Dynamic Science Report No. 212-DYS-79-001
Dynamic Science Report No. 219-DYS-79-001
Dynamic Science Report No. 301-DYS-79-007

DOT0033

NEW VEHICLE ASSESSMENT AND STANDARDS ENFORCEMENT INDICANT TESTING

FMVSS 212, 219, AND 301-75

CHRYSLER CORPORATION
1979 PLYMOUTH CHAMP 2-DOOR HATCHBACK
NHTSA NO. 790522

Prepared by:

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FMVSS 204/208/212/301
DATE: AUG 16 1979

FINAL REPORT
JULY 1979

Prepared for:

U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
-----ENFORCEMENT-----
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FINAL REPORT ACCEPTED BY:

TOM GRUBBS

NHTSA Contract Technical Manager
FMVSS 212/219/301-75

AUG 16 1979

Date of Report Acceptance

TECHNICAL REPORT STANDARD TITLE PAGE

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16. Abstract

FMVSS 212, 219, 301-75 Standards Enforcement Indicant Testing of a 1979 Plymouth Champ 2-door Hatchback, NHTSA 790522, VIN IM24J91901533, was conducted at the Dynamic Science, Inc., Phoenix Facility in Arizona.

The vehicle was tested using test parameter values which are in excess of the current upper limits of the subject FMVSS in order to obtain research and vehicle rating data. This test, therefore, can only be viewed as an "indicant" test by the Office of Vehicle Safety Compliance.

The front of the test vehicle impacted the fixed collision barrier at a speed of 35.27 mph.

The test was conducted May 21, 1979 with the following results:

(a) FMVSS 212 - Loss of retention was within the amount allowed.
(b) FMVSS 219 - No intrusion noted to windshield protected zone.
(c) FMVSS 301 - No fuel leakage or observable damage to fuel system.

17. Key Words	18. Distribution Statement
Frontal Impact Windshield Testing Fuel System Integrity	Available from Technical Reference Division, National Highway Traffic Safety Admin. Room 5108, Nassif Bldg., 400 7th St., S.W., Washington, D.C. 20590

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Unclassified	Unclassified	110	

Form DOT F 1700.7 (8-69)

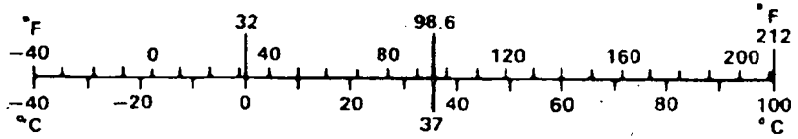
METRIC CONVERSION FACTORS

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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LIST OF ILLUSTRATIONS (CONTD)

SECTION 1
PURPOSE AND INTRODUCTION

PURPOSE:

The purpose of the test was to subject a 1979 Plymouth Champ 2-door Hatchback to the indicant test requirements of DOT Test Plan TP-212-01, March 20, 1979, Standard Enforcement Indicant Testing for FMVSS No. 212, "Windshield Mounting," FMVSS No. 219, "Windshield Zone Intrusion," and FMVSS 301-75, "Fuel System Integrity." The vehicle was tested using test parameters which are in excess of the current upper limits of the subject FMVSS, in order to obtain research and vehicle rating data. This test, therefore, can only be viewed as an "indicant" test by the Office of Vehicle Safety Compliance (OVSC).

INTRODUCTION:

The test procedure describing the facilities used and the test checklists completed for each vehicle indicant tested for FMVSS 212, 219, 301-75 are contained in Appendix A. Section 2 contains General Test and Vehicle Parameter Data. Section 3 contains Compliance Related Data for FMVSS 212, 219, 301-75 Indicant Testing, together with photographs related to these tests. Appendix B contains Calcomp plots.

SECTION 2
GENERAL TEST AND VEHICLE PARAMETER DATA

The following data sheets and photographs describe the General Test and Vehicle Parameter Data.

SECTION 2
GENERAL TEST AND VEHICLE PARAMETER DATA

TEST VEHICLE INFORMATION:

Vehicle Manufacturer: Chrysler Corporation

Make/Model: Plymouth Champ

Body Style: 2-door Hatchback Model Year: 1979

VIN: IM24J91901533 Build Date: 8/78

NHTSA No.: 790522 Color: Tan

Engine Data: 4 cylinders; 86 in.^{3} displacement

Transmission Data: 5 speed (X) Manual ( ) Automatic

Date Vehicle Received by Laboratory: February 9, 1979

Dealer Name & Address: Howard Chrysler Plymouth
Glendale, Arizona 85301

DATA FROM CERTIFICATION LABEL ON LEFT DOOR REAR FACE OR B-POST:

Vehicle Manufactured By: Chrysler Corporation

Date of Manufacture: 8/78 ; VIN: IM24J91901533

GVWR: 2730 lb; GAWR: Front = 1480 lb; Rear = 1310 lb

DATA FROM "RECOMMENDED TIRE PRESSURE" LABEL ON DOOR, POST, GLOVE BOX, ETC.:

Vehicle Load:	FRONT	REAR	RECOMMENDED TIRE SIZE:	LOAD RANGE:
Up to Capacity	24 psi	24 psi	175/70 HR 13; 6.15-13;155SR13	B
Vehicle Capacity:				

Type of Seats - ___ Bench, X Bucket, ___ Split Bench

Number of Occupants (Designated Seating Capacity) = 2 Front, 2 Rear, 4 Total

CARGO LOAD = 150 lb

TOTAL = 750 lb

WEIGHT OF TEST VEHICLE AS RECEIVED FROM DEALER (with max. fluids)

Right Front = 556 lb Right Rear = 337 lb

Left Front = 578 lb Left Rear = 359 lb

TOTAL FRONT WEIGHT = 1134 lb (61.9% of Total Vehicle Weight)

TOTAL REAR WEIGHT = 696 lb (38.1% of Total Vehicle Weight)

TOTAL DELV. WEIGHT = 1830 lb

WEIGHT OF TEST VEHICLE WITH REQUIRED DUMMIES AND 150 lb CARGO:

Right Front = 631 lb Right Rear = 518 lb

Left Front = 644 lb Left Rear = 520 lb

TOTAL FRONT WEIGHT = 1275 lb (55.1% of Total Vehicle Weight)

TOTAL REAR WEIGHT = 1038 lb (44.9% of Total Vehicle Weight)

TOTAL TEST WEIGHT = 2313 lb

Weight of ballast secured in vehicle trunk area = 0 lb

SECTION 2
GENERAL TEST AND VEHICLE PARAMETER DATA (CONTD)

TEST CONDITIONS:

Date of Test: May 21, 1979 Time of Test: 1044

Ambient Temperature: 78 °F at impact area.

Temperature in Occupant Compartment: 65 °F Windshield Molding Temperature: 70 °F

VEHICLE ATTITUDE: (all dimensions in inches)

Delivered Attitude:	RF 29.5	LF 29.5	RR 29.5	LR 29.5
Test Attitude:	RF 29.0	LF 29.0	RR 27.8	LR 28.0

VEHICLE TIRE DATA:

Recommended Cold Tire Pressure: Front = 24 psi
Rear = 24 psi

Recommended Tire Size: 175/70 HR13; 6.15-13; 155 SR13
Load Range: B

Tires on Vehicle: 155 SR13
Is Spare Tire a "Space Saver": No (yes/no)
Is Spare Tire standard equipment: Yes (yes/no)

TEST FLUID DATA:

Test Fluid Type: Red Stoddard Solvent ; Spec. Grav.: 0.764
Kinematic Viscosity: 0.99 centistokes
Spill Point Volume: 10.5 Gallons (SPV)
Test Volume: 9.6 Gallons (90 to 91% of SPV)
Fuel System Capacity (data from Owner's Manual): _____ gallons
Details of Fuel System: See Section 3

Electric Fuel Pump: No (yes/no); Fuel Injection: No (yes/no)
Does electric fuel pump operate with ignition switch "on" and the engine not operating: No (yes/no)

VEHICLE REBOUND AND CRUSH:

Overall Length of Test Vehicle	Pre-test = R 147.3	L 147.7	inches
	Post-test = R 125.0	L 125.5	inches

CRUSH = R 22.3 L 22.3

FOR FRONTAL IMPACTS, distance from front of test vehicle to the barrier after impact = 59.4 inches

SECTION 2
GENERAL TEST AND VEHICLE PARAMETER DATA (CONTD)

VISIBLE DUMMY CONTACT POINTS

	Driver	Passenger	Child
Head	Top of Steering Wheel	Dash	Seat Back
Chest	Steering Wheel Hub	None	None
Abdomen	None	None	None
Left Knee	Dash	Dash	None
Right Knee	Dash	Dash	None

	Front		Rear	
DOOR OPENING	Left	Right	Left	Right
Easy	X	X	NA	NA
Difficult				
Tools Required				
SEAT BACK				
Failure	None	None		
GLAZING DAMAGE				
Windshield	Cracked			
Backlight			None	
Others	None	None	None	None

OTHER NOTABLE IMPACT EFFECTS: Steering wheel crushed severely, exposing steel edges of hub. Displacement of dash panel exposed metal heater element. Passenger head impact left sharp convex break in glovebox lid medial to latch.

Figure 2-1. Pre-test Front View - 1979 Plymouth Champ 2-door Hatchback - NHTSA No. 790522.

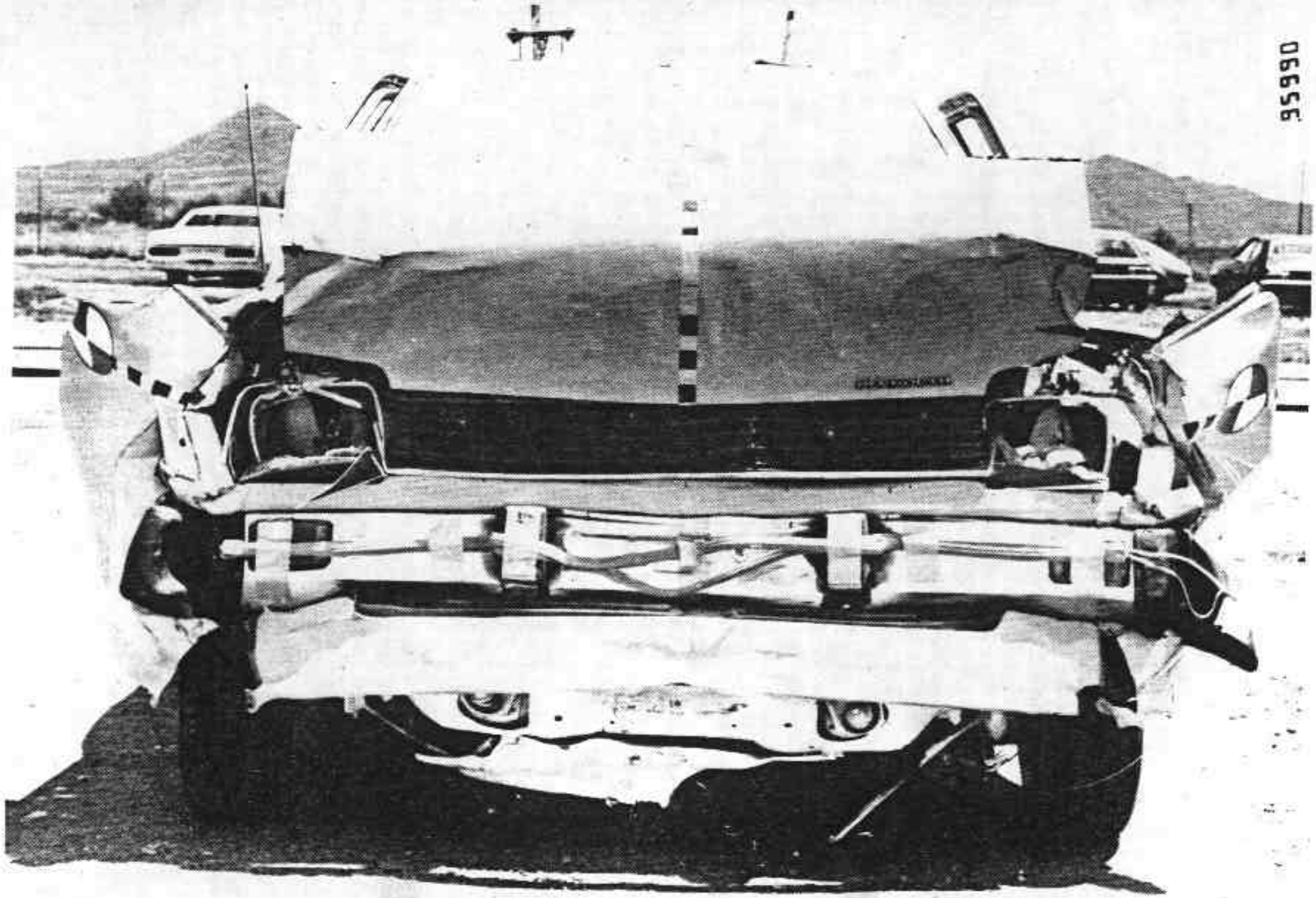


Figure 2-2. Post-test Front View - 1979 Plymouth Champ 2-door Hatchback - NHTSA No. 790522.

Figure 2-3. Pre-test Side View - 1979 Plymouth Champ 2-door Hatchback - NHTSA No. 790522.

Figure 2-4. Post-test Left Side View - 1979 Plymouth Champ 2-door Hatchback - NHTSA No. 790522.

Figure 2-5. Post-test Right Side View - 1979 Plymouth Champ 2-door Hatchback - NHTSA No. 790522.

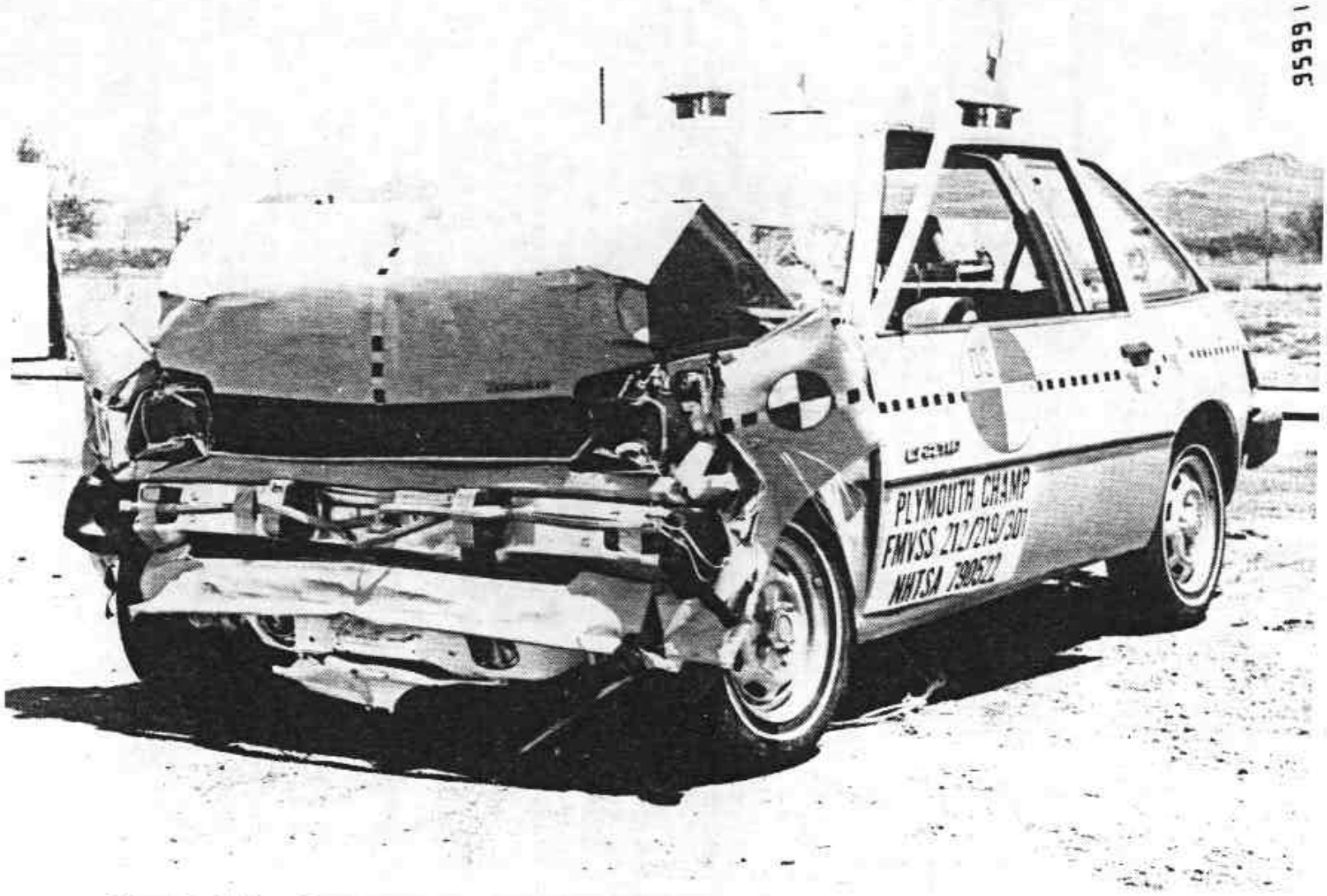


Figure 2-6. Post-test Left Front Quarter View - 1979 Plymouth Champ 2-door Hatchback - NHTSA No. 790522.

Figure 2-7. Post-test Right Front Quarter View - 1979 Plymouth Champ 2-door Hatchback - NHTSA No. 790522.

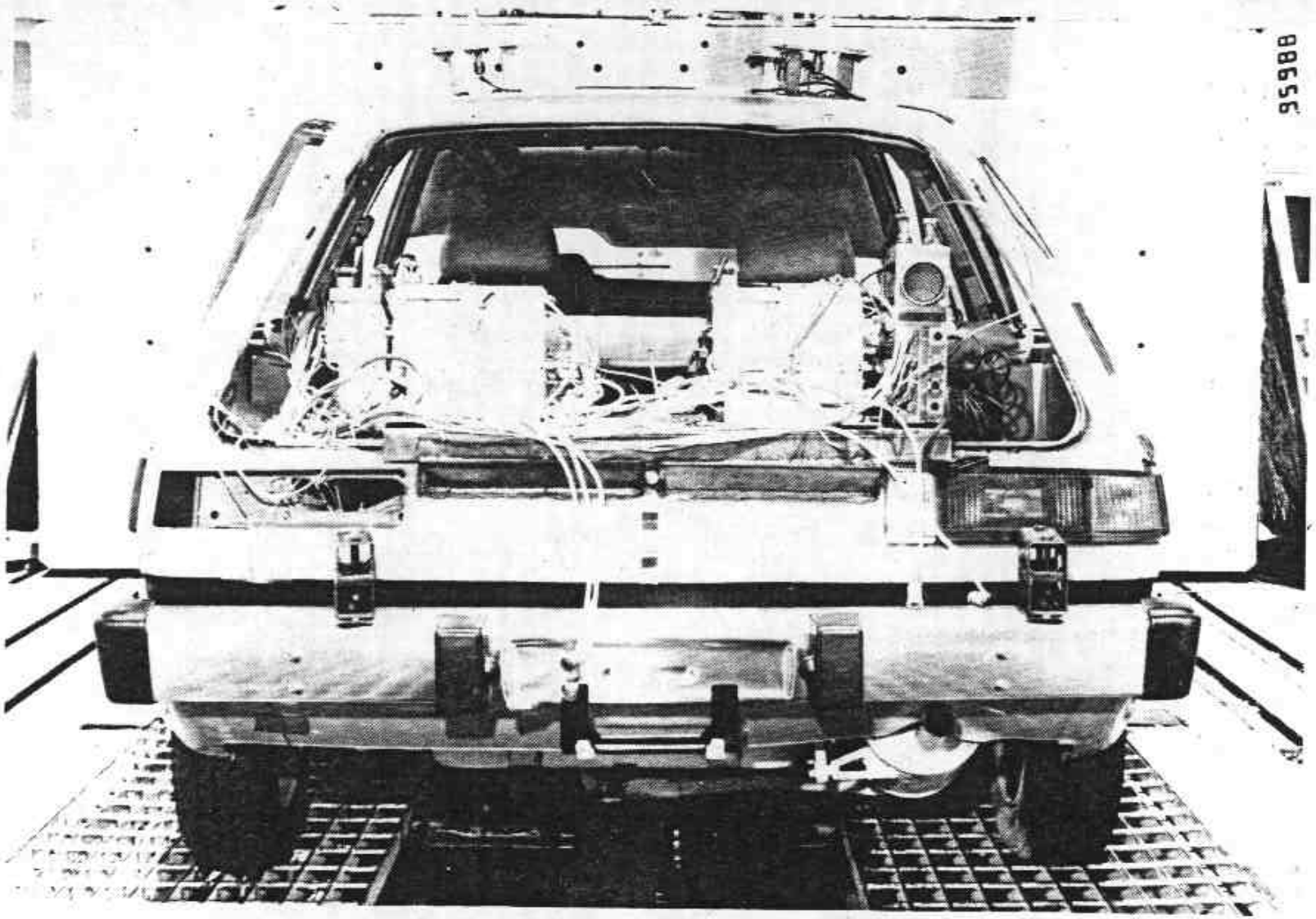


Figure 2-8. Post-test Rear View - 1979 Plymouth Champ 2-door Hatchback - NHTSA No. 790522.

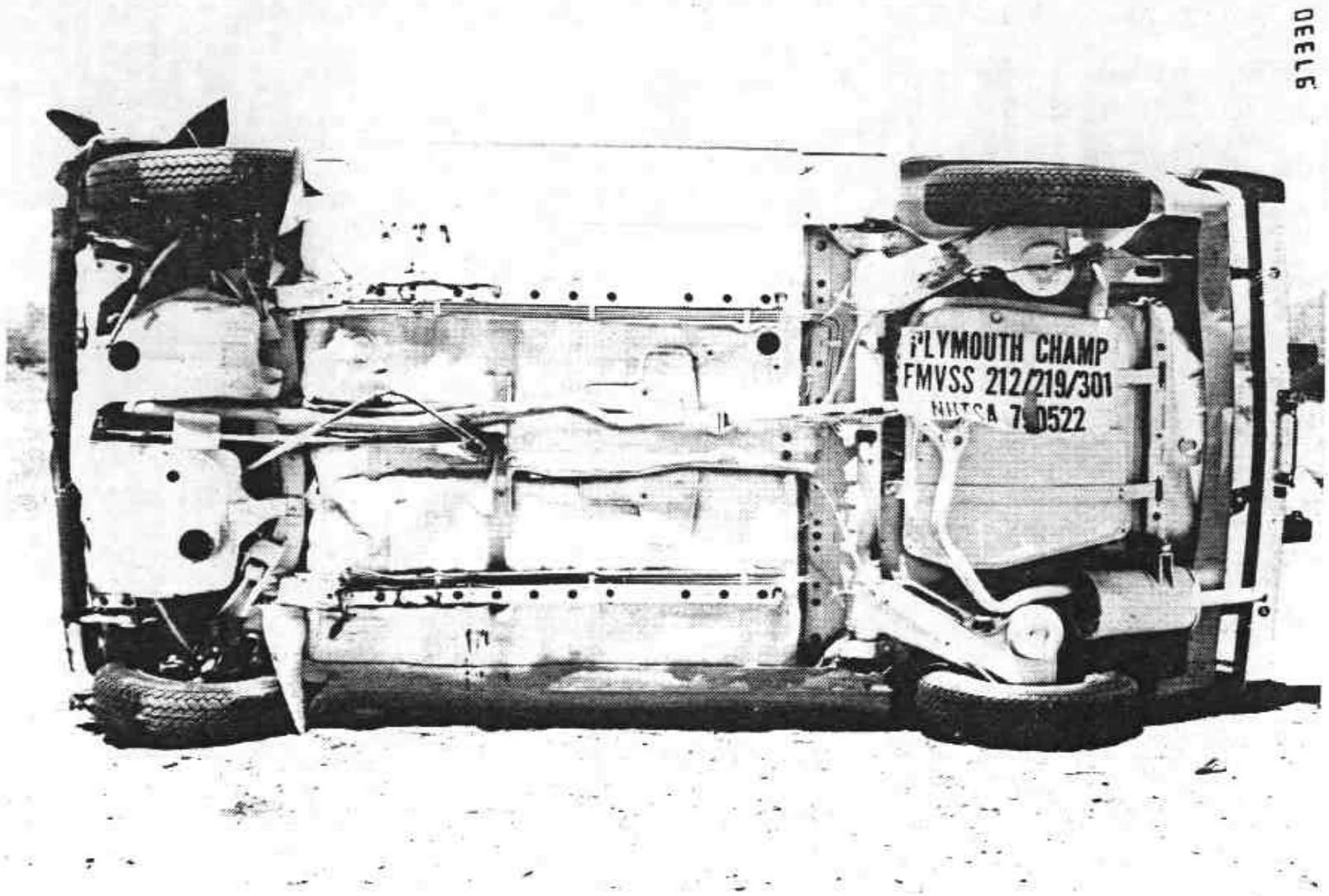


Figure 2-9. Post-test Overall Underside View - 1979 Plymouth Champ 2-door Hatchback - NHTSA No. 790522.

SECTION 3

COMPLIANCE-RELATED DATA
FMVSS 212, 219, 301-75 INDICANT TESTING

The following data sheets and photographs document compliance data related to FMVSS 212, 219, and 301-75.

SECTION 3

SUMMARY OF RESULTS
FMVSS 212 INDICANT DATA

VEHICLE DATA:

Manufacturer: Chrysler Corporation Model Year: 1979

Make/Model: Plymouth Champ

Body Style: 2-door Hatchback Manufacture Date: 8/78

VIN: IM24J91901533 NHTSA No.: 790522

Delivery Weight: 1830 lb; Test Weight: 2313 lb; GVWR: 2730 lb

Engine: No. of Cylinders 4 Displacement 86 $in.^3$

Vehicle Mileage: 53 miles

Remarks: Power Brakes, Radio, Front Disc Brakes

GENERAL TEST CONDITIONS:

Vehicle Impact Speed:

Primary 35.27 mph; Secondary 35.28 mph

Speed Range Specified by CTM: 34.5 to 35.5 mph

Ambient Temperature at Time of Test: 78 °F

Date of Test: May 21, 1979 Time: 1044

Windshield Molding Temperature: 70 °F

SUMMARY FOR FMVSS NO. 212:

			Actual Data	Standard Requirement	Pass/Fail
1.	Pre-test Windshield Periphery (in.)	Right	69.3		
		Left	69.3		
		Total	138.6		
2.	Post-test Windshield Periphery (in.)	Right	52.3		
		Left	66.3		
		Total	118.6	75% Minimum	Pass

LABORATORY INFORMATION:

Project Engineer: R. Pirtle Date: May 1979

Project Manager: E. Enserink Date: May 1979

SECTION 3

TEST DATA SHEET FOR
FMVSS 212 INDICANT DATA

VEHICLE DATA:

NHTSA No.: 790522 Tire Size and Type: 155 SR 13

Cold Tire Inflation Pressure (psi): RF 24 LF 24
RR 24 LR 24 Spare 24

Delivered Vehicle Attitude (in.):

RF 29.5 LF 29.5 RR 29.5 LR 29.5

Vehicle Test Attitude (in.):

RF 29.0 LF 29.0 RR 27.8 LR 28.0

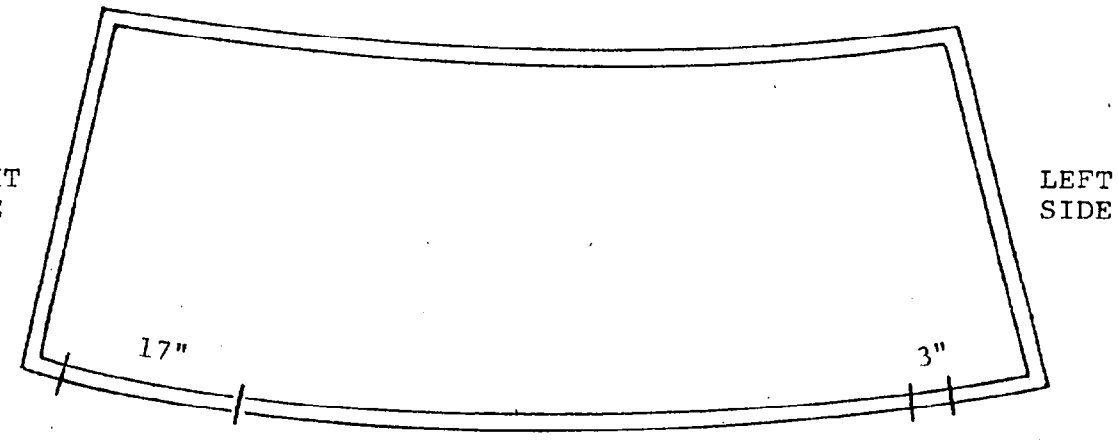
Static Crush: 22.3 in. (Right Side) 22.2 in. (Left Side)

Rebound Distance: Right 59.4 in. Left 59.4 in.

SPECIFIC TEST DATA FOR FMVSS 212:

Details of Windshield Mounting: The windshield is mounted on the vehicle body by means of a rubber-molded gasket that indexes on the glass edge along the entire periphery. A slot in the outer edge of the gasket fits on the pinch weld flange on the windshield opening to secure the glass to the vehicle body. A 3/4-inch wide chrome strip indexes on the grommet and borders the periphery.

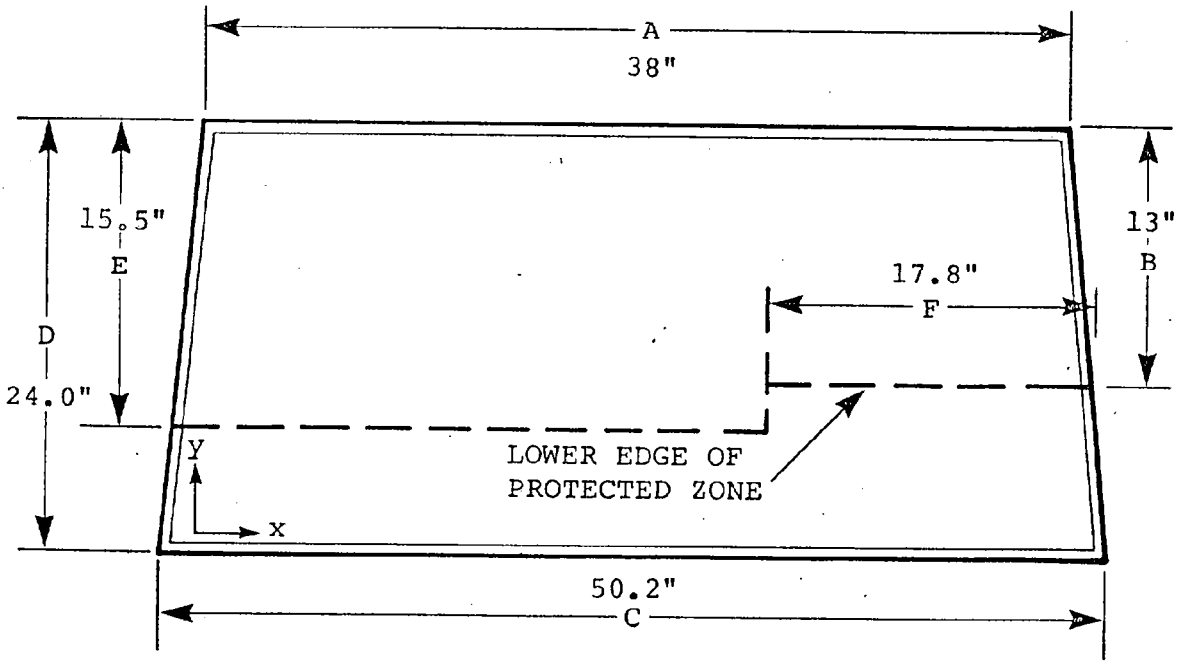
Area of Retention Failure (as noted):



FRONT VIEW

SECTION 3
FMVSS 219 INDICANT DATA

1. PROTECTED ZONE DEFINITION:



FRONT VIEW OF WINDSHIELD

Method of adhering styrofoam to the windshield:
The styrofoam is adhered to the windshield glazing using Scotch Grip contact cement, 2215 (neutral).

2. TEST RESULTS:

Zone Intrusion Description/Cause: No intrusion noted

	Coordinates X	Coordinates Y	Depth (in.)
1.	NA	NA	NA
2.	NA	NA	NA
3.	NA	NA	NA

SECTION 3
FMVSS 301-75 INDICANT DATA

GENERAL TEST CONDITIONS:

Vehicle Impact Speed:

Primary 35.27 mph Secondary 35.28 mph

Speed Range Specified by CTM: 34.5 to 35.5 mph

Ambient Temperature at Time of Test: 78 °F

Date of Test: May 21, 1979 Time: 1044

FUEL SYSTEM DATA:

Test Fluid: Stoddard Solvent No. 2 Specific Gravity: 0.764

Kinematic Viscosity: 0.99 centistokes

Spill Point Volume: 10.5 U.S. gal/lb Liquid Temp: 85 °F

Test Volume: 9.6 U.S. gal/lb Liquid Temp: 85 °F

Details of Fuel Tank, Filler Pipes, and Connections: The fuel tank is held beneath the rear trunk floor by two tank straps. The nonmetallic filler tube is secured to a metal neck on the top left side of the fuel tank by a hose clamp. The tube terminates at the left rear fender well. The filler tube is sealed by a twist-type cap.

PERFORMANCE SUMMARY FOR FMVSS NO. 301-75:

	Actual Data	Standard Requirement	Pass/Fail
1. Transimpact Fluid Loss (oz)	0.0	1 oz maximum	Pass
2. Post-impact Fluid Loss (oz) (30-minute period post-impact)	0.0	1 oz/ minute maximum	Pass

Details of Leakage: --

3. Static Rollover: See following four pages

LABORATORY INFORMATION:

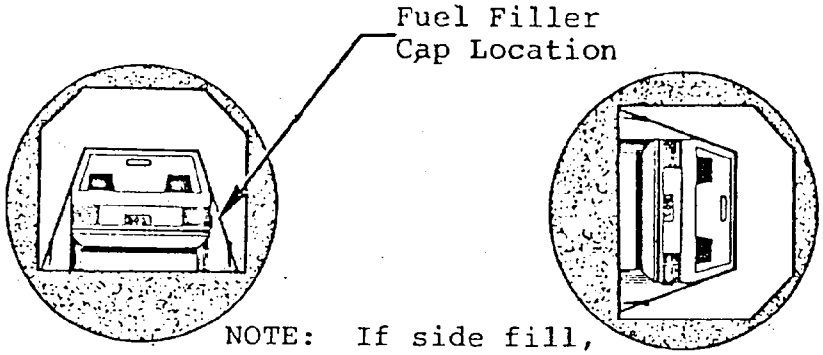
Project Engineer: R. Pirtle Date: May 1979

Project Manager: E. Enserink Date: May 1979

SECTION 3

FMVSS 301-75 INDICANT STATIC ROLLOVER DATA SHEET

TEST PHASE: 0 to 90° VEHICLE NHTSA NO. 790522



NOTE: If side fill, rotate so that filler cap is down.

DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time.... = 1 min, 38 sec +
(Spec. Range = 1 to 3 min)

FMVSS 301 Position Hold Time..... = 5 min, 0 sec =

Total..... = 6 min, 38 sec

Next Whole Minute Interval..... = 7 min

FMVSS 301 REQUIREMENTS AND ACTUAL TEST RESULTS:

Time Period	First 5 min (from onset)	6th min	7th min	8th min (if req'd)
Maximum Spillage Allowed (oz)	5	1	1	1
Actual Spillage Recorded	0	0	0	-

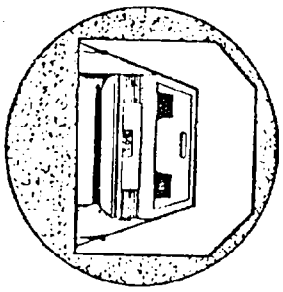
NOTE: Spillage is recorded in whole minute intervals only - as determined above.

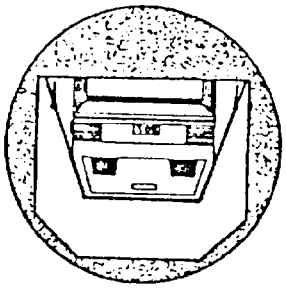
SOLVENT SPILLAGE LOCATION(S):

SECTION 3

FMVSS 301-75 INDICANT STATIC ROLLOVER DATA SHEET

TEST PHASE: 90 to 180° VEHICLE NHTSA NO. 790522





DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time.... = 1 min, 38 sec +
(Spec. Range = 1 to 3 min)

FMVSS 301 Position Hold Time..... = 5 min, 0 sec =

Total..... = 6 min, 38 sec

Next Whole Minute Interval..... = 7 min

FMVSS 301 REQUIREMENTS AND ACTUAL TEST RESULTS:

Time Period	First 5 min (from onset)	6th min	7th min	8th min (if req'd)
Maximum Spillage Allowed (oz)	5	1	1	1
Actual Spillage Recorded	0	0	0	-

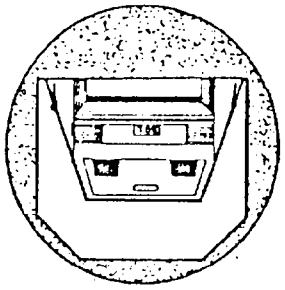
NOTE: Spillage is recorded in whole minute intervals only - as determined above.

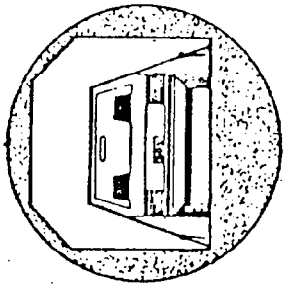
SOLVENT SPILLAGE LOCATION(S):

SECTION 3

FMVSS 301-75 INDICANT STATIC ROLLOVER DATA SHEET

TEST PHASE: 180° to 270° VEHICLE NHTSA NO. 790522





DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time.... = 1 min, 38 sec +
(Spec. Range = 1 to 3 min)

FMVSS 301 Position Hold Time..... = 5 min, 0 sec =

Total..... = 6 min, 38 sec

Next Whole Minute Interval..... = 7 min

FMVSS 301 REQUIREMENTS AND ACTUAL TEST RESULTS:

Time Period	First 5 min (from onset)	6th min	7th min	8th min (if req'd)
Maximum Spillage Allowed (oz)	5	1	1	1
Actual Spillage Recorded	0	0	0	-

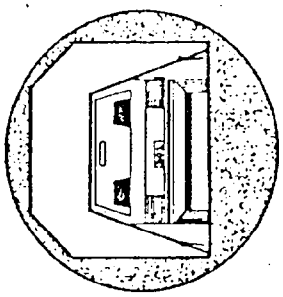
NOTE: Spillage is recorded in whole minute intervals only - as determined above.

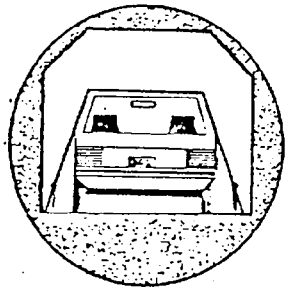
SOLVENT SPILLAGE LOCATION(S):

SECTION 3

FMVSS 301-75 INDICANT STATIC ROLLOVER DATA SHEET

TEST PHASE: 270° to 360° VEHICLE NHTSA NO. 790522





DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time.... = 1 min, 38 sec +
(Spec. Range = 1 to 3 min)

FMVSS 301 Position Hold Time..... = 5 min, 0 sec =

Total..... = 6 min, 38 sec

Next Whole Minute Interval..... = 7 min

FMVSS 301 REQUIREMENTS AND ACTUAL TEST RESULTS:

Time Period	First 5 min (from onset)	6th min	7th min	8th min (if req'd)
Maximum Spillage Allowed (oz)	5	1	1	1
Actual Spillage Recorded	0	0	0	-

NOTE: Spillage is recorded in whole minute intervals only - as determined above.

SOLVENT SPILLAGE LOCATION(S):

95960

Figure 3-1. Pre-test Windshield - Left Side View - 1979 Plymouth Champ 2-door Hatchback - NHTSA No. 790522.

Figure 3-2. Pre-test Windshield - Right Side View - 1979 Plymouth Champ 2-door Hatchback - NHTSA No. 790522.

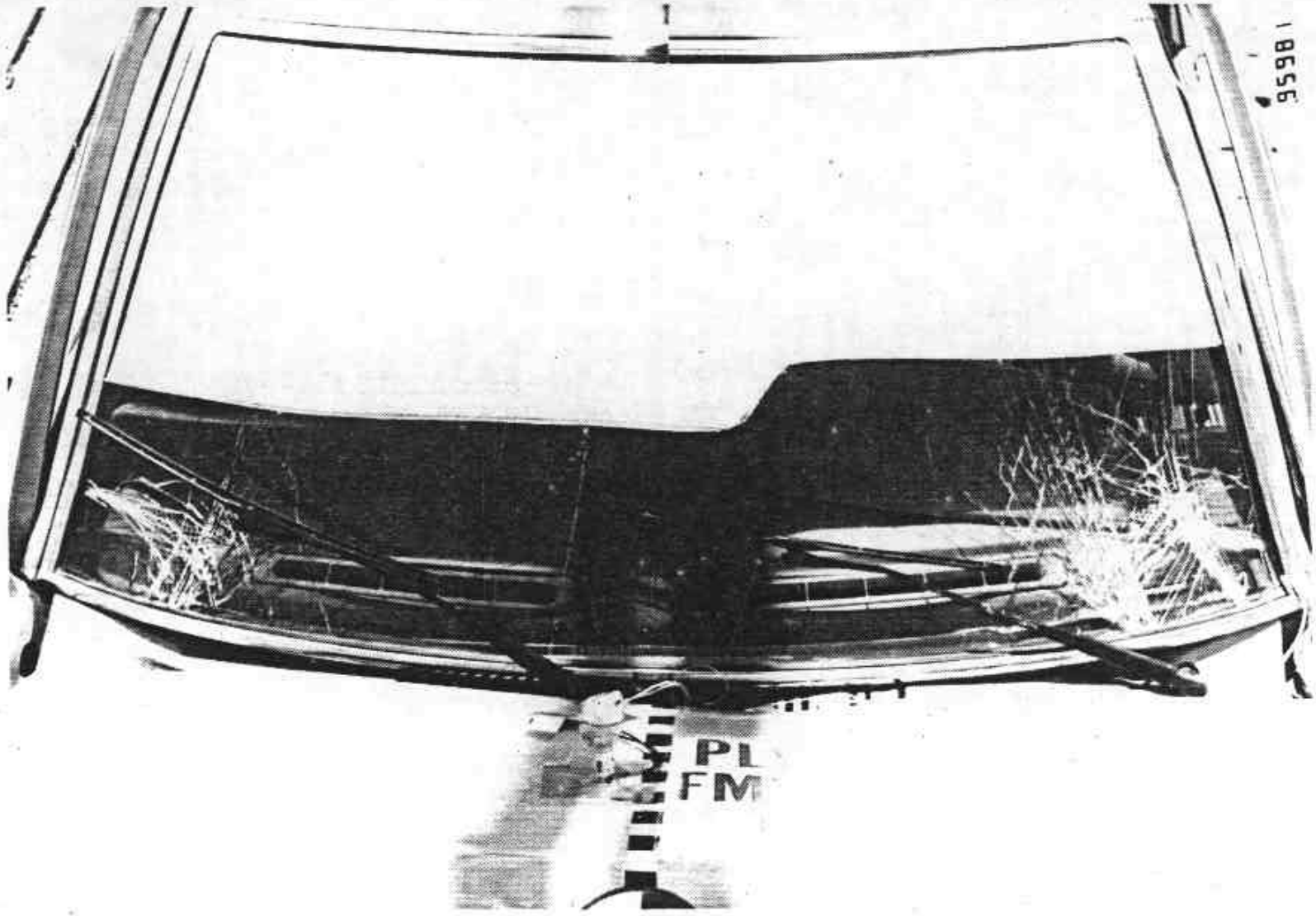


Figure 3-3. Post-test Windshield - Overall View - 1979 Plymouth Champ 2-door Hatchback - NHTSA No. 790522.

Figure 3-4. Windshield Retention Loss - Right Side View - 1979 Plymouth Champ 2-door Hatchback - NHTSA No. 790522.

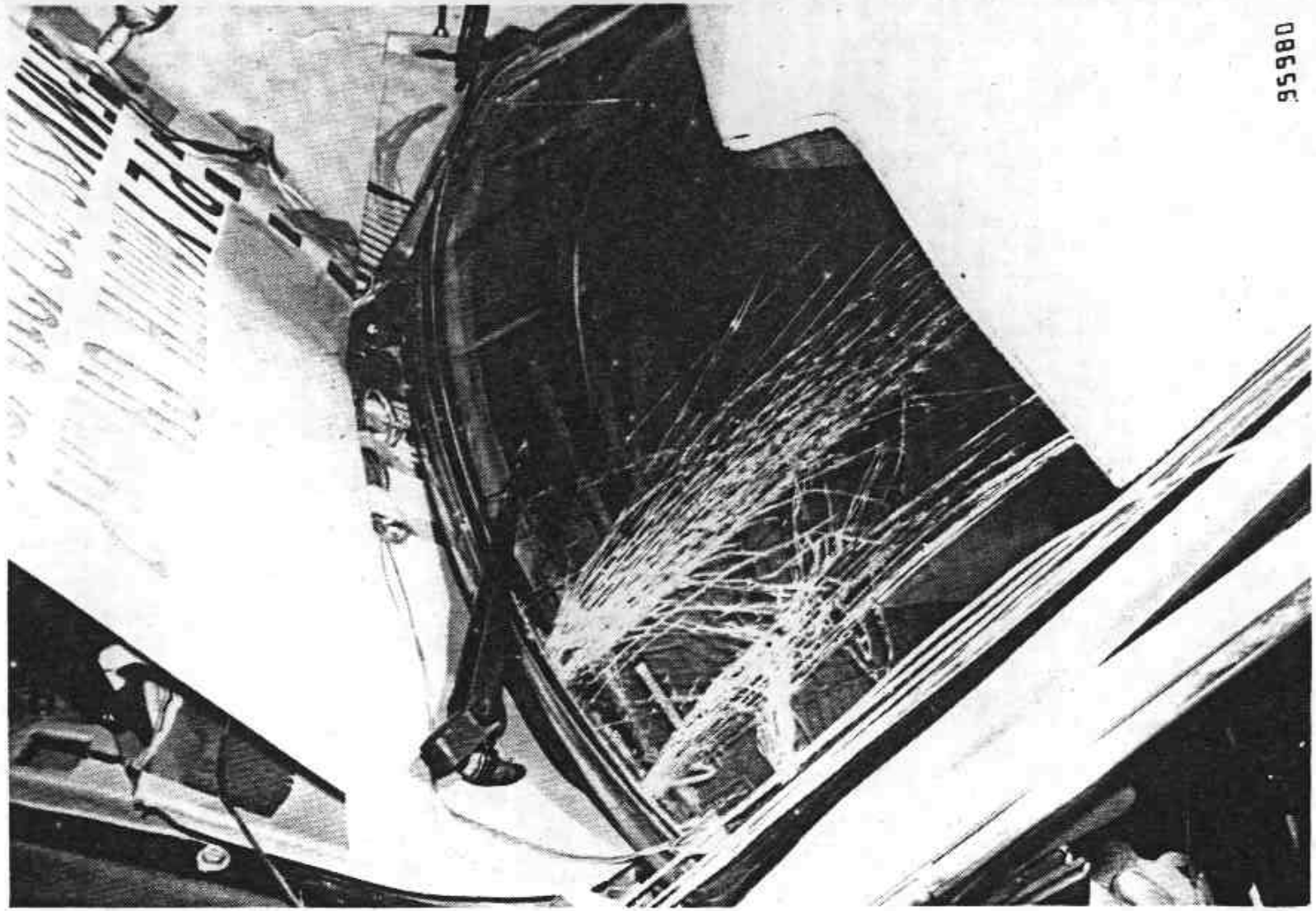


Figure 3-5. Windshield Retention Loss - Left Side View - 1979 Plymouth Champ 2-door Hatchback - NHTSA No. 790522.

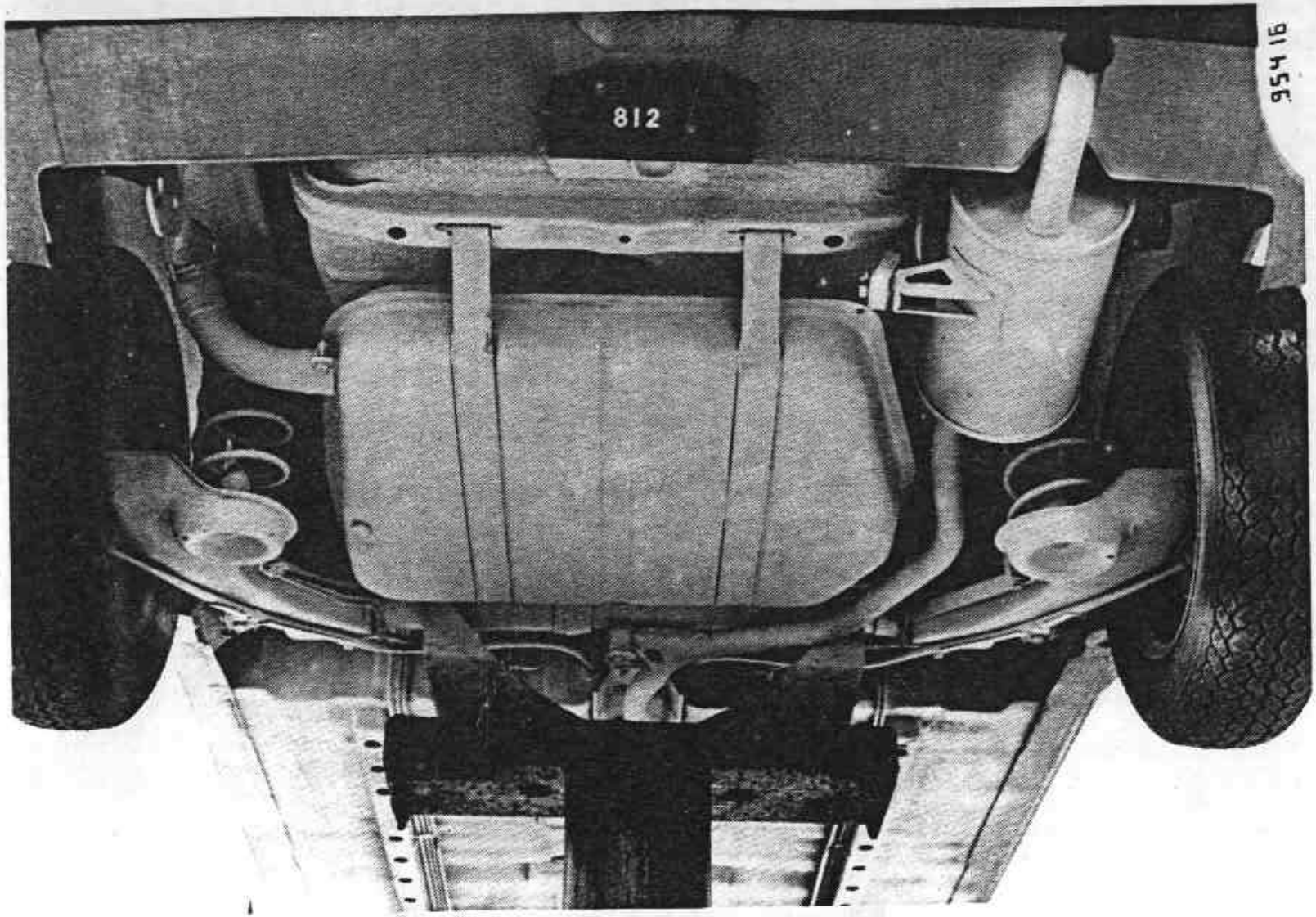


Figure 3-6. Pre-test View of Fuel Tank - 1979 Plymouth Champ 2-door Hatchback - NHTSA No. 790522.

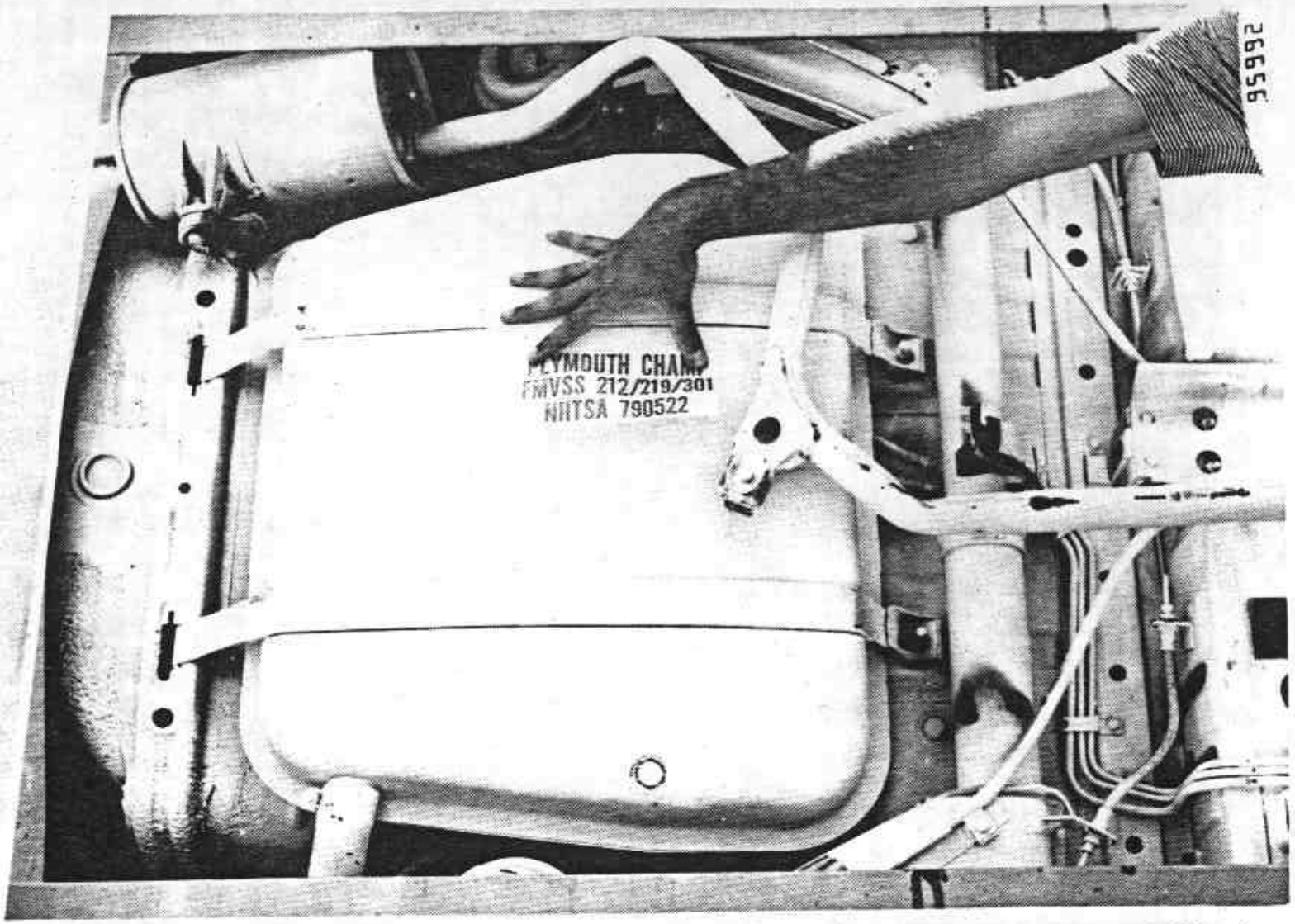


Figure 3-7. Post-test View of Fuel Tank - 1979 Plymouth Champ 2-door Hatchback - NHTSA No. 790522.

SECTION 4
DATA REQUIRED BY R&D AND OAR

The following pages are included in this section:

1. Dummy positional data
2. Dummy injury summaries
3. Vehicle crush data
4. Accelerometer location and data summary
5. Photographs pertinent to R&D and OAR

Calcomp plots of dummy and vehicle accelerometer data are presented in Appendix B.

SECTION 4
DUMMY POSITIONING

Pre-test Dummy Positions

Measurement	Driver (in.)	Passenger (in.)	Child (in.)
Dummy Centerline to Vehicle Centerline			
Nose to Windshield (Horizontal Distance)	17.2	17.6	
Chest to Upper Rim Steering Wheel	11.3		
Chest to Steering Wheel Hub		--	
Chest to Instrument Panel	--		
Left Knee to Closest Point on Lower Panel			
Right Knee to Closest Point on Lower Panel			
Ankle Distance	10	10	
Knee Distance	9	9	
Forehead to Seatback			21.3

Additional dummy positioning information is presented in the PART 572 DUMMY IN-VEHICLE POSITION RECORDING SHEET which follows.

SECTION 4

PART 572 DUMMY IN-VEHICLE POSITION RECORDING SHEET

NHTSA No.: 790522 Manufacturer: Chrysler Corporation

Make/Model: Plymouth Champ Model Year: 1979

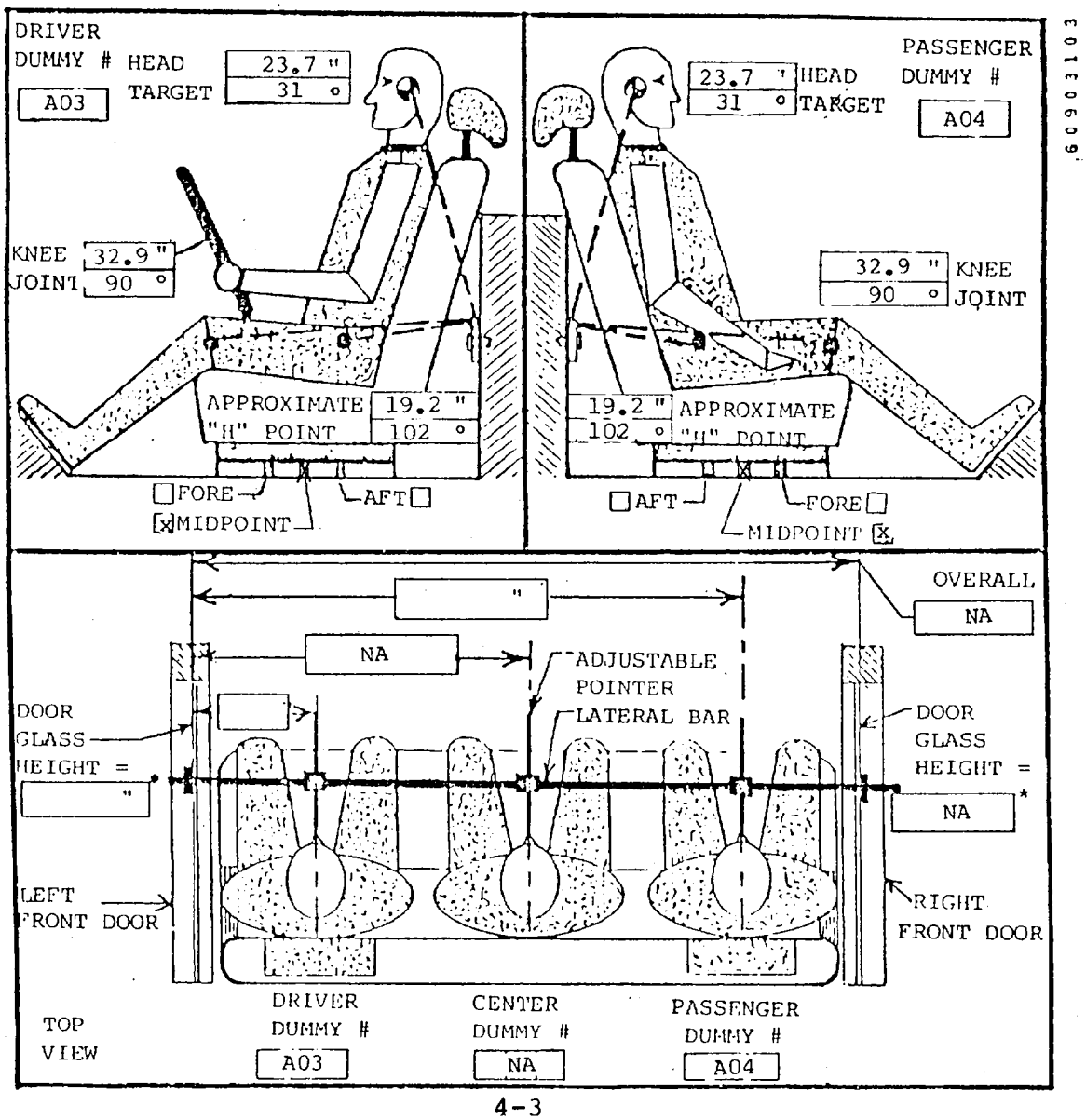
SEAT TYPE:	ADJUSTER TYPE:	BUCKET SEAT BACK TYPE:
___ Bench X Bucket	X Manual	X Adjustable Reclining
___ Split Bench	___ Power	___ Fixed

AMBIENT TEMPERATURE: 65 °F; TIME: 0830

POSITIONING DATE: May 21, 1979

TECHNICIANS: 1. R. Pirtle
2. M. Pozzi

All front seat dummies shall be positioned according to the procedure "OSE RECOMMENDED PROCEDURE FOR POSITIONING PART 572 DUMMIES IN TEST VEHICLE."



SECTION 4

PART 572 DUMMY DATA SUMMARY

	Driver Dummy				Passenger Dummy			
	Positive Direction*		Negative Direction**		Positive Direction*		Negative Direction**	
	Peak (G)	Time (msec)	Peak (G)	Time (msec)	Peak (G)	Time (msec)	Peak (G)	Time (msec)
Head Acceleration								
Longitudinal	18.67	166	116.42	80	140.49	179	205.57	84
Lateral	7.83	67	29.17	80	51.37	179	10.57	83
Vertical	66.56	86	45.68	81	82.81	92	16.13	119
Resultant	127.08	80			206.91	84		
HIC	1270.2 @ 72-99 msec				1918.4 @ 82-93 msec			
Chest Acceleration								
Longitudinal	7.86	200	85.72	70	16.8	184	70.2	96
Lateral	3.29	66	15.60	73	9.6	86	10.5	103
Vertical	11.72	51	17.10	91	13.4	45	8.5	91
Resultant (Max)	86.85	70			70.3	96		
Resultant (3 msec clip)	72.07	72			66.27	98		
TIME > 60 G	4 msec				8 msec			
SEVERITY INDEX	592.5 @ 200 msec				684.0 @ 200 msec			
	Peak (lb)	Time (msec)	Peak (lb)	Time (msec)	Peak (lb)	Time (msec)	Peak (lb)	Time (msec)
Femur Loads								
Left			892.88	62			686.2	53
Right			435.35	48			560.7	96
Belt Loads								
Torso	804.4	81			1220.1	95		
Vehicle Impact Speed (mph): 35.27								

*Longitudinal: Forward
Lateral: Rightward
Vertical: Downward
**Longitudinal: Rearward
Lateral: Leftward
Vertical: Upward

SECTION 4
CHILD DUMMY DATA SUMMARY

	Child Dummy			
	Positive Direction*		Negative Direction**	
	Peak G	Time (msec)	Peak G	Time (msec)
Head Acceleration				
Longitudinal	13.04	67	94.05	126
Lateral	23.72	127	10.41	104
Vertical	83.24	99	9.89	160
Resultant	112.81	125		
HIC	1337.6 @ 79-132 msec			
Chest Acceleration				
Longitudinal	9.5	106	30.3	141
Lateral	15.4	137	8.7	105
Vertical	13.4	45	8.0	158
Resultant (Maximum)	66.0	106		
Resultant (3 msec clip)	62.43	108		
TIME > 60 G	5 msec			
SEVERITY INDEX	664.8 @ 200 msec			
Femur Loads				
Left			1045.4	108
Right			189.3	96

Vehicle Impact Speed (mph): 35.27

*Longitudinal: Forward
Lateral: Rightward
Vertical: Downward
**Longitudinal: Rearward
Lateral: Leftward
Vertical: Upward

SECTION 4

PRE-/POST-TEST STATIC MEASUREMENT DATA
(See Following Page for Dimension Definition)

Vehicle: 1979 Plymouth Champ 2-door Hatchback NHTSA No.: 790522

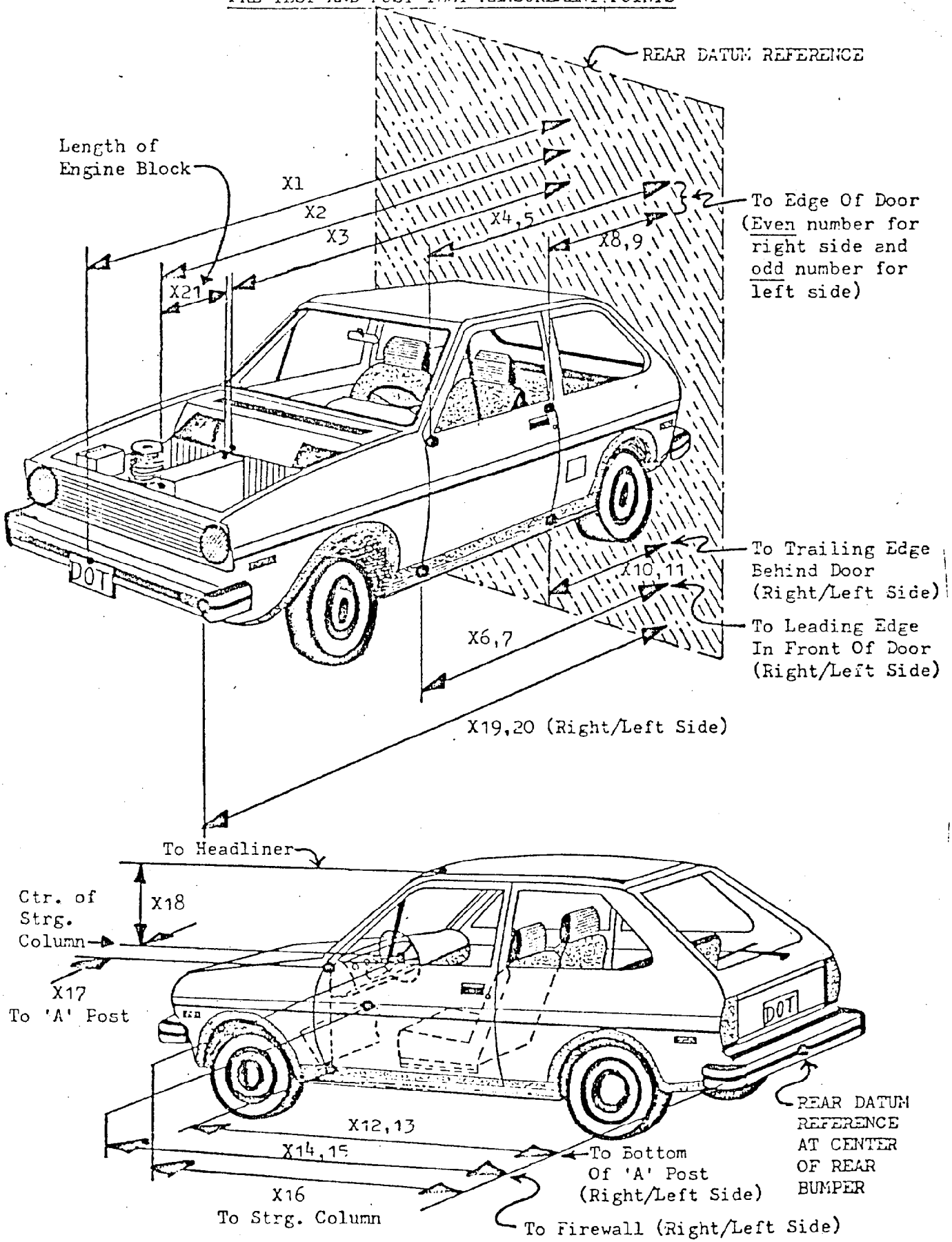
Test Date: May 21, 1979 D.S. No.:

Reference Dimension	Pre-test Measurement	Post-test Measurement	Change
X_1*	152.5) 24.5"	131.6	20.9
X_2	128.0)	118.6	9.4
X_3	109.8	106.6	3.2
X_4	96.0	95.8	0.2
X_5	97.5	97.0	0.5
X_6	95.3	94.7	0.6
X_7	95.3	97.0	+1.7
X_8*	52.0	51.7	0.3
X_9*	52.9	52.4	0.5
X_{10}	50.0	49.5	0.5
X_{11}	50.0	49.0	1.0
X_{12}	96.8	95.7	1.1
X_{13}	96.3	95.0	1.3
X_{14}	109.3	102.2	7.1
X_{15}	112.1	99.8	12.3
X_{16}	85.0	82.6	2.4
Y_{17}	13.0	12.0	1.0
Z_{18}	17.0	15.3	1.7
X_{19}*	147.3	125.0	22.3
X_{20}*	147.7	125.5	22.2
X_{21}	22.3	22.3	0.0

*Rear impact data requirements.

109.8
22.3
132.1

PRE-TEST AND POST-TEST MEASUREMENT POINTS



SECTION 4

VEHICLE PROFILE DATA SHEET

Vehicle: 1979 Plymouth Champ D.S. No.: 812 Test Date: May 21, 1979

Measurement Date: Pre-test: May 14, 1979 Post-test May 25, 1979

Exterior Measurements Referenced to Plane: 11 feet

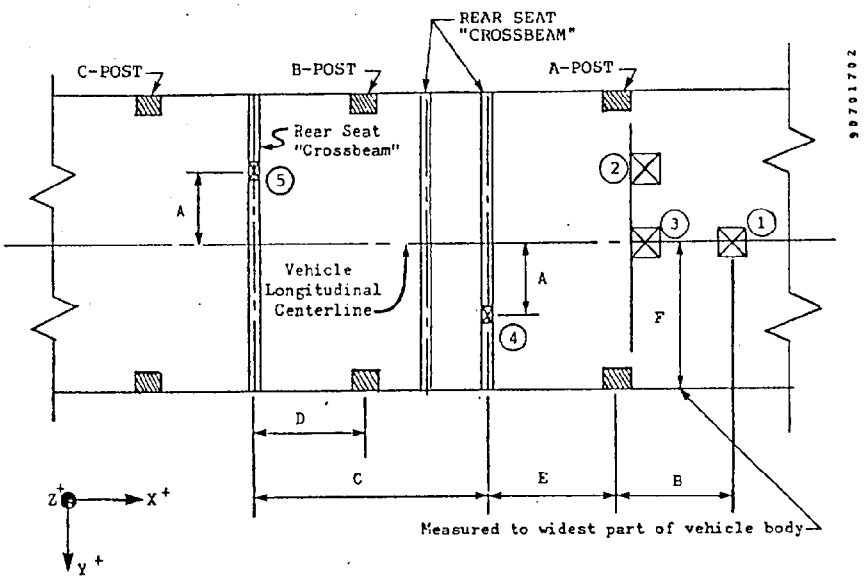
Forward of: Target over rear wheels

Location	Height	Vehicle Left (in.) 30	24	18	12	6	0	Vehicle Right (in.) 6	12	18	24	30
Pre-test Profile (in.)												
Top of Front Bumper	21.6		16.1	15.7	15.3	15.0	14.8	15.0	15.3	15.7	16.3	
Bottom of Headlight	24.0		19.5	19.0	18.5	18.3	18.0	18.3	18.5	18.9	19.3	
Post-test Profile (in.)												
Top of Front Bumper			39.7	39.0	39.5	39.5	39.5	39.4	39.0	38.8	39.0	
Bottom of Headlight			39.1	39.3	39.3	39.4	39.0	39.6	39.7	39.4	39.5	
Post-test Static Crush (in.)												
Top of Front Bumper			23.6	23.3	24.2	24.5	24.7	24.4	23.9	23.1	22.7	
Bottom of Headlight			19.6	20.3	20.8	21.1	21.0	21.3	21.2	20.5	20.2	

TEST VEHICLE ACCELEROMETER LOCATION DEFINITION AND DATA SUMMARY

Dim.	Length (in.)
A	15.3
B	18.6
C	30.5
D	1.0
E	16.5*
F	30.6

*From hinges



No.	Location Description	Component Direction X	Y	Z	Data Summary Peak G @ MSEC X "+"	X "-"	Y "+"	Y "-"	Z "+"	Z "-"
1	Engine	✓		✓	28.2 @ 41	126.5 @ 33	@	@	18.8 @ 55	29.5 @ 30
2	Firewall above steering column	✓		✓	13.9 @ 44	28.9 @ 50	@	@	27.6 @ 48	32.6 @ 31
3	Firewall @ vehicle centerline	✓		✓	4.4 @ 160	62.4 @ 58	@	@	47.7 @ 45	52.8 @ 39
4	Below front seat area	✓	✓	✓	7.8 @ 172	46.6 @ 40	7.2 @ 86	68.6 @ 91	38.9 @ 60	26.9 @ 56
5	Below rear seat area	✓		✓	2.7 @ 170	32.0 @ 71	@	@	12.5 @ 75	11.8 @ 80

SECTION 4
DUMMY KINEMATIC SUMMARY

DRIVER - Impacted steering wheel with chin and chest at approximately 65 msec. Knees struck dash panel. Came to rest leaning toward centerline of car.

PASSENGER - Head impacted dash panel, breaking glovebox lid, at approximately 70 msec. Knees struck dash panel. Came to rest leaning against door.

CHILD - Head impacted passenger seatback about one foot anterior to B-pillar at approximately 95 msec. Came to rest lying transversely across vehicle centerline.

OTHER COMMENTS:

Figure 4-1. Pre-test Driver Dummy Position - 1979 Plymouth Champ 2-door Hatchback - NHTSA No. 790522.

Figure 4-2. Post-test Driver Dummy Position - 1979 Plymouth Champ 2-door Hatchback - NHTSA No. 790522.

Figure 4-3. Post-test Driver Dummy Position - 1979 Plymouth Champ 2-door Hatchback - NHTSA No. 790522.

Figure 4-4. Post-test Driver Compartment - 1979 Plymouth Champ 2-door Hatchback - NHTSA No. 790522.

Figure 4-5. Pre-test Passenger Position - 1979 Plymouth Champ 2-door Hatchback NHTSA No. 790522.

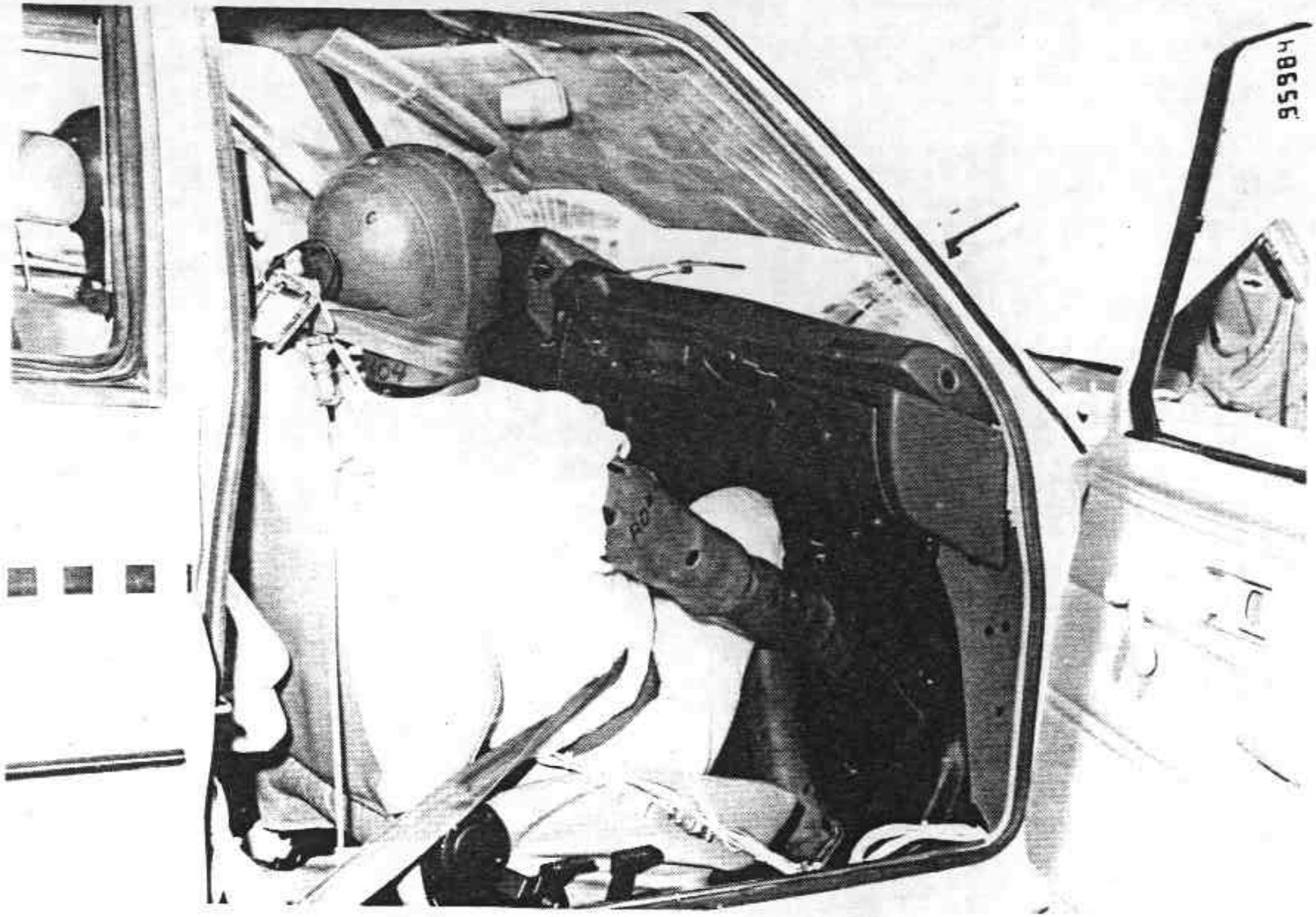


Figure 4-6. Post-test Passenger Position - 1979 Plymouth Champ 2-door Hatchback - NHTSA No. 790522.

Figure 4-7. Post-test Passenger Position - 1979 Plymouth Champ 2-door Hatchback - NHTSA No. 790522.

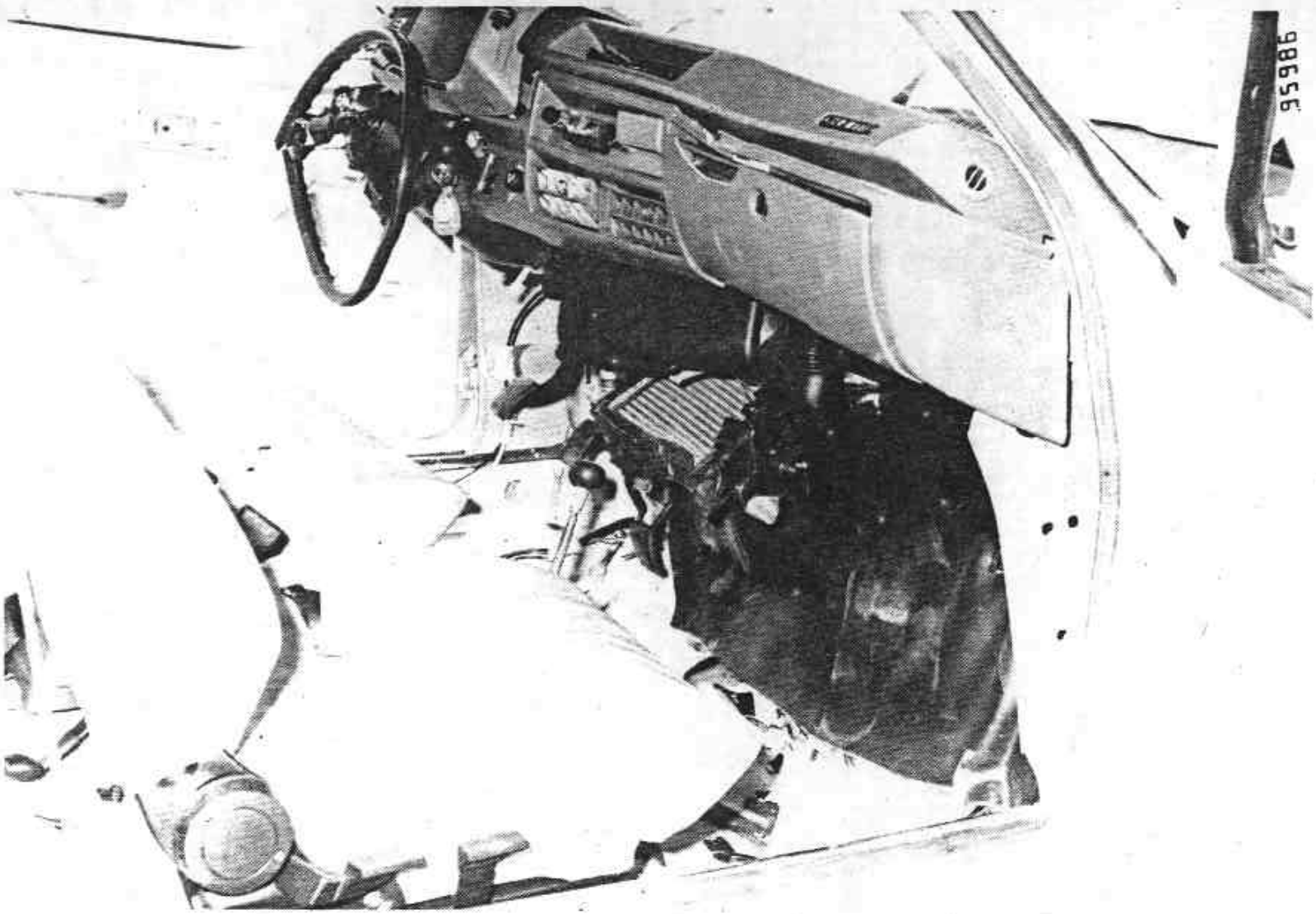


Figure 4-8. Post-test Passenger Compartment - 1979 Plymouth Champ 2-door Hatchback - NHTSA No. 790522.

Figure 4-9. Pre-test Child Dummy Position - 1979 Plymouth Champ 2-door Hatchback - NHTSA No. 790522.

Figure 4-10. Post-test Child Dummy Position - 1979 Plymouth Champ 2-door Hatchback - NHTSA No. 790522.

APPENDIX A

TEST FACILITIES AND PROCEDURE

TEST FACILITY AND EQUIPMENT FOR FMVSS 301-75 and 219 IMPACT TESTS

General Test Facility Description

FMVSS 301-75 and 219 impact tests are conducted at the Dynamic Science, Inc. Phoenix Facility in Phoenix, Arizona. Figure A-1 is an overall aerial view of that facility.

More specifically, the Monorail Impact Facility shown schematically in Figure A-2 is used. As indicated in Figure A-2, the Monorail Impact Facility accommodates a variety of test modes and configurations.

Test Track and Guidance System

The test track consists of 1,200 feet of asphalt pavement (SN = 75 ±5), 14 feet in width. The length allows sufficient acceleration distance to accommodate impact speeds in excess of 60 mph with sufficient distance remaining to abort the test if necessary. Guidance for the test vehicle is provided by a sliding shoe attached to the vehicle. The sliding shoe rides on the monorail embedded in the test track. Prior to impact, the shoe is mechanically released from the test vehicle.

Tow System and Velocity Control

The tow system consists of a drum-driven endless cable powered by a pair of 390-cubic-inch engines driven in tandem driving a modified three-speed C-6 automatic truck transmission. The tow system can propel a 6,000-pound vehicle into the fixed barrier at 75 mph. Velocity control is achieved through a manually controlled throttle system. A visual readout of speed versus distance is provided and compared with the "ideal curve." Velocity control under ±0.5 mph is realizable down to 20 mph and ±2.0 percent down to zero mph.

1. ENGINEERING/ADMINISTRATION CENTER
2. MECHANICAL/INSTRUMENTATION SHOPS
3. DUMMY CALIBRATION LABORATORY
4. GARAGE/MAINTENANCE SHOP
5. ENVIRONMENTAL CHAMBER
6. STATIC CRUSH FACILITY
7. TWO-MILE OVAL
8. TURNAROUND (TYPICAL OF TWO)
9. BARRIER IMPACT FACILITY
10. DROP TOWER/SLED TEST FACILITY
11. CENTRAL DATA ACQUISITION AND CONTROL STATION
12. PENDULUM FACILITY
13. NONMETALLICS LABORATORY
14. TEST SERVICE FACILITY
15. VEHICLE-TO-VEHICLE TEST FACILITY
16. ROLLOVER TEST FACILITY
17. RIDE QUALITY COURSE
18. SKID PAD
19. HIGH AND LOW SKID NUMBER BRAKING LANES
20. SALT WATER TROUGH
21. BELGIAN BLOCK
22. PARKING BRAKE TEST RAMP
23. PULL-OFF AREA (TYPICAL OF THIRTEEN)
24. BALLISTIC TEST RANGE

Figure A-1. The Dynamic Science, Inc. Phoenix Facility.

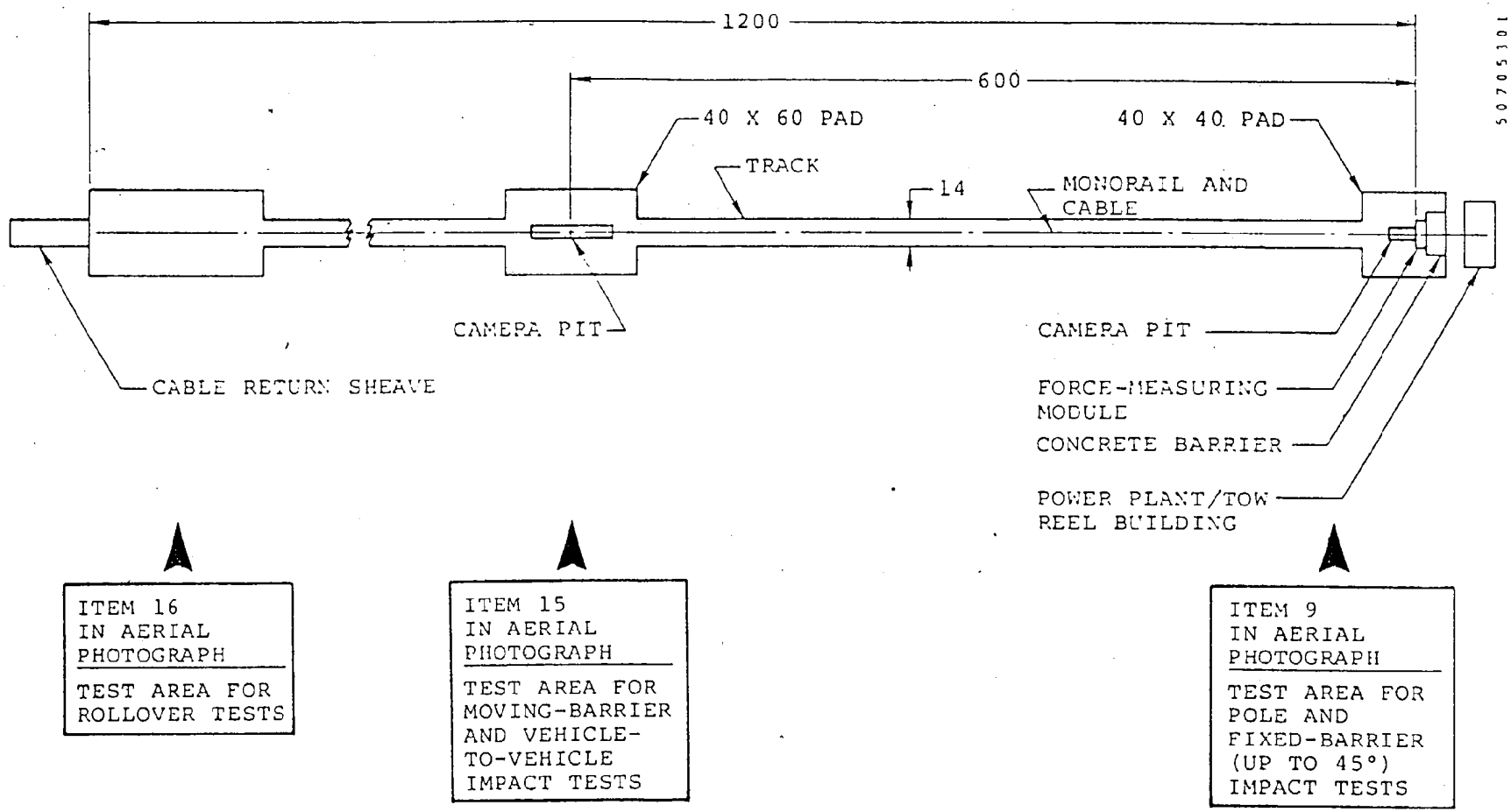


Figure A-2. Monorail Impact Facility.

Automatic abort capability is provided through the vehicle service brakes which are actuated by releasing high-pressure air into the hydraulic system. Abort criteria consist of vehicle speed, data acquisition and instrumentation system readiness, and stability of the vehicle on the test track. The first two criteria are automatically monitored by the test control system, while the third criterion is visually monitored by the test conductor. Manual abort provisions are available to the test conductor. Upon verifying vehicle speed, the test control system automatically deactivates the abort system to preclude inadvertent test abort immediately prior to impact.

Control System

The master control system used for impact tests controls and monitors all primary system functions that must operate throughout a predetermined interval during a test. This includes the starting and stopping of the tape recorder, high-speed cameras, and oscillograph, and control of the power winch which propels the test vehicle. The operation of the various devices is confirmed, including vehicle velocity and tape recorder speed synchronization, before it passes through a "commit" window. When the vehicle is committed, the abort system is disarmed, preventing an accidental abort after the point of no return is reached.

Any system malfunction, including improper vehicle velocity up to the commit window, generates an abort. The control system uses the pulse output from the IRIG time base generator as a clock with a manual push button defining time zero. The logic circuits compare pulse counts from time zero to preset values dialed in at the control panel. As each control circuit gets an equal comparison, that circuit is turned on. If the self-test circuit does not verify, the abort system is automatically activated. After successful vehicle test, the last control circuit shuts the entire system down. The manual backup control system provides the test conductor the option for manually aborting the test if the need arises.

Fixed Collision Barrier

The basic fixed collision barrier conforms to the definition in Part 571-1, Paragraph 571.3 - Definitions, 36 F.R. 11242, dated July 14, 1970 and effective September 1, 1970. The fixed impact barrier is a reinforced concrete structure, 6-feet high, 6-feet thick, 12-feet wide, and weighing approximately 100,000 pounds. The barrier face is adjustable for conducting 30-degree oblique impact tests.

Fuel Simulation

As prescribed in the FMVSS 301-75 Laboratory Procedure, the vehicle fuel system is filled to 90-91 percent of capacity with Stoddard Solvent.

The fuel is pumped out of the fuel tank, and the residual fuel in the fuel lines and the carburetor is burned by operating the vehicle engine. The fuel system is filled with Stoddard Solvent No. 2. The solvent is then pumped into the fuel lines, up to the carburetor. The weight of the Stoddard Solvent added and removed is determined with two Western Beam Scales (Model No. WP 2000).

The solvent used, Stoddard Solvent No. 2, has a specific gravity of 0.764 at 75°F and a viscosity of 0.99 centistokes.

Windshield Zone Intrusion Template

A windshield zone intrusion template is laid out and fabricated for each vehicle to spatially define the windshield protected zone.

Windshield Protected Zone Boundaries

The lower boundary of the protected zone is determined as follows:

1. A 6.5-inch diameter rigid sphere, weighing 15 pounds, is positioned so it simultaneously contacts the inner surface of the windshield glazing and the surface of the instrument panel, and the locus of points contacted by the sphere is marked. The line is then extended horizontally to the edge of the glazing material.

2. A line is drawn on the inner surface of the windshield below and one-half inch distant from the locus of points determined in Step 1.

The top and side boundaries of the zone are the top and sides of the windshield opening. The protected zone extends three inches outward from the outer surface of the windshield measured perpendicular to any point along the outer boundary of the zone. The protected zone is shown in Figure A-3.

Fabrication of Windshield Zone Intrusion Template

In order to determine whether or not there is any penetration into the protected zone, FMVSS No. 219 specifies that a template be formed of Styrofoam, type DB, cut cell, conforming to the shape of the zone and attached to the windshield. The Styrofoam exhibits essentially only plastic deformation characteristics, making it excellent for recording possible intrusion but difficult to shape to the windshield contour. The ultimate thickness of 3 inches is achieved by laminating six 1/2-inch-thick layers which can be individually bent to the windshield curvature, an operation not possible with 3-inch-thick Styrofoam because of its brittleness. The laminations are glued together in place on the windshield and the 45° bevel is applied to the perimeter of the template after it is bonded to the windshield.

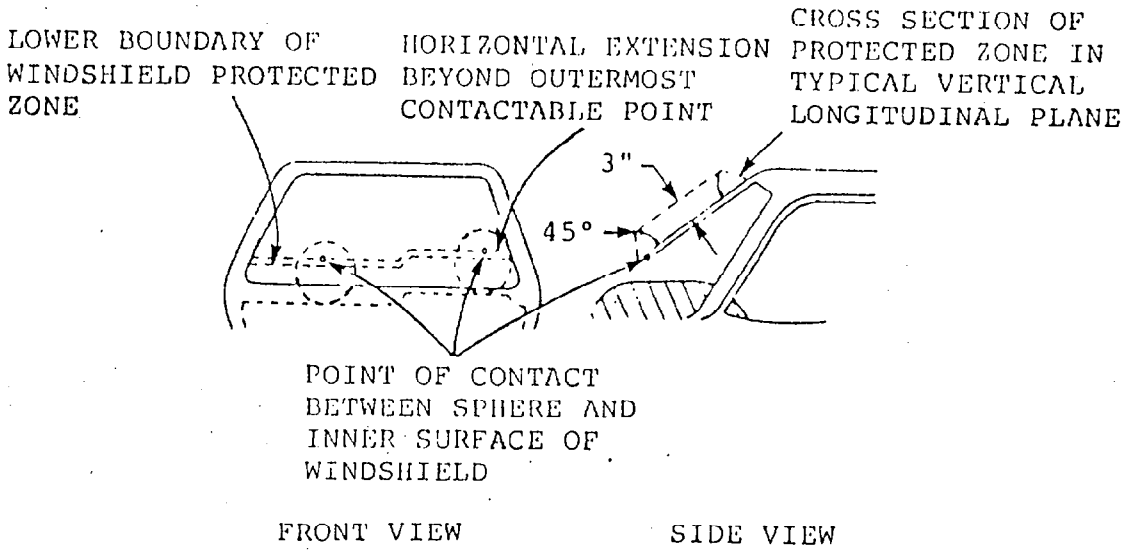


Figure A-3. Windshield Protected Zone.

Camera Coverage

Eight high-speed cameras are positioned on and around the impact barrier and test vehicle to provide total coverage of the barrier impact (Figure A-4). Specific locations are:

1. Left side overall
2. Offboard vehicle right side to view windshield.
3. At the front end of the pit to view possible fuel spillage in the engine compartment.
4. In the pit under the fuel tank to view possible fuel spillage from the tank.
5. Right side closeup of dummy motion and the windshield zone template.
6. Left side closeup of dummy motion and the windshield zone template.
7. On the barrier to provide a front view of the windshield template.

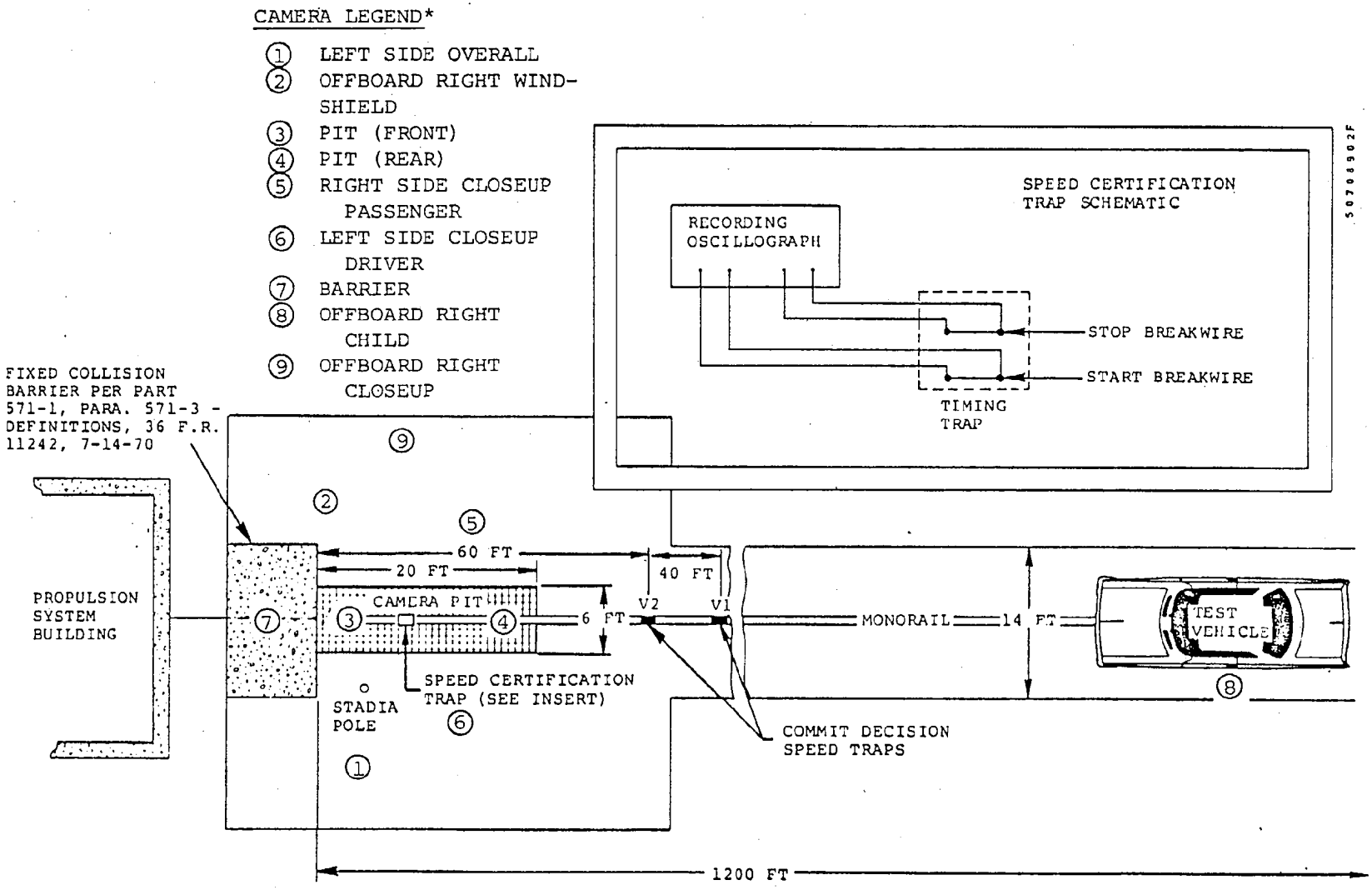


Figure A-4. FMVSS 301-75 and 219 (Frontal Impact Test) Barrier Test Site Layout.

Test Equipment List and Function

Item	Manufacturer	Model	Purpose
Timing Trap	Dynamic Science	None	Determine impact speed by furnishing a start and stop signal to recording oscillograph.
Oscillograph	Bell and Howell	5-134	Records timing start and stop signals from timing traps, cable drum drive rpm, and impact switch.
Speed Control	Dynamic Science	None	Precision control of cable drive drum rpm.
Beam Scales	Western	WP 2000	Used to determine vehicle test weights.
High-speed Motion Picture Cameras	Photosonics Milliken Red Lake Labs	16-1B 5A 164-5AC	Used for front, side, overhead, and underside film coverage.
Motion Picture Camera	Canon Scoopic		Panning and documentation.
Still Camera	Mamiya	RB 67	Documentary photo coverage.
100 and 1000 Hz Time Code Generators	Dynamic Science	None	Furnish timing signal for high-speed cameras and a 1 second timing for velocity determination.
Stop Watch	Brietling	None	Time for collection of fuel leak samples.
Containers	-	-	Collection for fuel leak samples.
Graduated Cylinder	Pyrex	3022	Fuel volume measurement.
Graduated Cylinder	Kimax	-	Fuel volume measurement.
Calibrated Steel Rule	Starret	48 in.	Precision measurement of velocity trap spacing.
Anthropomorphic Dummies	Alderson Research Labs	Hybrid II	To ballast the vehicle and to gather occupant response data.

8. Offboard right to view child in rear seat.

9. Offboard right to view two-thirds of vehicle.

Ballast Weight

The ballast used in this program is weighed on a Howe platform scale prior to installation in the test vehicle.

The platform scale is calibrated by placing precision weights thereon and recording the scale reading. The accuracy of the ballast weights is:

- ±1/2 pound for 0 to 300-pound weights
- ±1 pound for 300 to 1000-pound weights.

Vehicle Weight

The weights of the test vehicle are determined by placing each wheel on a Western Model WP 2000 beam scale, certified with test weights scaled to National Bureau of Standards Class B tolerances.

Dummy Positioning

The following table summarizes the steps taken to position the instrumented, calibrated dummies in the test vehicle. The dummies were kept in a temperature-controlled enclosure at the head of the track until t-30 seconds. The temperatures both in the enclosure, and the outside ambient temperature were recorded immediately prior to rollout.

DUMMY PLACEMENT AND POSITIONING

Part 572 Dummy	Driver DSP	Passenger DSP
HEAD	Surface of transverse instrument mounting platform is horizontal & midsagittal plane falls in longitudinal plane.	Surface of transverse instrument mounting platform is horizontal & midsagittal plane falls in longitudinal plane.
UPPER TORSO	Placed against seat back. Midsagittal plane is vertical & longitudinal & passes through center point of steering wheel rim.	Placed against seat back. Midsagittal plane is vertical, longitudinal, & the same distance from vehicle longitudinal centerline as driver dummy midsagittal plane.
UPPER ARMS	Initially placed against seat back & tangent to side of Upper Torso. Push arms rearward into seat back with bending at elbows.	Initially placed against seat back & tangent to side of Upper Torso. Push arms rearward into seat back with bending at elbows. Remains tangent.
LOWER ARMS	Initially placed against the outside of the thighs. Centerline as close as possible in a vertical plane.	Initially placed against the outside of the thighs. Centerline as close as possible in a vertical plane.
HAND PALMS	Palms contact outer part of steering wheel rim at horizontal centerline.	Palms contact the outsides of the thighs.
HAND THUMBS	Placed over steering wheel rim.	
HAND LITTLE FINGERS		Barely in contact with the seat cushion.

DUMMY PLACEMENT AND POSITIONING (CONTD)

Part 572 Dummy	Driver DSP	Passenger DSP
LOWER TORSO	Centered on bucket seat cushion. Midsagittal plane is vertical & longitudinal. For bench seat, midsagittal plane is vertical & longidinal & passes through center point of plane described by steering wheel rim.	Centered on bucket seat cushion. Midsaggital plane is vertical & longitudinal. For bench seat, midsagittal plane is vertical, longitudinal, and same distance from vehicle longitudinal centerline as driver dummy midsagittal plane.
UPPER LEGS (thighs or femurs)	Placed against seat cushion. Plane defined by femur and tibia centerlines is as close as possible to vertical.	Placed against seat cushion. Plane defined by femur and tibia centerlines is as close as possible to vertical.
RIGHT KNEE	Knees initially set 14.5" apart between pivot bolt head outer surfaces.	Located so that plane defined by femur and tibia centerlines is as close as possible to vertical.
LEFT KNEE	Outer surface of pivot bolt head is 5.9" from midsagittal plane of dummy.	Located as above.
LOWER LEGS (tibias)	Plane defined by femur and tibia centerlines is as close as possible to vertical longitudinal plane.	Plane defined by femur and tibia centerlines is as close as possible to vertical longitudinal plane.
RIGHT FOOT	Placed on undepressed accelerator pedal--rearmost point of heel on floorpan in plane of pedal.	Centerline falls in vertical longitudinal plane. Placed on toeboard--rearmost point of heel on floorpan as close as possible to intersection of toeboard and floorpan.
LEFT FOOT	Placed on toeboard--rearmost point of heel on floorpan as close as possible to intersection of toeboard and floorpan. Centerline falls in vertical longitudinal plane.	Centerline falls in vertical longitudinal plane. Placed on toeboard--rearmost point of heel on floorpan as close as possible to intersection of toeboard and floorpan.

APPENDIX B

CALCOMP PLOT PRESENTATION

Calcomp plots generated from the crash test data are presented on the following pages. All data will be recorded on magnetic tape for inclusion in the NHTSA crash test data base system. All data was filtered according to SAE J211. Plot legends and test anomalies are listed below:

PLOT LEGEND

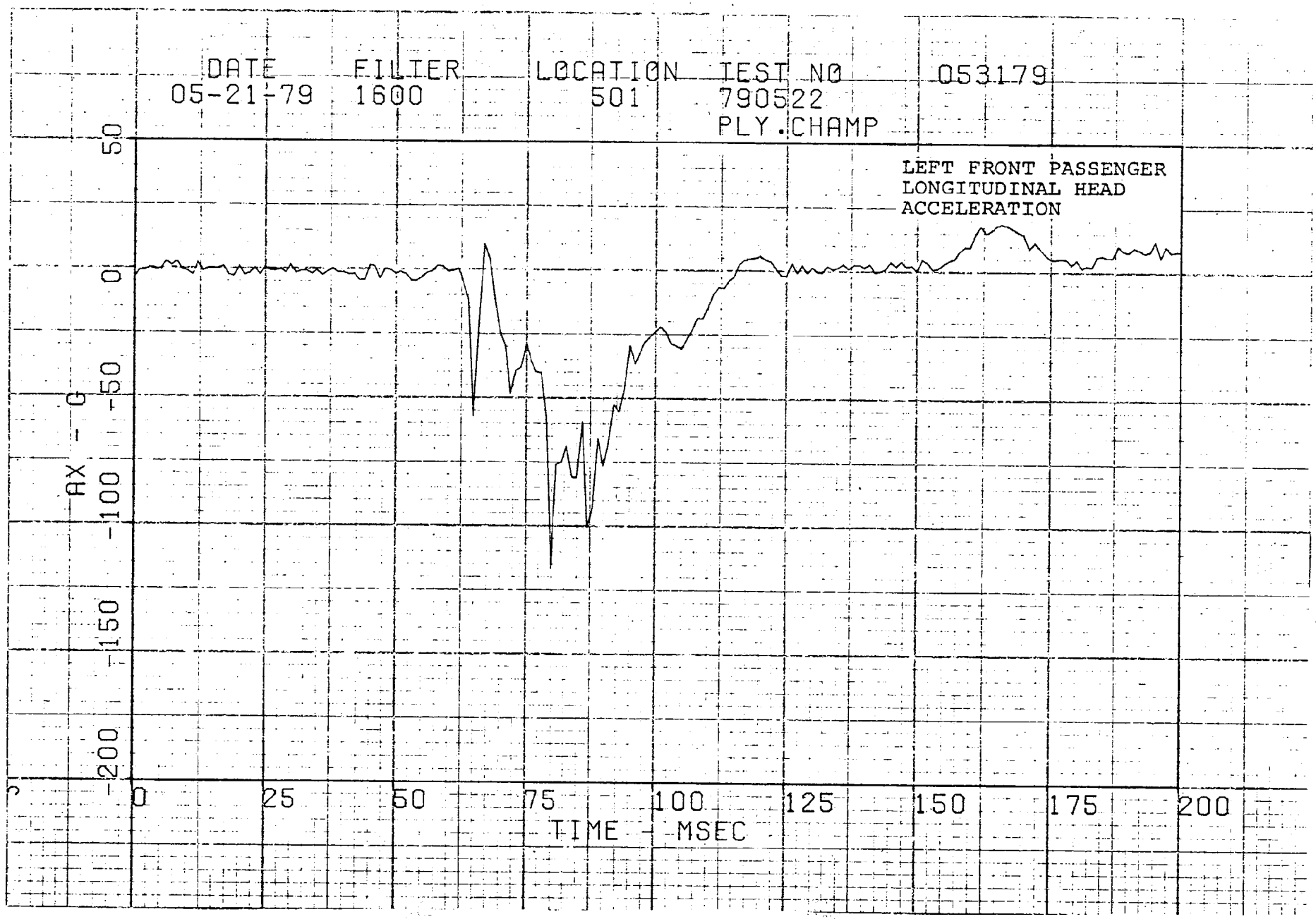
Dummy Data*

Driver	RF Outboard Passenger	RR 6-year-Child	Data Description
501	503	506	Head Acceleration
1101	1103	1106	Chest Acceleration
2111	2131	2161	Left Femur Load
2112	2132	2162	Right Femur Load
4101	4103	-	Torso Belt Load

Vehicle Data**

	Location
101	Engine
102	Firewall
103	Firewall at Vehicle Centerline
104	Front Seat Area
105	Rear Seat Area

*Dummy Injury Summary presented on pages 4-4 and 4-5.
**Vehicle accelerometer location and data summarized on page 4-9.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LOCATION
501
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PLY.CHAMP
053179
LEFT FRONT PASSENGER
LONGITUDINAL HEAD
ACCELERATION
AX - G
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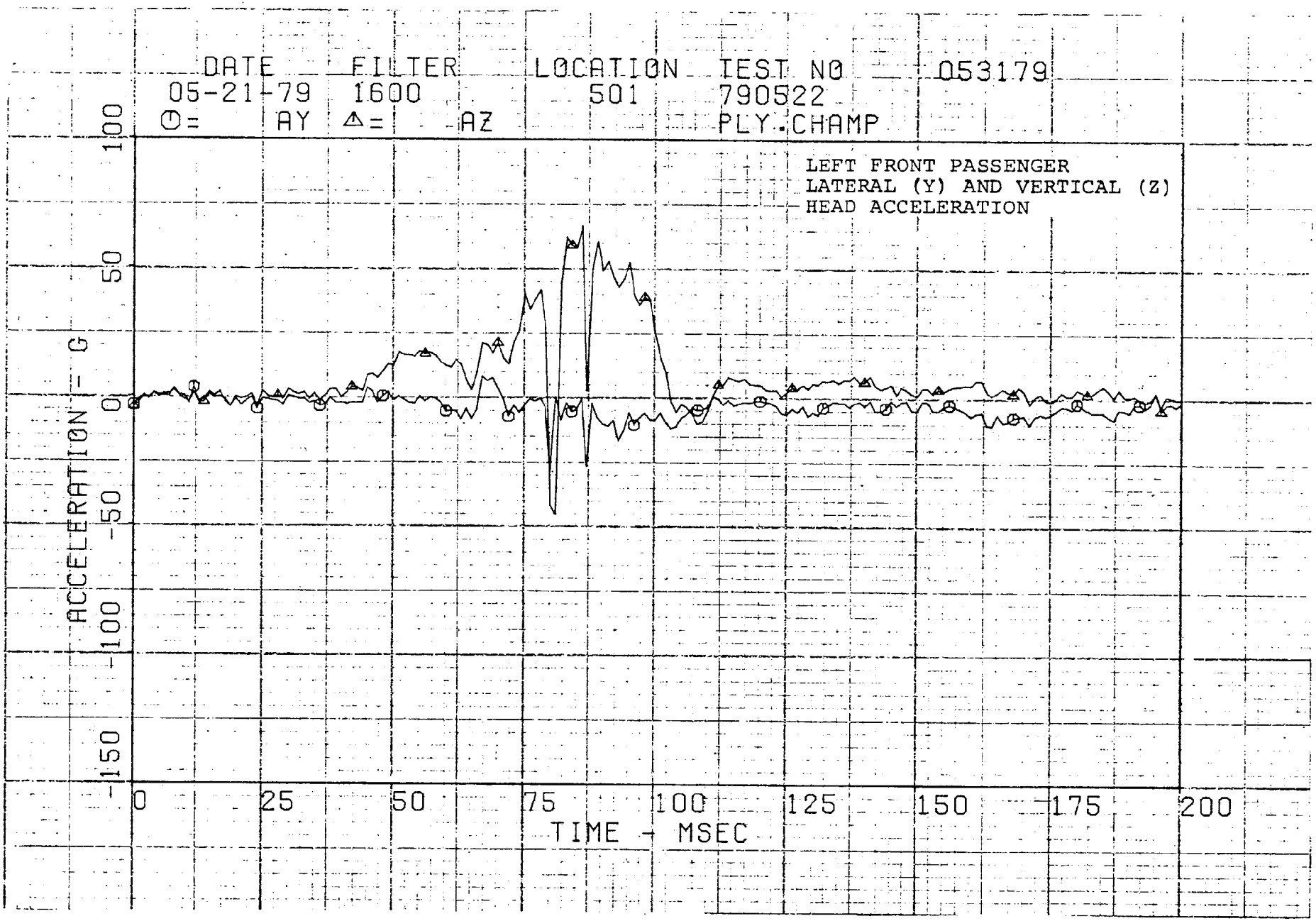
-50
-100
-150
-200
0
25
50
75
100
125
150
175
200
TIME - MSEC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PLY-CHAMP
LEFT FRONT PASSENGER
LATERAL (Y) AND VERTICAL (Z)
HEAD ACCELERATION
ACCELERATION - G
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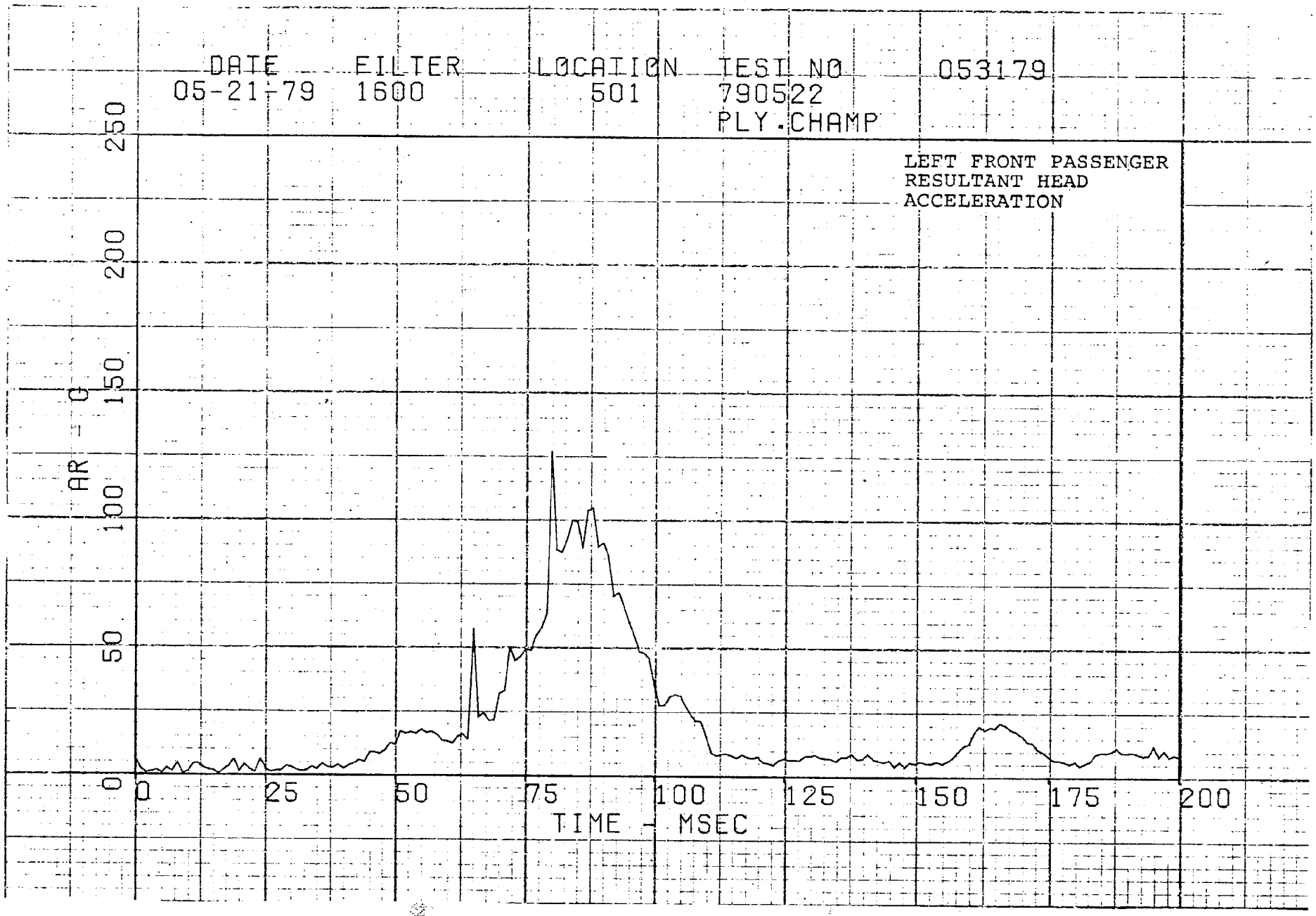
125
150
175
200
TIME - MSEC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RESULTANT HEAD
ACCELERATION
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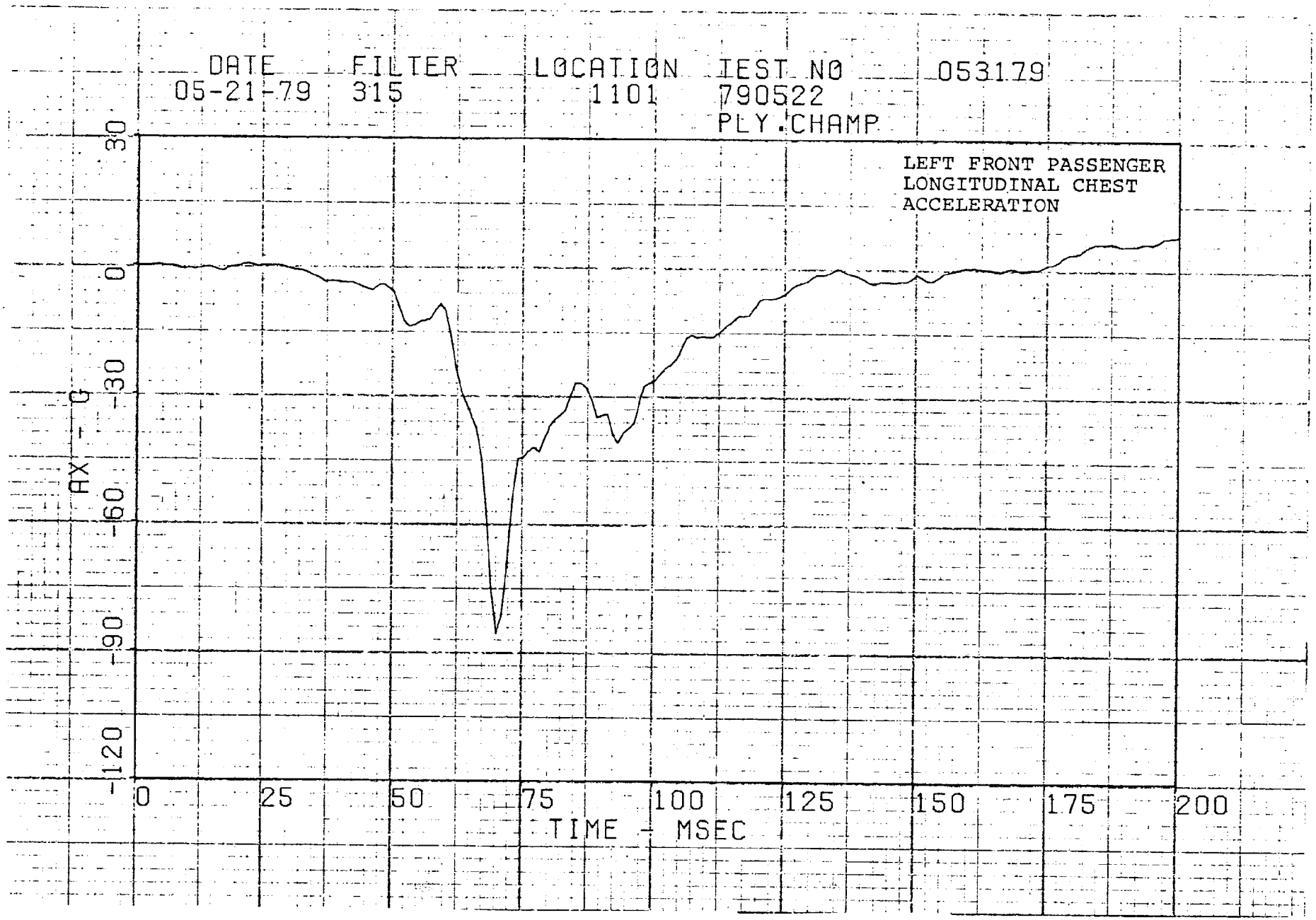
200
TIME - MSEC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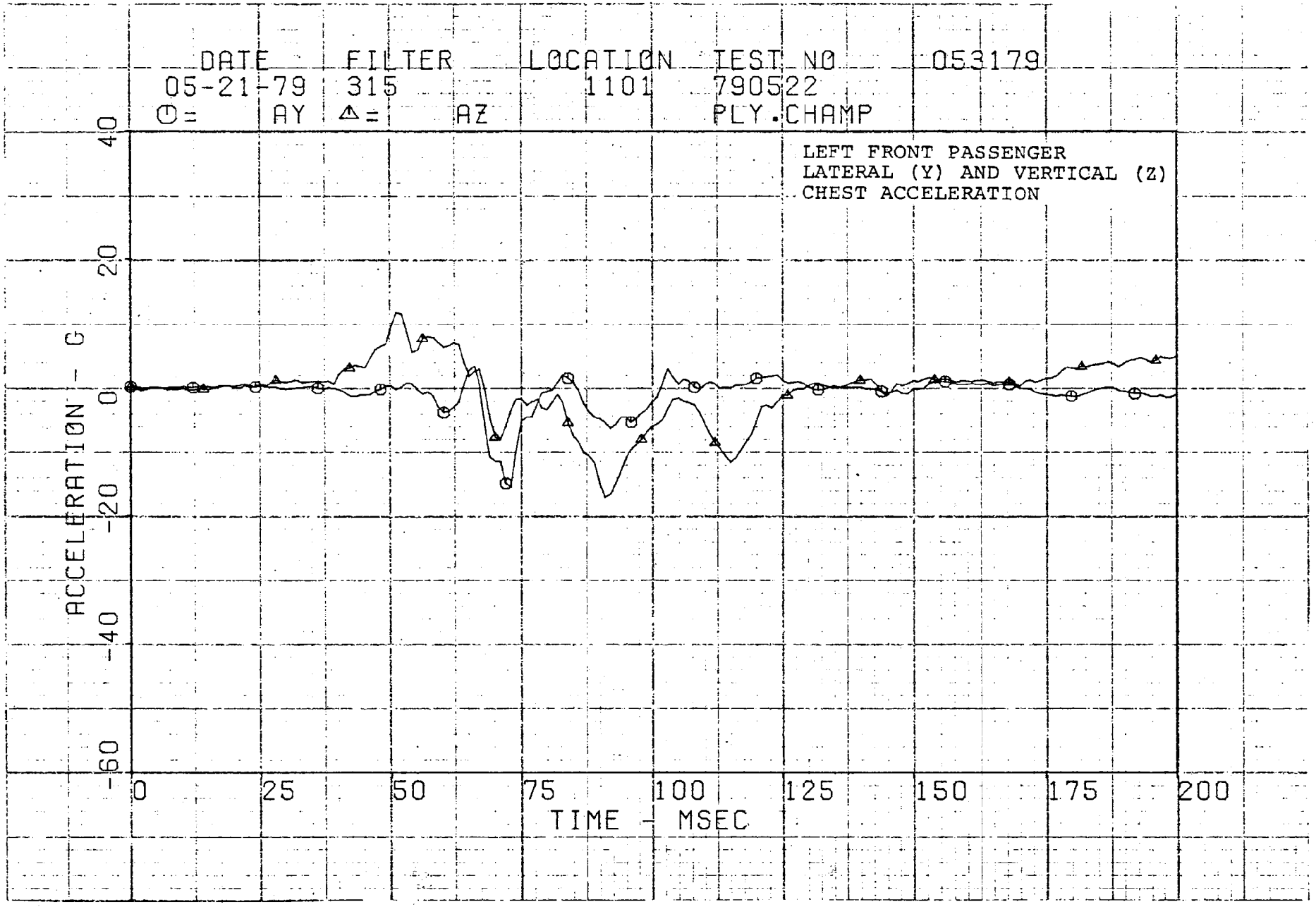
150
175
200
TIME - MSEC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△= AZ
PLY. CHAMP
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LATERAL (Y) AND VERTICAL (Z)
CHEST ACCELERATION
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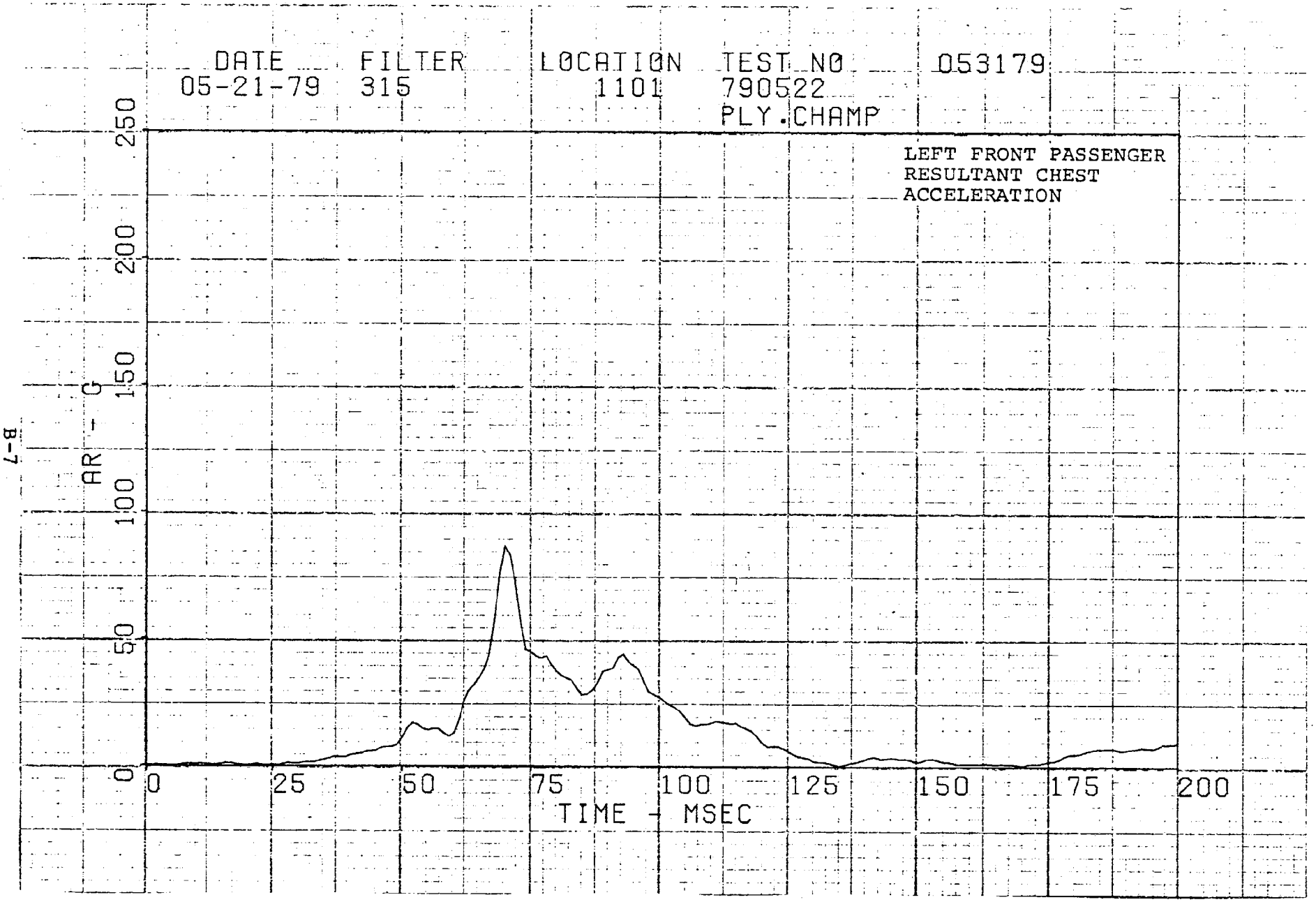
175
200
TIME - MSEC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RESULTANT CHEST
ACCELERATION
AR - G
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100
150
200
250
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75
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125
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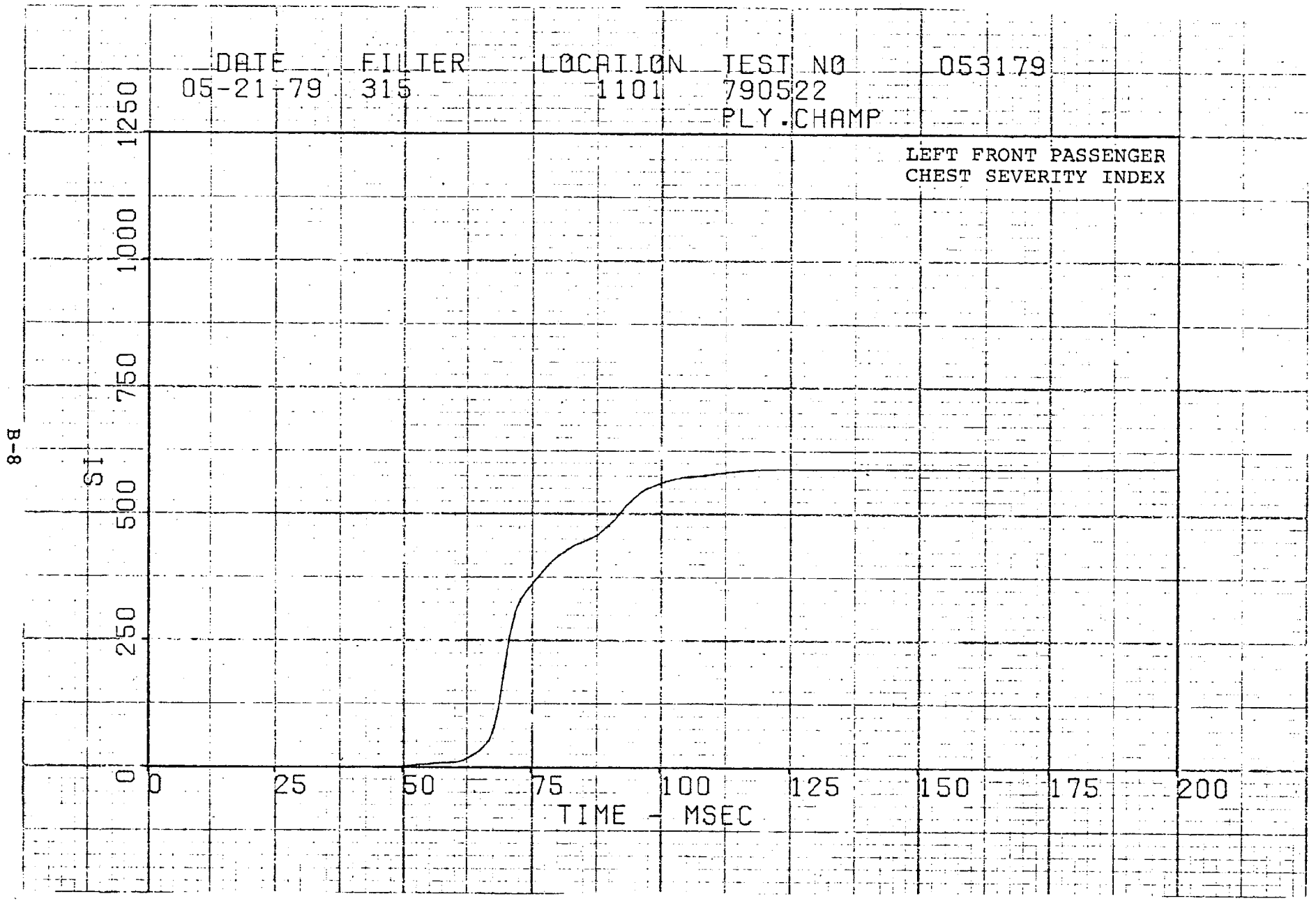
175
200
TIME - MSEC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750
1000
1250
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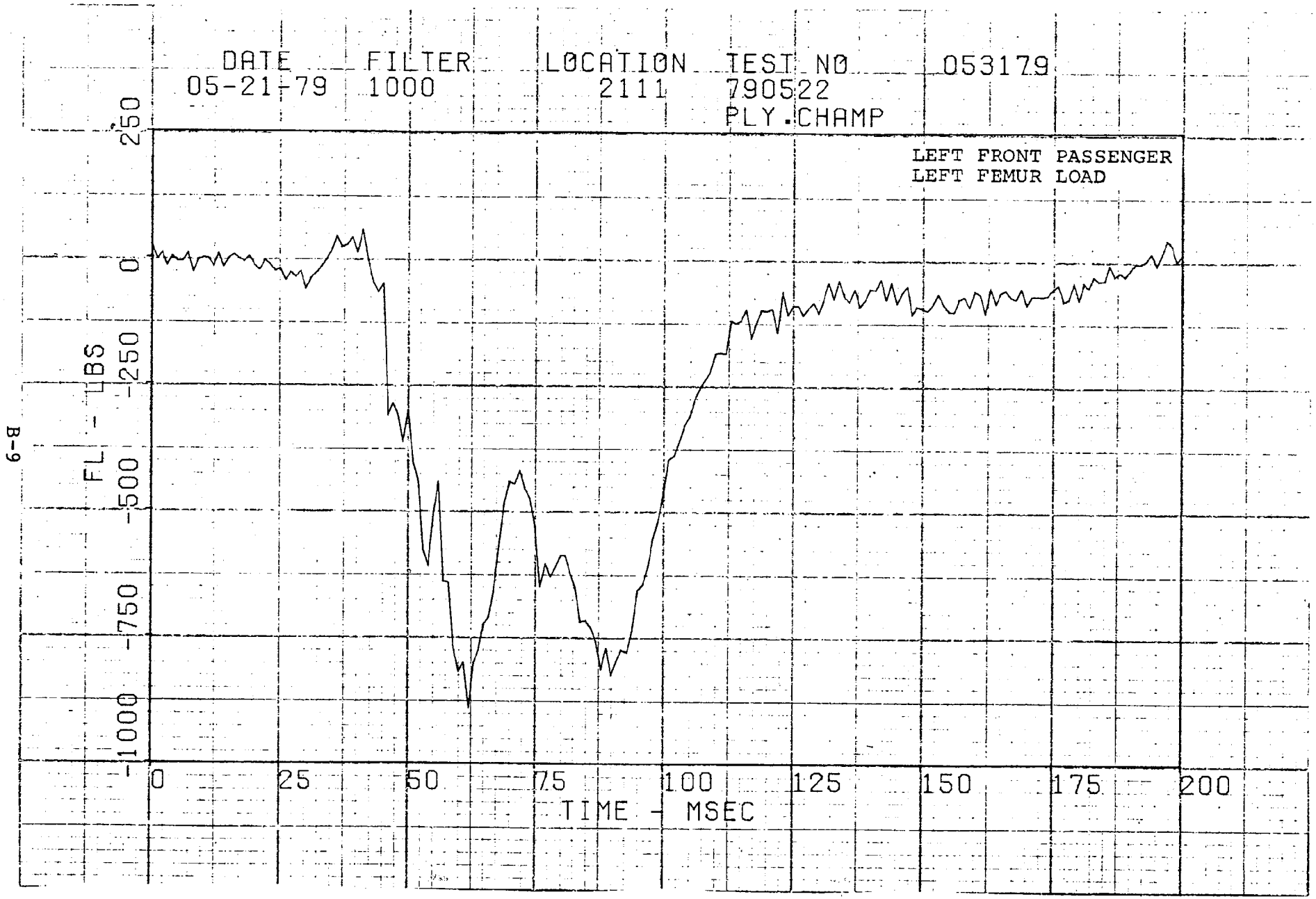
75
100
125
150
175
200
TIME - MSEC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LEFT FEMUR LOAD
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-750
-1000
FL - LBS
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25
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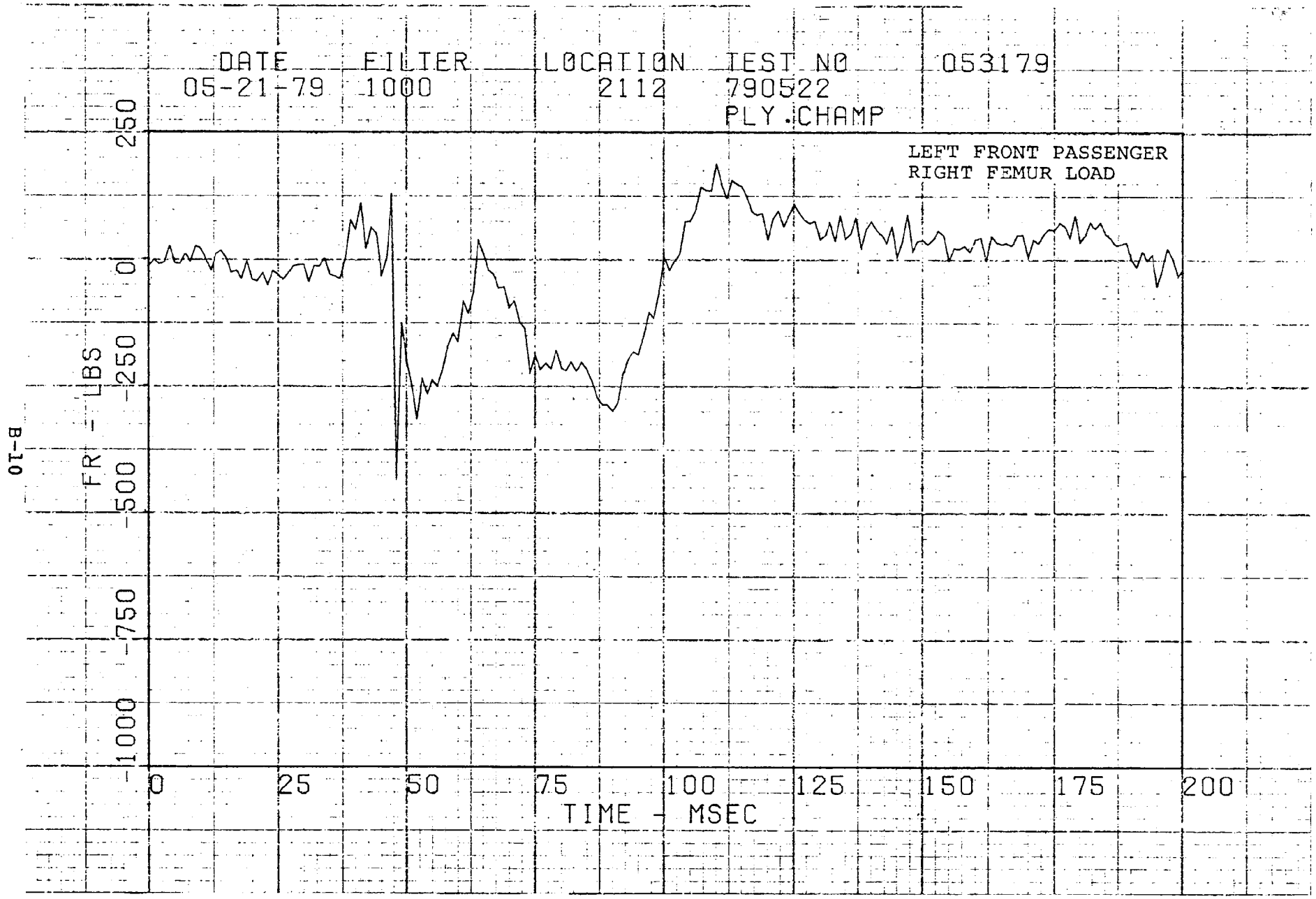
75
100
125
150
175
200
TIME - MSEC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RIGHT FEMUR LOAD
FR - LBS
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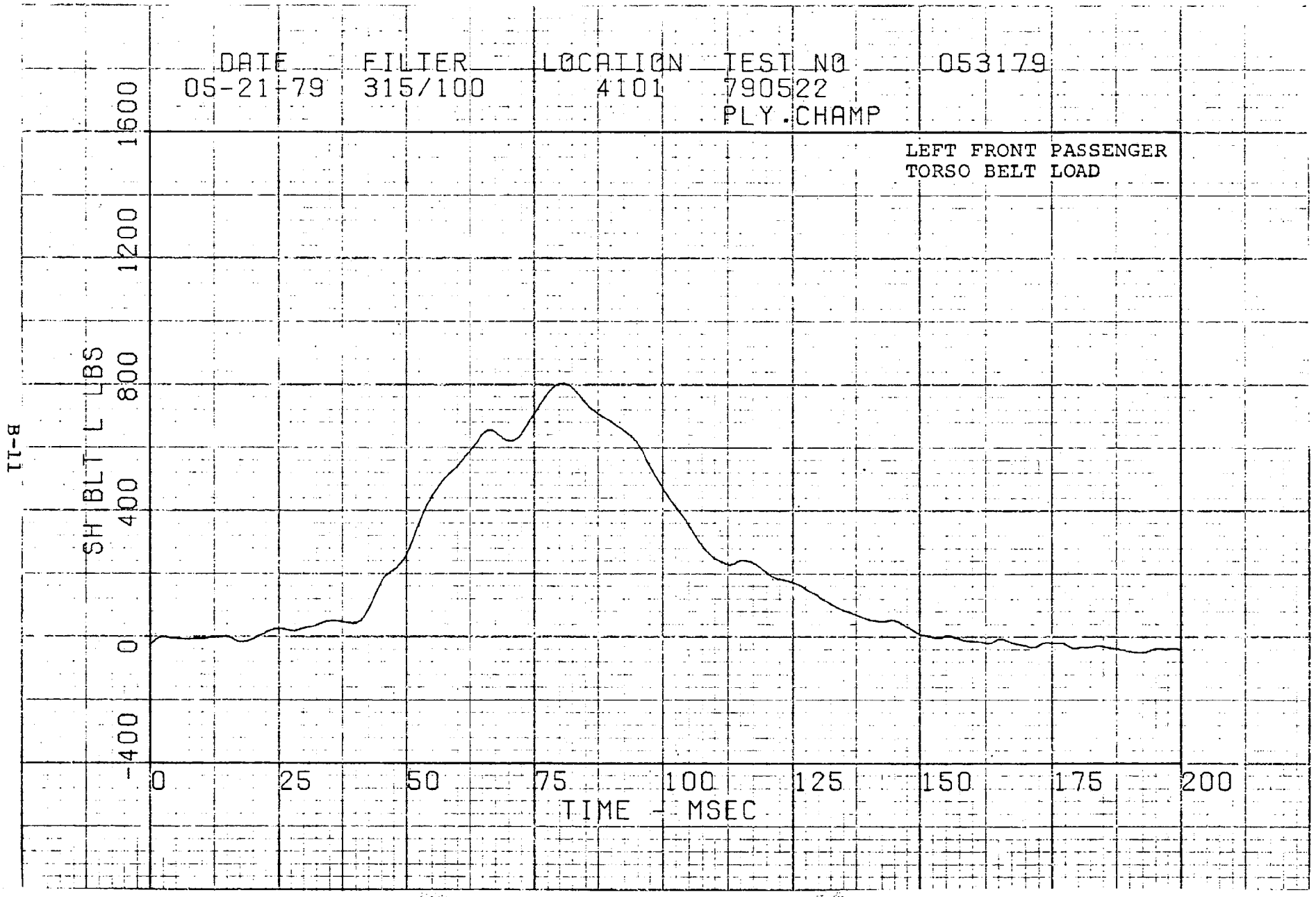
-500
-750
-1000
0
25
50
75
100
125
150
175
200
TIME - MSEC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LOCATION
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TORSO BELT LOAD
SH BLT L LBS
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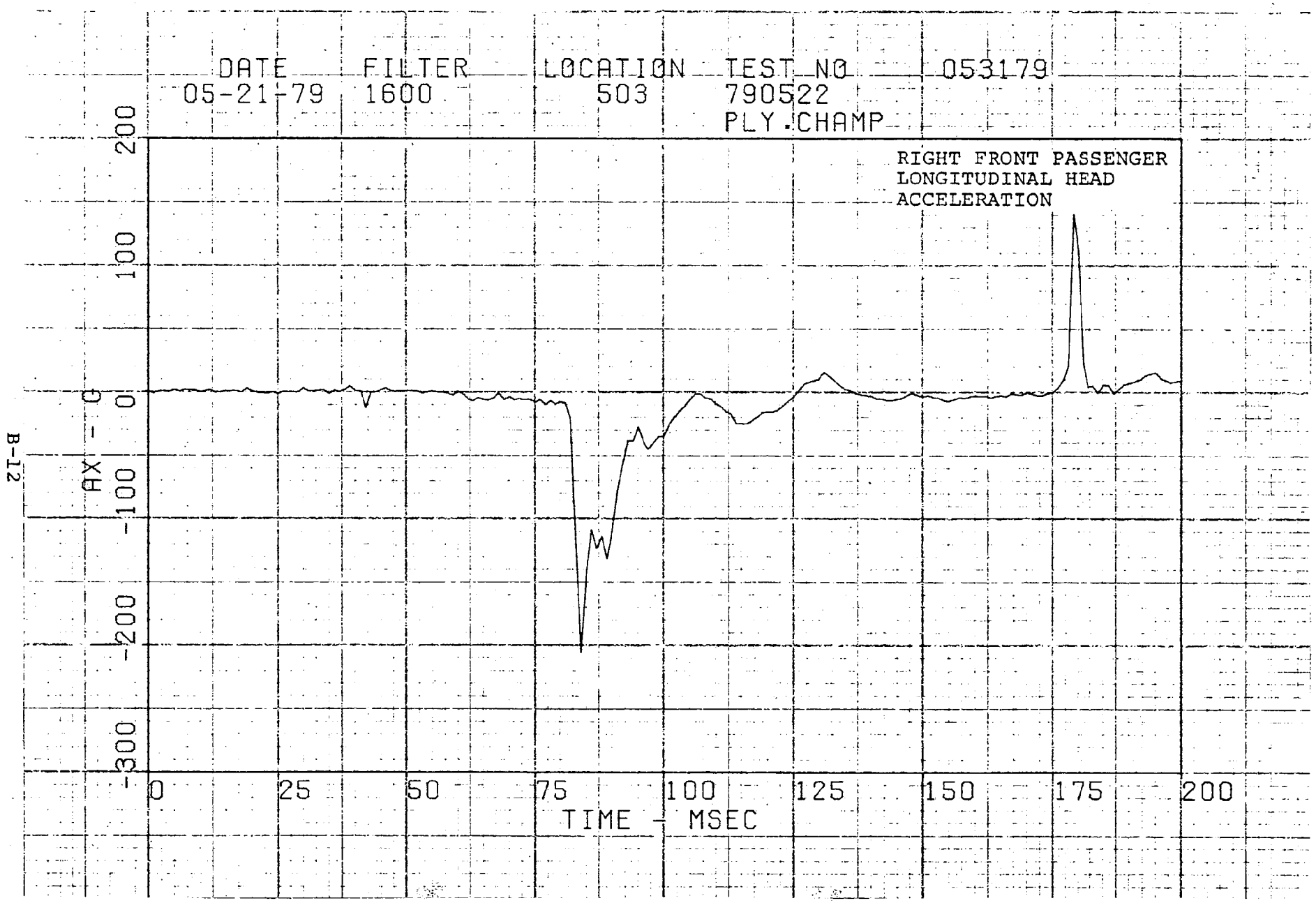
TIME - MSEC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LONGITUDINAL HEAD
ACCELERATION
AX - G
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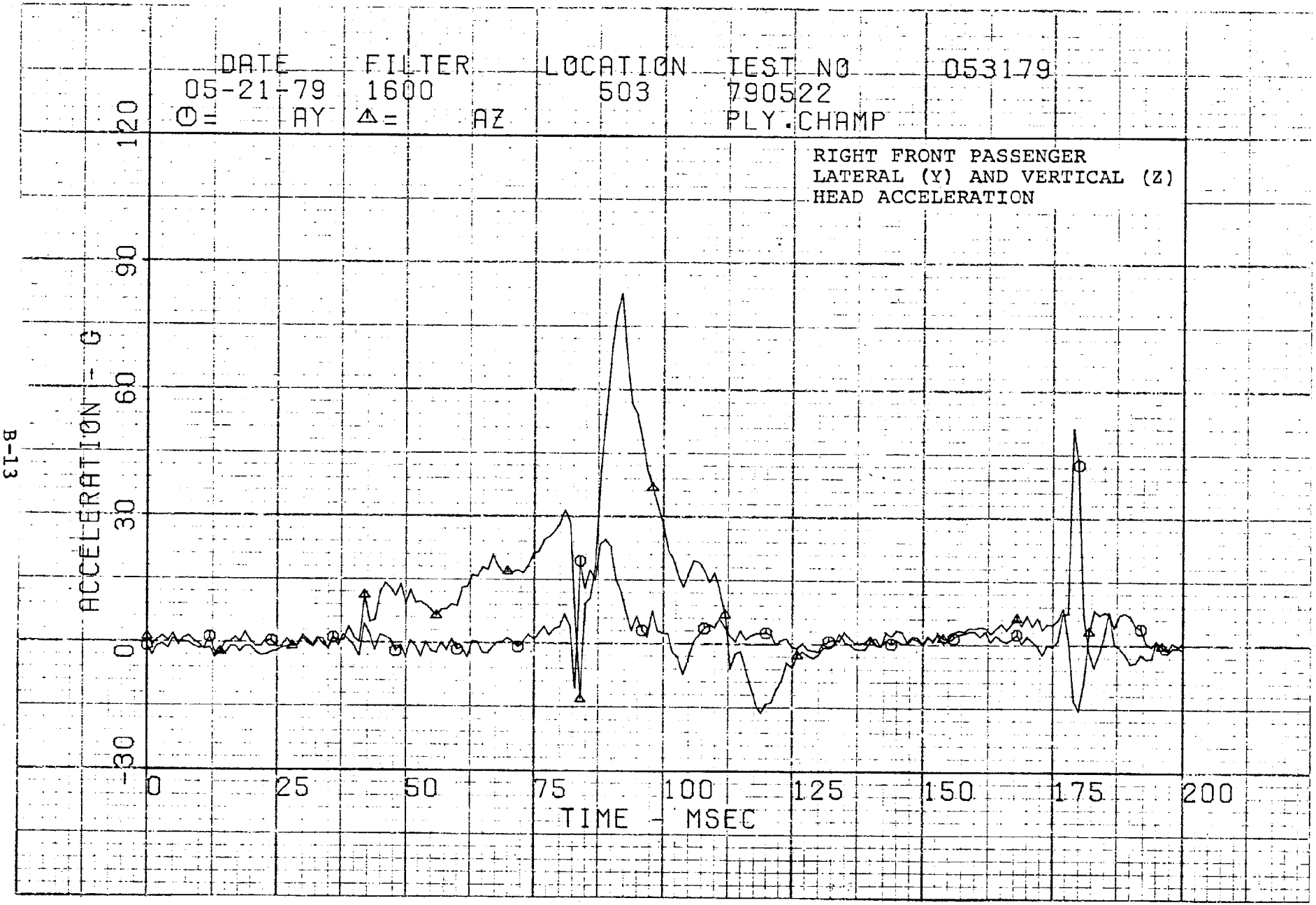
TIME - MSEC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Θ= AY
Δ= AZ
PLY. CHAMP
RIGHT FRONT PASSENGER
LATERAL (Y) AND VERTICAL (Z)
HEAD ACCELERATION
ACCELERATION - G
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90
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30
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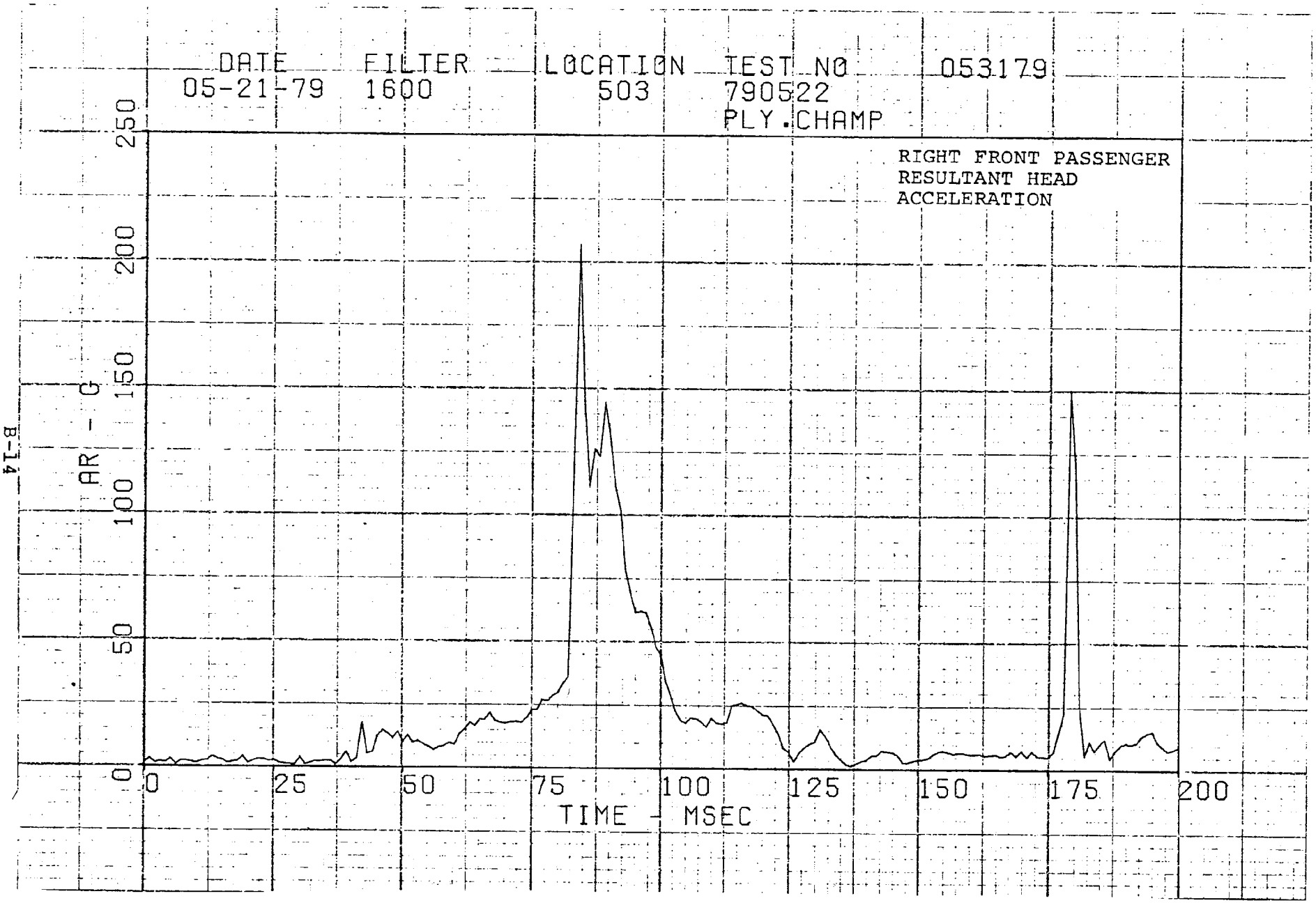
150
175
200
TIME - MSEC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RESULTANT HEAD
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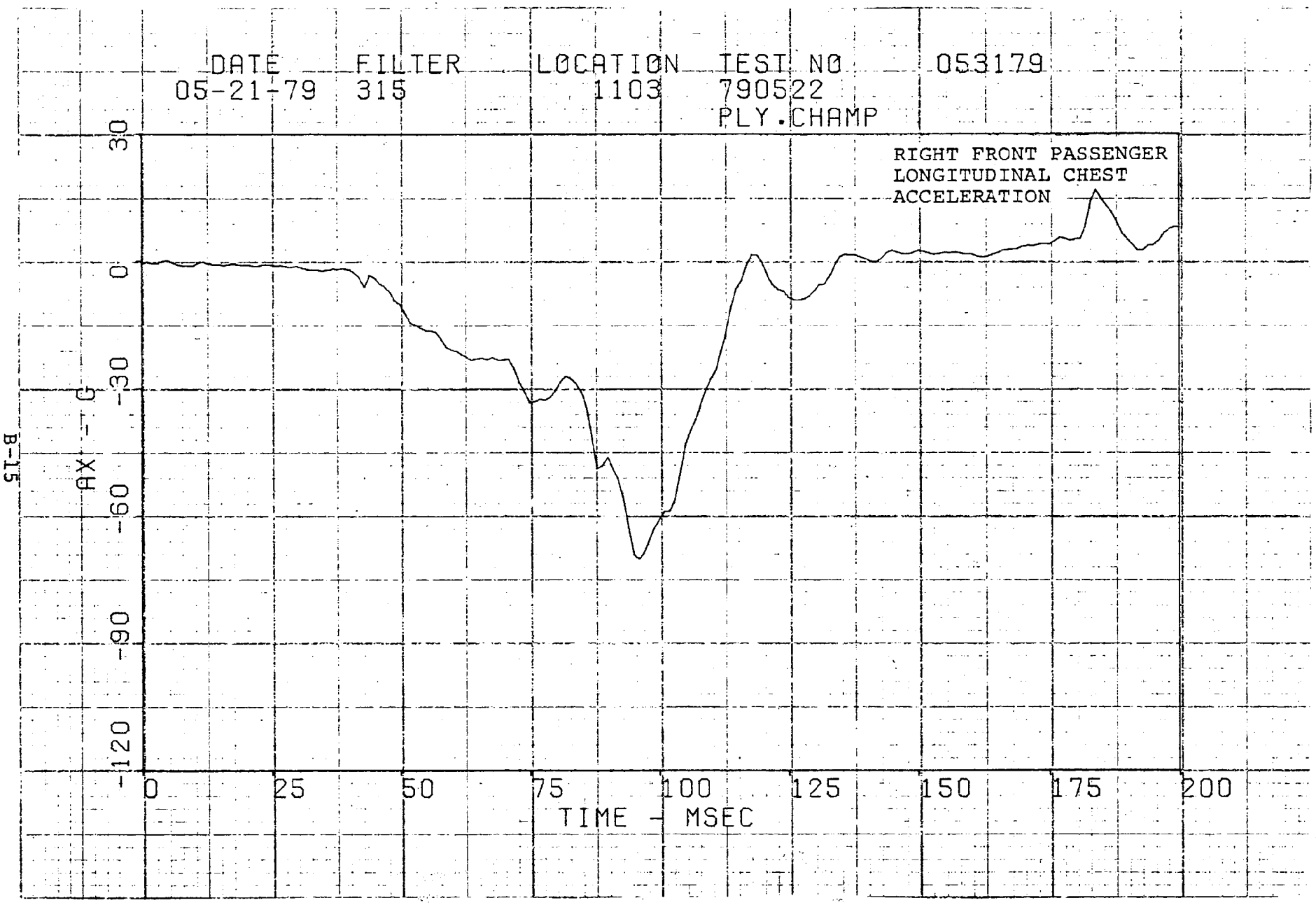
200
TIME - MSEC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ACCELERATION
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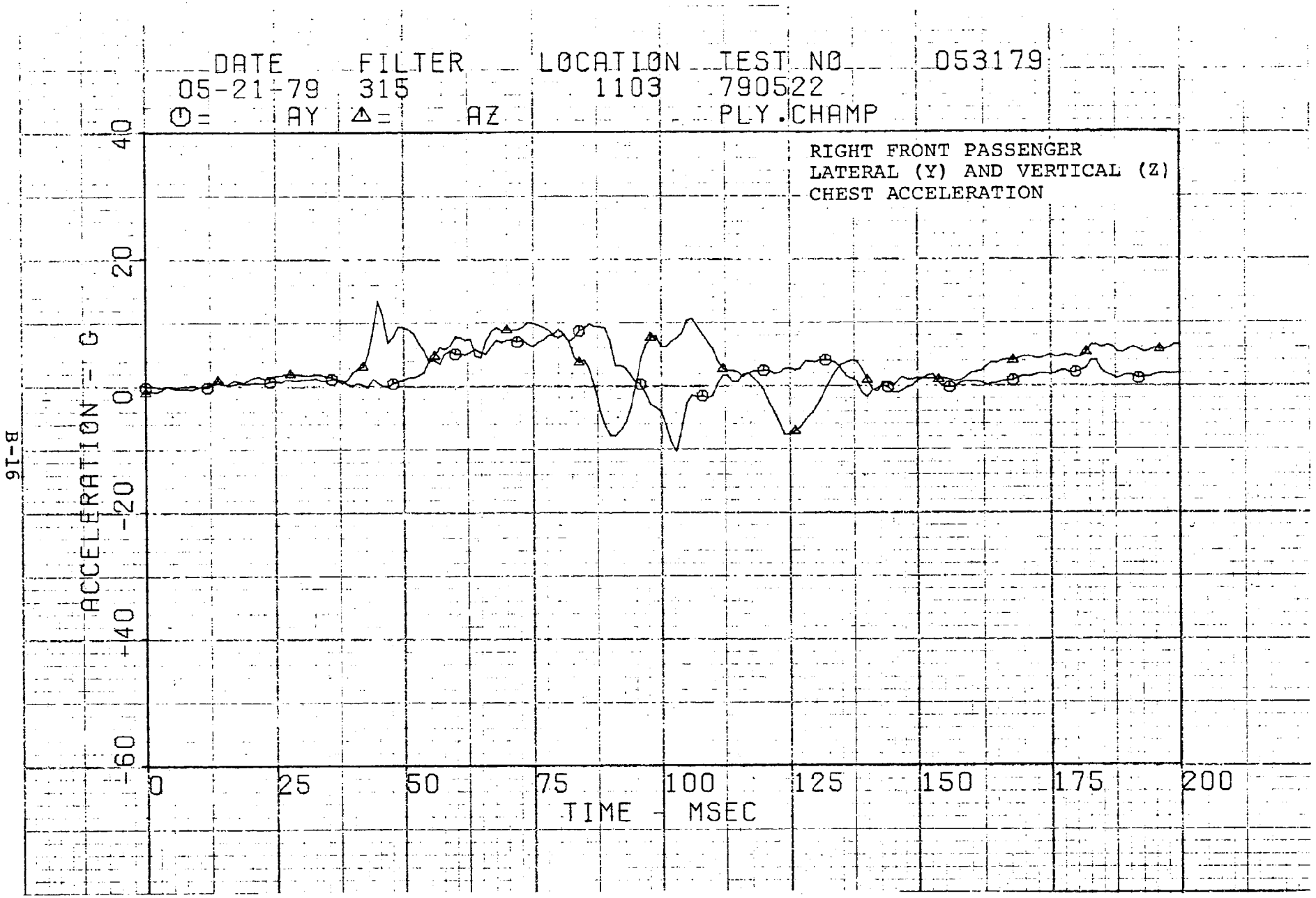
TIME - MSEC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PLY.CHAMP
Ⓞ= AY
△= AZ
RIGHT FRONT PASSENGER
LATERAL (Y) AND VERTICAL (Z)
CHEST ACCELERATION
ACCELERATION - G
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-40
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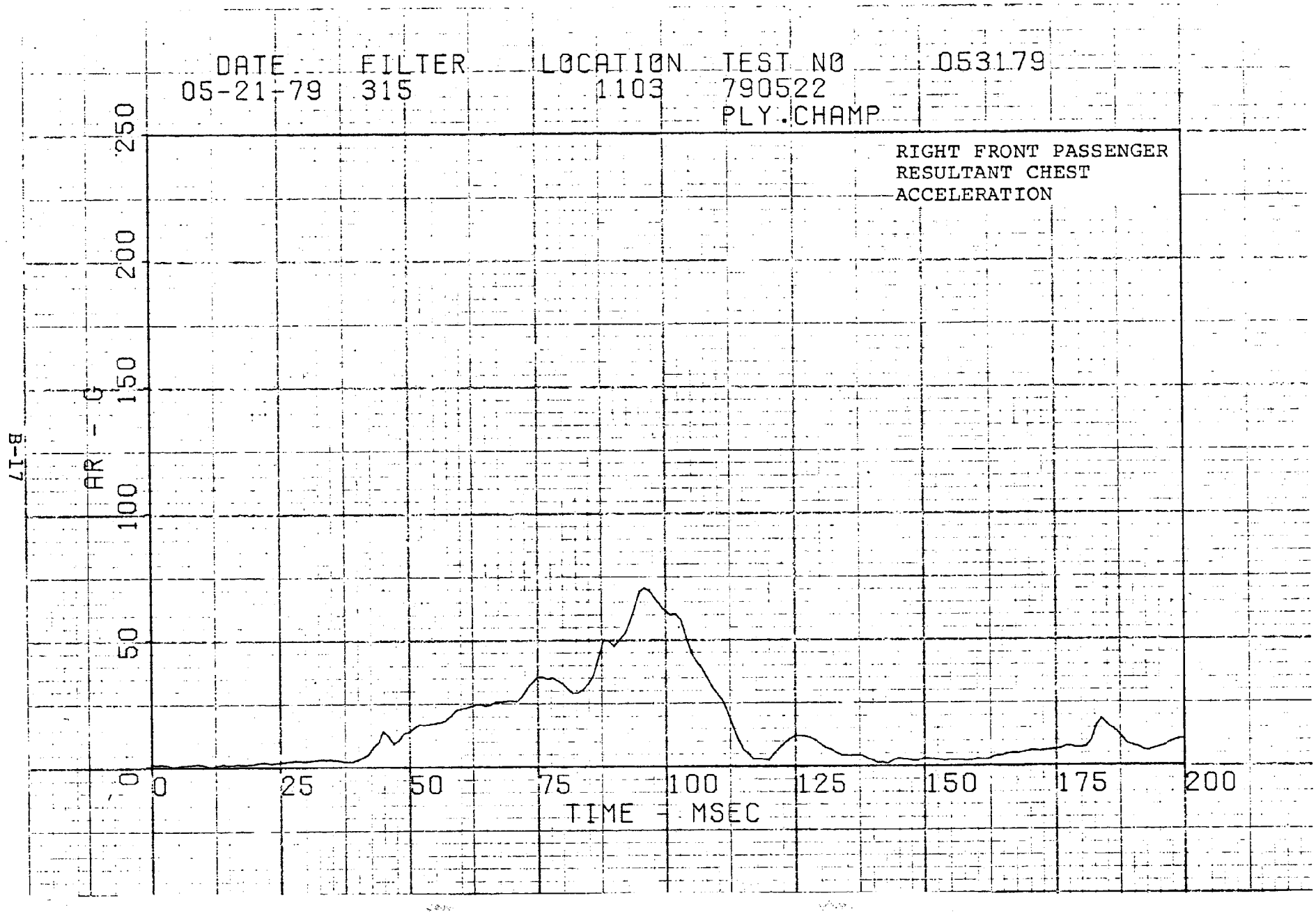
TIME - MSEC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053179
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RESULTANT CHEST
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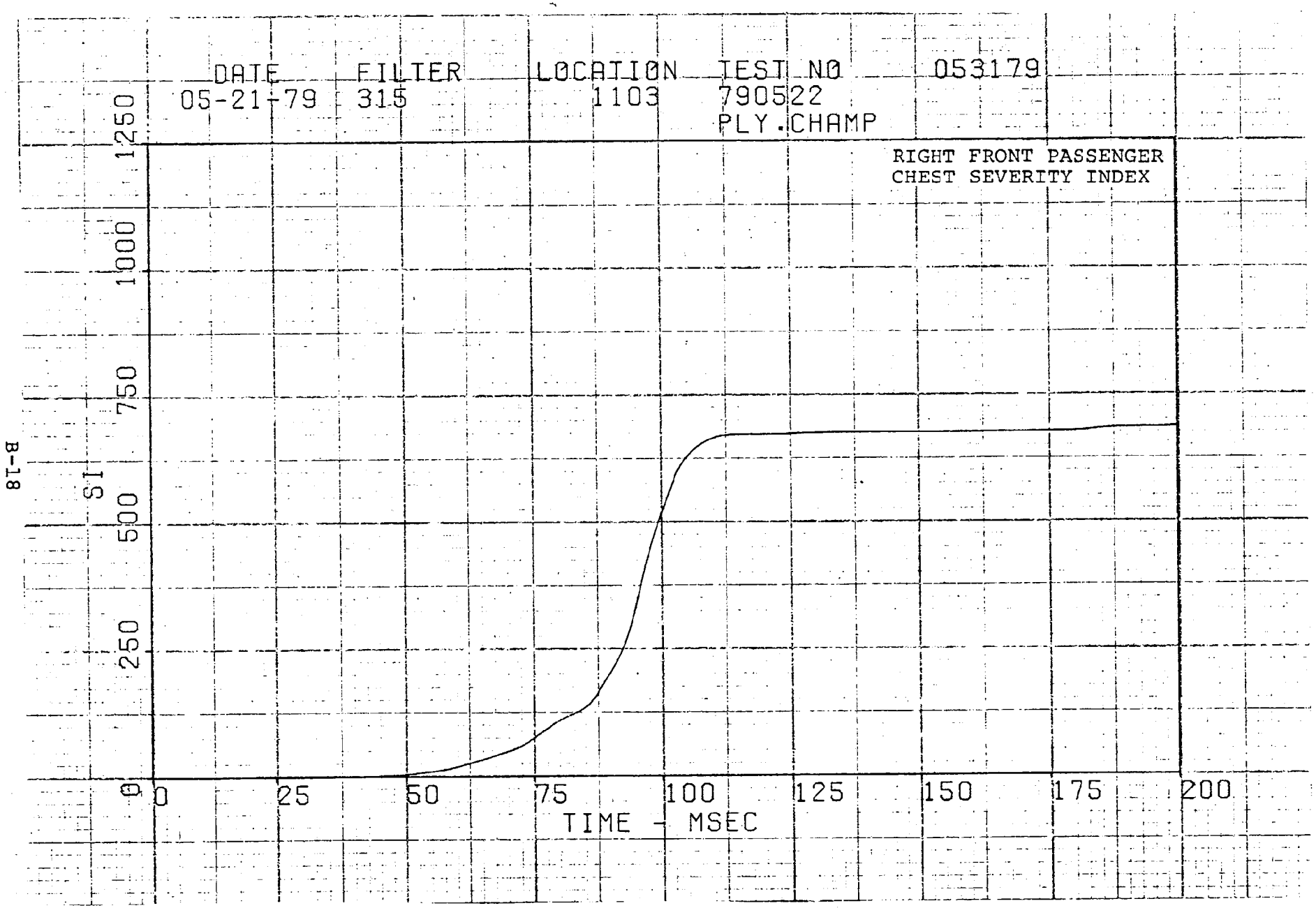
TIME - MSEC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FILTER
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LOCATION
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TEST NO
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053179
PLY.CHAMP
RIGHT FRONT PASSENGER
CHEST SEVERITY INDEX
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250
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750
1000
1250
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75
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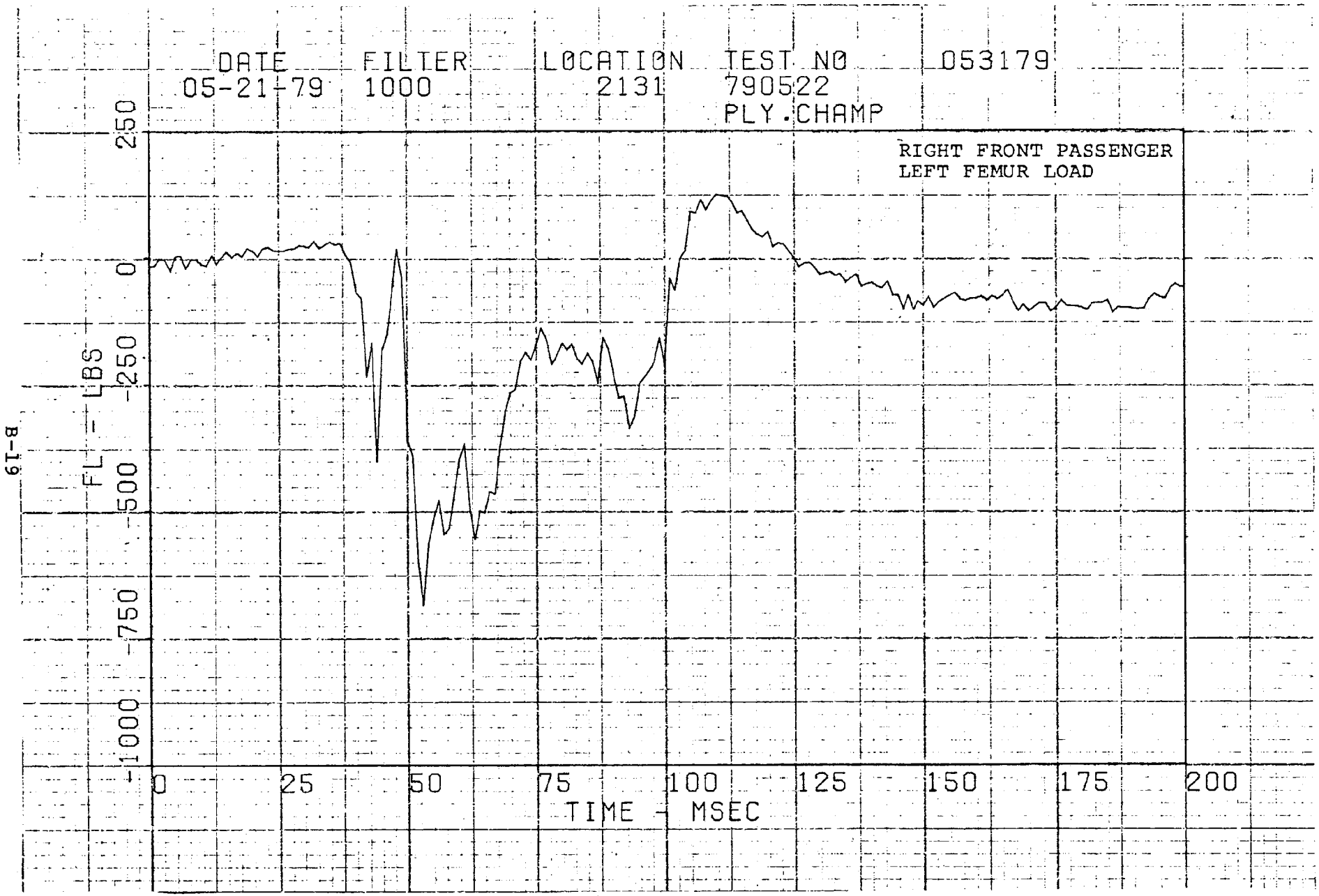
150
175
200
TIME - MSEC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FILTER
1000
LOCATION
2131
TEST NO
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PLY.CHAMP
053179
RIGHT FRONT PASSENGER
LEFT FEMUR LOAD
250
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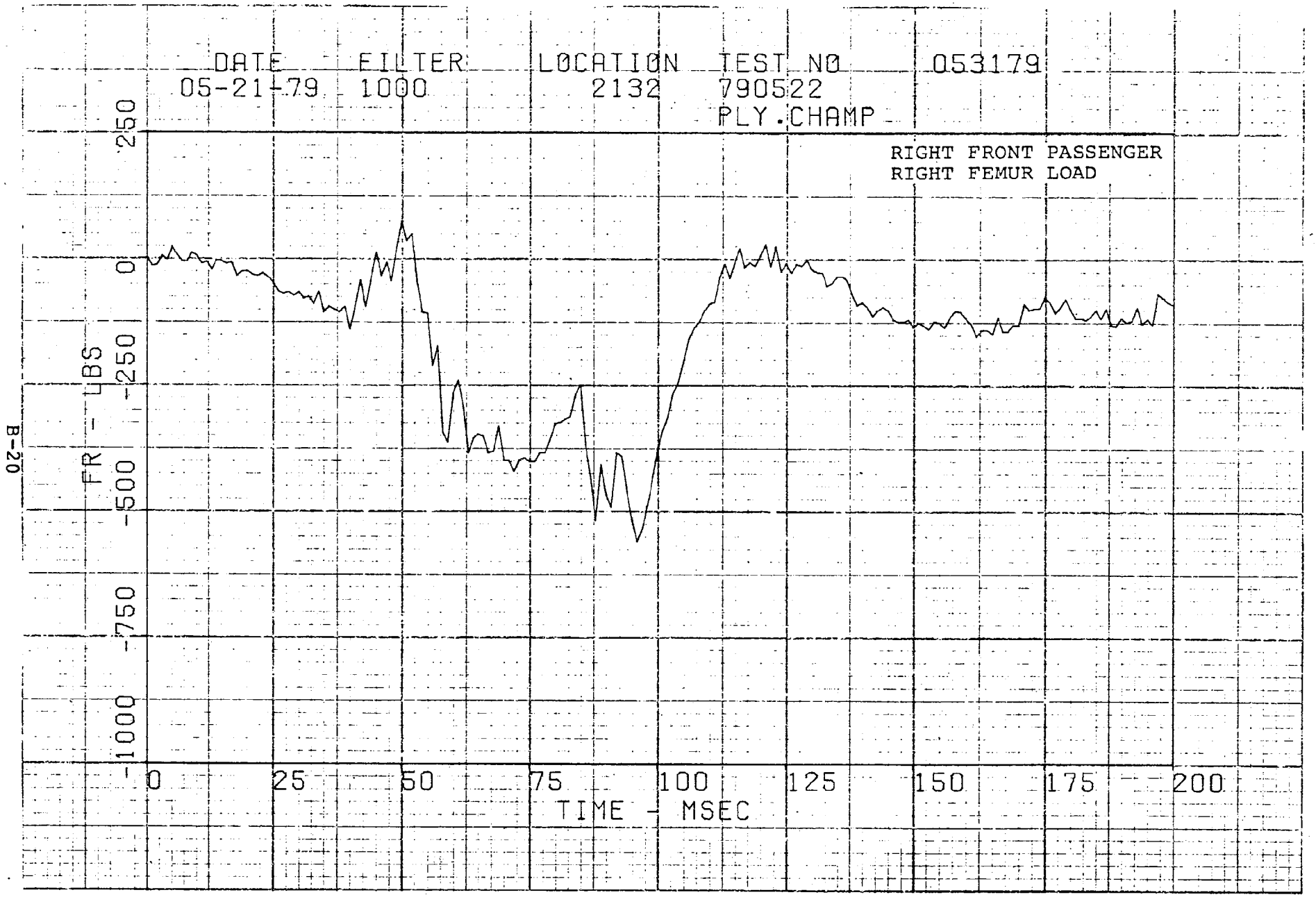
-750
-1000
FL - LBS
0
25
50
75
100
125
150
175
200
TIME - MSEC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FILTER
1000
LOCATION
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TEST NO
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PLY.CHAMP
053179
RIGHT FRONT PASSENGER
RIGHT FEMUR LOAD
250
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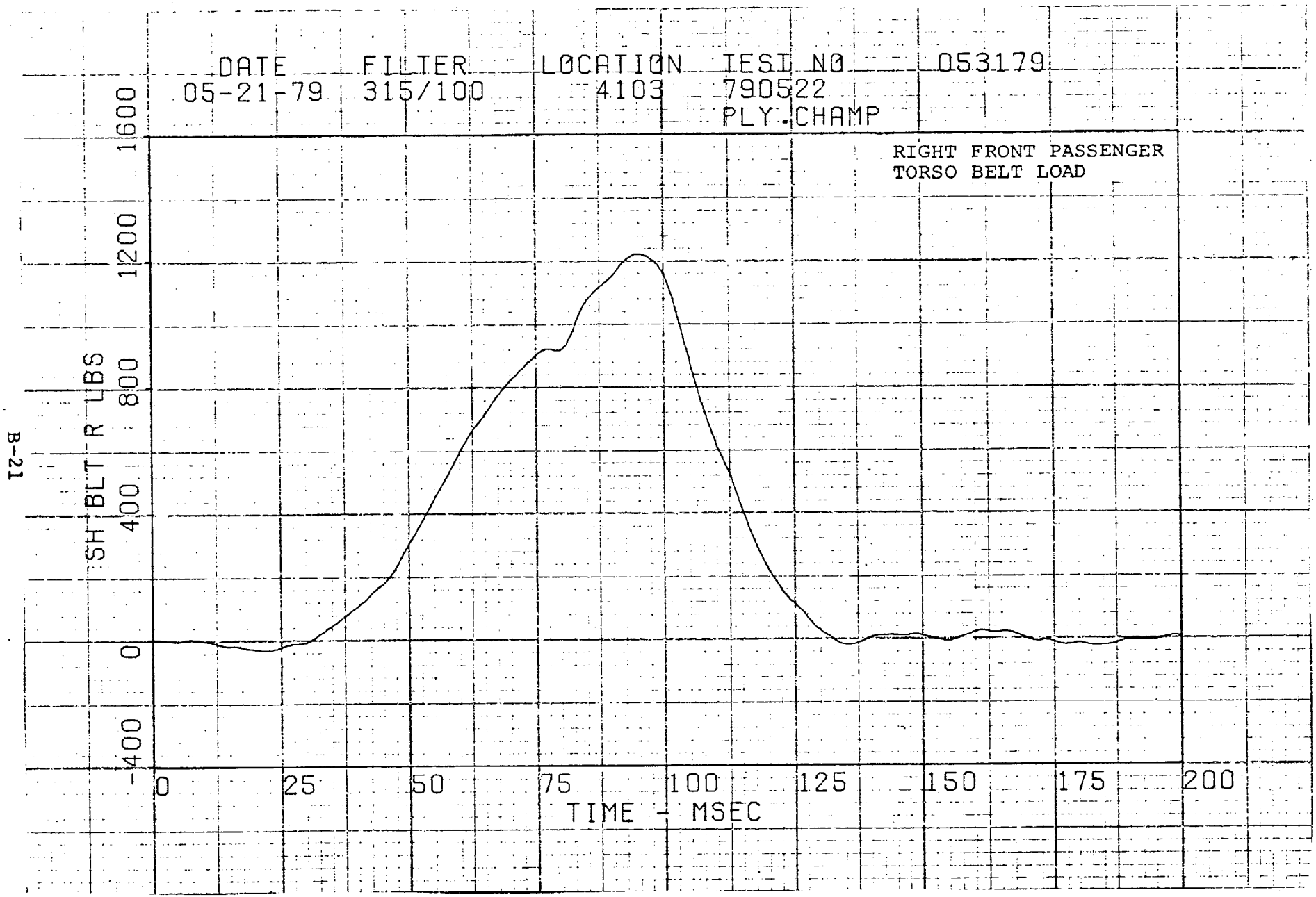
-500
-750
-1000
FR - LBS
0
25
50
75
100
125
150
175
200
TIME - MSEC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FILTER
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LOCATION
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053179
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TORSO BELT LOAD
SH BLT R LBS
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1200
800
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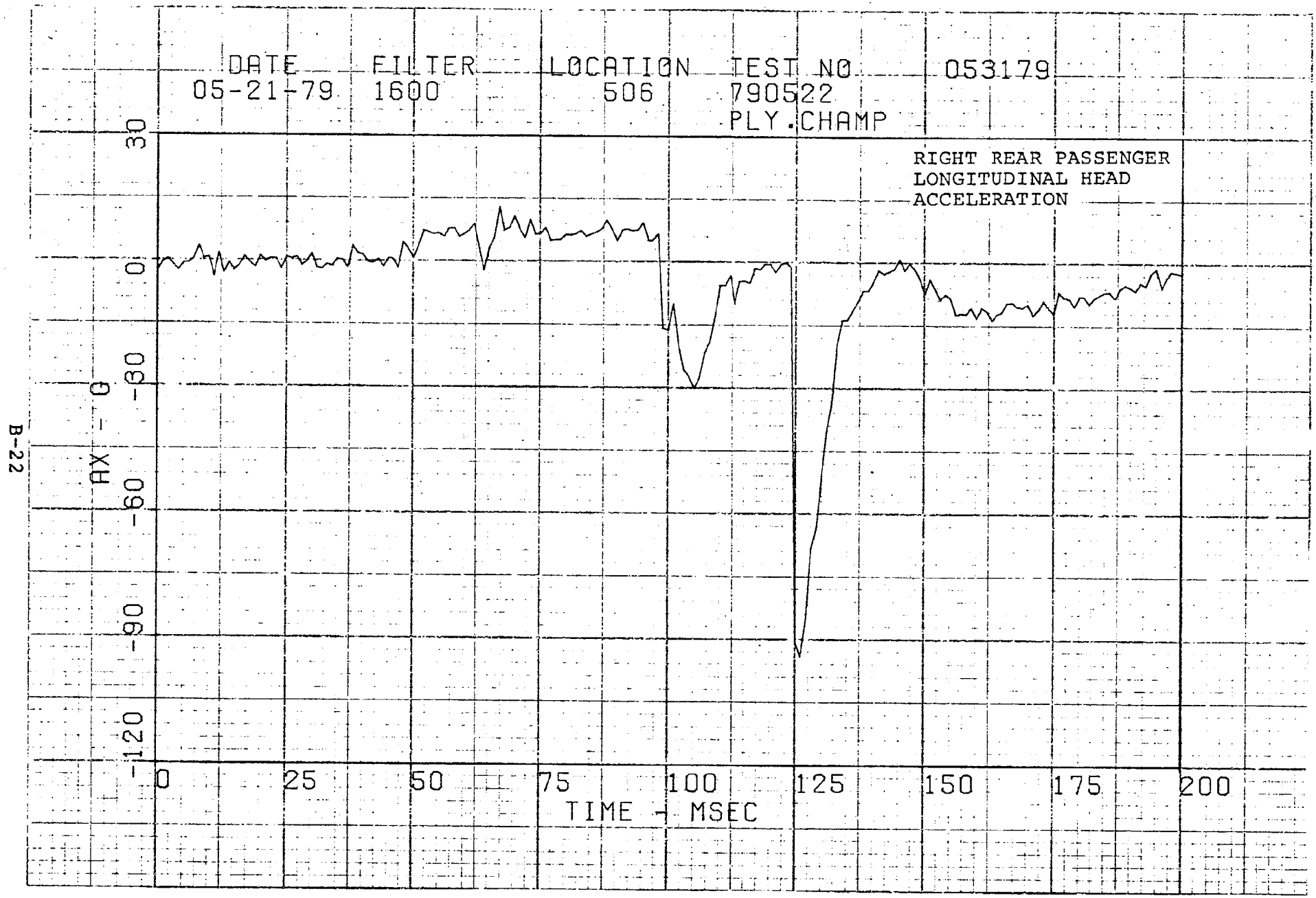
TIME - MSEC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FILTER
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LOCATION
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053179
RIGHT REAR PASSENGER
LONGITUDINAL HEAD
ACCELERATION
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-60
-90
-120
AX - G
0
25
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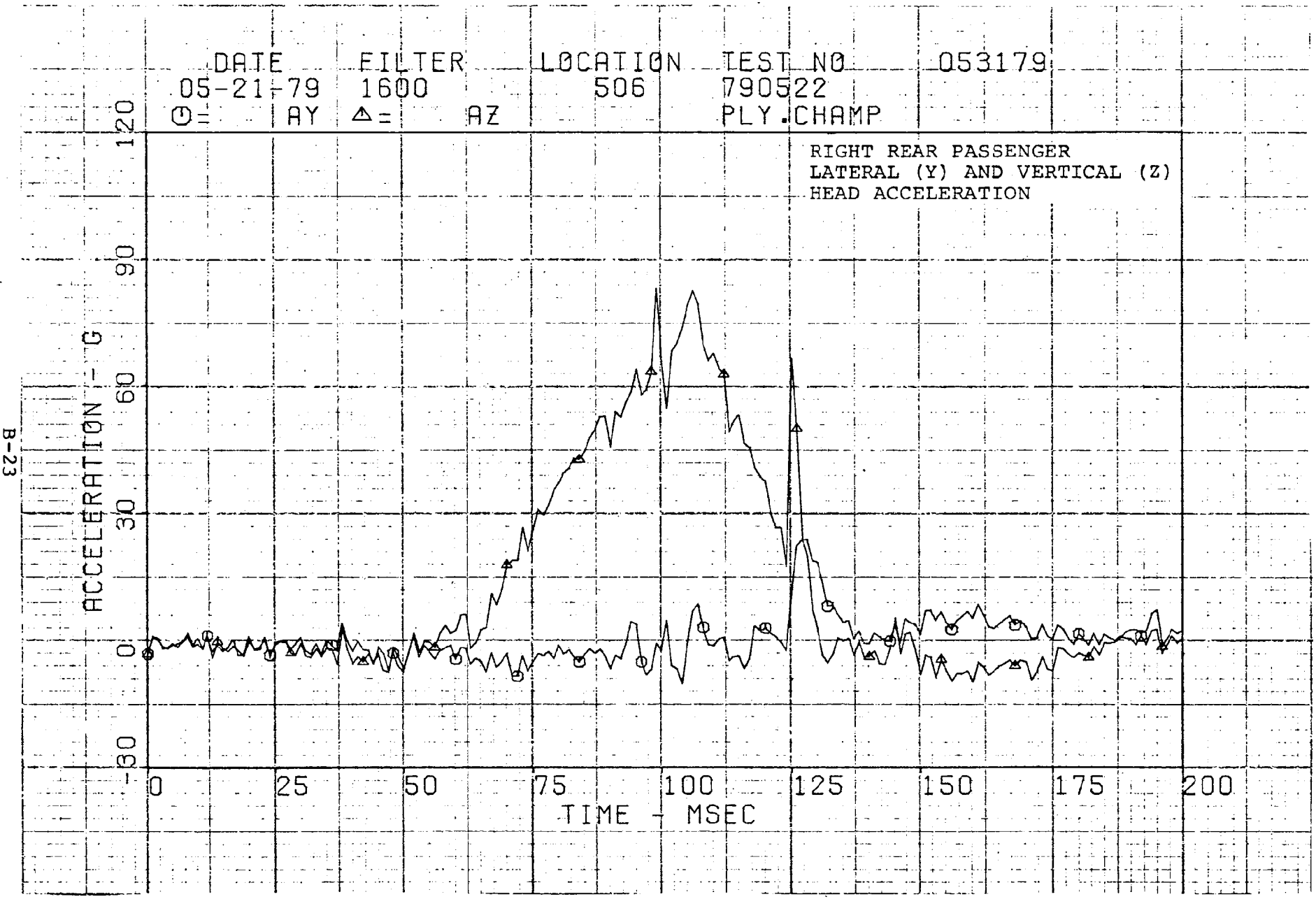
75
100
125
150
175
200
TIME - MSEC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PLY. CHAMP
RIGHT REAR PASSENGER
LATERAL (Y) AND VERTICAL (Z)
HEAD ACCELERATION
ACCELERATION - G
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90
60
30
0
-30
0
25
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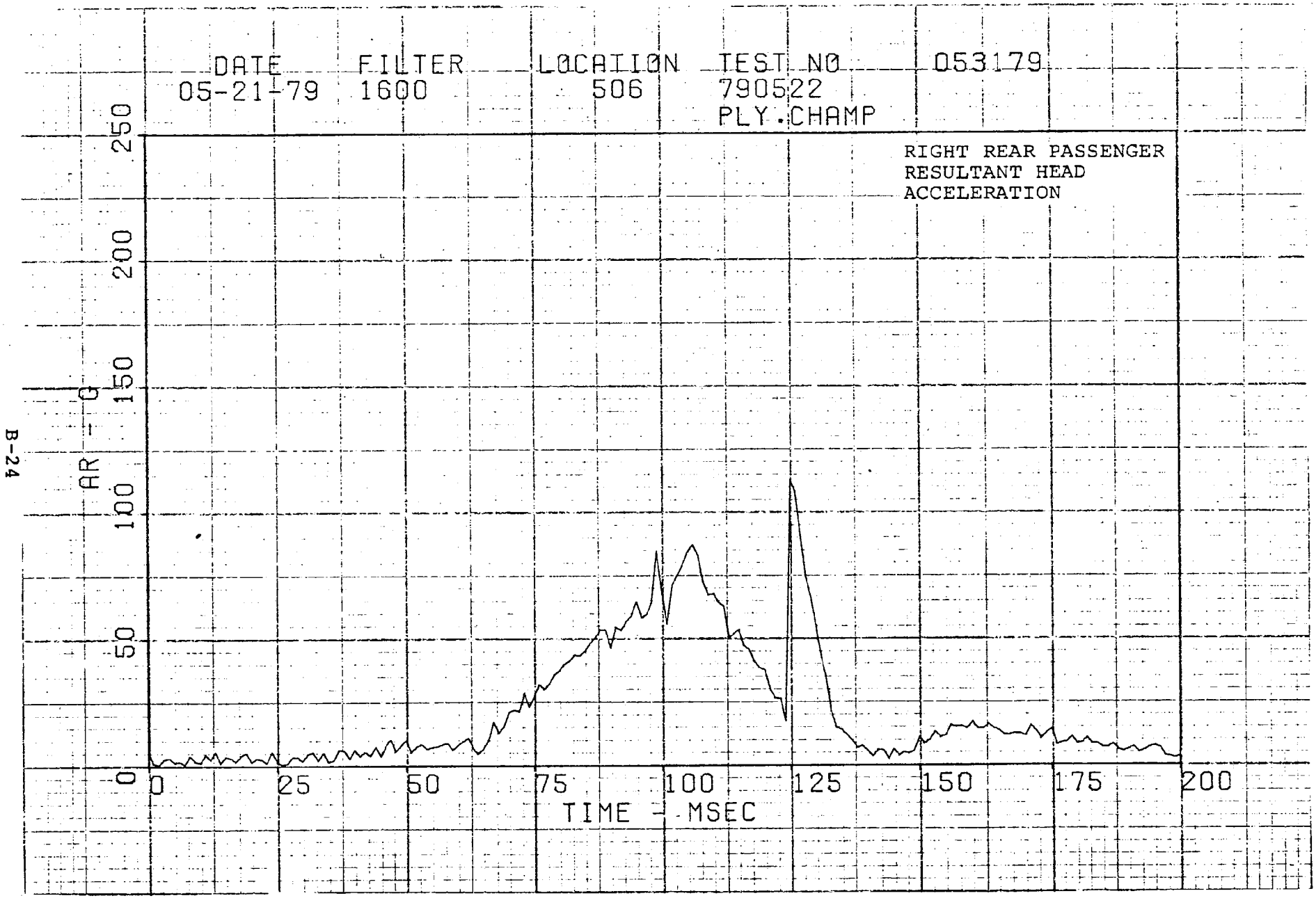
75
100
125
150
175
200
TIME - MSEC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LOCATION
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TEST NO
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053179
RIGHT REAR PASSENGER
RESULTANT HEAD
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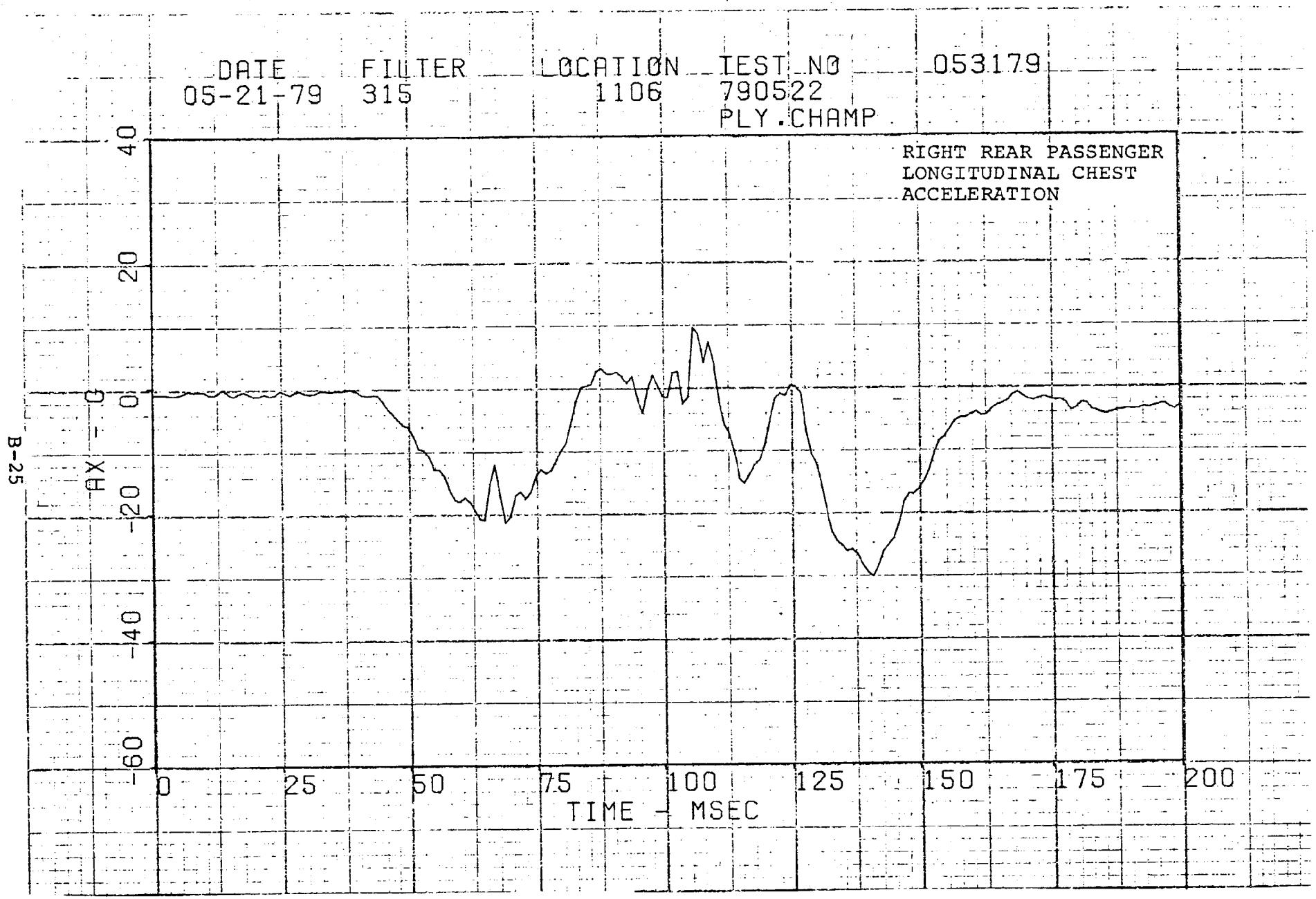
150
175
200
TIME - MSEC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FILTER
315
LOCATION
1106
TEST NO
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PLY.CHAMP
053179
RIGHT REAR PASSENGER
LONGITUDINAL CHEST
ACCELERATION
AX - G
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-20
-40
-60
0
25
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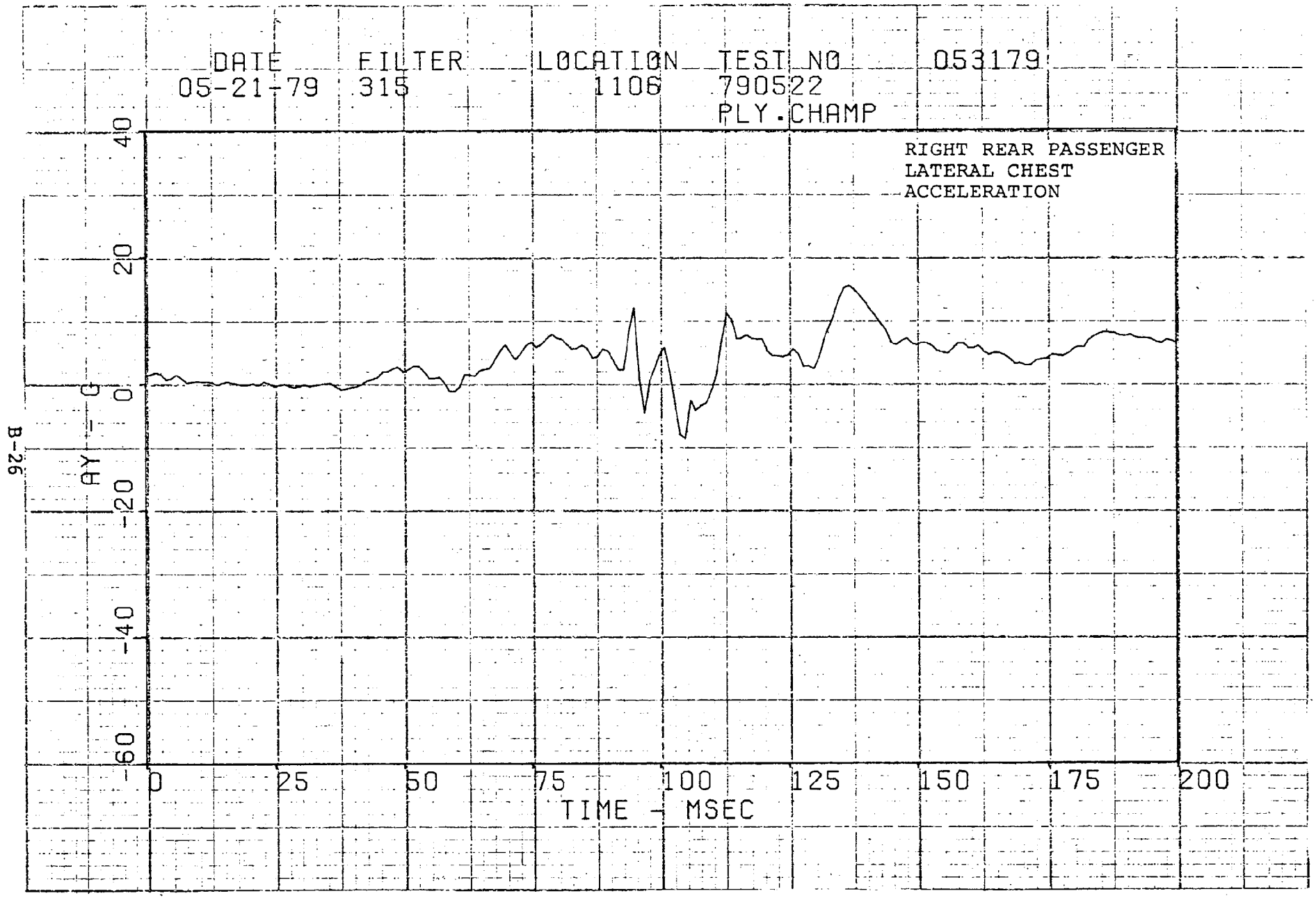
75
100
125
150
175
200
TIME - MSEC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FILTER
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LOCATION
1106
TEST NO
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053179
PLY. CHAMP
RIGHT REAR PASSENGER
LATERAL CHEST
ACCELERATION
AY - G
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-20
-40
-60
0
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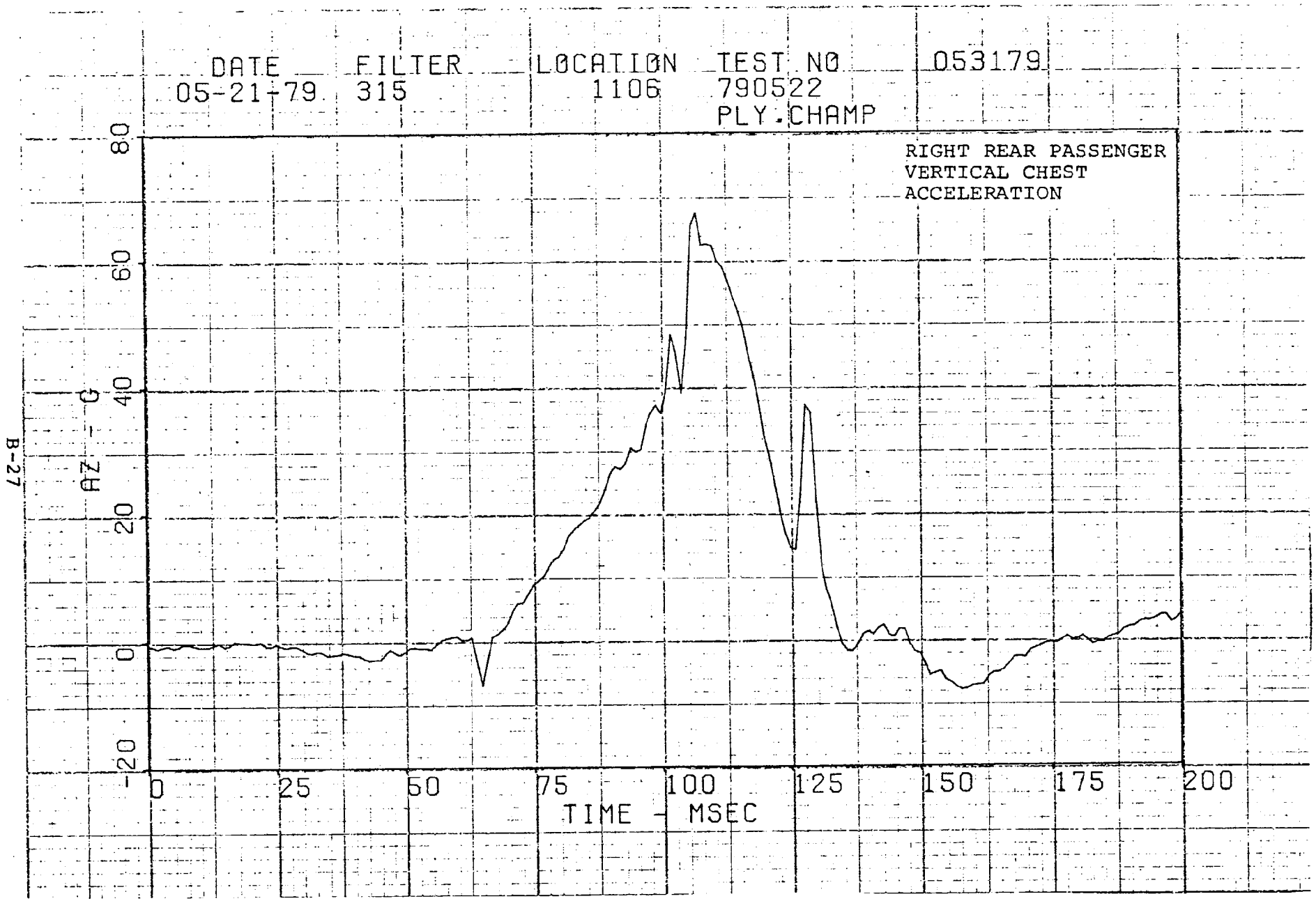
75
100
125
150
175
200
TIME - MSEC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FILTER
315
LOCATION
1106
TEST NO
790522
053179
PLY-CHAMP
RIGHT REAR PASSENGER
VERTICAL CHEST
ACCELERATION
AZ - G
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40
20
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-20
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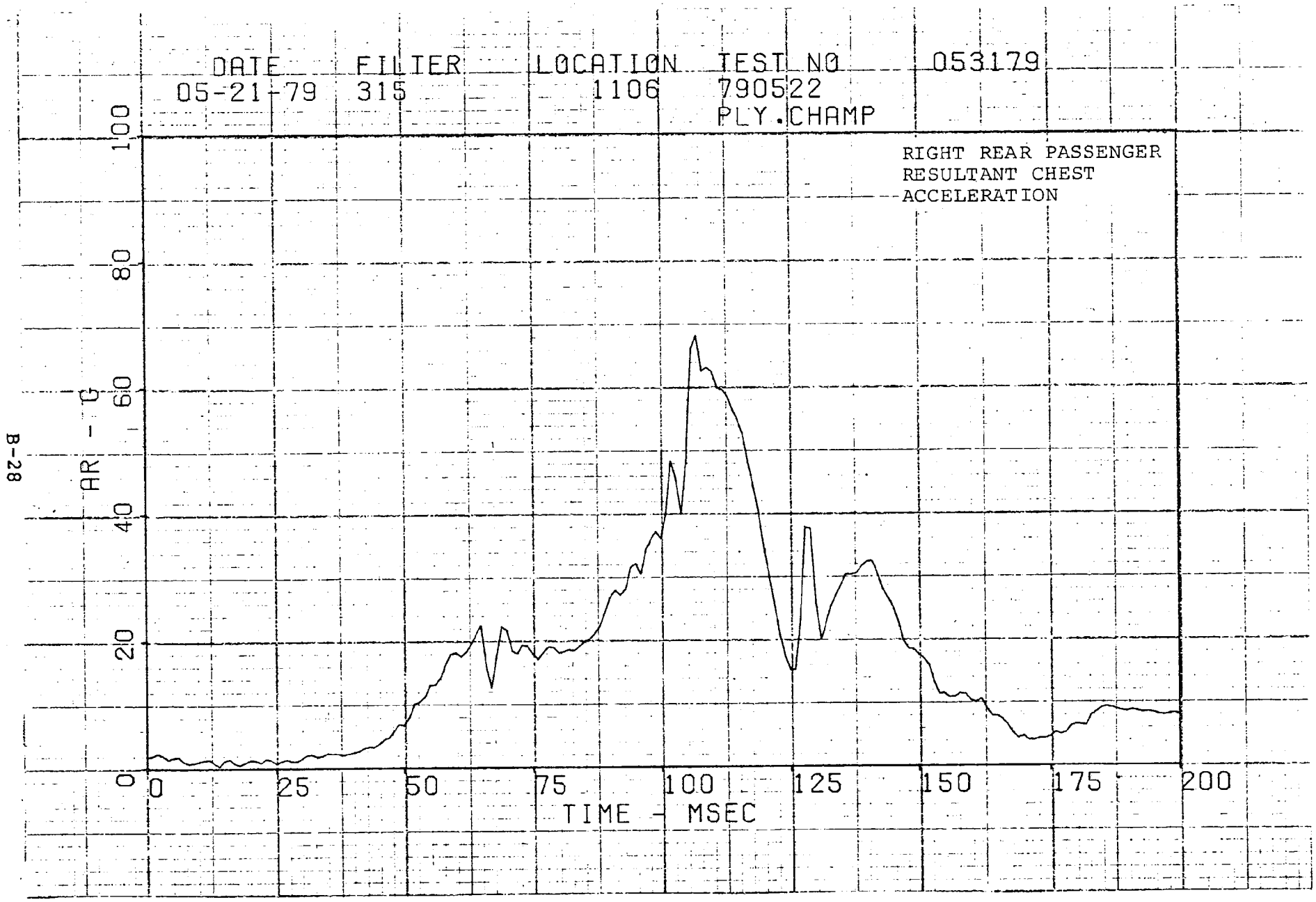
75
100
125
150
175
200
TIME - MSEC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05-21-79
FILTER
315
LOCATION
1106
TEST NO
790522
PLY.CHAMP
053179
RIGHT REAR PASSENGER
RESULTANT CHEST
ACCELERATION
AR - G
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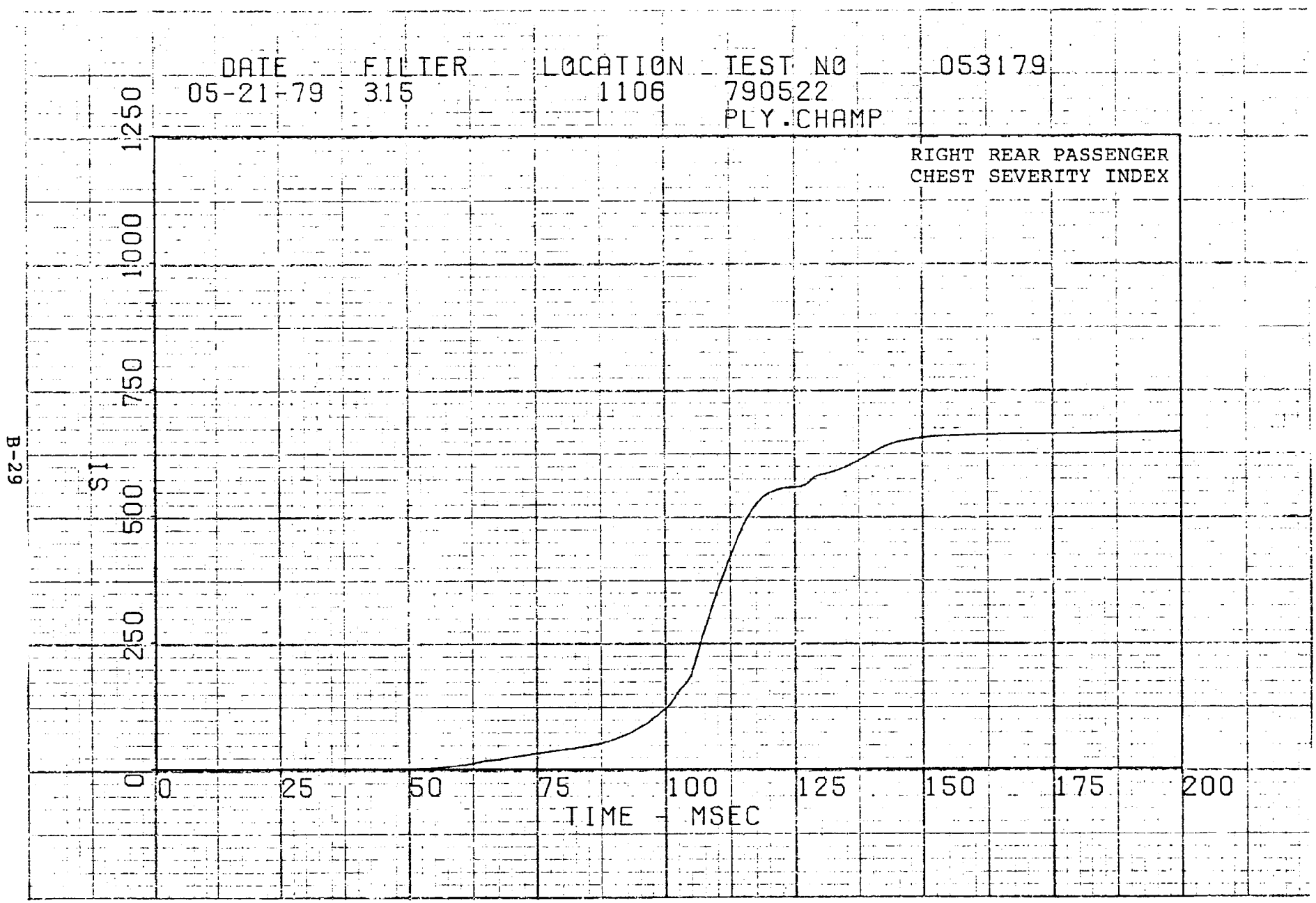
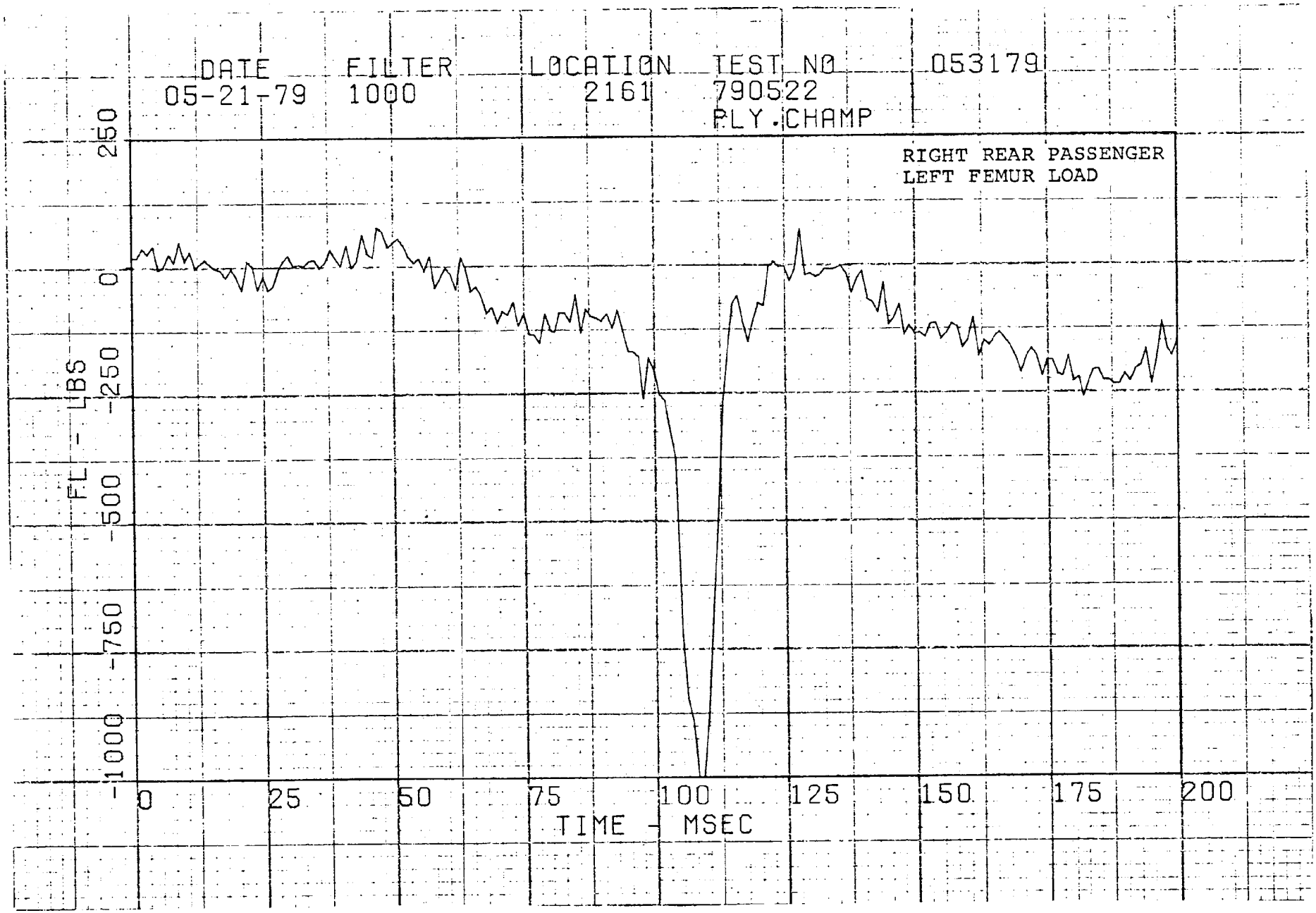
20
40
60
80
100
0
25
50
75
100
125
150
175
200
TIME - MSEC


DATE
05-21-79
FILTER
315
LOCATION
1106
TEST NO
790522
PLY.CHAMP
053179
RIGHT REAR PASSENGER
CHEST SEVERITY INDEX
1250
1000
750
500
250
0
SI
0
25
50
75
100
125
150
175
200
TIME - MSEC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FILTER
1000
LOCATION
2161
TEST NO
790522
PLY.CHAMP
053179
RIGHT REAR PASSENGER
LEFT FEMUR LOAD
FL - LBS
250
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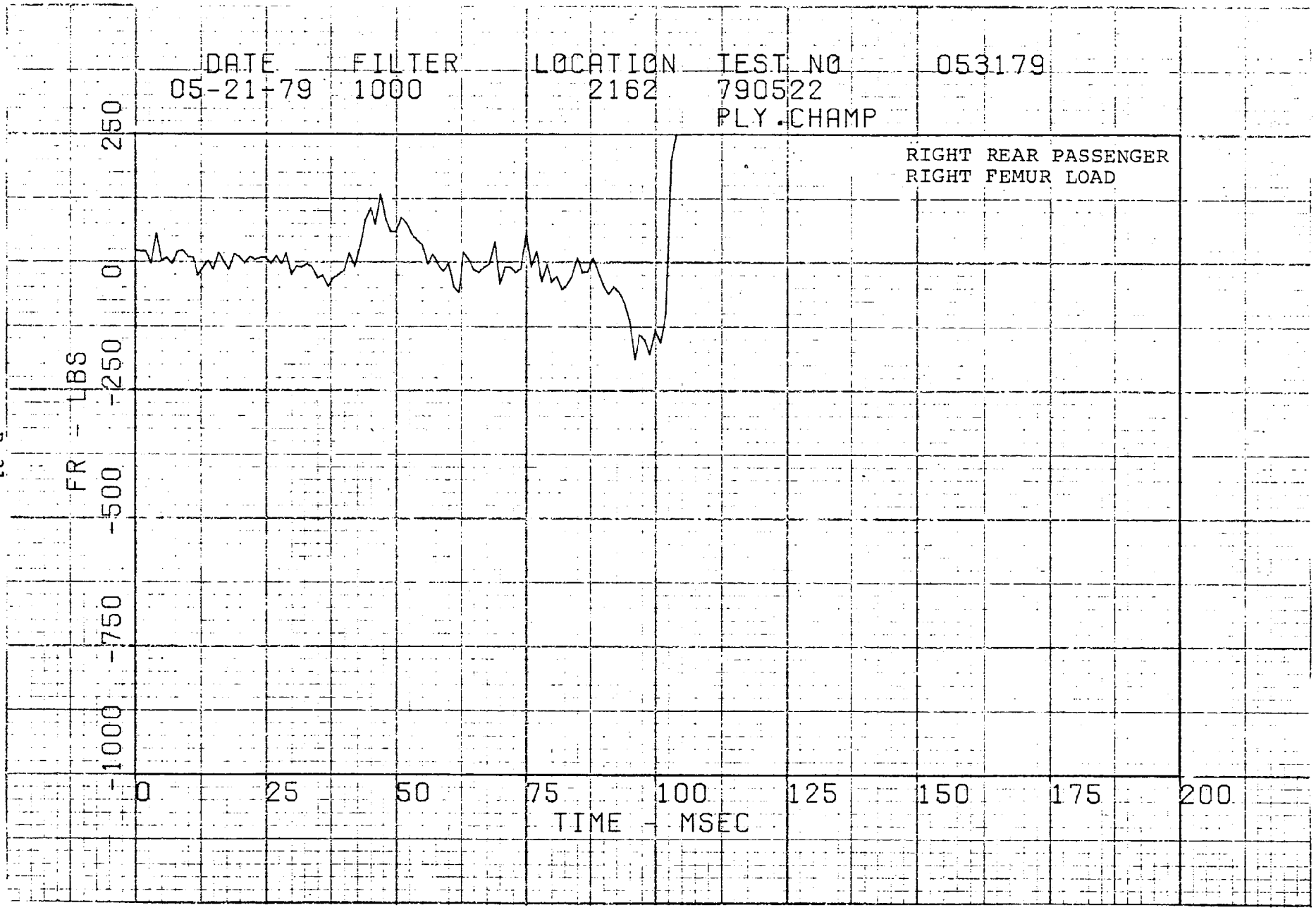
-250
-500
-750
-1000
0
25
50
75
100
125
150
175
200
TIME - MSEC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2162
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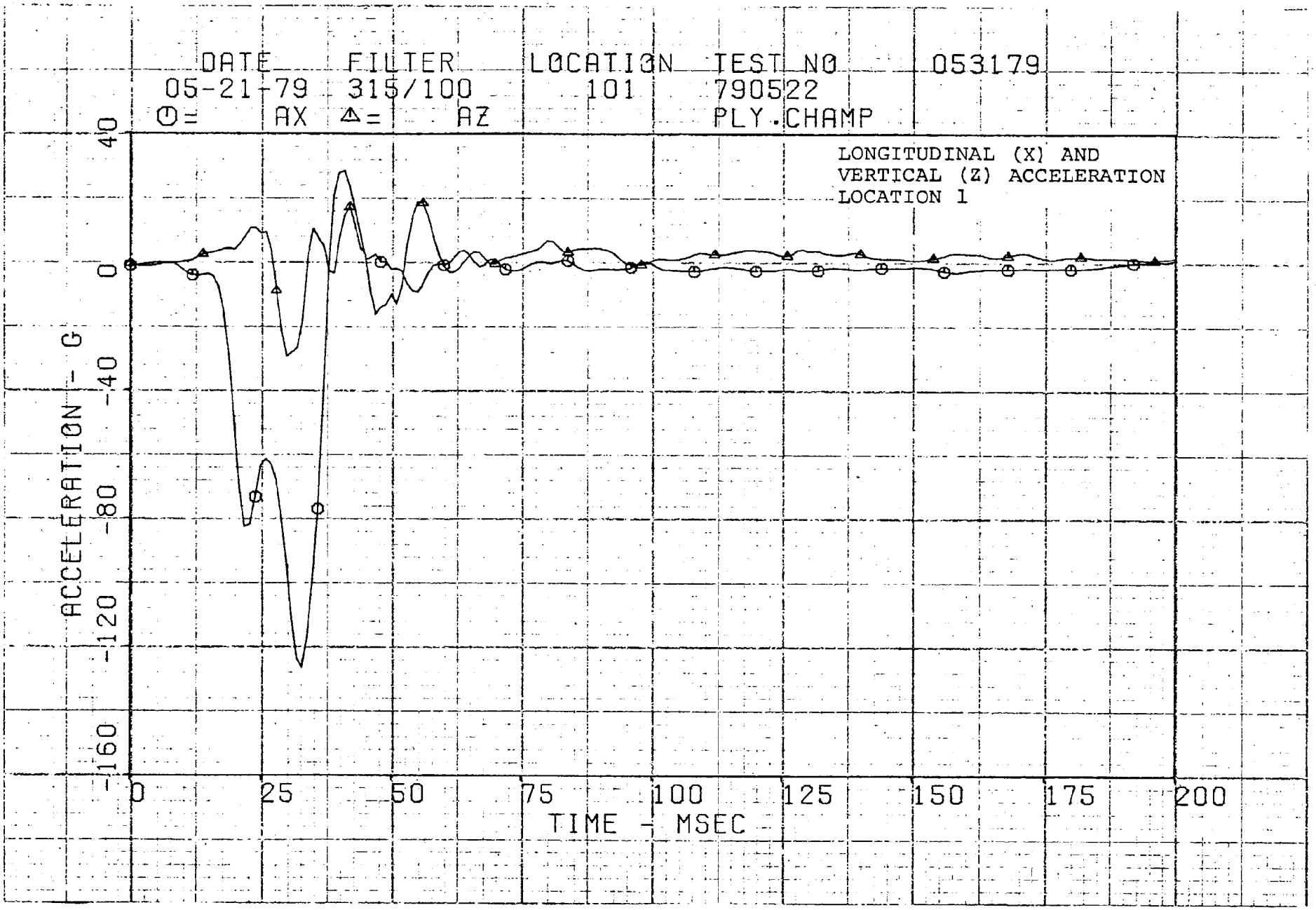
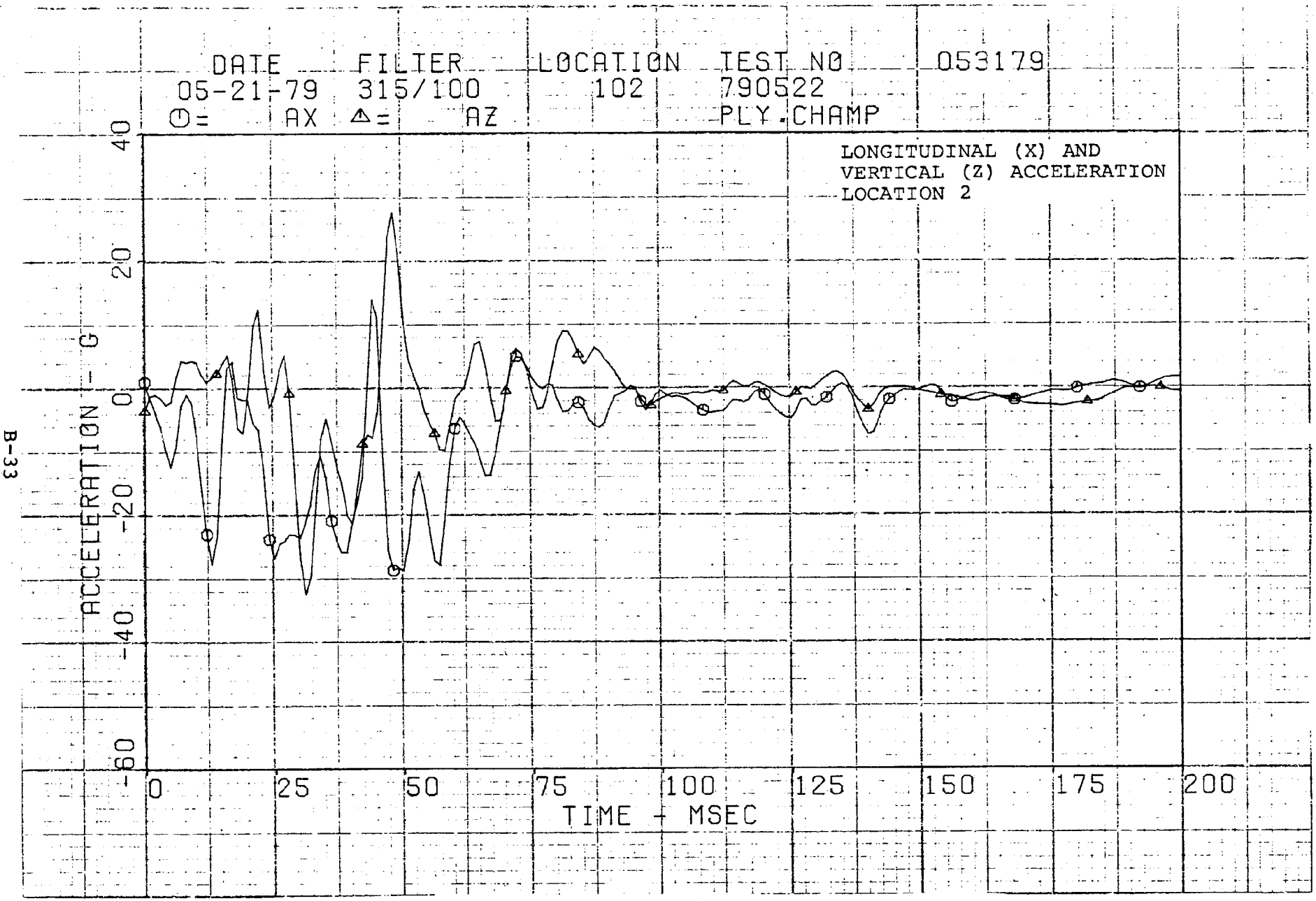
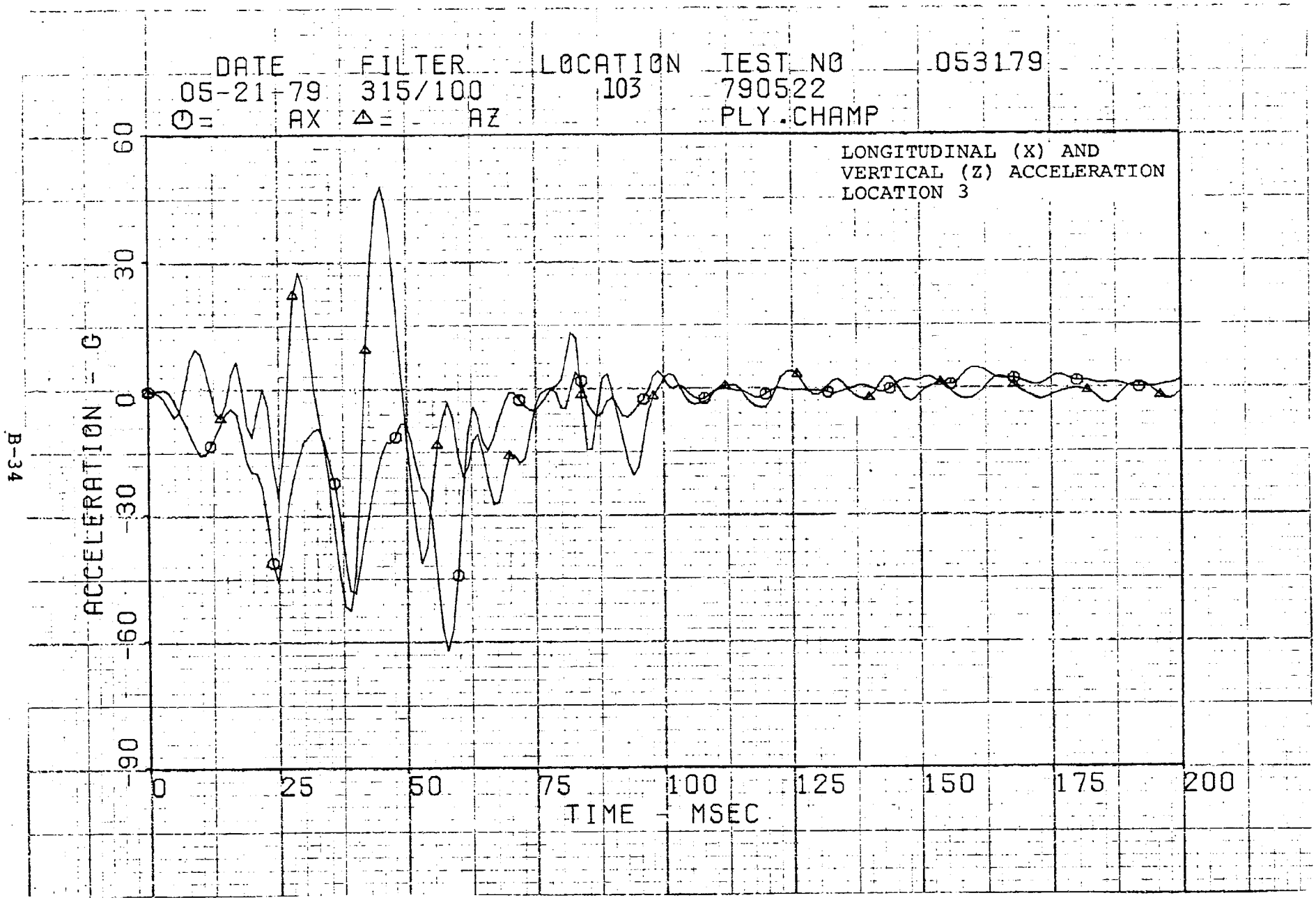
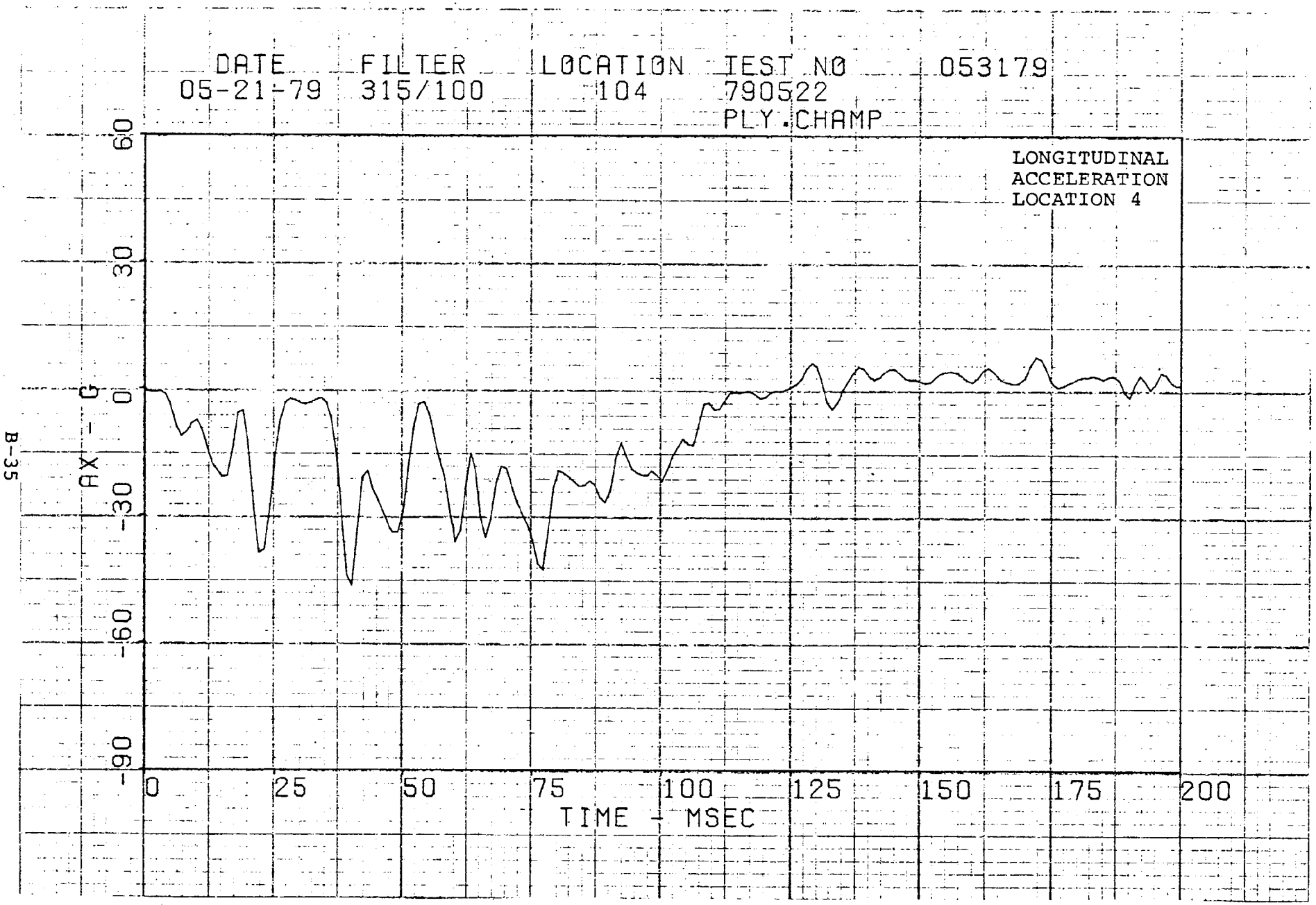
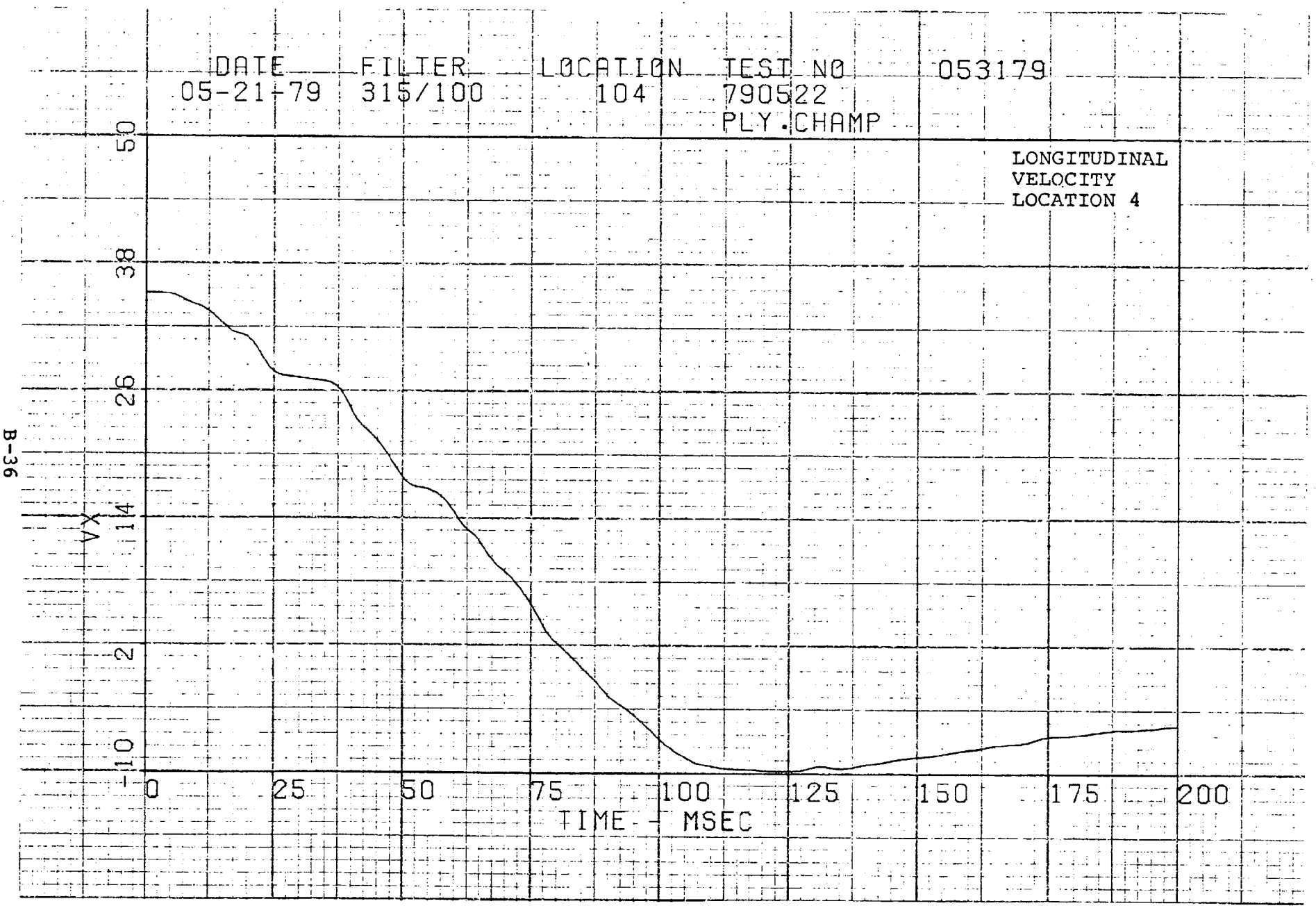
790522
PLY.CHAMP
053179
RIGHT REAR PASSENGER
RIGHT FEMUR LOAD
FR - LBS
250
0
-250
-500
-750
-1000
0
25
50
75
100
125
150
175
200
TIME - MSEC

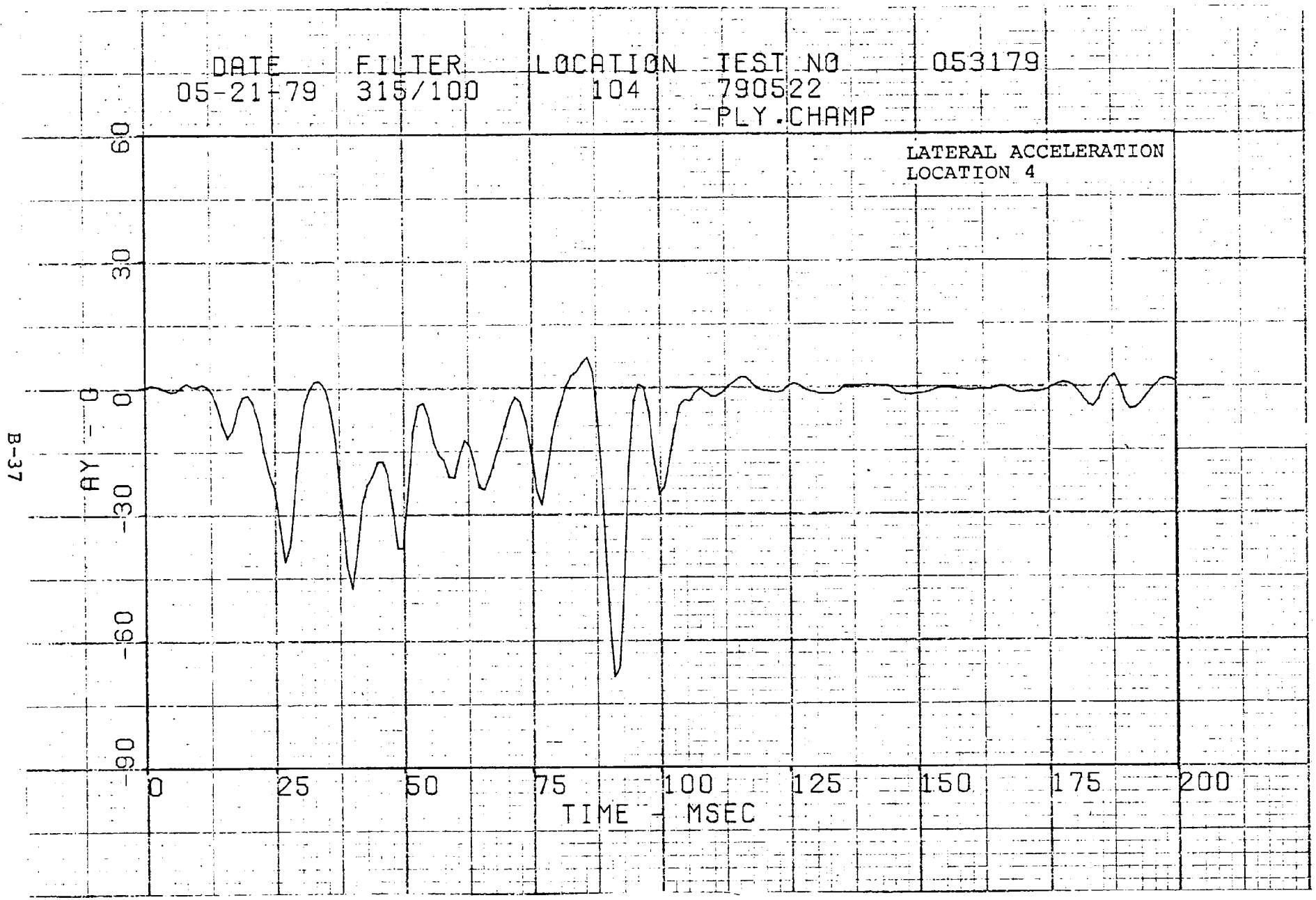

DATE
05-21-79
FILTER
315/100
LOCATION
101
TEST NO
053179
790522
PLY.CHAMP
⊙= AX
△= AZ
LONGITUDINAL (X) AND
VERTICAL (Z) ACCELERATION
LOCATION 1
ACCELERATION - G
40
0
-40
-80
-120
-160
0
25
50
75
100
125
150
175
200
TIME - MSEC

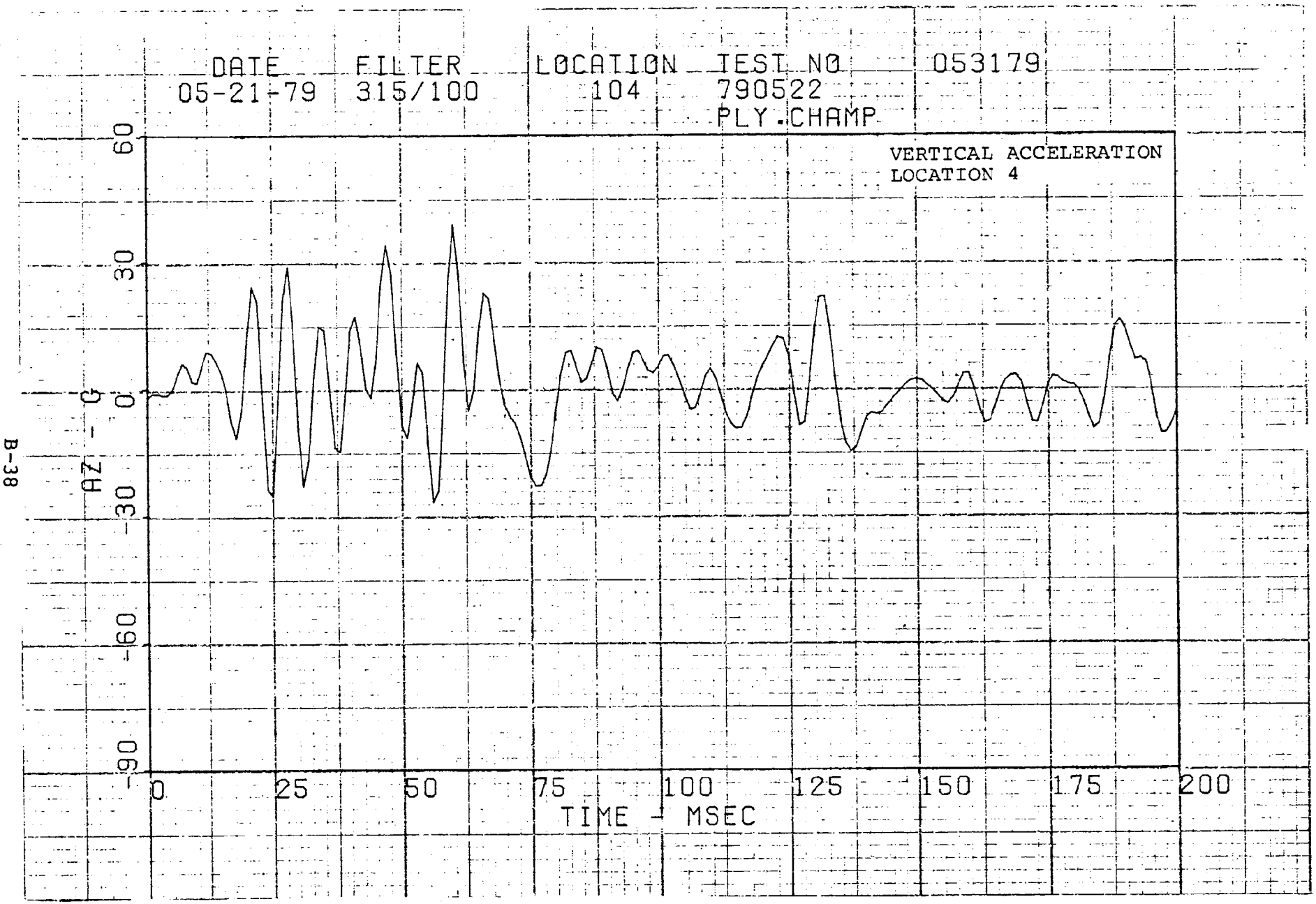

DATE
05-21-79
FILTER
315/100
LOCATION
102
TEST NO
790522
053179
PLY.CHAMP
○= AX △= AZ
LONGITUDINAL (X) AND
VERTICAL (Z) ACCELERATION
LOCATION 2
ACCELERATION - G
40
20
0
-20
-40
-60
0
25
50
75
100
125
150
175
200
TIME - MSEC

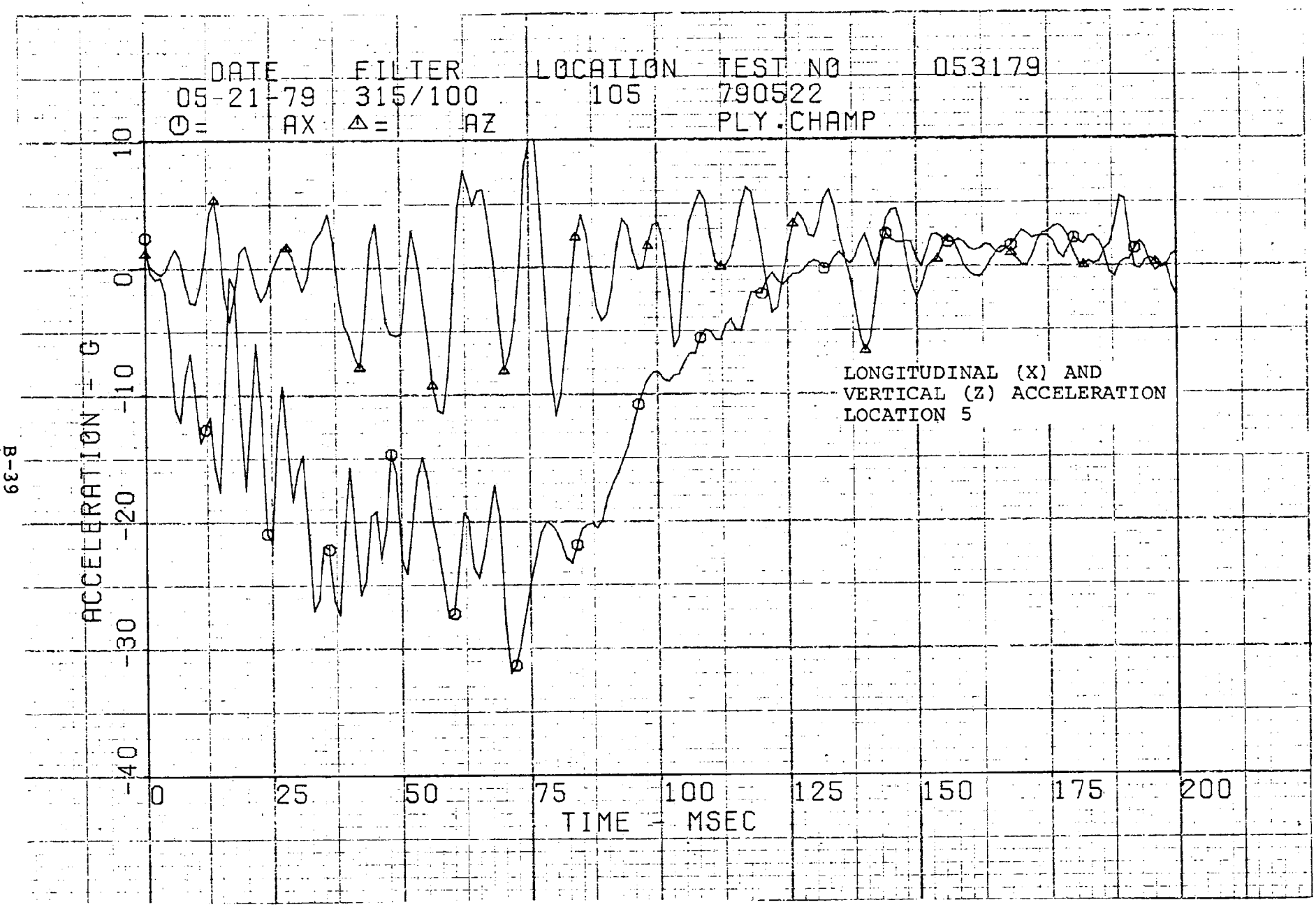

DATE
05-21-79
FILTER
315/100
LOCATION
103
TEST NO
790522
053179
⊖ = AX △ = AZ
PLY-CHAMP
LONGITUDINAL (X) AND
VERTICAL (Z) ACCELERATION
LOCATION 3
ACCELERATION - G
60
30
0
-30
-60
-90
0
25
50
75
100
125
150
175
200
TIME - MSEC


DATE
05-21-79
FILTER
315/100
LOCATION
104
TEST NO
790522
PLY.CHAMP
053179
LONGITUDINAL
ACCELERATION
LOCATION 4
AX - G
60
30
0
-30
-60
-90
0
25
50
75
100
125
150
175
200
TIME - MSEC


DATE
05-21-79
FILTER
315/100
LOCATION
104
TEST NO
790522
PLY.CHAMP
053179
LONGITUDINAL
VELOCITY
LOCATION 4
VX
50
38
26
14
2
-10
0
25
50
75
100
125
150
175
200
TIME - MSEC


DATE
05-21-79
FILTER
315/100
LOCATION
104
TEST NO
790522
PLY.CHAMP
053179
LATERAL ACCELERATION
LOCATION 4
AY - G
60
30
0
-30
-60
-90
0
25
50
75
100
125
150
175
200
TIME - MSEC


DATE
05-21-79
FILTER
315/100
LOCATION
104
TEST NO
790522
PLY-CHAMP
053179
VERTICAL ACCELERATION
LOCATION 4
AZ - G
60
30
0
-30
-60
-90
0
25
50
75
100
125
150
175
200
TIME - MSEC


DATE
05-21-79
FILTER
315/100
LOCATION
105
TEST NO
790522
053179
PLY.CHAMP
⏲= AX
△= AZ
10
0
-10
-20
-30
-40
ACCELERATION = G
0
25
50
75
100
125
150
175
200
TIME - MSEC
LONGITUDINAL (X) AND
VERTICAL (Z) ACCELERATION
LOCATION 5

Test Anomalies:

Zero shift in child right femur GFE Sensor at approximately 100 msec. Went gross (+).