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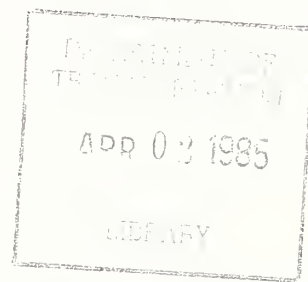


U.S. Department
of Transportation
National Highway
Traffic Safety
Administration

EVALUATION OF NHTSA MODIFIED VOLKSWAGEN RABBITS
MDB-TO-CAR SIDE IMPACT TEST OF A 26° CRABBED MOVING
DEFORMABLE BARRIER TO A 1982 VOLKSWAGEN RABBIT
AT 29.1 MPH

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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 baseline 1982 Volkswagen Rabbit 2-door hatchback 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 26°, at 29.1 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 September 26, 1983 and the ambient temperature was 63°F.					
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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 1982 Volkswagen Rabbit 2-door hatchback was impacted on the left side by a Moving Deformable Barrier (MDB) on September 26, 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 90° counterclockwise with respect to the longitudinal axis of the struck vehicle. The leading edge of contact 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 29.1 mph with the MDB's wheels crabbed clockwise to 26°. The actual test speed was 29.1 mph and the actual leading edge was 37.5 inches forward of the midpoint of the Volkswagen Rabbit's wheelbase.

The vehicle was a baseline model with no structural modifications. The driver door and left rear occupant wall contained three inches of padding.

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: Volkswagen of America, Inc.

MAKE/MODEL: Volkswagen Rabbit

VIN: 1VWCB9176CV013329

BODY STYLE: 2-Door Hatchback

MODEL YEAR: 1982

NHTSA NO.: R & D

COLOR: Gold

ENGINE DATA: TYPE: Transverse

CYLINDERS: 4

DISPLACEMENT 105 CID

TRANSMISSION DATA: 4 Speed Manual

DATE VEHICLE RECEIVED: 9/9/83

ODOMETER READING: 18552

DEALER'S NAME AND ADDRESS: NA

ACCESSORIES:

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

REMARKS:

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

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

VEHICLE MANUFACTURED BY: Volkswagen of America, Inc.

DATE OF MANUFACTURE: 10/81

GVWR: 2822 LBS.,

GAWR: FRONT 1609 LBS., REAR 1278 LBS.

VEHICLE TIRE DATA

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

TIRES ON VEHICLE (MFG. & LINE, SIZE): Michelin XZX P155/80 V 13

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 650 LBS. RIGHT REAR 370 LBS.

LEFT FRONT 680 LBS. LEFT REAR 340 LBS.

TOTAL FRONT WEIGHT 1330 LBS. (65.2 % OF TOTAL VEHICLE WEIGHT)

TOTAL REAR WEIGHT 710 LBS. (34.8 % OF TOTAL VEHICLE WEIGHT)

TOTAL DELIVERED WEIGHT 2040 LBS.

VEHICLE ATTITUDE (ALL DIMENSIONS IN INCHES):

DELIVERED ATTITUDE: RF 25 3/4 ;LF 24 7/16 ;RR 23 7/16 ;LR 23 1/2

PRE-TEST ATTITUDE: RF 24 1/8 ;LF 23 7/8 ;RR 21 7/16 ;LR 21 1/4

POST-TEST ATTITUDE: RF 23 1/8 ;LF 24 3/8 ;RR 20 11/16 ;LR 22 1/16

WEIGHT OF TEST VEHICLE WITH REQUIRED DUMMIES AND 158 LBS. CARGO:

RIGHT FRONT 700 LBS. RIGHT REAR 558 LBS.

LEFT FRONT 710 LBS. LEFT REAR 578 LBS.

TOTAL FRONT WEIGHT 1410 LBS. (55.4 % OF TOTAL VEHICLE WEIGHT)

TOTAL REAR WEIGHT 1136 LBS. (44.6 % OF TOTAL VEHICLE WEIGHT)

TOTAL TEST WEIGHT 2546 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*: NA GALLONS

TEST VOLUME: 2.5 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: 155/80 V 13

LOAD RANGE X B, C,

VEHICLE CAPACITY:

TYPES OF SEATS:

Front - Bucket

Rear - Bench

NUMBER OF OCCUPANTS (DESIGNATED SEATING CAPACITY): 2 FRONT

2 REAR

CARGO LOAD 135 LBS.

4 TOTAL

TOTAL 735 LBS.

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

TEST CONDITIONS

TEST NUMBER: 830926

DATE OF TEST: September 26, 1983

TIME OF TEST: 11:35

WIND VELOCITY: 4-9 mph 216° W

HUMIDITY: 42%

AMBIENT TEMPERATURE AT IMPACT AREA: 63° F

TEMPERATURE IN OCCUPANT COMPARTMENT: 72° F

SUBJECT VEHICLE DATA

	<u>ACTUAL</u>	<u>INTENDED</u>
VEHICLE TEST WEIGHT (LBS.)	2546	2523
MDB TEST WEIGHT (LBS.)	2990	3000
MDB VELOCITY (MPH)*	29.1	29.1
IMPACT POINT (INCHES)**	37.5	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			U02	
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 # 06	PASSENGER # U02
Head	<u>Side Window, Sill</u>	<u>Side Window, Header, Padding</u>
Chest	<u>Padding</u>	<u>Padding</u>
Abdomen	<u>Padding</u>	<u>Padding</u>
Left Knee	<u>Padding</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>Yes, Approx. 2 inches</u>
Rear	<u>No</u>	<u>No</u>

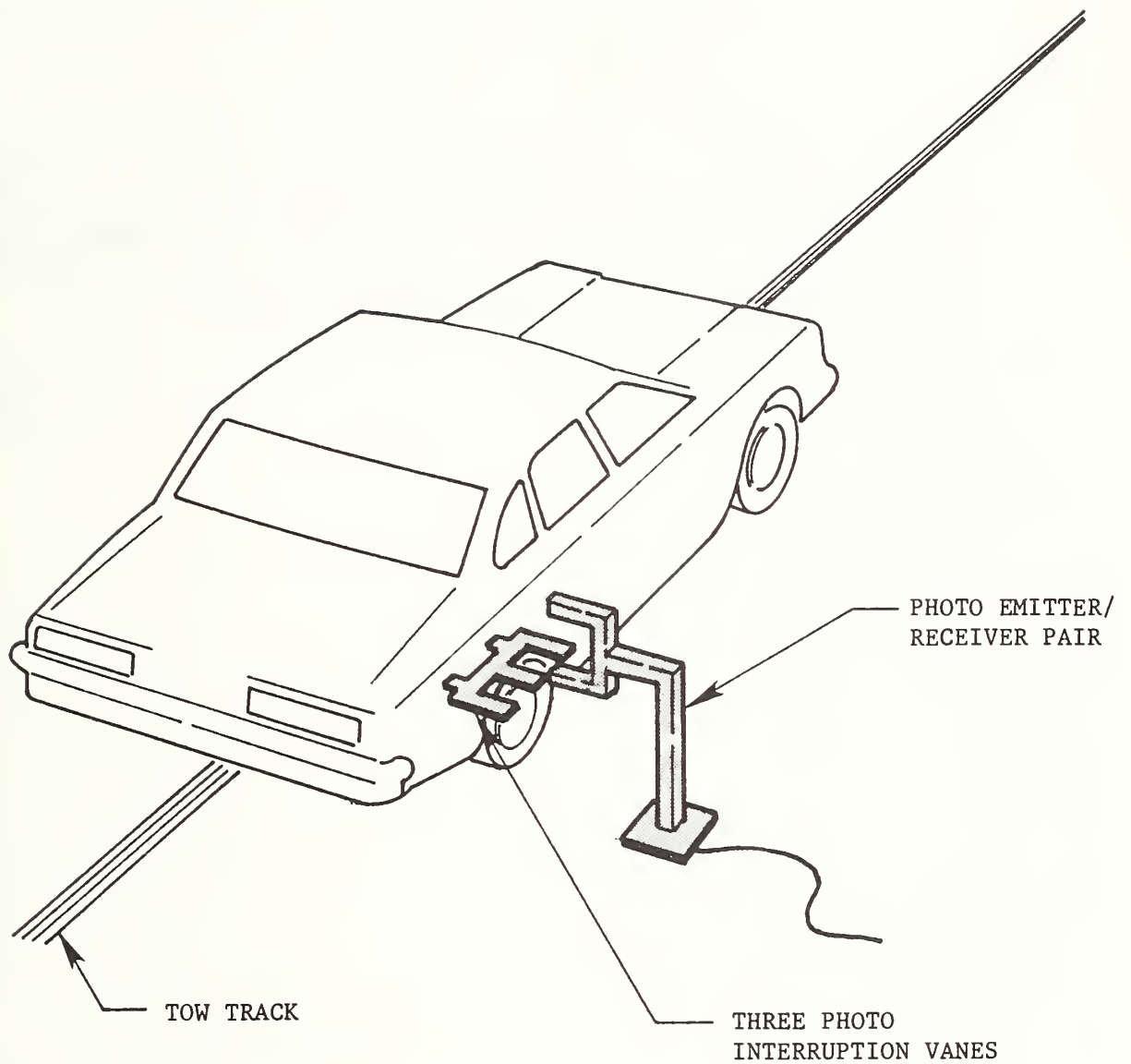
GLAZING DAMAGE:

Windshield cracked, driver window and left
rear passenger window shattered, no backlight
damage,

OTHER NOTABLE IMPACT EFFECTS:

Driver side sill split and deformed upward,
B-pillar intruding approximately 10 inches,

IMPACT VELOCITY MEASUREMENT SYSTEM



The final vane is located two inches before impact.

The vanes have one foot spacing.

VEHICLE TEST WEIGHT CALCULATION

$$\begin{aligned}\text{Test Weight} &= \text{Unloaded Delivered Weight} + \\ &\quad \text{Number of Dummies} \times 174 \text{ lbs.} + \\ &\quad \text{Cargo Weight} \\ &= 2040 + 2 \times 174 + 135 \text{ lbs.} \\ &= 2523 \text{ lbs.}\end{aligned}$$

To achieve test weight, the radio, speakers, air conditioning compressor, and alternator were removed and 2.5 gallons of Stoddard Solvent was added in the fuel tank. The weight of the test vehicle was measured by placing each wheel on a Loadmeter Corporation Hiway Loadometer.

TEST ANOMALIES

1) Intermittent cable separation occurred in data channel LFDYG5 [Vehicle Left Front Door (Position 11) Acceleration Y Axis] at approximately 35 msec, no peak levels or delta velocity are reported.

2) Post-test examination conducted on September 26, 1983 of the driver dummy skull revealed unwelded joints that allowed the head to ring. All driver head data channel peak values, the resultants and HIC are therefore unrealistic.

3) High speed camera No. 7 which was mounted on the hood of the test vehicle ran for approximately one-half second and then failed. The camera was removed from service, but the fault has not been identified.

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.
UPPER TORSO	Placed against seat back. Midsagittal plane is vertical and centered on bucket seat.
LOWER TORSO	Midsagittal plane is vertical and centered on bucket seat.
UPPER LEGS (thighs or femurs)	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.
LOWER LEGS	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.
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.

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

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

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

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

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

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

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

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.

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

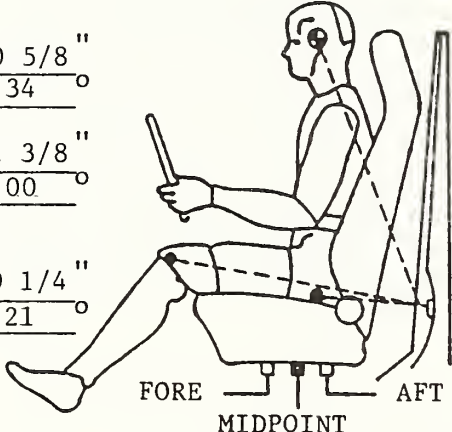
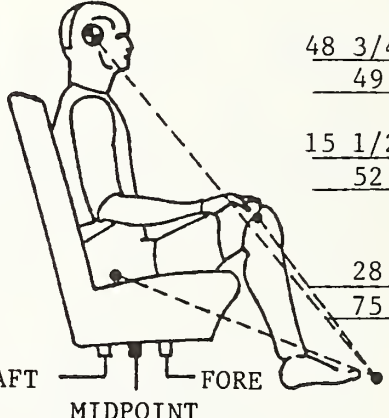
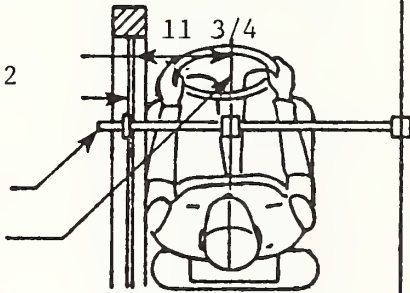
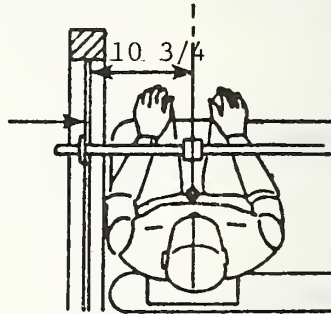
TECHNICIANS:
 1. E. Grumbling

POSITIONING DATE: 9/26/83

2. M. Garrison

AMBIENT TEMP.: 69° F. TIME: 5:30

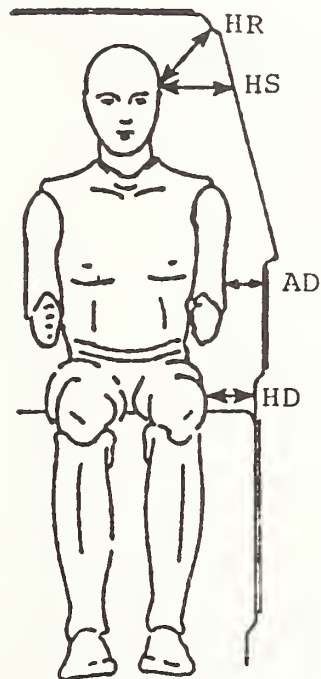
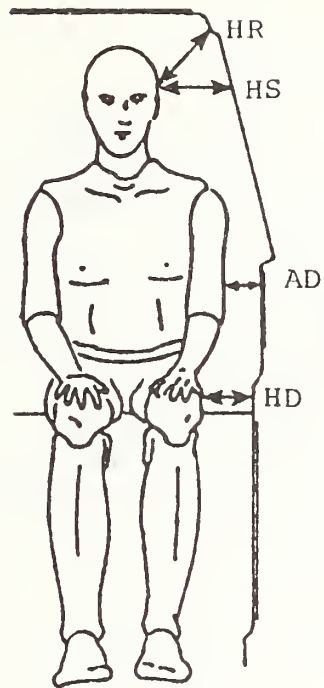
3. J. Kokoruda

DRIVER DUMMY # 06 HEAD <u>20 5/8"</u> TARGET* <u>34</u>° KNEE <u>31 3/8"</u> JOINT <u>100</u>° APPROX. "H" <u>19 1/4"</u> POINT <u>121</u>°  FORE MIDPOINT AFT	REAR PASSENGER DUMMY # U02 <u>48 3/4"</u> HEAD <u>49</u>° TARGET** <u>15 1/2"</u> KNEE <u>52</u>° JOINT APPROX. "H" <u>28"</u> POINT <u>75</u>°  AFT MIDPOINT FORE
DOOR GLASS HEIGHT*** <u>9 1/2"</u> LATERAL BAR ADJUSTABLE POINTER  DRIVER DUMMY # 06	DOOR GLASS HEIGHT <u>DNA</u> <u>10 3/4"</u>  PASSENGER DUMMY # U02

*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.



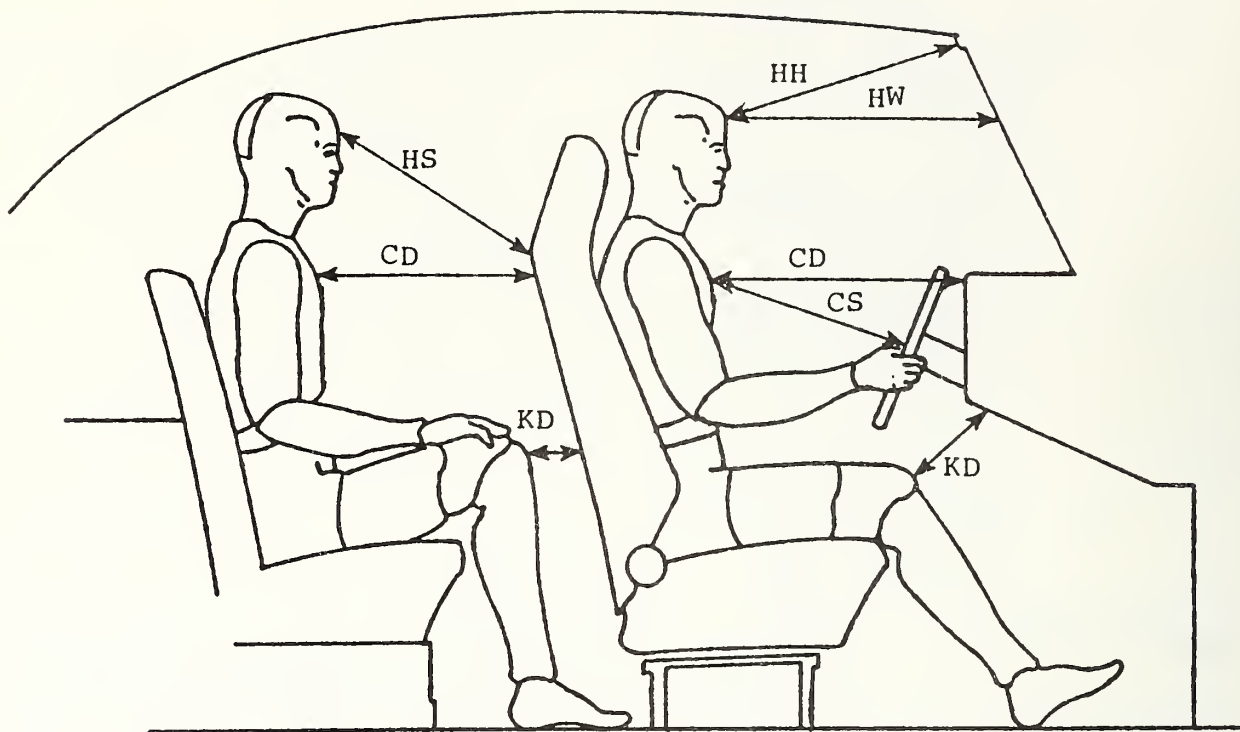
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	DRIVER	PASSENGER
HR	6	4 3/4
HS	7 1/2	7 5/16
AD	0	1/4
HD	5 3/16	1 7/8

NOTE: ALL MEASUREMENTS IN INCHES

DUMMY LATERAL CLEARANCE DIMENSIONS



	06 DRIVER	U02 PASSENGER
HH	12 5/8	DNA
HW	18 1/4	DNA
HS	DNA	22 3/4
CD	20 11/16	18 1/2
CS	11	DNA
KDL	4 15/16	2 1/4
KDR	5 7/16	1 7/16

NOTE: ALL MEASUREMENTS IN INCHES

DUMMY KINEMATIC SUMMARY

DRIVER

During impact, the dummy's torso contacted the padded driver's door and the head contacted the driver's window shattering the glass window. The dummy rebounded from the driver's door on its left side facing the rear of the vehicle. The left buttock struck the front passenger's side window sill. The dummy came to rest against the front passenger door facing the driver's side and with its head caught behind the front passenger's head restraint.

PASSENGER

During impact, the dummy's torso contacted the padded left rear passenger side wall and the head contacted the side window and padded side header. The dummy rebounded off the side wall and fell across the rear seat with its feet trapped in the left rear foot well. Its head struck the right rear passenger's window sill, rebounded once and the dummy came to rest laying across the rear seat with its head on 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	9.5	X	X	18.9	19.0	19.0	19.0	19.1	19.2	19.2	19.3	19.5	19.6	19.9	X	X
H-Point	17.4	X	X	16.6	16.7	16.7	16.6	16.6	16.6	16.7	16.8	16.9	17.1	17.2	X	X
Mid Door	23.1	15.3	16.4	16.3	16.3	16.3	16.3	16.3	16.3	16.4	16.4	16.6	16.6	16.8	16.9	16.0
Window Sill	33.6	X	18.3	18.1	18.1	18.0	17.5	18.0	18.0	18.0	18.1	18.2	18.3	18.3	18.5	18.6
Window Top	52.5	X	X	X	X	X	26.1	25.7	25.6	25.5	25.4	25.4	25.5	25.6	25.8	26.1

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

Axle Height	9.5	X	X	24.2	25.3	25.3	25.2	25.0	25.0	25.0	25.3	25.1	23.2	21.1	X	X
H-Point	17.4	X	X	26.8	27.2	27.9	28.1	28.2	28.3	28.3	28.8	29.6	27.8	25.6	X	X
Mid Door	23.1	20.6	22.8	24.1	24.6	25.3	25.4	25.8	26.1	26.5	26.9	28.1	27.3	26.1	23.3	19.1
Window Sill	33.6	X	20.8	21.7	22.9	23.4	23.3	24.5	24.8	25.5	25.6	27.0	26.3	26.4	23.1	20.9
Window Top	52.5	X	X	X	X	X	28.1	27.6	27.5	27.4	27.3	27.3	27.4	27.4	27.9	28.1

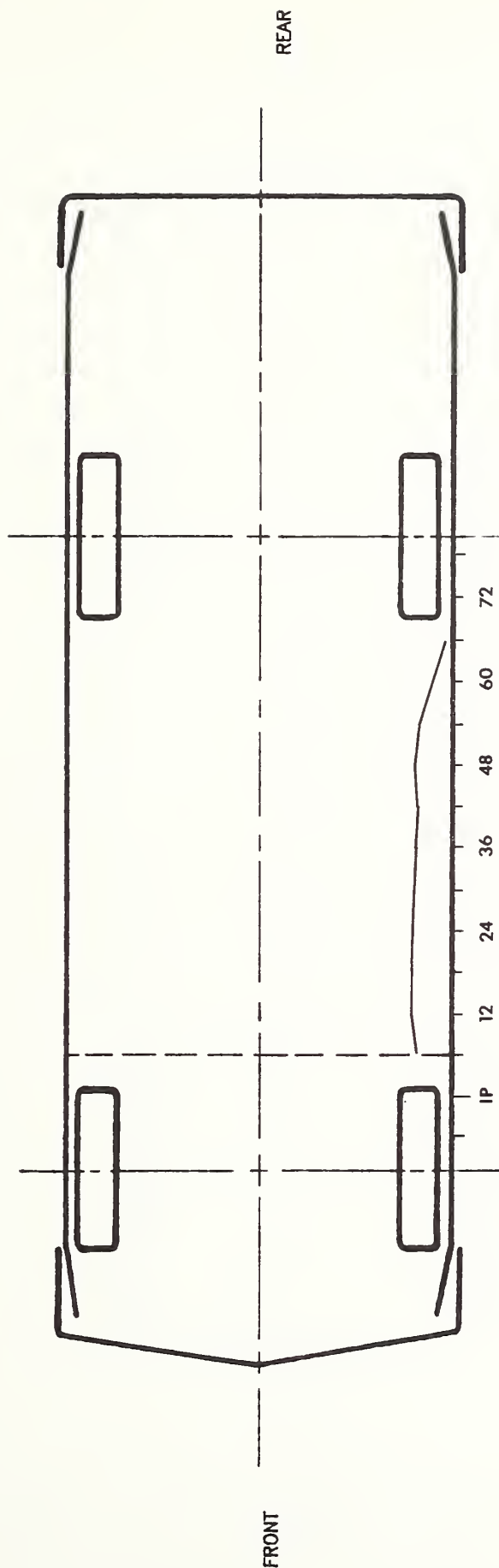
STATIC CRUSH (IN)

Axle Height	9.5	X	X	5.3	6.3	6.3	6.2	5.9	5.8	5.8	6.0	5.6	3.6	1.2	X	X
H-Point	17.4	X	X	10.2	10.5	11.2	11.5	11.6	11.7	11.6	12.0	12.7	10.7	8.4	X	X
Mid Door	23.1	5.3	6.4	7.8	8.3	9.0	9.1	9.5	9.8	10.1	10.5	11.5	10.7	9.3	6.4	3.1
Window Sill	33.6	X	2.5	3.6	4.8	5.4	5.8	6.5	6.8	7.5	7.5	8.8	8.0	8.1	4.6	2.3
Window Top	52.5	X	X	X	X	X	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.8	2.1	2.0

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

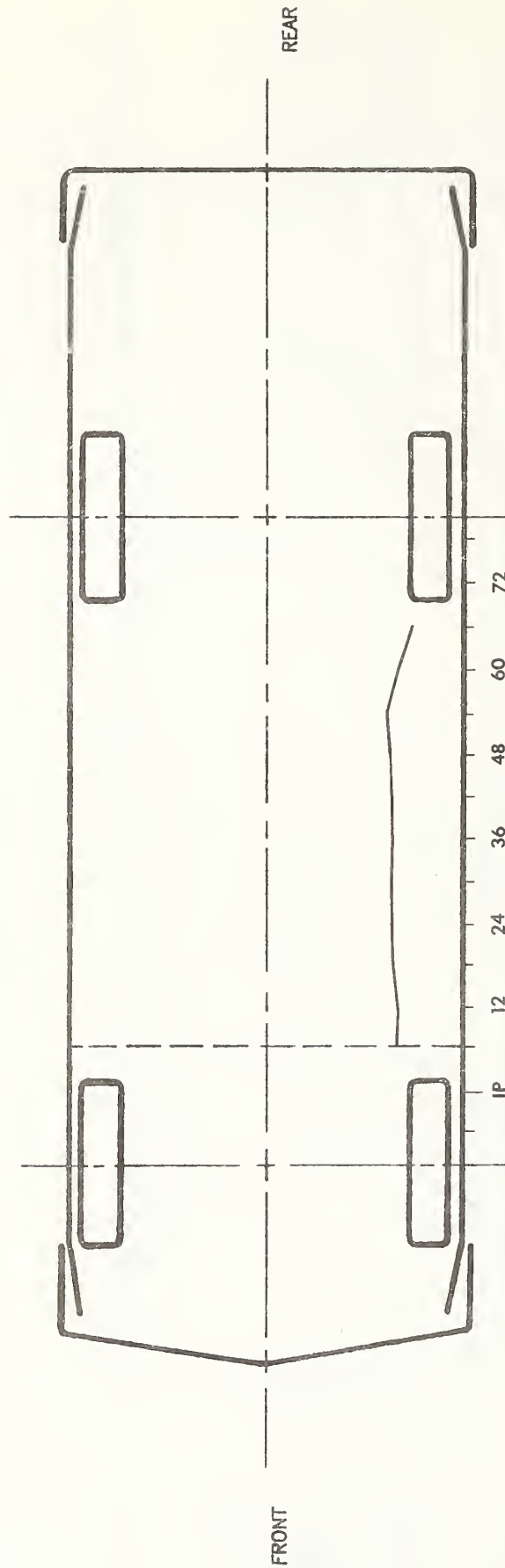
** Reference plane is parallel to and 48 inches from the vehicle longitudinal centerline.

VEHICLE EXTERIOR STATIC CRUSH PROFILE



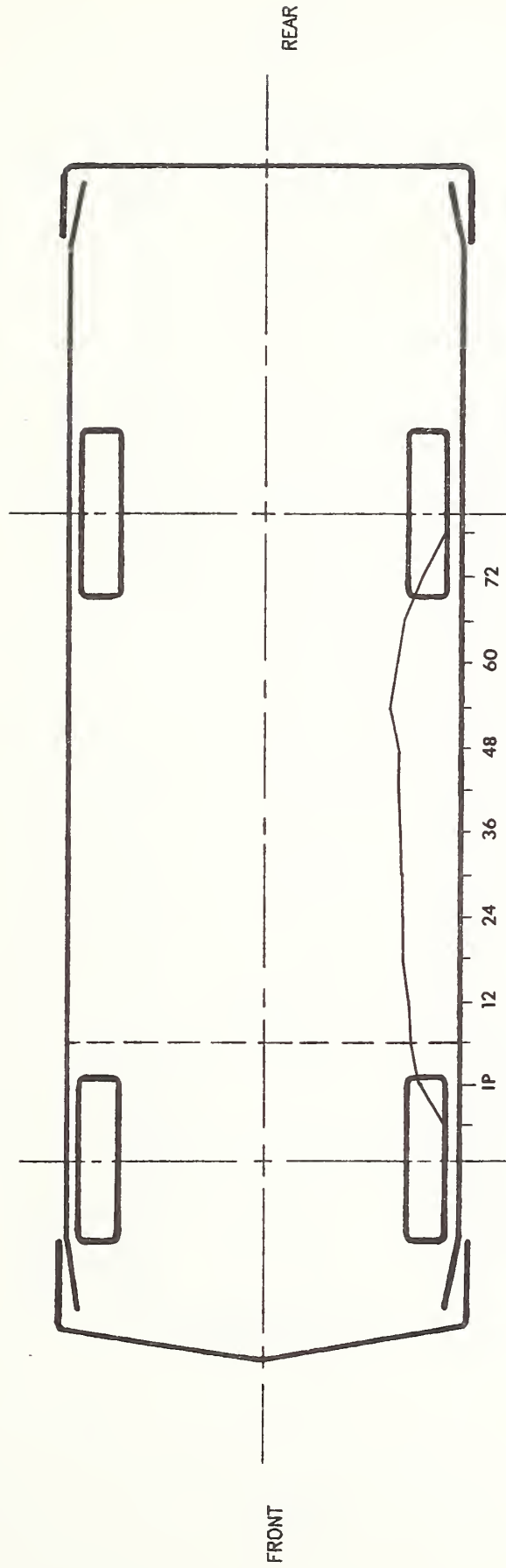
PROFILE LEVEL EQUALS AXLE HEIGHT
IP EQUALS PROJECTED IMPACT POINT

VEHICLE EXTERIOR STATIC CRUSH PROFILE



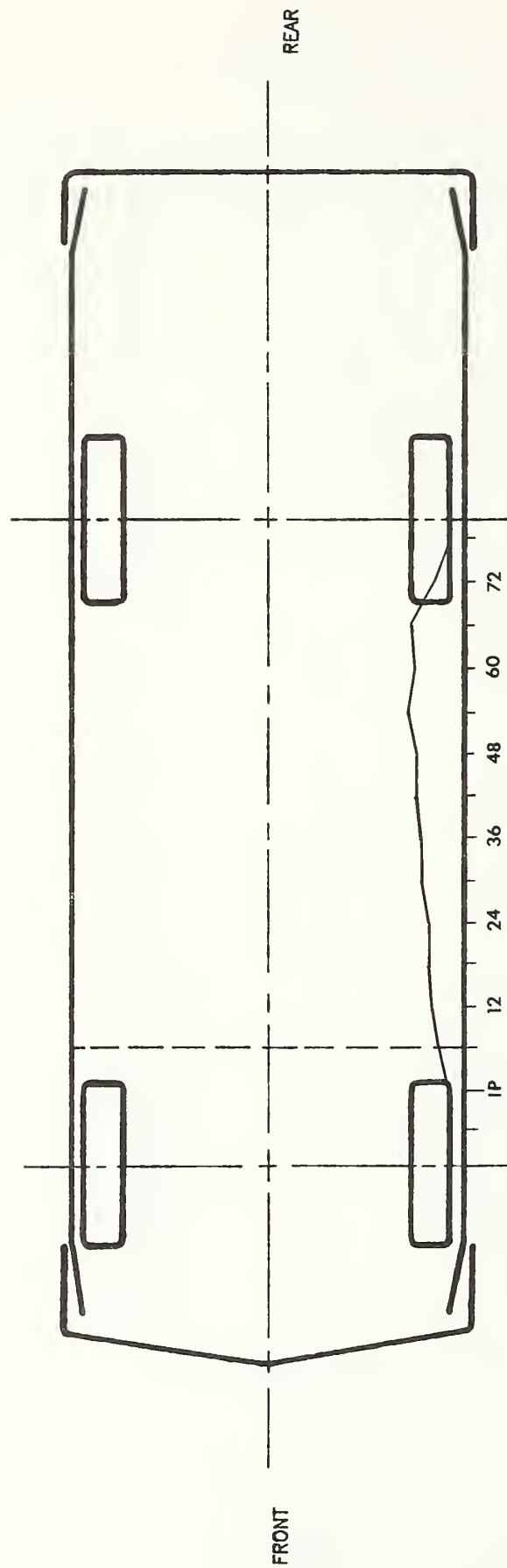
PROFILE LEVEL EQUALS H-POINT HEIGHT
IP EQUALS PROJECTED IMPACT POINT

VEHICLE EXTERIOR STATIC CRUSH PROFILE



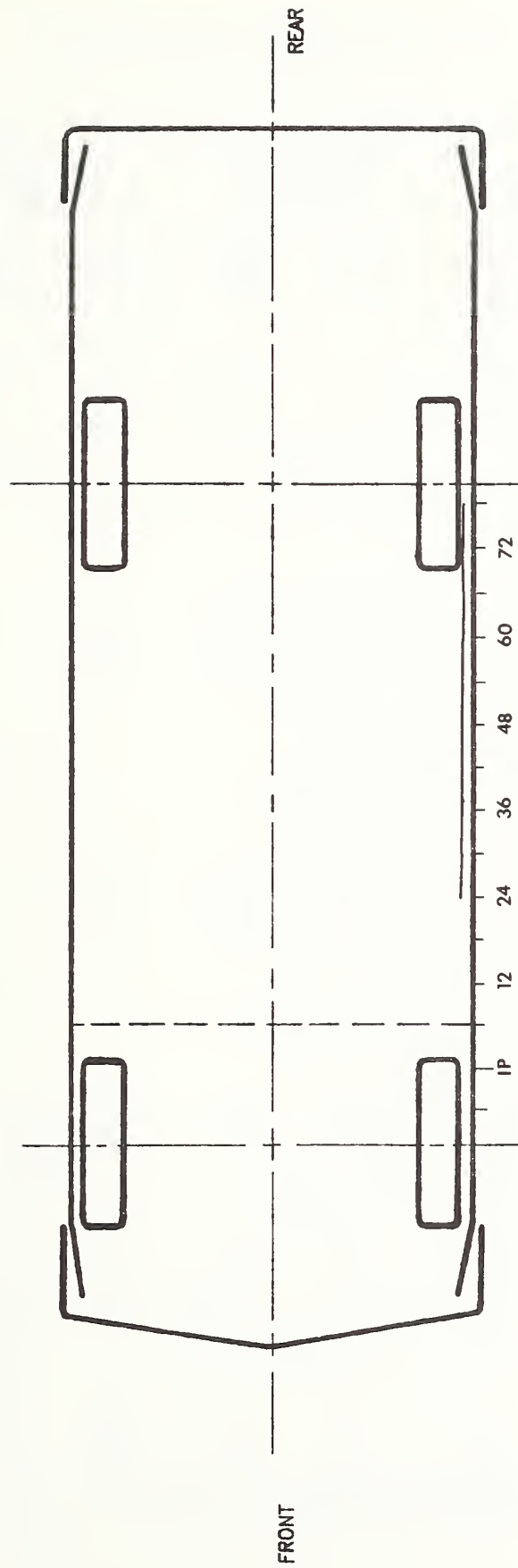
PROFILE LEVEL EQUALS MID-DOOR HEIGHT
IP EQUALS PROJECTED IMPACT POINT

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		NEGATIVE		POSITIVE		NEGATIVE	
	DIRECTION*		DIRECTION**		DIRECTION*		DIRECTION**	
	MAX	TIME	MAX	TIME	MAX	TIME	MAX	TIME
	(g)	(msec)	(g)	(msec)	(g)	(msec)	(g)	(msec)
HEAD ACCELERATION								
LONGITUDINAL	283.78	57.63	19.20	57.13 Y	24.66	166.50	23.43	68.13
LATERAL	156.44	57.25	281.70	57.63 Y	88.83	52.38	17.39	166.50
VERTICAL	310.87	57.88	76.62	58.75 Y	34.79	61.75	20.46	48.88
RESULTANT		506.48 @	57.88 Y			90.77 @	52.38	
HIC	6370.49	from 57.38 to 61.13 Y				345.70	from 48.13 to 57.38	
CHEST ACCELERATION								
UPPER SPINE								
LONGITUDINAL	10.63	51.25	14.10	65.63	3.51	55.00	25.75	61.87
LATERAL (P) ***	58.11	43.13	35.00	63.13	32.14	50.00	5.55	131.25
LATERAL (R) ***	59.47	43.13	33.89	63.13	32.80	49.37	5.00	131.25
VERTICAL	10.32	61.87	7.70	78.75	6.95	32.50	14.28	63.13
RESULTANT (P)		58.33 @	43.13			32.98 @	50.00	
RESULTANT (R)		59.68 @	43.13			33.54 @	49.37	
DELTA V (MPH) ****		23.6 @	60.00 (P)			21.5 @	124.38 (P)	
		23.8 @	60.00 (R)			21.5 @	127.50 (R)	
LOWER SPINE								
LONGITUDINAL	37.89	37.50	27.51	32.50	6.26	74.37	13.17	38.13
LATERAL (P)	80.86	31.88	23.04	63.75	47.69	45.00	16.25	66.87
LATERAL (R)	80.33	31.88	26.36	63.13	49.02	45.00	15.39	66.87
VERTICAL	18.64	62.50	5.29	78.13	8.18	46.25	6.21	65.00
RESULTANT (P)		85.75 @	32.50			48.88 @	45.00	
RESULTANT (R)		85.40 @	32.50			50.18 @	45.00	
DELTA V (MPH)		29.1 @	52.50 (P)			22.9 @	59.38 (P)	
		28.9 @	53.12 (R)			23.6 @	60.00 (R)	
LEFT UPPER RIB								
LATERAL (P)	65.92	28.75	9.87	76.25	39.61	34.38	7.11	123.75
LATERAL (R)	68.51	28.13	12.81	75.62	40.31	34.38	12.19	70.63
DELTA V (MPH)		23.1 @	71.25 (P)			24.3 @	141.88 (P)	
		22.7 @	71.88 (R)			23.5 @	142.50 (R)	
LEFT LOWER RIB								
LATERAL (P)	62.40	27.50	25.37	68.13	46.68	45.00	18.93	63.00
LATERAL (R)	68.47	36.25	22.24	68.13	59.43	119.38	22.28	65.00
DELTA V (MPH)		23.6 @	76.25 (P)			23.4 @	163.75 (P)	
		24.2 @	75.63 (R)			24.7 @	122.50 (R)	
PELVIS ACCELERATION								
LONGITUDINAL	10.45	49.50	273.36	45.88 °	5.26	83.50	38.93	38.75
LATERAL	91.73	30.63	14.78	51.00	73.22	40.50	6.01	91.88
VERTICAL	13.76	40.50	7.52	25.00	20.24	45.38	5.47	67.38
RESULTANT		273.60 @	45.88 °			74.12 @	40.50	
DELTA V (MPH)		27.9 @	46.88			23.3 @	68.88	

SIDE IMPACT DUMMY DATA SUMMARY CONTD

	<u>DRIVER DUMMY</u>				<u>PASSENGER DUMMY</u>			
	<u>POSITIVE</u>		<u>NEGATIVE</u>		<u>POSITIVE</u>		<u>NEGATIVE</u>	
	<u>DIRECTION*</u>		<u>DIRECTION**</u>		<u>DIRECTION*</u>		<u>DIRECTION**</u>	
	<u>MAX</u>	<u>TIME</u>	<u>MAX</u>	<u>TIME</u>	<u>MAX</u>	<u>TIME</u>	<u>MAX</u>	<u>TIME</u>
	<u>(in)</u>	<u>(msec)</u>	<u>(in)</u>	<u>(msec)</u>	<u>(in)</u>	<u>(msec)</u>	<u>(in)</u>	<u>(msec)</u>
RIB DEFLECTION †	0.08	177.00	1.62	106.25	0.08	122.38	1.64	71.63

* 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

‡See TEST ANOMALIES

°The CTM has judged that intermittent rattling has occurred in these channels and, therefore, the peak values reported are questionable as are applicable resultants and Delta V's.

VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

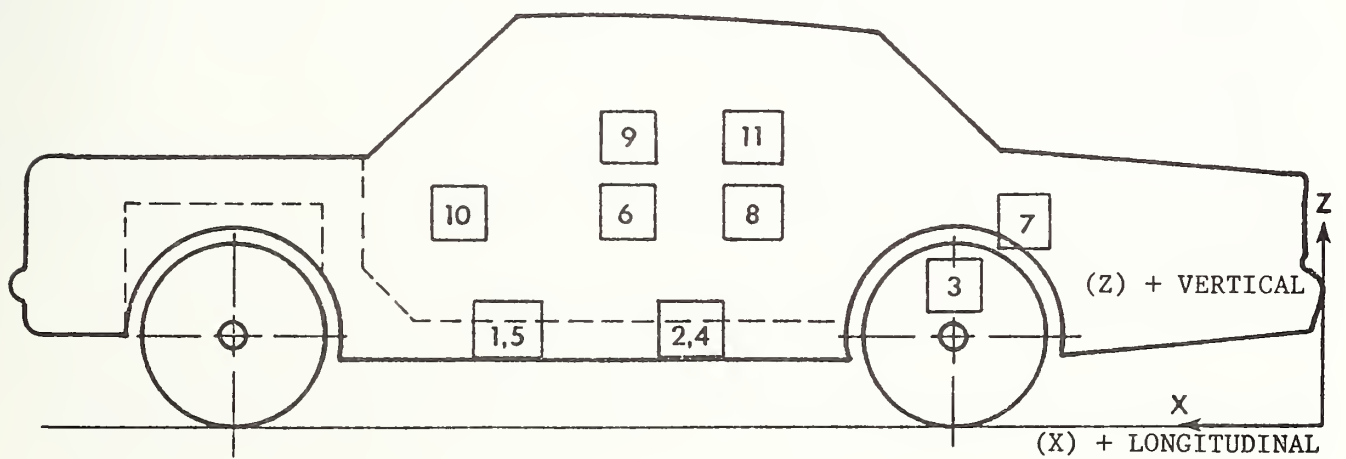
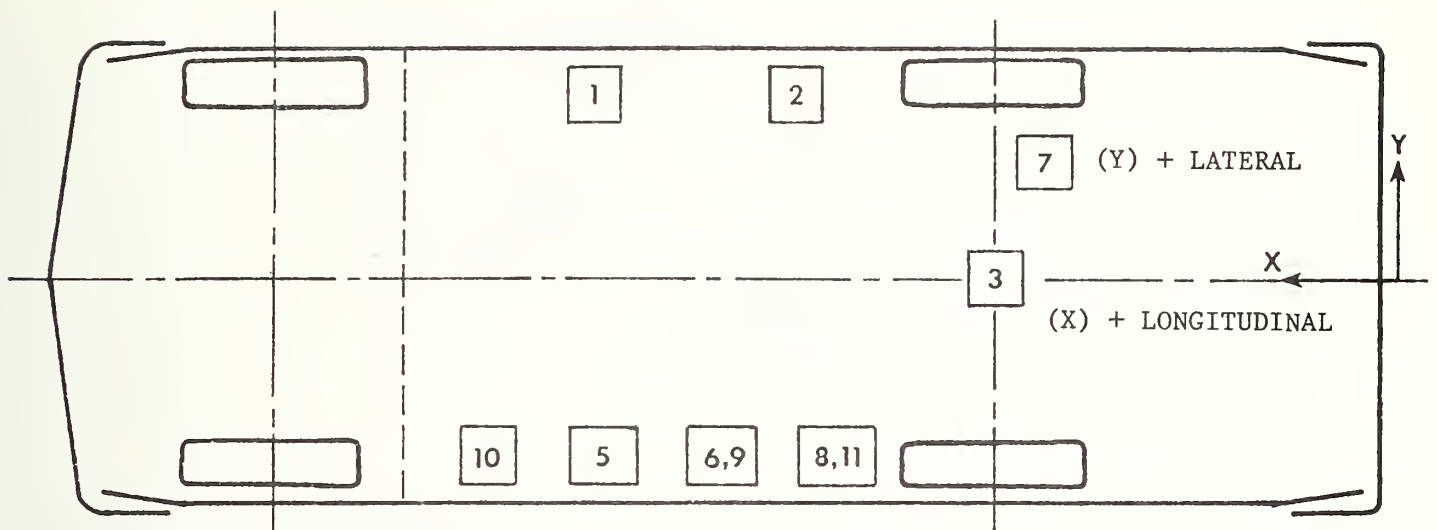
NO.	LOCATION	X*	Y*	Z*	POSITIVE DIRECTION		NEGATIVE DIRECTION	
					MAX (g)	TIME (msec)	MAX (g)	TIME (msec)
1	RIGHT SILL AT FRONT SEAT	83.4	23.9	9.5				
	(LONGITUDINAL)	$\Delta V = -1.7$ mph @ 90.00 msec			2.68	49.88	7.54	28.38
	(LATERAL)	$\Delta V = 14.5$ mph @ 90.00 msec			18.68	35.13	2.62	138.00
	(VERTICAL)				6.34	68.88	6.73	41.13
	(RESULTANT)					18.68 @ 35.13		
2	RIGHT SILL AT REAR SEAT	61.4	24.5	8.5				
	(LONGITUDINAL)	$\Delta V = -0.7$ mph @ 90.00 msec			3.49	50.00	7.24	28.63
	(LATERAL)	$\Delta V = 16.1$ mph @ 90.00 msec			20.92	34.63	2.03	137.50
	(VERTICAL)				6.50	69.38	8.26	44.75
	(RESULTANT)					20.98 @ 34.68		
3	REAR DECK OVER AXLE	32.0	0.0	7.0				
	(LONGITUDINAL)	$\Delta V = -1.4$ mph @ 90.00 msec			6.04	43.88	13.81	27.50
	(LATERAL)	$\Delta V = 18.9$ mph @ 90.00 msec			20.20	54.50	3.07	6.88
	(VERTICAL)				4.67	31.63	3.37	47.75
	(RESULTANT)					23.72 @ 27.25		
4	LEFT SILL AT REAR SEAT	61.0	-24.5	8.6				
	(LATERAL)	$\Delta V = 15.3$ mph @ 46.88 msec			40.72	31.63	25.75	54.00
5	LEFT SILL AT FRONT SEAT	83.5	-24.5	9.8				
	(LATERAL)	$\Delta V = 7.7$ mph @ 53.00 msec			36.96	12.25	13.39	17.88
6	LEFT FRONT DOOR CENTERLINE	80.8	-27.0	23.0				
	(LATERAL)	$\Delta V = 19.2$ mph @ 24.00 msec			157.56	15.88	53.55	30.88
7	RIGHT REAR COMPARTMENT	31.0	15.5	13.4				
	(LONGITUDINAL)				3.39	43.13	9.72	27.75
8	MIDREAR OF LEFT FRONT DOOR	60.5	-26.5	23.5				
	(LATERAL)	$\Delta V = 18.9$ mph @ 11.38 msec			175.77	12.13	29.03	25.75
9	UPPER LEFT FRONT DOOR CENTERLINE	81.3	-26.0	33.1				
	(LATERAL)	$\Delta V = 25.5$ mph @ 27.13 msec			117.54	27.25	125.47	33.63
10	MIDFRONT OF LEFT FRONT DOOR	99.0	-26.5	22.0				
	(LATERAL)	$\Delta V = 17.0$ mph @ 23.63 msec			117.70	11.00	75.69	28.75
11	UPPER REAR OF LEFT FRONT DOOR	69.9	-26.0	33.1				
	(LATERAL)				-----	----- Y -----	----- Y	

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

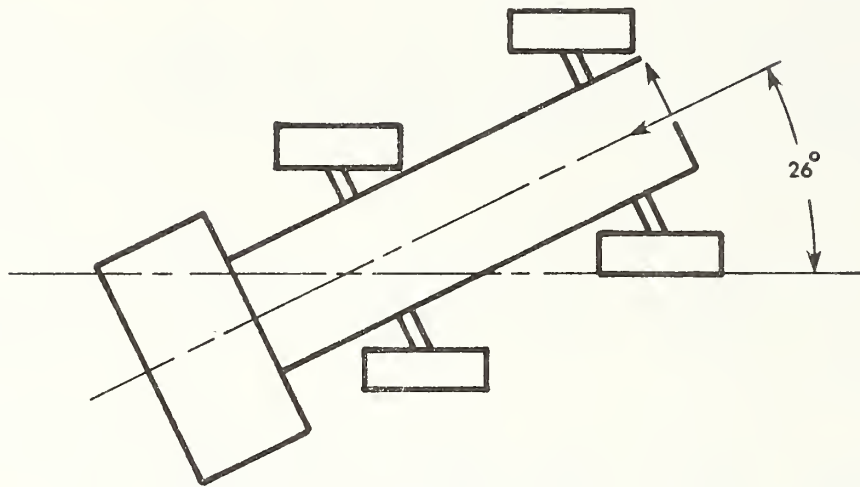
All measurements of accelerometer locations in inches.

Y See TEST ANOMALIES

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)	$\Delta V = -14.1 \text{ mph @ } 90.00 \text{ msec}$			0.95	272.38	15.24	43.25
	(LATERAL)	$\Delta V = -3.0 \text{ mph @ } 90.00 \text{ msec}$			1.48	79.38	8.06	34.00
	(VERTICAL)				7.51	182.38	7.40	173.38
	(RESULTANT)				17.05 @ 42.63			
2	FRONT FRAME MEMBER	130.3	0.0	11.3				
	(LONGITUDINAL)	$\Delta V = -14.9 \text{ mph @ } 90.00 \text{ msec}$			0.34	114.13	15.66	41.00
3	REAR FRAME MEMBER	23.3	0.0	11.5				
	(LONGITUDINAL)	$\Delta V = -13.6 \text{ mph @ } 90.00 \text{ msec}$			0.99	270.63	15.01	40.75

* 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	752	Vehicle dynamics
2	Overhead	Photosonics 1B	25	722	Close-up of impact point
3	Onboard MDB	Stalex	25	500	Close-up of impact point
4	Onboard MDB	Photosonics 1B	13	815	Driver kinematics
5	Ground level - right	Hycam	25	762	Overall view
6	Ground level - left	Hycam	16	805	Overall view
7	Onboard vehicle	Photosonics 1B	8	----*	Driver kinematics - front view
8	Onboard vehicle	Photosonics 1B	8	805	Driver kinematics
9	Onboard vehicle	Photosonics 1B	8	800	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.

* See TEST ANOMALIES

LOCATIONS OF OFFBOARD HIGH SPEED CAMERAS

CAMERA NO.	X	Y	Z
1	0	0	25'
2	0	0	25'
5	24'10"	58'8"	45"
6	-20'11"	-13'	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)
BCGXG	Accel	4-202-0001	18845	Bell Howell	8/9/83	.236 MV/G	50 G
BCGYG	Accel	4-202-0001	18858	Bell Howell	8/9/83	.2385 MV/G	50 G
BCGZG	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

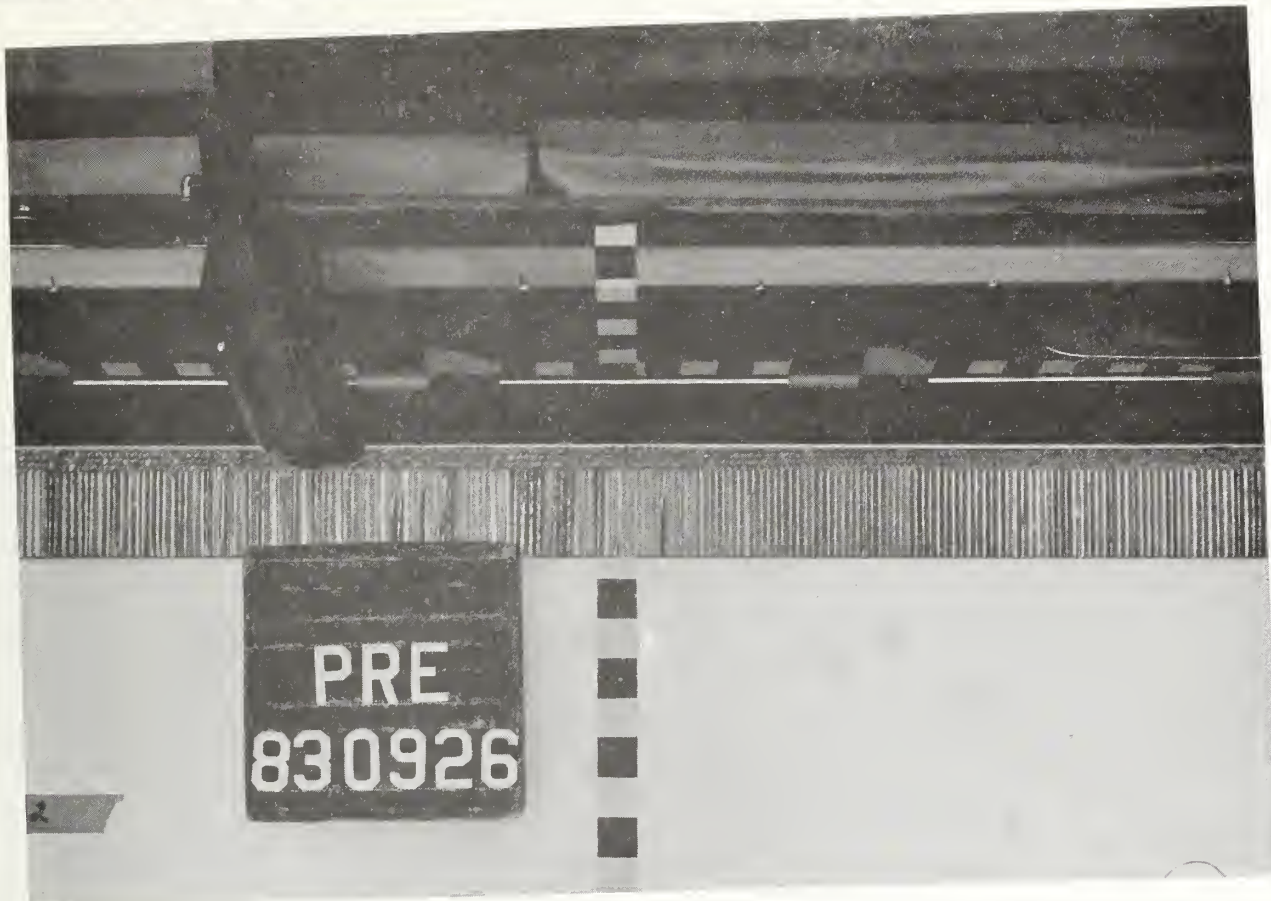


Figure A-7. PRE-TEST CLOSEUP - VIEW 3

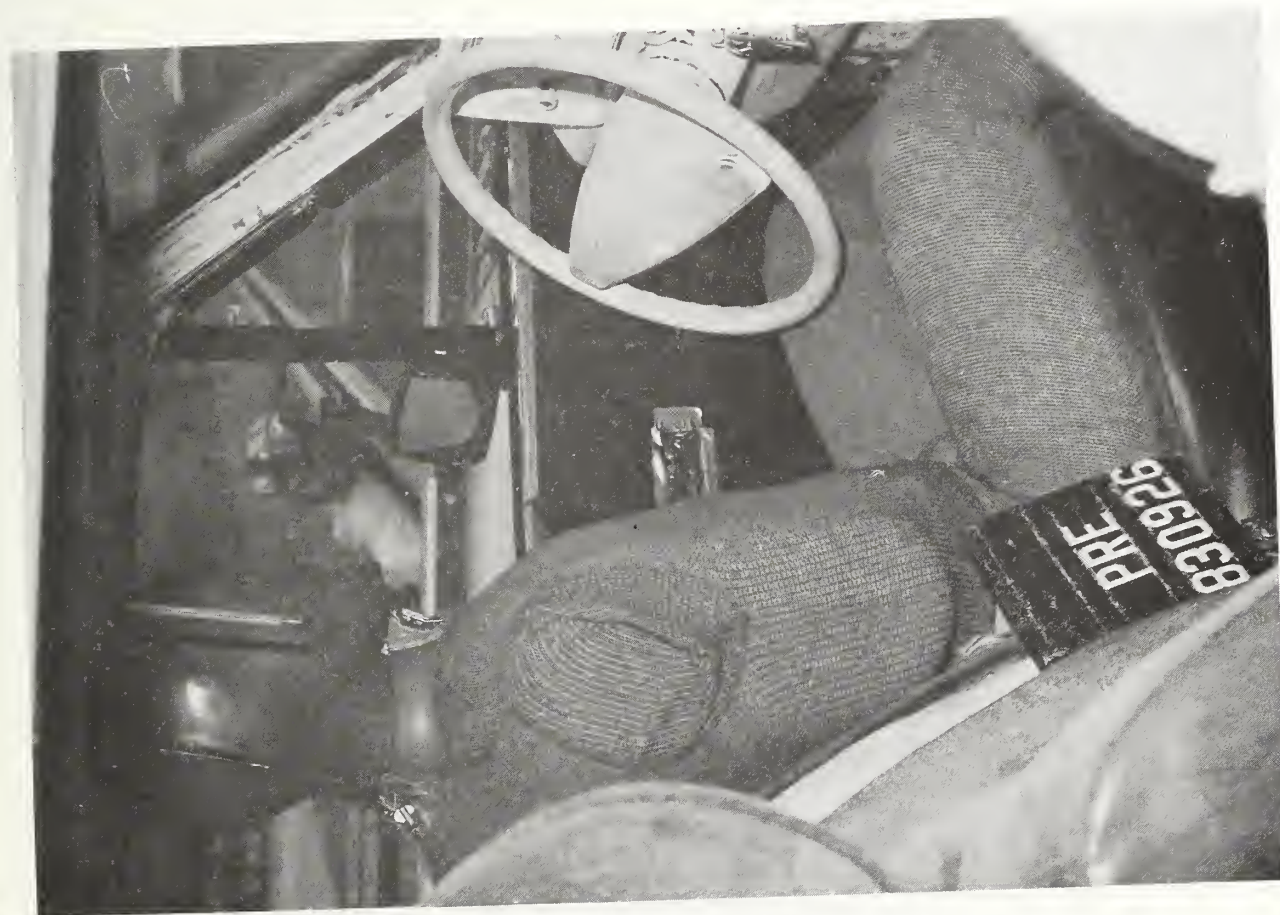


Figure A-8. PRE-TEST DRIVER DUMMY - VIEW 1



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. CRASH EVENT PHOTOGRAPH

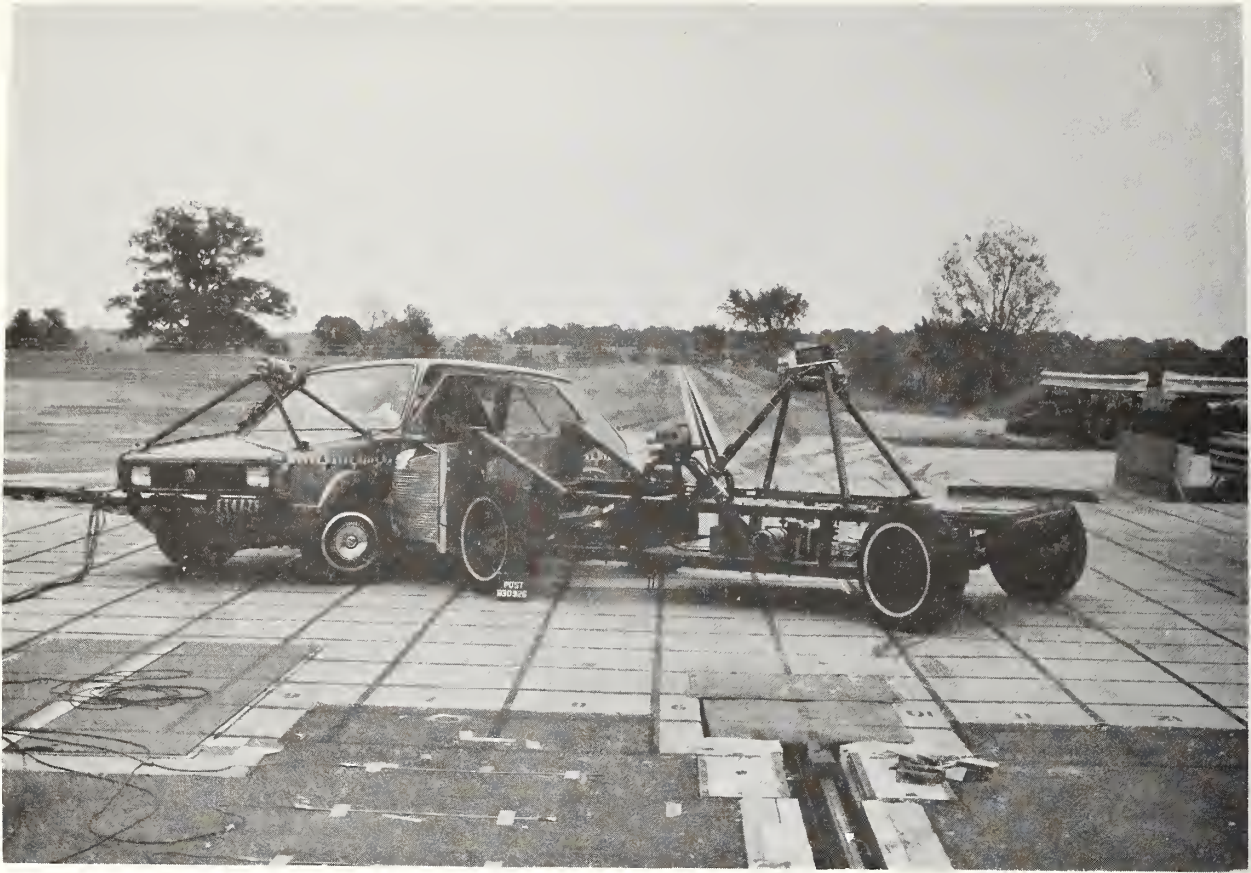


Figure A-13. POST-TEST OVERALL - VIEW 1

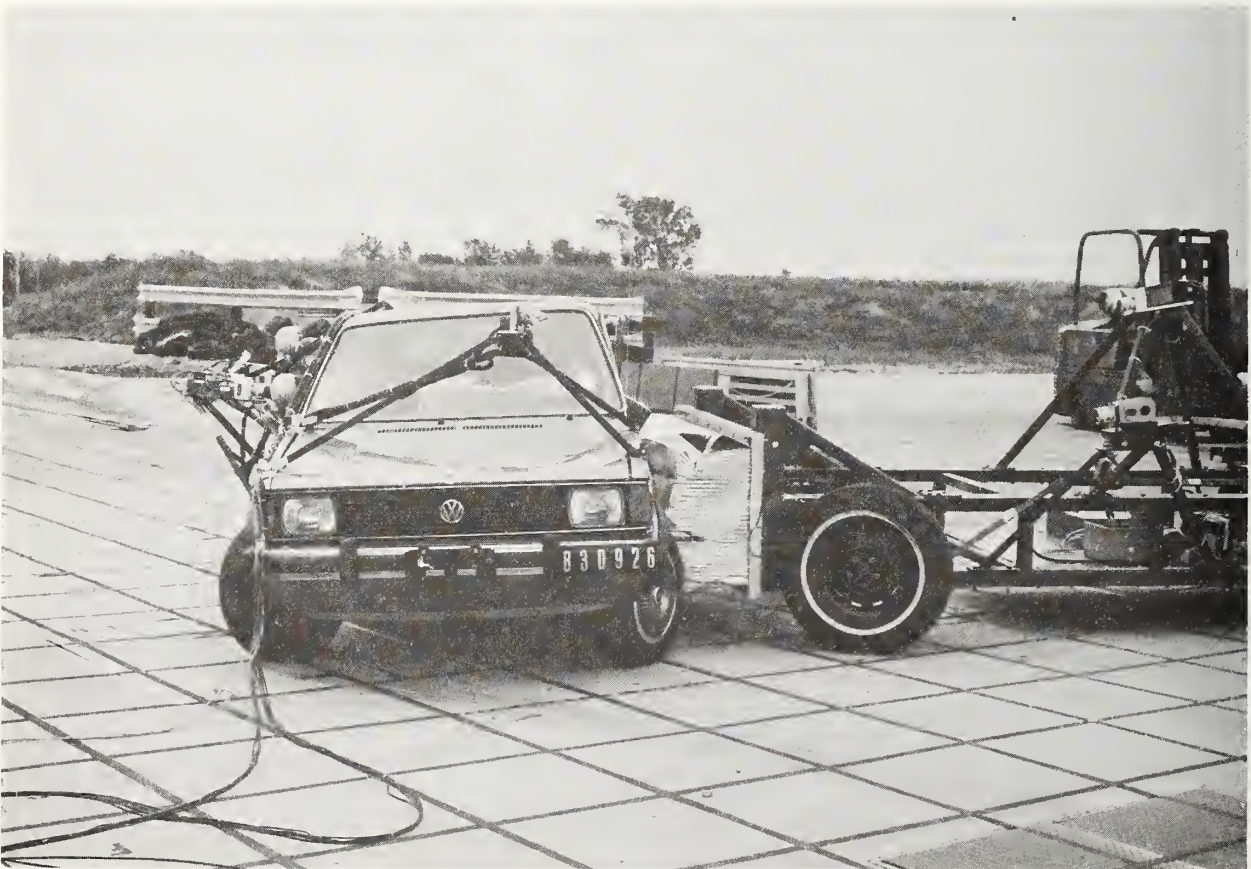


Figure A-14. POST-TEST OVERALL - VIEW 2



Figure A-15. POST-TEST OVERALL - VIEW 3

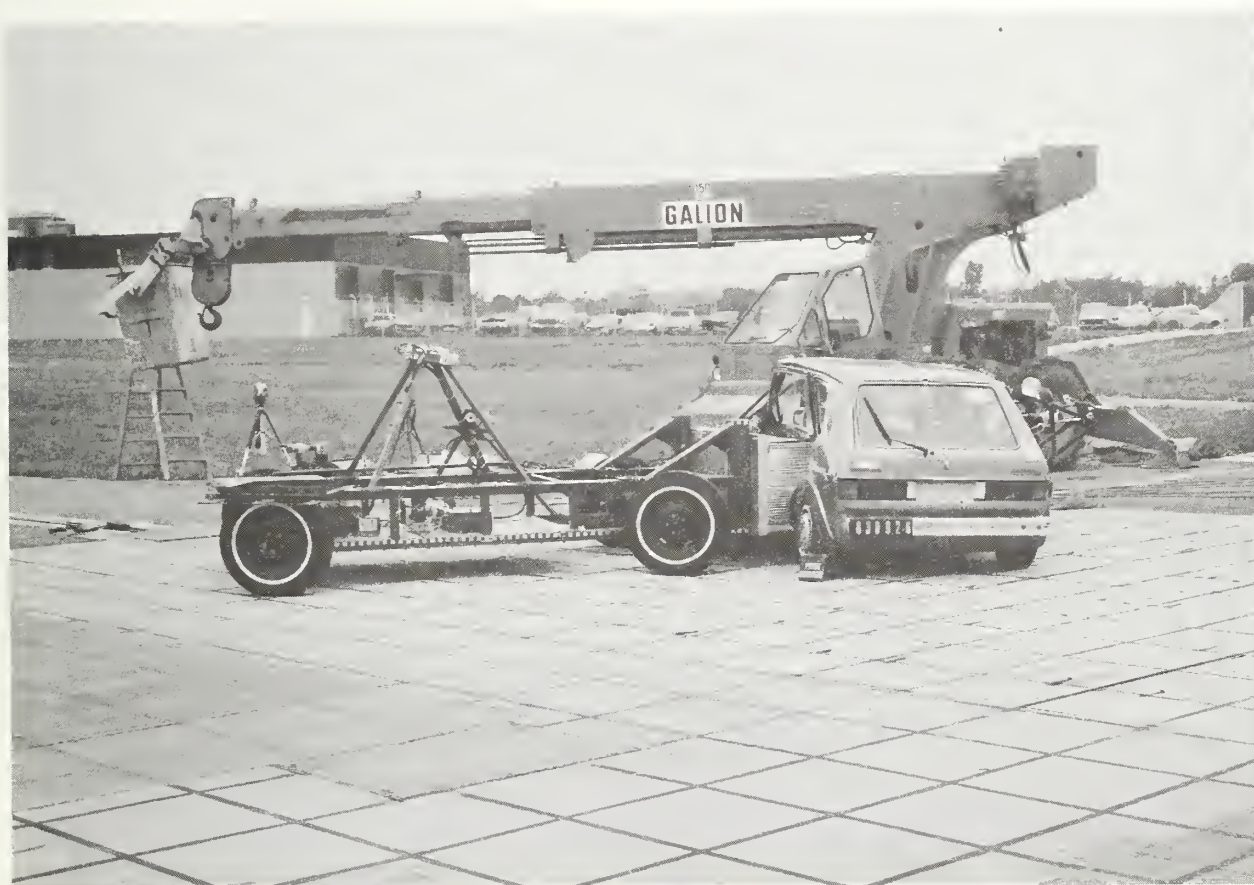


Figure A-16. POST-TEST OVERALL - VIEW 4



Figure A-17. POST-TEST CLOSEUP - VIEW 1



Figure A-18. POST-TEST CLOSEUP - VIEW 2

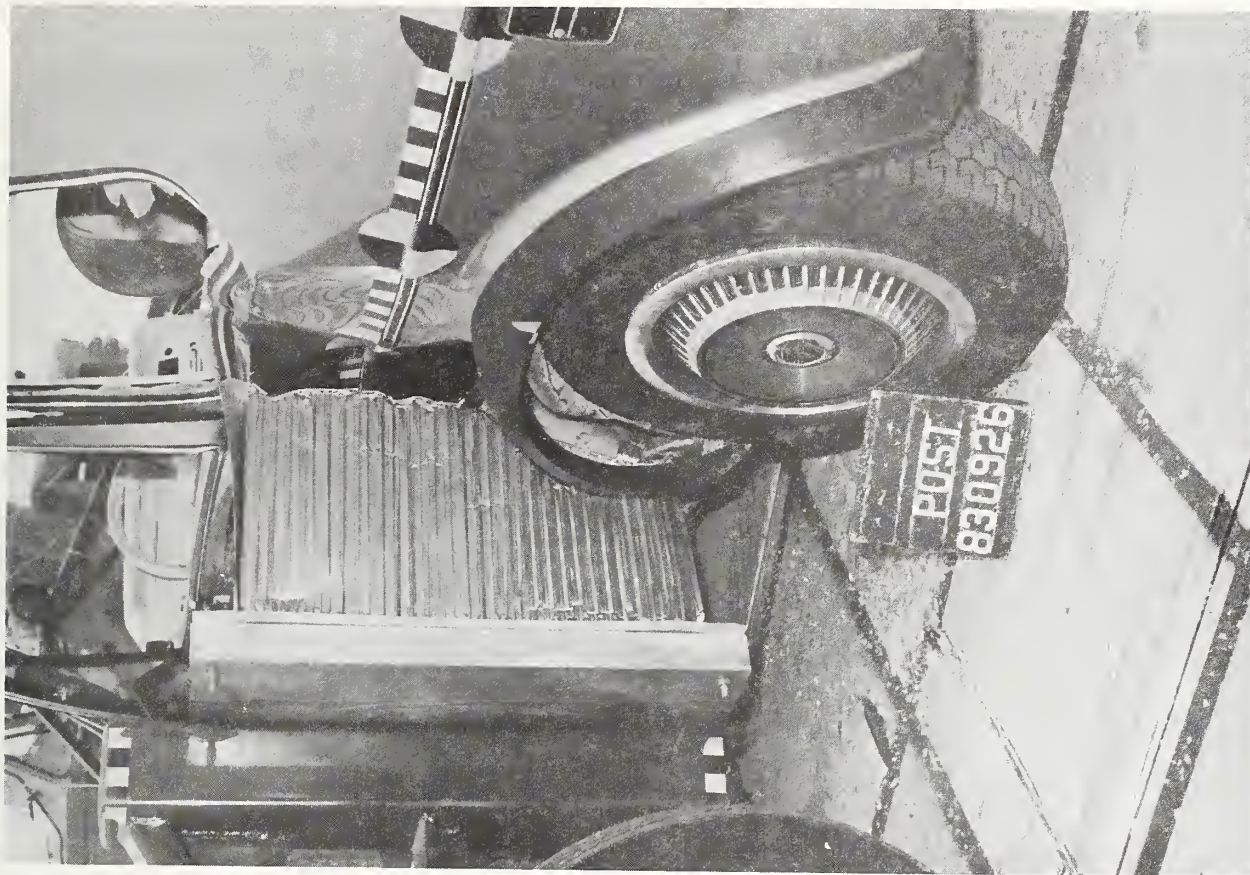


Figure A-19. POST-TEST CLOSEUP - VIEW 3



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



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

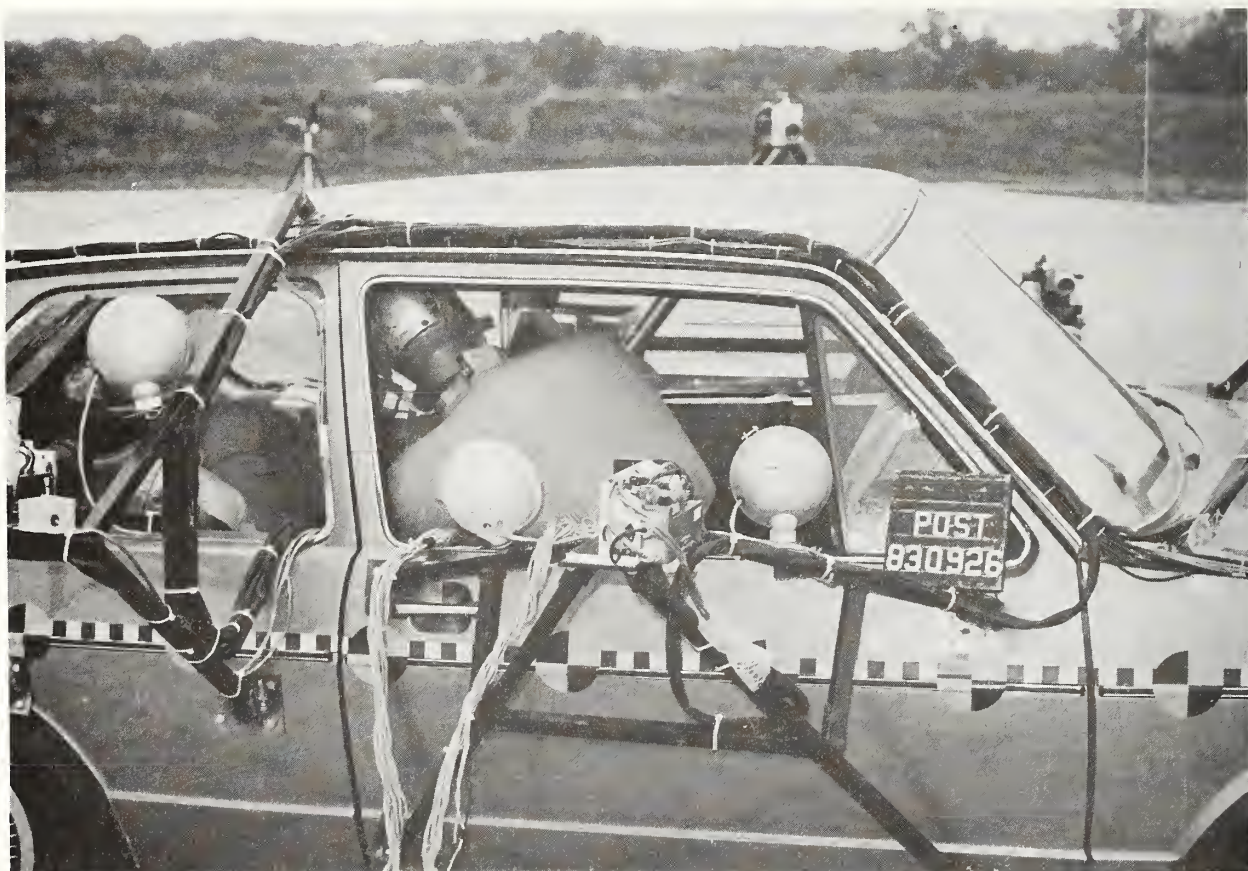


Figure A-22. POST-TEST DRIVER DUMMY - VIEW 3



Figure A-23. POST-TEST PASSENGER DUMMY - VIEW 1



Figure A-24. POST-TEST PASSENGER DUMMY - VIEW 2

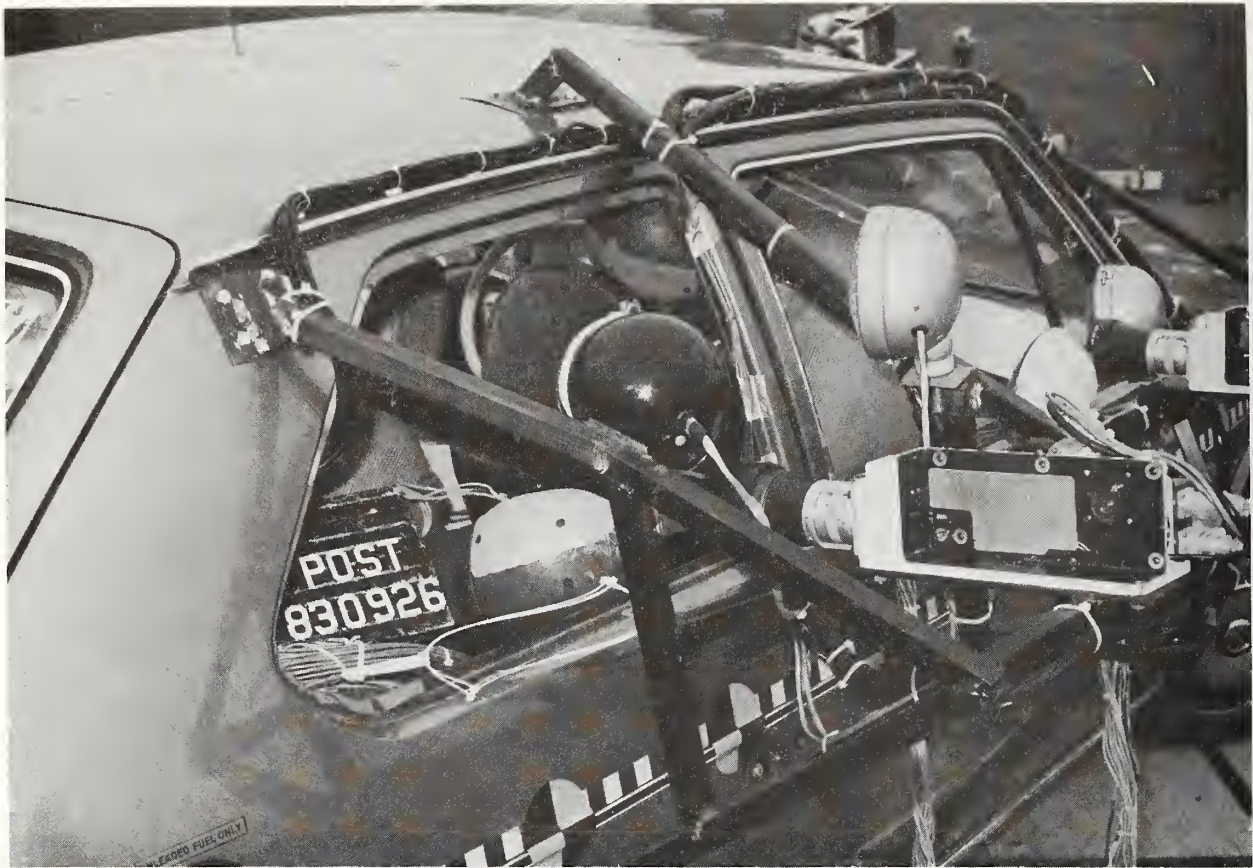


Figure A-25. POST-TEST PASSENGER DUMMY - VIEW 3



Figure A-26. POST-TEST VEHICLE DAMAGE - VIEW 1

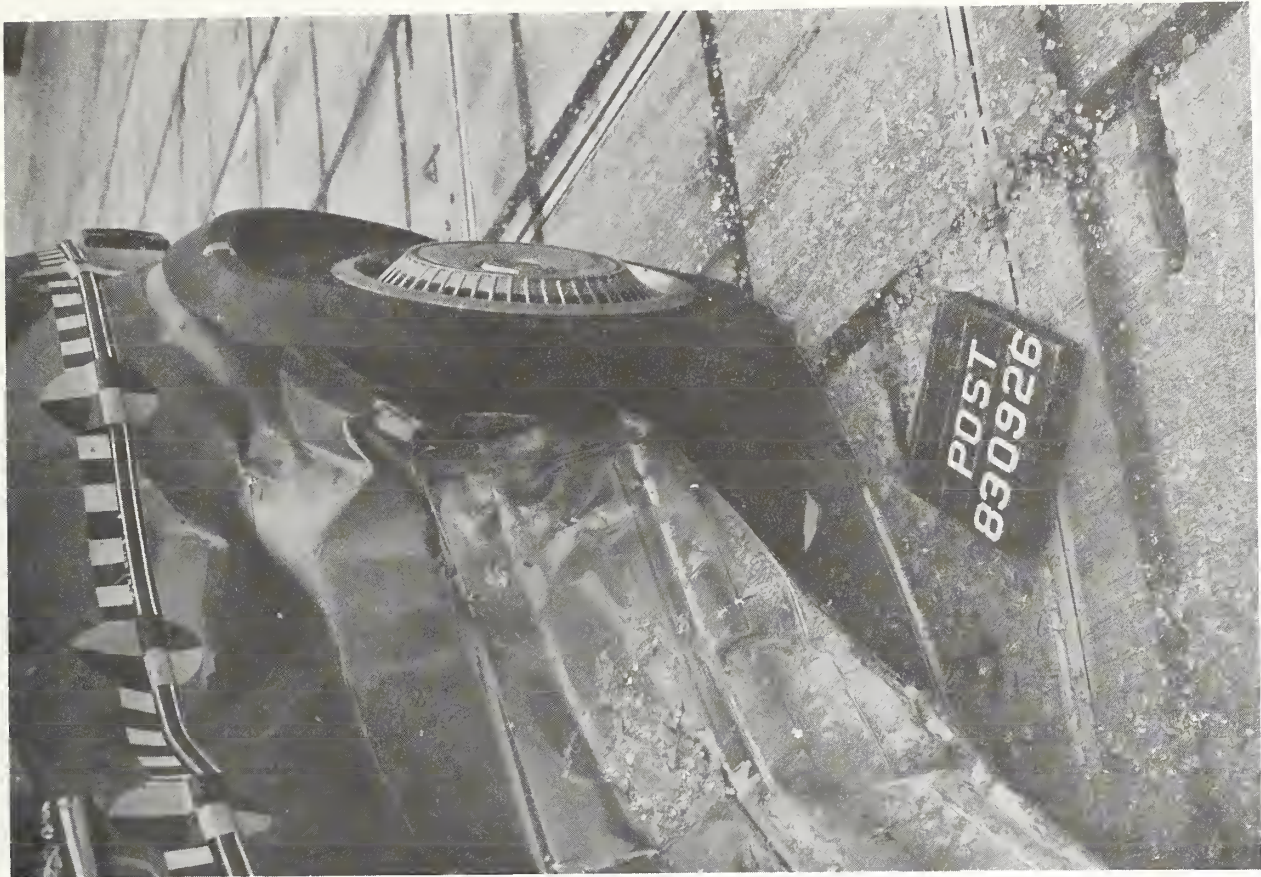


Figure A-27. POST-TEST VEHICLE DAMAGE - VIEW 2

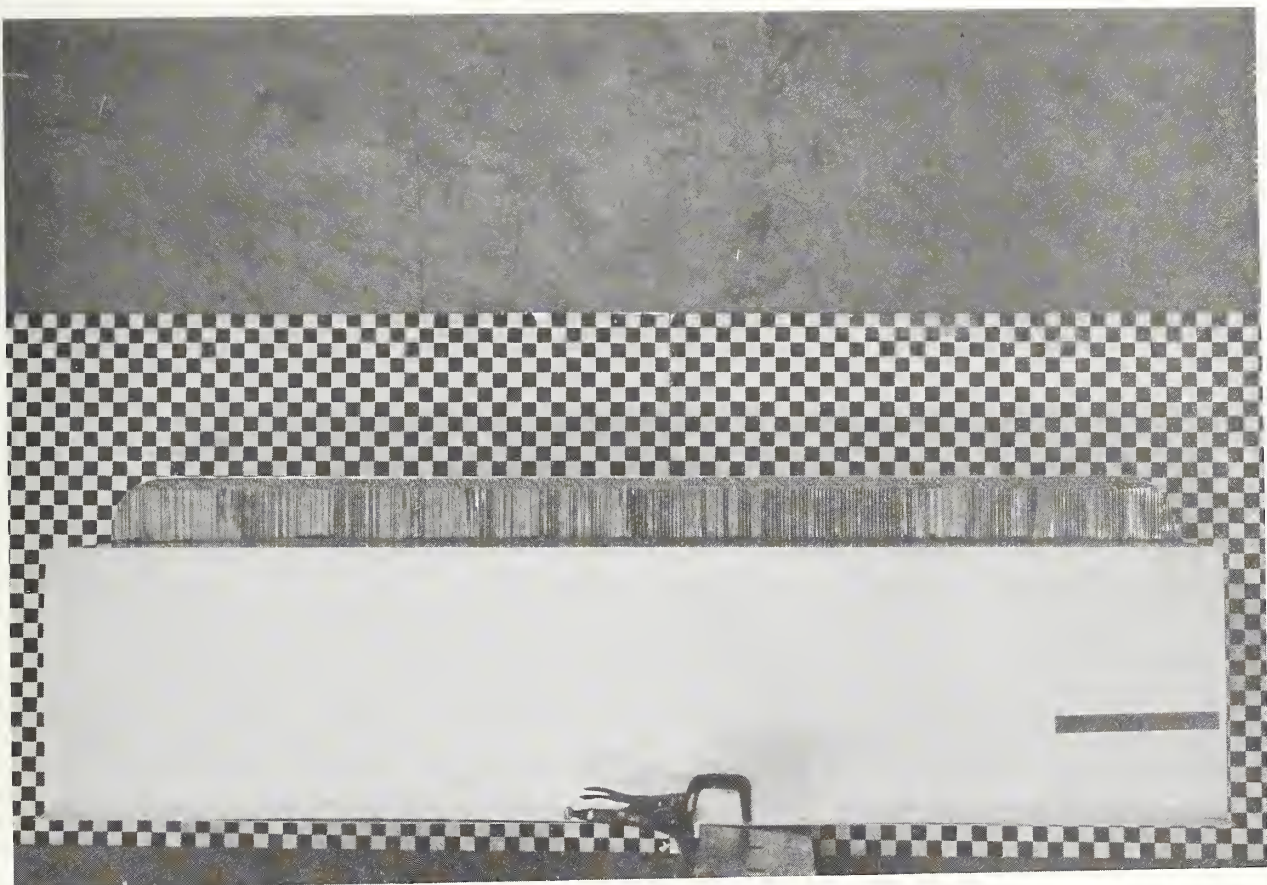


Figure A-28. PRE-TEST MDB FACE - VIEW 1

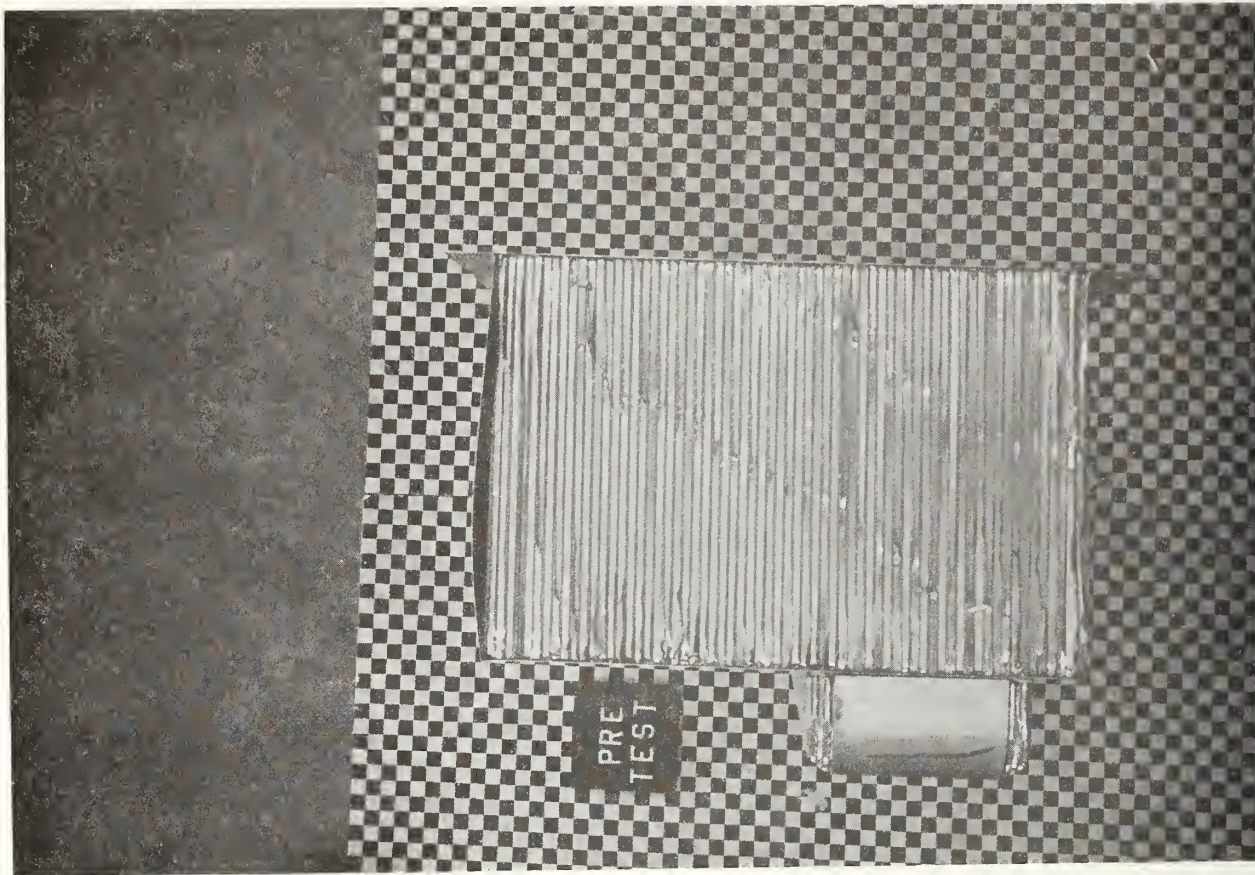


Figure A-29. PRE-TEST MDB FACE - VIEW 2



Figure A-30. POST-TEST MDB FACE - VIEW 1

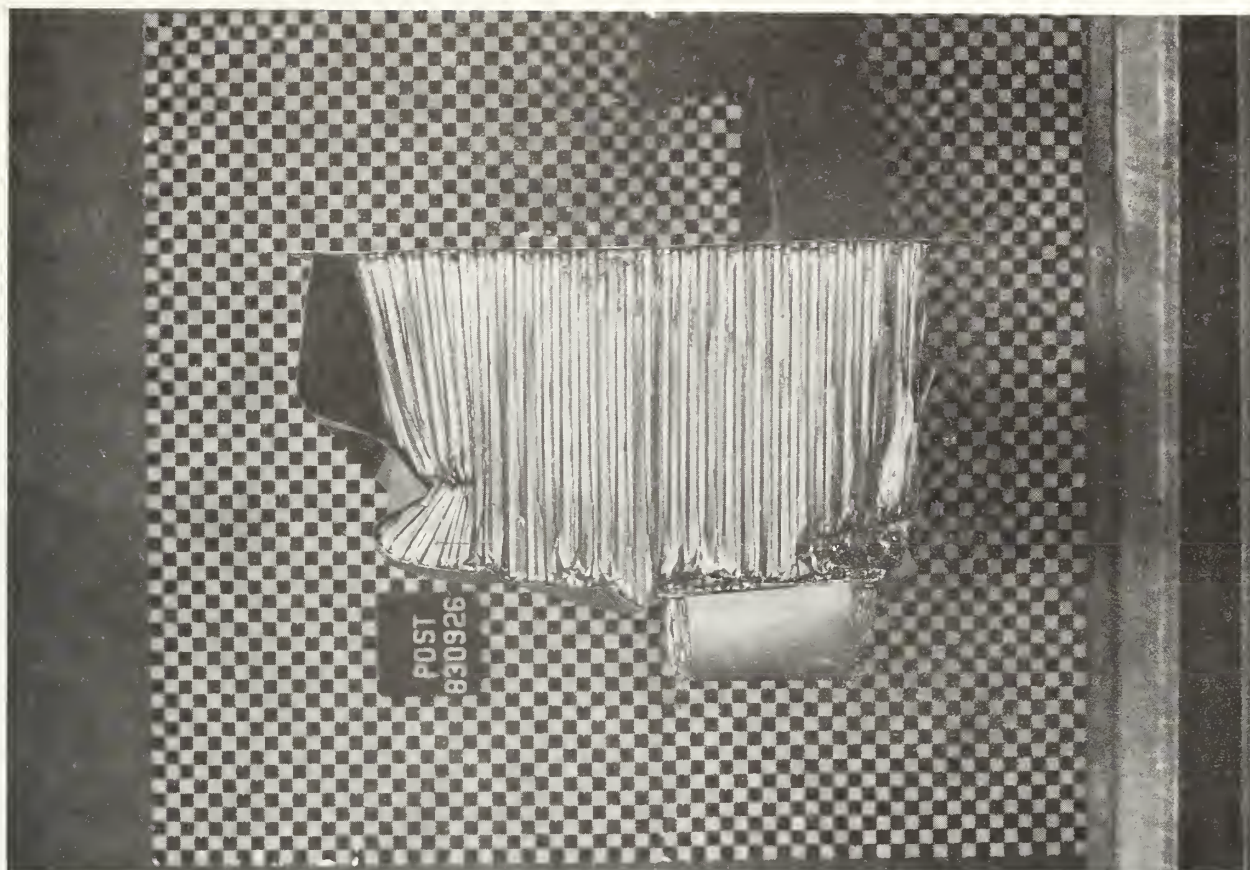


Figure A-31. POST-TEST MDB FACE - VIEW 2

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.

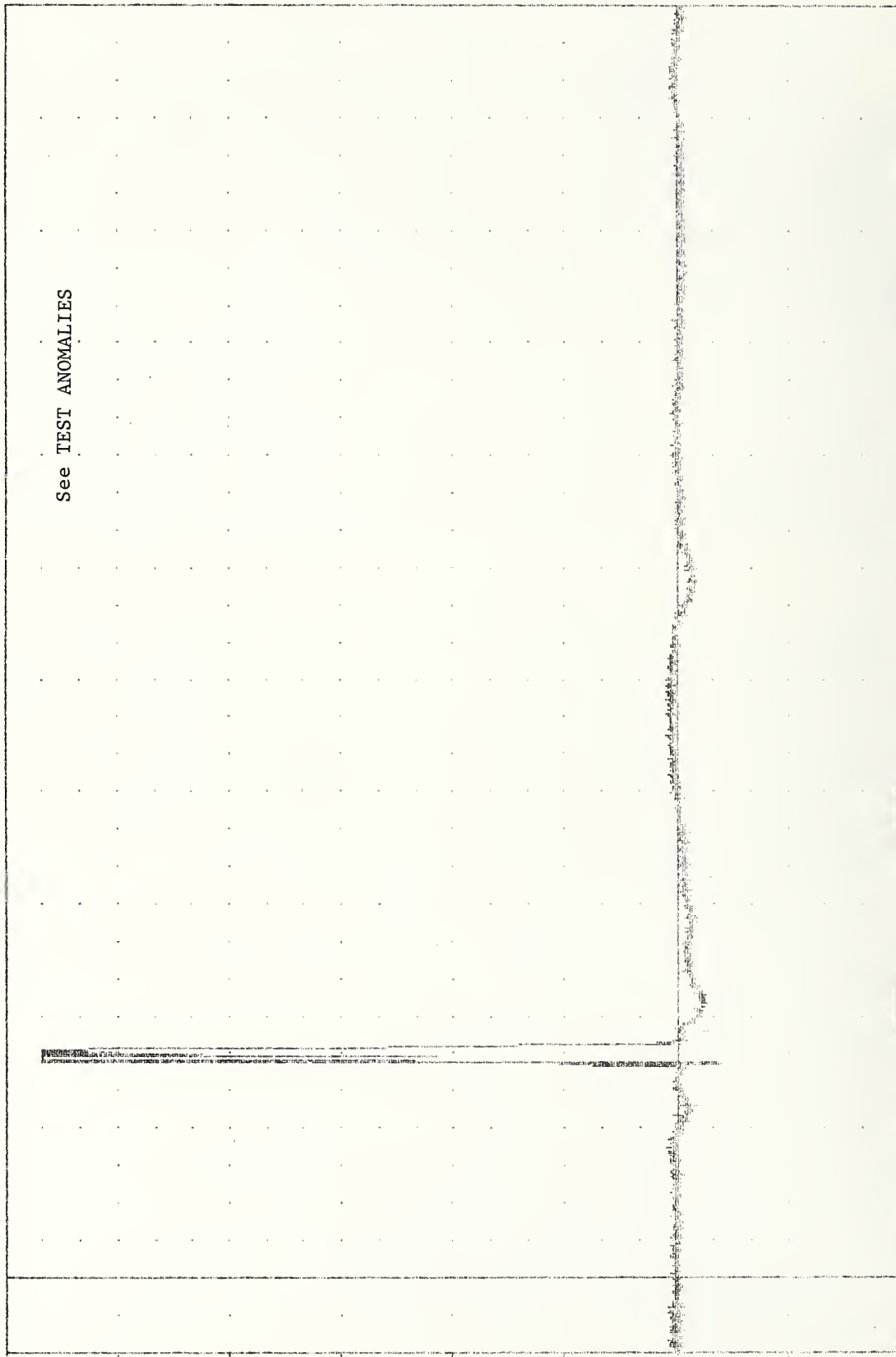
TRC
EVALUATION OF MOD VW FLEET
83269000000
HEDXG1

PLOT DATE 11-OCT-83 10:44:26

FILTER = ALPF 1650/ 5217/ -40

MIN. MAX VALUES = -19.20 57.13 283.78 57.63

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

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER HEAD ACCELERATION X AXIS

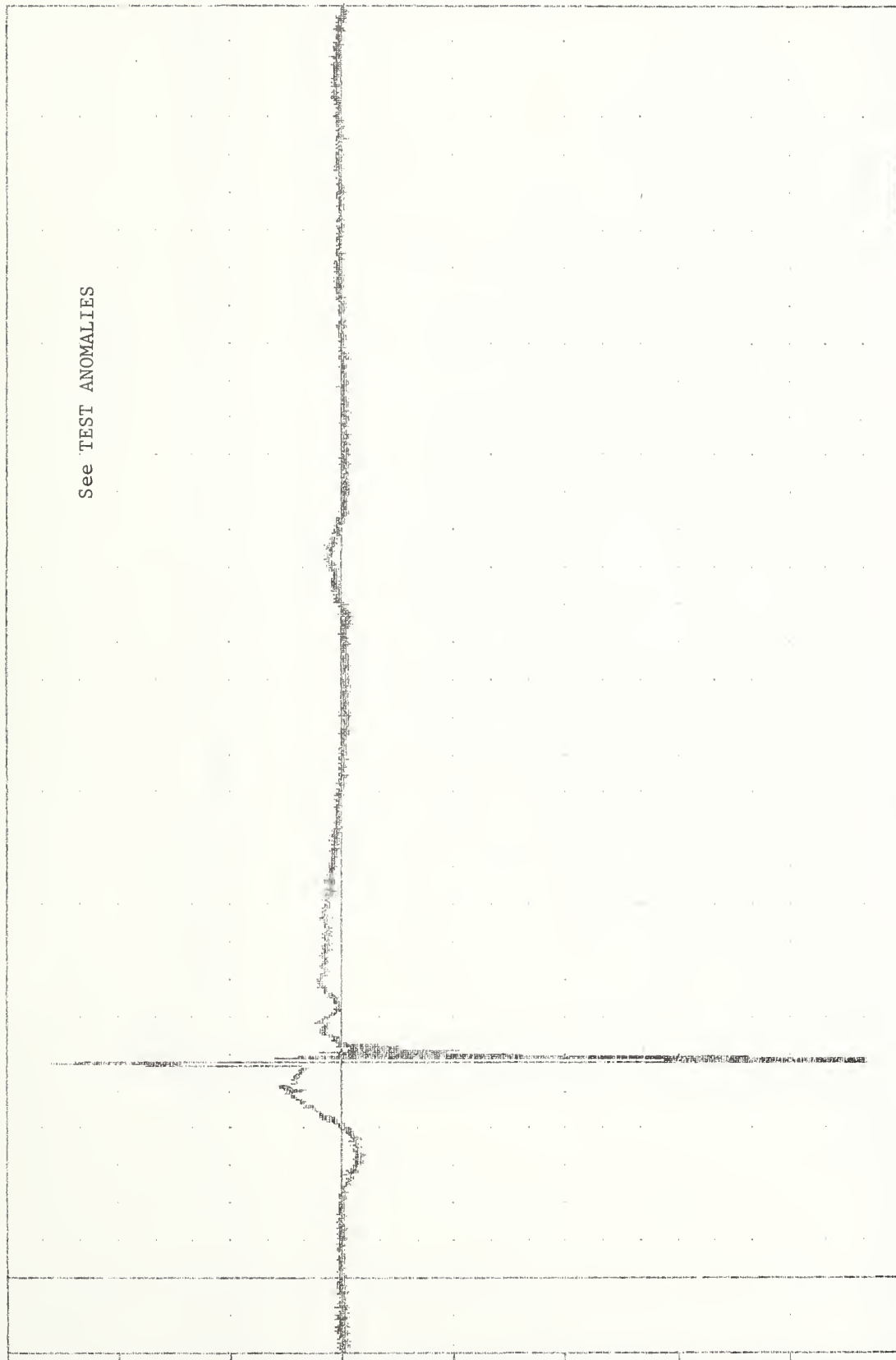
TBC
EVALUATION OF HED VW FLEET
83269000000
HEDY61

PLOT DATE 11-OCT-83 10:44:26

FILTER = ALPF 1650/ 5217/ -10

MIN. MAX VALUES = -281.702 57.63 156.44 57.25

ACCELERATION (G)



-300.00 -240.00 -180.00 -120.00 -60.00 0.00 60.00 120.00 180.00
-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)

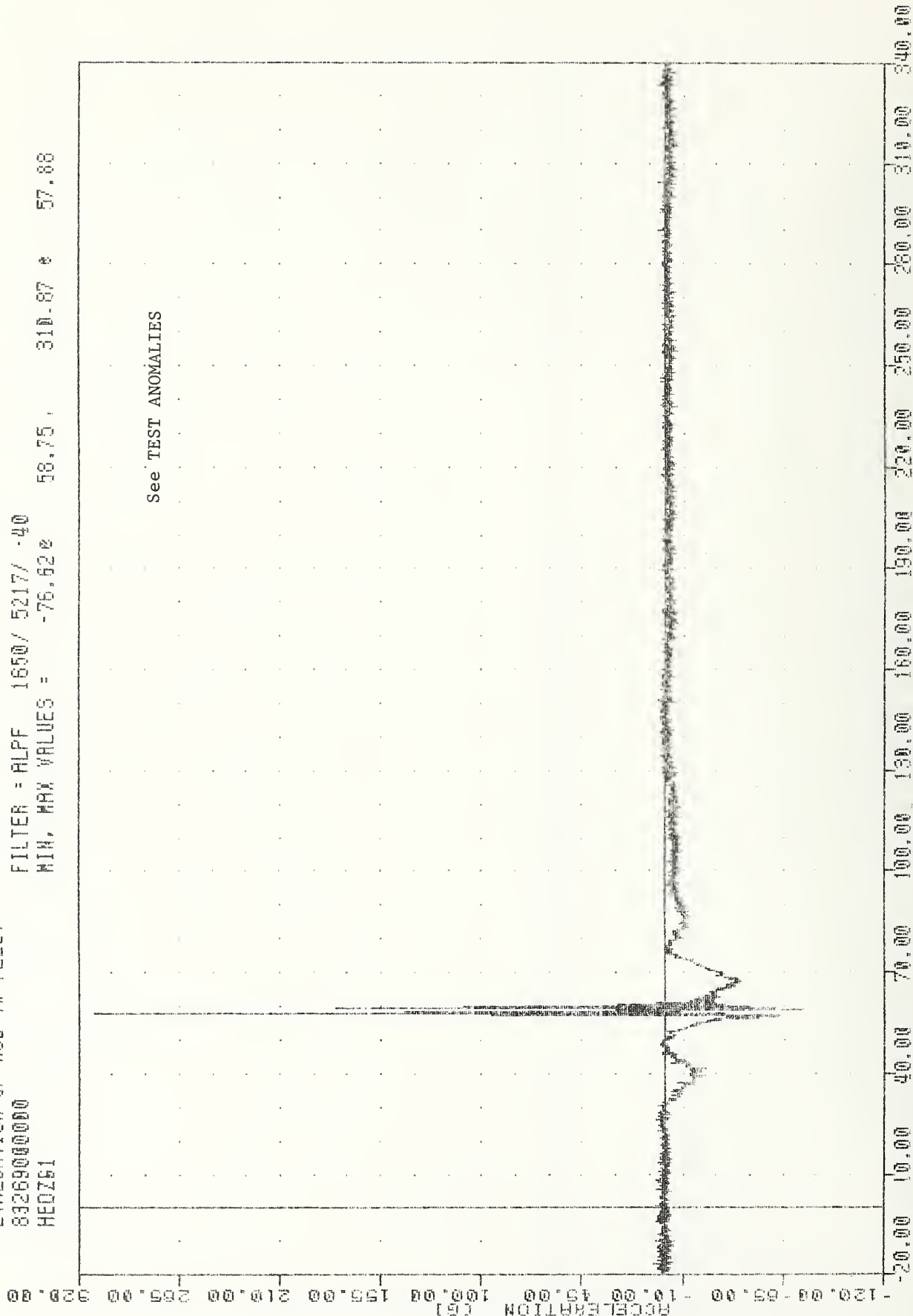
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER HEAD ACCELERATION Y AXIS

TRC
EVALUATION OF MOD VN FLEET
83269000000
HEDZ61

PLOT DATE 11-OCT-88 10:44:26

FILTER = ALPF 1650/ 5217/ -40

MIN, MAX VALUES = -76.62% 58.75, 310.87 * 57.88



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER HEAD ACCELERATION Z AXIS

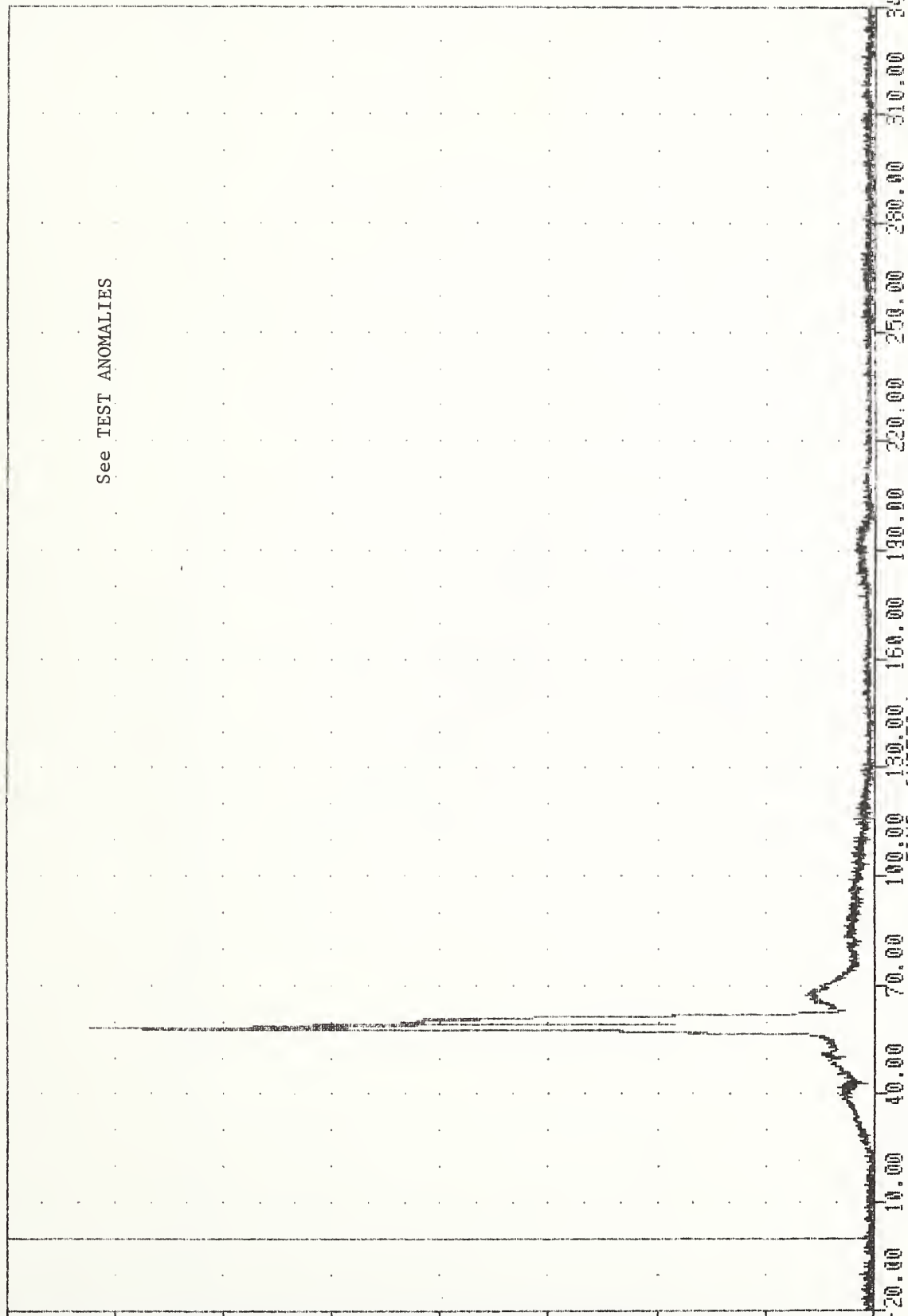
TRC , 830926
 EVALUATION OF MDD VW FLEET
 83259000000
 HEADRG1

PLOT DATE 11-OCT-83 10:44:26

FILTER = ALFF 165N/ 5217/ -40

MIN. MAX VALUES = 0.150 3.13, 506.48 0 57.80

ACCELERATION (G)

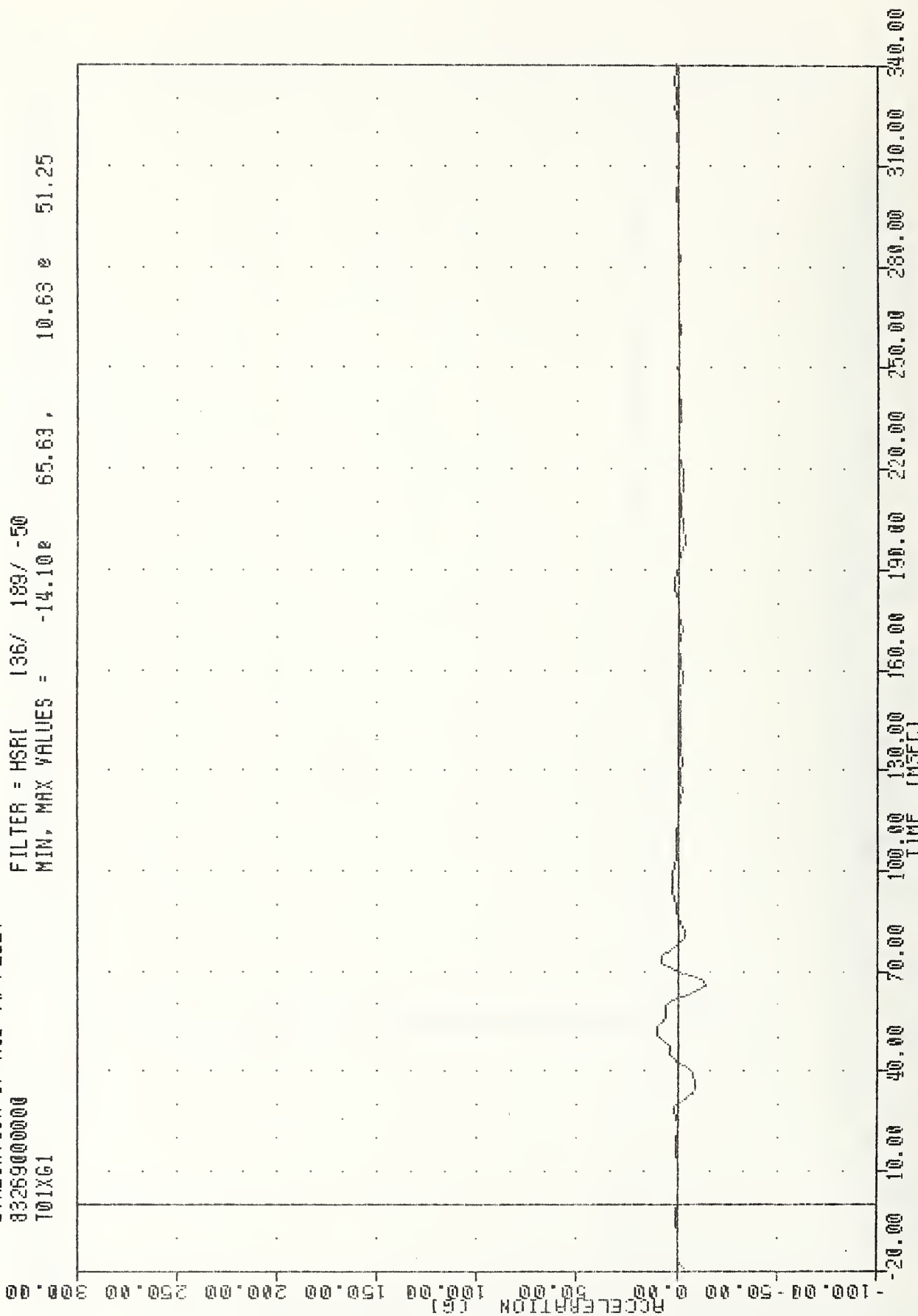


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DRIVER HEAD RESULTANT

TRC , 830926
 EVALUATION OF MOD YW FLEET
 83269000000
 T01XG1

PLOT DATE 29-SEP-83 12:05:23

FILTER = HSR1 136/ 189/ -50
 MIN, MAX VALUES = -14.10e 65.63, 10.63 e 51.25

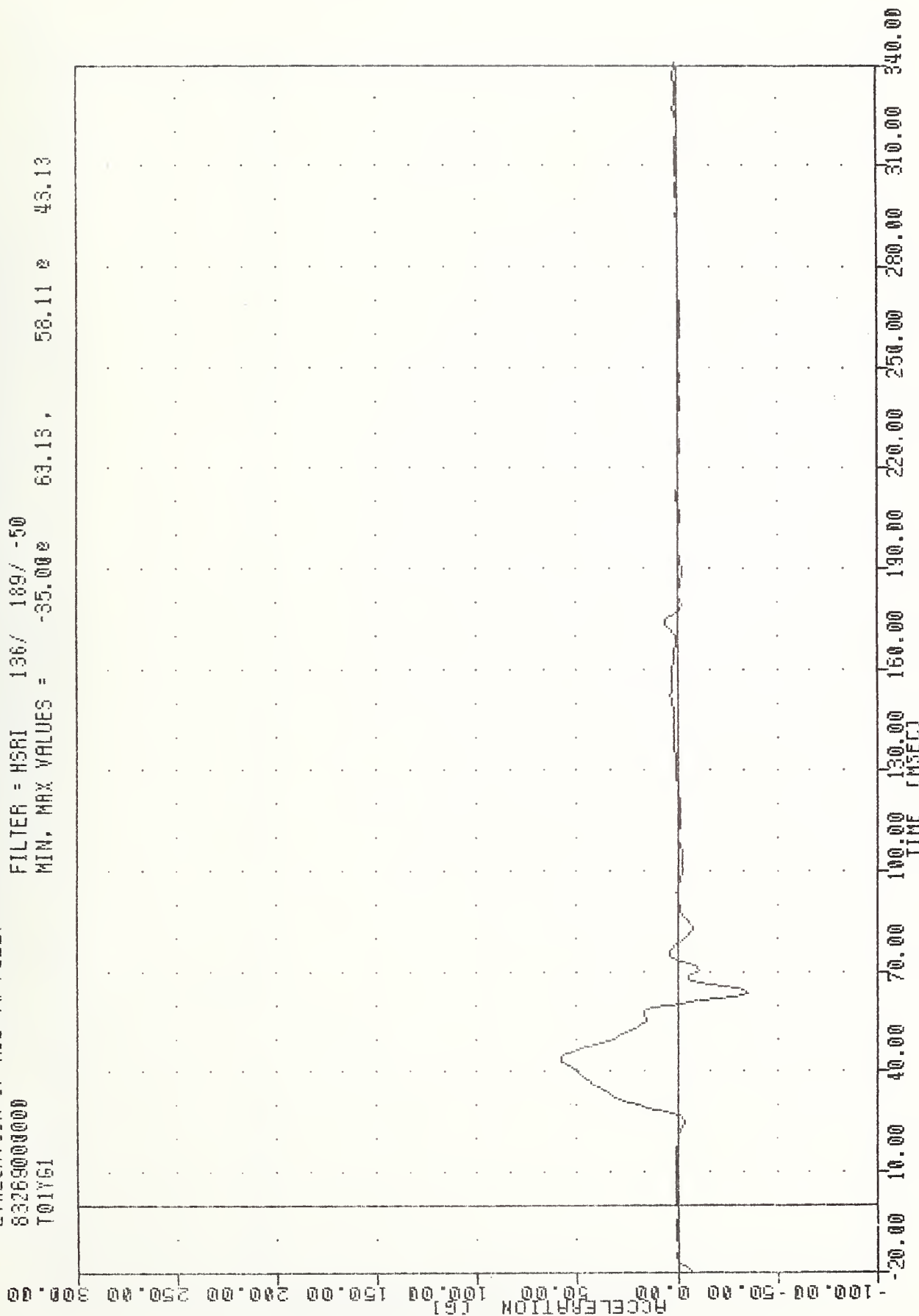


TRC , 830926
 EVALUATION OF MOD VW FLEET
 83269000000
 T01Y61

PLOT DATE 29-SEP-83 12:05:23

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -35.00e 63.13, 58.11 e 43.13



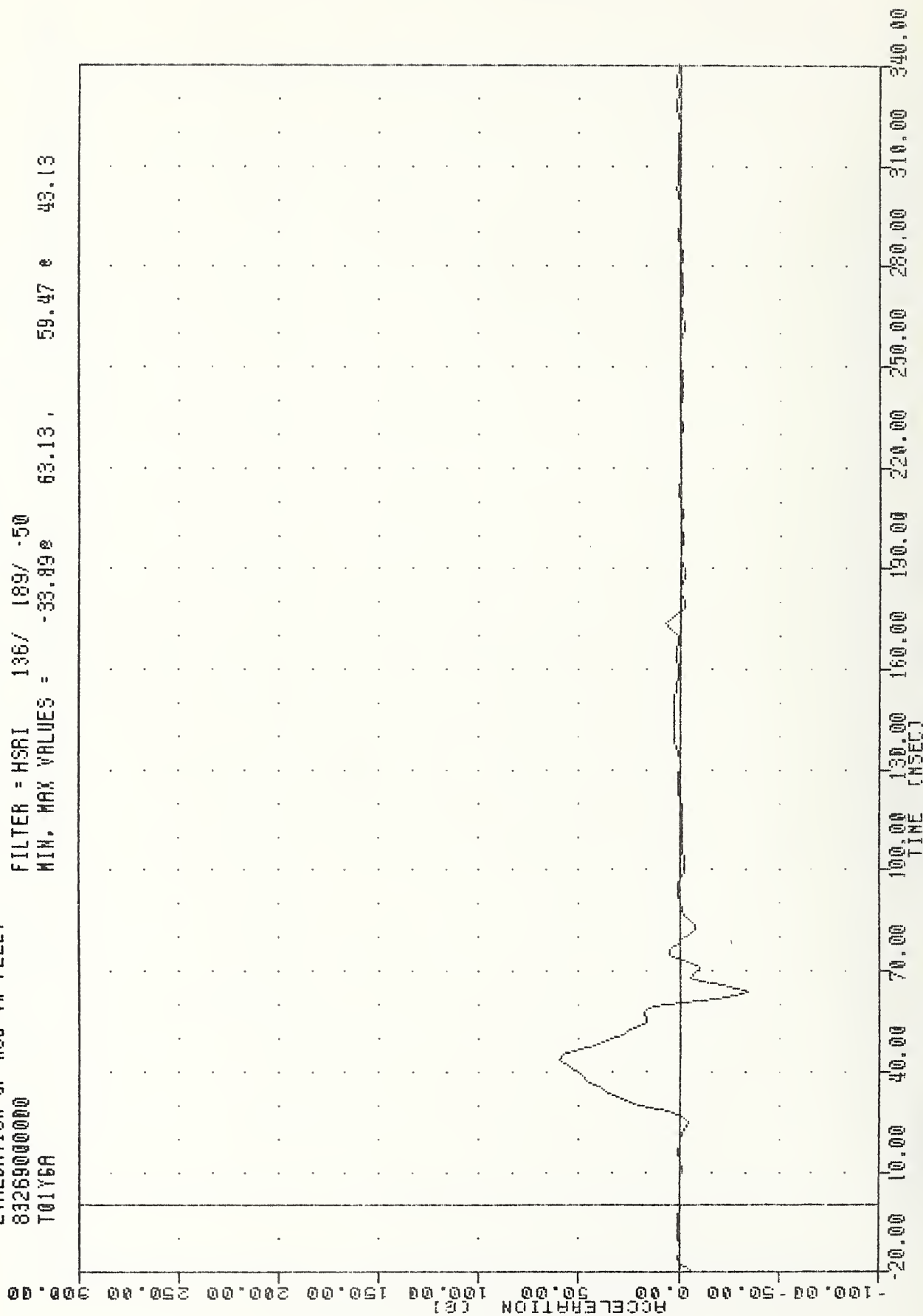
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DRIVER UPPER SPINE ACCELERATION Y AXIS

TAC
EVALUATION OF MOD VN FLEET
83269000000
T01Y6A

PLOT DATE 29-SEP-83 12:05:23

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -33.89 63.13, 59.47 43.13

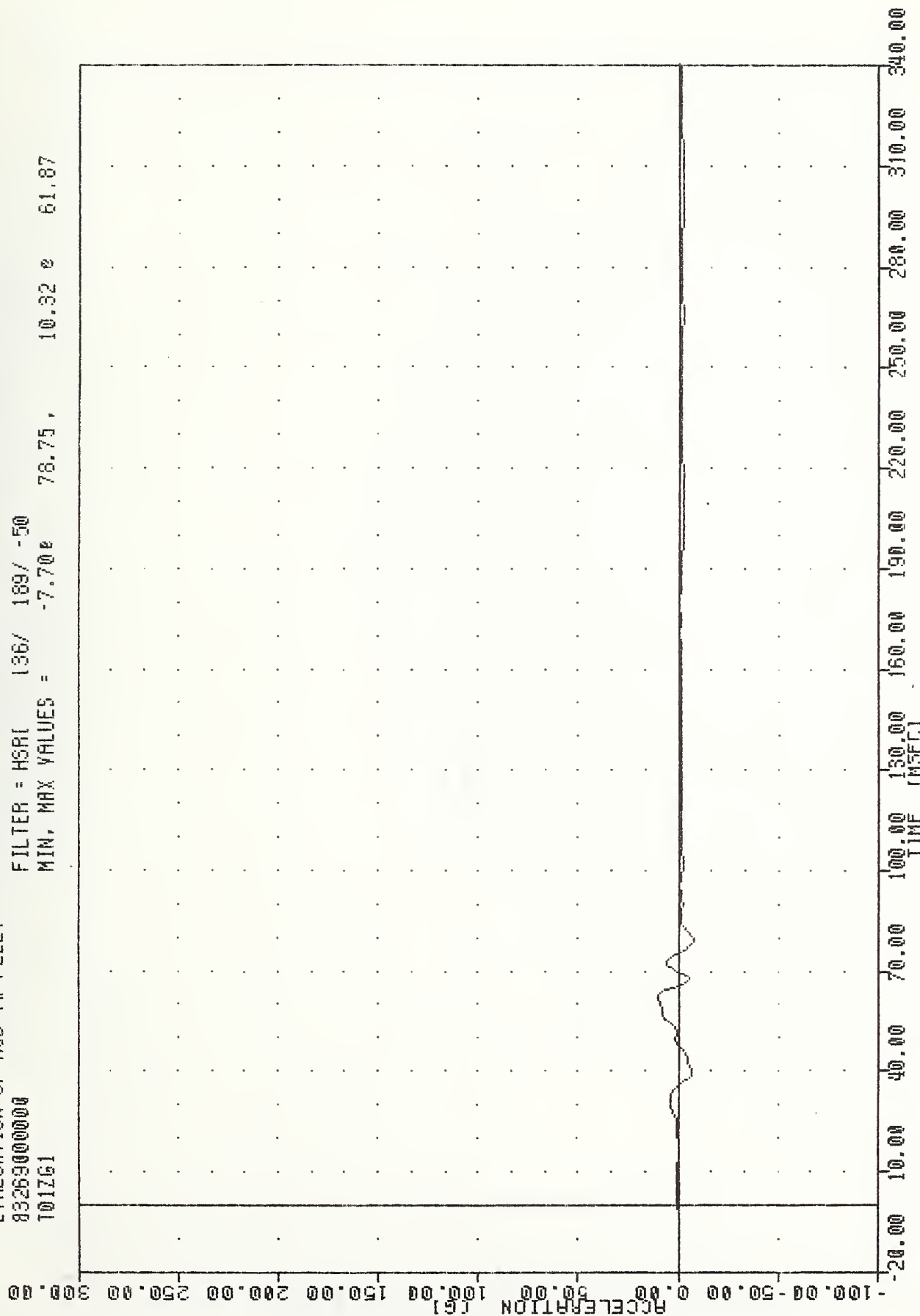


TRC , 830926
 EVALUATION OF MOD VW FLEET
 832690000000
 T01Z61

PLOT DATE 29-SEP-83 12:05:23

FILTER = HSRL 136/ 189/ -50

MIN, MAX VALUES = -7.70e 78.75, 10.32 e 61.87

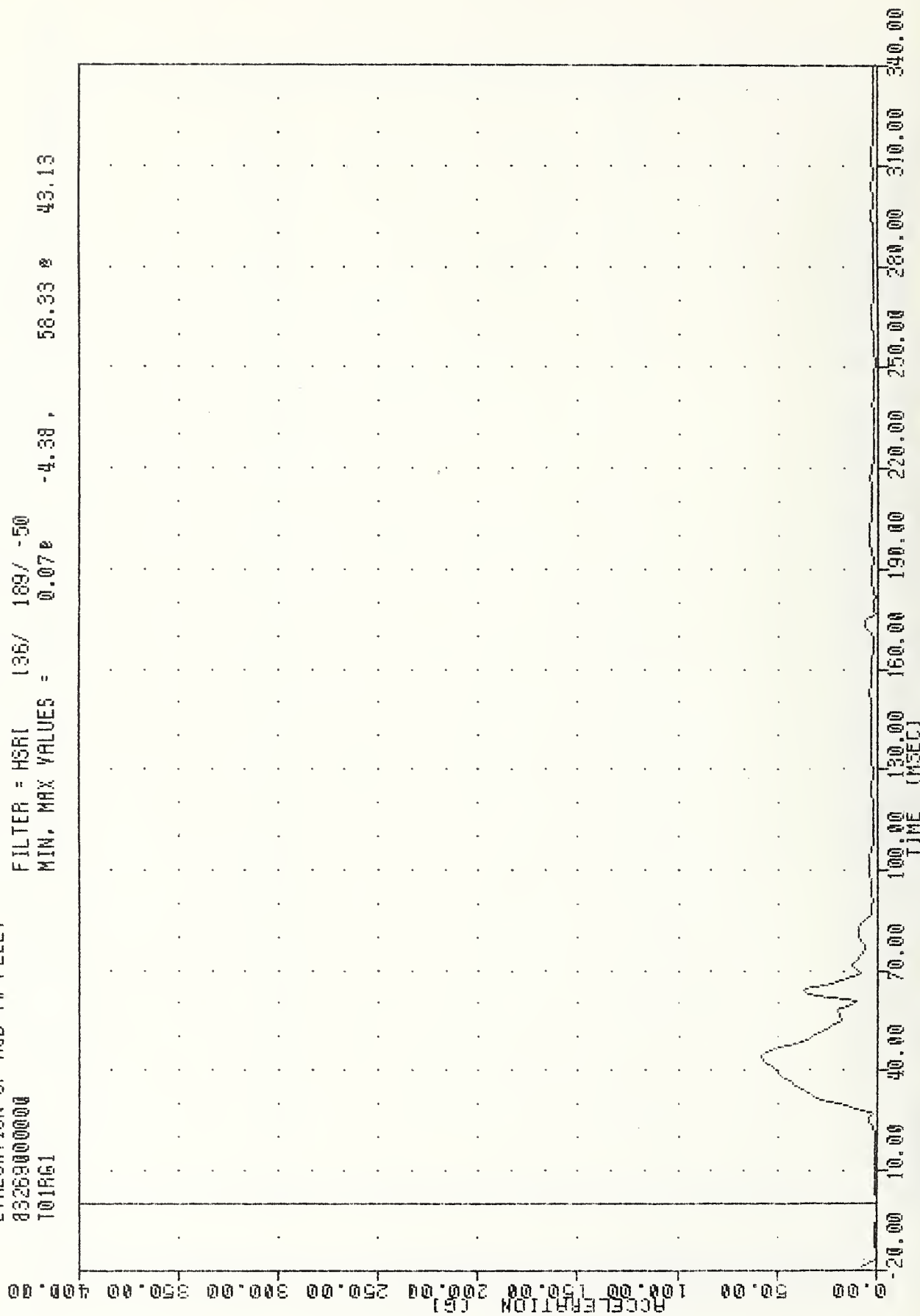


TRC , 630926
 EVALUATION OF MOD VV FLEET
 832690000000
 101R61

PLOT DATE 29-SEP-83 12:05:23

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = 0.070 -4.38 , 58.33 0 43.13



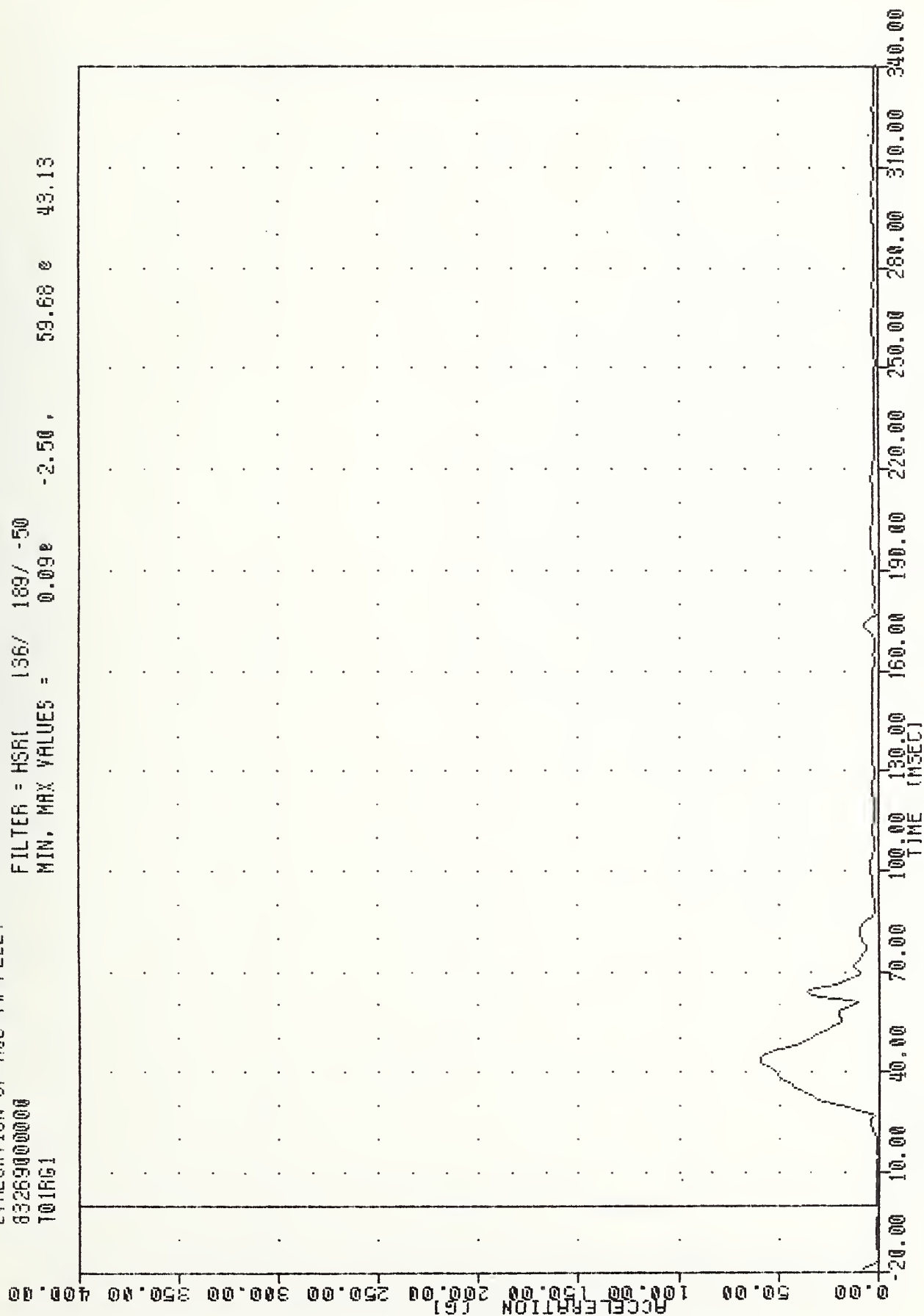
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DRIVER UPPER SPINE RESULTANT

IRC , 830926
 EVALUATION OF MGD YW FLEET
 832690000000
 T01RG1

PLOT DATE 29-SEP-83 12:06:28

FILTER = HSRL 136/ 189/ -50

MIN. MAX VALUES = 0.09e -2.50 , 59.68 e 43.13



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

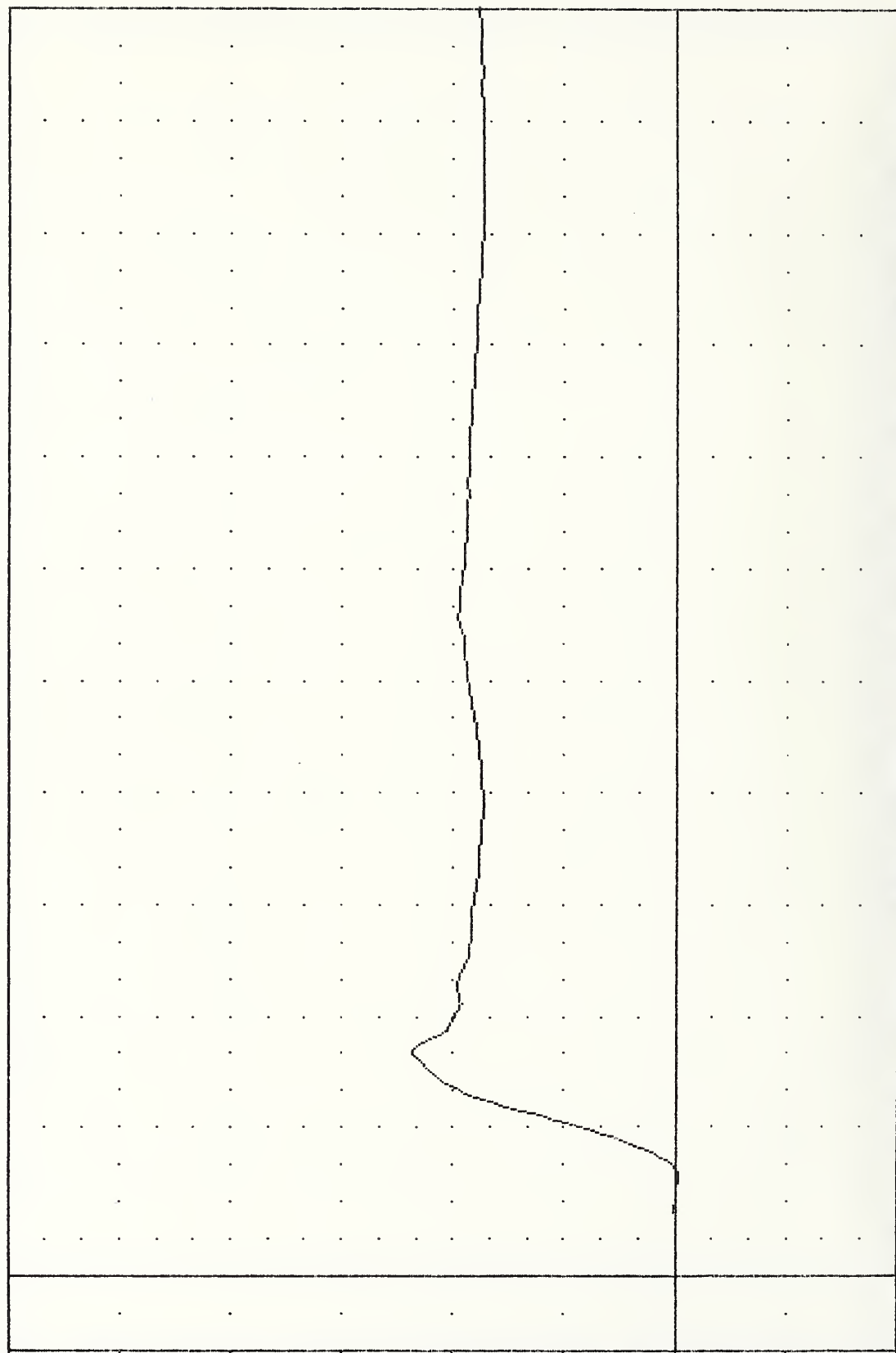
TRC , 830926
 EVALUATION OF MOD YW FLEET
 83289000000
 T01YV1

PLOT DATE 30-SEP-83 06:40:32

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -0.328 26.25 23.62 60.00

VELOCITY (MPH)



-20.00 10.00 20.00 30.00 40.00 50.00 60.00

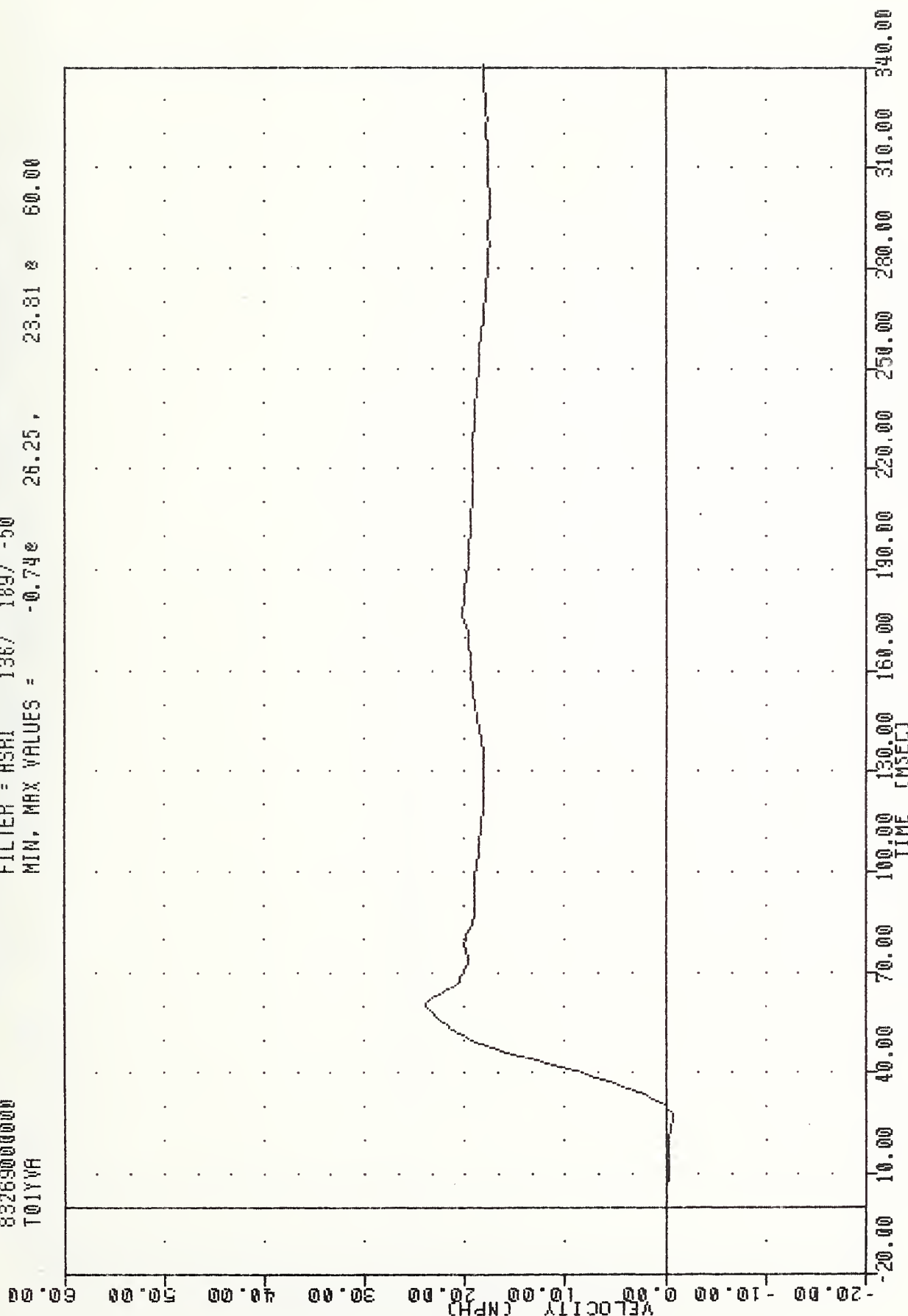
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING T01YGI

TRC , 830926
 EVALUATION OF MDD VW FLEET
 83269000000
 T01YVA

PLOT DATE 30-SEP-83 08:40:32

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -0.74e 26.25, 23.81 e 60.00



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING T01YGA

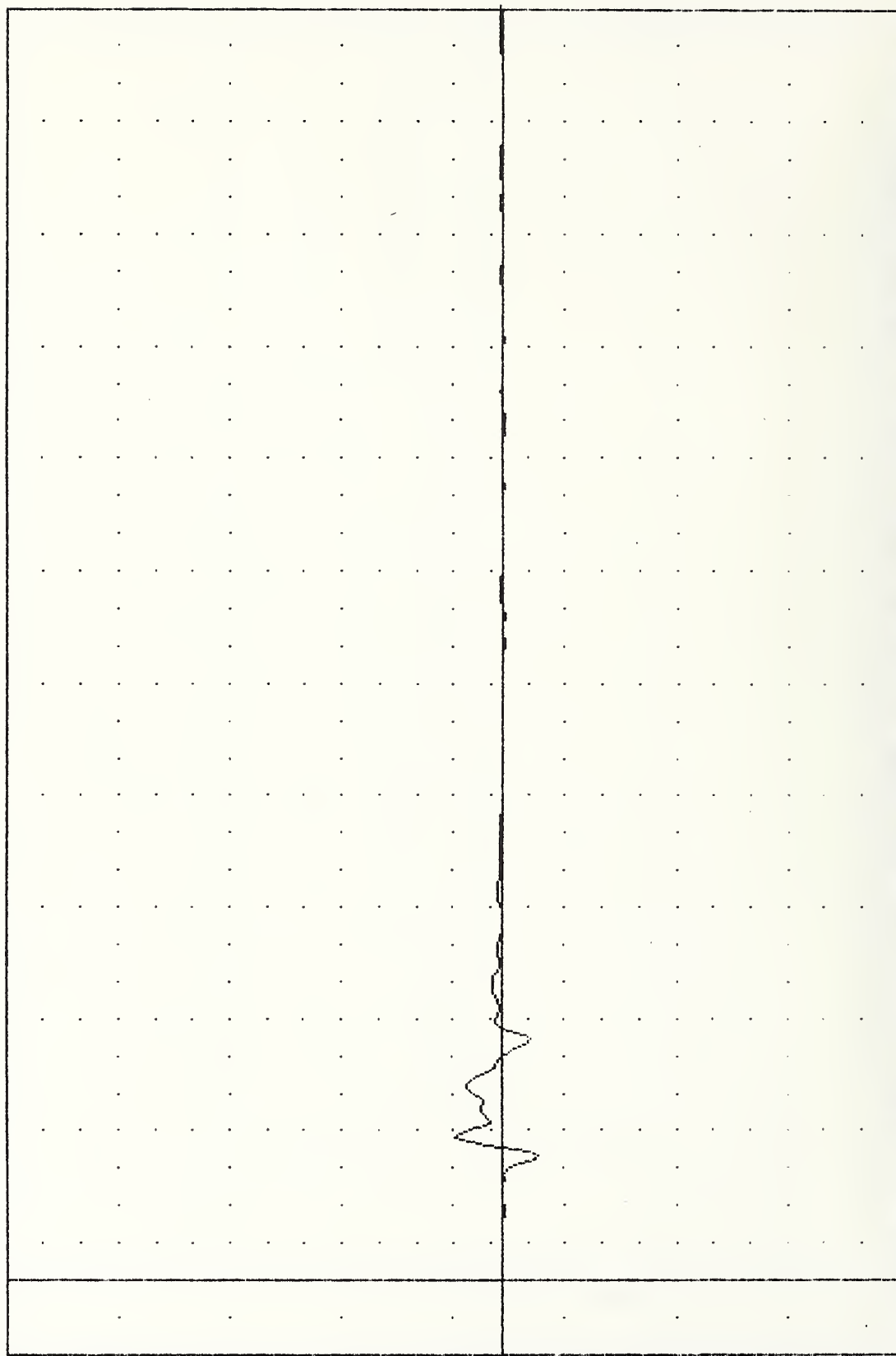
TRC , 830926
 EVALUATION OF MOD VW FLEET
 83269000000
 T12X61

PLOT DATE 29-SEP-83 12:05:23

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -27.51g 32.50g 37.89g 37.50

ACCELERATION (g)



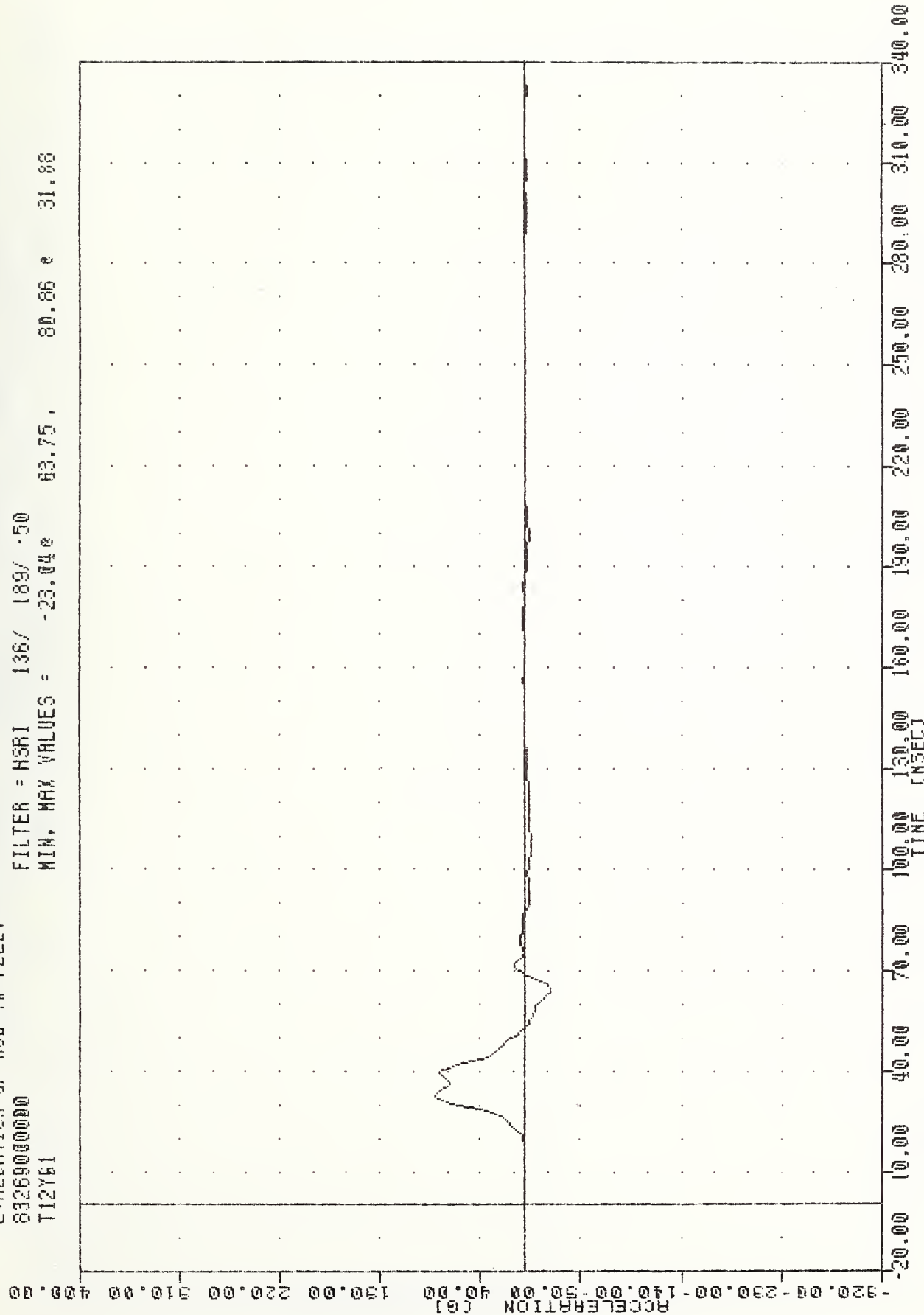
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DRIVER LOWER SPINE ACCELERATION X AXIS

TAC 830926
 EVALUATION OF MOD VN FLEET
 83269000000
 T12Y61

PLOT DATE 29-SEP-83 12:05:23

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -23.04 83.75 , 80.86 31.88

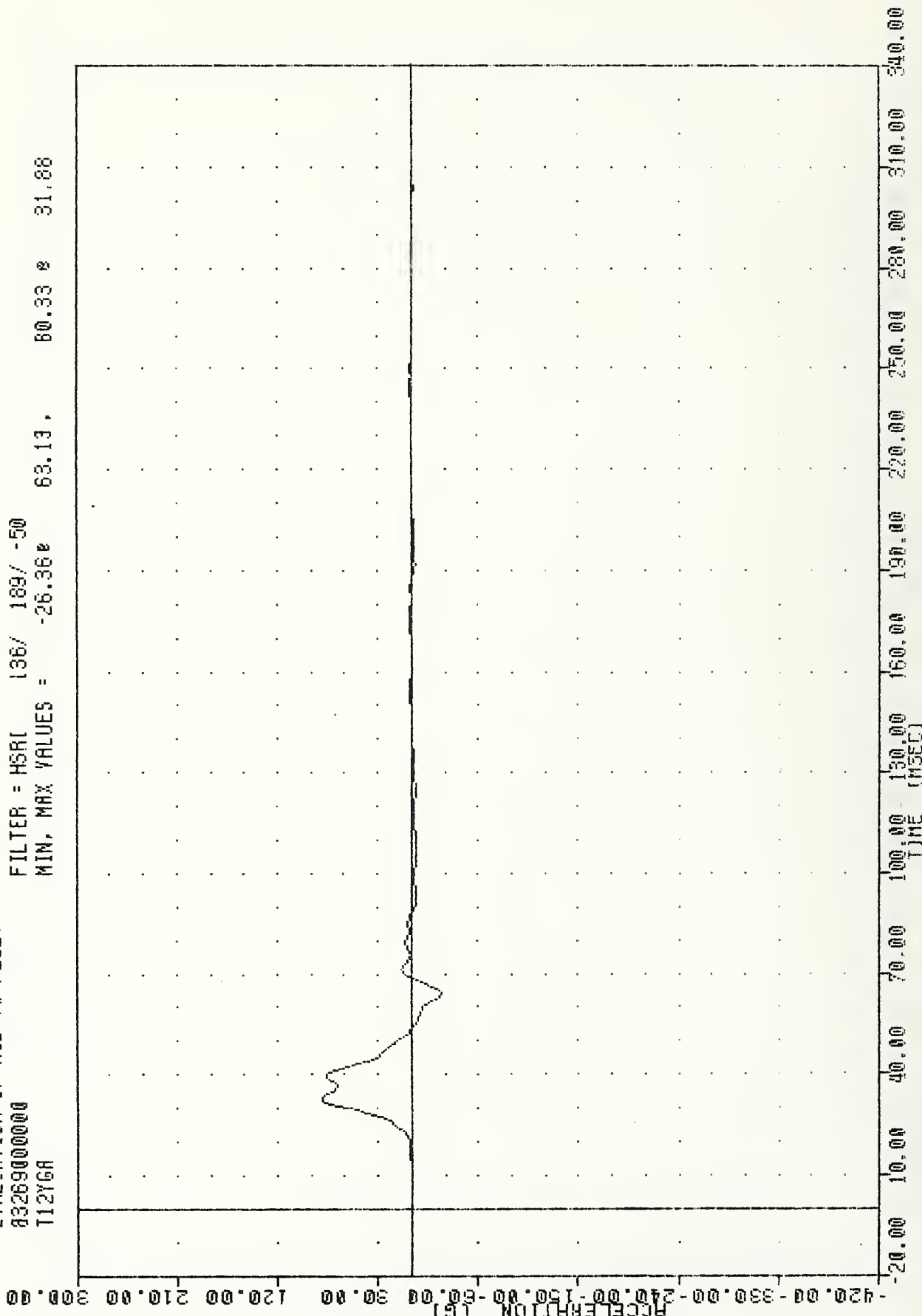


TRC
EVALUATION OF MOD YW FLEET
832690000000
T12YGR

PLOT DATE 29-SEP-83 12:05:23

FILTER = HSR1 136/ 189/ -50

MIN, MAX VALUES = -26.36v 63.13, 80.33 v 31.88



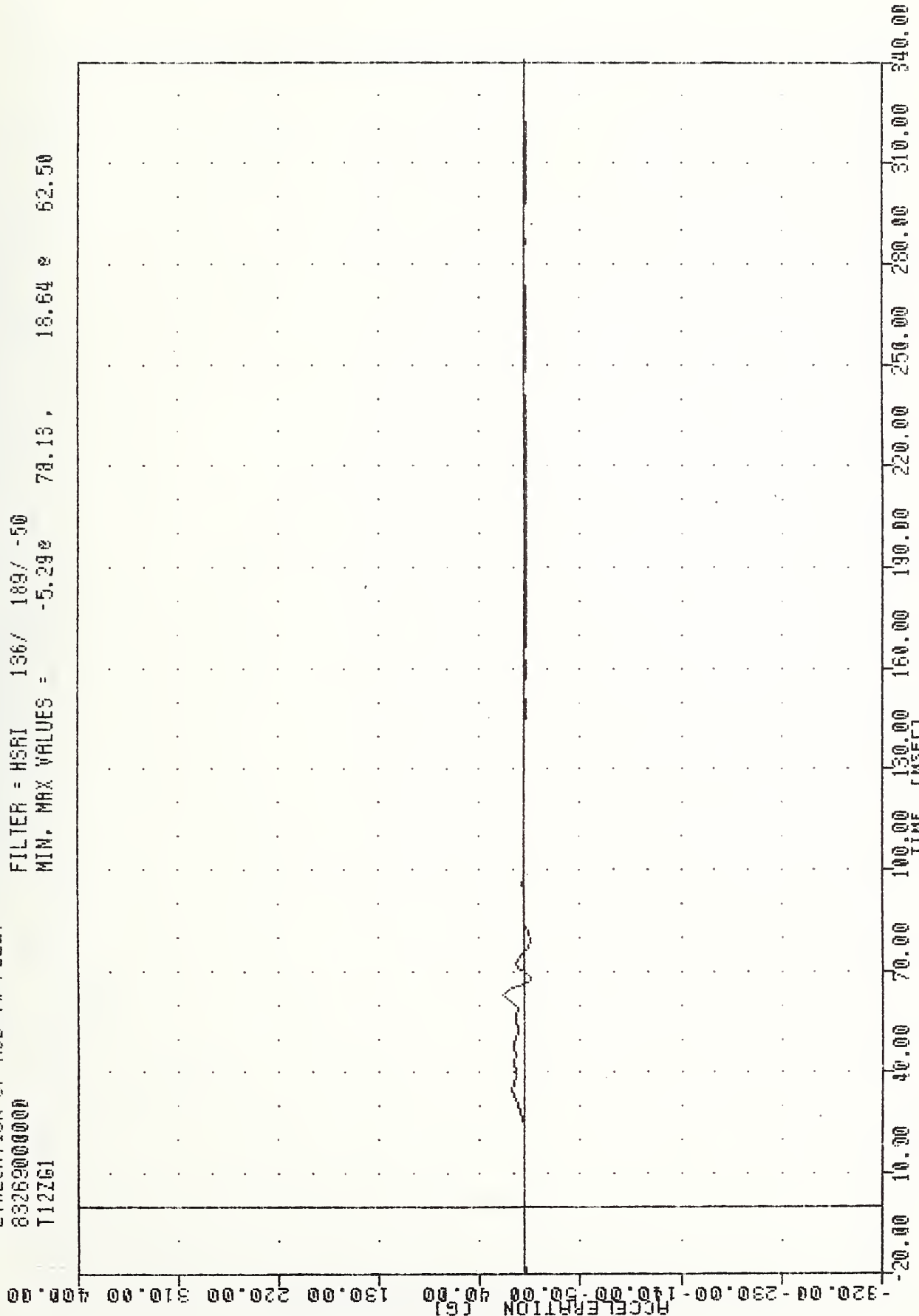
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER LOWER SPINE ACCELERATION -2 Y AXIS

TRC , 830926
 EVALUATION OF MOD VW FLEET
 83262000000
 T12ZG1

PLOT DATE 29-SEP-83 12:05:23

FILTER = HSRT 136/ 189/ -50

MIN. MAX VALUES = -5.29e 78.13 , 18.64 e 62.50



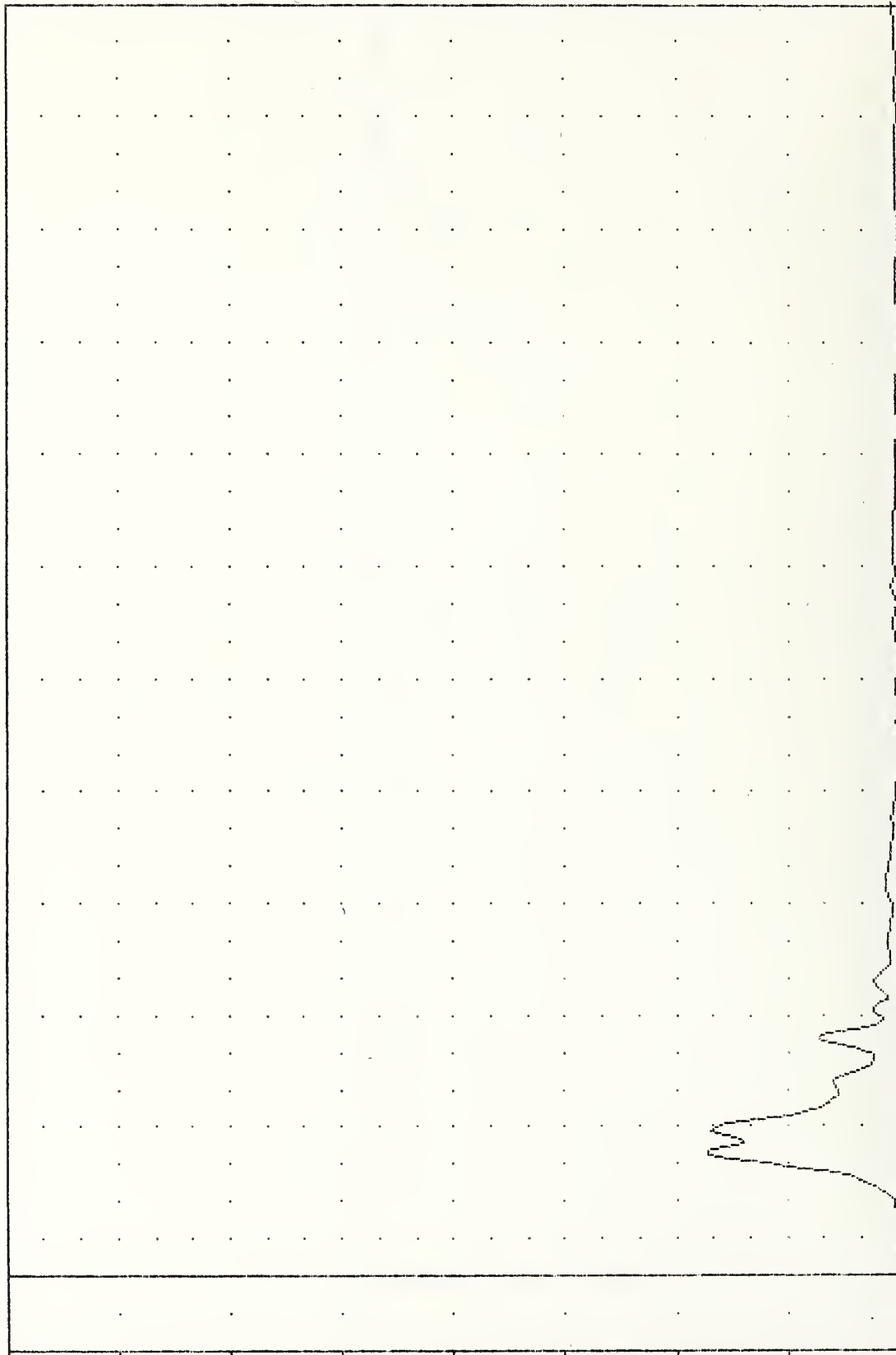
TRC
EVALUATION OF MDD VW FLEET
83269000000
T12R61

PLOT DATE 29-SEP-83 12:05:23

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = 0.12e -15.00, 85.75 e 32.50

ACCELERATION (G)



0.00
50.00
100.00
150.00
200.00
250.00
300.00
350.00
400.00
-20.00
0.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
80.00
90.00
100.00
110.00
120.00
130.00
140.00
150.00
160.00
170.00
180.00
190.00
200.00
210.00
220.00
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280.00
290.00
300.00
310.00
320.00
330.00
340.00

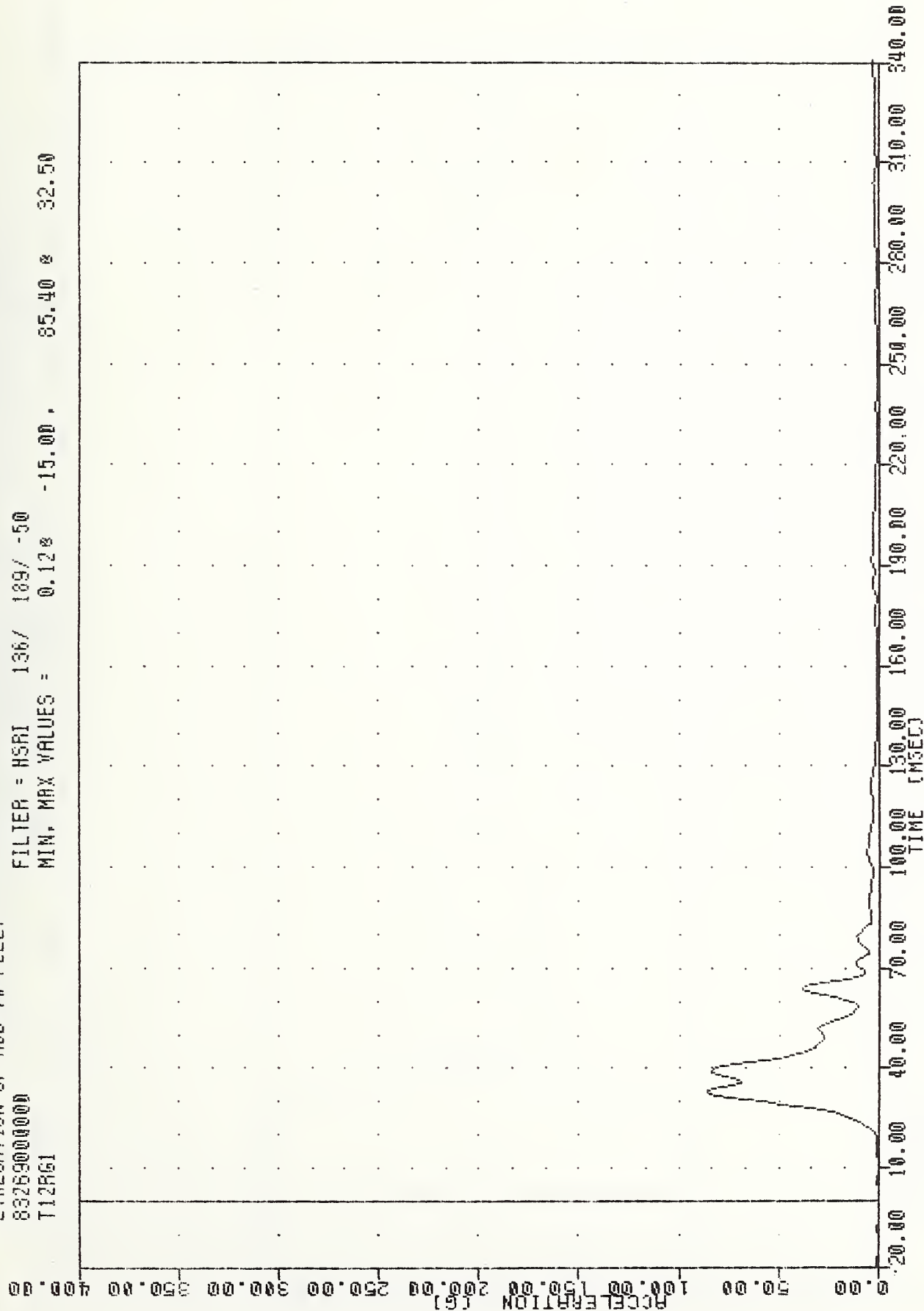
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER LOWER SPINE RESULTANT

TRC , 830926
 EVALUATION OF MDD VW FLEET
 83259000000
 T12R61

PLOT DATE 29-SEP-83 12:06:28

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = 0.12% -15.00% 85.40% 32.50

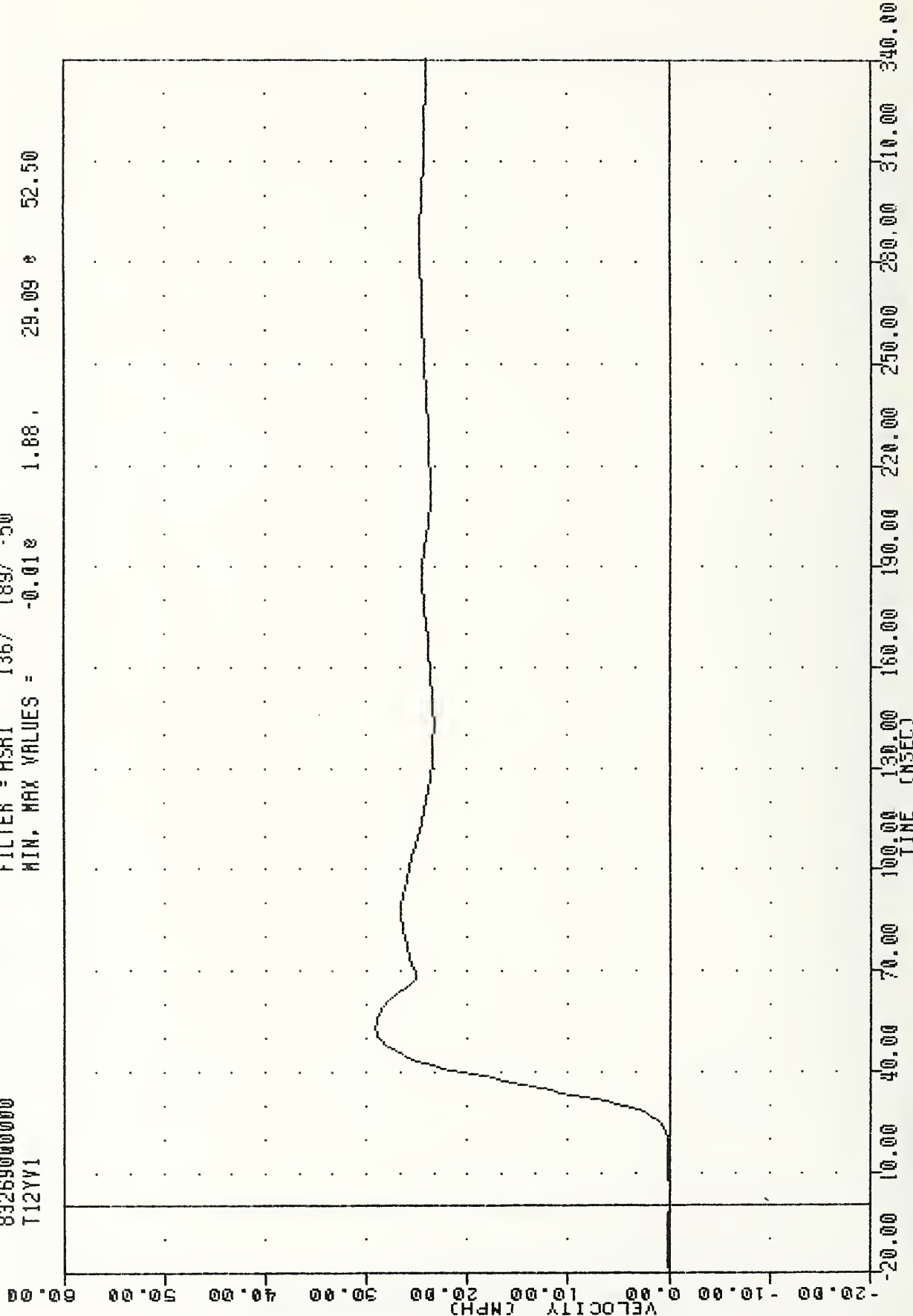


TAC , 830926
 EVALUATION OF MOD VN FLEET
 83269000000
 T12YV1

PLOT DATE 30-SEP-83 08:40:32

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -0.01e 1.88 , 29.09 * 52.50



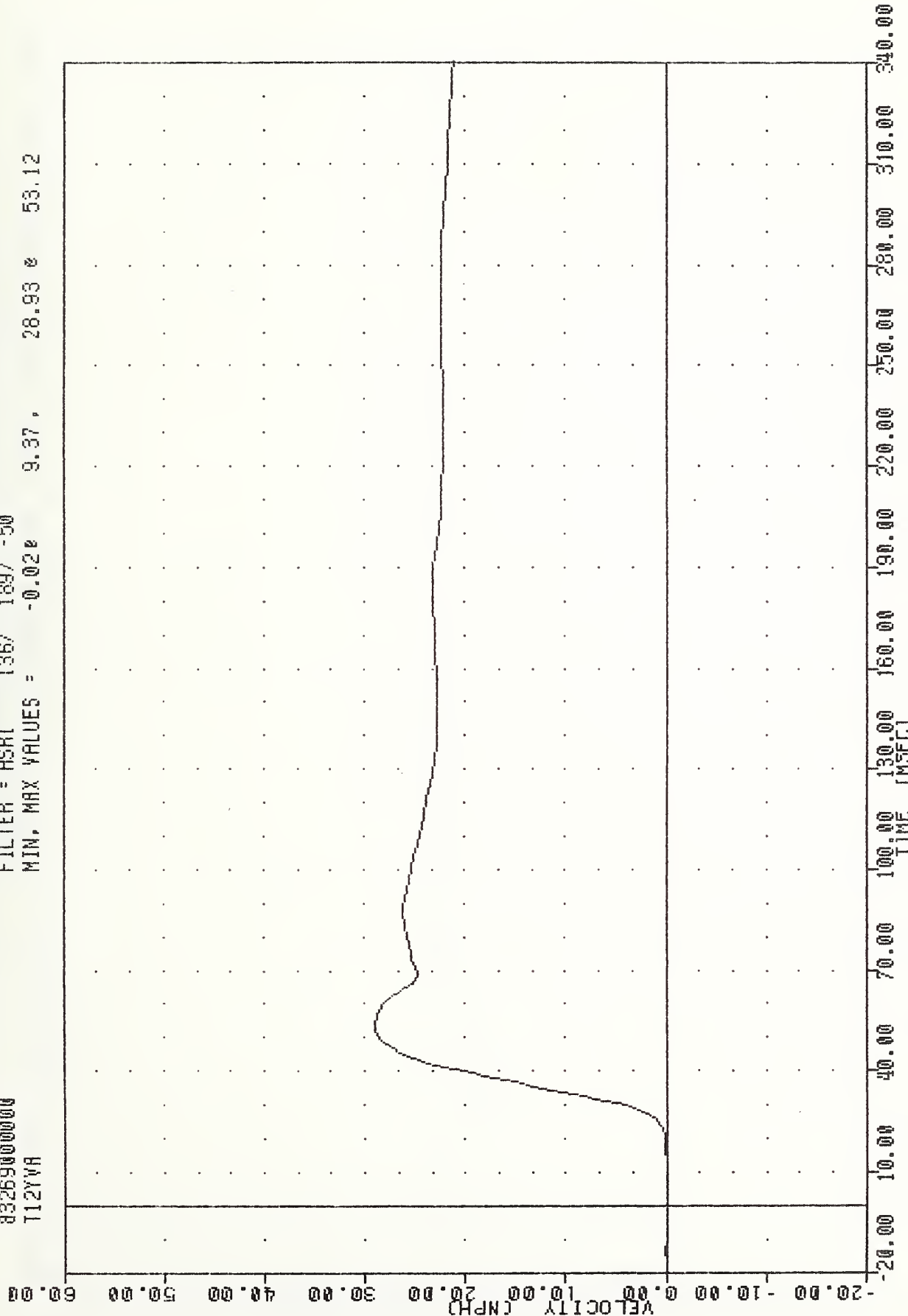
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING T12YV1

TRC , 830926
 EVALUATION OF MOD YW FLEET
 8326900000
 T12YGA

PLOT DATE 30-SEP-83 08:40:32

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -0.02% 9.37, 28.93 % 53.12



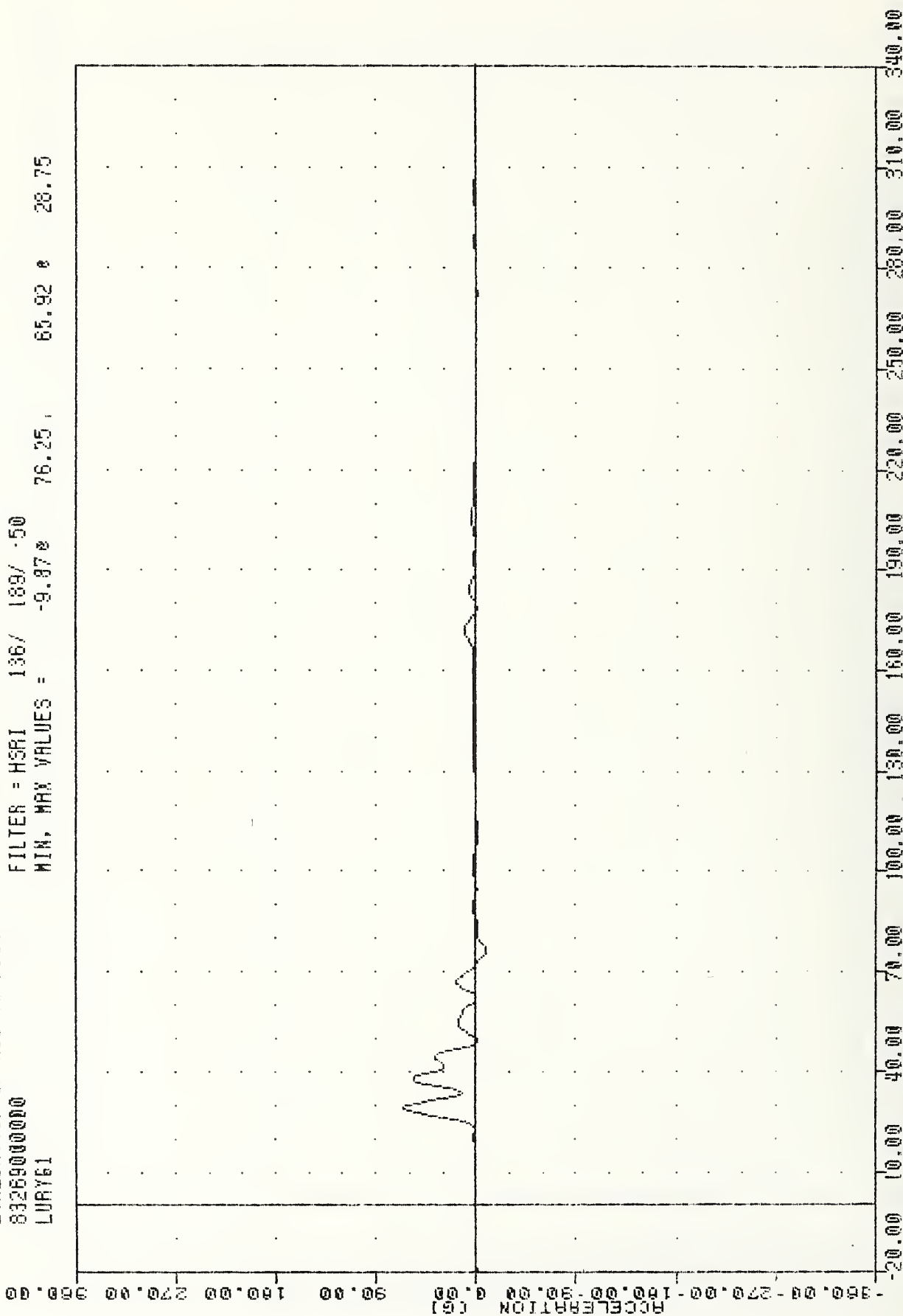
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING T12YGA

TRC
EVALUATION OF M00 VW FLEET
83259000000
LURY61

PLOT DATE 29-SEP-83 12:05:23

FILTER = HSRI 136/ 189/ .50

MIN, MAX VALUES = -9.870 76.25 , 65.92 0 28.75

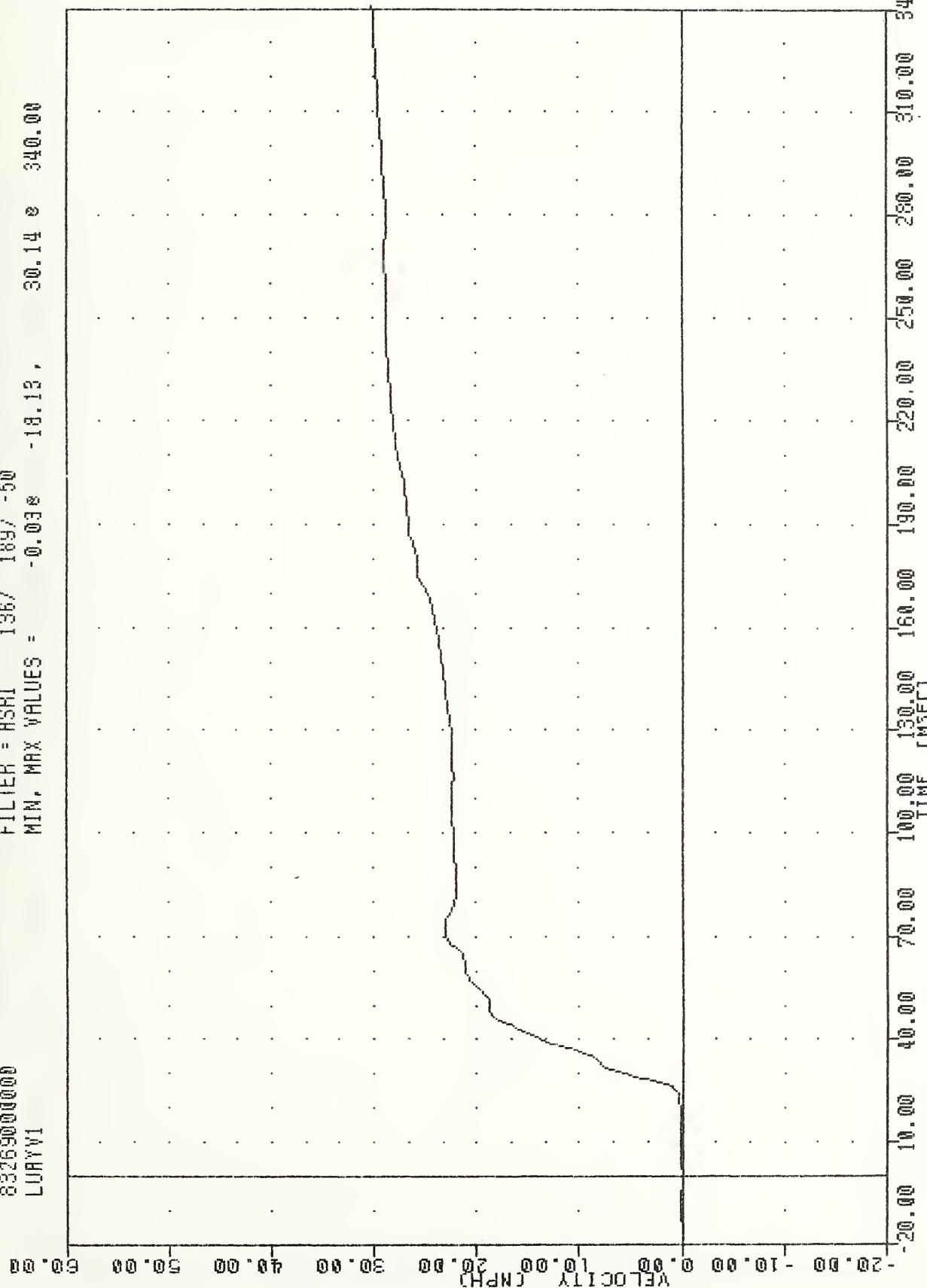


TRC , 830926
EVALUATION OF MDD VW FLEET
83269000000
LURYV1

PLOT DATE 30-SEP-83 00:40:32

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -0.03s -18.13, 30.14 s 340.00



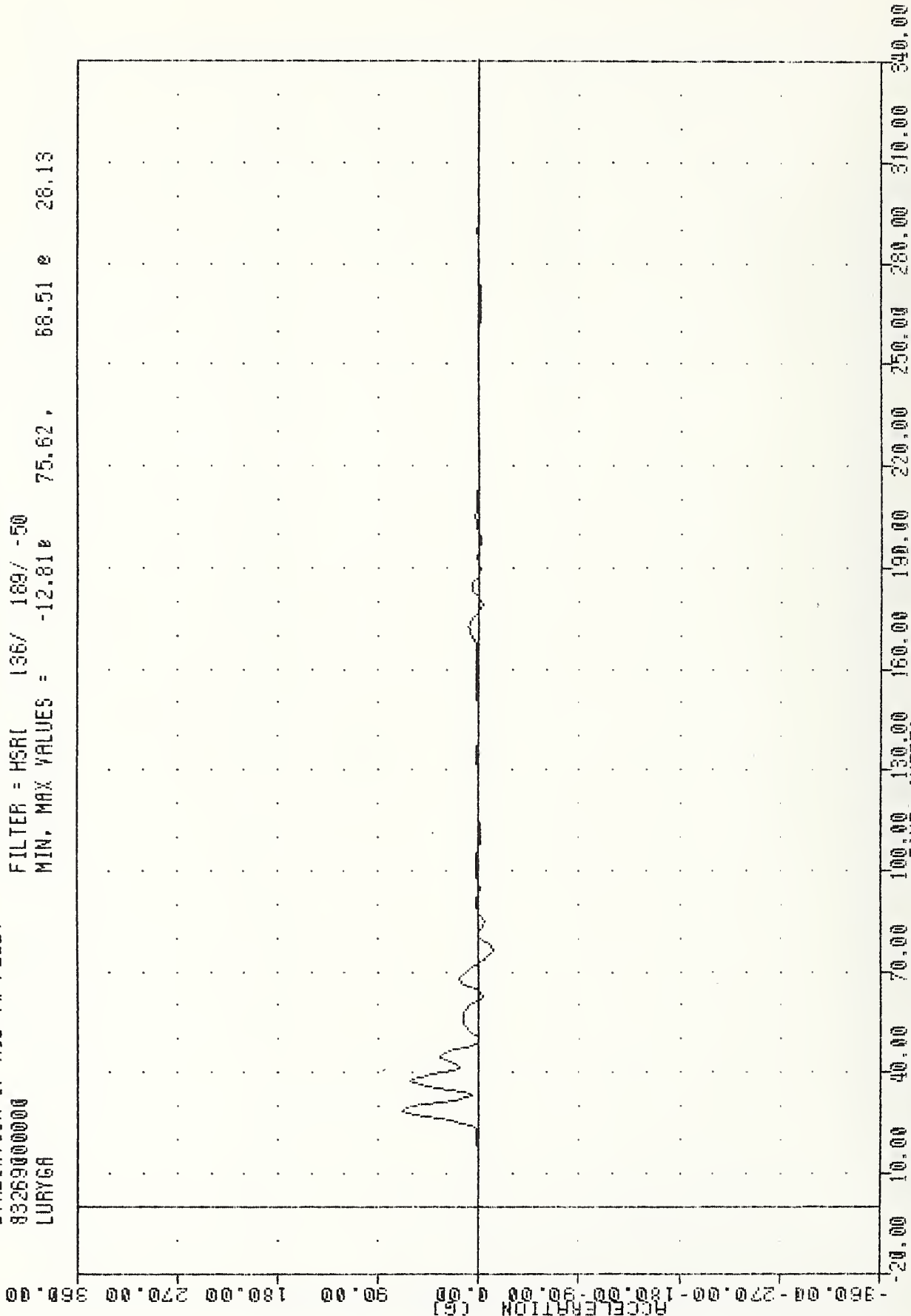
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING LURY61

TRC
EVALUATION OF MOD YW FLEET
83269000000
LURYGA

PLOT DATE 29-SEP-83 12:05:23

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -12.81 75.62 68.51 28.13

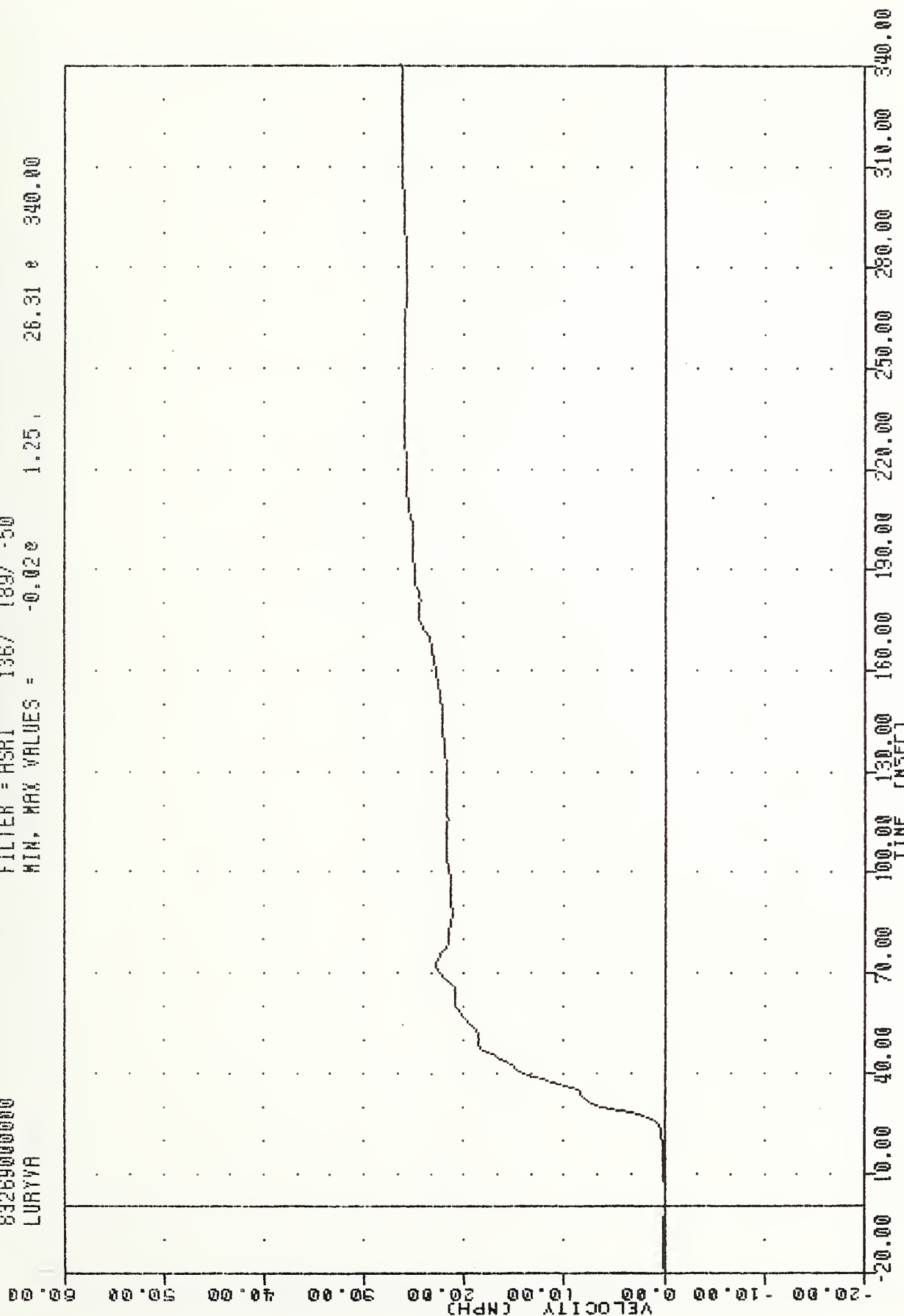


TRC 830926
EVALUATION OF MOD VW FLEET
83269000000
LURYVA

PLOT DATE 30-SEP-83 08:40:32

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -0.02 1.25 26.31 340.00

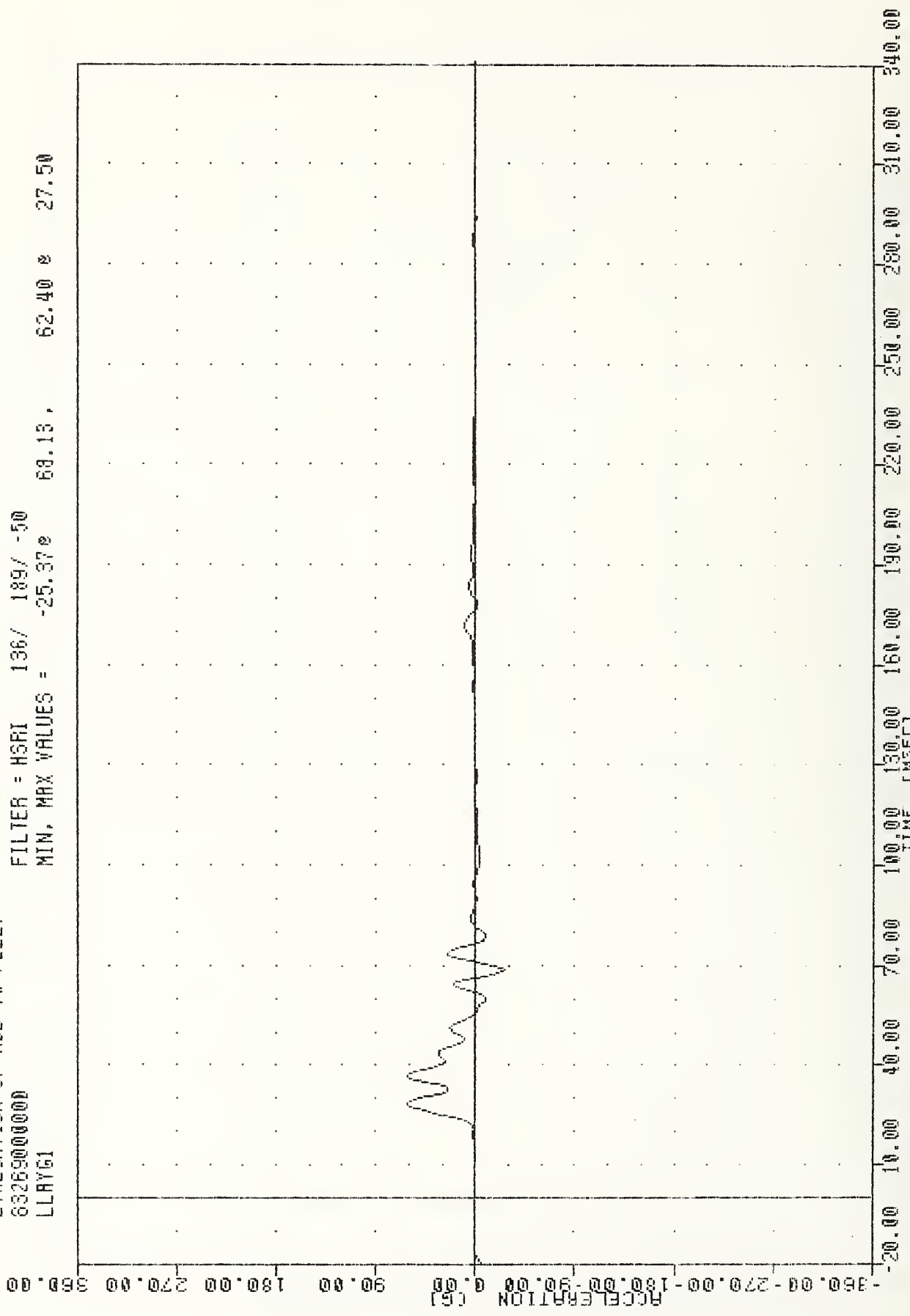


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING LURYGA

TRC 830926
 EVALUATION OF MOD VW FLEET
 63259000000
 LLAY61

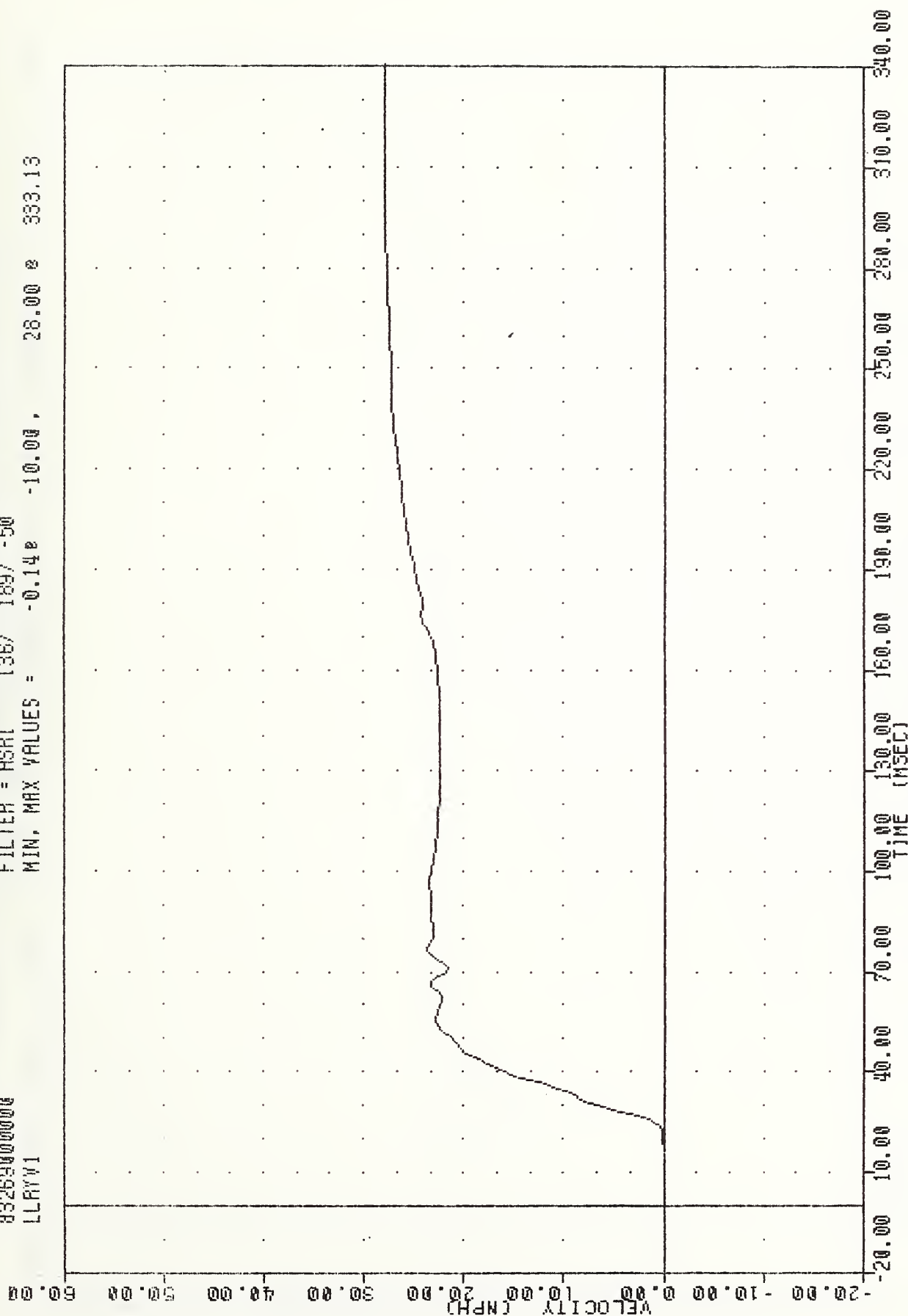
PLOT DATE 29-SEP-83 12:05:23

FILTER = HSRI 136/ 189/ -50
 MIN. MAX VALUES = -25.37% 68.13, 62.40% 27.50



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

TRC . 830926 PLOT DATE 30-SEP-83 08:40:32
 EVALUATION OF MOD VV FLEET
 832630000000 FILTER = HSRI 136/ 189/ -50
 LLRYV1 MIN, MAX VALUES = -0.14e -10.00, 28.00 e 333.13



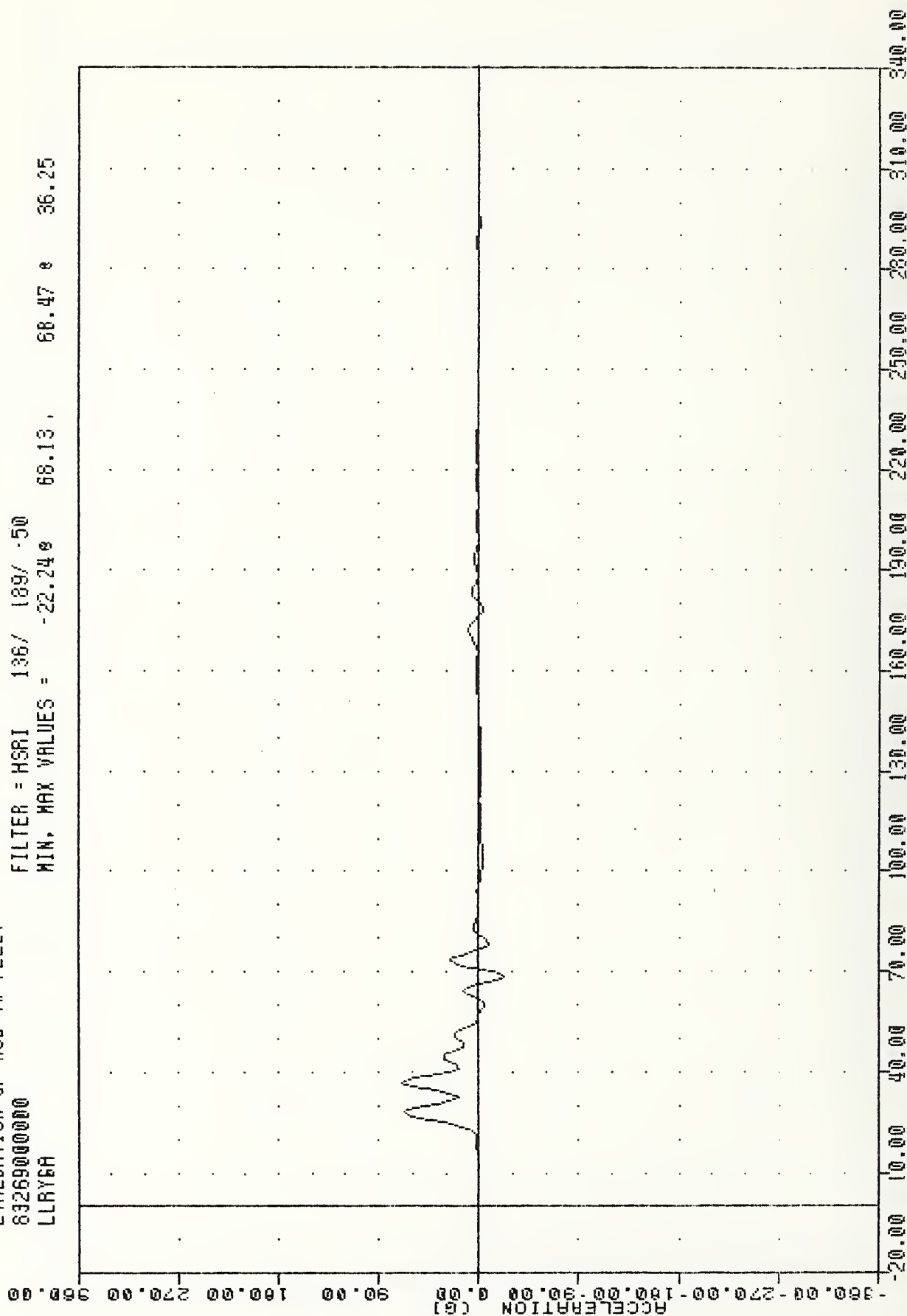
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING LLRYG1

TAC
EVALUATION OF MOD VN FLEET
832690000000
LLRYBA

PLOT DATE 29-SEP-83 12:05:23

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -22.24% 68.13, 68.47 & 36.25

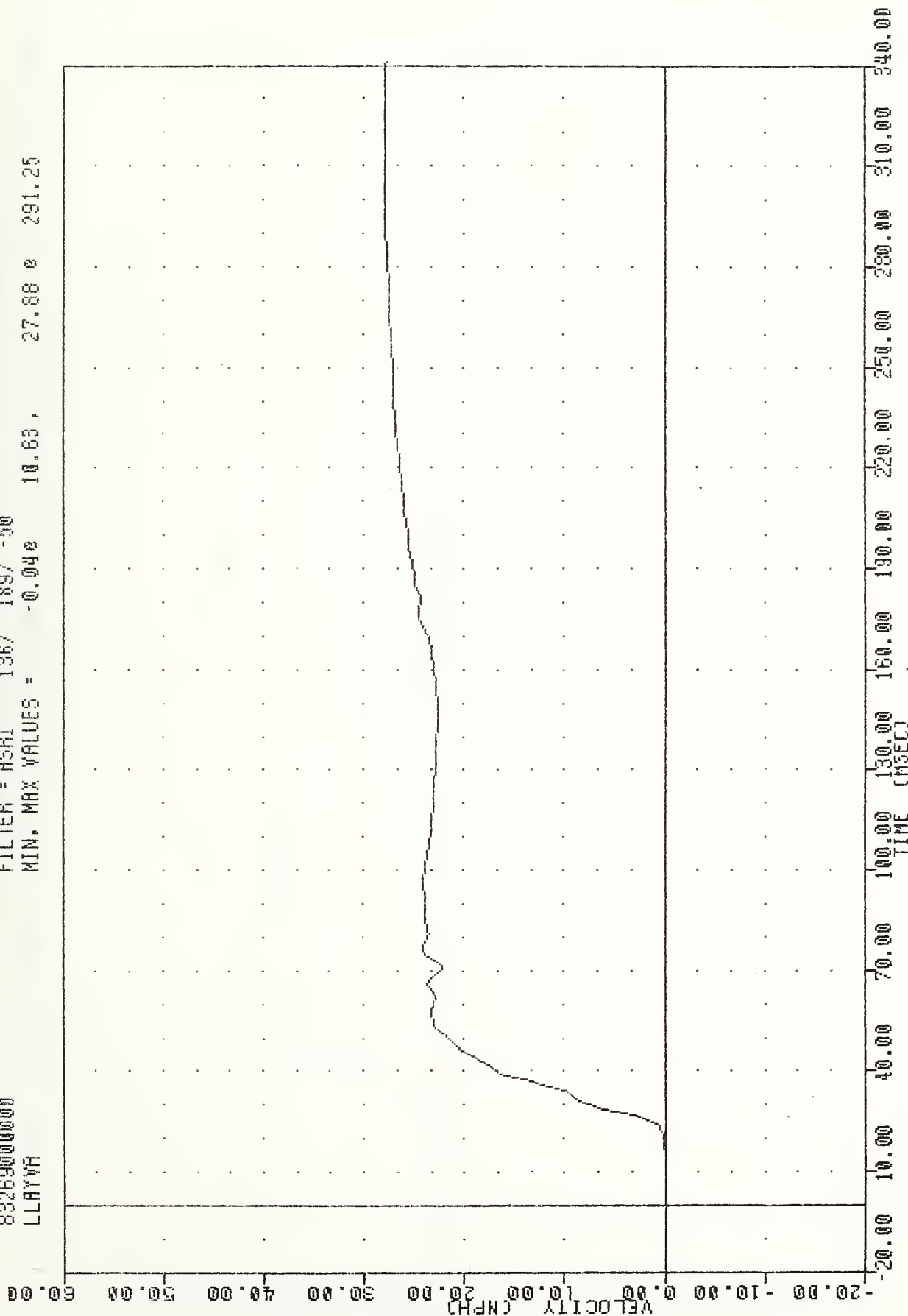


TRC 830926
 EVALUATION OF MDD VW FLEET
 832690000000
 LLYVH

PLOT DATE 30-SEP-83 08:40:32

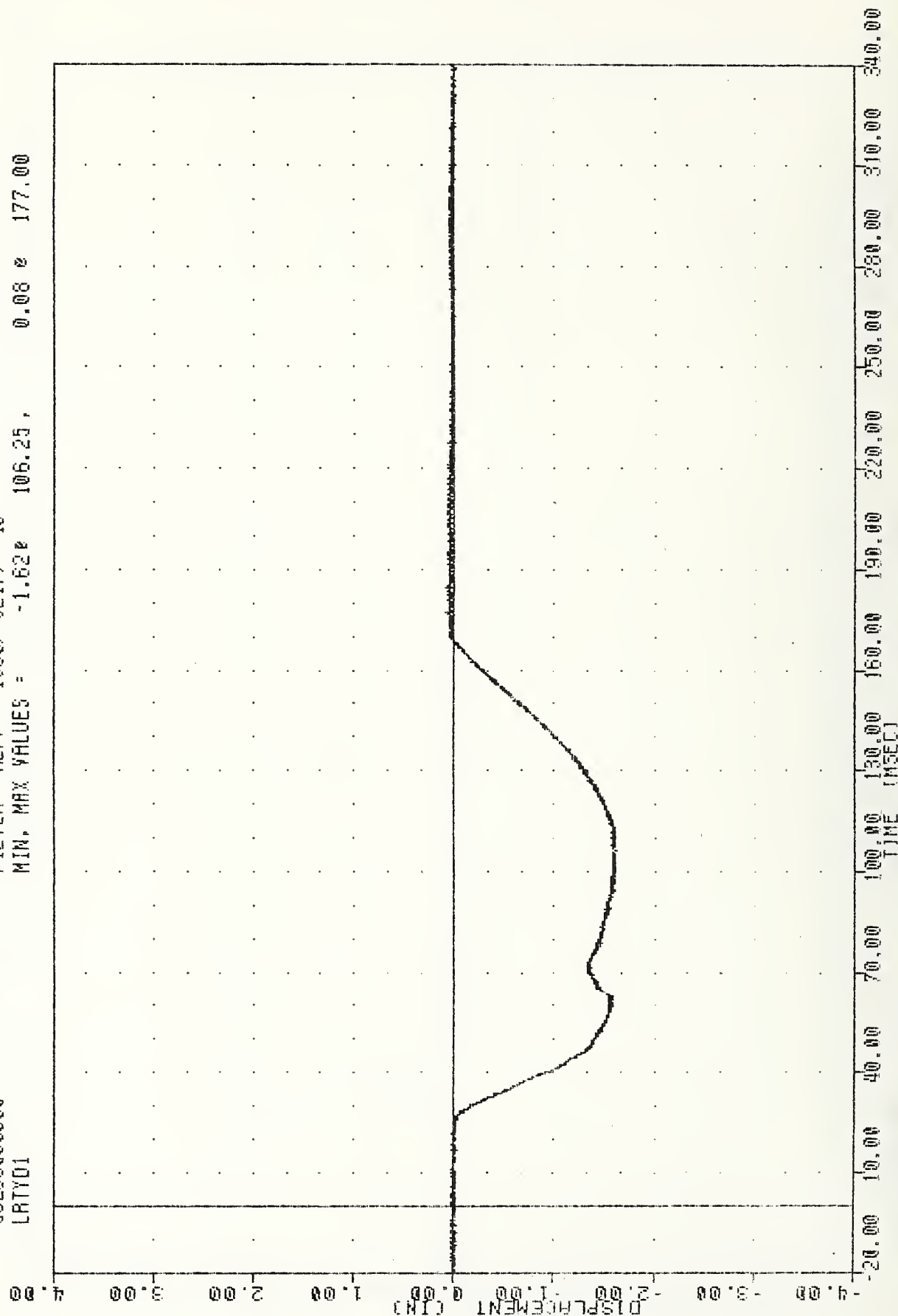
FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -0.040 10.63, 27.88 @ 291.25



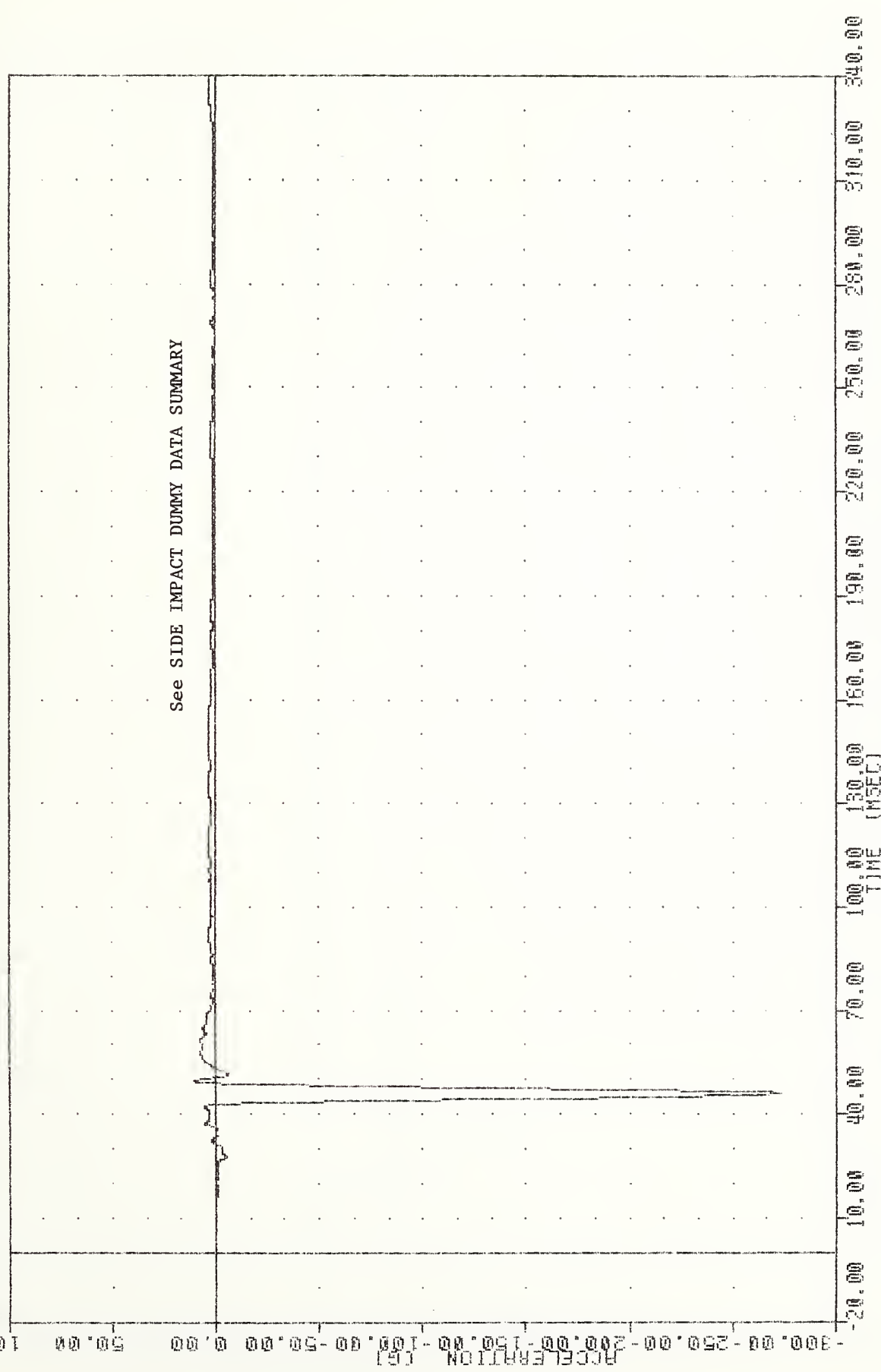
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING LLYVH

TAC 830926 PLOT DATE 29-SEP-83 12:04:12
 EVALUATION OF M00 YW FLEET
 83269000000
 LRTYD1
 FILTER = ALPF 1650/ 5217/ -40
 MIN, MAX VALUES = -1.62 106.25, 0.08 177.00



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

TRC , 830926
 EVALUATION OF MOD VW FLEET
 83269000000
 PEVXG1
 PLOT DATE 11-OCT-83 10:44:26
 FILTER = BLPF 300/ 949/ -40
 MIN. MAX VALUES = -273.36e 45.88 , 10.45 e 49.50



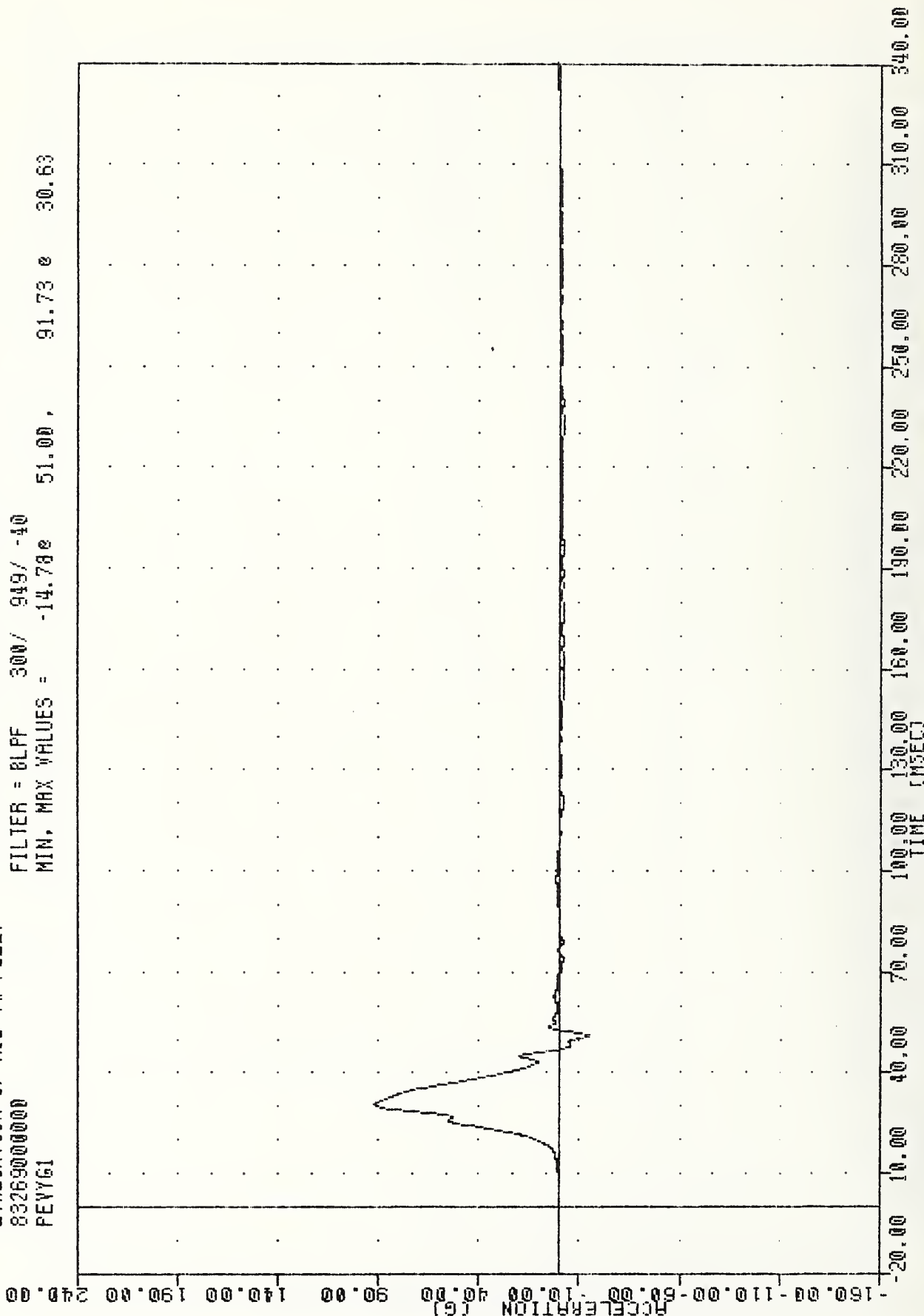
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DRIVER PELVIS ACCELERATION X AXIS

TRC , 830926
 EVALUATION OF MDD VW FLEET
 83263000000
 PEVY61

PLOT DATE 29-SEP-83 12:04:12

FILTER = 8LPF 300/ 949/ -40

MIN. MAX VALUES = -14.78e 51.00, 91.73 e 30.63



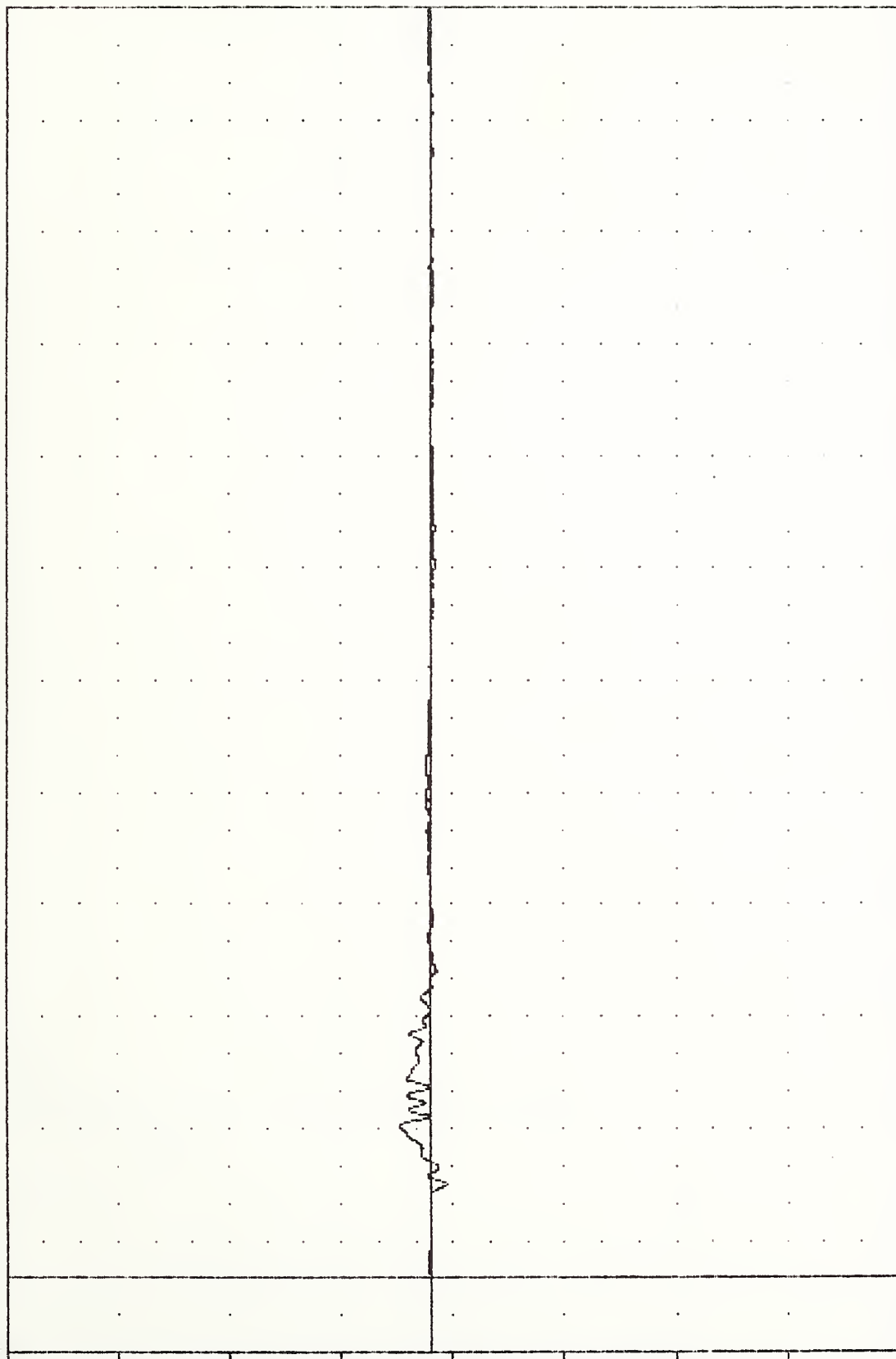
TAC
EVALUATION OF MOD VN FLEET
83269000000
PEVZ61

PLOT DATE 29-SEP-83 12:04:12

FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = -7.520 25.00 13.76 40.50

ACCELERATION (G)



TIME (msec)

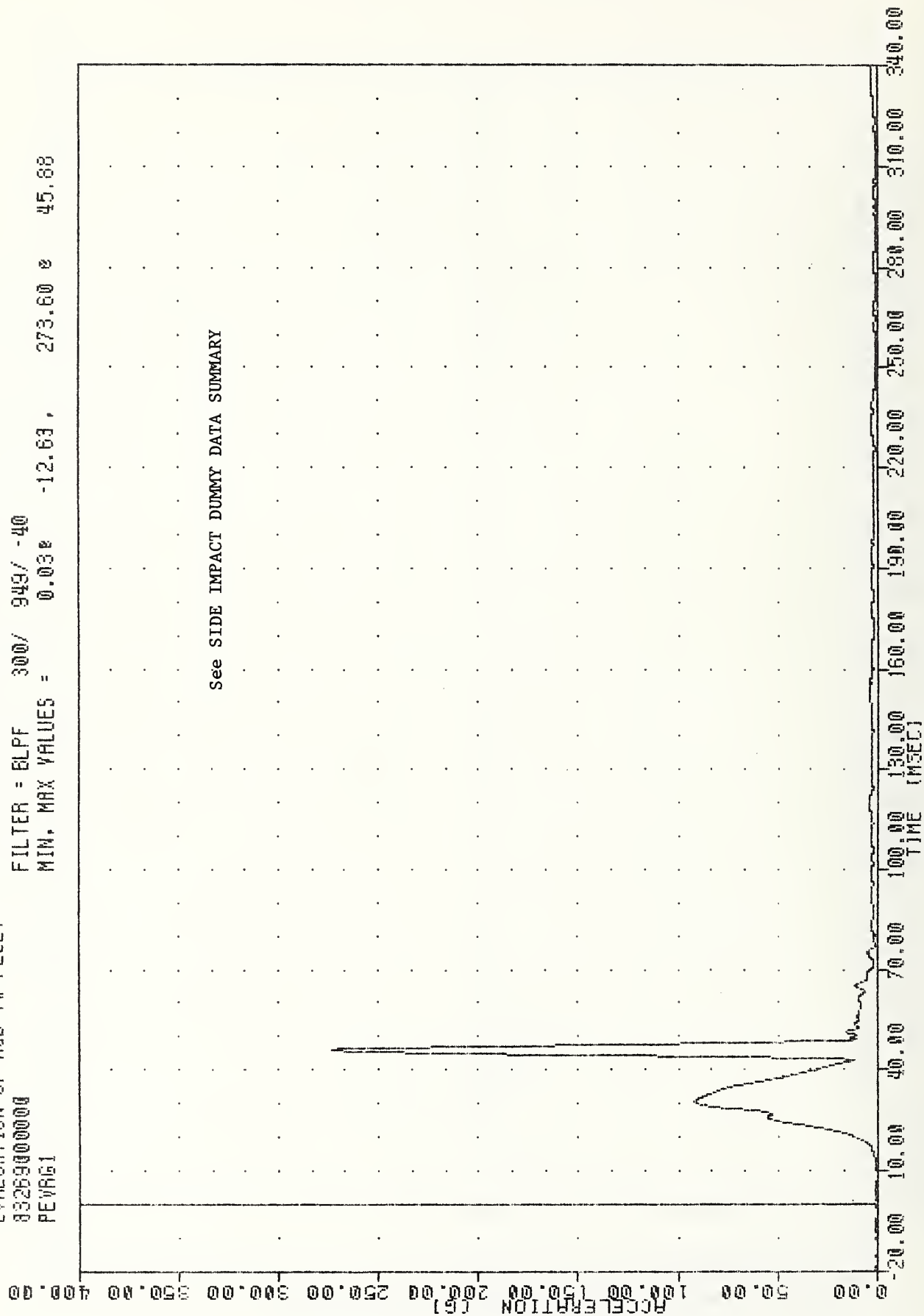
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DRIVER PELVIS ACCELERATION Z AXIS

TRC 830926
 EVALUATION OF MOD YN FLEET
 83269000000
 PEVRG1

PLOT DATE 29-SEP-83 12:04:12

FILTER = BLPF 300/ 949/ -40

MIN. MAX VALUES = 0.03e -12.63, 273.60 e 45.88



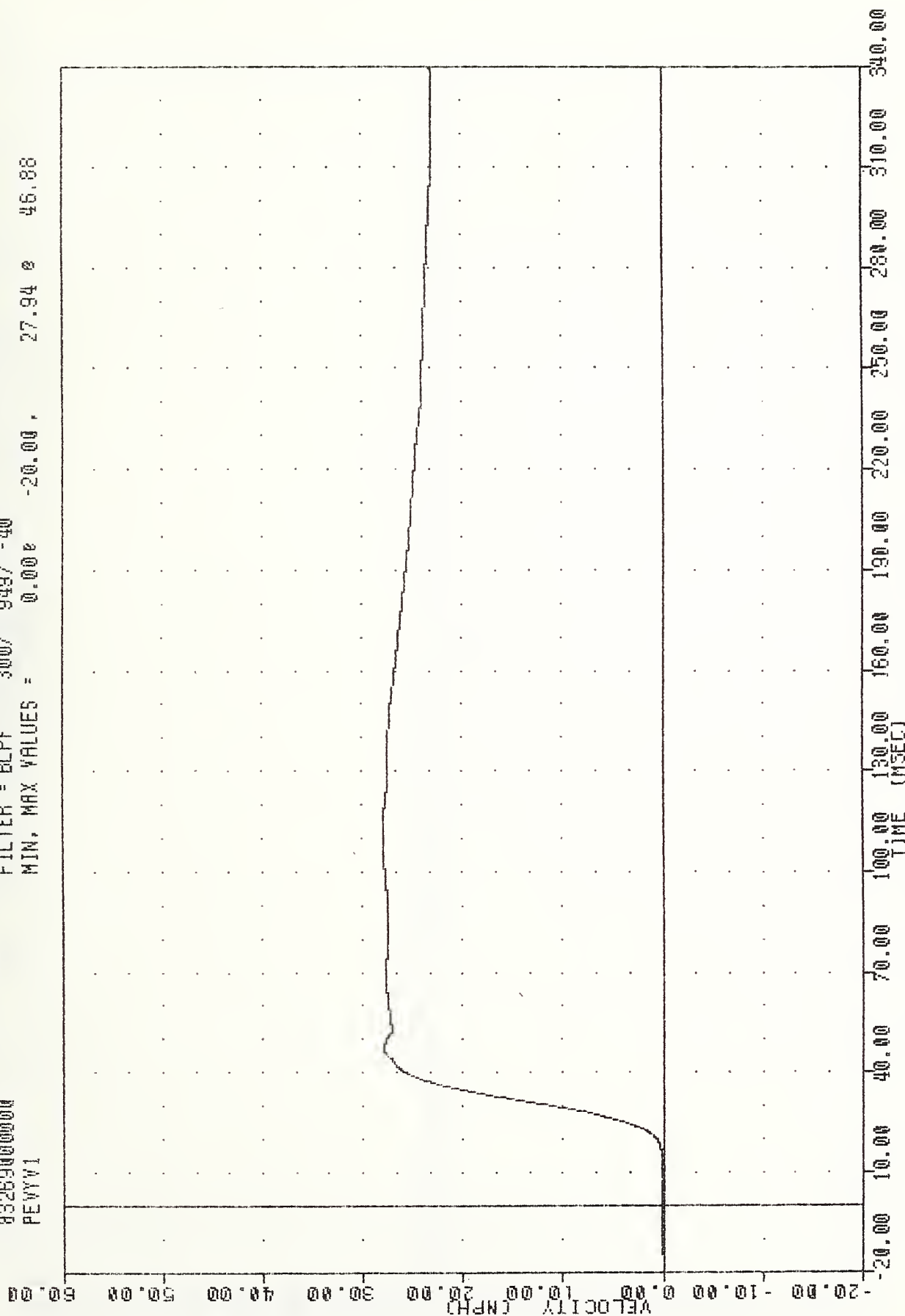
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DRIVER PELVIS RESULTANT

TRC , 830926
 EVALUATION OF MOD VW FLEET
 83269000000
 PEVYV1

PLOT DATE 30-SEP-83 08:41:19

FILTER = BLPF 300/ 943/ -40

MIN, MAX VALUES = 0.00e -20.00, 27.94 e 46.88



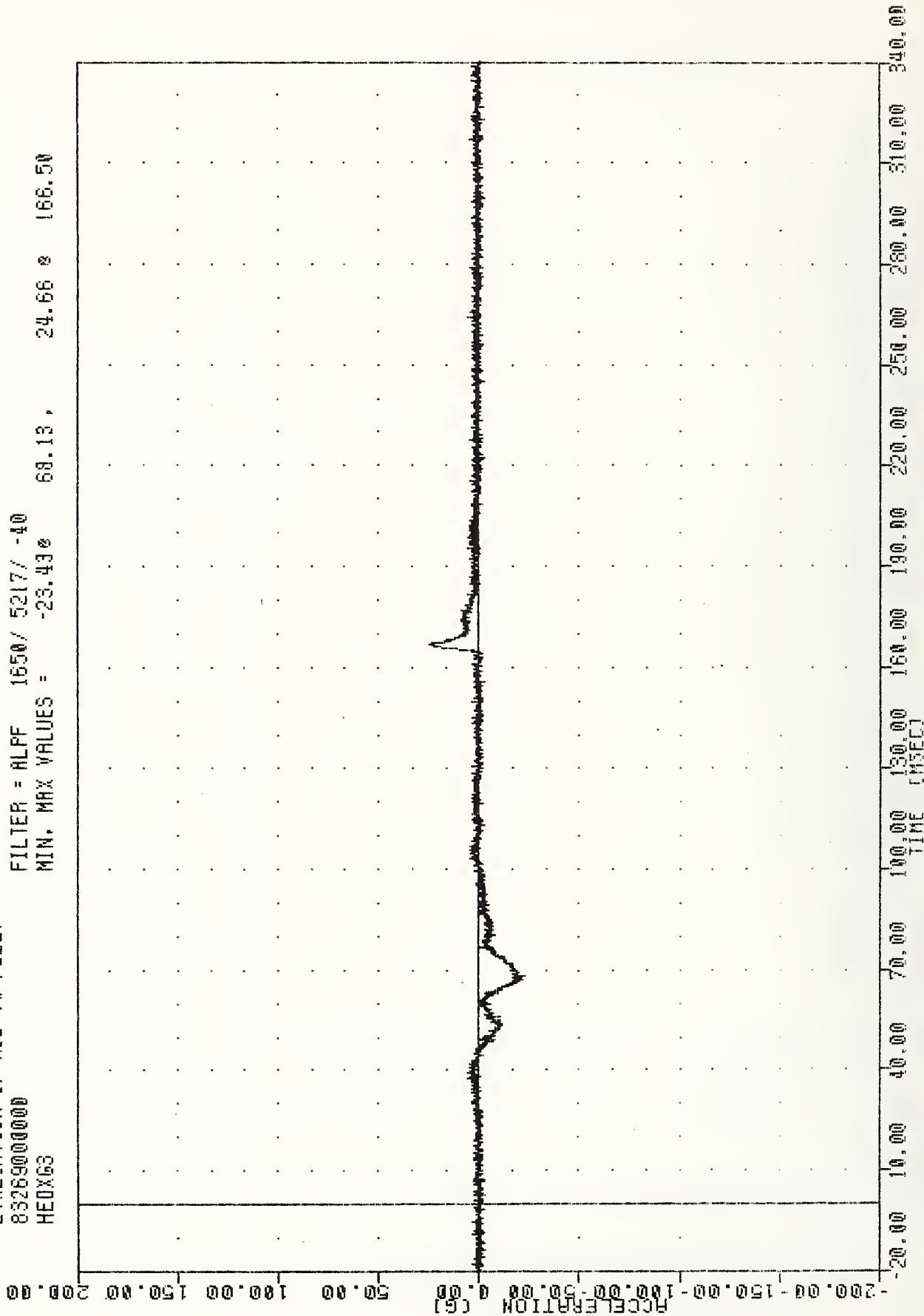
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING PEVYGI

TRC , 830926
 EVALUATION OF MDD VW FLEET
 83269000000
 HEDXG3

PLOT DATE 29-SEP-83 12:04:12

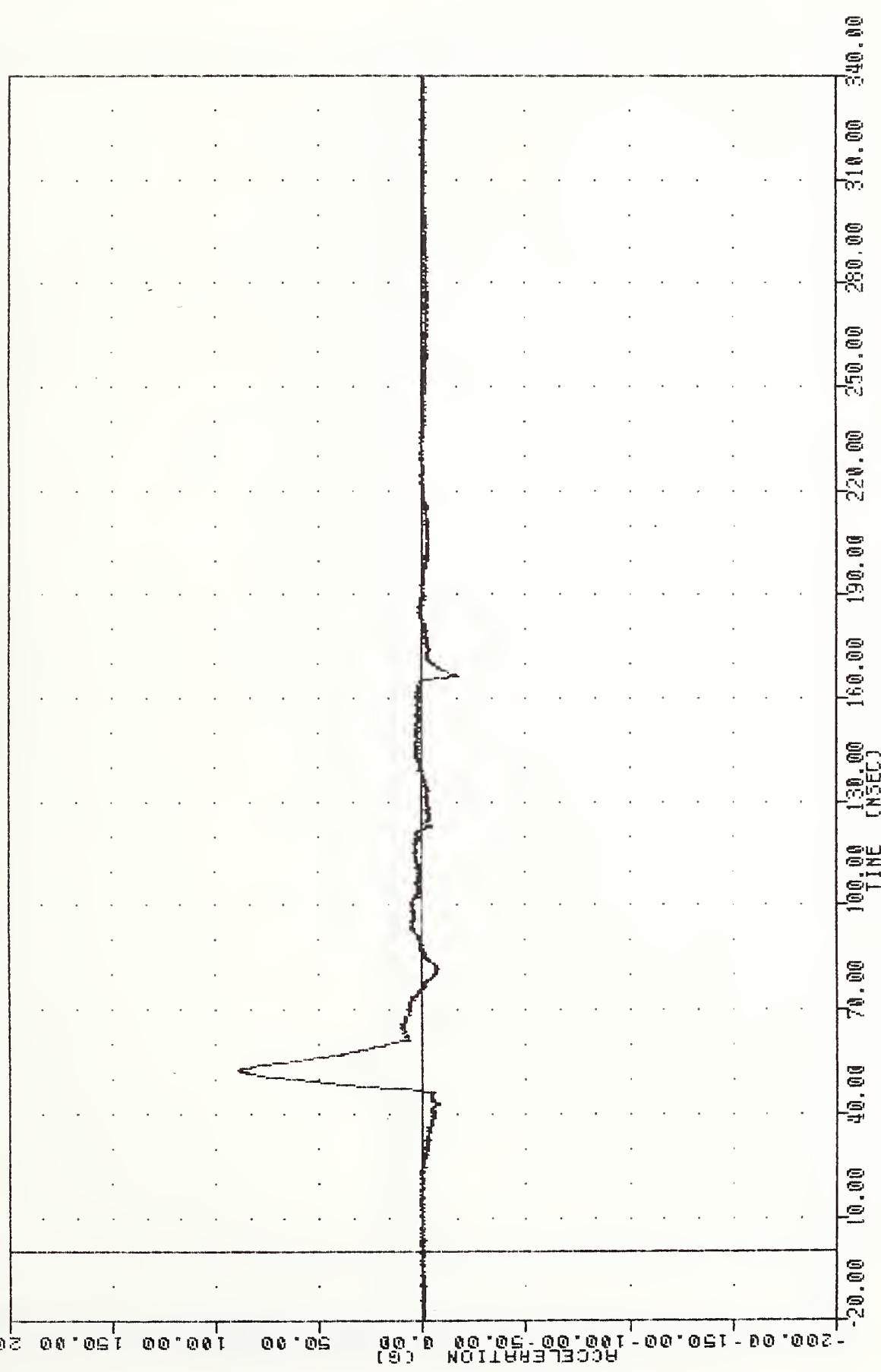
FILTER = ALPF 1650/ 5217/ -40

MIN. MAX VALUES = -23.430 68.13, 24.66 0 166.50



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 PASSENGER HEAD ACCELERATION X AXIS

TAC , 830926 PLOT DATE 29-SEP-83 12:04:12
 EVALUATION OF MOD VW FLEET
 83269000000
 HEDY63
 FILTER = ALPF 1650/ 5217/ -40
 MIN, MAX VALUES = -17.39e 166.50 , 88.83 e 52.38



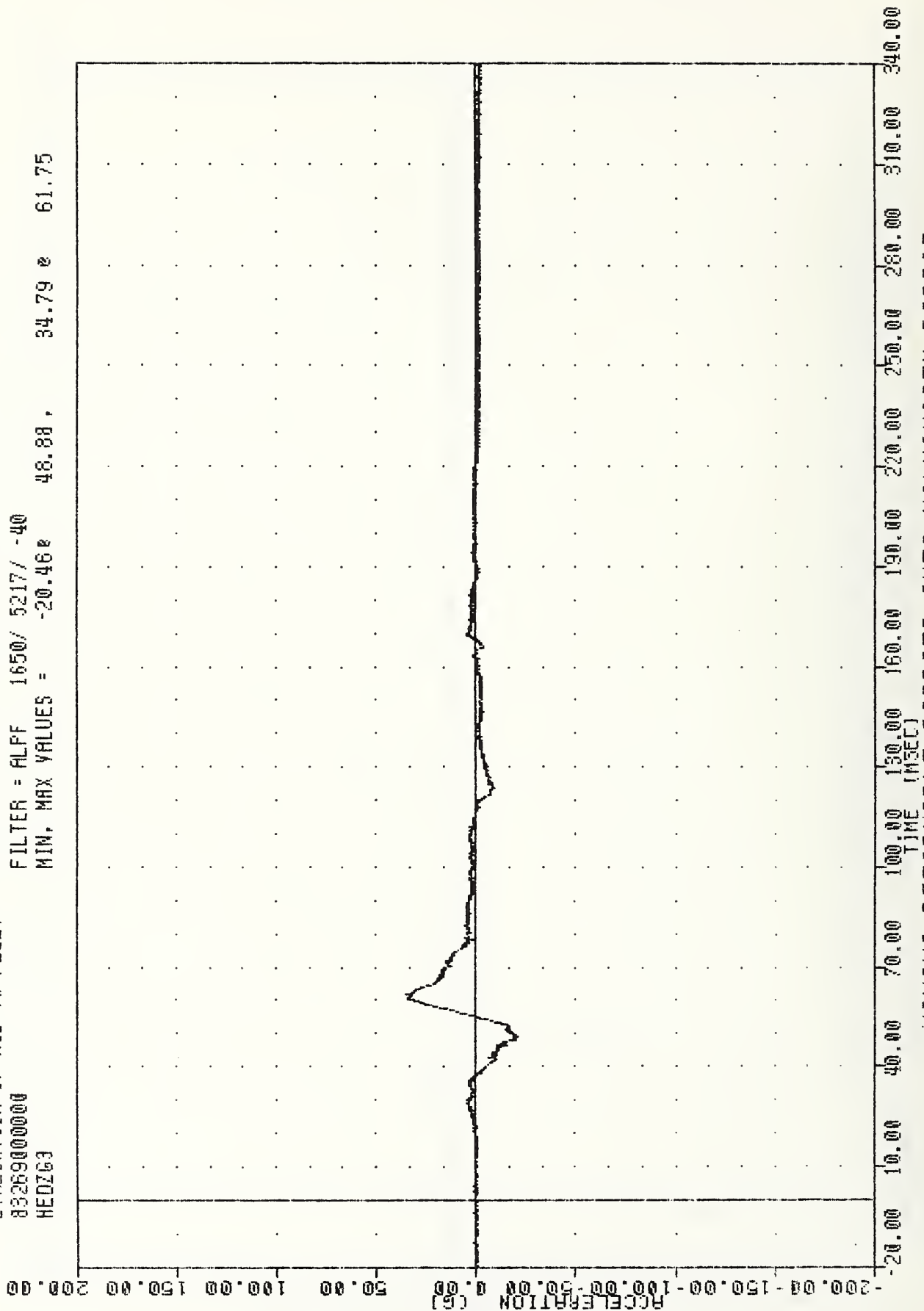
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 PASSENGER HEAD ACCELERATION Y AXIS

TRC 830926
 EVALUATION OF MDD VW FLEET
 83269000000
 HEDZG3

PLOT DATE 29-SEP-83 12:04:12

FILTER = ALPF 1650/ 5217/ -40

MIN, MAX VALUES = -20.46 48.88, 34.79 61.75



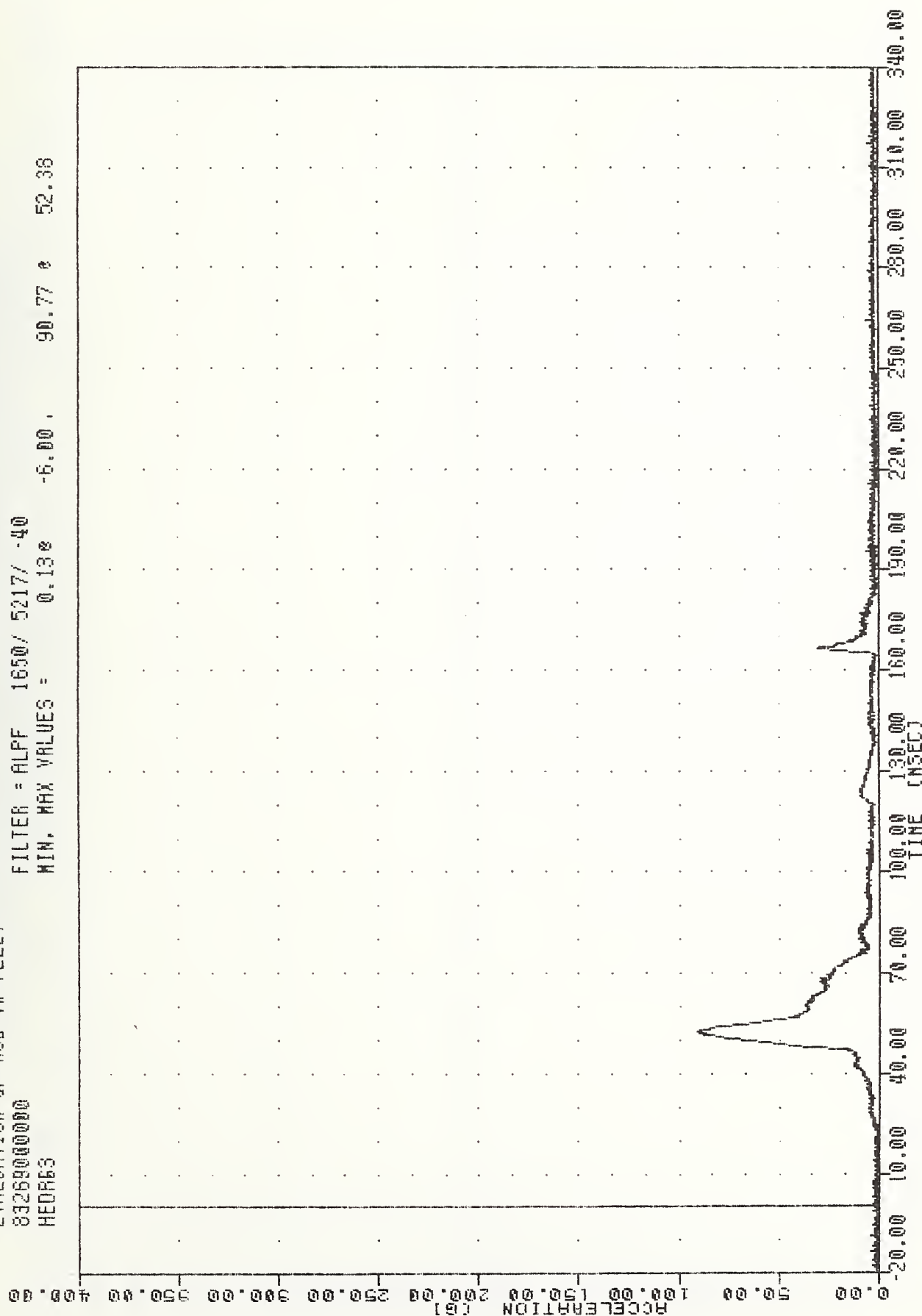
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 PASSENGER HEAD ACCELERATION Z AXIS

TAC
EVALUATION OF MOD VW FLEET
83269000000
HEAD63

PLOT DATE 29-SEP-83 12:04:12

FILTER = ALPF 1650/ 5217/ -40

MIN. MAX VALUES = 0.132 -6.00 90.77 52.36

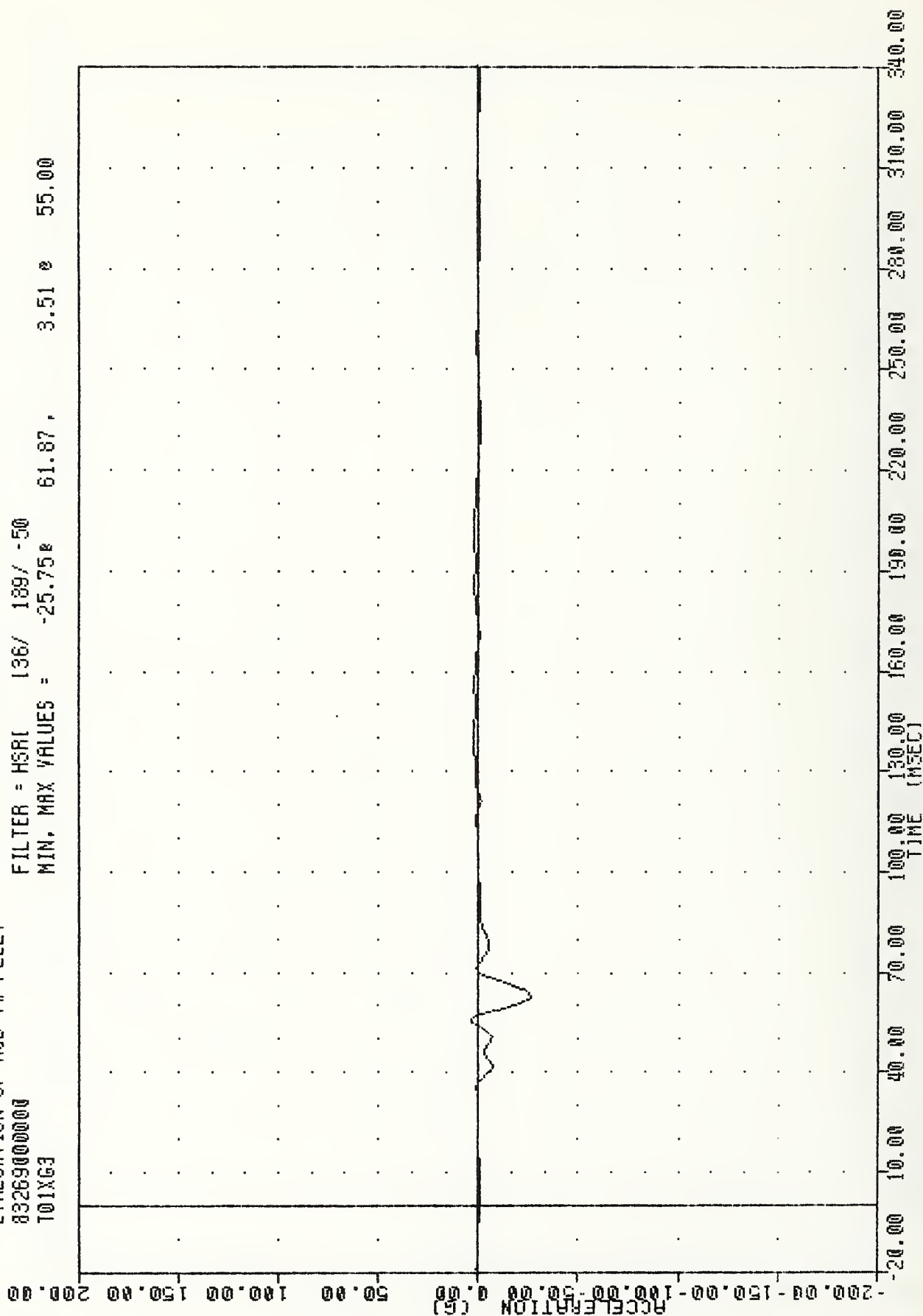


TRC 830926
 EVALUATION OF MOD YW FLEET
 83269000000
 T01XG3

PLOT DATE 29-SEP-83 12:05:23

FILTER = HSRI 136/ 139/ -50

MIN. MAX VALUES = -25.75 61.87 3.51 55.00

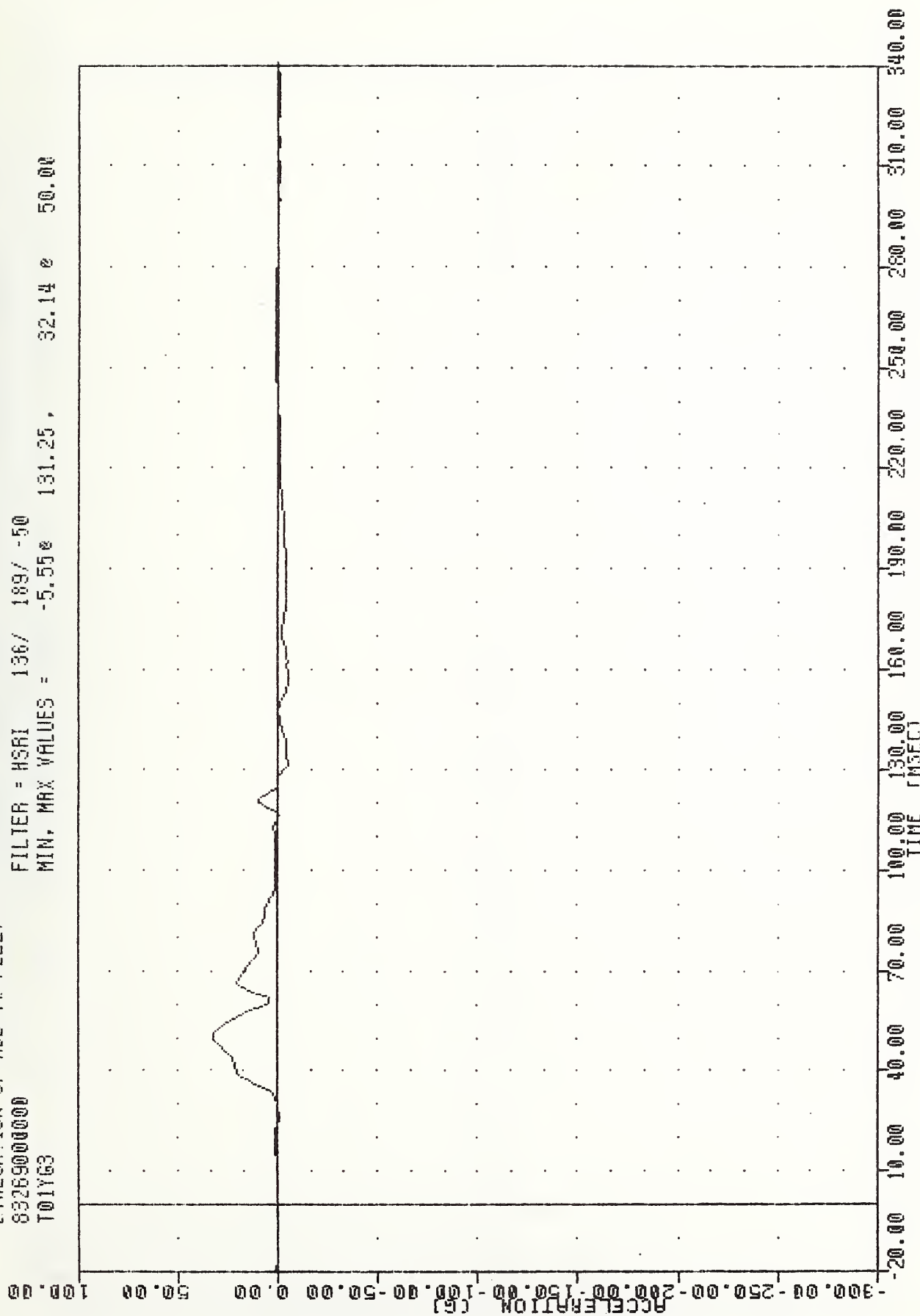


TRC , 830926
 EVALUATION OF MDD VW FLEET
 83269000000
 T01YG3

PLOT DATE 29-SEP-83 12:05:23

FILTER = HSR1 136/ 189/ -50

MIN. MAX VALUES = -5.55e 131.25 , 32.14 e 50.00

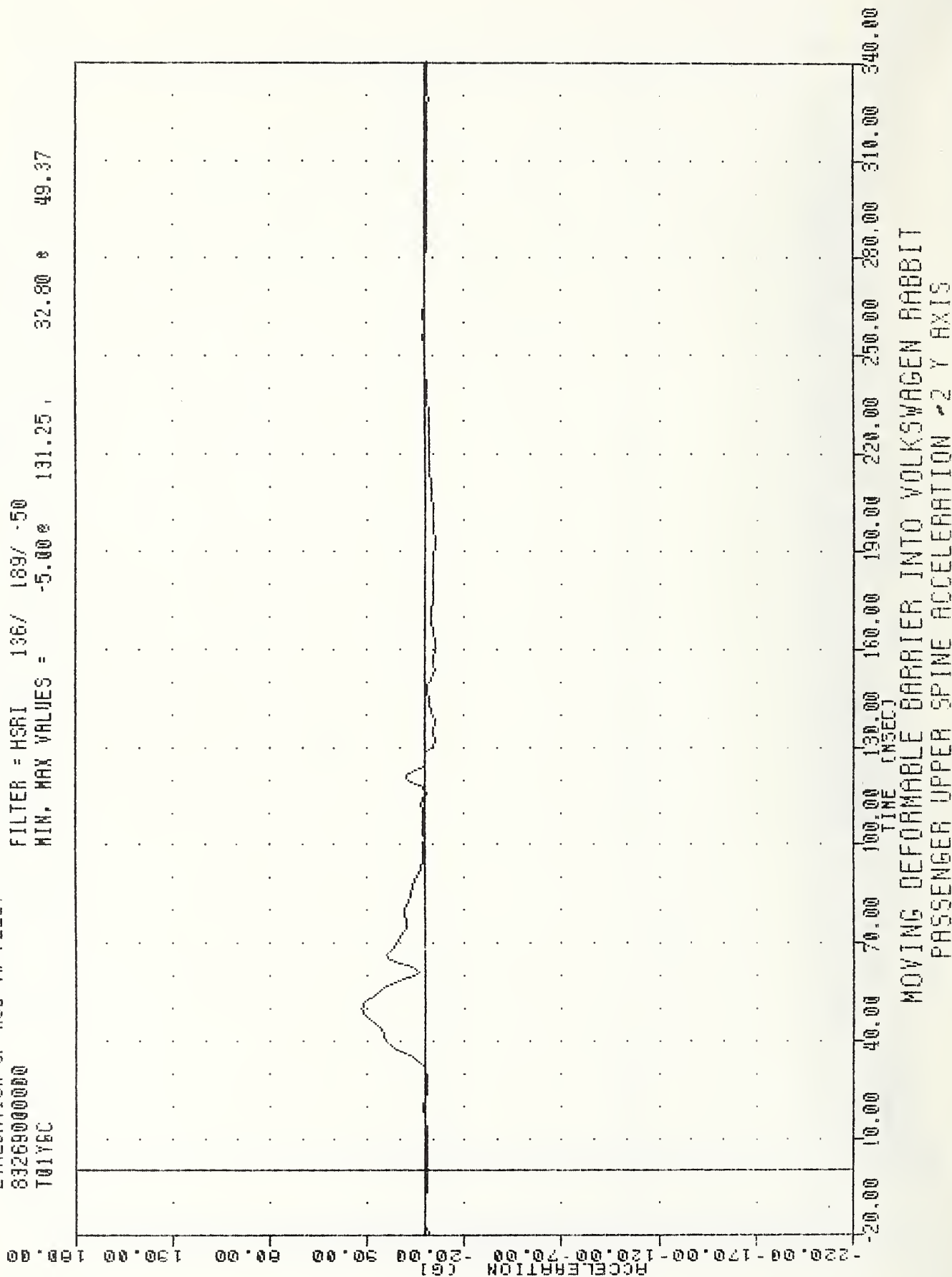


TAC
EVALUATION OF MOD VN FLEET
832690000000
T01YEC

PLOT DATE 29-SEP-83 12:05:23

FILTER = HSRI 136/ 189/ -50

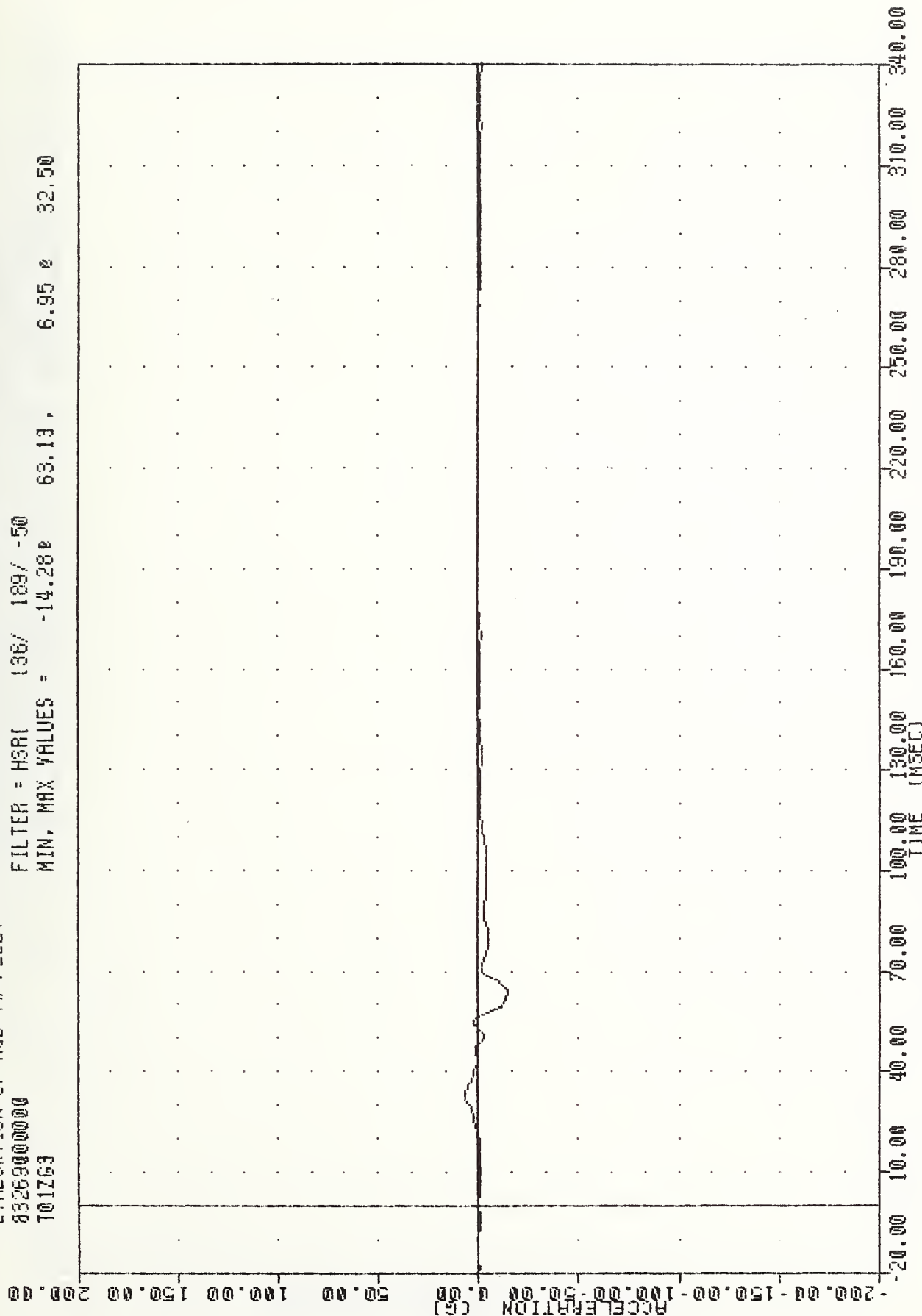
MIN. MAX VALUES = -5.00 32.80 49.37



TRC . 830926
 EVALUATION OF MOD VW FLEET
 83269000000
 T01763

PLOT DATE 29-SEP-83 12:05:23

FILTER = HSR1 136/ 189/ -50
 MIN. MAX VALUES = -14.280 63.13, 6.95 32.50



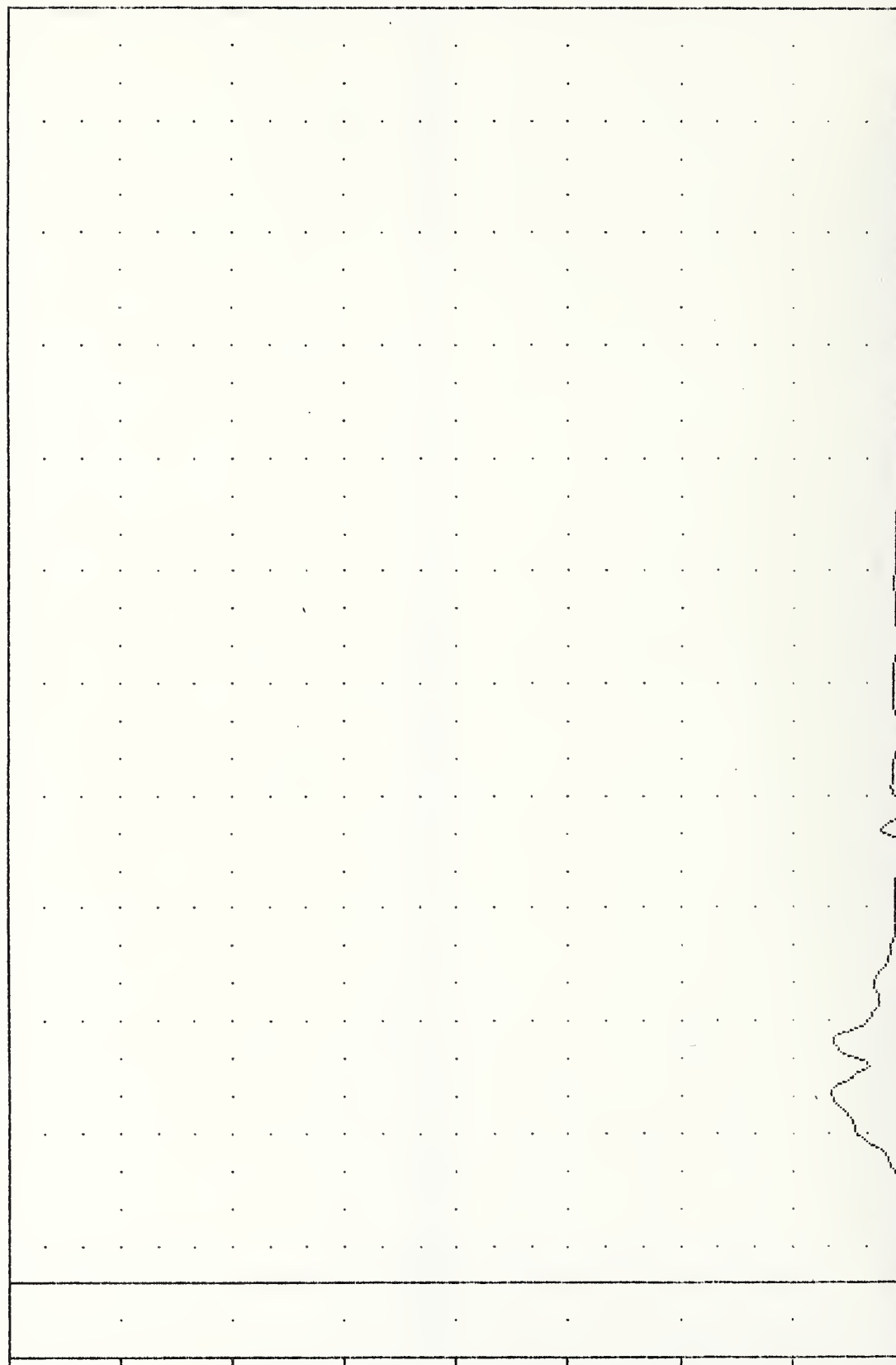
TAC
EVALUATION OF MOD VN FLEET
83269000000
T01R63

PLOT DATE 29-SEP-83 12:05:23

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = 0.21g -10.63, 32.98 g 50.00

ACCELERATION (g)



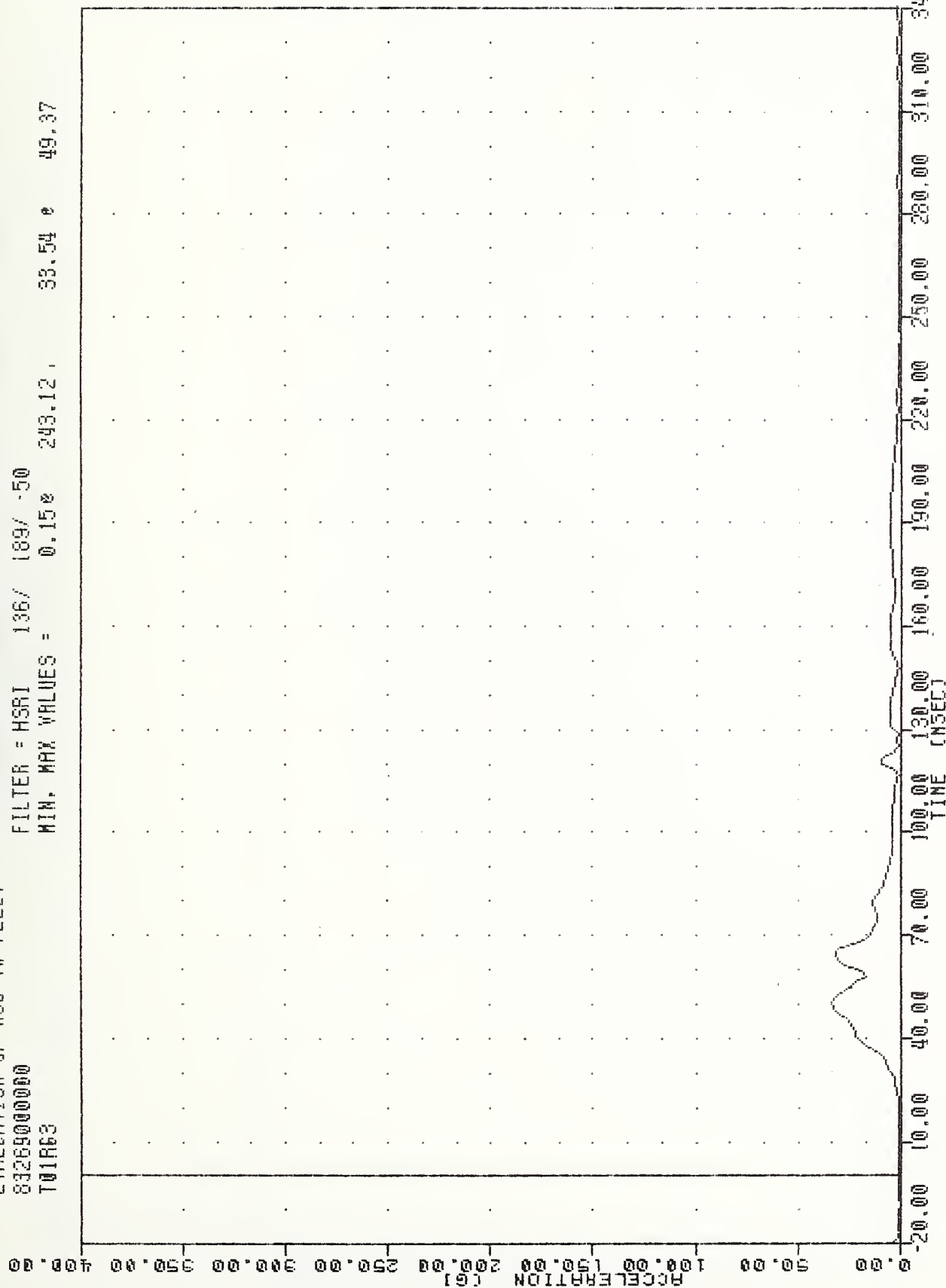
-20.00 10.00 40.00 70.00 100.00 130.00 160.00 190.00 220.00 250.00 280.00 310.00 340.00
TIME (msec)
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER UPPER SPINE RESULTANT

TAC
EVALUATION OF MOD VW FLEET
832690000000
T01R63

PLOT DATE 29-SEP-83 12:06:28

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = 0.15e 243.12 33.54 e 49.37



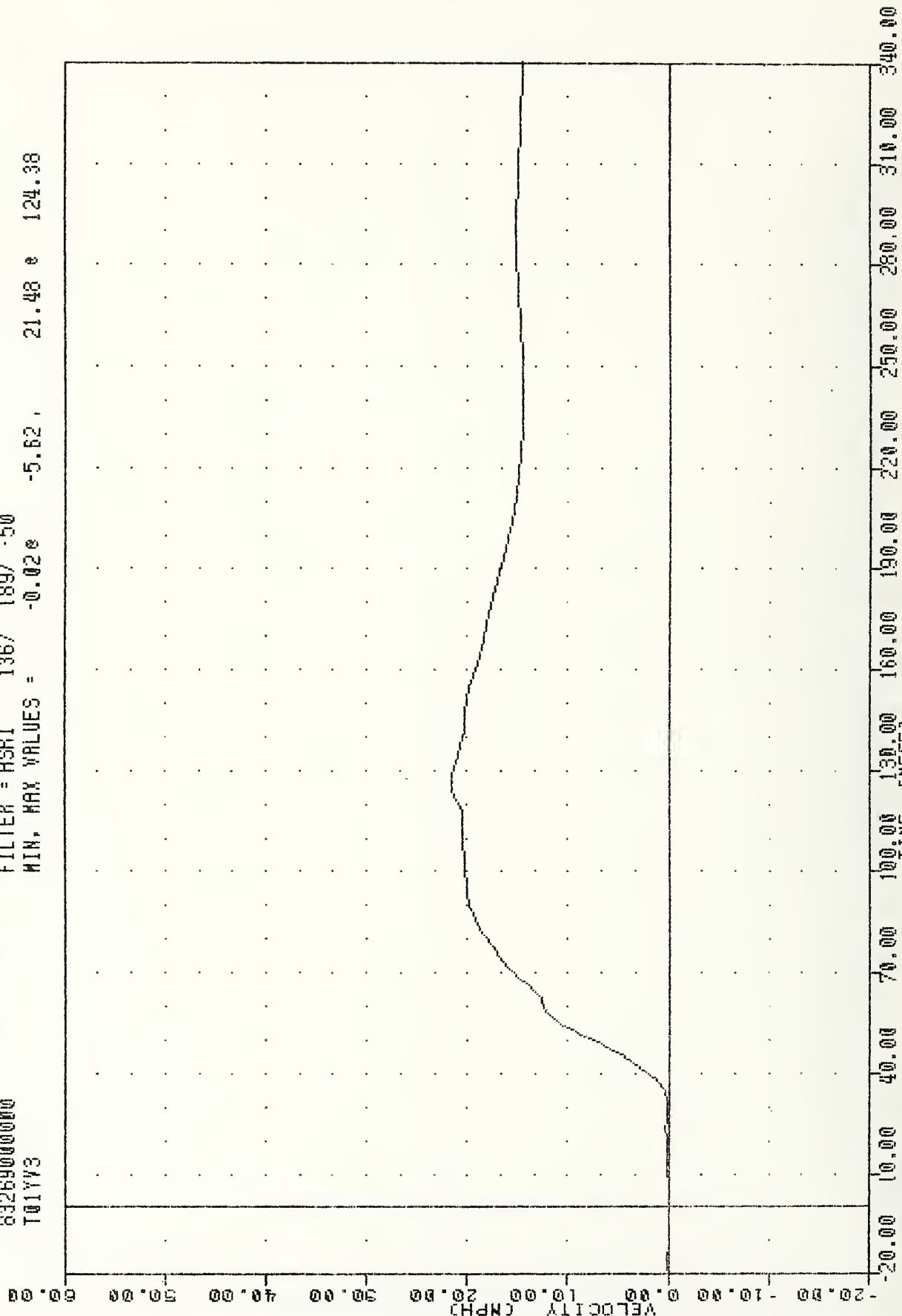
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER UPPER SPINE RESULTANT USING T01Y6C

TAC
EVALUATION OF MOD VW FLEET
832690000000
T01YV3

PLOT DATE 30-SEP-83 08:40:32

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -0.028 -5.62 21.48 124.38



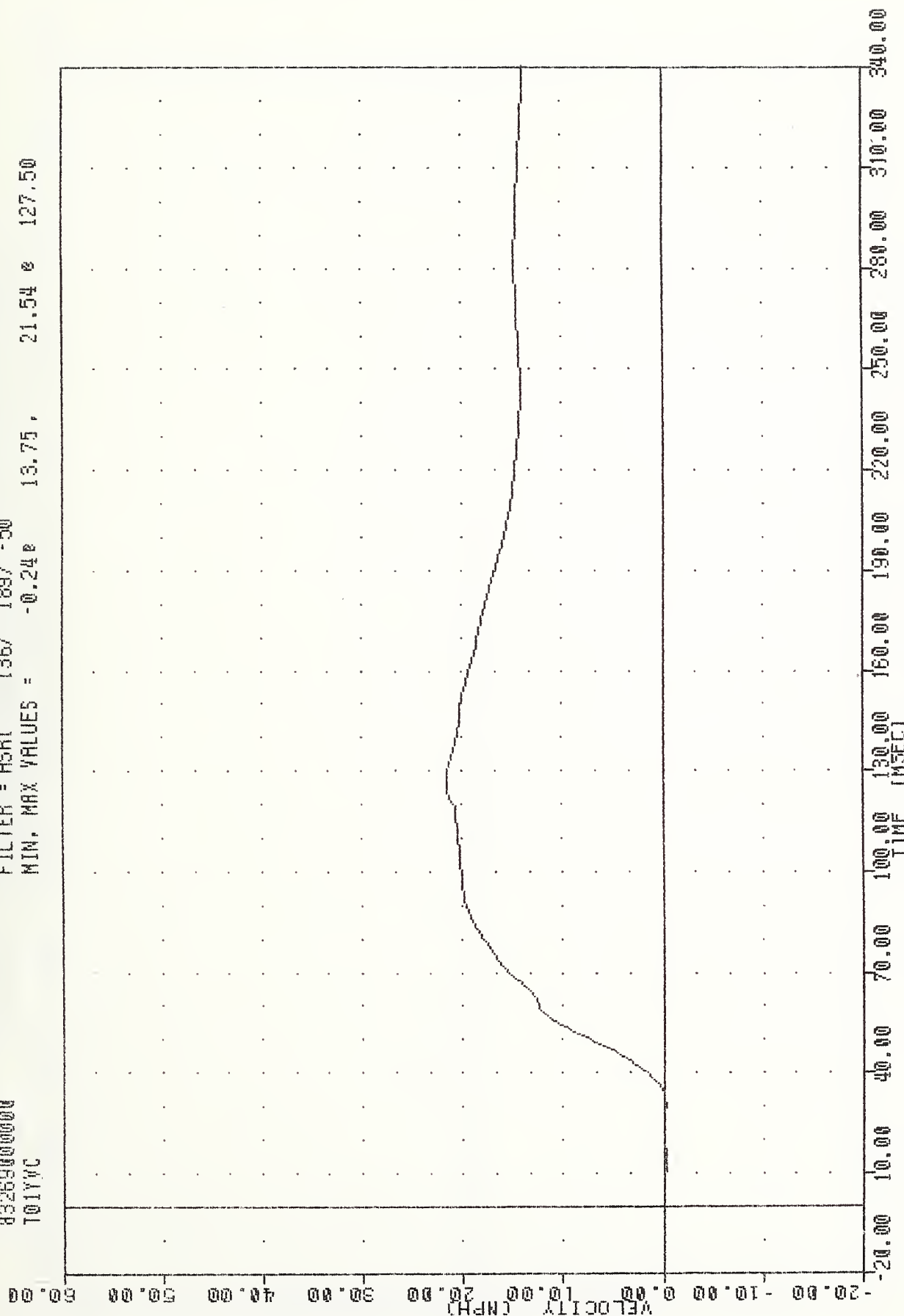
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING T01YV3

TRC 830926
EVALUATION OF MOD VW FLEET
83269000000
T01YVC

PLUT DATE 30-SEP-83 06:40:32

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -0.24e 13.75, 21.54 e 127.50



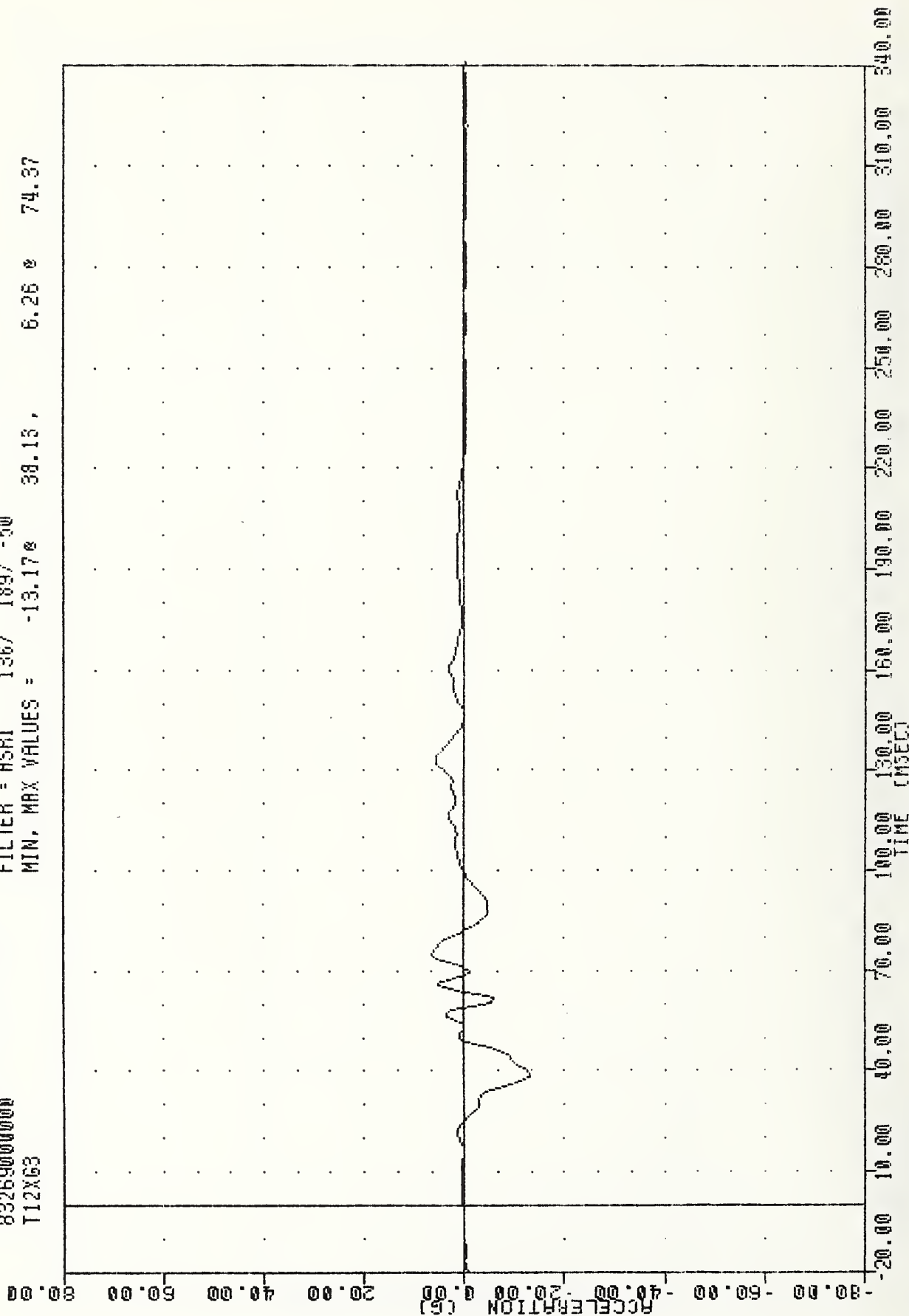
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING T01YGC

TRC , 830926
 EVALUATION OF MDD YW FLEET
 83269000000
 T12X63

PLOT DATE 29-SEP-83 12:05:23

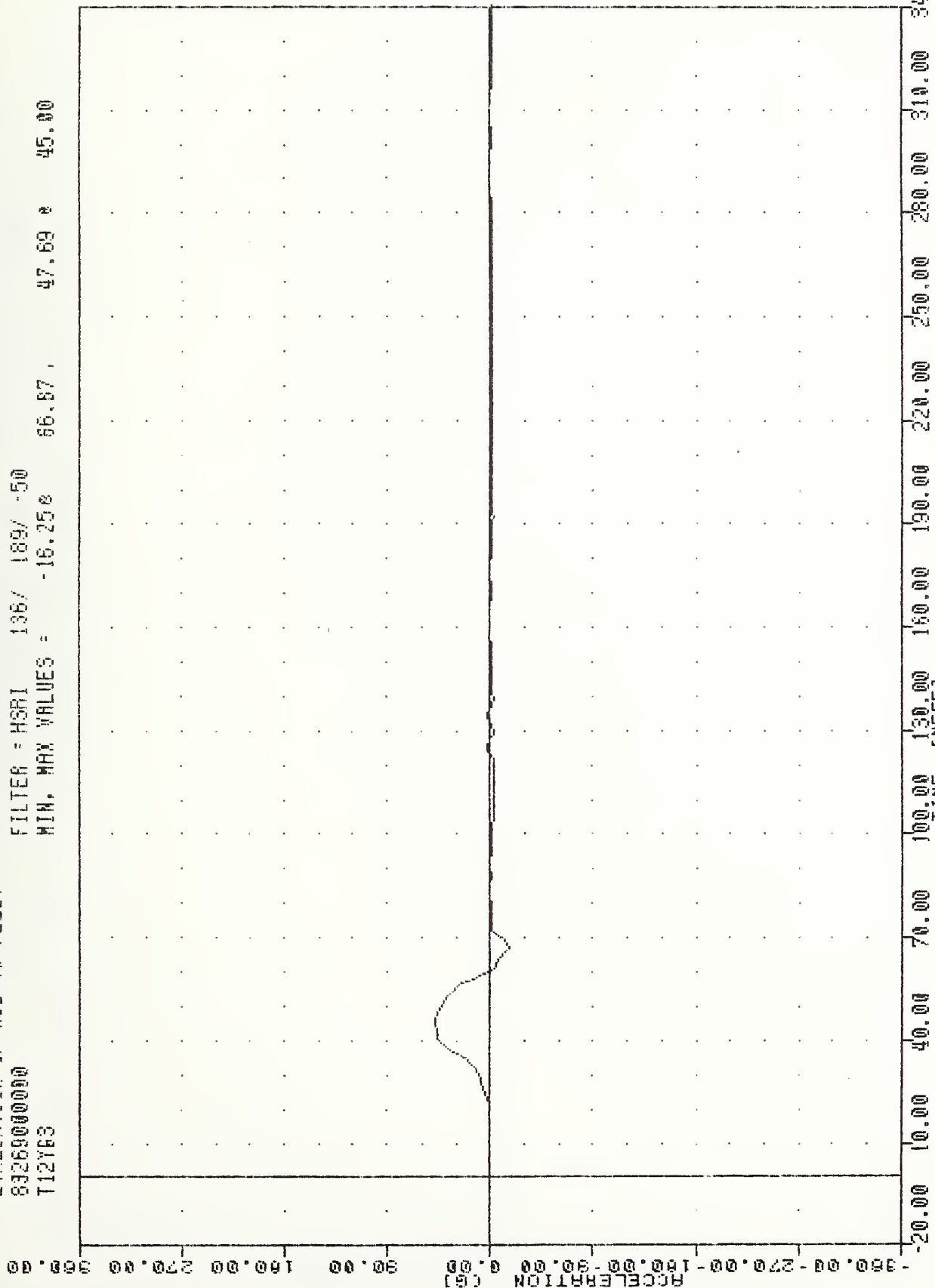
FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -13.17% 38.13, 6.26% 74.37



TAC
EVALUATION OF MOD VN FLEET
832690000000
T12Y63

PLOT DATE 29-SEP-83 12:00:23
FILTER = HSRI 136/ 189/ -50
MIN. MAX VALUES = -16.25 66.87 47.69 45.00



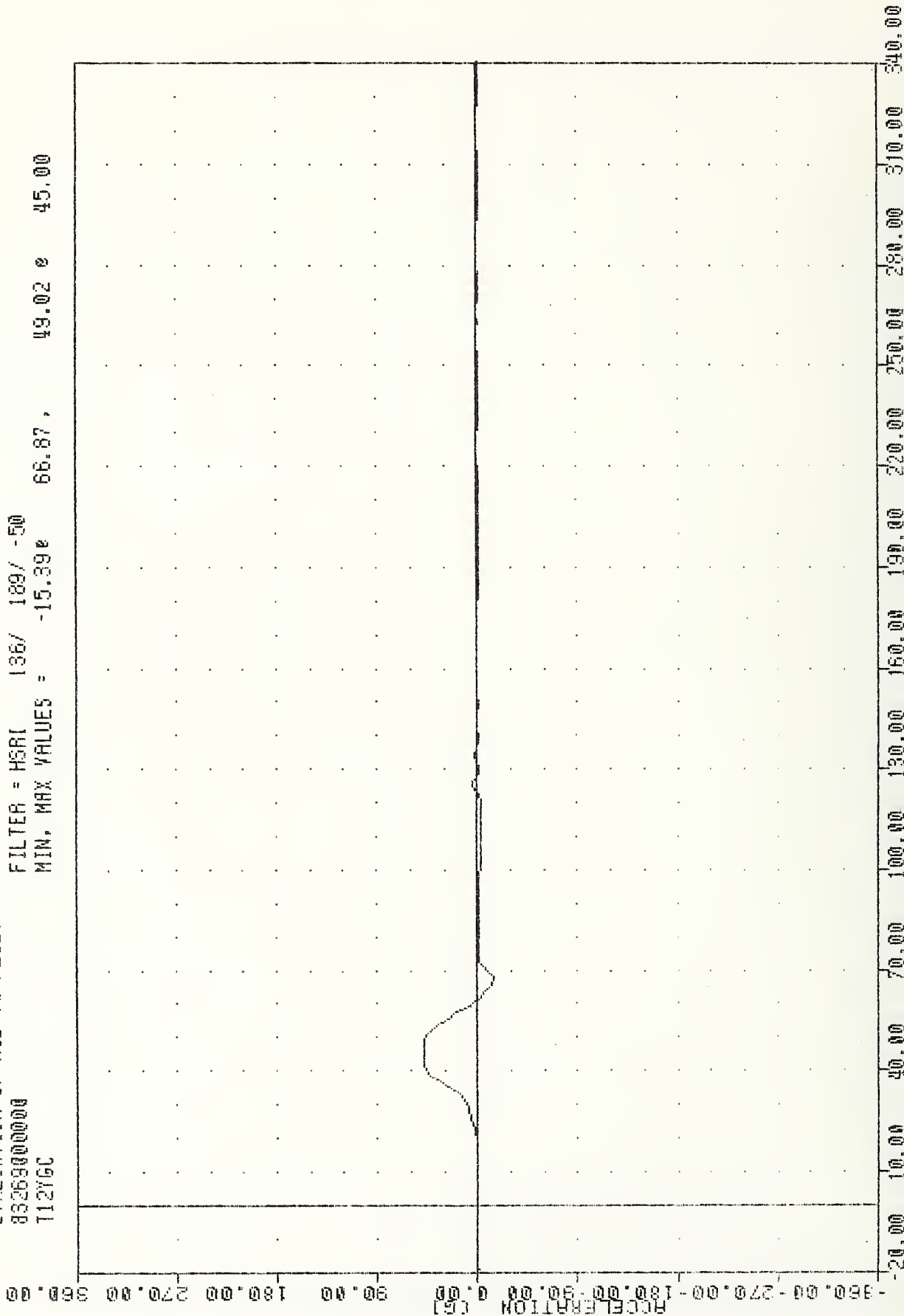
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER LOWER SPINE ACCELERATION Y AXIS

TRC , 830926
 EVALUATION OF MOD YW FLEET
 83269000000
 T12YGC

PLOT DATE 29-SEP-83 12:05:23

FILTER = HSR[136/ 189/ -50

MIN. MAX VALUES = -15.39e 66.87, 49.02 e 45.00



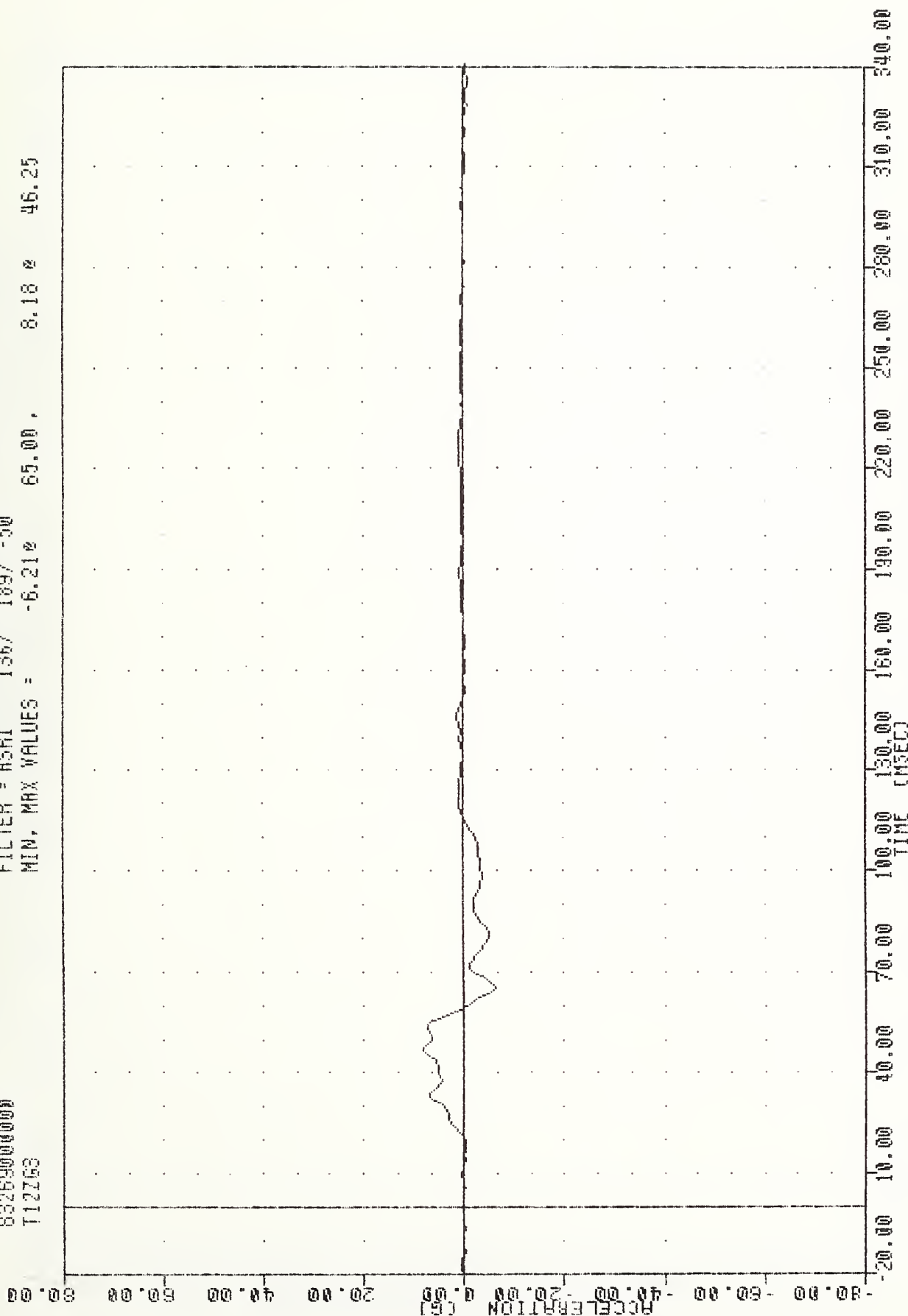
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 PASSENGER LOWER SPINE ACCELERATION -2 Y AXIS

TRC
EVALUATION OF HMO VW FLEET
83269000000
T12Z63

PLOT DATE 29-SEP-83 12:05:23

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -6.21e 65.00, 8.18 e 46.25



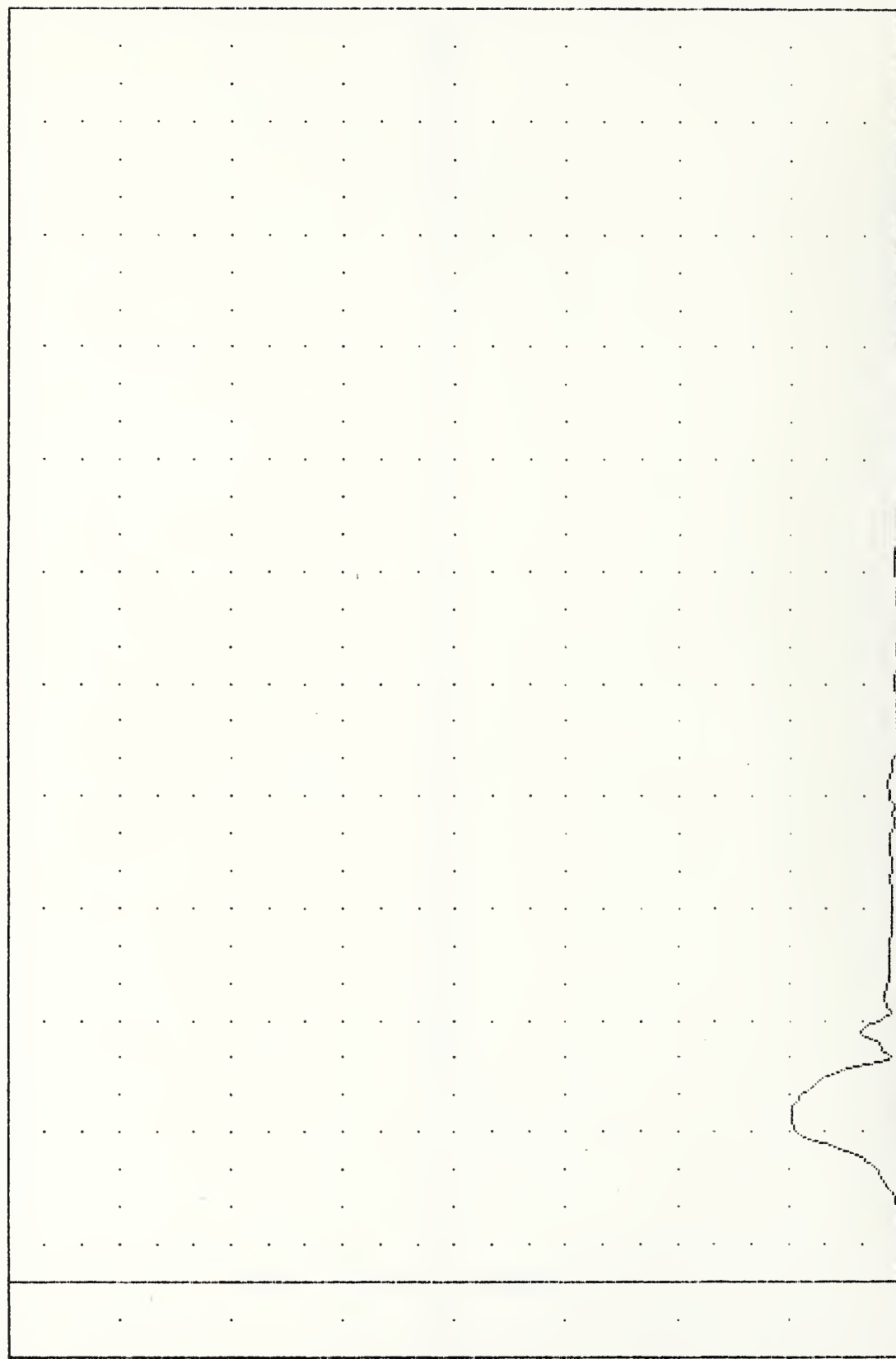
TRC
EVALUATION OF MOD YW FLEET
83269000000
T12R63

PLOT DATE 29-SEP-83 12:05:23

FILTER = HSR1 136/ 189/ -50

MIN. MAX VALUES = 0.11e 292.50 , 43.88 e 45.00

ACCELERATION (G)



0.00 50.00 100.00 150.00 200.00 250.00 300.00 340.00

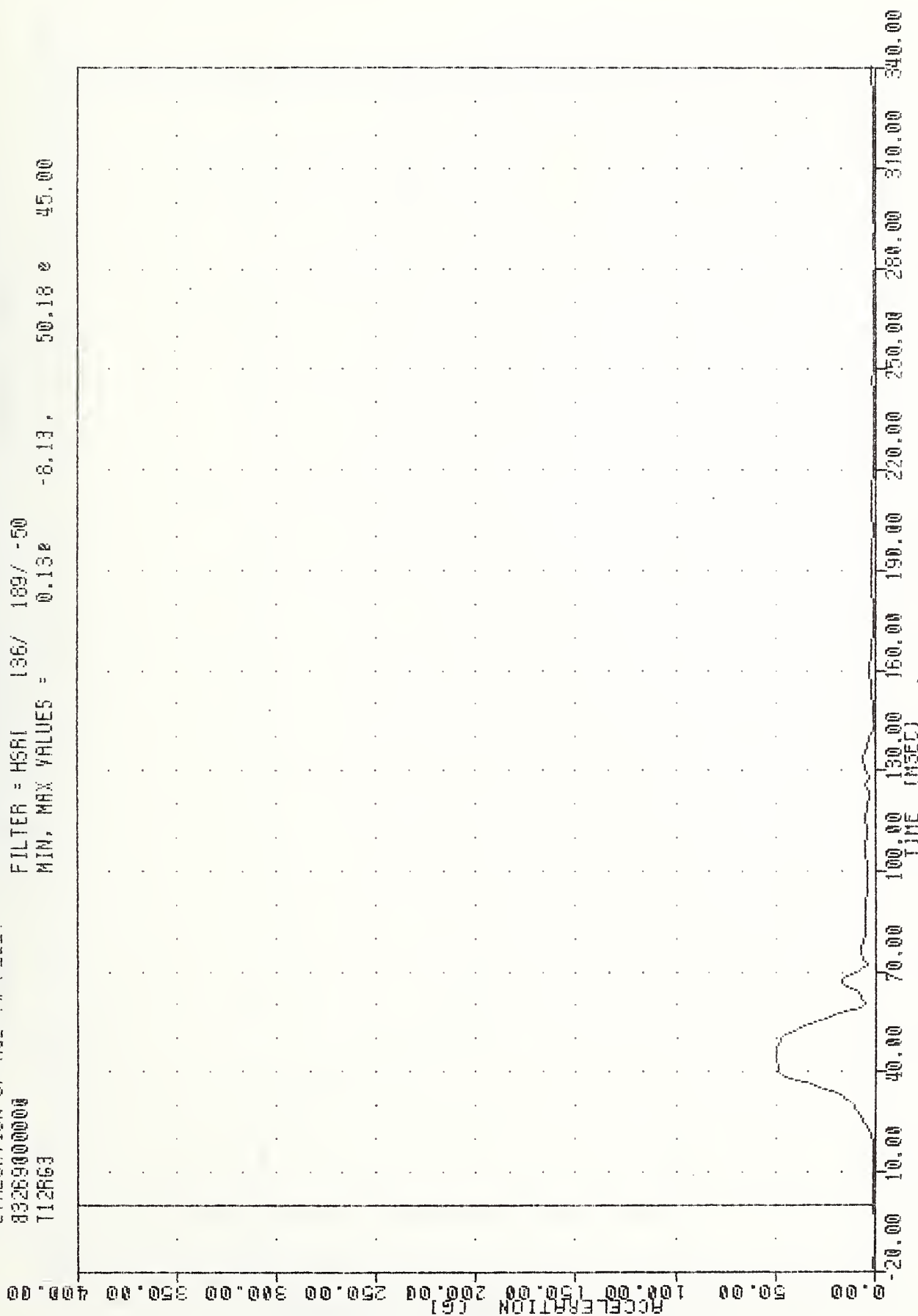
TIME (MSEC)

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER LOWER SPINE RESULTANT

TRC , 830926
 EVALUATION OF MOD VW FLEET
 83269000000
 112863

PLOT DATE 29-SEP-83 12:06:28

FILTER = HSRI 136/ 189/ -50
 MIN, MAX VALUES = 0.130 -8.13, 50.18 0 45.00



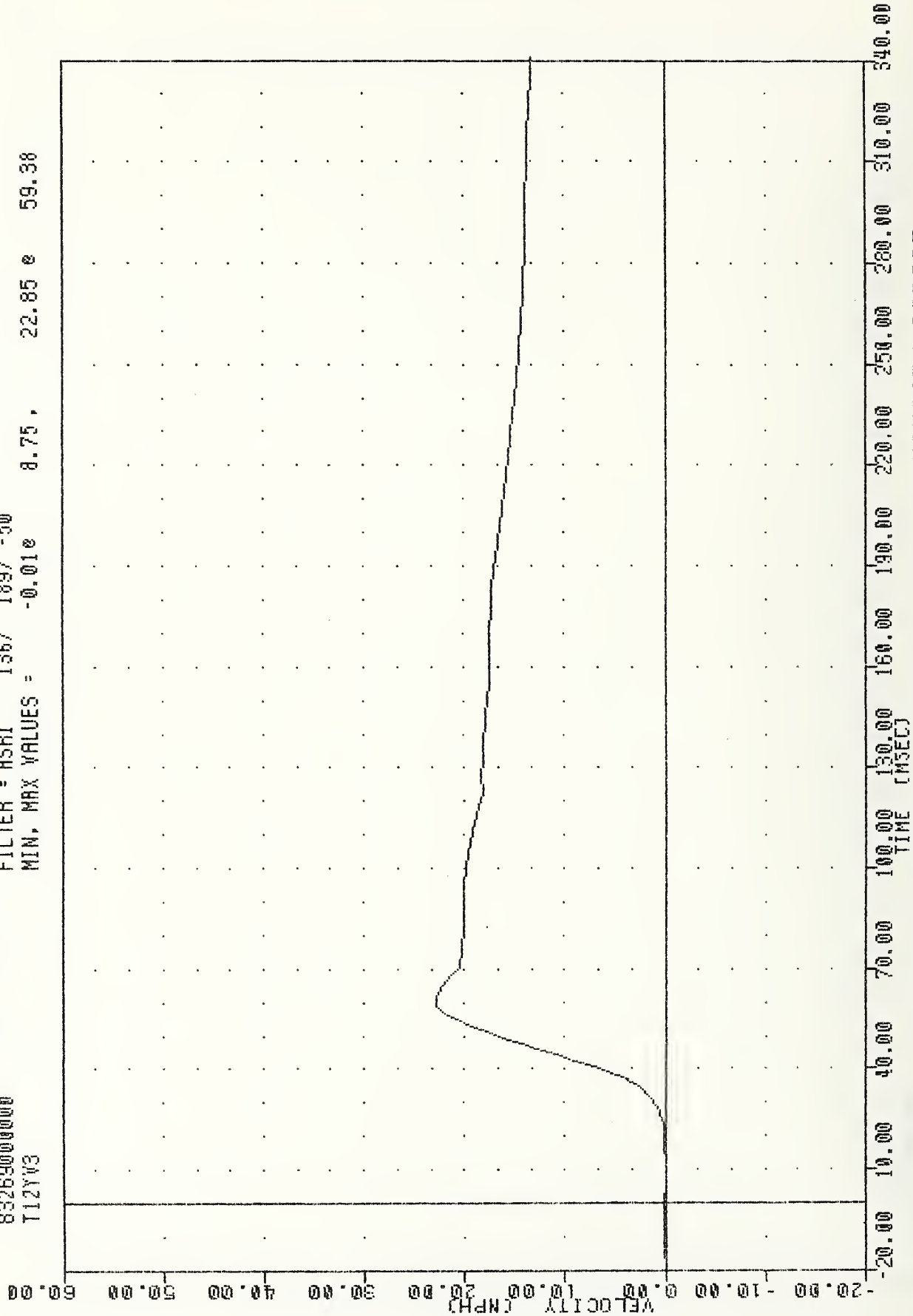
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 PASSENGER LOWER SPINE RESULTANT USING 112Y6C

TRC , 830926
 EVALUATION OF MOD VW FLEET
 83269000000
 T12YV3

PLOT DATE 30-SEP-83 08:40:32

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -0.01e 8.75, 22.85 e 59.38



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING T12Y63

TAC , 830926
 EVALUATION OF MOD VN FLEET
 83269000000
 T12YVC

PLOT DATE 30-SEP-83 08:40:32

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -0.04e -6.25, 23.60 e 60.00

60.00

50.00

40.00

30.00

20.00

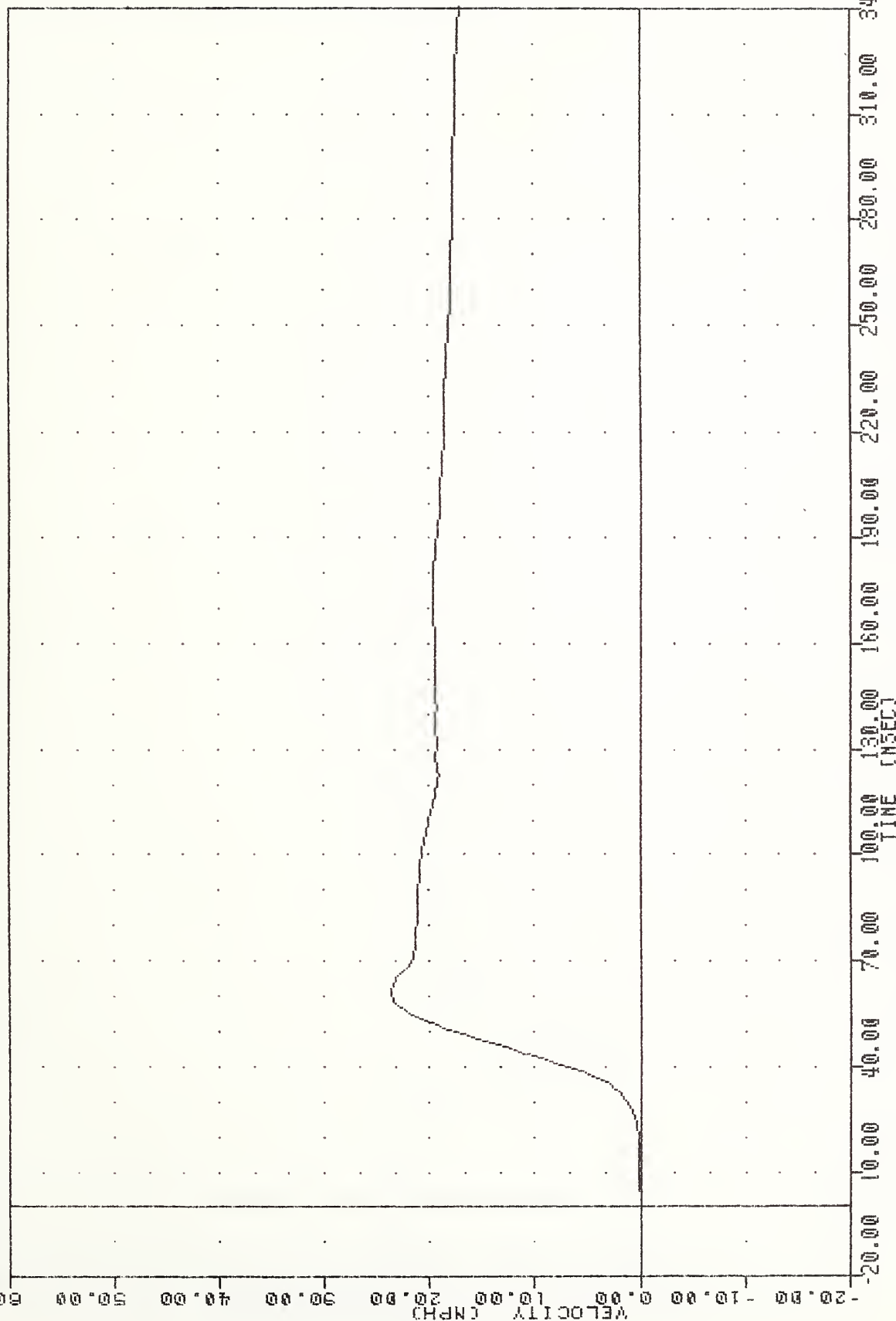
10.00

0.00

-10.00

-20.00

B-55



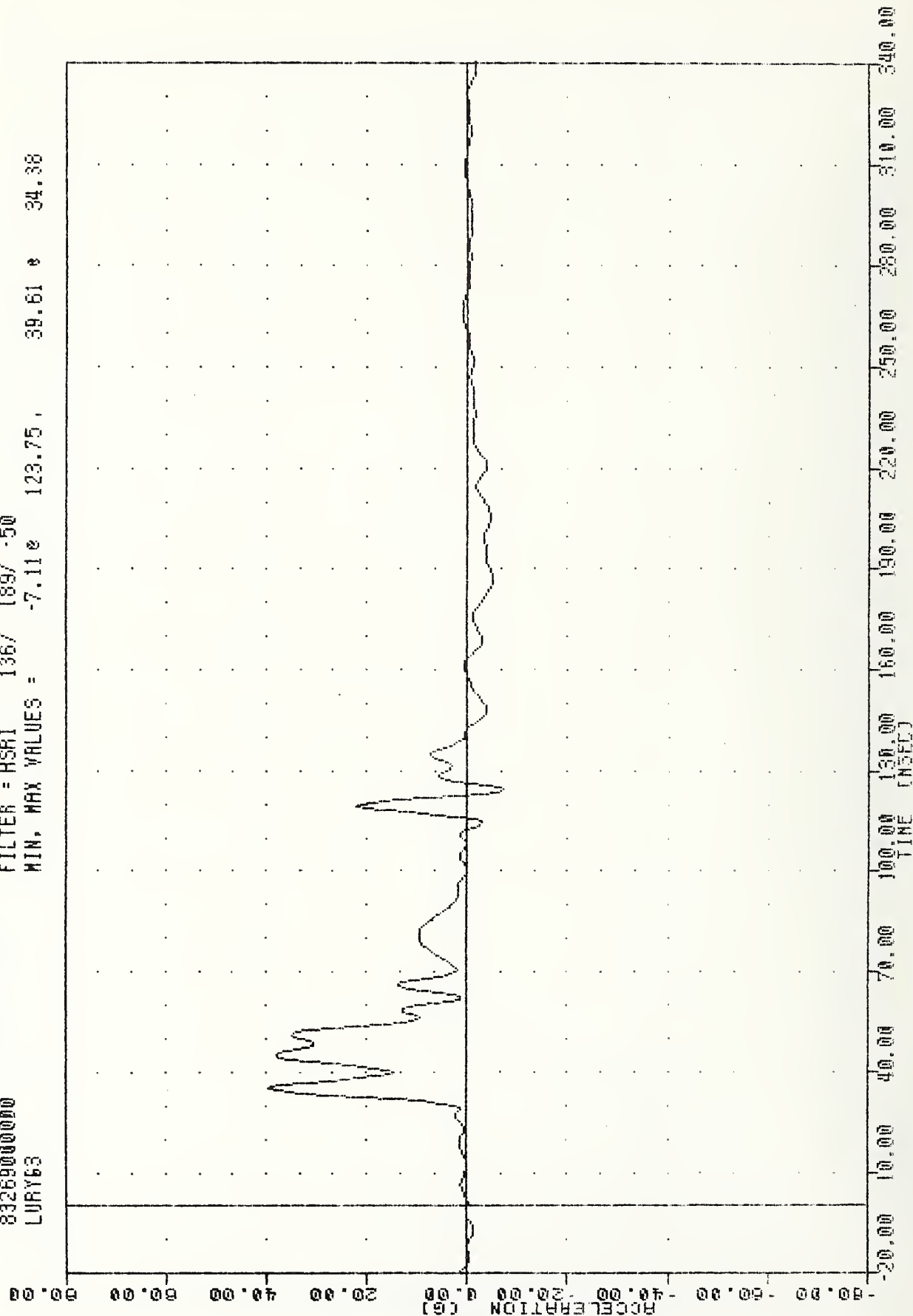
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING T12YGC

TAC
EVALUATION OF MOD VN FLEET
83269000000
LURY63

PLOT DATE 29-SEP-83 12:05:23

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -7.11e 123.75, 39.61 e 34.38

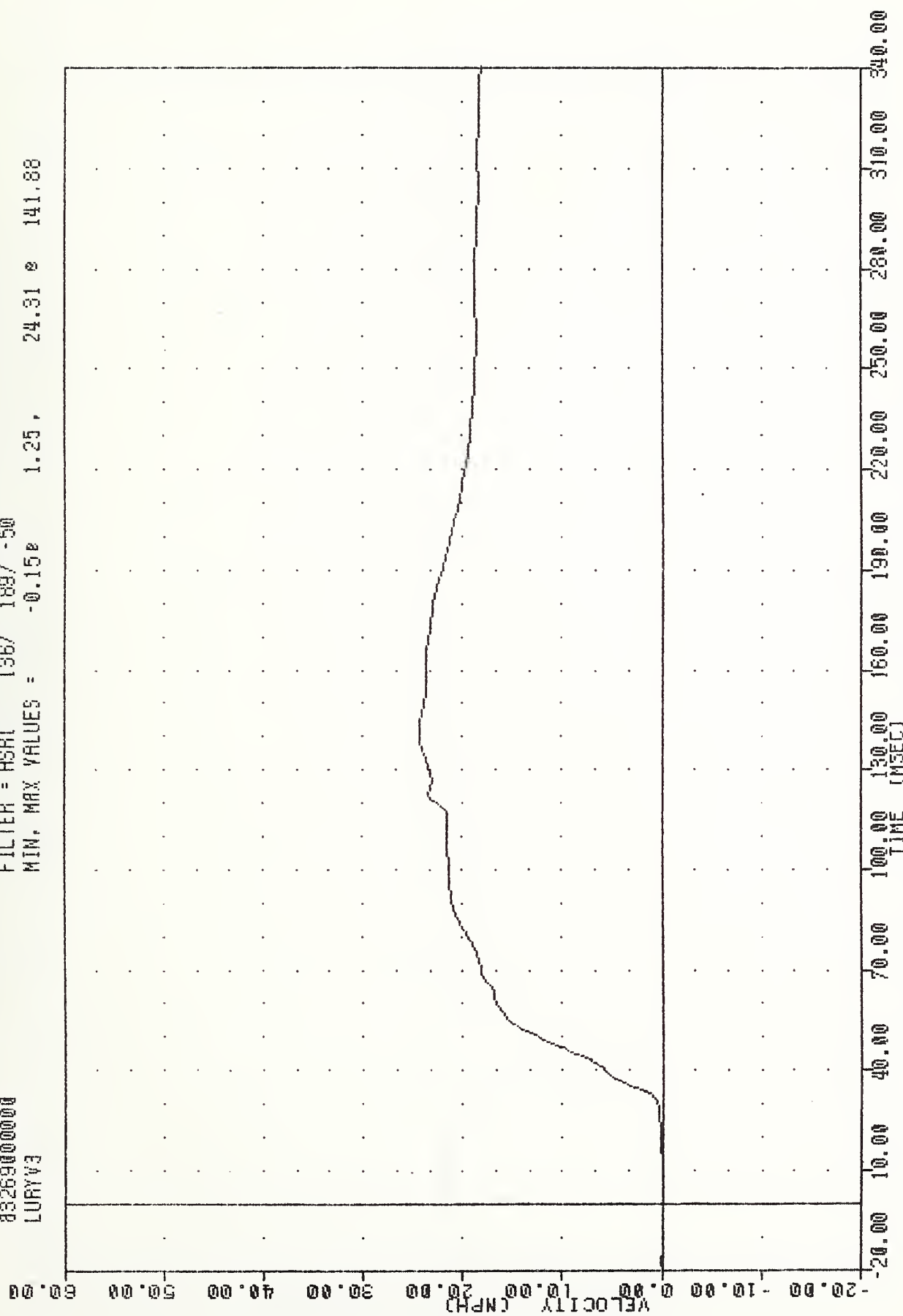


TRC , 830926
 EVALUATION OF MOD VW FLEET
 83269000000
 LURYV3

PLOT DATE 30-SEP-83 08:40:32

FILTER = HSR1 136/ 189/ -50

MIN, MAX VALUES = -0.15e 1.25, 24.31 e 141.88



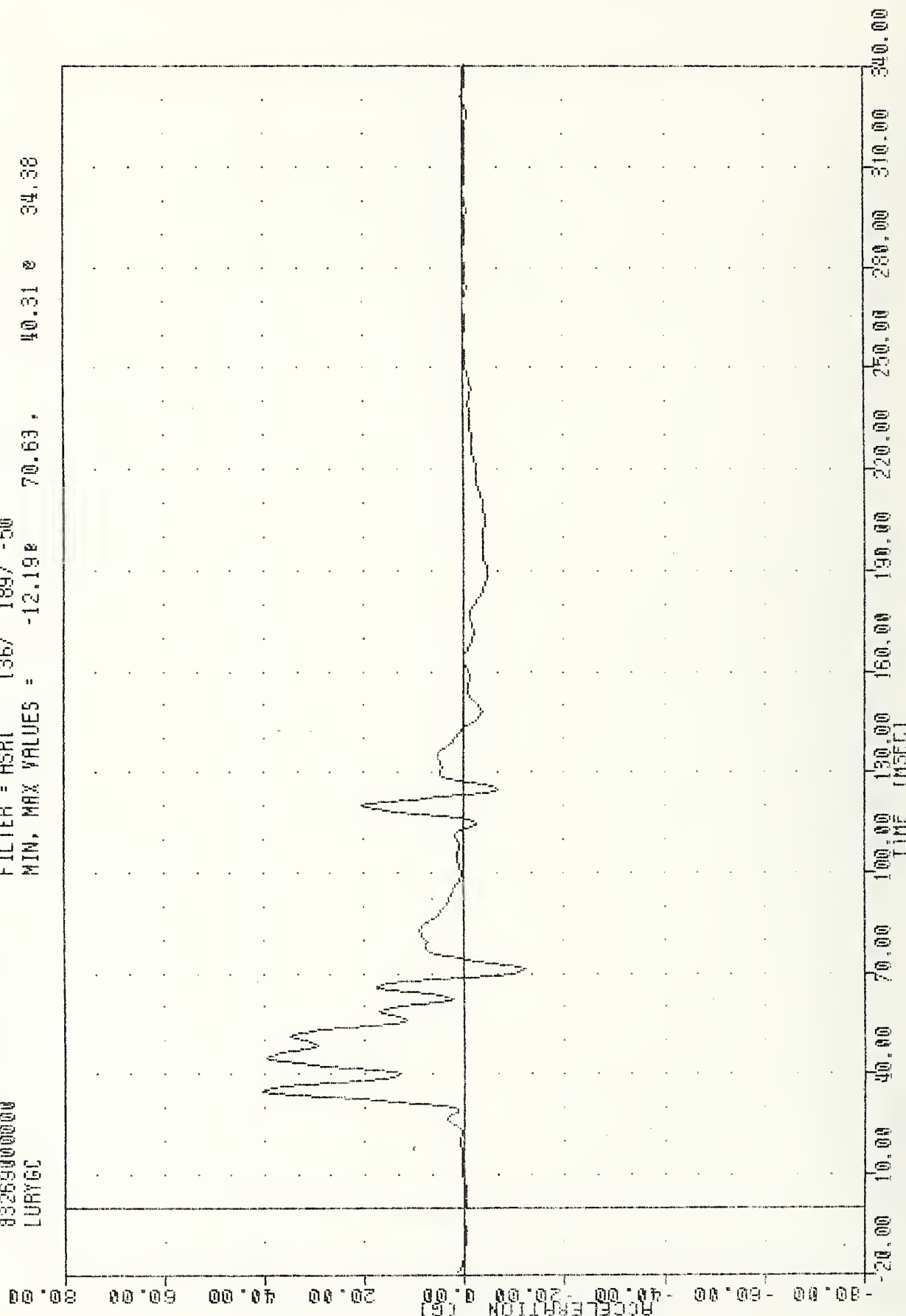
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING LURYG3

TRC , 830926
 EVALUATION OF MOD YW FLEET
 8326900000
 LURYGC

PLOT DATE 29-SEP-83 12:05:23

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -12.19 70.63 , 40.31 e 34.38



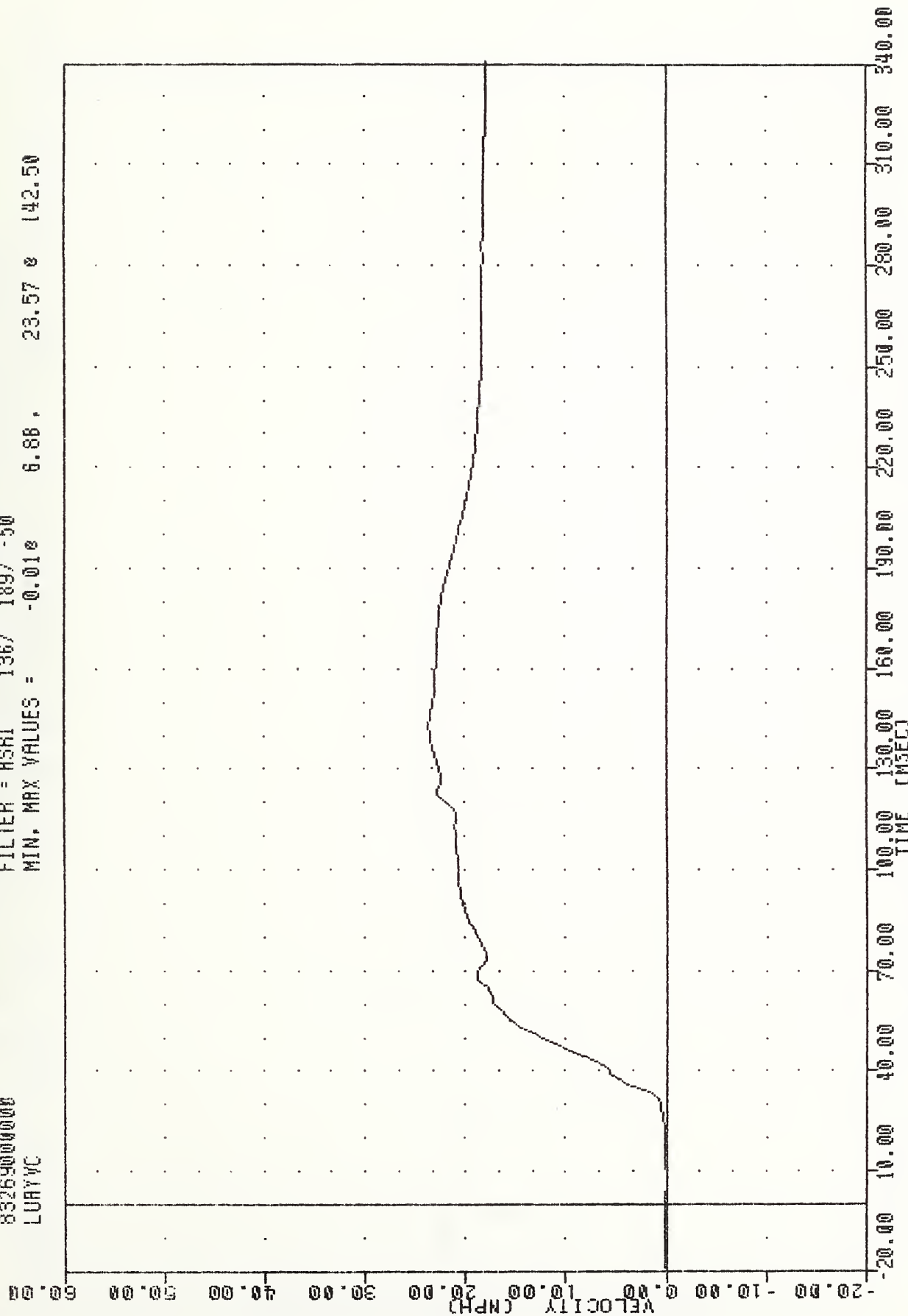
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 PASSENGER LEFT UPPER RIB ACCELERATION -Z Y AXIS

TRC
EVALUATION OF MOD VW FLEET
83269000000
LURYVC

PLOT DATE 30-SEP-83 08:40:32

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = -0.018 6.88 , 23.57 8 142.50

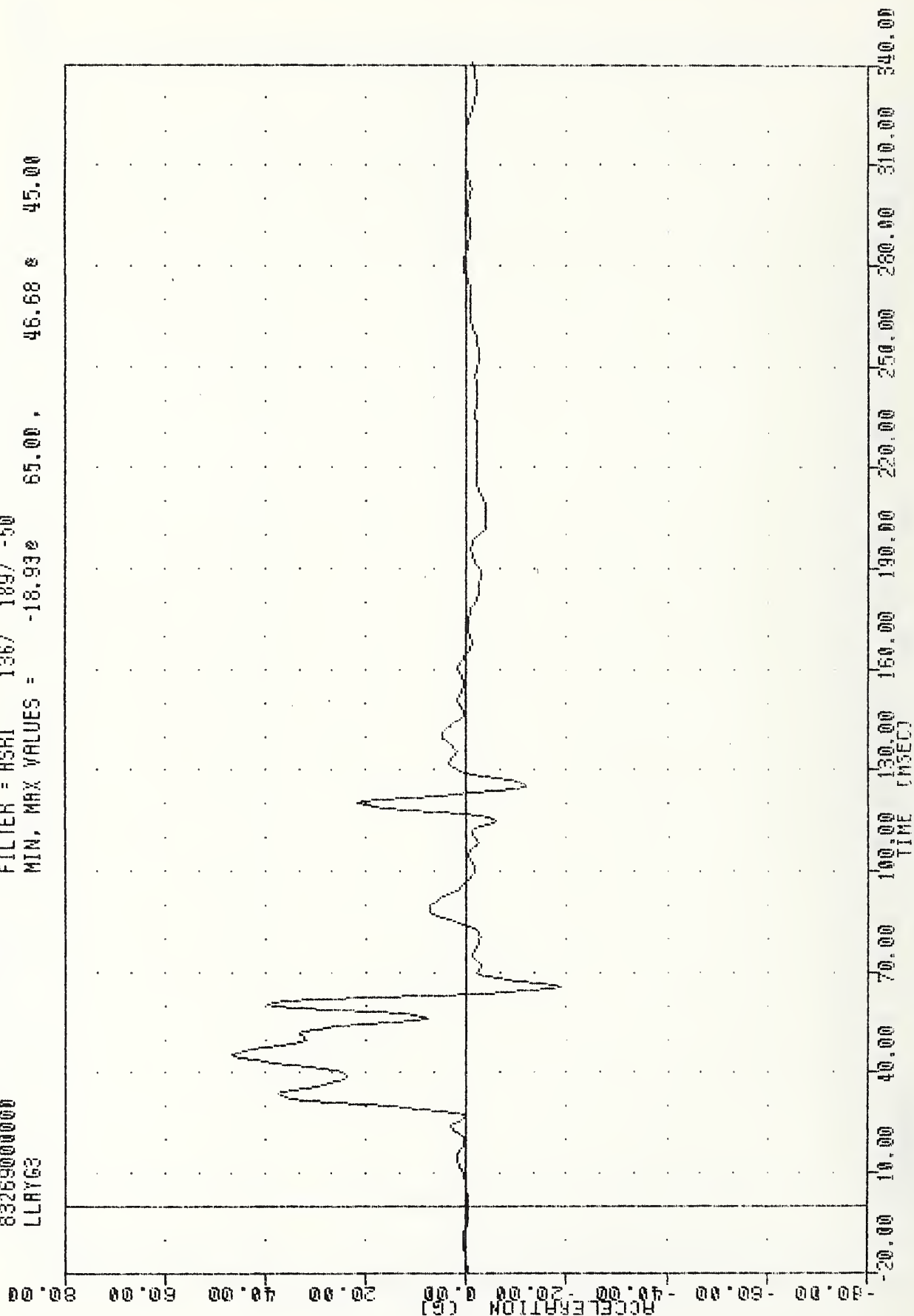


TRC
EVALUATION OF MDD VV FLEET
83269000000
LLRYG3

PLOT DATE 29-SEP-83 12:05:23

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -18.93e 65.00, 46.68 e 45.00



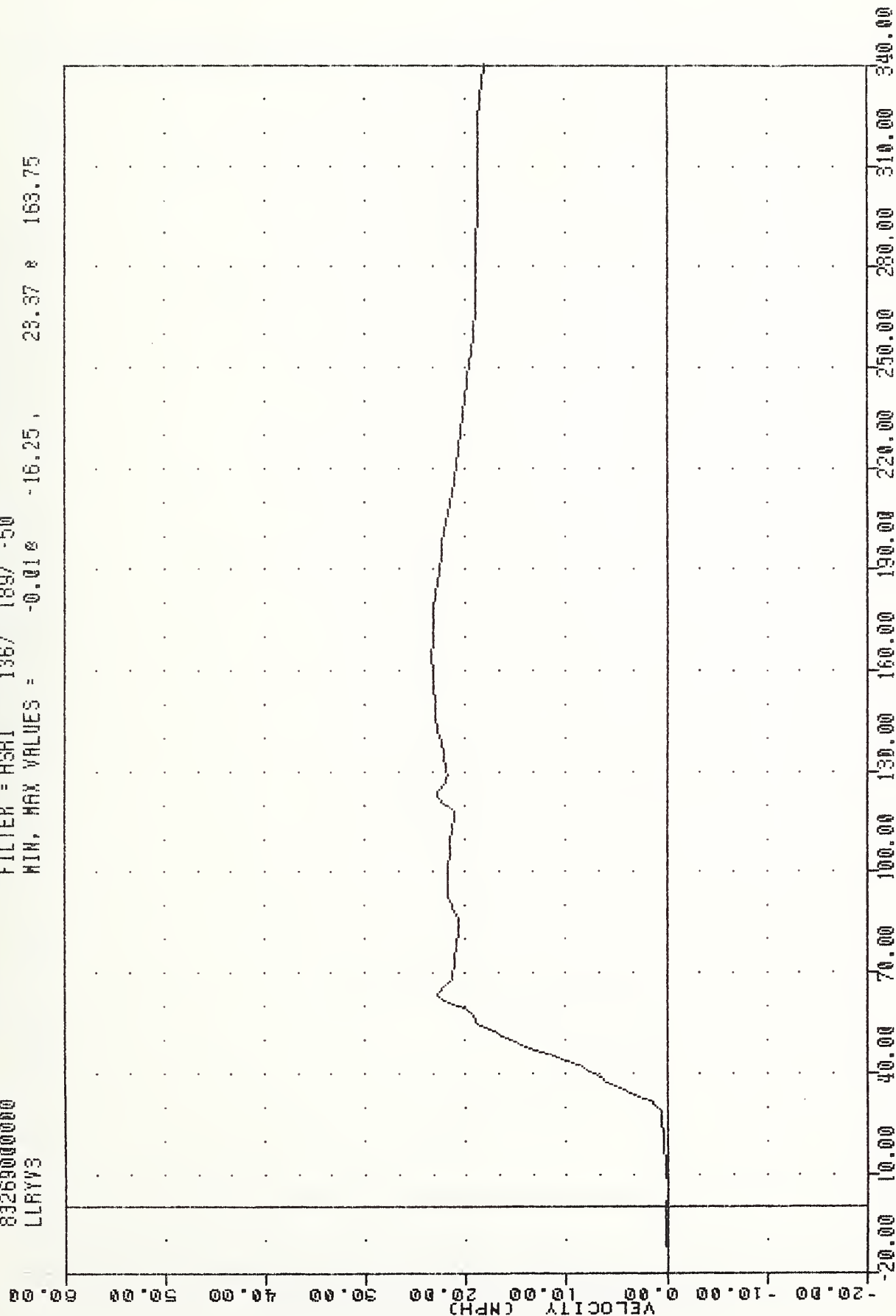
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER LEFT LOWER RIB ACCELERATION Y AXIS

TRC , 830926
 EVALUATION OF MOD VW FLEET
 832690000000
 LLRYV3

PLOT DATE 30-SEP-83 08:40:32

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -0.018 -16.25 , 23.37 * 163.75



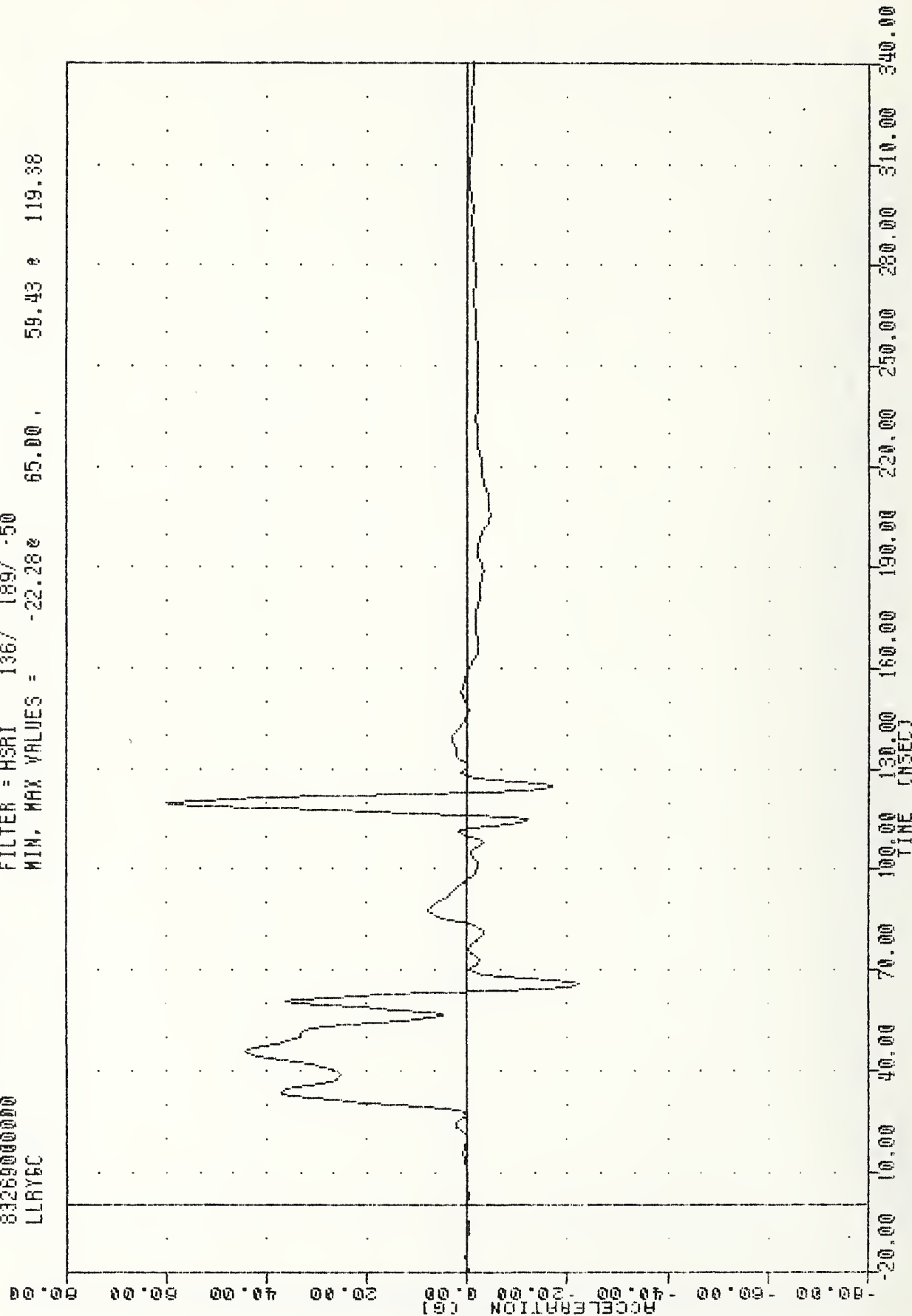
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING LLRYG3

TAC
EVALUATION OF MOD VW FLEET
83269000000
LLRYSC

PLOT DATE 29-SEP-83 12:05:23

FILTER = HSRI 136/ 189/ -50

MIN, MAX VALUES = -22.28 65.00, 59.43 119.38



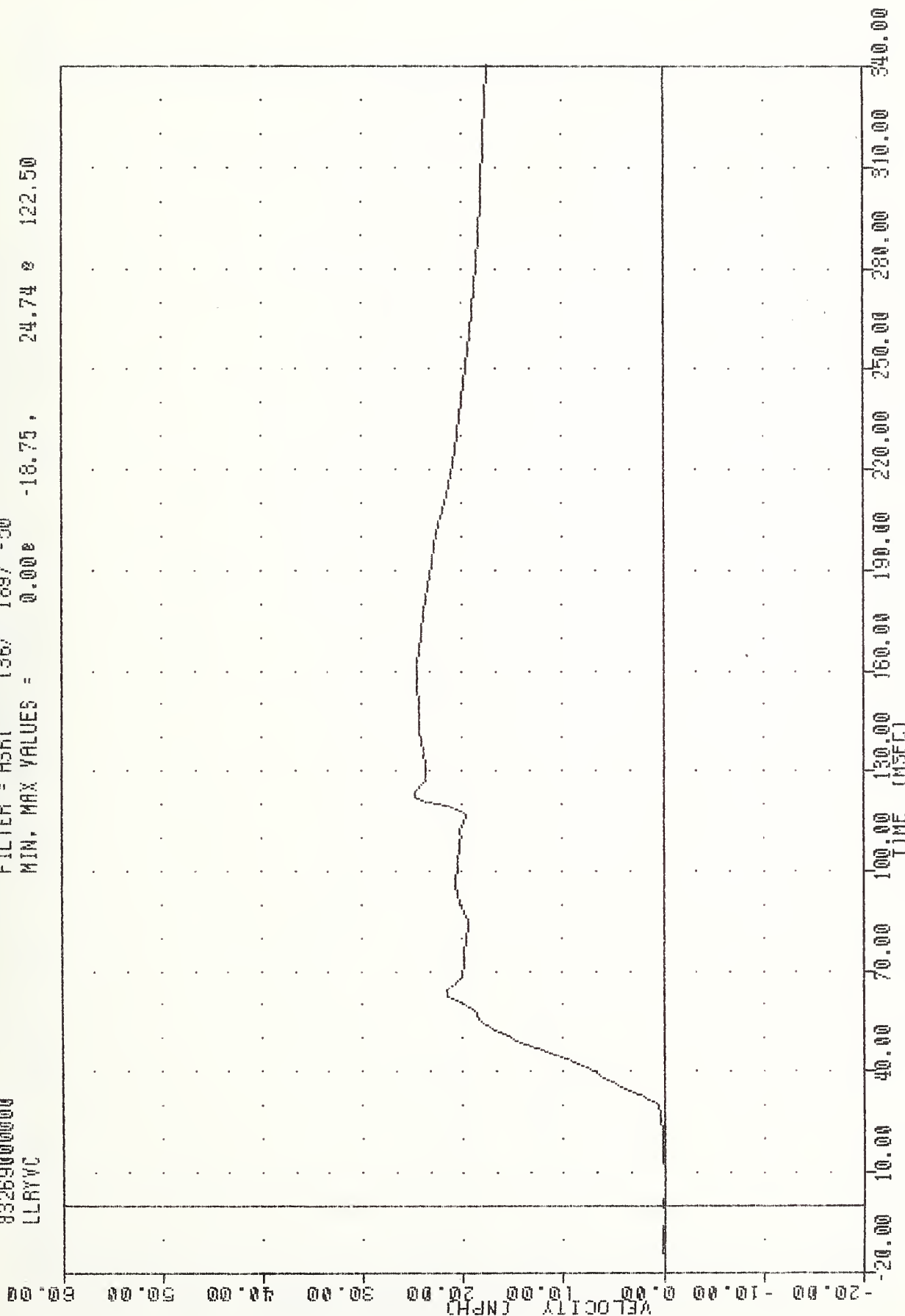
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER LEFT LOWER RIB ACCELERATION -Z Y AXIS

TRC , 830826
 EVALUATION OF MOD VW FLEET
 83269000000
 LLRYVC

PLOT DATE 30-SEP-83 08:40:32

FILTER = HSRI 136/ 189/ -50

MIN. MAX VALUES = 0.00e -18.75, 24.74 e 122.50



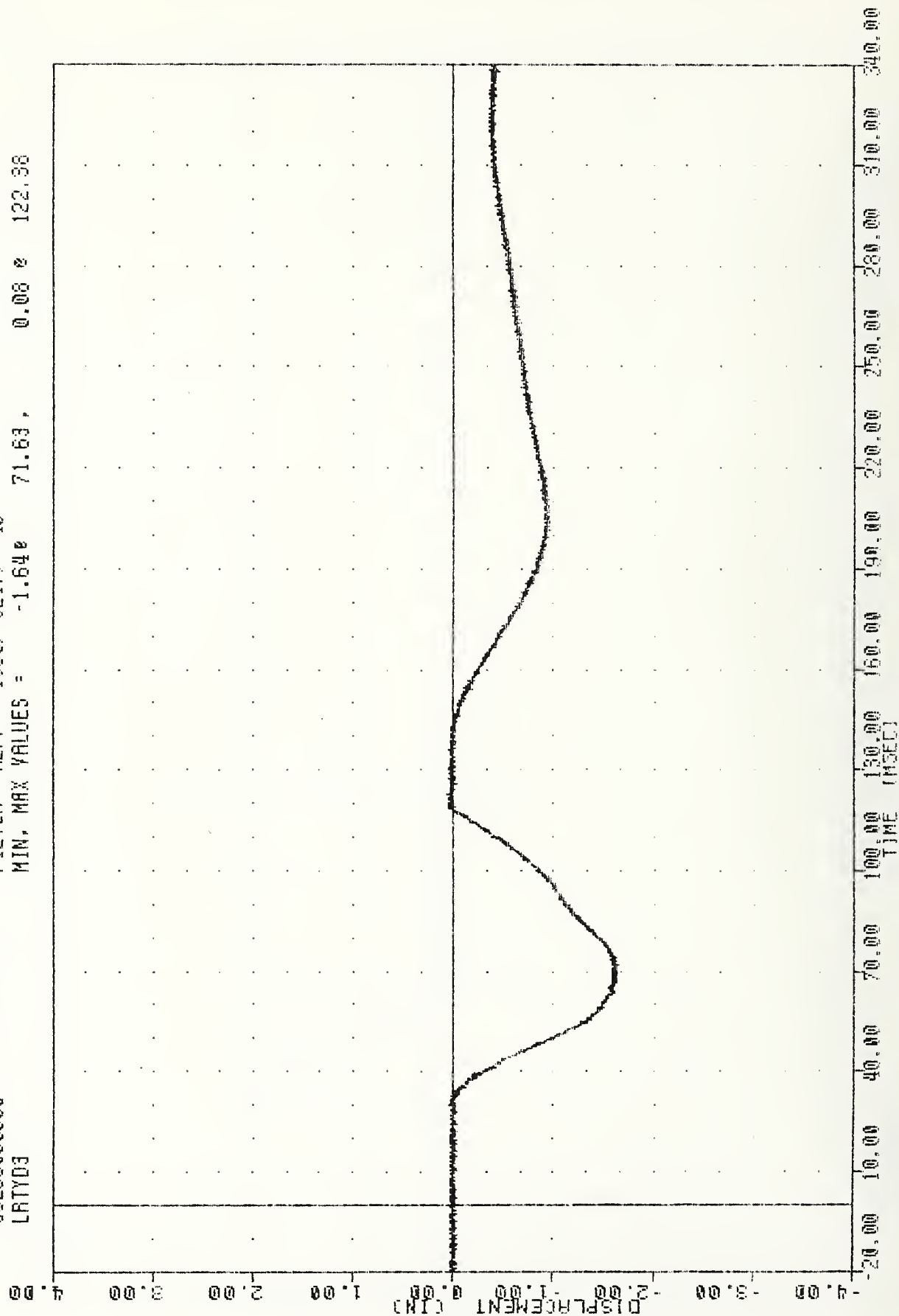
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING LLRYGC

TRC , 830926
 EVALUATION OF MOD YW FLEET
 83269000000
 LRTYD3

PLOT DATE 29-SEP-83 12:06:59

FILTER = ALPF 1650/ 5217/ -40

MIN. MAX VALUES = -1.64e 71.63, 0.08 e 122.36



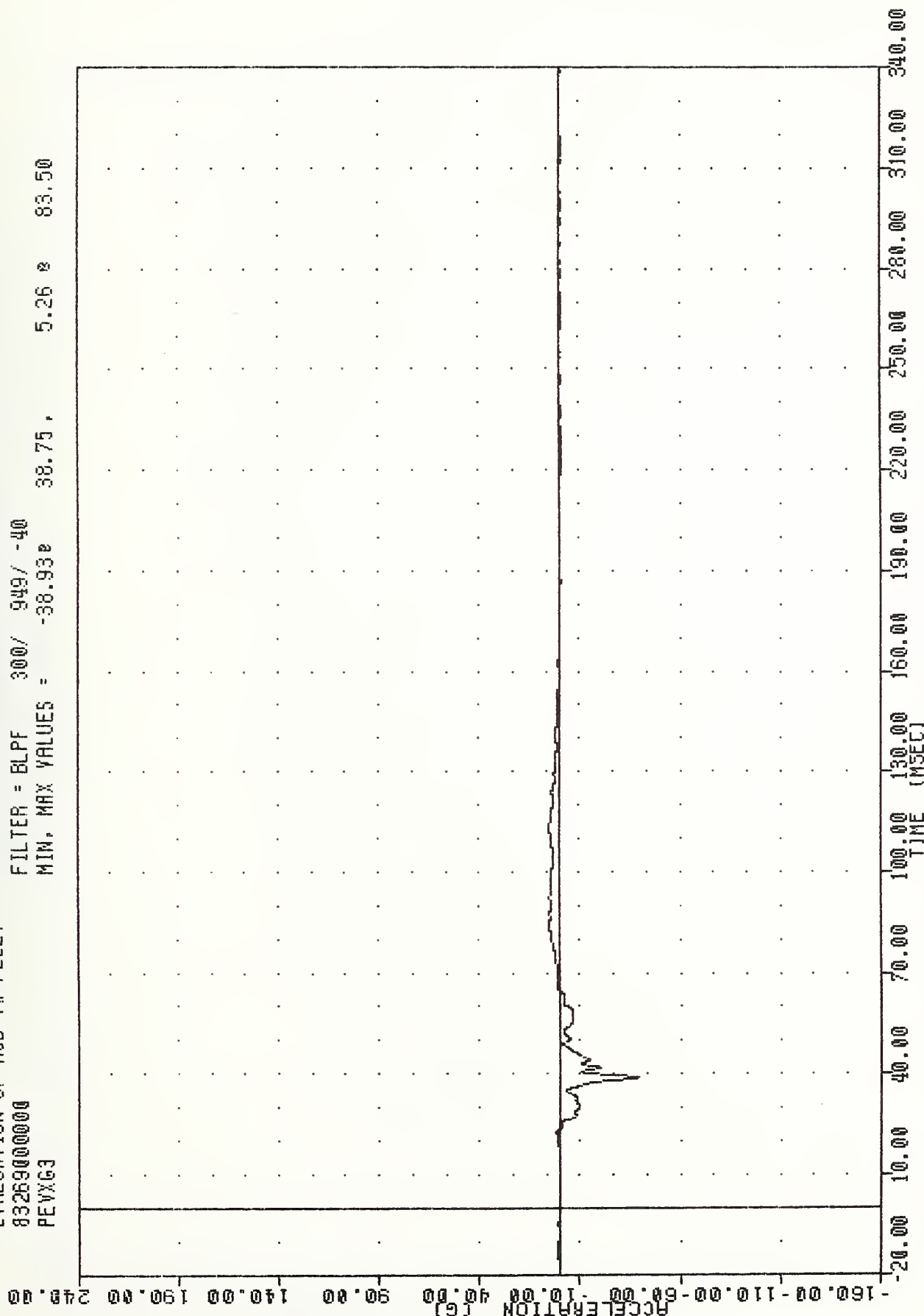
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 PASSENGER LEFT AIS TO SPINE DISPLACEMENT INCHES

TRC , 830926
 EVALUATION OF MOD VW FLEET
 83269000000
 PEVXG3

PLOT DATE 29-SEP-83 14:29:08

FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = -38.93e 38.75, 5.26 e 83.50



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 PASSENGER PELVIS ACCELERATION X AXIS

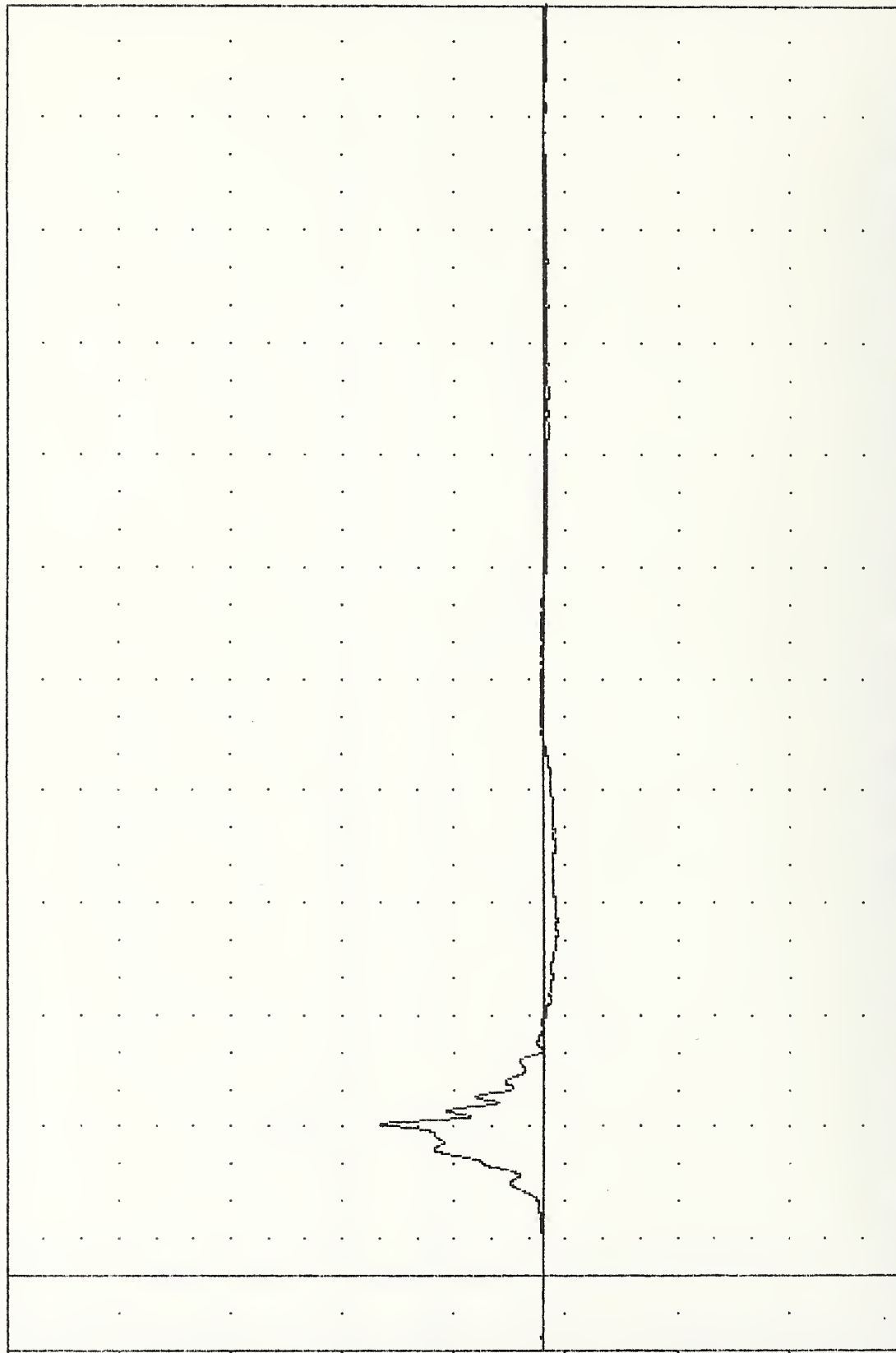
TRC , 830926
 EVALUATION OF M00 VW FLEET
 832590000000
 PEVY63

PLOT DATE 29-SEP-83 14:29:00

FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = -6.01e 91.80, 73.22 e 40.50

ACCELERATION (G)



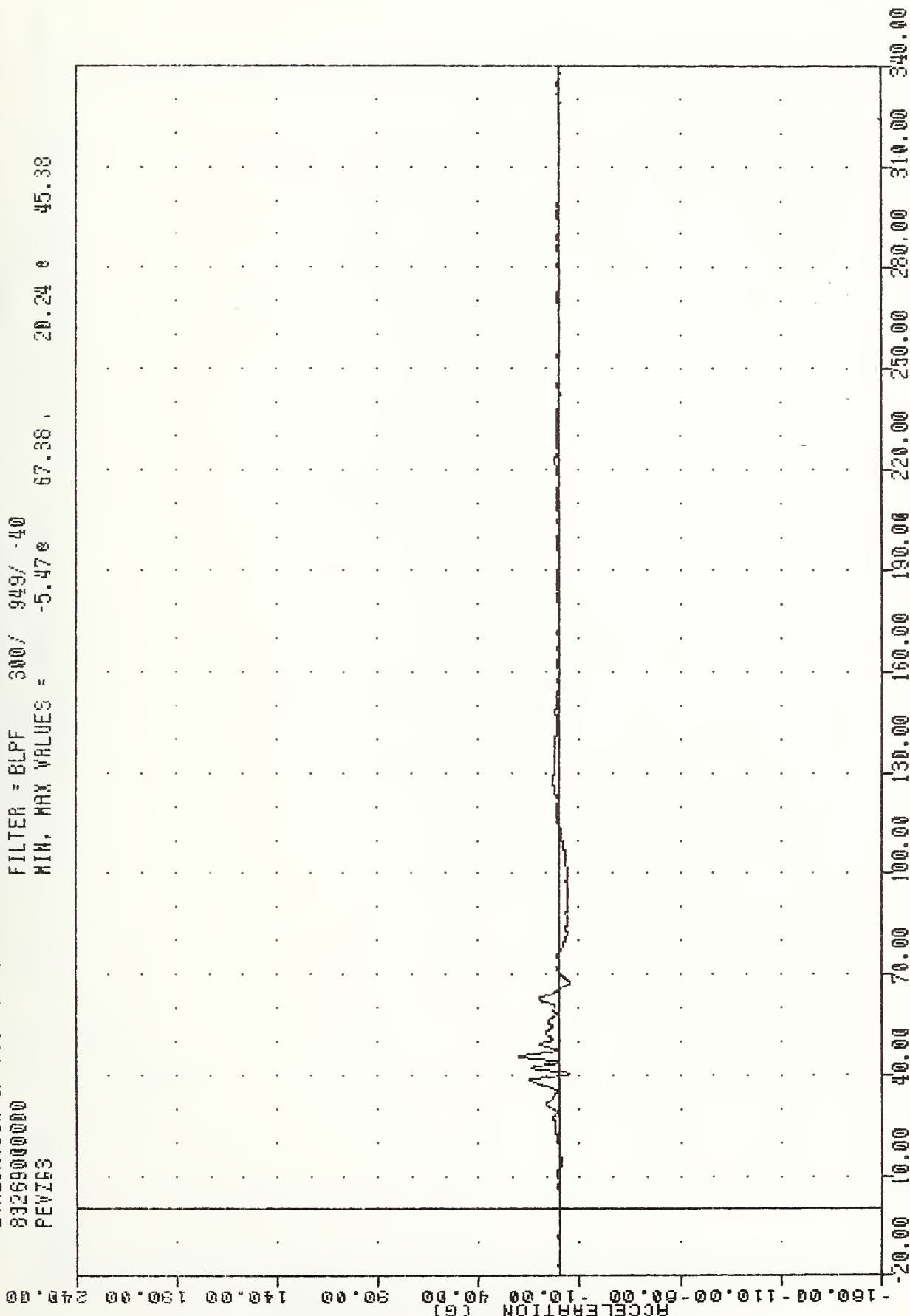
TIME (MSEC)

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 PASSENGER PELVIS ACCELERATION Y AXIS

TAC
EVALUATION OF MOD VW FLEET
83269000000
PEVZES

PLOT DATE 29-SEP-83 14:29:08

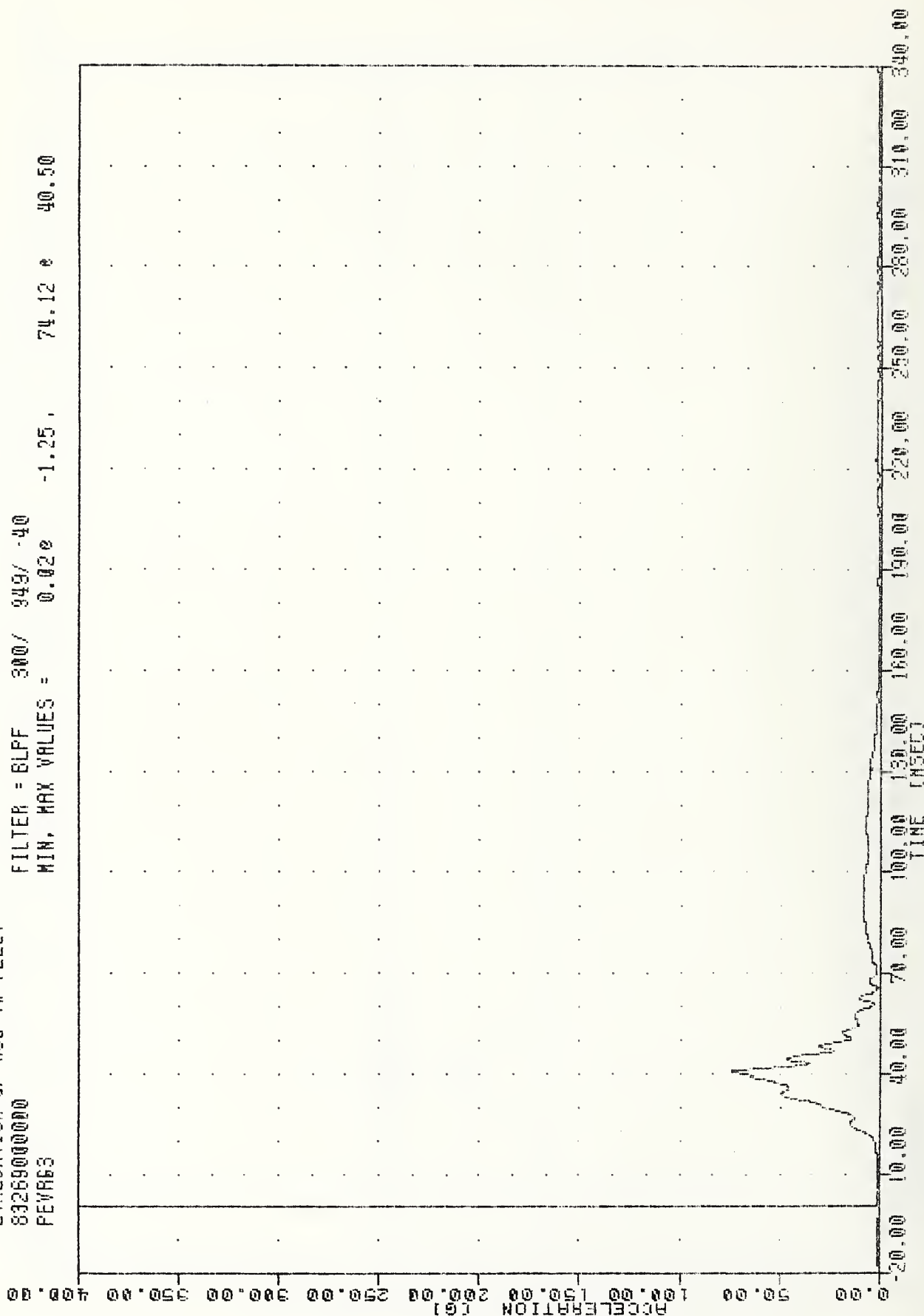
FILTER = BLPF 300/ 949/ -40
MIN, MAX VALUES = -5.47% 67.38, 20.24 45.38



TAC
EVALUATION OF H00 VW FLEET
83269000000
PEVRES

PLOT DATE 29-SEP-83 12:06:59

FILTER = BLPF 300/ 949/ -40
MIN, MAX VALUES = 0.020 -1.25, 74.12 40.50



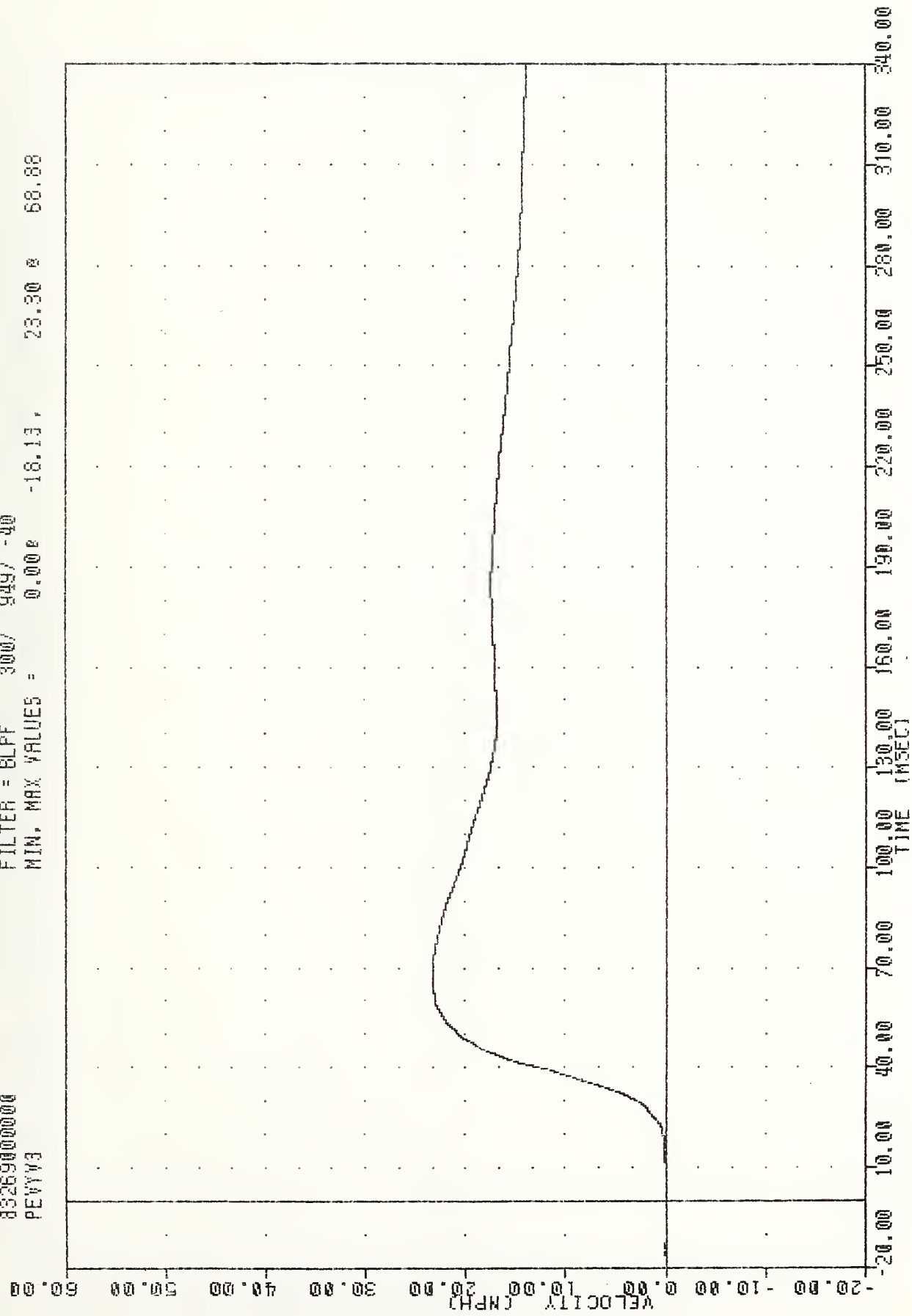
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PASSENGER PELVIS RESULTANT

TRC , 830926
 EVALUATION OF MOD YW FLEET
 83269000000
 PEVYV3

PLOT DATE 30-SEP-83 08:41:37

FILTER = BLPF 300/ 949/ -40

MIN. MAX VALUES = 0.00e -18.13, 23.30 e 68.88



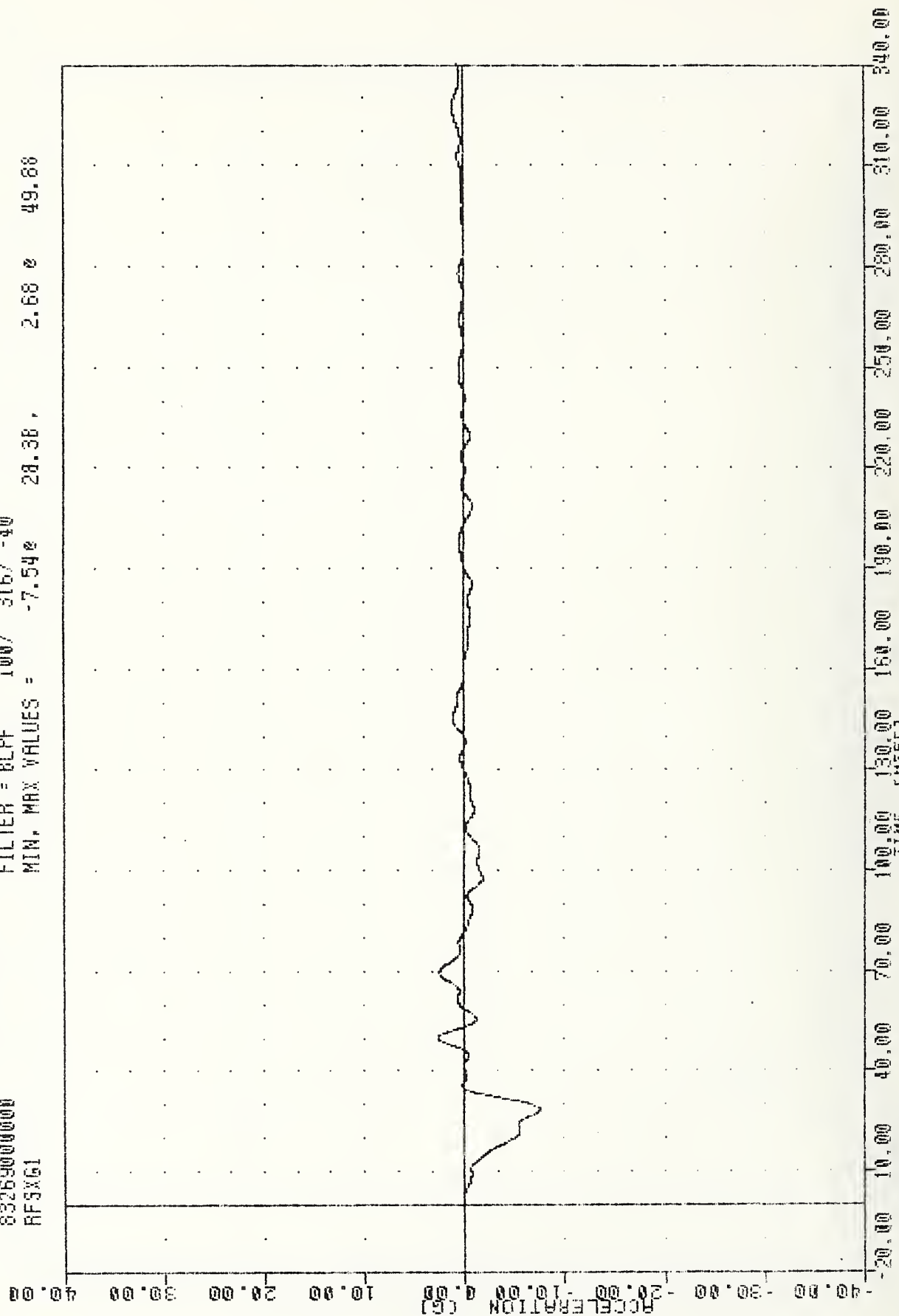
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING PEVY63

TRC , 830926
 EVALUATION OF MOD VN FLEET
 83269000000
 RFSXG1

PLOT DATE 29-SEP-83 12:06:59

FILTER = BLPF 100/ 316/ -40

MIN. MAX VALUES = -7.54e 28.38e 2.68e 49.88



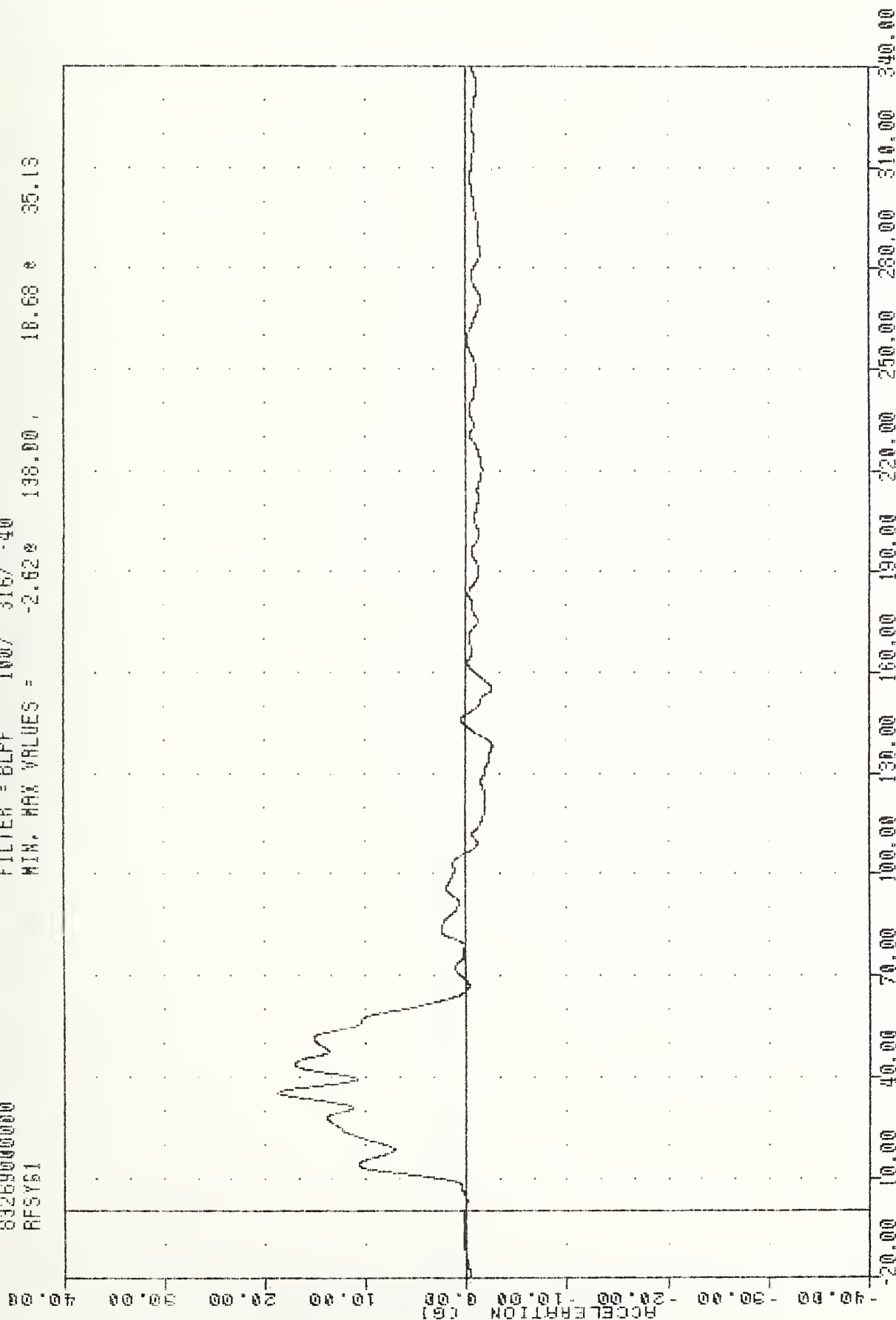
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 VEHICLE RIGHT FRONT STILL ACCELERATION X AXIS

TAC
EVALUATION OF MOD VN FLEET
83269000000
RFSY61

PLOT DATE 29-SEP-83 12:06:59

FILTER = BLPF 100/ 316/ -40

MIN. MAX VALUES = -2.62% 138.00 , 18.68 * 35.13



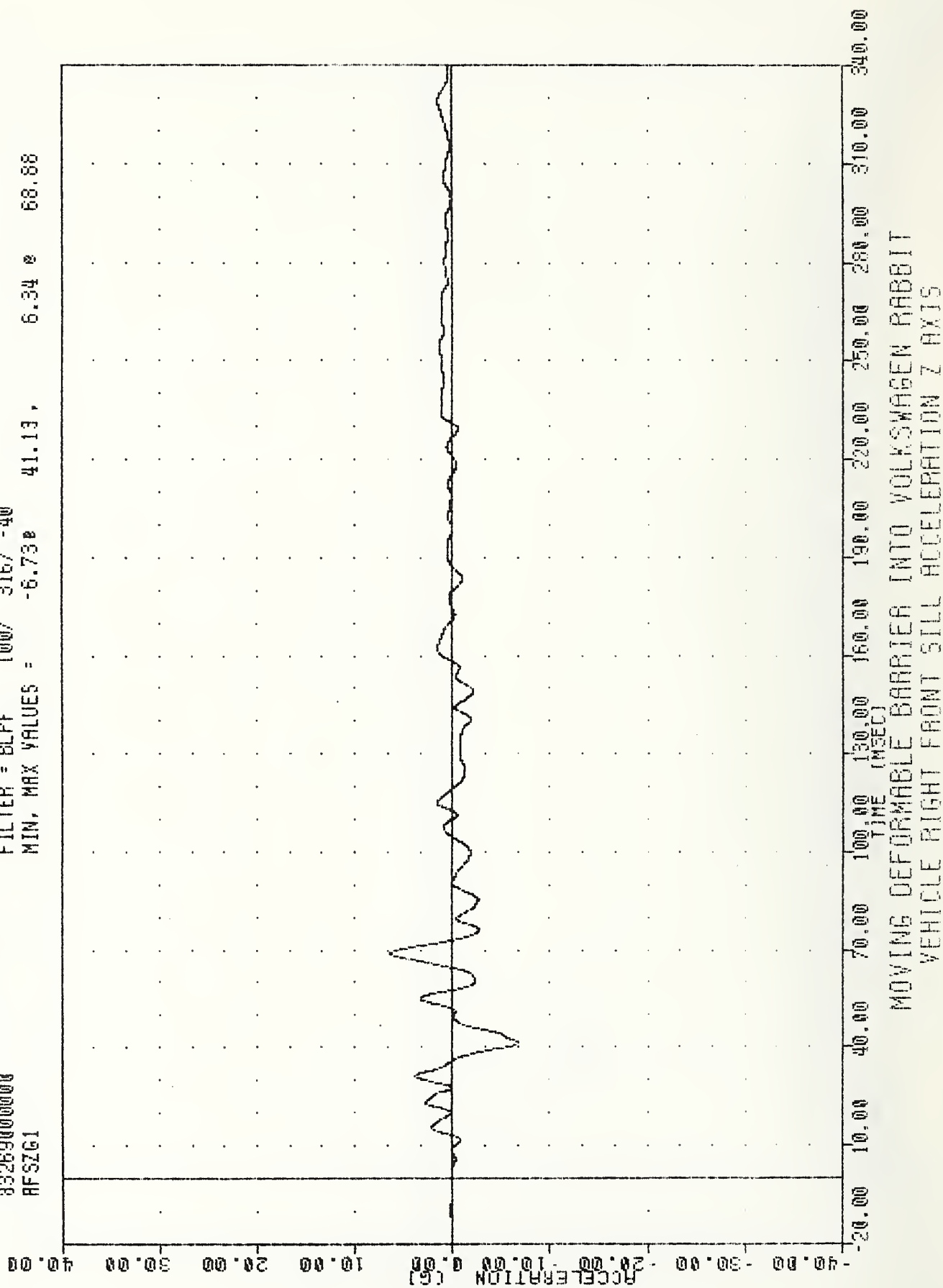
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE RIGHT FRONT SILL ACCELERATION Y AXIS

TRC , 830926
 EVALUATION OF MOD VW FLEET
 83269000000
 RFSZG1

PLOT DATE 29-SEP-83 12:06:59

FILTER = BLPF 100/ 316/ -40

MIN, MAX VALUES = -6.73e 41.13, 6.34 e 68.68

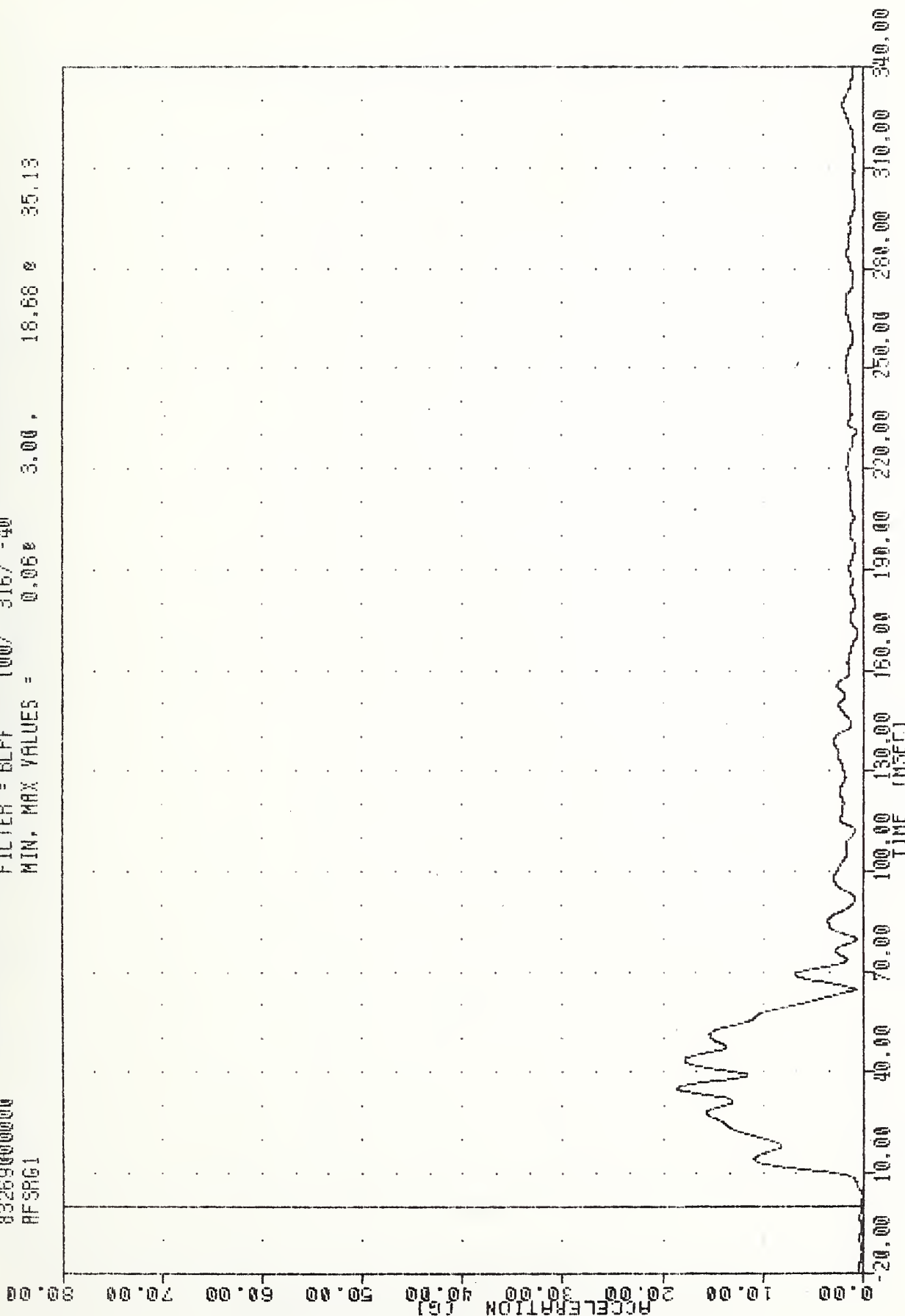


TRC
EVALUATION OF MOD VN FLEET
83269000000
RFSRG1

PLOT DATE 29-SEP-83 12:06:59

FILTER = BLPF 100/ 316/ -40

MIN. MAX VALUES = 0.06g 3.00g 18.68g 35.13g



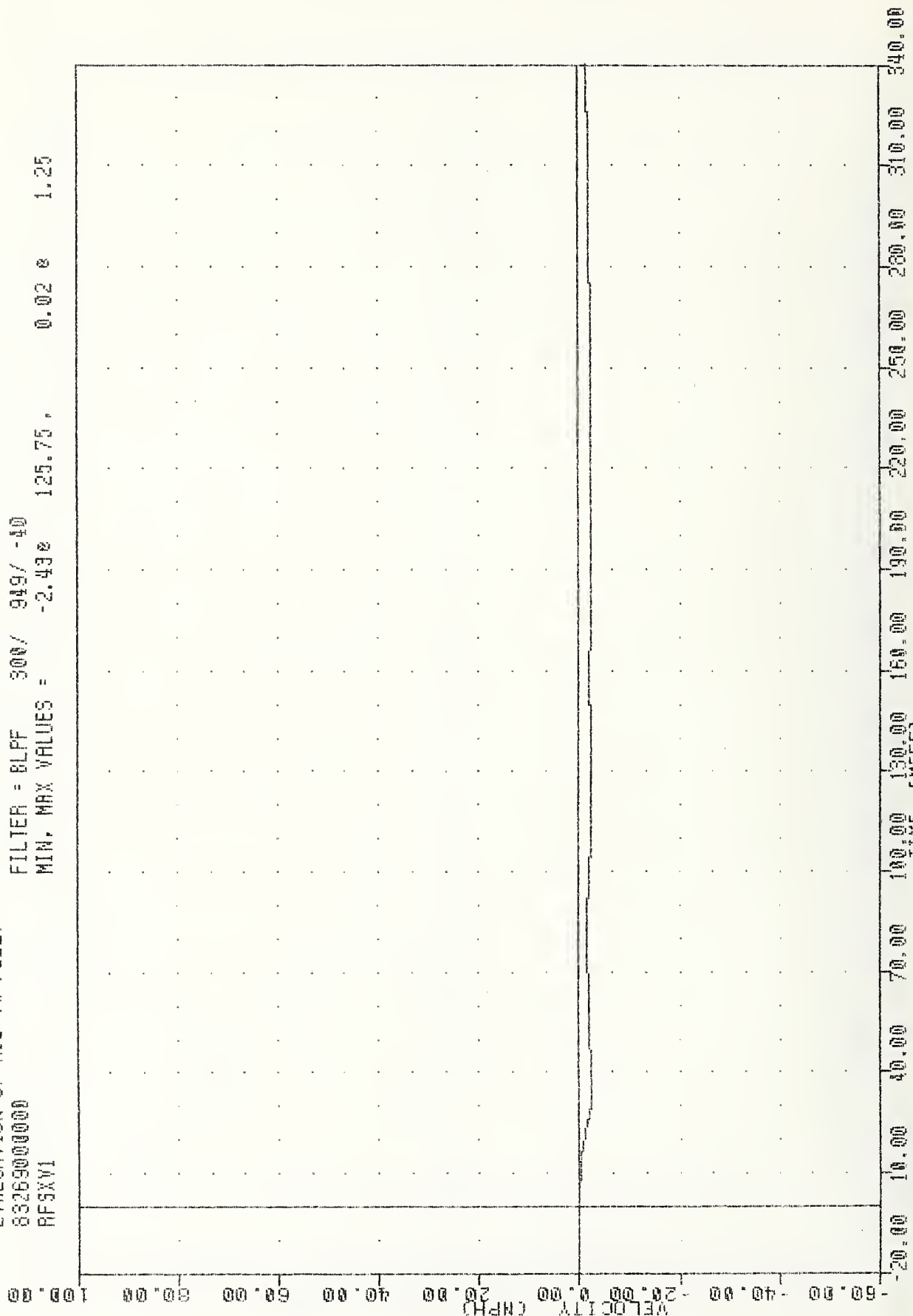
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE RIGHT FRONT SILL RESULTANT

TRC , 830926
EVALUATION OF M00 VW FLEET
832690000000
RFSXV1

PLOT DATE 30-SEP-83 00:41:37

FILTER = BLPF 300/ -40

MIN, MAX VALUES = -2.438 125.75, 0.02 1.25



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT

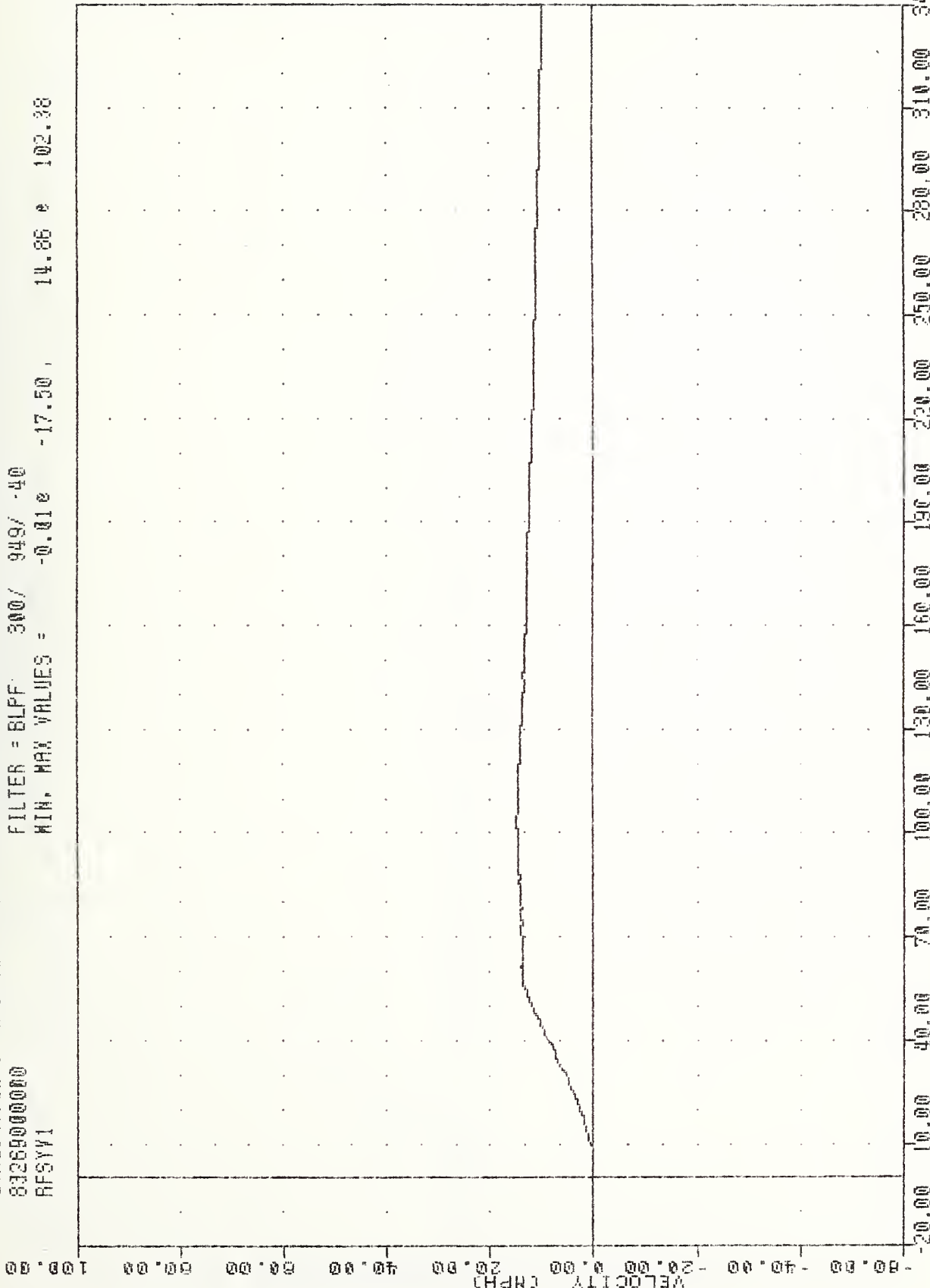
DELTA V USING RFSXG1

TAC , 830926
 EVALUATION OF MOG YW FLEET
 832690000000
 RFSYV1

PLUT DATE 30-SEP-83 08:41:37

FILTER = BLPF 300/ 949/ -40

MIN. MAX VALUES = -0.010 -17.50 , 14.86 e 102.38



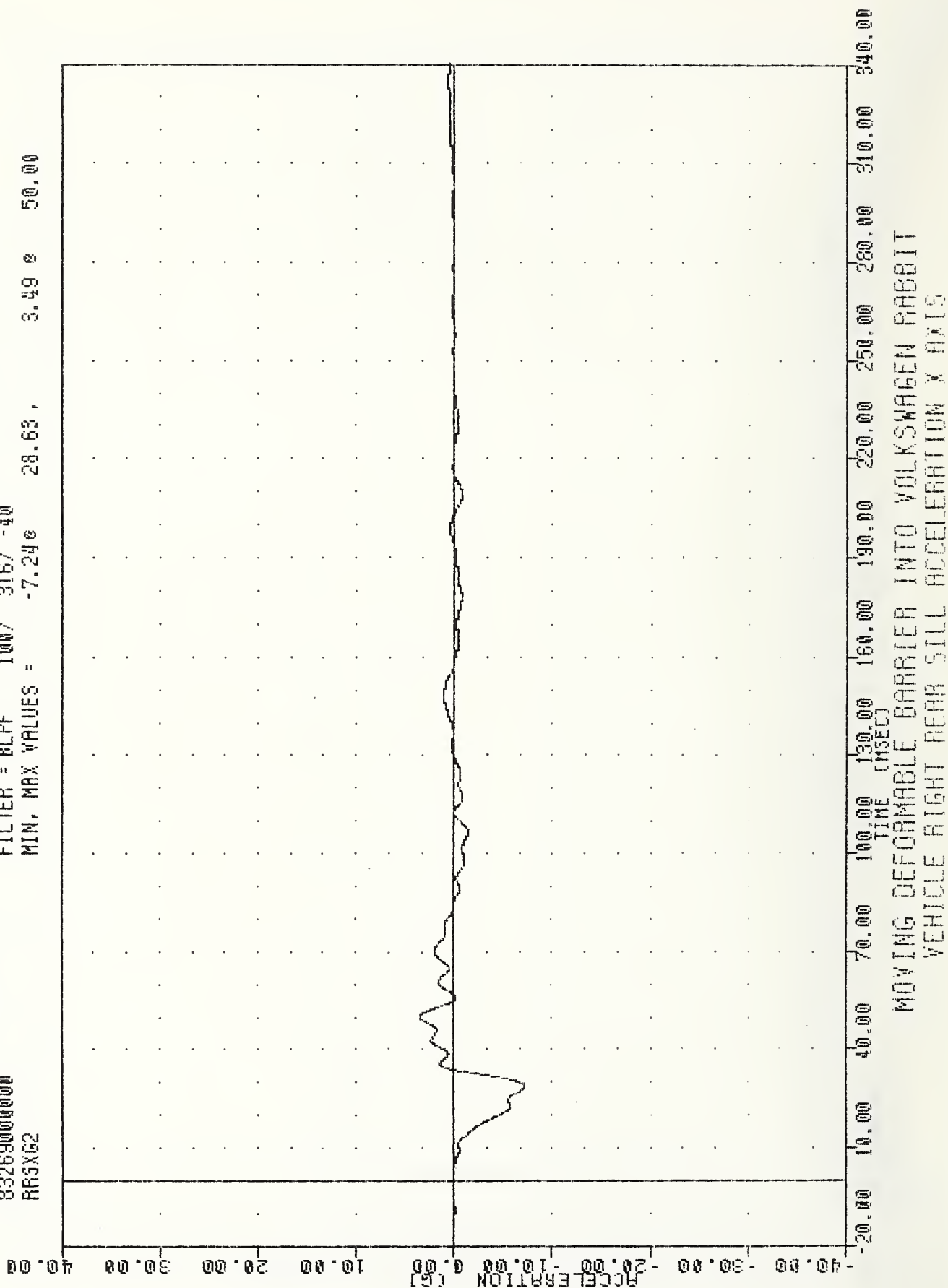
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING RFSYGI

TRC
EVALUATION OF MDD VW FLEET
83269000000
RR3XG2

PLOT DATE 29-SEP-83 12:06:59

FILTER = BLPF 100/ 316/ -40

MIN, MAX VALUES = -7.24e 28.63, 3.49 e 50.00

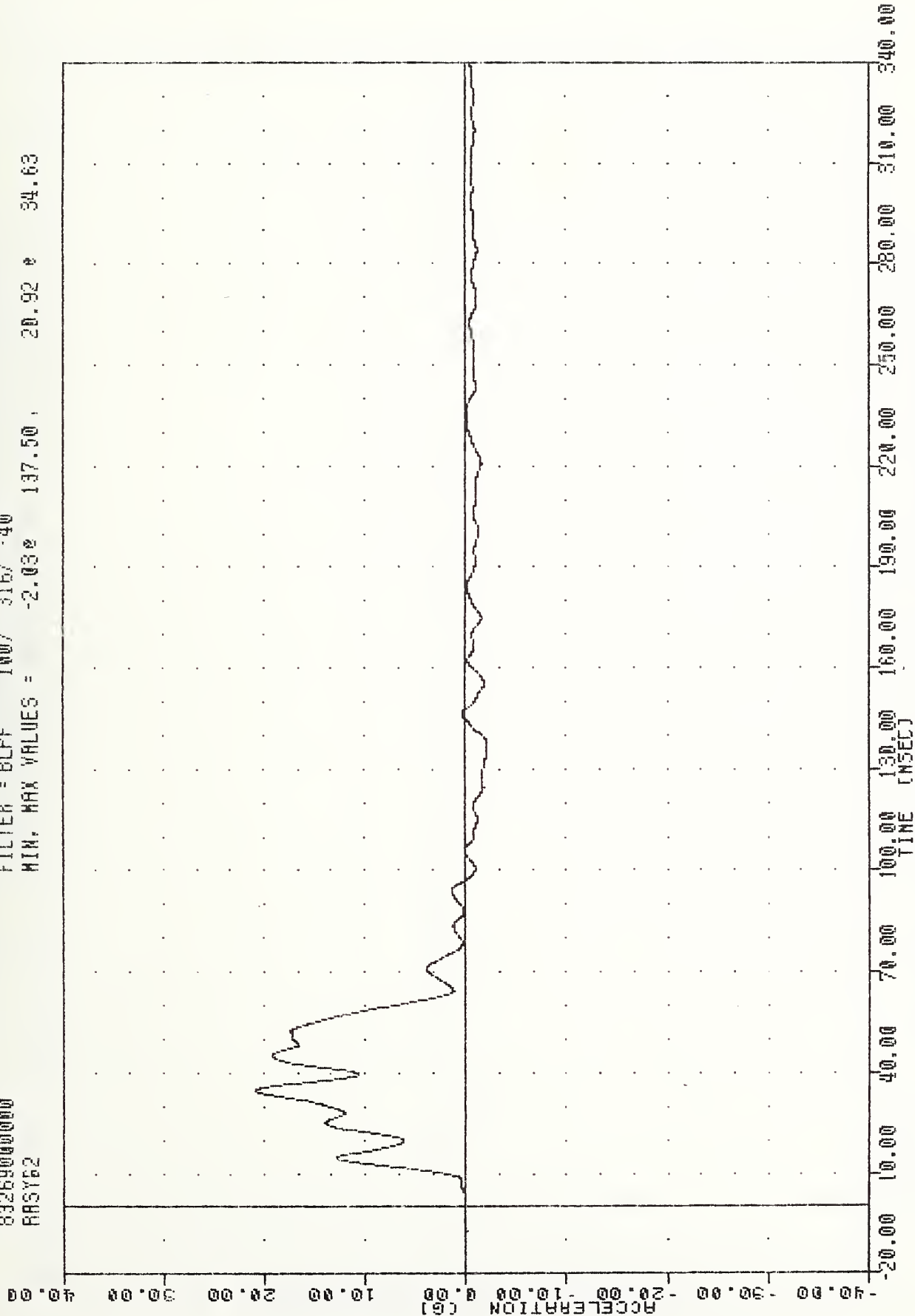


TAC
EVALUATION OF MOD VN FLEET
83269000000
RASY62

PLOT DATE 29-SEP-83 12:06:59

FILTER = BLPF 100/ 316/ -40

MIN, MAX VALUES = -2.03e 137.50 , 20.92 e 34.63

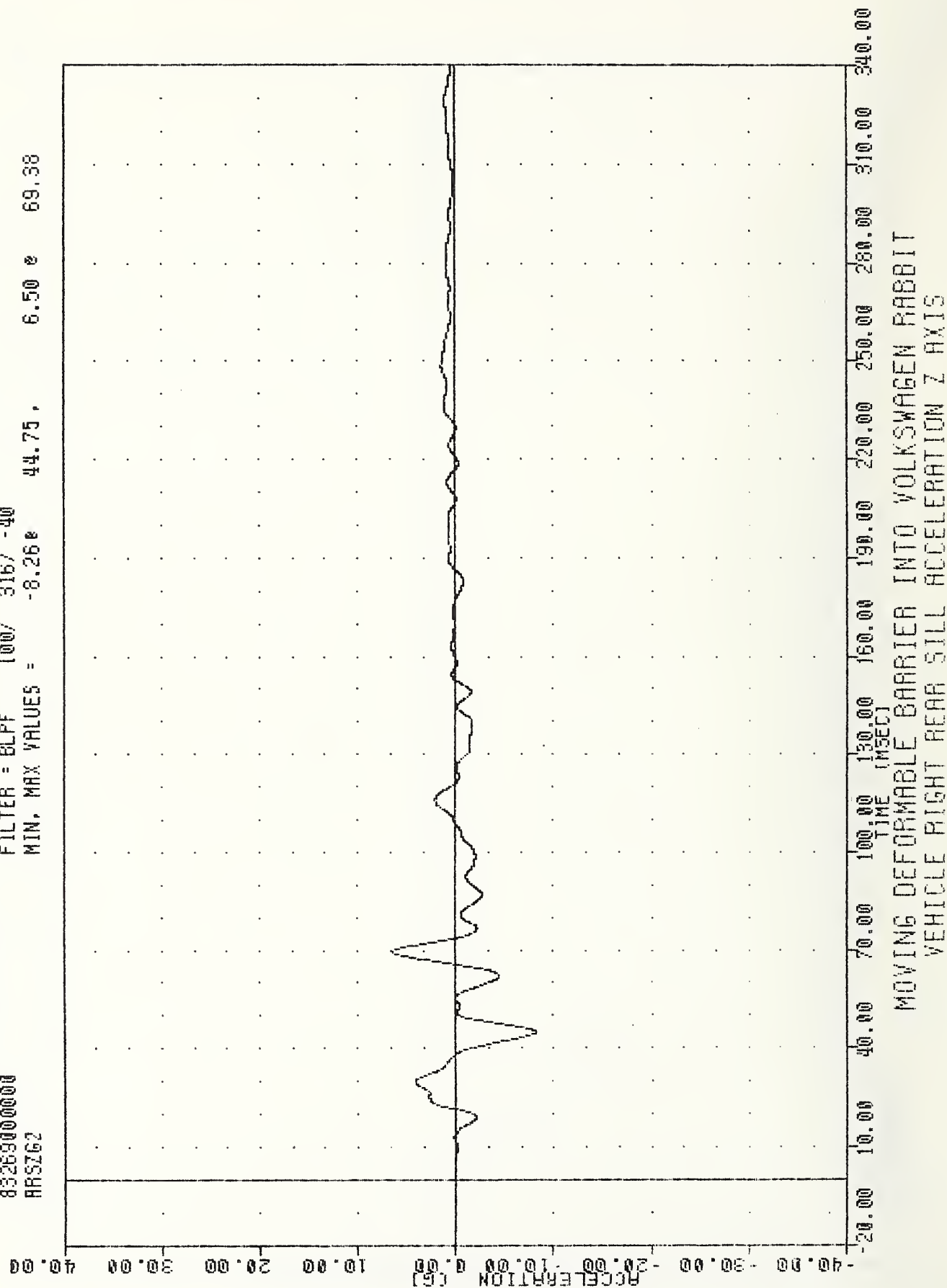


TRC
EVALUATION OF MOD VN FLEET
83269000000
RRSZ62

PLOT DATE 29-SEP-83 12:06:59

FILTER = BLPF 100/ 316/ -40

MIN. MAX VALUES = -8.26e 44.75, 6.50e 69.38

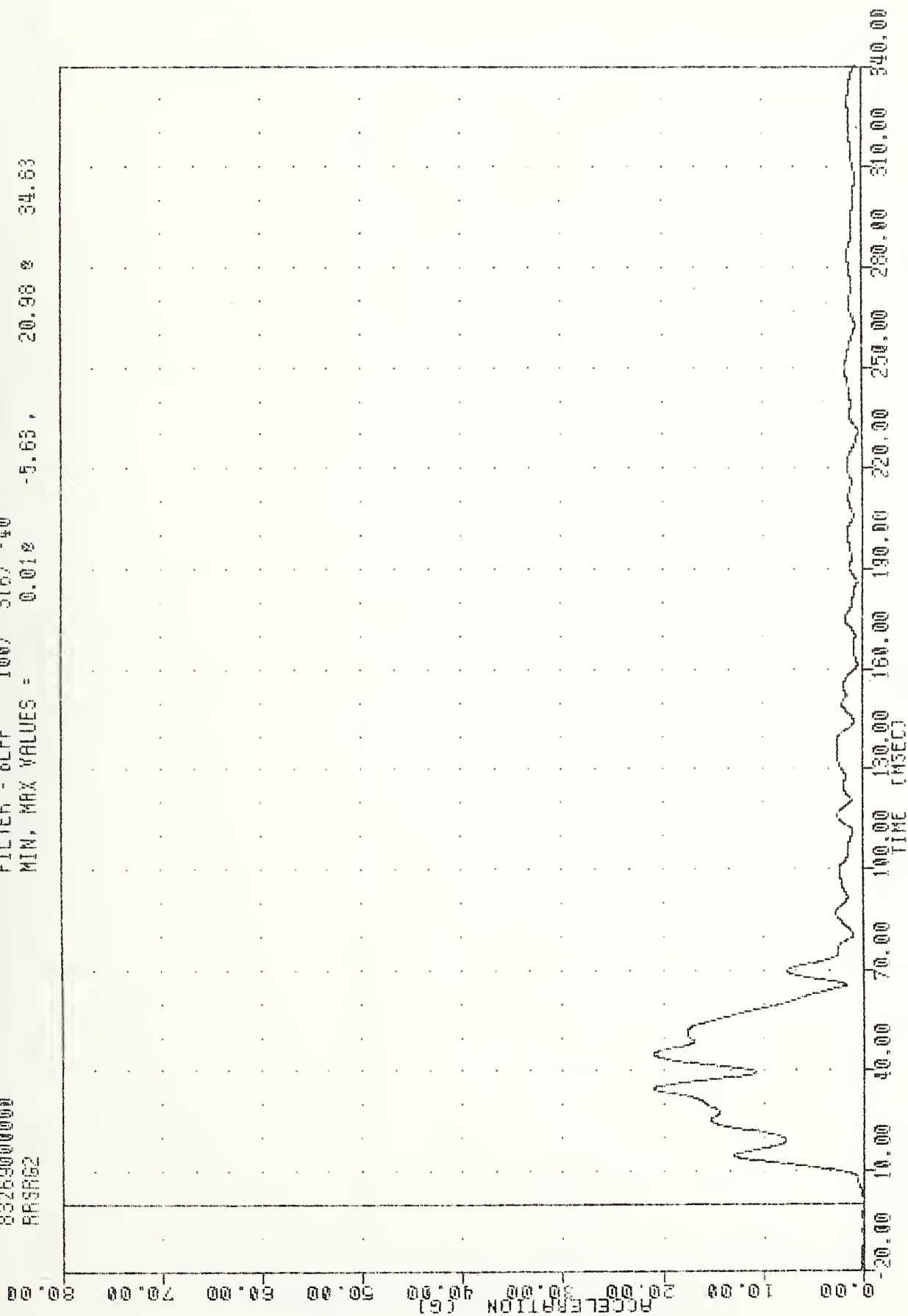


TRC , 830926
EVALUATION OF MOD VW FLEET
832690000000
RRSR62

PLOT DATE 29-SEP-83 12:06:59

FILTER = 8LFF 100/ 316/ -40

MIN. MAX VALUES = 0.010 -5.63, 20.98 0 34.63



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE RIGHT REAR STILL RESULTANT

TRC
EVALUATION OF MOD YW FLEET
83269000000
ARSXV2

PLOT DATE 30-SEP-83 08:41:37

FILTER = BLPF 300/ 949/ -40

MIN. MAX VALUES = -2.060 30.75, 0.010 -14.63

100.00

80.00

60.00

40.00

20.00

VELOCITY (MPH)

0.00

-20.00

-40.00

-60.00

-80.00

-100.00

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

TIME (MSEC)

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT

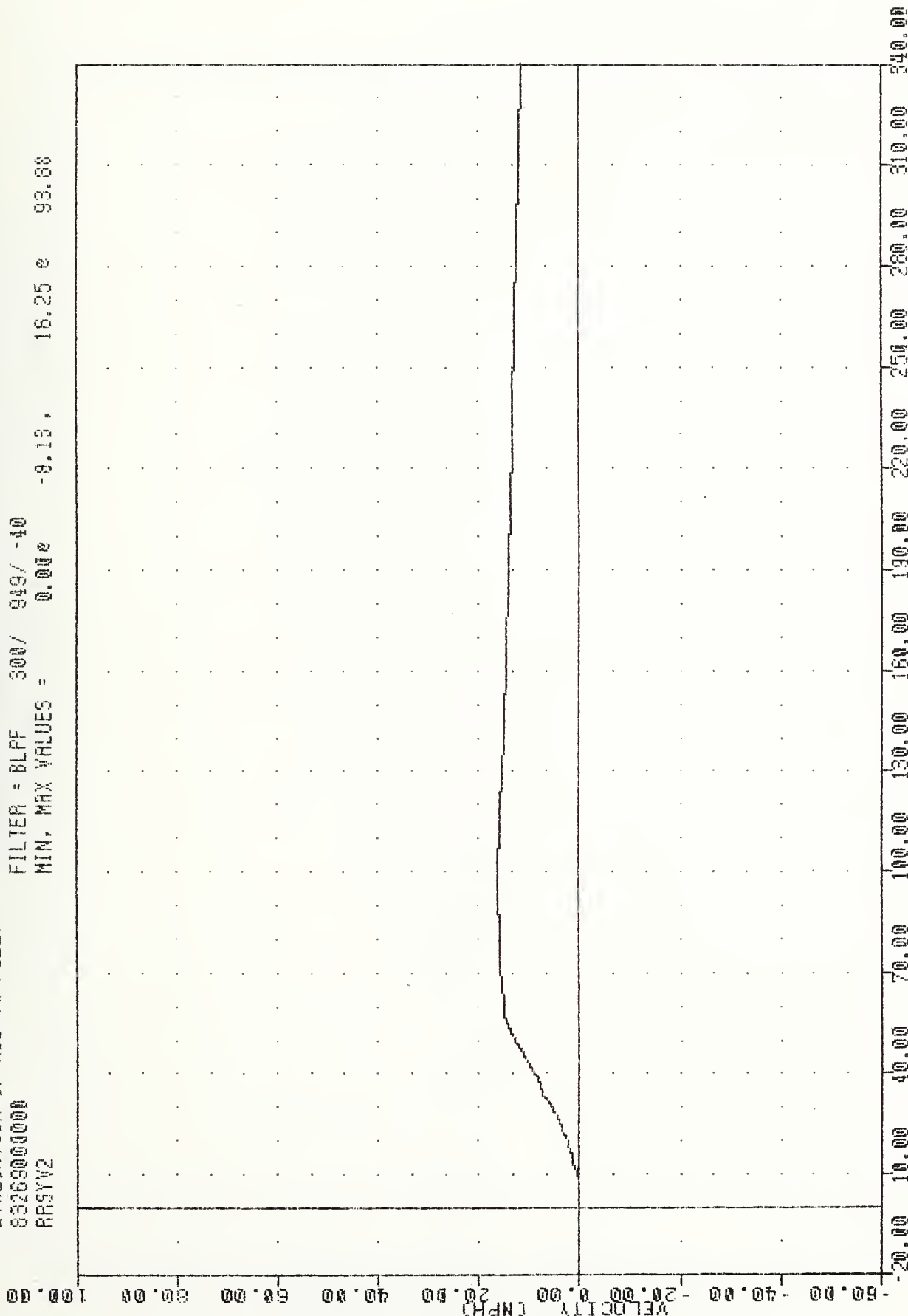
DELTA V USING ARSXG2

TAC 830926
 EVALUATION OF MDD VW FLEET
 83269000000
 RRSYV2

PLOT DATE 30-SEP-83 08:41:37

FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = 0.000 -0.13, 18.25 0 93.88



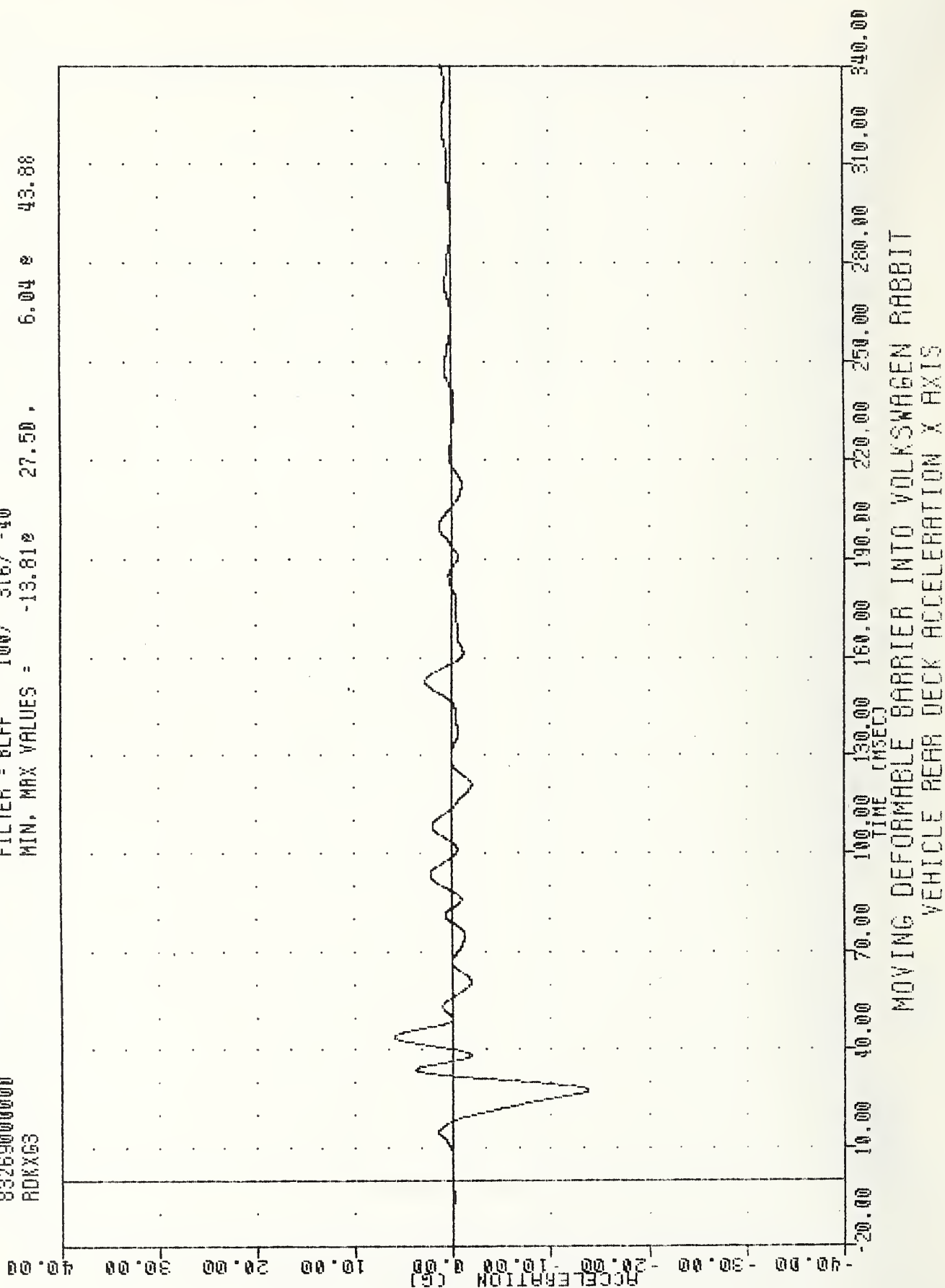
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING RRSYG2

TRC , 830926
 EVALUATION OF MOD VN FLEET
 8326900000
 RDXG63

PLOT DATE 29-SEP-83 12:06:59

FILTER = 8LFF 100/ 316/ -10

MIN. MAX VALUES = -13.81e 27.50. 6.04 e 43.88

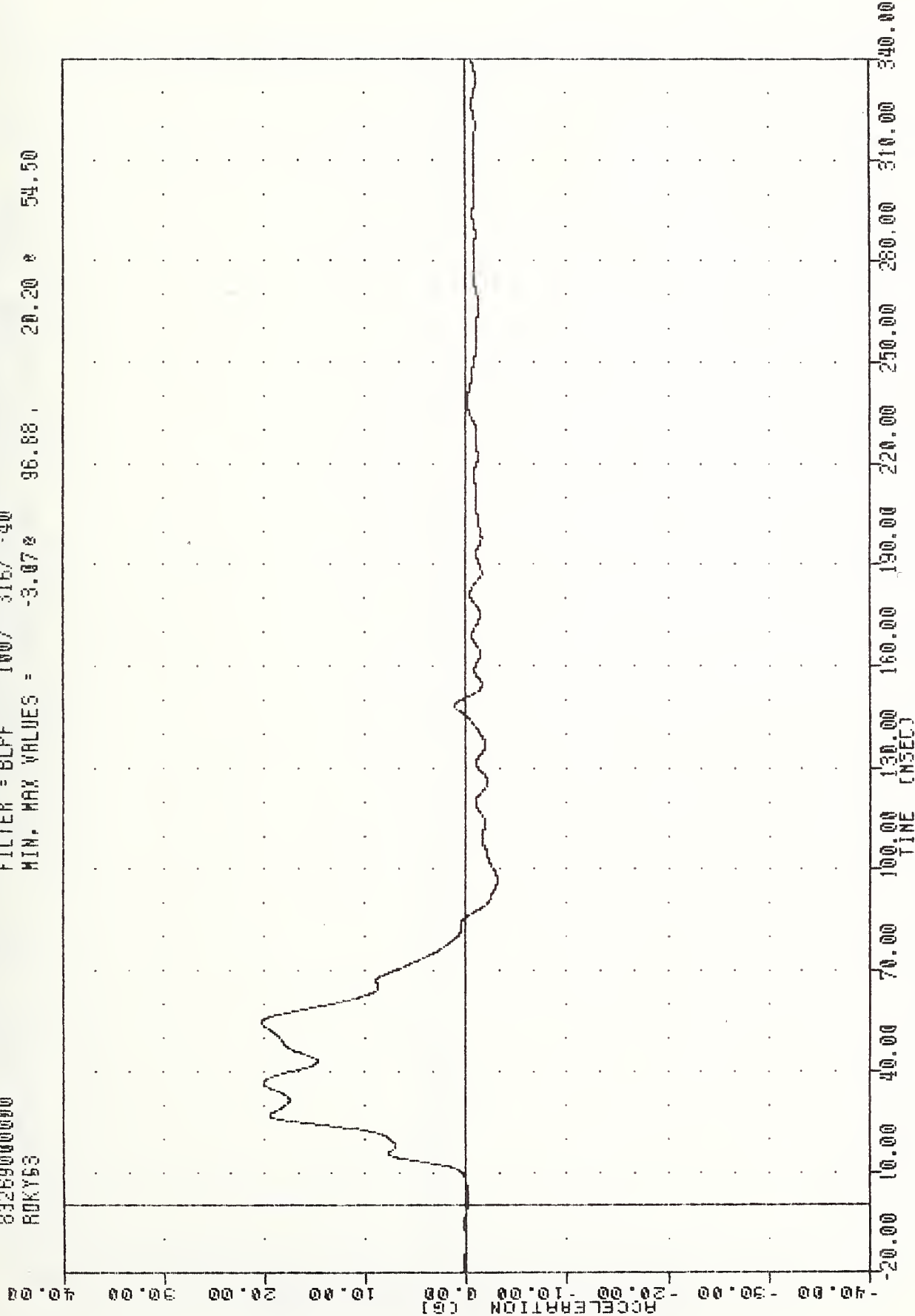


TAC
EVALUATION OF MOD VW FLEET
832650000000
R0KY53

PLOT DATE 29-SEP-83 12:06:59

FILTER = BLPF 100/ 316/ -40

MIN. MAX VALUES = -3.07% 96.88 , 20.20 * 54.50



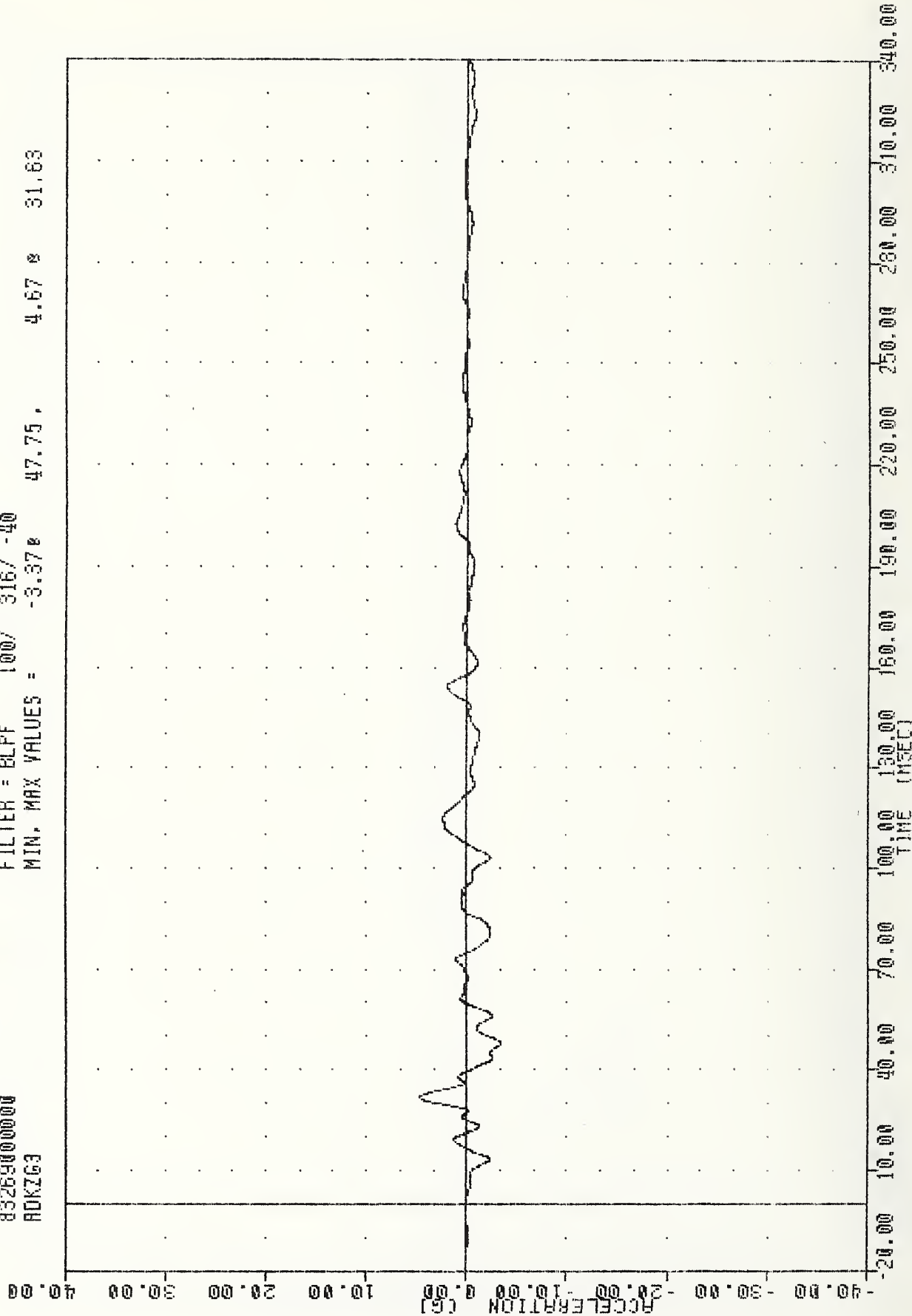
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE REAR DECK ACCELERATION Y AXIS

TRC , 830926
 EVALUATION OF MOD YW FLEET
 83269000000
 ADKZG3

PLOT DATE 29-SEP-83 12:06:59

FILTER = BLPF 100/ 316/ -40

MIN. MAX VALUES = -3.37% 47.75 , 4.67 % 31.63



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

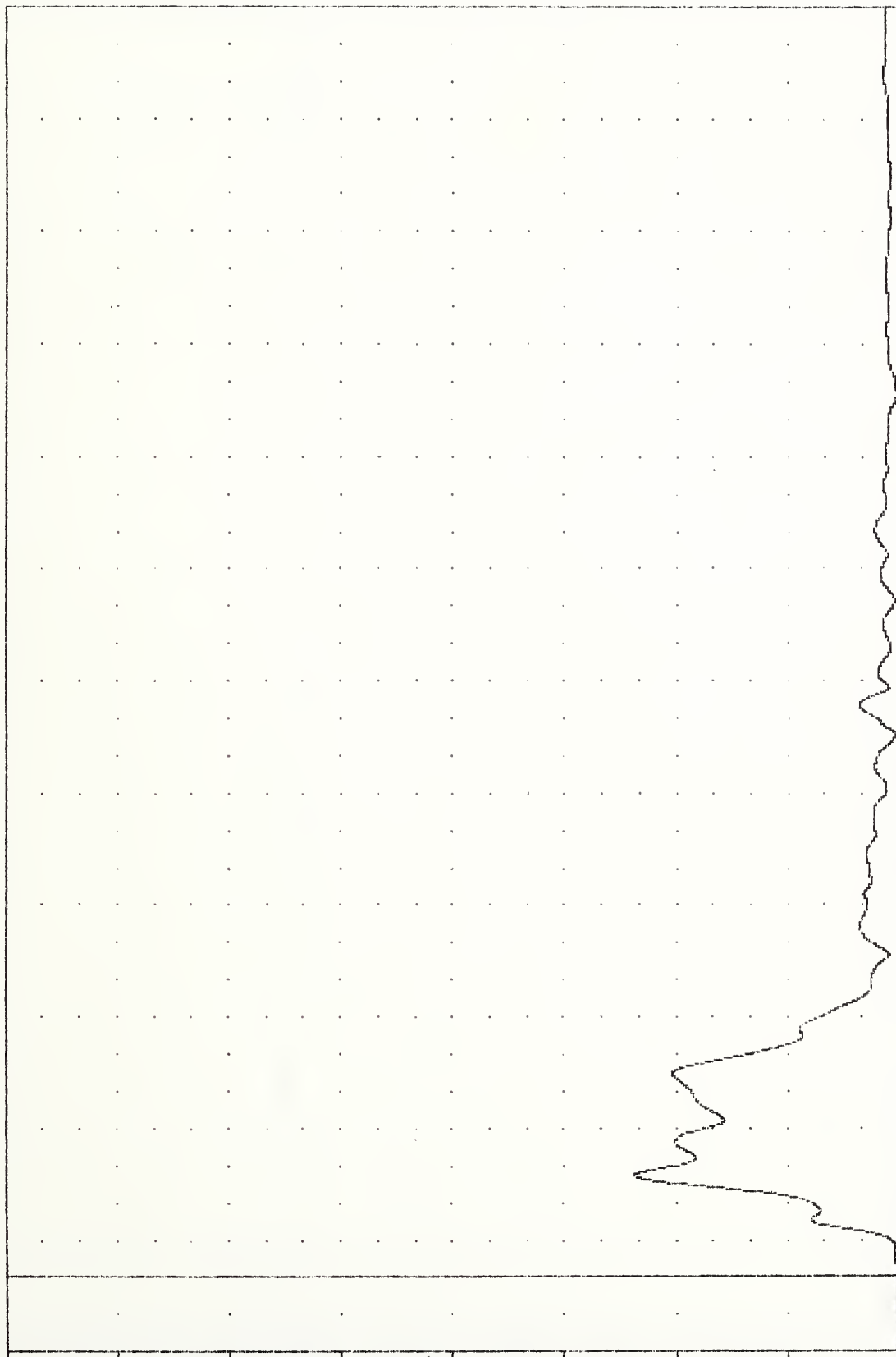
TRC , 830926
 EVALUATION OF MOD VM FLEET
 83259000000
 ROKR63

PLOT DATE 29-SEP-83 12:06:59

FILTER = BLPF 100/ 316/ -40

WIN, MAX VALUES = 0.070 -2.00 , 23.72 * 27.25

ACCELERATION (G)



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 VEHICLE REAR DECK RESULTANT

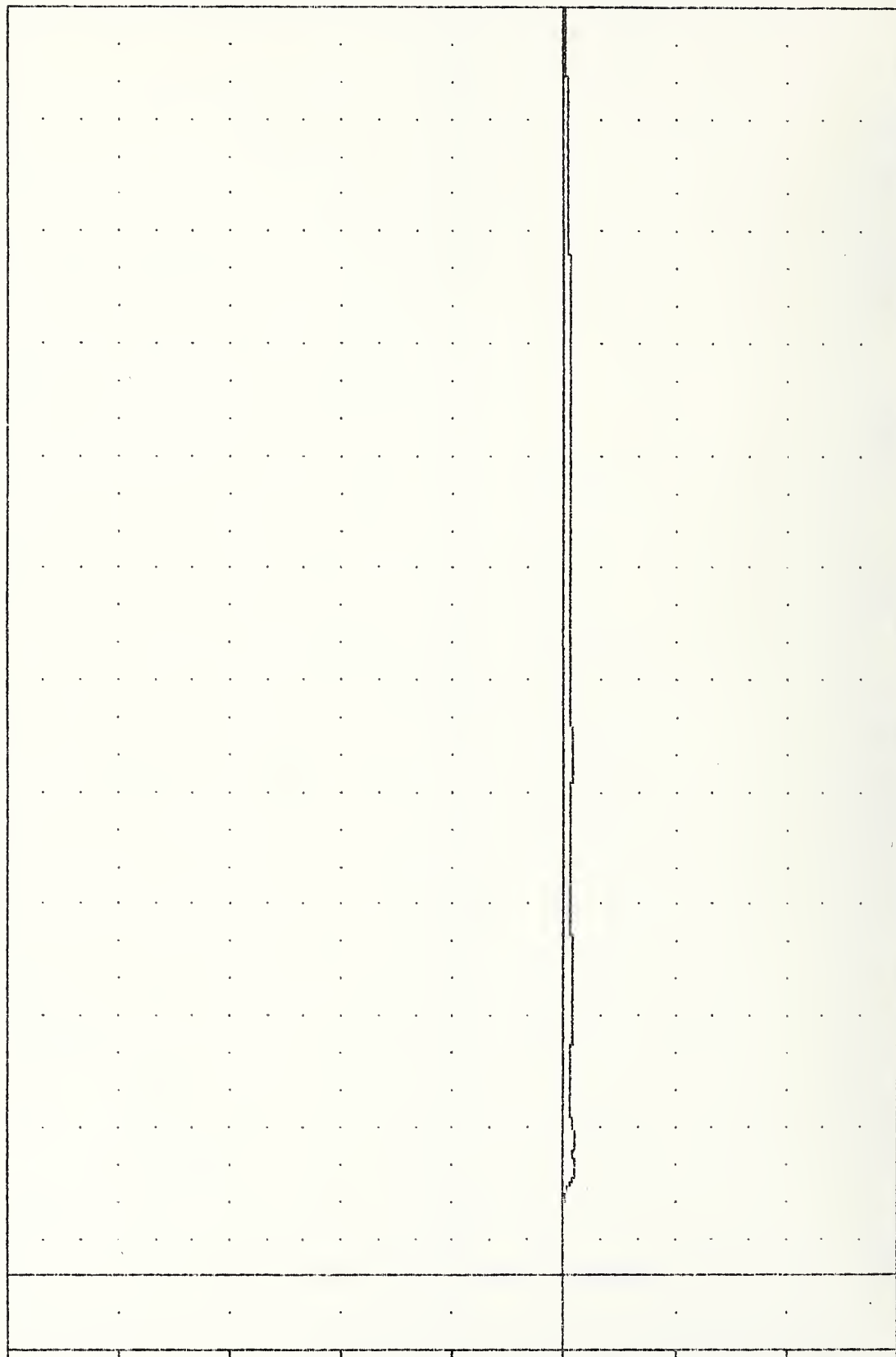
TAC
EVALUATION OF MOD VW FLEET
83269000000
RDKXV3

PLOT DATE 30-SEP-83 08:41:37

FILTER = BLPF 300/ 949/ -40

MIN. MAX VALUES = -1.96e 27.88 0.22 e 13.88

100.00
80.00
60.00
40.00
20.00
0.00
-20.00
-40.00
-60.00
-80.00
-100.00



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

MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING RDKXG3

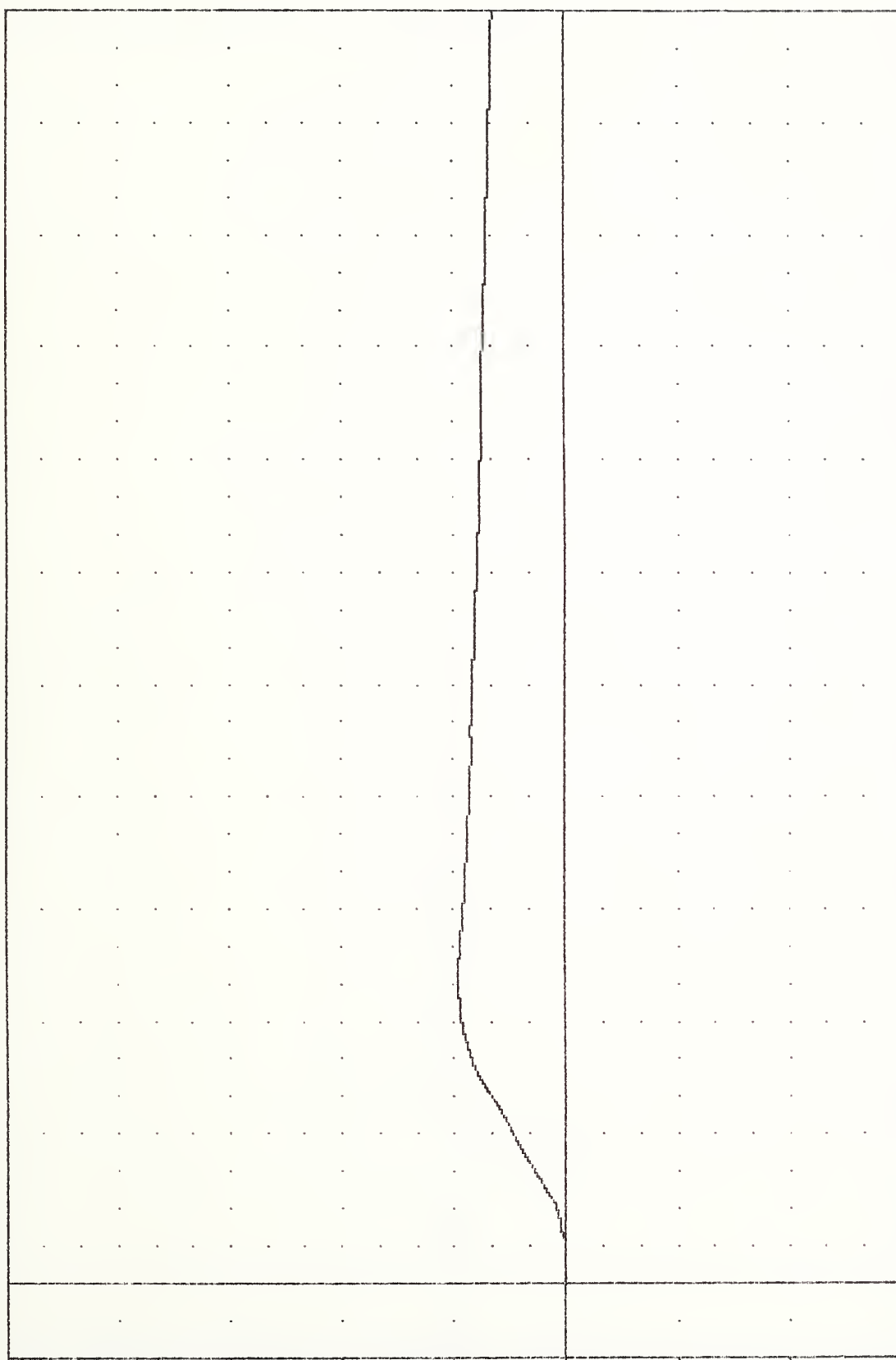
TRC , 830926
 EVALUATION OF MOD VW FLEET
 83259000000
 ROKYV3

PLOT DATE 30-SEP-83 08:41:37

FILTER = BLPF 300/ 949/ -40

MIN. MAX VALUES = 0.00e -20.00 , 19.16 e 83.13

VELOCITY (MPH)



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

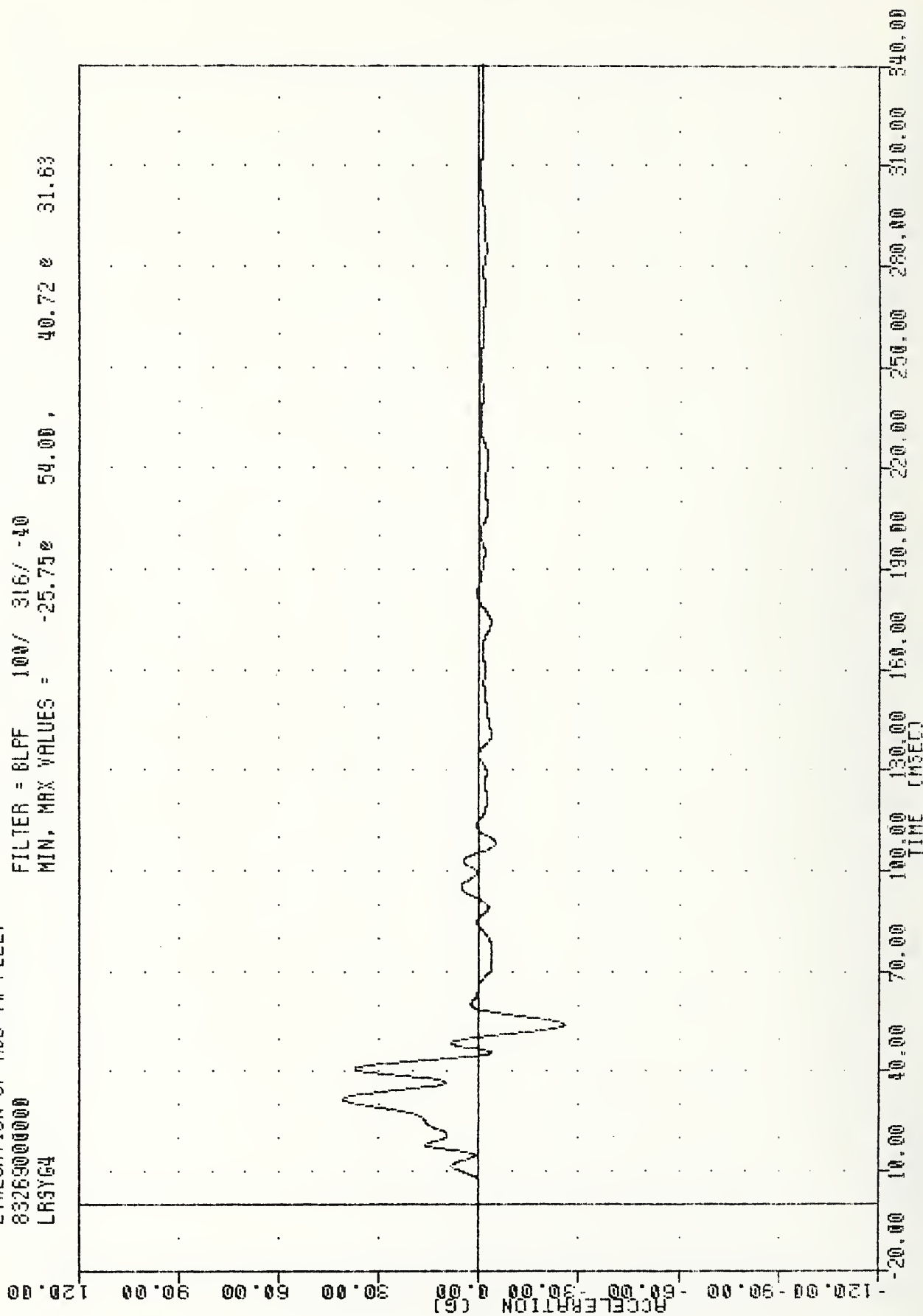
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING ROKYGS

TRC , 830926
EVALUATION OF MDD VW FLEET
83269000000
LRSYG4

PLOT DATE 29-SEP-83 12:06:59

FILTER = 8LPF 100/ 316/ -40

MIN. MAX VALUES = -25.75e 54.00, 40.72 e 31.63



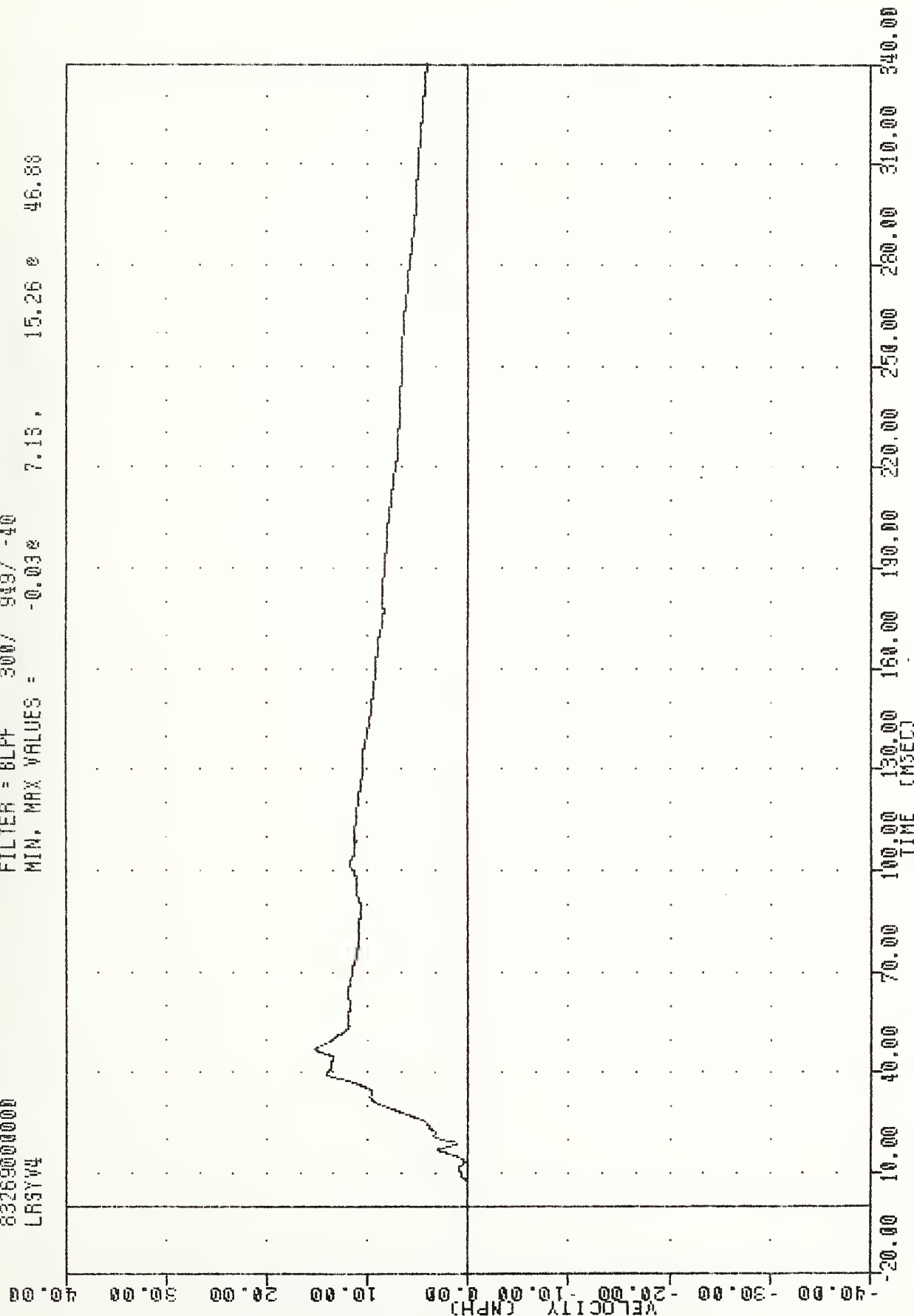
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE LEFT REAR SILL ACCELERATION Y AXIS

PRC 830926
 EVALUATION OF MDD VW FLEET
 83269000000
 LRSYV4

PLOT DATE 30-SEP-83 08:41:37

FILTER = 8LFF 300/ 949/ -40

MIN. MAX VALUES = -0.032 7.13, 15.26 0 46.88



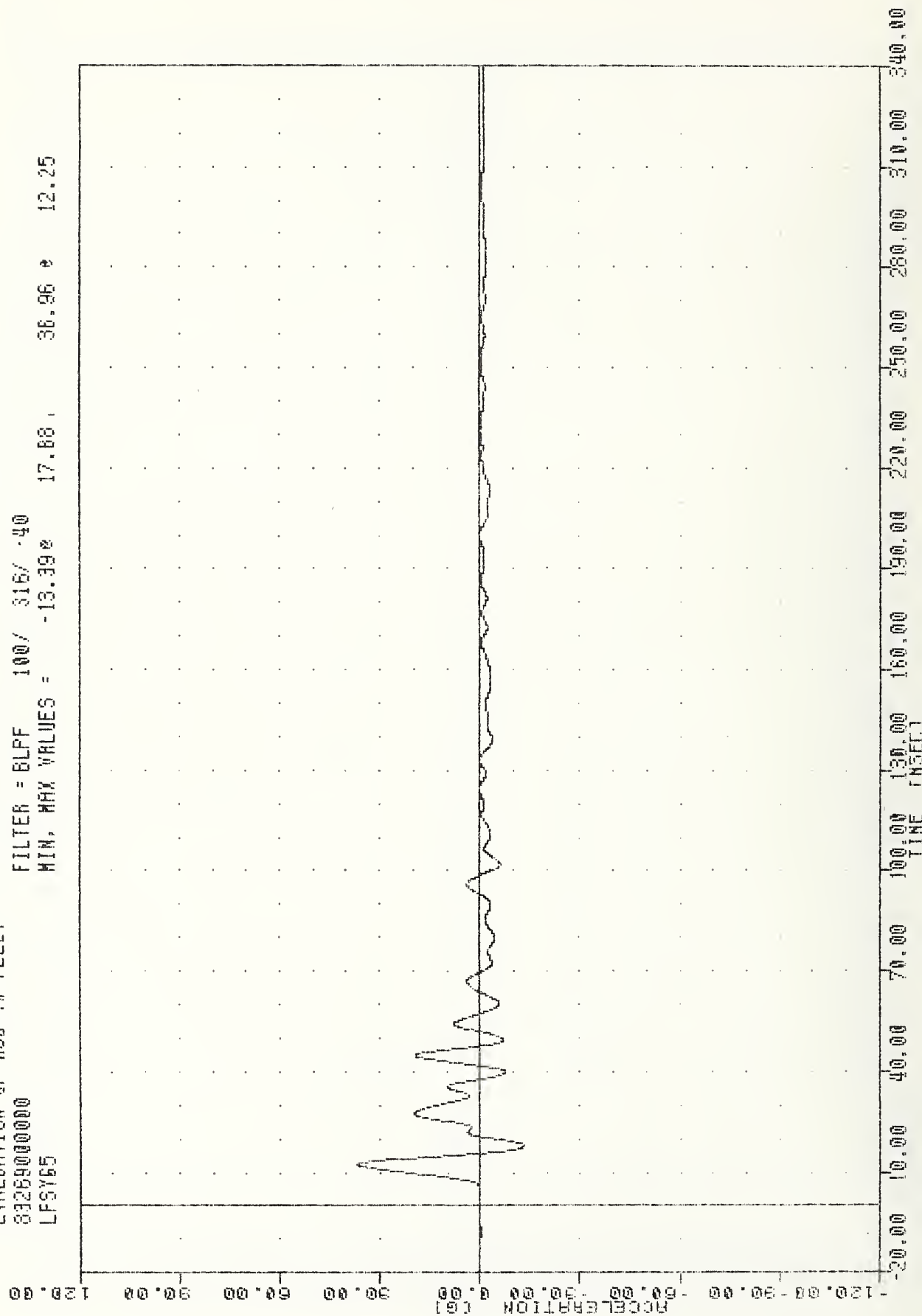
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING LRSY64

TAC
EVALUATION OF MOD VW FLEET
83269000000
LFSY65

PLOT DATE 29-SEP-83 12:06:59

FILTER = BLPF 100/ 316/ -40

MIN, MAX VALUES = -13.39 17.68 36.96 12.25

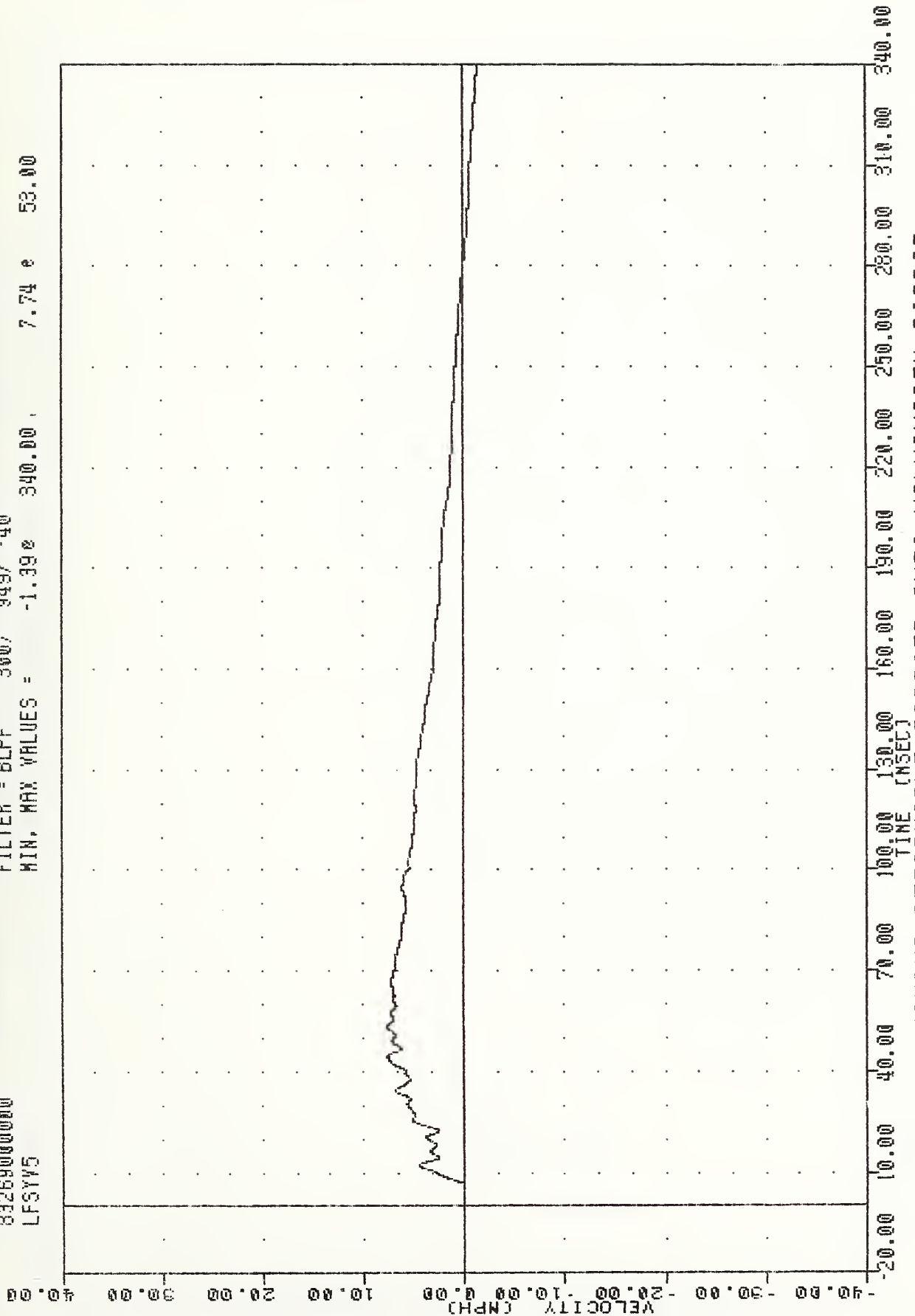


TAC , 830926
 EVALUATION OF MOD VW FLEET
 83269000000
 LFSYV5

PLOT DATE 30-SEP-83 08:41:37

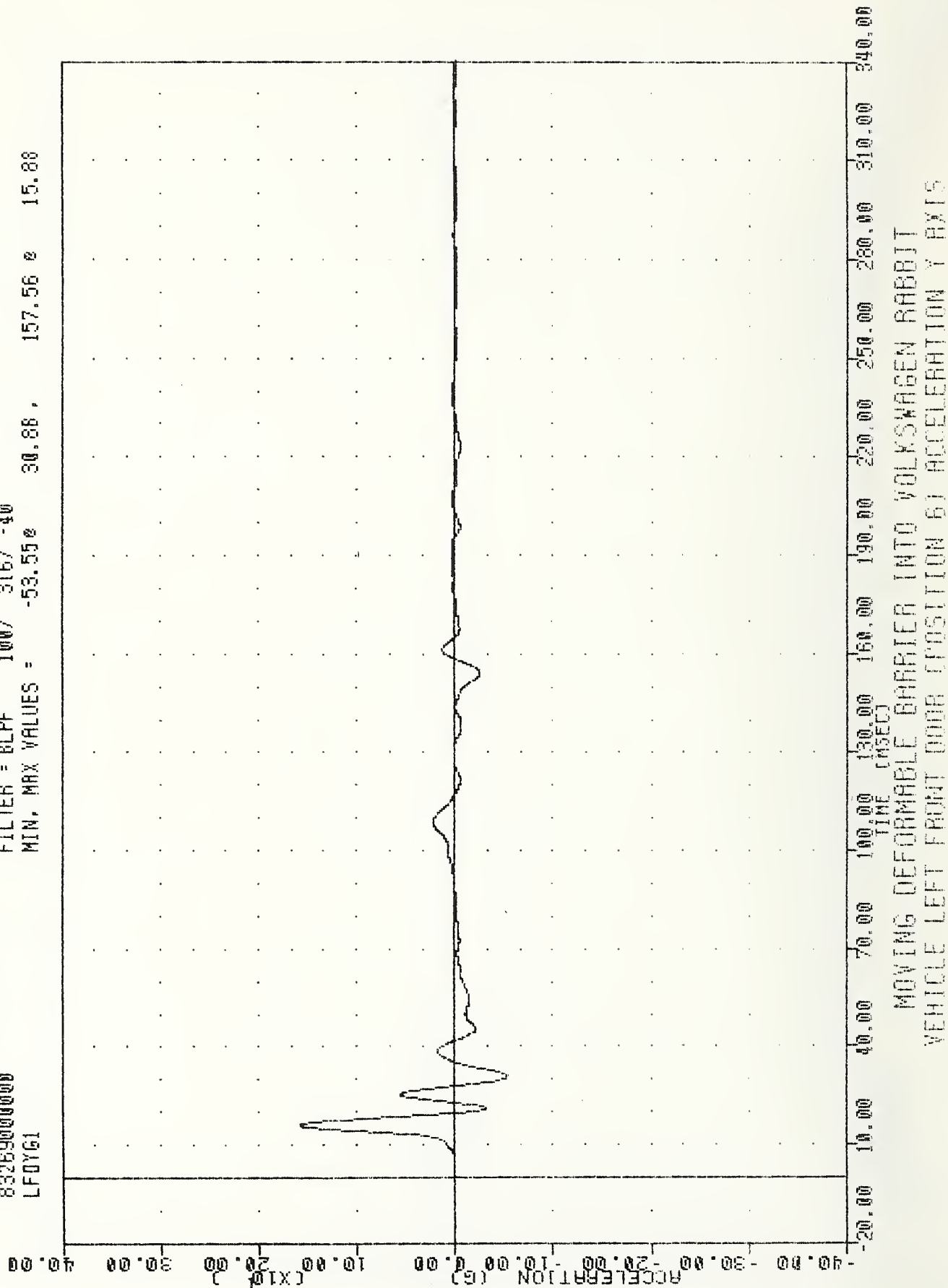
FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = -1.39e 340.00 , 7.74 e 53.00



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING LFSYG5

TRC , 830926 PLOT DATE 29-SEP-83 12:06:59
 EVALUATION OF MOD VW FLEET
 83269000000
 LFDY61
 FILTER = 8LPE 100/ 316/ -40
 MIN. MAX VALUES = -53.55% 30.88 , 157.56 % 15.88

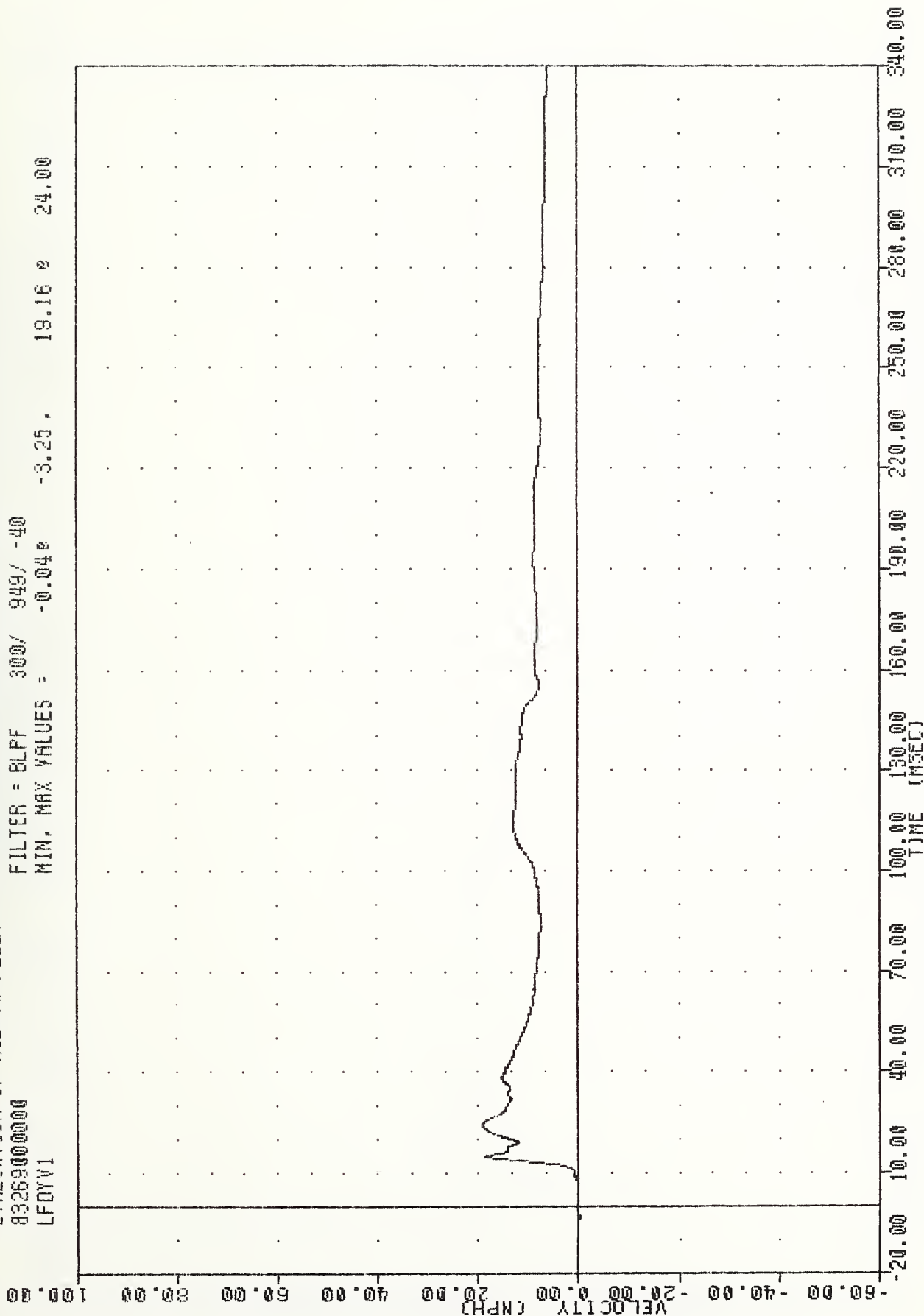


TRC , 830926
EVALUATION OF MOD VW FLEET
83269000000
LFOYV1

PLOT DATE 30-SEP-83 08:41:37

FILTER = BLPF 300/ 949/ -40

MIN. MAX VALUES = -0.040 -3.25, 19.16 24.00

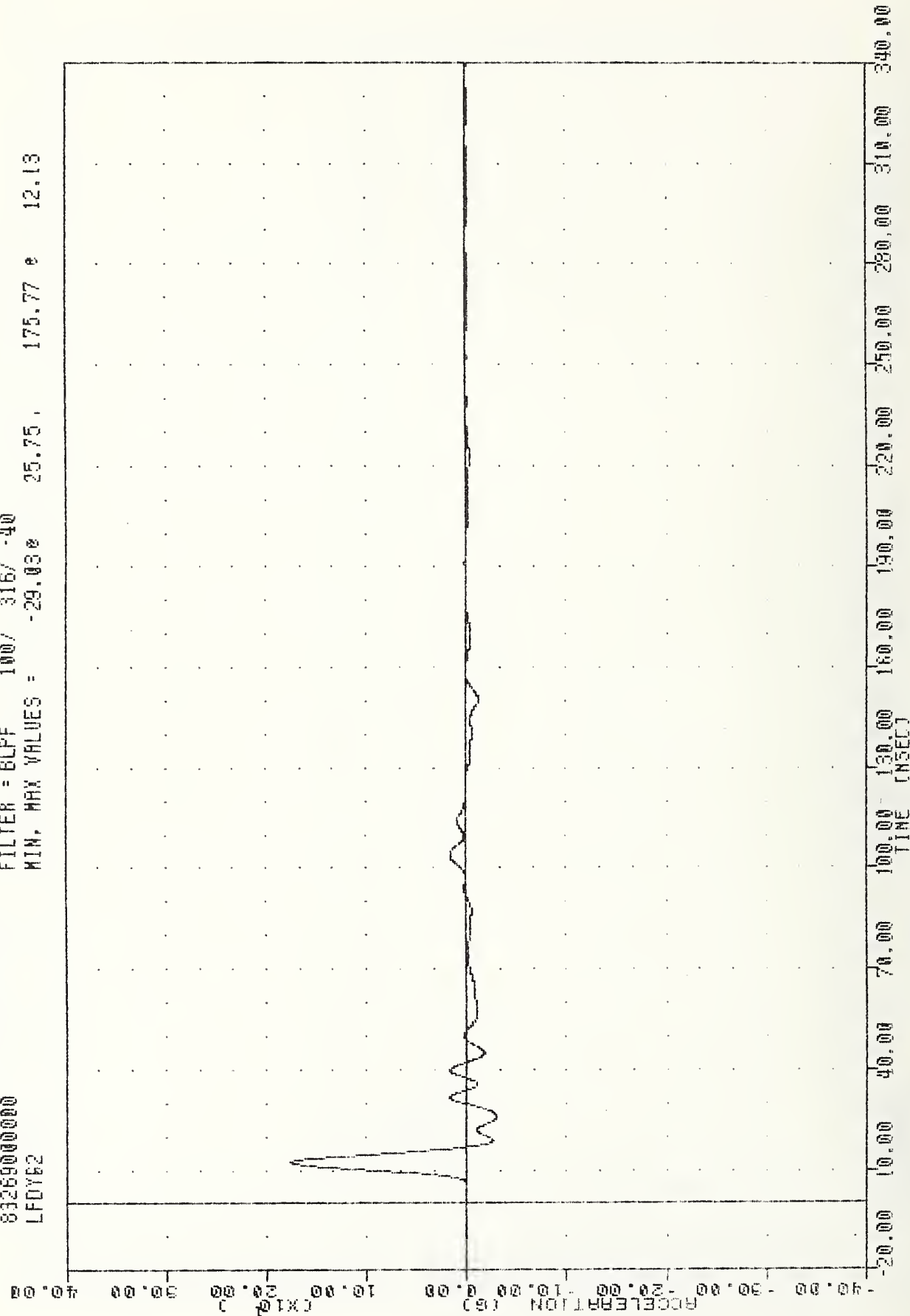


TAC
EVALUATION OF MOD VN FLEET
83269000000
LFDY82

PLOT DATE 29-SEP-83 12:06:59

FILTER = BLPF 100/ 316/ -40

MIN. MAX VALUES = -29.030 25.75, 175.77 12.13



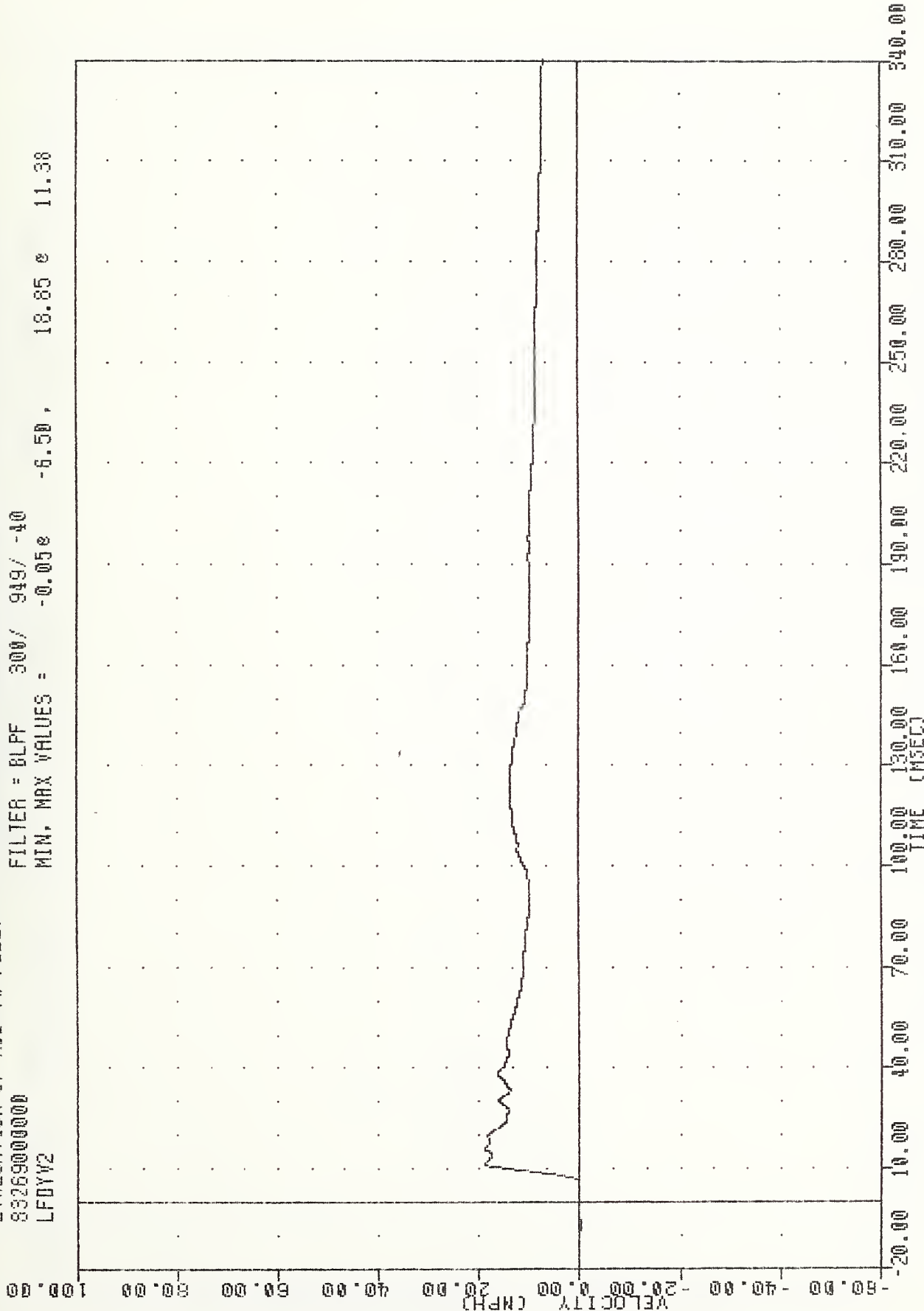
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
VEHICLE LEFT FRONT DOOR (POSITION 8) ACCELERATION Y AXIS

TRC . 830926
 EVALUATION OF MOD VW FLEET
 832690000000
 LFDYV2

PLOT DATE 30-SEP-83 00:41:37

FILTER = BLPF 300/ 949/ -10

MIN. MAX VALUES = -0.058 -6.50, 18.85 11.38

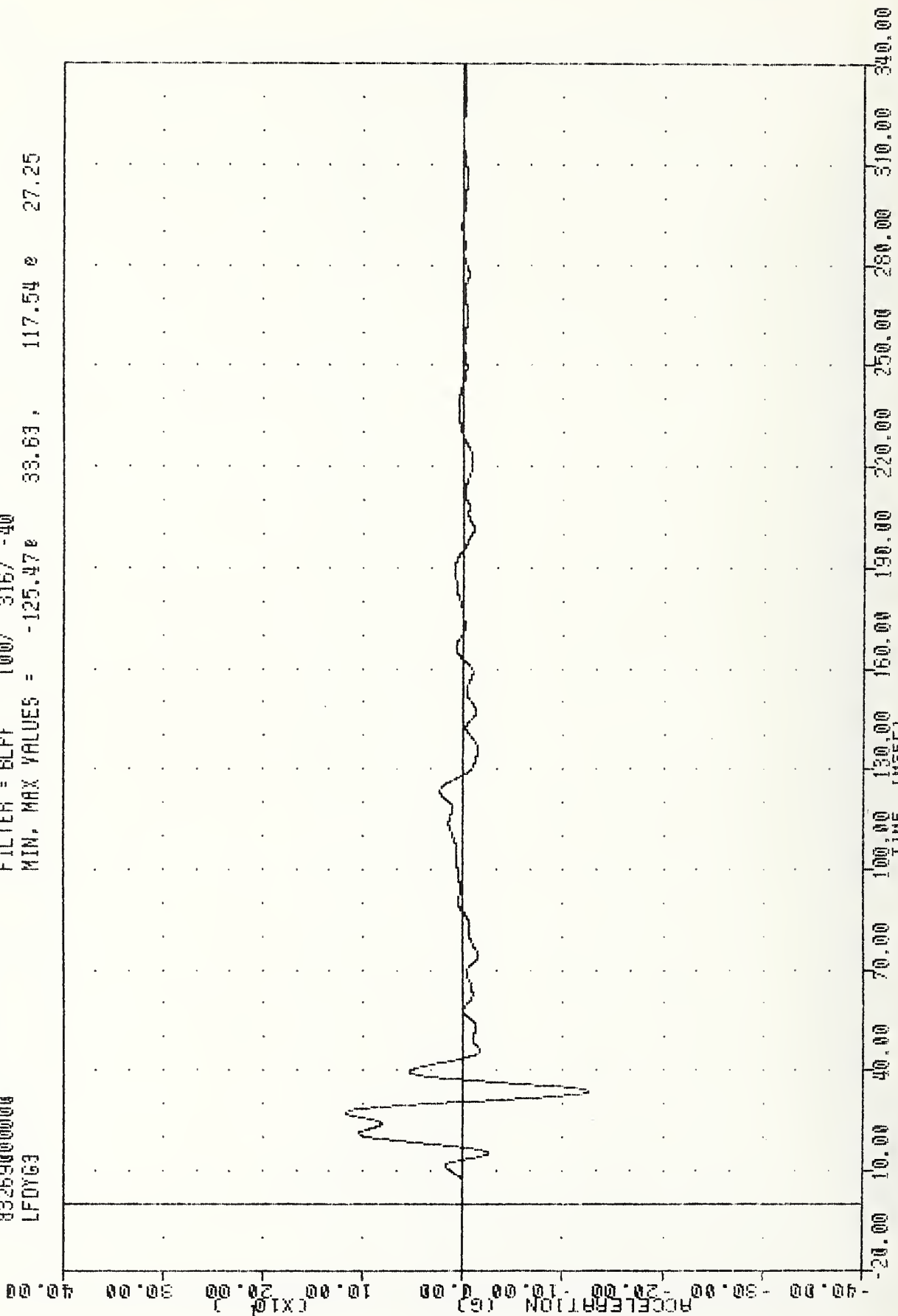


TRC
EVALUATION OF MOD YW FLEET
83269000000
LF0Y63

PLOT DATE 29-SEP-83 12:06:59

FILTER = BLPF 100/ 316/ -40

MIN. MAX VALUES = -125.47e 33.63, 117.54 e 27.25

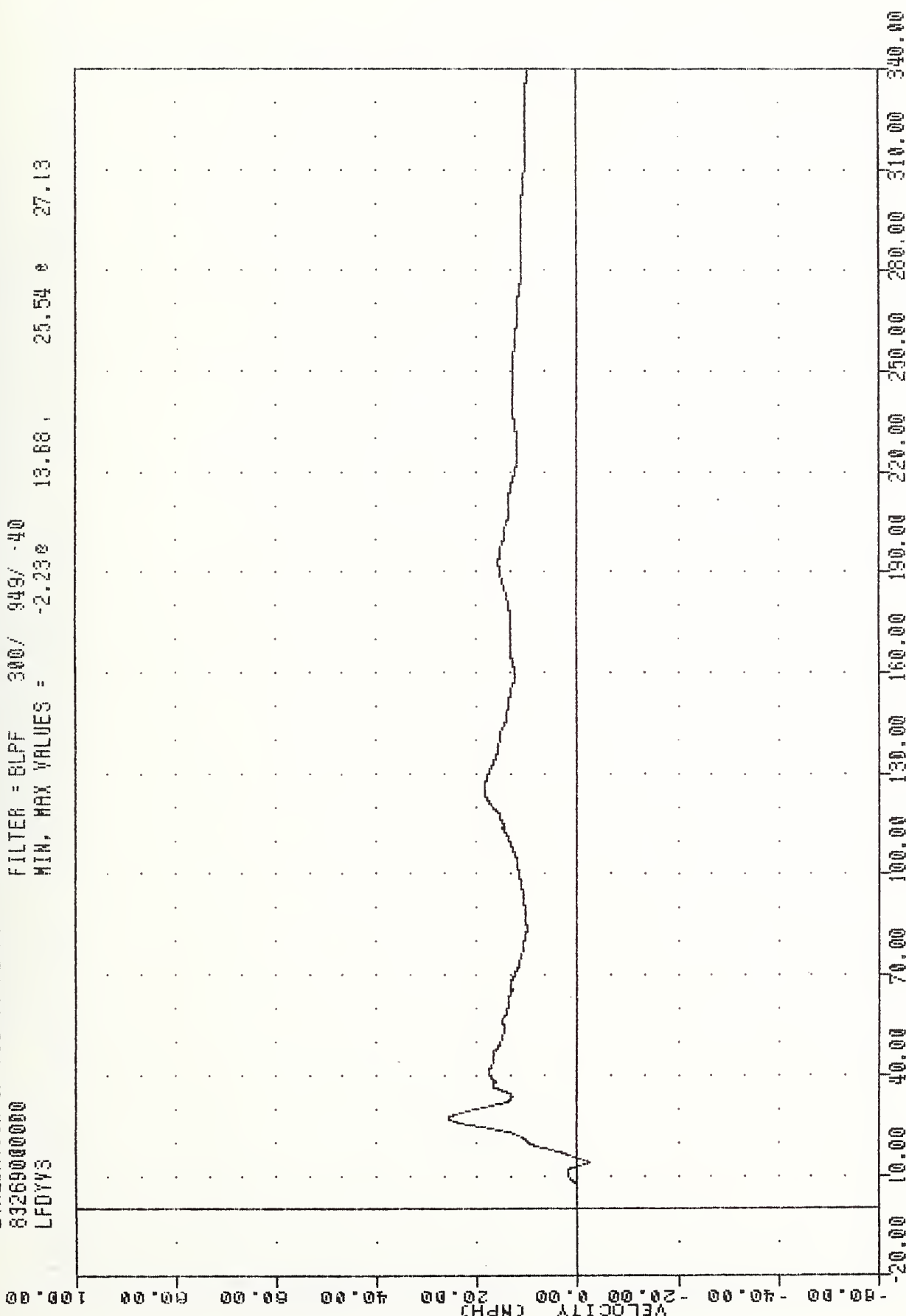


TAC 830926
 EVALUATION OF MOD VW FLEET
 832690000000
 LFDYVS

PLOT DATE 30-SEP-83 08:41:37

FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = -2.23e 13.68 , 25.54 e 27.13



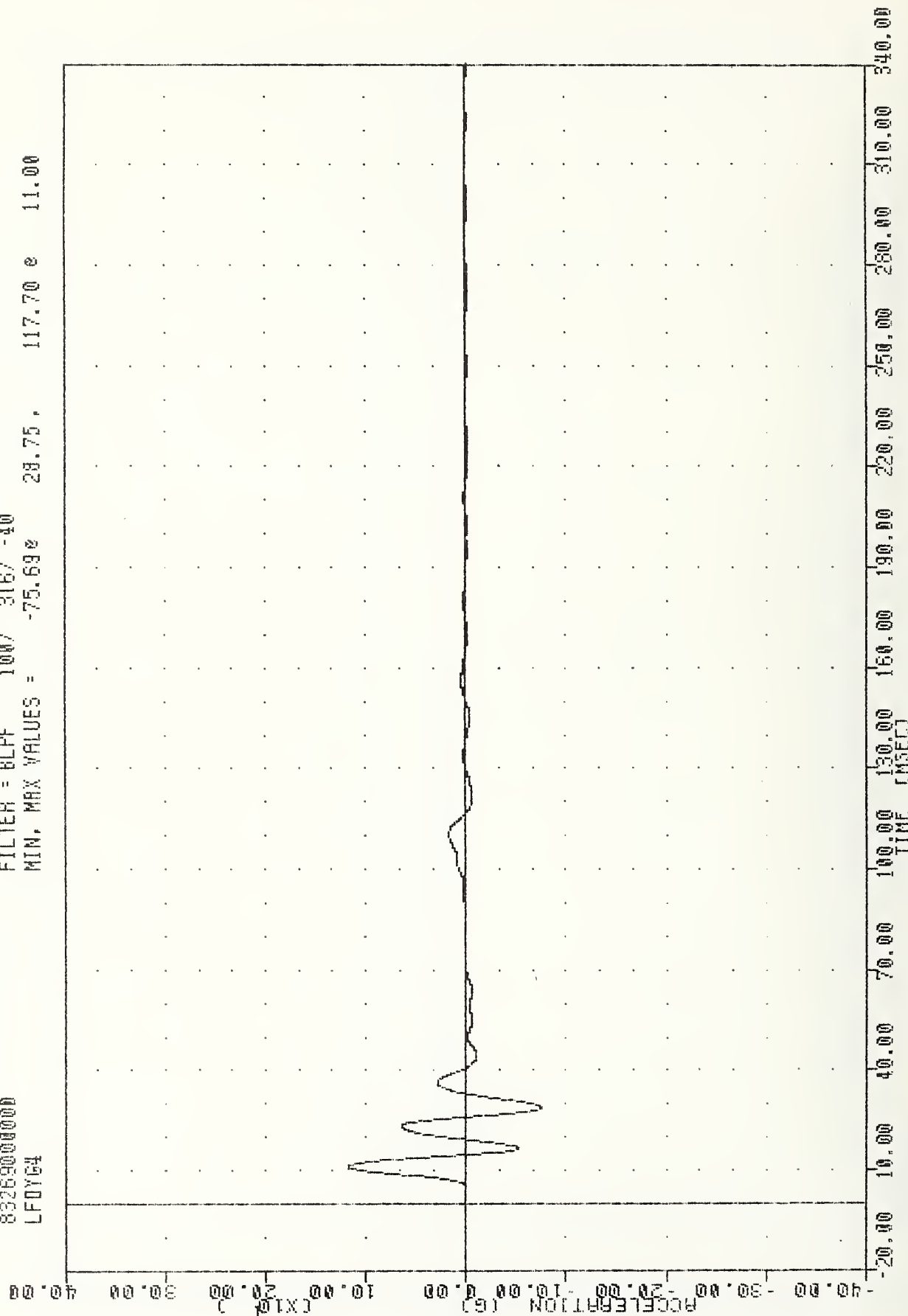
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING LFDYGS

TAC
EVALUATION OF MDD VW FLEET
83269000000
LFDY64

PLOT DATE 29-SEP-83 12:06:59

FILTER = 6LPF 100/ 316/ -40

MIN. MAX VALUES = -75.69e 28.75, 117.70 e 11.00

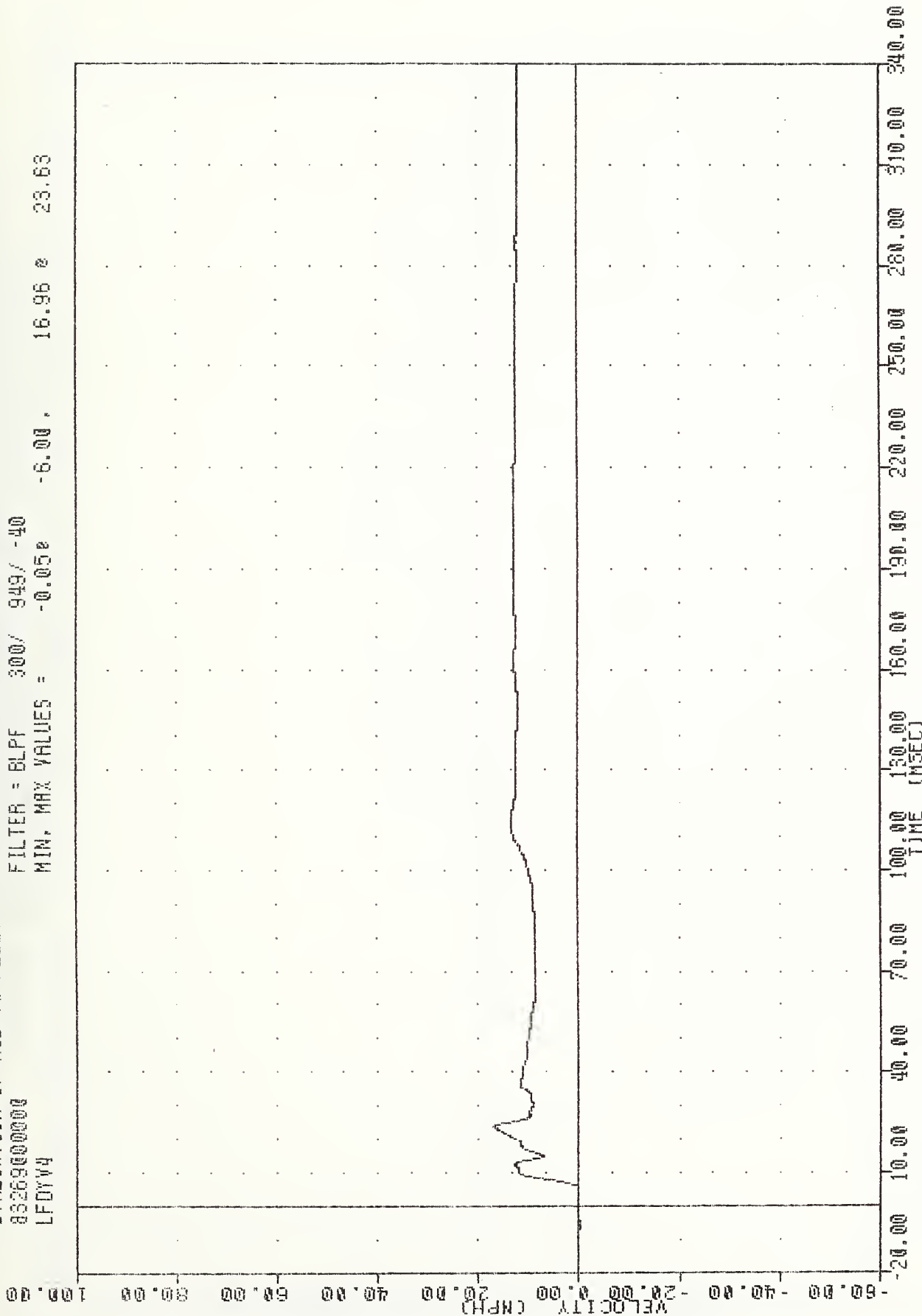


TRC 830926
EVALUATION OF MOD VW FLEET
8326900000
LFDYV4

PLOT DATE 30-SEP-83 08:41:37

FILTER = BLPF 300/ 949/ -40

MIN, MAX VALUES = -0.050 -6.00, 16.96 23.63



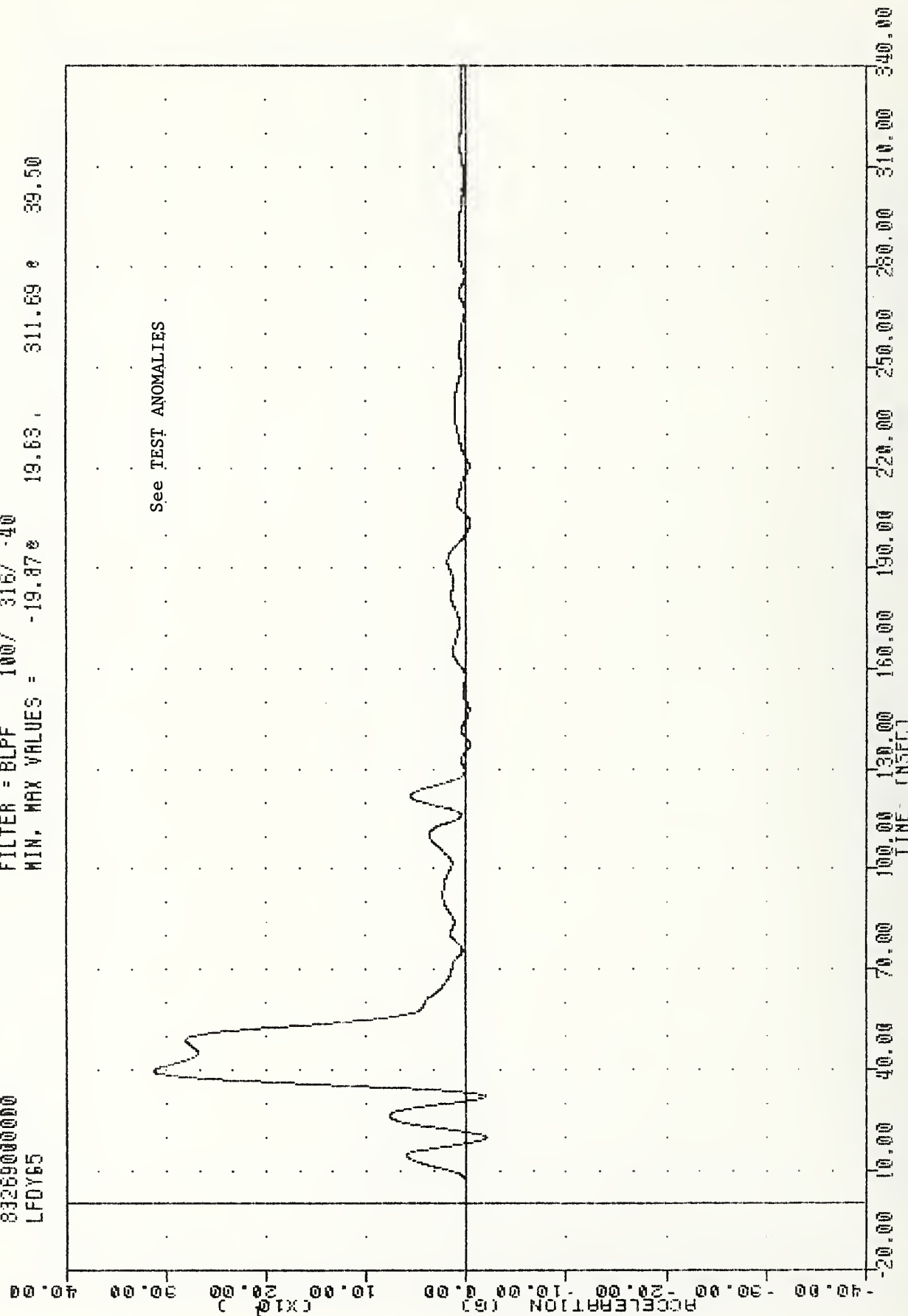
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
DELTA V USING LFDY64

TAC , 830926
 EVALUATION OF MOD VN FLEET
 83269000000
 LFDY65

PLOT DATE 29-SEP-83 12:06:59

FILTER = BLPF 100/ 316/ -40

MIN, MAX VALUES = -19.87e 19.63, 311.69 e 39.50



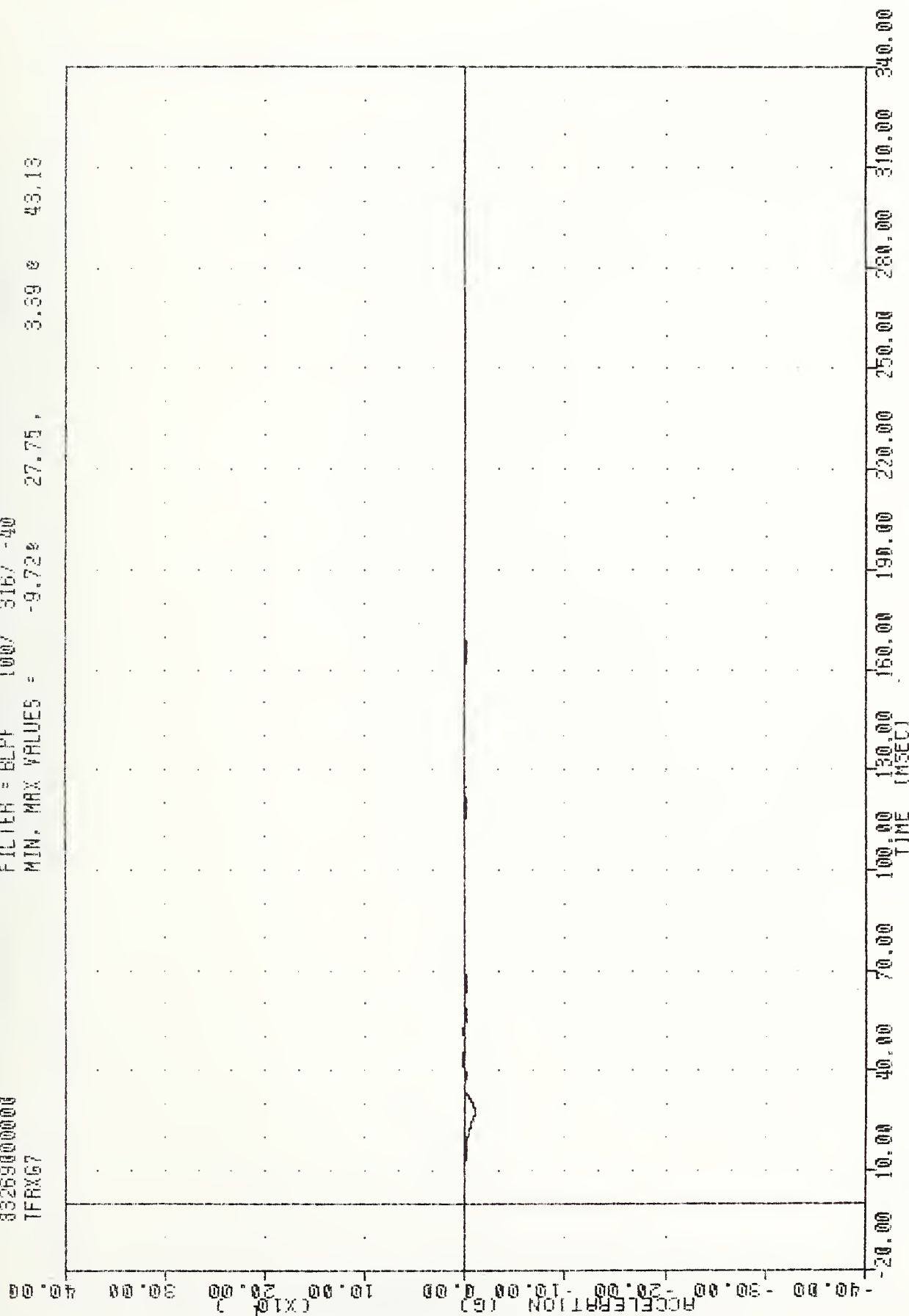
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 VEHICLE LEFT FRONT DOOR (POSITION 11) ACCELERATION Y AXIS

TRC 830926
 EVALUATION OF MOD VW FLEET
 83269000000
 TFRX67

PLOT DATE 29-SEP-83 12:06:59

FILTER = BLPF 100/ 316/ -40

MIN. MAX VALUES = -9.72 27.75, 3.39 43.13

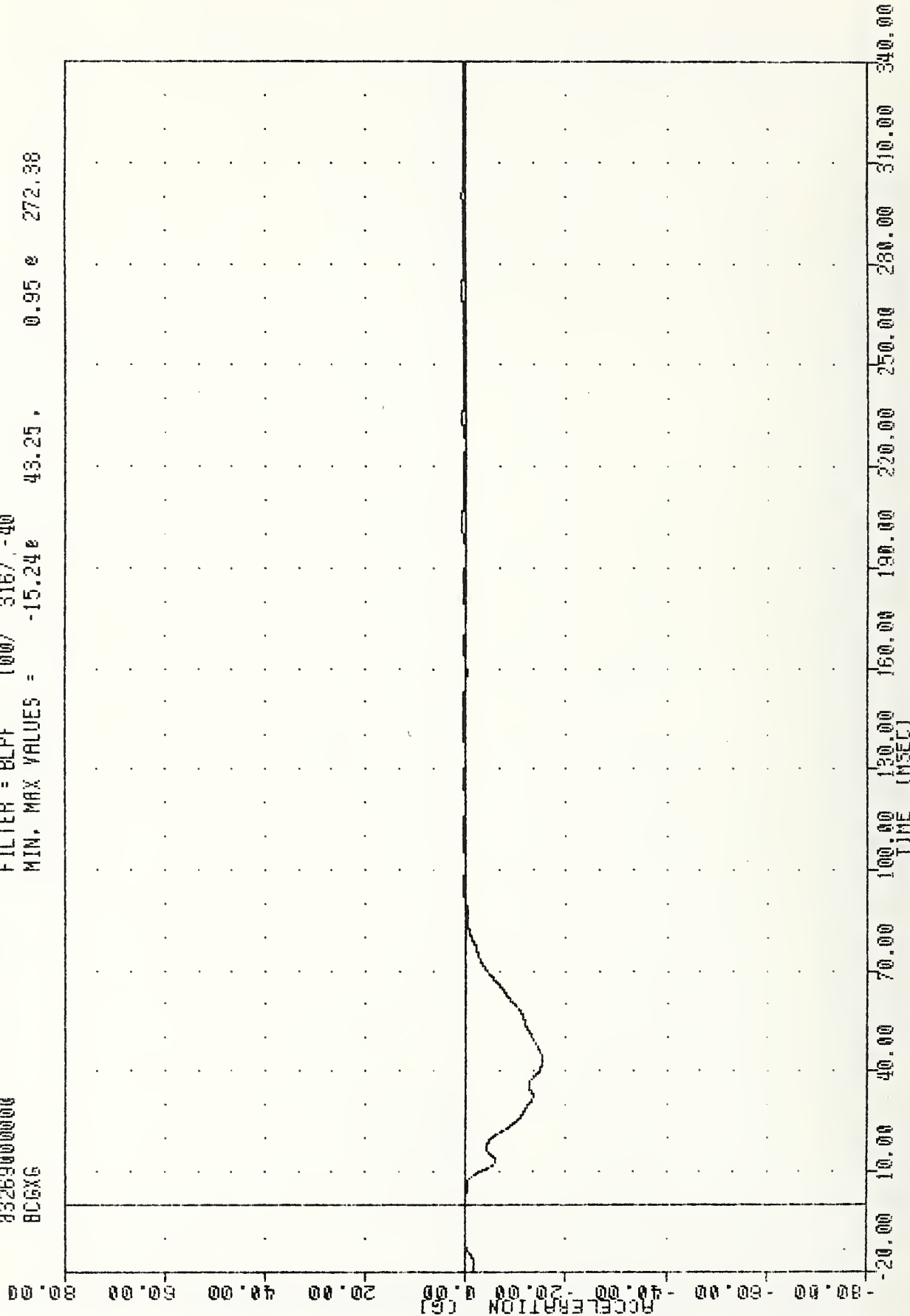


TRC
EVALUATION OF MOD YW FLEET
83269000000
BCGXG

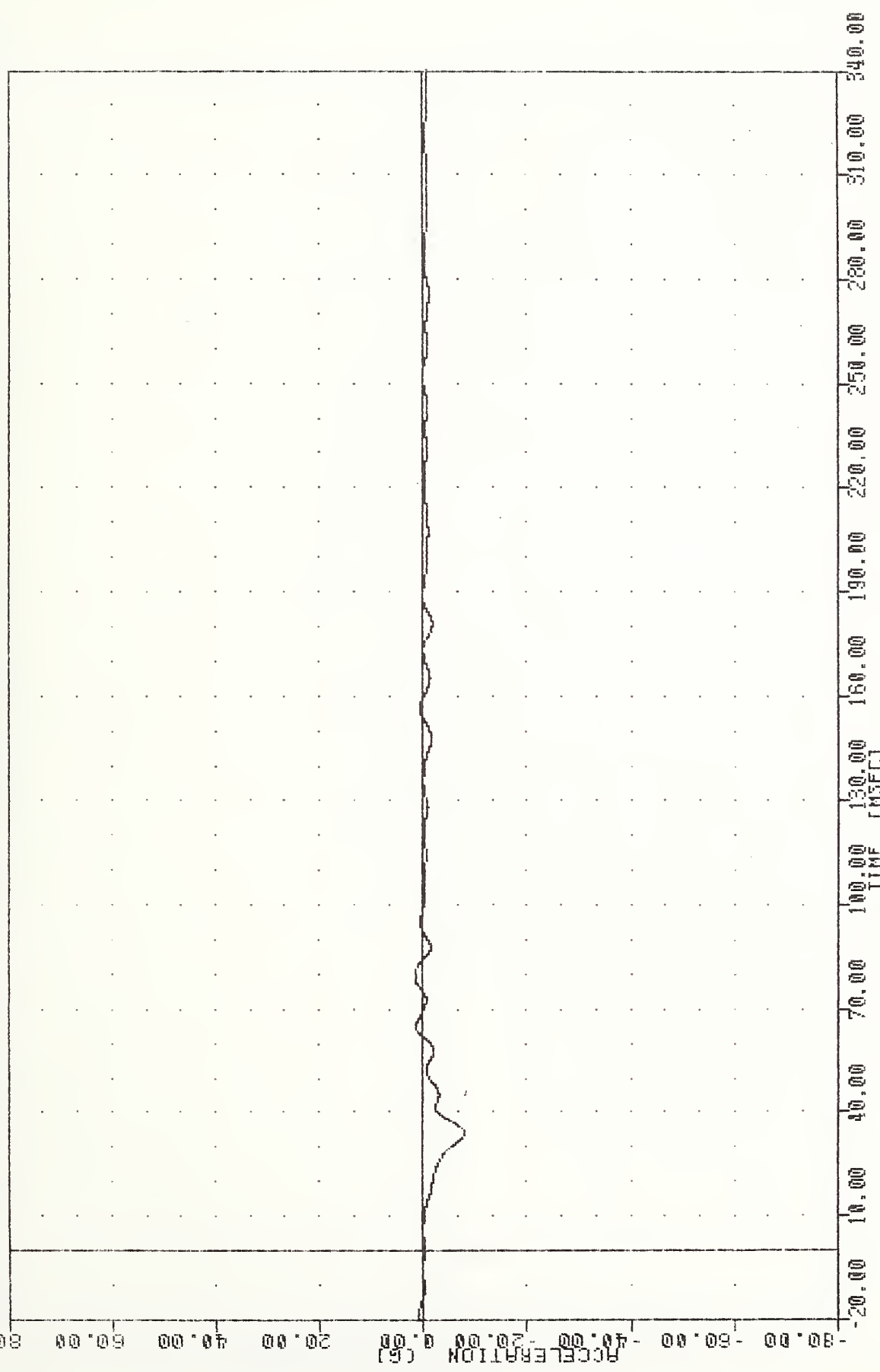
PLOT DATE 29-SEP-83 12:06:59

FILTER = BLPF 100/ 316/-40

MIN. MAX VALUES = -15.24e 43.25. 0.95 e 272.38



TRC , 830926
 EVALUATION OF MOD VW FLEET
 83268000000
 BCGYG
 PLOT DATE 29-SEP-83 12:06:59
 FILTER = 8LFF 100/ 316/ -40
 MIN. MAX VALUES = -8.06e 34.00 , 1.48 e 79.38



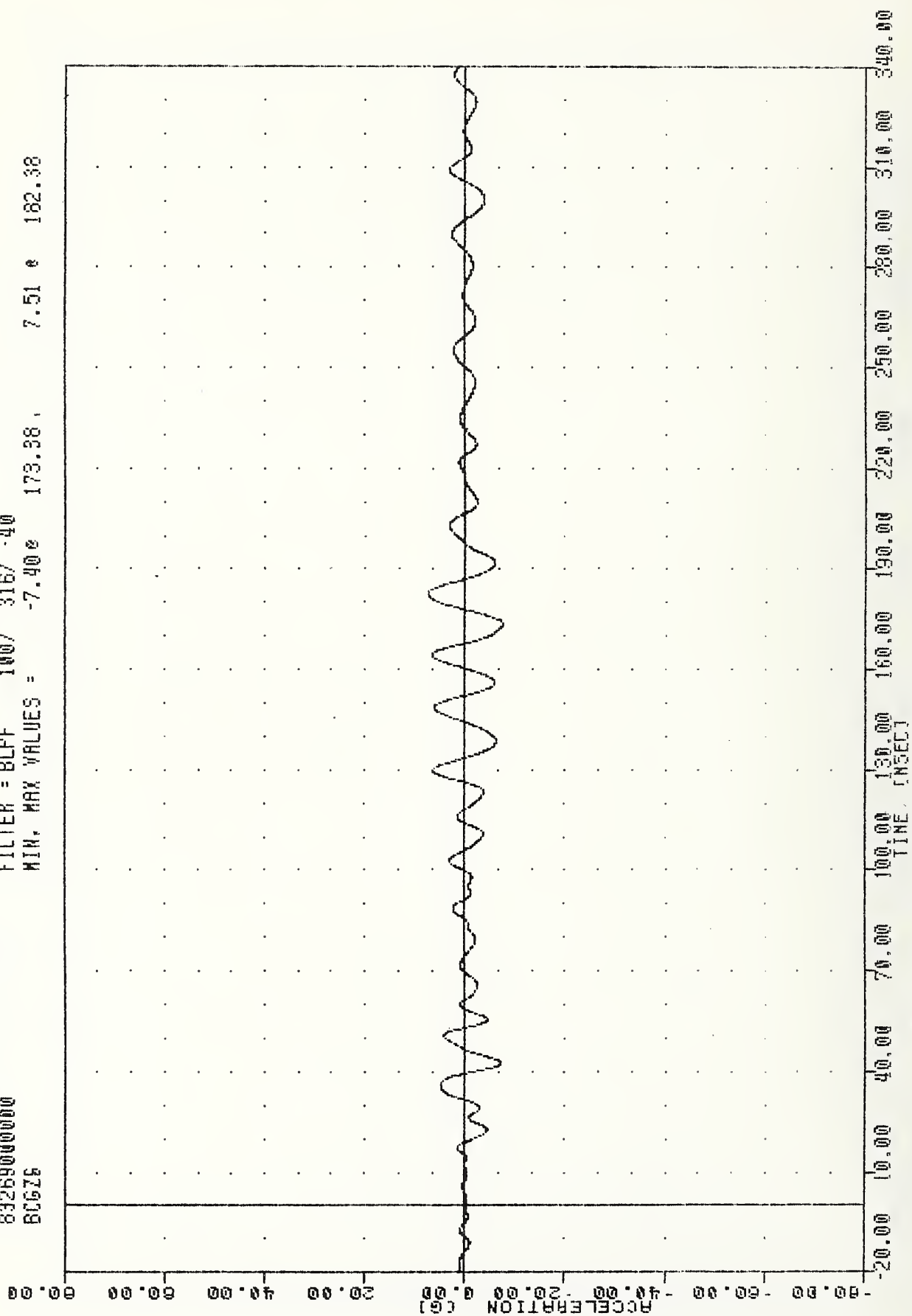
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 BARRIER CENTER OF GRAVITY Y AXIS

TAC
EVALUATION OF MOD VV FLEET
83269000000
BCGZS

PLOT DATE 29-SEP-83 12:06:59

FILTER = BLFF 100/ 316/ -40

MIN. MAX VALUES = -7.40e 173.38 , 7.51 e 182.38



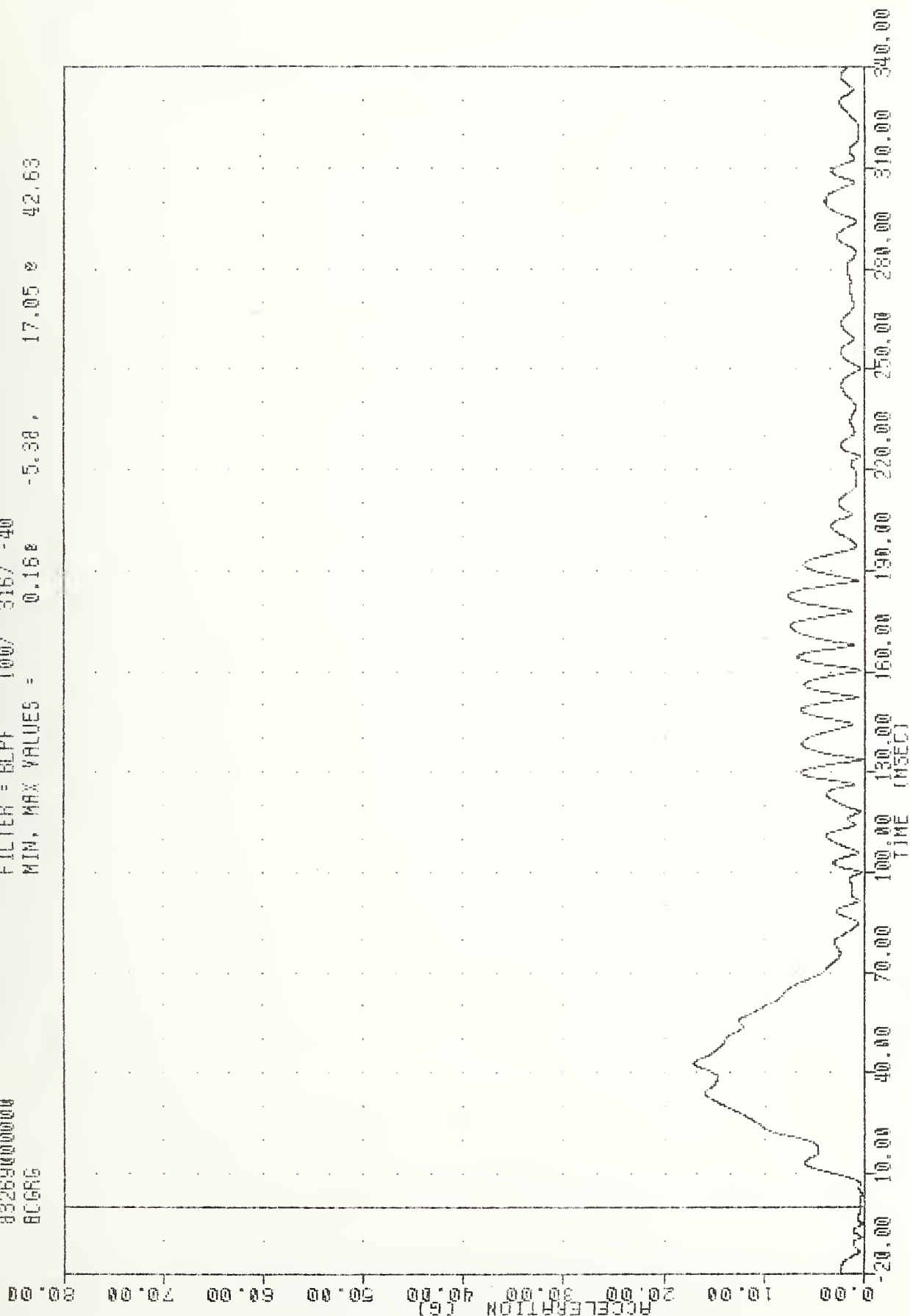
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
BARRIER CENTER OF GRAVITY Z AXIS

TRC , 830926
EVALUATION OF MOD VW FLEET
83269000000
BCGRG

PLOT DATE 29-SEP-83 12:06:59

FILTER = RLFF 100/ 315/ -40

MIN. MAX VALUES = 0.168 -5.38 , 17.05 42.63



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
BARRIER CG RESULTANT

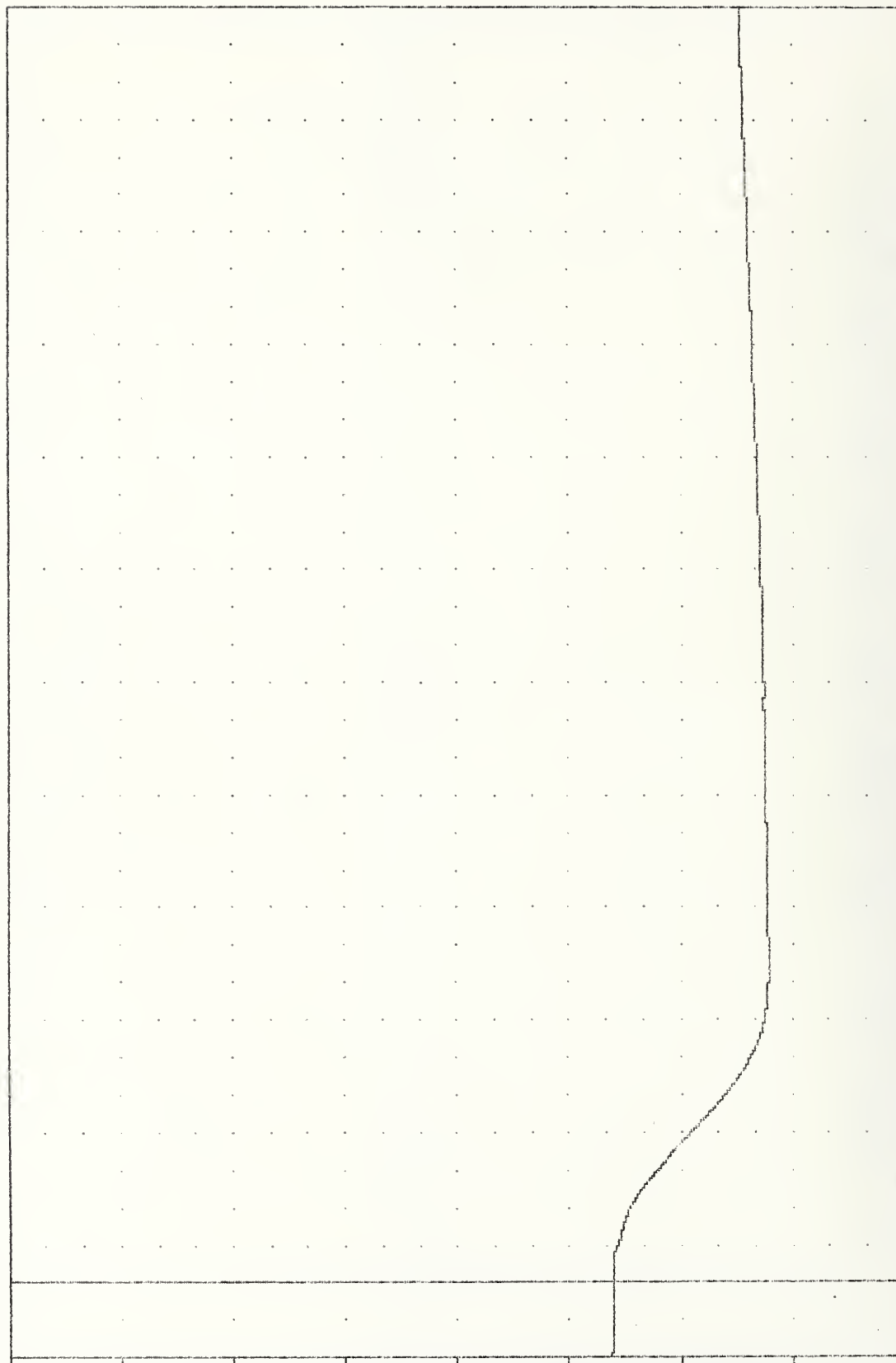
TRC , 830926
 EVALUATION OF MOD VW FLEET
 83269000000
 BCGXW

PLOT DATE 30-SEP-83 08:41:37

FILTER = BLPF 300/ 949/ -40

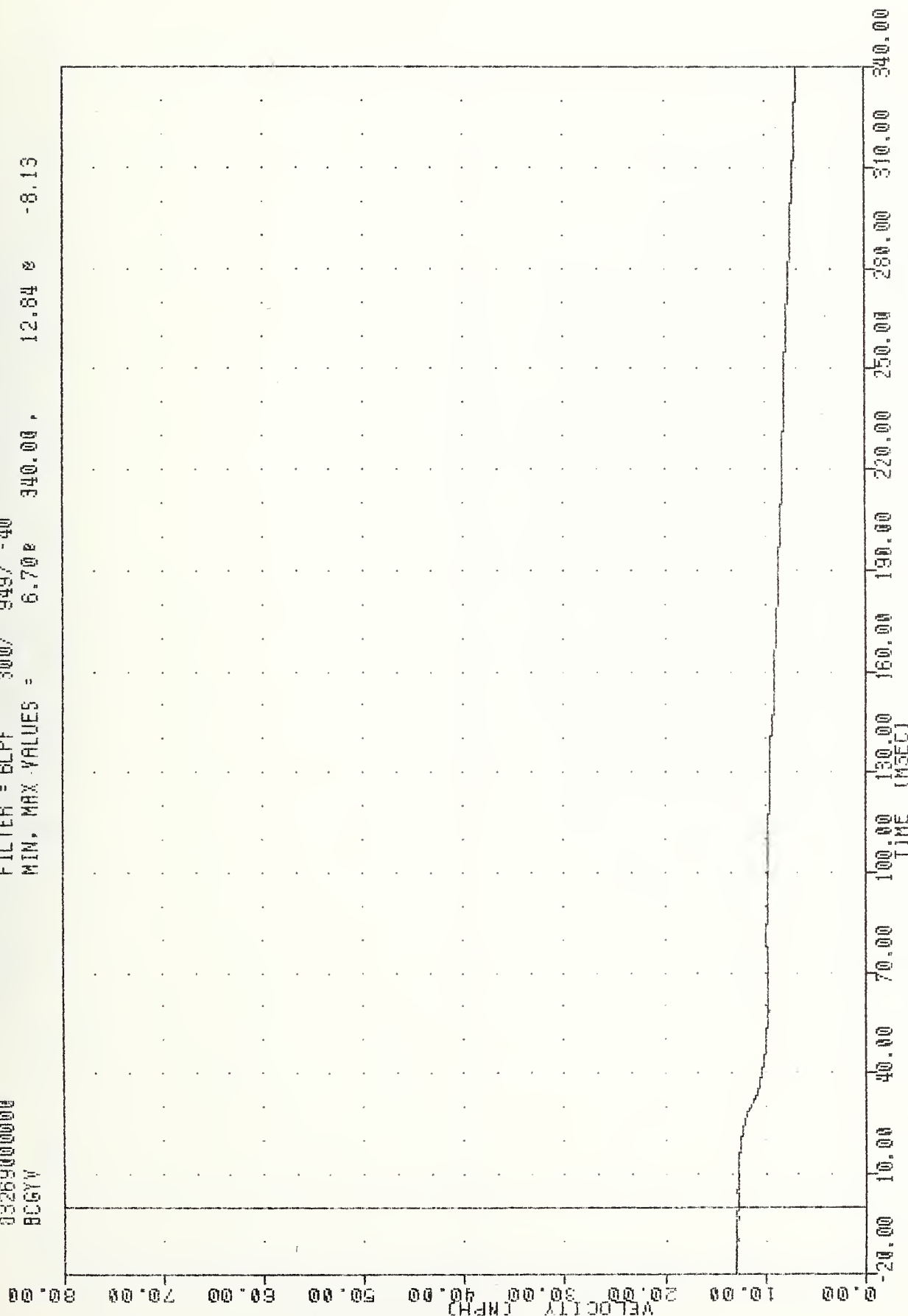
MIN, MAX VALUES = 12.11 87.38 26.20 -20.00

VELOCITY (MPH)



MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING BCGXG

MIN.	MAX	VALUES	=	6.70	40.00	12.84	2	-8.19
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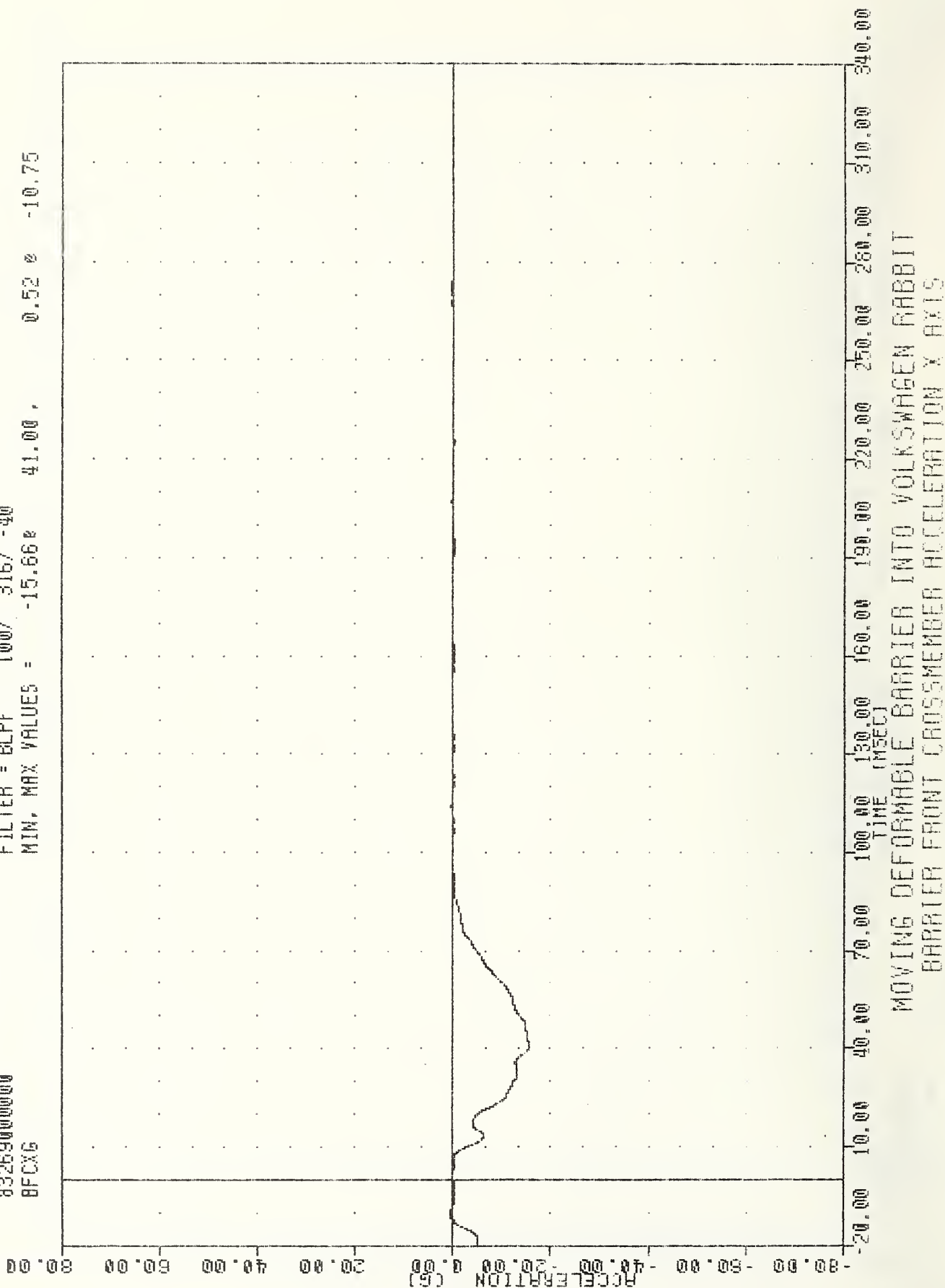
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
PURE (INSEC)
DELTA V USING BCGYG

TRC
EVALUATION OF MOD YW FLEET
832690000000
BFCXG

PL01 DATE 29-SEP-83 12:06:59

FILTER = BLPF 100/ 316/ -40

MIN. MAX VALUES = -15.66% 41.00, 0.52% -10.75

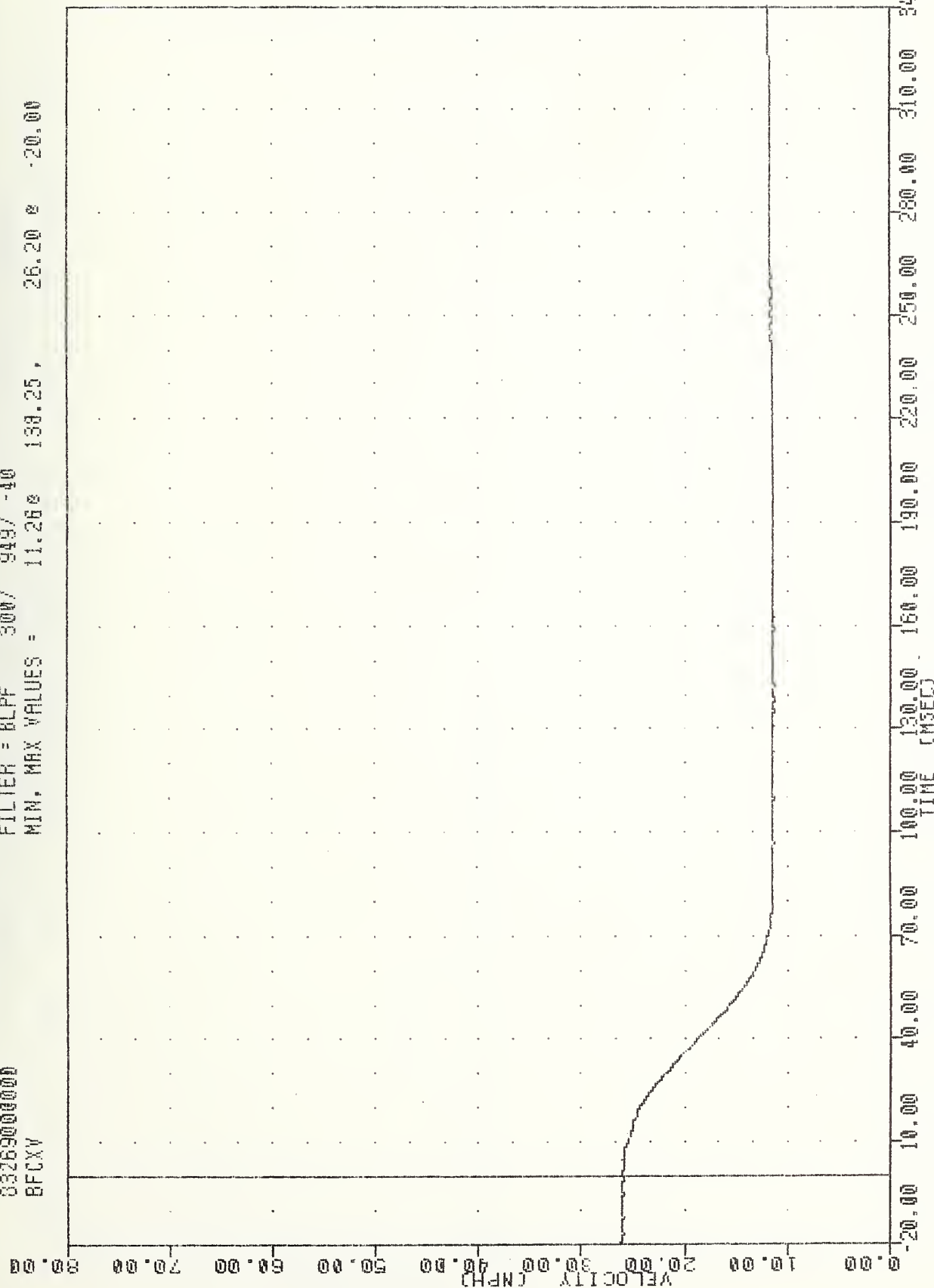


TRC , 830926
 EVALUATION OF MOD VW FLEET
 0326900000
 BFCXV

PLOT DATE 30-SEP-83 08:41:37

FILTER = BLPF 300/ 949/ -40

MIN. MAX VALUES = 11.26 138.25 , 26.20 -20.00



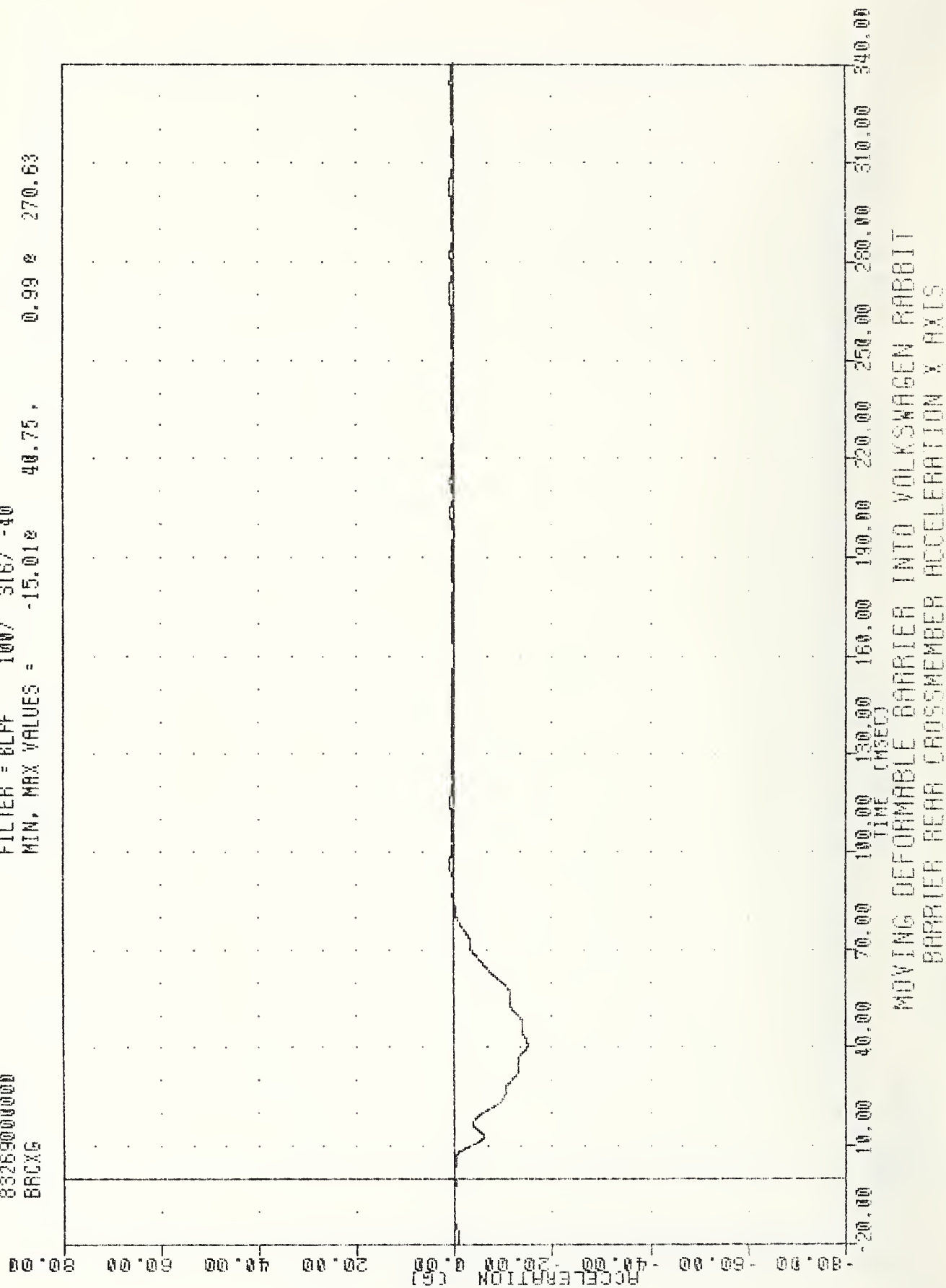
MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT
 DELTA V USING BFCXG

TRC , 830926
 EVALUATION OF M00 VW FLEET
 83269000000
 BRXG

PLOT DATE 29-SEP-83 12:06:59

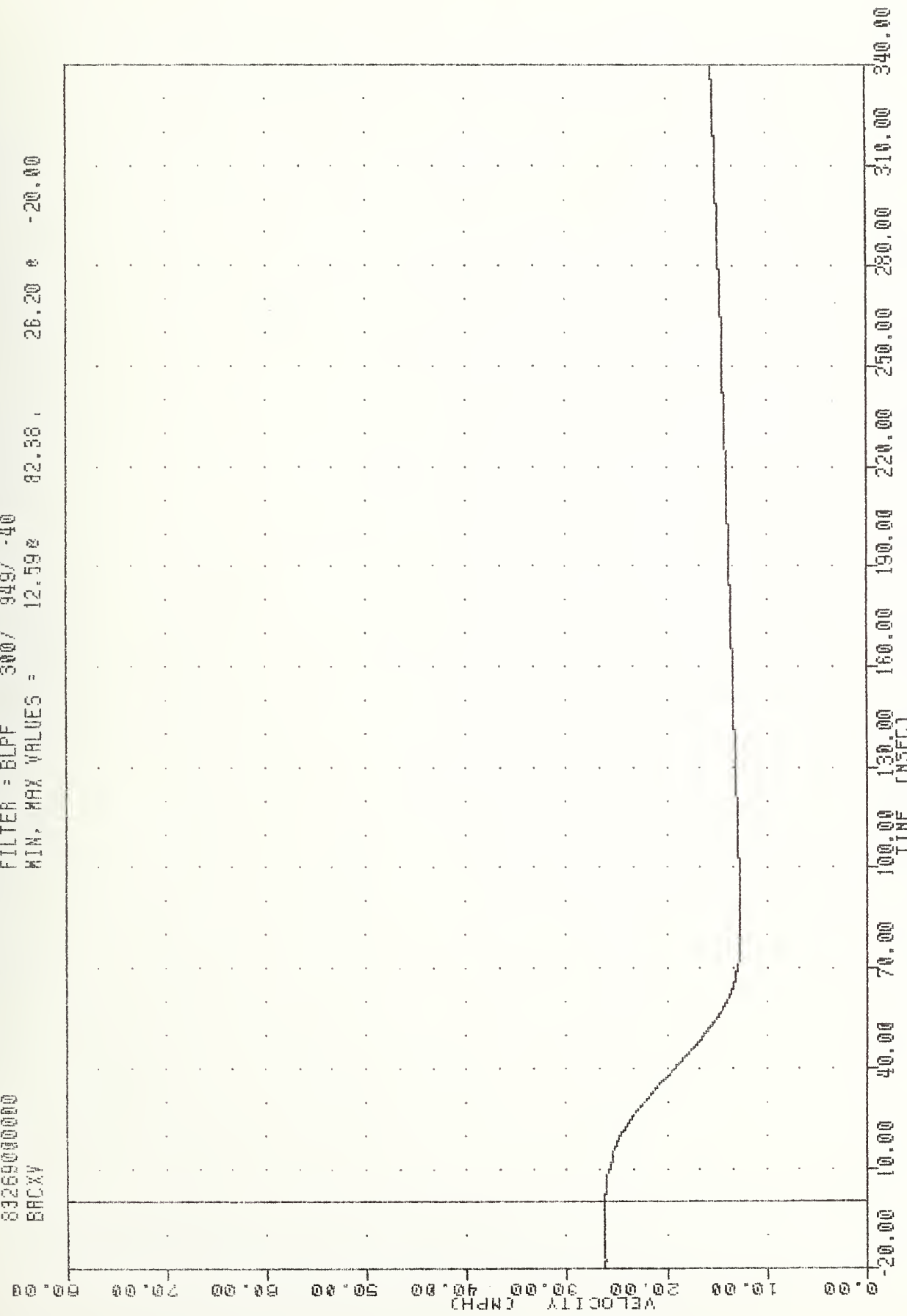
FILTER = BLFF 100/ 316/ -40

MIN, MAX VALUES = -15.01e 48.75, 0.99 e 270.63



TAC 830926
 EVALUATION OF MOD VN FLEET
 83269000000
 BRCKV
 FILTER = BLPF 300/ 949/ -40
 MIN, MAX VALUES = 12.59% 82.38% 26.20% -20.00%

PLOT DATE 30-SEP-83 08:41:37

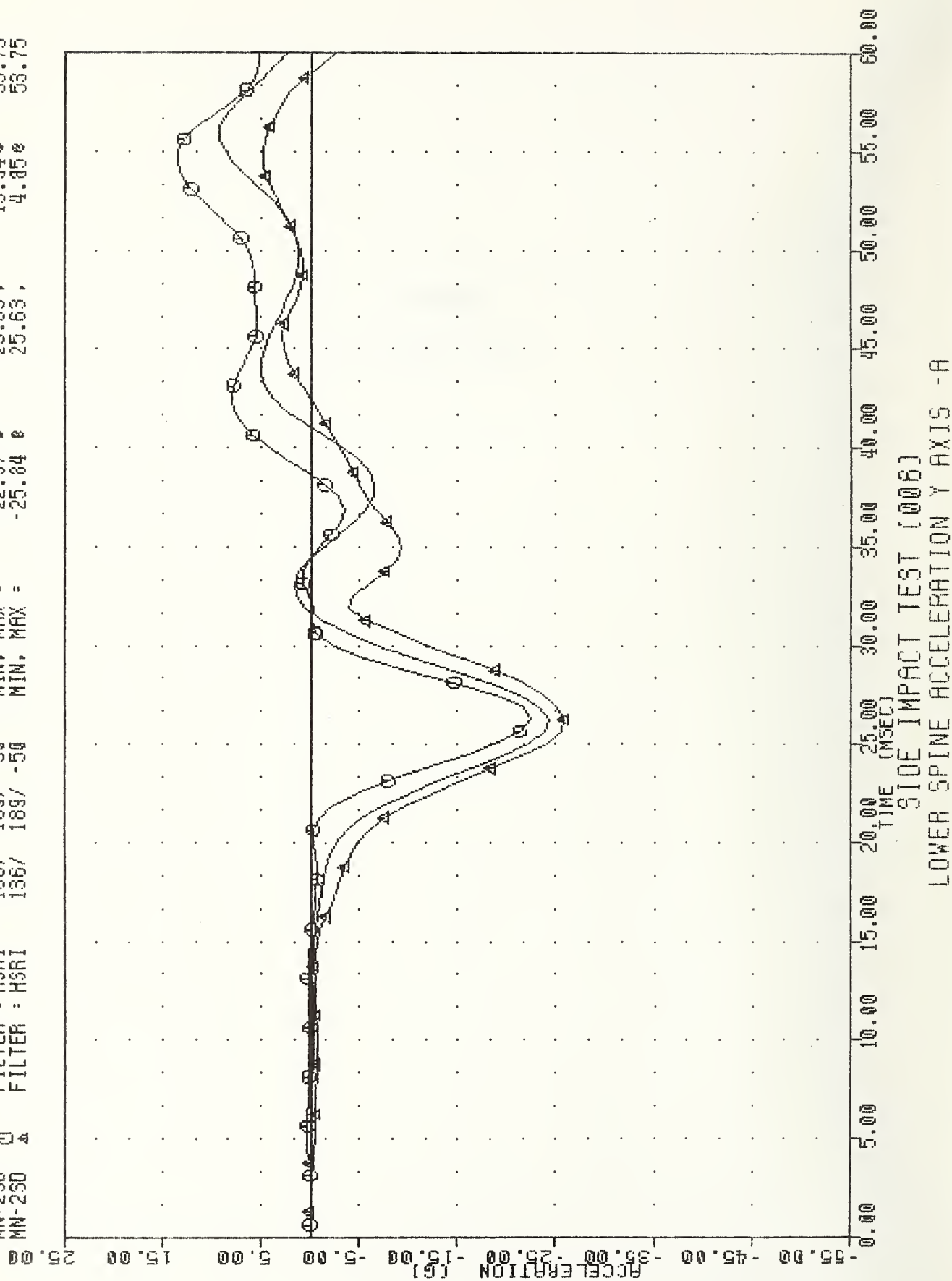


MOVING DEFORMABLE BARRIER INTO VOLKSWAGEN RABBIT

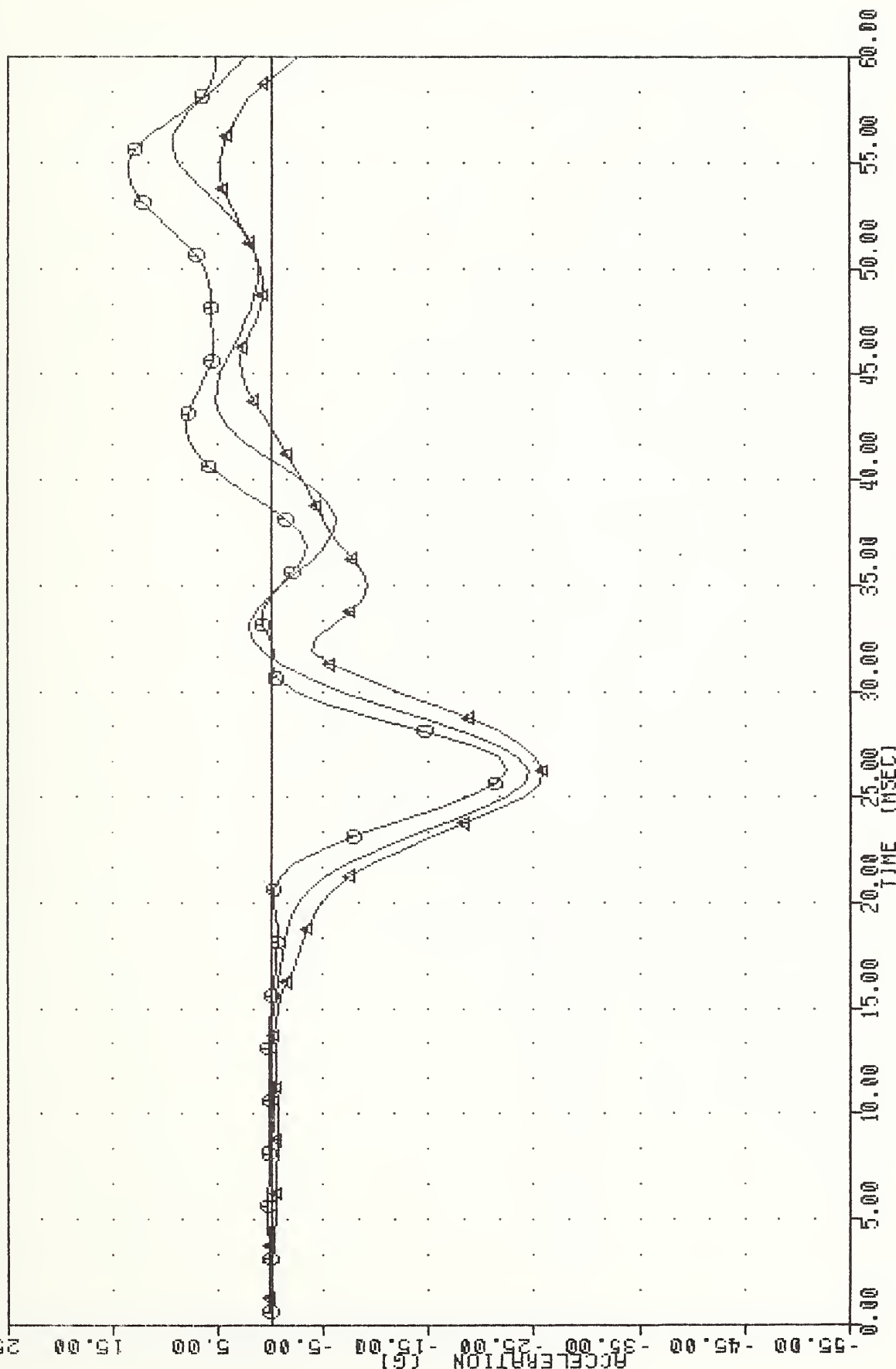
DELTA V USING BRCKG

APPENDIX C
DUMMY CERTIFICATION

VRTC SRL26 , ARL6CA64 SID THORAX 6 BODY 318 CAL 64 83271 PLOT DATE 23-SEP-83 13:15:30
 T12YGA FILTER = HSRI 136/ 189/ -50 MIN, MAX = -24.18 9.16 55.00
 MN-250 0 FILTER = HSRI 136/ 189/ -50 MIN, MAX = -22.37 13.54 53.75
 MN-250 A FILTER = HSRI 136/ 189/ -50 MIN, MAX = -25.84 4.85 53.75

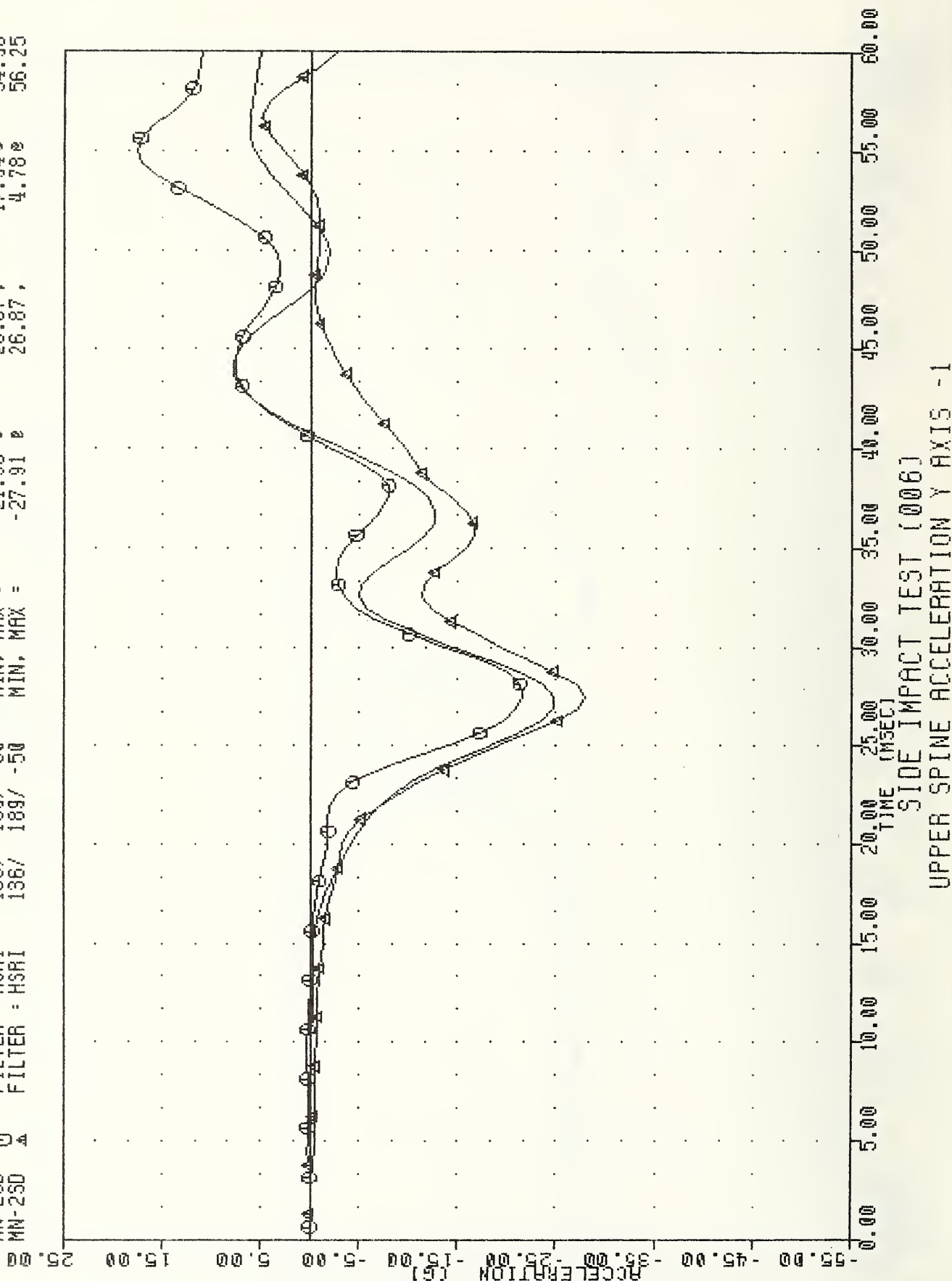


VRIC SRL26 , ARL6C864 SID THORAX 6 BODY 318 CAL 64 83271 -24.39 25.63 13:14:23
 T12Y61 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -22.37 25.63 9.25 55.00
 MN+2SD 0 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -25.84 25.63 4.85 53.75
 MN-2SD 4 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -25.84 25.63 4.85 53.75



SIDE IMPACT TEST (006)
 LOWER SPINE ACCELERATION Y AXIS -1

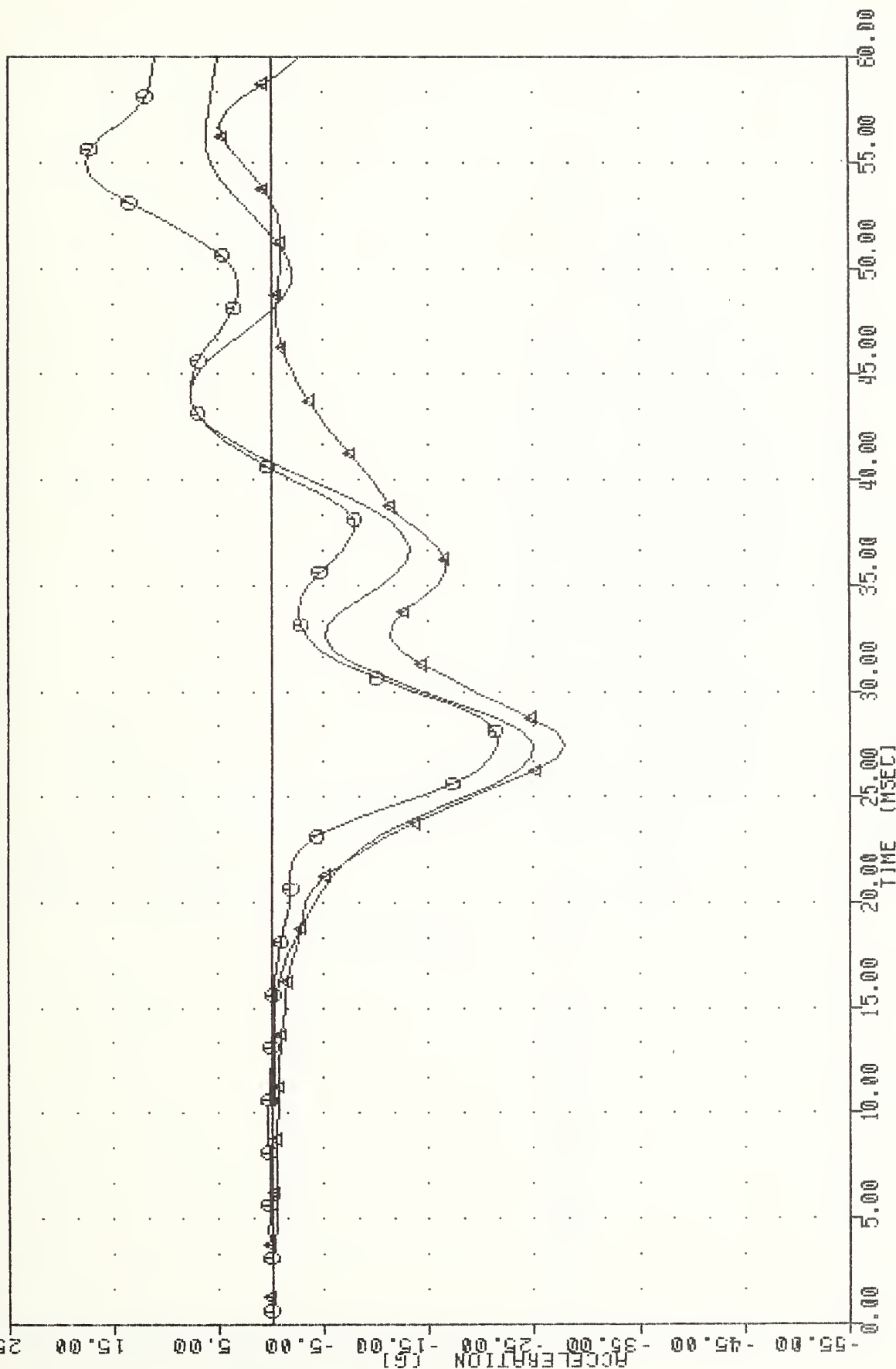
VRIC SRL26 , HRL6CA64 SID THORAX 6 BODY 318 CAL 64 83271 23-SEP-83 13:11:12
 T01Y61 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -24.77 7.75 43.13
 MN-250 0 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -21.58 17.54 54.38
 MN-250 A FILTER : HSRI 136/ 189/ -50 MIN, MAX = -27.91 26.87 56.25



SIDE IMPACT TEST (006)

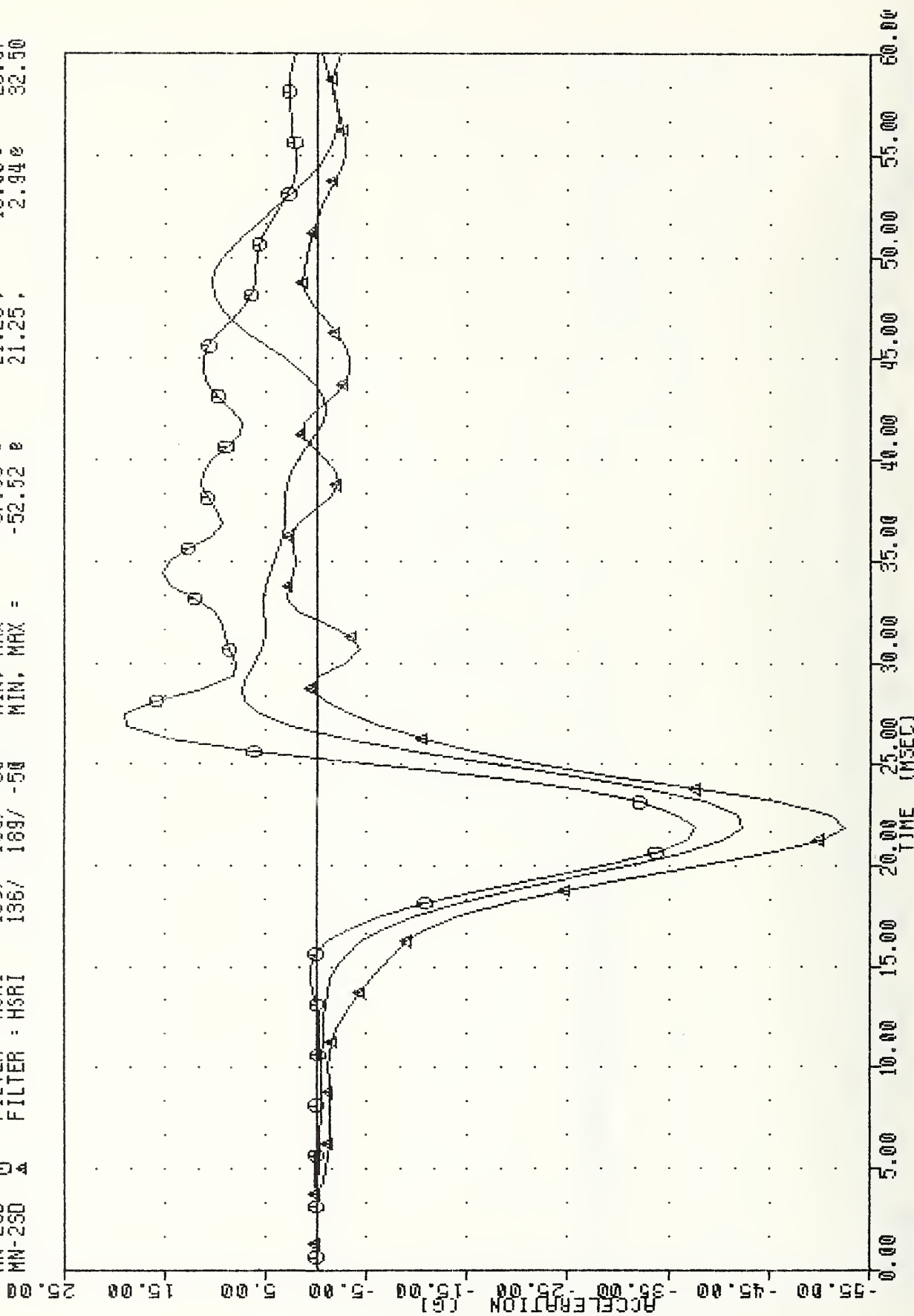
UPPER SPINE ACCELERATION Y AXIS -1

VRIC SRL26 , ARL6CH64 SID THORAX 6 BODY 318 CAL 64 83271 PLUT DRUE 23-SEP-85 13:07:30
 T01YGA FILTER : HSRI 136/ 189/ -50 MIN. MAX = -24.91 26.87 7.57 43.75
 MN-250 0 FILTER : HSRI 136/ 189/ -50 MIN. MAX = -21.58 26.87 17.54 54.38
 MN-250 A FILTER : HSRI 136/ 189/ -50 MIN. MAX = -27.91 26.87 4.78 56.25



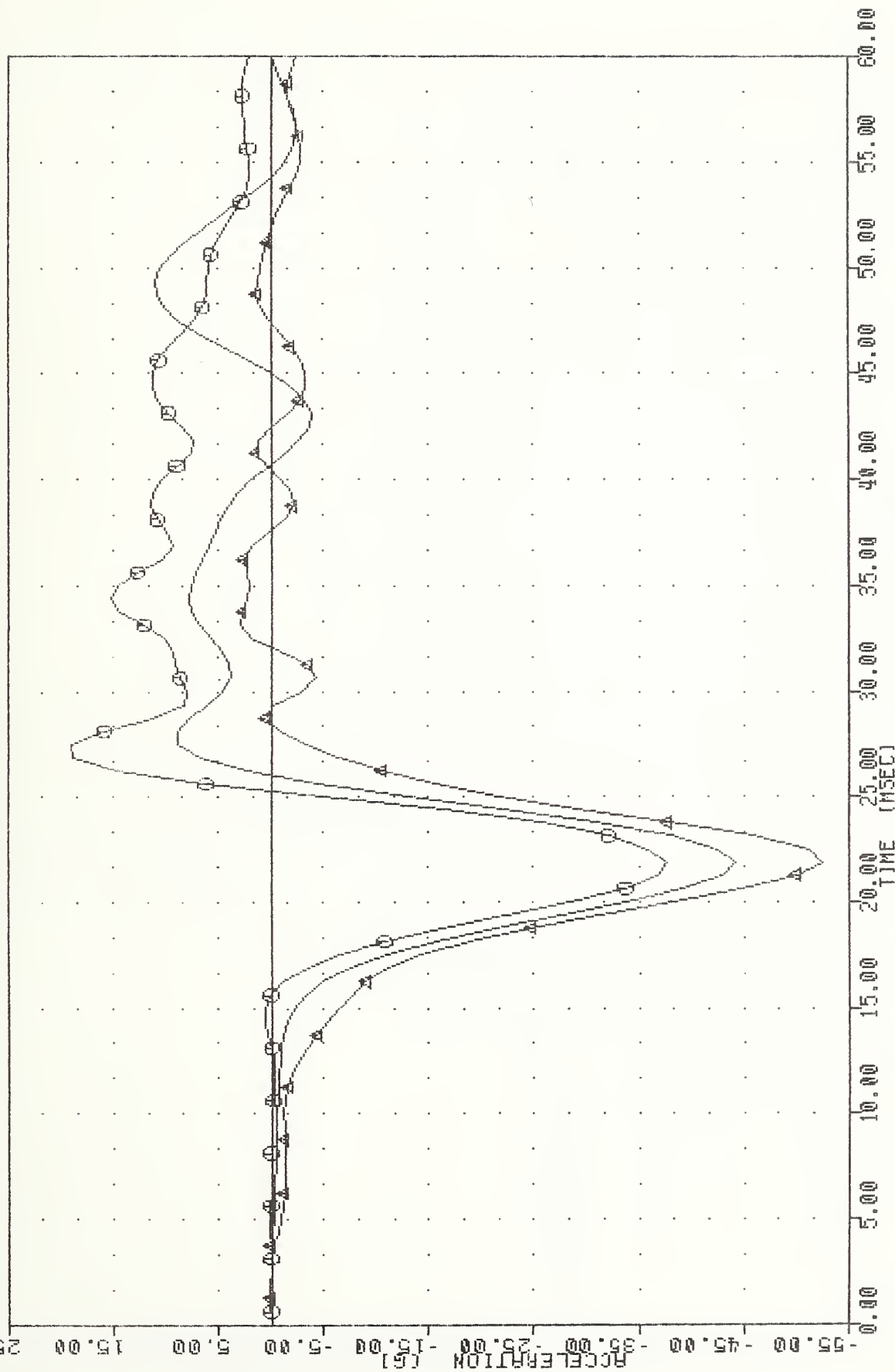
SIDE IMPACT TEST (006)
 UPPER SPINE ACCELERATION Y AXIS -A

VRIC SRL26 , ARL6CA64 SID THORAX 6 BODY 318 CAL 64 83271 PLOT DATE 23-SEP-83 13:18:23
 LLRYG1 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -42.36 21.25, 10.30 48.13
 MN-250 0 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -37.66 21.25, 19.00 26.87
 MN-250 A FILTER : HSRI 136/ 189/ -50 MIN, MAX = -52.52 21.25, 2.94 32.50

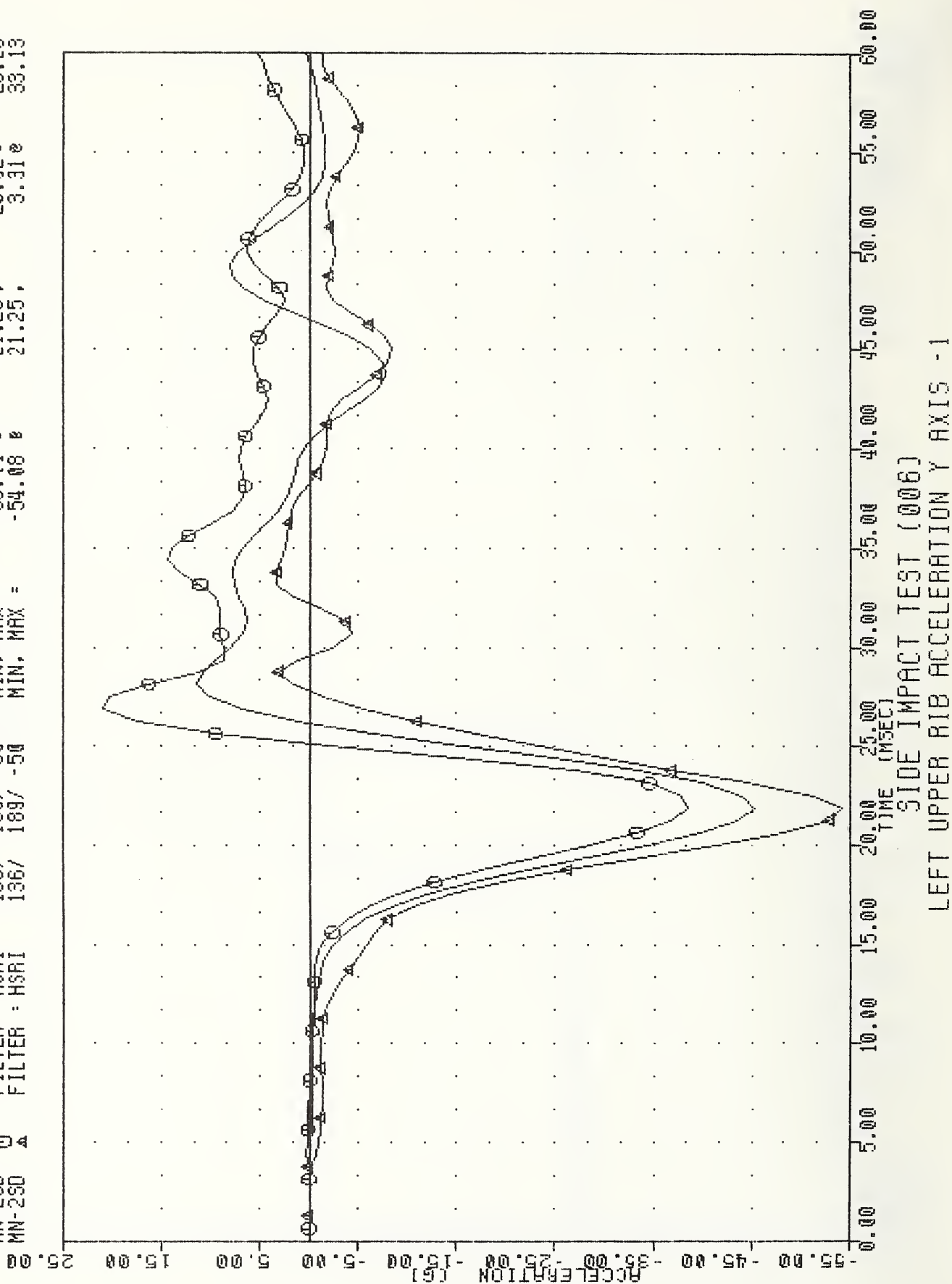


SIDE IMPACT TEST (0006)
 LEFT LOWER RIB ACCELERATION Y AXIS -1

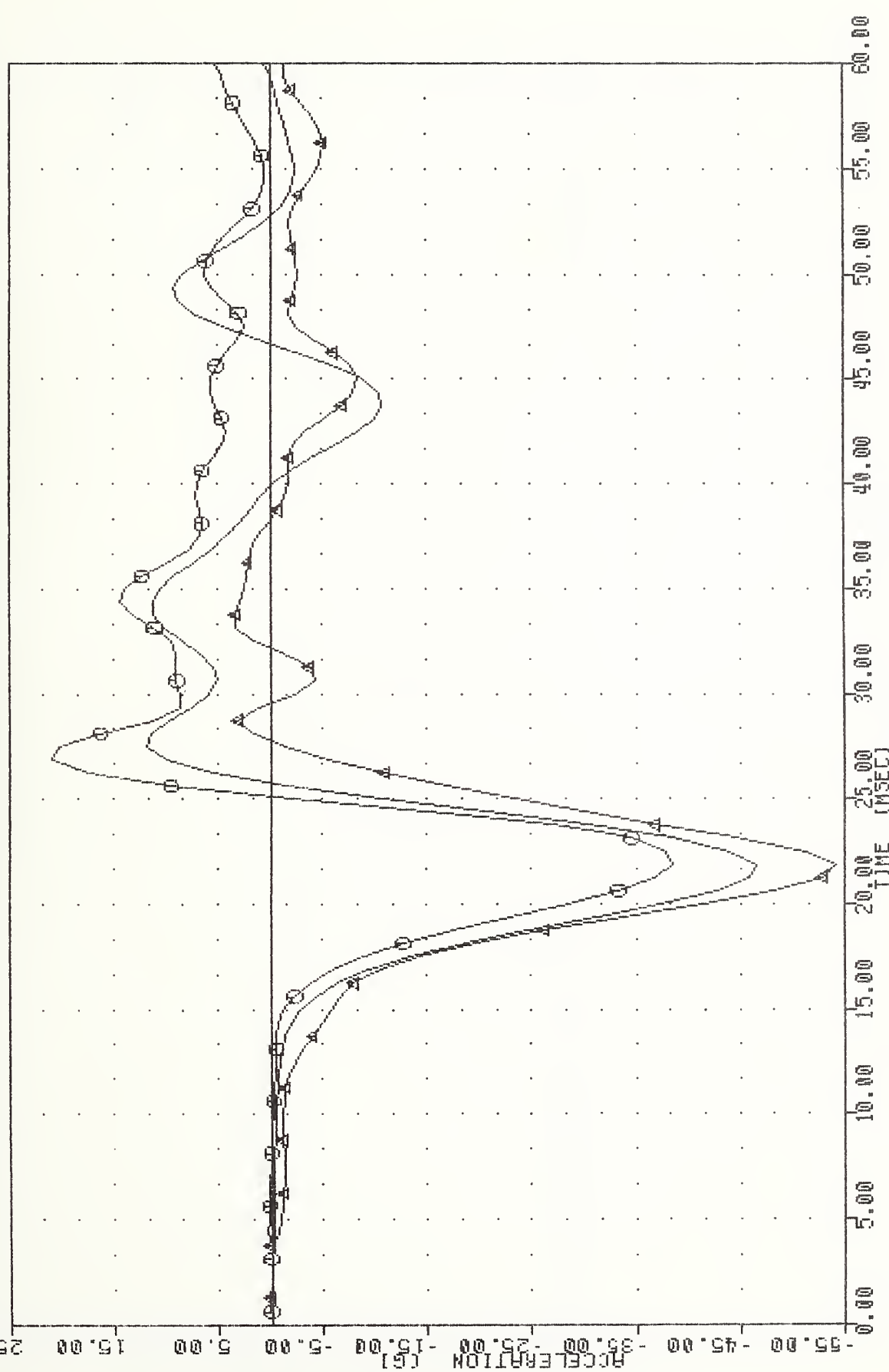
VRIC SRL26 , ARL6C864 S10 THORAX 6 BODY 318 CAL 64 83271 PLOT DATE 23-SEP-83 13:19:57
 LLRYGA FILTER = HSRI 136/ 189/ -50 MIN, MAX = -44.22 21.25 10.92 48.75
 MN-250 U FILTER = HSRI 136/ 189/ -50 MIN, MAX = -37.66 21.25 10.90 26.87
 MN-250 A FILTER = HSRI 136/ 189/ -50 MIN, MAX = -52.52 21.25 2.94 32.50



VRIC SRL26 , ARL6C864 SID THORAX 6 BODY 318 CAL 64 83271 PLOT DATE 23-SEP-83 13:08:31
 LURYGI FILTER : HSRI 136/ 189/ -50 MIN. MAX = -45.25 e 21.25, 11.25e 27.50
 MN-2SD 0 FILTER : HSRI 136/ 189/ -50 MIN. MAX = -38.44 e 21.25, 20.92e 26.25
 MN-2SD 4 FILTER : HSRI 136/ 189/ -50 MIN. MAX = -54.08 e 21.25, 3.31e 33.13

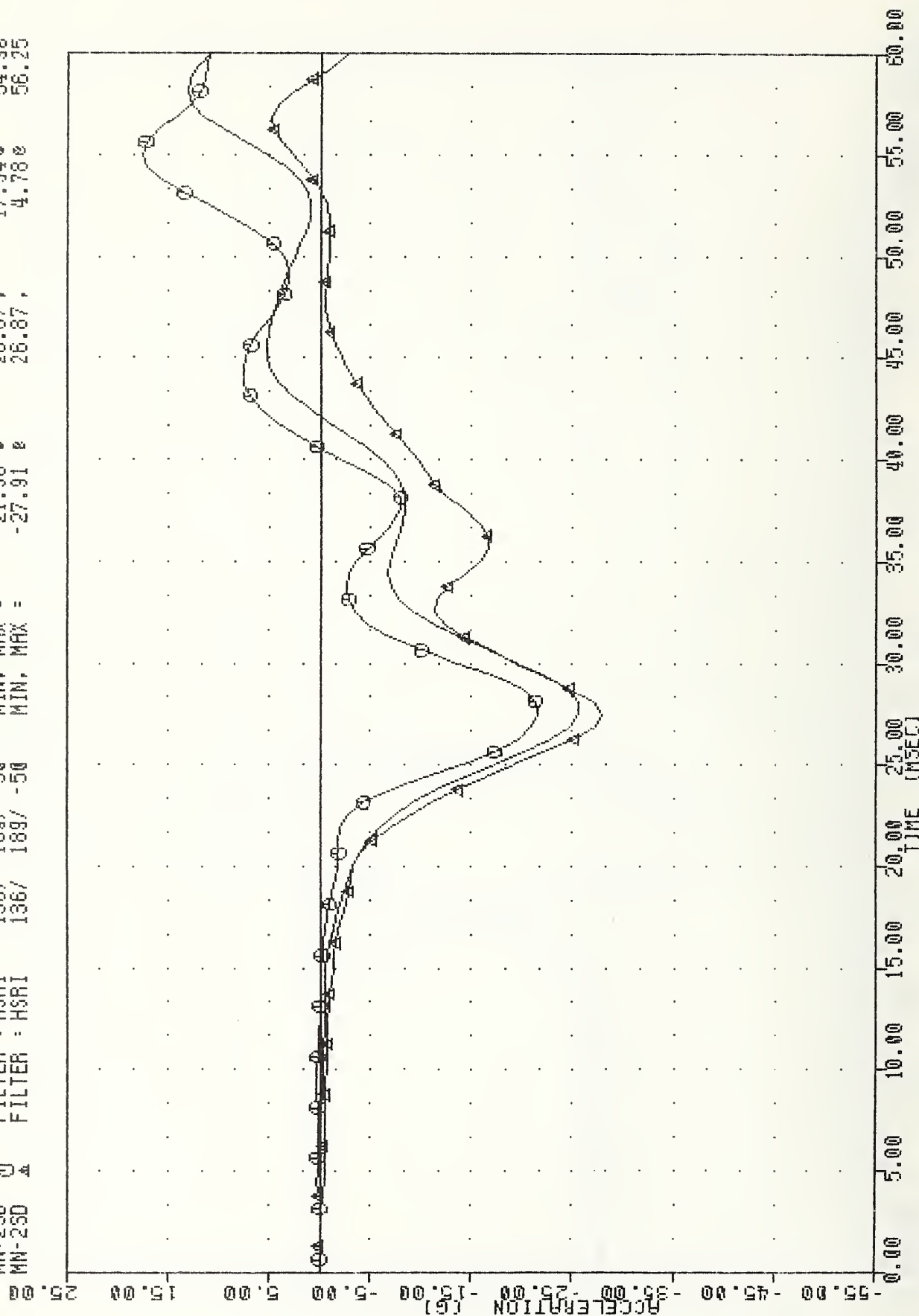


WRTC SRL26 .ARL5CAG4 SID THORAX & BODY 318 CAL 64 83271 PLOT DATE 23-SEP-83 13:10:13
 LURIGH FILTER : HSRI 136/ 189/ -50 MIN, MAX = -46.56 21.25 11.81 26.87
 MN-250 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -38.44 21.25 20.92 26.25
 MN-250 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -54.08 21.25 3.31 33.13



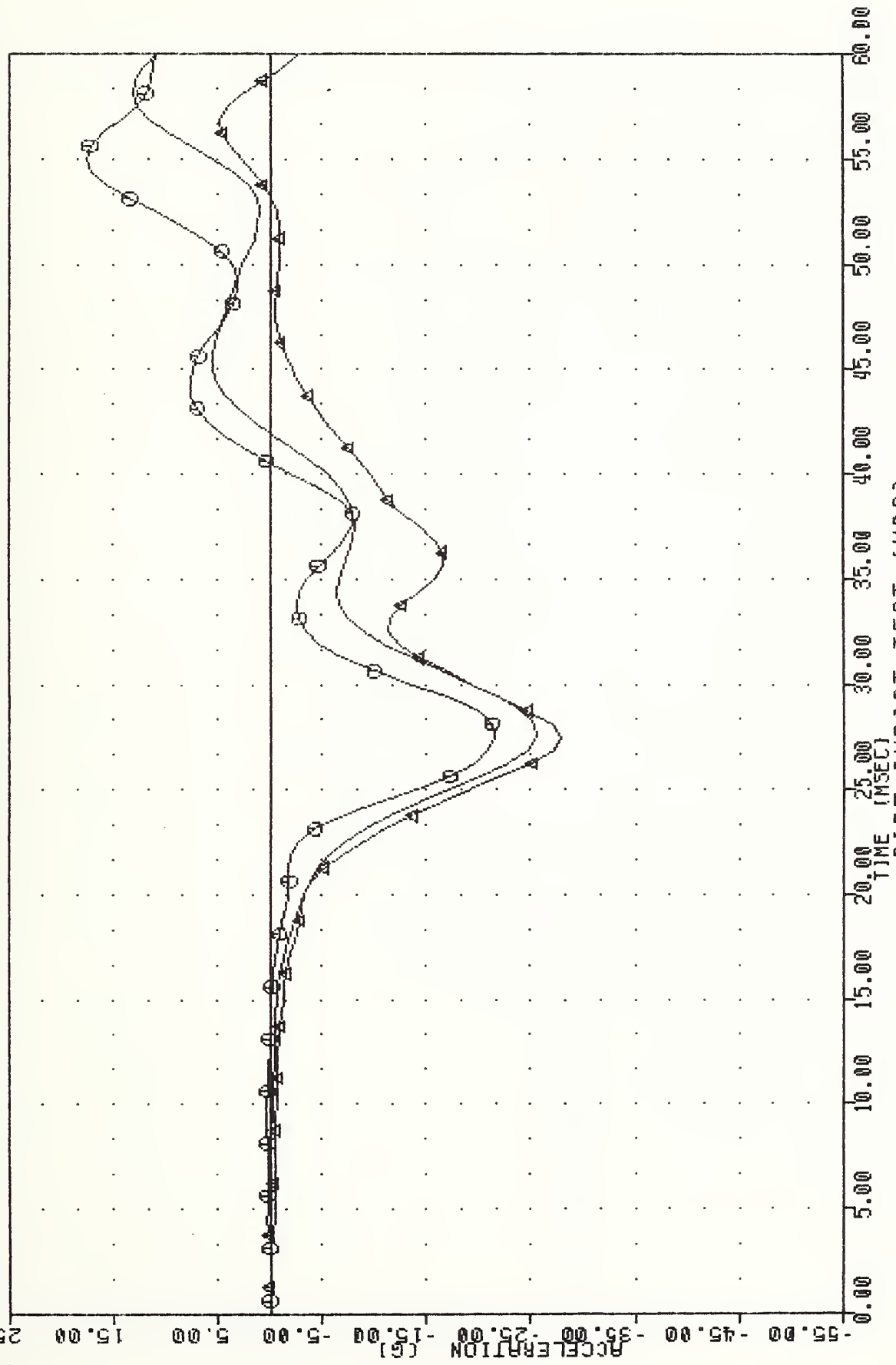
SIDE IMPACT TEST (006)
 LEFT UPPER RIB ACCELERATION Y AXIS -A

VRIC SRL26 • U02CAL63 SID THORAX U02 BODY 830 CAL 63 83271 PLOT DATE 23-SEP-83 13:33:31
 T01YGR FILTER : HSRI 136/ 189/ -50 MIN, MAX = -25.63 26.87 13.14 57.50
 MN-2SD 0 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -21.58 26.87 17.54 54.38
 MN-2SD 4 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -27.91 26.87 4.78 56.25



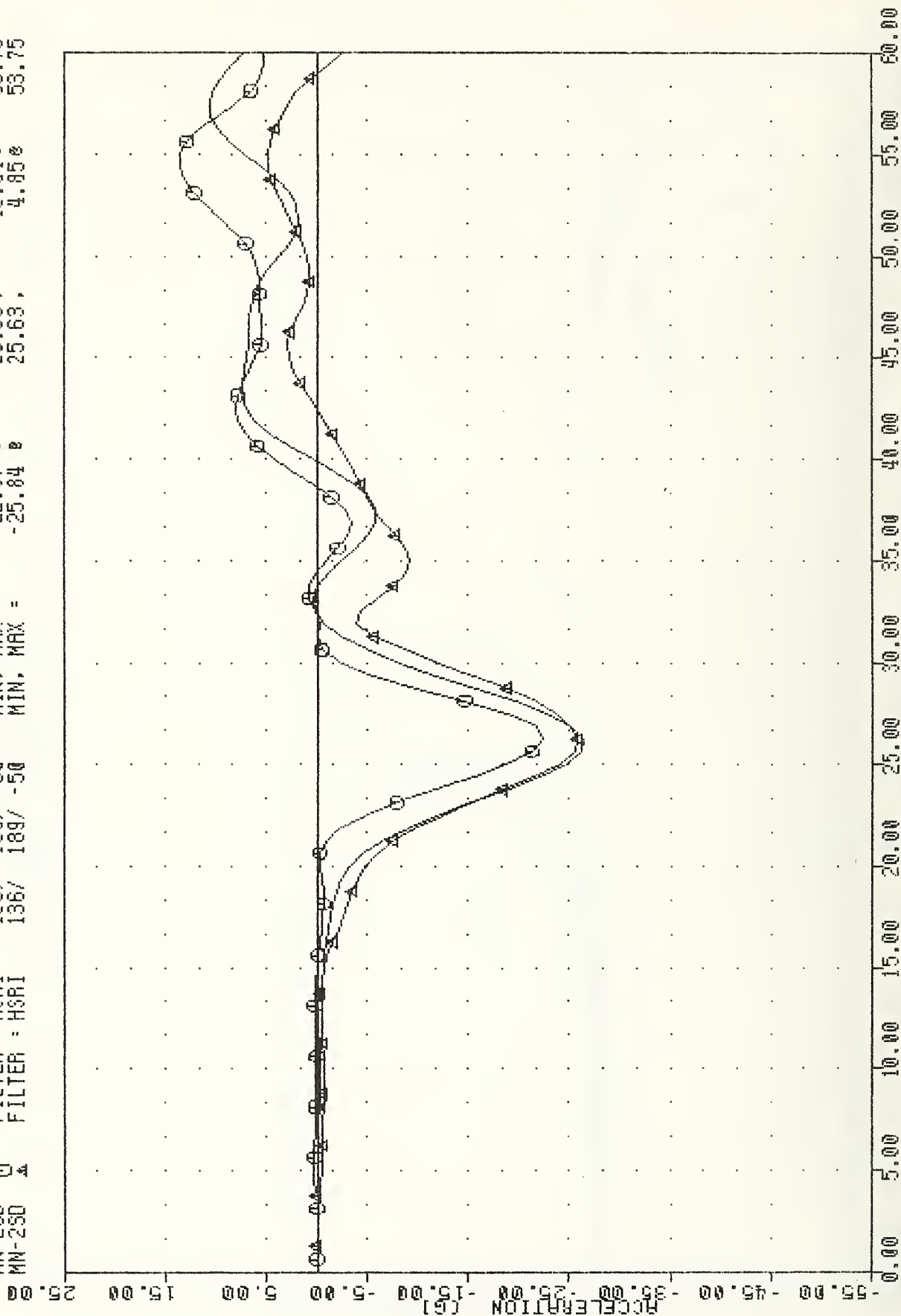
SIDE IMPACT TEST (U02)
 UPPER SPINE ACCELERATION Y AXIS -A

WRTC SRL26 , U02CAL63 S10 THORAX UN2 BODY 830 ORL 63 83271 PLOT DATE 23-SEP-83 13:32:41
 T01Y61 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -25.53 26.87, 13.13 57.50
 MN-2SD 0 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -21.58 26.87, 17.54 54.38
 MN-2SD 4 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -27.91 26.87, 4.78 56.25



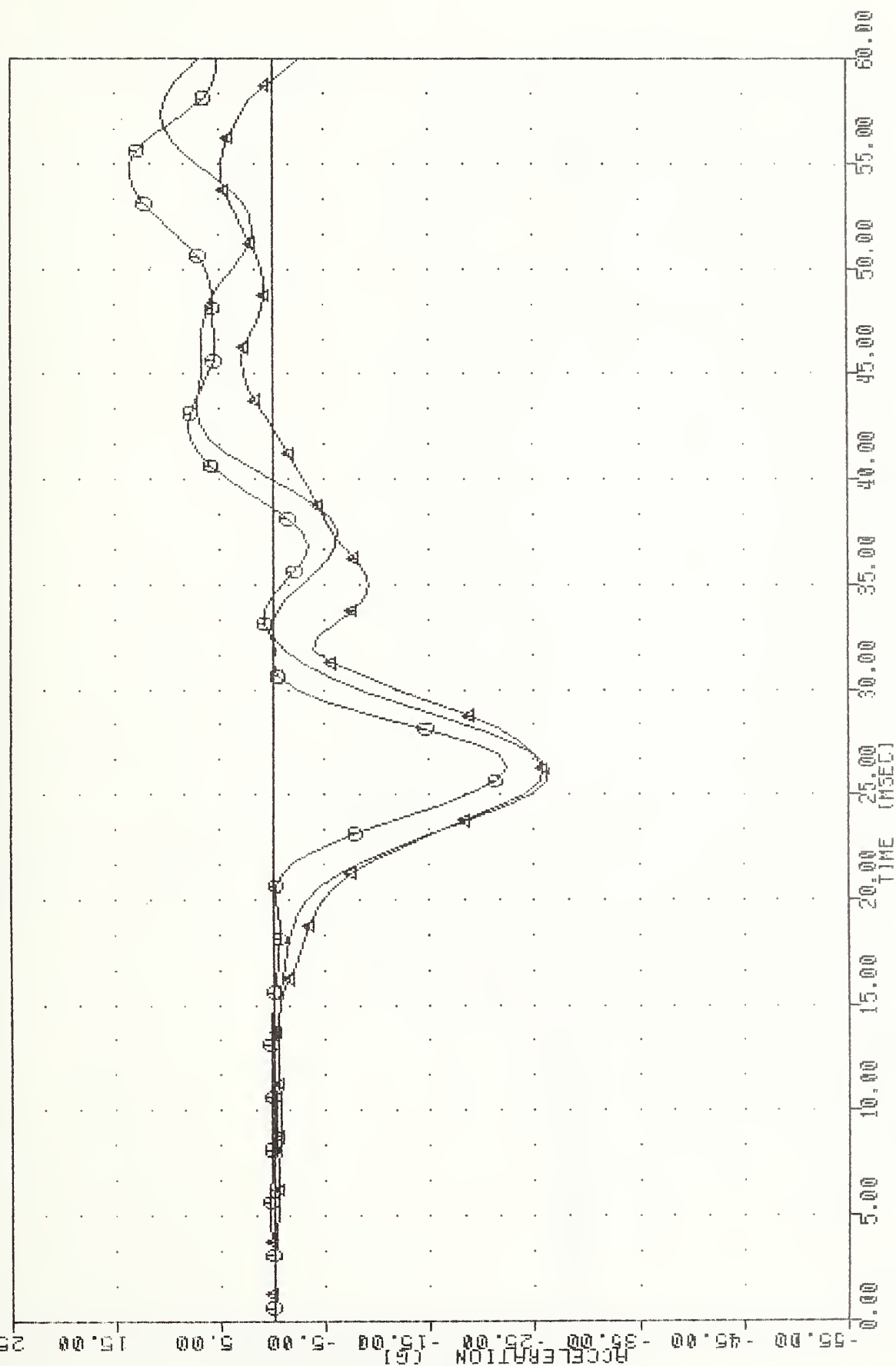
SIDE IMPACT TEST (U02)
 UPPER SPINE ACCELERATION Y AXIS -1

VRIC SRL26 , U02CAL63 SID THORAX U02 BODY 830 CAL 63 83271
 T12Y61 FILTER : H3RI 136/ 189/ -50 MIN. MAX = -26.37 0 25.63 10.59 13:23:42
 MN+230 0 FILTER : H3RI 136/ 189/ -50 MIN. MAX = -22.37 0 25.63 13.54 56.87
 MN-230 4 FILTER : H3RI 136/ 189/ -50 MIN. MAX = -25.84 0 25.63 4.85 53.75



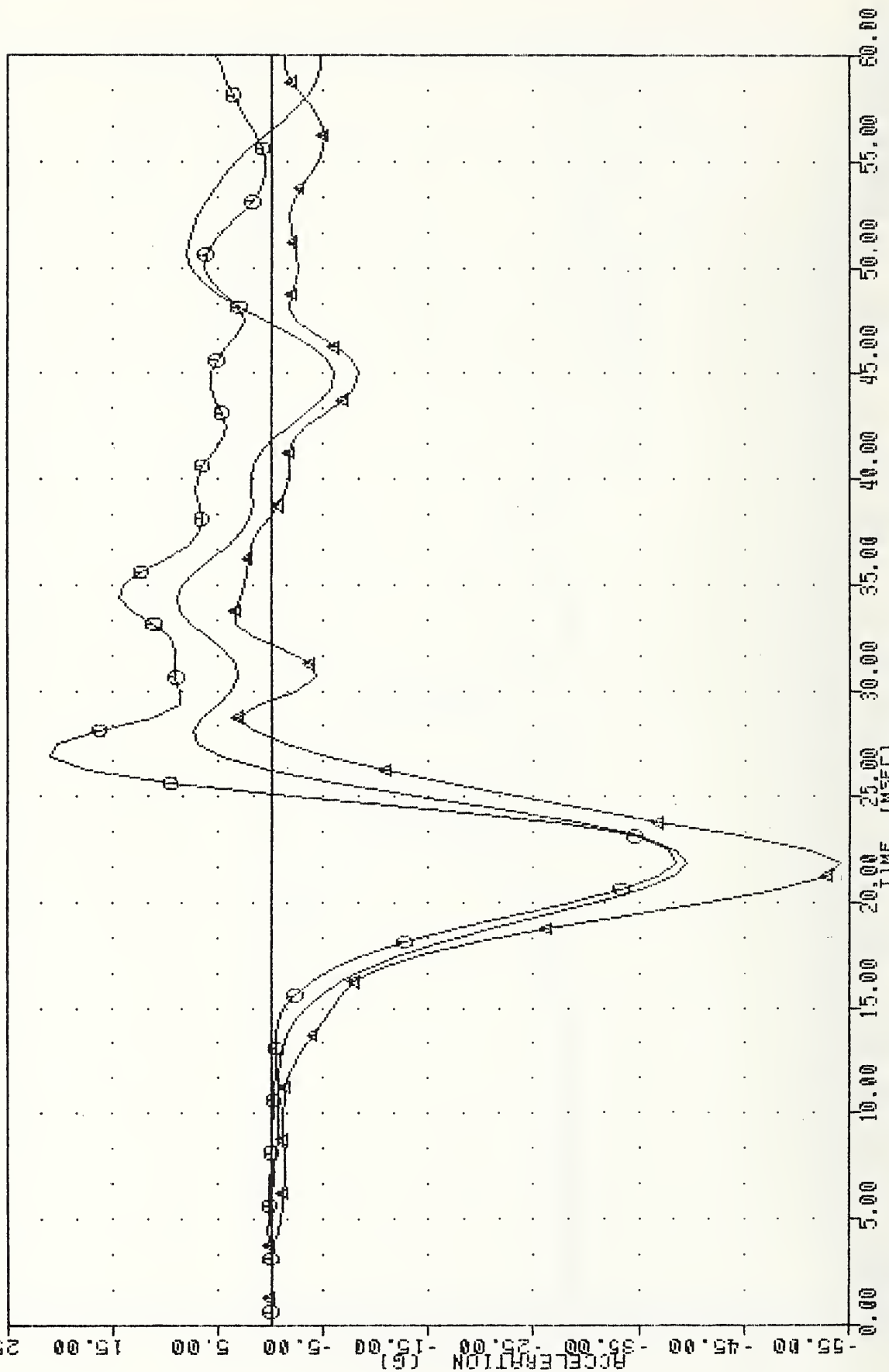
SIDE IMPACT TEST (U02)
 LOWER SPINE ACCELERATION Y AXIS -1

VRTC SRL26 , U02CAL63 SID THORAX U02 BODY 830 CAL 63 83271 PLOT DATE 23-SEP-83 13:25:06
 T12YGR FILTER : HSRI 136/ 189/ -50 MIN. MAX = -26.30 e 25.63 e 10.53 e 56.87
 MN-250 FILTER : HSRI 136/ 189/ -50 MIN. MAX = -22.37 e 25.63 e 13.54 e 53.75
 MN-250 FILTER : HSRI 136/ 189/ -50 MIN. MAX = -25.84 e 25.63 e 4.85 e 53.75



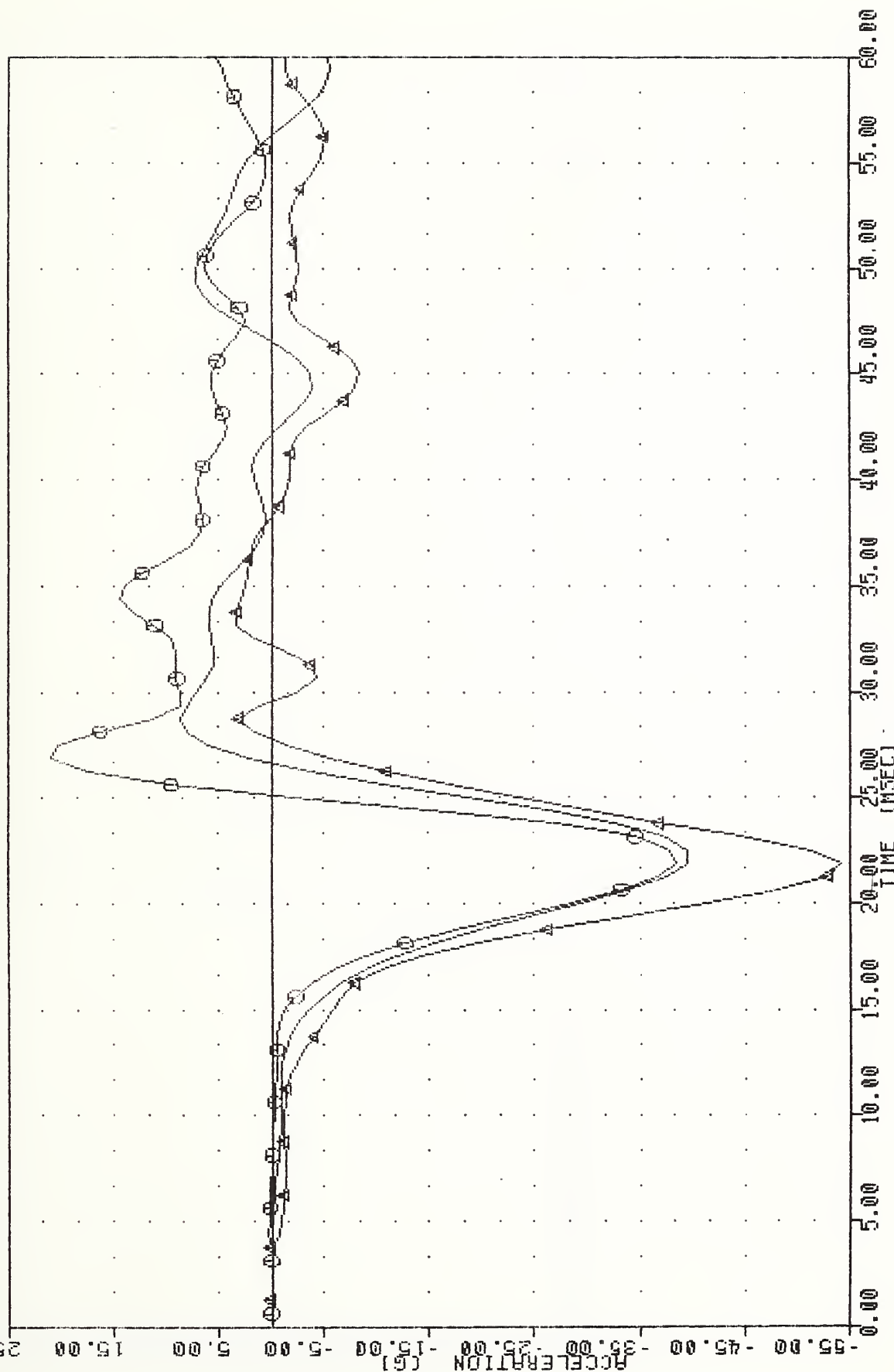
SIDE IMPACT TEST (U02)
 LOWER SPINE ACCELERATION Y AXIS -A

VRTC SRL26 U02CAL63 S10 THORAX U02 BODY 830 CAL 63 83271 PLOT DATE 23-SEP-83 13:28:29
 LURYGH FILTER : HSRI 136/ 189/ -50 MIN, MAX = -39.56 8.86 33.75
 MN-2SD 0 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -38.44 20.92 26.25
 MN-2SD 0 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -54.08 3.31 33.13



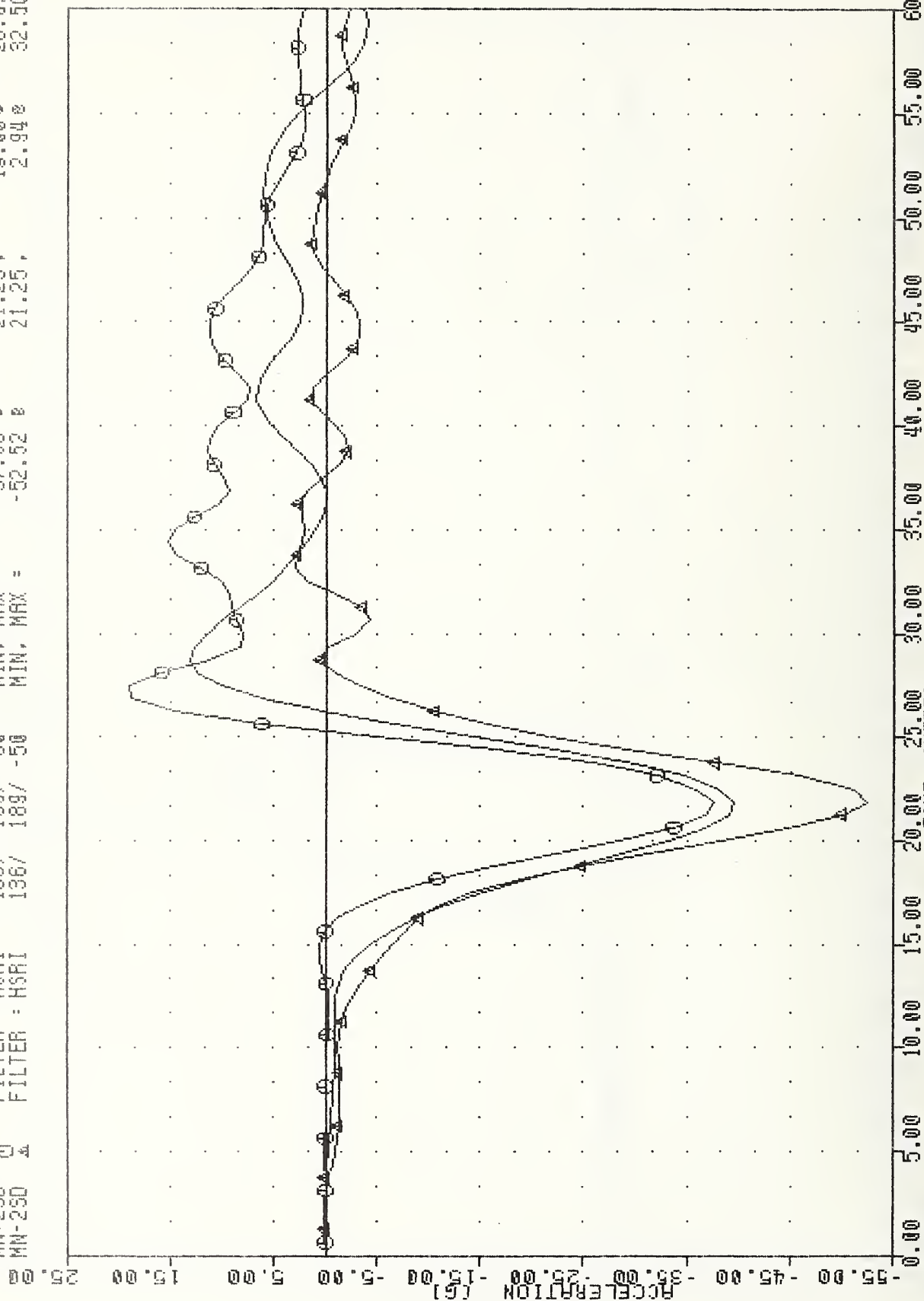
SIDE IMPACT TEST (U02)
 LEFT UPPER RIB ACCELERATION Y AXIS -A

VRIC SRL26 , U02CAL63 SID THORAX UN2 BODY 830 CHL 63 83271 PLOT DATE 23-SEP-83 13:27:13
 LURY61 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -39.59 21.25 8.57 26.13
 MN-2SD 0 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -38.44 21.25 20.92 26.25
 MN-2SD 4 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -54.08 21.25 3.31 33.13



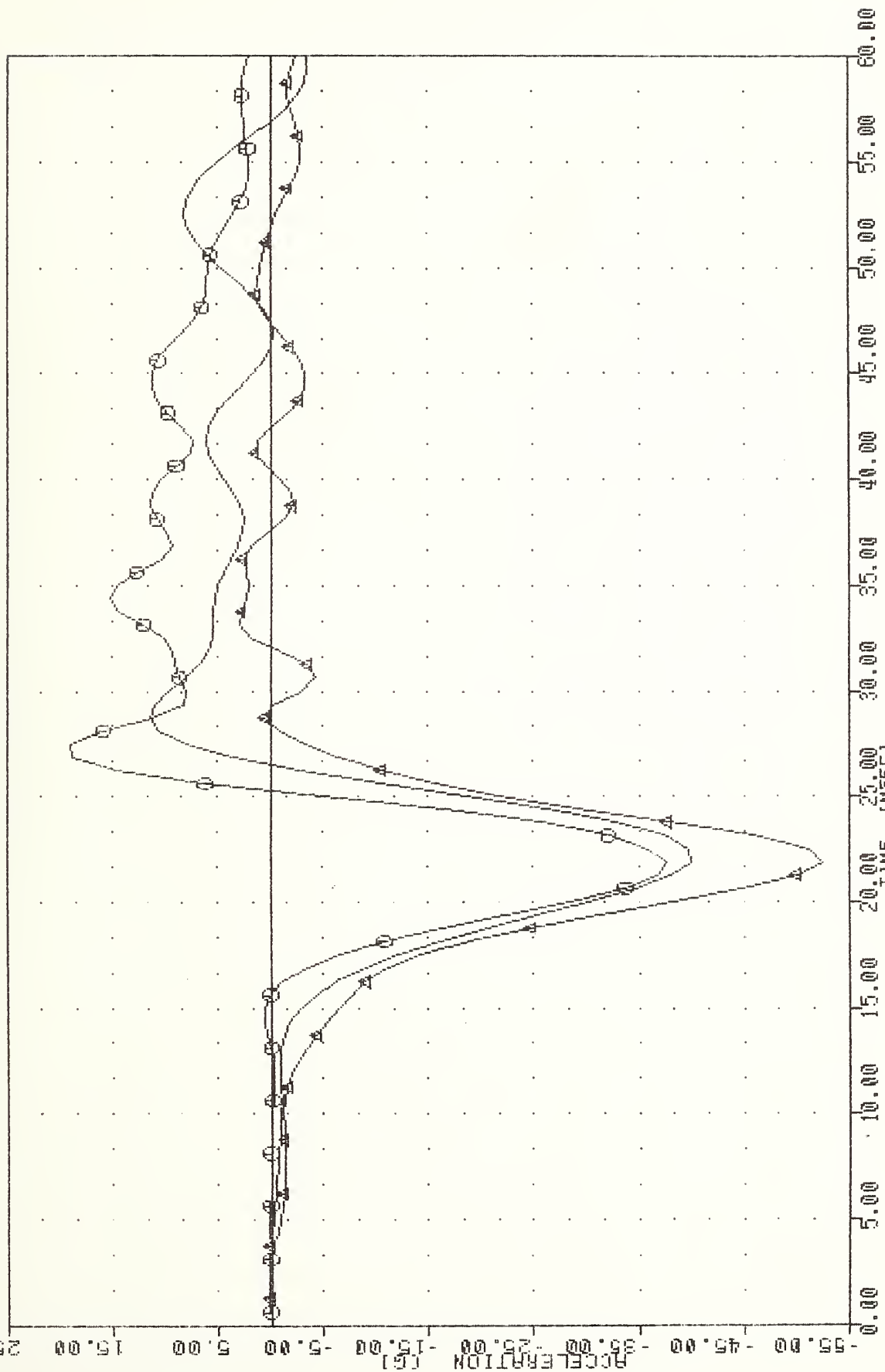
SIDE IMPACT TEST (U02)
 LEFT UPPER RIB ACCELERATION Y AXIS -1

VRIC SRL26 , U02CRL63 SID THORAX UN2 BODY 830 CAL 63 83271 PLOT DATE 23-SEP-83 13:40:52
 LLRYGA FILTER : HSRI 136/ 189/ -50 MIN, MAX = -39.63 21.25, 13.14 28.13
 MN-2SD 0 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -37.68 21.25, 19.00 26.87
 MN-2SD 4 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -52.52 21.25, 2.94 32.50



SIDE IMPACT TEST (U02)
 LEFT LOWER RIB ACCELERATION Y AXIS -A

VRTC SRL26 • U02CAL63 SID THORAX U02 BODY 830 CAL 63 83271 PLOT DATE 23-SEP-83 13:31:47
 LLRY61 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -39.97 21.25 11.41 26.13
 MN+250 0 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -37.66 21.25 19.00 26.87
 MN-250 A FILTER : HSRI 136/ 189/ -50 MIN, MAX = -52.52 21.25 2.94 32.50



SIDE IMPACT TEST (U02)
 LEFT LOWER RIB ACCELERATION Y AXIS - 1

TL 242 .S87

Stultz, J.

Evaluation
Volkswagen

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