REPORT NOS. 208-TRC-91-018

212-TRC-91-018

301-TRC-91-018

VEHICLE SAFETY COMPLIANCE TESTING FOR OCCUPANT CRASH PROTECTION, WINDSHIELD MOUNTING, WINDSHIELD ZONE INTRUSION, AND FUEL SYSTEM INTEGRITY

FORD MOTOR COMPANY

1991 FORD MUSTANG

2-DOOR CONVERTIBLE

NHTSA NO. CM0211

TRC TEST NO. 910930

THE TRANSPORTATION RESEARCH CENTER OF OHIO

10820 STATE ROUTE 347

EAST LIBERTY, OHIO 43319

OCTOBER 16, 1991

FINAL REPORT

PREPARED FOR:

U.S. DEPARTMENT OF TRANSPORTATION

NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

OFFICE OF VEHICLE SAFETY COMPLIANCE (NEF-31)

400 SEVENTH STREET, S.W., ROOM NO. 6111

WASHINGTON, DC 20590

Rec'd 10/22/91

This Final Test Report was prepared for the U.S. Department of Transportation, National Highway Traffic Safety Administration, under Contract No. DTNH22-90-C-21003. This document is disseminated under the sponsorship of the U.S. Department of Transportation in the interest of information exchange. The United States Government assumes no liability for its contents or use thereof.

REPORT PREPARED BY:

Jeffery W. Sankey Date 10/15/91

Jeffery W. Sankey, Supervisor, Laboratory Engineering
Transportation Research Center of Ohio

REPORT APPROVED BY:

Kay Latimer Date 10-16-91

C. Kay Latimer, Project Manager
Transportation Research Center of Ohio

FINAL REPORT ACCEPTED BY:

Charles R. Case Date 11/19/91

Contracting Officer's Technical Representative (COTR),
NHTSA, Office of Vehicle Safety Compliance

1. Report No. 208-TRC-91-018 212-TRC-91-018 301-TRC-91-018	2. Government Accession No.	3. Recipient's Catalog No.

4. Title and Subtitle	5. Report Date
FINAL REPORT OF FMVSS NOS. 208, 212, 219 (PARTIAL), AND 301 COMPLIANCE TESTING OF A 1991 FORD MUSTANG 2-DOOR CONVERTIBLE, NHTSA NO. CM0211	OCTOBER 16, 1991
	6. Performing Organization Code
7. Author(s) J.W. Sankey, Supervisor, Laboratory Engineering, TRC	8. Performing Organization Report No. 208-TRC-91-018 212-TRC-91-018 301-TRC-91-018
9. Performing Organization Name and Address Transportation Research Center of Ohio 10820 State Route 347 East Liberty, Ohio 43319	10. Work Unit No. (TRAIS)
	11. Contract or Grant No. DTNH22-90-C-21003
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Office of Vehicle Safety Compliance (NEF-31) 400 Seventh St., S.W., Washington, DC 20590	13. Type of Report and Period Covered FINAL REPORT SEPTEMBER - OCTOBER 1991
	14. Sponsoring Agency Code NEF-30

15. Supplementary Notes

16. Abstract

A 30 mph flat frontal barrier impact test was conducted on a 1991 Ford Mustang 2-door convertible, NHTSA No. CM0211, at the Transportation Research Center of Ohio on September 30, 1991. This test was conducted to determine compliance with Federal Motor Vehicle Safety Standards: FMVSS 208, "Occupant Crash Protection"; FMVSS 212, "Windshield Mounting"; FMVSS 219 (partial), "Windshield Zone Intrusion"; FMVSS 301, "Fuel System Integrity." The barrier impact velocity was 29.5 mph. The vehicle's maximum static crush was 17.9 inches. The ambient temperature was 90° F.

The driver's head injury criteria (HIC) was 617. The driver's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 35.6 g. The driver's left and right femur maximum axial forces were 1577 pounds and 830 pounds, respectively.

The passenger's head injury criteria (HIC) was 75. The passenger's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 27.7 g. The passenger's left and right femur maximum axial forces were 398 pounds and 163 pounds, respectively.

The vehicle appears to comply with the applicable requirements of FMVSS 208, 212, 219 (partial), and 301.

17. Key Words	18. Distribution Statement
Frontal Impact 30 mph Vehicle Safety Compliance Testing FMVSS 208, "Occupant Crash Protection" FMVSS 212, "Windshield Mounting" FMVSS 219P, "Windshield Zone Intrusion" FMVSS 301, "Fuel System Integrity"	Available from: NHTSA Technical Reference Division Room 5108, (NAD-52) 400 Seventh Street, SW Washington, DC 20590 Attn: Mr. Robert Hornickle

19. Security Classif. (of this report)	20. Security Classif. (of this page)	21. No. of Pages	22. Price
Unclassified	Unclassified	129	

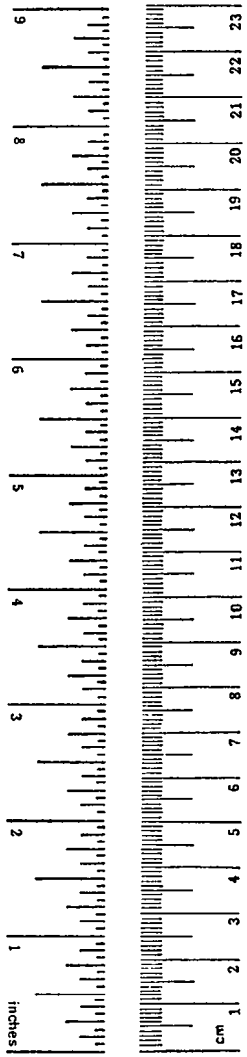
Form DOT F 1700.7 (8-72) Reproduction of completed page authorized

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

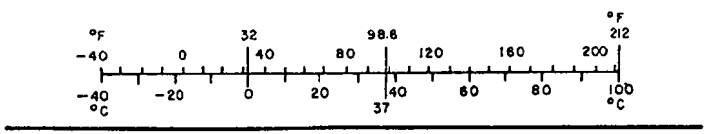


TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF PHOTOGRAPHS

LIST OF PHOTOGRAPHS, CONT'D.

SECTION 1.0

PURPOSE & TEST PROCEDURE

PURPOSE

This 30 mph flat frontal barrier impact test is part of the Federal Motor Vehicle Safety Standard (FMVSS) 208, 212, 219 (partial), and 301 compliance test program conducted for the National Highway Traffic Safety Administration (NHTSA) by the Transportation Research Center of Ohio (TRC) under Contract No. DTNH22-90-C-21003. The purpose of this test was to determine if the subject vehicle, a 1991 Ford Mustang 2-door convertible, NHTSA No. CM0211, meets the performance requirements of FMVSS 208, "Occupant Crash Protection"; FMVSS 212, "Windshield Mounting"; FMVSS 219 (partial), "Windshield Zone Intrusion"; and FMVSS 301, "Fuel System Integrity," in the flat frontal barrier impact mode.

TEST PROCEDURE

This test was conducted in accordance with NHTSA's Office of Vehicle Safety Compliance (OVSC) Laboratory Test Procedure No. TP-208-08. Data was obtained relative to FMVSS 208, "Occupant Crash Protection"; FMVSS 212, "Windshield Mounting"; FMVSS 219 (partial), "Windshield Zone Intrusion"; and FMVSS 301, "Fuel System Integrity," performance.

The test vehicle was instrumented with seven (7) accelerometers to measure longitudinal axis accelerations. The vehicle's specified impact velocity range was 28.9 to 29.9 mph. The vehicle impacted a flat frontal barrier.

The test vehicle contained two (2) Part 572 B 50th percentile adult male anthropomorphic test devices (dummies). The dummies were positioned in the front outboard designated seating positions according to the dummy placement procedure specified in Appendices B and C of the Laboratory Test Procedure.

Both dummies were instrumented with head and chest accelerometers to measure longitudinal, lateral, and vertical accelerations, and with left and right femur load cells to measure axial forces.

The twenty-three (23) 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 sections 12.8 and 12.9 of the Laboratory Test Procedure.

The crash event was recorded by one (1) real-time panning motion picture camera and fourteen (14) 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 FMVSS 208, 212, 219 (partial) and 301 data are presented in Section 3.0. The vehicle, occupant, and camera measurements are presented in Section 4.0. Appendix A contains the still photographic prints. Appendix B contains the dummy and vehicle data plots.

SECTION 2.0

FRONTAL BARRIER IMPACT TEST SUMMARY

TEST RESULTS SUMMARY

This flat frontal barrier test was conducted at TRC on September 30, 1991.

The test vehicle, a 1991 Ford Mustang 2-door convertible, NHTSA No. CM0211, appeared to comply with the performance requirements of FMVSS 208, 212, 219 (partial), and 301 in the flat frontal barrier impact mode. The Head Injury Criteria (HIC) calculations were less than 1000, the chest resultant accelerations did not exceed 60 g's, and the axial forces transmitted through the upper legs did not exceed 2,250 pounds as measured by Part 572 B dummies seated in the front outboard designated seating positions. The vehicle's restraint system met the applicable comfort and convenience requirements. The windshield periphery retention was 100 percent. There was no penetration into any portion of the windshield. No fluid spilled from the vehicle's fuel system following the impact or during the static rollover test.

The test vehicle was equipped with a 2.3 liter, inline engine, automatic transmission, power steering, and power brakes. The vehicle's test weight was 3491 pounds. The vehicle's impact speed was 29.5 mph. The vehicle's maximum static crush was 17.9 inches.

The driver's head injury criteria (HIC) was 617. The driver's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 35.6 g. The driver's left and right femur maximum axial forces were 1577 pounds and 830 pounds, respectively.

The right front passenger's HIC was 75. The right front passenger's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 27.7 g. The right front passenger's left and right femur maximum axial forces were 398 pounds and 163 pounds, respectively.

There was no loss of windshield periphery retention.

There was no intrusion through the windshield.

No fluid spilled from the vehicle's fuel system following the crash test event or during the static rollover test.

TABLE 1 CRASH TEST SUMMARY

NHTSA NO.: CM0211 TEST TYPE: Frontal Barrier Impact

TEST DATE: 09/30/91 TEST TIME: 1431 AMBIENT TEMP. (°F): 90

VEHICLE YEAR/MAKE/MODEL/BODY STYLE: 1991/Ford/Mustang/2-door convertible

VEHICLE TEST WEIGHT (LBS): 3491

IMPACT ANGLE (DEG)*: 0

IMPACT VELOCITY (MPH)**: PRIMARY = 29.5 SECONDARY = 29.4

MAXIMUM STATIC CRUSH (IN): 17.9

AVERAGE REBOUND (IN): 41.4

DUMMIES:	Driver #353	Passenger #354
TYPE:	Part 572 B	Part 572 B
LOCATION:	Left front	Right front
RESTRAINT:	Driver's airbag	Three-point unibelt

NUMBER OF DATA CHANNELS: 23

NUMBER OF CAMERAS: HIGH-SPEED 14 REAL-TIME 2

*With respect to tow track centerline.
**Speed trap measurement (± .05 mph accuracy)

TABLE 2 TEST VEHICLE INFORMATION

VEHICLE MANUFACTURER: Ford Motor Company

MAKE/MODEL: Ford/Mustang VIN: 1FACP44M2MF155283

BODY STYLE: 2-door convertible MODEL YEAR: 1991

NHTSA NO.: CM0211 COLOR: Red

ENGINE DATA: TYPE: inline CYLINDERS: 4 DISPLACEMENT: 2.3 liter

TRANSMISSION DATA: _4_ SPEED, ___MANUAL, _X_ AUTOMATIC, ___FWD, _X_ RWD, ___4WD

DATE VEHICLE RECEIVED: 08/12/91 ODOMETER READING: 152.3

DEALER'S NAME AND ADDRESS: Kistler Ford, Inc.
5555 W. Central Ave.
Toledo, OH 43615

ACCESSORIES:

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

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

DATE OF MANUFACTURE: 04/91 VIN: 1FACP44M2MF155283

GVWR: 3892 LBS

GAWR: FRONT: 1997 LBS., REAR: 1935 LBS.

TABLE 2 TEST VEHICLE INFORMATION CONT'D

TIRES ON VEHICLE (MFR., LINE, SIZE): Firestone/FR480 P195/75R14

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

SPARE TIRE (MFR., LINE, SIZE): Firestone, Temp, B7814

TYPE OF SEATS: FRONT: Bucket
REAR: Bench

TYPE OF FRONT SEAT BACKS: Manually Adjustable

MAXIMUM WIDTH: 69.1 INCHES

WHEELBASE: 101.0 INCHES

LOCATION OF LABEL STATING TIRE & CAPACITY DATA: THE LABEL WAS LOCATED ON THE RIGHT B-PILLAR.

TIRE & CAPACITY DATA FROM VEHICLE'S LABEL:

RECOMMENDED TIRE SIZE: FRONT: P195/75R14

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

DESIGNATED SEATING CAPACITY: 2 FRONT 2 REAR 4 TOTAL

VEHICLE CAPACITY WEIGHT: 700 LBS. LUGGAGE 100 LBS.

TEST VEHICLE ATTITUDE (ALL MEASUREMENTS ARE IN INCHES):

DELIVERED ATTITUDE:	LF	26.8;	RF	27.0;	LR	27.9;	RR	27.6
FULLY LOADED ATTITUDE:	LF	26.6;	RF	26.8;	LR	26.2;	RR	26.0
PRE-TEST ATTITUDE:	LF	26.6;	RF	26.8;	LR	26.4;	RR	26.1
POST-TEST ATTITUDE:	LF	27.8;	RF	24.2;	LR	26.1;	RR	25.6

TABLE 2 TEST VEHICLE INFORMATION CONT'D

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

RIGHT FRONT	840 LBS.	RIGHT REAR	660 LBS.
LEFT FRONT	920 LBS.	LEFT REAR	660 LBS.
TOTAL FRONT WEIGHT	1760 LBS.	(57.1% OF TOTAL VEHICLE WEIGHT)	
TOTAL REAR WEIGHT	1320 LBS.	(42.9% OF TOTAL VEHICLE WEIGHT)	
TOTAL DELIVERED WEIGHT	3080 LBS.		

CALCULATION OF TEST VEHICLE'S TARGET TEST WEIGHT:

RCLW = RATED CARGO AND LUGGAGE WEIGHT*

UDW = UNLOADED DELIVERED WEIGHT (3080 LBS)

VCW = VEHICLE CAPACITY WEIGHT (700 LBS)

DSC = DESIGNATED SEATING CAPACITY (4)

RCLW*= VCW - 150 (DSC) = 700 - 150 (4) = 100

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

TARGET TEST WEIGHT = 3080 + 100 + 328

TARGET TEST WEIGHT = 3508 LBS

WEIGHT OF TEST VEHICLE WITH REQUIRED DUMMIES AND 83 LBS. OF CARGO WEIGHT:

RIGHT FRONT	906 LBS.	RIGHT REAR	817 LBS.
LEFT FRONT	985 LBS.	LEFT REAR	783 LBS.
TOTAL FRONT WEIGHT	1891 LBS.	(54.2% OF TOTAL VEHICLE WEIGHT)	
TOTAL REAR WEIGHT	1600 LBS.	(45.8% OF TOTAL VEHICLE WEIGHT)	
TOTAL TEST WEIGHT	3491 LBS.	(0.5% UNDER TARGET TEST WEIGHT)	

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

COMPONENTS REMOVED TO MEET TARGET TEST WEIGHT: None

CG = 46.3 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.

TABLE 3 POST-IMPACT DATA

TEST NUMBER: 910930 NHTSA NO.: CM0211

TEST DATE: 09/30/91 TEST TIME: 1431

TEST TYPE: Frontal Barrier Impact IMPACT ANGLE: 0

AMBIENT TEMPERATURE AT IMPACT AREA: 90° F

TEMPERATURE IN OCCUPANT COMPARTMENT: 72° F

IMPACT VELOCITY: PRIMARY = 29.5 MPH SECONDARY = 29.4 MPH

(SPECIFIED RANGE = 28.9 TO 29.9 MPH)

DISTANCE FROM VEHICLE TO BARRIER: ENTERING VELOCITY TRAP = 26.0 IN.

EXITING VELOCITY TRAP = 2.0 IN.

TEST VEHICLE STATIC CRUSH (ALL MEASUREMENTS ARE IN INCHES):

OVERALL LENGTH OF TEST VEHICLE: PRE-TEST: L 174.5; C 179.9; R 174.5

POST-TEST: L 158.1; C 162.0; R 160.2

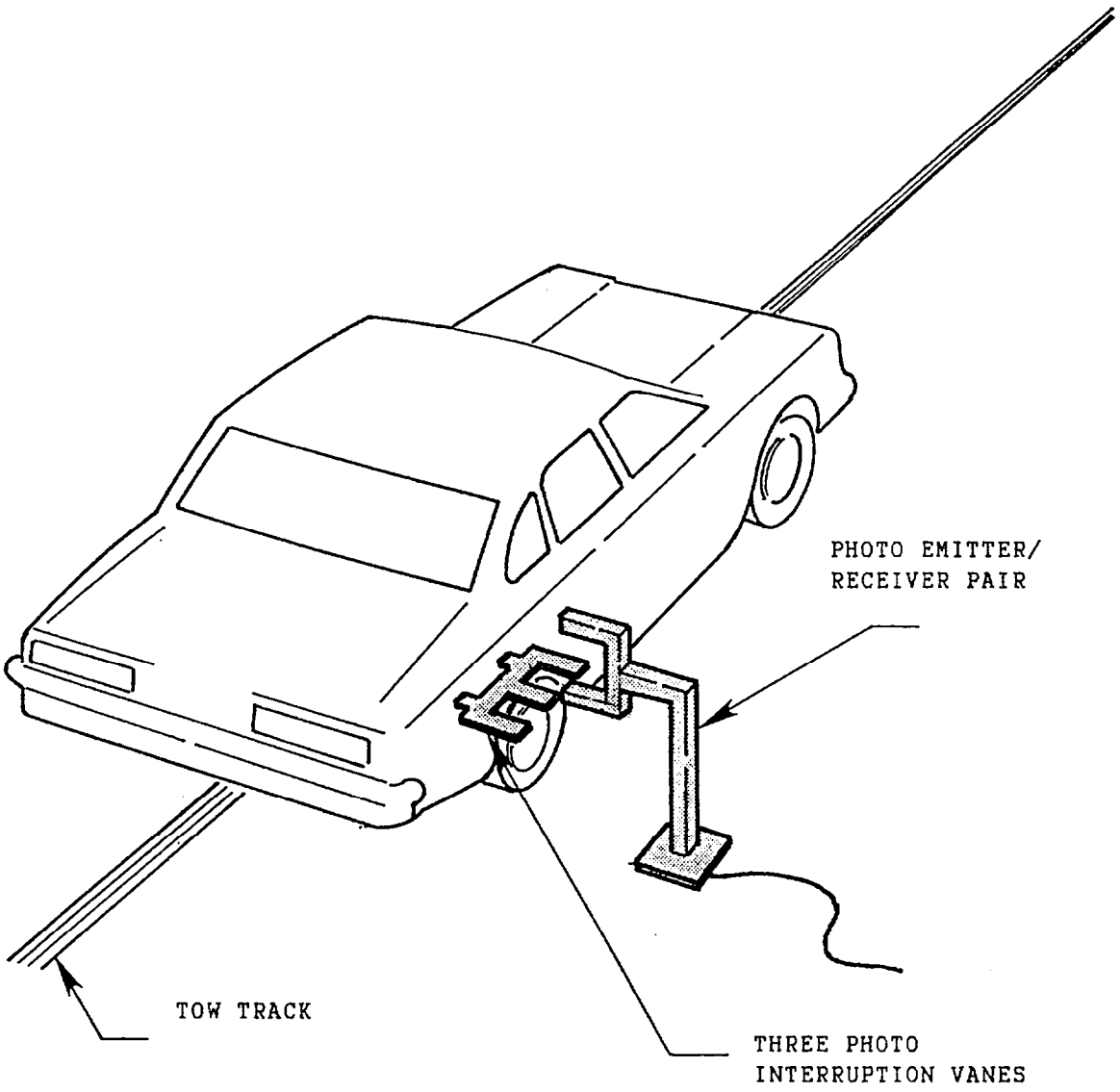
TOTAL CRUSH: L 16.4; C 17.9; R 14.3

AVERAGE CRUSH: 16.2

TEST VEHICLE REBOUND FROM FLAT BARRIER (ALL MEASUREMENTS ARE IN INCHES):

DISTANCE FROM TEST VEHICLE TO BARRIER: L 44.1; C 39.4; R 40.6; AVG. 41.4

FIGURE 1 IMPACT VELOCITY MEASUREMENT SYSTEM



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

The vanes have one foot spacing.

FIGURE 2 ACCIDENT INVESTIGATION DIVISION DATA
FOR 30 MPH FRONTAL BARRIER IMPACT

VEHICLE MAKE/MODEL/BODY STYLE: Ford/Mustang/2-door convertible

VEHICLE NHTSA NO.: CM0211 ; VIN: 1FACP44M2MF155283

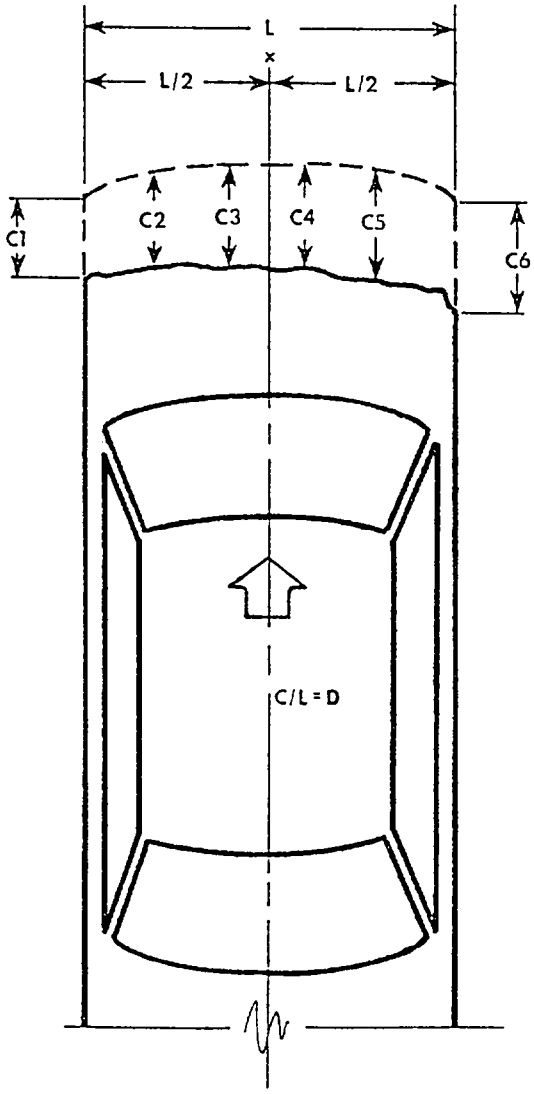
MODEL YEAR: 1991 ; BUILD DATE: 04/91 ; TEST DATE: 09/30/91

VEHICLE SIZE CATEGORY: Subcompact ; TEST WEIGHT: 3491 LBS.

VEHICLE WHEELBASE: 101.0 INCHES

MAXIMUM WIDTH: 69.1 INCHES

FRONT OVERHANG: 40.8 INCHES



COLLISION DEFORMATION
CLASSIFICATION (CDC) CODE: 12FDEW2

CRUSH DEPTH MEASUREMENTS:

C1 = 16.4 INCHES

C2 = 17.8 INCHES

C3 = 17.8 INCHES

C4 = 17.4 INCHES

C5 = 16.1 INCHES

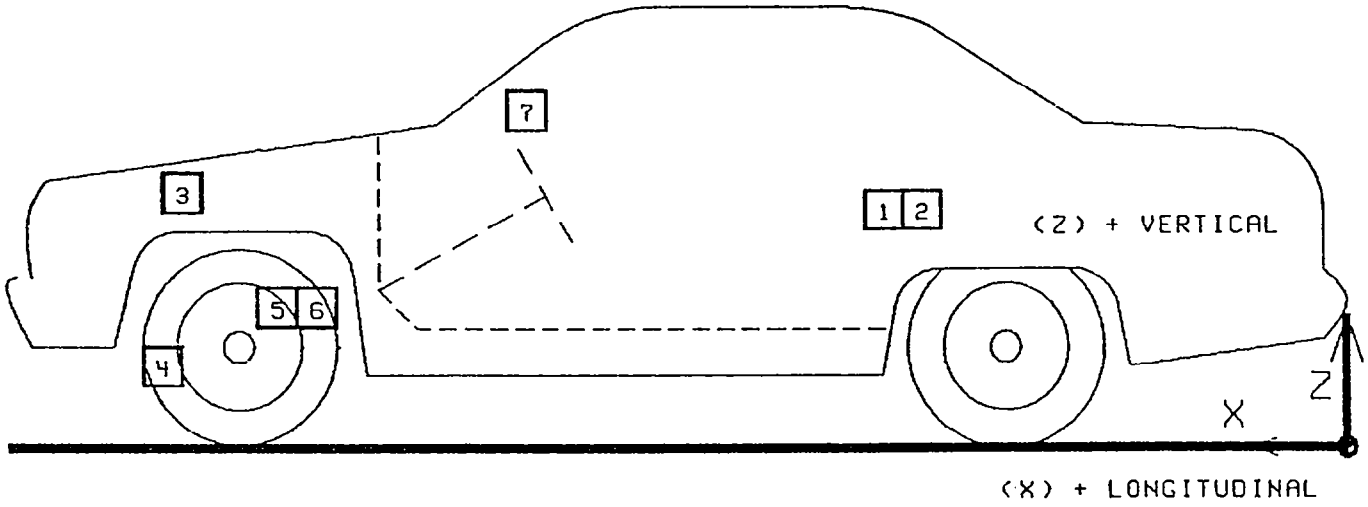
C6 = 14.3 INCHES

MIDPOINT OF DAMAGE: D = VEHICLE CENTERLINE (LONGITUDINAL)

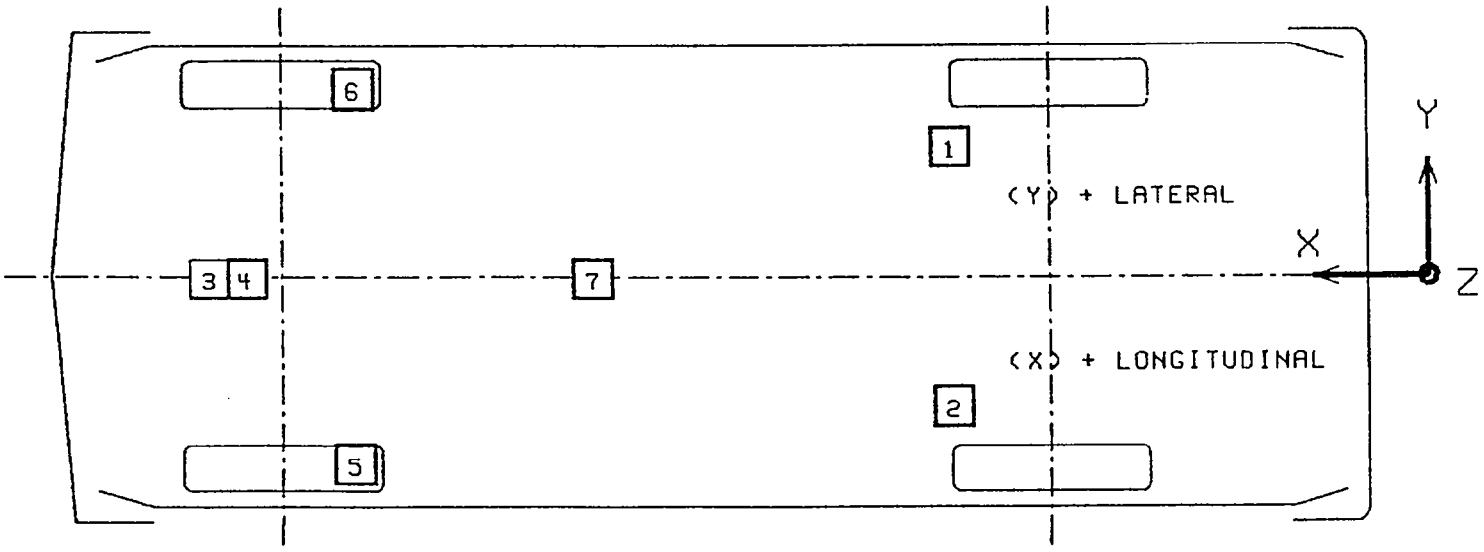
LENGTH OF DAMAGED REGION: L = 60.0 INCHES

FIGURE 3

VEHICLE ACCELEROMETER PLACEMENT



SIDE VIEW



BOTTOM VIEW

TABLE 4

VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

TEST NUMBER 910930

No.	LOCATION		X*	Y*	Z*	POSITIVE DIRECTION MAX G	POSITIVE DIRECTION MSEC	NEGATIVE DIRECTION MAX G	NEGATIVE DIRECTION MSEC
1	LEFT REAR SEAT CROSSMEMBER	PRE	66.6	10.1	15.0				
		POST	66.6	10.1	15.1				
	LONGITUDINAL					2.7	146.5	25.2	78.0
2	RIGHT REAR SEAT CROSSMEMBER	PRE	66.7	-10.1	15.9				
		POST	66.8	-10.1	15.2				
	LONGITUDINAL					3.1	146.0	26.0	71.0
3	ENGINE TOP	PRE	138.2	-0.8	32.1				
		POST	137.0	-1.5	32.8				
	LONGITUDINAL					16.9	68.6	53.3	55.1
4	ENGINE BOTTOM	PRE	131.3	1.9	6.4				
		POST	129.0	1.1	6.2				
	LONGITUDINAL					19.9	69.3	37.8	59.9
5	RIGHT BRAKE CALIPER	PRE	135.4	-23.2	15.0				
		POST	134.0	-20.8	13.8				
	LONGITUDINAL					32.2	104.5	77.8	86.4
6	LEFT BRAKE CALIPER	PRE	136.4	23.2	14.8				
		POST	133.9	26.6	13.7				
	LONGITUDINAL					20.8	106.3	41.2	81.3
7	INSTRUMENT PANEL CENTER	PRE	111.1	4.2	32.6				
		POST	111.1	2.5	31.4				
	LONGITUDINAL					51.3	47.4	59.6	92.0

* ALL MEASUREMENTS OF ACCELEROMETER LOCATIONS ARE IN INCHES.

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

REPORT OF VEHICLE CONDITION AT THE
COMPLETION OF TESTING

CONTRACT NO.: DTNH22-90-C-21003
FROM: The Transporation Research Center of Ohio
10820 State Route 347
East Liberty, OH 43319

TO: Mr. Charles Case
COTR
Office of Vehicle Safety Compliance

The following vehicle has been subjected to testing for FMVSS 208. The vehicle was inspected upon arrival at the laboratory for the test and found to contain all of the equipment listed below. All variances have been reported within 2 working days of vehicle arrival, by letter, to the NHTSA Industrial Property Manager/NAD-30, with a carbon copy to the responsible testing office. The vehicle is again inspected, after the above test has been conducted, and all changes are noted below. The final condition of the vehicle is also noted in detail.

NHTSA NO.: CM0211
MAKE/MODEL/BODY STYLE: Ford/Mustang/2-door convertible
MODEL YEAR: 1991 BODY COLOR: Red
VIN: 1FACP44M2MF155283
ODOMETER (ARRIVAL): 152 DATE: 08/12/91
ODOMETER (COMPLETION): 158 DATE: 09/30/91
COST: $17,437.00

X AIR CONDITIONER	X CONSOLE	BRAKES: X POWER
X TINTED GLASS	X TACHOMETER	FRONT: Disc
X POWER STEERING	X SPEED CONTROL	REAR: Drum
X POWER WINDOWS	___ REAR WINDOW DEF.	
X POWER DOOR LOCKS	___ SUN/MOON ROOF	FRONT SEATS: ___ POWER
X RADIO	X T-TOP	SEAT TYPE: Bucket
X CLOCK	___ TILT STEERING WHEEL	NO. OF SEATS: 4
X ROOF RACK	X OTHER OPTIONS: Clearcoat paint	
	Premium sound system	

ENGINE: 4 CYLINDERS; 2.3 LITERS
TRANSMISSION: 4-speed; DRIVE TYPE: Rear wheel
TIRE SIZE: P195/75R14
GASOLINE TYPE: Unleaded

EQUIPMENT THAT IS NO LONGER ON THE VEHICLE AS NOTED ABOVE: None

EXPLANATION: NA

VEHICLE CONDITION: Vehicle has been subjected to a 30 mph frontal barrier crash test.

SECTION 3.0

FMVSS 208, 212, 219 (partial), & 301 DATA

TABLE 5 DUMMY INJURY CRITERIA

MAXIMUM ACCELERATION (G)

	HEAD				CHEST			
	X	Y	Z	R	X	Y	Z	R*
DRIVER	-146.0	-29.3	-90.7	172.2	-35.9	2.0	-14.9	35.6
PASSENGER	-30.9	-10.3	-23.0	36.9	-28.4	-7.6	9.0	27.7

MAXIMUM FEMUR COMPRESSIVE FORCE (LBS)

	LEFT FEMUR	RIGHT FEMUR
DRIVER	1577	830
PASSENGER	398	163

HEAD INJURY CRITERIA**

	HIC	TIME t_1 (MSEC)	TIME t_2 (MSEC)
DRIVER	617	50.1	53.2
PASSENGER	75	90.4	126.4

*Defined as exceeding 0.003 sec. duration

**As defined in FMVSS No. 208

TABLE 6 POST-IMPACT DUMMY/VEHICLE DATA

VISIBLE DUMMY CONTACT POINTS:

	DRIVER #353	PASSENGER #354
HEAD	Sunvisor & Airbag	Sunvisor
CHEST	Airbag	None
ABDOMEN	None	None
LEFT KNEE	Instrument panel	Instrument panel
RIGHT KNEE	Instrument panel	Instrument panel

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 windshield was cracked upon impact.

OTHER NOTABLE IMPACT EFFECTS:

None

DUMMY KINEMATIC SUMMARY

Driver Dummy

Upon impact, the driver dummy translated forward on the seat impacting both knees into the instrument panel. The dummy's head contacted the driver's sun visor and rotated rearward as the dummy's head and chest were restrained by the driver's airbag. The dummy's head rotated forward, and then rearward into the head restraint, as the dummy rebounded into the seat back. The dummy came to rest seated in the driver's seat.

Right Front Passenger Dummy

Upon impact, the right front passenger dummy translated forward on the seat impacting both knees into the instrument panel. The dummy's head contacted the passenger's sun visor and rotated forward as the dummy's torso was restrained by the three-point unibelt. The dummy's head rotated rearward into the head restraint as the dummy rebounded into the seat back. The dummy came to rest seated in the right front passenger's seat, restrained by the three-point unibelt.

TABLE 7 FMVSS 208 COMFORT & CONVENIENCE DATA FOR MANUAL SEAT BELTS

MAKE/MODEL: Ford/Mustang VIN: 1FACP44M2MF155283

BODY STYLE: 2-door convertible NHTSA NO.: CM0211

DATE OF MANUFACTURE: 04/91

WEBBING TENSION - RELIEVING DEVICE:

DO OUTBOARD SEATING POSITION SEAT BELTS HAVE WEBBING TENSION - RELIEVING DEVICES? No

BELT CONTACT FORCE:

BELT CONTACT FORCE ON CHEST OF TEST DUMMY: .1 POUNDS

LATCHPLATE ACCESS:

ARE THE SEAT BELT LATCHPLATES, IN THEIR NORMAL STOWED POSITION, WITHIN THE REACH ENVELOPE? Yes

DOES THE CLEARANCE TEST BLOCK MOVE UNHINDERED TO THE LATCHPLATE OR BUCKLE? Yes

RETRACTION:

SEAT BELT AUTOMATICALLY RETRACTS WHEN

(check one): _____ The adjacent vehicle door is open and the seat belt latchplate is released.

X The seat belt latchplate is released.

ARE THE STOWED SEAT BELT WEBBING AND HARDWARE PINCHED WHEN THE DOOR IS CLOSED? No

TABLE 7 FMVSS 208 COMFORT & CONVENIENCE DATA FOR MANUAL SEAT BELTS,CONT'D

MAKE/MODEL: Ford/Mustang VIN: 1FACP44M2MF155283

BODY STYLE: 2-door convertible NHTSA NO.: CM0211

DATE OF MANUFACTURE: 04/91

ACCESSIBILITY:

IS THE SEAT CUSHION REMOVABLE SO THE SEAT BACK SERVES A FUNCTION OTHER THAN SEATING? No

IS THE SEAT REMOVABLE? No

IS THE SEAT MOVABLE SO THE SPACE FORMERLY OCCUPIED BY THE SEAT CAN BE USED FOR A SECONDARY FUNCTION? No

NOTE: IF ANY OF THE ABOVE ANSWERS ARE "YES", THE ACCESSIBILITY REQUIREMENTS DO NOT APPLY.

IF WEBBING IS DESIGNED TO PASS THROUGH THE SEAT CUSHION OR BETWEEN THE CUSHION AND SEAT BACK ARE ONE OF THE FOLLOWING PARTS NORMALLY ON TOP OF OR ABOVE THE SEAT CUSHION: LATCHPLATE, BUCKLE, WEBBING?
NA, The webbing is not designed to pass through the seat cushion or between the cushion and seat back.

ARE THE REMAINING TWO PARTS ACCESSIBLE UNDER NORMAL CONDITIONS?
NA, The webbing is not designed to pass through the seat cushion or between the cushion and seat back.

DO THE LATCHPLATE AND BUCKLE PASS THROUGH THE GUIDES PROVIDED AND FALL BEHIND THE SEAT WHEN THE BELT IS COMPLETELY RETRACTED (OR DETACHED IF NOT RETRACTABLE); THE SEAT IS MOVED TO ANY POSITION; AND THE SEAT BACK, IF FOLDABLE, IS FOLDED FORWARD AS FAR AS POSSIBLE AND THEN MOVED BACKWARD INTO POSITION? No

IS THE INBOARD RECEPTACLE END OF THE OUTBOARD SEATING POSITION'S SEAT BELT ACCESSIBLE WITH THE CENTER ARM REST IN ANY POSITION TO WHICH IT CAN BE ADJUSTED WITHOUT MOVING THE ARM REST FOR ACCESS? Yes

TABLE 8 FMVSS 208 SEAT BELT WARNING SYSTEM DATA

WITH OCCUPANT IN DRIVER'S POSITION AND UNIBELT IN STOWED POSITION AND IGNITION SWITCH PLACED IN "START/ON" POSITION:

Duration of audible warning signal = __6__ sec.

Duration of reminder light operation = __6__ sec.

WITH OCCUPANT IN DRIVER'S POSITION AND UNIBELT IN USE AND THE IGNITION SWITCH PLACED IN "START/ON" POSITION:

Duration of audible warning signal = __0__ sec.

(NOTE: audible warning should not operate)

Duration of reminder light operation = __6__ sec.

WORDING OF VISUAL WARNING:

_____ Fasten Seat Belt

_____ Fasten Belt

__X__ Symbol 101-80

_____ Other: _____

TABLE 9 FMVSS 208 LABELING AND DRIVER'S MANUAL DATA

DESCRIBE LOCATION OF LABEL WHICH DESCRIBES MANUFACTURER'S MAINTENANCE OR REPLACEMENT SCHEDULE FOR CRASH-DEPLOYED OCCUPANT PROTECTON SYSTEM: The label was located on the inside of the glove box door.

THE MANUFACTURER'S RECOMMENDED SCHEDULE IS TO: (check one)

_____ Replace

_____ Repair

__X__ Other: See item d below

This system: (check one)

a. by _____ month, _____ year

b. by _____ miles

c. or after a time interval of _____ months or _____ years.

d. other: No maintenance is needed unless: 1 - Airbag lamp does not light when key is turned on; 2 - Airbag lamp flashes or stays lit; 3 - groups of 5 beeps are heard; 4 - airbag has inflated.

WERE APPROPRIATE INSTRUCTIONS CONCERNING MAINTENANCE AND/OR REPLACEMENT OF THIS SYSTEM PROVIDED? __X__ YES, owner's manual, page 68.

_____ YES, label on vehicle

_____ NO

WAS A DESCRIPTION OF THE FUNCTIONAL OPERATION OF THE SYSTEM PROVIDED?

__X__ YES, owner's manual, page 33

_____ YES, label on vehicle

_____ NO

IS THERE A REFERENCE TO THE INSTRUCTIONS AND DESCRIPTION OF THE SYSTEM ON THE LABEL? __X__ YES _____ NO

WAS AN OWNER'S MANUAL PROVIDED? __X__ YES _____ NO

DID THE OWNER'S MANUAL CONTAIN APPROPRIATE INFORMATION CONCERNING MAINTENANCE AND/OR REPLACEMENT AND A DESCRIPTION OF THE FUNCTIONAL OPERATION OF THE SYSTEMS? __X__ YES, page 33

_____ NO

TABLE 10 FMVSS 208 READINESS INDICATOR DATA

AN OCCUPANT RESTRAINT SYSTEM THAT DEPLOYS IN THE EVENT OF A CRASH SHALL HAVE A MONITORING SYSTEM WITH A READINESS INDICATOR. A TOTALLY MECHANICAL SYSTEM IS EXEMPT FROM THIS REQUIREMENT.

IS THE SYSTEM TOTALLY MECHANICAL? _____ YES __X__ NO

IF NO:

DESCRIBE THE LOCATION OF THE READINESS INDICATOR: The readiness indicator was a light stating "Airbag" located on the instrument cluster below the tachometer

IS THE READINESS INDICATOR CLEARLY VISIBLE TO THE DRIVER?

__X__ YES _____ NO

IS A LIST OF THE ELEMENTS IN THE OCCUPANT RESTRAINT SYSTEM, BEING MONITORED BY THE READINESS INDICATOR, PROVIDED?

__X__ YES, owner's manual, page 33

_____ YES, label on vehicle

_____ NO

FIGURE 4 FMVSS 212 TEST DATA

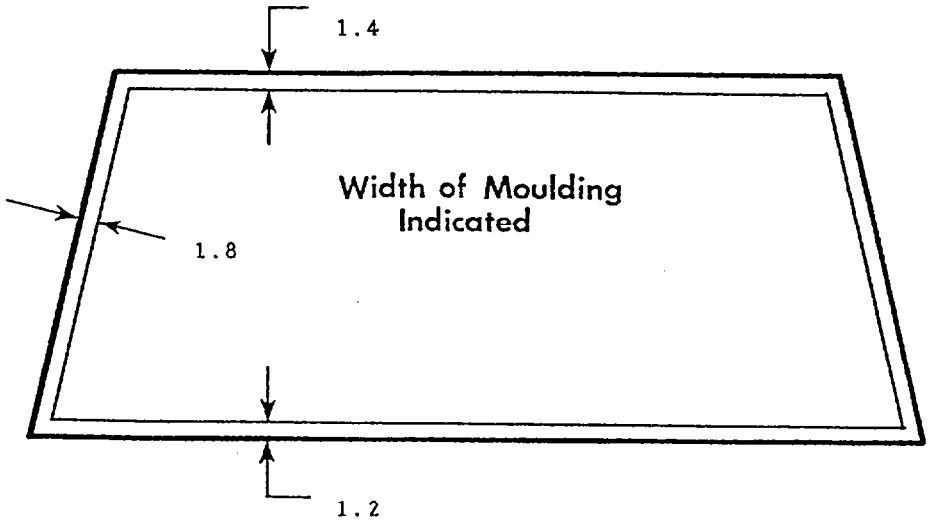
DETAILS OF WINDSHIELD MOUNTING SUCH AS RETENTION METHOD, TRIM TYPE, ETC.:
Plastic trim around outer perimeter, adhesive trim around inner perimeter.

FMVSS 212 REQUIREMENTS: The post-test periphery retention amount must be at least 75% of the pre-test periphery measurement for vehicles NOT equipped with automatic restraints, and 50% for each side of windshield for vehicles equipped with automatic restraint systems for front occupants.

WINDSHIELD PERIPHERY MEASUREMENTS:

	PRE-TEST	POST-TEST	PERCENT RETENTION
RIGHT SIDE	73.8	73.8	100
LEFT SIDE	73.8	73.8	100
TOTAL	147.6	147.6	100

PRE-TEST WINDSHIELD MOUNTING MATERIAL TEMPERATURE: 72° F



FRONT VIEW OF WINDSHIELD*

LOSS OF WINDSHIELD RETENTION LENGTHS: None

ALL DISTANCE MEASUREMENTS ARE IN INCHES.
*INDICATE AREAS OF LOSS OF RETENTION, IF ANY, ON WINDSHIELD DIAGRAM.

FIGURE 5 FMVSS 219 TEST DATA

PROTECTED ZONE LOWER EDGE REQUIREMENT:

The lower edge of the protected zone is determined by placing a 6.5 inch diameter rigid sphere weighing 15 pounds in a position such that it simultaneously contacts the inner surface of the windshield and the top surface of the instrument panel including padding. Draw the locus of points on the inner surface of the windshield contactable by the sphere across the width of the instrument panel. From the outermost contactable points, extend the locus line horizontally to the edges of the windshield, and then draw a line on the inner surface of the windshield below and 0.5 inch from the locus line. The LOWER EDGE OF THE PROTECTED ZONE is the longitudinal projection onto the outer surface of the windshield of this line.

WINDSHIELD MEASUREMENTS:

A = 45.8

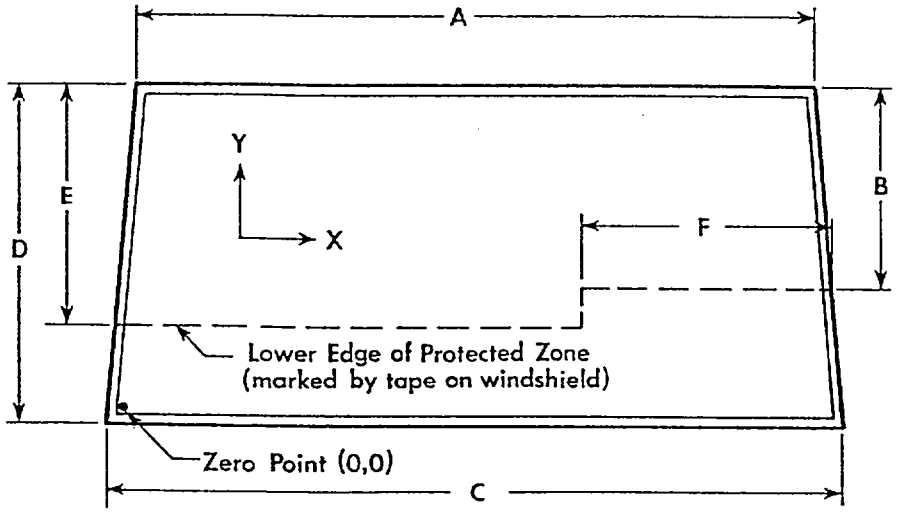
B = 12.8

C = 59.5

D = 21.5

E = 17.0

F = 27.5



FRONT VIEW

METHOD OF ADHERING PROTECTED ZONE TEMPLATE TO WINDSHIELD: NA

AREAS OF WINDSHIELD TEMPLATE PENETRATION GREATER THAN 0.25 IN.: NA

COORDINATES	X	Y
1.		
2.		
3.		

AREAS OF WINDSHIELD PENETRATION, BELOW THE PROTECTED ZONE, THROUGH THE INNER SURFACE OF THE WINDSHIELD: None

1.
2.
3.

ALL MEASUREMENTS ARE IN INCHES.

TABLE 11 FUEL SYSTEM DATA

MAKE/MODEL: Ford/Mustang

NHTSA NO.: CM0211

FUEL SYSTEM CAPACITY: 15.4 GALLONS (FROM OWNER'S MANUAL)

USABLE CAPACITY: 15.4 GALLONS (FURNISHED BY COTR)

TEST VOLUME RANGE: 14.2 GALLONS TO 14.5 GALLONS (92-94% OF USABLE)

ACTUAL TEST VOLUME: 14.3 GALLONS (WITH ENTIRE FUEL SYSTEM FILLED)

TEST FLUID TYPE: STODDARD SOLVENT

SPECIFIC GRAVITY: 0.764

KINEMATIC VISCOSITY: 0.99 CENTISTOKES

TEST FLUID COLOR: PURPLE

DETAILS OF FUEL SYSTEM: The fuel filler neck was located on the right side. The fuel tank was loacted behind the rear axle. The fuel lines ran along the right side to the front.

ELECTRIC FUEL PUMP: Yes FUEL INJECTION: Yes

DOES ELECTRIC FUEL PUMP OPERATE WITH IGNITION SWITCH "ON" AND THE ENGINE NOT OPERATING? No

TABLE 12 FMVSS 301 POST-IMPACT TEST DATA

TEST VEHICLE NHTSA NO.: CM0211 ; TEST DATE: 09/30/91

VEHICLE MAKE/MODEL/BODY STYLE: Ford/Mustang/2-door convertible

TEST REQUIREMENTS:

Test vehicle fuel tank filled to 92 to 94% of manufacturer's usable capacity and with electric fuel pump operating (if it will operate without engine operation). Part 572 test dummies located at each front designated seating position.

TEST VEHICLE IMPACT TYPE:

X FRONTAL (30 MPH)

_____ OBLIQUE (30 MPH) WITH ___° BARRIER FACE
FIRST CONTACTING _____ (DRIVER/PASS.) SIDE.

_____ REAR MOVING BARRIER (30 MPH)

_____ LATERAL MOVING BARRIER (20 MPH)

FUEL SYSTEM FLUID SPILLAGE MEASUREMENTS:

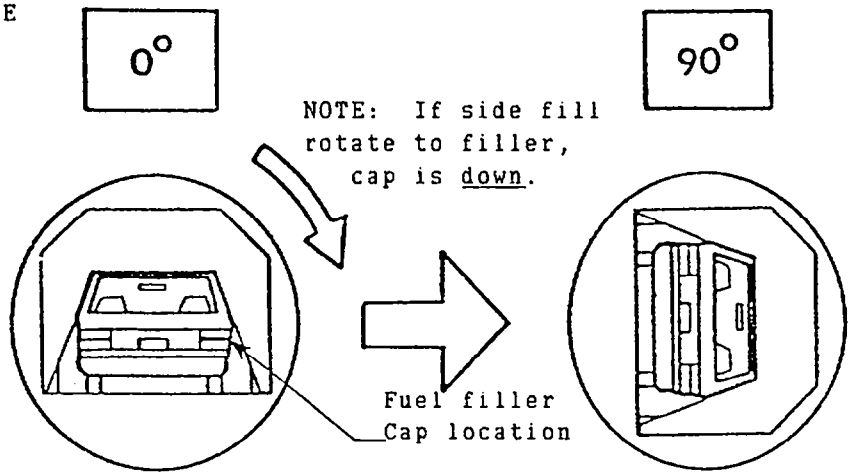
	TEST RESULTS	MAXIMUM ALLOWABLE
1. FROM IMPACT UNTIL VEHICLE MOTION CEASES - - -	0 OZ.	1 OZ.
2. 5 MINUTE PERIOD AFTER VEHICLE MOTION CEASES -	0 OZ.	5 OZ.
3. NEXT 25 MINUTES AFTER 5 MINUTE PERIOD - - - -	0 OZ.	1 OZ./1 MIN.

FUEL SYSTEM FLUID SPILLAGE LOCATION(S):

None

FIGURE 6 FMVSS 301 STATIC ROLLOVER TEST DATA

NHTSA NO.: CM0211
TEST PHASE



STATIC ROLLOVER MACHINE ROTATION TIME INFORMATION: (Spec. Range = 1-3 min.)

TIME REQ. FOR MACHINE TO ROTATE 90° = 2 minutes, 00 seconds

FMVSS 301 POSITION HOLD TIME = 5 minutes, 00 seconds

TOTAL - - - - - - - - - = 7 minutes, 00 seconds

NEXT WHOLE MINUTE INTERVAL - - - - = 7 minutes

FUEL SYSTEM FLUID SPILLAGE MEASUREMENTS:

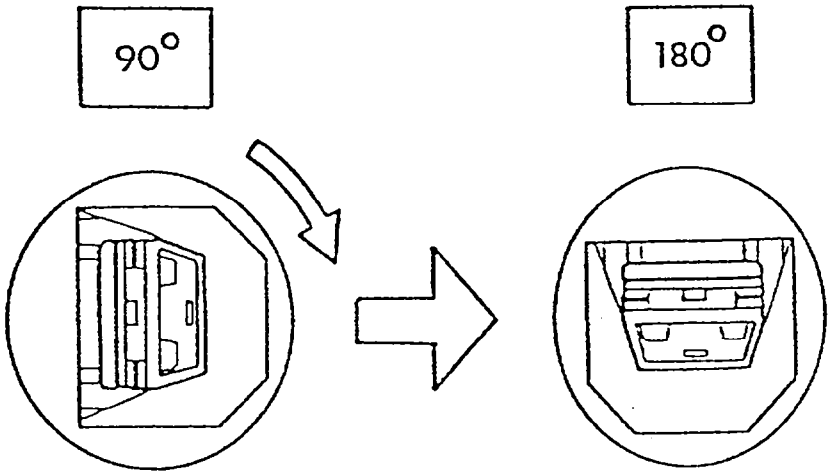
0° TO 90° ROTATION (FUEL FILLER CAP DOWN)	TEST RESULTS	MAXIMUM ALLOWABLE
1. FIRST 5 MINUTES FROM ONSET OF ROTATION - - - - - -	0 oz.	5 oz.
2. 6TH MINUTE FROM ONSET OF ROTATION - - - - - - - -	0 oz.	1 oz.
3. 7TH MINUTE FROM ONSET OF ROTATION - - - - - - - -	0 oz.	1 oz.

FUEL SYSTEM FLUID SPILLAGE LOCATION(S):

None

FIGURE 6 FMVSS 301 STATIC ROLLOVER TEST DATA, CONT'D.

NHTSA NO.: CM0211
TEST PHASE



STATIC ROLLOVER MACHINE ROTATION TIME INFORMATION: (Spec. Range = 1-3 min.)

TIME REQ. FOR MACHINE TO ROTATE 90° = 2 minutes, 00 seconds

FMVSS 301 POSITION HOLD TIME = 5 minutes, 00 seconds

TOTAL - - - - - - - - - = 7 minutes, 00 seconds

NEXT WHOLE MINUTE INTERVAL - - - - = 14 minutes

FUEL SYSTEM FLUID SPILLAGE MEASUREMENTS:

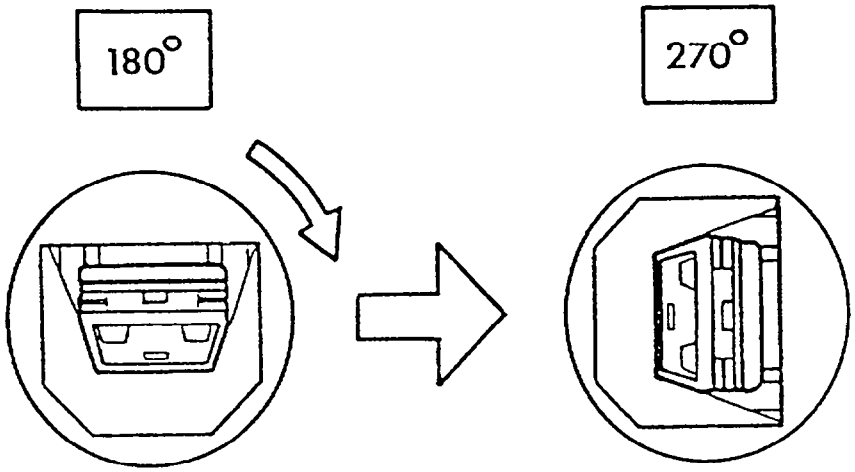
90° TO 180° ROTATION	TEST RESULTS	MAXIMUM ALLOWABLE
1. FIRST 5 MINUTES FROM ONSET OF ROTATION - - - - - -	0 oz.	5 oz.
2. 6TH MINUTE FROM ONSET OF ROTATION - - - - - - - - -	0 oz.	1 oz.
3. 7TH MINUTE FROM ONSET OF ROTATION - - - - - - - - -	0 oz.	1 oz.

FUEL SYSTEM FLUID SPILLAGE LOCATION(S):

None

FIGURE 6 FMVSS 301 STATIC ROLLOVER TEST DATA, CONT'D.

NHTSA NO.: CM0211
TEST PHASE



STATIC ROLLOVER MACHINE ROTATION TIME INFORMATION: (Spec. Range = 1-3 min.)

TIME REQ. FOR MACHINE TO ROTATE 90° = 2 minutes, 00 seconds

FMVSS 301 POSITION HOLD TIME = 5 minutes, 00 seconds

TOTAL - - - - - - - - - = 7 minutes, 00 seconds

NEXT WHOLE MINUTE INTERVAL - - - - = 21 minutes

FUEL SYSTEM FLUID SPILLAGE MEASUREMENTS:

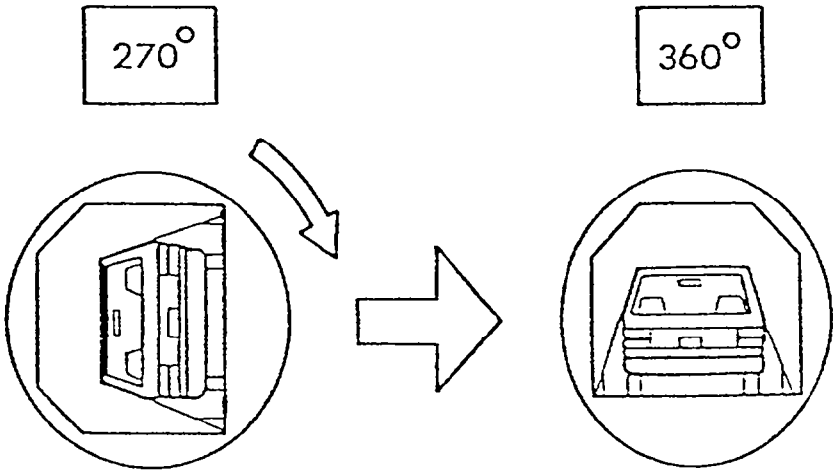
180° TO 270° ROTATION	TEST RESULTS	MAXIMUM ALLOWABLE
1. FIRST 5 MINUTES FROM ONSET OF ROTATION - - - - - -	0 oz.	5 oz.
2. 6TH MINUTE FROM ONSET OF ROTATION - - - - - - - - -	0 oz.	1 oz.
3. 7TH MINUTE FROM ONSET OF ROTATION - - - - - - - - -	0 oz.	1 oz.

FUEL SYSTEM FLUID SPILLAGE LOCATION(S):

None

FIGURE 6 FMVSS 301 STATIC ROLLOVER TEST DATA, CONT'D.

NHTSA NO.: CM0211
TEST PHASE



STATIC ROLLOVER MACHINE ROTATION TIME INFORMATION: (Spec. Range = 1-3 min.)

TIME REQ. FOR MACHINE TO ROTATE 90° = 2 minutes, 00 seconds

FMVSS 301 POSITION HOLD TIME = 5 minutes, 00 seconds

TOTAL - - - - - - - - = 7 minutes, 00 seconds

NEXT WHOLE MINUTE INTERVAL - - - - = 28 minutes

FUEL SYSTEM FLUID SPILLAGE MEASUREMENTS:

270° TO 360° ROTATION	TEST RESULTS	MAXIMUM ALLOWABLE
1. FIRST 5 MINUTES FROM ONSET OF ROTATION - - - - - -	0 oz.	5 oz.
2. 6TH MINUTE FROM ONSET OF ROTATION - - - - - - - -	0 oz.	1 oz.
3. 7TH MINUTE FROM ONSET OF ROTATION - - - - - - - -	0 oz.	1 oz.

FUEL SYSTEM FLUID SPILLAGE LOCATION(S):

None

SECTION 4.0

VEHICLE, OCCUPANT, AND CAMERA MEASUREMENTS

FIGURE 7

PRE-TEST AND POST-TEST MEASUREMENT POINTS

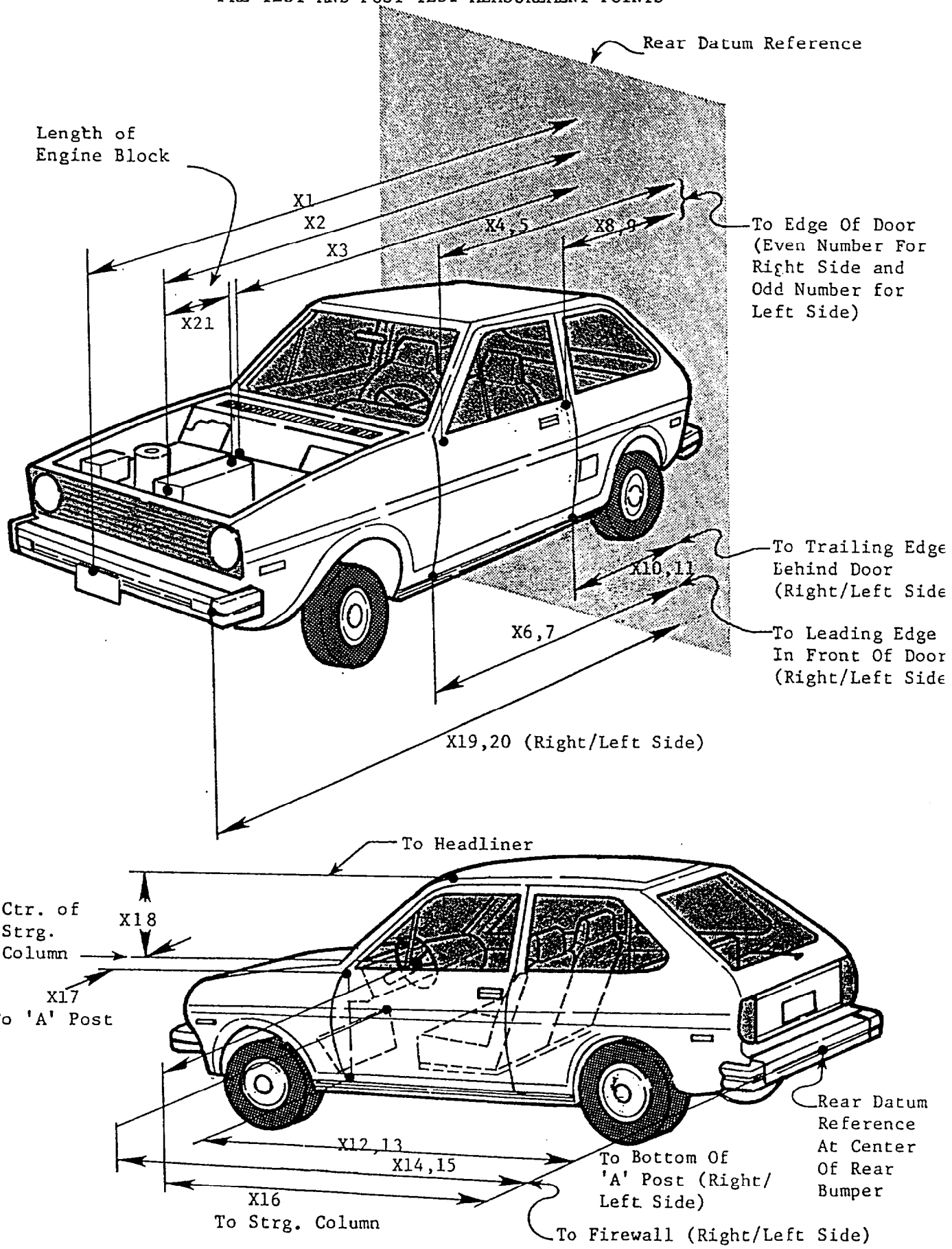


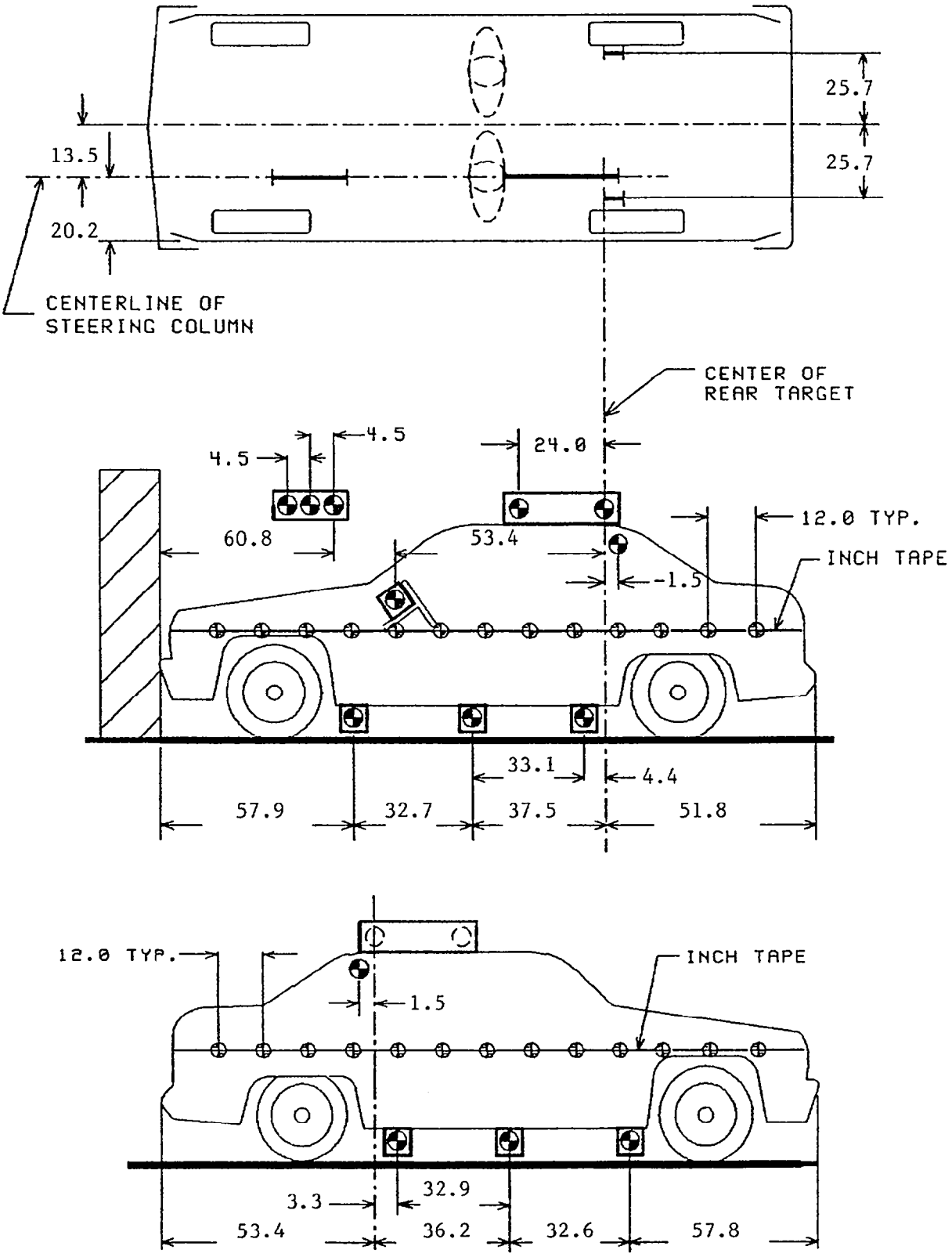
TABLE 13 IMPACTED VEHICLE MEASUREMENTS

VEHICLE MAKE/MODEL: Ford/Mustang TEST NUMBER: 910930

NO.	TYPE OF MEASUREMENT	ALL MEASUREMENTS ARE IN INCHES PRE-TEST	POST-TEST	DIFF.
X1	TOTAL LENGTH OF VEHICLE AT CENTERLINE	179.9	162.0	17.9
X2	REAR SURFACE OF VEHICLE TO FRONT OF ENGINE BLOCK	150.1	146.0	4.1
X3	REAR SURFACE OF VEHICLE TO FIREWALL	127.3	125.9	1.4
X4	REAR SURFACE OF VEHICLE TO UPPER LEADING EDGE OF RIGHT DOOR	114.4	115.0	-0.6
X5	REAR SURFACE OF VEHICLE TO UPPER LEADING EDGE OF LEFT DOOR	114.9	114.1	0.8
X6	REAR SURFACE OF VEHICLE TO LOWER LEADING EDGE OF RIGHT DOOR	114.9	114.8	0.1
X7	REAR SURFACE OF VEHICLE TO LOWER LEADING EDGE OF LEFT DOOR	115.2	115.0	0.2
X8	REAR SURFACE OF VEHICLE TO UPPER TRAILING EDGE OF RIGHT DOOR	64.9	65.2	-0.3
X9	REAR SURFACE OF VEHICLE TO UPPER TRAILING EDGE OF LEFT DOOR	65.1	65.1	0.0
X10	REAR SURFACE OF VEHICLE TO LOWER TRAILING EDGE OF RIGHT DOOR	64.4	64.2	0.2
X11	REAR SURFACE OF VEHICLE TO LOWER TRAILING EDGE OF LEFT DOOR	64.6	64.0	0.6
X12	REAR SURFACE OF VEHICLE TO BOTTOM OF "A" POST ON RIGHT SIDE	113.8	114.2	-0.4
X13	REAR SURFACE OF VEHICLE TO BOTTOM OF "A" POST ON LEFT SIDE	114.1	113.9	0.2
X14	REAR SURFACE OF VEHICLE TO FIREWALL - RIGHT SIDE	127.1	126.2	0.9
X15	REAR SURFACE OF VEHICLE TO FIREWALL - LEFT SIDE	127.4	124.0	3.4
X16	REAR SURFACE OF VEHICLE TO STEERING WHEEL CENTER	98.6	98.8	-0.2
X17	CENTER OF STEERING COLUMN TO "A" POST	15.0	14.2	0.8
X18	CENTER OF STEERING COLUMN TO HEADLINER	15.9	14.8	1.1
X19	REAR SURFACE OF VEHICLE TO RIGHT SIDE OF FRONT BUMPER	174.5	160.2	14.3
X20	REAR SURFACE OF VEHICLE TO LEFT SIDE OF FRONT BUMPER	174.5	158.1	16.4
X21	LENGTH OF ENGINE BLOCK	20.5	20.5	0.0

FIGURE 8

VEHICLE TARGET LOCATIONS



ALL DISTANCE MEASUREMENTS ARE IN INCHES.

FIGURE 9 DUMMY AND SEAT POSITIONING DATA

PRE-IMPACT DATA:

MAKE/MODEL: Ford/Mustang

BODY STYLE: 2-door convertible MODEL YEAR: 1991

NHTSA NO.: CM0211 COLOR: Red

DATA FROM CERTIFICATION LABEL:

VEHICLE MANUFACTURER: Ford Motor Company, Ltd.

DATE OF MANUFACTURE: 04/91 VIN: 1FACP44M2MF155283

GVWR: 3892 LBS.; GAWR: FRONT = 1997 LBS.; REAR = 1935 LBS.

POST-IMPACT DATA:

DATE OF TEST: 09/30/91 TIME: 1431 TEMPERATURE: 90° F

IMPACT VELOCITY: PRIMARY = 29.5 MPH SECONDARY = 29.4 MPH

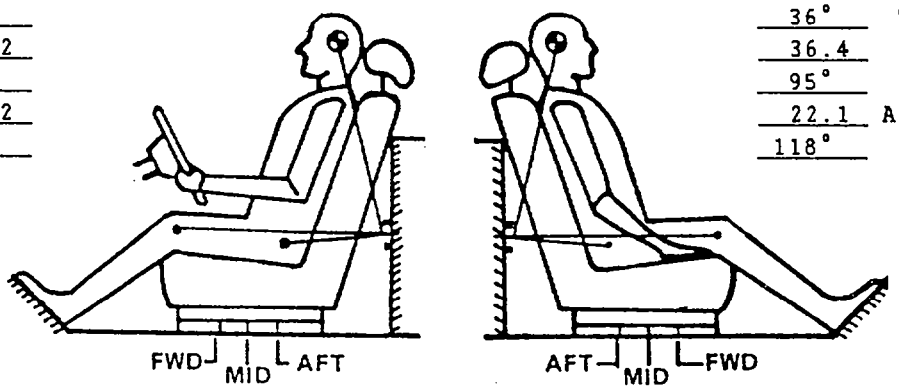
REQUIRED IMPACT VELOCITY RANGE: 28.9 TO 29.9 MPH

SEAT TYPE: Bucket ADJUSTER TYPE: Manual

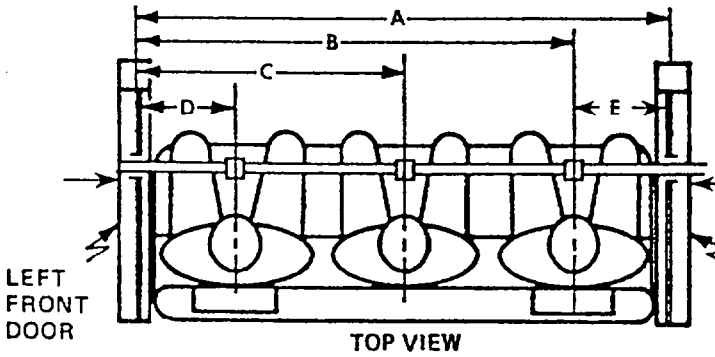
FRONT SEAT BACK TYPE: Manually adjustable

TECHNICIANS: R. Branham, P. Cummins, D. Jones

DRIVER DUMMY # 353 TYPE: HII		PASSENGER DUMMY # 354 TYPE: HII	
HEAD	26.2	25.8	HEAD
TARGET	36°	36°	TARGET
KNEE	37.2	36.4	KNEE
JOINT	92°	95°	JOINT
APPROX-	21.2	22.1	APPROX-
IMATE	102°	118°	IMATE
"H" POINT			"H" POINT



A = 52.0
B = 41.0
C = 26.0
D = 11.2
E = 11.0
DOOR GLASS HEIGHT = 9.2



DOOR GLASS HEIGHT = 9.8

DRIVER DUMMY PASSENGER DUMMY

ALL ANGLES ARE RELATIVE TO VERTICAL PLANE THROUGH DOOR STRIKER.

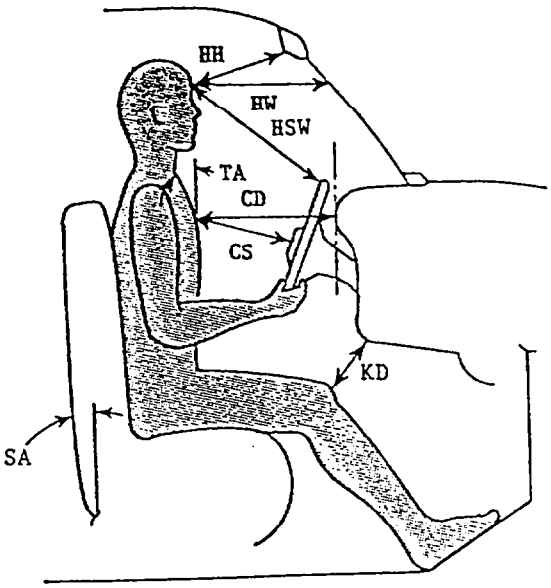
ALL DISTANCE MEASUREMENTS ARE IN INCHES/MILLIMETERS.

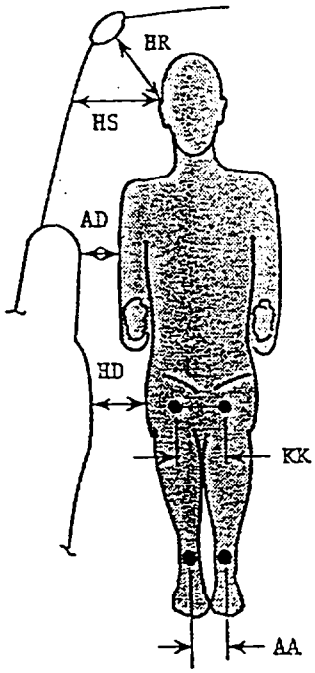
FIGURE 10 DUMMY IN VEHICLE POSITIONING DATA

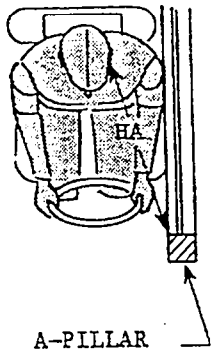
	DRIVER	PASSENGER
HH	11.5	12.4
HW	14.1	15.1
CD	19.4	21.2
CS	11.2	NA
KDL	3.1	5.6
KDR	3.6	5.6
TA	14°	18°
SA	20°	20°
HSW	15.9	NA

	DRIVER	PASSENGER
HR	4.0	4.6
HS	7.6	7.6
AD	3.7	3.4
HD	5.6	6.4
KK	10.5	7.8
AA	9.6	6.8
HA	13.9	17.0

KNEE OUTER BOLT HEAD TO OUTER BOLT HEAD SPACING:
DRIVER = 14.5
PASSENGER = 11.8





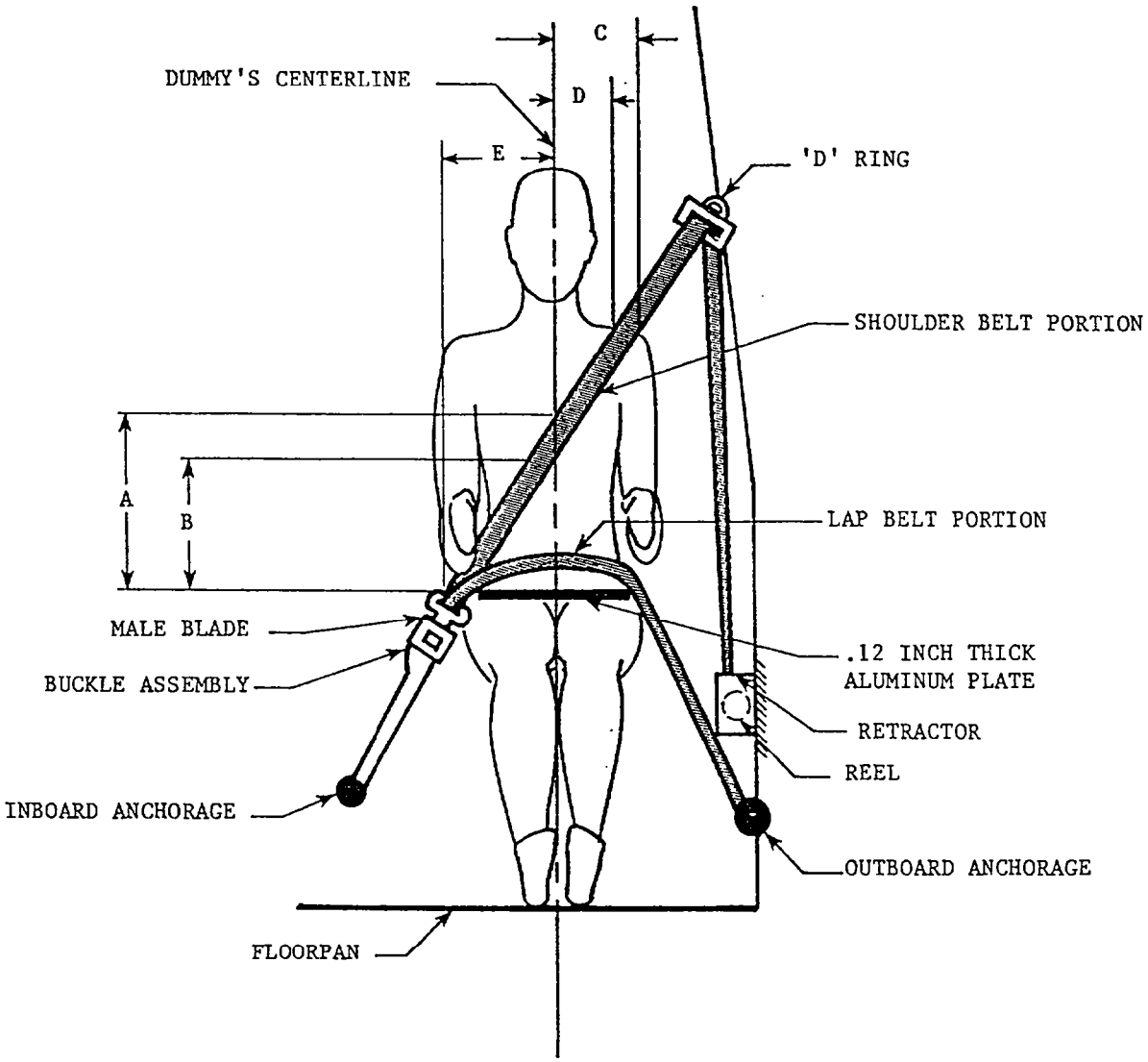


HH = HEAD TO WINDSHIELD HEADER
HW = HEAD TO WINDSHIELD
CD = CHEST TO DASH
CS = CHEST TO STEERING WHEEL
KD = KNEE TO DASH
TA = TORSO ANGLE
SA = SEAT BACK ANGLE
HSW= HEAD TO STEERING WHEEL

HR = HEAD C.G. TARGET TO SIDE ROOF HEADER
HS = HEAD C.G. TARGET TO SIDE WINDOW
AD = ARM TO DOOR
HD = HIP TO DOOR
KK = KNEE TO KNEE
AA = ANKLE TO ANKLE
HA = HEAD C.G. TARGET TO A-PILLAR

TORSO AND SEAT BACK ANGLES ARE RELATIVE TO VERTICAL.
ALL DISTANCE MEASUREMENTS ARE IN INCHES.

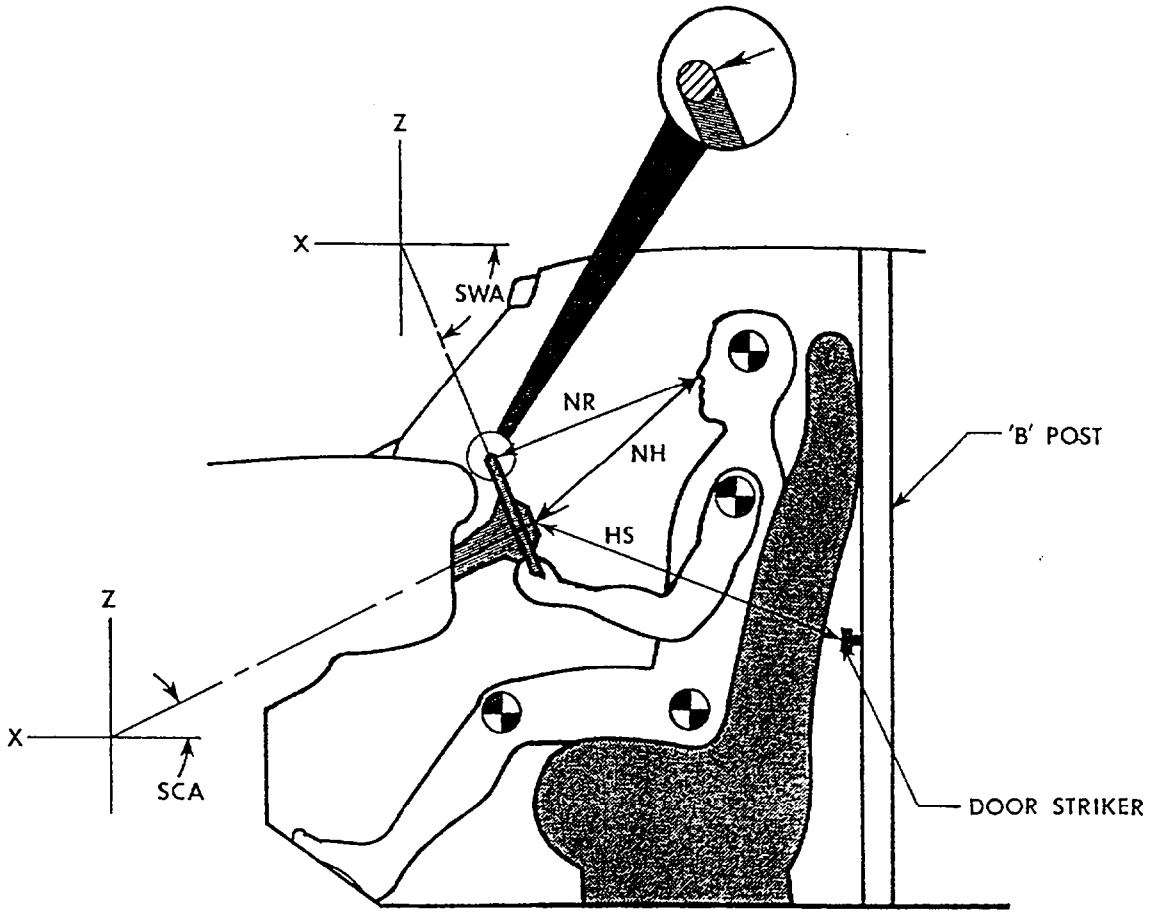
FIGURE 11 SEAT BELT POSITIONING DATA



	PASSENGER DUMMY
A - TOP SURFACE OF ALUM. PLATE TO BELT UPPER EDGE	14.0
B - TOP SURFACE OF ALUM. PLATE TO BELT LOWER EDGE	10.4
C - DUMMY CENTERLINE TO OUTER EDGE OF BELT AT CHEST FLESH TOP	4.6
D - DUMMY CENTERLINE TO INNER EDGE OF BELT AT CHEST FLESH TOP	2.1
E - DUMMY CENTERLINE TO INTERSECTION OF UPPER TORSO BELT AND LAP BELT	9.6

ALL DISTANCE MEASUREMENTS ARE IN INCHES.

FIGURE 12 DRIVER DUMMY TO STEERING COLUMN/WHEEL ASSEMBLY DATA



POSITION OF STEERING COLUMN TILTING AND TELESCOPING ADJUSTMENTS, IF ANY: The steering column was not adjustable. Each seat back was positioned in the first tilt adjustment notch.

	MEASUREMENTS
NR - DISTANCE FROM TIP OF DUMMY'S NOSE TO TOP REAR SURFACE OF STEERING WHEEL RIM.	13.7
NH - DISTANCE FROM TIP OF DUMMY'S NOSE TO CENTER OF STEERING COLUMN HUB.	15.1
HS - DISTANCE FROM CENTER OF STEERING COLUMN HUB TO THE FORWARD SURFACE OF THE DOOR LOCK STRIKER PIN.	33.0
SCA - ANGLE OF STEERING COLUMN RELATIVE TO THE HORIZONTAL X AXIS	25°
SWA - ANGLE OF STEERING WHEEL RELATIVE TO THE HORIZONTAL X AXIS	65°

ALL DISTANCE MEASUREMENTS ARE IN INCHES.

FIGURE 13

CAMERA POSITIONS

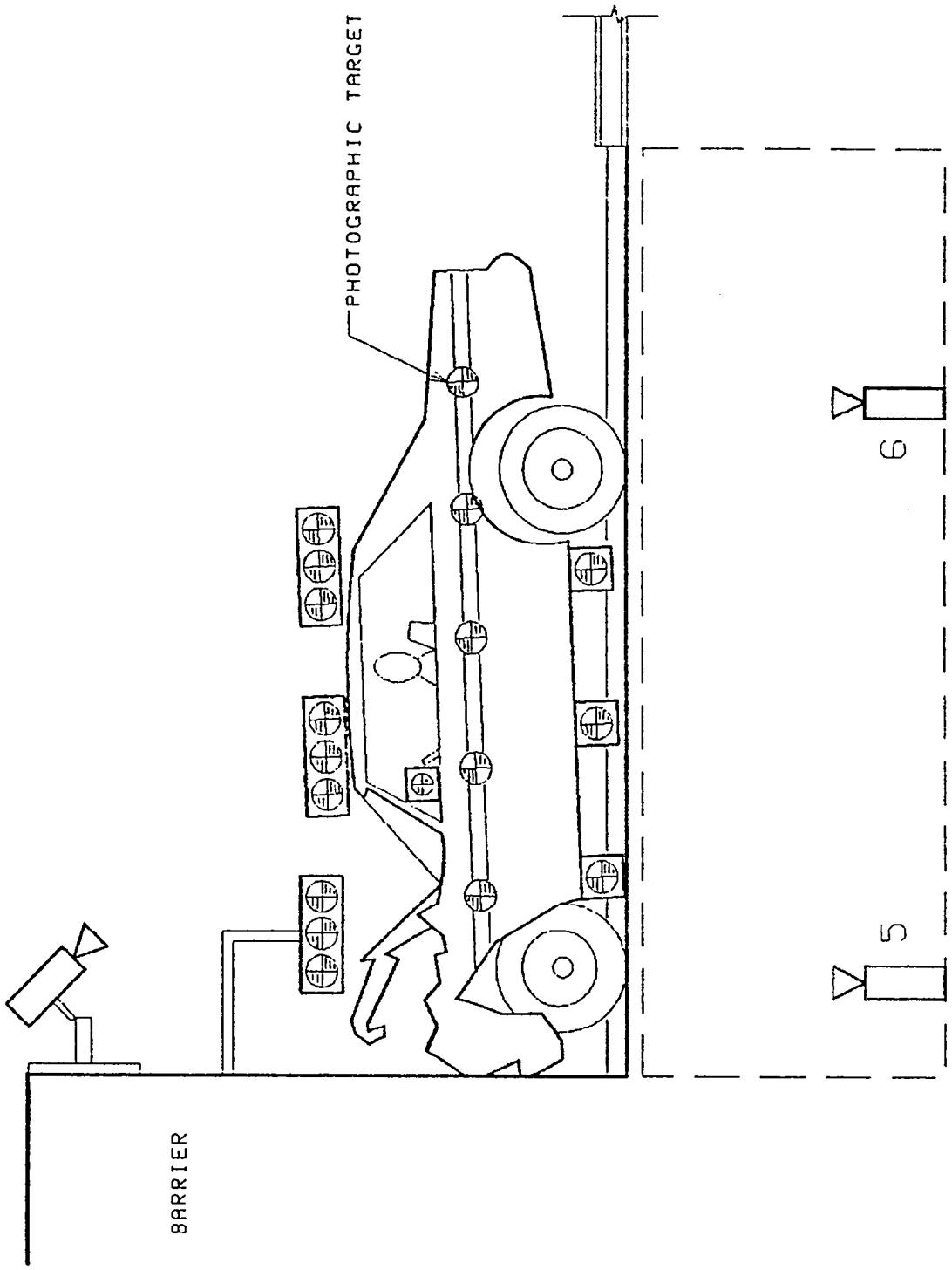


FIGURE 13

CAMERA POSITIONS, CONTINUED

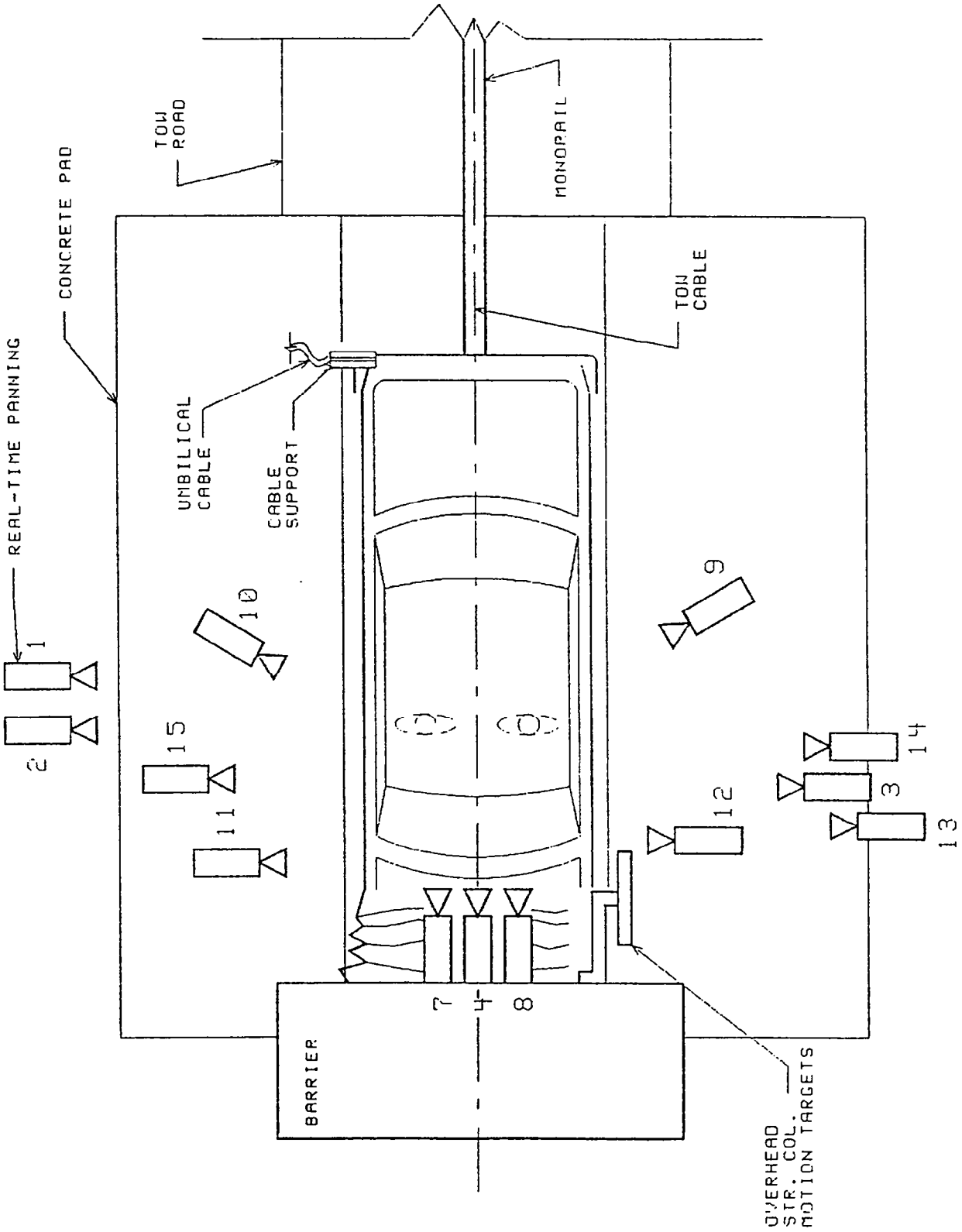


TABLE 14 MOTION PICTURE CAMERA LOCATIONS

TEST NO.: 910930 VEHICLE: Ford/Mustang/2-door convertible

CAMERA NO.	VIEW	CAMERA POSITIONS (IN)* X	Y	Z	ANGLE** (DEG)	FILM PLANE TO HEAD TARGET(IN)	LENS (MM)	FILM SPEED (FPS)
1	Real-time panning	-142.0	-504.0	61.0	NA	NA	16	24
2	Right overall	-81.3	-266.4	37.1	-2	NA	13	488
3	Left vehicle crush	-41.5	295.0	44.0	-4	226.5	25	507
4	Windshield front view	-6.0	0.0	84.0	-40	NA	13	493
5	Pit front position	-50.5	0.0	-92.4	90	NA	13	1000
6	Pit rear position	-99.3	0.0	-99.0	90	NA	13	1000
7	Passenger front view	-4.5	-13.8	93.0	-50	NA	17	500
8	Driver front view	-6.8	14.5	93.0	-50	NA	17	500
9	Driver kinematics	-157.3	116.0	87.0	-27	98.0	25	500
10	Passenger kinematics	-152.1	-116.0	87.0	-26	87.0	25	505
11	Right windshield intrusion	-38.1	-306.1	44.0	0	NA	50	498
12	Left windshield instrusion	-53.0	309.4	42.3	0	NA	50	498
13	Steering column motion	-114.0	285.0	103.0	-14	NA	25	495
14	Steering column motion	-114.0	285.0	75.1	-9	NA	25	502
15	Passenger kinematics	-38.8	-293.0	45.3	-4	223.0	25	483
16	Real-time documentation	NA	NA	NA	NA	NA	12-120	24

* +X = Film plane forward of barrier face

+Y = Film plane to left of monorail centerline

+Z = Film plane above ground level

** +Angle = Film plane angled upward from horizontal plane

APPENDIX A

PHOTOGRAPHS

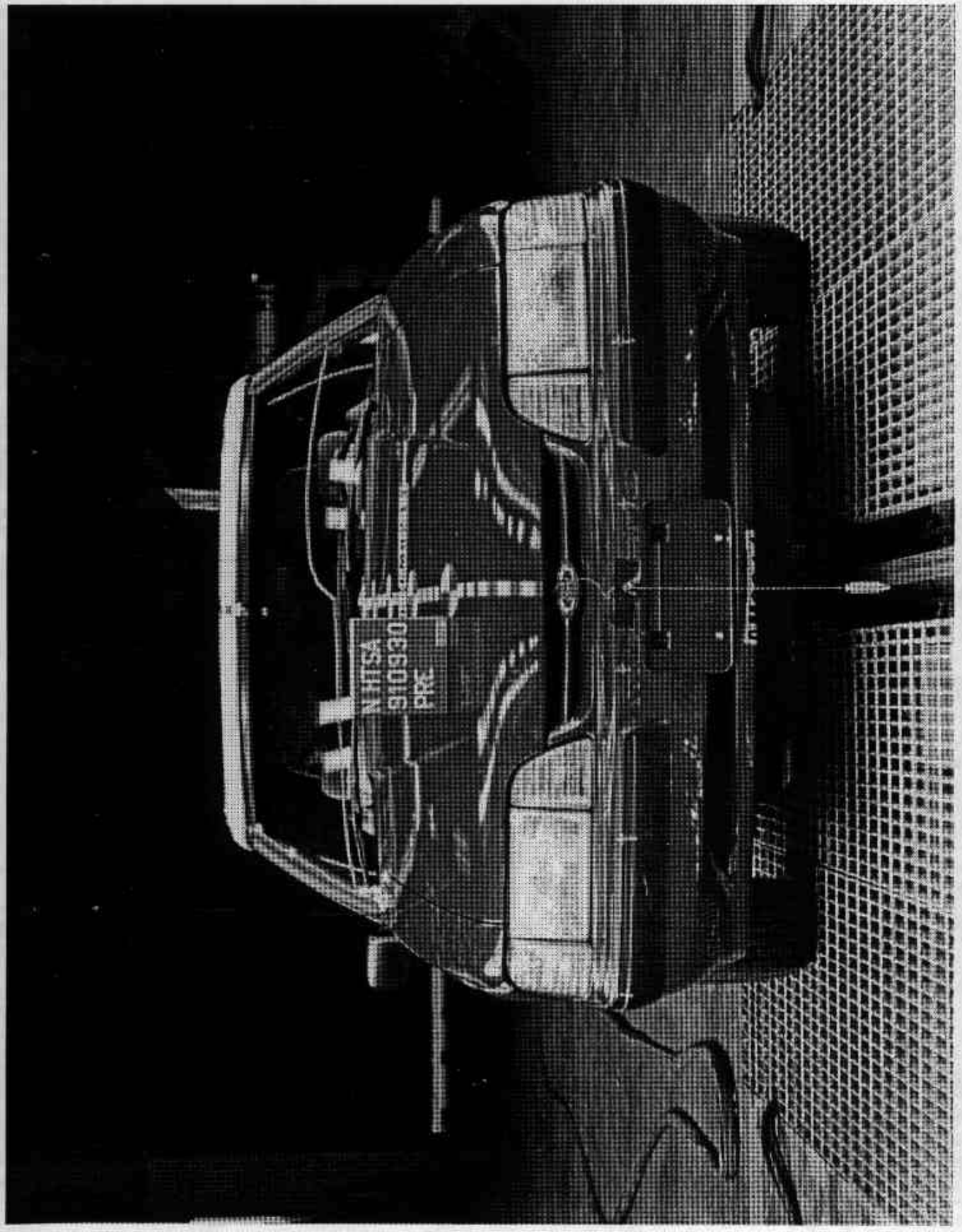


FIGURE A-1 PRE-TEST FRONT VIEW

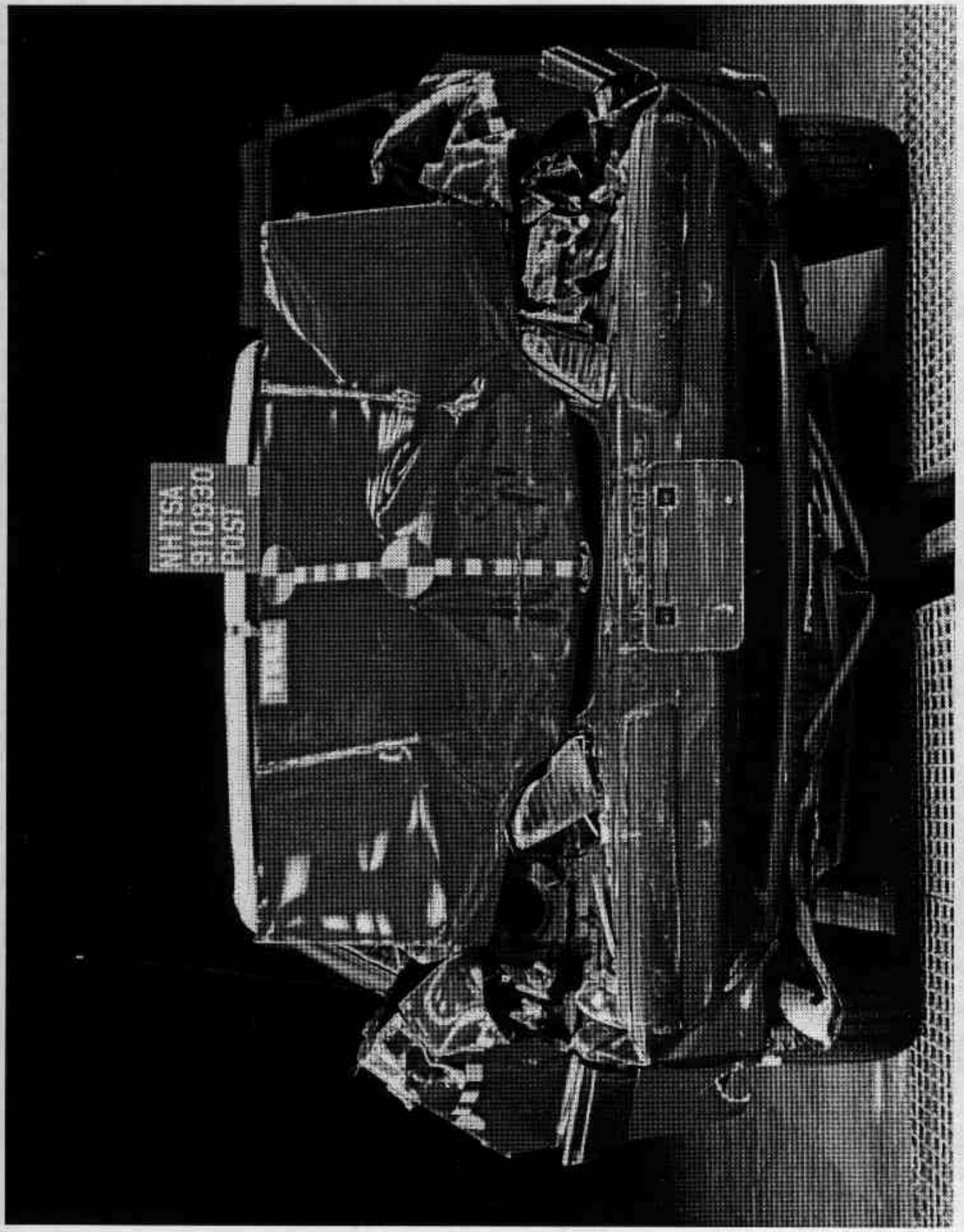


FIGURE A-2 POST-TEST FRONT VIEW

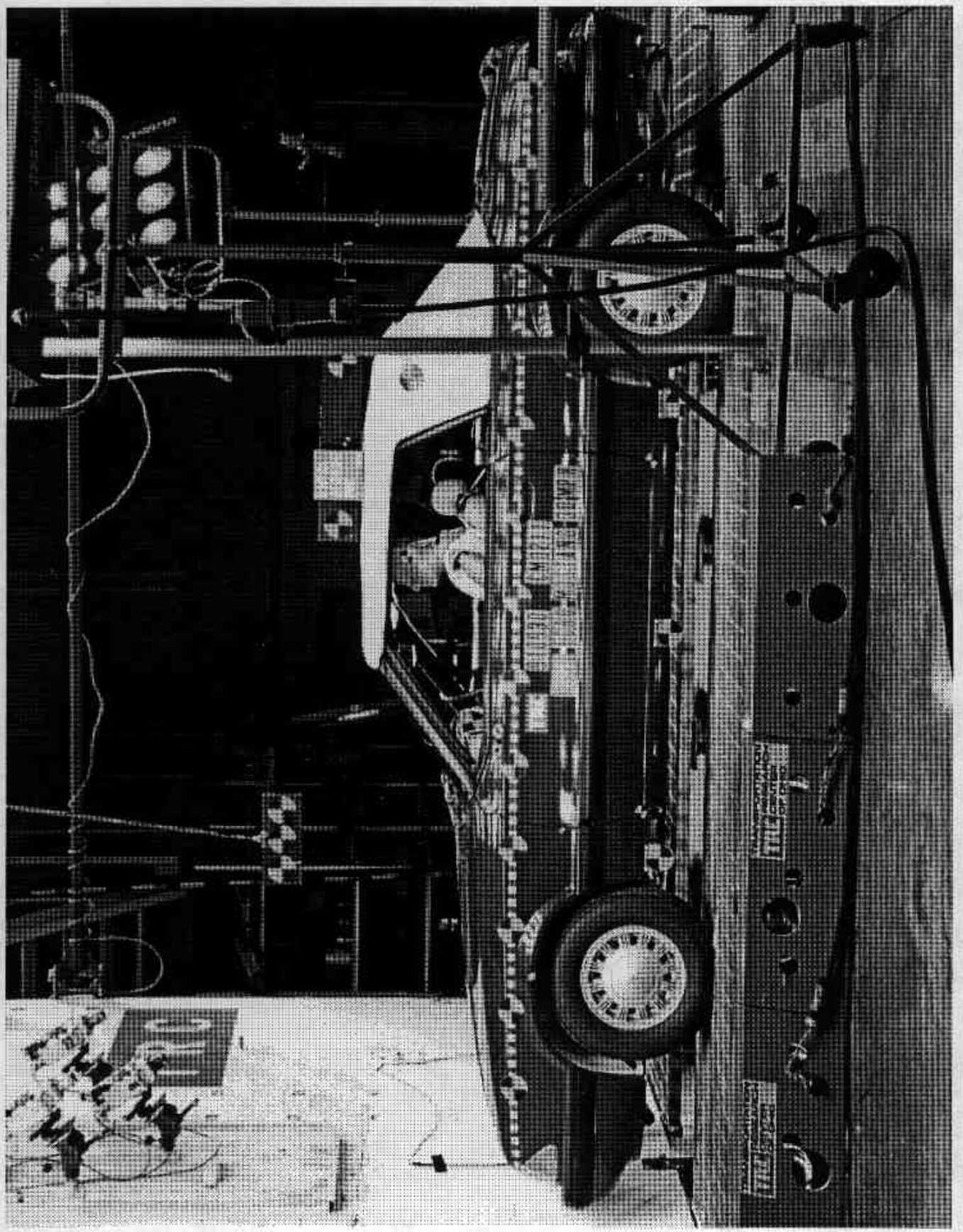


FIGURE A-3 PRE-TEST LEFT SIDE VIEW

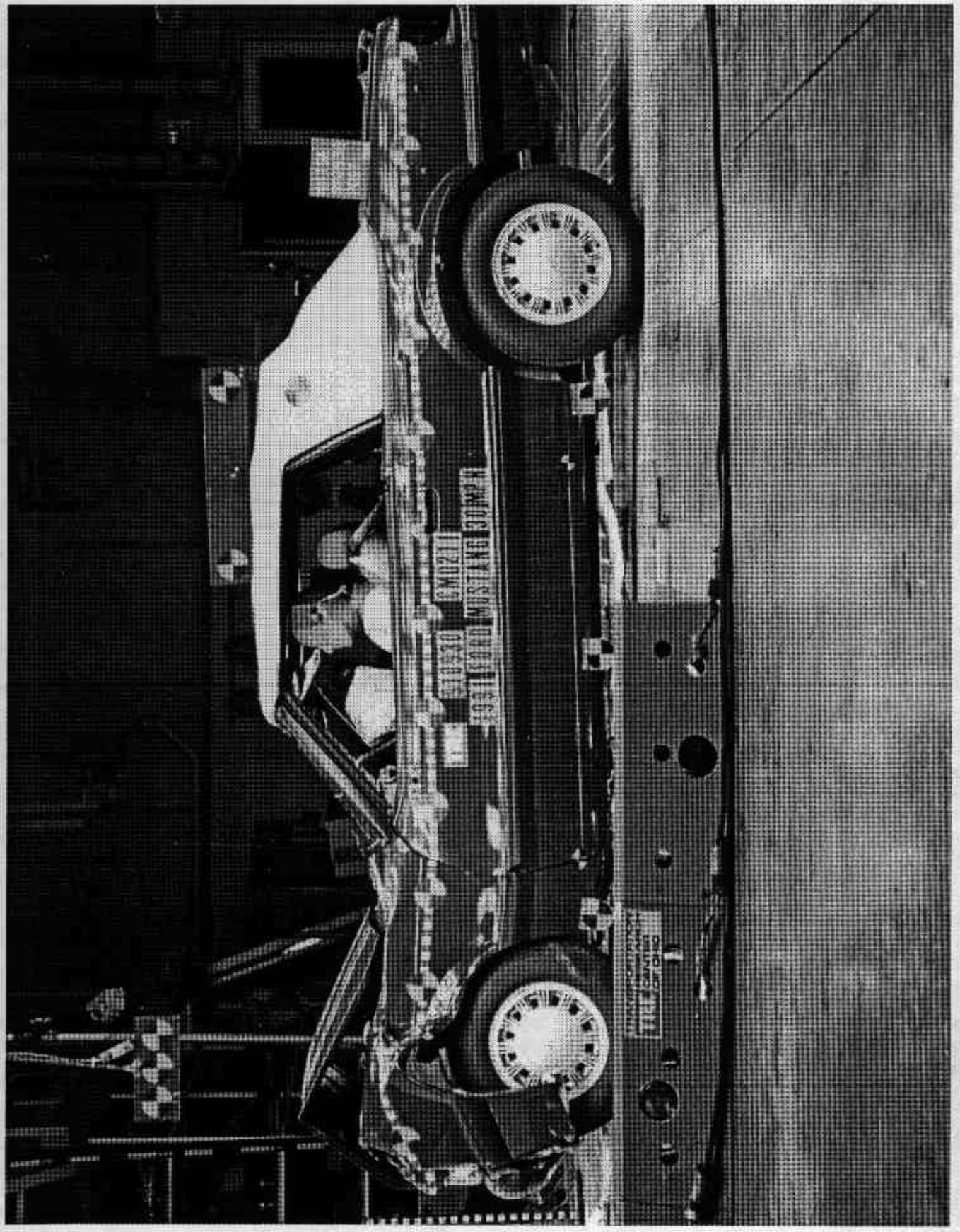


FIGURE A-4 POST-TEST LEFT SIDE VIEW

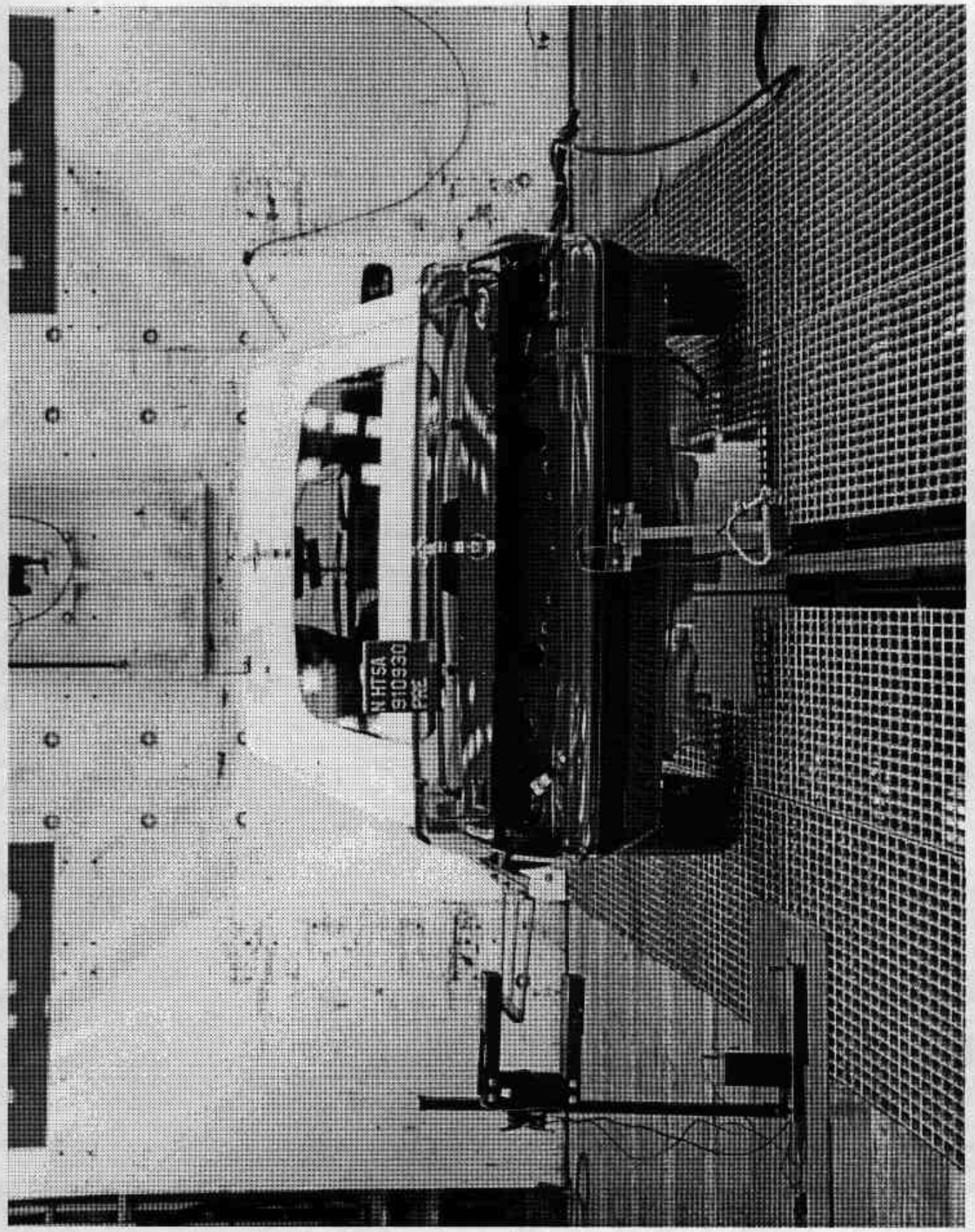


FIGURE A-5 PRE-TEST REAR VIEW

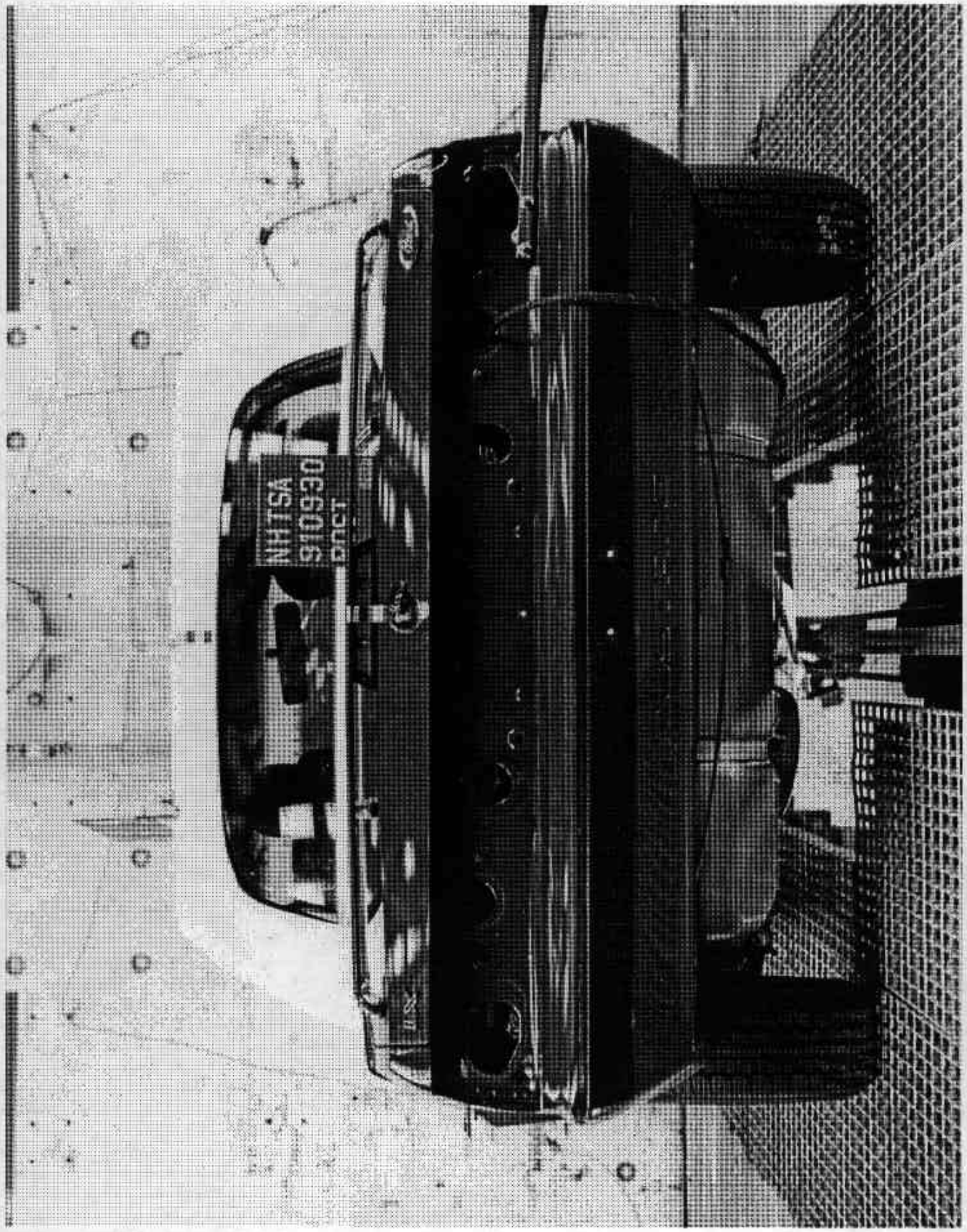


FIGURE A-6 POST-TEST REAR VIEW

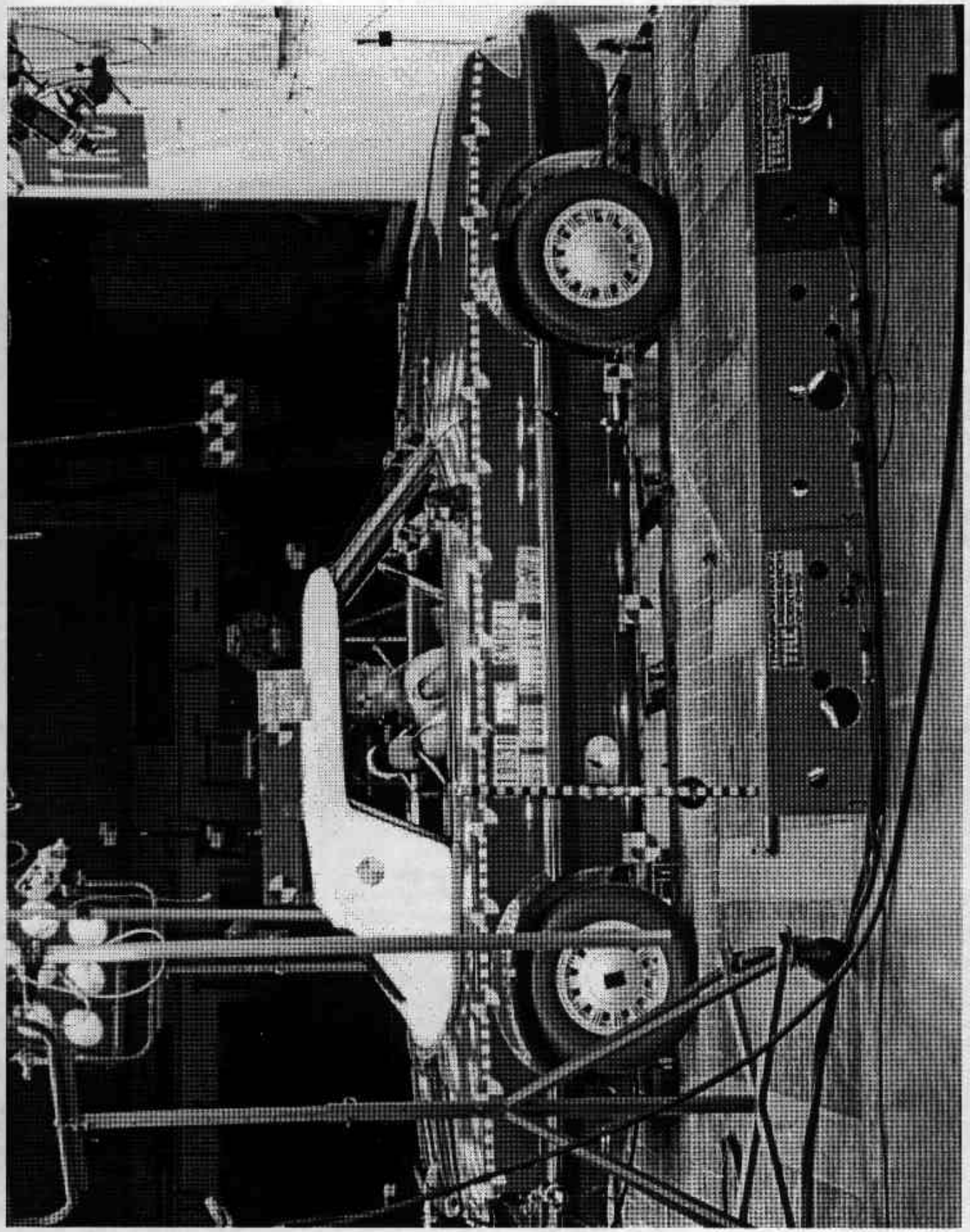


FIGURE A-7 PRE-TEST RIGHT SIDE VIEW

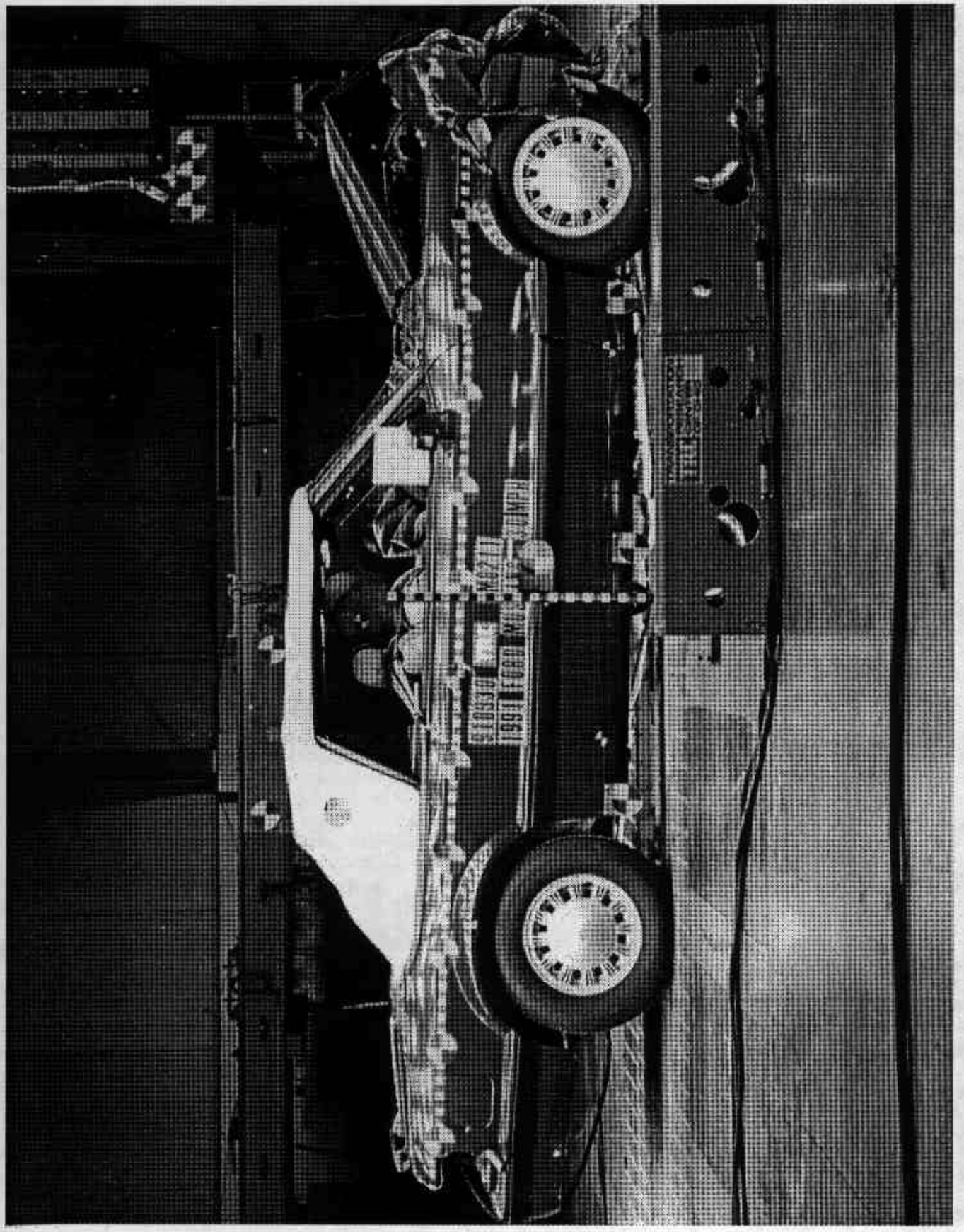


FIGURE A-8 POST-TEST RIGHT SIDE VIEW

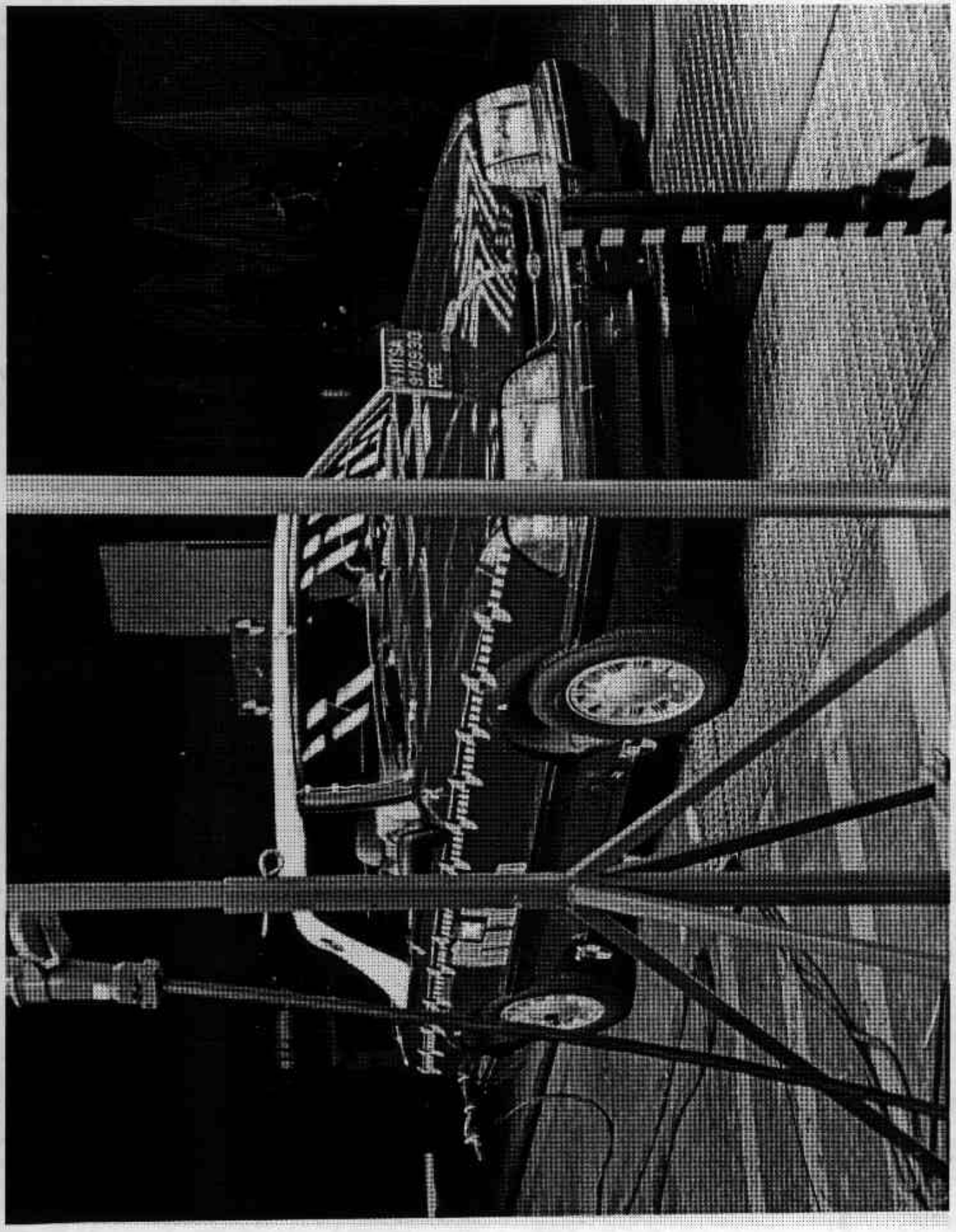


FIGURE A-9 PRE-TEST RIGHT FRONT THREE-QUARTER VIEW

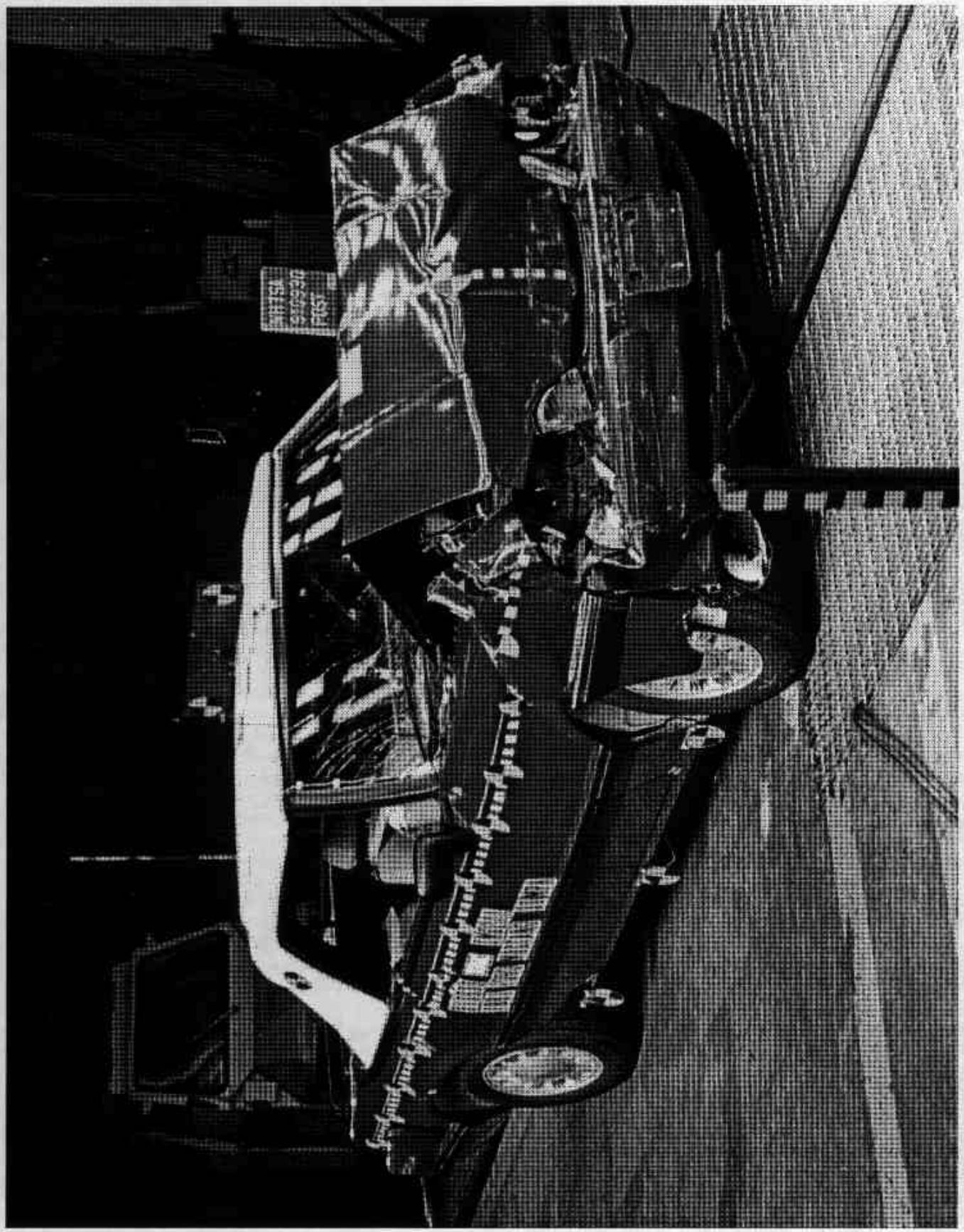


FIGURE A-10 POST-TEST RIGHT FRONT THREE-QUARTER VIEW

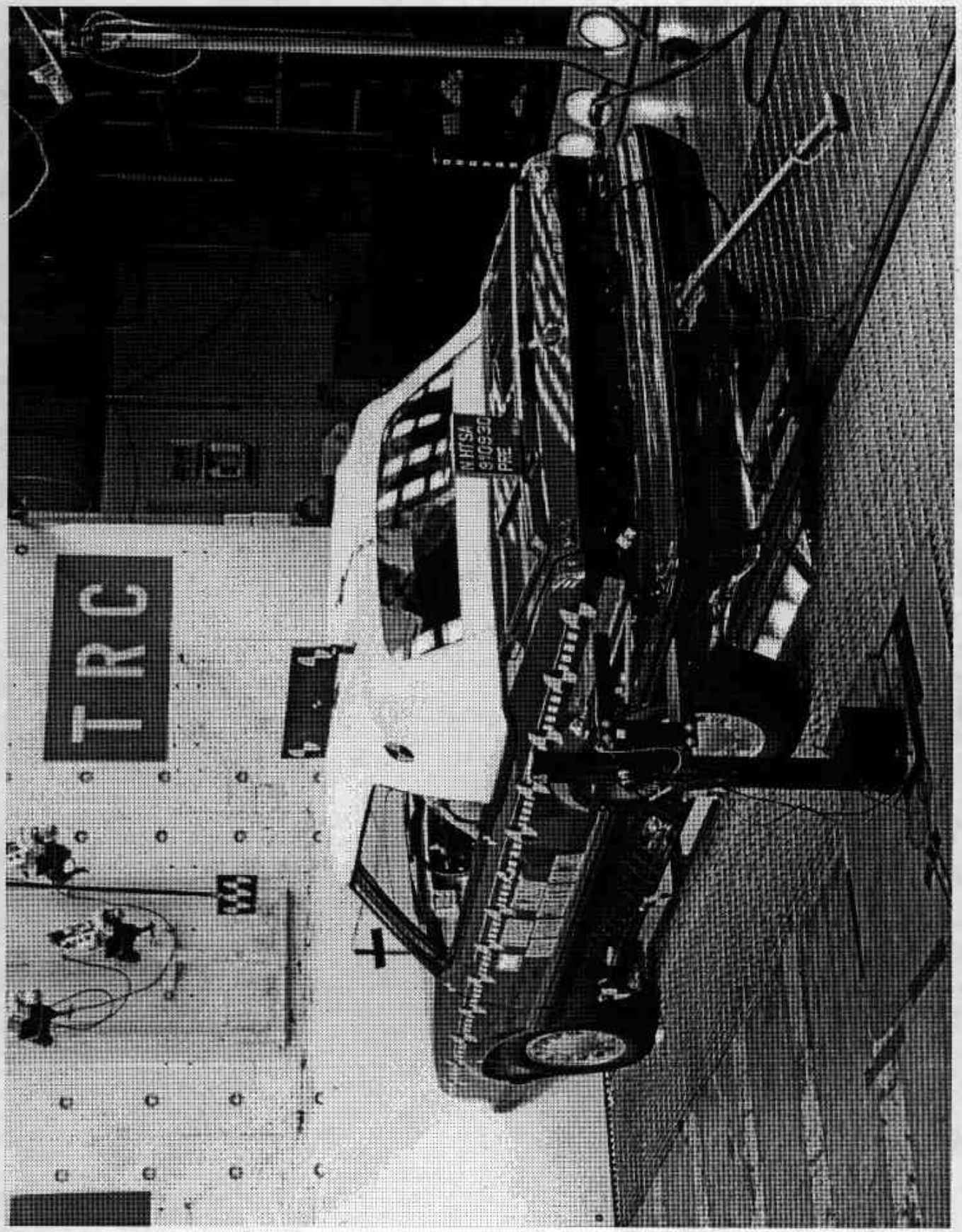


FIGURE A-11 PRE-TEST LEFT REAR THREE-QUARTER VIEW

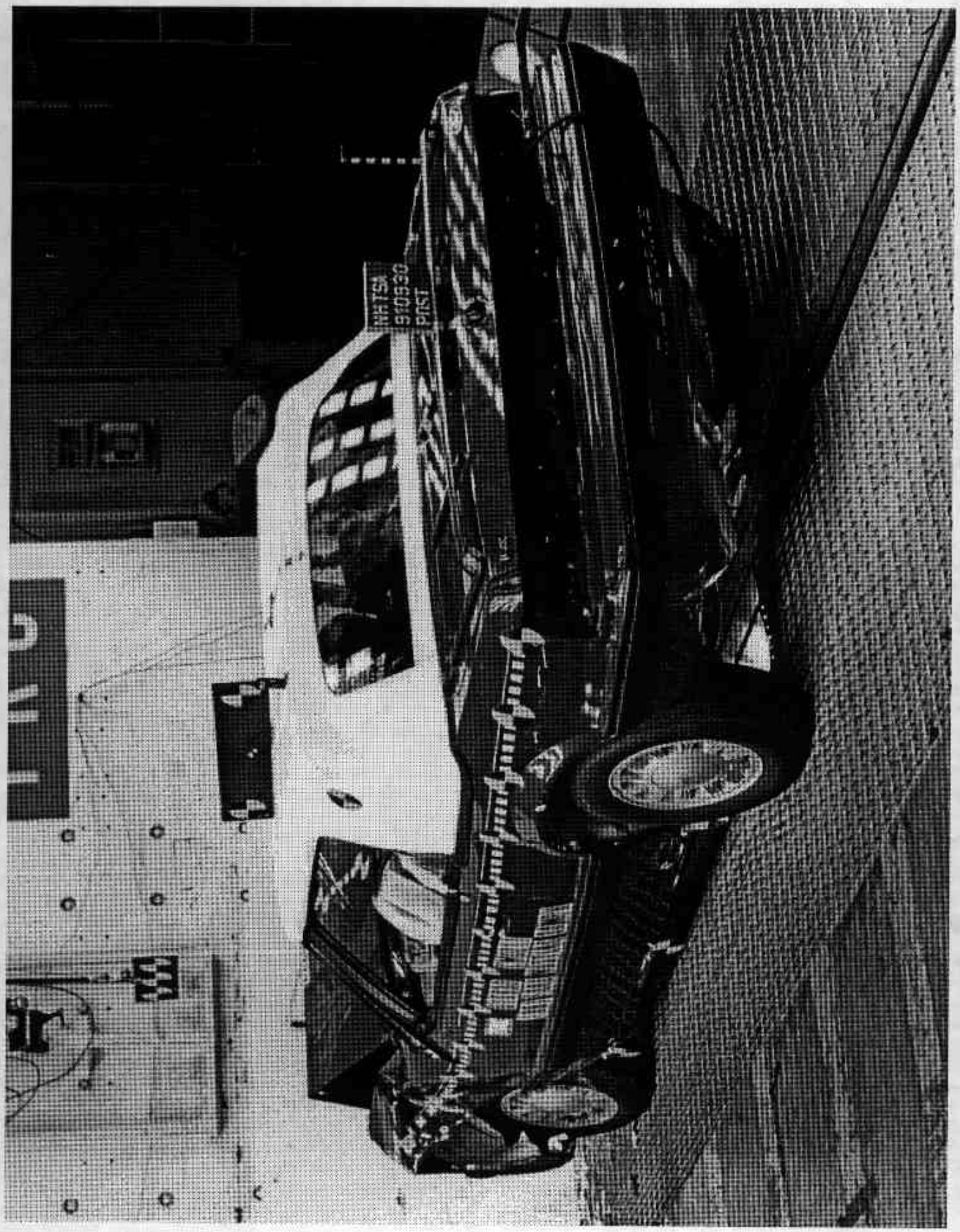


FIGURE A-12 POST-TEST LEFT REAR THREE-QUARTER VIEW

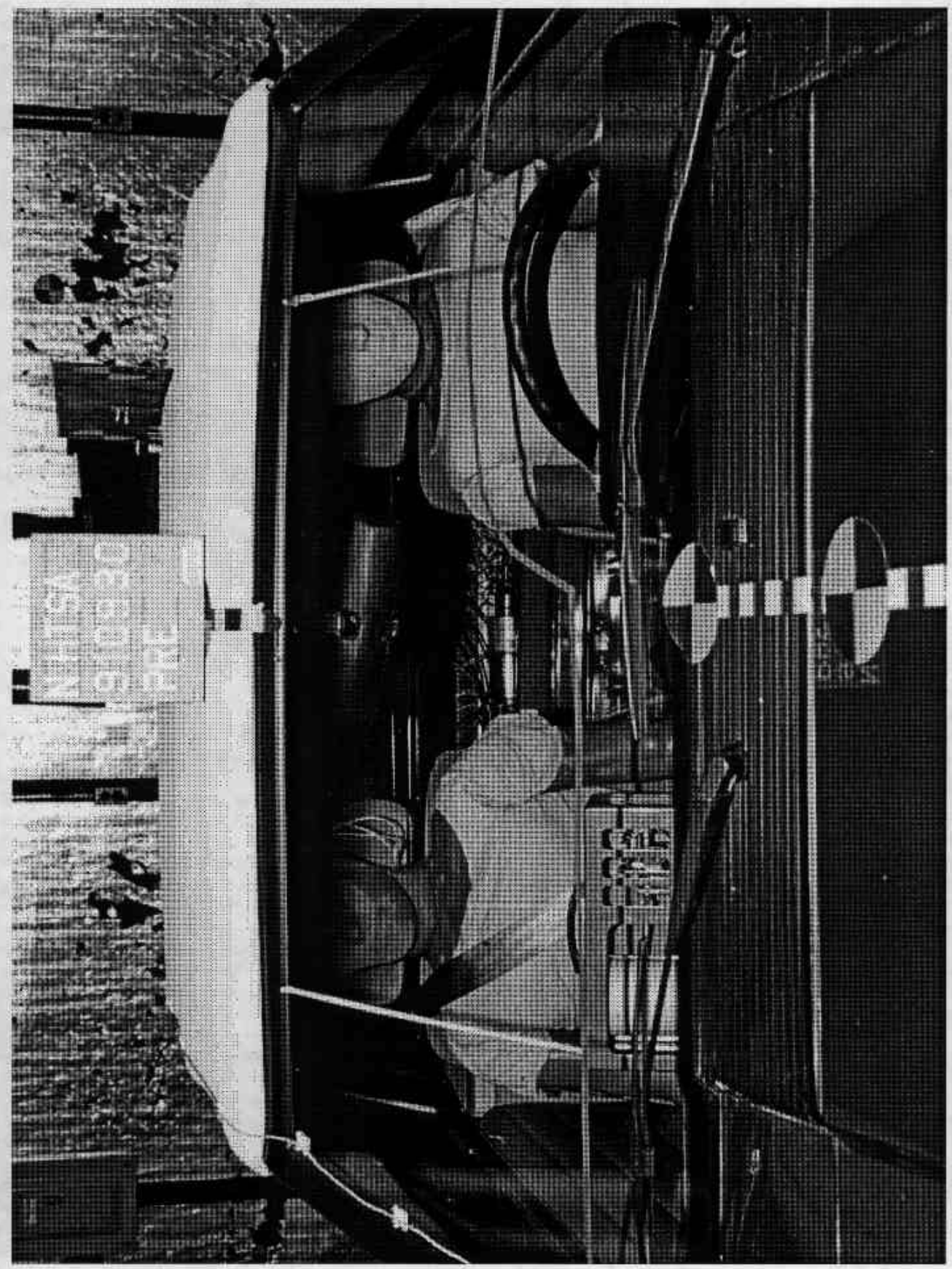


FIGURE A-13 PRE-TEST WINDSHIELD VIEW

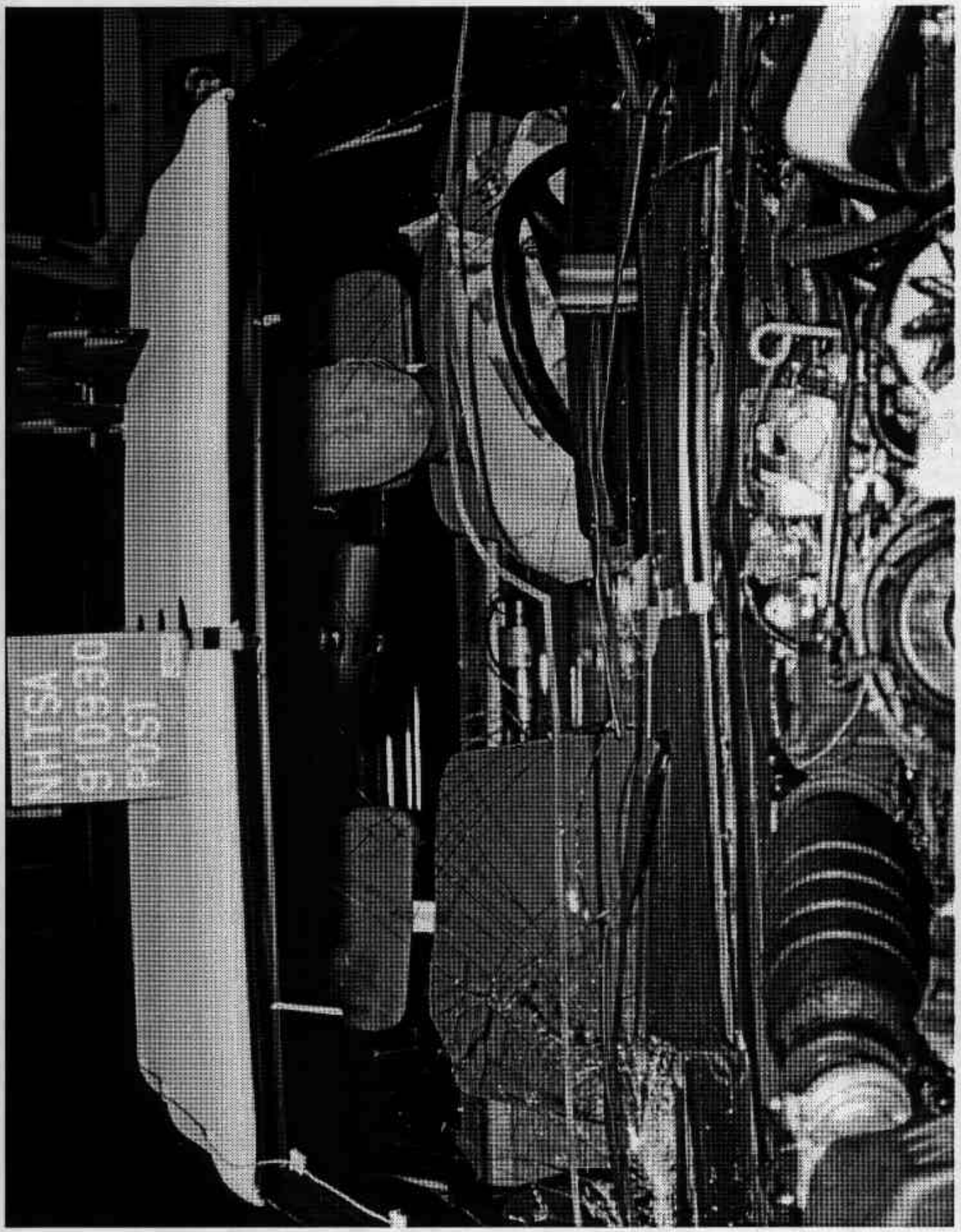


FIGURE A-14 POST-TEST WINDSHIELD VIEW

FIGURE A-15 PRE-TEST ENGINE COMPARTMENT VIEW

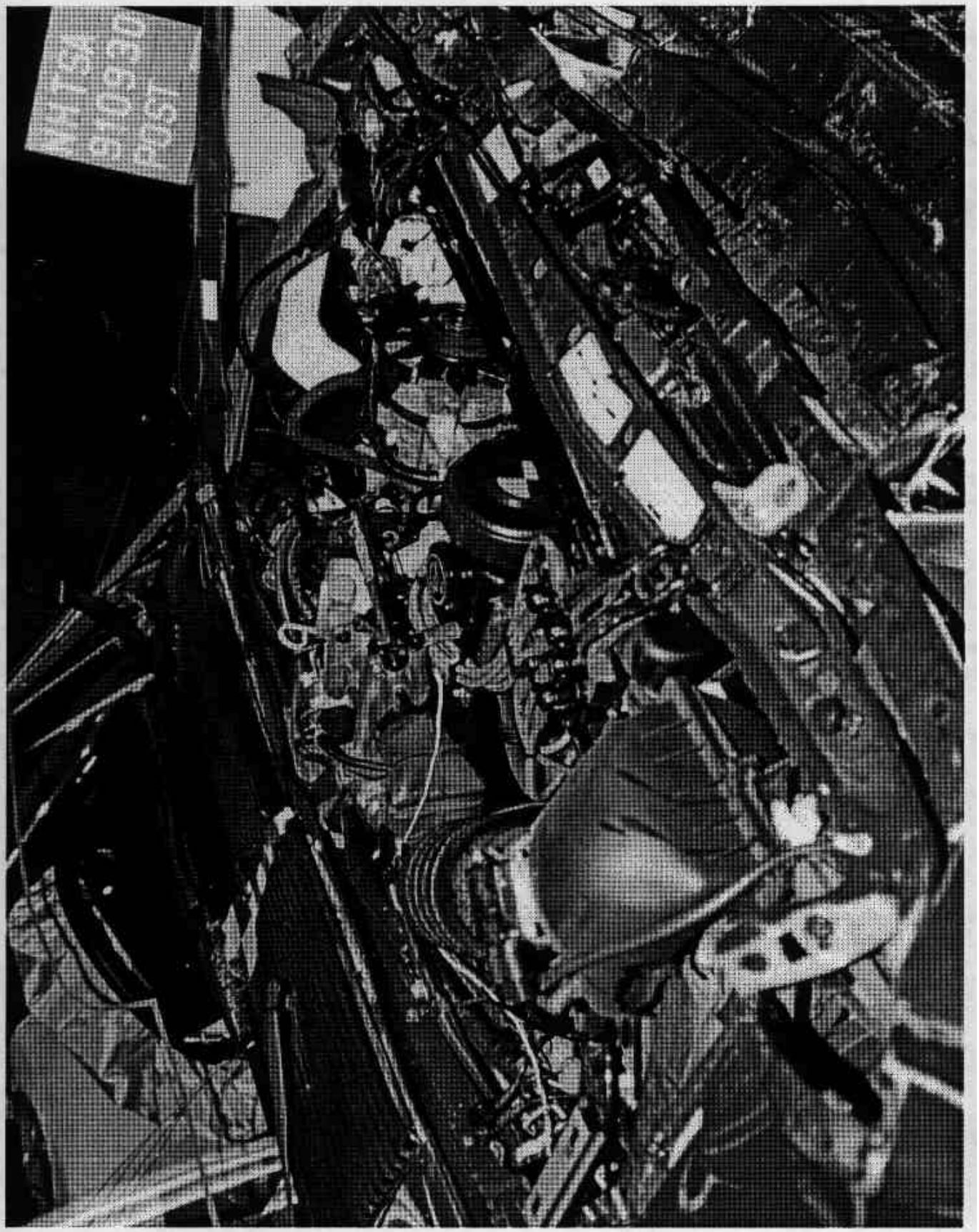


FIGURE A-16 POST-TEST ENGINE COMPARTMENT VIEW

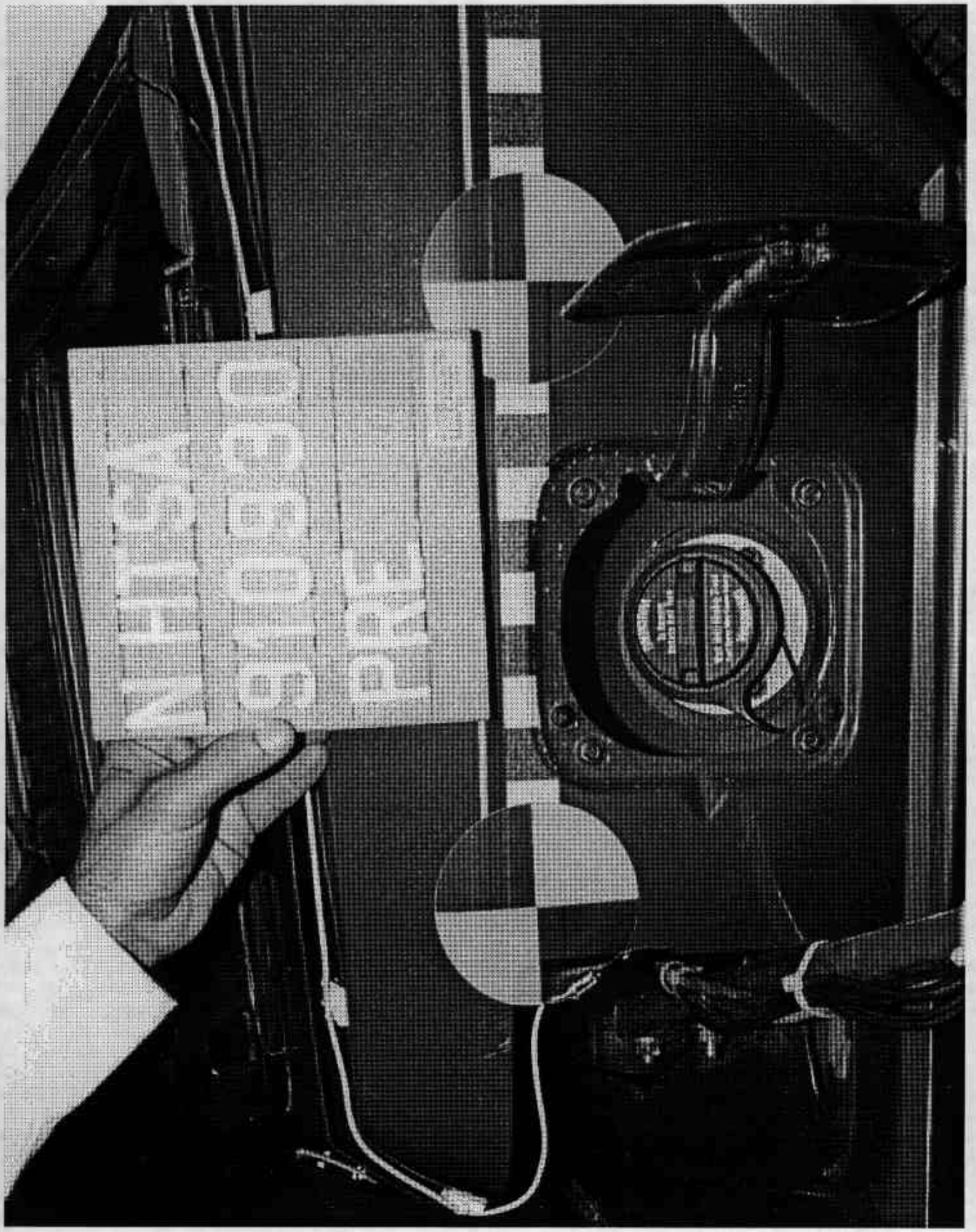


FIGURE A-17 PRE-TEST FUEL FILLER CAP VIEW

FIGURE A-18 POST-TEST FUEL FILLER CAP VIEW

FIGURE A-19 PRE-TEST FUEL FILLER NECK VIEW

FIGURE A-20 POST-TEST FUEL FILLER NECK VIEW

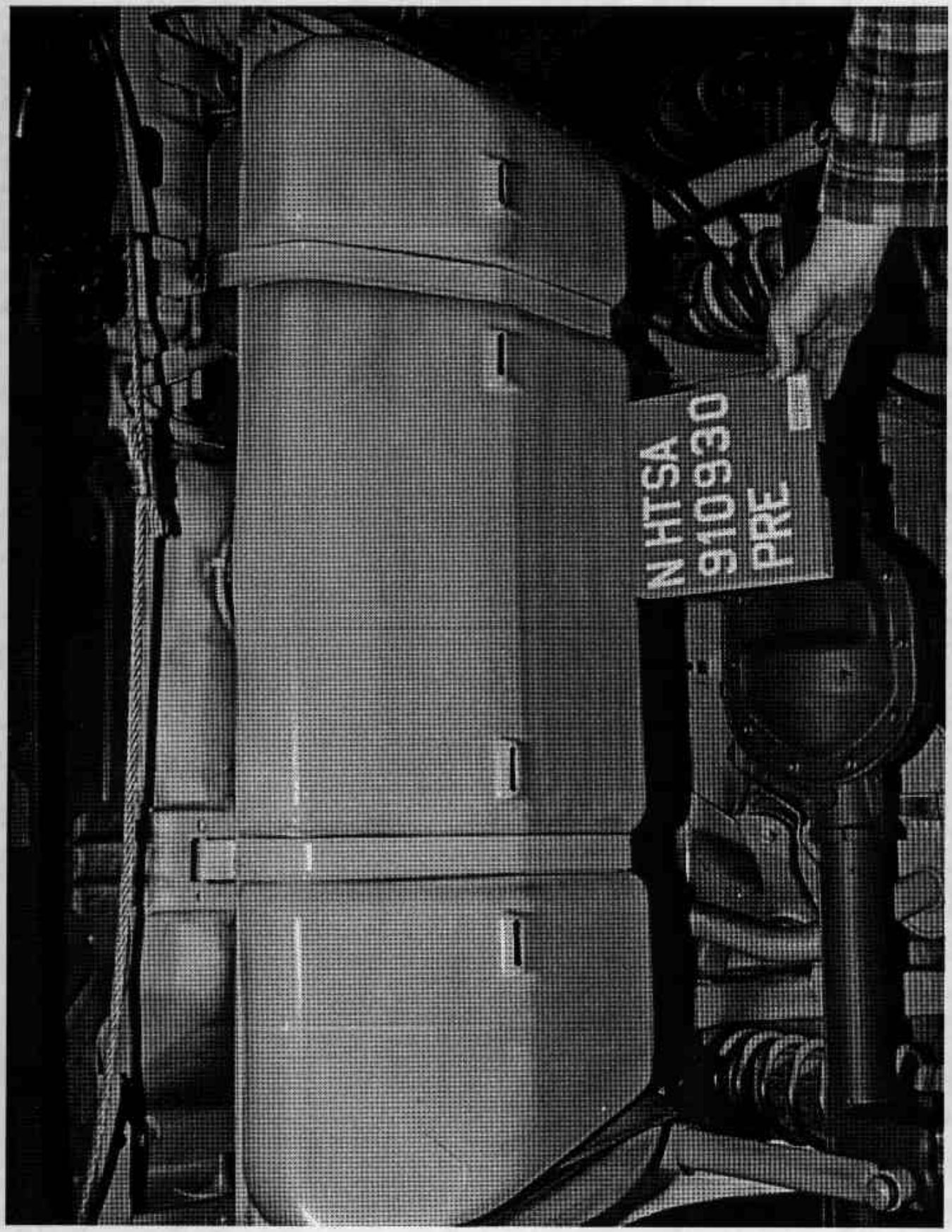


FIGURE A-21 PRE TEST FUEL TANK VIEW

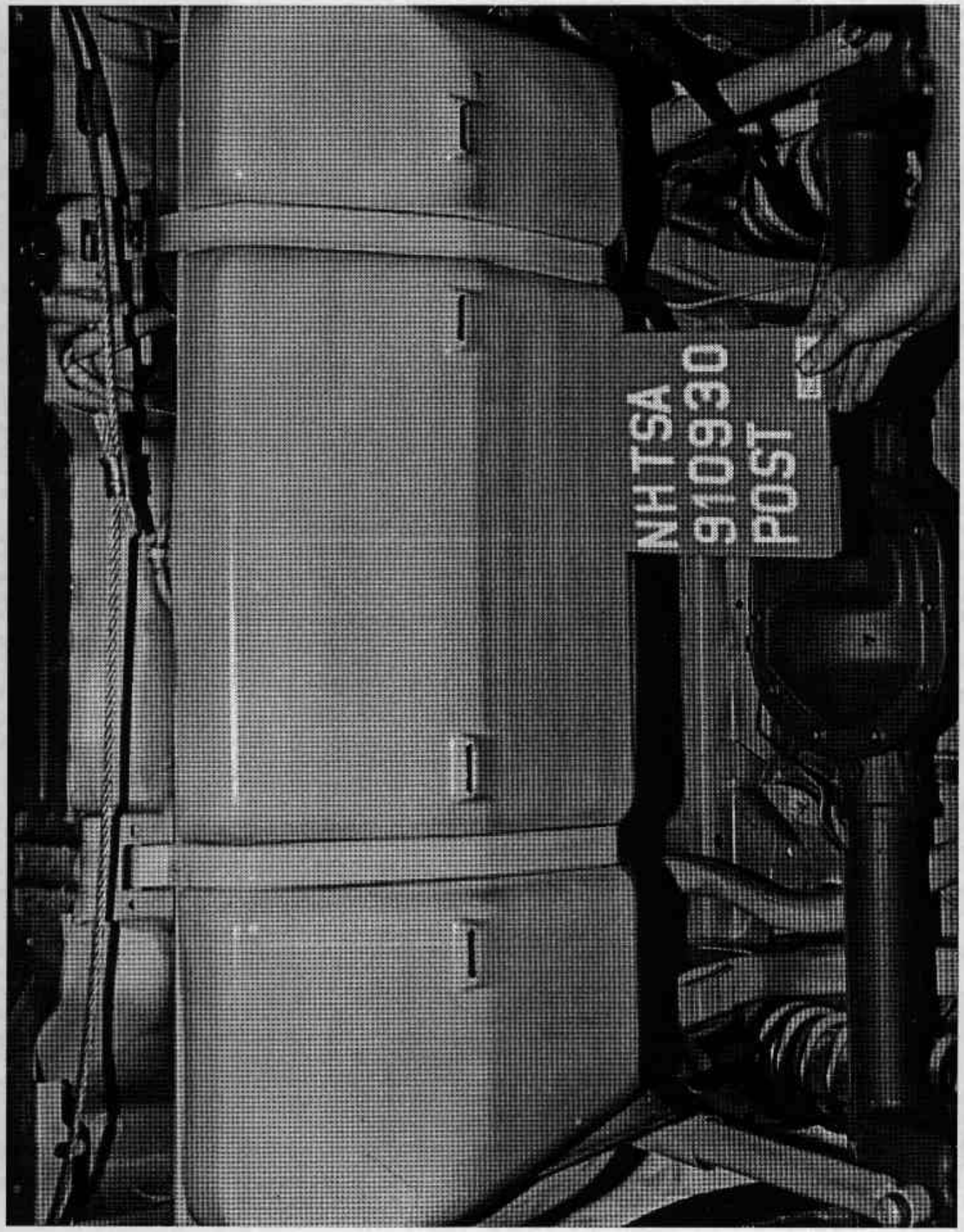


FIGURE A-22 POST-TEST FUEL TANK VIEW

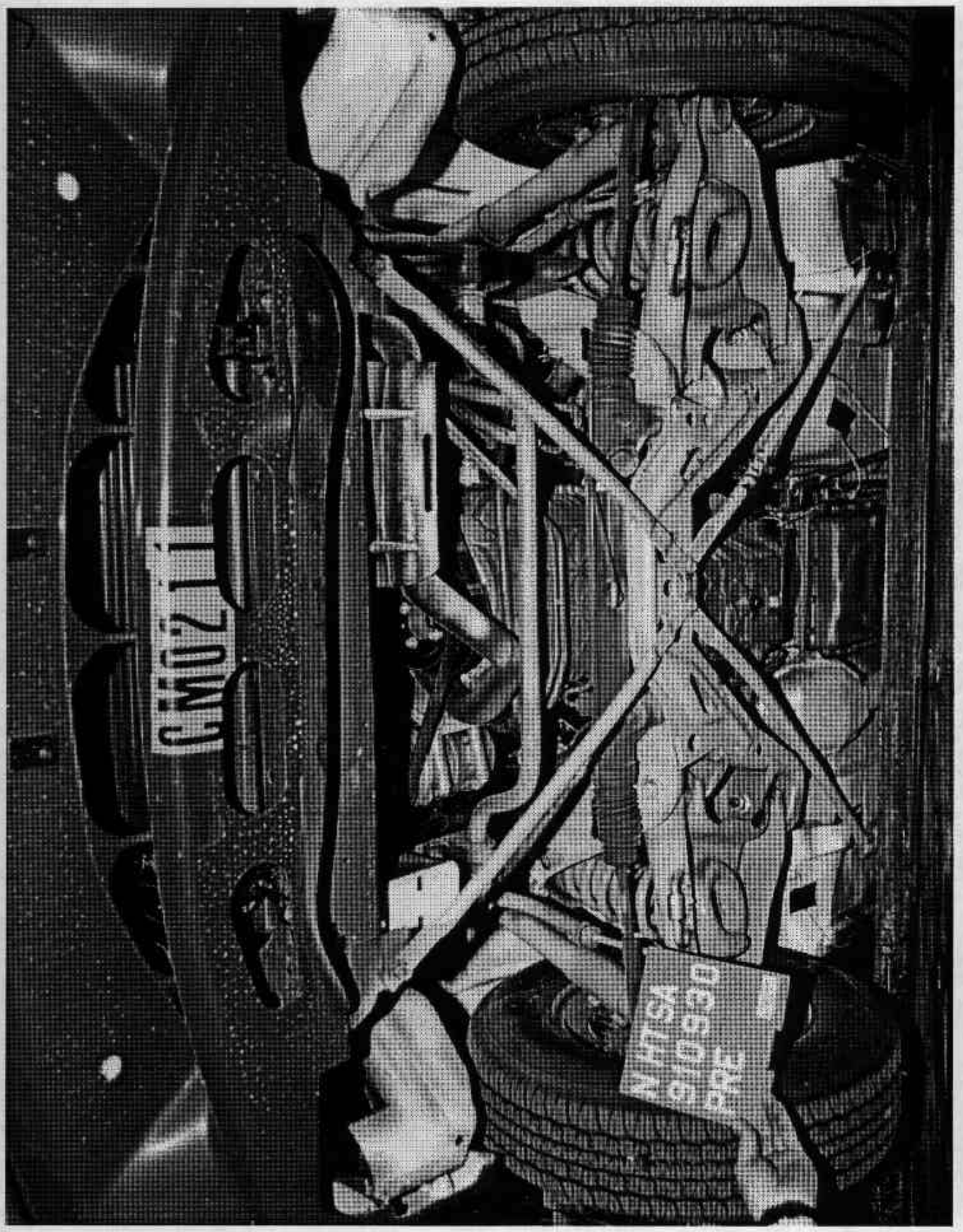


FIGURE A-23 PRE-TEST FRONT UNDERBODY VIEW

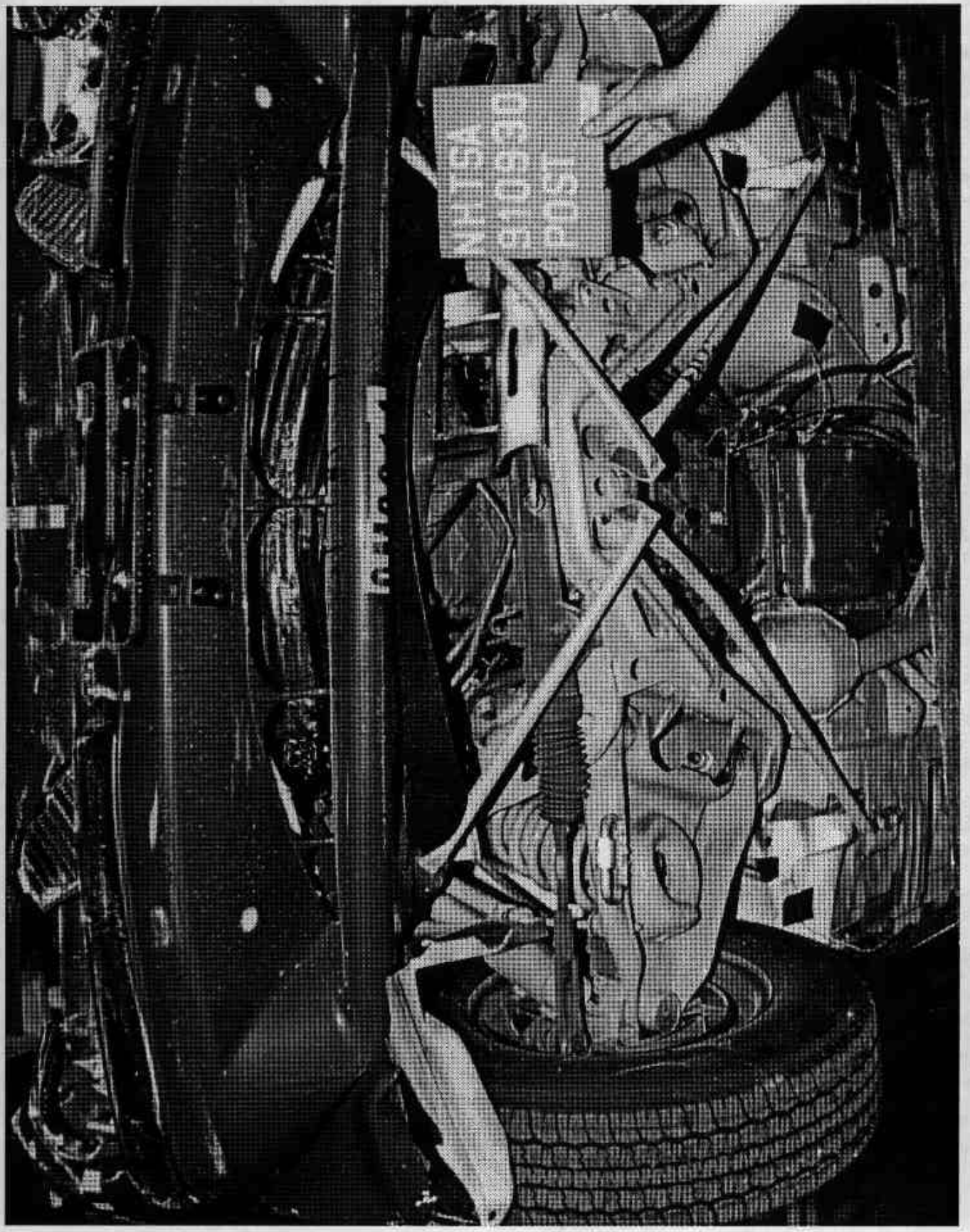


FIGURE A-24 POST-TEST FRONT UNDERBODY VIEW

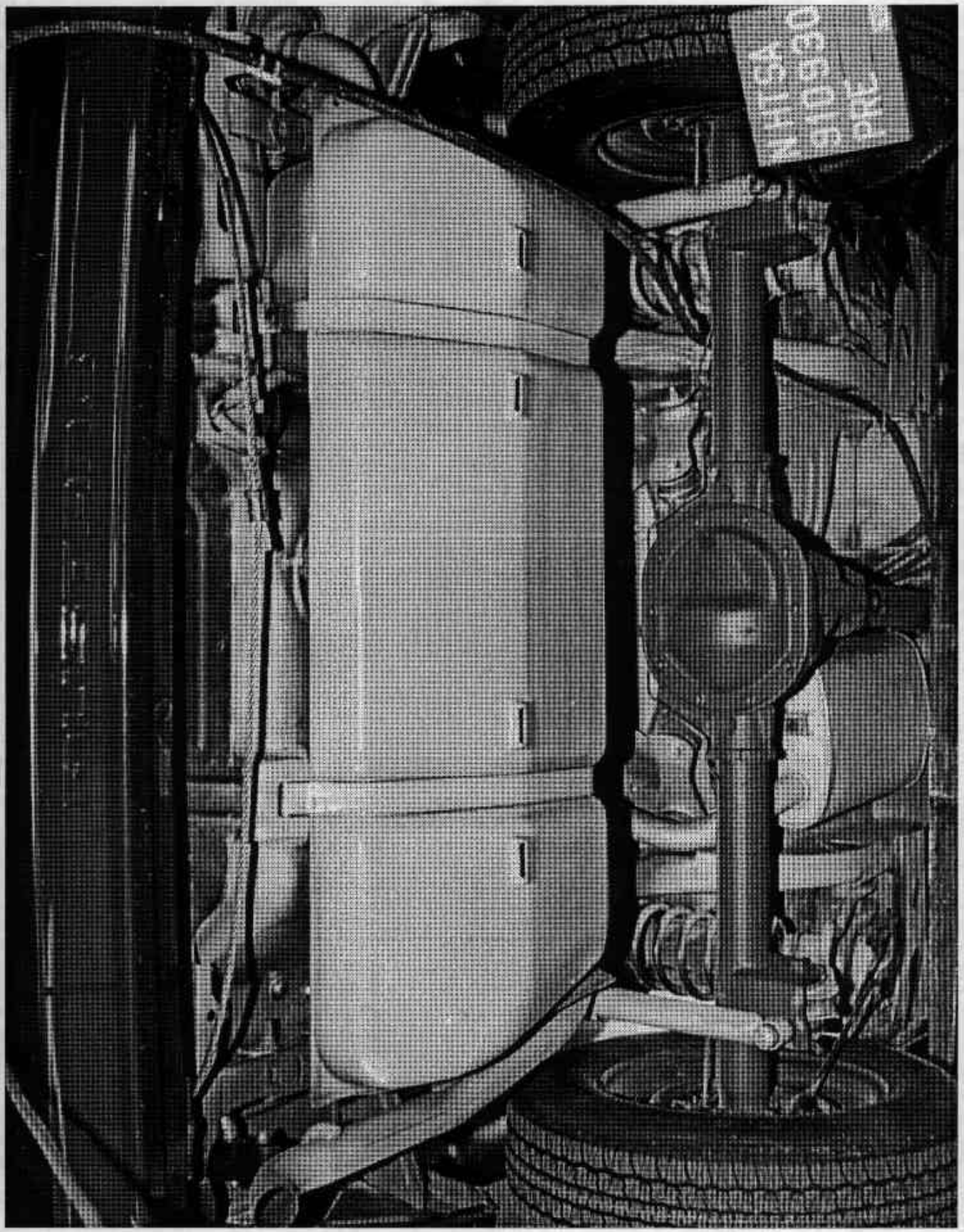


FIGURE A-25 PRE-TEST REAR UNDERBODY VIEW

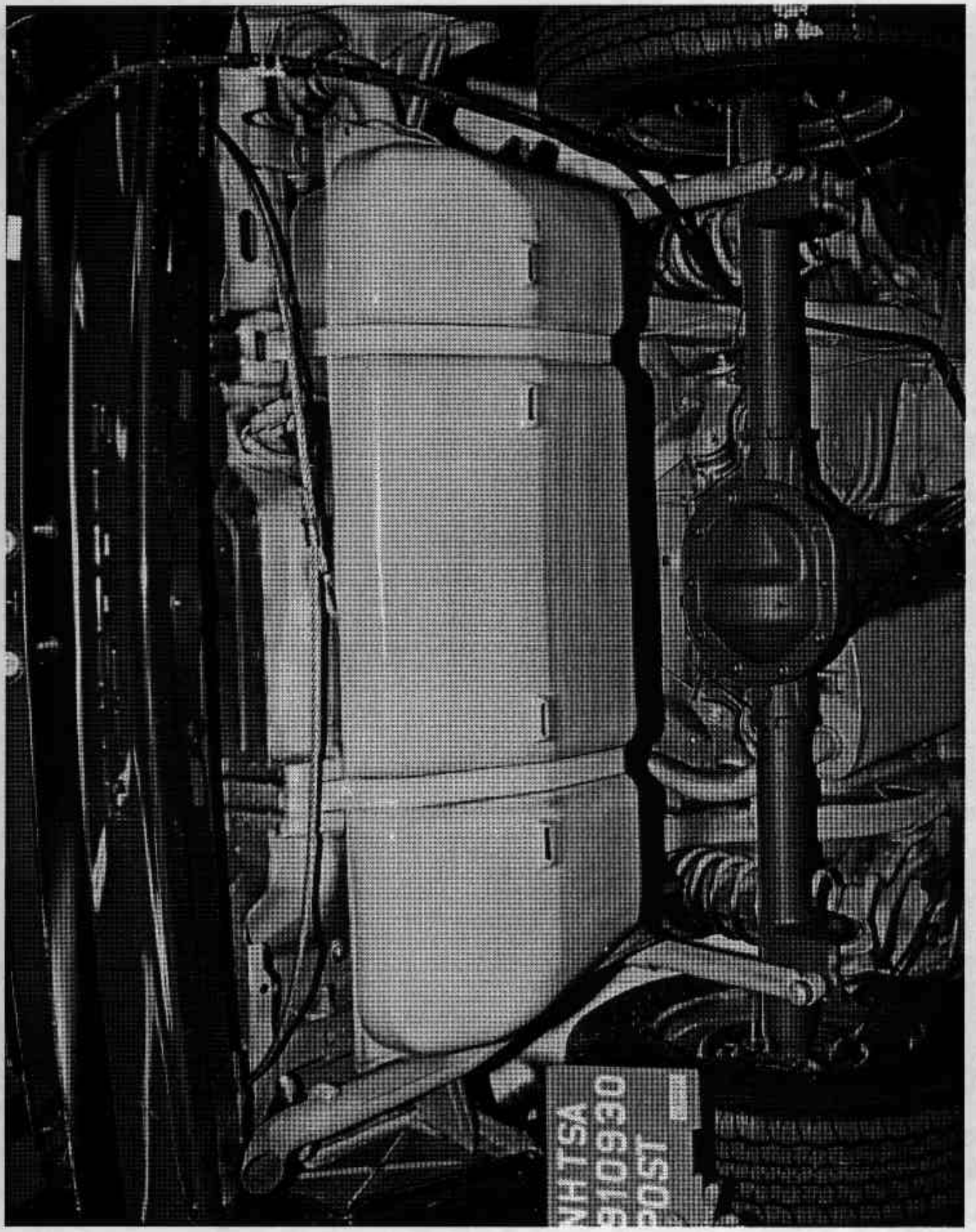


FIGURE A-26 POST-TEST REAR UNDERBODY VIEW

FIGURE A-27 PRE-TEST DRIVER DUMMY POSITION VIEW

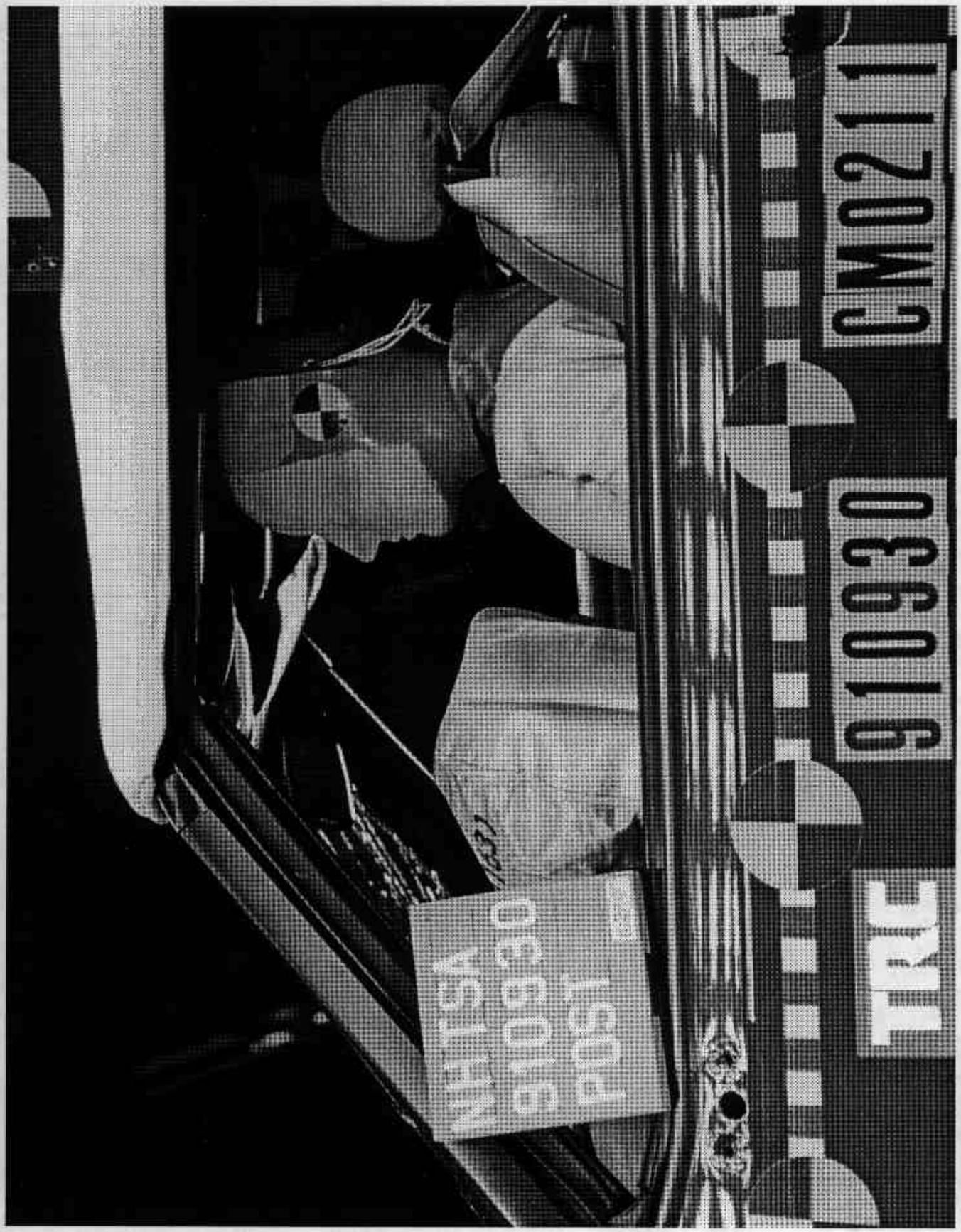


FIGURE A-28 POST-TEST DRIVER DUMMY POSITION VIEW

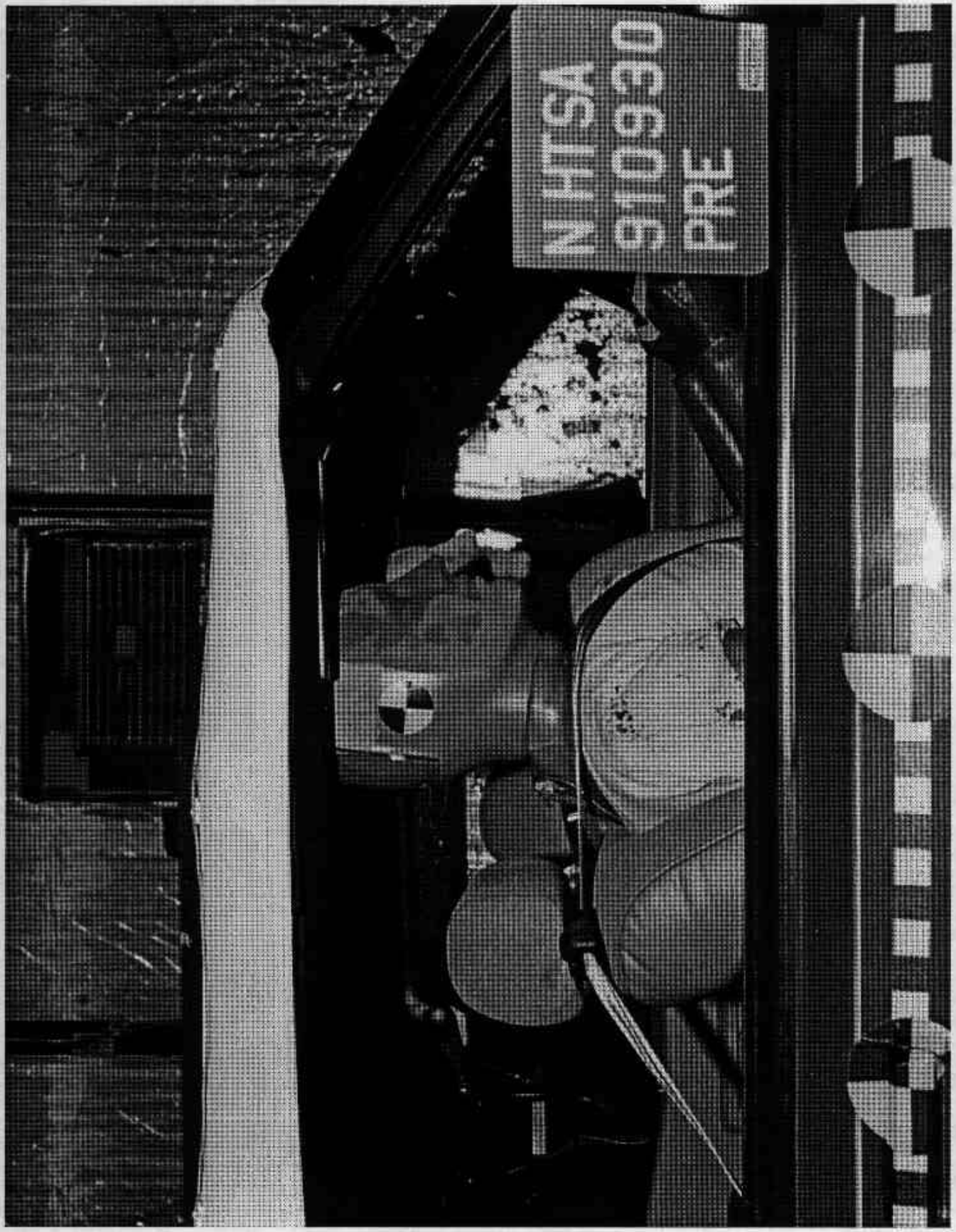


FIGURE A-29 PRE-TEST PASSENGER DUMMY POSITION VIEW

FIGURE A-30 POST-TEST PASSENGER DUMMY POSITION VIEW

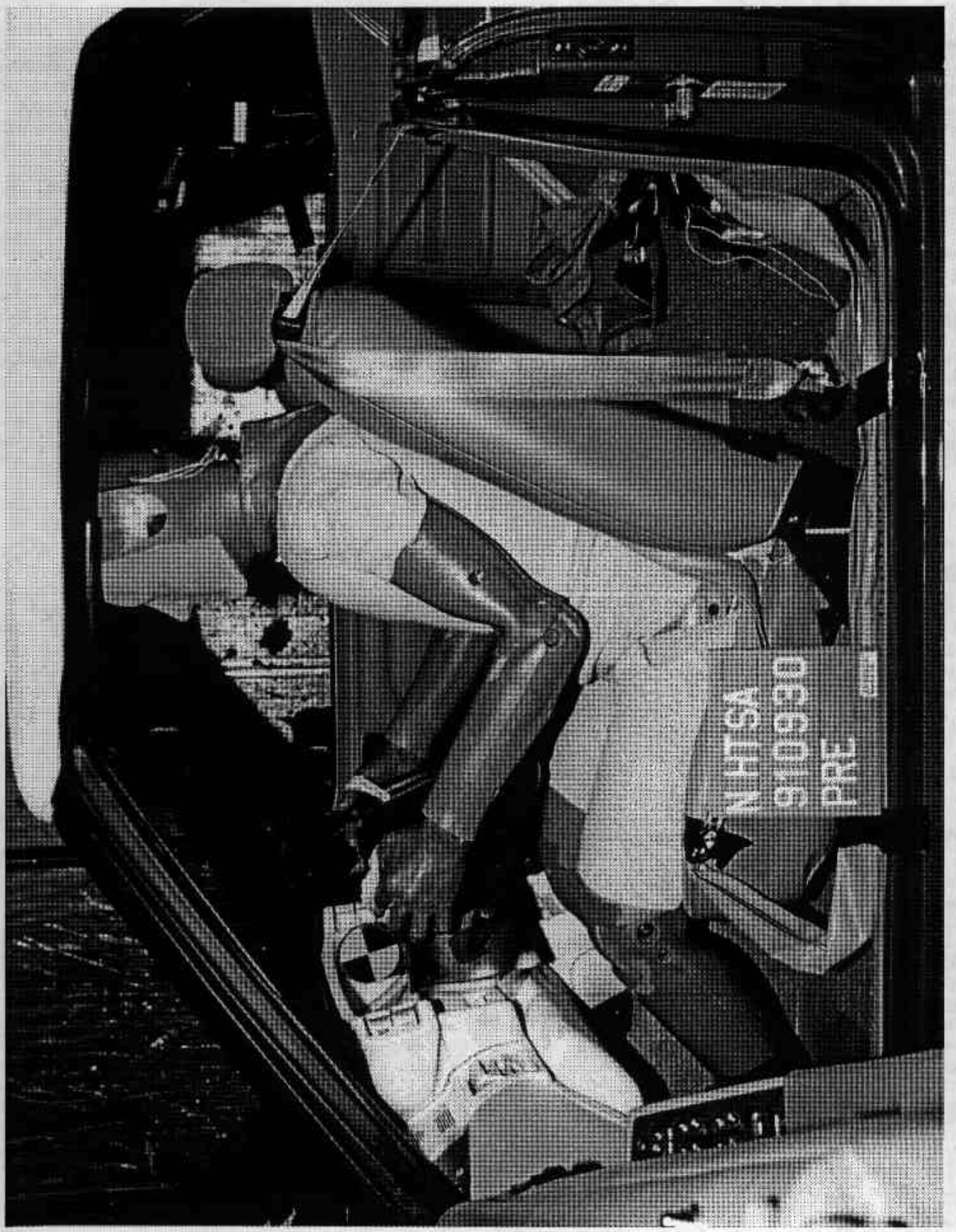


FIGURE A-31 PRE-TEST DR. DUM. & VEHICLE INTERIOR - 1

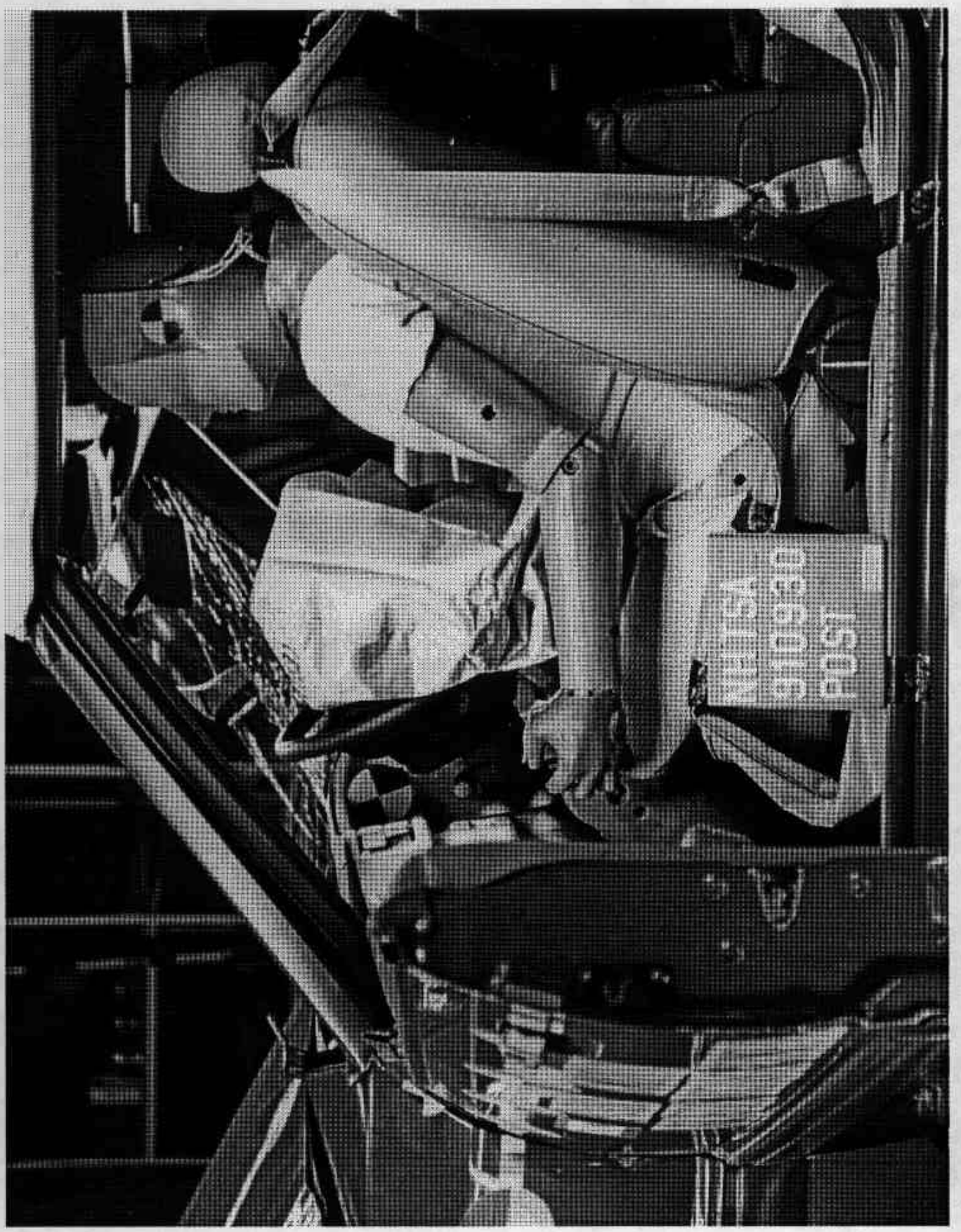


FIGURE A-32 POST-TEST DR. DUM. & VEHICLE INTERIOR - 1

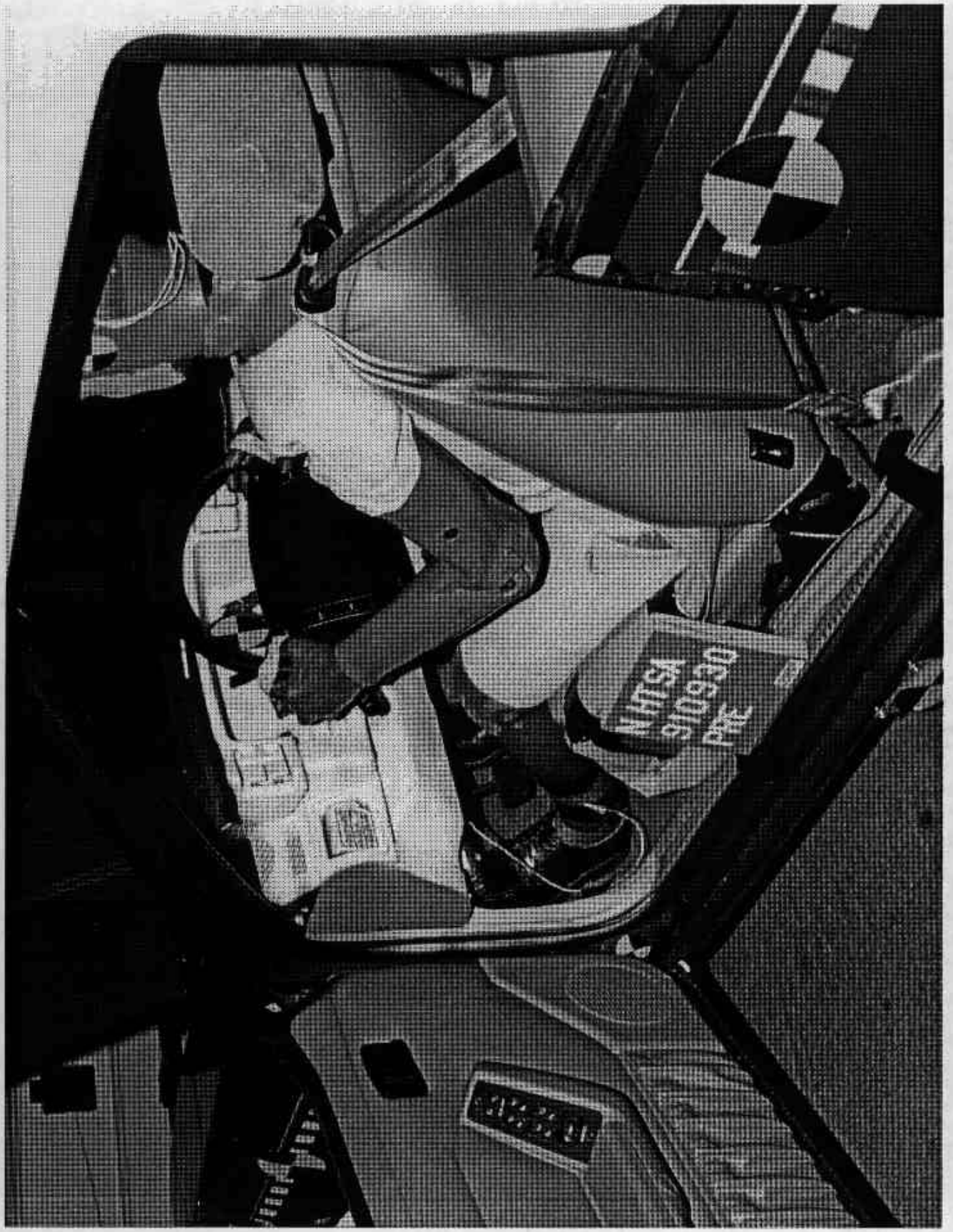


FIGURE A-33 PRE-TEST DR. DUM. & VEHICLE INTERIOR - 2

FIGURE A-34 POST-TEST DR. DUM. & VEHICLE INTERIOR - 2

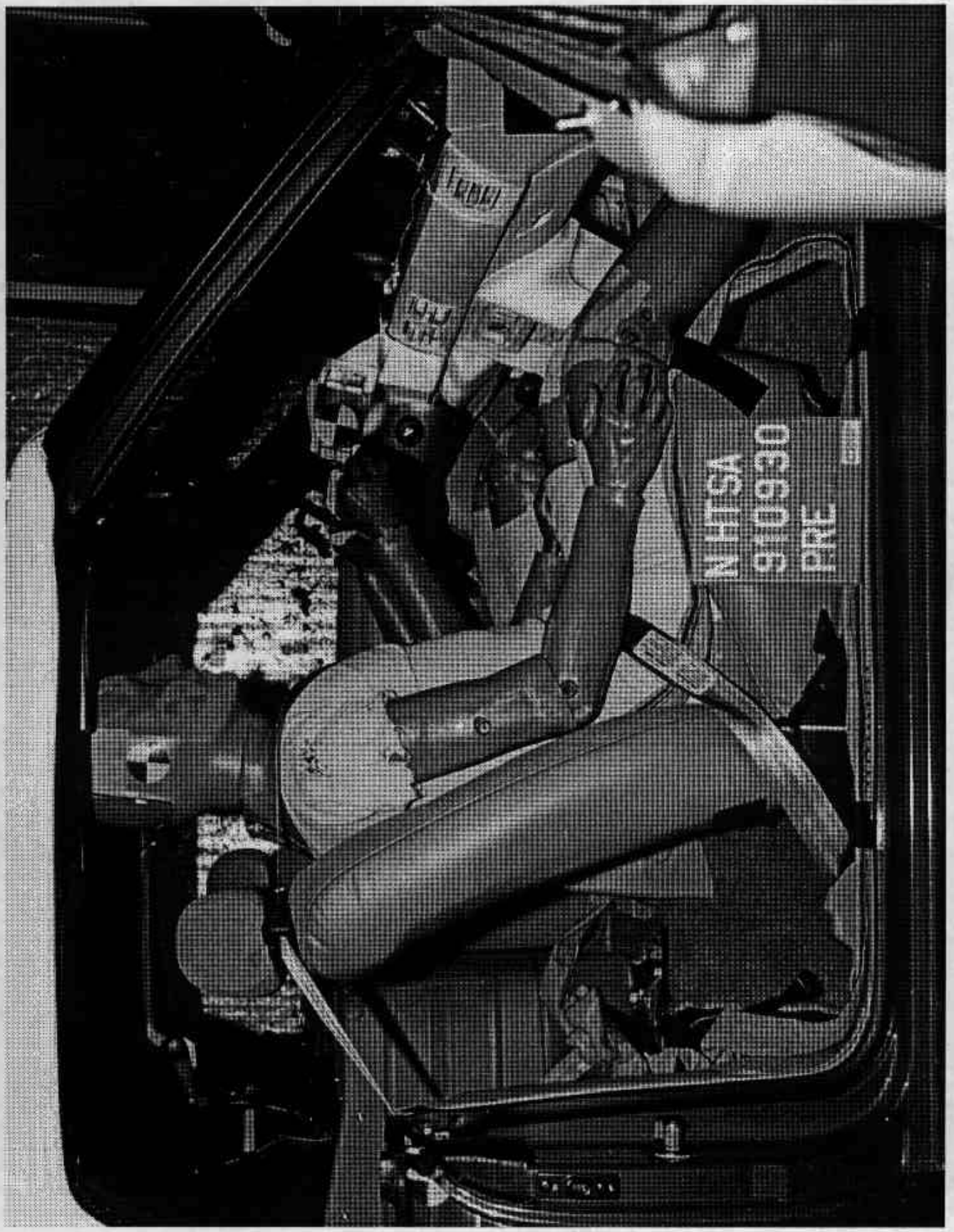


FIGURE A-35 PRE-TEST PA. DUM. & VEHICLE INTERIOR - 1

FIGURE A-36 POST-TEST PA. DUM. & VEHICLE INTERIOR - 1

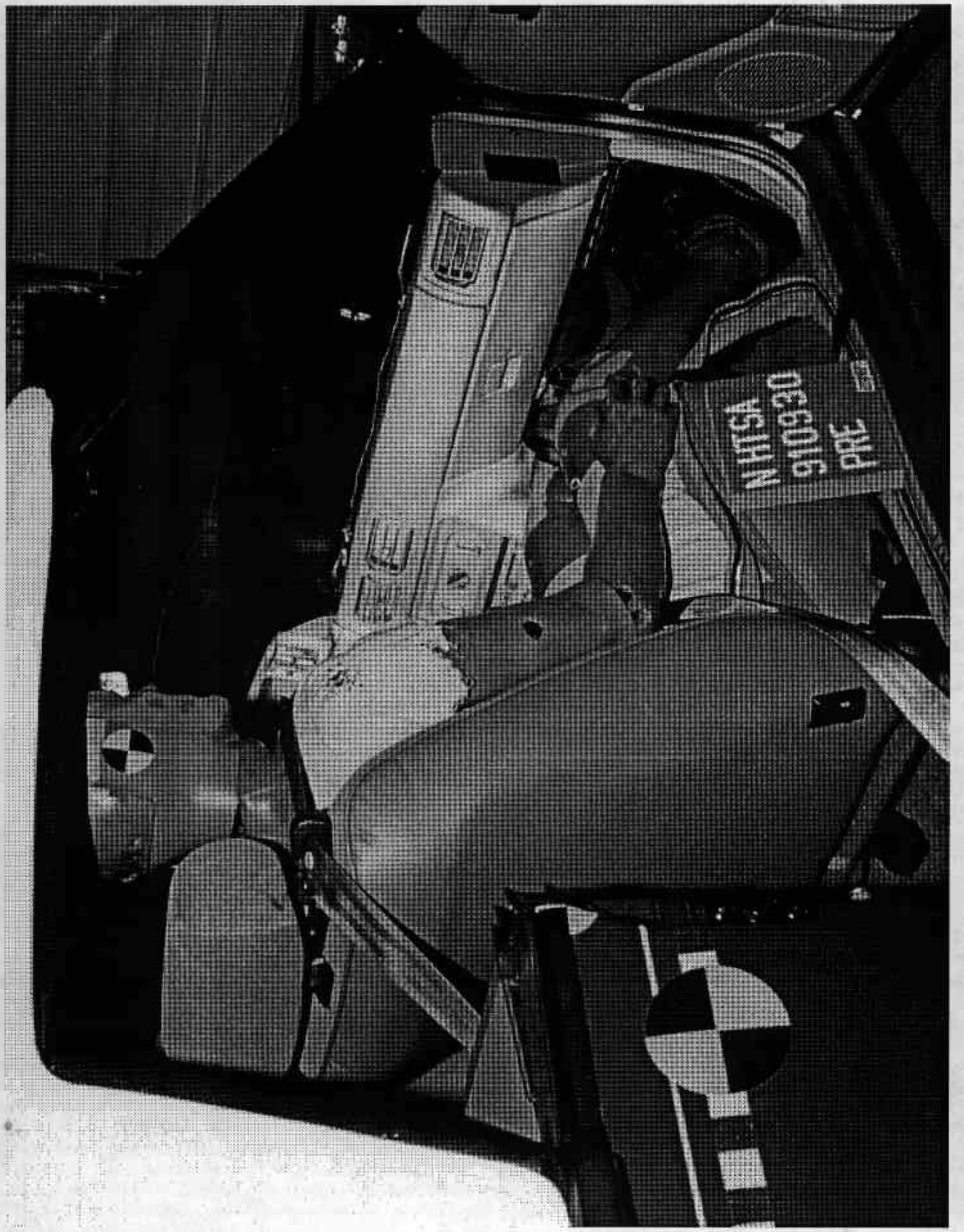


FIGURE A-37 PRE-TEST PA. DUM. & VEHICLE INTERIOR - 2

FIGURE A-38 POST-TEST PAS. DUM. & VEHICLE INTERIOR - 2

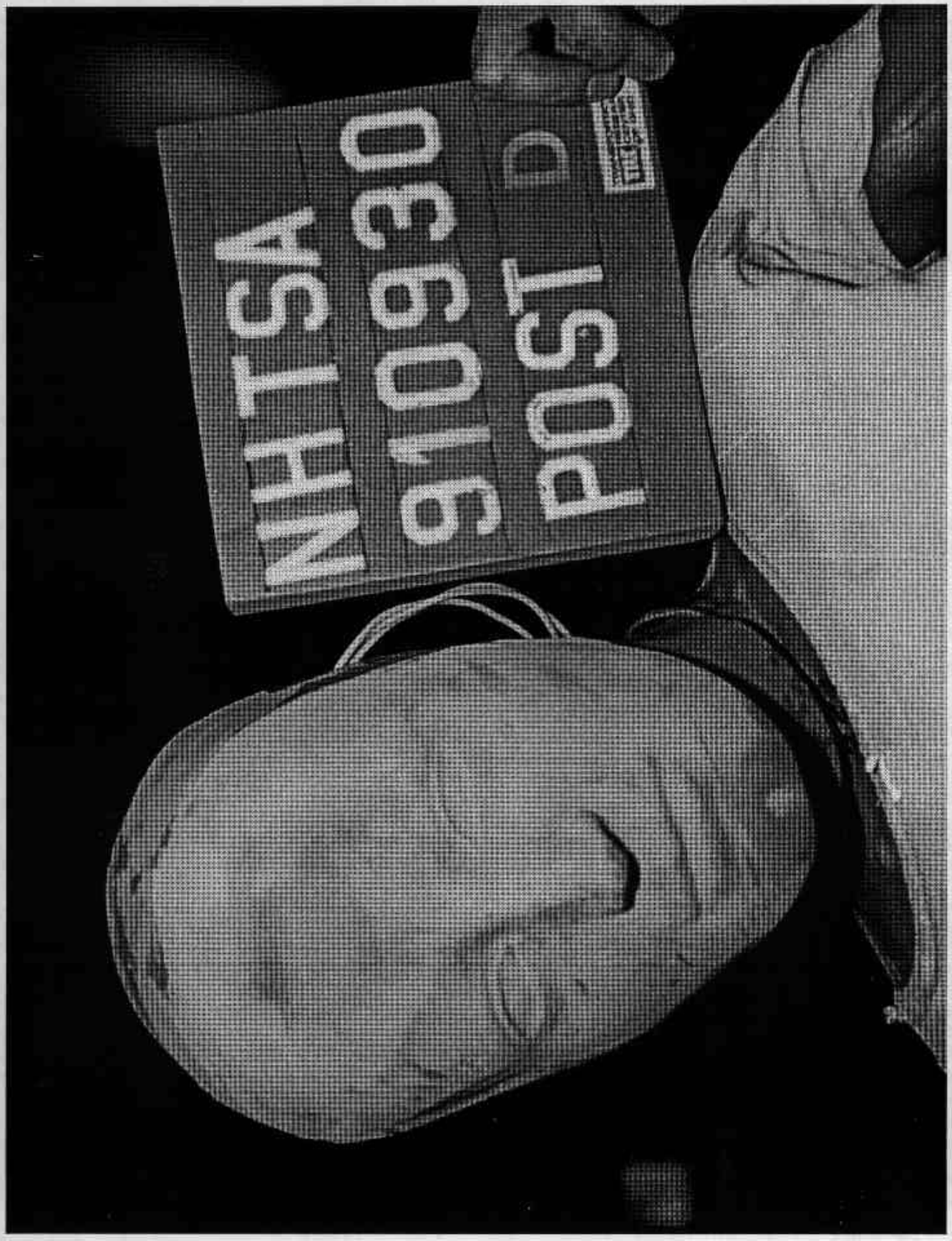


FIGURE A-39 POST-TEST DRIVER DUMMY HEAD CONTACT - 1

FIGURE A-40 POST-TEST DRIVER DUMMY HEAD CONTACT - 2

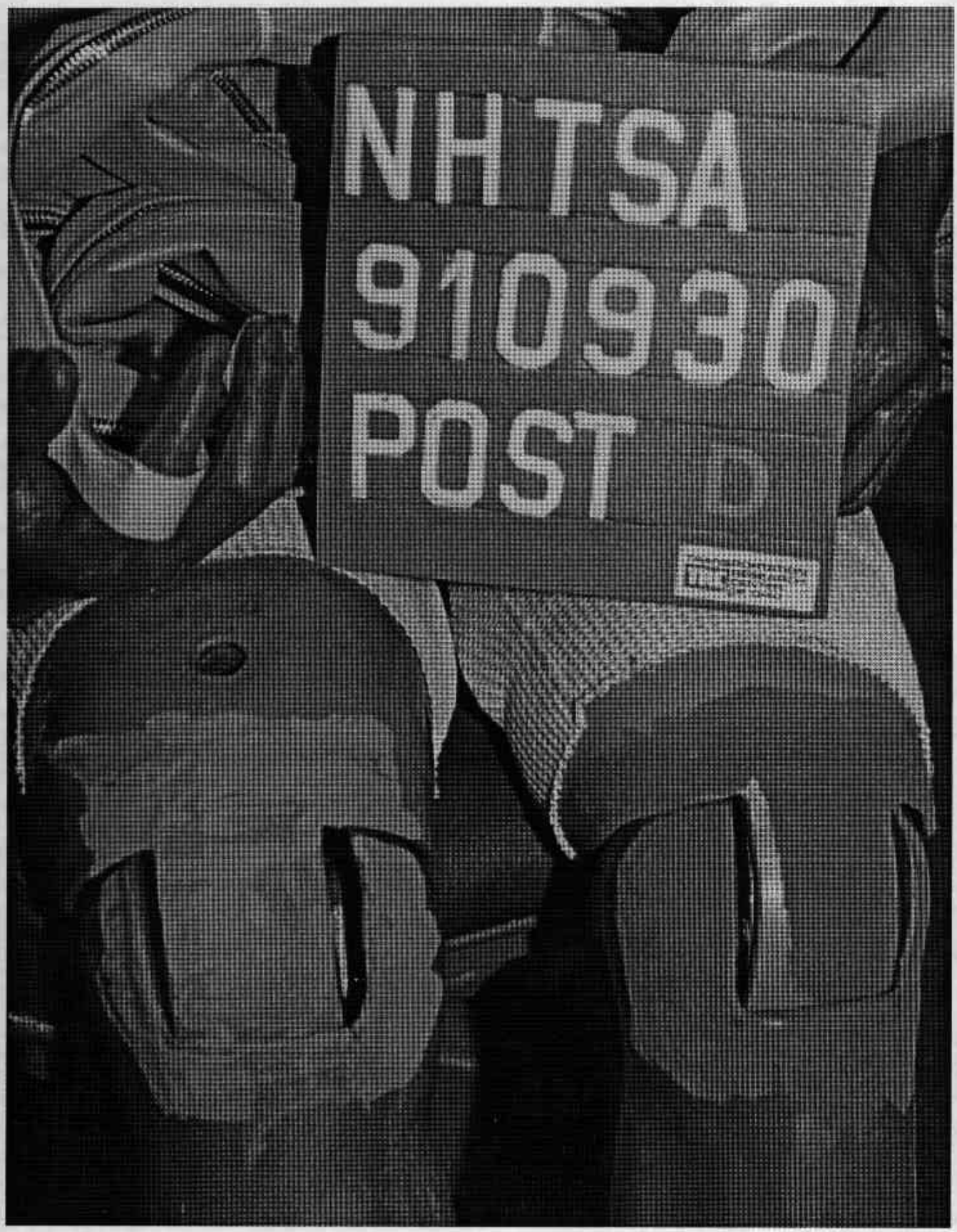


FIGURE A-41 POST-TEST DRIVER DUMMY KNEE CONTACT - 1

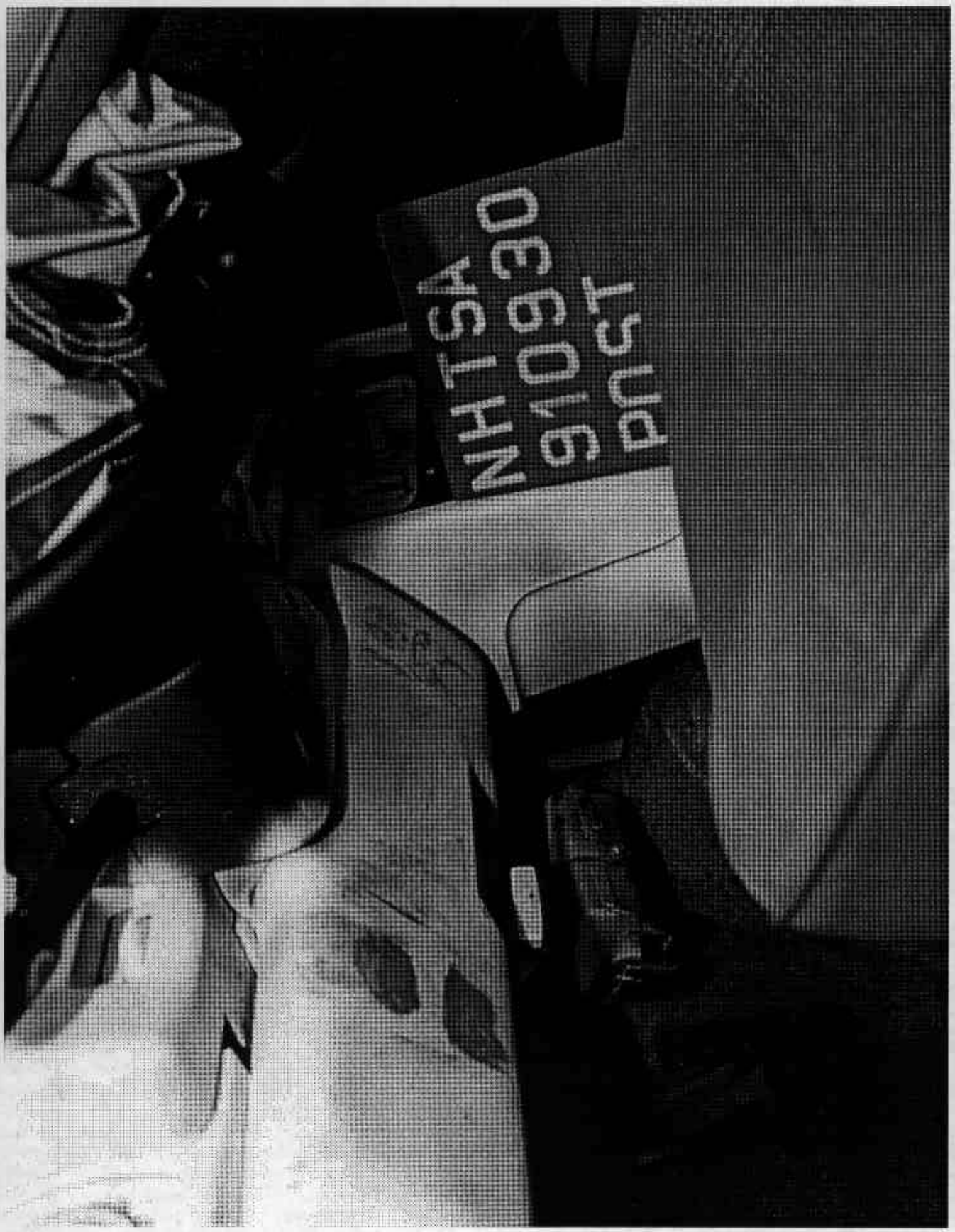


FIG. A-42 POST-TEST DRIVER DUMMY KNEE CONTACT - 2

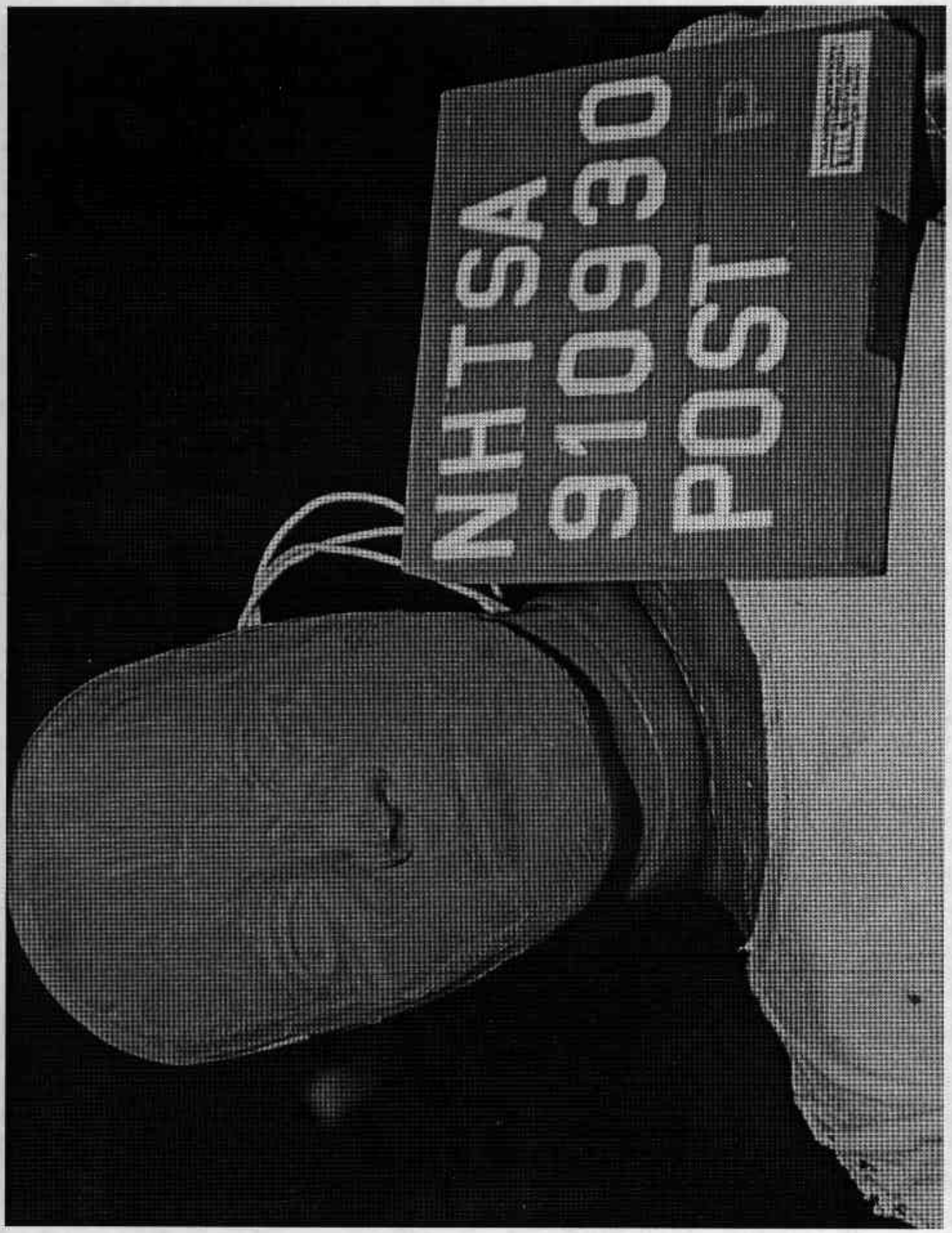


FIGURE A-43 POST-TEST PASSENGER DUMMY HEAD CONTACT

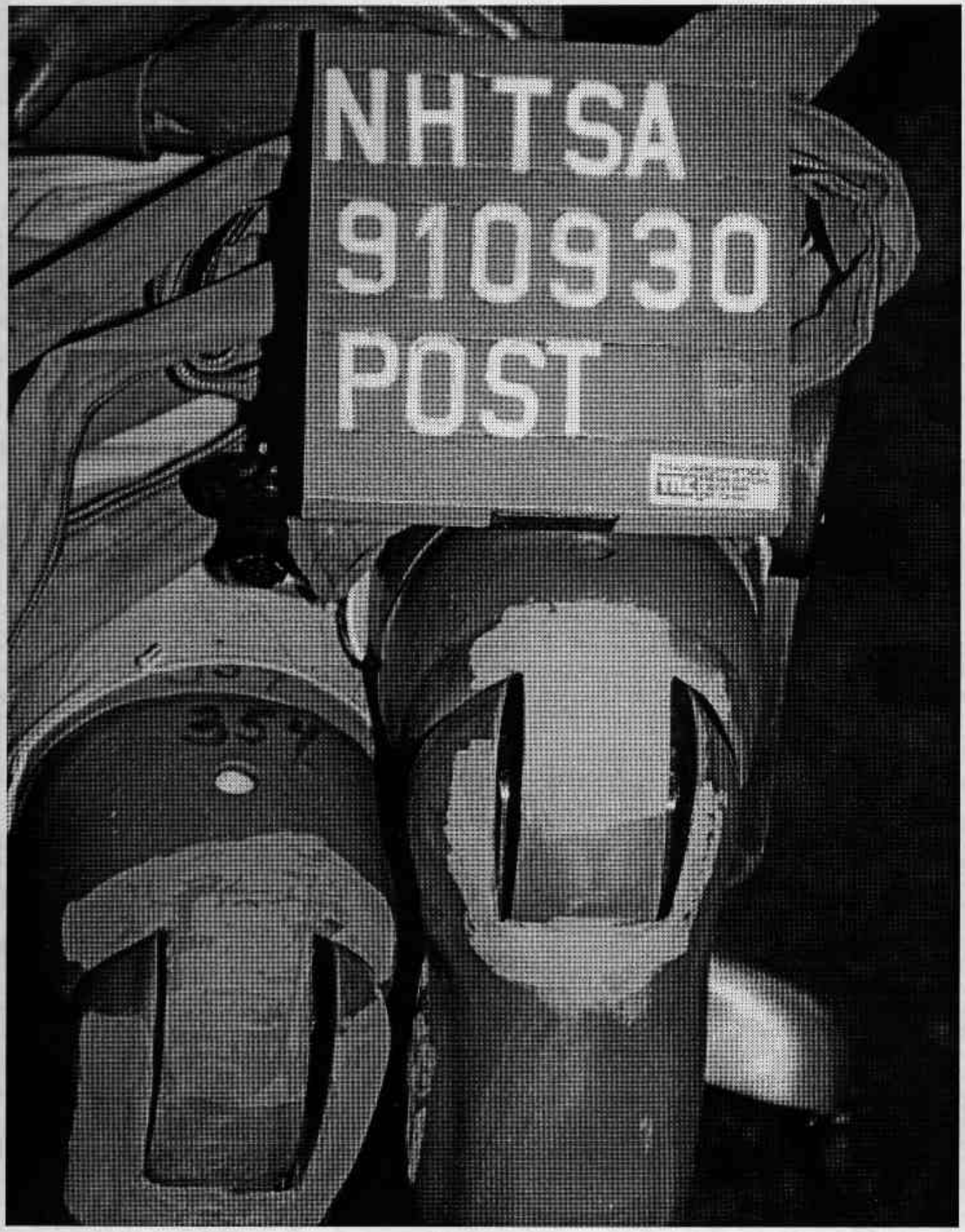


FIGURE A-44 POST-TEST PASSENGER DUMMY KNEE CONTACT - 1

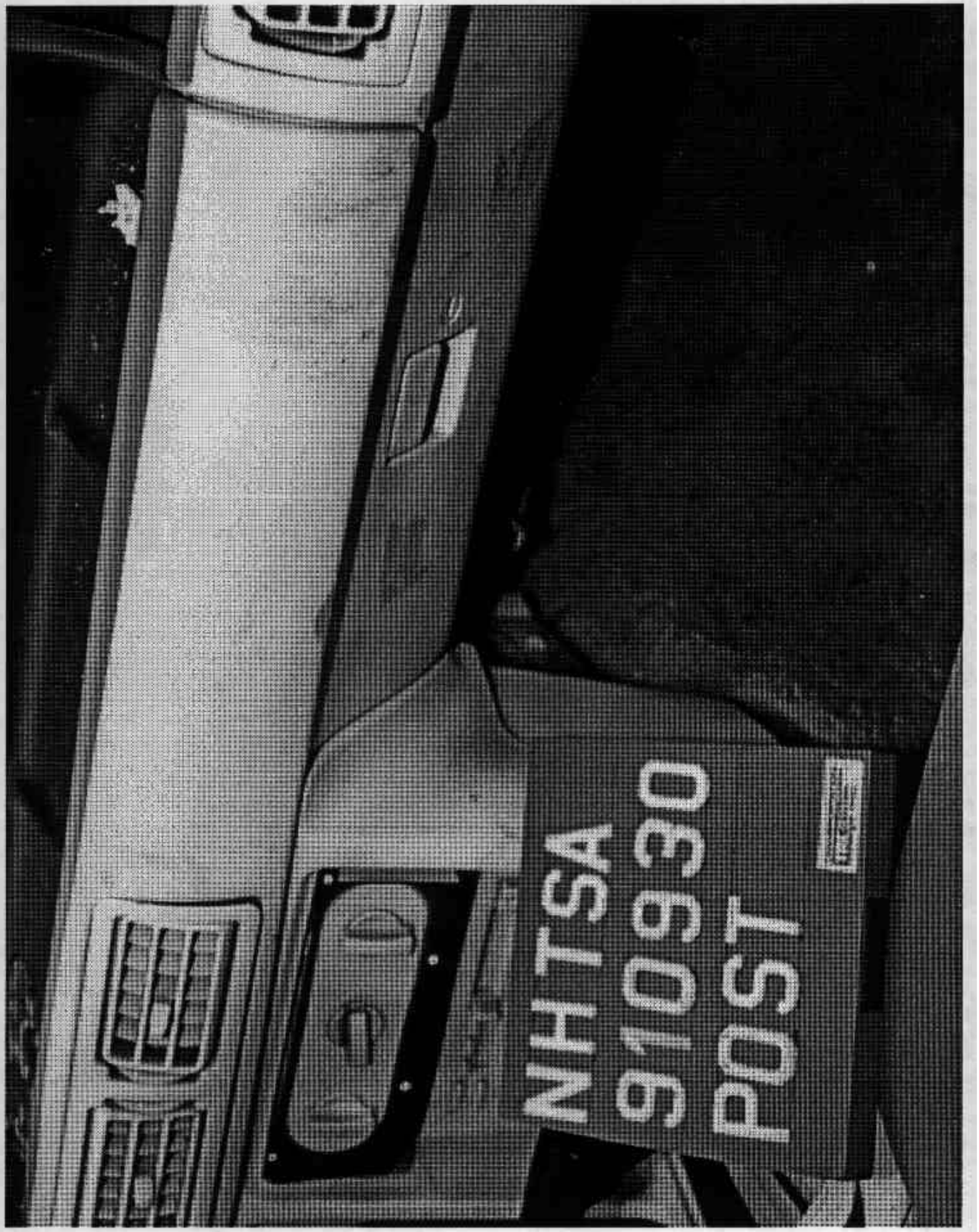


FIG. A-45 POST-TEST PASSENGER DUMMY KNEE CONTACT - 2

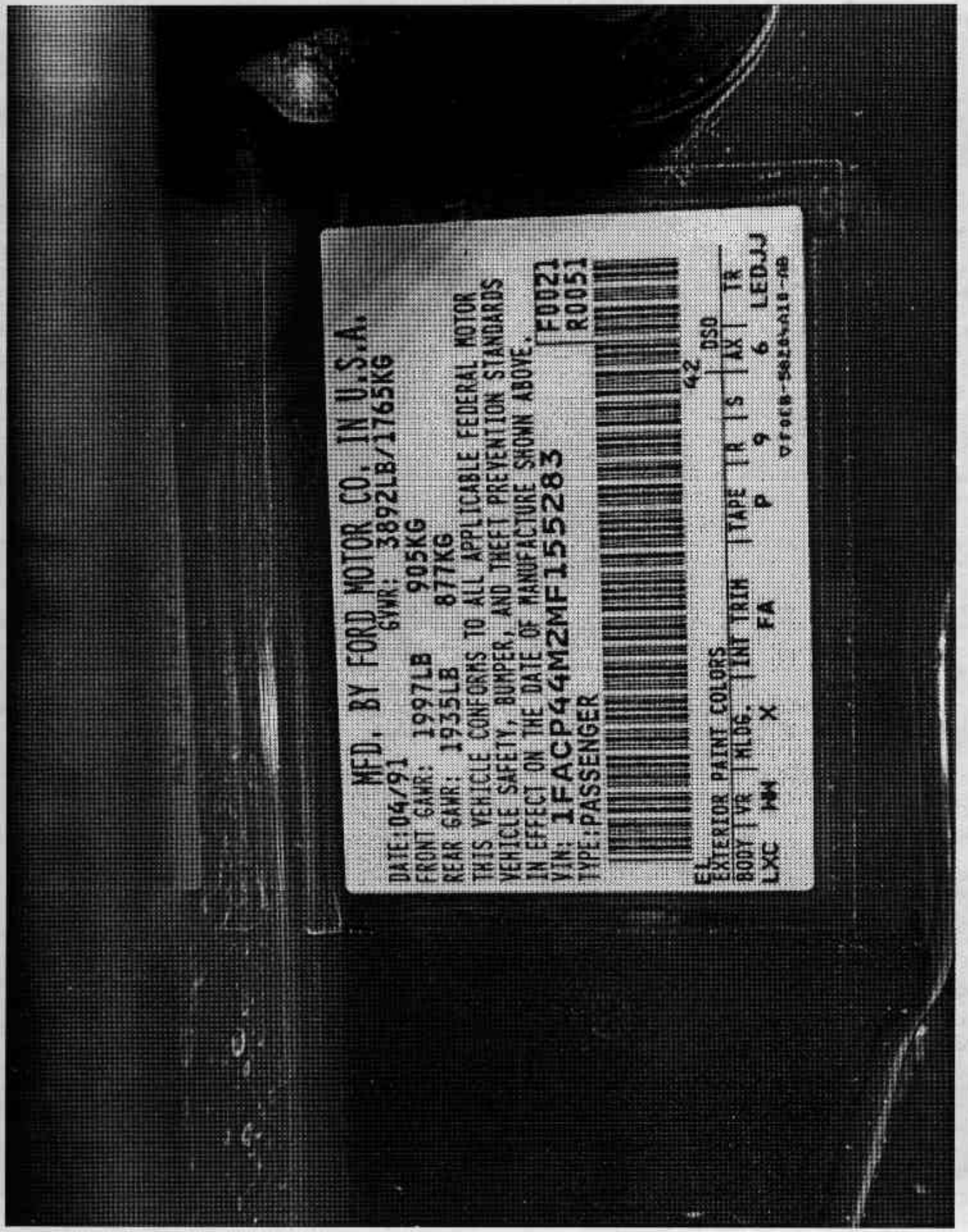


FIGURE A-46 PRE-TEST VEHICLE CERTIFICATION LABEL VIEW

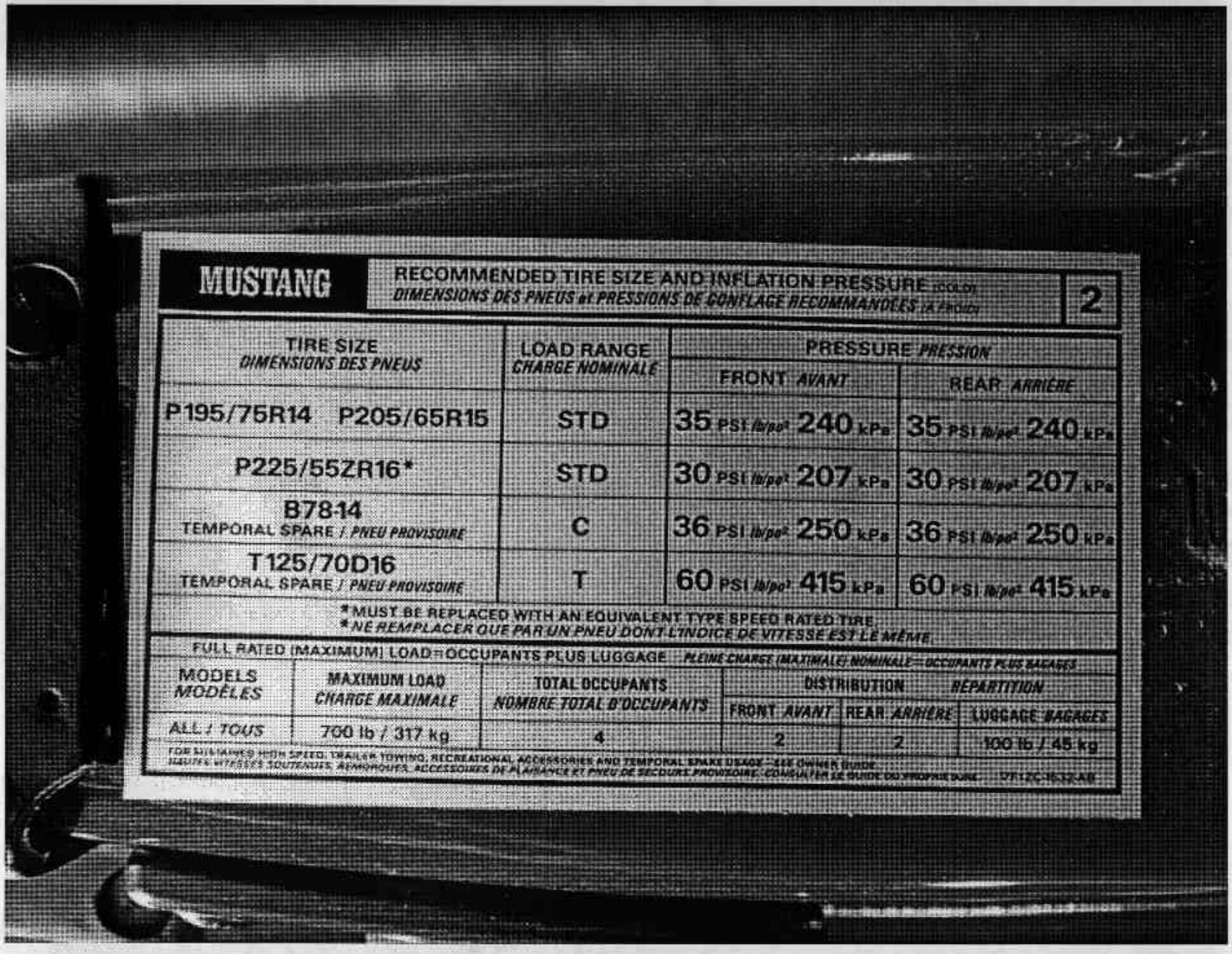


FIGURE A-47 PRE-TEST VEH. RECOMMENDED TIRE PRESSURE LABEL

910930

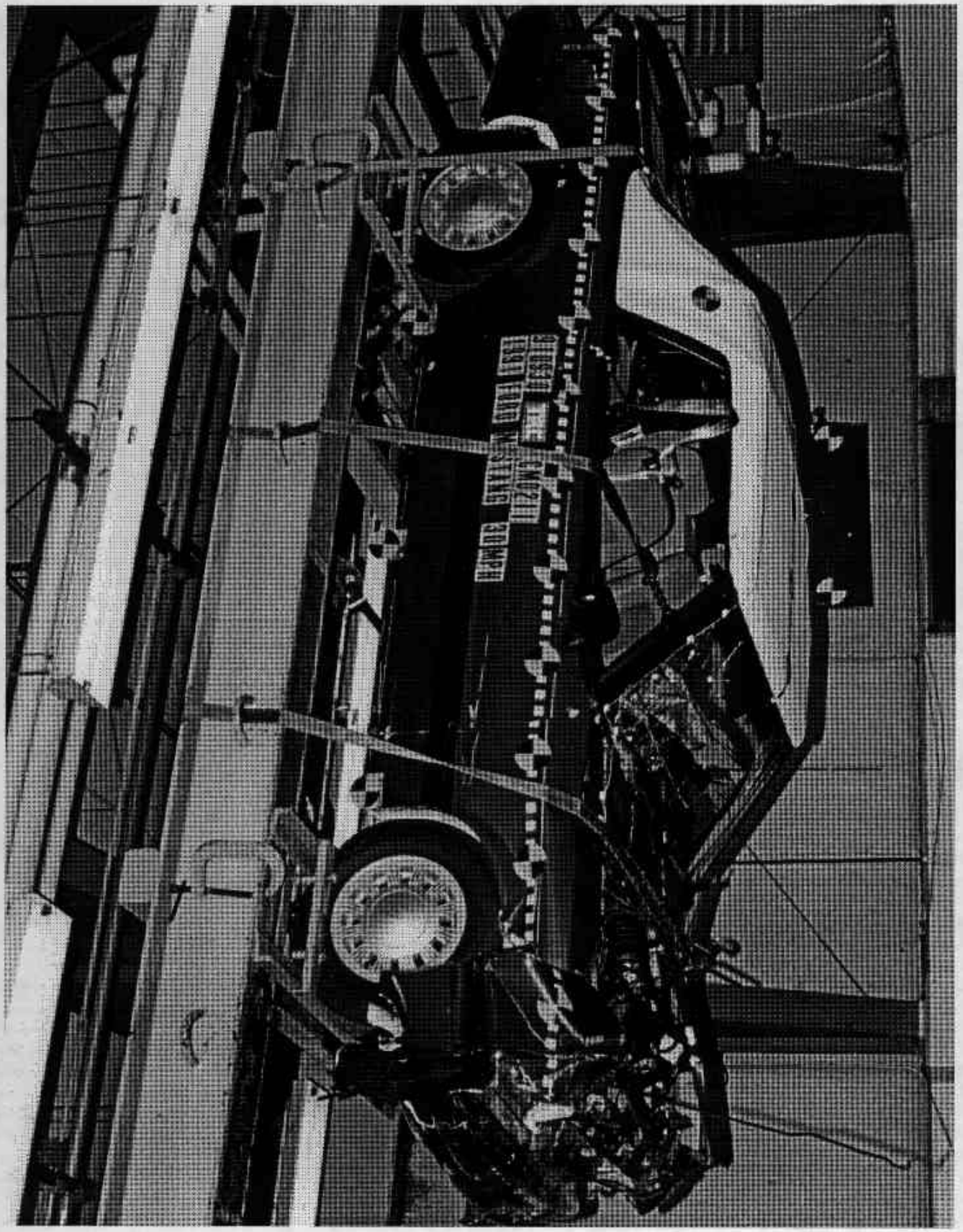
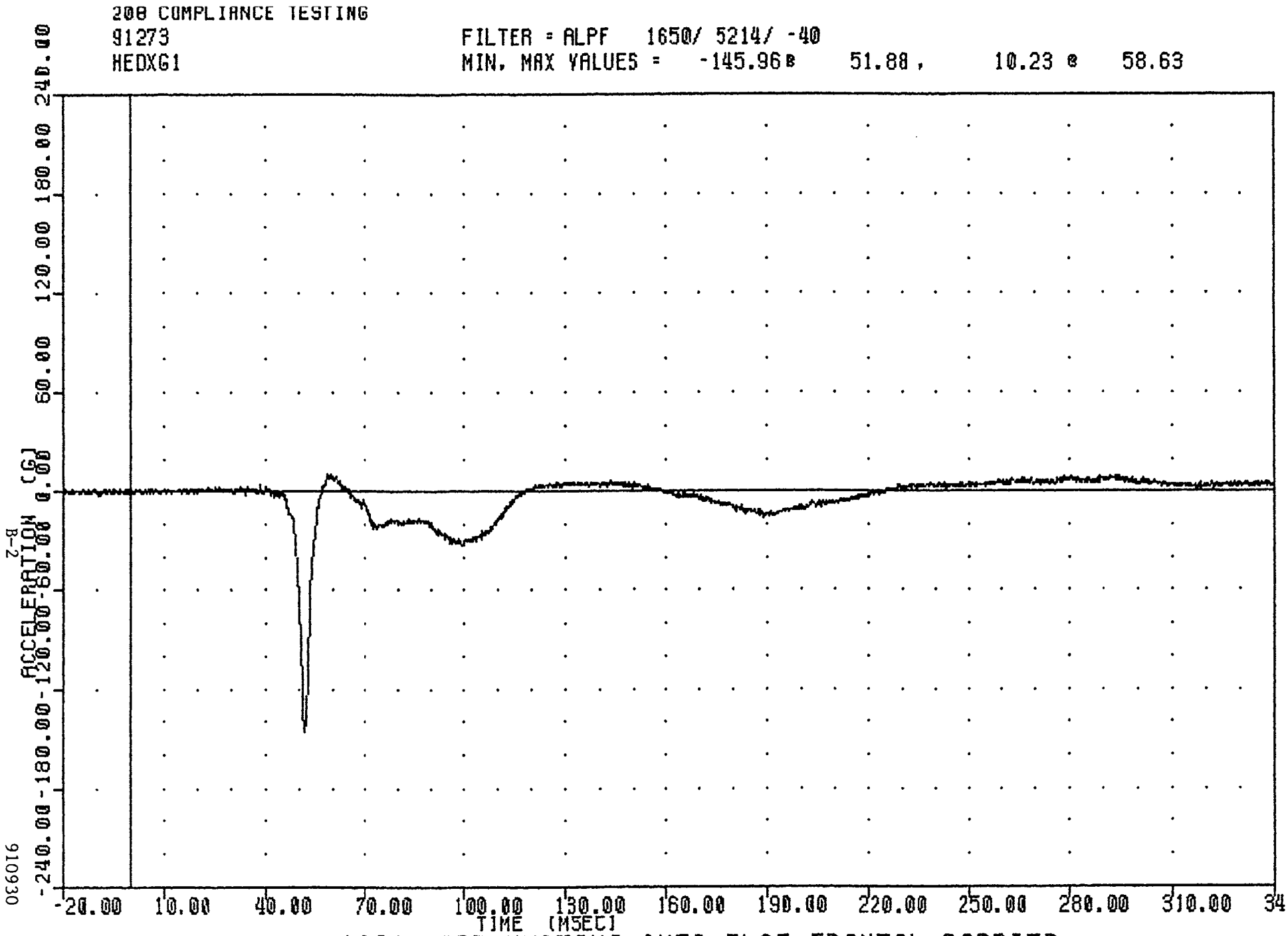


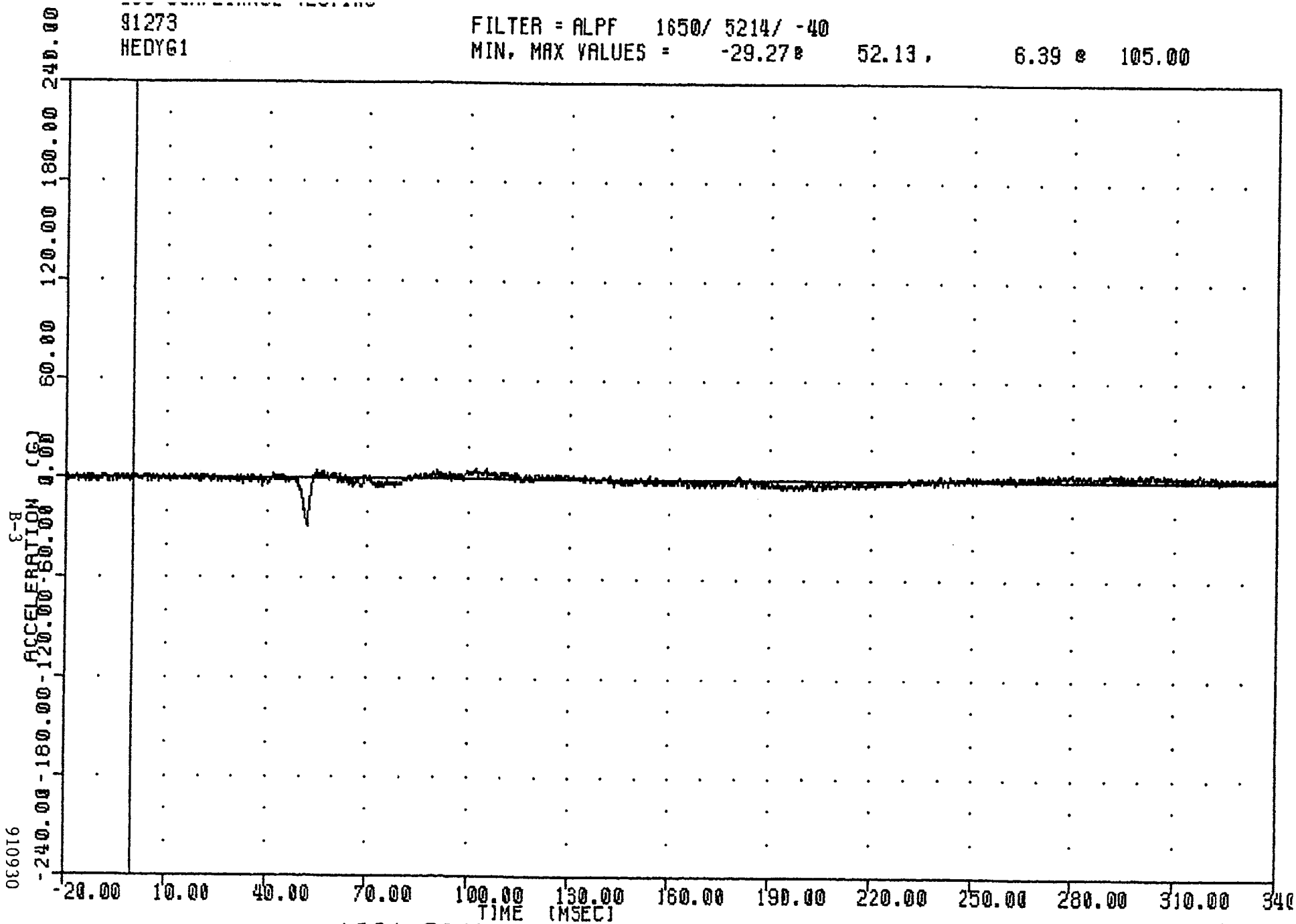
FIGURE A-48 POST-TEST VEHICLE ON STATIC ROLLOVER MACHINE

APPENDIX B

DATA PLOTS



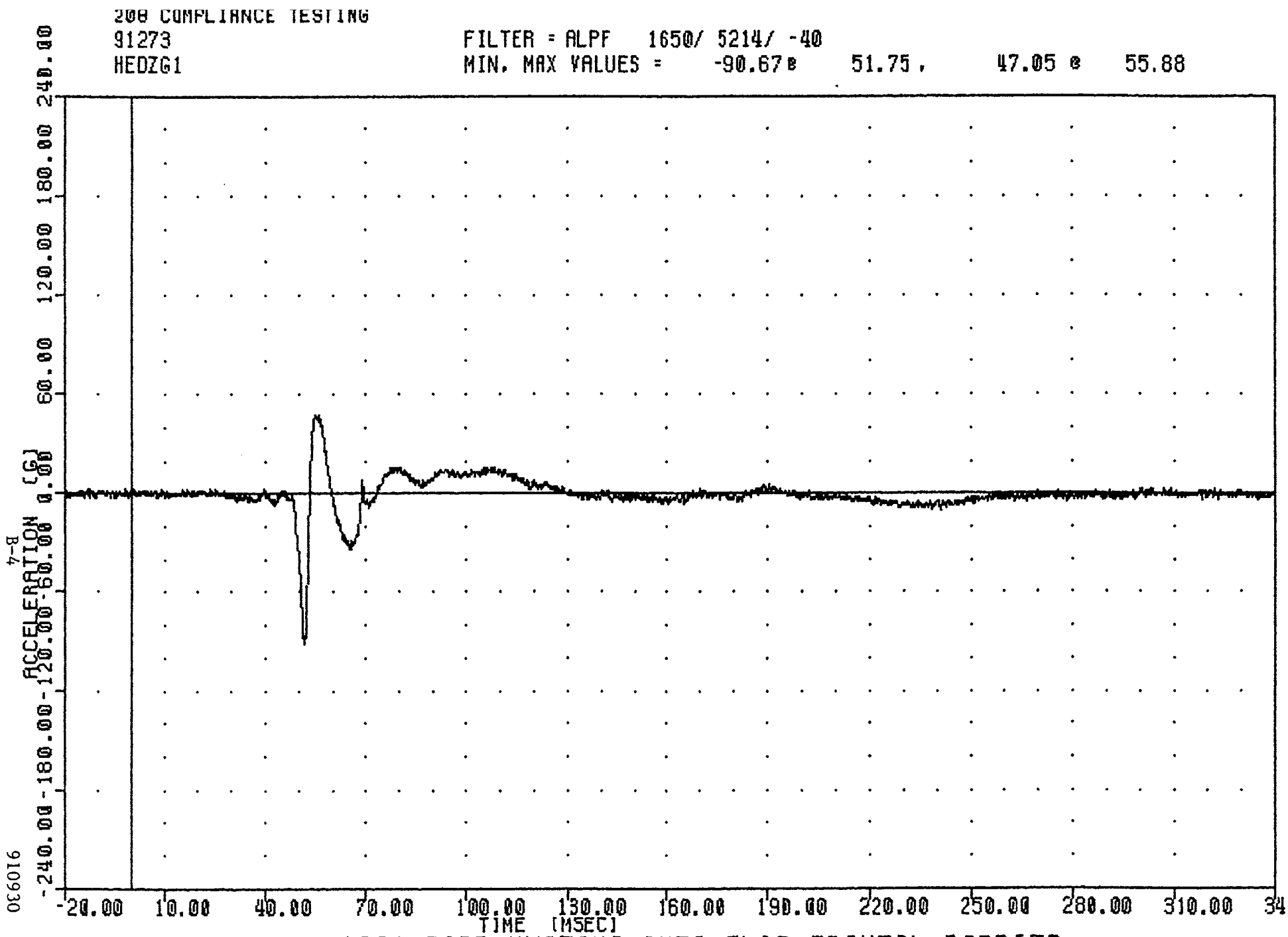
1991 FORD MUSTANG INTO FLAT FRONTAL BARRIER
DRIVER HEAD X-AXIS ACCELERATION



1991 FORD MUSTANG INTO FLAT FRONTAL BARRIER
DRIVER HEAD Y-AXIS ACCELERATION

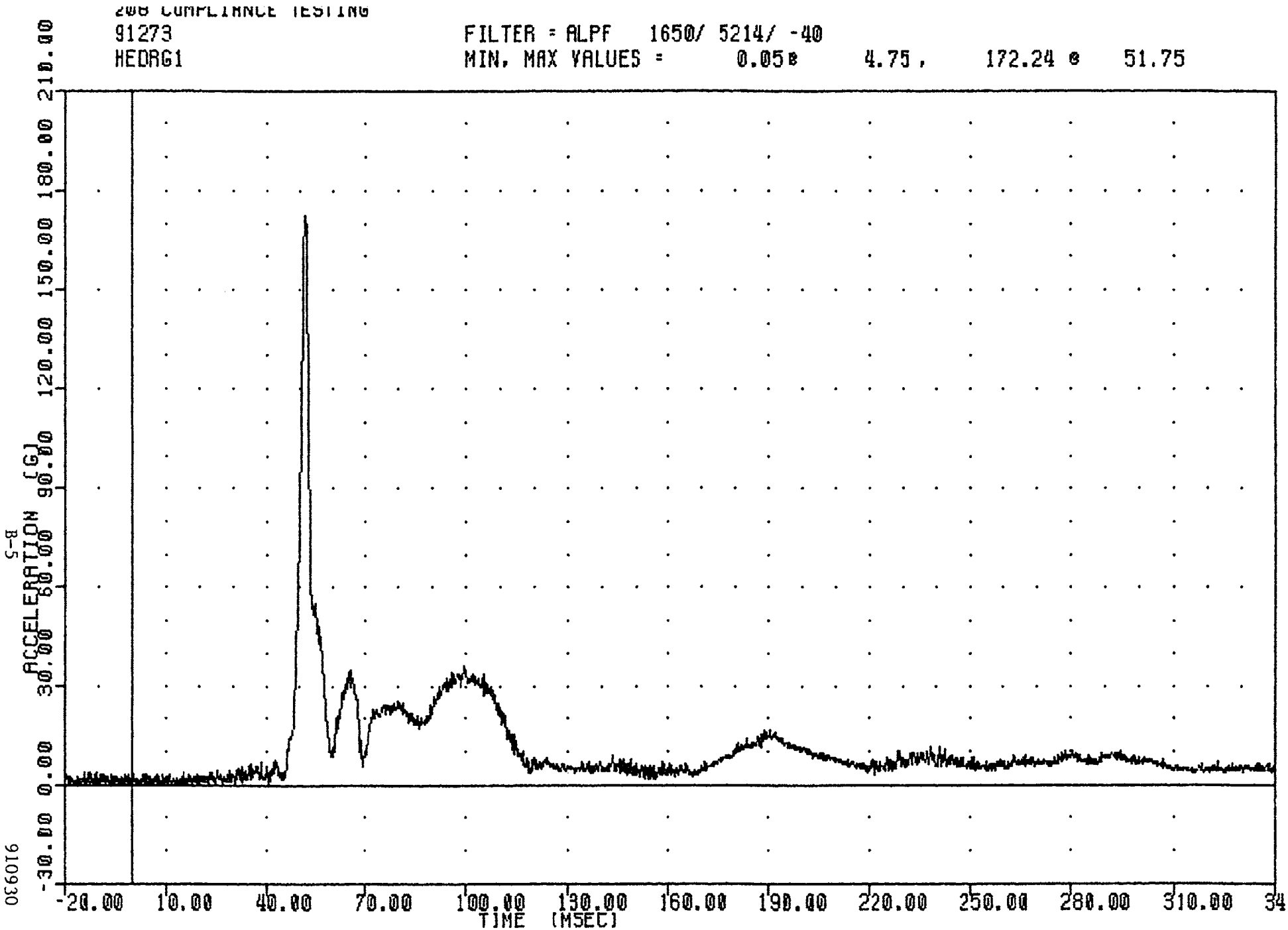
B-3

910930



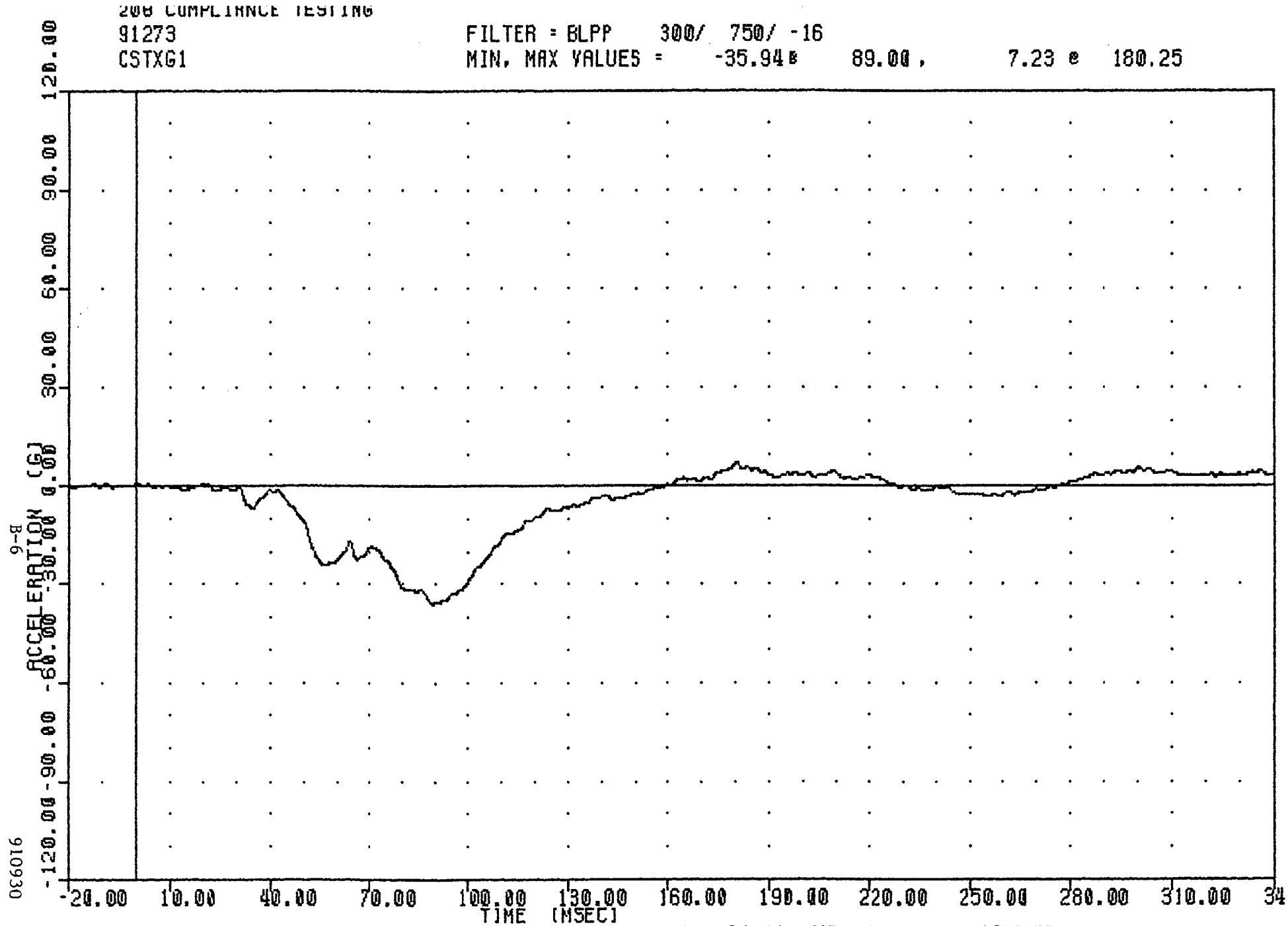
1991 FORD MUSTANG INTO FLAT FRONTAL BARRIER
DRIVER HEAD Z-AXIS ACCELERATION

910930



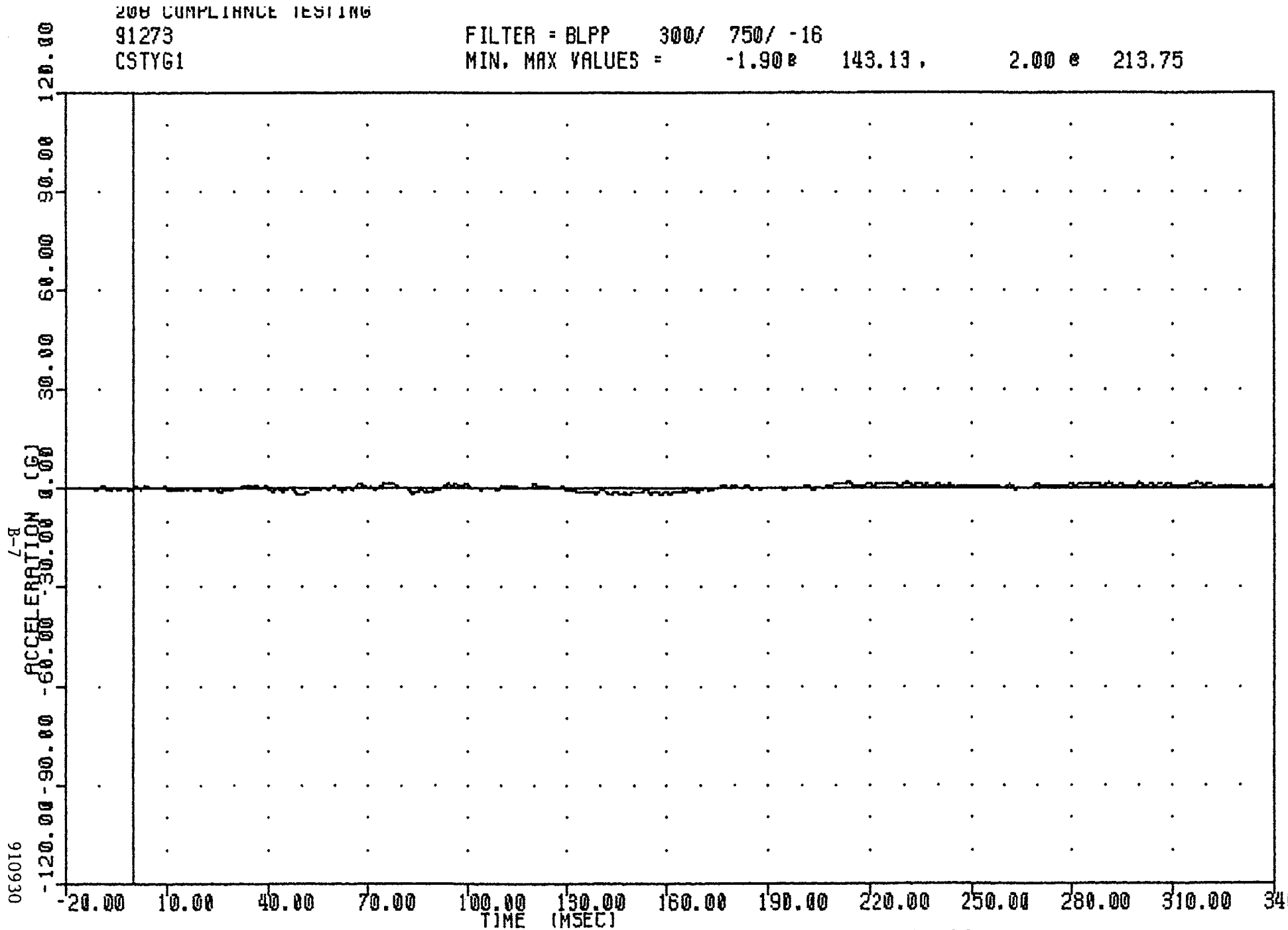
1991 FORD MUSTANG INTO FLAT FRONTAL BARRIER
DRIVER HEAD RESULTANT ACCELERATION

910930

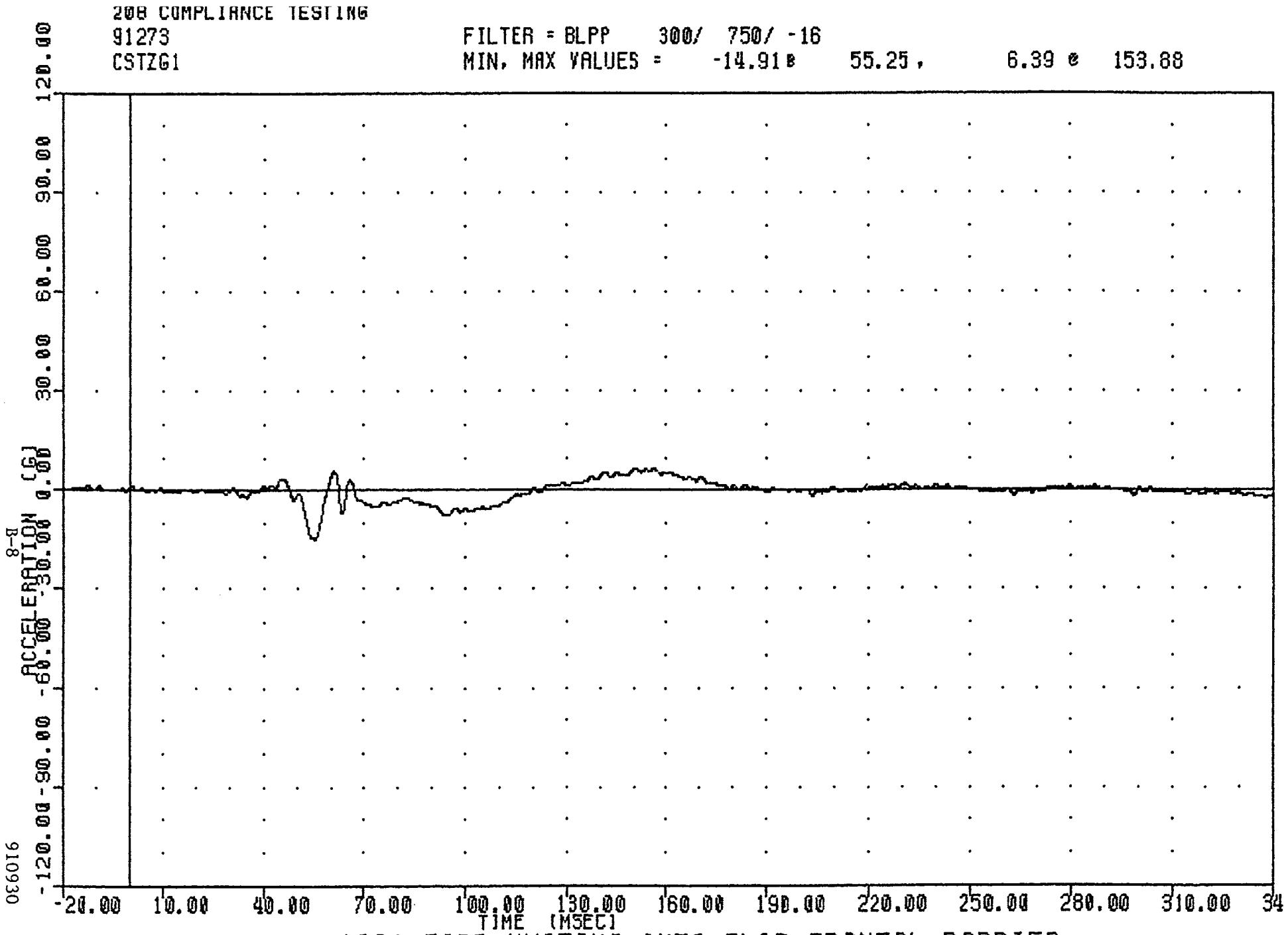


1991 FORD MUSTANG INTO FLAT FRONTAL BARRIER
DRIVER CHEST X-AXIS ACCELERATION

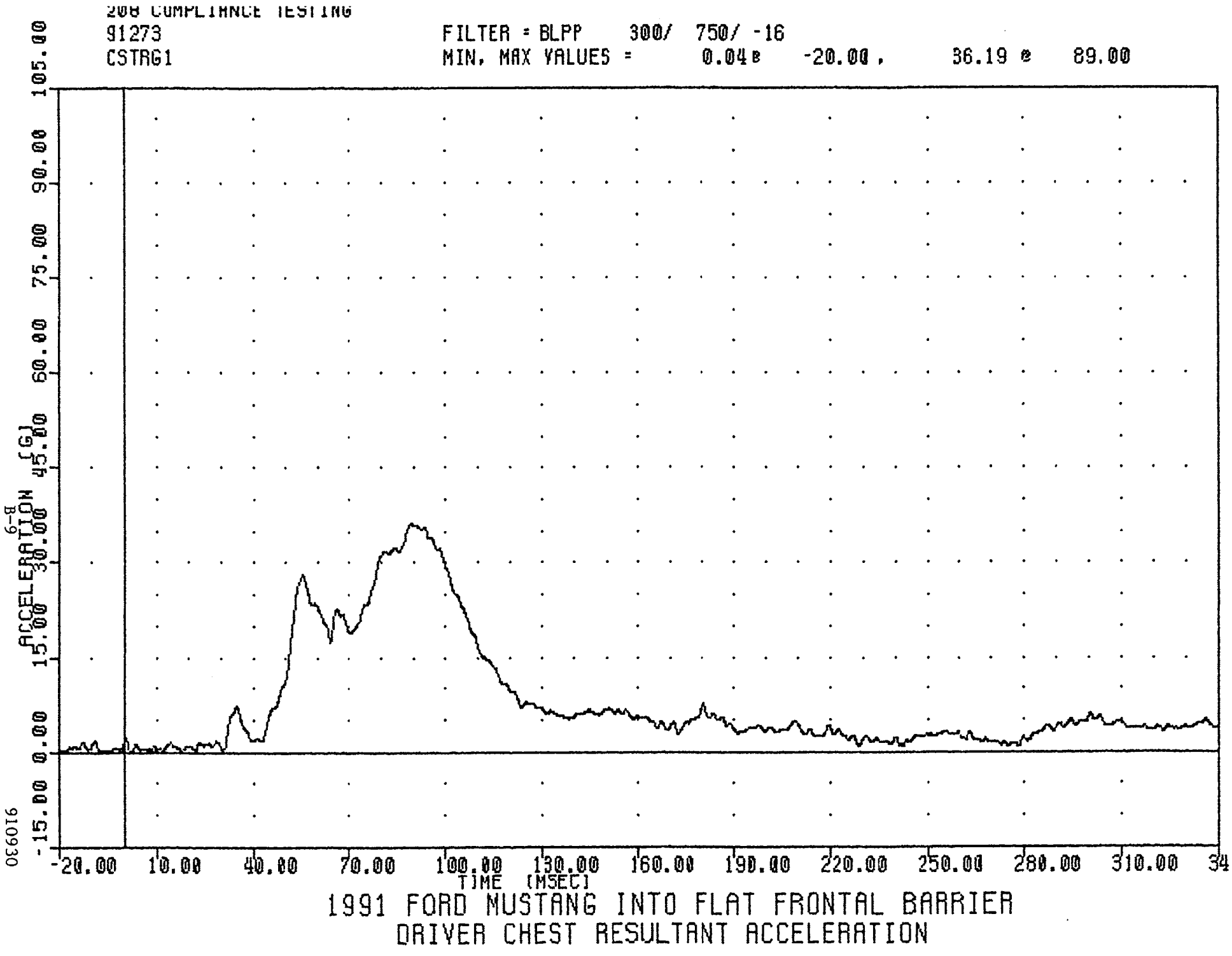
910930



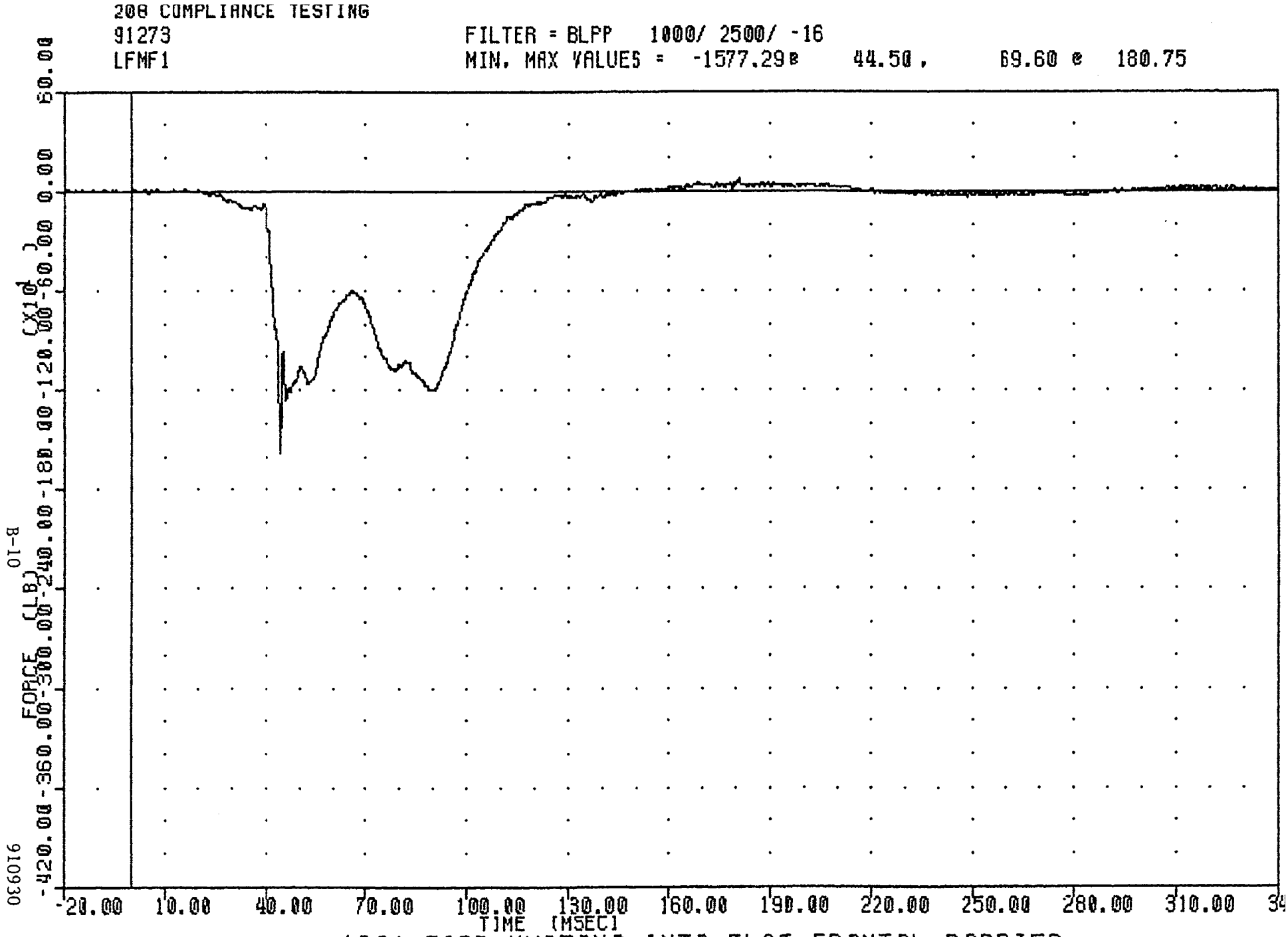
1991 FORD MUSTANG INTO FLAT FRONTAL BARRIER
DRIVER CHEST Y-AXIS ACCELERATION



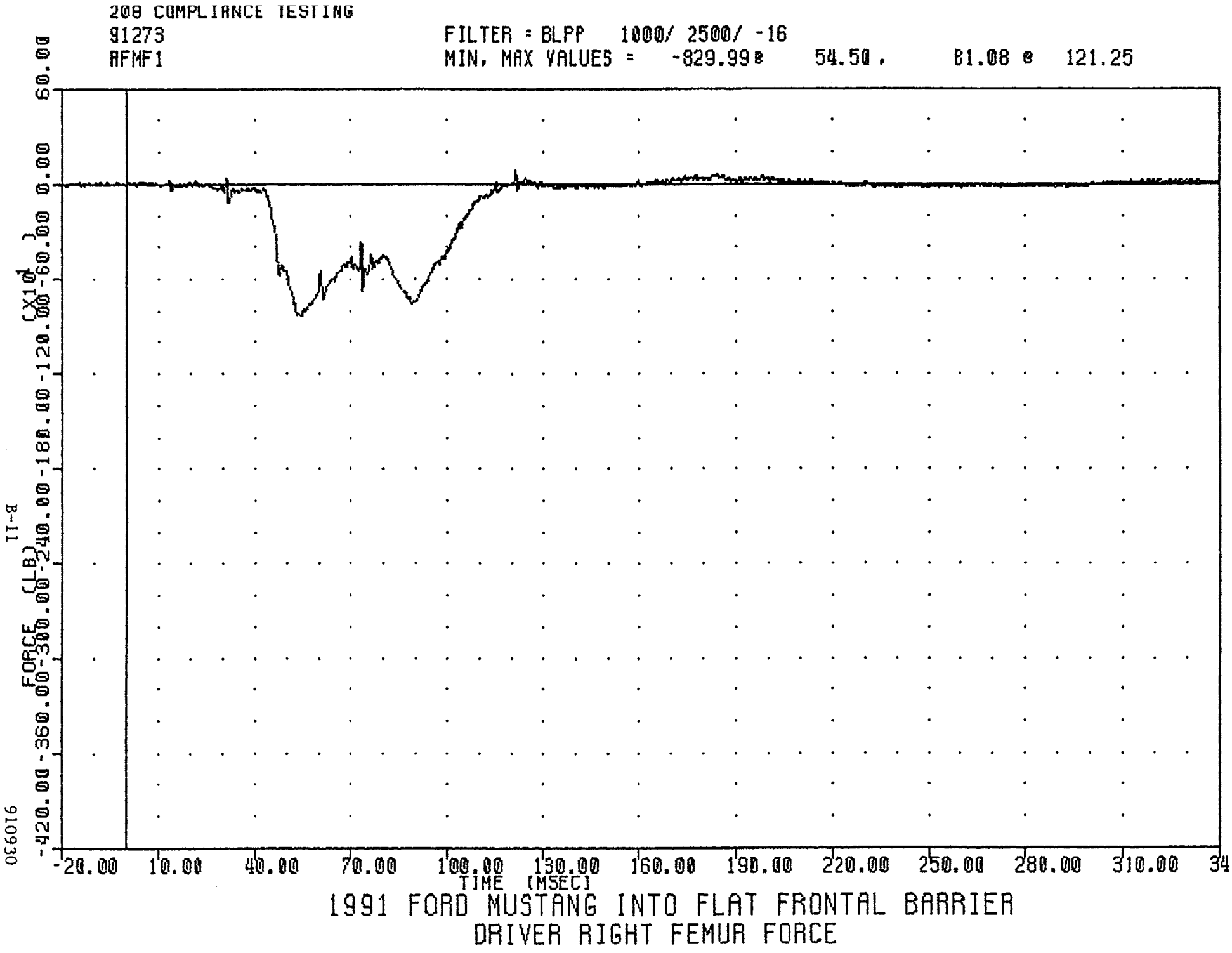
1991 FORD MUSTANG INTO FLAT FRONTAL BARRIER
DRIVER CHEST Z-AXIS ACCELERATION



1991 FORD MUSTANG INTO FLAT FRONTAL BARRIER
DRIVER CHEST RESULTANT ACCELERATION

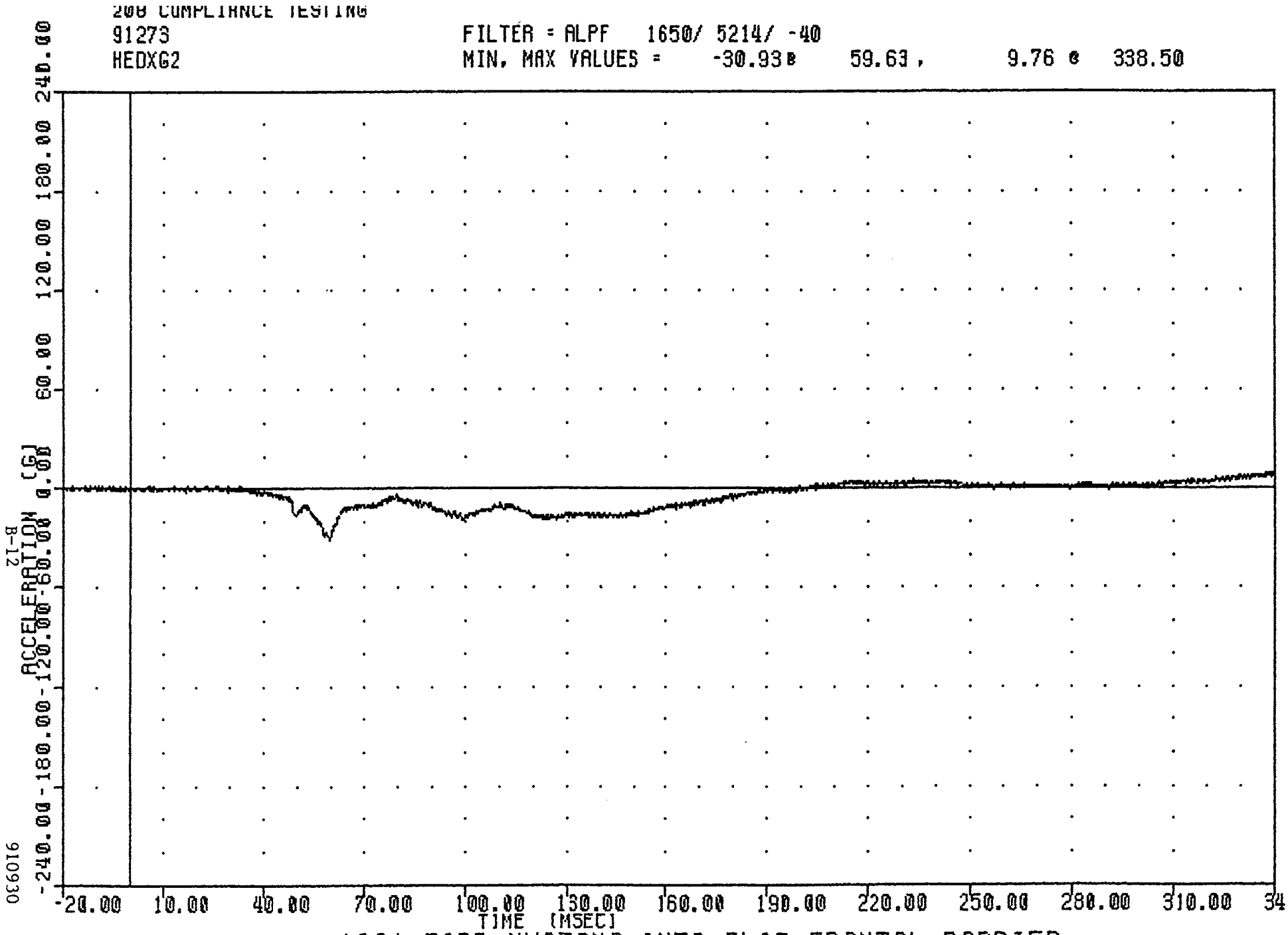


1991 FORD MUSTANG INTO FLAT FRONTAL BARRIER
DRIVER LEFT FEMUR FORCE

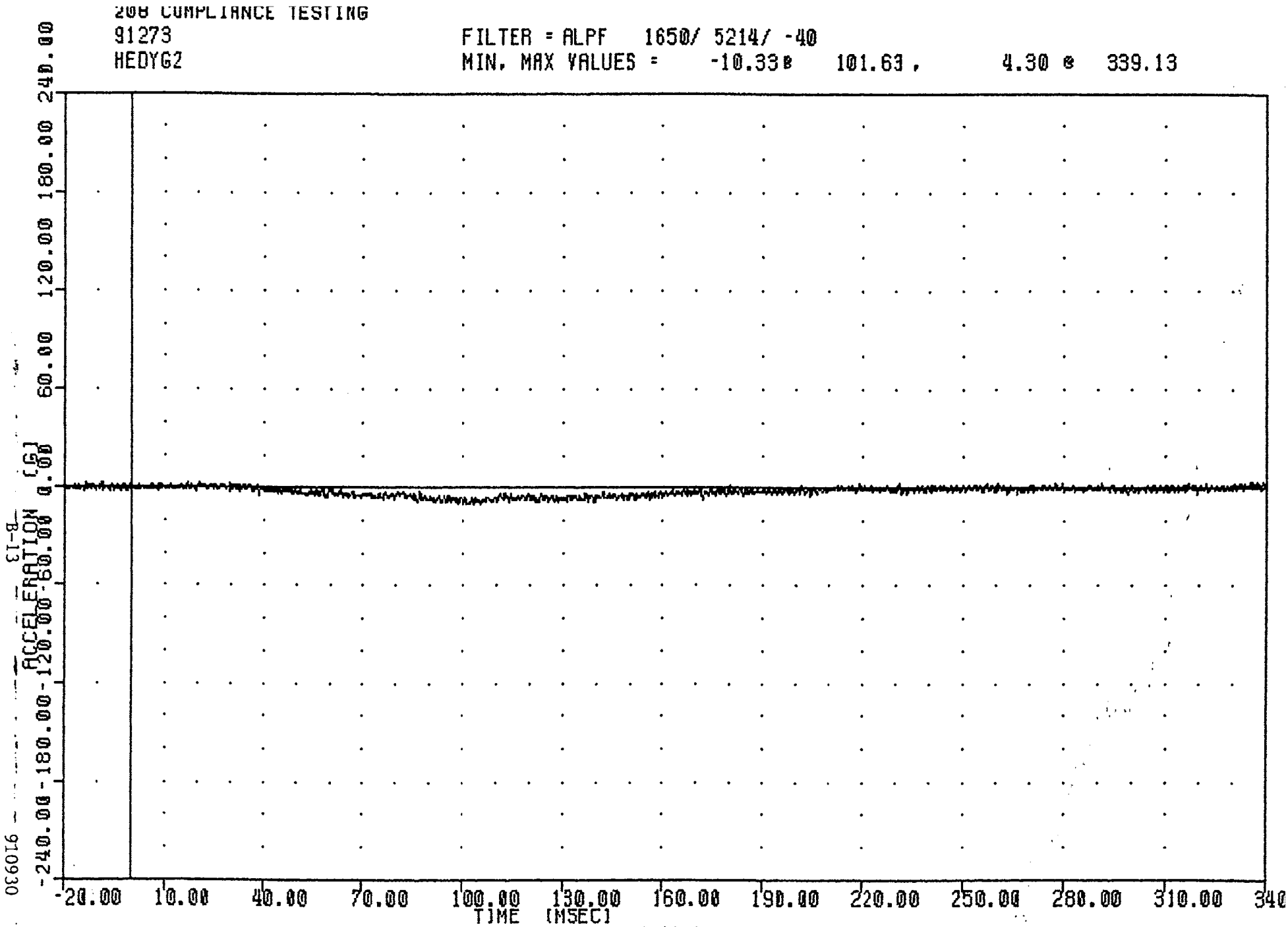


1991 FORD MUSTANG INTO FLAT FRONTAL BARRIER
DRIVER RIGHT FEMUR FORCE

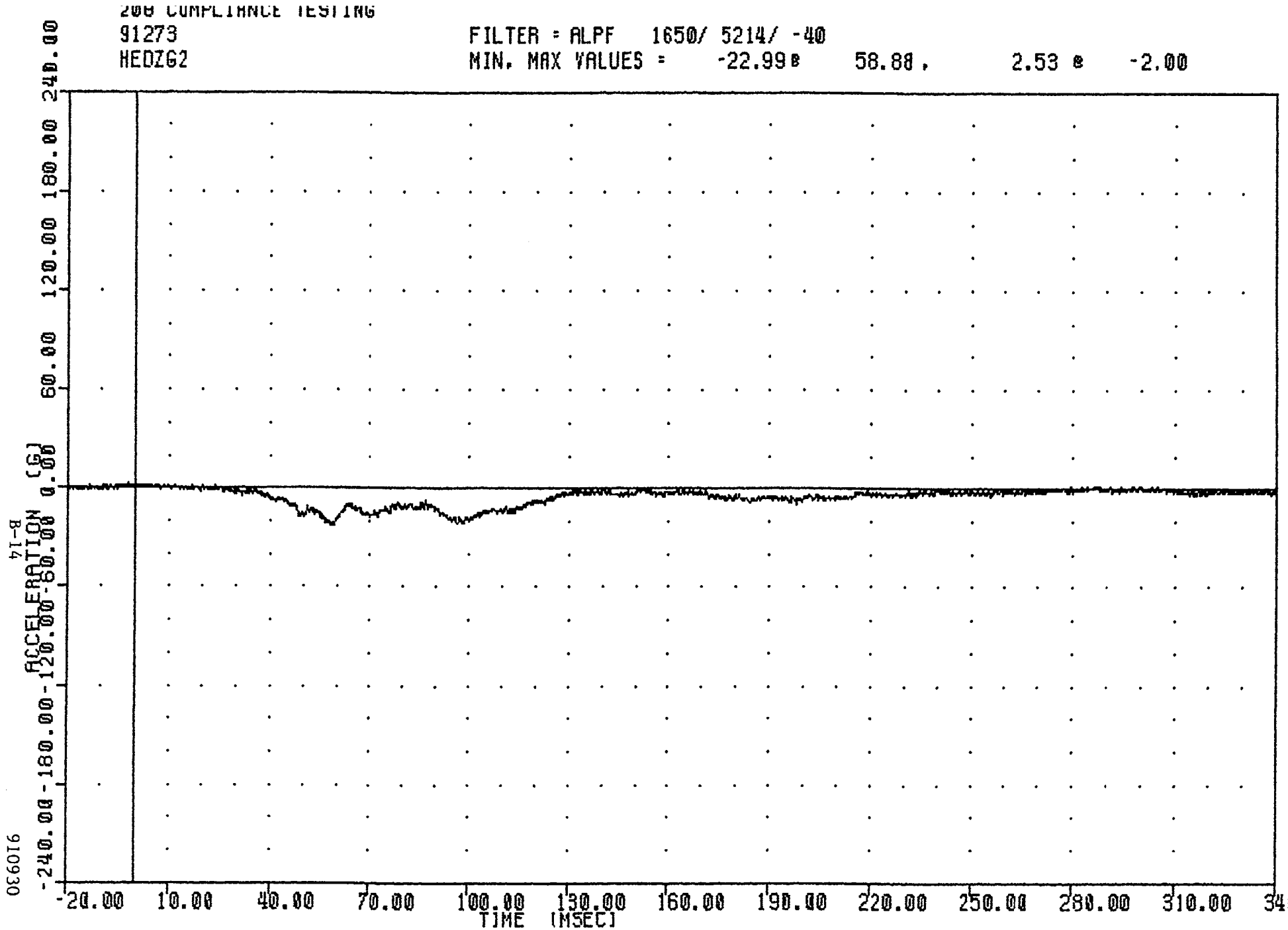
910930



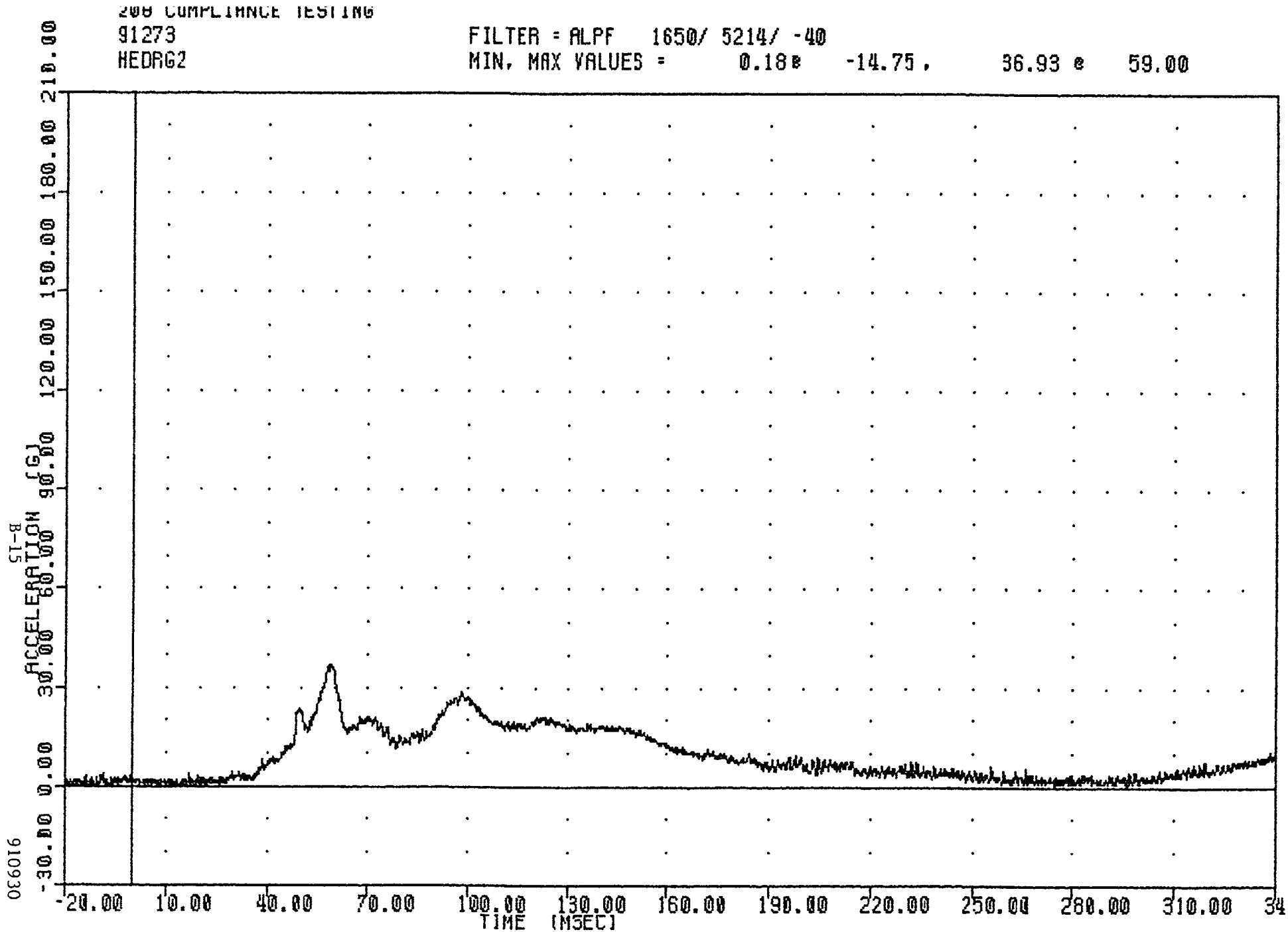
1991 FORD MUSTANG INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER HEAD X-AXIS ACCELERATION



1991 FORD MUSTANG INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER HEAD Y-AXIS ACCELERATION

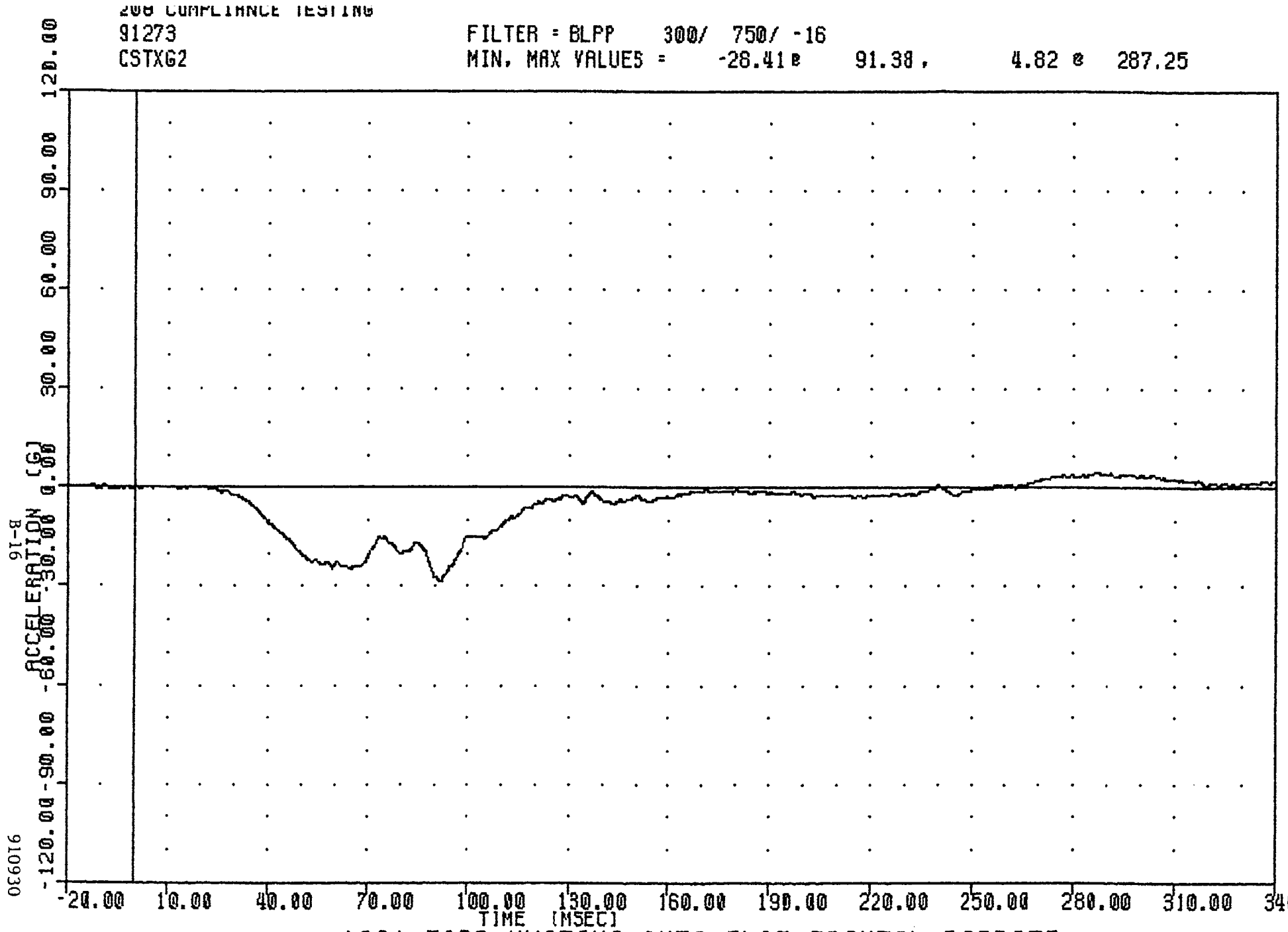


1991 FORD MUSTANG INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER HEAD Z-AXIS ACCELERATION

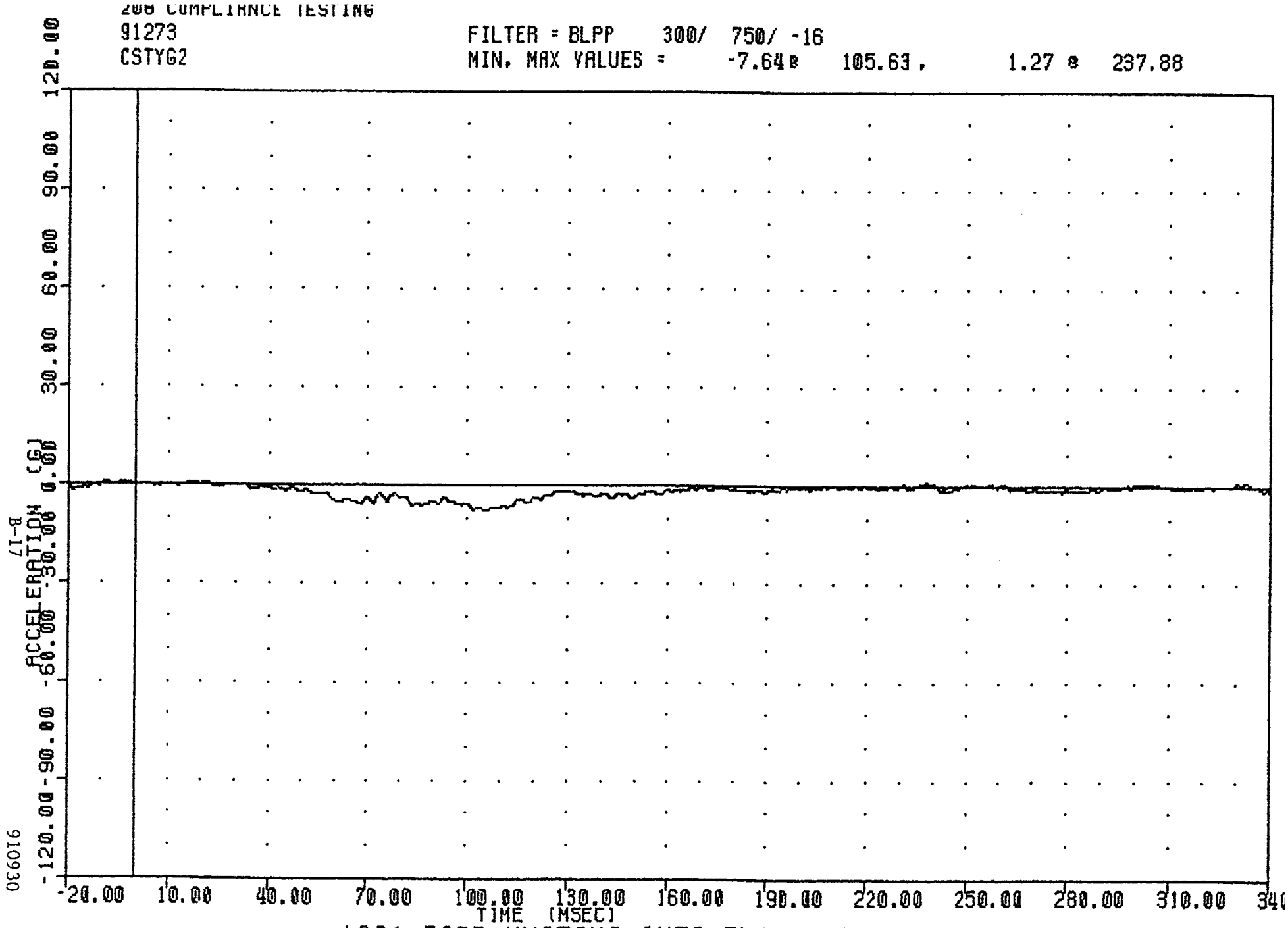


1991 FORD MUSTANG INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER HEAD RESULTANT ACCELERATION

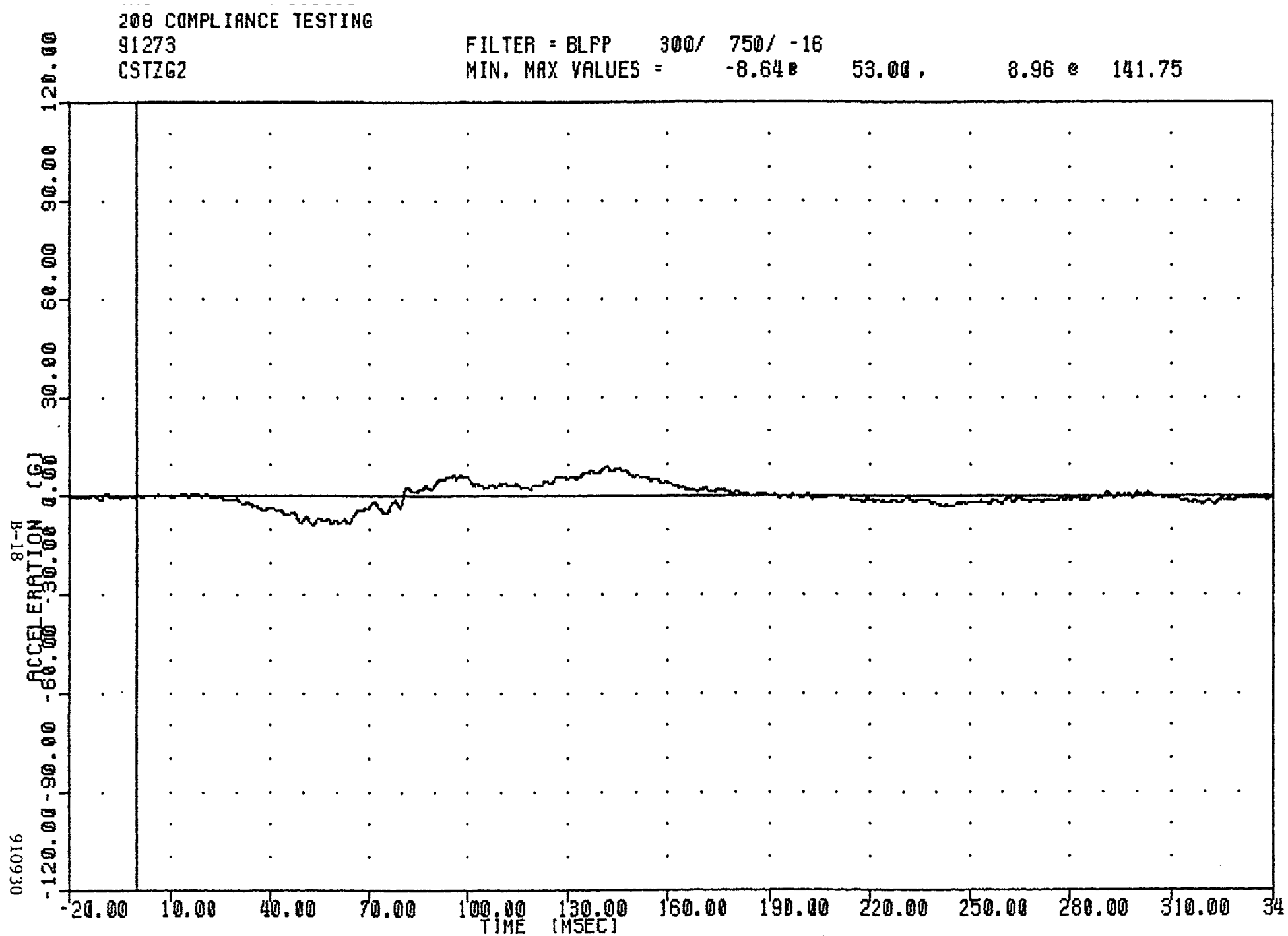
910930



1991 FORD MUSTANG INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER CHEST X-AXIS ACCELERATION

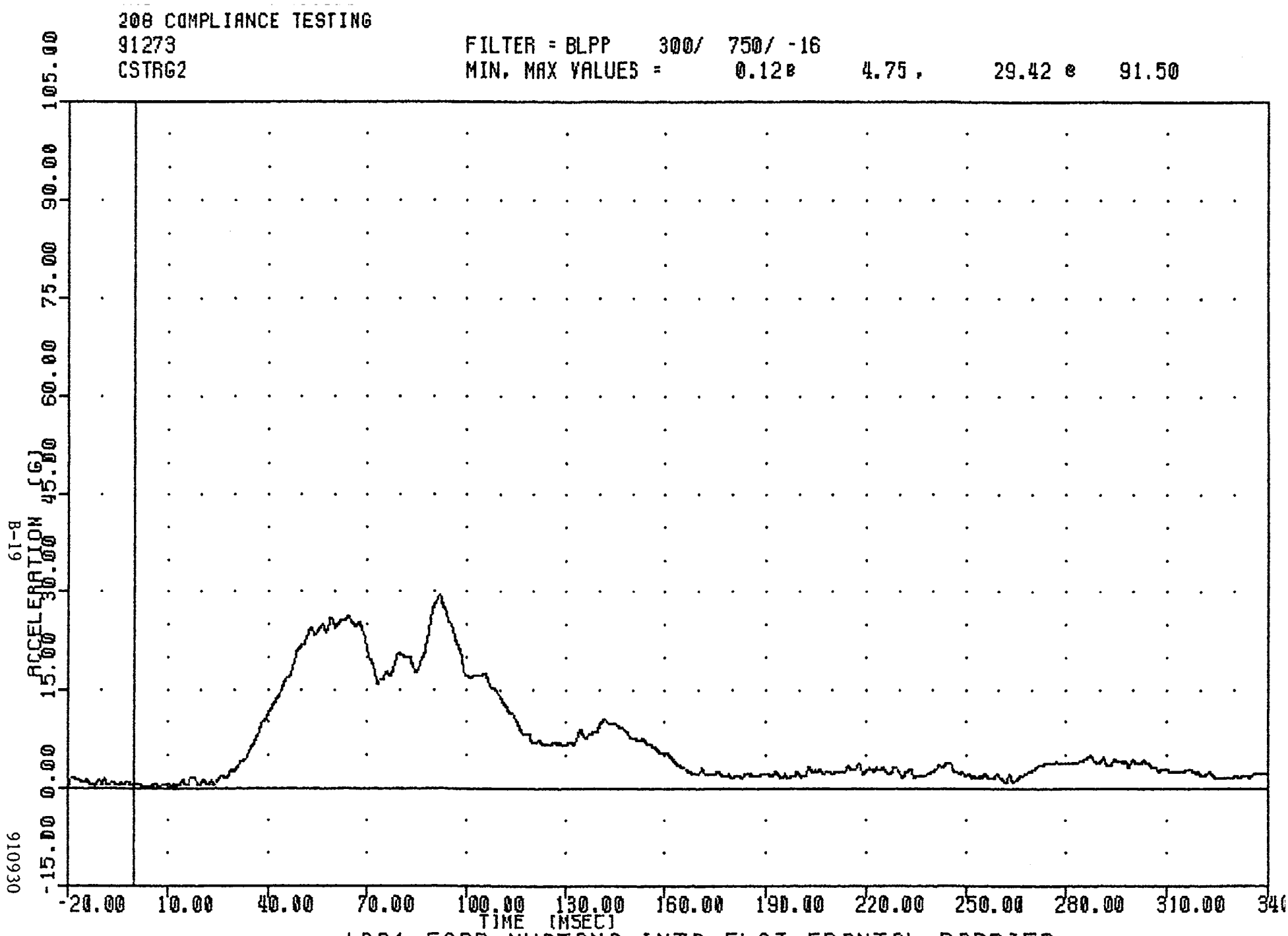


1991 FORD MUSTANG INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER CHEST Y-AXIS ACCELERATION

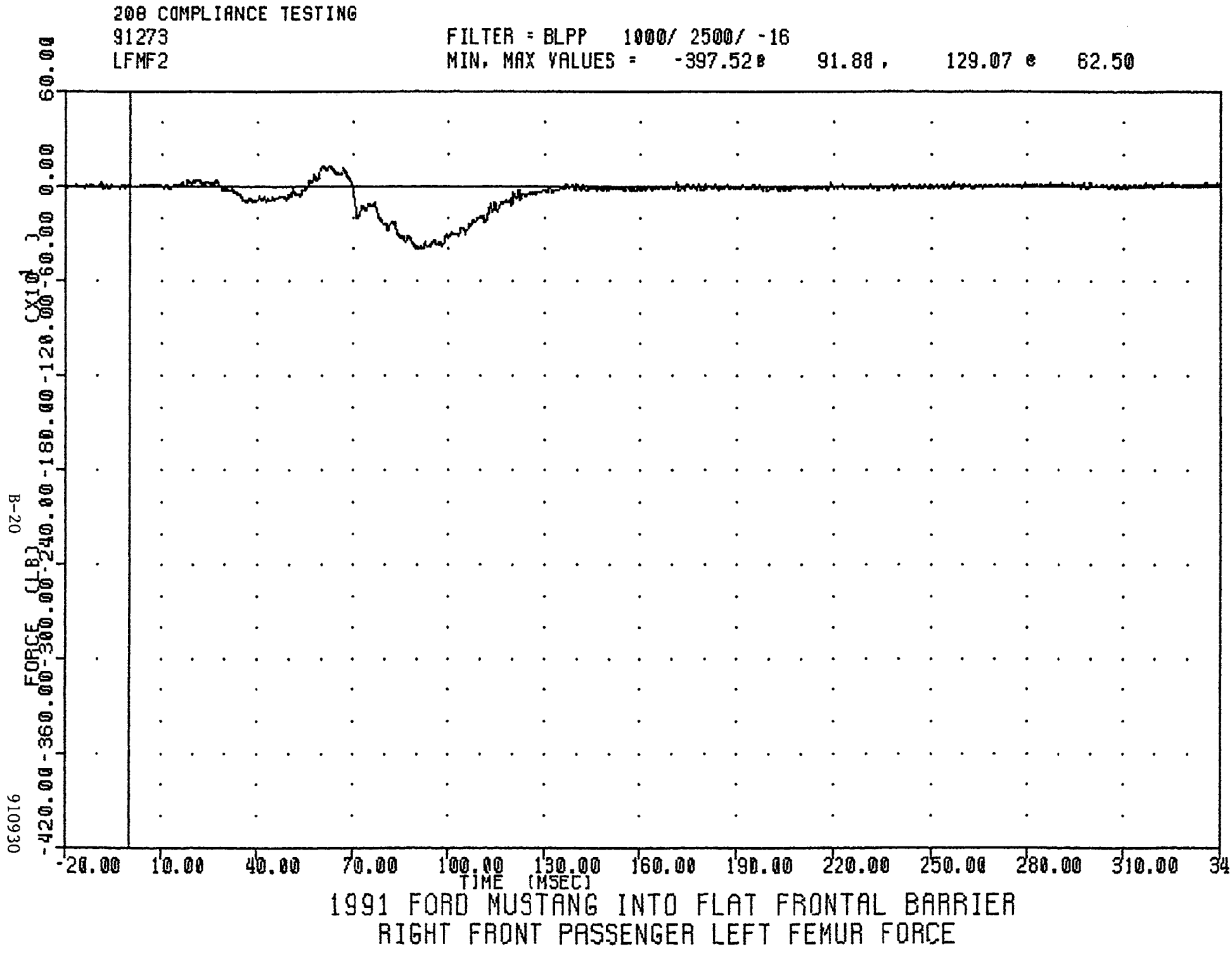


1991 FORD MUSTANG INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER CHEST Z-AXIS ACCELERATION

910930

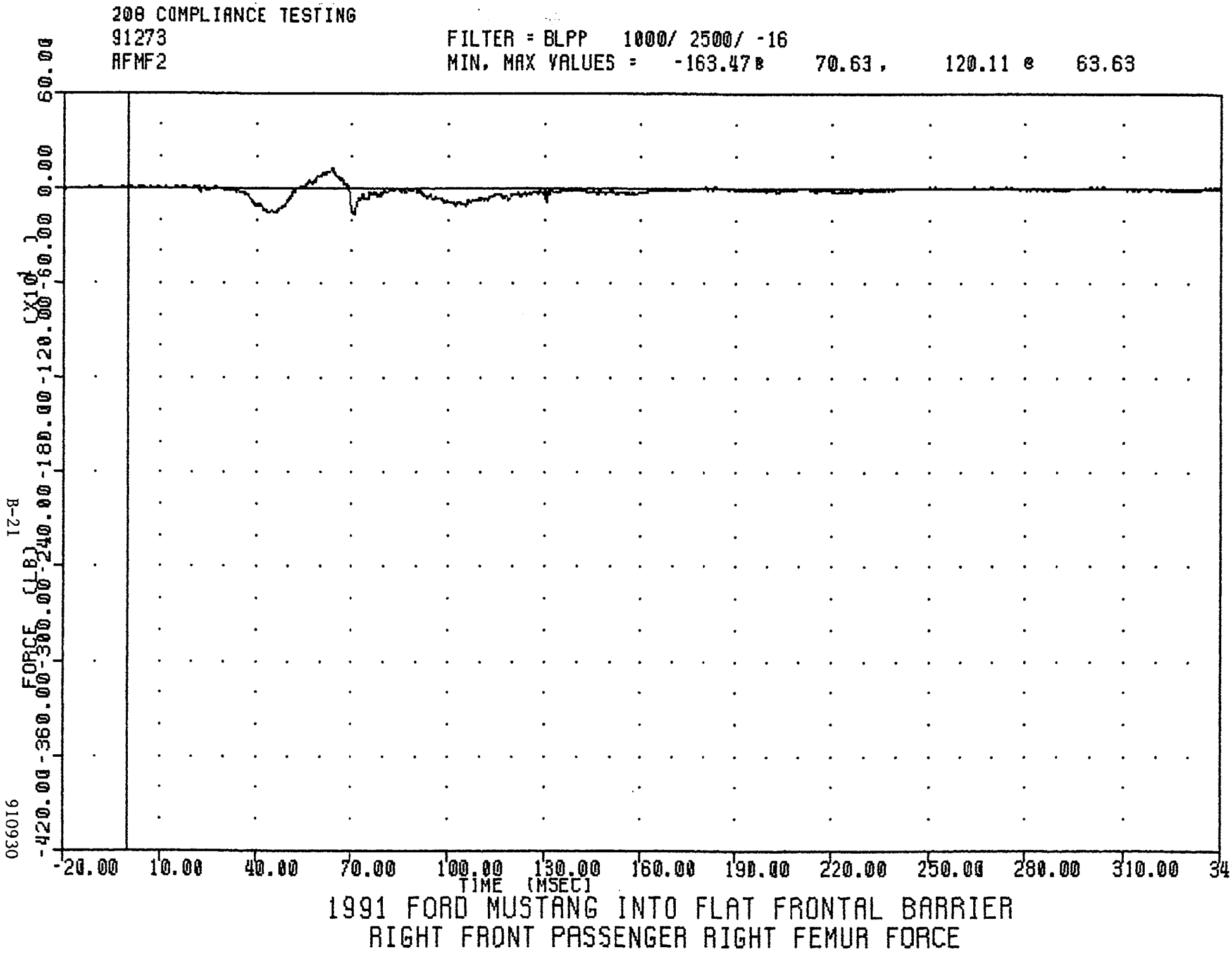


1991 FORD MUSTANG INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER CHEST RESULTANT ACCELERATION



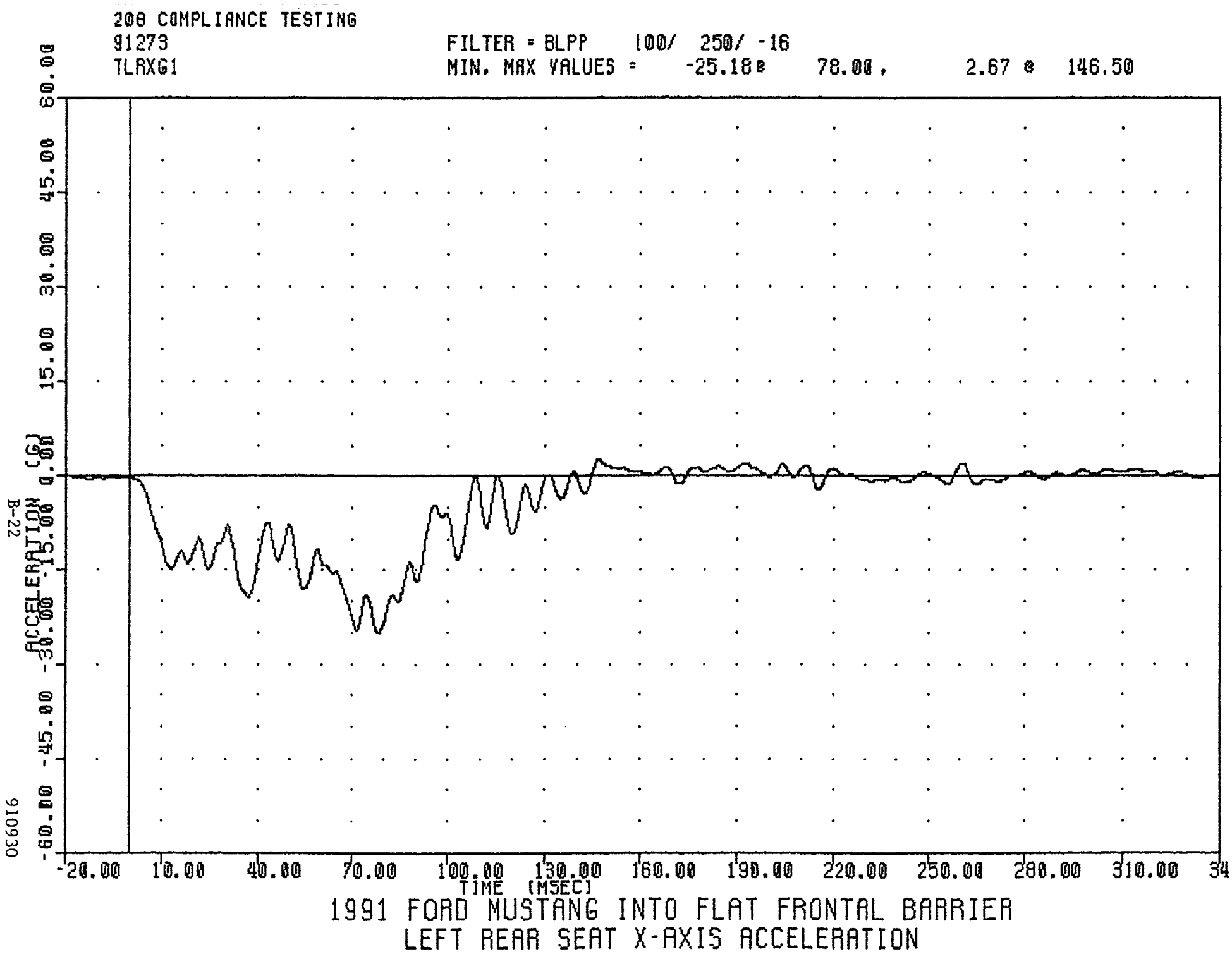
1991 FORD MUSTANG INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER LEFT FEMUR FORCE

910930

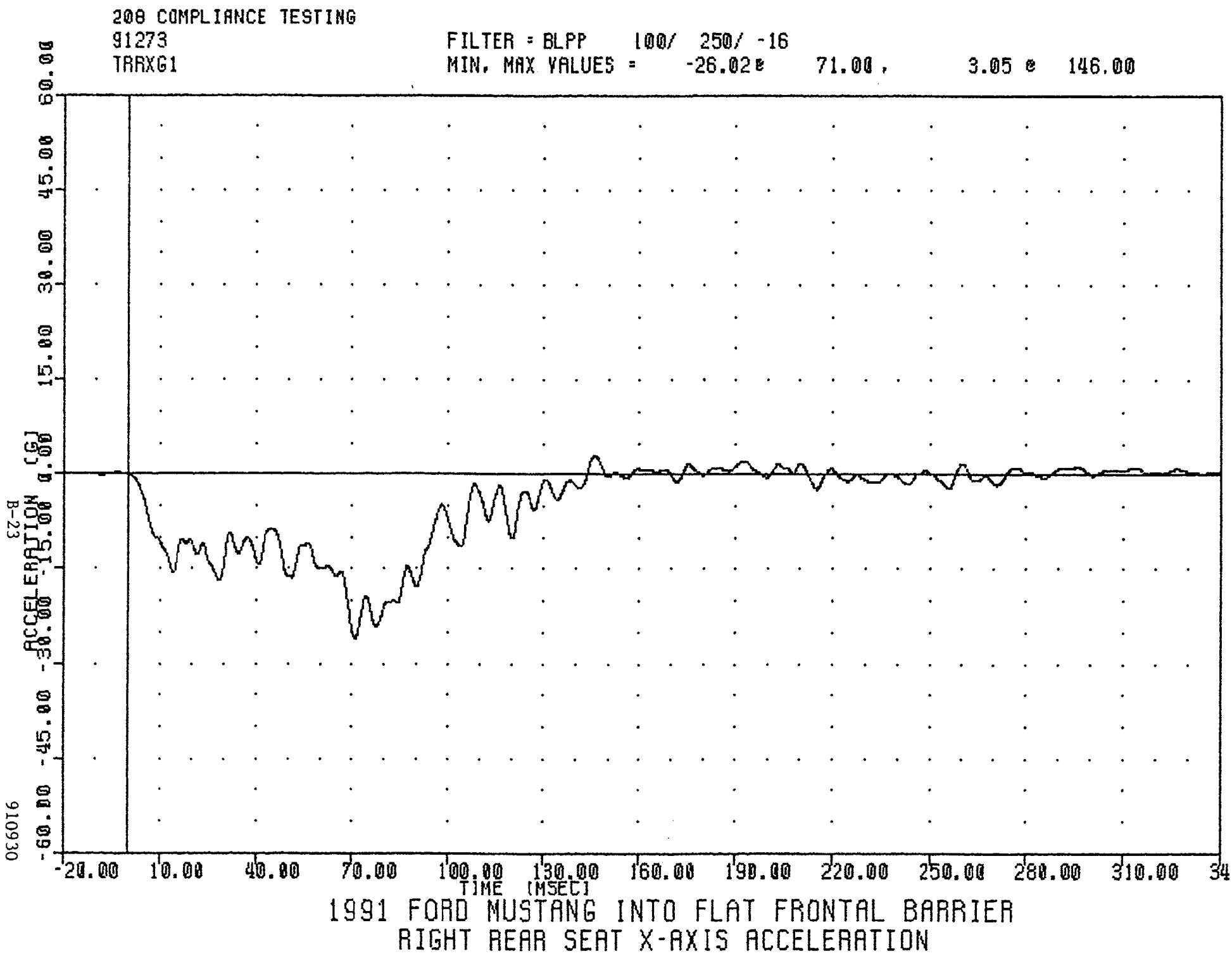


1991 FORD MUSTANG INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER RIGHT FEMUR FORCE

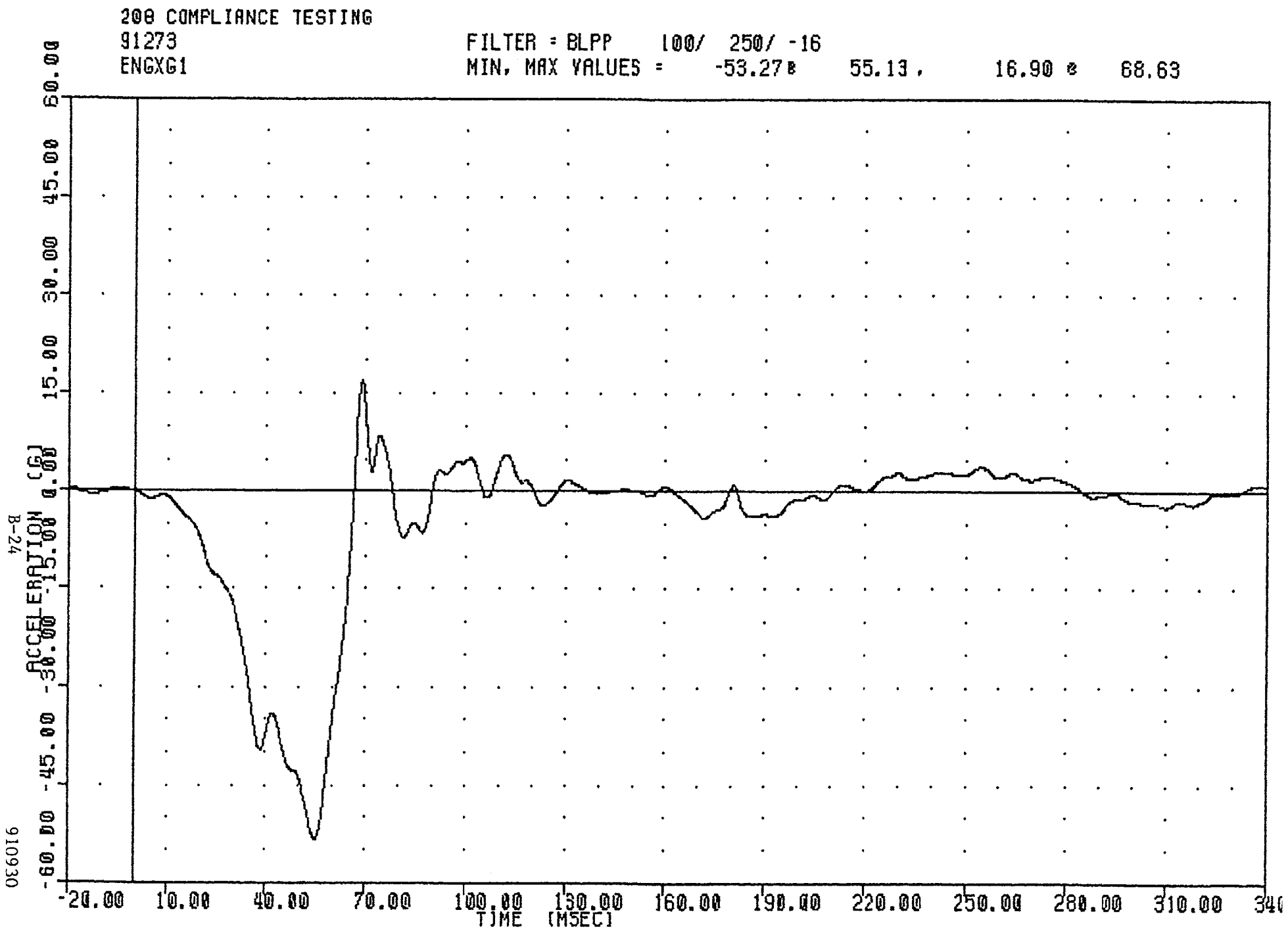
910930


208 COMPLIANCE TESTING
91273
TLRXG1
FILTER = BLPP 100/ 250/ -16
MIN, MAX VALUES = -25.18 @ 78.00 , 2.67 @ 146.50
90.00
45.00
30.00
15.00
0.00
-15.00
-30.00
-45.00
-60.00
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
TIME (MSEC)
1991 FORD MUSTANG INTO FLAT FRONTAL BARRIER
LEFT REAR SEAT X-AXIS ACCELERATION

910930

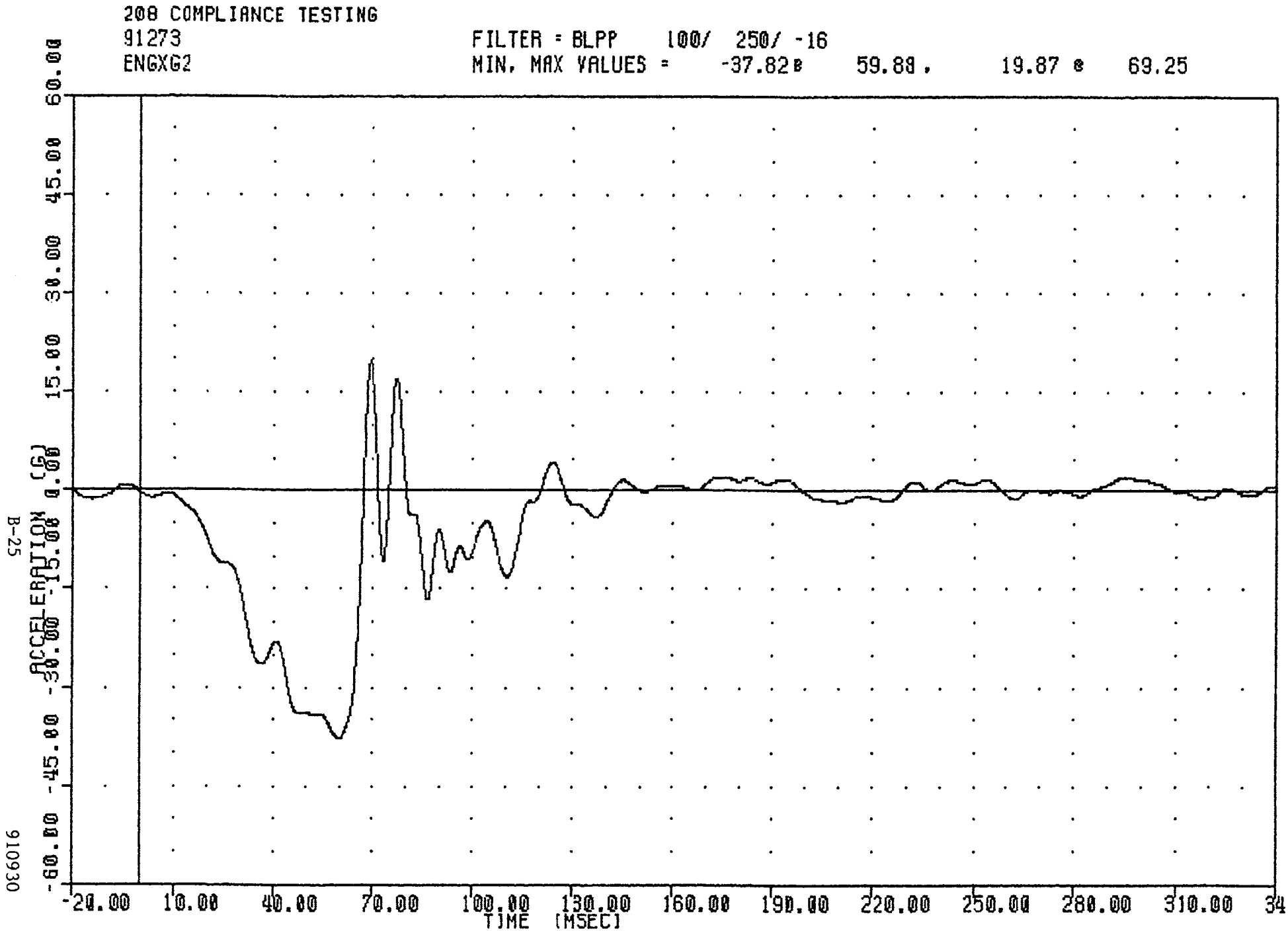


1991 FORD MUSTANG INTO FLAT FRONTAL BARRIER
RIGHT REAR SEAT X-AXIS ACCELERATION

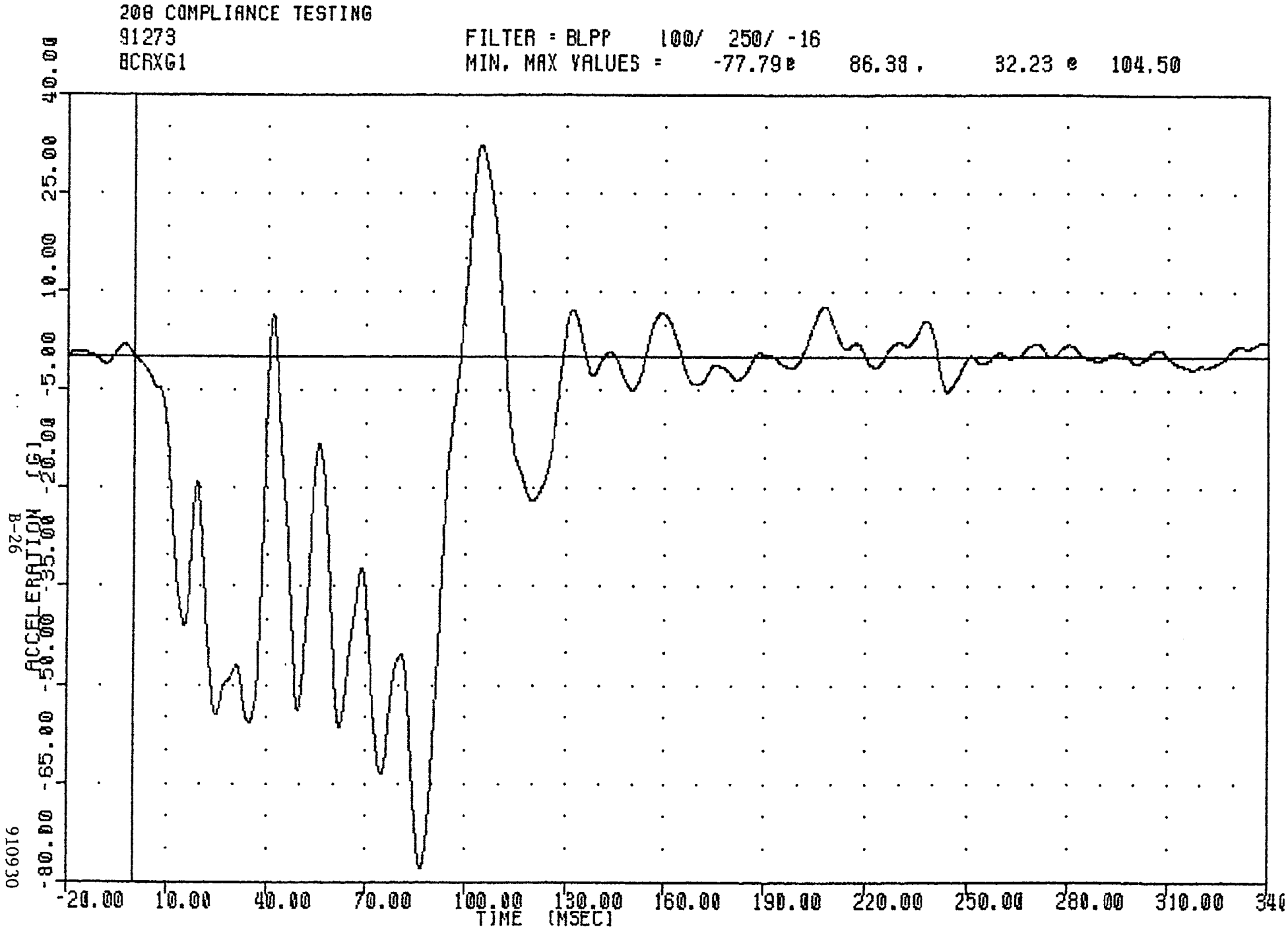


1991 FORD MUSTANG INTO FLAT FRONTAL BARRIER
ENGINE TOP X-AXIS ACCELERATION

910930

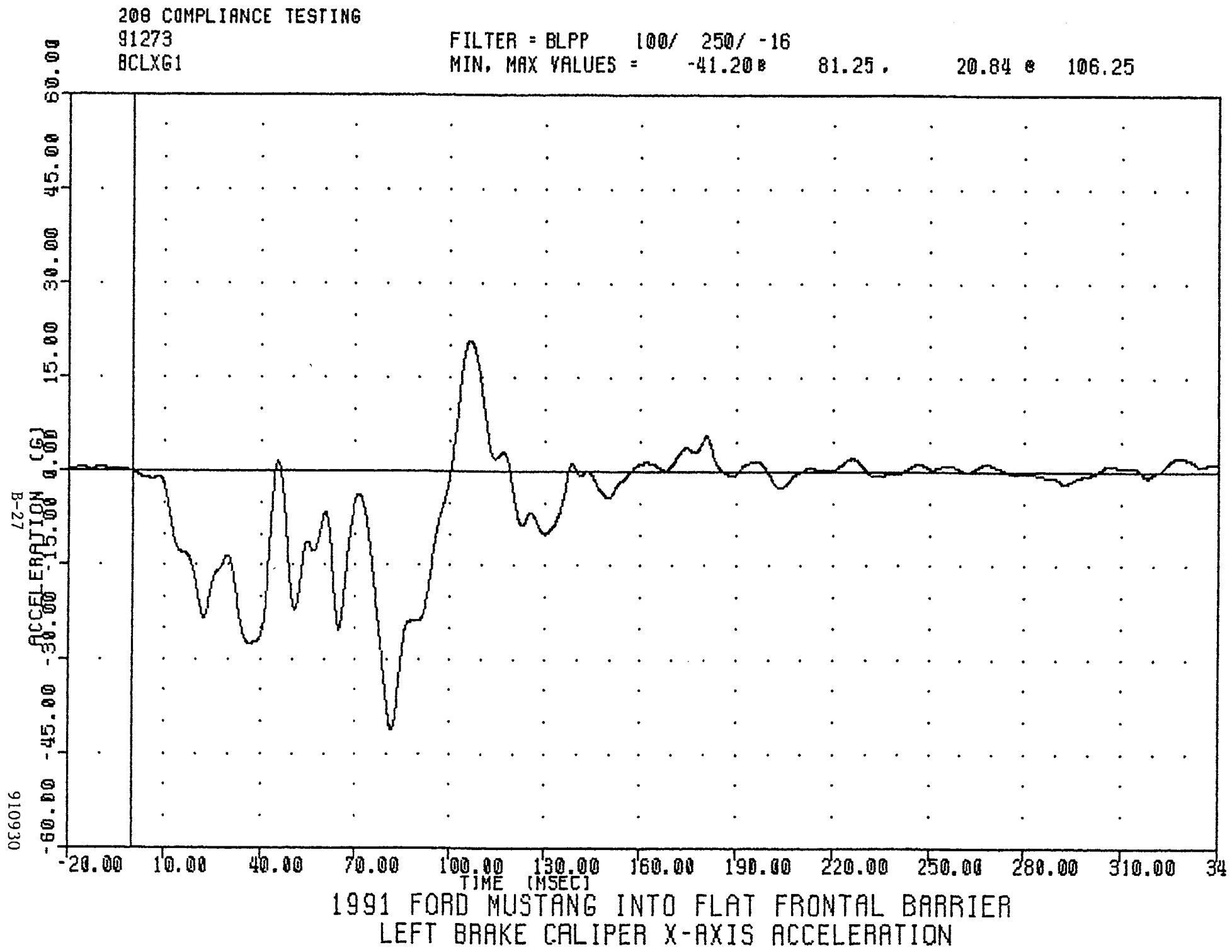


1991 FORD MUSTANG INTO FLAT FRONTAL BARRIER
ENGINE BOTTOM X-AXIS ACCELERATION

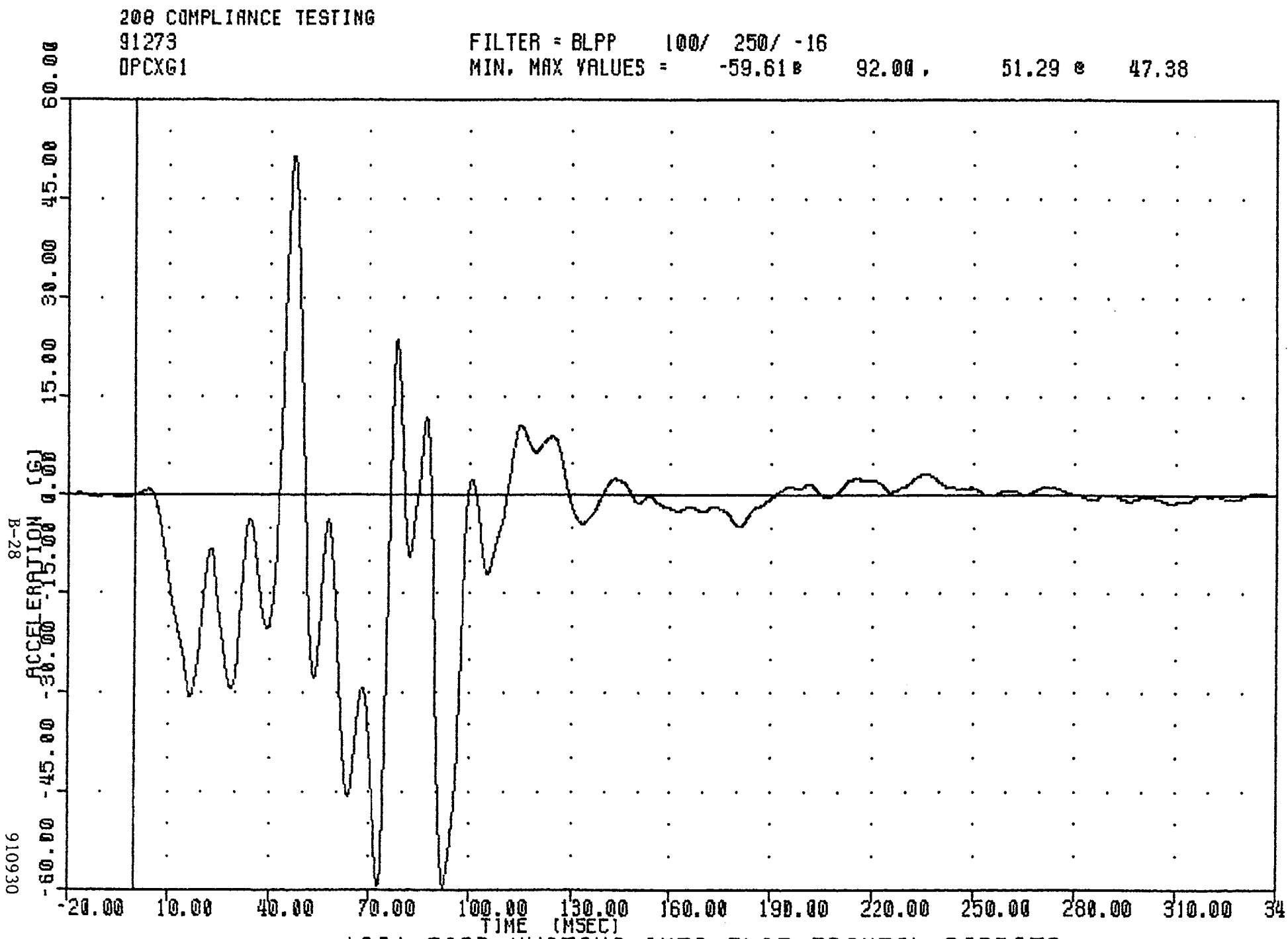


1991 FORD MUSTANG INTO FLAT FRONTAL BARRIER
RIGHT BRAKE CALIPER X-AXIS ACCELERATION

910930



1991 FORD MUSTANG INTO FLAT FRONTAL BARRIER
LEFT BRAKE CALIPER X-AXIS ACCELERATION



1991 FORD MUSTANG INTO FLAT FRONTAL BARRIER
INSTRUMENT PANEL CENTER X-AXIS ACCELERATION