V1873

REPORT NOS. 208-TRC-93-011
212-TRC-93-011
301-TRC-93-011

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

NISSAN MOTOR CO., LTD.
1993 NISSAN PATHFINDER
4-DOOR SPECIAL PURPOSE VEHICLE
NHTSA NO. CP5204
TRC TEST NO. 930121

TRANSPORTATION RESEARCH CENTER INC.
10820 STATE ROUTE 347
EAST LIBERTY, OHIO 43319

FEBRUARY 8, 1993
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 2/10/93

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15. Supplementary Notes

16. Abstract

A 30 mph flat frontal barrier impact test was conducted on a 1993 Nissan Pathfinder 4-door special purpose vehicle, NHTSA No. CP5204, at Transportation Research Center Inc. on January 21, 1993. 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 29.2 mph. The vehicle's maximum static crush was 16.5 inches. The ambient temperature was 71° F.

The driver's head injury criteria (HIC) was 766 (See DATA ACQUISITION EXPLANATIONS). The driver's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 44.8 g. The driver's left and right femur maximum axial forces were 1165 pounds and 1145 pounds, respectively.

The passenger's head injury criteria (HIC) was 497. The passenger's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 45.9 g. The passenger's left and right femur maximum axial forces were 759 pounds and 335 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

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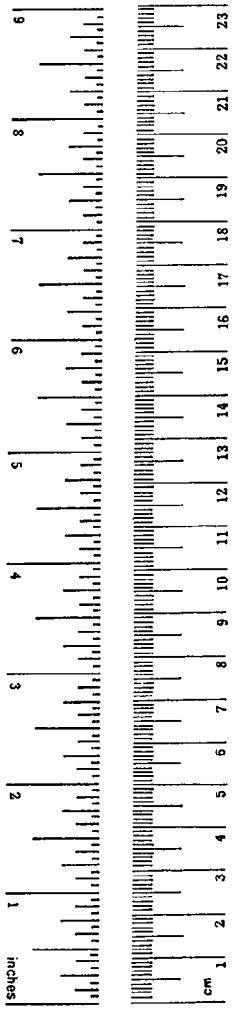
METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures

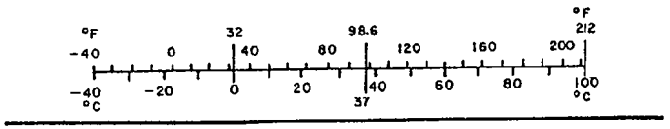
Symbol	When You Know	Multiply by	To Find	Symbol
		LENGTH		
in	inches	*2.5	centimeters	cm
ft	feet	30	centimeters	cm
yd	yards	0.9	meters	m
mi	miles	1.6	kilometers	km
		AREA		
in^2	square inches	6.5	square centimeters	cm^2
ft^2	square feet	0.09	square meters	m^2
yd^2	square yards	0.8	square meters	m^2
mi^2	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



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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 Transportation Research Center Inc. (TRC) under Contract No. DTNH22-90-C-21003. The purpose of this test was to determine if the subject vehicle, a 1993 Nissan Pathfinder 4-door special purpose vehicle, NHTSA No. CP5204, 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 January 21, 1993.

The test vehicle, a 1993 Nissan Pathfinder 4-door special purpose vehicle, NHTSA No. CP5204, 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 3.0 liter, inline engine, automatic transmission, power steering, and power brakes. The vehicle's test weight was 4261 pounds. The vehicle's impact speed was 29.2 mph. The vehicle's maximum static crush was 16.5 inches.

The driver's head injury criteria (HIC) was 766 (see data acquisition explanations). The driver's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 44.8 g. The driver's left and right femur maximum axial forces were 1165 pounds and 1145 pounds, respectively.

The right front passenger's HIC was 497. The right front passenger's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 45.9 g. The right front passenger's left and right femur maximum axial forces were 759 pounds and 335 pounds, respectively.

There was no loss of windshield periphery retention.

There was no penetration through the windshield.

Following the impact, no fluid spilled from the vehicle's fuel system prior to the static rollover test or during any portion of the static rollover test.

DATA ACQUISITION EXPLANATIONS

The driver's head X, Y, and Z-axis accelerometers, HEDXG1, HEDYG1, and HEDZG1, recorded a questionable data spike at 85 milliseconds. The driver's head Y-axis accelerometer, HEDYG1, also recorded a questionable data spike at 55 milliseconds. These data spikes affected the driver's head resultant acceleration and Head Injury Criteria (HIC) calculations. The data acquisition circuits were checked immediately after the impact. All appeared normal. In addition, the dummy's head passed the post-test calibration head drop test. The cause of the spikes could not be identified.

TABLE 1 CRASH TEST SUMMARY

NHTSA NO.: CP5204 TEST TYPE: Frontal Barrier Impact

TEST DATE: 01/21/93 TEST TIME: 1339 AMBIENT TEMP. (°F): 71

VEHICLE YEAR/MAKE/MODEL/BODY STYLE: 1993/Nissan/Pathfinder/4-door special purpose vehicle

VEHICLE TEST WEIGHT (LBS): 4261

IMPACT ANGLE (DEG)*: 0

IMPACT VELOCITY (MPH)**: PRIMARY = 29.2 SECONDARY = 29.2

MAXIMUM STATIC CRUSH (IN): 16.5

AVERAGE REBOUND (IN): 16.8

DUMMIES:	Driver #353	Passenger #354
TYPE:	Part 572 B	Part 572 B
LOCATION:	Left front	Right front
RESTRAINT:	3-point unibelt	3-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: Nissan Motor Co., Ltd.

MAKE/MODEL: Nissan/Pathfinder VIN: JN8HD17S2PW112637

BODY STYLE: 4-door special purpose vehicle MODEL YEAR: 1993

NHTSA NO.: CP5204 COLOR: Red

ENGINE DATA: TYPE: inline CYLINDERS: 6 DISPLACEMENT: 3.0 liter

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

DATE VEHICLE RECEIVED: 12/10/92 ODOMETER READING: 67

DEALER'S NAME AND ADDRESS: Ricart Nissan, Inc.
P. O. Box 27130
Columbus, OH 43227

ACCESSORIES:

POWER STEERING	Yes	AUTOMATIC TRANSMISSION	Yes
POWER BRAKES	Yes	AUTOMATIC SPEED CONTROL	Yes
POWER SEATS	No	TILTING STEERING WHEEL	Yes
POWER WINDOWS	No	TELESCOPING STEERING WHEEL	No
TINTED GLASS	No	AIR CONDITIONING	No
RADIO	Yes	ANTI-SKID BRAKE	Yes rear only
CLOCK	Yes	REAR WINDOW DEFROSTER	Yes
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: Nissan Motor Co., Ltd.

DATE OF MANUFACTURE: 09/92 VIN: JN8HD17S2PW112637

GVWR: 5000 LBS

GAWR: FRONT: 2650 LBS., REAR: 2850 LBS.

TABLE 2 TEST VEHICLE INFORMATION CONT'D

TIRES ON VEHICLE (MFR., LINE, SIZE): General, Ameritrac, P235/75R15

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

SPARE TIRE (MFR., LINE, SIZE): Toyo, T115/75R15

TYPE OF SEATS: FRONT: Bucket
REAR: Bench

TYPE OF FRONT SEAT BACKS: Manually adjustable

MAXIMUM WIDTH: 66.9 INCHES

WHEELBASE: 105.0 INCHES

LOCATION OF LABEL STATING TIRE & CAPACITY DATA:

The label was located in the glovebox

TIRE & CAPACITY DATA FROM VEHICLE'S LABEL:

RECOMMENDED TIRE SIZE: P235/75R15

RECOMMENDED COLD TIRE PRESSURE: FRONT: 26 PSI; REAR: 26 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	33.2;	RF	33.8;	LR	34.0;	RR	34.5
FULLY LOADED ATTITUDE:	LF	33.2;	RF	33.1;	LR	32.5;	RR	32.6
PRE-TEST ATTITUDE:	LF	32.6;	RF	33.1;	LR	32.4;	RR	32.8
POST-TEST ATTITUDE:	LF	29.8;	RF	31.1;	LR	32.2;	RR	32.9

TABLE 2 TEST VEHICLE INFORMATION CONT'D

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

RIGHT FRONT	939 LBS.	RIGHT REAR	862 LBS.
LEFT FRONT	930 LBS.	LEFT REAR	918 LBS.
TOTAL FRONT WEIGHT	1869 LBS.	(51.2% OF TOTAL VEHICLE WEIGHT)	
TOTAL REAR WEIGHT	1780 LBS.	(48.8% OF TOTAL VEHICLE WEIGHT)	
TOTAL DELIVERED WEIGHT	3649 LBS.		

CALCULATION OF TEST VEHICLE'S TARGET TEST WEIGHT:

RCLW = RATED CARGO AND LUGGAGE WEIGHT*

GVWR = GROSS VEHICLE WEIGHT RATING (5000 LBS)

UDW = UNLOADED DELIVERED WEIGHT (3649 LBS)

VCW = VEHICLE CAPACITY WEIGHT = GVWR - UDW = 5000 - 3649 = 1351 LBS

DSC = DESIGNATED SEATING CAPACITY (5)

RCLW*= VCW - 150 (DSC) = 5000 - 3649 - 150 (5) = 601 LBS.

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

TARGET TEST WEIGHT = 3649 + 300 + 328

TARGET TEST WEIGHT = 4277 LBS

WEIGHT OF TEST VEHICLE WITH REQUIRED DUMMIES AND 284 LBS. OF CARGO WEIGHT:

RIGHT FRONT	1044 LBS.	RIGHT REAR	1071 LBS.
LEFT FRONT	1004 LBS.	LEFT REAR	1142 LBS.
TOTAL FRONT WEIGHT	2048 LBS.	(48.1% OF TOTAL VEHICLE WEIGHT)	
TOTAL REAR WEIGHT	2213 LBS.	(51.9% OF TOTAL VEHICLE WEIGHT)	
TOTAL TEST WEIGHT	4261 LBS.	(0.4% UNDER TARGET TEST WEIGHT)	

WEIGHT OF BALLAST SECURED IN VEHICLE CARGO AREA: 200 LBS.

COMPONENTS REMOVED TO MEET TARGET TEST WEIGHT: None

CG = 54.5 INCHES REARWARD OF FRONT WHEEL CENTERLINE

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

TABLE 3 POST-IMPACT DATA

TEST NUMBER: 930121 NHTSA NO.: CP5204

TEST DATE: 01/21/93 TEST TIME: 1339

TEST TYPE: Frontal Barrier Impact IMPACT ANGLE: 0

AMBIENT TEMPERATURE AT IMPACT AREA: 71° F

TEMPERATURE IN OCCUPANT COMPARTMENT: 70° F

IMPACT VELOCITY: PRIMARY = 29.2 MPH SECONDARY = 29.2 MPH

(SPECIFIED RANGE = 28.9 TO 29.9 MPH)

DISTANCE FROM VEHICLE TO BARRIER: ENTERING VELOCITY TRAP = 15.0 IN.

EXITING VELOCITY TRAP = 2.0 IN.

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

OVERALL LENGTH OF TEST VEHICLE: PRE-TEST: L 170.2; C 172.1; R 170.5

POST-TEST: L 156.8; C 155.6; R 158.0

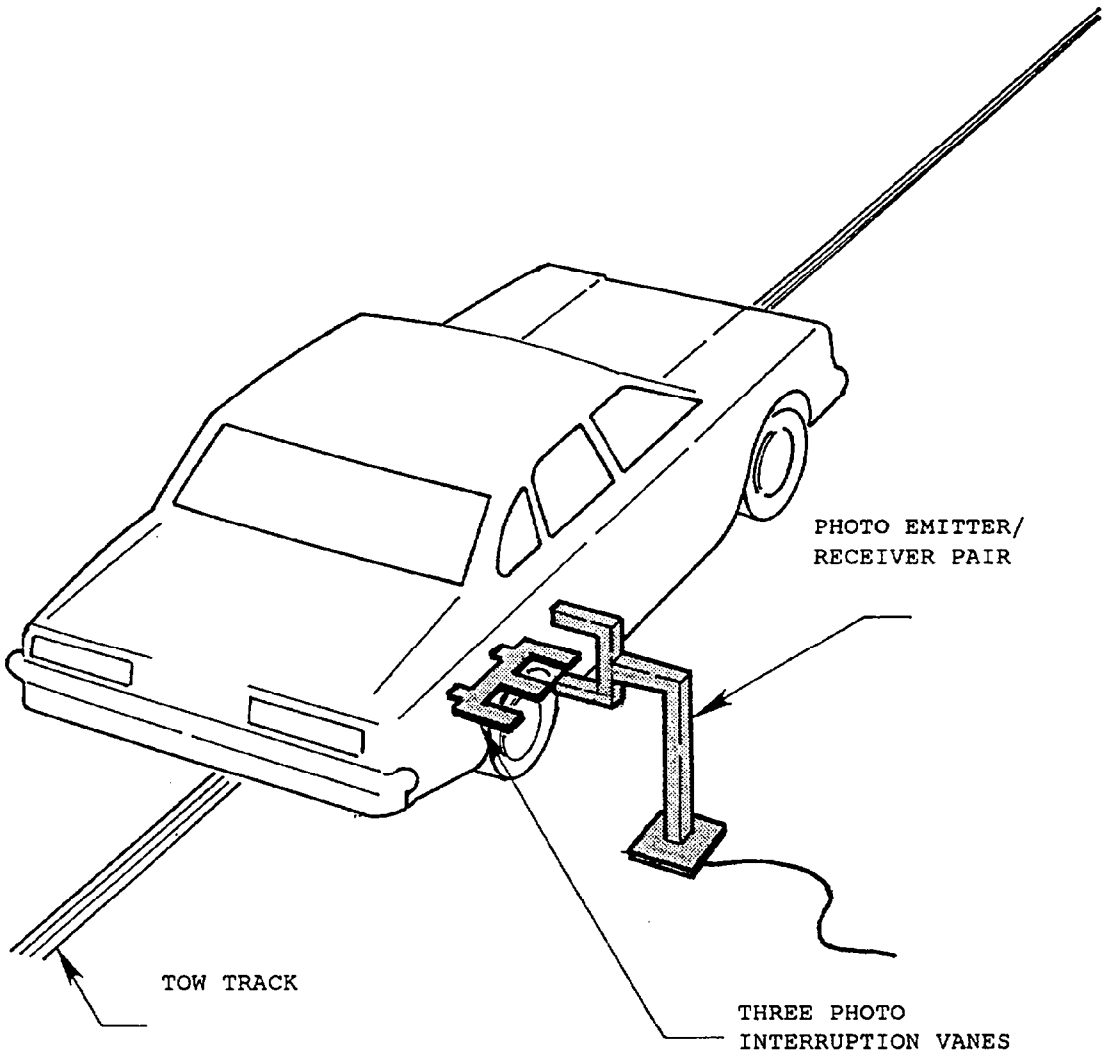
TOTAL CRUSH: L 13.4; C 16.5; R 12.5

AVERAGE CRUSH: 14.1

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

DISTANCE FROM TEST VEHICLE TO BARRIER: L 17.8; C 17.6; R 14.9; AVG. 16.8

FIGURE 1 IMPACT VELOCITY MEASUREMENT SYSTEM



The final vane clears the final emitter/receiver pair 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: Nissan/Pathfinder/4-door spec. purpose veh.

VEHICLE NHTSA NO.: CP5204 ; VIN: JN8HD17S2PW112637

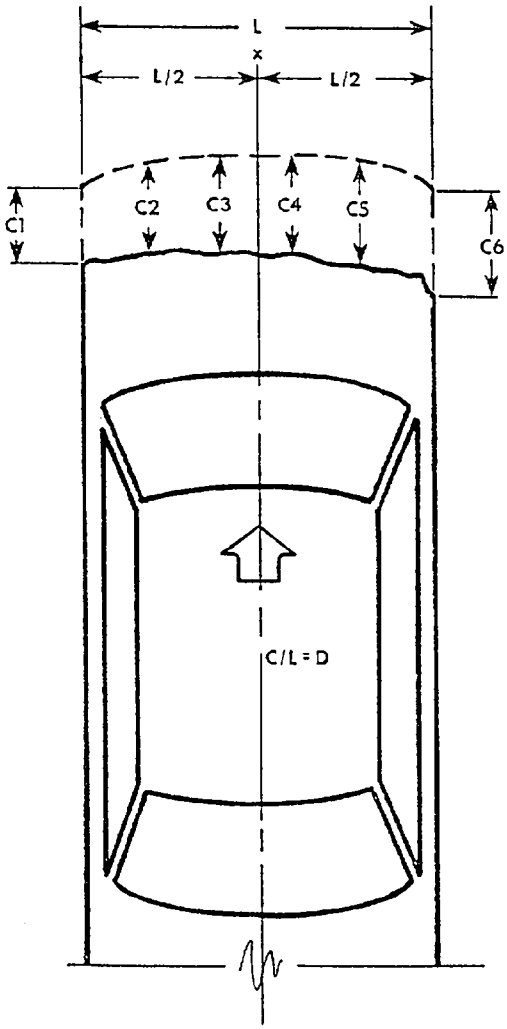
MODEL YEAR: 1993 ; BUILD DATE: 09/92 ; TEST DATE: 01/21/93

VEHICLE SIZE CATEGORY: Spec. purpose veh. ; TEST WEIGHT: 4261 LBS.

VEHICLE WHEELBASE: 105.0 INCHES

MAXIMUM WIDTH: 66.9 INCHES

FRONT OVERHANG: 28.2 INCHES



COLLISION DEFORMATION
CLASSIFICATION (CDC) CODE: 12FDEW2

CRUSH DEPTH MEASUREMENTS:

C1 = 13.4 INCHES

C2 = 14.7 INCHES

C3 = 15.2 INCHES

C4 = 15.8 INCHES

C5 = 14.2 INCHES

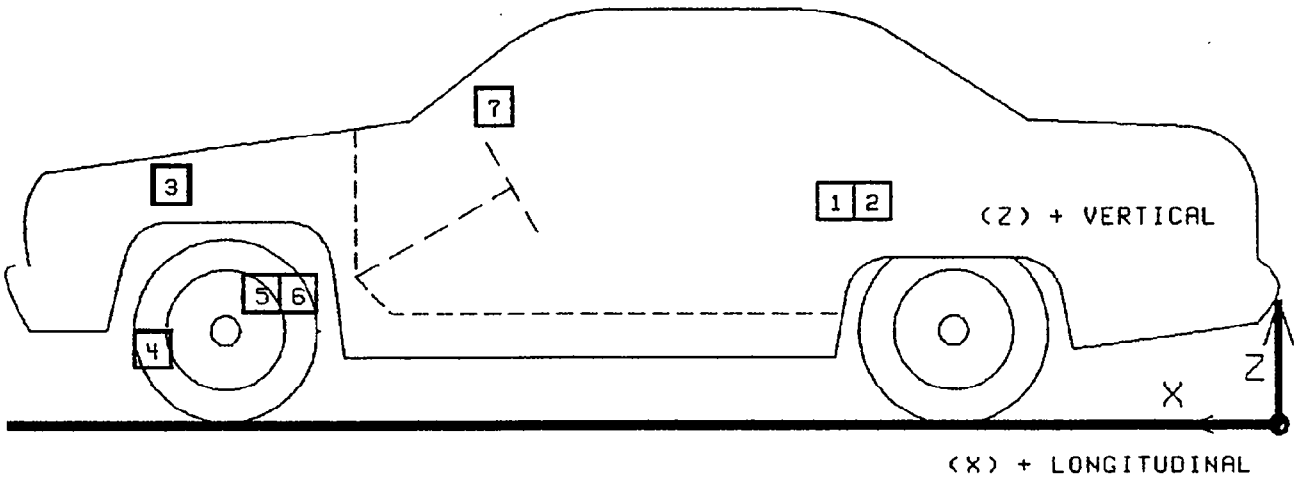
C6 = 12.5 INCHES

MIDPOINT OF DAMAGE: D = VEHICLE CENTERLINE (LONGITUDINAL)

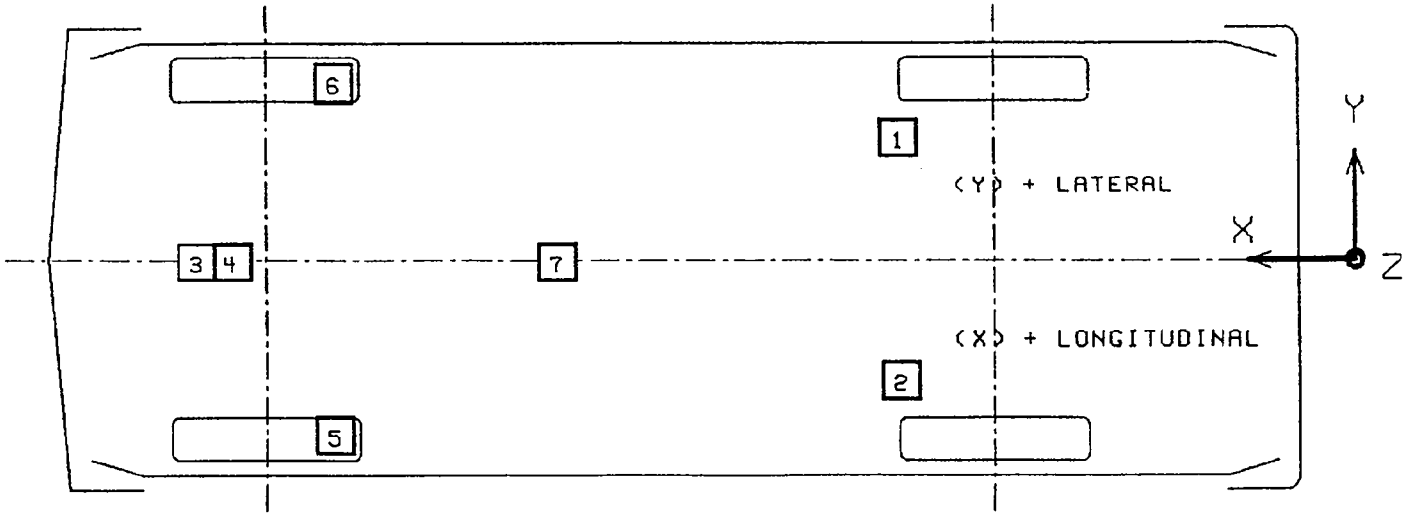
LENGTH OF DAMAGED REGION: L = 56.0 INCHES

FIGURE 3

VEHICLE ACCELEROMETER PLACEMENT



SIDE VIEW



BOTTOM VIEW

TABLE 4

VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

TEST NUMBER 930121

No.	LOCATION		X*	Y*	Z*	POSITIVE DIRECTION MAX G	POSITIVE DIRECTION MSEC	NEGATIVE DIRECTION MAX G	NEGATIVE DIRECTION MSEC
1	LEFT REAR SEAT	PRE	62.8	16.5	25.8				
	CROSSMEMBER	POST	61.4	16.5	26.0				
	LONGITUDINAL					3.8	124.3	35.3	25.6
2	RIGHT REAR SEAT	PRE	63.8	-18.4	25.9				
	CROSSMEMBER	POST	62.1	-18.4	26.4				
	LONGITUDINAL					4.0	124.0	34.7	23.3
3	ENGINE TOP	PRE	144.0	-8.0	36.0				
		POST	141.0	-8.0	39.4				
	LONGITUDINAL					25.4	43.0	116.6	34.9
4	ENGINE BOTTOM	PRE	138.6	2.0	13.4				
		POST	137.9	1.8	15.0				
	LONGITUDINAL					18.1	47.9	125.8	34.5
5	RIGHT BRAKE CALIPER	PRE	137.8	-24.0	13.2				
		POST	135.8	-23.8	12.4				
	LONGITUDINAL					18.5	59.4	87.9	42.3
6	LEFT BRAKE CALIPER	PRE	138.0	24.0	13.2				
		POST	132.5	23.8	11.5				
	LONGITUDINAL					10.8	64.0	62.9	35.3
7	INSTRUMENT PANEL	PRE	118.6	-1.0	46.0				
	CENTER	POST	120.4	-1.0	45.0				
	LONGITUDINAL					38.2	24.1	56.4	47.8

* 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: Transporation Research Center Inc.
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.: CP5204
MAKE/MODEL/BODY STYLE: Nissan/Pathfinder/4-door special purpose vehicle
MODEL YEAR: 1993 BODY COLOR: Red
VIN: JN8HD17S2PW112637
ODOMETER (ARRIVAL): 67 DATE: 12/10/92
ODOMETER (COMPLETION): 73 DATE: 01/21/93
COST: $16,923.50

___ AIR CONDITIONER	___ CONSOLE	BRAKES: _X_ POWER
___ TINTED GLASS	___ TACHOMETER	FRONT: Disc
_X_ POWER STEERING	_X_ SPEED CONTROL	REAR: Drum
___ POWER WINDOWS	_X_ REAR WINDOW DEF.	
___ POWER DOOR LOCKS	___ SUN/MOON ROOF	FRONT SEATS: ___ POWER
_X_ RADIO	___ T-TOP	SEAT TYPE: Bucket
_X_ CLOCK	_X_ TILT STEERING WHEEL	NO. OF SEATS: _5_
ROOF RACK	___ OTHER OPTIONS: _____	

ENGINE: 6 CYLINDERS; 3.0 LITERS
TRANSMISSION: 4-speed auto; DRIVE TYPE: Rear wheel drive
TIRE SIZE: P235/75R15
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
DRIVER	-149.8γ	31.8γ	-131.2γ	156.4γ	-44.4	25.2	21.7
PASSENGER	-39.3	-16.5	-56.8	57.5	-49.0	27.1	19.2

MAXIMUM FEMUR COMPRESSIVE FORCE (LBS)

	LEFT FEMUR	RIGHT FEMUR
DRIVER	1165	1145
PASSENGER	759	335

HEAD INJURY CRITERIA**

	HIC	TIME t_1 (MSEC)	TIME t_2 (MSEC)
DRIVER	766γ	84.2	96.4
PASSENGER	497	61.4	97.4

CHEST MAXIMUM RESULTANT ACCELERATION*

	ACCEL. (G)	TIME t_1 (MSEC)	TIME t_2 (MSEC)
DRIVER	44.8	58.8	61.9
PASSENGER	45.9	63.5	66.6

*Defined as equal to or exceeding 0.003 sec. duration

**As defined in FMVSS No. 208

γ See DATA ACQUISITION EXPLANATIONS

TABLE 6 POST-IMPACT DUMMY/VEHICLE DATA

VISIBLE DUMMY CONTACT POINTS:

	DRIVER #353	PASSENGER #354
HEAD	Steering wheel upper rim & hub, chest	Chest
CHEST	Lower steering wheel rim	None
ABDOMEN	None	None
LEFT KNEE	Instrument panel	Instrument panel
RIGHT KNEE	Instrument panel	Instrument panel

DOOR OPENING:

	LEFT	RIGHT
FRONT	Easy	Easy
REAR	Easy	Easy

SEAT MOVEMENT:

	SEAT BACK FAILURE	SEAT SHIFT
FRONT	None	None
REAR	NA	NA

GLAZING DAMAGE:

Entire windshield 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 driver's chest impacted the lower steering wheel rim as the dummy's head rotated downward contacting the dummy's chest and the steering wheel upper rim and hub. The driver dummy was restrained by the three-point unibelt. The dummy rebounded rearward rotating slightly to the left into the seat as the dummy's head rotated rearward. The driver dummy came to rest in the driver's seat restrained by the three-point unibelt.

Right Front Passenger Dummy

The right front passenger dummy translated forward on the seat impacting both knees into the instrument panel. The dummy's head rotated downward impacting the dummy's chest. The right front passenger dummy was restrained by the three-point unibelt. The dummy rebounded rearward rotating slightly to the right into the seat back as the dummy's head rotated rearward. The right front passenger dummy came to rest in the right front passenger's seat rotated slightly to the right.

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

MAKE/MODEL: Nissan/Pathfinder VIN: JN8HD17S2PW112637

BODY STYLE: 4-door special purpose vehicle NHTSA NO.: CP5204

DATE OF MANUFACTURE: 09/92

WEBBING TENSION - RELIEVING DEVICE:

DO OUTBOARD SEATING POSITION SEAT BELTS HAVE WEBBING TENSION - RELIEVING DEVICES?(check one): __NO__

IF YES:

MAXIMUM SLACK RECOMMENDED IN OWNER'S MANUAL: _____ INCHES

DOES OWNER'S MANUAL WARN THAT INTRODUCING SLACK BEYOND THE AMOUNT SPECIFIED CAN SIGNIFICANTLY REDUCE THE EFFECTIVENESS OF THE SHOULDER BELT? _____ YES _____ NO

IF NO, EXPLAIN:

THE WEBBING TENSION - RELIEVING DEVICE IS CANCELLED WHEN (check one): _____ The adjacent door is opened.

_____ The latch plate is released from the buckle.

_____ A manual means is activated on a open-body vehicle without doors.

OPEN-BODY VEHICLE (without doors): DOES THE MANUAL MEANS TO CANCEL THE WEBBING TENSION - RELIEVING DEVICE OPERATE PROPERLY? _____ YES _____ NO

IF NO, EXPLAIN:

BELT CONTACT FORCE:

BELT CONTACT FORCE ON CHEST OF TEST DUMMY: __0.2__ POUNDS

_____ NOT APPLICABLE, THE VEHICLE'S SEAT BELT SYSTEM INCLUDED A WEBBING TENSION - RELIEVING DEVICE.

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

MAKE/MODEL: Nissan/Pathfinder VIN: JN8HD17S2PW112637

BODY STYLE: 4-door special purpose vehicle NHTSA NO.: CP5204

DATE OF MANUFACTURE: 09/92

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__

OPEN-BODY VEHICLE (without doors): DOES THE SEAT BELT SYSTEM FULLY RETRACT WHEN THE WEBBING TENSION-RELIEVING DEVICE IS MANUALLY DEACTIVATED? _____ YES _____ NO

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.

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

MAKE/MODEL: Nissan/Pathfinder VIN: JN8HD17S2PW112637

BODY STYLE: 4-door special purpose vehicle NHTSA NO.: CP5204

DATE OF MANUFACTURE: 09/92

ACCESSIBILITY, CONT'D:

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?
Not Applicable, 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?
Not Applicable, 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?
Not Applicable, the restraint system does not provide guides.

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 = 7 sec.

Duration of reminder light operation = 7 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 = 7 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:

Not applicable, vehicle did not contain a crash-deployed occupant protection system.

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.

Not applicable, vehicle did not contain a crash-deployed occupant protection system.

FIGURE 4 FMVSS 212 TEST DATA

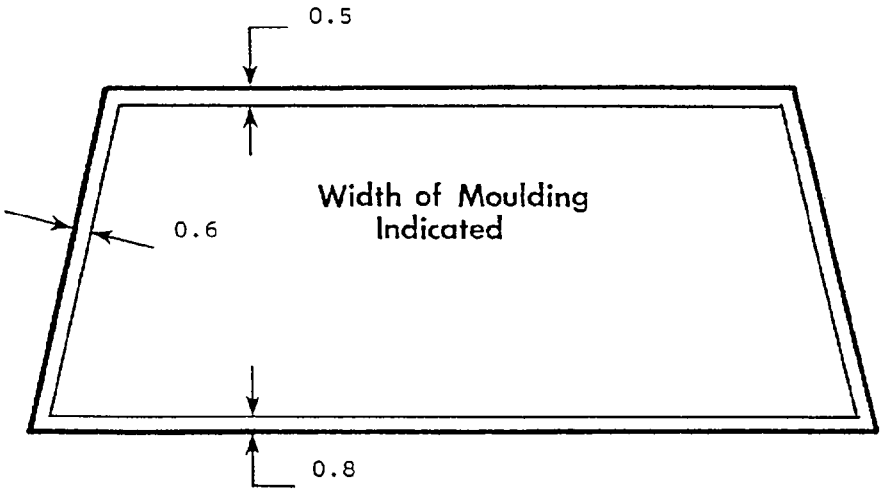
DETAILS OF WINDSHIELD MOUNTING SUCH AS RETENTION METHOD, TRIM TYPE, ETC.:
Plastic trim around outer perimeter, adhesive around inner perimeter.

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	79.0	79.0	100
LEFT SIDE	79.0	79.0	100
TOTAL	158.0	158.0	100

PRE-TEST WINDSHIELD MOUNTING MATERIAL TEMPERATURE: 70° 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 = 49.0

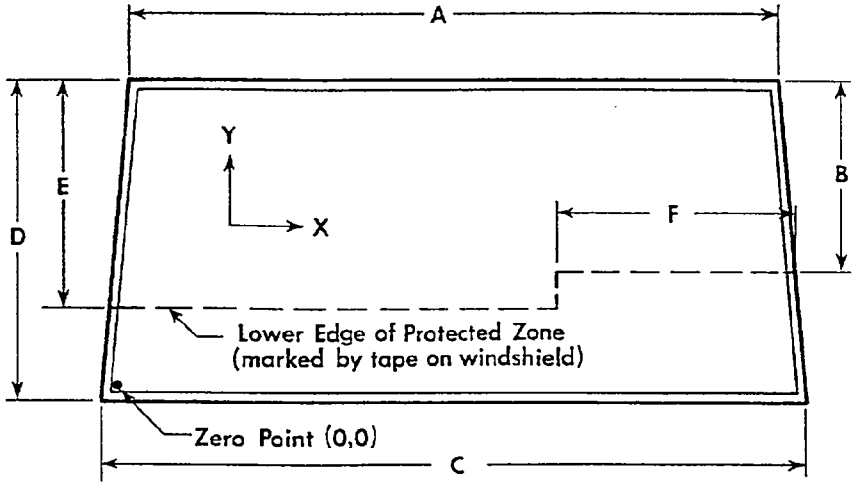
B = 14.2

C = 59.6

D = 26.9

E = 17.4

F = 24.4



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:	Nissan/Pathfinder
NHTSA NO.:	CP5204
FUEL SYSTEM CAPACITY:	21.1 GALLONS (FROM OWNER'S MANUAL)
USABLE CAPACITY:	20.7 GALLONS (FURNISHED BY COTR)
TEST VOLUME RANGE:	19.0 GALLONS TO 19.5 GALLONS (92-94% OF USABLE)
ACTUAL TEST VOLUME:	19.3 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 is on the right. The fuel tank is behind the rear axle. The fuel lines run along the right frame rail 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.: CP5204 ; TEST DATE: 01/21/93

VEHICLE MAKE/MODEL/BODY STYLE: Nissan/Pathfinder/4-door special purpose vehicle

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:

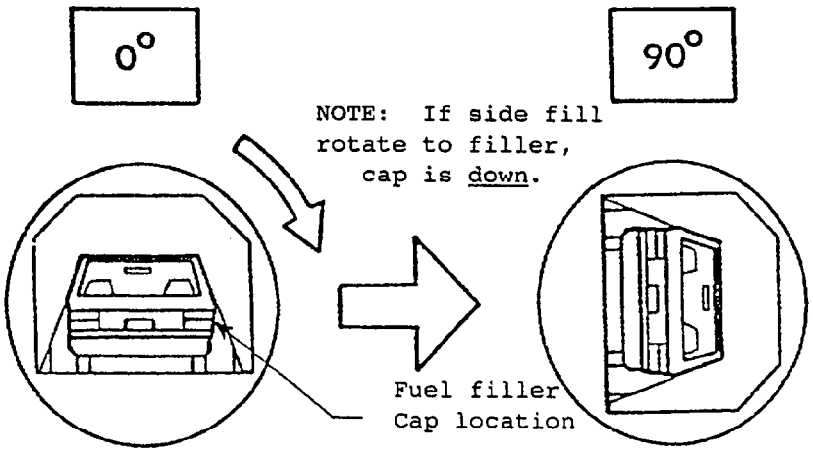
	TEST RESULTS	MAXIMUM ALLOWABLE
1. FROM IMPACT UNTIL VEHICLE MOTION CEASES - - -	0 OZ.	1 OZ.
2. 5 MINUTE PERIOD AFTER VEHICLE MOTION CEASES -	0 OZ.	5 OZ.
3. NEXT 25 MINUTES AFTER 5 MINUTE PERIOD - - - -	0 OZ.	1 OZ./1 MIN.

FUEL SYSTEM FLUID SPILLAGE LOCATION(S):

None

FIGURE 6 FMVSS 301 STATIC ROLLOVER TEST DATA

NHTSA NO.: CP5204
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:

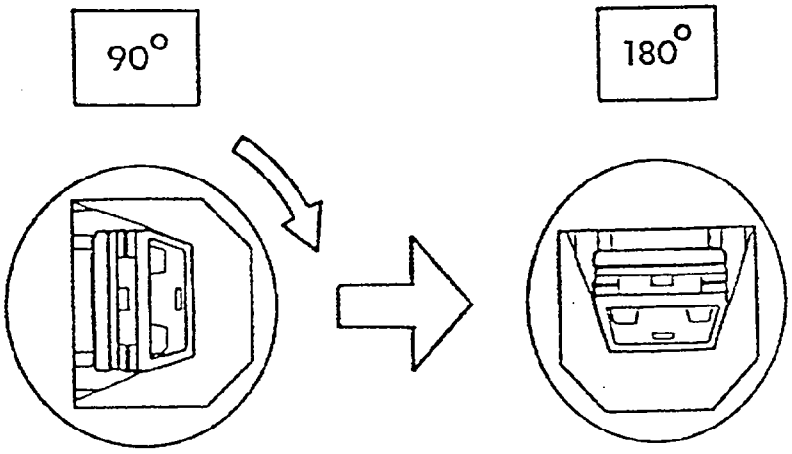
0° TO 90° ROTATION (FUEL FILLER CAP DOWN)	TEST RESULTS	MAXIMUM ALLOWABLE
1. FIRST 5 MINUTES FROM ONSET OF ROTATION - - - - - -	0 oz.	5 oz.
2. 6TH MINUTE FROM ONSET OF ROTATION - - - - - - - -	0 oz.	1 oz.
3. 7TH MINUTE FROM ONSET OF ROTATION - - - - - - - -	0 oz.	1 oz.

FUEL SYSTEM FLUID SPILLAGE LOCATION(S):

None

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

NHTSA NO.: CP5204
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:

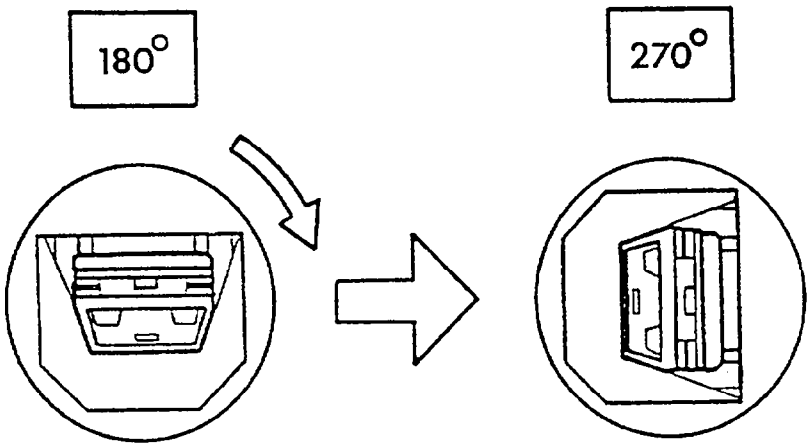
90° TO 180° ROTATION	TEST RESULTS	MAXIMUM ALLOWABLE
1. FIRST 5 MINUTES FROM ONSET OF ROTATION - - - - - -	0 oz.	5 oz.
2. 6TH MINUTE FROM ONSET OF ROTATION - - - - - - - -	0 oz.	1 oz.
3. 7TH MINUTE FROM ONSET OF ROTATION - - - - - - - -	0 oz.	1 oz.

FUEL SYSTEM FLUID SPILLAGE LOCATION(S):

None

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

NHTSA NO.: CP5204
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:

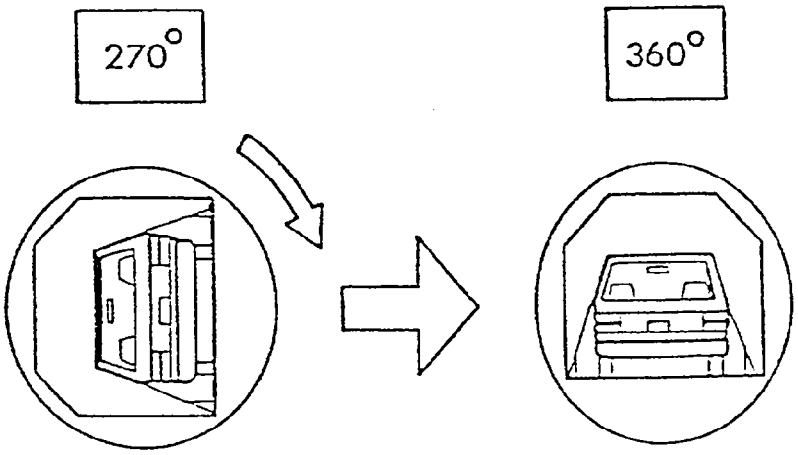
180° TO 270° ROTATION	TEST RESULTS	MAXIMUM ALLOWABLE
1. FIRST 5 MINUTES FROM ONSET OF ROTATION - - - - - -	0 oz.	5 oz.
2. 6TH MINUTE FROM ONSET OF ROTATION - - - - - - - -	0 oz.	1 oz.
3. 7TH MINUTE FROM ONSET OF ROTATION - - - - - - - -	0 oz.	1 oz.

FUEL SYSTEM FLUID SPILLAGE LOCATION(S):

None

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

NHTSA NO.: CP5204
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):

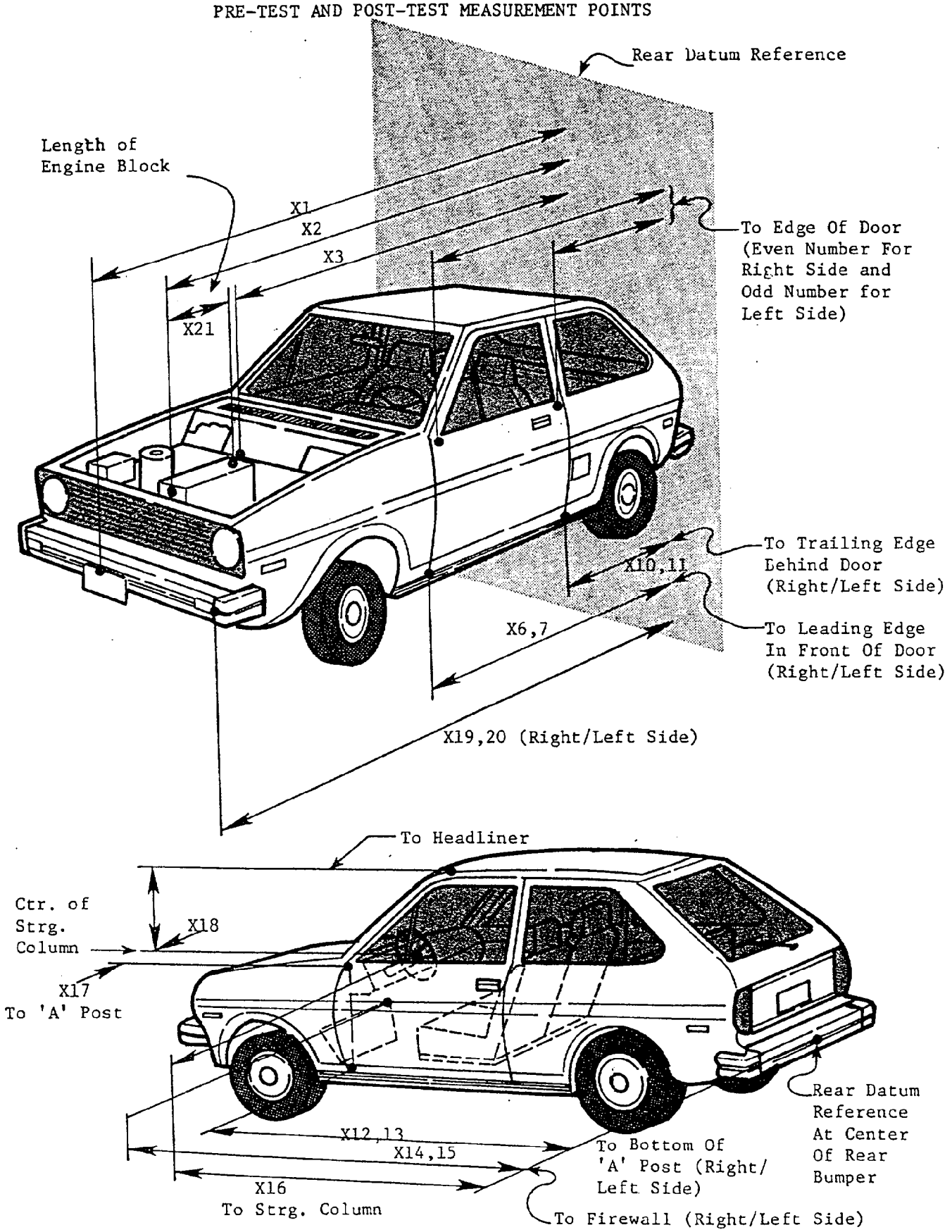
None

SECTION 4.0

VEHICLE, OCCUPANT, AND CAMERA MEASUREMENTS

FIGURE 7

PRE-TEST AND POST-TEST MEASUREMENT POINTS



930121

TABLE 13 IMPACTED VEHICLE MEASUREMENTS

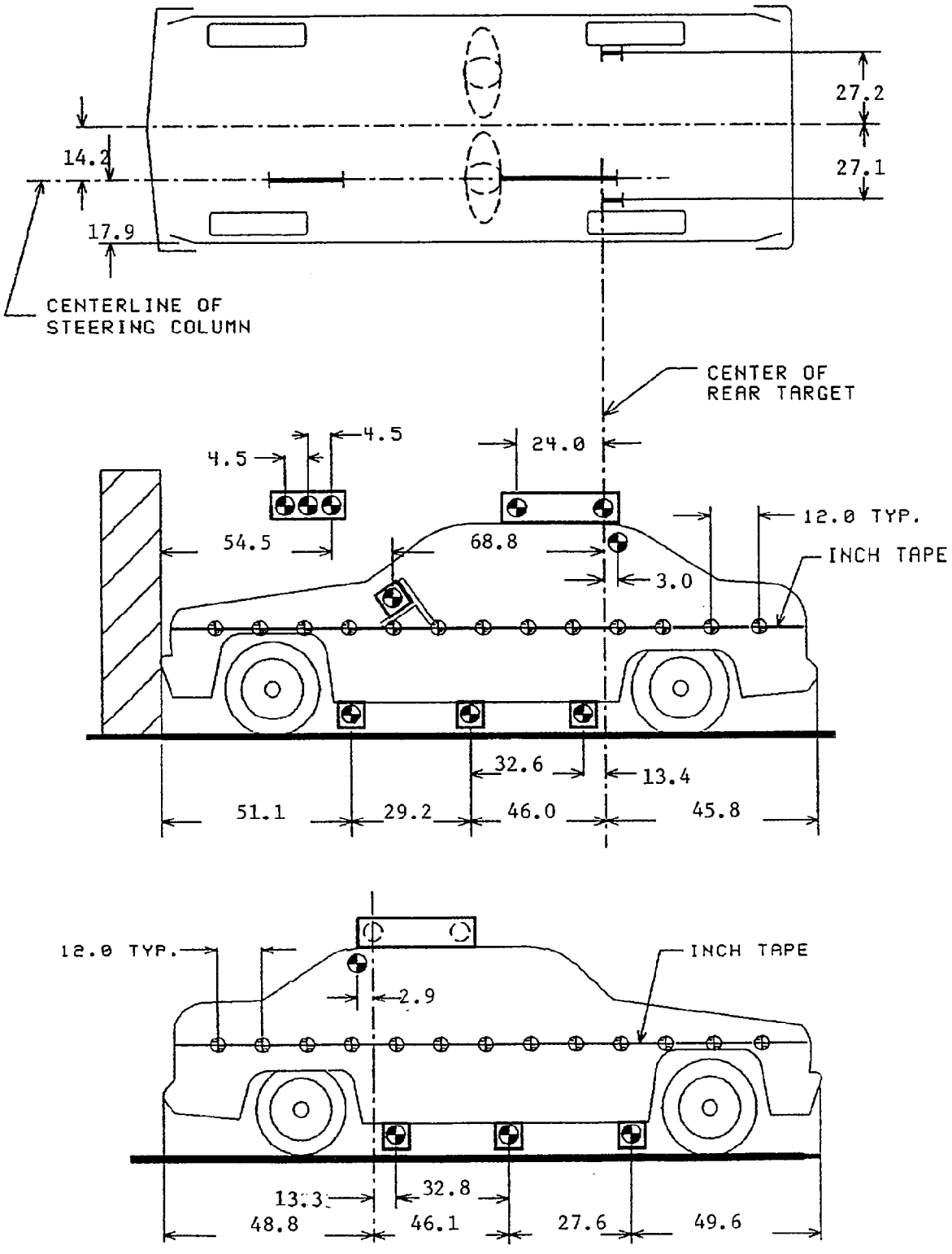
VEHICLE MAKE/MODEL: Nissan/Pathfinder TEST NUMBER: 930121

ALL MEASUREMENTS ARE IN INCHES

NO.	TYPE OF MEASUREMENT	PRE-TEST	POST-TEST	DIFF.
X1	TOTAL LENGTH OF VEHICLE AT CENTERLINE	172.1	155.6	16.5
X2	REAR SURFACE OF VEHICLE TO FRONT OF ENGINE BLOCK	153.5	151.1	2.4
X3	REAR SURFACE OF VEHICLE TO FIREWALL	134.8	129.5	5.3
X4	REAR SURFACE OF VEHICLE TO UPPER LEADING EDGE OF RIGHT DOOR	124.5	126.1	-1.6
X5	REAR SURFACE OF VEHICLE TO UPPER LEADING EDGE OF LEFT DOOR	124.5	126.0	-1.5
X6	REAR SURFACE OF VEHICLE TO LOWER LEADING EDGE OF RIGHT DOOR	123.2	124.0	-0.8
X7	REAR SURFACE OF VEHICLE TO LOWER LEADING EDGE OF LEFT DOOR	123.5	123.9	-0.4
X8	REAR SURFACE OF VEHICLE TO UPPER TRAILING EDGE OF RIGHT DOOR	78.6	80.4	-1.8
X9	REAR SURFACE OF VEHICLE TO UPPER TRAILING EDGE OF LEFT DOOR	78.8	80.4	-1.6
X10	REAR SURFACE OF VEHICLE TO LOWER TRAILING EDGE OF RIGHT DOOR	78.6	79.1	-0.5
X11	REAR SURFACE OF VEHICLE TO LOWER TRAILING EDGE OF LEFT DOOR	78.9	79.2	-0.3
X12	REAR SURFACE OF VEHICLE TO BOTTOM OF "A" POST ON RIGHT SIDE	123.5	124.1	-0.6
X13	REAR SURFACE OF VEHICLE TO BOTTOM OF "A" POST ON LEFT SIDE	123.5	124.2	-0.7
X14	REAR SURFACE OF VEHICLE TO FIREWALL - RIGHT SIDE	133.1	135.2	-2.1
X15	REAR SURFACE OF VEHICLE TO FIREWALL - LEFT SIDE	133.0	135.1	-2.1
X16	REAR SURFACE OF VEHICLE TO STEERING WHEEL CENTER	104.2	105.6	-1.4
X17	CENTER OF STEERING COLUMN TO "A" POST	11.2	10.0	1.2
X18	CENTER OF STEERING COLUMN TO HEADLINER	17.2	18.1	-0.9
X19	REAR SURFACE OF VEHICLE TO RIGHT SIDE OF FRONT BUMPER	170.5	158.0	12.5
X20	REAR SURFACE OF VEHICLE TO LEFT SIDE OF FRONT BUMPER	170.2	156.8	13.4
X21	LENGTH OF ENGINE BLOCK	15.0	15.0	0.0

FIGURE 8

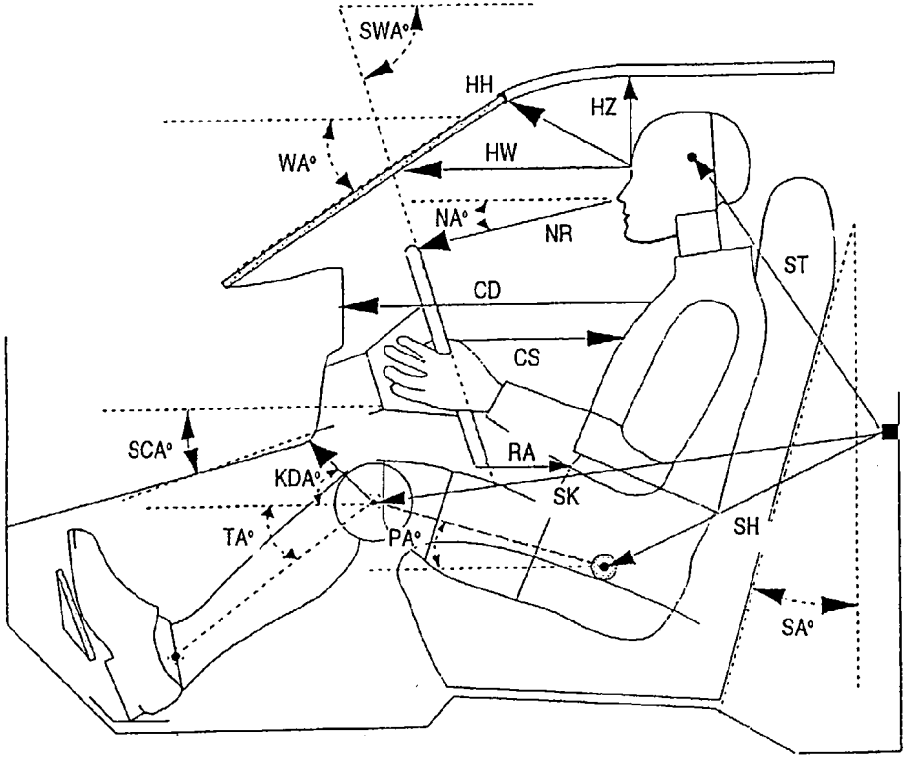
VEHICLE TARGET LOCATIONS

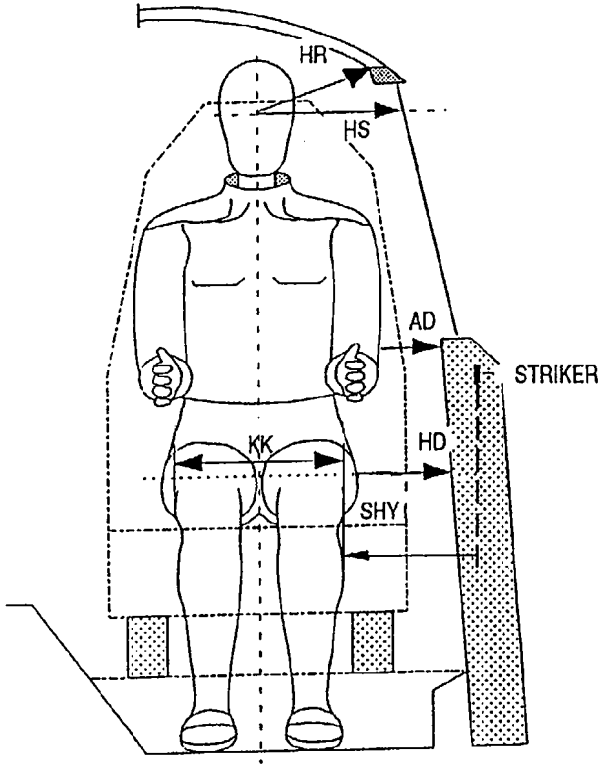


ALL DISTANCE MEASUREMENTS ARE IN INCHES.

FIGURE 9

DUMMY MEASUREMENT LOCATIONS FOR FRONT SEAT OCCUPANTS





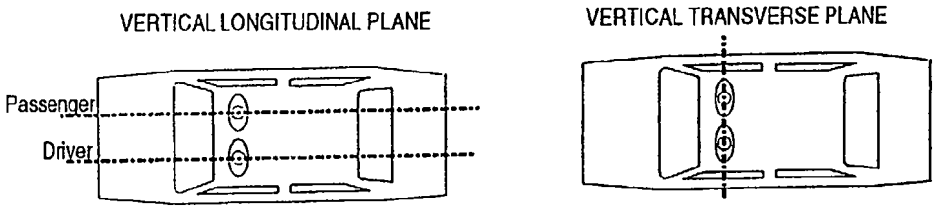


TABLE 14 DUMMY MEASUREMENT DATA FOR FRONT SEAT OCCUPANTS

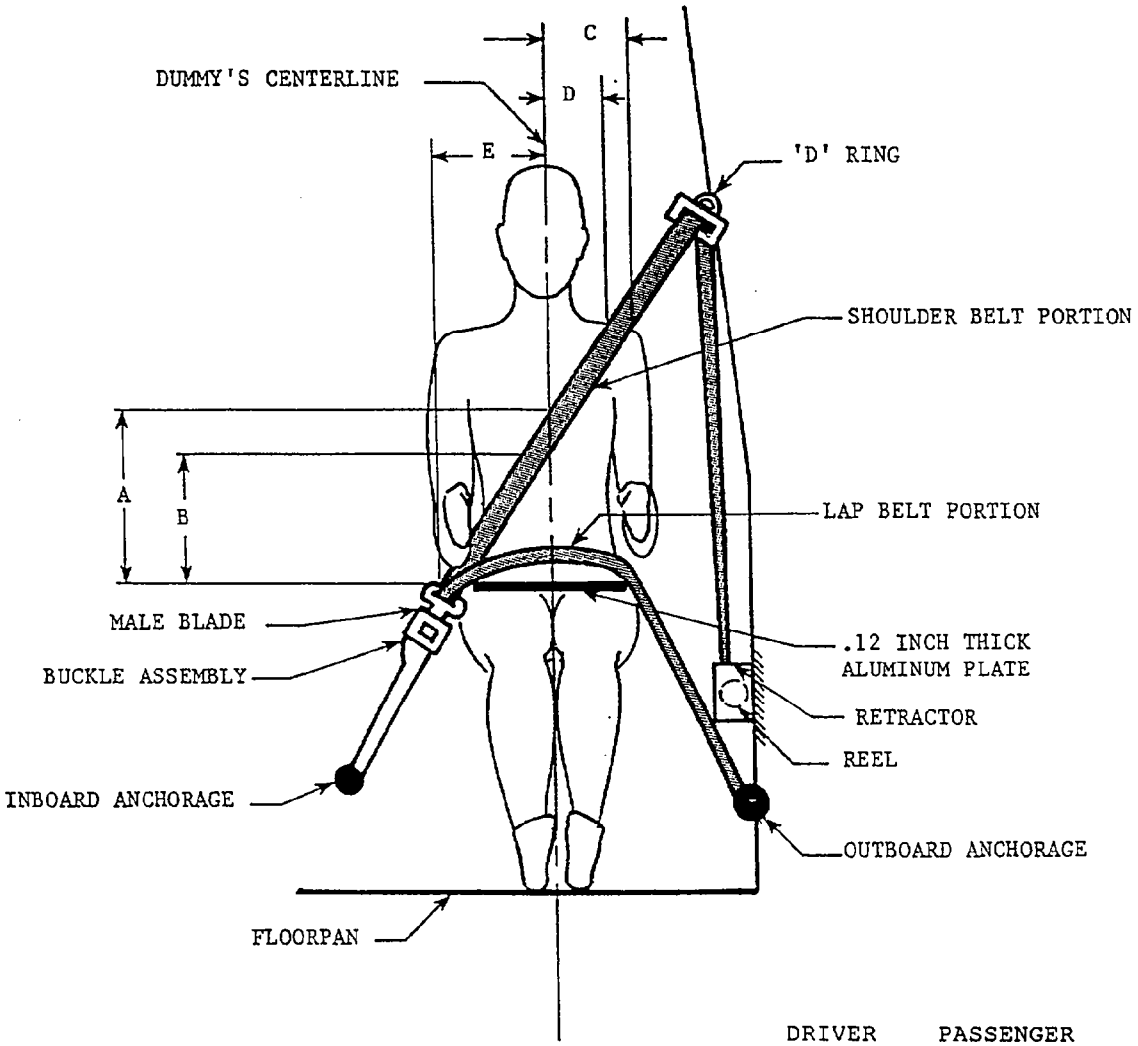
DESIGNATION	TYPE OF MEASUREMENT	DRIVER (SERIAL #353)	PASSENGER (SERIAL #354)
WA°	WINDSHIELD ANGLE	36°	36°
SWA°	STEERING WHEEL ANGLE	27°	NA
SCA°	STEERING COLUMN ANGLE	66°	NA
SA°	SEAT BACK ANGLE	25°	25°
HZ	HEAD TO ROOF	6.2	6.4
HH	HEAD TO HEADER	16.2	17.6
HW	HEAD TO WINDSHIELD	21.4	24.7
HR	HEAD TO SIDE HEADER	8.4	7.1
NR	NOSE TO RIM	17.8	NA
NA	NOSE TO RIM ANGLE	24°	NA
CD	CHEST TO DASH	24.3	25.1
CS	STEERING WHEEL TO CHEST	14.8	NA
RA	RIM TO ABDOMEN	6.8	NA
KDL	LEFT KNEE TO DASH	8.4	8.6
KDR	RIGHT KNEE TO DASH	9.0	8.9
KDA	OUTBOARD KNEE TO DASH ANGLE	25°	33°
PA°	PELVIC ANGLE	16°	17°
TA°	TIBIAL ANGLE	39°	40°
KK	KNEE TO KNEE	14.0	12.5
ST*	STRIKER TO HEAD	22.6	21.2
	STRIKER TO HEAD ANGLE	-78°	-83°
SK*	STRIKER TO KNEE	25.7	26.6
	STRIKER TO KNEE ANGLE	1°	2°
SH*	STRIKER TO H-POINT	12.4	12.1
	STRIKER TO H-POINT ANGLE	25°	29°
SHY	STRIKER TO H-POINT (Y DIR.)	6.9	7.9
HS	HEAD TO SIDE WINDOW	10.9	11.6
HD	H-POINT TO DOOR	5.6	5.8
AD	ARM TO DOOR	3.0	2.9

THE SEAT BACK ANGLE (SA°) IS MEASURED RELATIVE TO VERTICAL, ALL OTHER ANGLES ARE MEASURED RELATIVE TO HORIZONTAL.

*A negative angle indicates the measurement point was located above the striker.

ALL DISTANCE MEASUREMENTS ARE IN INCHES.

FIGURE 10 SEAT BELT POSITIONING DATA



	DRIVER DUMMY	PASSENGER DUMMY
A - TOP SURFACE OF ALUM. PLATE TO BELT UPPER EDGE	15.8	13.8
B - TOP SURFACE OF ALUM. PLATE TO BELT LOWER EDGE	12.4	10.2
C - DUMMY CENTERLINE TO OUTER EDGE OF BELT AT CHEST FLESH TOP	5.6	6.4
D - DUMMY CENTERLINE TO INNER EDGE OF BELT AT CHEST FLESH TOP	3.0	4.0
E - DUMMY CENTERLINE TO INTERSECTION OF UPPER TORSO BELT AND LAP BELT	11.0	10.8

ALL DISTANCE MEASUREMENTS ARE IN INCHES.

FIGURE 11 CAMERA POSITIONS

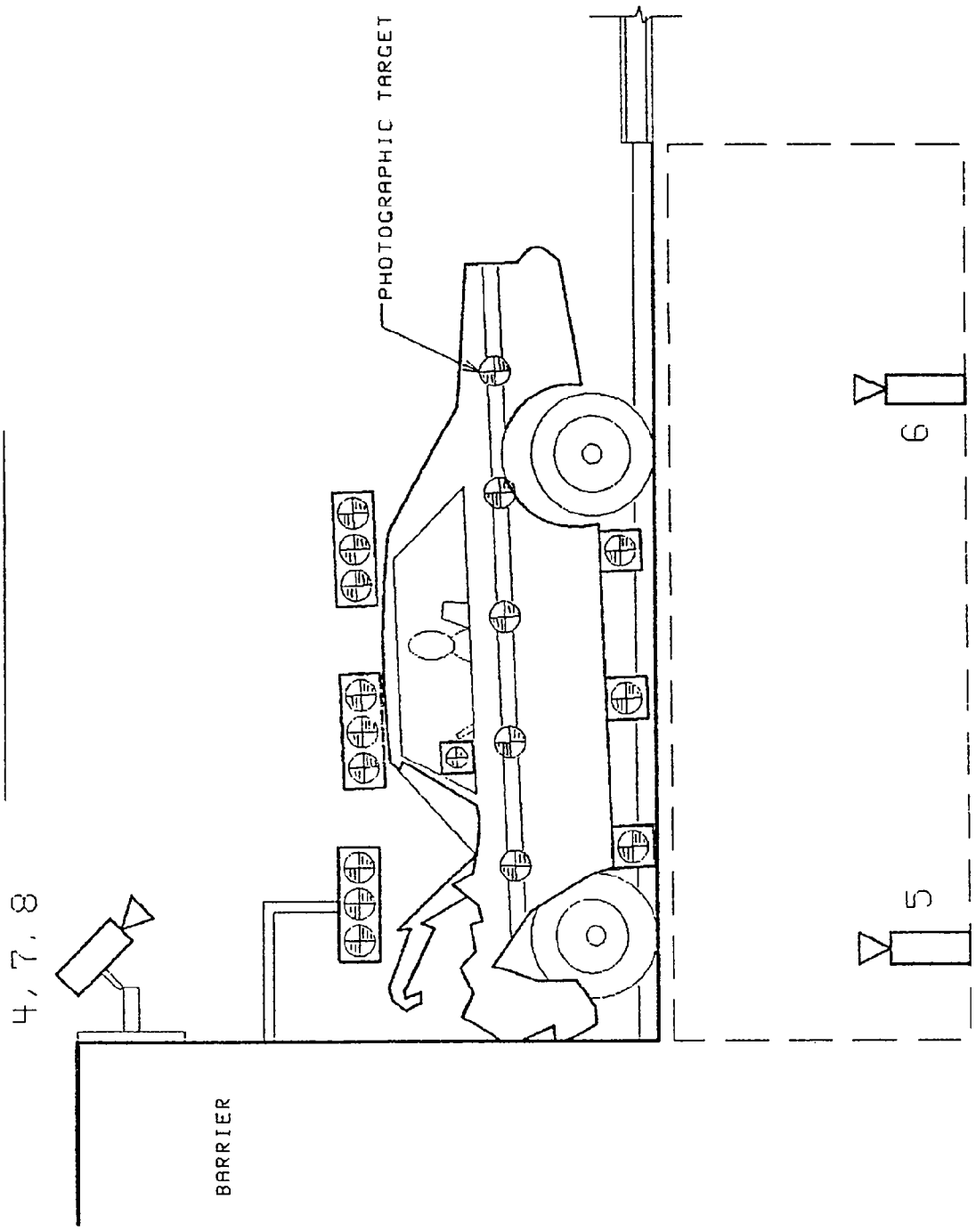


FIGURE 11 CAMERA POSITIONS, CONT'D.

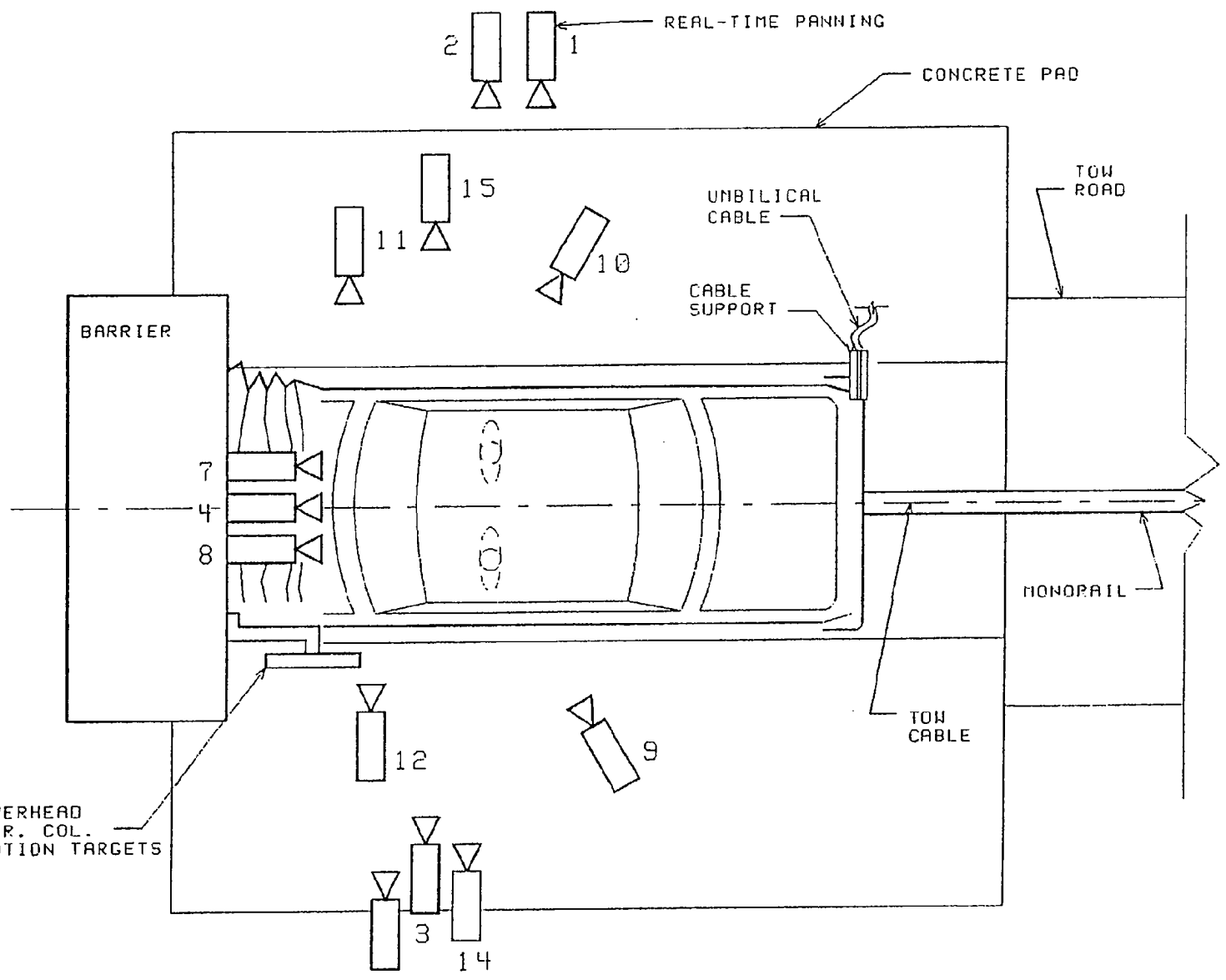


TABLE 15 MOTION PICTURE CAMERA LOCATIONS

TEST NO.: 930121 VEHICLE: Nissan Pathfinder 4-door special purpose vehicle

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	500
3	Left vehicle crush	-41.5	295.0	44.0	-4	215.0	25	1015
4	Windshield front view	-6.0	0.0	85.0	-40	NA	13	495
5	Pit-left subframe sidemember	-8.0	29.0	-16.0	90	NA	13	998
6	Pit-right subframe sidemember	-7.0	30.0	-12.0	90	NA	13	1010
7	Passenger front view	-4.5	-13.8	93.0	-50	NA	17	502
8	Driver front view	-6.8	14.5	93.0	-50	NA	17	505
9	Driver kinematics	-157.3	116.0	87.0	-27	89.0	25	495
10	Passenger kinematics	-152.1	-116.0	87.0	-26	88.0	25	500
11	Right windshield intrusion	-38.1	-306.1	44.0	0	NA	50	500
12	Left windshield instrusion	-53.0	309.4	42.3	0	NA	50	502
13	Steering column motion	-120.0	285.0	103.0	-14	NA	25	500
14	Steering column motion	-120.0	285.0	75.1	-9	NA	25	502
15	Passenger kinematics	-38.8	-293.0	45.3	-4	232.0	25	1002
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

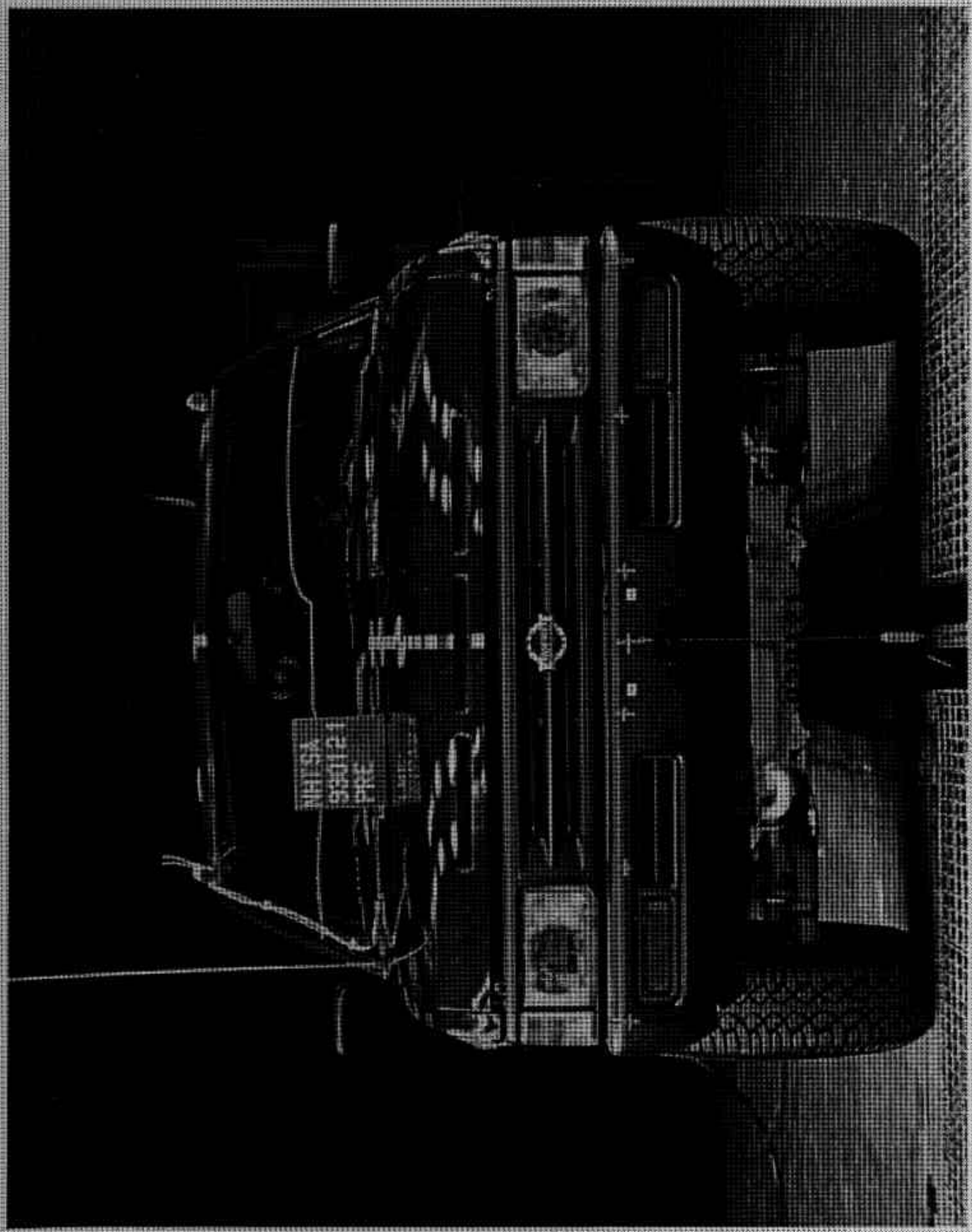


Figure A-1. PRE-TEST FRONT VIEW

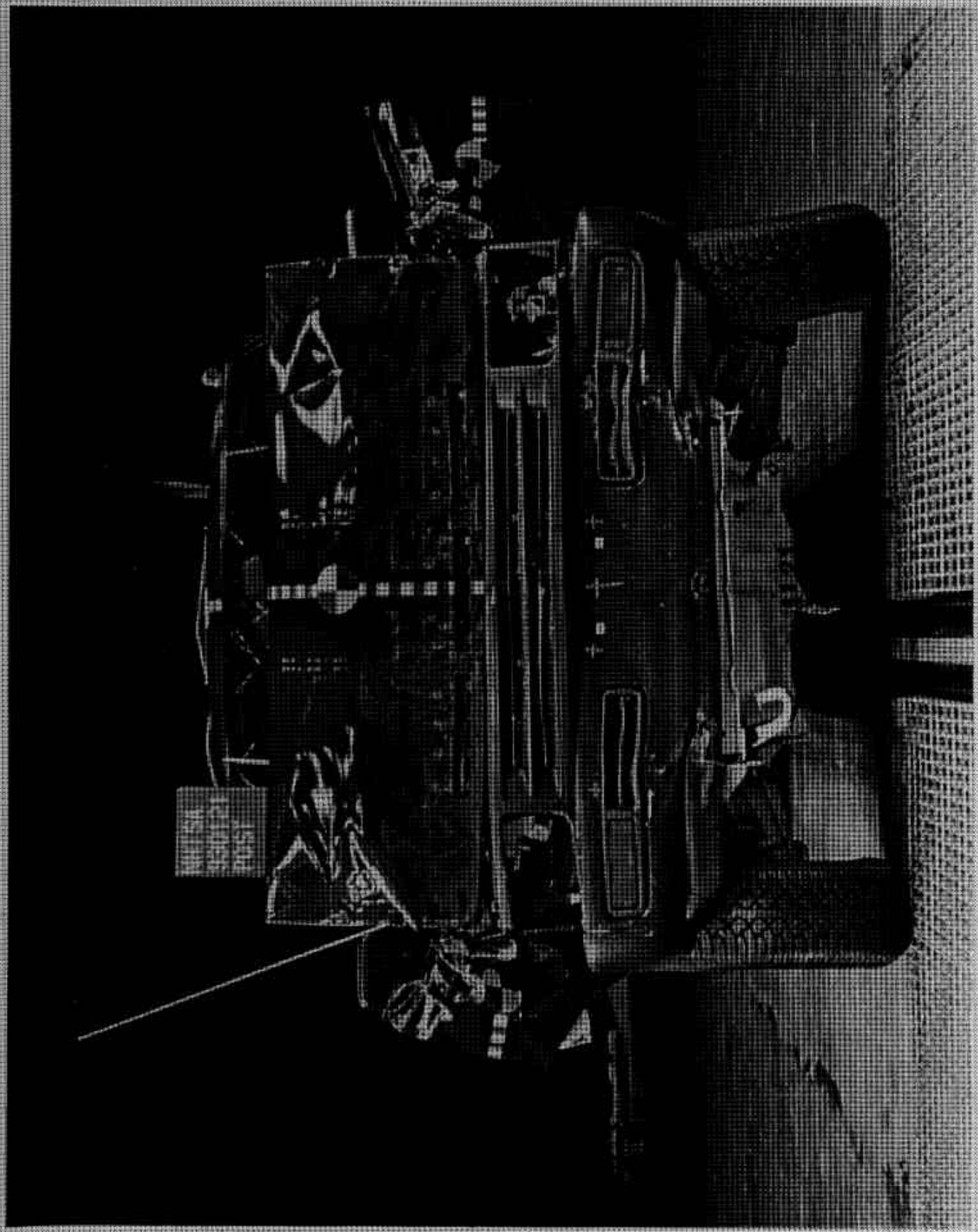


Figure A-2. POST-TEST FRONT VIEW

930121

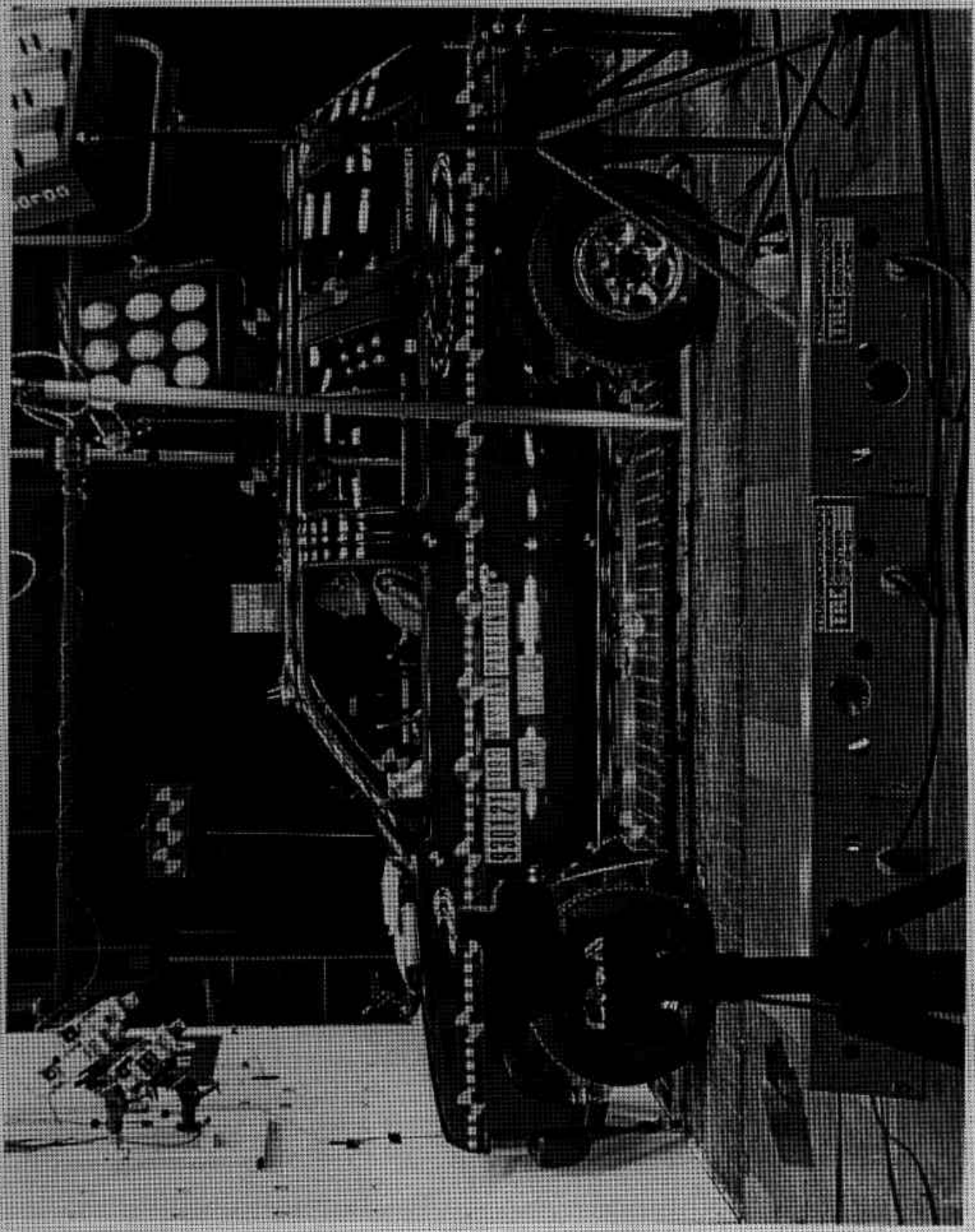


Figure A-3. PRE-TEST LEFT SIDE VIEW

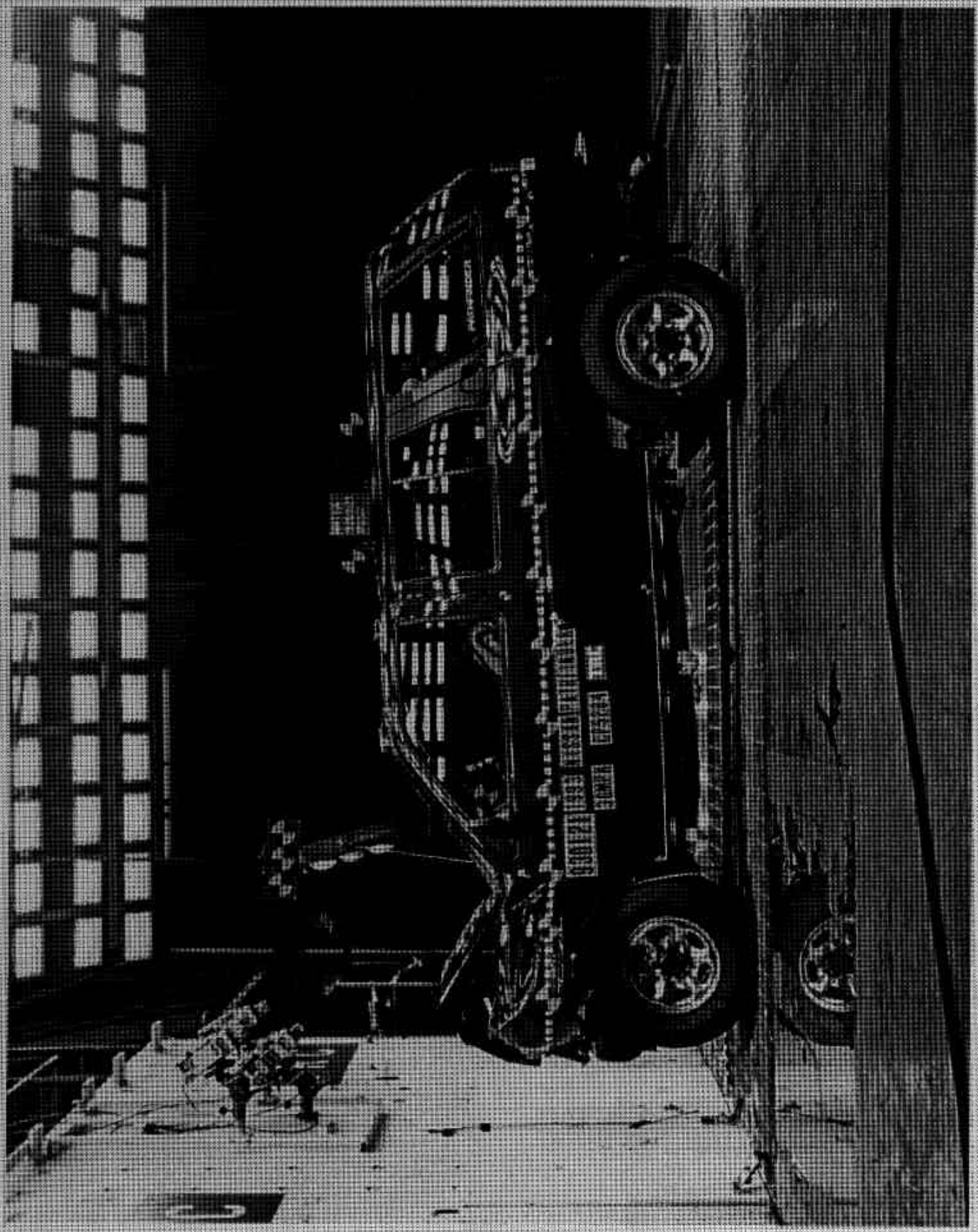


Figure A-4. POST-TEST LEFT SIDE VIEW

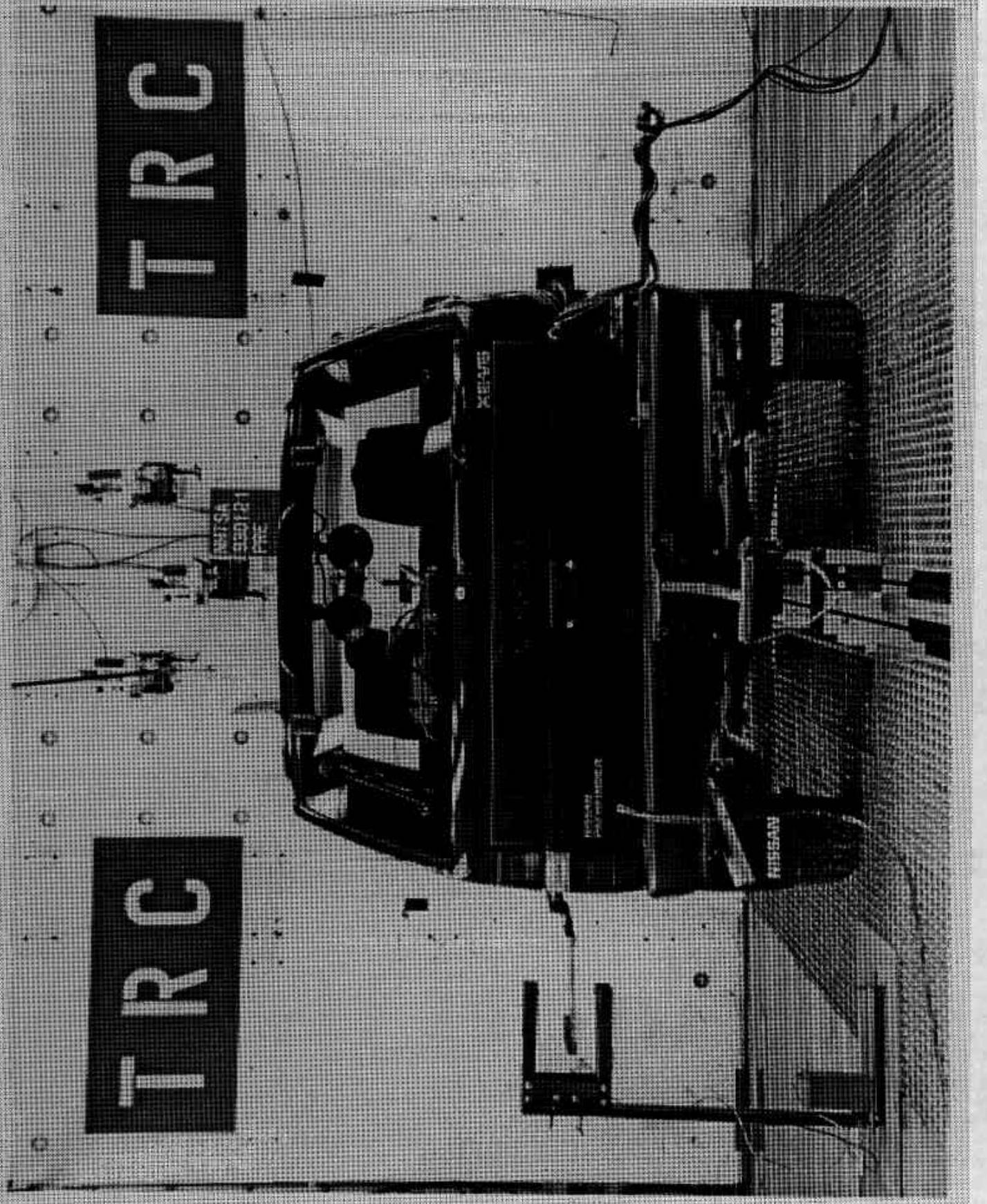


Figure A-5. PRE-TEST REAR VIEW

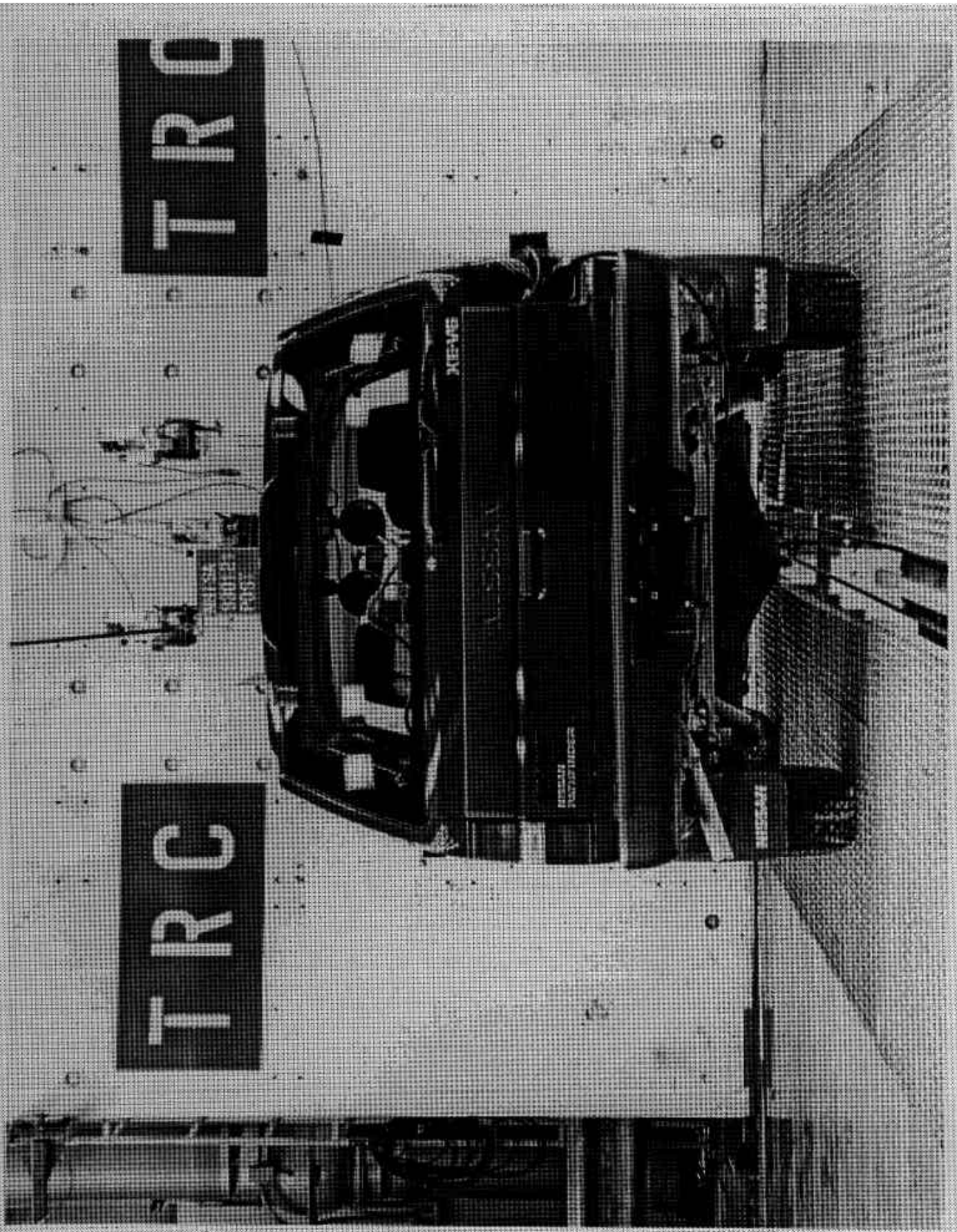


Figure A-6. POST-TEST REAR VIEW

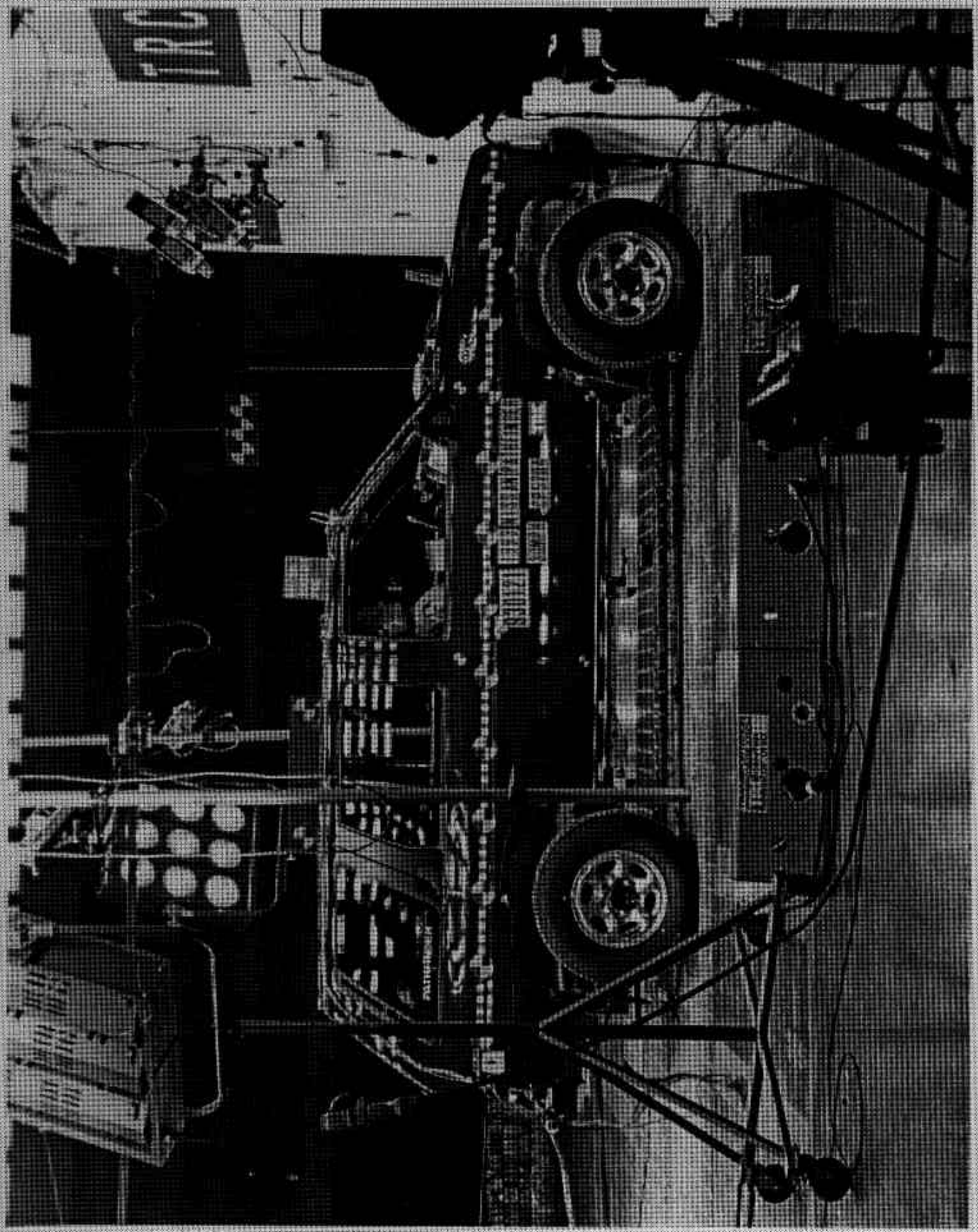


Figure A-7. PRE-TEST RIGHT SIDE VIEW

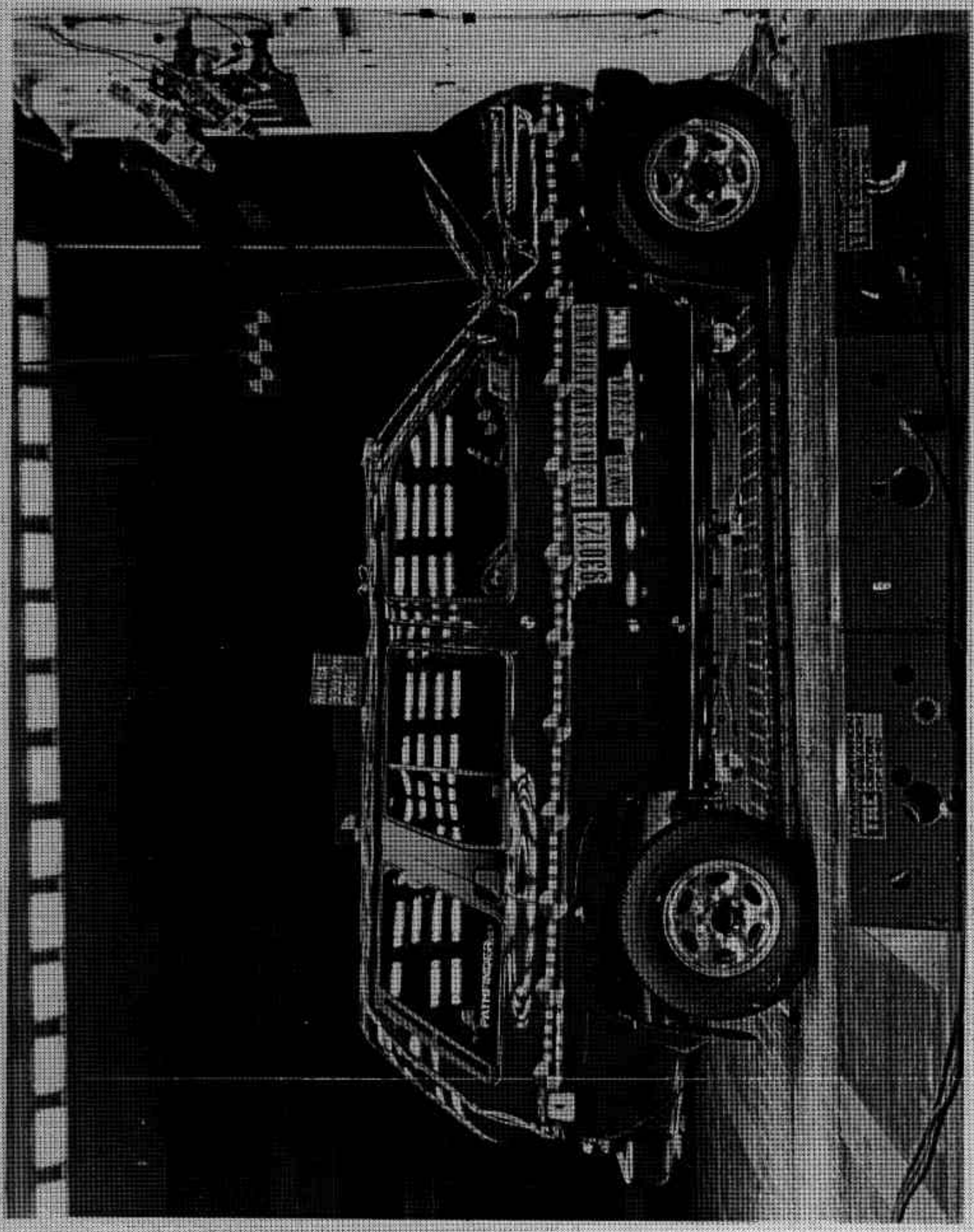


Figure A-8. POST-TEST RIGHT SIDE VIEW

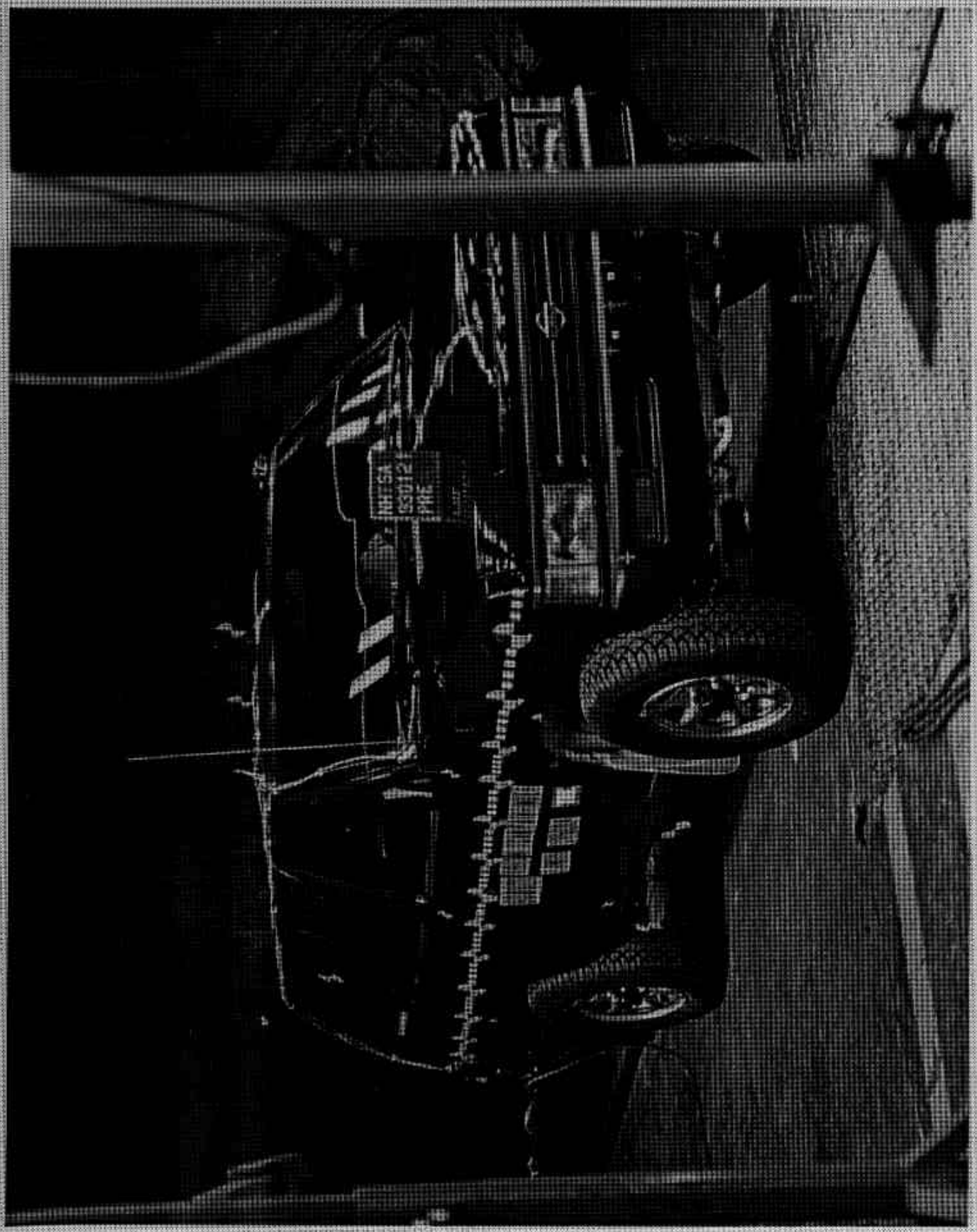


Figure A-9. PRE-TEST RIGHT FRONT THREE-QUARTER VIEW

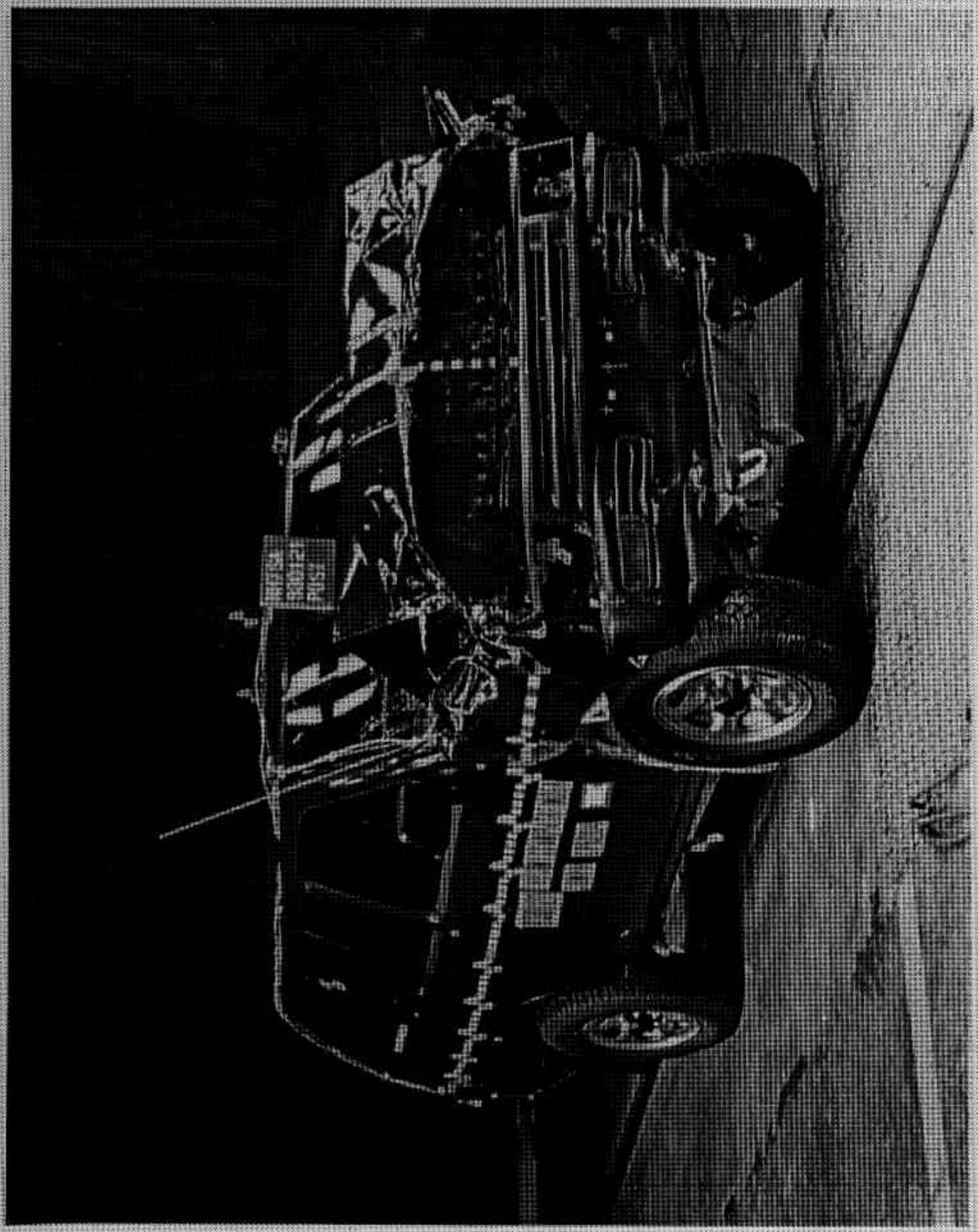


Figure A-10. POST-TEST RIGHT FRONT THREE-QUARTER VIEW

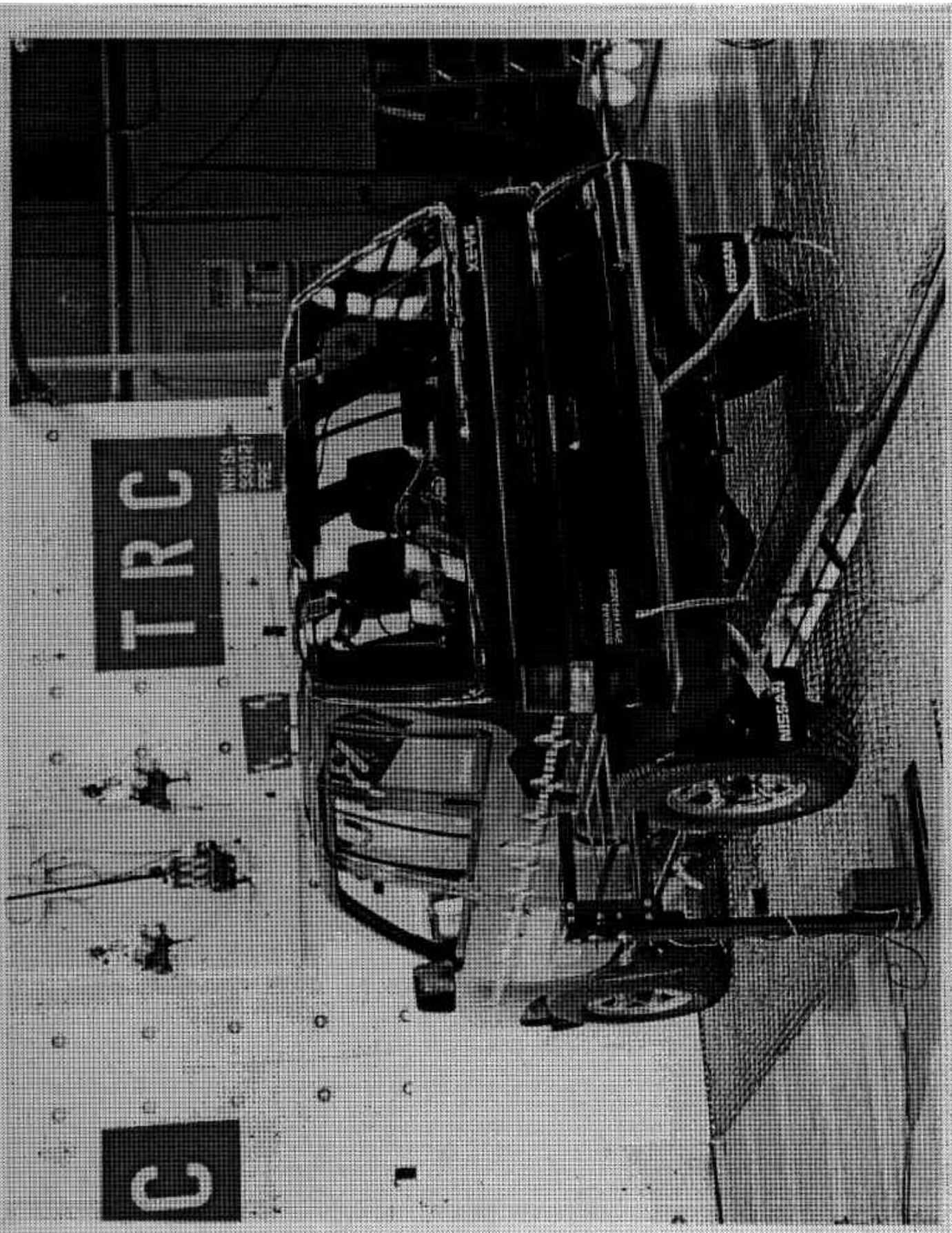


Figure A-11. PRE-TEST LEFT REAR THREE-QUARTER VIEW

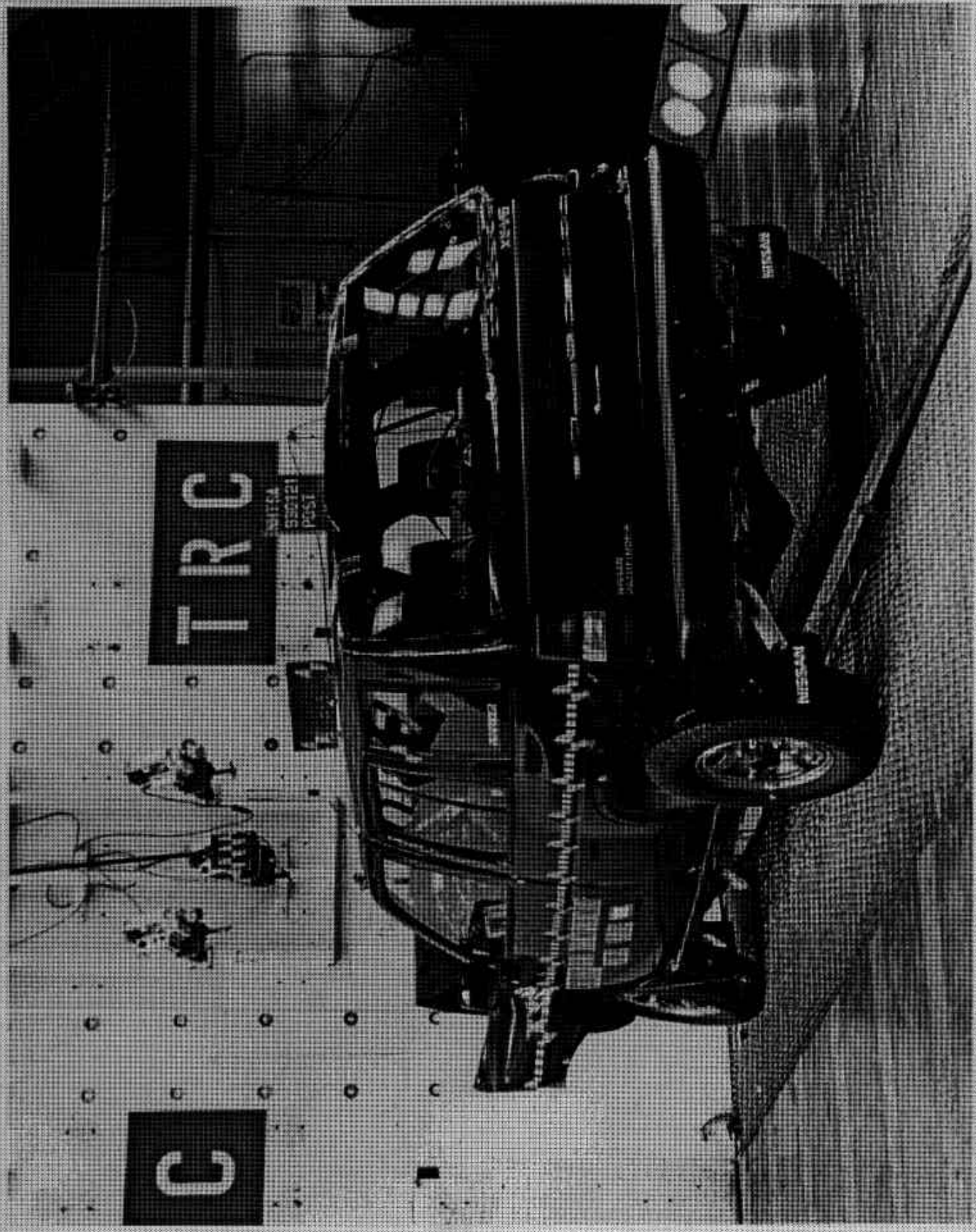


Figure A-12. POST-TEST LEFT REAR THREE-QUARTER VIEW

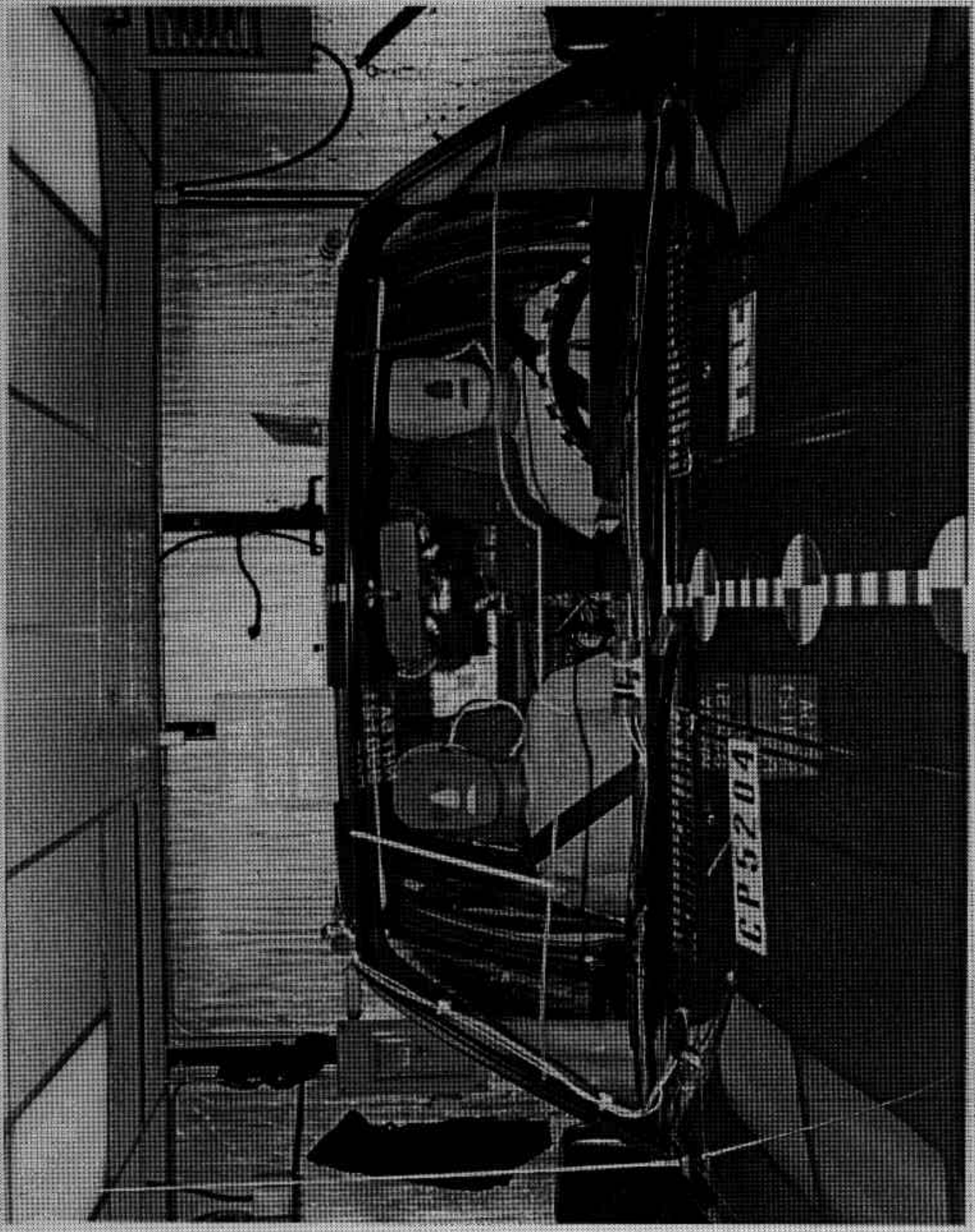


Figure A-13. PRE-TEST WINDSHIELD VIEW

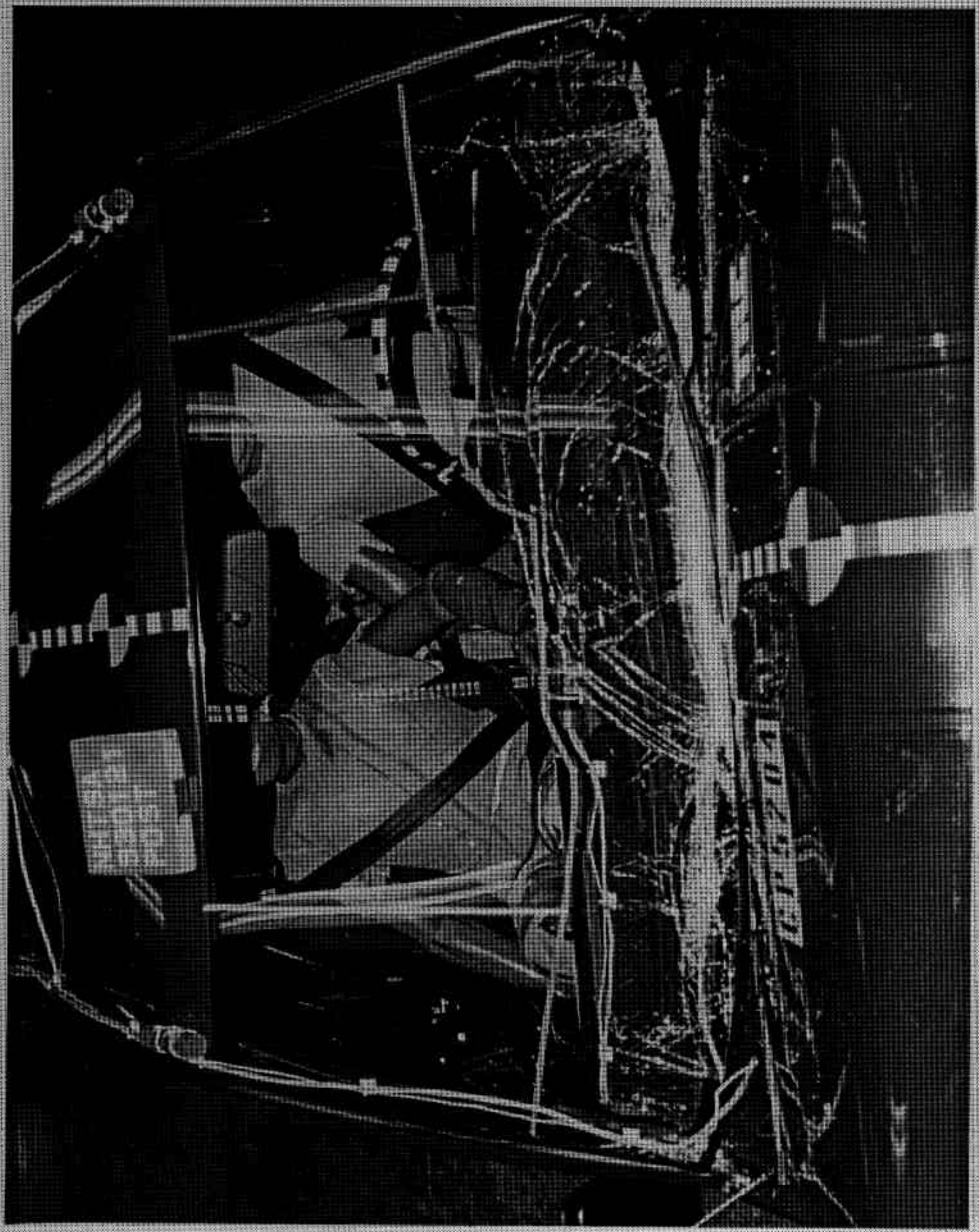


Figure A-14. POST-TEST WINDSHIELD VIEW

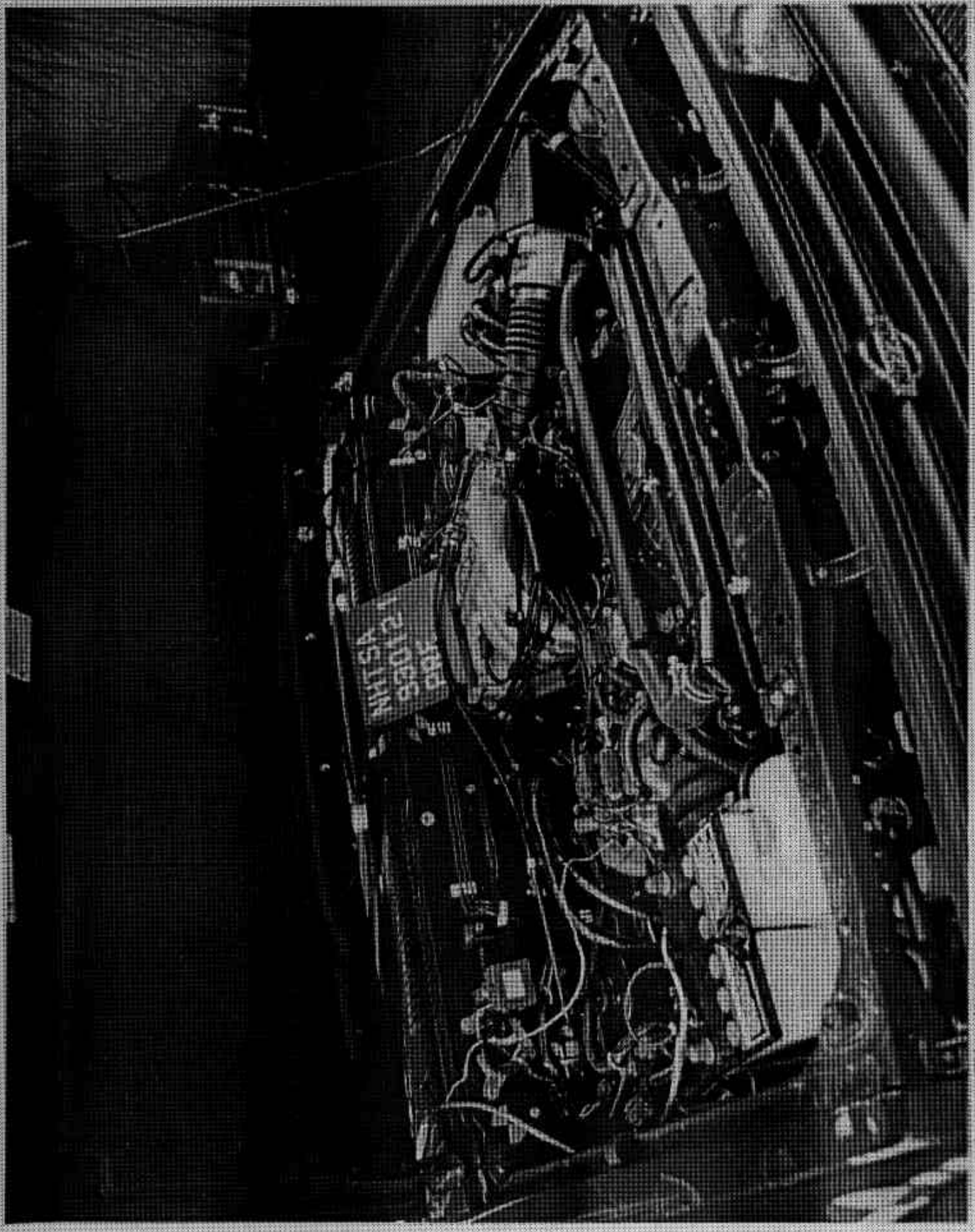


Figure A-15. PRE-TEST ENGINE COMPARTMENT VIEW

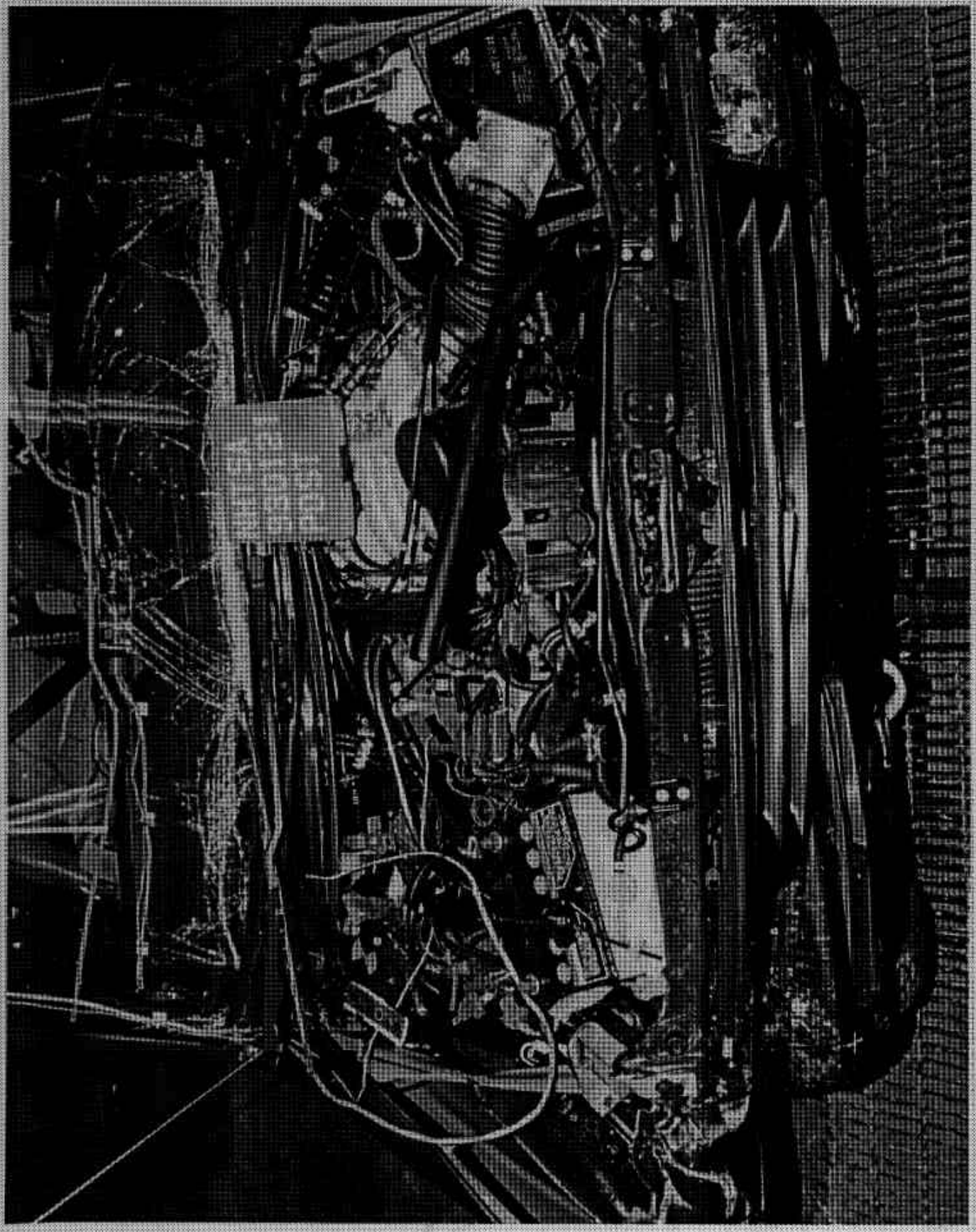


Figure A-16. POST-TEST ENGINE COMPARTMENT VIEW

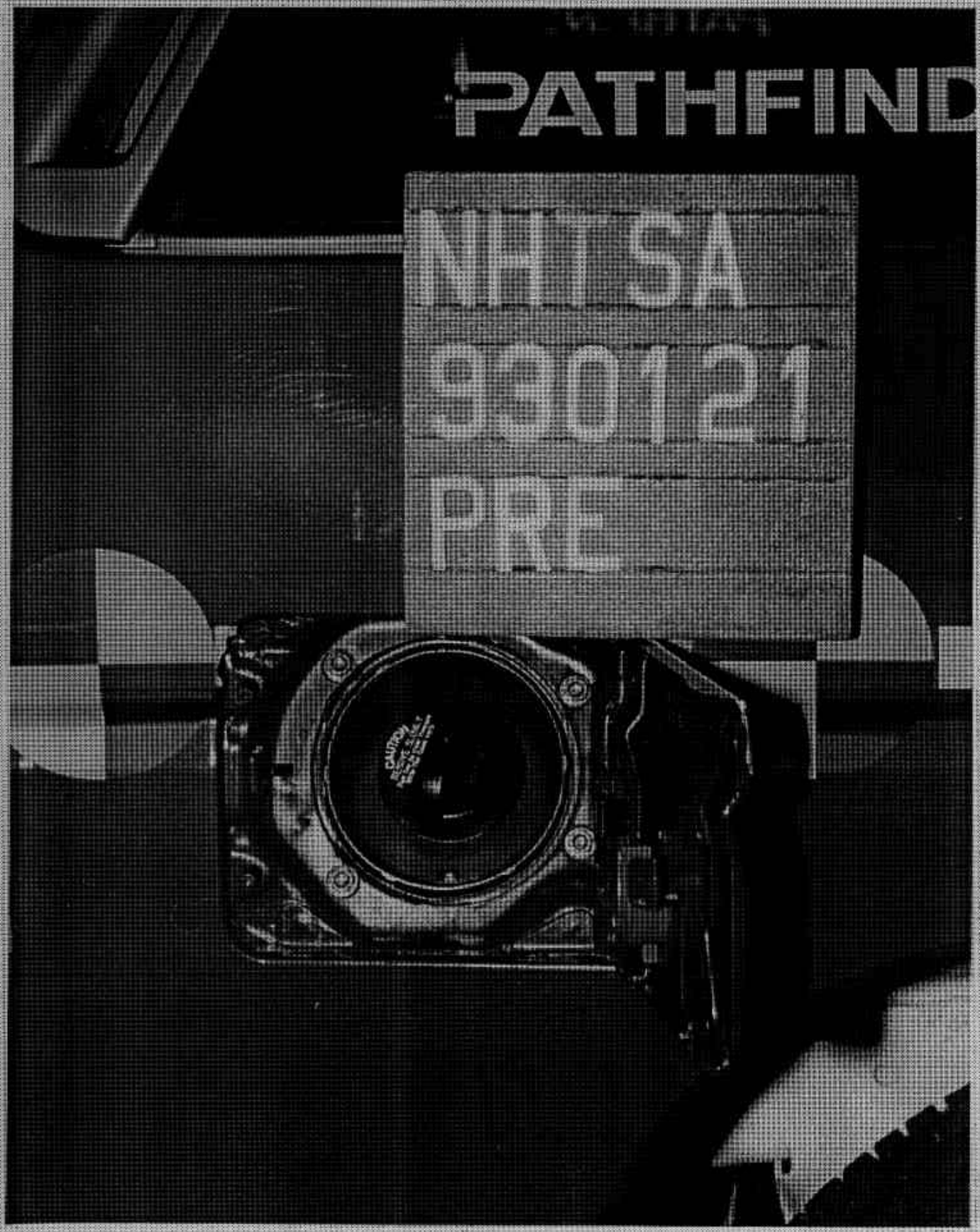


Figure A-17. PRE-TEST FUEL FILLER CAP VIEW

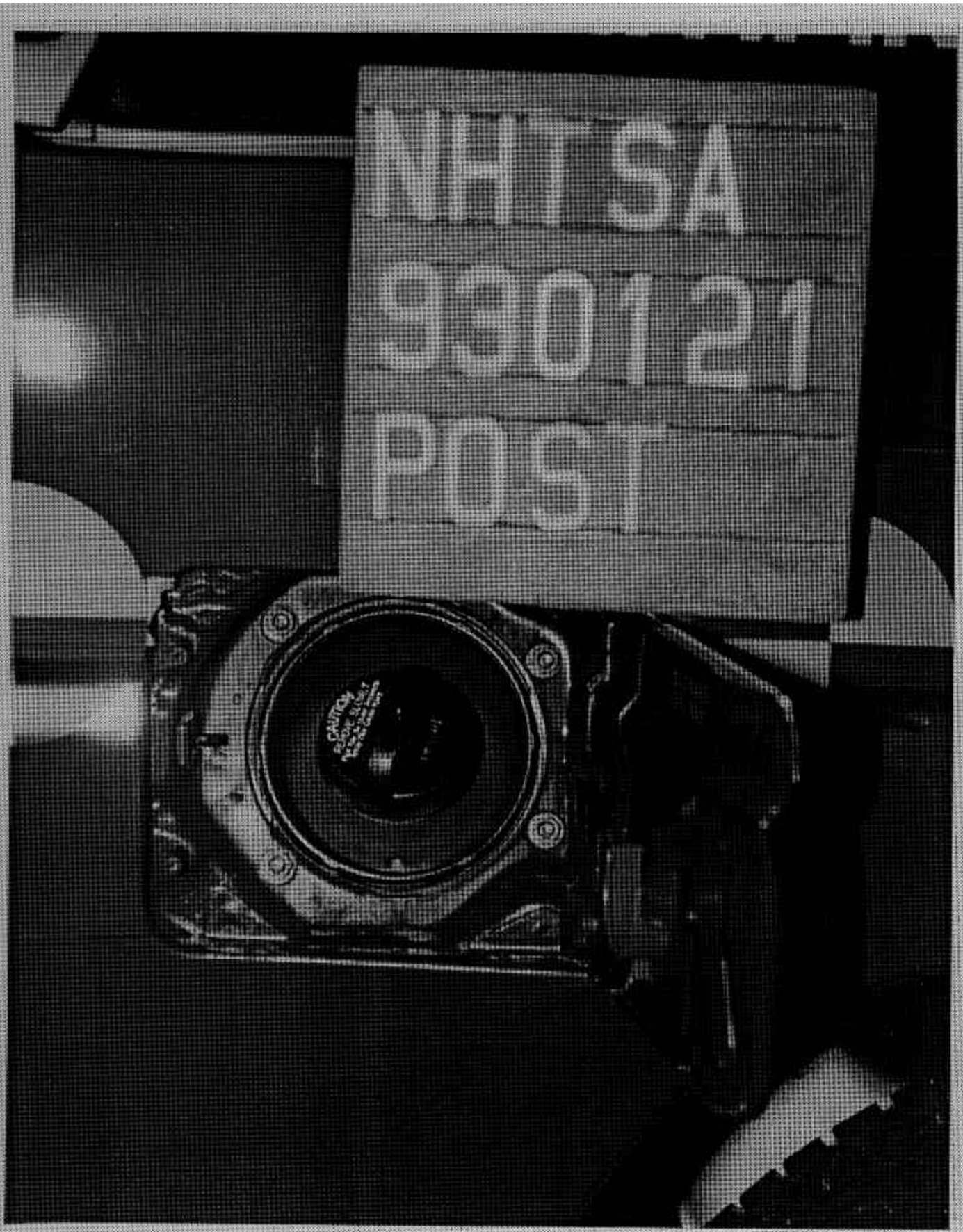


Figure A-18. POST-TEST FUEL FILLER CAP VIEW

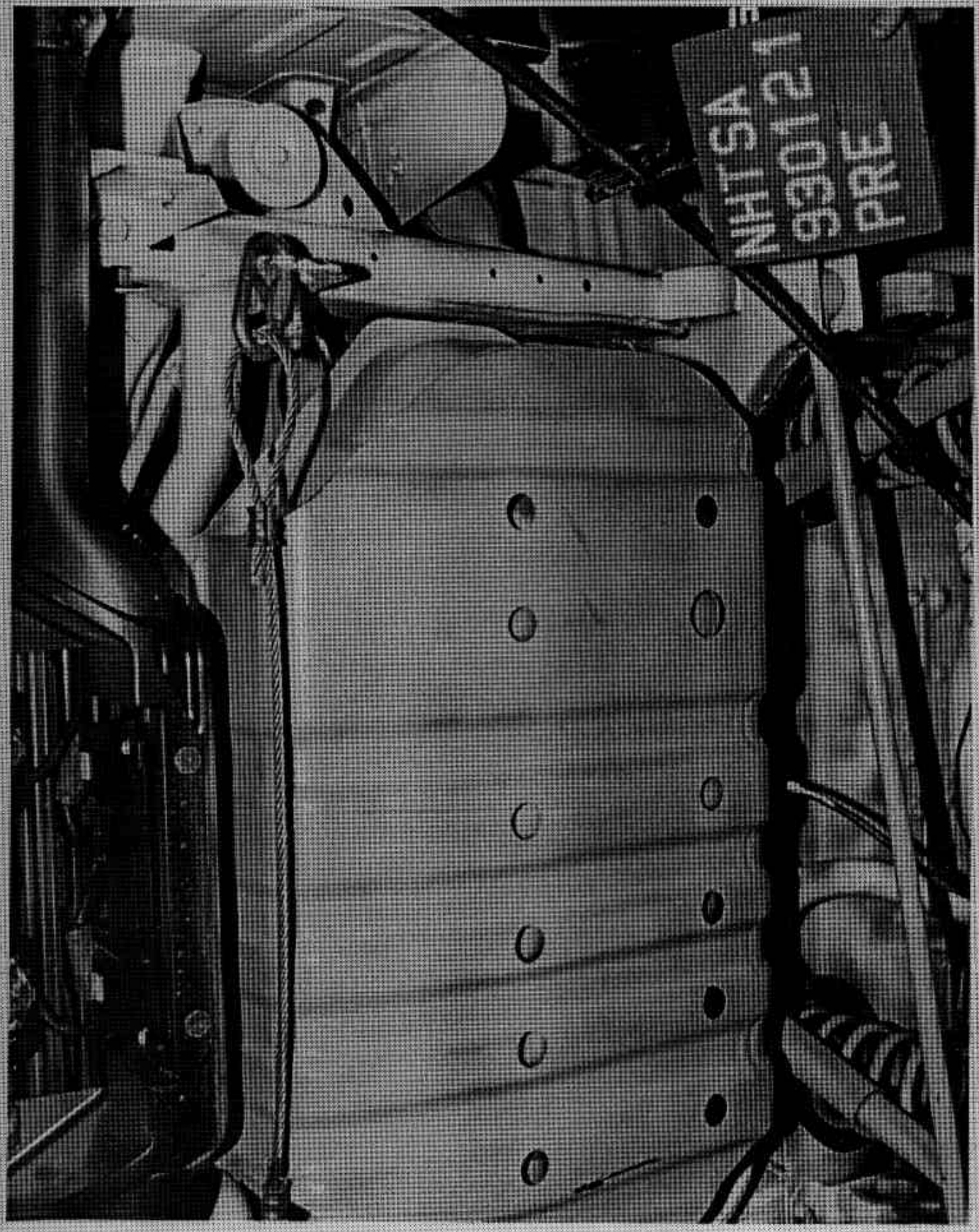


Figure A-19. PRE-TEST FUEL TANK VIEW

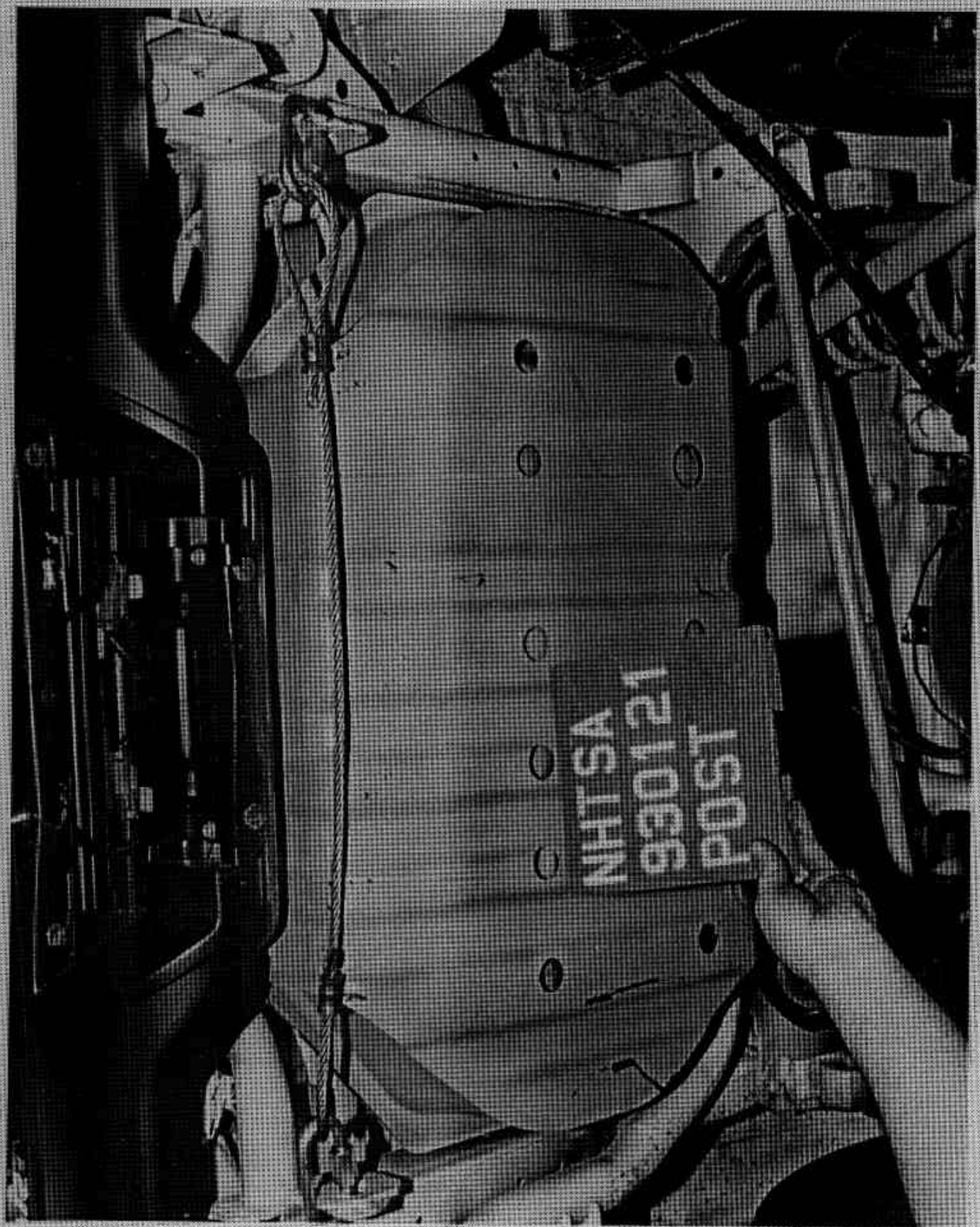


Figure A-20. POST-TEST FUEL TANK VIEW

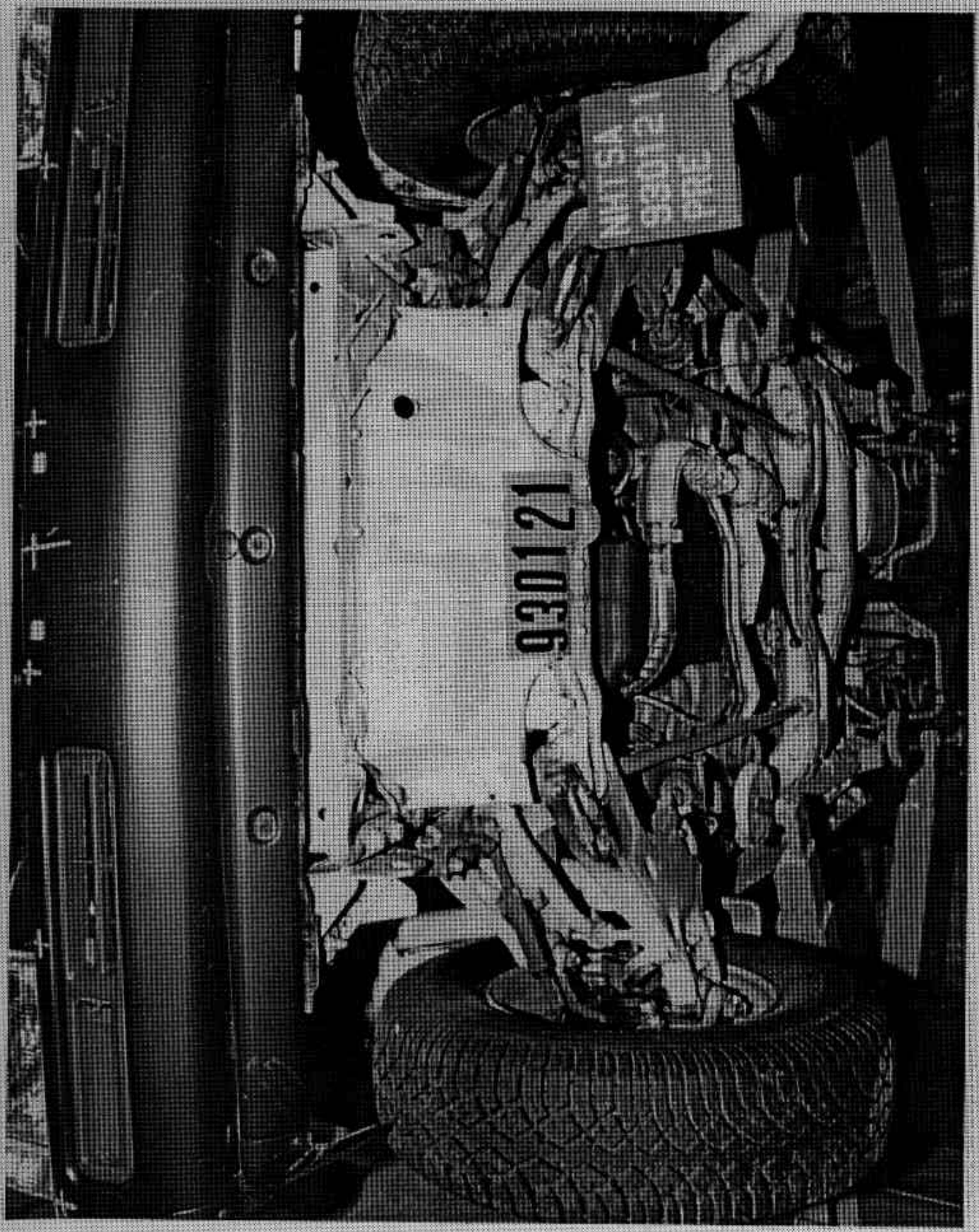


Figure A-21. PRE-TEST FRONT UNDERBODY VIEW

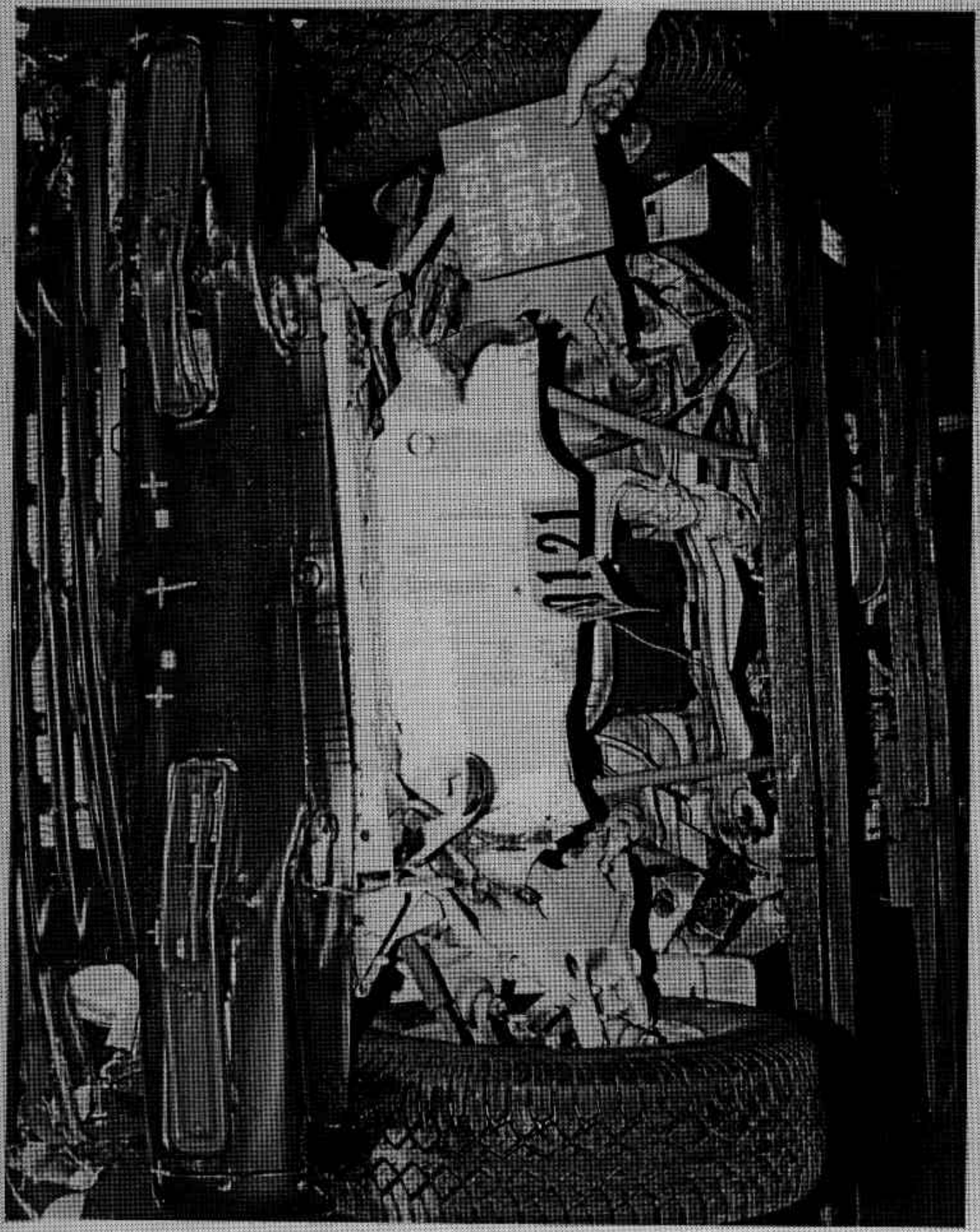


Figure A-22. POST-TEST FRONT UNDERBODY VIEW

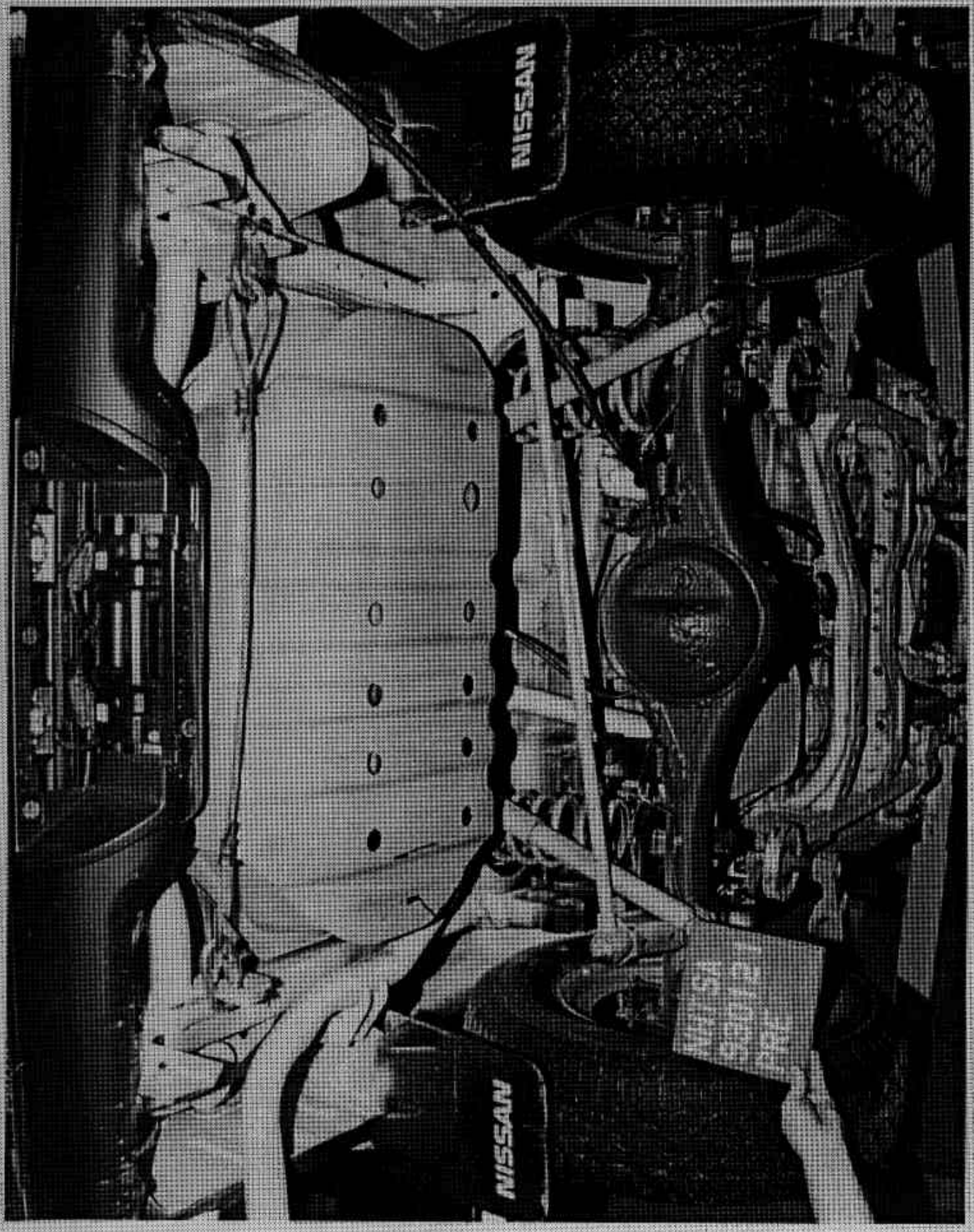


Figure A-23. PRE-TEST REAR UNDERBODY VIEW

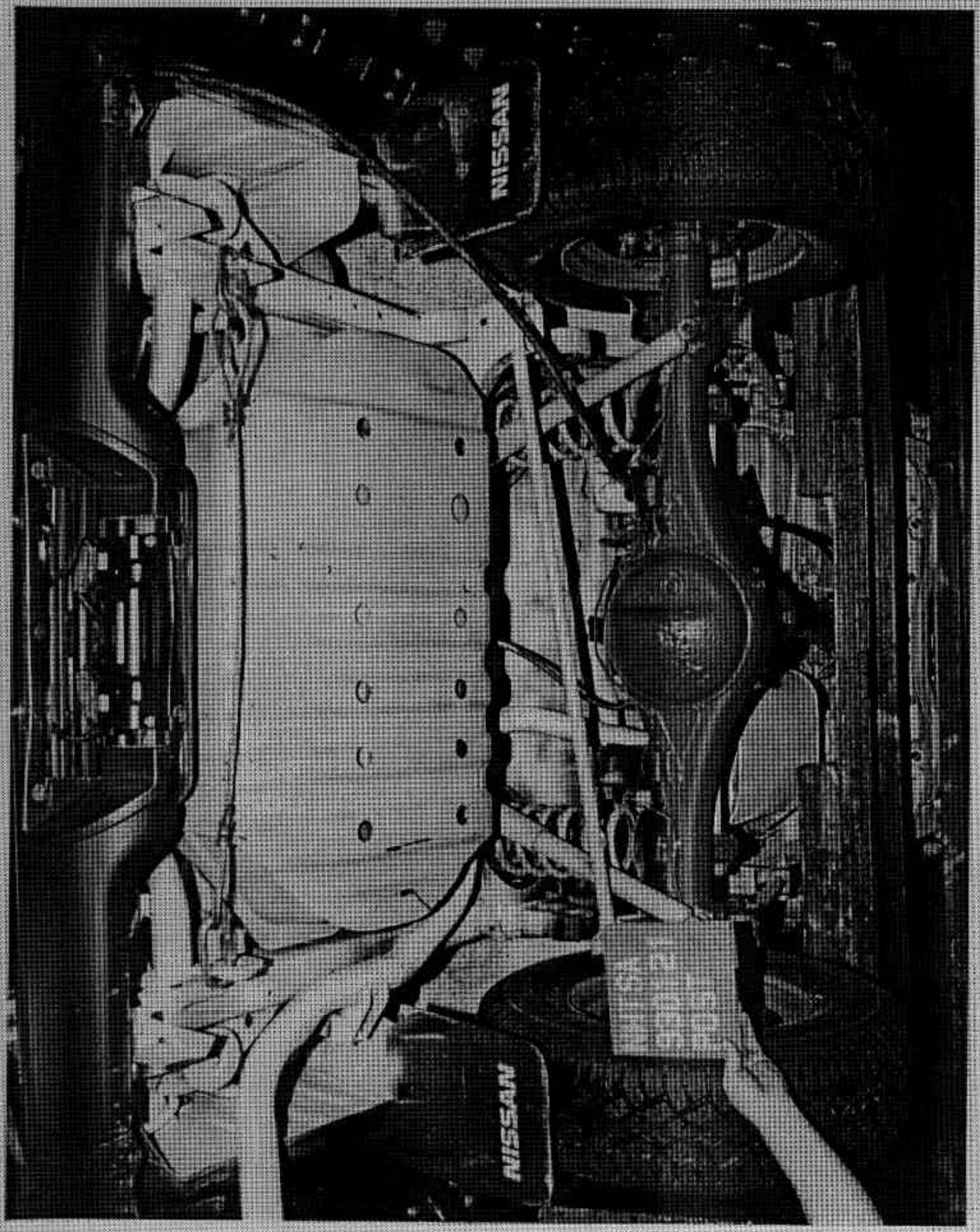


Figure A-24. POST-TEST REAR UNDERBODY VIEW

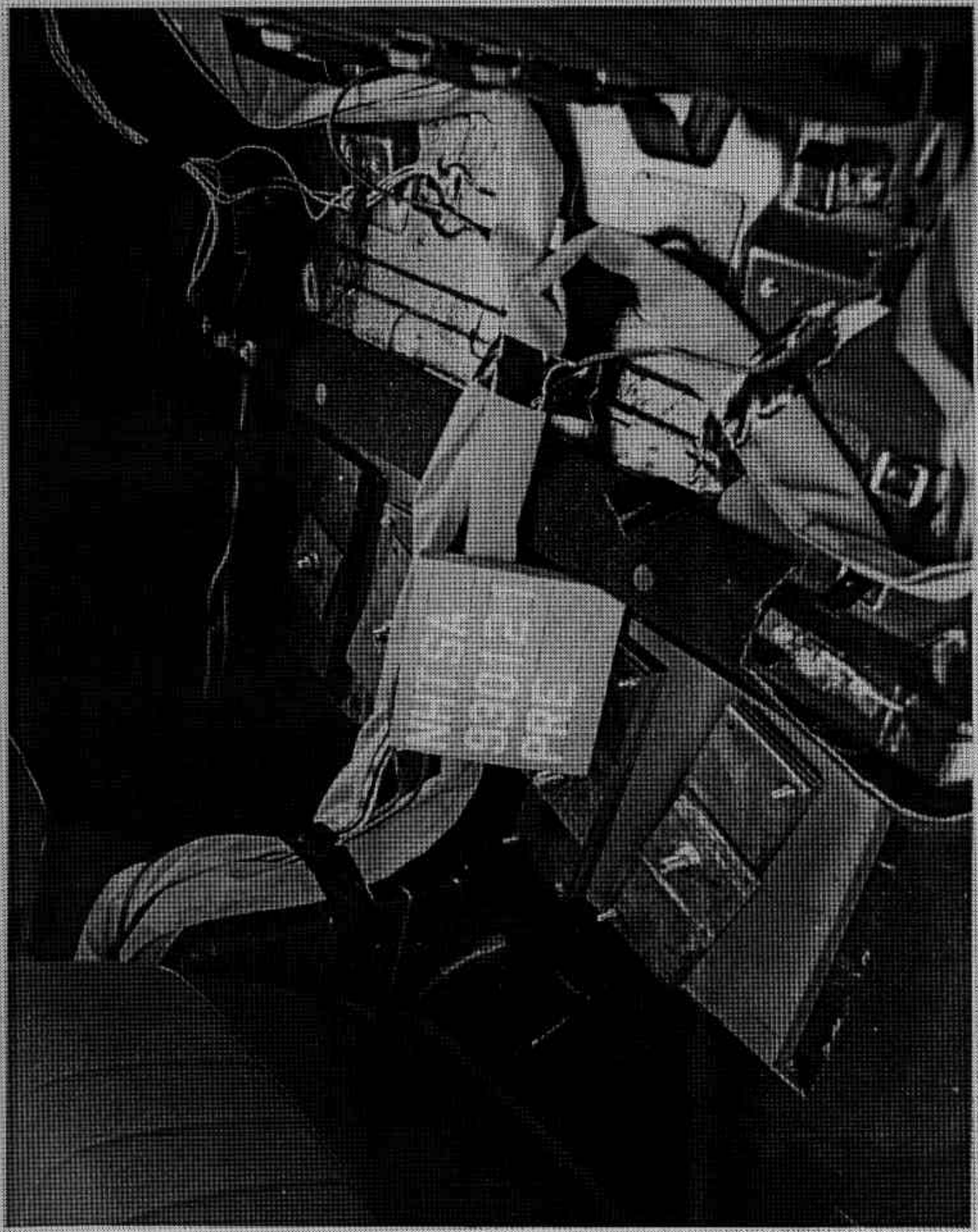


Figure A-25. PRE-TEST BALLAST LOCATION VIEW

Figure A-26. PRE-TEST DRIVER DUMMY POSITION VIEW

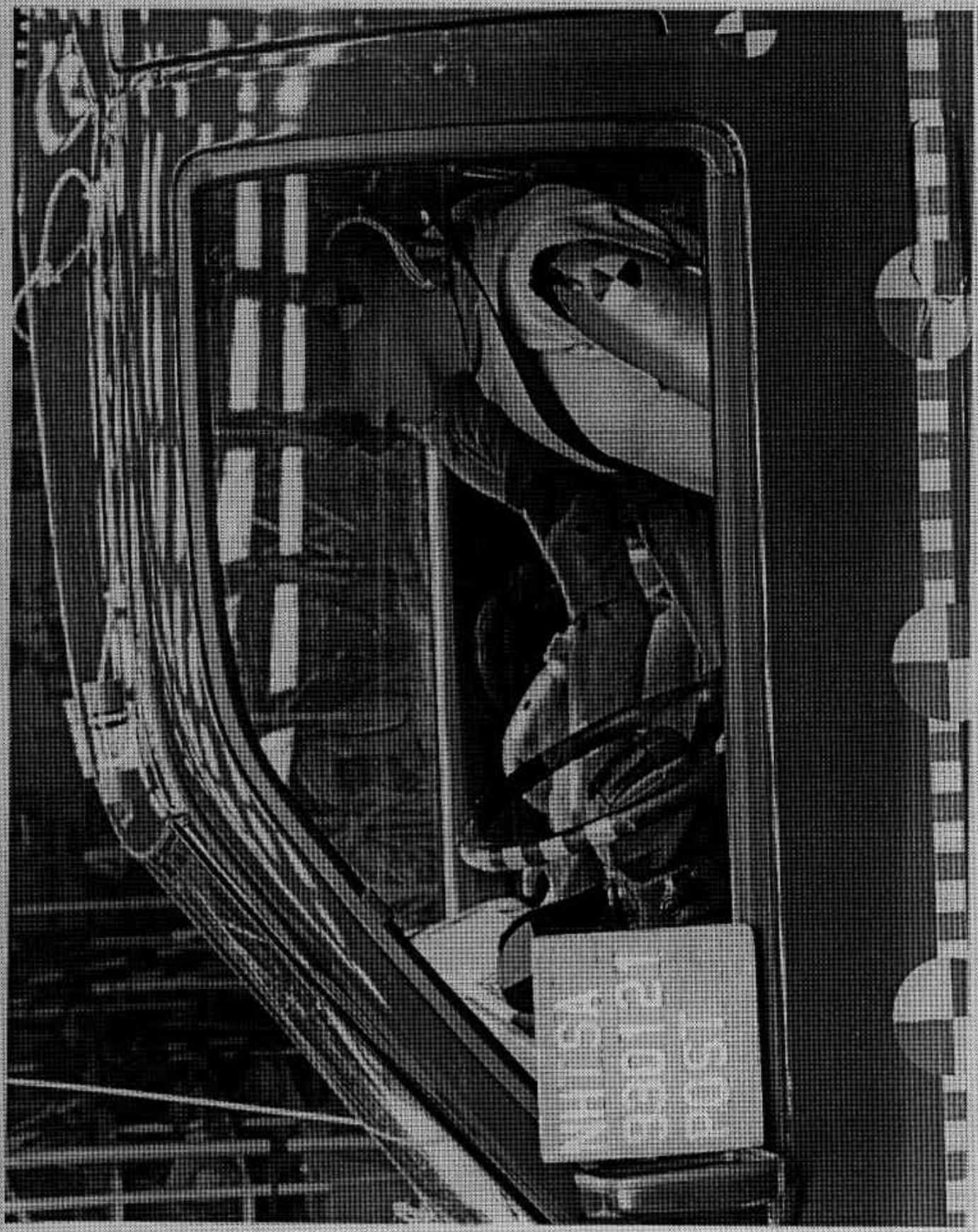


Figure A-27. POST-TEST DRIVER DUMMY POSITION VIEW

Figure A-28. PRE-TEST PASSENGER DUMMY POSITION VIEW

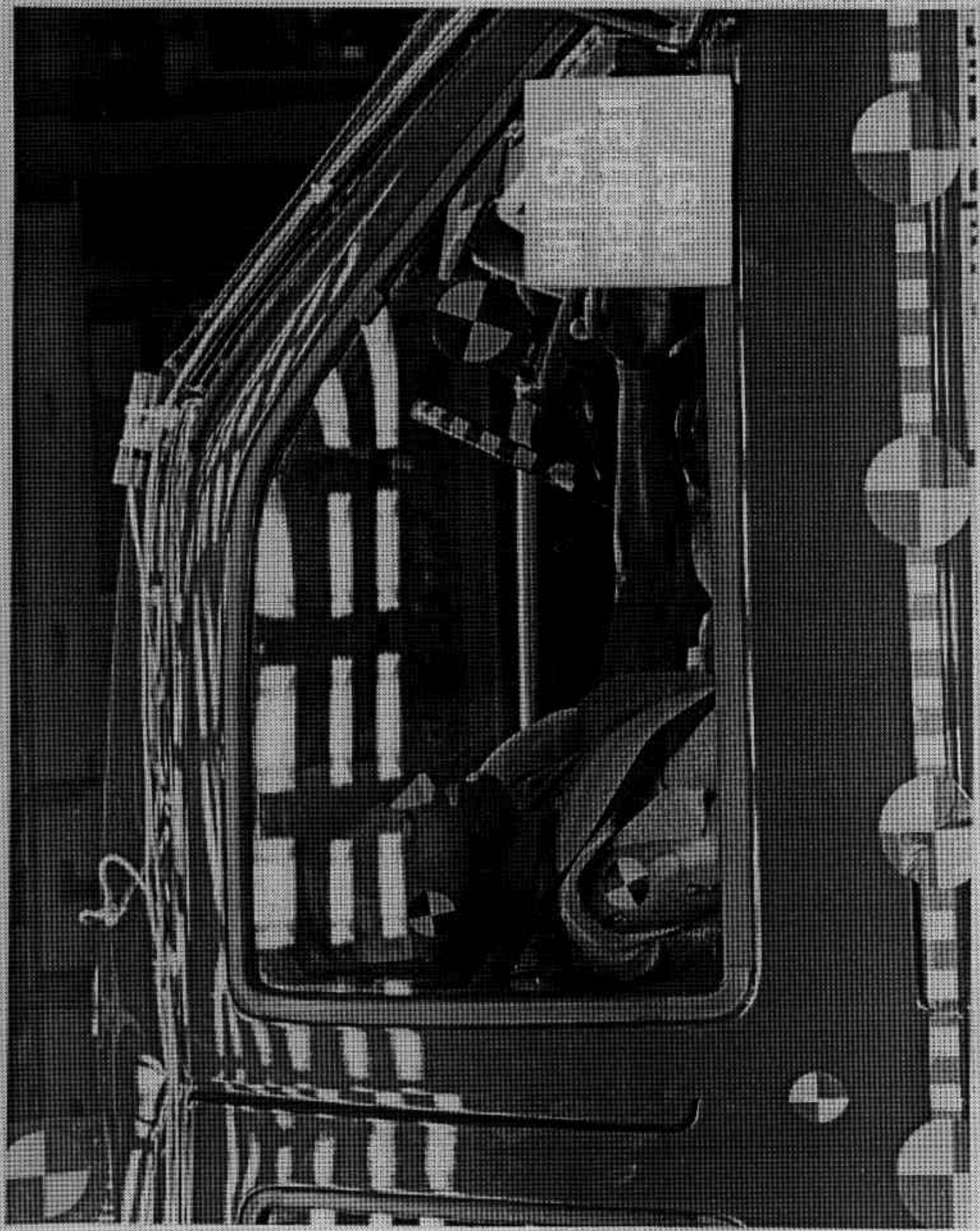


Figure A-29. POST-TEST PASSENGER DUMMY POSITION VIEW

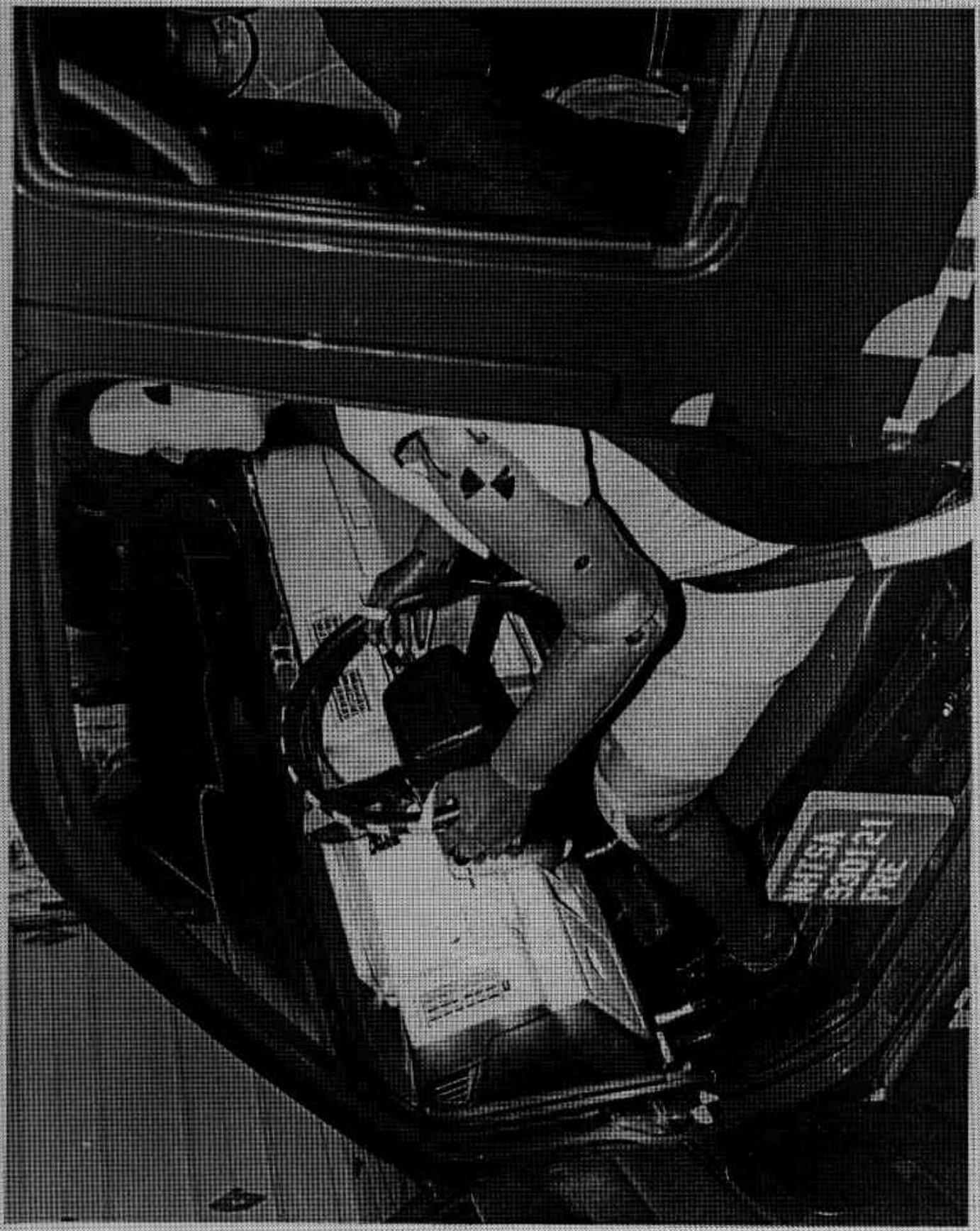


Figure A-30. PRE-TEST DRIVER DUMMY & VEHICLE INTERIOR - VIEW 1

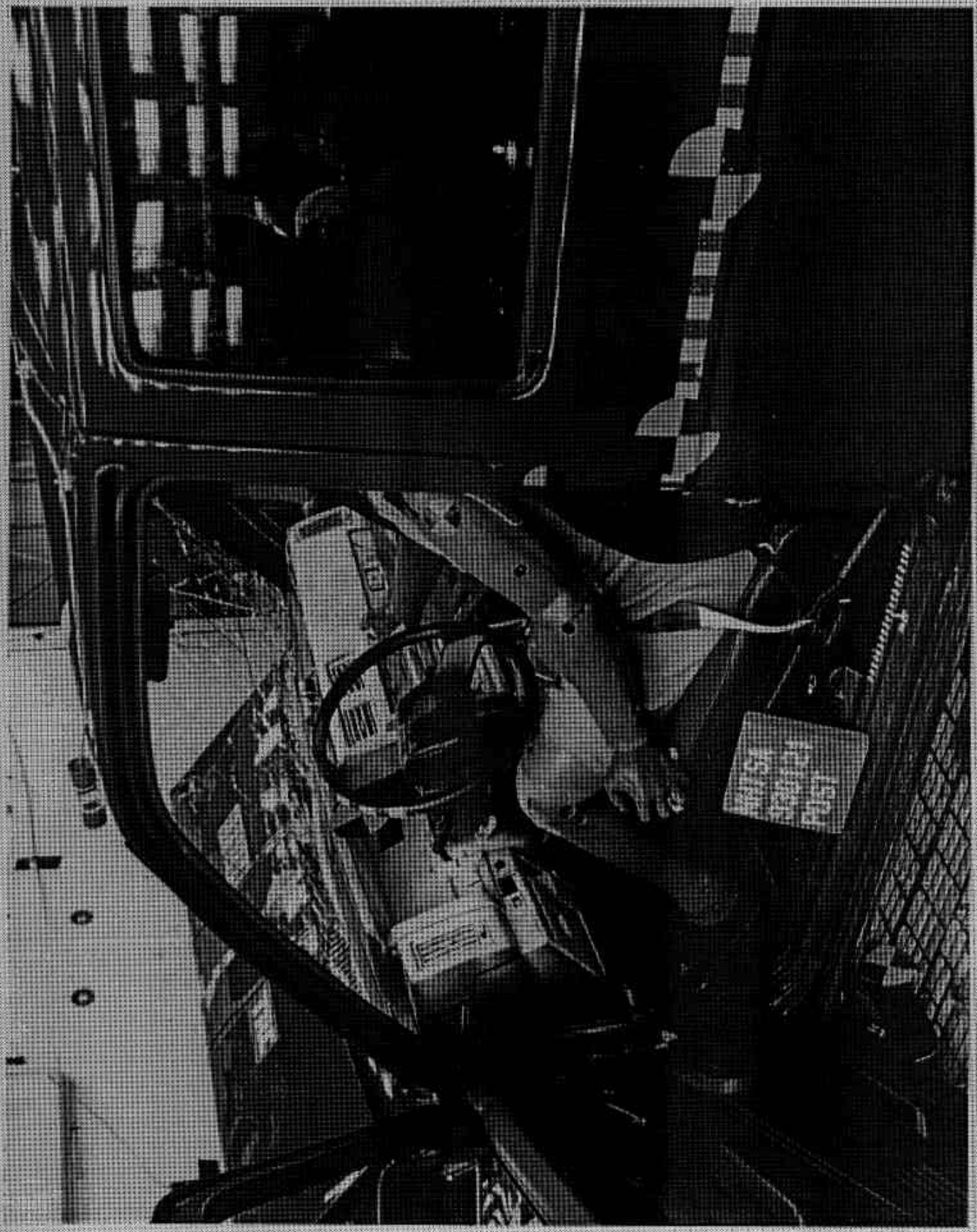


Figure A-31. POST-TEST DRIVER DUMMY & VEHICLE INTERIOR - VIEW 1

Figure A-32. PRE-TEST DRIVER DUMMY & VEHICLE INTERIOR - VIEW 2

Figure A-33. POST-TEST DRIVER DUMMY & VEHICLE INTERIOR - VIEW 2

Figure A-34. PRE-TEST PASSENGER DUMMY & VEHICLE INTERIOR - VIEW 1

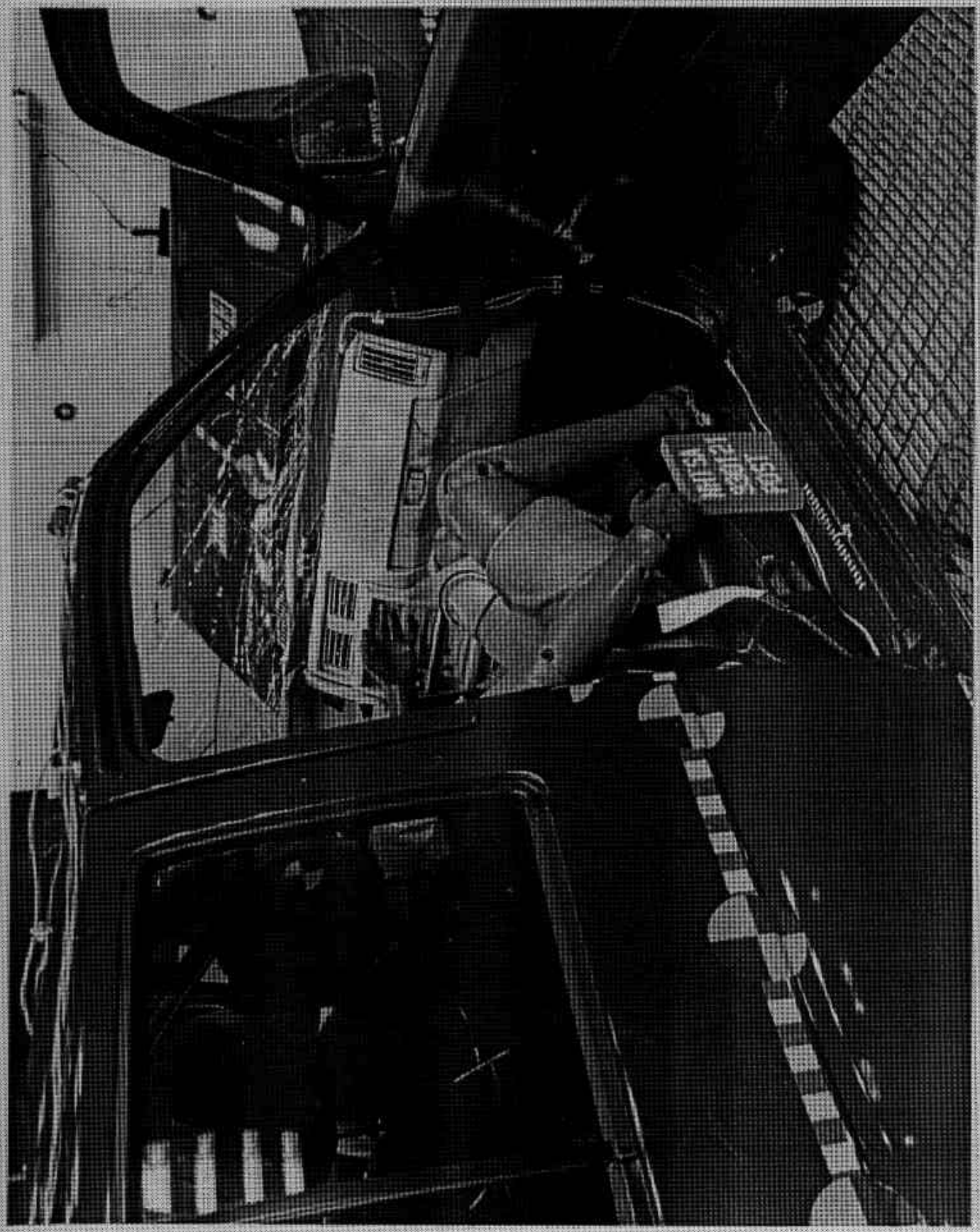


Figure A-35. POST-TEST PASSENGER DUMMY & VEHICLE INTERIOR - VIEW 1

Figure A-36. PRE-TEST PASSENGER DUMMY & VEHICLE INTERIOR - VIEW 2

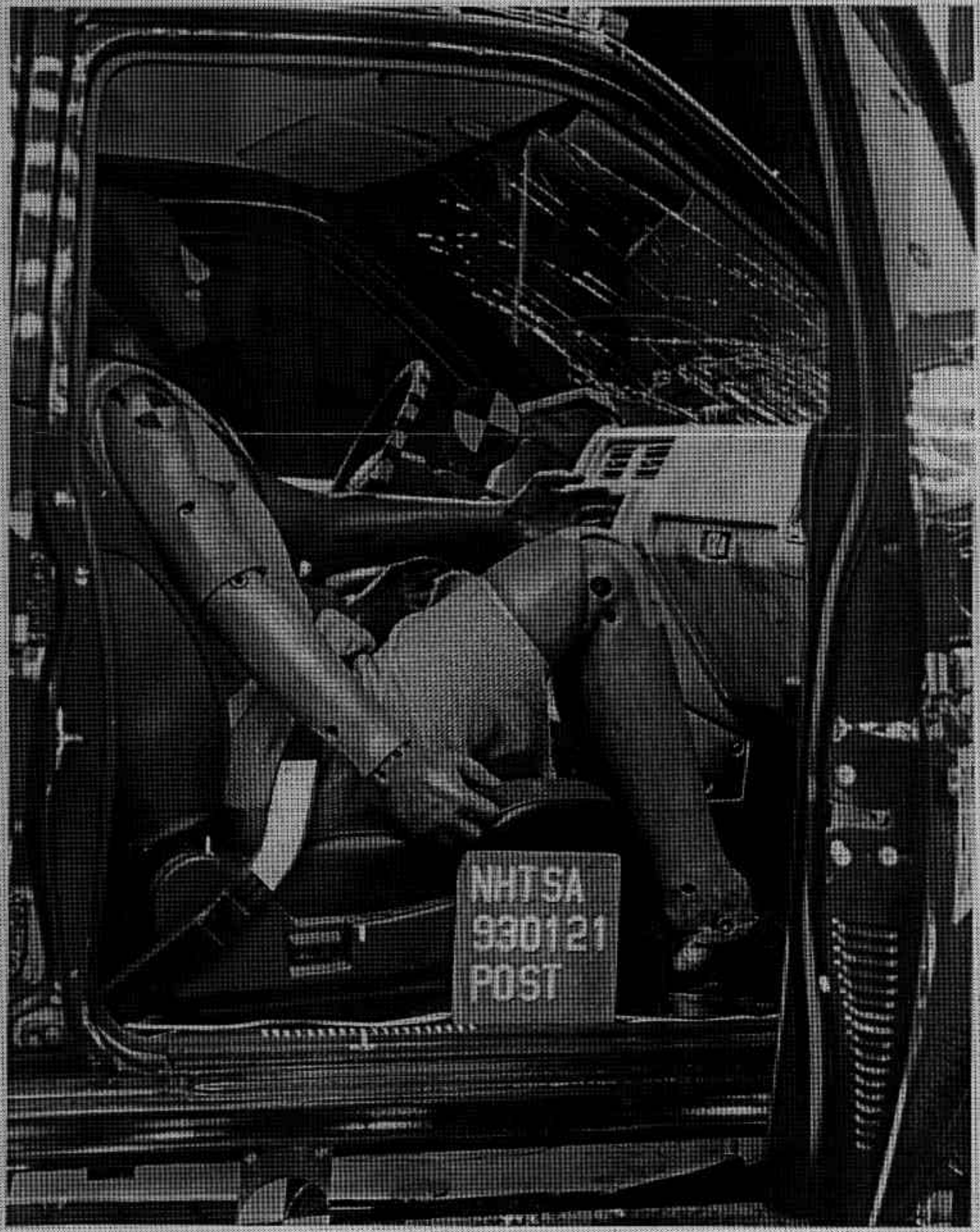


Figure A-37. POST-TEST PASSENGER DUMMY & VEHICLE INTERIOR - VIEW 2

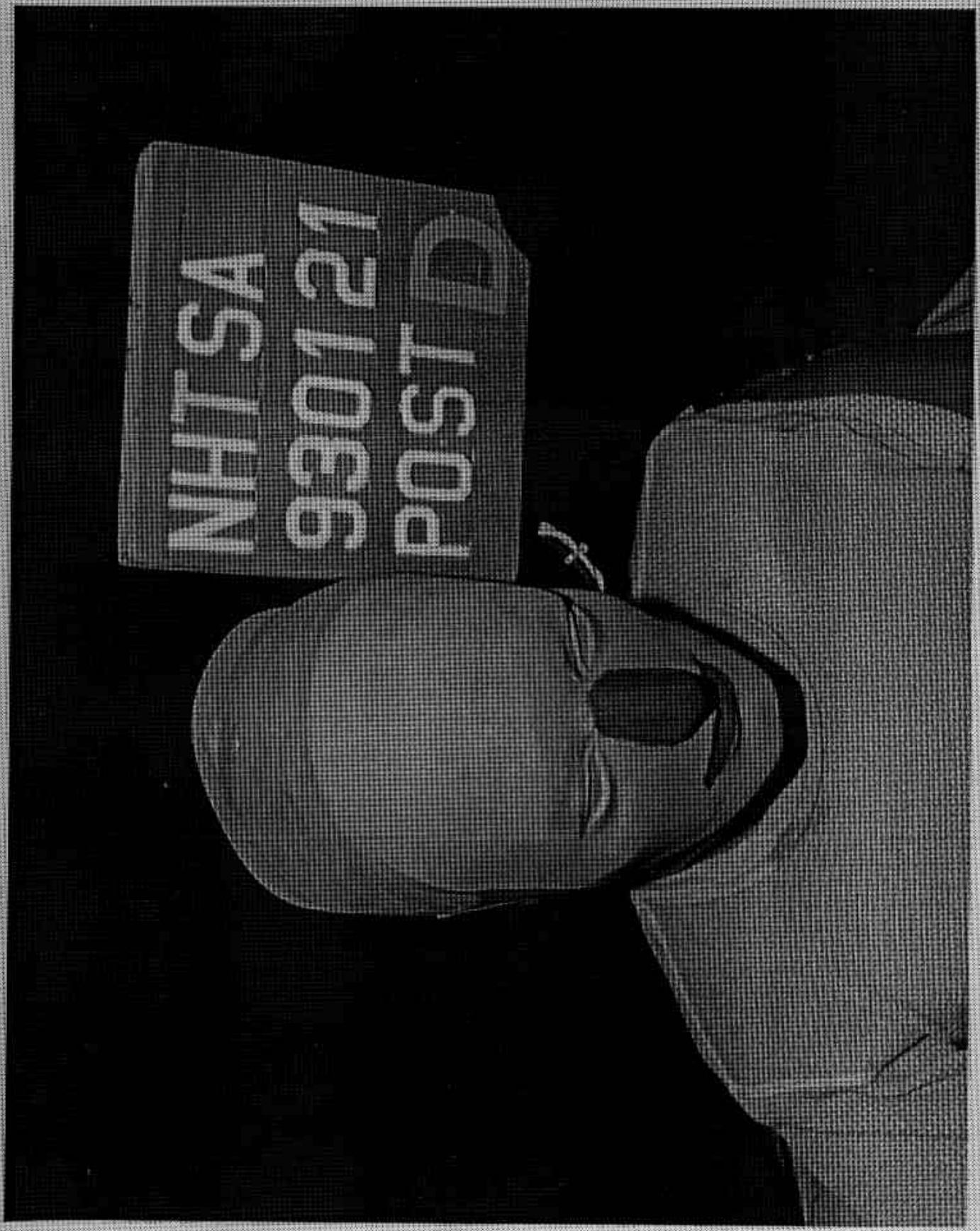


Figure A-38. POST-TEST DRIVER DUMMY HEAD CONTACT - VIEW 1

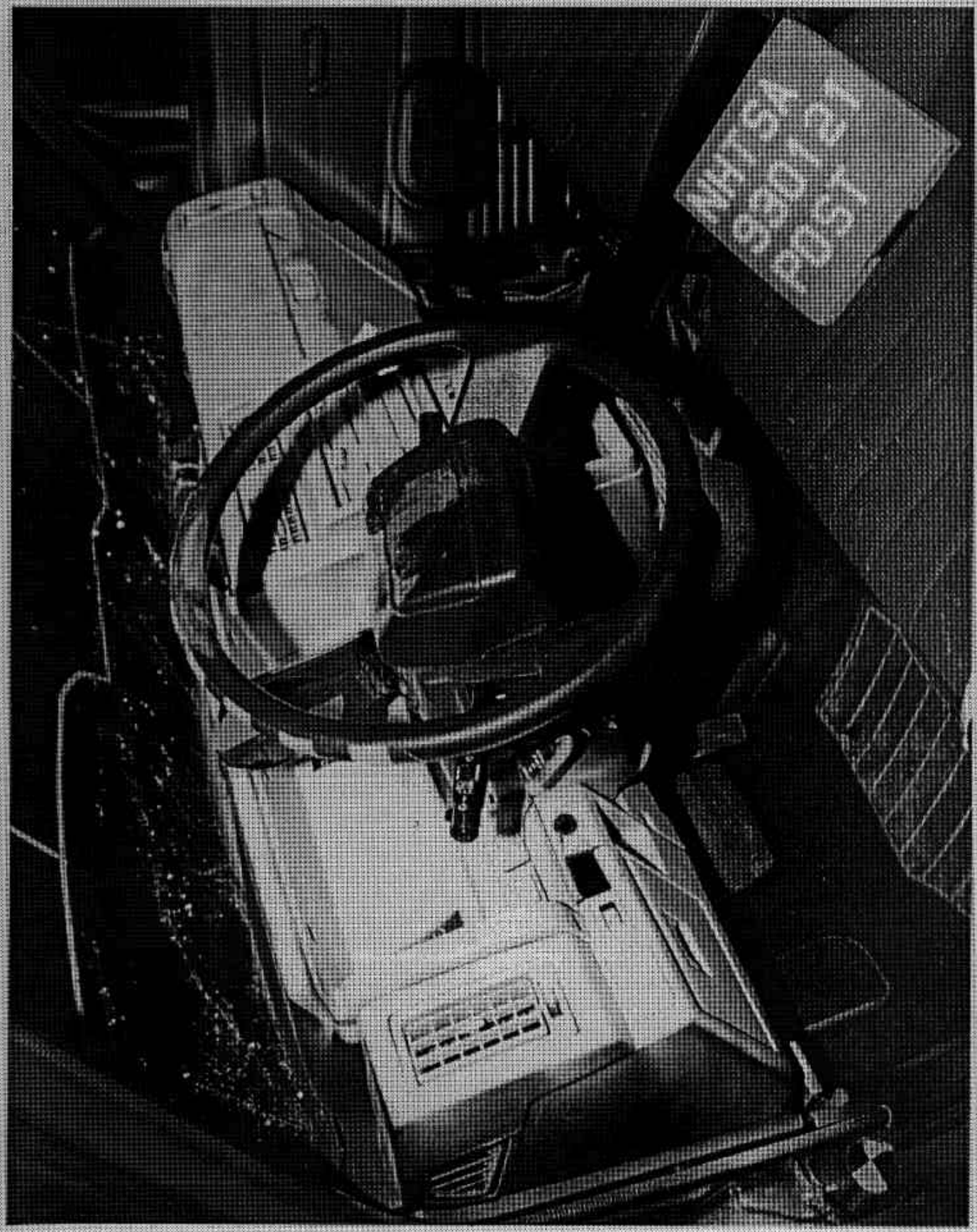


Figure A-39. POST-TEST DRIVER DUMMY HEAD CONTACT - VIEW 2

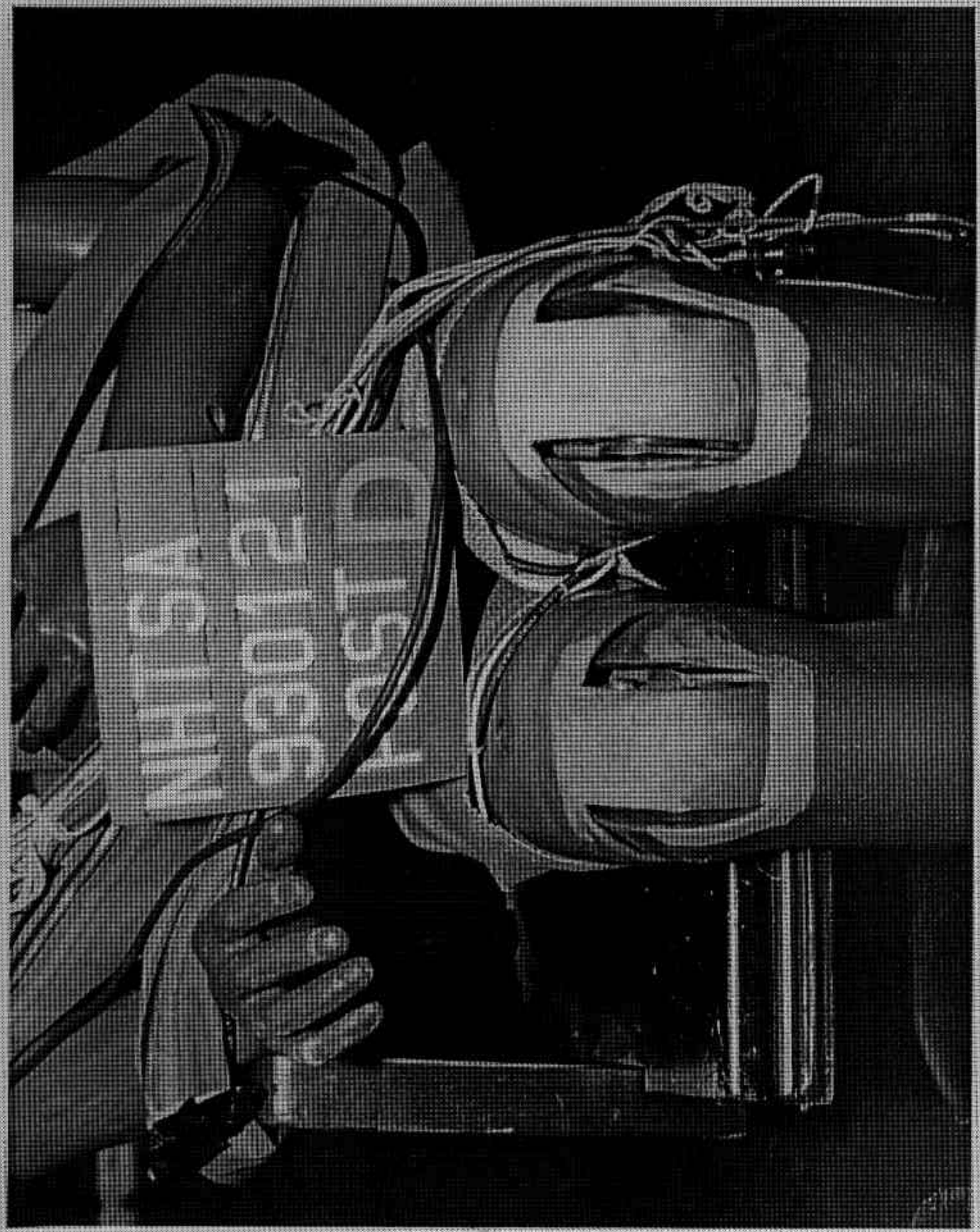


Figure A-40. POST-TEST DRIVER DUMMY KNEE CONTACT - VIEW 1

Figure A-41. POST-TEST DRIVER DUMMY KNEE CONTACT - VIEW 2

Figure A-42. POST-TEST DRIVER DUMMY KNEE CONTACT - VIEW 3

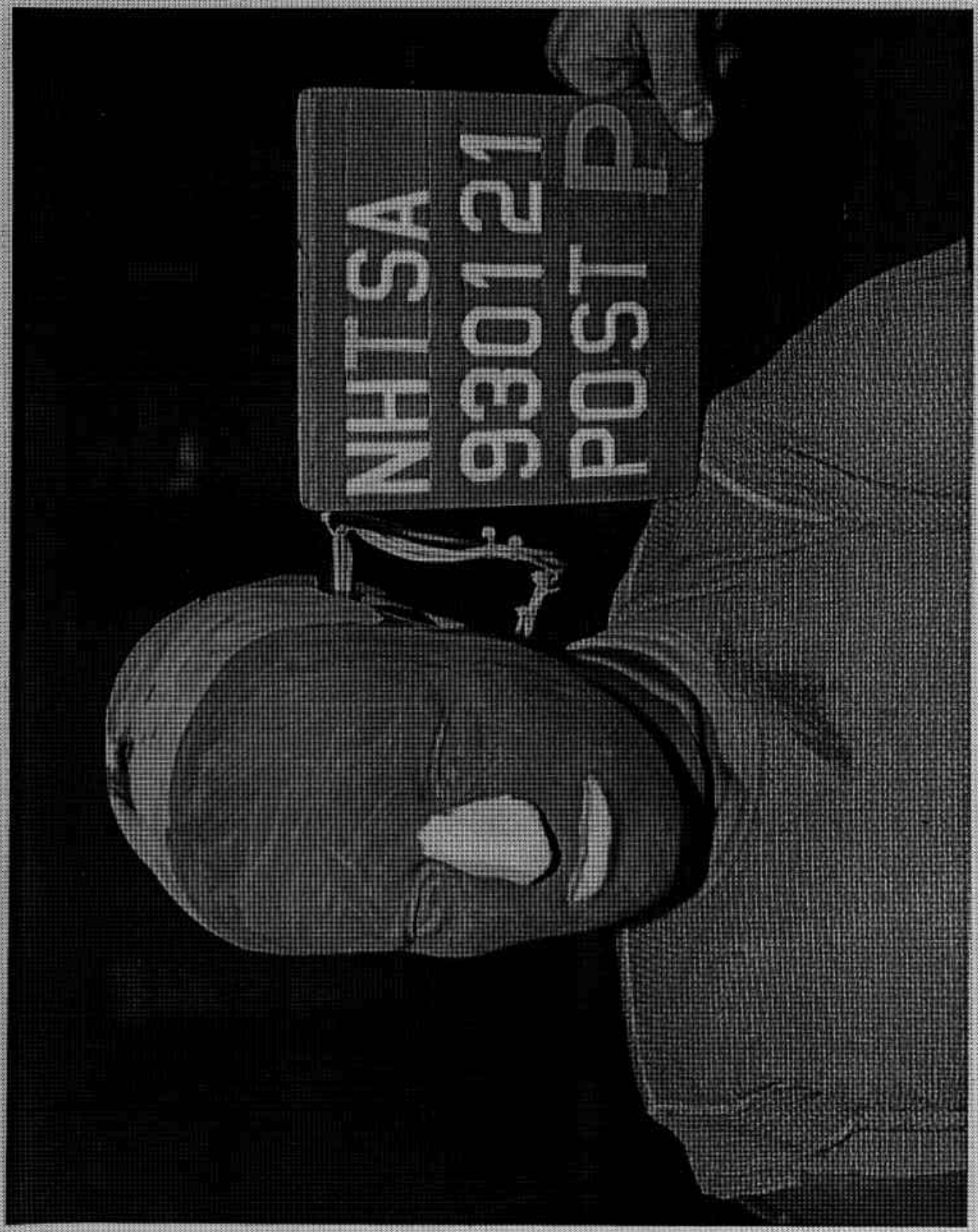


Figure A-43. POST-TEST PASSENGER DUMMY HEAD CONTACT VIEW

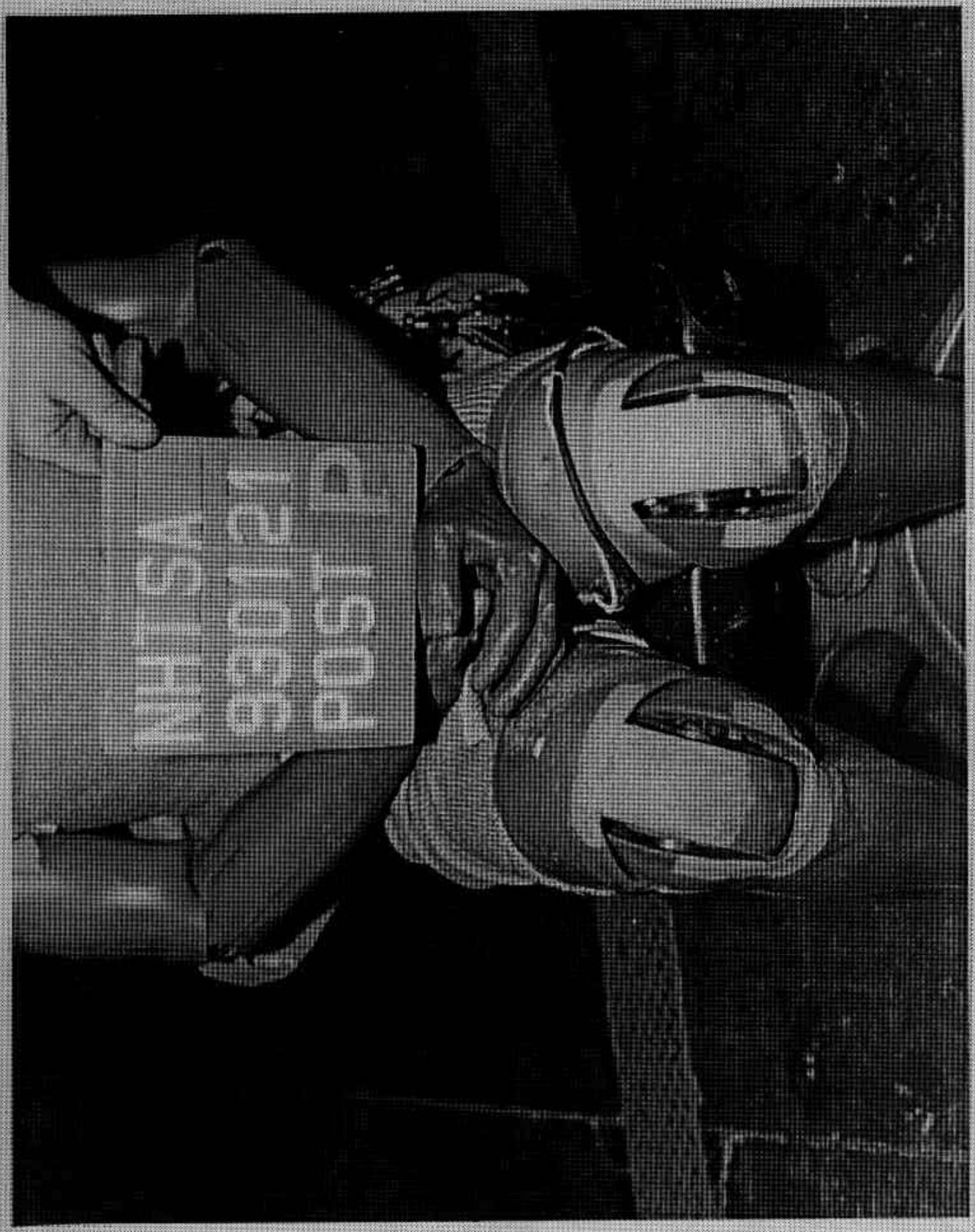


Figure A-44. POST-TEST PASSENGER DUMMY KNEE CONTACT - VIEW 1

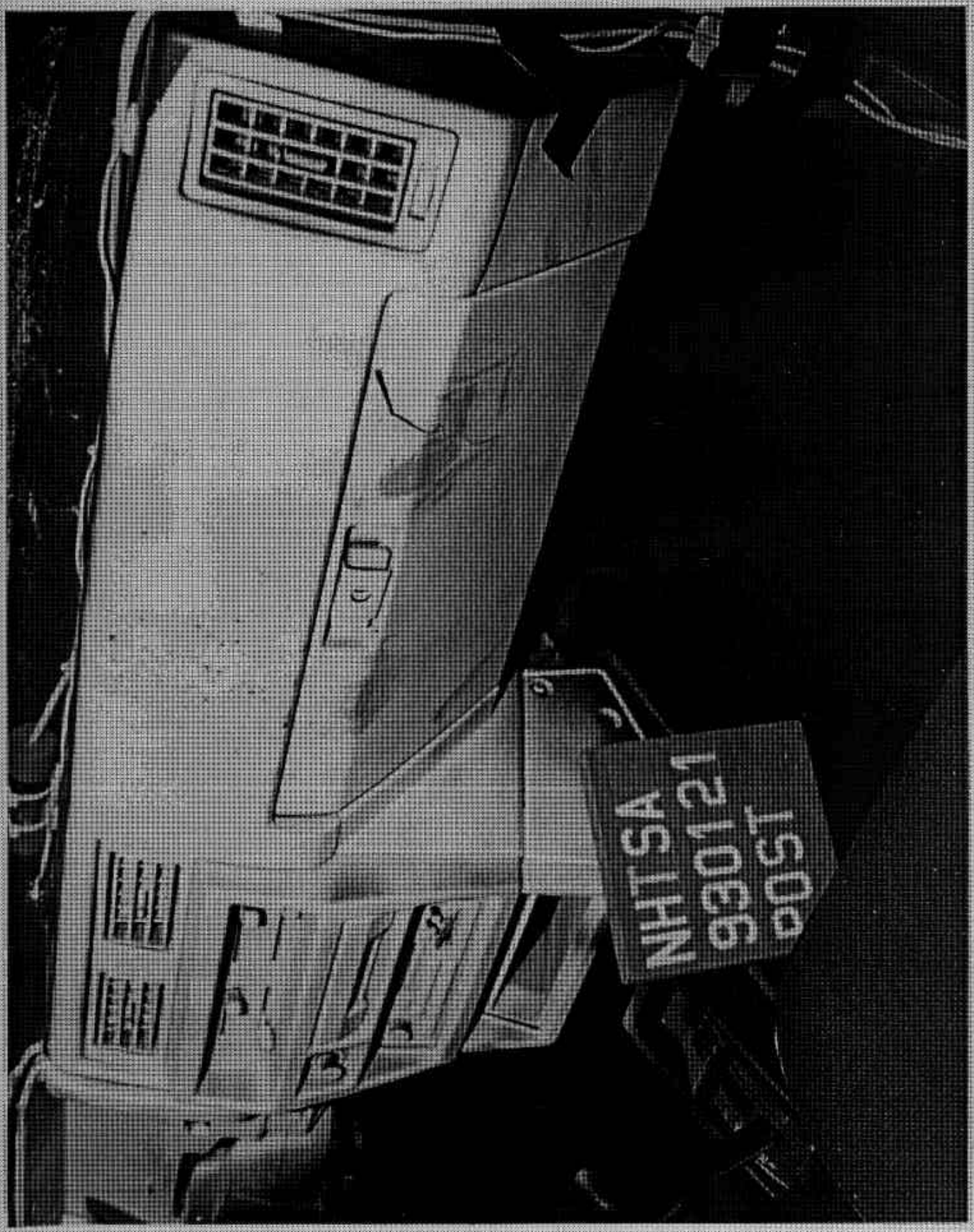


Figure A-45. POST-TEST PASSENGER DUMMY KNEE CONTACT - VIEW 2

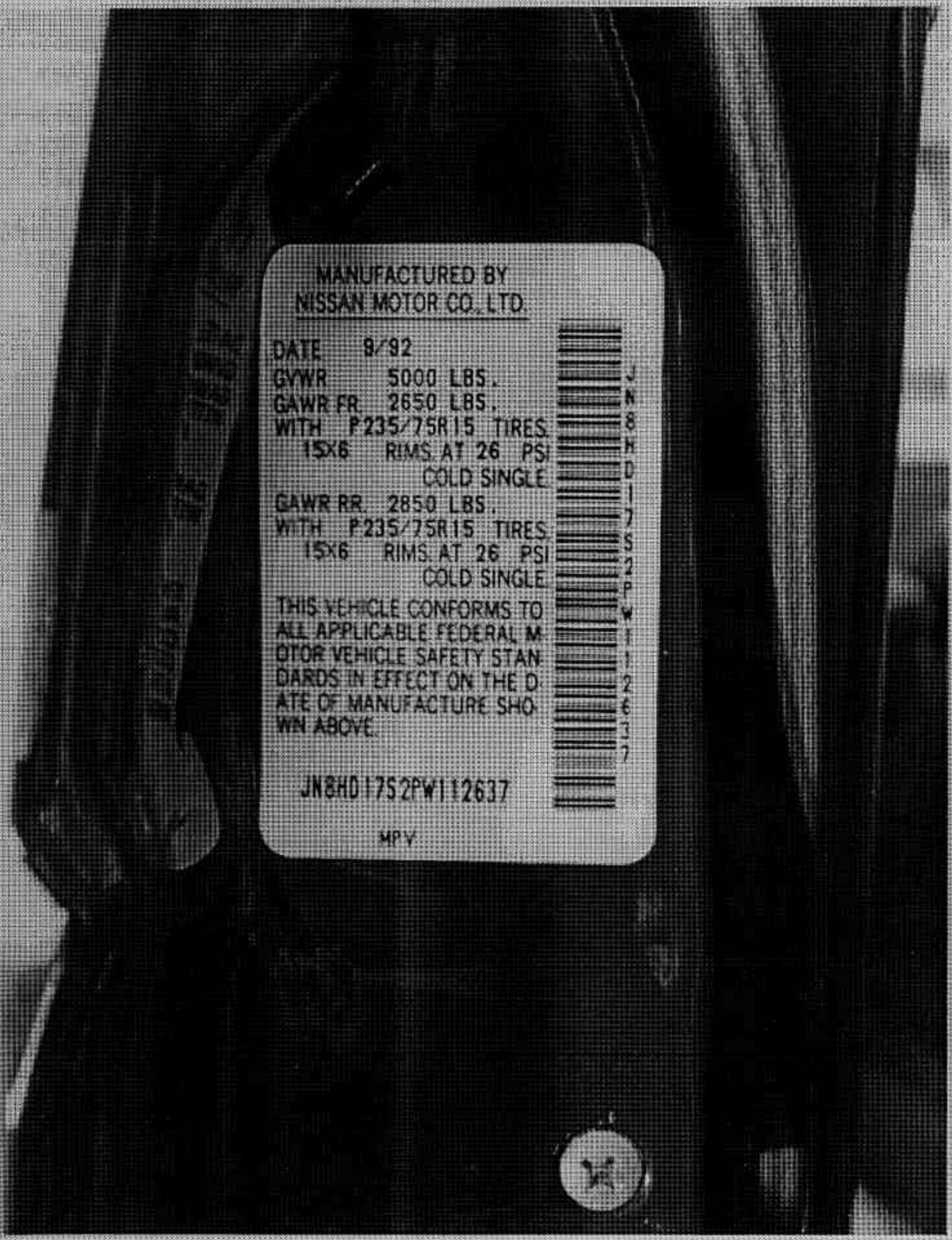


Fig. A-46. PRE-TEST VEHICLE CERT. & RECOMMENDED TIRE PRES. LABEL

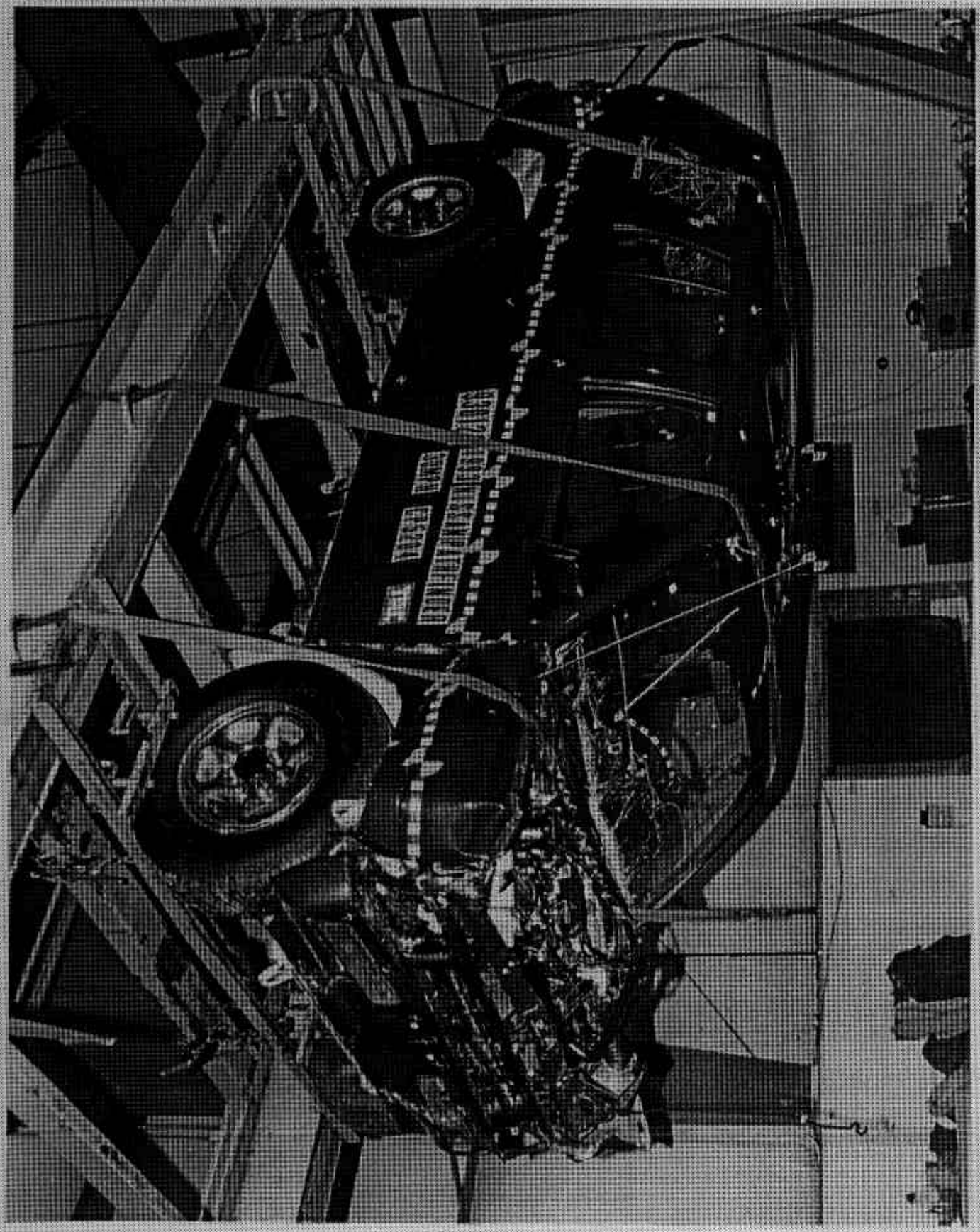
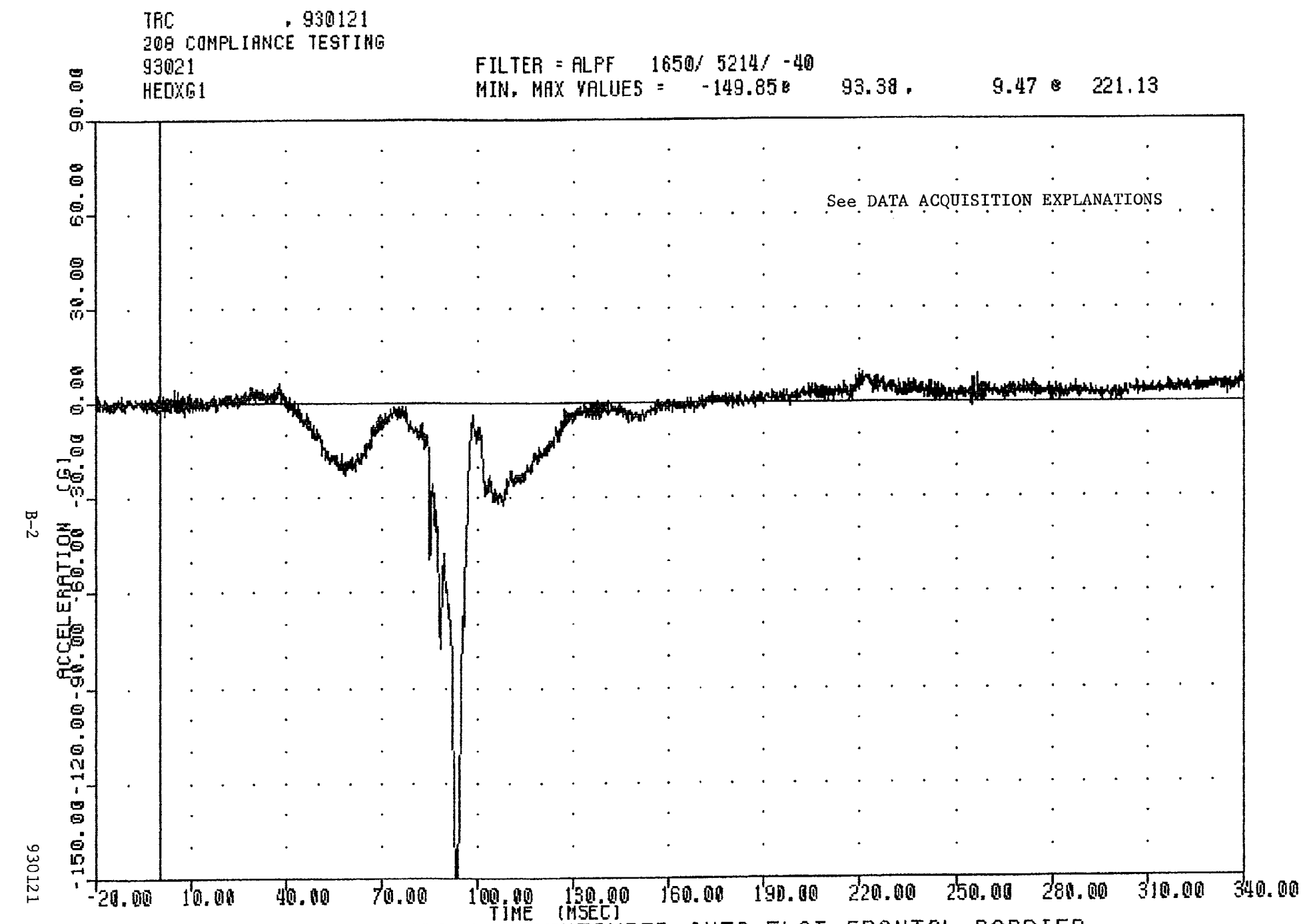


Figure A-47. POST-TEST VEHICLE ON STATIC ROLLOVER MACHINE VIEW

APPENDIX B

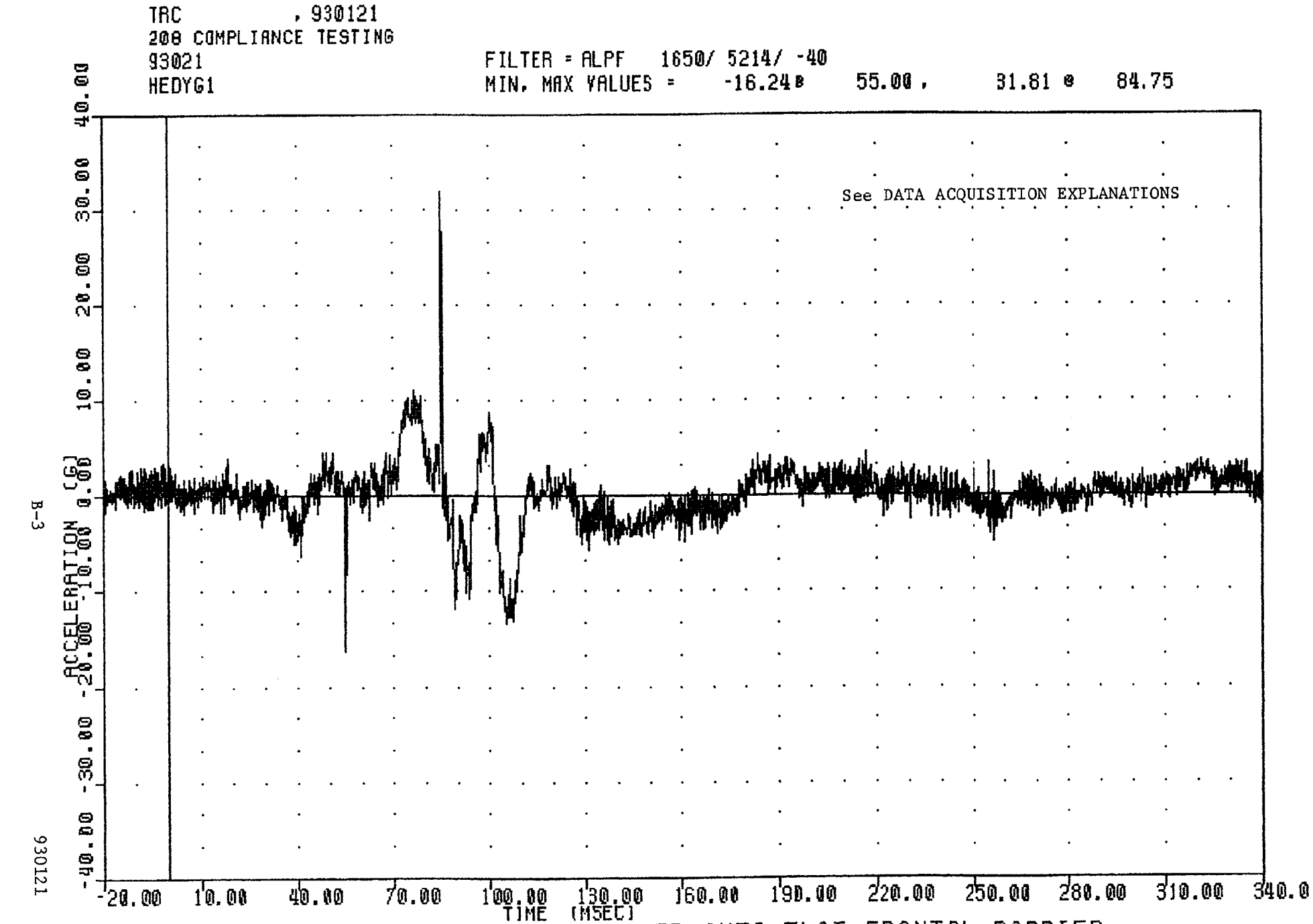
DATA PLOTS



1993 NISSAN PATHFINDER INTO FLAT FRONTAL BARRIER

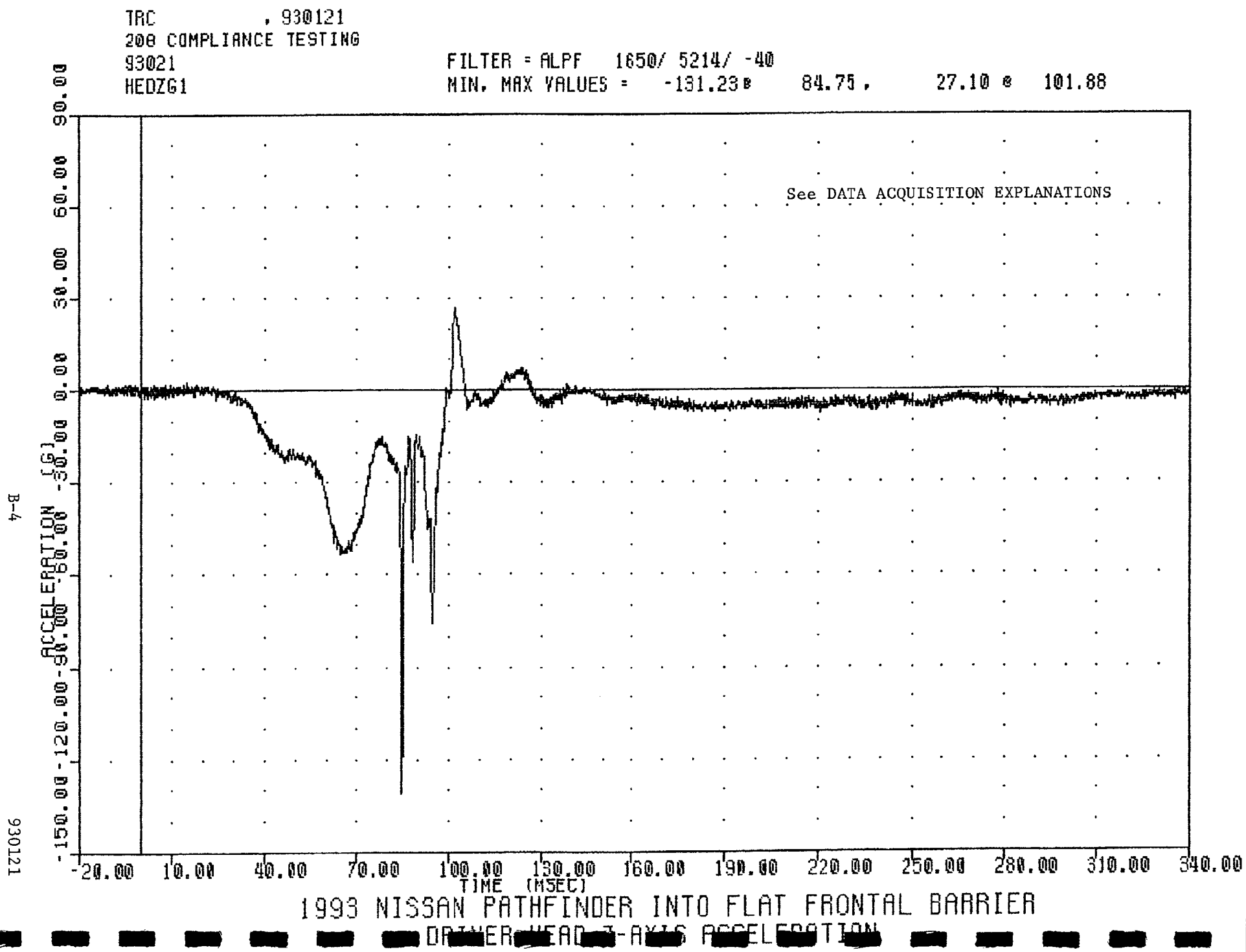
DRIVER HEAD X-AXIS ACCELERATION

930121

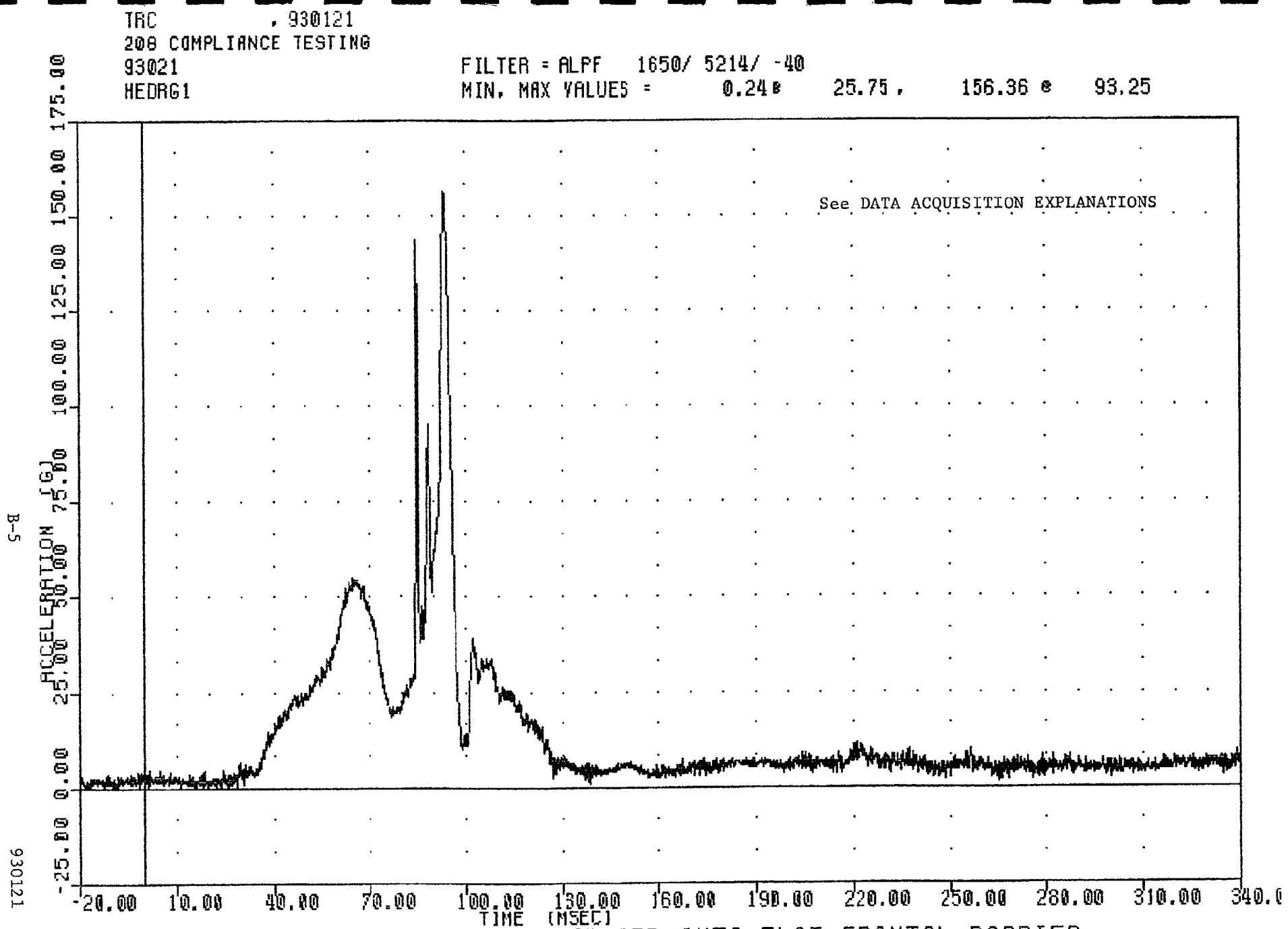


1993 NISSAN PATHFINDER INTO FLAT FRONTAL BARRIER
DRIVER HEAD Y-AXIS ACCELERATION

930121

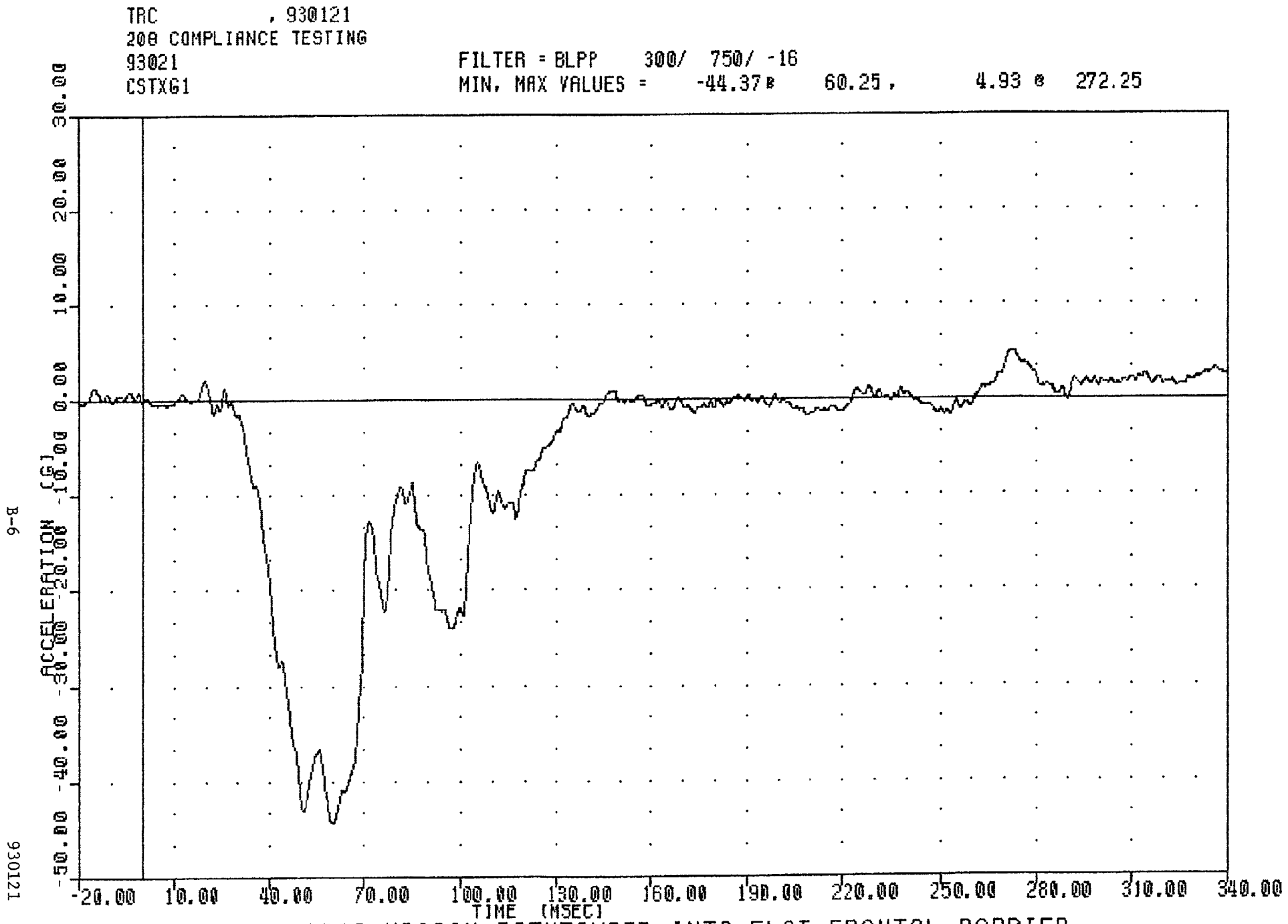

TRC , 930121
208 COMPLIANCE TESTING
93021
HEDZG1
FILTER = ALPF 1650/ 5214/ -40
MIN, MAX VALUES = -131.23 @ 84.75 , 27.10 @ 101.88
See DATA ACQUISITION EXPLANATIONS
90.00
60.00
30.00
0.00
-30.00
-60.00
-90.00
-120.00
-150.00
ACCELERATION (G)
-20.00
10.00
40.00
70.00
100.00
130.00
160.00
190.00
220.00
250.00
280.00
310.00
340.00
TIME (MSEC)
1993 NISSAN PATHFINDER INTO FLAT FRONTAL BARRIER
DRIVER HEAD X-AXIS ACCELERATION

930121



1993 NISSAN PATHFINDER INTO FLAT FRONTAL BARRIER
DRIVER HEAD RESULTANT ACCELERATION

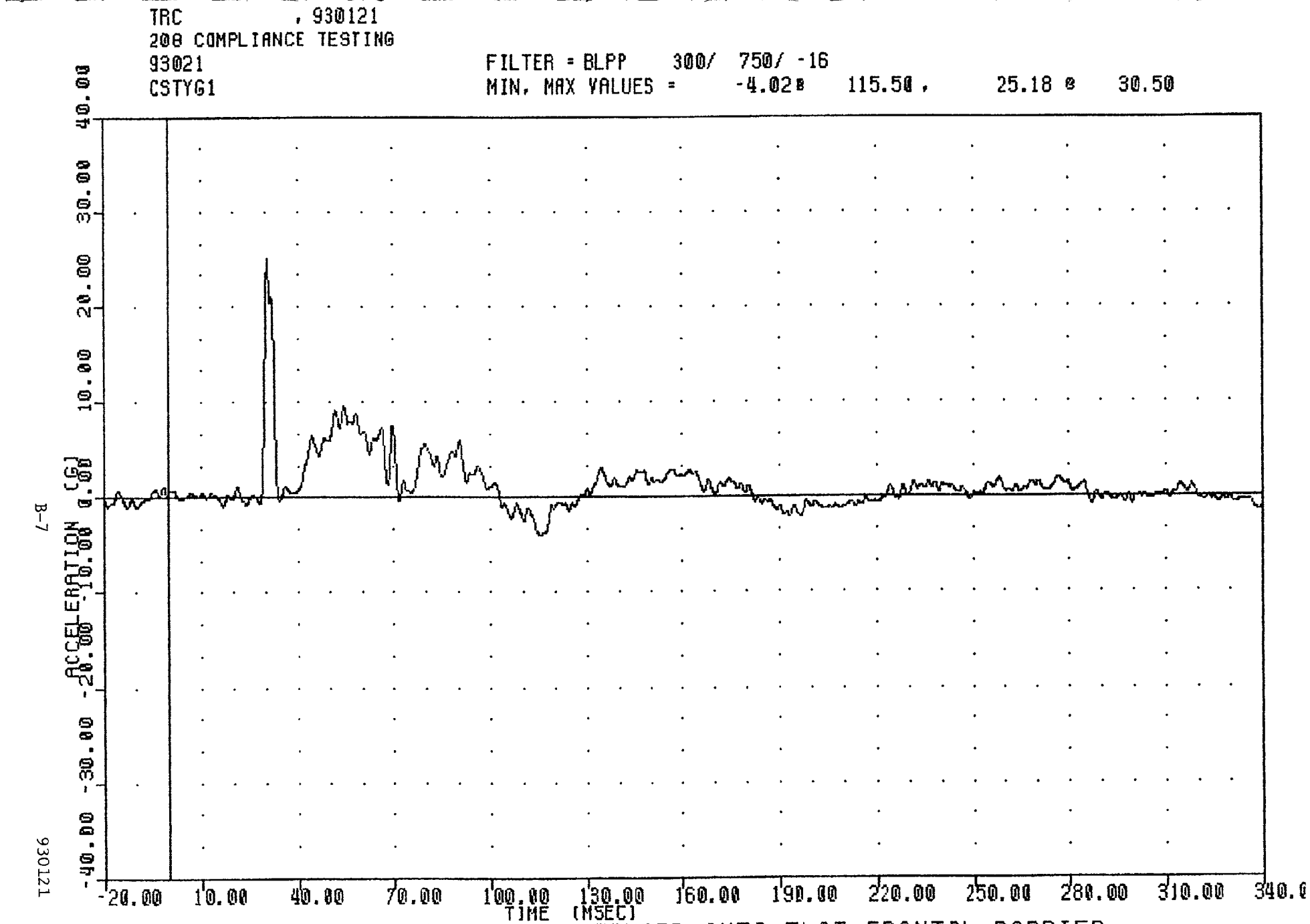
930121



1993 NISSAN PATHFINDER INTO FLAT FRONTAL BARRIER

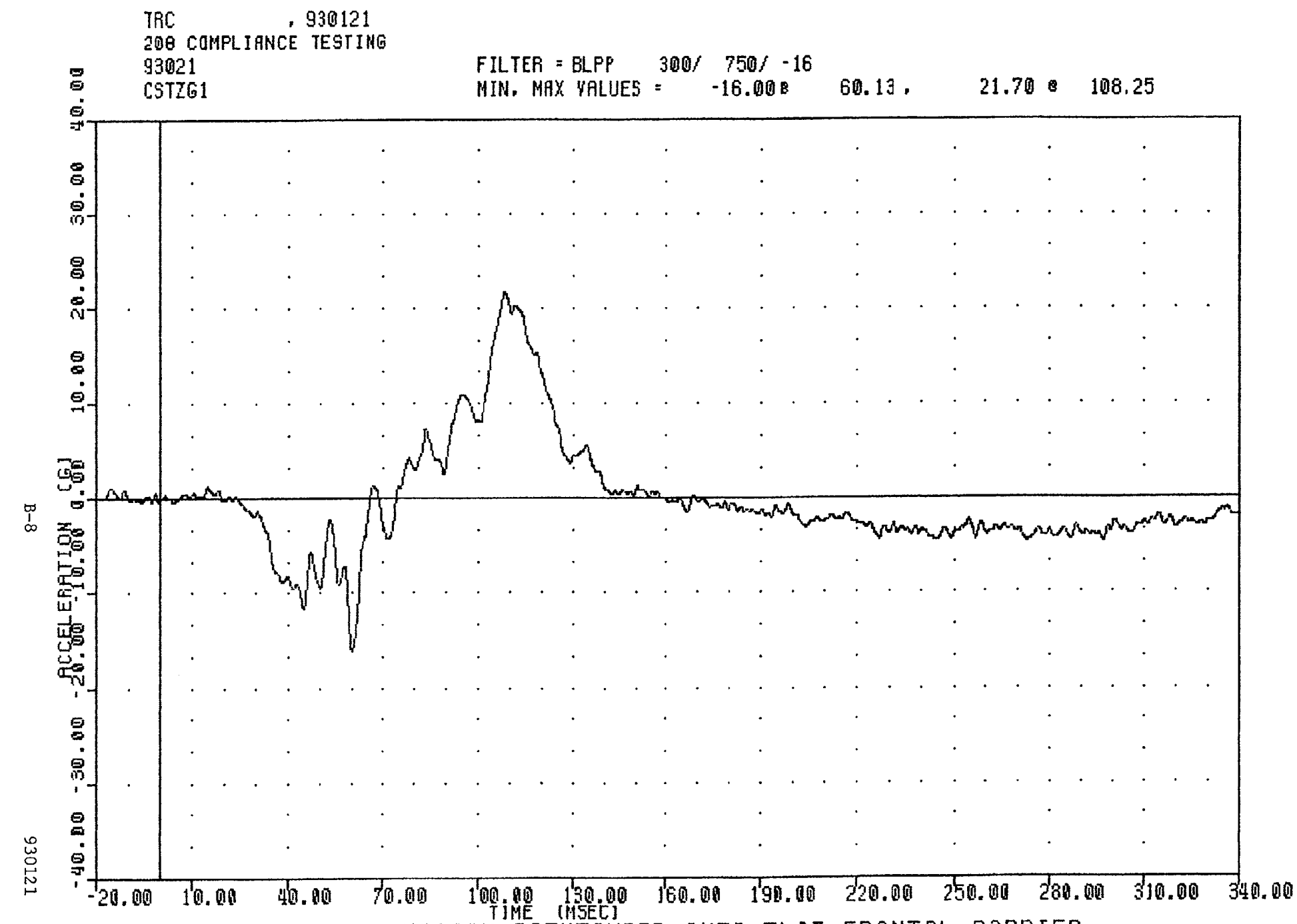
DRIVER [redacted] TEST X-AXIS ACCELERATION

930121



1993 NISSAN PATHFINDER INTO FLAT FRONTAL BARRIER
DRIVER CHEST Y-AXIS ACCELERATION

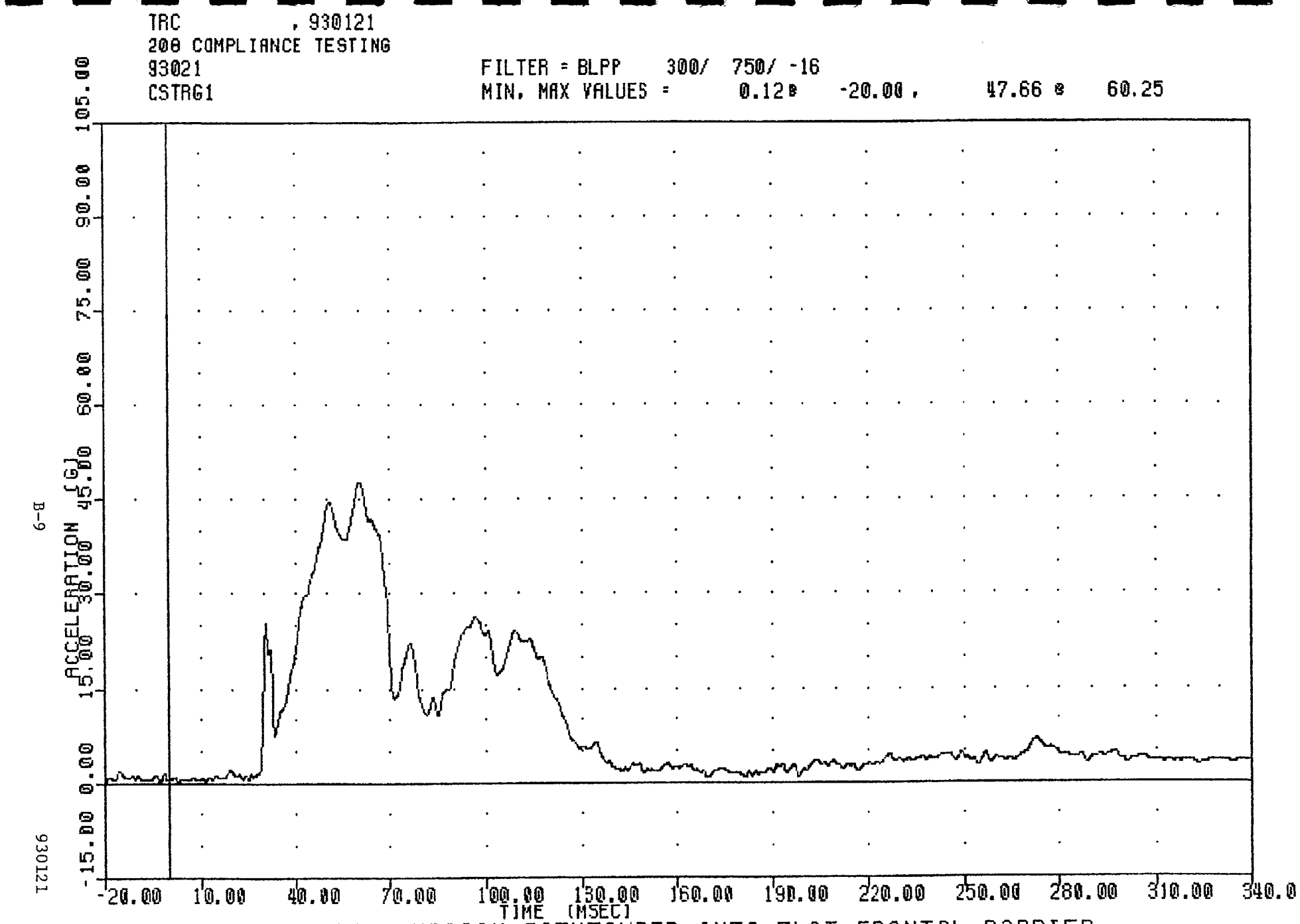
930121



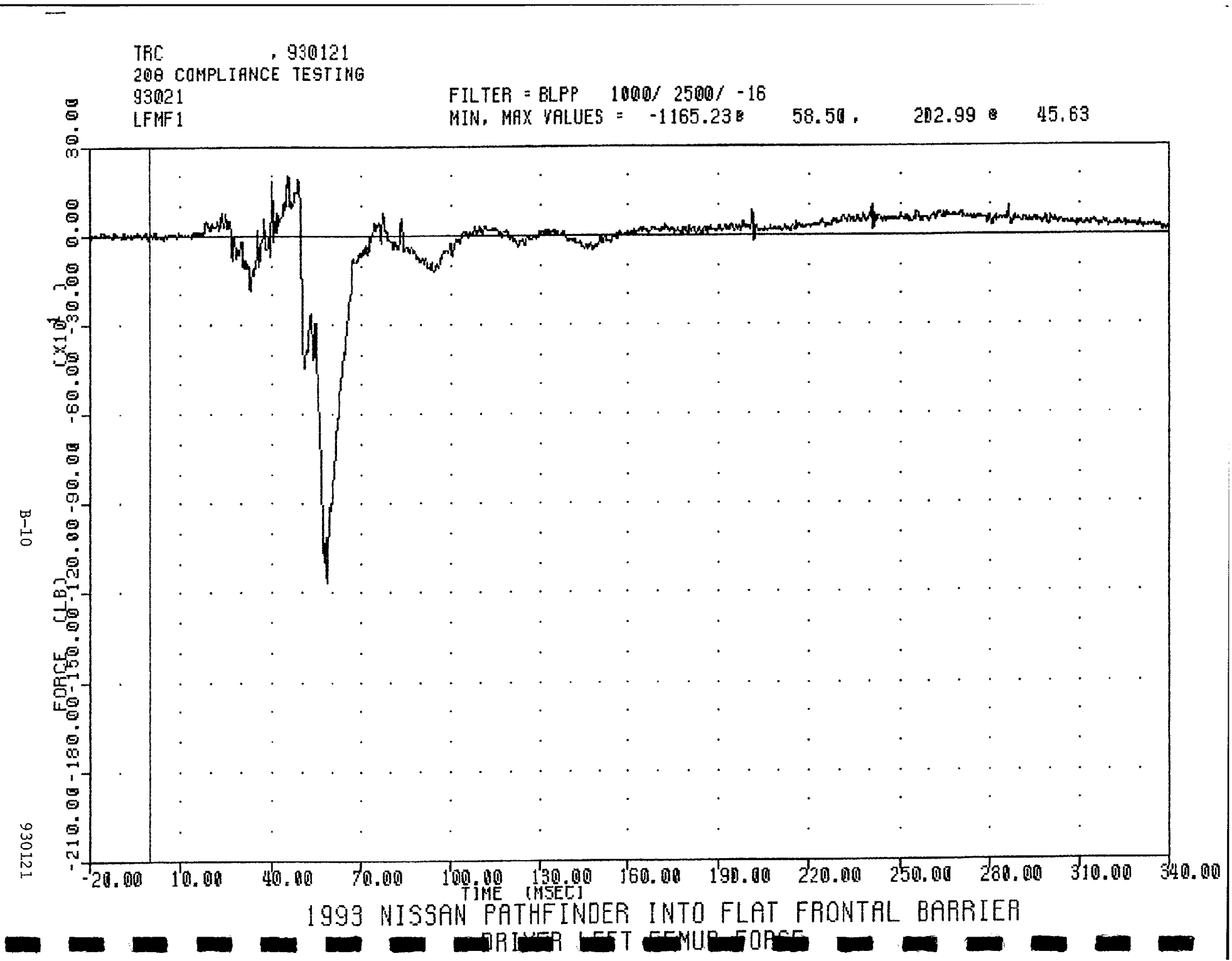
1993 NISSAN PATHFINDER INTO FLAT FRONTAL BARRIER

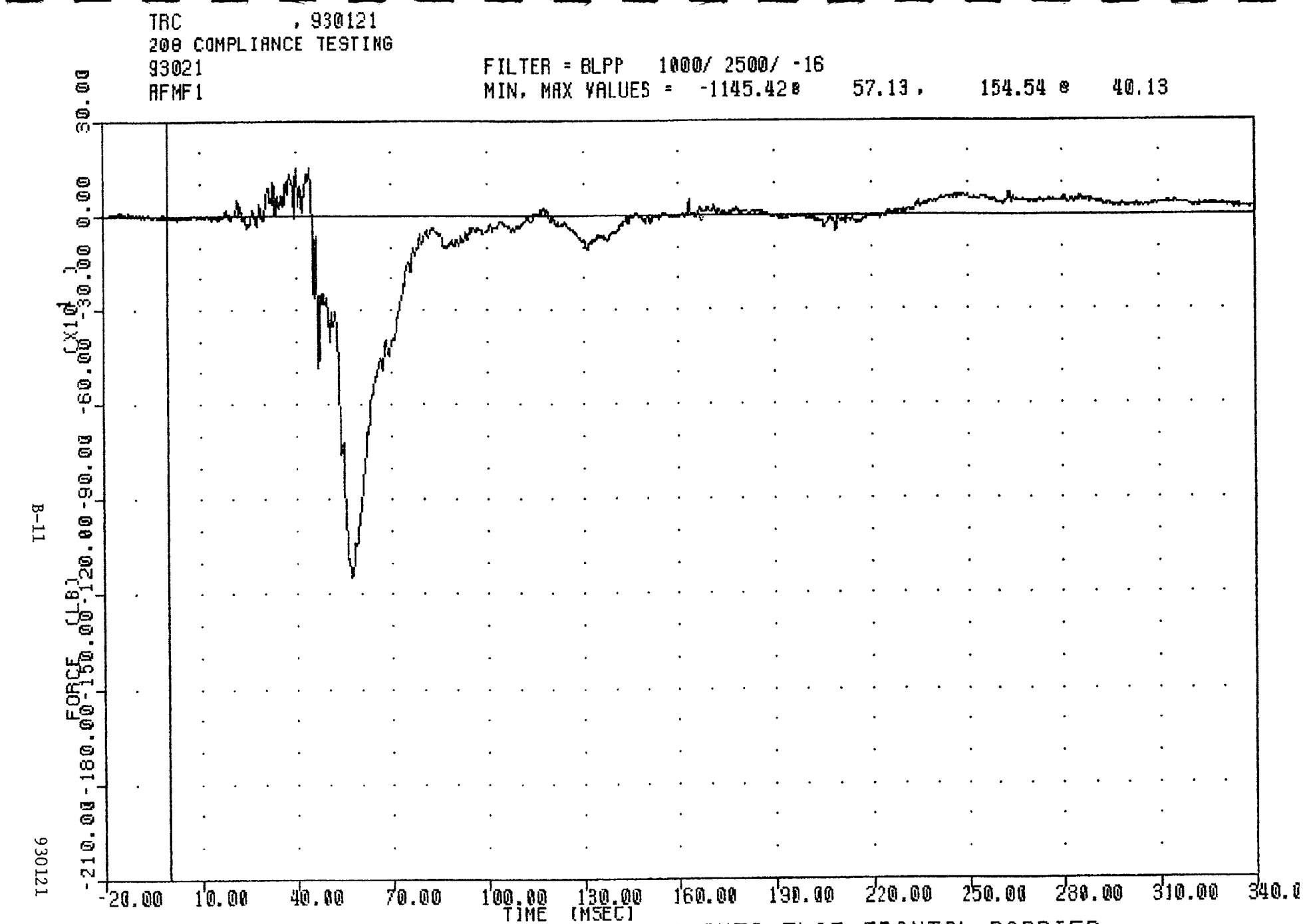
DRIVER CHEST Z-AXIS ACCELERATION

930121



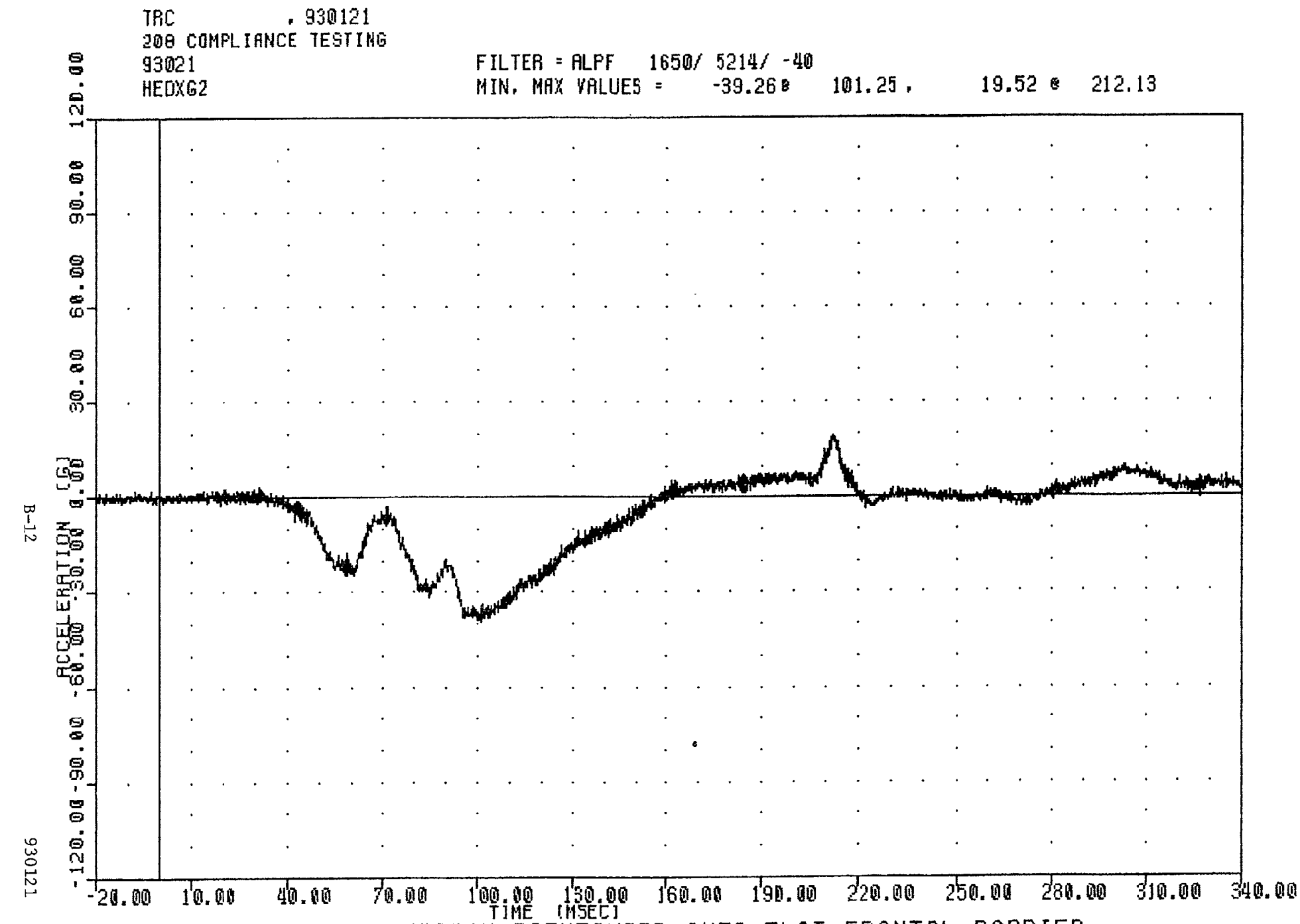
1993 NISSAN PATHFINDER INTO FLAT FRONTAL BARRIER
DRIVER CHEST RESULTANT ACCELERATION


TRC , 930121
208 COMPLIANCE TESTING
93021
LFMF1
FILTER = BLPP 1000/ 2500/ -16
MIN, MAX VALUES = -1165.23 @ 58.50 , 202.99 @ 45.63
30.00
0.00
-30.00
-60.00
-90.00
-120.00
-150.00
-180.00
-210.00
FORCE (LB) (X10)
-20.00
10.00
40.00
70.00
100.00
130.00
160.00
190.00
220.00
250.00
280.00
310.00
340.00
TIME (MSEC)
1993 NISSAN PATHFINDER INTO FLAT FRONTAL BARRIER
DRIVER LEFT FEMUR FORCE



1993 NISSAN PATHFINDER INTO FLAT FRONTAL BARRIER
DRIVER RIGHT FEMUR FORCE

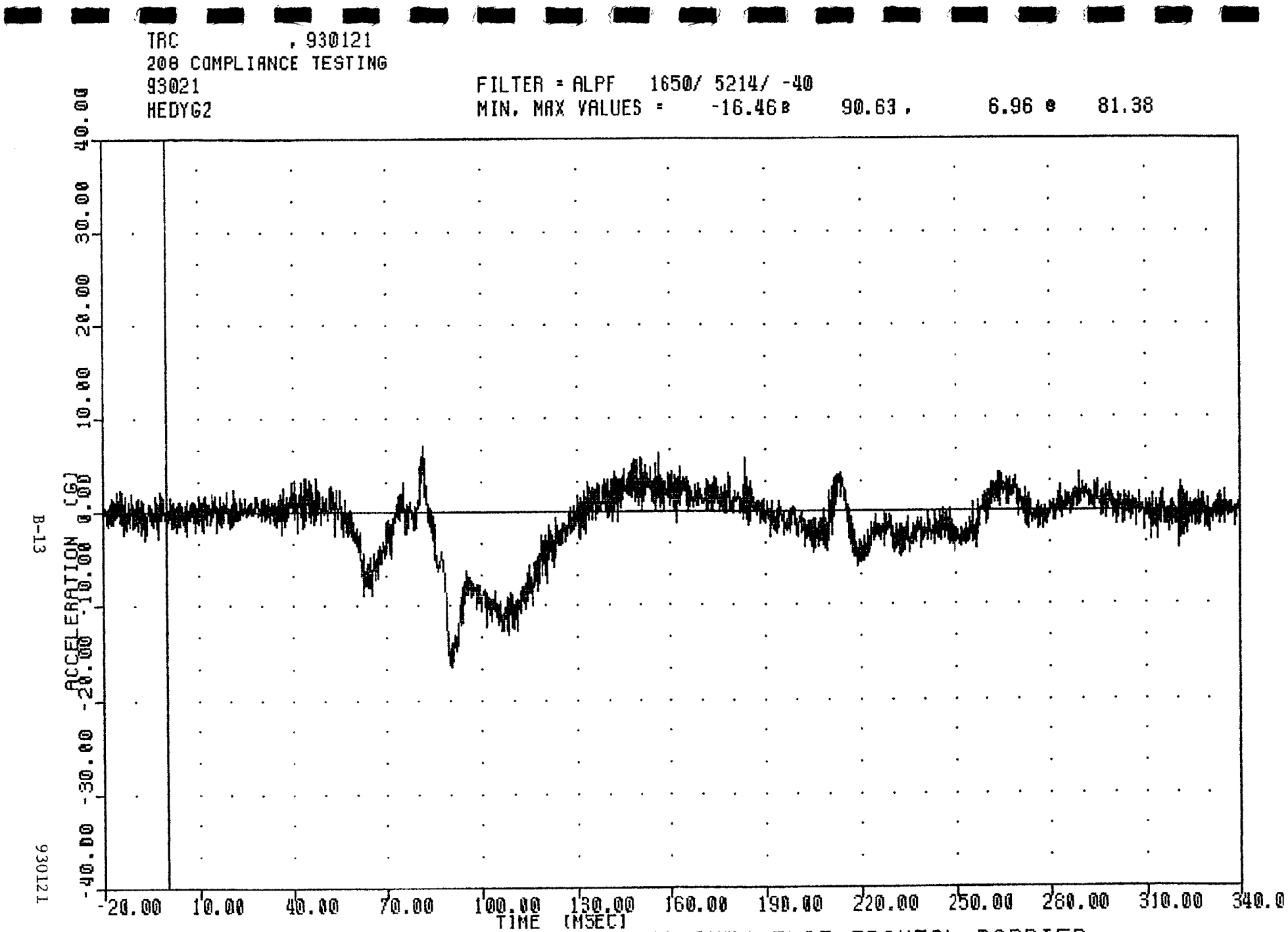
930121



1993 NISSAN PATHFINDER INTO FLAT FRONTAL BARRIER

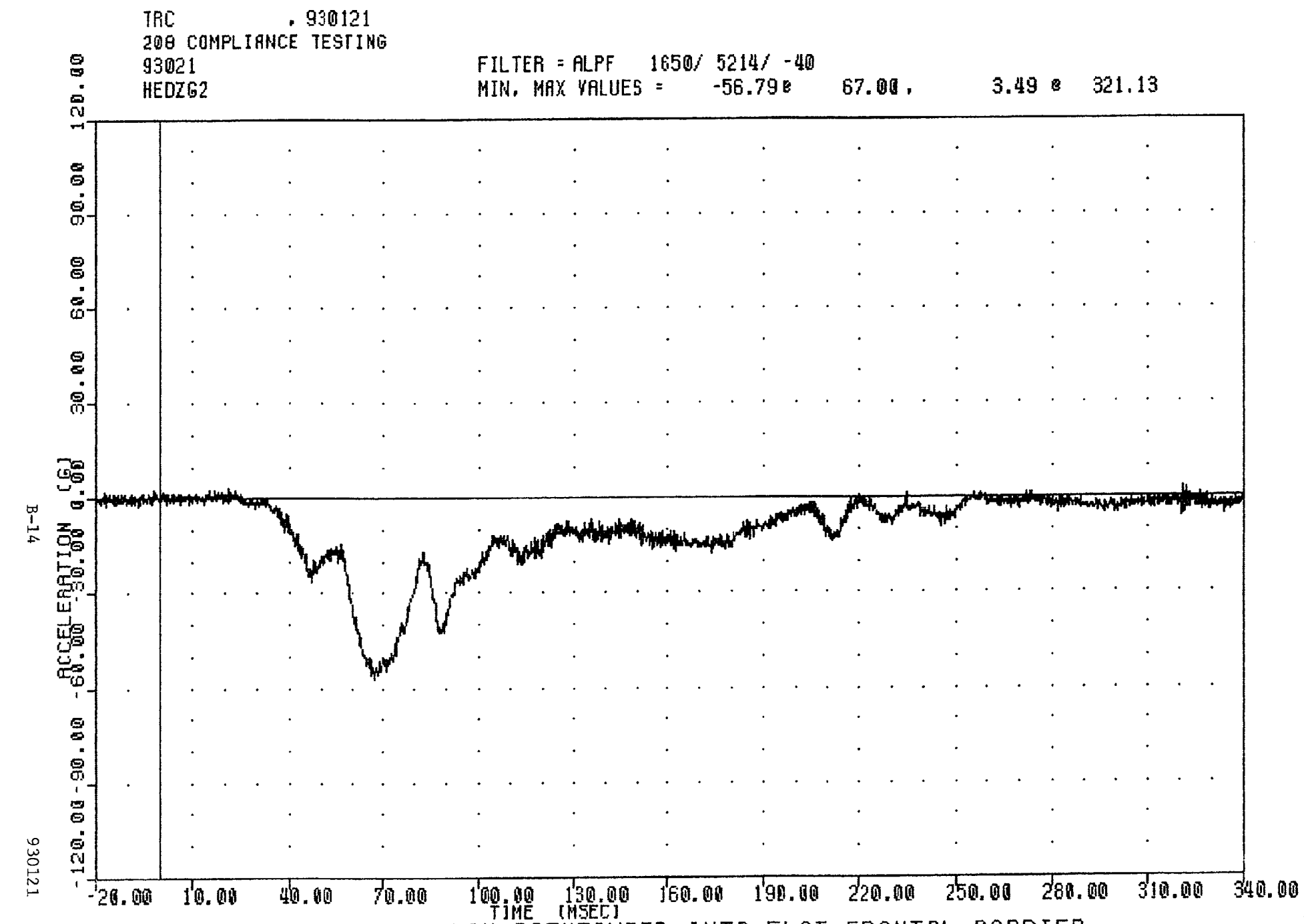
RIGHT FRONT PASSENGER HEAD X AXIS ACCELERATION

930121

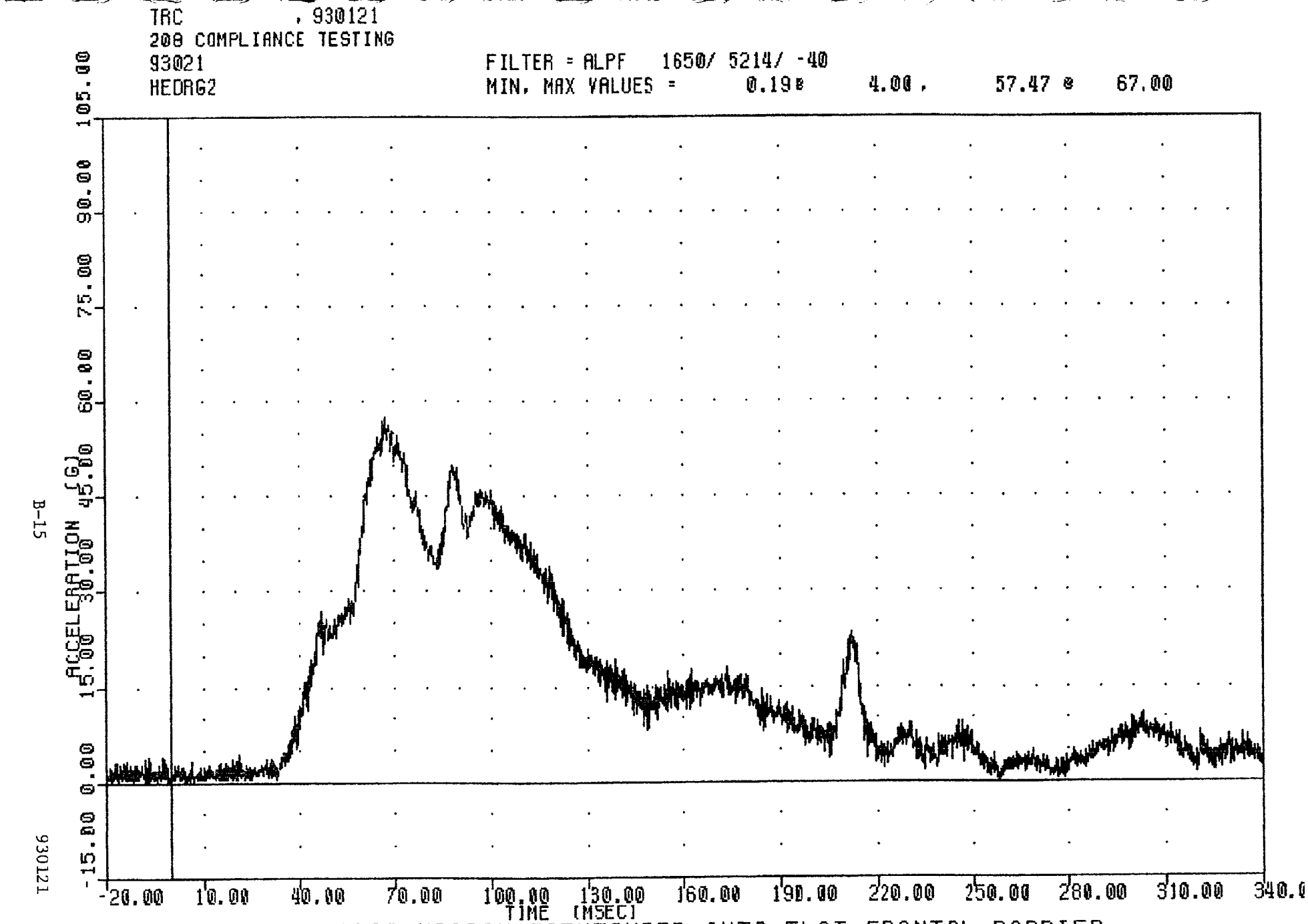


1993 NISSAN PATHFINDER INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER HEAD Y-AXIS ACCELERATION

930121

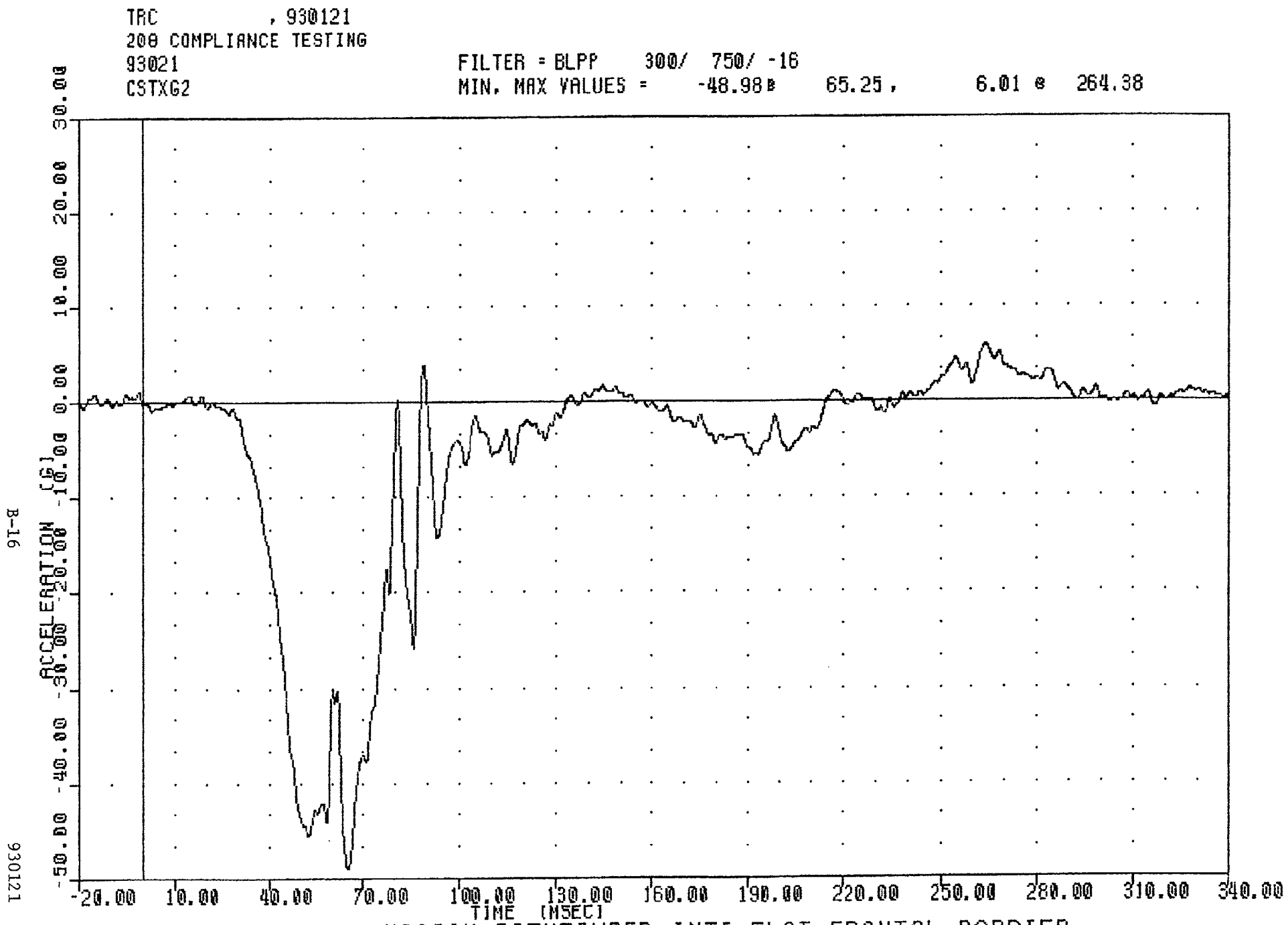

TRC . 930121
208 COMPLIANCE TESTING
93021
HEDZG2
FILTER = ALPF 1650/ 5214/ -40
MIN, MAX VALUES = -56.79 @ 67.00 , 3.49 @ 321.13
120.00
90.00
60.00
30.00
0.00
-30.00
-60.00
-90.00
-120.00
ACCELERATION (G)
-20.00
10.00
40.00
70.00
100.00
130.00
160.00
190.00
220.00
250.00
280.00
310.00
340.00
TIME (MSEC)
1993 NISSAN PATHFINDER INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER HEAD Z AXIS ACCELERATION

930121



1993 NISSAN PATHFINDER INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER HEAD RESULTANT ACCELERATION

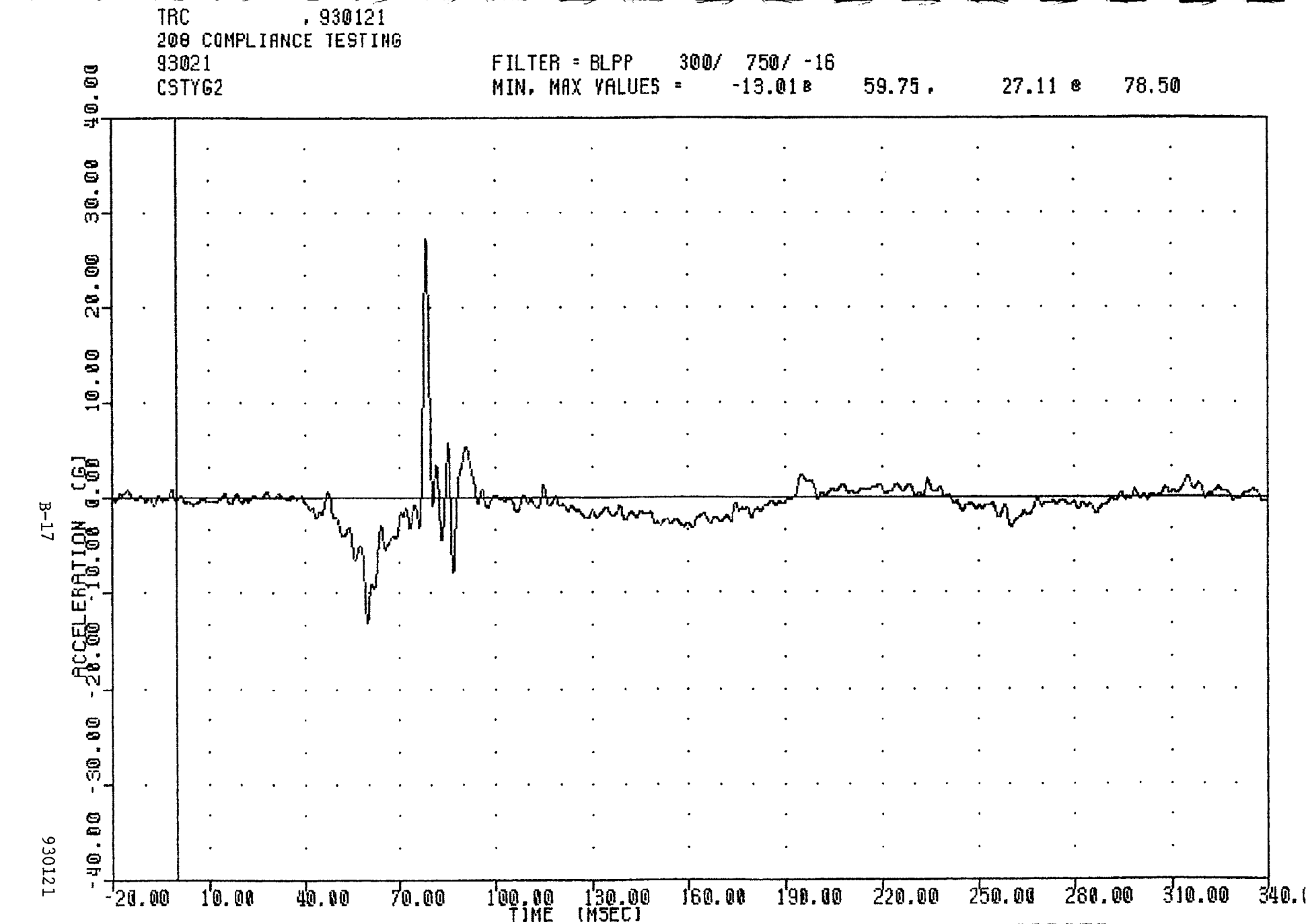
930121



1993 NISSAN PATHFINDER INTO FLAT FRONTAL BARRIER

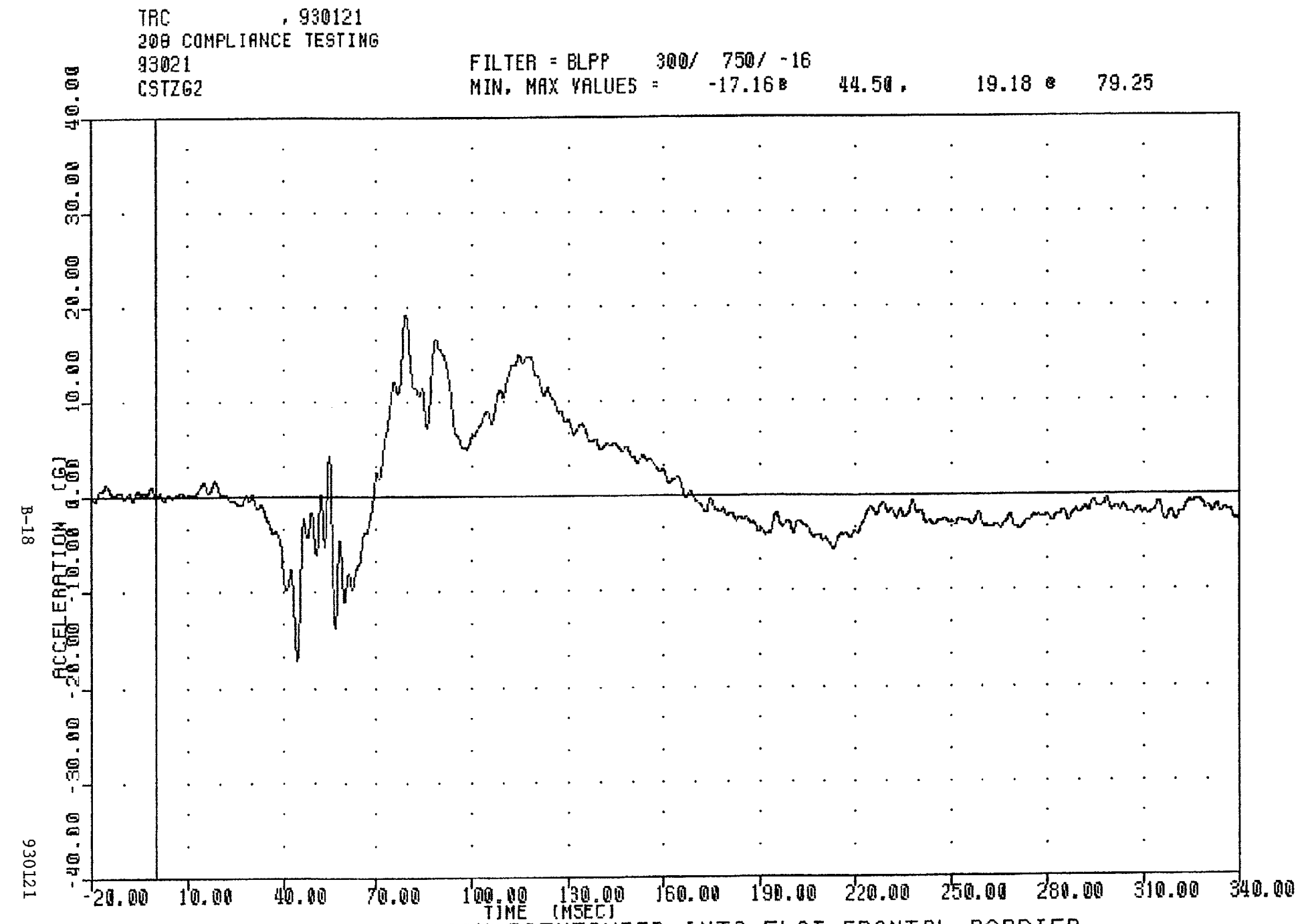
RIGHT FRONT PASSENGER CHEST X-AXIS ACCELERATION

930121



1993 NISSAN PATHFINDER INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER CHEST Y-AXIS ACCELERATION

930121



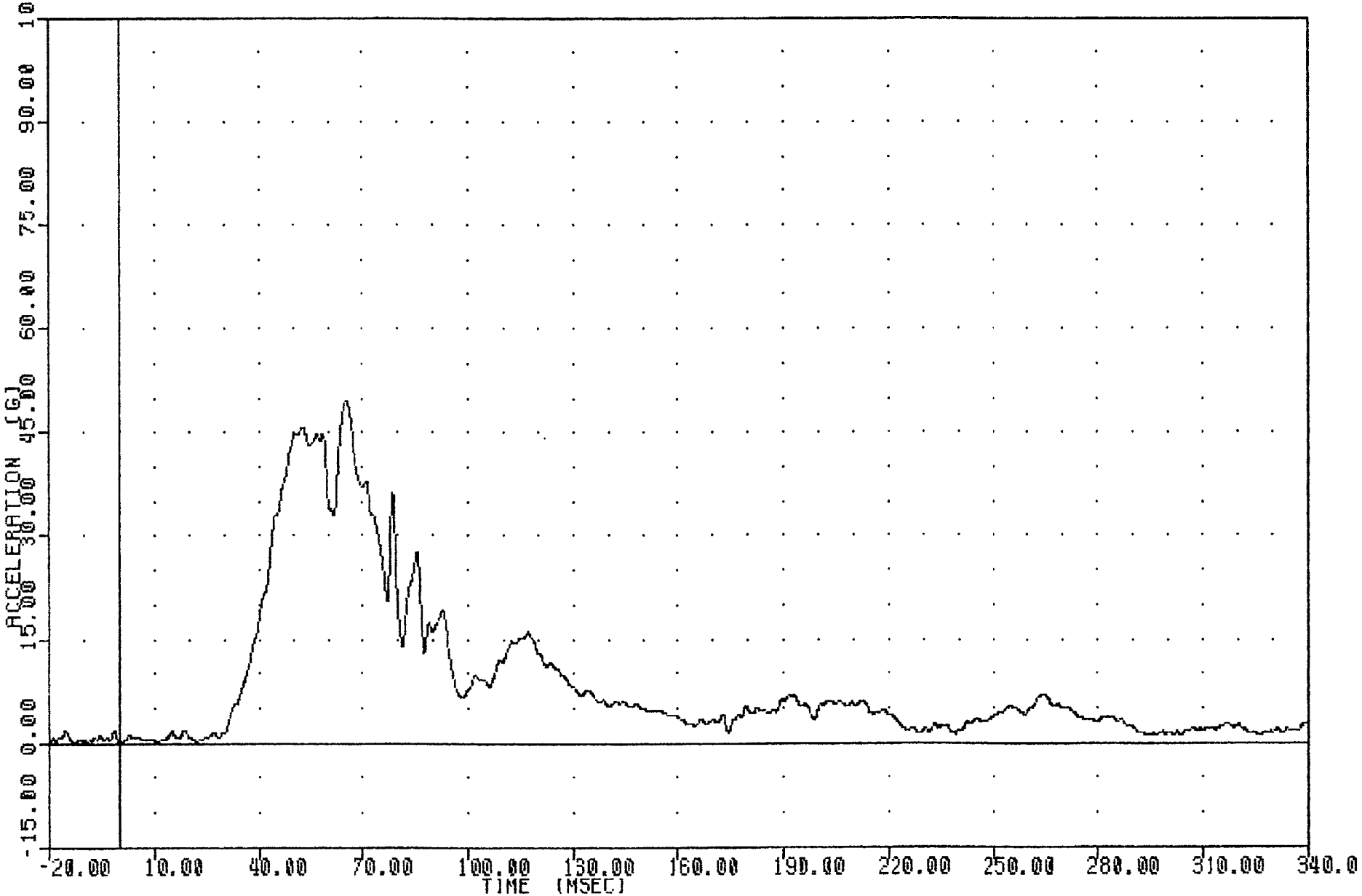
1993 NISSAN PATHFINDER INTO FLAT FRONTAL BARRIER

RIGHT FRONT PASSENGER CHEST Z-AXIS ACCELERATION

930121

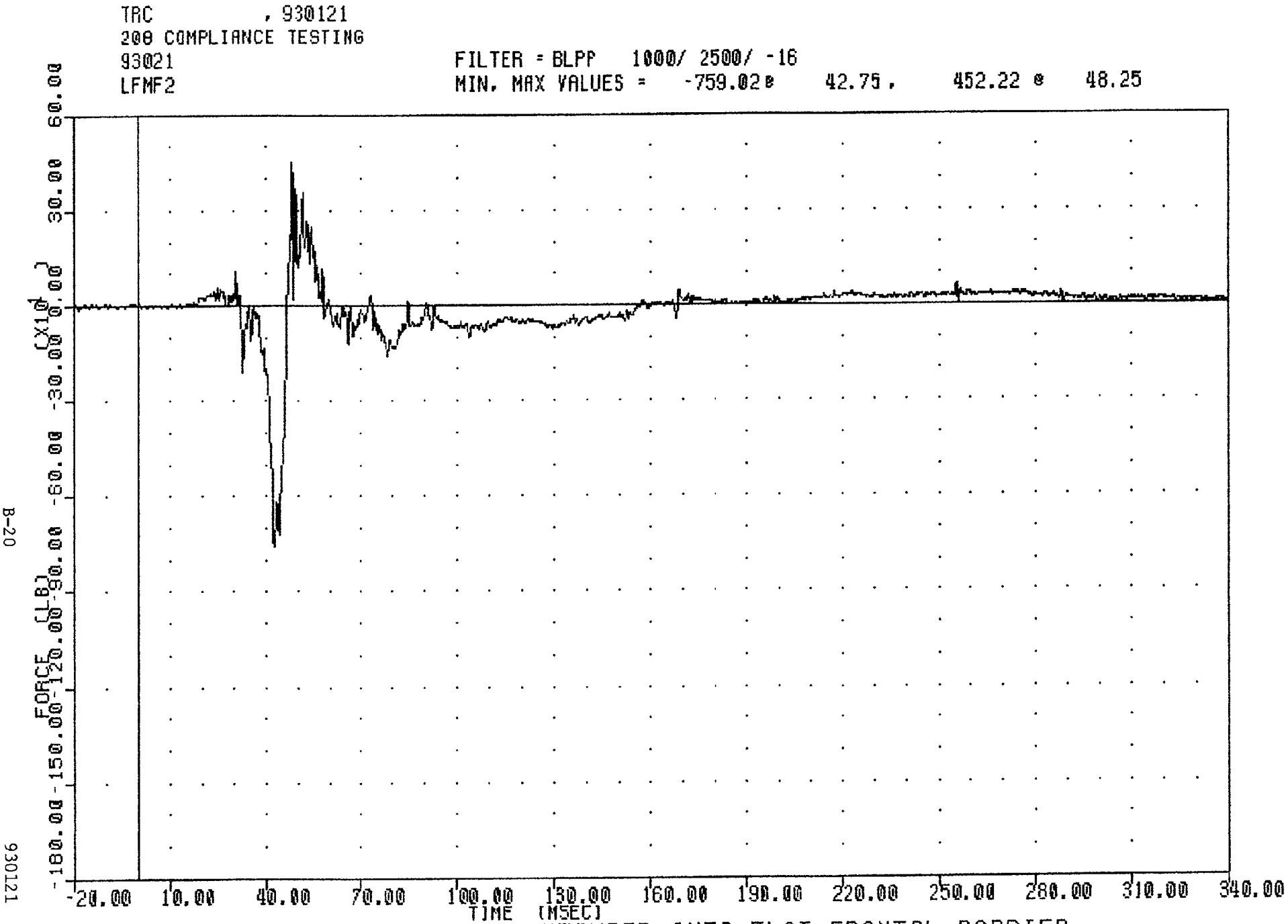
TRC , 930121
200 COMPLIANCE TESTING
93021
CSTRG2

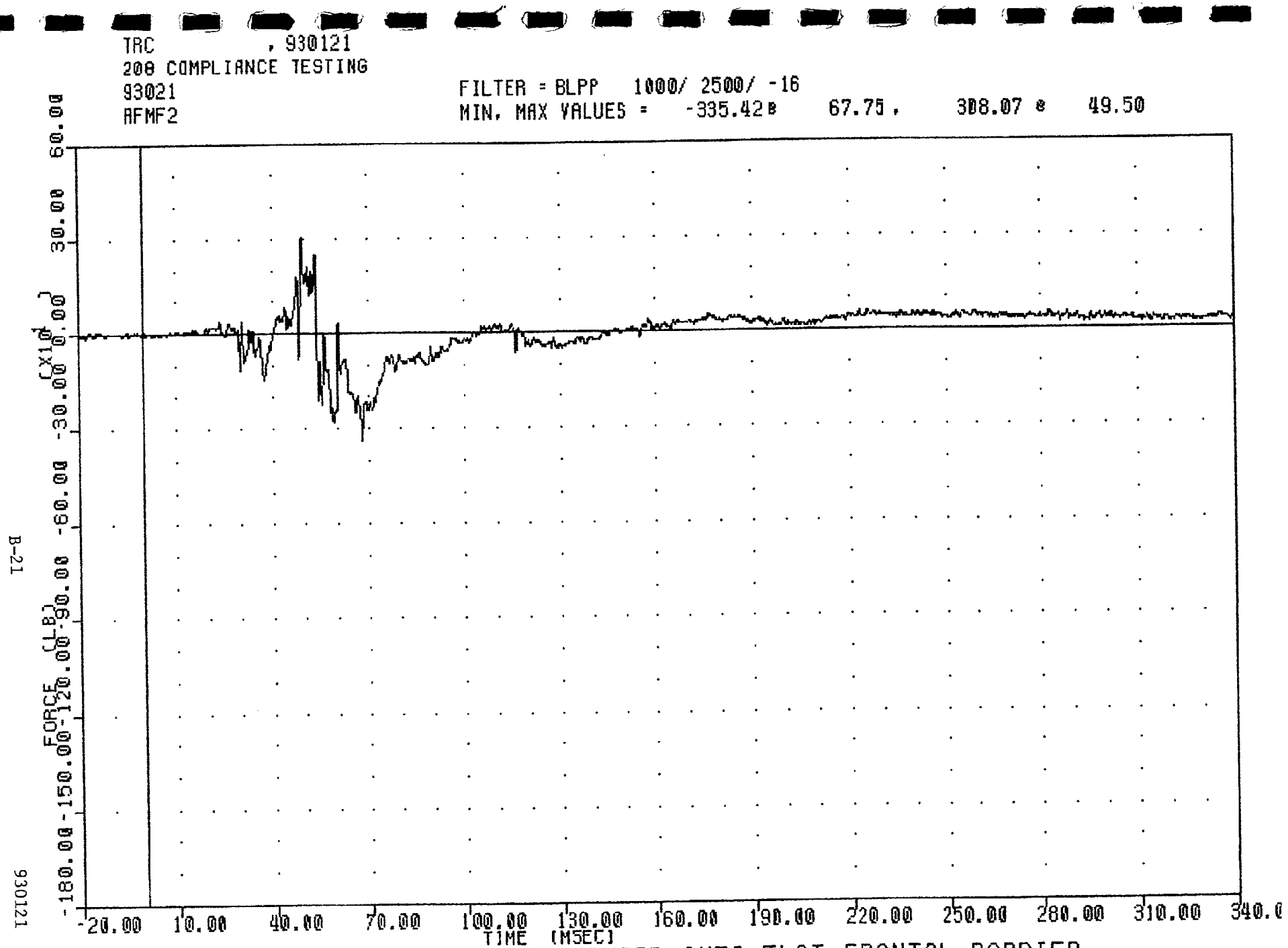
FILTER = BLPP 300/ 750/ -16
MIN, MAX VALUES = 0.07 @ -20.00 , 49.61 @ 65.13



1993 NISSAN PATHFINDER INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER CHEST RESULTANT ACCELERATION

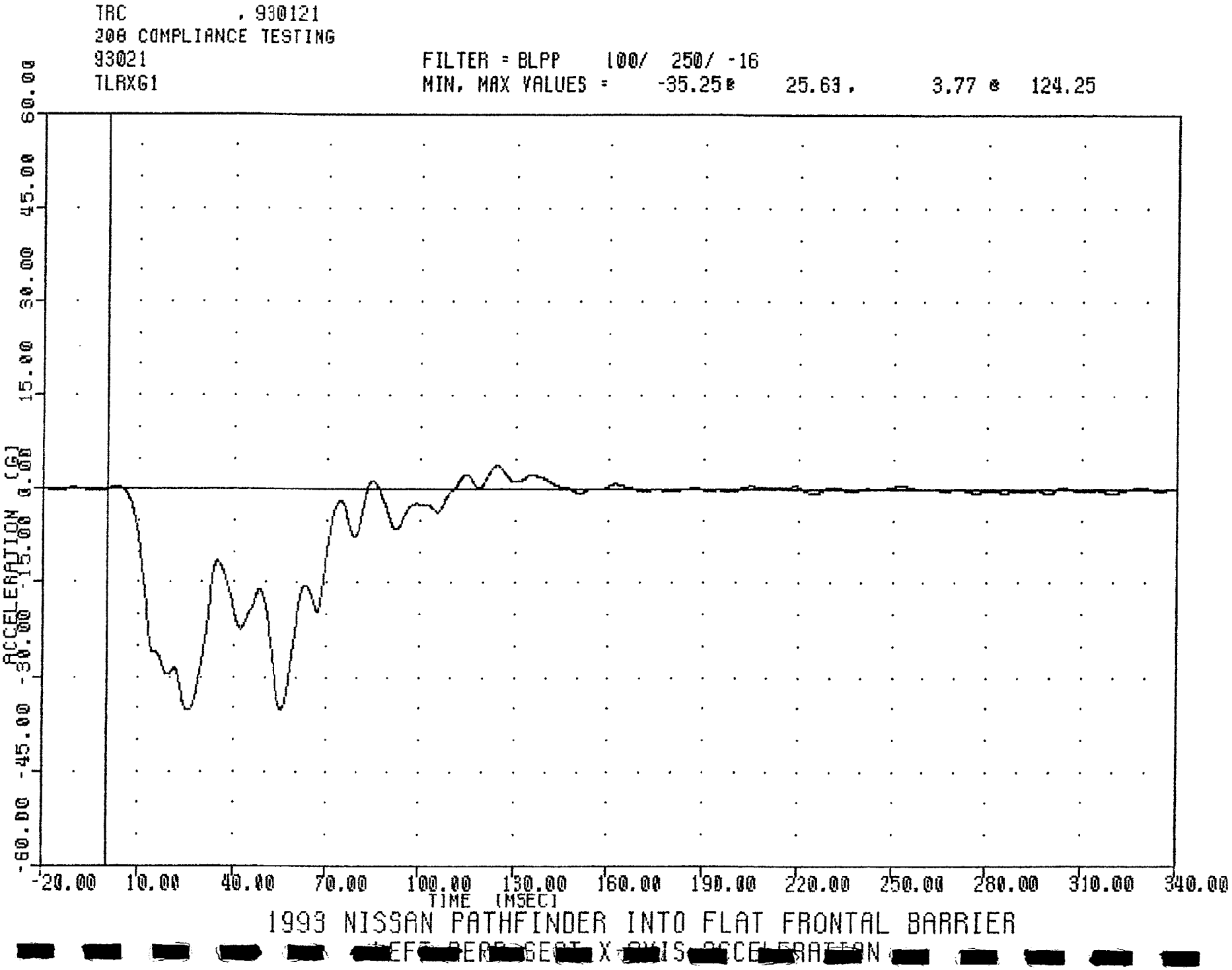
930121


TRC , 930121
208 COMPLIANCE TESTING
93021
LFMF2
FILTER = BLPP 1000/ 2500/ -16
MIN, MAX VALUES = -759.02 @ 42.75 , 452.22 @ 48.25
60.00
30.00
0.00
-30.00
-60.00
-90.00
-120.00
-150.00
-180.00
FORCE (LB) (X10)
-20.00
10.00
40.00
70.00
100.00
130.00
160.00
190.00
220.00
250.00
280.00
310.00
340.00
TIME (MSEC)
1993 NISSAN PATHFINDER INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER LEFT FEMUR FORCE
B-20
930121

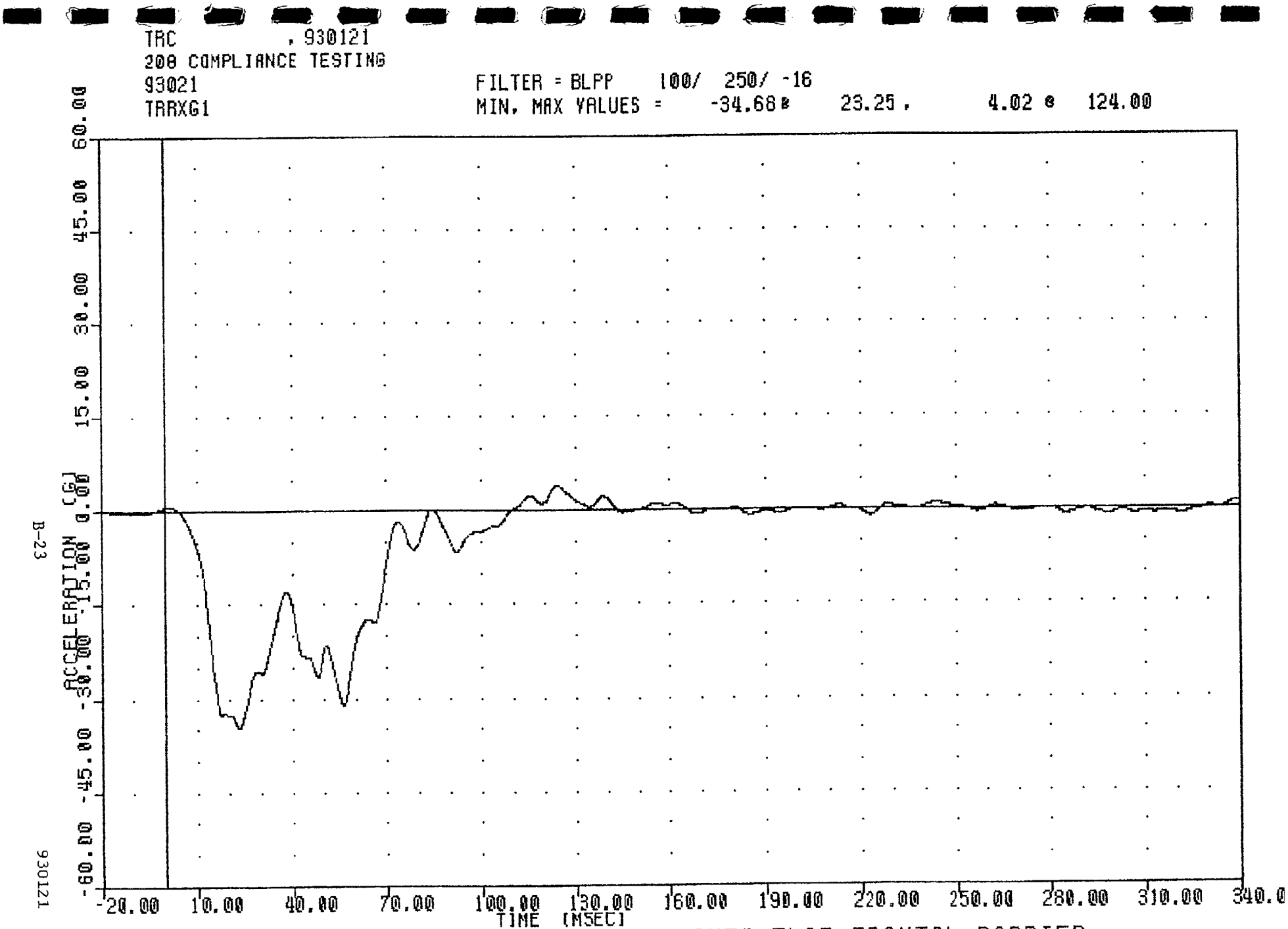


1993 NISSAN PATHFINDER INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER RIGHT FEMUR FORCE

930121

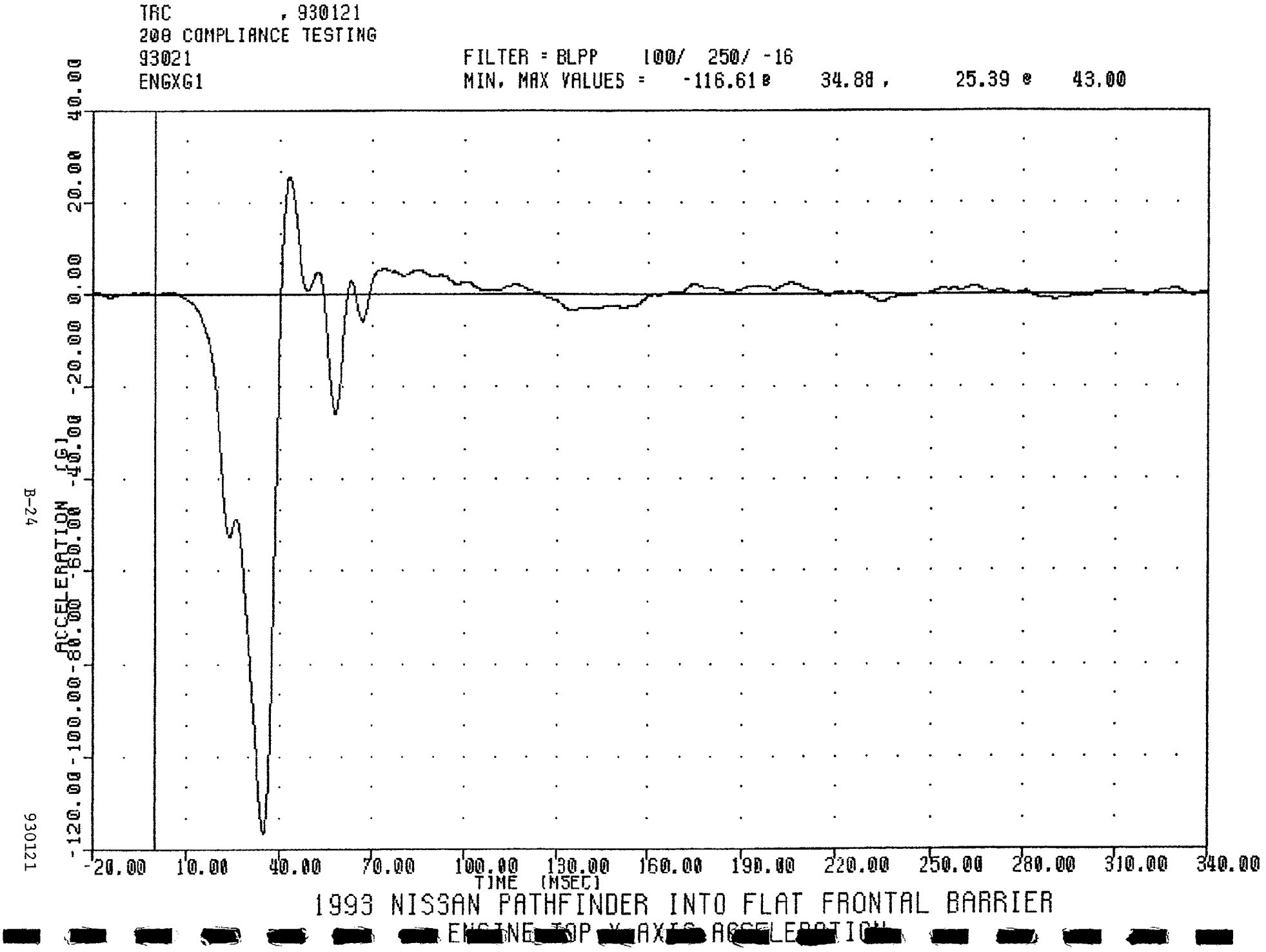

TRC , 930121
208 COMPLIANCE TESTING
93021
TLRXG1
FILTER = BLPP 100/ 250/ -16
MIN, MAX VALUES = -35.25 @ 25.63 , 3.77 @ 124.25
60.00
45.00
30.00
15.00
0.00
-15.00
-30.00
-45.00
-60.00
ACCELERATION (G)
-20.00
10.00
40.00
70.00
100.00
130.00
160.00
190.00
220.00
250.00
280.00
310.00
340.00
TIME (MSEC)
1993 NISSAN PATHFINDER INTO FLAT FRONTAL BARRIER
EFF REAR SEAT X AXIS ACCELERATION

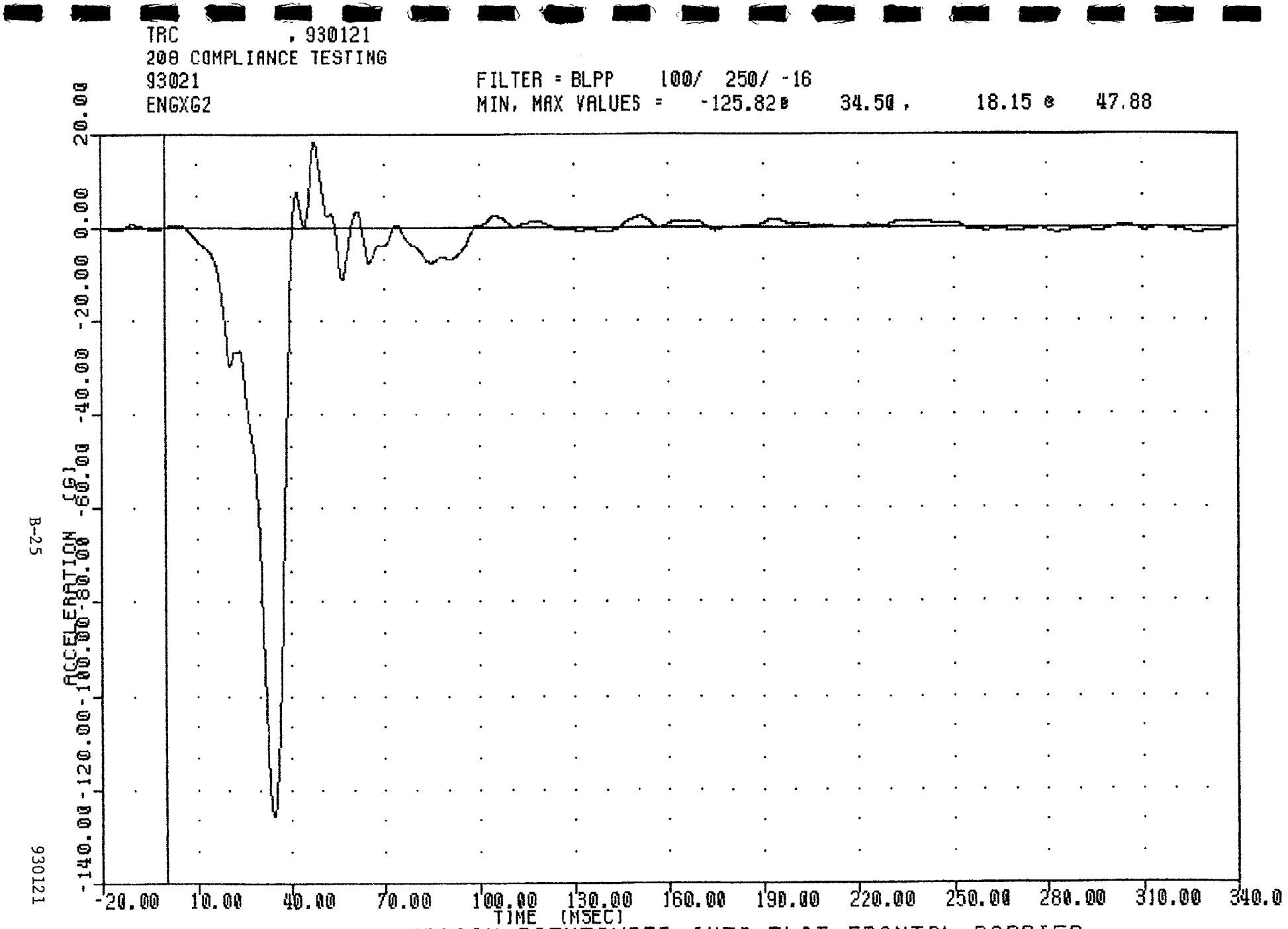
930121



1993 NISSAN PATHFINDER INTO FLAT FRONTAL BARRIER
RIGHT REAR SEAT X-AXIS ACCELERATION

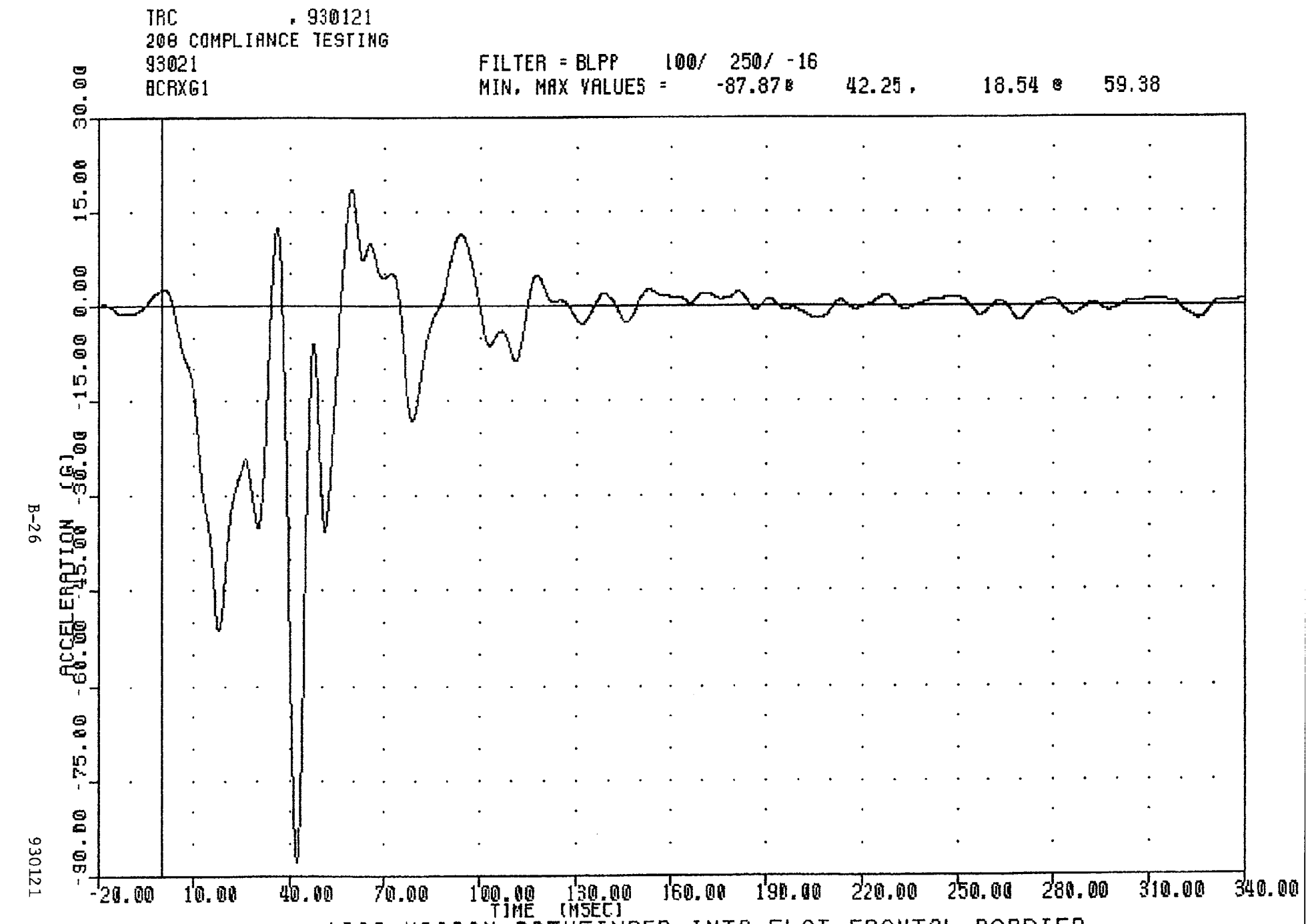
930121


TRC , 930121
208 COMPLIANCE TESTING
93021
ENGXG1
FILTER = BLPP 100/ 250/ -16
MIN, MAX VALUES = -116.61 @ 34.88 , 25.39 @ 43.00
ACCELERATION (G)
40.00
20.00
0.00
-20.00
-40.00
-60.00
-80.00
-100.00
-120.00
-20.00
10.00
40.00
70.00
100.00
130.00
160.00
190.00
220.00
250.00
280.00
310.00
340.00
TIME (MSEC)
1993 NISSAN PATHFINDER INTO FLAT FRONTAL BARRIER
ENGINE TOP Y AXIS ACCELERATION



1993 NISSAN PATHFINDER INTO FLAT FRONTAL BARRIER
ENGINE BOTTOM X-AXIS ACCELERATION

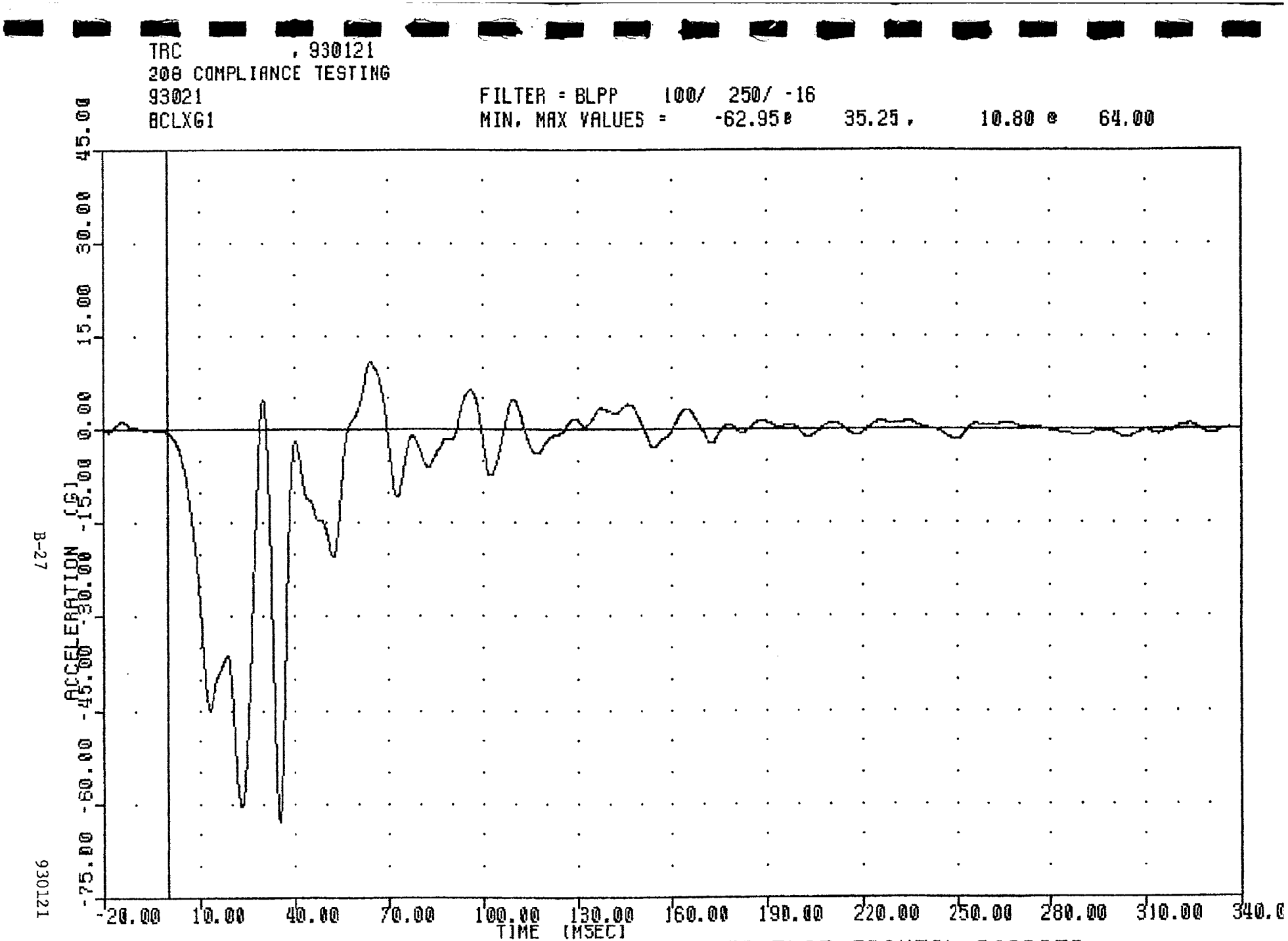
930121



1993 NISSAN PATHFINDER INTO FLAT FRONTAL BARRIER

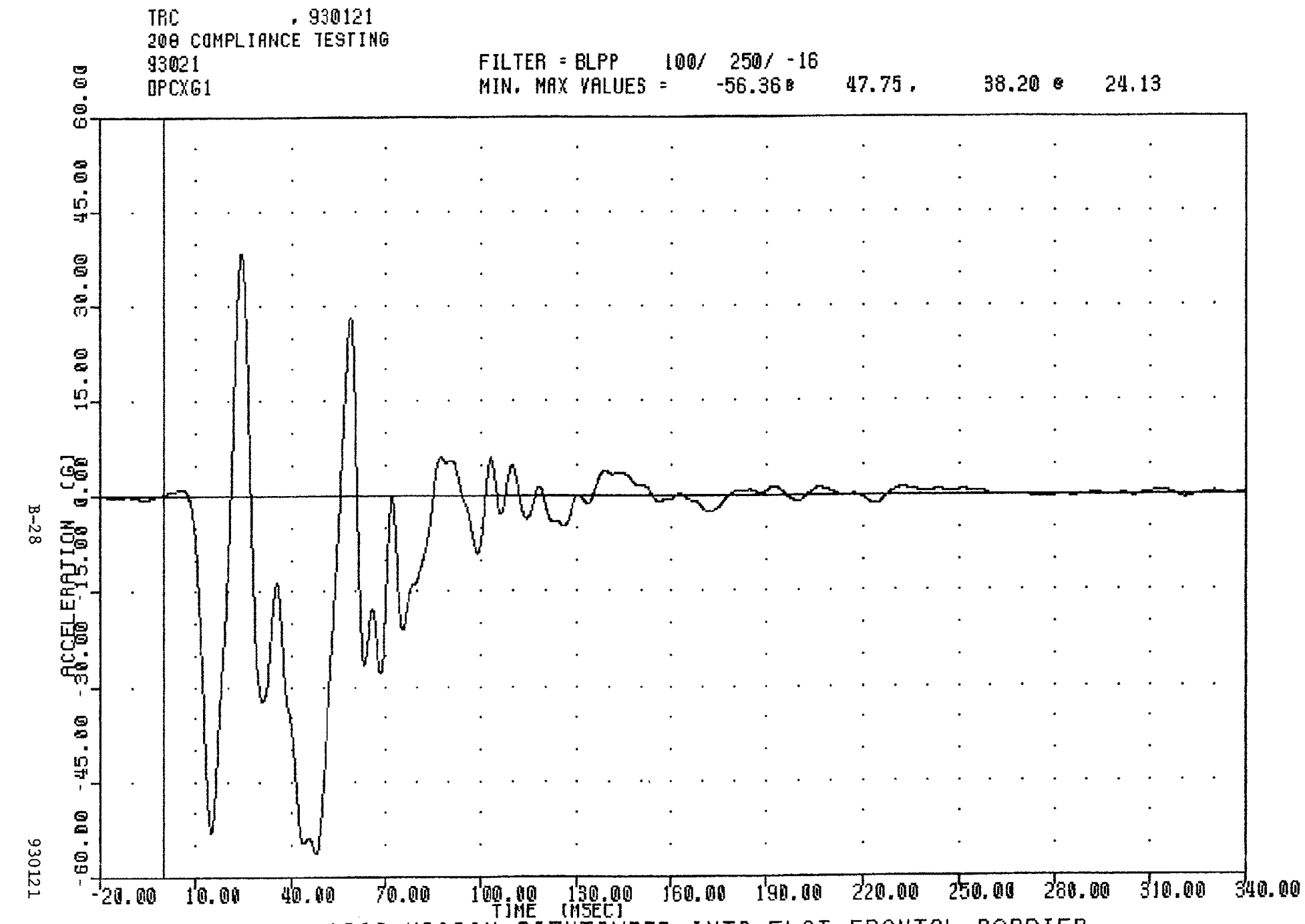
RIGHT BRAKE CALIPER X-AXIS ACCELERATION

930121



1993 NISSAN PATHFINDER INTO FLAT FRONTAL BARRIER
LEFT BRAKE CALIPER X-AXIS ACCELERATION

930121



1993 NISSAN PATHFINDER INTO FLAT FRONTAL BARRIER

INSTRUMENT PANEL CENTER X AXIS ACCELERATION

930121