V1556

REPORT NOS. 208-TRC-91-008
212-TRC-91-008
301-TRC-91-008

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

MITSUBISHI MOTORS CORP.
1991 MITSUBISHI GALANT
4-DOOR SEDAN
NHTSA NO. CM5601
TRC TEST NO. 910206

THE TRANSPORTATION RESEARCH CENTER OF OHIO
10820 STATE ROUTE 347
EAST LIBERTY, OHIO 43319

FEBRUARY 22, 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

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 2/22/91

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

REPORT APPROVED BY:

C. Kay Latimer Date 2/22/91

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

FINAL REPORT ACCEPTED BY:

Date 3/28/91

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

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FINAL REPORT OF FMVSS NOS. 208, 212, 219 (PARTIAL), AND 301 COMPLIANCE TESTING OF A 1991 MITSUBISHI GALANT 4-DOOR SEDAN, NHTSA NO. CM5601	FEBRUARY 22, 1991
	6. Performing Organization Code
7. Author(s) J.W. Sankey, Supervisor, Laboratory Engineering, TRC	8. Performing Organization Report No. 208-TRC-91-008 212-TRC-91-008 301-TRC-91-008
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15. Supplementary Notes

16. Abstract

A 30 mph flat frontal barrier impact test was conducted on a 1991 Mitsubishi Galant 4-door sedan, NHTSA No. CM5601, at the Transportation Research Center of Ohio on February 6, 1991. This test was conducted to determine compliance with Federal Motor Vehicle Safety Standards: FMVSS No. 208, "Occupant Crash Protection"; FMVSS No. 212, "Windshield Mounting"; FMVSS No. 219 (partial), "Windshield Zone Intrusion"; FMVSS 301, "Fuel System Integrity." The barrier impact velocity was 29.5 mph. The vehicle's maximum crush was 18.6 inches. The ambient temperature was 70° F.

The driver's head injury criteria (HIC) was 603. The driver's maximum chest deceleration over three (3) milliseconds was 40.2 g. The driver's maximum left and right femur forces were 1290 pounds and 1103 pounds, respectively.

The passenger's head injury criteria (HIC) was 496. The passenger's maximum chest deceleration over three (3) milliseconds was 38.3 g. The passenger's maximum left and right femur forces were 999 pounds and 1094 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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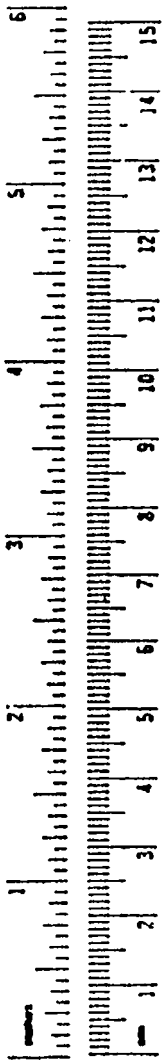
METRIC CONVERSION FACTORS

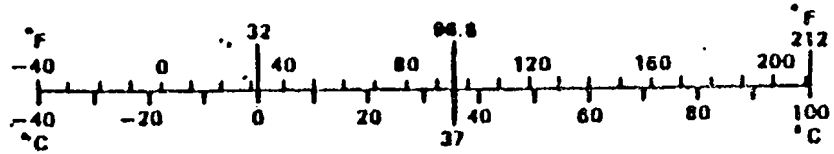
Approximate Conversions to Metric Measures

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	metric ton	t
	VOLUME			
tsp	teaspoons	5	milliliters	mL
Tbsp	tablespoons	15	milliliters	mL
in^3	cubic inches	16	milliliters	mL
fl oz	fluid ounces	30	milliliters	mL
c	cups	0.24	liters	L
pt	pints	0.47	liters	L
qt	quarts	0.95	liters	L
gal	gallons	3.8	liters	L
ft^3	cubic feet	0.03	cubic meters	m^3
yd^3	cubic yards	0.76	cubic meters	m^3
	TEMPERATURE (exact)			
°F	degrees Fahrenheit	5/9 (after subtracting 32)	degrees Celsius	°C



Approximate Conversions from Metric Measures

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



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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 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 Mitsubishi Galant 4-door sedan, NHTSA No. CM5601, 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 February 6, 1991.

The test vehicle, a 1991 Mitsubishi Galant 4-door sedan, NHTSA No. CM5601, appeared to comply with the performance requirements of FMVSS test Nos. 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 compressive 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 2.0 liter, transverse engine, automatic transmission, power steering, and power brakes. The vehicle's test weight was 3222 pounds. The vehicle's impact speed was 29.5 mph. The vehicle's maximum crush was 18.6 inches.

The driver's head injury criteria (HIC) was 603. The driver's maximum chest resultant acceleration over three (3) milliseconds was 40.2 g. The driver's maximum left and right femur forces were 1290 pounds and 1103 pounds, respectively.

The right front passenger's HIC was 496. The right front passenger's maximum chest resultant acceleration over three (3) milliseconds was 38.3 g. The right front passenger's maximum left and right femur forces were 999 pounds and 1094 pounds, respectively.

There was no loss of windshield periphery retention.

There was no intrusion through the windshield.

There was no fluid spillage from the vehicle's fuel system following the crash test event or during the static rollover test.

TABLE 1 CRASH TEST SUMMARY

NHTSA NO.: CM5601 TEST TYPE: Frontal Barrier Impact

TEST DATE: 02/06/91 TEST TIME: 1419 AMBIENT TEMP. (°F): 70

VEHICLE YEAR/MAKE/MODEL/BODY STYLE: 1991 Mitsubishi Galant 4-door sedan

VEHICLE TEST WEIGHT (LBS): 3222

IMPACT ANGLE (DEG)*: 0

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

MAXIMUM STATIC CRUSH (IN): 18.6

AVERAGE REBOUND (IN): 30.3

DUMMIES:	Driver #1173	Passenger #353
TYPE:	Part 572 B	Part 572 B
LOCATION:	Left front	Right front
RESTRAINT:	2-point passive belt	2-point passive belt

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: Mitsubishi Motors Corp.

MAKE/MODEL: Mitsubishi Galant VIN: JA3CR46V6MZ024820

BODY STYLE: 4-door sedan MODEL YEAR: 1991

NHTSA NO.: CM5601 COLOR: Silver

ENGINE DATA: TYPE: transverse CYLINDERS: 4 DISPLACEMENT: 2.0 liter

TRANSMISSION DATA: 3 SPEED, ___MANUAL, X AUTOMATIC, X FWD, ___RWD, ___4WD

DATE VEHICLE RECEIVED: 01/09/91 ODOMETER READING: 81.0

DEALER'S NAME AND ADDRESS: Ricart Mitsubishi
4255 South Hamilton Road
Columbus, OH 43227

ACCESSORIES:

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

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 ALTERED BY: Mitsubishi Motors Corp.

DATE OF MANUFACTURE: 10-90 VIN: JA3CR46V6MZ024820

GVWR: 3747 LBS

GAWR: FRONT: 1984 LBS., REAR: 1763 LBS.

TABLE 2 TEST VEHICLE INFORMATION CONT'D

TIRES ON VEHICLE (MFR., LINE, SIZE): Yokohama, 372 All Season, P185/75R14

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

SPARE TIRE (MFR., LINE, SIZE): Yokohama, Temp, T125/70D15

TYPE OF SEATS: FRONT: Bucket
REAR: Bench

TYPE OF FRONT SEAT BACKS: Manual adjustable

MAXIMUM WIDTH: 67.2 INCHES

WHEELBASE: 103.0 INCHES

LOCATION OF LABEL STATING TIRE & CAPACITY DATA: THE LABEL WAS LOCATED ON THE DRIVER'S DOOR.

TIRE & CAPACITY DATA FROM VEHICLE'S LABEL:

RECOMMENDED TIRE SIZE: FRONT: P185/70R14

RECOMMENDED COLD TIRE PRESSURE: FRONT: 29 PSI; REAR: 26 PSI

DESIGNATED SEATING CAPACITY: 2 FRONT 3 REAR 5 TOTAL

VEHICLE CAPACITY WEIGHT: 827 LBS. LUGGAGE: 77 LBS.

TEST VEHICLE ATTITUDE (ALL MEASUREMENTS ARE IN INCHES):

DELIVERED ATTITUDE:	LF	26.6;	RF	26.7;	LR	25.7;	RR	25.9
FULLY LOADED ATTITUDE:	LF	26.0;	RF	26.1;	LR	24.4;	RR	24.8
PRE-TEST ATTITUDE:	LF	26.8;	RF	26.8;	LR	24.2;	RR	24.5
POST-TEST ATTITUDE:	LF	30.5;	RF	29.8;	LR	23.5;	RR	25.0

TABLE 2 TEST VEHICLE INFORMATION CONT'D

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

RIGHT FRONT	883 LBS.	RIGHT REAR	521 LBS.
LEFT FRONT	863 LBS.	LEFT REAR	562 LBS.
TOTAL FRONT WEIGHT	1746 LBS.	(61.7% OF TOTAL VEHICLE WEIGHT)	
TOTAL REAR WEIGHT	1083 LBS.	(38.3% OF TOTAL VEHICLE WEIGHT)	
TOTAL DELIVERED WEIGHT	2829 LBS.		

CALCULATION OF TEST VEHICLE'S TARGET TEST WEIGHT:

RCLW = RATED CARGO AND LUGGAGE WEIGHT*

UDW = UNLOADED DELIVERED WEIGHT (2829 LBS)

VCW = VEHICLE CAPACITY WEIGHT (827 LBS)

DSC = DESIGNATED SEATING CAPACITY (5)

RCLW*= VCW - 150 (DSC) = 827 - 150 (5) = 77

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

TARGET TEST WEIGHT = 2829 + 77 + 328

TARGET TEST WEIGHT = 3234 LBS

WEIGHT OF TEST VEHICLE WITH REQUIRED DUMMIES AND 65 LBS. OF CARGO WEIGHT:

RIGHT FRONT	918 LBS.	RIGHT REAR	681 LBS.
LEFT FRONT	929 LBS.	LEFT REAR	694 LBS.
TOTAL FRONT WEIGHT	1847 LBS.	(57.3% OF TOTAL VEHICLE WEIGHT)	
TOTAL REAR WEIGHT	1375 LBS.	(42.7% OF TOTAL VEHICLE WEIGHT)	
TOTAL TEST WEIGHT	3222 LBS.	(0.4% UNDER TARGET TEST WEIGHT)	

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

COMPONENTS REMOVED TO MEET TARGET TEST WEIGHT: Tail light, rear speakers, rear seat belts, center brake light.

CG = 44.0 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: 910206 NHTSA NO.: CM5601

TEST DATE: 02/06/91 TEST TIME: 1419

TEST TYPE: Frontal Barrier Impact IMPACT ANGLE: 0

AMBIENT TEMPERATURE AT IMPACT AREA: 70° F

TEMPERATURE IN OCCUPANT COMPARTMENT: 71° F

IMPACT VELOCITY: PRIMARY = 29.5 MPH SECONDARY = 29.5 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 179.5; C 183.5; R 179.5

POST-TEST: L 161.0; C 165.0; R 163.0

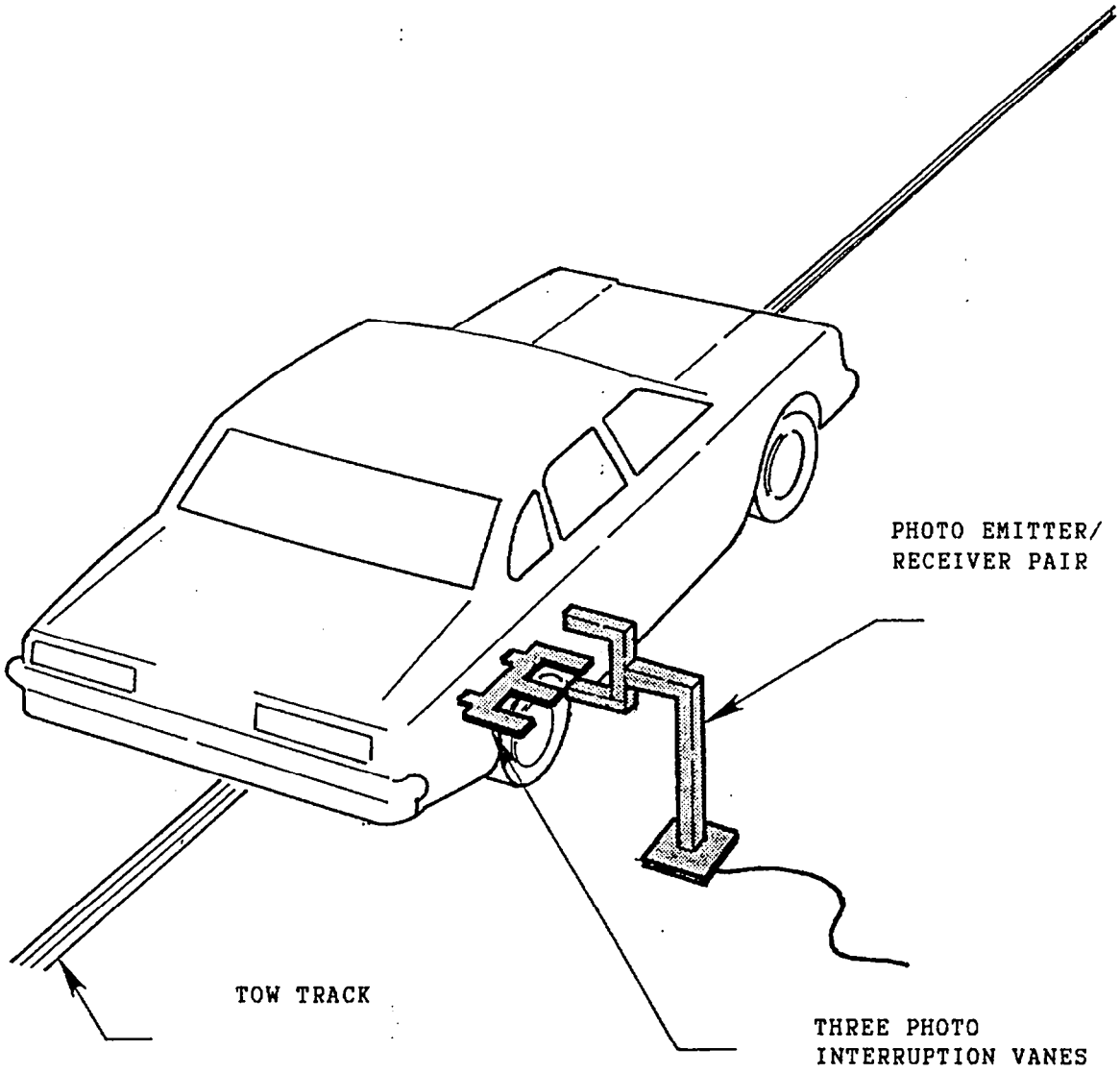
TOTAL CRUSH: L 18.5; C 18.5; R 16.5

AVERAGE CRUSH: 17.8

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

DISTANCE FROM TEST VEHICLE TO BARRIER: L 31.4; C 28.6; R 31.0; AVG. 30.3

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: Mitsubishi/Galant/4-door sedan

VEHICLE NHTSA NO.: CM5601 ; VIN: JA3CR46V6MZ024820

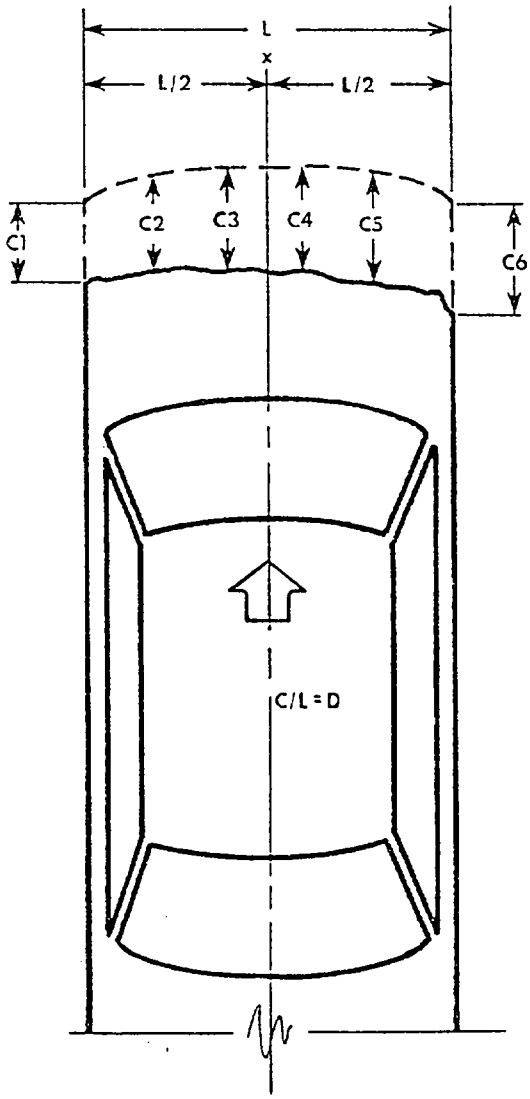
MODEL YEAR: 1991 ; BUILD DATE: 10/90 ; TEST DATE: 02/06/91

VEHICLE SIZE CATEGORY: Compact ; TEST WEIGHT: 3222 LBS.

VEHICLE WHEELBASE: 103.0 INCHES

MAXIMUM WIDTH: 67.2 INCHES

FRONT OVERHANG: 39.0 INCHES



COLLISION DEFORMATION
CLASSIFICATION (CDC) CODE: 12FDEW2

CRUSH DEPTH
MEASUREMENTS:

C1 = 18.5 INCHES

C2 = 17.9 INCHES

C3 = 18.6 INCHES

C4 = 18.6 INCHES

C5 = 17.7 INCHES

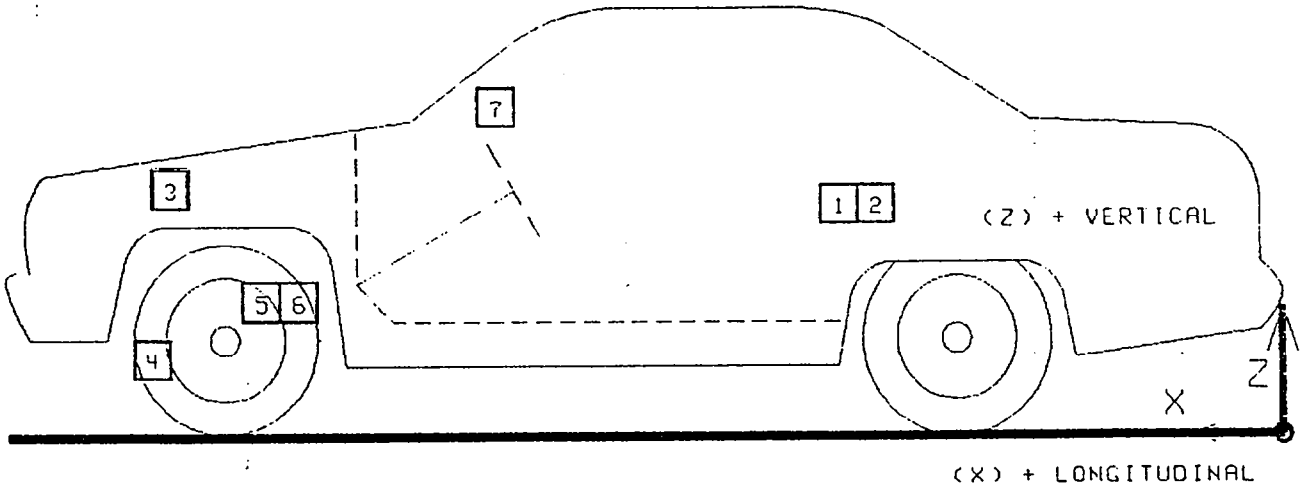
C6 = 16.5 INCHES

MIDPOINT OF DAMAGE: D = VEHICLE CENTERLINE (LONGITUDINAL)

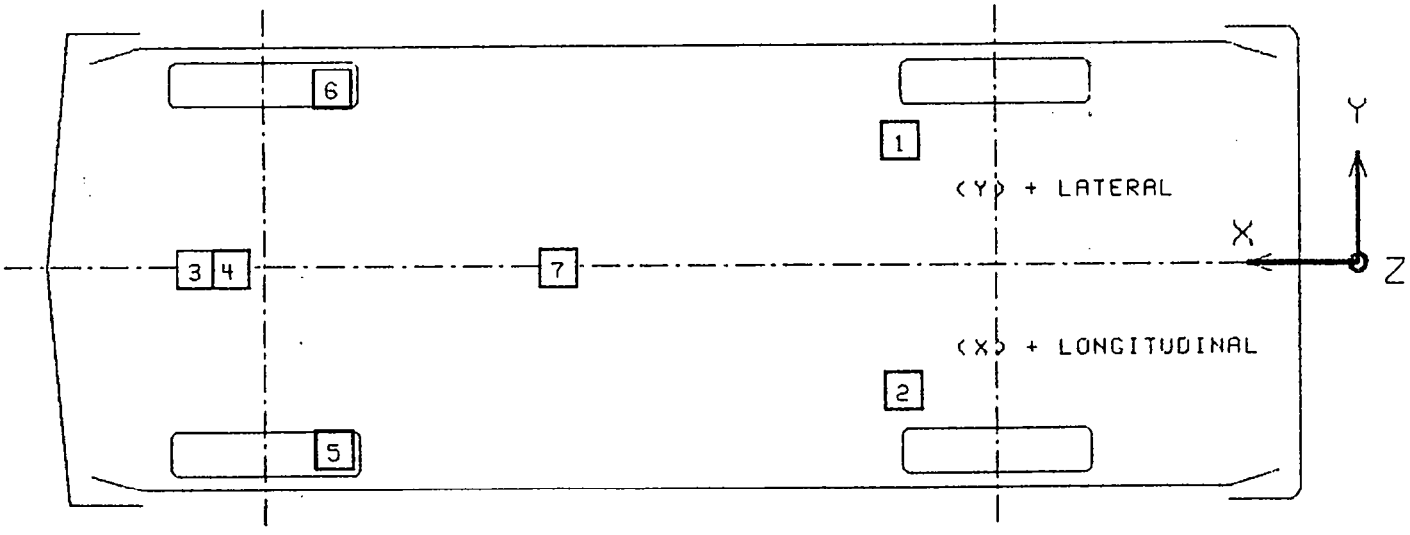
LENGTH OF DAMAGED
REGION: L = 55.0 INCHES

FIGURE 3

VEHICLE ACCELEROMETER PLACEMENT



SIDE VIEW



BOTTOM VIEW

TABLE 4

VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

TEST NUMBER 910206

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	68.0	14.2	16.1				
		POST	68.0	14.2	17.0				
	LONGITUDINAL					2.7	129.8	34.3	63.5
2	RIGHT REAR SEAT CROSSMEMBER	PRE	68.0	-14.2	16.2				
		POST	68.0	-14.2	18.2				
	LONGITUDINAL					2.8	130.1	33.4	63.3
3	ENGINE TOP	PRE	157.1	1.8	30.1				
		POST	150.5	1.2	30.0				
	LONGITUDINAL					12.9	50.1	92.0	39.3
4	ENGINE BOTTOM	PRE	151.5	10.5	7.0				
		POST	143.5	10.5	7.0				
	LONGITUDINAL					25.5	43.8	113.8	31.3
5	RIGHT BRAKE CALIPER	PRE	150.0	-25.2	11.8				
		POST	145.0	-25.0	10.1				
	LONGITUDINAL					28.4	60.6	106.4	44.5
6	LEFT BRAKE CALIPER	PRE	150.0	25.2	11.4				
		POST	147.8	25.4	10.4				
	LONGITUDINAL					41.7	69.8	67.4	53.9
7	INSTRUMENT PANEL CENTER	PRE	119.1	0.0	32.8				
		POST	121.5	1.2	34.0				
	LONGITUDINAL					17.9	50.6	57.7	60.4

* ALL MEASUREMENTS OF ACCELEROMETER LOCATIONS ARE IN INCHES.

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

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. Glen Brammeier
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.: CM5601
MAKE/MODEL/BODY STYLE: Mitsubishi/Galant/4-door sedan
MODEL YEAR: 1991 BODY COLOR: Silver
VIN: JA3CR46V6MZ024820
ODOMETER (ARRIVAL): 81 DATE: 01/09/91
ODOMETER (COMPLETION): 90 DATE: 02/06/91
COST: $11,859.00

X AIR CONDITIONER	___ CONSOLE	BRAKES: X POWER
X TINTED GLASS	___ TACHOMETER	FRONT: Disc
X POWER STEERING	___ 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	X OTHER OPTIONS: Floor mats, Cassette deck, wheel covers	

ENGINE: 4 CYLINDERS; 2.0 LITERS
TRANSMISSION: Automatic; DRIVE TYPE: Front wheel
TIRE SIZE: P185/75R14
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	-60.5	-25.8	-72.0	94.3	-42.4	-7.7	7.5	40.2
PASSENGER	-26.9	-10.9	-57.9	59.9	-39.3	-7.0	-7.1	38.3

MAXIMUM FEMUR COMPRESSIVE FORCE (LBS)

	LEFT FEMUR	RIGHT FEMUR
DRIVER	1290	1103
PASSENGER	999	1094

HEAD INJURY CRITERIA**

	HIC	TIME t_1 (MSEC)	TIME t_2 (MSEC)
DRIVER	603	73.4	109.4
PASSENGER	496	69.2	105.2

*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 #1173	PASSENGER #353
HEAD	Upper steering wheel rim & chest	Chest
CHEST	None	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:

None

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 rotated forward, impacting the upper steering wheel rim and the dummy's chest, as the dummy was restrained by the two-point passive belt. 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 driver's seat, restrained by the two-point passive belt.

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 rotated forward, contacting the dummy's chest, as the dummy was restrained by the two-point passive belt. 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 two-point passive belt.

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

MAKE/MODEL: Mitsubishi/Galant VIN: JA3CR46V6MZ024820

BODY STYLE: 4-door sedan NHTSA NO.: CM5601

DATE OF MANUFACTURE: 10/90

CONVENIENCE HOOKS:

DEVICE TO STOW SEAT BELT WEBBING TO FACILITATE ENTERING OR EXITING THE VEHICLE AUTOMATICALLY RELEASES THE WEBBING WHEN THE IGNITION IS TURNED TO THE "ON" OR "START" POSITION AND (check one):

_____ The vehicle's drivetrain is engaged

_____ The vehicle's parking brake is in the released mode

_____ Not applicable, the vehicle's restraint system does not include convenience hooks or devices to stow seat belt webbing.

__X__ Whenever the switch is turned to the "ON" or "START" position.

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

TABLE 8 FMVSS 208 SEAT BELT WARNING SYSTEM DATA

WITH OCCUPANT IN DRIVER'S POSITION AND LAP BELT 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 LAP BELT 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 _____

Symbol 101-80 X

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:

__X__ 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.

__X__ NOT APPLICABLE, VEHICLE DID NOT CONTAIN A CRASH-DEPLOYED OCCUPANT PROTECTION SYSTEM.

FIGURE 4 FMVSS 212 TEST DATA

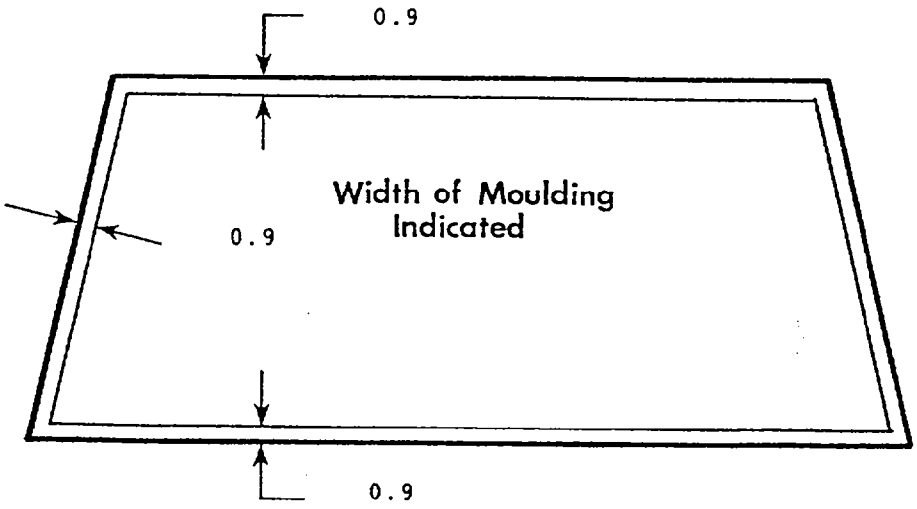
DETAILS OF WINDSHIELD MOUNTING SUCH AS RETENTION METHOD, TRIM TYPE, ETC.:
Plastic and chrome trim around outer perimeter, adhesive around inner perimeter.

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	77.1	77.1	100%
LEFT SIDE	77.1	77.1	100%
TOTAL	154.2	154.2	100%

PRE-TEST WINDSHIELD MOUNTING MATERIAL TEMPERATURE: 71° 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 = 45.0

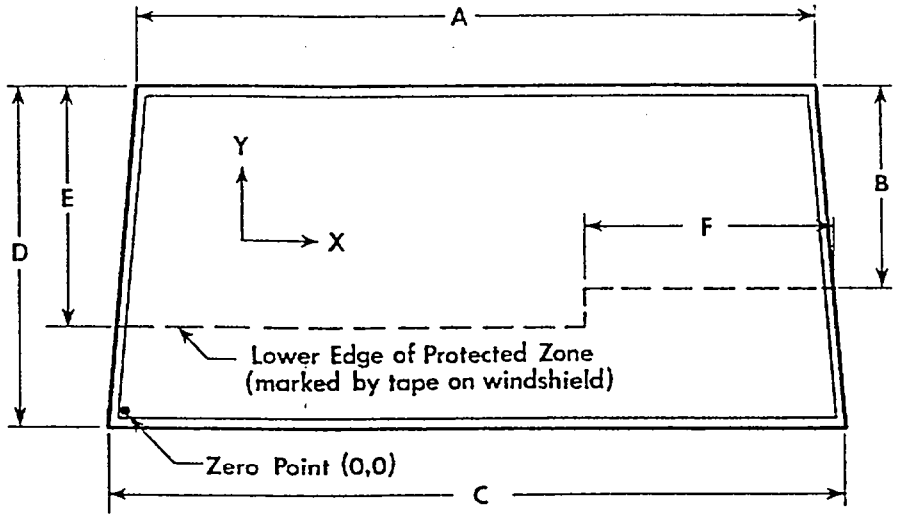
B = 17.0

C = 58.8

D = 28.5

E = 20.4

F = 27.0



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: Mitsubishi/Galant NHTSA NO.: CM5601

FUEL SYSTEM CAPACITY: 15.9 GALLONS (FROM OWNER'S MANUAL)

USABLE CAPACITY: 16.4 GALLONS (FURNISHED BY COTR)

TEST VOLUME RANGE: 15.1 GALLONS TO 15.4 GALLONS (92-94% OF USABLE)

ACTUAL TEST VOLUME: 15.3 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 tank was located in front of the rear axle. The fuel filler neck was located on the left side and entered the left rear corner of the tank. The fuel lines ran along the left 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.: CM5601 ; TEST DATE: 02/06/91

VEHICLE MAKE/MODEL/BODY STYLE: Mitsubishi/Galant/4-door sedan

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.

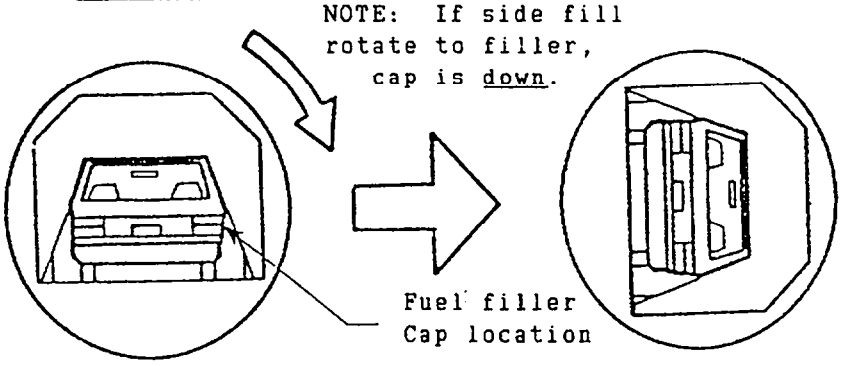
FUEL SYSTEM FLUID SPILLAGE LOCATION(S):

None

FIGURE 6 FMVSS 301 STATIC ROLLOVER TEST DATA

NHTSA NO.: CM5601

TEST PHASE 0° 90°



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.

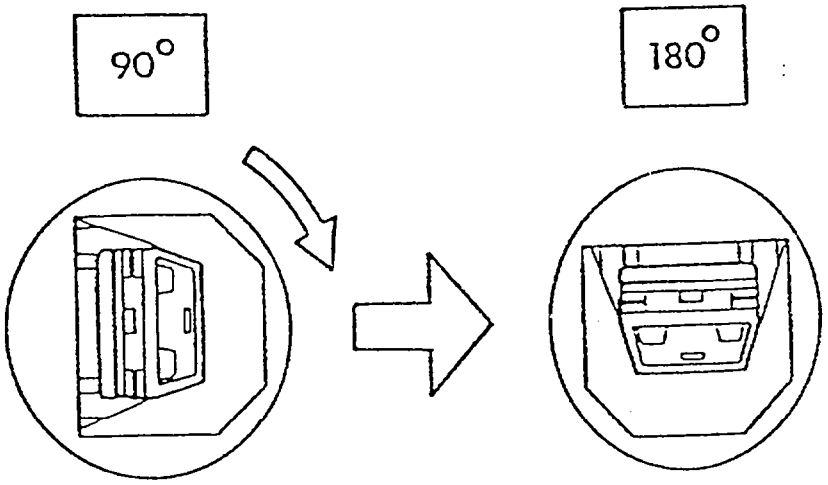
FUEL SYSTEM FLUID SPILLAGE LOCATION(S):

None

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

NHTSA NO.: CM5601

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.

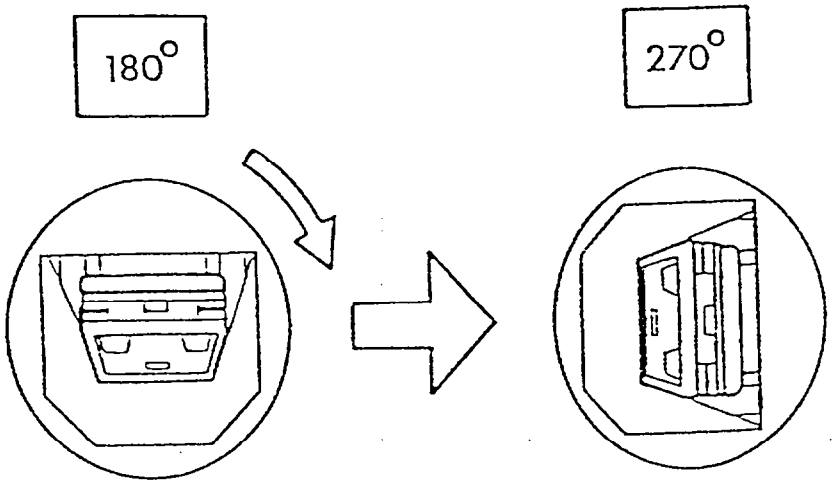
FUEL SYSTEM FLUID SPILLAGE LOCATION(S):

None

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

NHTSA NO.: CM5601

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.

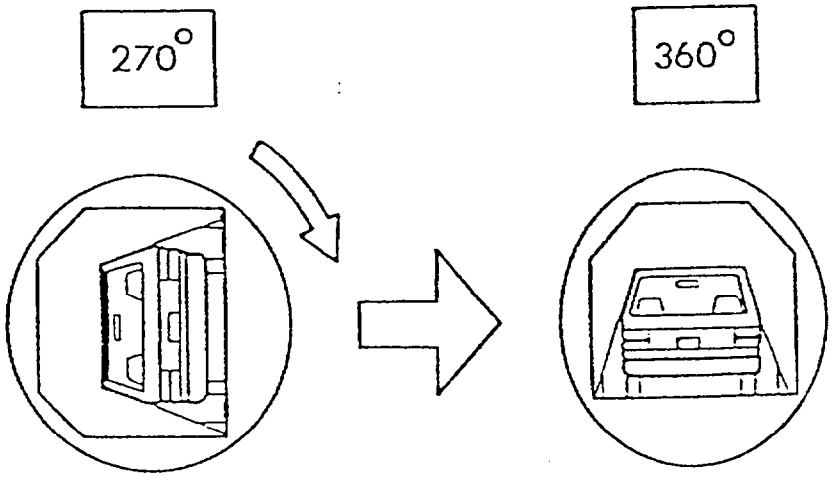
FUEL SYSTEM FLUID SPILLAGE LOCATION(S):

None

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

NHTSA NO.: CM5601

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

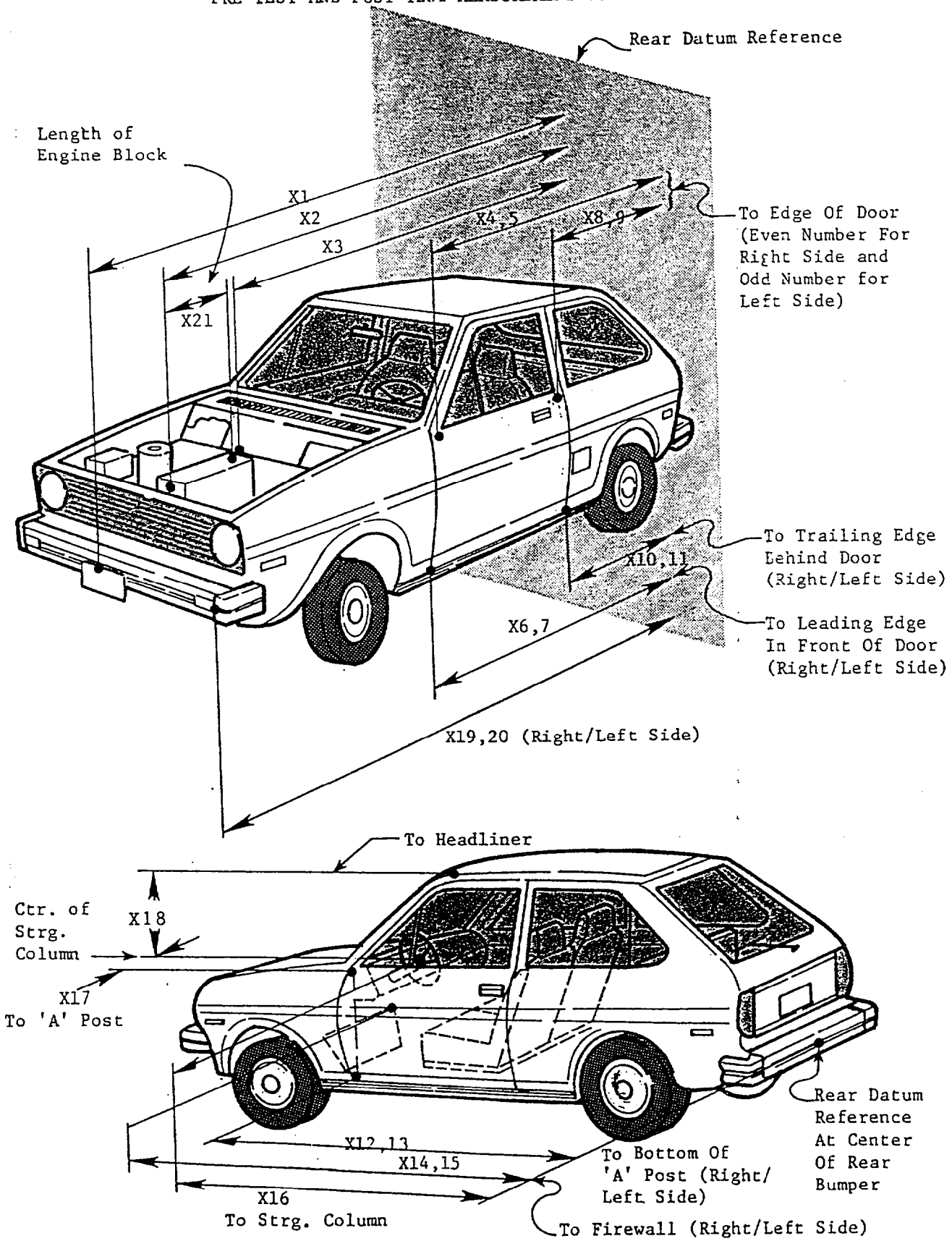


TABLE 13 IMPACTED VEHICLE MEASUREMENTS

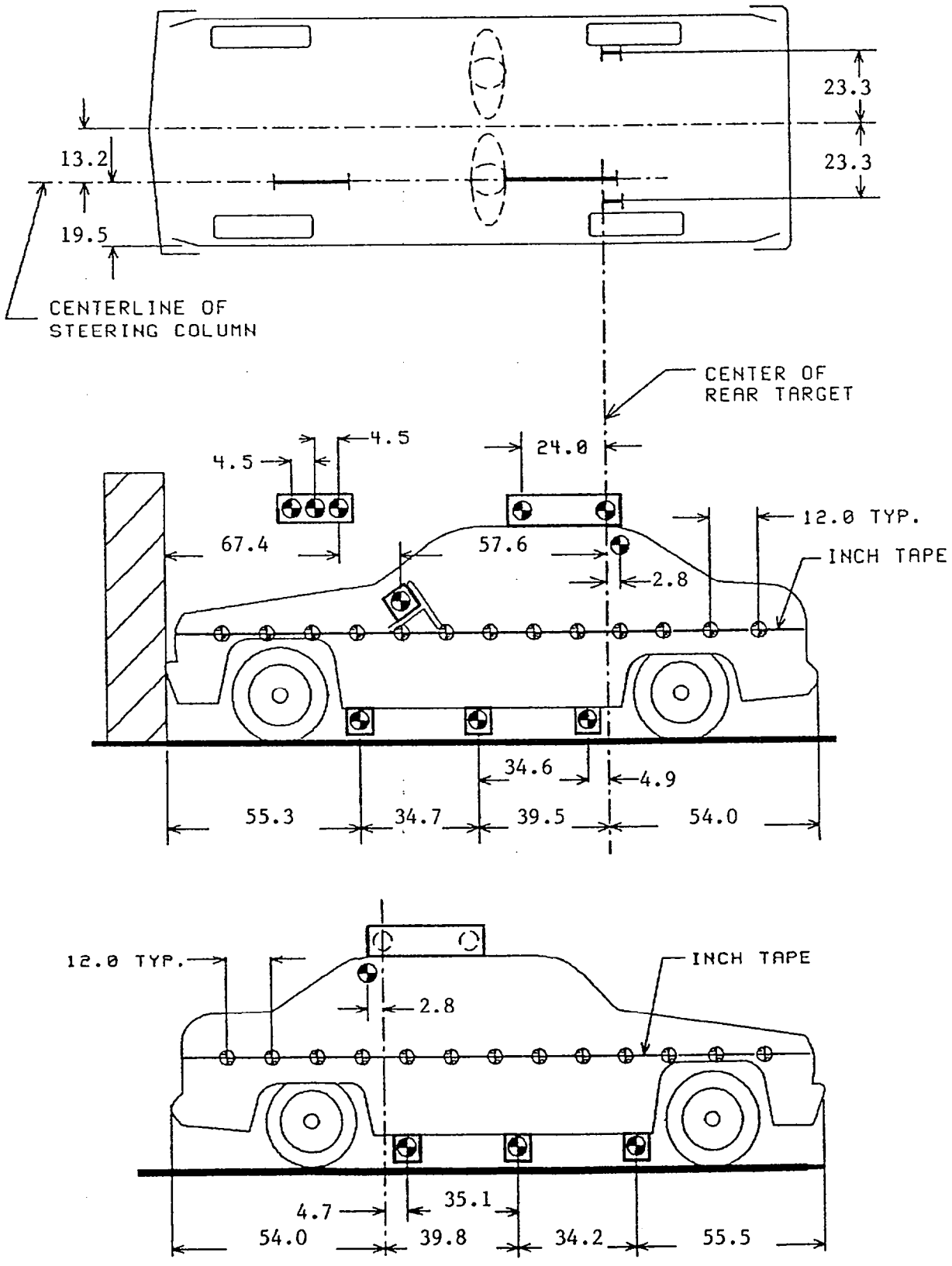
VEHICLE MAKE/MODEL: Mitsubishi/Galant TEST NUMBER: 910206

ALL MEASUREMENTS ARE IN INCHES

NO.	TYPE OF MEASUREMENT	PRE-TEST	POST-TEST	DIFF.
X1	TOTAL LENGTH OF VEHICLE AT CENTERLINE	183.5	165.0	18.5
X2	REAR SURFACE OF VEHICLE TO FRONT OF ENGINE BLOCK	157.1	151.5	5.6
X3	REAR SURFACE OF VEHICLE TO FIREWALL	135.0	134.2	0.8
X4	REAR SURFACE OF VEHICLE TO UPPER LEADING EDGE OF RIGHT DOOR	124.1	124.2	-0.1
X5	REAR SURFACE OF VEHICLE TO UPPER LEADING EDGE OF LEFT DOOR	124.5	124.0	0.5
X6	REAR SURFACE OF VEHICLE TO LOWER LEADING EDGE OF RIGHT DOOR	125.0	124.6	0.4
X7	REAR SURFACE OF VEHICLE TO LOWER LEADING EDGE OF LEFT DOOR	124.8	125.0	-0.2
X8	REAR SURFACE OF VEHICLE TO UPPER TRAILING EDGE OF RIGHT DOOR	84.0	83.9	0.1
X9	REAR SURFACE OF VEHICLE TO UPPER TRAILING EDGE OF LEFT DOOR	84.0	83.8	0.2
X10	REAR SURFACE OF VEHICLE TO LOWER TRAILING EDGE OF RIGHT DOOR	84.9	84.3	0.6
X11	REAR SURFACE OF VEHICLE TO LOWER TRAILING EDGE OF LEFT DOOR	84.3	84.6	-0.3
X12	REAR SURFACE OF VEHICLE TO BOTTOM OF "A" POST ON RIGHT SIDE	124.2	123.8	0.4
X13	REAR SURFACE OF VEHICLE TO BOTTOM OF "A" POST ON LEFT SIDE	124.2	124.2	0.0
X14	REAR SURFACE OF VEHICLE TO FIREWALL - RIGHT SIDE	134.0	134.0	0.0
X15	REAR SURFACE OF VEHICLE TO FIREWALL - LEFT SIDE	133.8	134.2	-0.4
X16	REAR SURFACE OF VEHICLE TO STEERING WHEEL CENTER	106.6	107.1	-0.5
X17	CENTER OF STEERING COLUMN TO "A" POST	14.2	14.5	-0.3
X18	CENTER OF STEERING COLUMN TO HEADLINER	17.6	17.5	0.1
X19	REAR SURFACE OF VEHICLE TO RIGHT SIDE OF FRONT BUMPER	179.5	163.0	16.5
X20	REAR SURFACE OF VEHICLE TO LEFT SIDE OF FRONT BUMPER	179.5	161.0	18.5
X21	LENGTH OF ENGINE BLOCK	19.0	19.0	0.0

FIGURE 8

VEHICLE TARGET LOCATIONS



ALL DISTANCE MEASUREMENTS ARE IN INCHES.

910206

FIGURE 9 DUMMY AND SEAT POSITIONING DATA

PRE-IMPACT DATA:

MAKE/MODEL: Mitsubishi/Galant
BODY STYLE: 4-door sedan MODEL YEAR: 1991
NHTSA NO.: CM5601 COLOR: Silver

DATA FROM CERTIFICATION LABEL:

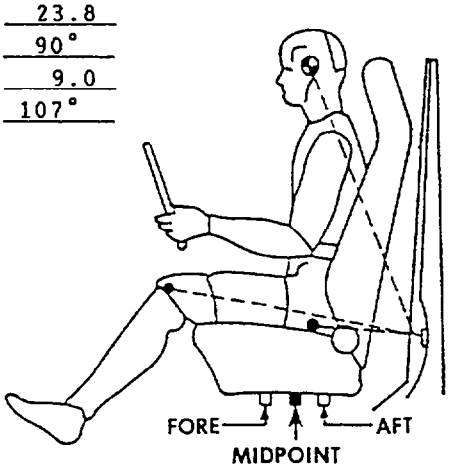
VEHICLE MANUFACTURER: Mitsubishi Motor Corp.
DATE OF MANUFACTURE: 10/90 VIN: JA3CR46V6MZ024820
GVWR: 3747 LBS.; GAWR: FRONT = 1984 LBS.; REAR = 1763 LBS.

POST-IMPACT DATA:

DATE OF TEST: 02/06/91 TIME: 1419 TEMPERATURE: 70° F
IMPACT VELOCITY: PRIMARY = 29.5 MPH SECONDARY = 29.5 MPH
REQUIRED IMPACT VELOCITY RANGE: 28.9 TO 29.9 MPH
SEAT TYPE: Bucket ADJUSTER TYPE: Manual
FRONT SEAT BACK TYPE: Manual adjustable
TECHNICIANS: R. Benavides, B. Crabtree, & P. Cummins

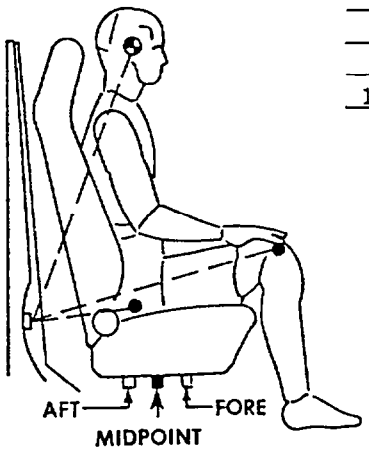
DRIVER DUMMY # 1173 TYPE: 572

HEAD	21.0
TARGET	4°
KNEE	23.8
JOINT	90°
APPROX-IMATE "H" POINT	9.0 / 107°

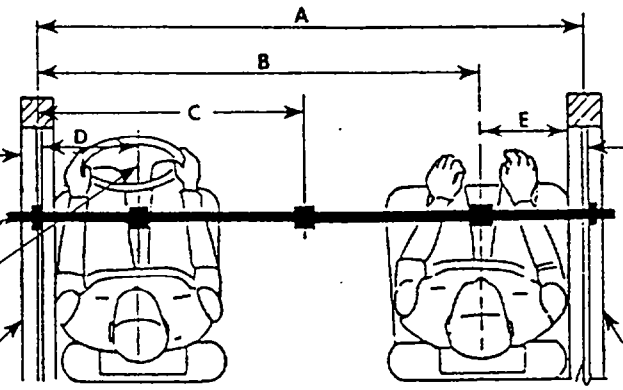


PASSENGER DUMMY # 353 TYPE: 572

22.5	HEAD
2°	TARGET
23.9	KNEE
87°	JOINT
9.1 / 105°	APPROX-IMATE "H" POINT



A = 53.2
B = 40.7
C = 26.6
D = 12.5
E = 12.5
DOOR GLASS HEIGHT = 10.0



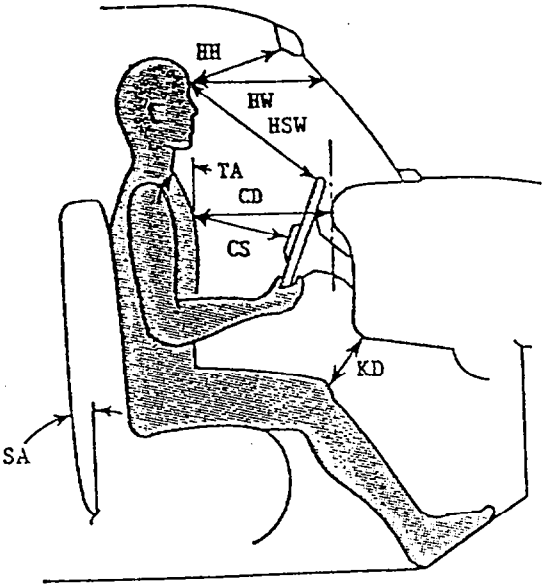
ALL ANGLES ARE RELATIVE TO VERTICAL PLANE THROUGH DOOR STRIKER.
ALL DISTANCE MEASUREMENTS ARE IN INCHES.

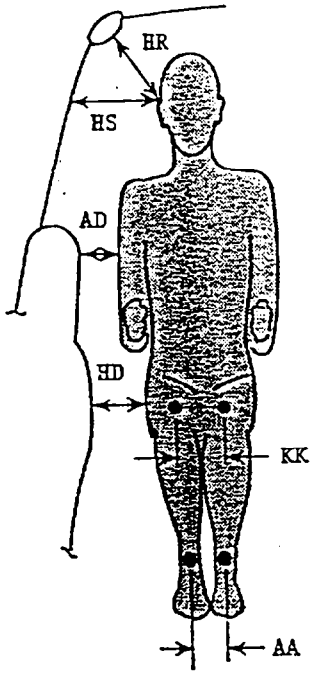
FIGURE 10 DUMMY IN VEHICLE POSITIONING DATA

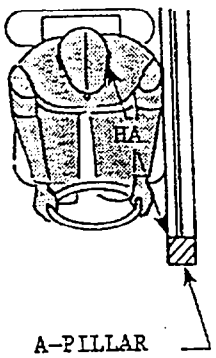
	DRIVER	PASSENGER
HH	14.0	12.1
HW	21.6	19.4
CD	21.2	20.6
CS	13.3	NA
KDL	3.5	3.2
KDR	3.2	2.8
TA	25°	21°
SA	21°	21°
HSW	20.0	NA

	DRIVER	PASSENGER
HR	5.8	5.2
HS	9.2	9.5
AD	3.5	4.0
HD	5.9	5.5
KK	10.5	7.5
AA	12.5	7.8
HA	22.2	19.0

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





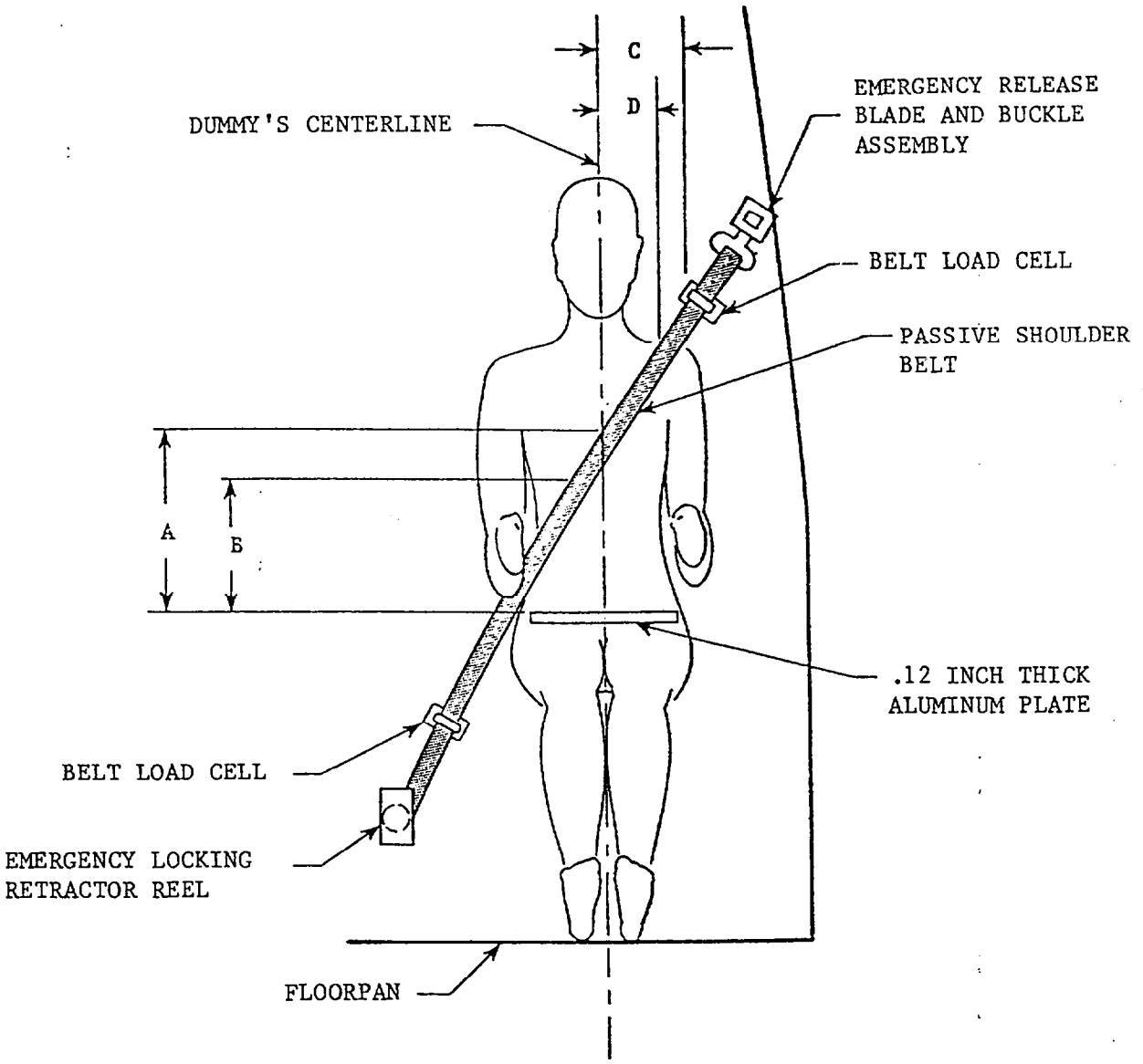


HH = HEAD TO WINDSHIELD HEADER
HW = HEAD TO WINDSHIELD
CD = CHEST TO DASH
CS = CHEST TO STEERING WHEEL
KD = KNEE TO DASH
TA = TORSO ANGLE
SA = SEAT BACK ANGLE
HSW= HEAD TO STEERING WHEEL

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.

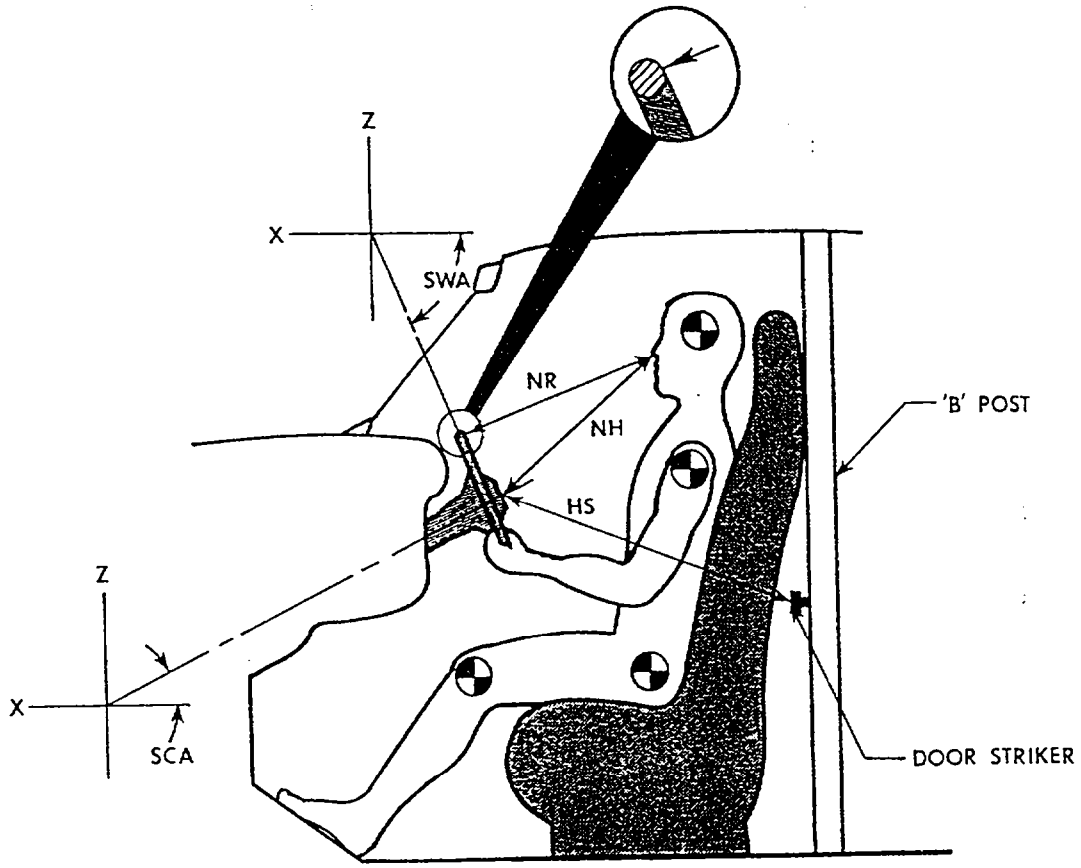
FIGURE 11 SEAT BELT POSITIONING DATA



	DRIVER DUMMY	PASSENGER DUMMY
A - Top surface of alum. plate to belt upper edge (in)	14.5	14.5
B - Top surface of alum. plate to belt lower edge (in)	11.2	11.5
C - Dummy centerline to outer edge of belt at chest flesh top (in)	5.0	5.0
D - Dummy centerline to inner edge of belt at chest flesh top (in)	2.5	2.5

ALL 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 latched at the mid-point of the infinitely-adjustable tilt range.

	MEASUREMENTS
NR - DISTANCE FROM TIP OF DUMMY'S NOSE TO TOP REAR SURFACE OF STEERING WHEEL RIM.	18.0
NH - DISTANCE FROM TIP OF DUMMY'S NOSE TO CENTER OF STEERING COLUMN HUB.	19.0
HS - DISTANCE FROM CENTER OF STEERING COLUMN HUB TO THE FORWARD SURFACE OF THE DOOR LOCK STRIKER PIN.	23.2
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

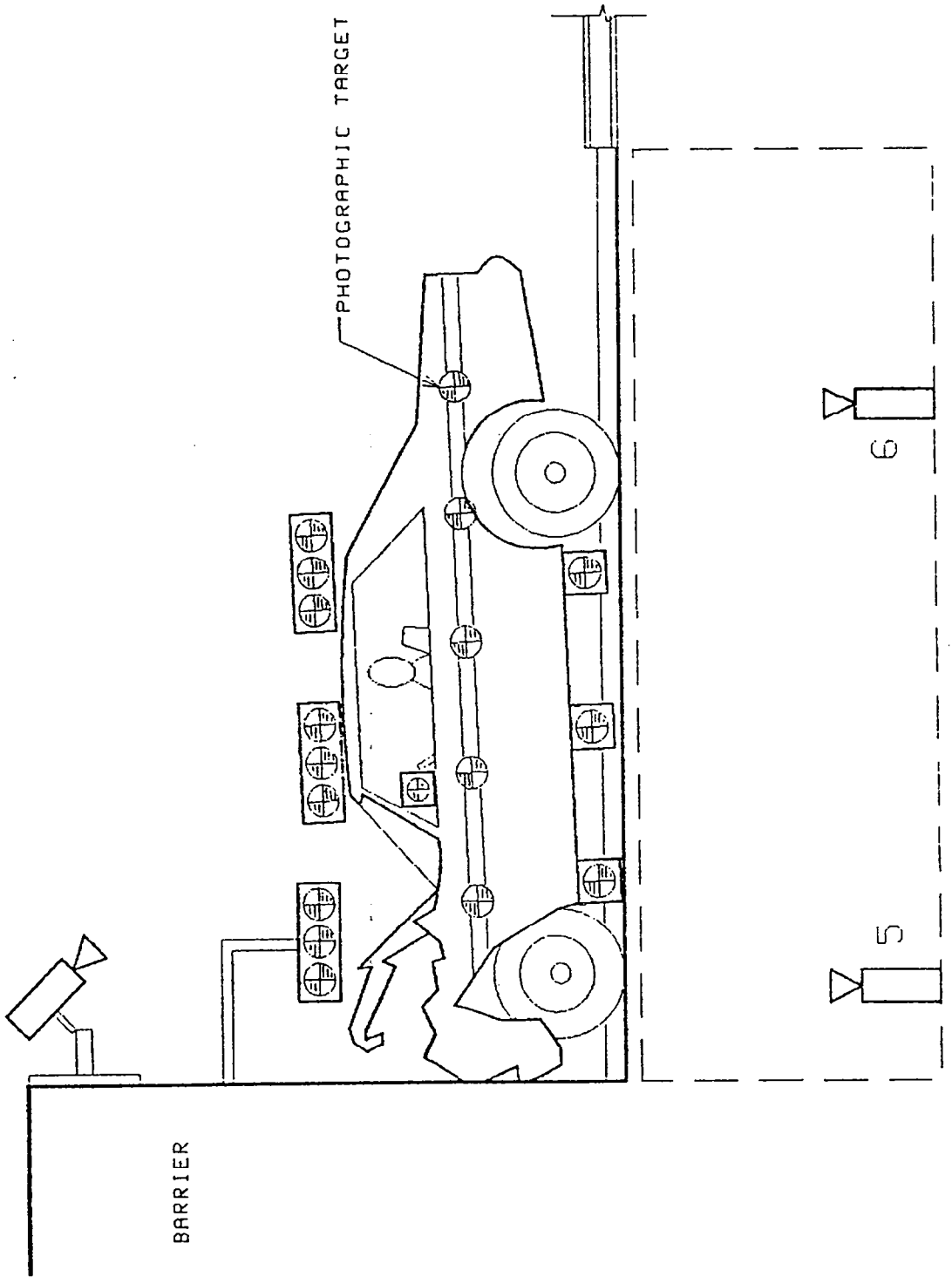


FIGURE 13

CAMERA POSITIONS, CONTINUED

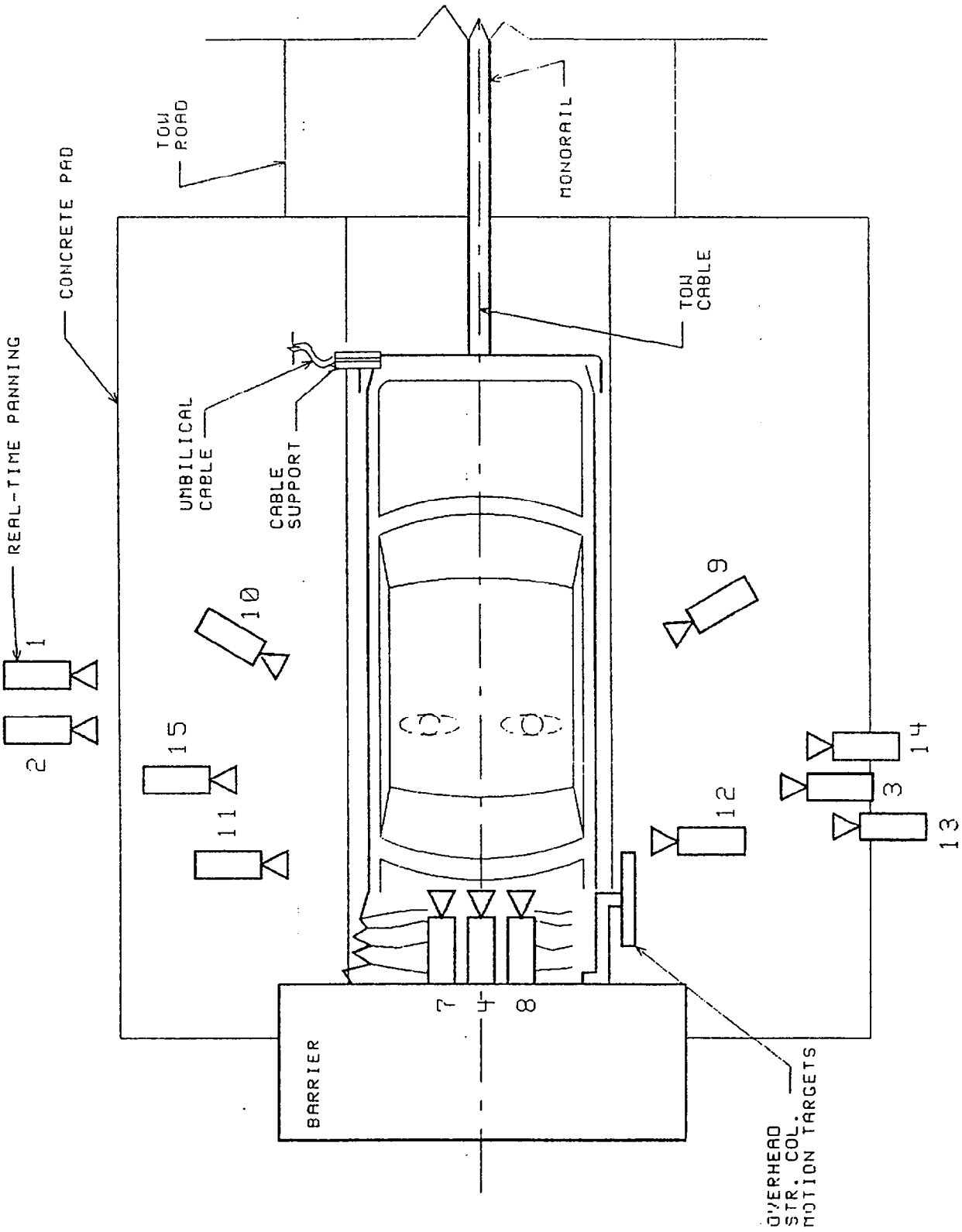


TABLE 14 MOTION PICTURE CAMERA LOCATIONS

TEST NO.: 910206 VEHICLE: Mitsubishi Galant 4-door sedan

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	498
3	Left vehicle crush	-41.5	295.0	44.0	-4	203.0	25	1000
4	Windshield front view	-6.0	0.0	97.0	-40	NA	8.5	500
5	Pit front position	-50.5	0.0	-92.4	90	NA	13	998
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	498
8	Driver front view	-6.8	14.5	93.0	-50	NA	17	498
9	Driver kinematics	-157.3	116.0	87.0	-27	90.0	25	500
10	Passenger kinematics	-152.1	-116.0	87.0	-26	76.0	25	502
11	Right windshield intrusion	-38.1	-306.1	44.0	0	NA	50	505
12	Left windshield instrusion	-53.0	309.4	42.3	0	NA	50	500
13	Steering column motion	-100.0	280.0	103.0	-14	NA	25	500
14	Steering column motion	-100.0	280.0	75.1	-9	NA	25	500
15	Passenger kinematics	-38.8	-293.0	45.3	-4	217.0	25	500
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

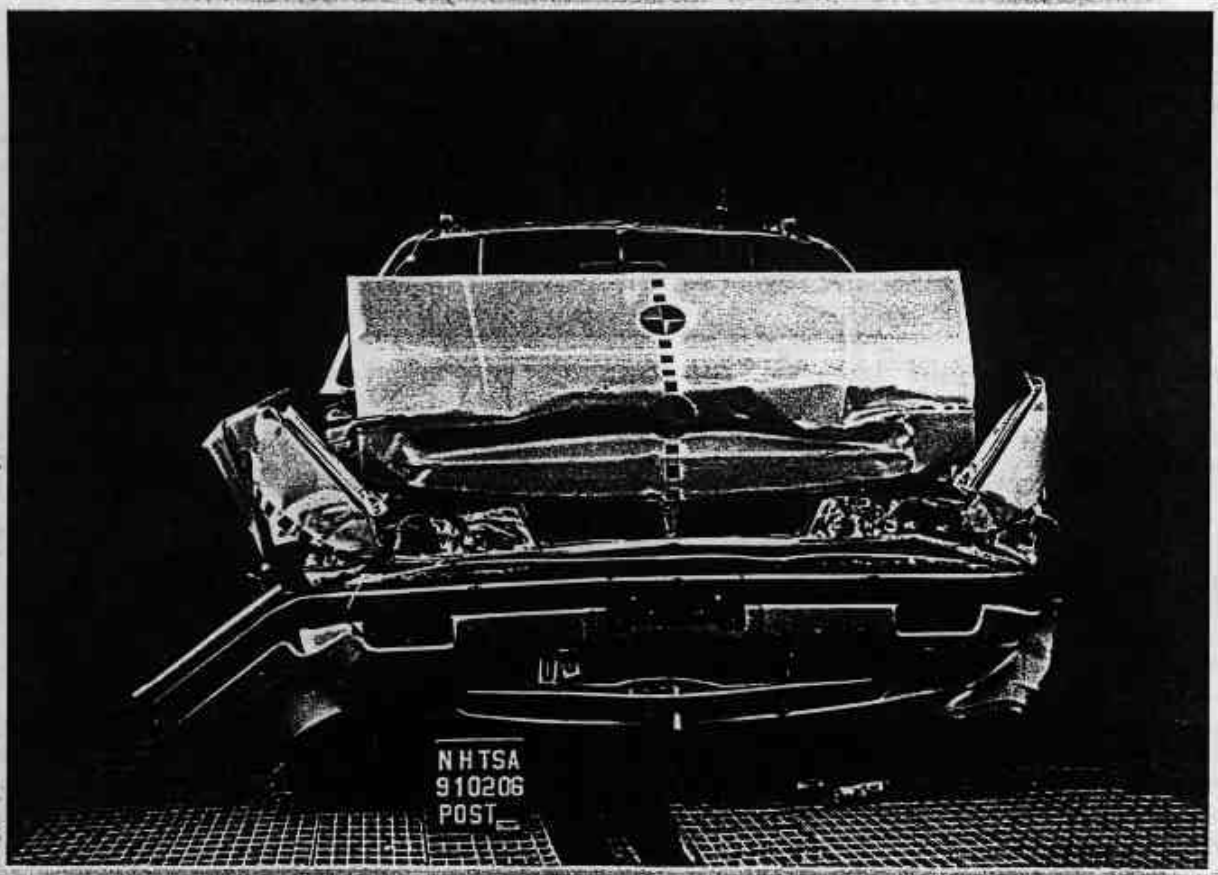


Figure A-2. POST-TEST FRONT VIEW

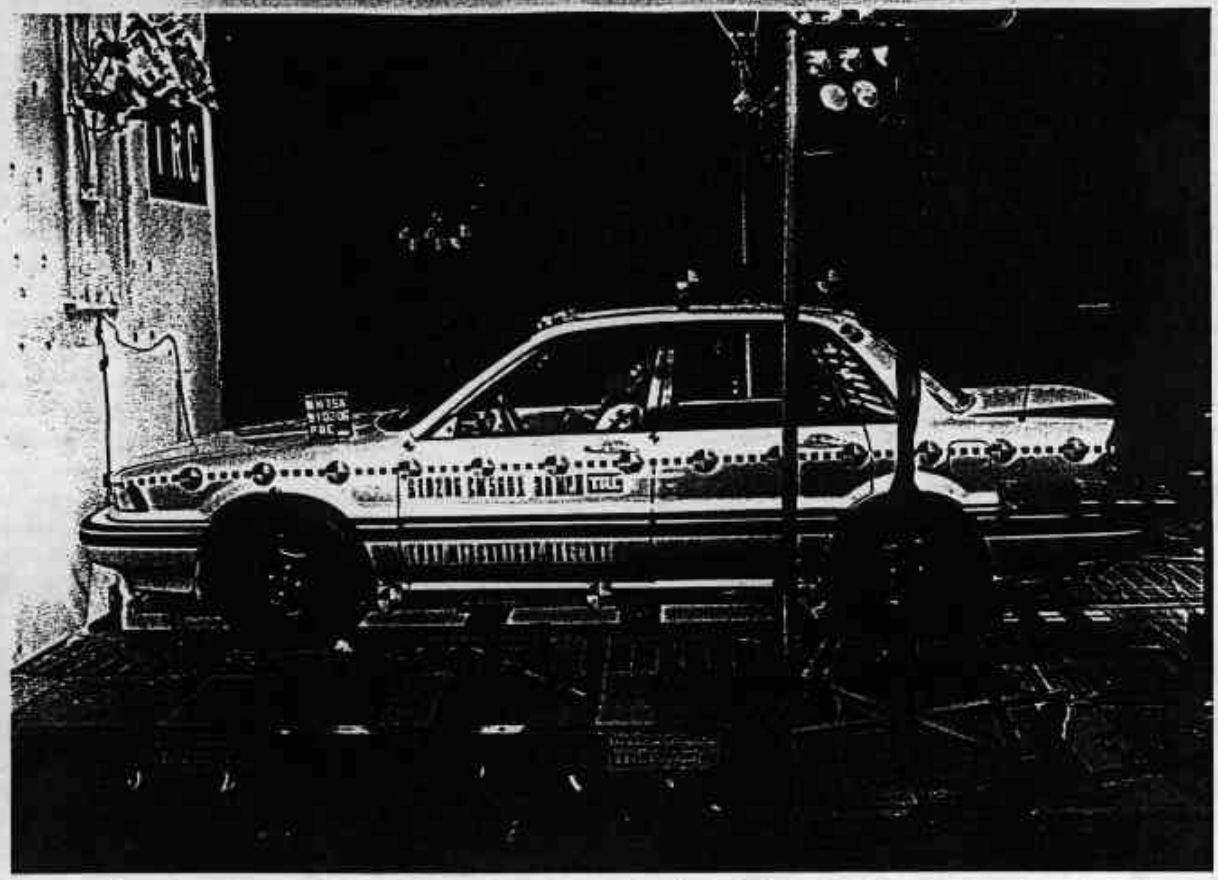


Figure A-3. PRE-TEST LEFT SIDE VIEW

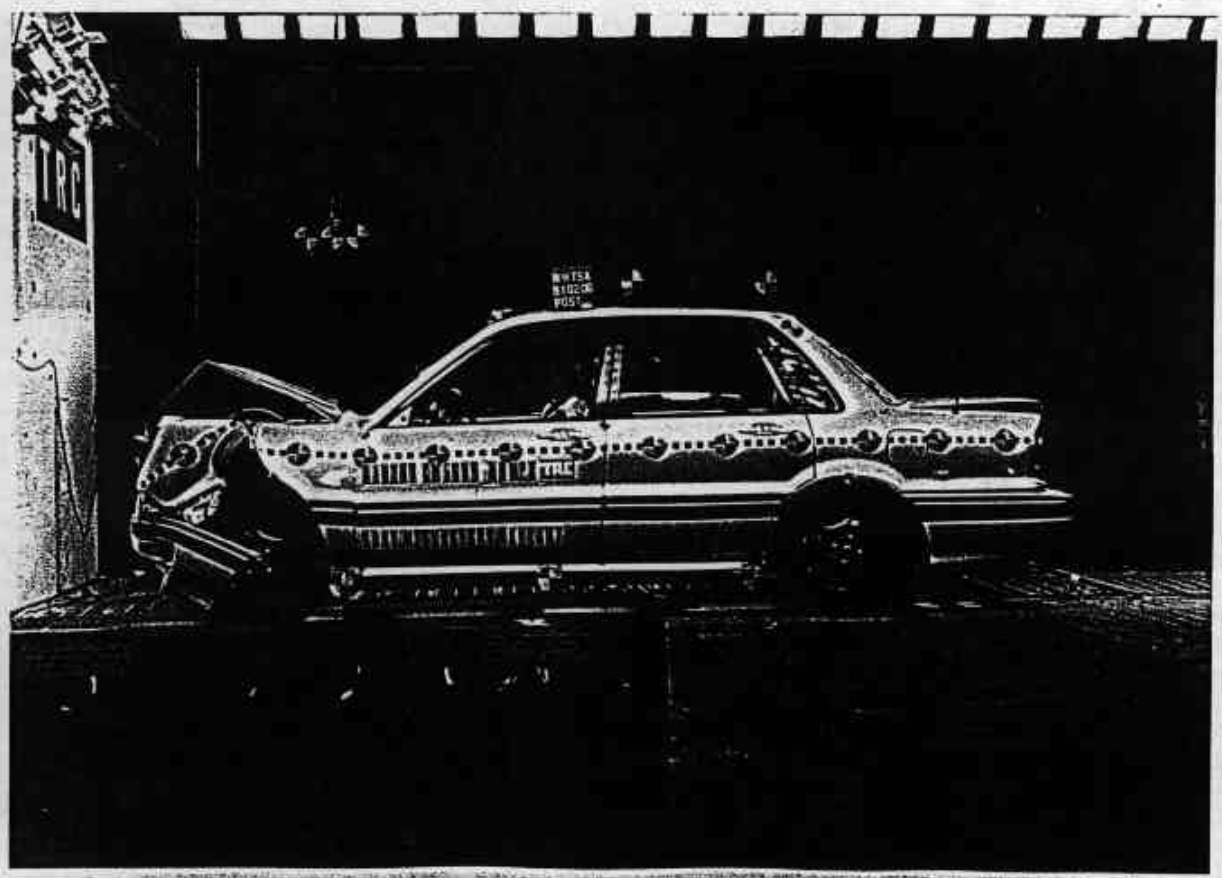


Figure A-4. POST-TEST LEFT SIDE VIEW

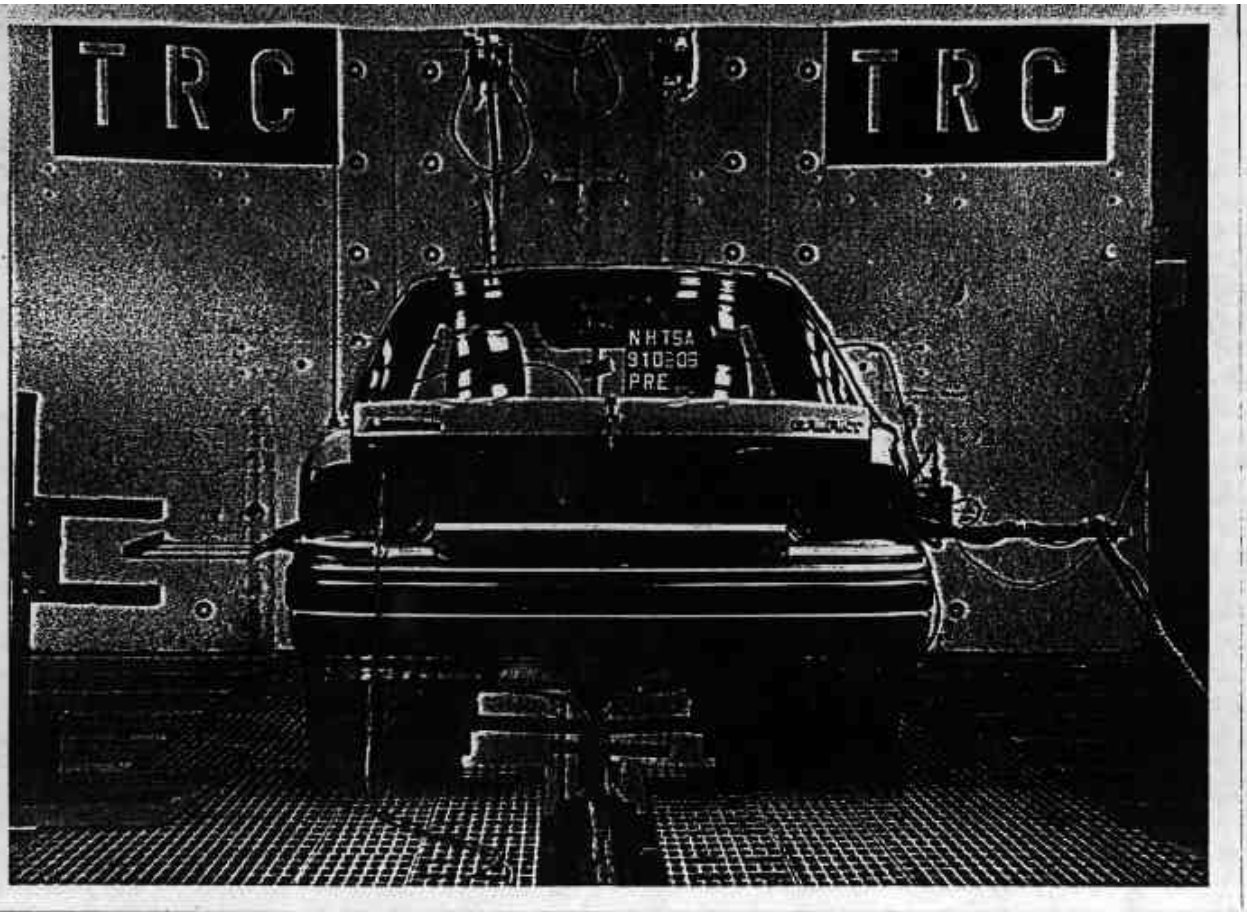


Figure A-5. PRE-TEST REAR VIEW

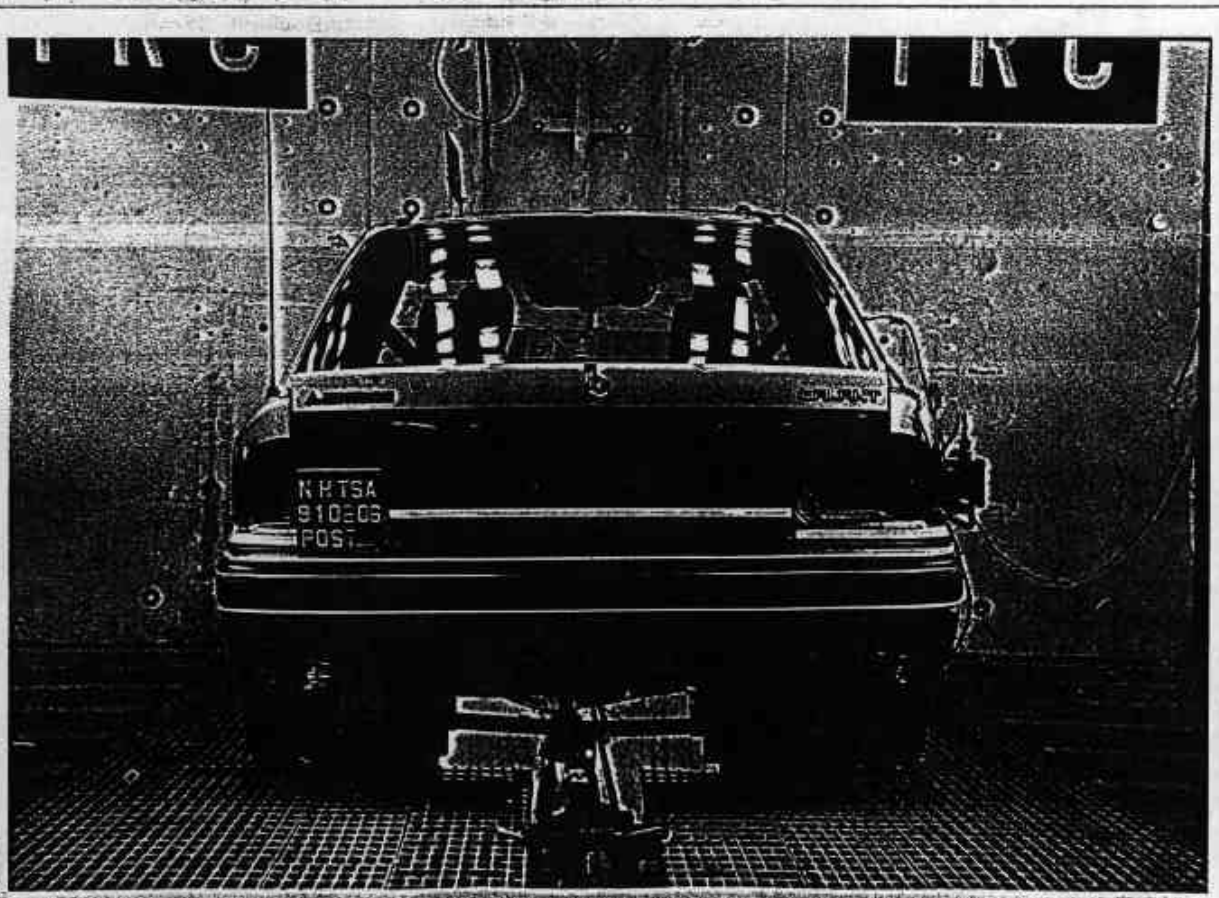


Figure A-6. POST-TEST REAR VIEW

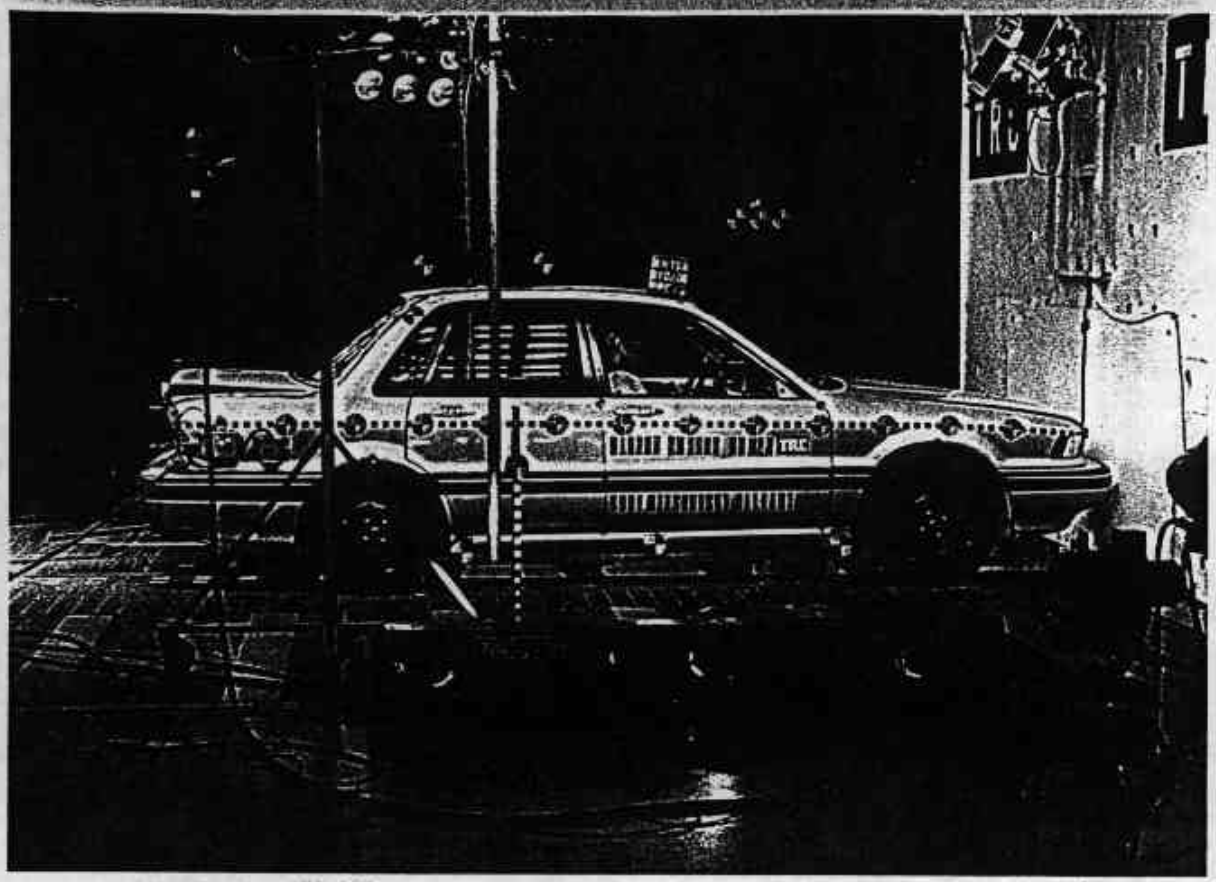


Figure A-7. PRE-TEST RIGHT SIDE VIEW

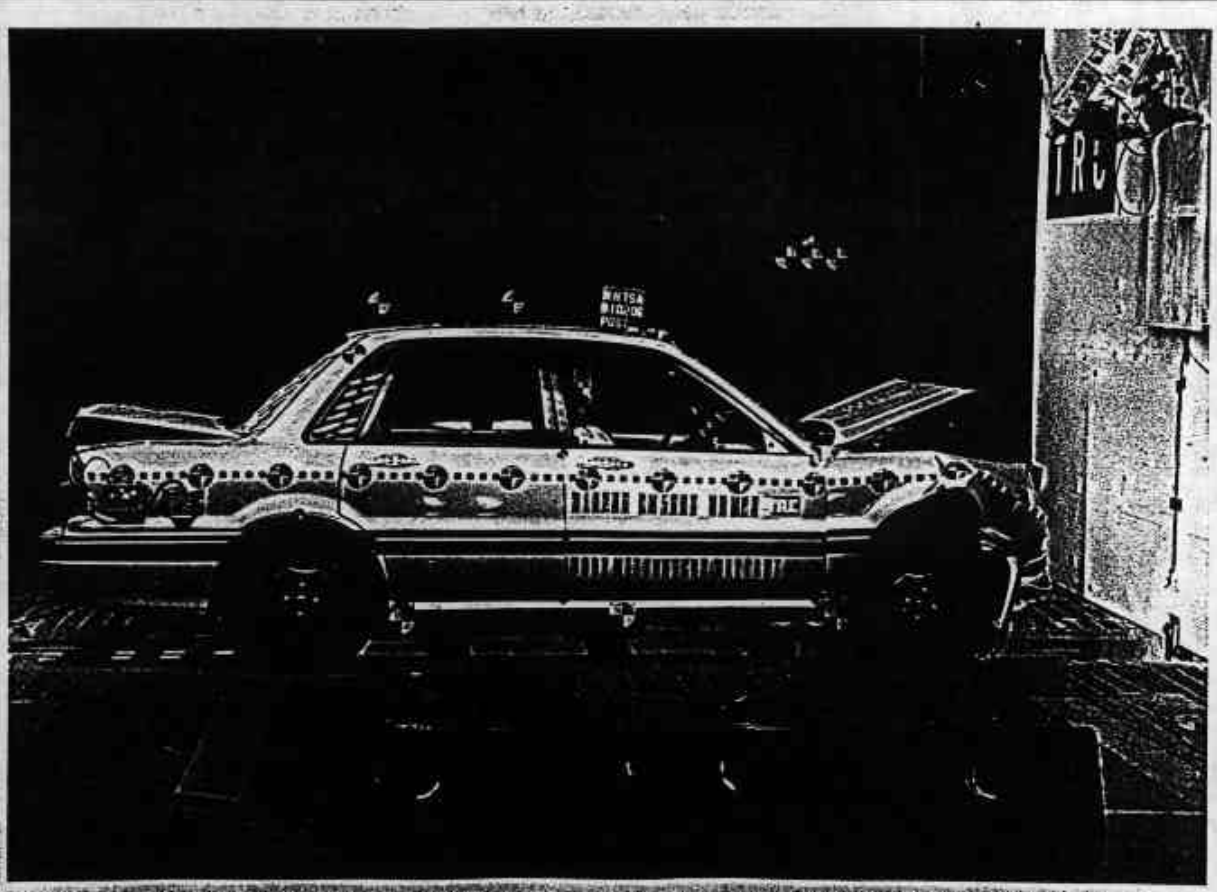


Figure A-8. POST-TEST RIGHT SIDE VIEW

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

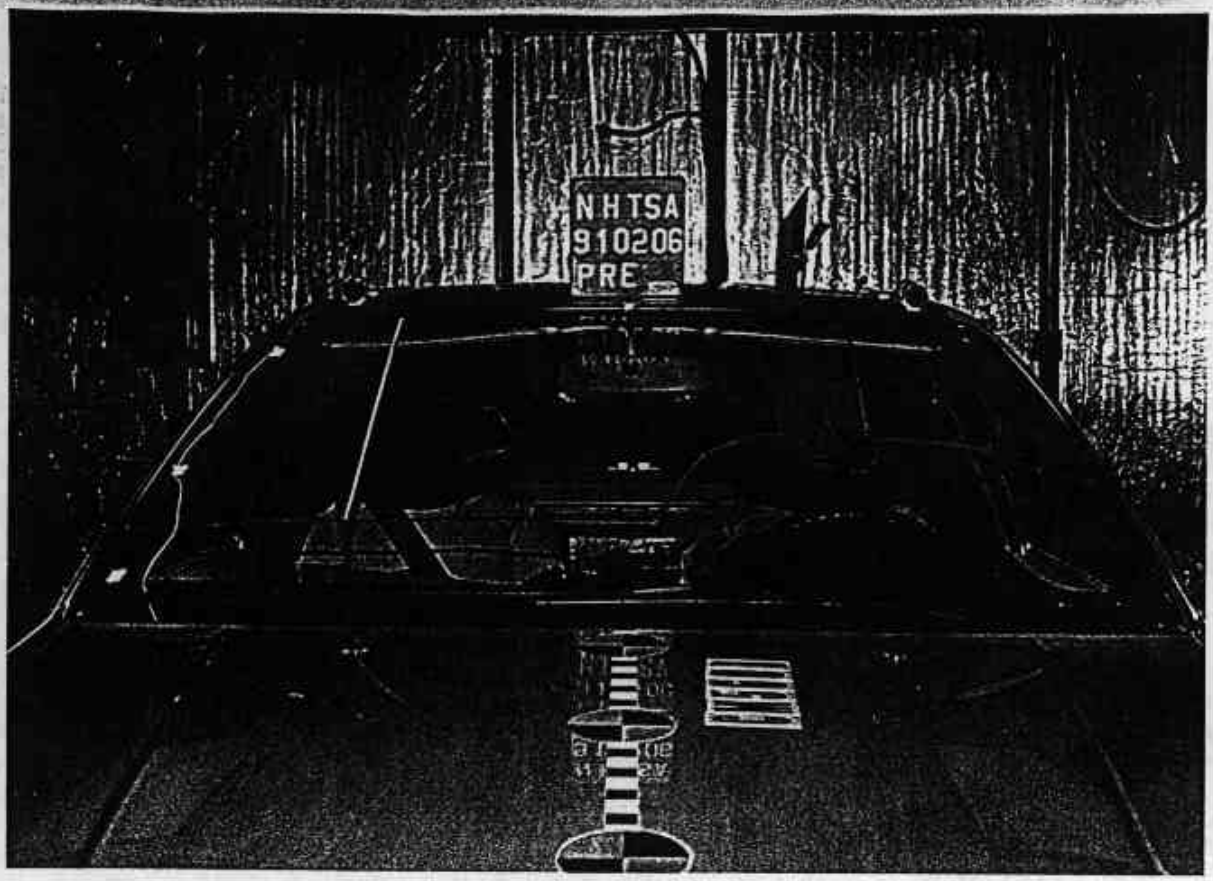


Figure A-13. PRE-TEST WINDSHIELD VIEW

Figure A-14. POST-TEST WINDSHIELD VIEW

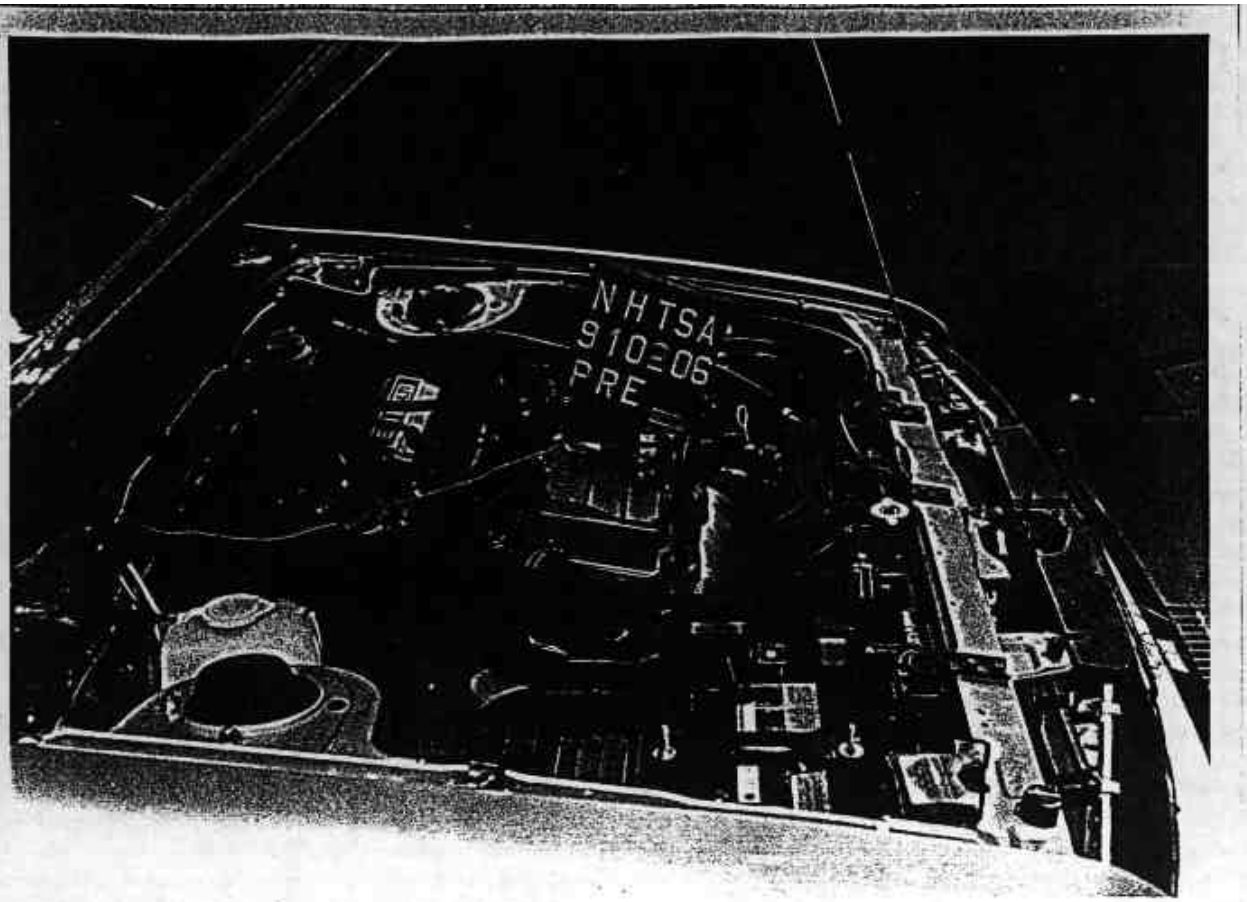


Figure A-15. PRE-TEST ENGINE COMPARTMENT VIEW

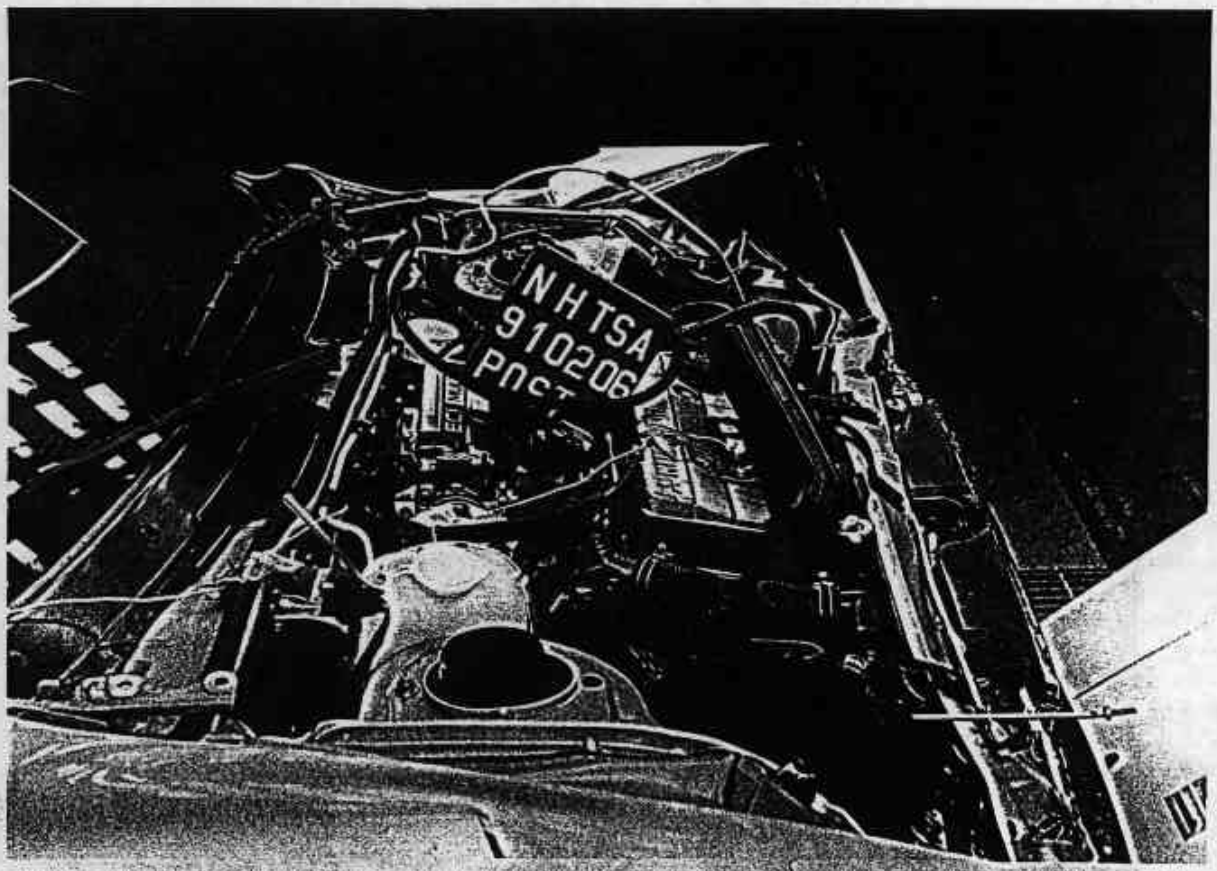


Figure A-16. POST-TEST ENGINE COMPARTMENT VIEW

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

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

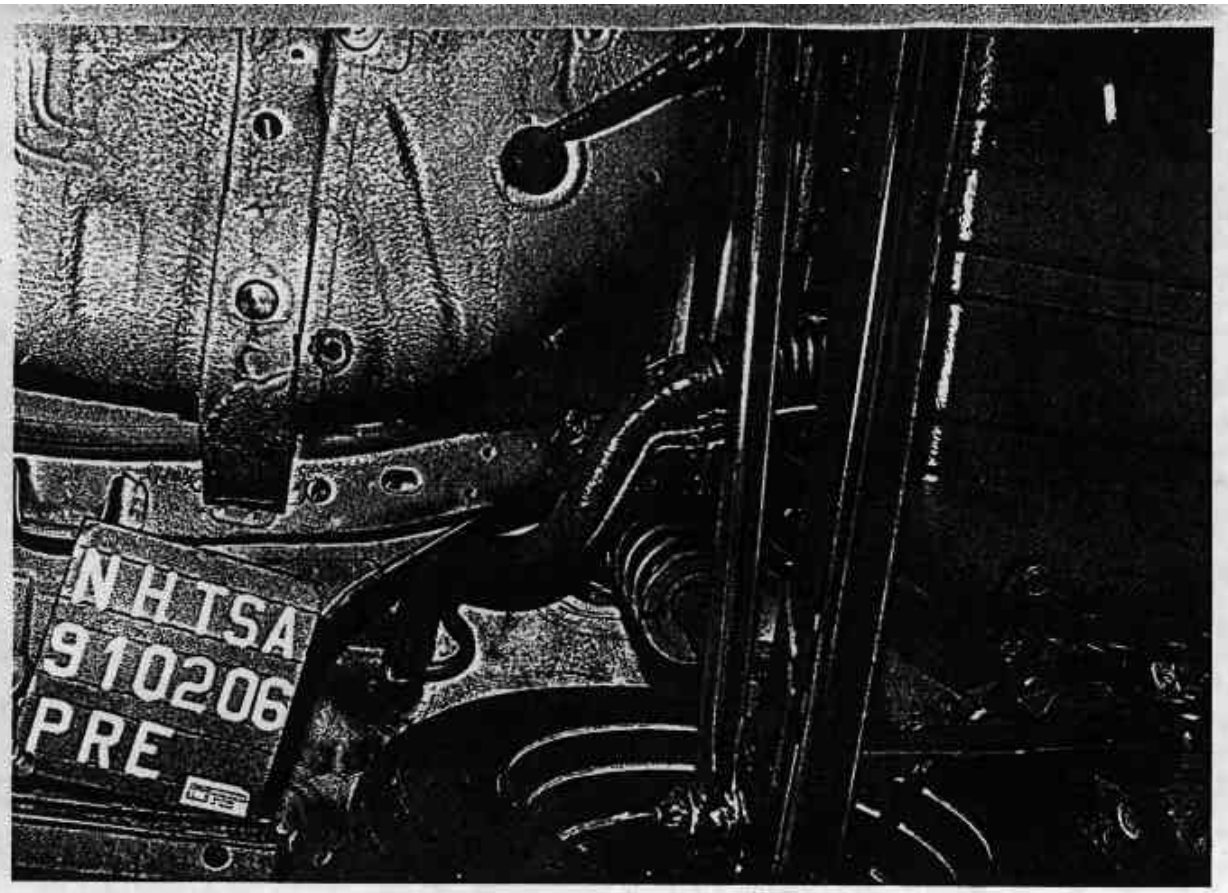


Figure A-19. PRE-TEST FUEL FILLER NECK VIEW

Figure A-20. PRE-TEST FUEL TANK VIEW

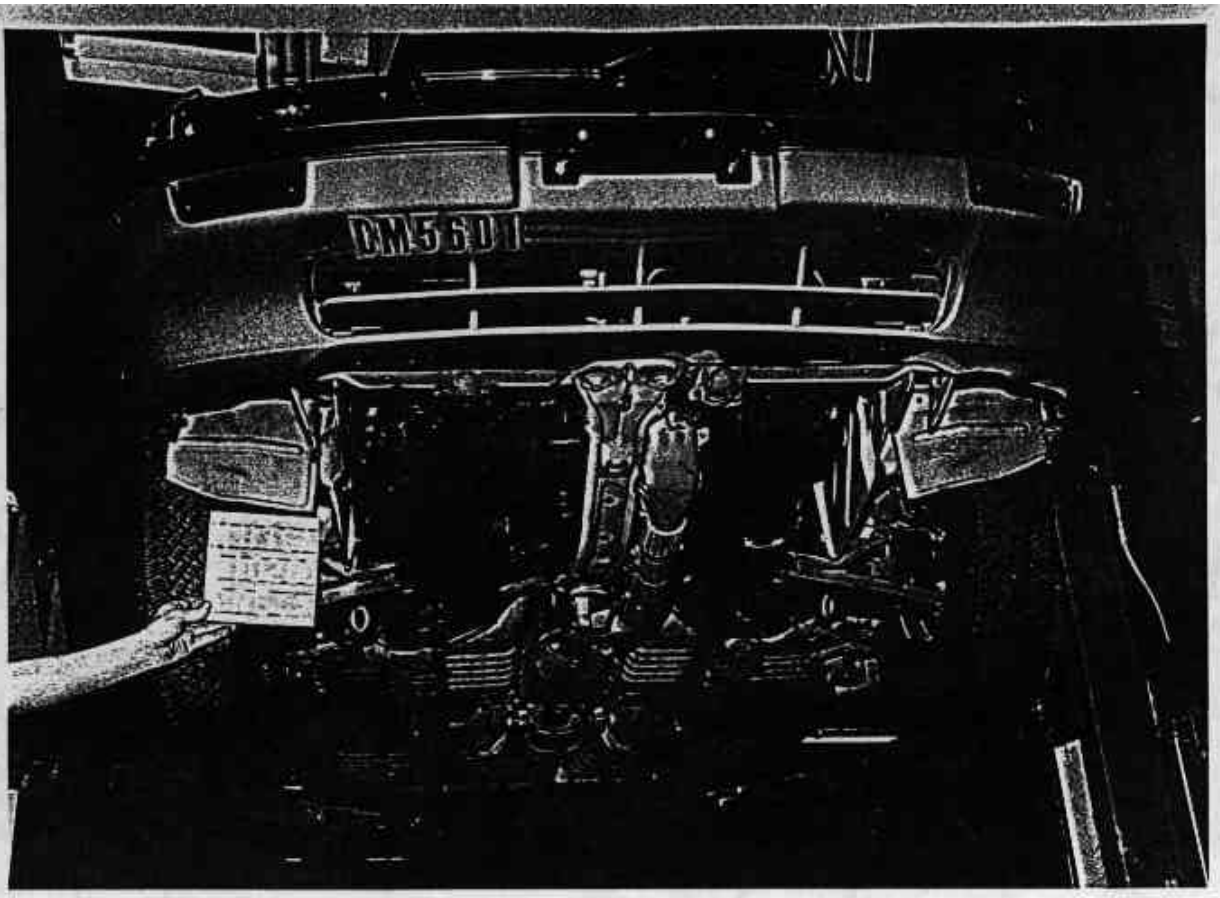


Figure A-21. PRE-TEST FRONT UNDERBODY VIEW

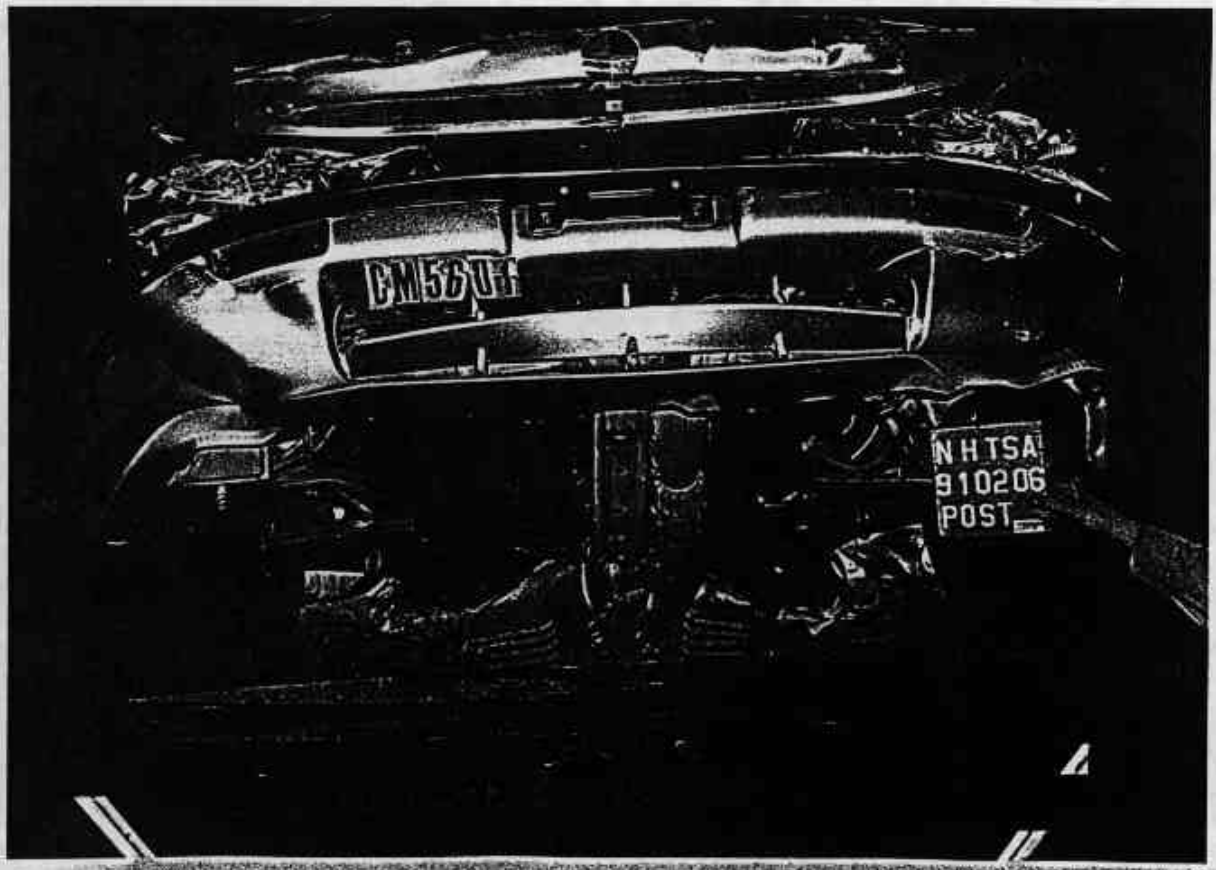


Figure A-22. POST-TEST FRONT UNDERBODY VIEW

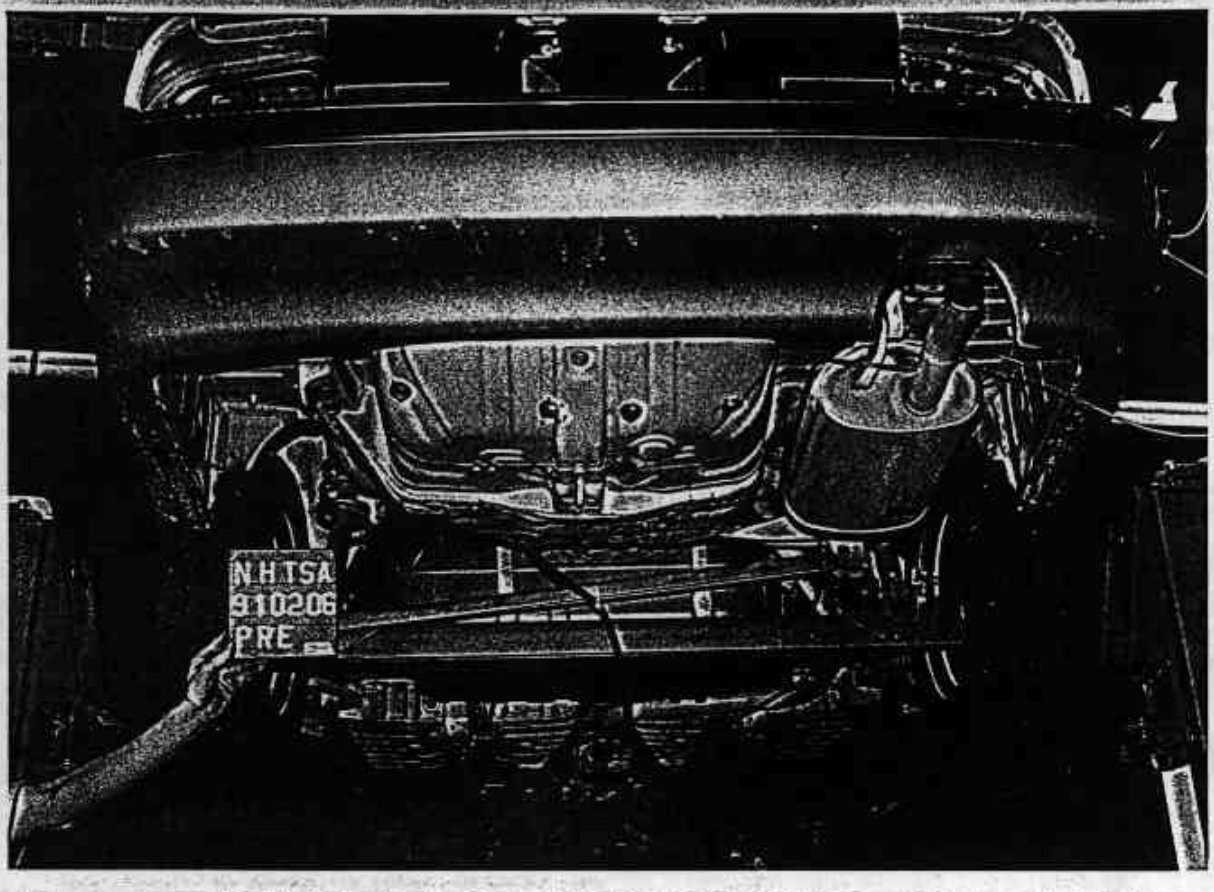


Figure A-23. PRE-TEST REAR UNDERBODY VIEW

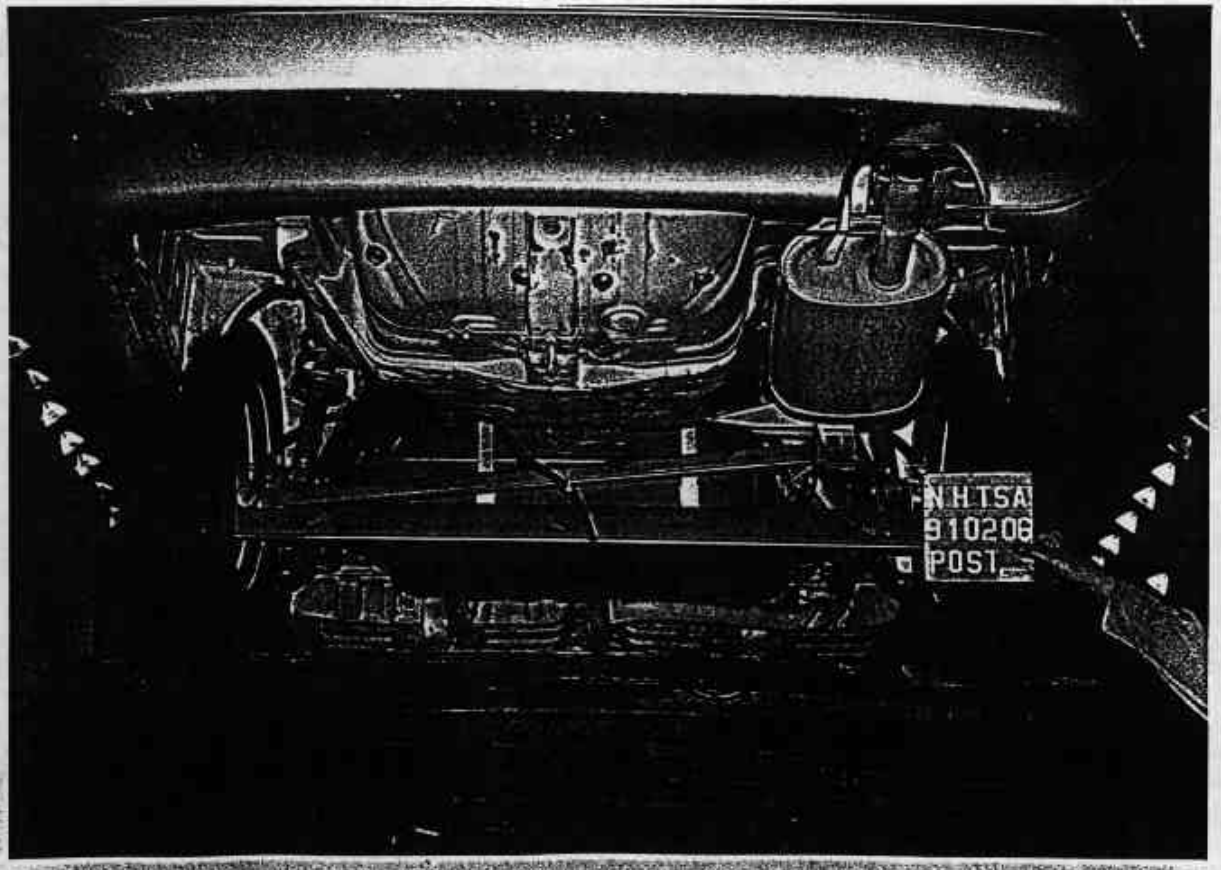


Figure A-24. POST-TEST REAR UNDERBODY VIEW

Figure A-25. PRE-TEST DRIVER DUMMY POSITION VIEW

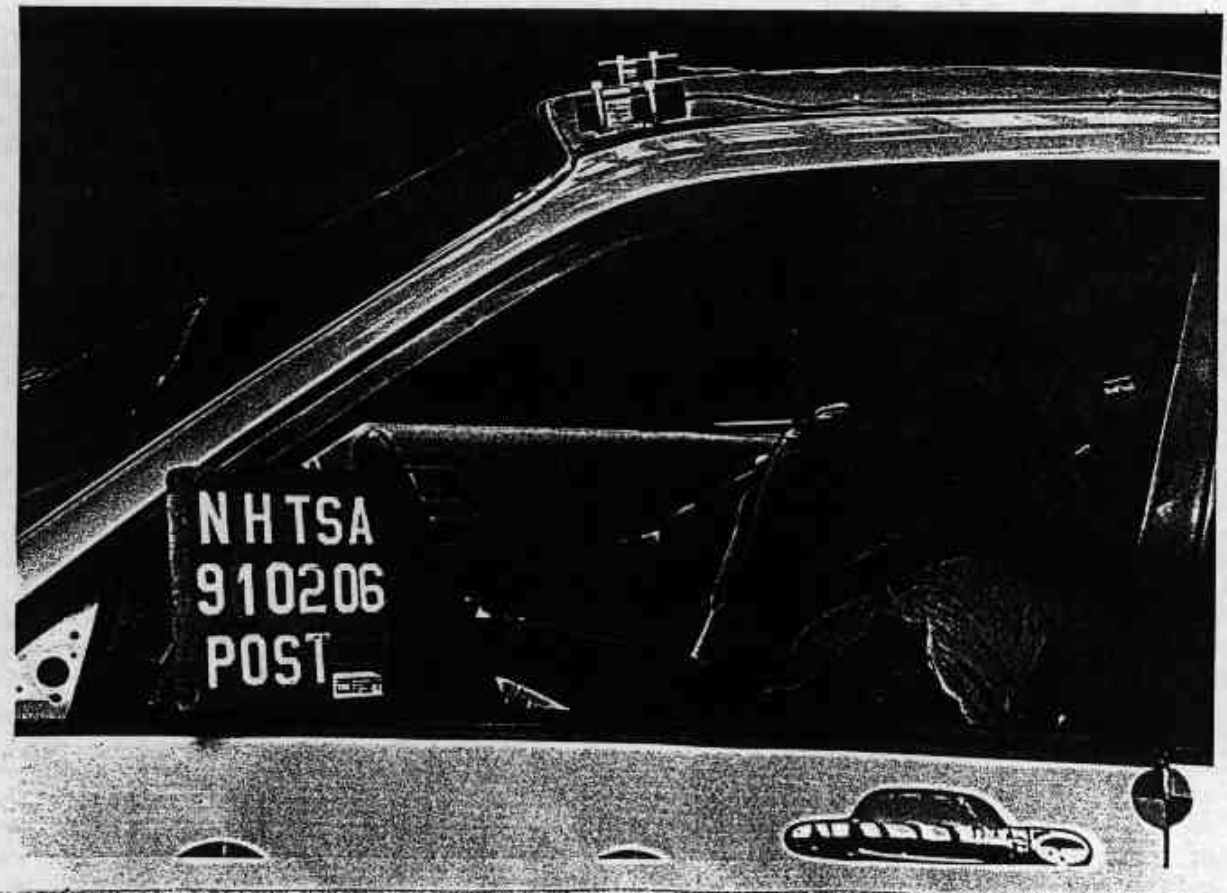


Figure A-26. POST-TEST DRIVER DUMMY POSITION VIEW

Figure A-27. PRE-TEST PASSENGER DUMMY POSITION VIEW

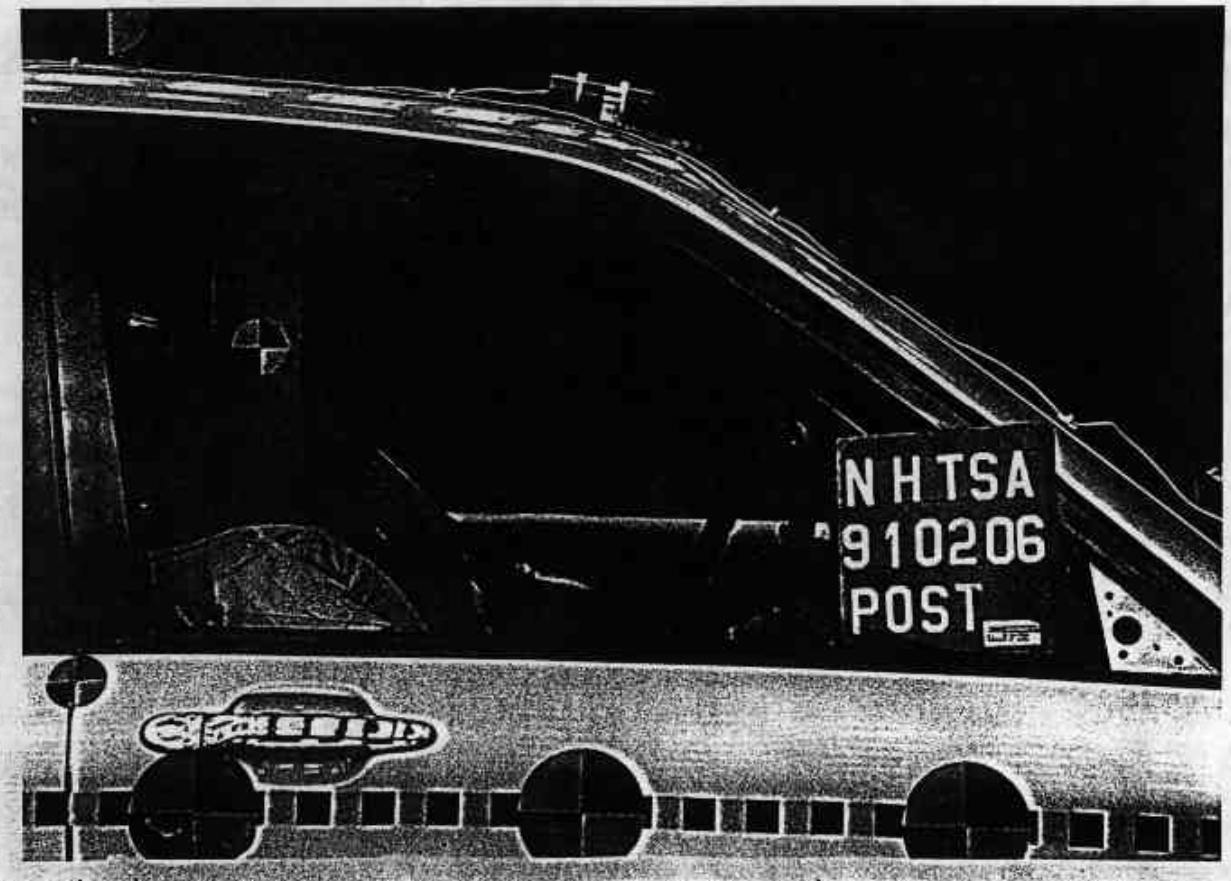


Figure A-28. POST-TEST PASSENGER DUMMY POSITION VIEW

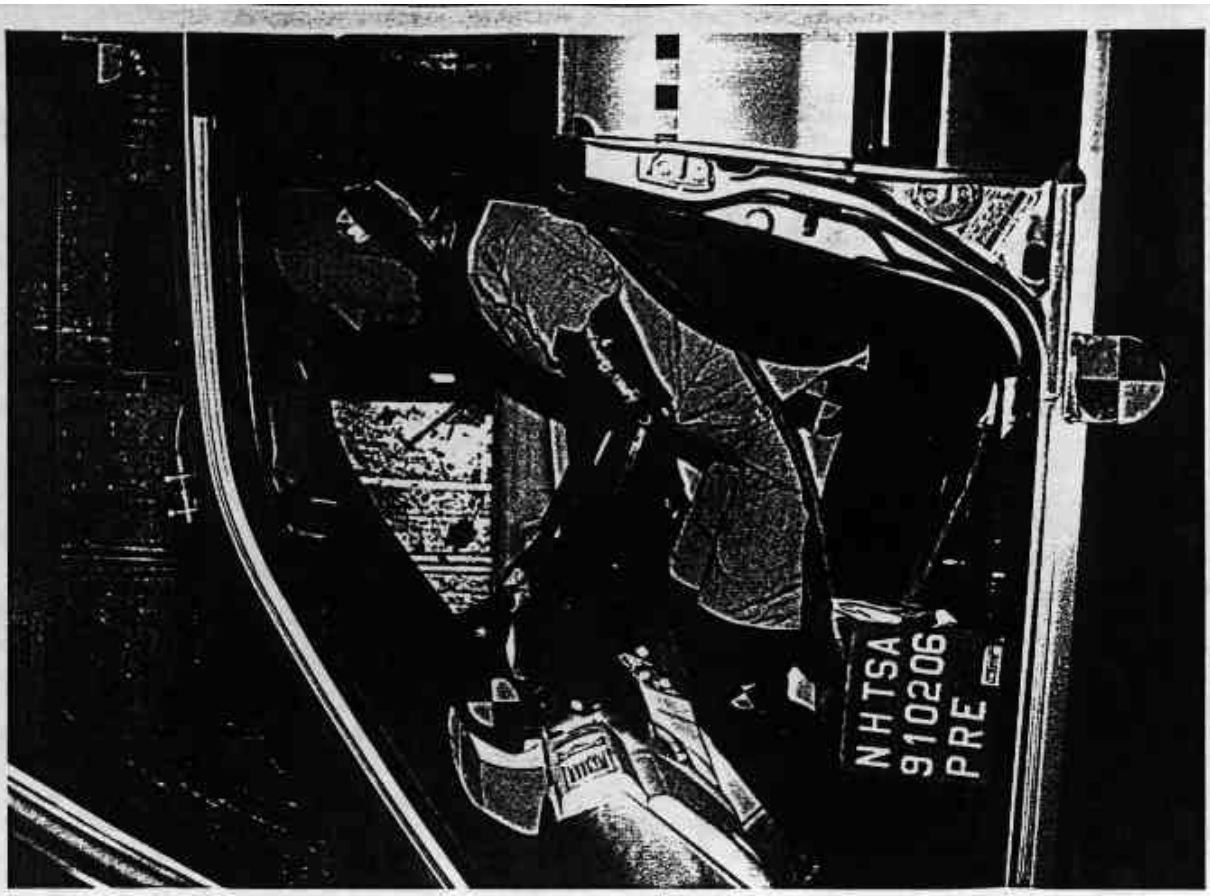


Figure A-29. PRE-TEST DRIVER DUMMY & VEHICLE INTERIOR - VIEW 1

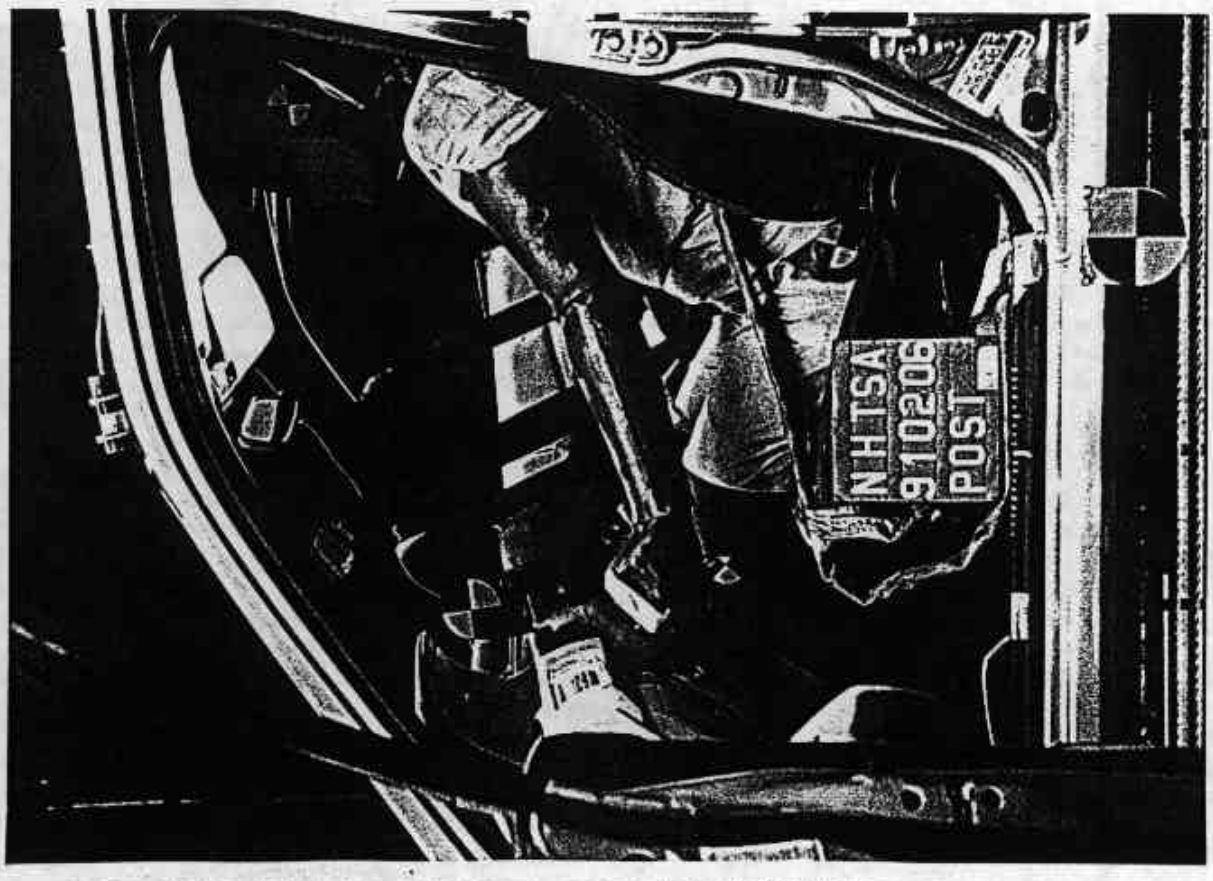


Figure A-30. POST-TEST DRIVER DUMMY & VEHICLE INTERIOR - VIEW 1

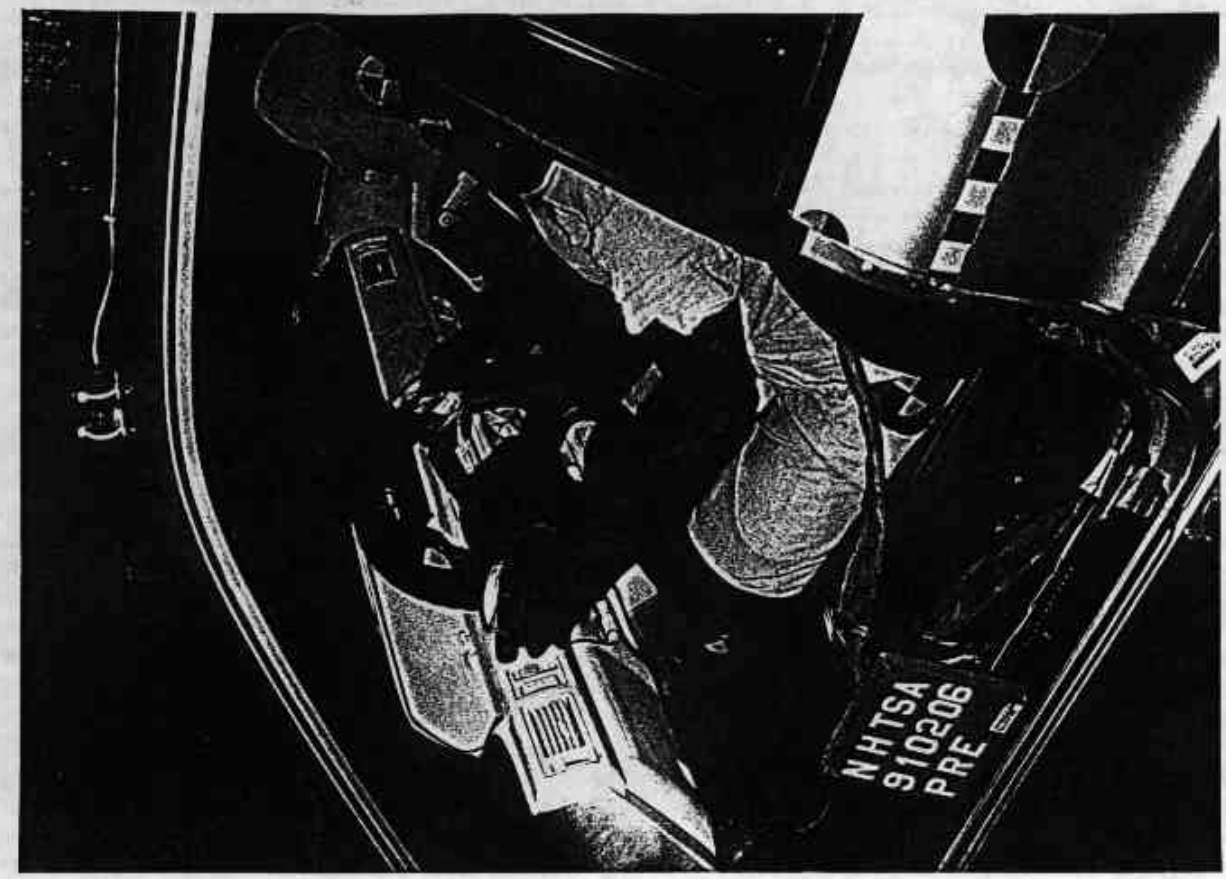


Figure A-31. PRE-TEST DRIVER DUMMY & VEHICLE INTERIOR - VIEW 2

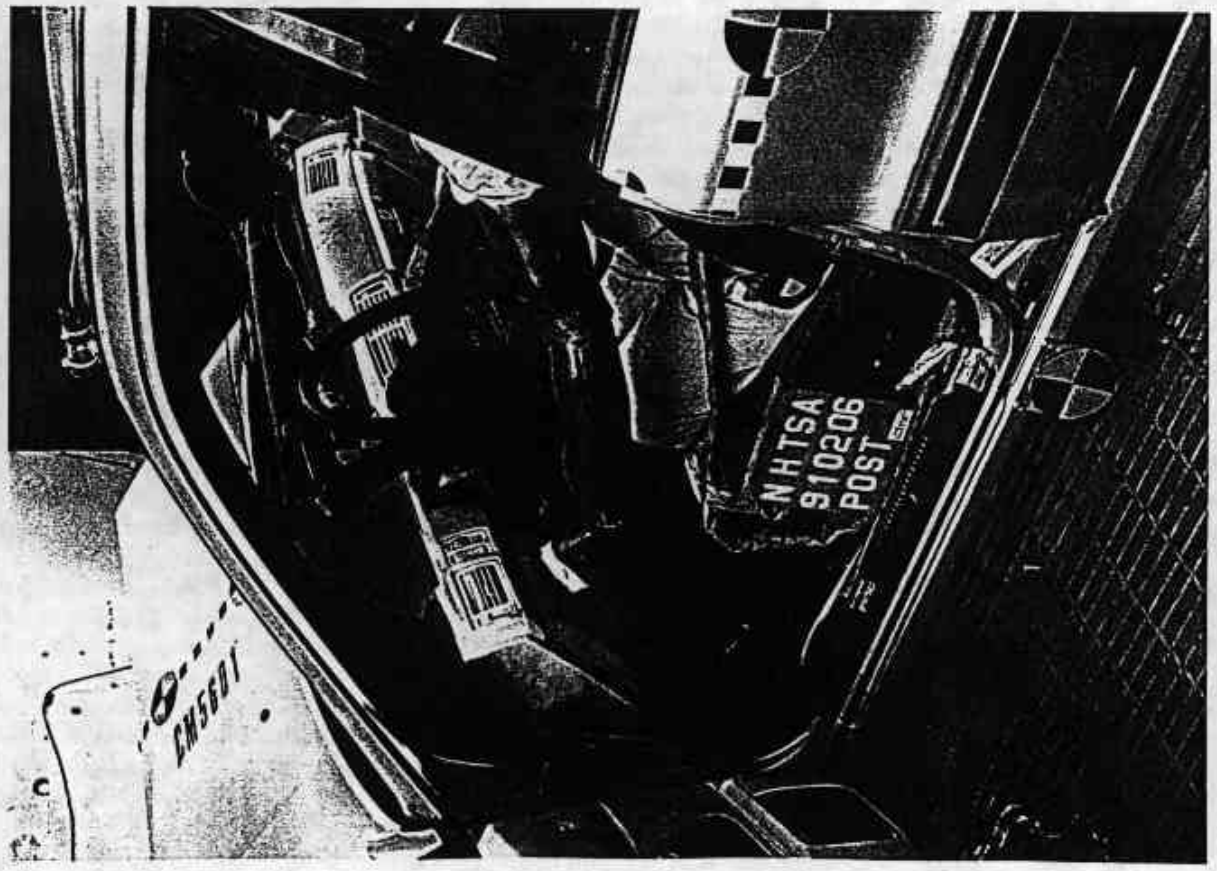


Figure A-32. POST-TEST DRIVER DUMMY & VEHICLE INTERIOR - VIEW 2

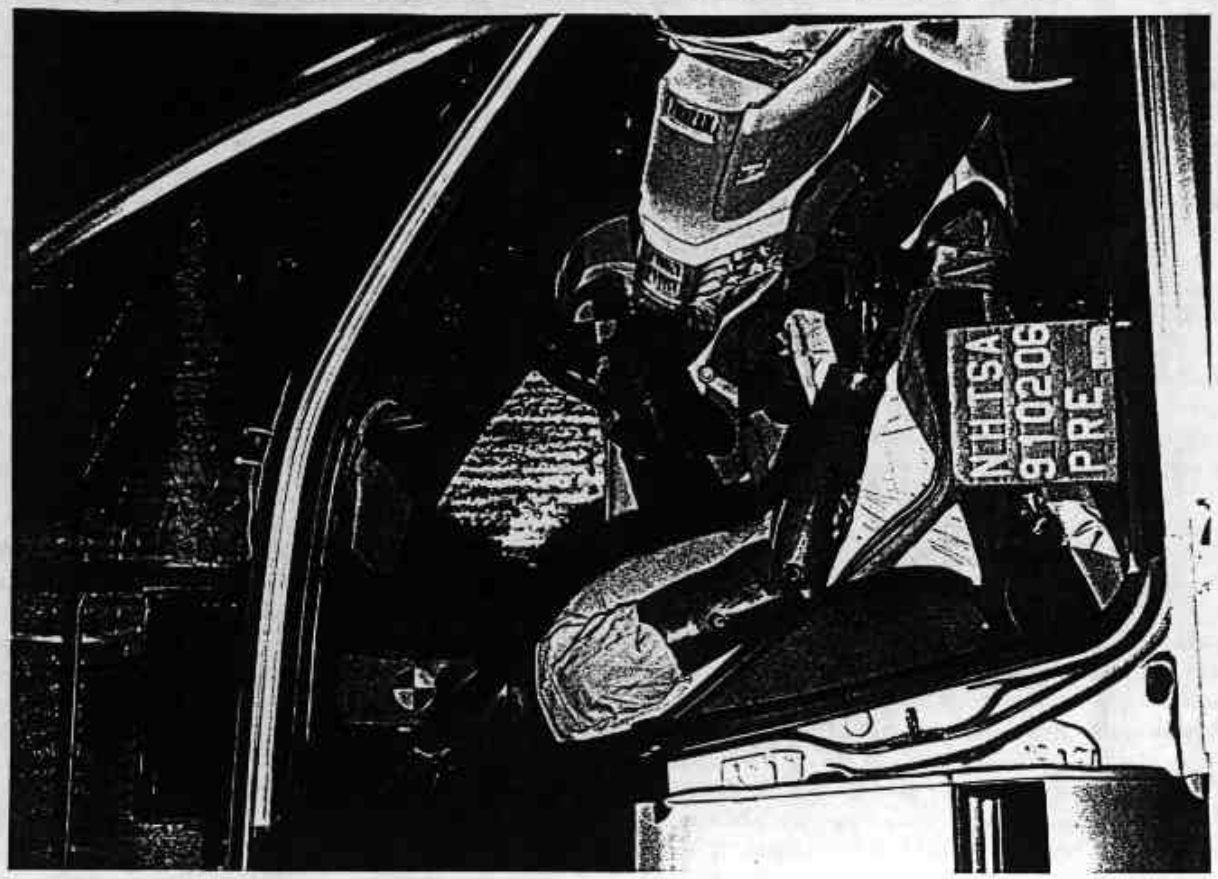


Figure A-33. PRE-TEST PASSENGER DUMMY & VEHICLE INTERIOR - VIEW 1

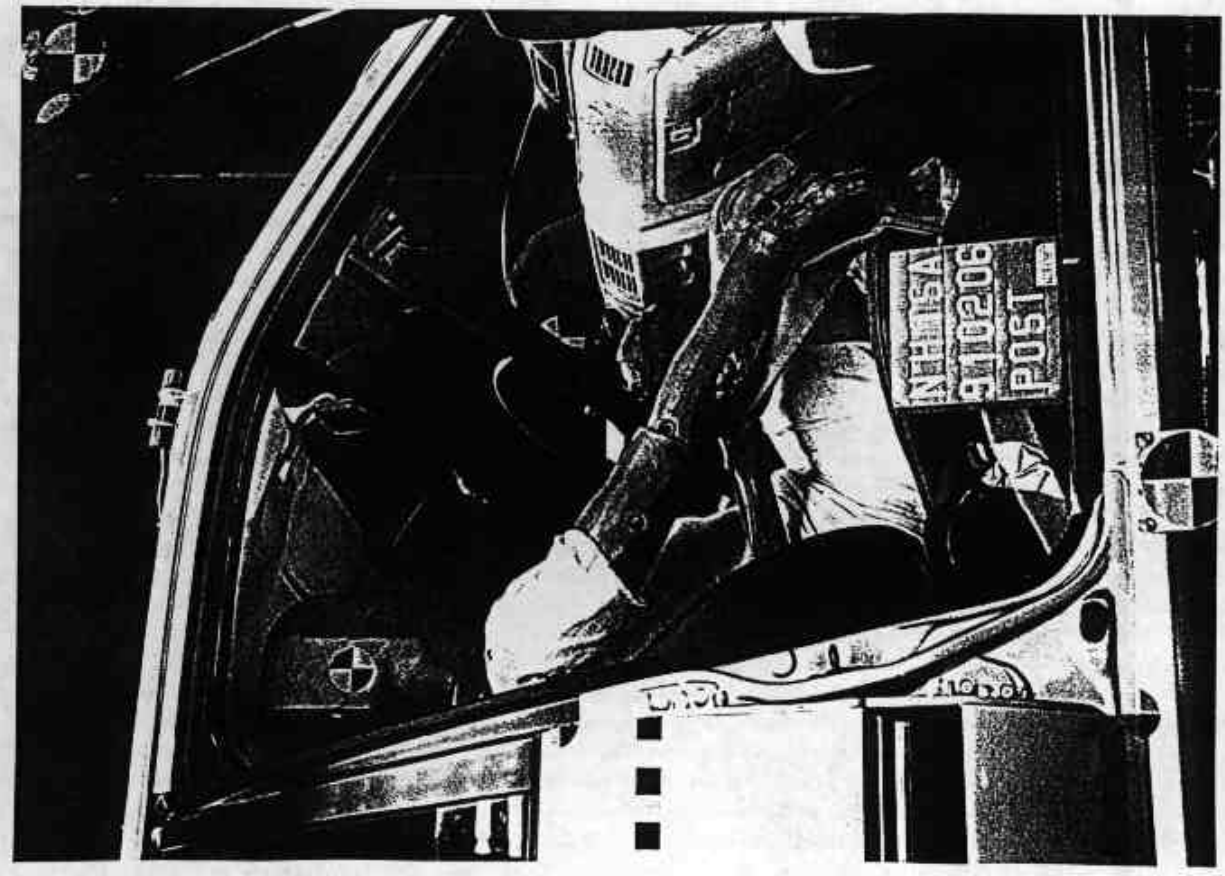


Figure A-34. POST-TEST PASSENGER DUMMY & VEHICLE INTERIOR - VIEW 1

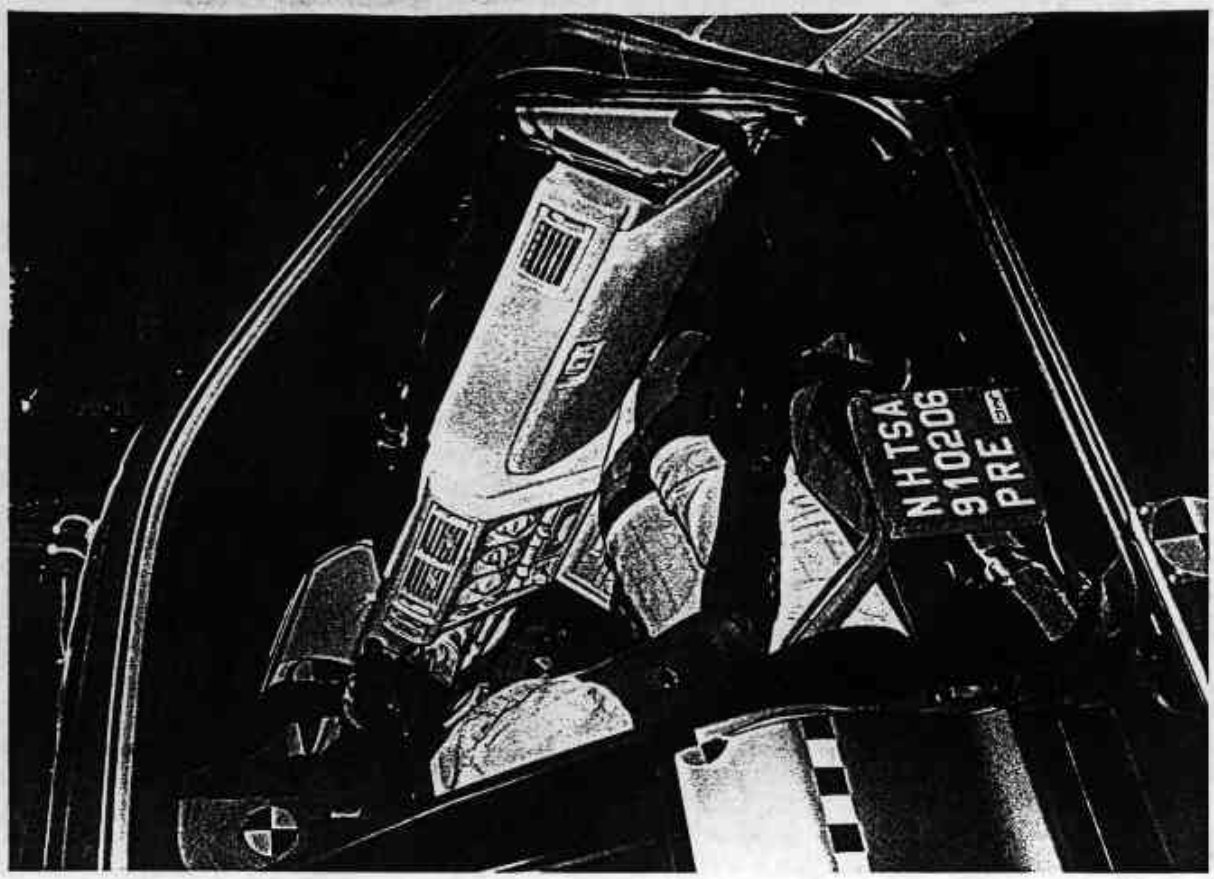


Figure A-35. PRE-TEST PASSENGER DUMMY & VEHICLE INTERIOR - VIEW 2

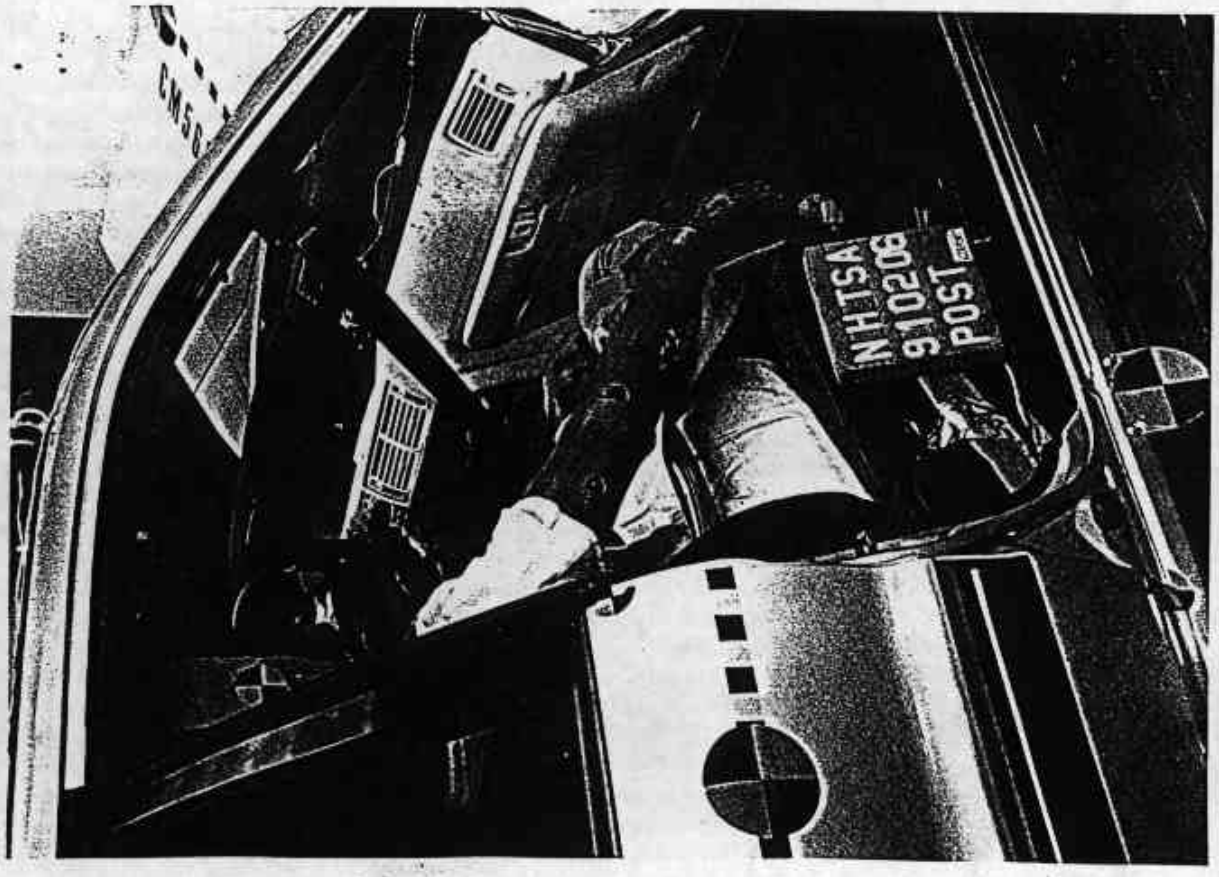


Figure A-36. POST-TEST PASSENGER DUMMY & VEHICLE INTERIOR - VIEW 2

Figure A-37. POST-TEST DRIVER DUMMY HEAD CONTACT VIEW

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

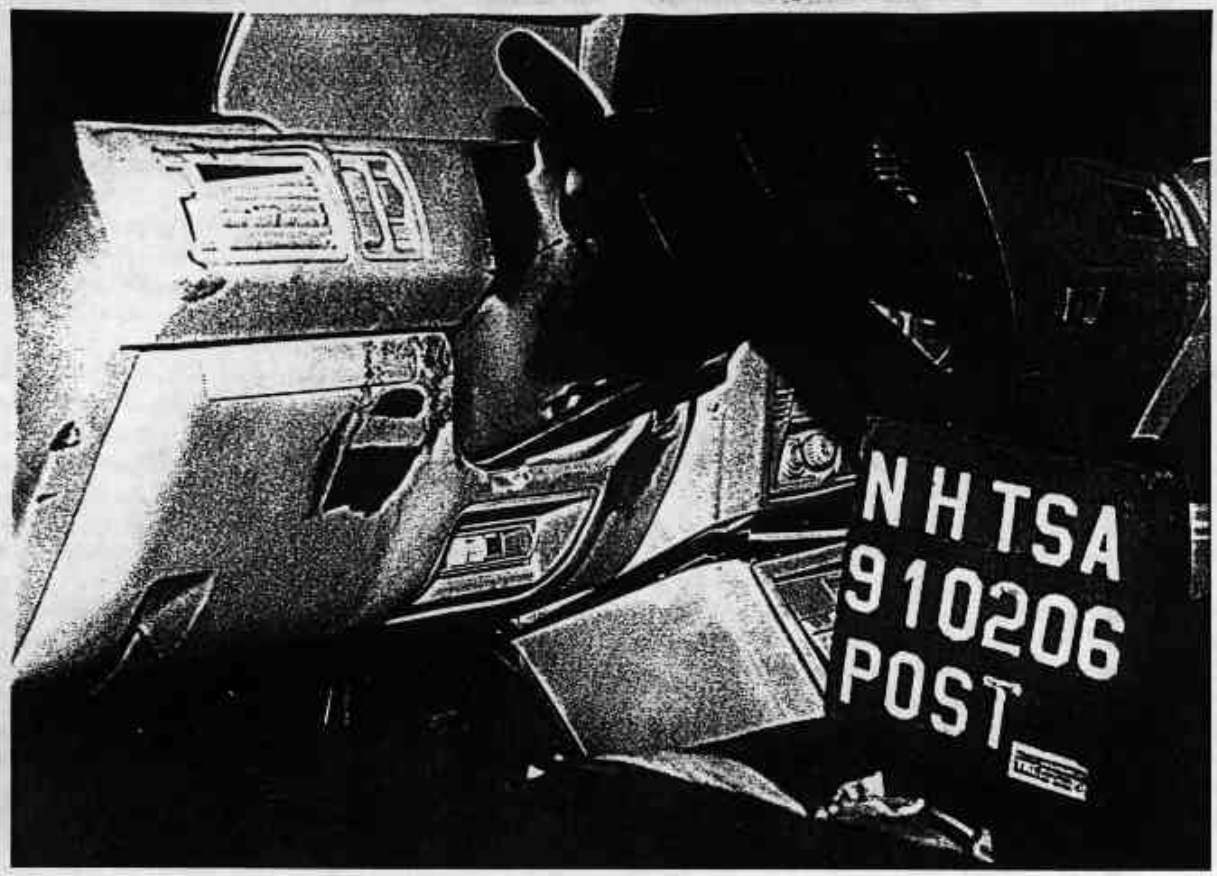


Figure A-39. POST-TEST DRIVER DUMMY KNEE CONTACT - VIEW 2

Figure A-40. POST-TEST PASSENGER DUMMY HEAD CONTACT VIEW

Figure A-41. POST-TEST PASSENGER DUMMY KNEE CONTACT - VIEW 1

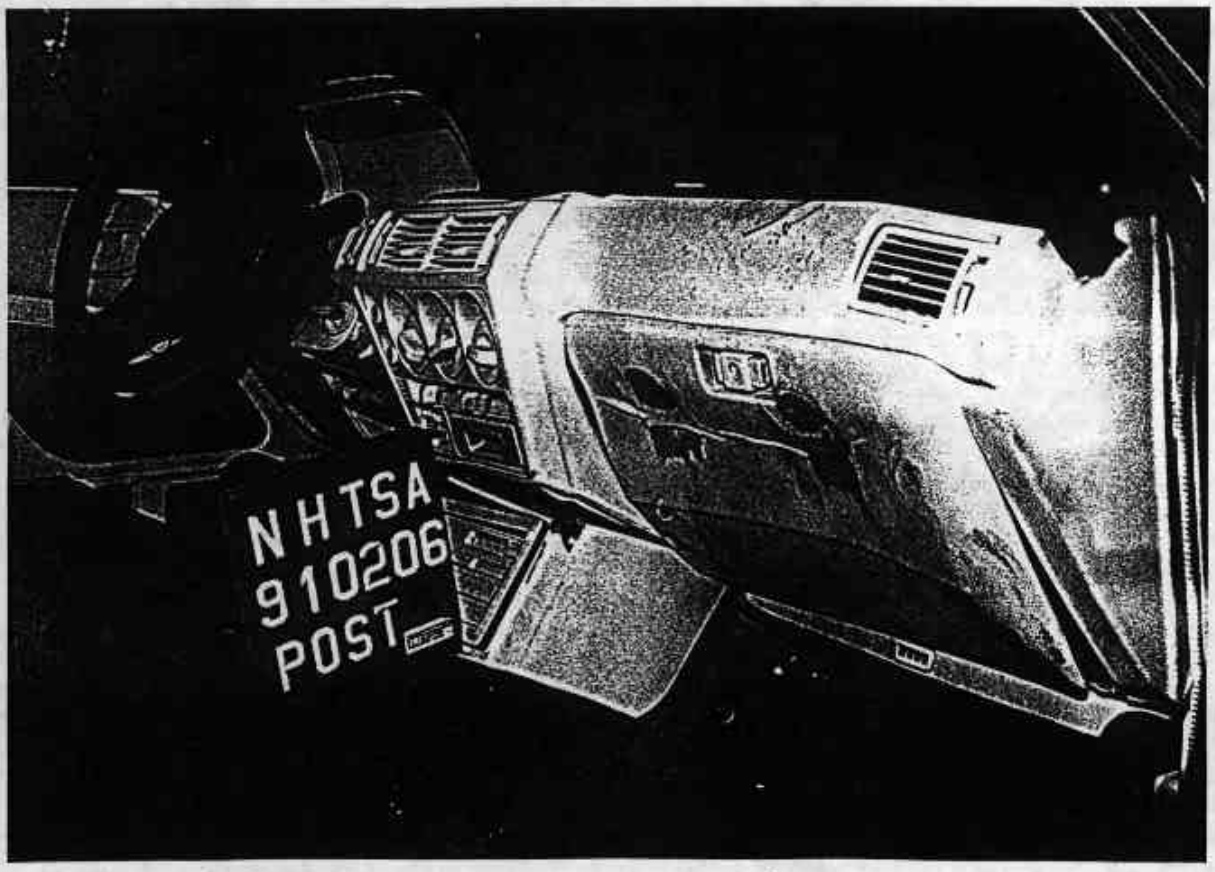


Figure A-42. POST-TEST PASSENGER DUMMY KNEE CONTACT - VIEW 2

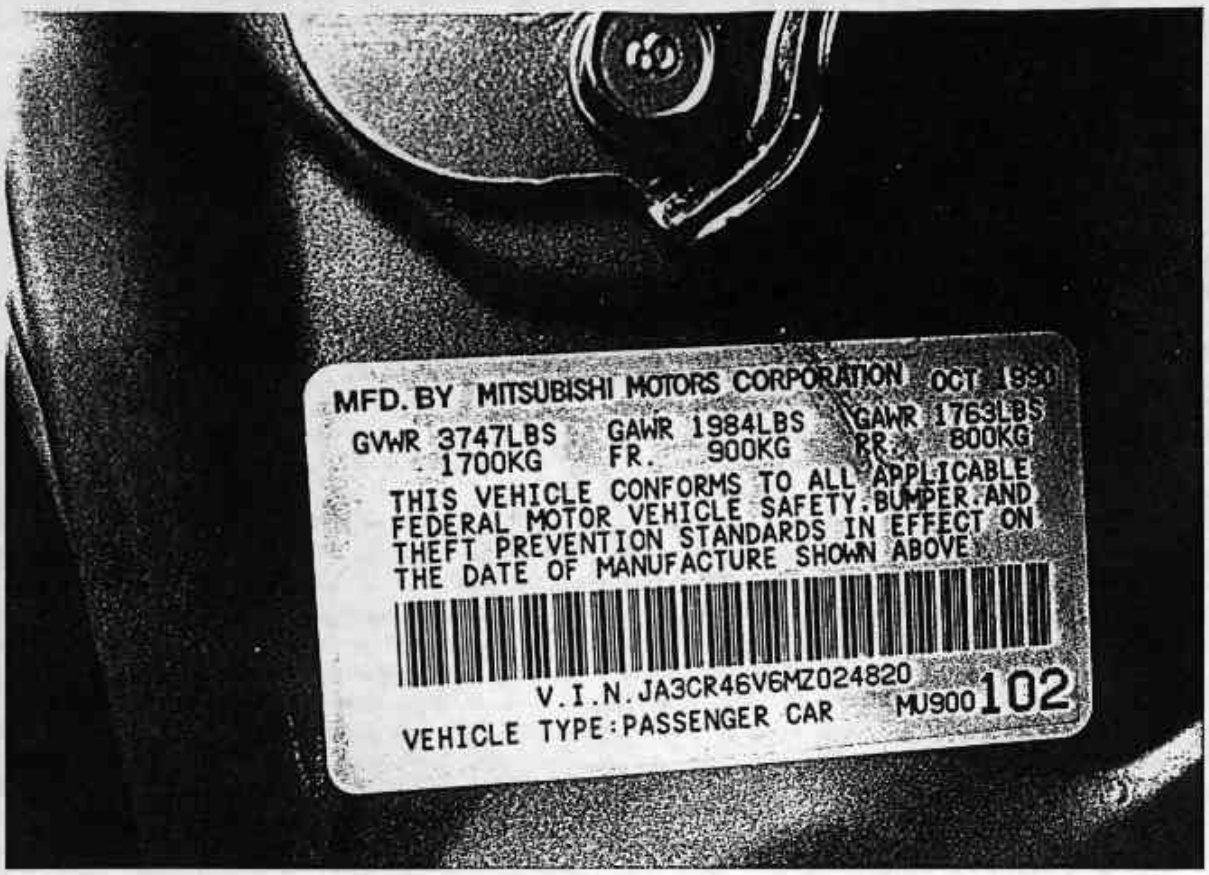


Figure A-43. PRE-TEST VEHICLE CERTIFICATION LABEL VIEW

Figure A-44. POST-TEST VEHICLE RECOMMENDED TIRE PRESSURE LABEL VIEW

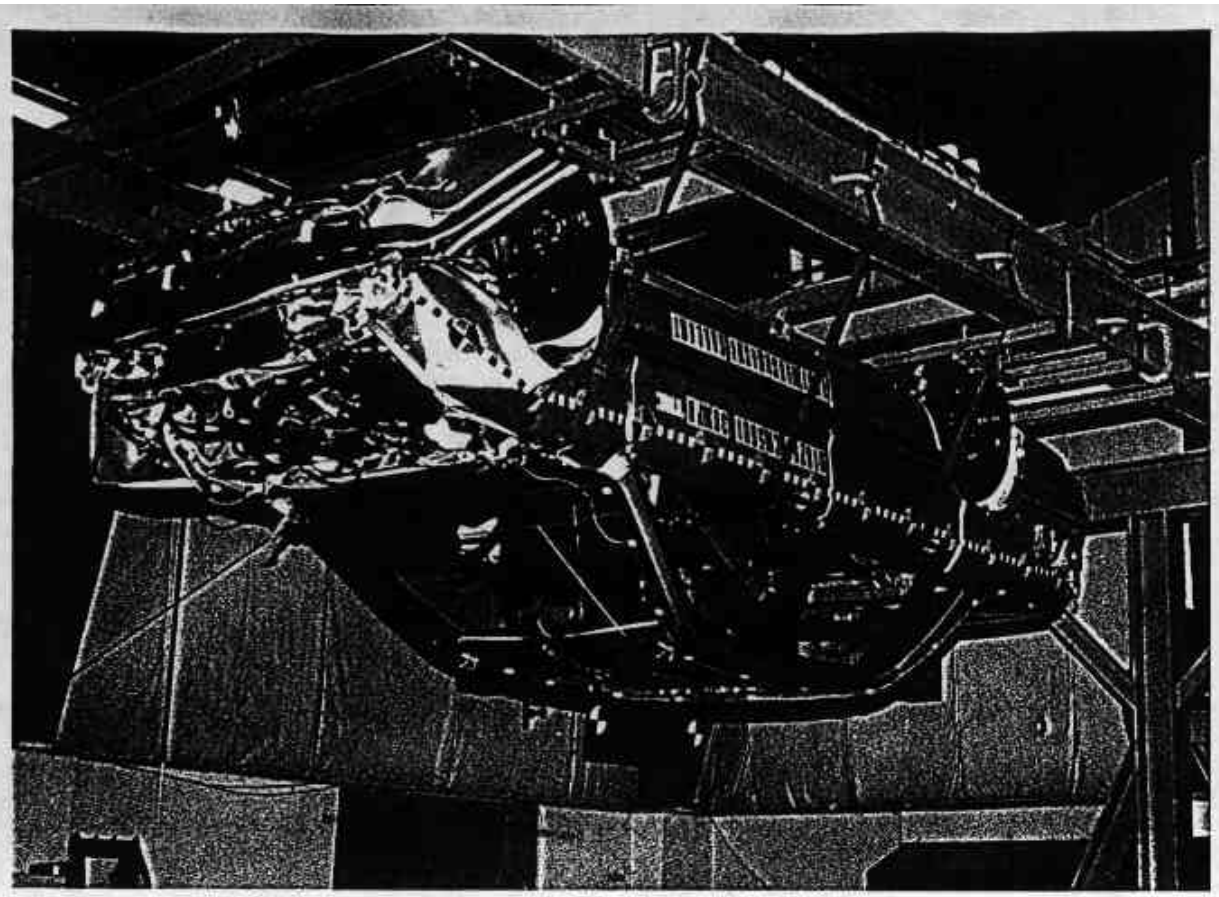
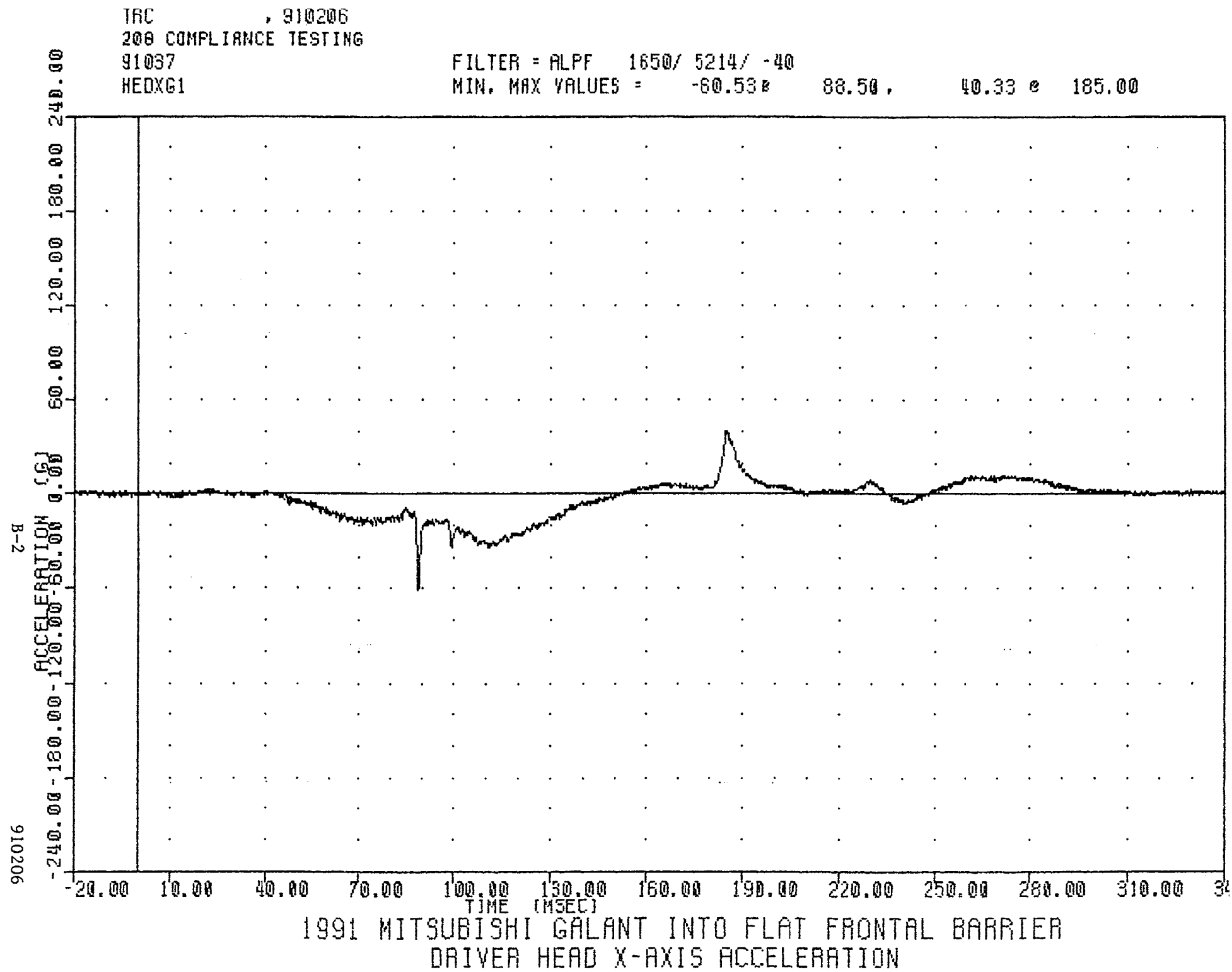


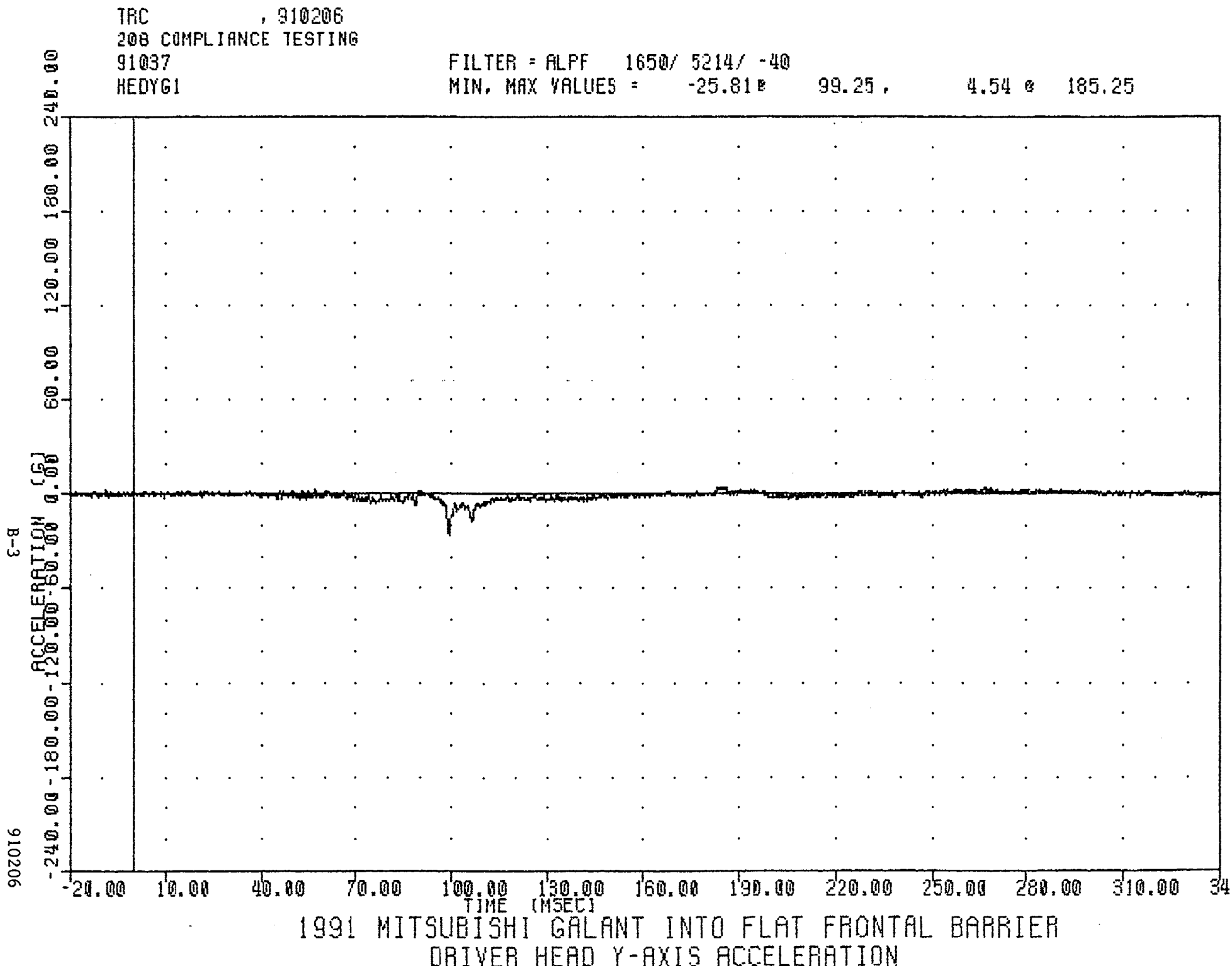
Figure A-45. PRE-TEST VEHICLE ON STATIC ROLLOVER MACHINE VIEW

APPENDIX B

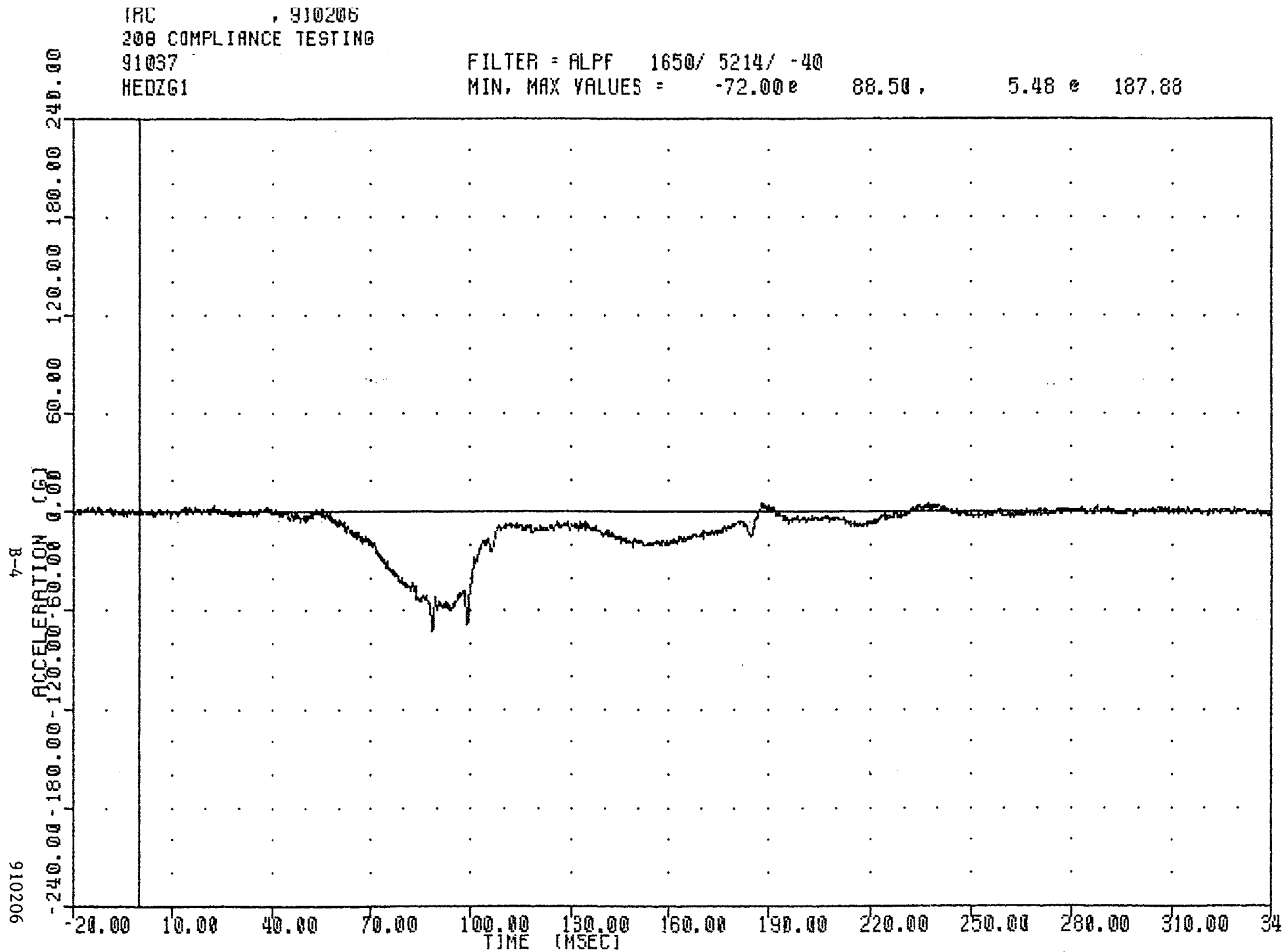
DATA PLOTS



1991 MITSUBISHI GALANT INTO FLAT FRONTAL BARRIER
DRIVER HEAD X-AXIS ACCELERATION

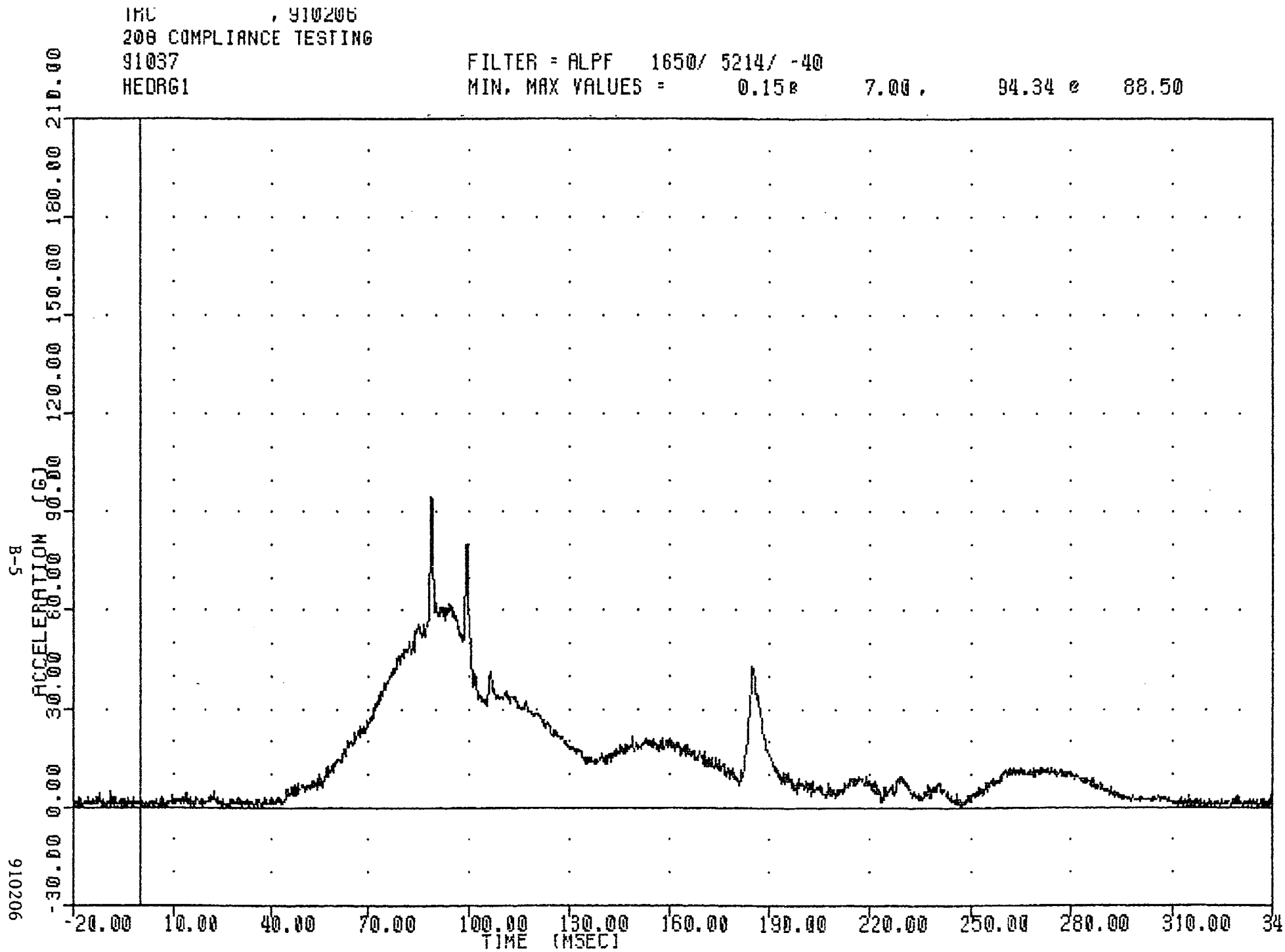


1991 MITSUBISHI GALANT INTO FLAT FRONTAL BARRIER
DRIVER HEAD Y-AXIS ACCELERATION

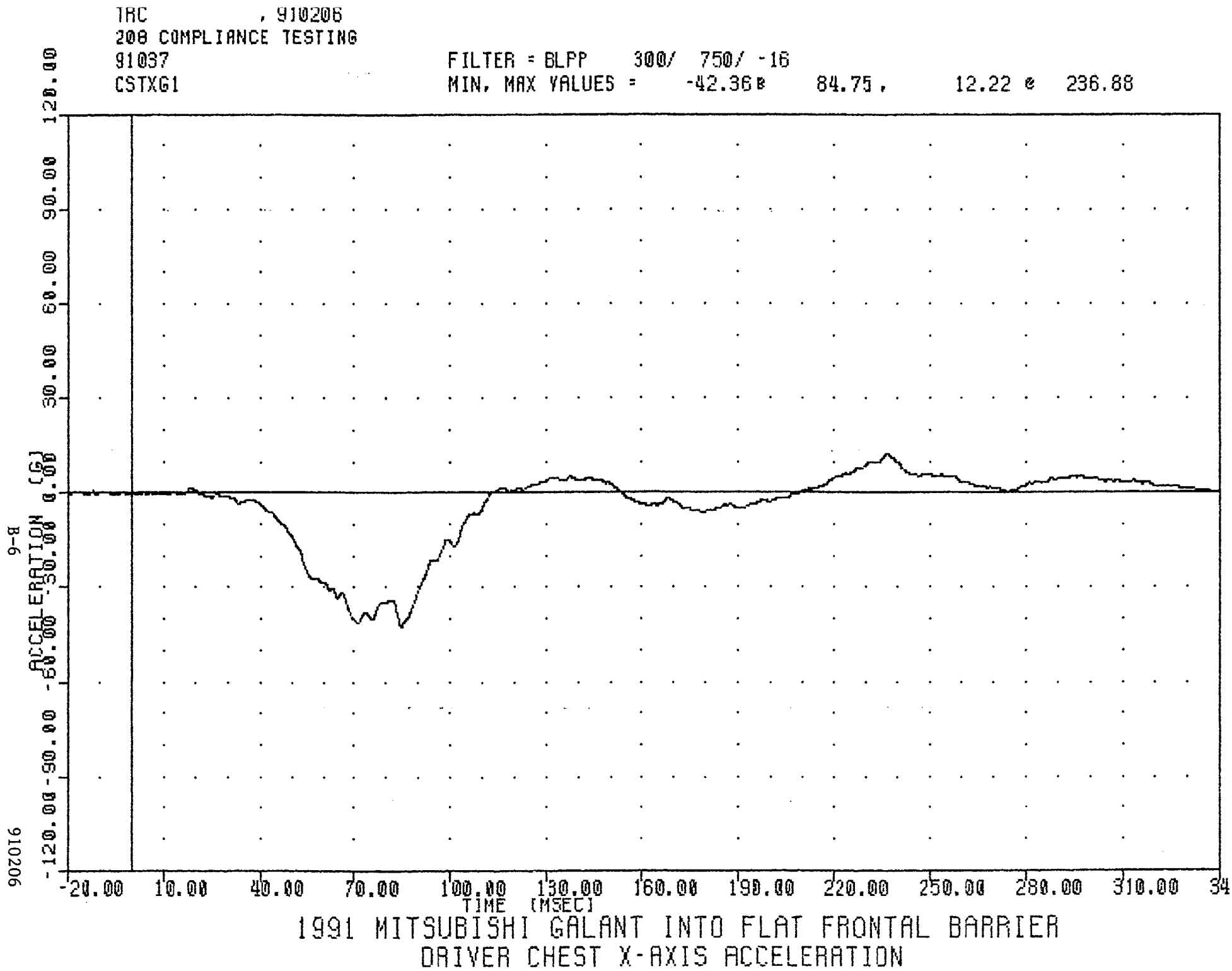


1991 MITSUBISHI GALANT INTO FLAT FRONTAL BARRIER
DRIVER HEAD Z-AXIS ACCELERATION

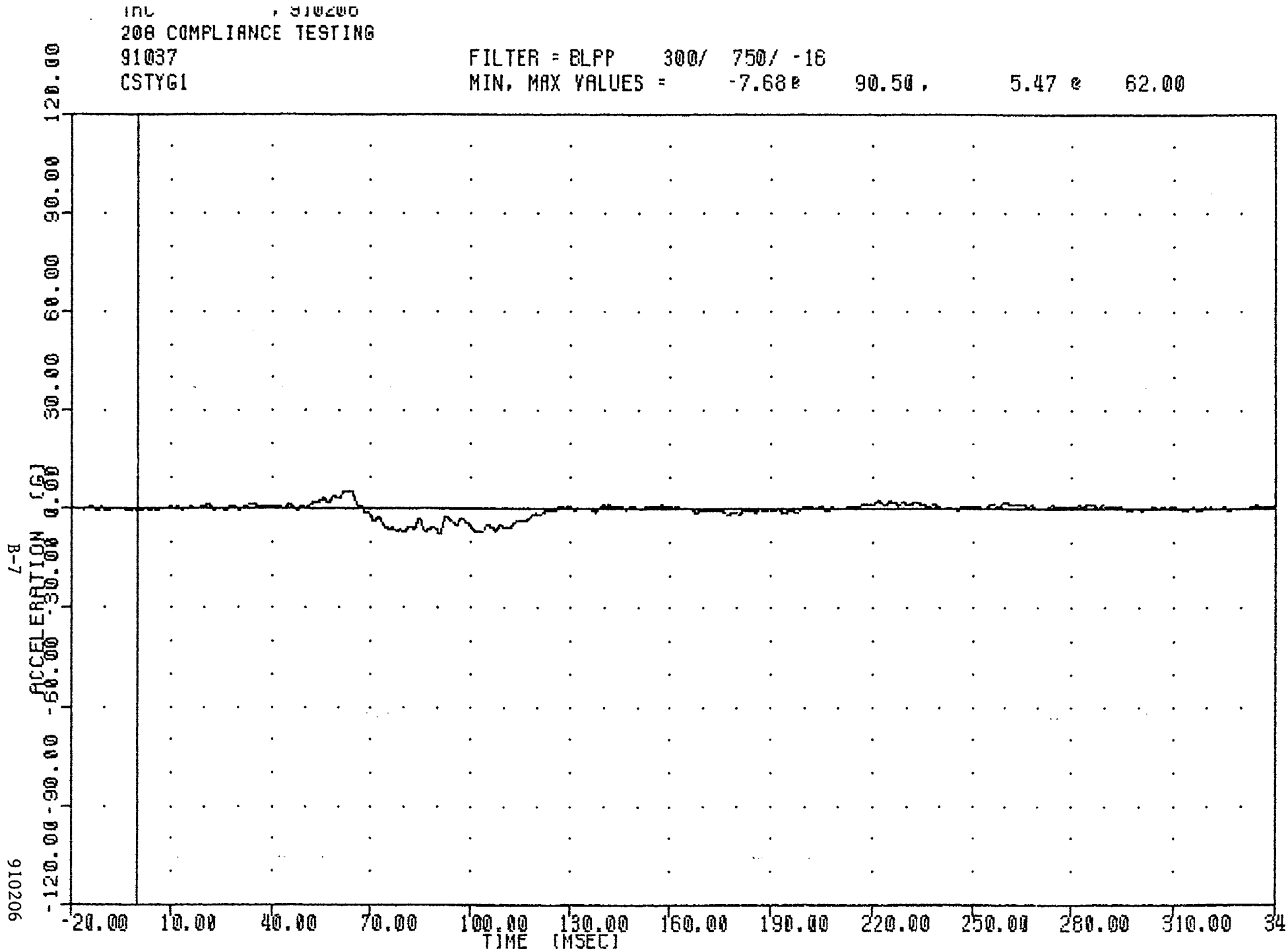
910206


IRC , 910206
208 COMPLIANCE TESTING
91037
HEDRG1
FILTER = ALPF 1650/ 5214/ -40
MIN. MAX VALUES = 0.15@ 7.00, 94.34 @ 88.50
ACCELERATION (G)
210.00
180.00
150.00
120.00
90.00
60.00
30.00
0.00
-30.00
-20.00
10.00
40.00
70.00
100.00
130.00
160.00
190.00
220.00
250.00
280.00
310.00
TIME (MSEC)
1991 MITSUBISHI GALANT INTO FLAT FRONTAL BARRIER
DRIVER HEAD RESULTANT ACCELERATION

910206

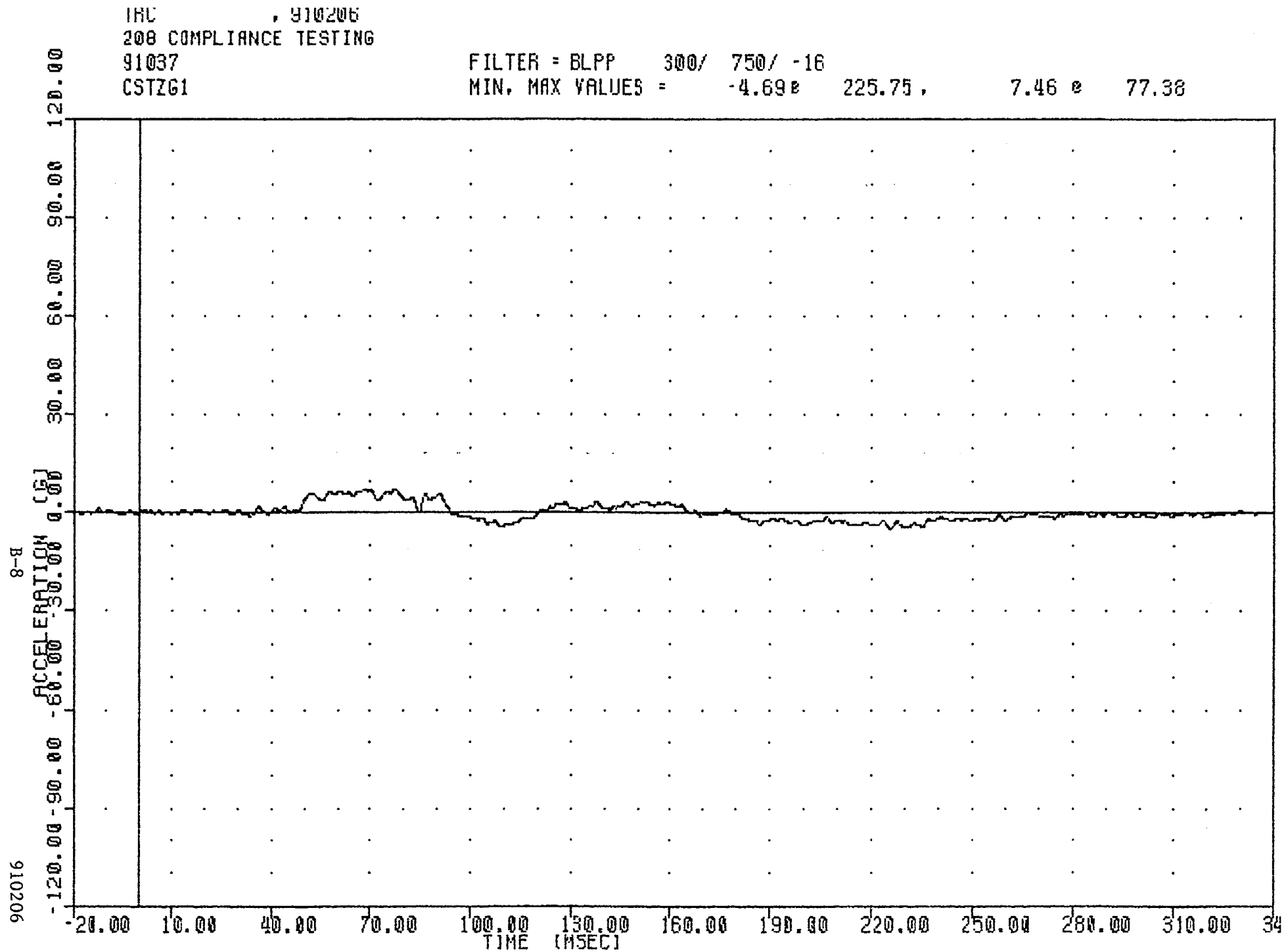


1991 MITSUBISHI GALANT INTO FLAT FRONTAL BARRIER
DRIVER CHEST X-AXIS ACCELERATION



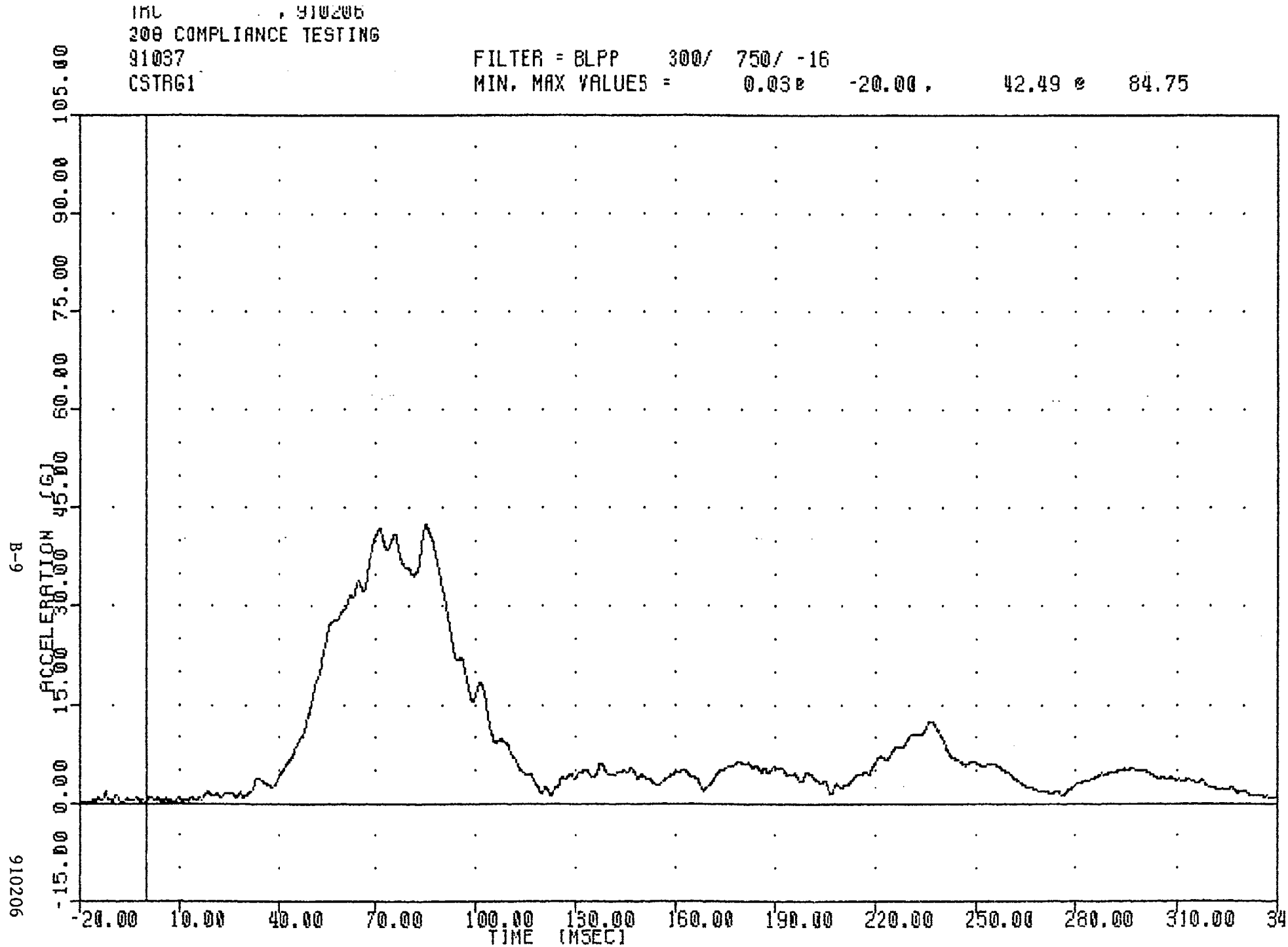
910206

1991 MITSUBISHI GALANT INTO FLAT FRONTAL BARRIER
DRIVER CHEST Y-AXIS ACCELERATION



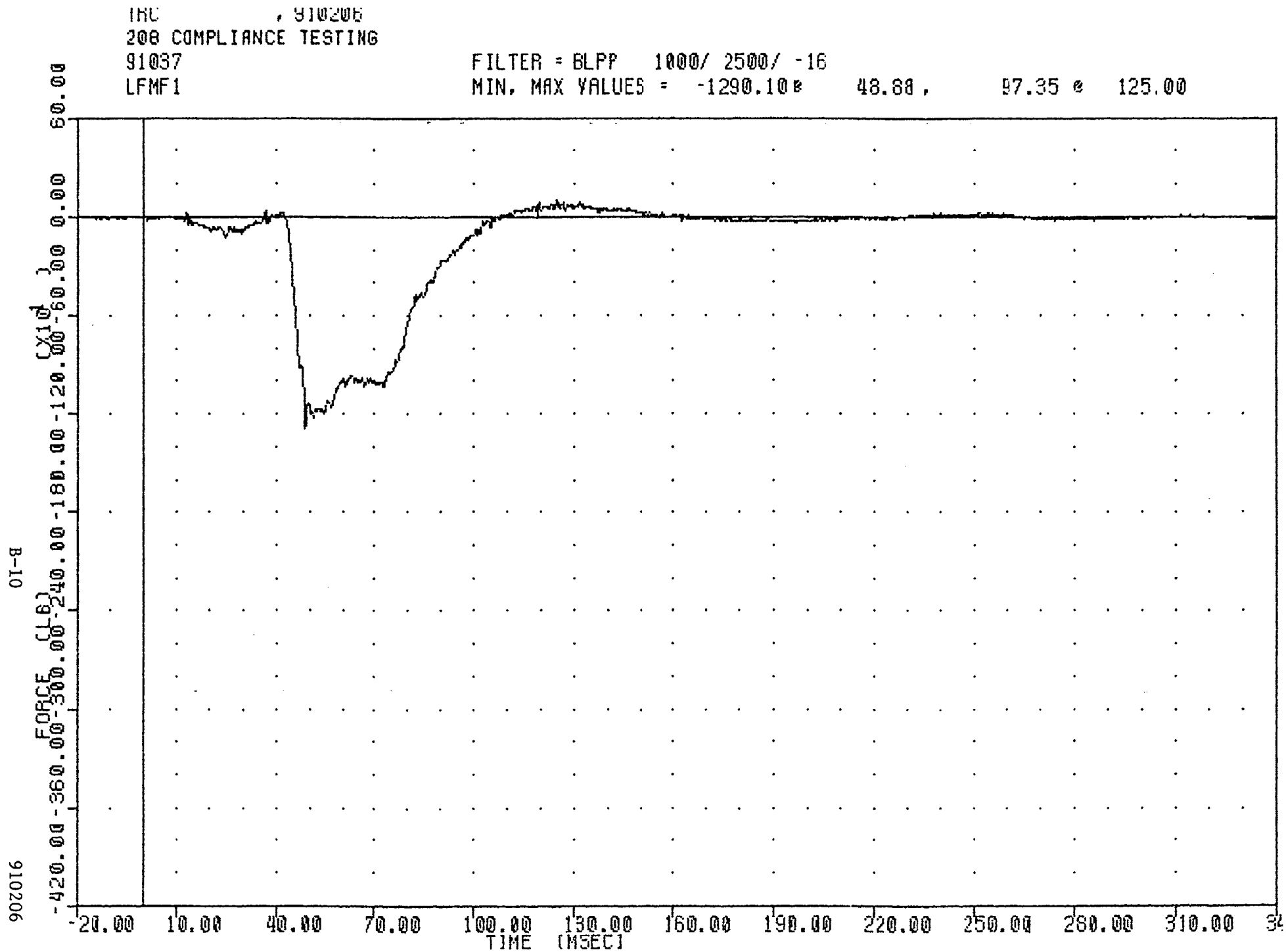
1991 MITSUBISHI GALANT INTO FLAT FRONTAL BARRIER
DRIVER CHEST Z-AXIS ACCELERATION

910206

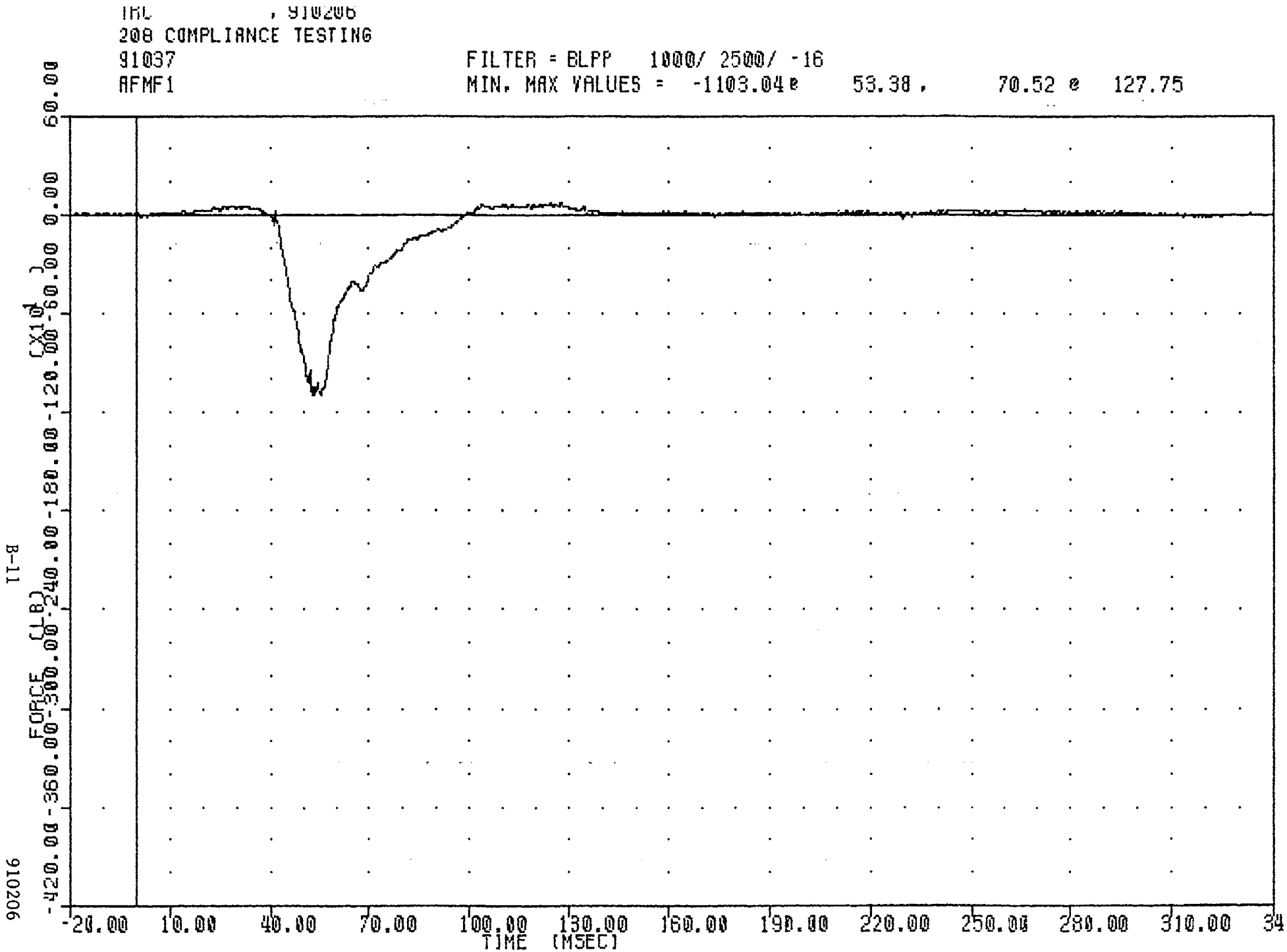


1991 MITSUBISHI GALANT INTO FLAT FRONTAL BARRIER
DRIVER CHEST RESULTANT ACCELERATION

910206

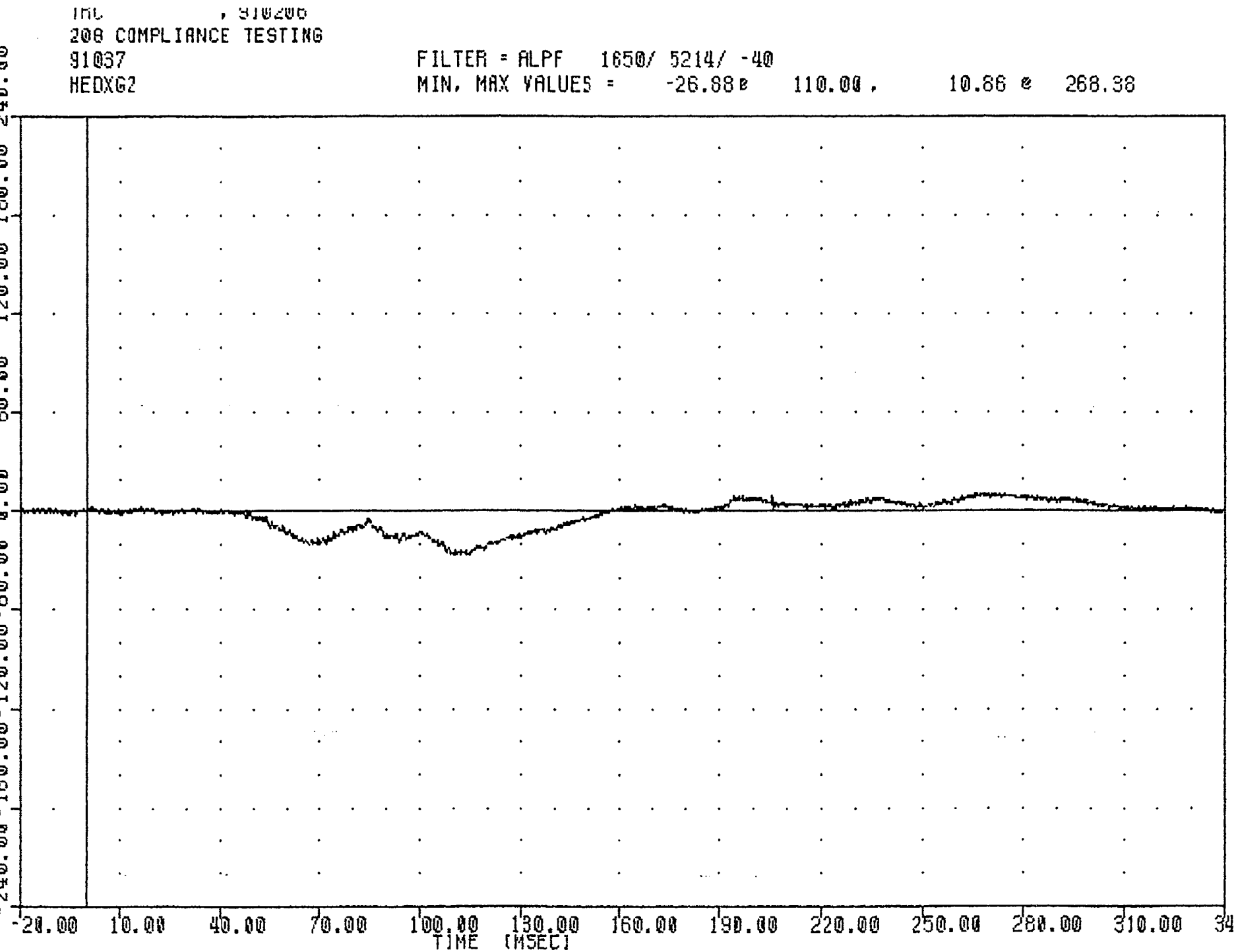


1991 MITSUBISHI GALANT INTO FLAT FRONTAL BARRIER
DRIVER LEFT FEMUR FORCE



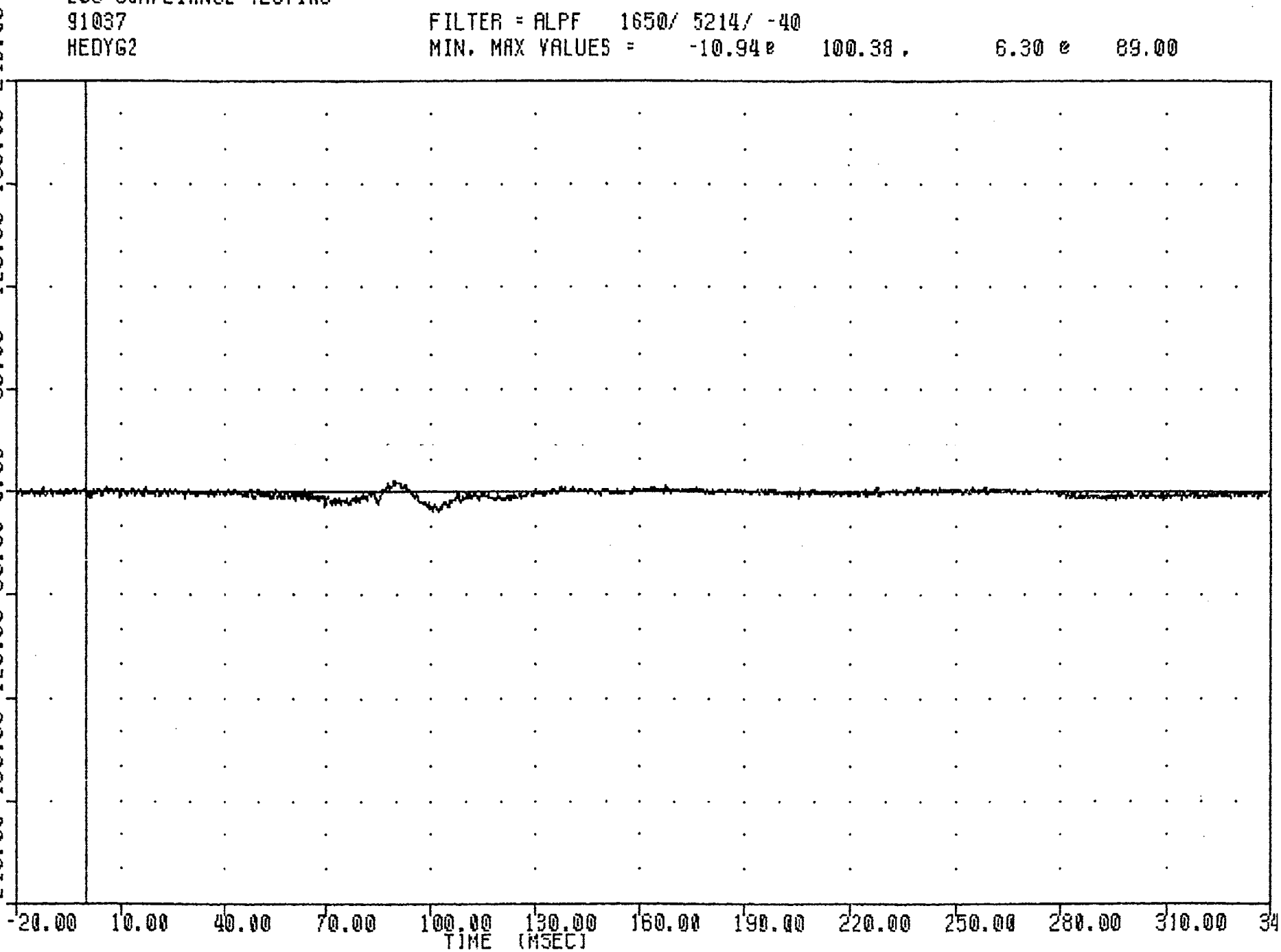
1991 MITSUBISHI GALANT INTO FLAT FRONTAL BARRIER
DRIVER RIGHT FEMUR FORCE

910206



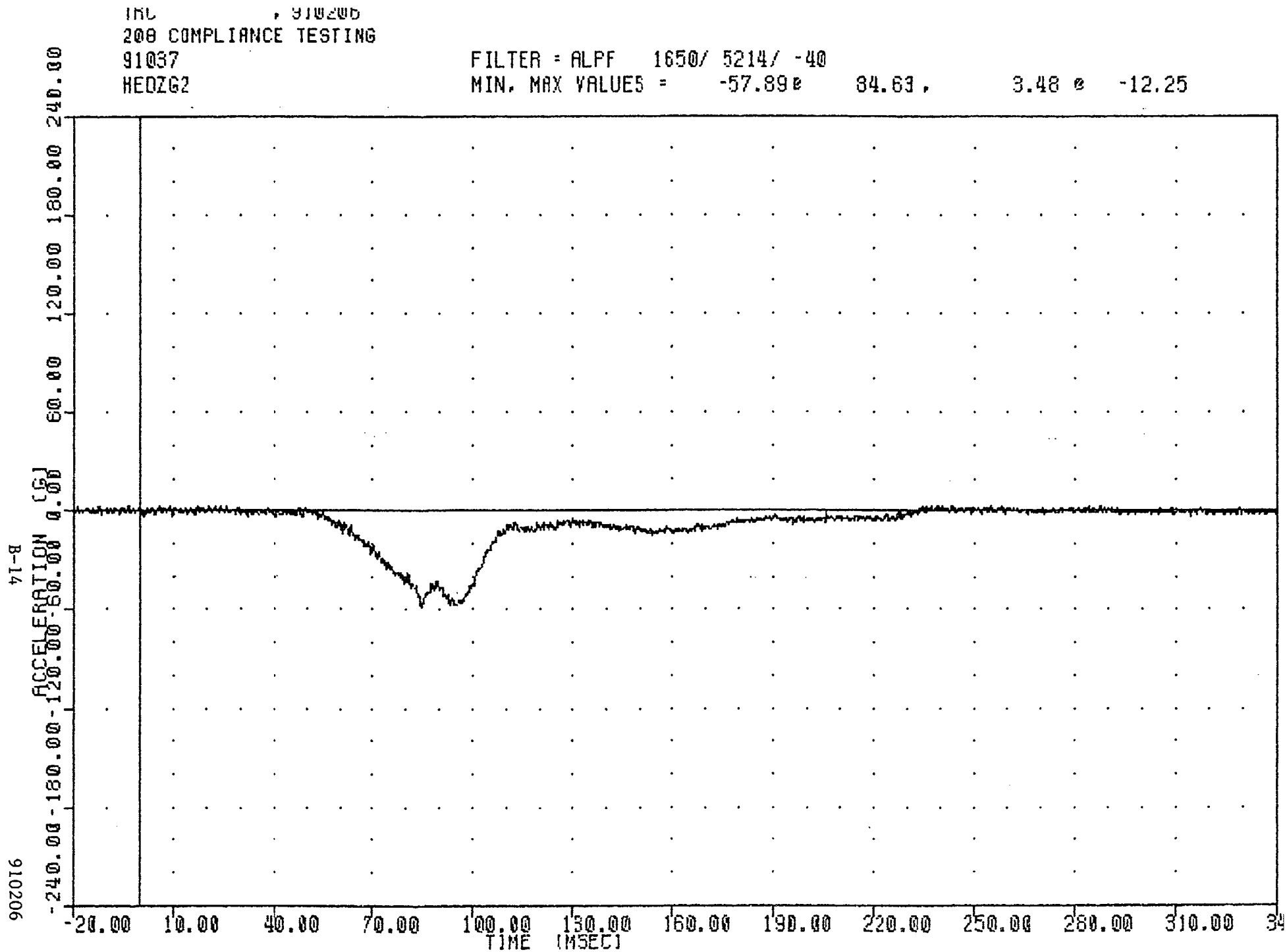
1991 MITSUBISHI GALANT INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER HEAD X-AXIS ACCELERATION

910206



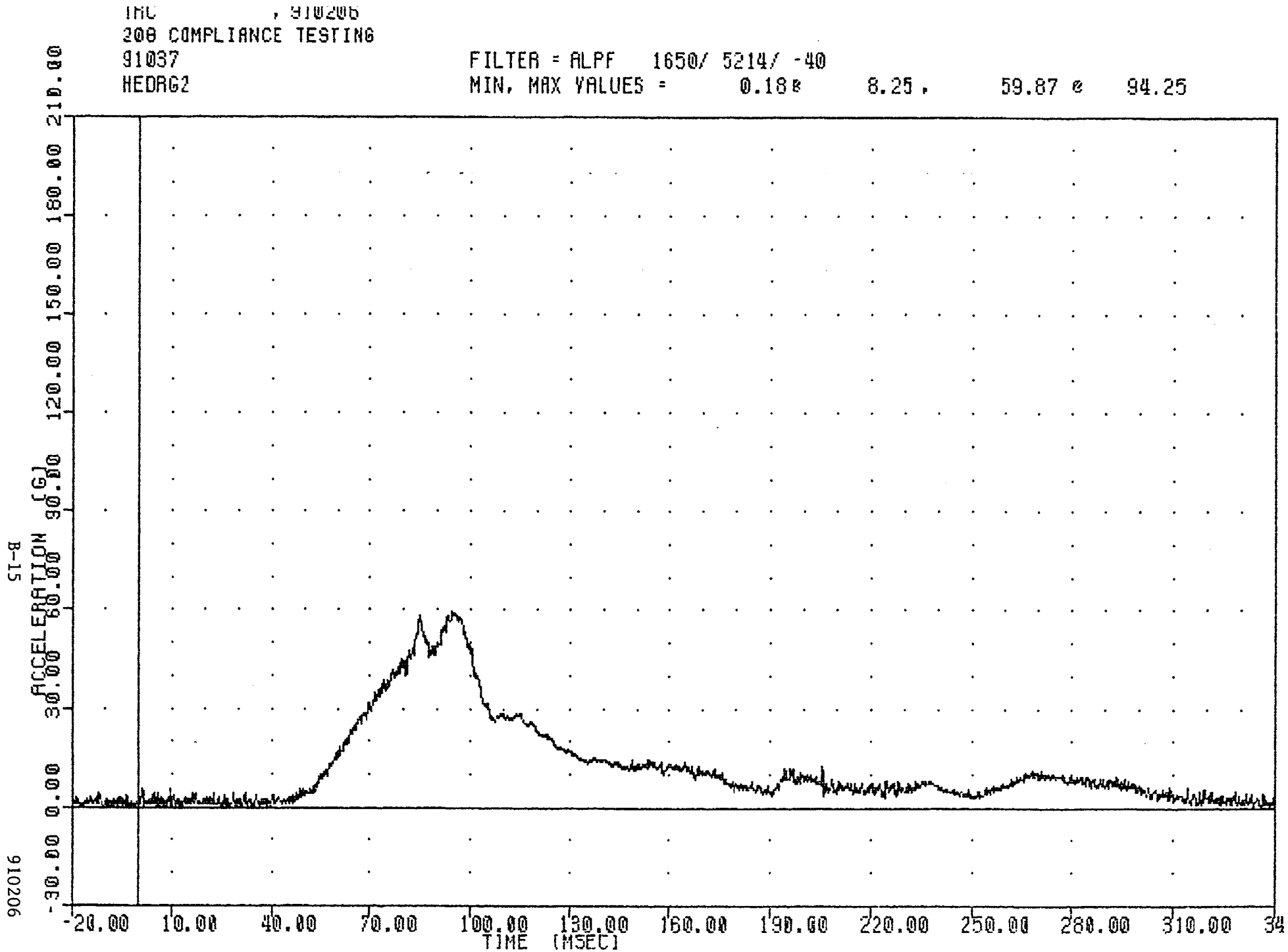
1991 MITSUBISHI GALANT INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER HEAD Y-AXIS ACCELERATION

910206

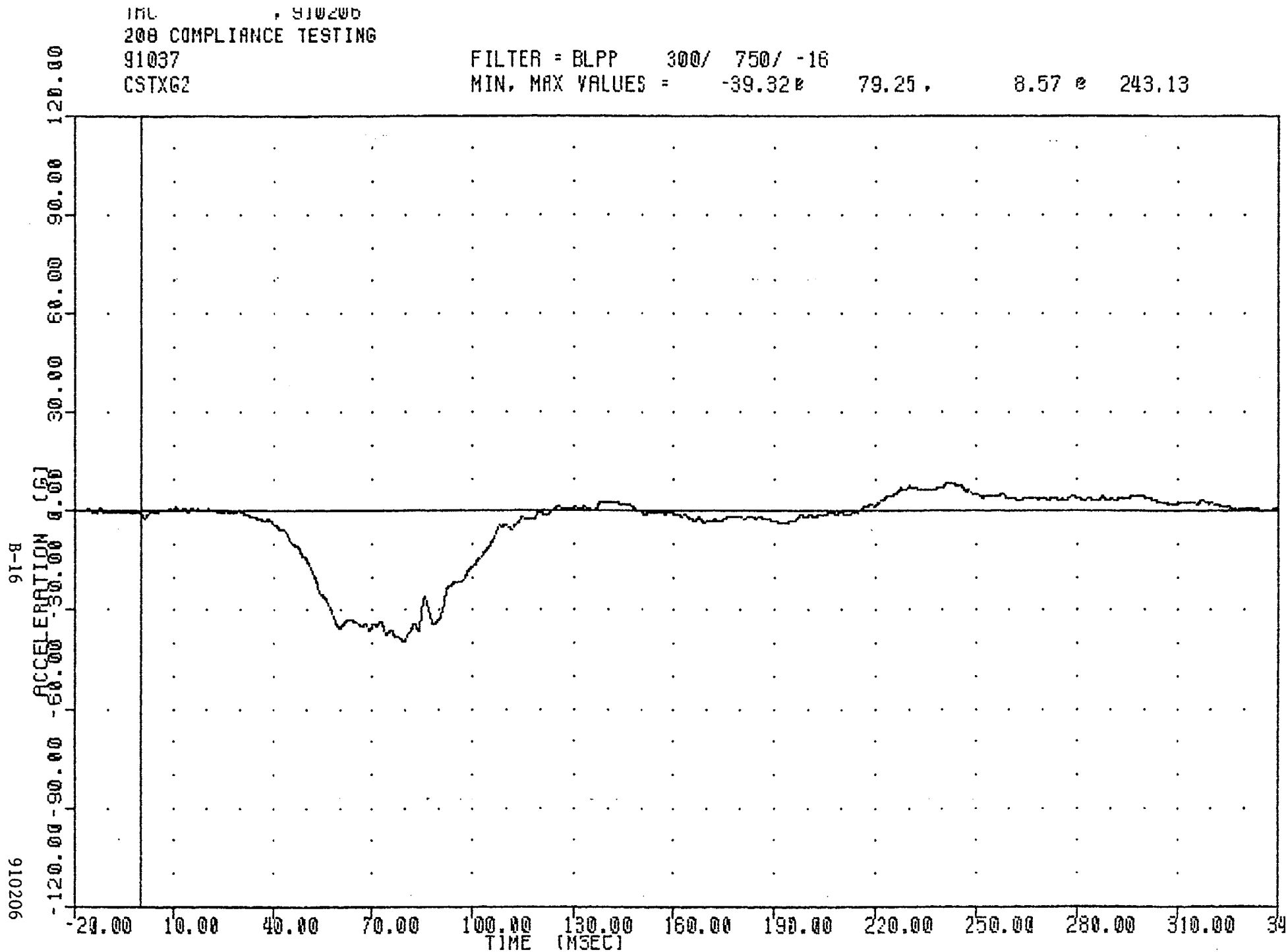


1991 MITSUBISHI GALANT INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER HEAD Z-AXIS ACCELERATION

910206

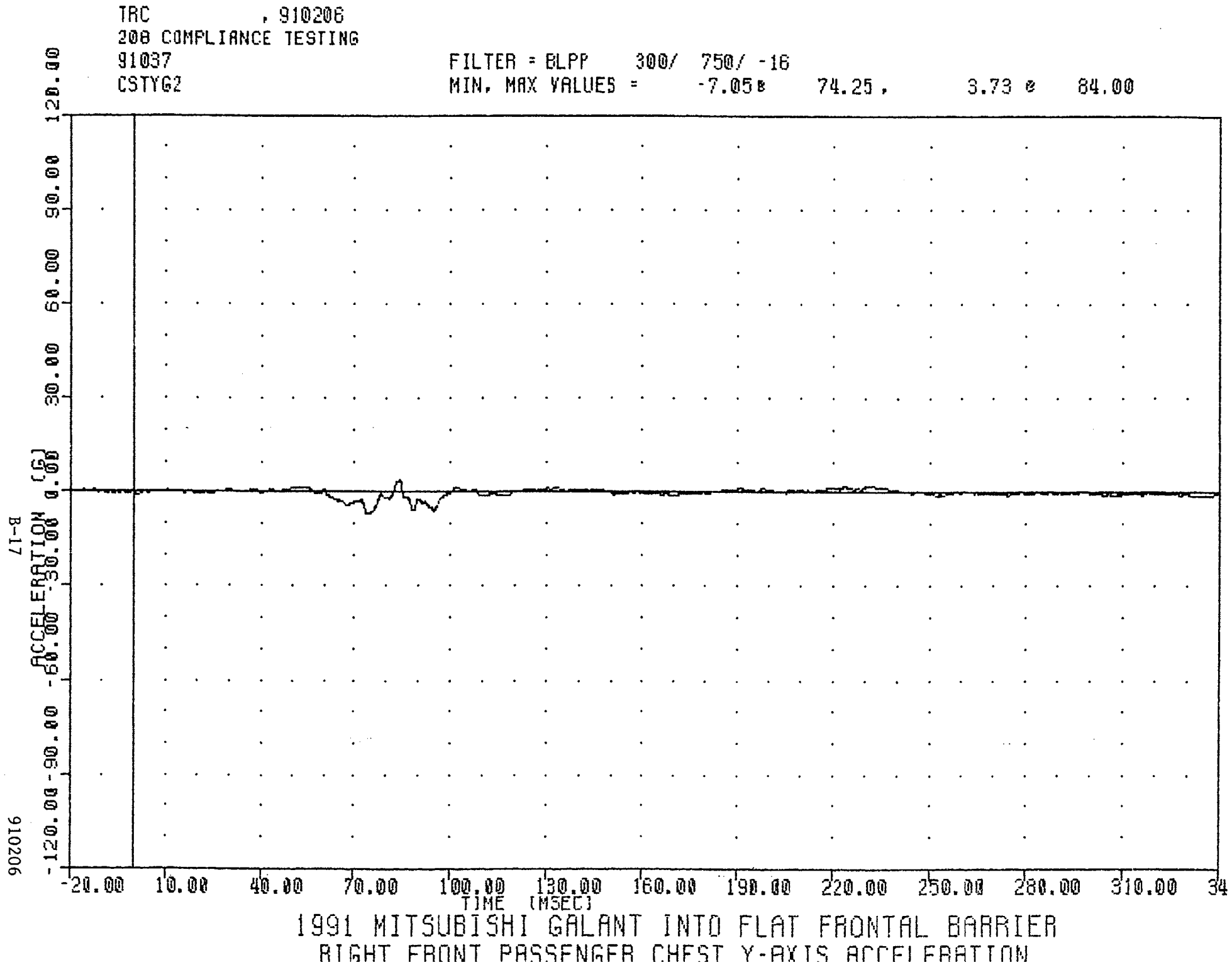


1991 MITSUBISHI GALANT INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER HEAD RESULTANT ACCELERATION



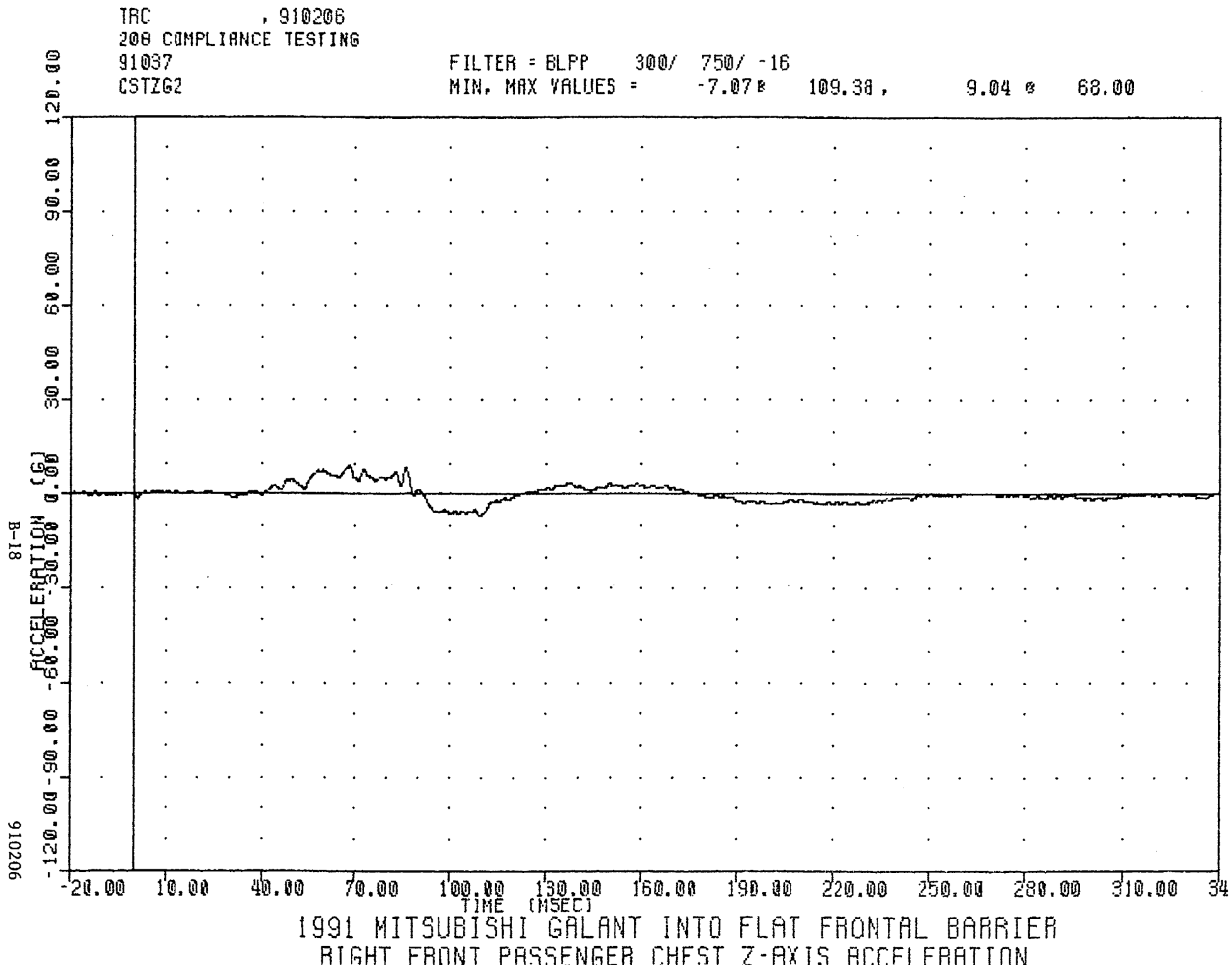
1991 MITSUBISHI GALANT INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER CHEST X-AXIS ACCELERATION

910206

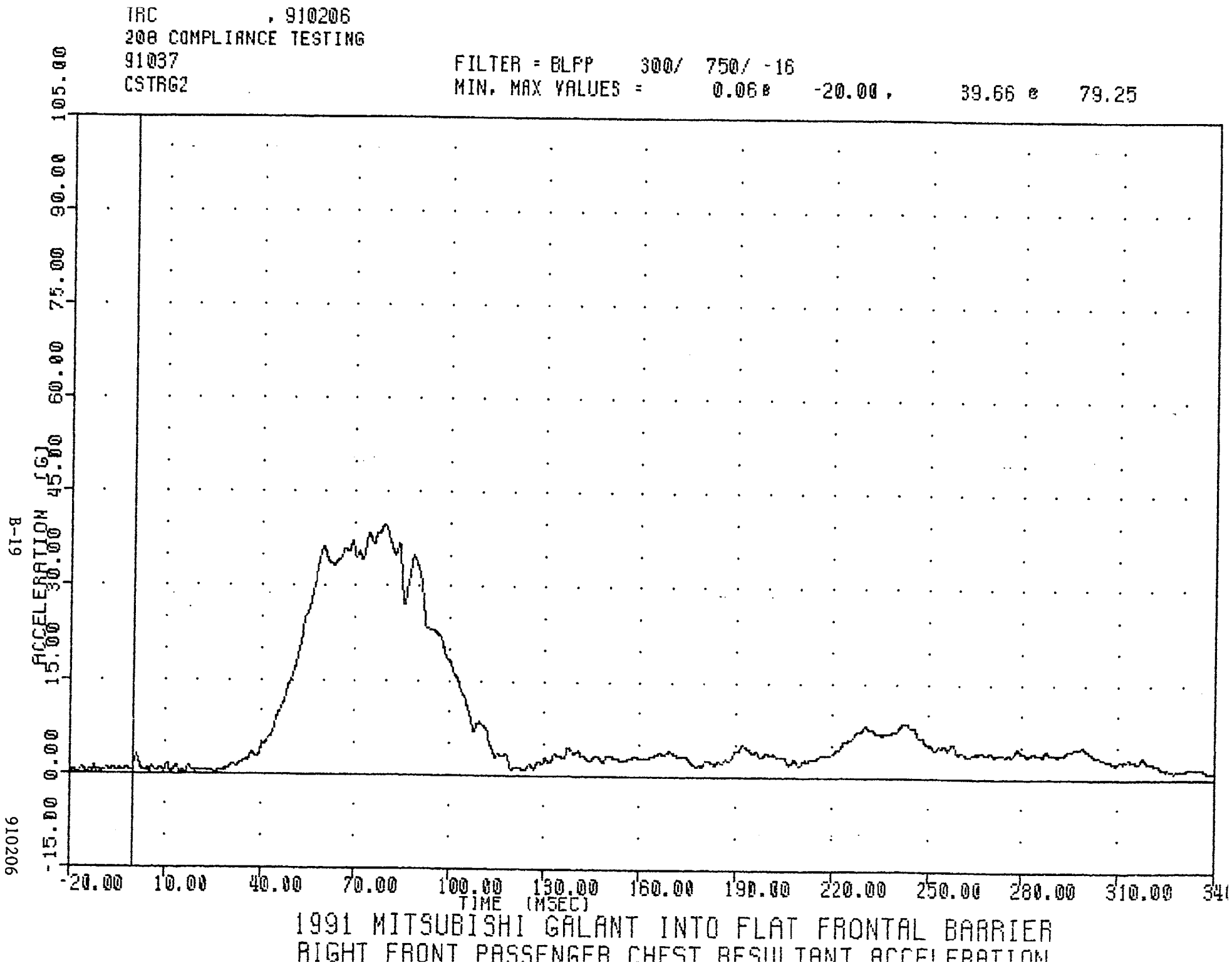


1991 MITSUBISHI GALANT INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER CHEST Y-AXIS ACCELERATION

910206

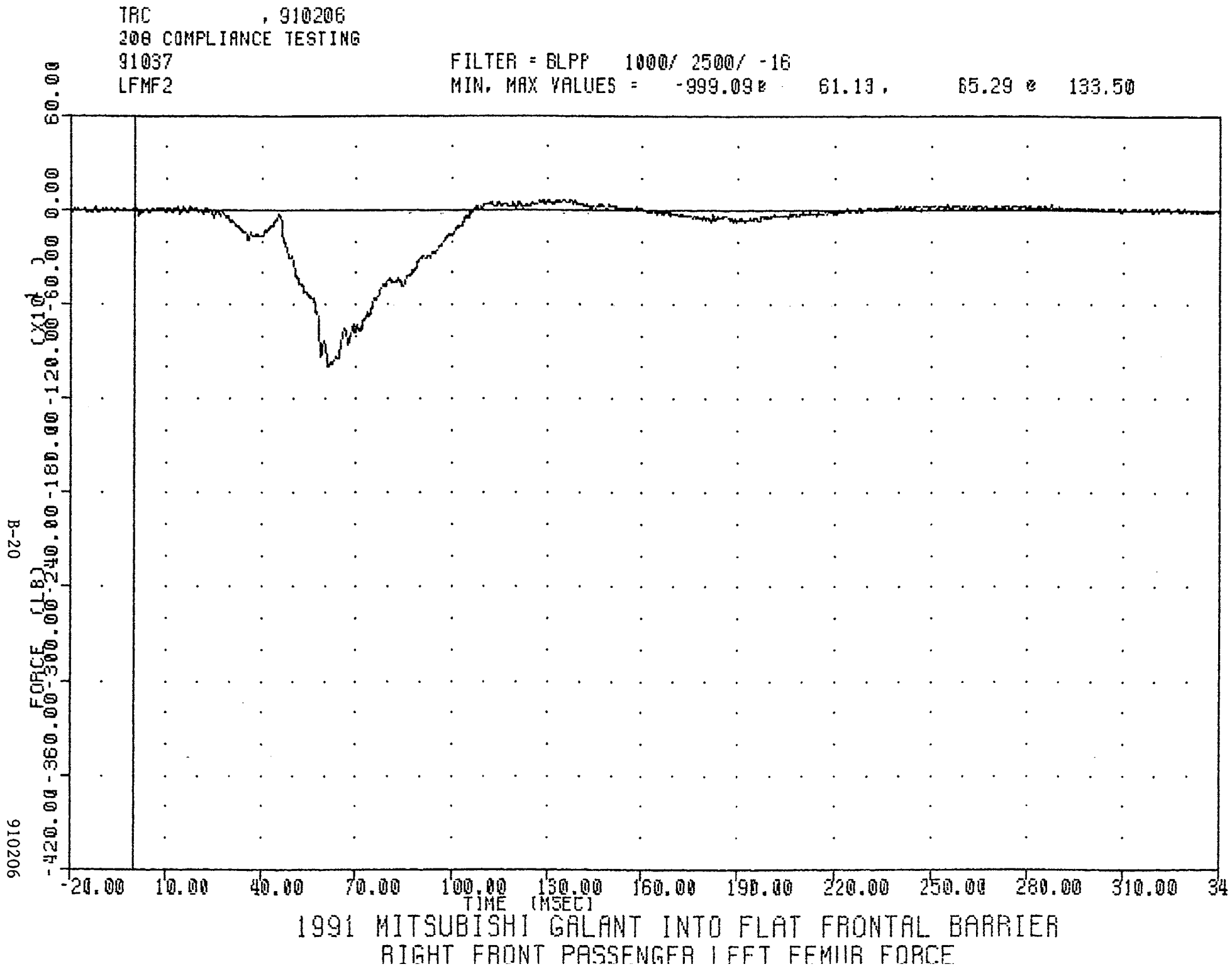

TRC , 910206
208 COMPLIANCE TESTING
91037
CSTZG2
FILTER = BLPP 300/ 750/ -16
MIN, MAX VALUES = -7.07 @ 109.38 , 9.04 @ 68.00
120.00
90.00
60.00
30.00
0.00
-30.00
-60.00
-90.00
-120.00
ACCELERATION (G)
-20.00
10.00
40.00
70.00
100.00
130.00
160.00
190.00
220.00
250.00
280.00
310.00
TIME (MSEC)
1991 MITSUBISHI GALANT INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER CHEST Z-AXIS ACCELERATION

910206



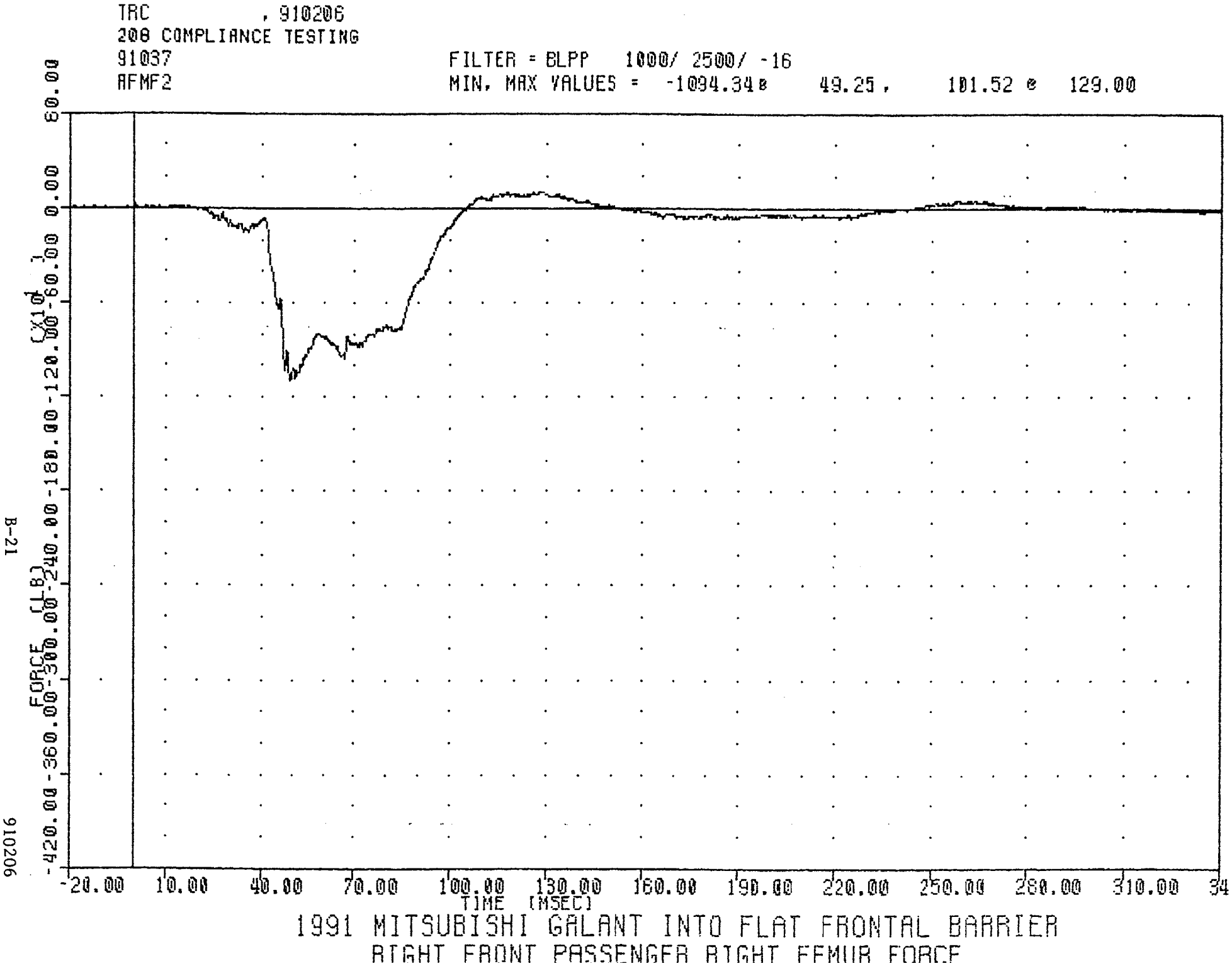
1991 MITSUBISHI GALANT INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER CHEST RESULTANT ACCELERATION

910206

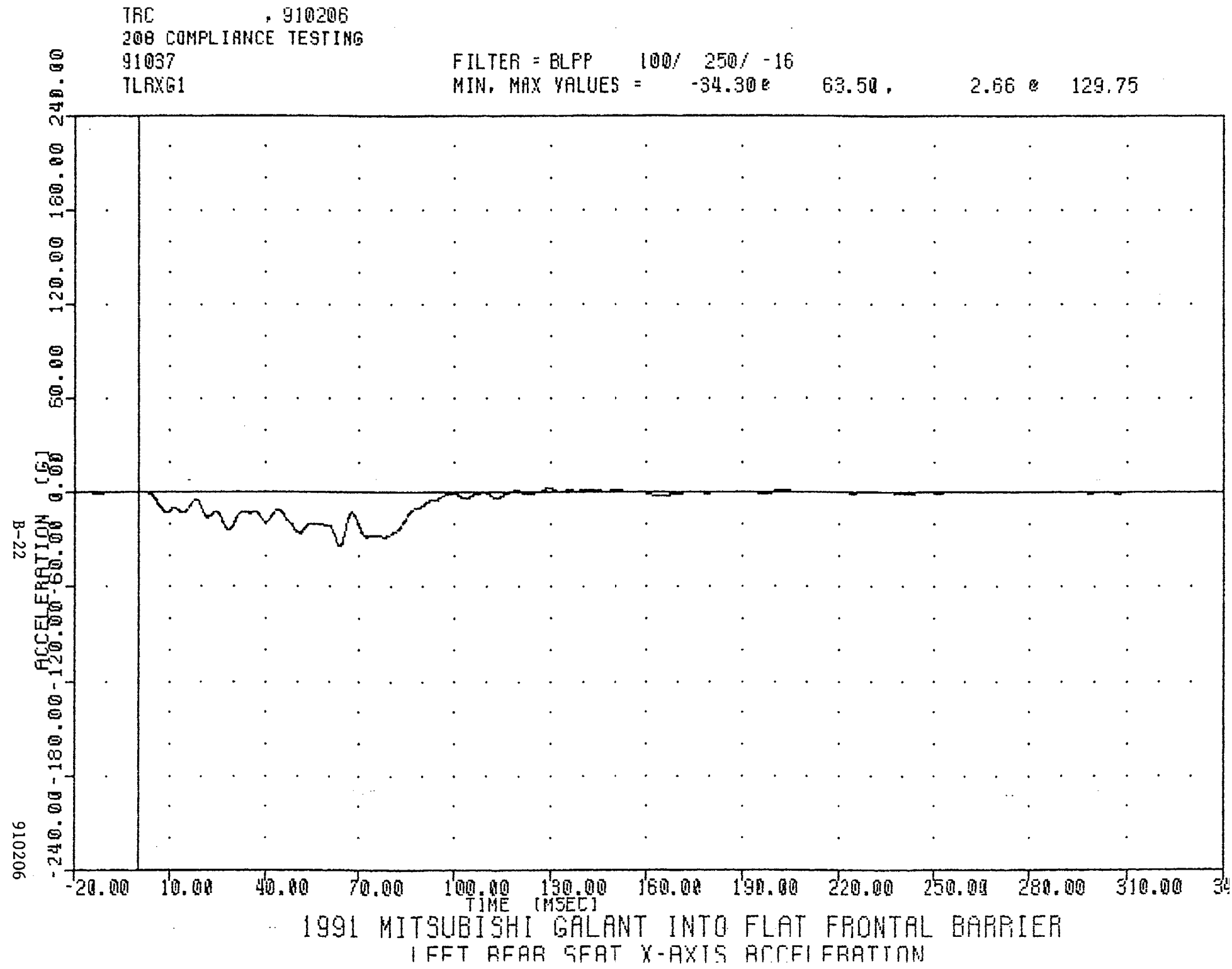


1991 MITSUBISHI GALANT INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER LEFT FEMUR FORCE

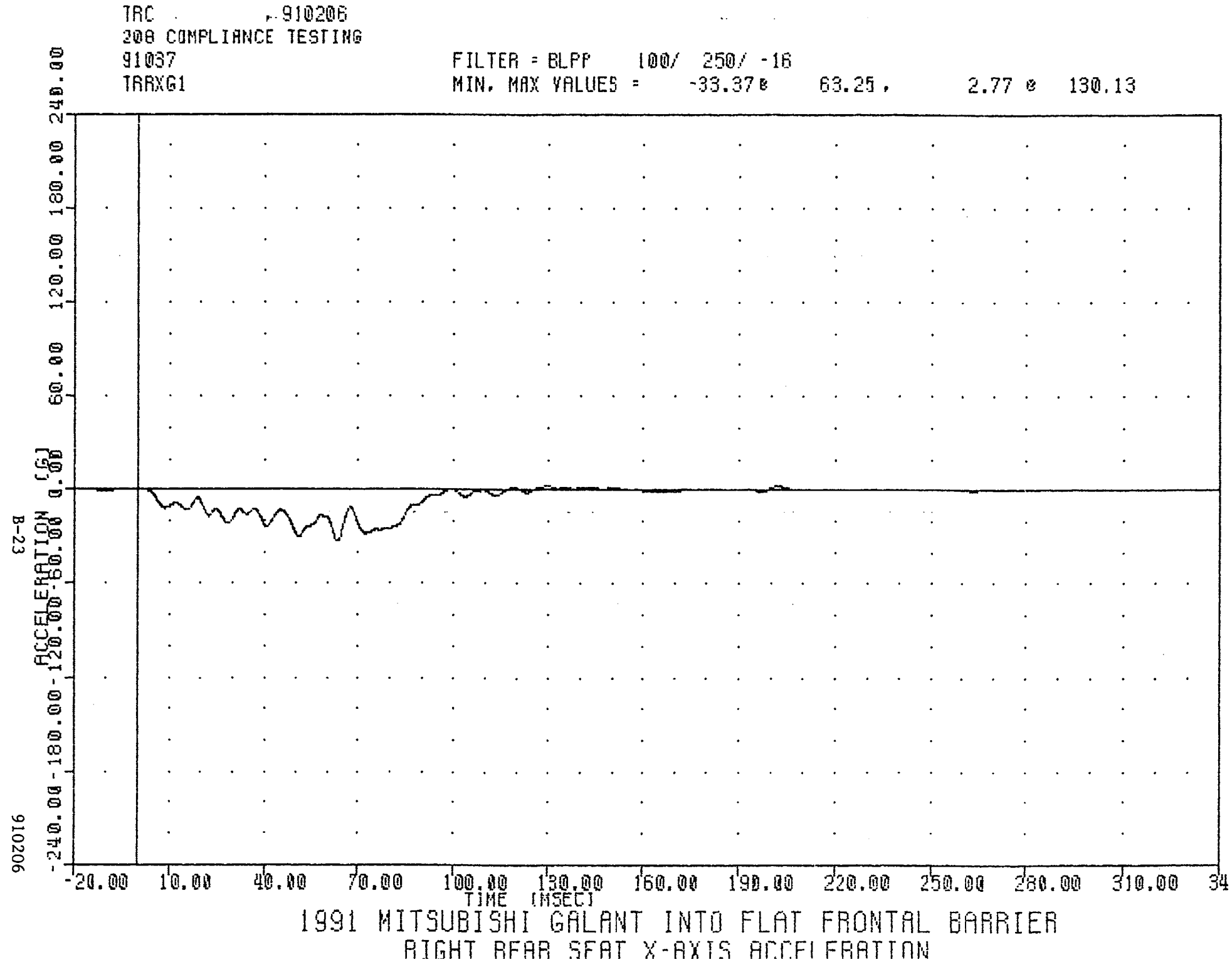
910206



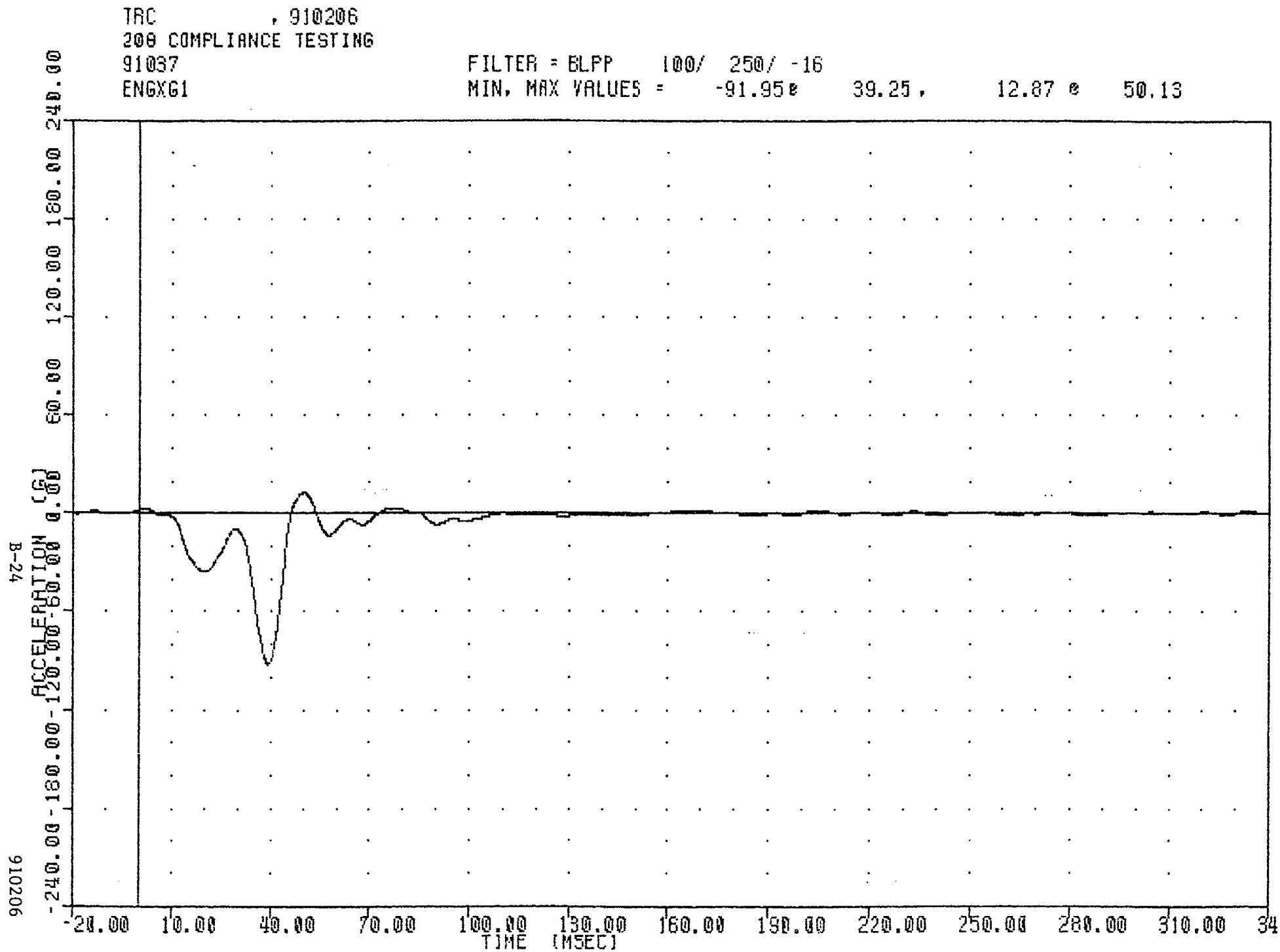
1991 MITSUBISHI GALANT INTO FLAT FRONTAL BARRIER
RIGHT FRONT PASSENGER RIGHT FEMUR FORCE


TRC , 910206
208 COMPLIANCE TESTING
91037
TLRXG1
FILTER = BLPP 100/ 250/ -16
MIN, MAX VALUES = -34.30 @ 63.50 , 2.66 @ 129.75
240.00
160.00
120.00
50.00
0.00
-60.00
-120.00
-180.00
-240.00
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 MITSUBISHI GALANT INTO FLAT FRONTAL BARRIER
LEFT REAR SEAT X-AXIS ACCELERATION

910206

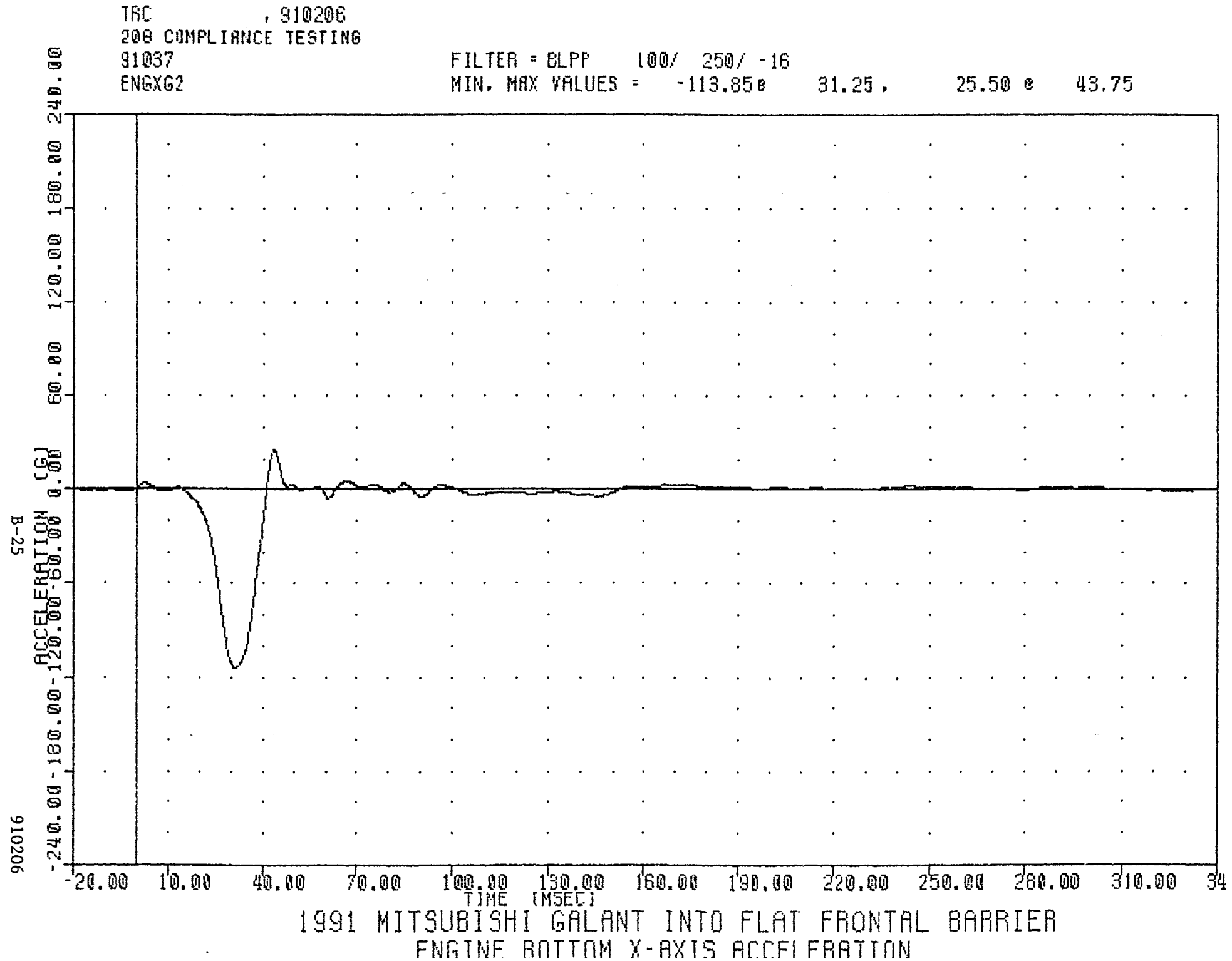


1991 MITSUBISHI GALANT INTO FLAT FRONTAL BARRIER
RIGHT REAR SEAT X-AXIS ACCELERATION

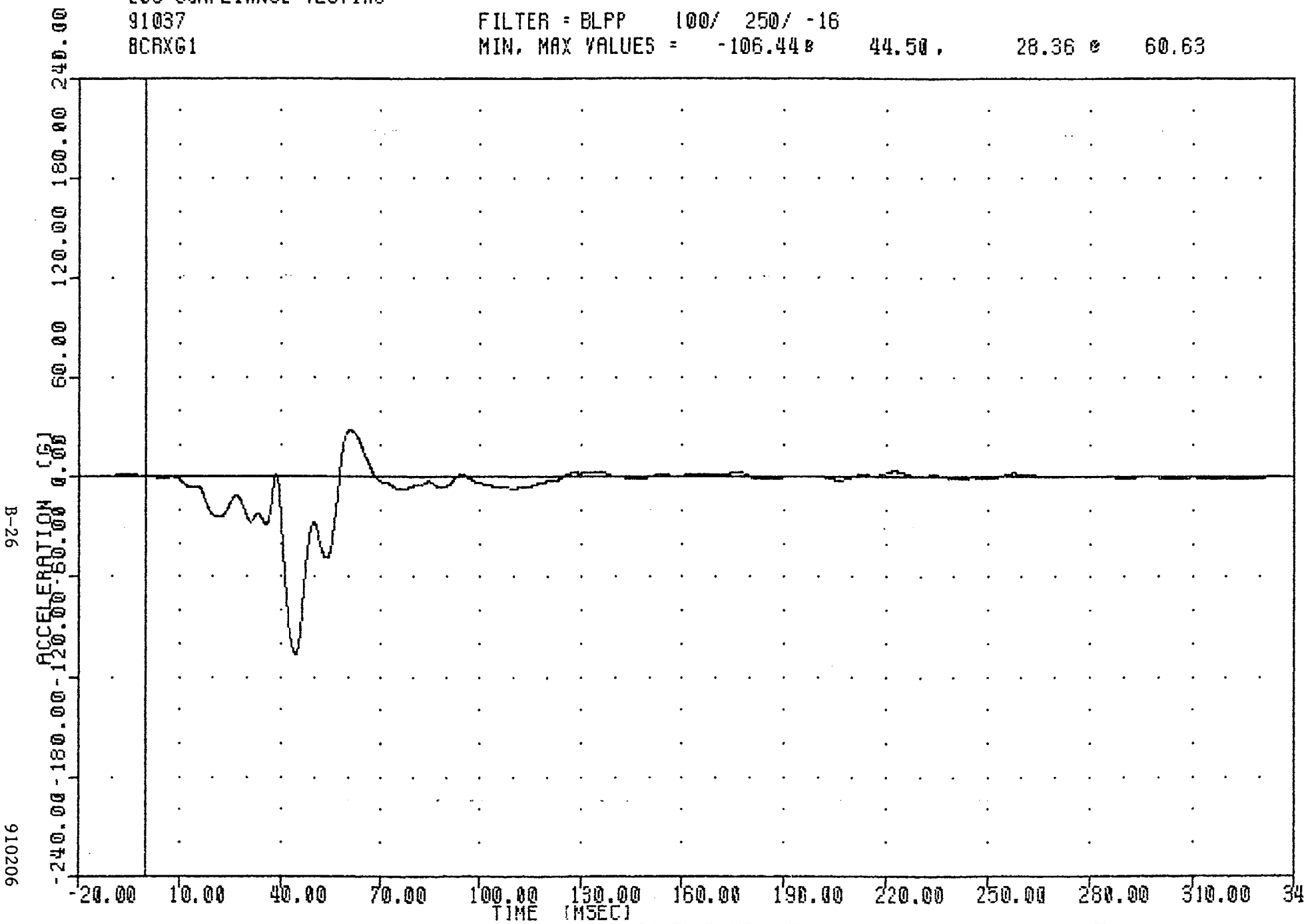


1991 MITSUBISHI GALANT INTO FLAT FRONTAL BARRIER
ENGINE TOP X-AXIS ACCELERATION

910206



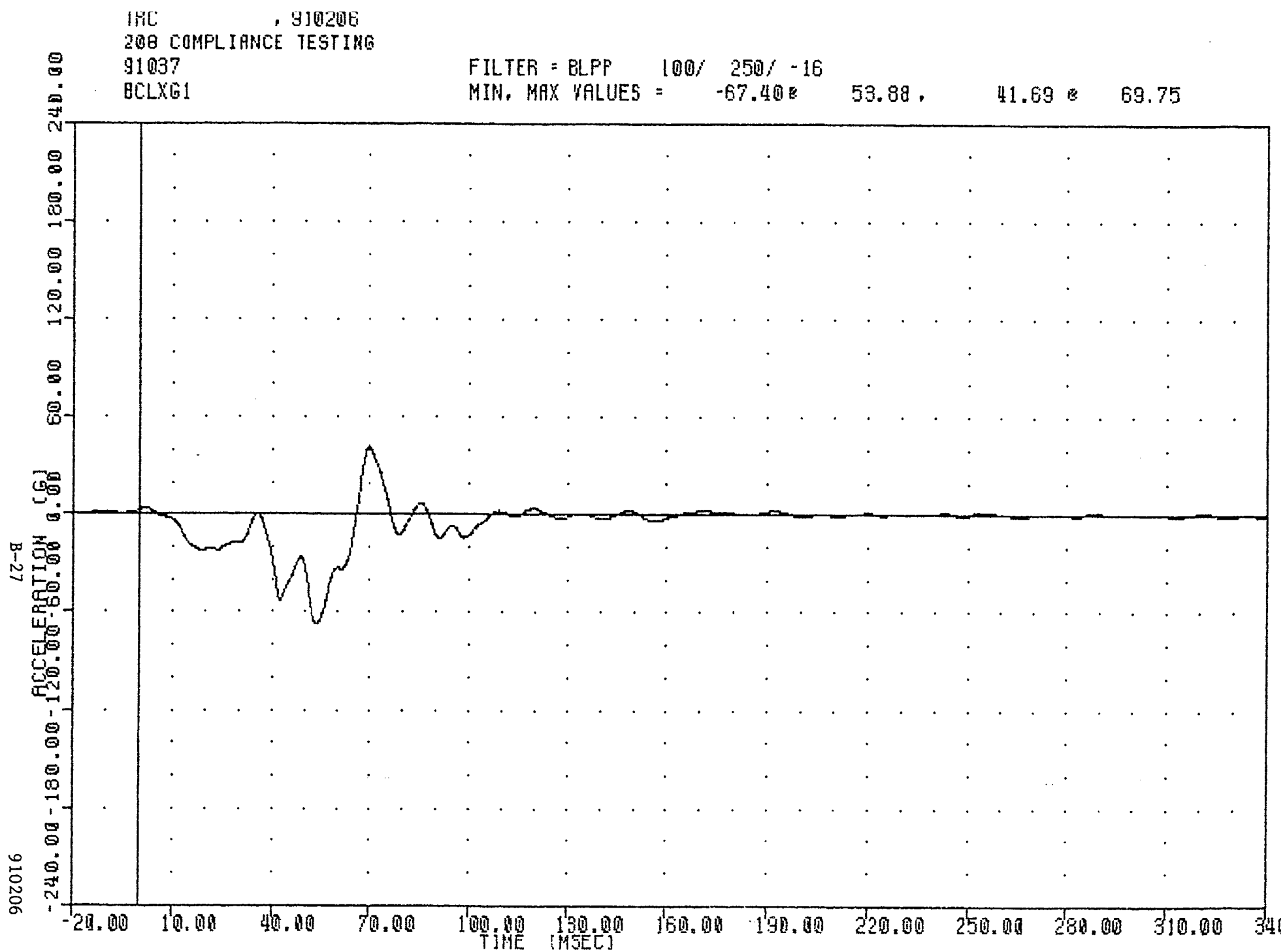
1991 MITSUBISHI GALANT INTO FLAT FRONTAL BARRIER
ENGINE BOTTOM X-AXIS ACCELERATION



1991 MITSUBISHI GALANT INTO FLAT FRONTAL BARRIER

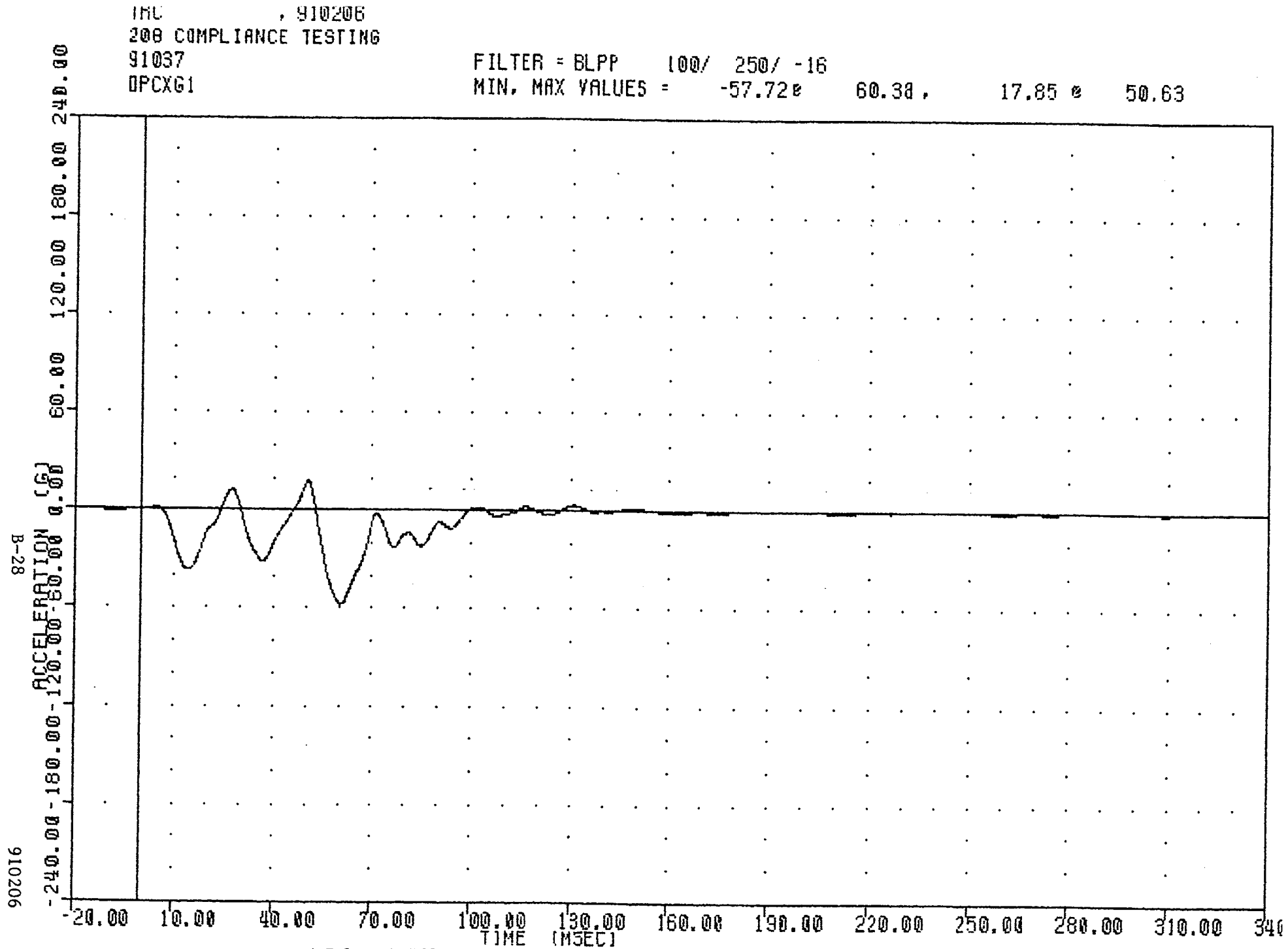
RIGHT BRAKE CALIPER X-AXIS ACCELERATION

910206



1991 MITSUBISHI GALANT INTO FLAT FRONTAL BARRIER
LEFT BRAKE CALIPER X-AXIS ACCELERATION

910206



1991 MITSUBISHI GALANT INTO FLAT FRONTAL BARRIER
INSTRUMENT PANEL CENTER X-AXIS ACCELERATION

910206