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1986 CHEVROLET C10 PICKUP TRUCK
INTO THE LEFT SIDE OF A
1987 FORD F150 PICKUP TRUCK
TRC TEST NO. 930223

PREPARED BY:

TRANSPORTATION RESEARCH CENTER INC.

10820 STATE ROUTE 347

EAST LIBERTY, OHIO 43319

FEBRUARY - MARCH 1993

FINAL REPORT

PREPARED FOR:

VEHICLE RESEARCH AND TEST CENTER

P. O. BOX 37

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16. Abstract

A 45 mph 300° driver's side vehicle to vehicle impact test was conducted at Transportation Research Center Inc. on February 23, 1993. The striking vehicle was a 1986 Chevrolet C10 pickup truck and the struck vehicle was a 1987 Ford F150 pickup truck. This test was conducted to determine the fuel tank integrity and occupant response of the struck vehicle in the 300°, 45 mph driver side impact mode. The striking vehicle's impact velocity was 45.5 mph. The struck vehicle's maximum crush was 22.7 inches and no fuel leakage was observed. The ambient temperature was 19° F.

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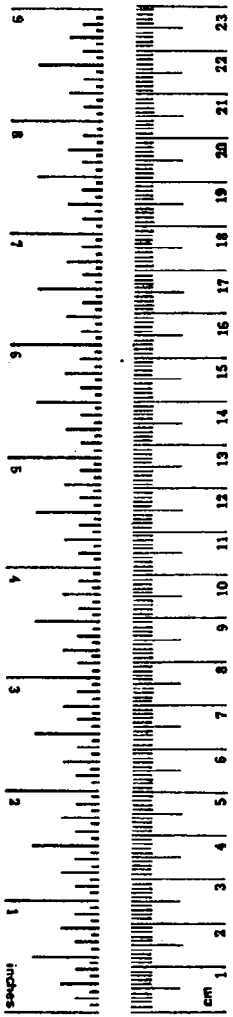
METRIC CONVERSION FACTORS

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	tonnes	t
		VOLUME		
tsp	teaspoons	5	milliliters	ml
Tbsp	tablespoons	15	milliliters	ml
fl oz	fluid ounces	30	milliliters	ml
c	cups	0.24	liters	l
pt	pints	0.47	liters	l
qt	quarts	0.95	liters	l
gal	gallons	3.8	liters	l
ft^3	cubic feet	0.03	cubic meters	m^3
yd^3	cubic yards	0.76	cubic meters	m^3
		TEMPERATURE (exact)		
°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

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



Approximate Conversions from Metric Measures

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

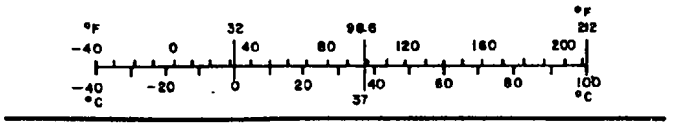


TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF PHOTOGRAPHS

SECTION 1.0

PURPOSE & TEST PROCEDURE

PURPOSE

This 45 mph 300° driver's side impact test was conducted for Vehicle Research and Test Center by Transportation Research Center Inc. (TRC). The purpose of this test was to determine the struck vehicle's occupant response and fuel tank integrity in the 45 mph 300° driver's side impact mode.

TEST PROCEDURE

This test measured the occupant response and fuel tank integrity of a 1987 Ford F150 pickup truck being struck by a 1986 Chevrolet C10 pickup truck in the 45 mph 300° driver's side impact mode.

The struck vehicle, a 1987 Ford F150 pickup truck, was instrumented with six (6) accelerometers to measure lateral axis accelerations. The truck was placed at a 60° angle to the tow cable system prior to impact. The leading edge of contact was 45.1 inches forward of the midpoint of the truck's wheelbase.

The struck vehicle contained one (1) Part 572 F side impact adult male anthropomorphic test device (dummy). The dummy was positioned in the left front outboard designated seating position using the dummy placement procedure specified as an attachment to the FMVSS 214 Laboratory Test Procedure as a guideline. The dummy was instrumented with spine and rib accelerometers to measure lateral accelerations. Head and pelvis accelerometers were used to measure longitudinal, lateral, and vertical axis accelerations. The dummy was restrained with a three-point unibelt.

The striking vehicle, a 1986 Chevrolet C10 pickup truck, previously used for an FMVSS No. 301 side impact test, was instrumented with four (4) accelerometers to measure longitudinal and lateral axis accelerations. The striking vehicle's specified velocity range was 44.5 to 45.5 mph.

The twenty-eight (28) data channels were multiplexed and recorded on a 14-track tape drive. The data was digitally sampled at 8000 samples per second and processed per section 12 of the FMVSS 214 Laboratory Test Procedure.

The crash event was recorded by one (1) real-time panning motion picture camera and eight (8) high-speed motion picture cameras. The pre-test and post-test conditions were recorded by one (1) real-time motion picture camera.

The vehicle and occupant data are summarized in Section 2.0. The struck vehicle data are presented in Section 3.0. The striking vehicle data are presented in Section 4.0. The occupant and camera measurements are presented in Section 5.0. Appendix A contains the still photographic prints. Appendix B contains the dummy and vehicle data plots. Appendix C contains the dummy calibration data. Appendix D contains miscellaneous test information.

SECTION 2.0

TEST SUMMARY

TEST RESULTS SUMMARY

This 45 mph 300° driver's side impact test was conducted on a 1987 Ford F150 pickup truck at TRC on February 23, 1993.

The struck vehicle was equipped with a 5.0-liter, V8 engine, manual transmission, power steering, and power brakes. The struck vehicle's test weight was 4772 pounds. The striking vehicle's impact speed was 45.5 mph. The struck vehicle sustained a maximum static crush of 22.7 inches and the striking vehicle sustained a maximum static crush of 28.4 inches.

The driver's Thoracic Trauma Index (TTI) calculation and Head Injury Criteria (HIC) were 34.6 and 582 respectively; maximum pelvis lateral acceleration was 53.1 g.

The door on the struck side of the truck did not separate from the vehicle's main body at the hinges or latch. The door on the opposite side did not open during the crash event, and no fuel leakage was observed.

TABLE 1 CRASH TEST SUMMARY

TEST TYPE: Left Side Impact

TEST DATE: 02/23/93

TEST TIME: 1505

AMBIENT TEMPERATURE AT IMPACT AREA (°F): 19

TEMPERATURE IN OCCUPANT COMPARTMENT (°F): 74

STRUCK VEHICLE YEAR/MAKE/MODEL/BODY STYLE: 1987/Ford/F150/pickup truck

STRIKING VEHICLE YEAR/MAKE/MODEL/BODY STYLE: 1986/Chevrolet/C10/pickup truck

STRUCK VEHICLE TEST WEIGHT (LBS): 4772

STRIKING VEHICLE TEST WEIGHT (LBS): 4000

IMPACT POINT (IN)*: 45.1

IMPACT ANGLE (DEG)**: 300

IMPACT VELOCITY (MPH)***: PRIMARY = 45.5 SECONDARY = 45.5

STRUCK VEHICLE MAXIMUM STATIC CRUSH (IN): 22.7

STRIKING VEHICLE MAXIMUM STATIC CRUSH (IN): 28.4

DUMMIES:	Driver #903
TYPE:	Part 572 F
LOCATION:	Left front (struck vehicle)
RESTRAINT:	3-point unibelt
NUMBER OF DATA CHANNELS:	28
NUMBER OF CAMERAS:	HIGH-SPEED 8 REAL-TIME 2

*The point where the leftmost edge of the striking vehicle's bumper meets the edge of the struck vehicle as measured forward of the struck vehicle's wheelbase midpoint.

**Measured clockwise from struck vehicle's front longitudinal centerline.

***Speed trap measurement (± .05 mph accuracy)

TEST ANOMALIES

The left front sill Y-axis accelerometer on the Ford F150 pickup exceeded its data channel full-scale output at 27 milliseconds.

The right front sill X-axis accelerometer on the Chevrolet C10 did not return to zero after the impact event.

SECTION 3.0

STRUCK VEHICLE INFORMATION AND MEASUREMENTS

TABLE 2 STRUCK VEHICLE INFORMATION

VEHICLE MANUFACTURER: Ford Motor Company Canada, Ltd.

MAKE/MODEL: Ford/F150 VIN: 2FTDF15N5HCA93645

BODY STYLE: 2-door pickup MODEL YEAR: 1987

COLOR: Black/Gray

ENGINE DATA: TYPE: V8 CYLINDERS: 8 DISPLACEMENT: 5.0 liters

TRANSMISSION DATA: _4_ SPEED, _X_ MANUAL, ___ AUTOMATIC, ___ FWD, _X_ RWD, ___ 4WD

DATE VEHICLE RECEIVED: NA ODOMETER READING: 6,265

DEALER'S NAME AND ADDRESS: NA

ACCESSORIES:

POWER STEERING	Yes	AUTOMATIC TRANSMISSION	No
POWER BRAKES	Yes	AUTOMATIC SPEED CONTROL	Yes
POWER SEATS	No	TILTING STEERING WHEEL	Yes
POWER WINDOWS	Yes	TELESCOPING STEERING WHEEL	No
TINTED GLASS	No	AIR CONDITIONING	Yes
RADIO	Yes	ANTI-SKID BRAKE	No
CLOCK	Yes	REAR WINDOW DEFROSTER	No
OTHER	None		

REMARKS:

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

CERTIFICATION DATA FROM VEHICLE'S LABEL:

VEHICLE MANUFACTURED BY: Ford Motor Company Canada, Ltd.

DATE OF MANUFACTURE: 06/87 VIN: 2FTDF15N5HCA93645

GVWR: 5450 LBS

GAWR: FRONT: 2950 LBS., REAR: 3166 LBS.

TABLE 2 STRUCK VEHICLE INFORMATION, CONT'D.

TIRES ON VEHICLE (MFR., LINE, SIZE): Road King, Courier, P235/75R15

TIRE PRESSURE WITH MAXIMUM CAPACITY VEHICLE LOAD: FRONT: 35 PSI
REAR: 35 PSI

SPARE TIRE (MFR., LINE, SIZE): None

TYPE OF SEATS: FRONT: Bench; REAR: None

TYPE OF FRONT SEAT BACKS: Not adjustable

MAXIMUM WIDTH: 80.6 INCHES

WHEELBASE: 133.2 INCHES

TEST FLUID DATA:

MAIN FUEL TANK MEASURED CAPACITY:	20.5 GAL.
MAIN TANK TEST VOLUME:	19.1 GAL.
AUXILIARY FUEL TANK MEASURED CAPACITY:	20.5 GAL.
AUXILIARY TANK TEST VOLUME:	19.1 GAL.
TEST FLUID TYPE:	PURPLE STODDARD SOLVENT #2
SPECIFIC GRAVITY:	0.764
KINEMATIC VISCOSITY:	0.99 CENTISTOKES.

LOCATION OF LABEL STATING TIRE & CAPACITY DATA:
The label was located on the driver's side B-pillar.

TIRE & CAPACITY DATA FROM VEHICLE'S LABEL:

RECOMMENDED TIRE SIZE: P235/75/15 XL

RECOMMENDED COLD TIRE PRESSURE: FRONT: 35 PSI; REAR: 41 PSI

DESIGNATED SEATING CAPACITY: NA FRONT NA REAR NA TOTAL

TEST VEHICLE ATTITUDE (ALL MEASUREMENTS ARE IN INCHES):

DELIVERED ATTITUDE:	LF	32.0;	RF	31.6;	LR	34.0;	RR	33.4
PRE-TEST ATTITUDE:	LF	32.1;	RF	32.0;	LR	33.4;	RR	32.9
POST-TEST ATTITUDE:	LF	30.6;	RF	30.2;	LR	35.6;	RR	30.6

TABLE 2 STRUCK VEHICLE INFORMATION, CONT'D.

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

RIGHT FRONT	1177 LBS.	RIGHT REAR	895 LBS.
LEFT FRONT	1159 LBS.	LEFT REAR	927 LBS.
TOTAL FRONT WEIGHT	2336 LBS.	(56.2% OF TOTAL VEHICLE WEIGHT)	
TOTAL REAR WEIGHT	1822 LBS.	(43.8% OF TOTAL VEHICLE WEIGHT)	
TOTAL DELIVERED WEIGHT	4158 LBS.		

CALCULATION OF TEST VEHICLE'S TARGET TEST WEIGHT:

RCLW = RATED CARGO AND LUGGAGE WEIGHT *

UDW = UNLOADED DELIVERED WEIGHT (LBS) *

VCW = VEHICLE CAPACITY WEIGHT (LBS) *

DSC = DESIGNATED SEATING CAPACITY ( ) *

RCLW*= VCW - 150 (DSC) = 300

TARGET TEST WEIGHT = UDW + RCLW*+ (NO. OF PART 572 DUMMIES X 164 ** LBS/DUMMY)

TARGET TEST WEIGHT = 4158 + 300 + 328 **

TARGET TEST WEIGHT = 4786 LBS. **

WEIGHT OF TEST VEHICLE WITH REQUIRED DUMMY AND 450 LBS. OF CARGO WEIGHT:

RIGHT FRONT	1333 LBS.	RIGHT REAR	1109 LBS.
LEFT FRONT	1261 LBS.	LEFT REAR	1069 LBS.
TOTAL FRONT WEIGHT	2594 LBS.	(54.4% OF TOTAL VEHICLE WEIGHT)	
TOTAL REAR WEIGHT	2178 LBS.	(45.6% OF TOTAL VEHICLE WEIGHT)	
TOTAL TEST WEIGHT	4772 LBS.	(0.3% UNDER TARGET TEST WEIGHT)	

WEIGHT OF BALLAST SECURED IN VEHICLE CARGO AREA: 120 LBS.

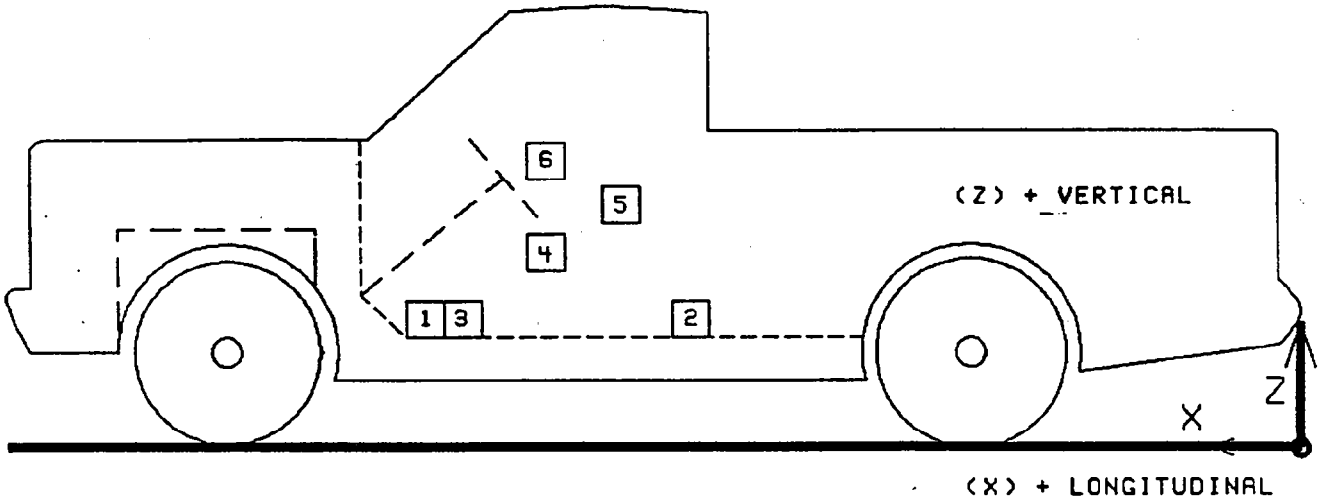
COMPONENTS REMOVED TO MEET TARGET TEST WEIGHT: None

CG = 60.8 INCHES REARWARD OF FRONT WHEEL CENTERLINE

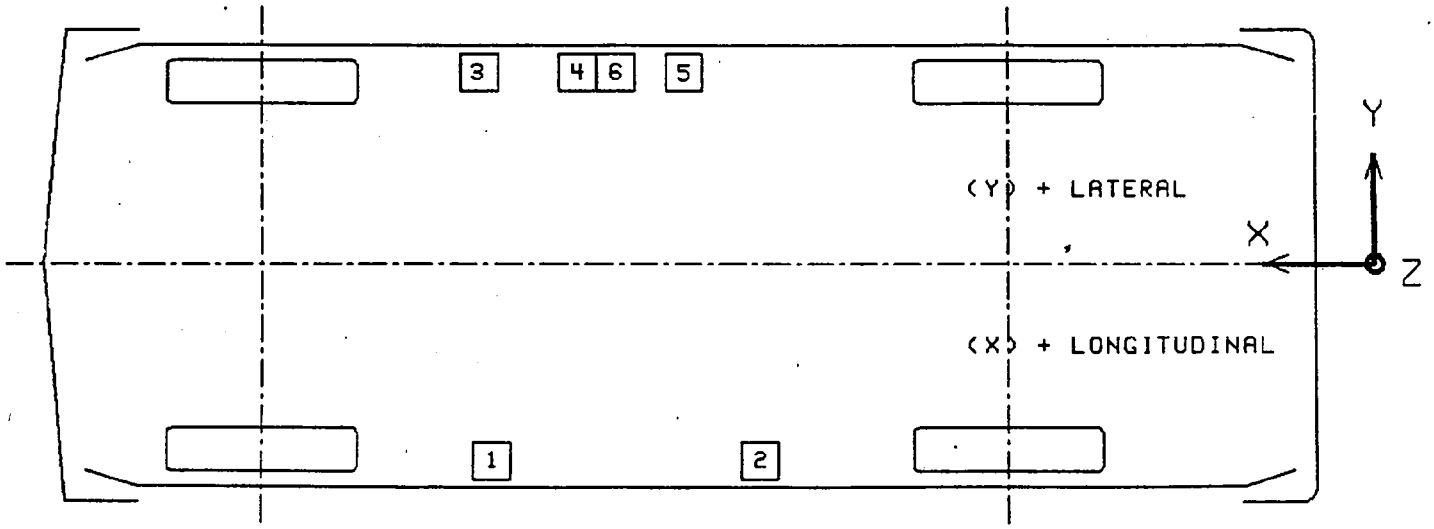
*Cargo weight for multi-purpose passenger vehicles, trucks, and buses is the vehicle's rated cargo and luggage weight from the vehicle's label or 300 pounds, whichever is less.

**The target test weight included two dummies to parallel Test No. 921217.

FIGURE 1 STRUCK VEHICLE INSTRUMENTATION PLACEMENT



SIDE VIEW



BOTTOM VIEW

TABLE 3

STRUCK VEHICLE INSTRUMENTATION LOCATIONS AND DATA SUMMARY

TEST NUMBER 930223

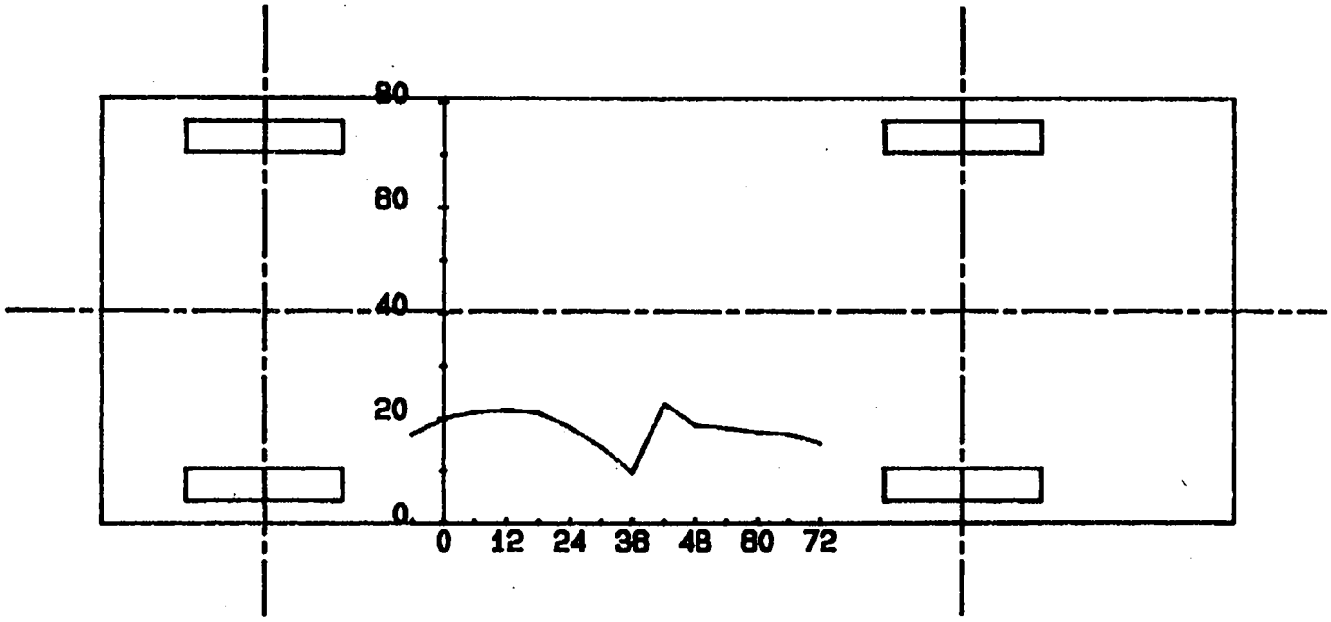
No.	LOCATION	X*	Y*	Z*	POSITIVE DIRECTION MAX	POSITIVE DIRECTION MSEC	NEGATIVE DIRECTION MAX	NEGATIVE DIRECTION MSEC
1	RIGHT FRONT SILL ACCELERATION (G) LATERAL	144.4	-29.0	19.8	4.0	105.0	19.7	58.8
2	RIGHT REAR SILL ACCELERATION (G) LATERAL	112.6	-26.0	26.4	6.0	28.8	30.8	46.1
3	LEFT FRONT SILL ACCELERATION (G) LATERAL	144.9	31.0	20.2	24.9	19.6 Y	481.5	27.9Y
4	LEFT FRONT DOOR CENTERLINE ACCELERATION (G) LATERAL	136.0	33.0	34.2	119.3	41.4	144.4	23.1
5	LEFT FRONT DOOR MID-REAR ACCELERATION (G) LATERAL	121.2	33.0	36.8	256.1	41.0	139.4	35.1
6	LEFT FRONT DOOR UPPER CENTERLINE ACCELERATION (G) LATERAL	136.0	33.0	44.1	172.8	44.9	137.9	23.0

* ALL MEASUREMENTS OF ACCELEROMETER LOCATIONS ARE IN INCHES.

REFERENCE: X: + FORWARD FROM REAR BUMPER
Y: + LEFTWARD FROM VEHICLE CENTERLINE
Z: + UPWARD FROM GROUND LEVEL

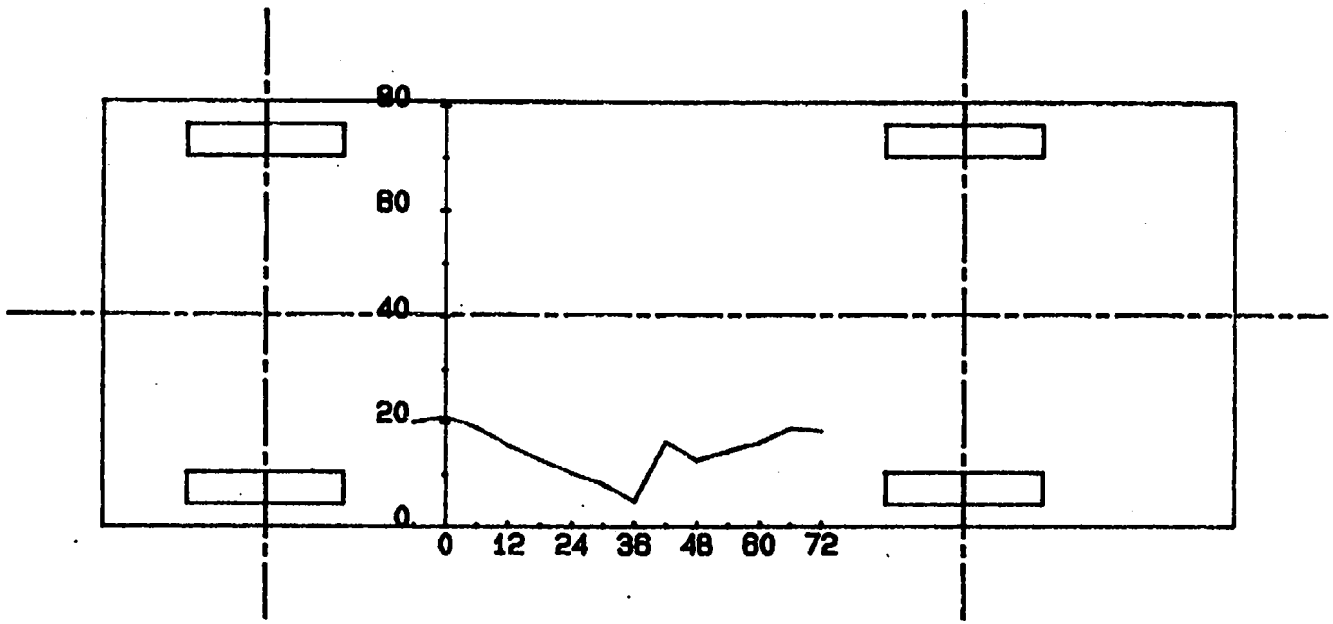
Y See TEST ANOMALIES

FIGURE 2 STRUCK VEHICLE EXTERIOR STATIC CRUSH PROFILE



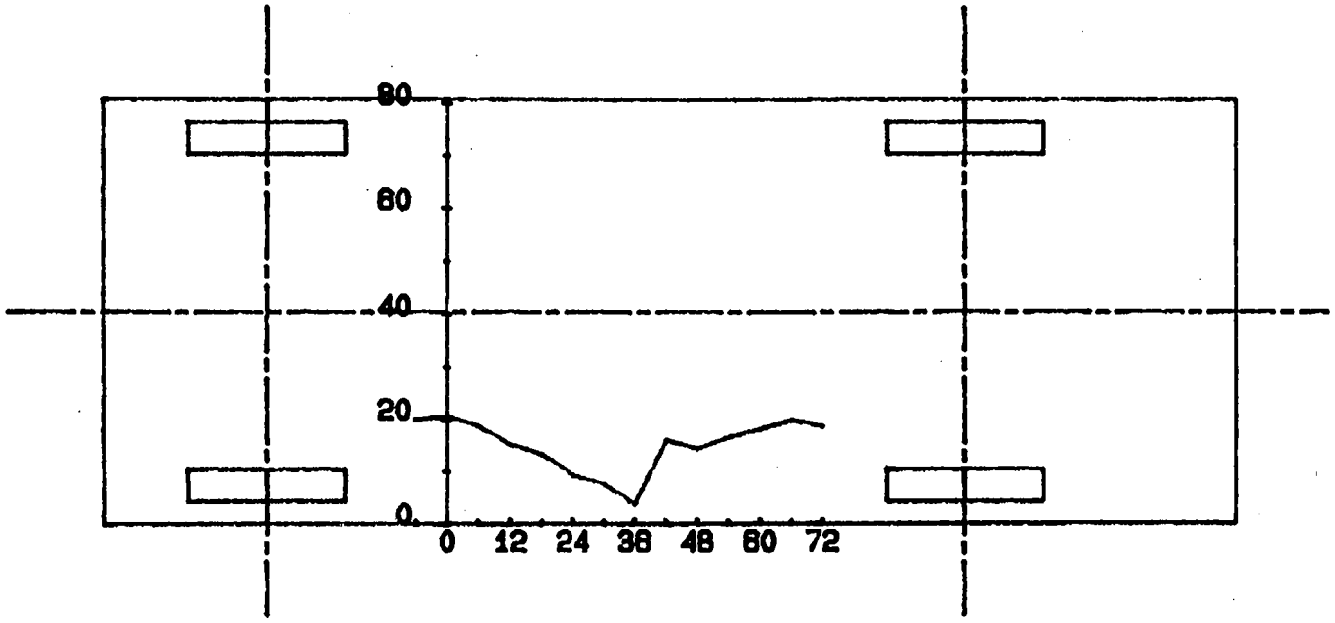
PROFILE LEVEL EQUALS AXLE HEIGHT WHICH IS 13.6 IN. ABOVE GROUND LEVEL

FIGURE 2 STRUCK VEHICLE EXTERIOR STATIC CRUSH PROFILE, CONT'D.



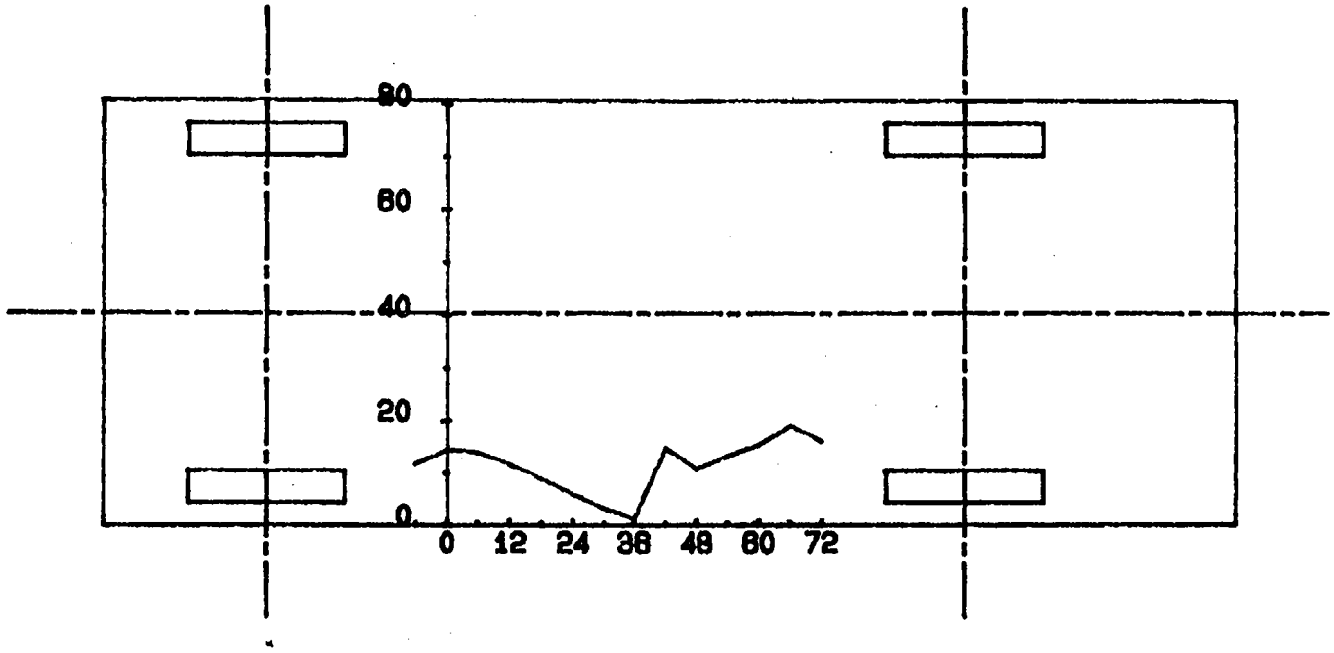
PROFILE LEVEL EQUALS H-POINT HEIGHT WHICH IS 34.9 IN. ABOVE GROUND LEVEL

FIGURE 2 STRUCK VEHICLE EXTERIOR STATIC CRUSH PROFILE, CONT'D.



PROFILE LEVEL EQUALS MID DOOR HEIGHT WHICH IS 32.8 IN. ABOVE GROUND LEVEL

FIGURE 2 STRUCK VEHICLE EXTERIOR STATIC CRUSH PROFILE, CONT'D.



PROFILE LEVEL EQUALS WINDOW SILL HEIGHT WHICH IS 46.7 IN. ABOVE GROUND LEVEL

TABLE 4 STRUCK VEHICLE EXTERIOR PROFILES AND STATIC CRUSH
ZERO DISTANCE 32.4 INCHES FORWARD OF WHEELBASE MID-POINT

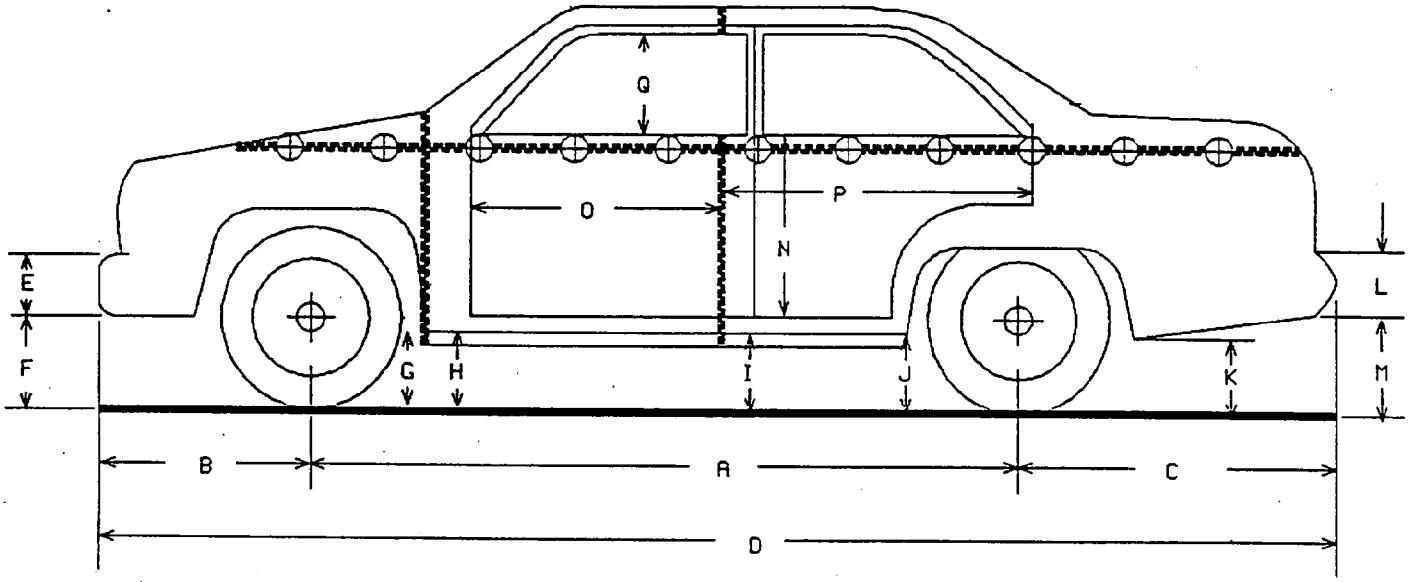
LOCATION	HEIGHT(IN)	-6	0	6	12	18	24	30	36	42	48	54	60	66	72
PRE-TEST PROFILE (DISTANCE IN INCHES FROM REFERENCE PLANE*)															
Axle Height	13.6	11.0	10.9	10.9	10.9	10.9	10.8	10.8	11.8	10.9	10.6	10.6	10.8	10.6	10.8
H-point	34.9	9.2	8.8	8.8	8.8	8.8	8.8	8.6	8.8	8.8	8.9	8.6	8.8	8.4	8.5
Mid Door	32.8	9.2	8.8	8.8	8.8	8.8	8.8	8.6	8.8	8.8	8.9	8.6	8.6	8.4	8.5
Window Sill	46.7	11.0	10.9	10.8	10.5	10.8	10.2	10.2	10.2	10.2	10.5	10.5	10.8	10.4	10.4
Window Top	69.2	X	X	X	18.1	18.2	18.0	17.9	18.2	X	X	X	X	X	X
POST-TEST PROFILE (DISTANCE IN INCHES FROM REFERENCE PLANE*)															
Axle Height	13.6	27.9	30.8	32.0	32.4	31.9	29.0	25.2	21.4	33.6	29.2	28.6	28.0	27.4	26.0
H-point	34.9	29.1	29.6	27.8	24.2	21.6	19.0	16.7	13.5	25.0	21.4	23.1	24.8	27.1	26.8
Mid Door	32.8	29.2	29.2	27.5	24.0	22.0	18.1	16.1	12.6	24.8	23.2	25.1	26.7	28.2	27.1
Window Sill	46.7	22.6	25.2	24.6	22.0	19.6	16.1	13.2	11.4	24.9	21.1	23.6	26.1	29.4	26.4
Window Top	69.2	X	X	X	29.3	29.6	29.9	30.1	30.3	X	X	X	X	X	X
STATIC CRUSH (IN)															
Axle Height	13.6	16.9	19.9	21.1	21.5	21.0	18.2	14.4	9.6	22.7	18.6	18.0	17.2	16.8	15.2
H-point	34.9	19.9	20.8	19.0	15.4	12.8	10.2	8.1	4.7	16.2	12.5	14.5	16.0	18.7	18.3
Mid Door	32.8	20.0	20.4	18.7	15.2	13.2	9.3	7.5	3.8	16.0	14.3	16.5	18.1	19.8	18.6
Window Sill	46.7	11.6	14.3	13.8	11.5	8.8	5.9	3.0	1.2	14.7	10.6	13.1	15.3	19.0	16.0
Window Top	69.2	X	X	X	11.2	11.4	11.9	12.2	12.1	X	X	X	X	X	X

*Reference plane is parallel to and 48 inches from the vehicle's longitudinal centerline.
Column readings are front to rear from left to right.

FIGURE 3 STRUCK VEHICLE PRE-TEST & POST-TEST MEASUREMENTS

VEHICLE YEAR/MAKE/MODEL/BODY 1987/Ford/F150/pickup truck

TEST DATE: 02/23/93 VIN: 2FTDF15N5HCA93645



LEFT SIDE VIEW

	PRE-TEST	POST-TEST	CHANGE		PRE-TEST	POST-TEST	CHANGE
A	133.2	127.0	6.2	J	17.8	19.2	-1.4
B	31.0	30.0	1.0	K	20.1	21.7	-1.6
C	52.0	51.5	0.5	L	6.2	6.2	0.0
D	216.2	208.5	7.7	M	19.0	20.8	-1.8
E	9.5	9.5	0.0	N	31.5	29.8	1.7
F	16.7	17.5	-0.8	O	23.0	20.7	2.3
G	13.5	17.1	-3.6	P	NA	NA	NA
H	16.5	19.2	-2.7	Q	18.6	18.0	0.6
I	17.2	20.3	-3.1				

ALL DISTANCE MEASUREMENTS ARE IN INCHES.

SECTION 4.0

STRIKING VEHICLE INFORMATION AND MEASUREMENTS

TABLE 5 STRIKING VEHICLE INFORMATION

VEHICLE MANUFACTURER: General Motors

MAKE/MODEL: Chevrolet/C10 VIN: 2GCDC14N3G1153524

BODY STYLE: 2-door pickup MODEL YEAR: 1986

COLOR: Blue

ENGINE DATA: TYPE: V6 CYLINDERS: 6 DISPLACEMENT: 4.3 liters

TRANSMISSION DATA: _3_ SPEED, ___ MANUAL, _X_ AUTOMATIC, ___ FWD, _X_ RWD, ___ 4WD

DATE VEHICLE RECEIVED: NA ODOMETER READING: 24,700

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	No
RADIO	Yes	ANTI-SKID BRAKE	No
CLOCK	No	REAR WINDOW DEFROSTER	No
OTHER	None		

REMARKS:

1. IS THE VEHICLE STOCK THROUGHOUT? Yes
2. DOES VEHICLE SHOW EVIDENCE OF PRIOR ACCIDENT HISTORY?
   Yes, the vehicle was previously used in a 301 side impact test.
3. DOES VEHICLE SHOW ANY SIGNIFICANT CORROSION? No
4. CONDITION OF THE FRONT/REAR BUMPER AND FRAME: Bumper - Good
   Frame - Fair

CERTIFICATION DATA FROM VEHICLE'S LABEL:

VEHICLE MANUFACTURED BY: General Motors

DATE OF MANUFACTURE: 01/86 VIN: 2GCDC14N3G1153524

GVWR: 5200 LBS

GAWR: FRONT: 2950 LBS., REAR: 3100 LBS.

TABLE 5 STRIKING VEHICLE INFORMATION, CONT'D.

TIRES ON VEHICLE (MFR., LINE, SIZE): Reynolds, RTX, P235/75R15

TIRE PRESSURE WITH MAXIMUM CAPACITY VEHICLE LOAD: FRONT: 35 PSI
REAR: 35 PSI

SPARE TIRE (MFR., LINE, SIZE): None

TYPE OF SEATS: FRONT: Bench
REAR: None

TYPE OF FRONT SEAT BACKS: Not adjustable

MAXIMUM WIDTH: 82.1 INCHES

WHEELBASE: 131.0 INCHES

TIRE & CAPACITY DATA FROM VEHICLE'S LABEL:

RECOMMENDED TIRE SIZE: P225/75R15

RECOMMENDED COLD TIRE PRESSURE: FRONT: 32 PSI; REAR 35 PSI

DESIGNATED SEATING CAPACITY: NA FRONT NA REAR NA TOTAL

VEHICLE CAPACITY WEIGHT: NA LBS.

TEST VEHICLE ATTITUDE (ALL MEASUREMENTS ARE IN INCHES):

DELIVERED ATTITUDE:	LF	32.4;	RF	32.3;	LR	31.2;	RR	31.6
PRE-TEST ATTITUDE*:	LF	29.5;	RF	29.6;	LR	32.2;	RR	32.1
POST-TEST ATTITUDE:	LF	27.8;	RF	29.7;	LR	31.1;	RR	32.5

*It was determined by VRTC that under heavy braking the front of the test vehicle lowered by 2.0 inches measured at the front bumper centerline and the rear of the test vehicle raised 3.0 inches measured at the rear bumper centerline. The pre-test attitudes of the test vehicle were modified to simulate these conditions.

All measurements are in inches.

TABLE 5 STRIKING VEHICLE INFORMATION, CONT'D.

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

RIGHT FRONT	1076 LBS.	RIGHT REAR	832 LBS.
LEFT FRONT	1122 LBS.	LEFT REAR	869 LBS.
TOTAL FRONT WEIGHT	2198 LBS.	(56.4% OF TOTAL VEHICLE WEIGHT)	
TOTAL REAR WEIGHT	1701 LBS.	(43.6% OF TOTAL VEHICLE WEIGHT)	
TOTAL DELIVERED WEIGHT	3899 LBS.		
TARGET TEST WEIGHT =	4000 LBS. *		

WEIGHT OF TEST VEHICLE:

RIGHT FRONT	1141 LBS.	RIGHT REAR	849 LBS.
LEFT FRONT	1070 LBS.	LEFT REAR	940 LBS.
TOTAL FRONT WEIGHT	2211 LBS.	(55.3% OF TOTAL VEHICLE WEIGHT)	
TOTAL REAR WEIGHT	1789 LBS.	(44.7% OF TOTAL VEHICLE WEIGHT)	
TOTAL TEST WEIGHT	4000 LBS.	(0.0% OVER TARGET TEST WEIGHT)	

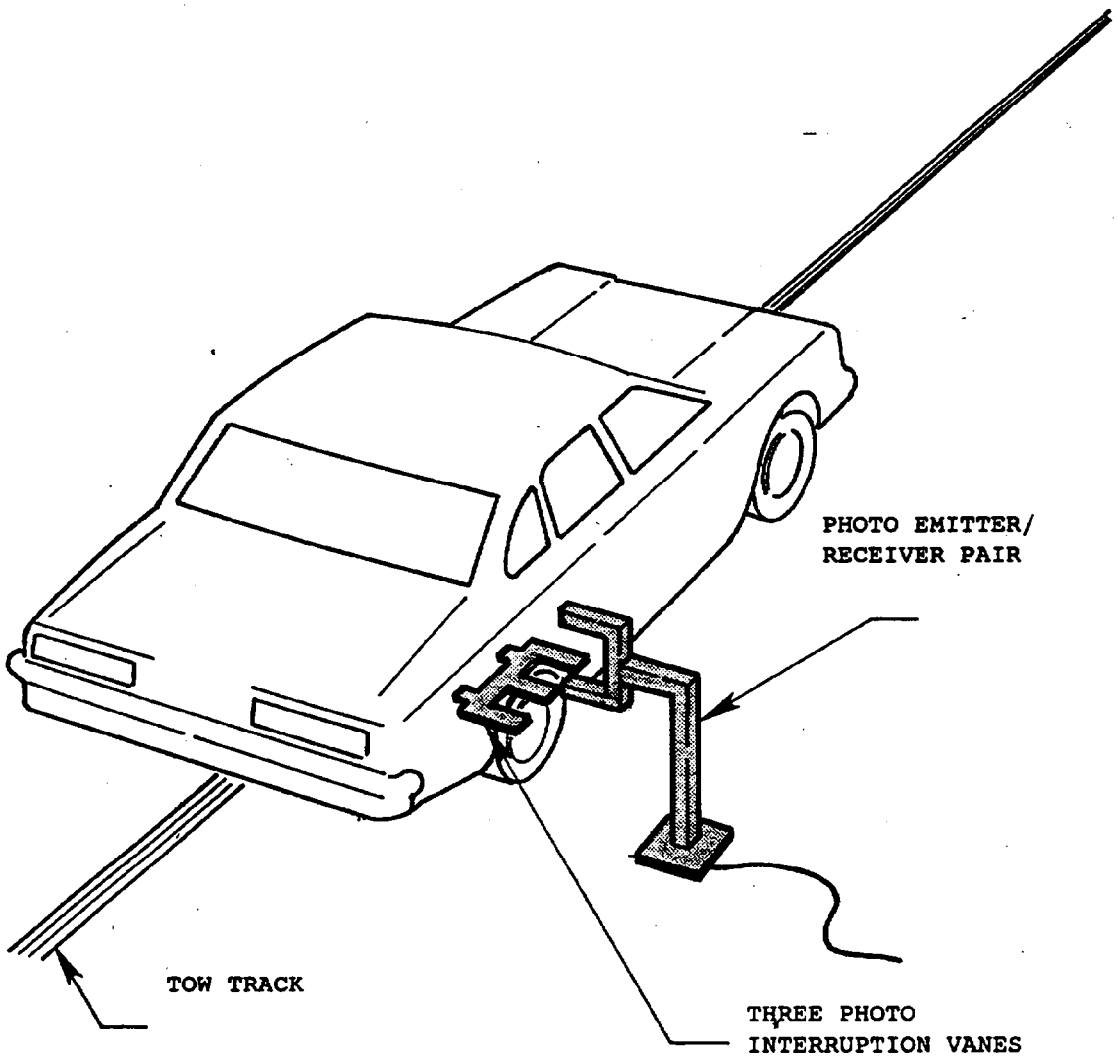
WEIGHT OF BALLAST SECURED IN VEHICLE CARGO AREA: 0 LBS.

COMPONENTS REMOVED TO MEET TARGET TEST WEIGHT: None

CG = 58.6 INCHES REARWARD OF FRONT WHEEL CENTERLINE

*Weight specified by VRTC.

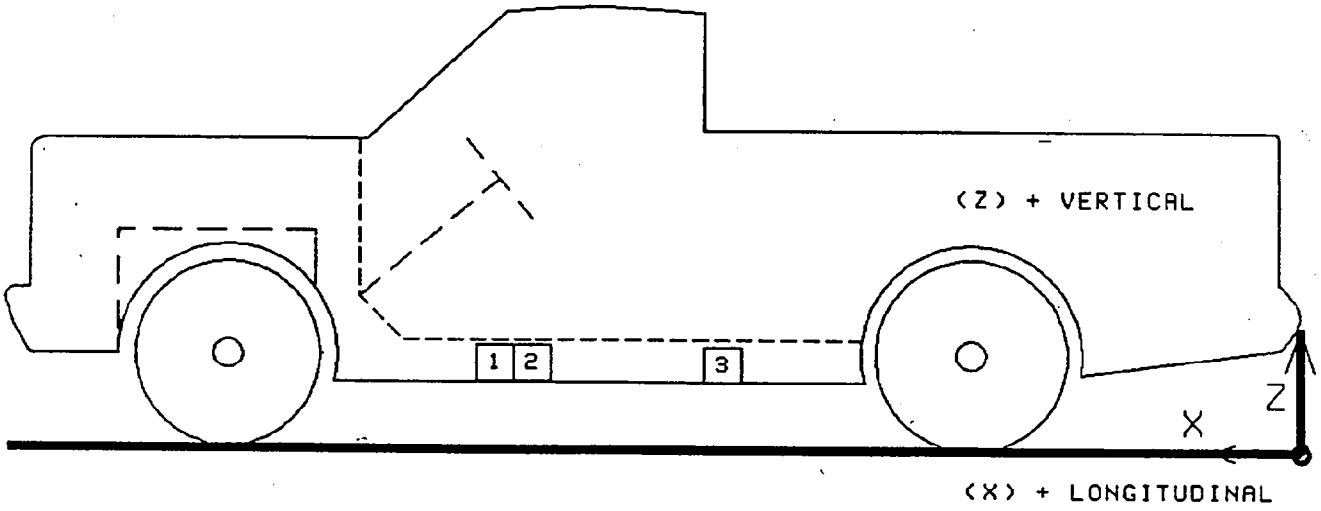
FIGURE 4 IMPACT VELOCITY MEASUREMENT SYSTEM



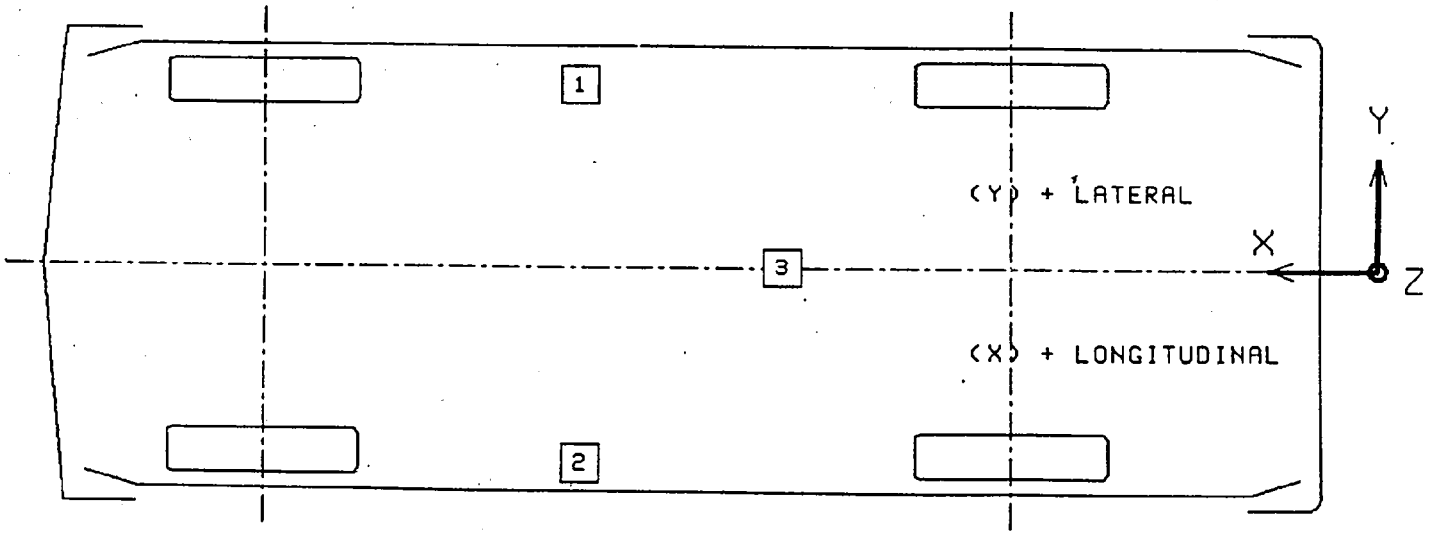
The final vane clears emitter/receiver two inches before impact.

The vanes have one foot spacing.

FIGURE 5 STRIKING VEHICLE INSTRUMENTATION PLACEMENT



SIDE VIEW



BOTTOM VIEW

TABLE 6

STRIKING VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

TEST NUMBER 930223

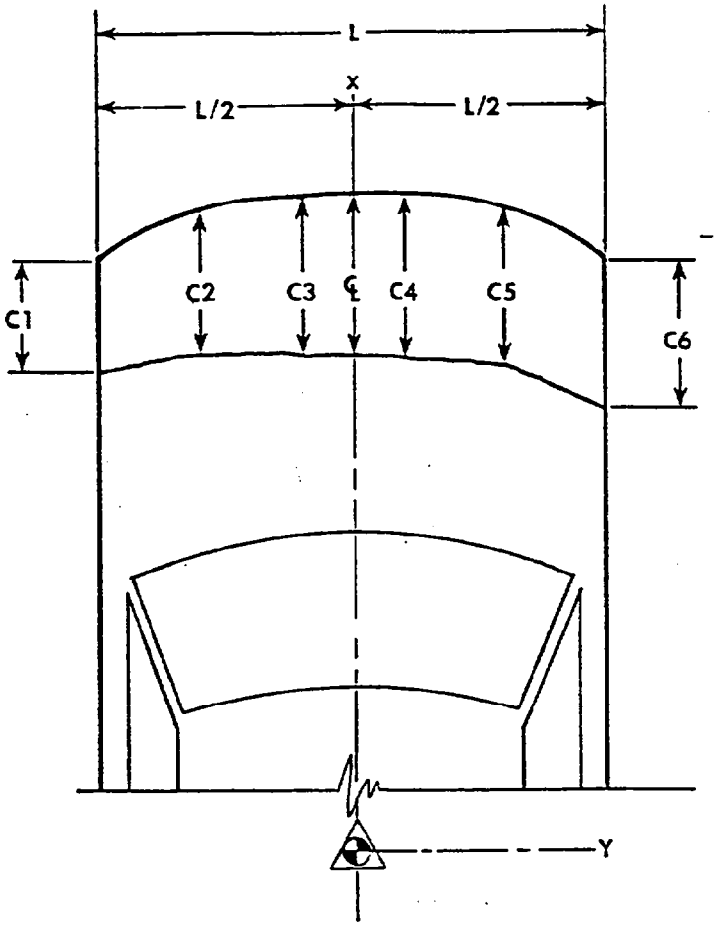
No.	LOCATION	X*	Y*	Z*	POSITIVE DIRECTION MAX	POSITIVE DIRECTION MSEC	NEGATIVE DIRECTION MAX	NEGATIVE DIRECTION MSEC
1	LEFT FRONT DOOR SILL ACCELERATION (G)	142.0	26.0	19.5				
	LONGITUDINAL				6.1	33.3	22.4	86.6
2	RIGHT FRONT DOOR SILL ACCELERATION (G)	142.8	-25.8	19.2				
	LONGITUDINAL				9.7	110.5 Y	89.2	74.1 Y
3	VEHICLE CENTER OF GRAVITY ACCELERATION (G)	121.5	0.0	22.8				
	LONGITUDINAL				6.5	34.6	33.4	91.0
	LATERAL				6.9	105.8	8.7	34.4

* ALL MEASUREMENTS OF ACCELEROMETER LOCATIONS ARE IN INCHES.

REFERENCE: X: + FORWARD FROM REAR BUMPER
Y: + LEFTWARD FROM VEHICLE CENTERLINE
Z: + UPWARD FROM GROUND LEVEL

Y See TEST ANOMALIES

FIGURE 6 STRIKING VEHICLE CRUSH



NOTES: L is pre-test length of contact surface.
C1 through C6 are spaced equally apart.
CL is vehicle centerline.
All measurements are in inches.

Striking Vehicle Chevrolet C10

	PRE-TEST	POST-TEST	CRUSH
L	70.0		
C1	216.0	187.6	28.4
C2	217.0	196.5	20.5
C3	218.0	203.6	14.4
C4	218.1	206.3	11.8
C5	217.4	209.9	7.5
C6	216.0	210.9	5.1
CL	218.2	204.0	14.2

FIGURE 7 STRIKING VEHICLE
PRE-TEST AND POST-TEST MEASUREMENT POINTS

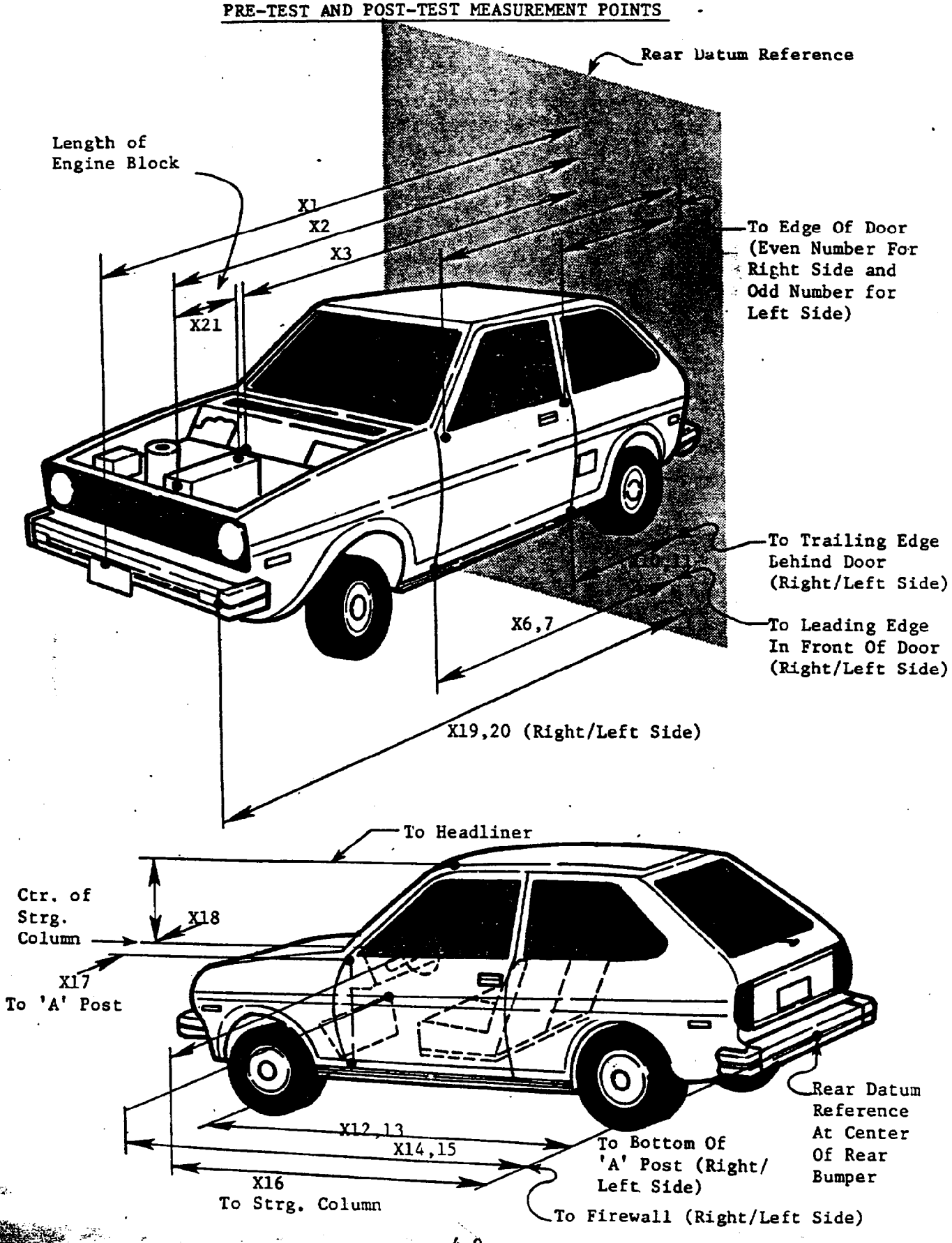


TABLE 7 STRIKING VEHICLE MEASUREMENTS

VEHICLE MAKE/MODEL: Chevrolet/C10 TEST NUMBER: 930223

ALL MEASUREMENTS ARE IN INCHES

NO.	TYPE OF MEASUREMENT	PRE-TEST	POST-TEST	DIFF.
X1	TOTAL LENGTH OF VEHICLE AT CENTERLINE	218.2	204.0	14.2
X2	REAR SURFACE OF VEHICLE TO FRONT OF ENGINE BLOCK	188.8	182.1	6.7
X3	REAR SURFACE OF VEHICLE TO FIREWALL	170.1	166.4	3.7
X4	REAR SURFACE OF VEHICLE TO UPPER LEADING EDGE OF RIGHT DOOR	156.5	154.2	2.3
X5	REAR SURFACE OF VEHICLE TO UPPER LEADING EDGE OF LEFT DOOR	154.8	154.3	0.5
X6	REAR SURFACE OF VEHICLE TO LOWER LEADING EDGE OF RIGHT DOOR	153.8	151.9	1.9
X7	REAR SURFACE OF VEHICLE TO LOWER LEADING EDGE OF LEFT DOOR	152.5	152.2	0.3
X8	REAR SURFACE OF VEHICLE TO UPPER TRAILING EDGE OF RIGHT DOOR	116.0	113.6	2.4
X9	REAR SURFACE OF VEHICLE TO UPPER TRAILING EDGE OF LEFT DOOR	114.5	114.0	0.5
X10	REAR SURFACE OF VEHICLE TO LOWER TRAILING EDGE OF RIGHT DOOR	114.8	112.9	1.9
X11	REAR SURFACE OF VEHICLE TO LOWER TRAILING EDGE OF LEFT DOOR	113.2	112.8	0.4
X12	REAR SURFACE OF VEHICLE TO BOTTOM OF "A" POST ON RIGHT SIDE	156.0	153.7	2.3
X13	REAR SURFACE OF VEHICLE TO BOTTOM OF "A" POST ON LEFT SIDE	NA	NA	NA
X14	REAR SURFACE OF VEHICLE TO FIREWALL - RIGHT SIDE	170.2	168.2	2.0
X15	REAR SURFACE OF VEHICLE TO FIREWALL - LEFT SIDE	168.6	166.4	2.2
X16	REAR SURFACE OF VEHICLE TO STEERING WHEEL CENTER	139.8	138.8	1.0
X17	CENTER OF STEERING COLUMN TO "A" POST	13.0	12.5	0.5
X18	CENTER OF STEERING COLUMN TO HEADLINER	19.8	20.0	-0.2
X19	REAR SURFACE OF VEHICLE TO RIGHT SIDE OF FRONT BUMPER	216.0	210.9	5.1
X20	REAR SURFACE OF VEHICLE TO LEFT SIDE OF FRONT BUMPER	216.0	187.6	28.4
X21	LENGTH OF ENGINE BLOCK	16.0	16.0	0.0

SECTION 5.0

OCCUPANT AND CAMERA INFORMATION

TABLE 8

DUMMY DATA SUMMARY

TEST NUMBER 930223

	DRIVER DUMMY SN: 903			
	POSITIVE DIRECTION		NEGATIVE DIRECTION	
	MAX	MSEC	MAX	MSEC
HEAD ACCELERATION (G)				
LONGITUDINAL	9.1	125.3	46.2	95.1
LATERAL	58.6	154.8	56.5	89.6
VERTICAL	27.4	159.6	60.3	91.5
RESULTANT	89.3	92.5		
HIC	582 FROM 88.0 TO 100.3			
UPPER SPINE ACCELERATION (G)				
LONGITUDINAL	14.3	88.8	4.0	161.3
LATERAL (P)	3.9	182.5	33.1	93.1
LATERAL (R)	3.9	206.3	32.5	93.1
VERTICAL	14.4	56.9	17.9	100.0
RESULTANT (P)	36.1	93.1		
RESULTANT (R)	35.5	93.1		
LOWER SPINE ACCELERATION (G)				
LONGITUDINAL	20.7	88.1	5.2	70.0
LATERAL (P)	7.2	113.1	32.5	60.6
LATERAL (R)	6.6	113.7	32.6	60.6
VERTICAL	17.7	57.5	17.7	100.0
RESULTANT (P)	36.9	58.1		
RESULTANT (R)	36.8	58.1		
LEFT UPPER THORAX RIB ACCELERATION (G)				
LATERAL (P)	5.3	194.4	36.6	74.4
LATERAL (R)	4.6	196.9	36.8	74.4
LEFT LOWER THORAX RIB ACCELERATION (G)				
LATERAL (P)	4.9	205.6	32.0	73.1
LATERAL (R)	5.1	205.0	31.9	73.1
TTI	34.6			
PELVIS ACCELERATION (G)				
LONGITUDINAL	3.2	51.9	10.8	59.4
LATERAL	7.4	106.9	53.1	55.0
VERTICAL	16.4	55.6	14.0	100.6
RESULTANT	55.6	55.0		

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

TABLE 9 POST-IMPACT DUMMY/VEHICLE DATA

VISIBLE DUMMY CONTACT POINTS:

	DRIVER #903	PASSENGER #
HEAD	Driver's door glass	NA
CHEST	None	NA
ABDOMEN	Door panel	NA
LEFT KNEE	Door panel	NA
RIGHT KNEE	Left knee	NA

DOOR OPENING:

	LEFT	RIGHT
FRONT	Tools required	Easy
REAR	NA	NA

SEAT MOVEMENT:

	SEAT BACK FAILURE	SEAT SHIFT
FRONT	None	None
REAR	NA	NA

GLAZING DAMAGE:

The left half of the windshield cracked upon impact.

OTHER NOTABLE IMPACT EFFECTS:

The left front tire of the striking vehicle went flat.

FIGURE 8 DUMMY AND SEAT POSITIONING DATA

MFR./MAKE/MODEL: Ford/F150/pickup

SEAT TYPE: X Bench
_____Bucket
_____Split bench

ADJUSTER TYPE: X Manual
_____Power
_____Non-adjustable

SEAT BACK TYPE: X Non-adjustable
_____Adjustable reclining

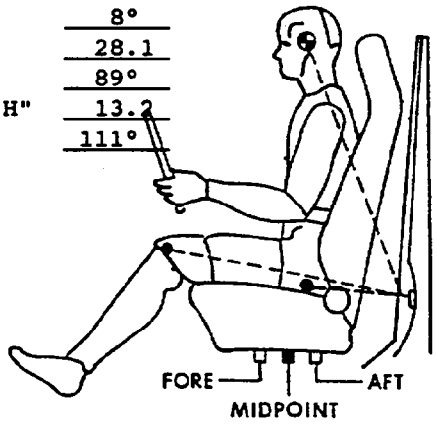
TECHNICIANS:
1. R. Branham
2. R. Benavides
3. _____
4. _____

POSITIONING DATE: 02/23/93

AMBIENT TEMP.: 72° F TIME: 1105

DRIVER DUMMY* # 903 TYPE: SID

Head	23.6
Target	8°
Knee	28.1
Joint	89°
Approx. "H"	13.2
Point	111°

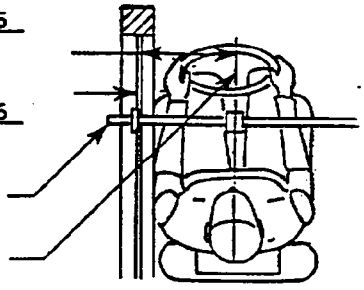


13.5

DOOR GLASS
HEIGHT = 10.6

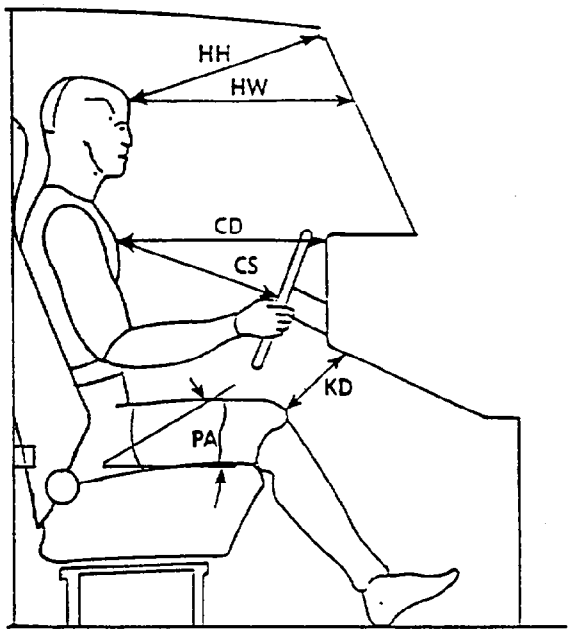
LATERAL BAR

ADJUSTABLE
POINTER



*Driver dummy measurements are referenced to top of front door striker.
ALL DISTANCE MEASUREMENTS ARE IN INCHES.
ALL ANGLES ARE REFERENCED TO VERTICAL..

FIGURE 9 DUMMY LONGITUDINAL CLEARANCE MEASUREMENTS



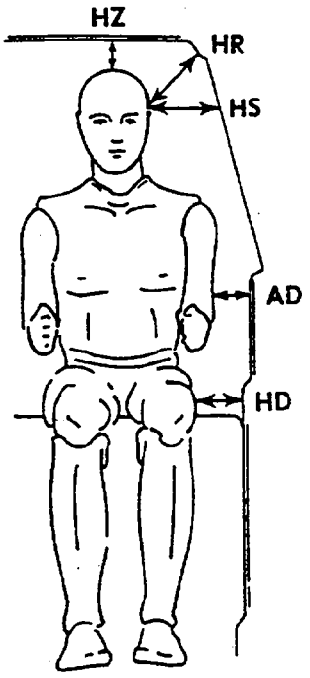
HH	20.7
HW	25.5
CD	22.5
CS	12.2
KDL	4.9
KDR	5.4
PA	16°
HB	NA
NB	NA
CB	NA
KBL	NA
KBR	NA

ALL DISTANCE MEASUREMENTS ARE IN INCHES.

ALL ANGLES ARE REFERENCED TO HORIZONTAL.

NOTE: FOR TWO-DOOR VEHICLES, THE REAR PASSENGER'S PHX AND PHZ MEASUREMENTS ARE REFERENCED TO THE FRONT DOOR STRIKER.

FIGURE 10 DUMMY LATERAL CLEARANCE MEASUREMENTS



HR	8.4
HS	10.2
AD	3.9
HD	5.4
HZ	5.1

ALL DISTANCE MEASUREMENTS ARE IN INCHES.

FIGURE 11

CAMERA POSITIONS

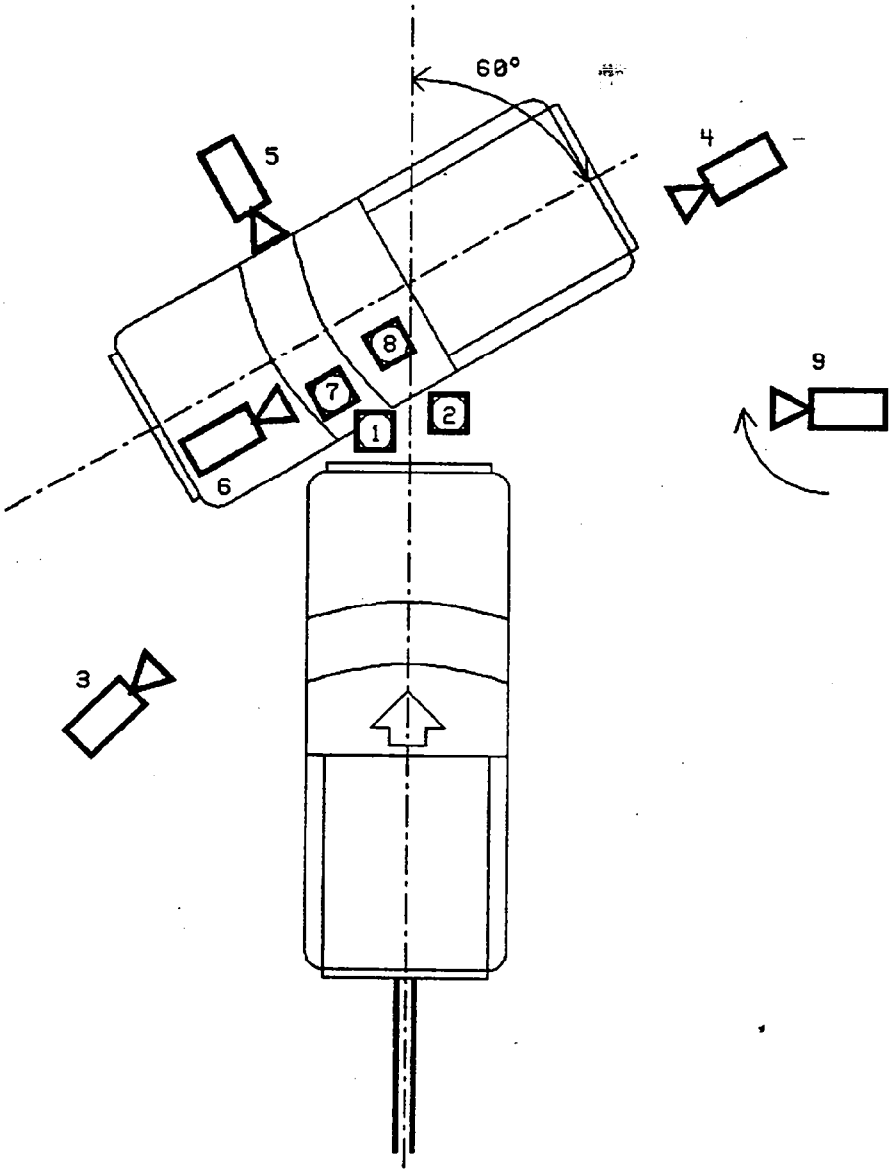


TABLE 10 CAMERA INFORMATION

CAMERA NO.	LOCATION	TYPE	LENS (mm)	SPEED (fps)	PURPOSE OF CAMERA DATA
1	Overhead wide	Photosonic	8	1000	Vehicle dynamics
2	Overhead tight	Photosonic	25	963	Vehicle dynamics
3	Left angle	Photosonic	13	1000	Vehicle dynamics
4	Right angle	Photosonic	25	653	Vehicle dynamics
5	Onboard side	Photosonic	8	950	Dummy kinematics
6	Onboard windshield	Photosonic	8	918	Dummy kinematics
7	Pit - front	Photosonic	13	785	Vehicle dynamics
8	Pit - rear	Photosonic	17	800	Vehicle dynamics
9	Panning	Beaulieu	12-120	24	Real-time panning

APPENDIX A

PHOTOGRAPHS

Figure A-1. PRE-TEST LEFT REAR VIEW

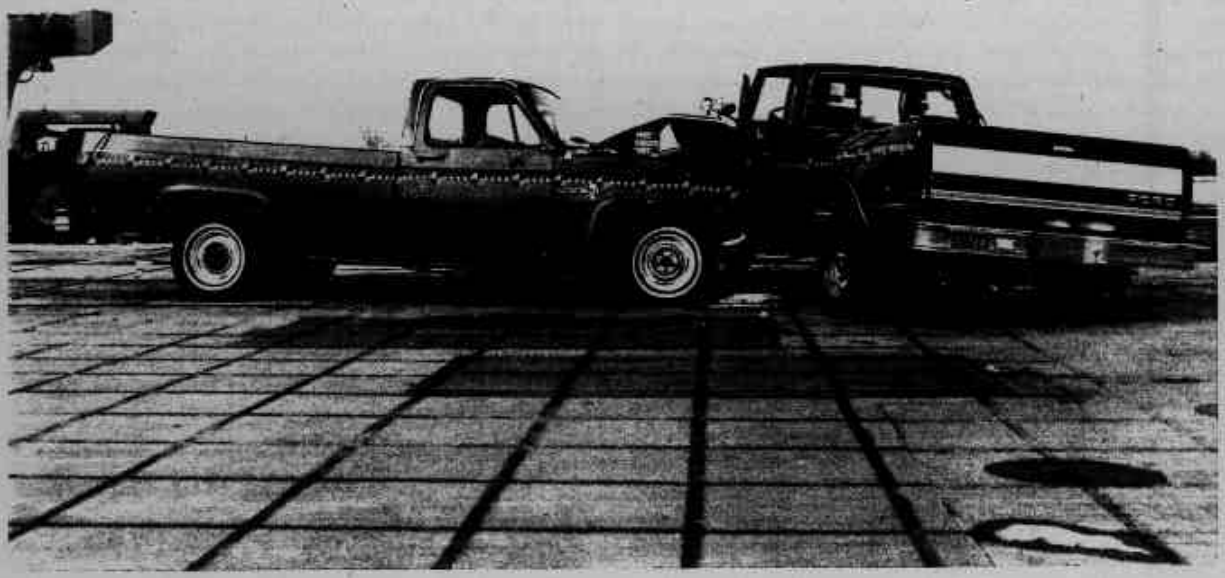


Figure A-2. POST-TEST LEFT REAR VIEW

Figure A-3. PRE-TEST LEFT SIDE VIEW

Figure A-4. POST-TEST LEFT SIDE VIEW

Figure A-5. PRE-TEST LEFT FRONT VIEW

Figure A-6. POST-TEST LEFT FRONT VIEW

Figure A-7. PRE-TEST RIGHT SIDE VIEW

Figure A-8. POST-TEST RIGHT SIDE VIEW

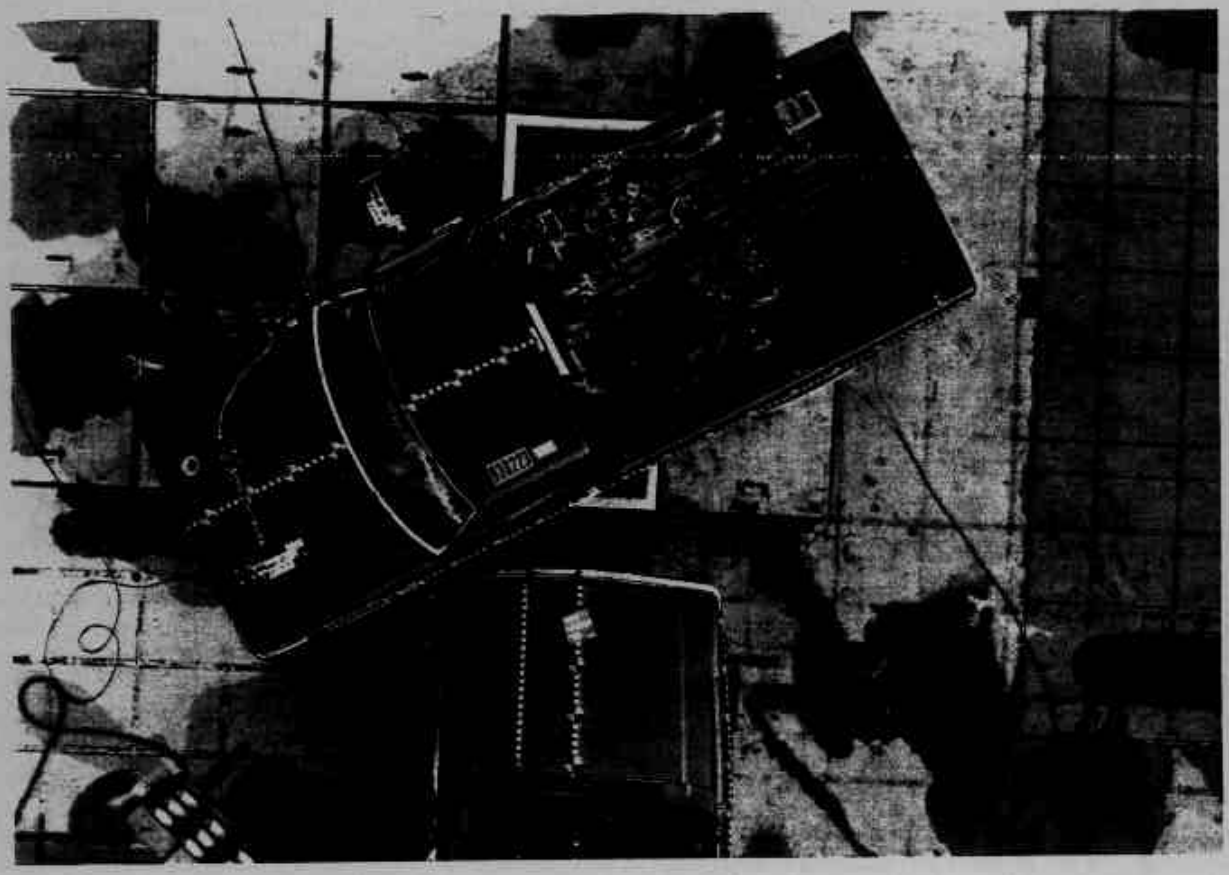


Figure A-9. PRE-TEST OVERHEAD - VIEW 1

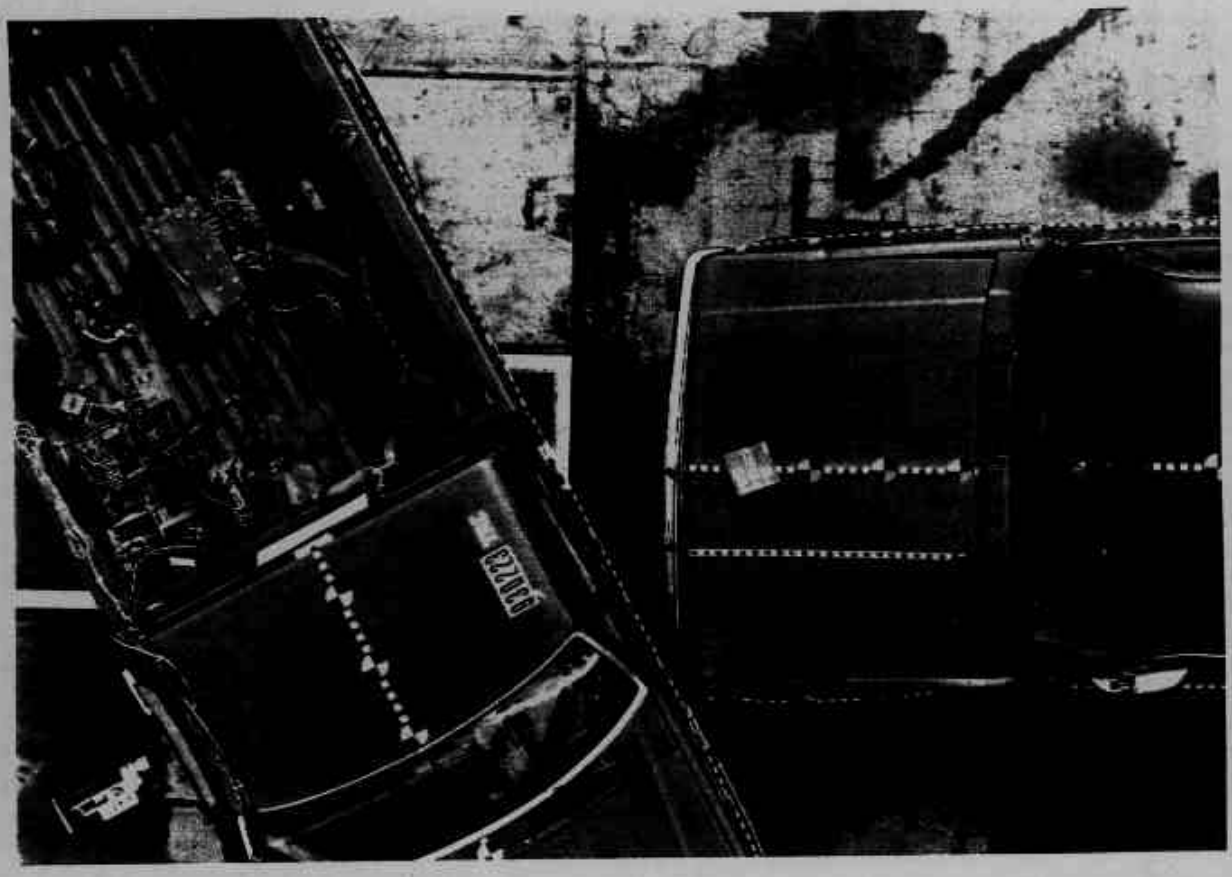


Figure A-10. PRE-TEST OVERHEAD - VIEW 2

Figure A-11. PRE-TEST DRIVER DUMMY POSITION VIEW

Figure A-12. PRE-TEST DRIVER DUMMY & VEHICLE INTERIOR - VIEW 1

Figure A-13. PRE-TEST DRIVER DUMMY & VEHICLE INTERIOR - VIEW 2

Figure A-14. POST-TEST DRIVER DUMMY POSITION VIEW

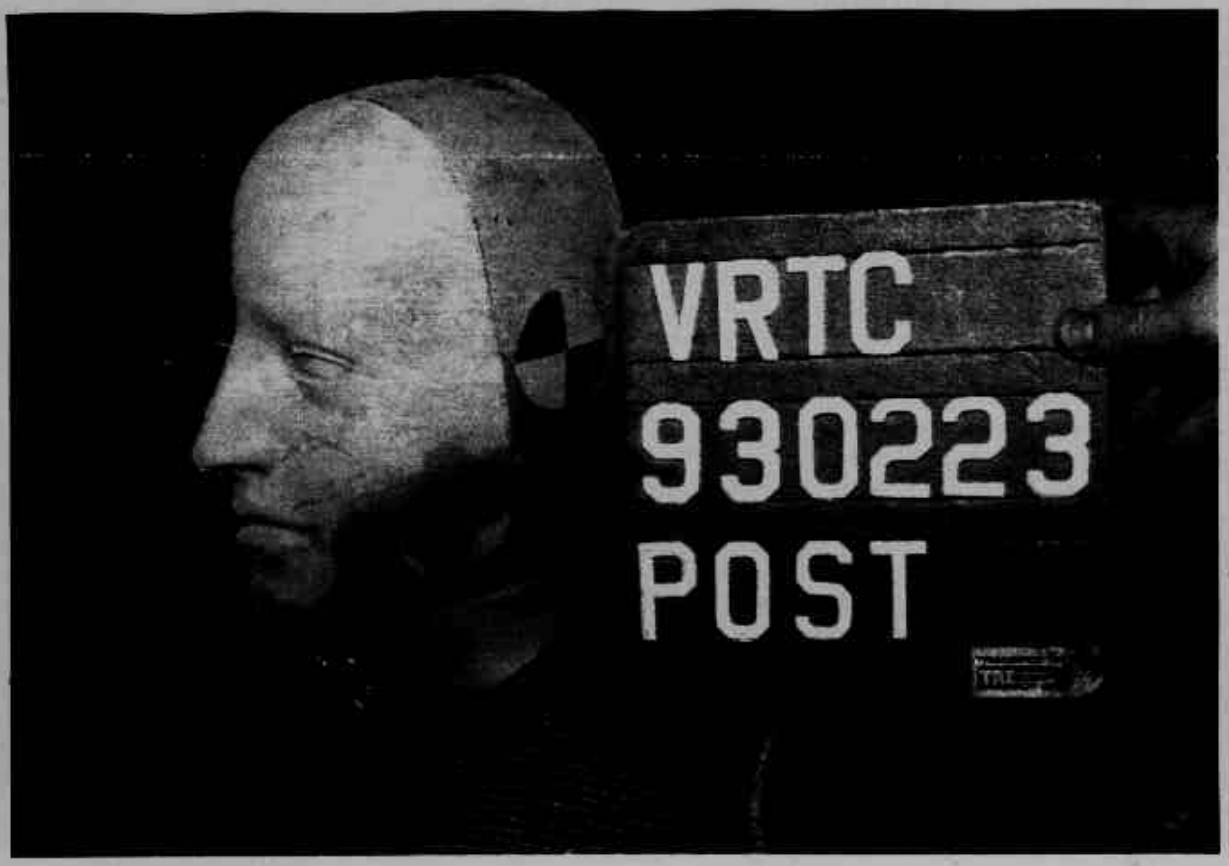


Figure A-15. POST-TEST DRIVER DUMMY CONTACT - VIEW 1

Figure A-16. POST-TEST DRIVER DUMMY CONTACT - VIEW 2

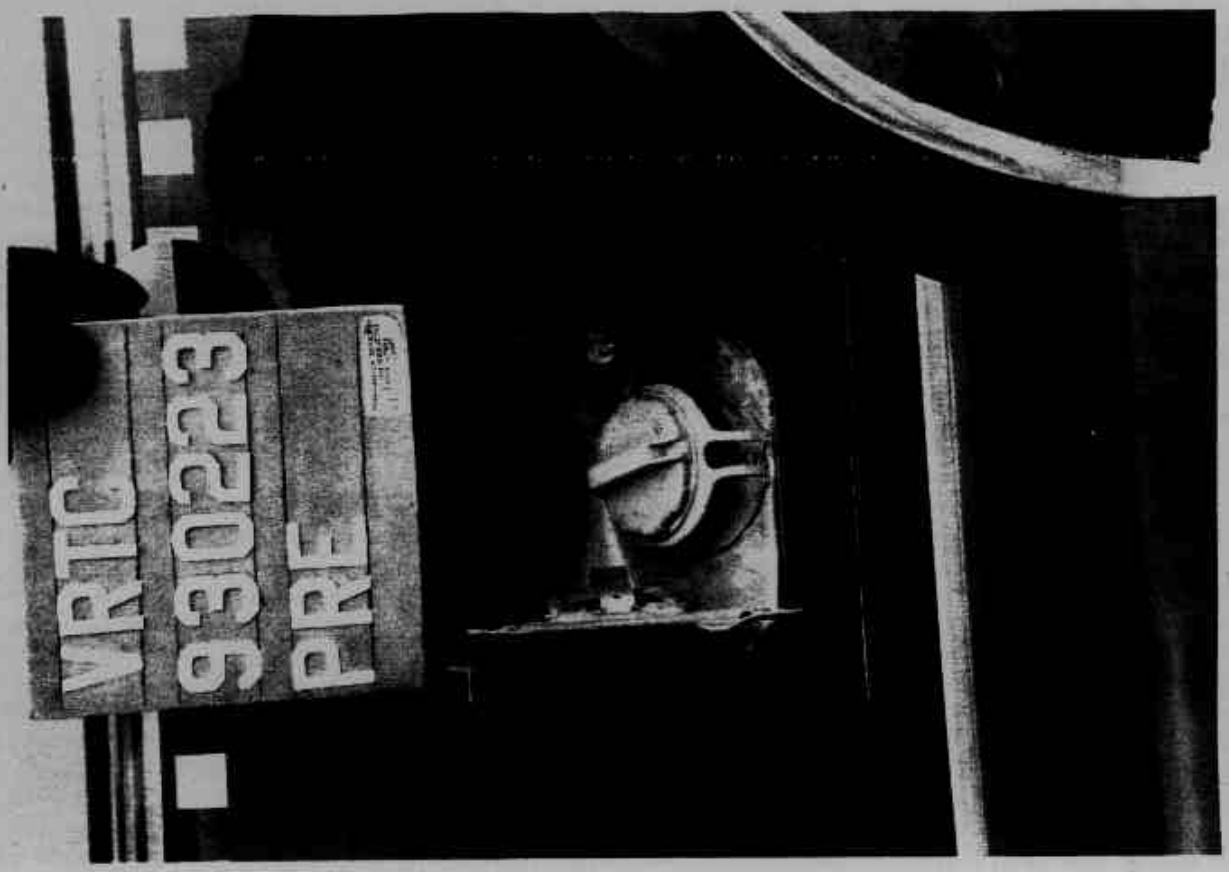


Figure A-17. PRE-TEST MAIN FUEL FILLER CAP VIEW

Figure A-18. POST-TEST MAIN FUEL FILLER CAP VIEW

Figure A-19. PRE-TEST AUXILLIARY FUEL FILLER CAP VIEW

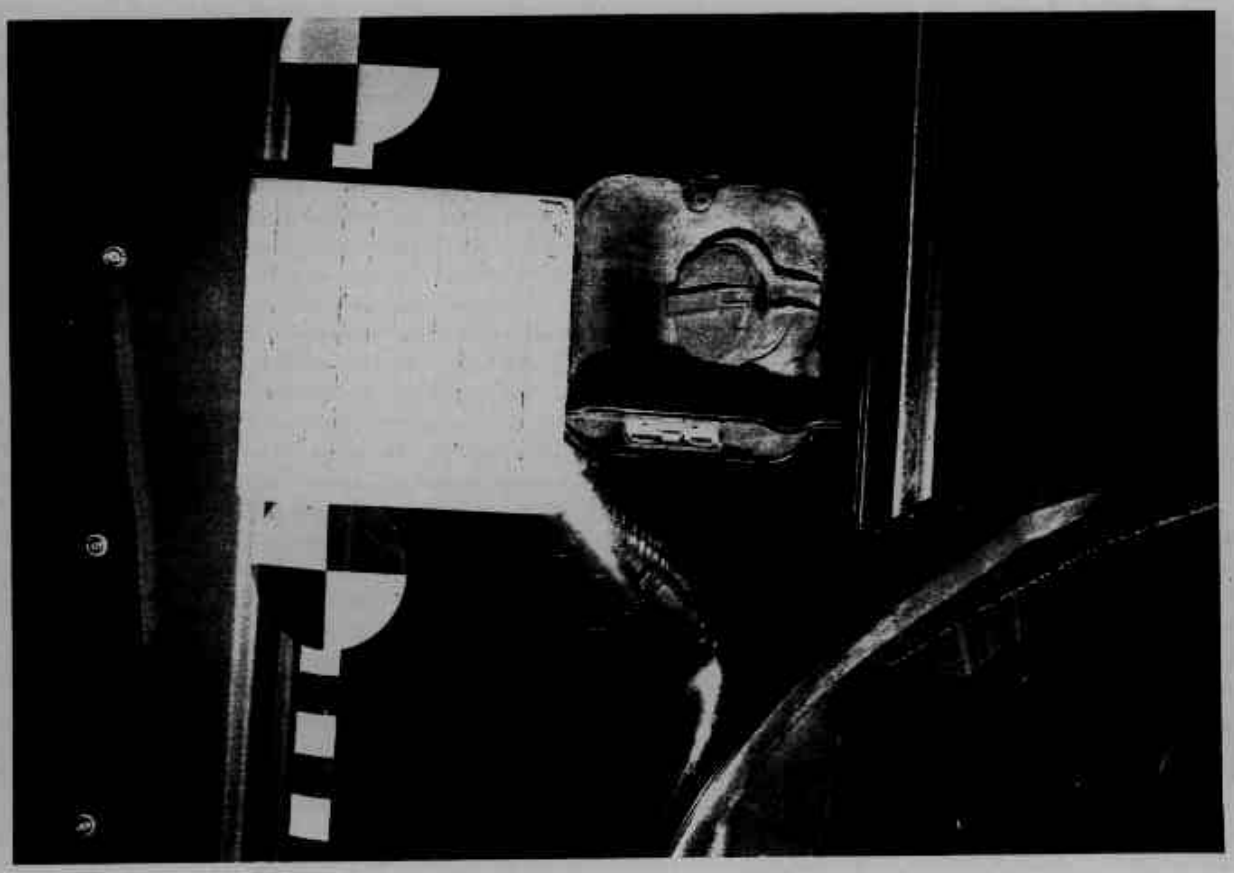
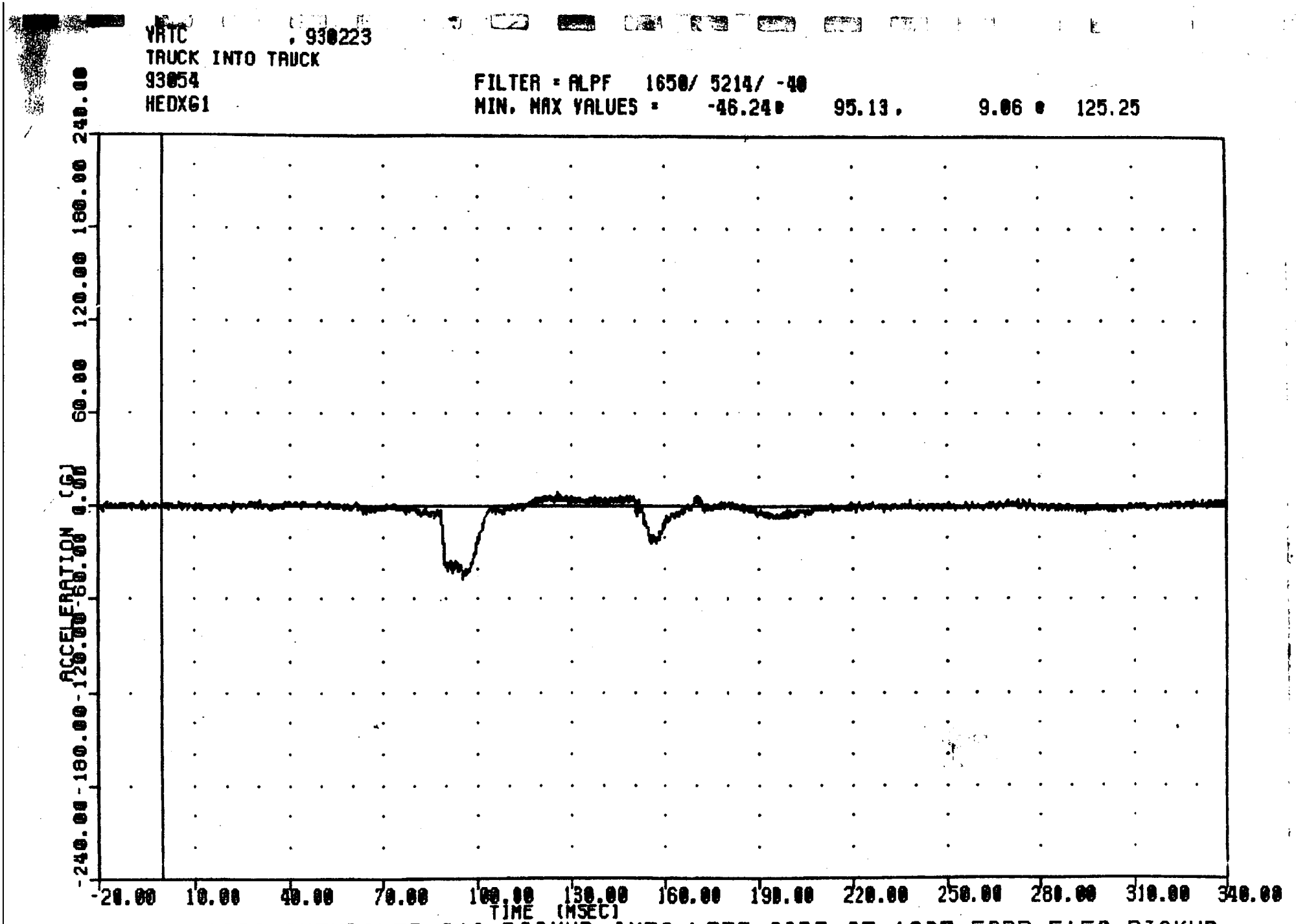


Figure A-20. POST-TEST AUXILLIARY FUEL FILLER CAP VIEW

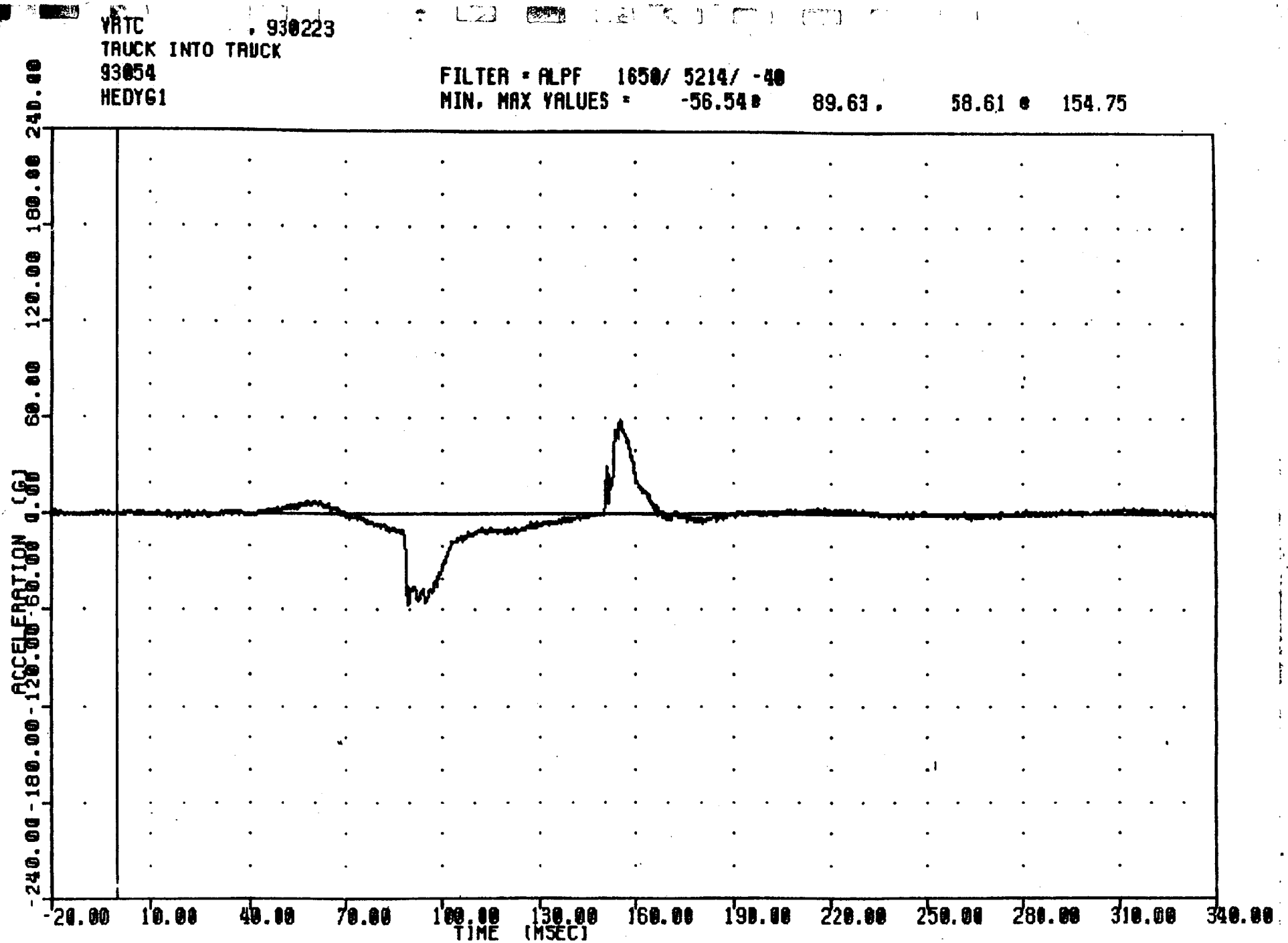
Figure A-21. VEHICLE TO VEHICLE IMPACT EVENT

APPENDIX B

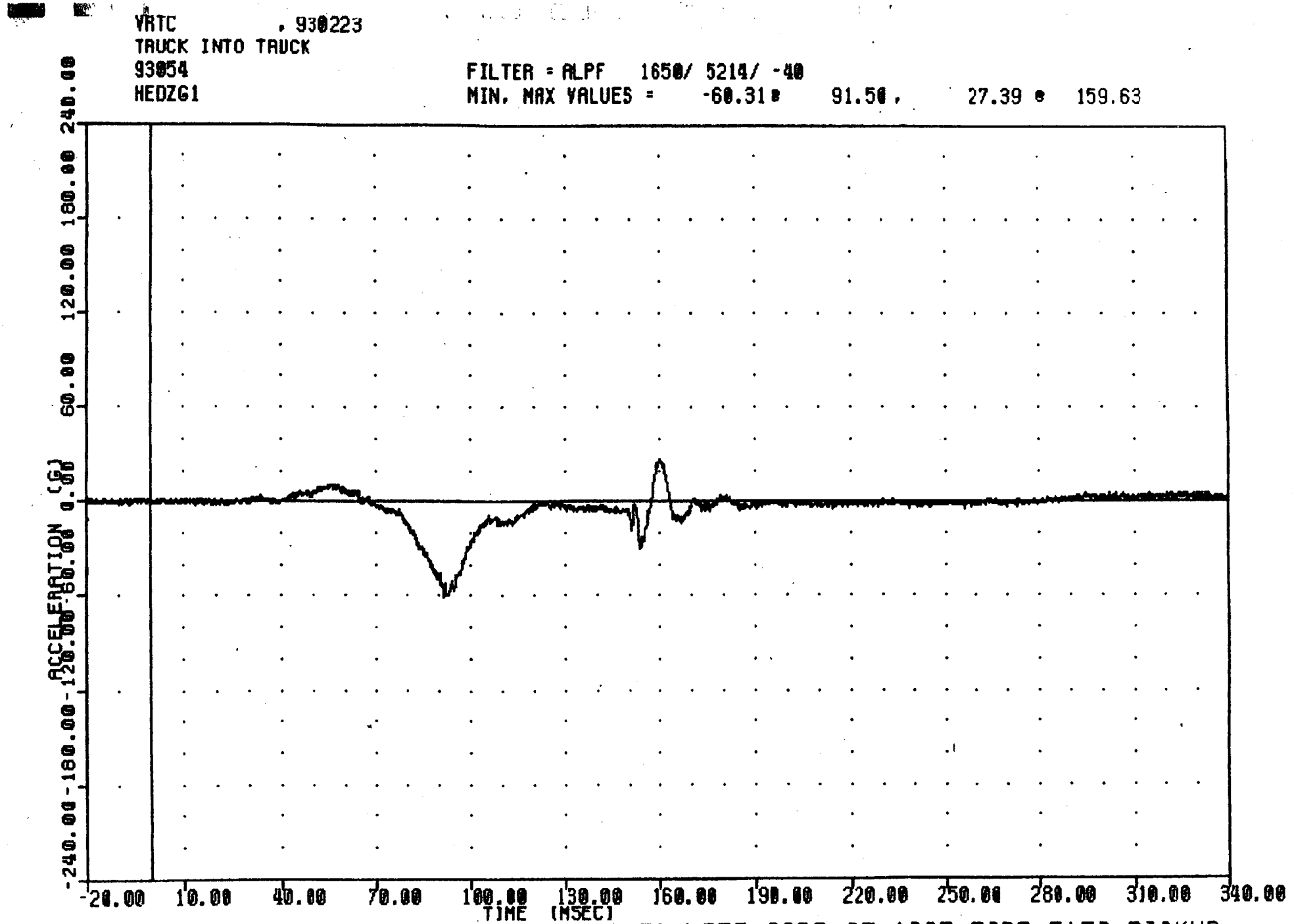
DATA PLOTS



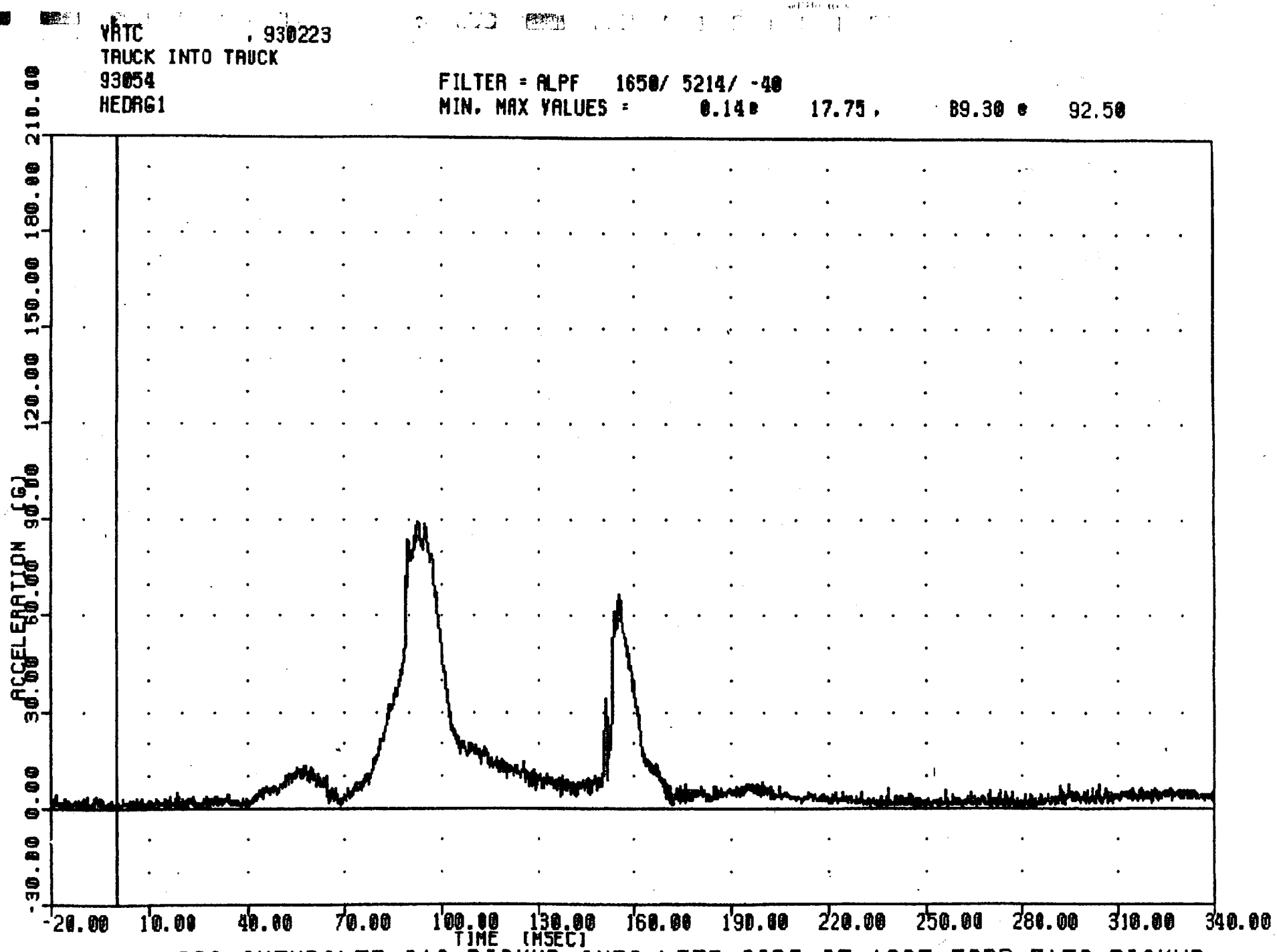
1986 CHEVROLET C10 PICKUP INTO LEFT SIDE OF 1987 FORD F150 PICKUP
DRIVER HEAD X-AXIS ACCELERATION



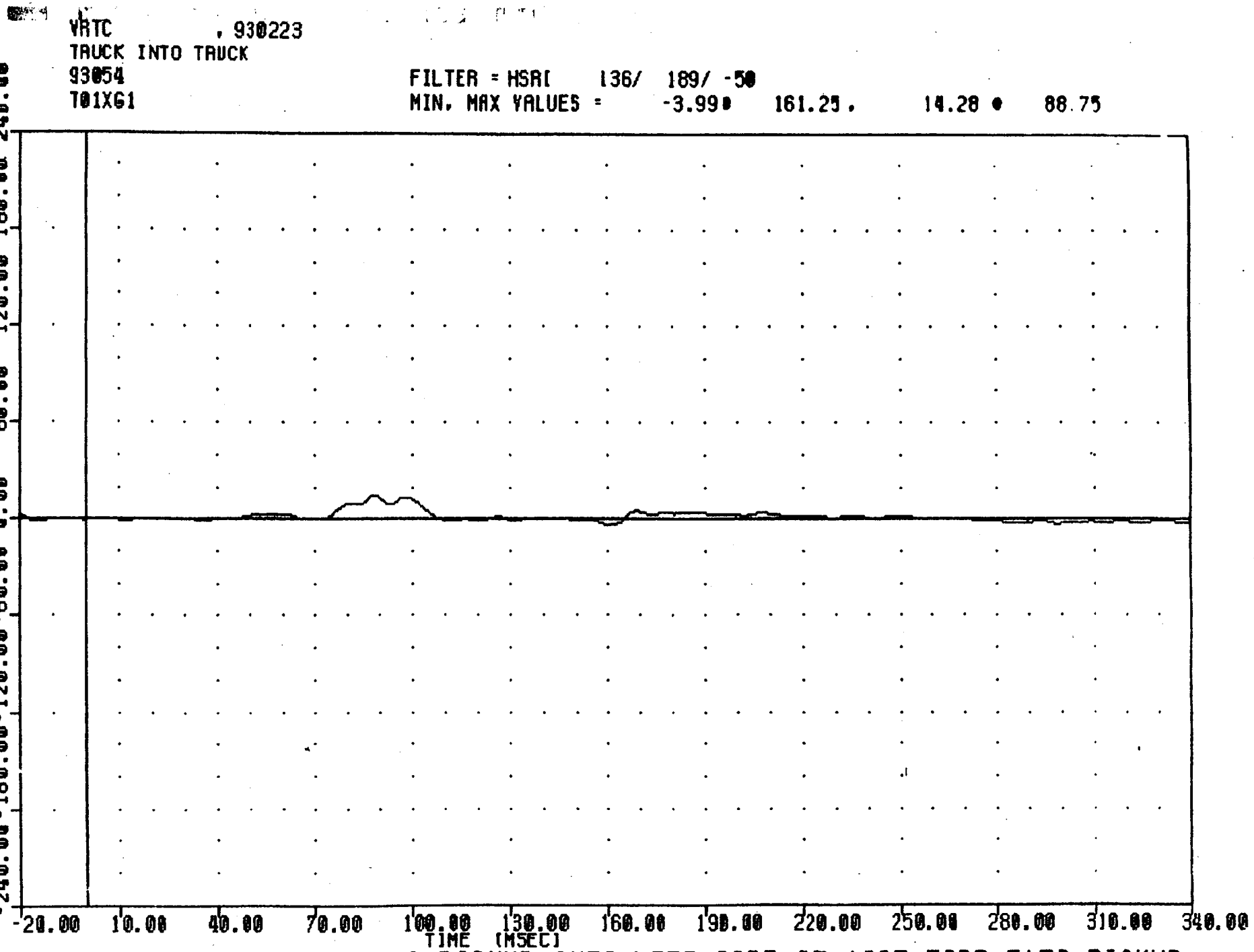
1986 CHEVROLET C10 PICKUP INTO LEFT SIDE OF 1987 FORD F150 PICKUP
DRIVER HEAD Y-AXIS ACCELERATION



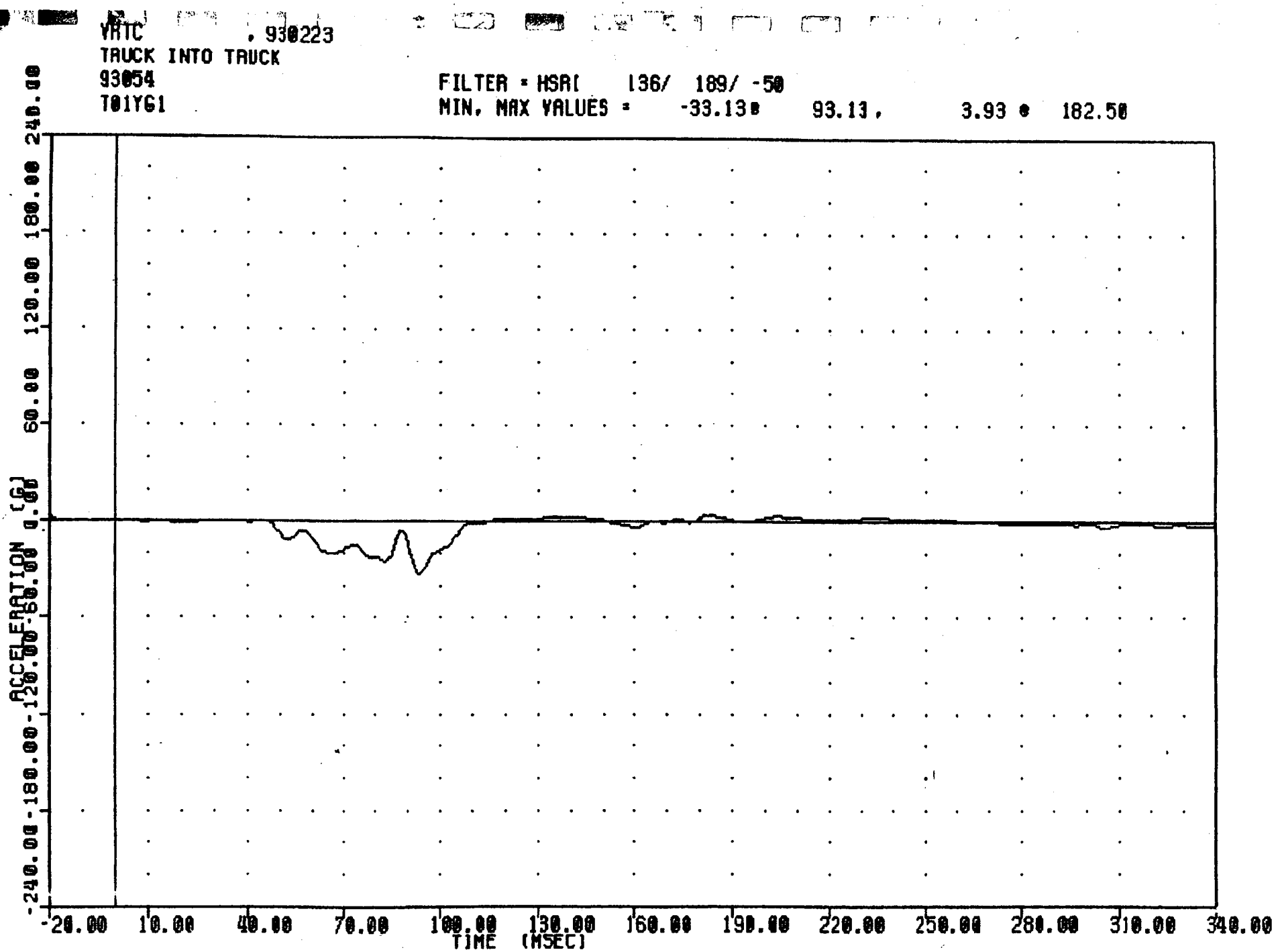
1986 CHEVROLET C10 PICKUP INTO LEFT SIDE OF 1987 FORD F150 PICKUP
DRIVER HEAD Z-AXIS ACCELERATION



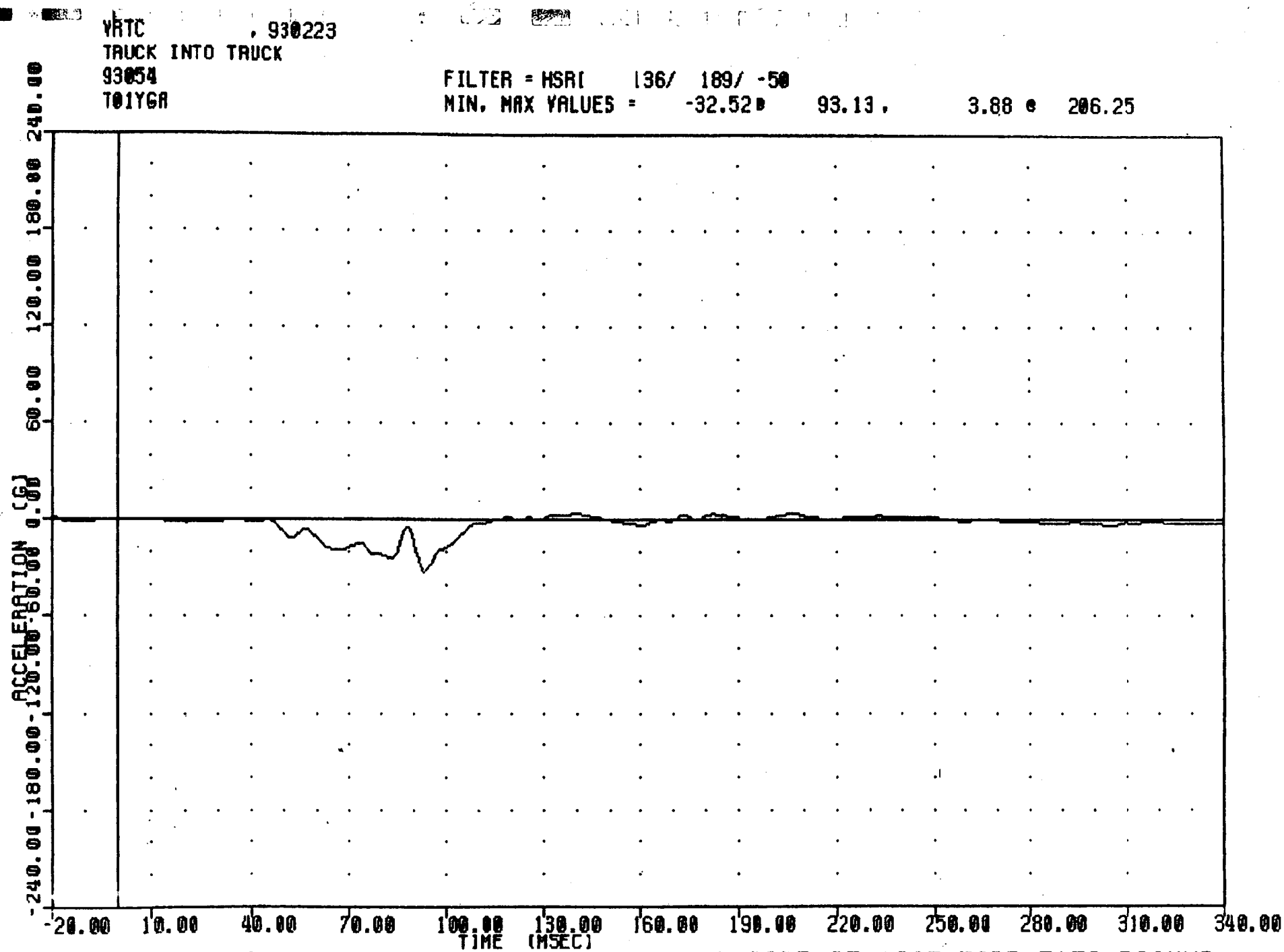
1986 CHEVROLET C10 PICKUP INTO LEFT SIDE OF 1987 FORD F150 PICKUP
DRIVER HEAD RESULTANT ACCELERATION



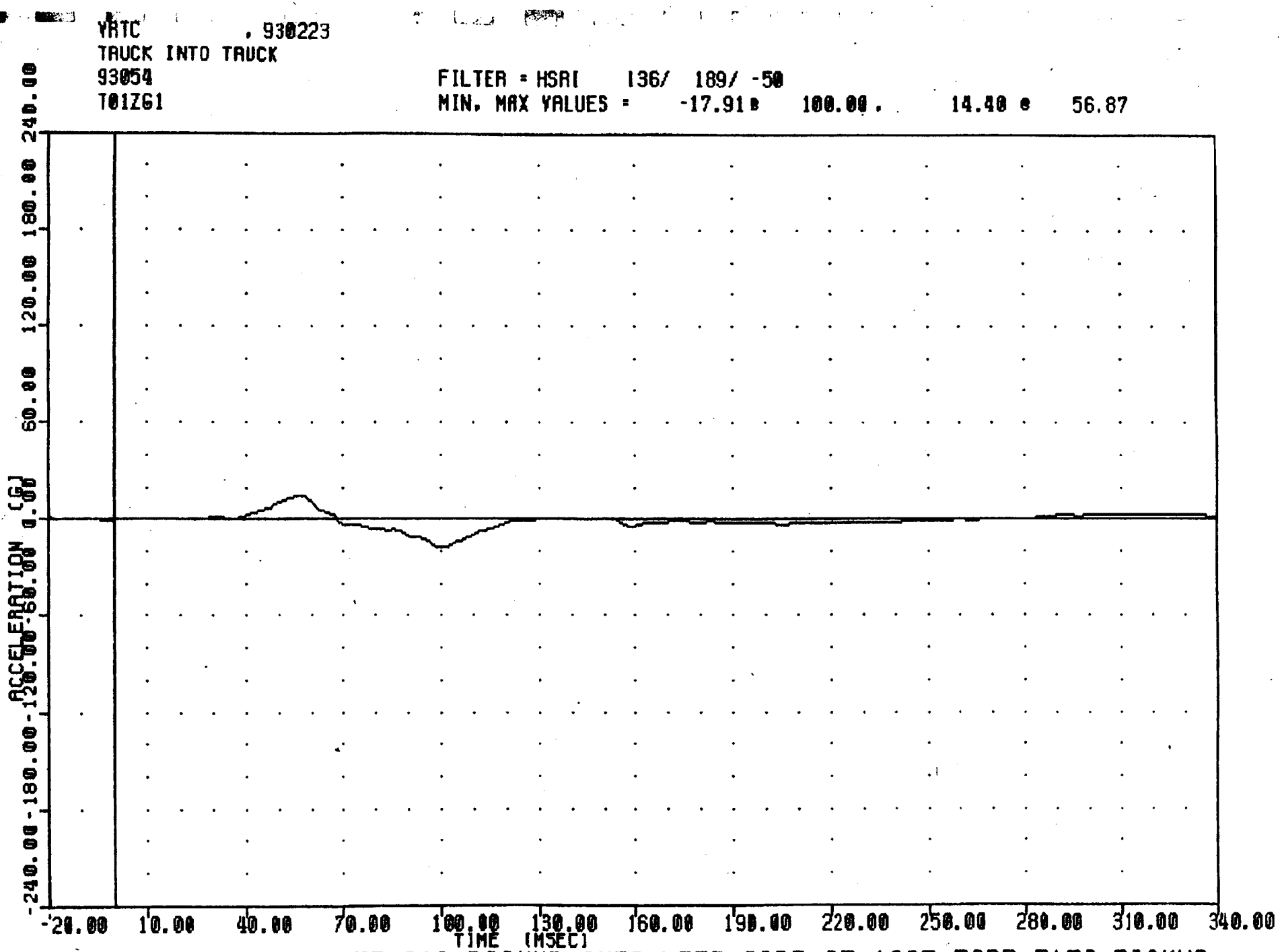
1986 CHEVROLET C10 PICKUP INTO LEFT SIDE OF 1987 FORD F150 PICKUP
DRIVER UPPER SPINE X-AXIS ACCELERATION



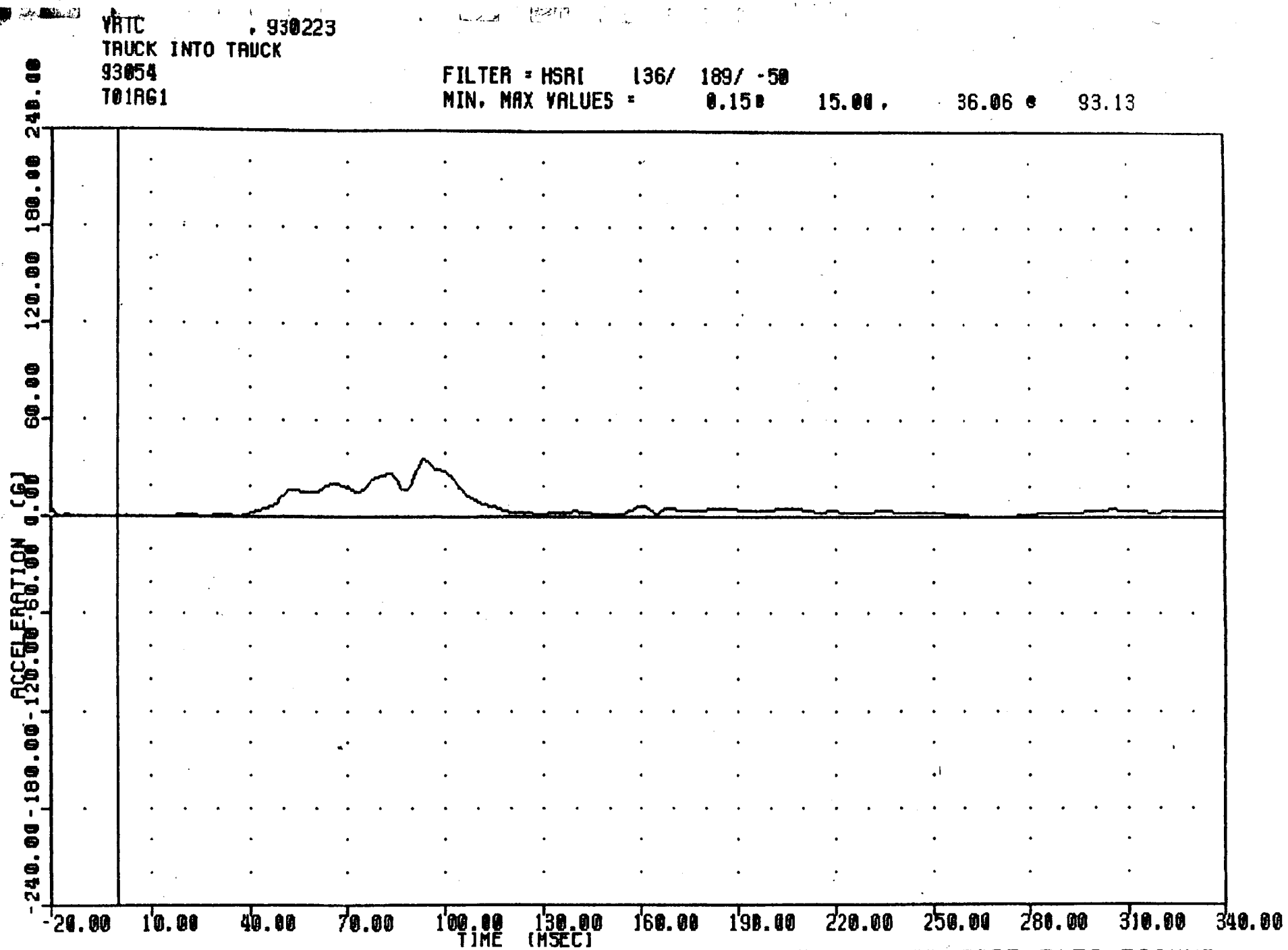
1986 CHEVROLET C10 PICKUP INTO LEFT SIDE OF 1987 FORD F150 PICKUP
DRIVER UPPER SPINE Y-AXIS ACCELERATION



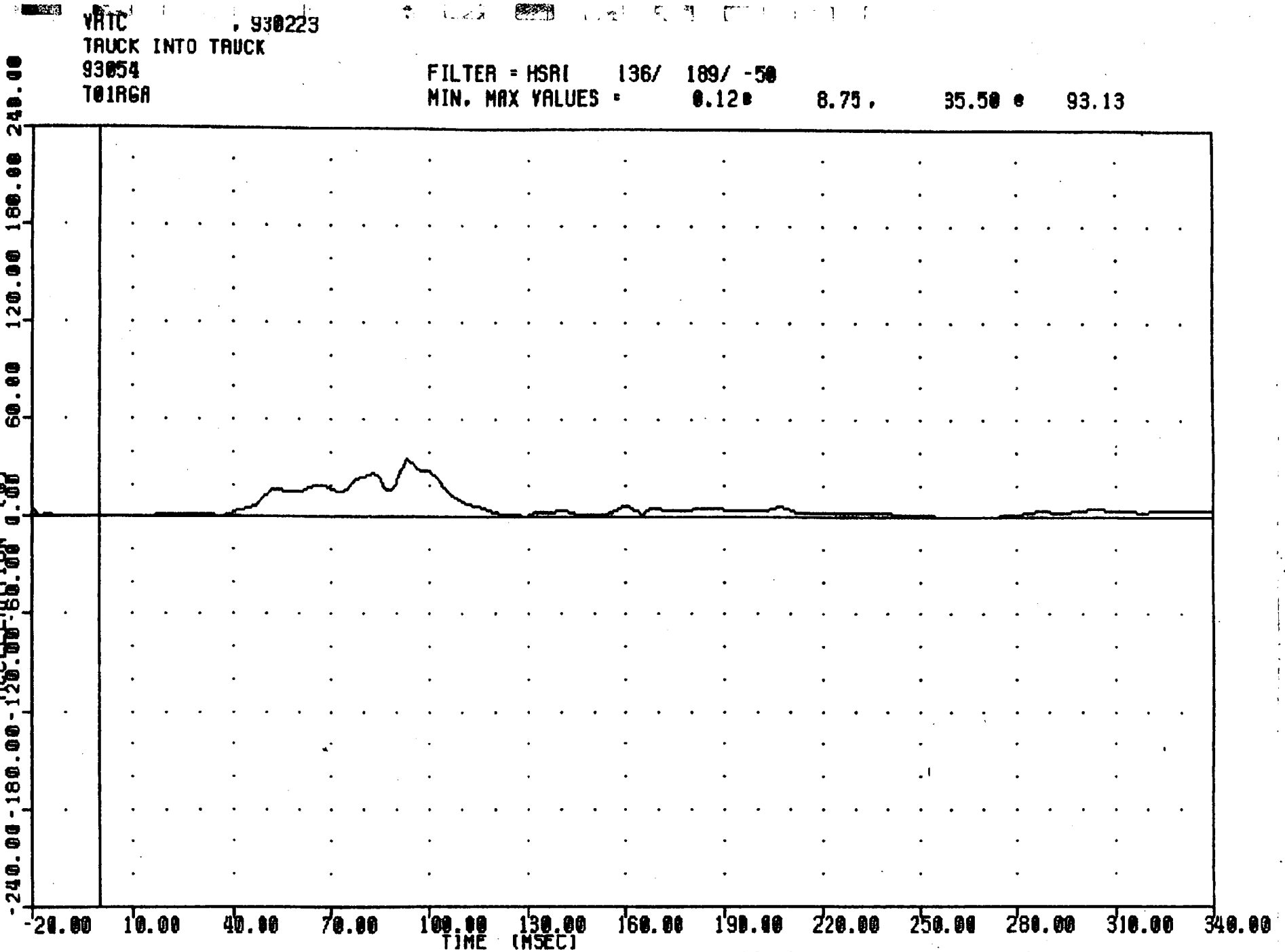
1986 CHEVROLET C10 PICKUP INTO LEFT SIDE OF 1987 FORD F150 PICKUP
DRIVER UPPER SPINE Y-AXIS REDUNDANT ACCELERATION



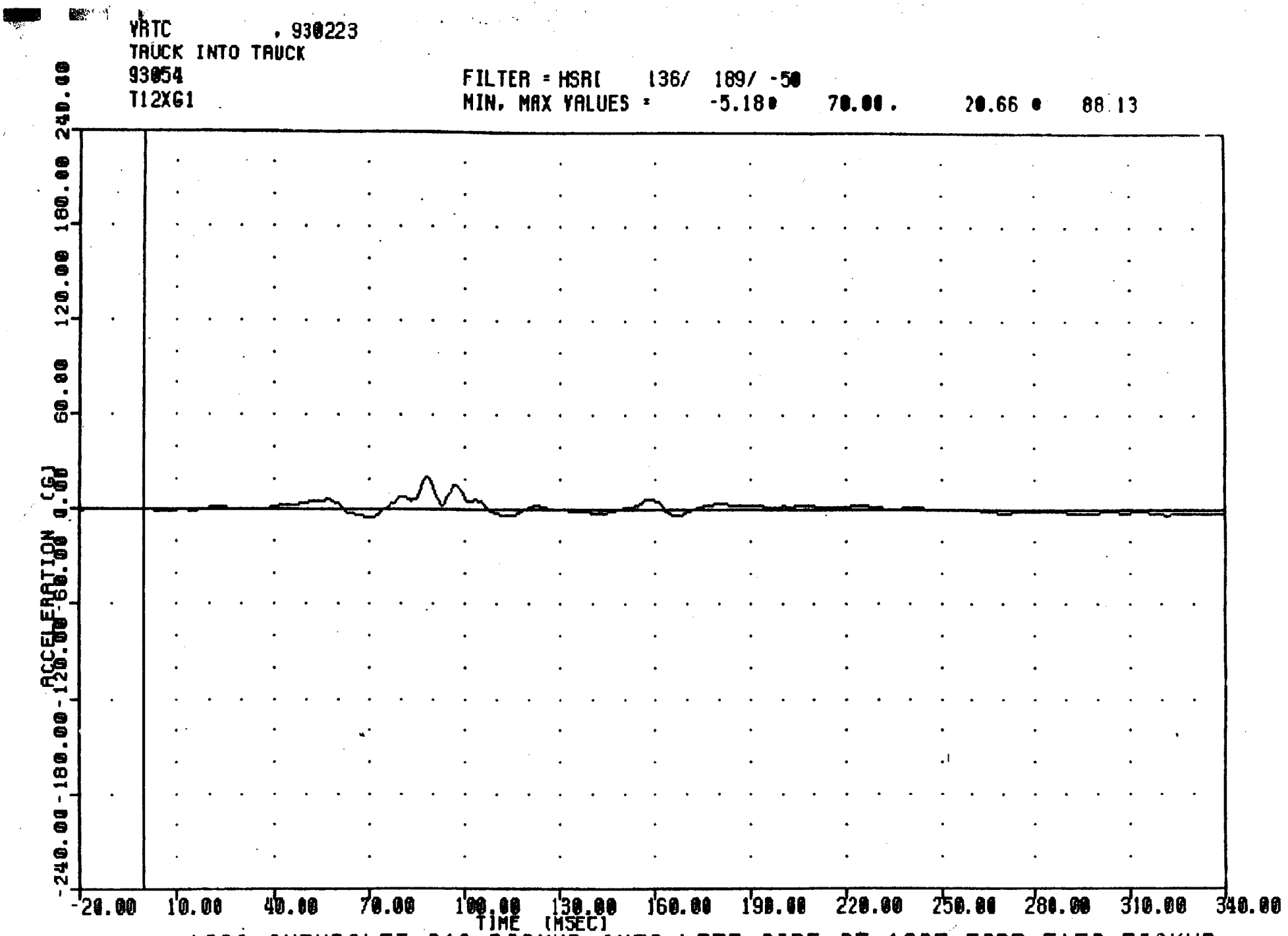
1986 CHEVROLET C10 PICKUP INTO LEFT SIDE OF 1987 FORD F150 PICKUP
DRIVER UPPER SPINE Z-AXIS ACCELERATION



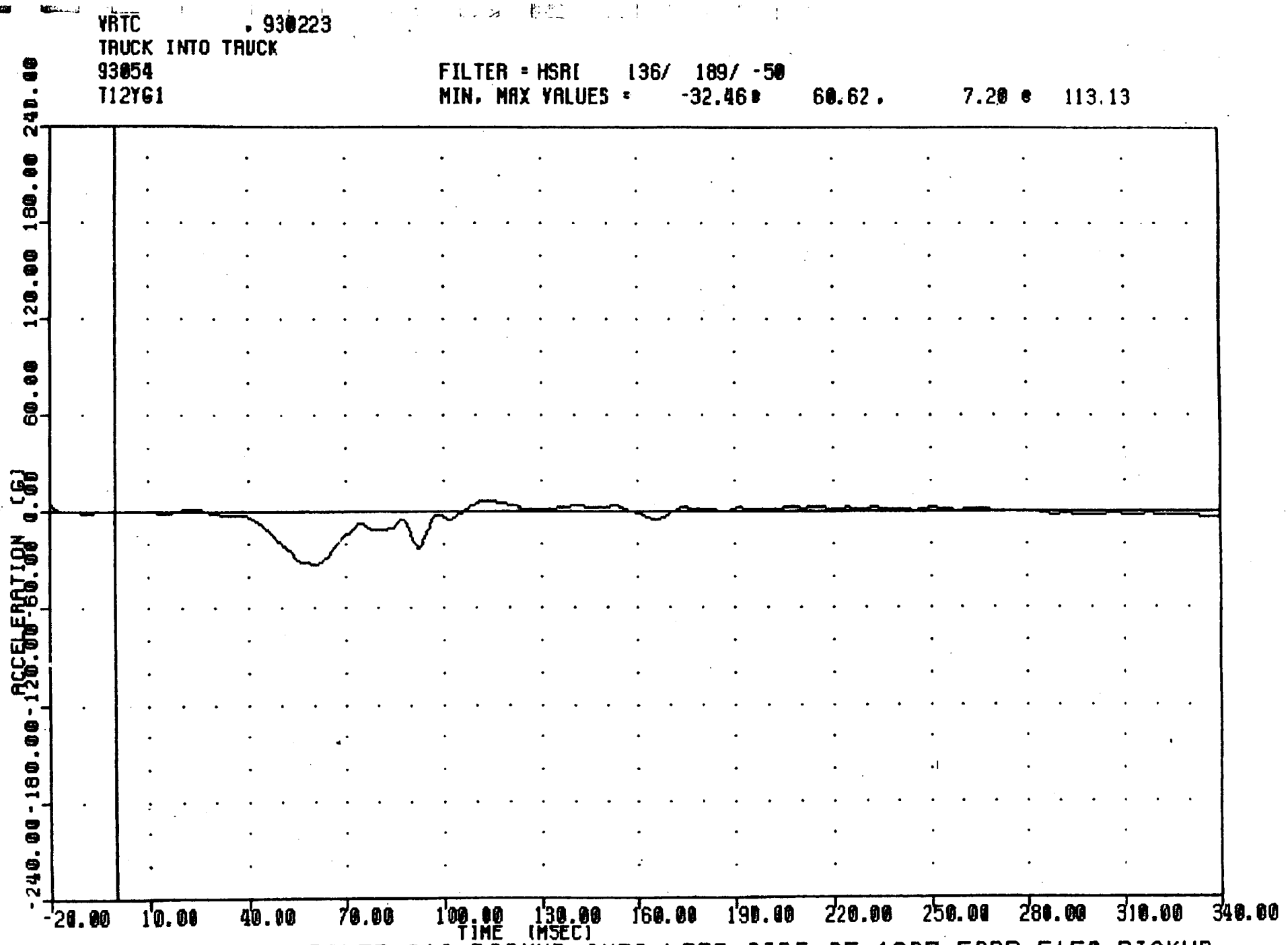
1986 CHEVROLET C10 PICKUP INTO LEFT SIDE OF 1987 FORD F150 PICKUP
DRIVER UPPER SPINE RESULTANT ACCELERATION



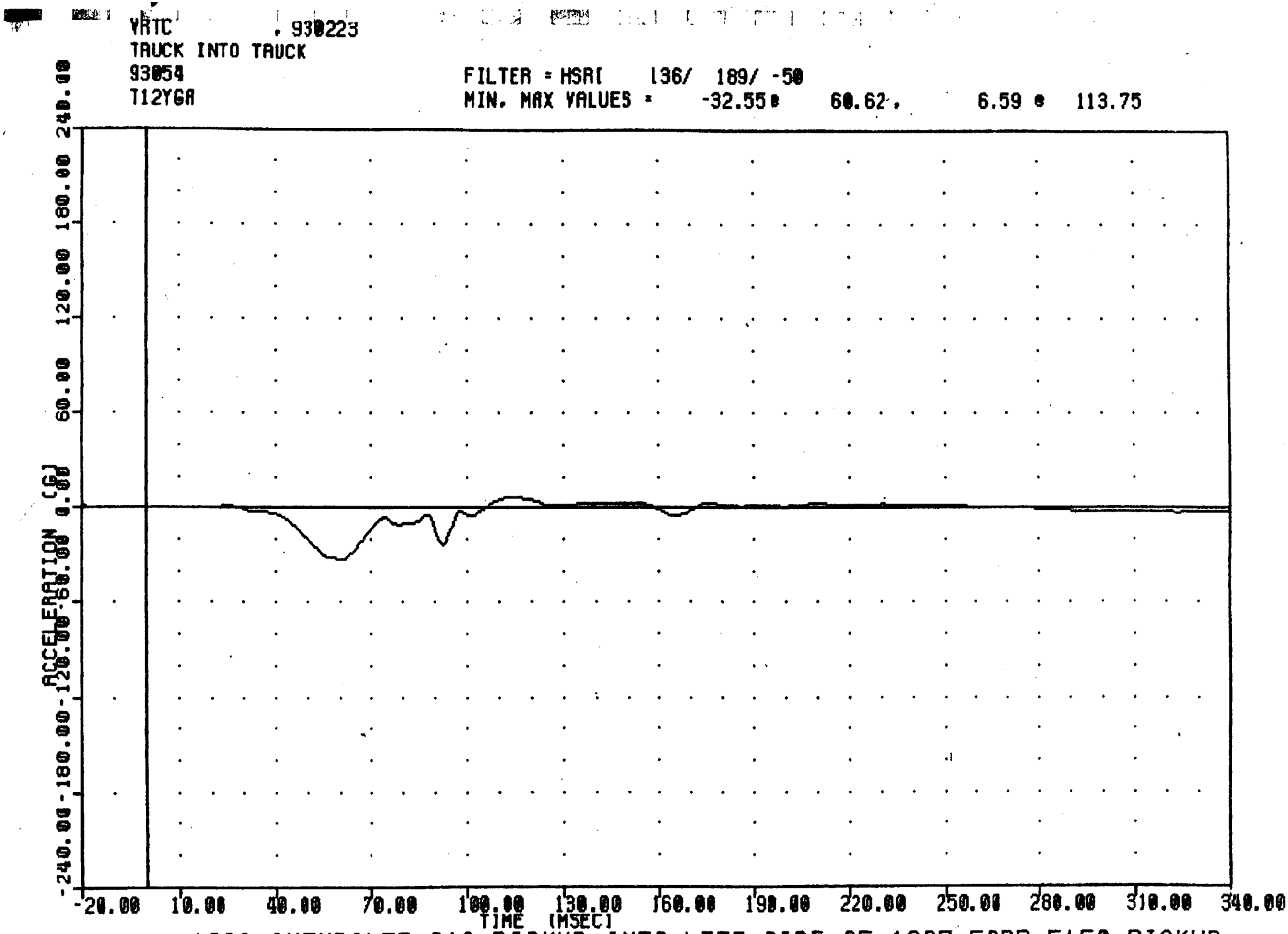
1986 CHEVROLET C10 PICKUP INTO LEFT SIDE OF 1987 FORD F150 PICKUP
DRIVER UPPER SPINE RESULTANT REDUNDANT ACCELERATION



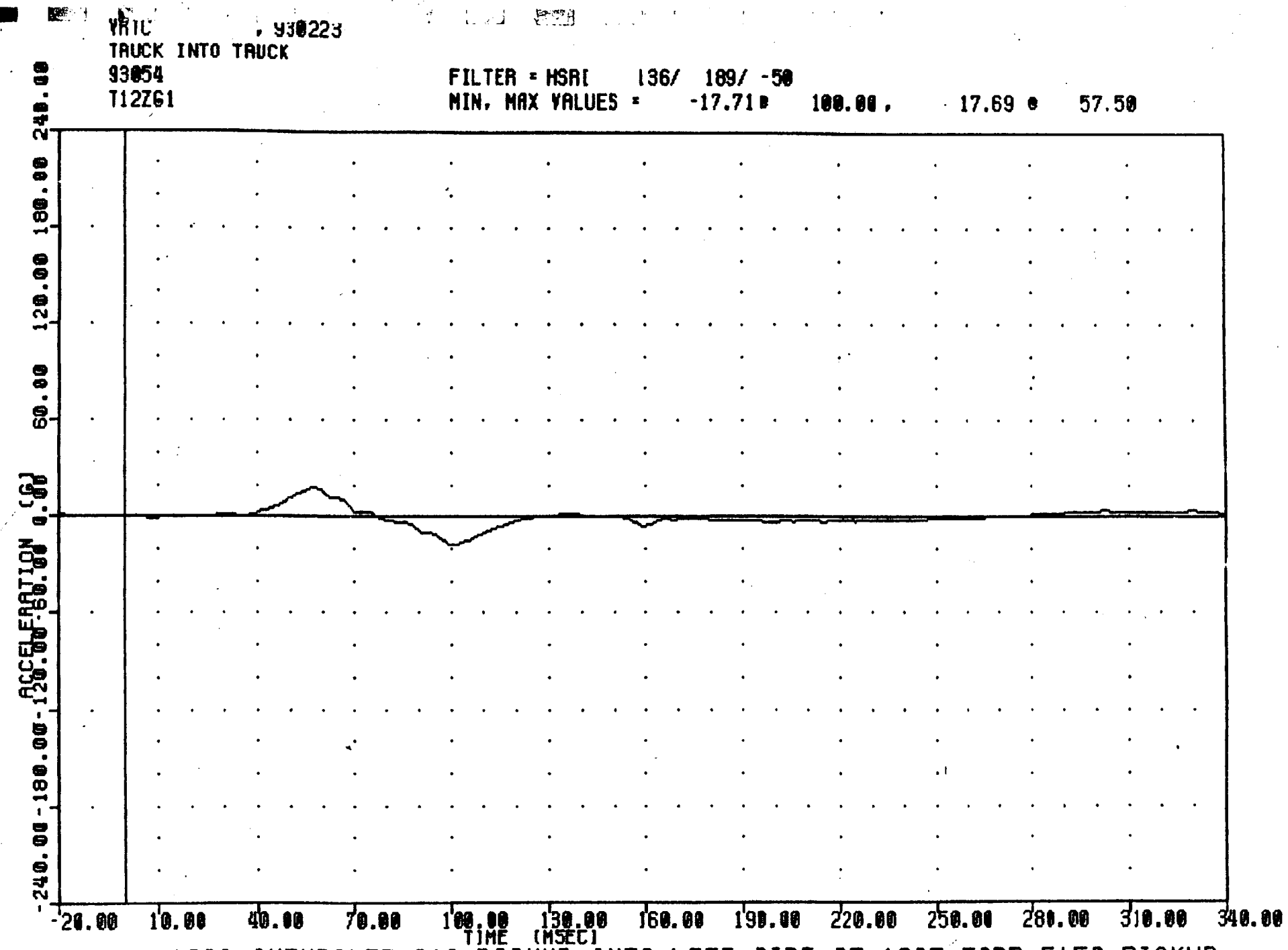
1986 CHEVROLET C10 PICKUP INTO LEFT SIDE OF 1987 FORD F150 PICKUP
DRIVER LOWER SPINE X-AXIS ACCELERATION



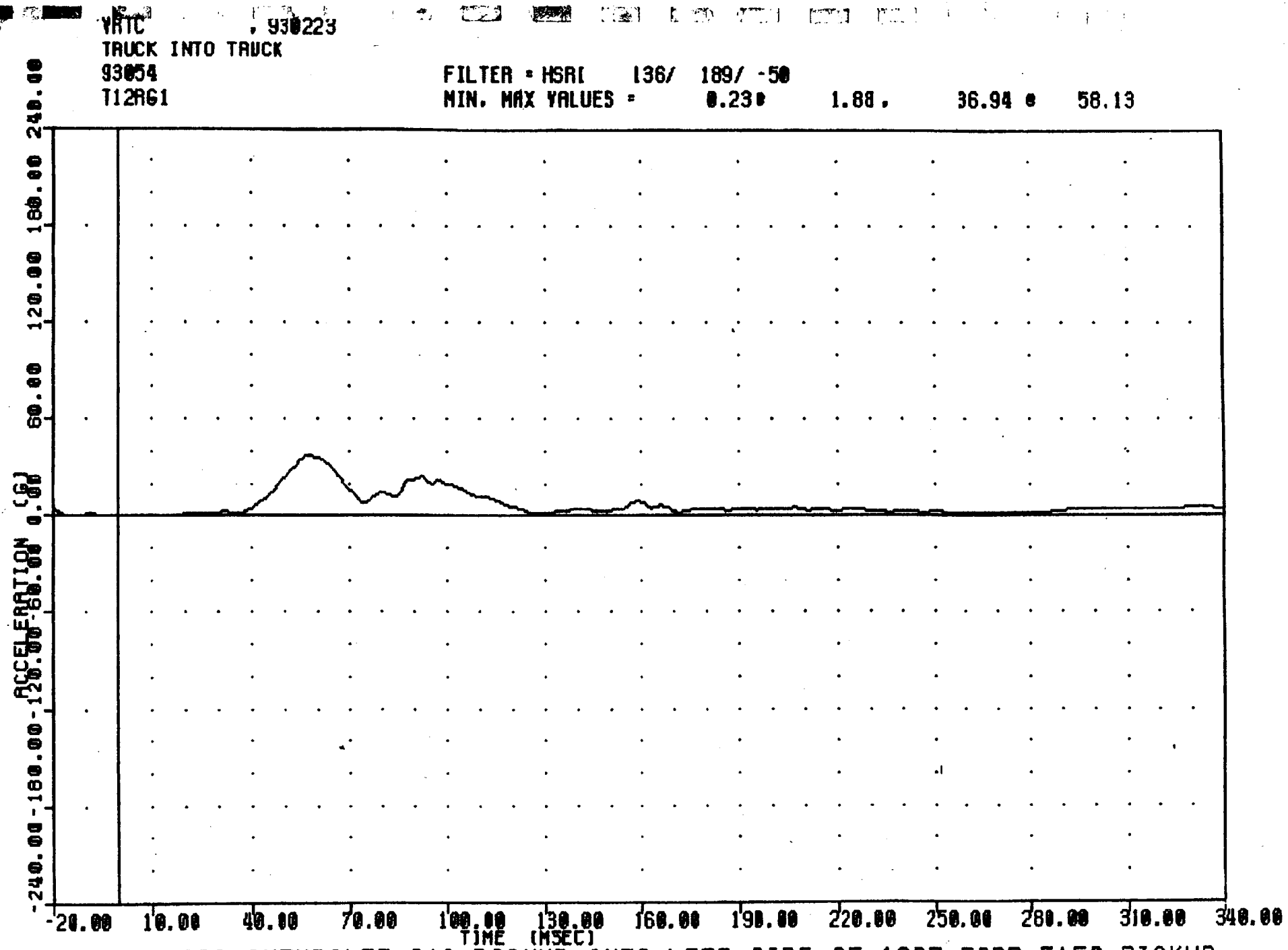
1986 CHEVROLET C10 PICKUP INTO LEFT SIDE OF 1987 FORD F150 PICKUP
DRIVER LOWER SPINE Y-AXIS ACCELERATION



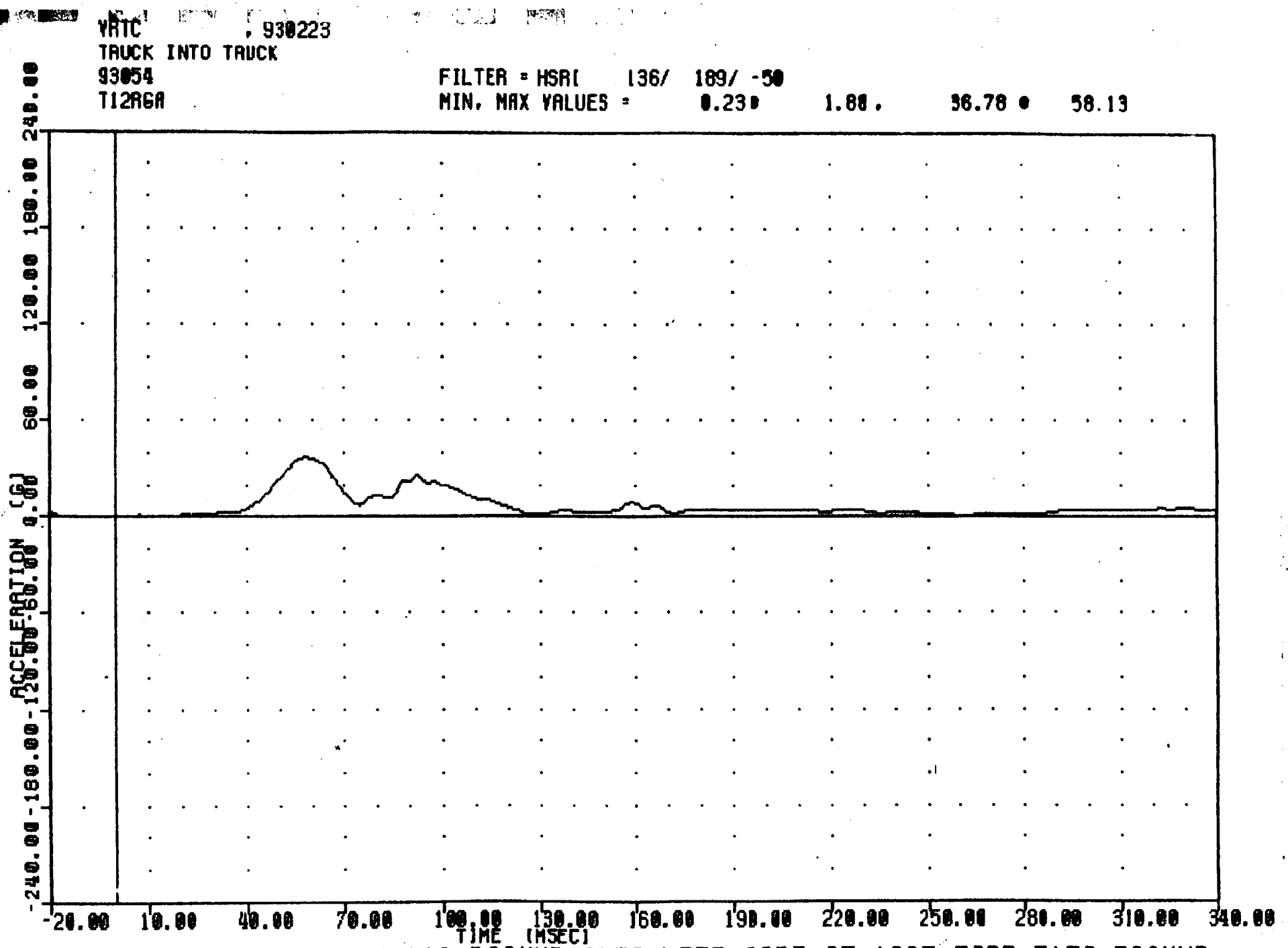
1986 CHEVROLET C10 PICKUP INTO LEFT SIDE OF 1987 FORD F150 PICKUP
DRIVER LOWER SPINE Y-AXIS REDUNDANT ACCELERATION



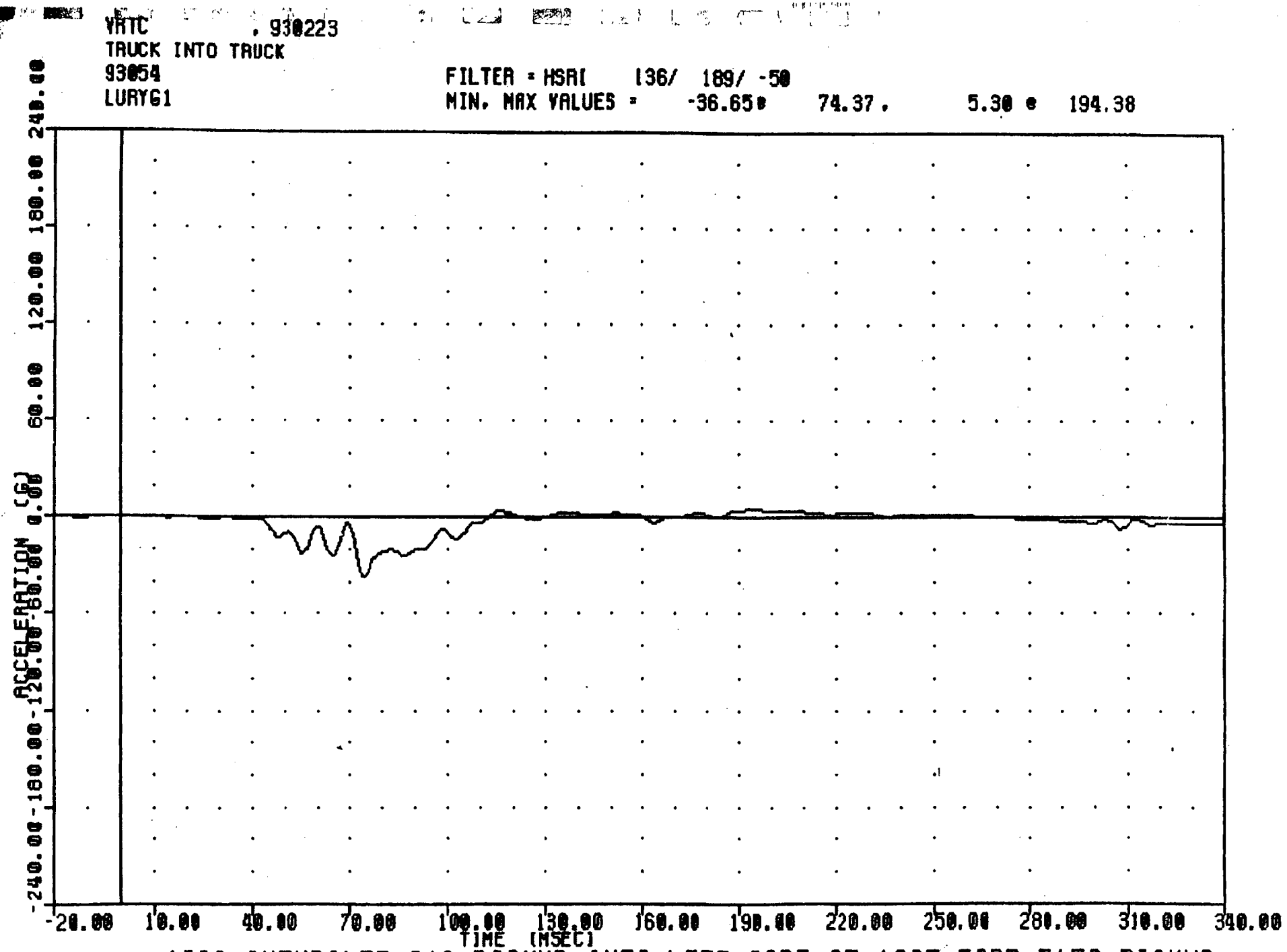
1986 CHEVROLET C10 PICKUP INTO LEFT SIDE OF 1987 FORD F150 PICKUP
DRIVER LOWER SPINE Z-AXIS ACCELERATION



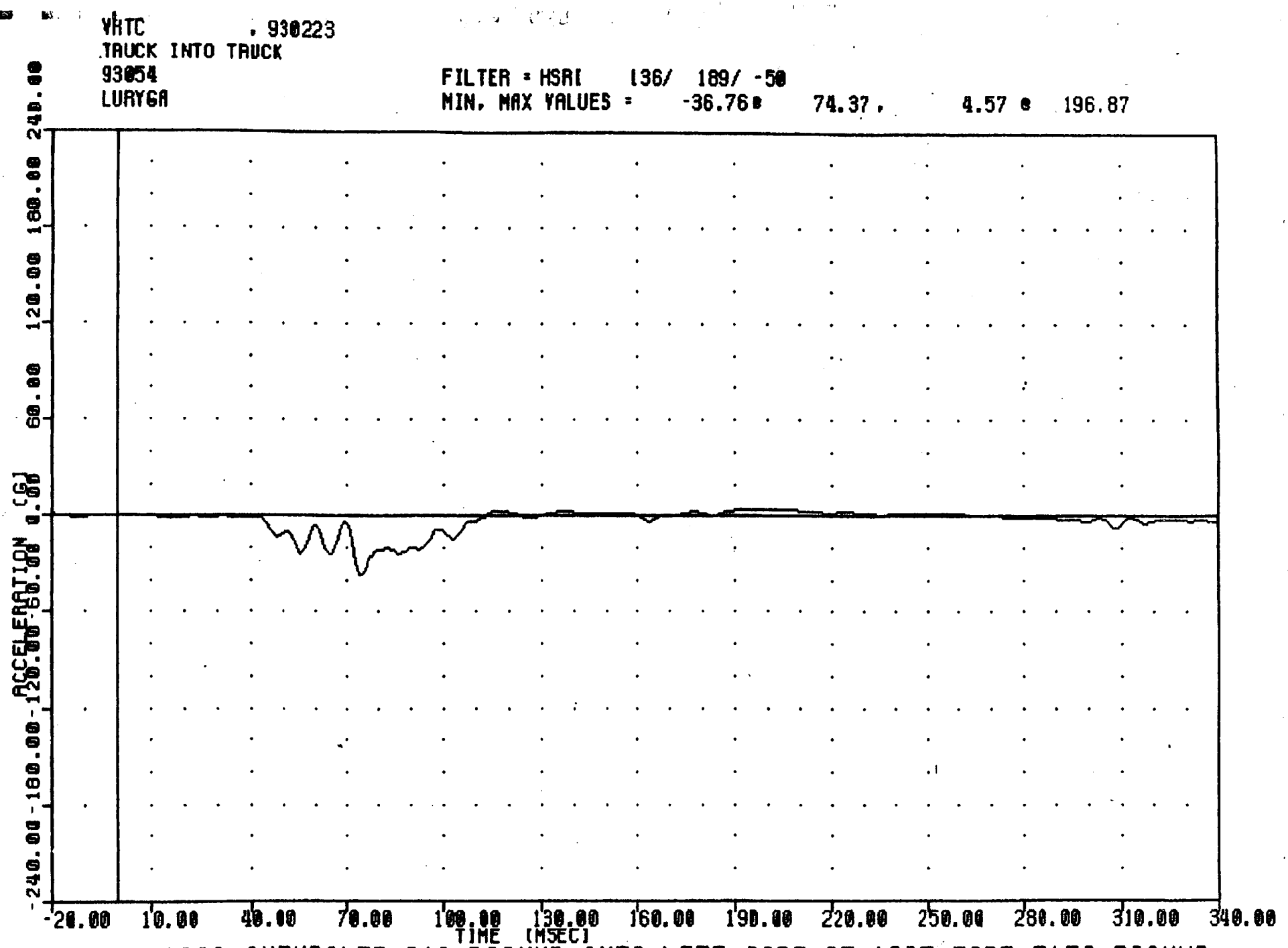
1986 CHEVROLET C10 PICKUP INTO LEFT SIDE OF 1987 FORD F150 PICKUP
DRIVER LOWER SPINE RESULTANT ACCELERATION



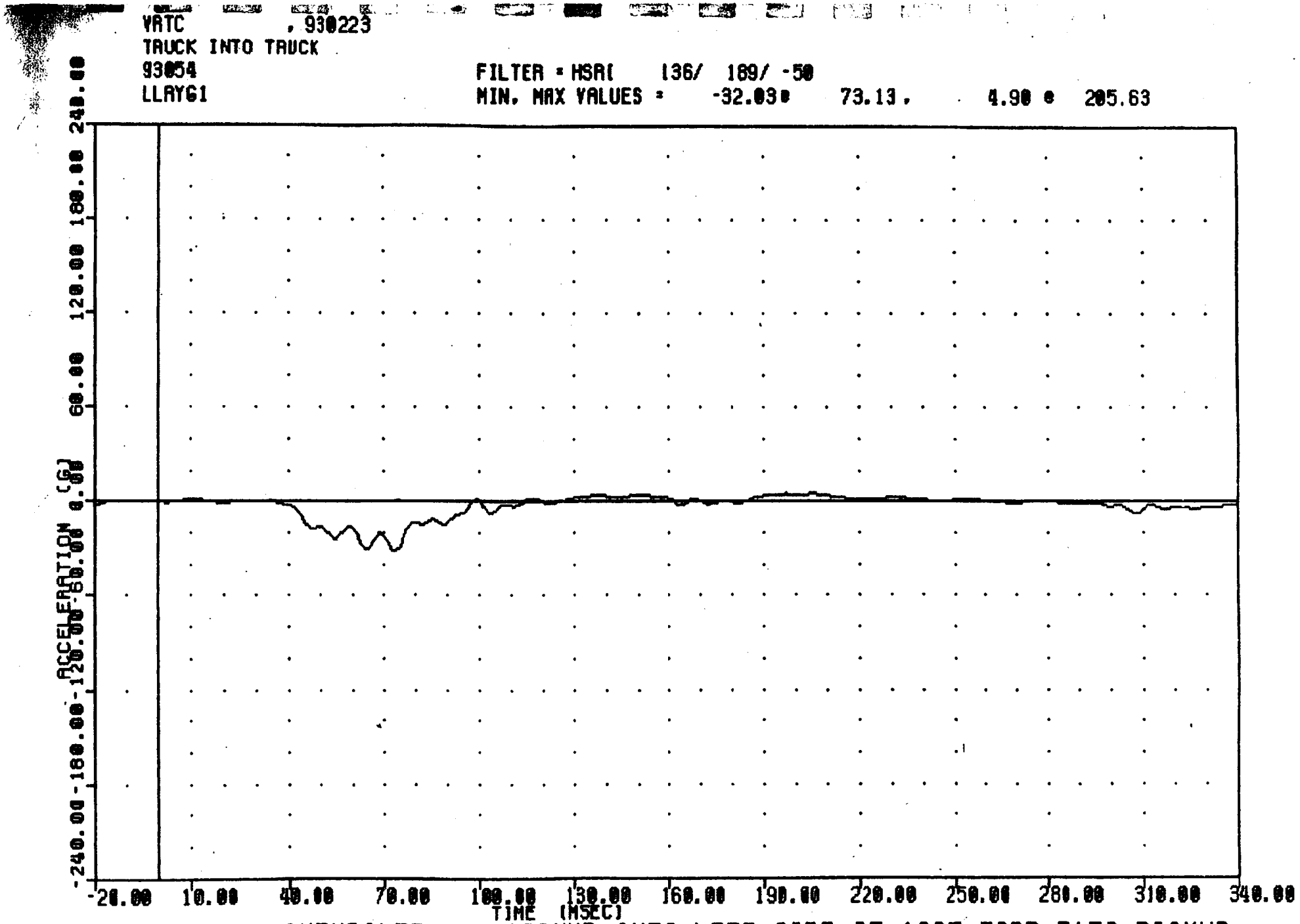
1986 CHEVROLET C10 PICKUP INTO LEFT SIDE OF 1987 FORD F150 PICKUP
DRIVER LOWER SPINE RESULTANT REDUNDANT ACCELERATION



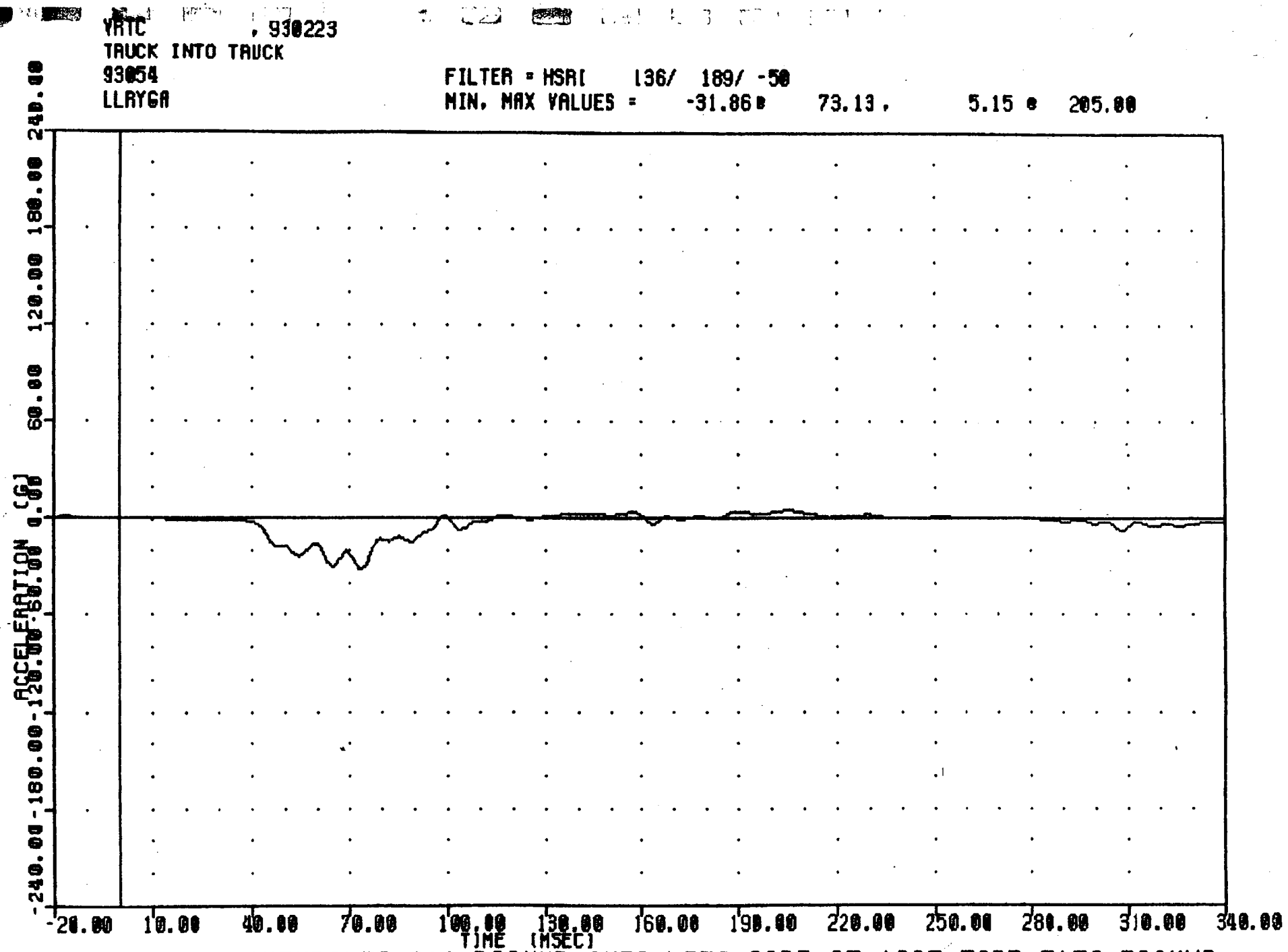
1986 CHEVROLET C10 PICKUP INTO LEFT SIDE OF 1987 FORD F150 PICKUP
DRIVER LEFT UPPER THORAX RIB Y-AXIS ACCELERATION



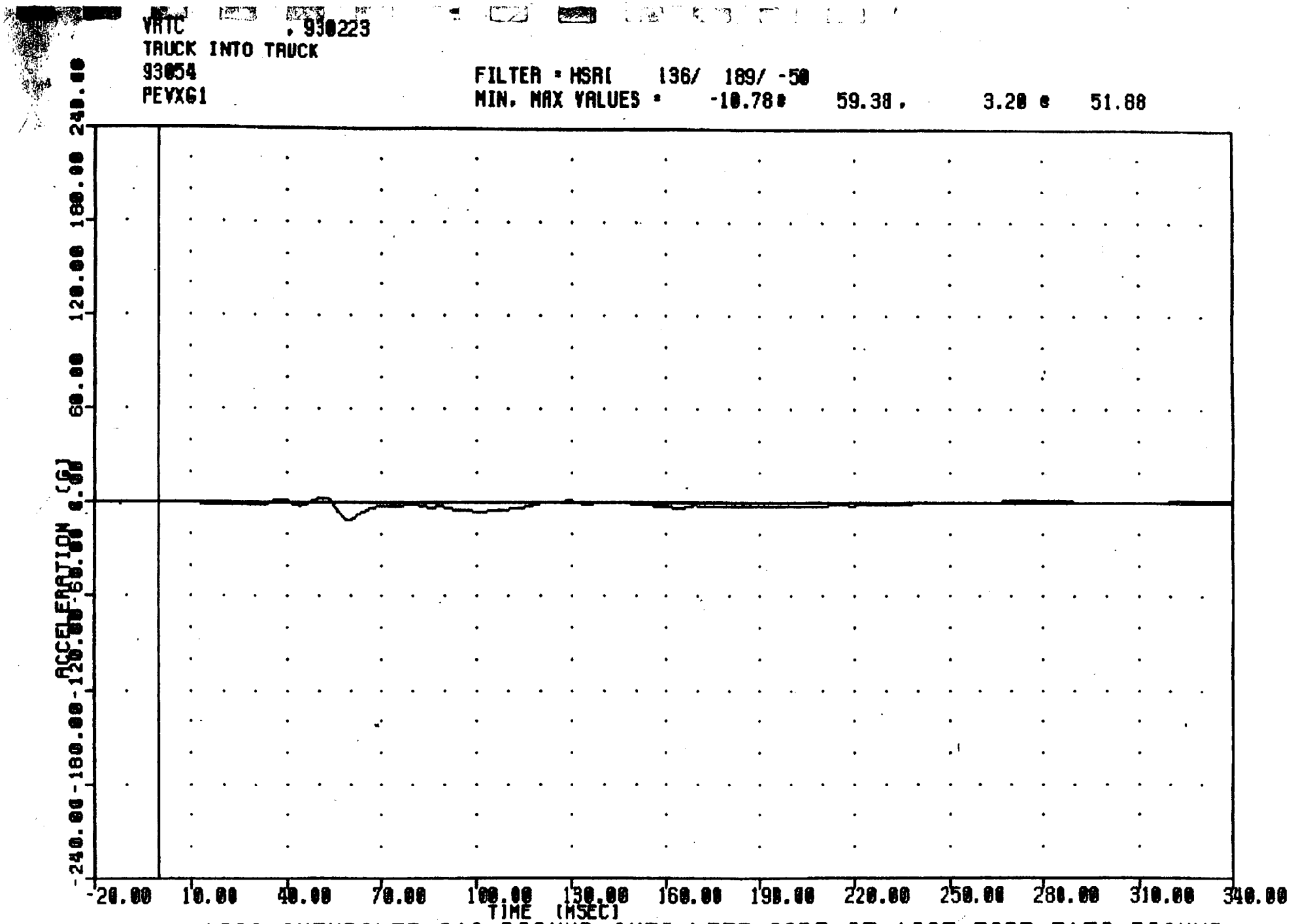
1986 CHEVROLET C10 PICKUP INTO LEFT SIDE OF 1987 FORD F150 PICKUP
DRIVER LEFT UPPER THORAX RIB Y-AXIS REDUNDANT ACCELERATION



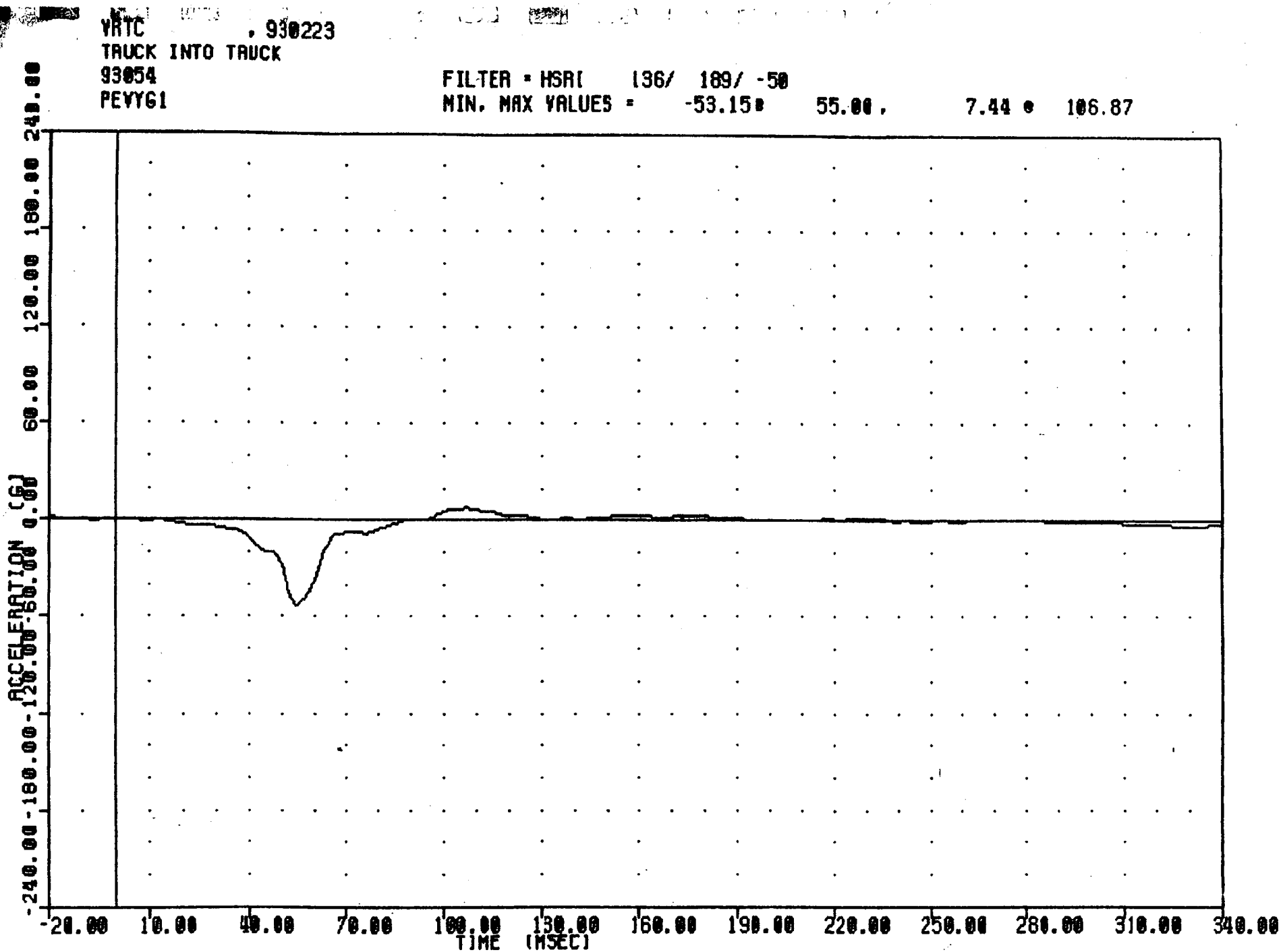
1986 CHEVROLET C10 PICKUP INTO LEFT SIDE OF 1987 FORD F150 PICKUP
DRIVER LEFT LOWER THORAX RIB Y-AXIS ACCELERATION



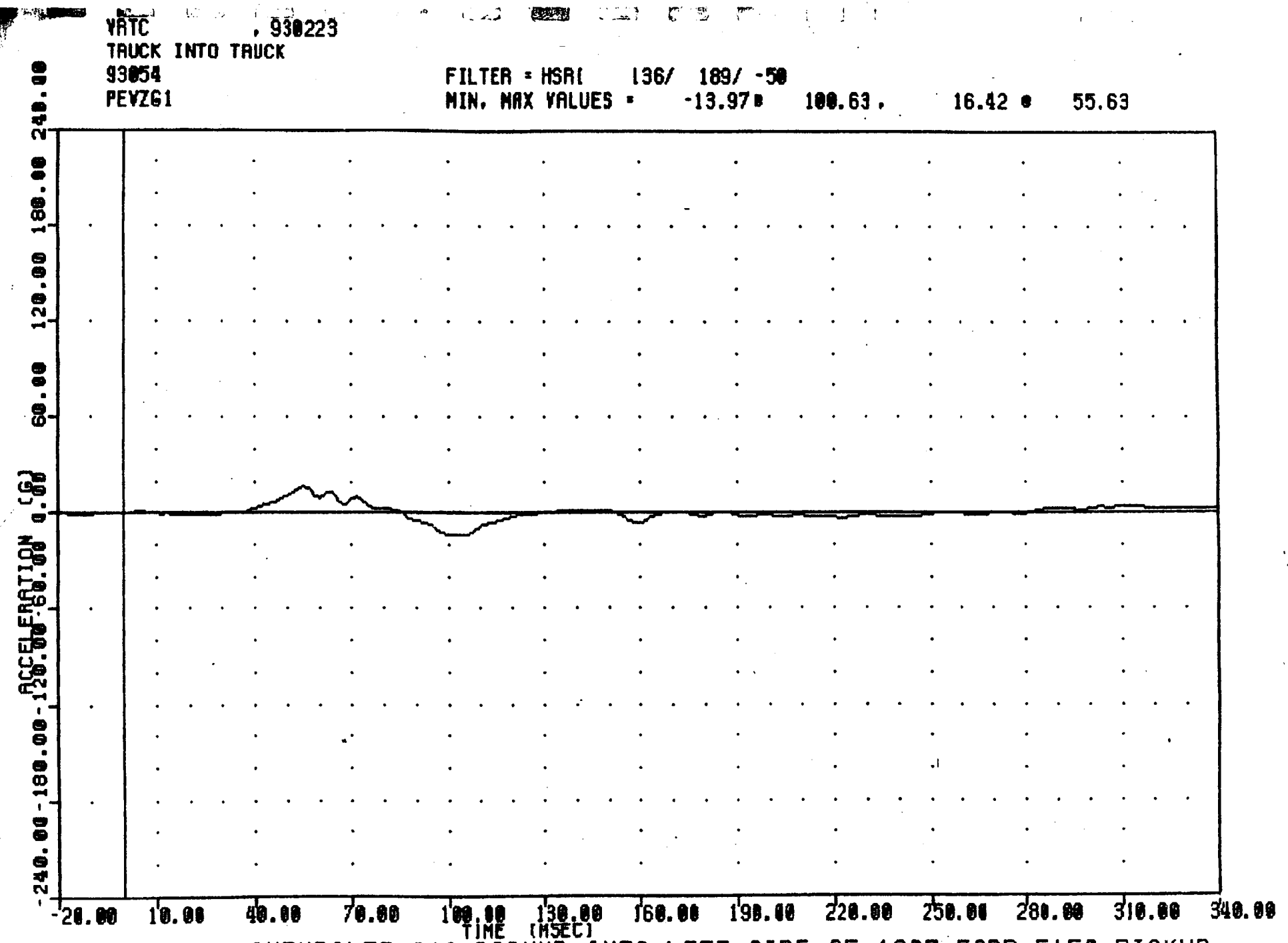
1986 CHEVROLET C10 PICKUP INTO LEFT SIDE OF 1987 FORD F150 PICKUP
DRIVER LEFT LOWER THORAX RIB Y-AXIS REDUNDANT ACCELERATION



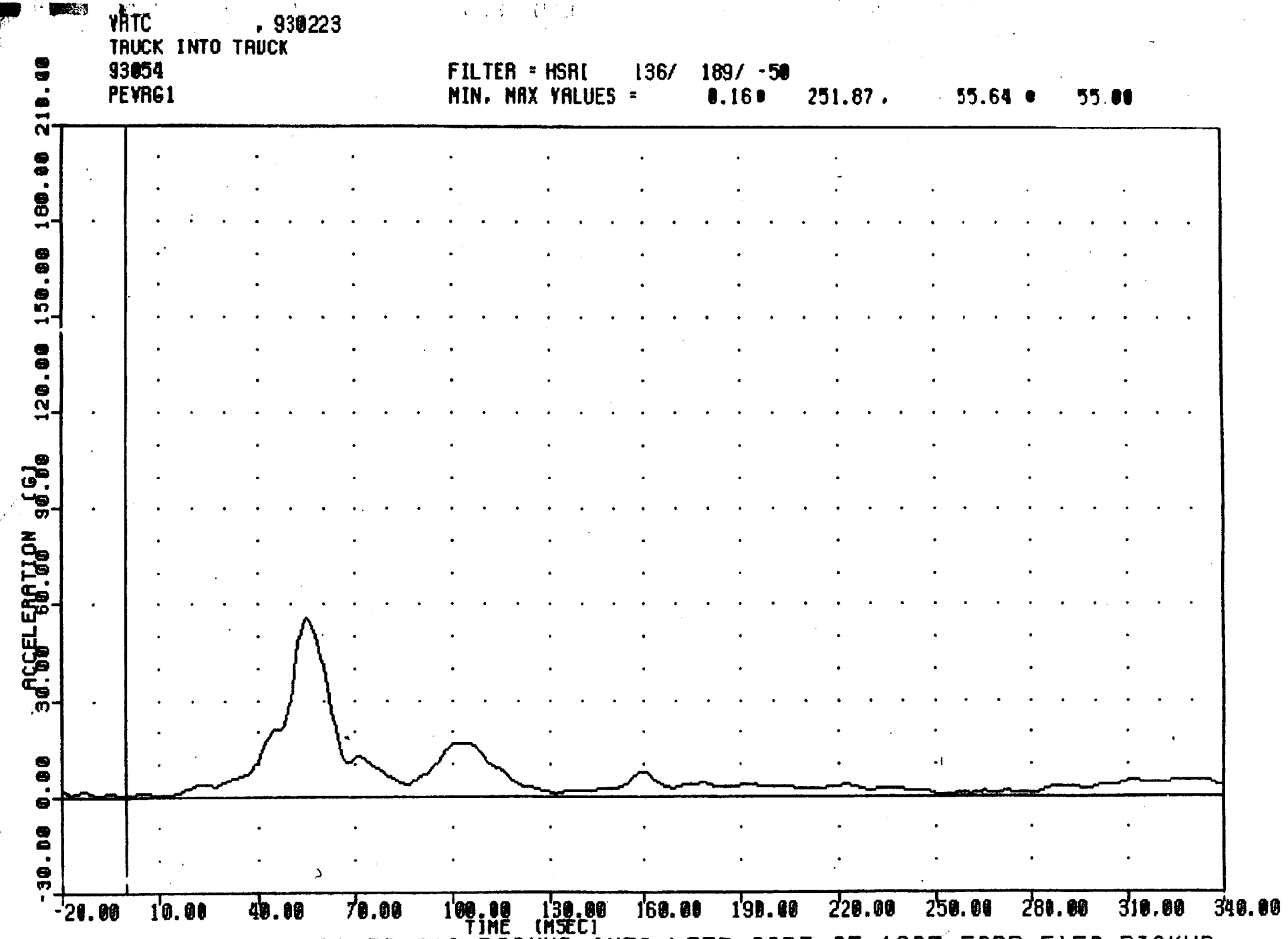
1986 CHEVROLET C10 PICKUP INTO LEFT SIDE OF 1987 FORD F150 PICKUP
DRIVER PELVIS X-AXIS ACCELERATION



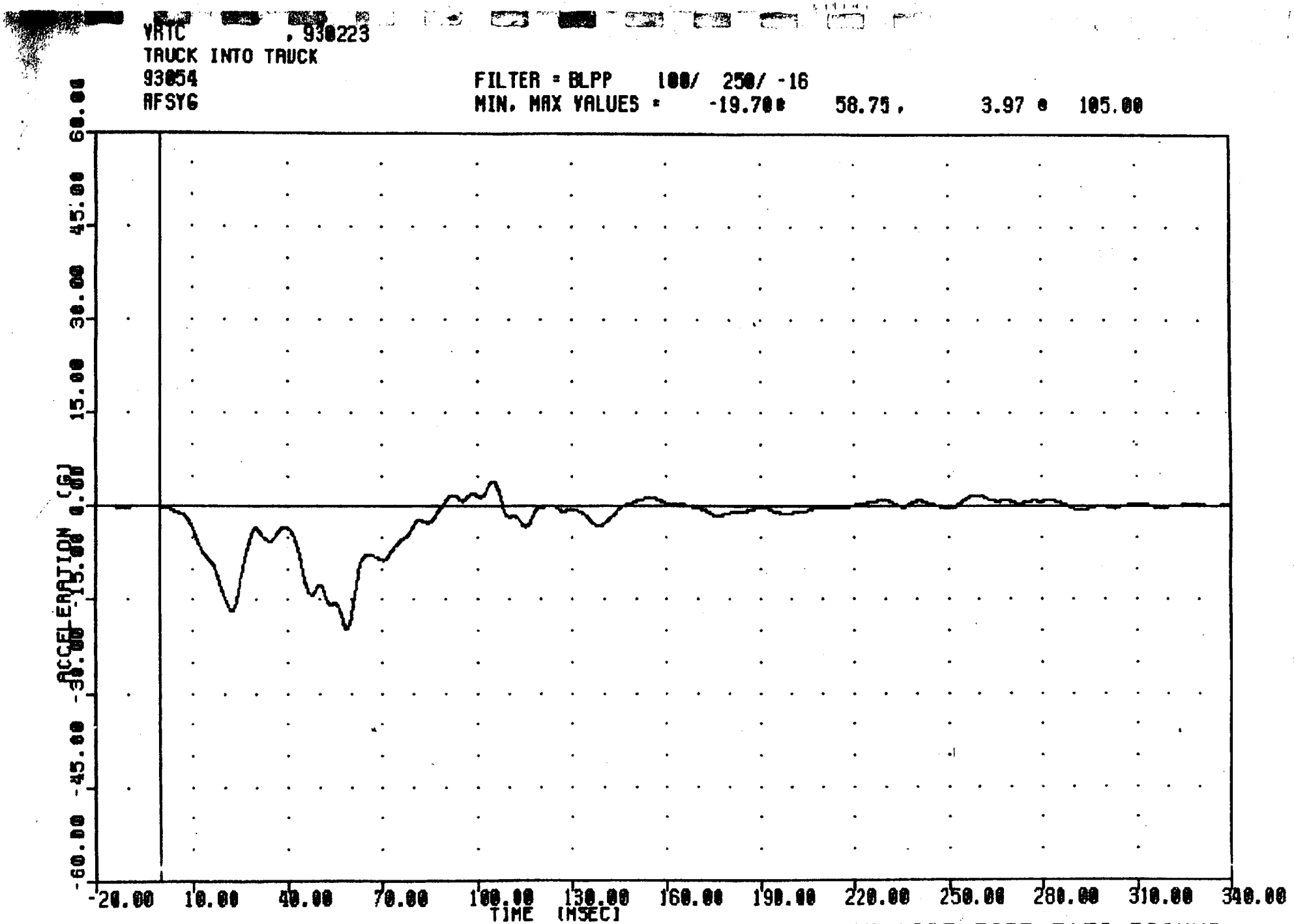
1986 CHEVROLET C10 PICKUP INTO LEFT SIDE OF 1987 FORD F150 PICKUP
DRIVER PELVIS Y-AXIS ACCELERATION



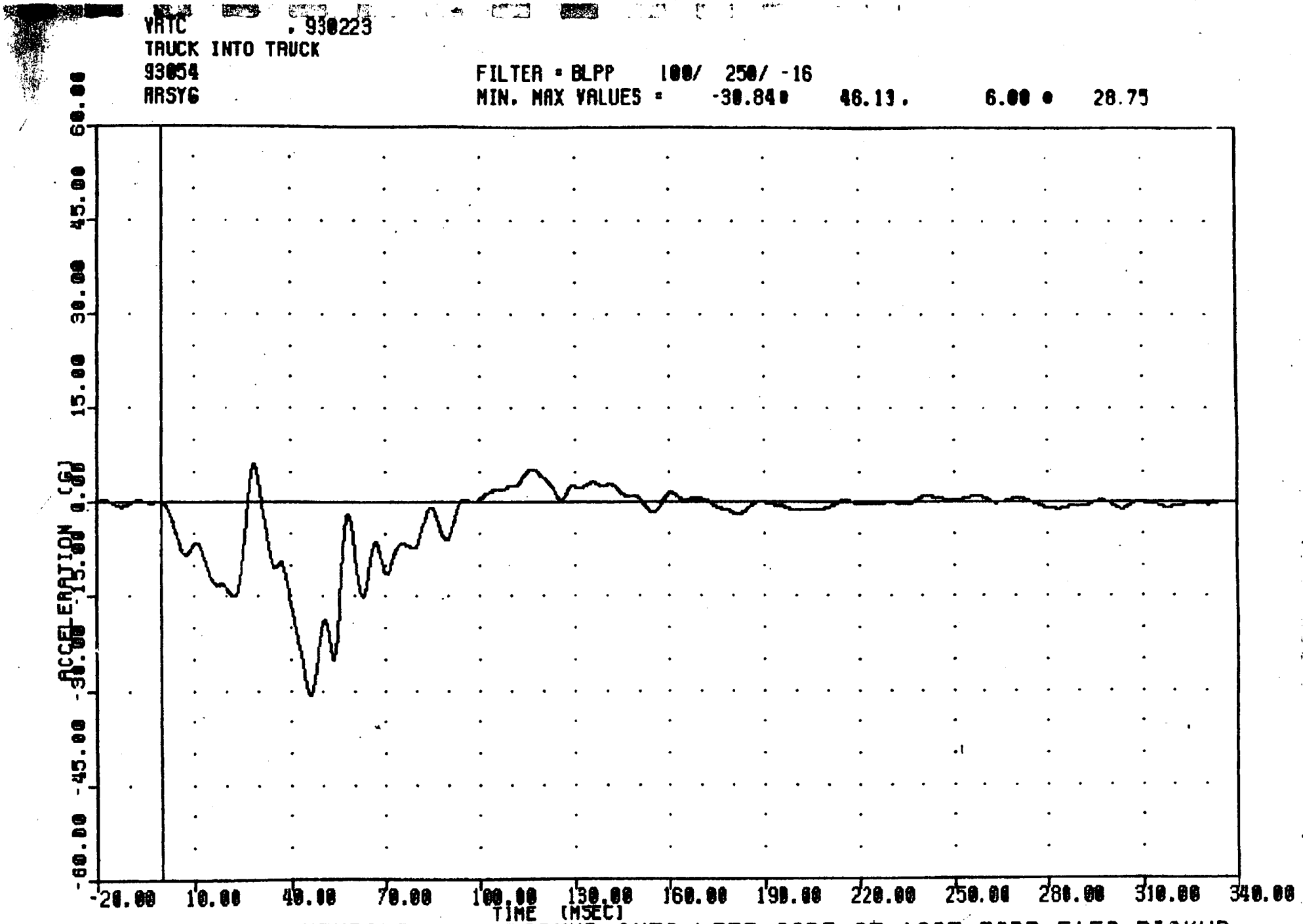
1986 CHEVROLET C10 PICKUP INTO LEFT SIDE OF 1987 FORD F150 PICKUP
DRIVER PELVIS Z-AXIS ACCELERATION



1986 CHEVROLET C10 PICKUP INTO LEFT SIDE OF 1987 FORD F150 PICKUP
DRIVER PELVIS RESULTANT ACCELERATION



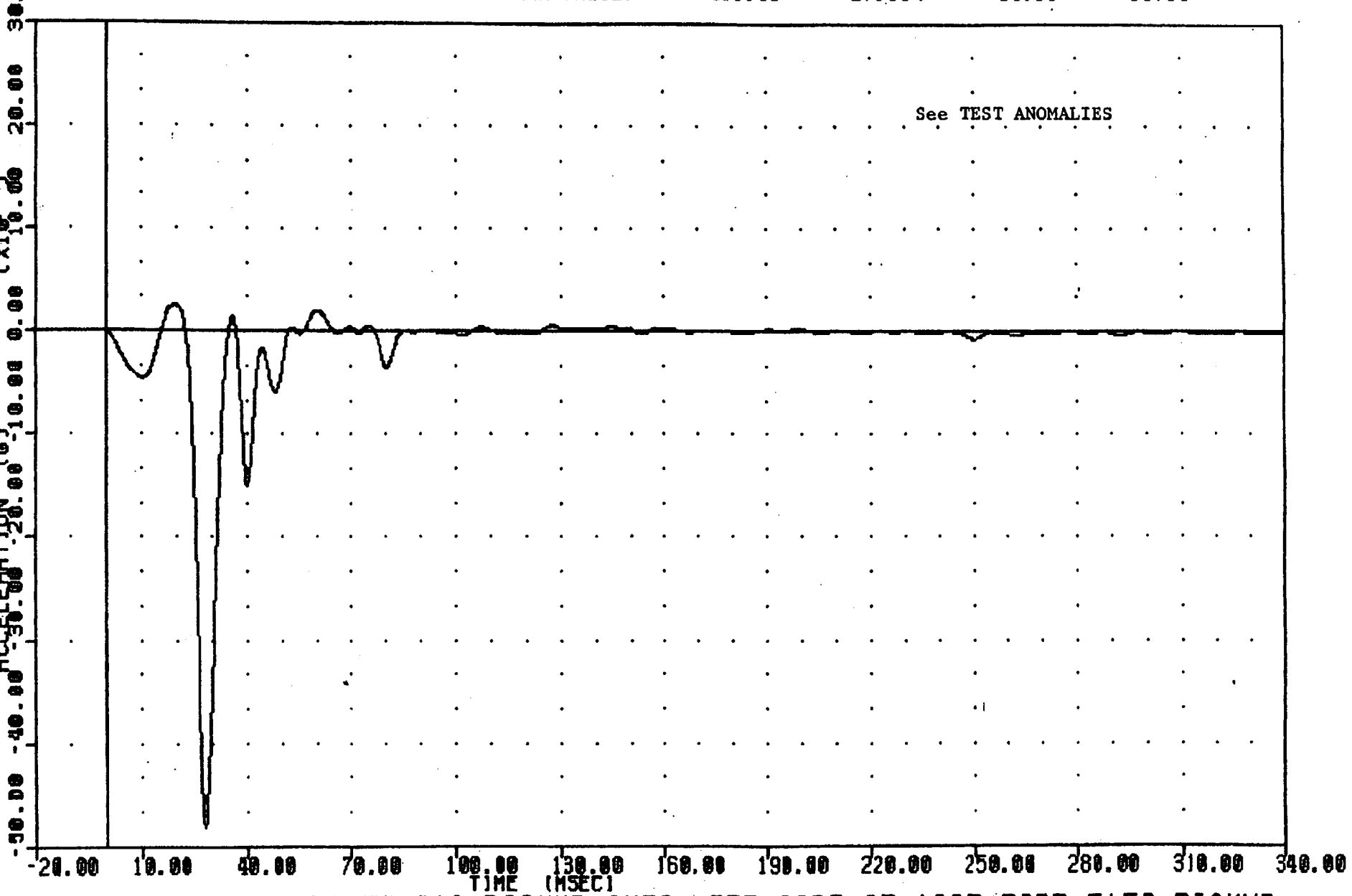
1986 CHEVROLET C10 PICKUP INTO LEFT SIDE OF 1987 FORD F150 PICKUP
VEHICLE RIGHT FRONT SILL Y-AXIS ACCELERATION



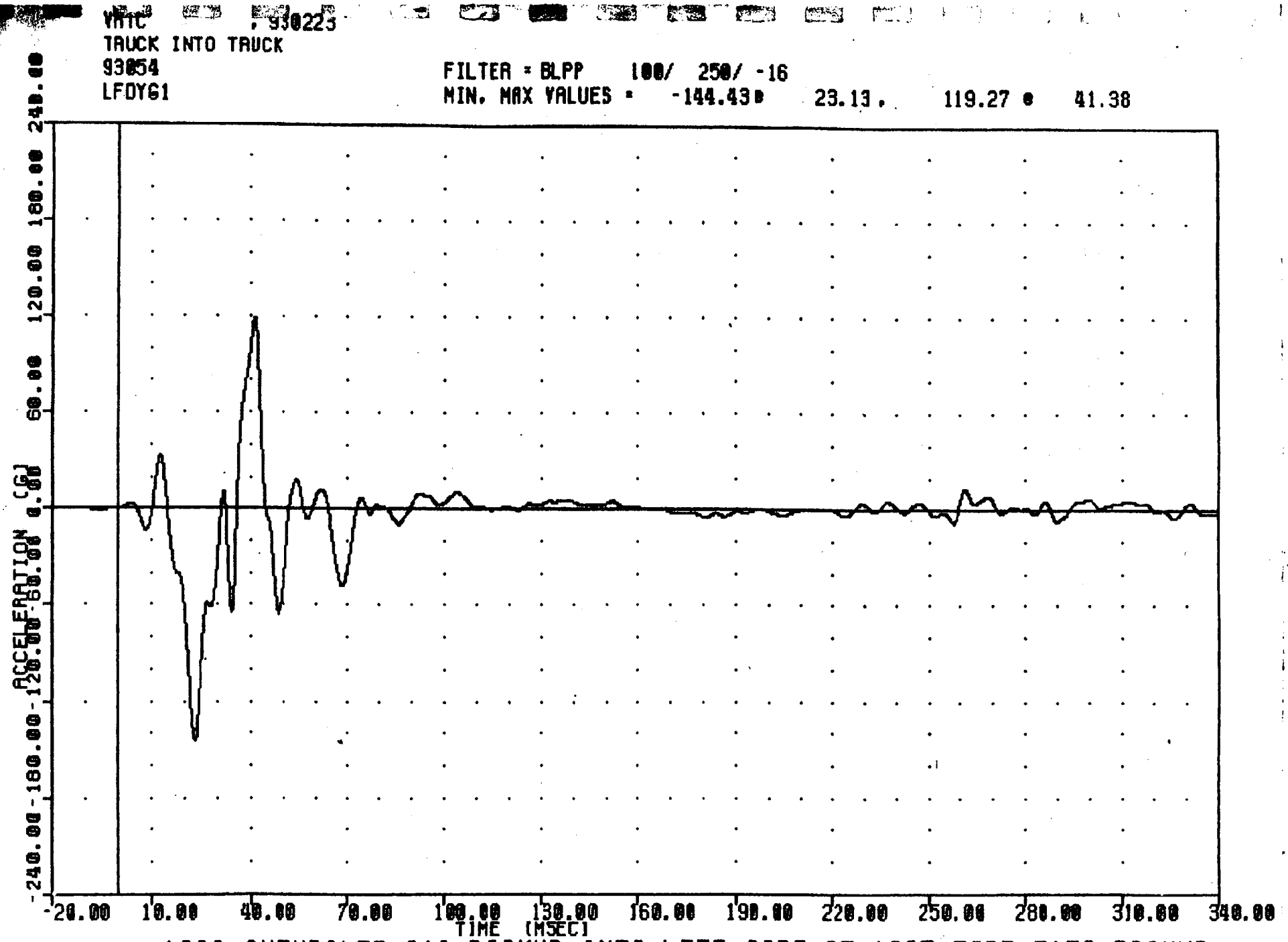
1986 CHEVROLET C10 PICKUP INTO LEFT SIDE OF 1987 FORD F150 PICKUP
VEHICLE RIGHT REAR SILL Y-AXIS ACCELERATION

VRTC , 930225
TRUCK INTO TRUCK
93054
LFSYG

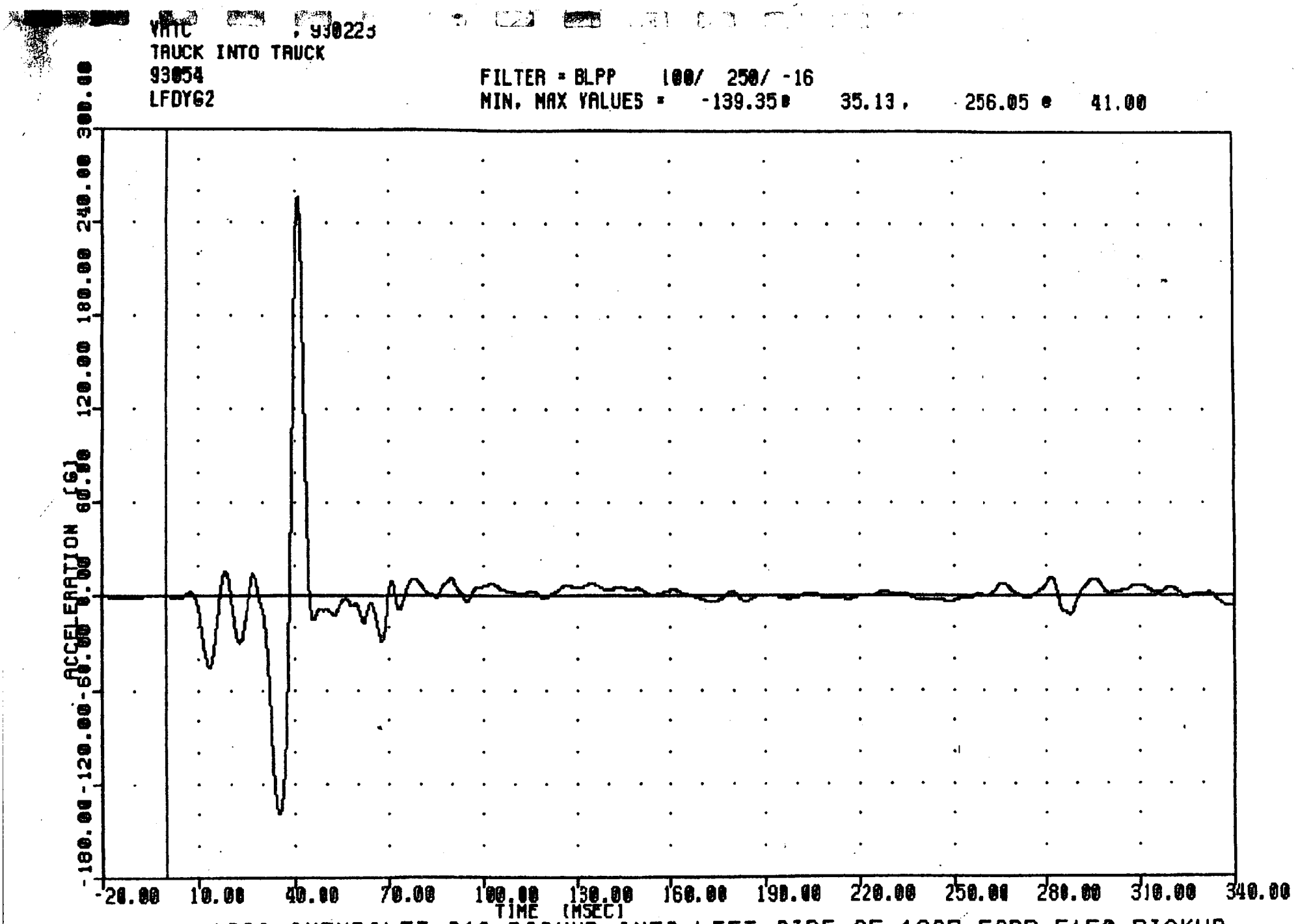
FILTER = BLPP 100/ 250/ -16
MIN, MAX VALUES = -481.49 @ 27.88 , 24.93 @ 19.63



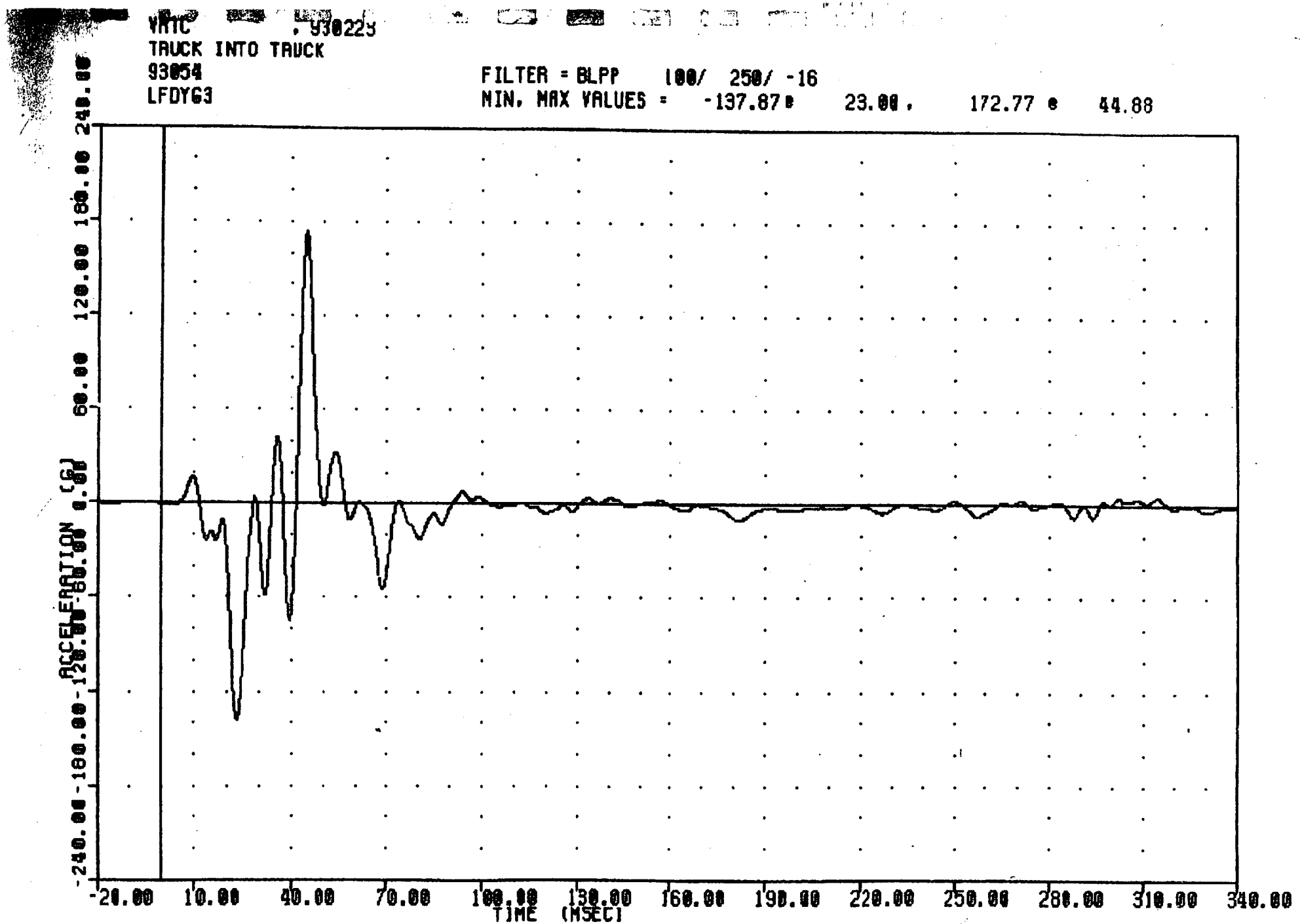
1986 CHEVROLET C10 PICKUP INTO LEFT SIDE OF 1987 FORD F150 PICKUP
LEFT FRONT SILL Y-AXIS ACCELERATION



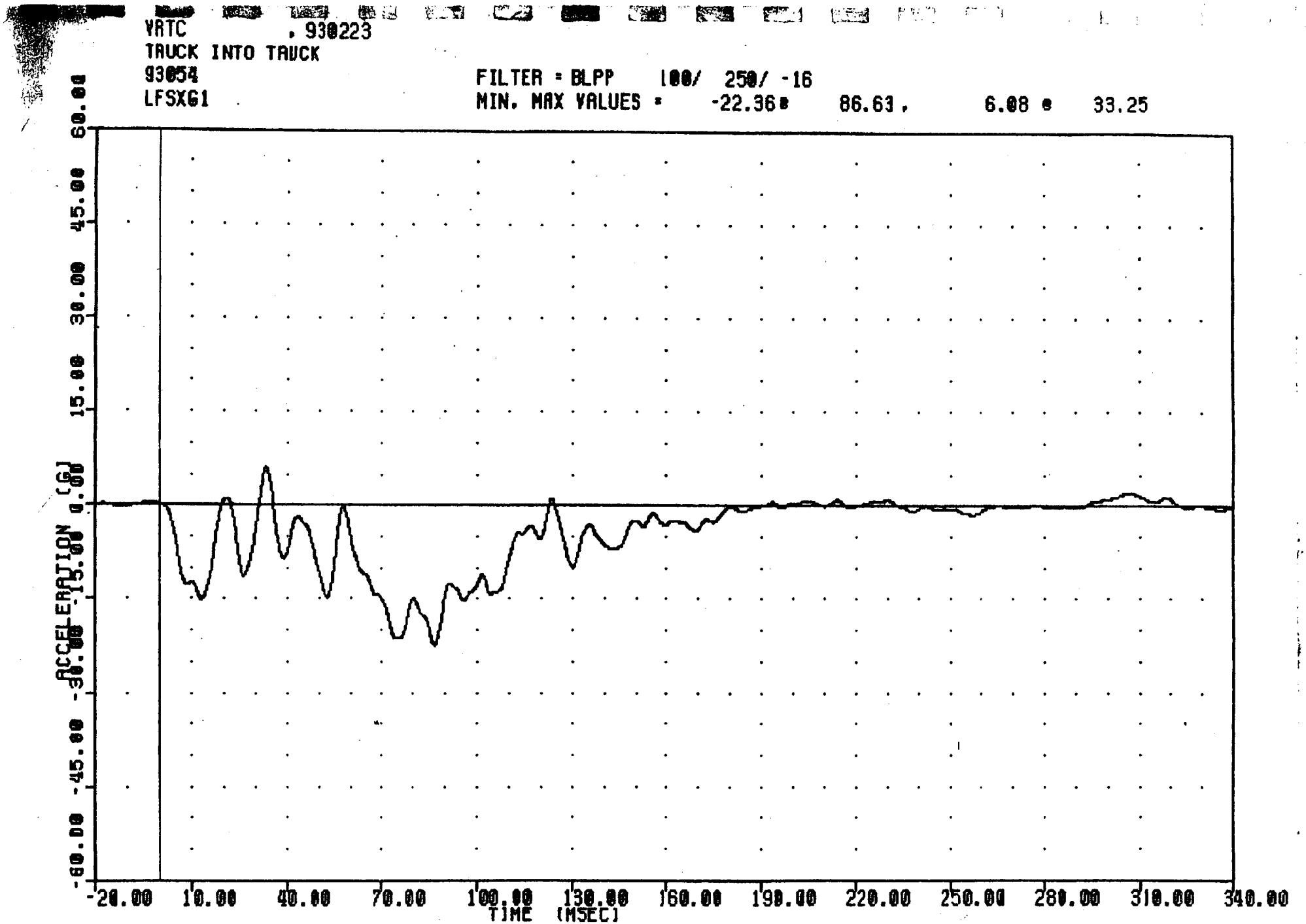
1986 CHEVROLET C10 PICKUP INTO LEFT SIDE OF 1987 FORD F150 PICKUP
LEFT FRONT DOOR CENTERLINE Y-AXIS ACCELERATION



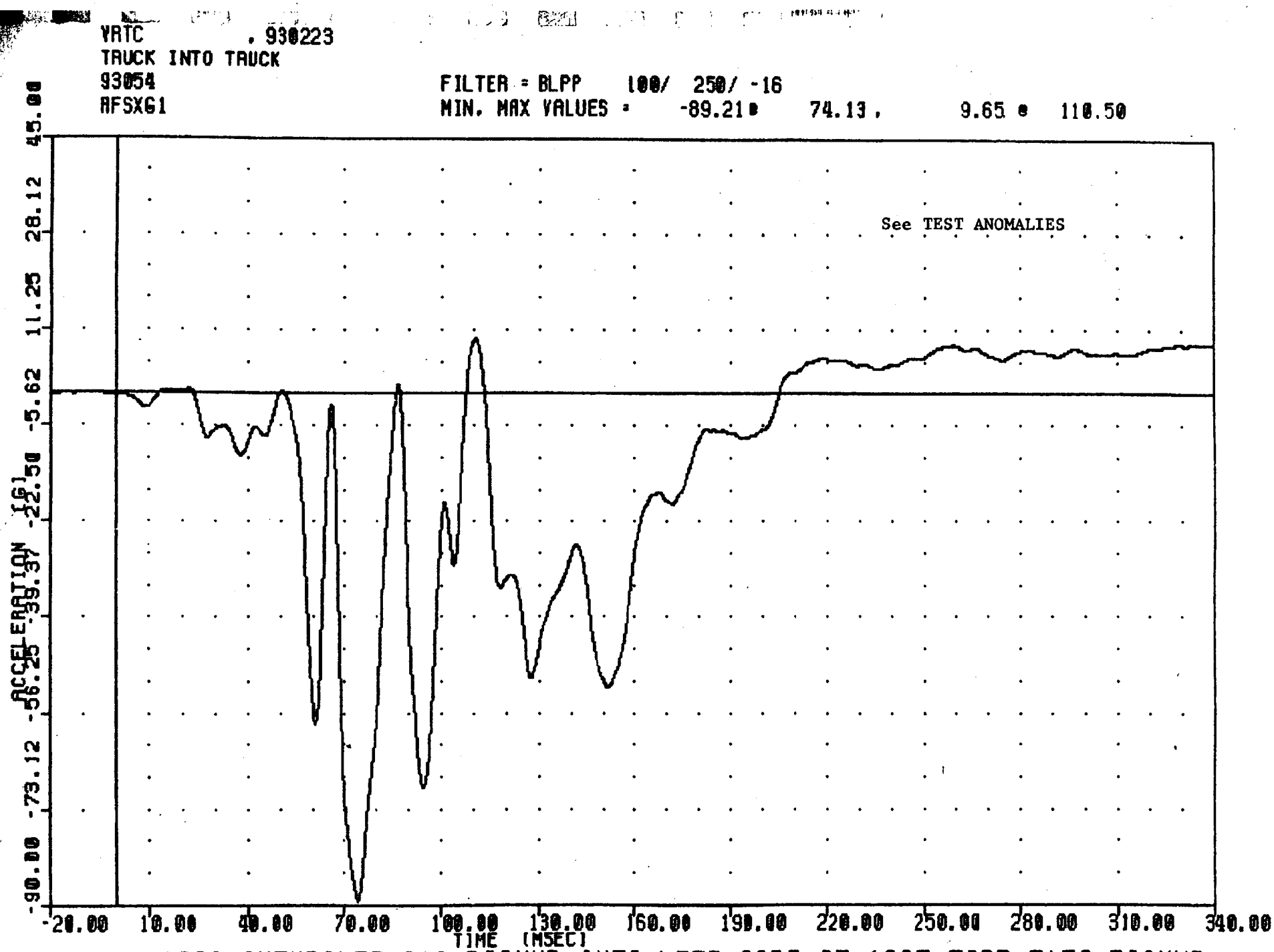
1986 CHEVROLET C10 PICKUP INTO LEFT SIDE OF 1987 FORD F150 PICKUP
LEFT FRONT DOOR MID-REAR Y-AXIS ACCELERATION



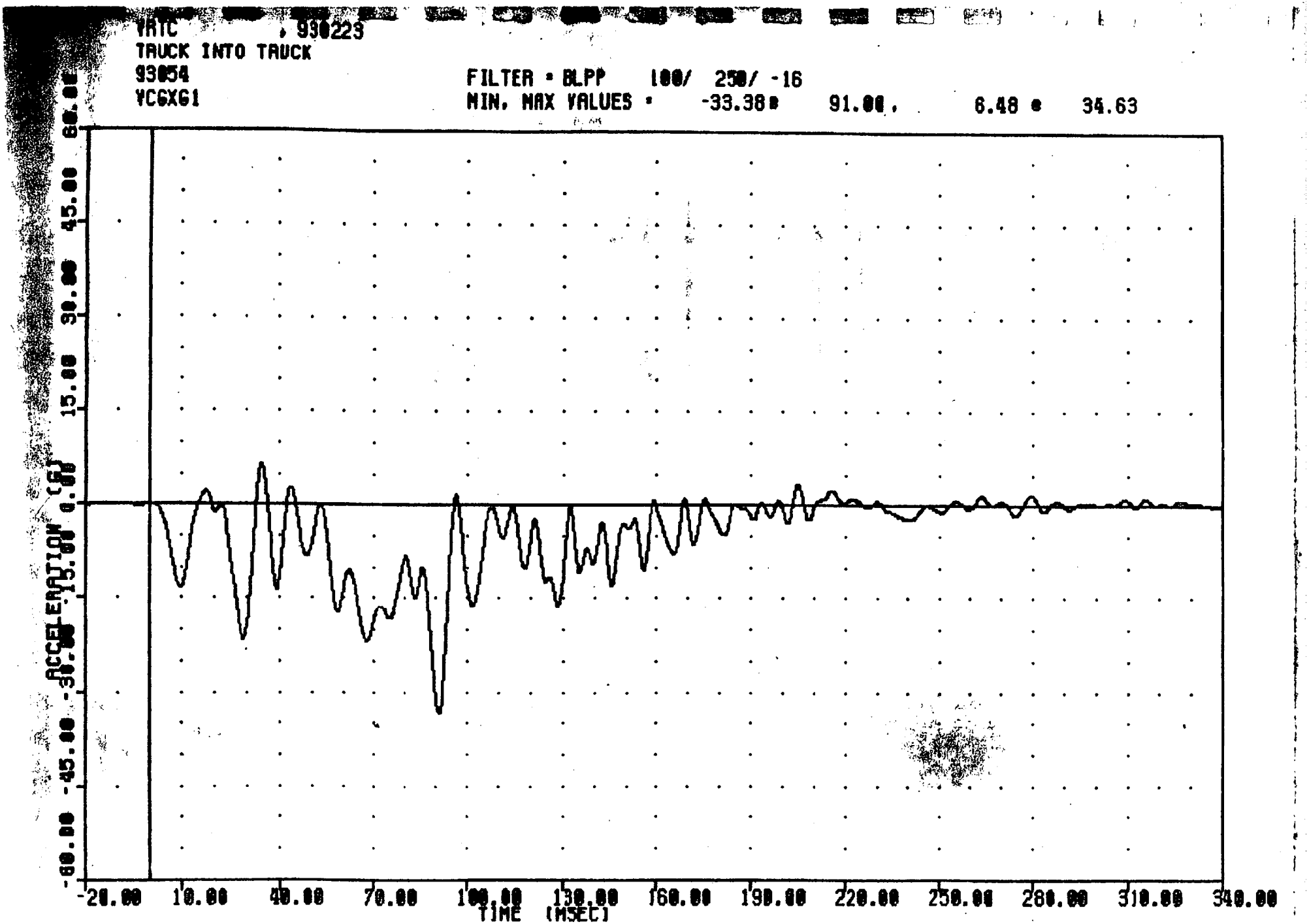
1986 CHEVROLET C10 PICKUP INTO LEFT SIDE OF 1987 FORD F150 PICKUP
LEFT FRONT DOOR UPPER CENTERLINE Y-AXIS ACCELERATION



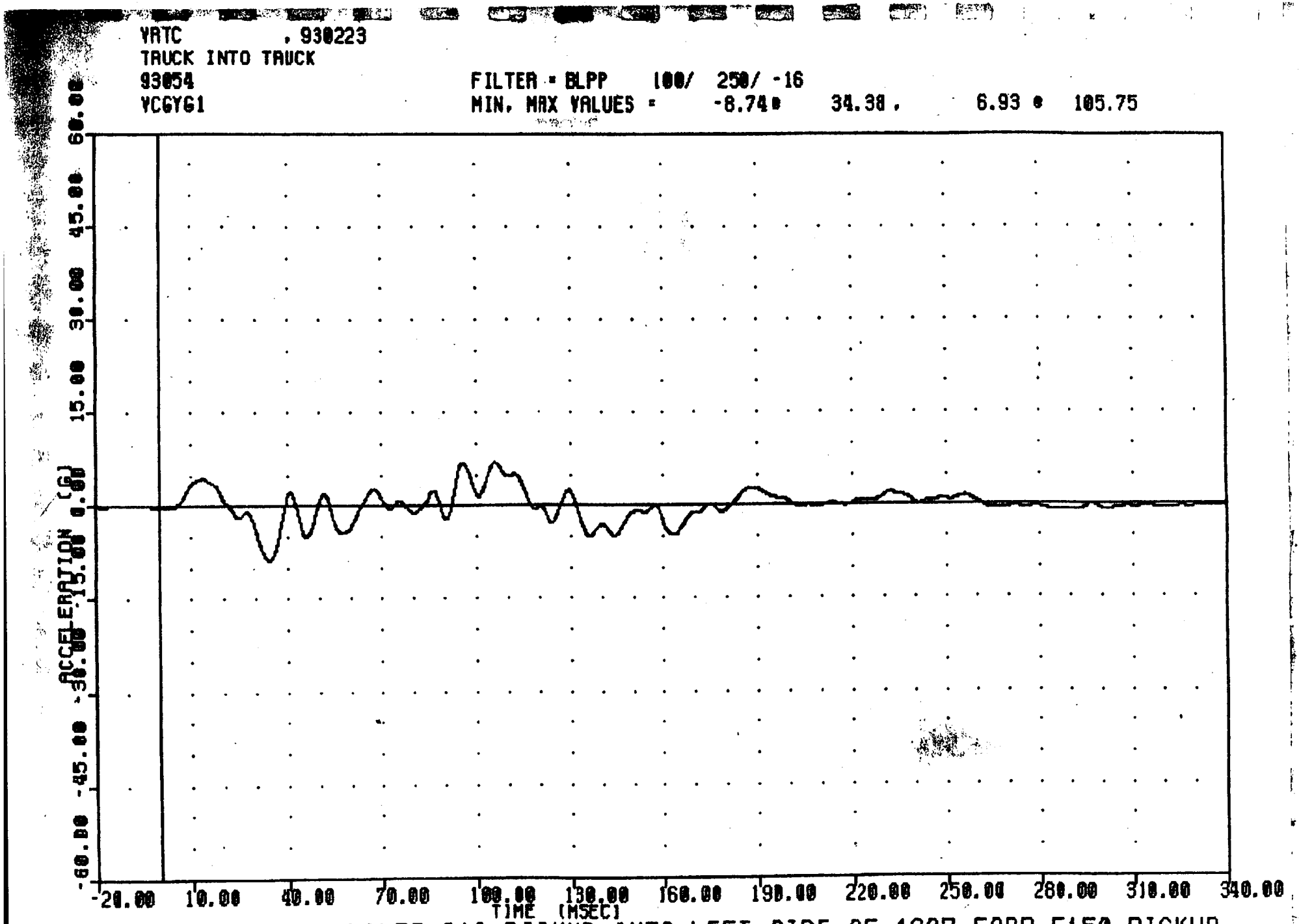
1986 CHEVROLET C10 PICKUP INTO LEFT SIDE OF 1987 FORD F150 PICKUP
CHEVROLET C10 PICKUP LEFT FRONT SILL X-AXIS ACCELERATION



1986 CHEVROLET C10 PICKUP INTO LEFT SIDE OF 1987 FORD F150 PICKUP
CHEVROLET C10 PICKUP RIGHT FRONT SILL X-AXIS ACCELERATION



1986 CHEVROLET C10 PICKUP INTO LEFT SIDE OF 1987 FORD F150 PICKUP
CHEVROLET C10 PICKUP CENTER OF GRAVITY X-AXIS ACCELERATION



1986 CHEVROLET C10 PICKUP INTO LEFT SIDE OF 1987 FORD F150 PICKUP
CHEVROLET C10 PICKUP CENTER OF GRAVITY Y-AXIS ACCELERATION

APPENDIX C

DUMMY CALIBRATION

PRE-TEST CALIBRATION

DRIVER DUMMY S/N 903

TRANSPORTATION RESEARCH CENTER INC.

LATERAL THORAX IMPACT TEST

SIDE IMPACT DUMMY 11-Jan-93

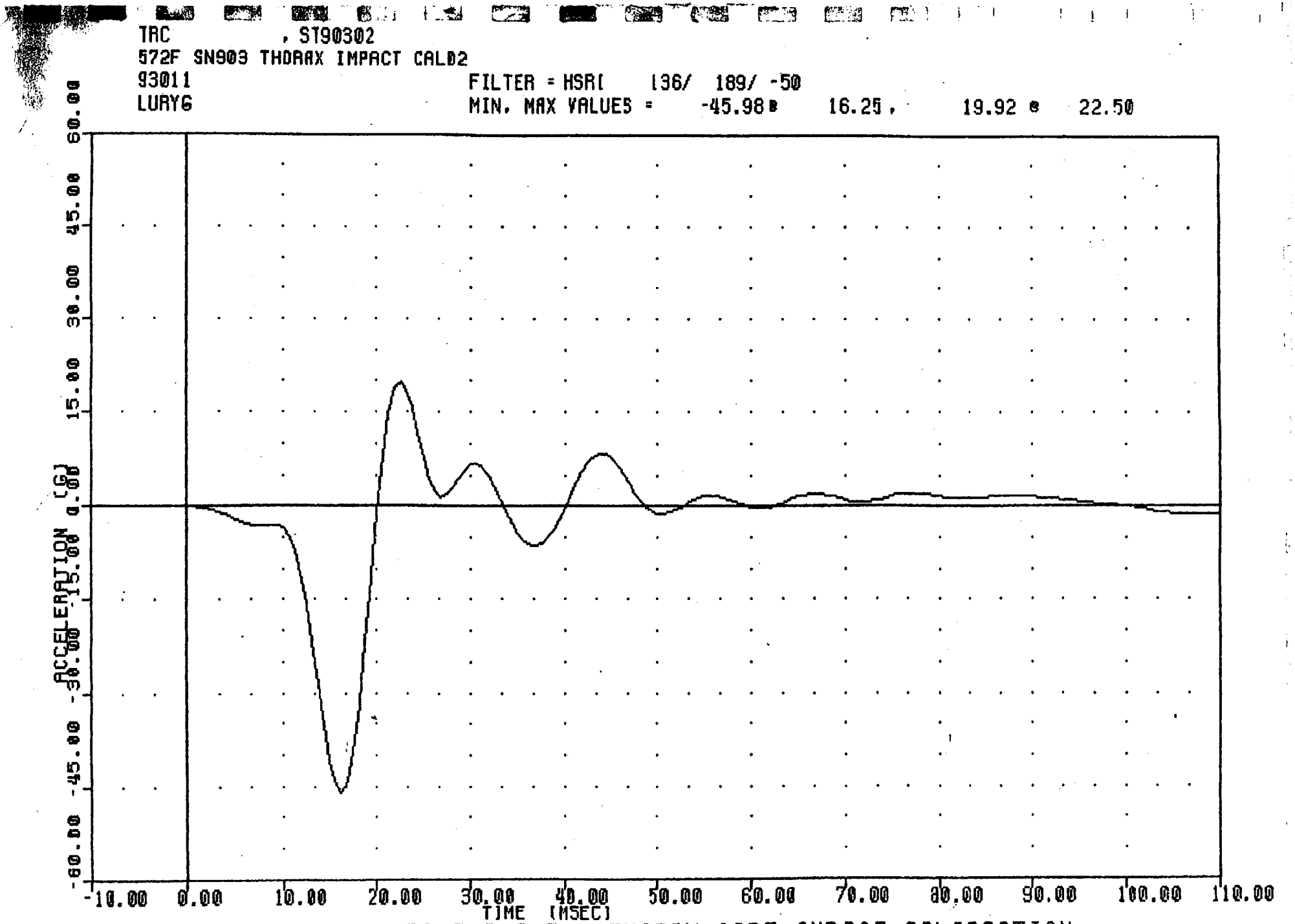
LEFT SIDE CONFIGURATION

TRC ST90302 572F SN903 THORAX IMPACT CAL02

TEST PARAMETER	SPECIFICATION (ABSOLUTE VALUE)	TEST RESULTS
TEMPERATURE	66 - 78 F	70.0 DEG. F
RELATIVE HUMIDITY	10 - 70 %	37.0 %
PISTON VELOCITY	13.80 - 14.20 FT/S	14.03 FT/S
PEAK ACCELERATION: UPPER RIB BAR	37 - 46 G	-46.0 G
PEAK ACCELERATION: LOWER RIB BAR	37 - 46 G	-44.2 G
PEAK ACCELERATION: LOWER THORACIC SPINE	15 - 22 G	-18.0 G

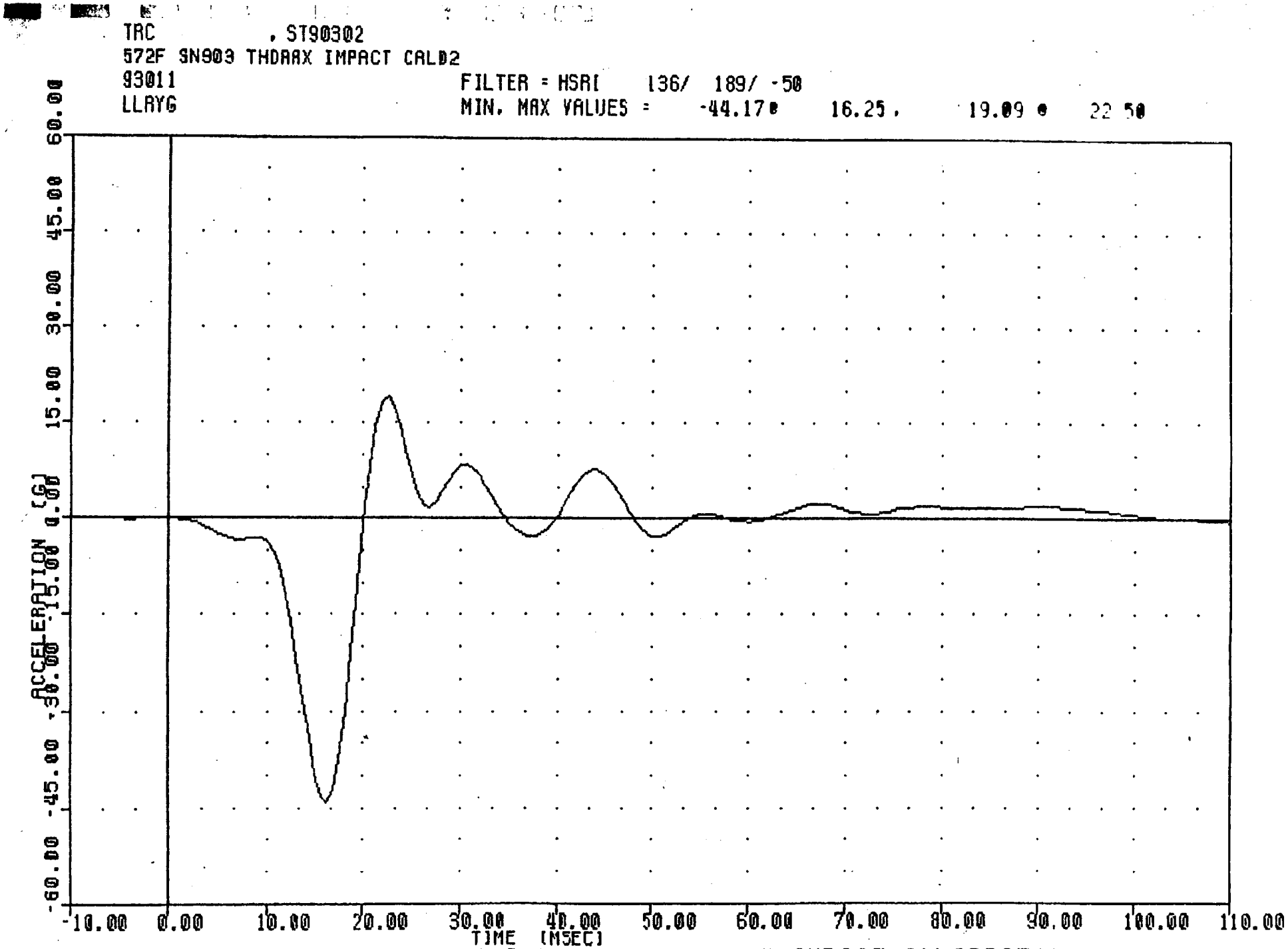
DUMMY MEETS SPECIFICATIONS

TECHNICIAN Chas. Middlet

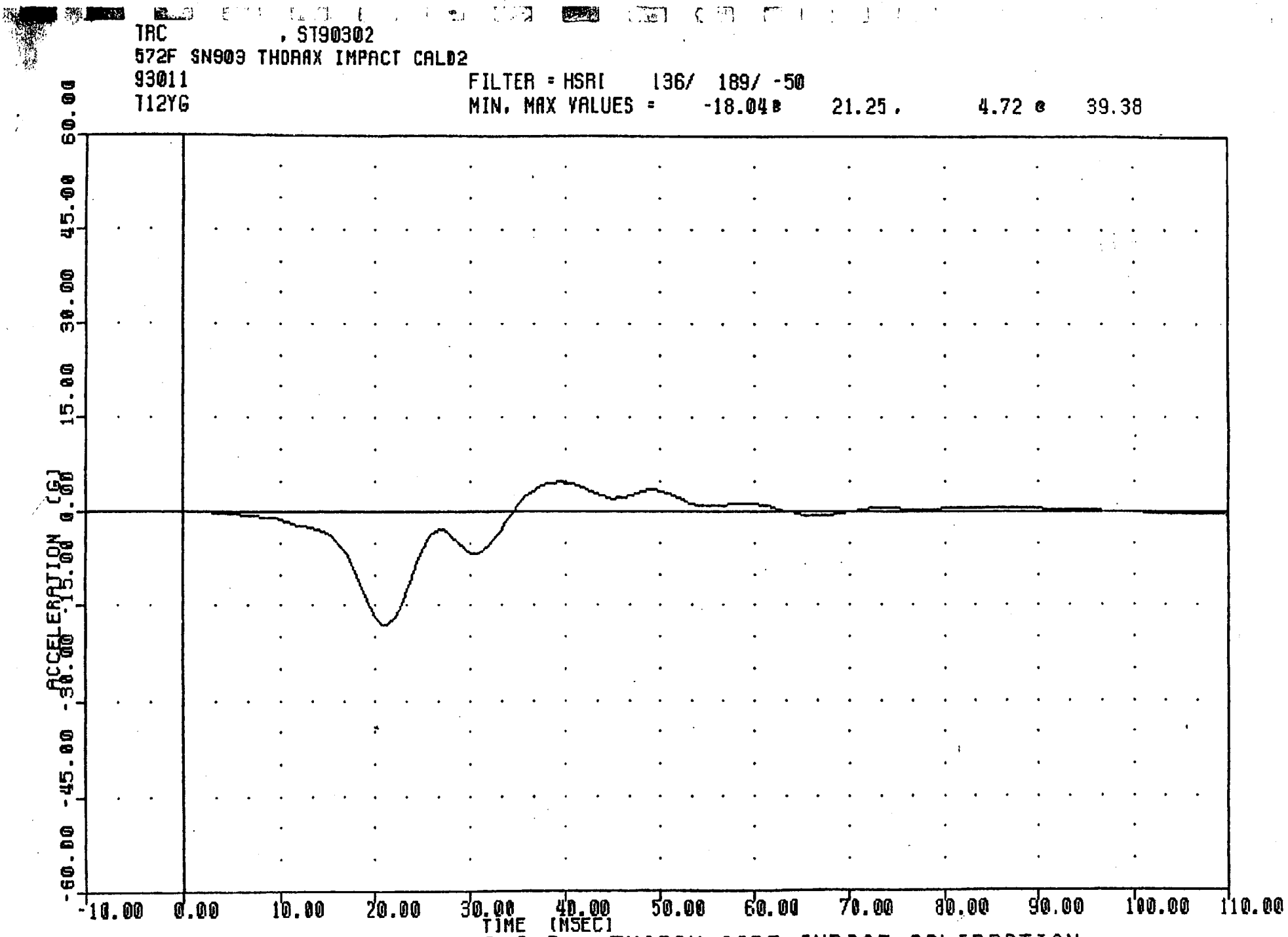


PART 572-F S.I.D. THORAX SIDE IMPACT CALIBRATION

LEFT UPPER RIB ACCELERATION Y AXIS



PART 572-F S.I.D. THORAX SIDE IMPACT CALIBRATION
LEFT LOWER RIB ACCELERATION Y AXIS



PART 572-F S.I.D. THORAX SIDE IMPACT CALIBRATION
LOWER SPINE ACCELERATION Y AXIS

TRANSPORTATION RESEARCH CENTER INC.

LATERAL PELVIS IMPACT TEST

SIDE IMPACT DUMMY 11-Jan-93

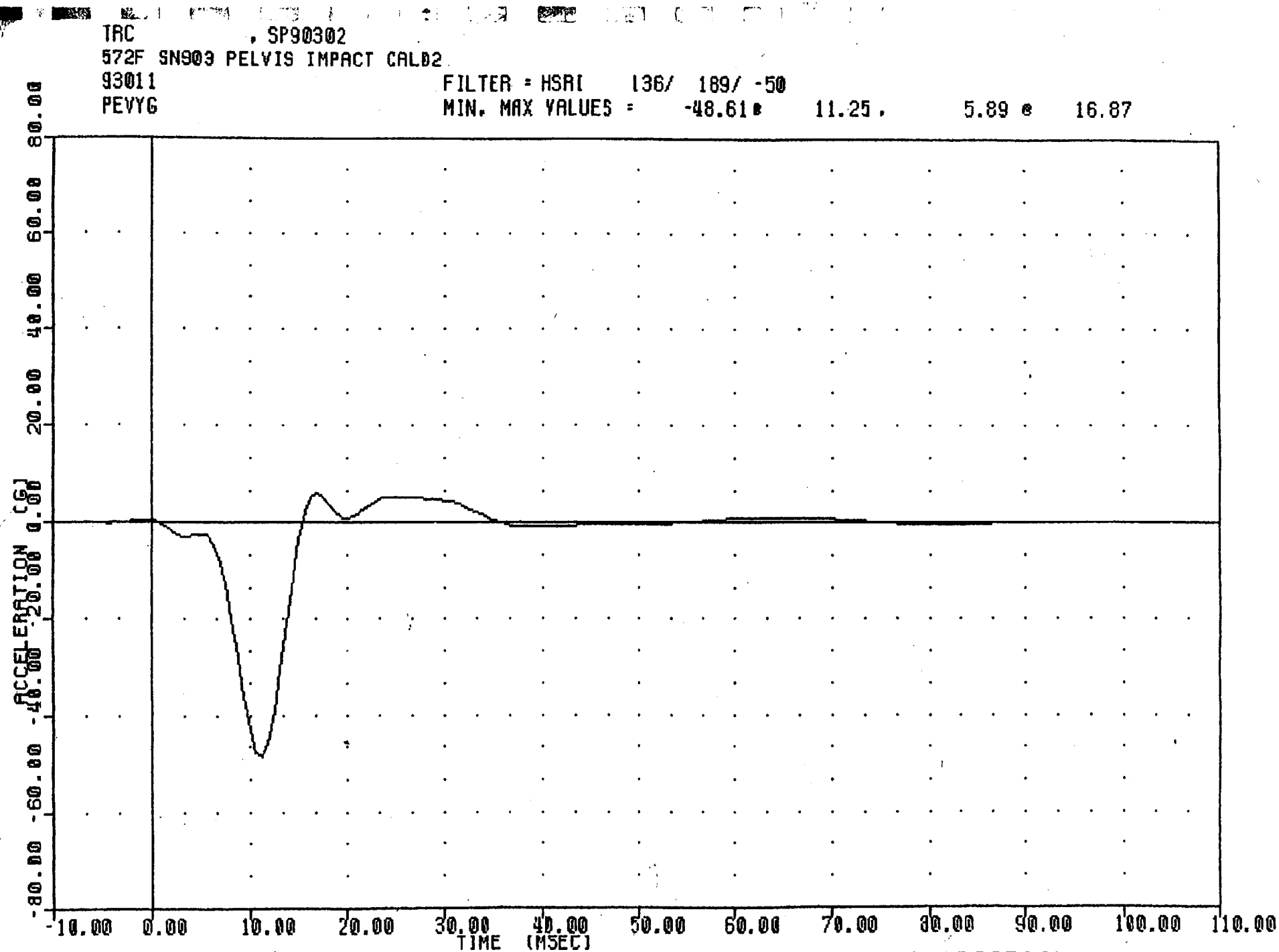
LEFT SIDE CONFIGURATION

TRC SP90302 572F SN903 PELVIS IMPACT CAL02

TEST PARAMETER	SPECIFICATION (ABSOLUTE VALUE)	TEST RESULTS
TEMPERATURE	66 - 78 F	70.0 DEG. F
RELATIVE HUMIDITY	10 - 70 %	37.0 %
PISTON VELOCITY	13.80 - 14.20 FT/S	14.15 FT/S
PEAK PELVIC ACCELERATION	40 - 60 G	-48.6 G
TIME ABOVE 20 G LEVEL	3 - 7 MSEC	5.6 MSEC
IS ACCELERATION CURVE UNIMODAL?	YES	YES

DUMMY MEETS SPECIFICATIONS

TECHNICIAN Chas Middlet



PART 572-F S.I.D. PELVIS SIDE IMPACT CALIBRATION
PELVIS ACCELERATION Y AXIS

APPENDIX D

MISCELLANEOUS TEST INFORMATION

DUMMY INSTRUMENTATION PLACEMENT

DUMMY MANUFACTURER & S/N: NHTSA 903

SEATING POSITION: DRIVER

MNEMONIC	LOCATION	AXIS	MFR	MODEL	S/N	ORIENTATION (+ SENSING)
HEDXG1	HEAD	X	ENDEVCO	7264	DC72J	REAR
HEDYG1	HEAD	Y	ENDEVCO	7264	BF42J	LEFT
HEDZG1	HEAD	Z	ENDEVCO	7264	EH75J	UP
T01XG1	UPPER SPINE	X	ENDEVCO	7264	DE99J	FRONT
T01YG1	UPPER SPINE	Y	ENDEVCO	7264	FG43J	LEFT
T01YGA	UPPER SPINE REDUNDANT	Y	ENDEVCO	7264	EJ62J	LEFT
T01ZG1	UPPER SPINE	Z	ENDEVCO	7264	BE02J	UP
T12XG1	LOWER SPINE	X	ENDEVCO	7264	DM34J	REAR
T12YG1	LOWER SPINE	Y	ENDEVCO	7264	EJ59J	LEFT
T12YGA	LOWER SPINE REDUNDANT	Y	ENDEVCO	7264	BF65J	LEFT
T12ZG1	LOWER SPINE	Z	ENDEVCO	7264	BH31J	UP
LURYG1	LEFT UPPER RIB	Y	ENDEVCO	7264	EY99J	RIGHT
LURYGA	LEFT UPPER RIB REDUNDANT	Y	ENDEVCO	7264	DC54J	RIGHT
LLRYG1	LEFT LOWER RIB	Y	ENDEVCO	7264	FJ66J	RIGHT
LLRYGA	LEFT LOWER RIB REDUNDANT	Y	ENDEVCO	7264	FC60J	RIGHT
PEVXG1	PELVIS	X	ENDEVCO	7264	FB67J	REAR
PEVYG1	PELVIS	Y	ENDEVCO	7264	DF92J	LEFT
PEVZG1	PELVIS	Z	ENDEVCO	7264	BE50J	UP

STRUCK VEHICLE INSTRUMENTATION PLACEMENT

NUMBER	LOCATION	AXIS	MFR	MODEL	S/N	ORIENTATION (+ SENSING)
1	RIGHT FRONT SILL	Y	ENDEVCO	2264	AY72	RIGHT
2	RIGHT REAR SILL	Y	ENDEVCO	2264	AZ88	RIGHT
3	LEFT FRONT SILL	Y	ENDEVCO	2264	AK03	RIGHT
4	LEFT FRONT DOOR CENTERLINE	Y	ENDEVCO	2264	AU09	LEFT
5	LEFT FRONT DOOR MID-REAR	Y	ENDEVCO	2264	AR89	LEFT
6	LEFT FRONT DOOR UPPER CENTERLINE	Y	ENDEVCO	2264	BB67	LEFT

STRIKING VEHICLE INSTRUMENTATION PLACEMENT

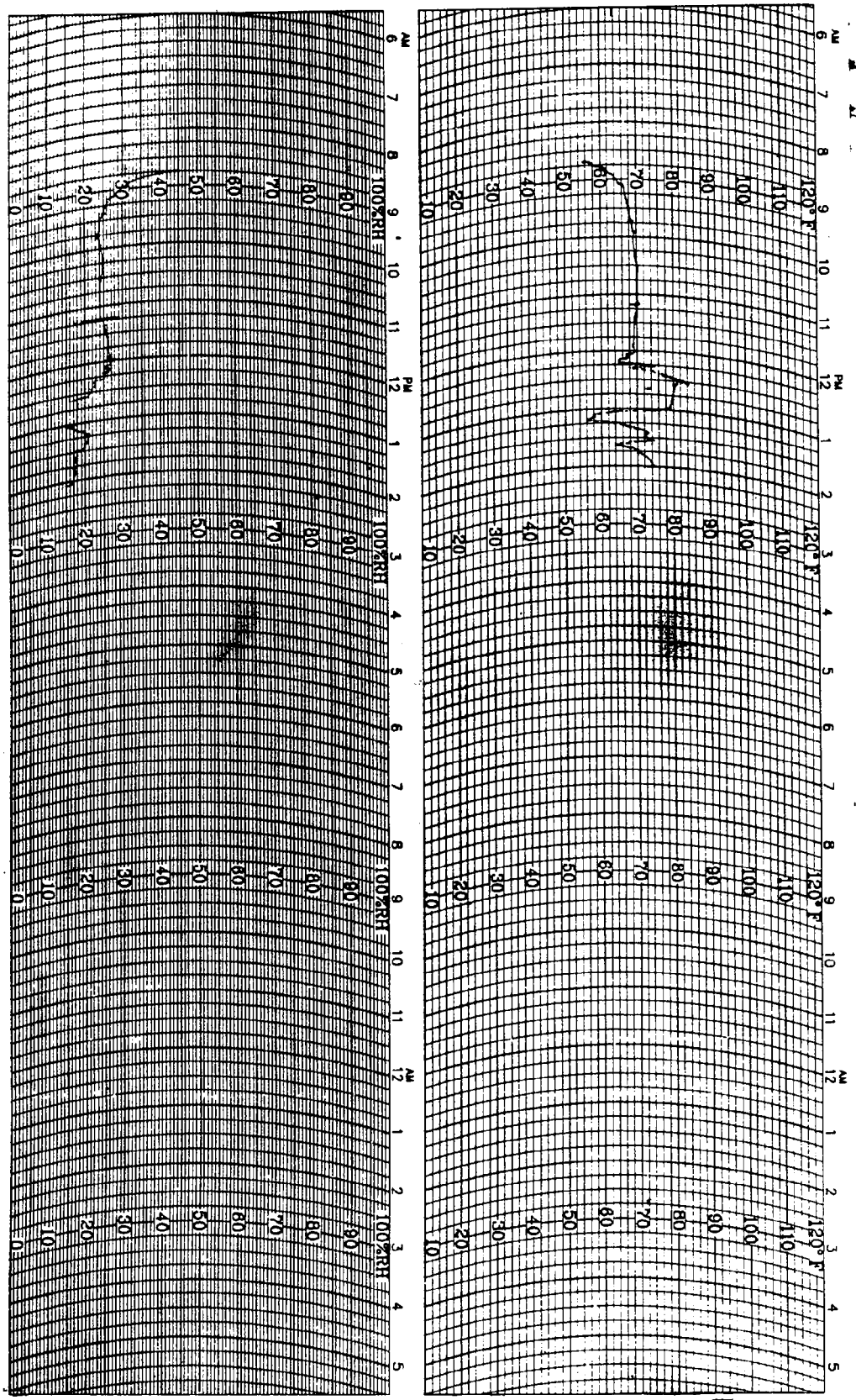
NUMBER	LOCATION	AXIS	MFR	MODEL	S/N	ORIENTATION (+ SENSING)
1	LEFT FRONT SILL	X	ENDEVCO	2264	AN06	REAR
2	RIGHT FRONT SILL	X	ENDEVCO	2264	AK21	REAR
3	CENTER OF GRAVITY	X	ENDEVCO	2264	AZ67	REAR
	CENTER OF GRAVITY	Y	ENDEVCO	2264	AR38	RIGHT

FREQUENCY RESPONSE CLASSES

NHTSA LABORATORY PROCEDURE TP-214D-01

TYPICAL TEST MEASUREMENTS	CHANNEL CLASS
Vehicle Structural Accelerations for use in:	
Total vehicle comparison	60
Collision simulation input	60
Component analysis	600
Integration for velocity or displacement	180
Anthropomorphic Test Device	
Head accelerations (linear and angular)	1000
Thorax	
Spine accelerations	180*
Rib accelerations	180*
Deflections	180
Pelvis	
Accelerations	180*

*The Channel Class 180 data is further processed by subsampling to a 1600 Hz sample rate, removing bias, and filtering with the Finite Impulse Response (FIR100) filter program.



WeatherMeasure
WEATHERtronics
Division of QUALIMETRICS, Inc.

P.O. BOX 41039
SACRAMENTO, CA 95841
PHONE: (916) 923-0055

HYGROTHERMOGRAPH
1 DAY

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

930223

STATION _____ DATE ON _____ DATE OFF _____

OCCUPANT COMPARTMENT THERMOGRAPH