3/16	19 1/2
CS	11 1/8	DNA
KDL	9 1/4	4 3/8
KDR	9 1/2	3 13/16

NOTE: ALL MEASUREMENTS IN INCHES

DUMMY LONGITUDINAL CLEARANCE DIMENSIONS
3-6

DUMMY KINEMATIC SUMMARY

DRIVER

During impact, the dummy's torso contacted the driver's door and the head contacted the driver's side window. The dummy rebounded across the vehicle and its buttocks passed through the front passenger's side window. The dummy came to rest laying across the front passenger's seat back with its buttocks resting on the passenger's window sill.

PASSENGER

During impact, the dummy's torso contacted the left rear occupant side wall and the head contacted the side window and side header. The dummy rebounded across the vehicle with its feet trapped beneath the driver's seat. Its head and left shoulder contacted the right rear side window sill. The dummy rebounded slowly and eventually came to rest with its head resting on top of the right rear window sill.

VEHICLE EXTERIOR PROFILES AND STATIC CRUSH
 ZERO DISTANCE AT PROJECTED IMPACT POINT*

LOCATION	HEIGHT (in)	6	0	6	12	18	24	30	36	42	48	54	60	66	72	78	
		PRE-TEST PROFILE (DISTANCE IN INCHES FROM REFERENCE PLANE**)															
Axle Height	9.0	X	X	20.3	20.3	20.3	20.3	20.4	20.4	20.5	20.5	20.6	20.8	20.8	X	X	
H-Point	16.0	X	X	18.0	18.1	18.0	18.1	18.1	18.2	18.3	18.3	18.4	18.4	18.5	17.4	X	
Mid Door	22.5	16.3	17.8	17.7	17.8	17.8	17.8	17.8	17.9	17.9	17.9	18.0	18.1	18.1	18.3	16.8	
Window Sill	33.0	19.9	19.5	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.4	19.5	19.5	19.6	19.8	19.9	
Window Top	51.3	X	X	X	X	X	29.3	27.9	26.8	26.5	26.4	26.4	26.4	26.8	27.3	28.3	

POST-TEST PROFILE (DISTANCE IN INCHES FROM REFERENCE PLANE**)

Axle Height	9.0	X	X	21.9	23.8	23.6	23.4	23.3	23.1	22.8	22.6	22.2	21.3	20.9	X	X
H-Point	16.0	X	X	24.9	29.8	31.8	32.9	32.8	31.8	30.1	27.8	25.4	23.4	21.4	18.1	X
Mid Door	22.5	21.1	22.9	23.3	28.2	30.0	31.2	30.6	29.6	28.1	26.6	24.9	22.9	21.3	19.4	16.9
Window Sill	33.0	21.1	21.4	22.1	25.8	28.5	30.4	30.6	28.8	27.0	25.0	24.9	22.8	21.5	20.9	20.6
Window Top	51.3	X	X	X	X	X	31.5	30.1	28.9	28.6	28.6	28.4	28.3	28.4	28.9	29.8

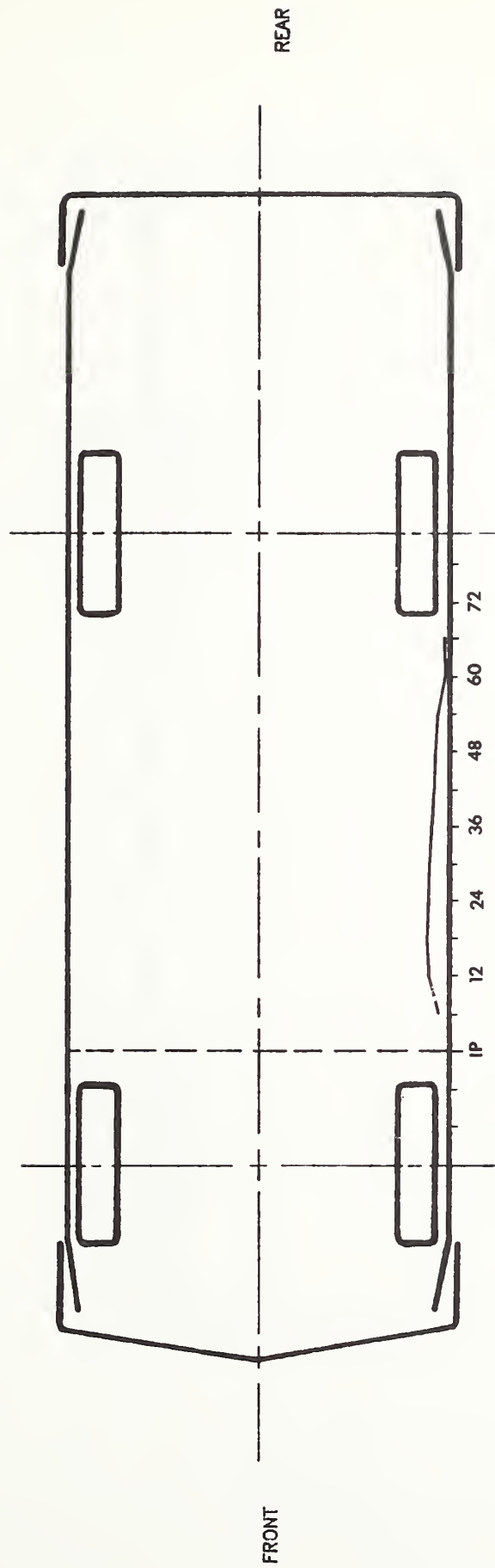
STATIC CRUSH (IN)

Axle Height	9.0	X	X	1.6	3.5	3.3	3.1	2.9	2.7	2.3	2.1	1.6	0.5	0.1	X	X
H-Point	16.0	X	X	6.9	11.7	13.8	14.9	14.7	13.7	11.9	9.5	7.0	5.0	2.9	0.7	X
Mid Door	22.5	4.8	5.1	5.6	10.4	12.2	13.4	12.8	11.8	10.2	8.7	6.9	4.8	3.2	1.1	0.1
Window Sill	33.0	1.2	1.9	2.8	6.5	9.2	11.1	11.3	9.5	7.7	5.6	5.4	3.3	1.9	1.1	0.7
Window Top	51.3	X	X	X	X	X	2.2	2.2	2.1	2.1	2.2	2.0	1.9	1.6	1.6	1.5

* Projected impact point is 37 inches forward of driver's side wheelbase midpoint. Column readings are front to rear from left to right.

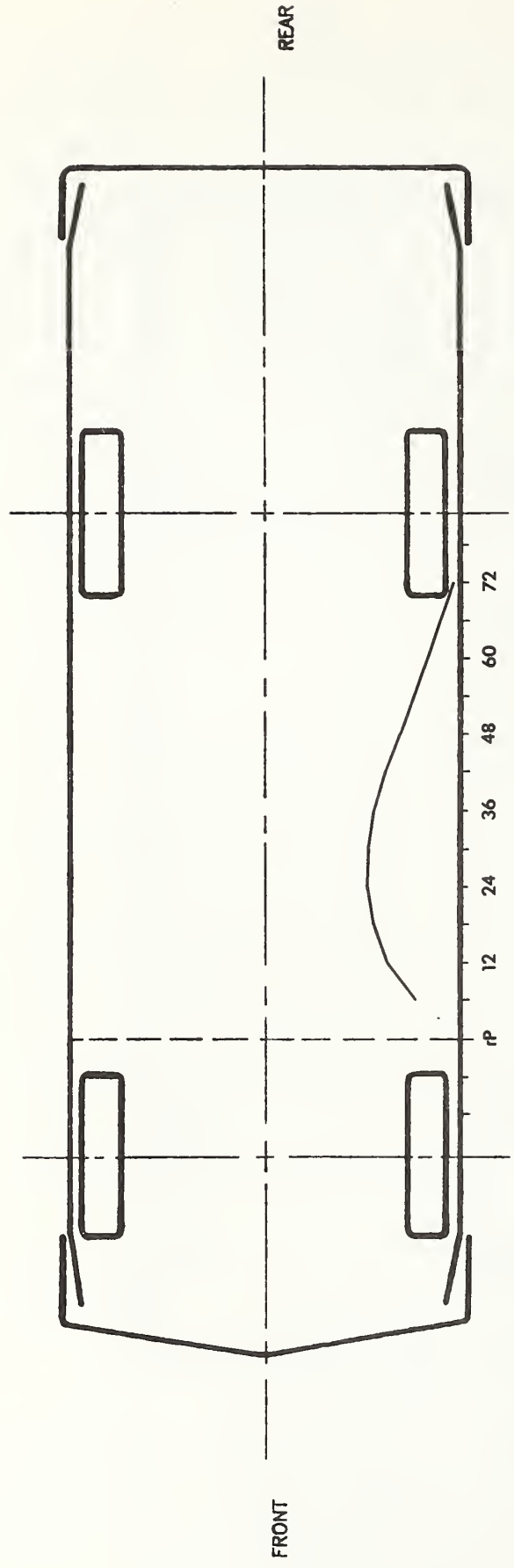
** Reference plane is parallel to and 48 inches from the vehicle longitudinal centerline.

VEHICLE EXTERIOR STATIC CRUSH PROFILE



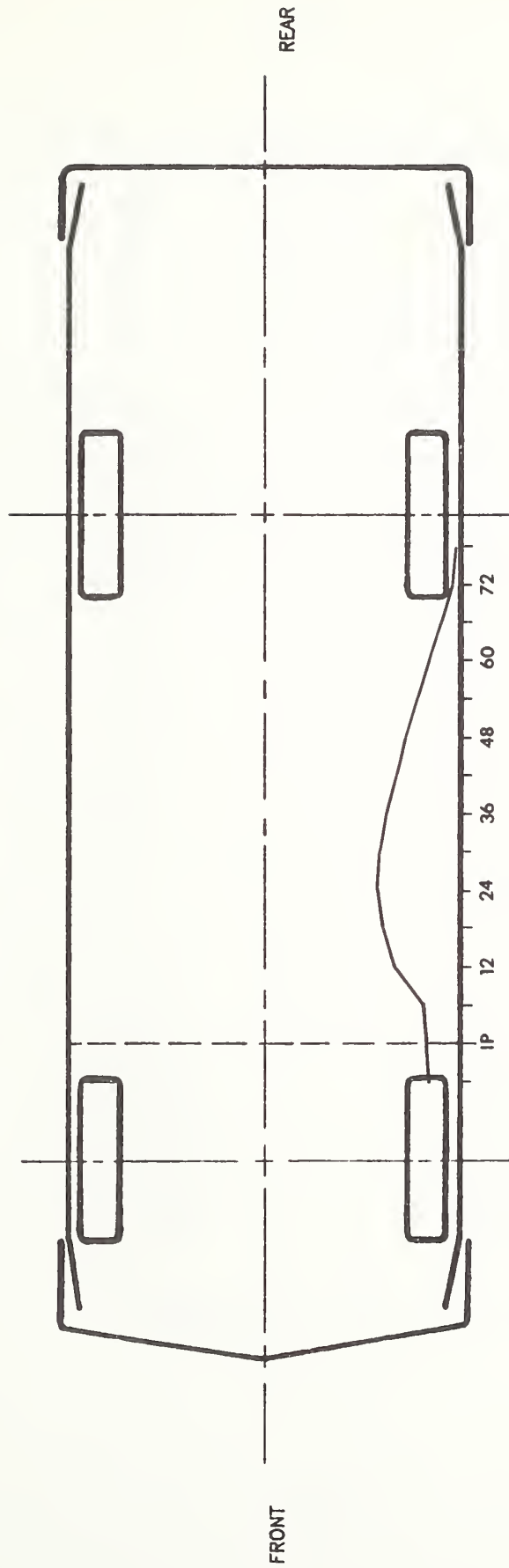
PROFILE LEVEL EQUALS AXLE HEIGHT
IP EQUALS PROJECTED IMPACT POINT

VEHICLE EXTERIOR STATIC CRUSH PROFILE



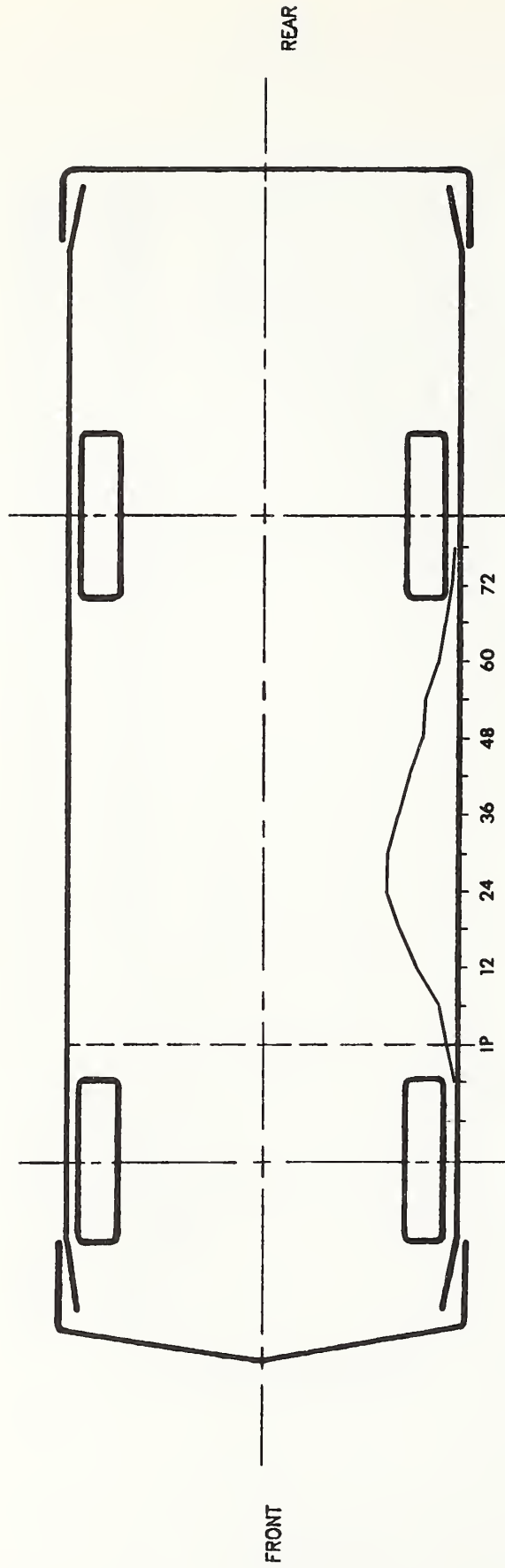
PROFILE LEVEL EQUALS H-POINT HEIGHT
IP EQUALS PROJECTED IMPACT POINT

VEHICLE EXTERIOR STATIC CRUSH PROFILE



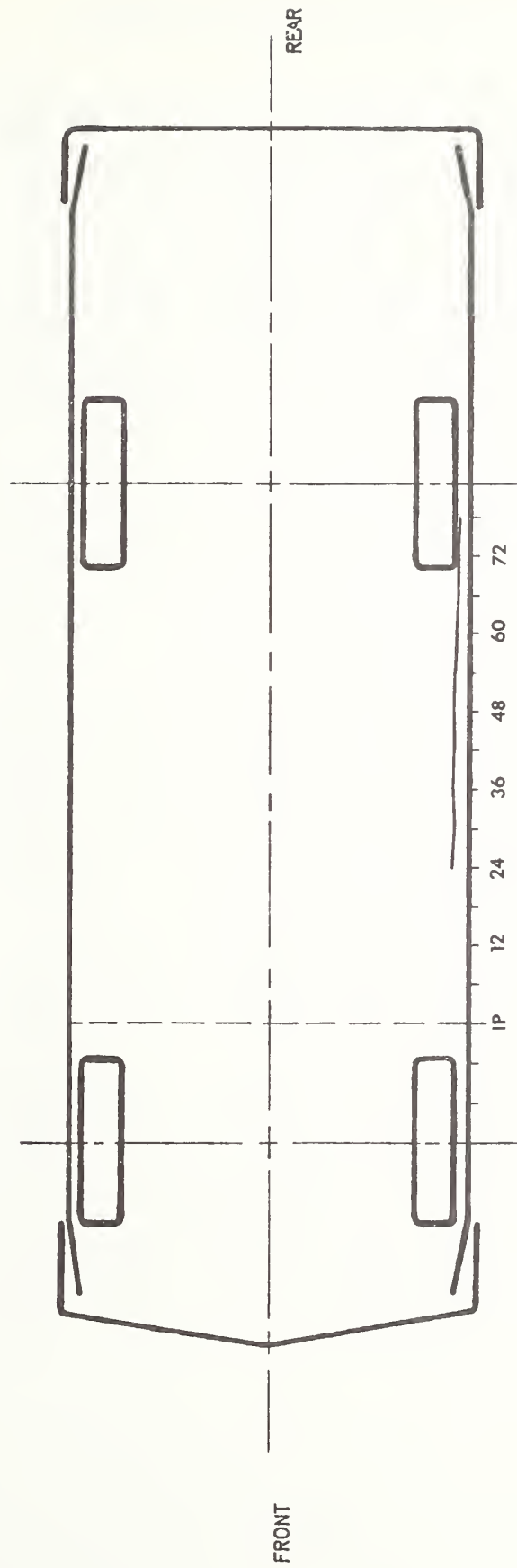
PROFILE LEVEL EQUALS MID-DOOR HEIGHT
IP EQUALS PROJECTED IMPACT POINT

VEHICLE EXTERIOR STATIC CRUSH PROFILE



PROFILE LEVEL EQUALS WINDOW SILL HEIGHT
IP EQUALS PROJECTED IMPACT POINT

VEHICLE EXTERIOR STATIC CRUSH PROFILE



PROFILE LEVEL EQUALS WINDOW TOP HEIGHT
IP EQUALS PROJECTED IMPACT POINT

SIDE IMPACT DUMMY DATA SUMMARY

	DRIVER DUMMY				PASSENGER DUMMY			
	POSITIVE DIRECTION*		NEGATIVE DIRECTION**		POSITIVE DIRECTION*		NEGATIVE DIRECTION**	
	MAX (g)	TIME (msec)	MAX (g)	TIME (msec)	MAX (g)	TIME (msec)	MAX (g)	TIME (msec)
HEAD ACCELERATION								
LONGITUDINAL	9.14	66.50	21.02	89.50	12.38	113.13	33.71	86.50
LATERAL	47.57	81.25	14.31	65.00	78.33	86.50	12.39	168.00
VERTICAL	9.22	55.00	62.05	91.00	28.67	118.38	23.95	85.25
RESULTANT		67.15	à 89.88			87.90	à 86.50	
HIC	373.04	from 76.13 to 98.63			283.04	from 83.75 to 91.00		
CHEST ACCELERATION								
UPPER SPINE								
LONGITUDINAL	16.28	77.50	36.20	67.50	3.97	327.50	21.76	118.75
LATERAL (P)***	114.71	68.75	16.85	61.87	45.48	98.12	8.68	143.75
LATERAL (R)***	118.37	68.75	15.48	61.87	46.08	98.12	8.90	143.13
VERTICAL	11.07	53.12	25.71	66.25	8.12	81.25	10.17	121.25
RESULTANT (P)		120.91	à 68.13			48.42	à 98.75	
RESULTANT (R)		124.45	à 68.13			49.12	à 98.75	
DELTA V (MPH)****		21.6	à 84.38 (P)			19.2	à 124.38 (P)	
		22.9	à 84.38 (R)			19.5	à 124.38 (R)	
LOWER SPINE								
LONGITUDINAL	32.14	75.00	21.31	63.75	5.13	221.88	21.58	116.88
LATERAL (P)	105.09	65.63	37.40	87.50	33.93	97.50	8.16	138.13
LATERAL (R)	107.86	65.63	36.77	88.13	33.89	97.50	7.76	136.88
VERTICAL	15.34	70.63	6.59	103.13	8.51	95.63	7.41	121.25
RESULTANT (P)		106.47	à 65.63			35.72	à 96.88	
RESULTANT (R)		109.20	à 65.63			35.59	à 97.50	
DELTA V (MPH)		31.6	à 80.63 (P)			19.1	à 121.25 (P)	
		32.4	à 80.63 (R)			19.5	à 121.87 (R)	
LEFT UPPER RIB								
LATERAL (P)	143.32	63.13	11.78	68.13	50.58	103.13	11.32	169.38
LATERAL (R)	126.99	63.13	10.84	108.75	49.55	103.13	13.04	170.00
DELTA V (MPH)		25.7	à 98.13 (P)			22.0	à 181.25 (P)	
		24.8	à 99.38 (R)			22.0	à 180.62 (R)	
LEFT LOWER RIB								
LATERAL (P)	172.87	61.25	28.29	86.88	65.56	104.38	14.86	170.63
LATERAL (R)	158.98	61.25	30.03	86.88	65.96	104.38	15.04	98.75
DELTA V (MPH)		28.2	à 83.75 (P)			22.6	à 189.38 (P)	
		29.2	à 83.75 (R)			21.8	à 188.75 (R)	
PELVIS ACCELERATION								
LONGITUDINAL	10.70	66.50	46.23	60.13	5.70	137.88	72.33	67.38
LATERAL	137.82	52.88	16.51	45.13	45.61	94.25	28.47	66.88
VERTICAL	33.71	65.63	21.14	67.88	11.99	75.38	7.95	72.88
RESULTANT		139.46	à 52.88			76.58	à 67.38	
DELTA V (MPH)		30.0	à 138.63			20.1	à 142.13	

SIDE IMPACT DUMMY DATA SUMMARY CONTD

	DRIVER DUMMY				PASSENGER DUMMY			
	POSITIVE DIRECTION*		NEGATIVE DIRECTION**		POSITIVE DIRECTION*		NEGATIVE DIRECTION**	
	MAX (in)	TIME (msec)	MAX (in)	TIME (msec)	MAX (in)	TIME (msec)	MAX (in)	TIME (msec)
RIB DEFLECTION †	0.10	267.88	1.80	127.75	0.06	168.50	1.60	119.25

* LONGITUDINAL: FORWARD
 LATERAL: RIGHTWARD
 VERTICAL: UPWARD

**LONGITUDINAL: REARWARD
 LATERAL: LEFTWARD
 VERTICAL: DOWNWARD

*** (P) = Primary Sensor, (R) = Redundant Sensor

**** For dummy channels, Delta V is the velocity change at the approximate time of separation from the contact area.

† Compression: Negative

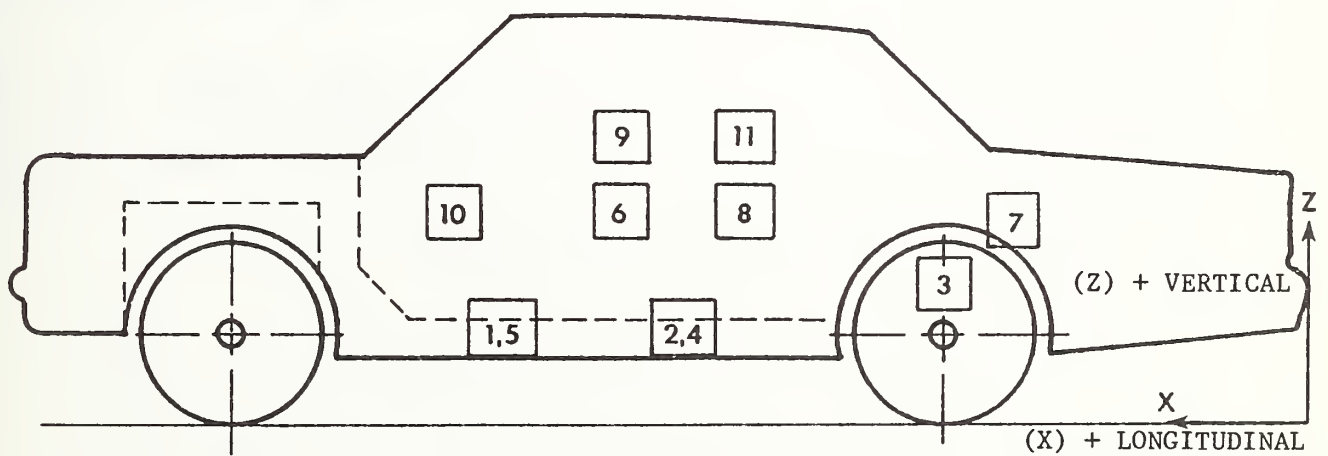
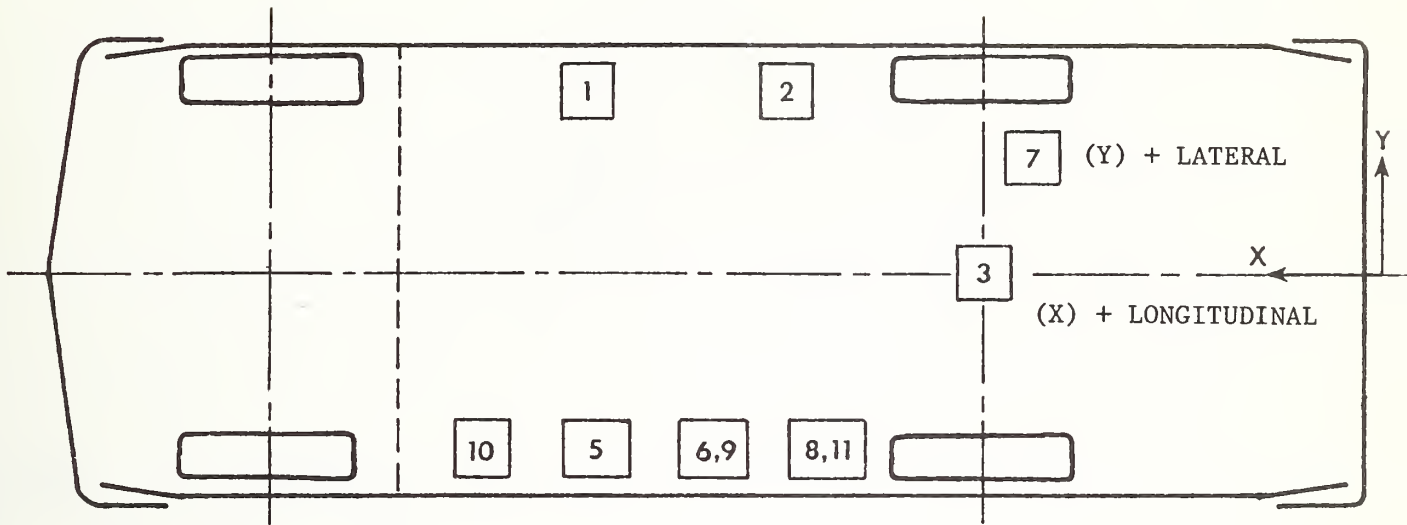
VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

NO.	LOCATION	X*	Y*	Z*	POSITIVE DIRECTION		NEGATIVE DIRECTION	
					MAX (g)	TIME (msec)	MAX (g)	TIME (msec)
1	RIGHT SILL AT FRONT SEAT (LONGITUDINAL)	83.3	23.0	9.5				
	(LATERAL)				1.34	144.13	7.95	18.25
	(VERTICAL)				13.08	61.00	3.73	143.25
	(RESULTANT)				6.12	18.00	4.25	38.63
						14.85	à 16.13	
2	RIGHT SILL AT REAR SEAT (LONGITUDINAL)	61.3	23.5	8.0				
	(LATERAL)				1.49	145.75	8.37	18.25
	(VERTICAL)				14.61	90.38	3.58	144.00
	(RESULTANT)				3.34	101.63	4.22	37.75
						15.02	à 90.25	
3	REAR DECK OVER AXLE (LONGITUDINAL)	32.0	0.0	6.6				
	(LATERAL)				4.78	34.25	10.39	66.00
	(VERTICAL)				19.28	92.38	4.03	159.25
	(RESULTANT)				4.54	106.38	6.73	94.75
						22.28	à 93.50	
4	LEFT SILL AT REAR SEAT (LATERAL)	61.0	-23.0	8.6				
					13.11	75.38	5.82	144.88
5	LEFT SILL AT FRONT SEAT (LATERAL)	83.6	-23.5	9.3				
					39.77	33.00	46.03	43.00
6	LEFT FRONT DOOR CENTERLINE (LATERAL)	81.0	-25.4	23.1				
					119.60	34.38	63.70	45.50
7	RIGHT REAR COMPARTMENT (LONGITUDINAL)	31.0	15.4	13.9				
					2.16	147.25	9.27	18.38
8	MIDREAR OF LEFT FRONT DOOR (LATERAL)	60.8	-25.5	23.4				
					123.05	60.50	64.23	84.63
9	UPPER LEFT FRONT DOOR CENTERLINE (LATERAL)	81.8	-26.0	32.2				
					73.45	61.25	89.28	54.13
10	MIDFRONT OF LEFT FRONT DOOR (LATERAL)	99.5	-25.5	21.8				
					84.80	28.25	44.24	40.13
11	UPPER REAR OF LEFT FRONT DOOR (LATERAL)	70.7	-25.5	32.2				
					117.86	48.75	115.86	54.38

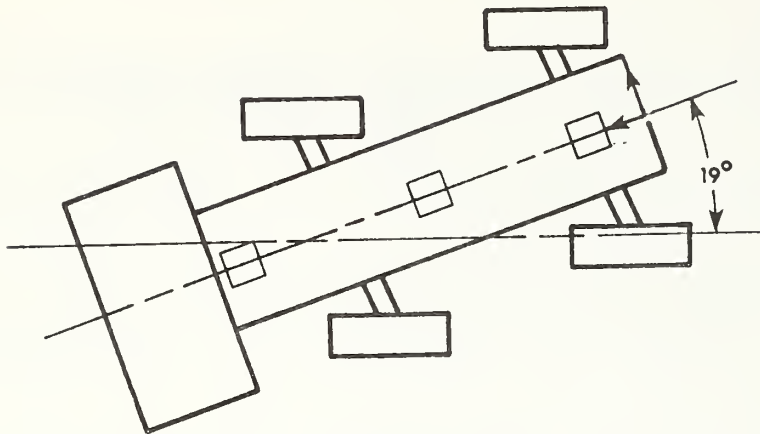
* Reference: X - Rear Bumper (+ Forward), Y - Vehicle Centerline (+ To Right), Z - Ground Level (+ Up)

All measurements of accelerometer locations in inches.

VEHICLE ACCELEROMETER LOCATIONS



MOVING BARRIER ACCELEROMETER LOCATIONS AND DATA SUMMARY



NO.	LOCATION	X*	Y*	Z*	POSITIVE DIRECTION		NEGATIVE DIRECTION	
					MAX (g)	TIME (msec)	MAX (g)	TIME (msec)
1	CENTER OF GRAVITY	74.5	0.0	11.5				
	(LONGITUDINAL)	$\Delta V = -15.1 \text{ mph } \text{à} \text{ } 130.00 \text{ msec}$			0.92	193.88	10.20	70.38
	(LATERAL)	$\Delta V = -1.7 \text{ mph } \text{à} \text{ } 130.00 \text{ msec}$			1.34	86.88	3.04	97.25
	(VERTICAL)				11.96	70.50	11.38	78.75
	(RESULTANT)					15.77	à 70.50	
2	FRONT FRAME MEMBER	130.3	0.0	11.3				
	(LONGITUDINAL)	$\Delta V = -16.0 \text{ mph } \text{à} \text{ } 130.00 \text{ msec}$			1.42	2.13	10.22	71.75
3	REAR FRAME MEMBER	23.3	0.0	11.5				
	(LONGITUDINAL)	$\Delta V = -14.3 \text{ mph } \text{à} \text{ } 130.00 \text{ msec}$			1.36	150.00	9.94	70.88

* Reference: X - Rear Most Point of Frame (+ To Forward), Y - Barrier Centerline (+ To Right), Z - Ground Level (+ To Up)

All measurements of accelerometer locations in inches.

HIGH SPEED CAMERA INFORMATION

CAMERA NO.	LOCATION	TYPE	LENS (mm)	SPEED (fps)	PURPOSE OF CAMERA DATA
1	Overhead	Photosonics 1B	8	745	Vehicle Dynamics
2	Overhead	Photosonics 1B	25	750	Close-up of impact point
3	Onboard MDB	Photosonics 1B	25	505	Close-up of impact point
4	Onboard MDB	Stalex	13	1000	Driver kinematics
5	Ground level - right	Hycam	25	777	Overall view
6	Ground level - left	Photosonics 1B	17	797	Overall view
7	Onboard vehicle	Photosonics 1B	8	802	Driver kinematics - front view
8	Onboard vehicle	Photosonics 1B	8	812	Driver kinematics
9	Onboard vehicle	Photosonics 1B	8	797	Passenger kinematics

NOTE: CAMERAS ARE NUMBERED ACCORDING TO SPLICING SEQUENCE OF FILM.
 (24 fps) REAL TIME MOVIE FILM COVERAGE OF PRE-CRASH, POST-CRASH
 AND CRASH EVENT SPLICED AT START AND END OF FILM.

LOCATIONS OF OFFBOARD HIGH SPEED CAMERAS

CAMERA NO.	X	Y	Z
1	0	0	25'
2	0	0	25'
5	26'4"	60'	45"
6	-19'7"	-11'3"	45"

Origin of Coordinate System is Point of Impact

- +X = Forward with Respect to Striking Vehicle's Velocity Vector
- +Y = Rightward with Respect to Striking Vehicle's Velocity Vector
- +Z = Upward with Respect to Striking Vehicle's Velocity Vector

NON-GOVERNMENT FURNISHED TRANSDUCER INFORMATION

PARAMETER BEING MEASURED	TYPE OF TRANSDUCER	MODEL NUMBER	SERIAL NUMBER	MFGR.	DATE OF LAST CALIBRATION	SENSITIVITY	DESIRED FULL SCALE (ENGR. UNITS)
BOGXG	Accel	4-202-0001	18845	Bell Howell	8/9/83	.236 MV/G	50 G
BOGYG	Accel	4-202-0001	18858	Bell Howell	8/9/83	.2385 MV/G	50 G
BOGZG	Accel	4-202-0001	18857	Bell Howell	8/9/83	.2385 MV/G	50 G
BFCXG	Accel	4-202-0001	18240	Bell Howell	8/9/83	.2385 MV/G	50 G
BRCXG	Accel	4-202-0001	19022	Bell Howell	8/9/83	.221 MV/G	50 G

All dummy and struck vehicle accelerometers were Government Furnished Equipment and were Endevco 2264 Accelerometers.



APPENDIX A
PHOTOGRAPHS



Figure A-1. PRE-TEST OVERALL - VIEW 1

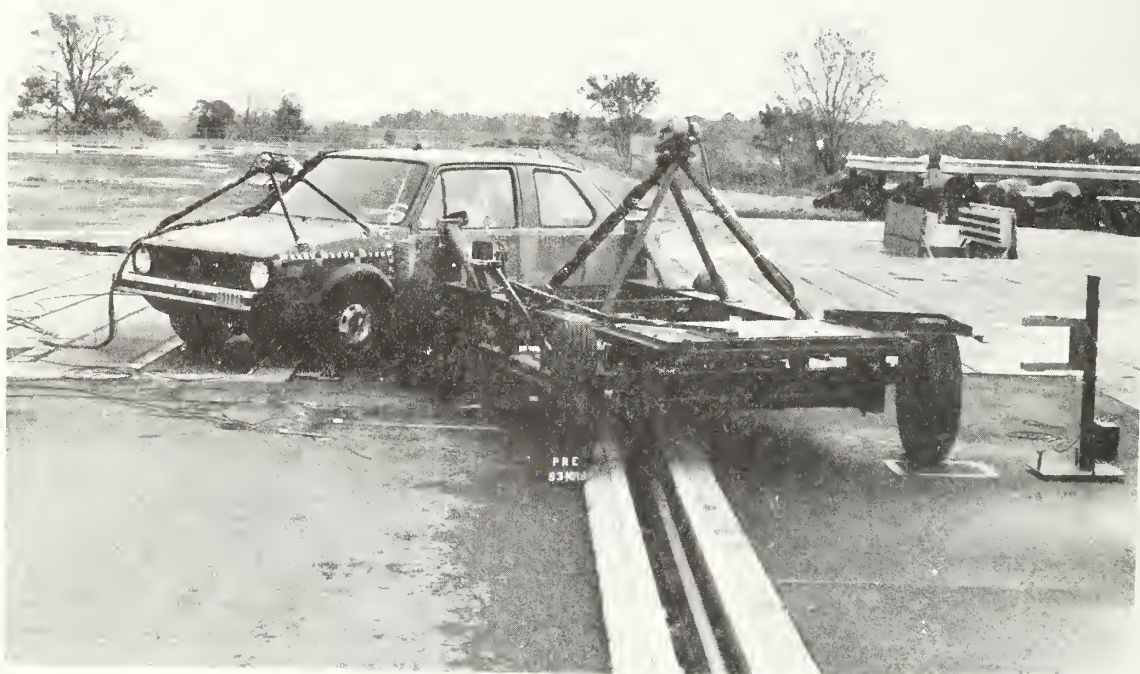


Figure A-2. PRE-TEST OVERALL - VIEW 2

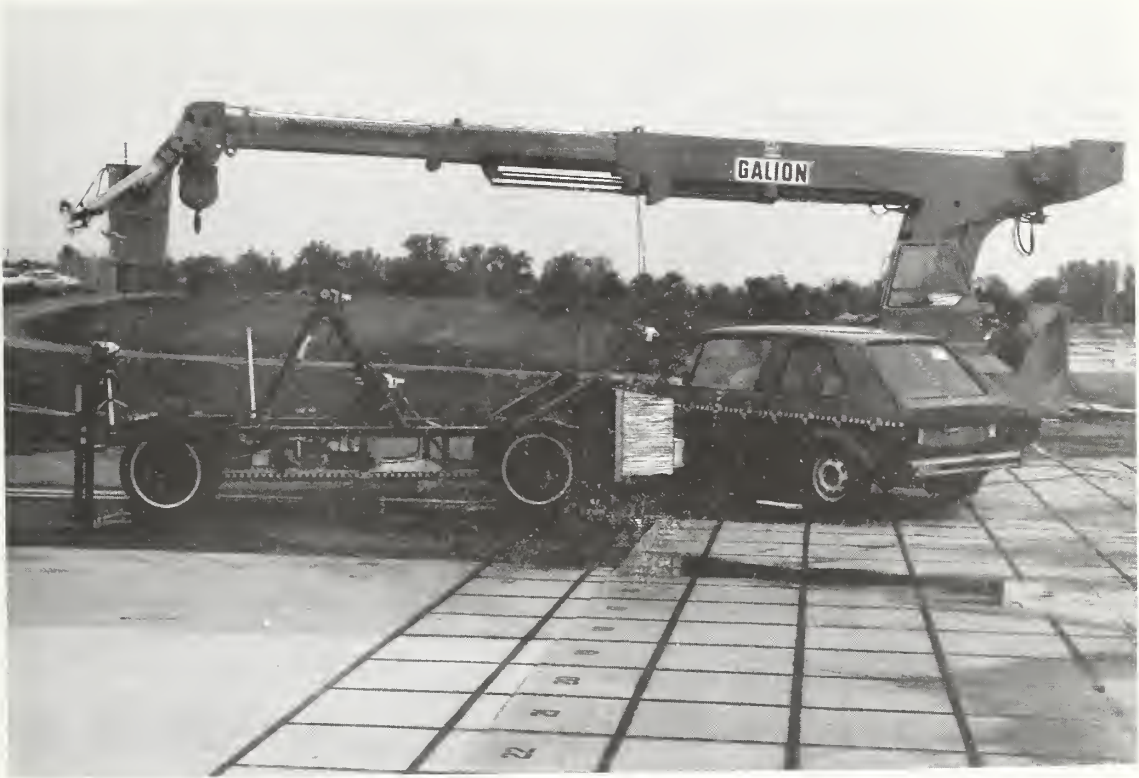


Figure A-3. PRE-TEST OVERALL - VIEW 3



Figure A-4. PRE-TEST OVERALL - VIEW 4

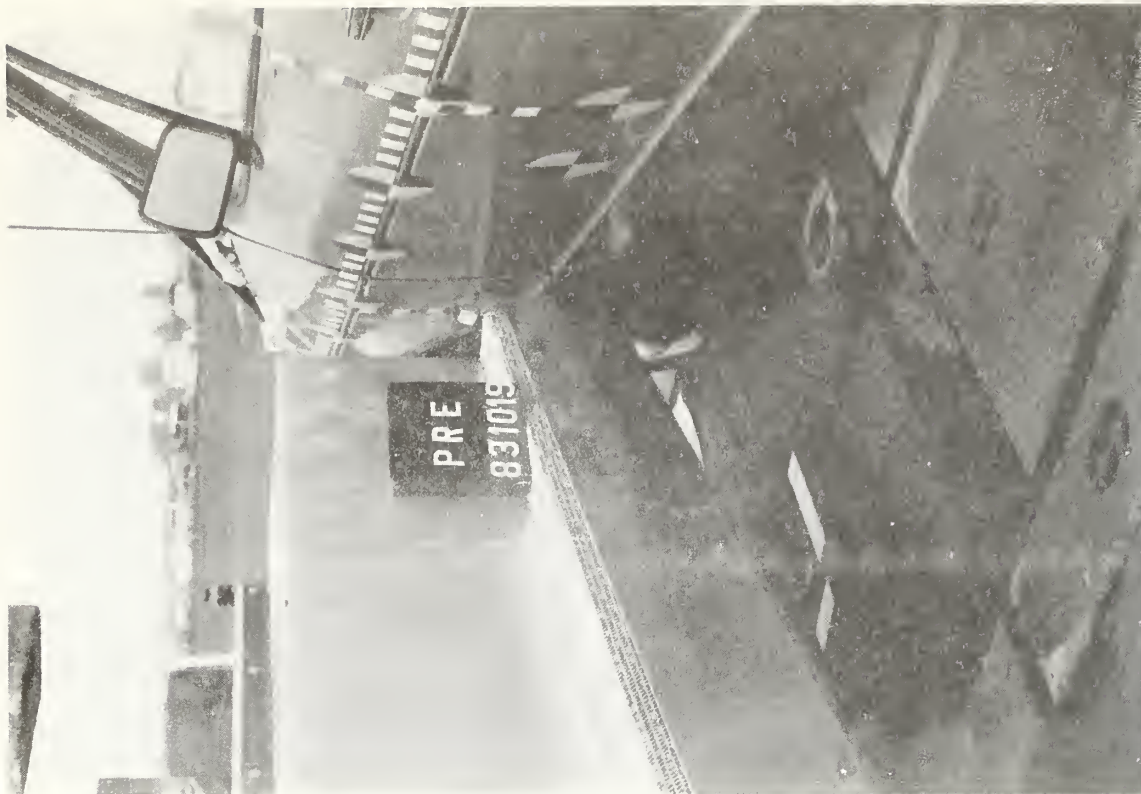


Figure A-5. PRE-TEST CLOSEUP - VIEW 1



Figure A-6. PRE-TEST CLOSEUP - VIEW 2



Figure A-7. PRE-TEST CLOSEUP - VIEW 3

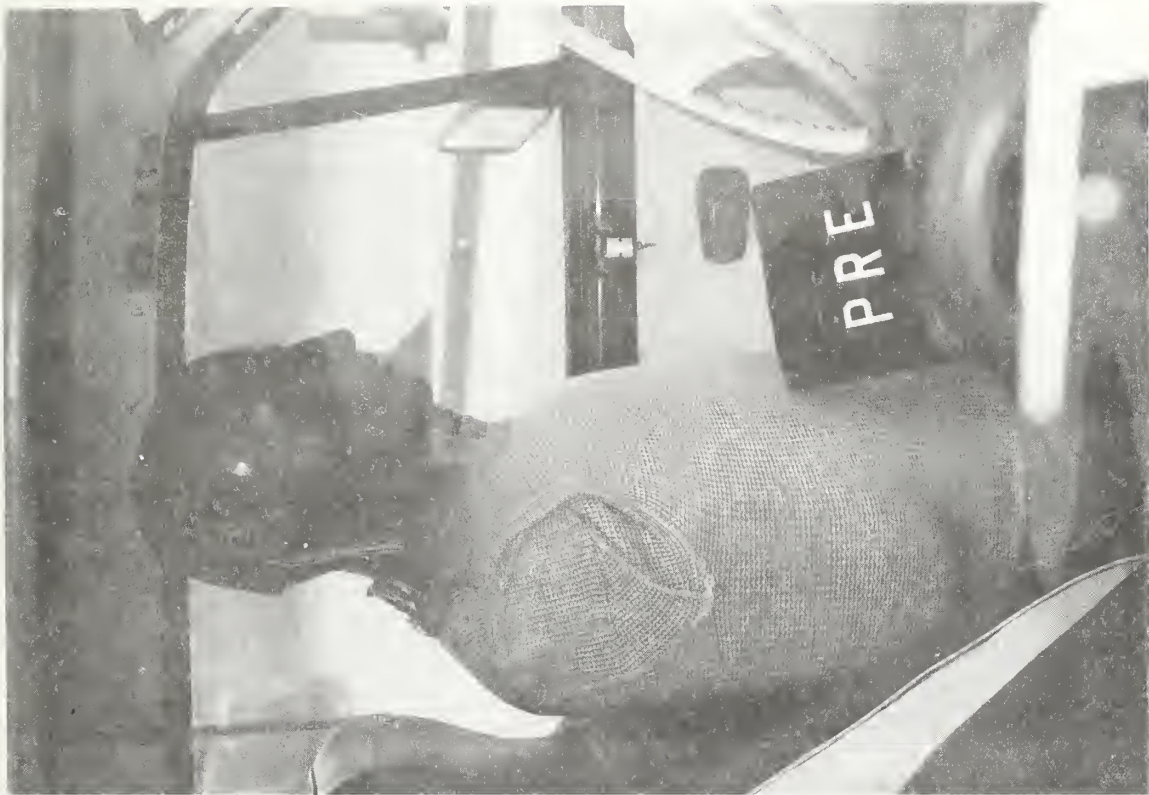


Figure A-8. PRE-TEST DRIVER DUMMY - VIEW 1



Figure A-9. PRE-TEST DRIVER DUMMY - VIEW 2



Figure A-10. PRE-TEST PASSENGER DUMMY - VIEW 1



Figure A-11. PRE-TEST PASSENGER DUMMY - VIEW 2

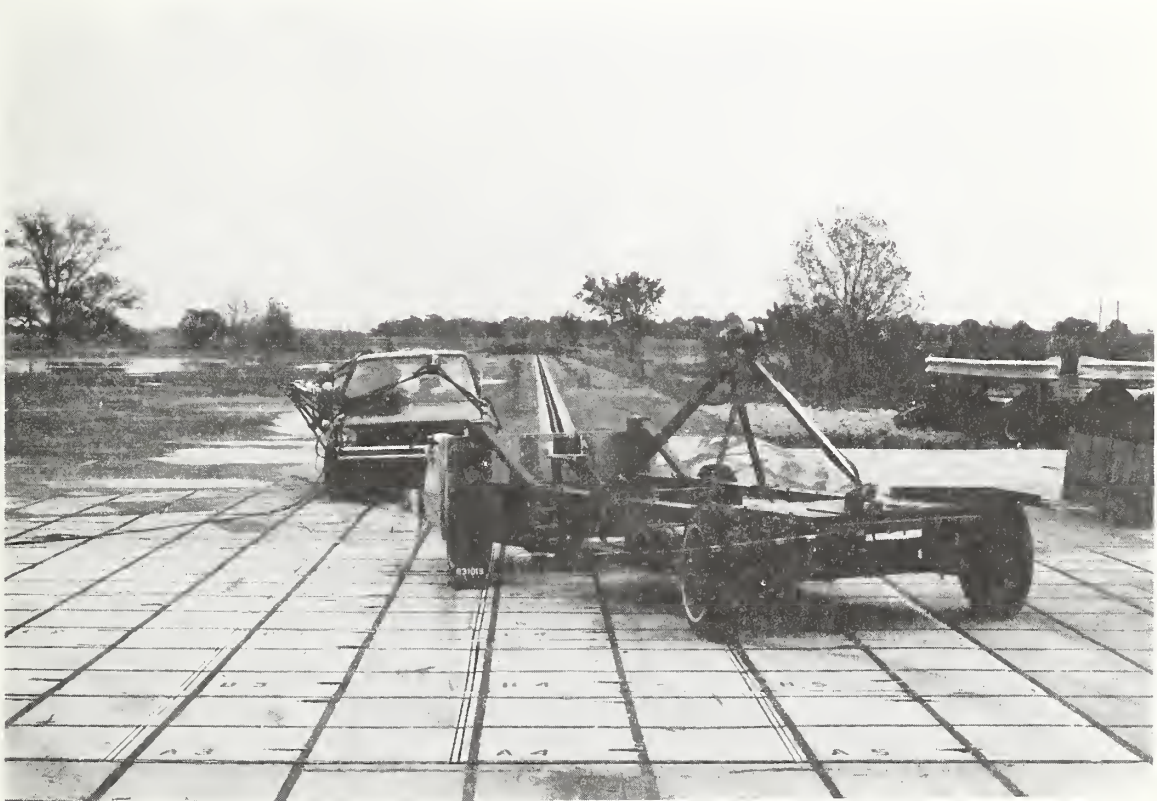


Figure A-12. POST-TEST OVERALL - VIEW 1



Figure A-9. PRE-TEST DRIVER DUMMY - VIEW 2



Figure A-10. PRE-TEST PASSENGER DUMMY - VIEW 1



Figure A-11. PRE-TEST PASSENGER DUMMY - VIEW 2



Figure A-12. POST-TEST OVERALL - VIEW 1



Figure A-13. POST-TEST OVERALL - VIEW 2



Figure A-14. POST-TEST OVERALL - VIEW 3



Figure A-15. POST-TEST OVERALL - VIEW 4

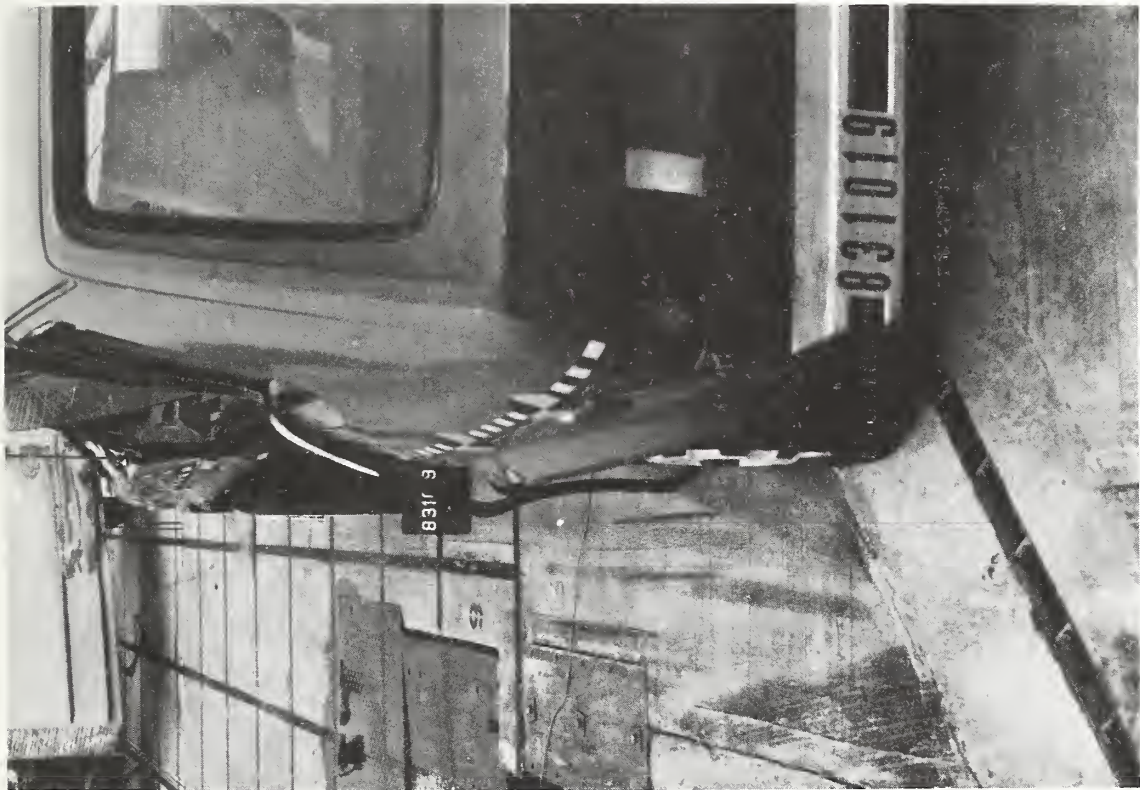


Figure A-16. POST-TEST CLOSEUP - VIEW 1



Figure A-17. POST-TEST DRIVER DUMMY - VIEW 1

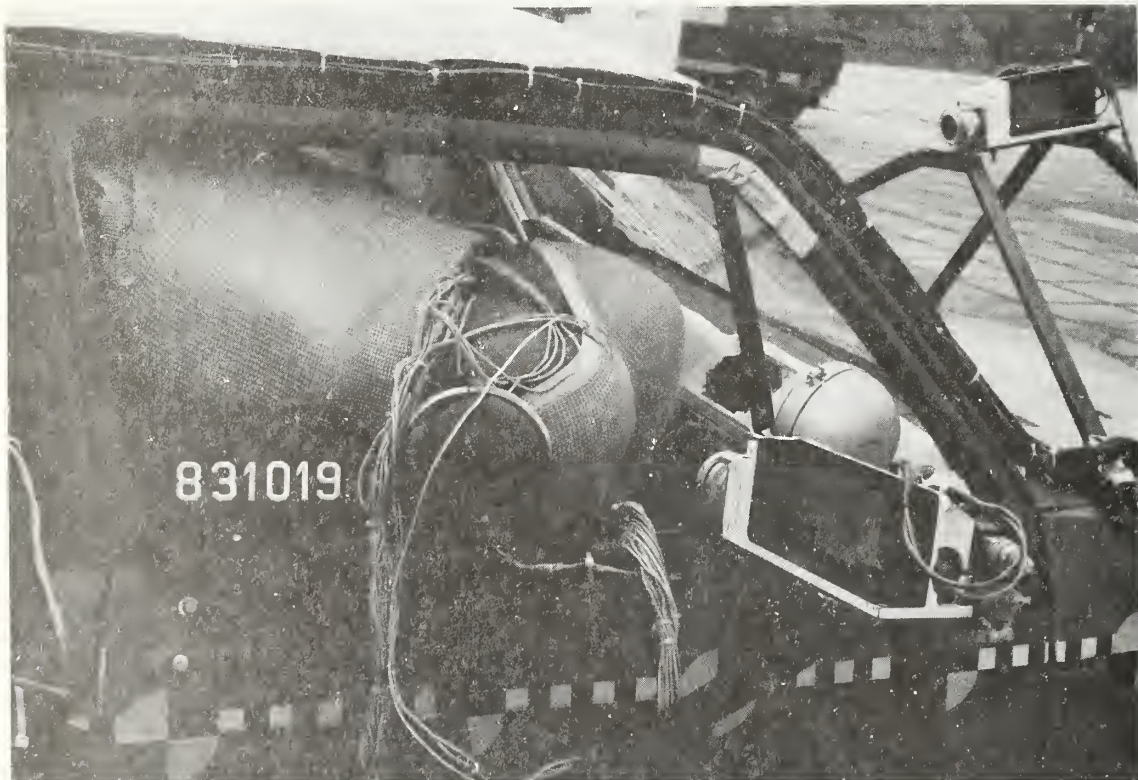


Figure A-18. POST-TEST DRIVER DUMMY - VIEW 2



Figure A-19. POST-TEST DRIVER DUMMY - VIEW 3



Figure A-20. POST-TEST PASSENGER DUMMY - VIEW 1

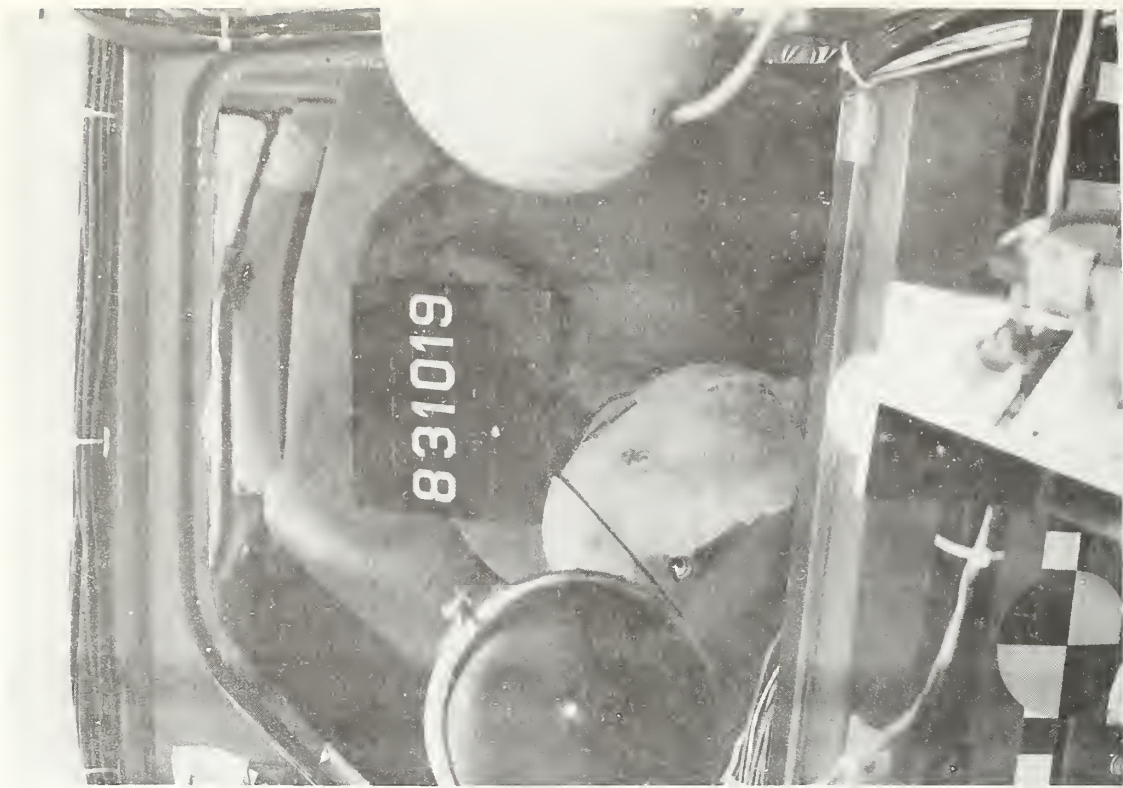


Figure A-21. POST-TEST PASSENGER DUMMY - VIEW 2

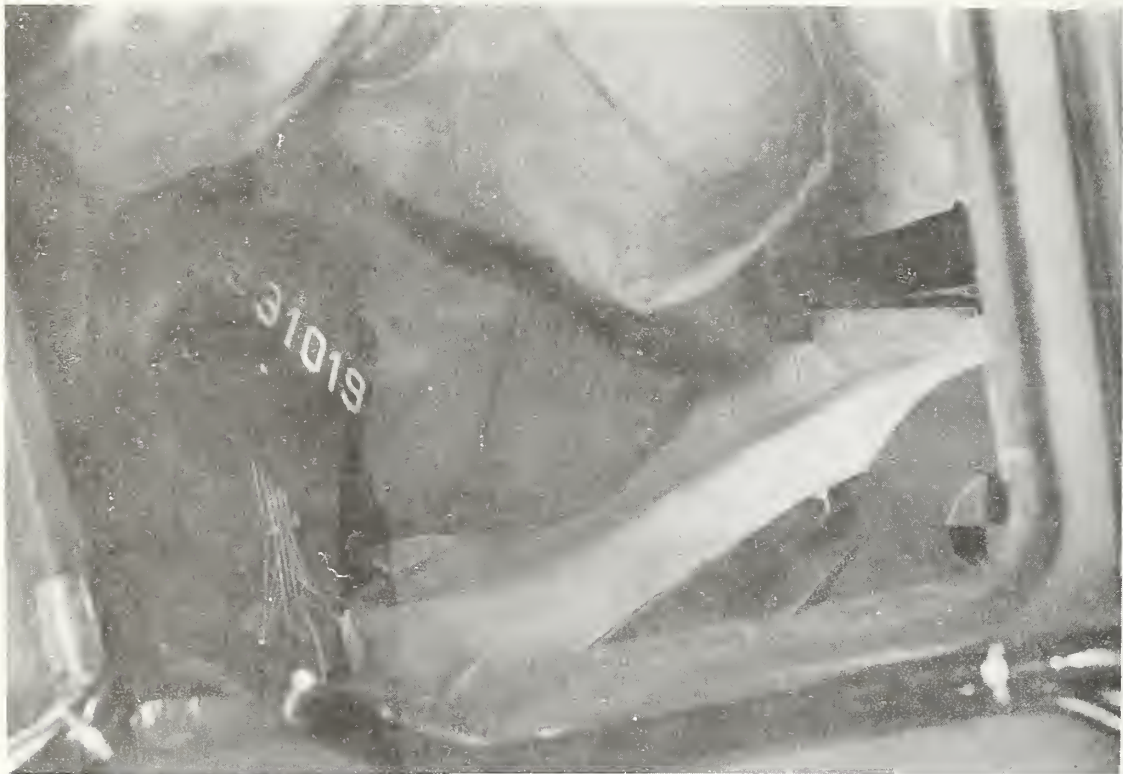


Figure A-22. POST-TEST PASSENGER DUMMY - VIEW 3



Figure A-23. POST-TEST VEHICLE DAMAGE - VIEW 1



Figure A-24. POST-TEST VEHICLE DAMAGE - VIEW 2

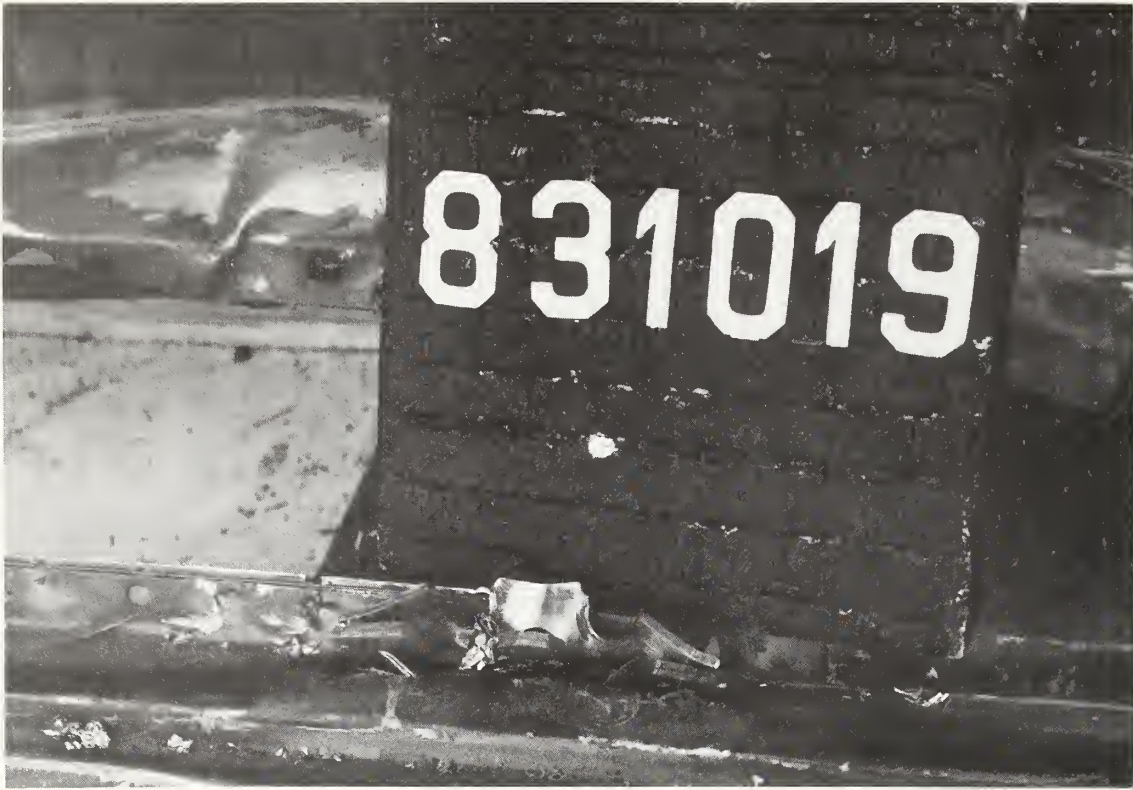


Figure A-25. POST-TEST VEHICLE DAMAGE - VIEW 3



Figure A-26. PRE-TEST MDD FACE - VIEW 1

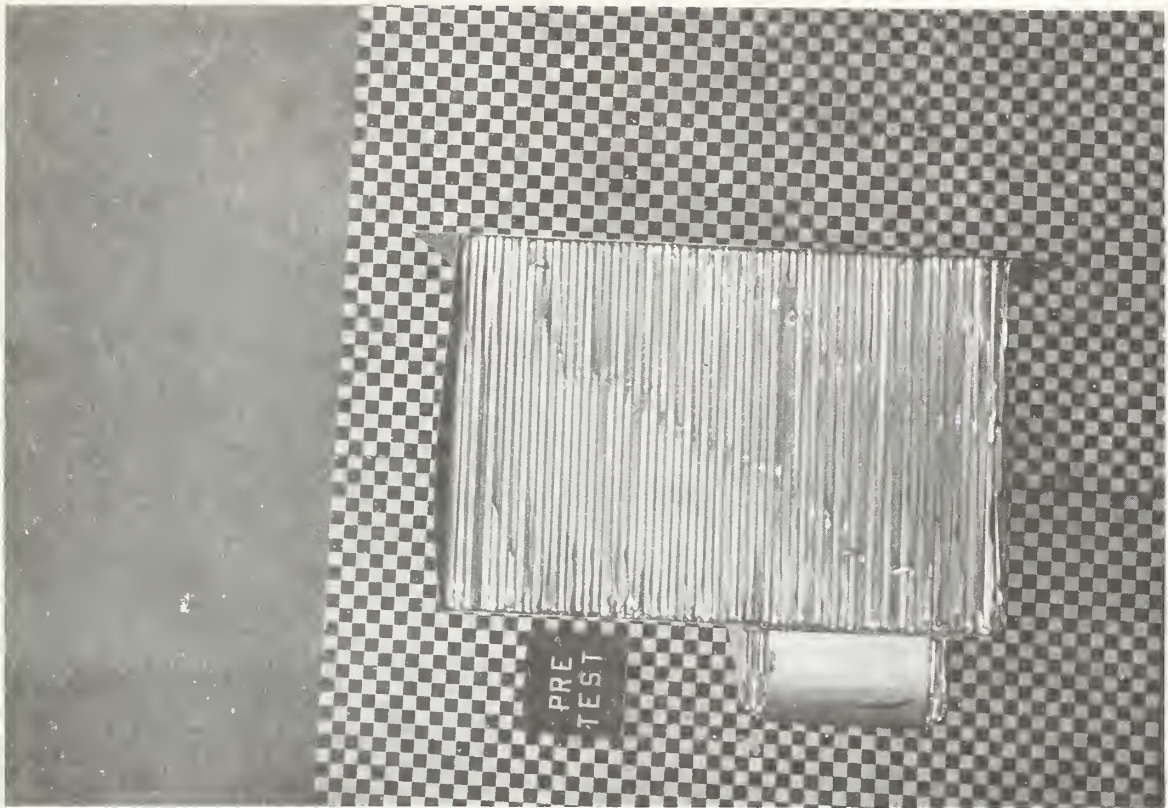


Figure A-27. PRE-TEST MDB FACE - VIEW 2

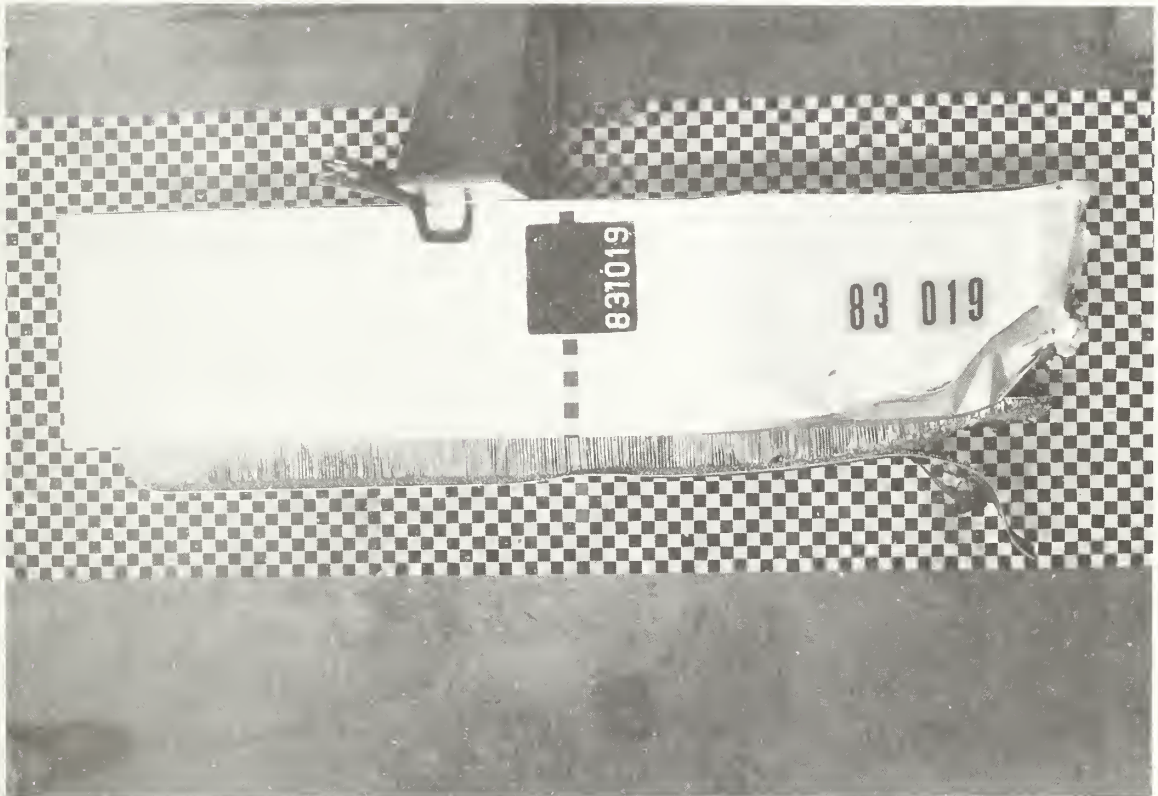


Figure A-28. POST-TEST MDB FACE - VIEW 1

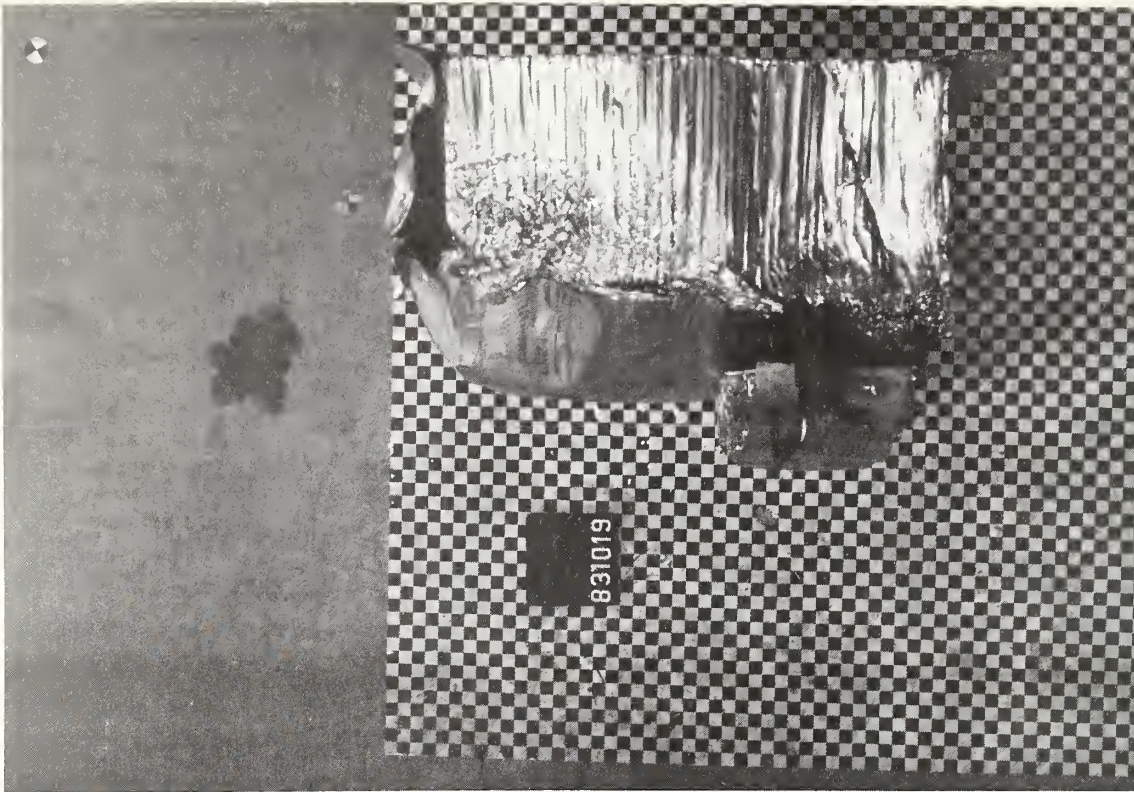


Figure A-29. POST-TEST MDB FACE - VIEW 2

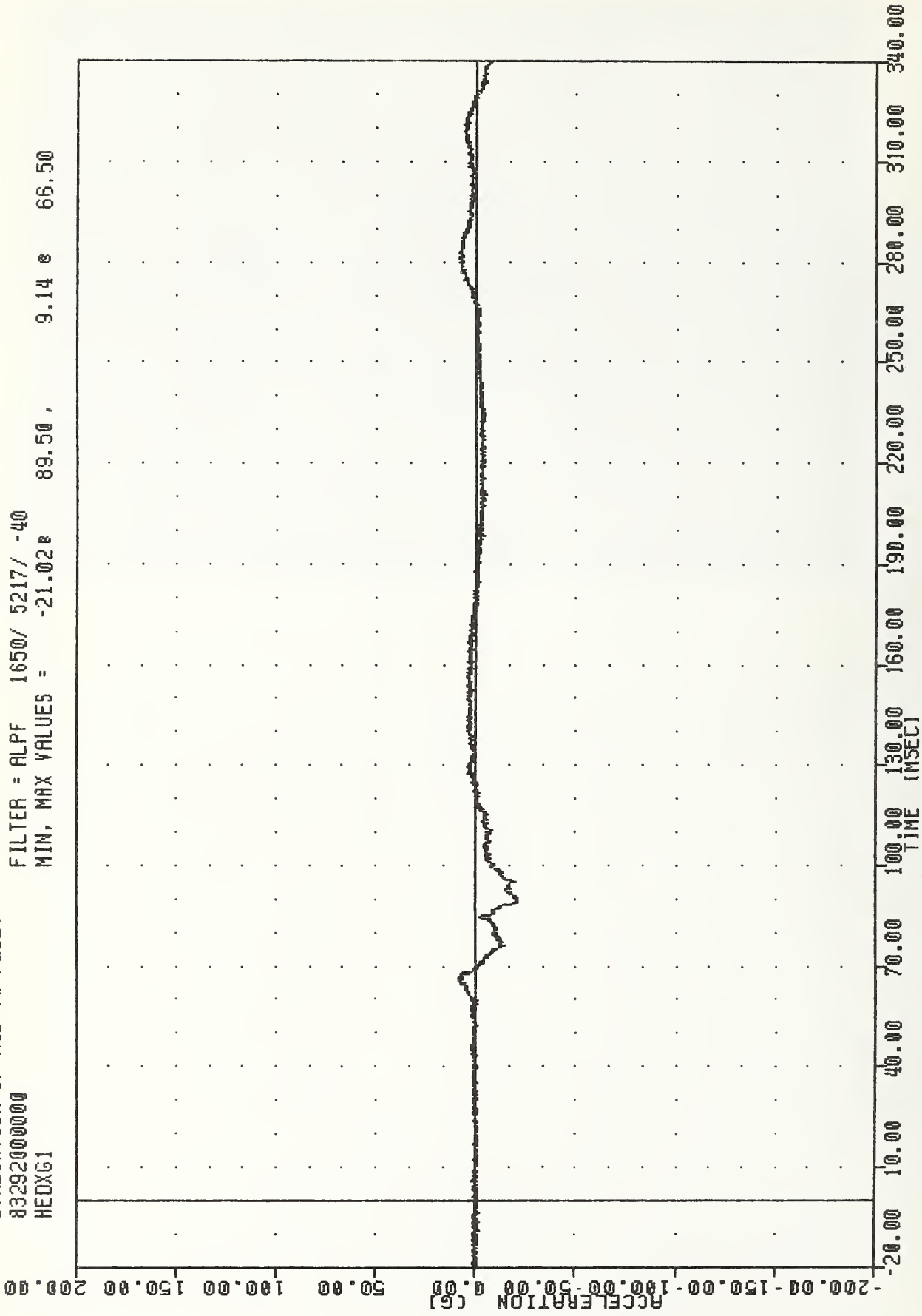
APPENDIX B

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. All data were filtered according to SAE J211, except that dummy thorax data were filtered using the HSRI filter.

EVALUATION OF MOD YW FLEET
83292000000
HEDXG1

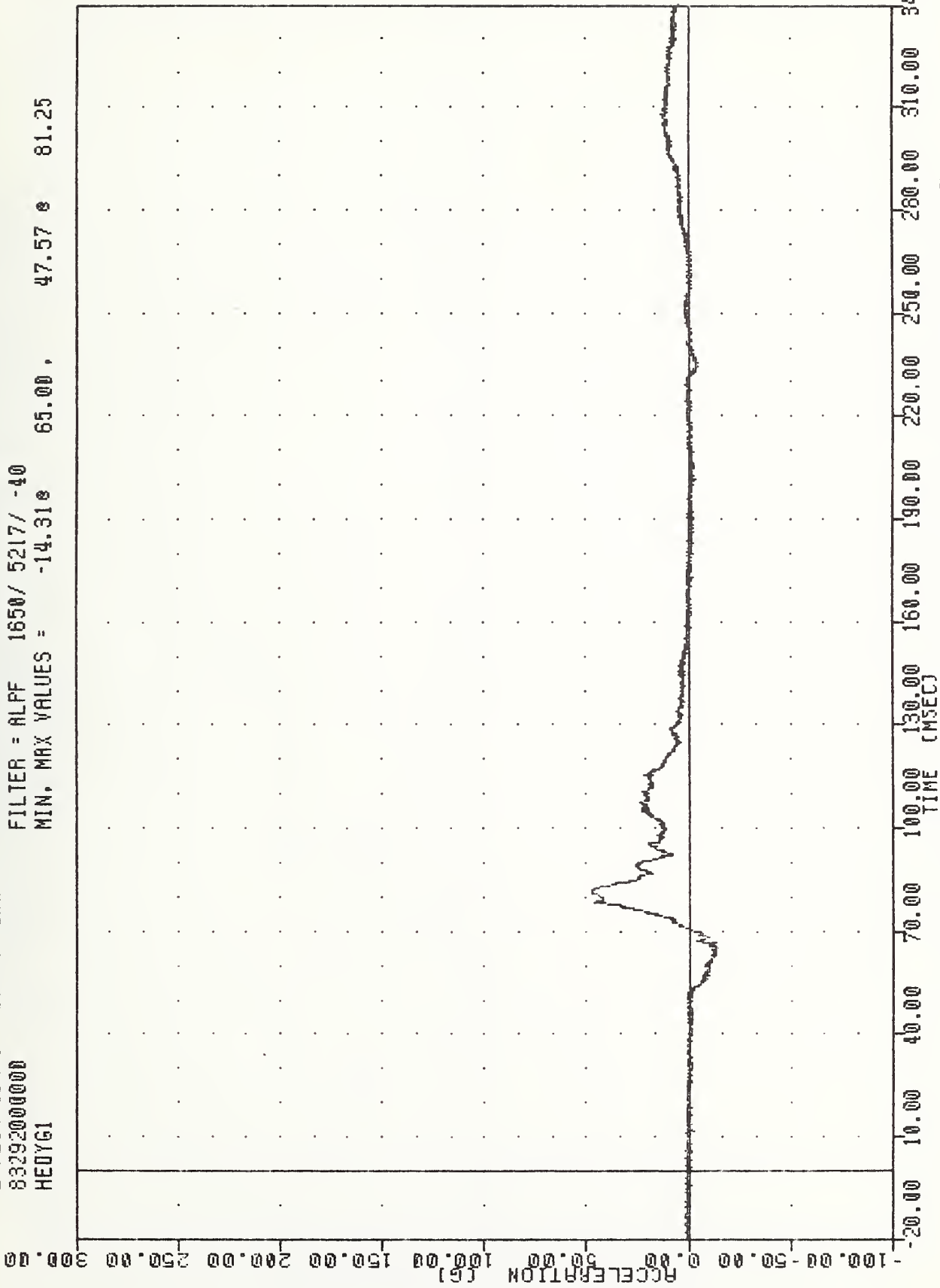
FILTER = ALPF 1650/ 5217/ -40
MIN, MAX VALUES = -21.02e 89.50, 9.14 e 66.50



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER HEAD ACCELERATION X AXIS

EVALUATION OF M00 VW FLEET
83292000000
HEDYG1

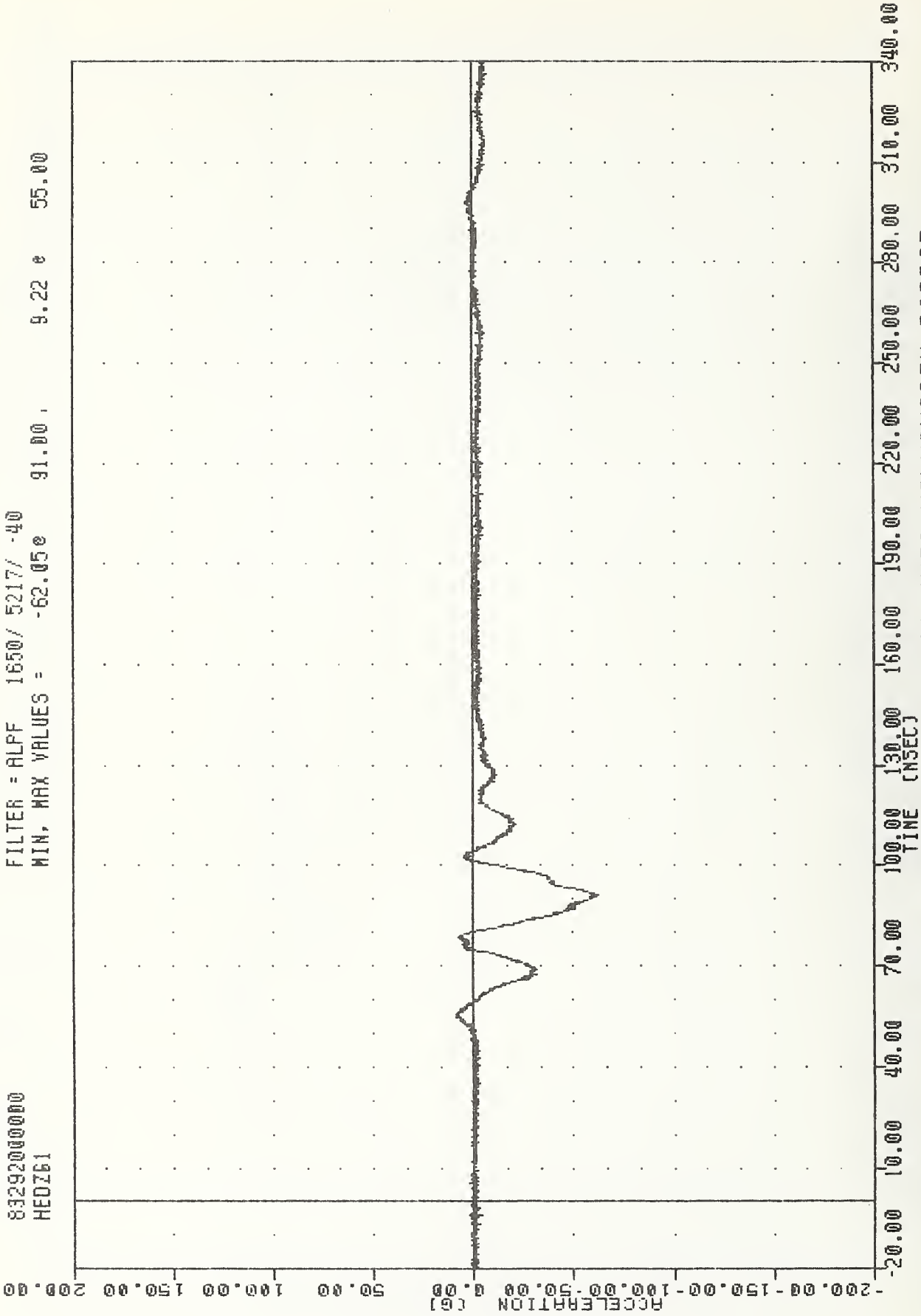
FILTER = ALPF 1650/ 5217/ -40
MIN, MAX VALUES = -14.31g 65.00g 47.57g 81.25



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER HEAD ACCELERATION Y AXIS

EVALUATION OF MOO VW FLEET
83292000000
HEAD61

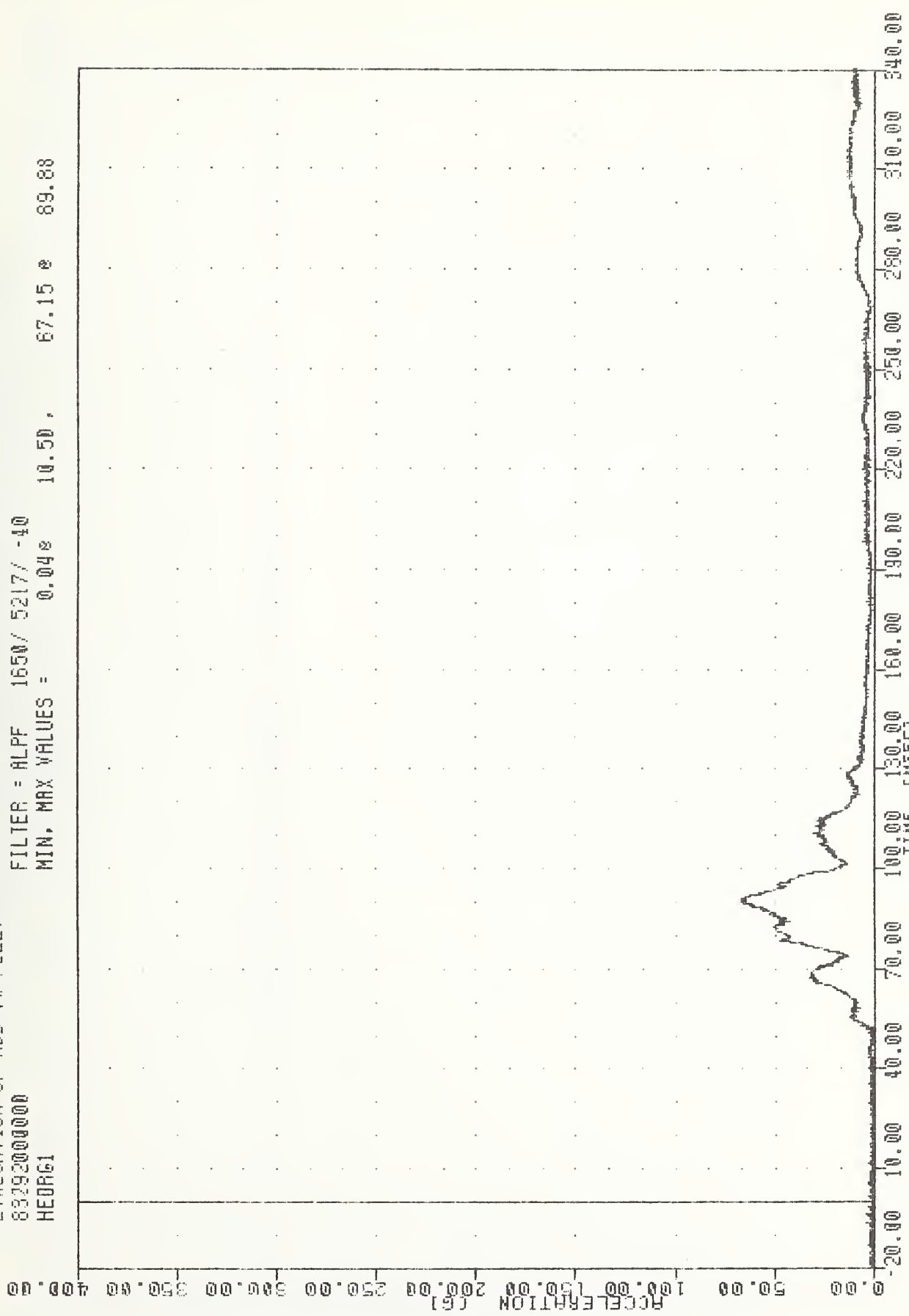
FILTER = ALPF 1650/ 5217/ -40
MIN, MAX VALUES = -62.05e 91.00 , 9.22 e 55.00



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER HEAD ACCELERATION Z AXIS

TRC
EVALUATION OF MOO VW FLEET
83292000000
HEOR61

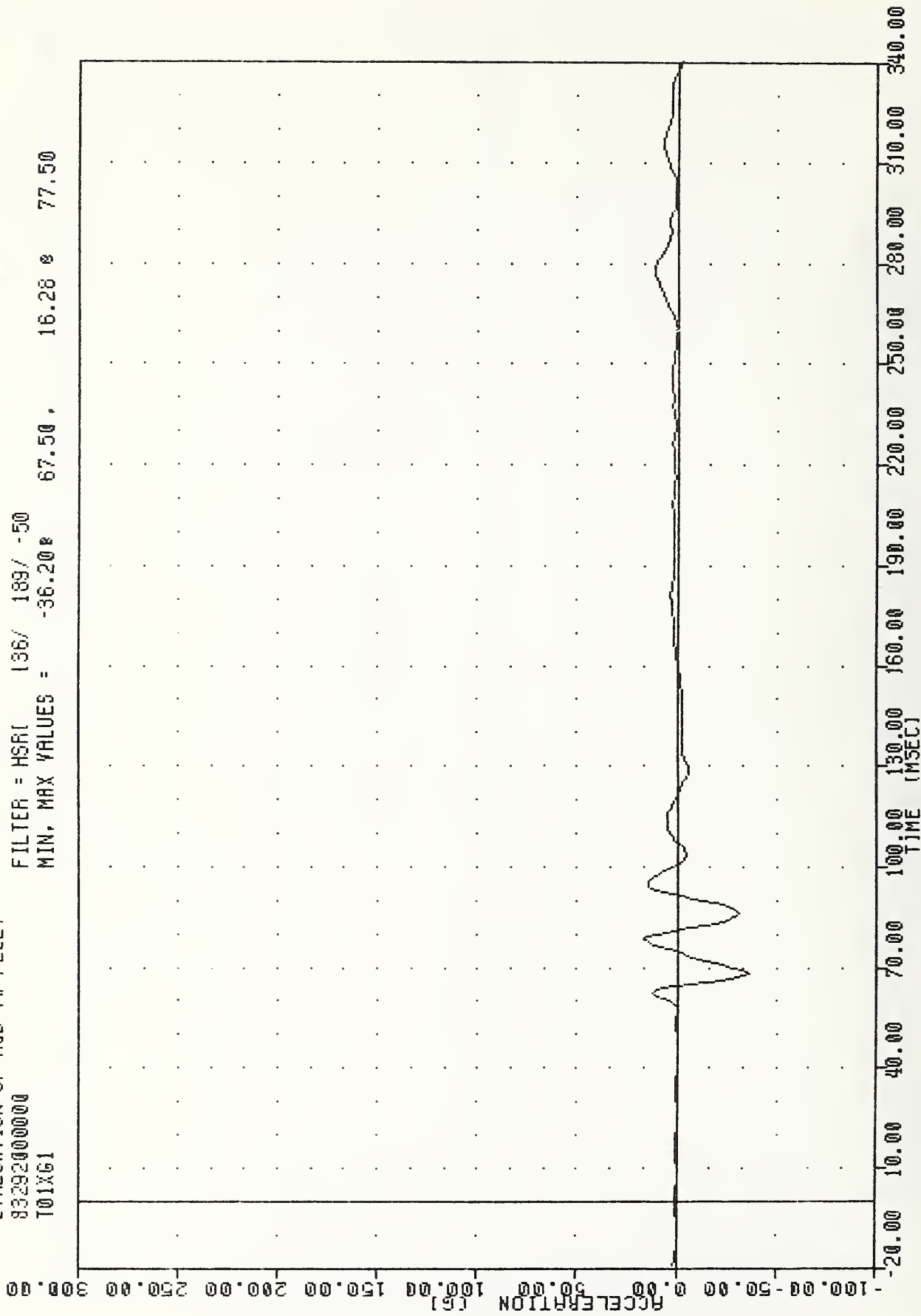
PLUT DATE 24-OCT-83 08:14:51
FILTER = ALPF 1650/ 5217/ -40
MIN. MAX VALUES = 0.04g 10.50, 67.15 g 89.88



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER HEAD RESULTANT

EVALUATION OF MOD YW FLEET
83292000000
T01XG1

FILTER = HSRI 136/ 189/ -50
MIN, MAX VALUES = -36.20 67.50 16.28 77.50



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER UPPER SPINE ACCELERATION X AXIS

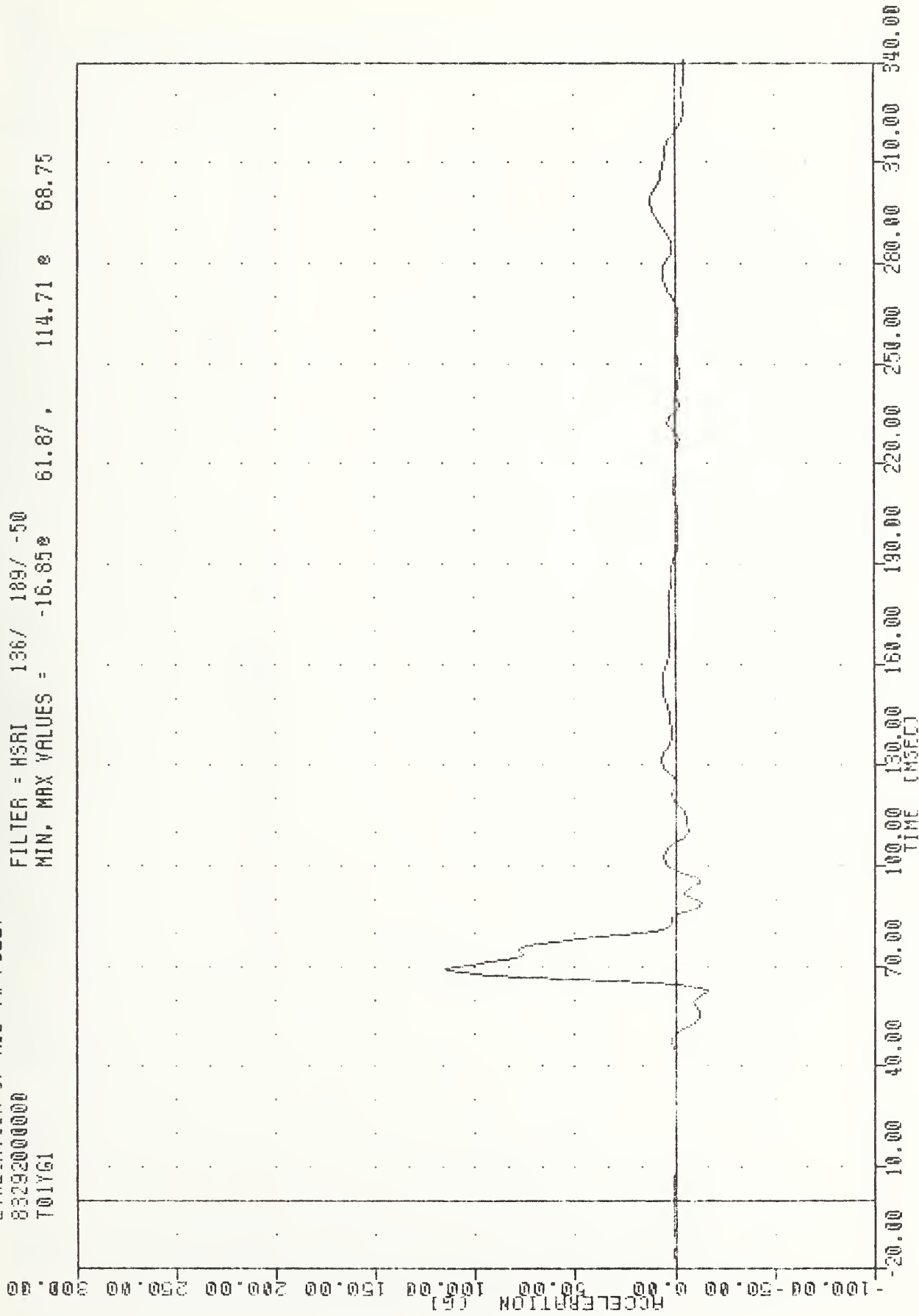
EVALUATION OF MDD VW FLEET

83292000000

T01Y61

FILTER = HSRI 136/ 189/ -50

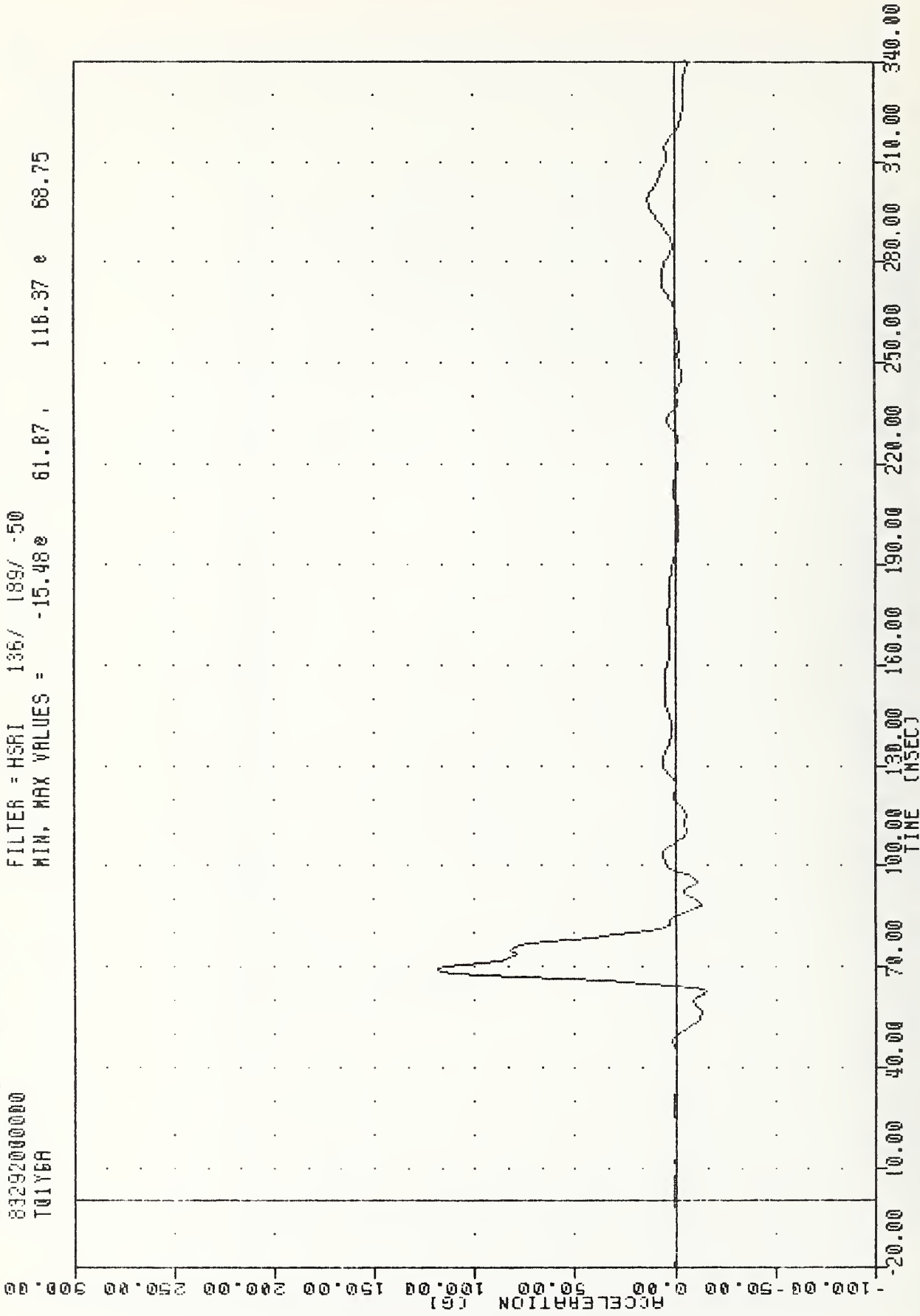
MIN. MAX VALUES = -16.85e 61.87 . 114.71 e 68.75



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER UPPER SPINE ACCELERATION Y AXIS

EVALUATION OF MOD VN FLEET
83292000000
TOYOTA

FILTER = HSRI 136/ 189/ -50
MIN. MAX VALUES = -15.48e 61.87, 116.37 e 68.75



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER UPPER SPINE ACCELERATION -2 Y AXIS

EVALUATION OF MOD VW FLEET

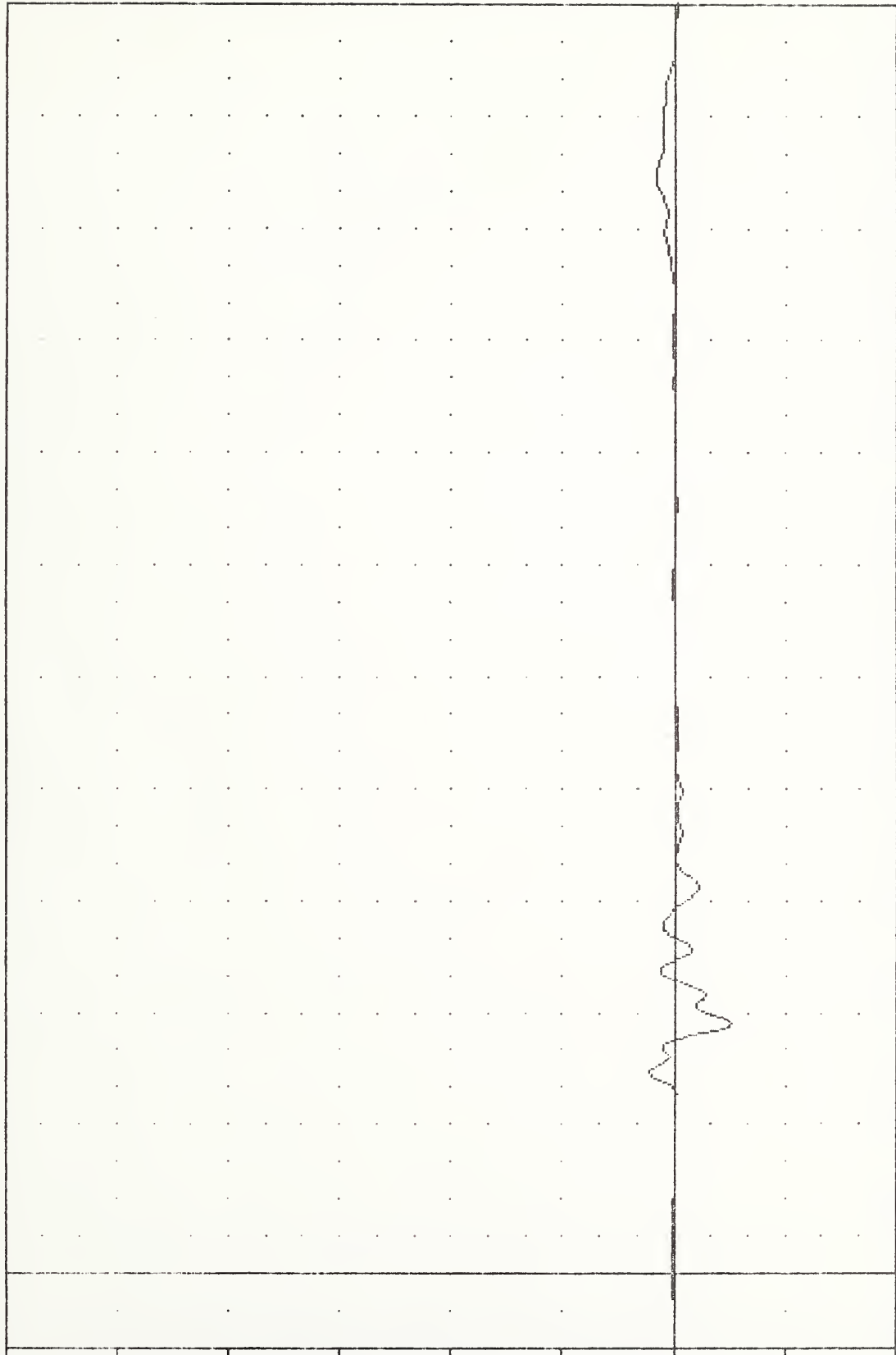
83292000000

T01761

FILTER = HSAI 136/ 189/ -50

MIN. MAX VALUES = -25.71g 66.25, 11.07g 53.12

ACCELERATION (G)

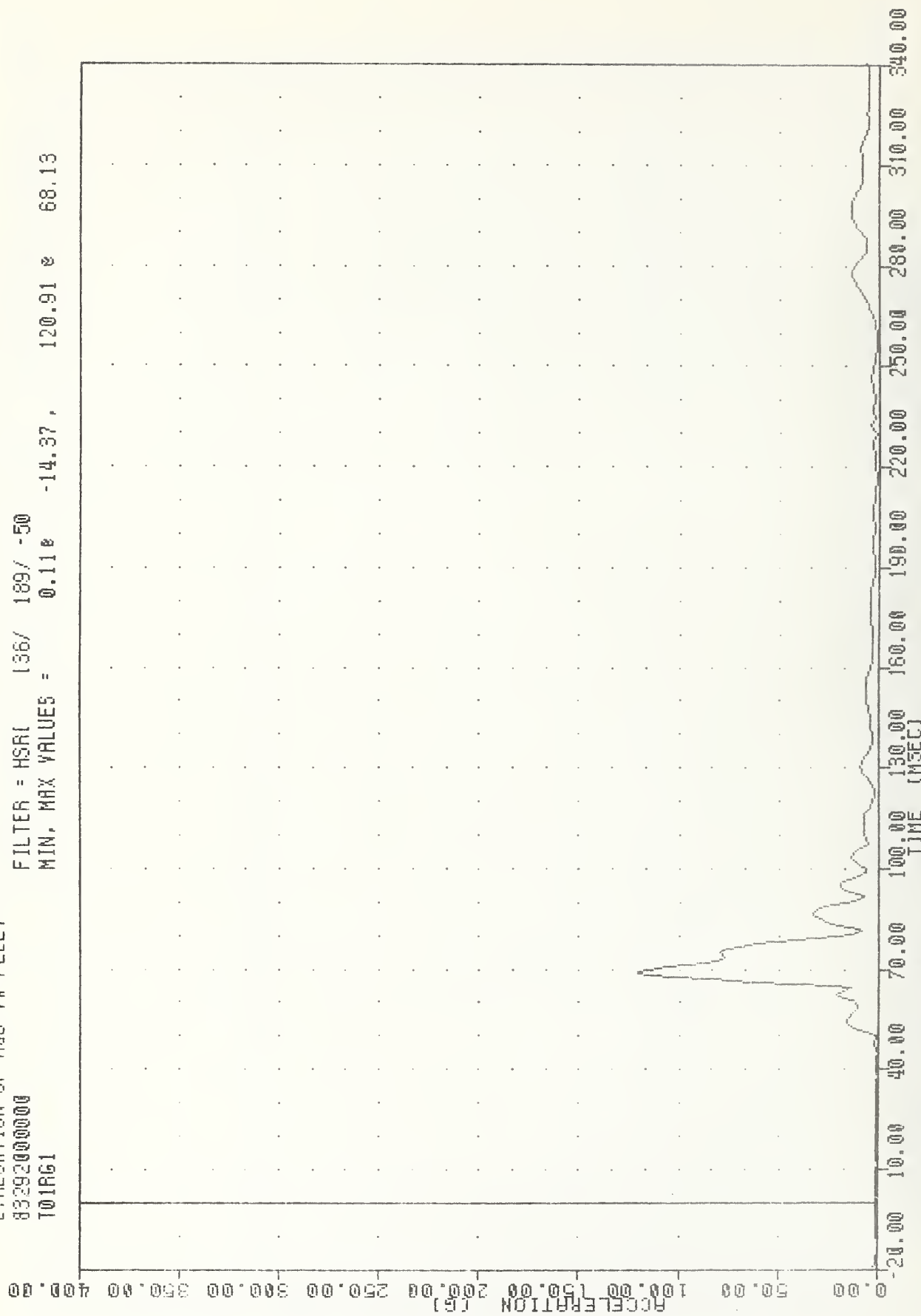


-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
TIME (MSEC)

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER UPPER SPINE ACCELERATION Z AXIS

EVALUATION OF M00 VW FLEET
83292000000
T01R61

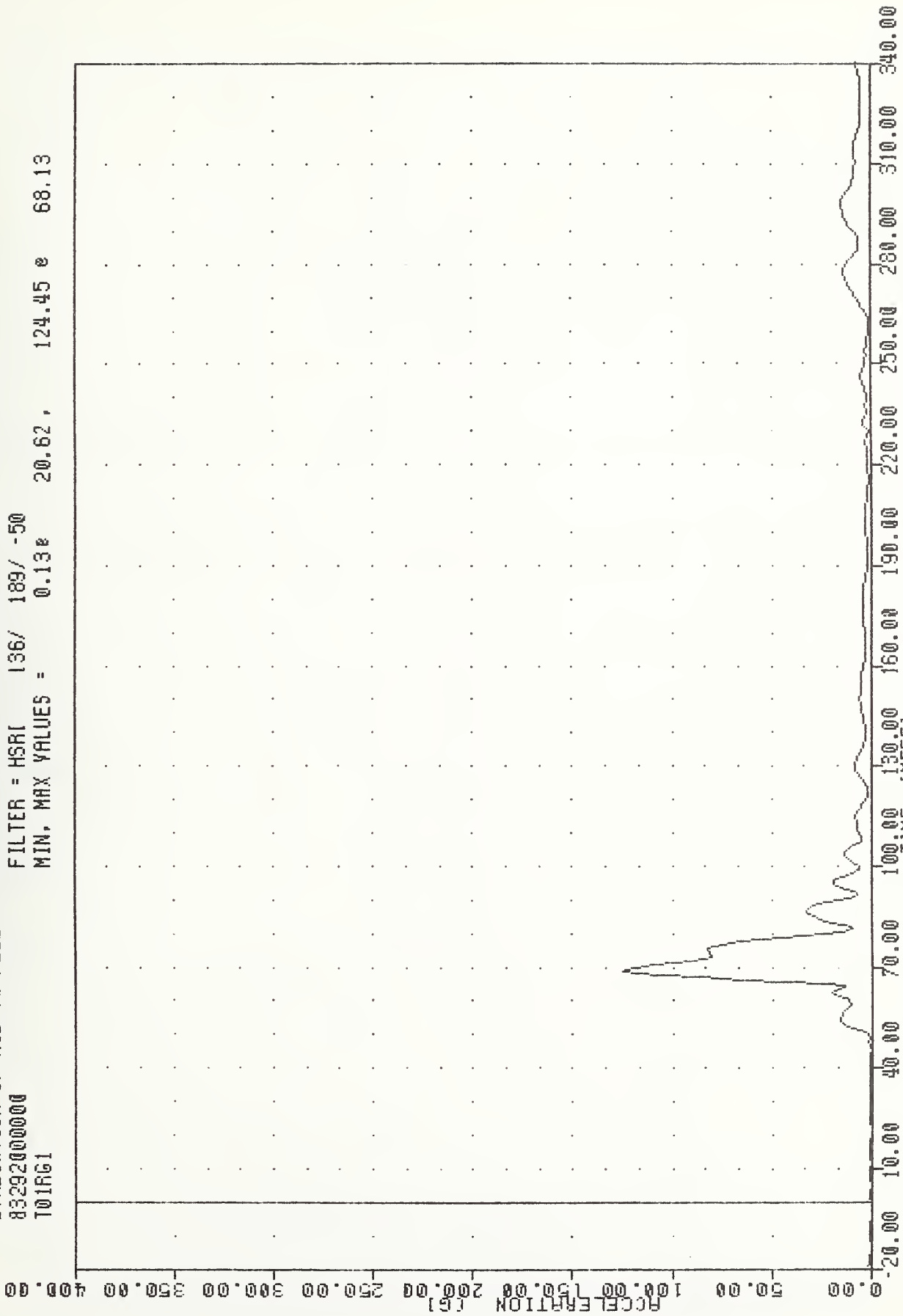
FILTER = HSRI 136/ 189/ -50
MIN. MAX VALUES = 0.11e -14.37, 120.91 e 68.13



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER UPPER SPINE RESULTANT

EVALUATION OF MOD YW FLEET
83292000000
T01RG1

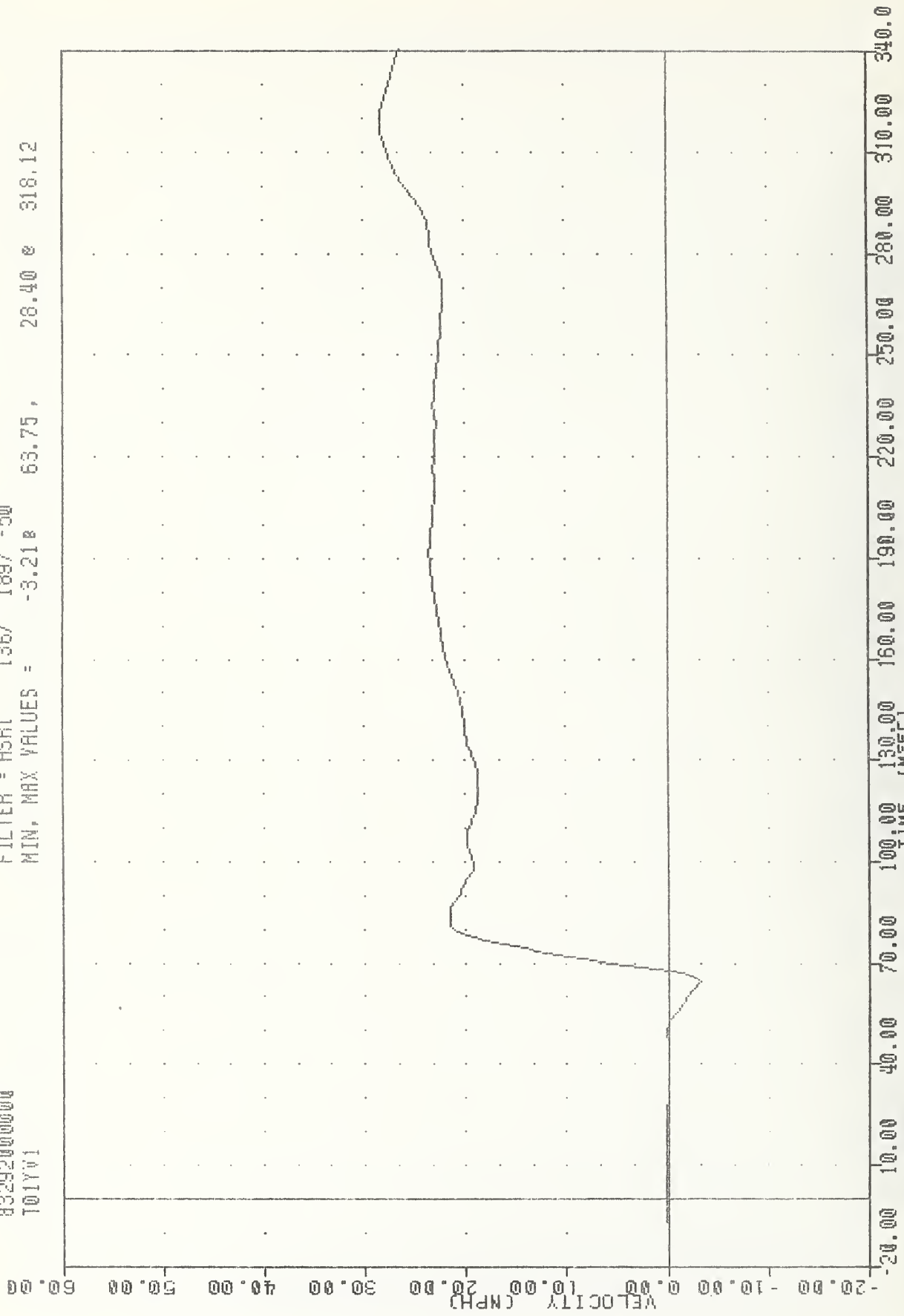
FILTER = HSRI 136/ 189/ -50
MIN. MAX VALUES = 0.13e 124.45 e 68.13



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER UPPER SPINE RESULTANT USING T01YGA

EVALUATION OF MID YW FLEET
83292000000
T01YV1

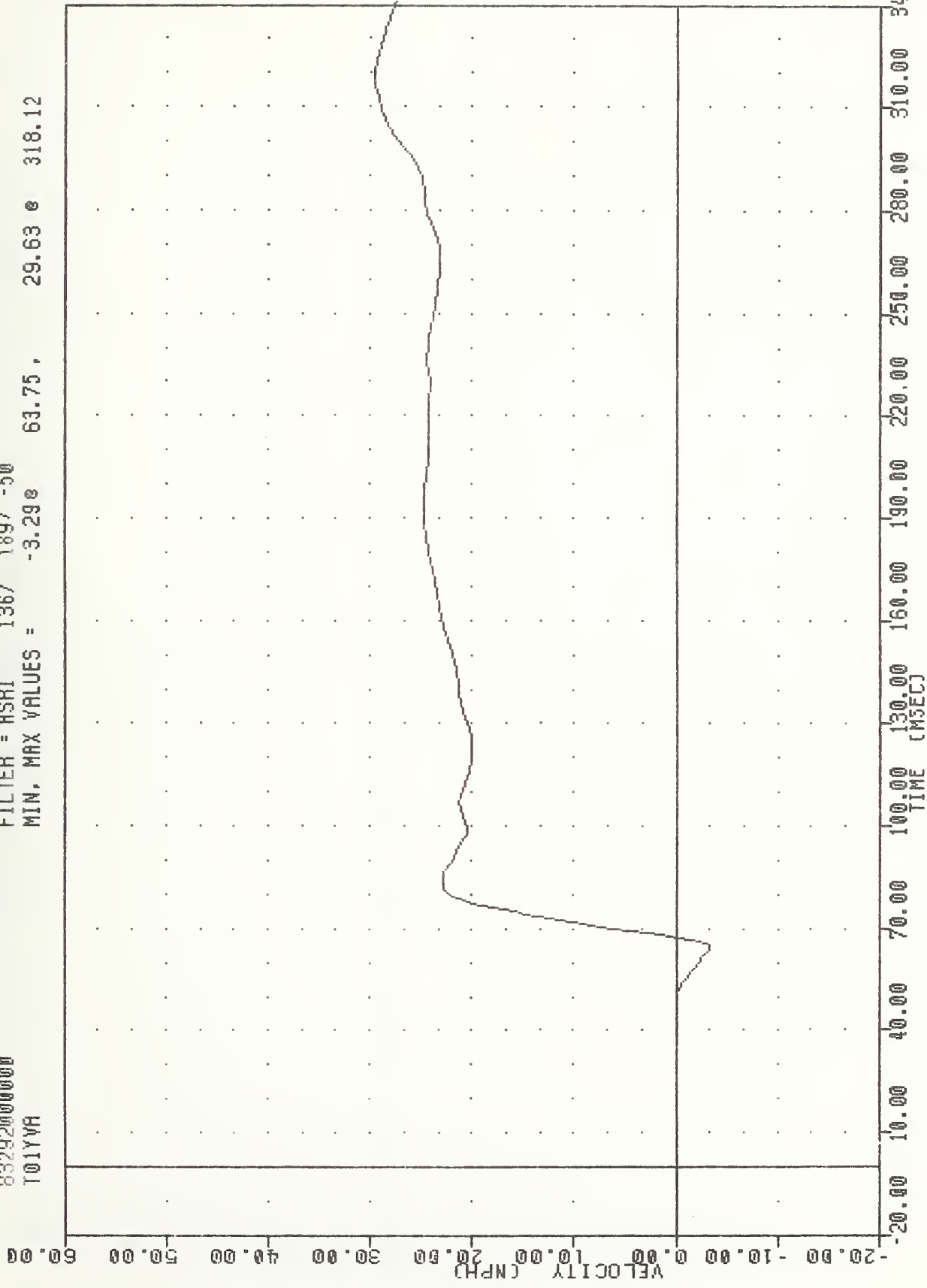
FILTER = HSRI 136/ 189/ -50
MIN. MAX VALUES = -3.218 63.75 , 28.40 e 318.12



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING T01YGI

EVALUATION OF MOD VV FLEET
83282000000
T01YVA

FILTER = HSRI 136/ 189/ -50
MIN. MAX VALUES = -3.29e 63.75 , 29.63 e 318.12



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING T01YGA

EVALUATION OF MOD YW FLEET

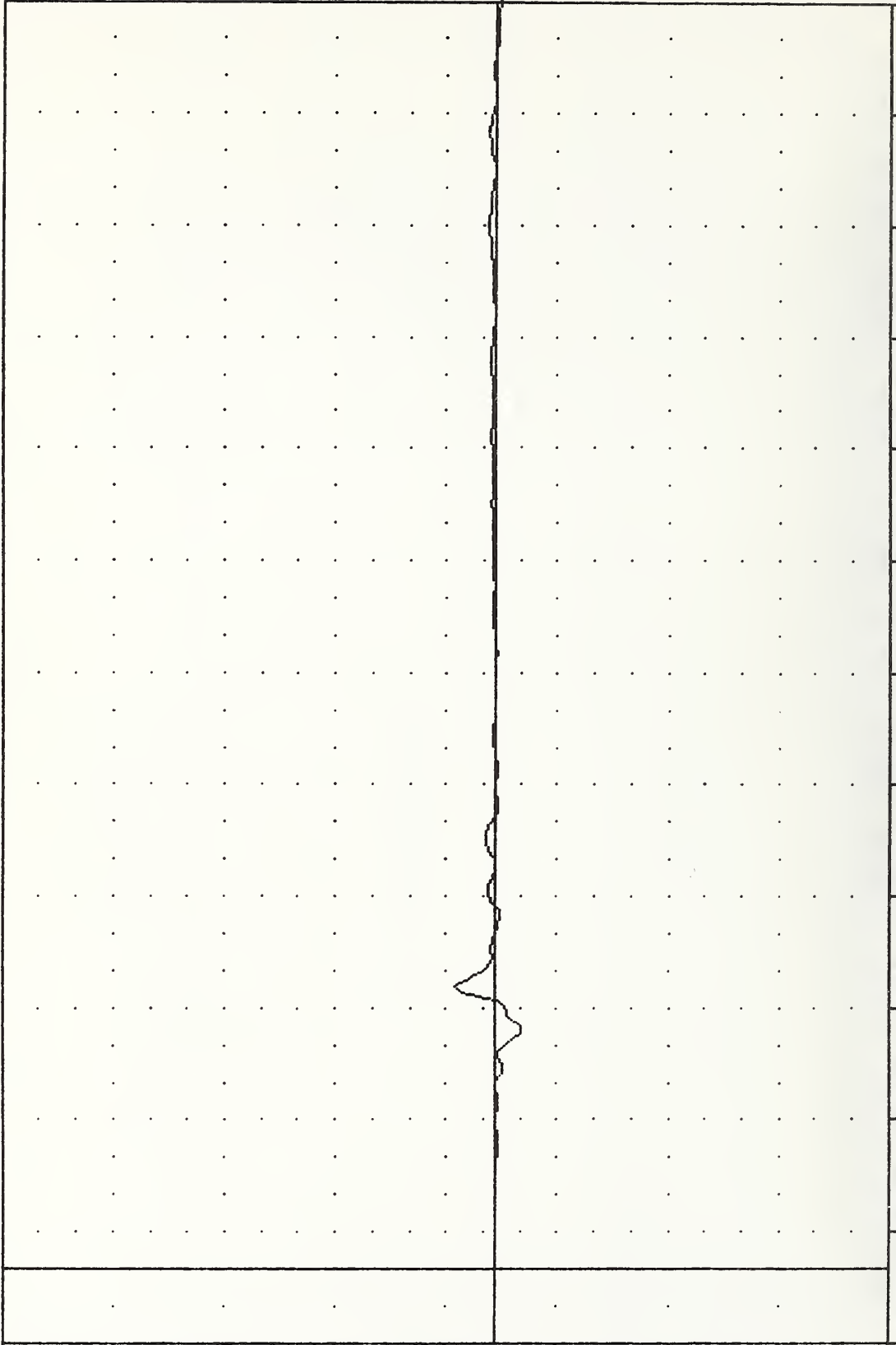
83292000000

T12XG1

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -21.31e 63.75 , 32.14 e 75.00

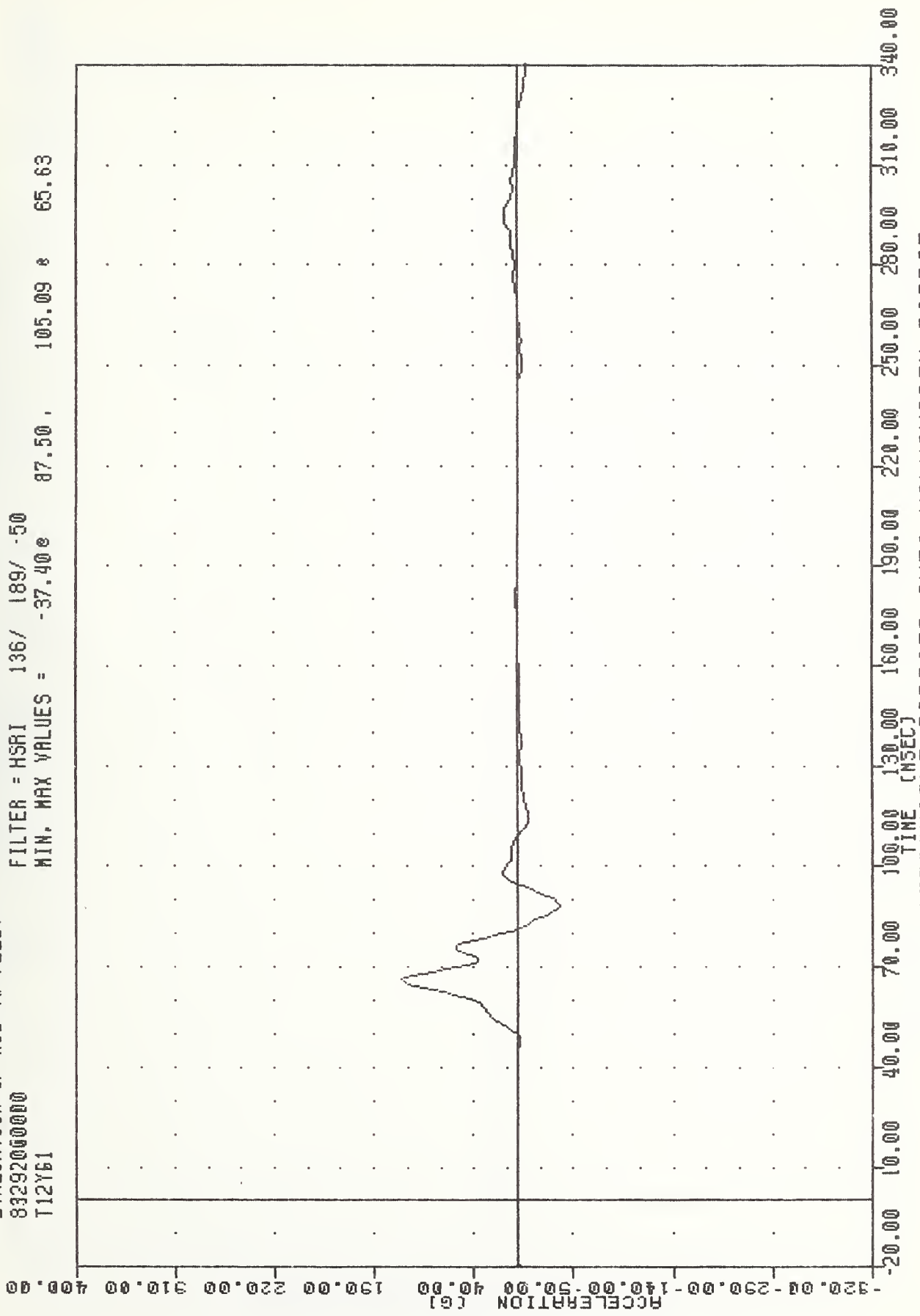
ACCELERATION (G)



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER LOWER SPINE ACCELERATION X AXIS

EVALUATION OF MOD VW FLEET
83292000000
T12Y61

FILTER = HSRI 136/ 189/ -50
MIN. MAX VALUES = -37.40e 87.50 , 105.09 e 65.63



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER LOWER SPINE ACCELERATION Y AXIS

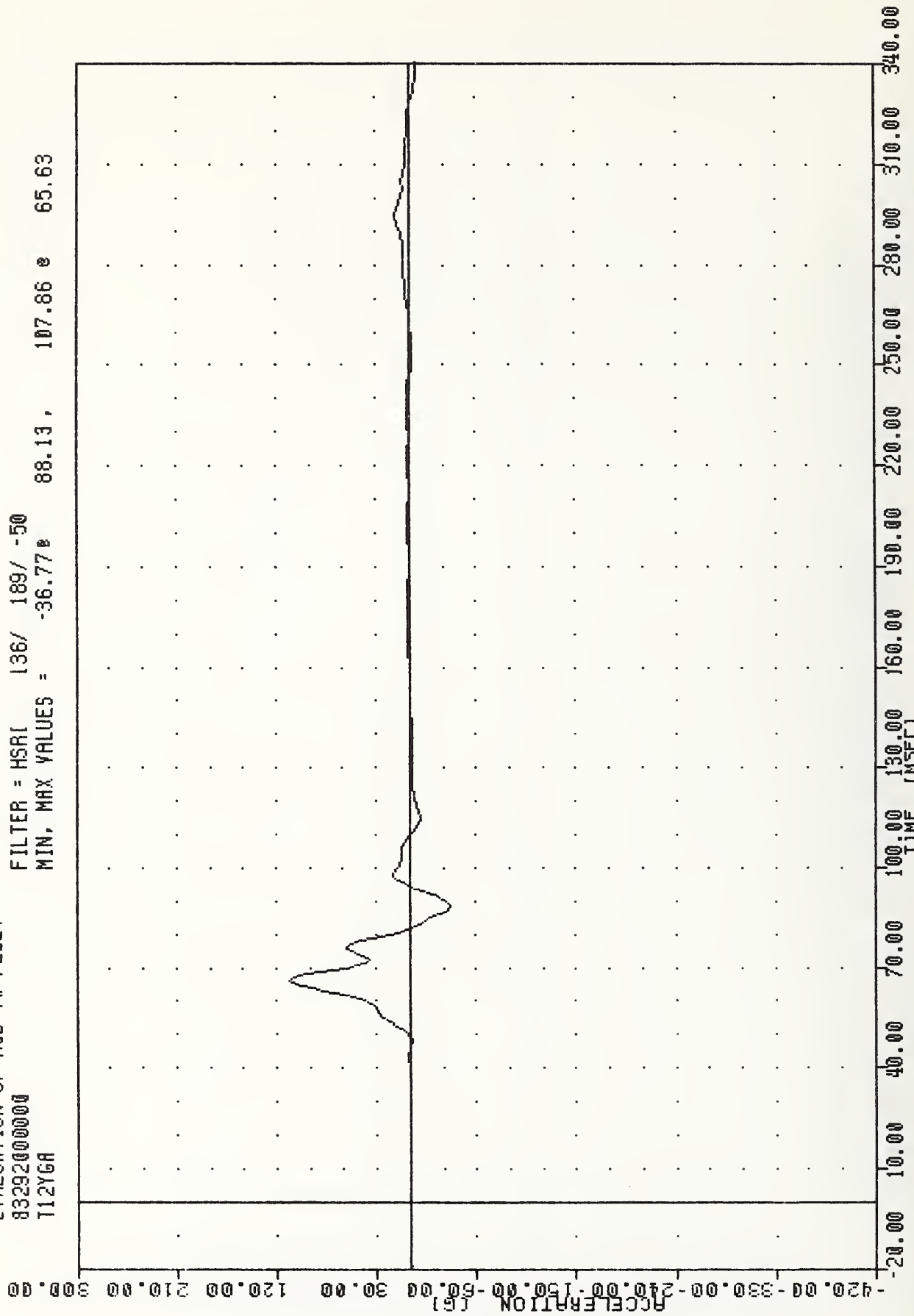
EVALUATION OF MOD YW FLEET

83292000000

T12Y6A

FILTER = HSRI 136/ 189/ -50

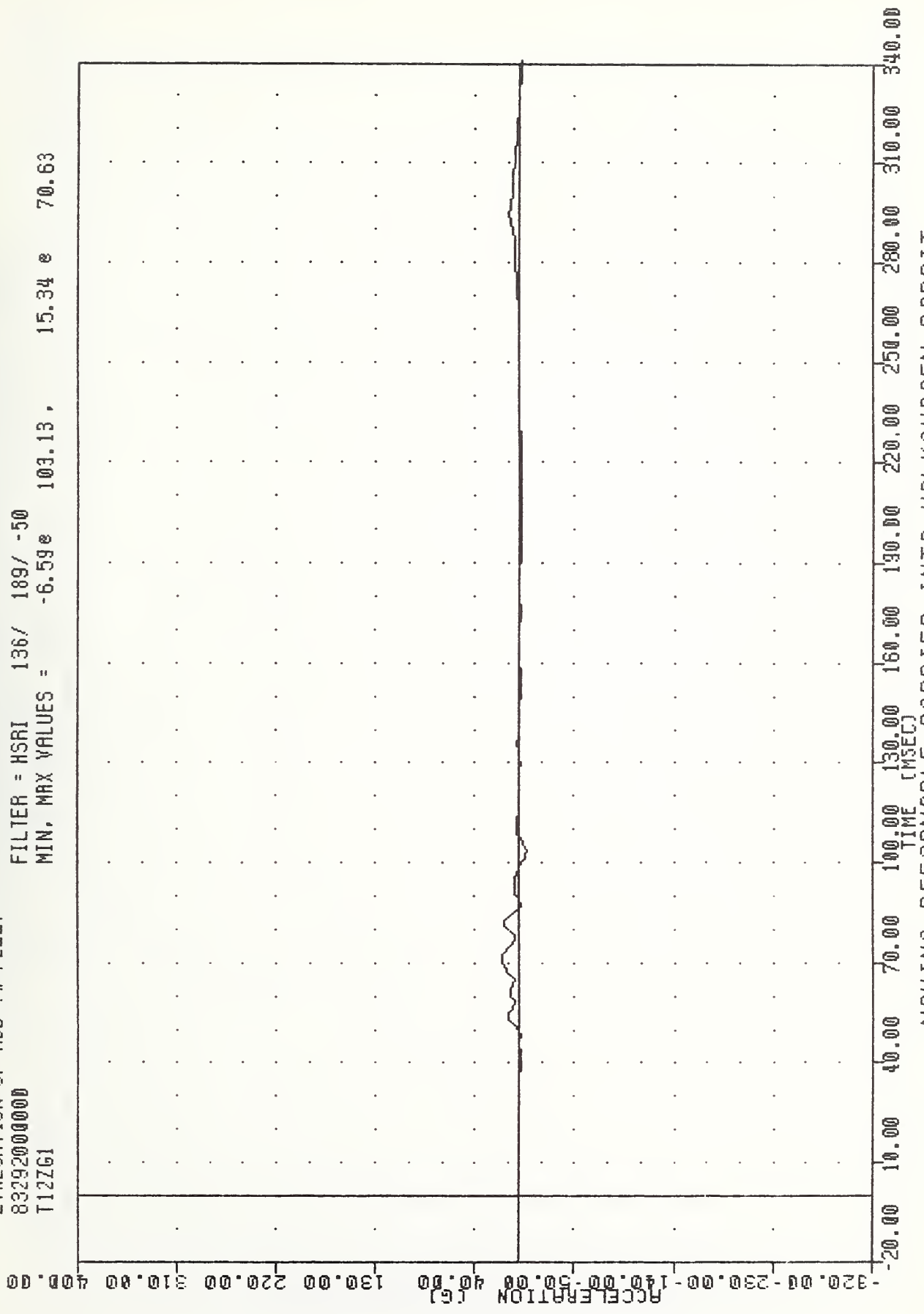
MIN. MAX VALUES = -36.77 e 107.86 e 65.63



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER LOWER SPINE ACCELERATION #2 Y AXIS

EVALUATION OF MDD VV FLEET
 83292000000
 T12ZG1

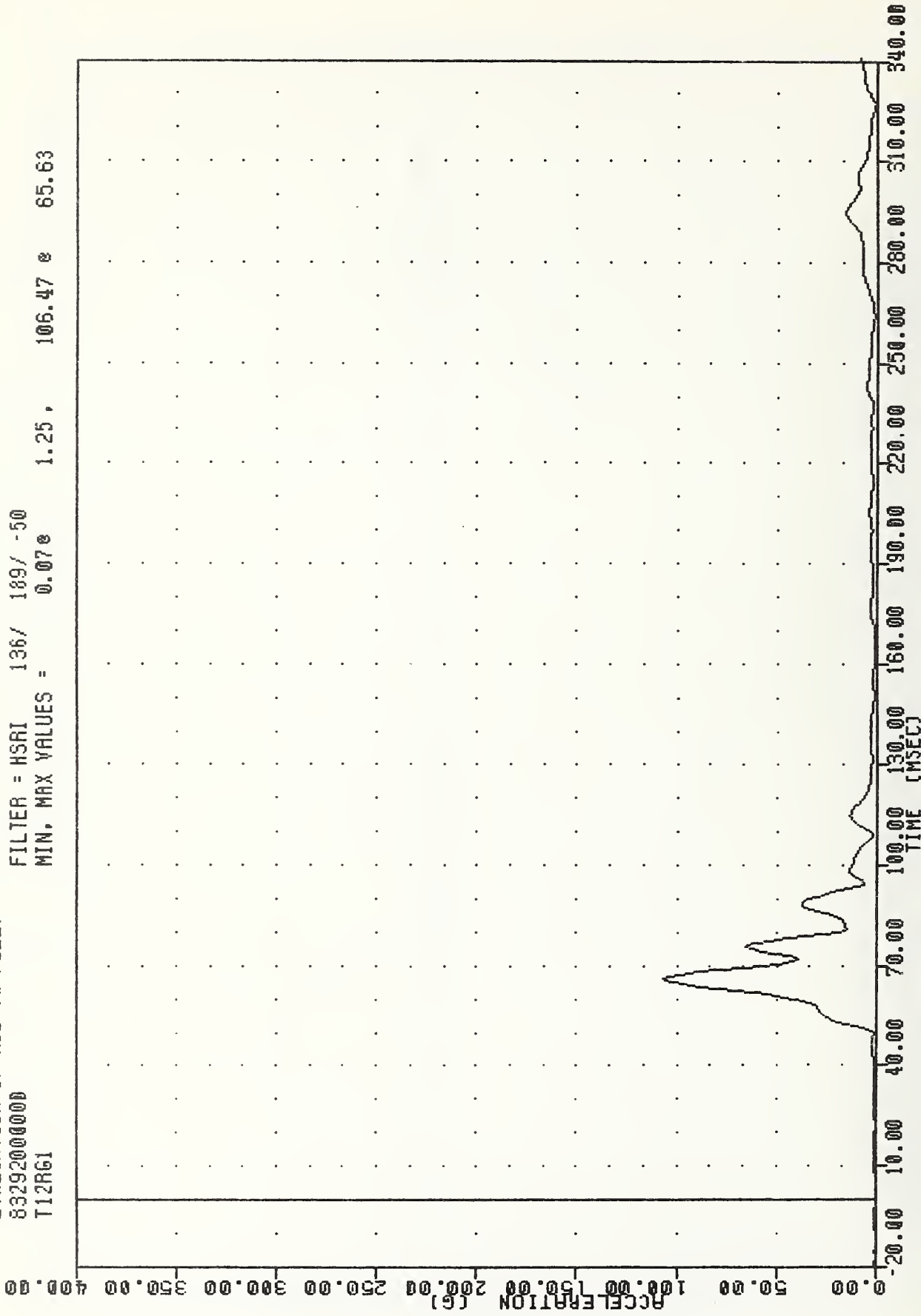
FILTER = HSRI 136/ 189/ -50
 MIN. MAX VALUES = -6.59e 103.13, 15.34 e 70.63



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DRIVER LOWER SPINE ACCELERATION Z AXIS

EVALUATION OF MDD VW FLEET
83292000000
T12R61

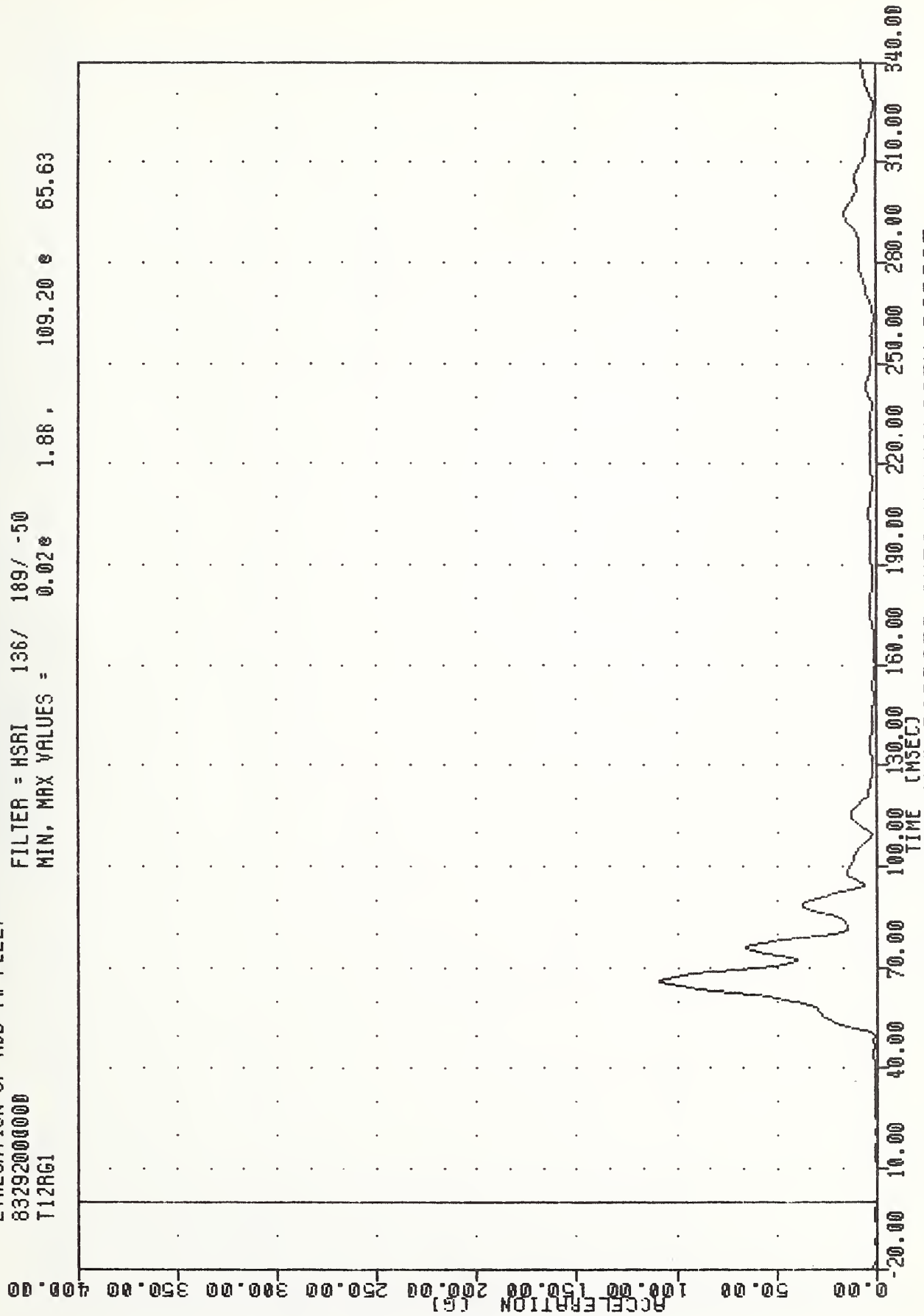
FILTER = HSRI 136/ 189/ -50
MIN. MAX VALUES = 0.07e 1.25, 106.47 e 65.63



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER LOWER SPINE RESULTANT

EVALUATION OF MDD VV FLEET
83292000000
T12RG1

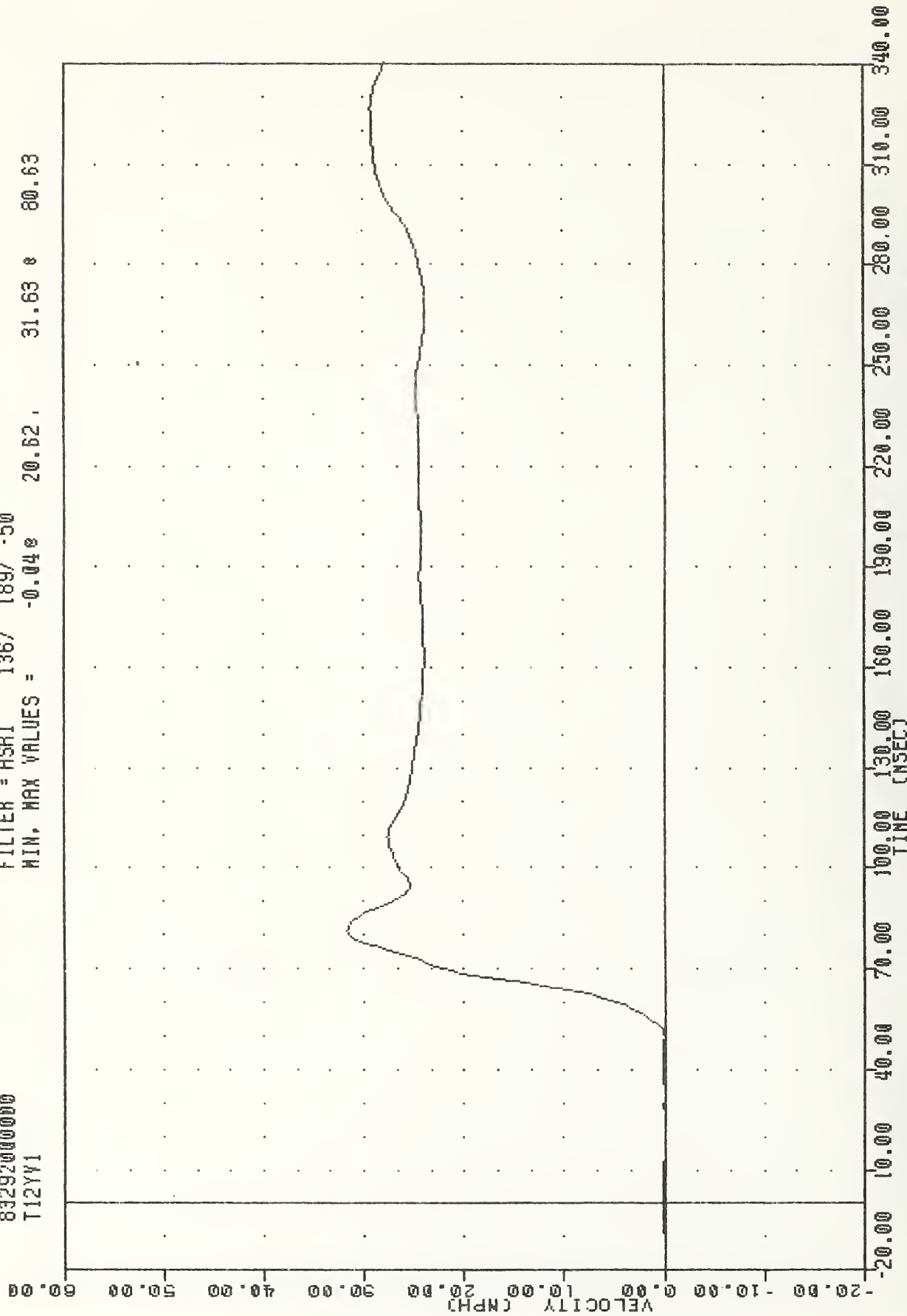
FILTER = HSRI 136/ 189/ -50
MIN, MAX VALUES = 0.02e 109.20 e 65.63



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER LOWER SPINE RESULTANT USING T12YGA

EVALUATION OF MOD VV FLEET
83292000000
T12YV1

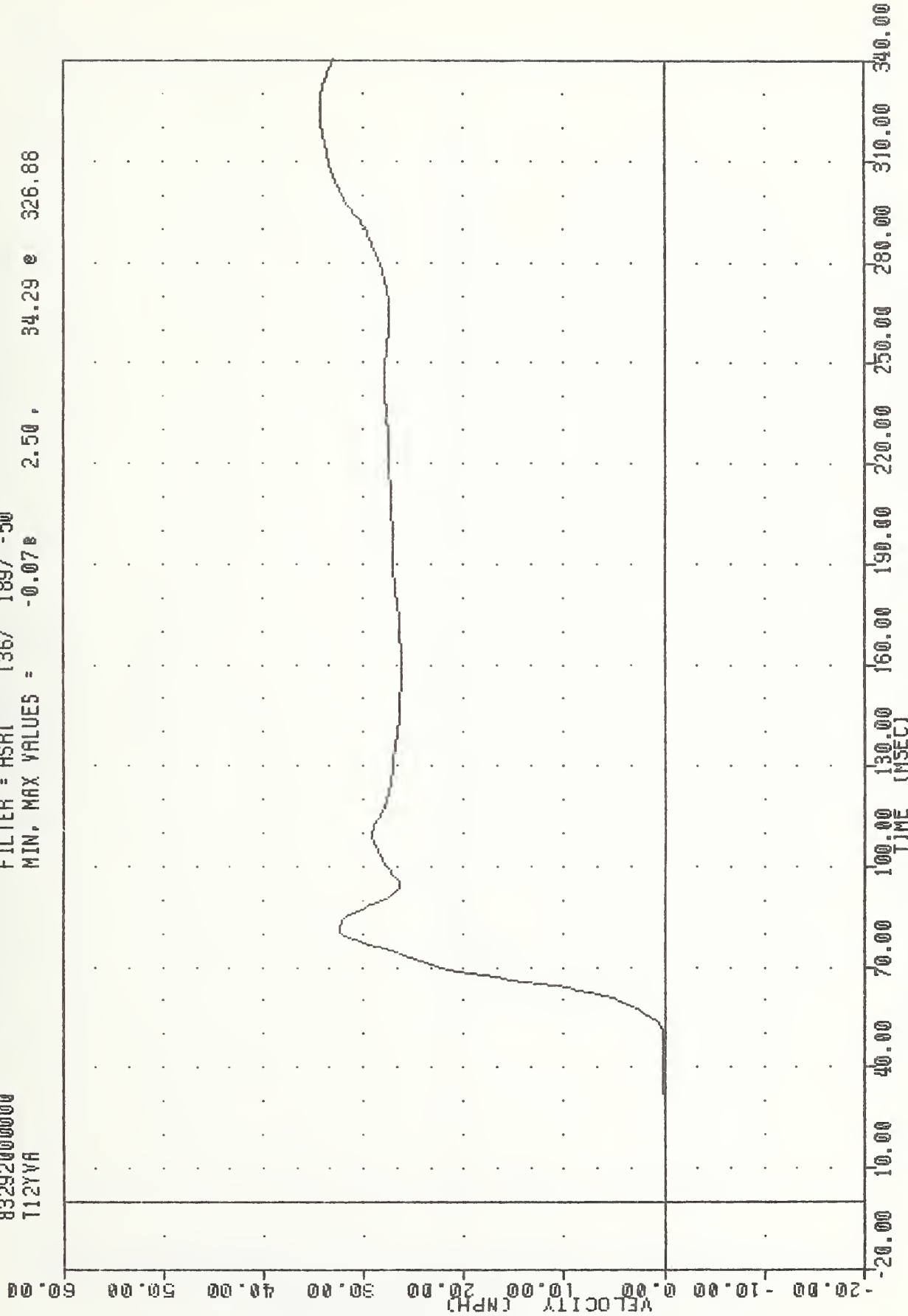
FILTER = HSRI 136/ 189/ -50
MIN, MAX VALUES = -0.04e 20.62, 31.63 e 80.63



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING T12YGI

EVALUATION OF MOD YV FLEET
83292000000
T12YVA

FILTER = HSRI 136/ 189/ -50
MIN, MAX VALUES = -0.07 e 2.50 f 34.29 e 326.88



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING T12YGA

EVALUATION OF MOD VV FLEET

83292000000

LURY61

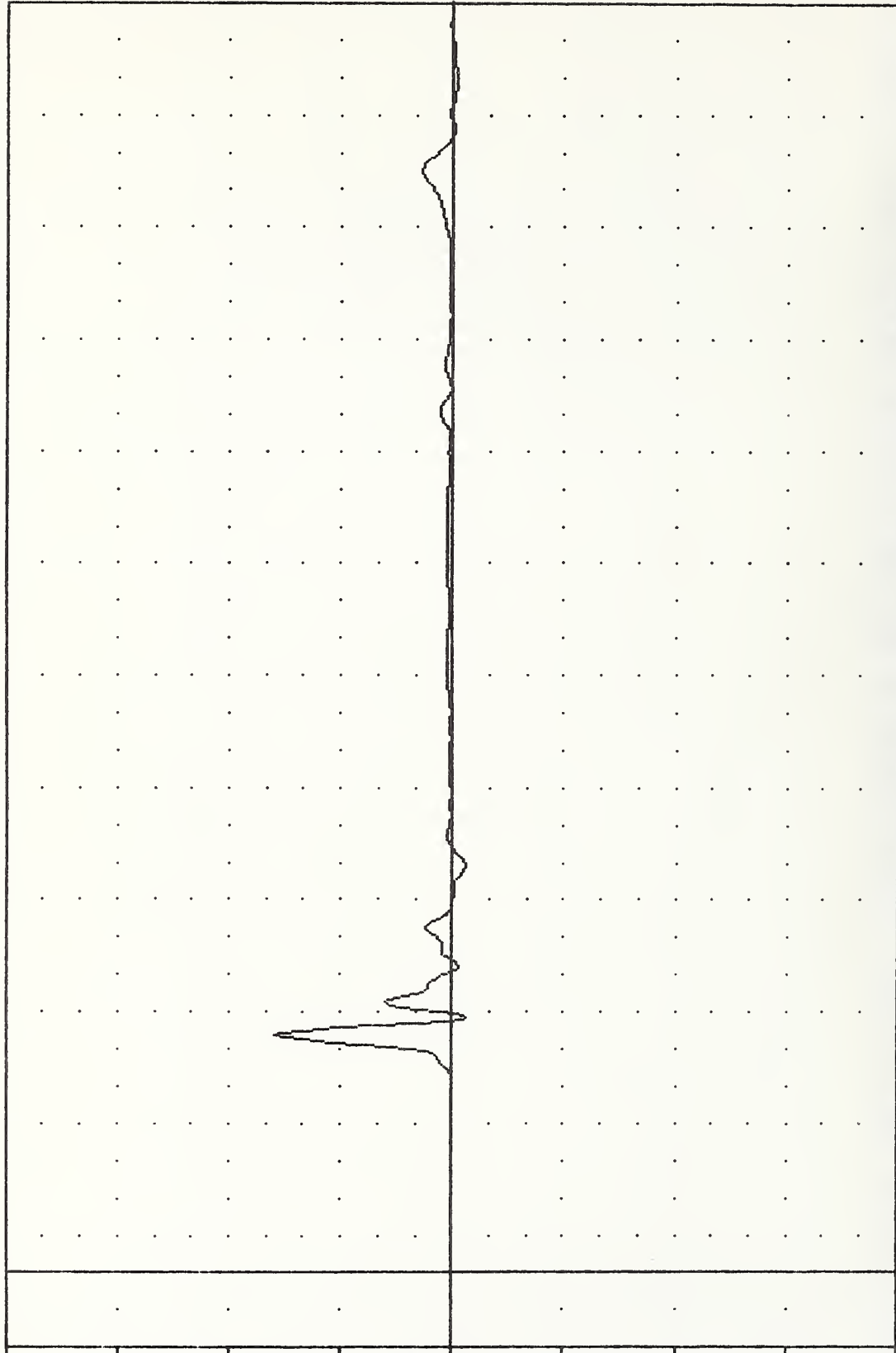
FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -11.78e 143.32 e 63.13

68.13, 143.32 e 63.13

ACCELERATION (G)

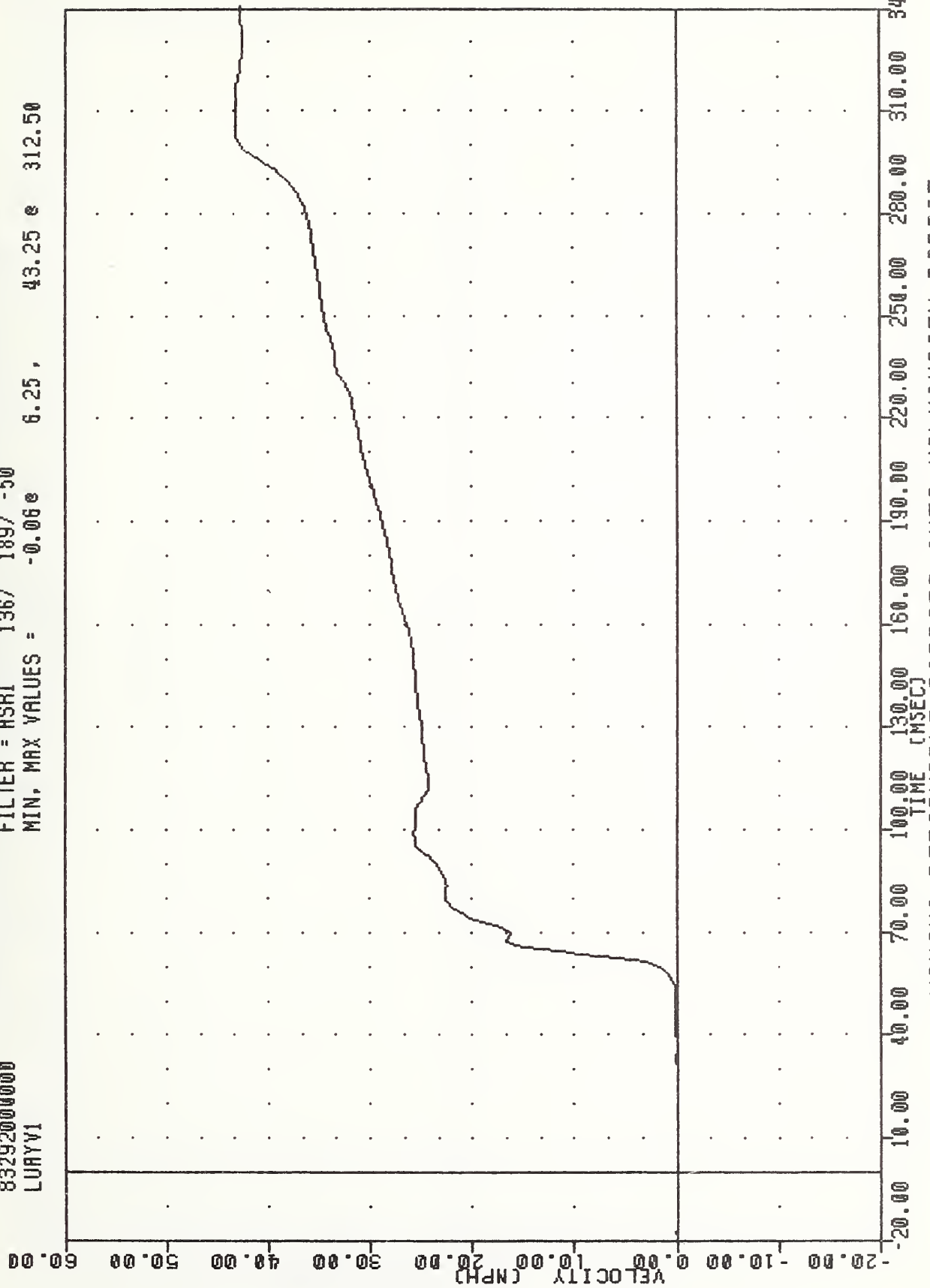
TIME (MSEC)



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER LEFT UPPER RIB ACCELERATION Y AXIS

EVALUATION OF MOD VV FLEET
83292000000
LURYV1

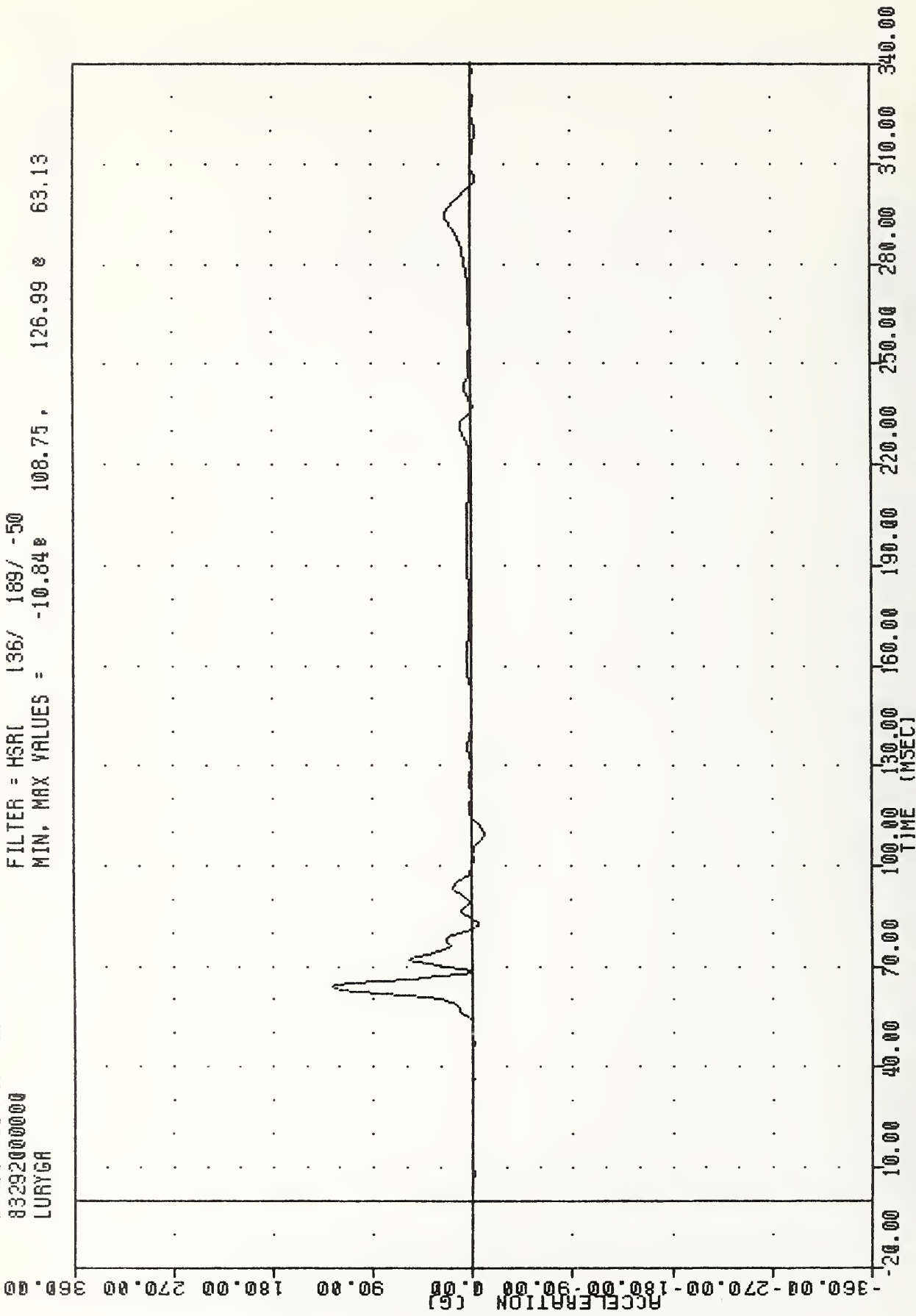
FILTER = HSRI 136/ 189/ -50
MIN, MAX VALUES = -0.06e 6.25, 43.25 e 312.50



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING LURYG1

EVALUATION OF MOD YW FLEET
8329200000
LURYGA

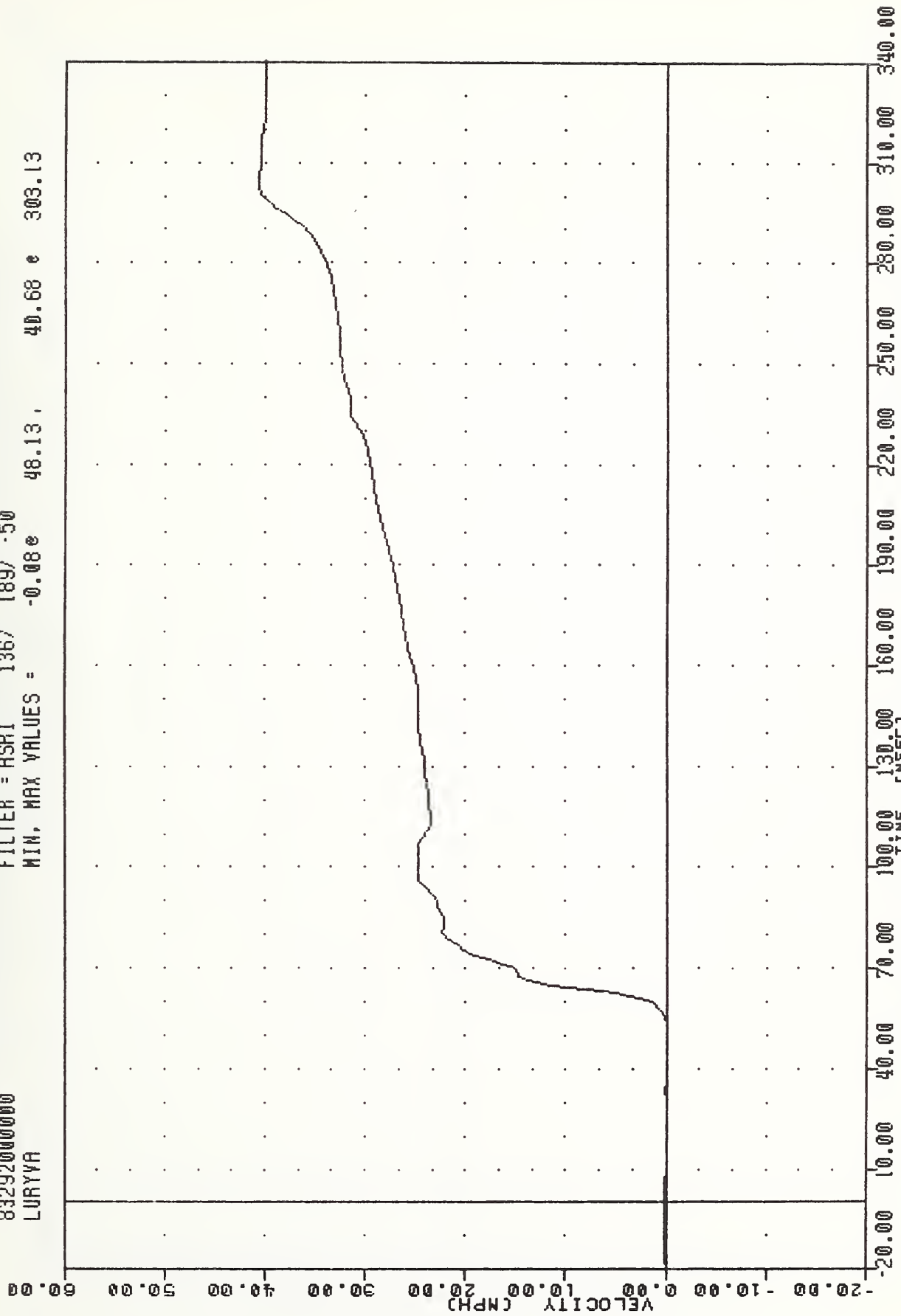
FILTER = HSR(136/ 189/ -50
MIN. MAX VALUES = -10.84e 108.75, 126.99 e 63.13



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER LEFT UPPER RIB ACCELERATION #2 Y AXIS

EVALUATION OF MOD YW FLEET
83292000000
LURYVA

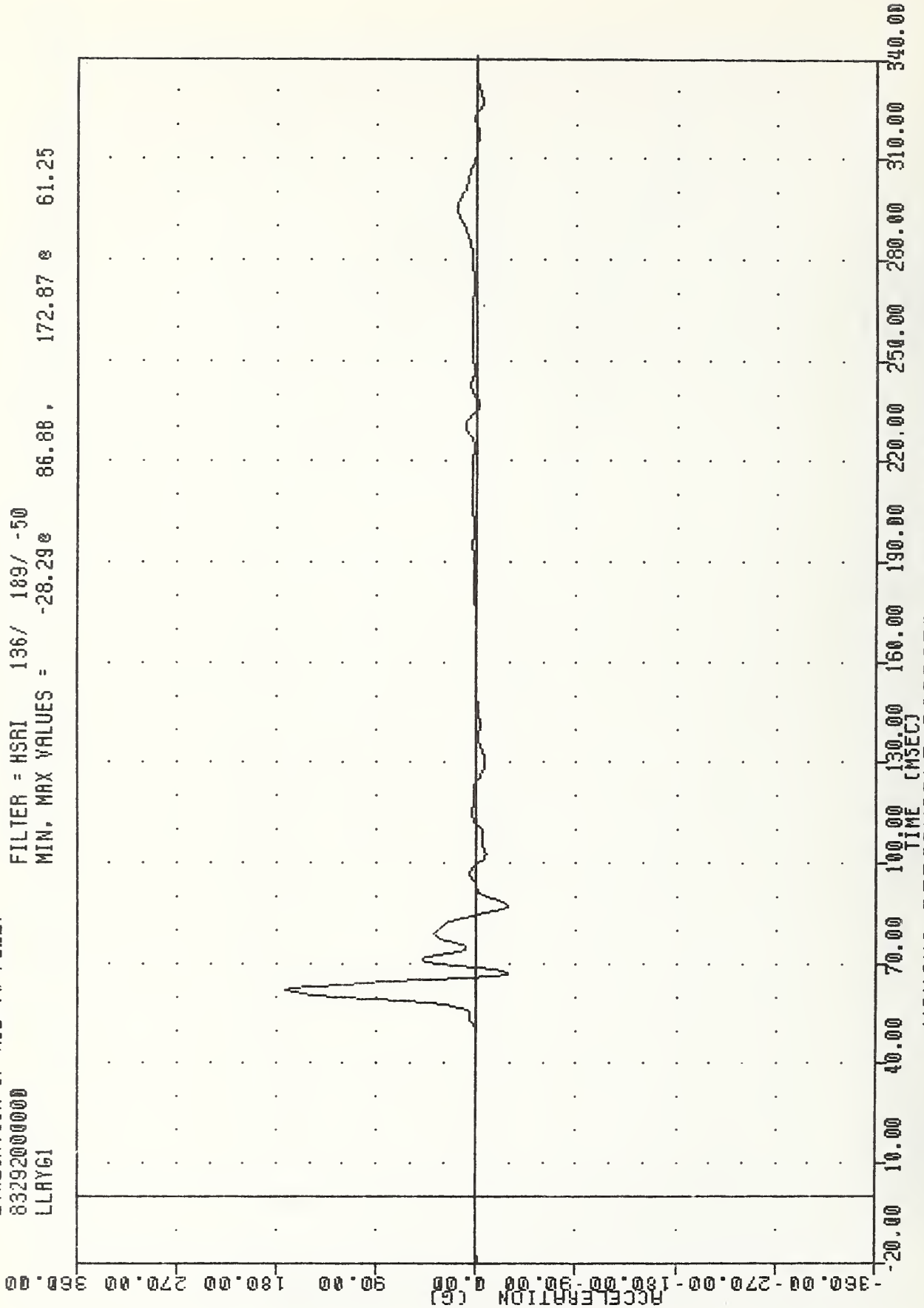
FILTER = HSRI 136/ 189/ .50
MIN, MAX VALUES = -0.08e 48.13, 40.68 e 303.13



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING LURYGA

EVALUATION OF MDD VW FLEET
83292000000
LLAYG1

FILTER = HSRI 136/ 189/ -50
MIN, MAX VALUES = -28.29e 86.88, 172.87 e 61.25



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER LEFT LOWER RIB ACCELERATION Y AXIS

EVALUATION OF MOD YW FLEET

83292000000

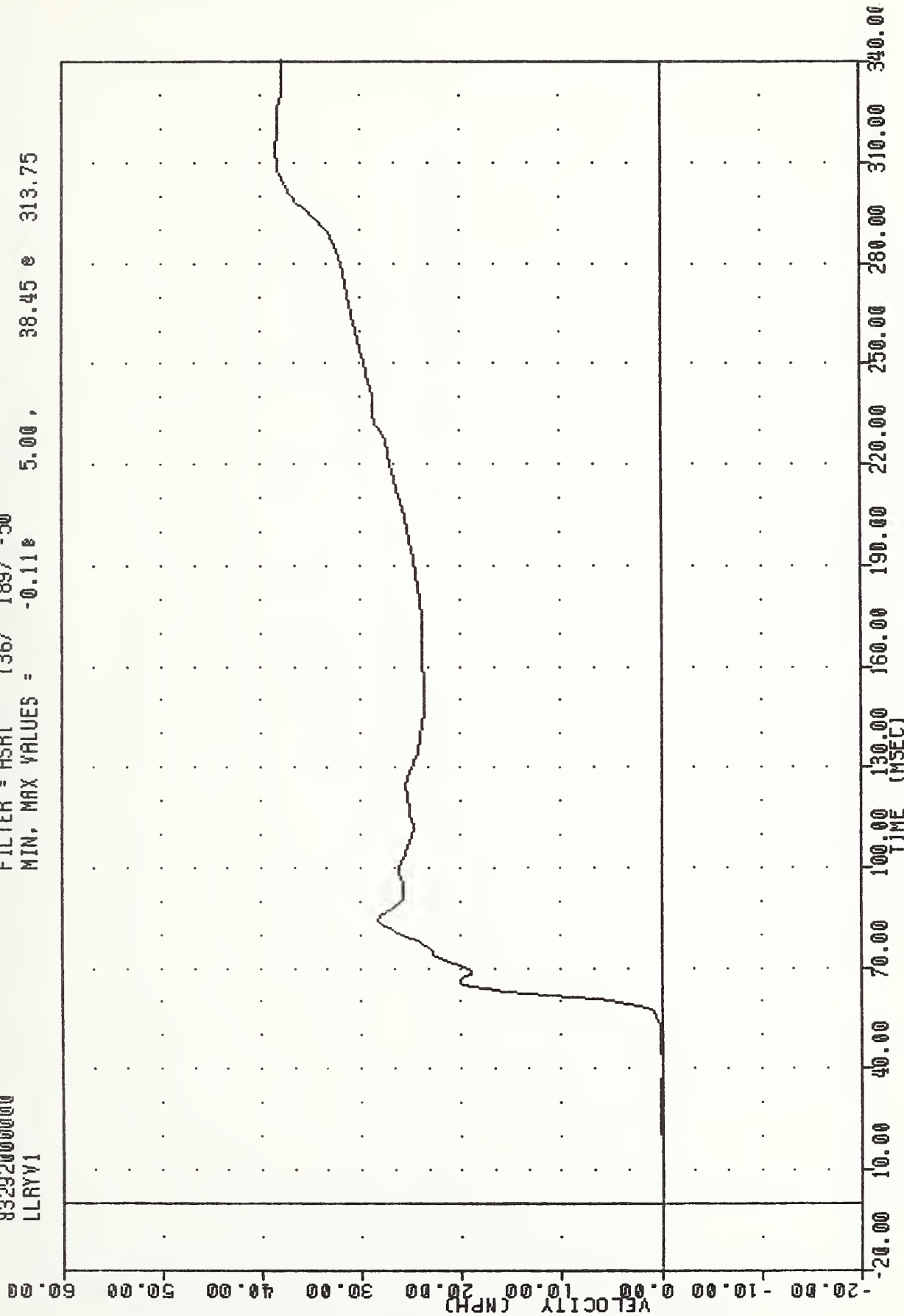
LLRYV1

FILTER = HSAI 136/ 189/ -50

MIN, MAX VALUES = -0.11e

5.00,

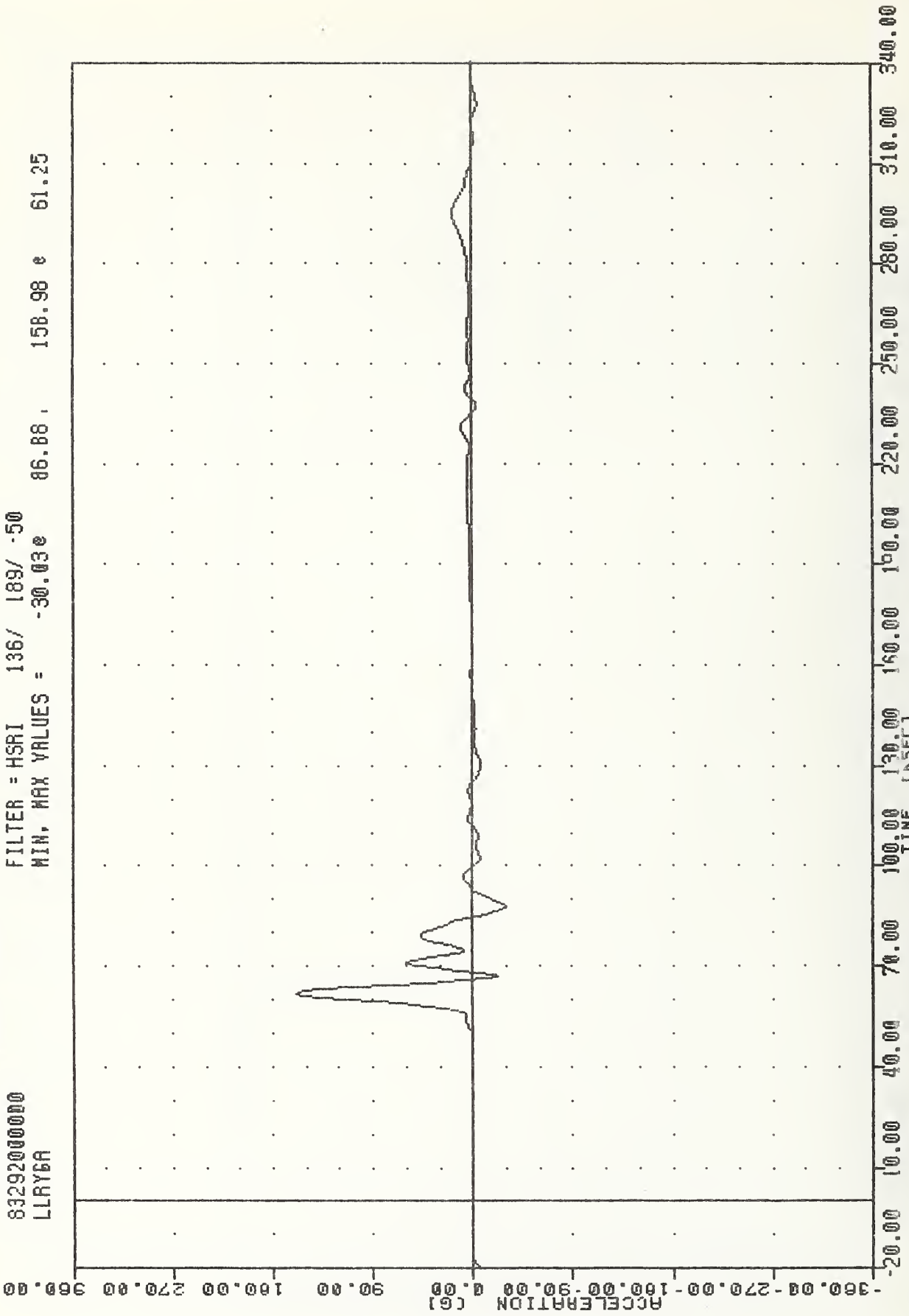
38.45 e 313.75



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING LLRYGI

EVALUATION OF MOD VN FLEET
83292000000
LLRY6A

FILTER = HSRI 136/ 189/ -50
MIN, MAX VALUES = -30.03e 158.98 e 61.25



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER LEFT LOWER RIB ACCELERATION -2 Y AXIS

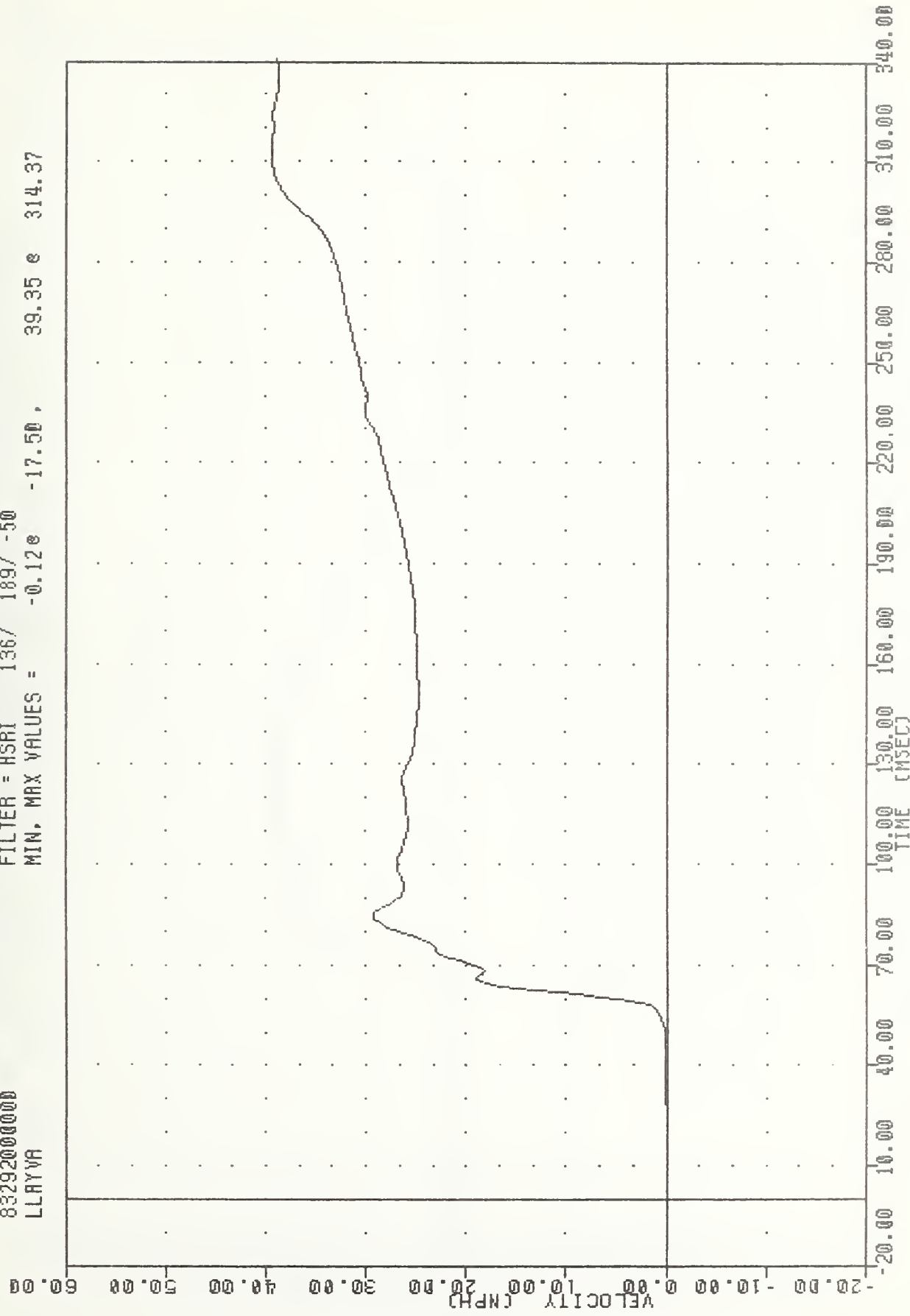
EVALUATION OF MDD VV FLEET

83292000000

LLAYVA

FILTER = HSRI 136/ 189/ -50

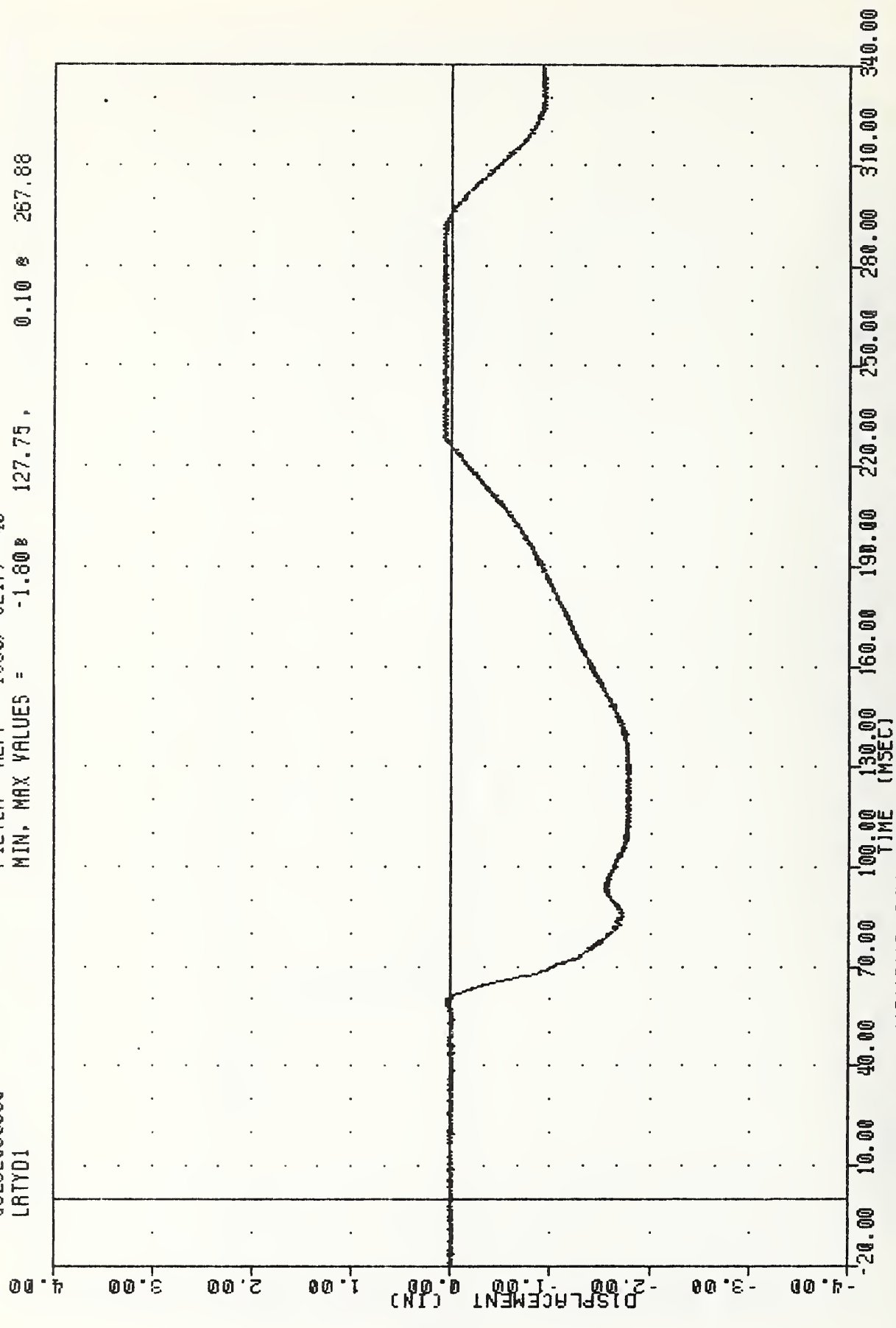
MIN. MAX VALUES = -0.12e -17.50, 39.35 e 314.37



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING LLAYVA

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EVALUATION OF MOD YN FLEET
83292000000
LRTYD1

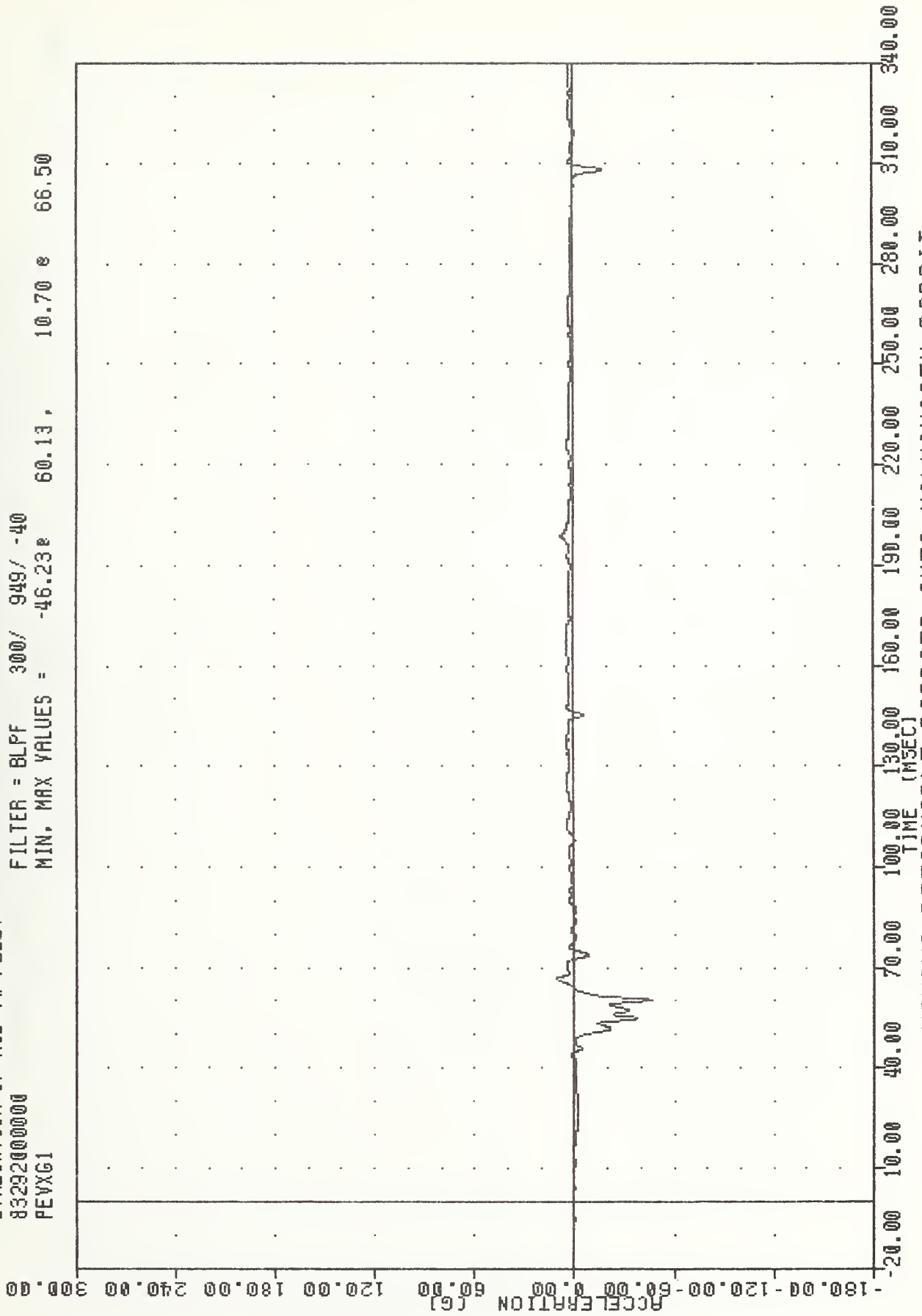
FILTER = ALPF 1650/ 5217/ -40
MIN. MAX VALUES = -1.80 127.75, 0.10 267.88



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER LEFT RIB TO SPINE DISPLACEMENT INCHES

EVALUATION OF MOD YW FLEET
83292000000
PEVXG1

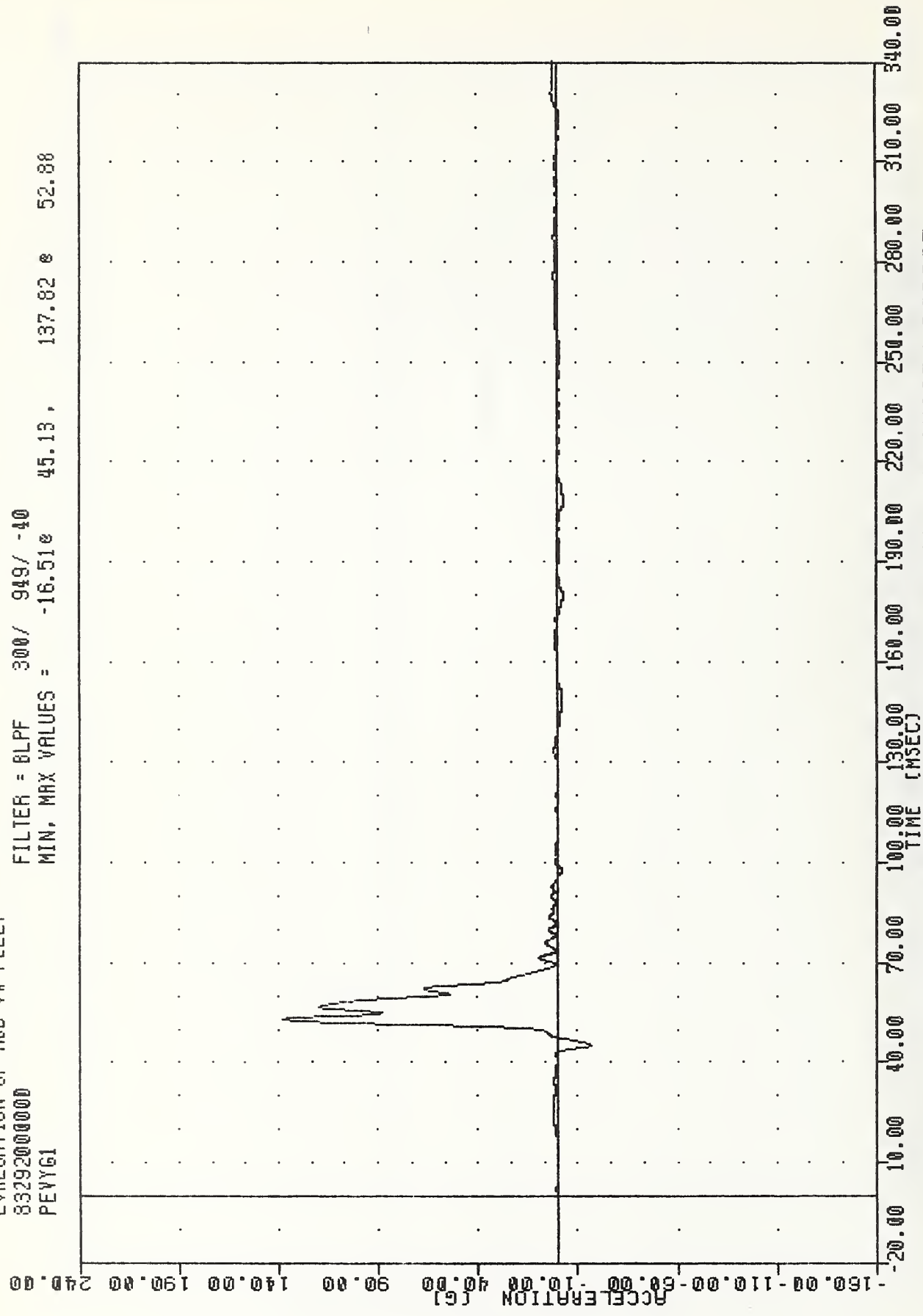
FILTER = BLPF 300/ 949/ -40
MIN. MAX VALUES = -46.23e 60.13, 10.70 e 66.50



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER PELVIS ACCELERATION X AXIS

EVALUATION OF MOD VV FLEET
83292000000
PEVY61

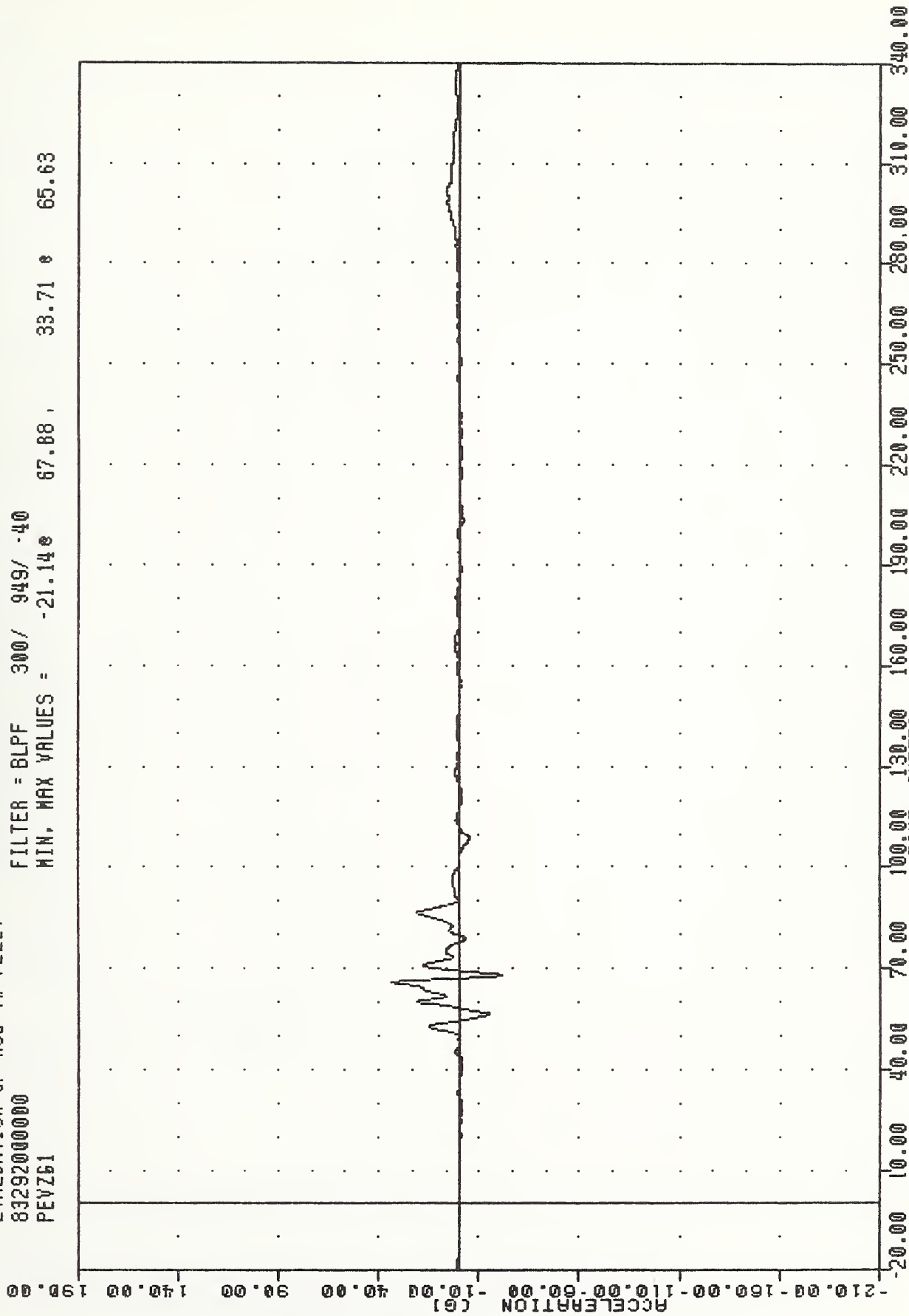
FILTER = 6LPF 300/ 949/ -40
MIN. MAX VALUES = -16.51e 45.13, 137.82 e 52.88



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER PELVIS ACCELERATION Y AXIS

EVALUATION OF MOD YW FLEET
83292000000
PEVZ61

FILTER = BLPF 300/ 949/ -40
MIN. MAX VALUES = -21.14e 67.88 , 33.71 e 65.63



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER PELVIS ACCELERATION Z AXIS

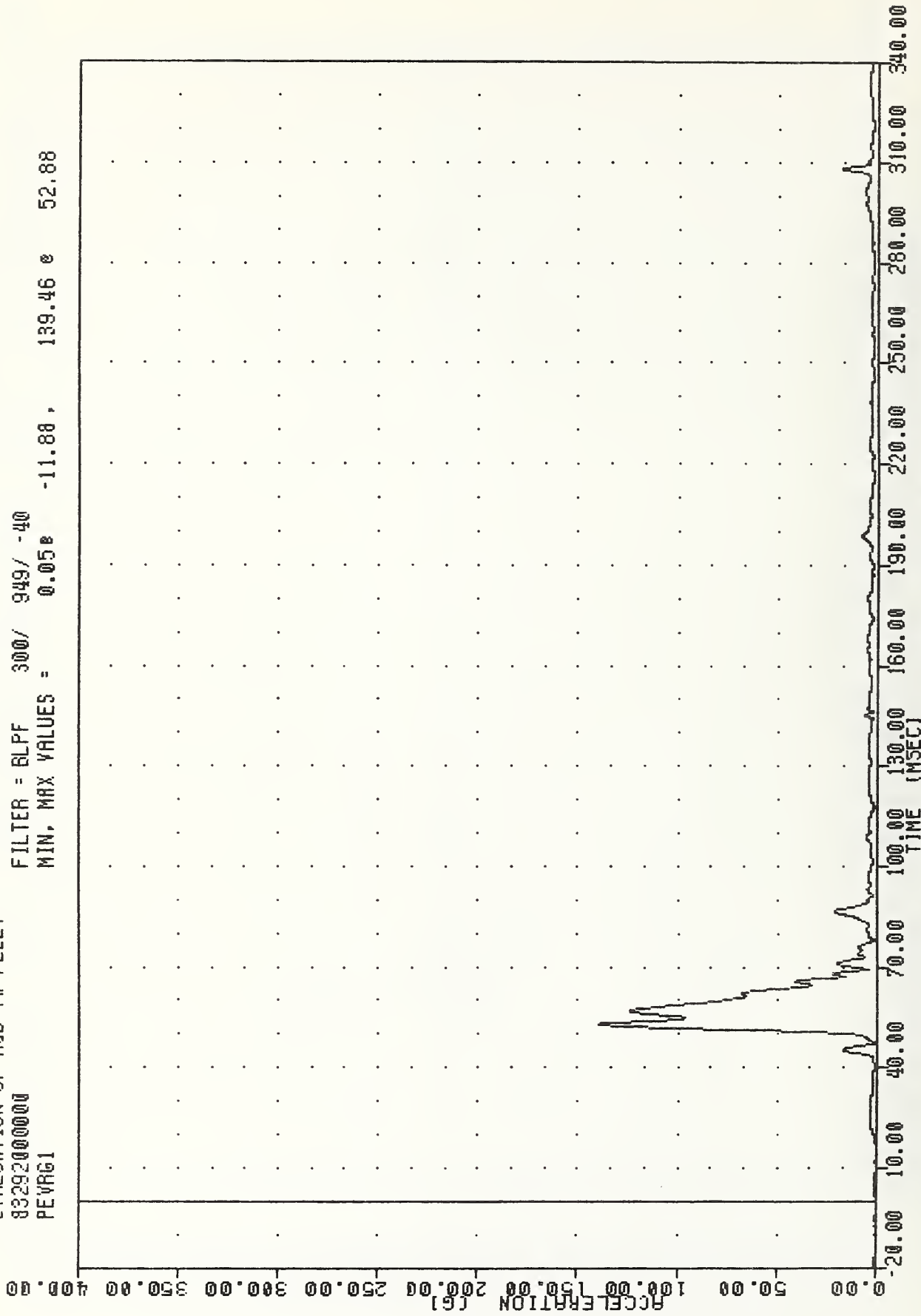
EVALUATION OF MOD YW FLEET

83292000000

PEVRG1

FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = 0.05e -11.88, 139.46 e 52.88



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER PELVIS RESULTANT

EVALUATION OF MOD YW FLEET

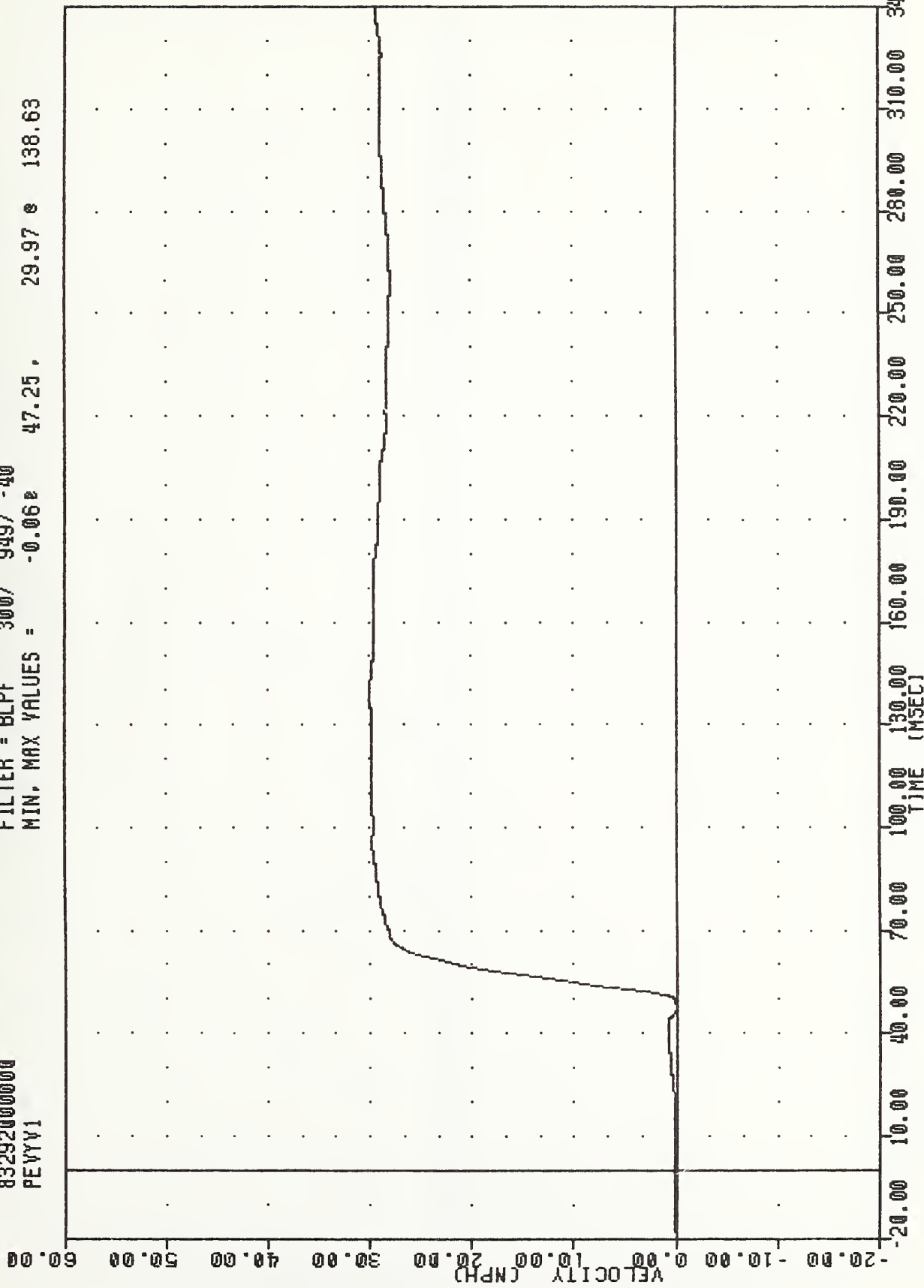
83292000000

PEVYV1

FILTER = BLPF 300/ 949/ -40

MIN. MAX VALUES = -0.06 47.25

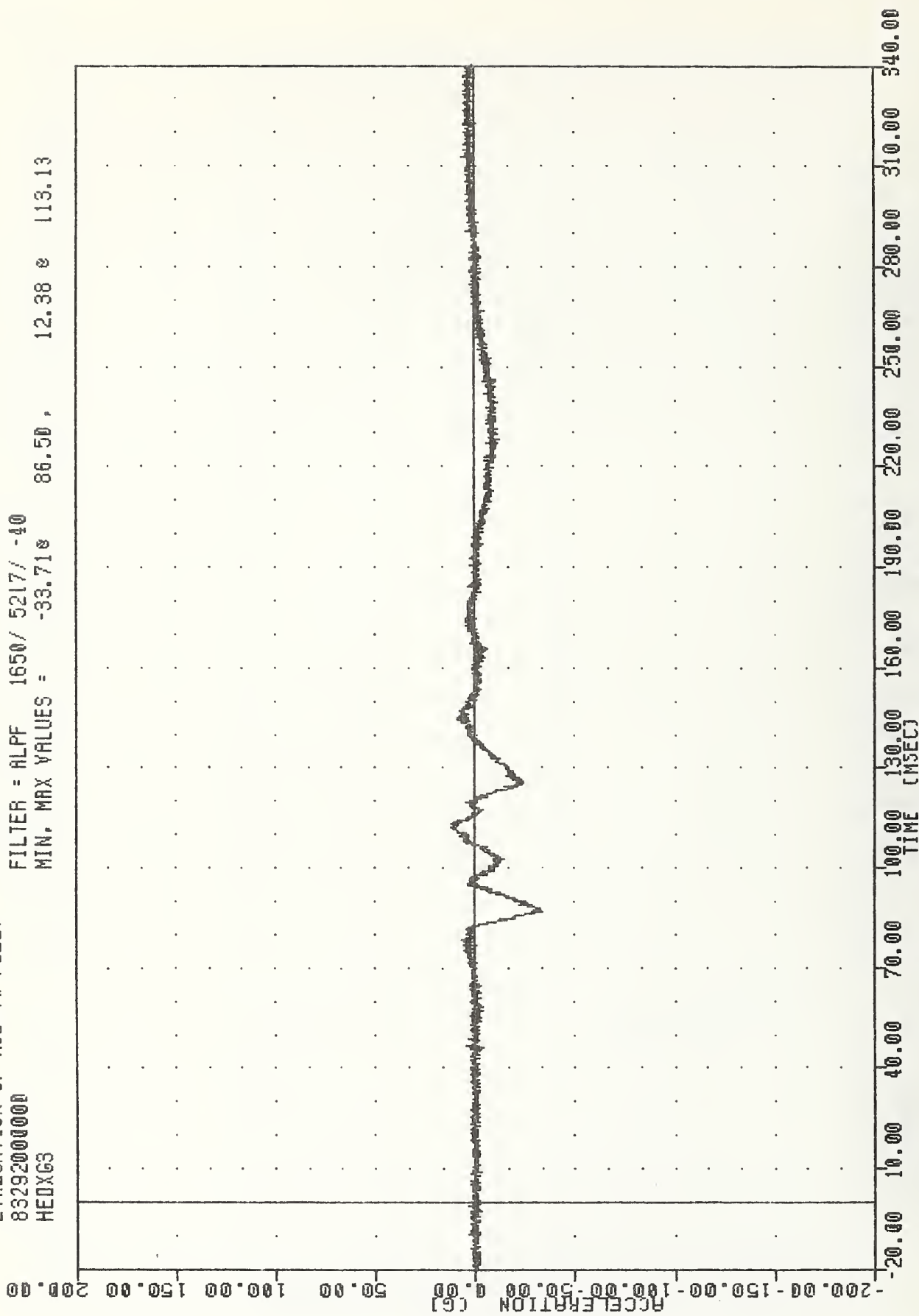
29.97 e 138.63



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING PEVYGI

EVALUATION OF MDD YW FLEET
83292000000
HEDXG3

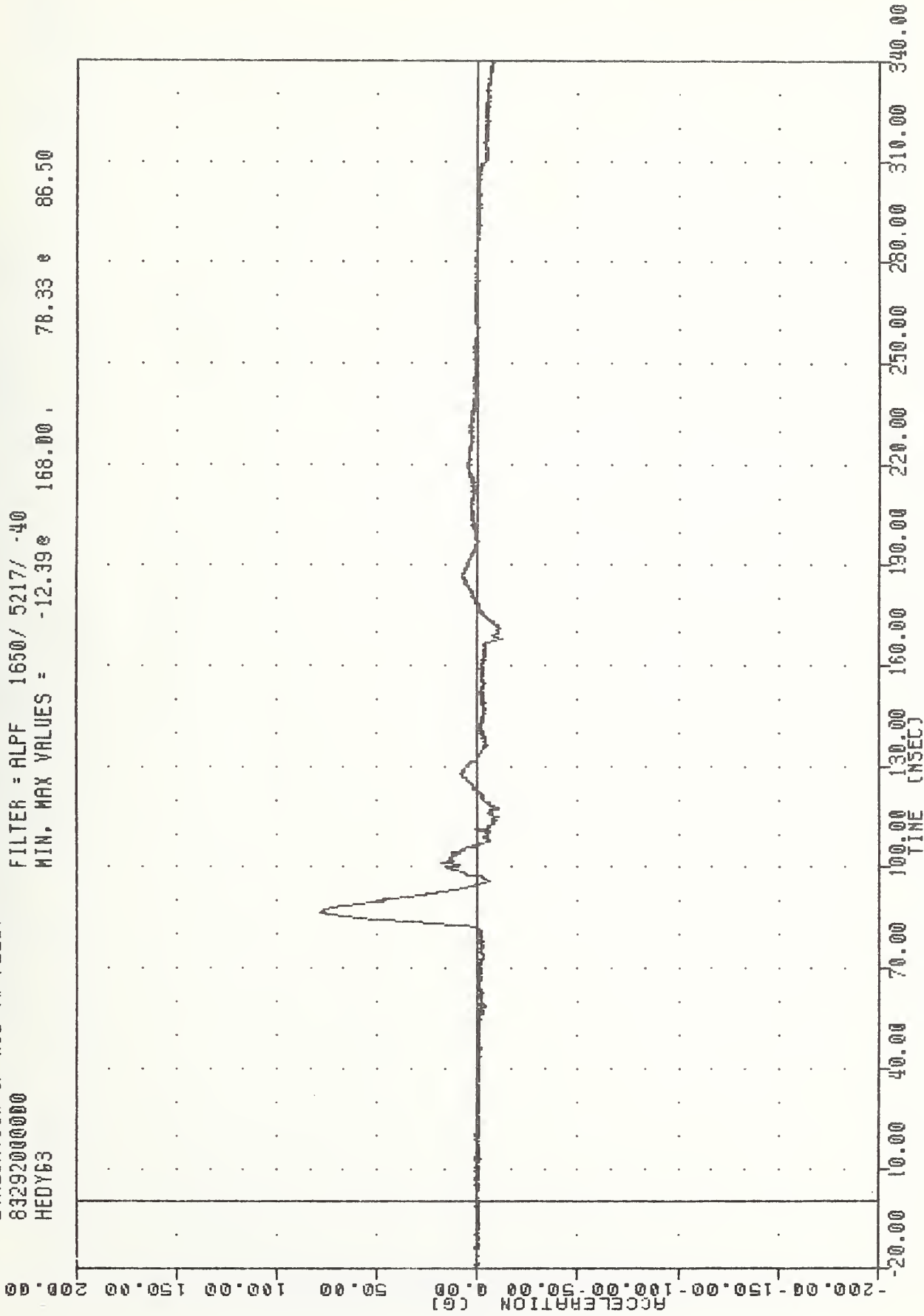
FILTER = ALPF 1650/ 5217/ -40
MIN. MAX VALUES = -33.71g 12.38 g 113.13



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER HEAD ACCELERATION X AXIS

EVALUATION OF MOD VW FLEET
83292000000
HEDY63

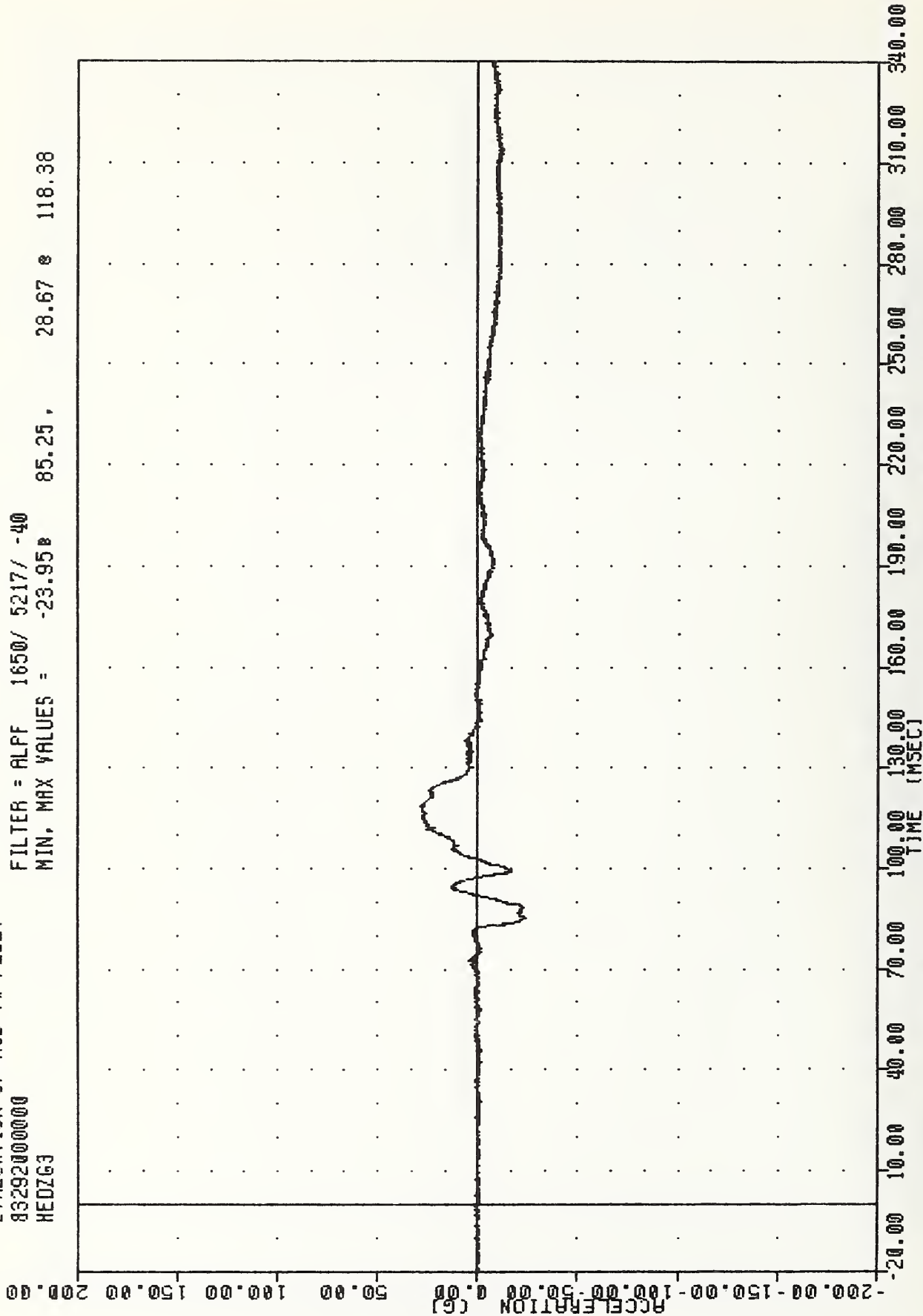
FILTER = ALPF 1650 / 5217 / -40
MIN. MAX VALUES = -12.39e 168.00 , 78.33 e 86.50



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER HEAD ACCELERATION Y AXIS

EVALUATION OF MOD YW FLEET
83292000000
HEDZG3

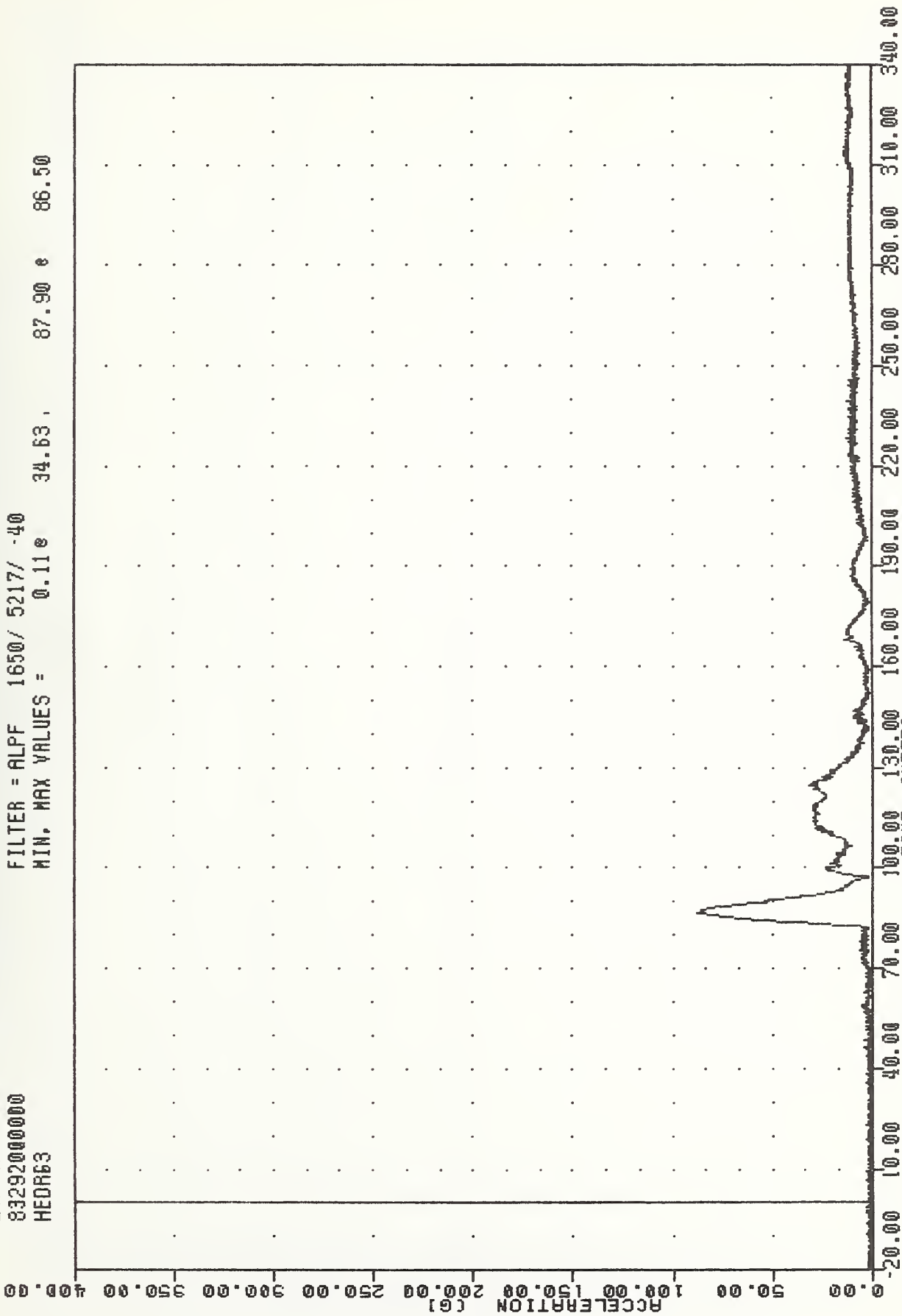
FILTER = ALPF 1650/ 5217/ -40
MIN. MAX VALUES = -23.95 85.25 , 28.67 e 118.38



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER HEAD ACCELERATION Z AXIS

EVALUATION OF MOD VW FLEET
83292000000
HEDR63

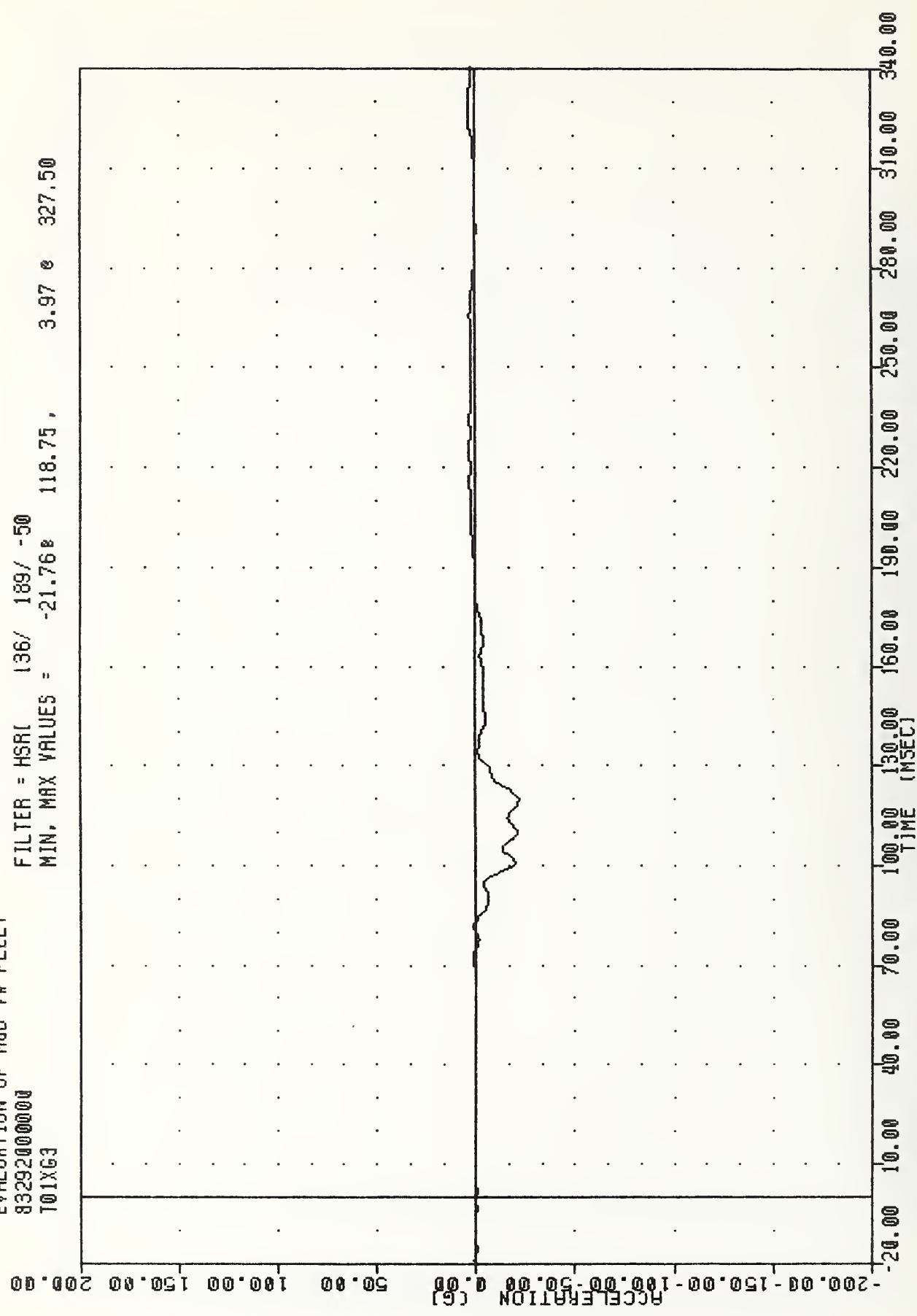
FILTER = ALPF 1650/ 5217/ -40
MIN. MAX VALUES = 0.11 e 34.63 , 87.90 e 86.50



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER HEAD RESULTANT

EVALUATION OF MOD YW FLEET
 83292000000
 T01XG3

FILTER = HSRI 136/ 189/ -50
 MIN, MAX VALUES = -21.76e 118.75, 3.97 e 327.50



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 PASSENGER UPPER SPINE ACCELERATION X AXIS

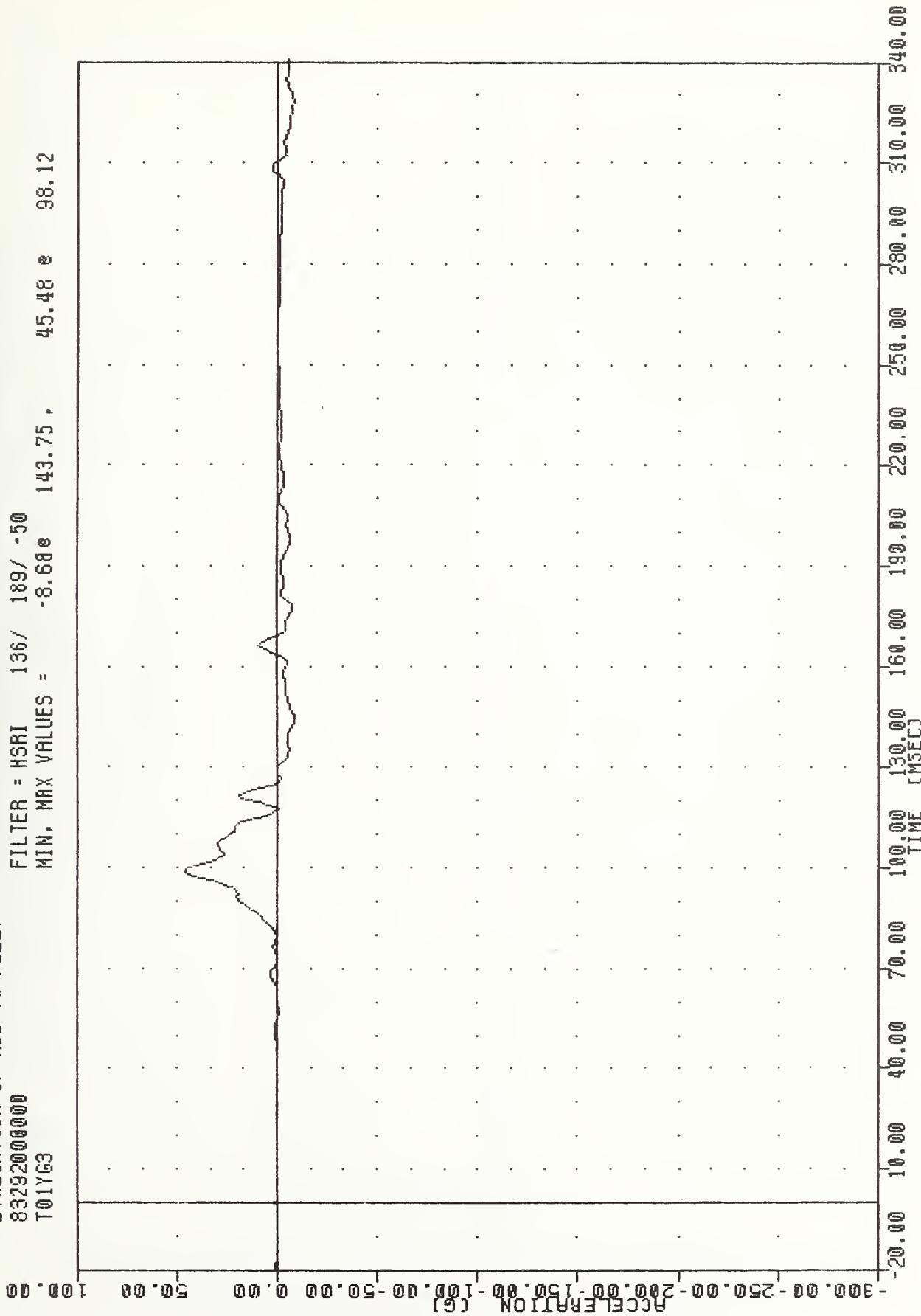
EVALUATION OF MDD VW FLEET

83292000000

T01Y63

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -8.68e 143.75 , 45.48 e 98.12



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER UPPER SPINE ACCELERATION Y AXIS

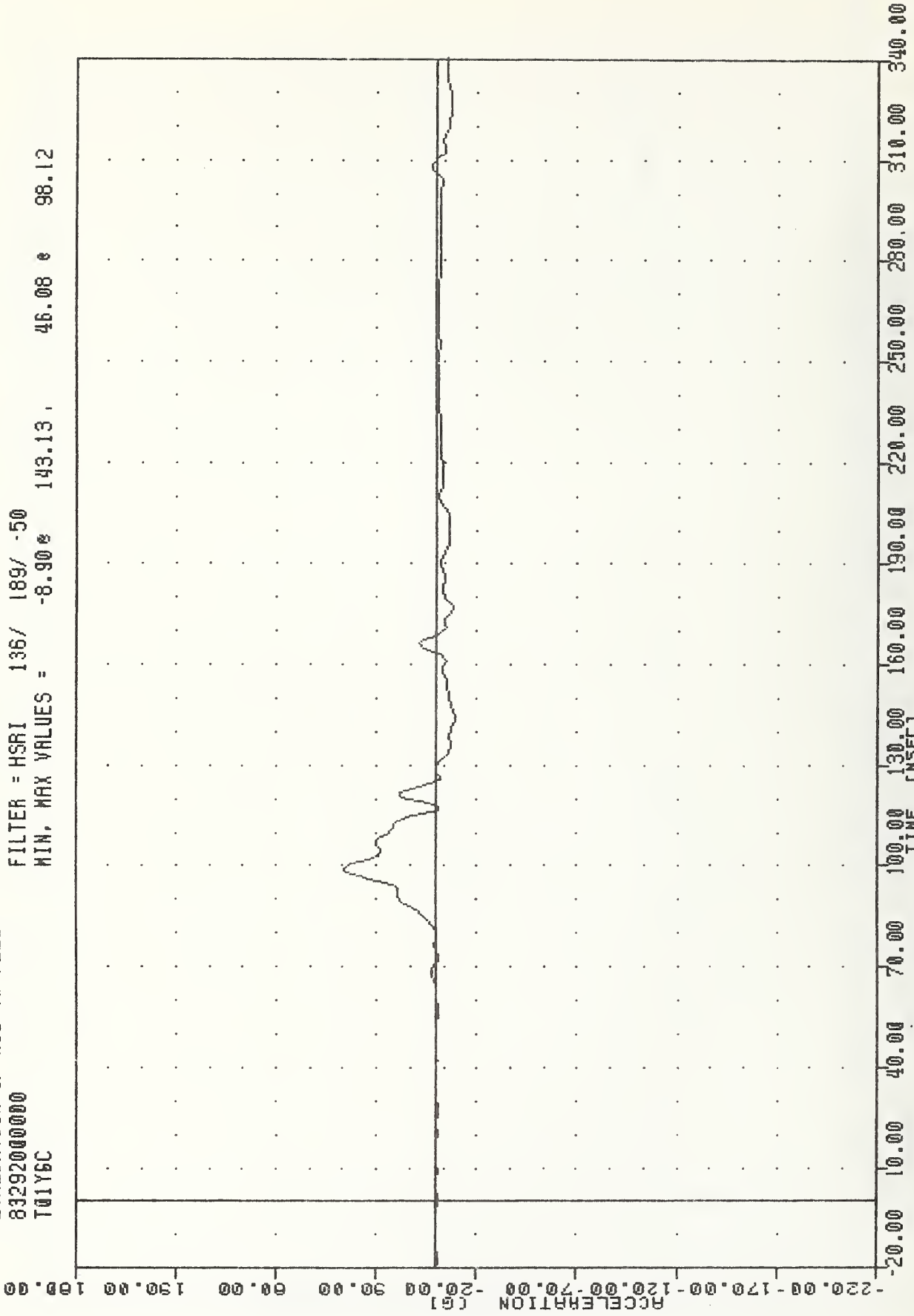
EVALUATION OF MOD YW FLEET

83292000000

T01Y6C

FILTER = HSRI 136/ 189/ -50

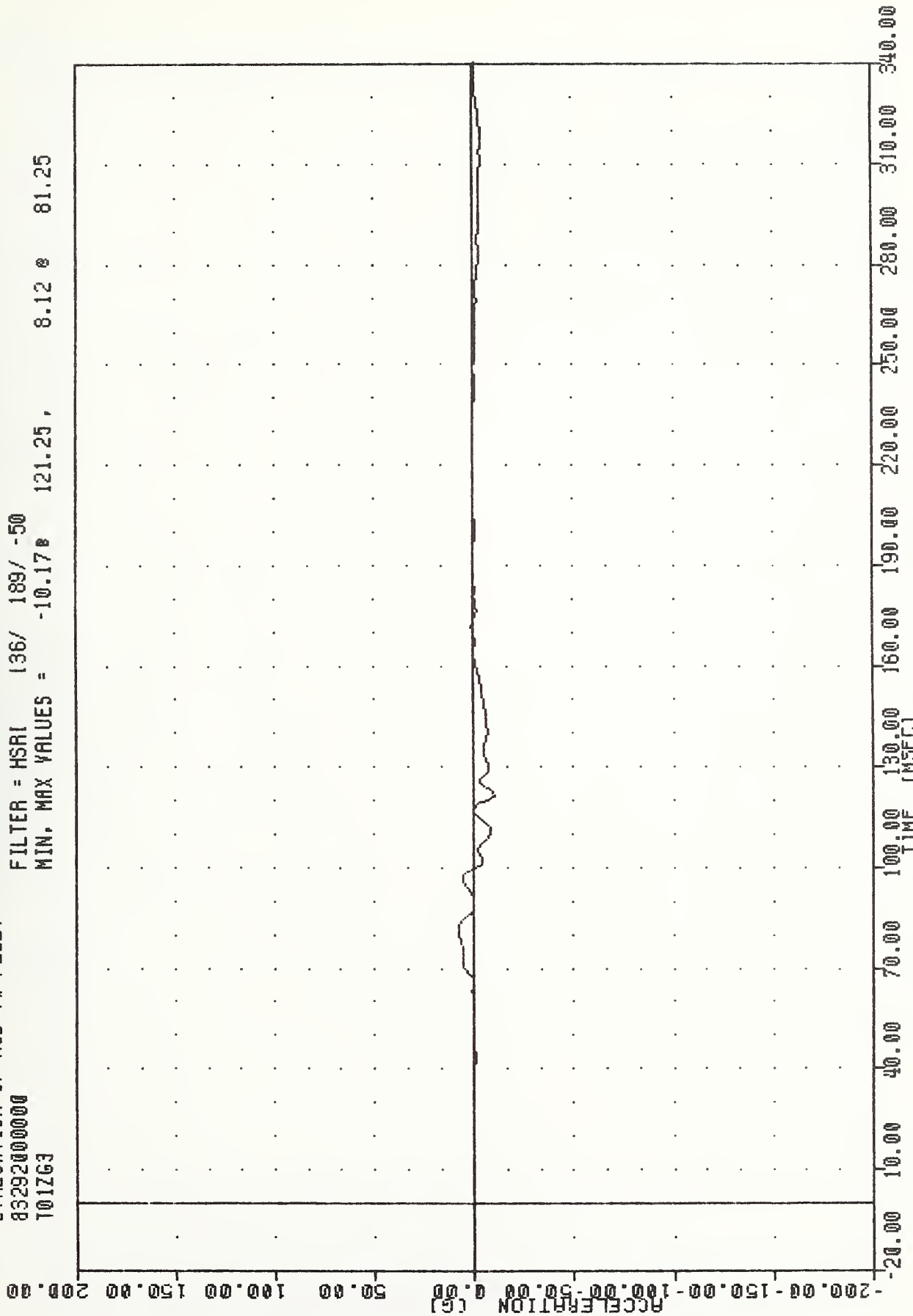
MIN, MAX VALUES = -8.90 e 143.13 , 46.08 e 98.12



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER UPPER SPINE ACCELERATION - 2 Y AXIS

EVALUATION OF MOD YW FLEET
 83292000000
 101ZG3

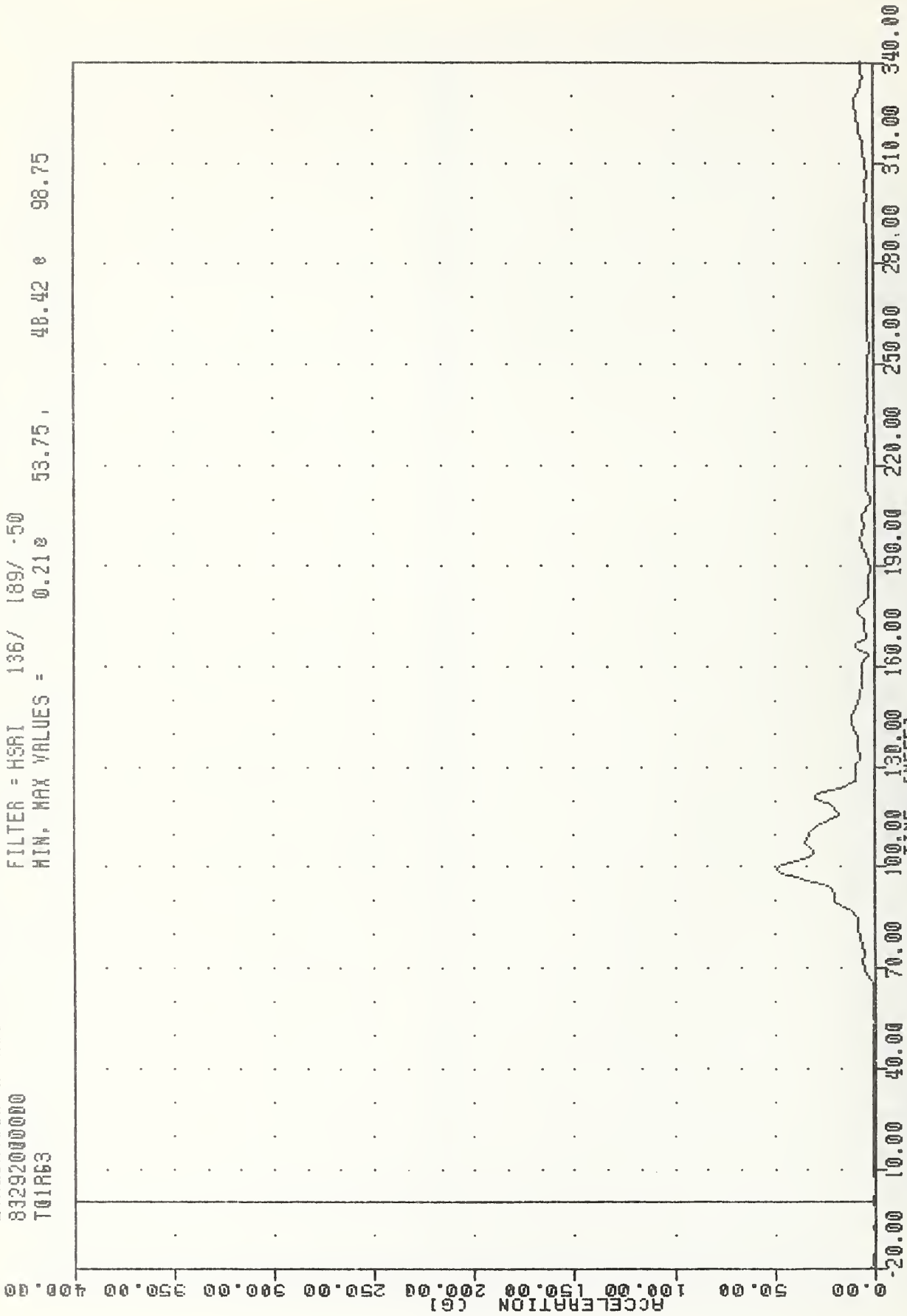
FILTER = HSRI 136/ 189/ -50
 MIN. MAX VALUES = -10.17 121.25, 8.12 81.25



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 PASSENGER UPPER SPINE ACCELERATION Z AXIS

EVALUATION OF MOD VN FLEET
8329200000
T01R63

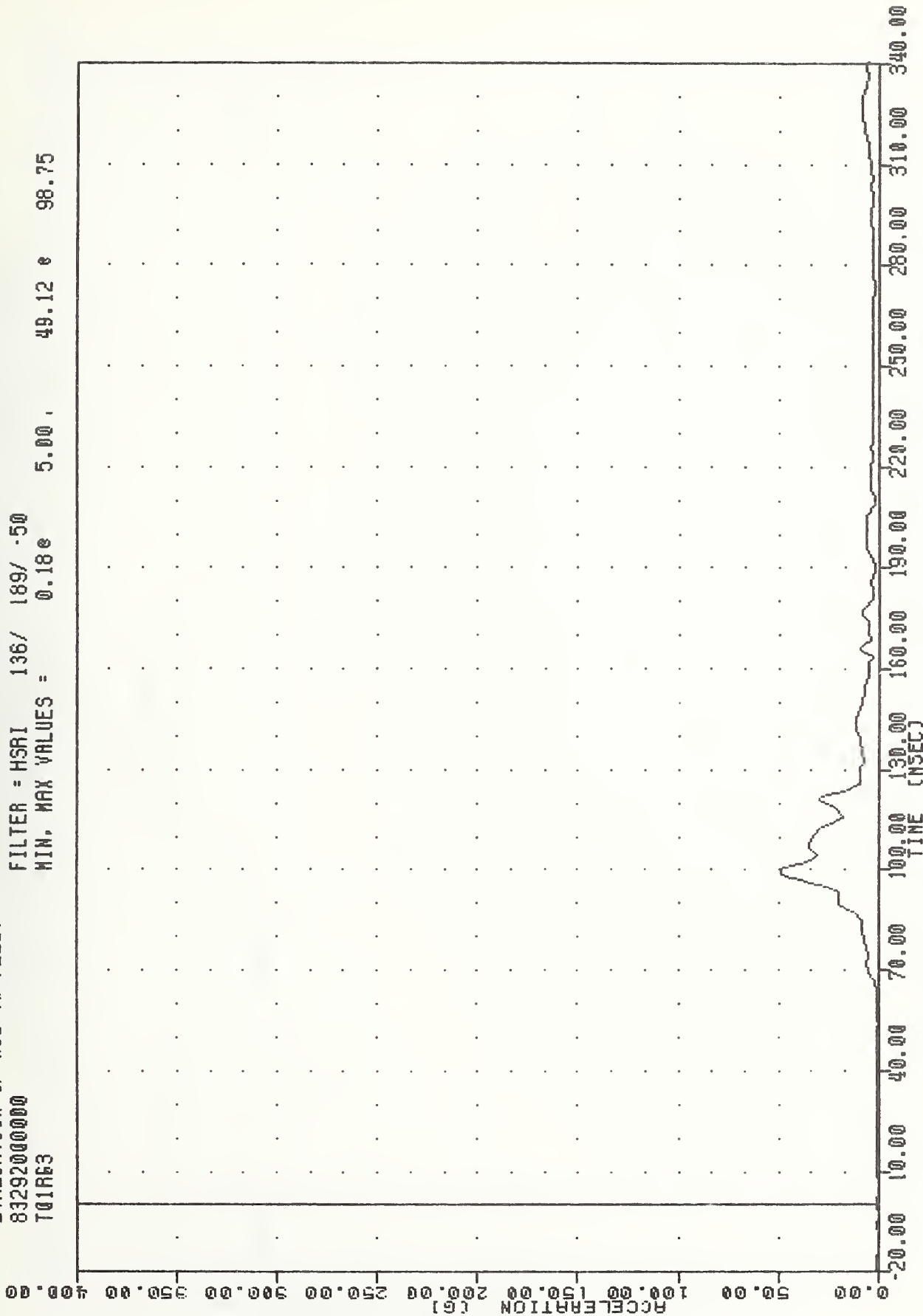
FILTER = HSRI 136/ 189/ .50
MIN. MAX VALUES = 0.21e 53.75 , 48.42 e 98.75



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER UPPER SPINE RESULTANT

EVALUATION OF MOD VM FLEET
83292000000
T01R63

FILTER = HSRI 136/ 189/ .50
MIN, MAX VALUES = 0.18e 5.00, 49.12 e 98.75



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER UPPER SPINE RESULTANT USING T01Y6C

EVALUATION OF MOO VW FLEET

83292000000

T01Y3

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -0.07e 32.50 , 19.21 e 124.38

VELOCITY (MPH)

60.00

50.00

40.00

30.00

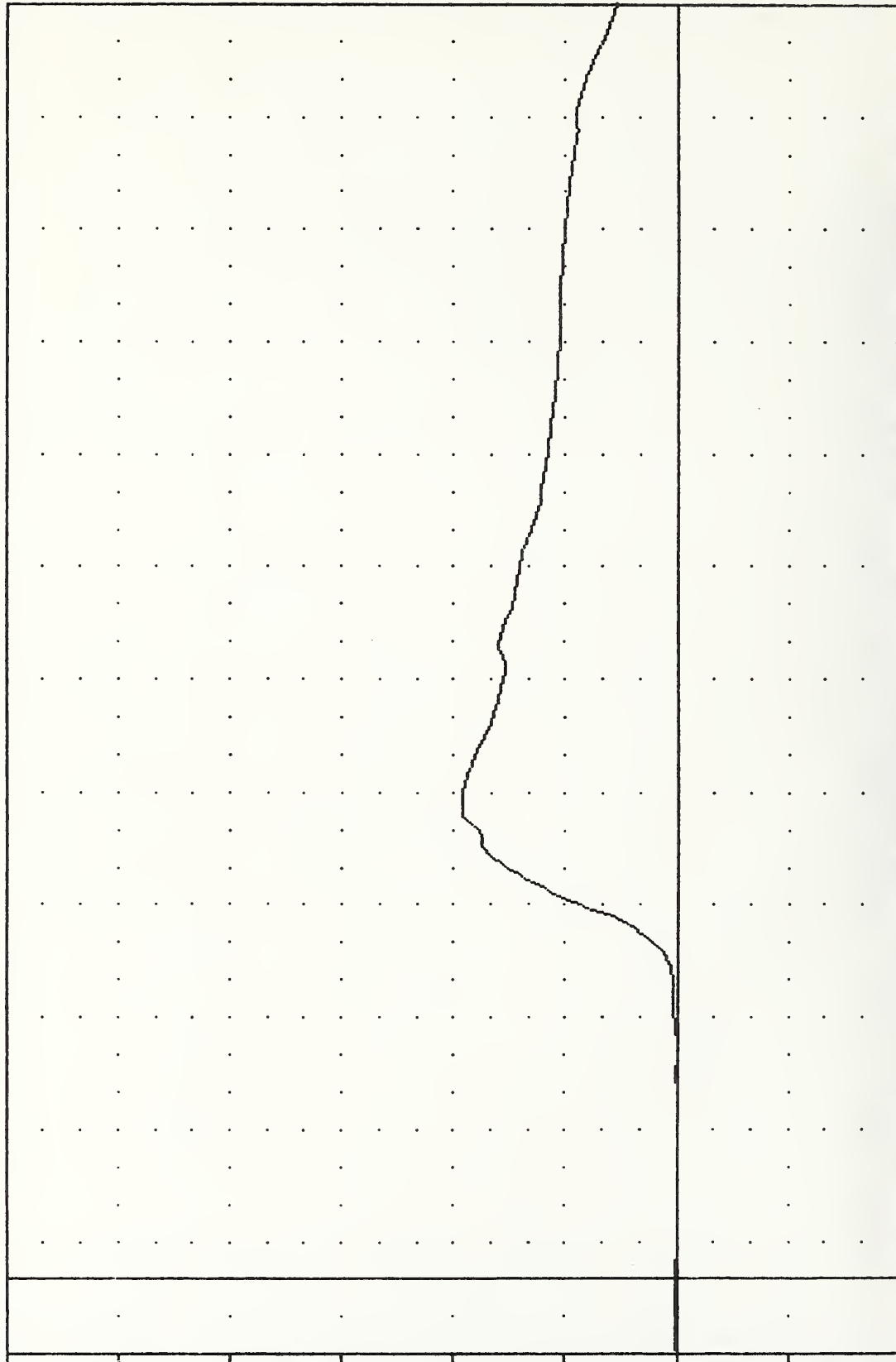
20.00

10.00

0.00

-10.00

-20.00

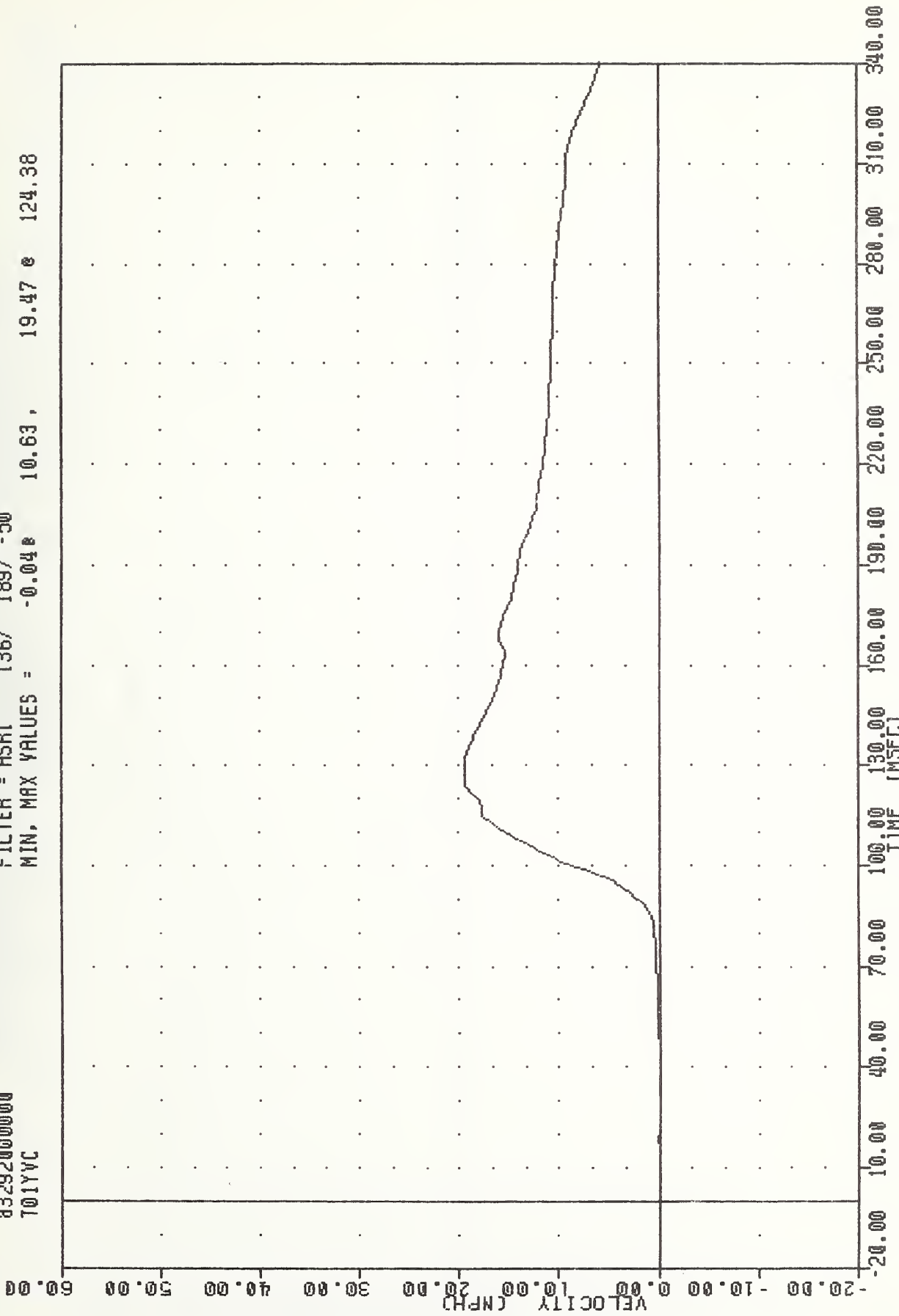


-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING T01YG3

EVALUATION OF MOD YW FLEET
 83292000000
 T01YVC

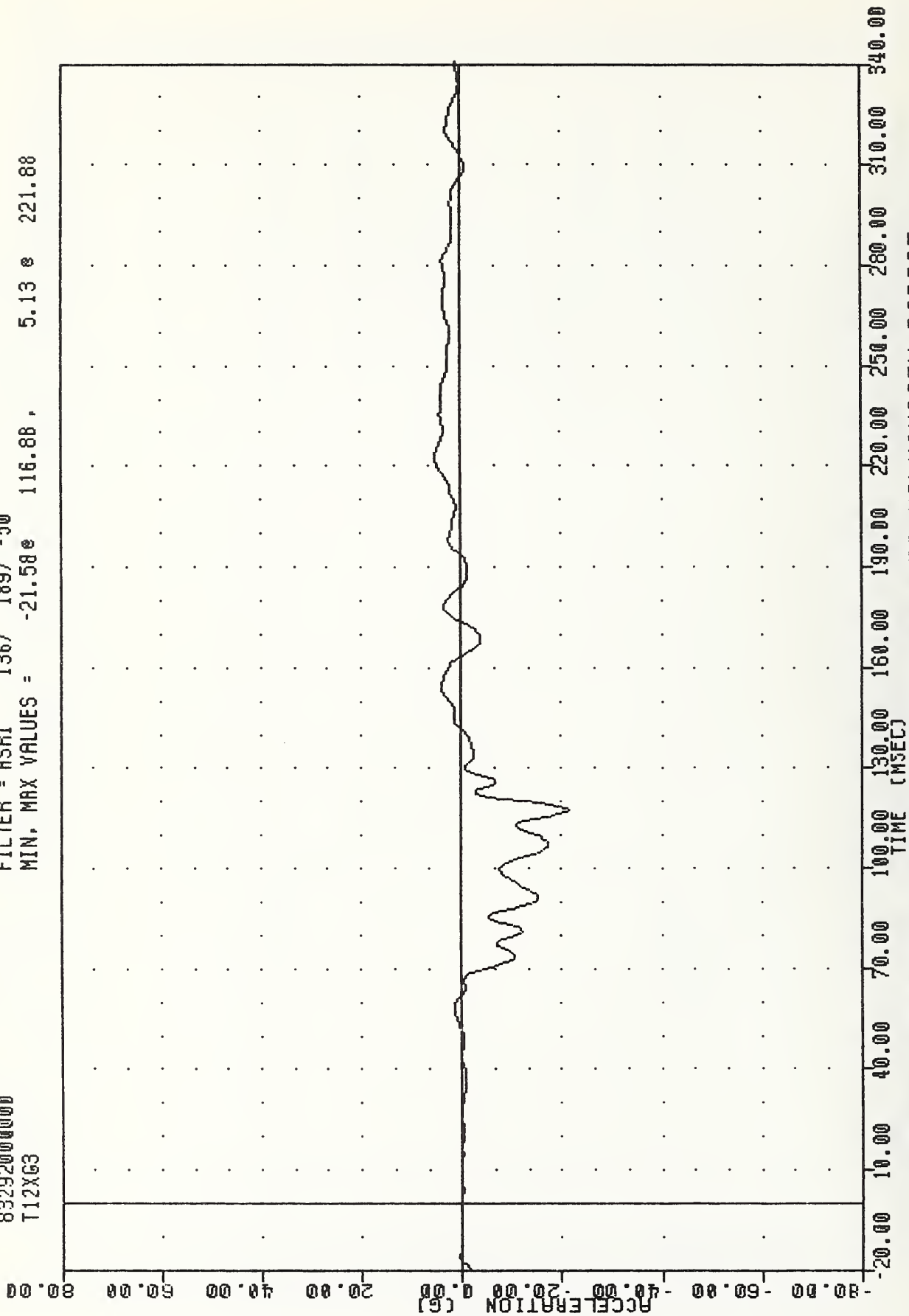
FILTER = HSRI 136/ 189/ -50
 MIN, MAX VALUES = -0.04e 10.63, 19.47 e 124.38



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING T01YGC

EVALUATION OF MDD VW FLEET
83292000000
T12XG3

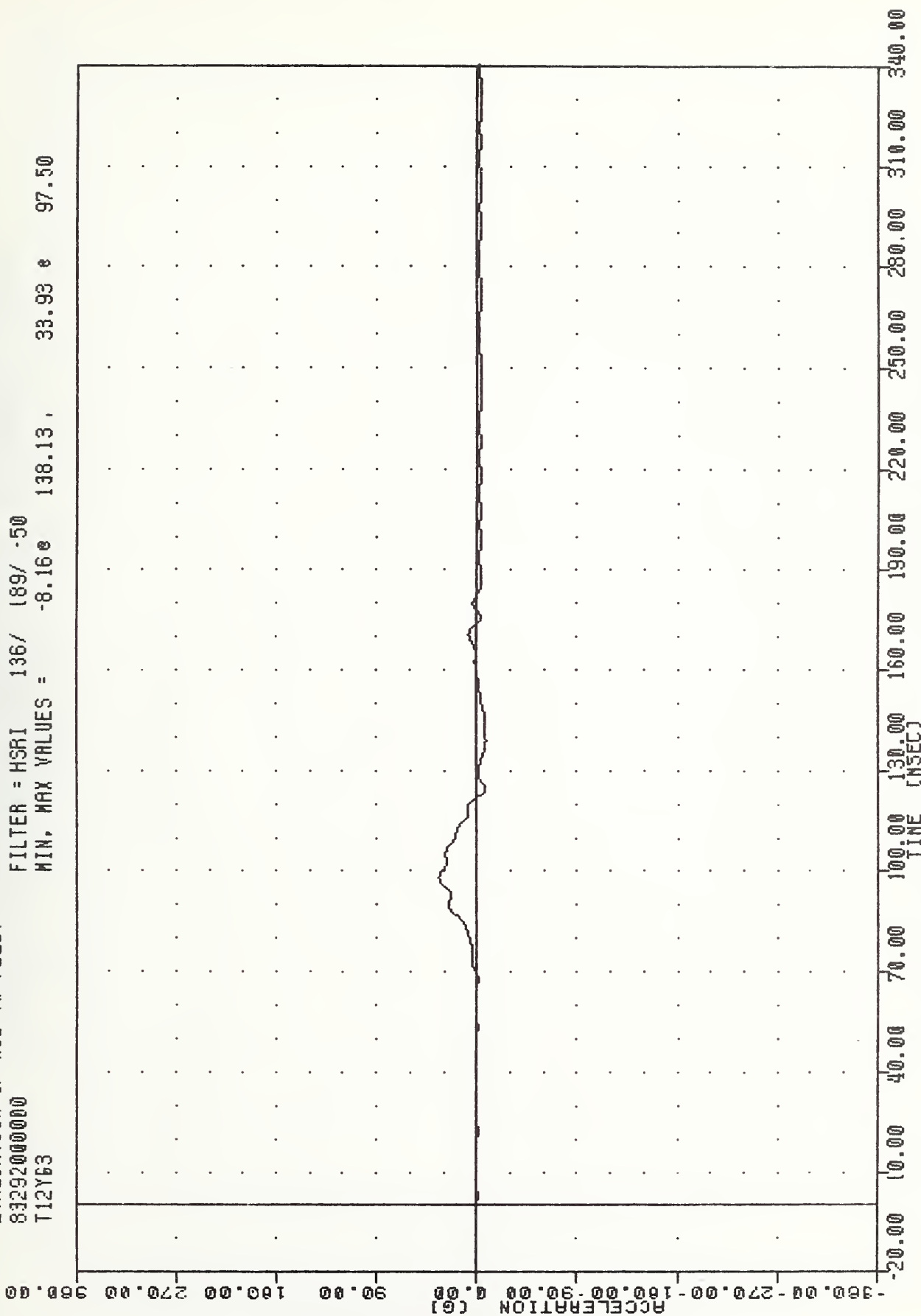
FILTER = HSRI 136/ 189/ -50
MIN, MAX VALUES = -21.58e 116.88, 5.13 e 221.88



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER LOWER SPINE ACCELERATION X AXIS

EVALUATION OF MOD VW FLEET
83292000000
T12Y63

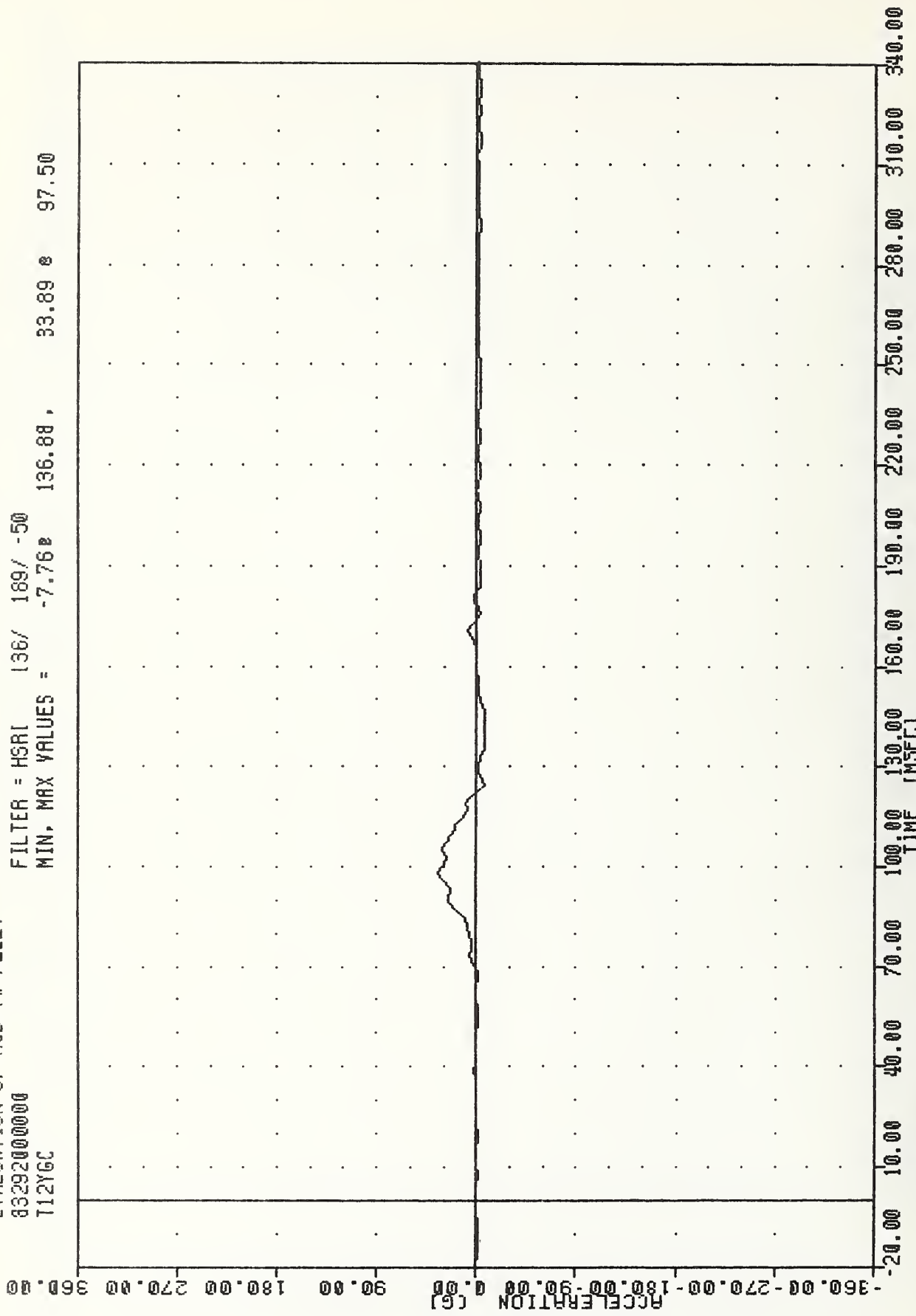
FILTER = HSRI 136/ 189/ -50
MIN, MAX VALUES = -8.16e 138.13, 33.93 e 97.50



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER LOWER SPINE ACCELERATION Y AXIS

EVALUATION OF MOD YW FLEET
83292000000
T12Y6C

FILTER = HSRI 136/ 169/ -50
MIN. MAX VALUES = -7.76E 136.88 , 33.89 e 97.50



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER LOWER SPINE ACCELERATION -2 Y AXIS

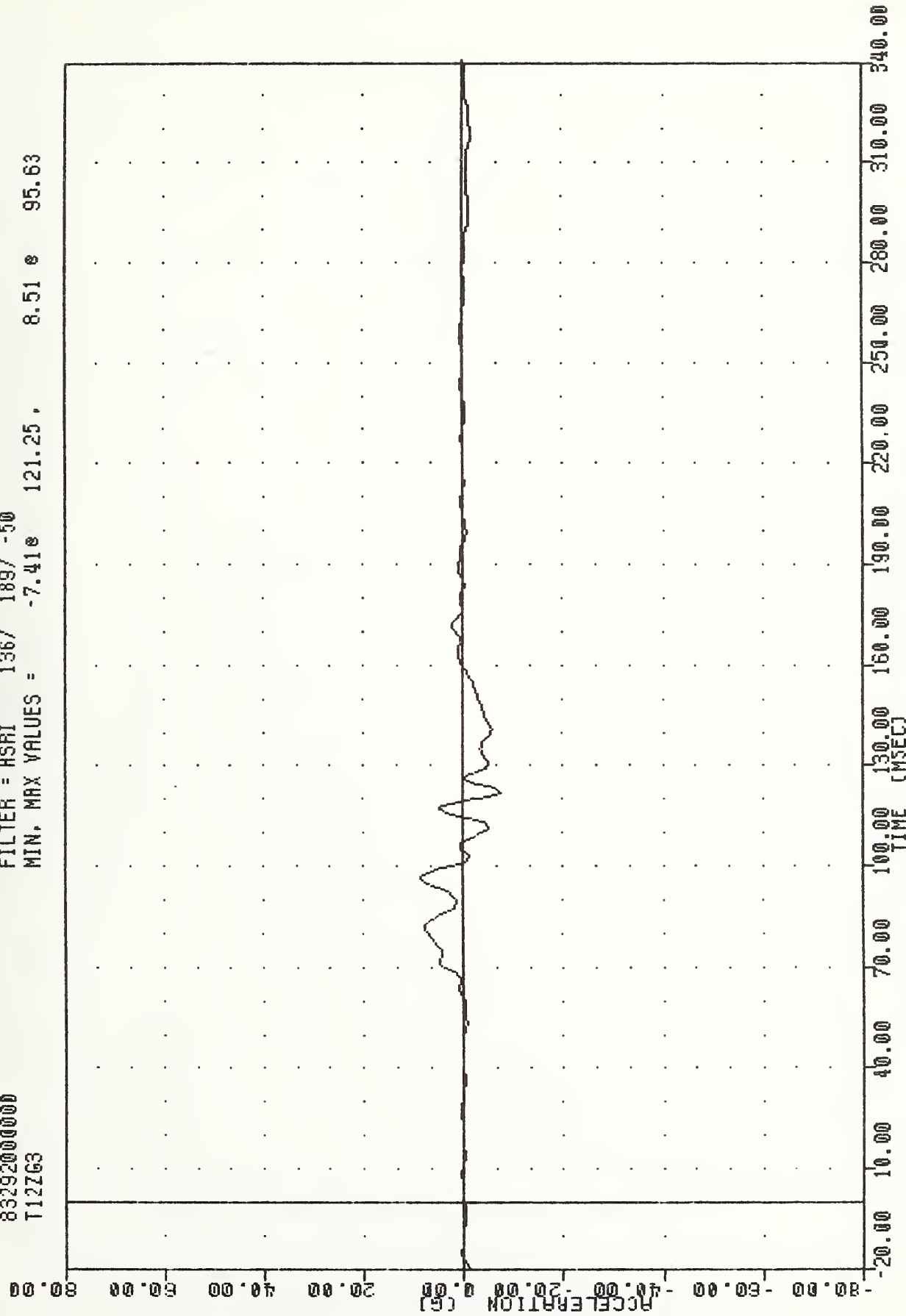
EVALUATION OF MDD VV FLEET

83292000000

T12ZG3

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -7.41e 121.25, 8.51 e 95.63



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER LOWER SPINE ACCELERATION Z AXIS

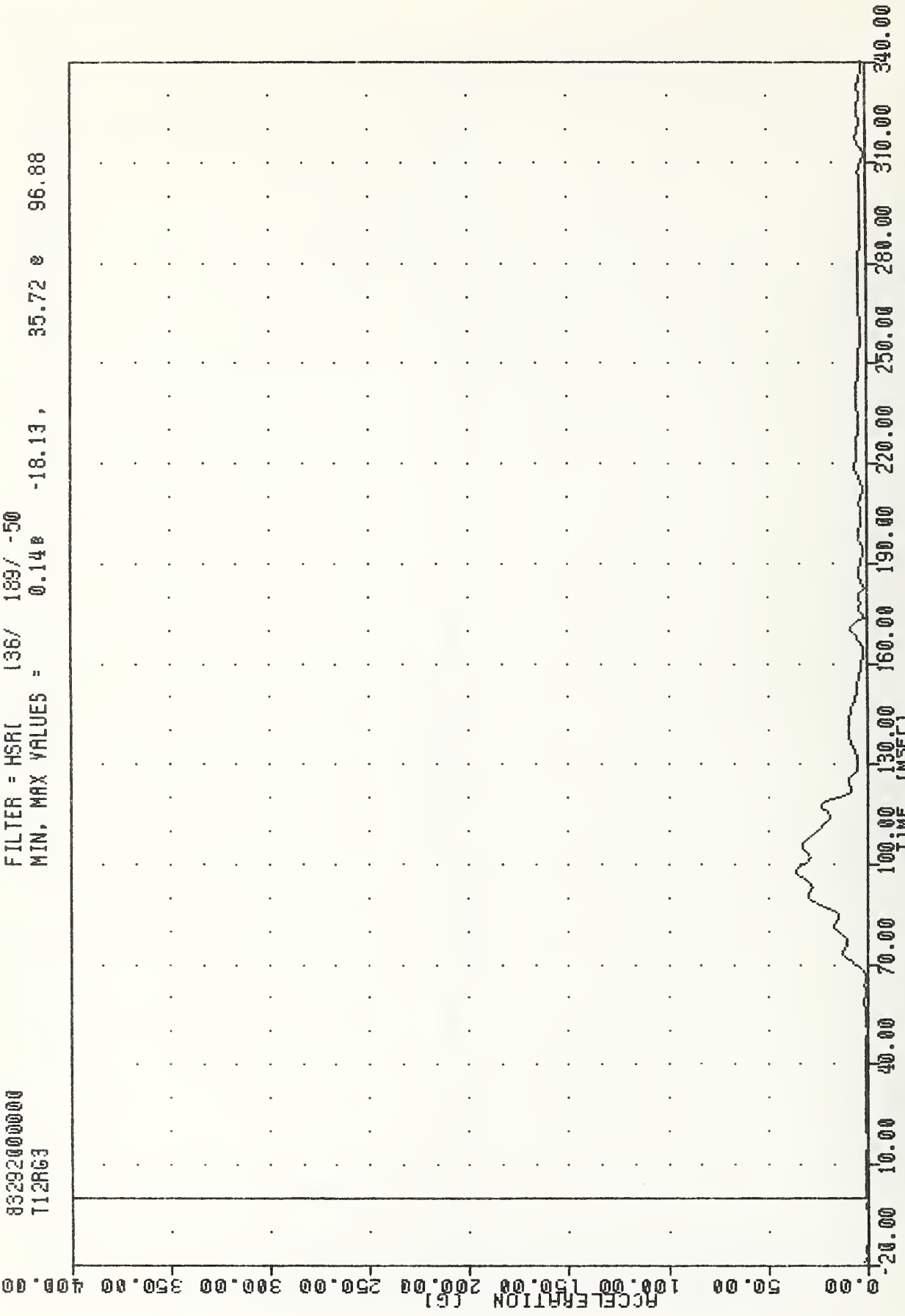
EVALUATION OF MOD YW FLEET

85292000000

T12R63

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = 0.14e -18.13, 35.72 e 96.88

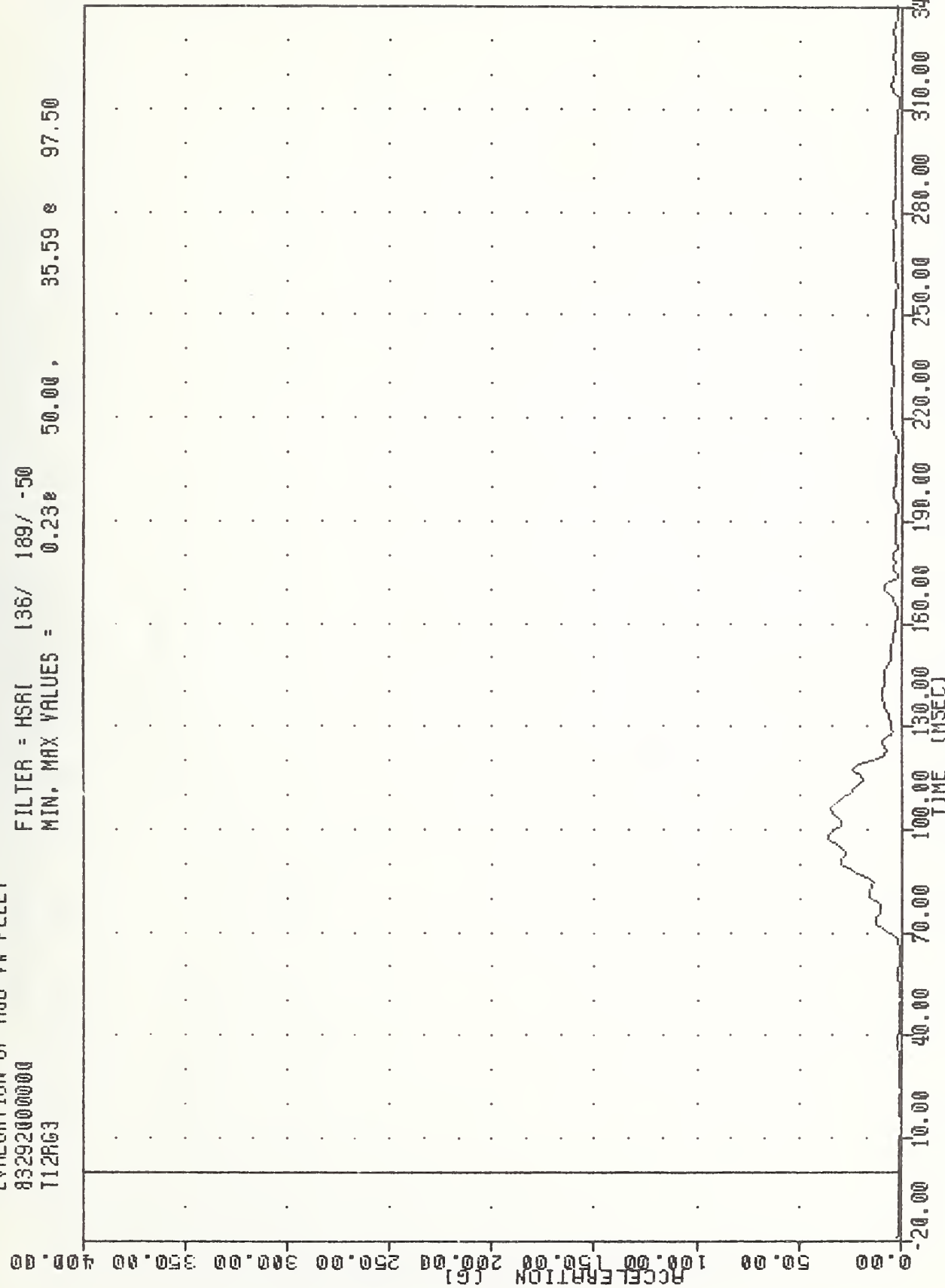


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER LOWER SPINE RESULTANT

TRC
 EVALUATION OF MOD VW FLEET
 83292000000
 T12R63

PLOT DATE 24-OCT-83 08:18:36

FILTER = HSRI 136/ 189/ -50
 MIN, MAX VALUES = 0.23e 50.00, 35.59 e 97.50



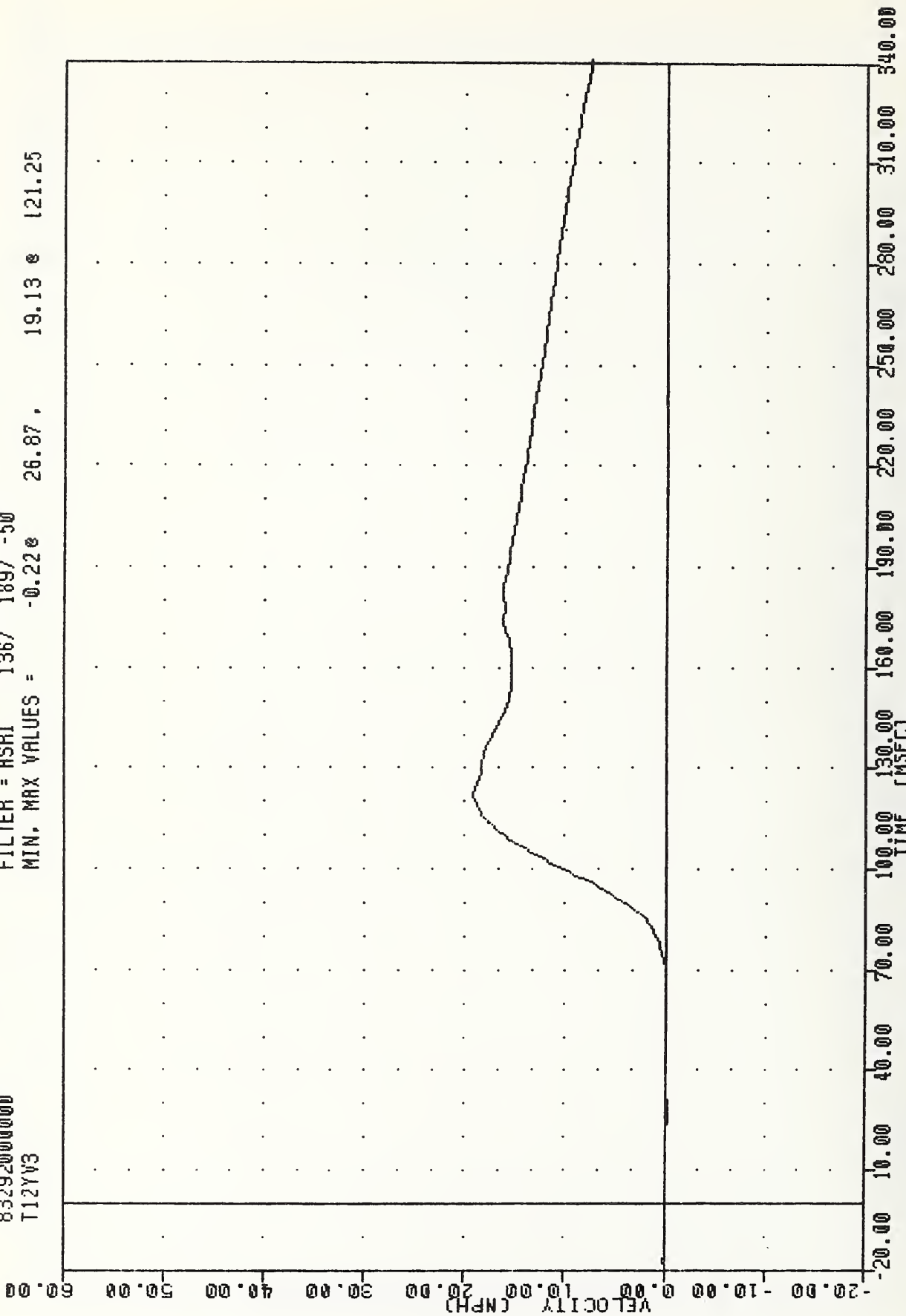
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 PASSENGER LOWER SPINE RESULTANT USING T12Y6C

TRC 831019
 EVALUATION OF MOD VV FLEET
 83292000000
 T12YV3

PLU1 DATE 24-OCT-83 10:53:52

FILTER = HSRI 136/ 189/ -50

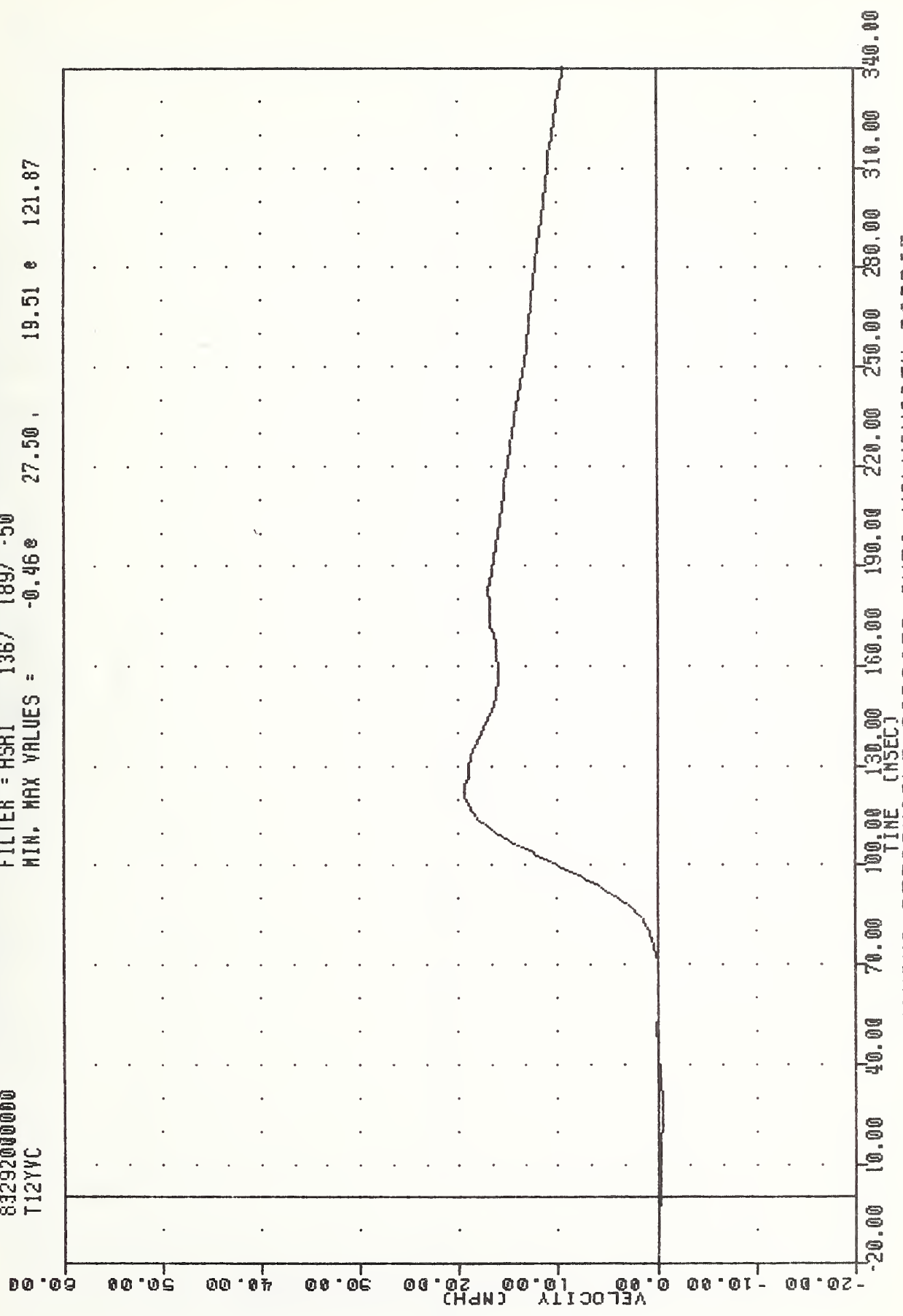
MIN. MAX VALUES = -0.22 26.87, 19.13 121.25



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING T12Y63

TAC 831019
EVALUATION OF MOD V# FLEET
8329200000
T12YVC

PLOT DATE 24-OCT-83 10:53:52
FILTER = HSRI 136/ 189/ -50
MIN. MAX VALUES = -0.46e 27.50, 19.51 e 121.87



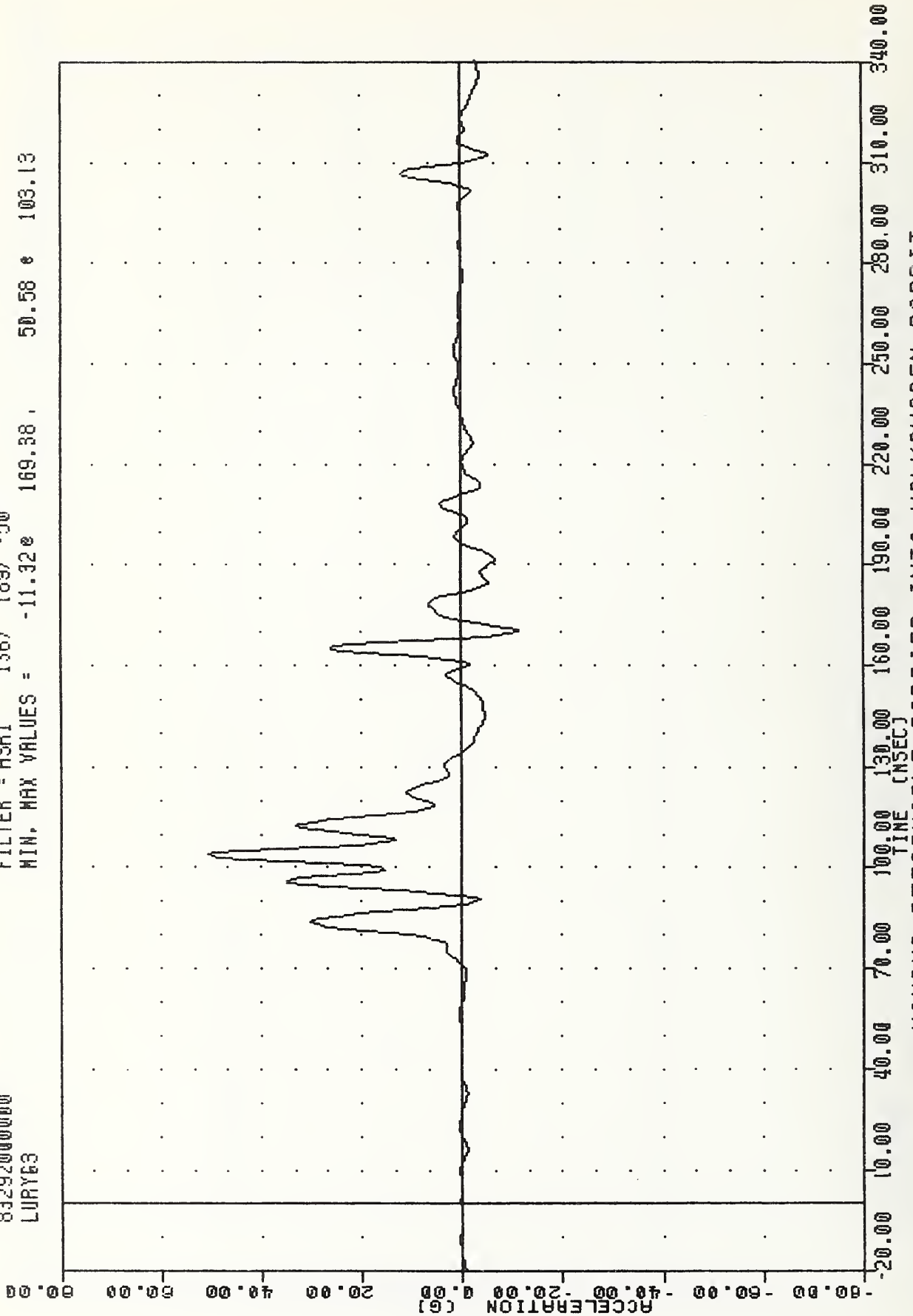
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING T12YGC

TAC , 831019
EVALUATION OF MOO VN FLEET
83292000000
LURVE3

PLOT UNIT 24-OCT-83 08:17:40

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -11.32e 169.38 , 50.58 e 103.13



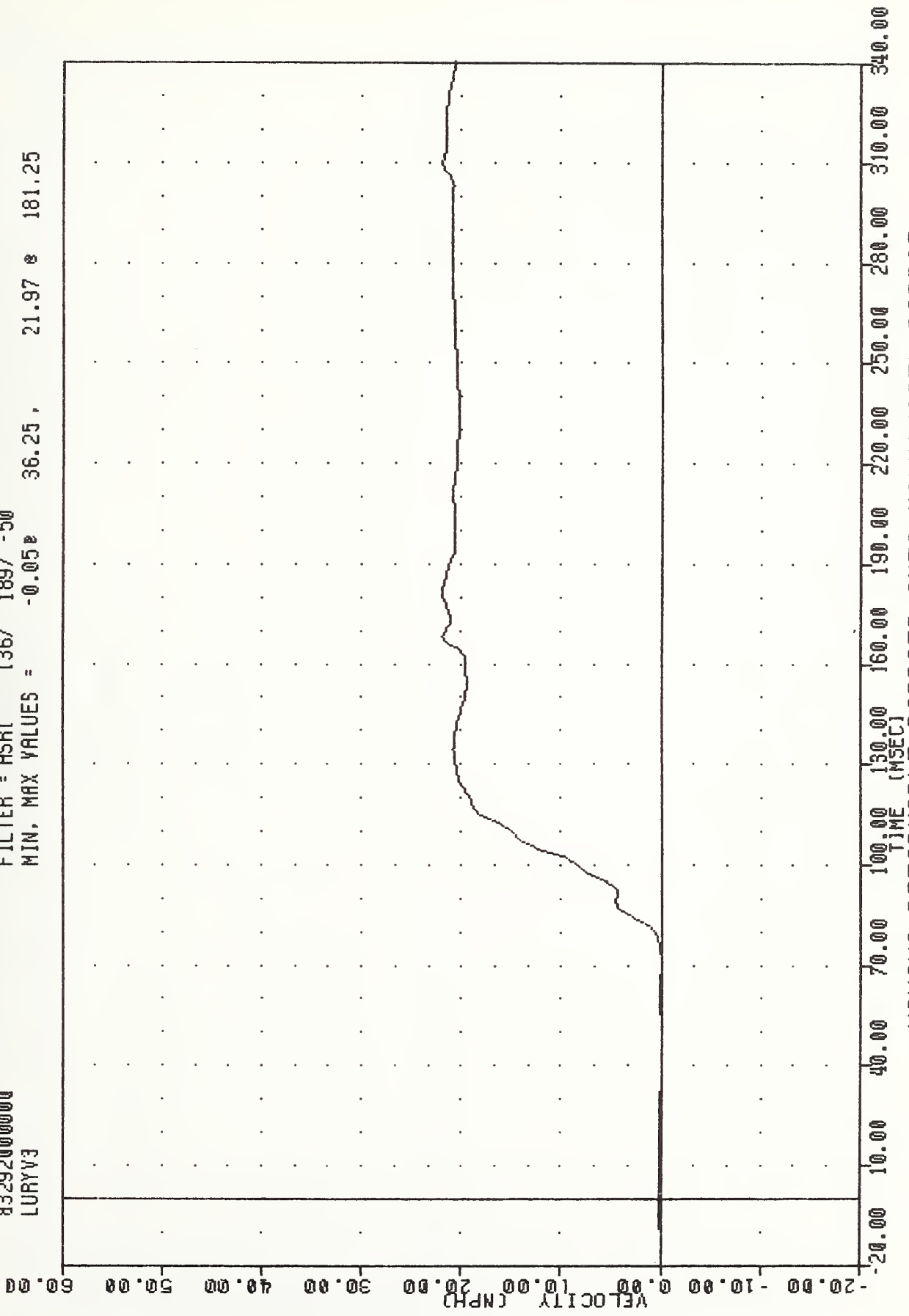
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER LEFT UPPER RIB ACCELERATION Y AXIS

TRC 831019
EVALUATION OF MOD YW FLEET
83292000000
LURYV3

PLOT DATE 24-OCT-83 10:53:52

FILTER = HSRI 136/ 189/ -50

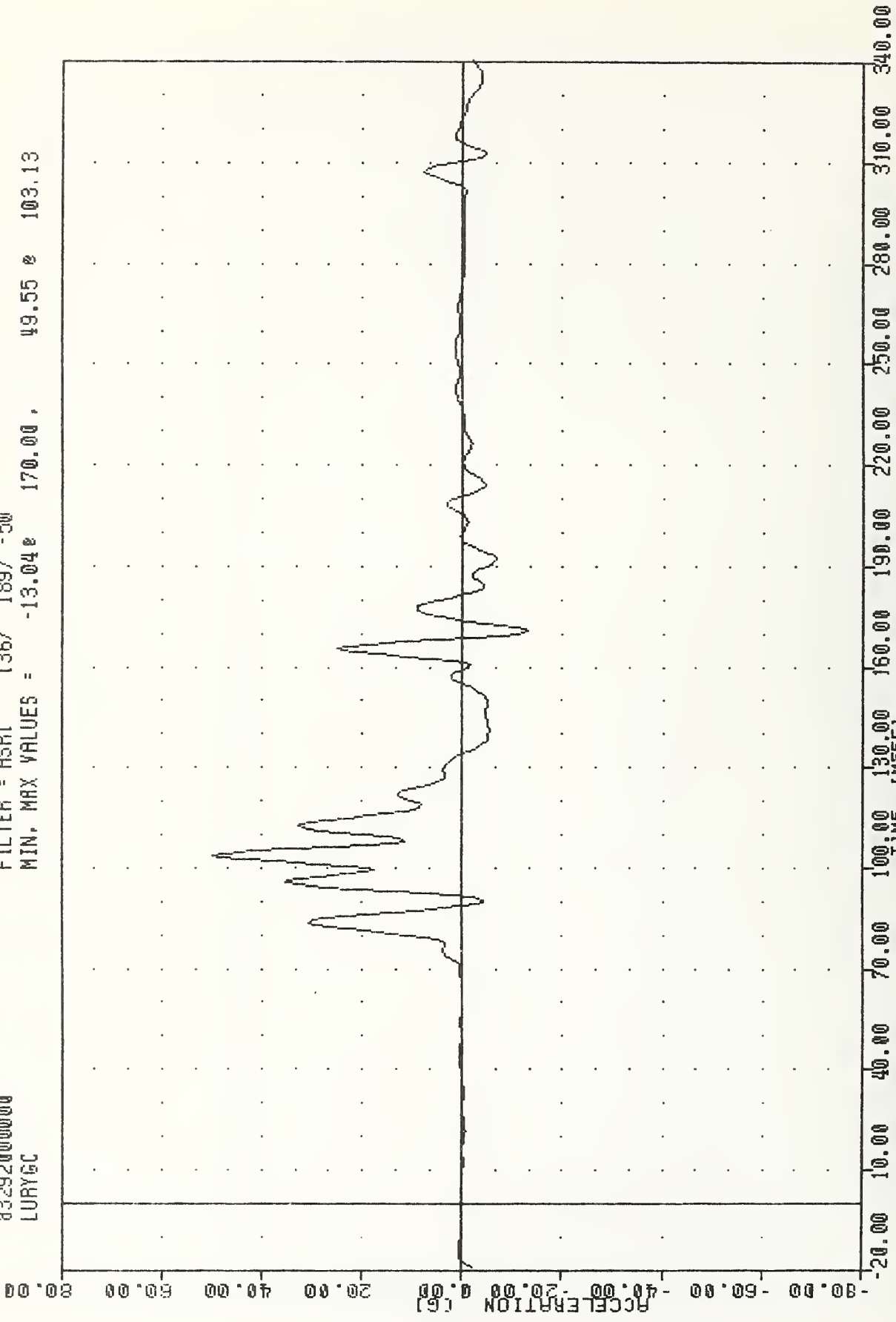
MIN. MAX VALUES = -0.05 36.25 21.97 181.25



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING LURYG3

EVALUATION OF MOD YW FLEET
83292000000
LURYGC

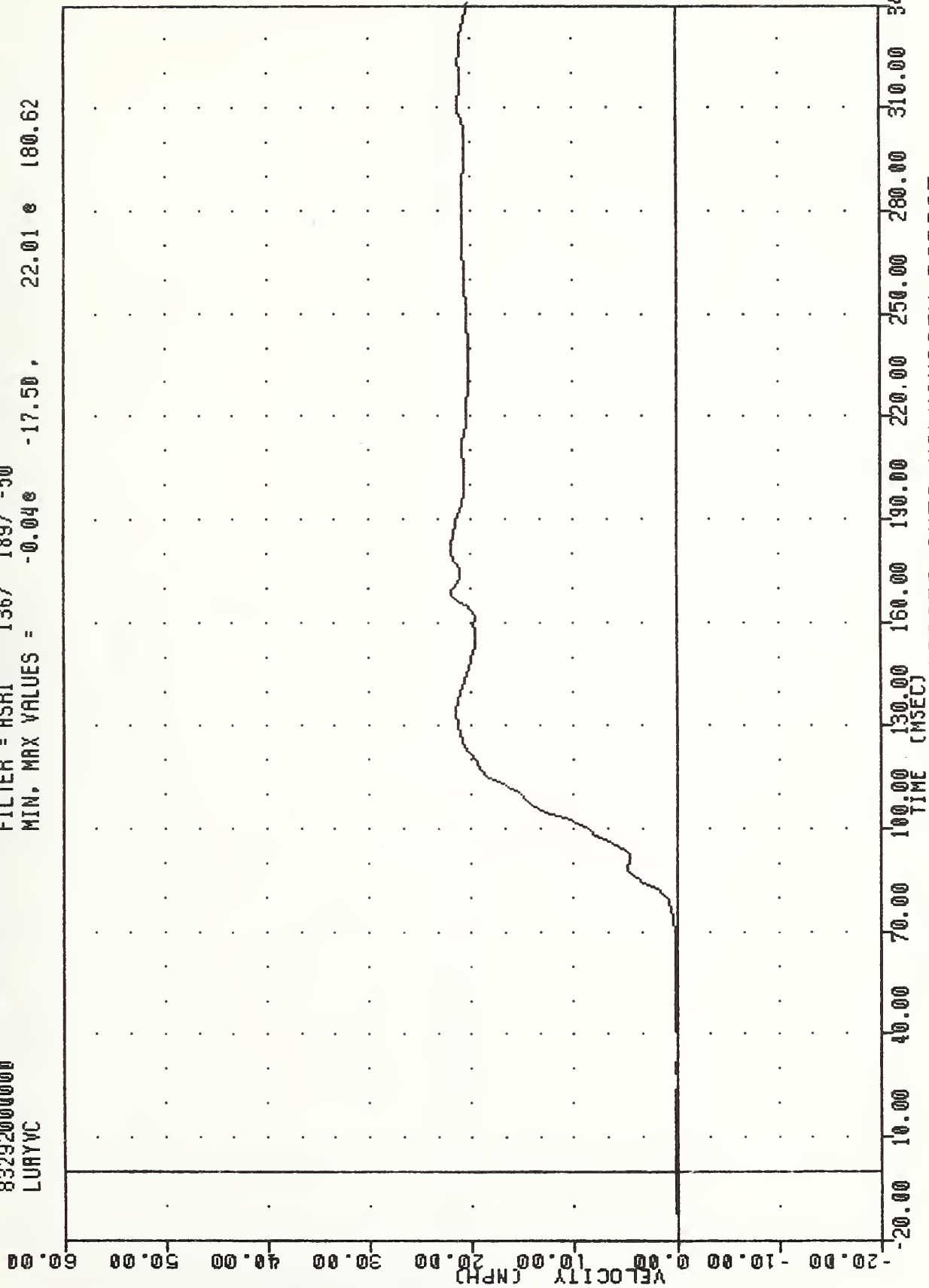
FILTER = HSRI 136/ 189/ -50
MIN. MAX VALUES = -13.04e 170.00 , 49.55 e 103.13



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER LEFT UPPER RIB ACCELERATION #2 Y AXIS

EVALUATION OF MOD VV FLEET
83292000000
LURYVC

FILTER = HSRI 136/ 189/ -50
MIN. MAX VALUES = -0.04e -17.50, 22.01 e 180.62

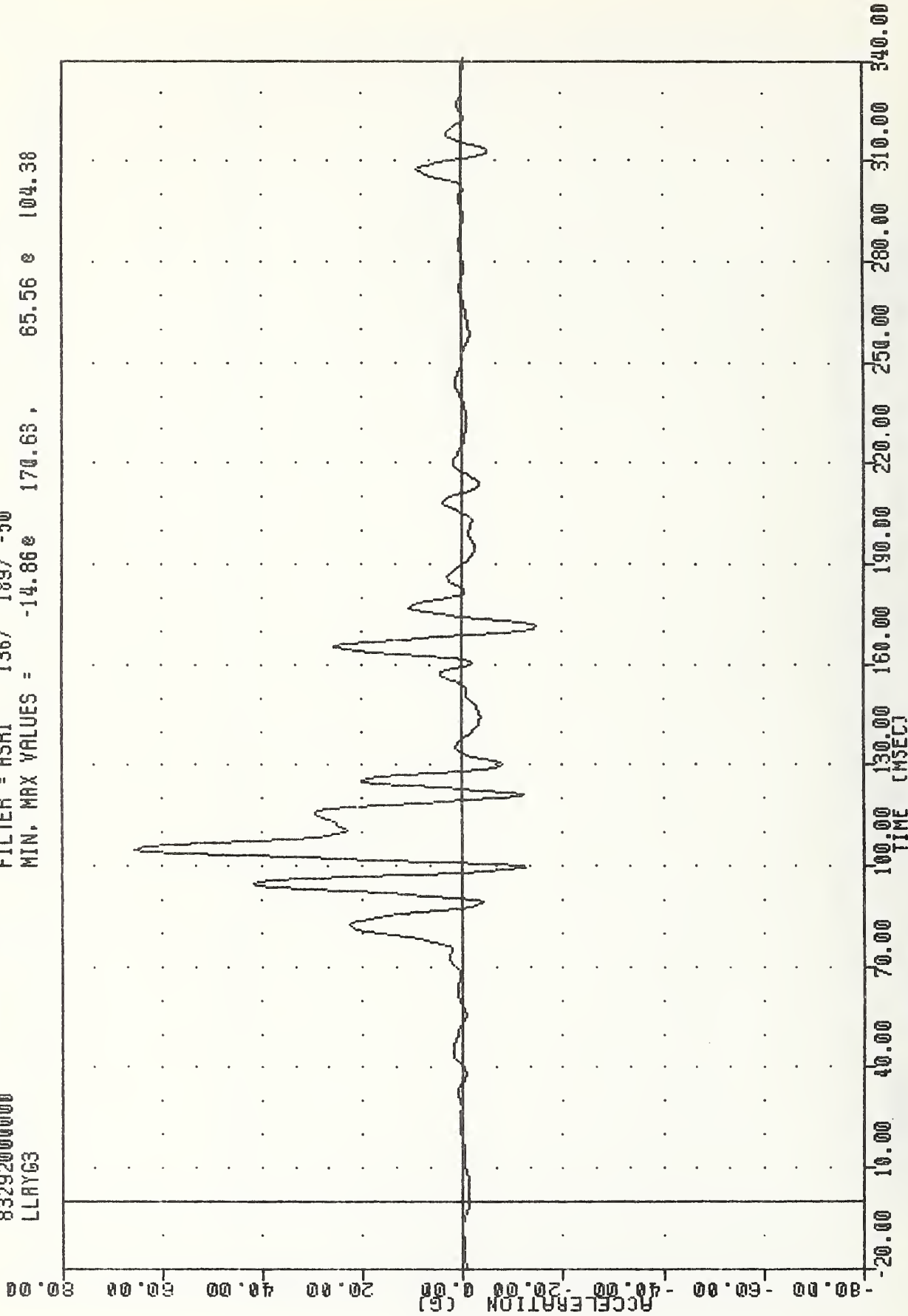


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MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING LURY6C

EVALUATION OF MDD VW FLEET
83292000000
LLRYG3

FILTER = HSRI 136/ 189/ -50
MIN. MAX VALUES = -14.86e 170.63, 65.56 e 104.38



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER LEFT LOWER RIB ACCELERATION Y AXIS

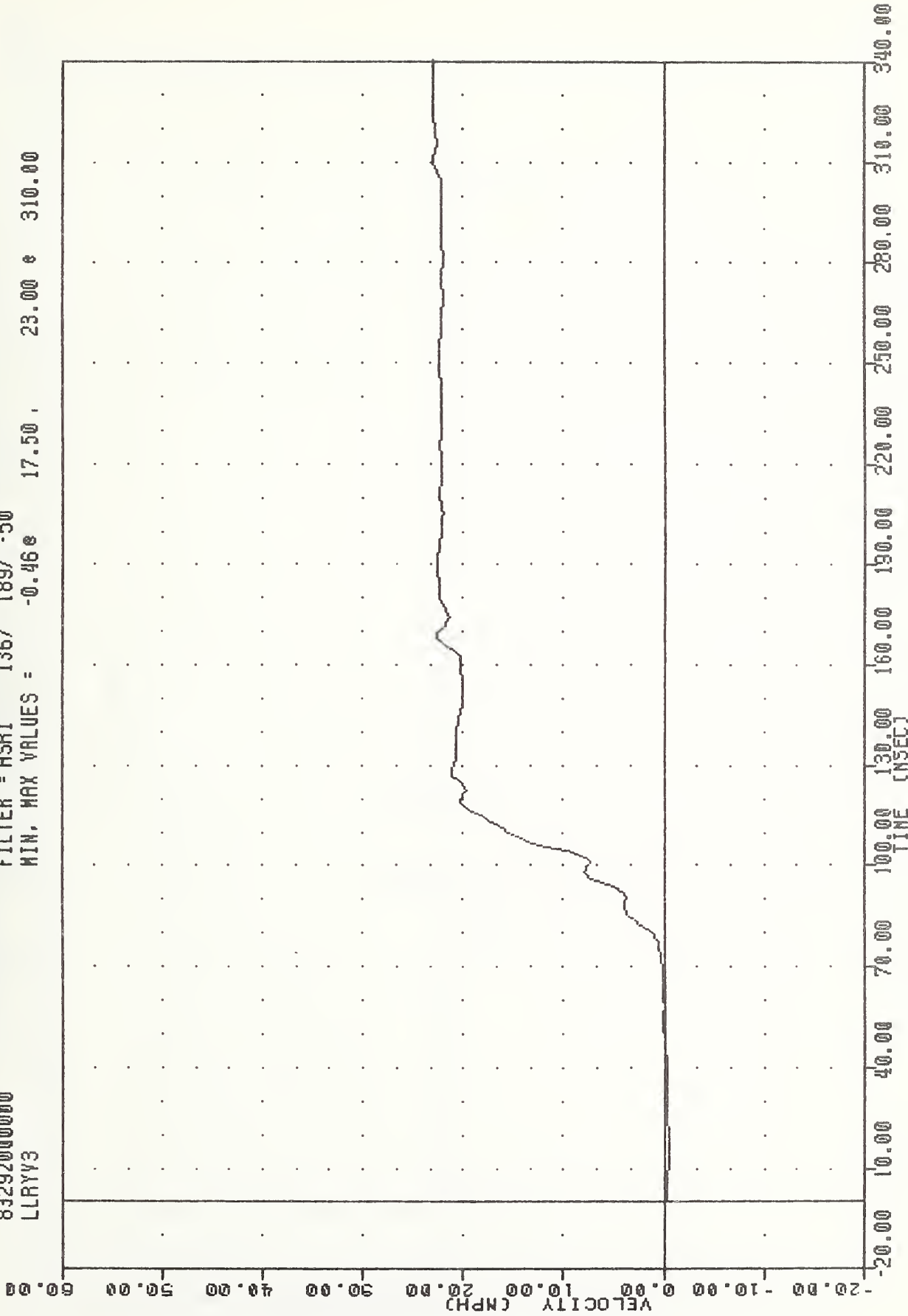
EVALUATION OF MOD VW FLEET

83292000000

LLRYV3

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -0.46 17.50 23.00 310.00



EVALUATION OF MOD VN FLEET

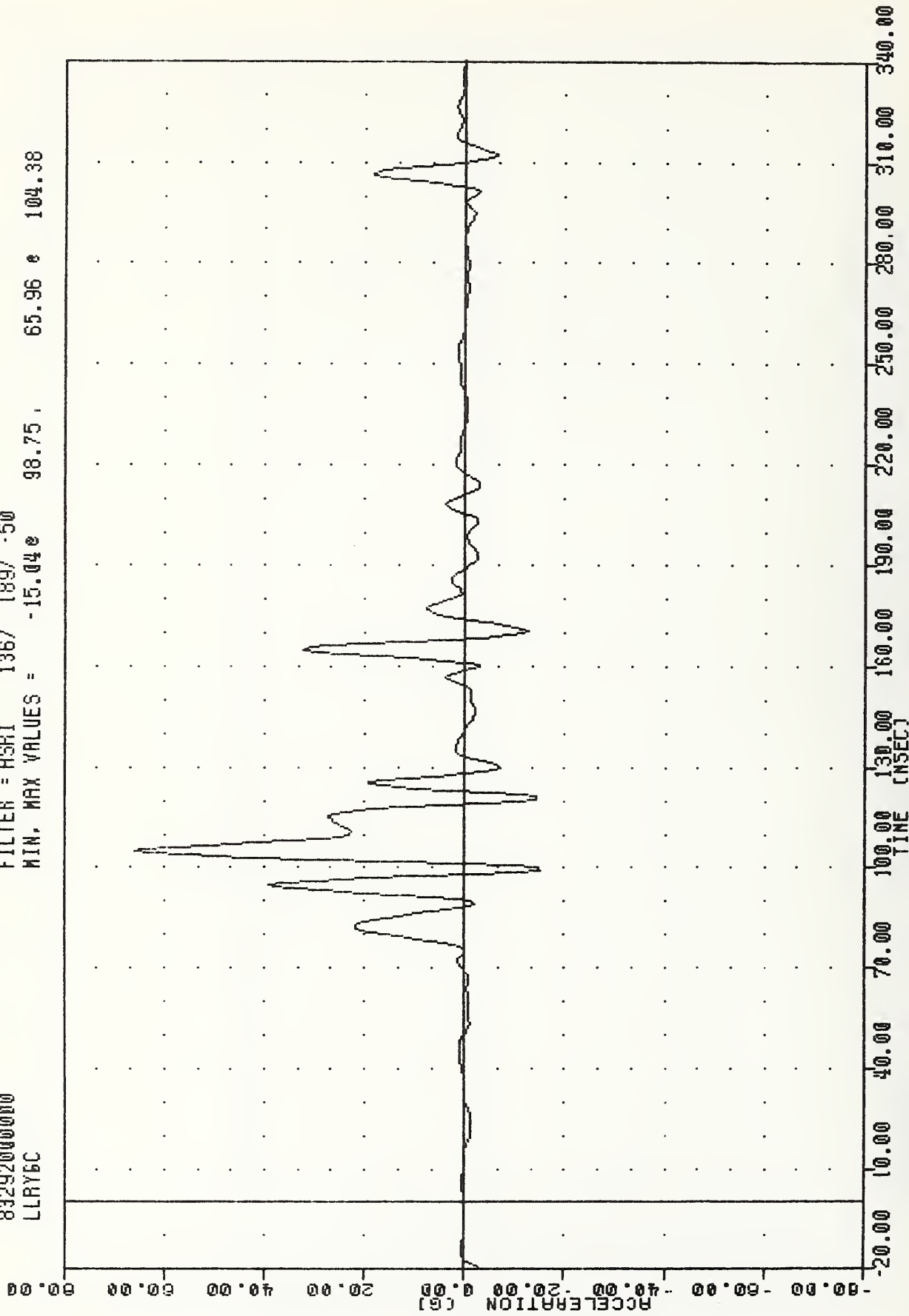
83292000000

LLRY5C

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -15.04e 98.75 ,

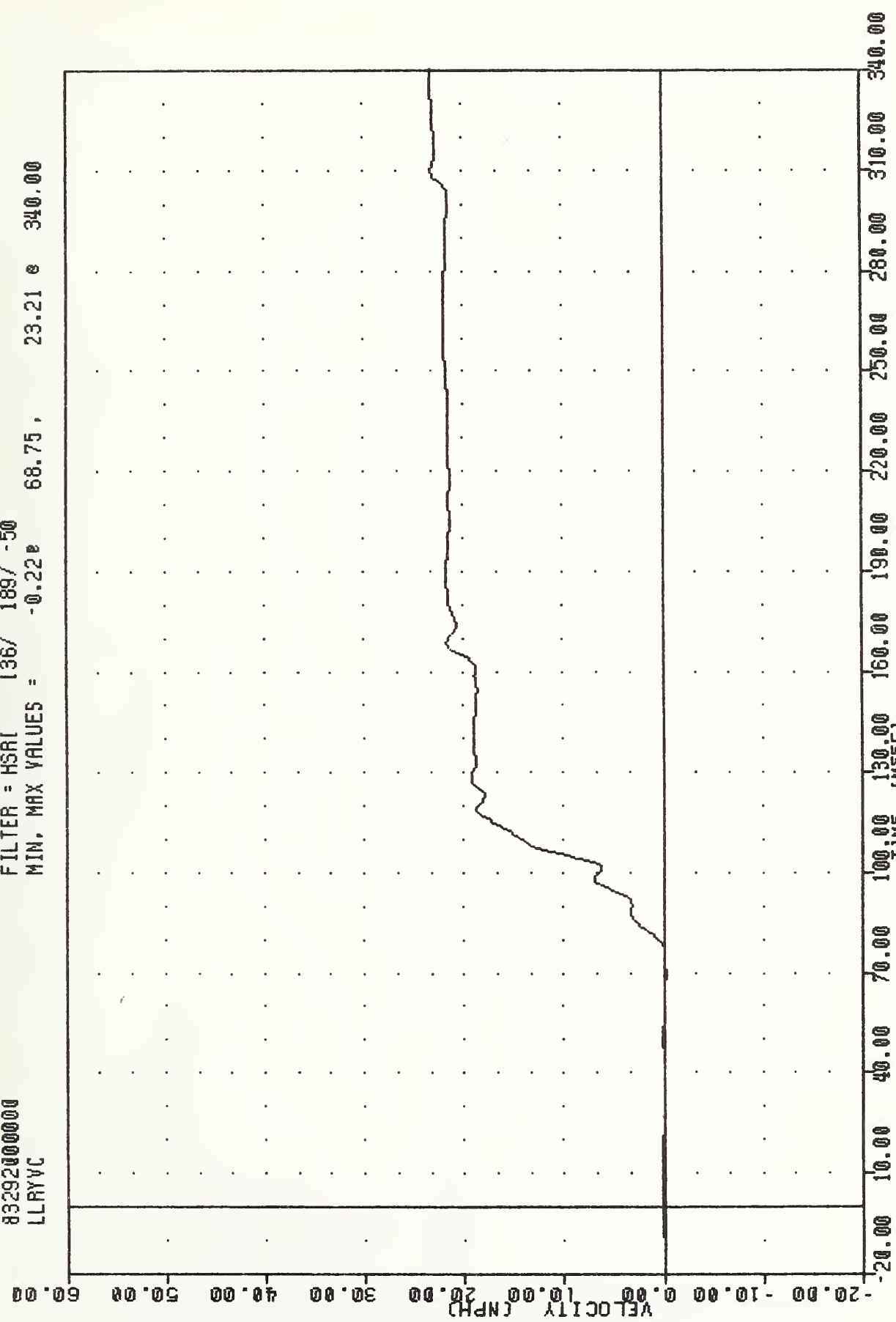
65.96 e 104.38



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER LEFT LOWER RIB ACCELERATION #2 Y AXIS

EVALUATION OF MOD YW FLEET
 83292000000
 LLRYVC

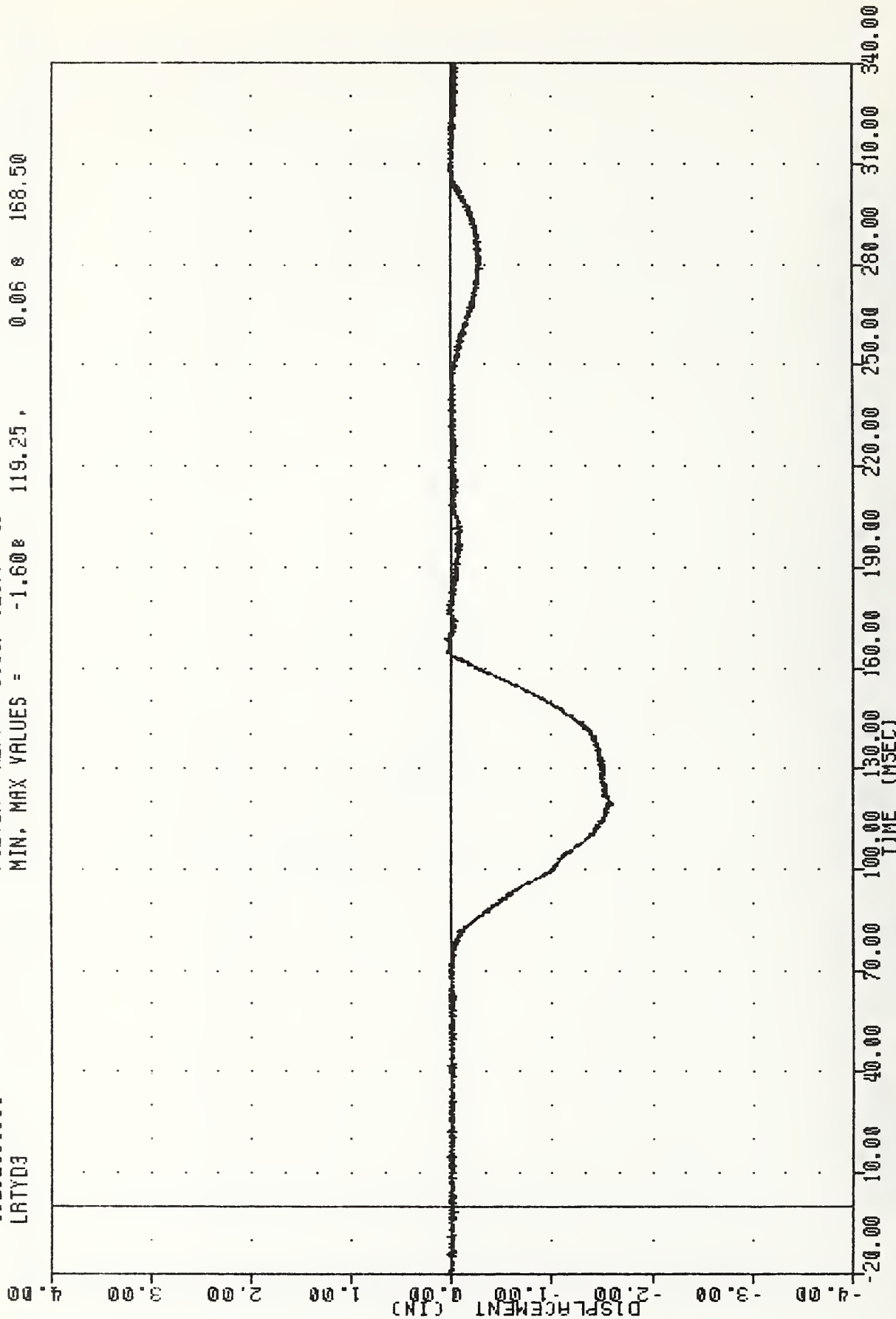
FILTER = HSRI 136/ 189/ -50
 MIN, MAX VALUES = -0.22 68.75, 23.21 e 340.00



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING LLRYVC

EVALUATION OF MOD VW FLEET
83292000000
LRTYD3

FILTER = ALPF 1650/ 5217/ -40
MIN. MAX VALUES = -1.60E 119.25 . 0.06 E 168.50



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER LEFT RIB TO SPINE DISPLACEMENT INCHES

EVALUATION OF MOD YW FLEET

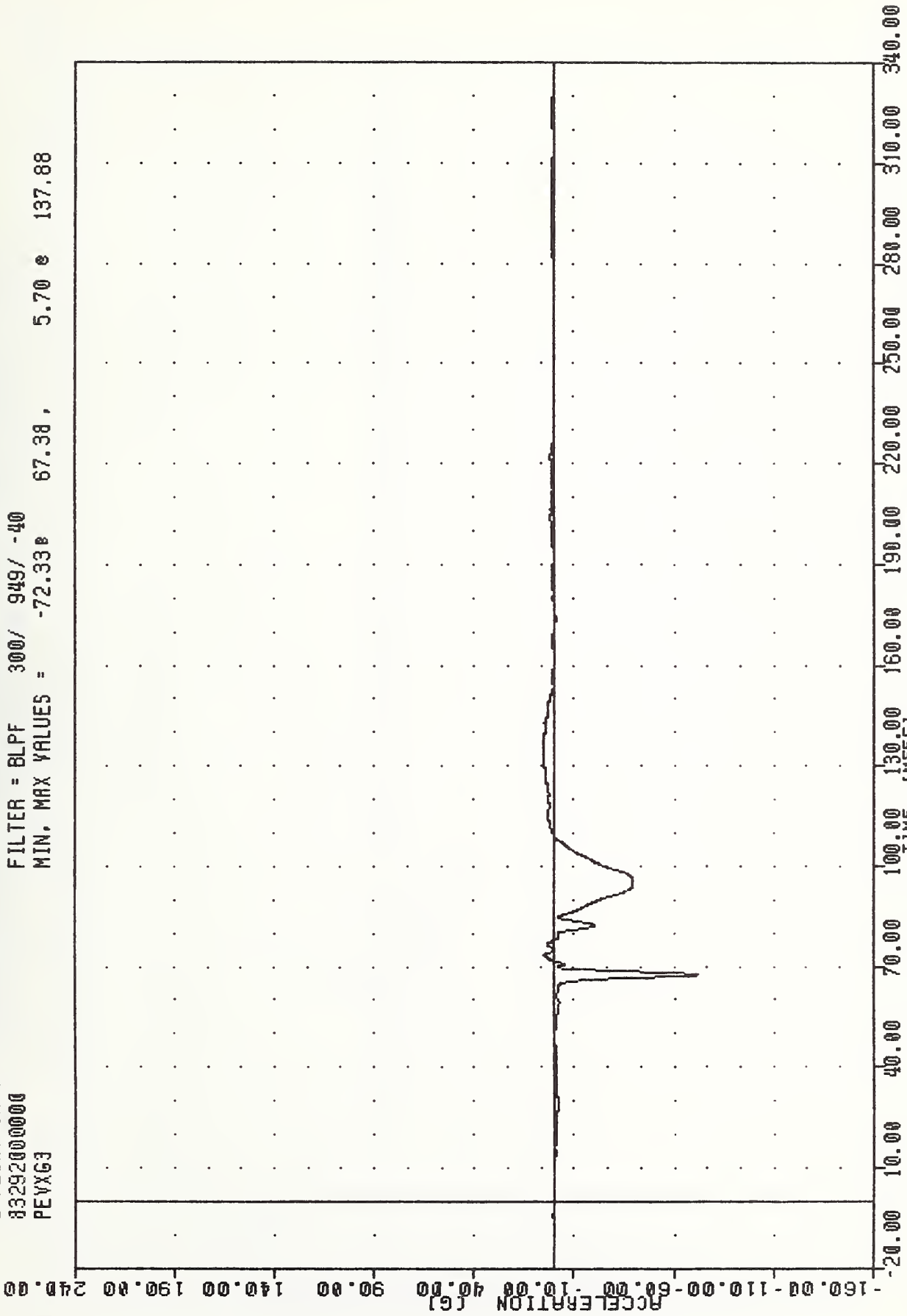
83292000000

PEVXG3

FILTER = BLPF 300/ 949/ -40

MIN. MAX VALUES = -72.33 67.38

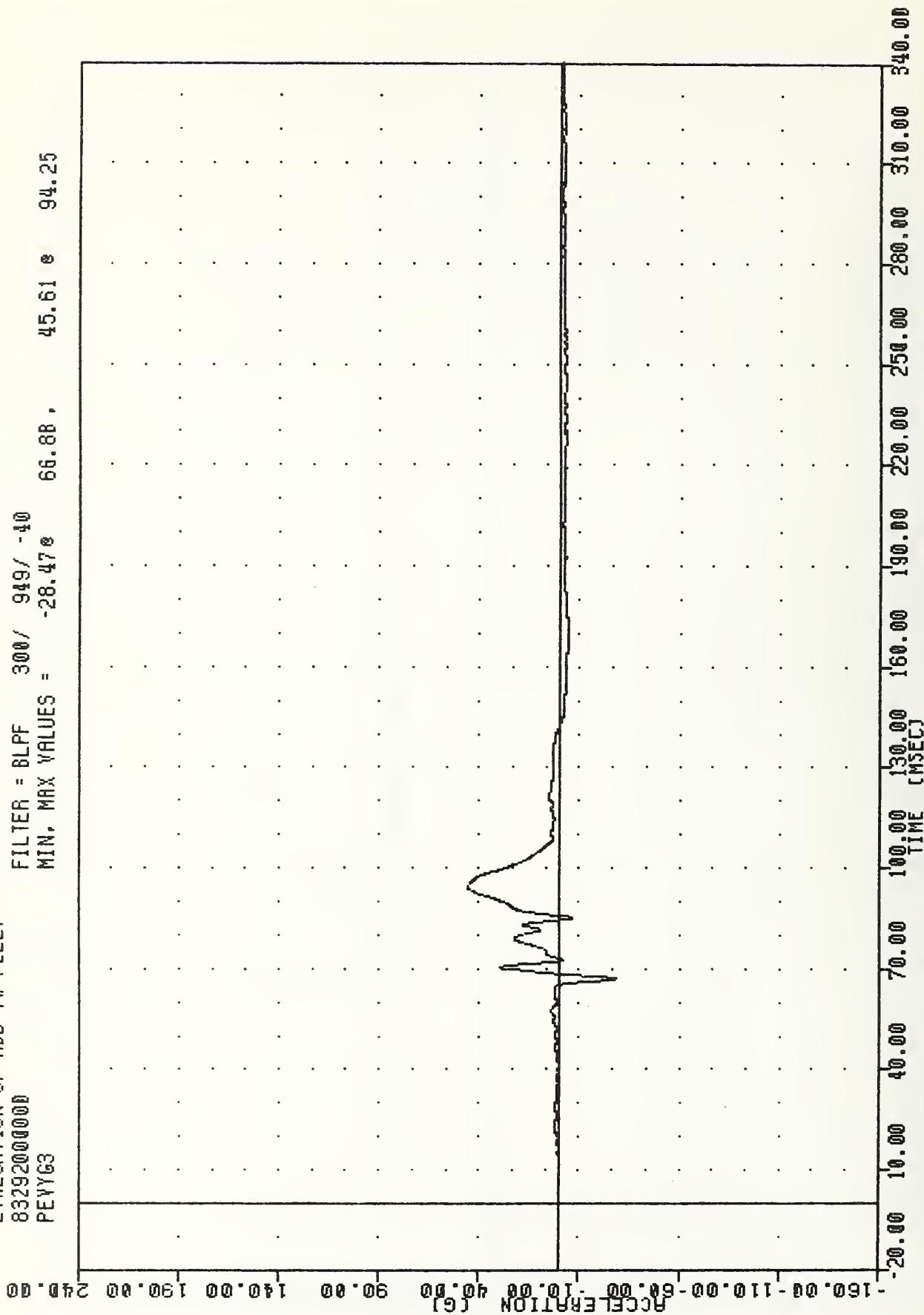
5.70 e 137.88



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER PELVIS ACCELERATION X AXIS

EVALUATION OF MDD VW FLEET
83292000000
PEY63

FILTER = 8LPF 300/ 949/ -40
MIN. MAX VALUES = -28.47 66.88 45.61 94.25



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER PELVIS ACCELERATION Y AXIS

EVALUATION OF MOD VN FLEET

83292000000

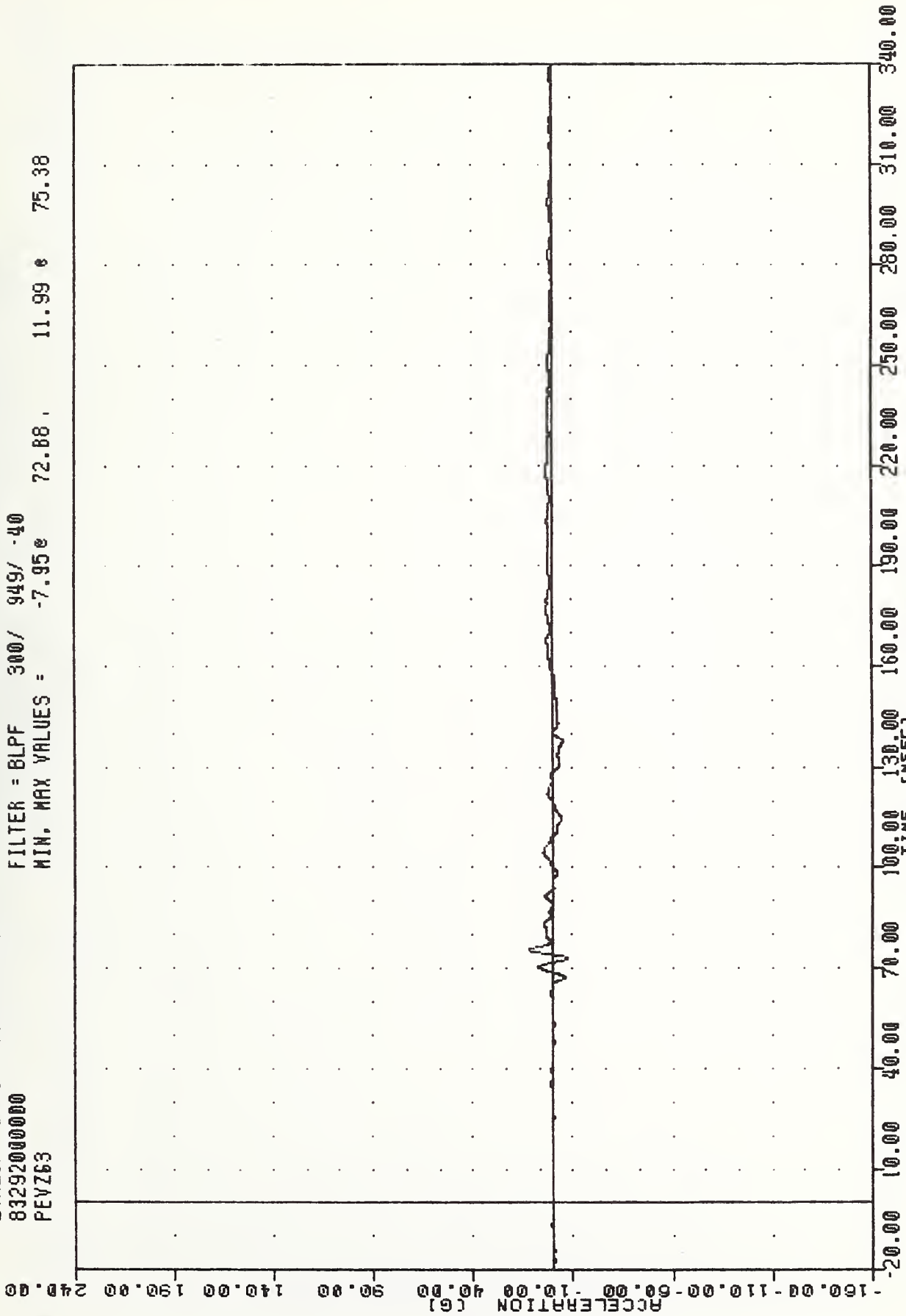
PEVZ63

FILTER = BLPF 300/ 949/ -40

MIN. MAX VALUES = -7.95e 72.88

11.99 e

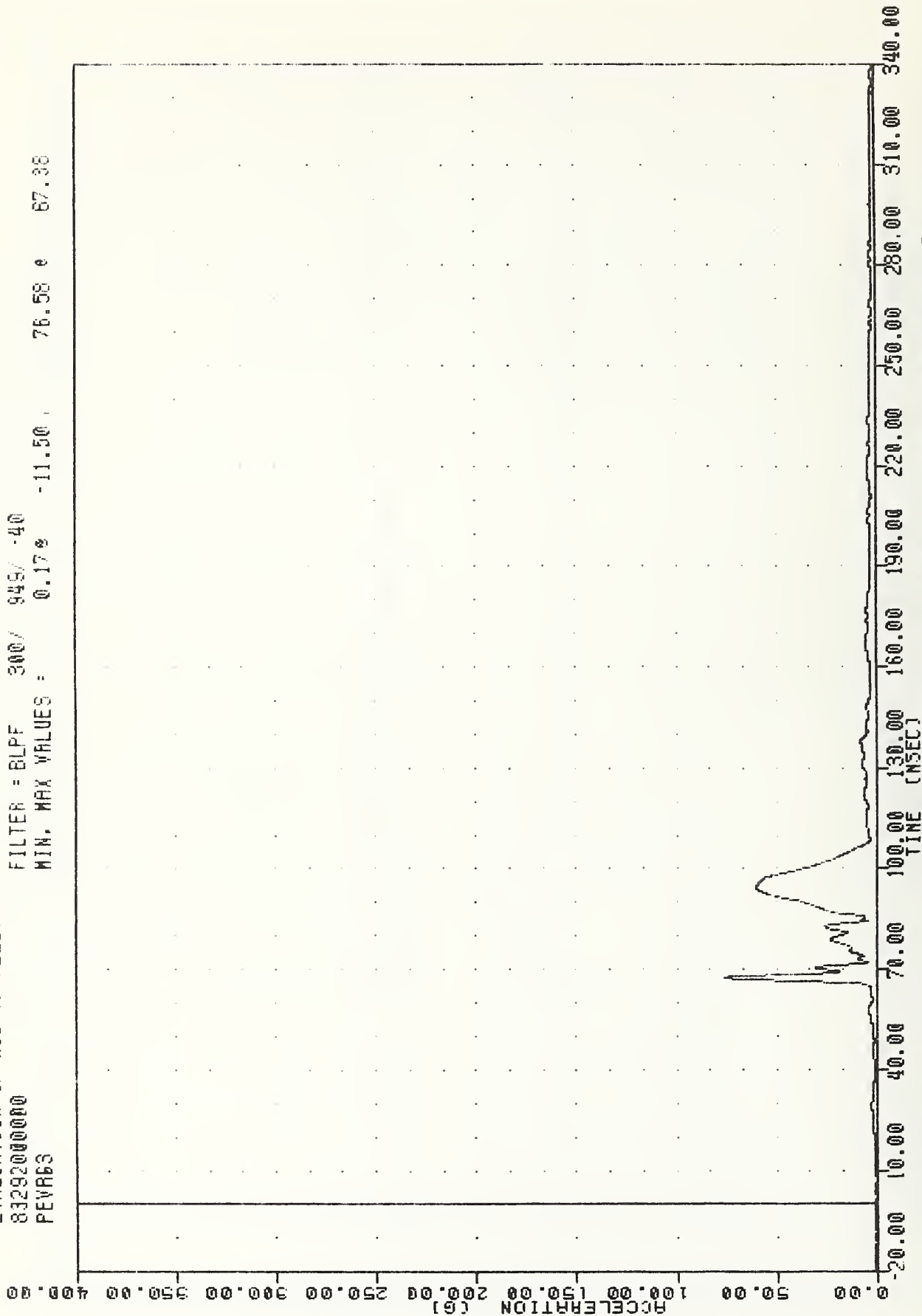
75.38



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER PELVIS ACCELERATION Z AXIS

EVALUATION OF MOD VN FLEET
83292000000
PEVR63

FILTER = BLPF 300/ 945/ -40
MIN. MAX VALUES = 0.17% -11.50, 76.58 e 67.38



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER PELVIS RESULTANT

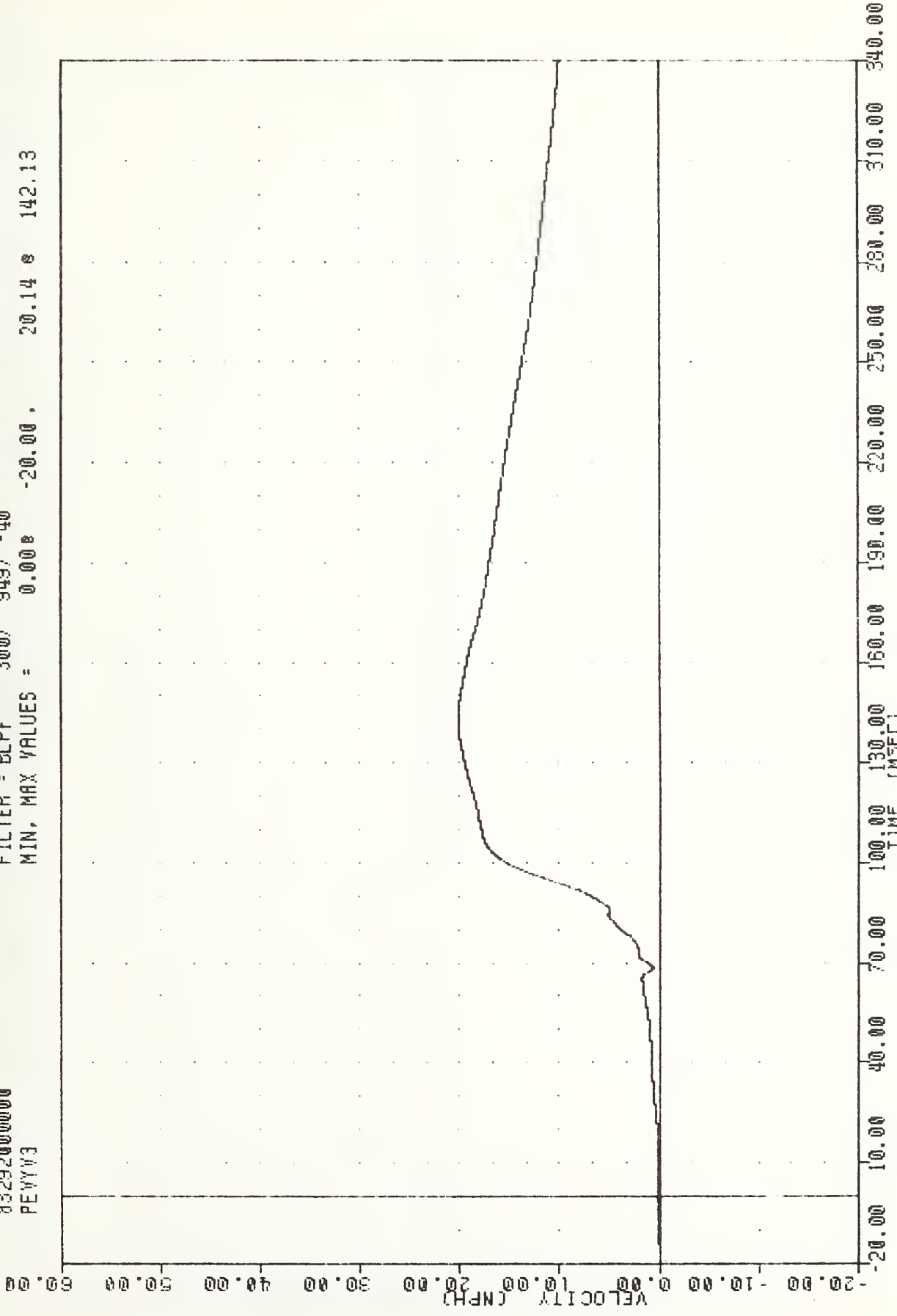
EVALUATION OF MOD YW FLEET

83292000000

PEVYV3

FILTER = BLPF 300/ 949/ -40

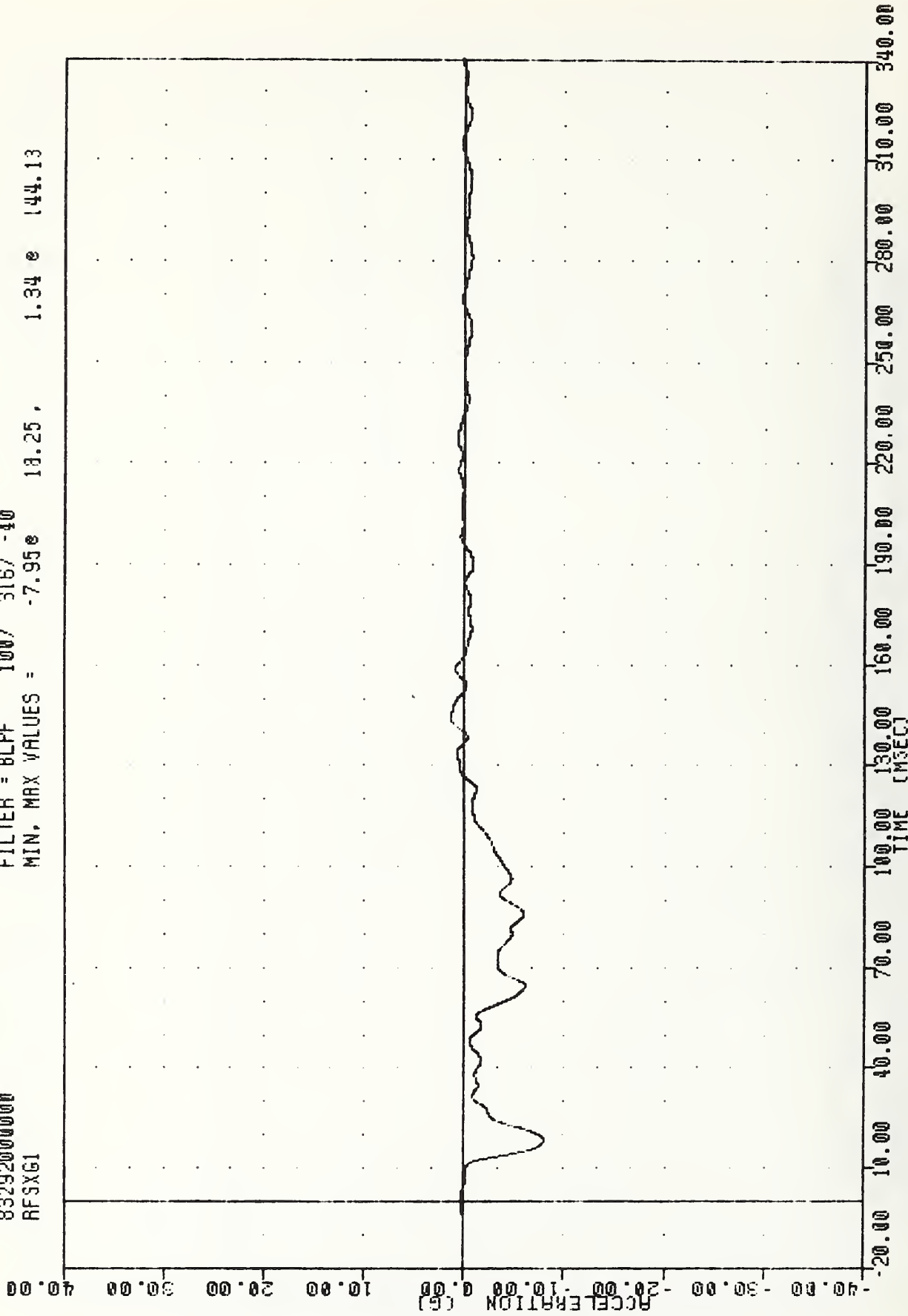
MIN, MAX VALUES = 0.000 -20.00 . 20.14 0 142.13



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING PEVYV3

EVALUATION OF MOD VW FLEET
83292000000
RFSXG1

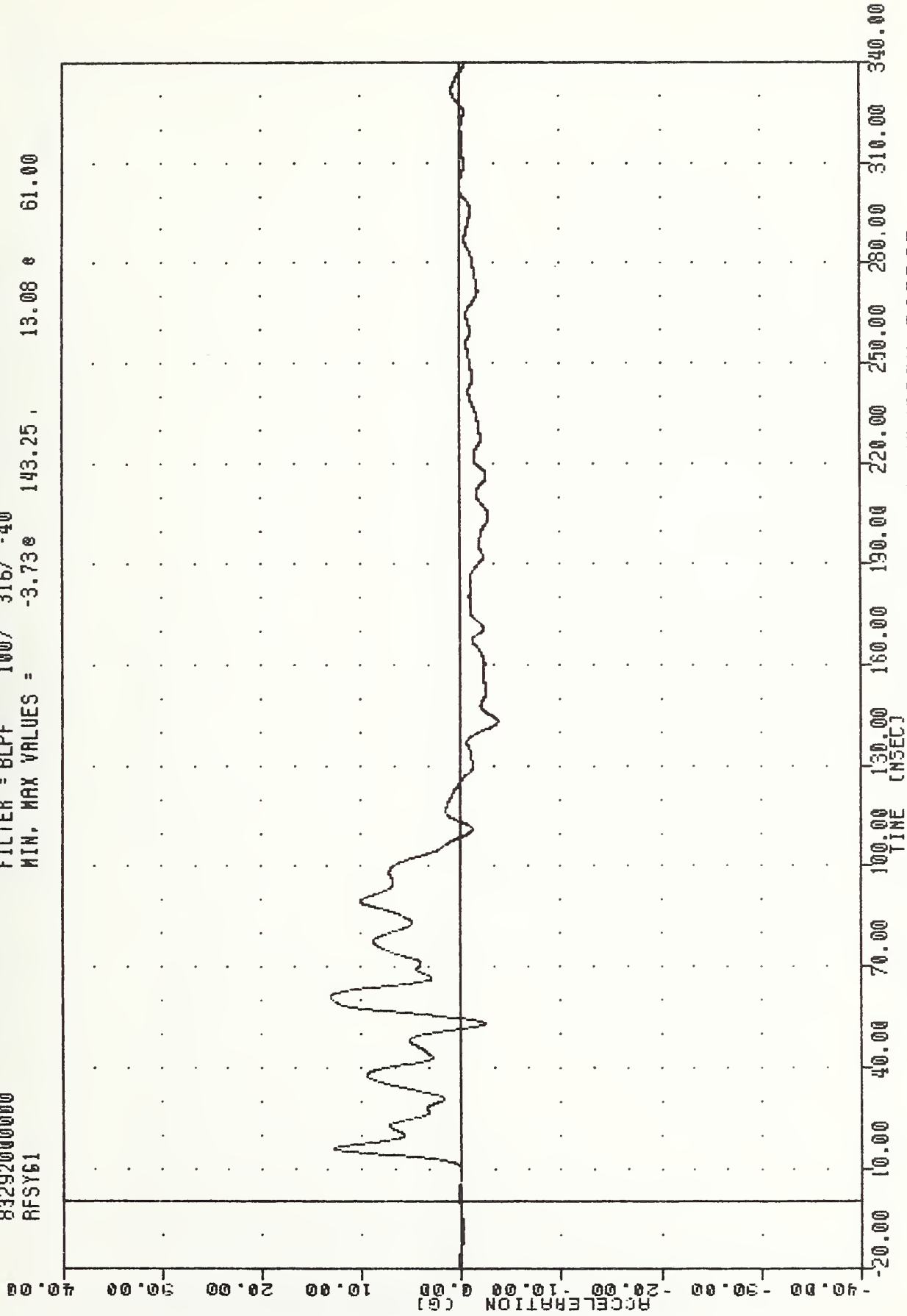
FILTER = BLPF 100/ 316/ -40
MIN, MAX VALUES = 18.25, 1.34 e 144.13



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE RIGHT FRONT SILL ACCELERATION X AXIS

EVALUATION OF MOD VV FLEET
83292000000
RFSY61

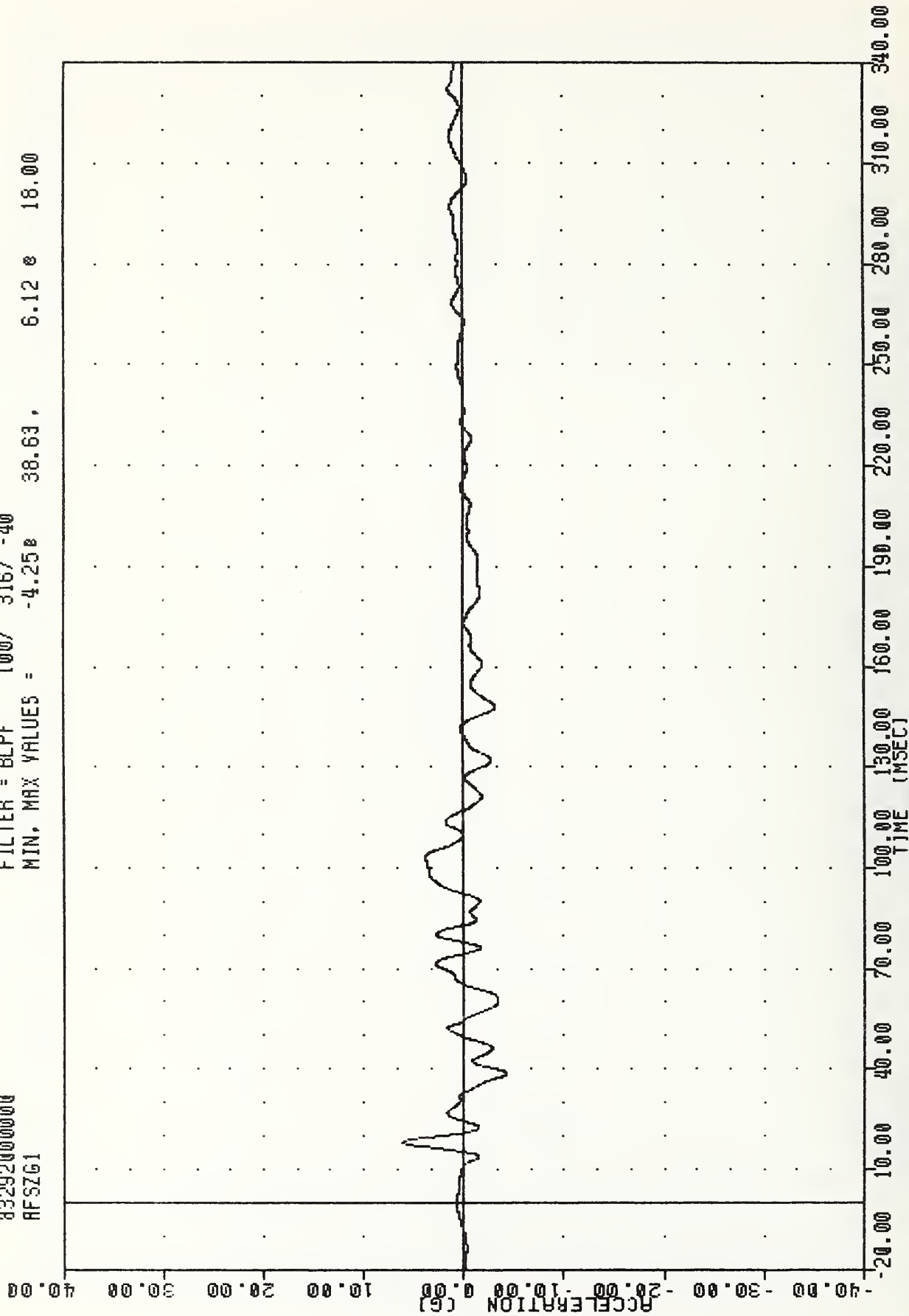
FILTER = BLPF 100/ 316/ -40
MIN, MAX VALUES = -3.73e 143.25, 13.08 e 61.00



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE RIGHT FRONT SILL ACCELERATION Y AXIS

EVALUATION OF MOD YW FLEET
83292000000
RFSZG1

FILTER = BLPF 100/ 316/ -40
MIN, MAX VALUES = -4.25e 38.63, 6.12 e 18.00



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE RIGHT FRONT SILL ACCELERATION Z AXIS

EVALUATION OF MOD YW FLEET

83292000000

AFSR61

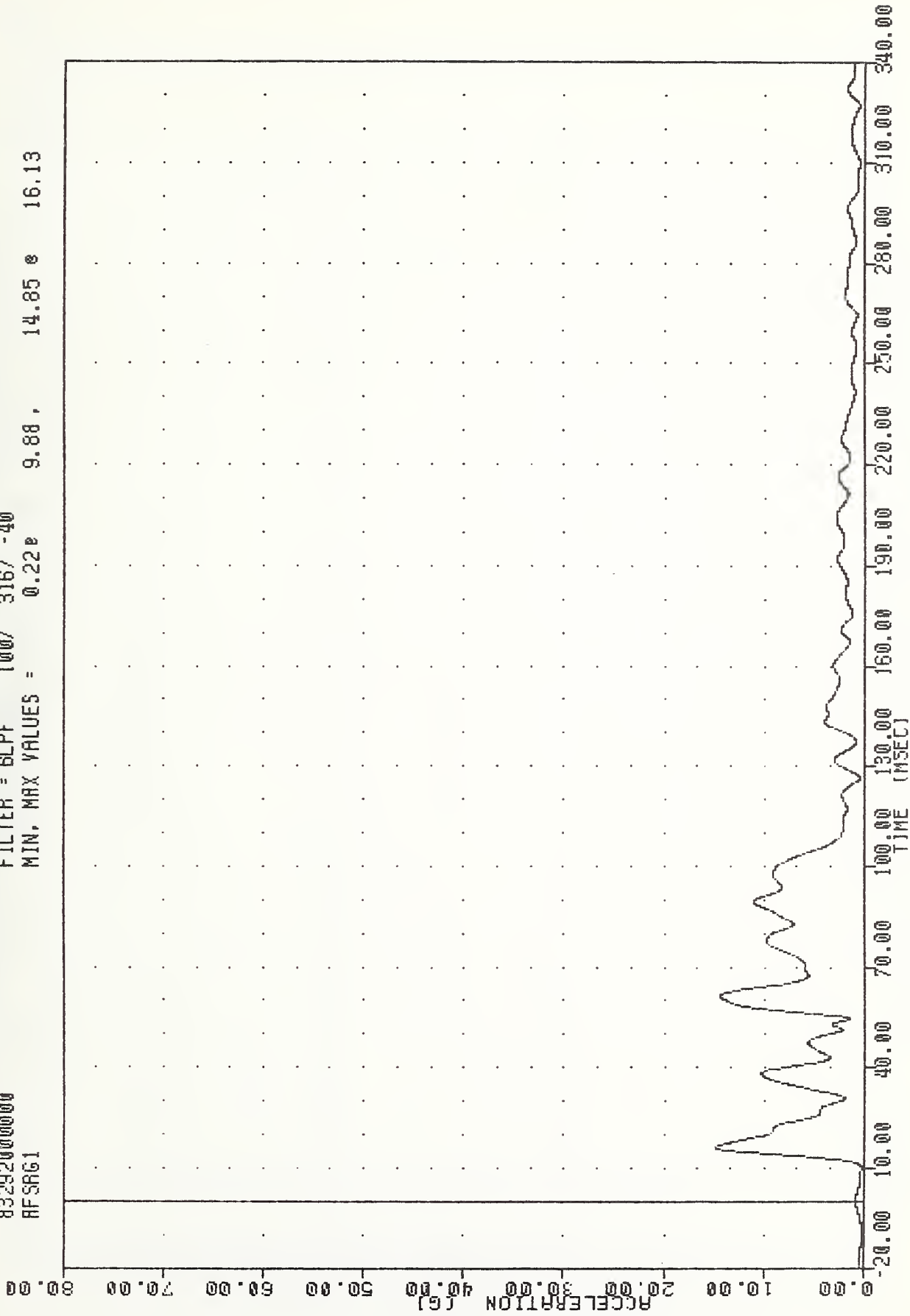
FILTER = 6LPF 100/ 316/ -40

MIN. MAX VALUES = 0.22e

9.88,

14.85 e

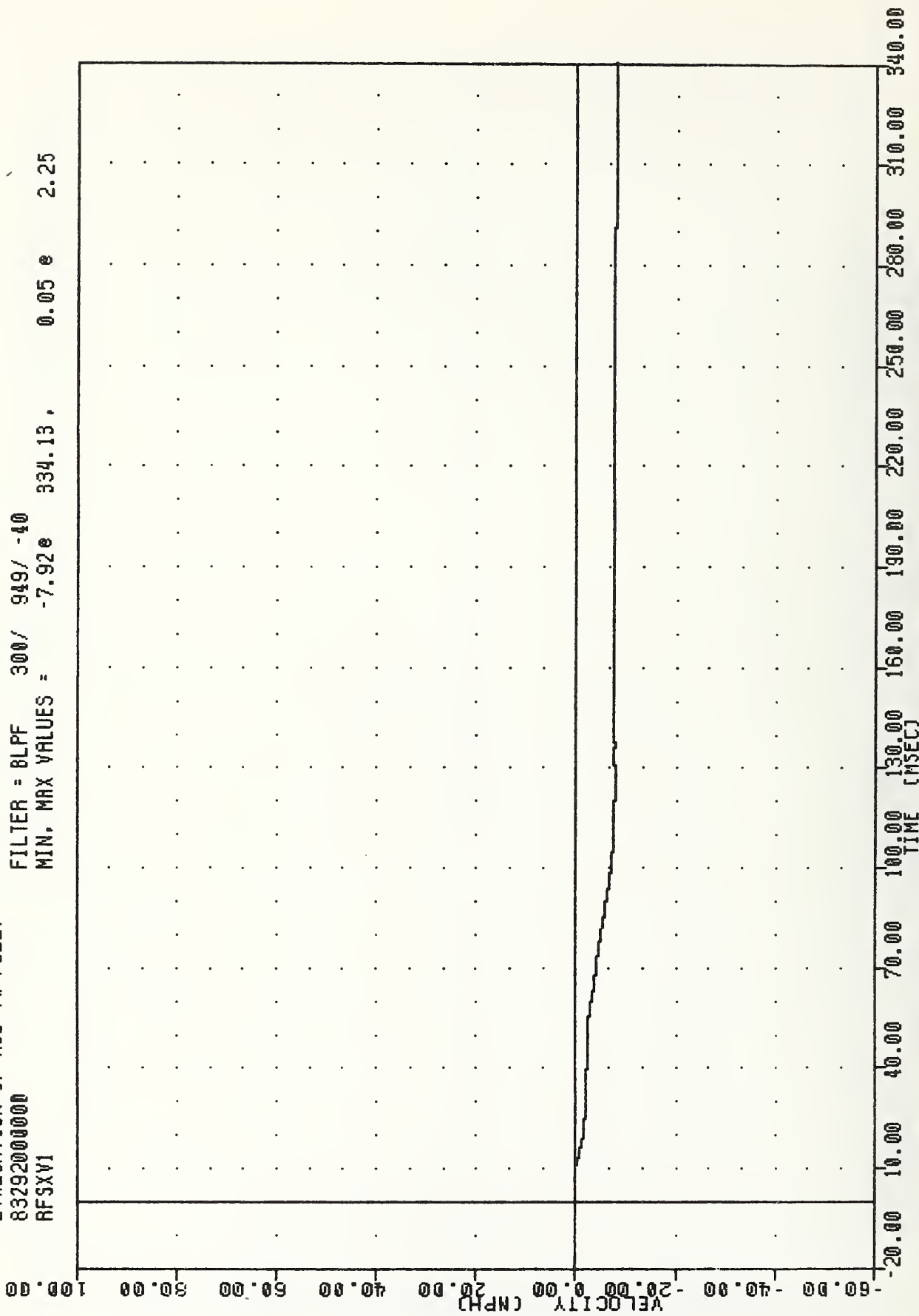
16.13



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE RIGHT FRONT SILL RESULTANT

EVALUATION OF MDD YW FLEET
83292000000
RFSXV1

FILTER = BLPF 300/ 949/ -40
MIN. MAX VALUES = -7.92e 334.13, 0.05 e 2.25



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING RFSX61

EVALUATION OF MOD VV FLEET

83292000000

RFSYV1

FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = -0.02e

-7.63,

12.74 e

121.88

100.00

80.00

60.00

40.00

20.00

0.00

-20.00

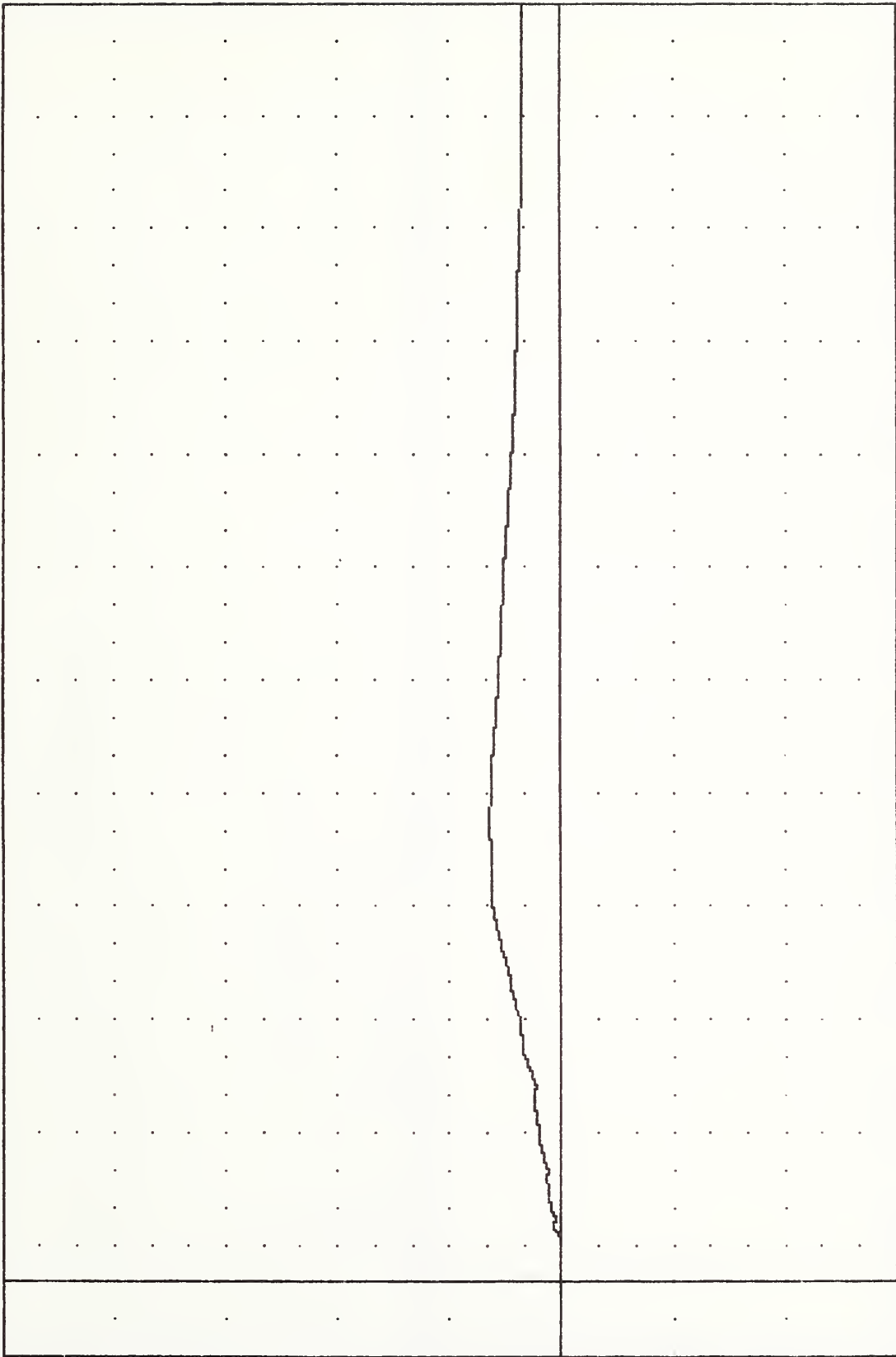
-40.00

-60.00

-80.00

B-75

VELOCITY (MPH)



-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 (NSEC)

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING RFSYGI

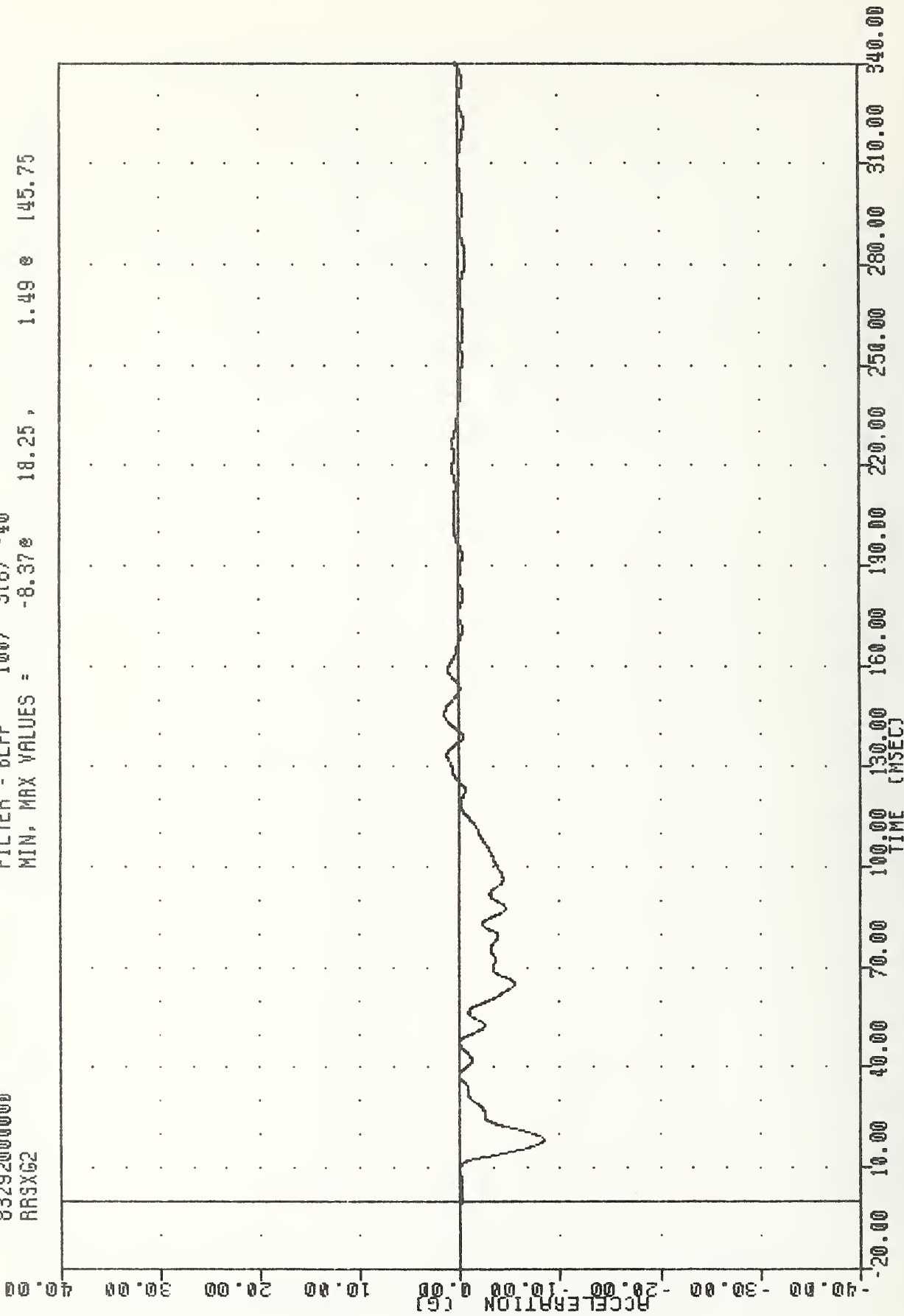
EVALUATION OF MOD VV FLEET

83292000000

RRSXG2

FILTER = 8LPF 100/ 316/ -40

MIN, MAX VALUES = -8.37e 1.49 e 145.75



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE RIGHT REAR SILL ACCELERATION X AXIS

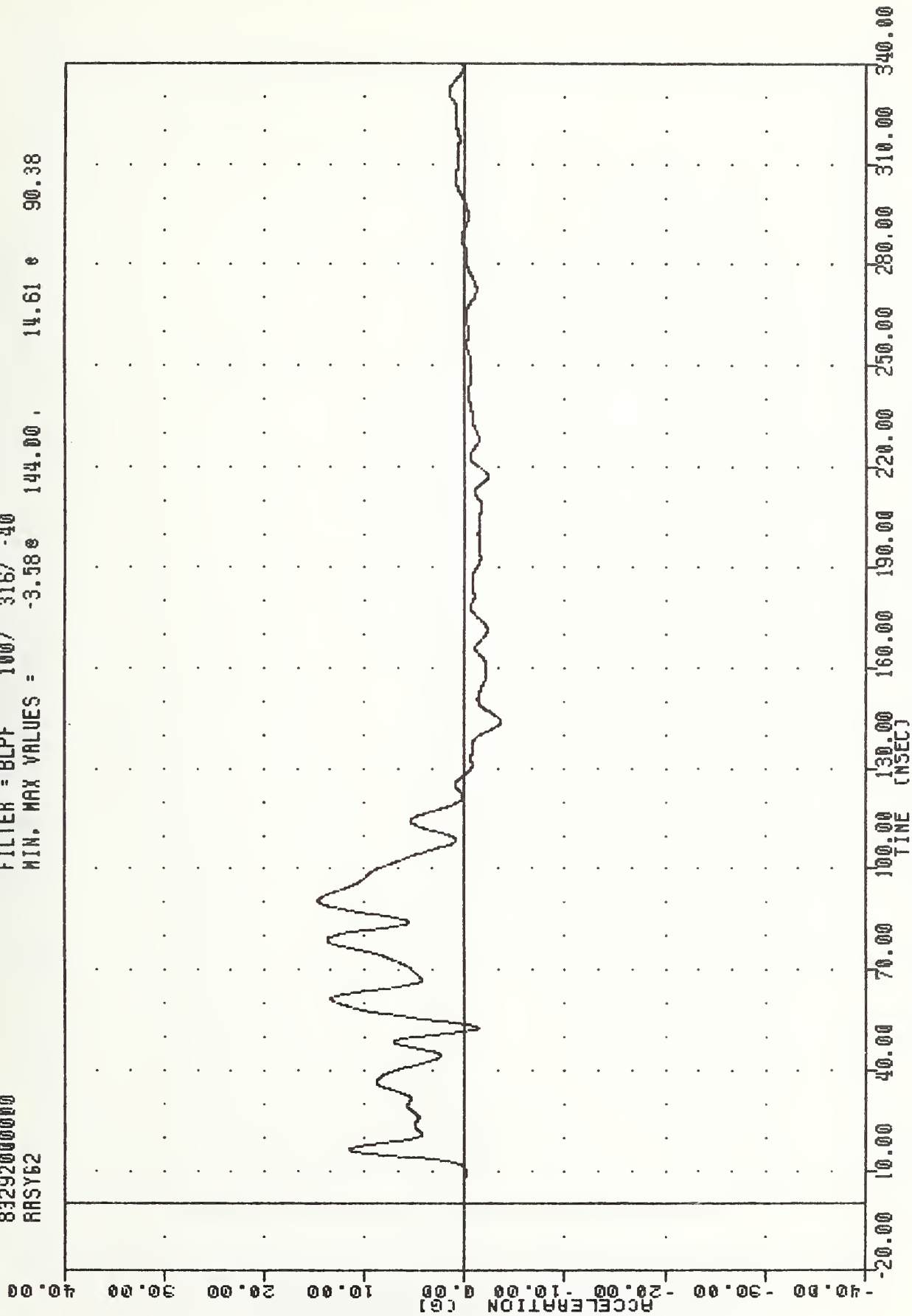
EVALUATION OF MOD VW FLEET

83292000000

RRSY62

FILTER = BLPF 100/ 316/ -40

MIN. MAX VALUES = -3.58 e 144.00 . 14.61 e 90.38



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE RIGHT REAR SILL ACCELERATION Y AXIS

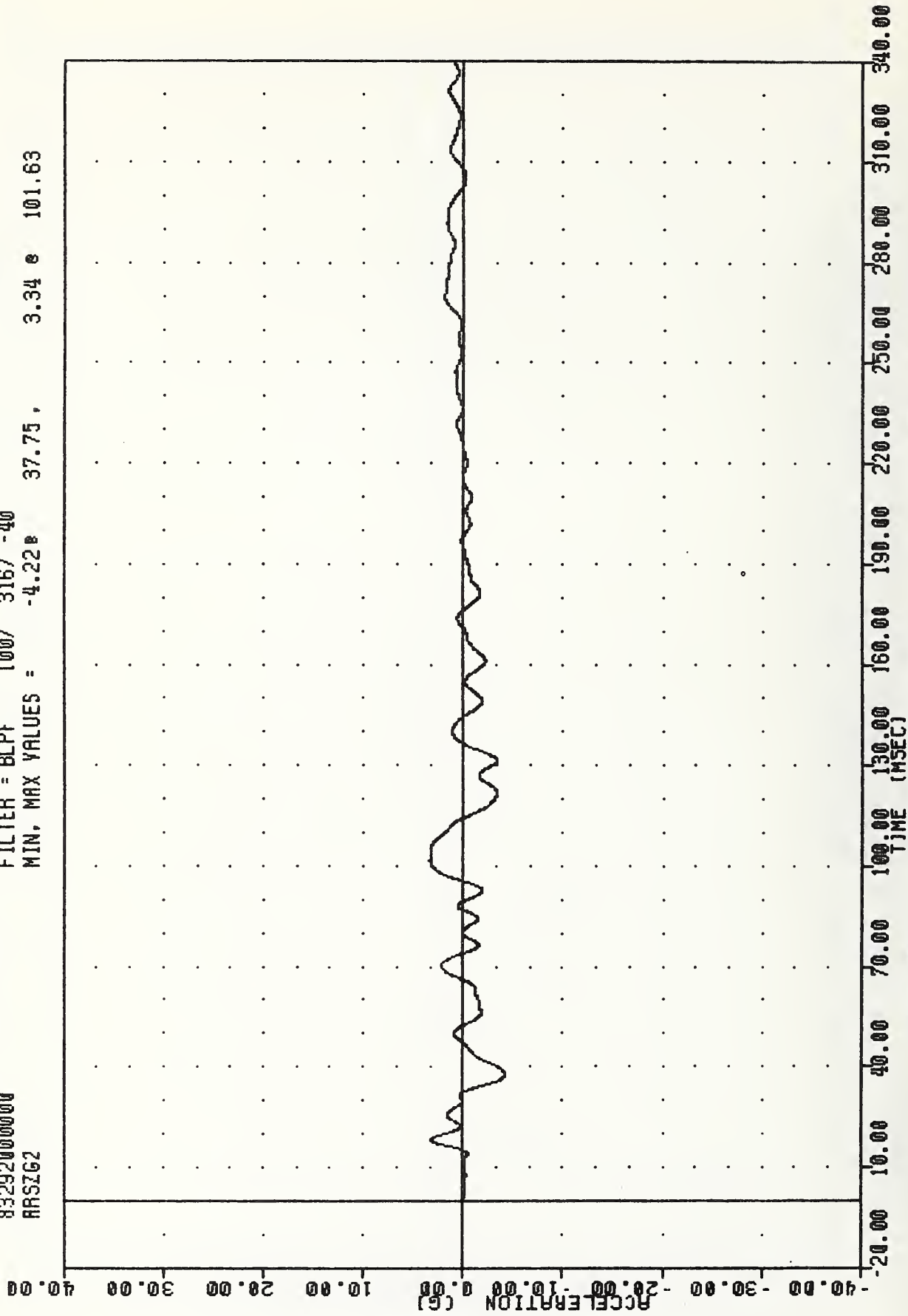
EVALUATION OF MOD YW FLEET

83292000000

ARSIG2

FILTER = BLPF 100/ 316/ -40

MIN. MAX VALUES = -4.22 e 37.75 , 3.34 e 101.63



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE RIGHT REAR SILL ACCELERATION Z AXIS

EVALUATION OF MDD YW FLEET

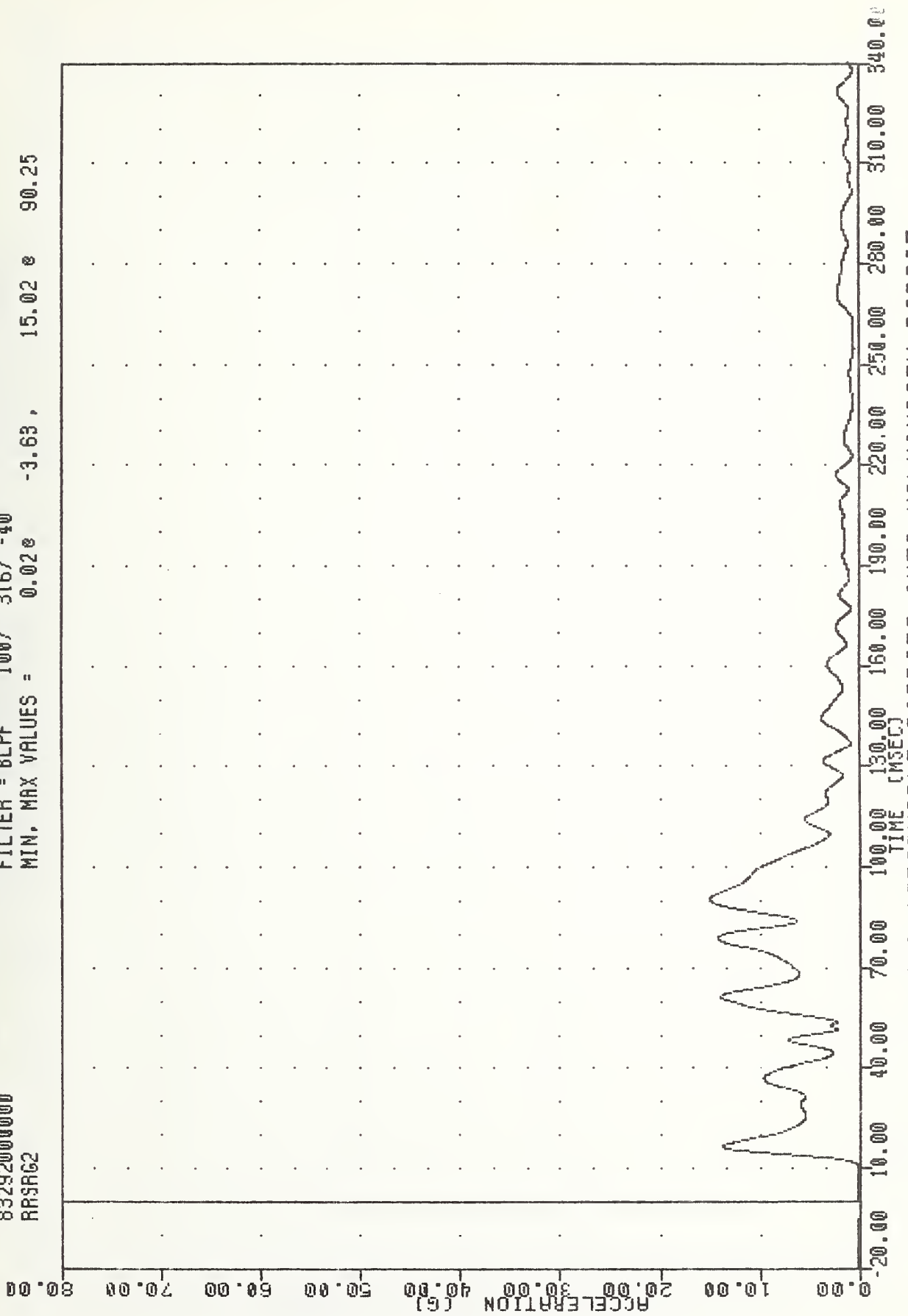
83292000000

RRSRC2

FILTER = 8LPF 100/ 316/ -40

MIN. MAX VALUES = 0.02 e

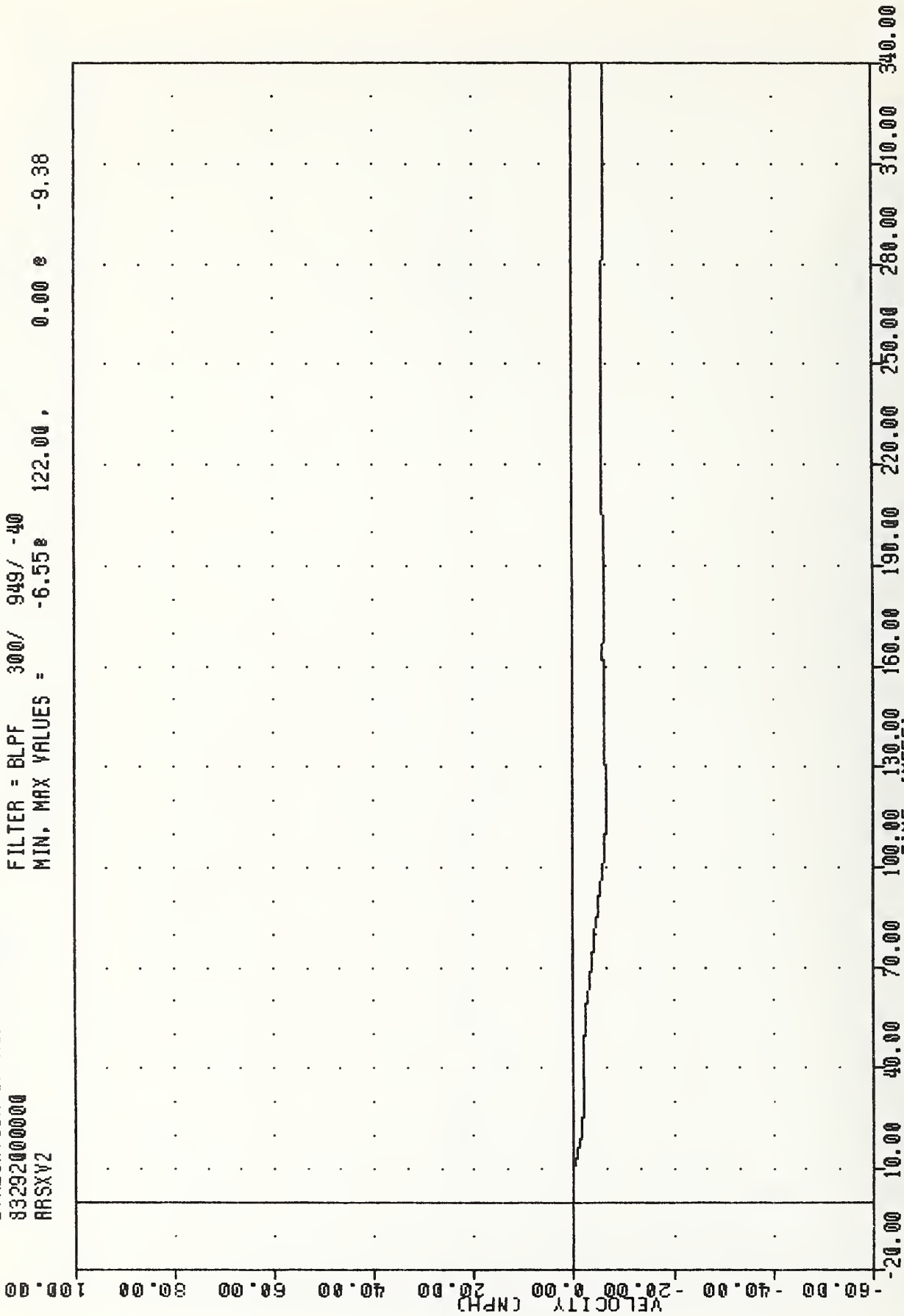
-3.63 , 15.02 e 90.25



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE RIGHT REAR SILL RESULTANT

EVALUATION OF MOD YW FLEET
 83292000000
 ARSXV2

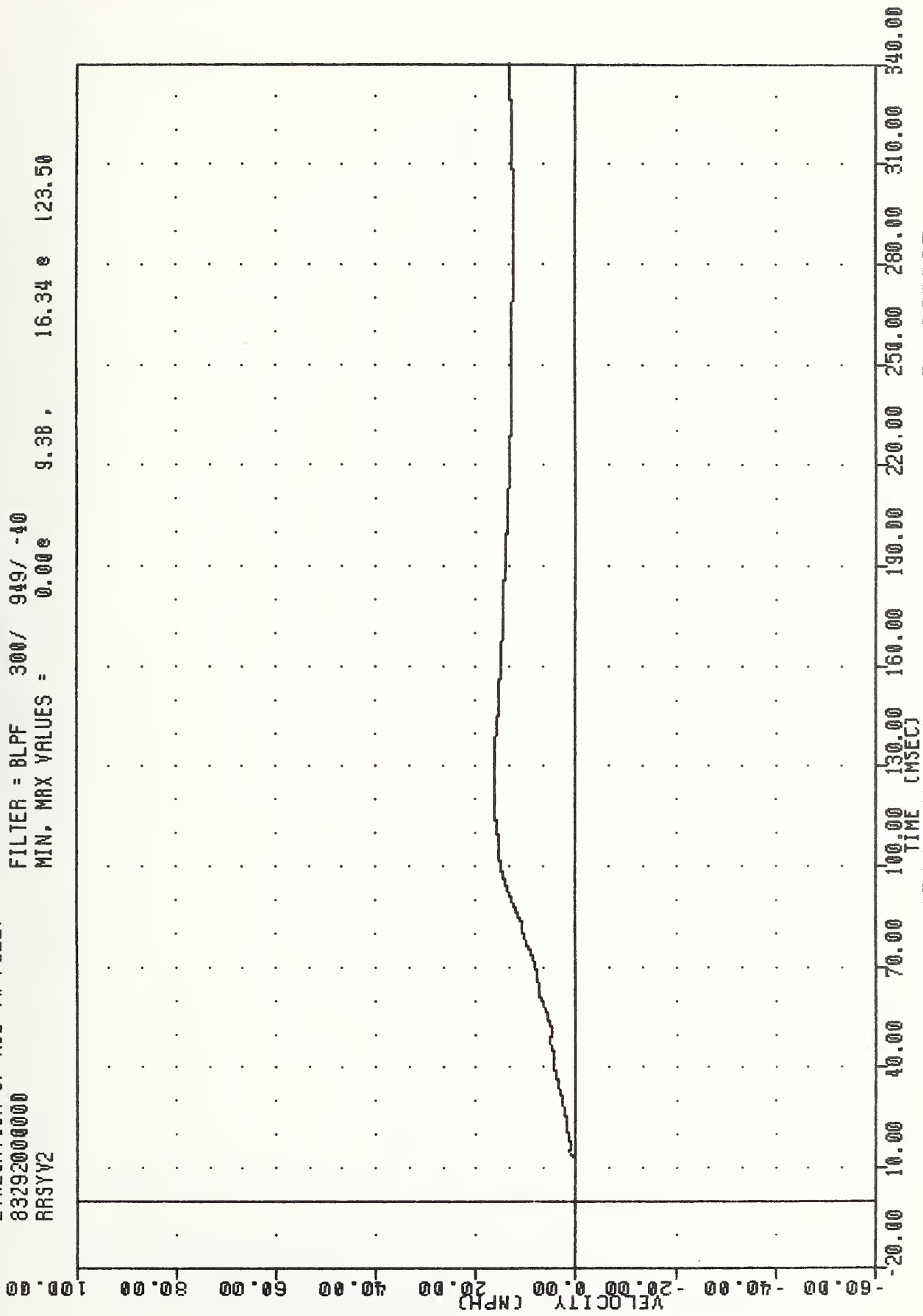
FILTER = BLPF 300/ 949/ -40
 MIN. MAX VALUES = -6.55e 122.00, 0.00 e -9.38



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING ARSXG2

EVALUATION OF MDD VW FLEET
 83292000000
 RRSYV2

FILTER = BLPF 300/ 949/ -40
 MIN. MAX VALUES = 0.00e 16.34 e 123.50



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING RRSYG2

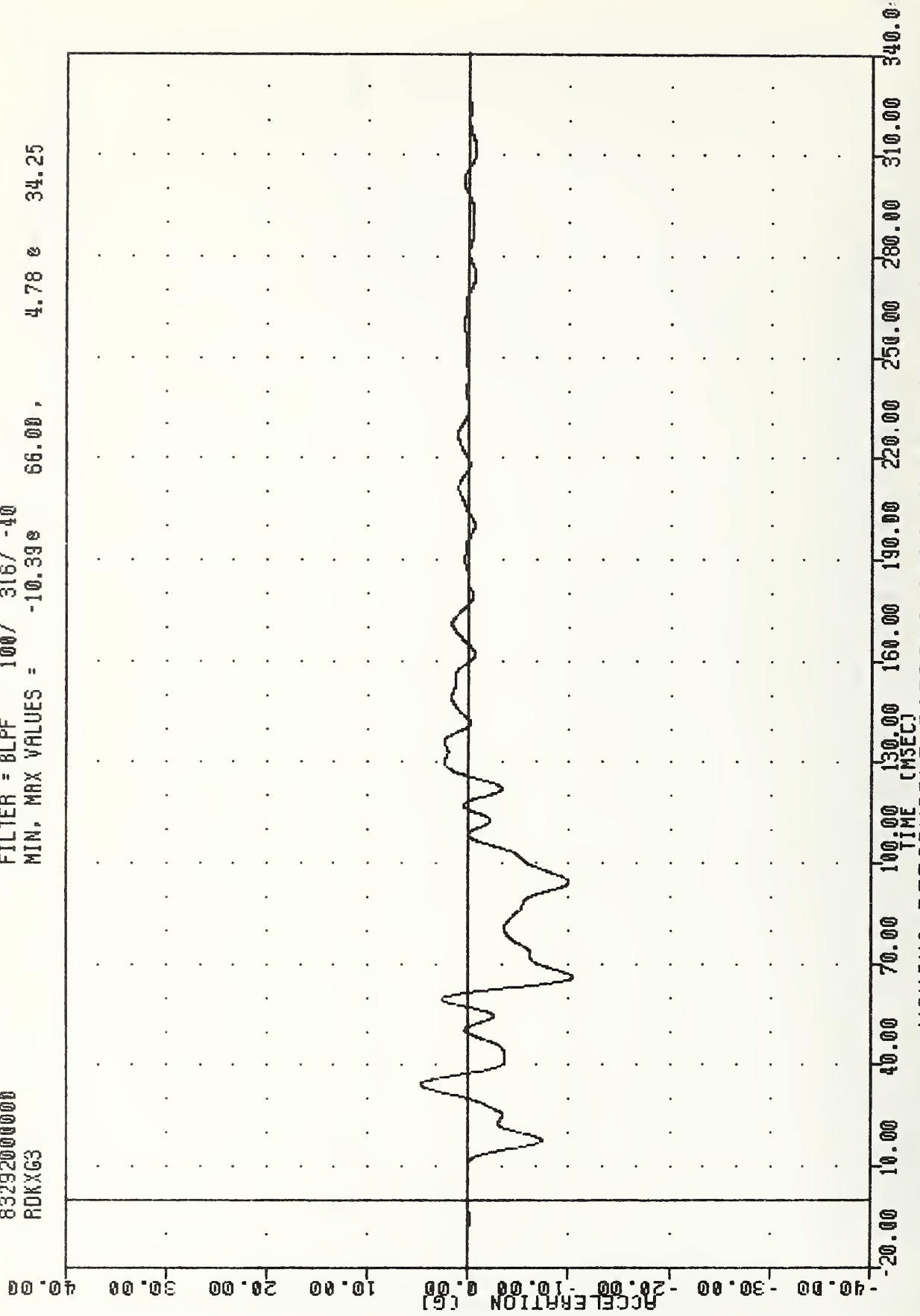
EVALUATION OF MOD YW FLEET

83292000000

RDKXG3

FILTER = BLPF 100/ 316/ -40

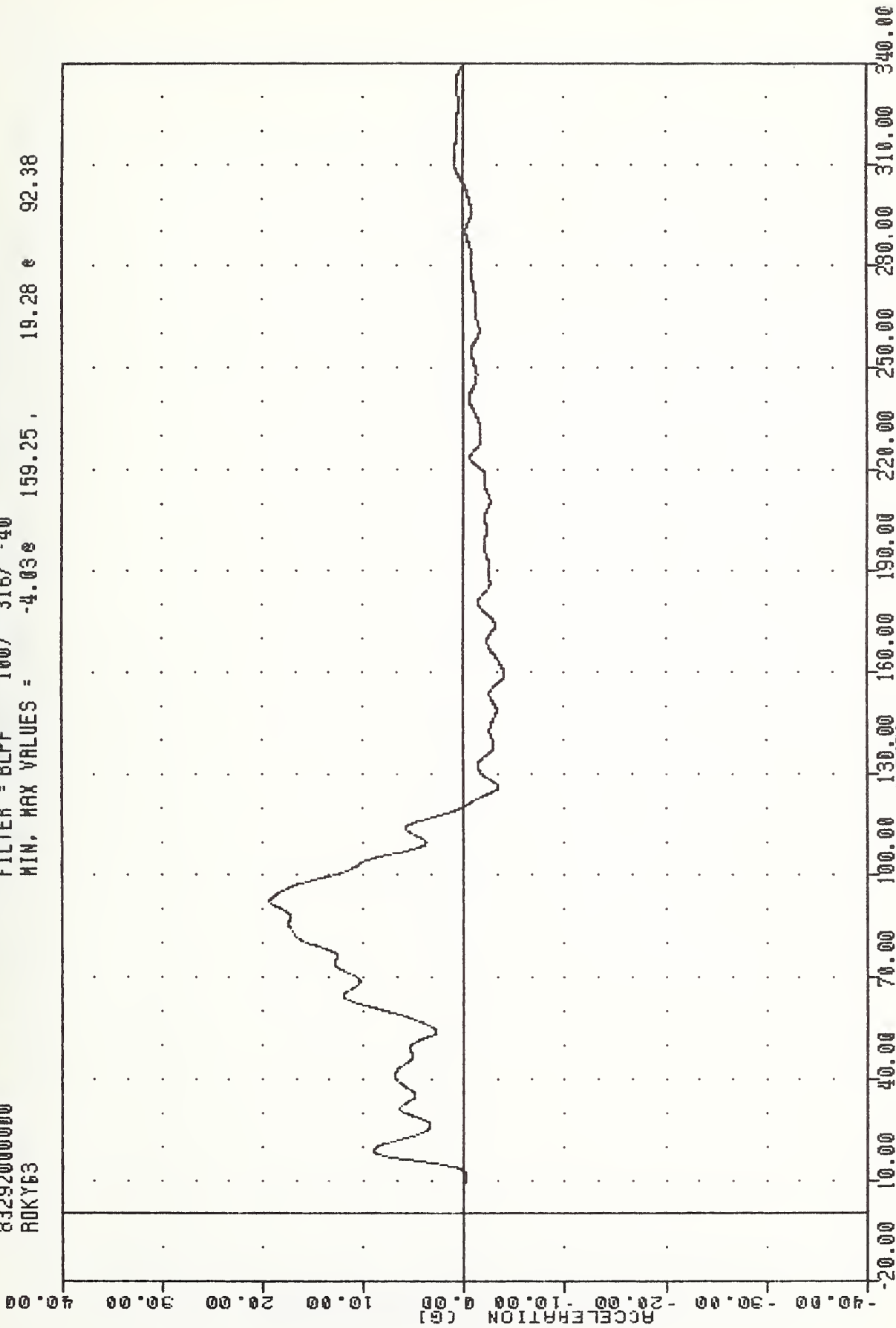
MIN, MAX VALUES = -10.39g 66.00, 4.78 g 34.25



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE REAR DECK ACCELERATION X AXIS

EVALUATION OF MOD VW FLEET
83292000000
RKY63

FILTER = BLPF 100/ 316/ -40
MIN. MAX VALUES = -4.03e 159.25 , 19.28 e 92.38



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE REAR DECK ACCELERATION Y AXIS

EVALUATION OF MOD YW FLEET

83292000000

ADKZ63

FILTER = BLPF 100/ 316/ -40

MIN. MAX VALUES = -6.73e 94.75, 4.54 e 106.38

40.00

30.00

20.00

10.00

ACCELERATION (G)

0.00

-10.00

-20.00

-30.00

-40.00

-20.00

10.00

40.00

70.00

100.00

130.00

160.00

190.00

220.00

250.00

280.00

310.00

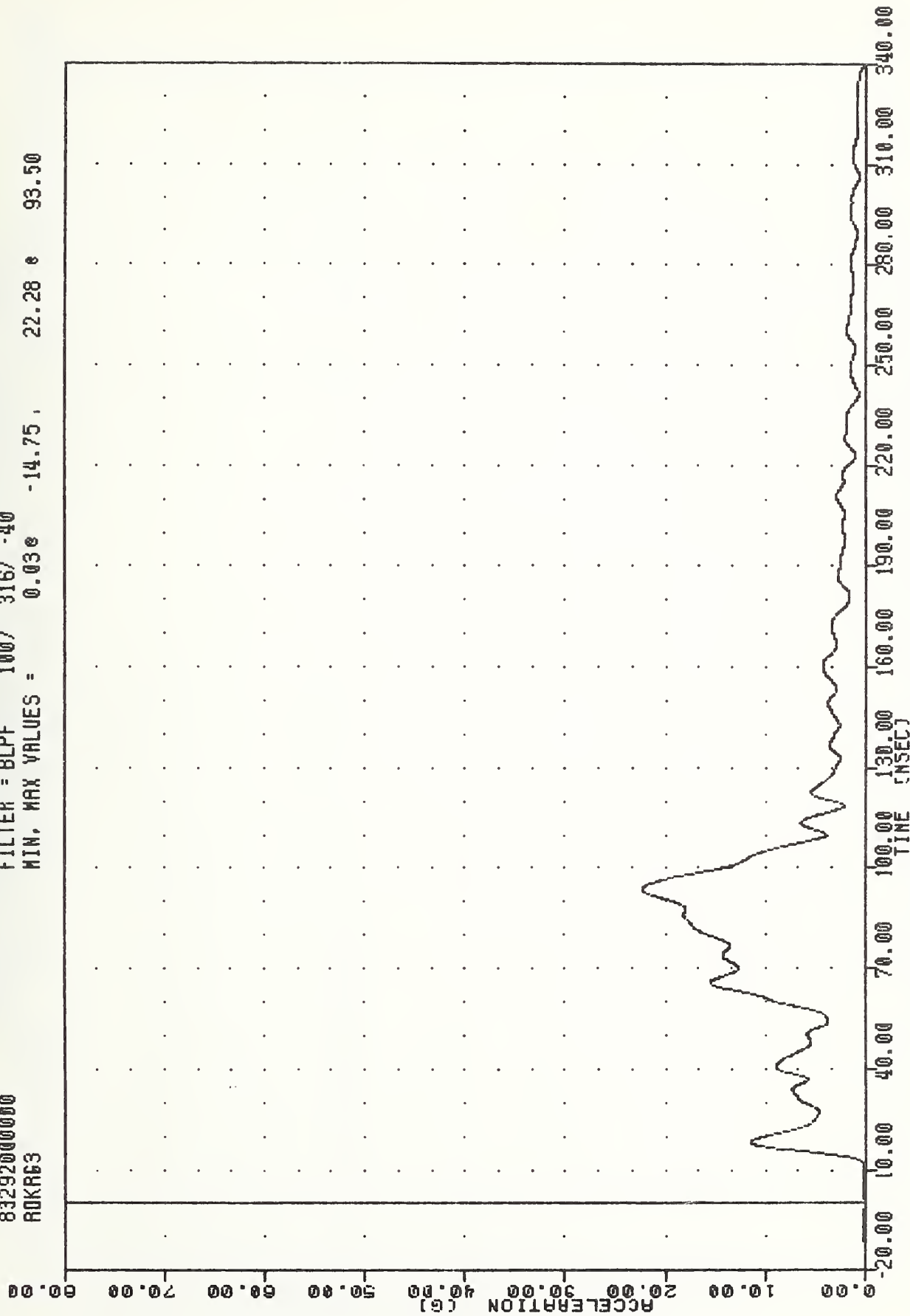
340.00

TIME (MSEC)

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE REAR DECK ACCELERATION Z AXIS

EVALUATION OF MOD VN FLEET
83292000000
R0KR63

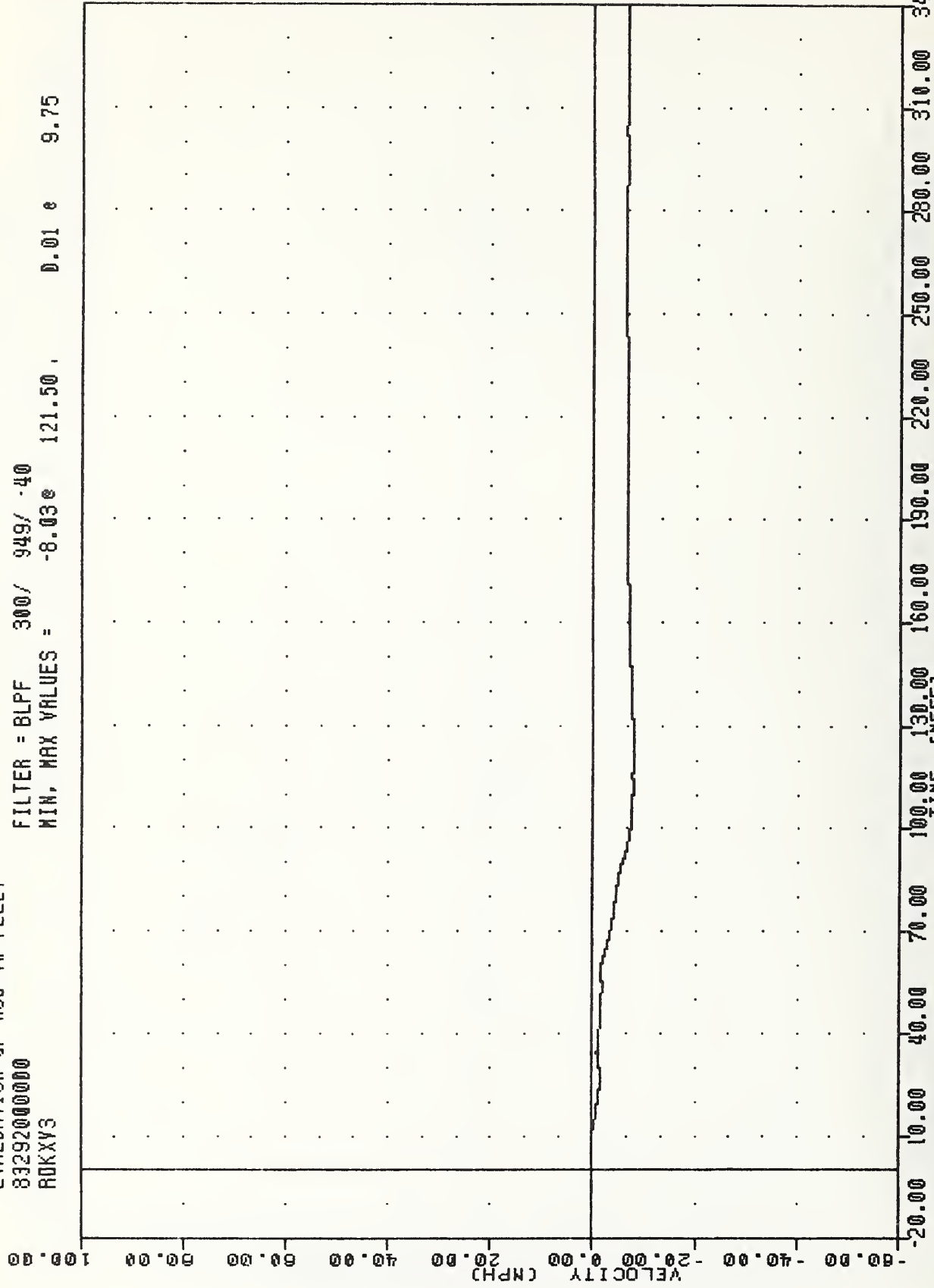
FILTER = BLPF 100/ 316/ -40
MIN, MAX VALUES = 0.03e -14.75, 22.28 e 93.50



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE REAR DECK RESULTANT

EVALUATION OF MOD VN FLEET
 83292000000
 ROKXY3

FILTER = BLPF 300/ 949/ -40
 MIN, MAX VALUES = -8.03e 121.50, 0.01 e 9.75



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING RDKXG3

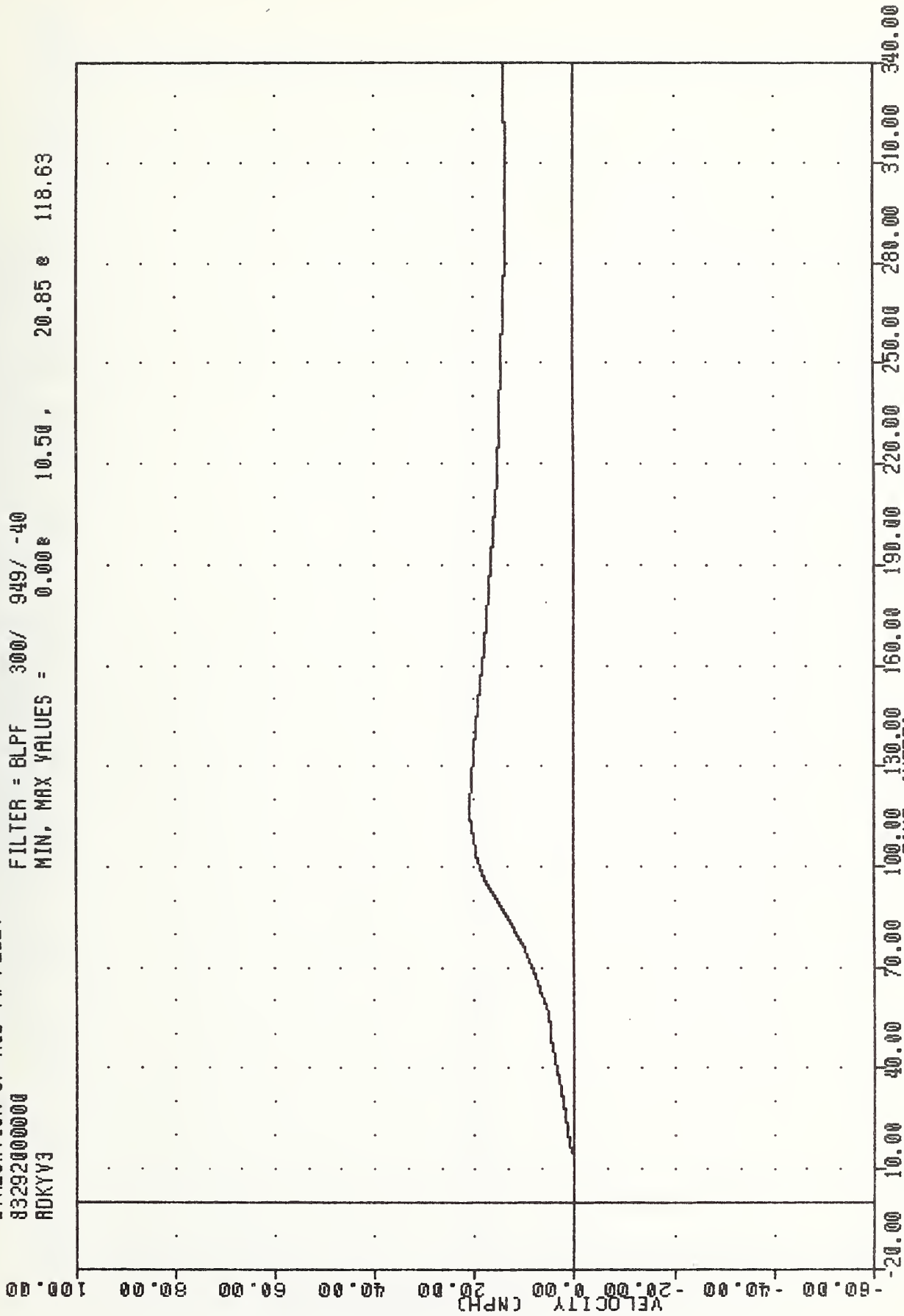
EVALUATION OF MOD YW FLEET

83292000000

ADKYV3

FILTER = BLPF 300/ 949/ -40

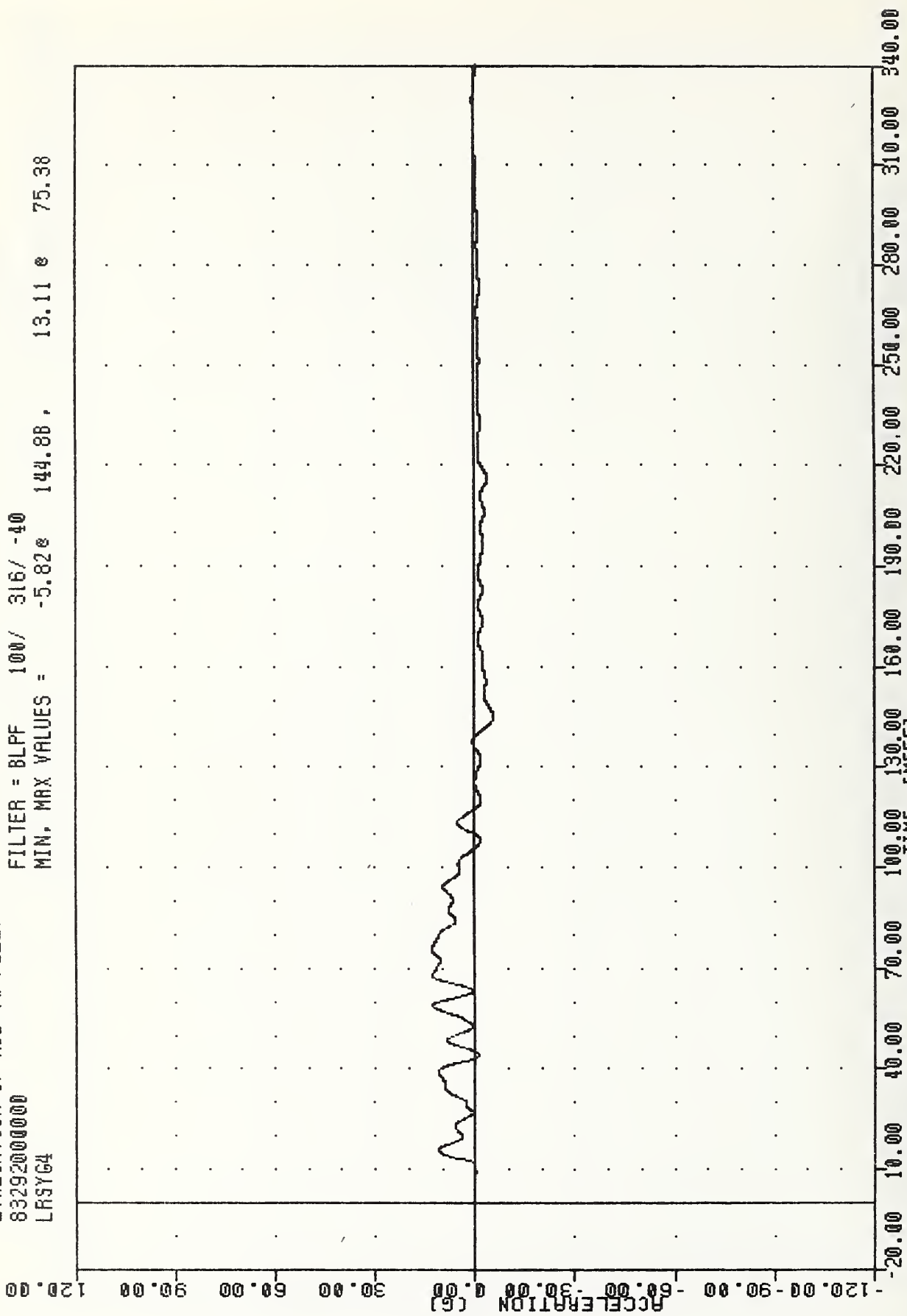
MIN. MAX VALUES = 0.00e 10.50 , 20.85 e 118.63



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING ADKYG3

EVALUATION OF MDD VV FLEET
83292000000
LRSYG4

FILTER = 8LFF 100/ 316/ -40
MIN. MAX VALUES = -5.82e 144.88, 13.11 e 75.38

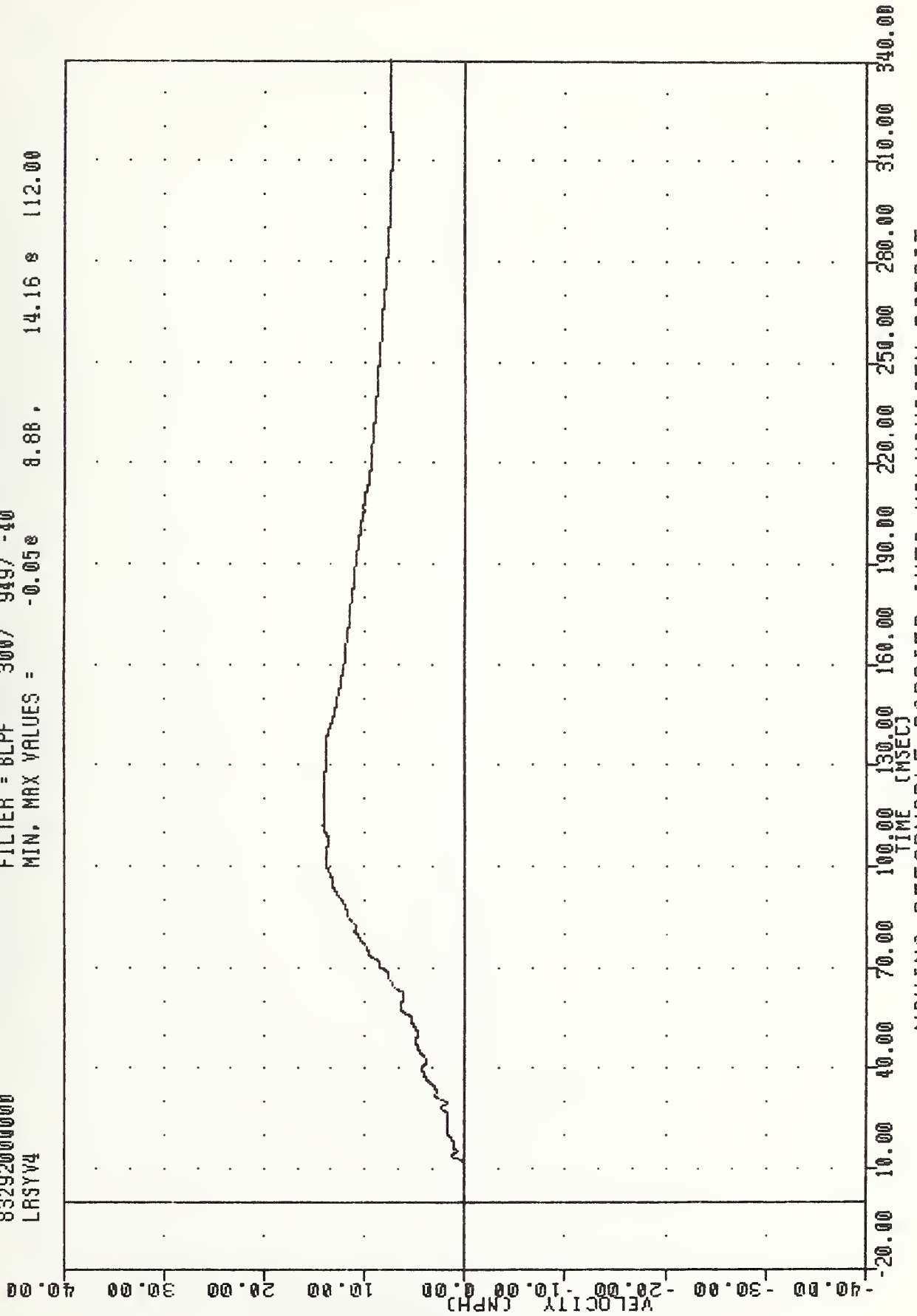


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MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE LEFT REAR SILL ACCELERATION Y AXIS

EVALUATION OF MDD VV FLEET
83292000000
LRSYV4

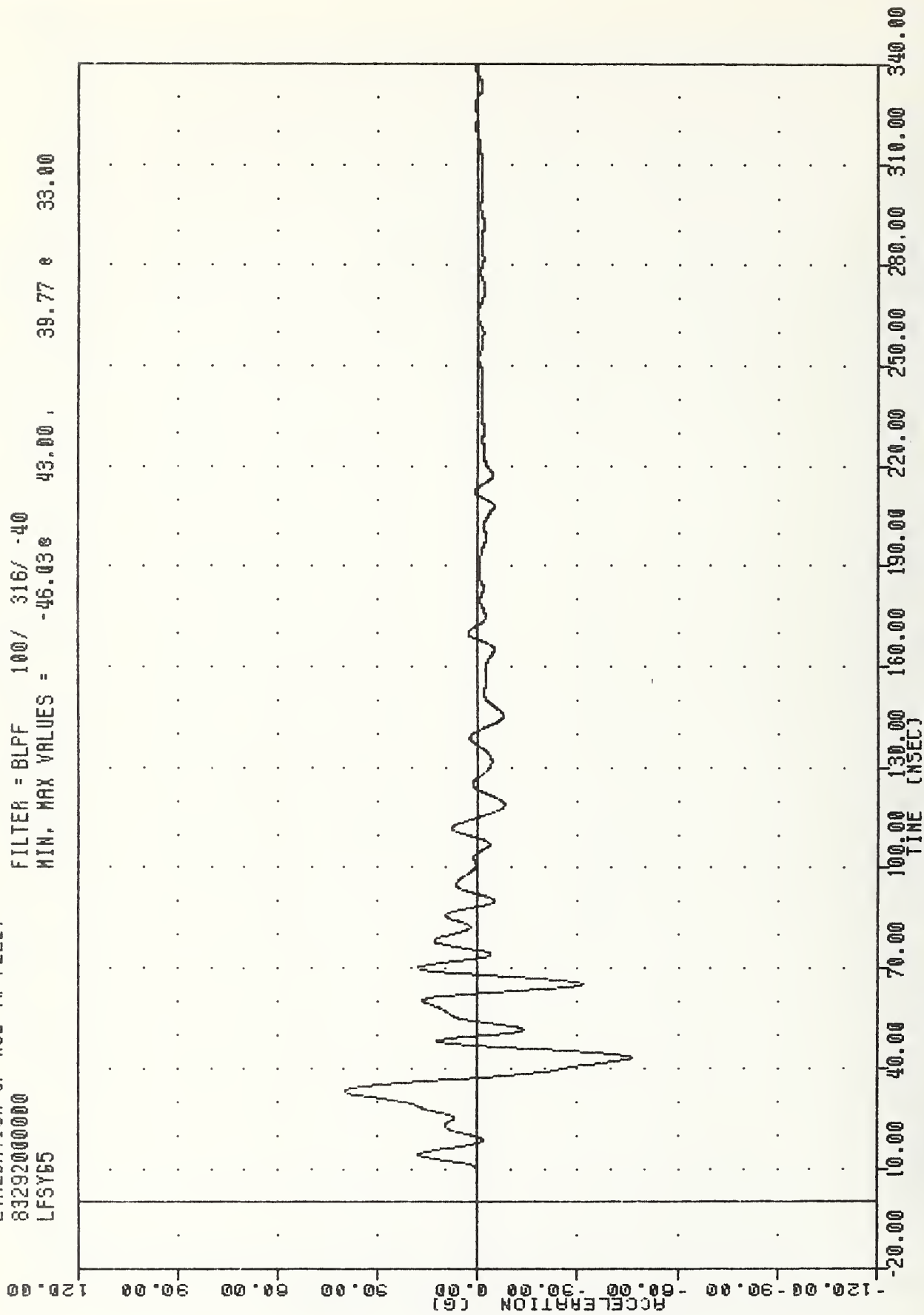
FILTER = BLPF 300/ 949/ -40
MIN. MAX VALUES = -0.05e 8.88, 14.16 s 112.00



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING LRSY64

EVALUATION OF MOD VW FLEET
83292000000
LFSY65

FILTER = BLPF 100/ 316/ -40
MIN. MAX VALUES = -46.03e 43.00 , 39.77 e 33.00



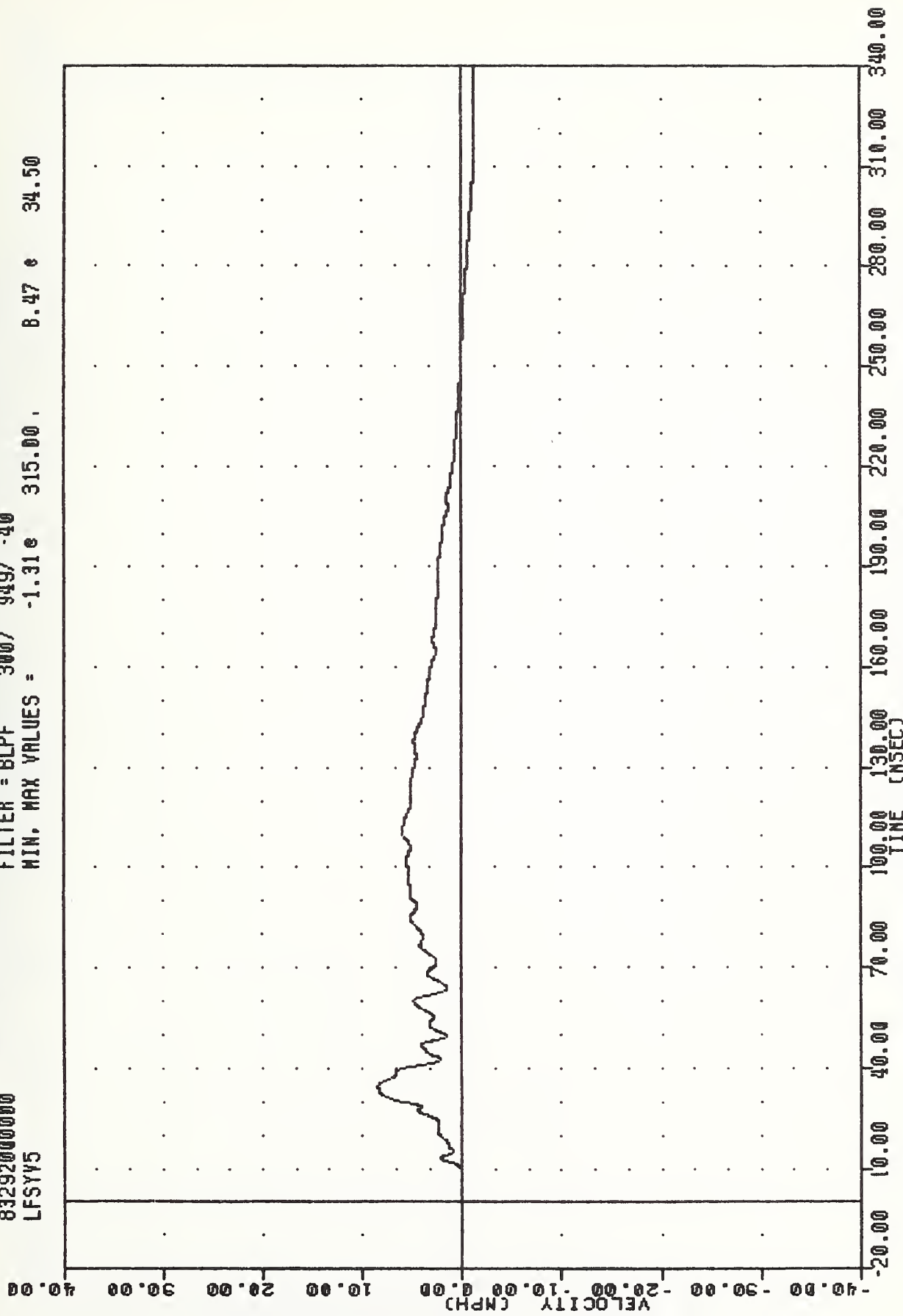
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE LEFT FRONT SILL ACCELERATION Y AXIS

EVALUATION OF MOD VV FLEET

83292000000
LFSYV5

FILTER = BLPF 300/ 949/ -40
MIN. MAX VALUES = -1.31e 315.00 .

B.47 e 34.50



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING LFSYG5

EVALUATION OF MDD YW FLEET

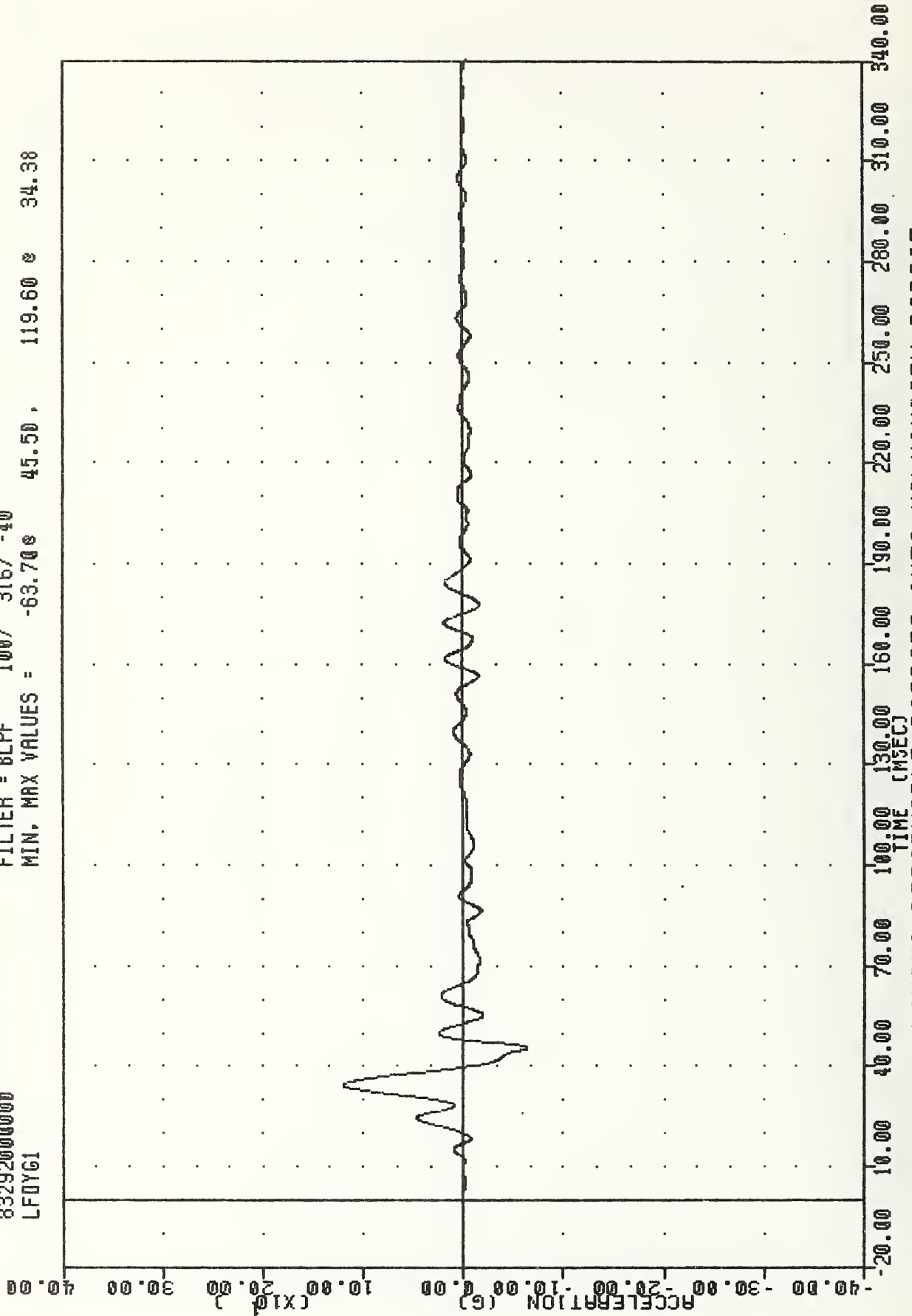
83292000000

LFDY61

FILTER = 8LPF 100/ 316/ -40

MIN. MAX VALUES = -63.70s 45.50 s

119.60 e 34.38



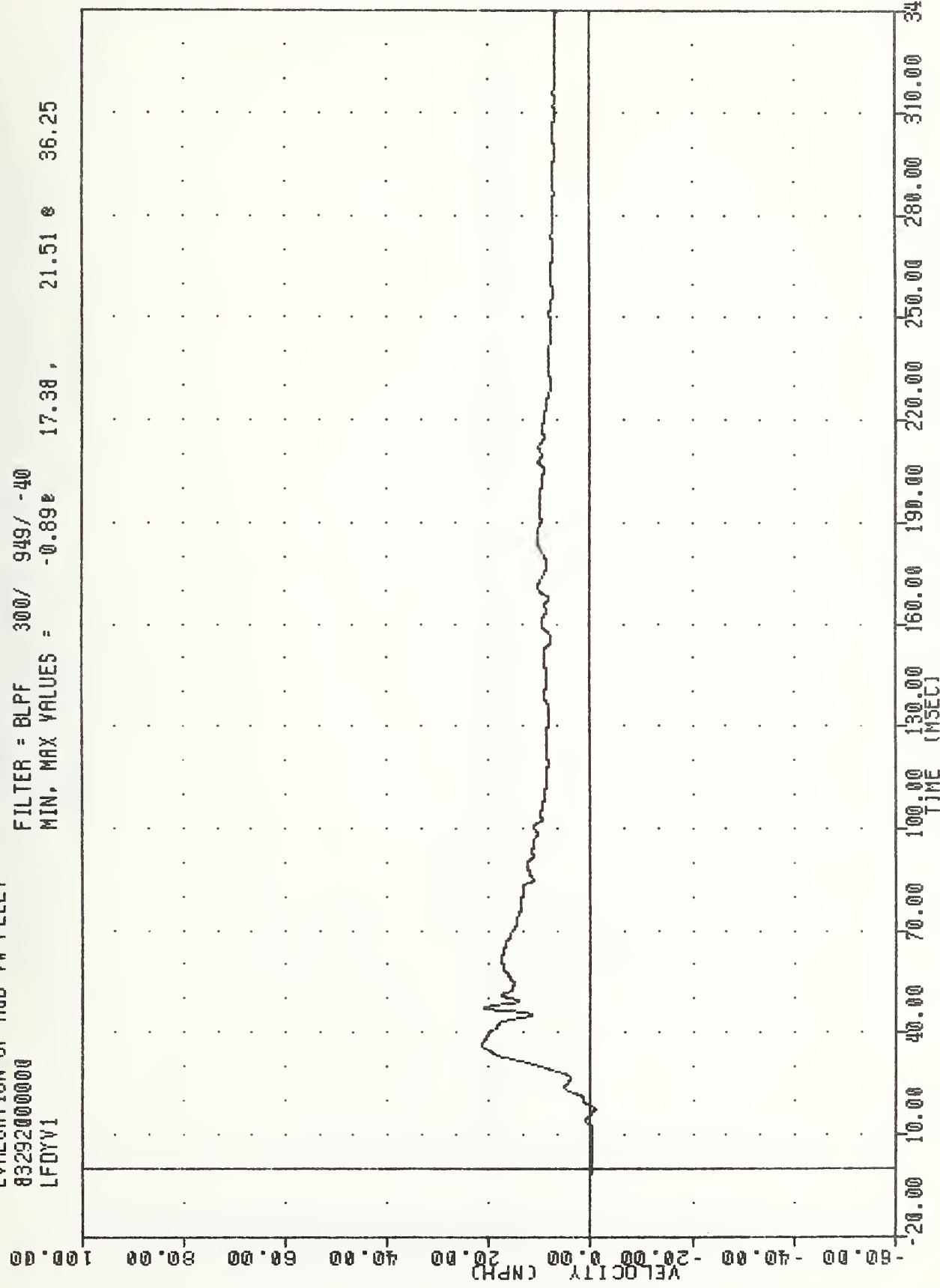
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE LEFT FRONT DOOR (POSITION 6) ACCELERATION Y AXIS

TRC , 831019
EVALUATION OF MOD YW FLEET
8329200000
LFDYV1

PLUT DATE 24-DEC-83 11:11:34

FILTER = BLPF 300/ 949/ -40

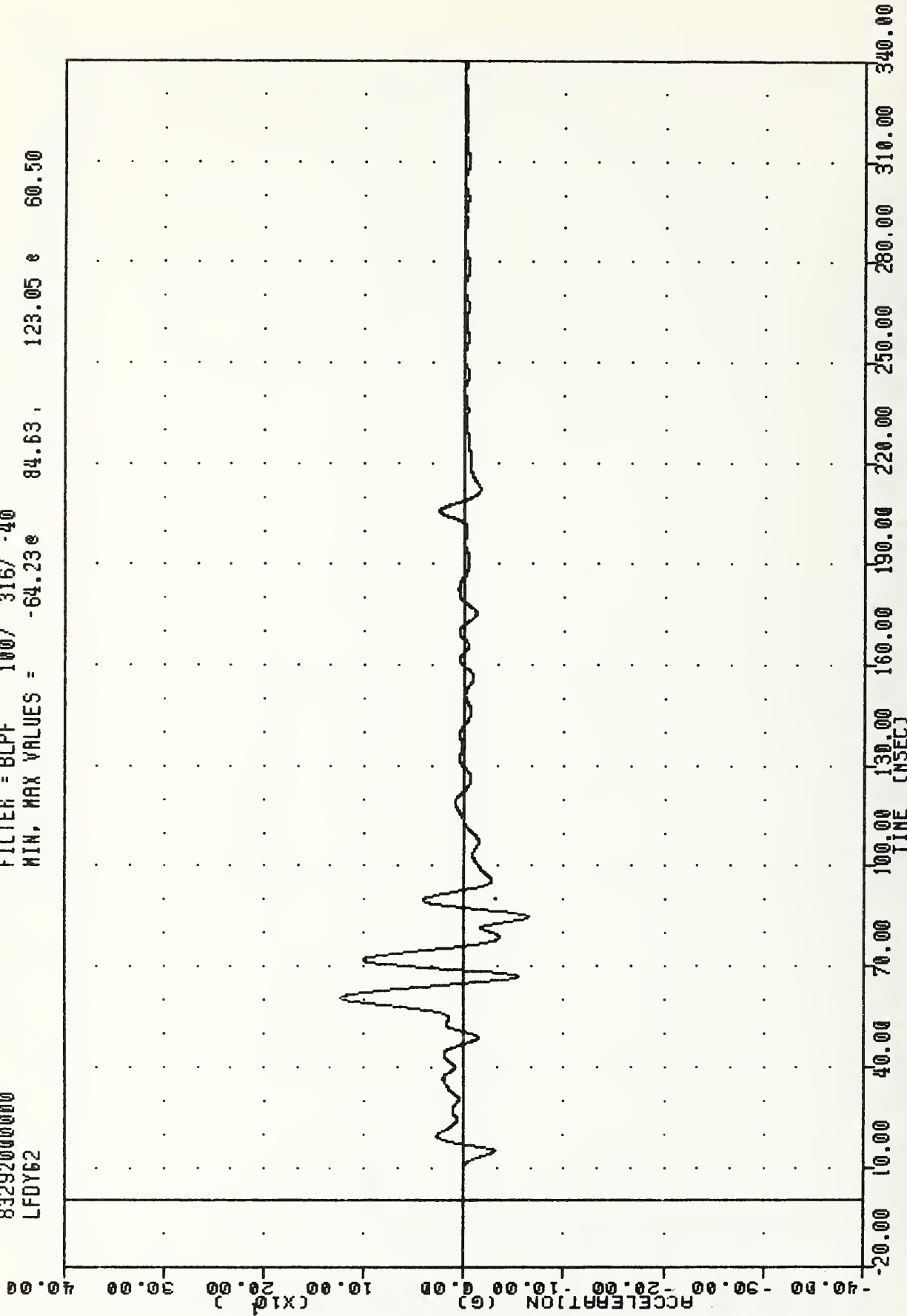
MIN. MAX VALUES = -0.89e 17.38 , 21.51 e 36.25



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING LFDYGI

EVALUATION OF MOD VW FLEET
83292000000
LFDY62

FILTER = BLPF 100/ 316/ -40
MIN, MAX VALUES = -64.23e 84.63, 123.05 e 60.50

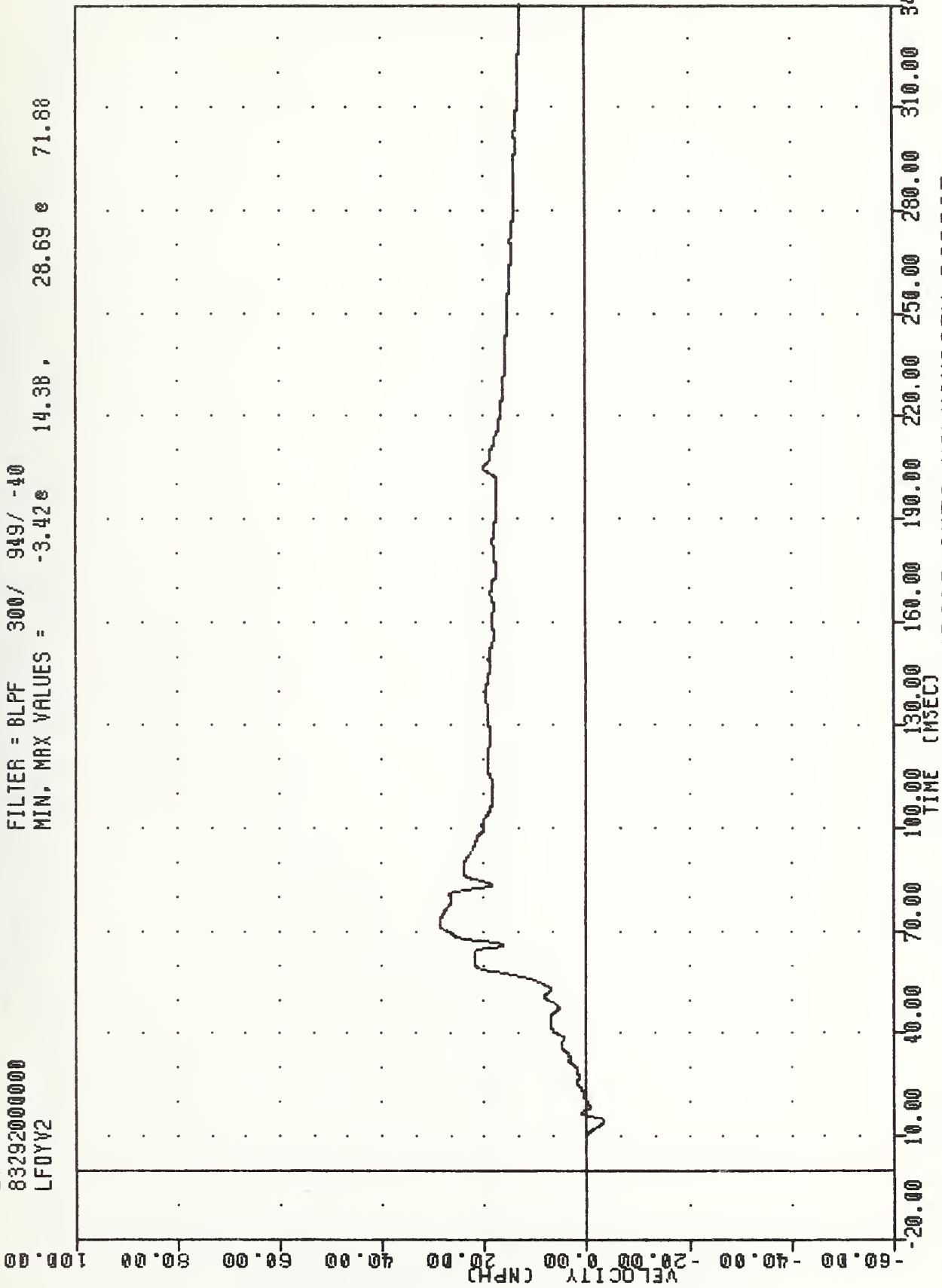


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MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE LEFT FRONT DOOR (POSITION 8) ACCELERATION Y AXIS

EVALUATION OF MDD YW FLEET
83292000000
LFOYV2

FILTER = BLPF 300/ 949/ -40
MIN. MAX VALUES = -3.42e 14.38e 28.69e 71.88



B-95

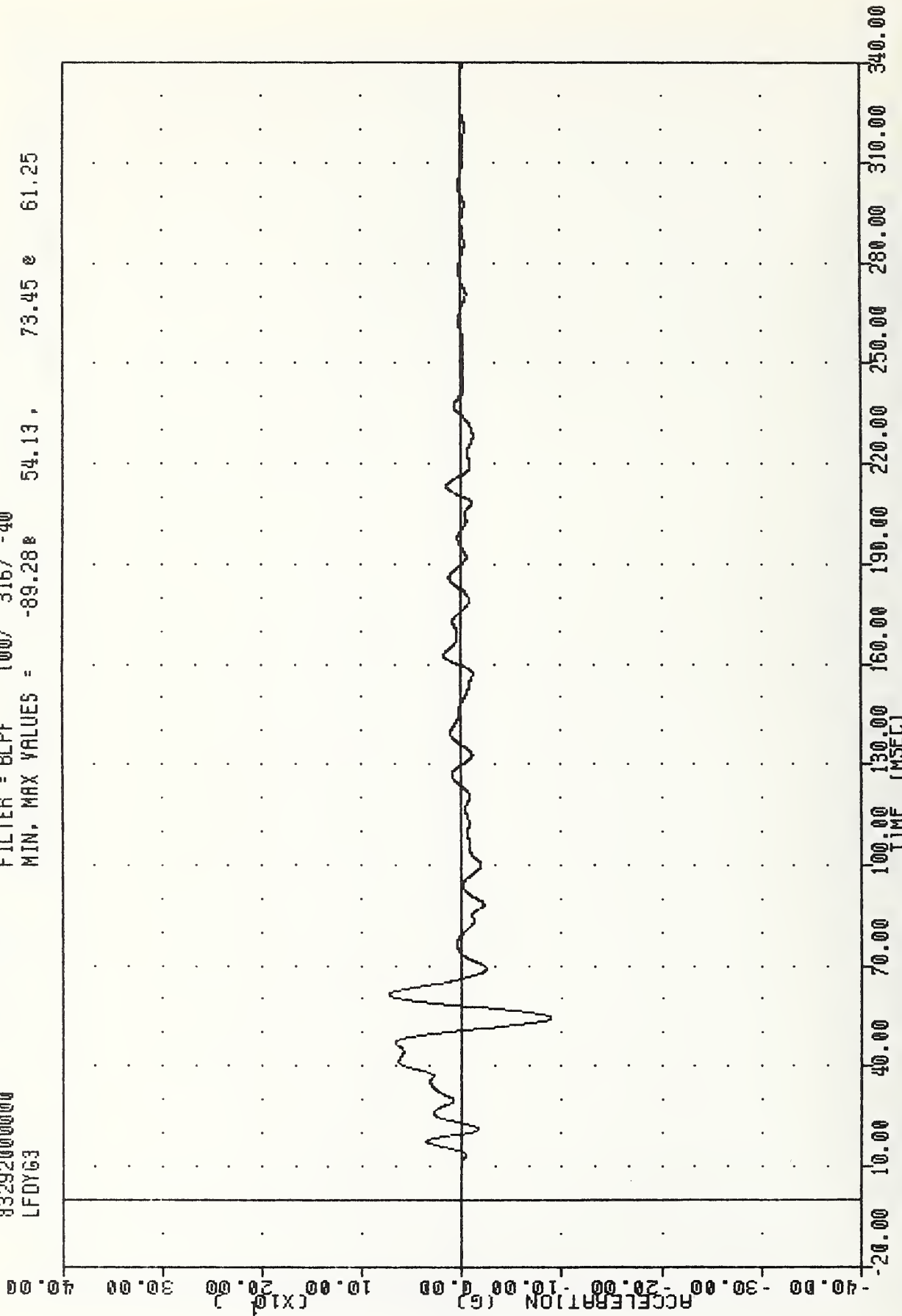
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING LFOY62

TRC , 831019
EVALUATION OF MOD VV FLEET
83292000000
LFDY63

PLOT DATE 24-UCI-83 08:15:54

FILTER = BLPF 100/ 316/ -40

MIN, MAX VALUES = -89.288 54.13, 73.45 e 61.25



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE LEFT FRONT DOOR (POSITION 9) ACCELERATION Y AXIS

EVALUATION OF MOD YW FLEET

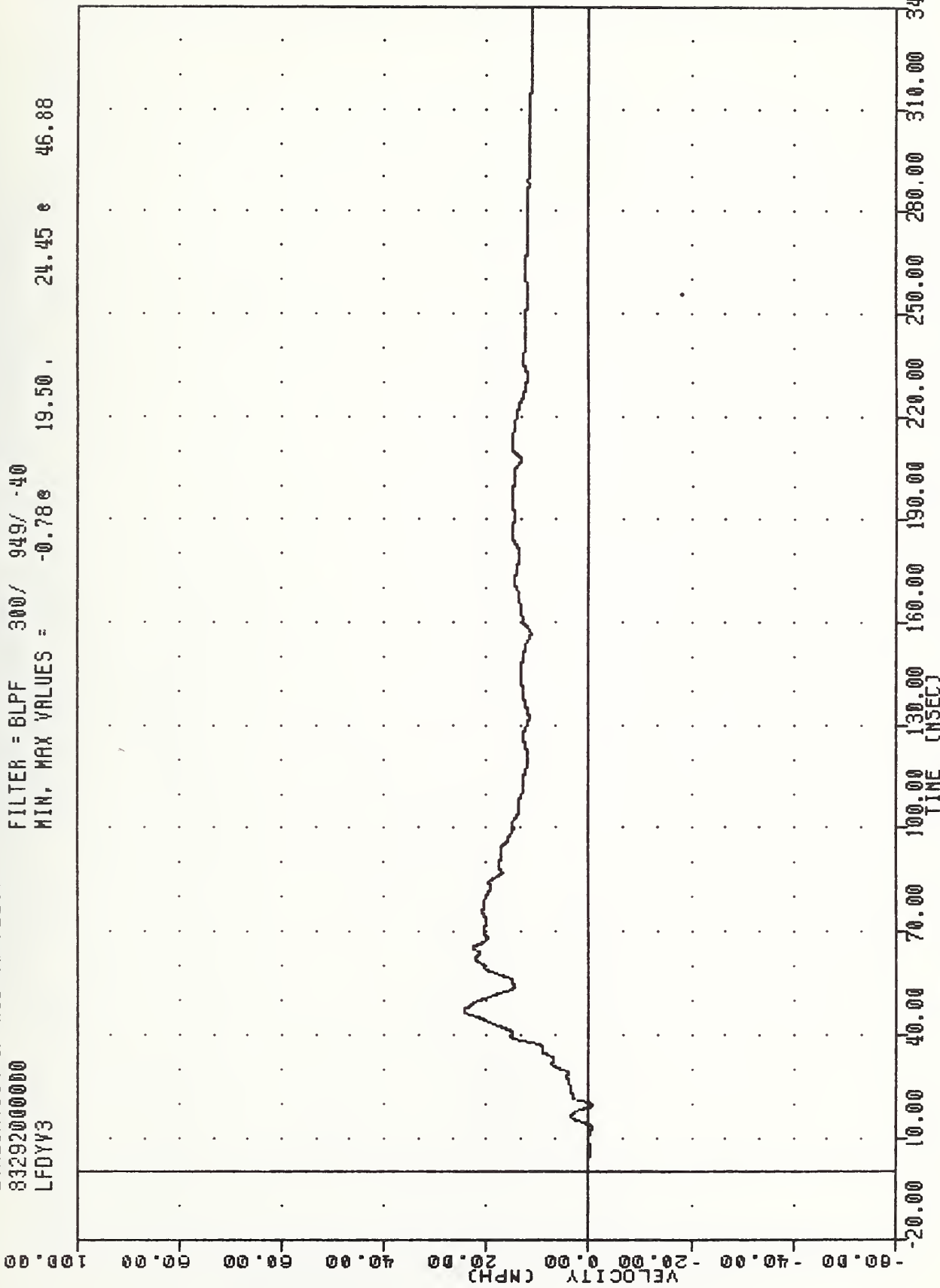
83292000000

LFDYY3

FILTER = BLPF 300/ 949/ -40

MIN. MAX VALUES = -0.78 e 19.50 .

24.45 e 46.88



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING LFDYG3

EVALUATION OF MOD YW FLEET

83292000000

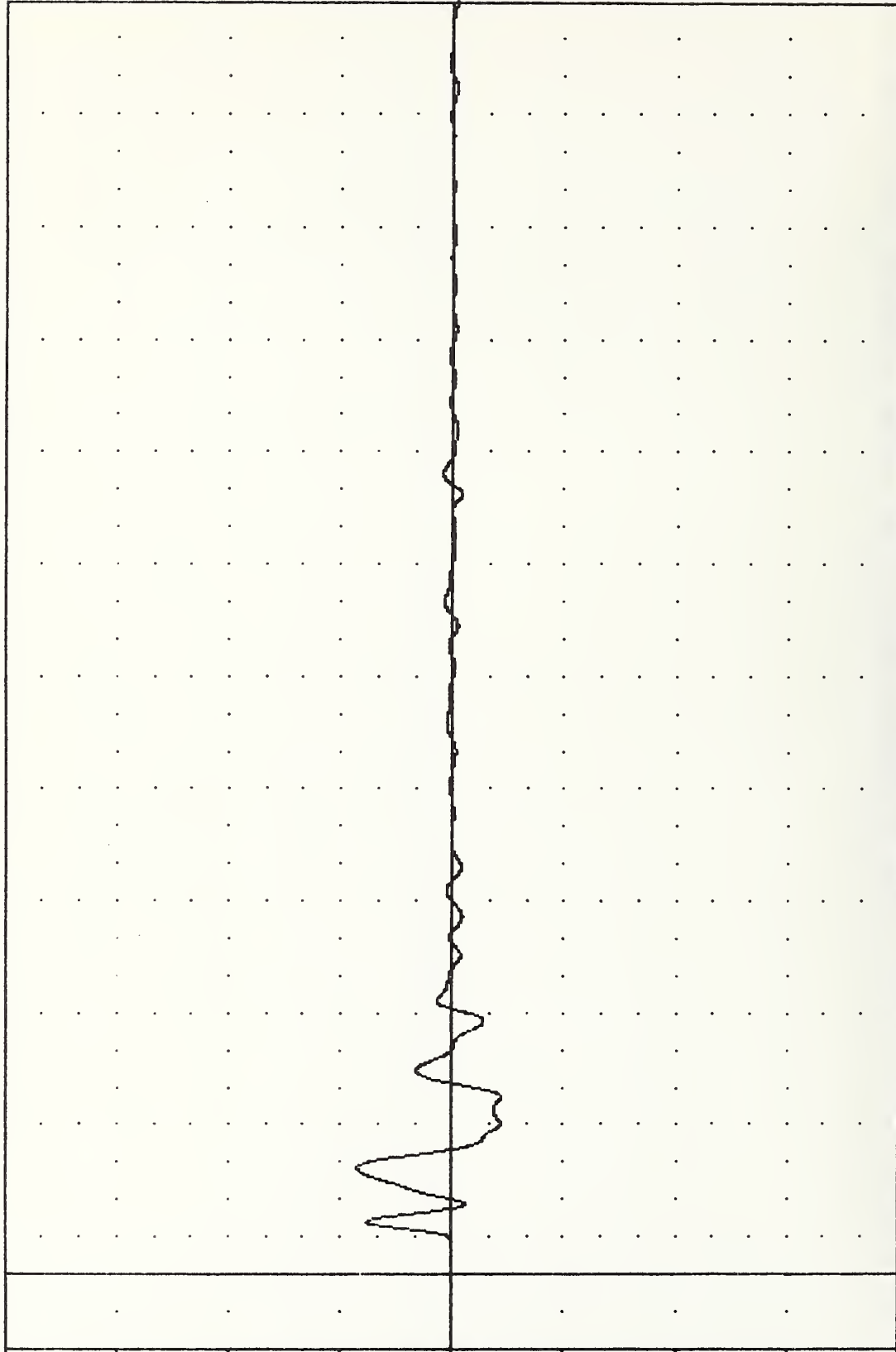
LF0YG4

FILTER = 6LFF 100/ 316/ -40

MIN. MAX VALUES = -44.24e 84.80 e 28.25

40.13, 84.80 e 28.25

ACCELERATION (G) (X10²)



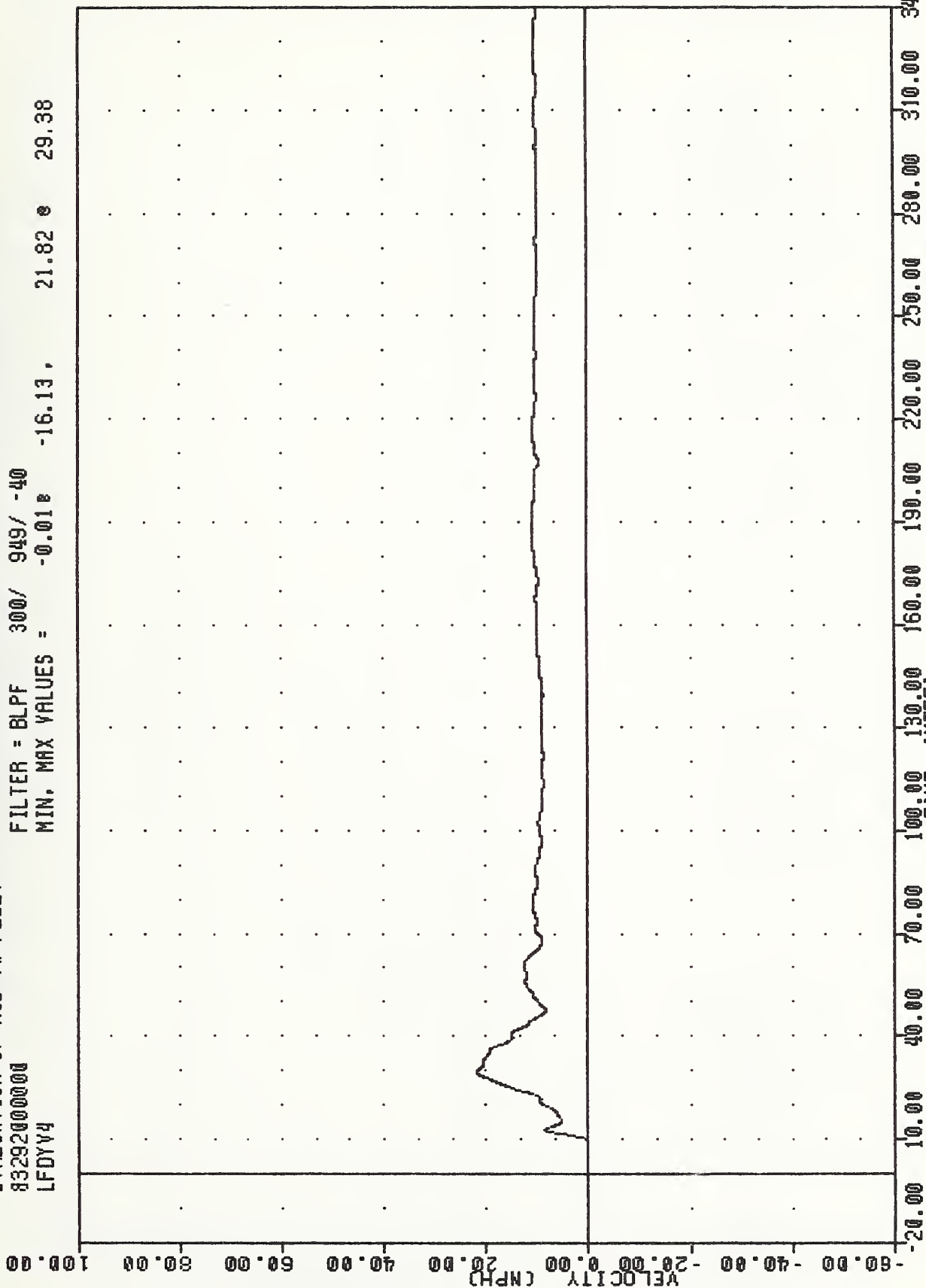
-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
TIME (MSEC)

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE LEFT FRONT DOOR (POSITION 10) ACCELERATION Y AXIS

TRC , 831019
EVALUATION OF MOD YW FLEET
83292000000
LFDYV4

PLOT DATE 24-ULI-83 11:11:34

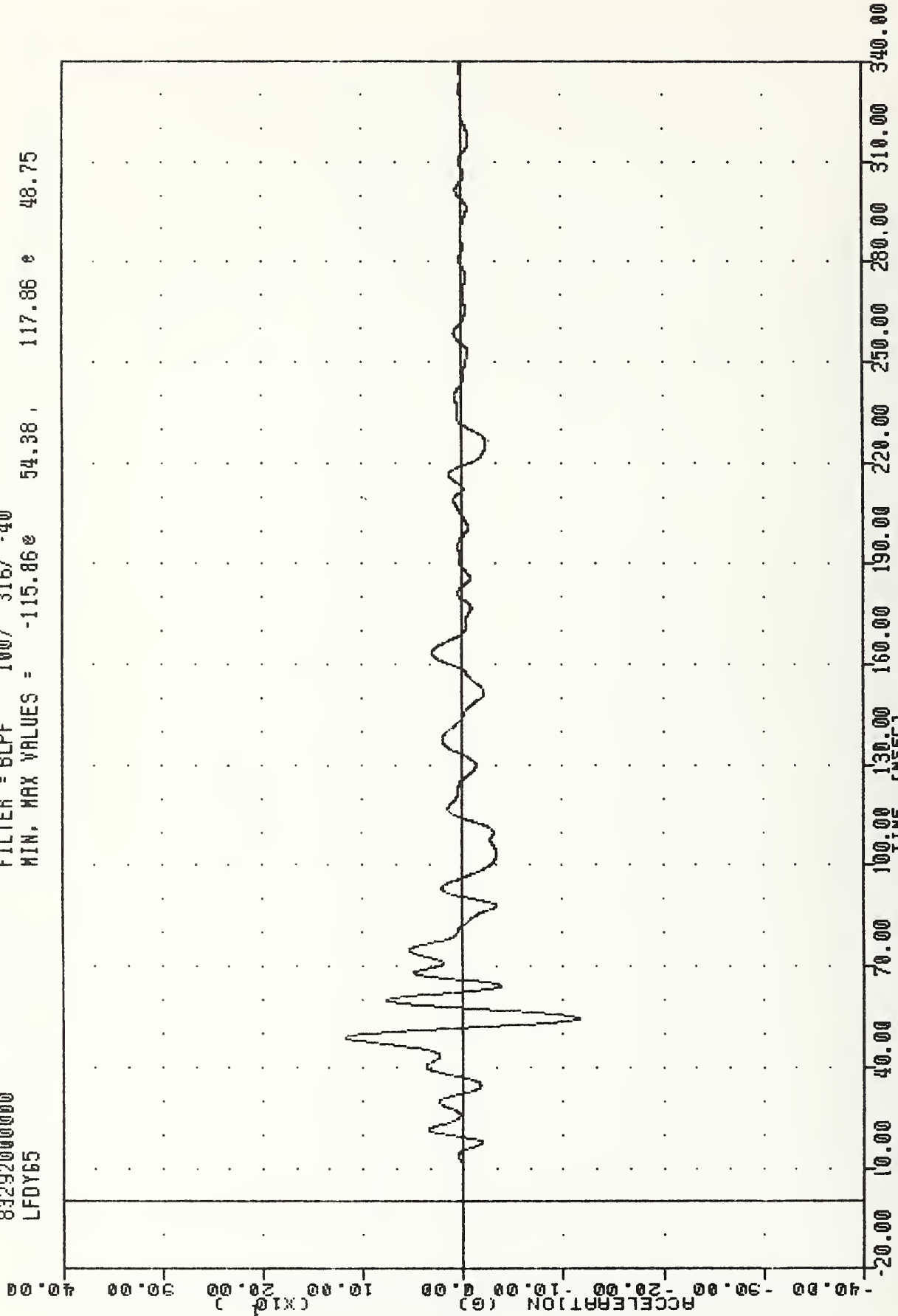
FILTER = BLPF 300/ 949/ -40
MIN. MAX VALUES = -0.018 -16.13, 21.82 29.38



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING LFDYV4

EVALUATION OF MOD VW FLEET
83292000000
LFDY65

FILTER = BLPF 100/ 316/ -40
MIN. MAX VALUES = -115.86e 54.38 , 117.86 e 48.75



B-100

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE LEFT FRONT DOOR (POSITION 11) ACCELERATION Y AXIS

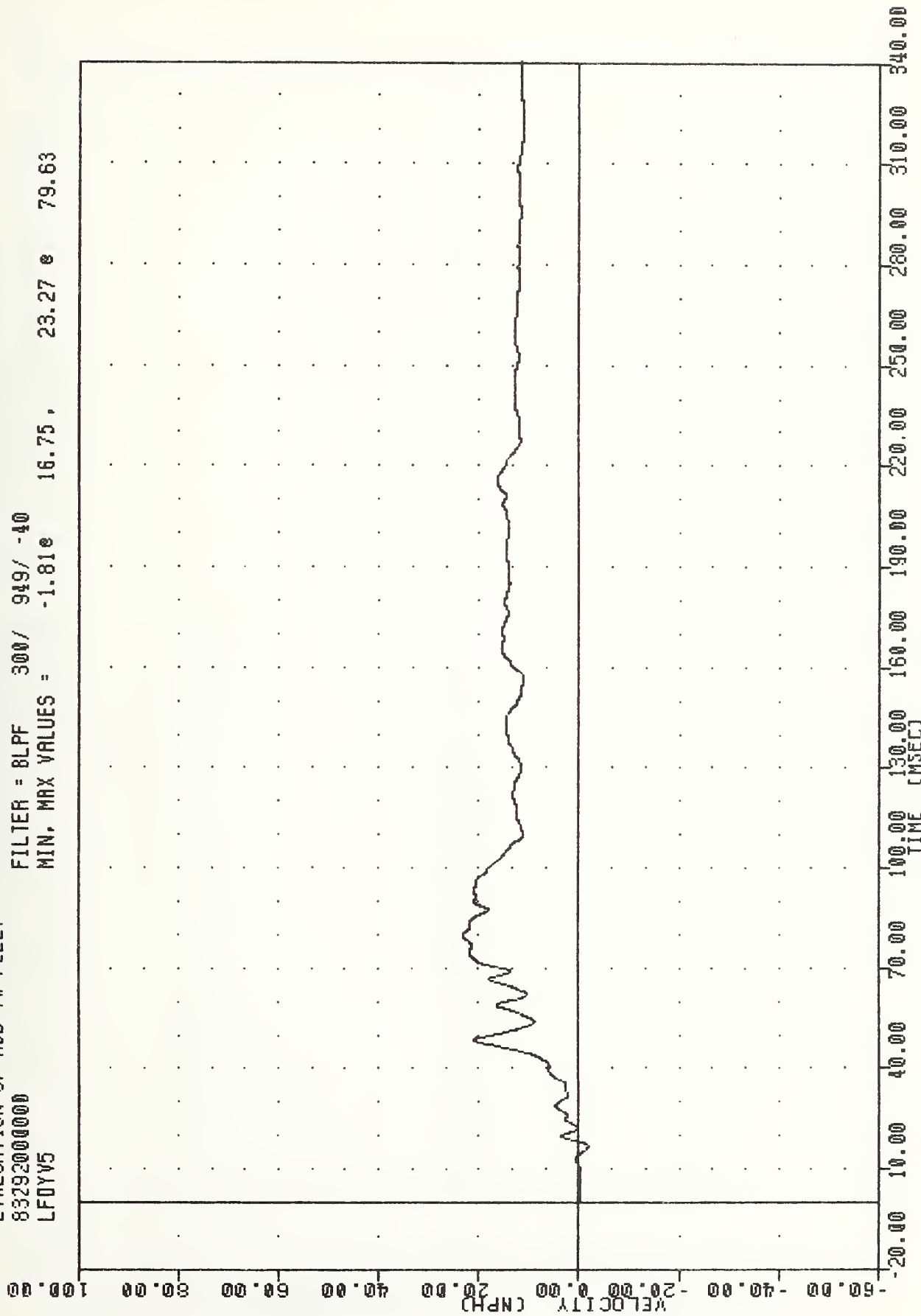
EVALUATION OF MOD VW FLEET

83292000000

LFDYV5

FILTER = 8LPF 300/ 949/ -40

MIN, MAX VALUES = -1.81e 16.75, 23.27 e 79.63



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT

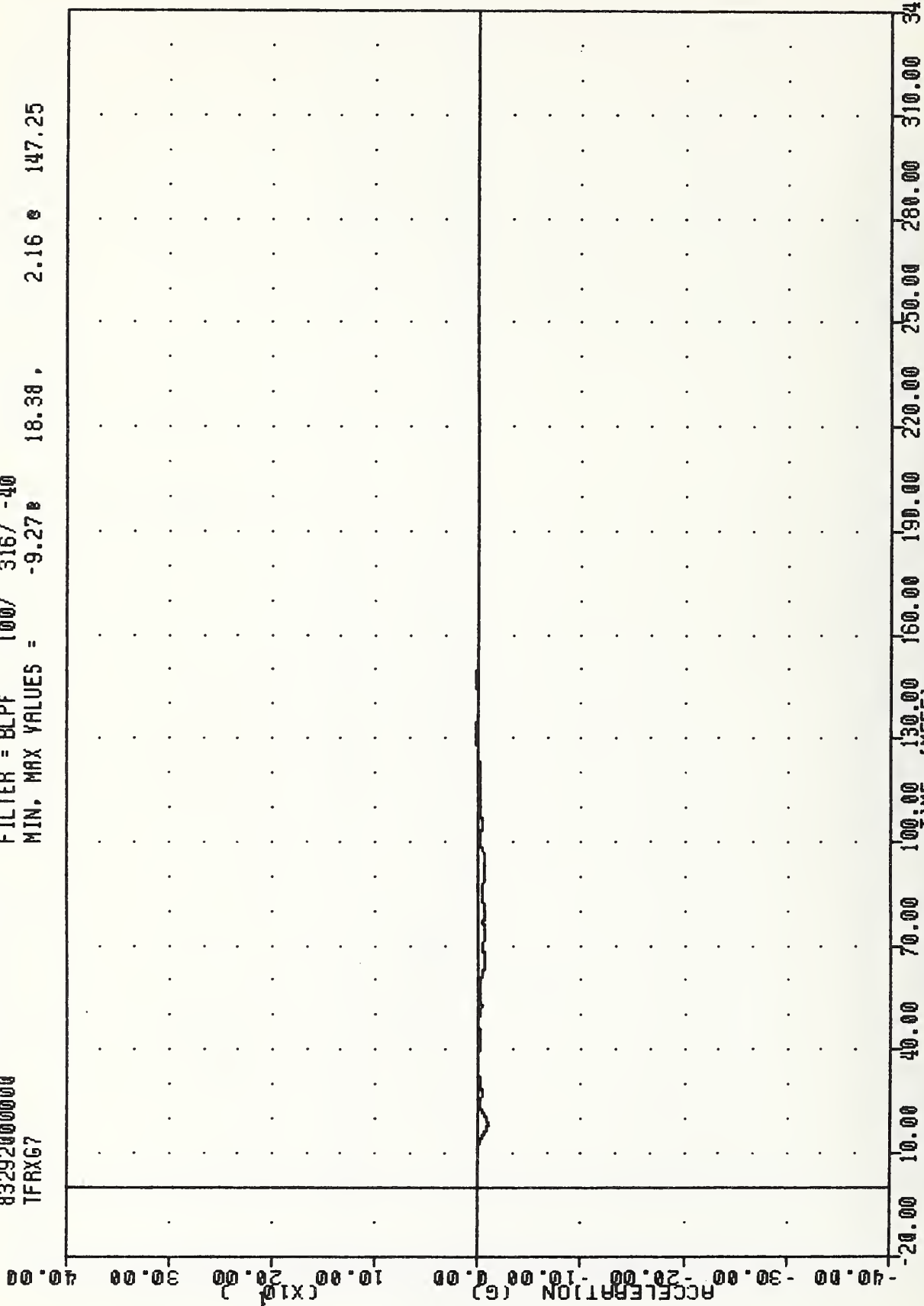
DELTA V USING LFDY65

TRC
 EVALUATION OF MOD YW FLEET
 83292000000
 TFRXG7

PLOT DATE 24-OCT-83 08:15:54

FILTER = BLPF 100/ 316/ -40

MIN. MAX VALUES = -9.27g 18.38g 2.16g 147.25



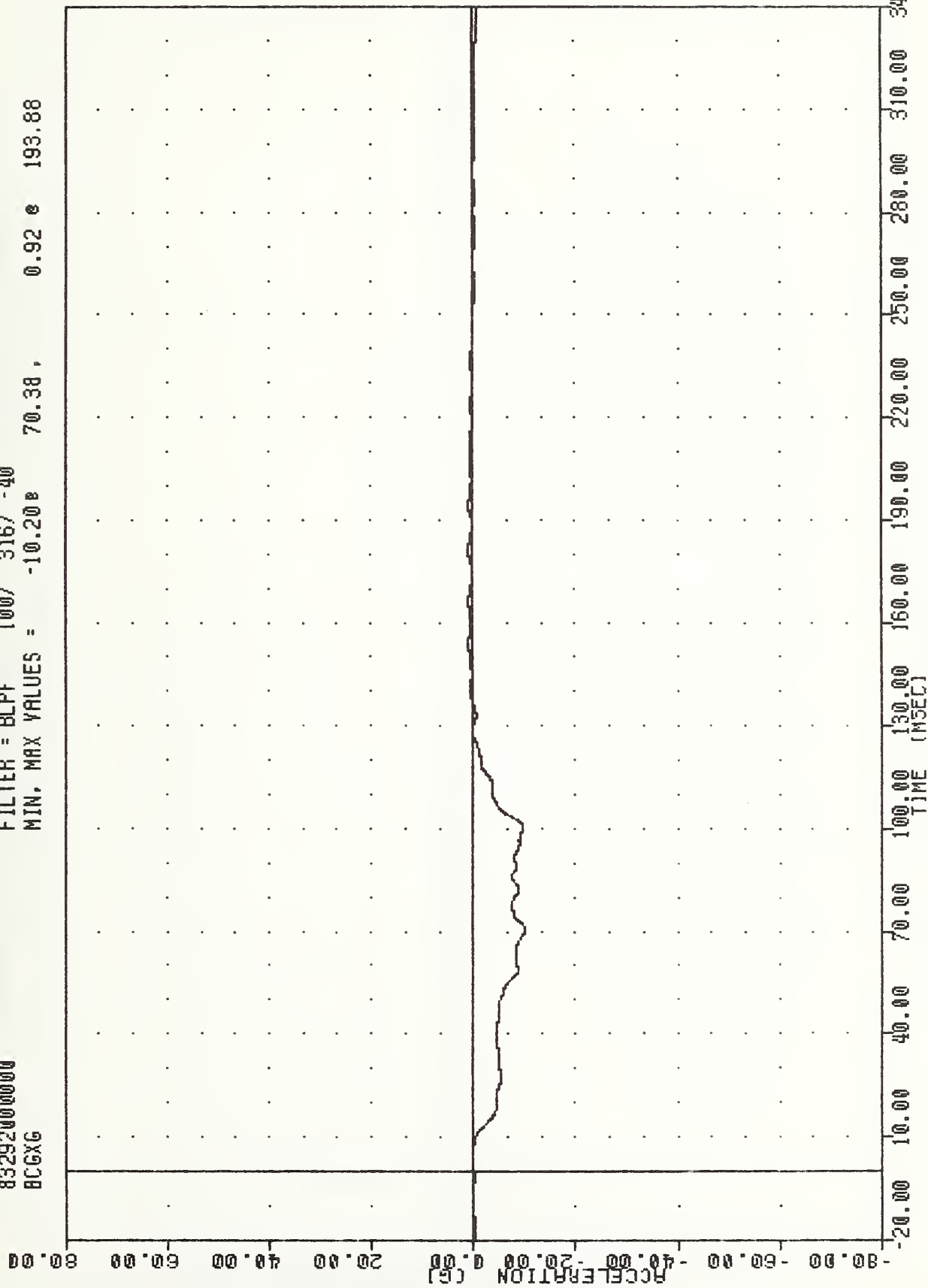
EVALUATION OF MOD YW FLEET

83292000000

BC6XG

FILTER = BLPF 100/ 316/ -40

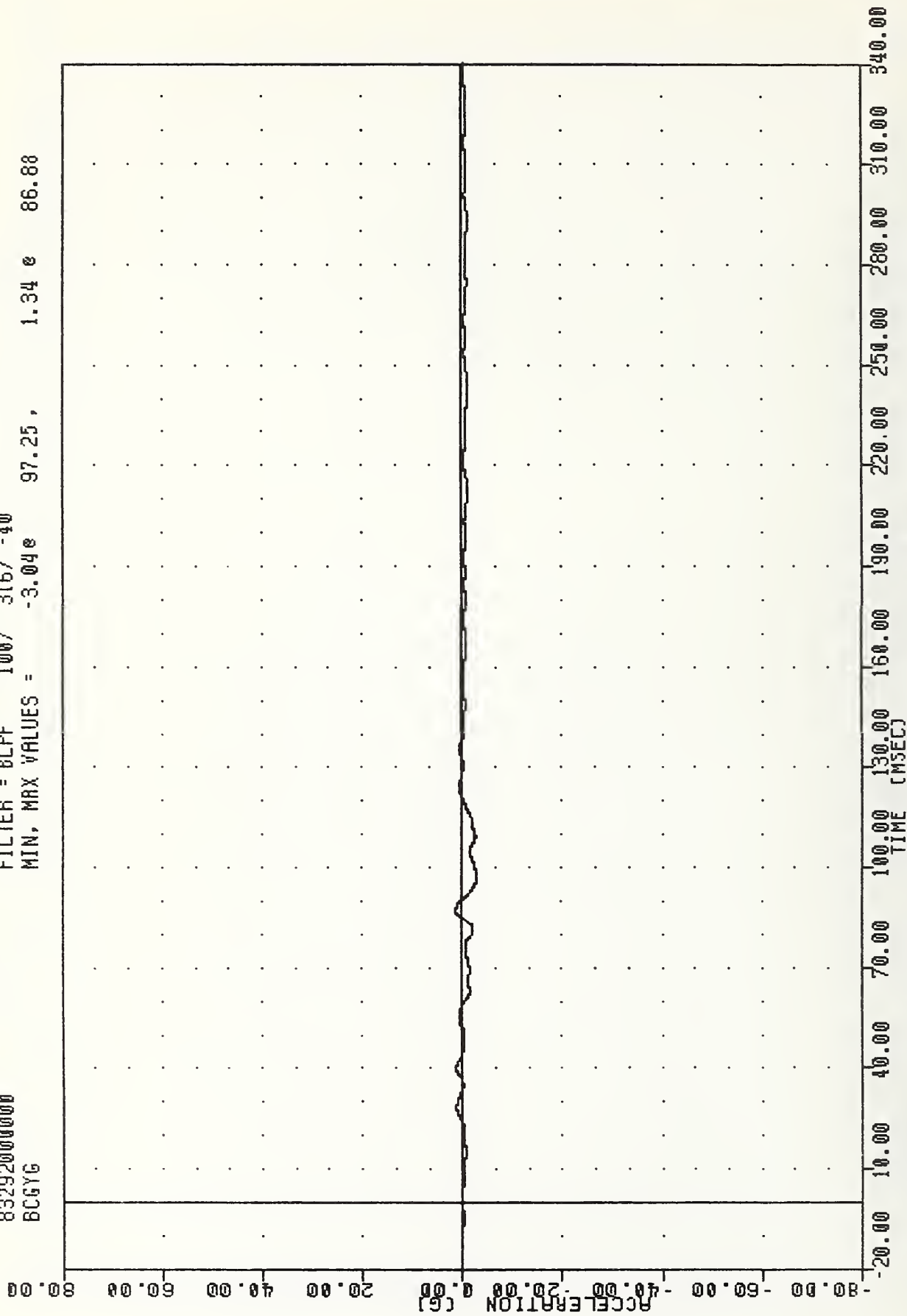
MIN. MAX VALUES = -10.208 70.38 , 0.92 e 193.88



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
BARRIER CENTER OF GRAVITY X AXIS

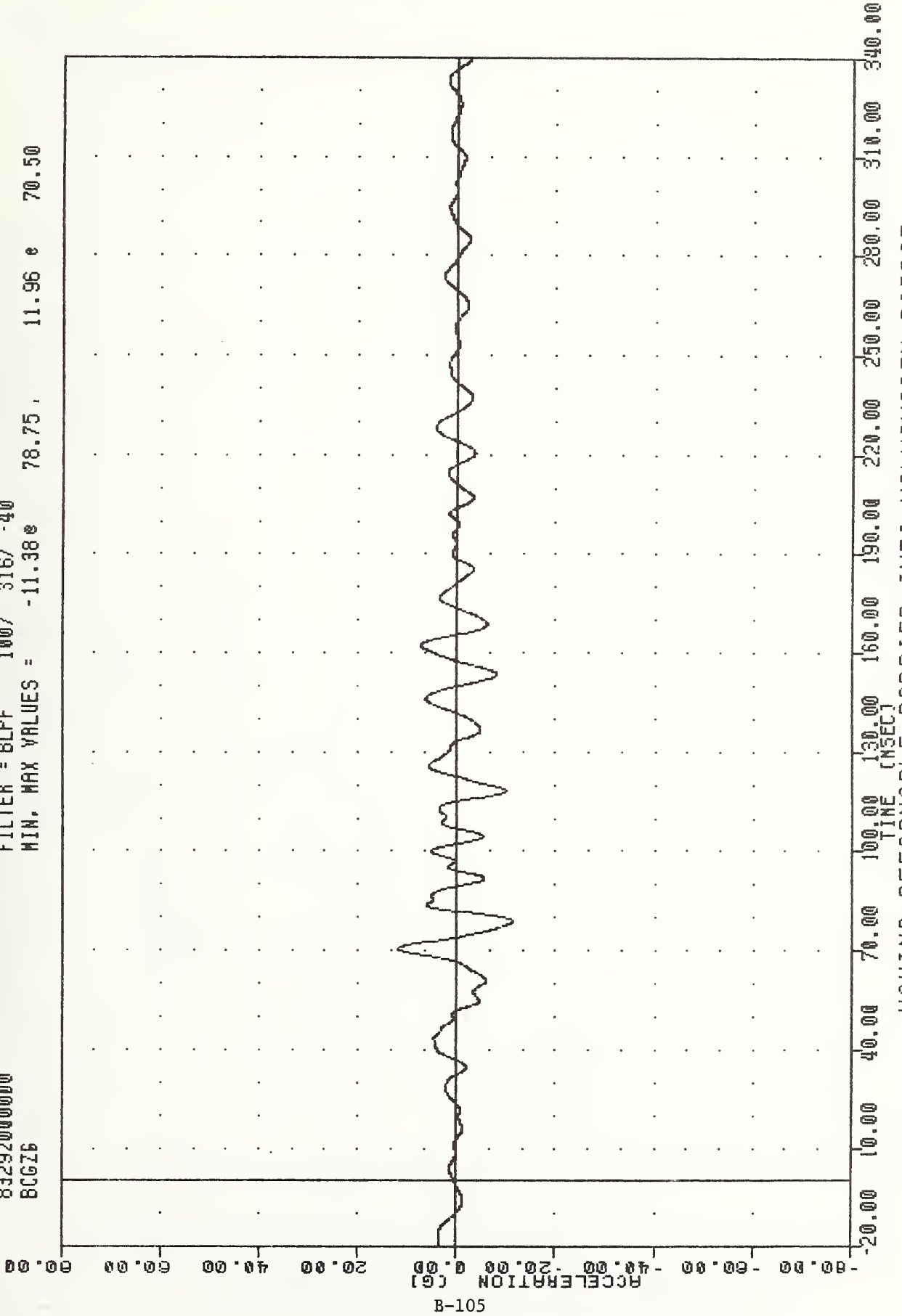
EVALUATION OF MOD VW FLEET
83292000000
BCGYG

FILTER = BLPF 100/ 316/ -40
MIN. MAX VALUES = -3.04e 1.34 e 86.88



EVALUATION OF MOD VN FLEET
83292000000
BCGZ6

FILTER = BLPF 100/ 316/ -40
MIN, MAX VALUES = -11.38e 11.96 e 70.50

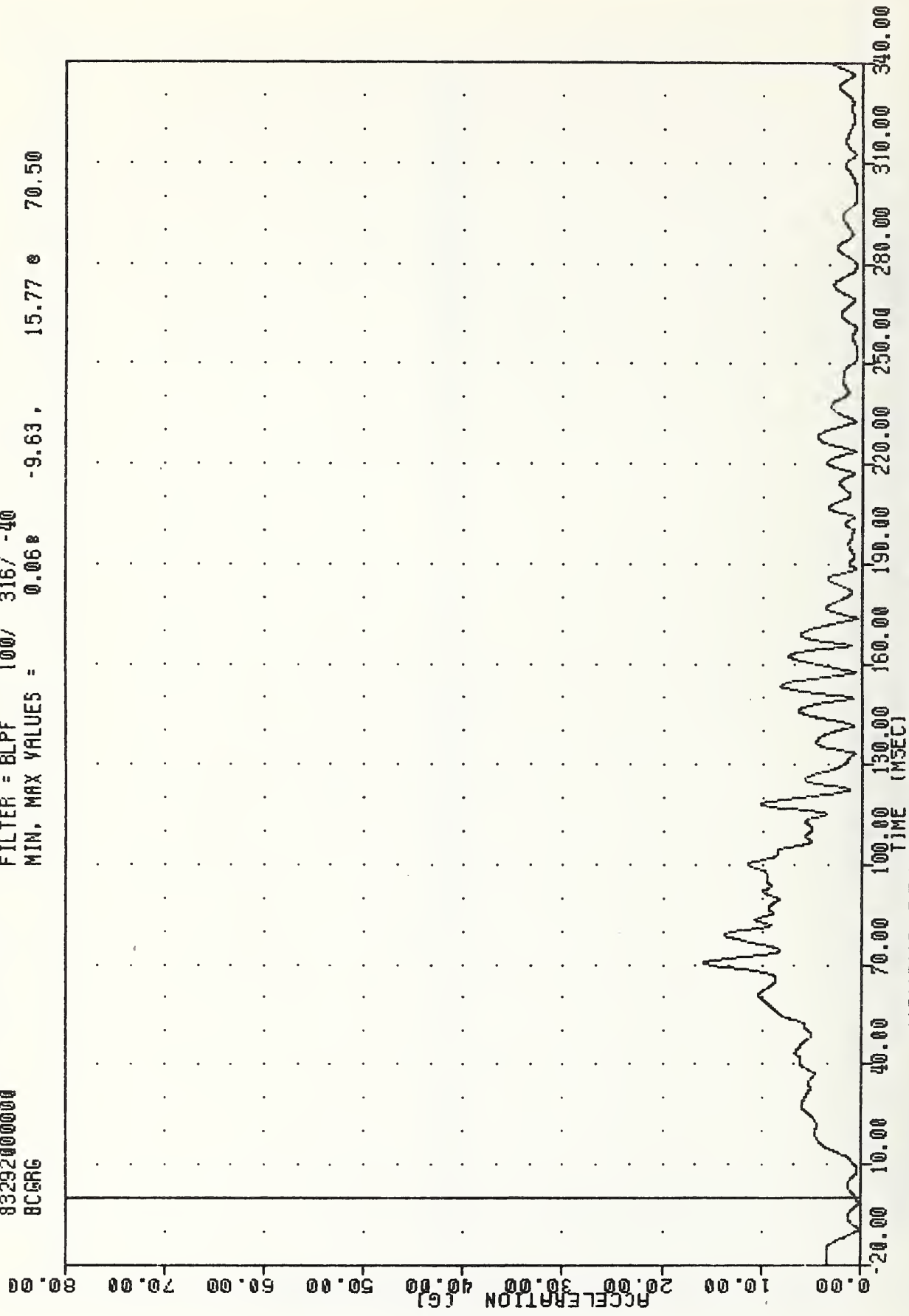


B-105

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
BARRIER CENTER OF GRAVITY Z AXIS

EVALUATION OF MOD YW FLEET
83292000000
BCGRG

FILTER = BLPF 100/ 316/ -40
MIN. MAX VALUES = 0.068 -9.63, 15.77 e 70.50



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
BARRIER CG RESULTANT

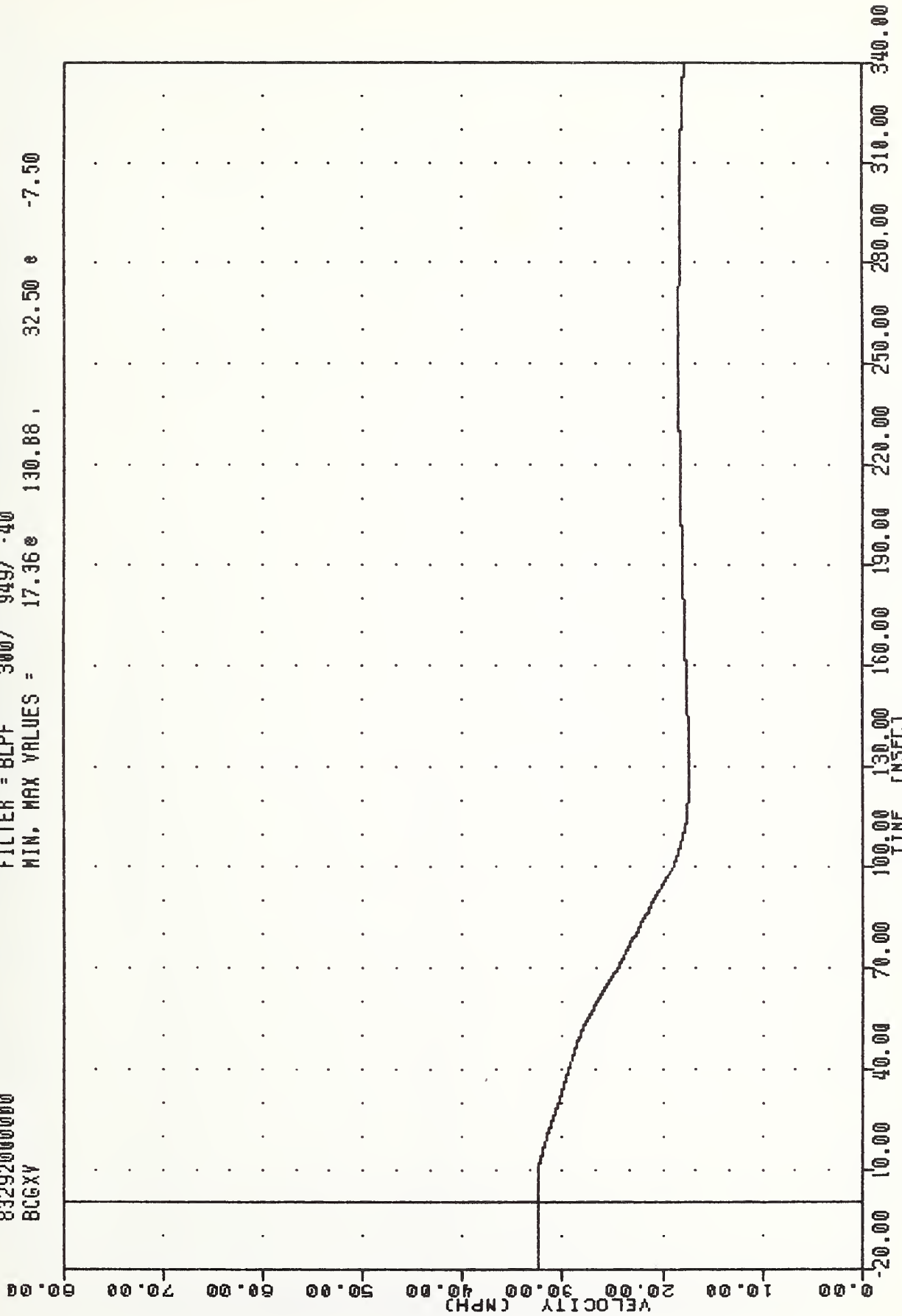
EVALUATION OF MOD VN FLEET

83292000000

BCGXV

FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = 17.36 e 130.88 , 32.50 e -7.50

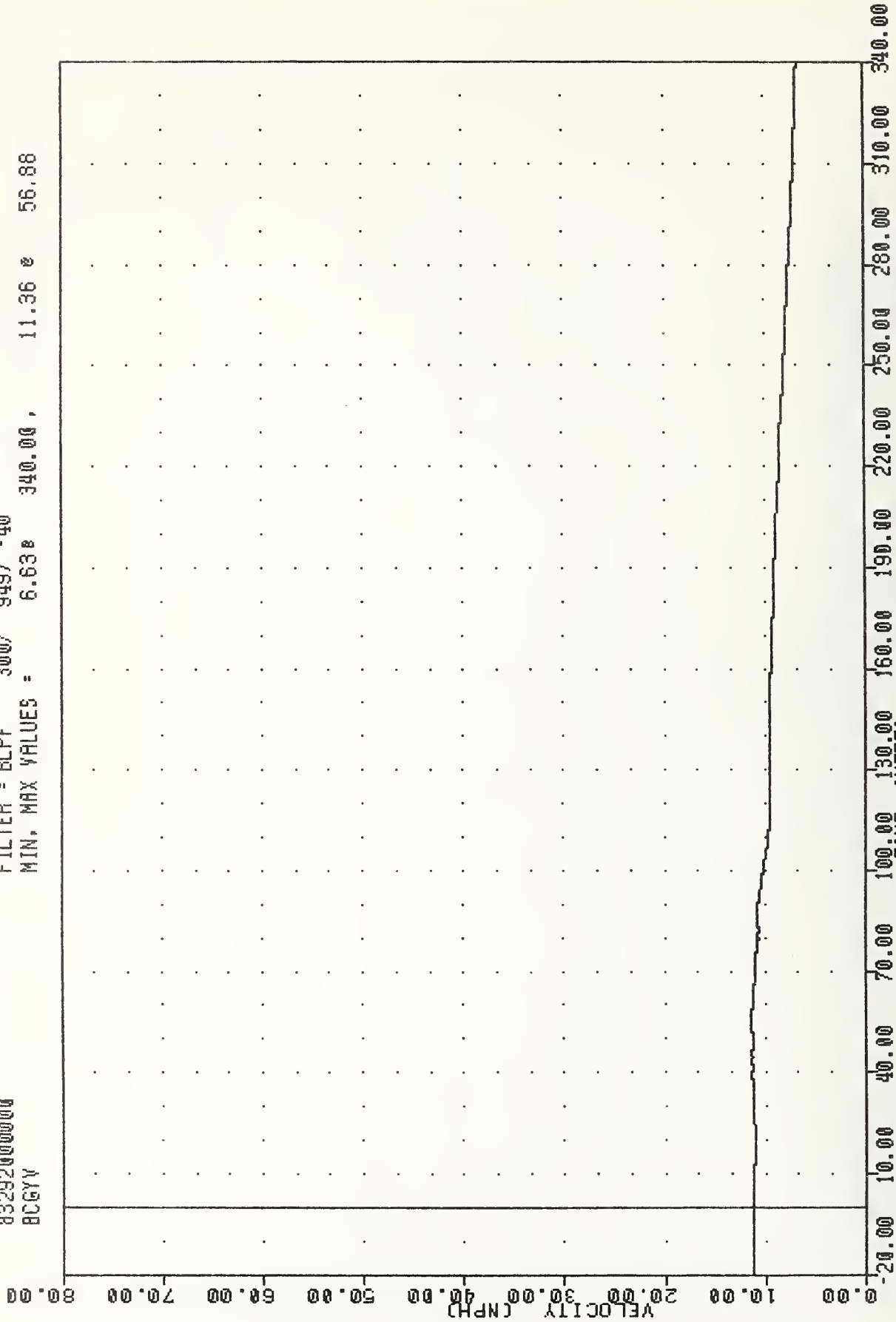


B-107

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING BCGXG

EVALUATION OF MOD VW FLEET
83292000000
BCGYG

FILTER = BLPF 300/ 949/ -40
MIN, MAX VALUES = 6.63e 340.00, 11.36 e 56.88

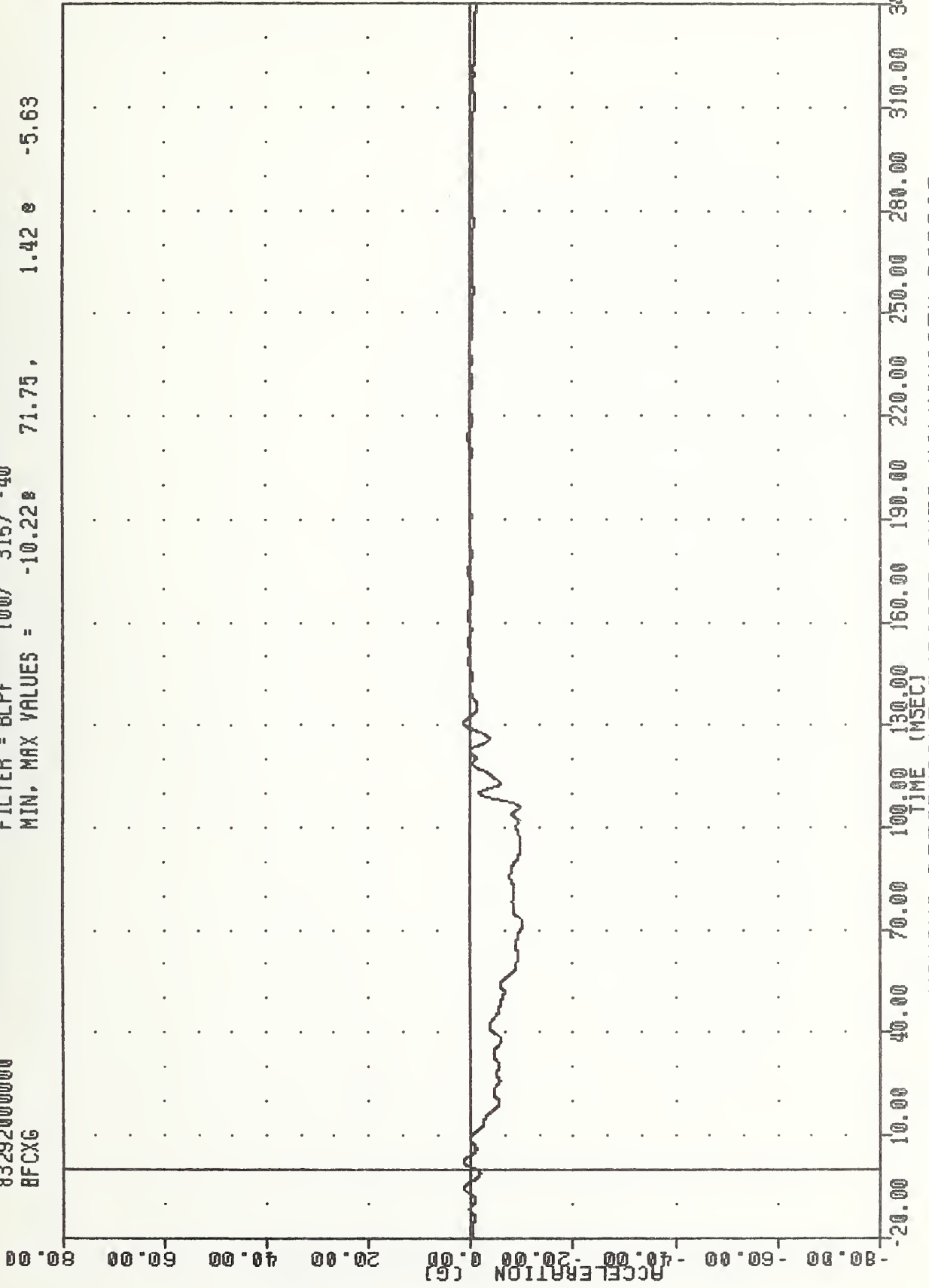


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING BCGYG

IKC
EVALUATION OF MOD YV FLEET
83292000000
BFCXG

FLUI UNIC 24-ULI-03 08:13:04

FILTER = BLPF 100/ 315/ -40
MIN, MAX VALUES = -10.22e 71.75, 1.42 e -5.63



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
BARRIER FRONT CROSSMEMBER ACCELERATION X AXIS

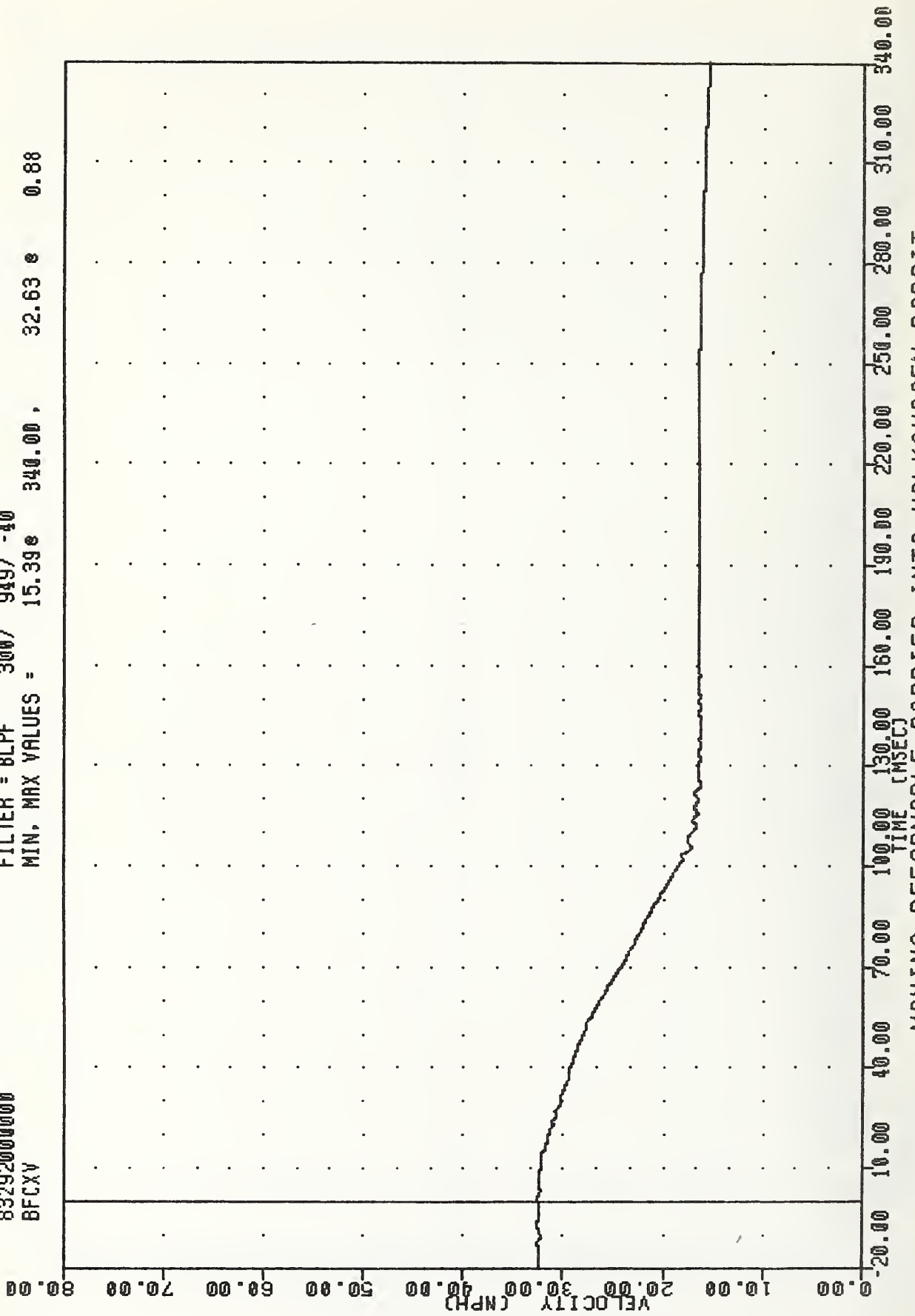
EVALUATION OF MDD YW FLEET

83292000000

BFCXY

FILTER = 8LPF 300/ 949/ -40

MIN. MAX VALUES = 15.39e 340.00 , 32.63 e 0.88



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING BFCXG

EVALUATION OF MDD VW FLEET

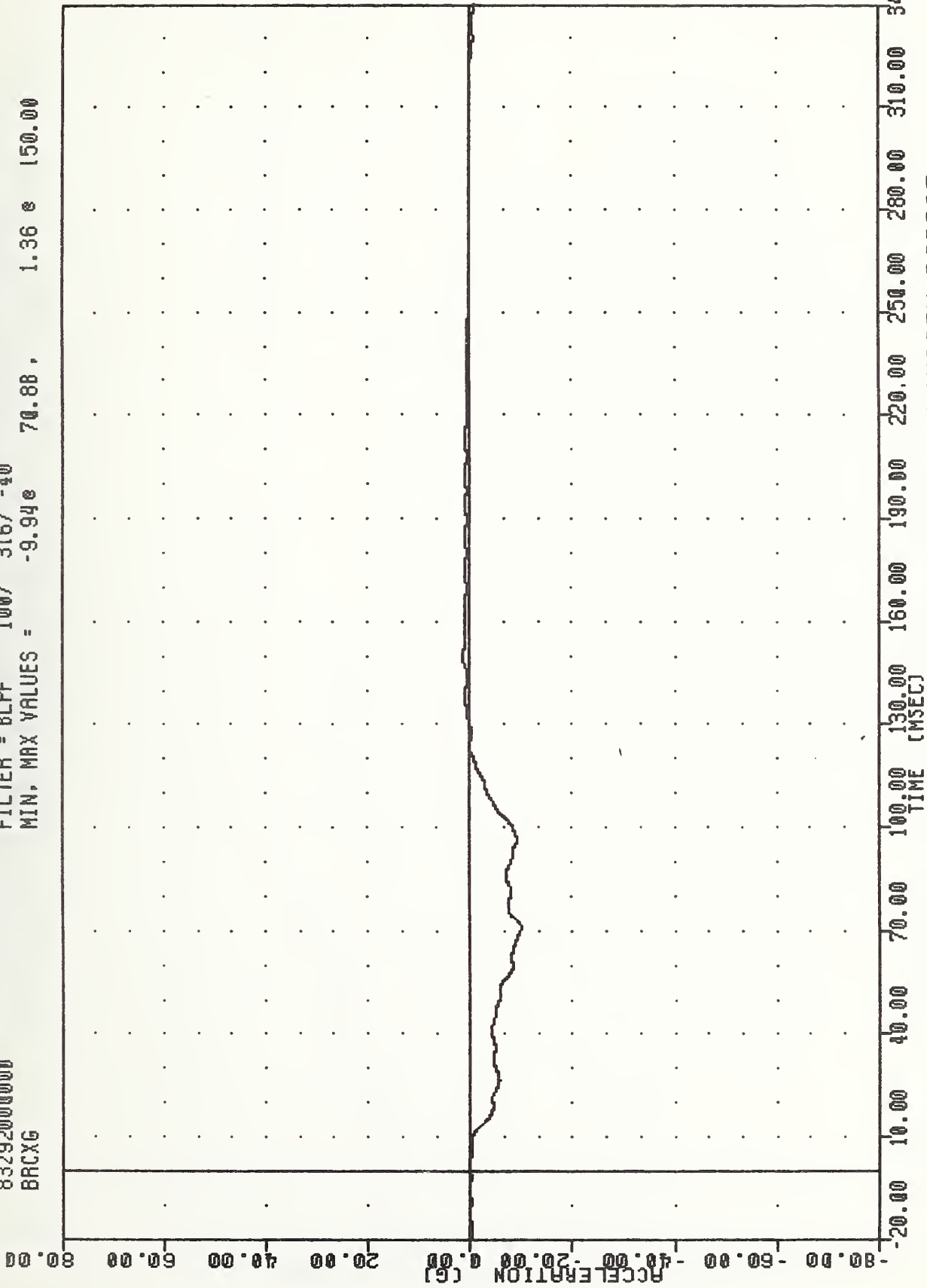
83292000000

BRCXG

FILTER = BLPF 100/ 316/ -40

MIN. MAX VALUES = -9.94e 70.88e

1.36 e 150.00



B-111

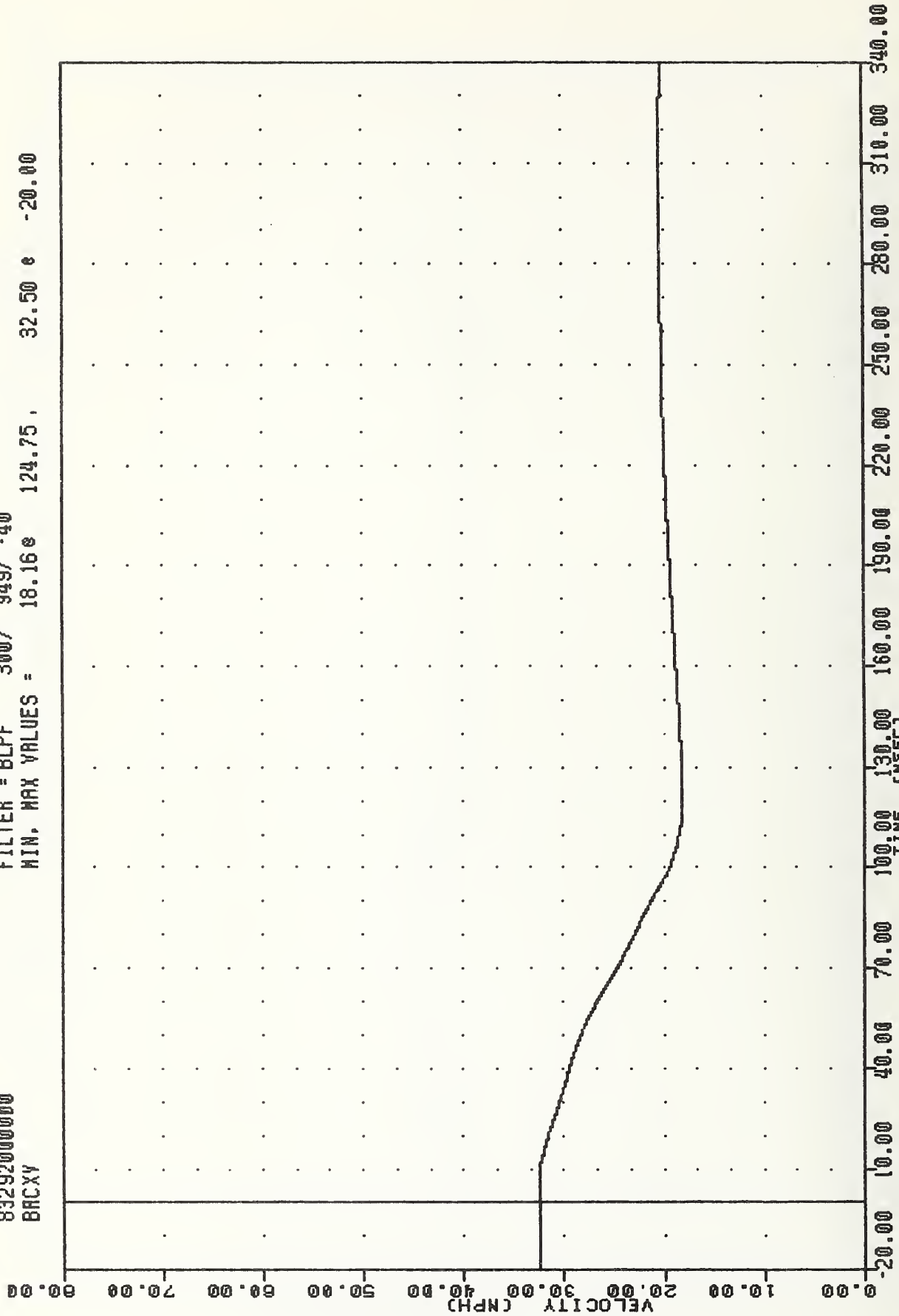
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
BARRIER REAR CROSSMEMBER ACCELERATION X AXIS

INL
 EVALUATION OF MOD VV FLEET
 83292000000
 BRCXY

PLUI DATE 24-OCT-83 11:11:34

FILTER = BLPF 300/ 949/ -40

MIN. MAX VALUES = 18.16e 124.75 , 32.50 e -20.00

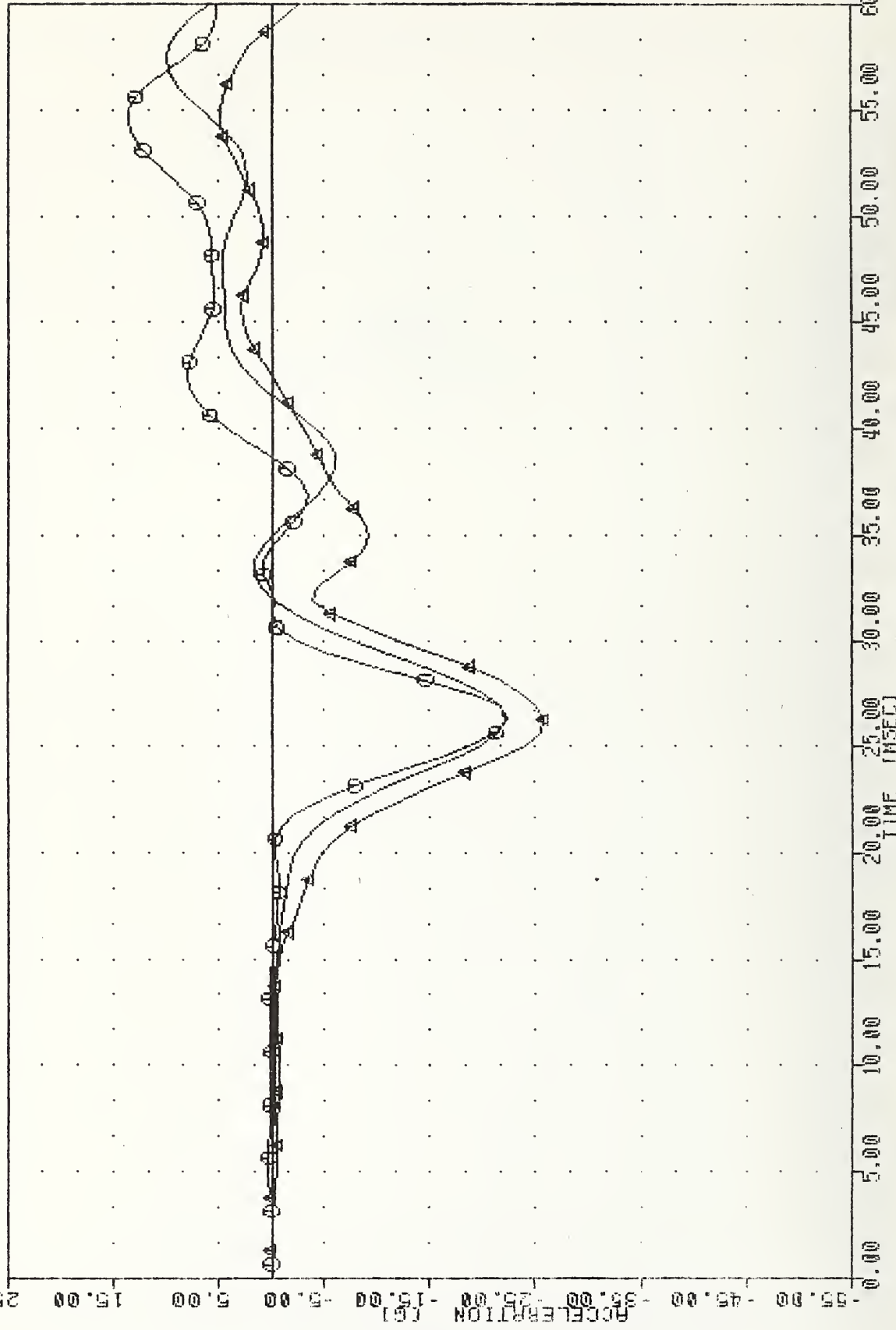


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING BRCXG

APPENDIX C
DUMMY CERTIFICATION

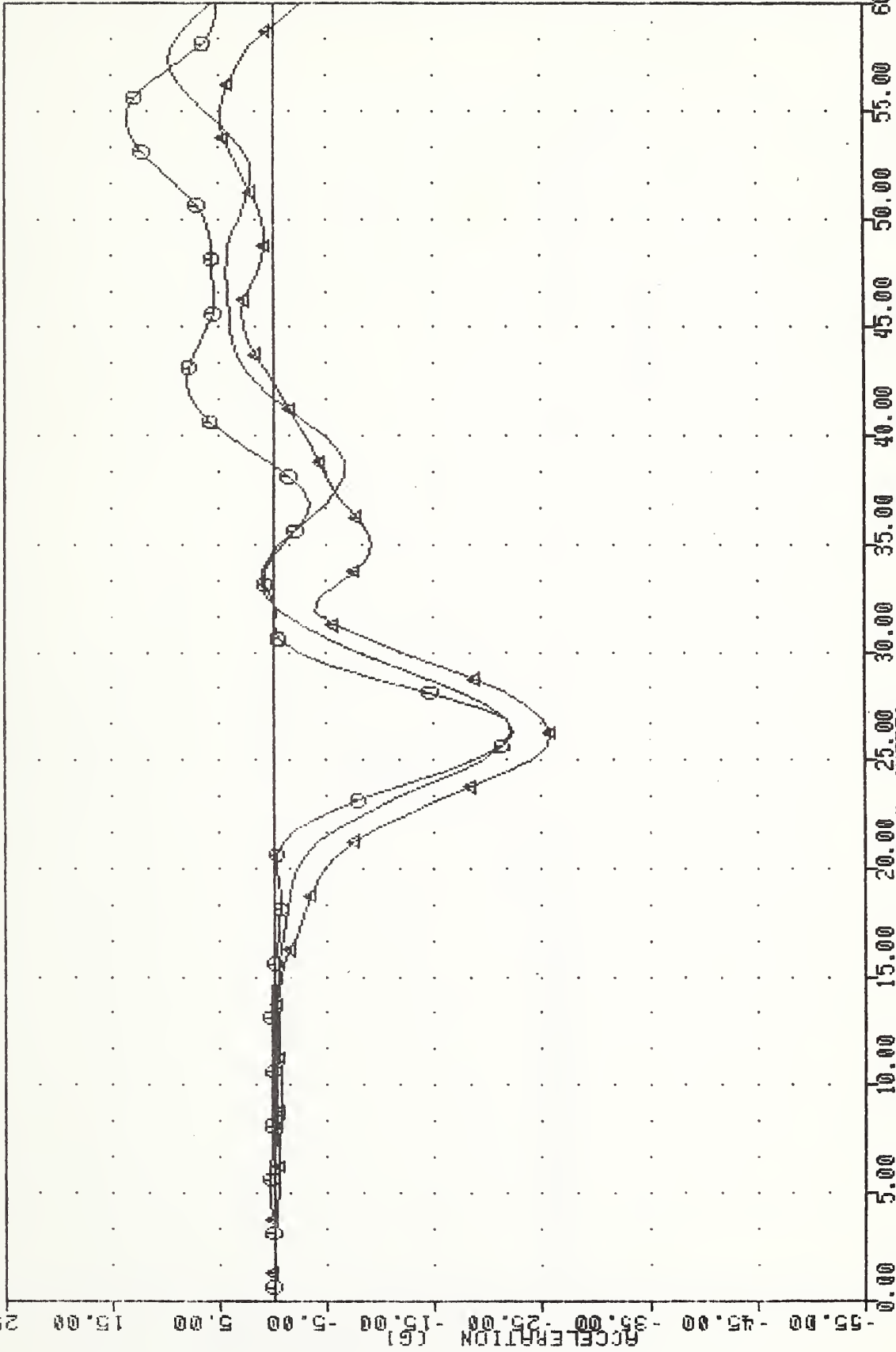
T12Y61
 MN-25D O
 MN-25D A

FILTER = HSRI	136/	189/	-50	MIN. MAX =	-22.18 e	9.93 e	56.87
FILTER = HSRI	136/	189/	-50	MIN. MAX =	-22.37 e	13.54 e	53.75
FILTER = HSRI	136/	189/	-50	MIN. MAX =	-25.84 e	4.85 e	53.75



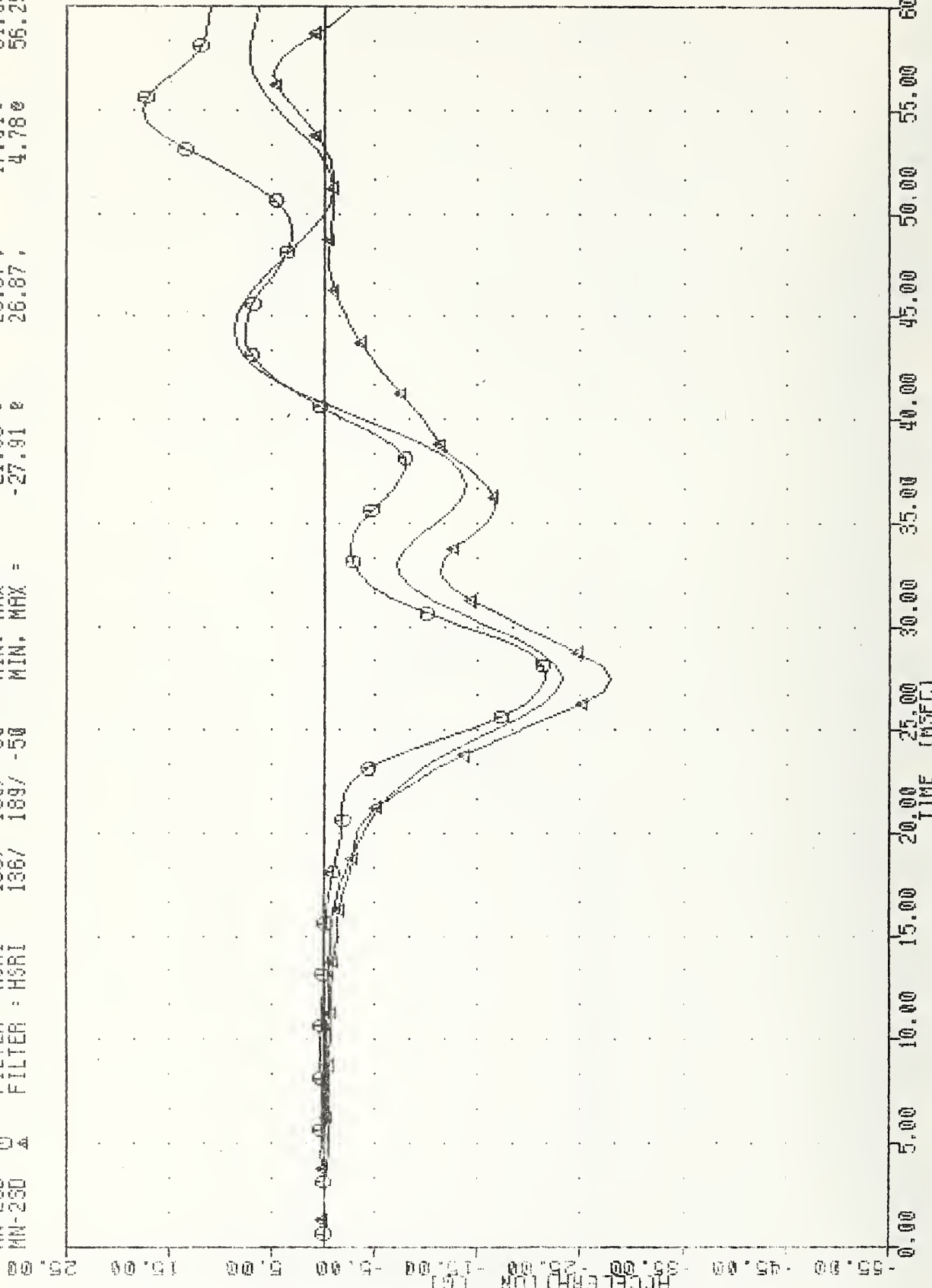
SIDE IMPACT TEST (CARL008)
 LOWER SPINE ACCELERATION Y AXIS -1

VRIC SRL26 ARLS0A67 SID THORAX 6 BODY 318 CAL 67 83290 PLOT DATE 17-OCT-83 16:02:40
 T12Y6A FILTER = HSRI 136/ 189/ -50 MIN, MAX = -22.02 9.60 56.87
 MN-250 FILTER = HSRI 136/ 189/ -50 MIN, MAX = -22.37 13.54 53.75
 MN-250 FILTER = HSRI 136/ 189/ -50 MIN, MAX = -25.84 4.85 53.75



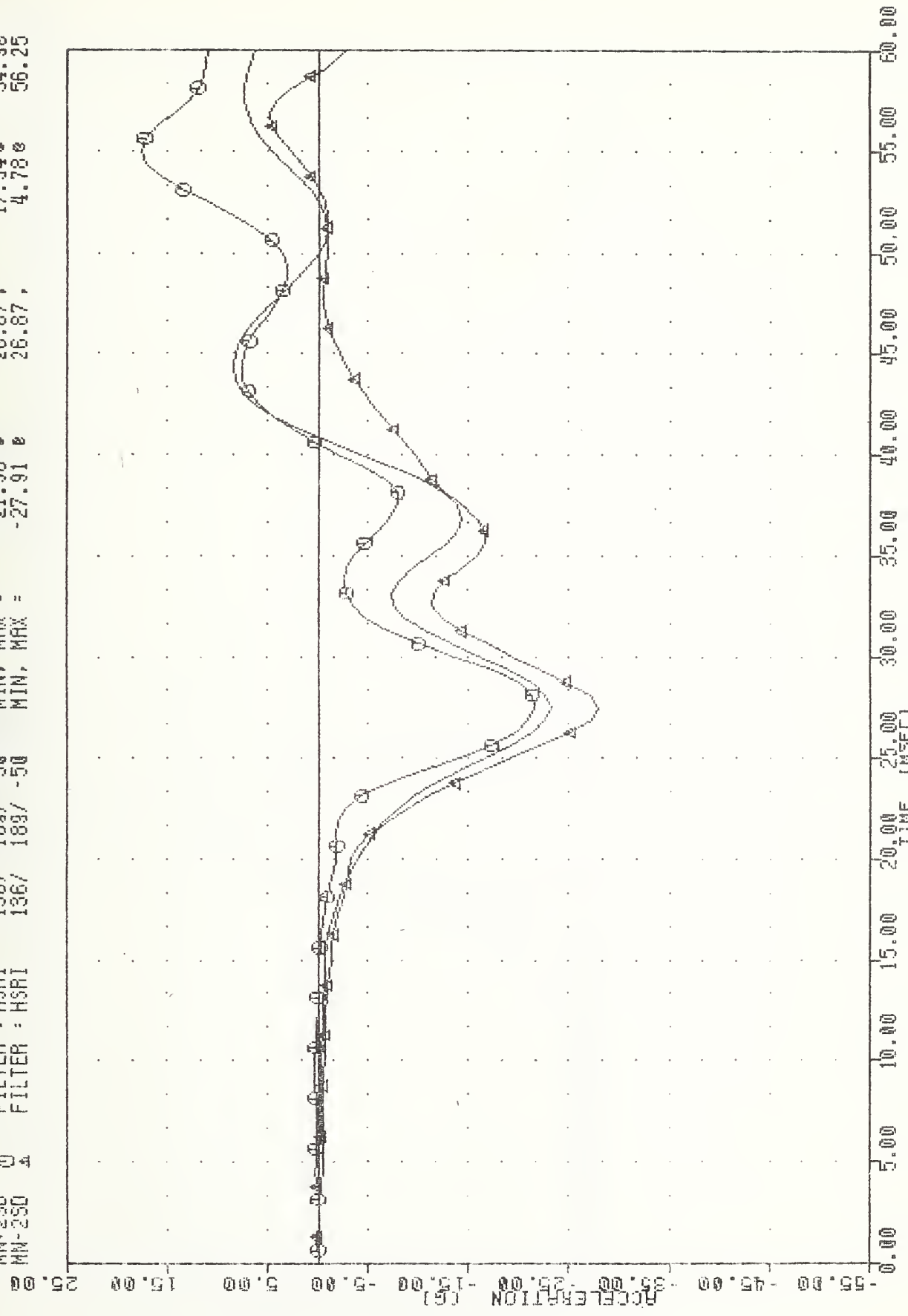
SIDE IMPACT TEST (ARL006)
 LOWER SPINE ACCELERATION Y AXIS -A

VRTG SRL26 , ARLECR67 SID THORAX 6 BODY 318 CAL 67 83290 17-OCT-83 16:09:35
 TOIY61 FILTER : HSRI 136/ 189/ -50 MIN. MAX = -23.12 8.59 43.75
 MN-2SD 0 FILTER : HSRI 136/ 189/ -50 MIN. MAX = -21.58 17.54 54.38
 MN-2SD 4 FILTER : HSRI 136/ 189/ -50 MIN. MAX = -27.91 26.87 56.25



SIDE IMPACT TEST (ARL006)
 UPPER SPINE ACCELERATION Y AXIS -1

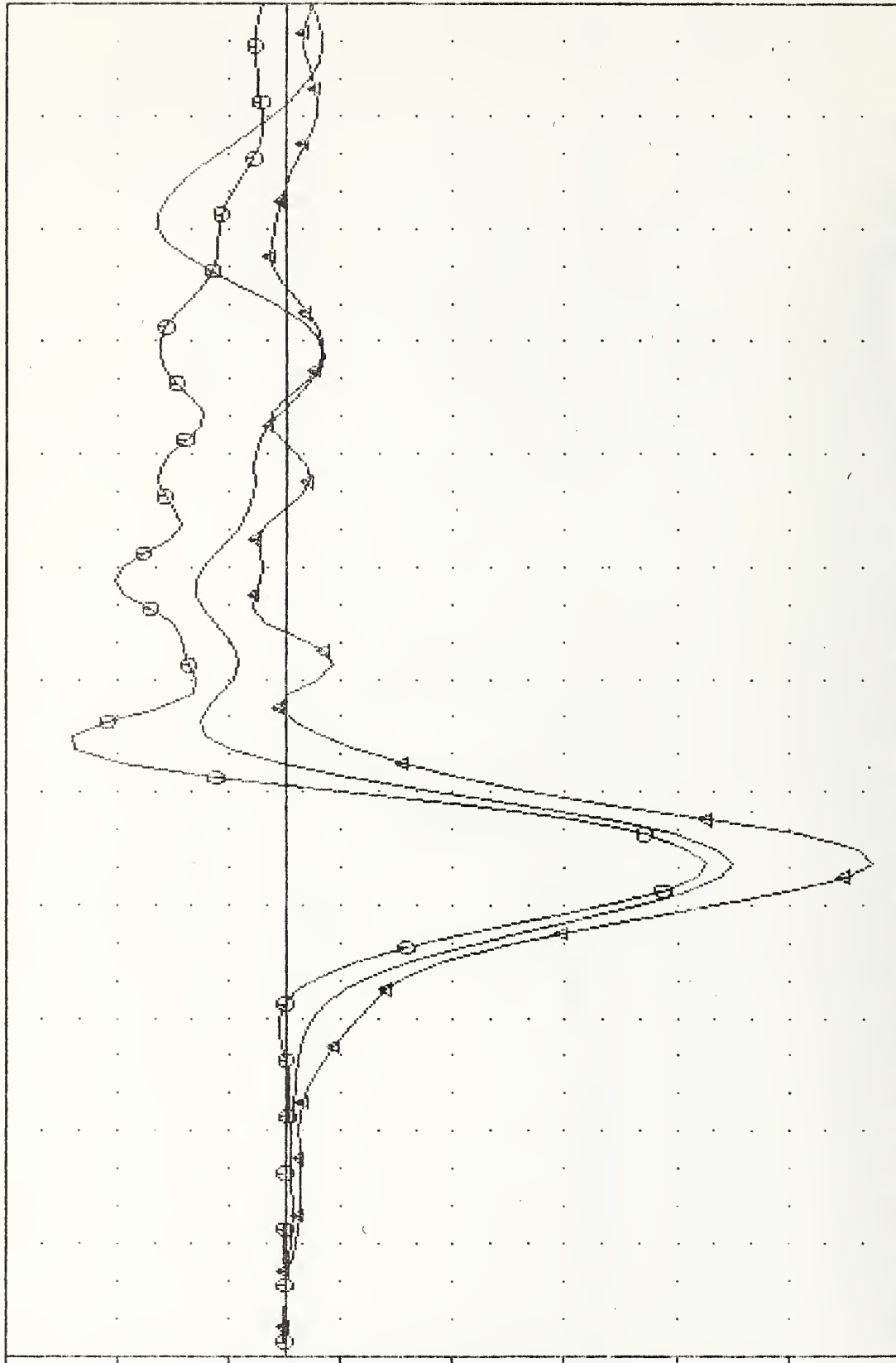
VRTIC SRL26 , SRL6CR67 SID THORAX 6 BODY 318 CAL 67 83290 PLOT DATE 17-OCT-83 16:11:23
 T01Y6R FILTER : HSRI 136/ 189/ -50 MIN, MAX = -23.16 e 26.27 e 8.46 e 43.75
 MN-250 0 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -21.58 e 26.87 e 17.54 e 54.38
 MN-250 4 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -27.91 e 26.87 e 4.78 e 56.25



SIDE IMPACT TEST (ARL006)
 UPPER SPINE ACCELERATION Y AXIS -A

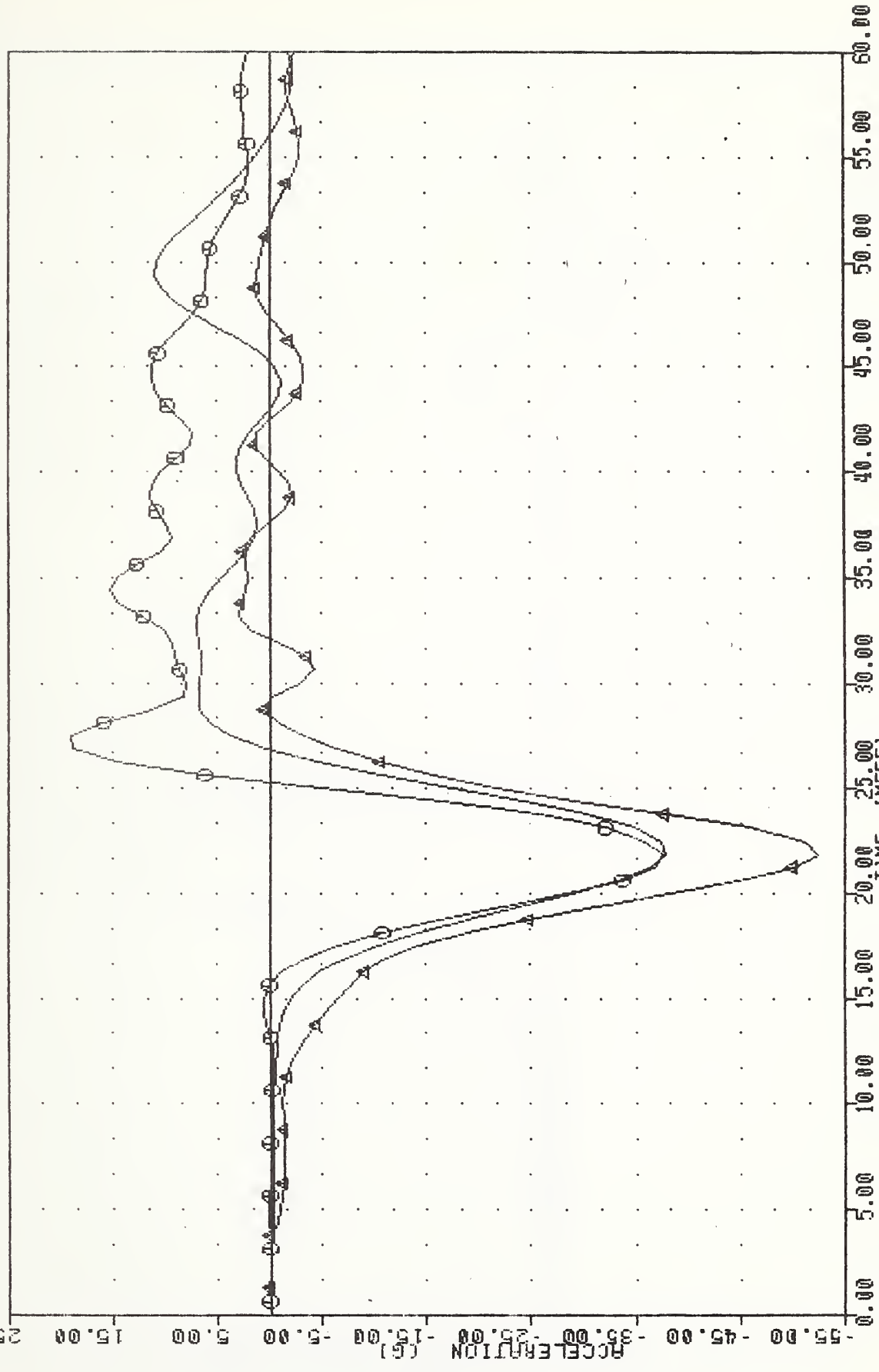
VRIC SRL26 , AR16CR67 SID THORAX 6 BODY 318 CAL 67 83290 PLOT DATE 17-OCT-83 16:05:34
 LLRY6A FILTER : HSRI 136/ 189/ -50 MIN. MAX = -39.88 e 21.25; 11.39e 50.00
 MN-250 0 FILTER : HSRI 136/ 189/ -50 MIN. MAX = -37.66 e 21.25; 19.00e 26.87
 MN-250 A FILTER : HSRI 136/ 189/ -50 MIN. MAX = -52.52 e 21.25; 2.94e 32.50

ACCELERATION (G)



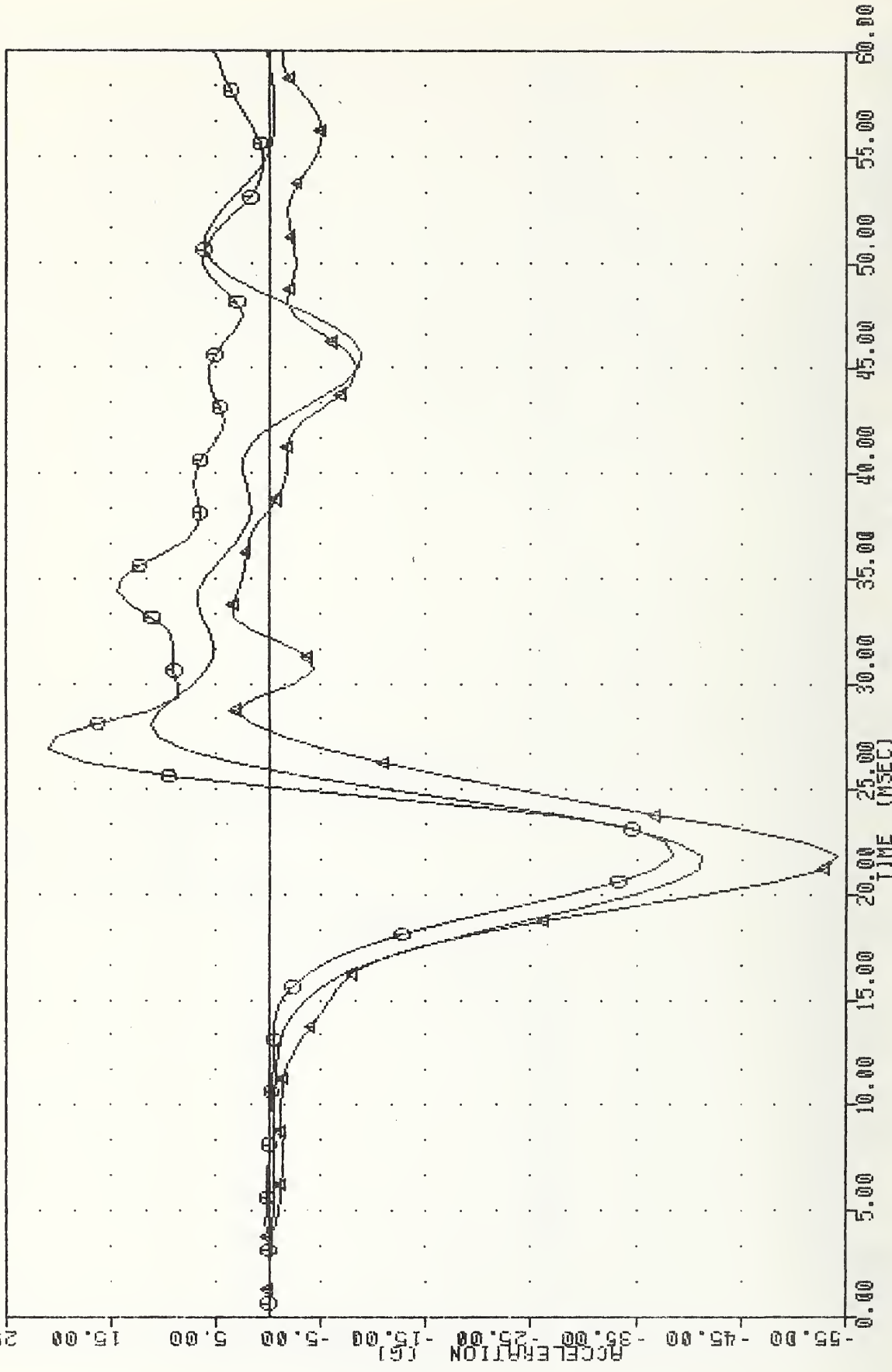
TIME (MSEC)
 SIDE IMPACT TEST (ARL006)
 LEFT LOWER RIB ACCELERATION Y AXIS - A

VRTC SRL26 • ARLECA67 SID THORAX 6 BODY 318 CAL 67 83290 PLOT DATE 17-UL-83 16:04:11
 LLRYG1 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -37.87 e 21.25 10.92 e 48.75
 MN-250 0 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -37.66 e 21.25 19.00 e 26.87
 MN-250 4 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -52.52 e 21.25 2.94 e 32.50



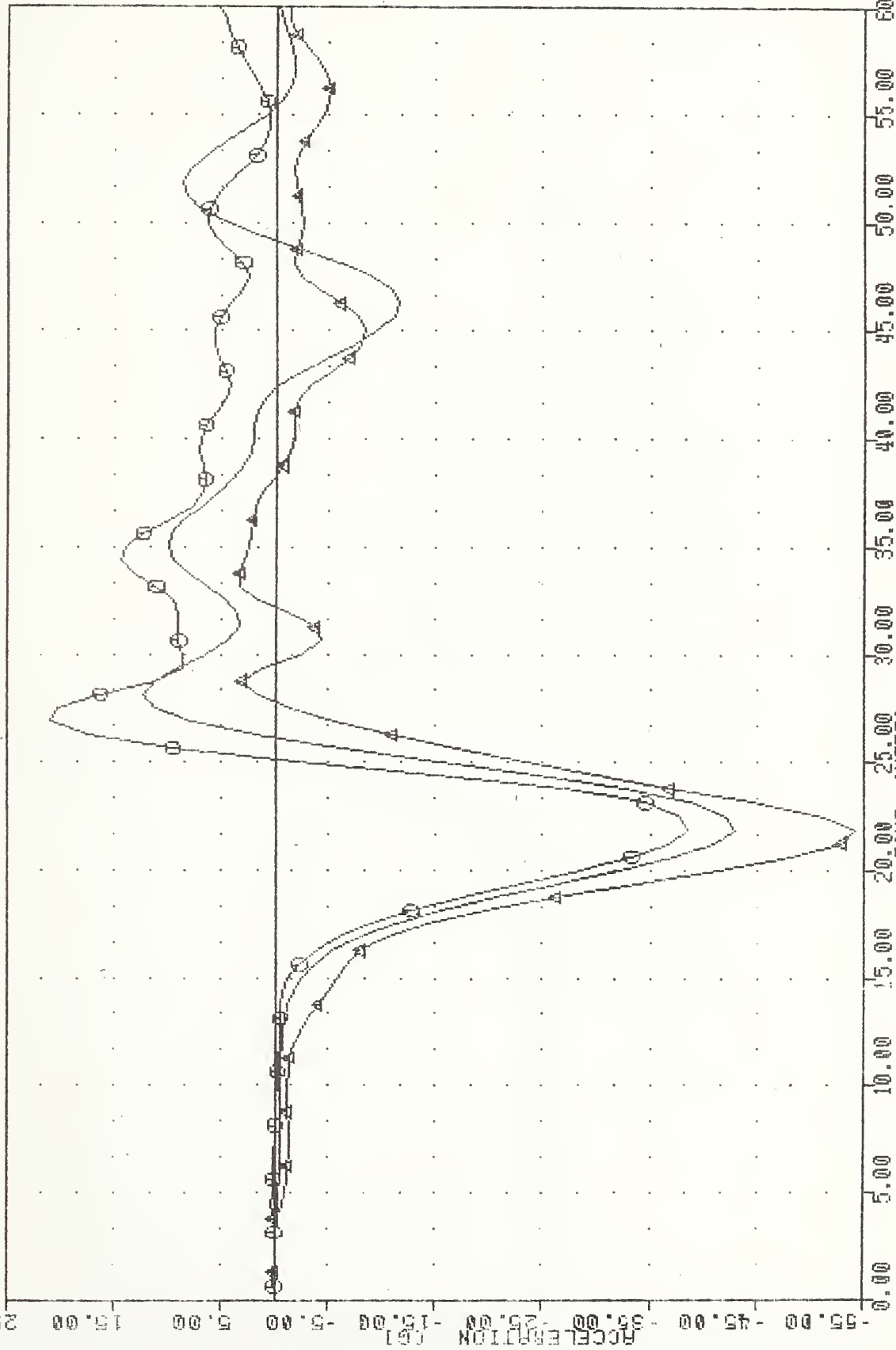
SIDE IMPACT TEST (ARL006)
 LEFT LOWER RIB ACCELERATION Y AXIS -1

VRIC SRL26 , ARL6CA67 SID THORAX 6 BODY 318 CAL 67 83290 PLOT DATE 17-OCT-83 16:13:15
 LURY61 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -41.18 @ 21.25, 11.12 @ 27.50
 MN-250 @ FILTER : HSRI 136/ 189/ -50 MIN, MAX = -38.44 @ 21.25, 20.92 @ 26.25
 MN-250 @ FILTER : HSRI 136/ 189/ -50 MIN, MAX = -54.08 @ 21.25, 3.91 @ 33.13



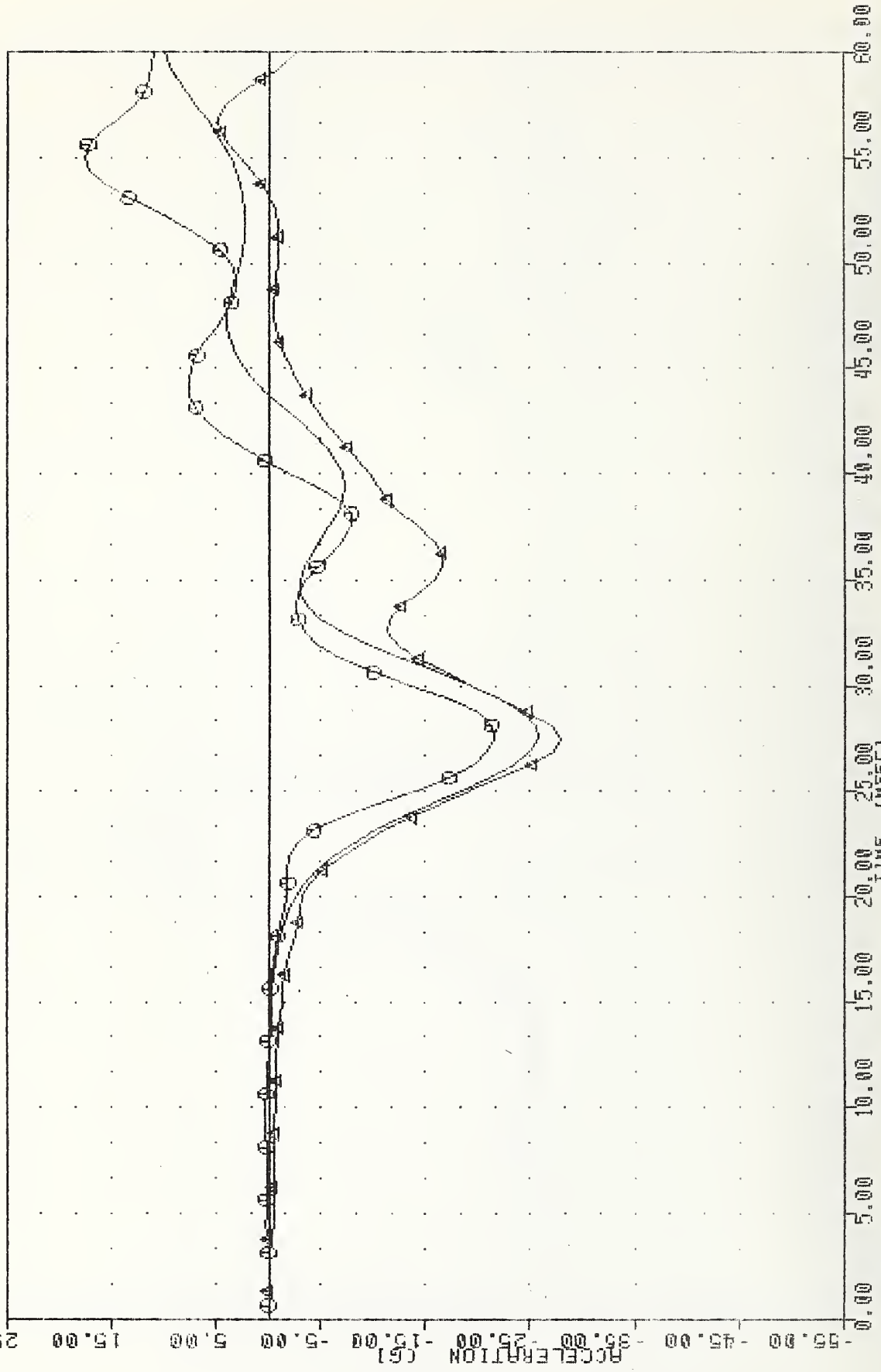
SIDE IMPACT TEST (ARL006)
 LEFT UPPER RIB ACCELERATION Y AXIS - 1

VRTC SRL26 ARL6CA67 SID THORAX 6 BODY 318 CAL 67 83290 PLOT DATE 17-OCT-83 16:07:46
 LURYGA FILTER = HSRI 136/ 189/ -50 MIN, MAX = 21.25, 12.21e 27.50
 MN-250 FILTER = HSRI 136/ 189/ -50 MIN, MAX = 21.25, 20.92e 26.25
 MN-250 FILTER = HSRI 136/ 189/ -50 MIN, MAX = 21.25, 3.31e 33.13



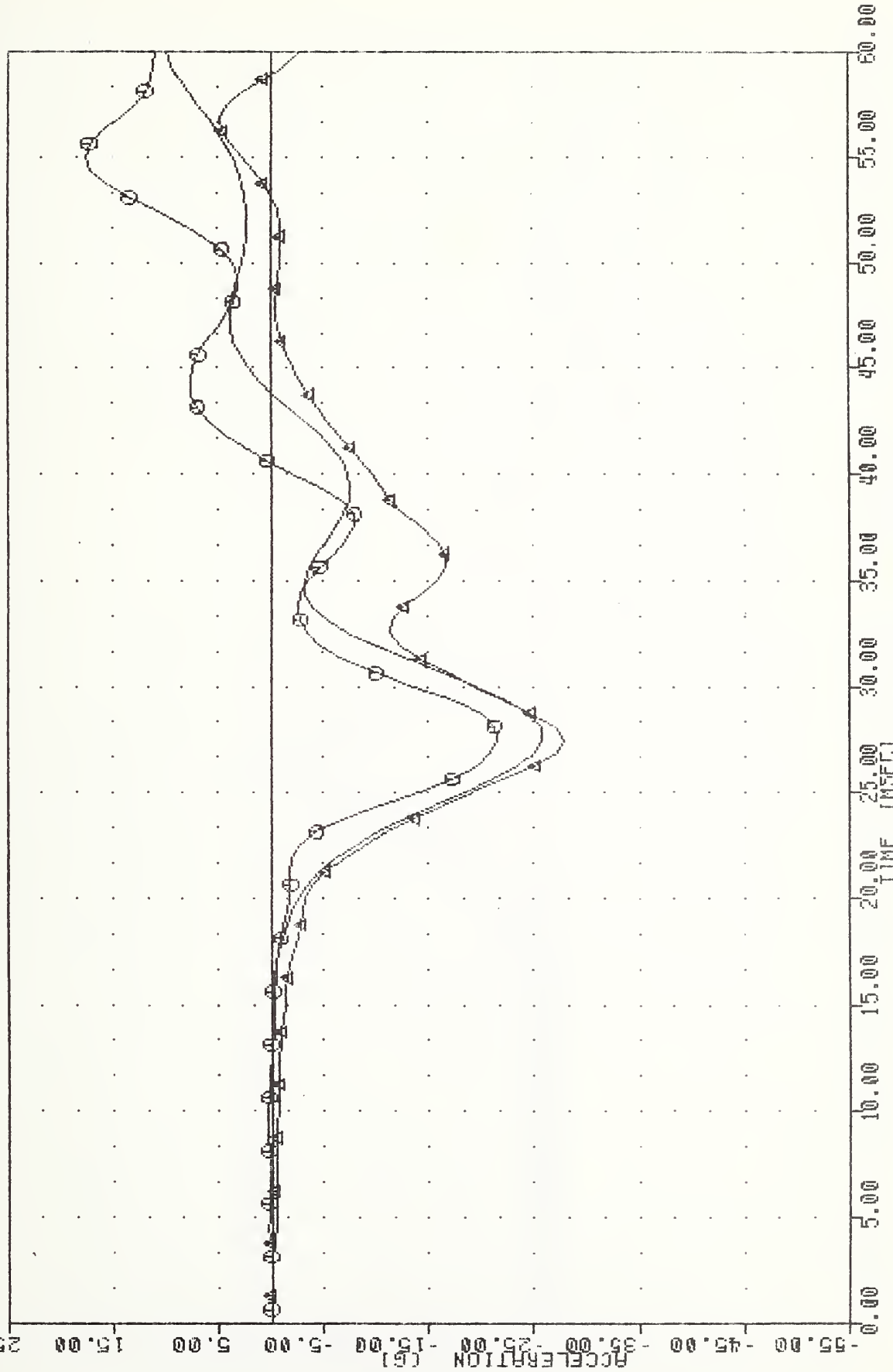
SIDE IMPACT TEST (ARL006)
 LEFT UPPER RIB ACCELERATION Y AXIS -A

TO1Y61 FILTER = HSRI 136/ 189/ -50 MIN, MAX = -25.72 g 10.02 g 60.00
 MN-250 FILTER = HSRI 136/ 189/ -50 MIN, MAX = -21.58 g 17.54 g 54.38
 MN-250 FILTER = HSRI 136/ 189/ -50 MIN, MAX = -27.91 g 4.78 g 56.25



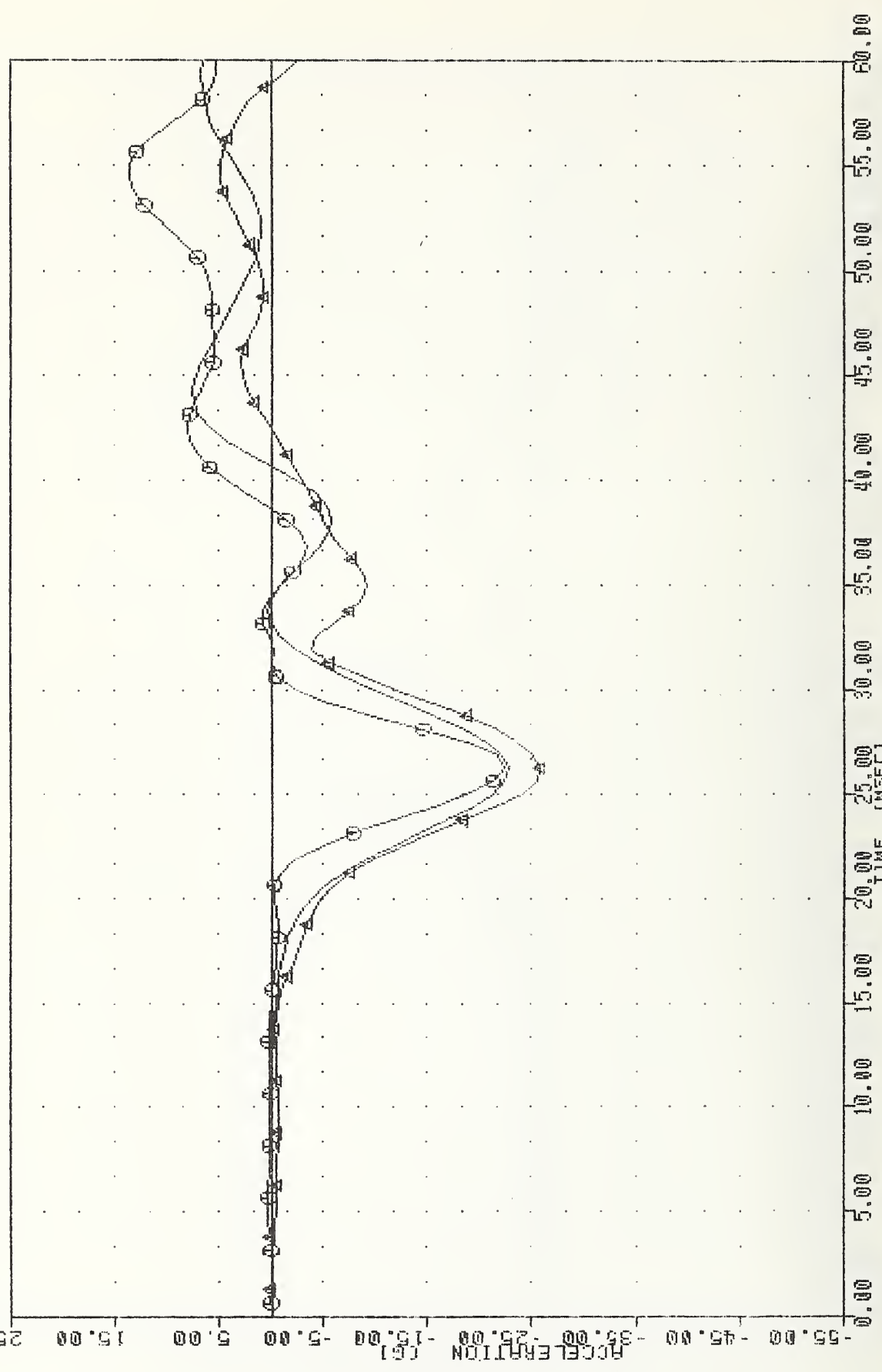
SIDE IMPACT TEST (CARLU02)
 UPPER SPINE ACCELERATION Y AXIS -1

TOIYGR		FILTER = HSRI	136/	189/	-50	MIN. MAX =	-25.87 e	26.87 e	10.03 e	50.00
MN-250	0	FILTER = HSRI	136/	189/	-50	MIN. MAX =	-21.58 e	26.87 e	17.54 e	54.32
MN-250	1	FILTER = HSRI	136/	189/	-50	MIN. MAX =	-27.91 e	26.87 e	4.78 e	56.25



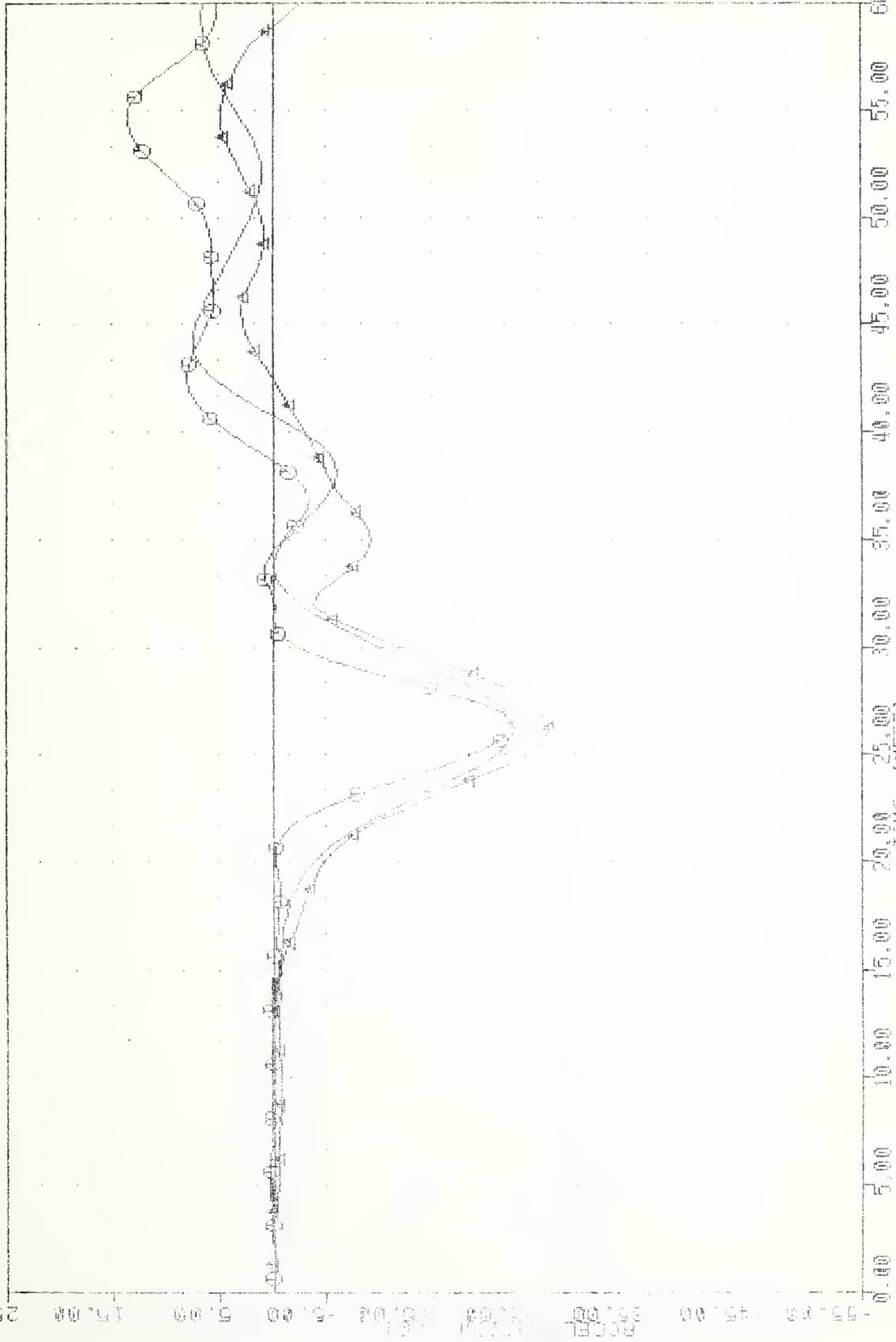
SIDE IMPACT TEST (ARLU02)
UPPER SPINE ACCELERATION Y AXIS -A

T12Y61	FILTER : HSRI	136/	189/	-50	MIN. MAX =	25.63 :	7.45 e	43.75
MN-230	FILTER : HSRI	136/	189/	-50	MIN. MAX =	25.63 :	13.54 e	53.75
MN-230	FILTER : HSRI	136/	189/	-50	MIN. MAX =	25.63 :	4.85 e	53.75



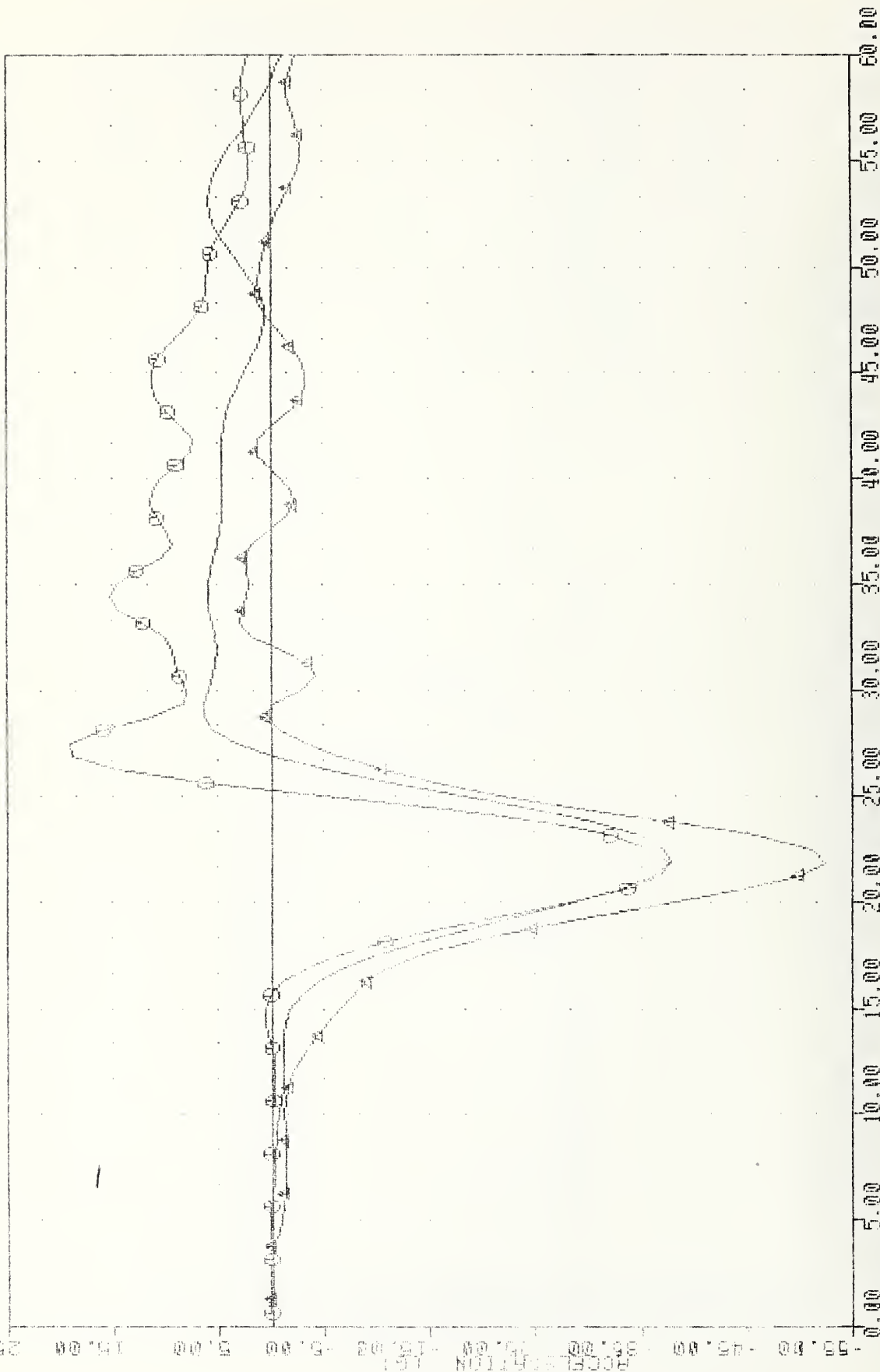
SIDE IMPACT TEST (ARLU02)
LOWER SPINE ACCELERATION Y AXIS -1

FILE NAME: 112768
 FILTER: HSRI
 MIN: 250
 MAX: 500
 TIME: 1897
 FILTER: HSRI
 MIN: 250
 MAX: 500
 TIME: 1897
 FILTER: HSRI
 MIN: 250
 MAX: 500
 TIME: 1897



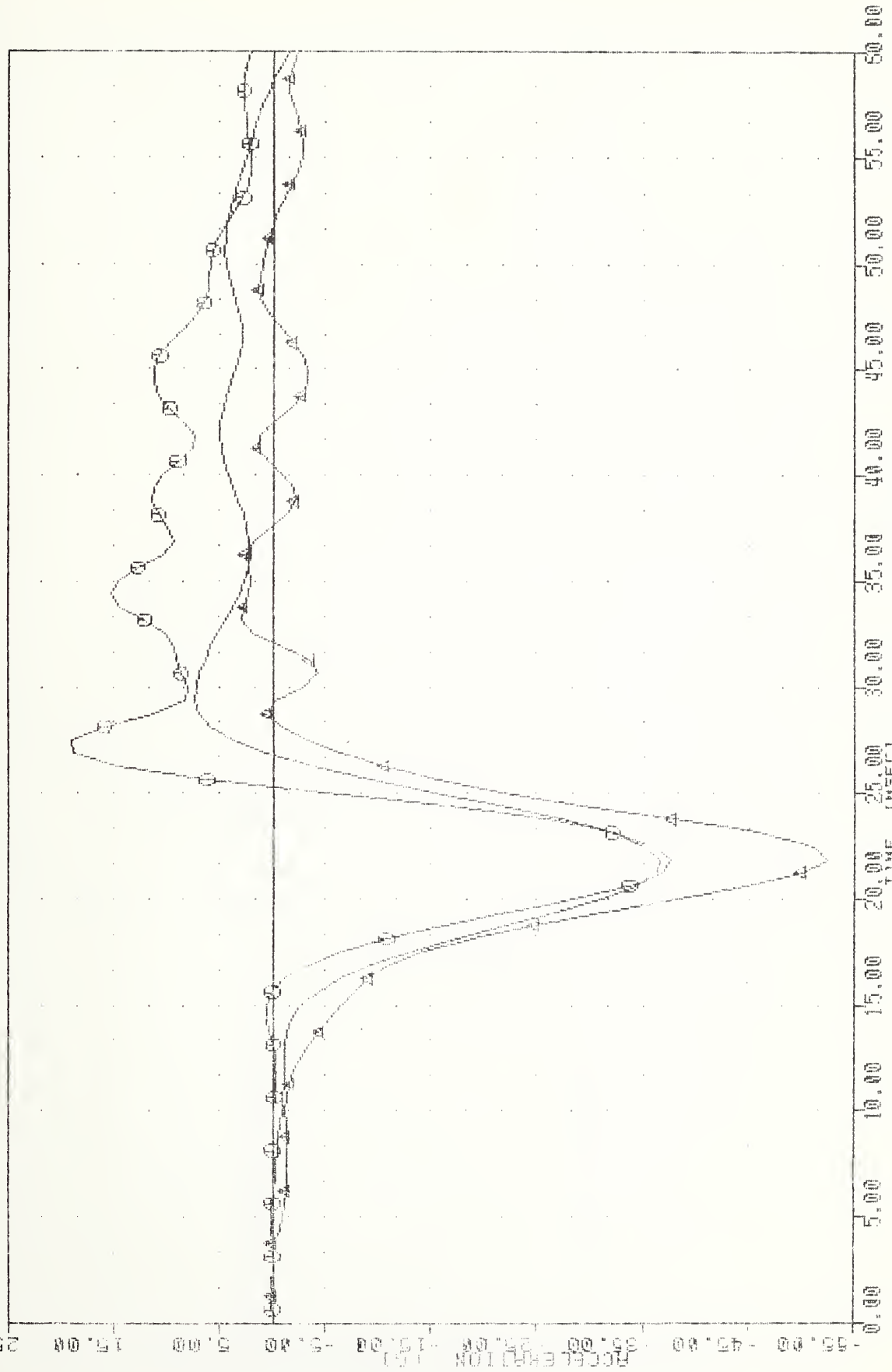
SIDE IMPACT TEST (ARL002)
 LOWER SPINE ACCELERATION Y AXIS -A

LARRY 1367 1897 1697 1697 1697
 MIN, MAX = -37.75 0 21.25
 MIN, MAX = -37.66 0 21.25
 MIN, MAX = -52.52 0 21.25
 6.92 0 20.75
 10.00 0 26.87
 2.94 0 32.50



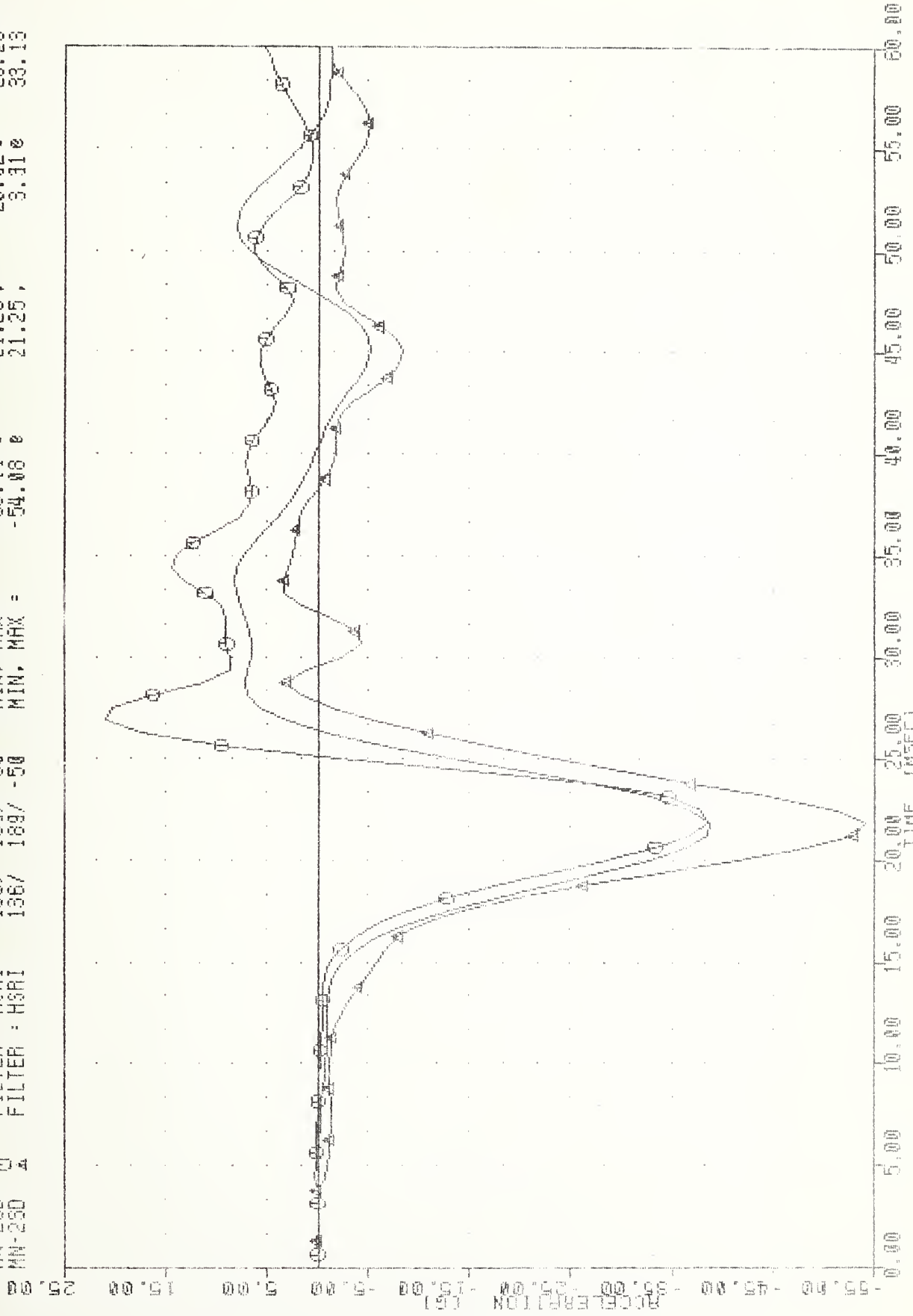
SIDE IMPACT TEST (ARLU02)
 LEFT LOWER RIB ACCELERATION Y AXIS - 1

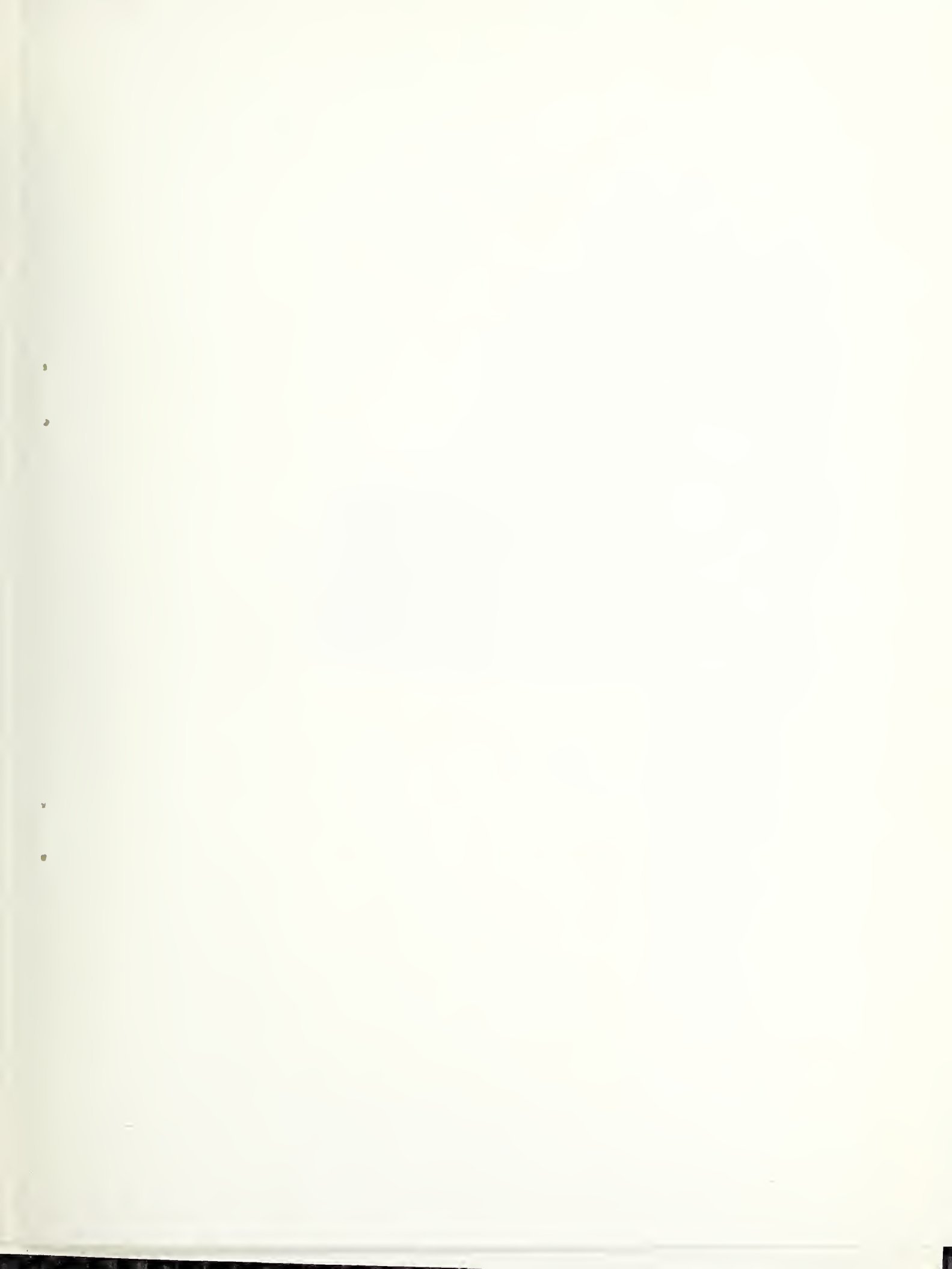
FILE: 01000000
 FILTER : HSRI 1367 1897 500 MIN, MAX = -36.68 0 7.26 28.75
 FILTER : HSRI 1367 1897 500 MIN, MAX = -37.66 0 19.00 26.87
 FILTER : HSRI 1367 1897 500 MIN, MAX = -52.52 0 2.94 32.50



SIDE IMPACT TEST (ARLU002)
 LEFT LOWER RIB ACCELERATION Y AXIS -A

TIME	136/	189/	500/	MIN.	MAX =	21.25	8.14	33.13
CHRYSLER	136/	189/	500/	MIN.	MAX =	21.25	20.92	26.26
FILTER : HSRI	136/	189/	500/	MIN.	MAX =	21.25	9.31	33.13
MIN-250								
MIN-250								





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Stultz, J.

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