DOT P ' ' '

SIDE PROTECTION IN 2-DOOR AND 4-DOOR PRODUCTION VEHICLES

MDB-TO-CAR SIDE IMPACT TEST OF A 26° CRABBED MOVING DEFORMABLE BARRIER TO A 1982 DODGE 400 AT 33.5 MPH

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FINAL REPORT
JULY 1984

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16. Abstract

This test report documents one of a series of fifteen crash tests to evaluate side impact protection in various vehicle models. Testing was conducted on a 1982 Dodge 400 2-door Sedan at the TRCO Crash Test Facility, East Liberty, Ohio. The test vehicle was impacted on the left side by a moving deformable barrier, crabbed to 26°, at 33.5 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 June 15, 1984 and the ambient temperature was 63°F.

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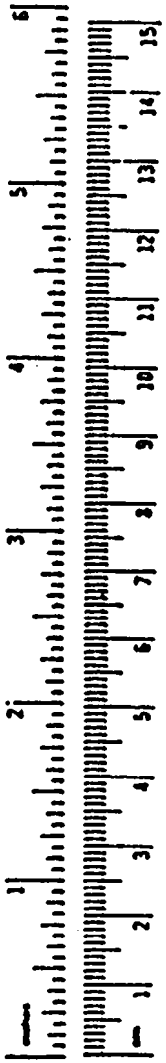
METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
		LENGTH		
in	inches	2.5	centimeters	cm
ft	feet	30	centimeters	cm
yd	yards	0.9	meters	m
mi	miles	1.6	kilometers	km
		AREA		
in^2	square inches	6.5	square centimeters	cm^2
ft^2	square feet	0.09	square meters	m^2
yd^2	square yards	0.8	square meters	m^2
mi^2	square miles	2.6	square kilometers	km^2
	acres	0.4	hectares	ha
		MASS (weight)		
oz	ounces	28	grams	g
lb	pounds	0.45	kilograms	kg
	short tons (2000 lb)	0.9	metric ton	t
		VOLUME		
tsp	teaspoons	5	milliliters	mL
Tbsp	tablespoons	15	milliliters	mL
in^3	cubic inches	16	milliliters	mL
fl oz	fluid ounces	30	milliliters	mL
c	cups	0.24	liters	L
pt	pints	0.47	liters	L
qt	quarts	0.95	liters	L
gal	gallons	3.8	liters	L
ft^3	cubic feet	0.03	cubic meters	m^3
yd^3	cubic yards	0.76	cubic meters	m^3
		TEMPERATURE (exact)		
°F	degrees Fahrenheit	5/9 (after subtracting 32)	degrees Celsius	°C



Approximate Conversions from Metric Measures

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

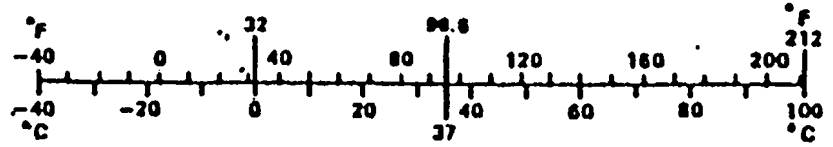


TABLE OF CONTENTS

LIST OF PHOTOGRAPHS

LIST OF PHOTOGRAPHS CONTD

SECTION 1.0

PURPOSE AND INTRODUCTION

PURPOSE

The main purpose of this test was to evaluate side impact protection in one of a fleet of 2-door and 4-door vehicles. The vehicle was tested using conditions not currently contained in a Federal Motor Vehicle Safety Standard.

INTRODUCTION

A stationary 1982 Dodge 400 2-door Sedan was impacted on the left side by a Moving Deformable Barrier (MDB) on June 15, 1984. The test was to simulate an intersection collision with the striking vehicle traveling at 30 mph and the struck vehicle traveling at 15 mph. The orientation angle of the striking vehicle was 90^{o} 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 Dodge 400 at 33.5 mph with the MDB's wheels crabbed clockwise to 26^{o}. The actual test speed was 33.5 mph and the actual impact point was 36.5 inches forward of the midpoint of the Dodge 400's wheelbase.

The vehicle was a baseline model with no structural modification. 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 describe the General Test and Vehicle Parameter Data.

TEST VEHICLE INFORMATION

VEHICLE MANUFACTURER: Chrysler Corporation

MAKE/MODEL: Dodge 400 VIN: 1B3BV41B3CG166527

BODY STYLE: 2-Door Sedan MODEL YEAR: 1982

NHTSA NO.: R & D COLOR: Dark Brown

ENGINE DATA: TYPE: Transverse CYLINDERS: 4 DISPLACEMENT: 135 CID

TRANSMISSION DATA: 3 Speed Manual

DATE VEHICLE RECEIVED: 6/7/84 ODOMETER READING: 4355

DEALER'S NAME AND ADDRESS: NA

ACCESSORIES:

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

REMARKS:

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

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

VEHICLE MANUFACTURED BY: Chrysler Corporation

DATE OF MANUFACTURE: 5/82

GVWR: 3825 LBS.,

GAWR: FRONT 2120 LBS., REAR 1755 LBS.

VEHICLE TIRE DATA

RECOMMENDED COLD TIRE PRESSURE: FRONT 29 psi; REAR 29 psi

TIRES ON VEHICLE (MFGR. & LINE, SIZE): Goodyear Arriva P185/70 R 14

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	810	LBS.	RIGHT REAR	450	LBS.
LEFT FRONT	840	LBS.	LEFT REAR	460	LBS.
TOTAL FRONT WEIGHT	1650	LBS. (64.4 % OF TOTAL VEHICLE WEIGHT)			
TOTAL REAR WEIGHT	910	LBS. (35.6 % OF TOTAL VEHICLE WEIGHT)			
TOTAL DELIVERED WEIGHT	2560	LBS.			

VEHICLE ATTITUDE (ALL DIMENSIONS IN INCHES):

DELIVERED ATTITUDE:	RF 25 1/4	;LF 25 5/16	;RR 25 1/16	;LR 25 1/4
PRE-TEST ATTITUDE:	RF 24 7/8	;LF 24 7/8	;RR 23 3/16	;LR 23 7/16
POST-TEST ATTITUDE:	RF 23 15/16	;LF 26 1/4	;RR 21 15/16	;LR 24 1/4

WEIGHT OF TEST VEHICLE WITH REQUIRED DUMMIES AND 120 LBS. CARGO:

RIGHT FRONT	860	LBS.	RIGHT REAR	621	LBS.
LEFT FRONT	918	LBS.	LEFT REAR	629	LBS.
TOTAL FRONT WEIGHT	1778	LBS. (58.7 % OF TOTAL VEHICLE WEIGHT)			
TOTAL REAR WEIGHT	1250	LBS. (41.3 % OF TOTAL VEHICLE WEIGHT)			
TOTAL TEST WEIGHT	3028	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*: 14.1 GALLONS

TEST VOLUME: 3.0 GALLONS

FUEL SYSTEM CAPACITY (DATA FROM OWNERS MANUAL): DNA 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 29 psi; REAR 29 psi

RECOMMENDED TIRE SIZE: P185/70 R 14 LOAD RANGE X B, C,

VEHICLE CAPACITY: TYPES OF SEATS: Bench

NUMBER OF OCCUPANTS (DESIGNATED SEATING CAPACITY): 3 FRONT
3 REAR
6 TOTAL

CARGO LOAD 115 LBS.

TOTAL 1015 LBS.

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

TEST CONDITIONS

TEST NUMBER: 840615

DATE OF TEST: June 15, 1984 TIME OF TEST: 11:10

WIND VELOCITY: 2-4 mph 45° N-NE HUMIDITY: 48%

AMBIENT TEMPERATURE AT IMPACT AREA: 63° F

TEMPERATURE IN OCCUPANT COMPARTMENT: 72° F

SUBJECT VEHICLE DATA

	ACTUAL	INTENDED
VEHICLE TEST WEIGHT (LBS.)	3028	3023
MDB TEST WEIGHT (LBS.)	2990	3000
MDB VELOCITY (MPH)*	33.5	33.5
IMPACT POINT (INCHES)**	36.5	37

DUMMIES

	DRIVER	MIDDLE PASSENGER	RT. FRONT PASSENGER	LEFT REAR PASSENGER	RT. REAR PASSENGER
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 vehicle's wheelbase.

VISIBLE DUMMY CONTACT POINTS:

	DRIVER 06	PASSENGER U02
Head	Side Window, Window Sill	C-Pillar
Chest	Driver's Inner Door Panel	Left Rear Inner Quarter Panel
Abdomen	Driver's Inner Door Panel	Left Rear Inner Quarter Panel
Left Knee	Driver's Inner Door Panel	Left Rear Inner Quarter Panel
Right Knee	Left Knee	Left Knee

DOOR OPENING:

	LEFT	RIGHT
Front	DNA*	Easy
Rear	DNA	DNA

SEAT MOVEMENT:

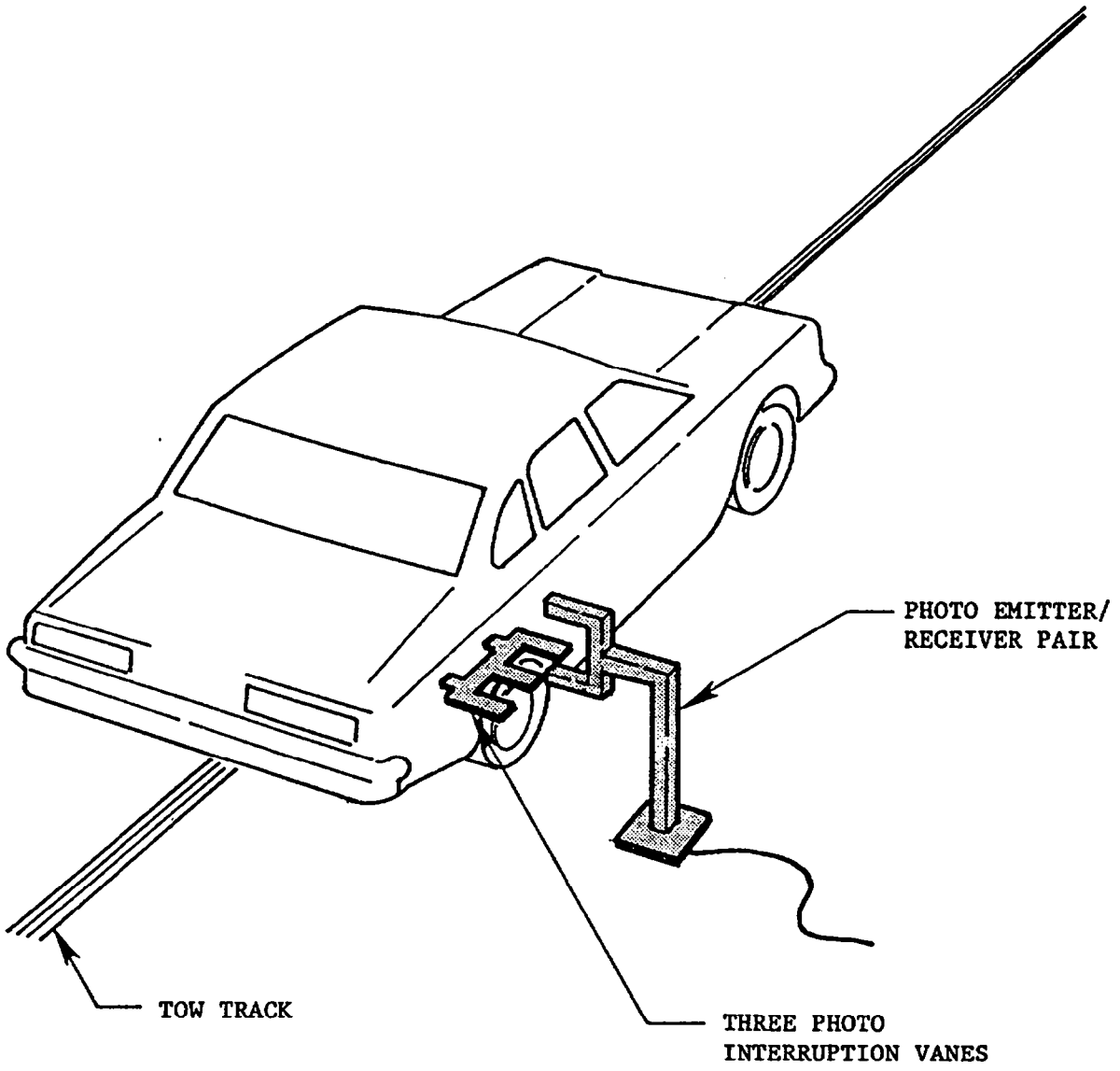
	SEAT BACK FAILURE	SEAT SHIFT
Front	No	Yes
Rear	No	No

GLAZING DAMAGE: Left side of windshield cracked; all left side windows shattered, no backlight damage.

OTHER NOTABLE IMPACT EFFECTS: Front seat shift popped open passenger's door; passenger's left knee casting shattered.

*The driver's door to remain closed for subsequent door opening effort studies.

IMPACT VELOCITY MEASUREMENT SYSTEM



The final vane is located two inches before impact.

The vanes have one foot spacing.

VEHICLE TEST WEIGHT CALCULATION

Test Weight = Unloaded Delivered Weight +
Number of Dummies X 174 lbs. +
Cargo Weight
= 2560 + 2 X 174 + 115 lbs.
= 3023 lbs.

To achieve test weight, 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 Loadmeter.

TEST ANOMALIES

Cable separation occurred in the following data channels:

TO1XG1 Driver Upper Spine Acceleration X Axis
LFDYG1 Vehicle Left Front Door (Position 6) Acceleration Y Axis

No peak levels or delta velocity are reported.

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 behind steering column.	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 behind steering column.	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 forwardd 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.

DUMMY IN-VEHICLE POSITION RECORDING SHEET

VEHICLE NHTSA NO. R & D

MFR./MAKE/MODEL: Chrysler Corp./Dodge 400

FRONT SEAT TYPE: X BENCH
____ BUCKET
____ SPLIT BENCH

ADJUSTER TYPE: X MANUAL
____ POWER

BUCKET SEAT BACK TYPE: X FIXED
____ ADJUSTABLE

TECHNICIANS:
1. N. Echeverria
2. D. LeVally
3. B. Miller

POSITIONING DATE: 6/15/84

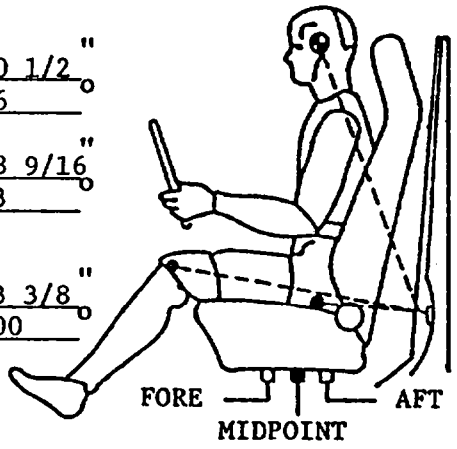
AMBIENT TEMP.: 70° F. TIME: 6:40

DRIVER DUMMY # 06

HEAD 30 1/2 "
TARGET* 46 °

KNEE 38 9/16 "
JOINT 93 °

APPROX. "H" POINT 23 3/8 " 100 °

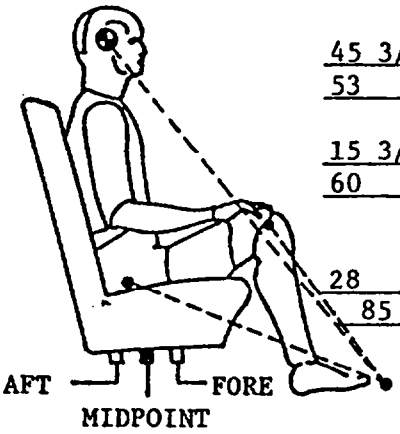


REAR PASSENGER DUMMY # U02

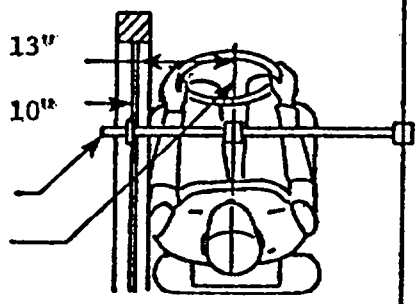
45 3/8 "HEAD
53 °TARGET**

15 3/16 "KNEE
60 °JOINT

APPROX. 28 " "H"
85 °POINT

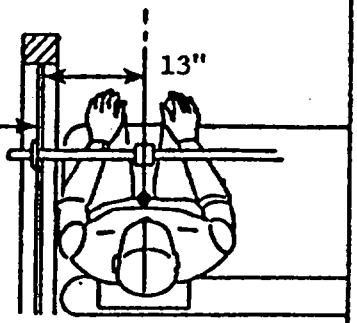


DOOR GLASS HEIGHT*** ____



DRIVER DUMMY # 06

DOOR GLASS HEIGHT N/A

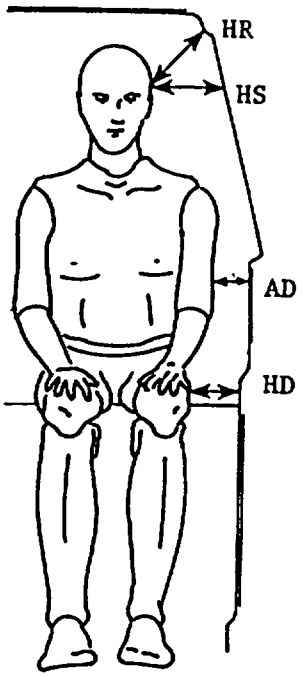


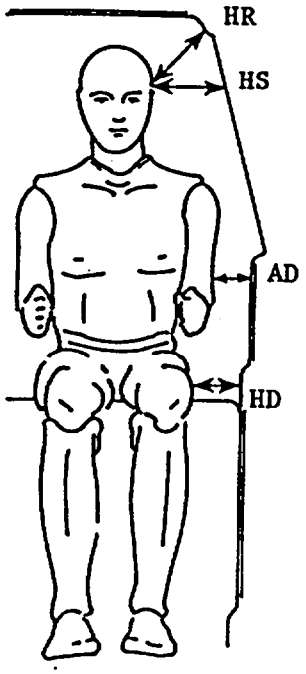
PASSENGER DUMMY # U02

*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.

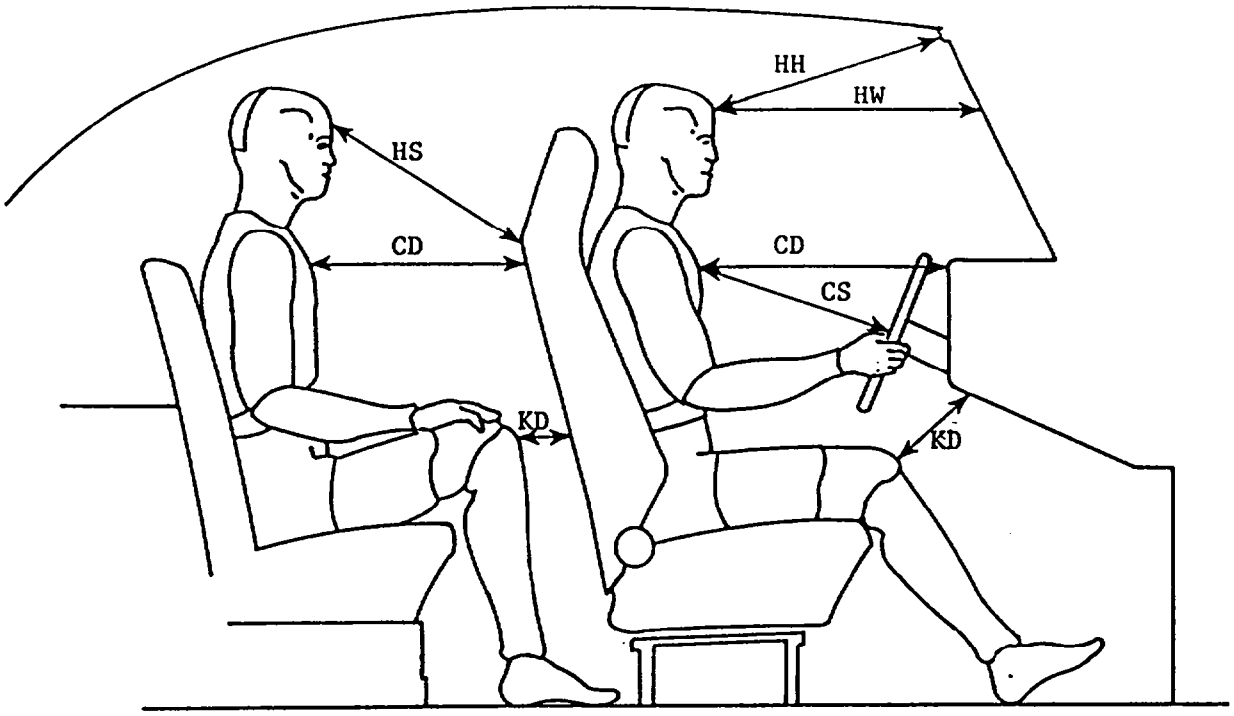




	DRIVER 06	PASSENGER U02
HR	5 3/4	6 5/8
HS	8 3/16	7 3/8
AD	4 1/2	6 11/16
HD	5 11/16	7 11/16

ALL MEASUREMENTS IN INCHES

DUMMY LATERAL CLEARANCE DIMENSIONS



	DRIVER 06	PASSENGER U02
HH	8 3/8	DNA
HW	11 3/16	DNA
HS	DNA	26
CD	17 5/8	21 11/16
CS	12 3/8	DNA
KDL	6 5/16	5 3/8
KDR	6 5/8	5 1/8

ALL MEASUREMENTS IN INCHES

DUMMY LONGITUDINAL CLEARANCE DIMENSIONS

DUMMY KINEMATIC SUMMARY

DRIVER

During impact, the dummy's torso contacted the driver's door and the head contacted the driver's side window and window sill. The dummy rebounded from the driver's door across the front occcupant compartment until it's buttocks struck the passenger side header near the A-pillar. The buttocks then struck the front passenger's door popping it open. The dummy came to rest seated upright in the front passenger's seat facing the driver's side.

PASSENGER

During impact, the dummy's torso struck the left rear passenger's side wall and the head struck the side header near the C-pillar. The dummy rebounded in an upright position from the side wall across the rear occupant compartment to the right rear passenger's seating position. The dummy fell partially over onto it's left side and came to rest there facing forward.

VEHICLE EXTERIOR PROFILES AND STATIC CRUSH

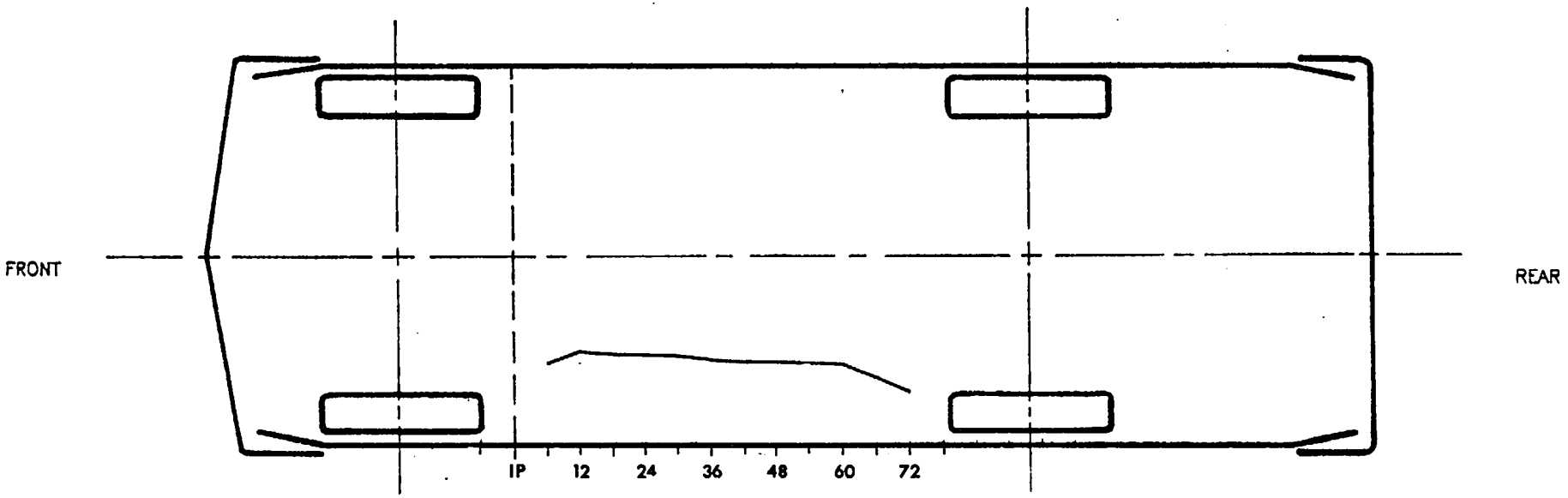
ZERO DISTANCE AT PROJECTED IMPACT POINT*

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	11.0	X	X	17.6	17.6	17.6	17.4	17.5	17.5	17.5	17.5	17.5	17.4	17.4	17.3	X
H-Point	18.0	X	14.3	14.3	14.3	14.2	14.1	14.0	14.0	13.9	13.9	13.9	14.0	14.0	14.1	X
Mid Door	23.3	X	14.3	14.3	14.3	14.2	14.1	14.0	14.0	13.9	13.9	13.9	13.9	13.9	14.0	13.4
Window Sill	33.6	16.3	16.2	16.1	15.9	15.9	15.9	15.2	15.8	15.8	15.8	15.8	15.8	15.9	15.9	15.9
Window Top	50.7	X	X	X	X	X	X	25.3	25.1	25.1	25.0	25.0	25.0	24.8	24.9	25.0
		POST-TEST PROFILE (DISTANCE IN INCHES FROM REFERENCE PLANE**)														
Axle Height	11.0	X	X	32.3	34.4	34.0	33.6	33.5	33.0	32.5	32.3	32.3	31.9	29.5	27.0	X
H-Point	18.0	X	28.4	31.2	32.4	33.2	33.6	33.9	34.0	34.1	34.4	34.6	34.6	33.6	30.1	X
Mid Door	23.3	X	25.9	28.0	29.9	30.1	30.3	30.6	30.9	31.3	31.6	31.9	32.2	32.7	29.8	24.3
Window Sill	33.6	20.4	21.7	24.4	27.4	28.4	28.5	28.9	29.3	29.6	29.9	30.0	30.1	30.8	27.1	22.7
Window Top	50.7	X	X	X	X	X	X	31.5	31.1	30.8	30.6	30.4	30.4	29.2	28.8	28.5
		STATIC CRUSH (IN)														
Axle Height	11.0	X	X	14.7	16.8	16.4	16.2	16.0	15.5	15.0	14.8	14.8	14.5	12.1	9.7	X
H-Point	18.0	X	14.1	16.9	18.1	19.0	19.5	19.9	20.0	20.2	20.5	20.7	20.6	19.6	16.0	X
Mid Door	23.3	X	11.6	13.7	15.6	15.9	16.2	16.6	16.9	17.4	17.7	18.0	18.3	18.8	15.8	10.9
Window Sill	33.6	4.1	5.5	8.3	11.5	12.5	12.6	13.7	13.5	13.8	14.1	14.2	14.3	14.9	11.2	6.8
Window Top	50.7	X	X	X	X	X	X	6.2	6.0	5.7	5.6	5.4	5.4	4.4	3.9	3.5

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

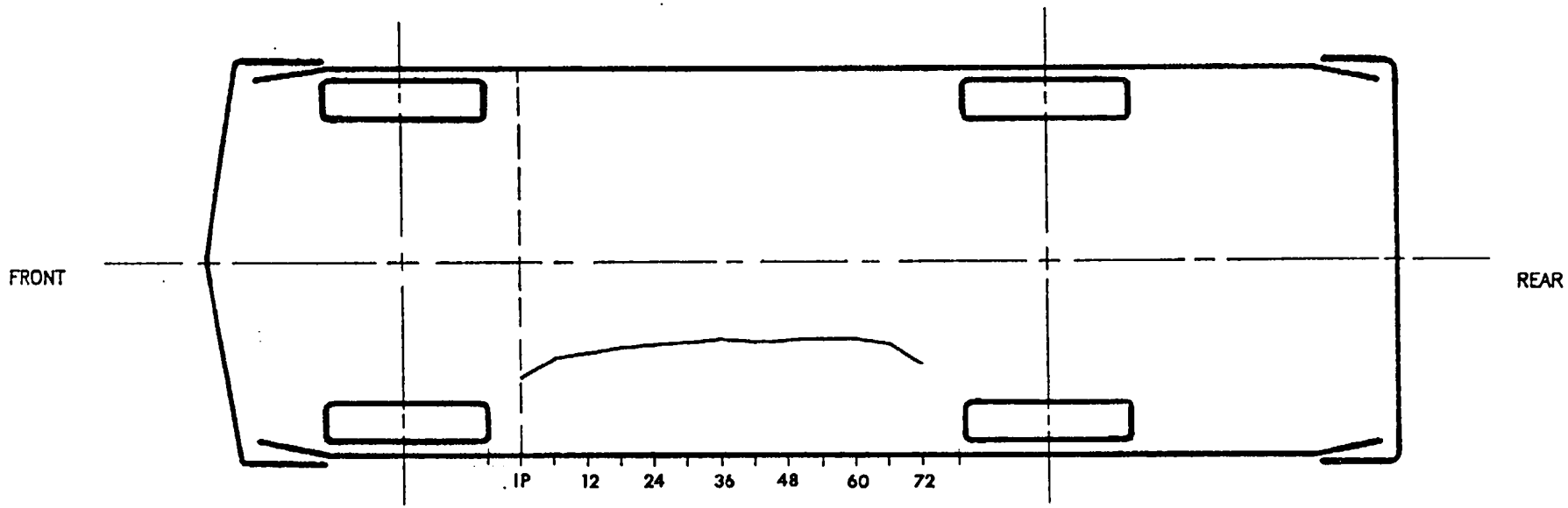
** Reference plane is parallel to and 48 inches from the vehicle longitudinal centerline.

VEHICLE EXTERIOR STATIC CRUSH PROFILE



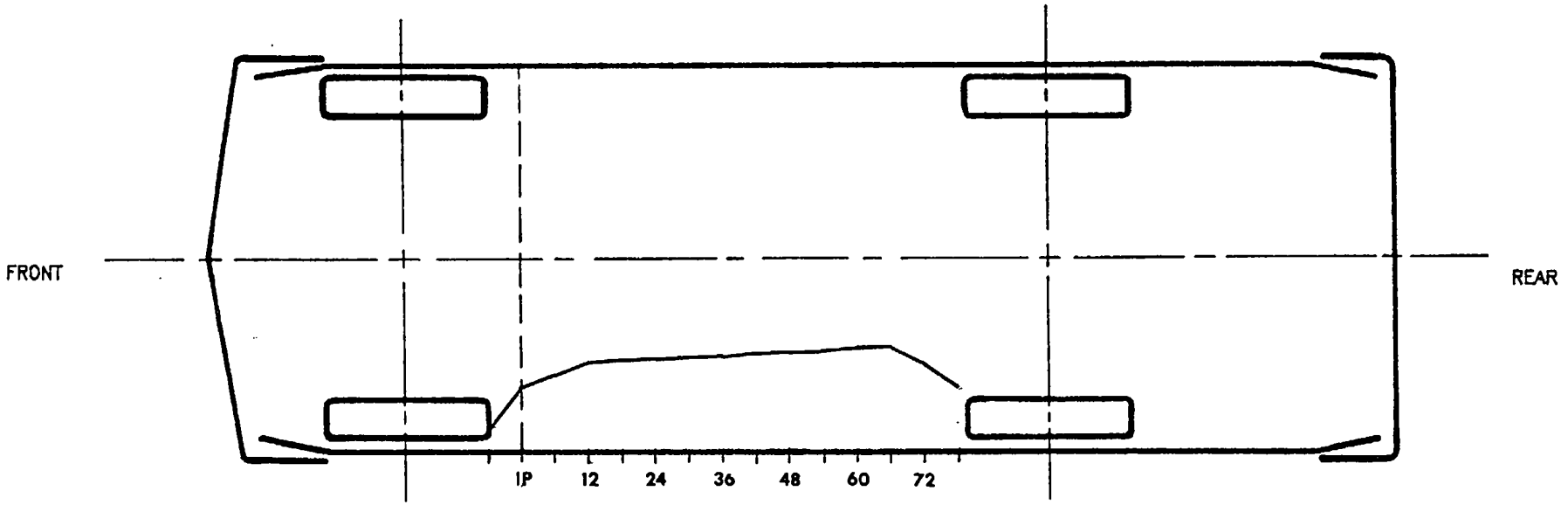
PROFILE LEVEL EQUALS AXLE HEIGHT
IP EQUALS PROJECTED IMPACT POINT

VEHICLE EXTERIOR STATIC CRUSH PROFILE



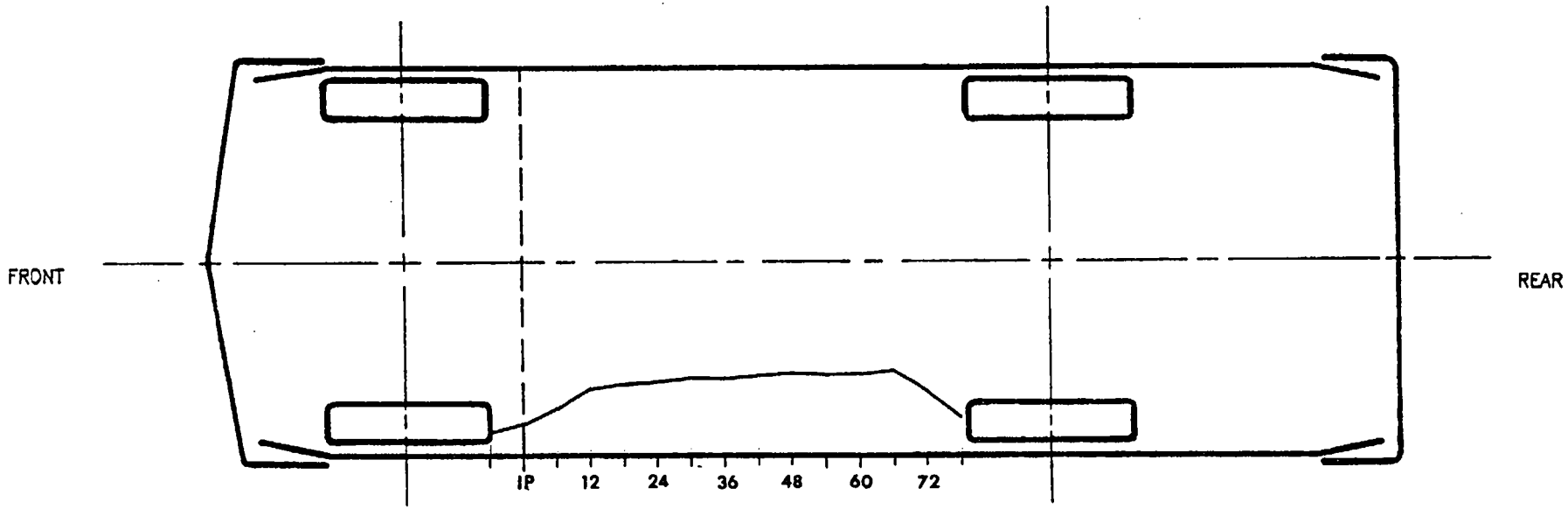
PROFILE LEVEL EQUALS H-POINT HEIGHT
IP EQUALS PROJECTED IMPACT POINT

VEHICLE EXTERIOR STATIC CRUSH PROFILE



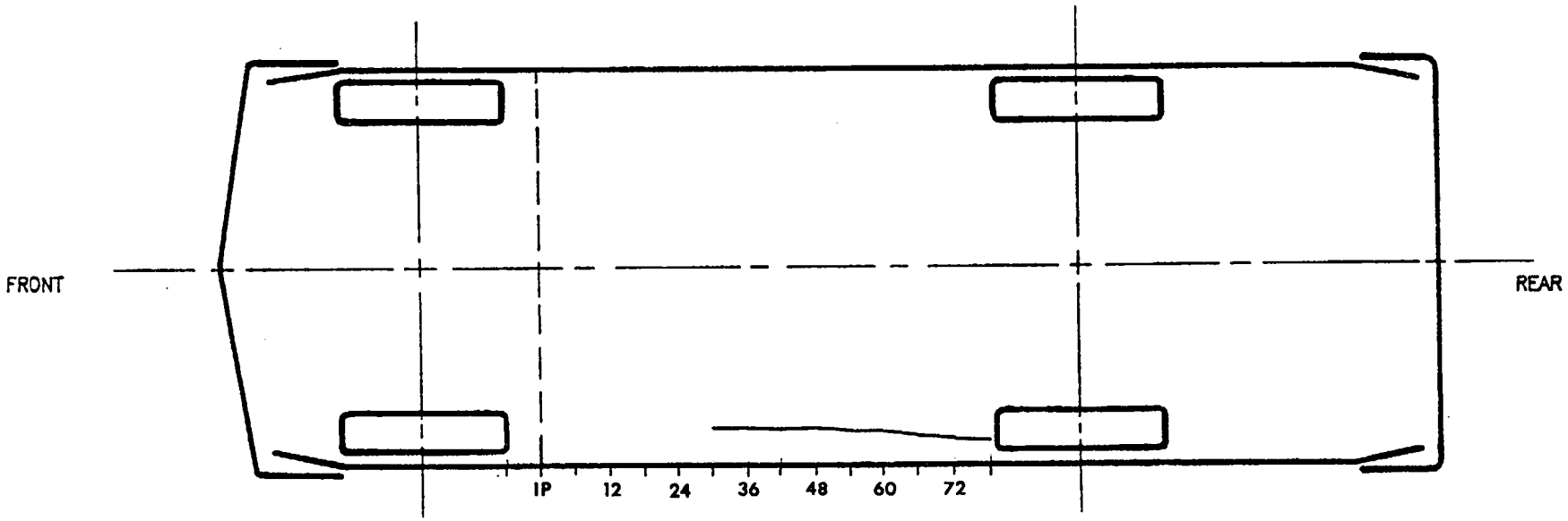
PROFILE LEVEL EQUALS MID–DOOR HEIGHT
IP EQUALS PROJECTED IMPACT POINT

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	9.73	100.50	114.95	90.13	11.75	40.25	29.68	58.13
LATERAL	108.55	90.25	22.86	38.50	130.55	57.63	18.52	42.88
VERTICAL	15.76	52.25	74.11	72.25	54.60	65.50	25.78	43.88
RESULTANT		157.65 @ 90.13				138.97 @ 57.38		
HIC	788.60	from 88.75 to 94.13			844.82	from 55.00 to 66.13		
CHEST ACCELERATION								
UPPER SPINE								
LONGITUDINAL	---	---Y	---	---Y	21.74	58.75	24.63	68.13
LATERAL (P)***	110.55	41.87	39.37	70.00	91.21	49.37	25.18	40.00
LATERAL (R)***	114.76	41.78	39.44	70.63	93.53	49.37	24.27	40.00
VERTICAL	8.84	30.00	15.58	44.38	7.06	31.88	20.97	69.38
RESULTANT (P)		---	---Y			94.75 @ 49.37		
RESULTANT (R)		---	---Y			96.99 @ 49.37		
DELTA V (MPH)****		23.2 @ 65.63 (P)				15.2 @ 78.75 (P)		
		24.9 @ 65.63 (R)				16.6 @ 78.75 (R)		
LOWER SPINE								
LONGITUDINAL	32.73	56.25	34.04	39.38	36.22	59.38	18.02	65.00
LATERAL (P)	115.19	36.25	18.17	98.12	93.94	41.25	32.45	64.38
LATERAL (R)	114.98	36.25	17.06	98.12	97.07	41.25	32.33	64.38
VERTICAL	34.80	39.38	5.75	86.25	27.09	45.00	14.06	83.12
RESULTANT (P)		115.96 @ 36.88				95.26 @ 41.25		
RESULTANT (R)		116.63 @ 36.88				98.35 @ 41.25		
DELTA V (MPH)		30.0 @ 56.25 (P)				29.0 @ 60.62 (P)		
		30.9 @ 56.25 (R)				30.7 @ 61.25 (R)		
LEFT UPPER RIB								
LATERAL (P)	88.83	36.88	16.88	48.13	96.21	44.38	9.85	70.63
LATERAL (R)	92.09	36.88	25.35	48.13	91.25	44.38	13.07	71.25
DELTA V (MPH)		24.9 @ 81.25 (P)				25.2 @ 109.38 (P)		
		24.2 @ 81.25 (R)				25.2 @ 110.00 (R)		
LEFT LOWER RIB								
LATERAL (P)	123.30	37.50	16.79	73.75	132.22	43.13	56.58	68.75
LATERAL (R)	125.81	36.88	15.96	73.75	137.21	43.13	64.98	68.75
DELTA V (MPH)		26.0 @ 88.13 (P)				27.0 @ 106.88 (P)		
		26.3 @ 86.88 (R)				25.5 @ 100.63 (R)		
PELVIS ACCELERATION								
LONGITUDINAL	10.60	51.50°	19.50	39.50°	8.61	80.63	66.63	37.63
LATERAL	204.36	32.63	129.80	39.50	155.56	37.13	19.33	83.50
VERTICAL	54.05	36.25	20.56	38.88	44.68	41.38	8.44	70.38
RESULTANT		204.83 @ 32.63°				169.29 @ 37.50		
DELTA V (MPH)		27.7 @ 37.75				29.0 @ 51.00		

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 †	1.62	66.88	0.08	165.38	1.59	69.50	0.04	37.88

* LONGITUDINAL:	FORWARD	**LONGITUDINAL:	REARWARD
LATERAL:	RIGHTWARD	LATERAL:	LEFTWARD
VERTICAL:	UPWARD	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

ϒ See TEST ANOMALIES

º 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 MAX (g)	POSITIVE DIRECTION TIME (msec)	NEGATIVE DIRECTION MAX (g)	NEGATIVE DIRECTION TIME (msec)
1	RIGHT SILL AT FRONT SEAT	103.0	24.9	10.0					
	(LONGITUDINAL)				Δ V = -1.0 mph @ 120.00 msec	8.02	48.00	7.29	29.00
	(LATERAL)				Δ V = 13.2 mph @ 120.00 msec	18.98	20.50	2.81	86.88
	(VERTICAL)					17.55	43.25	22.12	36.25
	(RESULTANT)						23.44 @ 36.13		
2	RIGHT SILL AT REAR SEAT	69.8	25.1	9.9					
	(LONGITUDINAL)				Δ V = -0.1 mph @ 120.00 msec	3.94	50.38	6.55	29.38
	(LATERAL)				Δ V = 17.1 mph @ 120.00 msec	19.98	18.25	3.12	86.50
	(VERTICAL)					8.72	30.50	8.85	35.88
	(RESULTANT)						20.69 @ 18.13		
3	REAR DECK OVER AXLE	38.2	0.0	17.8					
	(LONGITUDINAL)				Δ V = -1.8 mph @ 120.00 msec	5.68	32.50	6.04	80.38
	(LATERAL)				Δ V = 20.2 mph @ 120.00 msec	19.20	16.50	2.20	134.88
	(VERTICAL)					13.14	29.38	6.23	21.00
	(RESULTANT)						20.11 @ 16.38		
4	LEFT SILL AT REAR SEAT	69.4	-25.2	10.0					
	(LATERAL)				Δ V = 6.5 mph @ 120.00 msec	45.08	27.88	16.39	38.00
5	LEFT SILL AT FRONT SEAT	102.5	-25.4	10.1					
	(LATERAL)				Δ V = 6.0 mph @ 120.00 msec	80.15	15.88	48.15	22.38
6	LEFT FRONT DOOR CENTERLINE	93.1	-28.4	20.4					
	(LATERAL)		-----	----- Y		---	---Y	---	---Y
7	RIGHT REAR COMPARTMENT	28.4	-19.5	17.8					
	(LONGITUDINAL)					3.85	58.88	7.14	30.13
8	MIDREAR OF LEFT FRONT DOOR	85.1	-28.8	25.1					
	(LATERAL)				Δ V = 24.6 mph @ 28.13 msec	196.53	14.00	86.05	19.25
9	UPPER LEFT FRONT DOOR CENTERLINE	93.1	-28.4	30.1					
	(LATERAL)				Δ V = 19.9 mph @ 25.38 msecτ	161.02	25.00	97.56	36.50
10	MIDFRONT OF LEFT FRONT DOOR	101.5	-28.8	24.6					
	(LATERAL)				Δ V = 9.8 mph @ 21.38 msecτ	89.66	13.75	67.73	34.63
11	UPPER REAR OF LEFT REAR DOOR	86.8	28.3	32.6					
	(LATERAL)				Δ V = 17.9 mph @ 24.00 msecτ	151.00	24.88	101.45	38.13

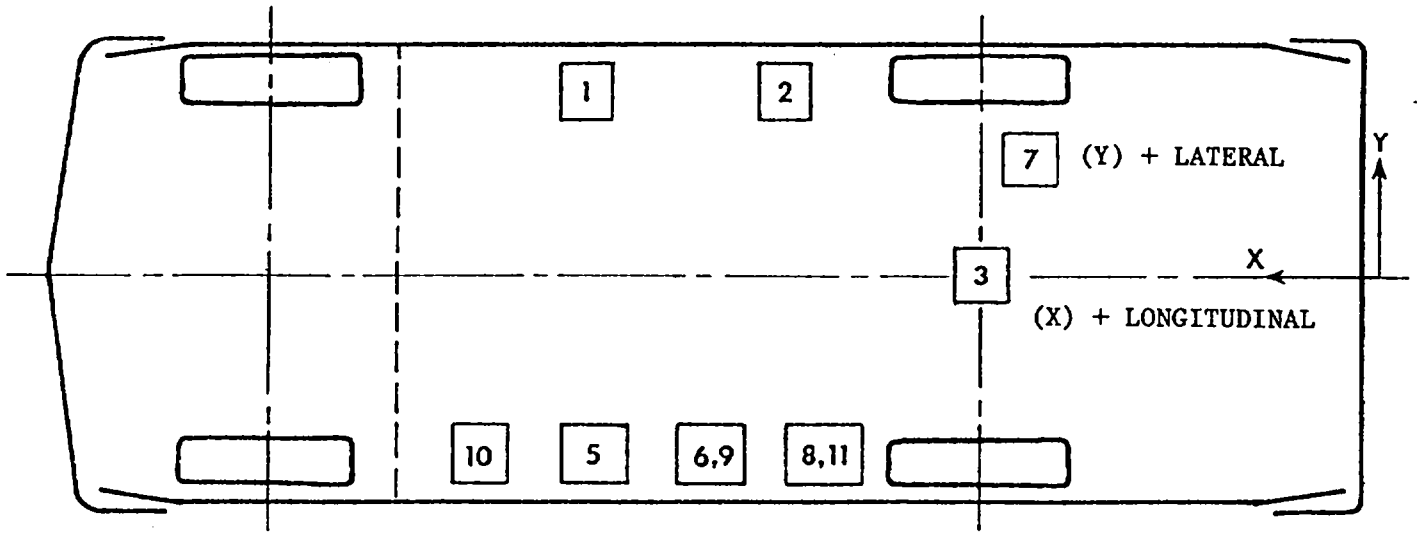
* Reference: X - Rear Bumper (+ Forward), Y - Vehicle Centerline (+ To Right), Z - Ground Level (+ Up)

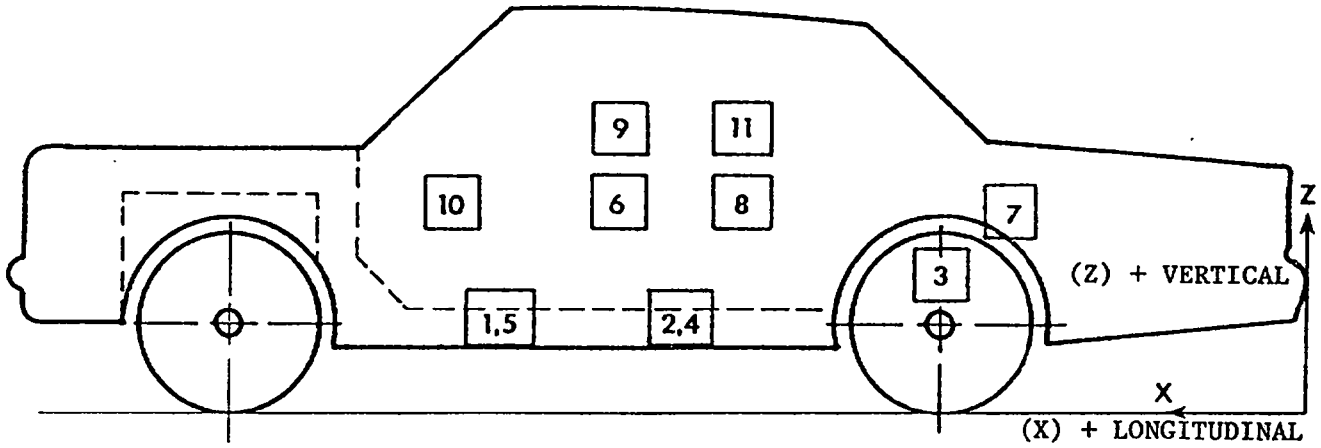
All measurements of accelerometer locations in inches.

Y See TEST ANOMALIES

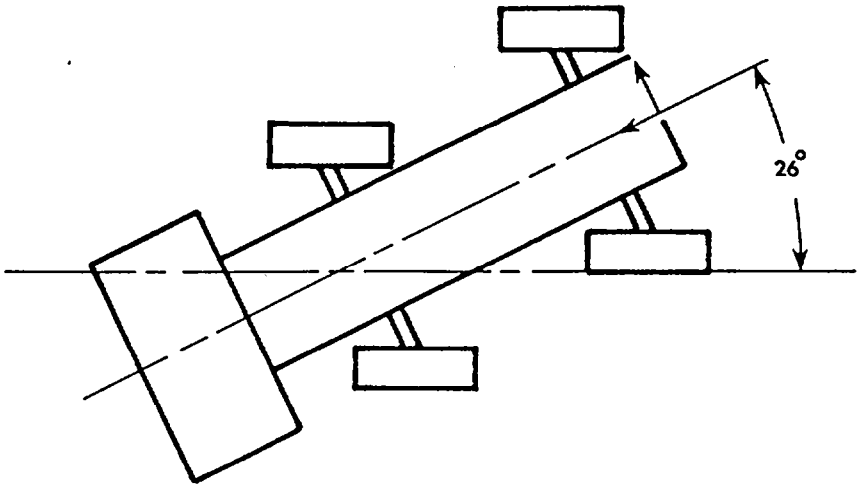
τ Delta V appears unrealistitc after intial velocity change.

VEHICLE ACCELEROMETER LOCATIONS





MOVING BARRIER ACCELEROMETER LOCATIONS AND DATA SUMMARY



NO.	LOCATION	X*	Y*	Z*		POSITIVE DIRECTION MAX (g)	POSITIVE DIRECTION TIME (msec)	NEGATIVE DIRECTION MAX (g)	NEGATIVE DIRECTION TIME (msec)
1	CENTER OF GRAVITY	74.5	0.0	11.5					
	(LONGITUDINAL)	ΔV = -16.8 mph @ 120.00 msec				1.14	148.88	14.98	27.63
	(LATERAL)	ΔV = -4.7 mph @ 120.00 msec				0.75	82.50	10.65	31.25
	(VERTICAL)					18.34	53.63	15.25	45.13
	(RESULTANT)						20.67 @ 53.63		
2	FRONT FRAME MEMBER	130.3	0.0	11.3					
	(LONGITUDINAL)	ΔV = -18.1 mph @ 120.00 msec				0.92	169.25	14.98	28.00
3	REAR FRAME MEMBER	23.3	0.0	11.5					
	(LONGITUDINAL)	ΔV = -15.0 mph @ 120.00 msec				1.09	117.00	14.39	36.88

* 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	Photosonic 1B	8	555	Vehicle Dynamics
2	Overhead	Photosonic 1B	25	555	Close-up of impact point
3	Onboard MDB	Photosonic 1B	25	500	Close-up of impact point
4	Onboard MDB	Stalex	13	500	Driver kinematics
5	Ground level - right	Hycam	25	512	Overall view
6	Ground level - left	Photosonic 1B	17	542	Overall view
7	Onboard vehicle	Photosonic 1B	8	795	Driver kinematics - front view
8	Onboard vehicle	Photosonic 1B	8	787	Driver kinematics
9	Onboard vehicle	Photosonic 1B	8	812	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	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	5/2/84	0.237 MV/G	50 G
BCGYG	Accel	4-202-0001	18858	Bell Howell	5/2/84	0.236 MV/G	50 G
BCGZG	Accel	4-202-0001	18857	Bell Howell	5/2/84	0.239 MV/G	50 G
BFCXG	Accel	4-202-0001	18240	Bell Howell	5/2/84	0.239 MV/G	50 G
BRCXG	Accel	4-202-0001	19022	Bell Howell	5/2/84	0.220 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

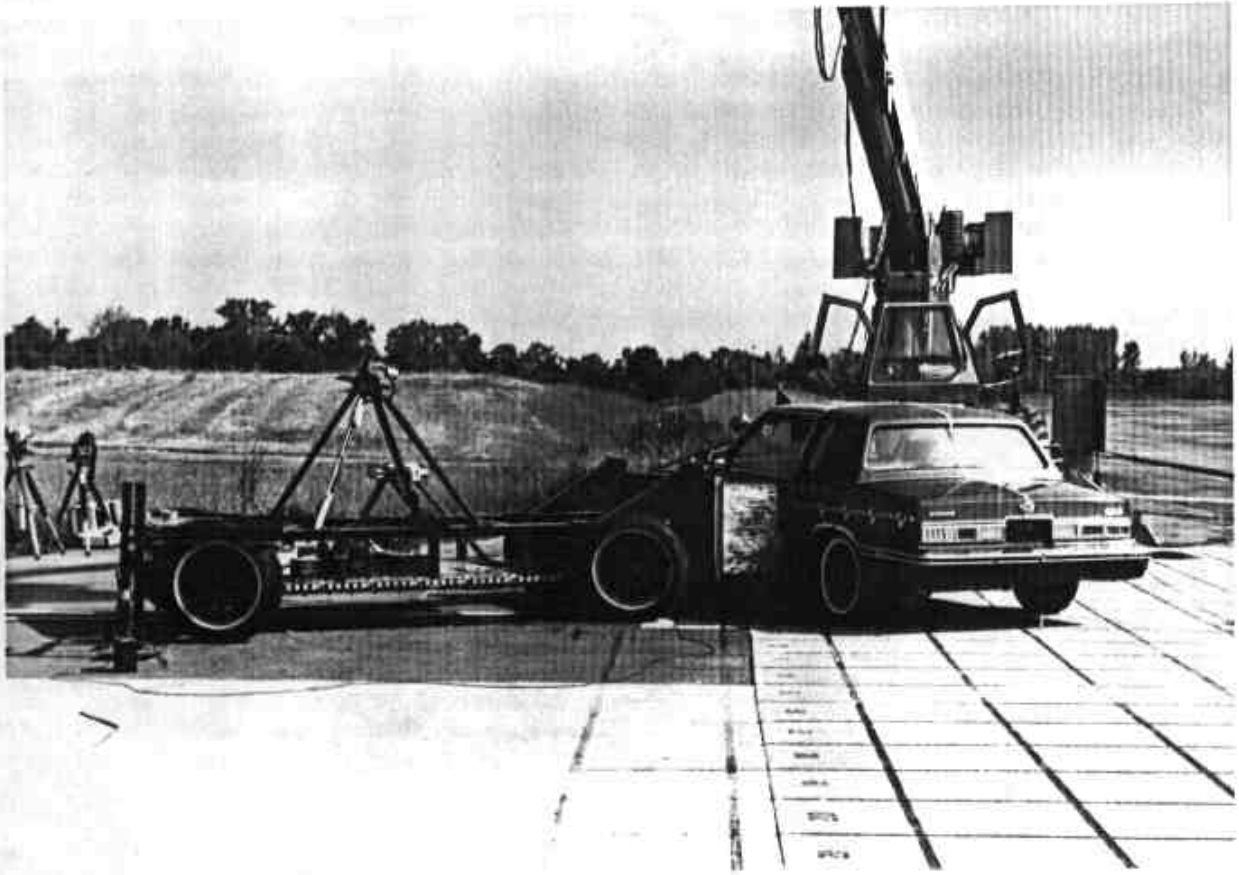


Figure A-2. PRE-TEST OVERALL - VIEW 2

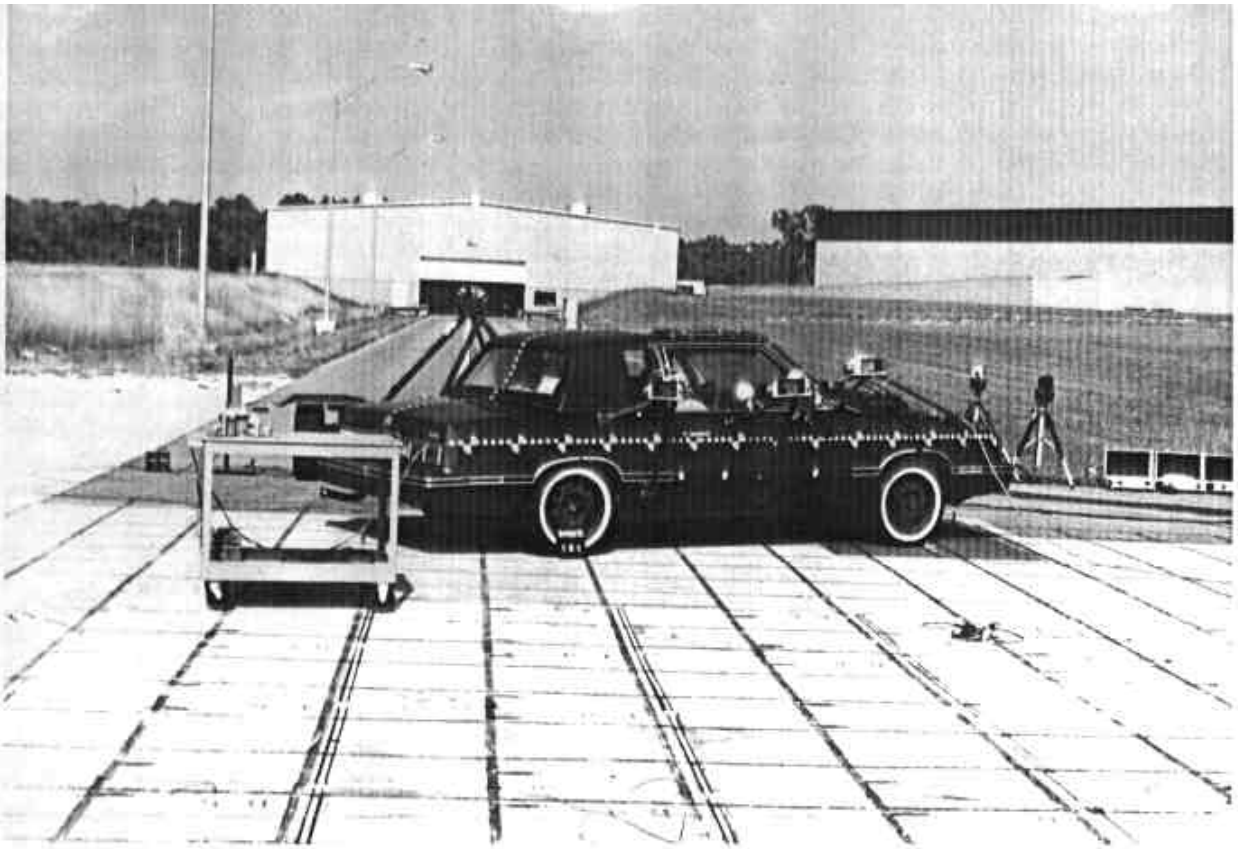


Figure A-3. PRE-TEST OVERALL - VIEW 3

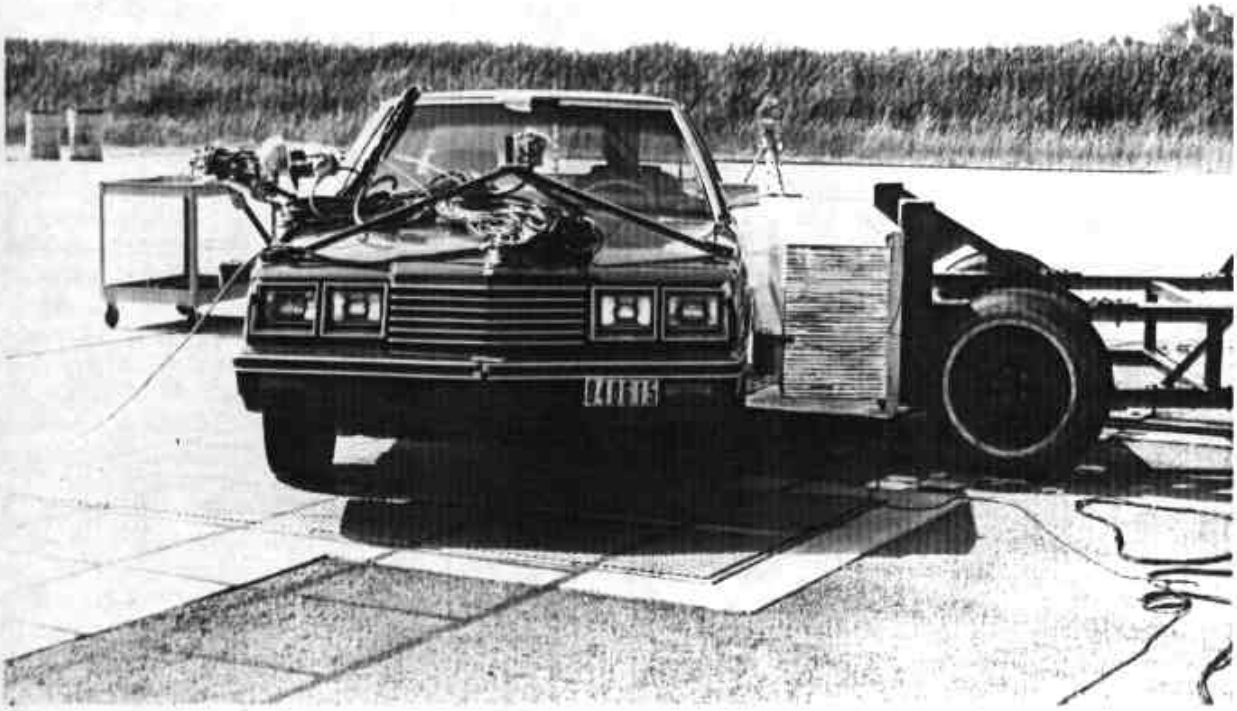


Figure A-4. PRE-TEST OVERALL - VIEW 4

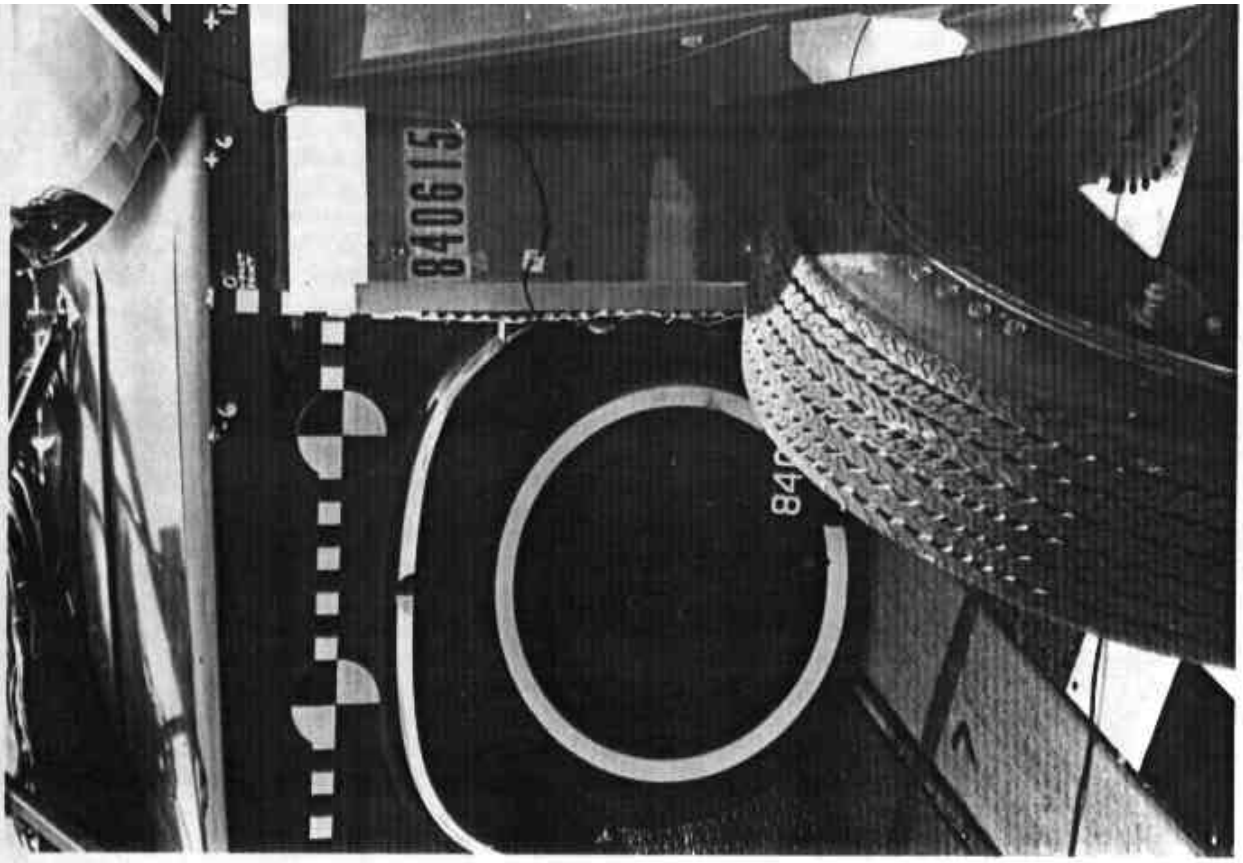


Figure A-5. PRE-TEST CLOSEUP - VIEW 1

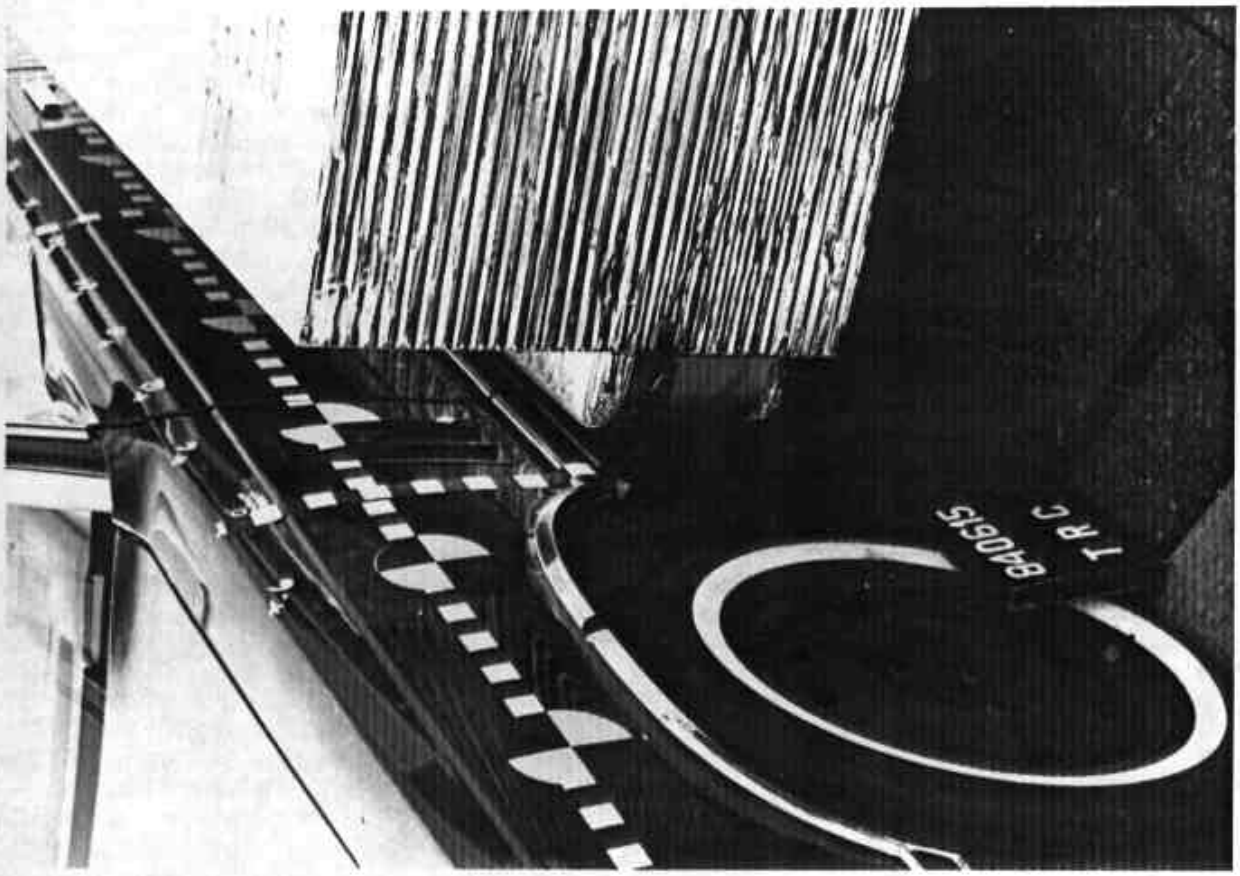


Figure A-6. PRE-TEST CLOSEUP - VIEW 2

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

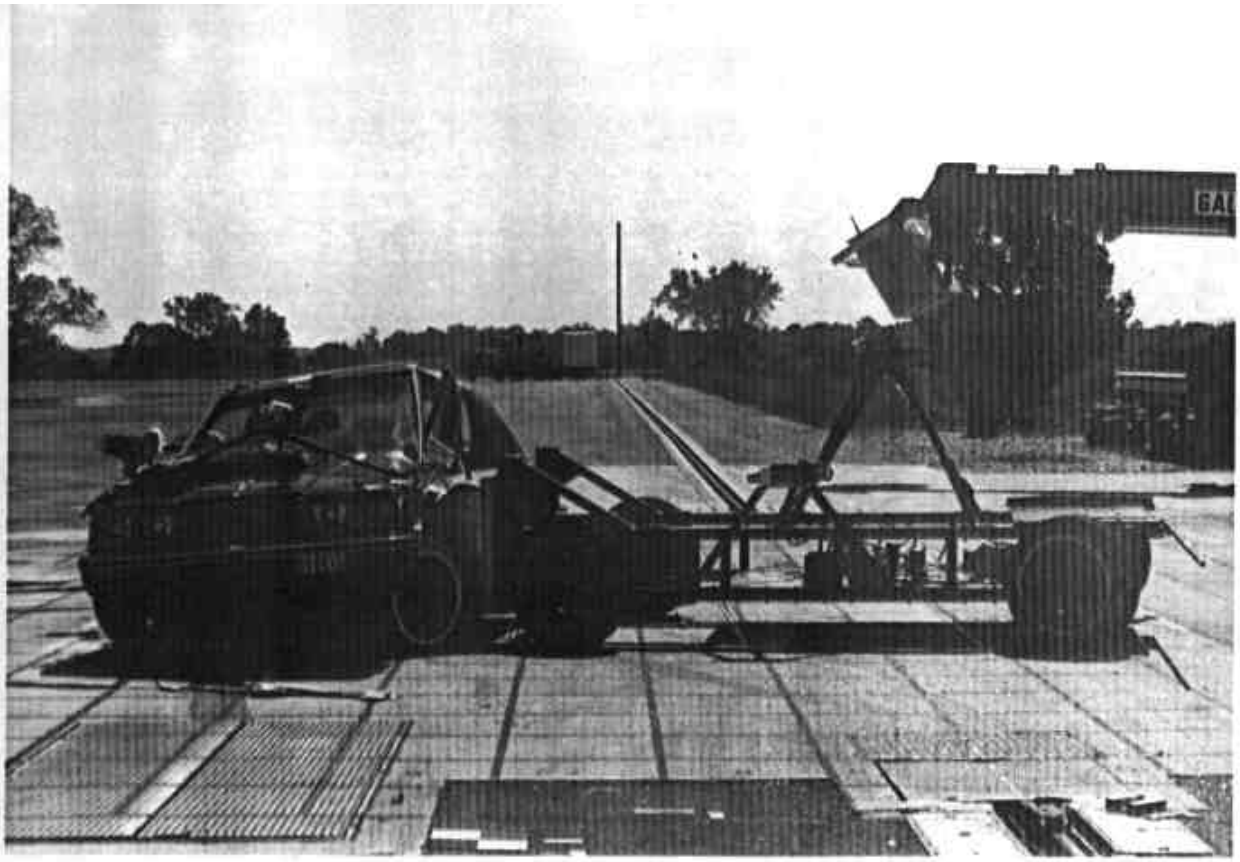


Figure A-13. POST-TEST OVERALL - VIEW 1

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

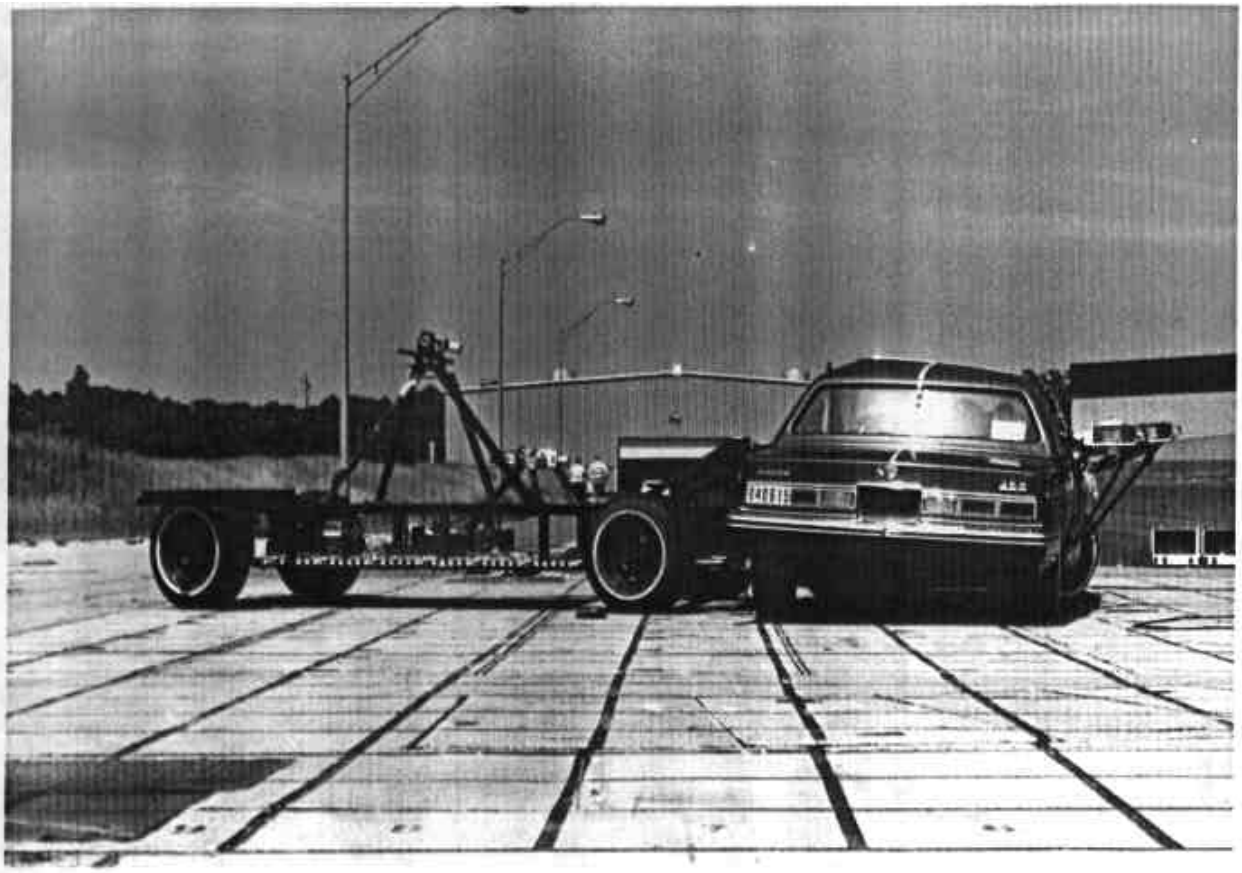


Figure A-15. POST-TEST OVERALL - VIEW 3

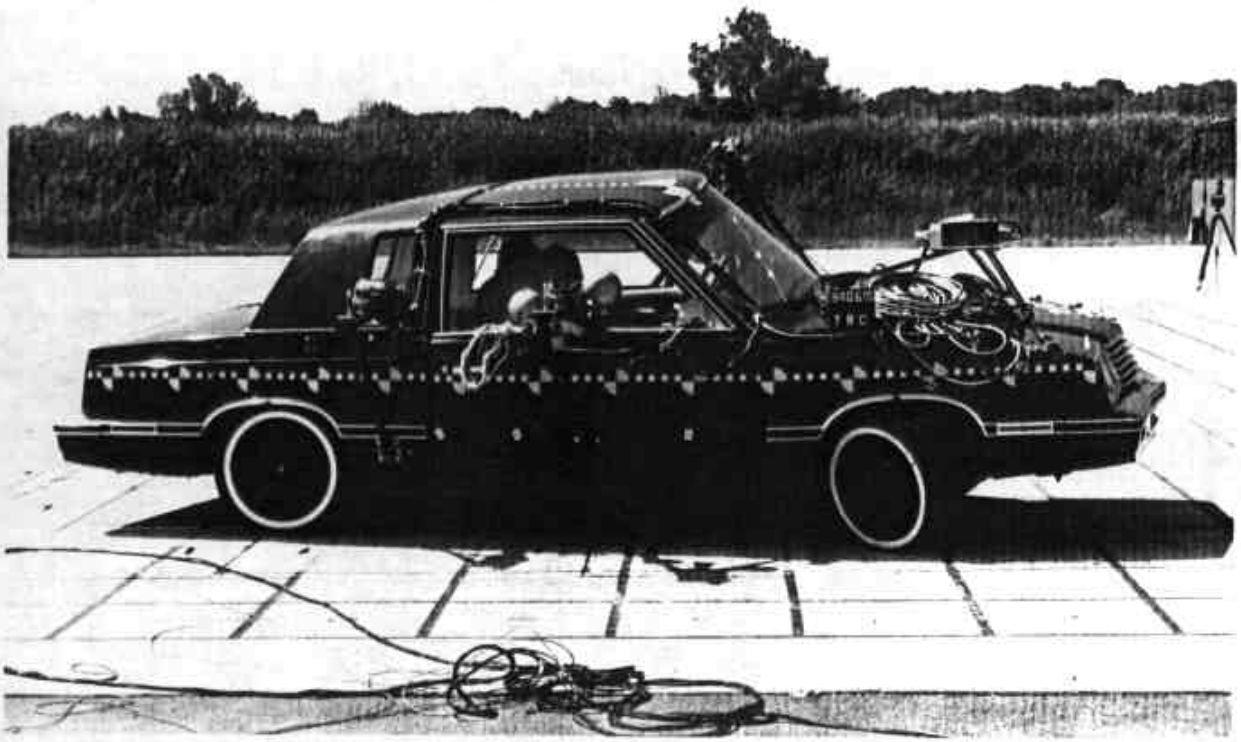


Figure A-16. POST-TEST OVERALL - VIEW 4

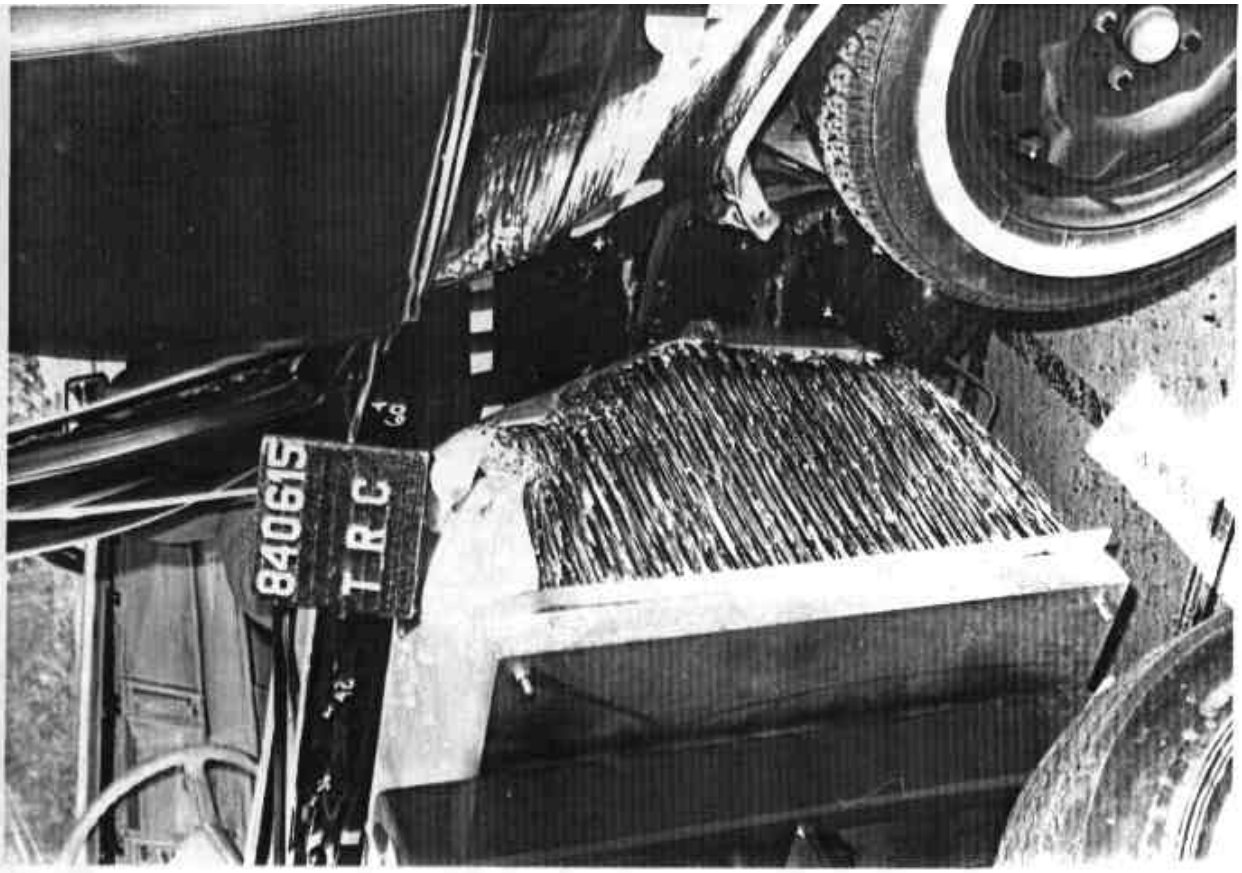


Figure A-17. POST-TEST CLOSEUP

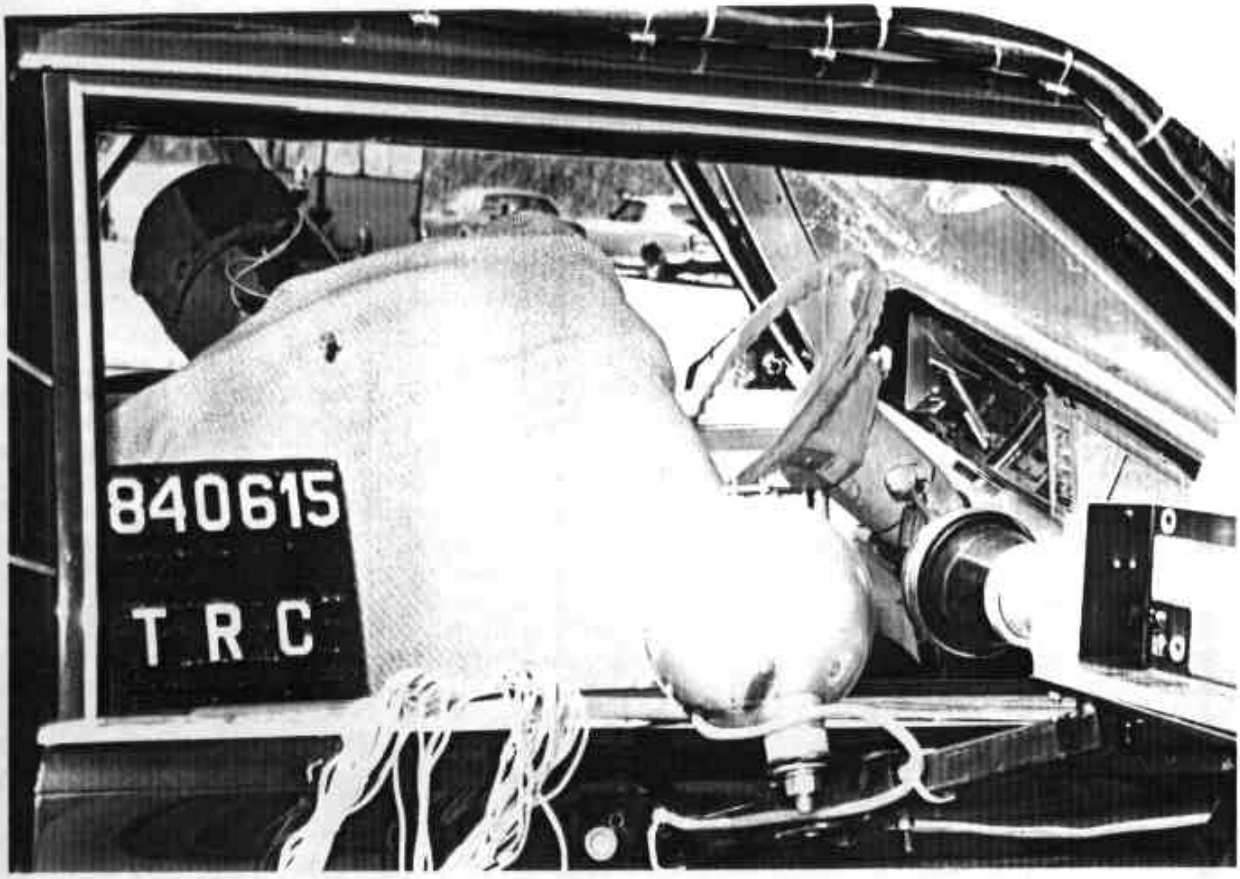


Figure A-18. POST-TEST DRIVER DUMMY - VIEW 1

Figure A-19. POST-TEST DRIVER DUMMY - VIEW 2

Figure A-20. POST-TEST DRIVER DUMMY - VIEW 3

Figure A-21. POST-TEST DRIVER DUMMY - VIEW 4

Figure A-22. POST-TEST PASSENGER DUMMY - VIEW 1

Figure A-23. POST-TEST PASSENGER DUMMY - VIEW 2

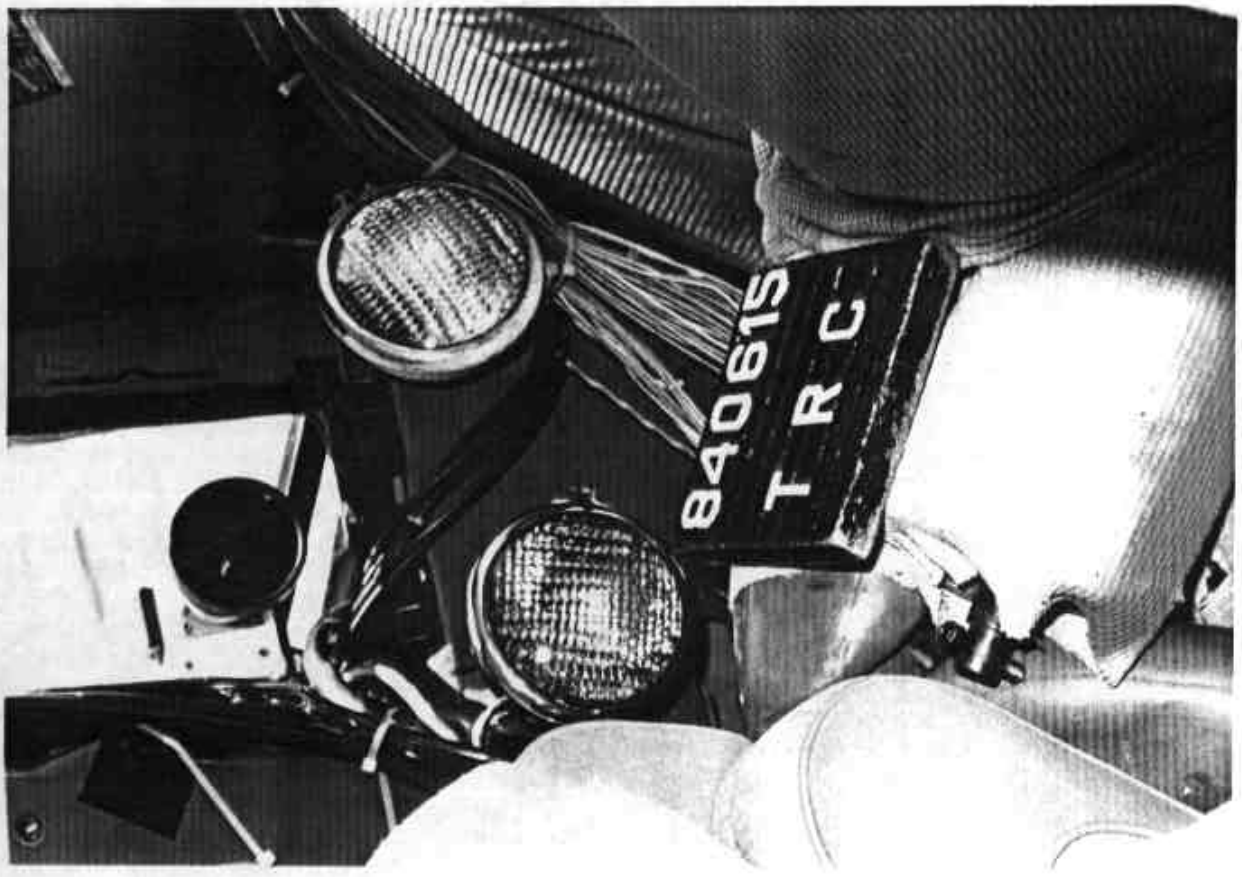


Figure A-24. POST-TEST PASSENGER DUMMY - VIEW 3

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

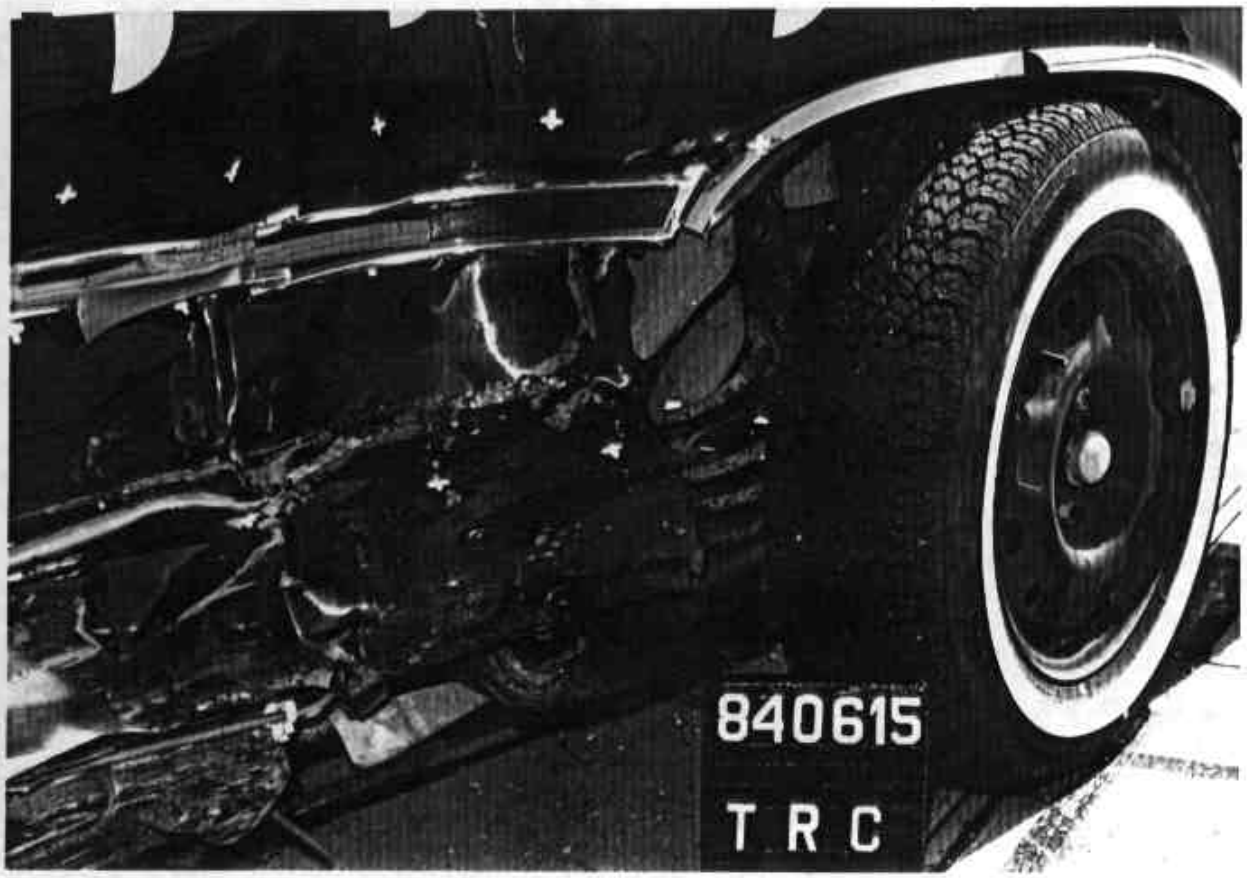


Figure A-26. POST-TEST VEHICLE DAMAGE - VIEW 2

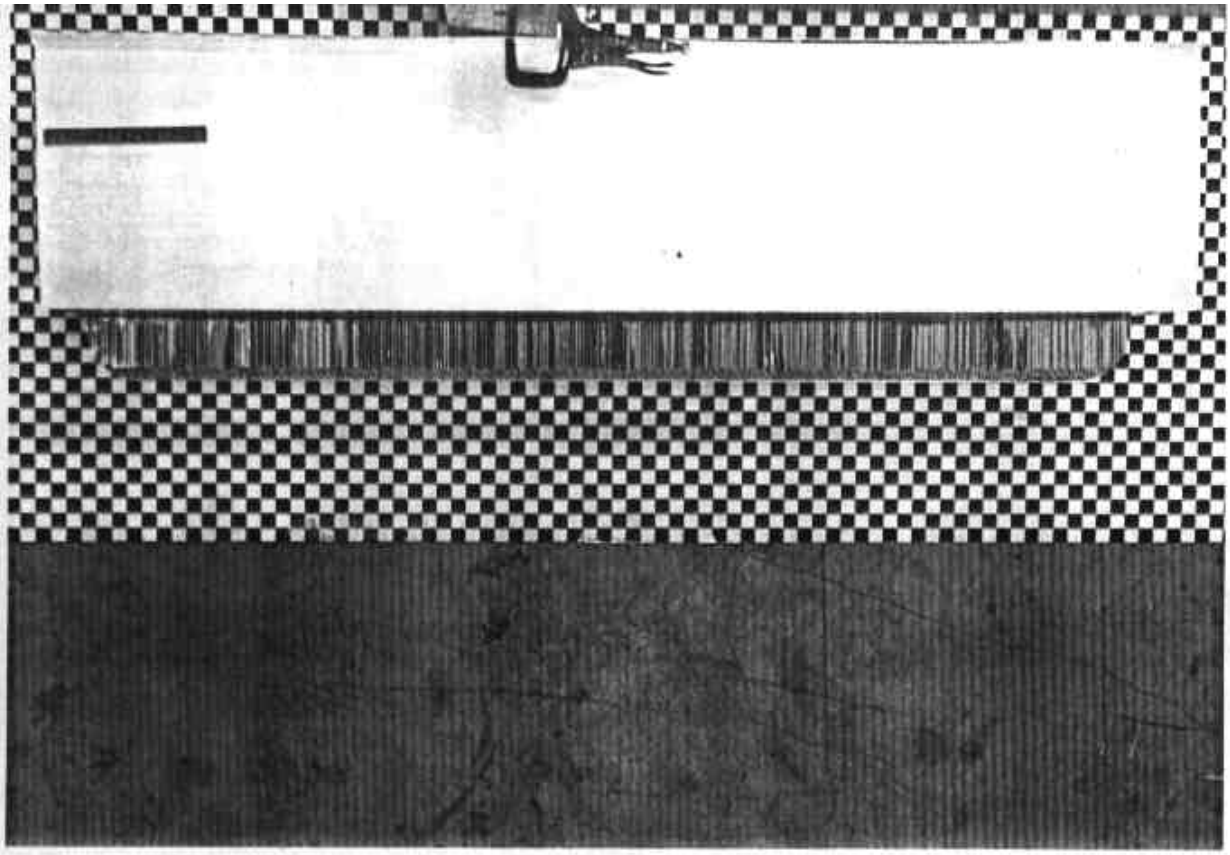


Figure A-27. PRE-TEST MDB FACE - VIEW 1

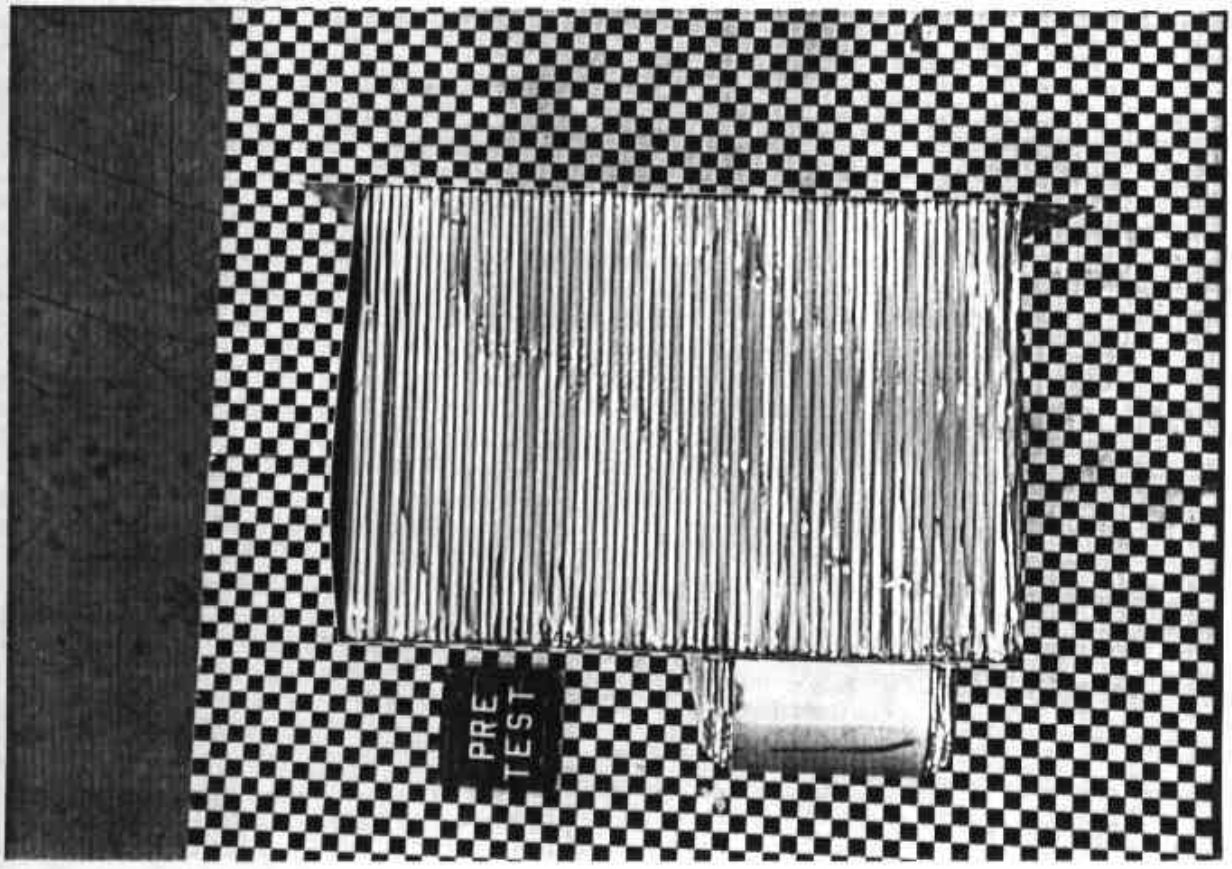


Figure A-28. PRE-TEST MDB FACE - VIEW 2

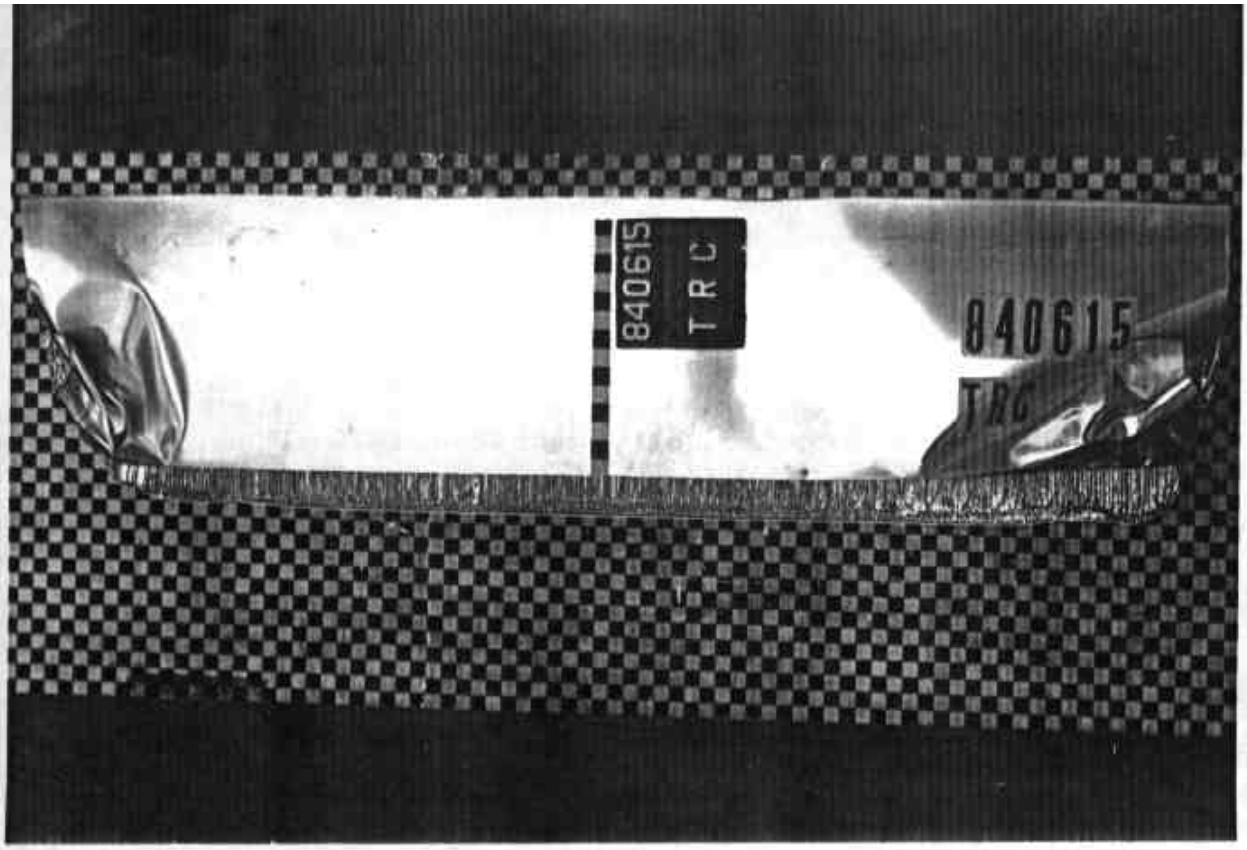


Figure A-29. POST-TEST MDB FACE - VIEW 1

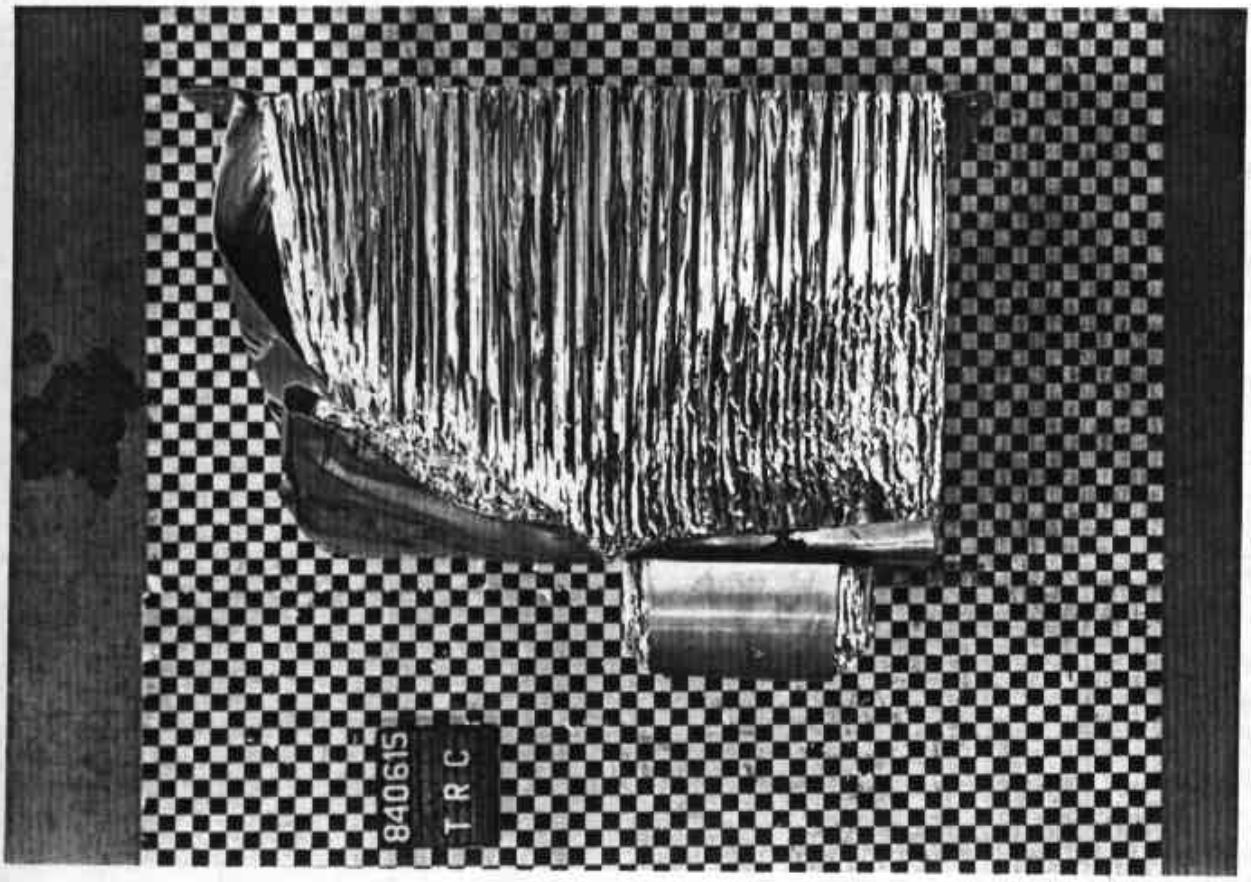
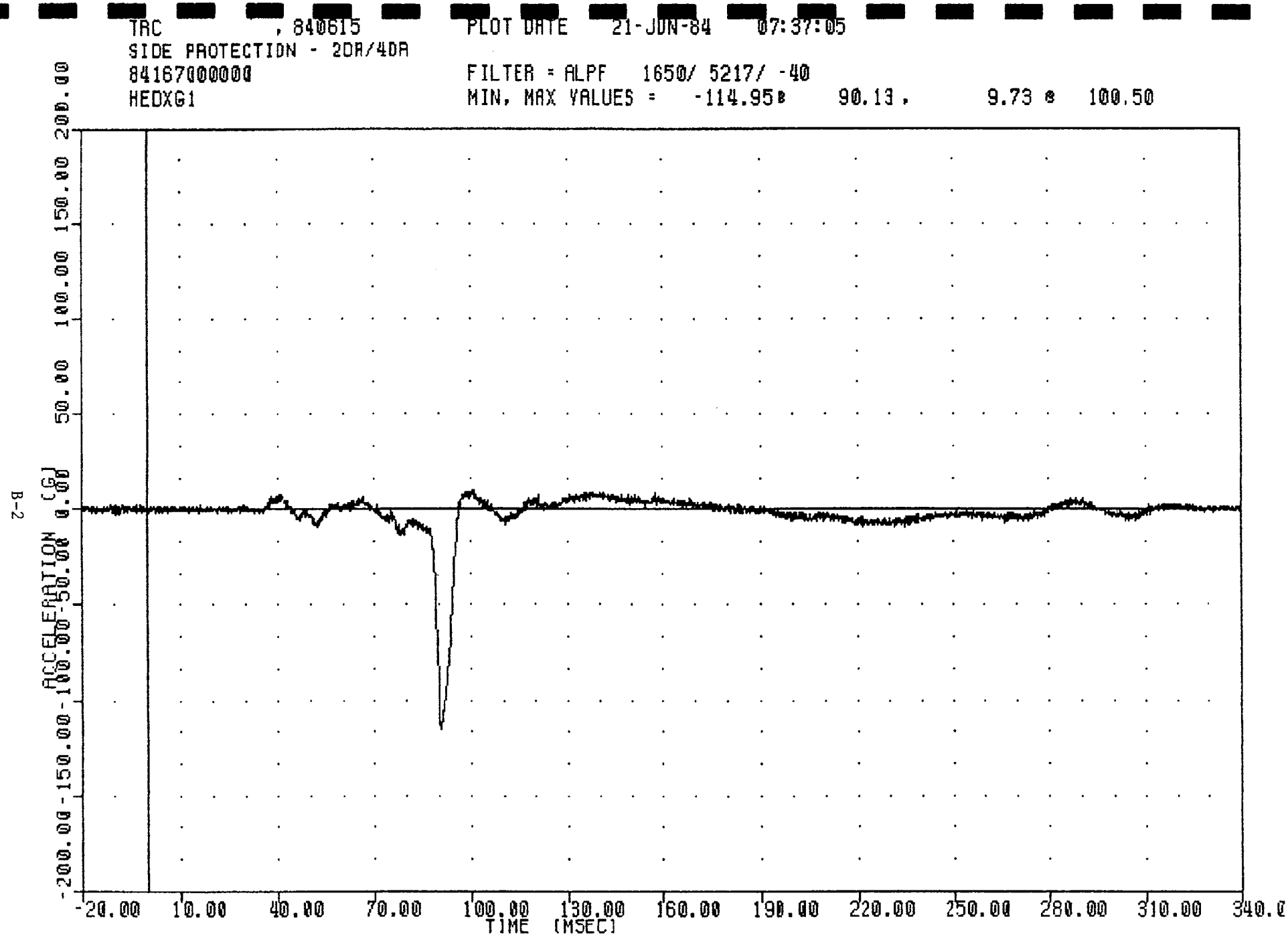


Figure A-30. POST-TEST MDB FACE - VIEW 2

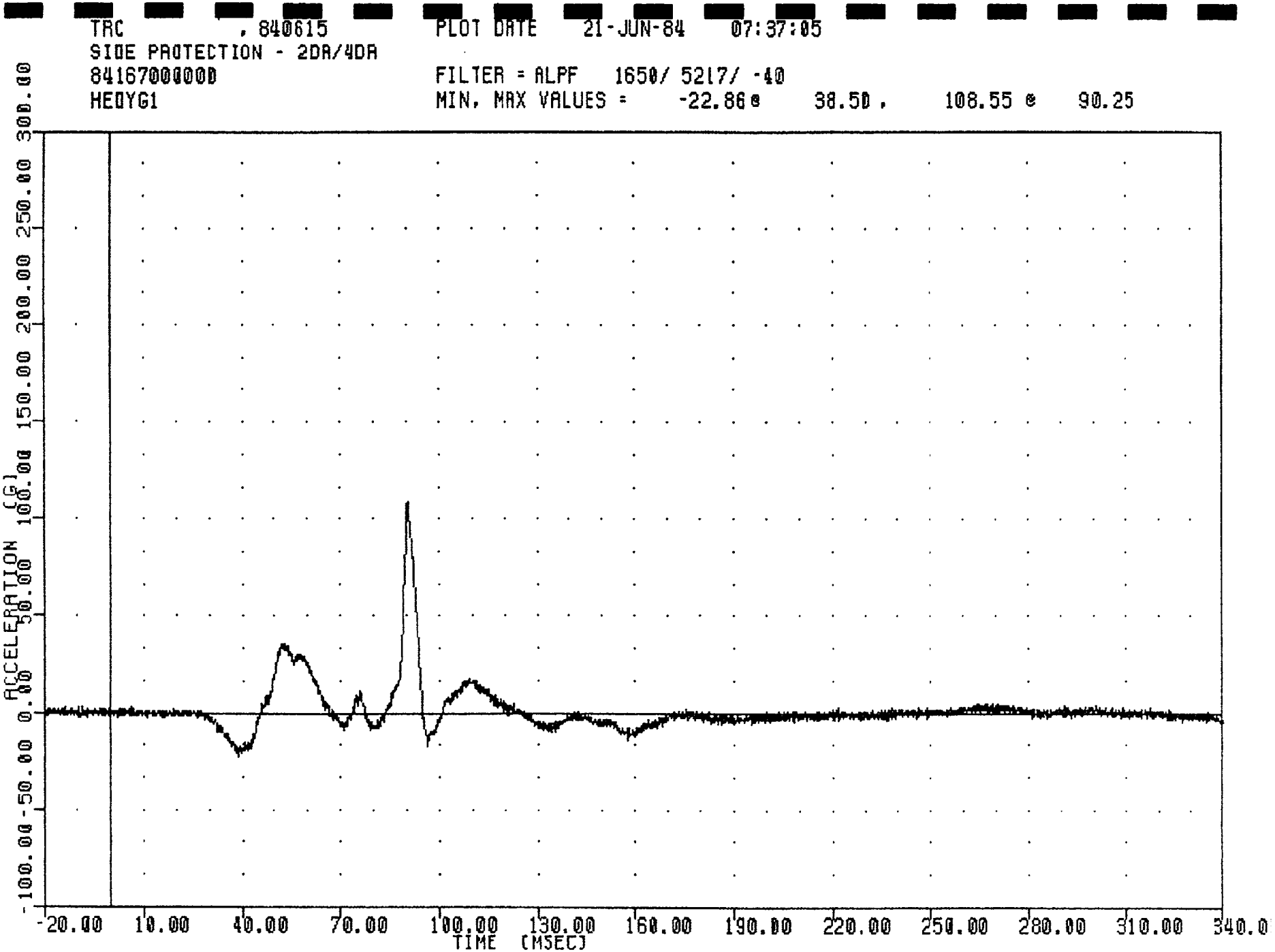
APPENDIX B

DATA PLOT PRESENTATION

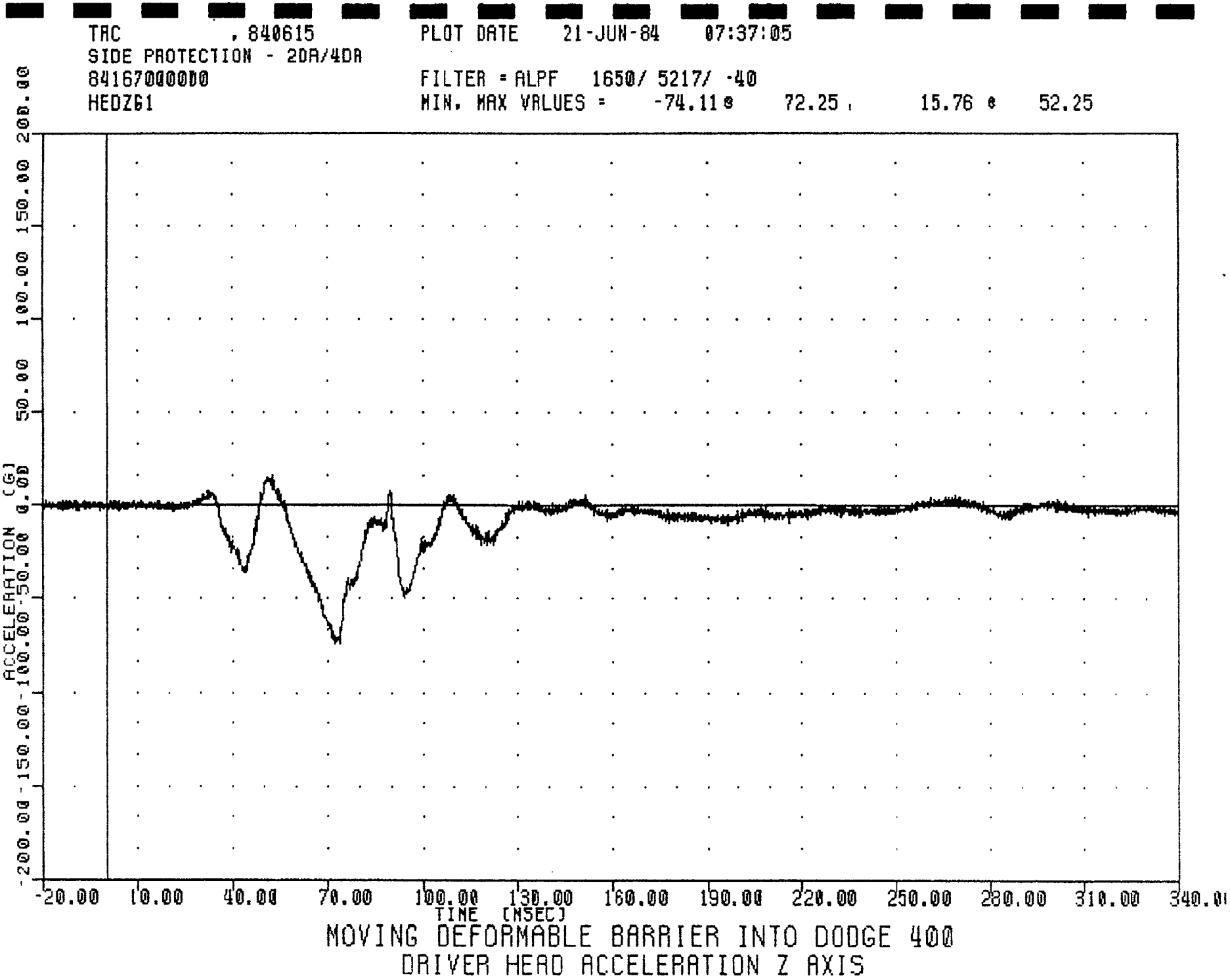
Data plots generated from the crash test data are presented on the following pages. All data are recorded on magnetic tape for inclusion in the NHTSA crash test data base system. All data were filtered according to SAE J211, except that dummy thorax data were filtered using the HSRI filter.



MOVING DEFORMABLE BARRIER INTO DODGE 400
DRIVER HEAD ACCELERATION X AXIS

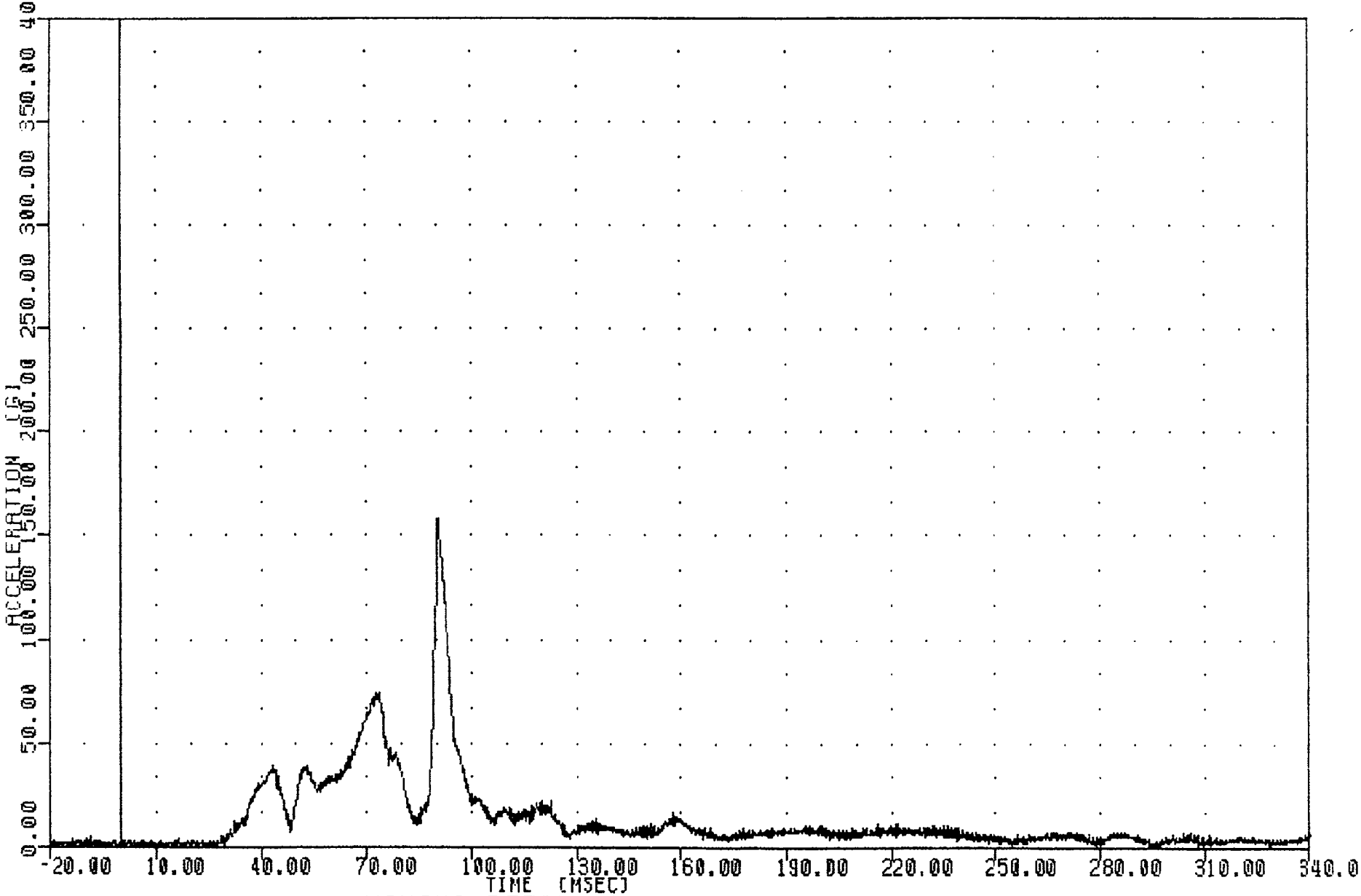


MOVING DEFORMABLE BARRIER INTO DODGE 400
DRIVER HEAD ACCELERATION Y AXIS

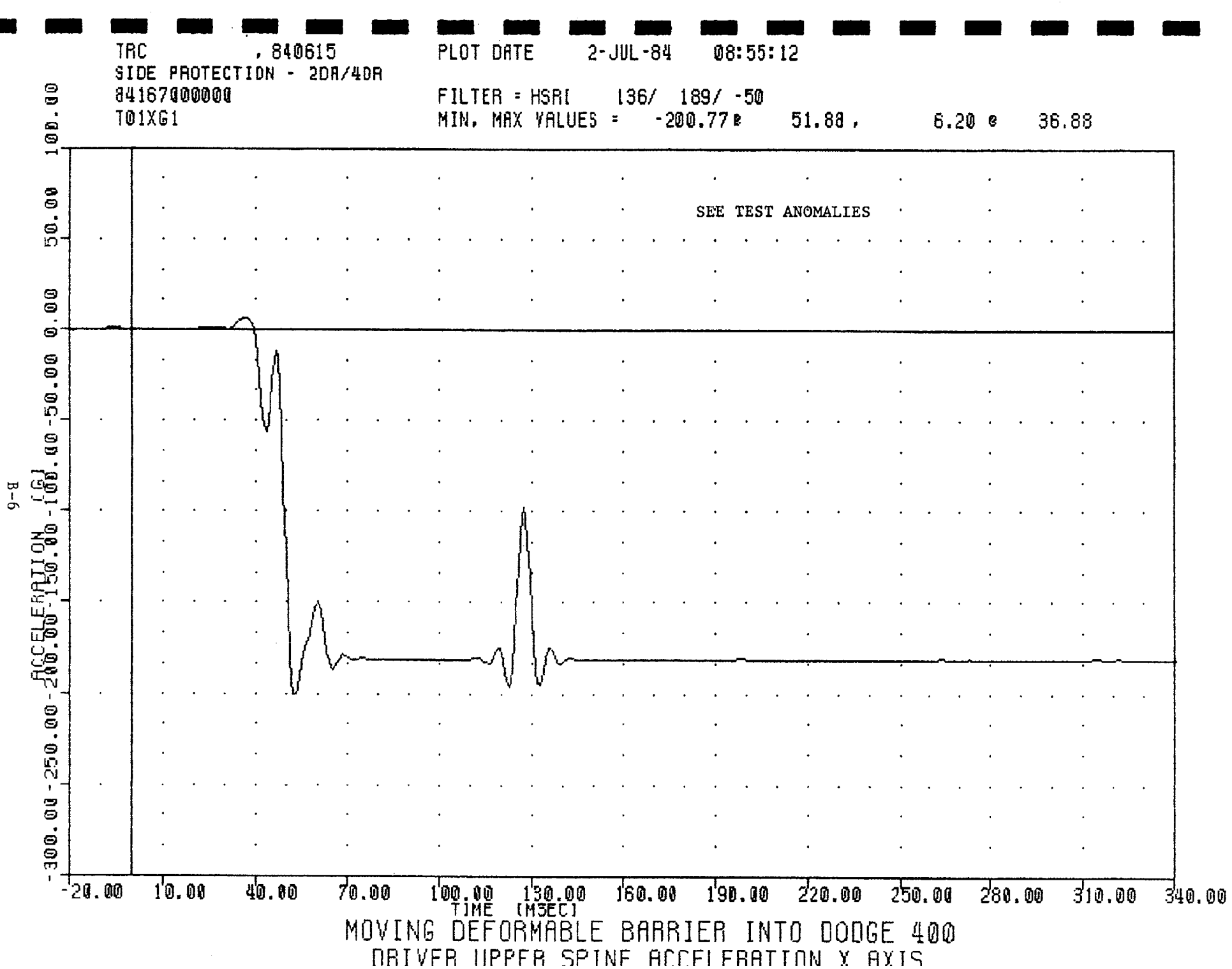


MOVING DEFORMABLE BARRIER INTO DODGE 400
DRIVER HEAD ACCELERATION Z AXIS

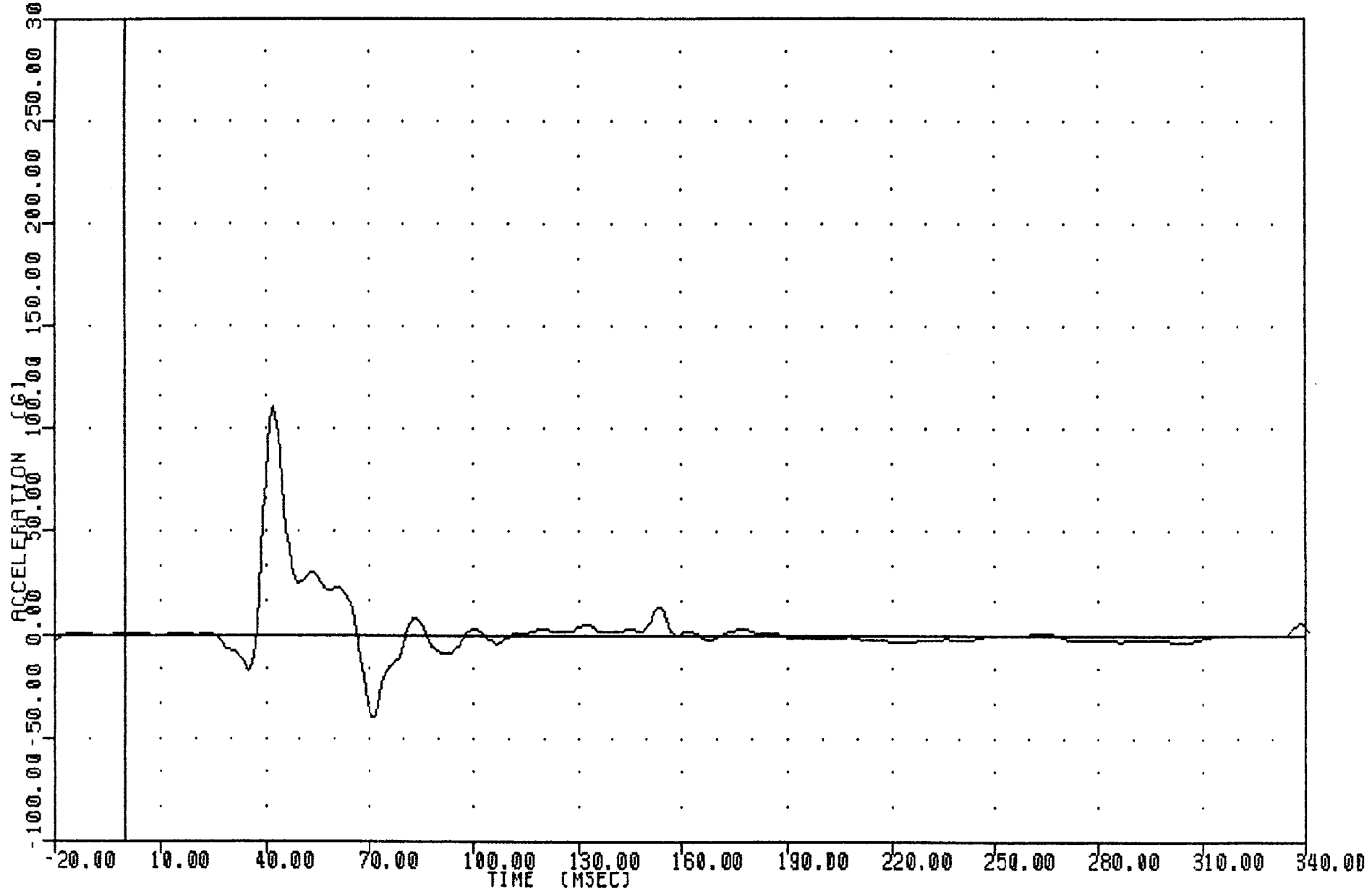
TRC , 840615 PLOT DATE 21-JUN-84 07:37:05
SIDE PROTECTION - 2DR/4DR
84167000000 FILTER = ALPF 1650/ 5217/ -40
HEDRG1 MIN, MAX VALUES = 0.06 @ 25.13 , 157.65 @ 90.13



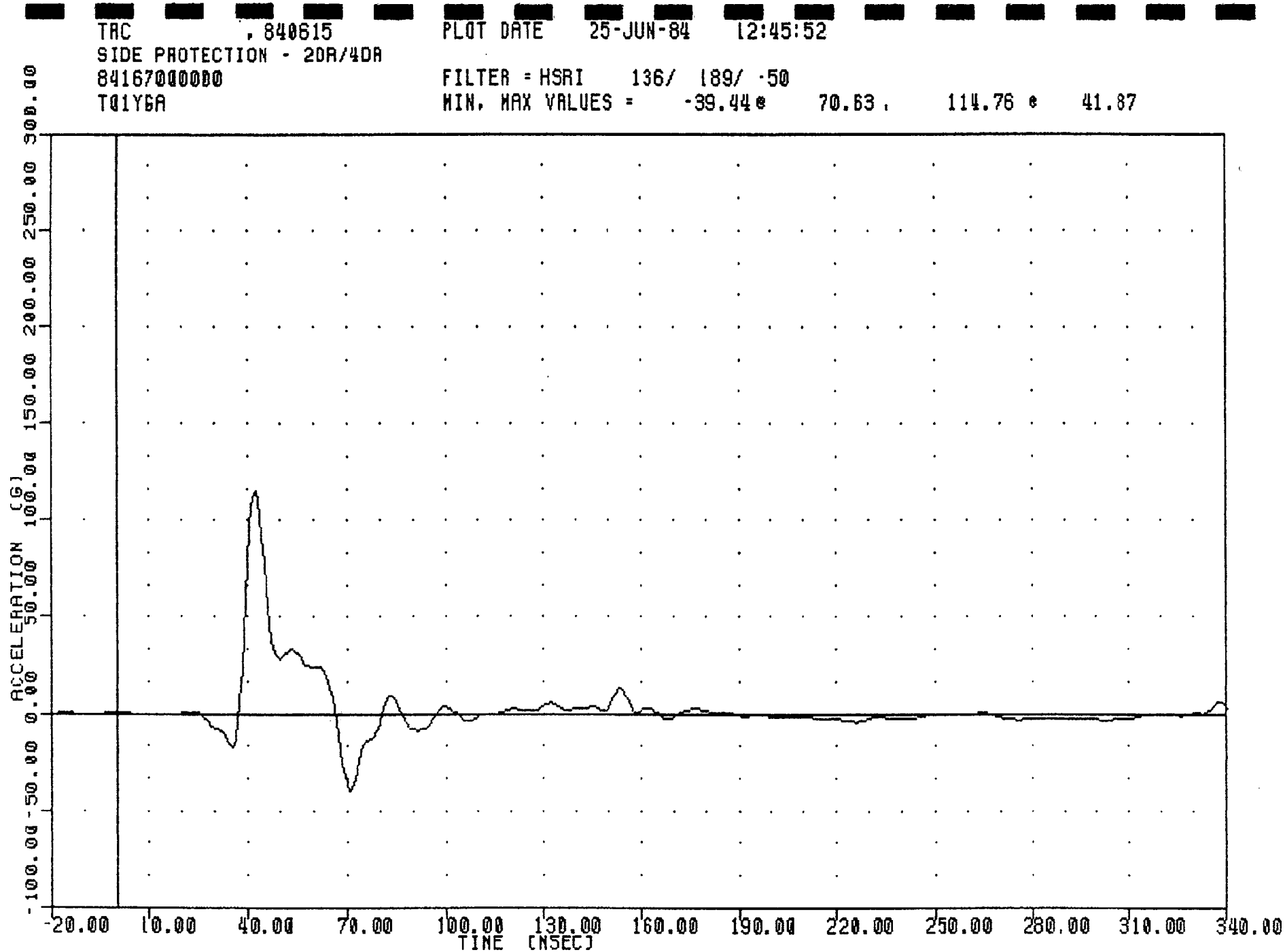
MOVING DEFORMABLE BARRIER INTO DODGE 400
DRIVER HEAD RESULTANT


TRC , 840615
PLOT DATE 2-JUL-84 08:55:12
SIDE PROTECTION - 2DR/4DR
841670000000
FILTER = HSRI 136/ 189/ -50
T01XG1
MIN, MAX VALUES = -200.77 @ 51.88 , 6.20 @ 36.88
SEE TEST ANOMALIES
ACCELERATION (G)
100.00
50.00
0.00
-50.00
-100.00
-150.00
-200.00
-250.00
-300.00
-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 DODGE 400
DRIVER UPPER SPINE ACCELERATION X AXIS

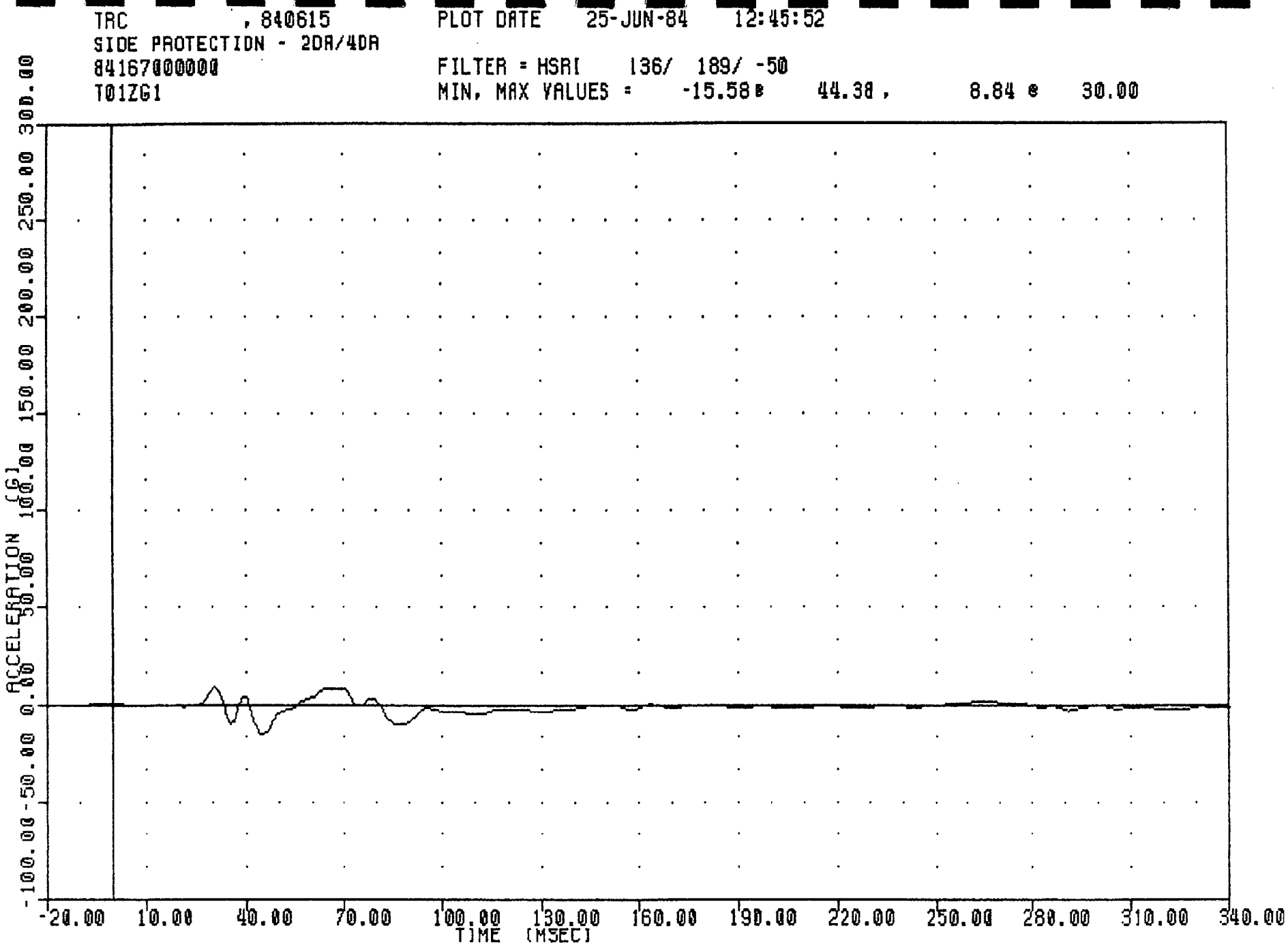
TRC , 840615 PLOT DATE 25-JUN-84 12:45:52
SIDE PROTECTION - 2DR/4DR
84167000000 FILTER = HSRI 136/ 189/ -50
T01YG1 MIN, MAX VALUES = -39.37 @ 70.00 , 110.55 @ 41.87



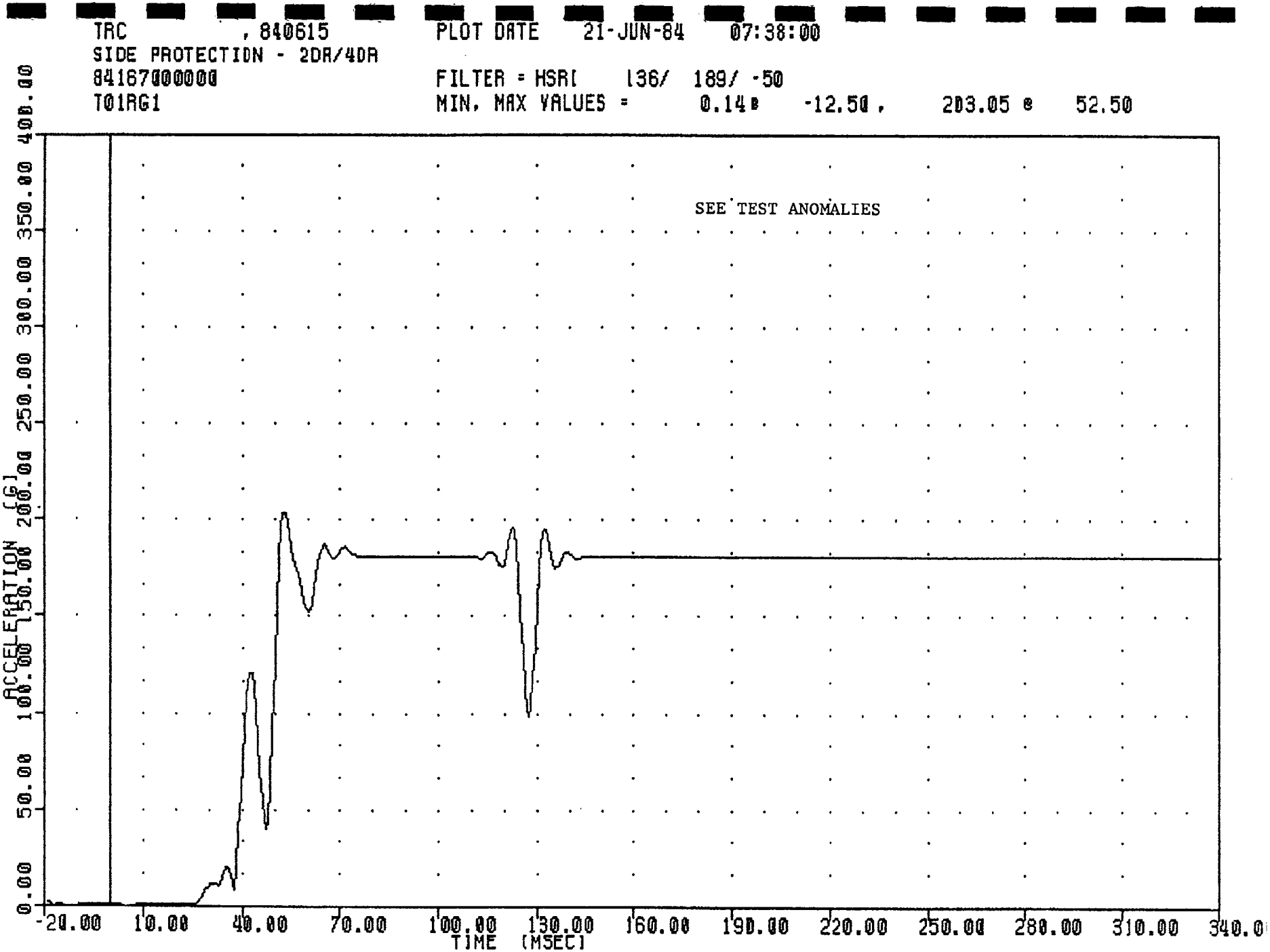
MOVING DEFORMABLE BARRIER INTO DODGE 400
DRIVER UPPER SPINE ACCELERATION Y AXIS



MOVING DEFORMABLE BARRIER INTO DODGE 400
DRIVER UPPER SPINE ACCELERATION -2 Y AXIS

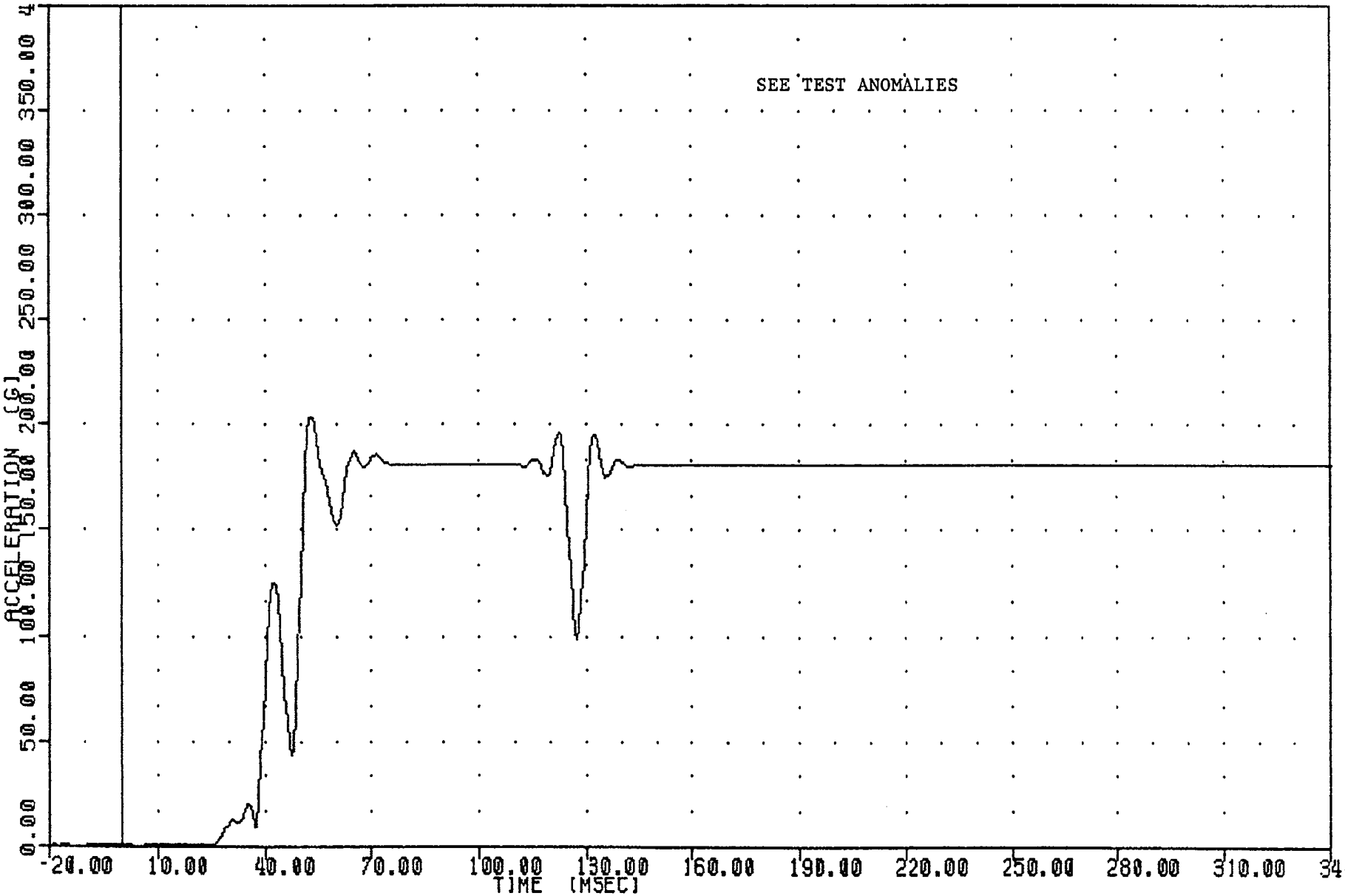


MOVING DEFORMABLE BARRIER INTO DODGE 400
DRIVER UPPER SPINE ACCELERATION Z AXIS

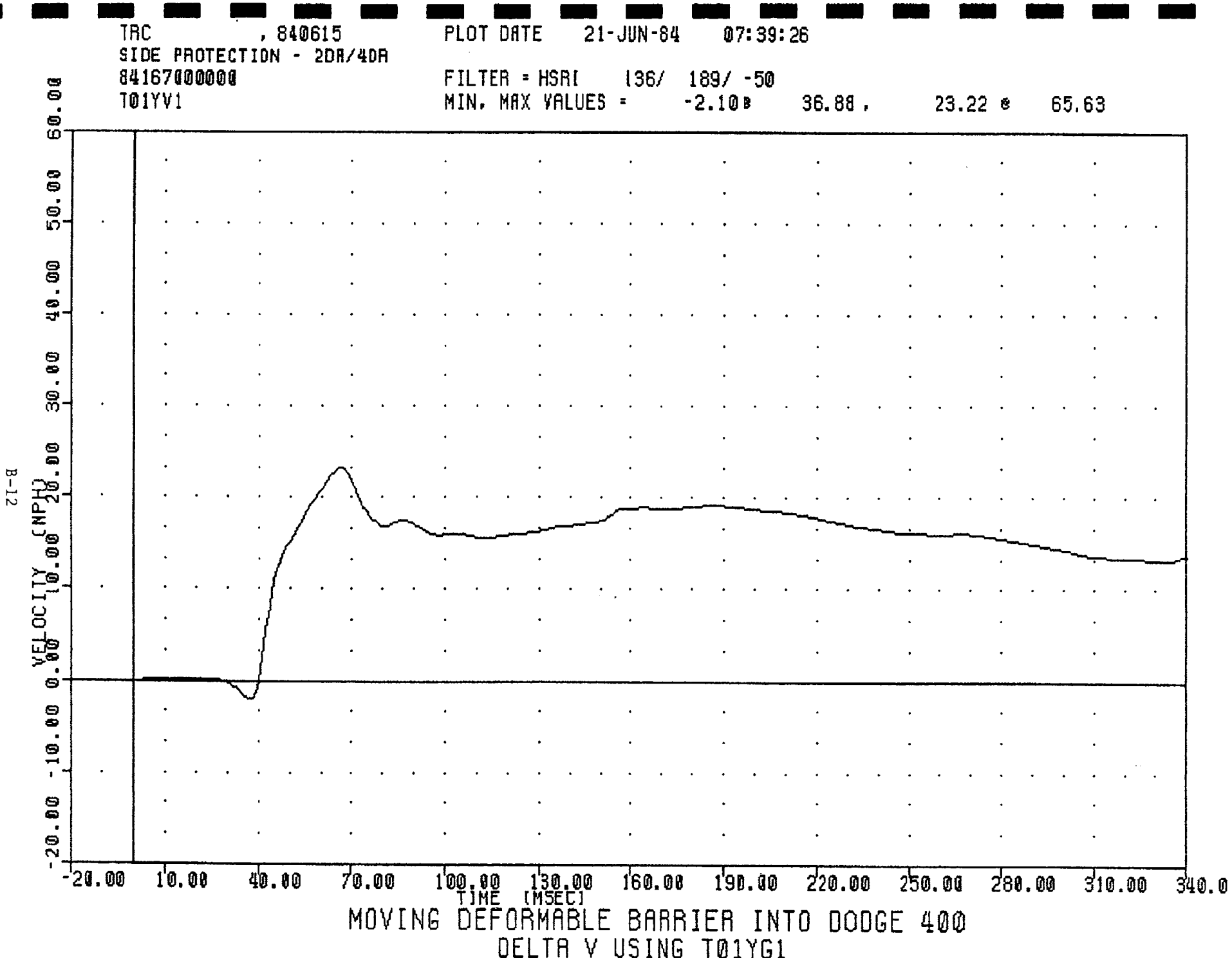


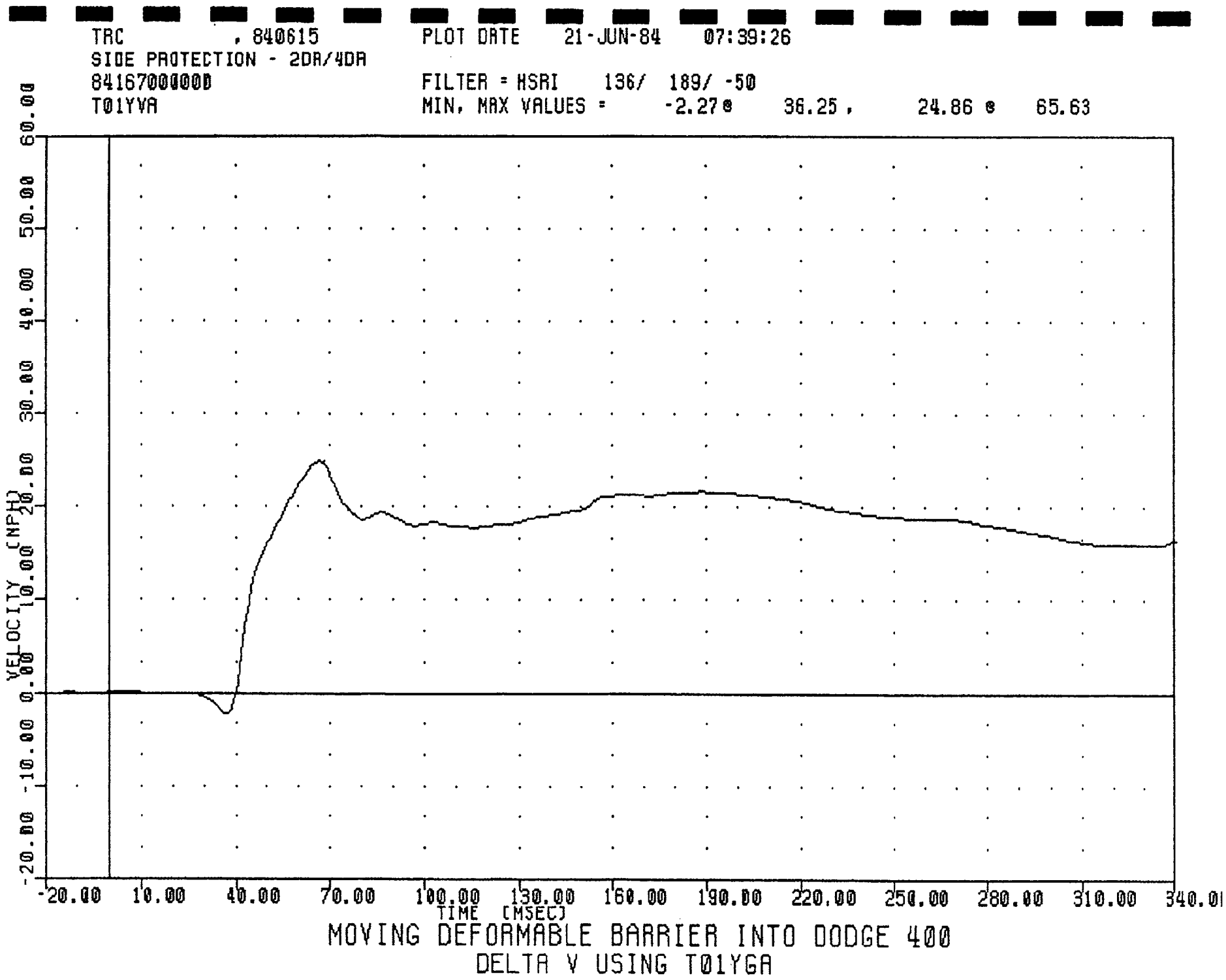
MOVING DEFORMABLE BARRIER INTO DODGE 400
DRIVER UPPER SPINE RESULTANT

TRC , 840615 PLOT DATE 21-JUN-84 07:39:02
SIDE PROTECTION - 2DR/4DR
84167000000 FILTER = HSRI [36/ 189/ -50
T01RG1 MIN, MAX VALUES = 0.08 @ 3.75 , 203.49 @ 52.50

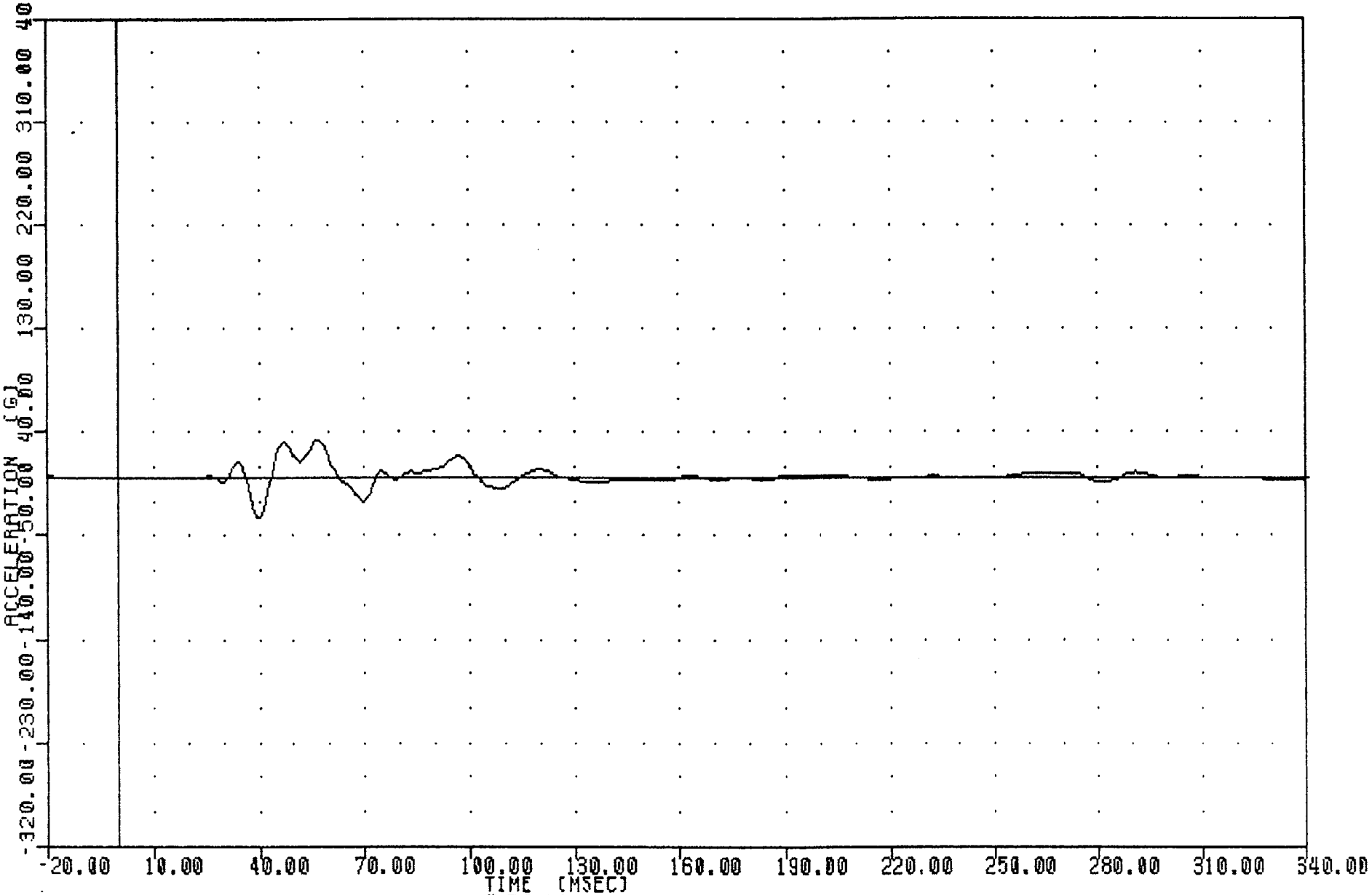


MOVING DEFORMABLE BARRIER INTO DODGE 400
DRIVER UPPER SPINE RESULTANT USING T01YGA


TRC , 840615
PLOT DATE 21-JUN-84 07:39:26
SIDE PROTECTION - 2DR/4DR
84167000000
FILTER = HSRI 136/ 189/ -50
T01YV1
MIN, MAX VALUES = -2.10 @ 36.88 , 23.22 @ 65.63
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
340.0
TIME (MSEC)
MOVING DEFORMABLE BARRIER INTO DODGE 400
DELTA V USING T01YG1

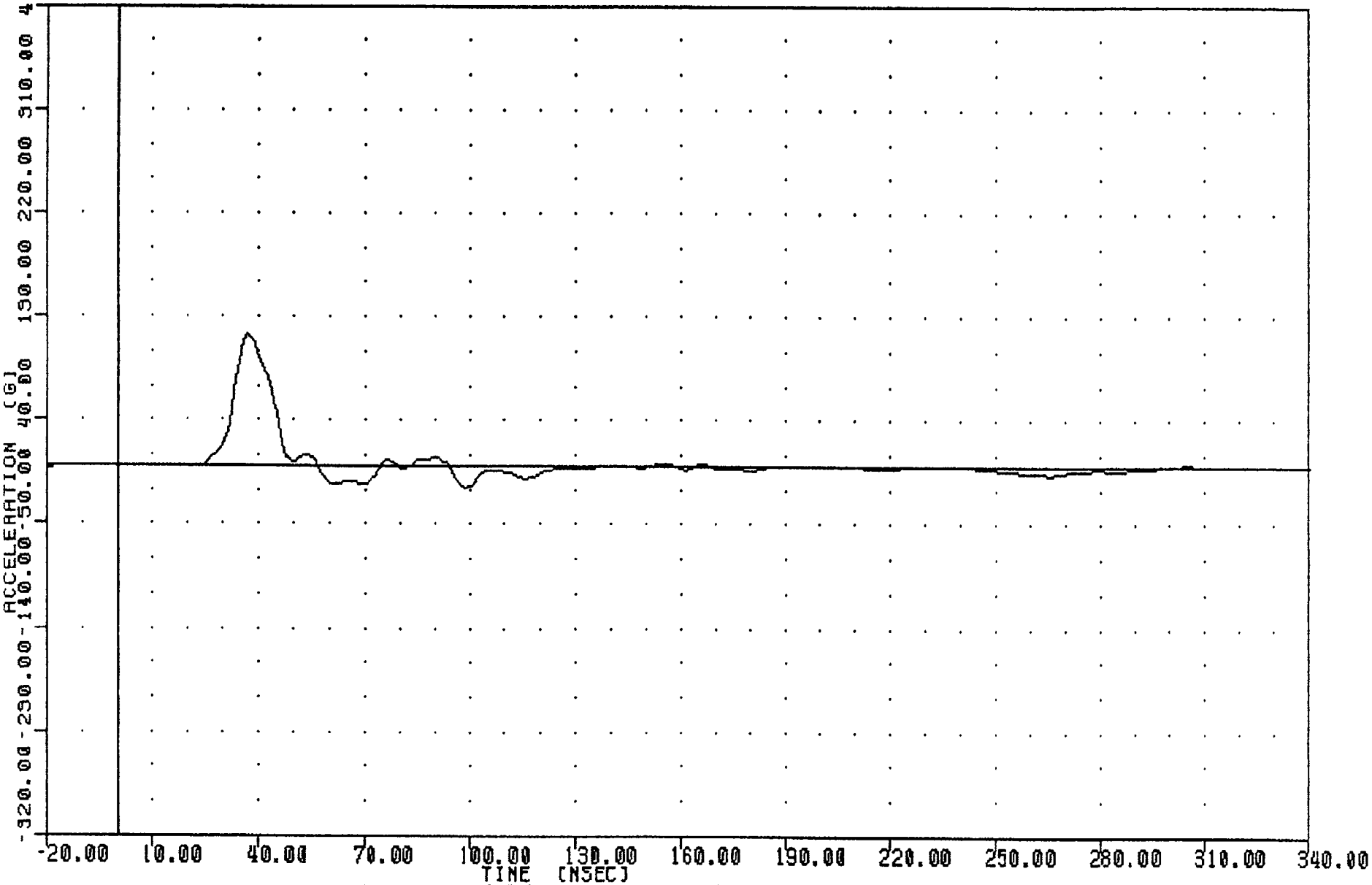

TRC , 840615
PLOT DATE 21-JUN-84 07:39:26
SIDE PROTECTION - 2DR/4DR
84167000000
FILTER = HSRI 136/ 189/ -50
T01YVA
MIN, MAX VALUES = -2.27@ 36.25 , 24.86 @ 65.63
60.00
50.00
40.00
30.00
20.00
10.00
0.00
-10.00
-20.00
VELOCITY (MPH)
-20.00
10.00
40.00
70.00
100.00
130.00
160.00
190.00
220.00
250.00
280.00
310.00
340.00
TIME (MSEC)
MOVING DEFORMABLE BARRIER INTO DODGE 400
DELTA V USING T01YGA

TRC , 840615 PLOT DATE 25-JUN-84 12:45:52
SIDE PROTECTION - 2DR/4DR
84167000000 FILTER = HSRI 136/ 189/ -50
T12XG1 MIN, MAX VALUES = -34.04 @ 39.38 , 32.73 @ 56.25

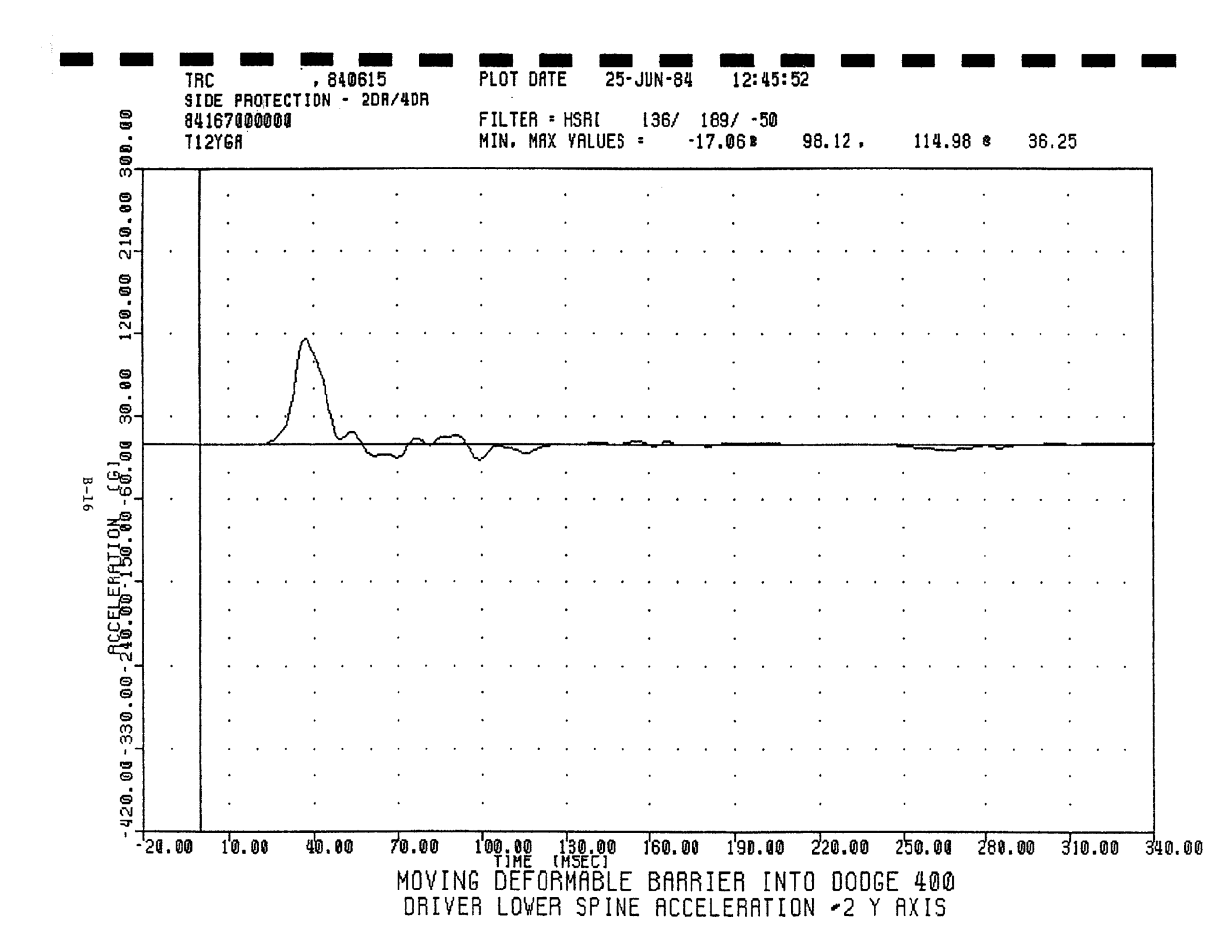


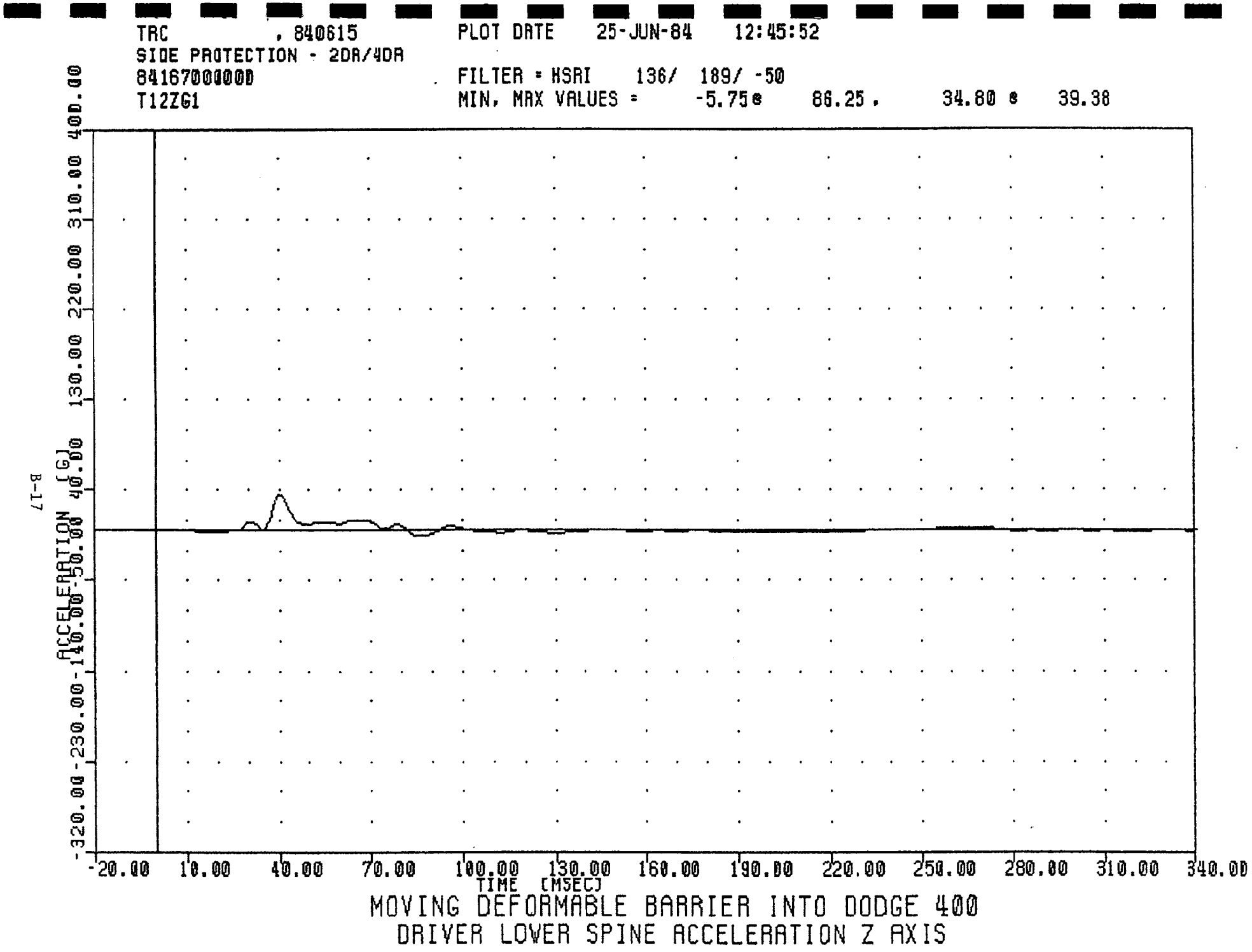
MOVING DEFORMABLE BARRIER INTO DODGE 400
DRIVER LOWER SPINE ACCELERATION X AXIS

TRC , 840615 PLOT DATE 25-JUN-84 12:45:52
SIDE PROTECTION - 2DR/4DR
84167000000 FILTER = HSRI 136/ 189/ -50
T12Y61 MIN, MAX VALUES = -18.17 @ 98.12 , 115.19 @ 36.25



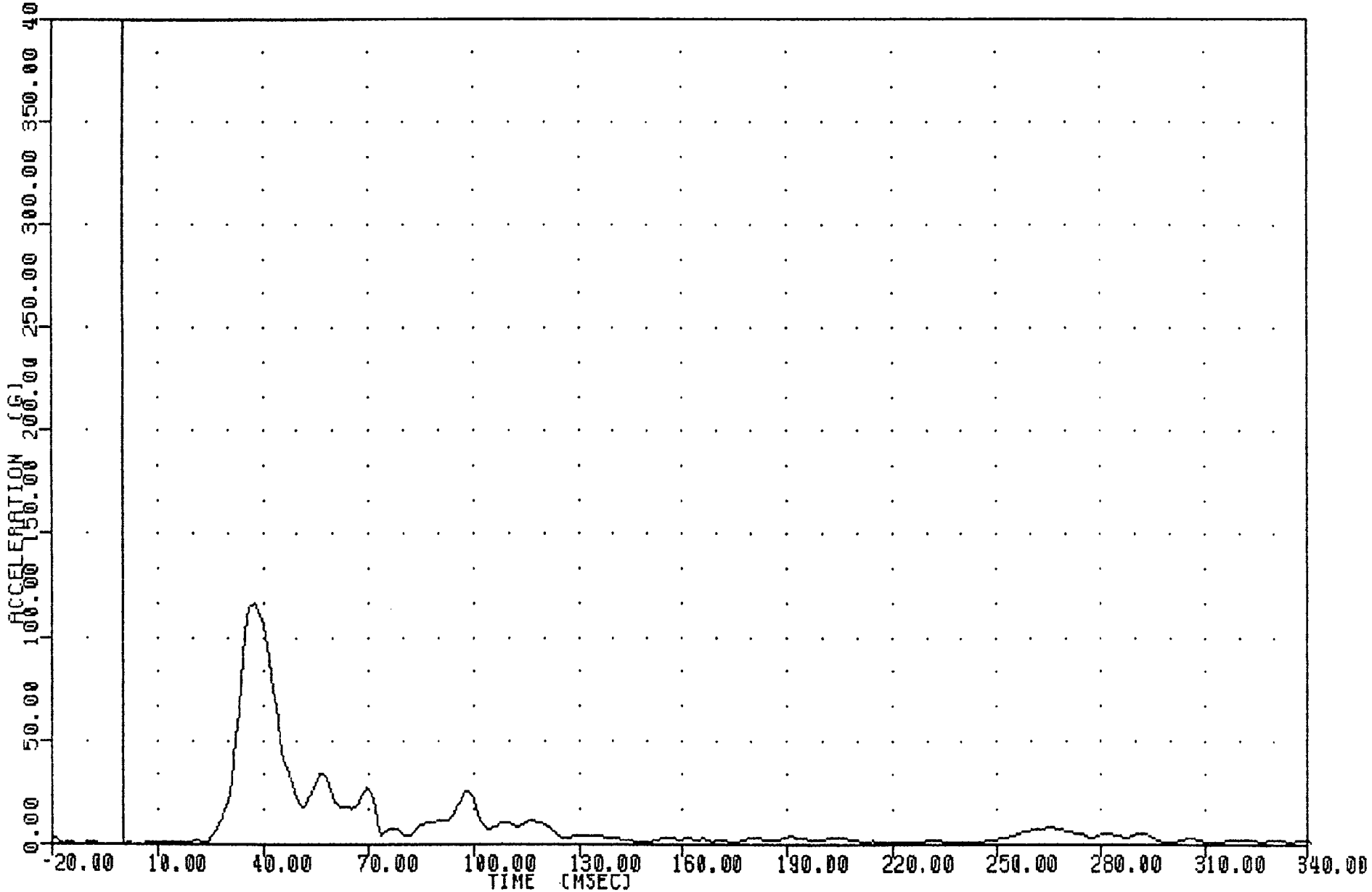
MOVING DEFORMABLE BARRIER INTO DODGE 400
DRIVER LOWER SPINE ACCELERATION Y AXIS


TRC , 840615
PLOT DATE 25-JUN-84 12:45:52
SIDE PROTECTION - 2DR/4DR
84167000000
FILTER = HSRI 136/ 189/ -50
T12YGA
MIN, MAX VALUES = -17.06 @ 98.12 , 114.98 @ 36.25
300.00
210.00
120.00
30.00
-60.00
-150.00
-240.00
-330.00
-420.00
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 DODGE 400
DRIVER LOWER SPINE ACCELERATION -2 Y AXIS

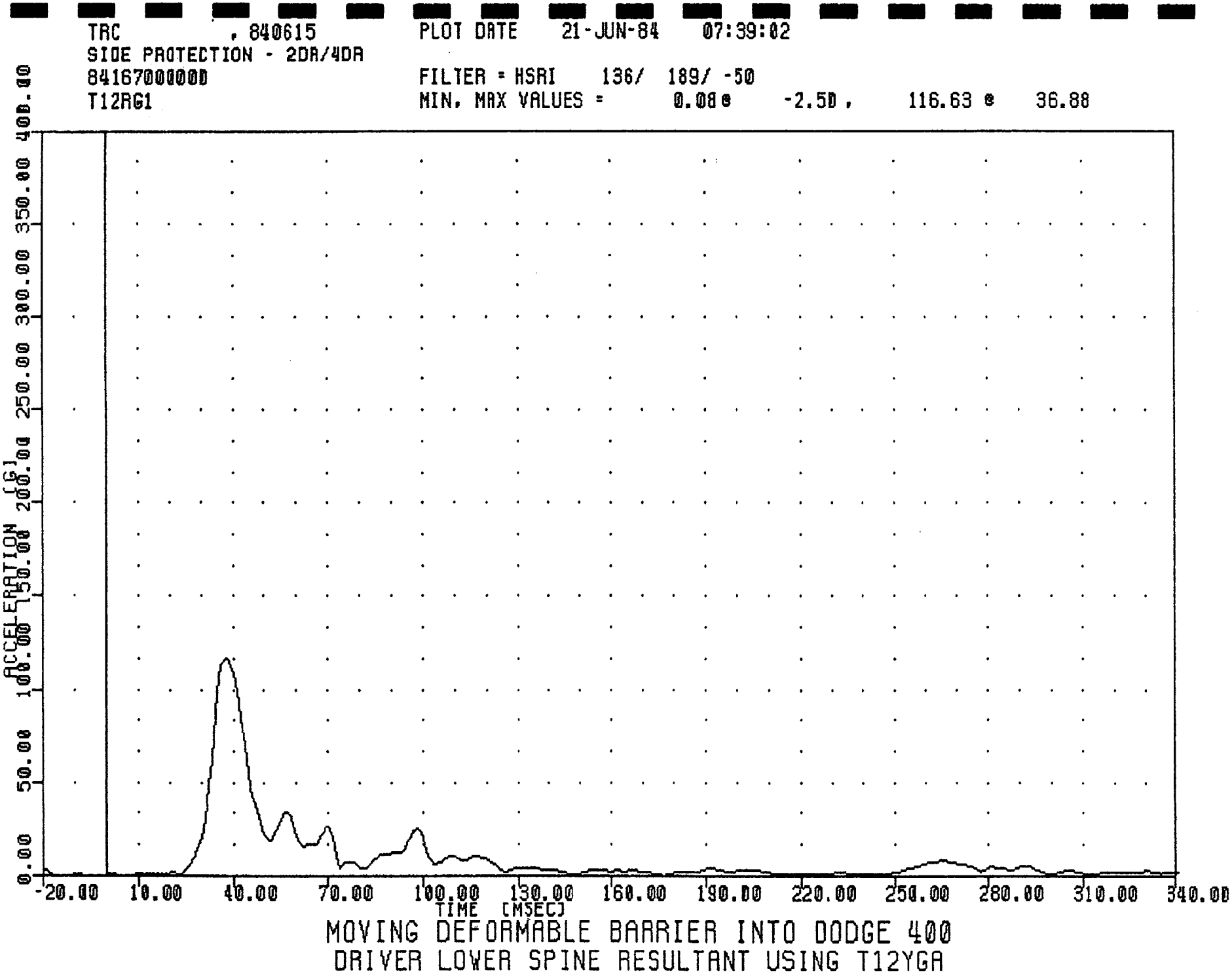


MOVING DEFORMABLE BARRIER INTO DODGE 400
DRIVER LOWER SPINE ACCELERATION Z AXIS

TRC , 840615 PLOT DATE 25-JUN-84 12:45:52
SIDE PROTECTION - 2DR/4DR
8416700000D FILTER = HSRI 136/ 189/ -50
T12RG1 MIN, MAX VALUES = 0.16 @ -6.25 , 115.96 @ 36.88

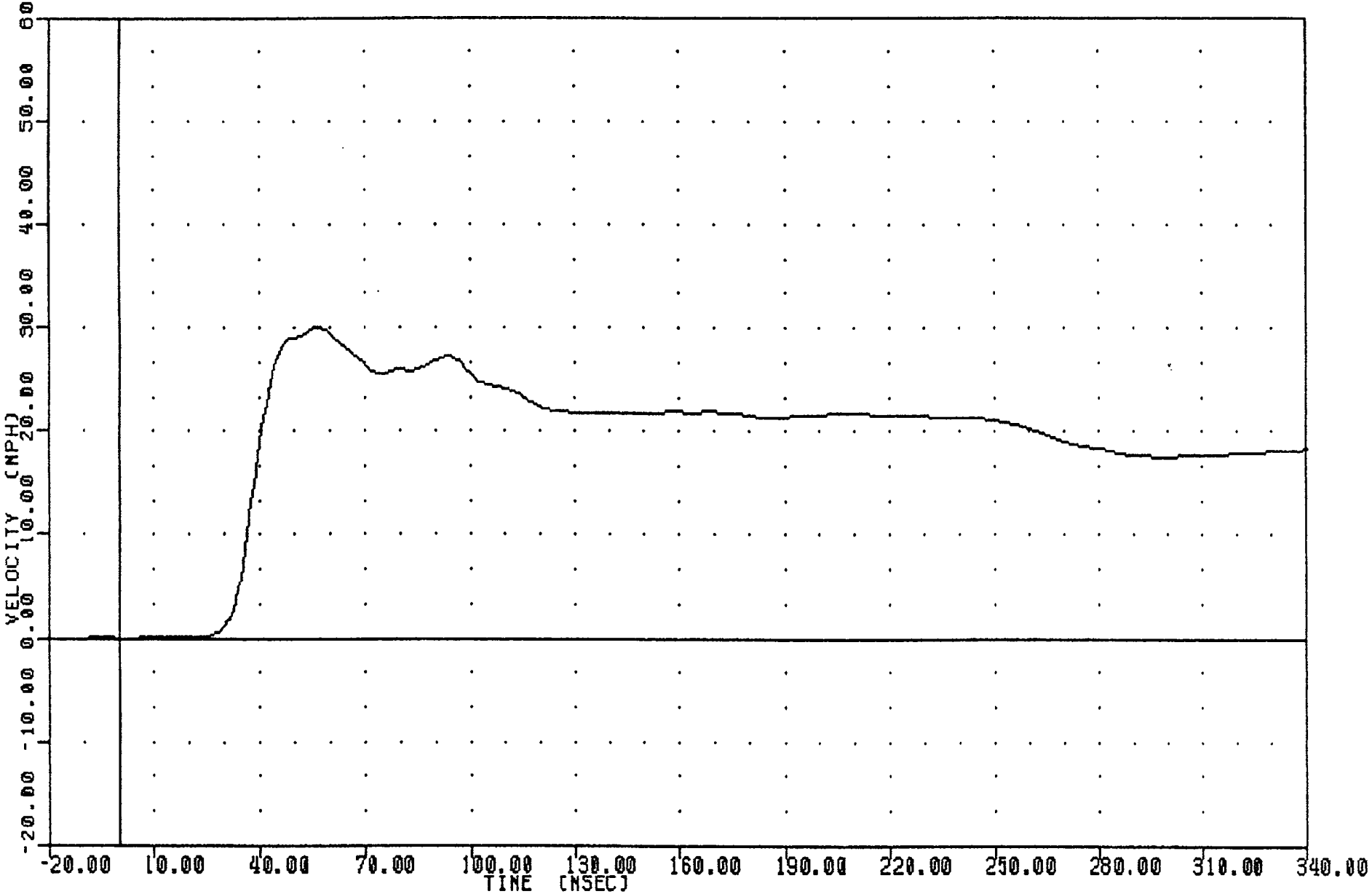


MOVING DEFORMABLE BARRIER INTO DODGE 400
DRIVER LOWER SPINE RESULTANT



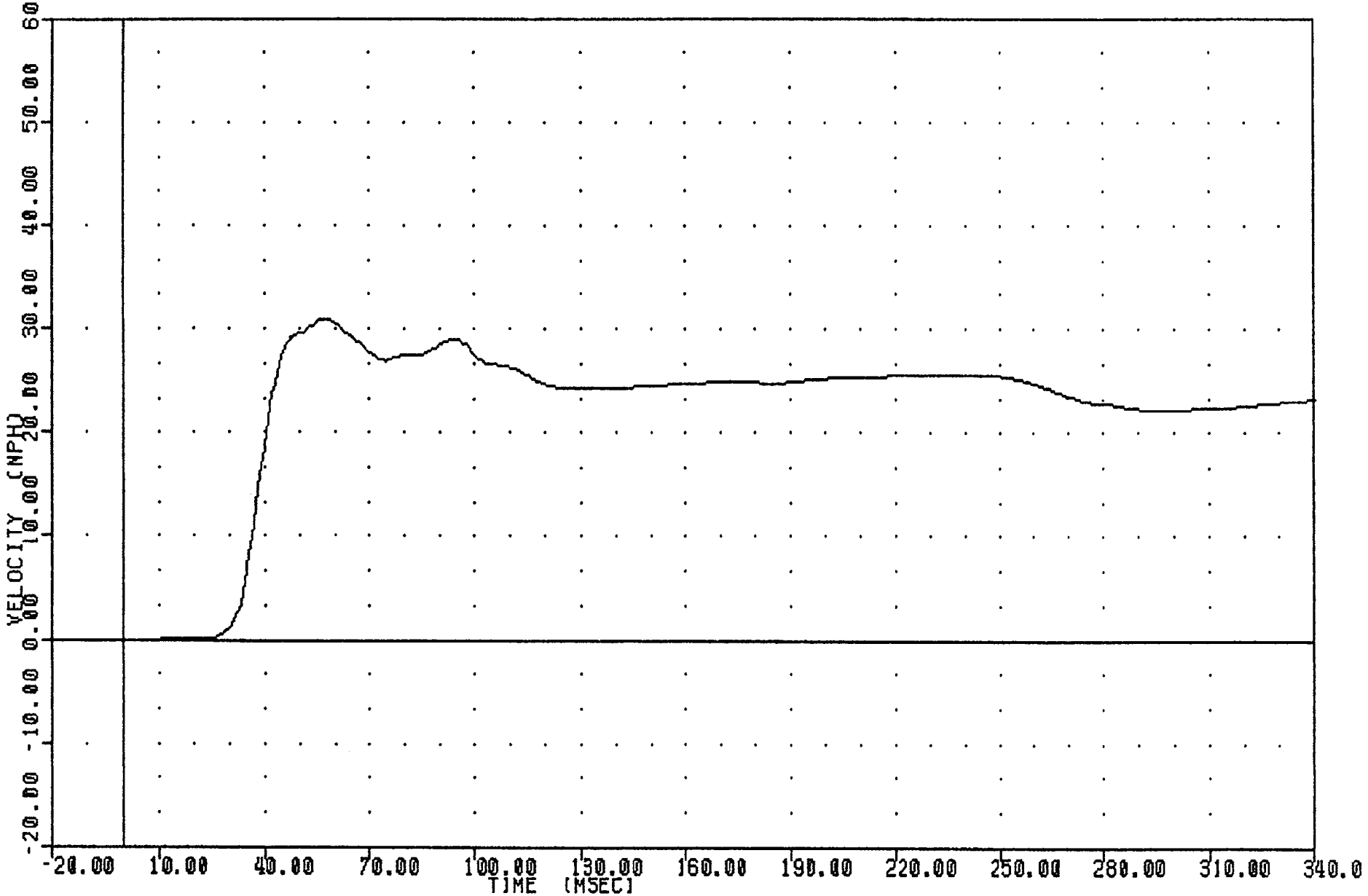
MOVING DEFORMABLE BARRIER INTO DODGE 400
DRIVER LOWER SPINE RESULTANT USING T12YGA

TRC , 840615 PLOT DATE 21-JUN-84 07:39:26
SIDE PROTECTION - 2DR/4DR
84167000000 FILTER = HSRI 136/ 189/ -50
T12YV1 MIN, MAX VALUES = -0.04 @ -17.50 , 30.03 @ 56.25

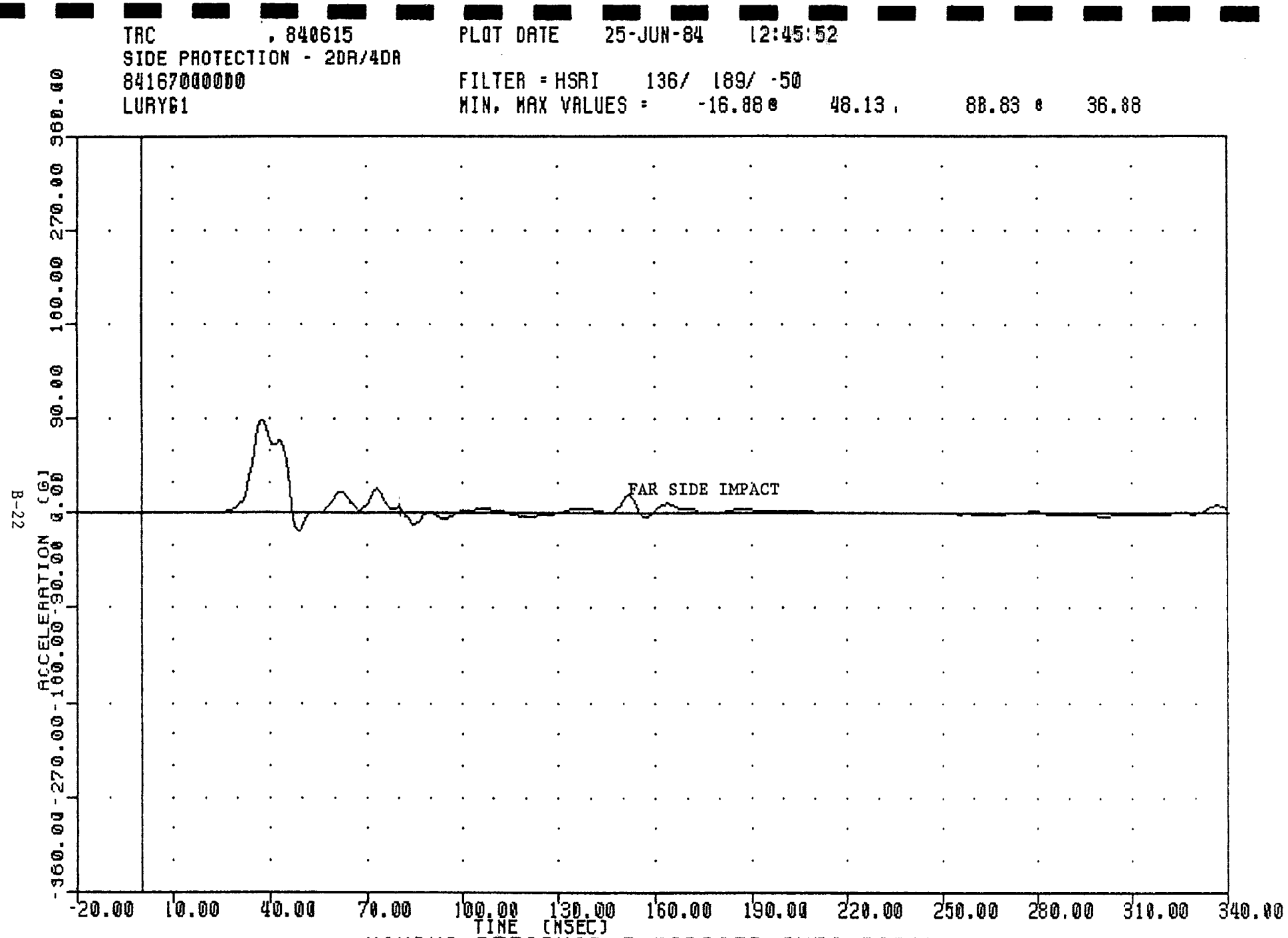


MOVING DEFORMABLE BARRIER INTO DODGE 400
DELTA V USING T12YG1

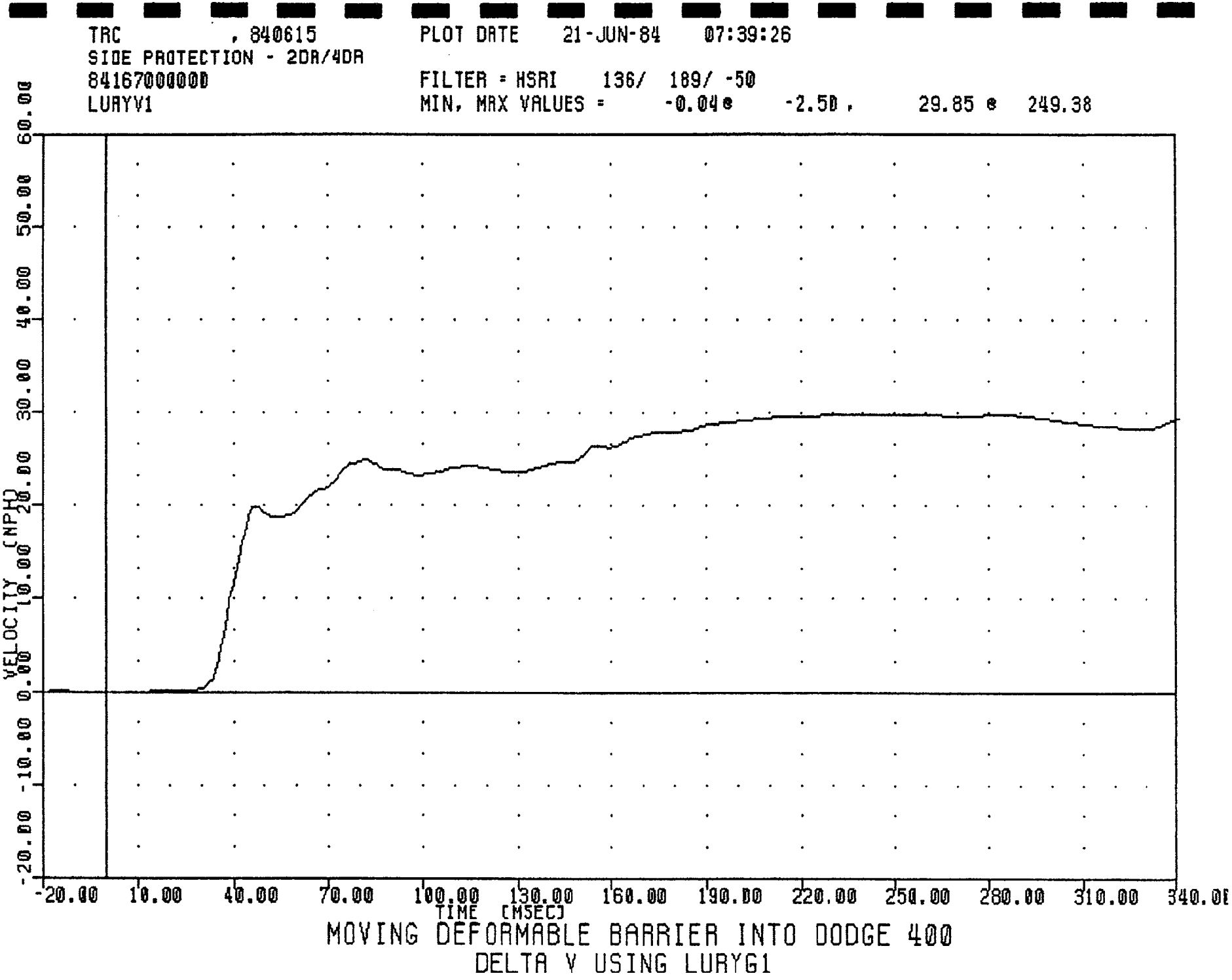
TRC , 840615 PLOT DATE 21-JUN-84 07:39:26
SIDE PROTECTION - 2DR/4DR
84167000000 FILTER = HSRI 136/ 189/ -50
T12YVA MIN, MAX VALUES = -0.03 @ -17.50 , 30.92 @ 56.25



MOVING DEFORMABLE BARRIER INTO DODGE 400
DELTA V USING T12YGA

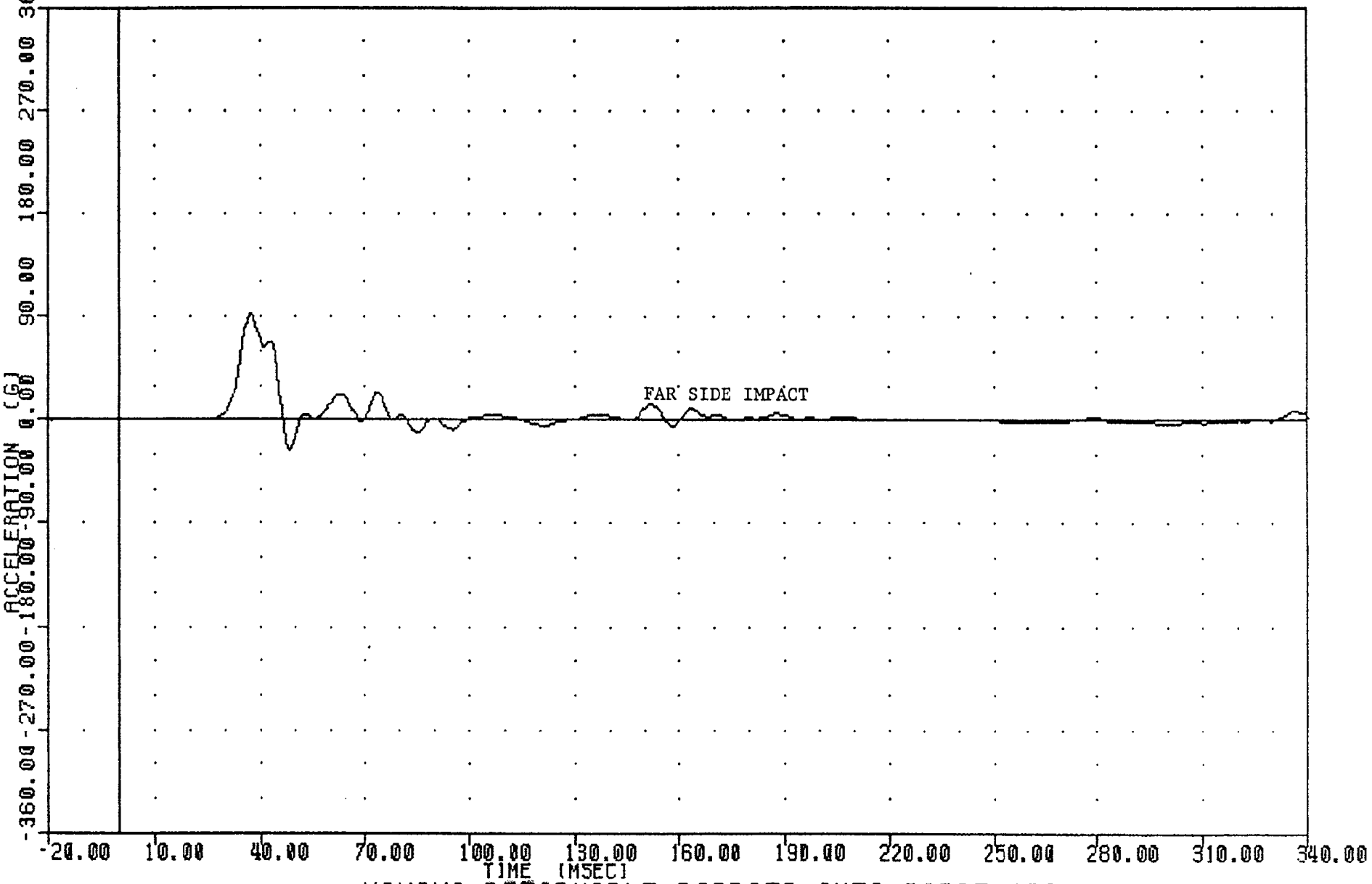


MOVING DEFORMABLE BARRIER INTO DODGE 400
DRIVER LEFT UPPER RIB ACCELERATION Y AXIS



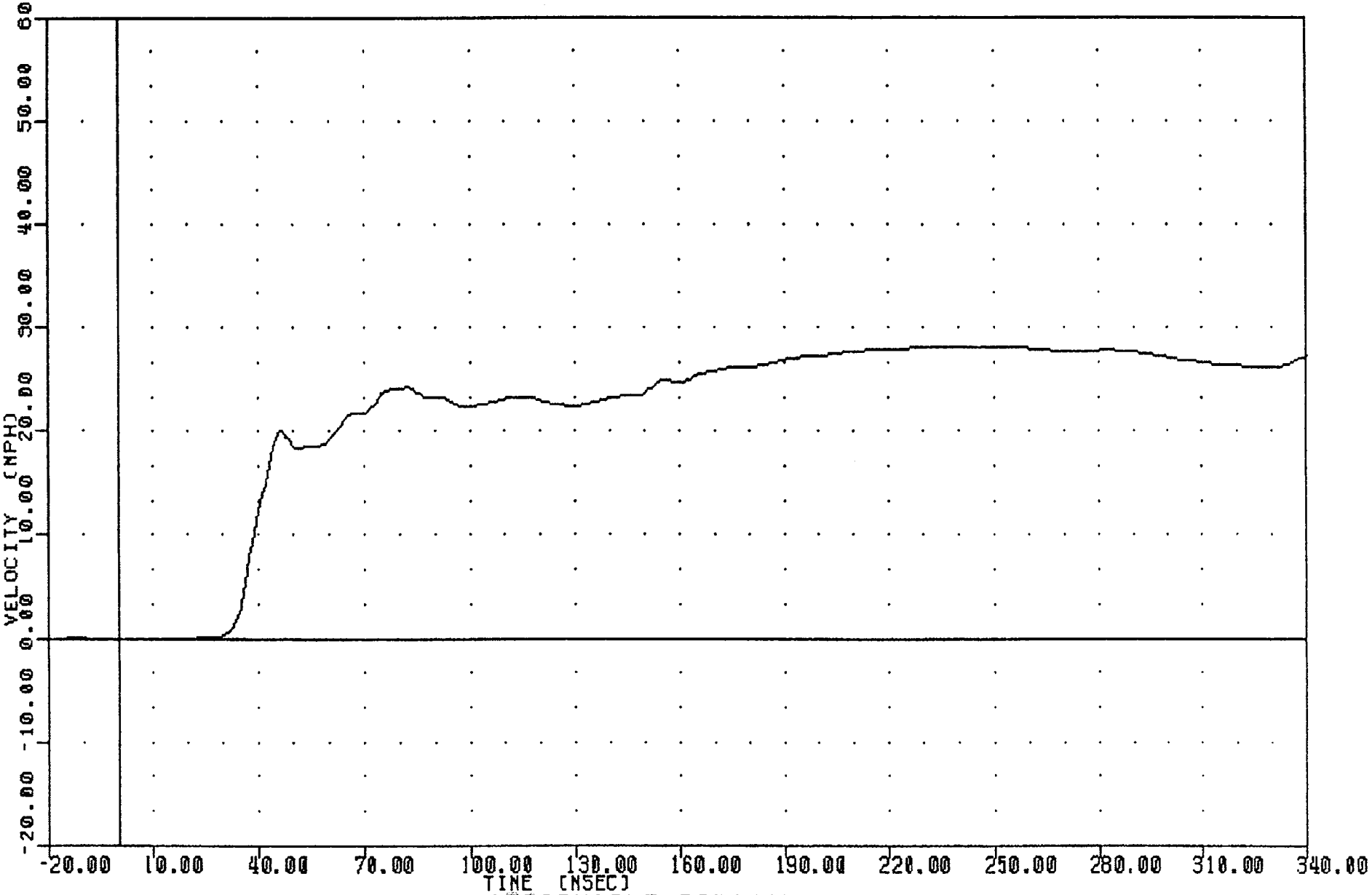
MOVING DEFORMABLE BARRIER INTO DODGE 400
DELTA V USING LURYG1

TRC , 840615 PLOT DATE 25-JUN-84 12:45:52
SIDE PROTECTION - 2DR/4DR
841670000001 FILTER = HSRI 136/ 189/ -50
LURYGR MIN, MAX VALUES = -25.35 @ 48.13 , 92.09 @ 36.88

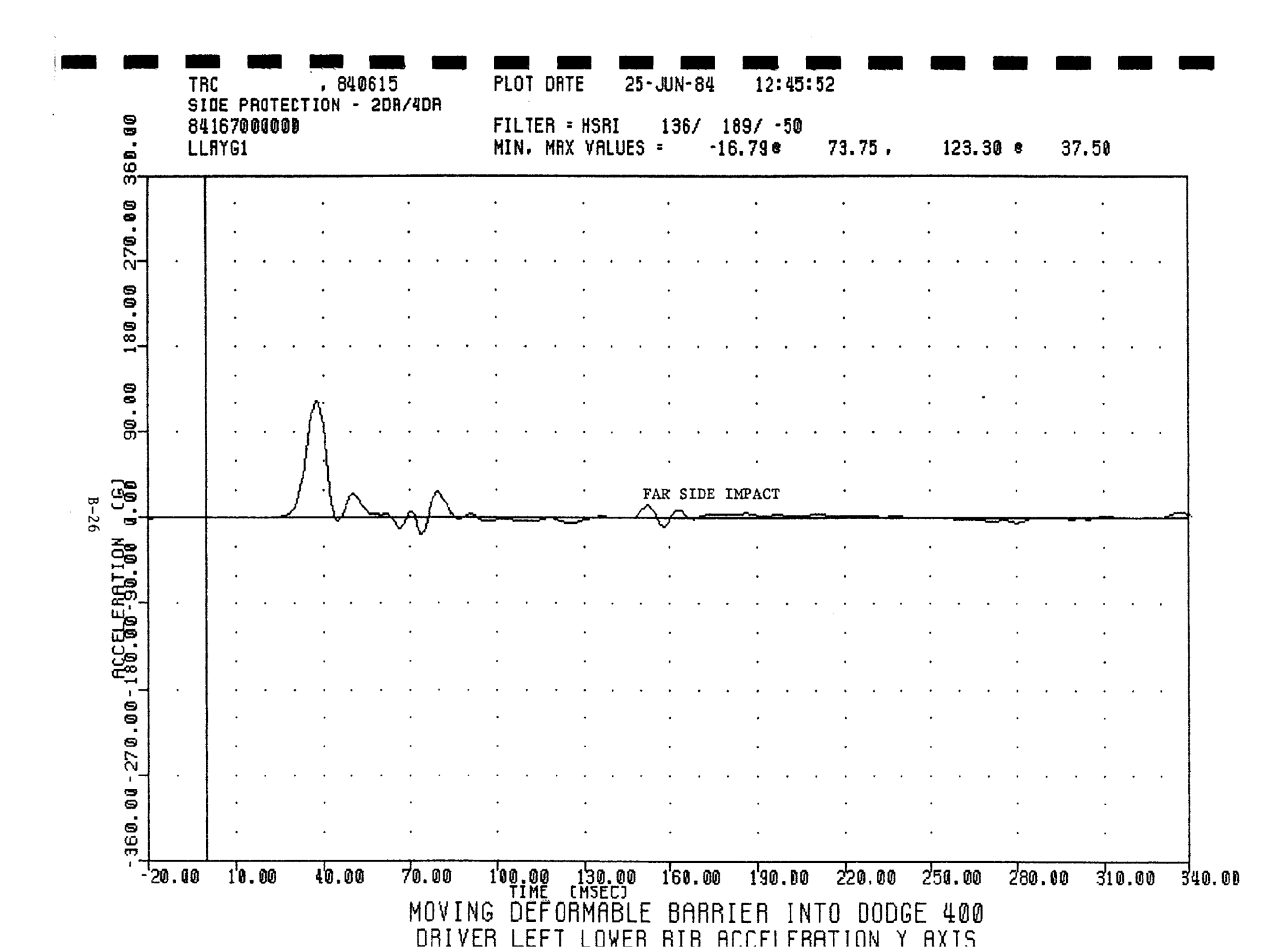


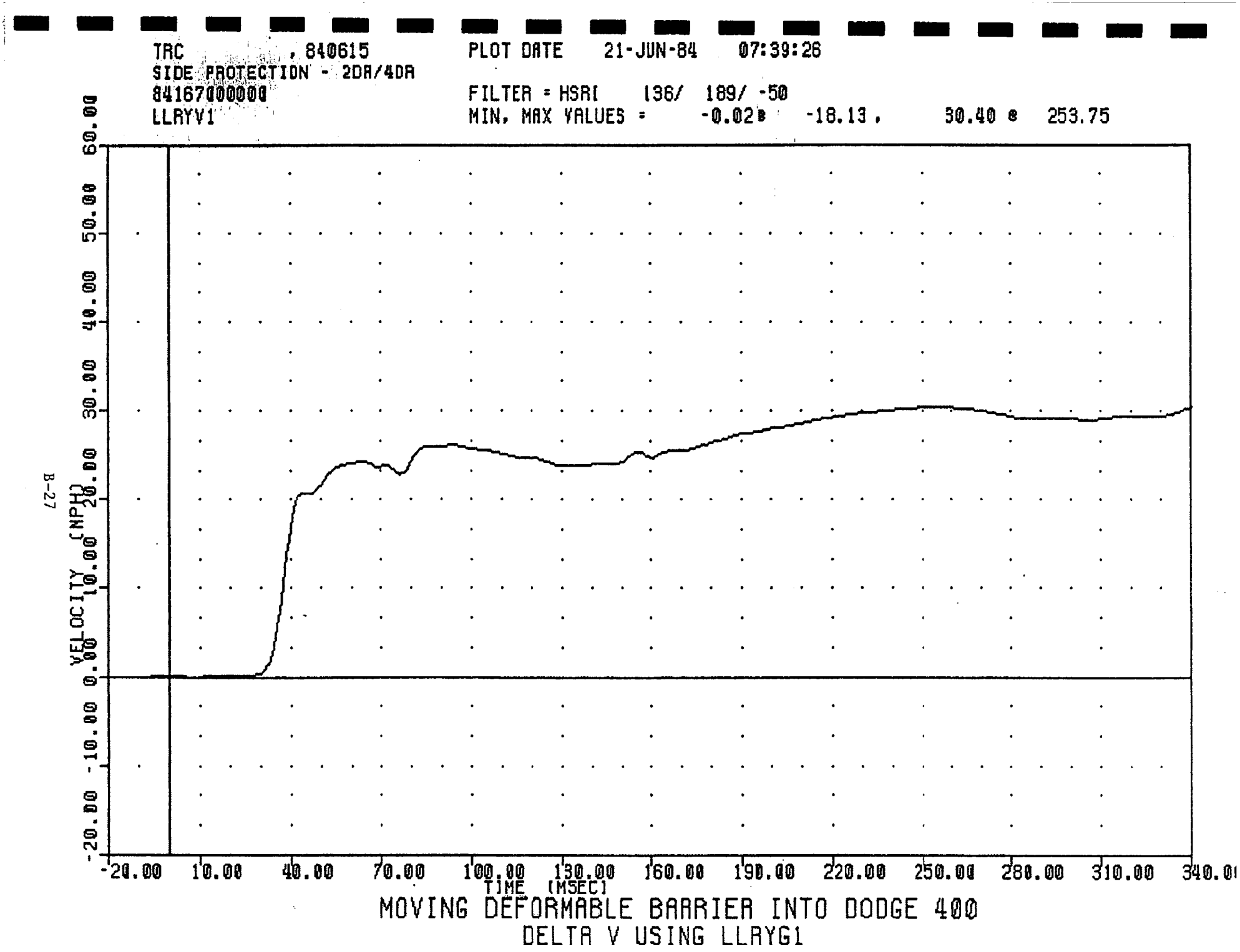
MOVING DEFORMABLE BARRIER INTO DODGE 400
DRIVER LEFT UPPER RIB ACCELERATION -2 Y AXIS

TRC , 840615 PLOT DATE 21-JUN-84 07:39:26
SIDE PROTECTION - 2DR/4DR
8416700000D FILTER = HSRI 136/ 189/ -50
LURYVA MIN, MAX VALUES = -0.01 @ -18.13 , 28.20 @ 247.50

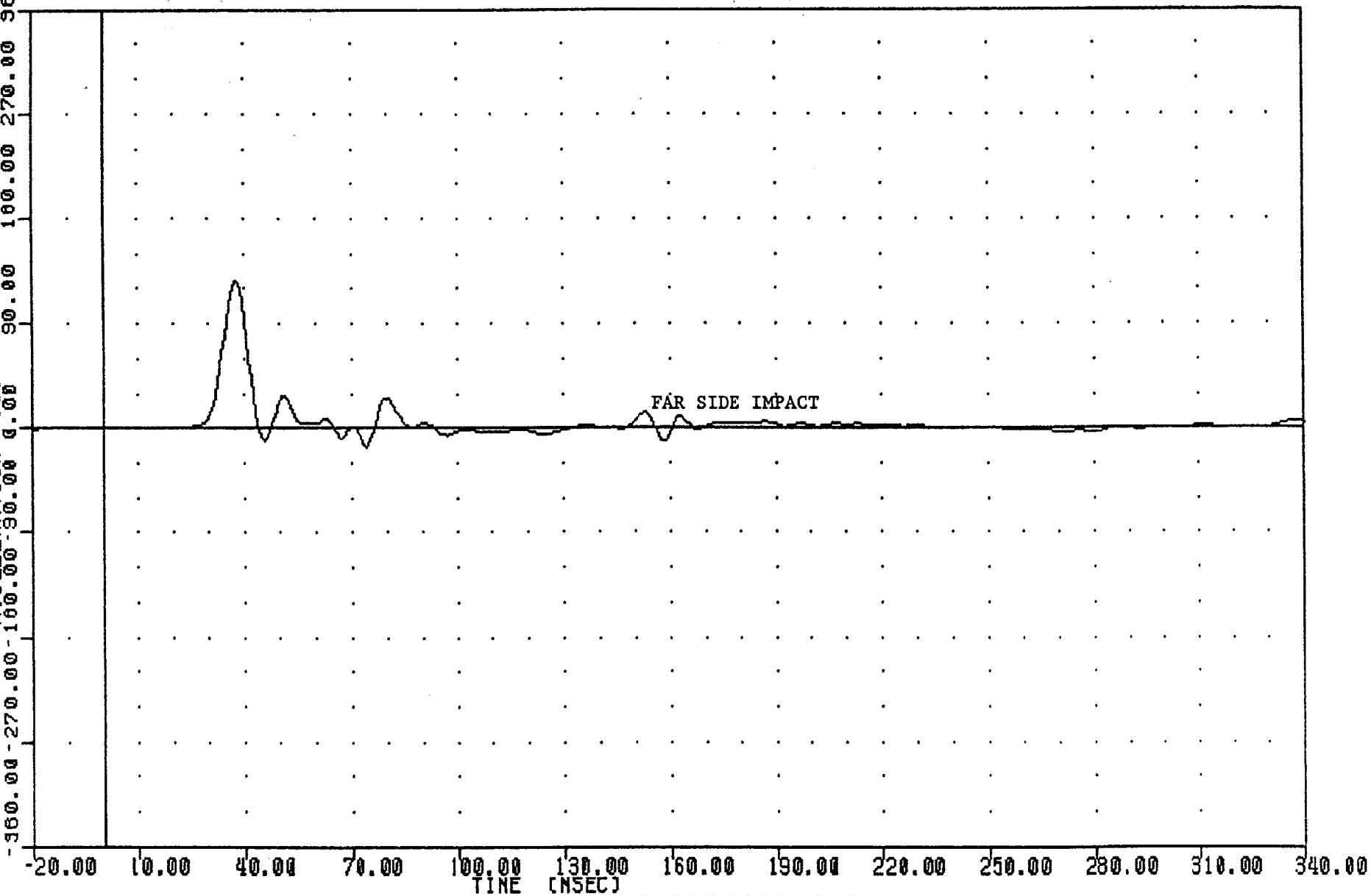


MOVING DEFORMABLE BARRIER INTO DODGE 400
DELTA V USING LURYGA

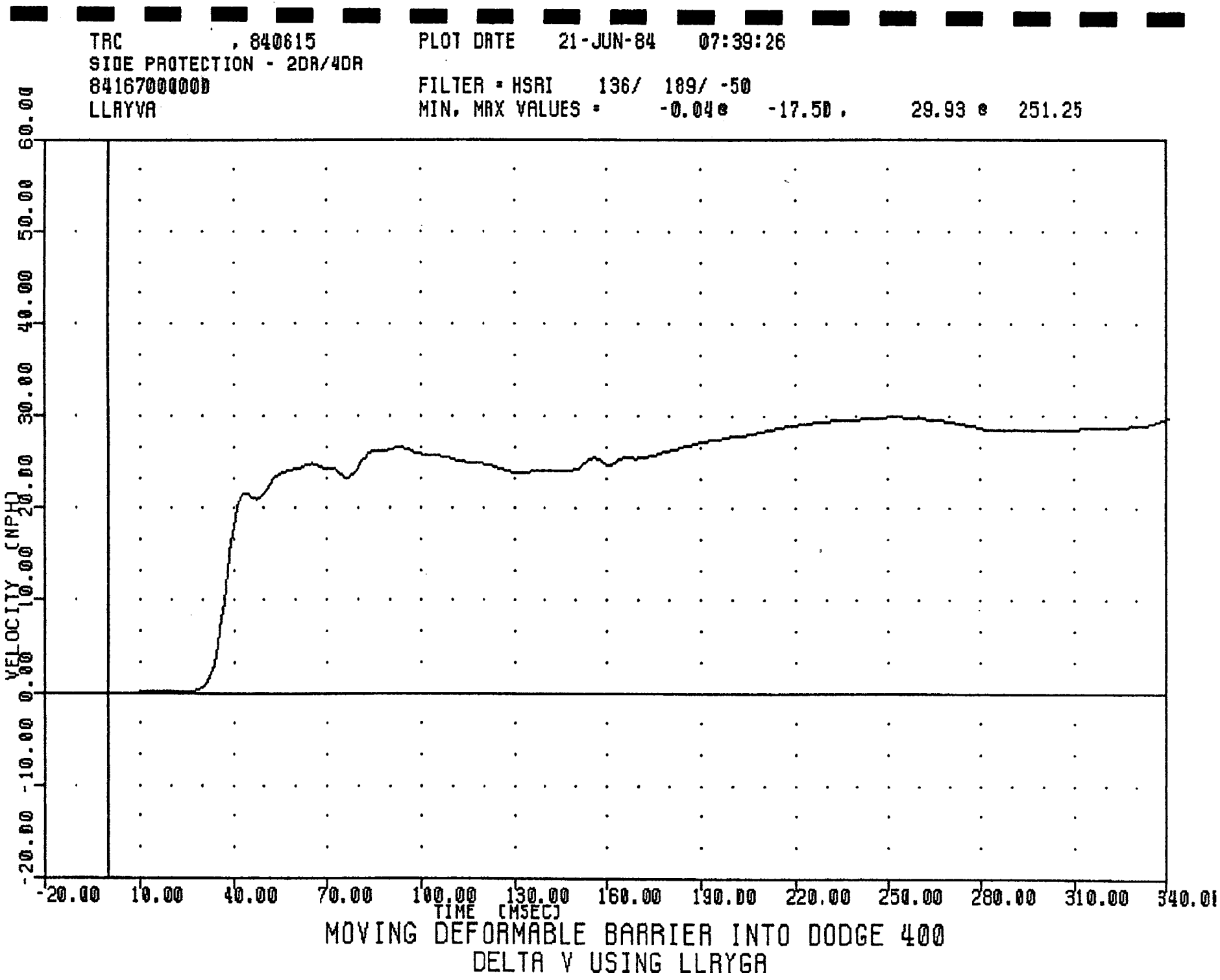

TRC , 840615
PLOT DATE 25-JUN-84 12:45:52
SIDE PROTECTION - 2DR/4DR
84167000000
FILTER = HSRI 136/ 189/ -50
LLAYG1
MIN. MAX VALUES = -16.79 @ 73.75 , 123.30 @ 37.50
360.00
270.00
180.00
90.00
0.00
-90.00
-180.00
-270.00
-360.00
ACCELERATION (G)
FAR SIDE IMPACT
-20.00
10.00
40.00
70.00
100.00
130.00
160.00
190.00
220.00
250.00
280.00
310.00
340.00
TIME (MSEC)
MOVING DEFORMABLE BARRIER INTO DODGE 400
DRIVER LEFT LOWER RIB ACCELERATION Y AXIS


TRC , 840615
PLOT DATE 21-JUN-84 07:39:26
SIDE PROTECTION - 2DR/4DR
84167000000
FILTER = HSRI 136/ 189/ -50
LLRYV1
MIN, MAX VALUES = -0.02 @ -18.13 , 30.40 @ 253.75
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
TIME (MSEC)
MOVING DEFORMABLE BARRIER INTO DODGE 400
DELTA V USING LLRYG1

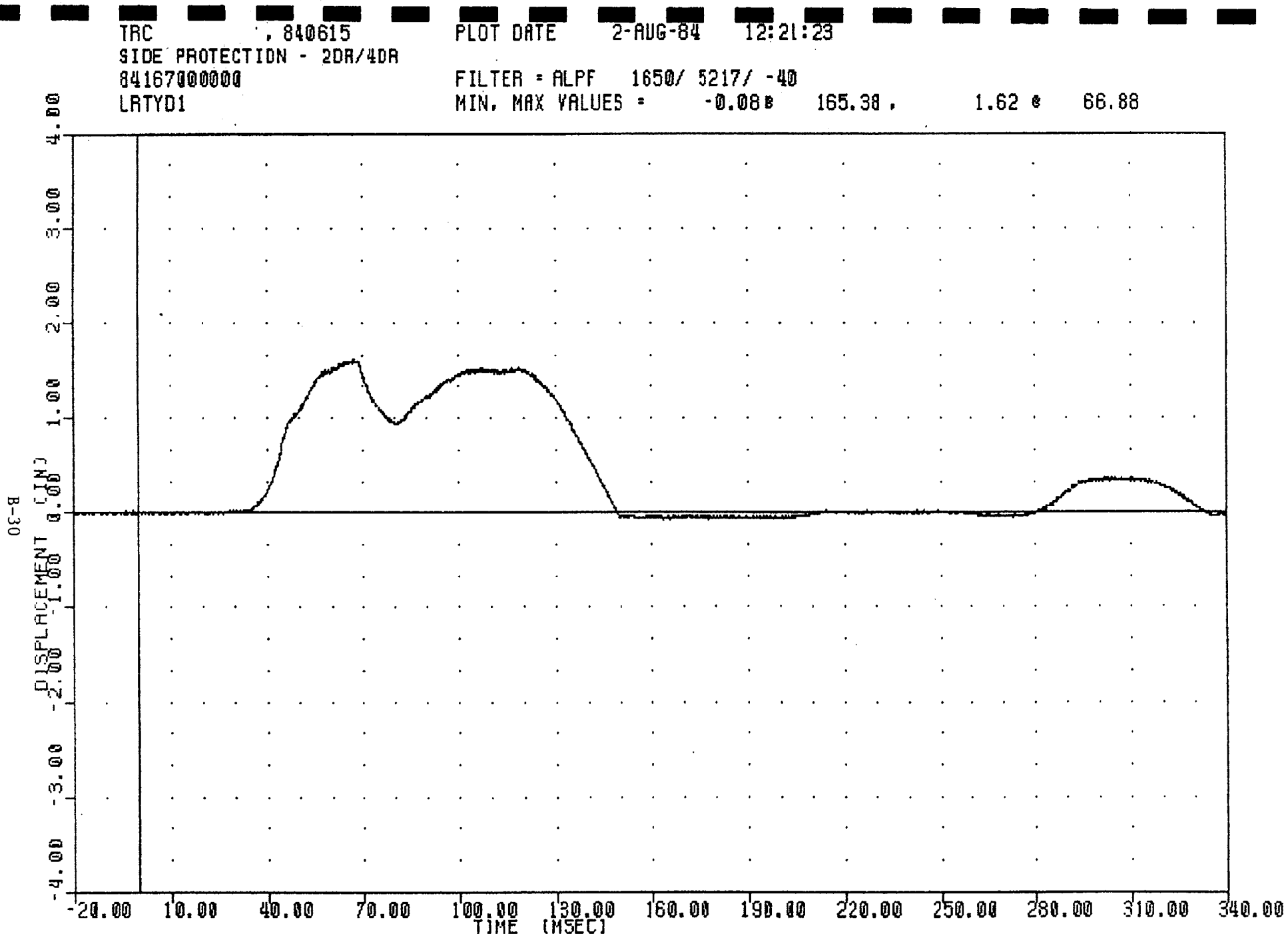
TRC , 840615 PLOT DATE 25-JUN-84 12:45:52
SIDE PROTECTION - 2DR/4DR
8416700000D0 FILTER = HSRI 136/ 189/ -50
LLRYBR MIN, MAX VALUES = -15.96 @ 73.75 , 125.81 @ 36.88



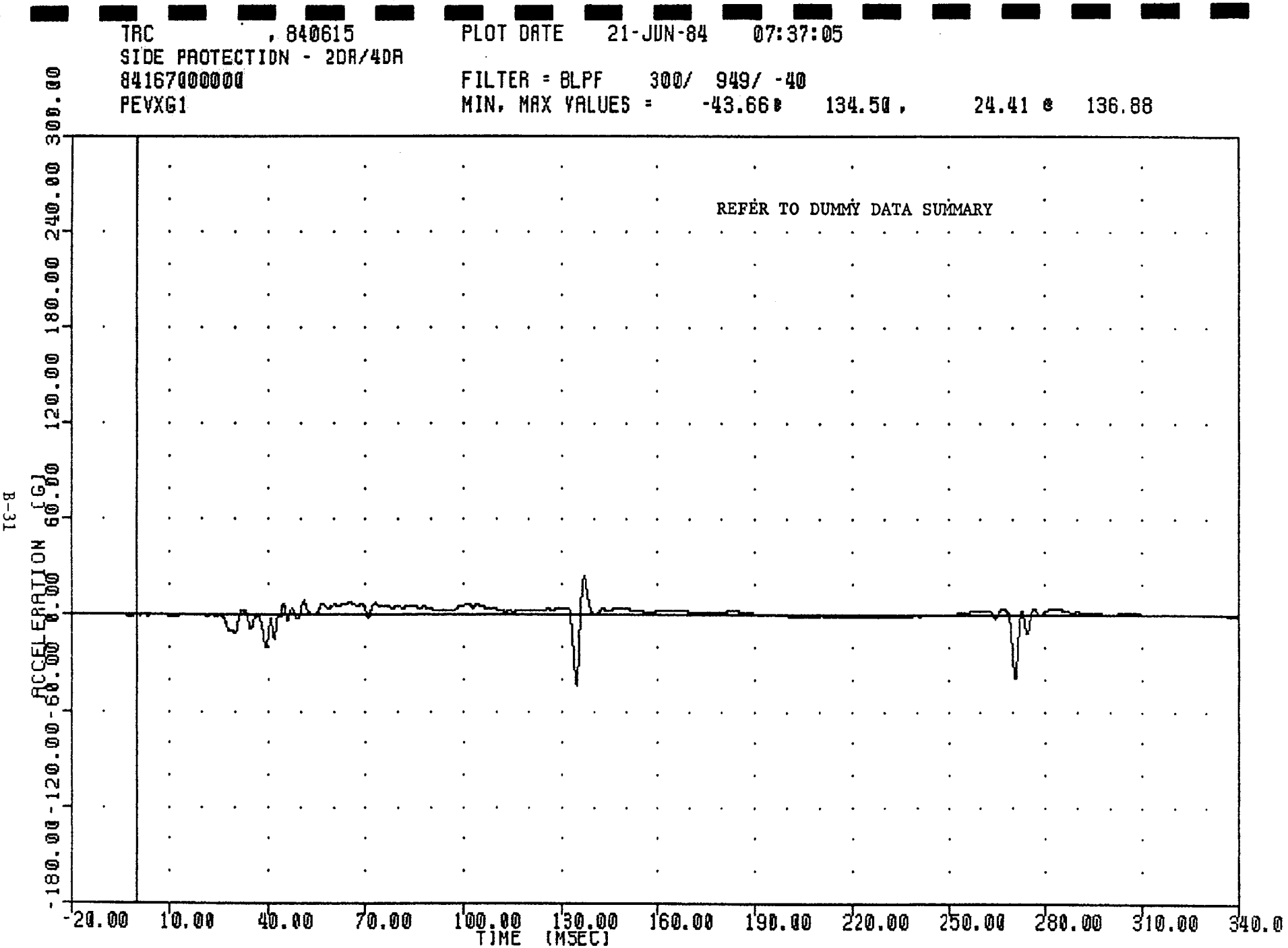
MOVING DEFORMABLE BARRIER INTO DODGE 400
DRIVER LEFT LOWER RIB ACCELERATION -2 Y AXIS



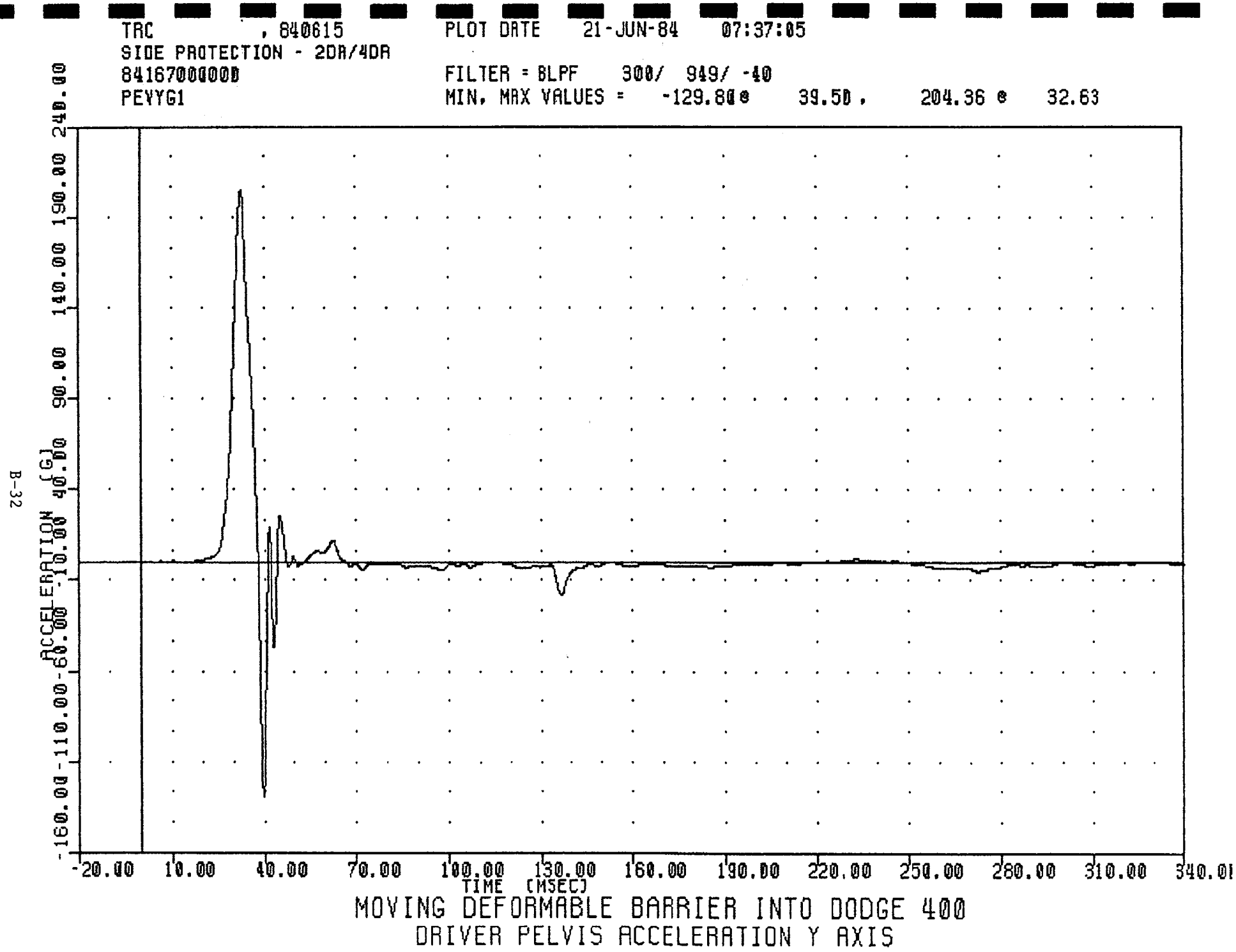
MOVING DEFORMABLE BARRIER INTO DODGE 400
DELTA V USING LLRYGA



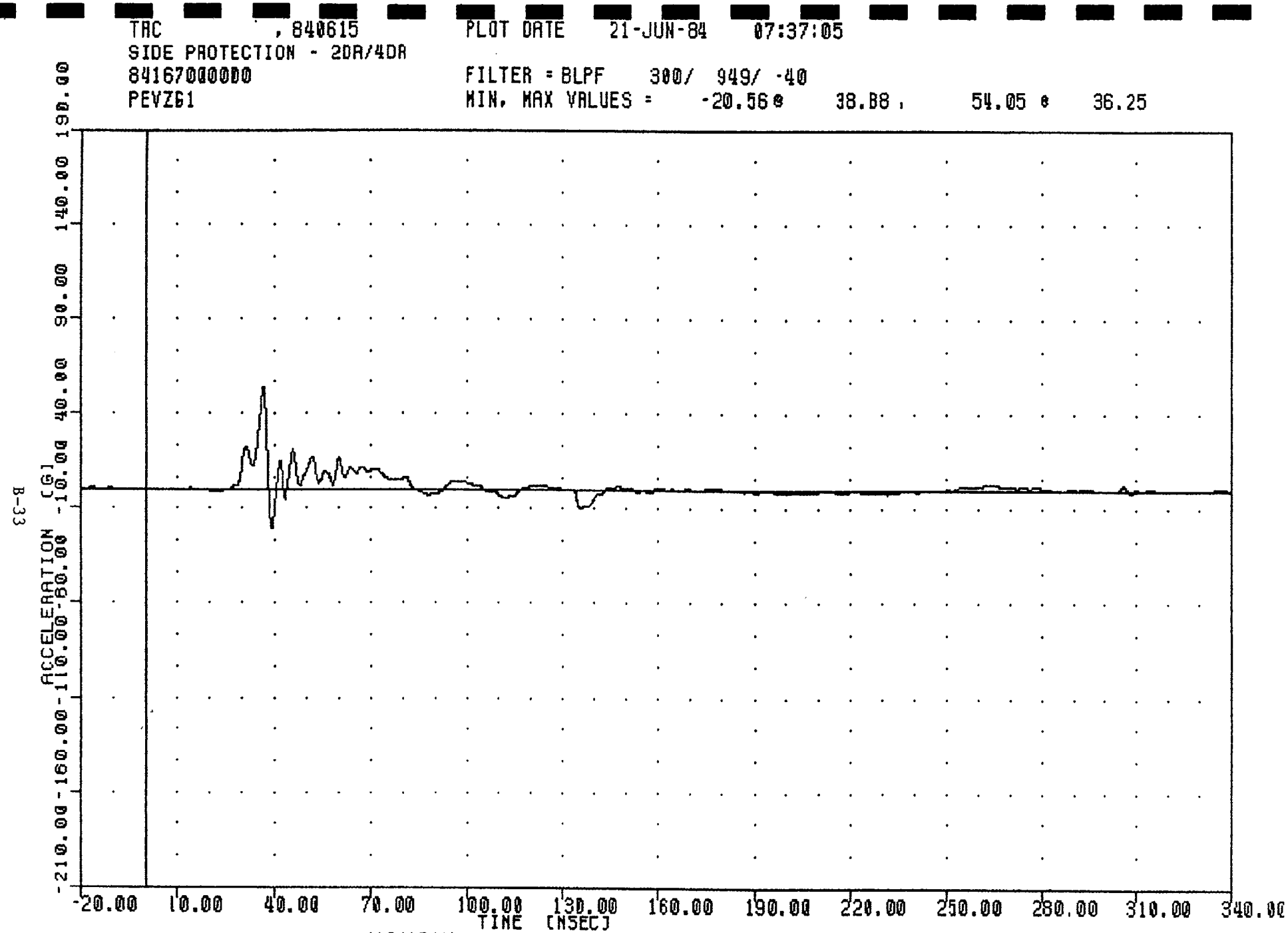
MOVING DEFORMABLE BARRIER INTO DODGE 400
DRIVER LEFT RIB TO SPINE DISPLACEMENT INCHES



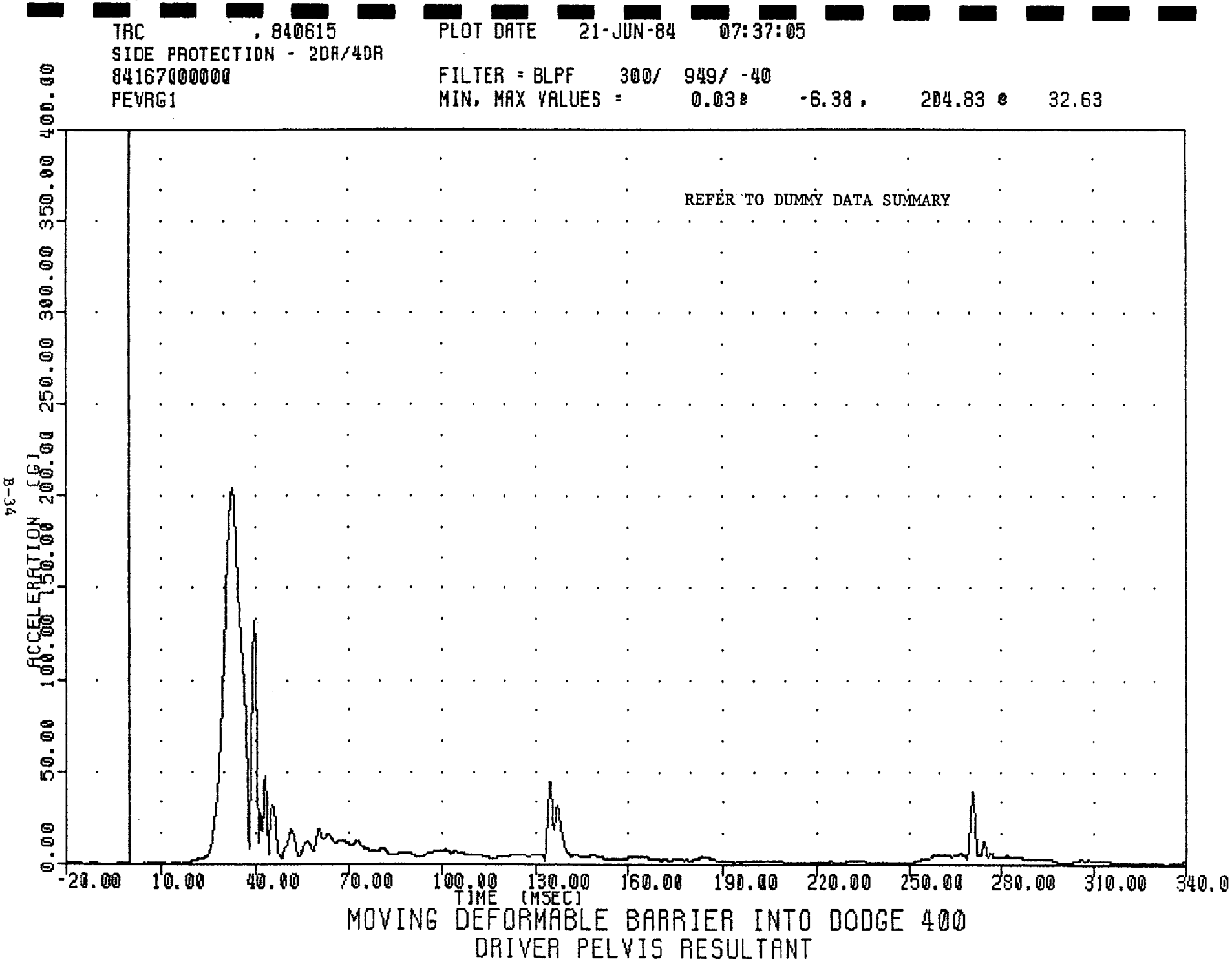
MOVING DEFORMABLE BARRIER INTO DODGE 400
DRIVER PELVIS ACCELERATION X AXIS



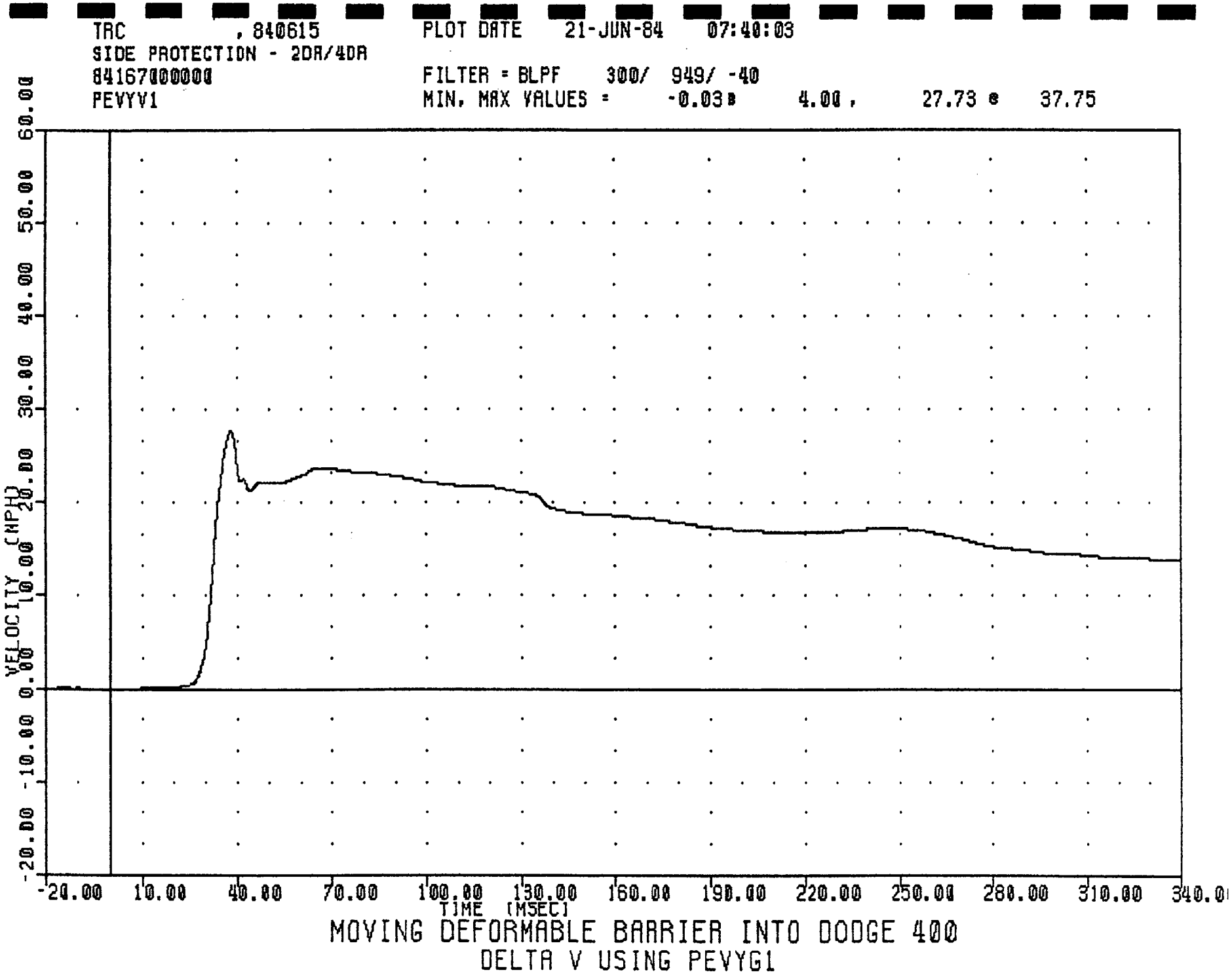
MOVING DEFORMABLE BARRIER INTO DODGE 400
DRIVER PELVIS ACCELERATION Y AXIS



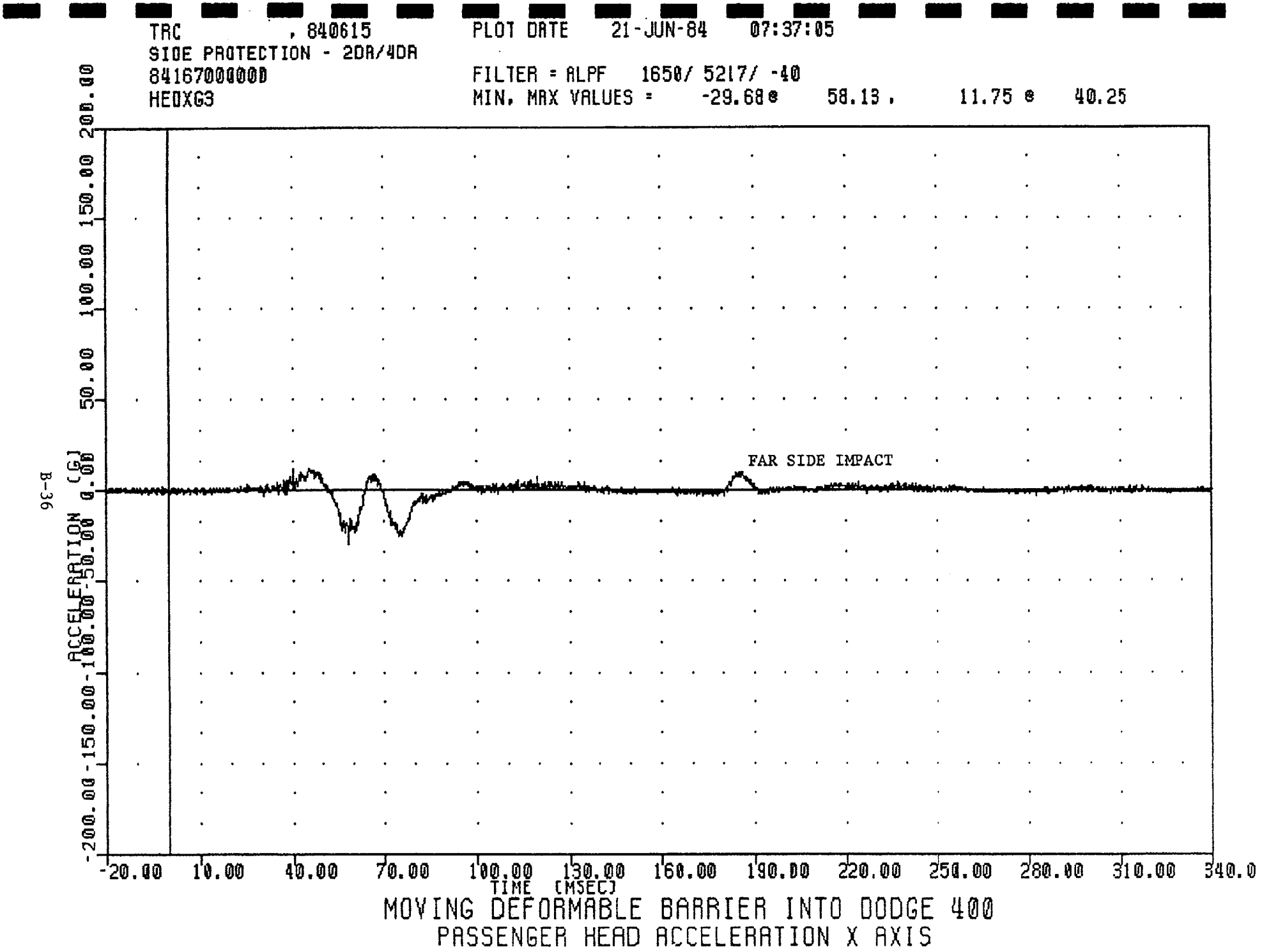
MOVING DEFORMABLE BARRIER INTO DODGE 400
DRIVER PELVIS ACCELERATION Z AXIS



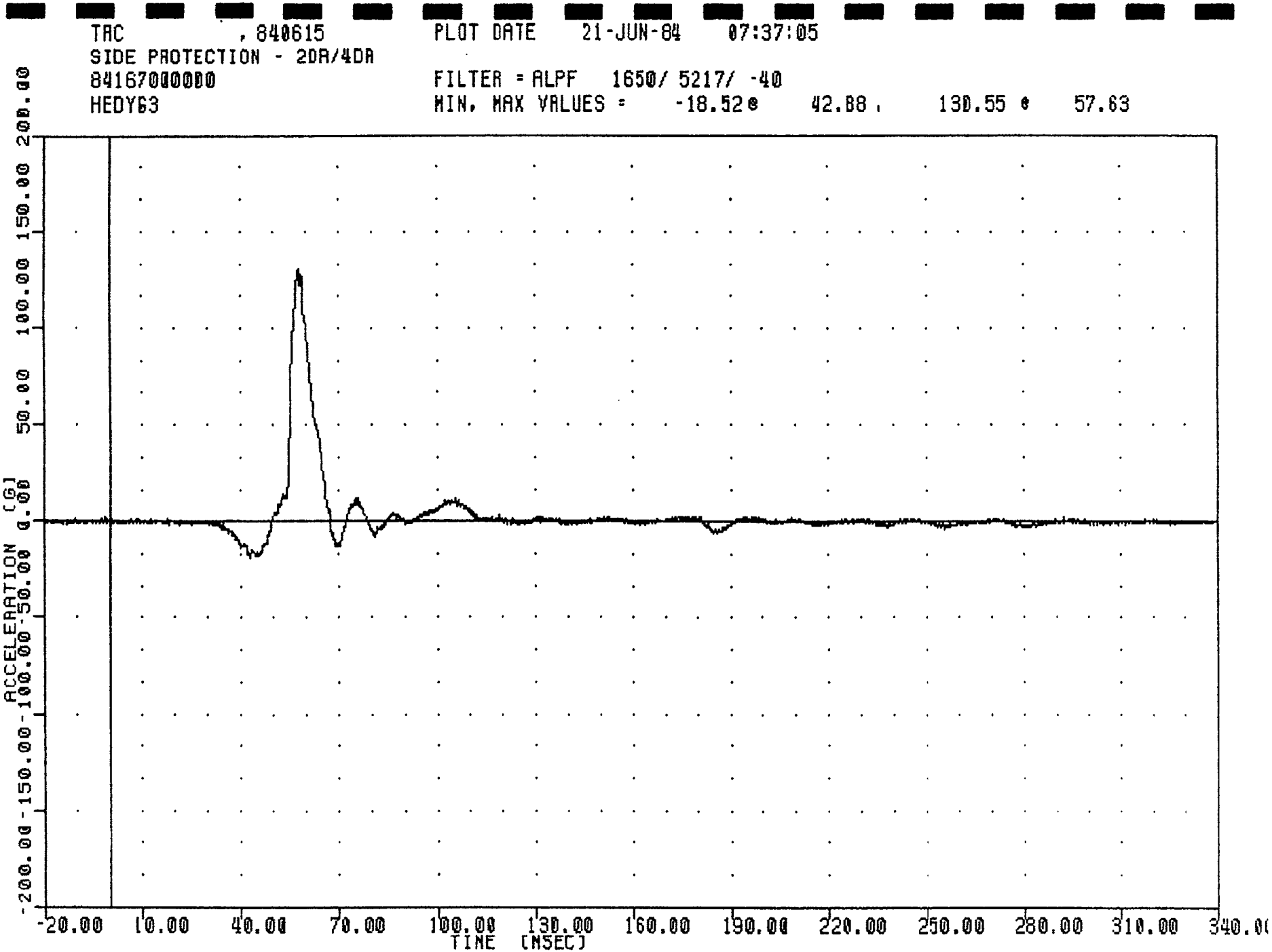
MOVING DEFORMABLE BARRIER INTO DODGE 400
DRIVER PELVIS RESULTANT



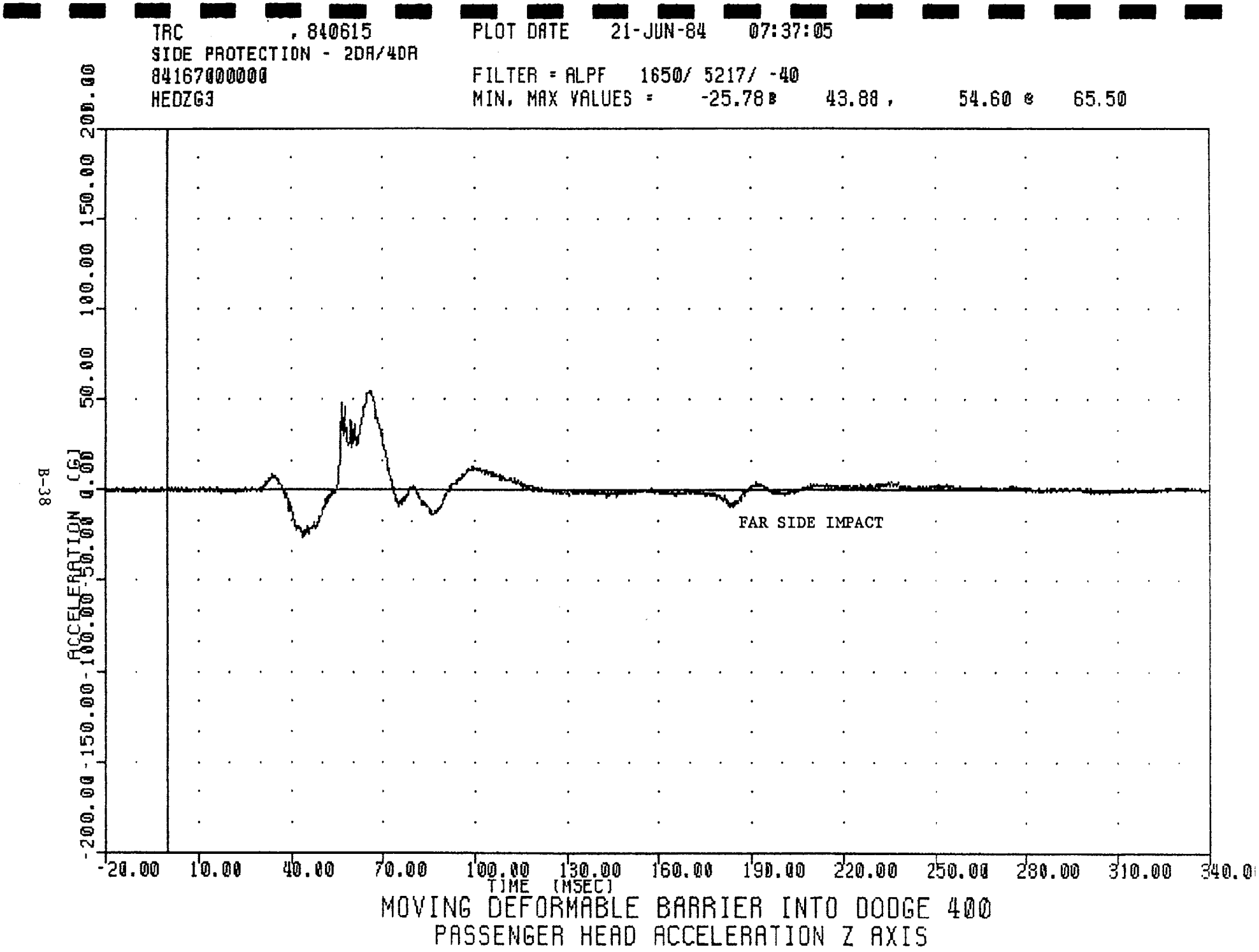
MOVING DEFORMABLE BARRIER INTO DODGE 400
DELTA V USING PEVYG1



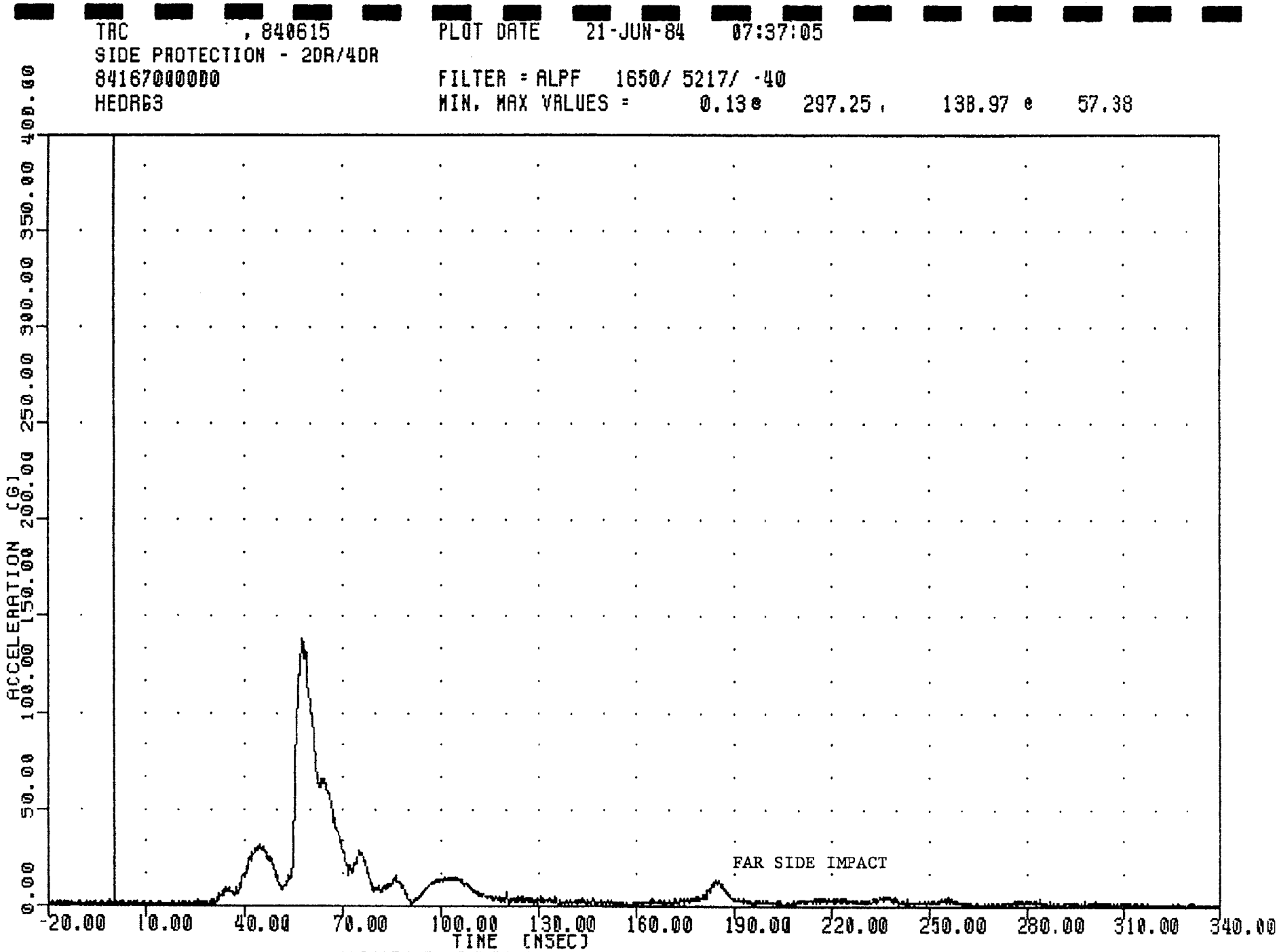
MOVING DEFORMABLE BARRIER INTO DODGE 400
PASSENGER HEAD ACCELERATION X AXIS



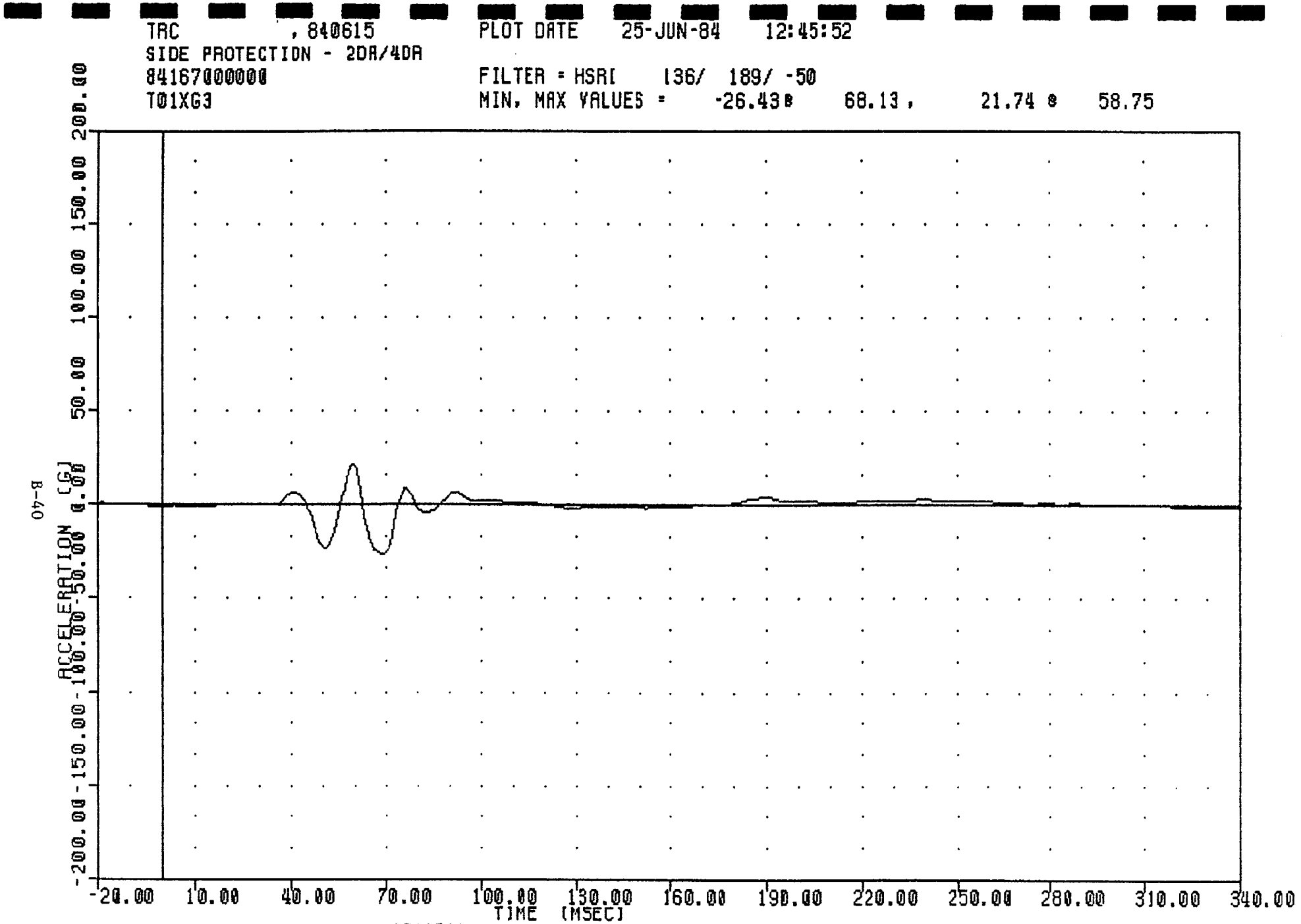
MOVING DEFORMABLE BARRIER INTO DODGE 400
PASSENGER HEAD ACCELERATION Y AXIS



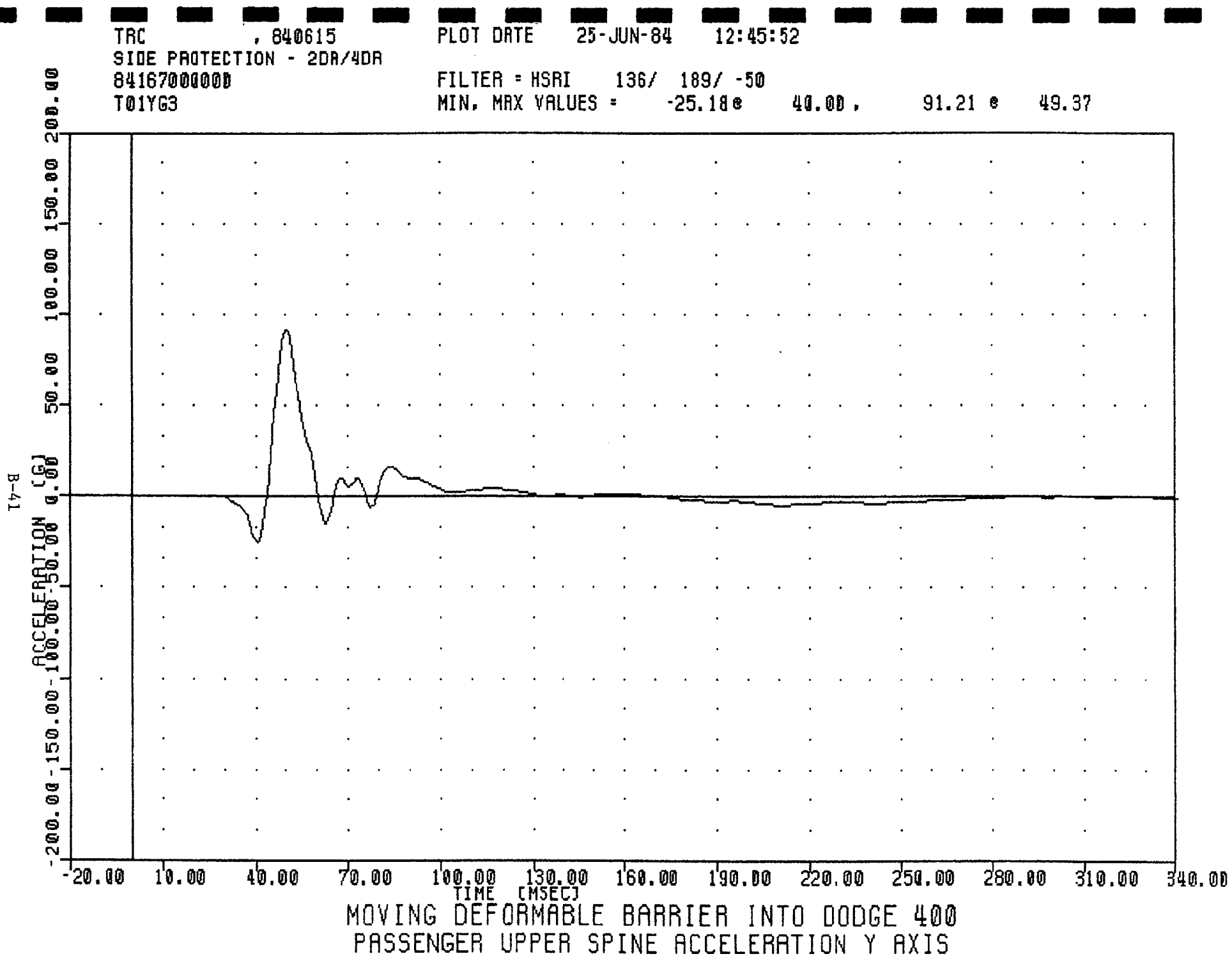
MOVING DEFORMABLE BARRIER INTO DODGE 400
PASSENGER HEAD ACCELERATION Z AXIS



MOVING DEFORMABLE BARRIER INTO DODGE 400
PASSENGER HEAD RESULTANT

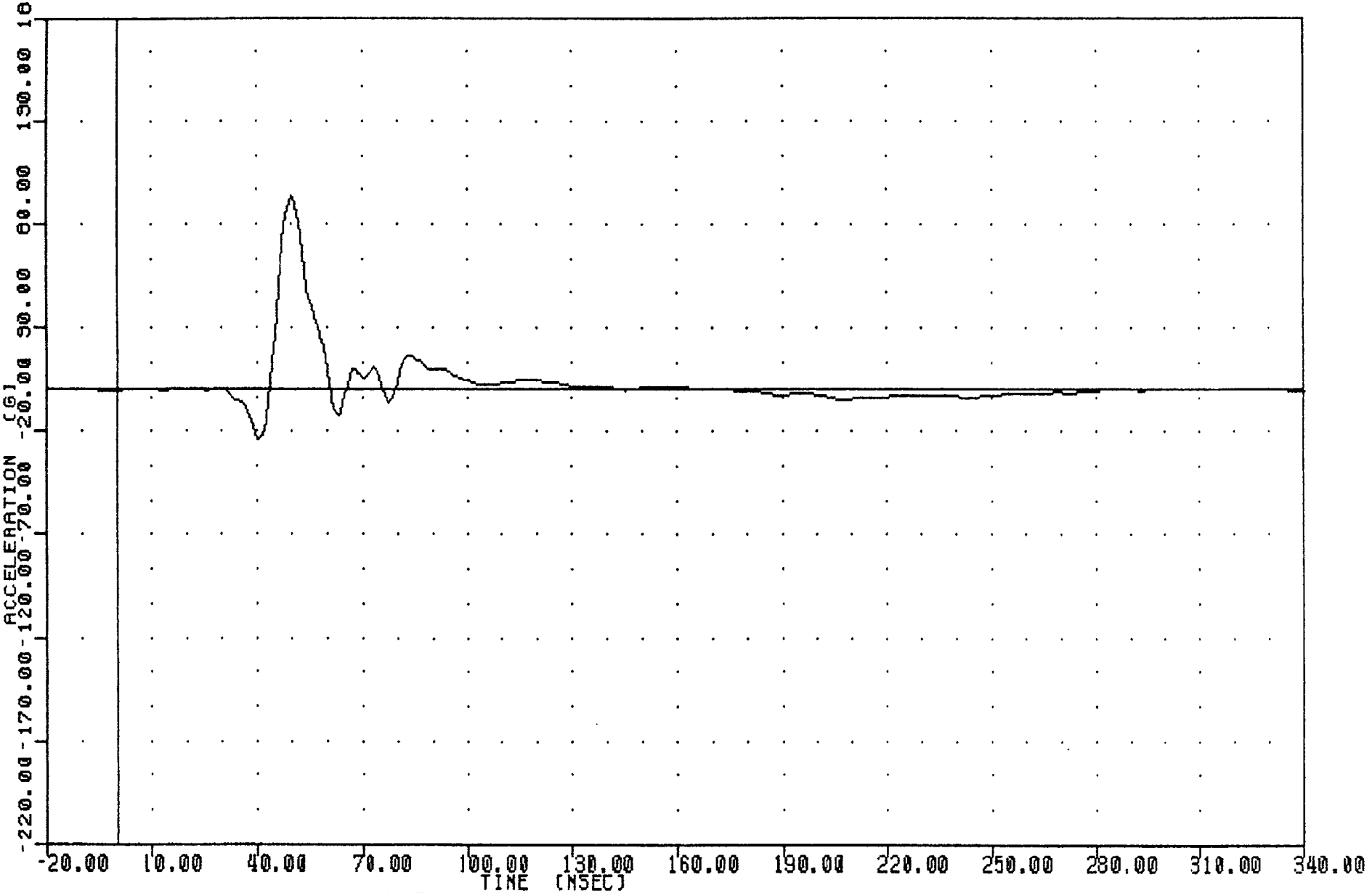


MOVING DEFORMABLE BARRIER INTO DODGE 400
PASSENGER UPPER SPINE ACCELERATION X AXIS

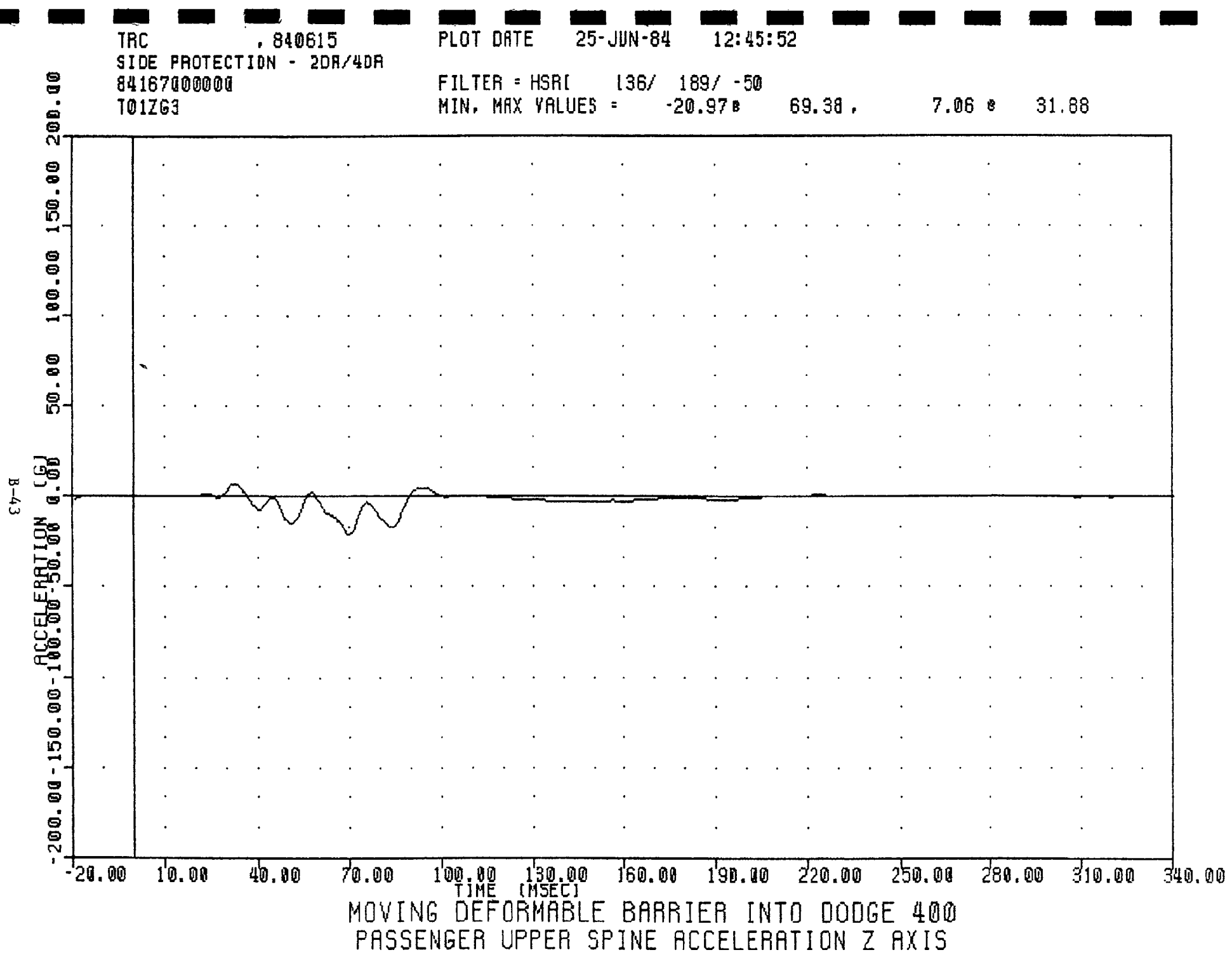


MOVING DEFORMABLE BARRIER INTO DODGE 400
PASSENGER UPPER SPINE ACCELERATION Y AXIS

TRC , 840615 PLOT DATE 25-JUN-84 12:45:52
SIDE PROTECTION - 2DR/4DR
84167000000 FILTER = HSRI 136/ 189/ -50
T01Y6C MIN, MAX VALUES = -24.27 @ 40.00 , 93.53 @ 49.37

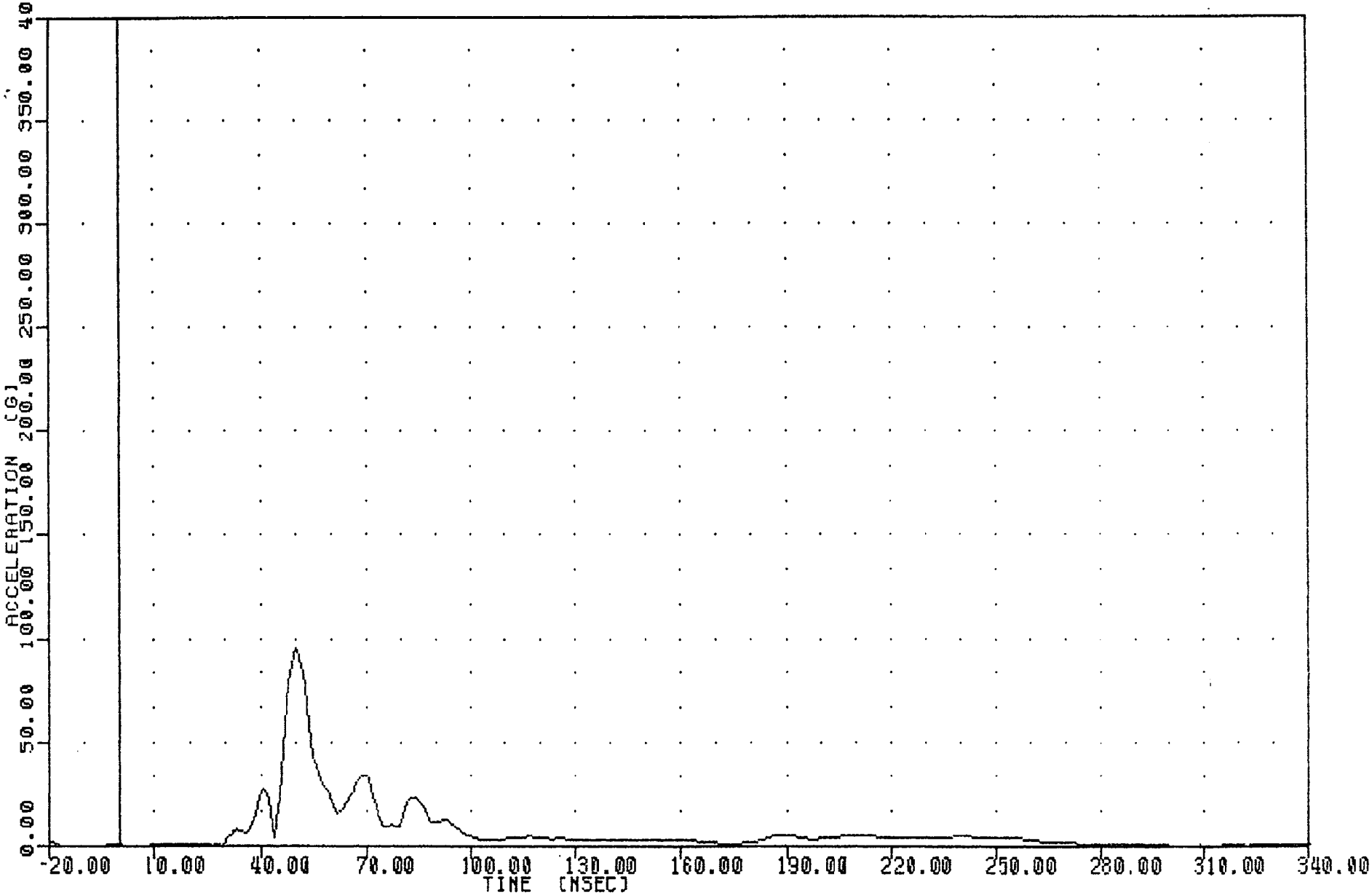


MOVING DEFORMABLE BARRIER INTO DODGE 400
PASSENGER UPPER SPINE ACCELERATION -2 Y AXIS

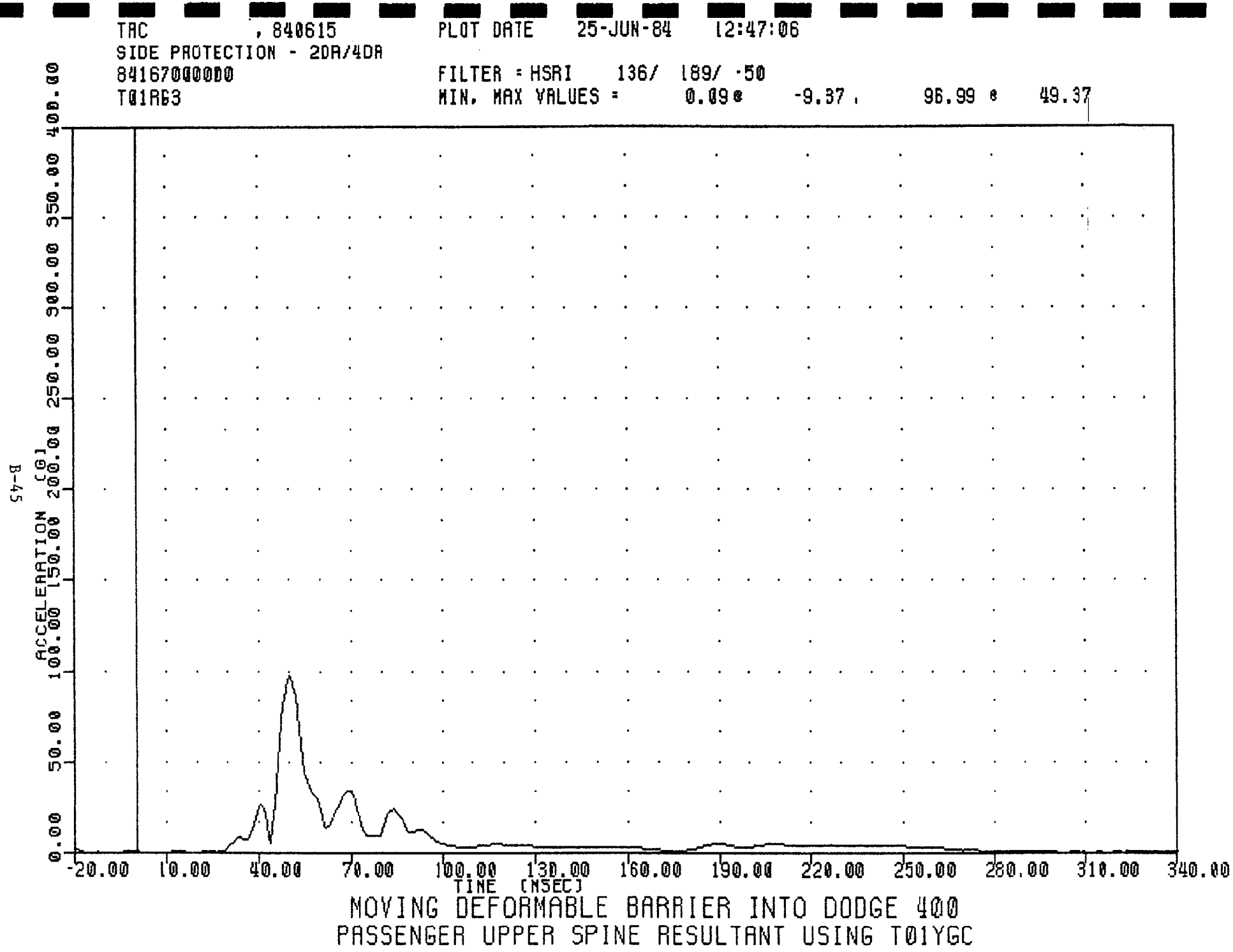


MOVING DEFORMABLE BARRIER INTO DODGE 400
PASSENGER UPPER SPINE ACCELERATION Z AXIS

TAC , 840615 PLOT DATE 25-JUN-84 12:45:52
SIDE PROTECTION - 2DA/4DA
84167000000 FILTER = HSRI 136/ 189/ -50
T01R63 MIN, MAX VALUES = 0.06 @ 301.88 , 94.75 @ 49.37

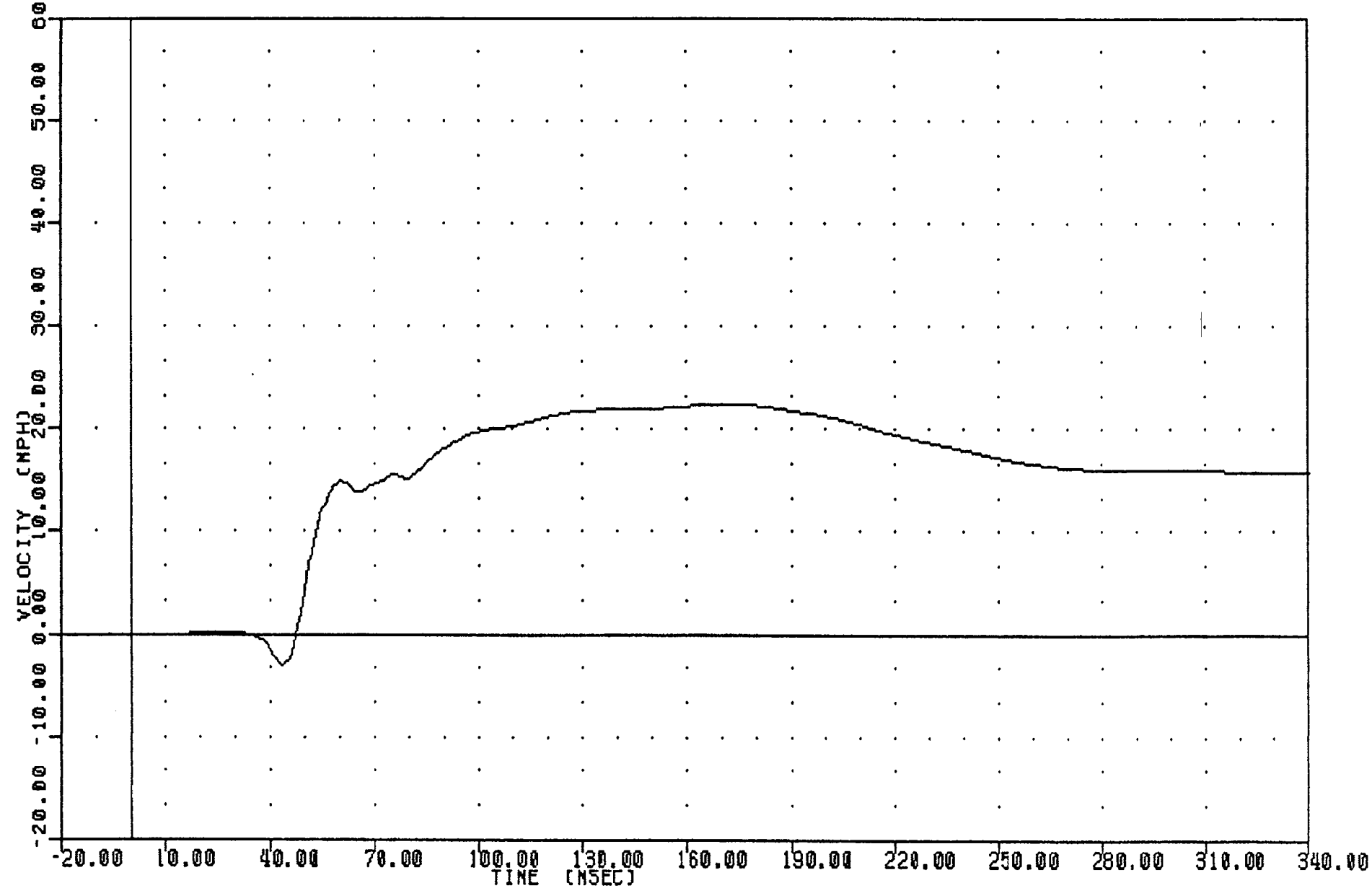


MOVING DEFORMABLE BARRIER INTO DODGE 400
PASSENGER UPPER SPINE RESULTANT



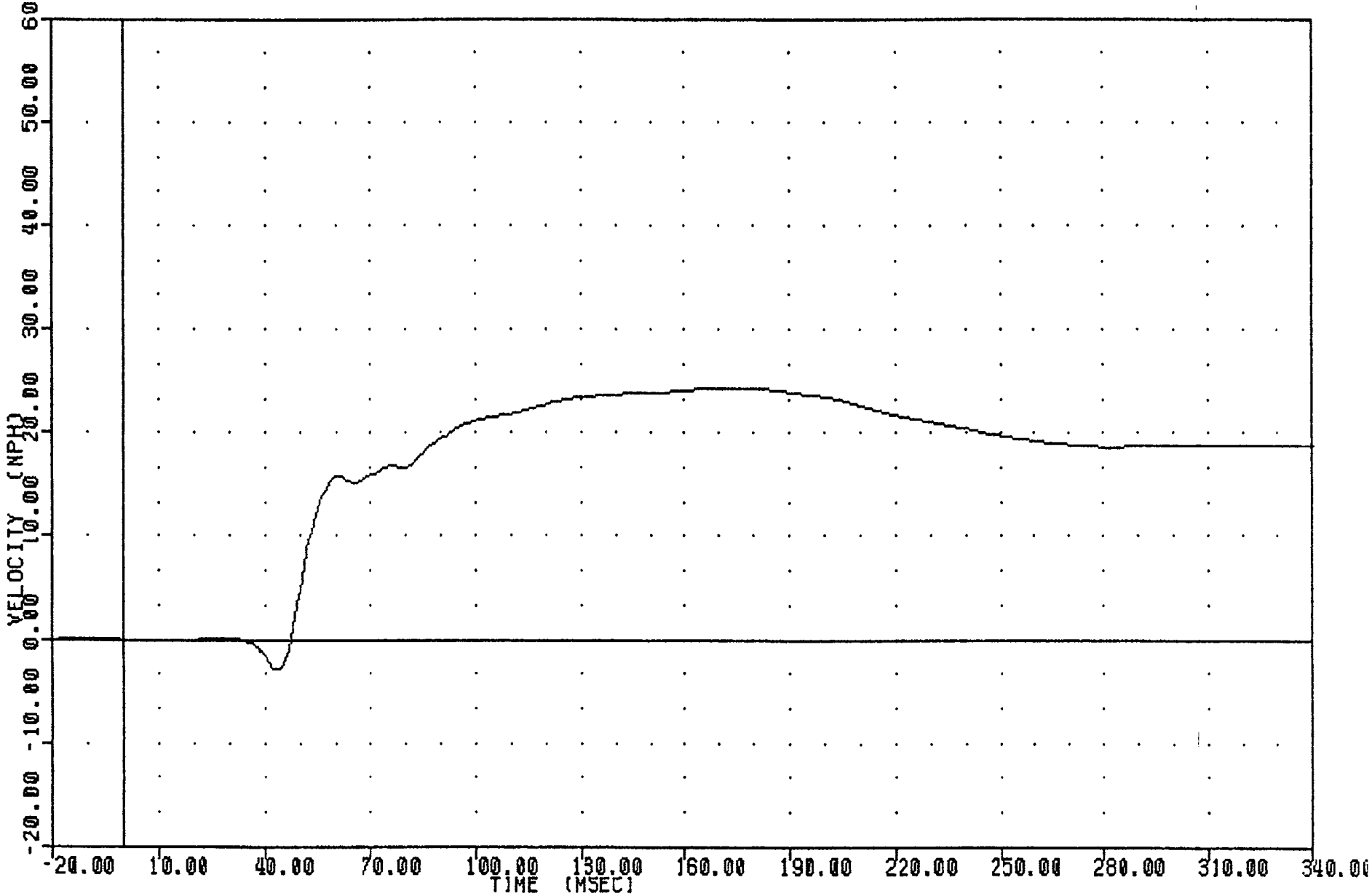
MOVING DEFORMABLE BARRIER INTO DODGE 400
PASSENGER UPPER SPINE RESULTANT USING T01YGC

TRC , 840615 PLOT DATE 21-JUN-84 07:39:26
SIDE PROTECTION - 2DR/4DR
84167000000 FILTER = HSRI 136/ 189/ -50
TQ1YV3 MIN, MAX VALUES = -3.03 @ 43.13 , 22.43 @ 171.25

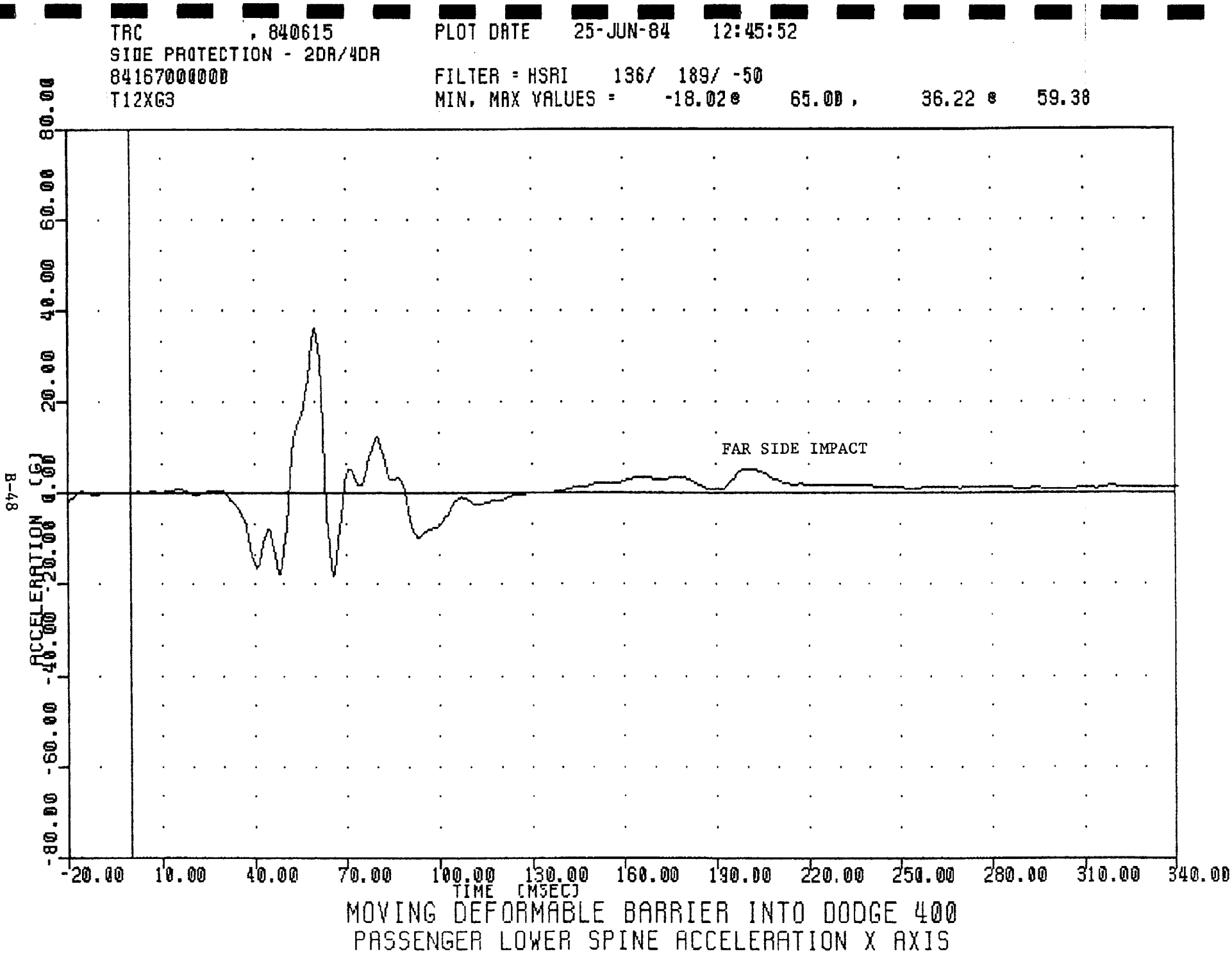


MOVING DEFORMABLE BARRIER INTO DODGE 400
DELTA V USING T01YG3

TRC , 840615 PLOT DATE 21-JUN-84 07:39:26
SIDE PROTECTION - 2DR/4DR
84167000000 FILTER = HSRI 136/ 189/ -50
T01YVC MIN, MAX VALUES = -2.95 @ 43.13 , 24.33 @ 175.00

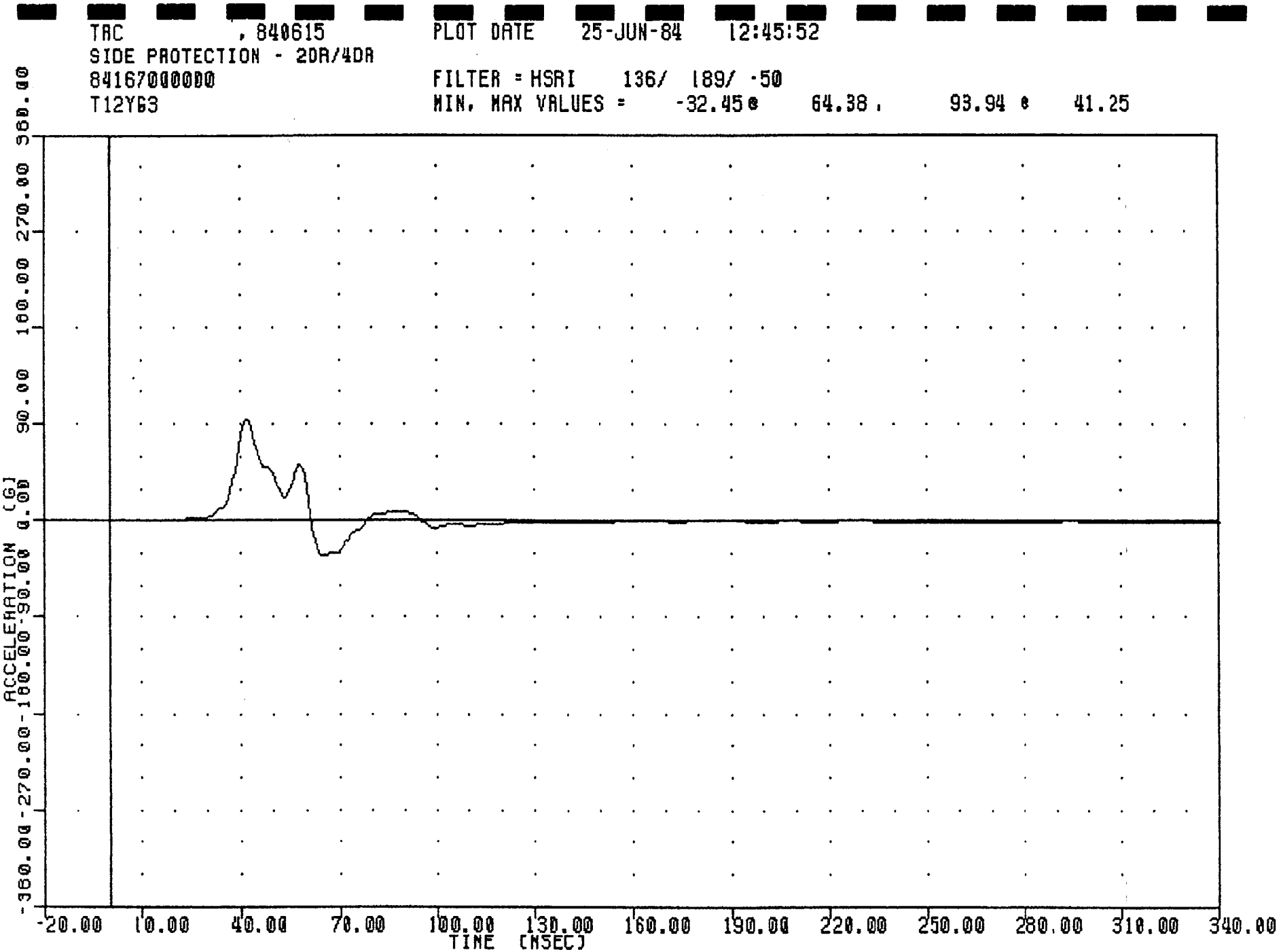


MOVING DEFORMABLE BARRIER INTO DODGE 400
DELTA V USING T01YGC



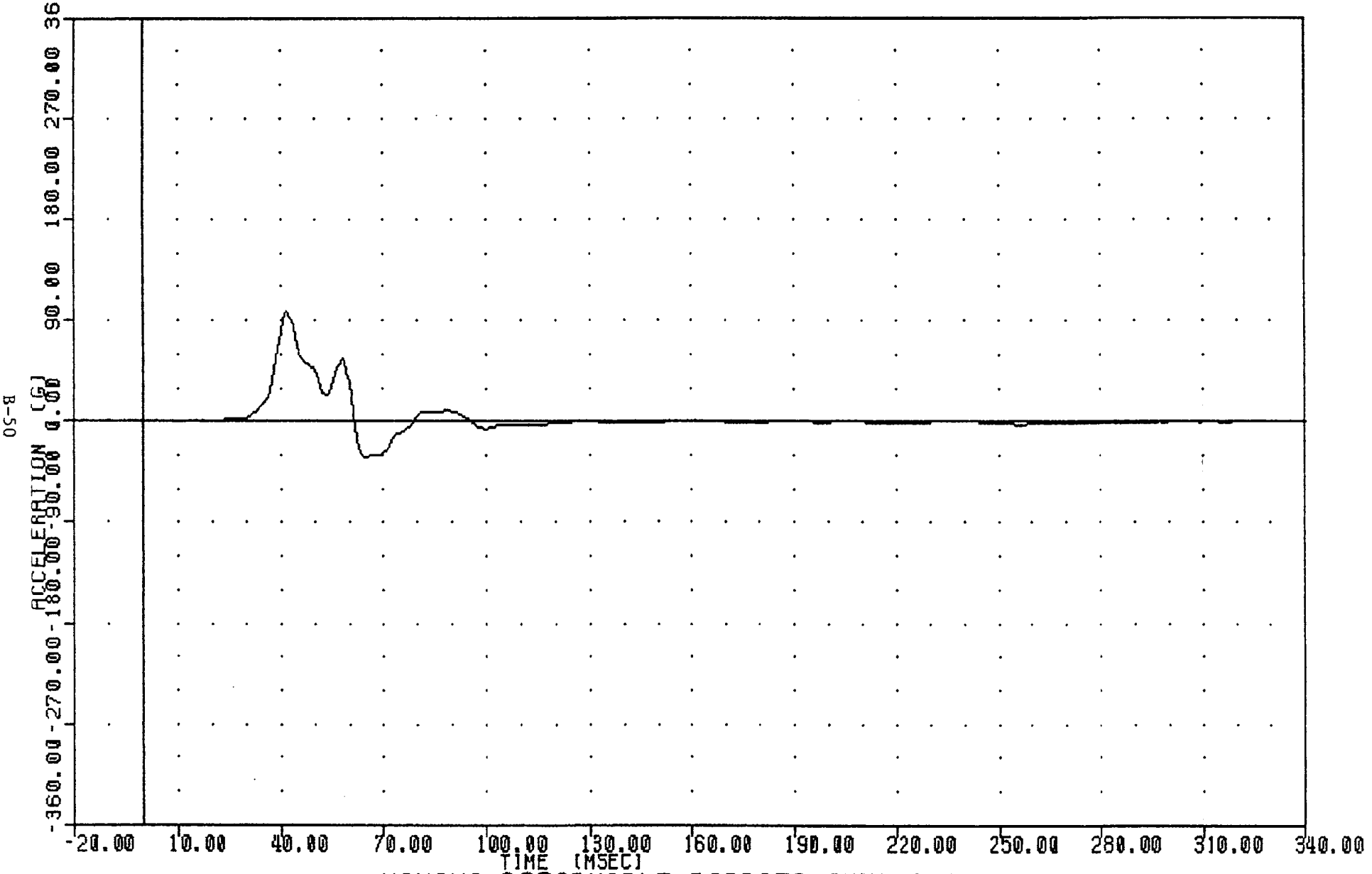
MOVING DEFORMABLE BARRIER INTO DODGE 400

PASSENGER LOWER SPINE ACCELERATION X AXIS

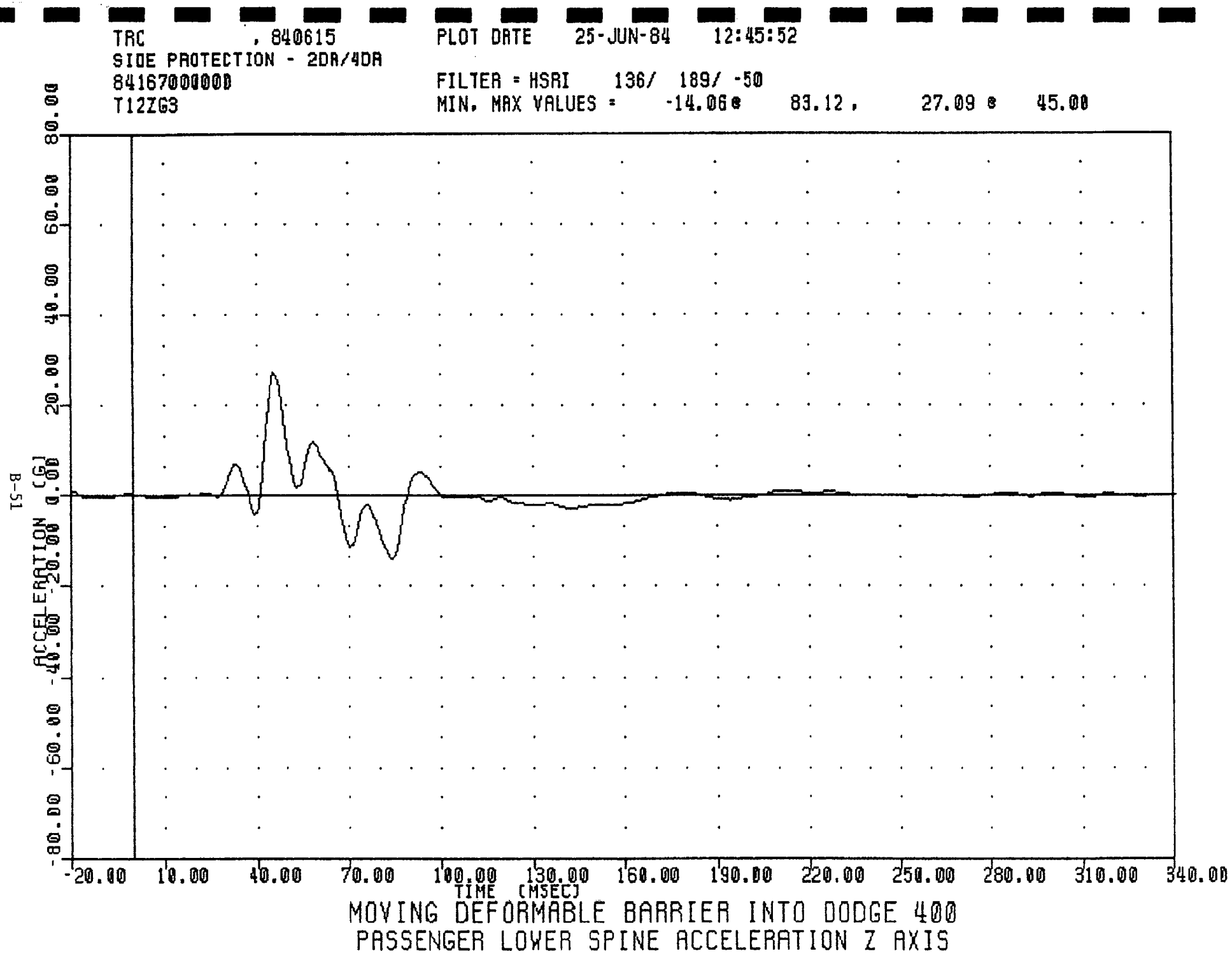


MOVING DEFORMABLE BARRIER INTO DODGE 400
PASSENGER LOWER SPINE ACCELERATION Y AXIS

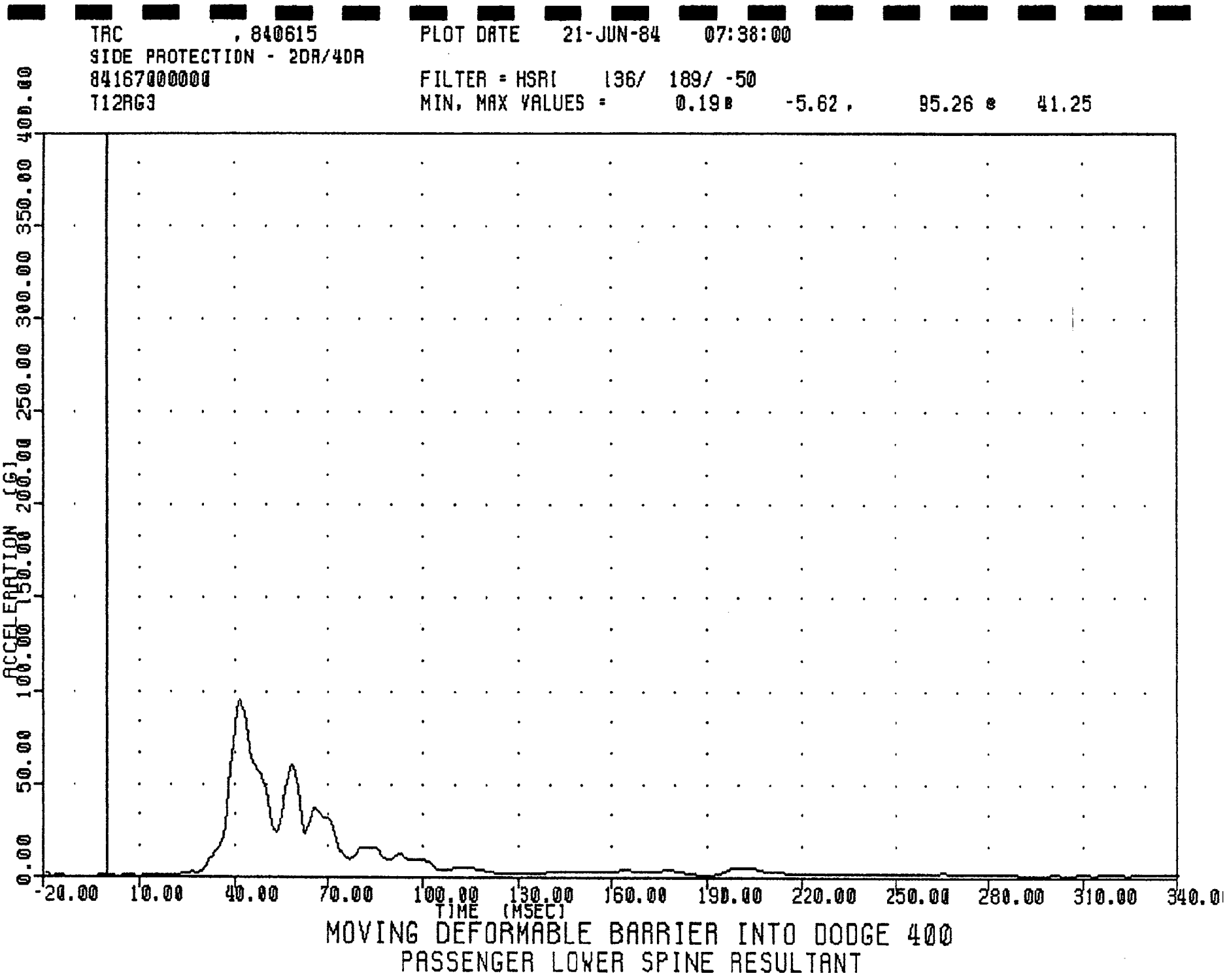
TRC , 840615 PLOT DATE 25-JUN-84 12:45:52
SIDE PROTECTION - 2DR/4DR
8416700000 FILTER = HSRI 136/ 189/ -50
T12YGC MIN, MAX VALUES = -32.33 @ 64.38 , 97.07 @ 41.25



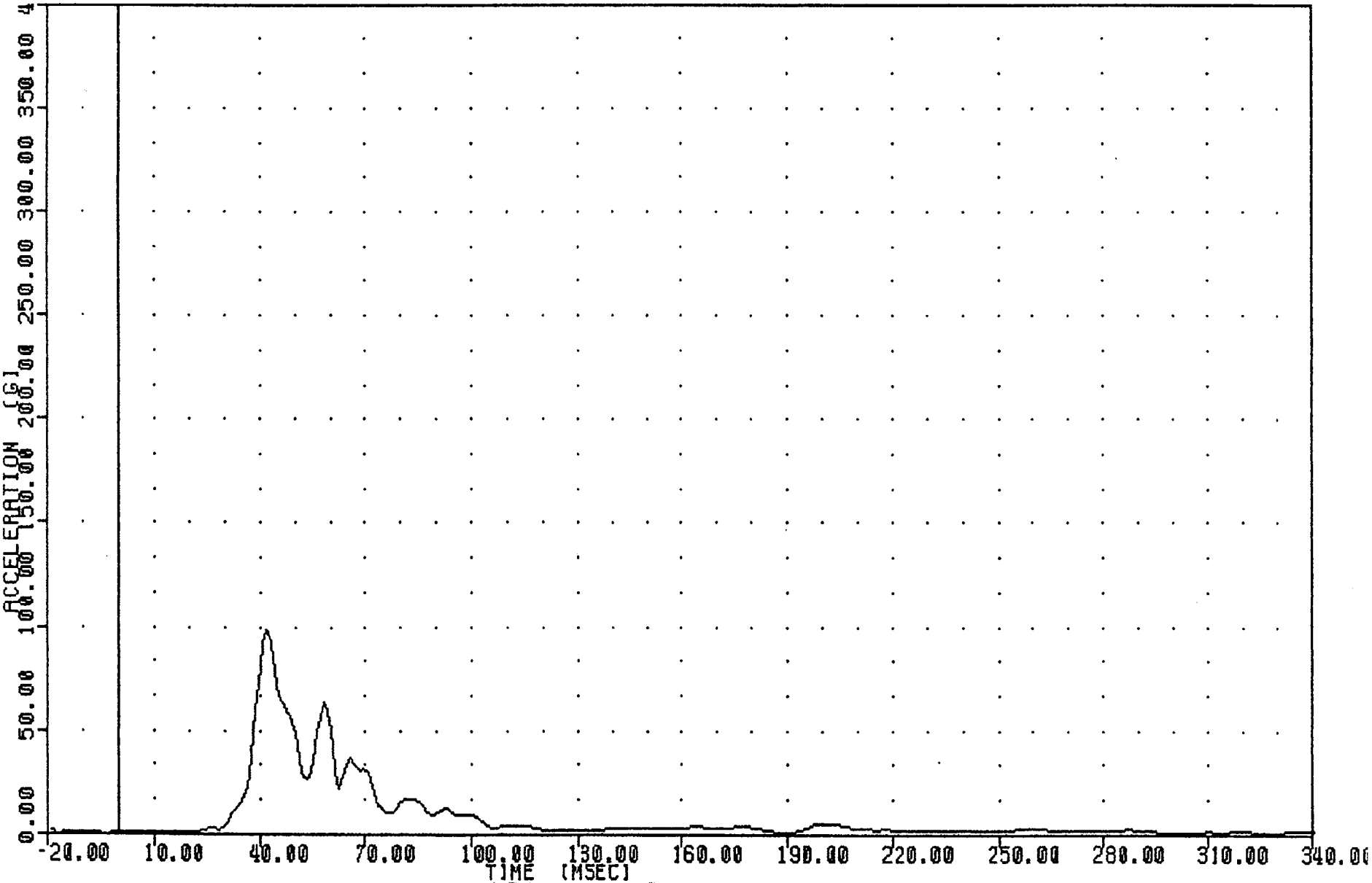
MOVING DEFORMABLE BARRIER INTO DODGE 400
PASSENGER LOWER SPINE ACCELERATION -2 Y AXIS



MOVING DEFORMABLE BARRIER INTO DODGE 400
PASSENGER LOWER SPINE ACCELERATION Z AXIS

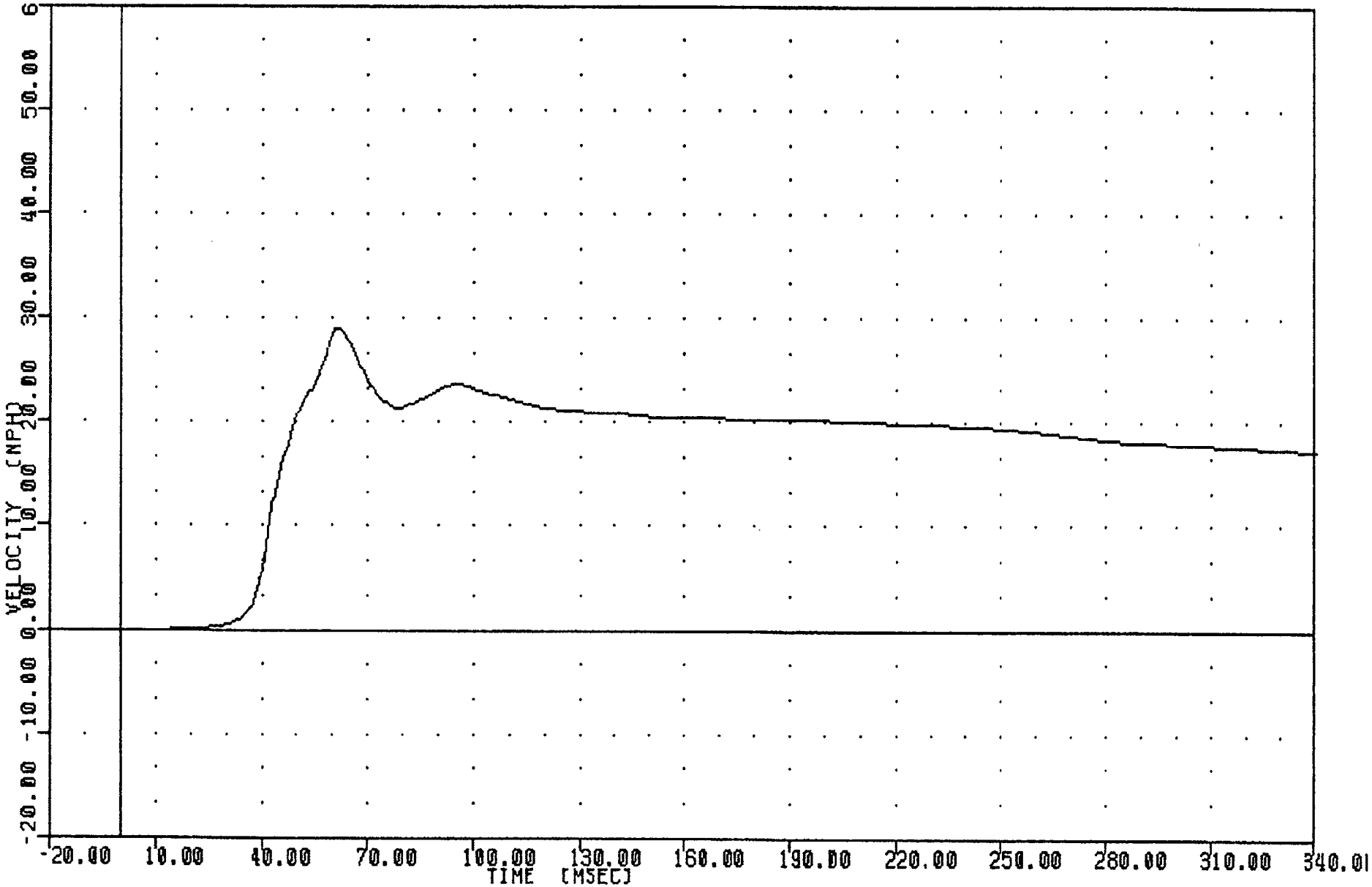

TRC , 840615
PLOT DATE 21-JUN-84 07:38:00
SIDE PROTECTION - 2DR/4DR
84167000000
FILTER = HSRI 136/ 189/ -50
T12RG3
MIN, MAX VALUES = 0.19 @ -5.62 , 95.26 @ 41.25
ACCELERATION [G]
0.00
50.00
100.00
150.00
200.00
250.00
300.00
350.00
400.00
-20.00
10.00
40.00
70.00
100.00
130.00
160.00
190.00
220.00
250.00
280.00
310.00
340.00
TIME (MSEC)
MOVING DEFORMABLE BARRIER INTO DODGE 400
PASSENGER LOWER SPINE RESULTANT

TRC , 840615 PLOT DATE 21-JUN-84 07:39:02
SIDE PROTECTION - 2DR/4DR
84167000000 FILTER = HSRI 136/ 189/ -50
T12RG3 MIN, MAX VALUES = 0.13 @ -17.50 , 98.35 @ 41.25



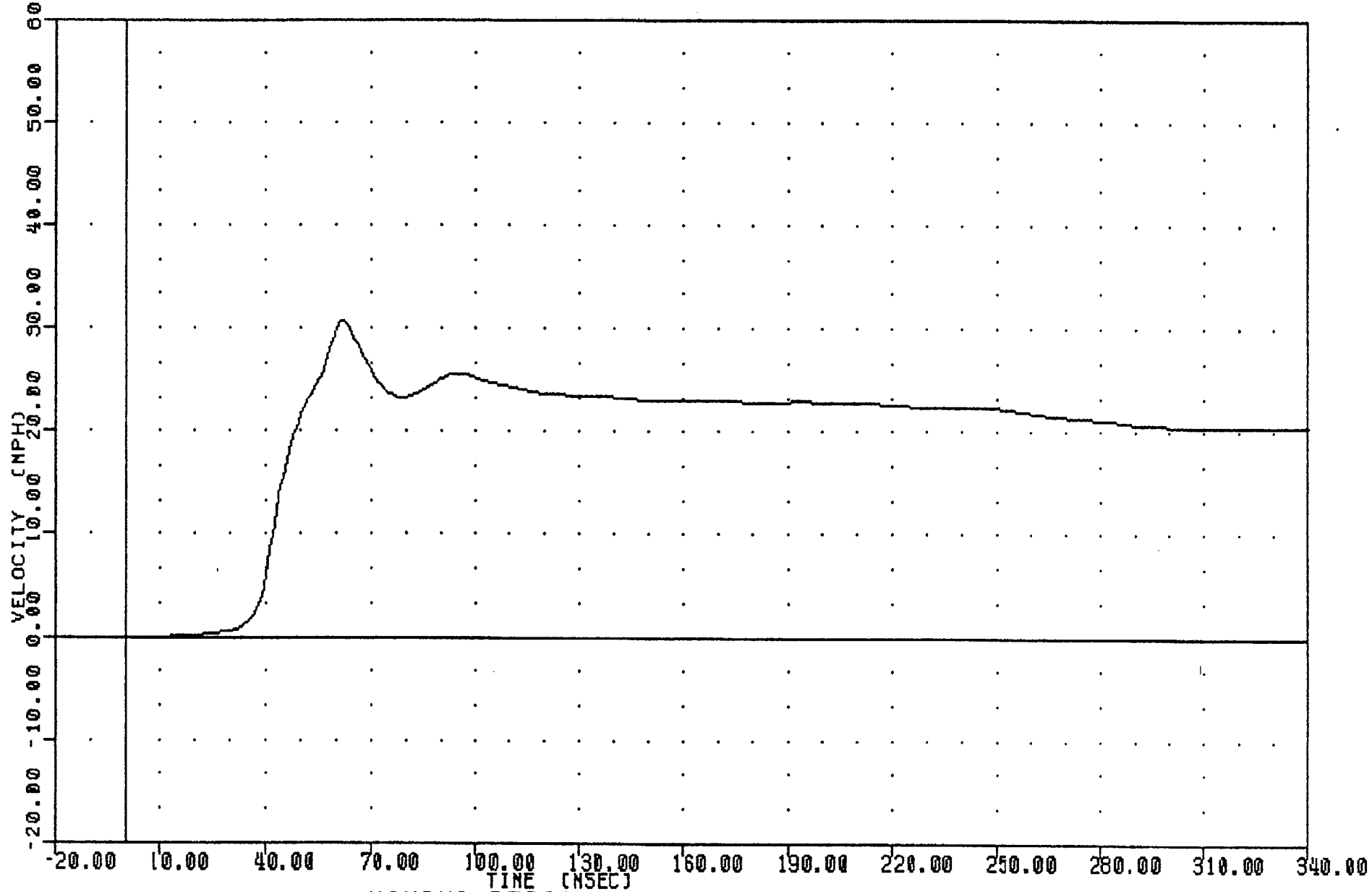
MOVING DEFORMABLE BARRIER INTO DODGE 400
PASSENGER LOWER SPINE RESULTANT USING T12YGC

TRC , 840615 PLOT DATE 21-JUN-84 07:39:26
SIDE PROTECTION - 2DR/4DR
84167000000 FILTER = HSRI 136/ 189/ -50
T12YV3 MIN. MAX VALUES = -0.02 @ -8.75 , 29.02 @ 60.62

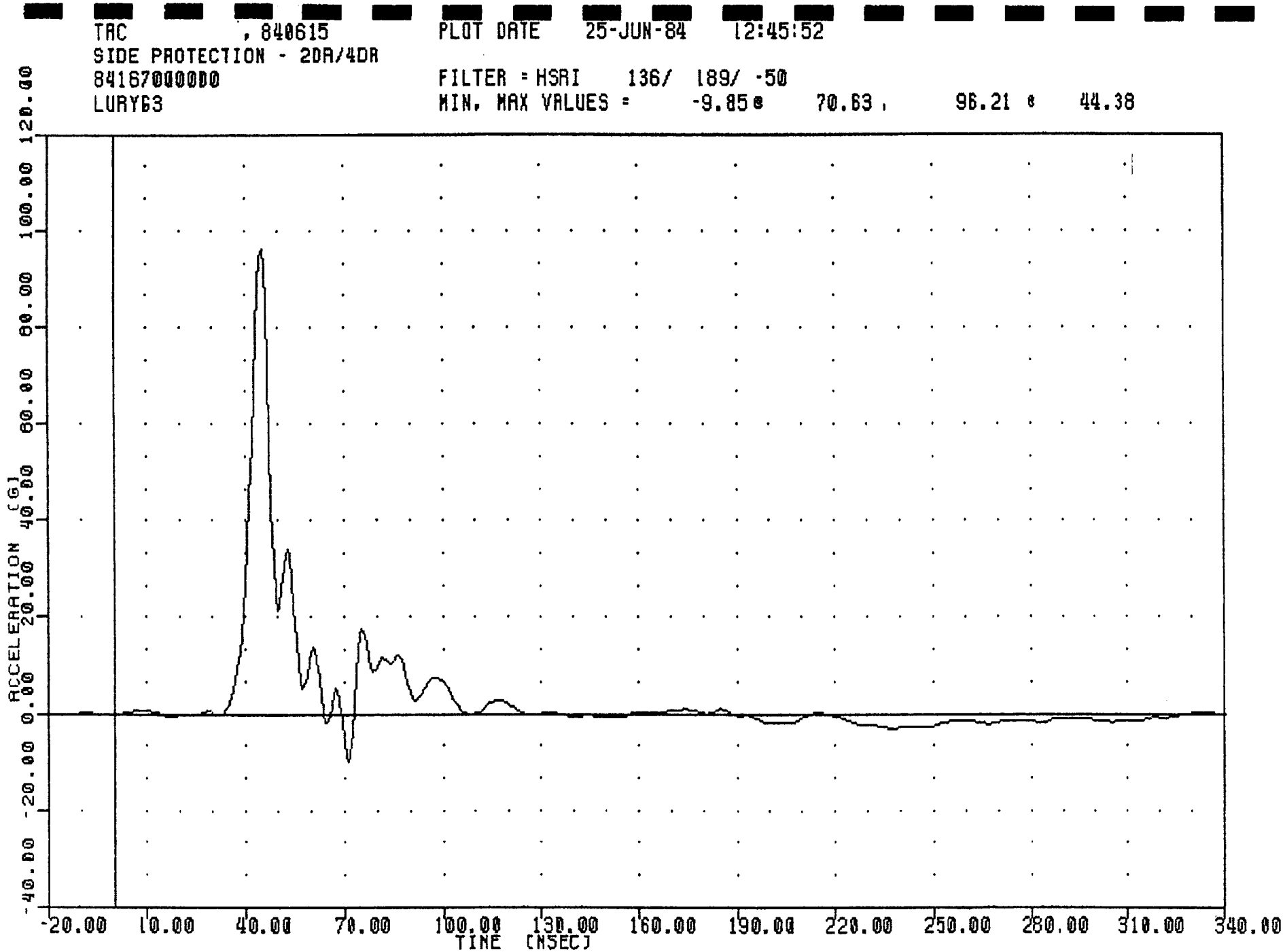


MOVING DEFORMABLE BARRIER INTO DODGE 400
DELTA V USING T12YG3

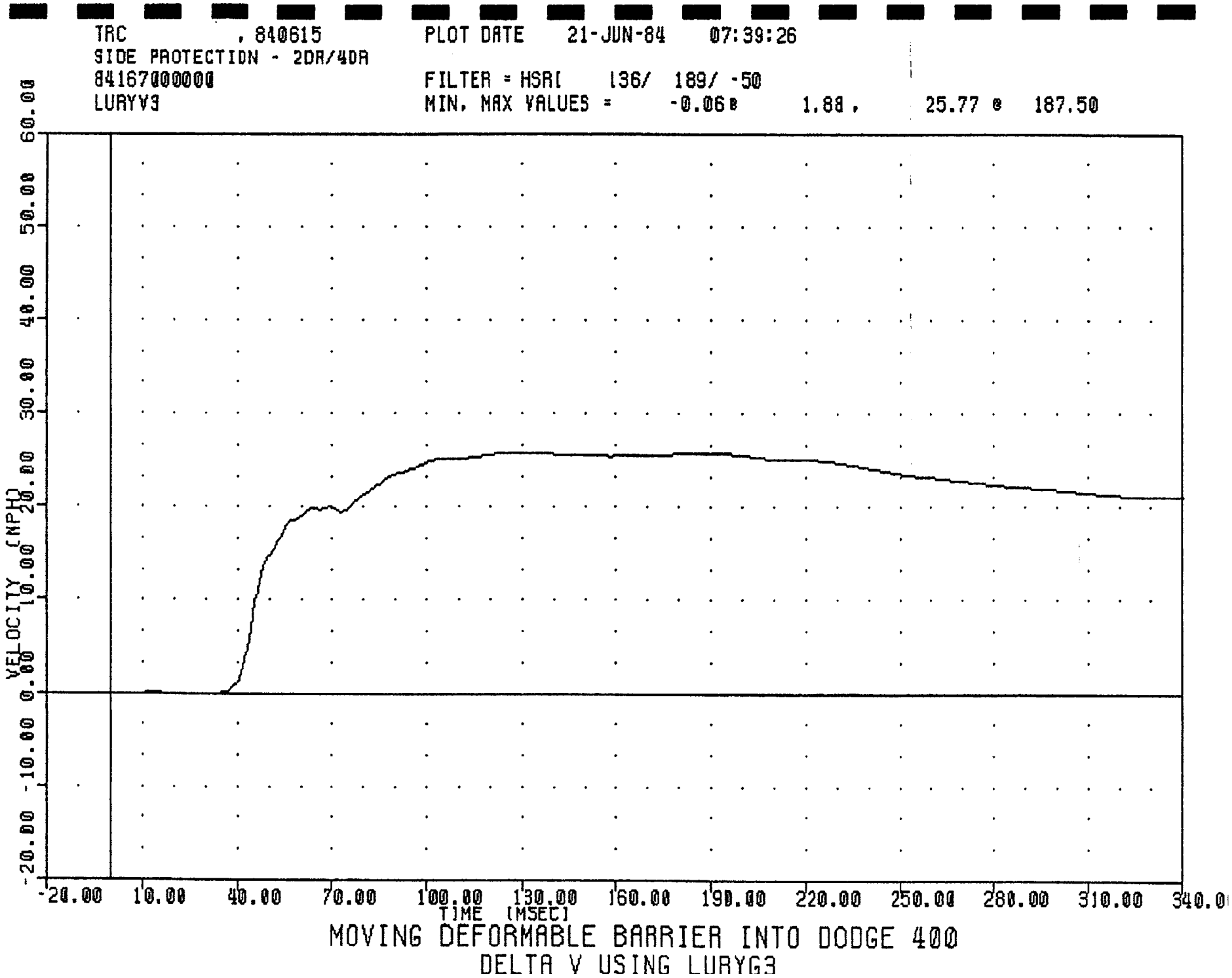
TRC , 840615 PLOT DATE 21-JUN-84 07:39:26
SIDE PROTECTION - 20A/4DA
8416700000D0 FILTER = HSRI 136/ 189/ -50
T12YYC MIN. MAX VALUES = -0.10 @ -1.88 , 30.68 @ 61.25

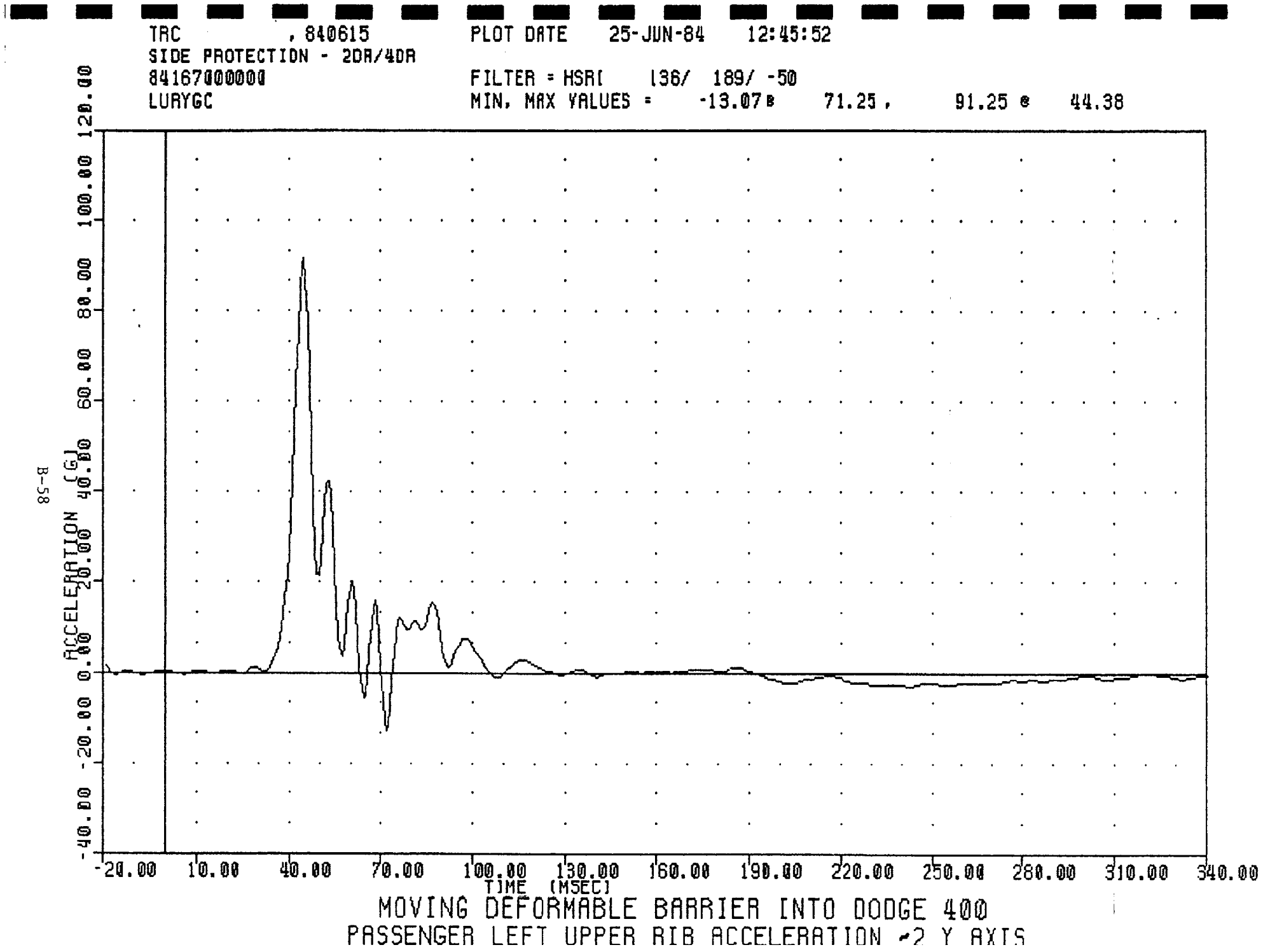


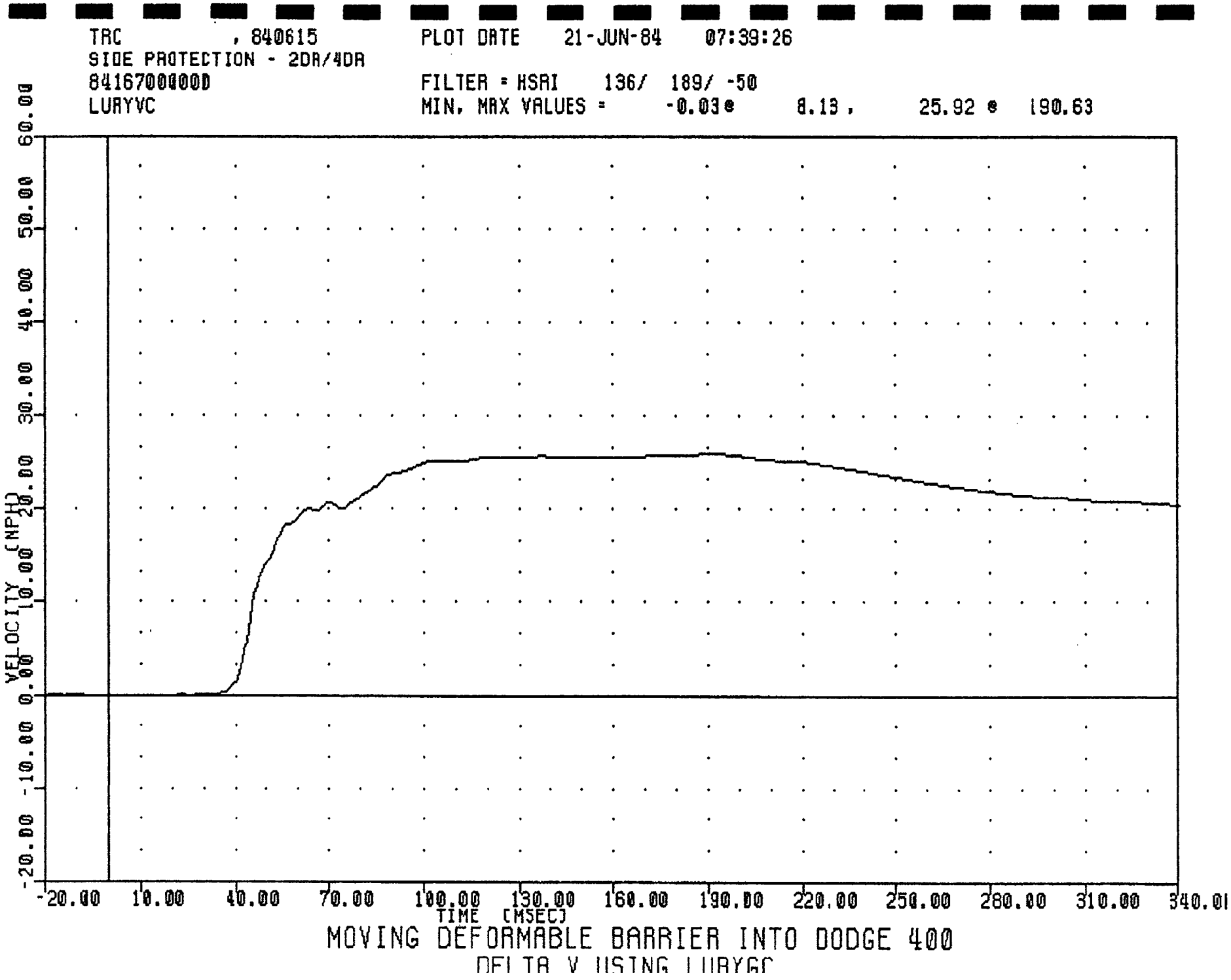
MOVING DEFORMABLE BARRIER INTO DODGE 400
DELTA V USING T12YGC

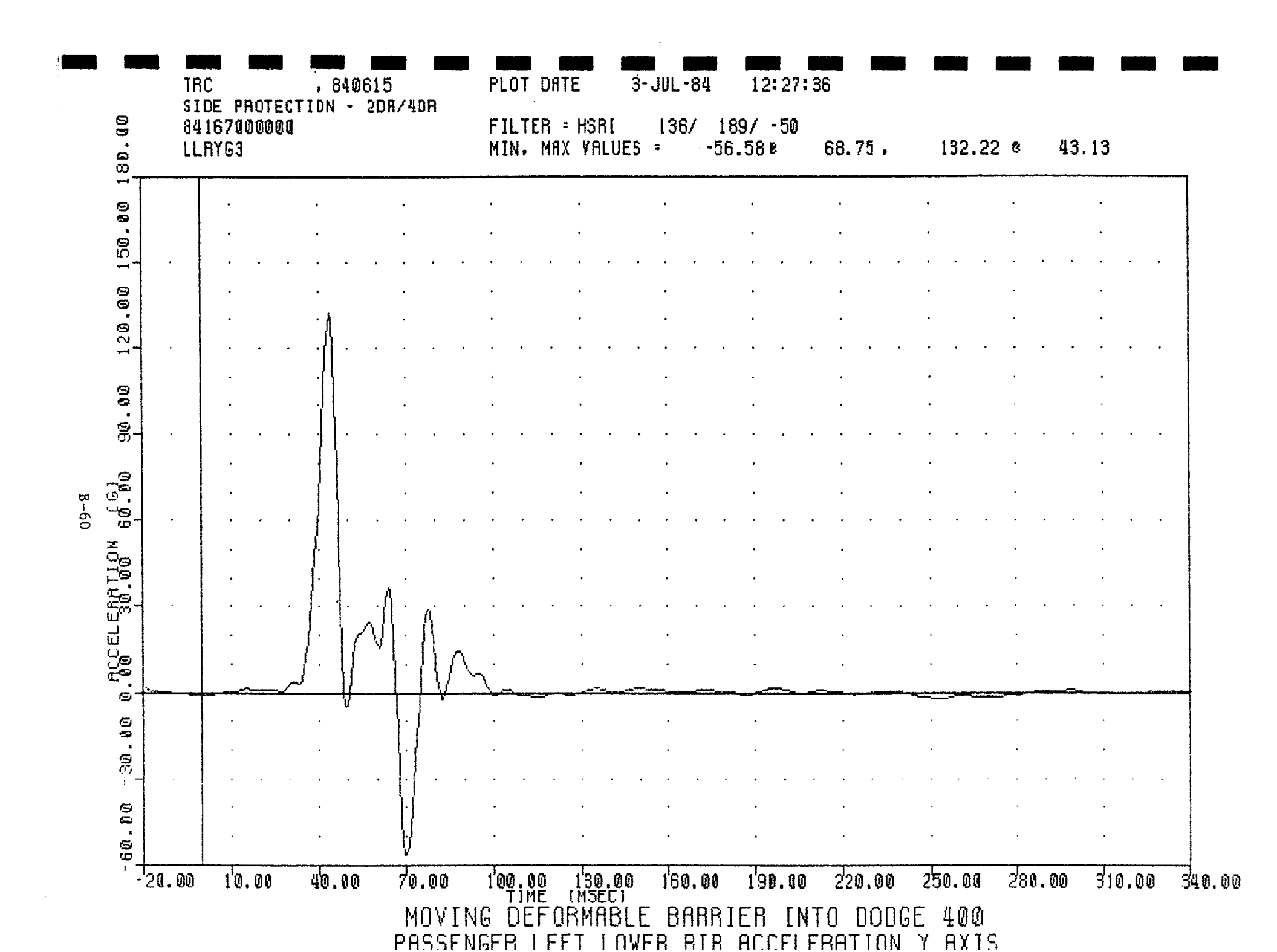


MOVING DEFORMABLE BARRIER INTO DODGE 400
PASSENGER LEFT UPPER RIB ACCELERATION Y AXIS

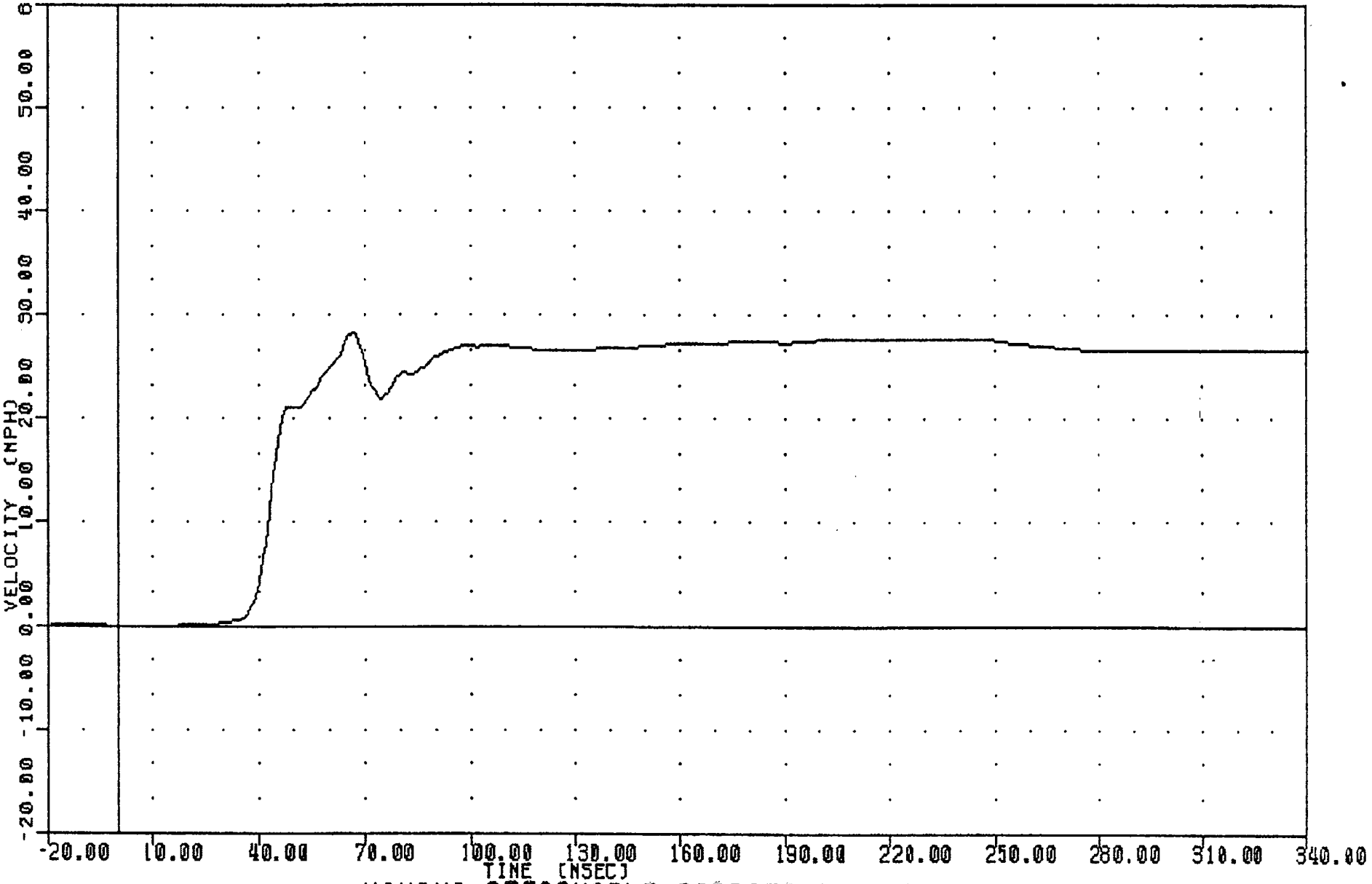

TRC , 840615
PLOT DATE 21-JUN-84 07:39:26
SIDE PROTECTION - 2DR/4DR
841670000000
FILTER = HSRI 136/ 189/ -50
LURYV3
MIN, MAX VALUES = -0.06 @ 1.88 , 25.77 @ 187.50
60.00
50.00
40.00
30.00
20.00
10.00
0.00
-10.00
-20.00
VELOCITY (MPH)
-20.00
10.00
40.00
70.00
100.00
130.00
160.00
190.00
220.00
250.00
280.00
310.00
340.00
TIME (MSEC)
MOVING DEFORMABLE BARRIER INTO DODGE 400
DELTA V USING LURYG3


TRC , 840615
PLOT DATE 25-JUN-84 12:45:52
SIDE PROTECTION - 2DR/4DR
84167000000
FILTER = HSRI 136/ 189/ -50
LURYGC
MIN, MAX VALUES = -13.07 @ 71.25 , 91.25 @ 44.38
ACCELERATION (G)
120.00
100.00
80.00
60.00
40.00
20.00
0.00
-20.00
-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 DODGE 400
PASSENGER LEFT UPPER RIB ACCELERATION -2 Y AXIS

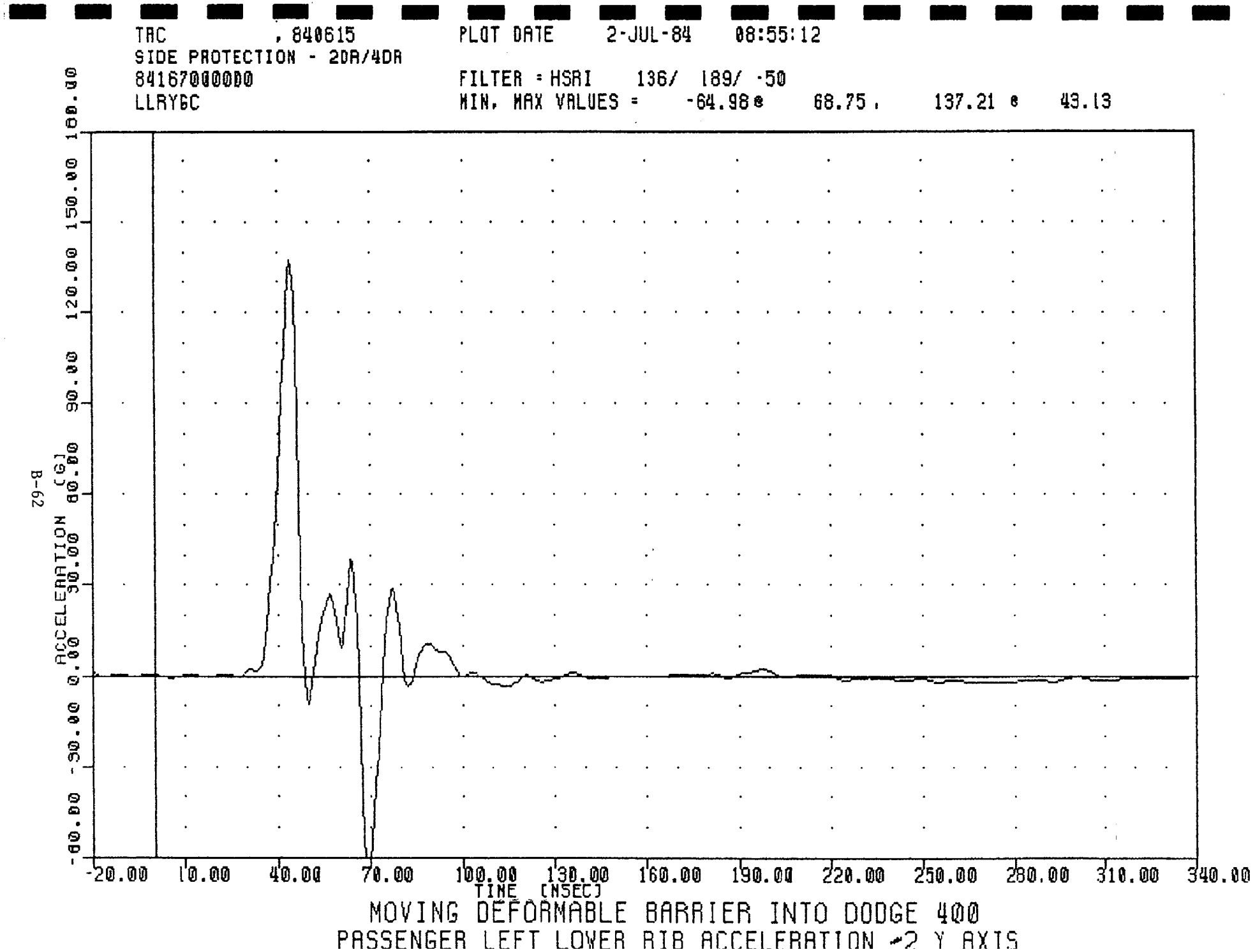

TRC , 840615
PLOT DATE 21-JUN-84 07:39:26
SIDE PROTECTION - 2DR/4DR
8416700400D
FILTER = HSRI 136/ 189/ -50
LURYVC
MIN, MAX VALUES = -0.03 @ 8.13 , 25.92 @ 190.63
60.00
50.00
40.00
30.00
20.00
10.00
0.00
-10.00
-20.00
VELOCITY (MPH)
-20.00
10.00
40.00
70.00
100.00
130.00
160.00
190.00
220.00
250.00
280.00
310.00
340.00
TIME (MSEC)
MOVING DEFORMABLE BARRIER INTO DODGE 400
DELTA V USING LURYGC


TRC , 840615
PLOT DATE 3-JUL-84 12:27:36
SIDE PROTECTION - 2DR/4DR
84167000000
FILTER = HSRI 136/ 189/ -50
LLRYG3
MIN, MAX VALUES = -56.58 @ 68.75 , 132.22 @ 43.13
ACCELERATION (G)
180.00
150.00
120.00
90.00
60.00
30.00
0.00
-30.00
-60.00
-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 DODGE 400
PASSENGER LEFT LOWER RIB ACCELERATION Y AXIS

TRC , 840615 PLOT DATE 21-JUN-84 07:39:26
SIDE PROTECTION - 2DR/4DR
84167000000 FILTER = HSRI 136/ 189/ -50
LLRYV3 MIN, MAX VALUES = -0.15 @ 6.25 , 28.32 @ 65.63

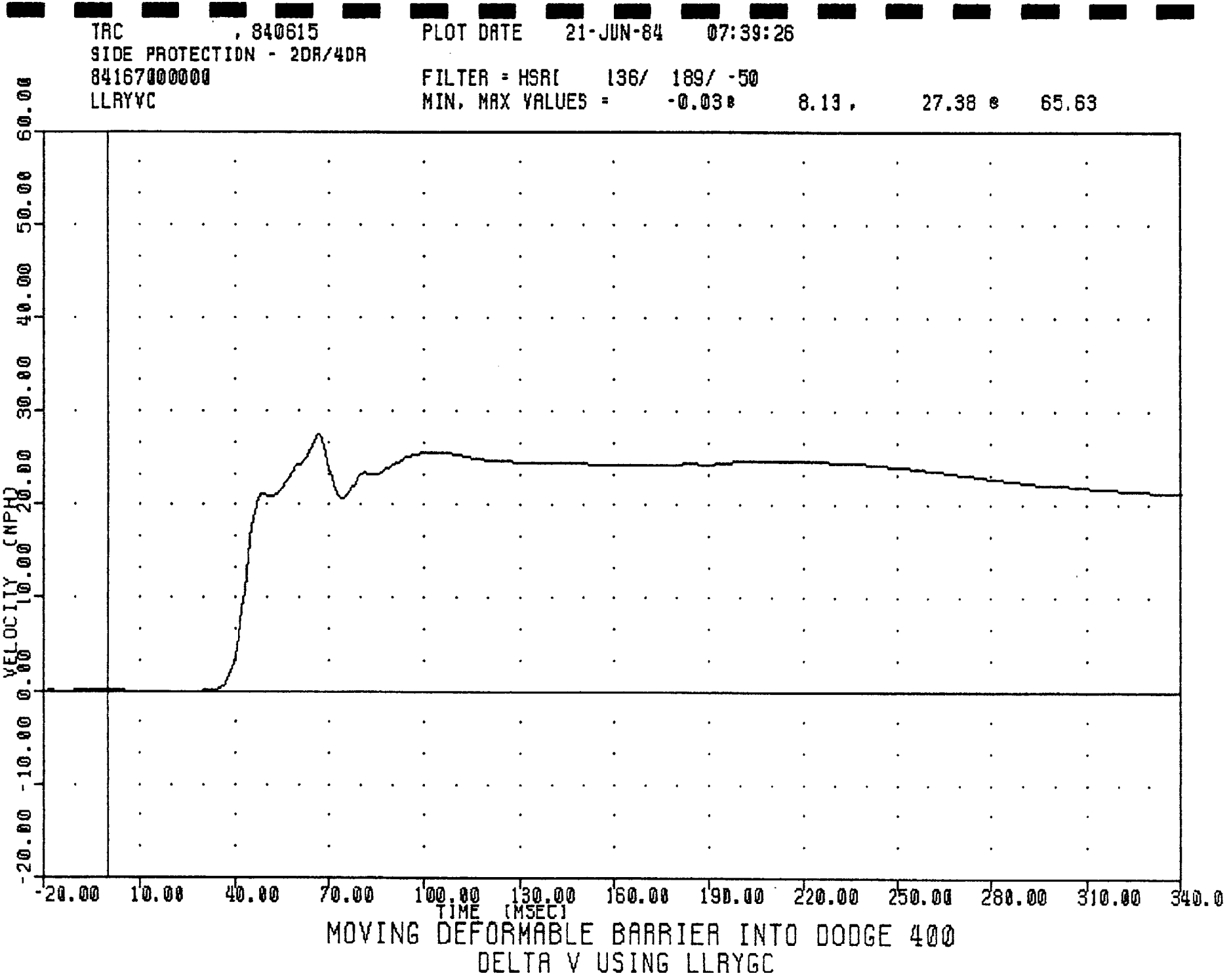


MOVING DEFORMABLE BARRIER INTO DODGE 400
DELTA V USING LLRYG3

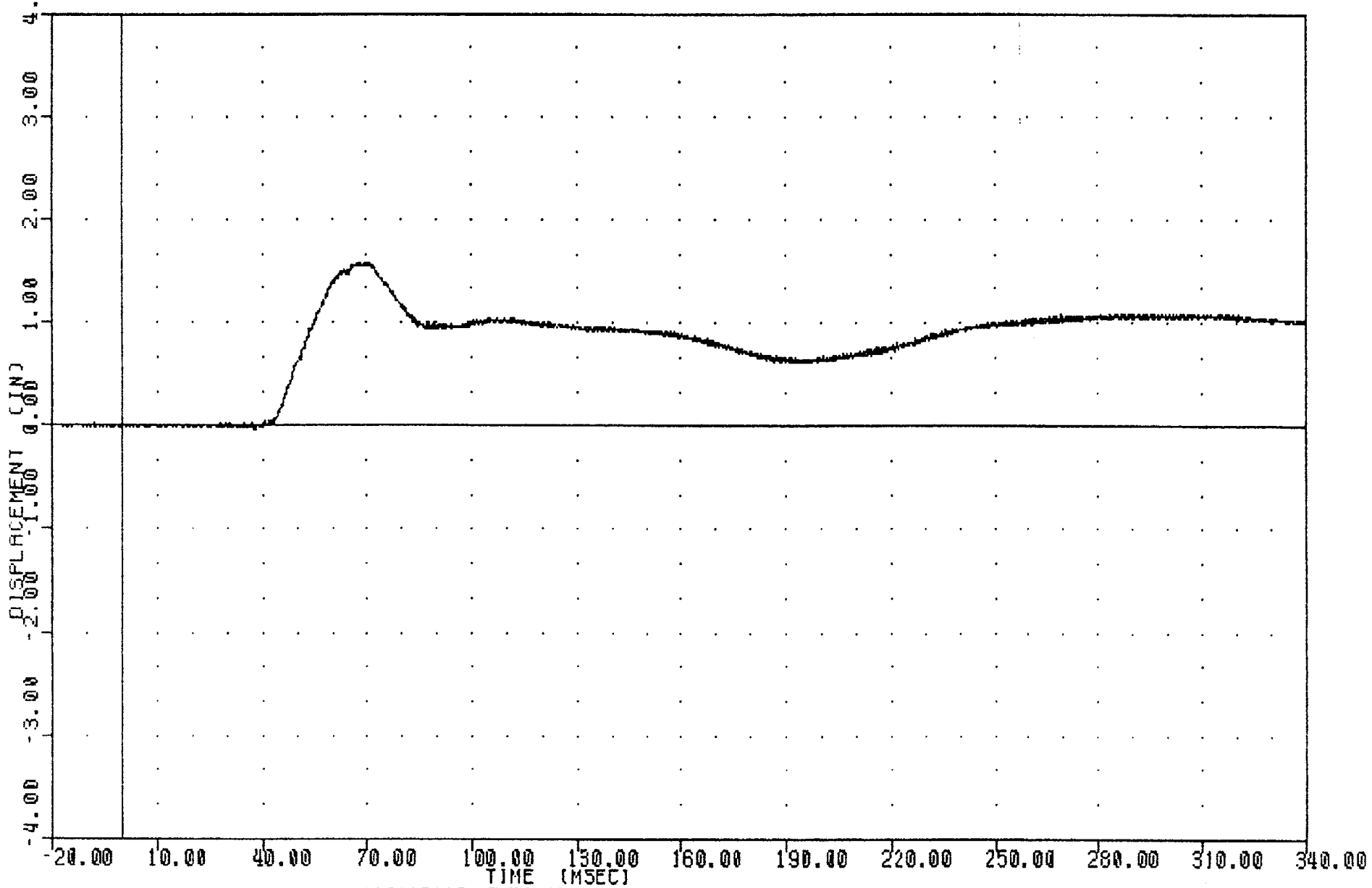


MOVING DEFORMABLE BARRIER INTO DODGE 400

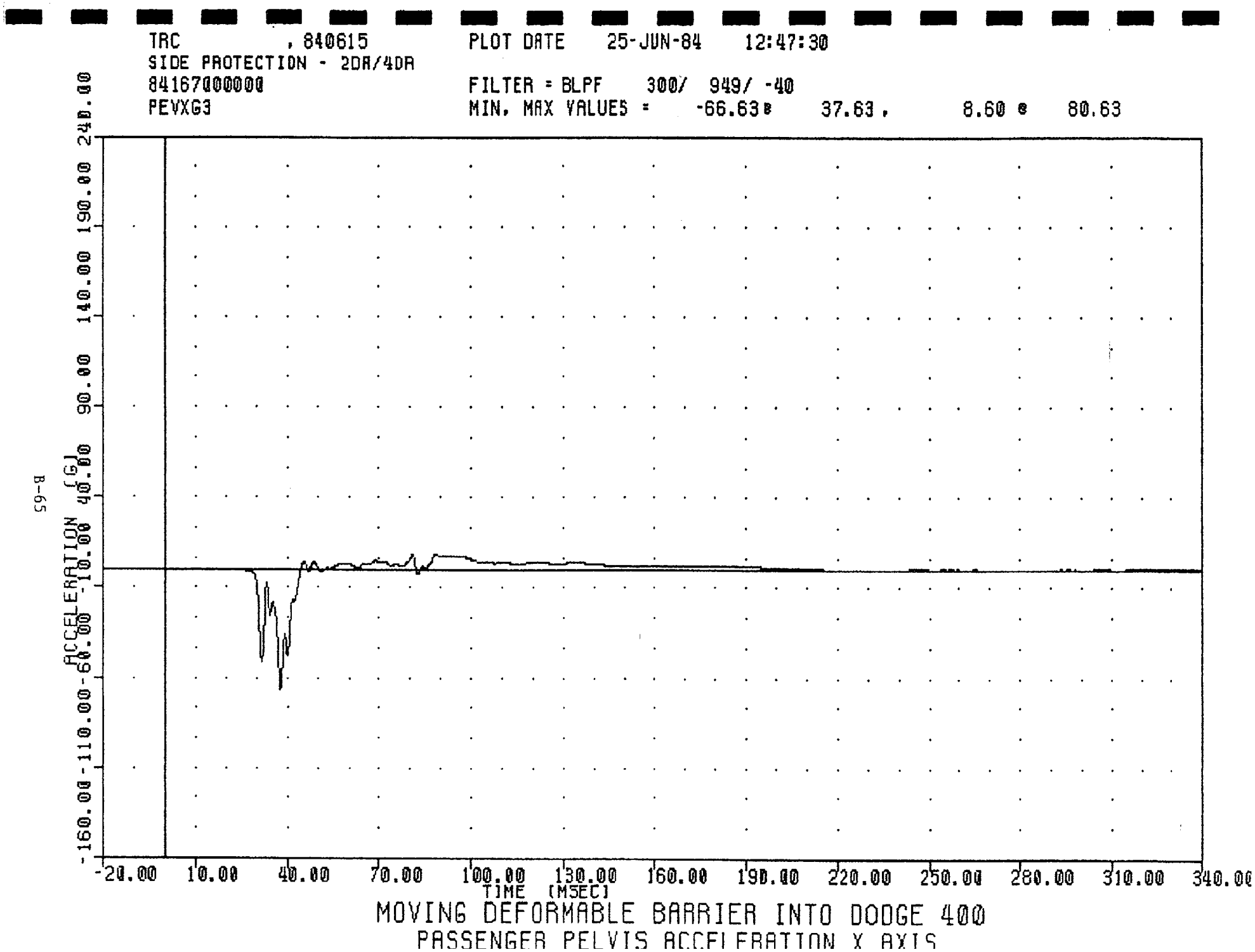
PASSENGER LEFT LOWER RIB ACCELERATION -2 Y AXIS

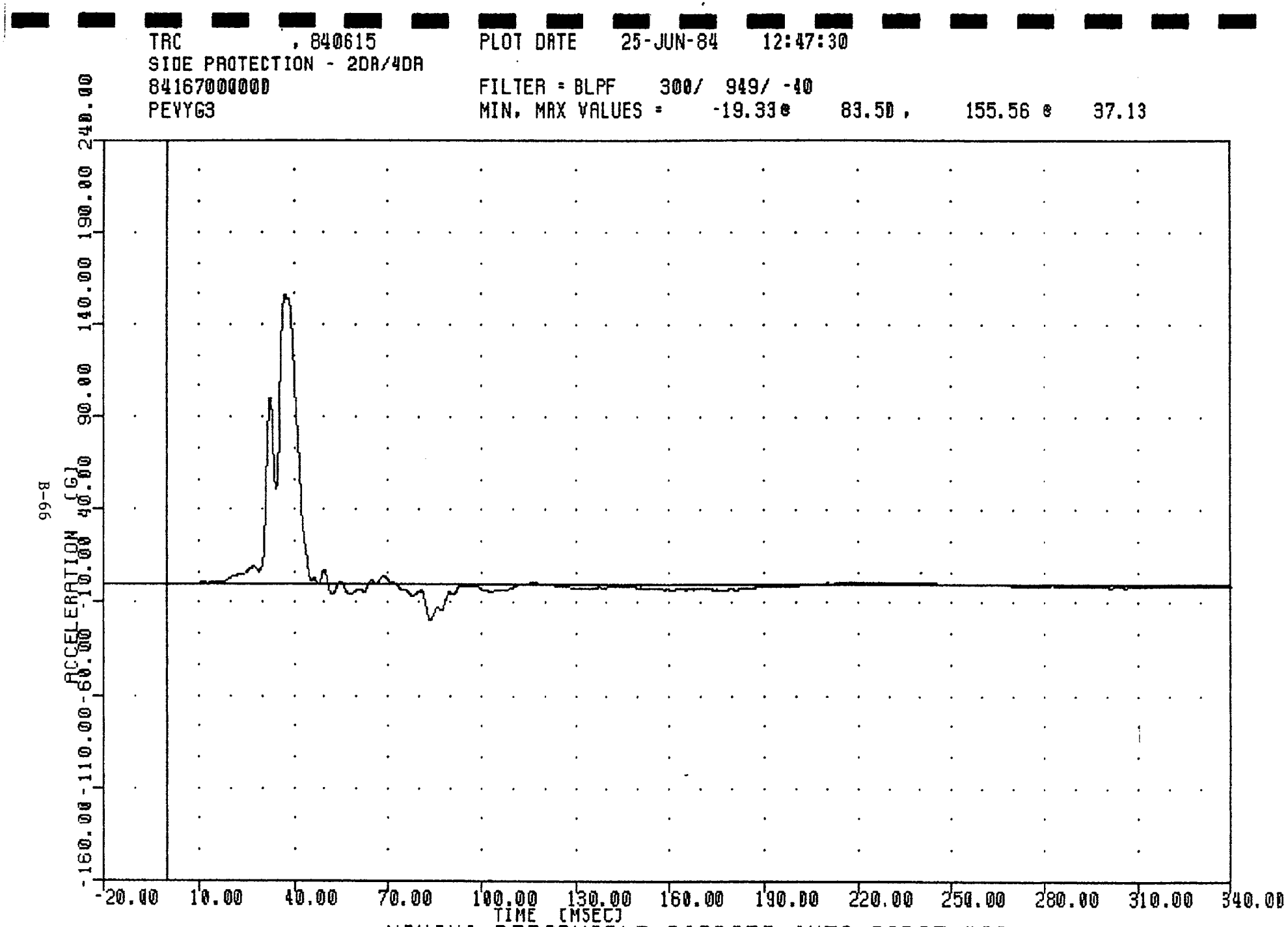

TRC , 840615
PLOT DATE 21-JUN-84 07:39:26
SIDE PROTECTION - 2DR/4DR
84167000000
FILTER = HSRI 136/ 189/ -50
LLRYVC
MIN, MAX VALUES = -0.03 @ 8.13 , 27.38 @ 65.63
60.00
50.00
40.00
30.00
20.00
10.00
0.00
-10.00
-20.00
VELOCITY (MPH)
-20.00
10.00
40.00
70.00
100.00
130.00
160.00
190.00
220.00
250.00
280.00
310.00
340.0
TIME (MSEC)
MOVING DEFORMABLE BARRIER INTO DODGE 400
DELTA V USING LLRYGC

TRC , 840615 PLOT DATE 2-AUG-84 12:23:06
SIDE PROTECTION - 2DR/4DR
841670000000 FILTER = ALPF 1650/ 5217/ -40
LRTYD3 MIN, MAX VALUES = -0.04 @ 37.88 , 1.59 @ 69.50

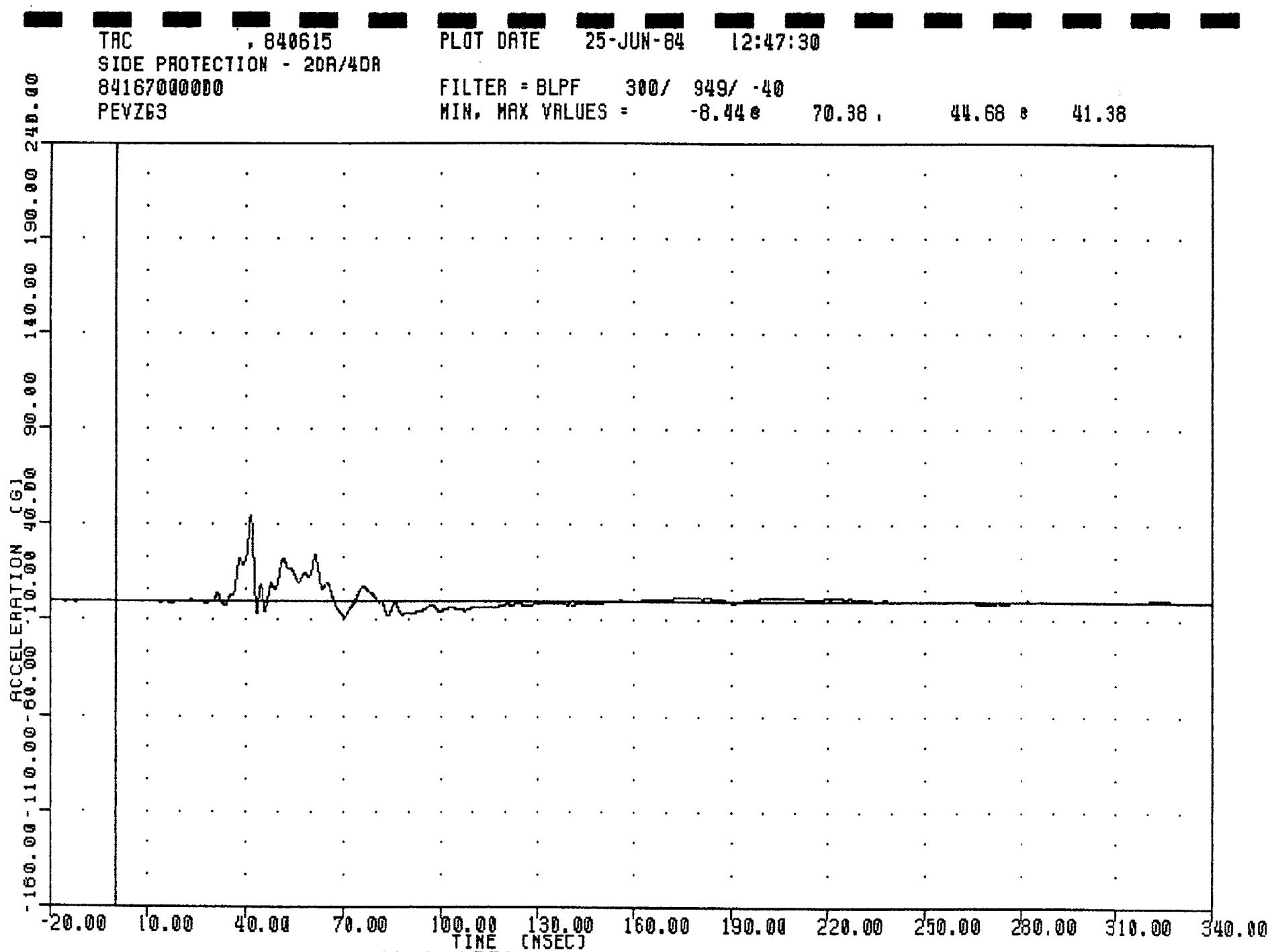


MOVING DEFORMABLE BARRIER INTO DODGE 400
PASSENGER LEFT RIB TO SPINE DISPLACEMENT INCHES

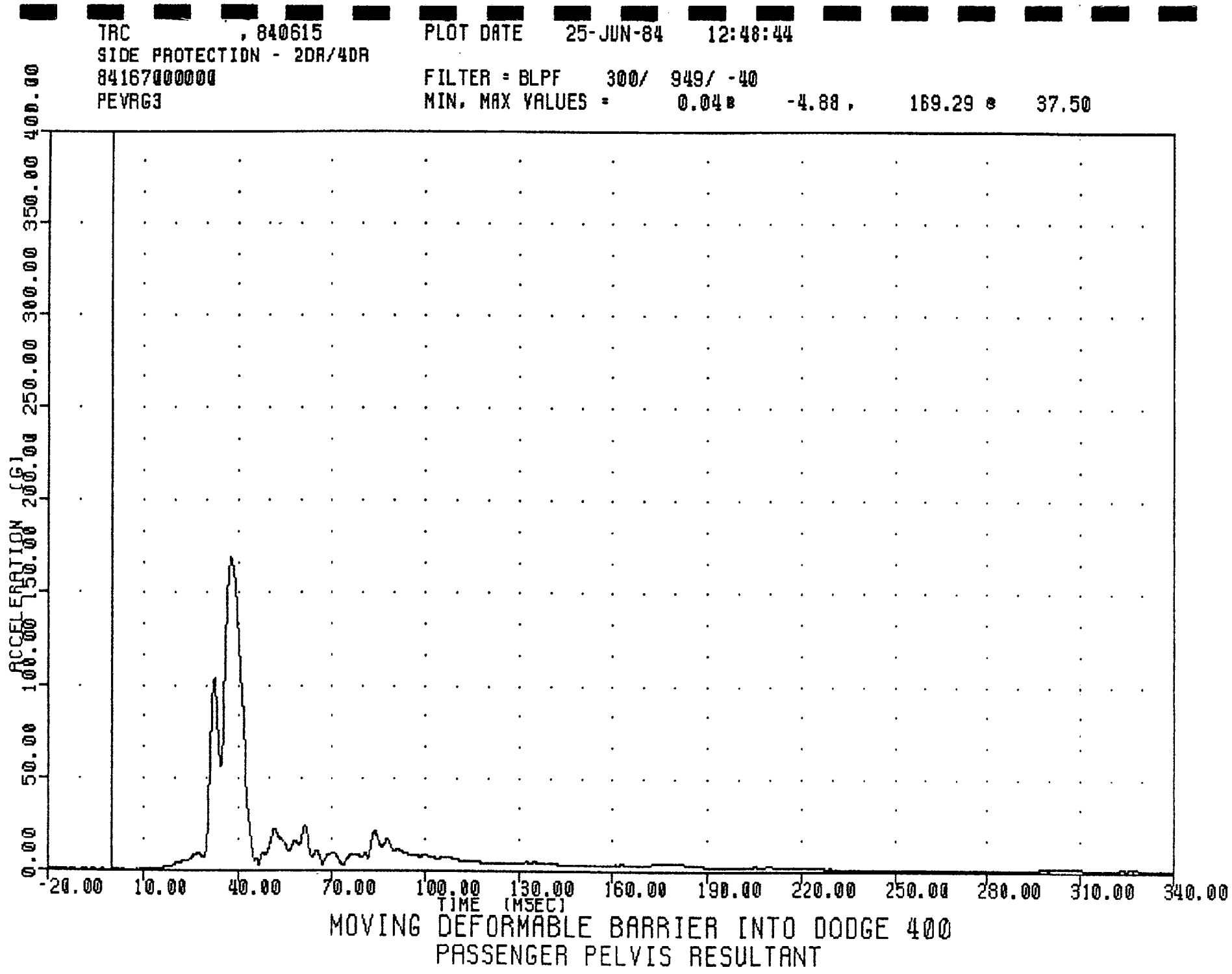

TRC , 840615
PLOT DATE 25-JUN-84 12:47:30
SIDE PROTECTION - 2DR/4DR
84167000000
FILTER = BLPF 300/ 949/ -40
PEVXG3
MIN, MAX VALUES = -66.63 @ 37.63 , 8.60 @ 80.63
ACCELERATION (G)
240.00
190.00
140.00
90.00
40.00
-10.00
-60.00
-110.00
-160.00
-20.00
10.00
40.00
70.00
100.00
130.00
160.00
190.00
220.00
250.00
280.00
310.00
340.00
TIME (MSEC)
MOVING DEFORMABLE BARRIER INTO DODGE 400
PASSENGER PELVIS ACCELERATION X AXIS



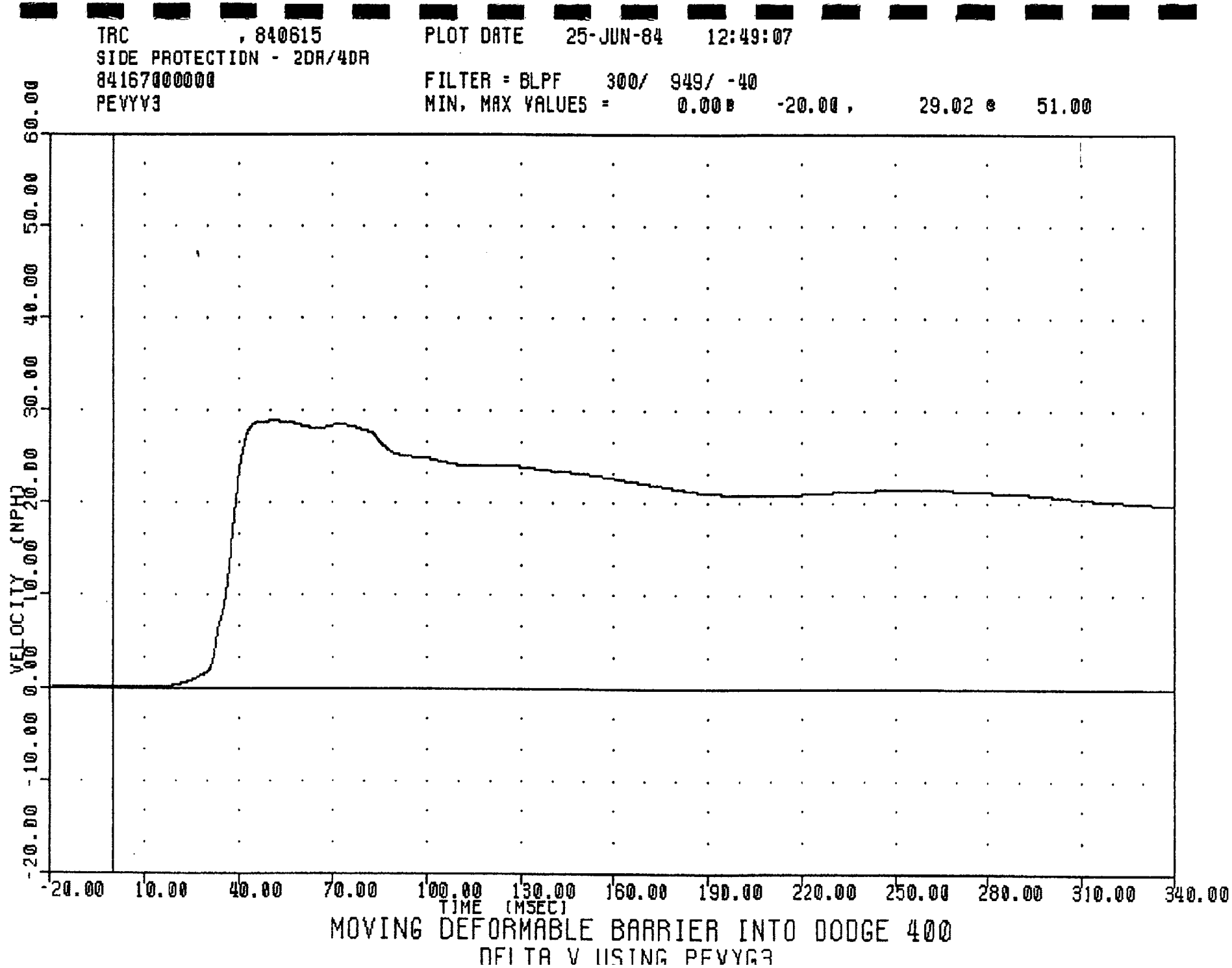
MOVING DEFORMABLE BARRIER INTO DODGE 400
PASSENGER PELVIS ACCLERATION Y AXIS

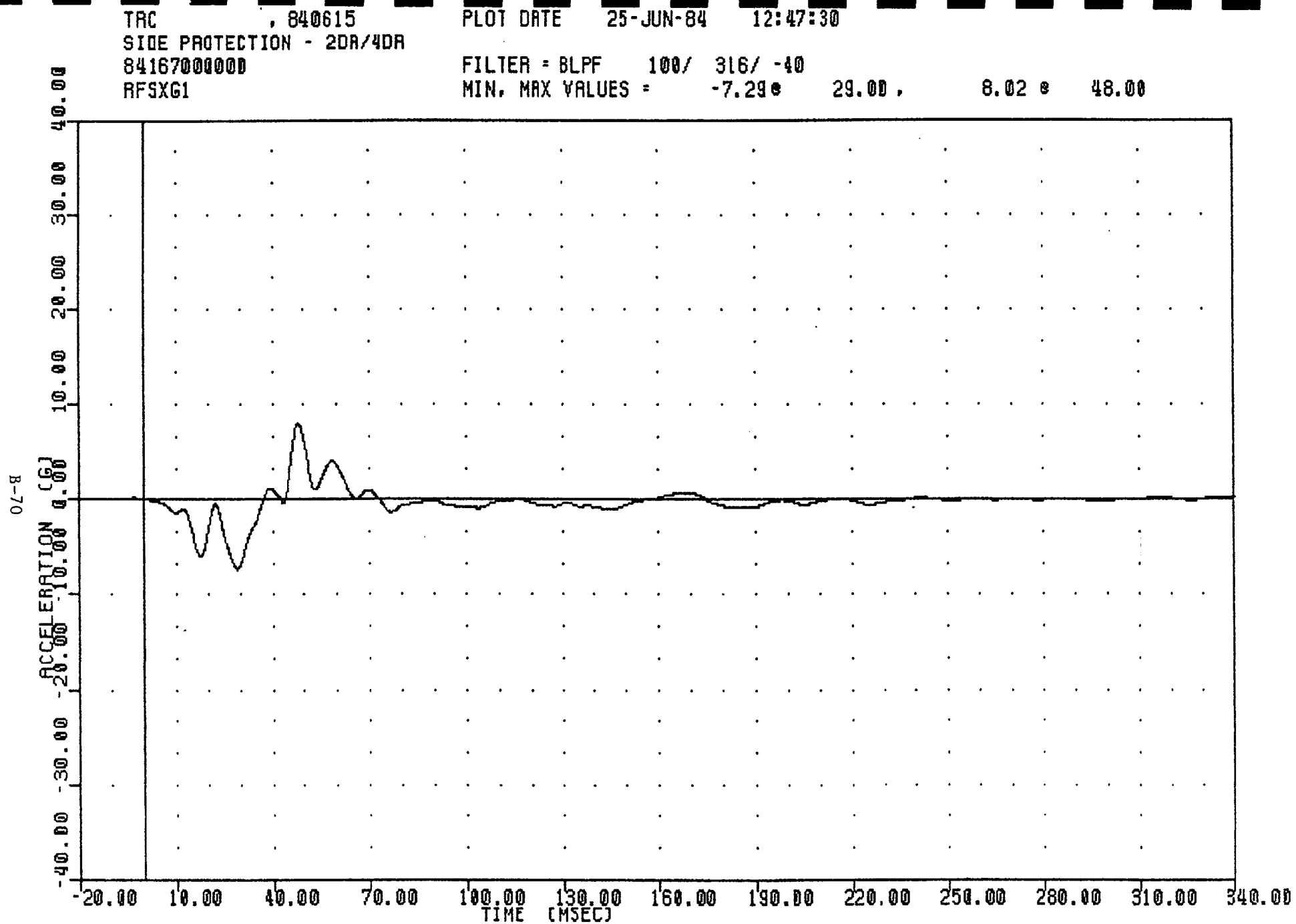


MOVING DEFORMABLE BARRIER INTO DODGE 400
PASSENGER PELVIS ACCELERATION Z AXIS

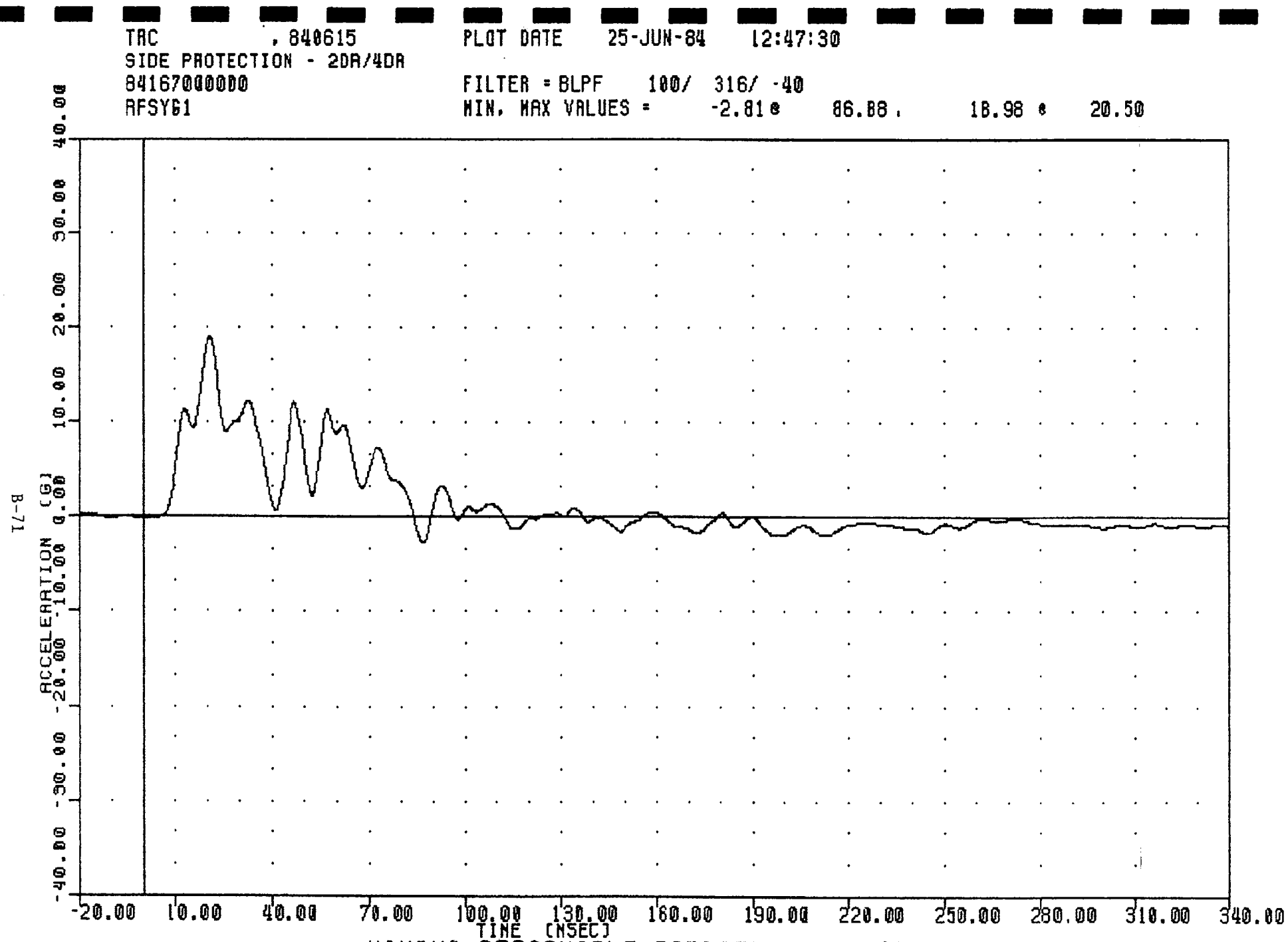


MOVING DEFORMABLE BARRIER INTO DODGE 400
PASSENGER PELVIS RESULTANT

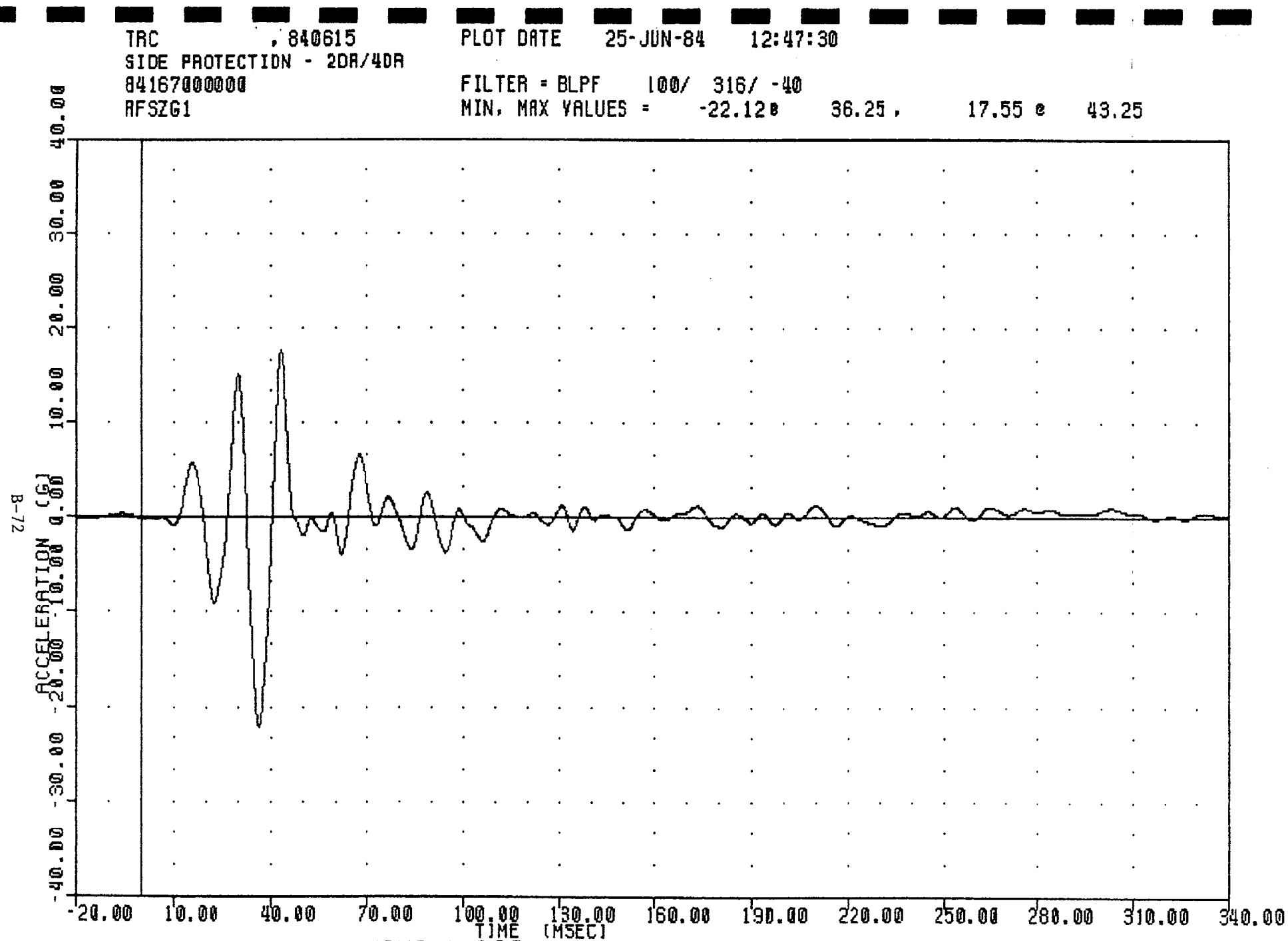

TRC , 840615
PLOT DATE 25-JUN-84 12:49:07
SIDE PROTECTION - 2DR/4DR
841670000000
FILTER = BLPF 300/ 949/ -40
PEVYV3
MIN, MAX VALUES = 0.00 @ -20.00 , 29.02 @ 51.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
-10.00
-20.00
VELOCITY (MPH)
-20.00
10.00
40.00
70.00
100.00
130.00
160.00
190.00
220.00
250.00
280.00
310.00
340.00
TIME (MSEC)
MOVING DEFORMABLE BARRIER INTO DODGE 400
DELTA V USING PEVYG3



MOVING DEFORMABLE BARRIER INTO DODGE 400
VEHICLE RIGHT FRONT SILL ACCELERATION X AXIS

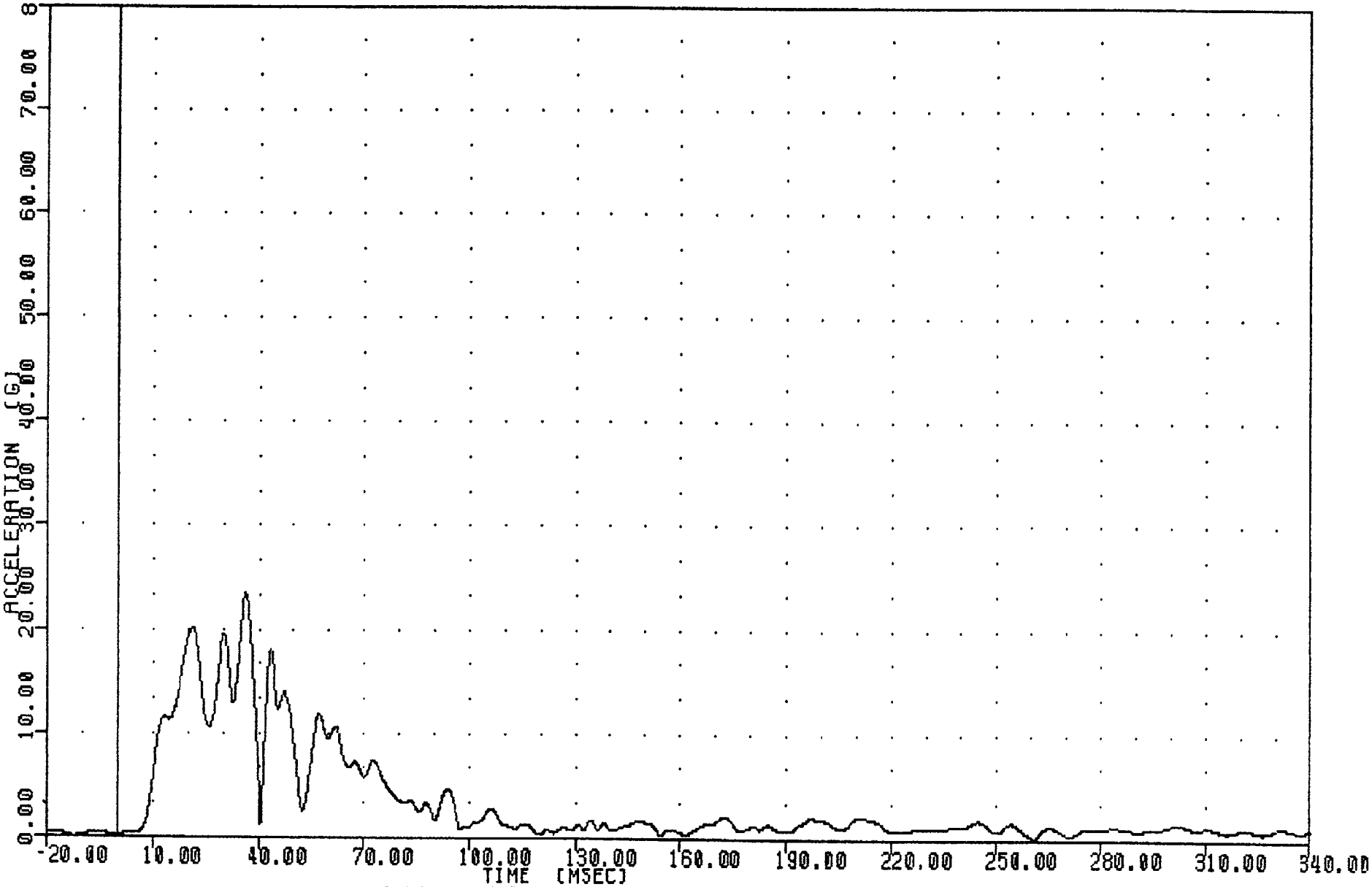


MOVING DEFORMABLE BARRIER INTO DODGE 400
VEHICLE RIGHT FRONT SILL ACCELERATION Y AXIS

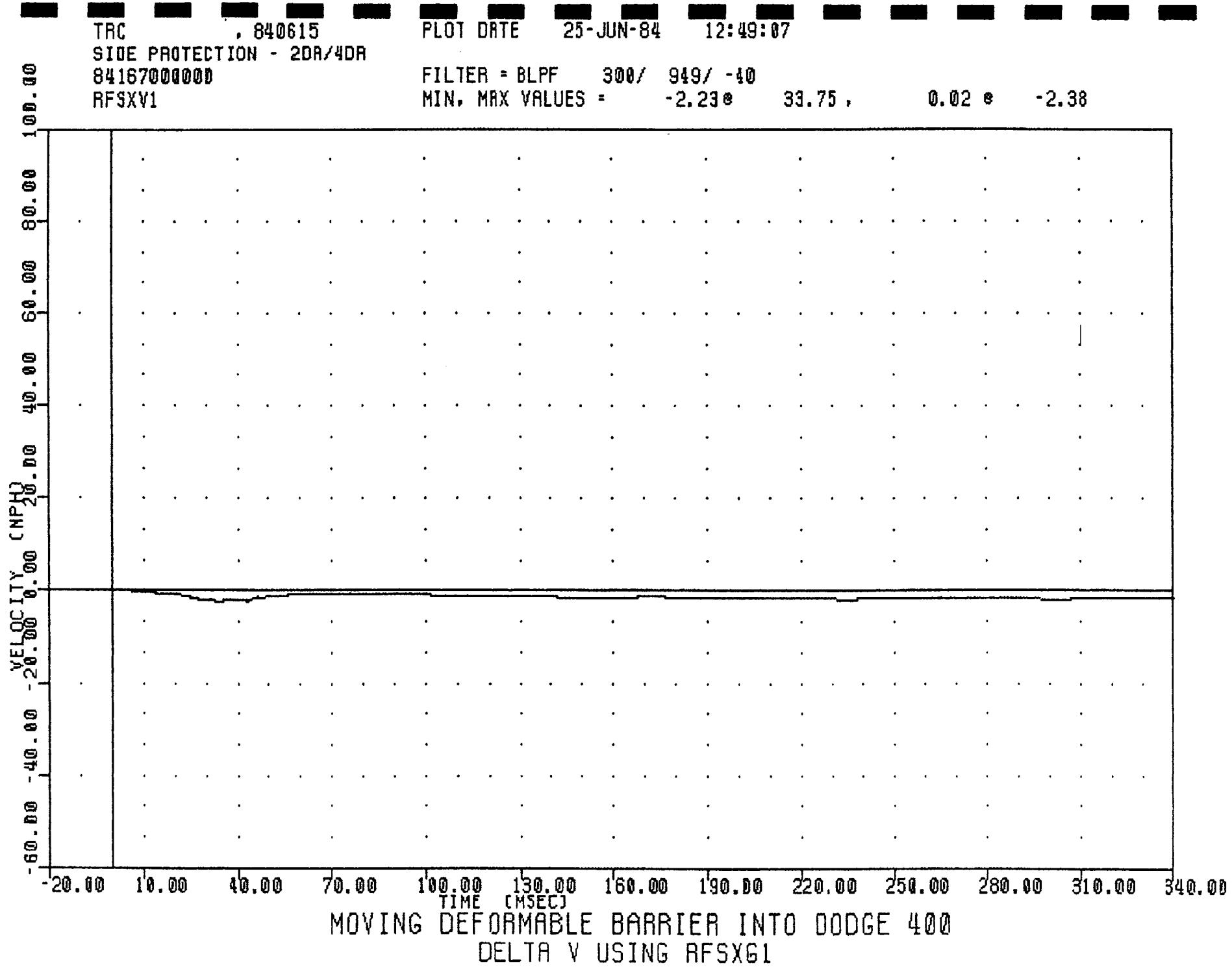


MOVING DEFORMABLE BARRIER INTO DODGE 400
VEHICLE RIGHT FRONT SILL ACCELERATION Z AXIS

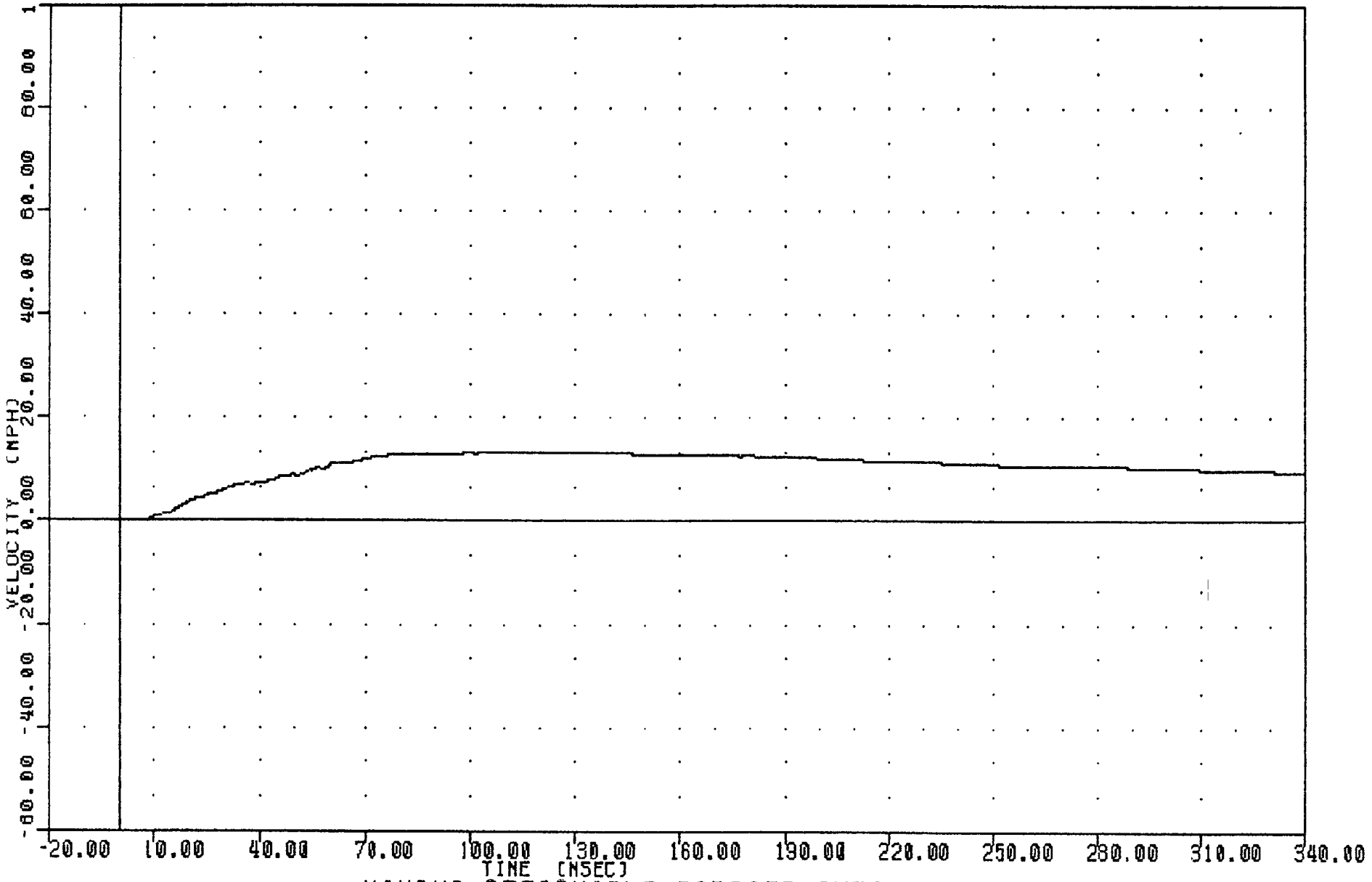
TRC , 840615 PLOT DATE 25-JUN-84 12:48:44
SIDE PROTECTION - 2DR/4DR
8416700000D FILTER = BLPF 100/ 316/ -40
RFSRG1 MIN, MAX VALUES = 0.03@ -12.75 , 23.44 @ 36.13



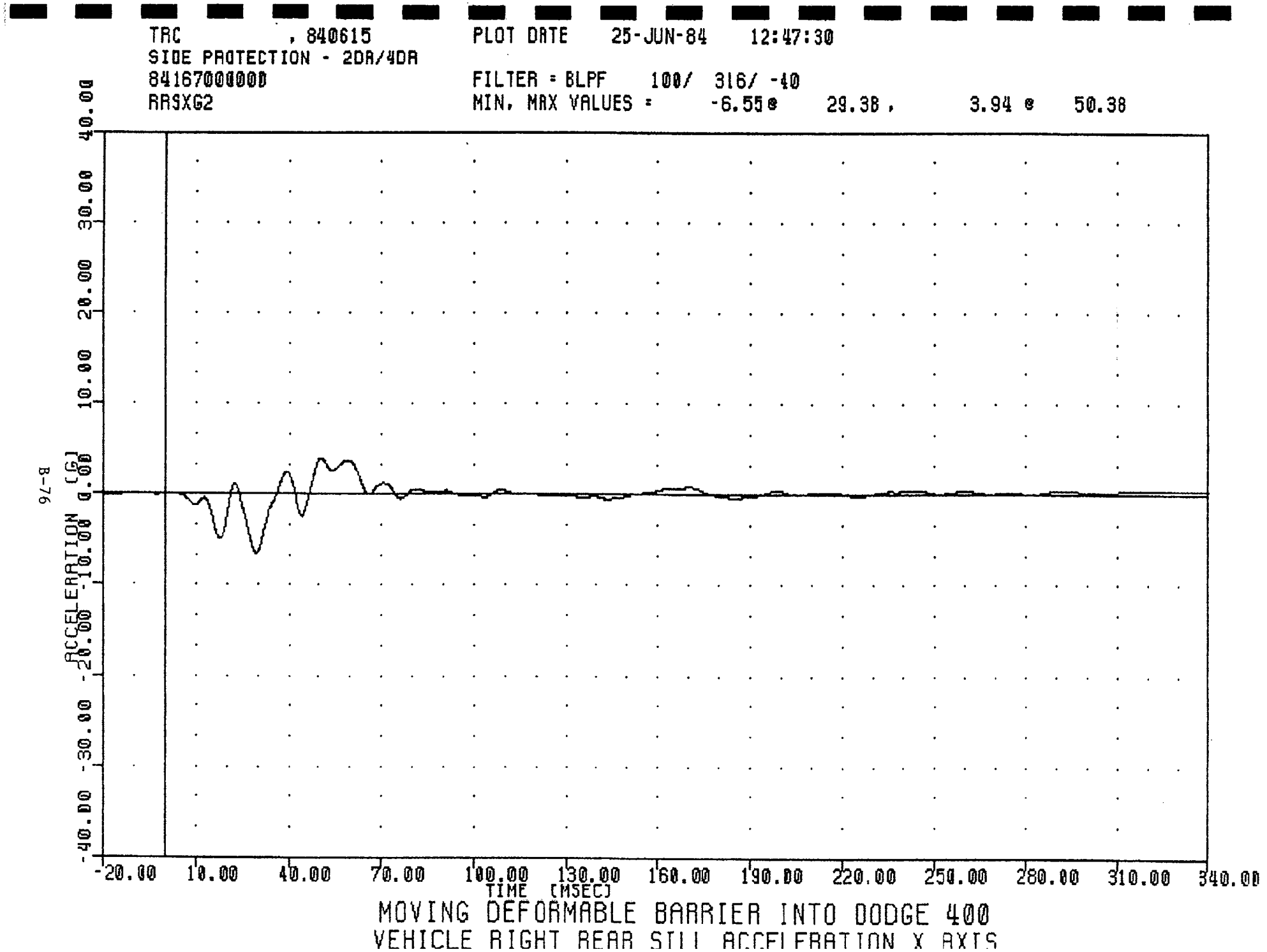
MOVING DEFORMABLE BARRIER INTO DODGE 400
VEHICLE RIGHT FRONT SILL RESULTANT

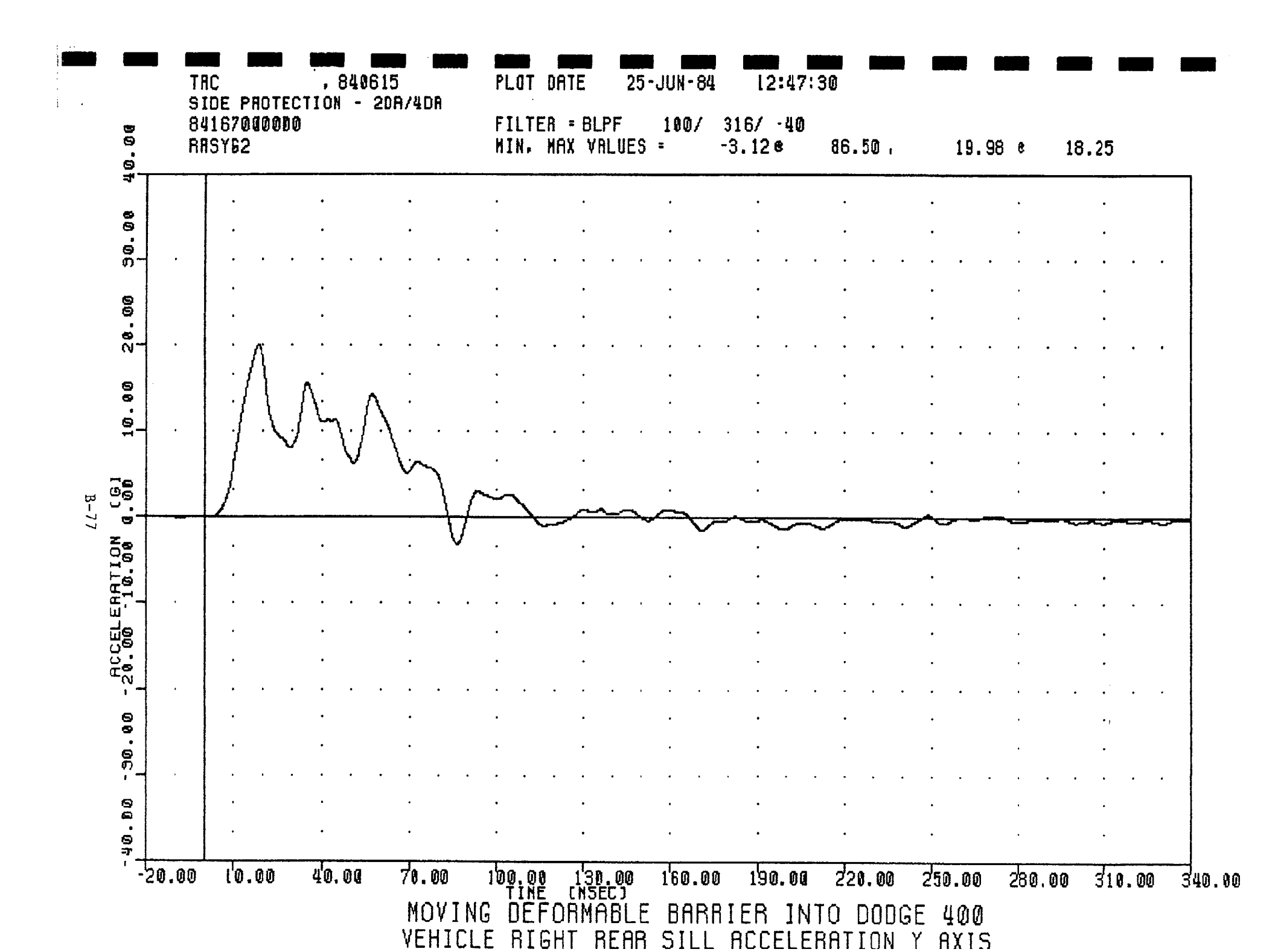

TRC , 840615
PLOT DATE 25-JUN-84 12:49:07
SIDE PROTECTION - 2DA/4DA
84167000000
FILTER = BLPF 300/ 949/ -40
RFSXV1
MIN, MAX VALUES = -2.23 @ 33.75 , 0.02 @ -2.38
100.00
80.00
60.00
40.00
20.00
0.00
-20.00
-40.00
-60.00
VELOCITY (MPH)
-20.00
10.00
40.00
70.00
100.00
130.00
160.00
190.00
220.00
250.00
280.00
310.00
340.00
TIME (MSEC)
MOVING DEFORMABLE BARRIER INTO DODGE 400
DELTA V USING RFSXG1

TRC , 840615 PLOT DATE 25-JUN-84 12:49:07
SIDE PROTECTION - 2DR/4DR
84167000000 FILTER = BLPF 300/ 949/ -40
RFSYV1 MIN, MAX VALUES = -0.02 @ 3.50 , 13.37 @ 132.63



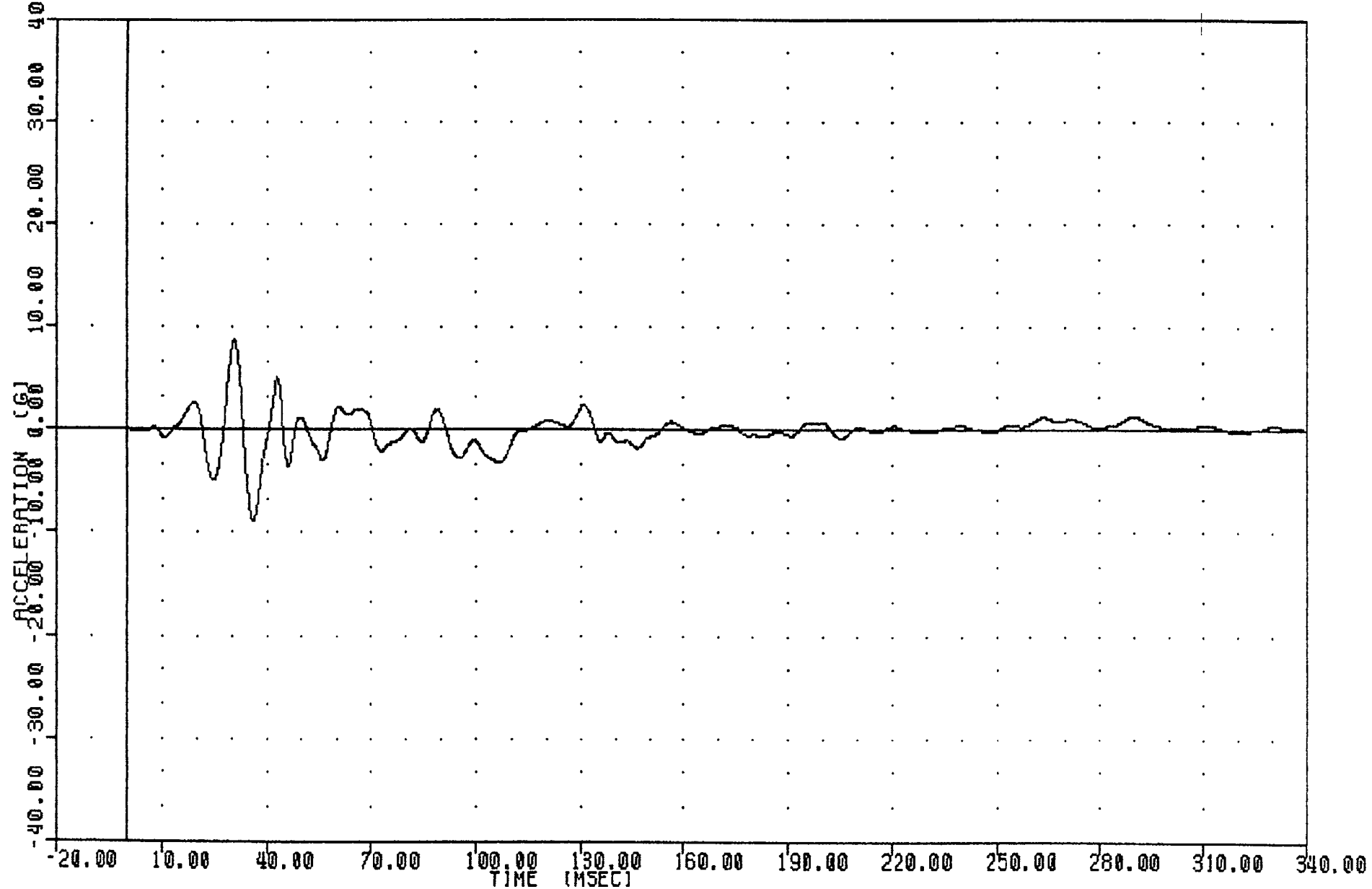
MOVING DEFORMABLE BARRIER INTO DODGE 400
DELTA V USING RFSYG1


TRC , 840615
PLOT DATE 25-JUN-84 12:47:30
SIDE PROTECTION - 2DR/4DR
84167000000
FILTER = BLPF 100/ 316/ -40
RRSXG2
MIN, MAX VALUES = -6.55 @ 29.38 , 3.94 @ 50.38
40.00
30.00
20.00
10.00
0.00
-10.00
-20.00
-30.00
-40.00
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 DODGE 400
VEHICLE RIGHT REAR SILL ACCELERATION X AXIS



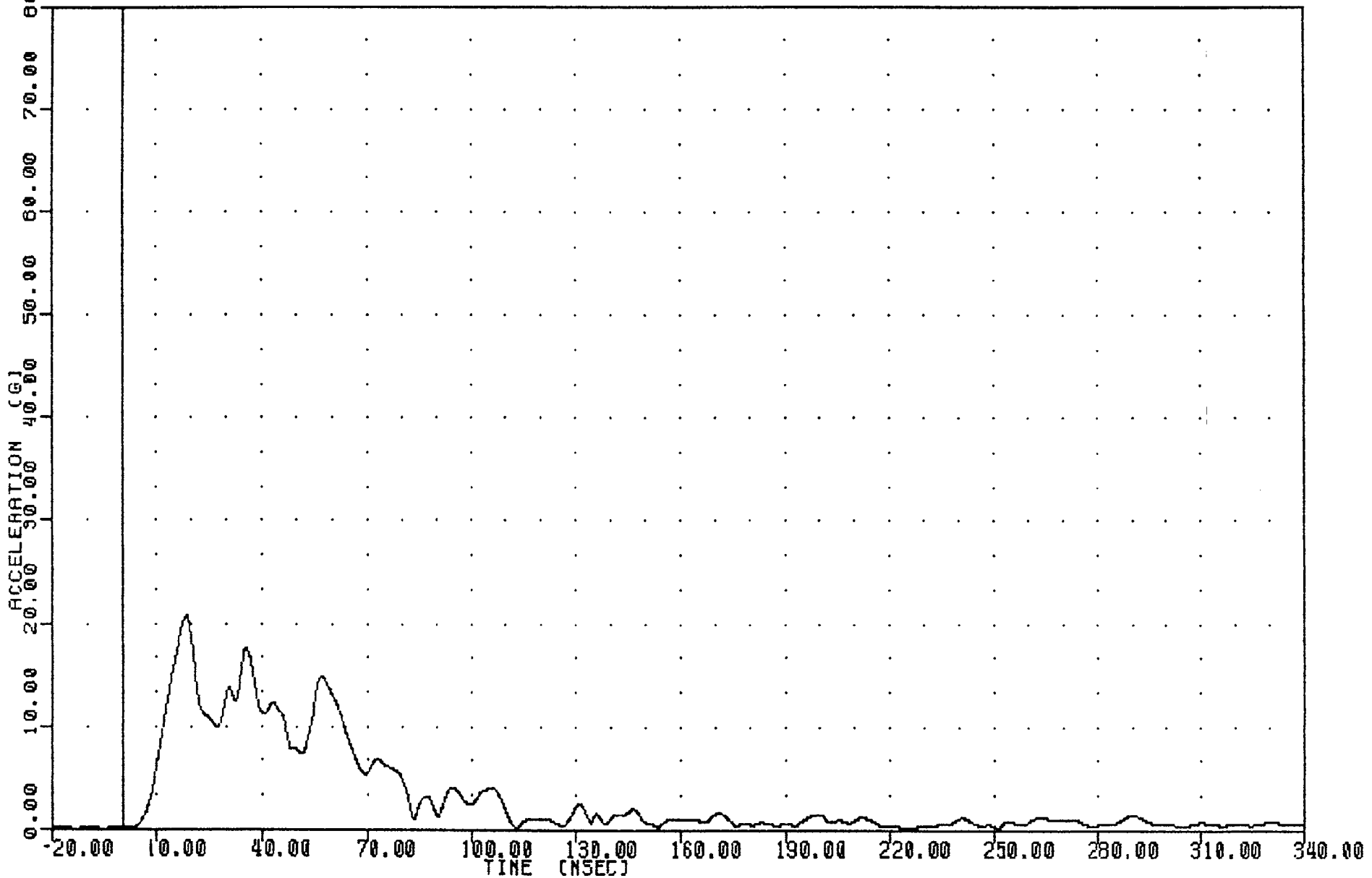
MOVING DEFORMABLE BARRIER INTO DODGE 400
VEHICLE RIGHT REAR SILL ACCELERATION Y AXIS

TRC , 840615 PLOT DATE 25-JUN-84 12:47:30
SIDE PROTECTION - 2DR/4DR
84167000000 FILTER = BLPF 100/ 316/ -40
RRSZG2 MIN. MAX VALUES = -8.85 @ 35.88 , 8.72 @ 30.50

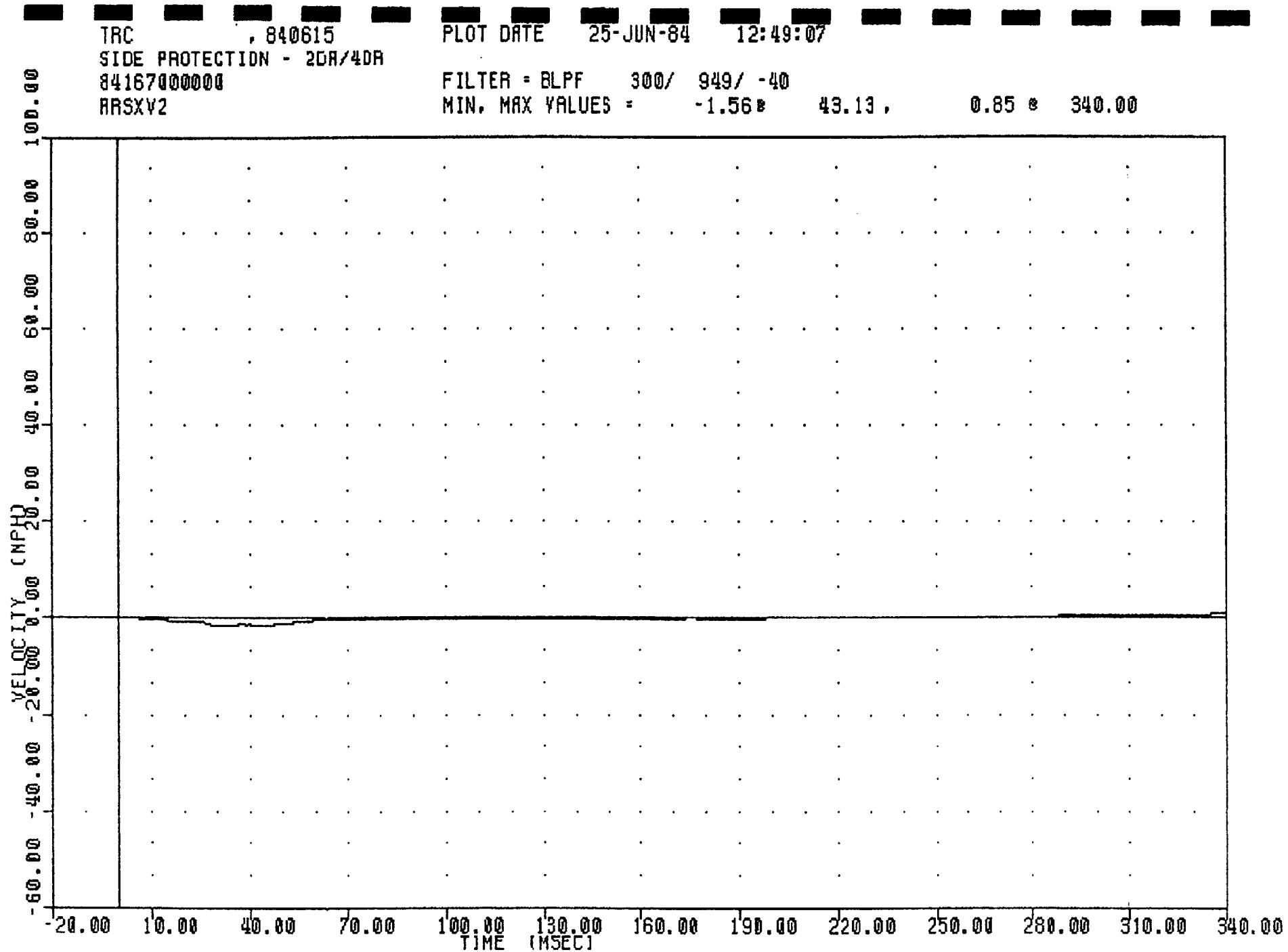


MOVING DEFORMABLE BARRIER INTO DODGE 400
VEHICLE RIGHT REAR SILL ACCELERATION Z AXIS

TAC , 840615 PLOT DATE 25-JUN-84 12:48:44
SIDE PROTECTION - 2DR/4DR
84167000000 FILTER = BLPF 100/ 316/ -40
RRSR62 MIN, MAX VALUES = 0.01 @ -5.38 , 20.69 @ 18.13

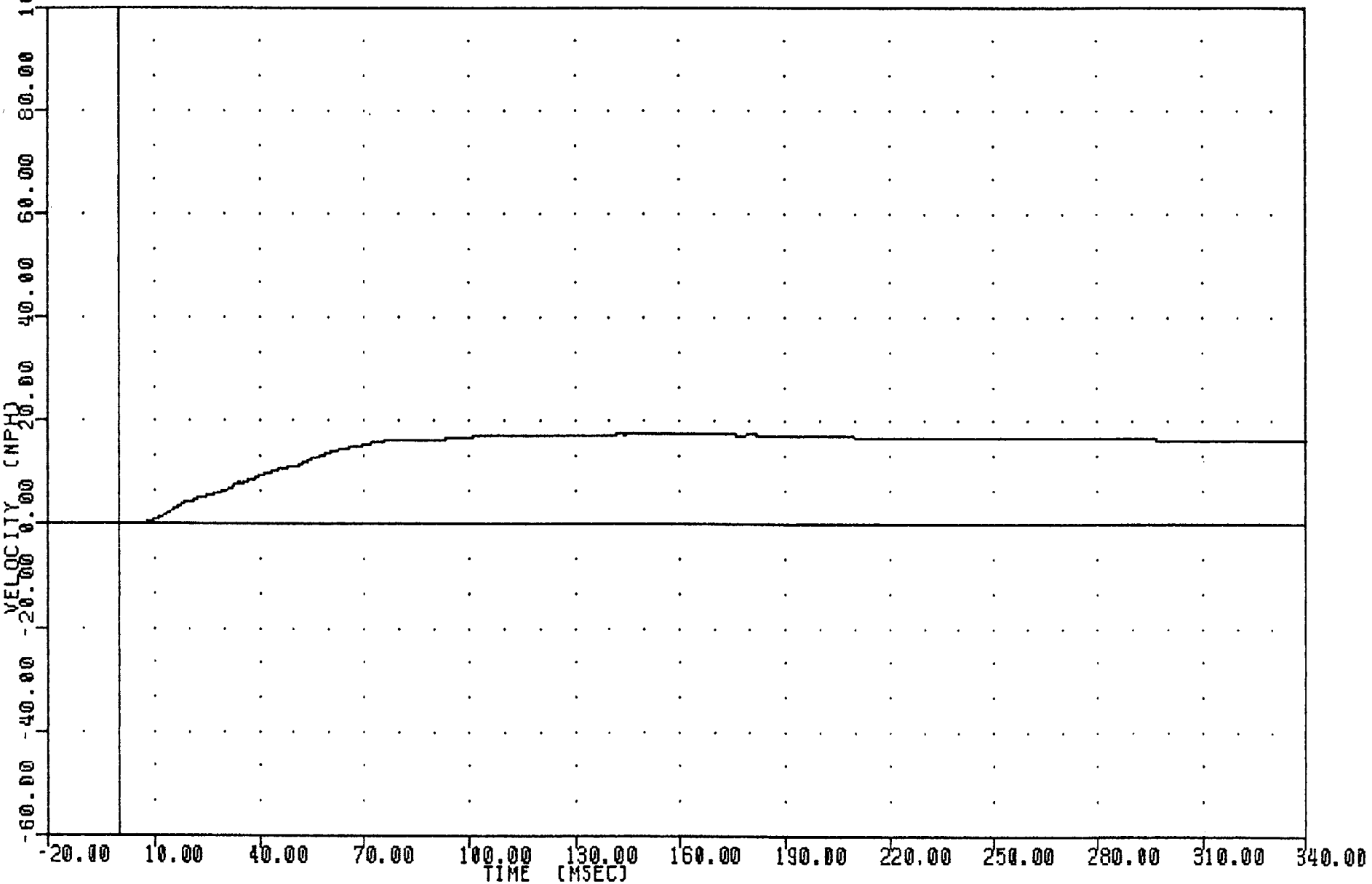


MOVING DEFORMABLE BARRIER INTO DODGE 400
VEHICLE RIGHT REAR SILL RESULTANT



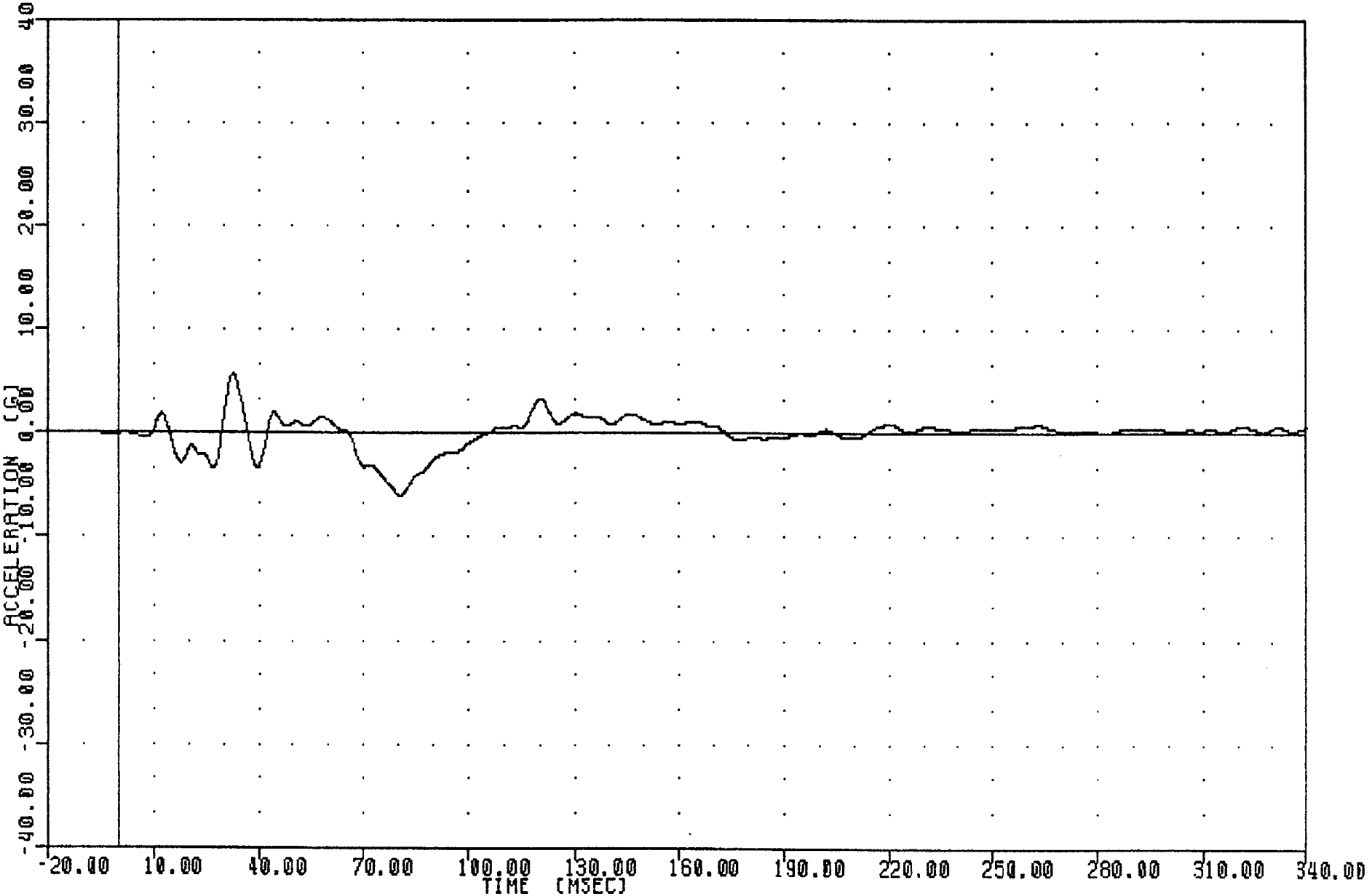
MOVING DEFORMABLE BARRIER INTO DODGE 400
DELTA V USING RRSXG2

TRC , 840615 PLOT DATE 25-JUN-84 12:49:07
SIDE PROTECTION - 2DR/4DR
84167000000 FILTER = BLPF 300/ 949/ -40
RRSYV2 MIN, MAX VALUES = -0.01 @ -8.88 , 17.56 @ 164.25

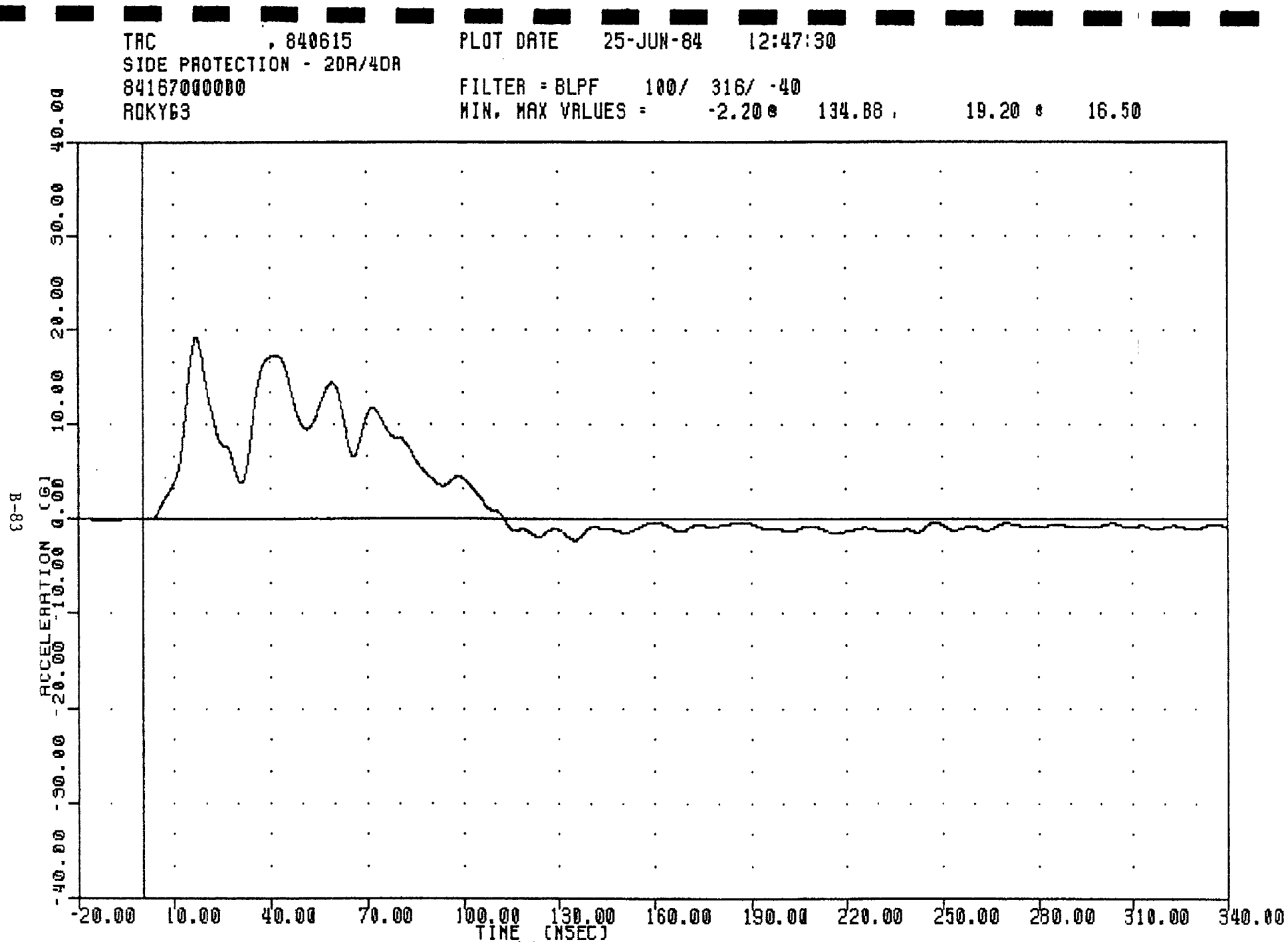


MOVING DEFORMABLE BARRIER INTO DODGE 400
DELTA V USING RRSYG2

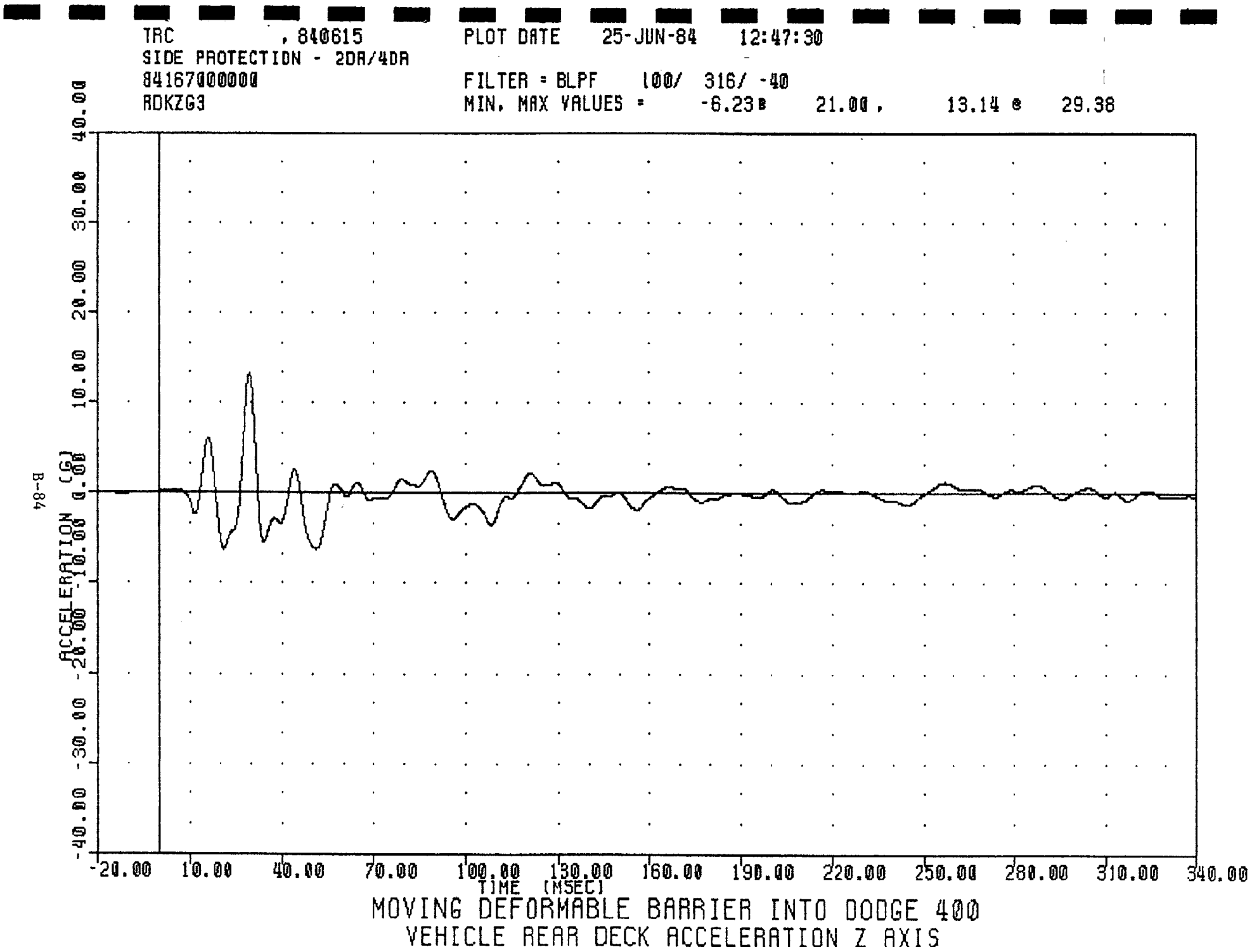
TRC . 840615 PLOT DATE 25-JUN-84 12:47:30
SIDE PROTECTION - 2DR/4DR
84167000000 FILTER = BLPF 100/ 316/ -40
RDKXG3 MIN, MAX VALUES = -6.04 @ 80.38 , 5.68 @ 32.50



MOVING DEFORMABLE BARRIER INTO DODGE 400
VEHICLE REAR DECK ACCELERATION X AXIS

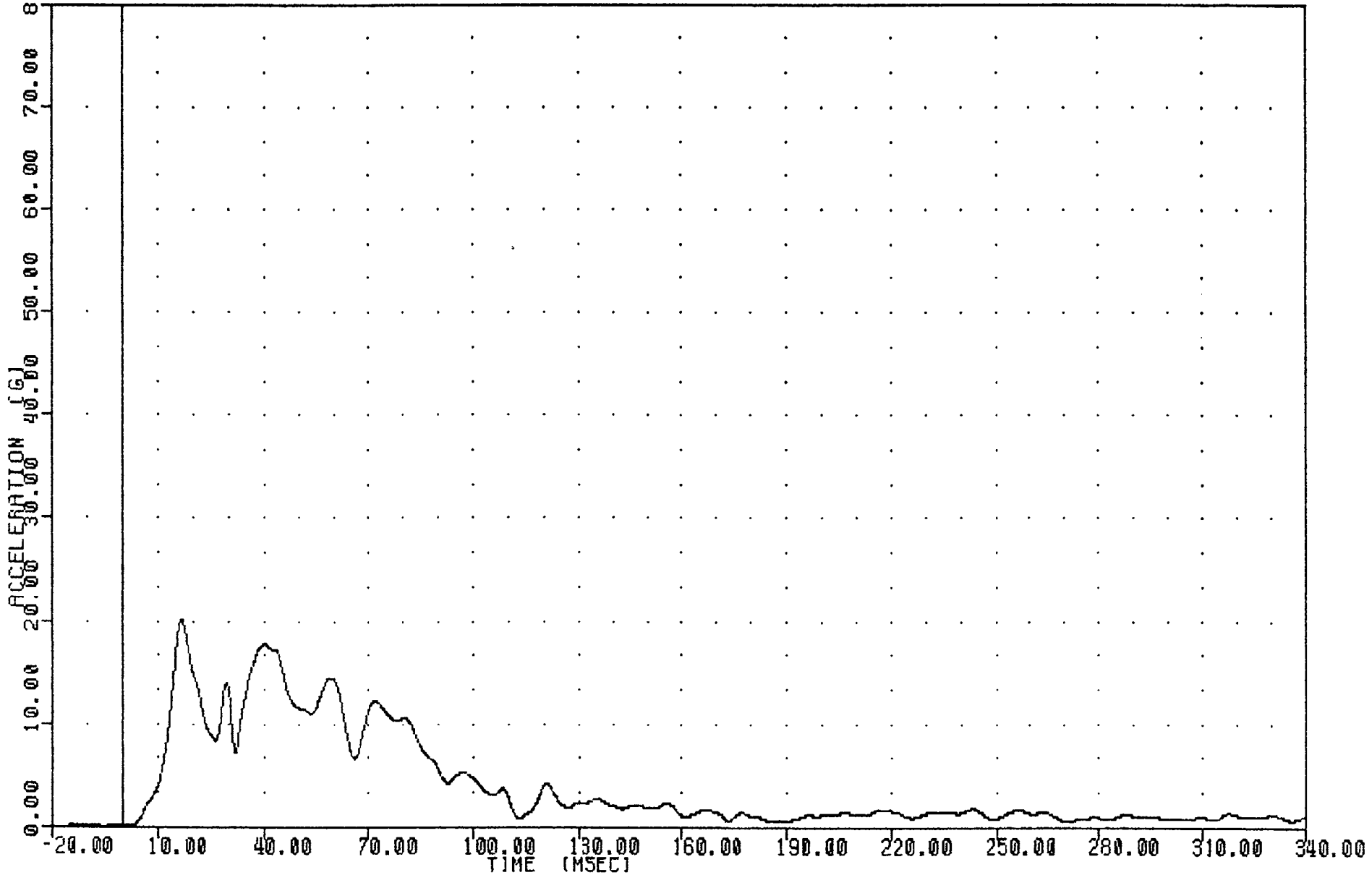


MOVING DEFORMABLE BARRIER INTO DODGE 400
VEHICLE REAR DECK ACCELERATION Y AXIS



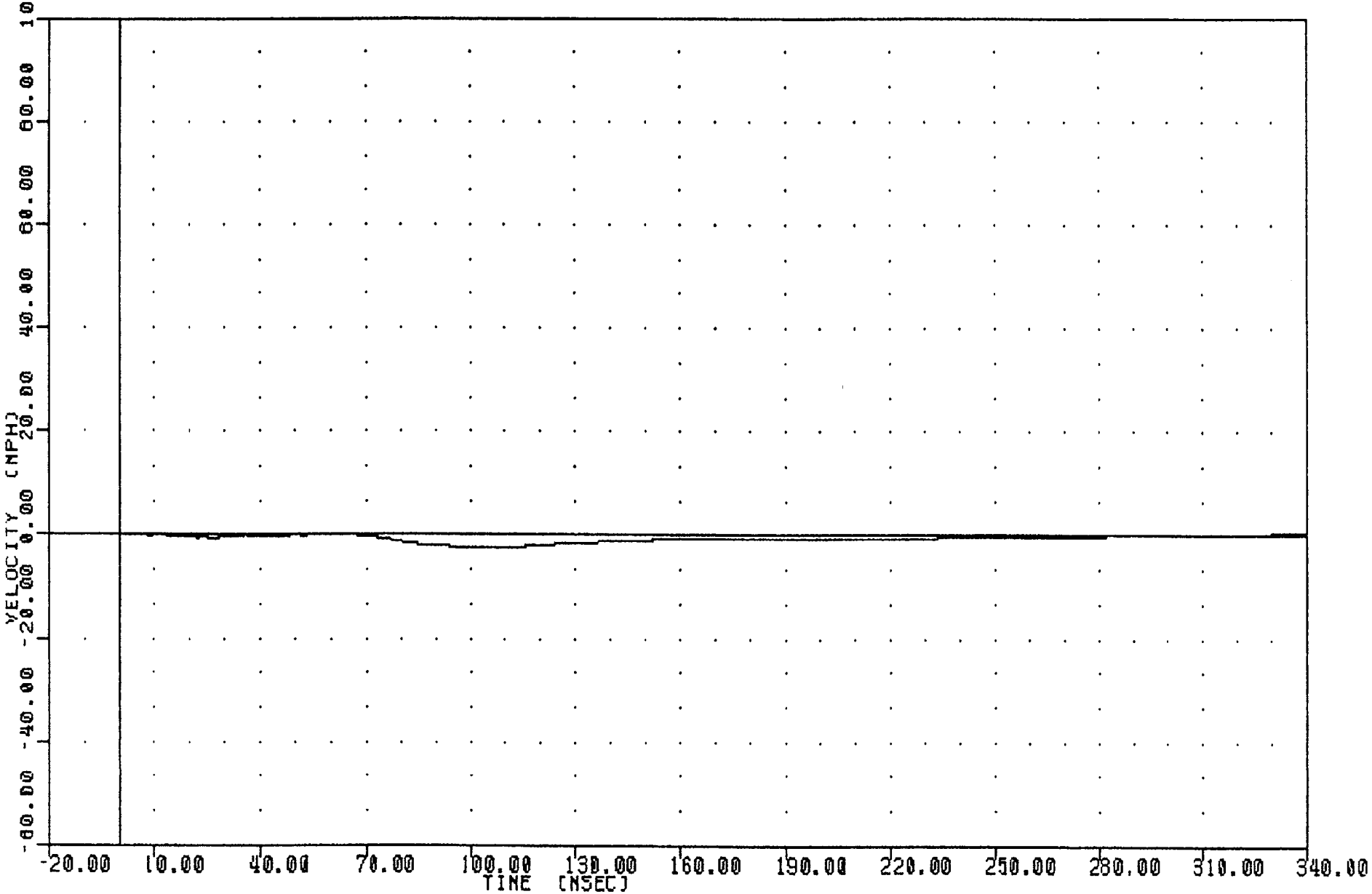
MOVING DEFORMABLE BARRIER INTO DODGE 400
VEHICLE REAR DECK ACCELERATION Z AXIS

TRC , 840615 PLOT DATE 25-JUN-84 12:48:44
SIDE PROTECTION - 2DR/4DR
841670000000 FILTER = BLPF 100/ 316/ -40
RDKRG3 MIN, MAX VALUES = 0.05 @ -17.13 , 20.11 @ 16.38

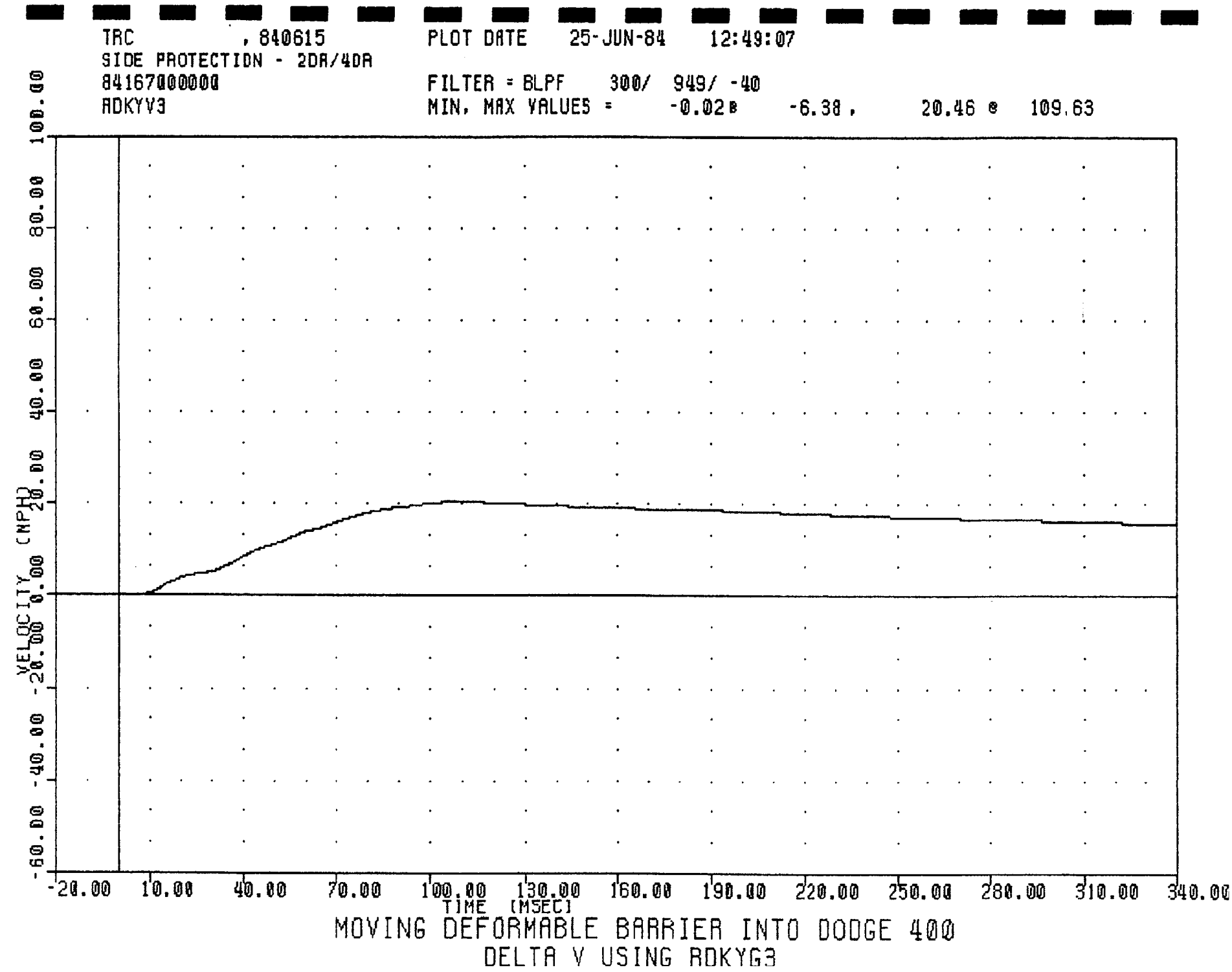


MOVING DEFORMABLE BARRIER INTO DODGE 400
VEHICLE REAR DECK RESULTANT

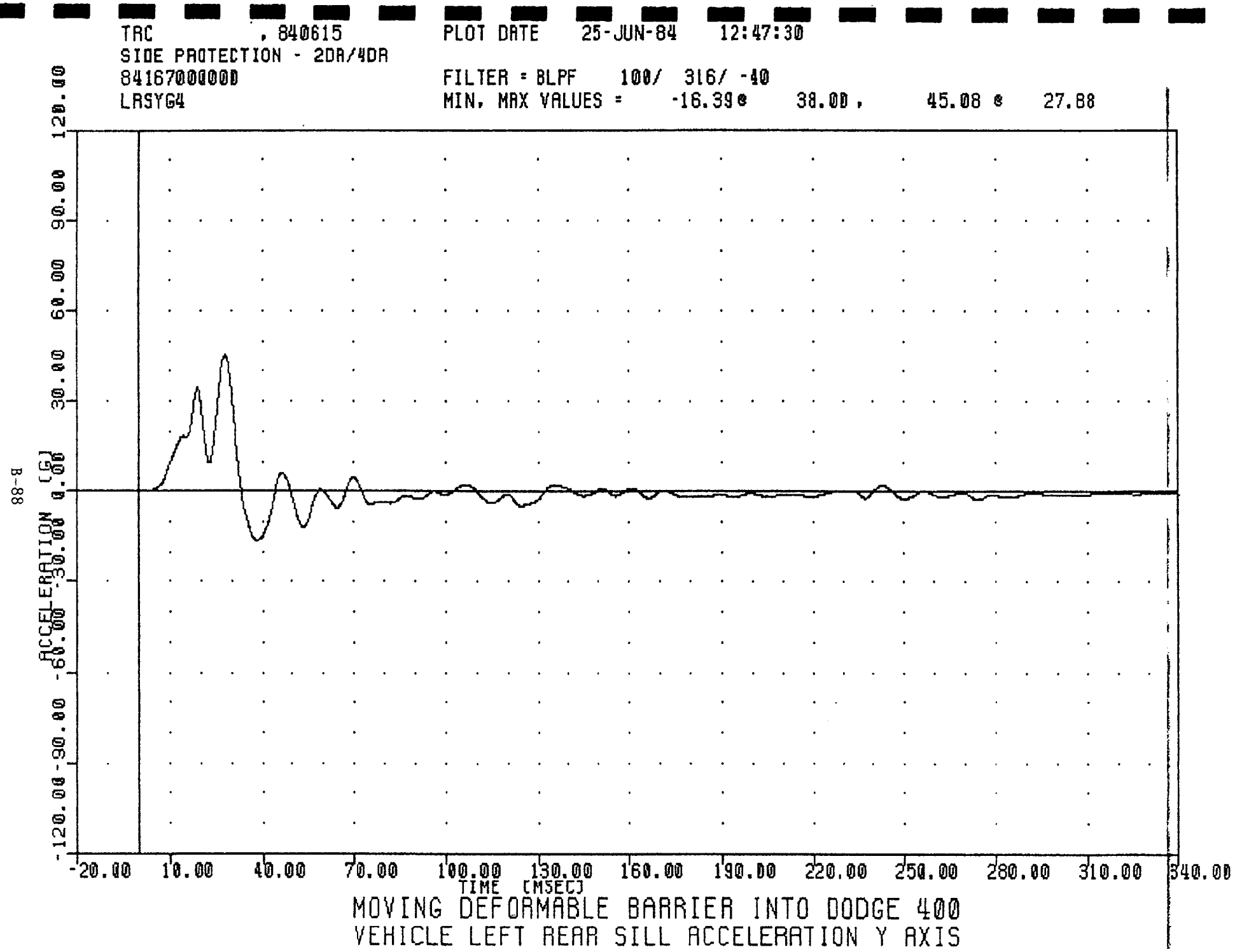
TRC , 840615 PLOT DATE 25-JUN-84 12:49:07
SIDE PROTECTION - 20R/4DR
84167000000 FILTER = BLPF 300/ 949/ -40
RDKXV3 MIN, MAX VALUES = -2.33 @ 105.00 , 0.48 @ 340.00



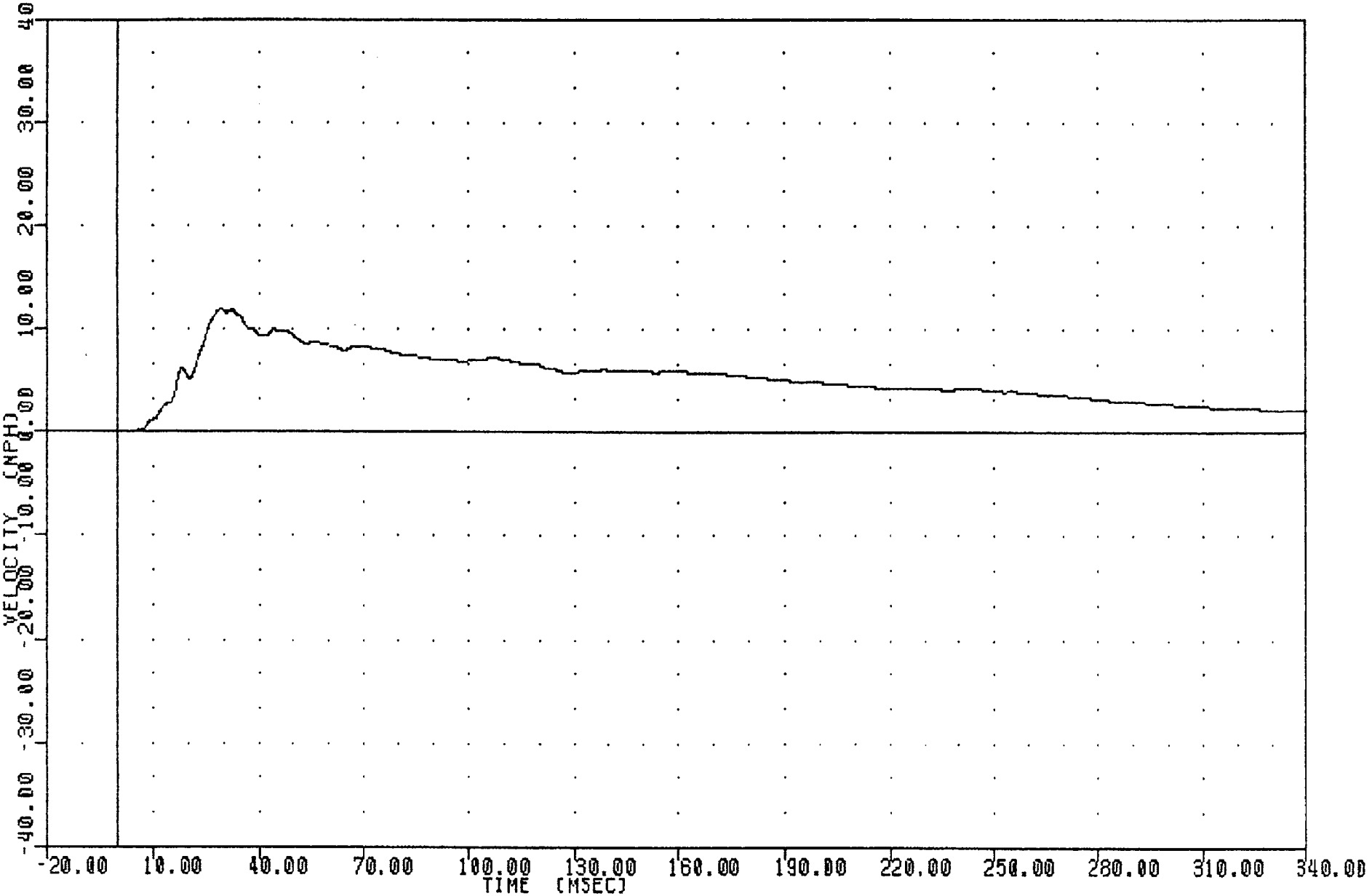
MOVING DEFORMABLE BARRIER INTO DODGE 400
DELTA V USING RDKXG3



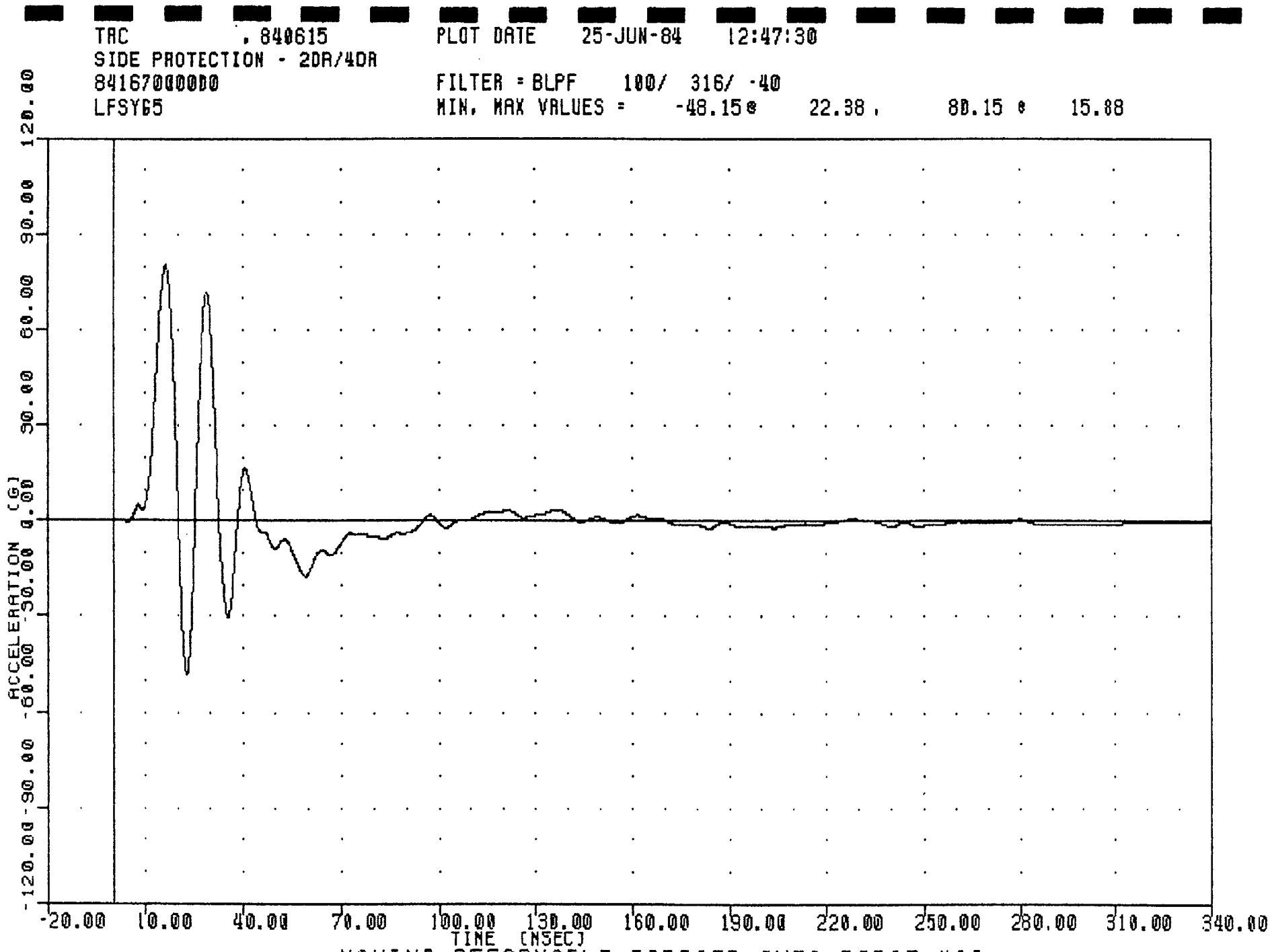
MOVING DEFORMABLE BARRIER INTO DODGE 400
DELTA V USING RDKYG3


TRC , 840615
PLOT DATE 25-JUN-84 12:47:30
SIDE PROTECTION - 2DR/4DR
8416700000D
FILTER = BLPF 100/ 316/ -40
LRSYG4
MIN, MAX VALUES = -16.39 @ 38.00 , 45.08 @ 27.88
120.00
90.00
60.00
30.00
0.00
-30.00
-60.00
-90.00
-120.00
ACCELERATION (G)
-20.00
10.00
40.00
70.00
100.00
130.00
160.00
190.00
220.00
250.00
280.00
310.00
340.00
TIME (MSEC)
MOVING DEFORMABLE BARRIER INTO DODGE 400
VEHICLE LEFT REAR SILL ACCELERATION Y AXIS

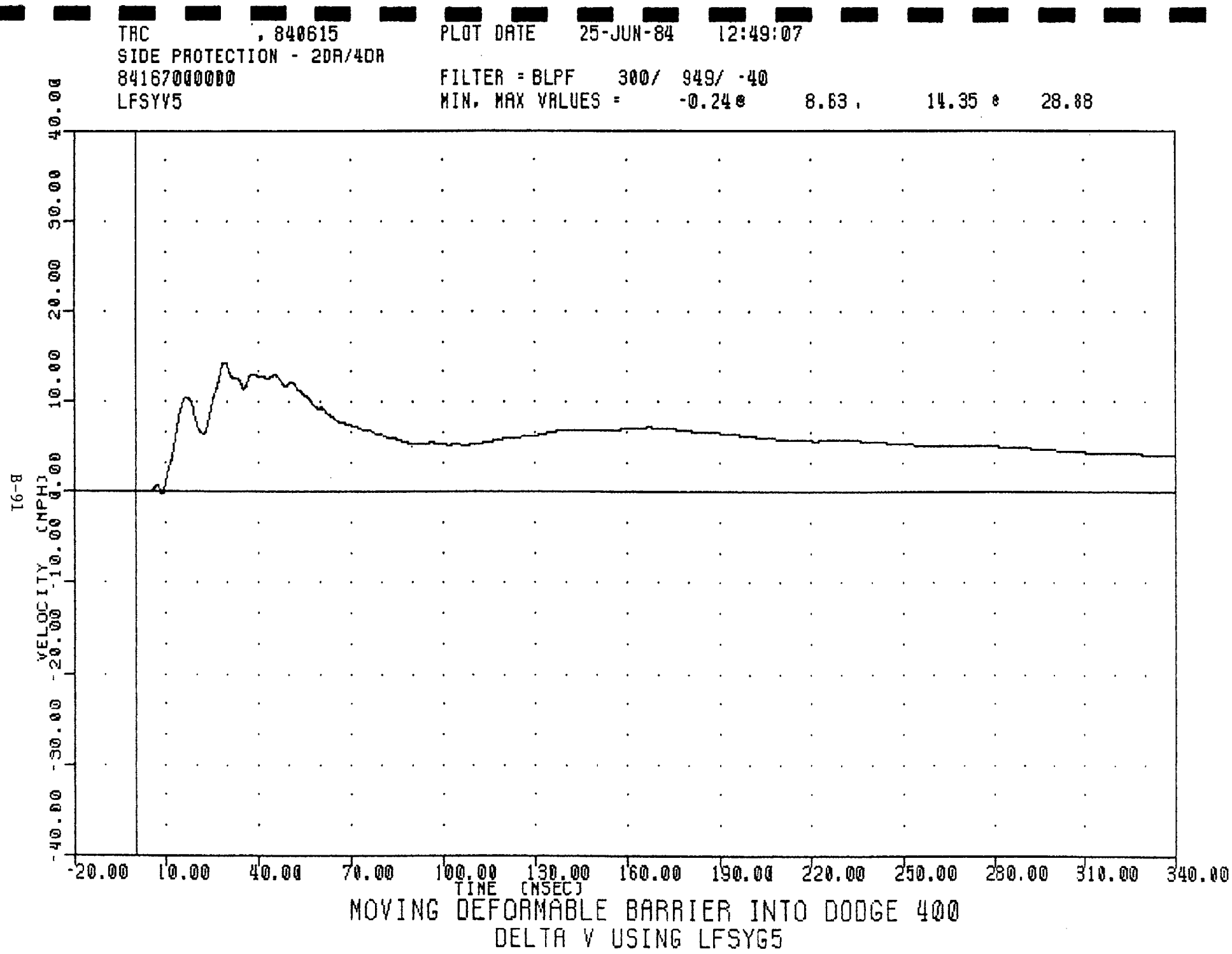
TRC , 840615 PLOT DATE 25-JUN-84 12:49:07
SIDE PROTECTION - 2DR/4DR
84167000000 FILTER = BLPF 300/ 949/ -40
LRSYV4 MIN, MAX VALUES = -0.01@ 2.38 , 11.90 @ 29.13

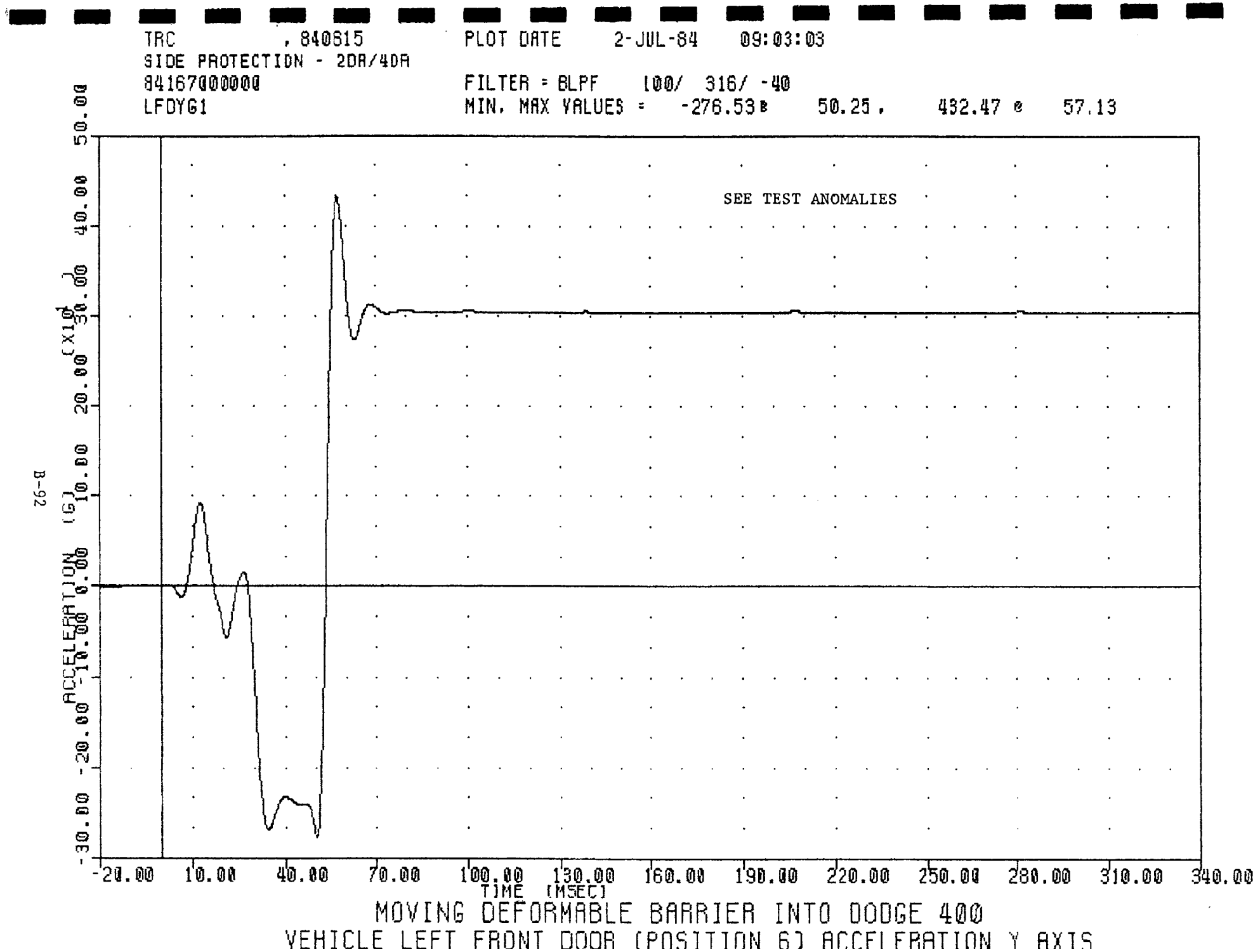


MOVING DEFORMABLE BARRIER INTO DODGE 400
DELTA V USING LRSYG4



MOVING DEFORMABLE BARRIER INTO DODGE 400
VEHICLE LEFT FRONT SILL ACCELERATION Y AXIS

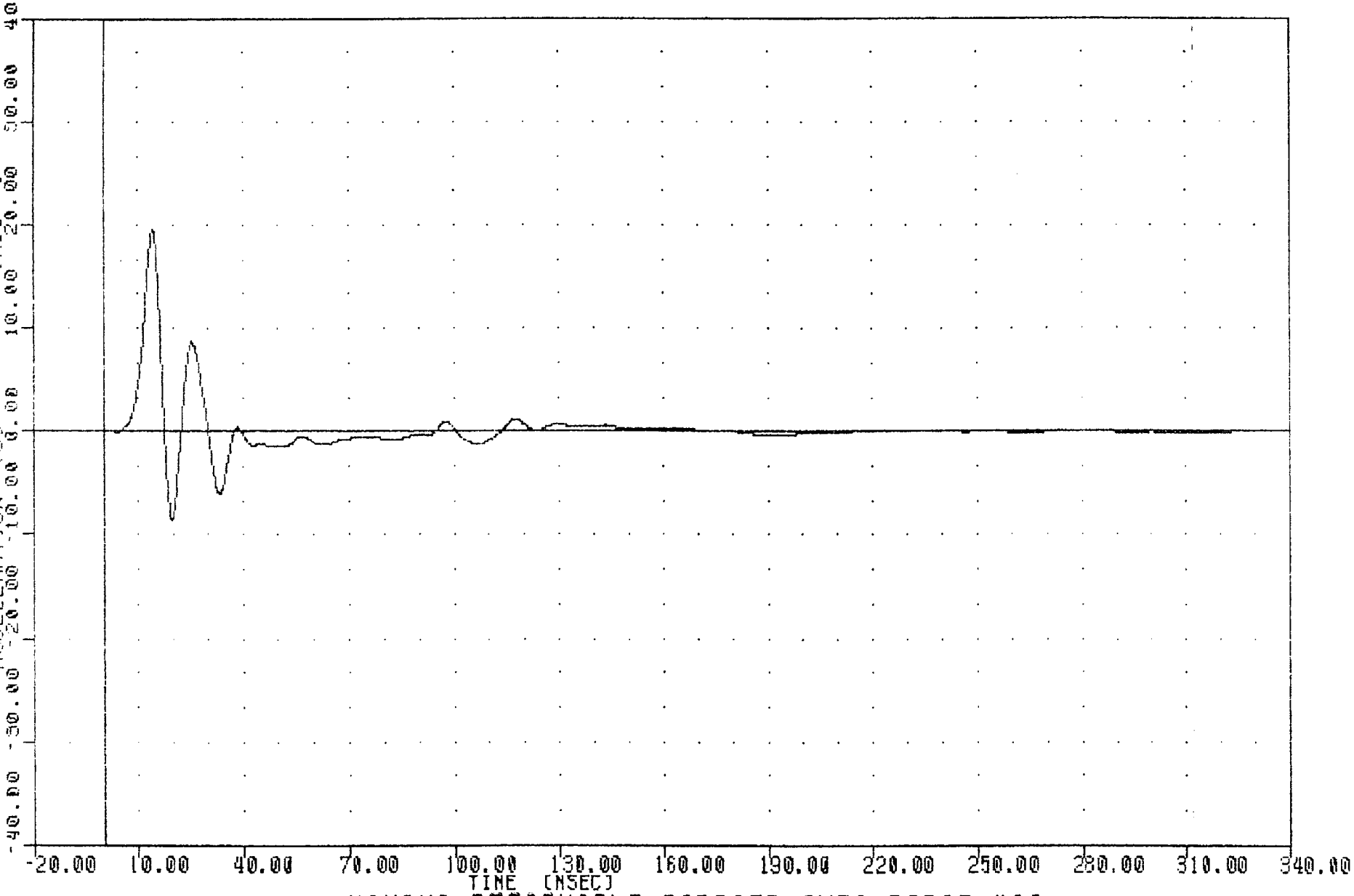

TRC , 840615
PLOT DATE 25-JUN-84 12:49:07
SIDE PROTECTION - 2DR/4DR
84167000000
FILTER = BLPF 300/ 949/ -40
LFSYY5
MIN, MAX VALUES = -0.24 @ 8.63 , 14.35 @ 28.88
40.00
30.00
20.00
10.00
0.00
-10.00
-20.00
-30.00
-40.00
VELOCITY (MPH)
-20.00
10.00
40.00
70.00
100.00
130.00
160.00
190.00
220.00
250.00
280.00
310.00
340.00
TIME (MSEC)
MOVING DEFORMABLE BARRIER INTO DODGE 400
DELTA V USING LFSYG5



MOVING DEFORMABLE BARRIER INTO DODGE 400

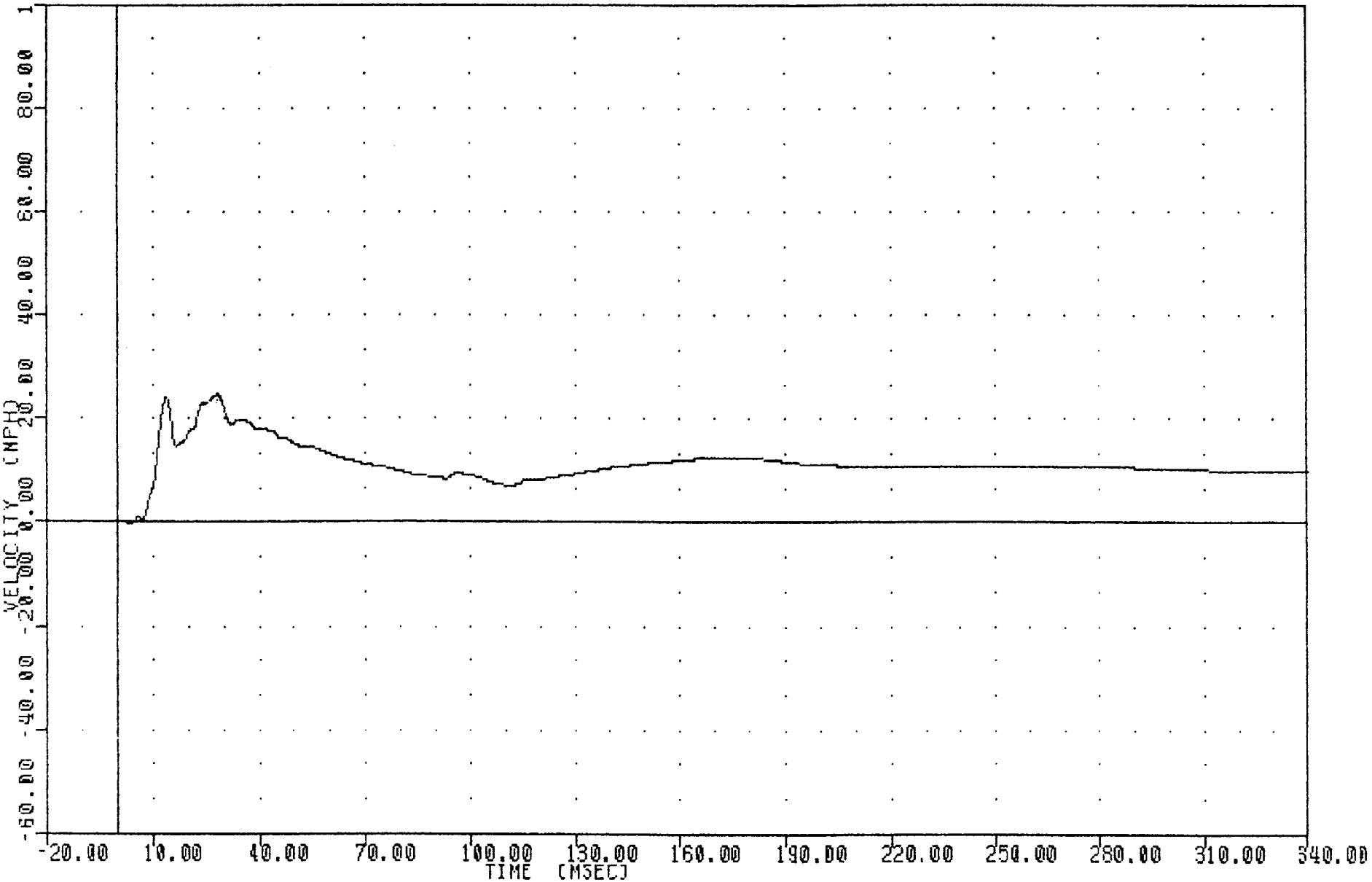
VEHICLE LEFT FRONT DOOR (POSITION 6) ACCELERATION Y AXIS

TRC , 840615 PLOT DATE 25-JUN-84 12:47:30
SIDE PROTECTION - 20A/4DA
84167000000 FILTER = BLPF 100/ 316/ -40
LFDY62 MIN, MAX VALUES = -86.05 @ 19.25 , 196.53 @ 14.00



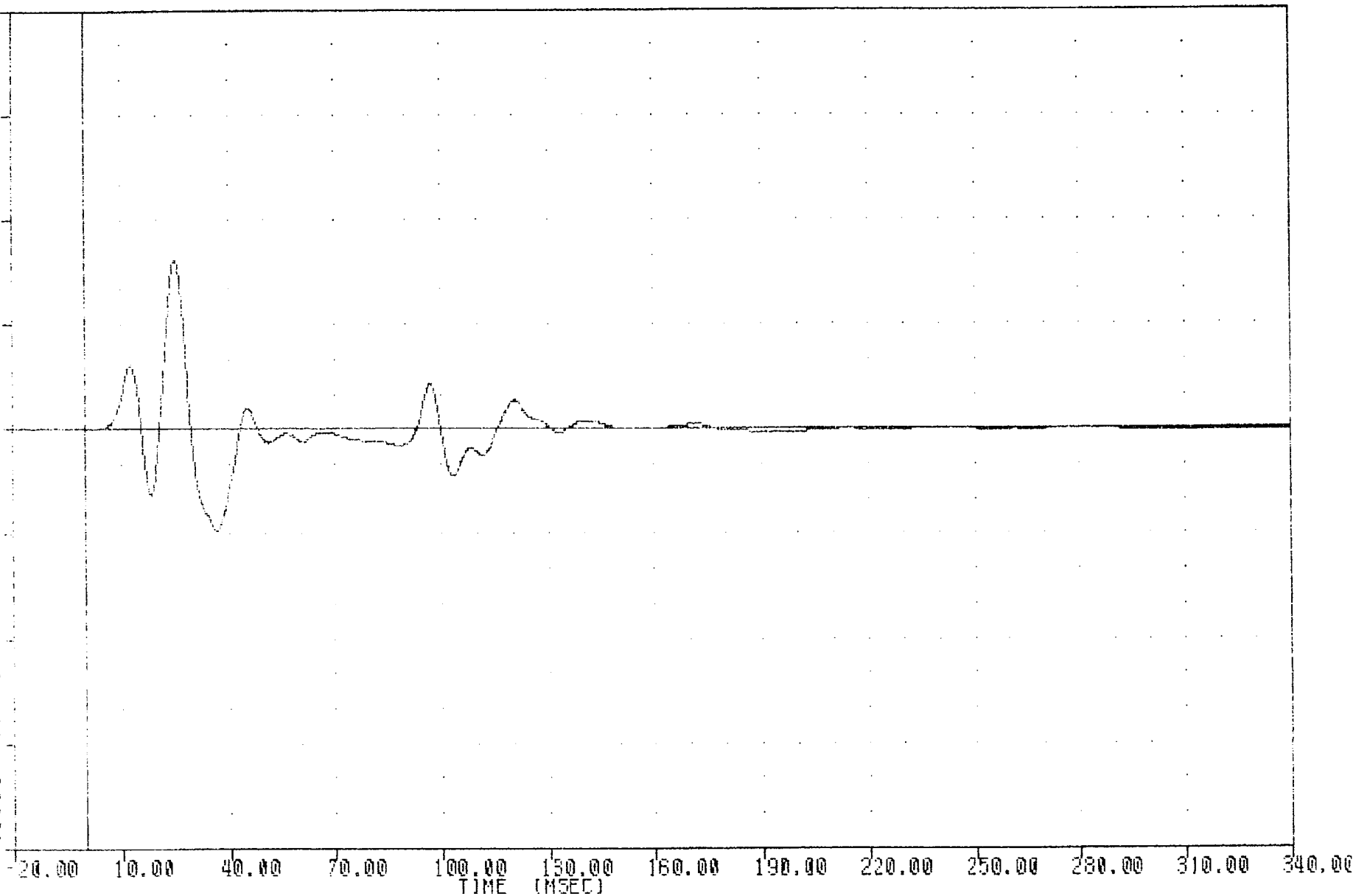
MOVING DEFORMABLE BARRIER INTO DODGE 400
VEHICLE LEFT FRONT DOOR (POSITION 8) ACCELERATION Y AXIS

TRC , 840615 PLOT DATE 25-JUN-84 12:49:07
SIDE PROTECTION - 2DR/4DR
84167000000 FILTER = BLPF 300/ 949/ -40
LFDYV2 MIN, MAX VALUES = -0.21@ 3.88 , 24.57 @ 28.13

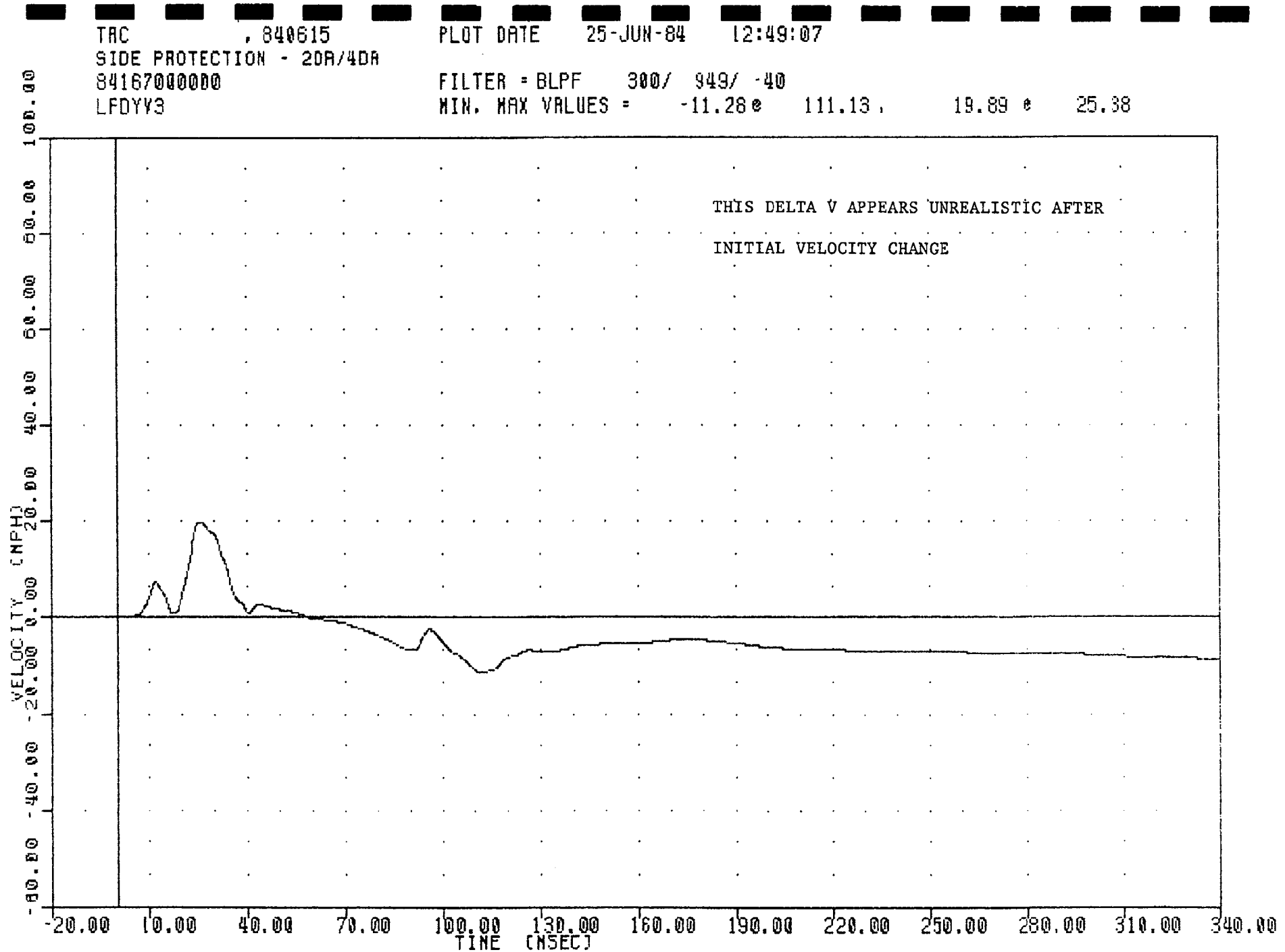


MOVING DEFORMABLE BARRIER INTO DODGE 400
DELTA V USING LFDYG2

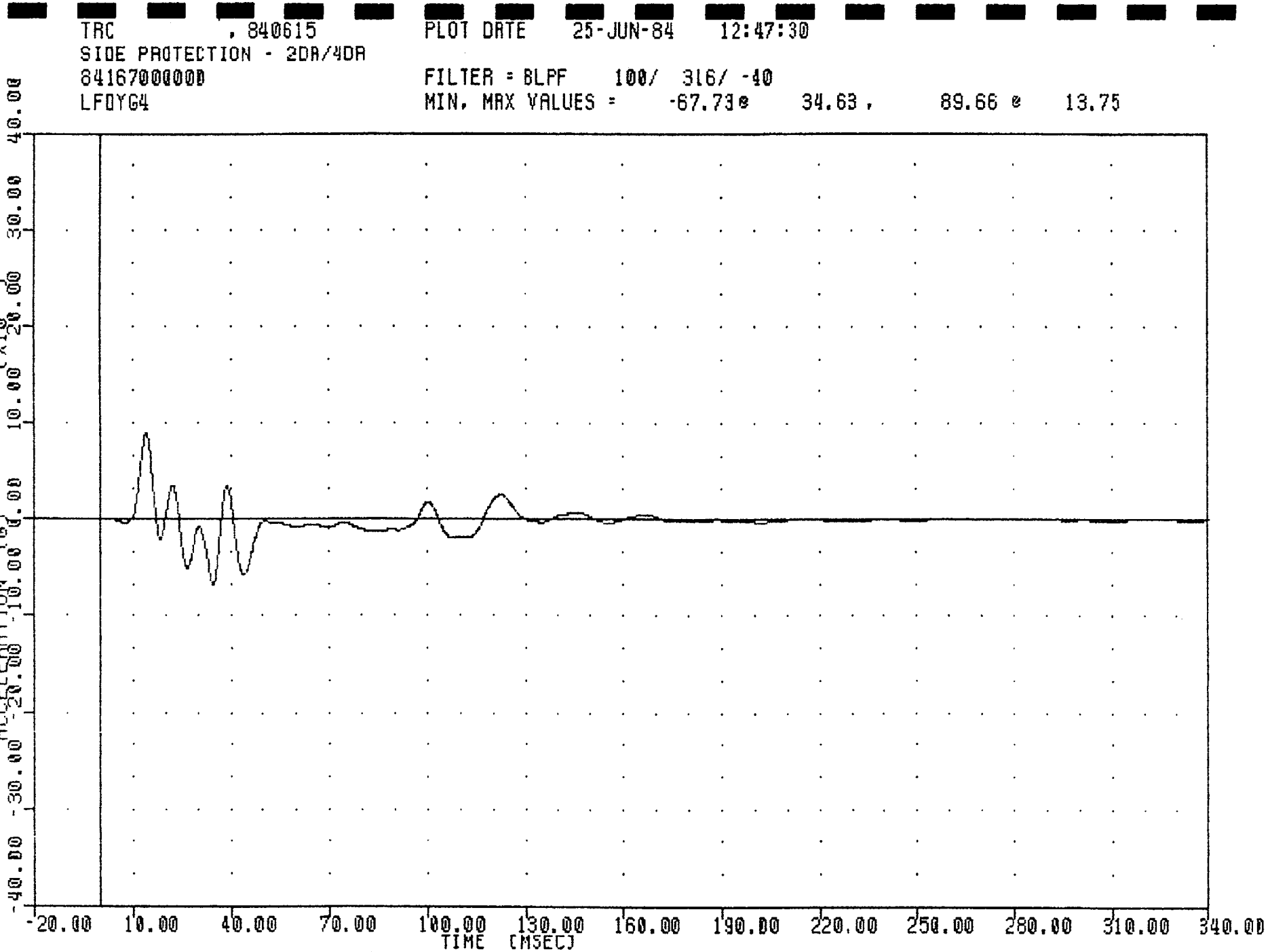
TRC , 840615 PLOT DATE 25-JUN-84 12:47:30
SIDE PROTECTION - 2DR/40R
841670000000 FILTER = BLPF 100/ 316/ -40
LFDYG3 MIN, MAX VALUES = -97.56 @ 36.50 , 161.02 @ 25.00



MOVING DEFORMABLE BARRIER INTO DODGE 400
VEHICLE LEFT FRONT DOOR (POSITION 9) ACCELERATION Y AXIS

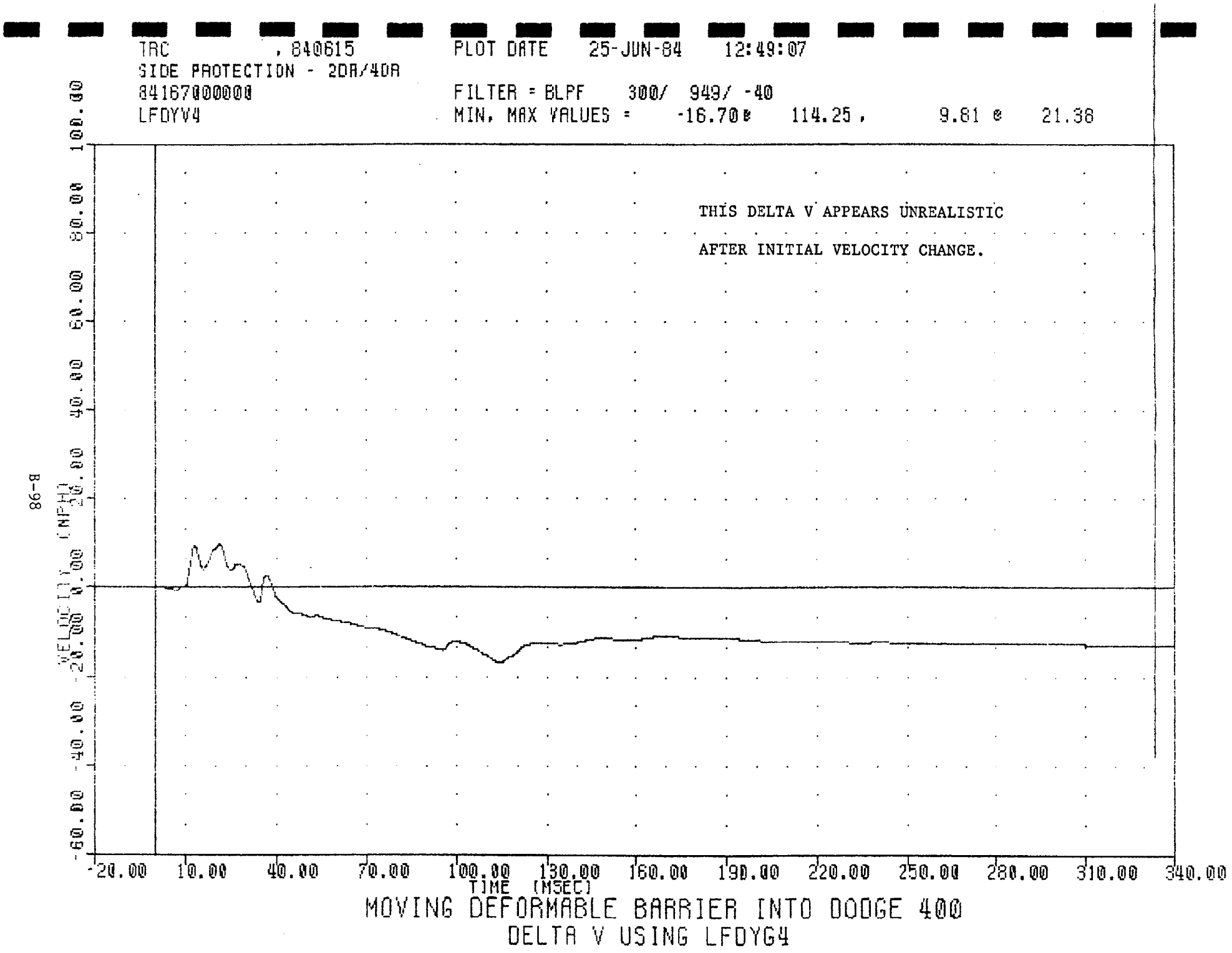


MOVING DEFORMABLE BARRIER INTO DODGE 400
DELTA V USING LFDYG3



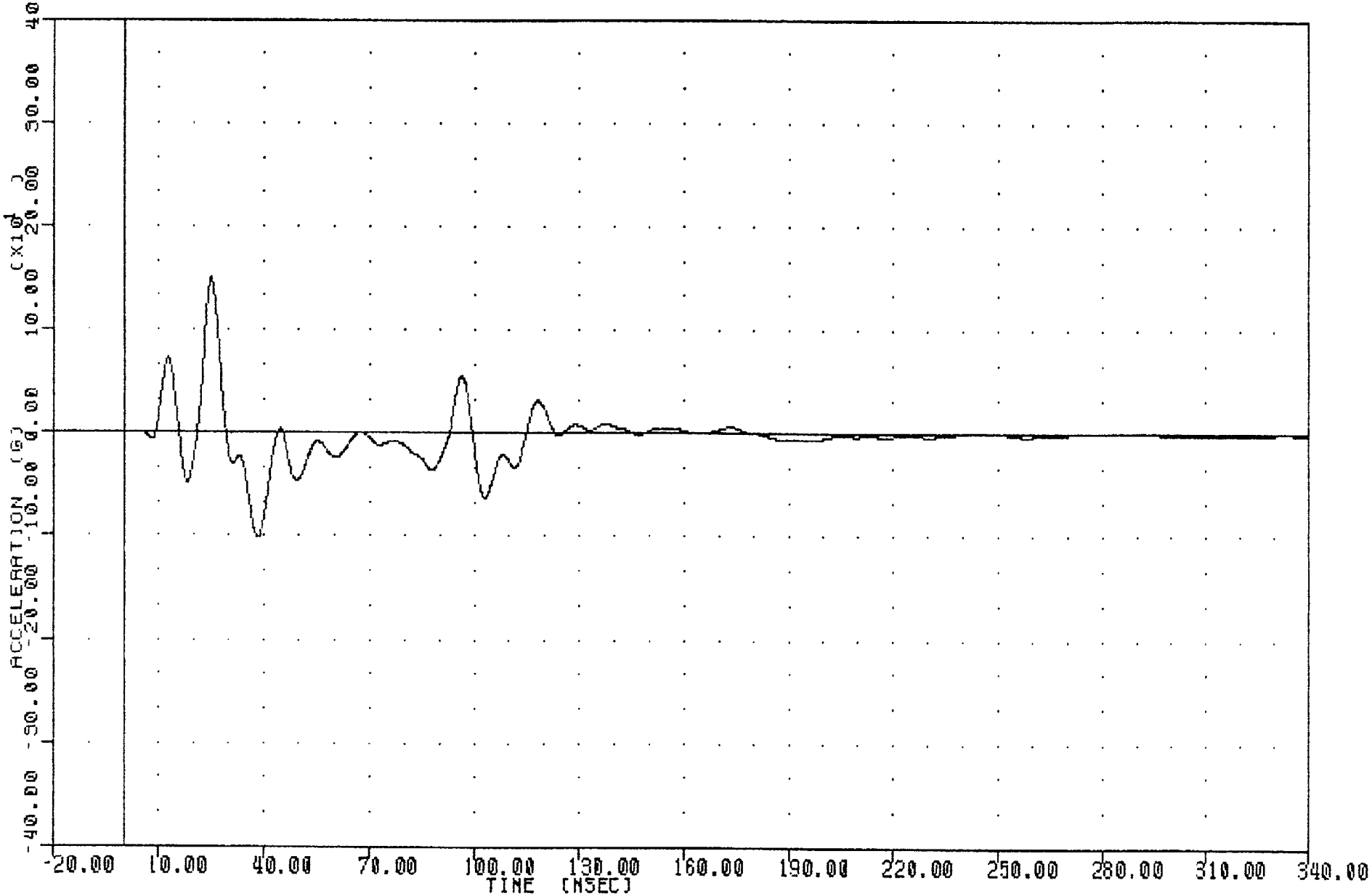
MOVING DEFORMABLE BARRIER INTO DODGE 400

VEHICLE LEFT FRONT DOOR (POSITION 10) ACCELERATION Y AXIS



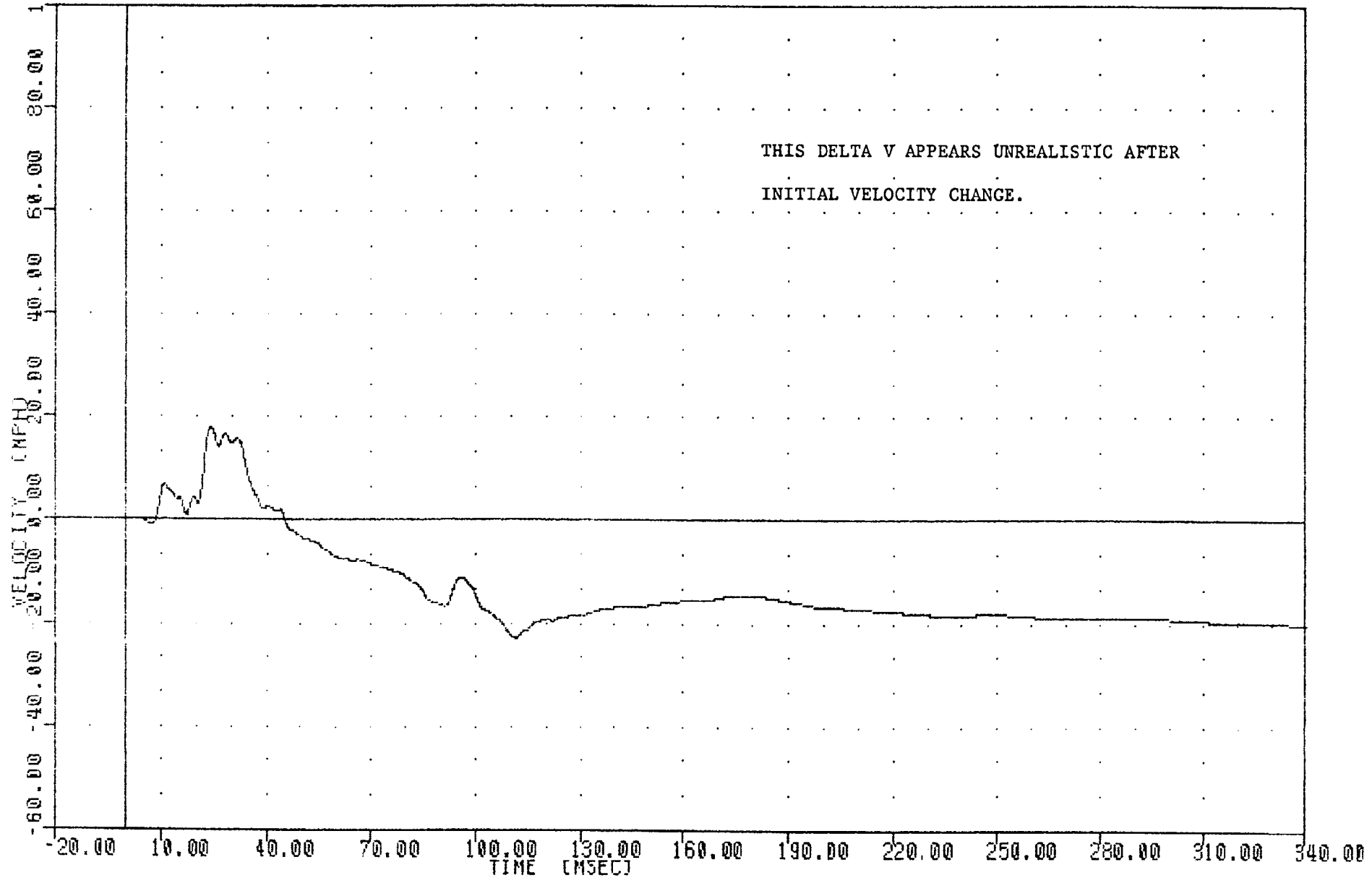
MOVING DEFORMABLE BARRIER INTO DODGE 400
DELTA V USING LFDYG4

TAC , 840615 PLOT DATE 25-JUN-84 12:47:30
SIDE PROTECTION - 20R/4DR
84167000000 FILTER = BLPF 100/ 316/ -40
LFDYG5 MIN, MAX VALUES = -101.45 @ 38.13 , 151.00 @ 24.88



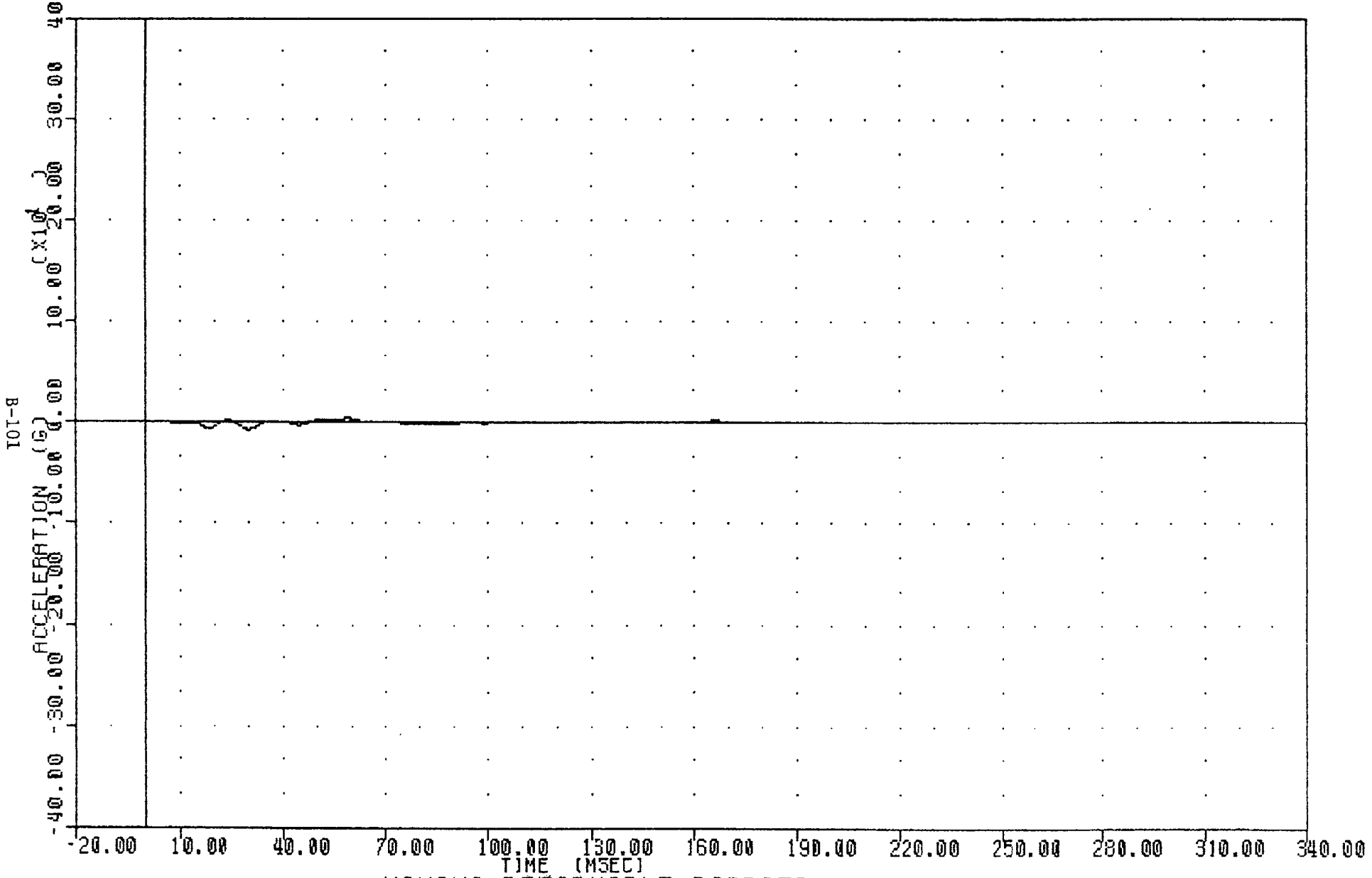
MOVING DEFORMABLE BARRIER INTO DODGE 400
VEHICLE LEFT FRONT DOOR (POSITION 11) ACCELERATION Y AXIS

TRC , 840615 PLOT DATE 25-JUN-84 12:49:07
SIDE PROTECTION - 2DA/4DA
84167000000 FILTER = BLPF 300/ 949/ -40
LFDYV5 MIN, MAX VALUES = -22.97@ 111.13 , 17.87 @ 24.00

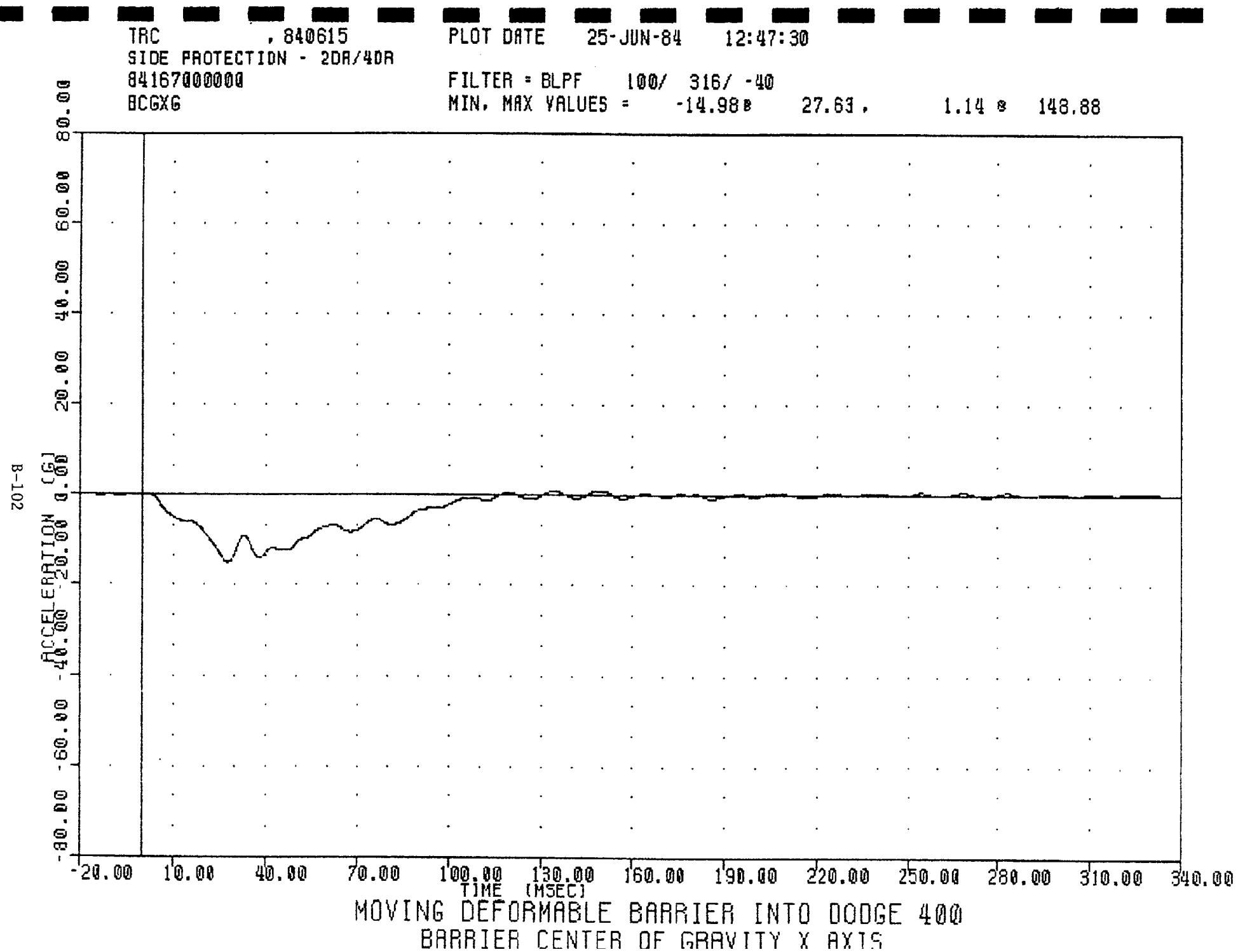


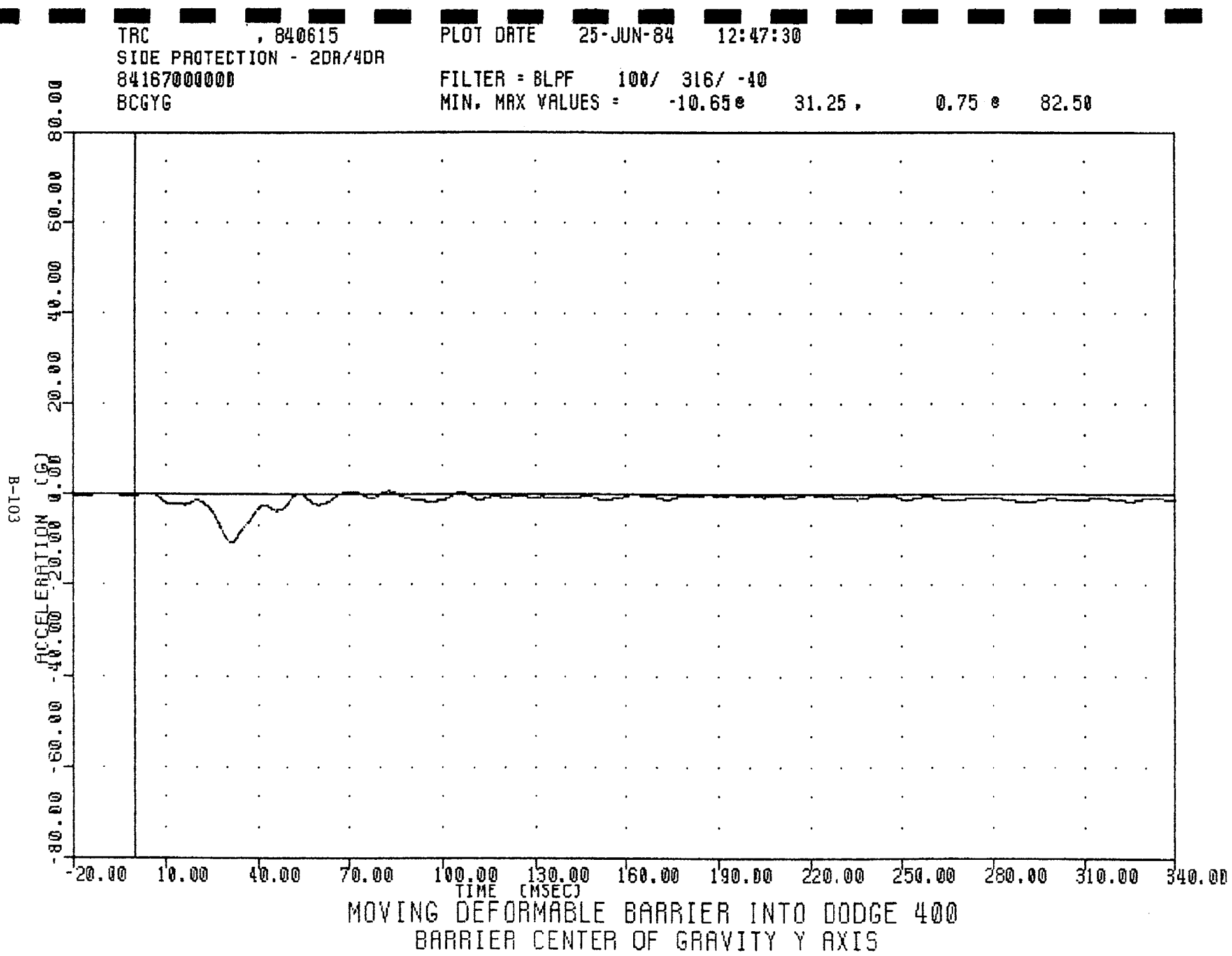
MOVING DEFORMABLE BARRIER INTO DODGE 400
DELTA V USING LFDY65

TRC , 840615 PLOT DATE 25-JUN-84 12:47:30
SIDE PROTECTION - 2DR/4DR
84167000000 FILTER = BLPF 100/ 316/ -40
TFRXG7 MIN. MAX VALUES = -7.14 @ 30.13 , 3.85 @ 58.88

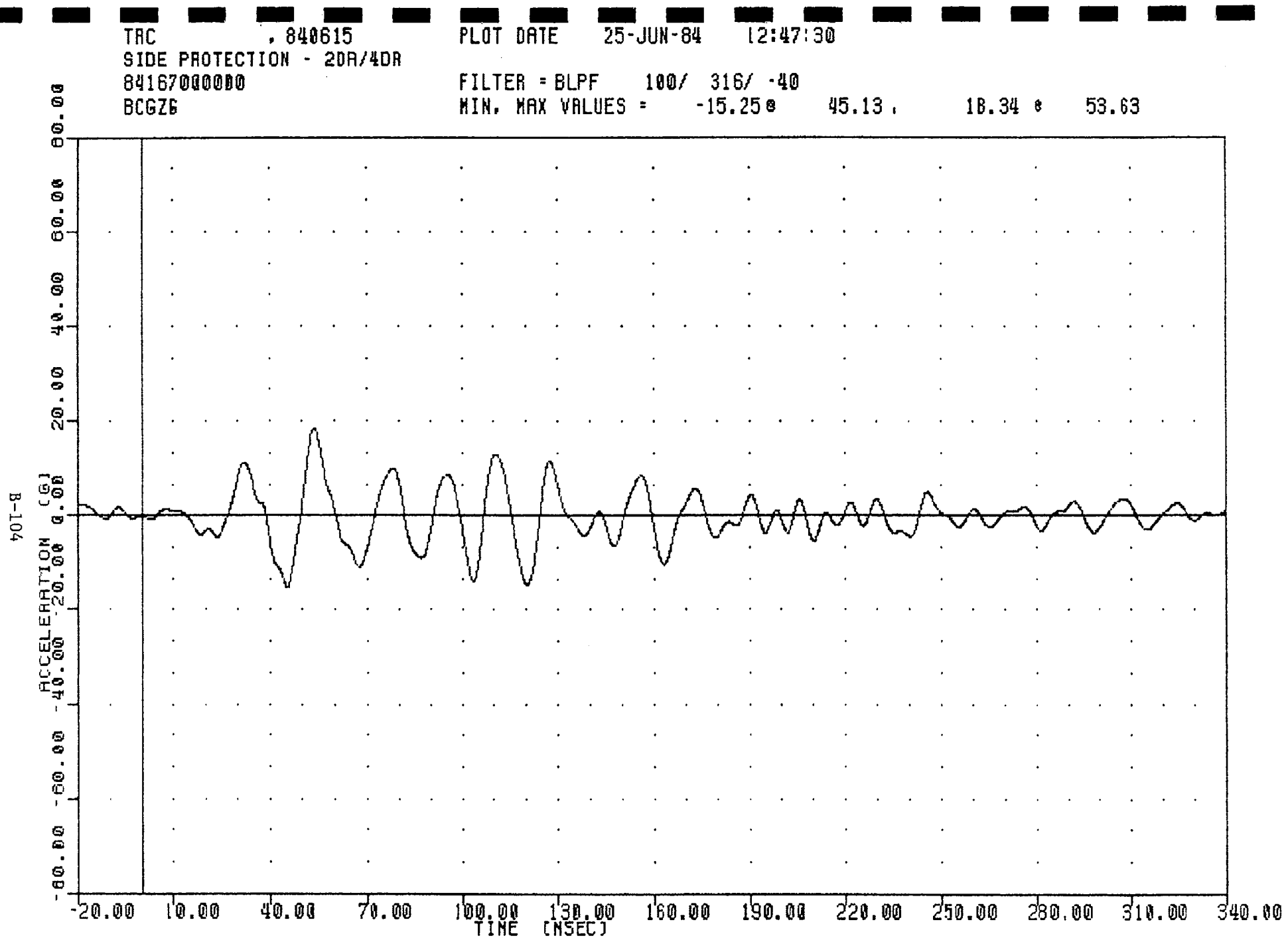


MOVING DEFORMABLE BARRIER INTO DODGE 400
VEHICLE TRUNK FLOOR RIGHT ACCELERATION X AXIS

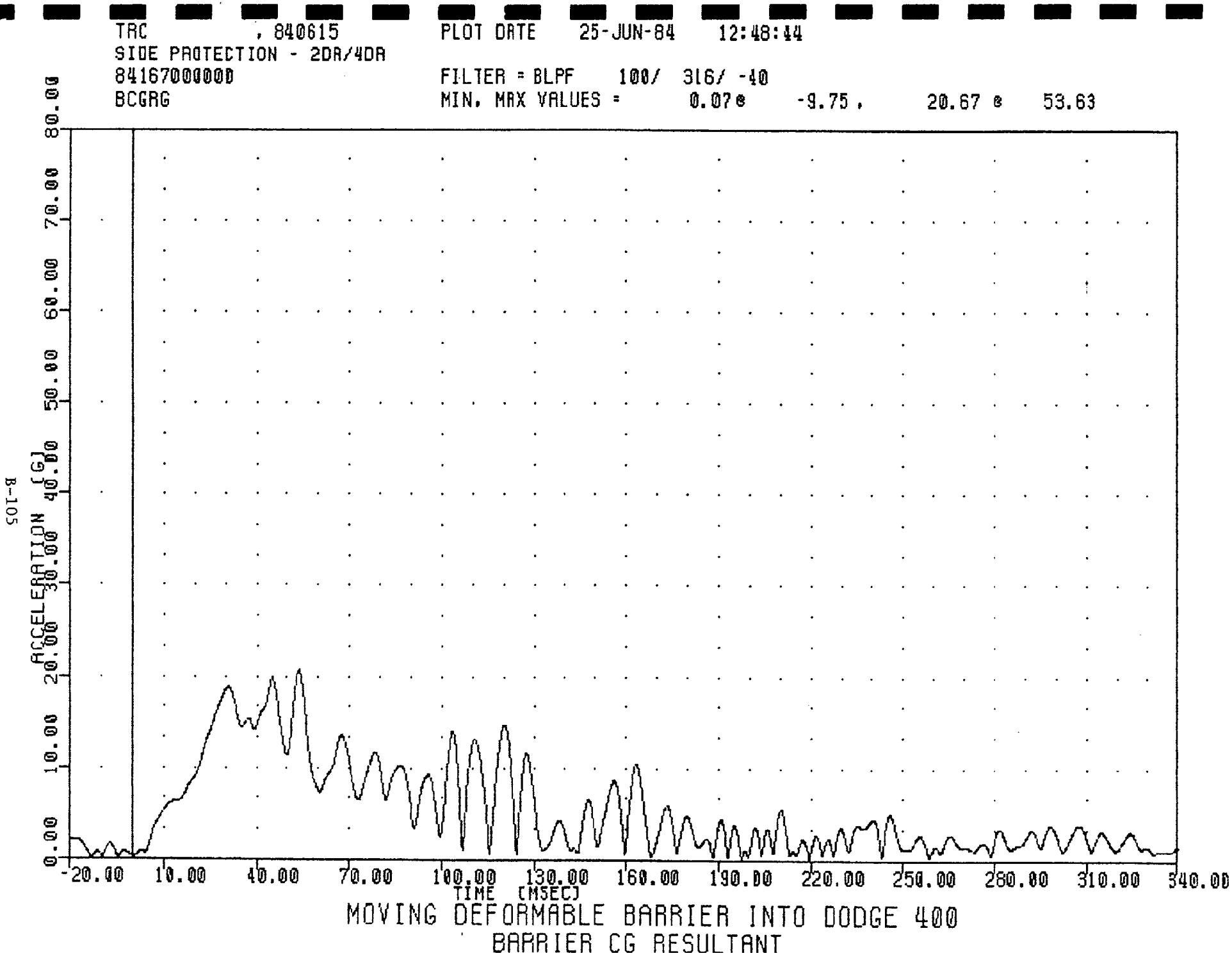

TRC , 840615
PLOT DATE 25-JUN-84 12:47:30
SIDE PROTECTION - 2DR/4DR
84167000000
FILTER = BLPF 100/ 316/ -40
BCGXG
MIN, MAX VALUES = -14.98 @ 27.63 , 1.14 @ 148.88
80.00
60.00
40.00
20.00
0.00
-20.00
-40.00
-60.00
-80.00
ACCELERATION (G)
-20.00
10.00
40.00
70.00
100.00
130.00
160.00
190.00
220.00
250.00
280.00
310.00
340.00
TIME (MSEC)
MOVING DEFORMABLE BARRIER INTO DODGE 400
BARRIER CENTER OF GRAVITY X AXIS



MOVING DEFORMABLE BARRIER INTO DODGE 400
BARRIER CENTER OF GRAVITY Y AXIS

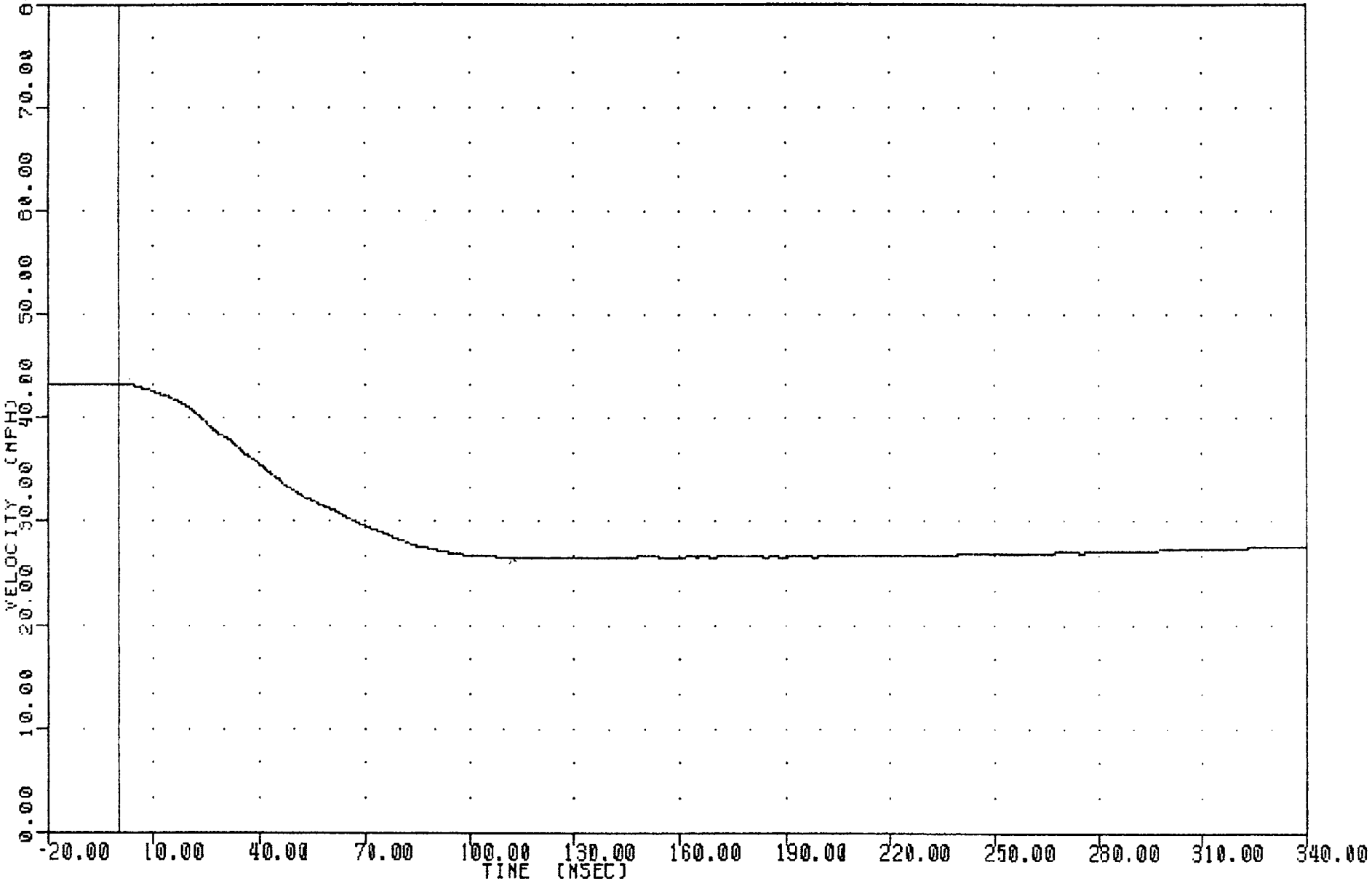


MOVING DEFORMABLE BARRIER INTO DODGE 400
BARRIER CENTER OF GRAVITY Z AXIS



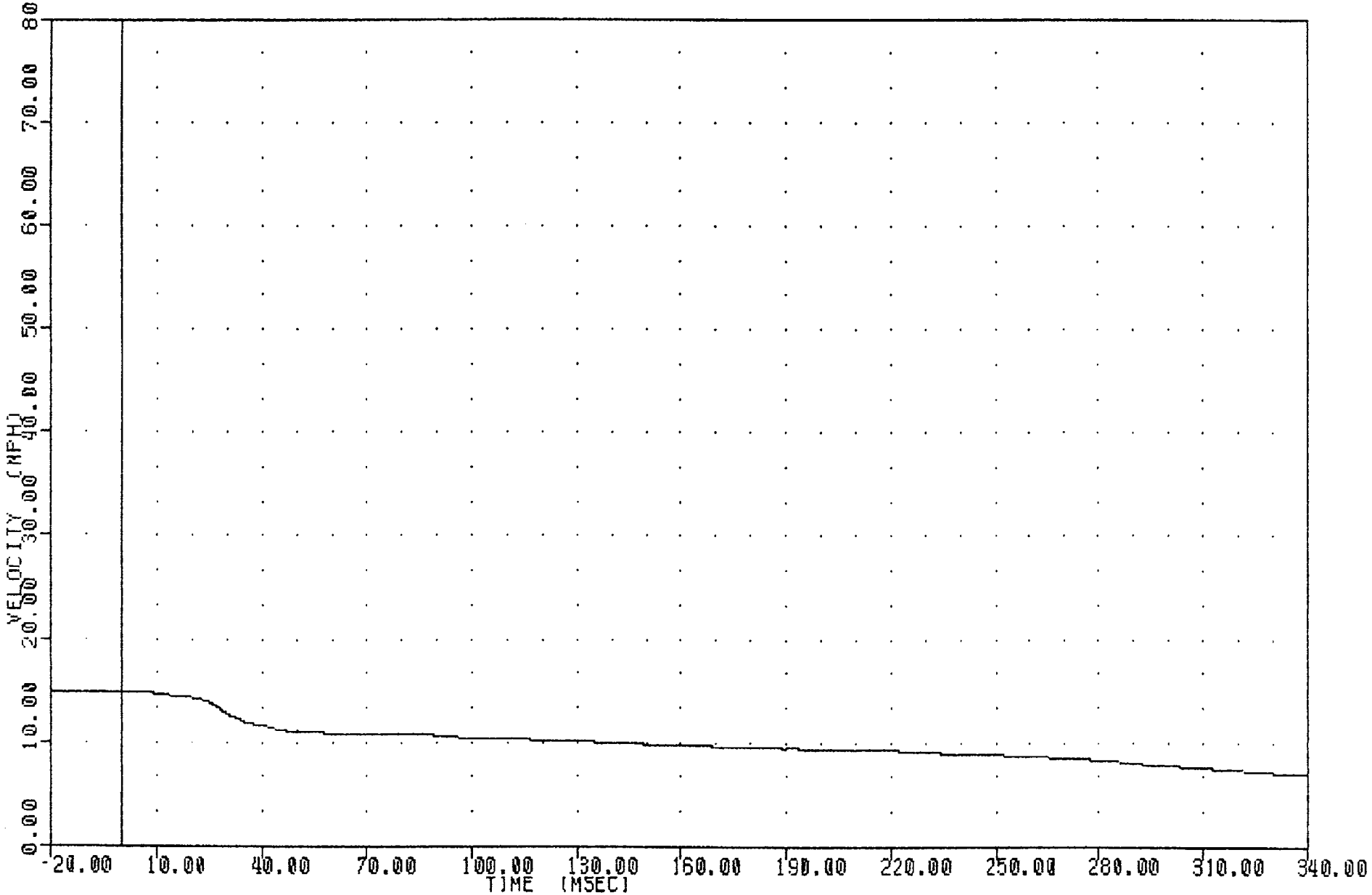
MOVING DEFORMABLE BARRIER INTO DODGE 400
BARRIER CG RESULTANT

TRC , 840615 PLOT DATE 25-JUN-84 12:49:07
SIDE PROTECTION - 2DR/4DR
84167000000 FILTER = BLPF 300/ 949/ -40
BCGXY MIN, MAX VALUES = 26.42 @ 127.50 , 43.30 @ -17.63



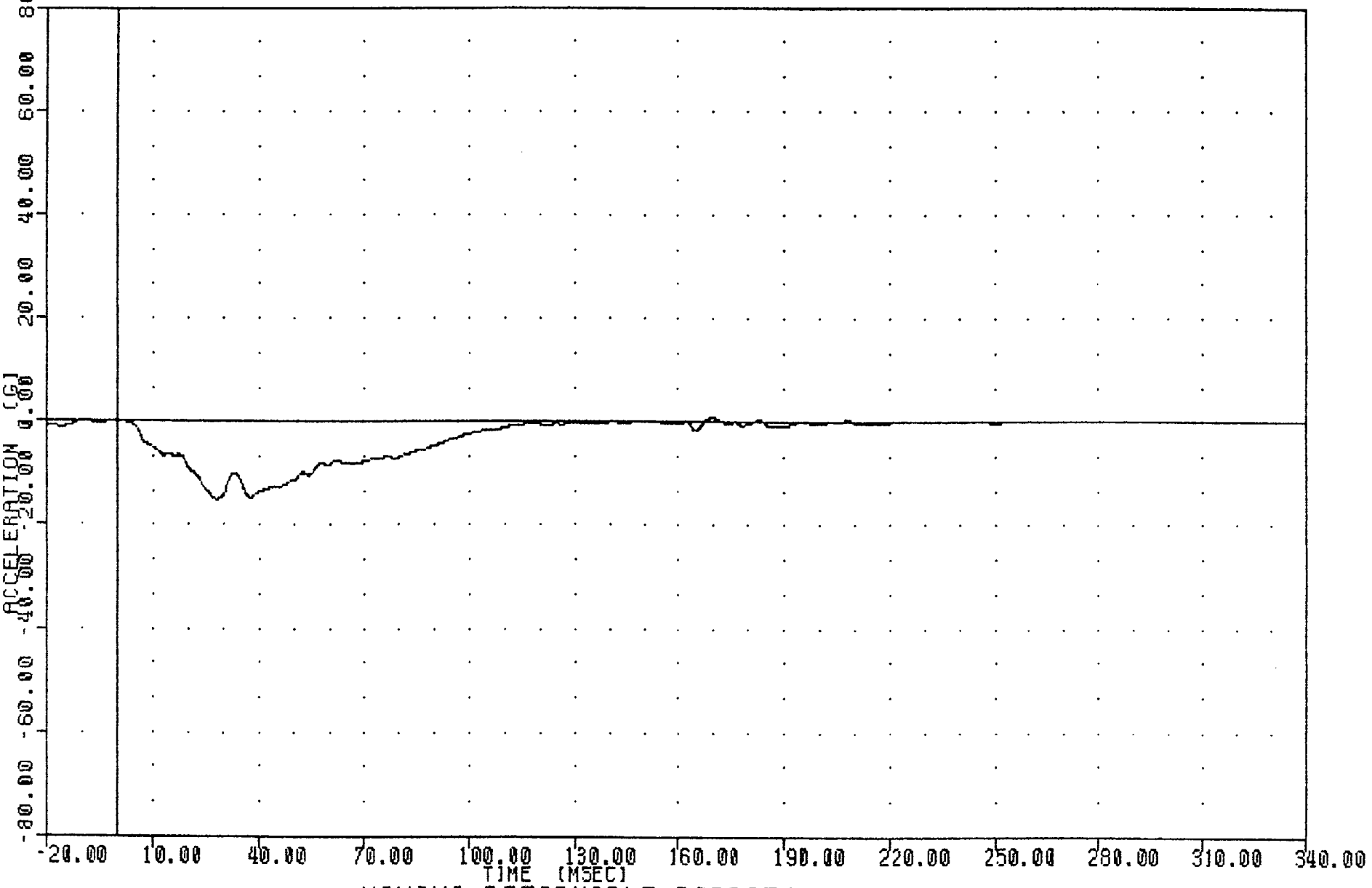
MOVING DEFORMABLE BARRIER INTO DODGE 400
DELTA V USING BCGXG

TRC , 840615 PLOT DATE 25-JUN-84 12:49:07
SIDE PROTECTION - 2DR/4DR
84167000000 FILTER = BLPF 300/ 949/ -40
BCGYV MIN, MAX VALUES = 6.87 @ 340.00 , 14.90 @ -20.00

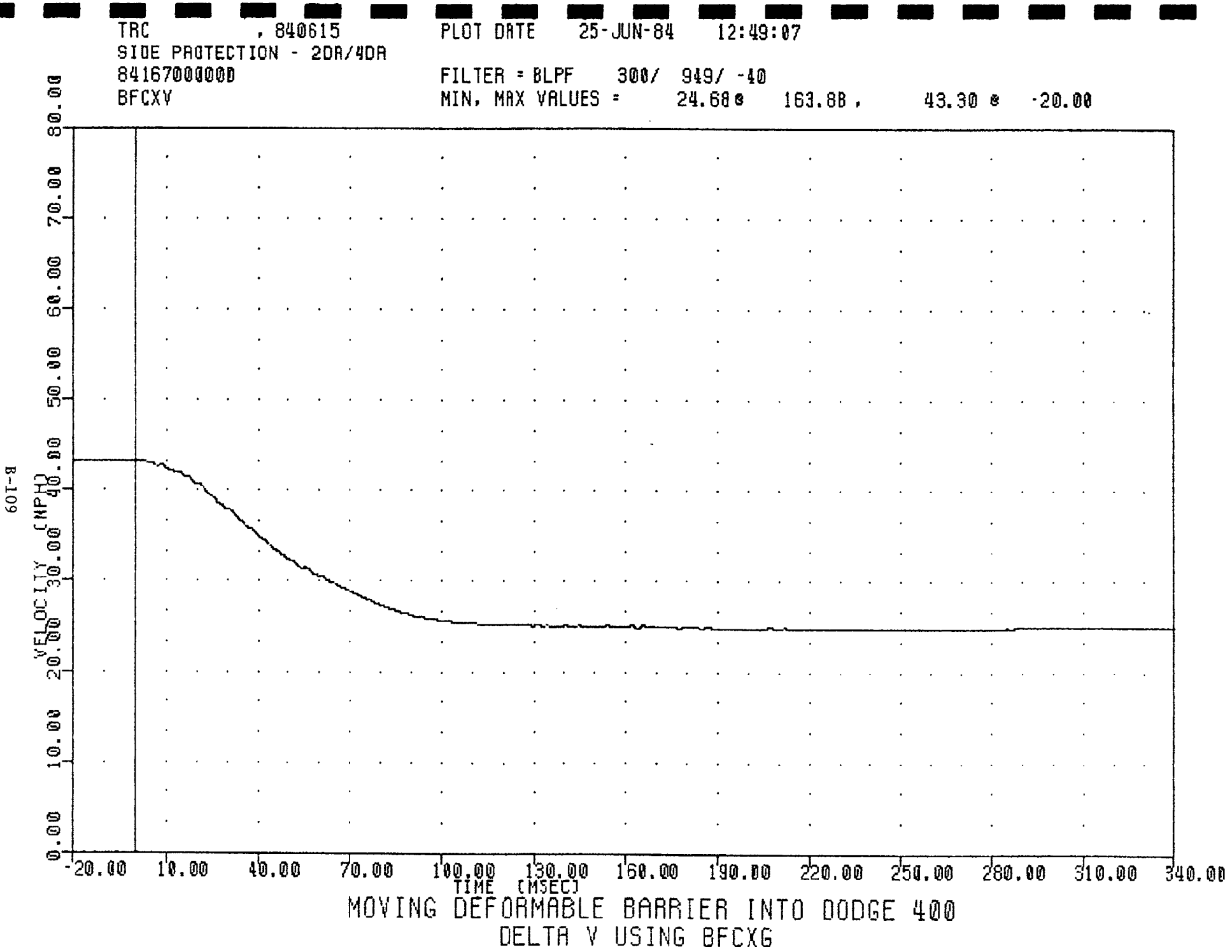


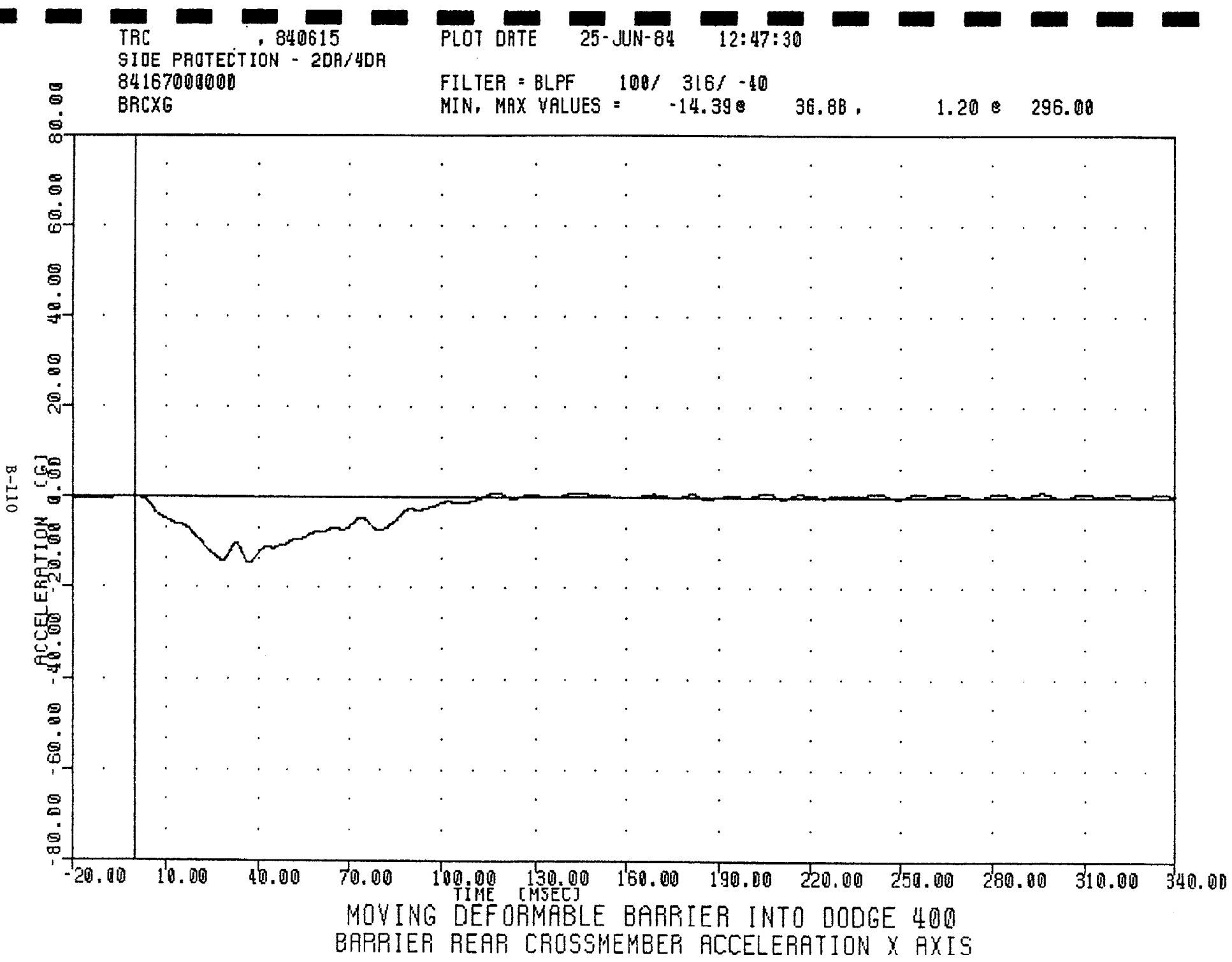
MOVING DEFORMABLE BARRIER INTO DODGE 400
DELTA V USING BCGYG

TRC , 840615 PLOT DATE 25-JUN-84 12:47:30
SIDE PROTECTION - 2DR/4DR
84167000000 FILTER = BLPF 100/ 316/ -40
BFCXG MIN, MAX VALUES = -14.98 @ 28.00 , 0.92 @ 169.25

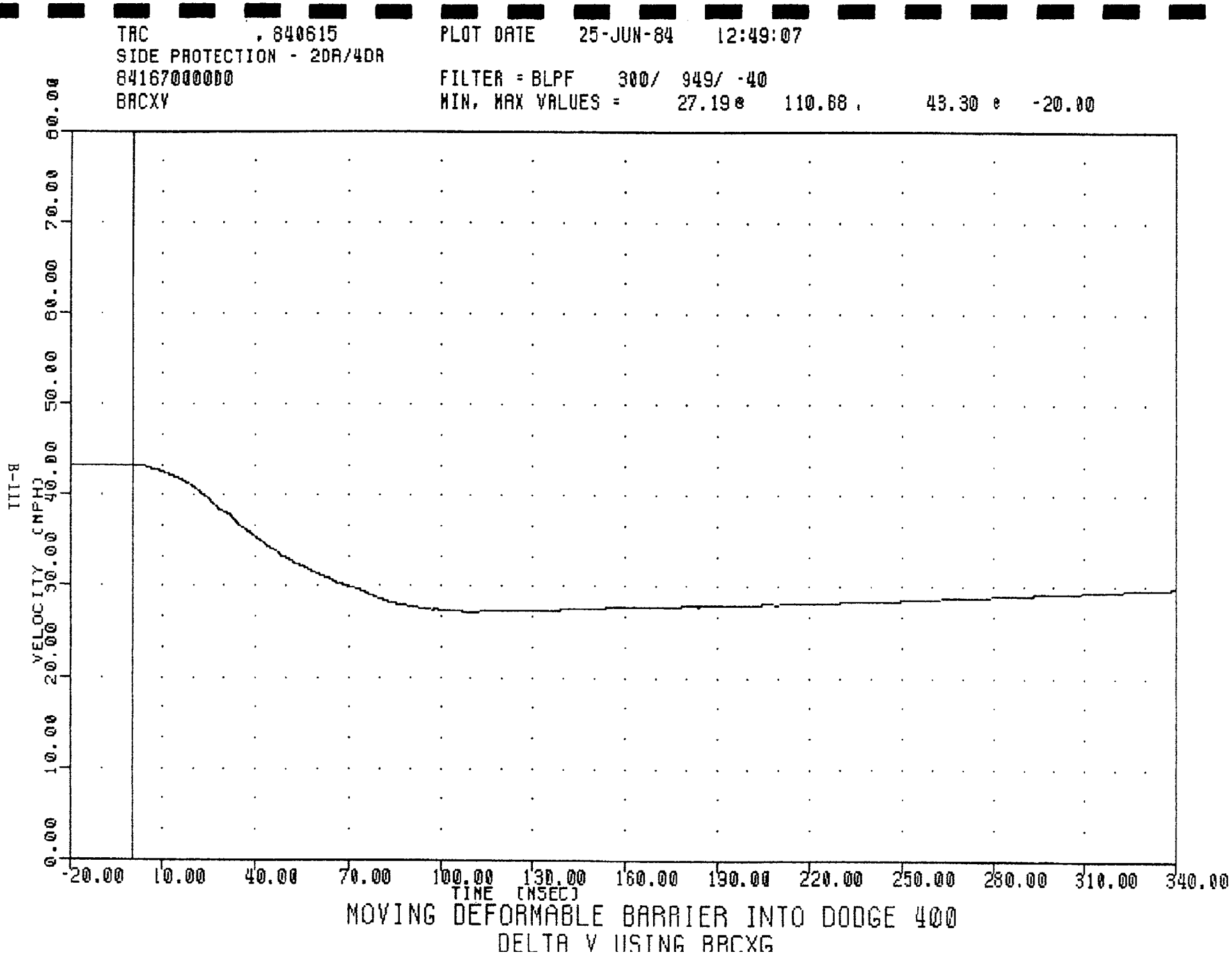


MOVING DEFORMABLE BARRIER INTO DODGE 400
BARRIER FRONT CROSSMEMBER ACCELERATION X AXIS


TRC , 840615
PLOT DATE 25-JUN-84 12:49:07
SIDE PROTECTION - 2DR/4DR
84167000000
FILTER = BLPF 300/ 949/ -40
BFCXV
MIN, MAX VALUES = 24.68 @ 163.88 , 43.30 @ -20.00
VELOCITY (MPH)
0.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
80.00
-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 DODGE 400
DELTA V USING BFCXG

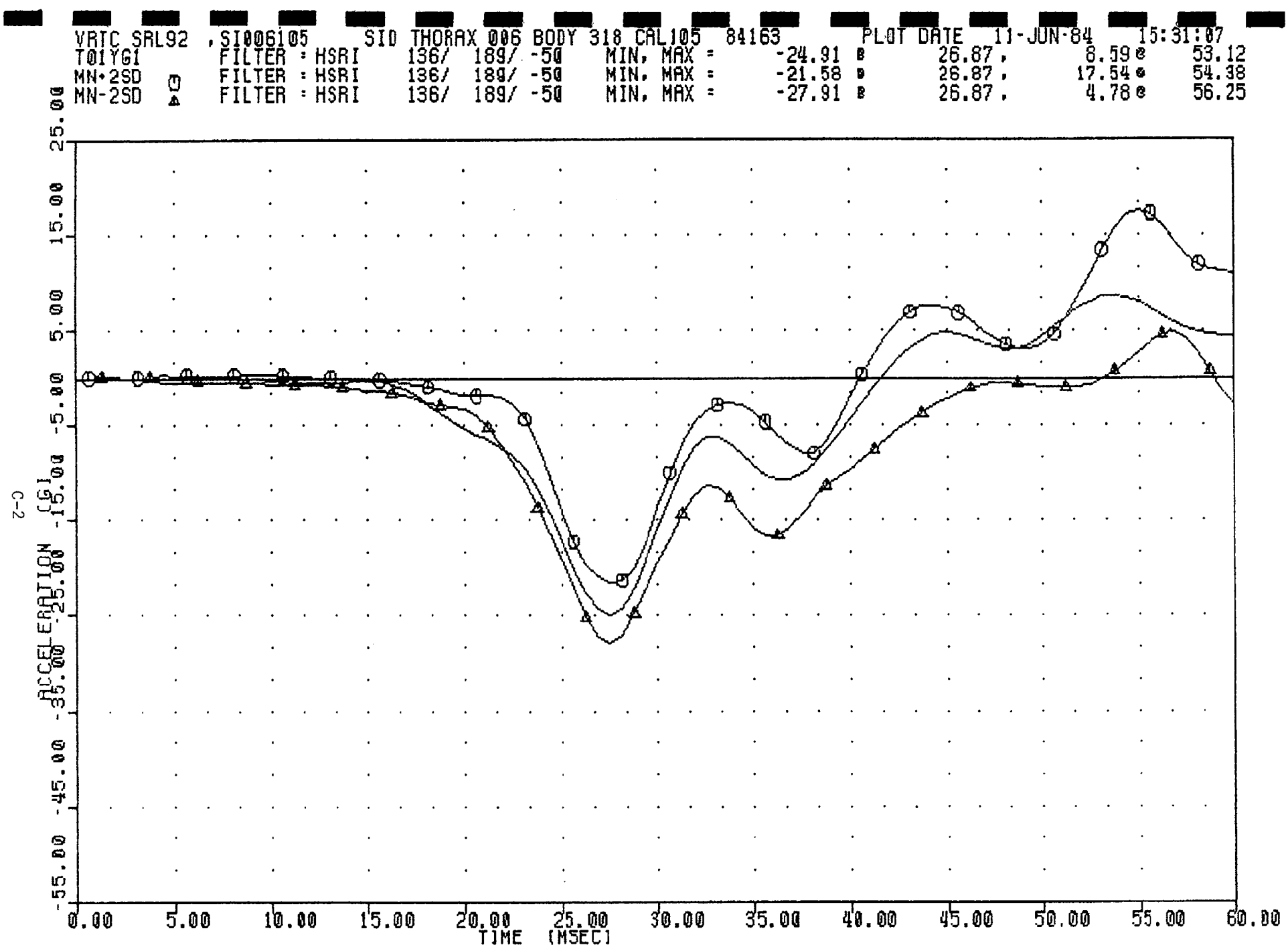


MOVING DEFORMABLE BARRIER INTO DODGE 400
BARRIER REAR CROSSMEMBER ACCELERATION X AXIS


TRC , 840615
PLOT DATE 25-JUN-84 12:49:07
SIDE PROTECTION - 2DR/4DR
84167000000
FILTER = BLPF 300/ 949/ -40
BRCXV
MIN, MAX VALUES = 27.19 @ 110.68 , 43.30 @ -20.00
VELOCITY (MPH)
0.00
10.00
20.00
30.00
40.00
50.00
60.00
70.00
80.00
-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 DODGE 400
DELTA V USING BRCXG

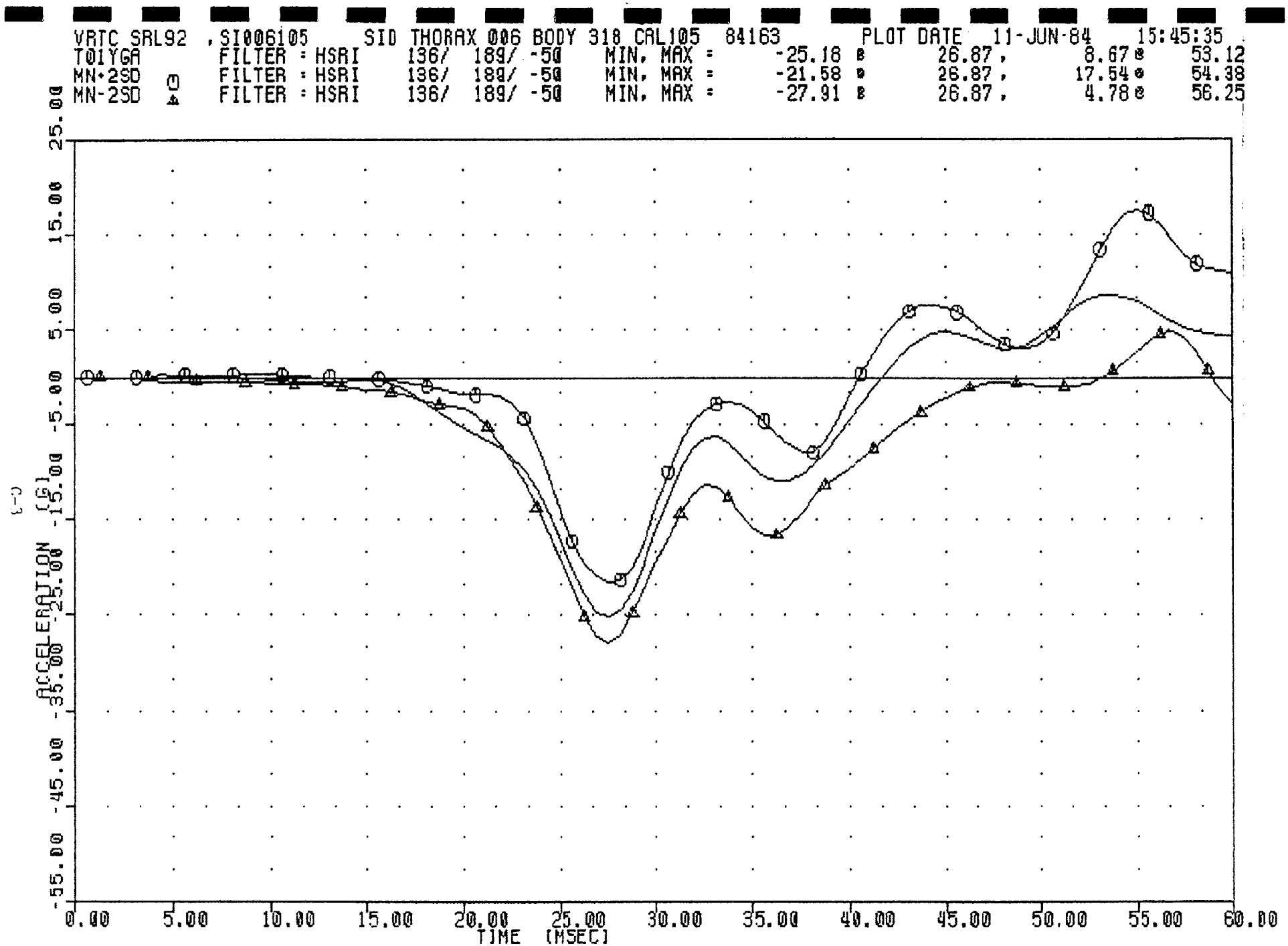
APPENDIX C

DUMMY CERTIFICATION



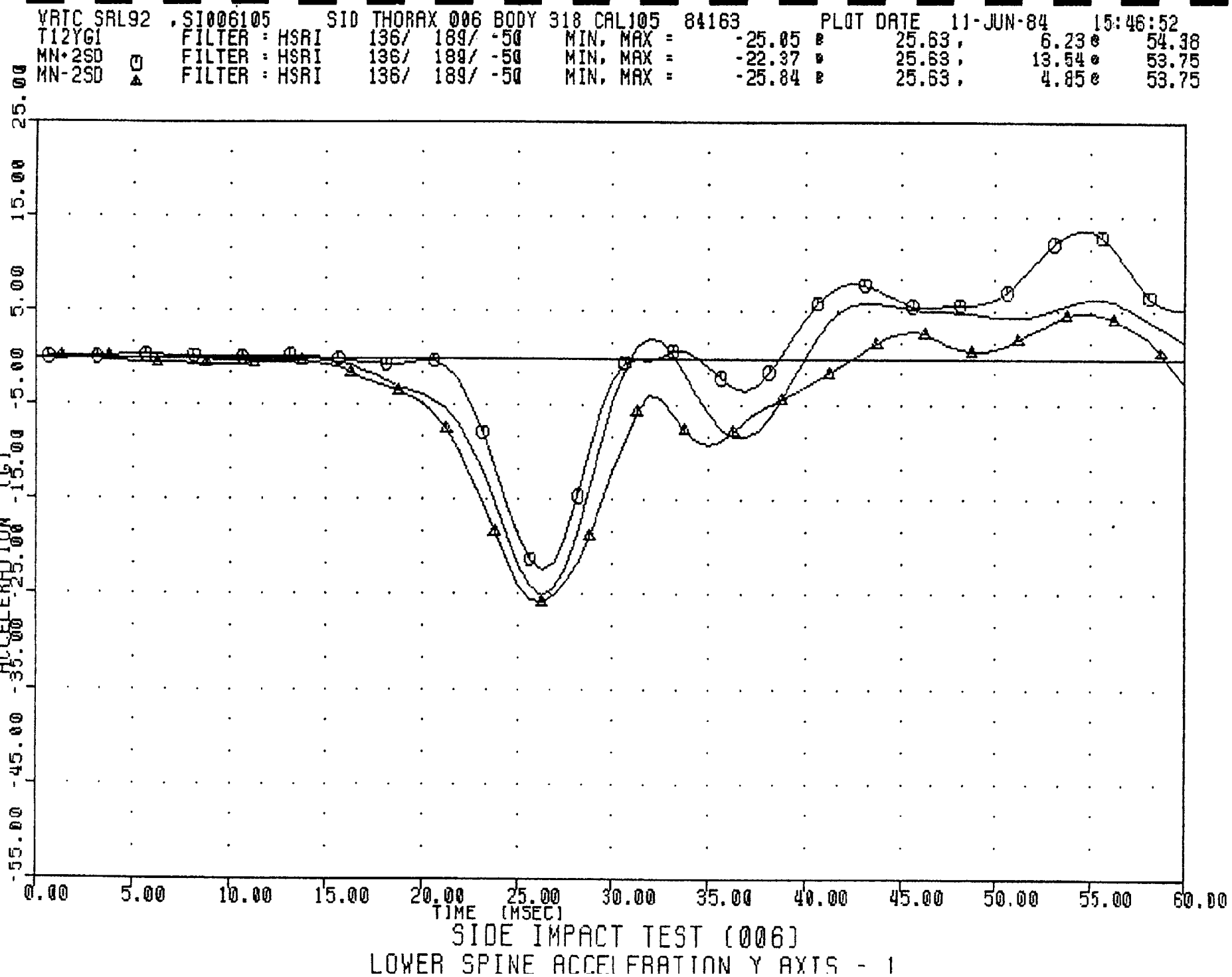
SIDE IMPACT TEST (006)

UPPER SPINE ACCELERATION Y AXIS -1



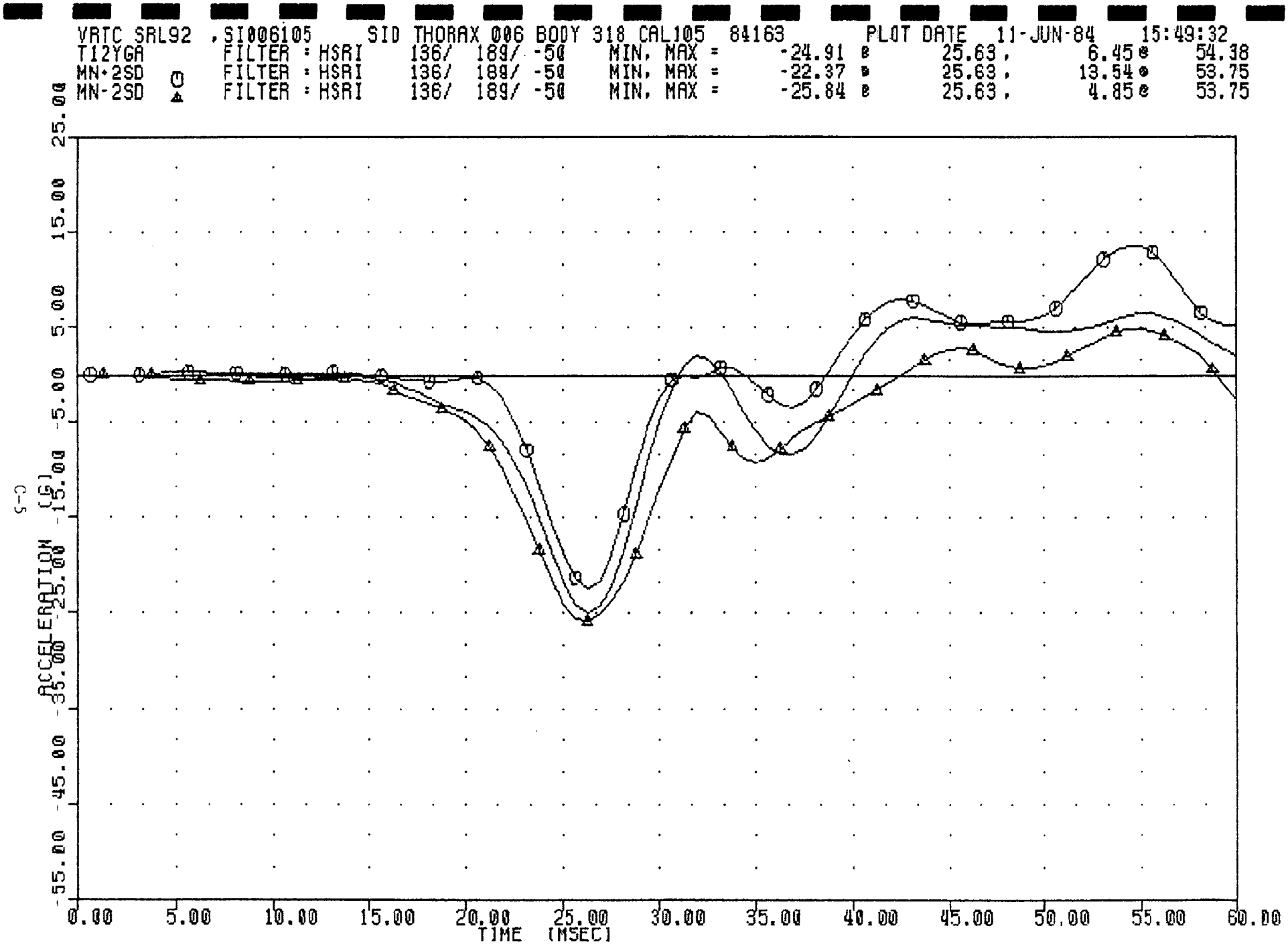
SIDE IMPACT TEST (006)

UPPER SPINE ACCELERATION Y AXIS - A



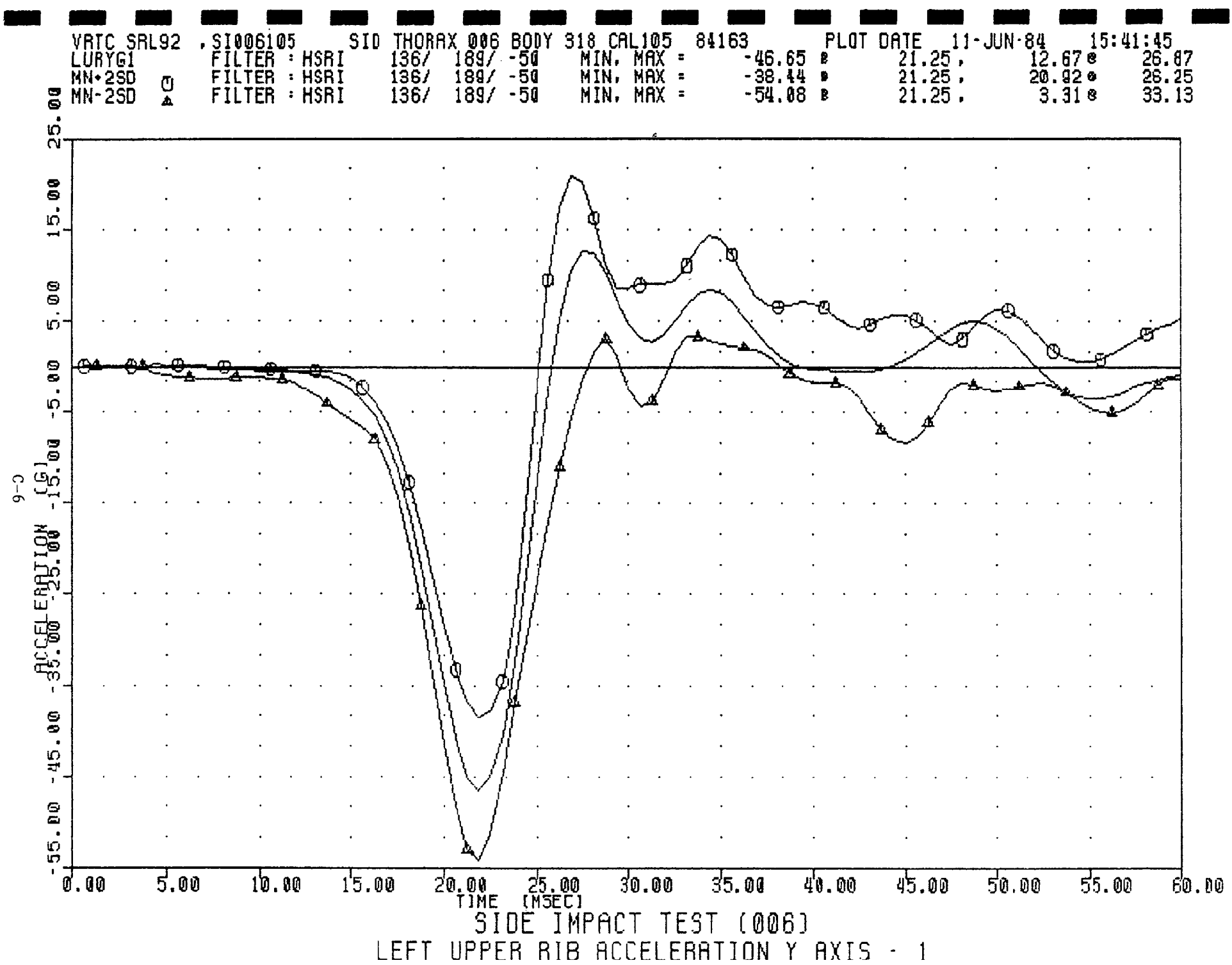
SIDE IMPACT TEST (006)

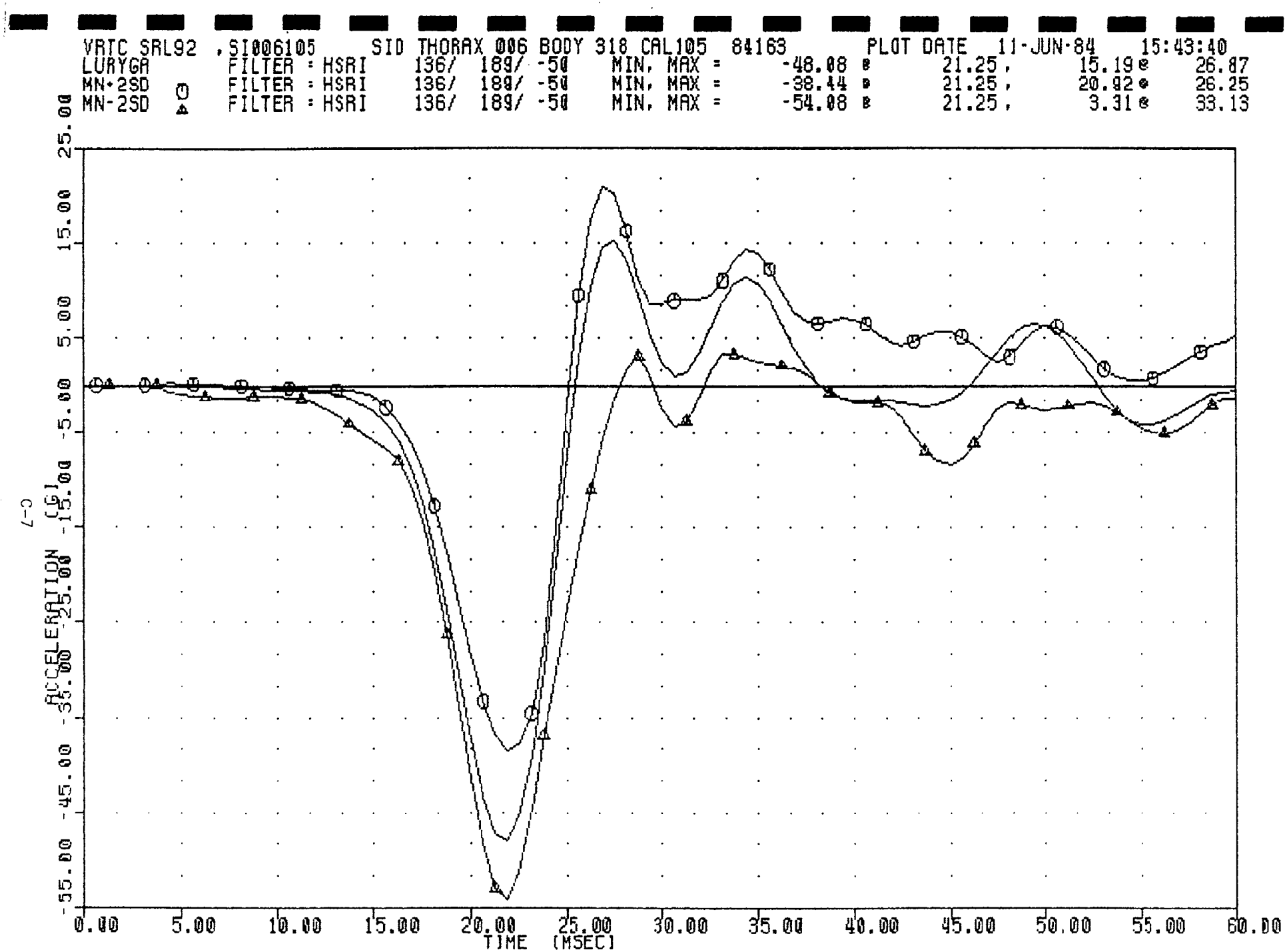
LOWER SPINE ACCELERATION Y AXIS - 1



SIDE IMPACT TEST (006)

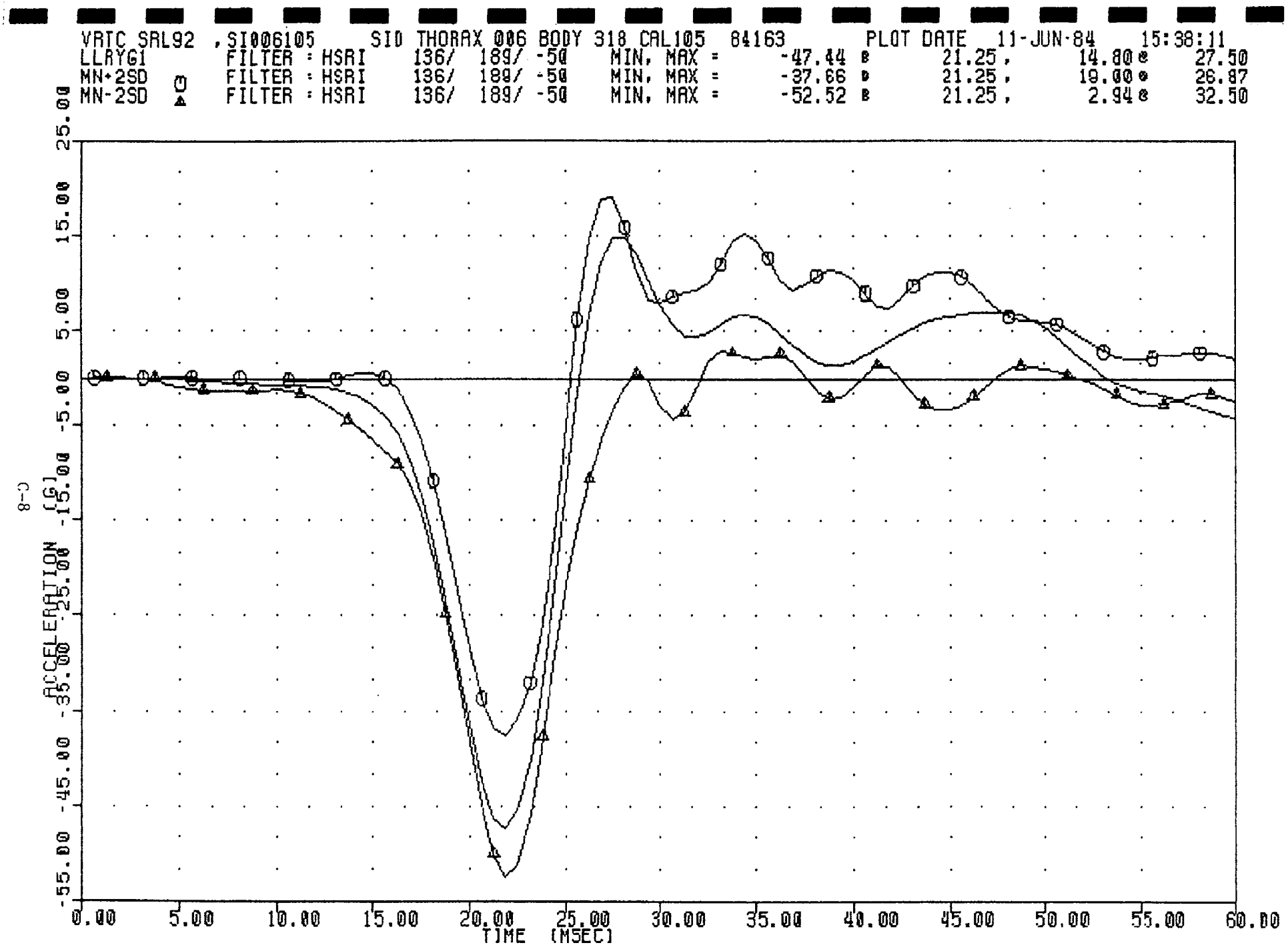
LOWER SPINE ACCELERATION Y AXIS - A


VRTC SRL92 ,SI006105 SID THORAX 006 BODY 318 CAL105 84163 PLOT DATE 11-JUN-84 15:41:45
LURYG1 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -46.65 @ 21.25 , 12.67 @ 26.87
MN+2SD FILTER : HSRI 136/ 189/ -50 MIN, MAX = -38.44 @ 21.25 , 20.92 @ 26.25
MN-2SD FILTER : HSRI 136/ 189/ -50 MIN, MAX = -54.08 @ 21.25 , 3.31 @ 33.13
25.00
15.00
5.00
-5.00
-15.00
-25.00
-35.00
-45.00
-55.00
ACCELERATION (G)
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
40.00
45.00
50.00
55.00
60.00
TIME (MSEC)
SIDE IMPACT TEST (006)
LEFT UPPER RIB ACCELERATION Y AXIS - 1



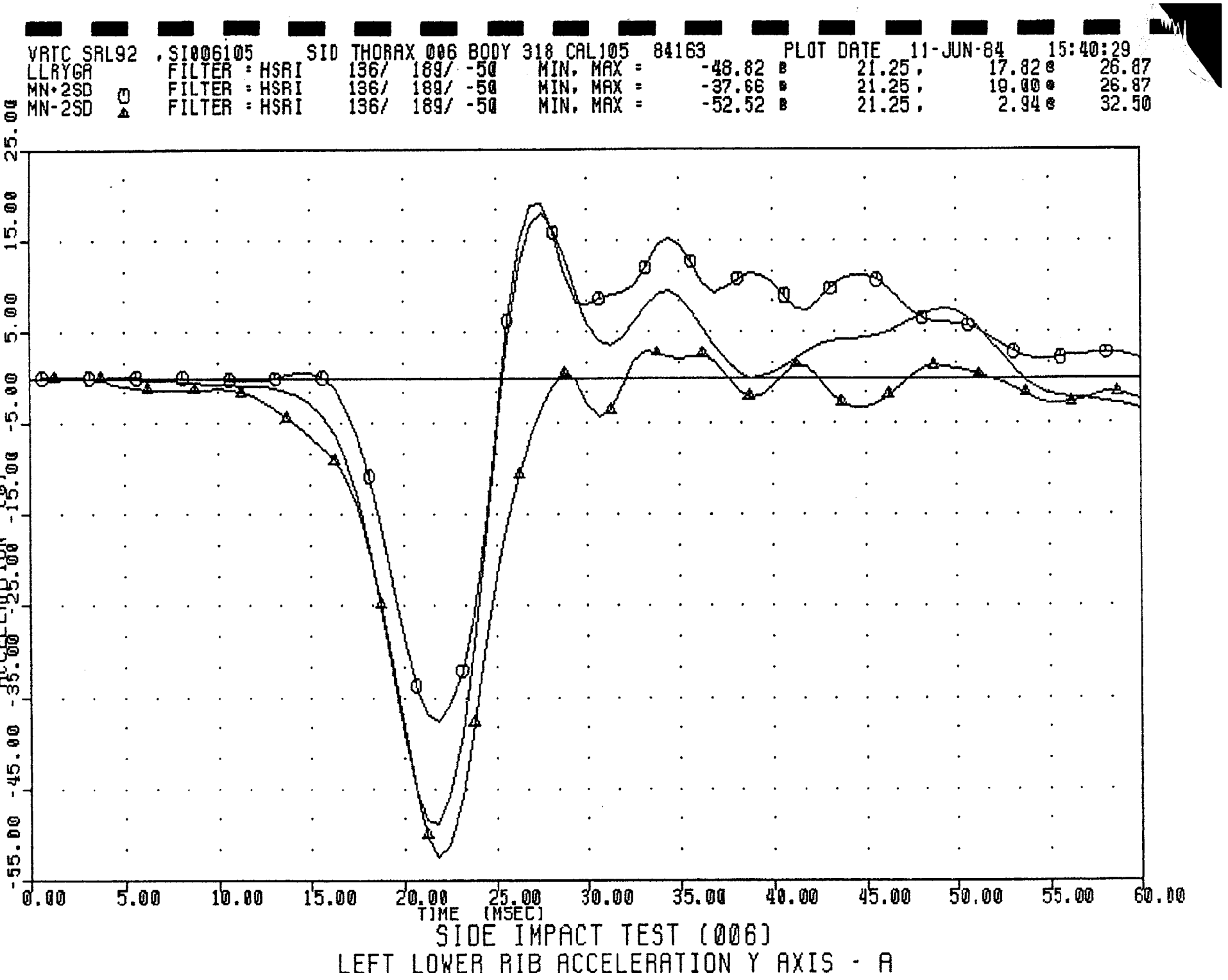
SIDE IMPACT TEST (006)

LEFT UPPER RIB ACCELERATION Y AXIS - A



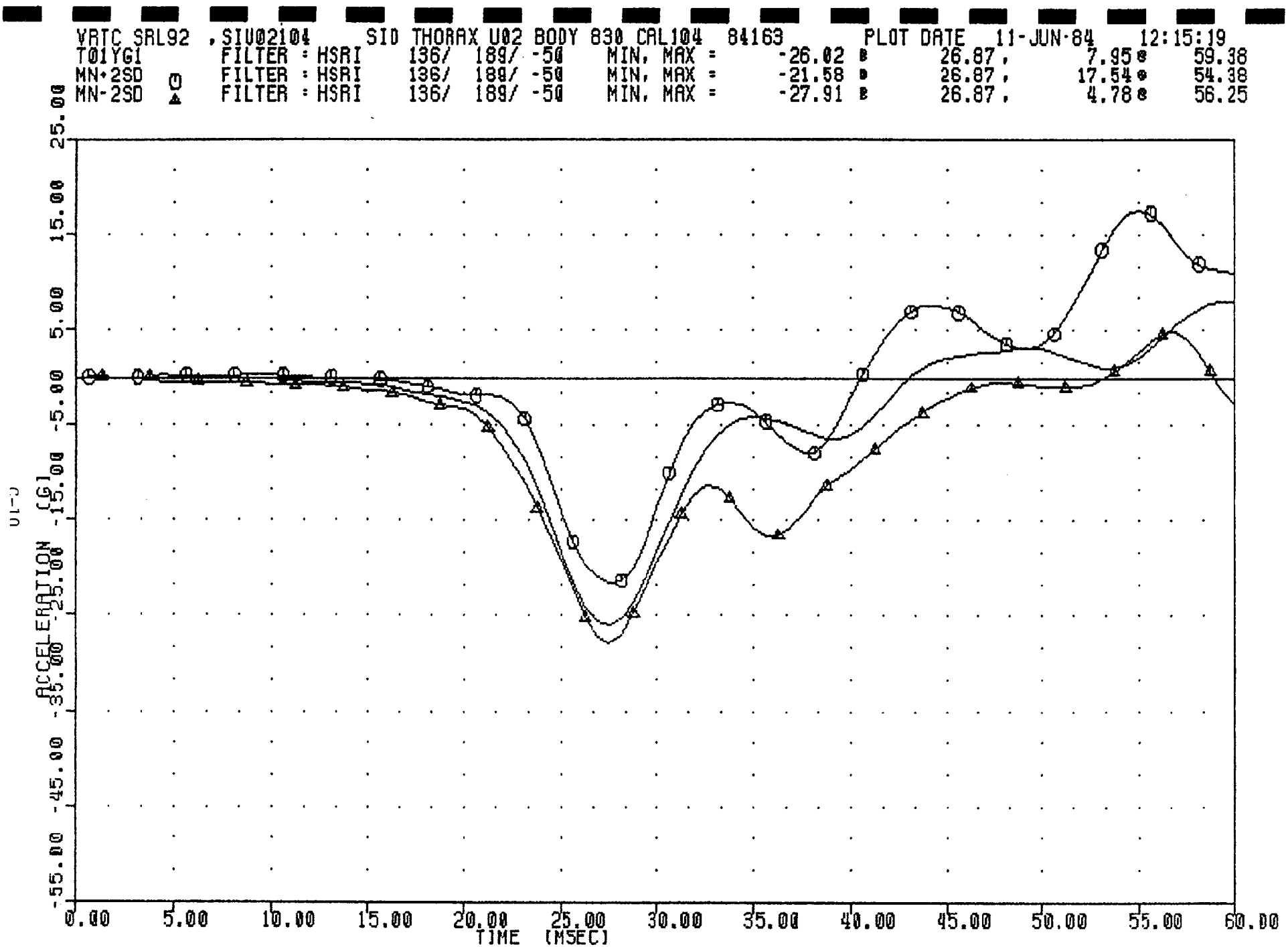
SIDE IMPACT TEST (006)

LEFT LOWER RIB ACCELERATION Y AXIS - 1



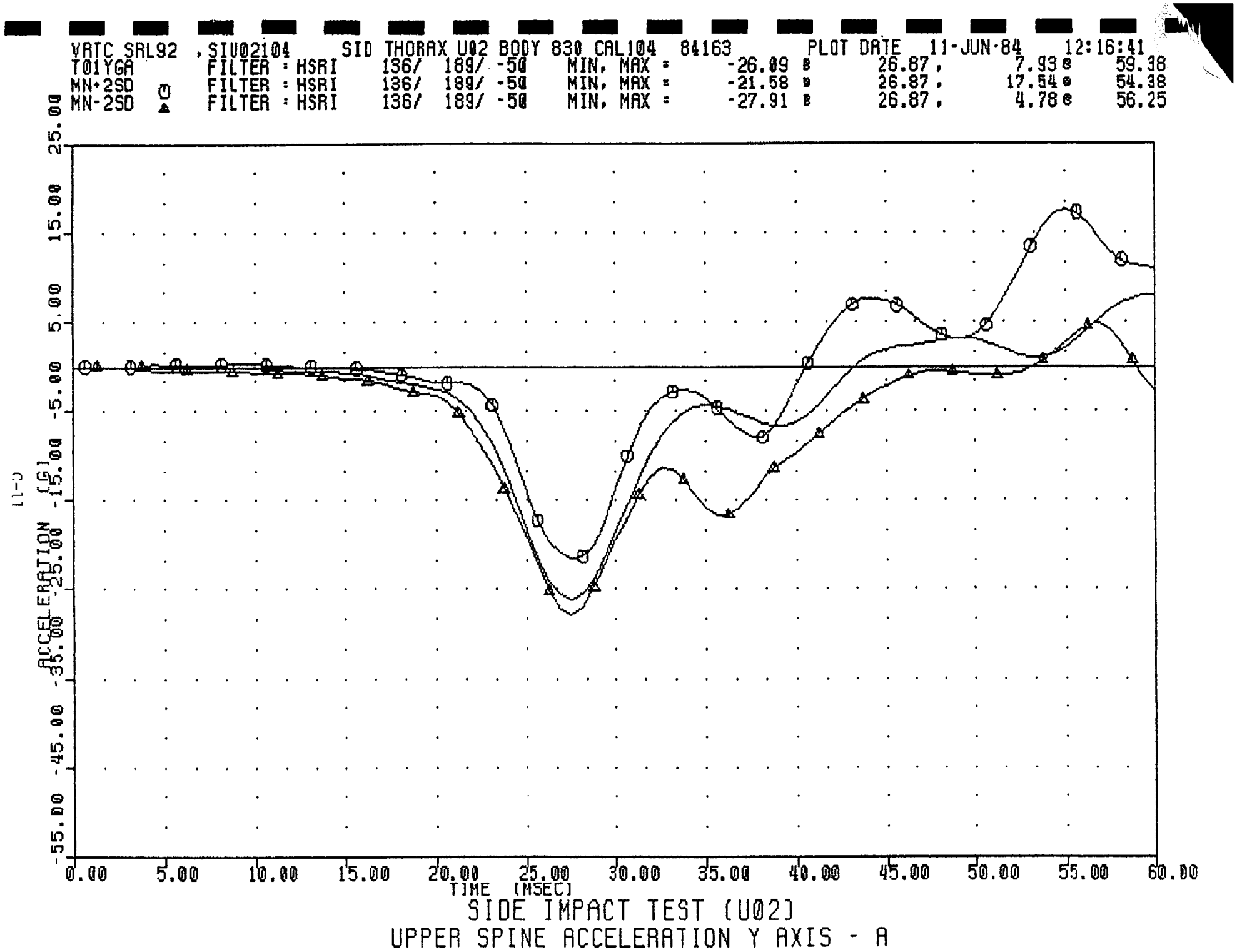
SIDE IMPACT TEST (006)

LEFT LOWER RIB ACCELERATION Y AXIS - A



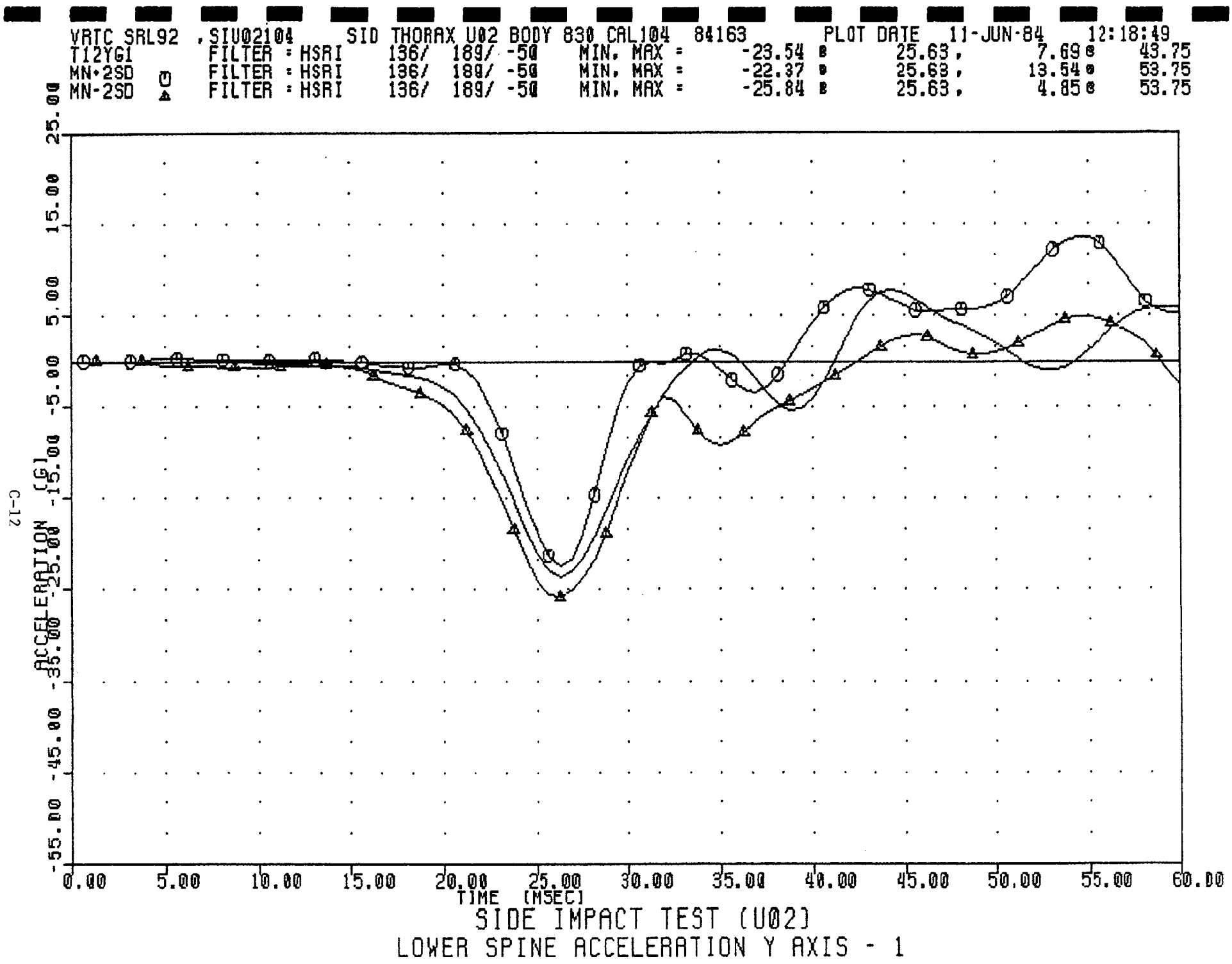
SIDE IMPACT TEST (U02)

UPPER SPINE ACCELERATION Y AXIS - 1



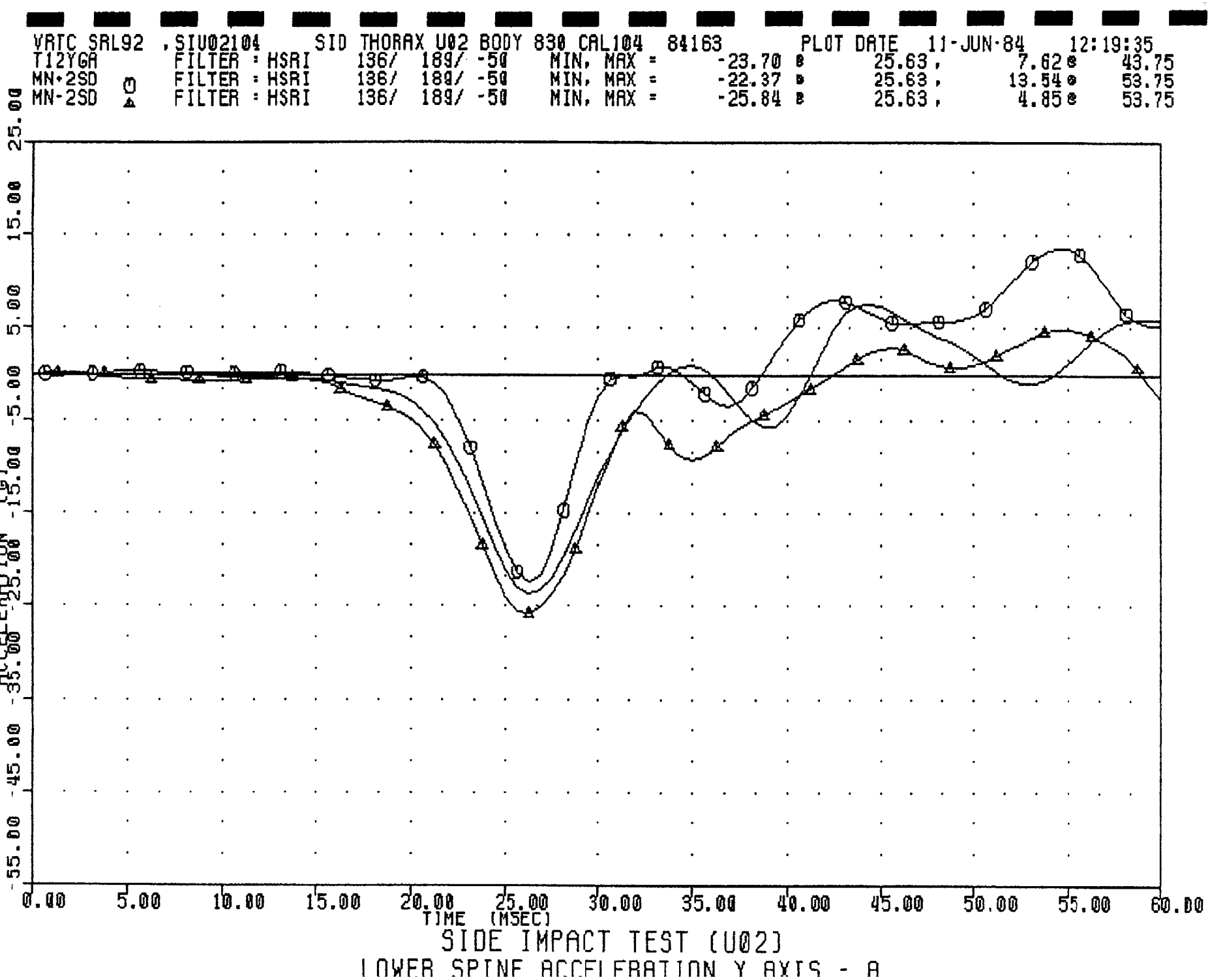
SIDE IMPACT TEST (U02)

UPPER SPINE ACCELERATION Y AXIS - A



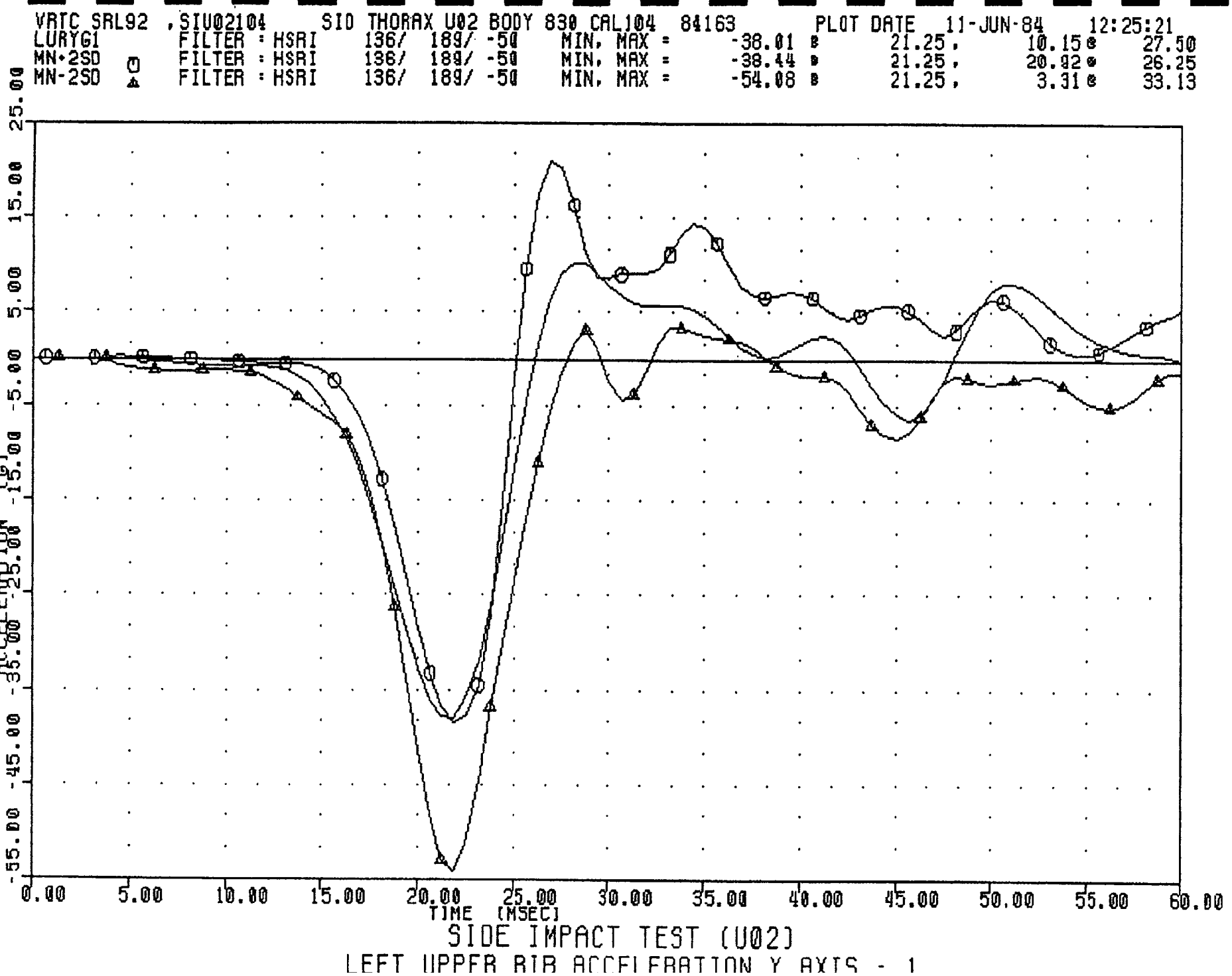
SIDE IMPACT TEST (U02)

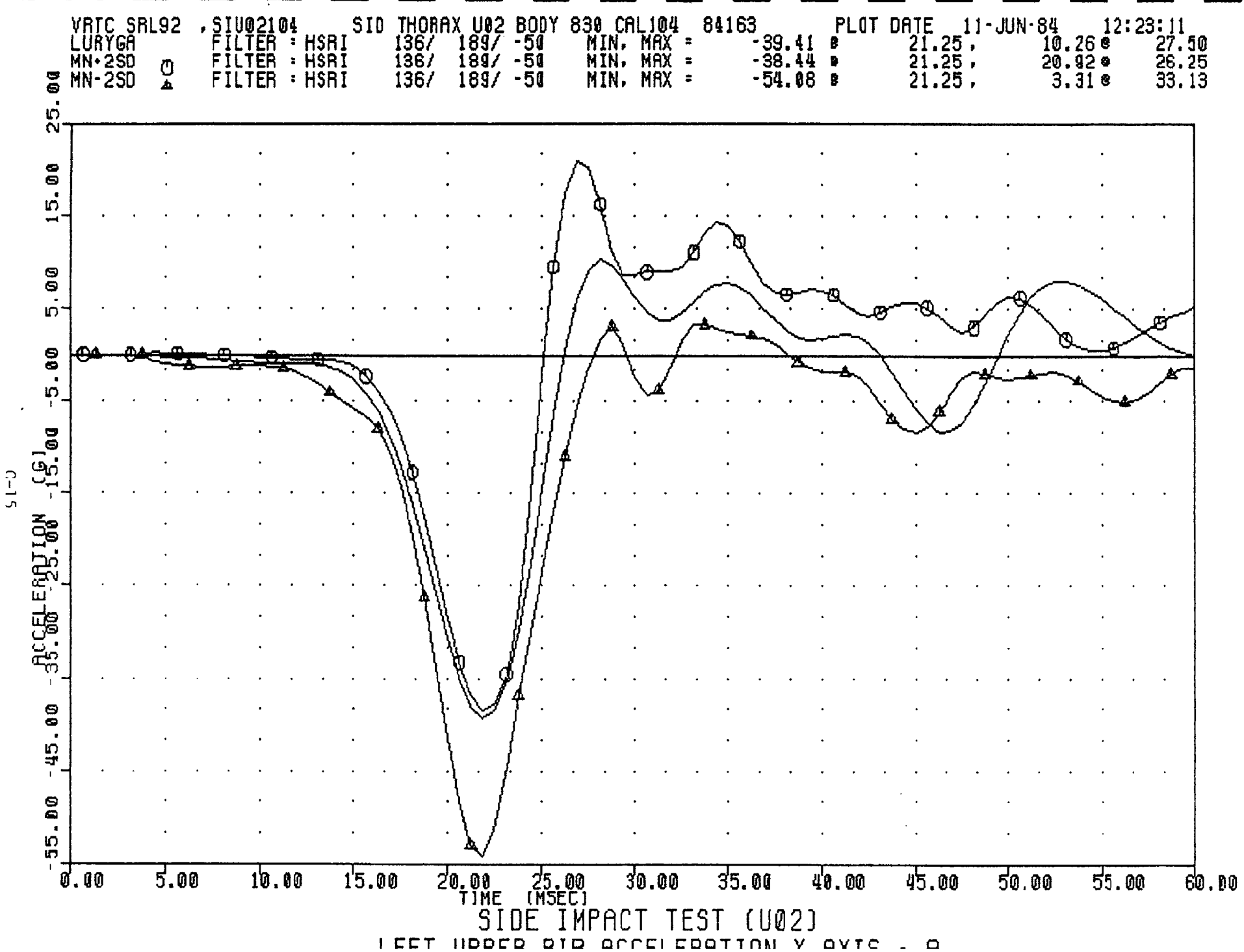
LOWER SPINE ACCELERATION Y AXIS - 1

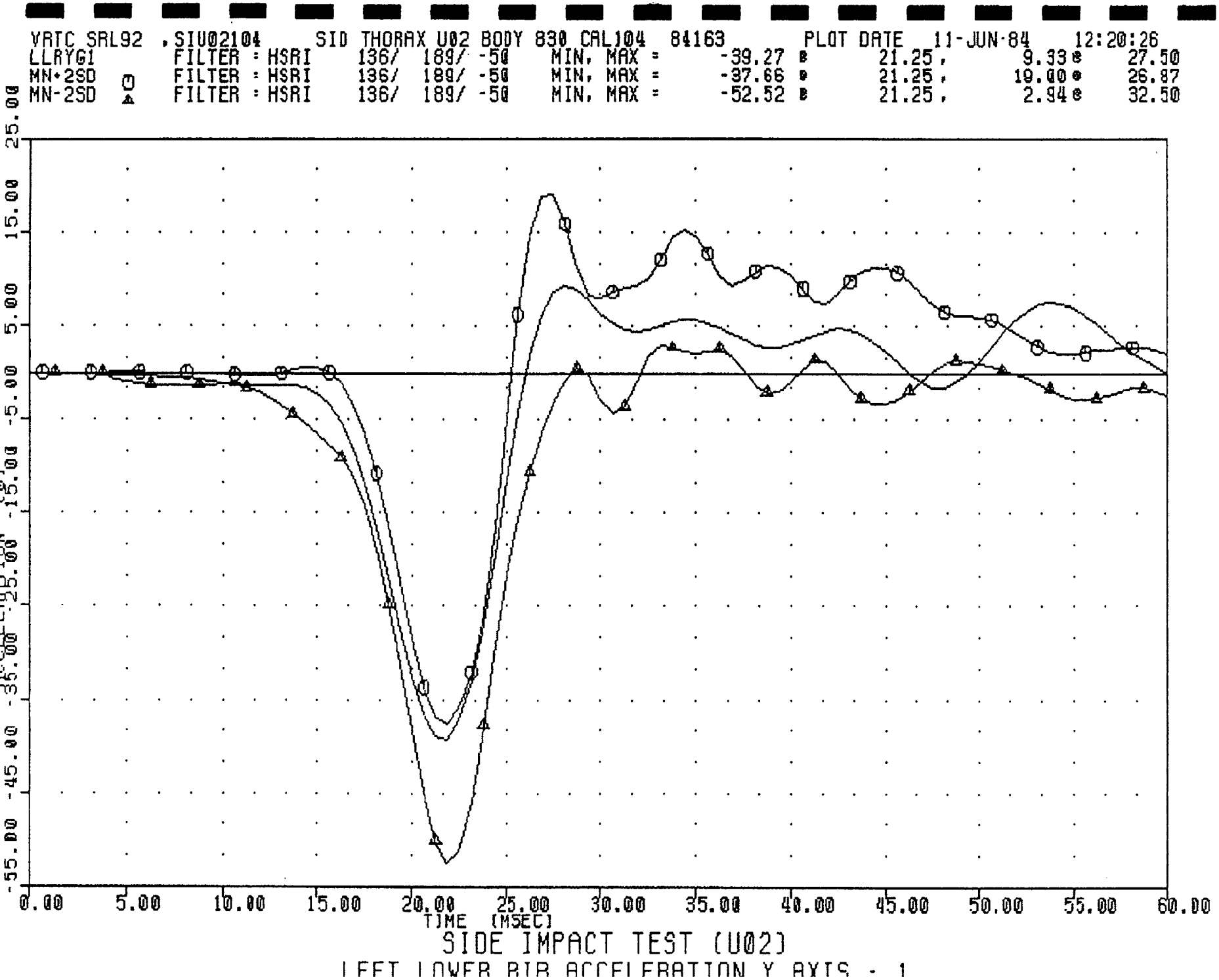


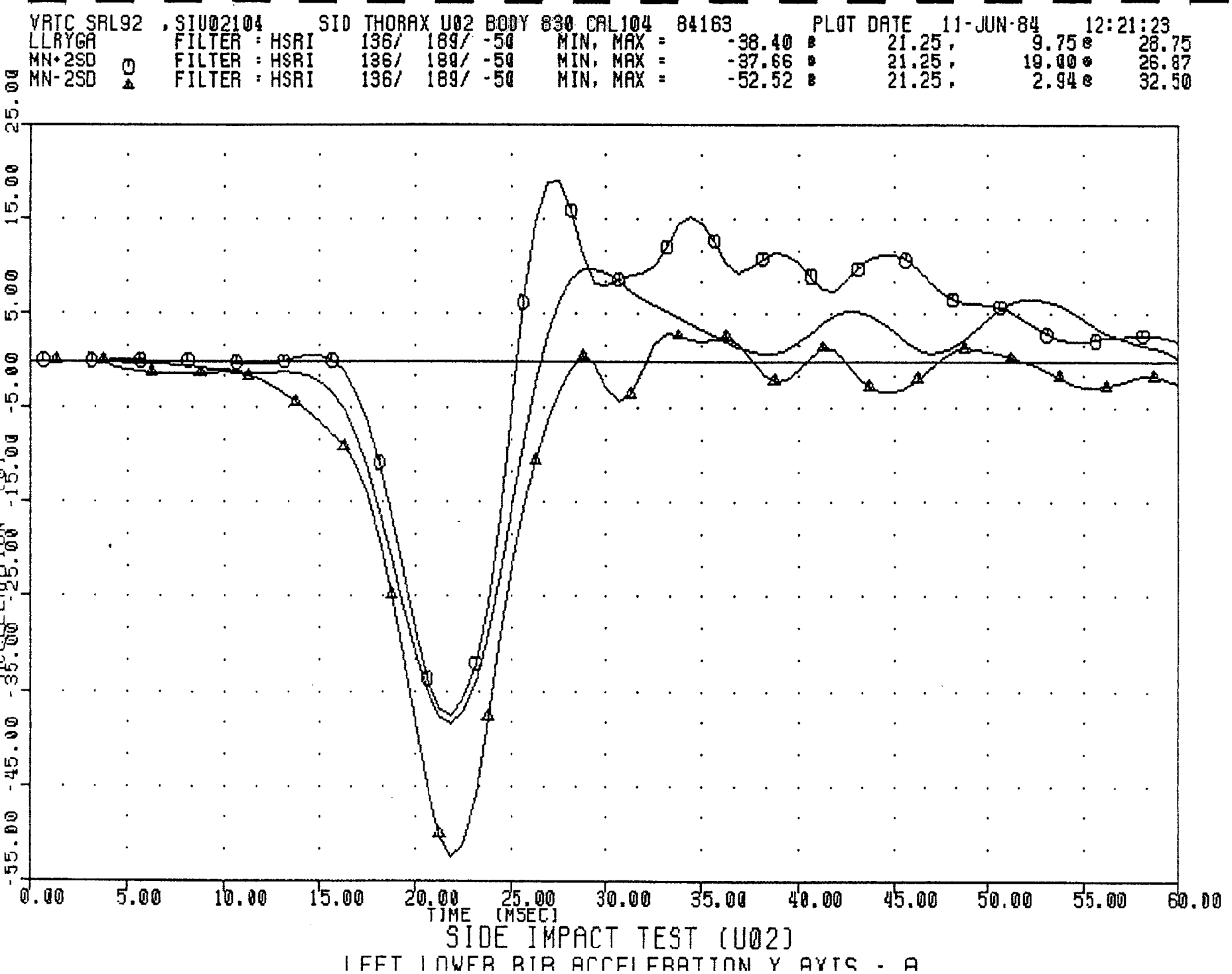
SIDE IMPACT TEST (U02)

LOWER SPINE ACCELERATION Y AXIS - A


VRTC SRL92 ,SIU02104 SID THORAX U02 BODY 830 CAL104 84163 PLOT DATE 11-JUN-84 12:25:21
LURYG1 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -38.01 @ 21.25 , 10.15 @ 27.50
MN+2SD FILTER : HSRI 136/ 189/ -50 MIN, MAX = -38.44 @ 21.25 , 20.92 @ 26.25
MN-2SD FILTER : HSRI 136/ 189/ -50 MIN, MAX = -54.08 @ 21.25 , 3.31 @ 33.13
25.00
15.00
5.00
-5.00
-15.00
-25.00
-35.00
-45.00
-55.00
ACCELERATION (G)
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
40.00
45.00
50.00
55.00
60.00
TIME (MSEC)
SIDE IMPACT TEST (U02)
LEFT UPPER RIB ACCELERATION Y AXIS - 1


VRTC SRL92 ,SIU02104 SID THORAX U02 BODY 830 CAL104 84163 PLOT DATE 11-JUN-84 12:23:11
LURYGA FILTER : HSRI 136/ 189/ -50 MIN, MAX = -39.41 @ 21.25 , 10.26 @ 27.50
MN+2SD FILTER : HSRI 136/ 189/ -50 MIN, MAX = -38.44 @ 21.25 , 20.92 @ 26.25
MN-2SD FILTER : HSRI 136/ 189/ -50 MIN, MAX = -54.08 @ 21.25 , 3.31 @ 33.13
25.00
15.00
5.00
-5.00
-15.00
-25.00
-35.00
-45.00
-55.00
ACCELERATION (G)
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
40.00
45.00
50.00
55.00
60.00
TIME (MSEC)
SIDE IMPACT TEST (U02)
LEFT UPPER RIB ACCELERATION X AXIS - R


VRTC SRL92 ,SIU02104 SID THORAX U02 BODY 830 CAL104 84163 PLOT DATE 11-JUN-84 12:20:26
LLRYG1 FILTER : HSRI 136/ 189/ -50 MIN, MAX = -39.27 @ 21.25, 9.33 @ 27.50
MN+2SD FILTER : HSRI 136/ 189/ -50 MIN, MAX = -37.66 @ 21.25, 19.00 @ 26.87
MN-2SD FILTER : HSRI 136/ 189/ -50 MIN, MAX = -52.52 @ 21.25, 2.94 @ 32.50
25.00
15.00
5.00
-5.00
-15.00
-25.00
-35.00
-45.00
-55.00
ACCELERATION (G)
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
40.00
45.00
50.00
55.00
60.00
TIME (MSEC)
SIDE IMPACT TEST (U02)
LEFT LOWER RIB ACCELERATION Y AXIS - 1


VRTC SRL92 ,SIU02104 SID THORAX U02 BODY 830 CAL104 84163 PLOT DATE 11-JUN-84 12:21:23
LLRYGA FILTER : HSRI 136/ 189/ -50 MIN, MAX = -38.40 @ 21.25, 9.75 @ 28.75
MN+2SD FILTER : HSRI 136/ 189/ -50 MIN, MAX = -37.66 @ 21.25, 19.00 @ 26.87
MN-2SD FILTER : HSRI 136/ 189/ -50 MIN, MAX = -52.52 @ 21.25, 2.94 @ 32.50
25.00
15.00
5.00
-5.00
-15.00
-25.00
-35.00
-45.00
-55.00
ACCELERATION (G)
0.00
5.00
10.00
15.00
20.00
25.00
30.00
35.00
40.00
45.00
50.00
55.00
60.00
TIME (MSEC)
SIDE IMPACT TEST (U02)
LEFT LOWER RIB ACCELERATION Y AXIS - A