

V2124

REPORT NO.: 208-MGA-94-005
212-MGA-94-005
301-MGA-94-005

VEHICLE SAFETY COMPLIANCE TESTING
FOR
FMVSS 208, OCCUPANT CRASH PROTECTION
FMVSS 212, WINDSHIELD MOUNTING
FMVSS 301, FUEL SYSTEM INTEGRITY
FMVSS 219, WINDSHIELD INTRUSION (PARTIAL)

GENERAL MOTORS CORPORATION
1994 Chevrolet Corsica 4 Door Sedan
NETSA NO. CR0113

MGA PROVING GROUNDS
5000 WARREN ROAD
BURLINGTON, WI 53105



Test Date: May 31, 1994

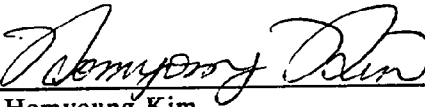
Report Date: November 23, 1994

FINAL REPORT

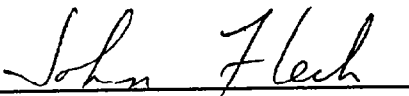
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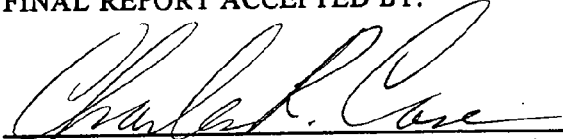
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DATE: 06/27/94

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DATE: 6-27-94

FINAL REPORT ACCEPTED BY:


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

DATE: 12/30/94

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SECTION 1
PURPOSE AND 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 MGA Research Corporation (MGA) under Contract No. DTNH22-93-D-21089. The purpose of this test was to determine whether the subject vehicle, a 1994 Chevrolet Corsica 4 Door Sedan, NHTSA No. CR0113, 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-208-09 dated March 15, 1993. 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 and one (1) accelerometer to measure vertical axis acceleration. The vehicle's specified impact velocity range was 28.9 to 29.9 mph. The vehicle impacted a fixed flat barrier of which face was covered with a sheet of 3/4 inch thick plywood.

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

Both dummies were instrumented with head, chest, and pelvis accelerometers to measure longitudinal, lateral, and vertical accelerations, and with left and right femur load cells to measure axial forces. Each Part 572 E dummy's instrumentation also included a chest potentiometer to measure longitudinal deflection and a six-axis neck load cell to measure longitudinal, lateral, and vertical forces and moments.

The forty-four (44) data channels were multiplexed and recorded on five IBM PC compatible computers with Metrobyte DAS-16F A/D converter boards. The data was digitally sampled at 8170 samples per second and processed per Section 11.13 through 11.15 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 the real-time motion picture camera.

The vehicle and occupant data are summarized in Section 2. The FMVSS 208, 212, 219 (partial) and 301 data are presented in Section 3. The vehicle, occupant, and camera measurements are presented in Section 4. Appendix A contains the still photographic prints. Appendix B contains the dummy and vehicle data plots. Appendix C contains the manufacturer's vehicle information.

SECTION 2
SUMMARY OF FRONTAL BARRIER IMPACT TEST

TEST RESULTS SUMMARY

This flat frontal barrier test was conducted at MGA Research Corp. on May 31, 1994.

The test vehicle, a 1994 Chevrolet Corsica 4 Door Sedan, NHTSA No. CR0113, 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 compressive forces transmitted through the upper legs did not exceed 2,250 pounds as measured by Part 572 E dummies seated in the front outboard designated seating positions. For each Part 572 E dummy, the chest deflection did not exceed 3.0 inches. The vehicle's restraint system met the applicable comfort and convenience requirements. The windshield periphery retention on each side of the vehicle centerline was greater than 50 percent. There was not 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 an airbag and a Type 2 automatic seat belt at the driver's seating position and a Type 2 automatic seat belt at the right front passenger's seating position. The vehicle's test weight was 3235 pounds. The vehicle's impact speed was 29.5 mph. The vehicle's maximum static crush was 21.9 inches.

The driver's HIC was 336. The driver's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 40.7 g's. The driver's chest maximum deflection was 1.0 inches. The driver's left and right femur maximum compressive forces were 1258 pounds and 1138 pounds, respectively.

The right front passenger's HIC was 707. The right front passenger's chest maximum resultant acceleration with three (3) milliseconds minimum duration was 46.3 g's. The right front passenger's chest maximum deflection was 1.5 inches. The right front passenger's left and right femur maximum compressive forces were 670 pounds and 581 pounds, respectively.

There was no loss of windshield periphery retention and 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.

TEST NOTES

An invalid data was collected from the Driver Neck Y Moment channel in the time duration of 69 - 83 and 132 - 140 msec. The reason for this invalid data was a bad connection of the positive excitor wire.

TABLE 1 CRASH TEST SUMMARY

Vehicle Yr/Make/Model/Body Style: 1994/Chevrolet/Corsica/4 Door Sedan

Vehicle NHTSA No.: CR0113 Test Type: Frontal Barrier Impact

Test Date: 05/31/94 Time: 15:37 Temp: 70°F

Vehicle Test Weight: 3235 lbs. Vehicle/Barrier Impact Angle: 0°

Impact Velocity: 29.5 mph Maximum Static Crush: 21.9 inches

Vehicle Rebound: 14.8 inches

Dummies:	Driver	Passenger
Dummy Type	<u>Part 572E</u>	<u>Part 572E</u>
Serial Number	<u>403</u>	<u>401</u>
Restraint System	<u>Type 2 Automatic Seat Belt</u>	
	<u>Airbag</u>	
No. of Data Channels	<u>18</u>	<u>18</u>

Number of Cameras: 1 Real Time
14 High Speed

Door Opening Data: Left Front: Easy
Right Front: Easy

Front Seat(s) Data:	Driver	Passenger
Seat Track Failure	<u>None</u>	<u>None</u>
Seat Back Failure	<u>None</u>	<u>None</u>

Visible Dummy Contact Points:	Driver	Passenger
Head	<u>Airbag</u>	<u>None</u>
Chest	<u>Airbag</u>	<u>None</u>
Left Knee	<u>Instrument Panel</u>	<u>Instrument Panel</u>
Right Knee	<u>Instrument Panel</u>	<u>Instrument Panel</u>

TABLE 2 GENERAL TEST AND VEHICLE PARAMETER DATA

Vehicle Yr/Make/Model/Body Style: 1994/Chevrolet/Corsica/4 Door Sedan

NHTSA No: CR0113 VIN: 1G1LD5545RY239402 Body Color: Blue

Engine: 4 Cylinders; C.I.D.; 2.2 liters; CC

 Gas; Diesel; Turbocharged

 Longitudinal; Transverse

Transmission: 3 Speed; Manual; Automatic; Overdrive

Final Drive: Front Wheel; Rear Wheel; Four Wheel

Major Option: A/C; P/S; P/B; P/wdo; P/door locks;

 P/seats; Tilt Wheel; Anti-skid Brakes; Cruise Control; Other

Date Received: 05/10/94; Odometer Reading: 31 miles

Dealer's Name/Address: Roger Palmen Auto Sales, Inc.
19212 Spring Street
Union Grove, WI 53182

DATA FROM VEHICLE'S CERTIFICATION LABEL:

Vehicle Manufactured By: General Motors Corporation

Date of Manufacture: 04/94; VIN: 1G1LD5545RY239402

GVWR: 3658 lbs; GAWR Front: 1910 lbs. GAWR Rear: 1748 lbs.

DATA FROM TIRE PLACARD:

Tire Pressure with maximum capacity vehicle load: Front 30 Psi; Rear 30 Psi

Recommended Tire Size: P185/75R14

Recommended Cold Tire Pressure: Front 30 Psi; Rear 30 Psi

Tires on Vehicle: P185/75R14; Manufacturer: Goodyear

Type of Spare Tire: Space Saver

Number of Occupants: 2 Front; 3 Rear; 3rd Seat; 5 TOTAL

Type of Front Seats: Bucket; Bench; Split Bench

Type of Front Seat Back: Fixed; Adj. With; Lever; Rot. Knob

TABLE 2 GENERAL TEST AND VEHICLE PARAMETER DATA (Cont'd)

WEIGHT OF TEST VEHICLE AS RECEIVED FROM DEALER (WITH MAXIMUM FLUIDS) = UDW:

Right Front = 883 lbs Right Rear = 495 lbs
Left Front = 890 lbs Left Rear = 500 lbs
TOTAL FRONT WEIGHT = 1773 lbs (64.1% of Total Vehicle Weight)
TOTAL REAR WEIGHT = 995 lbs (35.9% of Total Vehicle Weight)
TOTAL UNLOADED DELIVERED WEIGHT (UDW) = 2768 lbs

CALCULATION FOR TARGET TEST WEIGHT:

UDW (Unloaded Delivered Weight) = 2768 lbs
VCW (Vehicle Capacity Weight) = 891 lbs
DSC (Designated Seating Capacity) = 5
RCLW*(Rated Cargo/Luggage Weight) = VCW - 150 (DSC) = 891 - 150 (5) = 141 lbs
Target Test Weight = UDW + RCLW + (2 Dummies x Dummy Weight)
Target Test Weight = 2768 + 141 + 344 = 3253 lbs

WEIGHT OF TEST VEHICLE WITH REQUIRED DUMMIES AND CARGO WEIGHT:

Right Front = 930 lbs Right Rear = 656 lbs
Left Front = 966 lbs Left Rear = 683 lbs
TOTAL FRONT WEIGHT = 1896 lbs (58.6% of Total Vehicle Weight)
TOTAL REAR WEIGHT = 1339 lbs (41.4% of Total Vehicle Weight)
TOTAL TEST WEIGHT = 3235 lbs
Weight of ballast secured in vehicle = 26 lbs
Vehicle components removed to meet target weight: Rear seat cushion, rear seat back,
spare tire, and jack were removed for instrument installation.

VEHICLE ATTITUDE (all dimensions in inches):

Delivered Attitude: RF 26.8 LF 26.9 RR 28.1 LR 28.0
Fully Loaded Attitude: RF 26.6 LF 26.8 RR 26.1 LR 25.9
Test Attitude: RF 26.8 LF 26.8 RR 26.2 LR 26.0

Wheel Base: 103.8 in; C.G. = 43.0 in rearward of front wheel centerline

*Cargo weight for multi-purpose passenger vehicles, truck, and buses is the vehicle's rated cargo and luggage weight from the vehicle's label or 3000 pounds, whichever is less.

TABLE 3 POST-IMPACT DATA

Type of Test: Frontal Barrier Impact Impact Angle: 0°
Test Date: 05/31/94 Time: 15:37 Temperature: 70° F
Vehicle NHTSA No.: CR0113 VIN: 1G1LD5545RY239402

BARRIER IMPACT VELOCITY

Required Impact Velocity Range: 28.9 to 29.9 mph

Impact Velocity: Primary = 29.5 mph; Secondary = 29.6 mph

Distance From Front Bumper to Barrier Face When

Entering Speed Trap: 55.1 inches

Exiting Speed Trap: 15.7 inches

VEHICLE STATIC CRUSH AND REBOUND (inches):

Vehicle Length:	Pre-test	= R <u>178.1</u>	C _L <u>183.4</u>	L <u>178.8</u>
	Post-test	= R <u>162.8</u>	C _L <u>161.5</u>	L <u>162.0</u>
	Crush	= R <u>15.3</u>	C _L <u>21.9</u>	L <u>16.8</u>
	Average	= <u>18.0</u>		

Distance from front of test vehicle to point of impact (rebound):

R 14.4 in C_L 14.8 in L 14.1 in

TABLE 4 ACCIDENT INVESTIGATION DIVISION DATA

Vehicle Year/Make/Model/Body Style: 1994/Chevrolet/Corsica/4 Door Sedan

Veh. NHTSA No.: CR0113;

VIN: 1G1LD5545RY239402

Build Date: 04/94;

Test Date: 05/31/94

Veh. Size Category: Compact;

Test Weight: 3235 lbs

Veh. Wheelbase: 103.8 in;

Front Overhang: 37.6 in;

Overall Width: 68.9 in

ACCELEROMETER DATA:

Location: As per measurements on pages 2-10

Calibration Procedure: As per MGA Calibration Procedure

Linearity: >99.9% ; Integration Algorithm: Trapezoidal

COLLISION DEFORMATION CLASSIFICATION (CDC) CODE:

Impact Mode: Frontal Barrier

Crush Depth C1 = 16.8 inches

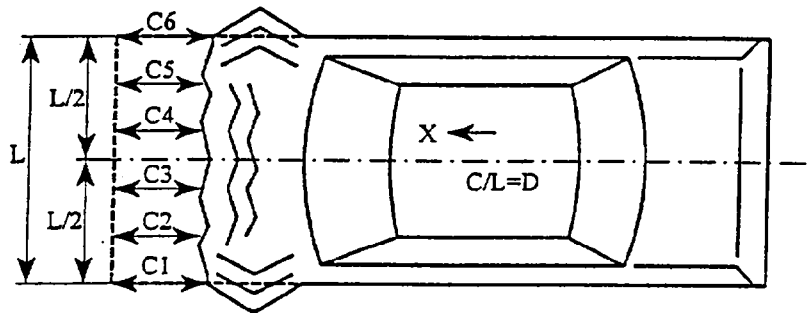
Dimensions: C2 = 18.0 inches

C3 = 21.8 inches

C4 = 20.2 inches

C5 = 17.0 inches

C6 = 15.3 inches



Midpoint of Damage: D = Vehicle Longitudinal Centerline

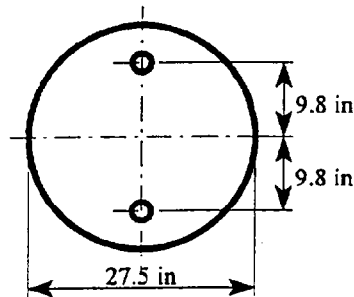
Length of Damaged Region: L = 51.8 inches

TABLE 5 POST TEST AIRBAG DATA

Vehicle Year/Make/Model/Body Style: 1994/Chevrolet/Corsica/4 Door Sedan

NHTSA No: CR0113; Test Date: 05/31/94; Technician: Homyoung Kim

- A. No of Vent Holes: Driver 2; Passenger N/A
- B. Size of Vent Holes: Driver 0.5 in Dia; Passenger N/A
- C. Total Vent Area: Driver 0.4 in²; Passenger N/A
- D. Deflated Airbag Length and Width Dimensions or, if Round, Diameter
 Driver; Length in; Width in; Diameter 27.5 in
 Passenger; Length N/A; Width N/A; Diameter N/A
- E. Is the Airbag Tethered?
 Driver; Yes; X No; if yes, record length of tether in
 Passenger; N/A Yes; N/A No; if yes, record length of tether N/A in



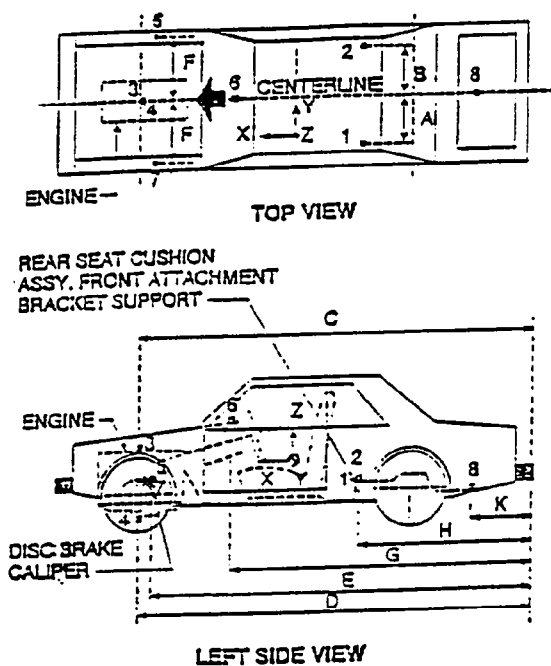
- F. Part Numbers and Manufacture Name of Airbag and Gas Generator
 Driver; Mfr N/A; Airbag PUT10571-01N; Gen 16753979
 Passenger; Mfr N/A; Airbag N/A; Gen N/A

TABLE 6 VEHICLE ACCELEROMETER LOCATION AND DATA SUMMARY

Vehicle Year/Make/Model/Body Style: 1994/Chevrolet/Corsica/4 Door Sedan

Vehicle NHTSA No.: CR0113;

Test Date: 05/31/94



ACCELEROMETER LOCATION (inches)		
	PRE-TEST	POST-TEST
A	22.6	22.6
B	23.0	23.0
C	179.0	137.1
D	151.1	143.8
E	147.4	142.0
F	25.0	25.0
G	121.1	119.8
H	63.9	64.0
K	8.9	9.0

ACCELEROMETER DATA SUMMARY					
No.	DESCRIPTION	MAXIMUM (g's)	TIME (msec)	MINIMUM (g's)	TIME (msec)
1	Left Rear Seat Crossmember	1.6	138	-25.9	67
2	Right Rear Seat Crossmember	1.7	136	-29.3	65
3	Top of Engine Block	48.2	48	-97.1	36
4	Bottom of Engine	30.2	50	-82.0	39
5	Right Disc Brake Caliper	6.6	76	-28.2	53
6	Instrument Panel	8.8	141	-57.0	57
7	Left Disc Brake Caliper	24.8	72	-52.4	54
8	Trunk	18.6	50	-11.9	91

TABLE 7 REPORT OF VEHICLE CONDITION AT THE COMPLETION OF TESTING

Contract Number: DTNH22-93-D-21089

From: MGA Research Corporation
5000 Warren Road
Burlington, WI 53105

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. The vehicle was again inspected after the above test had been conducted, and all changes were noted below. The final condition of the vehicle was also noted in detail.

Vehicle Year/Make/Model/Body Style: 1994/Chevrolet/Corsica/4 Door Sedan

Vehicle NHTSA No.: CR0113 Body Color: Blue

VIN: 1G1LD5545RY239402 Cost: \$13,010.00

Odometer: Arrival Date: 5/10/94 Reading: 31 miles

Completion Date: 5/31/94 Reading: 33 miles

Engine: 4 Cylinders; 2.2 Liters; X Gas; Diesel

Transmission: 3 Speed; Manual; X Automatic

Final Drive: X Front Wheel; Rear Wheel; Four Wheel

Tire Size: P185/75R14; Manufacturer: Goodyear

Air Conditioner	<u>Yes</u>	Console	<u>Yes</u>	Brakes	<u>Power</u>
Tinted Glass	<u>Yes</u>	Tachometer	<u>No</u>	Front	<u>Disc</u>
Power Steering	<u>Yes</u>	Cruise Control	<u>No</u>	Rear	<u>Drum</u>
Power Windows	<u>No</u>	Rear Window Def.	<u>Yes</u>	Front Seats	<u>Manual</u>
Power Door Locks	<u>Yes</u>	Sun/Moon Roof	<u>No</u>	Seat Type	Front <u>Bucket</u>
Radio	<u>Yes</u>	T-Top	<u>No</u>		Rear <u>Bench</u>
Clock	<u>Yes</u>	Tilt Steering Wheel	<u>No</u>		
Roof Rack	<u>No</u>	Other Options:	<u>ABS</u>	No. of Seats	<u>3</u>

TABLE 7 REPORT OF VEHICLE CONDITION AT THE COMPLETION OF TESTING, (Cont'd)

Equipment that is no longer on the vehicle as noted above:

Rear Seat

Spare Tire

Trunk Trim and Carpet

Explanation:

Items removed to allow installation of data acquisition system and to reduce test weight.

Vehicle Condition: The vehicle was subjected to a 30 mph frontal crash test. There is severe structural damage on the front body. Various interior and exterior portions of the vehicle have been painted and have had holes drilled to facilitate attachment of instrumentation. Various body parts have been removed. Stoddard solvent replaced the fuel in the fuel system and engine. **THE VEHICLE IS FOR SALVAGE ONLY AND IS NOT TO BE REPAIRED FOR HIGHWAY USE.**

SECTION 3
SUMMARY OF RESULTS FOR FMVSS 208
212, 219 (PARTIAL), AND 301

TABLE 8 FMVSS 208 OCCUPANT INJURY CRITERIA

Veh. Yr./Make/Model/Body Style: 1994/Chevrolet/Corsica/4 Door Sedan

Veh. NHTSA No.: CR0113 Test Date: 05/31/94

MAXIMUM ACCELERATION VALUES: (g's)	DRIVER DUMMY #403	PASSENGER DUMMY #401
Head Channel X	-53.1	63.0
Head Channel Y	-10.3	-19.4
Head Channel Z	-17.2	55.3
HEAD RESULTANT	54.4	68.2
Chest Channel X	-41.8	-46.2
Chest Channel Y	6.1	-12.2
Chest Channel Z	-13.7	15.6
CHEST RESULTANT	41.9	47.1

HEAD INJURY CRITERIA (HIC) VALUES:

HIC	336	707
t_1 = (msec)	59.4	77.9
t_2 = (msec)	95.4	113.8

[The maximum time interval from t_1 to t_2 is 36 milliseconds.]

CHEST INJURY CRITERIA (CLIP) VALUES: (g's)

CLIP	40.7	46.3
t^1 = (msec)	78.1	87.8
t^2 = (msec)	81.2	90.8
CHEST DEFLECTION (in)	1.2	1.8

MAX. COMPRESSIVE FEMUR FORCES:
(lbs)

Right Side	1138	581
Left Side	1258	670

TABLE 9 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 and chest impacted the airbag with the dummy's head rotating rearward. The driver dummy was restrained by the airbag and the Type 2 automatic seat belt. The dummy rebounded rearward into the seat back with the dummy's head contacting the head restraint. The driver dummy came to rest in the seat.

RIGHT FRONT PASSENGER DUMMY

Upon impact, the right front passenger dummy translated forward on the seat impacting both knees into the instrument panel. The dummy's head and chest movement was restrained by the shoulder belt and the dummy's head rotated forward. The right front passenger dummy, which was restrained by the Type 2 automatic seat belt, rebounded rearward into the seat back with the dummy's head contacting the head restraint. The right front passenger dummy came to rest on the seat.

TABLE 10 FMVSS 208 SEAT BELT COMFORT AND CONVENIENCE TEST SUMMARY
FRONT OUTBOARD DESIGNATED SEATING POSITIONS

Vehicle Year/Make/Model/Body Style: 1994/Chevrolet/Corsica/4 Door Sedan
NHTSA No.: CR0113; Date of Comfort/Convenience Check: 05/20/94
Technician Performing Check: Homyoung Kim
GVWR: 3235 lbs

Automatic seat belts installed in any vehicle, other than a walk-in van-type vehicle which has a gross vehicle weight rating of 10,000 pounds or less, and is manufactured on or after September 1, 1986, shall meet the requirements for convenience hooks, webbing tension relieving devices, and belt contact force.

Manual seat belts installed for compliance with this standard in front outboard designated seating positions of any vehicle, other than a walk-in van-type vehicle which has a gross vehicle rating of 10,000 pounds or less, and is manufactured on or after September 1, 1989, shall meet the requirements for belt contact force, plate access, retraction and seat belt guides, and hardware.

VEHICLE EQUIPMENT:

The vehicle's front outboard seating positions were equipped with automatic Type 2 seat belts which must comply with the dynamic test requirements of S5.1; requirements for convenience hooks (S7.4.4), webbing tension-relieving devices (S7.4.2), and belt contact force (S7.4.3) apply.

CONVENIENCE HOOKS (S7.4.1):

A manual convenience hook was provided to stow seat belt webbing to facilitate entering or exiting the vehicle.

The manual convenience hook automatically released the webbing when the automatic belt system was operational and remained in the released mode as long as the vehicle's ignition switch was moved to the "on" or "start" position and the vehicle's drivetrain was engaged.

TABLE 10 FMVSS 208 SEAT BELT COMFORT AND CONVENIENCE TEST SUMMARY
FRONT OUTBOARD DESIGNATED SEATING POSITIONS. (Cont'd)

The manual convenience hook automatically released the webbing when the automatic belt system was operational and remained in the released mode as long as the vehicle's ignition switch was moved to the "on" or "start" position and the vehicle's parking brake was in the released mode (non-engaged).

WEBBING TENSION-RELIEVING DEVICE (S7.4.2)

The seat belt assembly in the front outboard seating positions did not have webbing tension-relieving devices.

BELT CONTACT FORCE (S7.4.3)

The belt contact force on the chest of the test dummy was 0.3 pounds.

LATCHPLATE ACCESS (S7.4.4)

Not applicable, the vehicle was not equipped with manual seat belts.

RETRACTION (S7.4.5):

Not applicable, the vehicle was not equipped with manual seat belts.

SEAT BELT GUIDES AND HARDWARE (S7.4.6)

Not applicable, the vehicle was not equipped with manual seat belts.

TABLE 11 FMVSS 208 EQUIPMENT DATA

Vehicle Year/Make/Model/Body Style: 1994/Chevrolet/Corsica/4 Door Sedan

Vehicle NHTSA No.: CR0113 Date of Check: 05/20/94

Technician Performing Check: Homyoung Kim

GVWR: 3235 lbs

FMVSS 208 SEAT BELT WARNING SYSTEM DATA

With an occupant in the driver's position and the lap belt/unibelt in stowed position and the ignition switch placed in the "start/on" position, the duration of audible warning signal was 6.6 seconds and the reminder light stayed on.

With an occupant in the driver's position and the lap belt/unibelt in use and the ignition switch placed in the "start/on" position, the duration of audible warning signal was 0 second and the duration of the reminder light operation was 6.2 seconds.

Note: The audible warning should not operate.

The wording of the visual seat belt warning was the symbol from Table 2 of FMVSS 101.

FMVSS 208 LABELING AND DRIVER'S MANUAL DATA

The labels which describe manufacturer's maintenance or replacement schedule for the crash-deployed occupant protection system were located on the driver's sunvisor.

No airbag maintenance was required.

Appropriate instructions concerning maintenance and/or replacement of this system were provided in the owner's manual on pages 26-27.

A description of the functional operation of the system was provided in the owner's manual on pages 25-26.

A reference to the instructions and description of the system was included on the label.

TABLE 11 FMVSS 208 EQUIPMENT DATA, (Cont'd)

FMVSS 208 LABELING AND DRIVER'S MANUAL DATA (Cont'd)

An owner's manual was provided.

The owner's manual contained appropriate information concerning maintenance and/or replacement and a description of the functional operation of the systems on pages 25-27.

FMVSS 208 READINESS INDICATOR DATA

The vehicle contained a crash-deployed occupant protection system which was not totally mechanical. The readiness indicator was located on the middle right side of the instrument cluster.

The readiness indicator was clearly visible to the driver.

A list of the elements in the occupant restraint system, being monitored by the readiness indicator, was not provided in the owner's manual.

TABLE 12 FMVSS 212, "WINDSHIELD MOUNTING", DATA SUMMARY

Vehicle Year/Make/Model/Body Style: 1994/Chevrolet/Corsica/4 Door Sedan

Vehicle NHTSA No.: CR0113

Test Date: 05/31/94

DETAILS OF WINDSHIELD MOUNTING SUCH AS RETENTION METHOD, TRIM TYPE, ETC.:

Rubber trim with glue retention

CLIPS OR BRACKETS USED TO RETAIN WINDSHIELD: None

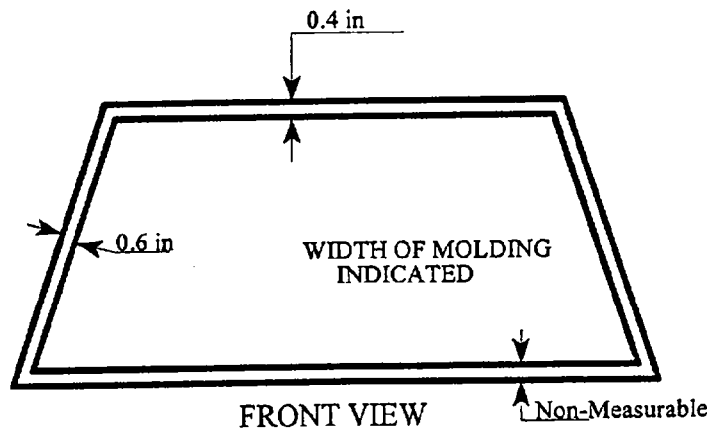
FMVSS 212 REQUIREMENTS:

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.

FMVSS 212 TEST DATA:

	WINDSHIELD PERIPHERY (inches)		PERCENT RETENTION
	PRE-TEST	POST-TEST	
RIGHT SIDE	81.6	81.6	100%
LEFT SIDE	81.3	81.3	100%
TOTAL	162.9	162.9	100%

Pre-Test Windshield Mounting Material Temperature: 71° F



FAILURE DETAILS: None

TABLE 13 FMVSS 219, "WINDSHIELD ZONE INTRUSION", DATA SUMMARY

Vehicle Year/Make/Model/Body Style: 1994/Chevrolet/Corsica/4 Door Sedan

Vehicle NHTSA No.: CR0113 Test Date: 05/31/94

PROTECTED ZONE LOWER EDGE REQUIREMENT:

The lower edge of the protected zone is determined by placing a 6.5" dia. 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 contacted by the sphere across the width of the instrument panel. From the outermost contact 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 1/2" distant 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= 45.6 in

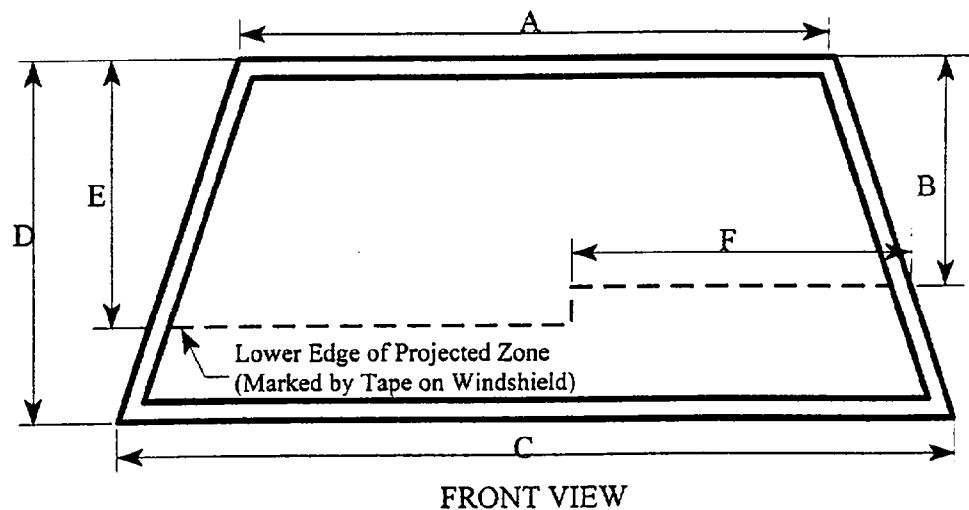
B= 18.4 in

C= 62.1 in

D= 27.8 in

E= 20.2 in

F= 27.8 in



AREAS OF WINDSHIELD TEMPLATE PENETRATION GREATER THAN 1/4 IN:

None

AREAS OF WINDSHIELD PENETRATION, BELOW THE PROTECTED ZONE, THROUGH THE INNER SURFACE OF THE WINDSHIELD:

None

TABLE 14 FUEL SYSTEM DATA

Vehicle Year/Make/Model/Body Style: 1994/Chevrolet/Corsica/4 Door Sedan

Vehicle NHTSA No.: CR0113

Test Date: 05/31/94

Fuel System Capacity from Owner's Manual = 15.2 gallons

Usable Capacity Figure Furnished by COTR = 15.2 gallons

Test Volume Range (92 to 94% of Usable Capacity)

= 14.0 to 14.3 gallons

Actual Test Volume = 14.0 gallons

Test Fluid Type: Stoddard Solvent; Spec. Grav. = 0.77

Kinematic Viscosity = 1.788 centistokes; Color = Purple

Type of Fuel Pump: X Electric; Mechanical

Does electric pump operate with ignition switch "On" and engine "Off"?

X Yes (only for a few seconds); No

Details of Fuel System:

The fuel tank was located in front of the rear axle. The fuel filler pipe
was located on the right side. The fuel lines ran along the left side to
the front.

TABLE 15 FMVSS 301 POST IMPACT TEST DATA

Vehicle Year/Make/Model/Body Style: 1994/Chevrolet/Corsica/4 Door Sedan

Vehicle NHTSA No.: CR0113 Test Date: 05/31/94

TEST REQUIREMENTS:

Test vehicle's 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:

- ☒ Frontal (30 mph)
☐ Oblique (30 mph) with ☐° barrier face first
contacting (driver/passenger) side
☐ Rear Moving Barrier (30 mph)
☐ Lateral Moving Barrier (20 mph)

FUEL SPILLAGE MEASUREMENT:

POST IMPACT TEST	TEST RESULTS	MAXIMUM ALLOWABLE
1. From impact until vehicle motion ceases	0 oz	1 oz
2. For 5 minute period after vehicle motion ceases	0 oz	5 oz
3. For next 25 minutes	0 oz	1 oz./1 min

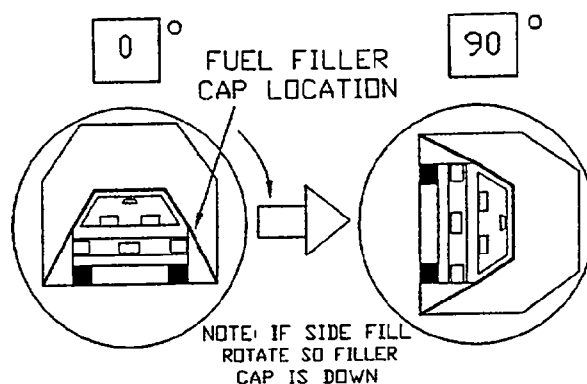
FUEL SPILLAGE LOCATION(S): None

TABLE 16 FMVSS 301 STATIC ROLLOVER TEST DATA

Vehicle Year/Make/Model/Body Style: 1994/Chevrolet/Corsica/4 Door Sedan

Vehicle NHTSA No.: CR0113 Test Date: 05/31/94

TEST PHASE: 0° - 90°



DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time = 2 minutes 38 seconds
(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time = 5 minutes 0 seconds

TOTAL TIME = 7 minutes 38 seconds

Next Whole Minute Interval = 8 minutes

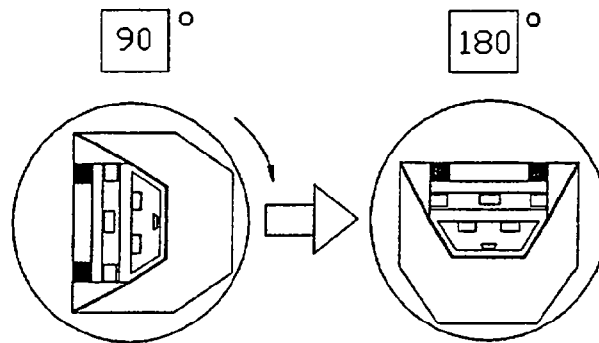
FUEL SPILLAGE MEASUREMENT:

0° TO 90° ROTATION (FILLER CAP DOWN)	TEST RESULTS	MAXIMUM ALLOWABLE
1. First 5 Minutes From Onset of Rotation	0 oz	5 oz
2. Sixth Minute From Onset of Rotation	0 oz	1 oz
3. Seventh Minute From Onset of Rotation	0 oz	1 oz
4. Eighth Minute if Required	N/A	1 oz

FUEL SPILLAGE LOCATIONS(S): None

TABLE 16 FMVSS 301 STATIC ROLLOVER TEST DATA (Cont'd)

TEST PHASE: 90° - 180°



DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time = 2 minutes 33 seconds
(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time = 5 minutes 0 seconds

TOTAL TIME = 7 minutes 33 seconds

Next Whole Minute Interval = 8 minutes

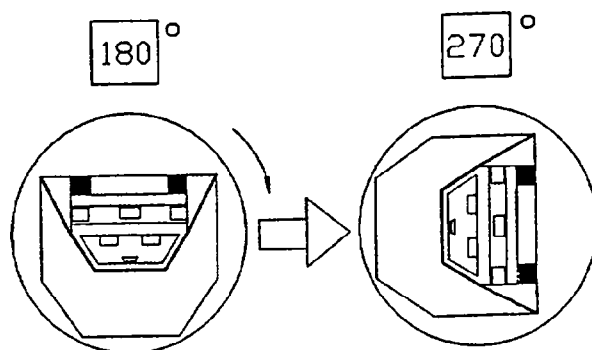
FUEL SPILLAGE MEASUREMENT:

90° TO 180° ROTATION	TEST RESULTS	MAXIMUM ALLOWABLE
1. First 5 Minutes From Onset of Rotation	0 oz	5 oz
2. Sixth Minute From Onset of Rotation	0 oz	1 oz
3. Seventh Minute From Onset of Rotation	0 oz	1 oz
4. Eighth Minute if Required	N/A	1 oz

FUEL SPILLAGE LOCATIONS(S): None

TABLE 16 FMVSS 301 STATIC ROLLOVER TEST DATA (Cont'd)

TEST PHASE: 180° - 270°



DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time = 2 minutes 12 seconds
(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time = 5 minutes 0 seconds

TOTAL TIME = 7 minutes 12 seconds

Next Whole Minute Interval = 8 minutes

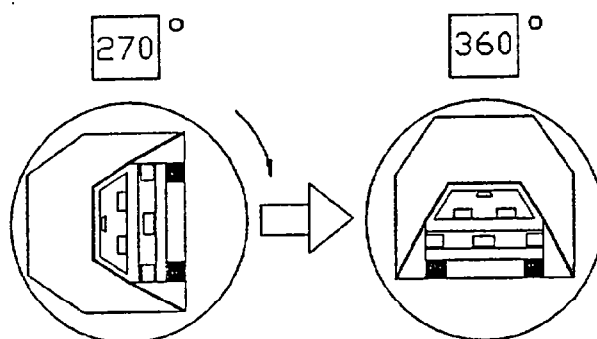
FUEL SPILLAGE MEASUREMENT:

180° TO 270° ROTATION	TEST RESULTS	MAXIMUM ALLOWABLE
1. First 5 Minutes From Onset of Rotation	0 oz	5 oz
2. Sixth Minute From Onset of Rotation	0 oz	1 oz
3. Seventh Minute From Onset of Rotation	0 oz	1 oz
4. Eighth Minute if Required	N/A	1 oz

FUEL SPILLAGE LOCATIONS(S): None

TABLE 16 FMVSS 301 STATIC ROLLOVER TEST DATA

TEST PHASE: 270° - 360°



DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time = 2 minutes 47 seconds
(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time = 5 minutes 0 seconds

TOTAL TIME = 7 minutes 47 seconds

Next Whole Minute Interval = 8 minutes

FUEL SPILLAGE MEASUREMENT:

270° TO 360° ROTATION	TEST RESULTS	MAXIMUM ALLOWABLE
1. First 5 Minutes From Onset of Rotation	0 oz	5 oz
2. Sixth Minute From Onset of Rotation	0 oz	1 oz
3. Seventh Minute From Onset of Rotation	0 oz	1 oz
4. Eighth Minute if Required	N/A	1 oz

FUEL SPILLAGE LOCATIONS(S): None

SECTION 4
OCCUPANT, VEHICLE, AND CAMERA INFORMATION

TABLE 17 SEAT AND STEERING COLUMN POSITIONING DATA

Vehicle Year/Make/Model/Body Style: 1994/Chevrolet/Corsica/4 Door Sedan

Vehicle NHTSA No.: CR0113 Test Date: 05/31/94

NOMINAL DESIGN RIDING POSITION:

Driver Seat: Seat Back Angle = 26.3°
The seat back angle was adjustable and was positioned in accordance with the seat back set procedure in the manufacturer's information. The seat back angle was measured on the seat back frame with the inclinometer.

Passenger Seat: Seat Back Angle = 26.1°
The seat back angle was adjustable and was positioned in accordance with the seat back set procedure in the manufacturer's information. The seat back angle was measured on the seat back frame with the inclinometer.

SEAT FORE AND AFT POSITIONS:

Driver Seat: The seat track had 19 detents and was positioned at the 10th notch rearward from the foremost position.

Passenger Seat: The seat track had 18 detents and was positioned at the 10th notch rearward from the foremost position.

STEERING COLUMN ADJUSTMENTS:

The steering column was not adjustable. The steering column angle was 16.7°.

FIGURE 1 DUMMY MEASUREMENT LOCATIONS FOR FRONT SEAT OCCUPANTS

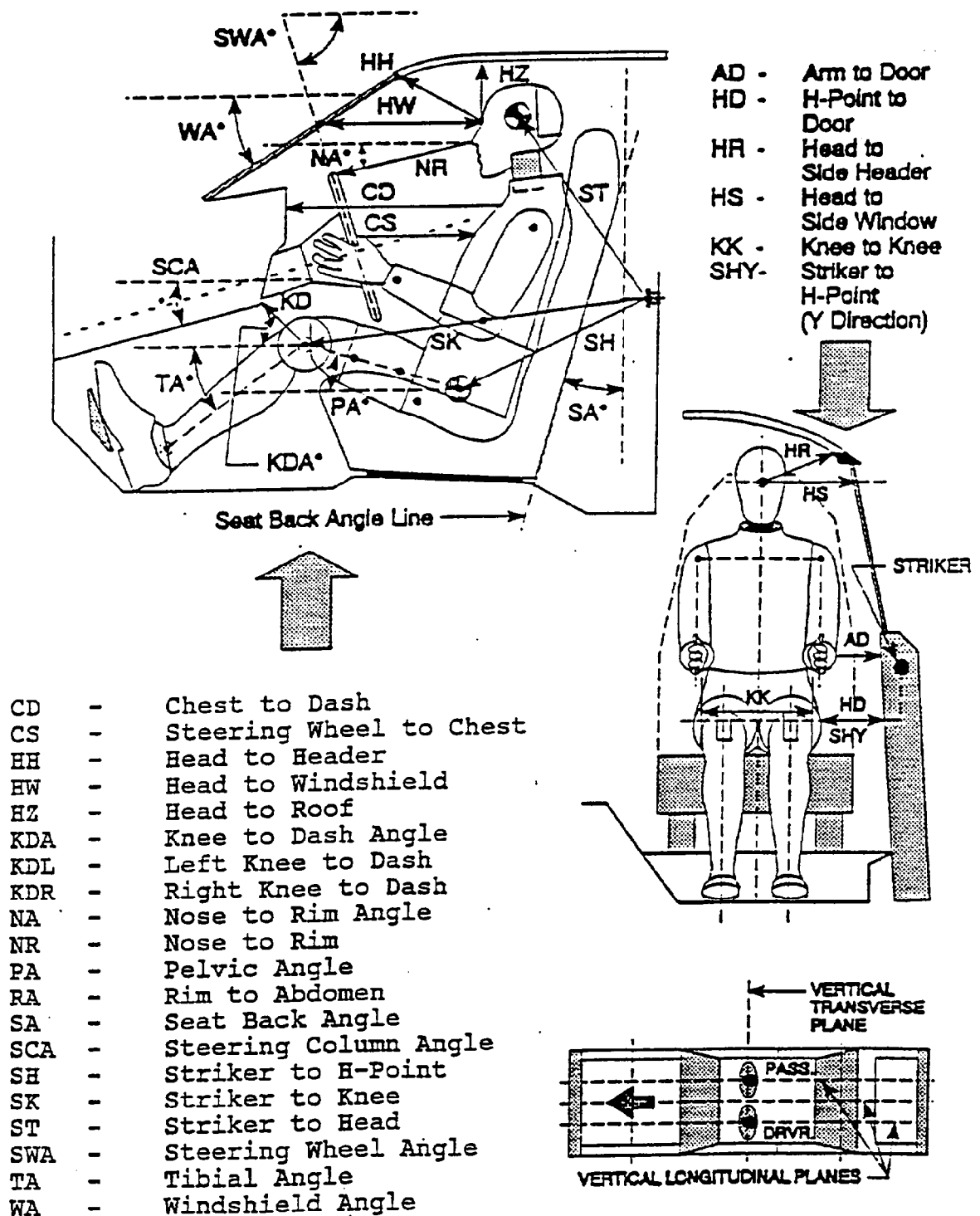


TABLE 18 DUMMY MEASUREMENT DATA FOR FRONT SEAT OCCUPANTS

Vehicle Year/Make/Model/Body Style: 1994/Chevrolet/Corsica/4 Door Sedan

Vehicle NHTSA No.: CR0113 Test Date: 05/31/94

	DRIVER (Serial #403)	PASSENGER (Serial #401)
WA°	29.6°	
SWA°	72.1°	N/A
SCA°	16.7°	N/A
SA°	26.3°	26.1°
HZ	7.1 in	6.5 in
HH	11.6 in	11.5 in
HW	21.4 in	21.0 in
HR	9.1 in	9.1 in
NR	14.3 in	N/A
CD	19.2 in	18.9 in
CS	10.8 in	N/A
RA	6.5 in	N/A
KDL	6.5 in Angle (KDA) 18.7°	7.8 in
KDR	6.6 in	7.0 in Angle (KDA) 37.8°
PA°	23.8°	20.6°
TA°	45.1°	43.8°
KK	12.3 in	11.0 in
ST	21.9 in Angle -5.4°	23.0 in Angle -2.8°
SK	22.4 in Angle 7.3°	22.8 in Angle 1.1°
SH	8.6 in Angle 23.4°	7.4 in Angle 22.1°
SHY	9.5 in	9.4 in
HS	12.5 in	13.3 in
HD	4.4 in	4.0 in
AD	3.0 in	3.4 in

N/A = Not Applicable

FIGURE 2 VEHICLE TARGET LOCATIONS

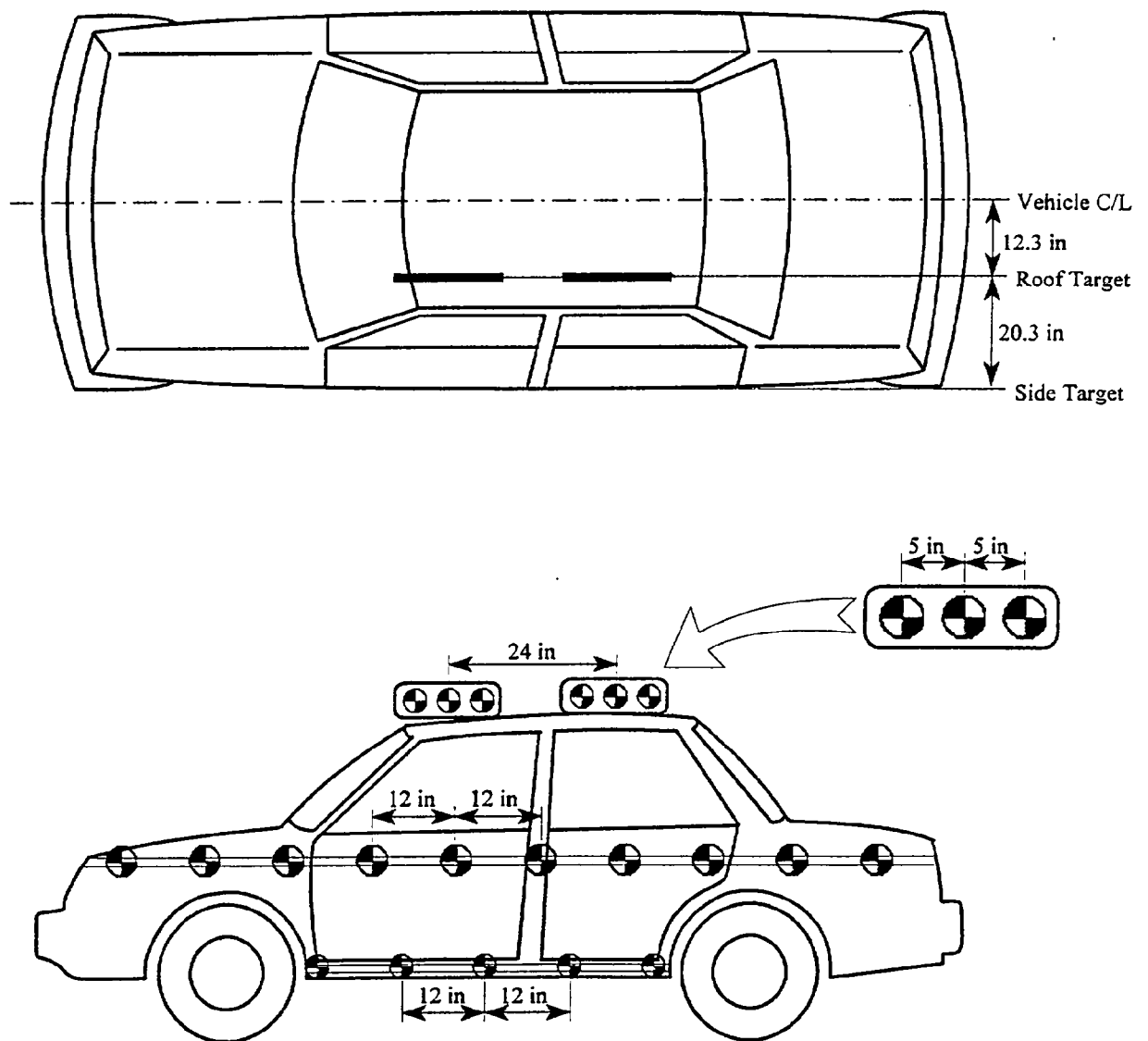


FIGURE 3 CAMERA POSITIONS

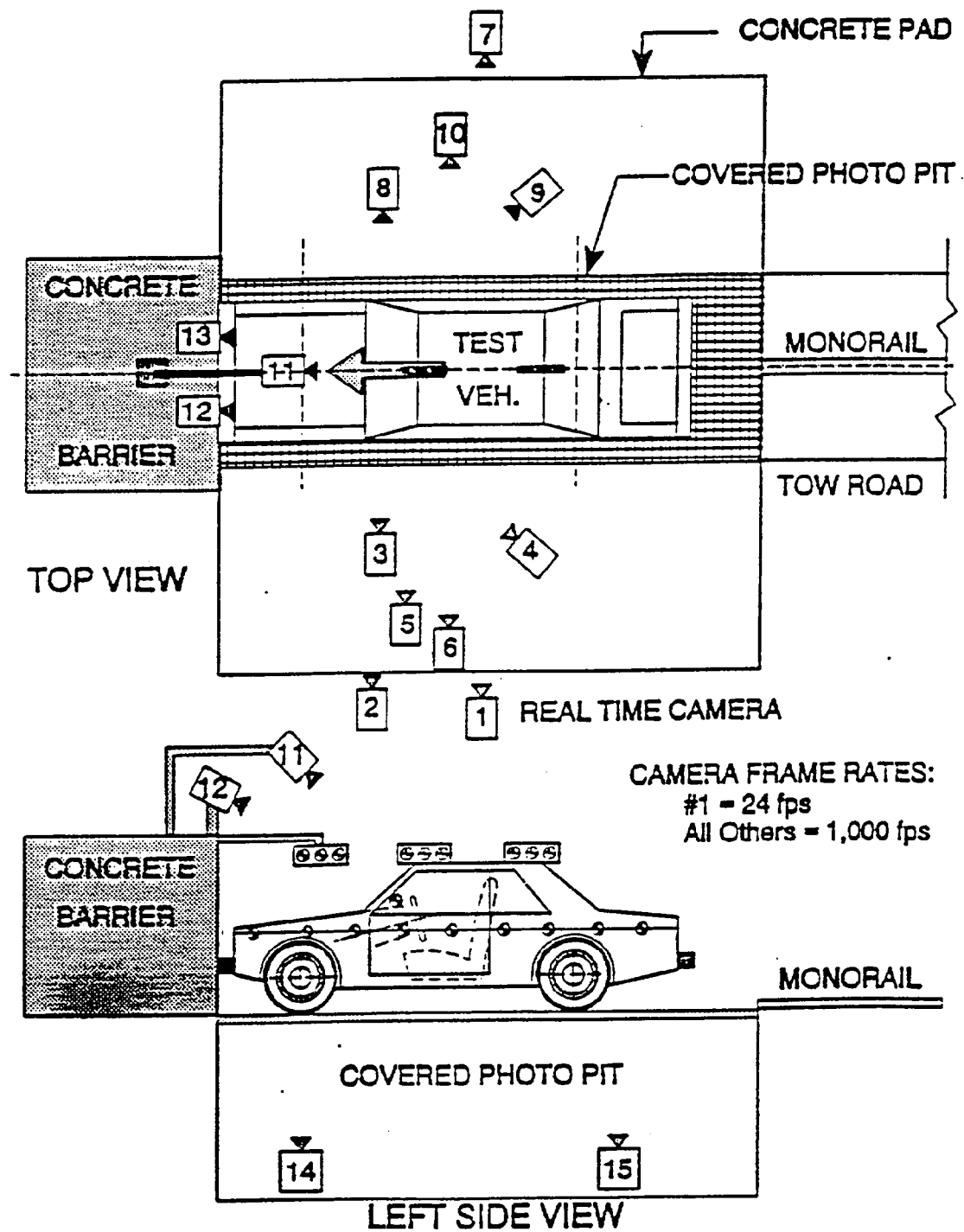


TABLE 19 CAMERA LOCATIONS

Veh. Year/Make/Model/Body Style: 1994/Chevrolet/Corsica/4 Door Sedan

Vehicle NHTSA No.: CR0113 ; Test Date: 05/31/94

	VIEW	CAMERA POSITIONS (inches)*			ANGLE (deg)	FILM PLANE TO HEAD TARGET	LENS (mm)	SPEED (fps)
		X	Y	Z				
1	Real-Time Left Side View						10	24
2	Left Vehicle Crush	44.1	305.5	51.0	90°	293.2	25	885
3	Left Windshield Intrusion	56.9	243.3	42.5	90°	231.0	35	1015
4	Left Driver Kinematics	159.3	181.5	83.1	50°		35	1053
5	Left Steering Column Motion	70.7	297.0	61.6	90°	284.7	25	1010
6	Left Steering Column Motion	70.7	295.9	40.4	90°	283.6	25	1000
7	Right Overall View	92.5	-281.3	41.1	90°	269.0	13	952
8	Right Vehicle Crush	52.0	-241.7	43.7	90°	229.4	35	995
9	Right Windshield Intrusion	201.2	-251.2	83.1	50°		50	893
10	Right Passenger Kinematics	60.6	-280.7	43.1	90°	268.4	25	1087
11	Front View Windshield	12.6	0	169.7			13	1010
12	Front View Driver	-10.2	14.6	92.1			13	1000
13	Front View Passenger	-5.5	-16.5	96.1			13	1111
14	Pit Camera Engine View	49.6	0	-123.4			13	629
15	Pit Camera Fuel Tank View	92.9	0	-124.8			13	No Timing**

- * +X = Film plane rearward of barrier
 +Y = Film plane to left of monorail centerline
 +Z = Film plane to above ground level

** The timing mark was not recorded. The camera was preset to 1000 frames per second.

APPENDIX A
PHOTOGRAPHS

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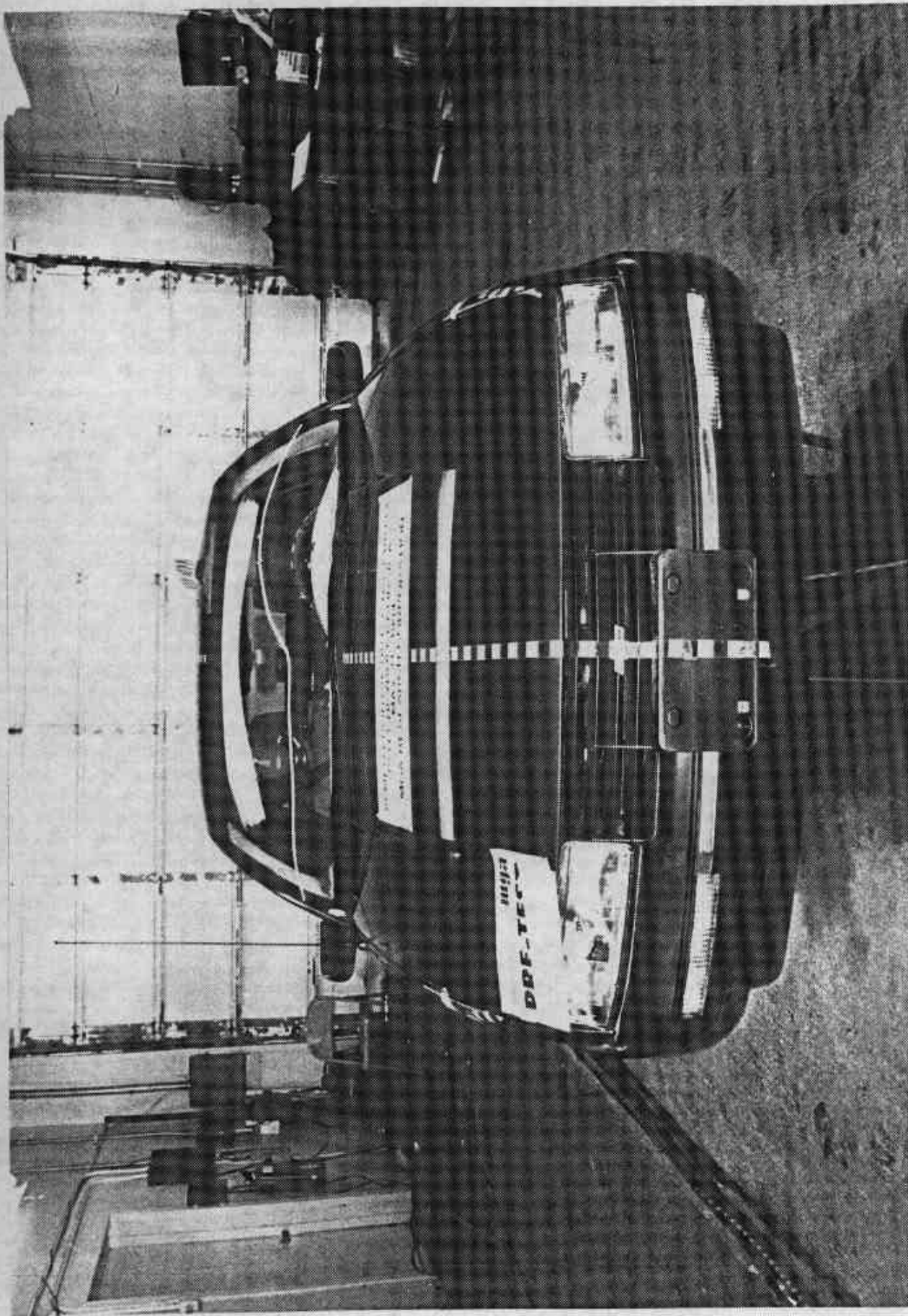


Photo No. A-1 - Pre-Test Front View

A-1

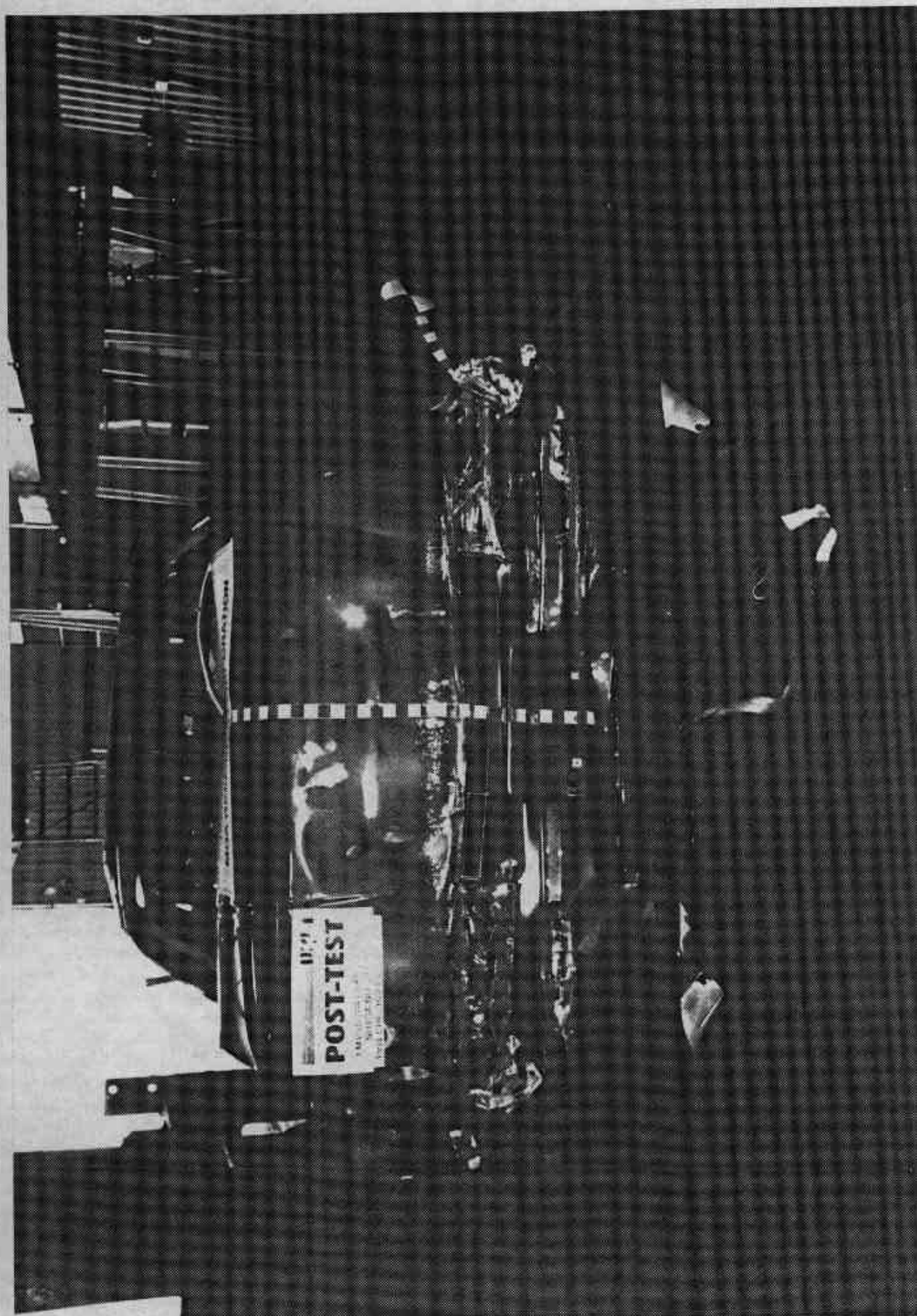


Photo No. A-2 - Post-Test Front View

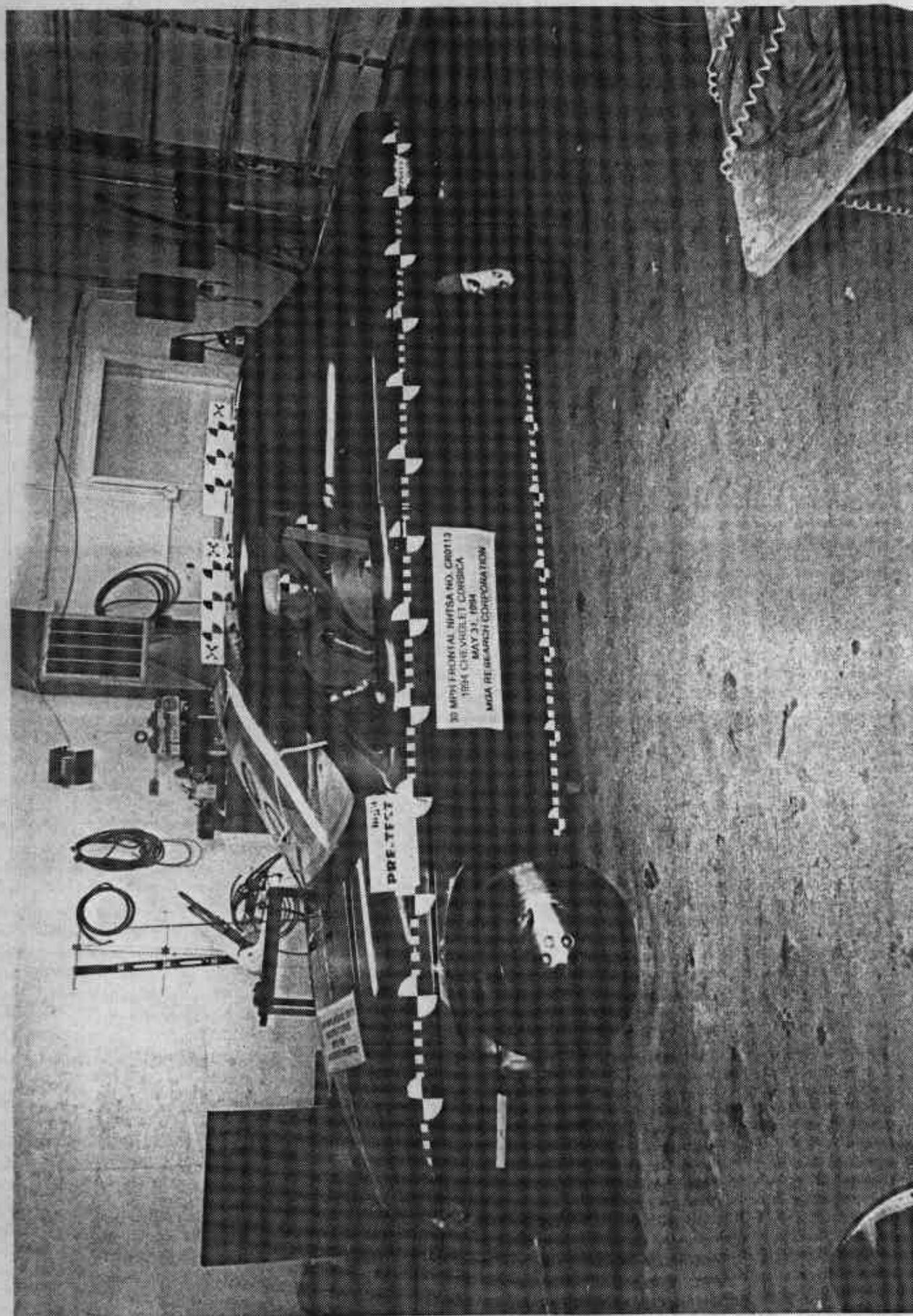


Photo No. A-3 - Pre-Test Left Side View



A-4

Photo No. A-4 - Post-Test Left Side View

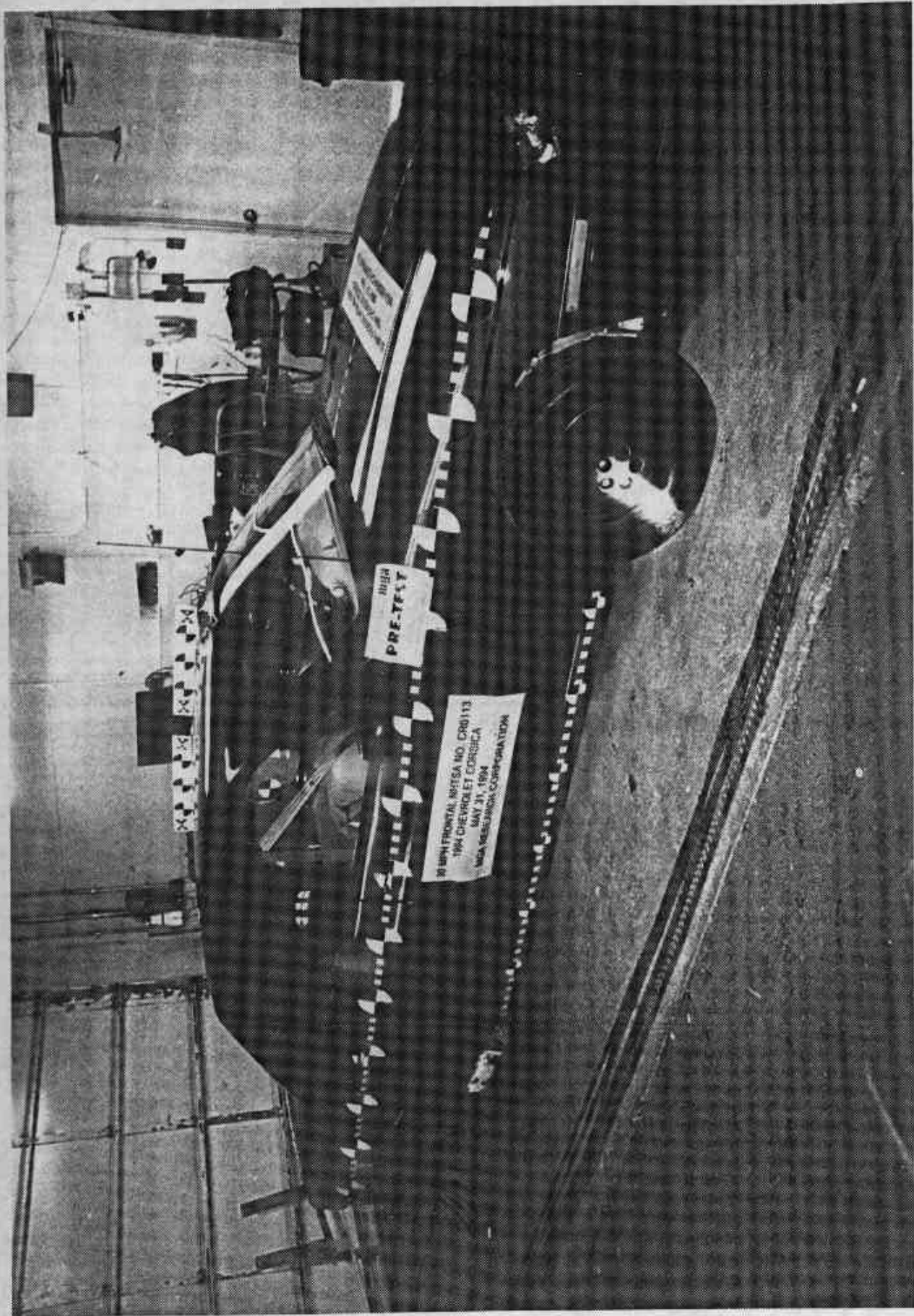
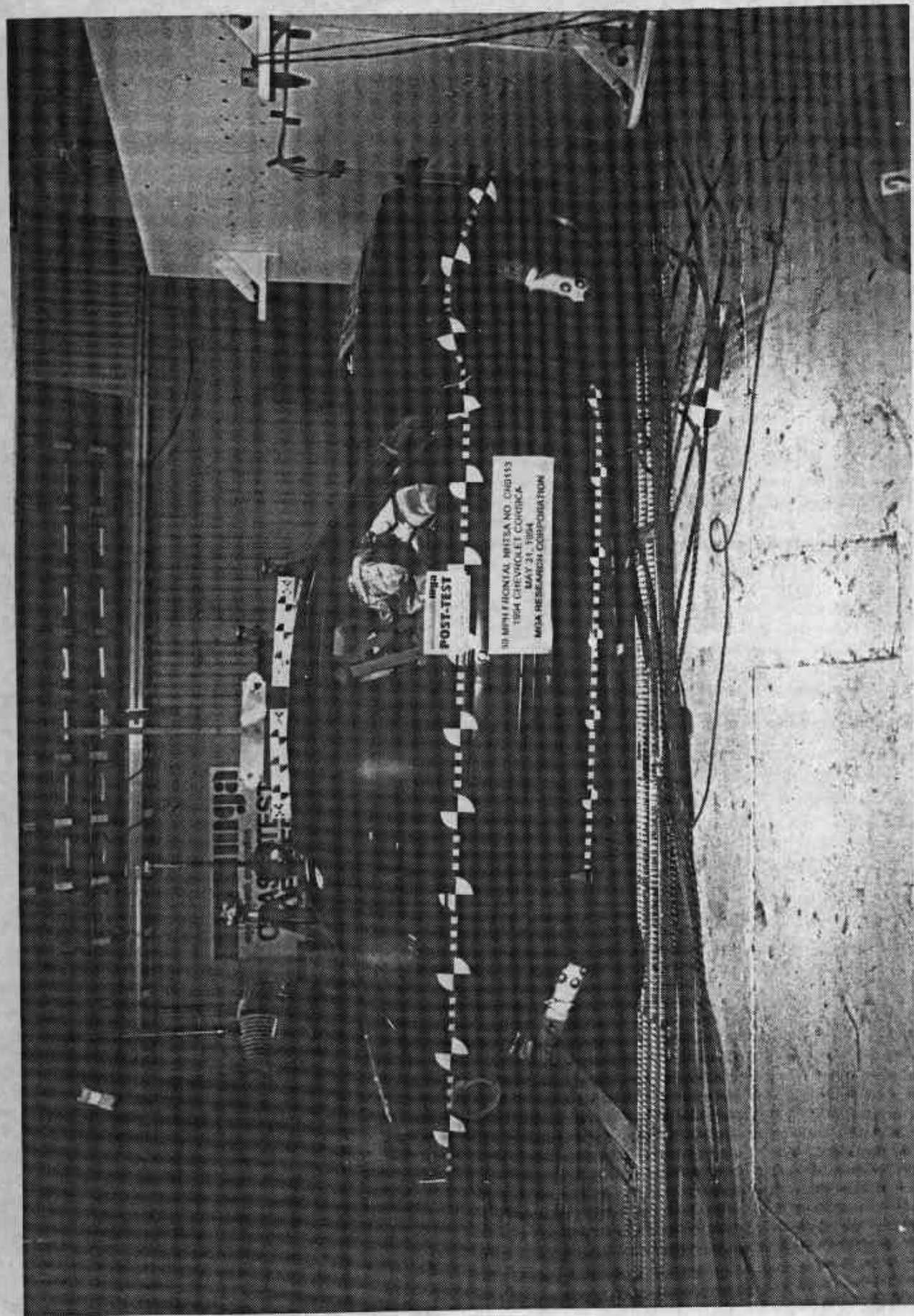
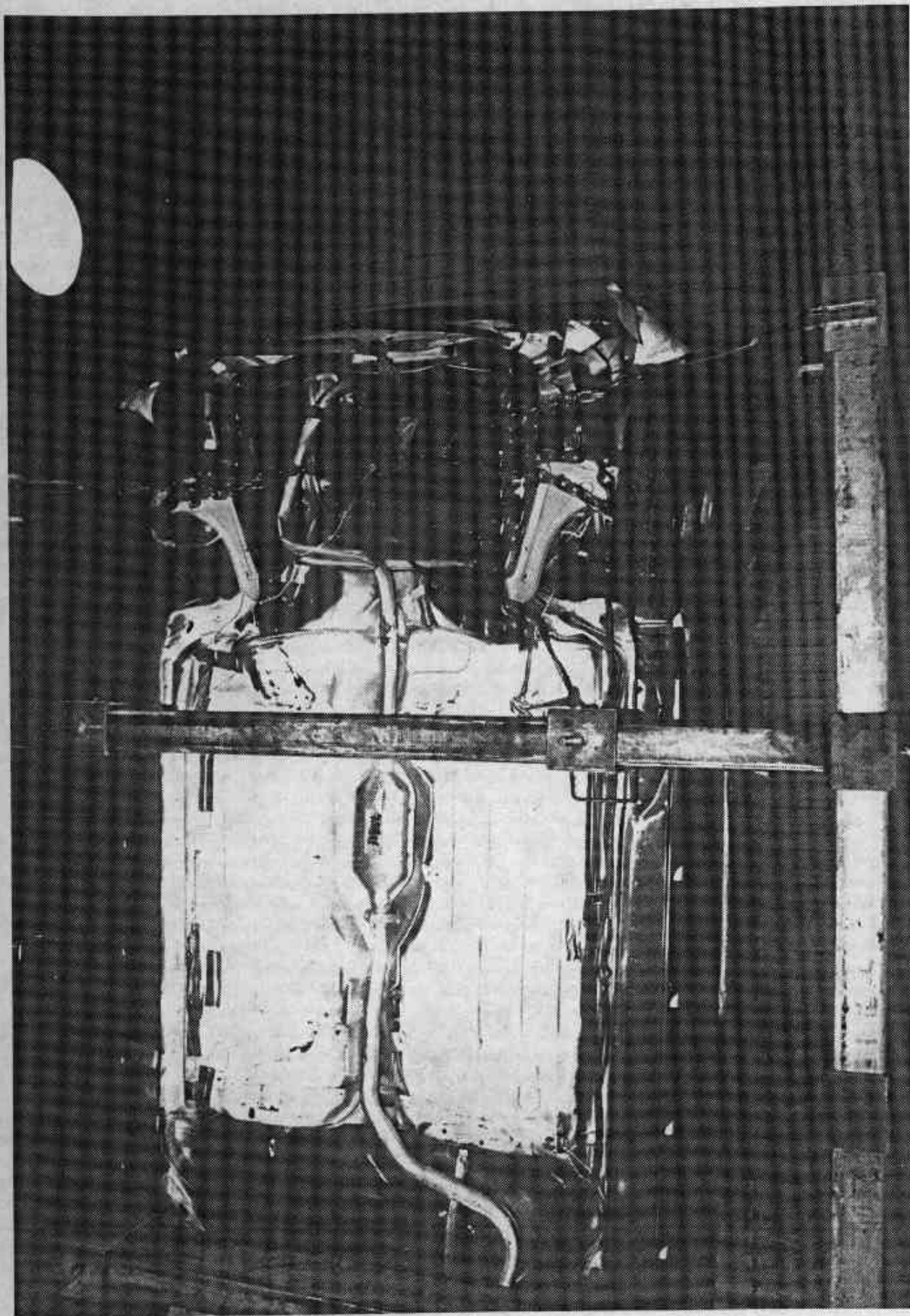


Photo No. A-5 - Pre-Test Right Side View



A-6

Photo No. A-6 - Post-Test Right Side View



A-7

Photo No. A-7 - Post-Test Front Underbody View



A-9

Photo No. A-9 - Post-Test Driver Dummy Position View

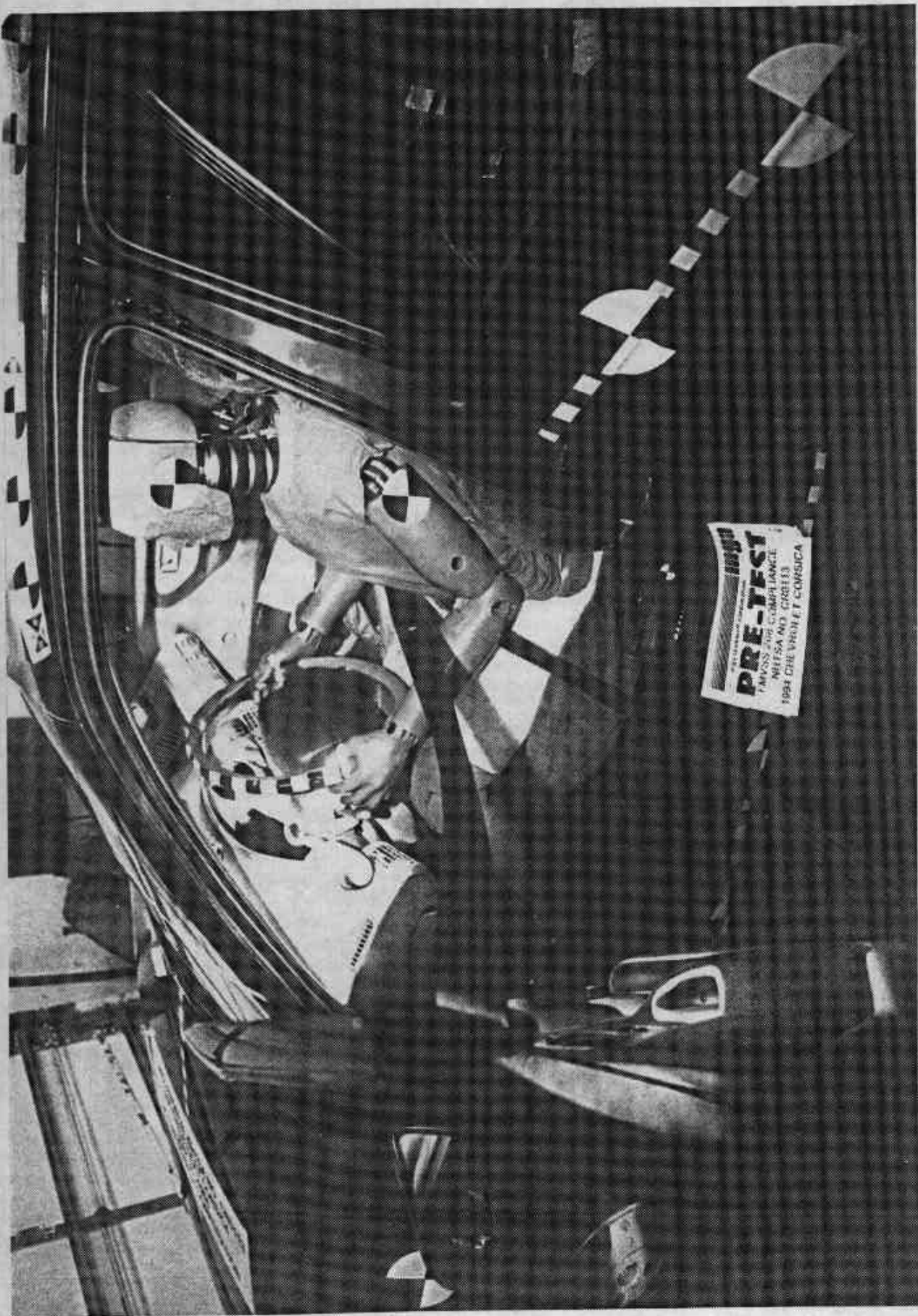


Photo No. A-10 - Pre-Test Driver Dummy Position View (Door Open)

A-10

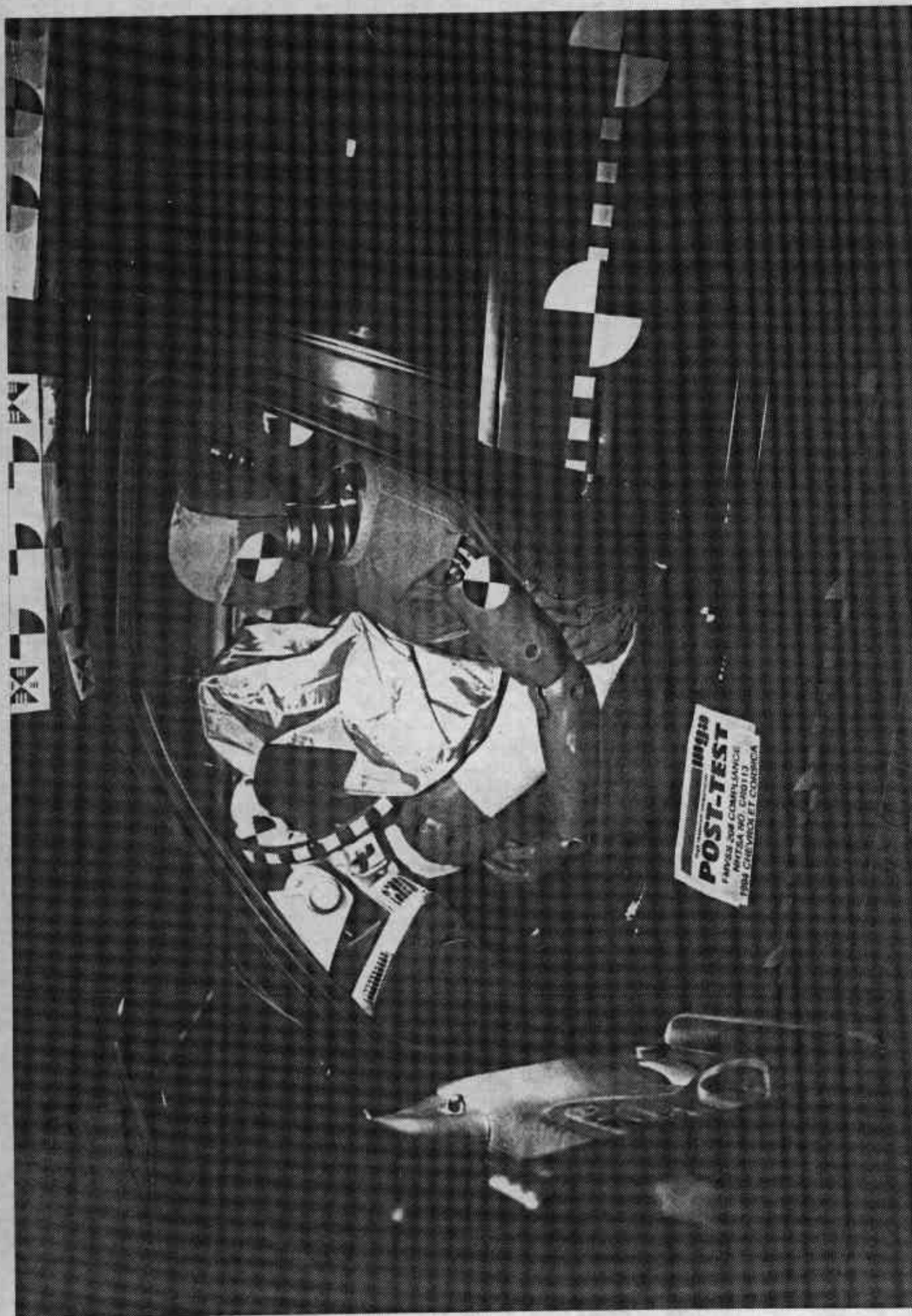


Photo No. A-11 - Post-Test Driver Dummy Position View (Door Open)



A-12

Photo No. A-12 - Pre-Test Driver Seat Position View



Photo No. A-13 - Post-Test Driver Seat Position View



A-14

Photo No. A-14 - Pre-Test Passenger Dummy Position View



A-15

Photo No. A-15 - Post-Test Passenger Dummy Position View

30 MPH FRONTAL NHTSA NO. CH0113

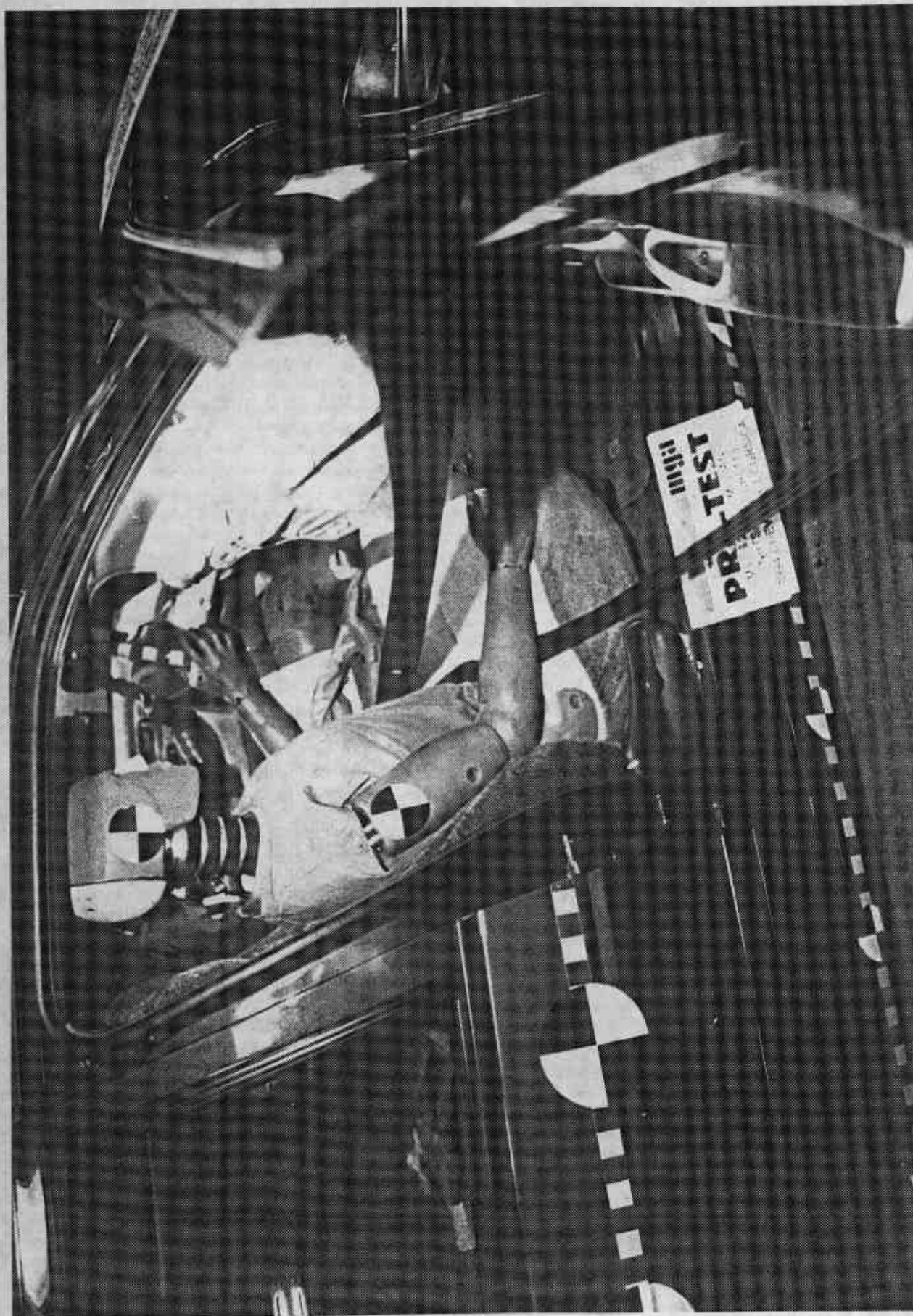


Photo No. A-16 - Pre-Test Passenger Dummy Position View (Door Open)



Photo No. A-17 - Post-Test Passenger Dummy Position View (Door Open)

A-17



A-18

Photo No. A-18 - Pre-Test Passenger Seat Position View



Photo No. A-20 - Pre-Test Driver Dummy Knee Bolster View

A-20

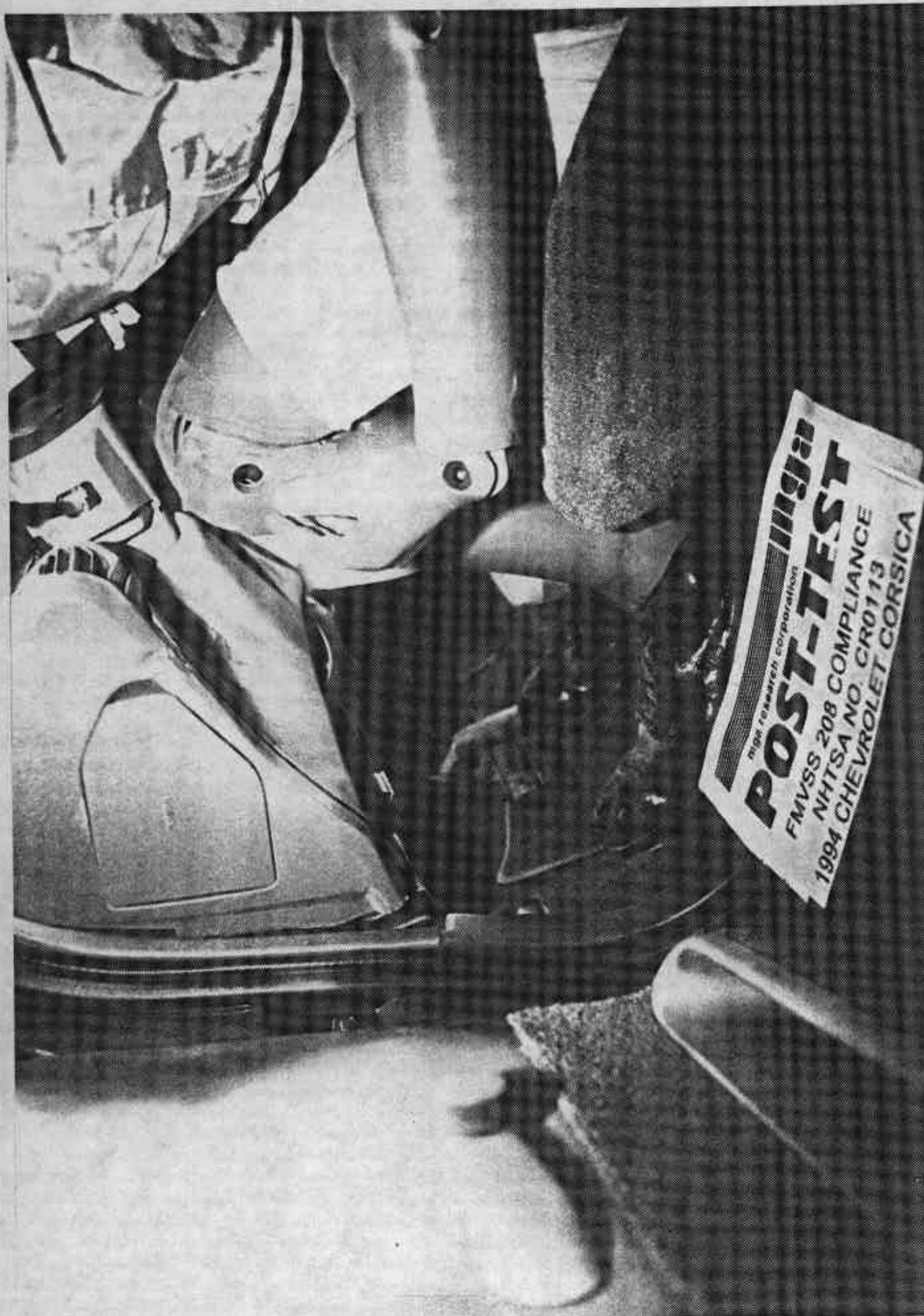


Photo No. A-21 - Post-Test Driver Dummy Knee Bolster View



Photo No. A-22 - Pre-Test Passenger Dummy Knee Bolster View



Photo No. A-23 - Post-Test Passenger Dummy Knee Bolster View



Photo No. A-24 - Driver Head Contact View

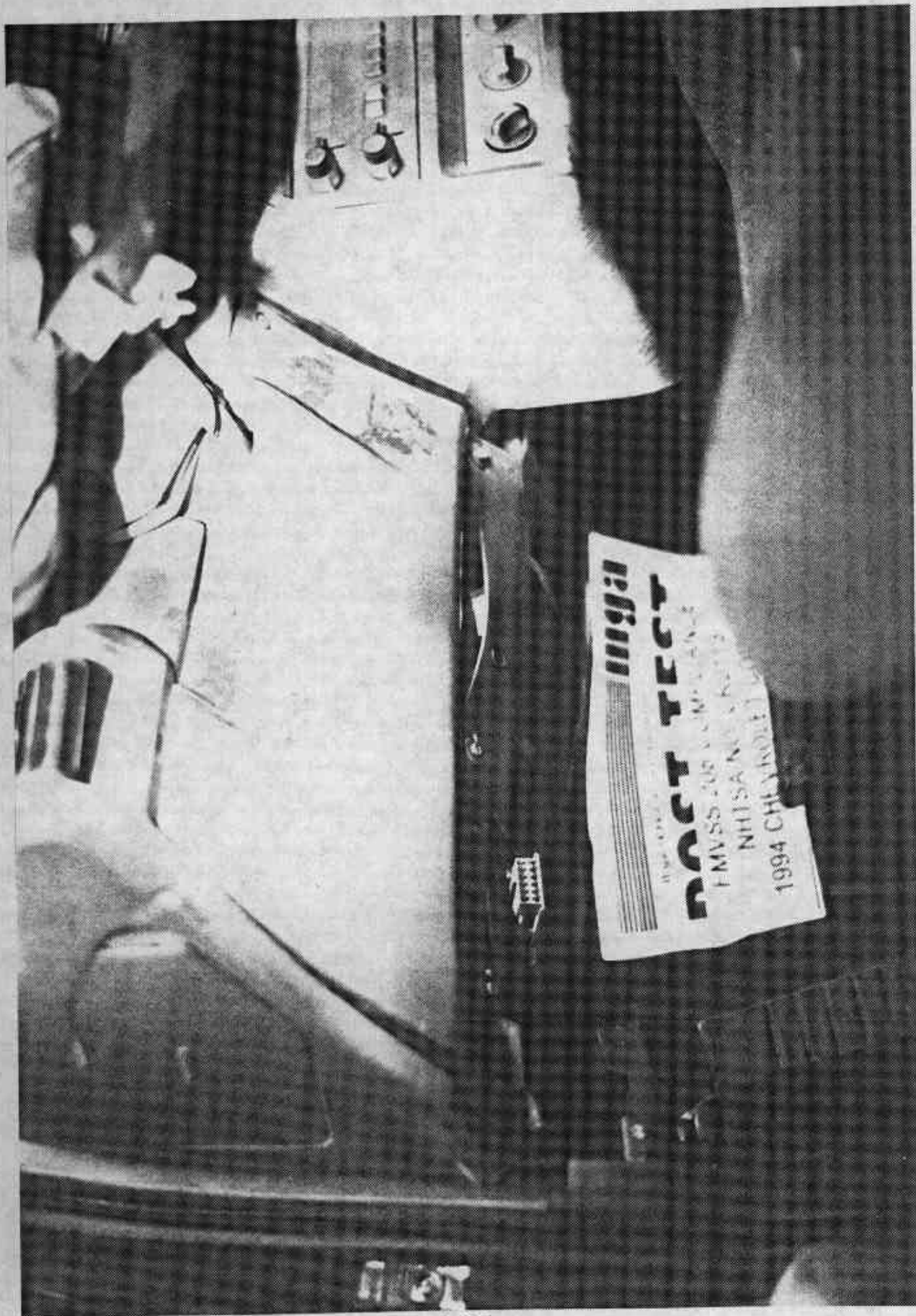


Photo No. A-25 - Driver Knee Contact View

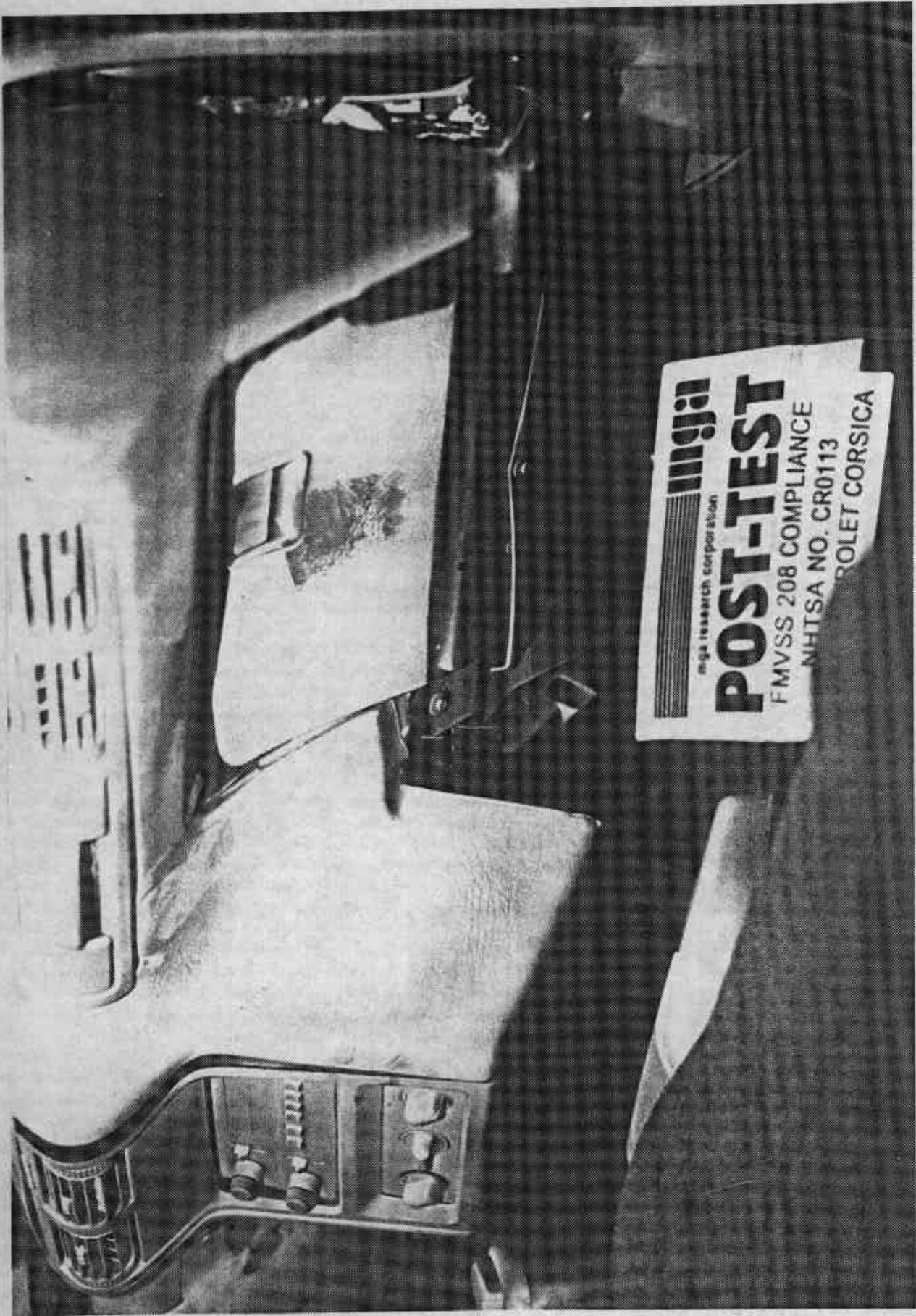


Photo No. A-26 - Passenger Knee Contact View



Photo No. A-27 - Pre-Test Steering Column at Firewall View - Interior



Photo No. A-28 - Post-Test Steering Column at Firewall View - Interior

A-28

FMVSS 208 COMPLIANCE
NHTSA NO. CR0113
1994 CHEVROLET CORSIKA

A-29

Photo No. A-29 - Pre-Test Vehicle Certification Label and Tire Placard

APPENDIX B
DATA PLOTS

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Figure B-3 - Driver Head Z Acceleration vs. Time	1000	B-3
Figure B-4 - Driver Head Resultant Acceleration vs. Time	1000	B-4
Figure B-5 - Driver Chest X Acceleration vs. Time	180	B-5
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Figure B-7 - Driver Chest Z Acceleration vs. Time	180	B-7
Figure B-8 - Driver Chest Resultant Acceleration vs. Time	180	B-8
Figure B-9 - Driver Chest Deflection vs. Time	180	B-9
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Filter: Class 1000

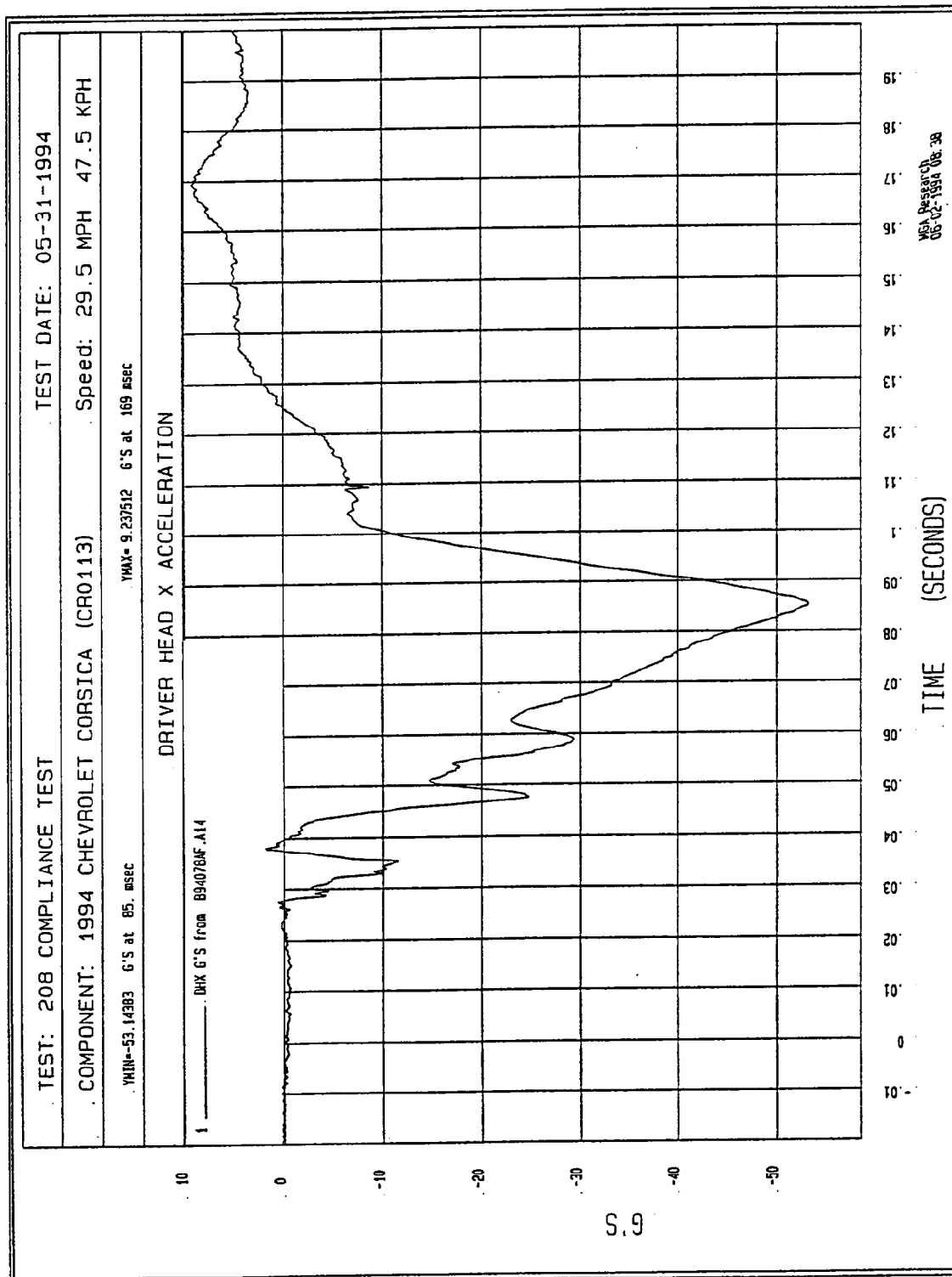


Figure B-1 - Driver Head X Acceleration vs. Time

Filter: Class 1000

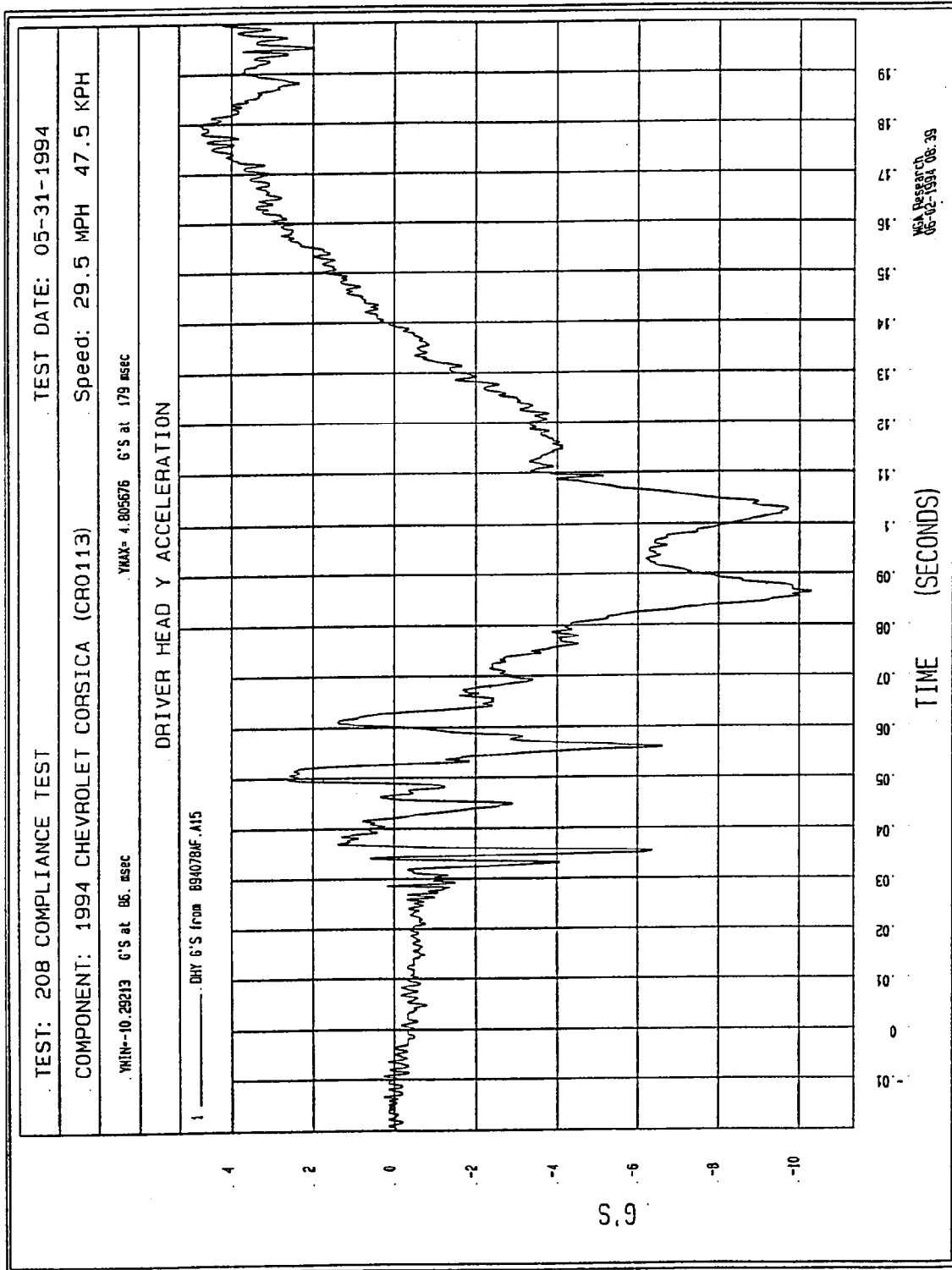


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Filter: Class 1000

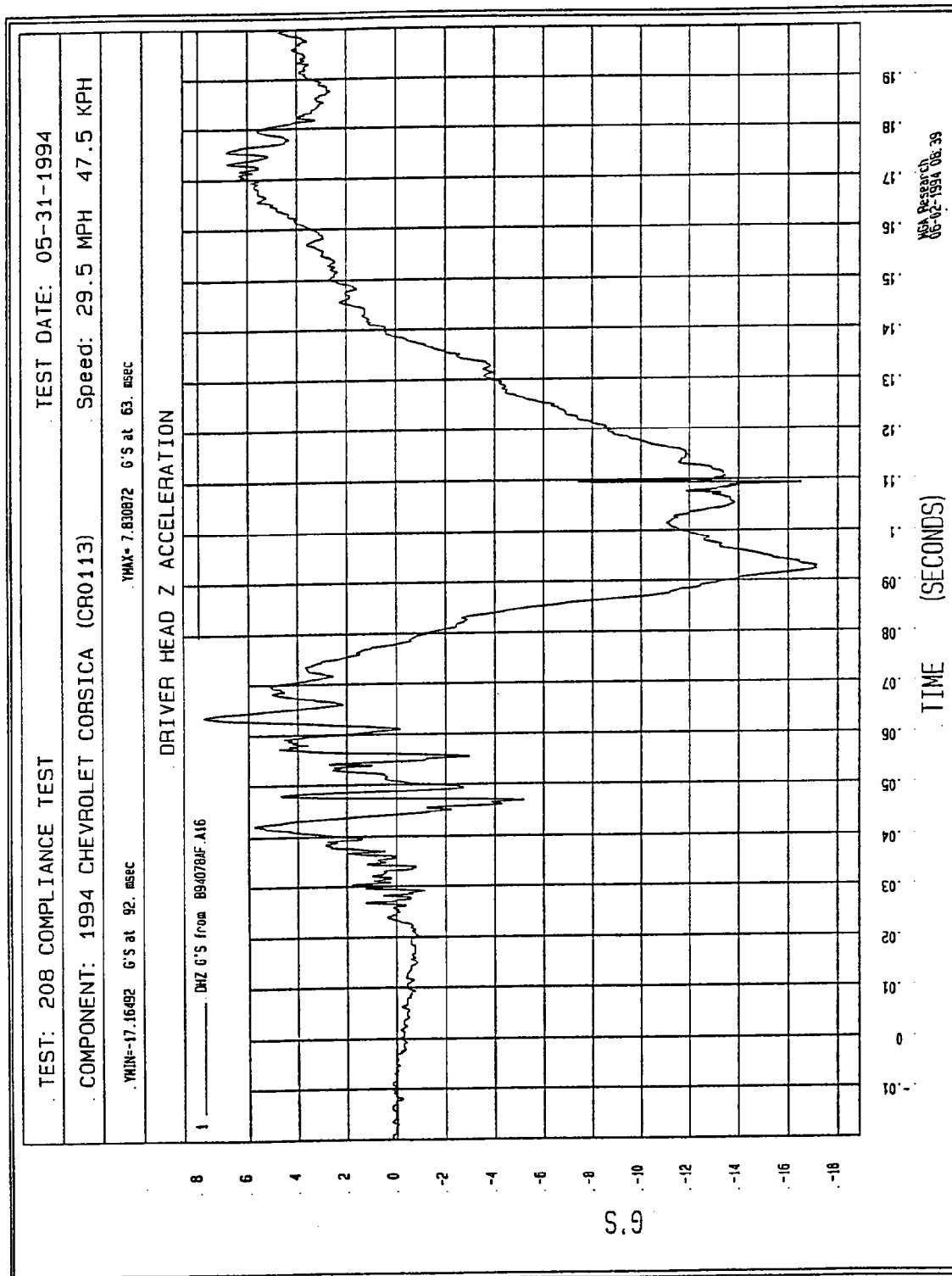


Figure B-3 - Driver Head Z Acceleration vs. Time

Filter: Class 1000

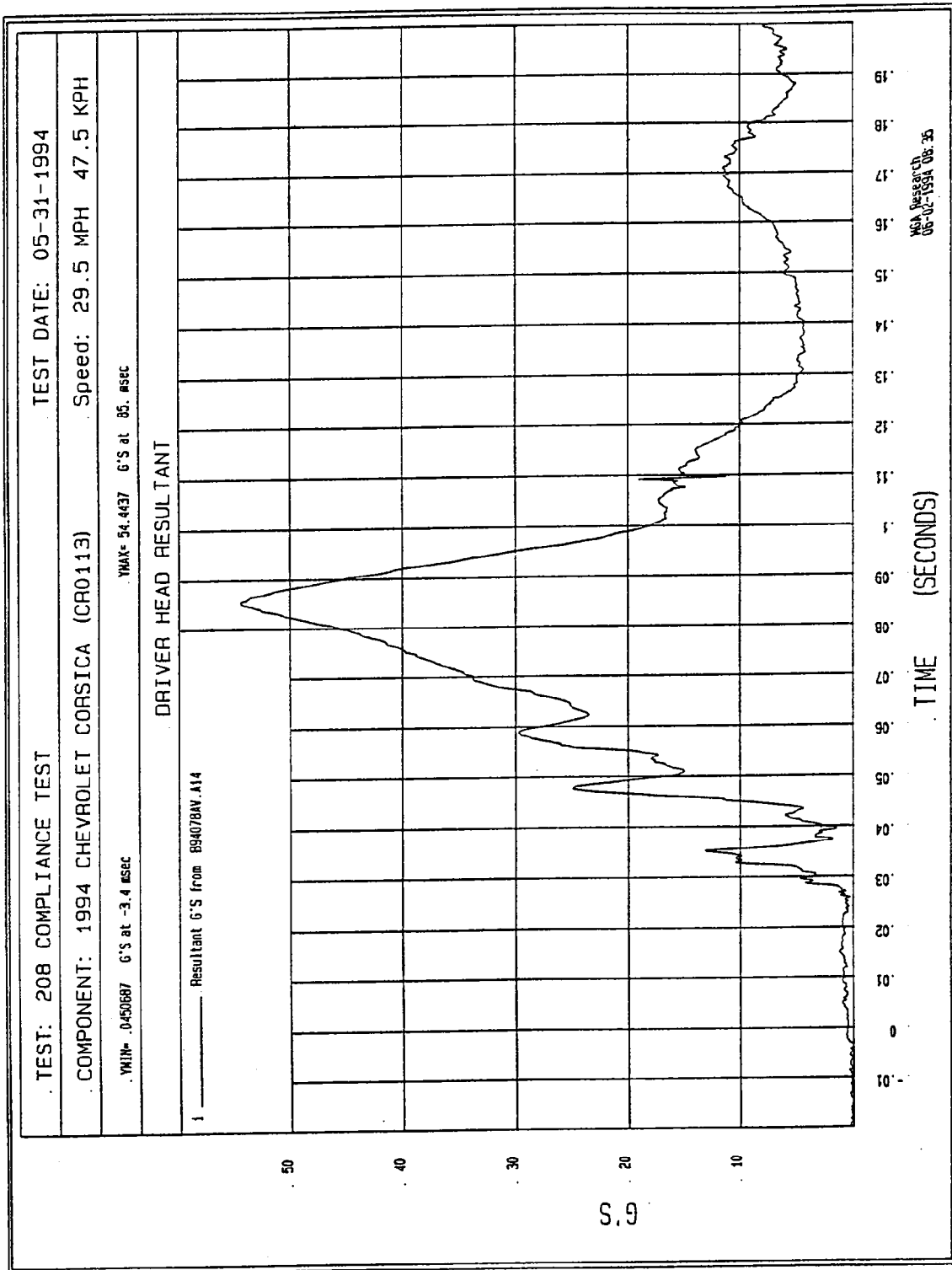


Figure B-4 - Driver Head Resultant Acceleration vs. Time

Filter: Class 180

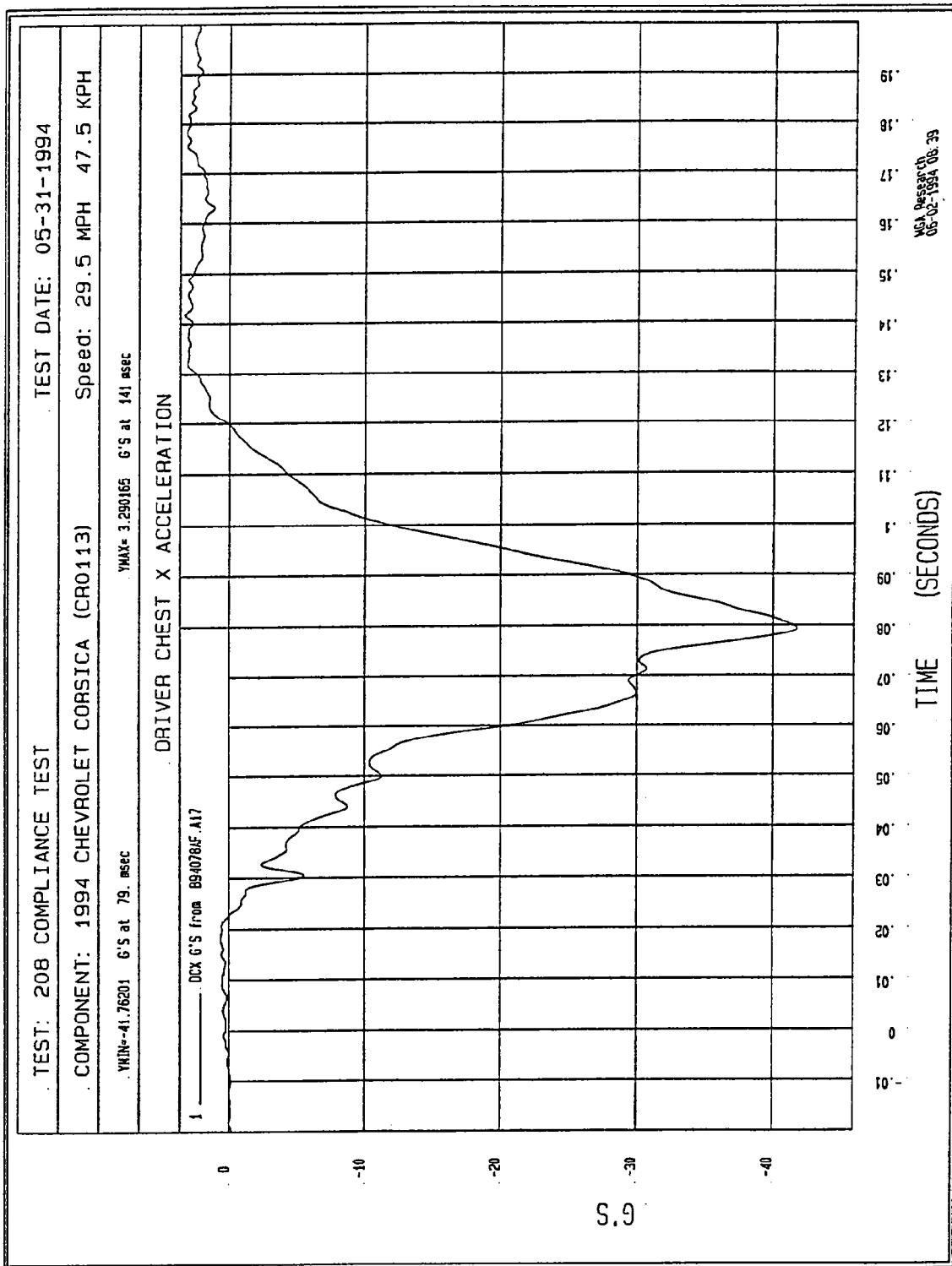


Figure B-5 - Driver Chest X Acceleration vs. Time

Filter: Class 180

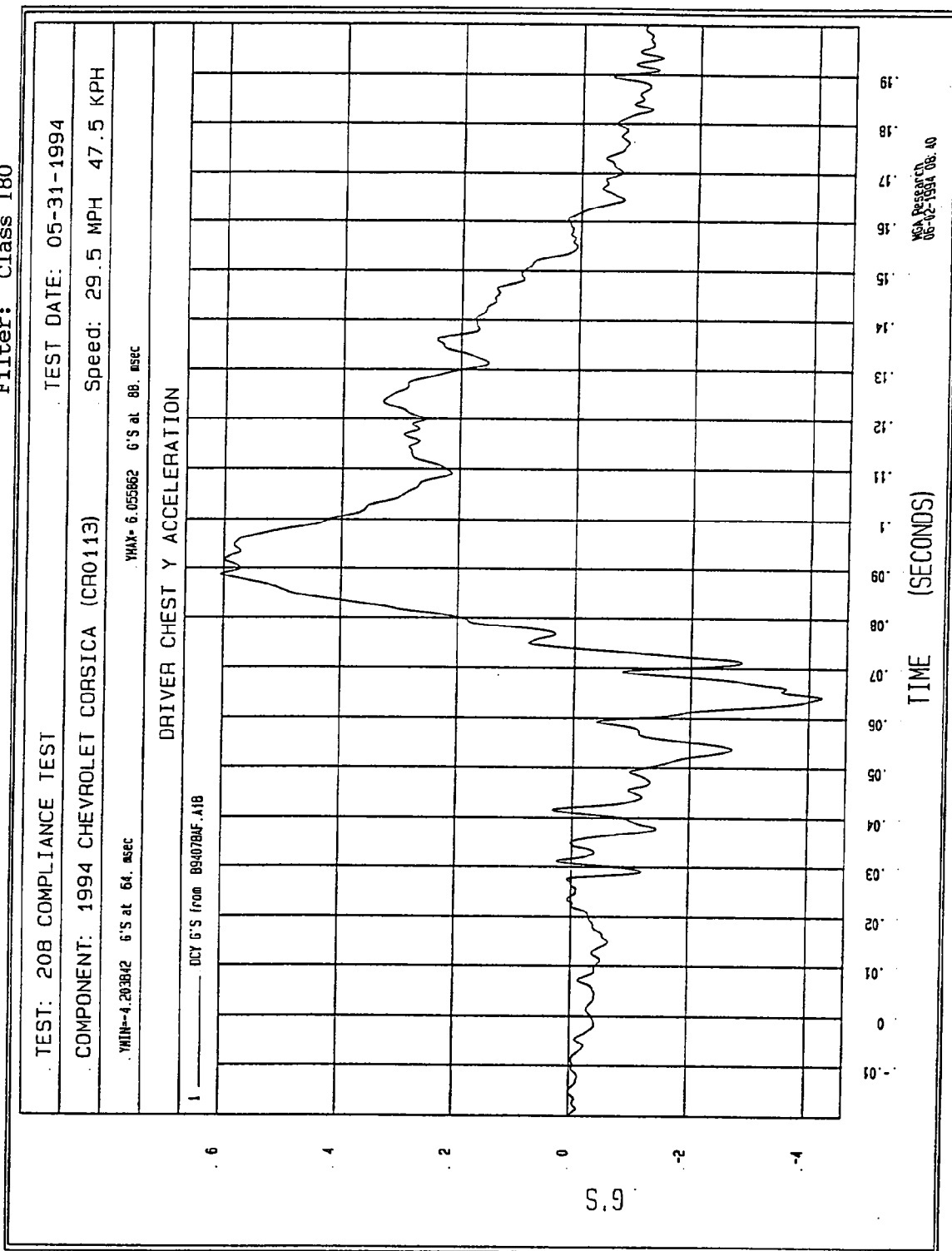


Figure B-6 - Driver Chest Y Acceleration vs. Time

Filter: Class 180

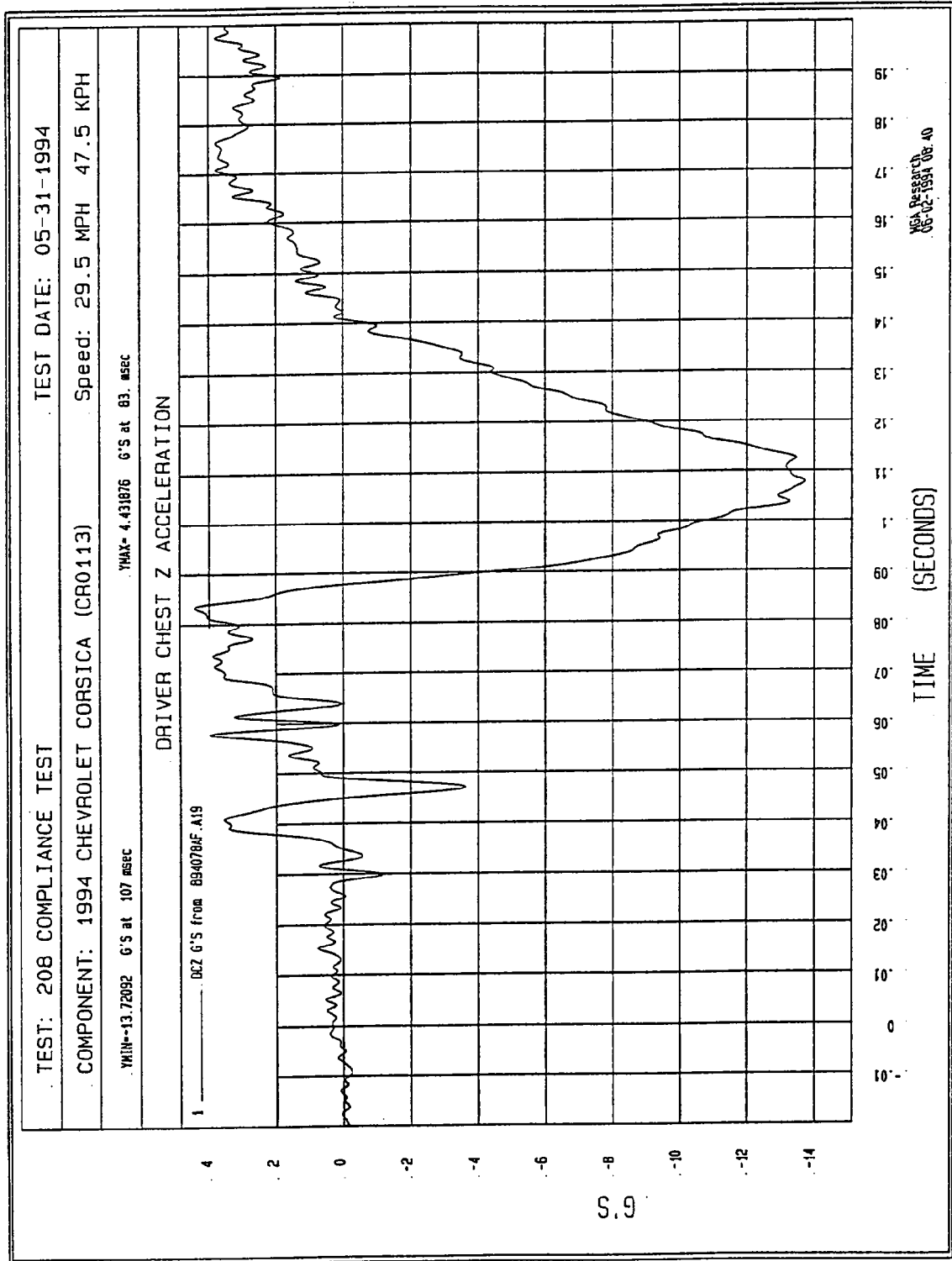


Figure B-7 - Driver Chest Z Acceleration vs. Time

Filter: Class 180

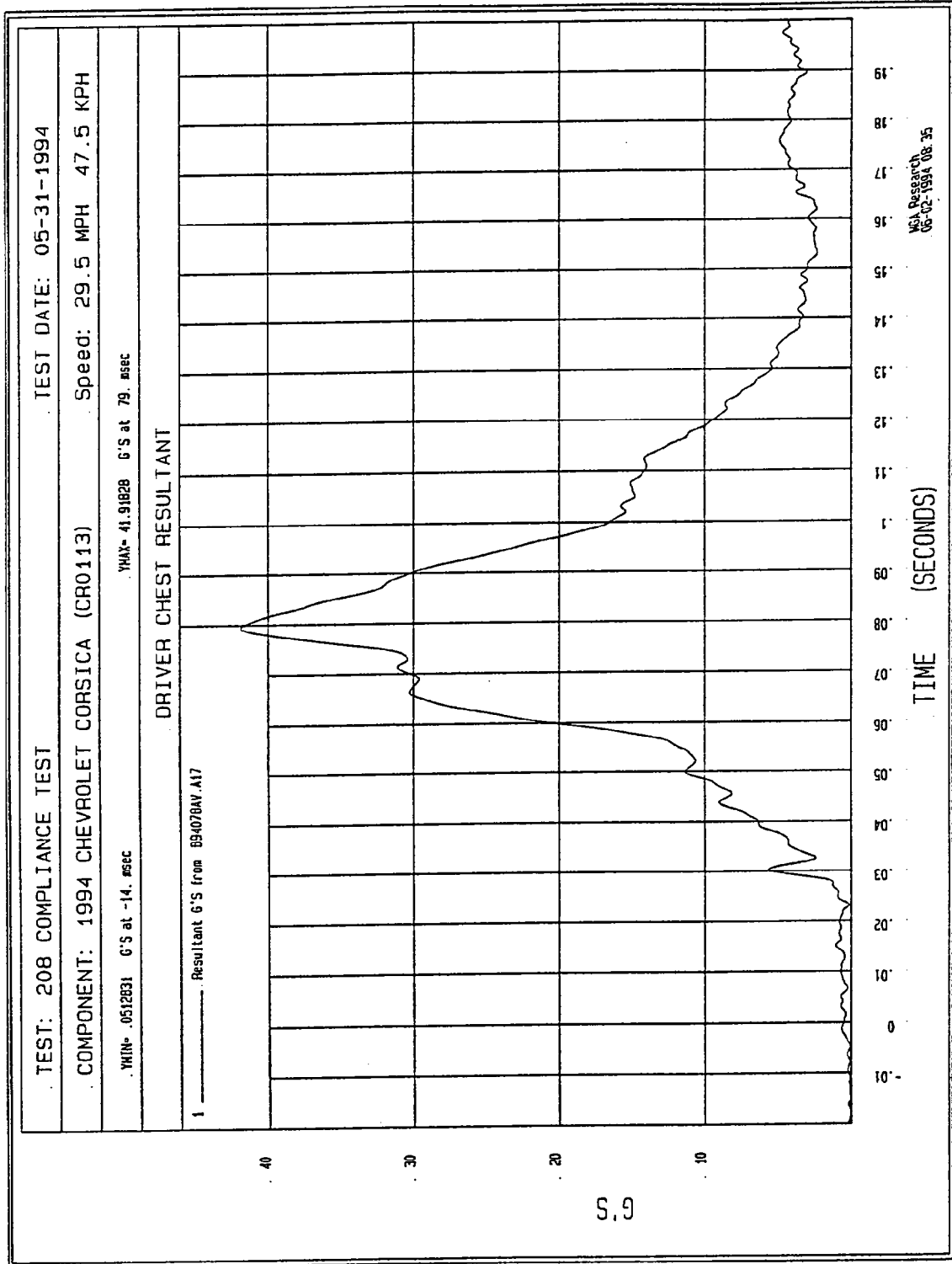


Figure B-8 - Driver Chest Resultant Acceleration vs. Time

Filter: Class 180

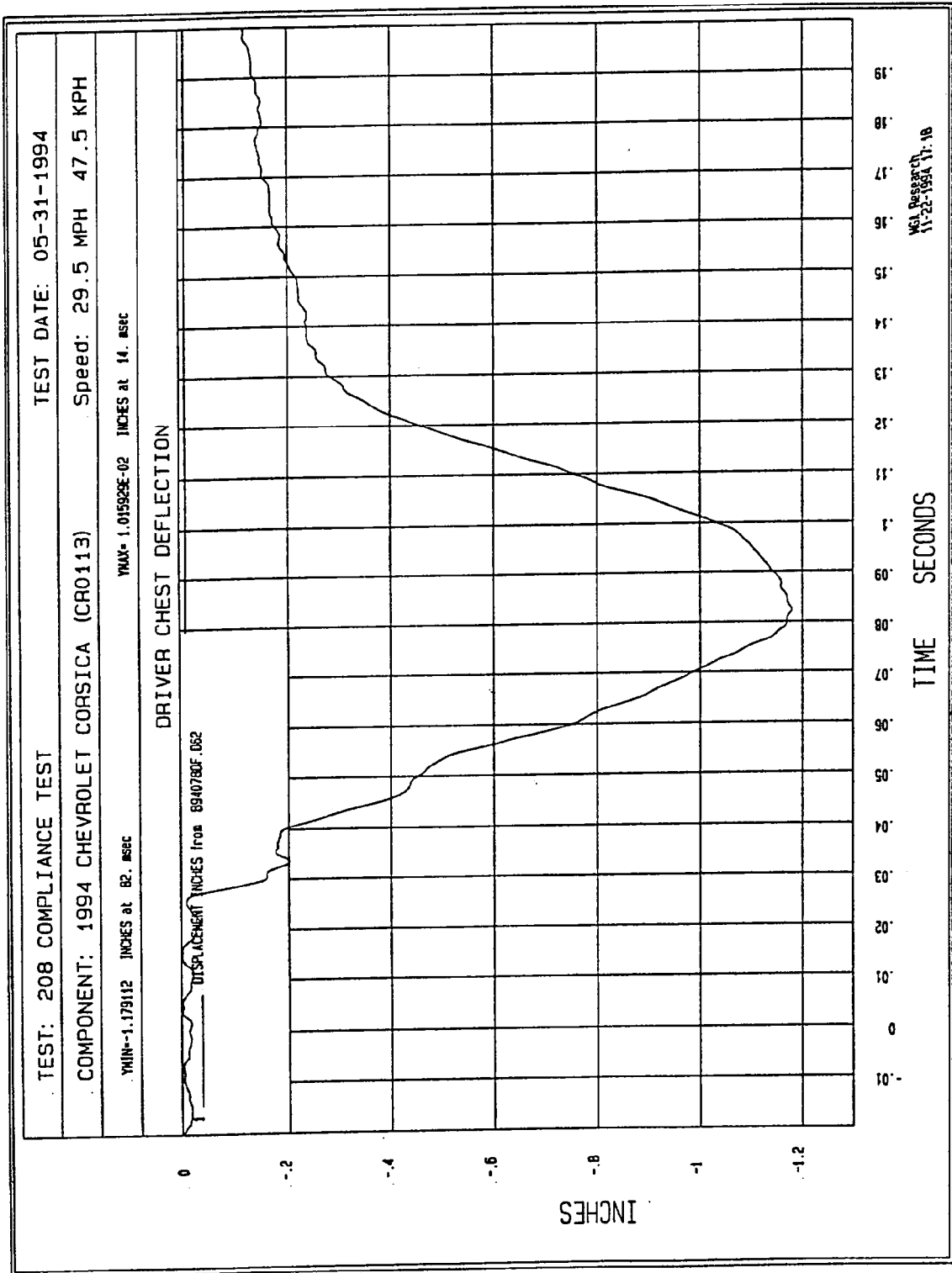


Figure B-9 - Driver Chest Deflection vs. Time

Filter: Class 600

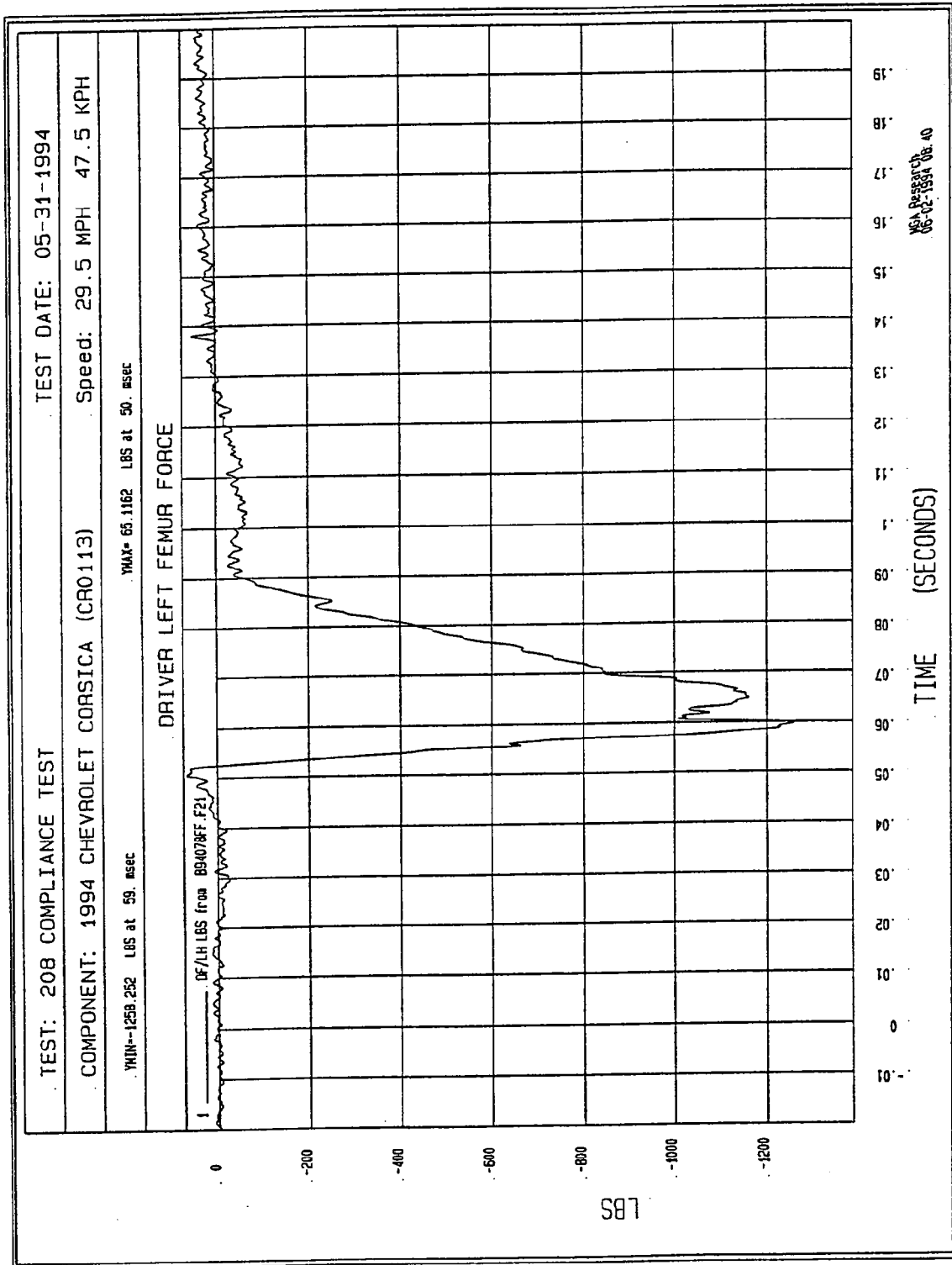


Figure B-10 - Driver Left Femur Force vs. Time

Filter: Class 600

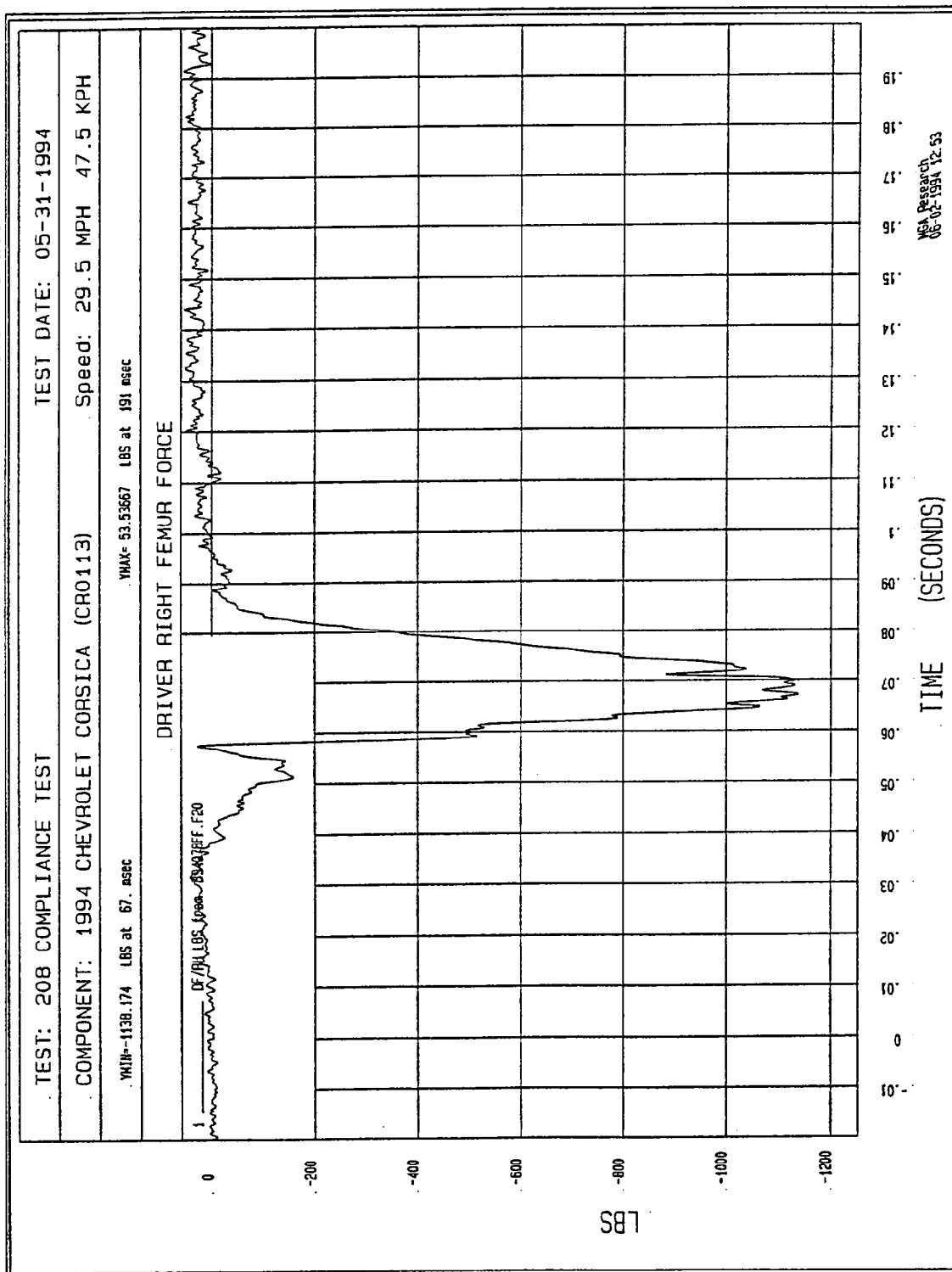


Figure B-11 - Driver Right Femur Force vs. Time

Filter: Class 1000

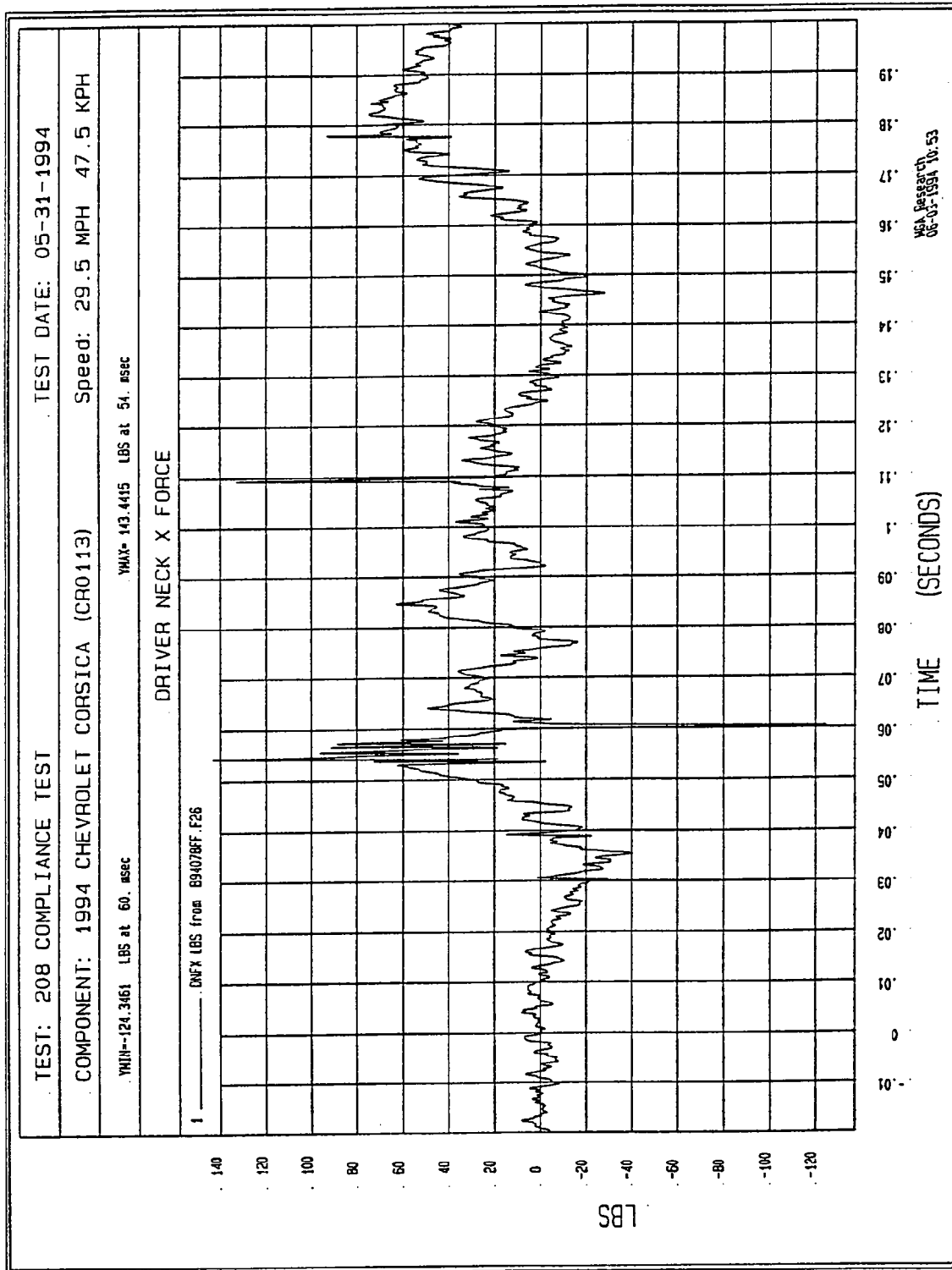


Figure B-12 - Driver Neck X Force vs. Time

Filter: Class 1000

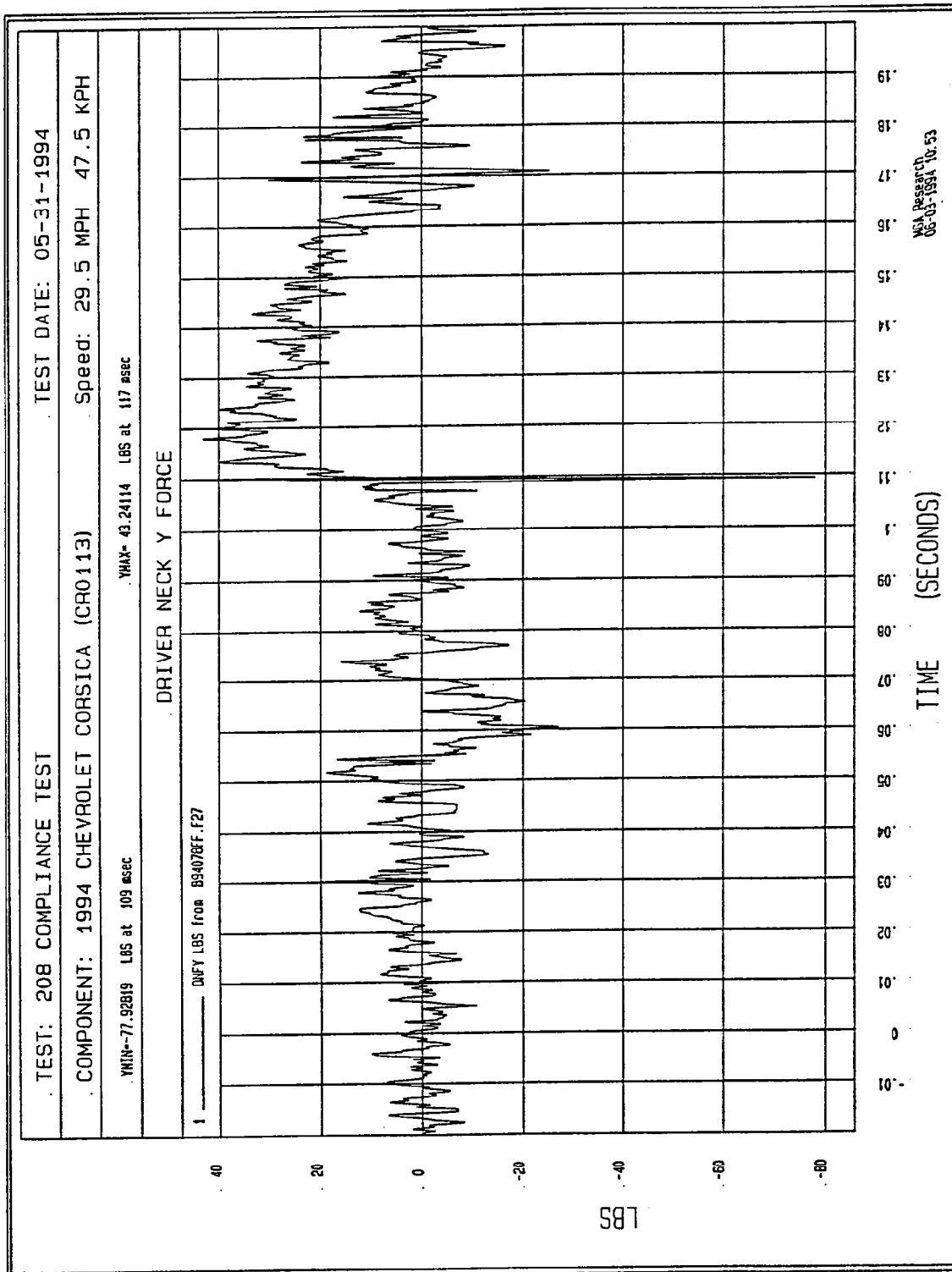


Figure B-13 - Driver Neck Y Force vs. Time

Filter: Class 1000

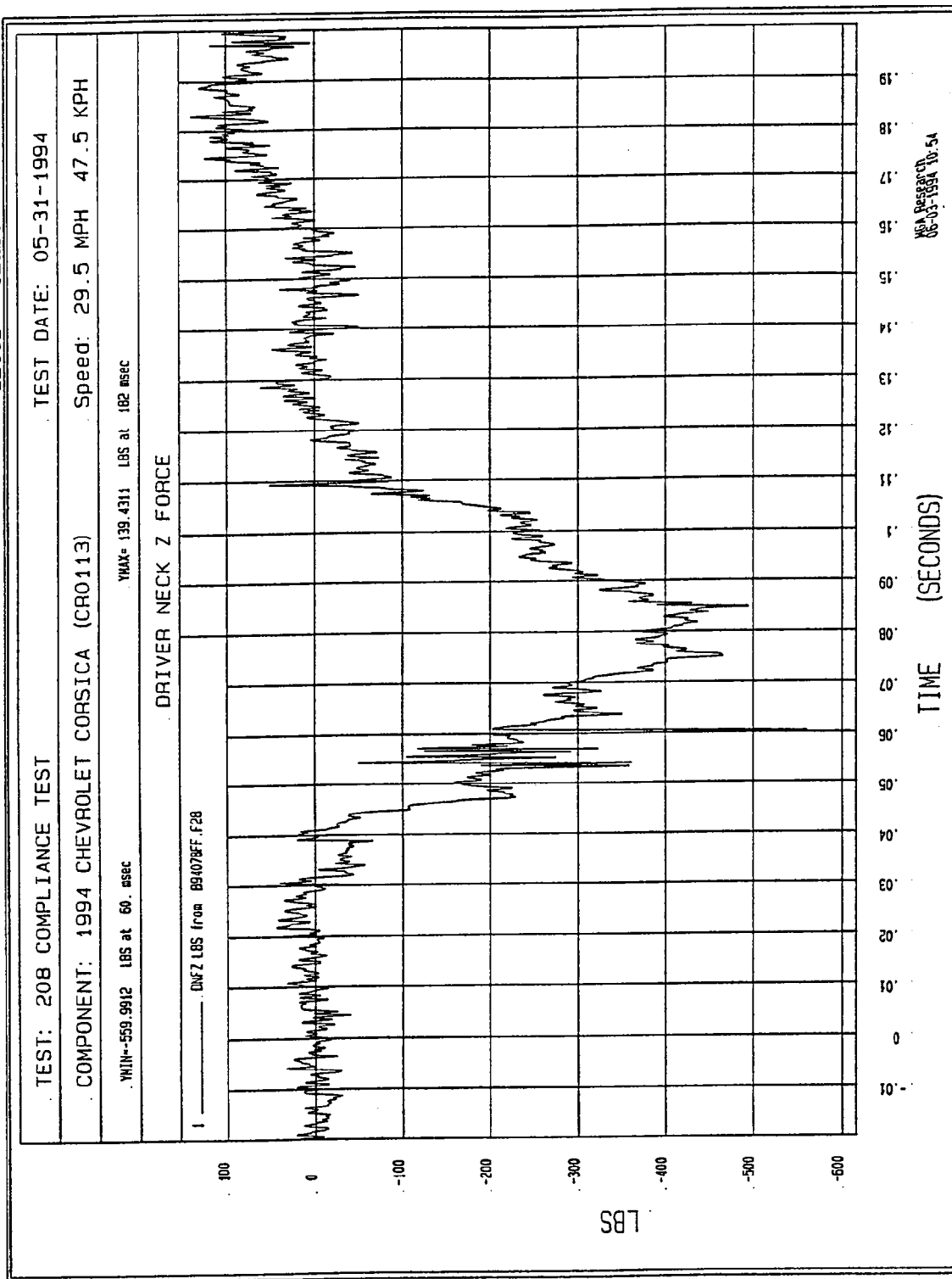


Figure B-14 - Driver Neck Z Force vs. Time

Filter: Class 1000

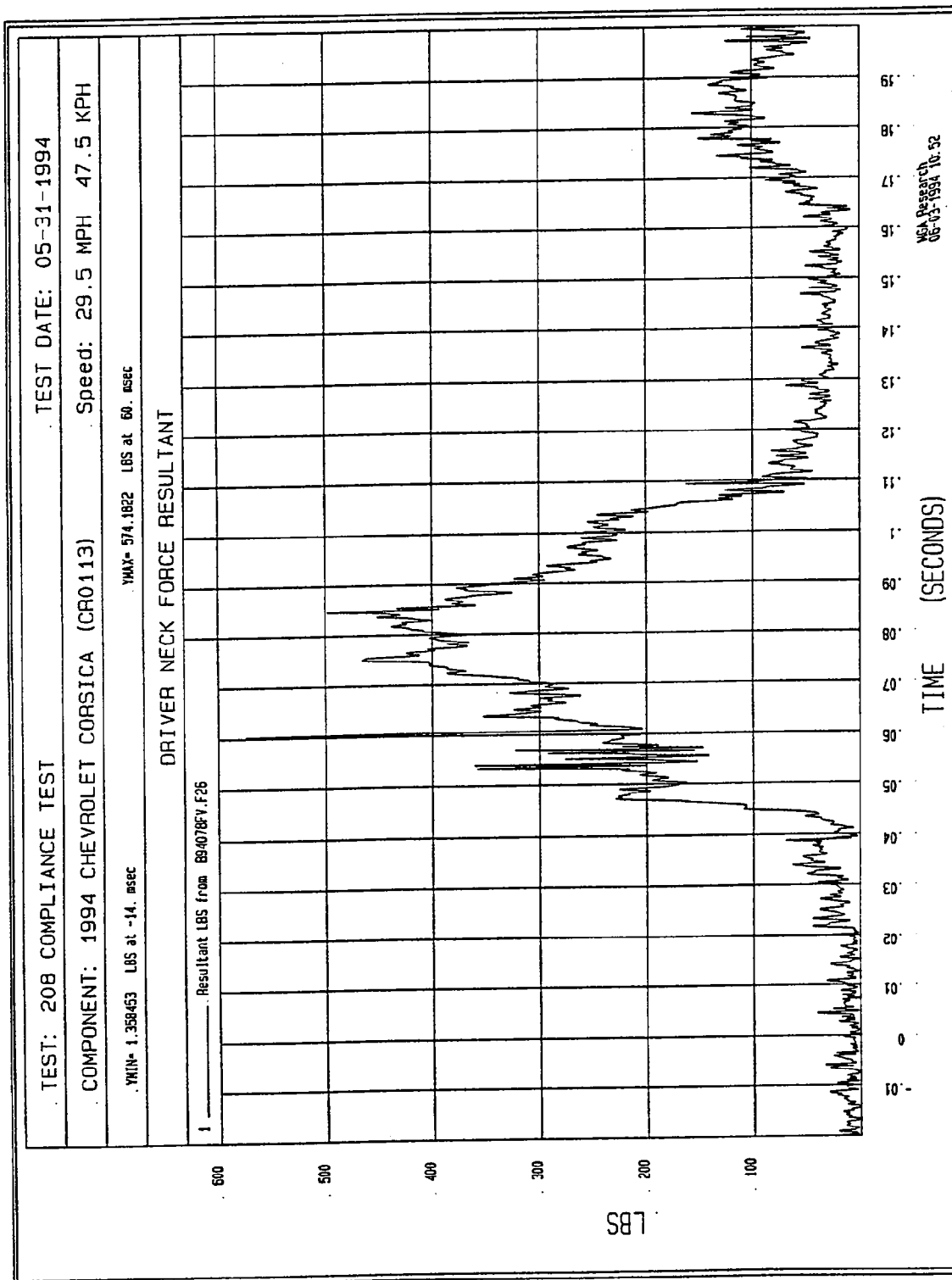


Figure B-15 - Driver Neck Force Resultant vs. Time

Filter: Class 600

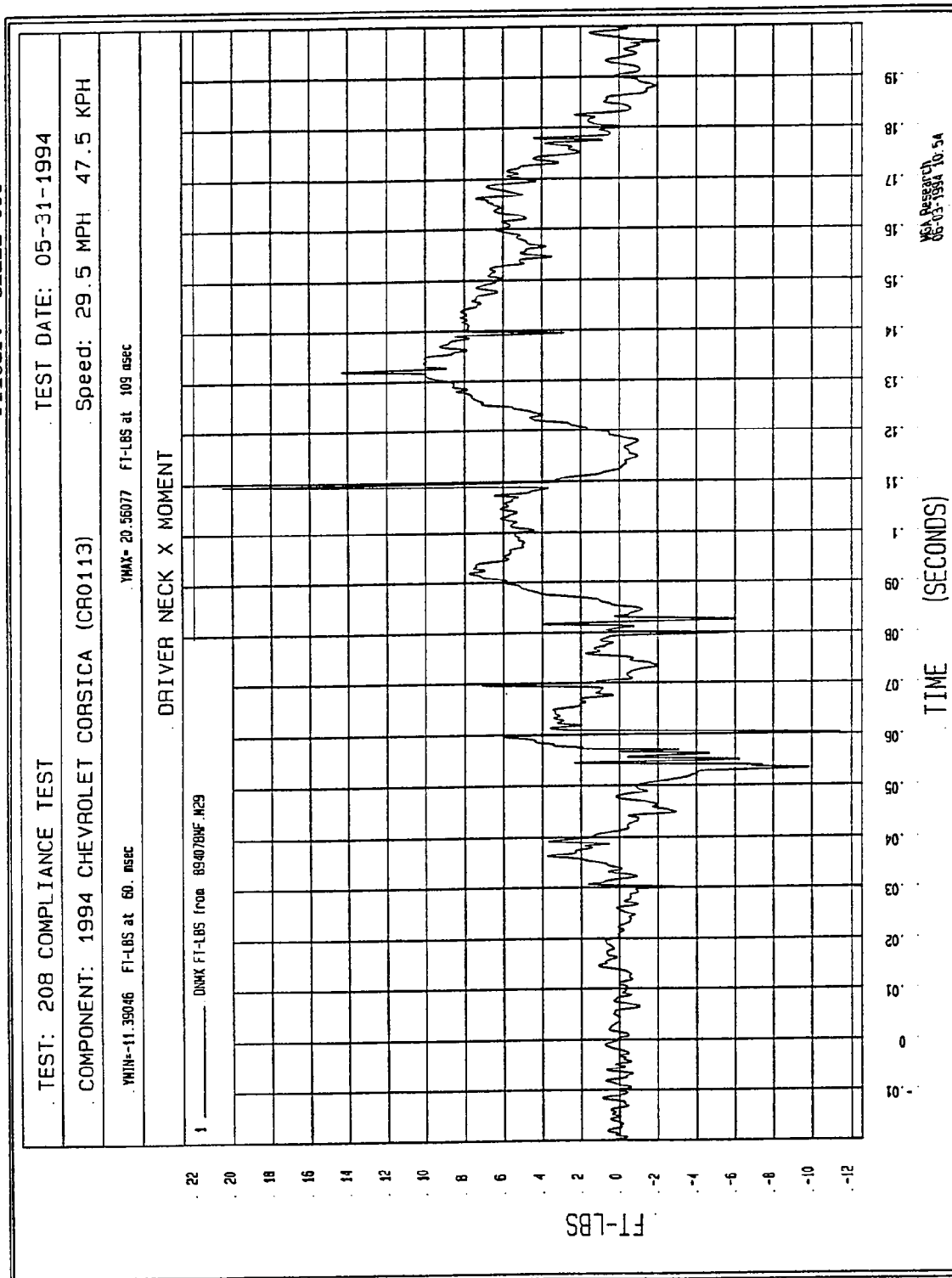


Figure B-16 - Driver Neck X Moment vs. Time

Filter: Class 600

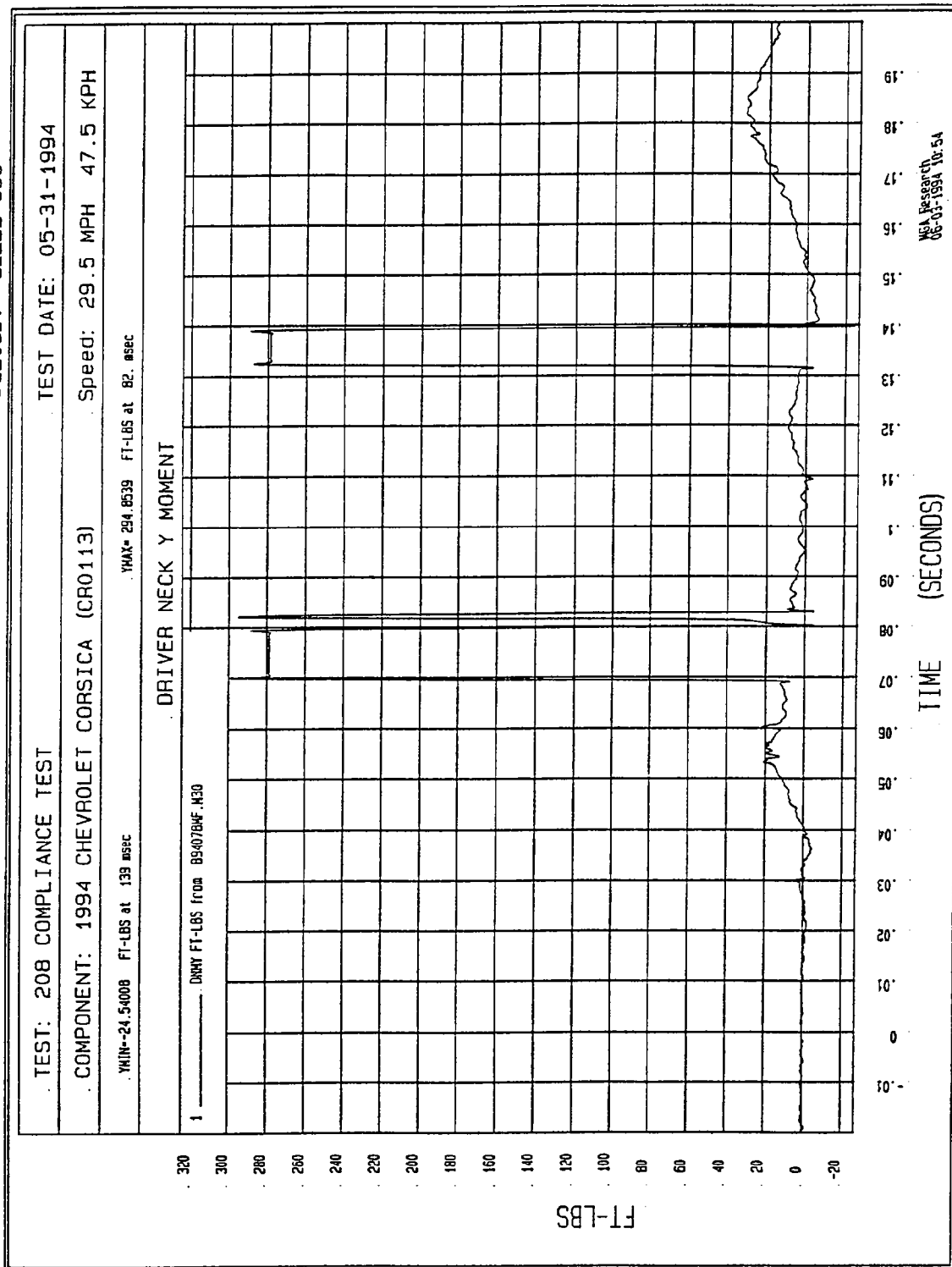


Figure B-17 - Driver Neck Y Moment vs. Time

Filter: Class 600

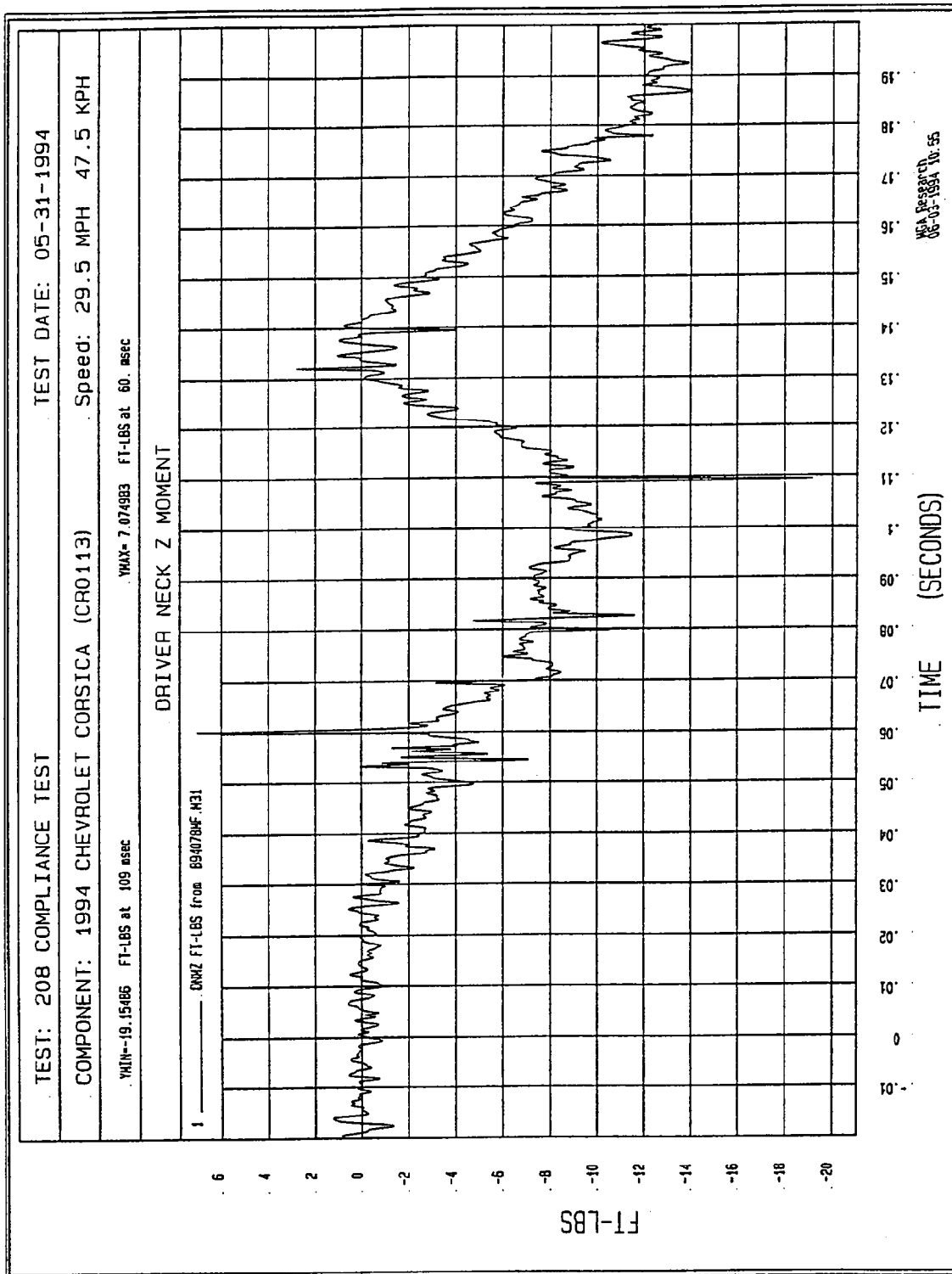


Figure B-18 - Driver Neck Z Moment vs. Time

Filter: Class 600

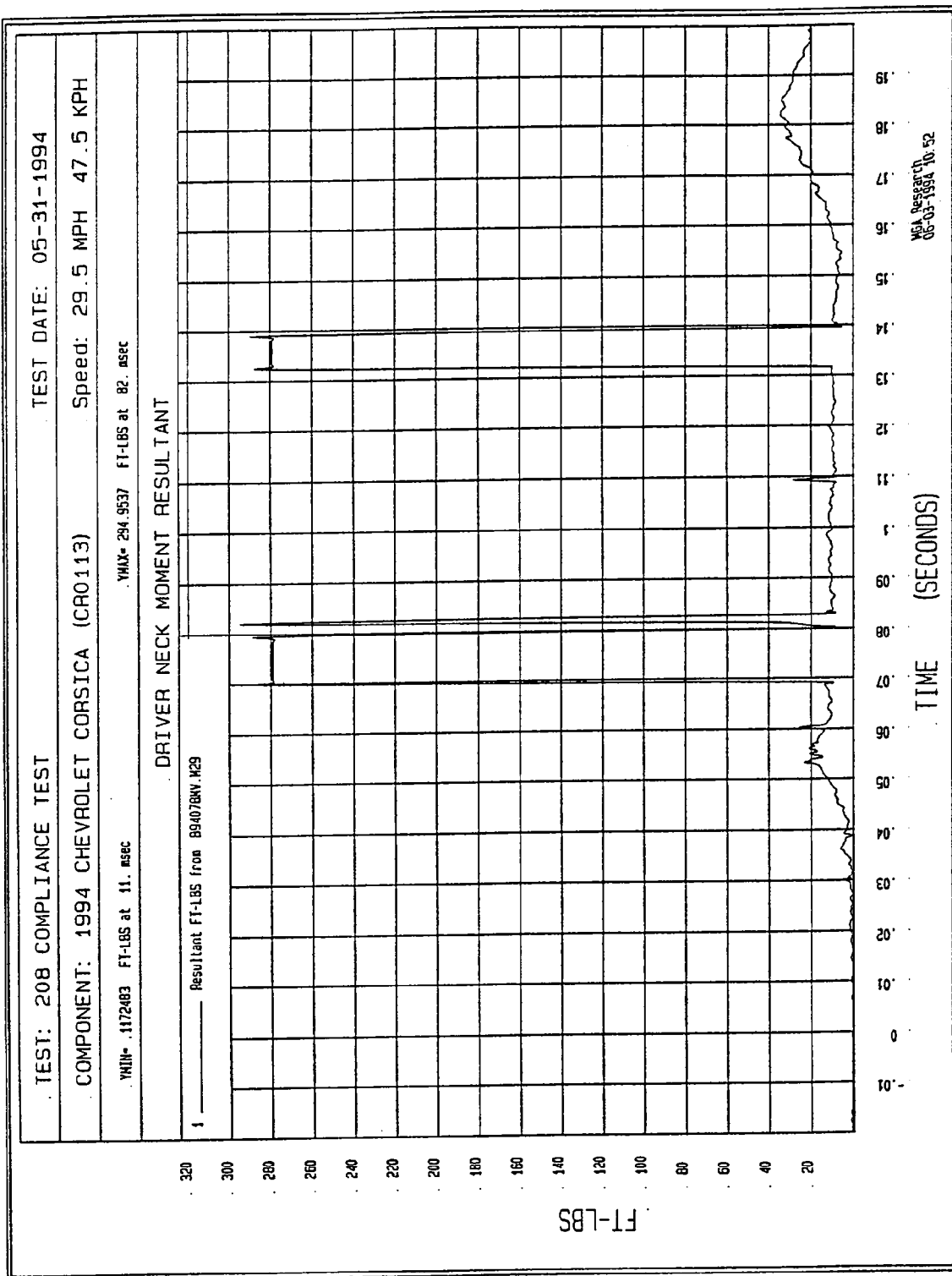


Figure B-19 - Driver Neck Moment Resultant vs. Time

Filter: Class 1000

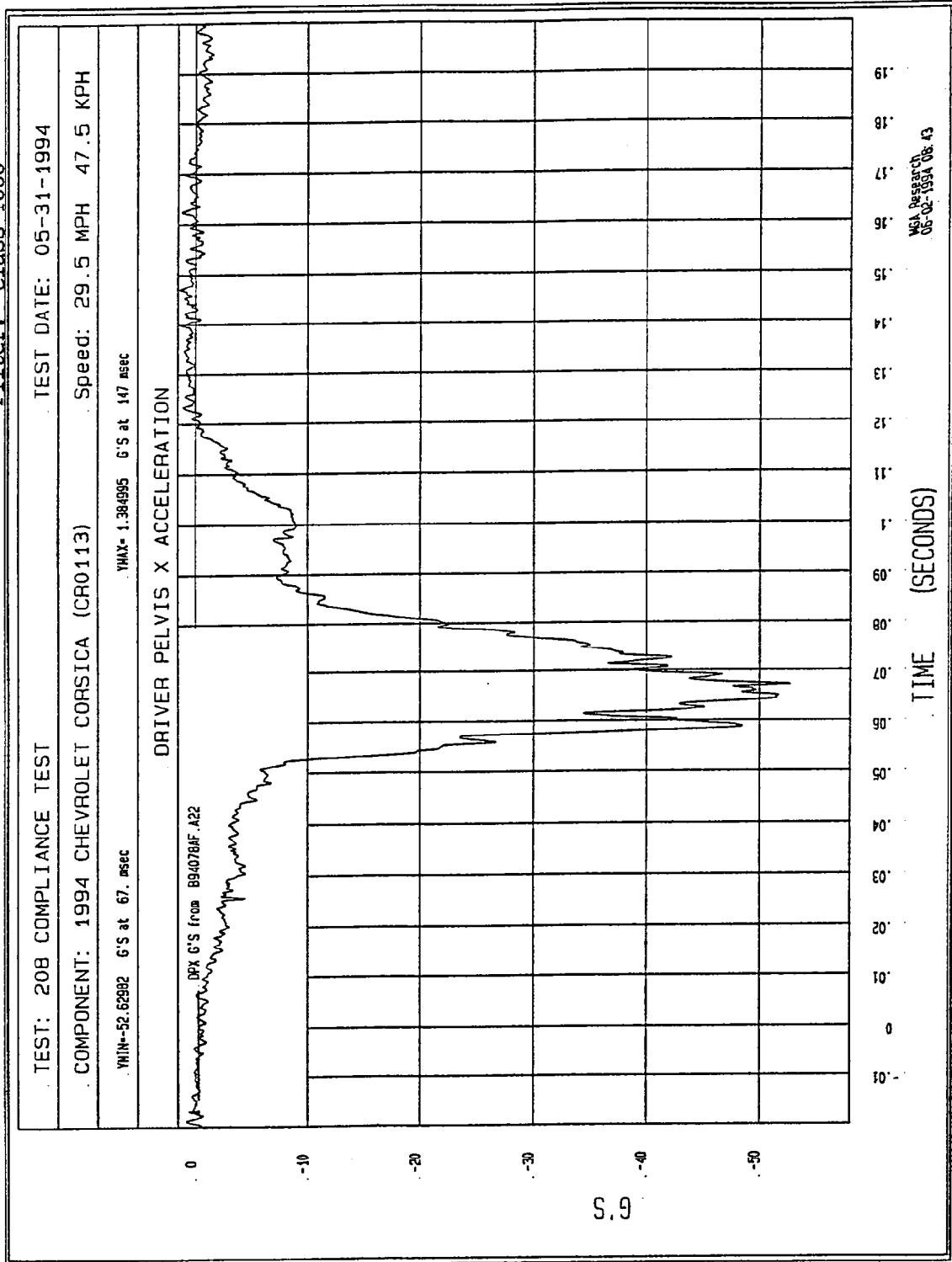


Figure B-20 - Driver Pelvis X Acceleration vs. Time

Filter: Class 1000

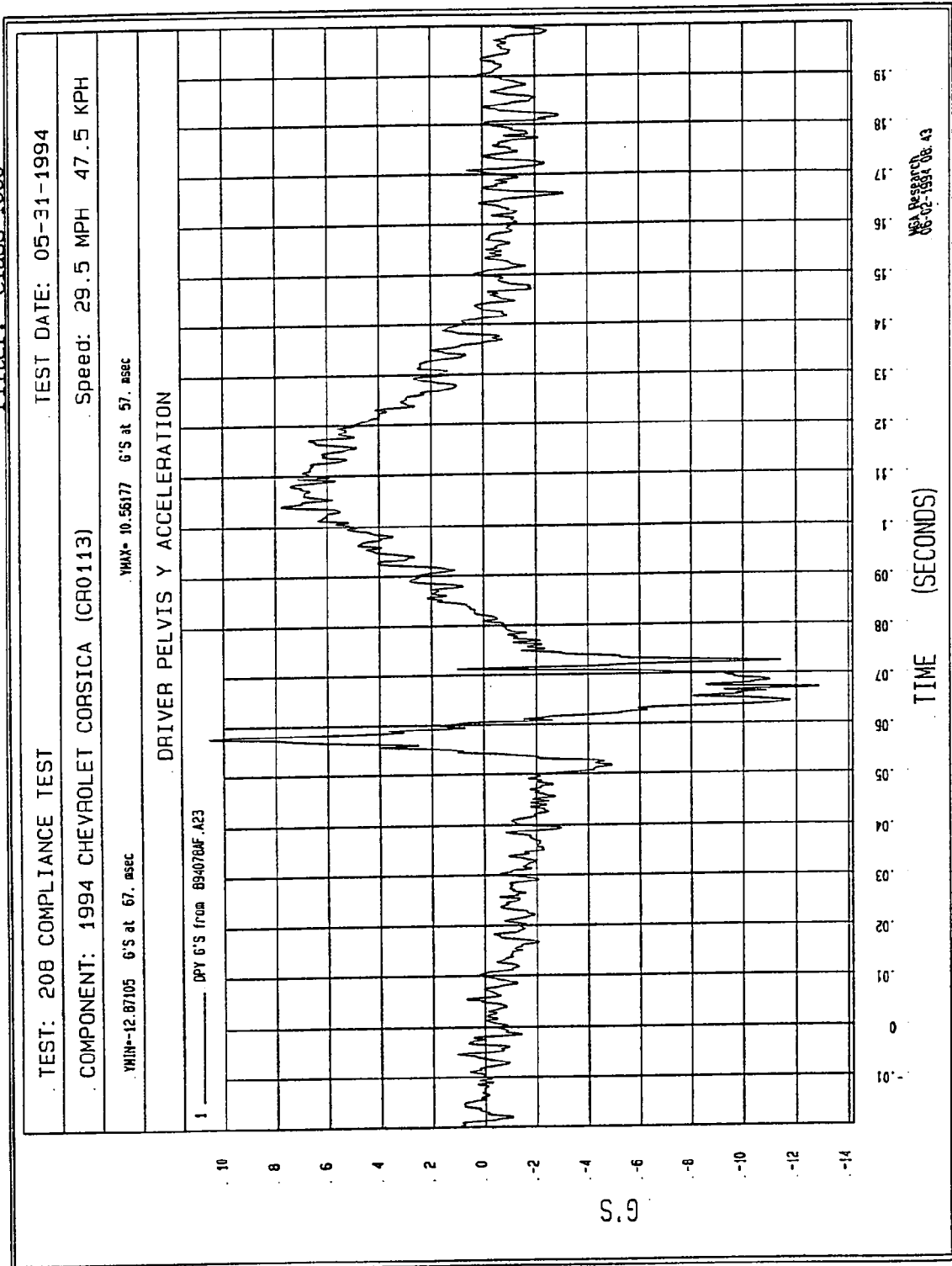


Figure B-21 - Driver Pelvis Y Acceleration vs. Time

Filter: Class 1000

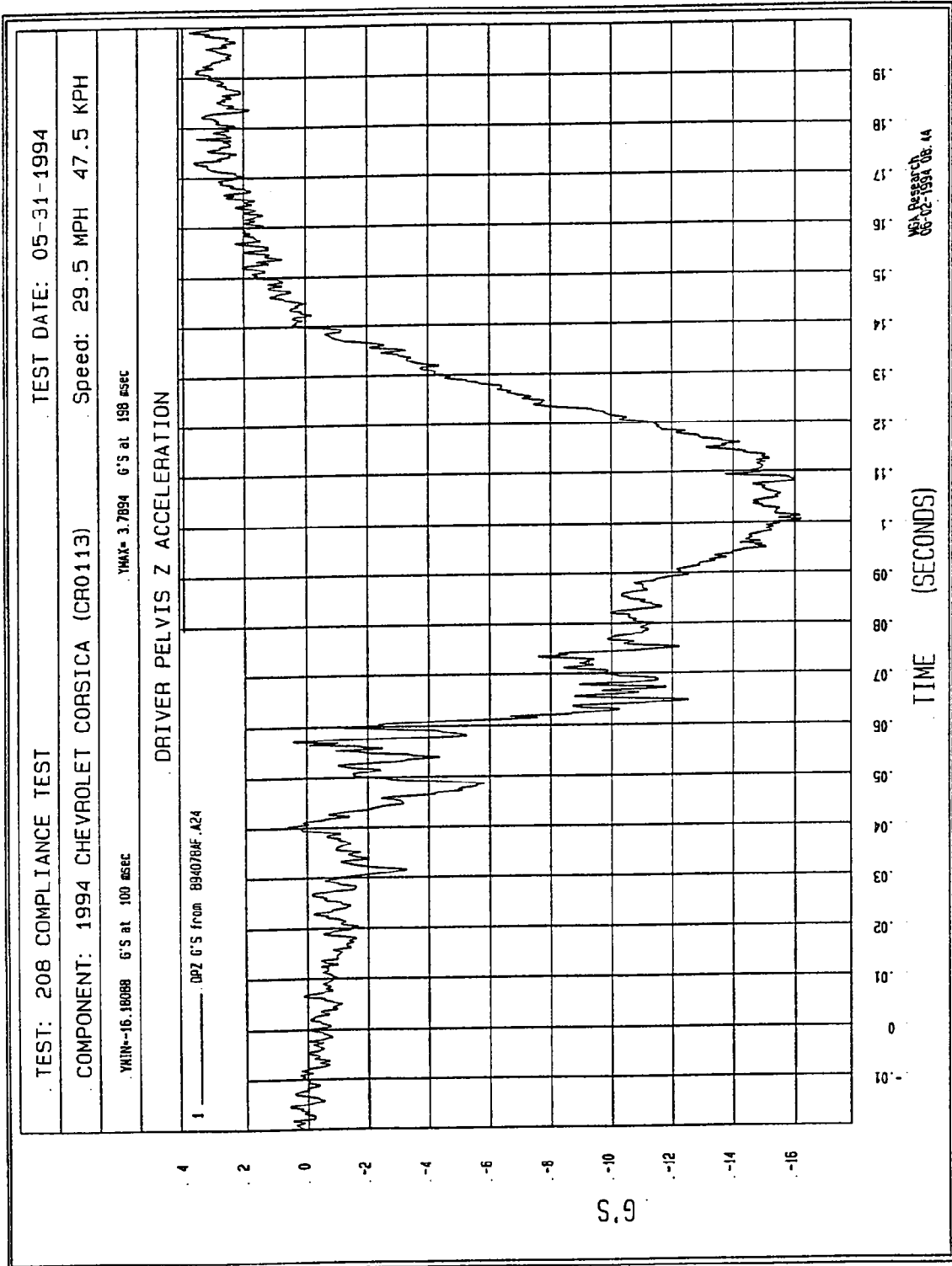


Figure B-22 - Driver Pelvis Z Acceleration vs. Time

Filter: Class 1000

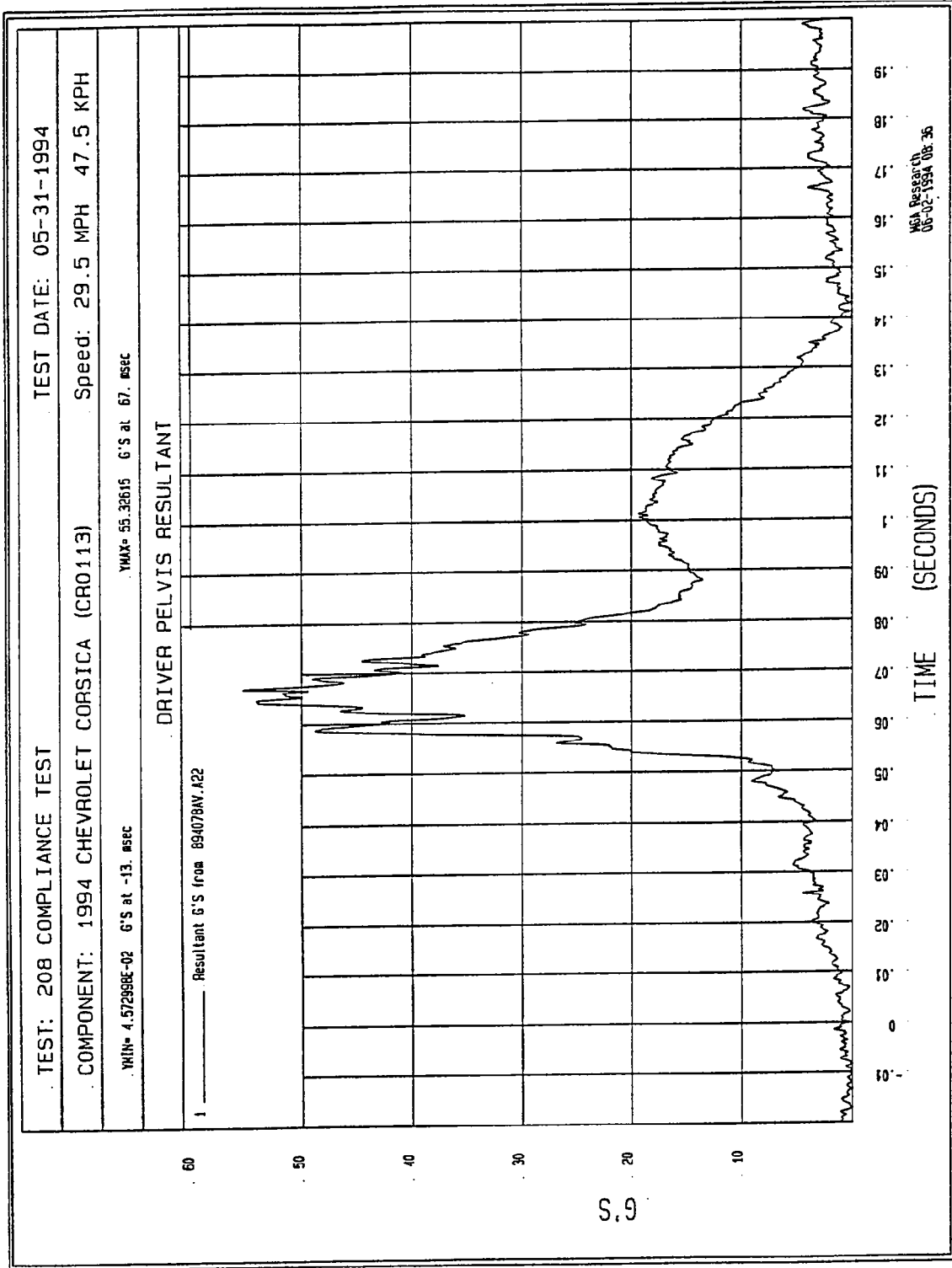


Figure B-23 - Driver Pelvis Resultant Acceleration vs. Time

Filter: Class 1000

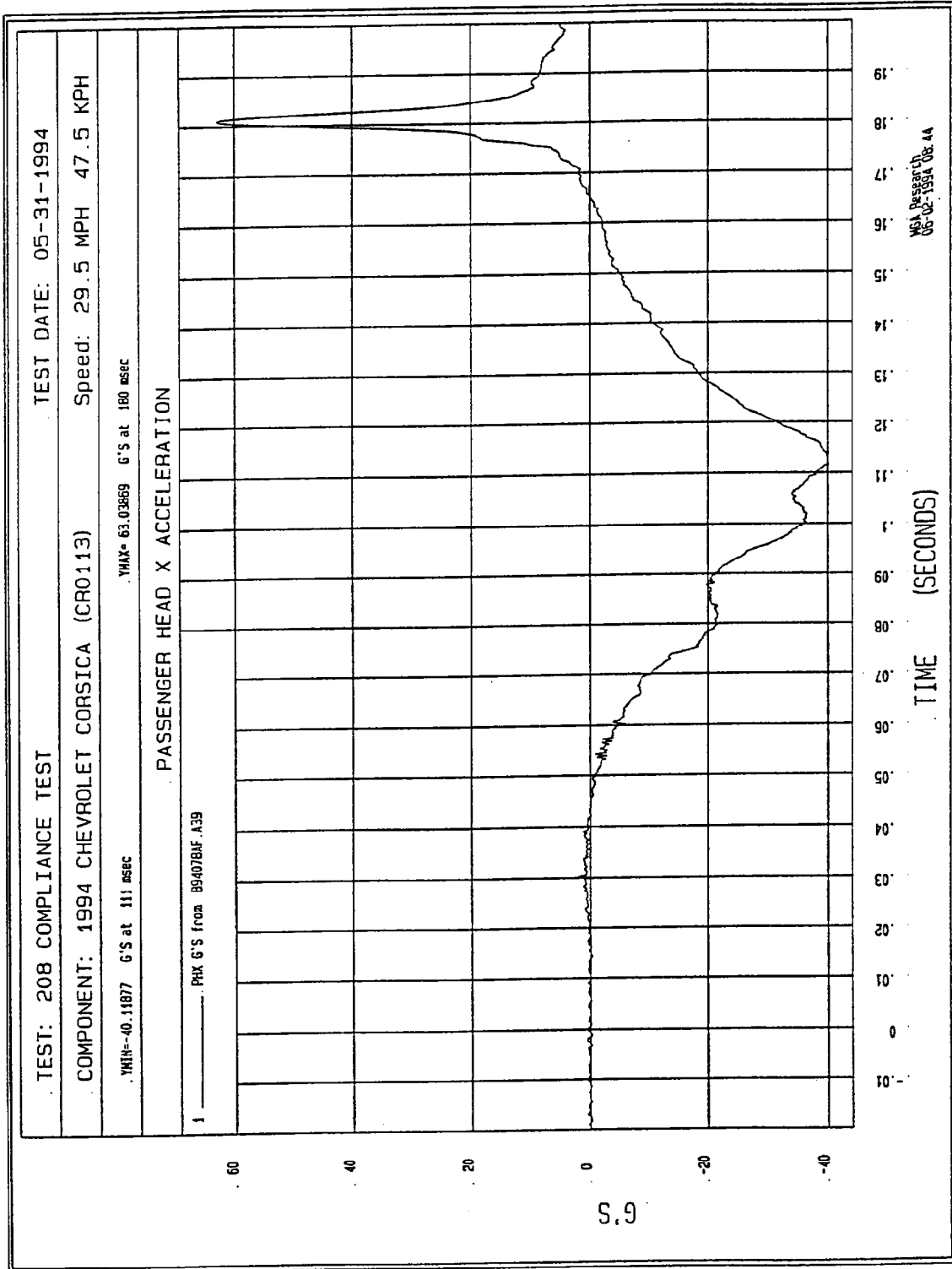


Figure B-24 - Passenger Head X Acceleration vs. Time

TEST: 208 COMPLIANCE TEST TEST DATE: 05-31-1994

COMPONENT: 1994 CHEVROLET CORSICA (CR0113) Speed: 29.5 MPH 47.5 KPH

WIN-19.35801 6'S at 180 msec YMAX= 8.11683 6'S at 111 msec

PASSENGER HEAD Y ACCELERATION

1 _____ PH1 6'S (rom 894078AF.440

8
6
4
2
0
-2
-4
-6
-8
-10
-12
-14
-16
-18
-20

0
0.01
0.02
0.03
0.04
0.05
0.06
0.07
0.08
0.09
0.1
0.11
0.12
0.13
0.14
0.15
0.16
0.17
0.18
0.19

TIME (SECONDS)

NSA Research
06-02-1994 08:44

Figure B-25 - Passenger Head Y Acceleration vs. Time

Filter: Class 1000

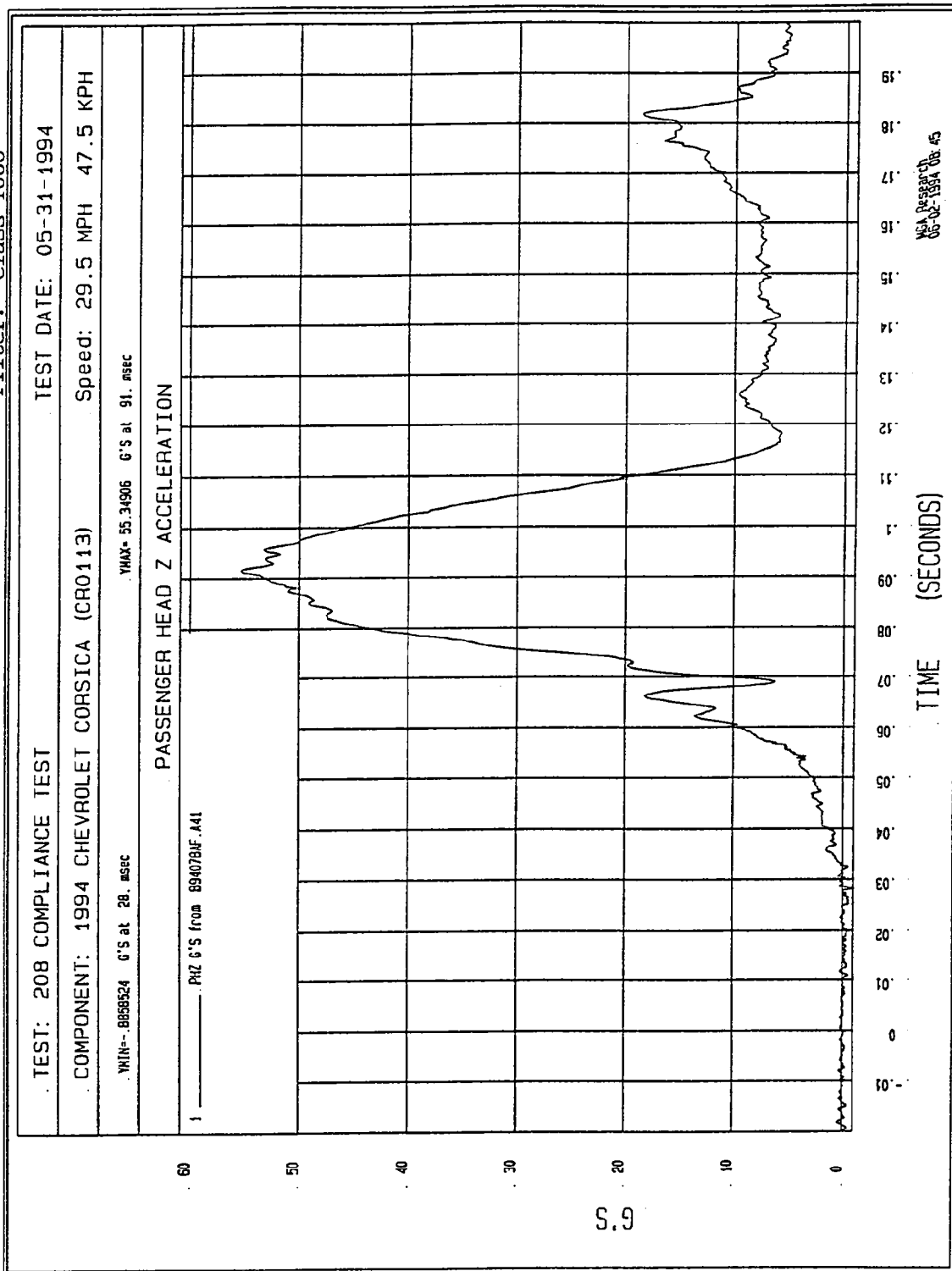


Figure B-26 - Passenger Head Z Acceleration vs. Time

Filter: Class 1000

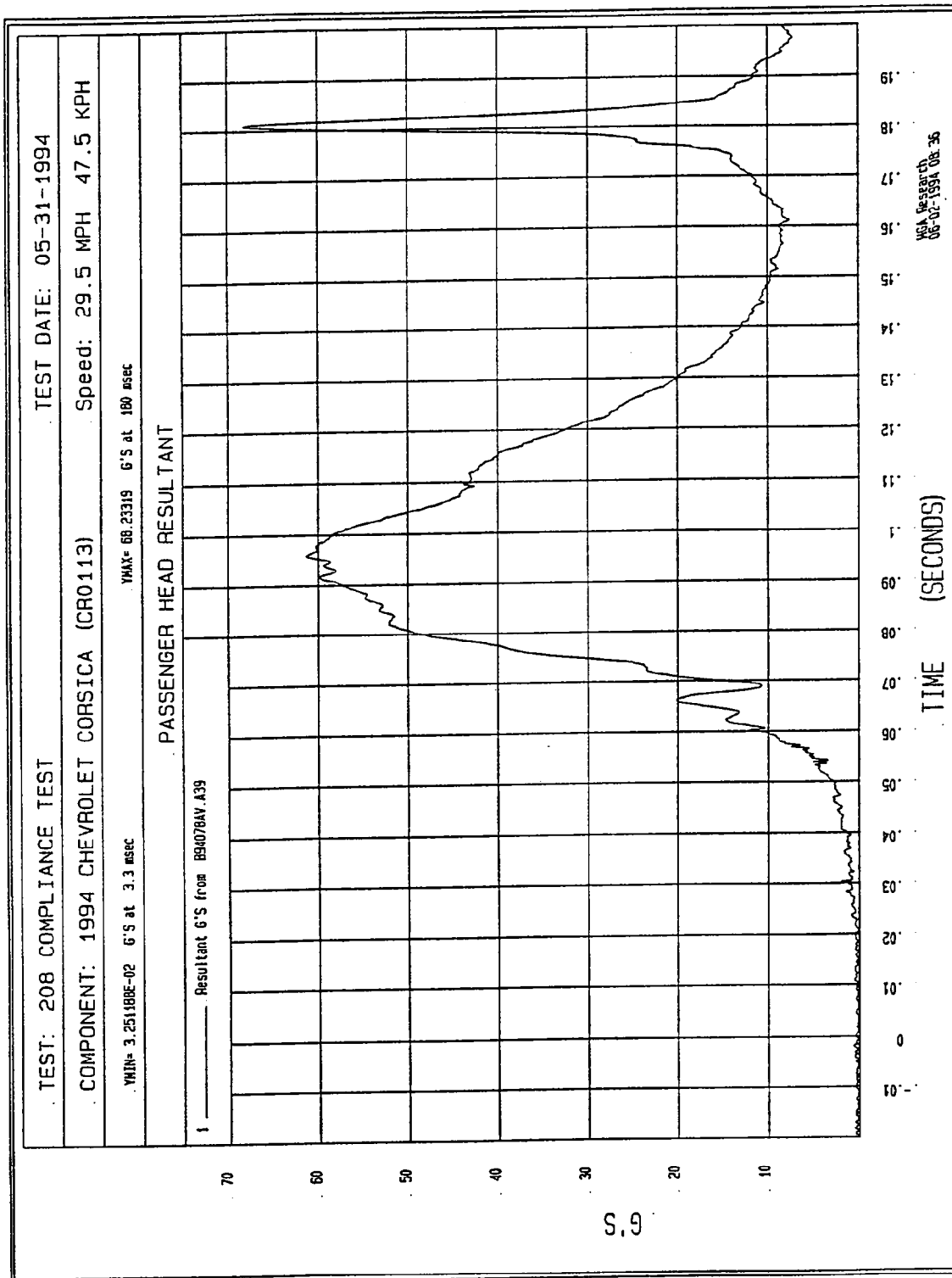


Figure B-27 - Passenger Head Resultant Acceleration vs. Time

Filter: Class 180

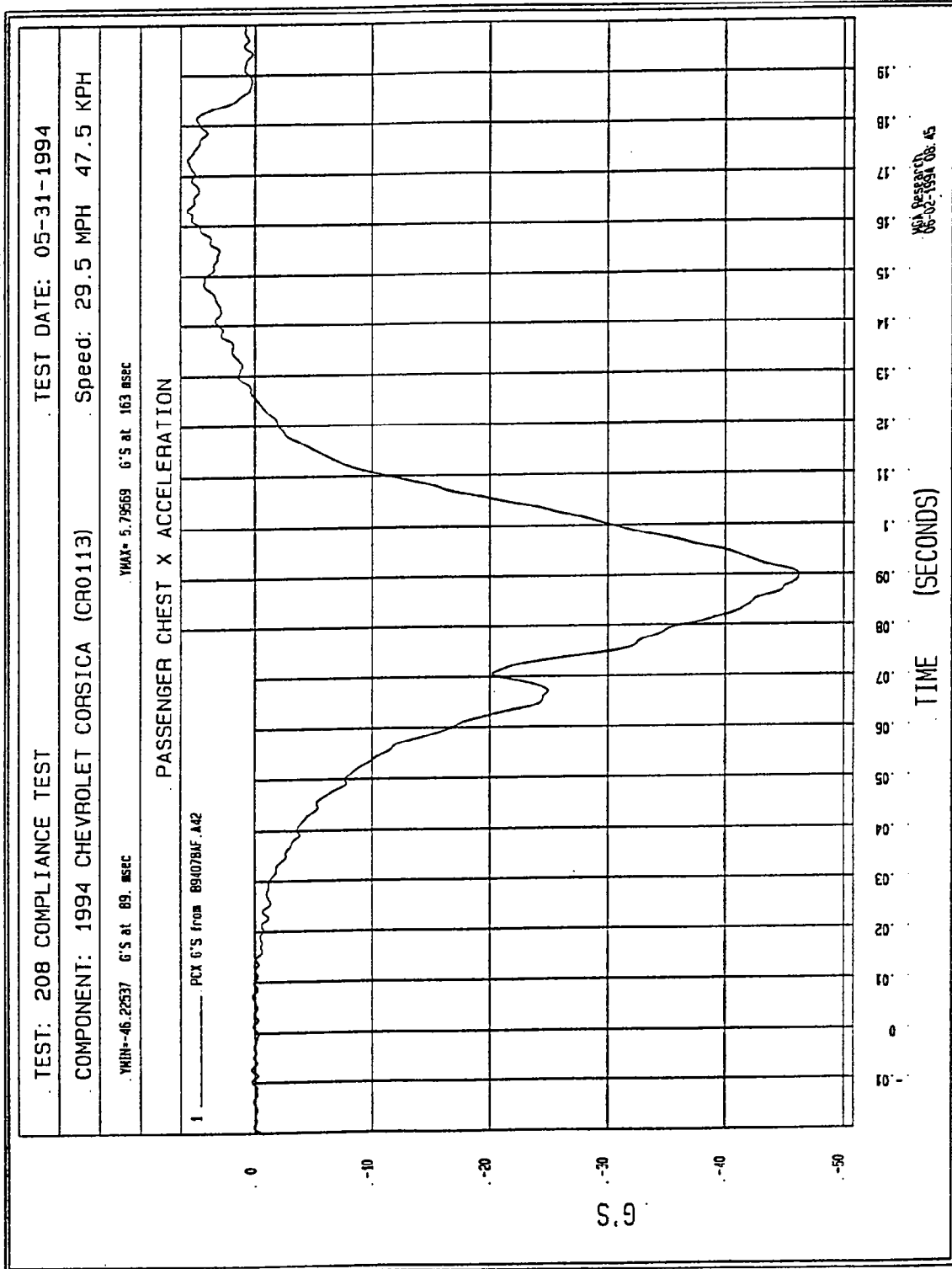


Figure B-28 - Passenger Chest X Acceleration vs. Time

Filter: Class 180

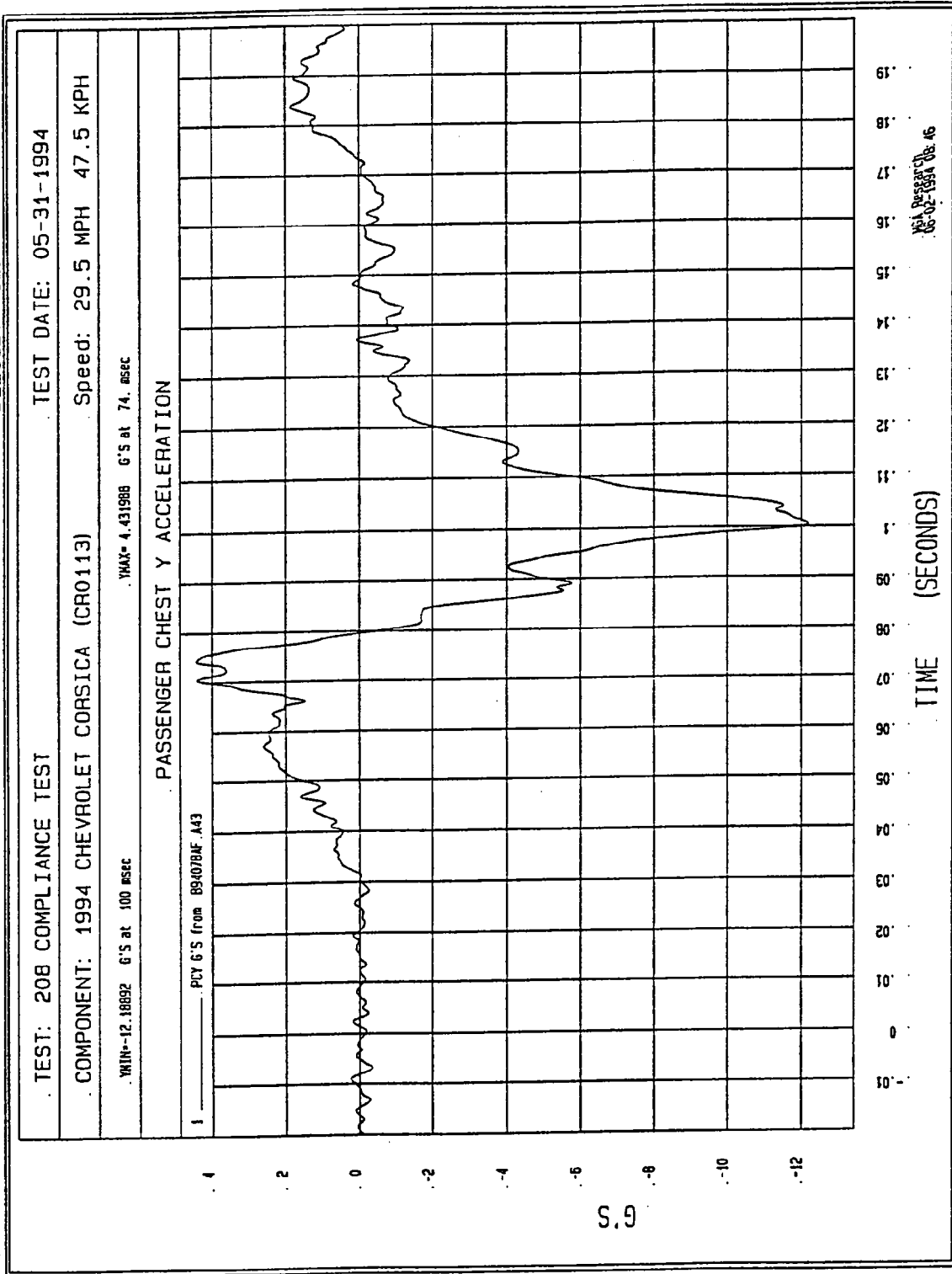


Figure B-29 - Passenger Chest Y Acceleration vs. Time

Filter: Class 180

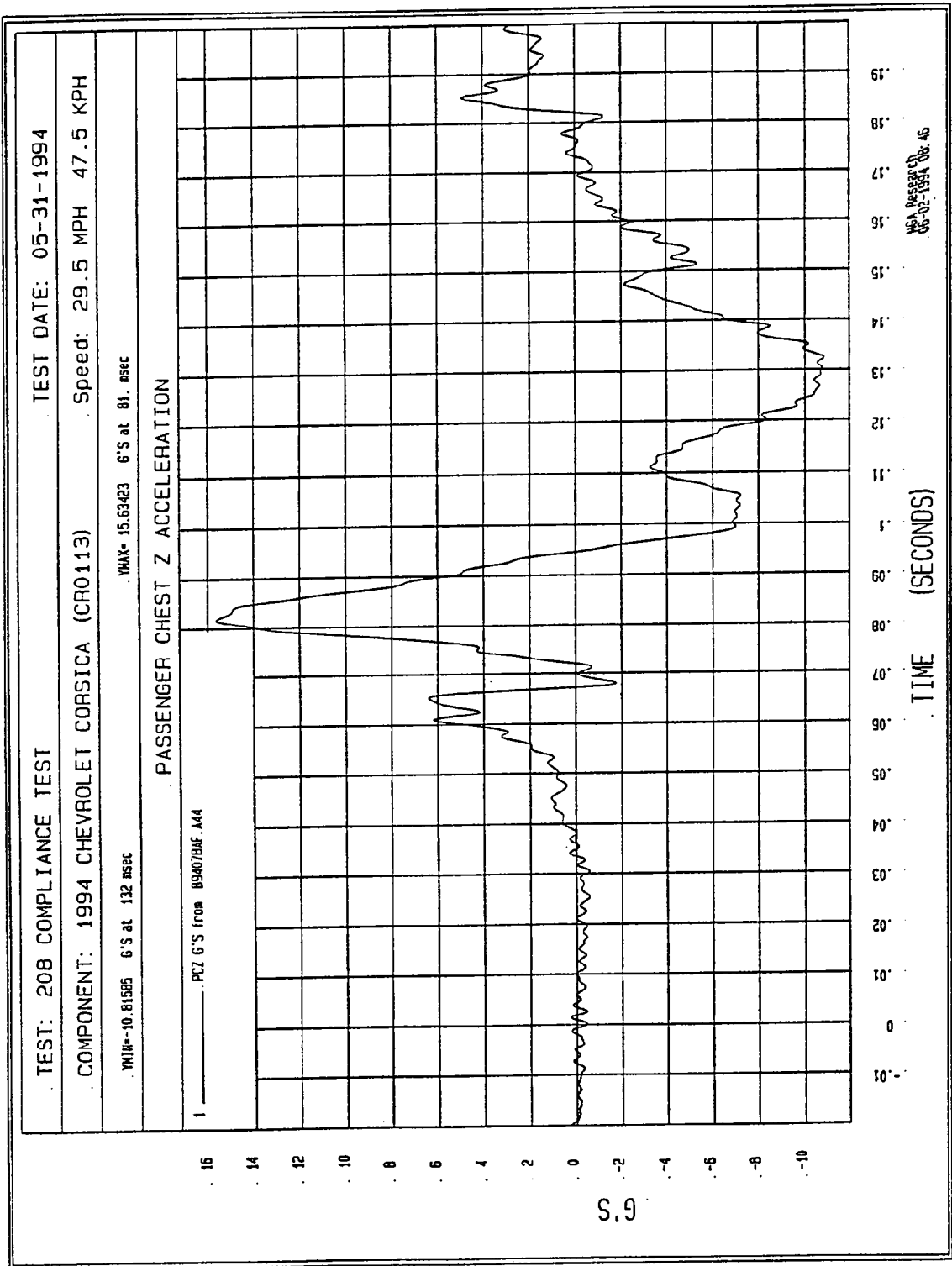


Figure B-30 - Passenger Chest Z Acceleration vs. Time

Filter: Class 180

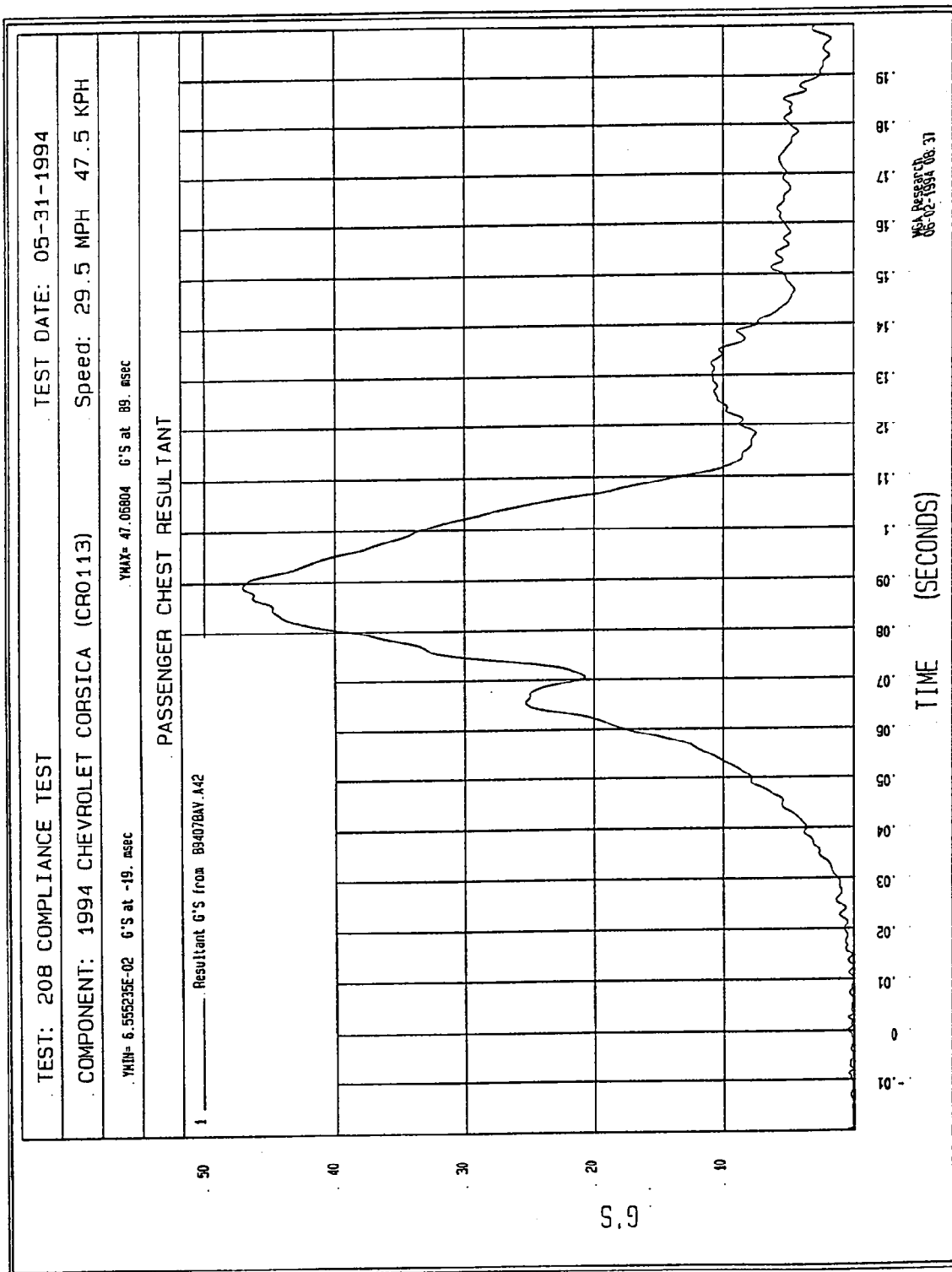


Figure B-31 - Passenger Chest Resultant Acceleration vs. Time

Filter: Class 180

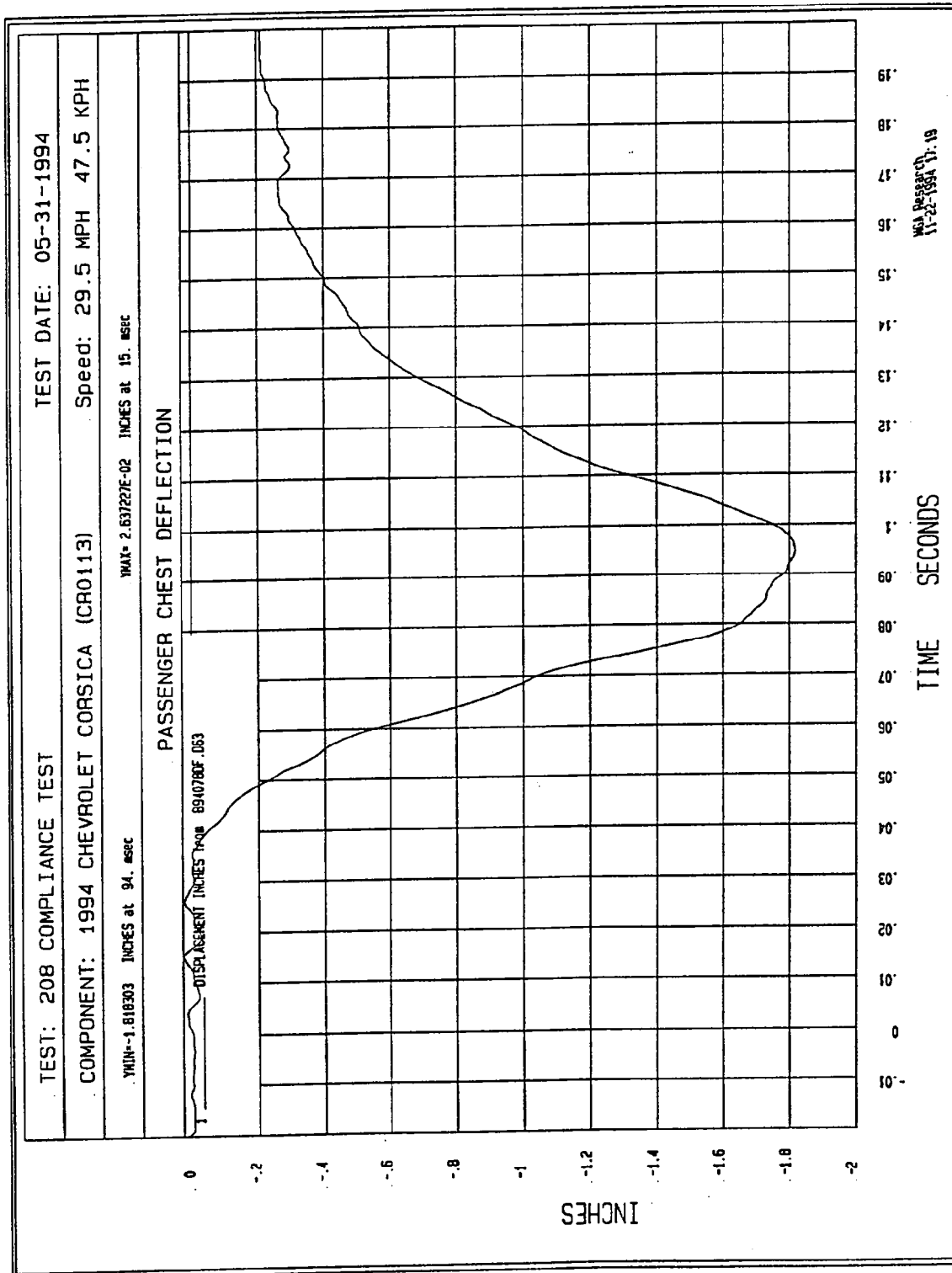


Figure B-32 - Passenger Chest Deflection vs. Time

Filter: Class 600

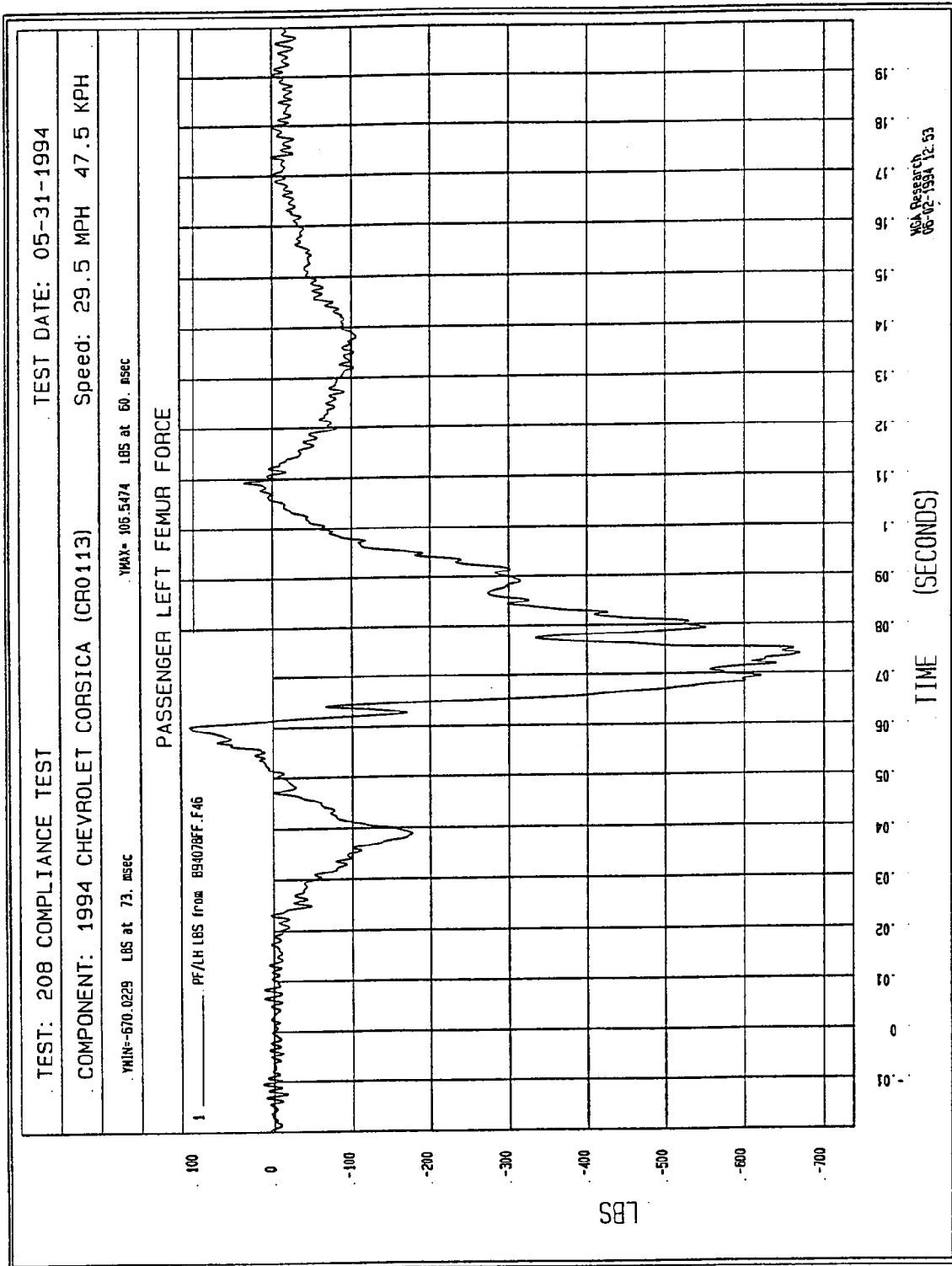


Figure B-33 - Passenger Left Femur Force vs. Time

Filter: Class 600

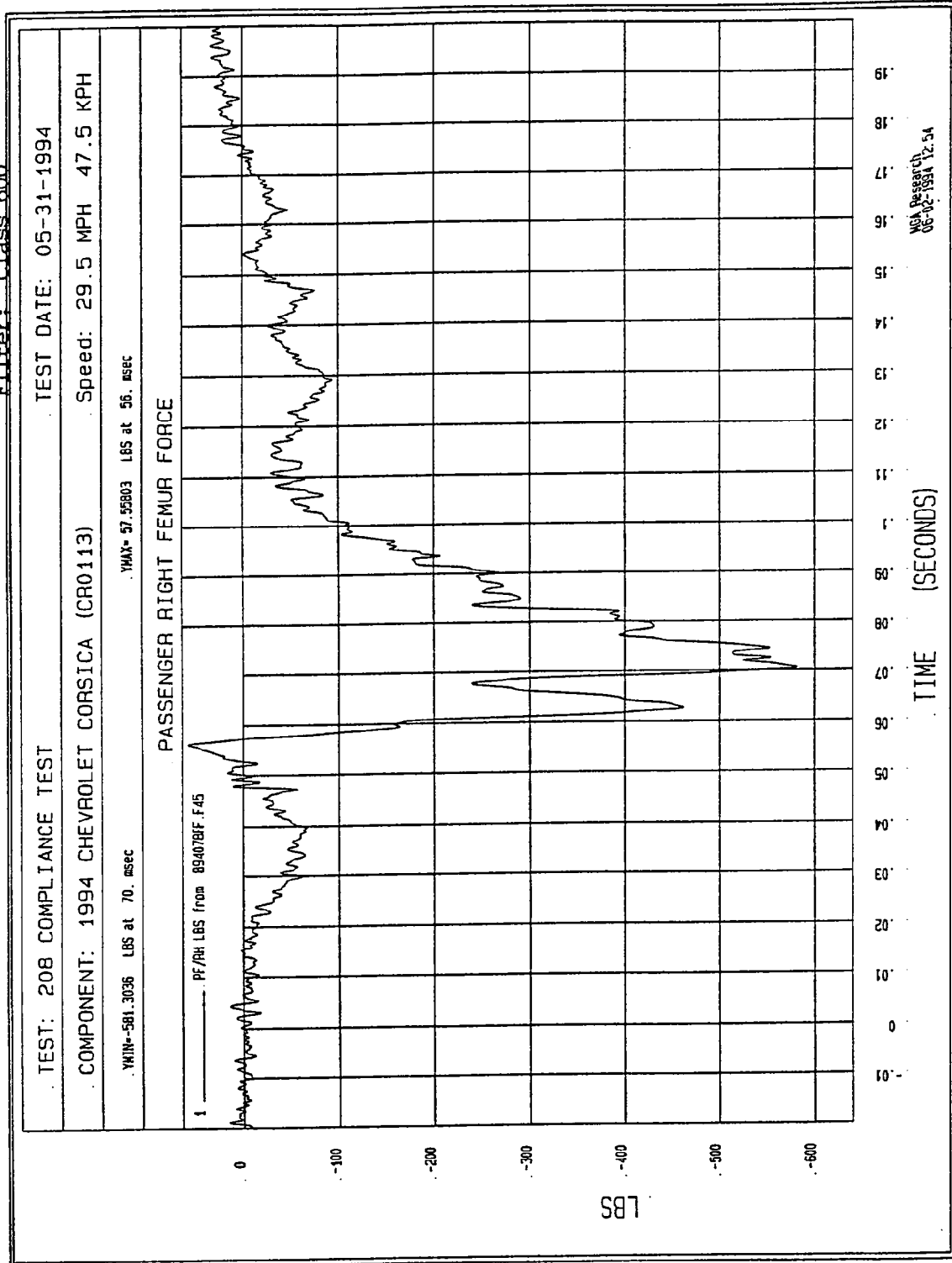


Figure B-34 - Passenger Right Femur Force vs. Time

Filter: Class 1000

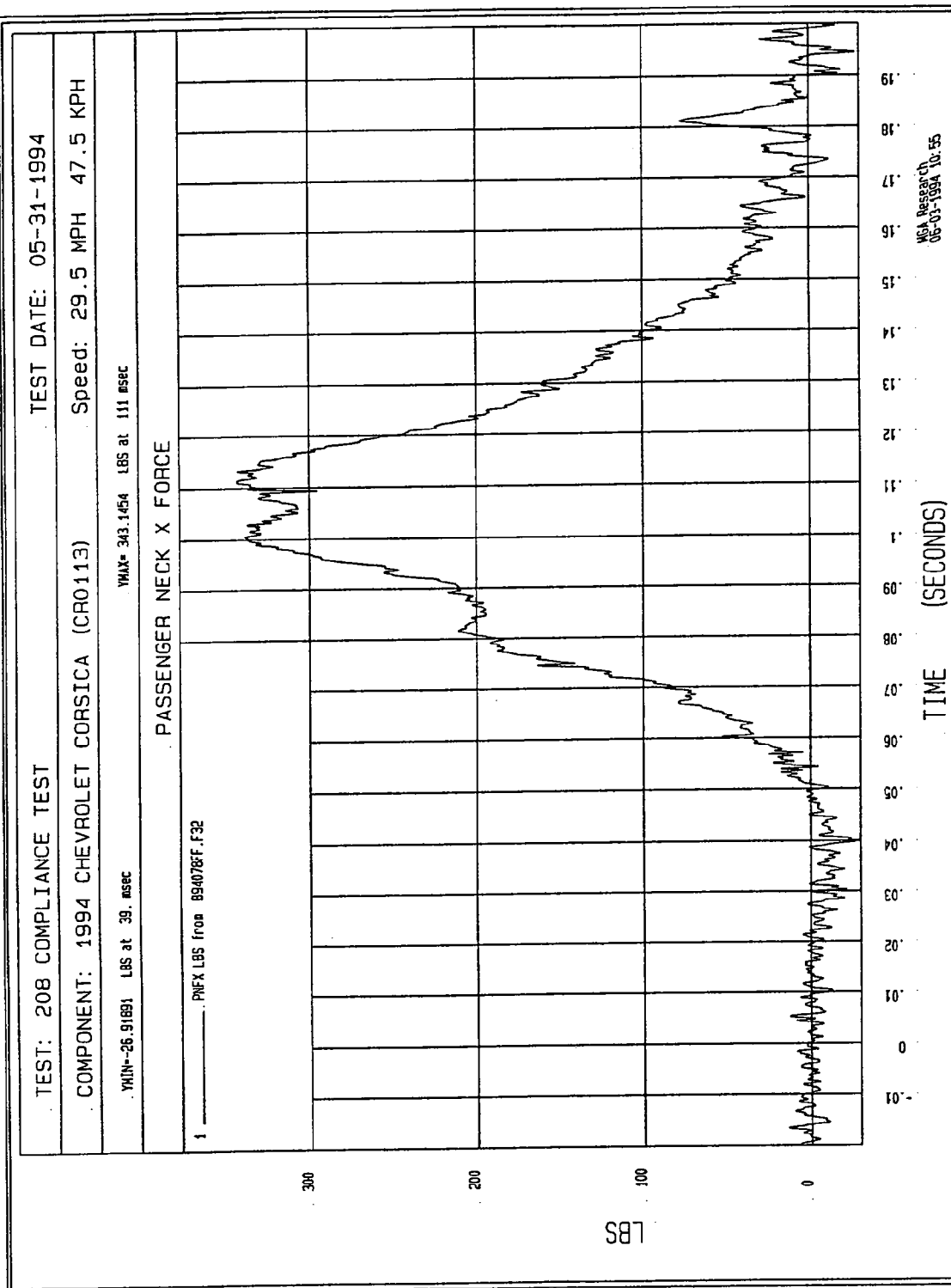


Figure B-35 - Passenger Neck X Force vs. Time

Filter: Class 1000

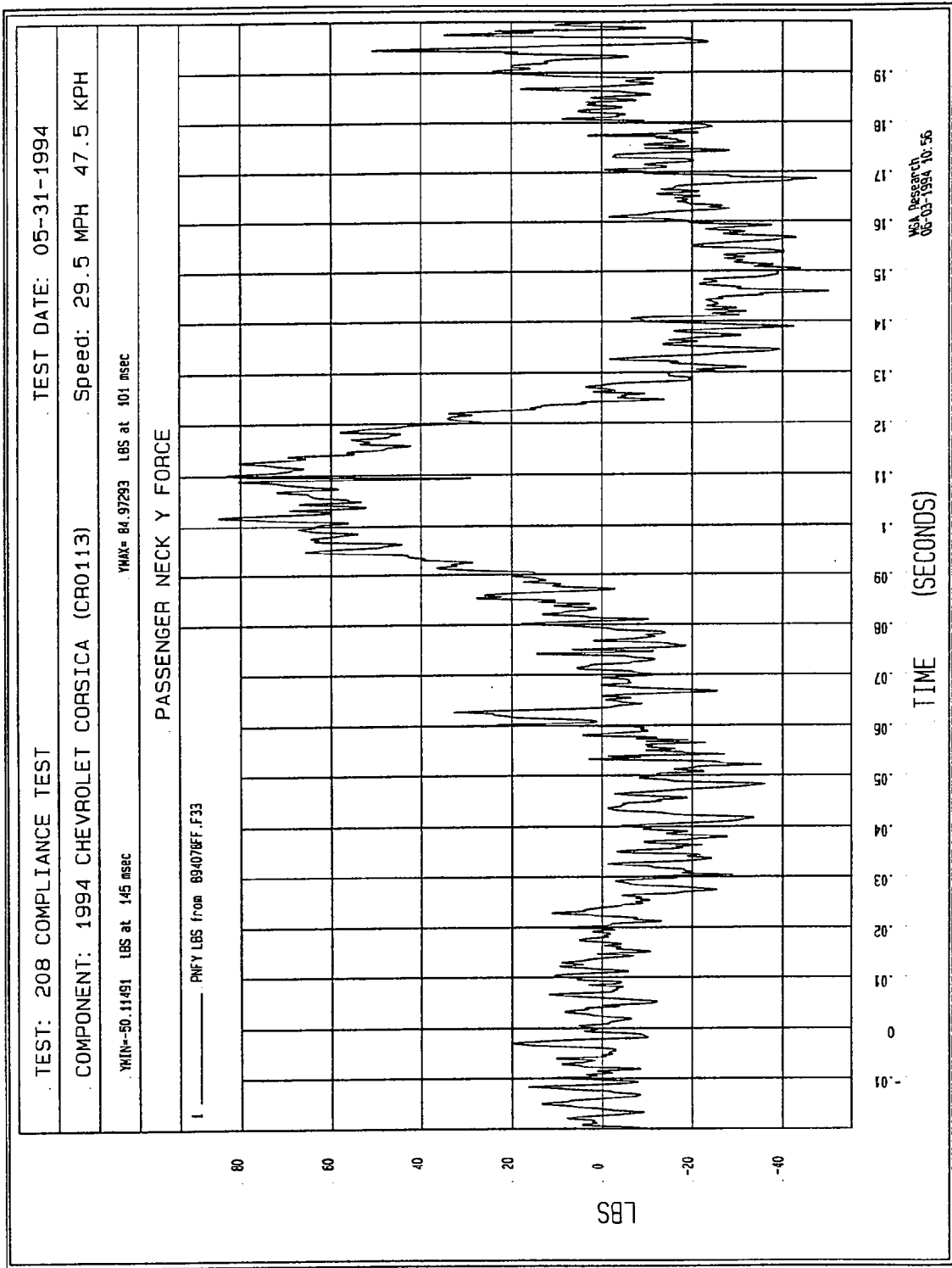


Figure B-36 - Passenger Neck Y Force vs. Time

Filter: Class 1000

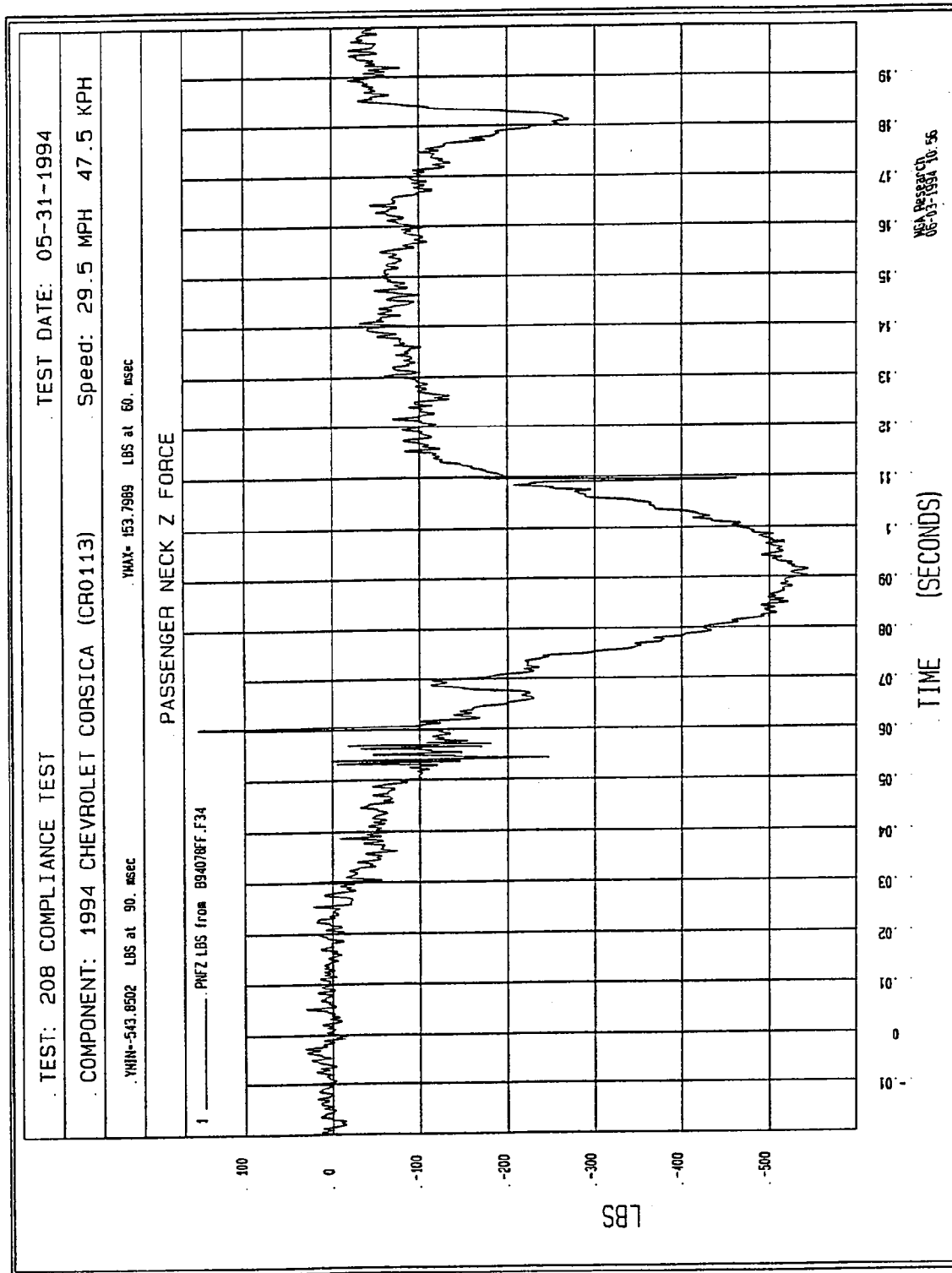


Figure B-37 - Passenger Neck Z Force vs. Time

Filter: Class 1000

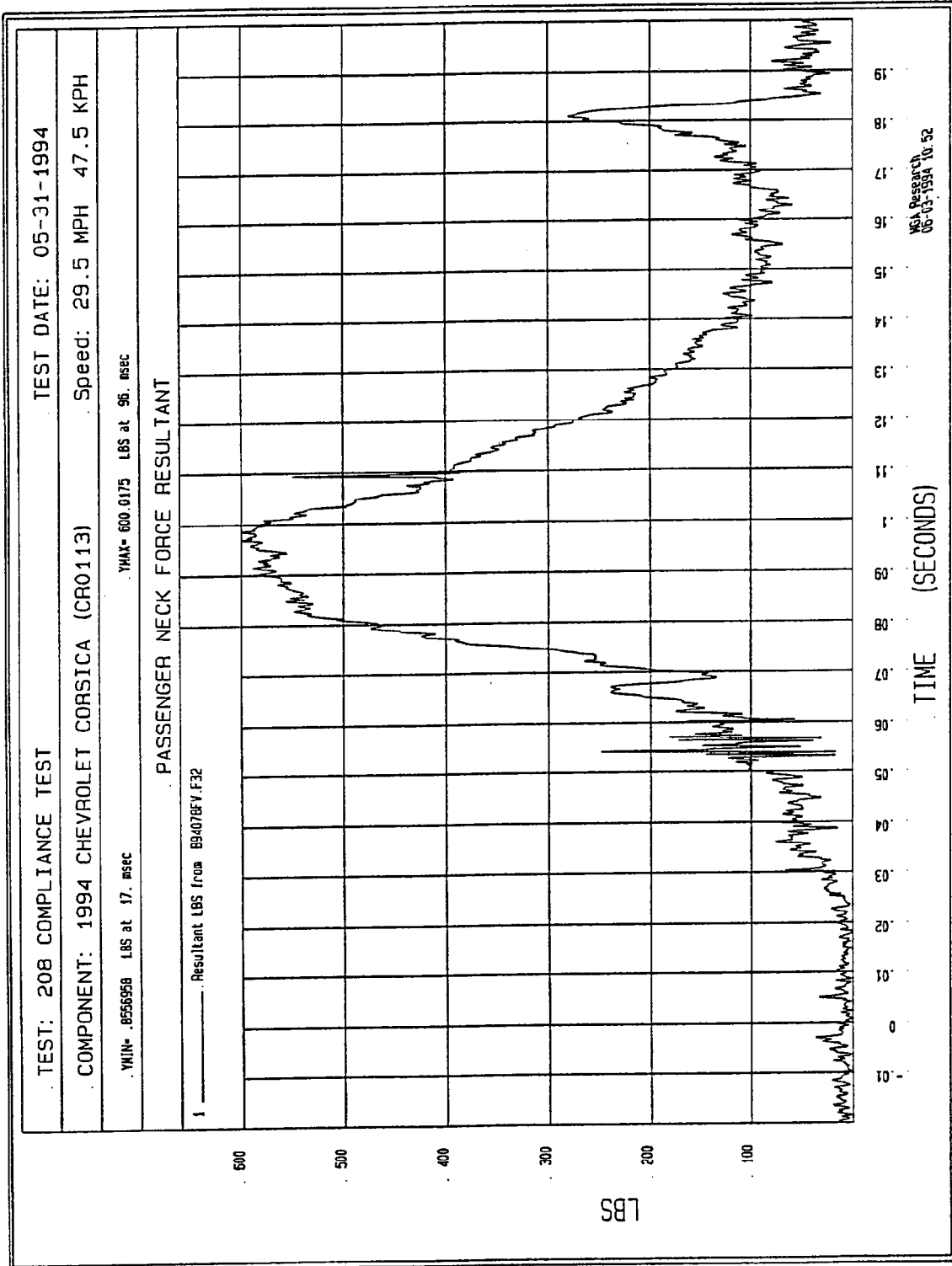


Figure B-38 - Passenger Neck Force Resultant vs. Time

Filter: Class 600

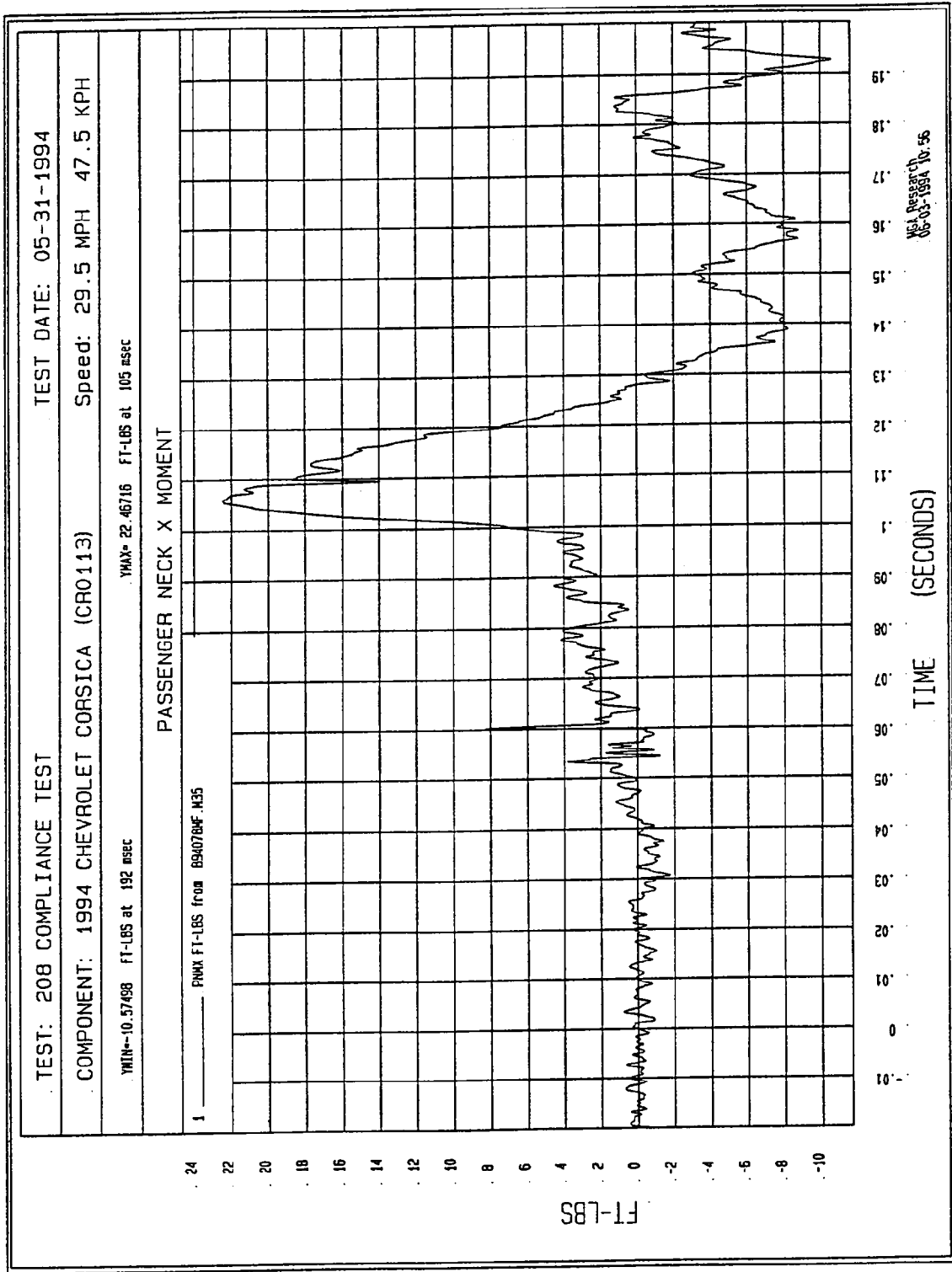


Figure B-39 - Passenger Neck X Moment vs. Time

Filter: Class 600

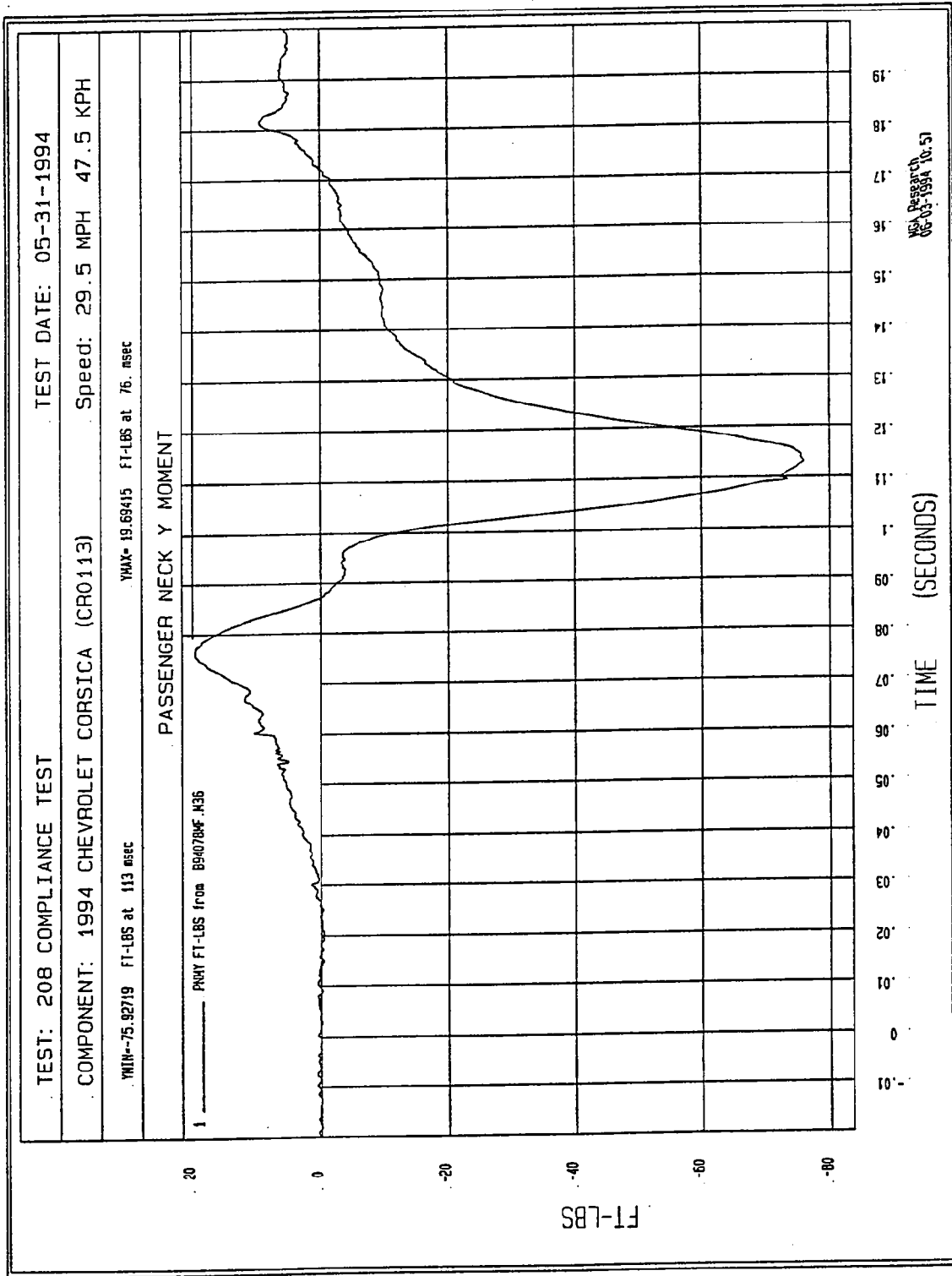


Figure B-40 - Passenger Neck Y Moment vs. Time

Filter: Class 600

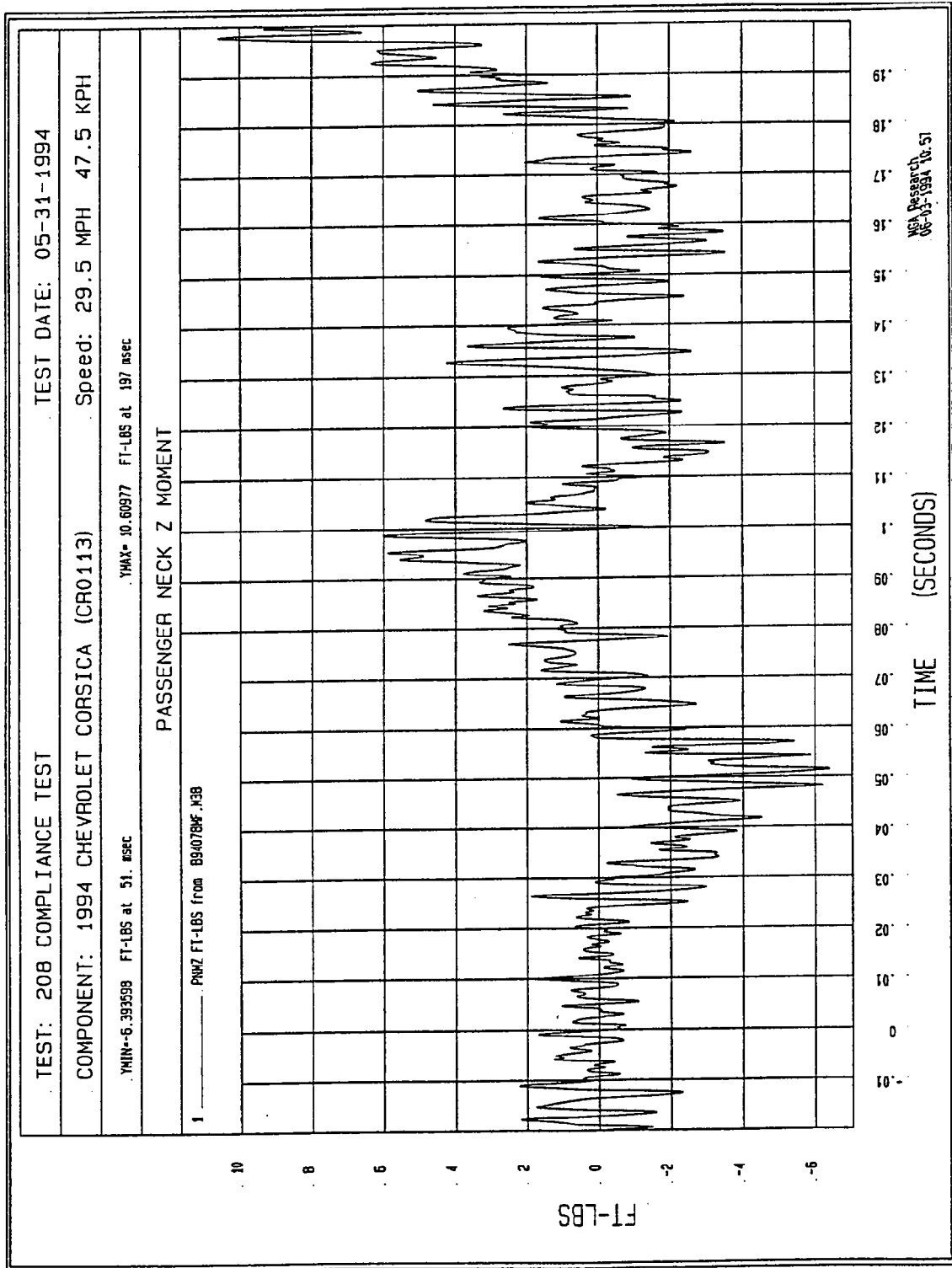


Figure B-41 - Passenger Neck Z Moment vs. Time

Filter: Class 600

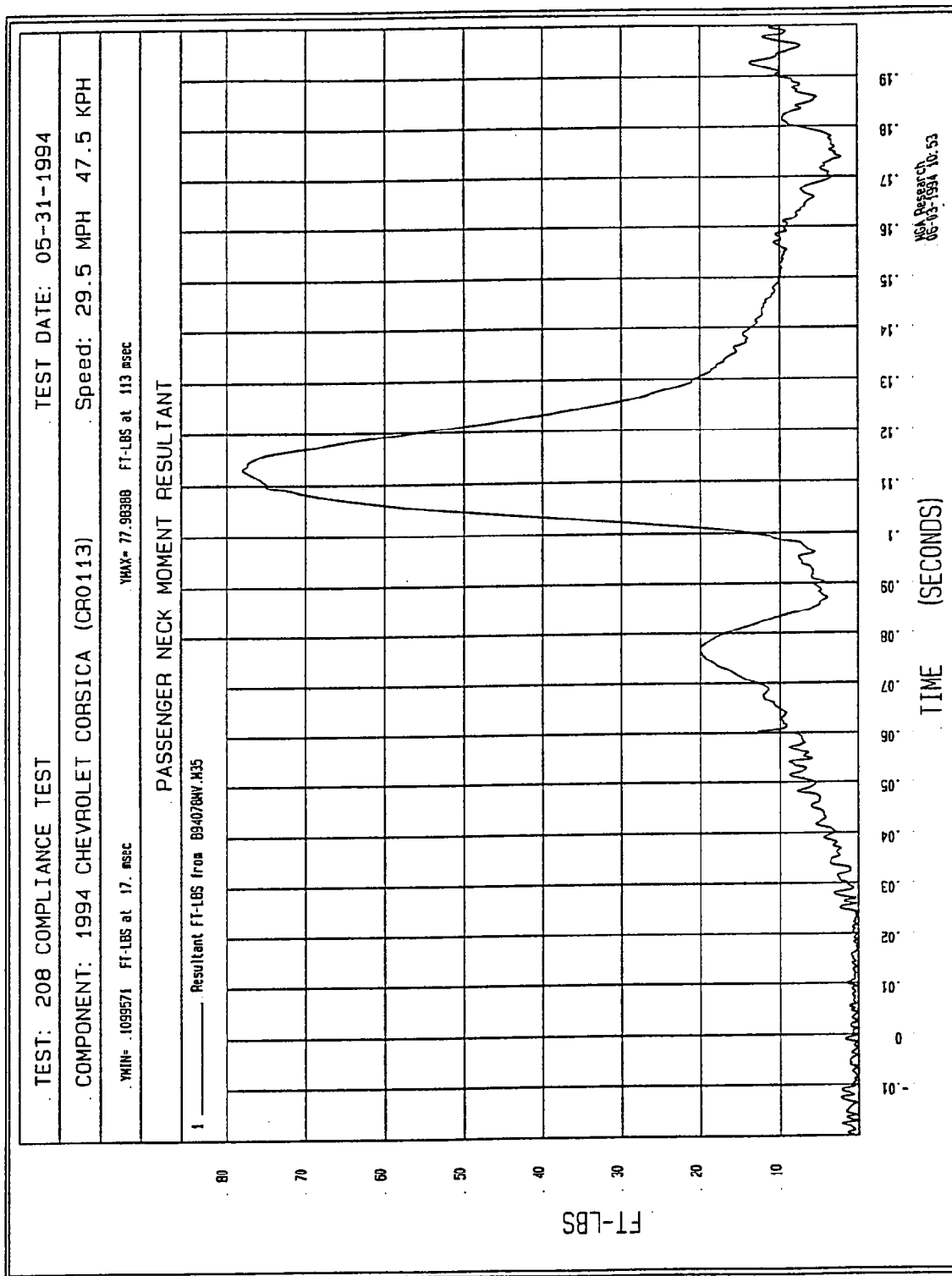


Figure B-42 - Passenger Neck Moment Resultant vs. Time

Filter: Class 1000

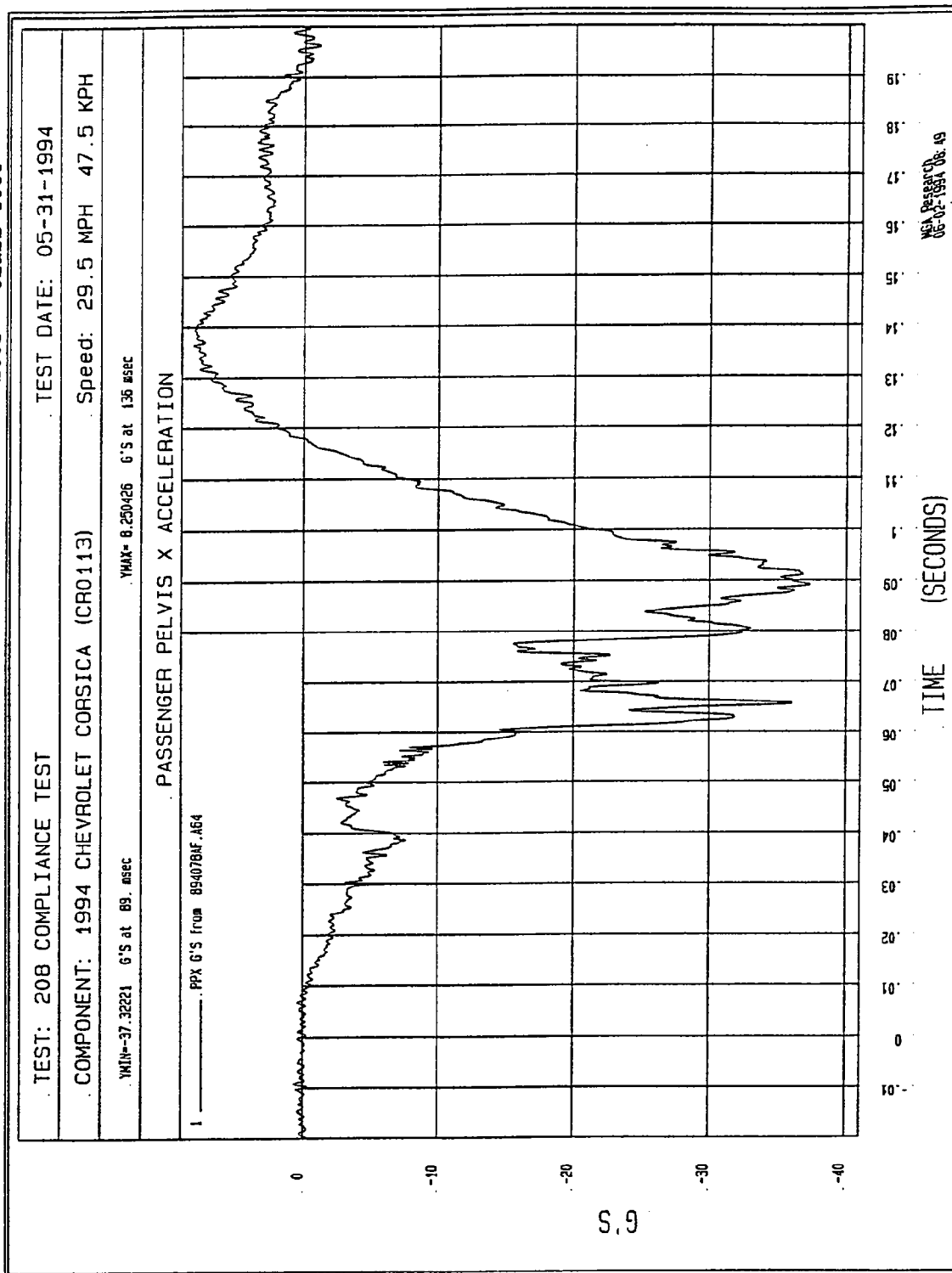


Figure B-43 - Passenger Pelvis X Acceleration vs. Time

Filter: Class 1000

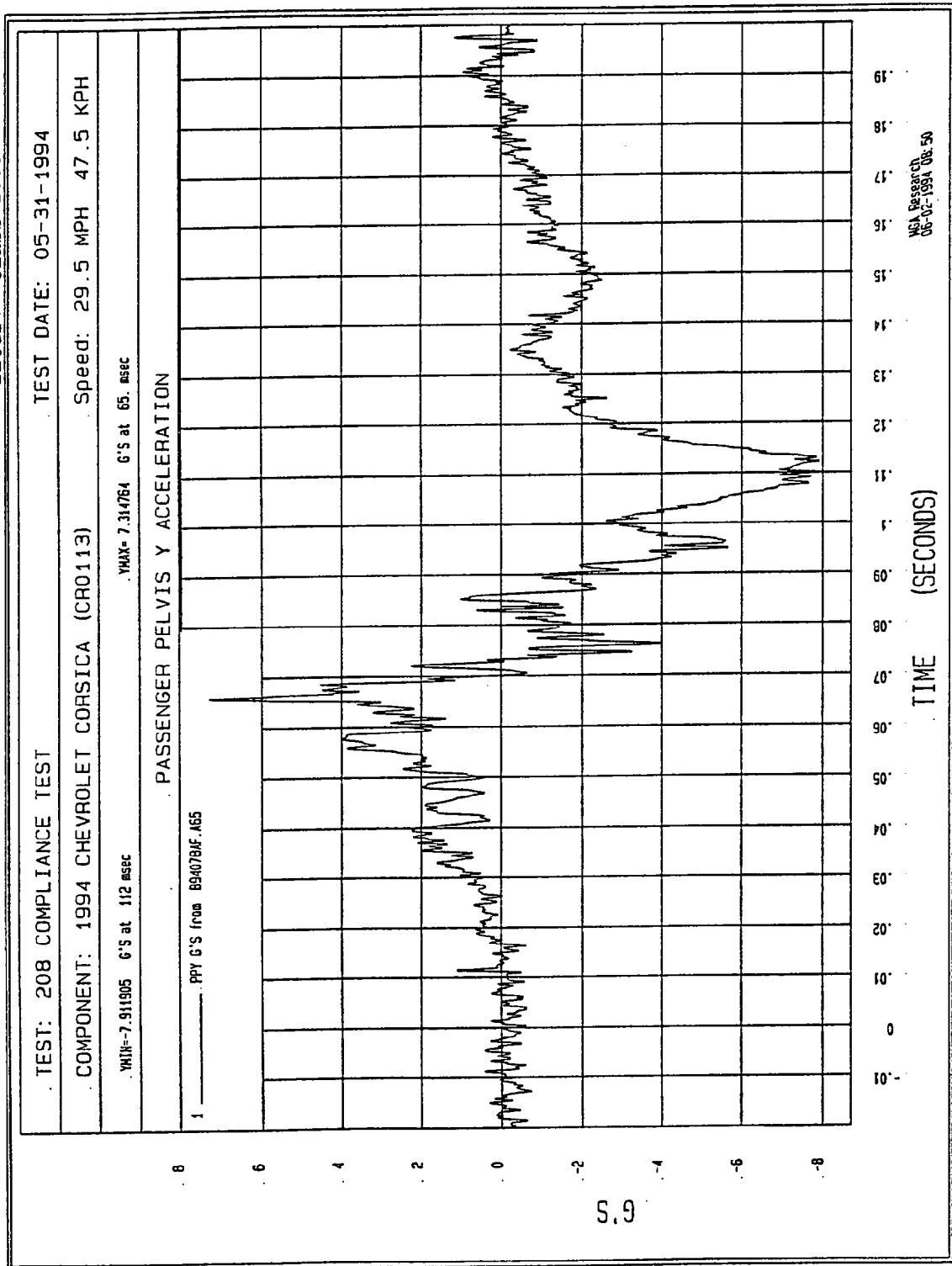


Figure B-44 - Passenger Pelvis Y Acceleration vs. Time

Filter: Class 1000

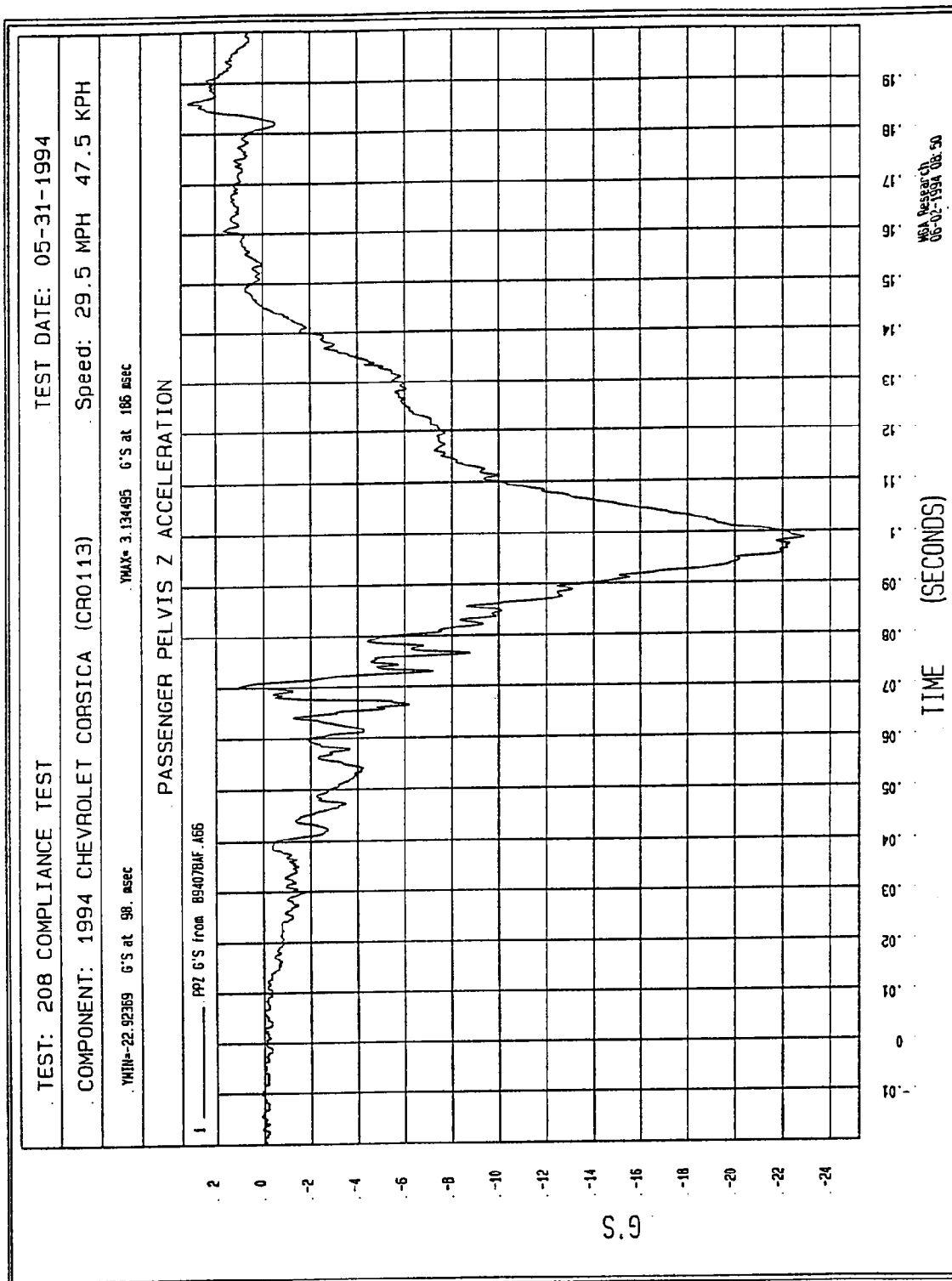


Figure B-45 - Passenger Pelvis Z Acceleration vs. Time

Filter: Class 1000

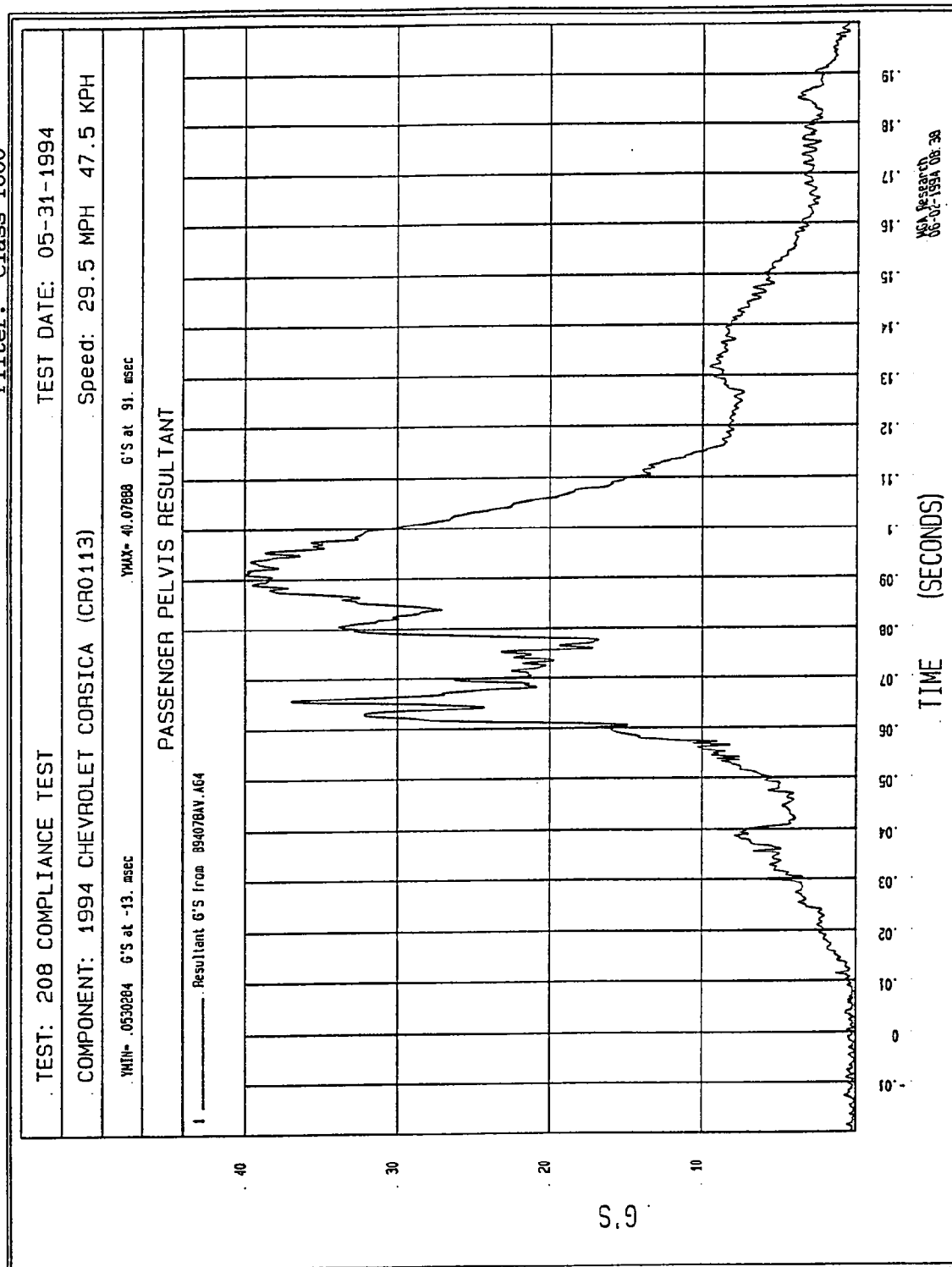


Figure B-46 - Passenger Pelvis Resultant Acceleration vs. Time

Filter: Class 60

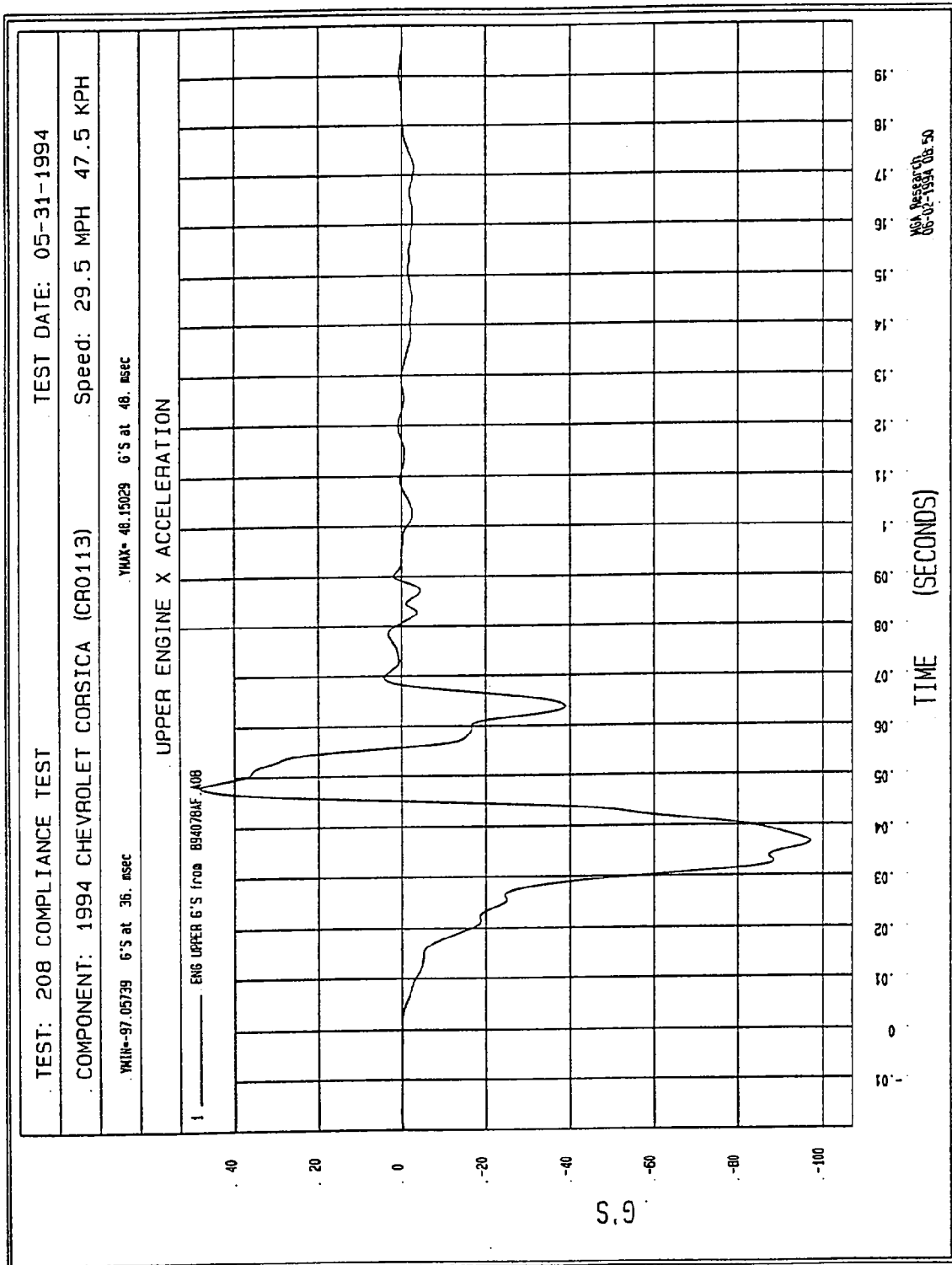


Figure B-47 - Upper Engine X Acceleration vs. Time

Filter: Class 60

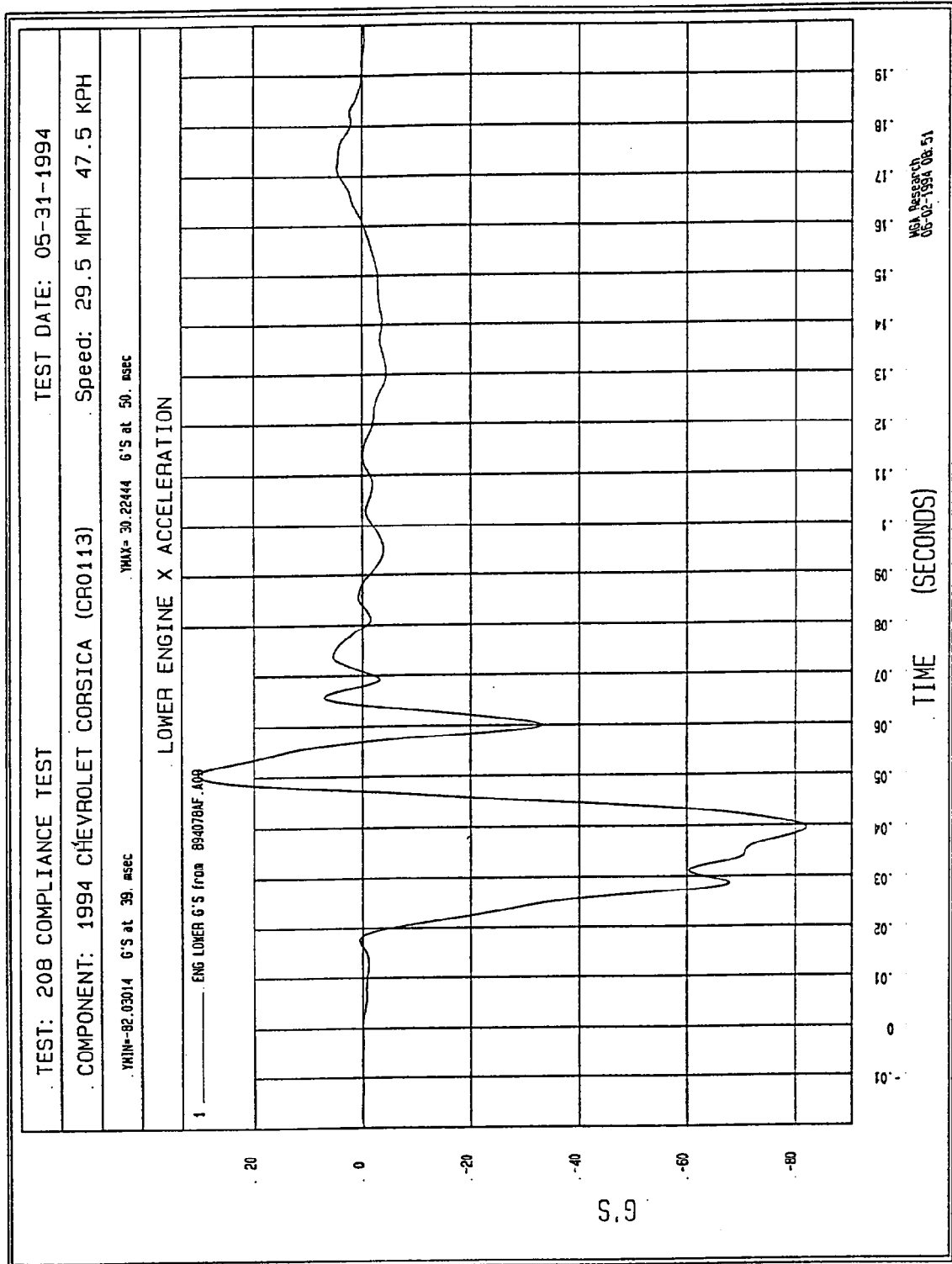


Figure B-48 - Lower Engine X Acceleration vs. Time

TEST: 208 COMPLIANCE TEST TEST DATE: 05-31-1994

COMPONENT: 1994 CHEVROLET CORSICA (CR0113) Speed: 29.5 MPH 47.5 KPH

YH1H--57.04688 G'S at 57. msec YH1X= 8.777084 G'S at 141 msec

INSTRUMENT PANEL X ACCELERATION

1 ——— INST. PANEL G'S from B94078AF.A10

TIME (SECONDS)

0.19 0.18 0.17 0.16 0.15 0.14 0.13 0.12 0.11 0.1 0.09 0.08 0.07 0.06 0.05 0.04 0.03 0.02 0.01 0

0 -10 -20 -30 -40 -50 -60

G.S.

WCA Research
05-02-1994 08:51

Figure B-49 - Instrument Panel X Acceleration vs. Time

Filter: Class 60

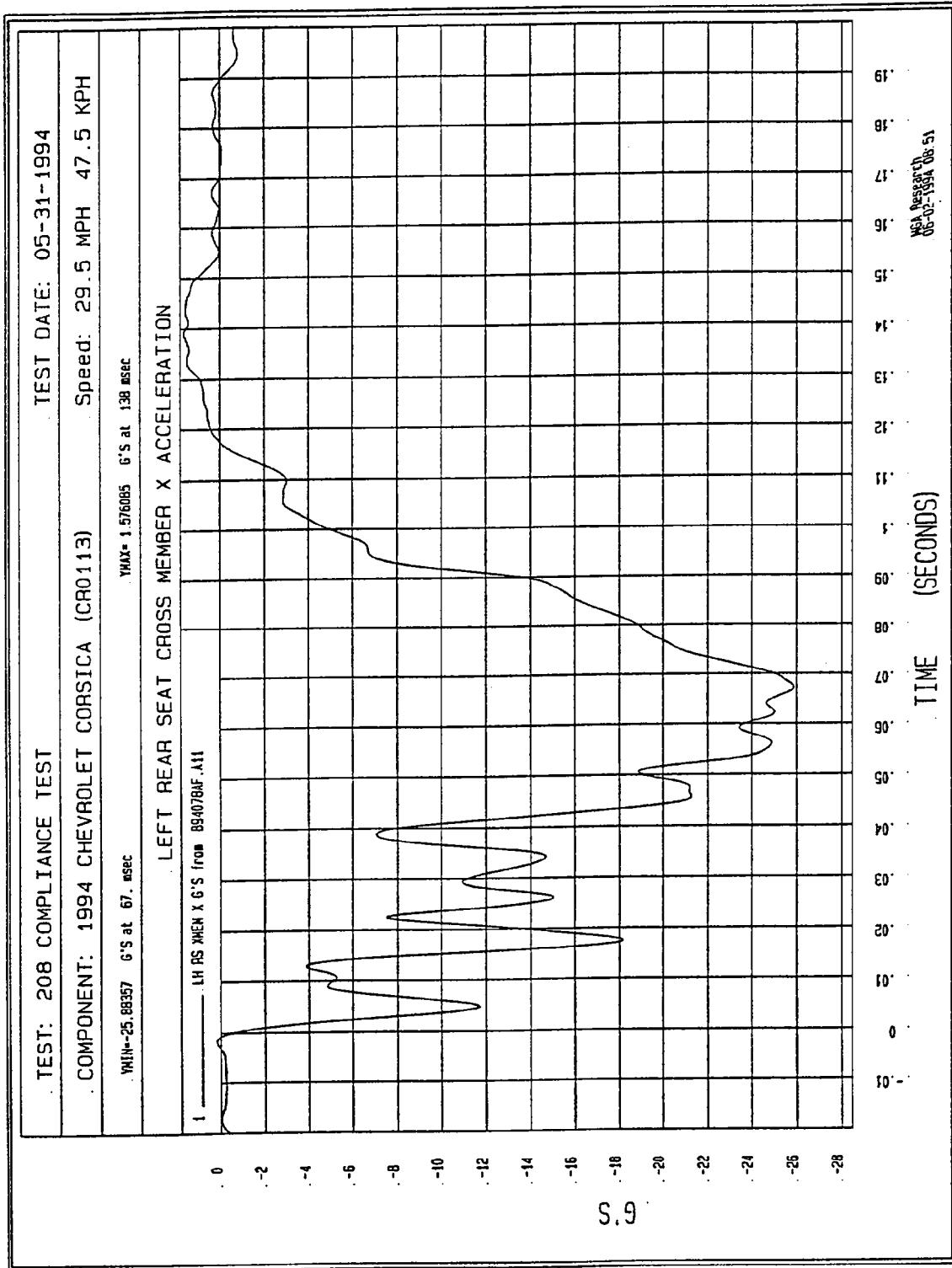


Figure B-50 - Left Rear Seat Crossmember X Acceleration vs. Time

Filter: Class 60

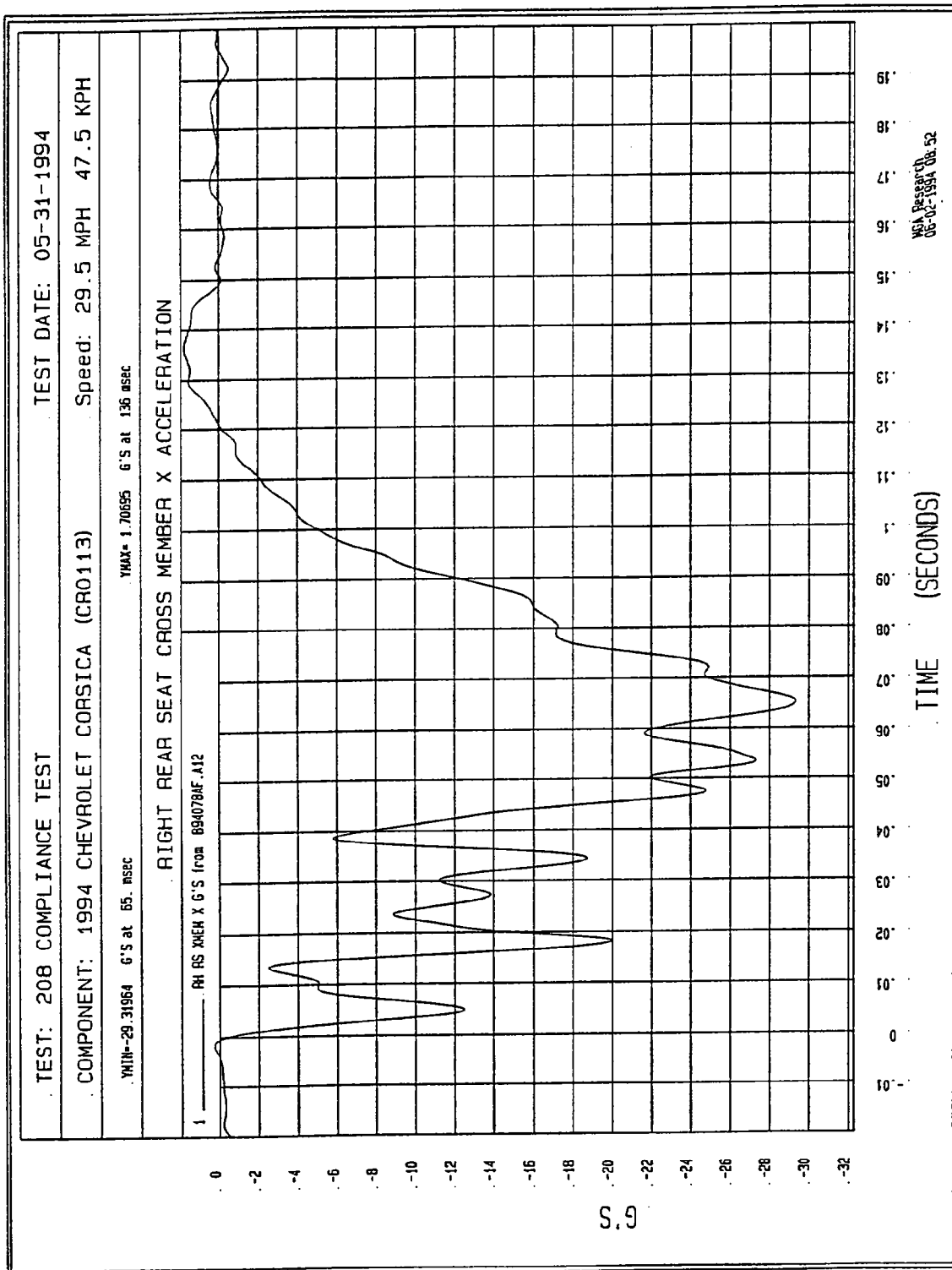


Figure B-51 - Right Rear Seat Crossmember X Acceleration vs. Time

Filter: Class 60

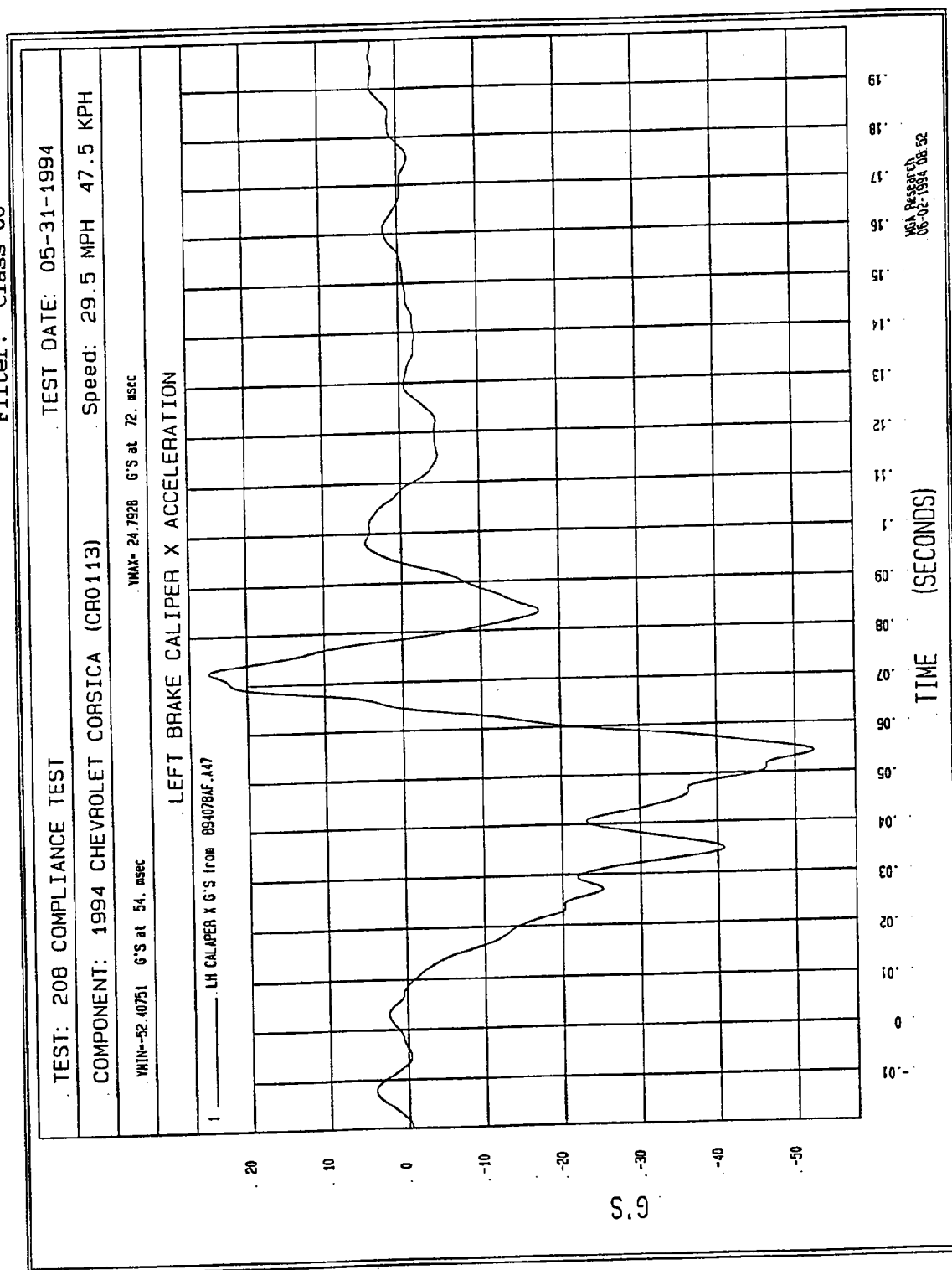


Figure B-52 - Left Brake Caliper X Acceleration vs. Time

Filter: Class 60

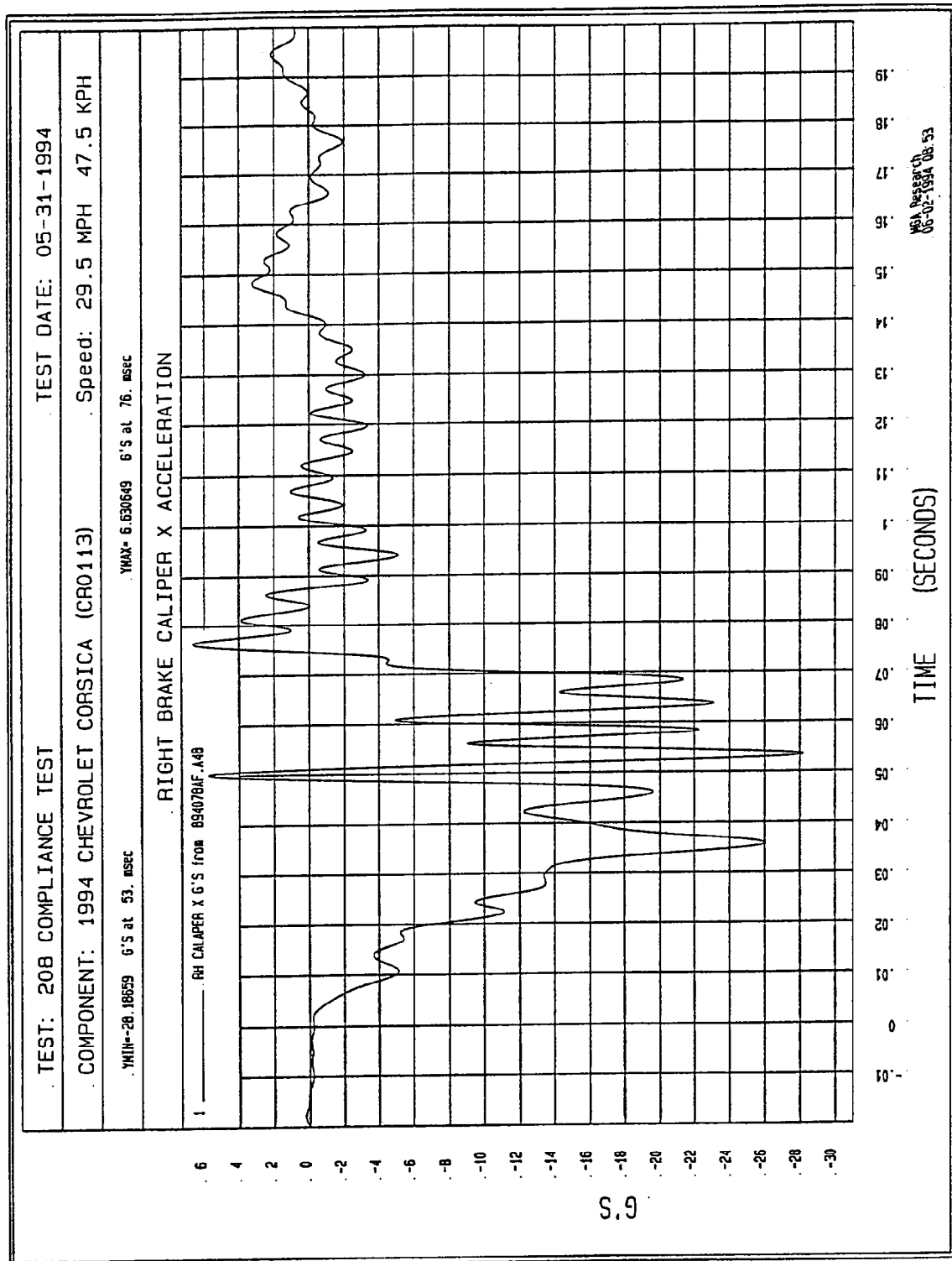


Figure B-53 - Right Brake Caliper X Acceleration vs. Time

Filter: Class 60

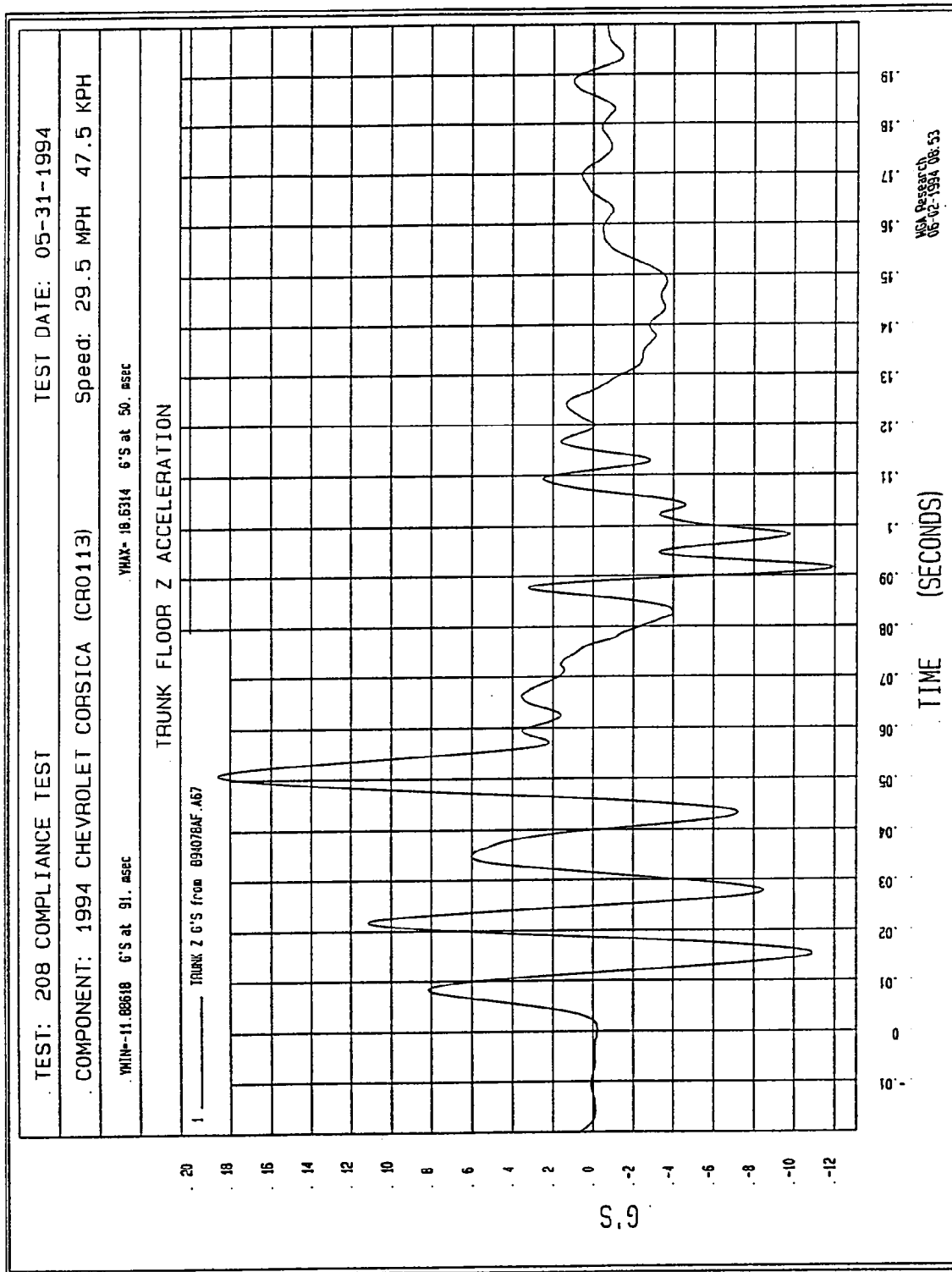


Figure B-54 - Trunk Floor Z Acceleration vs. Time

APPENDIX C
MANUFACTURER'S VEHICLE INFORMATION

OVSC QUESTIONS & GM RESPONSES
REGARDING FMVSS 208 INFORMATION REQUESTS

1994 Chevrolet Corsica (all models)

NEF-31CCa/IR-1298

Item 1

Please inform OVSC whether the automatic restraint systems provided at the driver's and passenger's seating positions in your vehicle are certified to meet the requirements of S4.1.2.1(c)(1) or S4.1.2.1(c)(2) for FMVSS No. 208.

GM Response

The air bag provided at the driver's seating position in the subject vehicle, along with the automatic lap/shoulder belt at both the driver and passenger seating positions, were installed to meet the requirements of paragraphs S4.1.2.1(a) and S4.1.2.1(c)(2) of FMVSS 208.

Item 2

If the automatic restraint systems provided at the driver's and passenger's seating positions in the subject vehicle are installed to meet the requirements of S4.1.2.1(c)(1), please provide a copy of the certification test reports for each of the test configurations required by that section of the standard (i.e., moving barrier lateral impact and dynamic rollover) and a copy of the certification reports for the frontal/angular barrier impact test required by S4.1.2.1.

GM Response

Since the subject vehicle's front outboard restraint systems are installed to meet the requirements of S4.1.2.1(c)(2), no response is required.

Item 3

If a manual 3-point safety belt is provided with the driver's automatic restraint system in order to meet the requirements of S4.1.2.1(c)(2), please provide a copy of the certification test reports for each of the test configurations required by that section of the standard (i.e., frontal/angular barrier impact test

of the automatic restraint system with the manual safety belt unfastened and frontal/angular barrier impact test of the automatic restraint system with the manual safety belt fastened).

GM Response

Since the subject vehicle is equipped with automatic lap/shoulder belts, no response is required.

Item 4

If the manual safety belt provided at the driver's seating position was not installed to meet the requirements of S4.1.2.1(c)(2), please provide a copy of a crash test report or engineering analysis showing that the use of the manual safety belt with the automatic restraint system does not affect the ability of the vehicle to meet the requirements FMVSS No. 208.

GM Response

Since the subject vehicle is equipped with an automatic lap/shoulder belt at the driver's seat position, no response is required.

Item 5

If the vehicle uses a pressure vessel to inflate the air bag, provide a copy of the test reports or engineering analysis to demonstrate that it meets all the requirements of S9.1.

GM Response

The air bag installed in this vehicle does not incorporate a pressure vessel to inflate the system. Therefore, no response is required.

Item 6

If the vehicle uses an explosive device to inflate the air bag, provide a copy of the test reports or engineering analysis to demonstrate that it meets all of the requirements of S9.2.

GM Response

The air bag installed in this vehicle does not incorporate an explosive device to inflate the system. Therefore, no response is required.

Item 7

State, for any automatic safety belt system in this vehicle, whether or not it is equipped with a tension-relieving device. Provide a copy of the information furnished in accordance with S7.4.2, if the tension-relieving device is used.

GM Response

The automatic lap/shoulder belts provided in the subject vehicle are not equipped with a tension-relieving device.

Item 8

FMVSS No. 208, S8.1.5 allows the manufacturer the option of having movable vehicle windows and vents placed in the closed position. State whether the vehicle's movable windows and vents were opened or closed for the certification tests.

GM Response

The windows and vents were open during testing.

Item 9

FMVSS No. 208, S5.1 provides a manufacturer with the option of using either a Part 572(B) or 572(E) test dummy. Please inform OVSC which test dummy was used in each seat for each certification test. Submit dummy placement measurements, including diagrams or photographs which show exactly where measurements were taken. Enclosed is a diagram of some of OVSC's dummy measurements. Where possible, use the dimension shown in the diagram to provide the individual dummy placement measurements.

State whether the vehicle has a foot rest for the driver.

If the vehicle can be equipped with a split front bench seat, state whether the driver dummy was located so that the midsagittal plane was centered on the steering wheel rim or the center of the seat cushion. Also, state whether the passenger dummy was located so the midsagittal plane was centered the same distance from the longitudinal centerline of the vehicle as the driver dummy or in the center of the seat cushion.

GM Response

The Part 572(E) test dummy was used in each front outboard seat position during certification testing for the subject vehicle.

Attachment A includes the available dummy placement information.

The driver position is equipped with a foot rest.

The vehicle is not equipped with a split front bench seat.

Item 10

Provide the seat positioning, steering column positioning, and fuel tank data on the enclosed form.

GM Response

Attachment B includes the requested information.

Item 11

If the vehicle is equipped with adjustable seat belt anchorages, provide the manufacturer's nominal design position for a 50th percentile adult male occupant.

GM Response

The subject vehicle is not equipped with adjustable seat belt anchorages.

Item 12

Provide the speed at impact, vehicle test weight, and resulting injury criteria (i.e., HIC, chest acceleration, chest compression for the Part 572(E) dummy and femur loads) recorded for all certification tests conducted to meet the requirements of S4.1.2.1.

In addition, include each dummy's head and chest acceleration versus time plots and femur load versus time plots for the full frontal barrier impact tests. Mark these plots to indicate when the following and any other significant events occur:

- 12.1 Driver and passenger knee contact with the knee bolster
- 12.2 Collapse of the driver and passenger knee bolsters
- 12.3 Steering column stroke (when it starts and when it ends)
- 12.4 Driver: Contact of the head with the air bag, steering wheel hub, windshield, header and any other contact points
- Passenger: Contact of the head with the air bag, instrument panel, windshield, header and any other contact points

- 12.5 Contact of the driver's torso with the air bag, steering wheel and hub
- 12.6 Time during event when each air bag starts to deploy and when it is fully deployed
- 12.7 Mark on the plots any unexpected events, like steering wheel fracture, windshield contact, windshield header contact, that affected the normal loading characteristics

GM Response

Attachment C includes a summary of the requested injury criteria information and the specified data plots. The requested "marked" reference points on these plots are not determined by GM in the ordinary course of our certification activities. To respond to the agency's request, however, the information marked on the requested plots was estimated by an analysis of the data. Therefore, the specific "marked" locations should be considered our approximation of the requested reference points.

Item 13

When vehicle components must be removed to obtain the proper test weight, what components do you recommend for removal and in what priority order do you recommend removal?

GM Response

GM does not typically prioritize which components are to be removed from a test vehicle to accommodate test weight. However, components that have been removed during our testing include trunk interior trim, spare tire and jack, rear seats, and rear carpeting. Additional components that may have been removed during specific tests include rear door trim, rear bumper facia, rear bumper and the deck lid.

Item 14

Please provide FMVSS No. 204, "Steering Control Rearward Displacement" certification data. Include a copy of the test report and any engineering analysis forming the basis of the certification. The report should document the vehicle test weight, impact velocity, and the horizontal and vertical displacements of the steering control. Pre and post test photographs are also requested.

Discuss the test procedure detailing the vehicle preparation and the measurement technique used to determine the steering control rearward displacement.

1994 CORSICA DUMMY MEASUREMENTS FOR FRONT SEAT OCCUPANTS
--

	<u>DRIVER</u>	<u>COMMENTS</u>
HH- Head to Header	280 mm	Middle of eye brows to header
NR- Nose to Rim	375 mm	
CS- Steering Wheel to Chest	275 mm	To module feature line
KDL- Left knee to Dash	170 mm	To top edge of the bolster panel
KDR- Right knee to Dash	210 mm	" "

Note: Knee measurements taken with Left foot on the foot rest, right foot on the accelerator pedal.

SH- Striker to H-Point	280 mm	Tip of the striker to H-point
SHY- Striker to H-Point (Y-Dir.)	190 mm	" "
HS- Head to Side Window	327 mm	Middle of eye brows to glass

Dummy was seated at H-point of 3056, 448, Pelvic angle: 22.8°, seat back angle : 26°.

	<u>PASS.</u>	<u>COMMENTS</u>
HH- Head to Header	230 mm	Middle of eye brows to header
KDL- Left knee to Dash	180 mm	To bottom edge of the cup holder
KDR- Right knee to Dash	164 mm	" "
SH- Striker to H-Point	290 mm	Tip of the striker to H-point
SHY- Striker to H-Point (Y-Dir.)	210 mm	" "
HS- Head to Side Window	300 mm	Middle of eye brows to glass

Dummy was seated at seat H-point of 3048, 445, Pelvic angle: 22.6°, seat back angle : 26°.

U.S. Department of Transportation
National Highway Traffic Safety Administration

TEST VEHICLE INFORMATION

Vehicle Model Year & Make: 1994 CHEVROLET
Vehicle Model & Body Style: CORSICA

1. NOMINAL DESIGN RIDING POSITION --

For adjustable driver and passenger seat backs.

- Please describe how to position the inclinometer to measure the seat back angle. Include description of the location of the adjustment latch detent if applicable. Indicate, if applicable, how the detents are numbered (Is the first detent "0" or "1"?).

Seat back angle for driver's seat = 26 degrees.

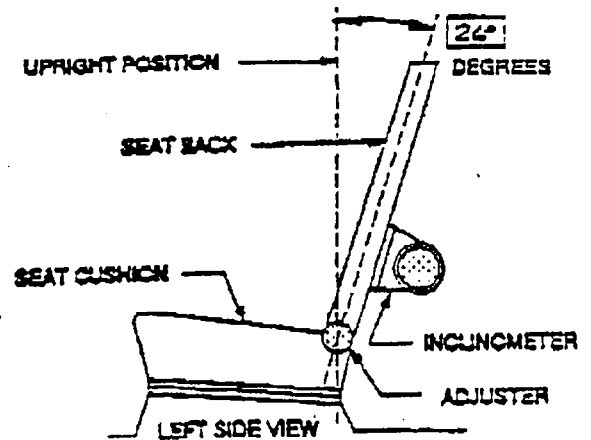
Measurement Instructions:

OPEN SEAT FABRIC DIRECTLY ABOVE RECLINER MECHANISM. PLACE INCLINOMETER ON TUBULAR SEAT FRAME. SET TO 26°

Seat back angle for passenger's seat = degrees.

Measurement Instructions:

SAME AS DRIVER



2. SEAT FORE & AFT POSITIONS --

Provide instructions for positioning the driver and front outboard passenger seat(s) in the center of fore and aft travel. For example, indicate how the detents are numbered (Is the first detent "0" or "1"?). Provide information to locate the detent in which the seat track is to be locked.

Positioning of the driver's seat:

POSITION SEAT AT MID-POINT OF FORE/AFT TRACK TRAVEL. HAVING MANUAL ADJUSTER PLACED IN FULL DOWN POSITION

Positioning of the passenger's seat (if applicable):

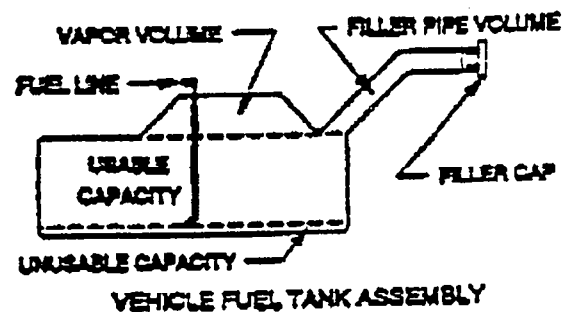
SAME AS DRIVER

3. FUEL TANK CAPACITY DATA --

3.1 A. "Usable Capacity" of standard equipment fuel tank = 15.2 gallons.

B. "Usable Capacity" of optional equipment fuel tank = gallons.

C. "Usable Capacity" of vehicle(s) used for certification testing to requirements of FMVSS 301 = 15.2 gallons.



TEST VEHICLE INFORMATION

3.2 Amount of Stoddard solvent added to vehicle(s) used for certification test(s) = 14.4 gallons

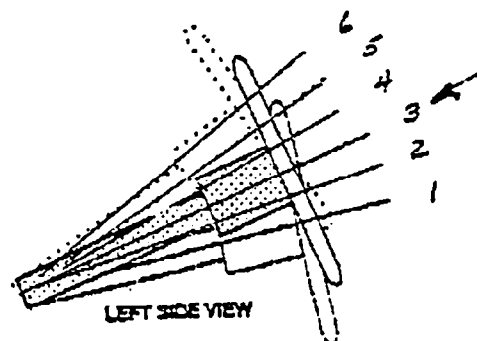
3.3 Is vehicle equipped with electric fuel pump? X YES NO
If YES, explain the vehicle operating conditions under which the fuel pump will pump fuel.
WITH THE KEY IN THE 'ON' POSITION, THE FUEL PUMP WILL PRIME FOR 2-5 SECONDS, THEN
SHUT OFF. WITH THE KEY IN THE 'RUN' POSITION, AND IF THERE IS OIL PRESSURE, THE
FUEL PUMP IS PUMPING FUEL.

4. STEERING COLUMN ADJUSTMENTS - -

Steering wheel and column adjustments are made so that the steering wheel hub is at the geometric center of the locus it describes when it is moved through its full range of driving positions.
If the tested vehicle has any of these adjustments, does your company use any specific procedures to determine the geometric center.

Operational Instructions:

THE STEERING WHEEL HAS SIX (6) POSITIONS.
TESTING IS CONDUCTED WITH THE STEERING
WHEEL ADJUSTED TO THE 9 O'CLOCK POSITION
UP FROM FULL DOWN, WITH FULL DOWN
BEING POSITION #1.



STEERING COLUMN ASSEMBLY