

DOT 200

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Report No. (to be assigned by NHTSA)

LIGHT TRUCK AGGRESSIVITY STUDY

TEST REPORT 1

TRUCK-TO-CAR HEAD-ON
IMPACTS TESTS

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R. Cropper
S. Davis

Contract No. DOT-HS-8-01942
\$60,048



October 1978

TEST REPORT

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NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
WASHINGTON, D.C. 20590

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METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures				Approximate Conversions from Metric Measures			
Symbol	When You Know	Multiply by	To Find	Symbol	When You Know	Multiply by	To Find
LENGTH				LENGTH			
in	inches	2.5	centimeters	mm	millimeters	0.04	inches
ft	feet	30	centimeters	cm	centimeters	0.4	inches
yd	yards	0.9	meters	m	meters	3.3	feet
mi	miles	1.6	kilometers	m	meters	1.1	yards
				km	kilometers	0.6	miles
AREA				AREA			
in ²	square inches	6.5	square centimeters	cm ²	square centimeters	0.16	square inches
ft ²	square feet	0.09	square meters	m ²	square meters	1.2	square yards
yd ²	square yards	0.8	square meters	m ²	square meters	0.4	square miles
mi ²	square miles	2.6	square kilometers	km ²	square kilometers	2.5	acres
acres	acres	0.4	hectares	ha	hectares		
MASS (weight)				MASS (weight)			
oz	ounces	28	grams	g	grams	0.035	ounces
lb	pounds	0.45	kilograms	kg	kilograms	2.2	pounds
	short tons	0.9	metric ton	t	metric ton	1.1	short tons
	(2000 lb)				(1000 kg)		
VOLUME				VOLUME			
tsp	teaspoons	5	milliliters	mL	milliliters	0.03	fluid ounces
Tbsp	tablespoons	15	milliliters	mL	milliliters	0.06	cubic inches
in ³	cubic inches	16	milliliters	L	liters	2.1	pints
fl oz	fluid ounces	30	milliliters	L	liters	1.06	quarts
c	cups	0.24	liters	L	liters	0.26	gallons
pt	pints	0.47	liters	m ³	cubic meters	35	cubic feet
qt	quarts	0.95	liters	m ³	cubic meters	1.3	cubic yards
gal	gallons	3.8	liters				
ft ³	cubic feet	0.03	cubic meters				
yd ³	cubic yards	0.76	cubic meters				
TEMPERATURE (exact)				TEMPERATURE (exact)			
°F	degrees Fahrenheit	5/9 (after subtracting 32)	degrees Celsius	°C	degrees Celsius	9/5 (then add 32)	degrees Fahrenheit

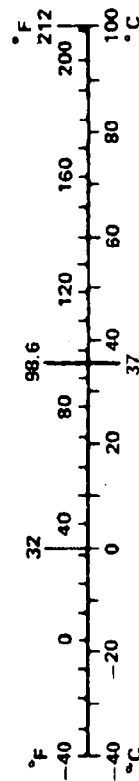


TABLE OF CONTENTS

	<u>Page</u>
1.0 INTRODUCTION	1-1
1.1 TEST OBJECTIVE.	1-1
1.2 TEST SCOPE.	1-1
2.0 PRESENTATION OF RESULTS - TEST NO. 3051-1.	2-1
3.0 PRESENTATION OF RESULTS - TEST NO. 3051-2.	3-1
APPENDIX A - CALCOMP PLOTS FOR TEST NO. 3051-1.	A-1
APPENDIX B - CALCOMP PLOTS FOR TEST NO. 3051-2.	B-1

LIST OF ILLUSTRATIONS

<u>Figure</u>		<u>Page</u>
2-1	1979 Chevrolet C-10 Truck Accelerometer Instrumentation (Test 3051-1)	2-5
2-2	1978 Plymouth Horizon Accelerometer Instrumentation (Test 3051-1)	2-6
2-3	Pre- and Post-test Vehicle Configuration (Test 3051-1)	2-11
2-4	Post-test Chevrolet C-10 Truck Configuration (Test 3051-1)	2-12
2-5	Post-test Plymouth Horizon Configuration (Test 3051-1)	2-13
2-6	Chevrolet C-10 Truck Dummy Configuration (Test 3051-1)	2-14
2-7	Plymouth Horizon Dummy Configuration (Test 3051-1)	2-15
2-8	Chevrolet C-10 Truck Exterior Static Crush (Test 3051-1)	2-25
2-9	Chevrolet C-10 Truck Interior Intrusion (Test 3051-1)	2-26
2-10	Plymouth Horizon Exterior Static Crush (Test 3051-1)	2-27

LIST OF ILLUSTRATIONS (CONTD)

<u>Figure</u>		<u>Page</u>
2-11	Plymouth Horizon Interior Intrusion (Test 3051-1)	2-28
3-1	1979 Chevrolet C-10 Truck Accelerometer Instrumentation (Test 3051-2)	3-5
3-2	1979 Chevrolet Impala Accelerometer Instrumentation (Test 3051-2)	3-6
3-3	Vehicle Configuration (Test 3051-2)	3-11
3-4	Post-test C-10 Truck Configuration (Test 3051-2)	3-12
3-5	Post-test Chevrolet Impala Configuration (Test 3051-2)	3-13
3-6	Chevrolet C-10 Truck Dummy Configuration (Test 3051-2)	3-14
3-7	Chevrolet Impala Dummy Configuration (Test 3051-2)	3-15
3-8	Chevrolet C-10 Truck Exterior Static Crush (Test 3051-2)	3-25
3-9	Chevrolet C-10 Truck Interior Intrusion (Test 3051-2)	3-26
3-10	Chevrolet Impala Exterior Static Crush (Test 3051-2)	3-27
3-11	Chevrolet Impala Interior Static Intrusion (Test 3051-2)	3-28

LIST OF TABLES

<u>Table</u>		<u>Page</u>
1-1	Summary of Car-to-Car Test Conditions - 3051.	1-2
2-1	Crash Test Summary (Test 3051-1).	2-2
2-2	Bullet Vehicle Inspection Sheet (Test 3051-1)	2-3

LIST OF TABLES (CONTD)

<u>Table</u>		<u>Page</u>
2-3	Target Vehicle Inspection Sheet (Test 3051-1)	2-4
2-4	Instrumentation Summary (Test 3051-1)	2-7
2-5	Camera Locations - Head-on Impact (Test 3051-1)	2-8
2-6	Summary of Pre-test Engine/Bumper/Firewall Characteristics - Chevrolet C-10 Truck (Test 3051-1)	2-9
2-7	Pre-test Dummy Positions - Chevrolet C-10 Truck (Test 3051-1)	2-9
2-8	Summary of Pre-test Engine/Bumper/Firewall Characteristics - Plymouth Horizon (Test 3051-1)	2-10
2-9	Pre-test Dummy Positions - Plymouth Horizon (Test 3051-1)	2-10
2-10	Chronology of Events (Test 3051-1)	2-16
2-11	Summary of Post-test Observations - Chevrolet C-10 Truck (Test 3051-1)	2-17
2-12	Summary of Post-test Observations - Plymouth Horizon (Test 3051-1)	2-18
2-13	Pre-test and Post-test Dimension Measurements - Bullet Vehicle (Test 3051-1)	2-19
2-14	Pre-test and Post-test Dimension Measurements - Target Vehicle (Test 3051-1)	2-20
2-15	Chevrolet C-10 Truck Exterior Profiles and Static Crush (Test 3051-1)	2-21
2-16	Chevrolet C-10 Truck Interior Profiles and Static Crush (Test 3051-1)	2-22
2-17	Plymouth Horizon Exterior Profiles and Static Crush (Test 3051-1)	2-23
2-18	Plymouth Horizon Interior Profiles and Static Crush (Test 3051-1)	2-24

LIST OF TABLES (CONTD)

<u>Table</u>		<u>Page</u>
2-19	Chevrolet C-10 Truck Steering Wheel Measurements and Displacement Values (Test 3051-1)	2-29
2-20	Plymouth Horizon Steering Wheel Measurements and Displacement Values (Test 3051-1)	2-30
2-21	Summary of Vehicle Accelerometer Data (Test 3051-1)	2-31
2-22	Occupant Response Data Summary (Test 3051-1)	2-32
2-23	Summary of Restraint System Data (Test 3051-1)	2-33
3-1	Crash Test Summary (Test 3051-2)	3-2
3-2	Bullet Vehicle Inspection Sheet (Test 3051-2)	3-3
3-3	Target Vehicle Inspection Sheet (Test 3051-2)	3-4
3-4	Instrumentation Summary (Test 3051-2)	3-7
3-5	Camera Locations - Head-on Impact (Test 3051-2)	3-8
3-6	Summary of Pre-test Engine/Bumper/Firewall Characteristics - Chevrolet C-10 Truck (Test 3051-2)	3-9
3-7	Pre-test Dummy Positions - Chevrolet C-10 Truck (Test 3051-2)	3-9
3-8	Summary of Pre-test Engine/Bumper/Firewall Characteristics - Chevrolet Impala (Test 3051-2)	3-10
3-9	Pre-test Dummy Positions - Chevrolet Impala (Test 3051-2)	3-10
3-10	Chronology of Events (Test 3051-2)	3-16
3-11	Summary of Post-test Observations - Chevrolet C-10 Truck (Test 3051-2)	3-17
3-12	Summary of Post-test Observations - Chevrolet Impala (Test 3051-2)	3-18

LIST OF TABLES (CONTD)

<u>Table</u>		<u>Page</u>
3-13	Pre-test and Post-test Dimension Measurements - Bullet Vehicle (Test 3051-2)	3-19
3-14	Pre-test and Post-test Dimension Measurements - Target Vehicle (Test 3051-2)	3-20
3-15	Chevrolet C-10 Truck Exterior Profiles and Static Crush (Test 3051-2)	3-21
3-16	Chevrolet C-10 Truck Interior Profiles and Static Crush (Test 3051-2)	3-22
3-17	Chevrolet Impala Exterior Profiles and Static Crush (Test 3051-2)	3-23
3-18	Chevrolet Impala Interior Profiles and Static Crush (Test 3051-2)	3-24
3-19	Chevrolet C-10 Truck Steering Wheel Measurements and Displacement Values (Test 3051-2)	3-29
3-20	Chevrolet Impala Steering Wheel Measurements and Displacement Values (Test 3051-2)	3-30
3-21	Summary of Vehicle Accelerometer Data (Test 3051-2)	3-31
3-22	Occupant Response Data Summary (Test 3051-2)	3-32
3-23	Summary of Restraint System Data (Test 3051-2)	3-33

1.0 INTRODUCTION

A series of seven full-scale truck-to-car crash tests was conducted as required under Task 2 of DOT-HS-8-01942, "Light Truck Aggressivity Study," sponsored by the National Highway Traffic Safety Administration. This test report presents the results of Tests No. 3051-1 and No. 3051-2, head-on, symmetric, truck-to-car collisions. Two 1979 Chevrolet C-10, 8-foot, full-bed, 8-cylinder, pickup trucks were used for the tests. The car used in Test No. 3051-1 was a 1978 Plymouth Horizon 4-door sedan. The car used in Test No. 3051-2 was a 1979 Chevrolet Impala 4-door sedan.

1.1 TEST OBJECTIVE

The object of these tests is to provide truck-to-car collision data. The crash test data from this program will be used to study the aggressivity of light trucks compared to passenger cars, support current vehicle standards, and provide information to upgrade future standards.

1.2 TEST SCOPE

The test matrix and summary of test conditions for conducting truck-to-car collisions are shown in Table 1-1. For these tests, the truck is designated as the bullet vehicle and the car designated as the target car. The target vehicle (Vehicle B) contained two instrumented Alderson Part 572, 50th percentile male anthropomorphic dummies (GFE) in the two front outboard seating positions.

The truck (Vehicle A) contained one instrumented (driver) and one uninstrumented (passenger) Alderson Part 572, 50th percentile dummy used as ballast. Each occupant was properly restrained with the vehicle's production restraint system. The seat tracks were put at midposition but not welded in place.

TABLE 1-1. SUMMARY OF CAR-TO-CAR TEST CONDITIONS - 3051

Test No.	Test Date	Test Condition	Test Vehicle*	Test Weight (lb)	Closing Speed (mph)
3051-1	10/10/78	Head-On (Symmetric)	A - 1979 C-10 Chevrolet Pickup Truck	5180	61.54
			B - 1978 Plymouth Horizon	2688	
3051-2	10/12/78	Head-On (Symmetric)	A - 1979 C-10 Chevrolet Pickup Truck	5182	74.50
			B - 1979 Chevrolet Impala	4404	
3051-3	10/23/78	Left Side - 90° (C of A at H-pt.)	A - 1979 C-10 Chevrolet Pickup Truck	5189	29.74
			B - 1978 Plymouth Horizon	2686	
3051-4	11/17/78	Left Side - 90° (E of A at H-pt.)	A - 1979 C-10 Chevrolet Pickup Truck	5183	29.99
			B - 1979 Chevrolet Impala	4398	
3051-5	10/30/78	Right Offset (21 in.)	A - 1979 C-10 Chevrolet Pickup Truck	5183	61.62
			B - 1978 Plymouth Horizon	2682	
3051-6	11/28/78	Right Offset (21 in.)	A - 1979 C-10 Chevrolet Pickup Truck	5176	75.78
			B - 1979 Chevrolet Impala	4397	
3051-7	2/01/79	Rear-End (Symmetric)	A - 1979 C-10** Chev- rolet Pickup Truck	5178	40.28
			B - 1978 Plymouth Horizon	3008	

*A = Bullet Vehicle; B = Target Car

**Repaired truck from Test 3

2.0 PRESENTATION OF RESULTS - TEST NO. 3051-1

This section of the report presents the results of Test No. 3051-1, a head-on, symmetric crash test between a 1979 Chevrolet C-10 pickup truck (bullet vehicle) and a 1978 Plymouth Horizon 4-door sedan (target vehicle).

This report presents all test results without analysis or discussion. Included in this document are: still photographs, film chronologies, vehicle damage sketches and tabulated pre- and post-test dimensions, accelerometer location identification, summaries of electronic data, and summaries of the simulated occupant data, including injury criteria values. High-speed motion pictures were also obtained for this test and have been submitted to the sponsor. Appendix A contains Calcomp plots of all electronic data for this test.

TABLE 2-1. CRASH TEST SUMMARY (TEST 3051-1)

TEST NO.	3051-1	CONTRACT:	DOT-HS-8-01942
TEST DATE:	October 10, 1978	TIME:	1337
TEST CONFIGURATION:	Front-to-Front Head-on	TEMPERATURE:	93 °F
VEHICLE NO. 1:	1979 Chevrolet C-10 Truck		
VEHICLE NO. 2:	1978 Plymouth Horizon, 4-door Sedan		
<u>VEHICLE DATA</u>		<u>VEHICLE NO. 1</u>	<u>VEHICLE NO. 2</u>
Overall Length/Width (in.)	217.1/78.0	163.2/66.2	
Test Weight by Wheel (lb)	LF 1364 RF 1391 LR 1199 RR 1226	LF 765 RF 767 LR 573 RR 583	
Total Weight (lb)	5180	2688	
Wheelbase (in.)	131.5	99.4	
Longitudinal C.G. (From Center of Front Axle) (in.)	61.6	42.7	
Impact Angle (deg)*	0	180	
Offset Distance (in.)	0	0	
Car Speed (mph)	+30.8	+30.8	
Final Speed (mph @ msec)	+4.3 @ 146	-11.7 @ 146	
Velocity Change (mph)	26.5	42.5	
Maximum Compartment Acceleration (G @ msec)	-26.1 @ 20	-41.1 @ 53	
Maximum Engine Acceleration (G @ msec)	-26.1 @ 53	-86.7 @ 24	
Maximum Mutual Dynamic Crush (Film Data) (in.)		58.1	
Maximum Static Crush			
• Hood Level (in.)	6.2	19.6	
• Between Hood/Bumper (in.)	16.6	26.2	
• Bumper Level (in.)	21.1	20.5	
Maximum Post-Test Intrusion (in.)	2.0	9.6	
<u>OCCUPANTS</u>			
Type	Alderson Part 572	Alderson Part 572	
Location	LF - Driver RF - Passenger	LF - Driver RF - Passenger	
Restraints	Standard Lap/ Shoulder Belt	Standard Lap/ Shoulder Belt	
<u>INSTRUMENTATION</u>			
Number of Data Channels	14	28	
Number of Cameras		5	

*With respect to tow truck centerline.

TABLE 2-2. BULLET VEHICLE INSPECTION SHEET (TEST 3051-1)

Contractor: Dynamic Science, Inc. Contract No.: DOT-HS-8-01942VIN NO.: CCL 4492107570 Make: ChevroletNHTSA No.: R&DYear: 1979 Color: White Model: C-10 TruckAuto Trans: yes ☐ no ☒ Pwr Steering: yes ☒ no ☐ Seats: Bench: XPwr Brakes: yes ☒ no ☐ Auto Speed Cont: yes ☐ no ☒ (front) Bucket: _____Pwr Seats: yes ☐ no ☒ Anti Skid Brake: yes ☐ no ☒ Split Bench: _____Pwr Windows: yes ☐ no ☒ Air Conditioning: yes ☒ no ☐ Split Back Bench: _____Tinted Glass: yes ☒ no ☐ Rear Window Def.: yes ☐ no ☒ Radio: yes ☐ no ☒ Brakes: drum: R disc: FClock: yes ☐ no ☒ Firestone, F - GlassTire Size: L78-15 Ply Rating: _____ Mfg. & Line: Belt, R - Snow PlowBias Ply: X Belted: _____ Radial _____ / Eng. Type: V-8 Cylinders: 8 Total 350
Displ: CIDTrans, # Fwd. Speeds: 4 Shipping Weight: _____ Odometer: 6

Dealer (name, address, and phone number)

Courtesy Chevrolet
1233 East Camelback Road
Phoenix, Arizona

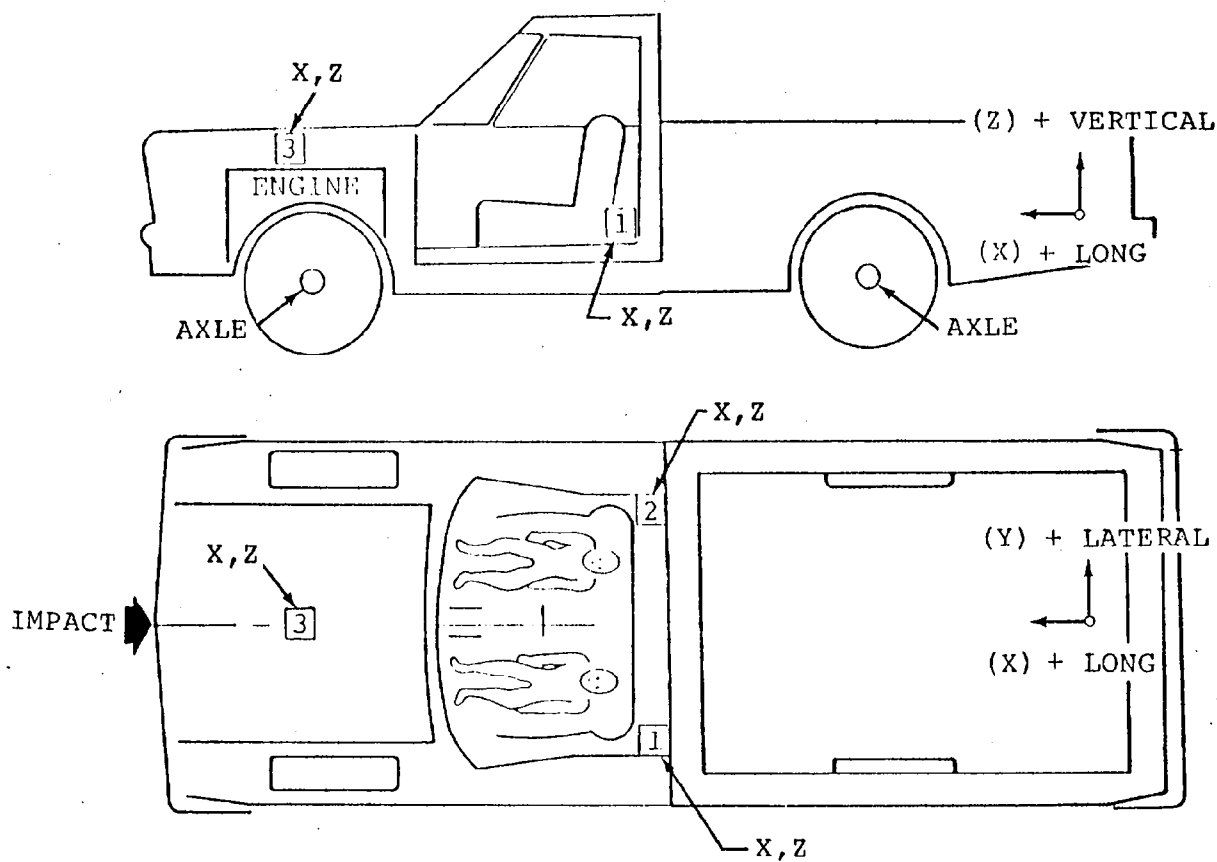
Remarks (list additional accessories not listed above)

Dual Fuel TanksDate of Manufacture: 9-78 Dynamic Science No.: 755 Date Received: 9-29-78Tilting Steering Wheel: yes ☐ no ☒ Telescoping Steering Wheel: yes ☐ no ☒Fuel Capacity: _____ "Space Saver" Spare Tire yes ☐ no ☒
(from owner's manual)Restraint System: Std. Lap and Shoulder Belts

1. Is the vehicle stock throughout? Describe: Yes. Except mirrors removed. All fluids drained except 100% Stoddard Solvent in both fuel tanks. 212 lb of lead added as ballast placed over rear axle.
2. Does vehicle show evidence of prior accident history? Describe: No.
3. Does vehicle show any significant corrosion? Describe: No.
4. Check condition of the front bumper and frame: OK.

TABLE 2-3. TARGET VEHICLE INSPECTION SHEET (TEST 3051-1)

Contractor: <u>Dynamic Science, Inc.</u>		Contract No.: <u>DOT-HS-8-01942</u>	
VIN NO.: <u>ML44A8D246556</u>		Make: <u>Plymouth</u>	
NHTSA No.: <u>R&D</u>			
Year: <u>1978</u>		Color: <u>Brown</u>	
Model: <u>Horizon</u>			
Auto Trans: yes ☒ no ☐	Pwr Steering: yes ☐ no ☒	Seats: <u> </u>	Bench: <u> </u>
Pwr Brakes: yes ☐ no ☒	Auto Speed Cont: yes ☐ no ☒	(front)	Bucket: <u>X</u>
Pwr Seats: yes ☐ no ☒	Anti Skid Brake: yes ☐ no ☒	Split	Bench: <u> </u>
Pwr Windows: yes ☐ no ☒	Air Conditioning: yes ☐ no ☒	Split	Back
Tinted Glass: yes ☐ no ☒	Rear Window Def.: yes ☒ no ☐	Bench:	<u> </u>
Radio: yes ☒ no ☐	Brakes: drum: <u>R</u> disc: <u>F</u>		
Clock: yes ☐ no ☒			
Tire Size: <u>P155/8R-13</u>	Ply Rating: <u> </u>	Mfg. & Line: <u>Firestone Deluxe Champion</u>	
Bias Ply: <u> </u>	Belted: <u> </u>	Eng. Trans- <u> </u>	Total <u>105</u>
Radial <u>X</u> / Type: <u>verse</u>	Cylinders: <u>4</u>	Displ: <u>CID</u>	
Trans, # Fwd. Speeds: <u>3</u>	Shipping Weight: <u> </u>	Odometer: <u>532</u>	
Dealer (name, address, and phone number)			
<u>Auto Driveway</u>			
<u>Riverside, California</u>			
Remarks (list additional accessories not listed above)			
Date of Manufacture: <u>6-78</u> Dynamic Science No.: <u>757</u> Date Received: <u>9-28-78</u>			
Tilting Steering Wheel: yes ☐ no ☒		Telescoping Steering Wheel: yes ☐ no ☒	
Fuel Capacity: <u> </u> (from owner's manual)		"Space Saver" Spare Tire yes ☐ no ☒	
Restraint System: <u>Standard Lap/Shoulder Belts</u>			
1. Is the vehicle stock throughout? Describe: <u>Carpeting, floor insulation, spare tire and jack removed. Mirrors removed. Water in gas tank 93% full. Windshield wipers removed. Empty fluids. 72 pounds of lead behind rear passenger seat as ballast.</u>			
2. Does vehicle show evidence of prior accident history? Describe: <u>No</u>			
3. Does vehicle show any significant corrosion? Describe: <u>No</u>			
4. Check condition of the front bumper and frame: <u>OK</u>			



VEHICLE ACCELEROMETER LOCATIONS AND PHYSICAL COORDINATES					MAXIMUM EXPECTED READINGS		
NO.	DESCRIPTION OF LOCATION	X**	Y**	Z**	LONG*	LAT*	VERT*
1	Rocker panel near B-pillar behind driver's seat	113	-26	29	50		50
2	Rocker panel near B-pillar behind passenger's seat	113	+25	29	50		50
3	Top of engine block	180	0	35	200		200

*In G

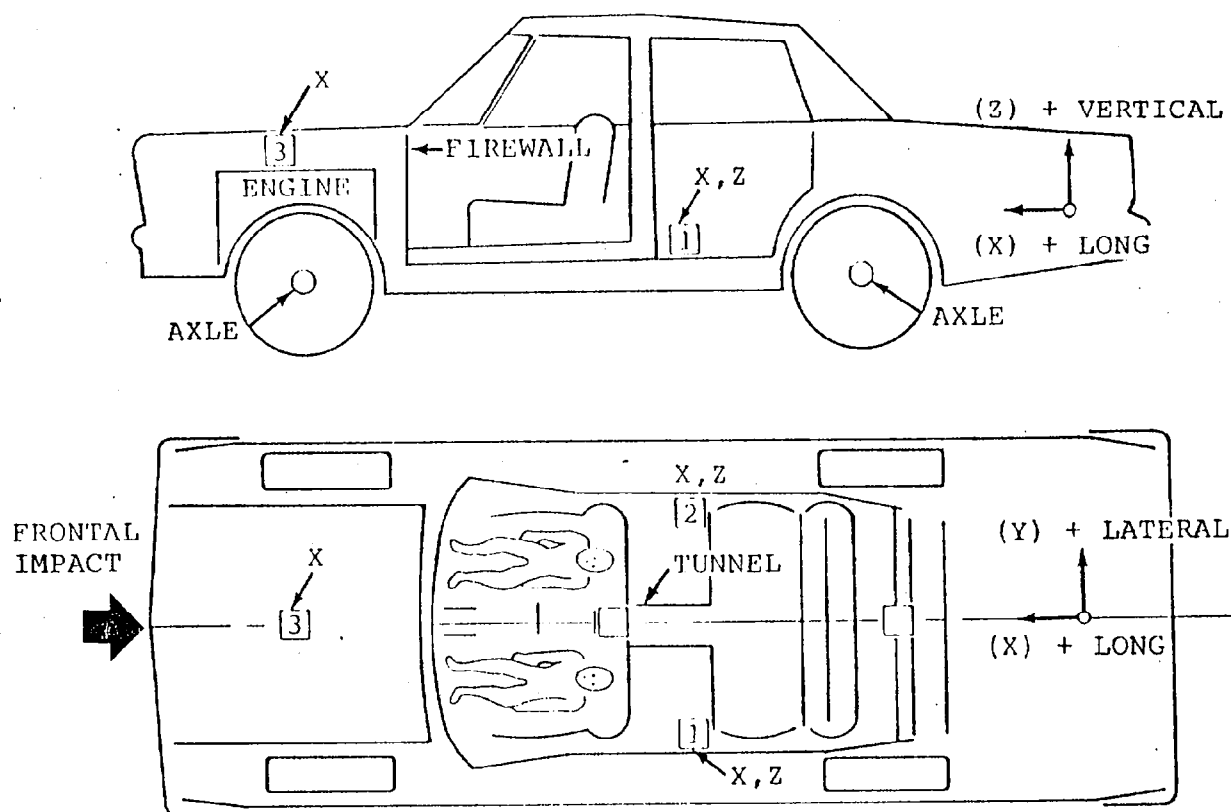
**Reference points:

X - Direction - Centerline of rear bumper

Y - Direction - Centerline of vehicle - left centerline (-), right centerline (+)

Z - Direction - Ground level

Figure 2-1. 1979 Chevrolet C-10 Truck Accelerometer Instrumentation (Test 3051-1).



VEHICLE ACCELEROMETER LOCATIONS AND PHYSICAL COORDINATES				MAXIMUM EXPECTED READINGS		
NO.	DESCRIPTION OF LOCATION	X**	Y**	Z**	LONG*	LAT* VERT*
1	Rocker panel near B-pillar behind driver's seat	79	-16	12	50	50
2	Rocker panel near B-pillar behind passenger's seat	79	+16	12	50	50
3	Top of engine block	128	+5	27	200	

*In G

**Reference points:

X - Direction - Centerline of rear bumper

Y - Direction - Centerline of vehicle - left centerline (-), right centerline (+)

Z - Direction - Ground level

Figure 2-2. 1978 Plymouth Horizon Accelerometer Instrumentation (Test 3051-1).

TABLE 2-4. INSTRUMENTATION SUMMARY (TEST 3051-1)

TEST NO. 3051-1 VEHICLE: 1979 Chevrolet C-10 Truck

Instrument	Numbers	Total No. of Data Channels
Vehicle Accelerometers*	3 locations	6
Dummy Instrumentation = Head (3), Chest (3)	1 location	6
Seat Belt Load Cells = Lap (1), Shoulder (1)	1 location	2
TOTAL		14 - 1 RSCM

VEHICLE: 1978 Plymouth Horizon

Vehicle Accelerometers**	3 locations	5
Dummy Instrumentation = Head (3), Chest (3), Femur (2)	2 locations	16
Seat Belt Load Cells = Lap (2), Shoulder (1)	2 locations	6
Impact Switch		1
TOTAL		28 - 2 RSCM's

*See Figure 2-1 for locations.

**See Figure 2-2 for locations.

TABLE 2-5. CAMERA LOCATIONS - HEAD-ON IMPACT (TEST 3051-1)

Test No: 1 Test Date: See Table 1-1

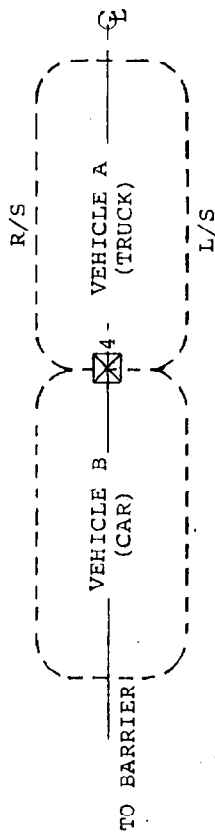
Test Type: Truck-to-Car Head-On Impact Tests

Vehicle A (Away): 1978 Chevrolet C-10 Pickup Truck

Vehicle B (Barrier): 1978 Plymouth Horizon

Comments: All high-speed cameras will be perpendicular to the line of vehicle travel

2 
3 



- CAMERA SYMBOLS
-  PIT
 -  GROUND
 -  BARRIER
 -  OVERHEAD
 -  ON-BOARD
- FRAME RATE
- ① 1000 fr/sec
 - ② 200 fr/sec
 - ③ Other 24 fr/sec
 - ④ 400 fr/sec
 - ⑤ 500 fr/sec
- TIMING LIGHT SPEED
- ① 100 Hz (10 msec/light)
 - ② 200 Hz (5 msec/light)
 - ③ Other

5 
1 
6 

CAMERA	YES
STILLS	X
SLIDES	X
MOVIE	X
POLAROID	

Loc. No.	Location	Field of View	Lens Size	Frm Rate	Tmng Spd	Ser No	Impact Dist-X	C.L. Dist-Y	CAM Hght-2
1	Left Side	Overall of Truck and Car	13	1	1				
2	Right Side	B-Pillar-to-B-Pillar of Both Vehicles	13	1	1				
3	Right Side	Front Occupant Compartment of Car B*	VAR	5	1				
4	Overhead	Front Half of Both Vehicles at Impact	13	1	1				
5	Left Side	Panning Test and Overall Results		3					
6	Left Side	Impact of Cars at 100 msec (Still Camera 4x5 Color Negative)							
*NOTE: CAMERA FAILED DURING TEST.									

TABLE 2-6. SUMMARY OF PRE-TEST ENGINE/BUMPER/FIREWALL CHARACTERISTICS - CHEVROLET C-10 TRUCK (TEST 3051-1)

Test No.	3051-1	Type	Head-On, Symmetric
Car Model	Chevrolet C-10 Truck	Dynamic Science No.	755
Engine Size	350 CID		
Engine Weight* (lb)	675		
Engine Height/Width (in.)	35.0/21.0		
Bumper to Engine (in.)	29.2		
Engine Length (in.)	21.8		
Engine to Firewall (in.)	1.7		
Bumper to Firewall (in.)	52.7		
Bumper Height (max/min) (in.)	24.4/15.2		

*Includes engine and rigid attachments such as transmission and drive train.

TABLE 2-7. PRE-TEST DUMMY POSITIONS - CHEVROLET C-10 TRUCK (TEST 3051-1)

Distances (in.)	Driver	Passenger
Chest to Steering Wheel Hub (horizontal)	10.9	
Nose to Steering Wheel Upper Rim	14.7	
Nose to Windshield (horizontal)	23.8	24.8
Knee to Lower Panel (closest point)		
Left	8.2	6.8
Right	8.3	7.3
Chest to Dash (horizontal)	24.4	22.2
Forehead to Header	17.9	19.0
Dummy Serial Number	A03	A04

TABLE 2-8. SUMMARY OF PRE-TEST ENGINE/BUMPER/FIREWALL CHARACTERISTICS - PLYMOUTH HORIZON (TEST 3051-1)

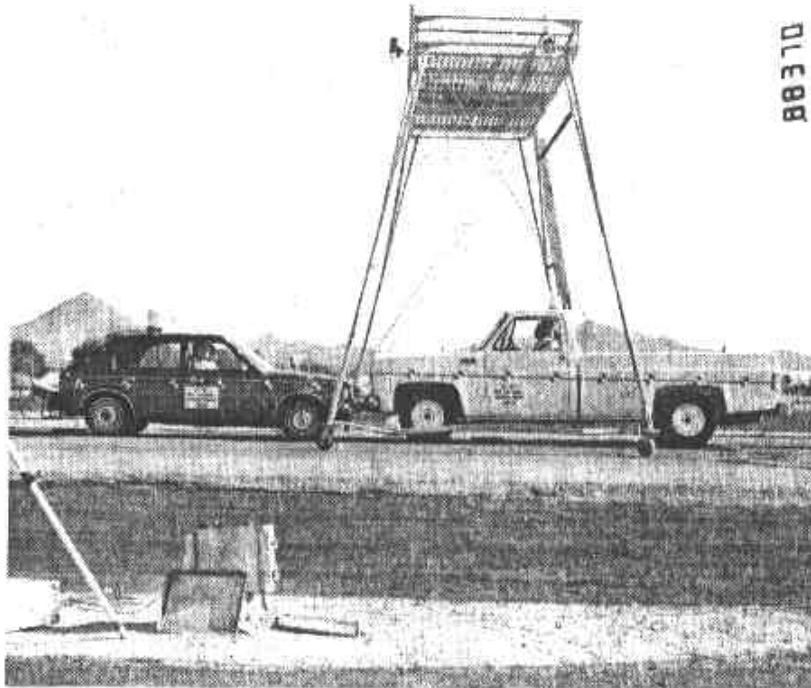
Test No.	3051-1	Type	Head-On Symmetric
Car Model	Plymouth Horizon	Dynamic Science No.	757
Engine Size	105 CID		
Engine Weight* (lb)	475		
Engine Height/Width (in.)	28.8/16.2**		
Bumper to Engine (in.)	17.1		
Engine Length (in.)	12.3		
Engine to Firewall (in.)	10.0		
Bumper to Firewall (in.)	39.4		
Bumper Height (max/min) (in.)	20.8/15.5		

*Includes engine and rigid attachments such as transmission and drive train.

**Engine plus transmission width = 36 inches.

TABLE 2-9. PRE-TEST DUMMY POSITIONS - PLYMOUTH HORIZON (TEST 3051-1)

Distances (in.)	Driver	Passenger
Chest to Steering Wheel Hub (horizontal)	15.6	
Nose to Steering Wheel Upper Rim	17.5	
Nose to Windshield (horizontal)	20.7	20.6
Knee to Lower Panel (closest point)		
Left	7.0	7.7
Right	7.6	7.5
Chest to Dash (horizontal)	21.5	22.8
Forehead to Header	13.3	13.9
Dummy Serial Number	759	760



a) Pre-test



b) Post-test

Figure 2-3. Pre- and Post-test Vehicle Configuration (Test 3051-1).

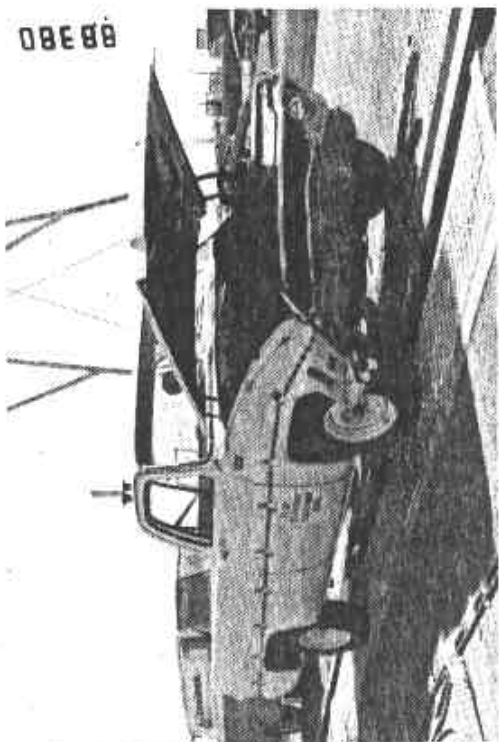
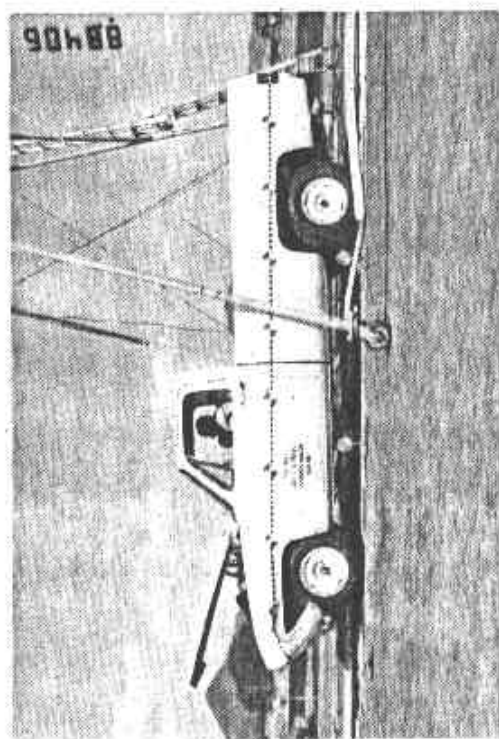


Figure 2-4. Post-test Chevrolet C-10 Truck Configuration (Test 3051-1).

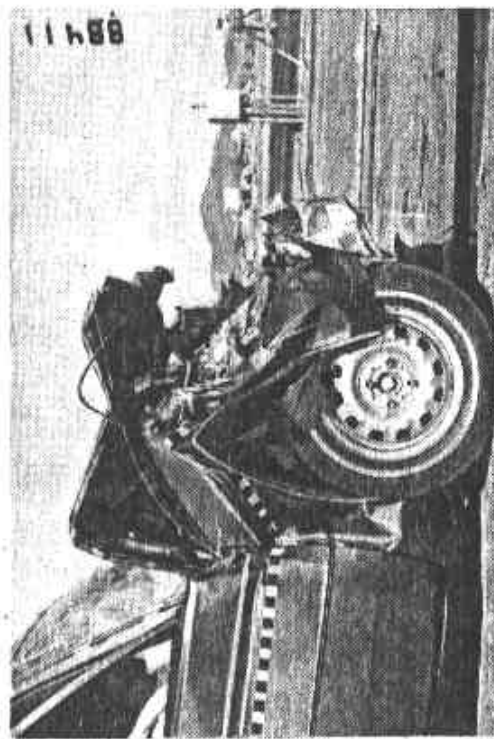
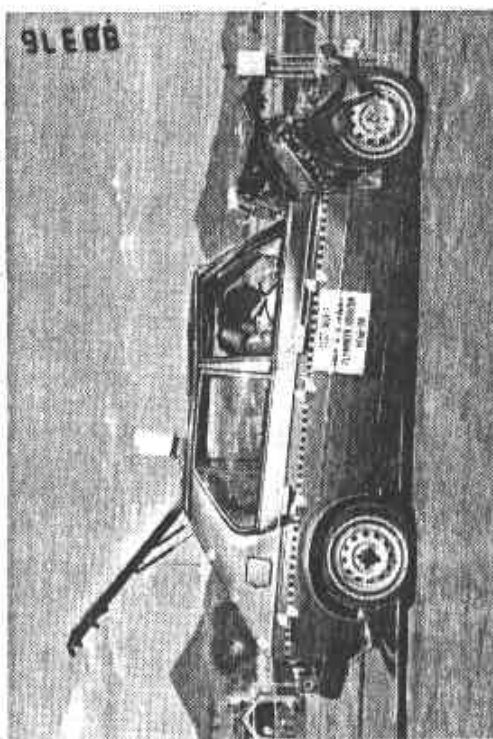
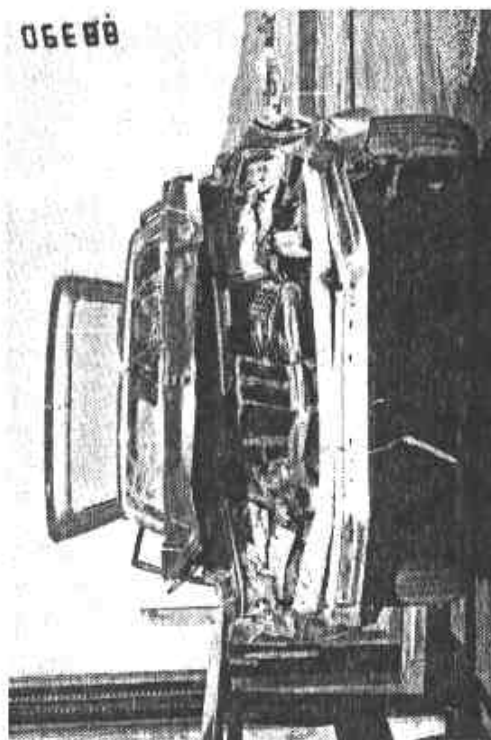
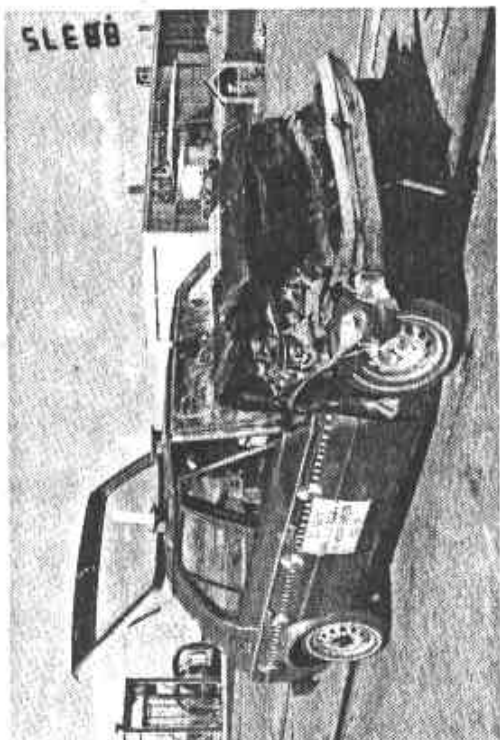
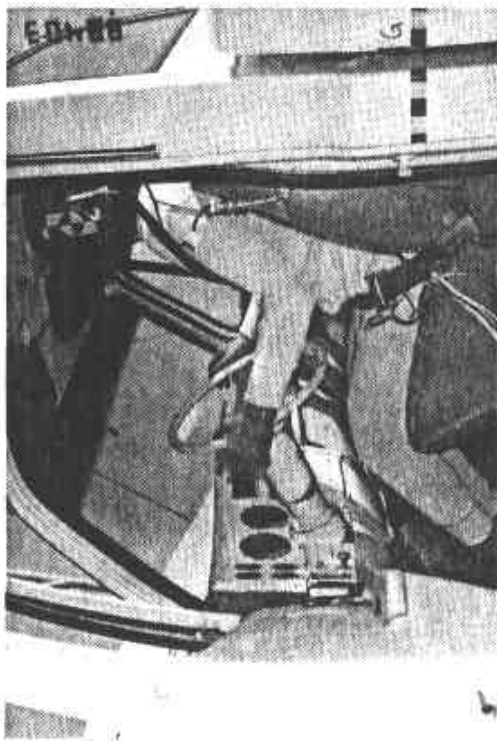
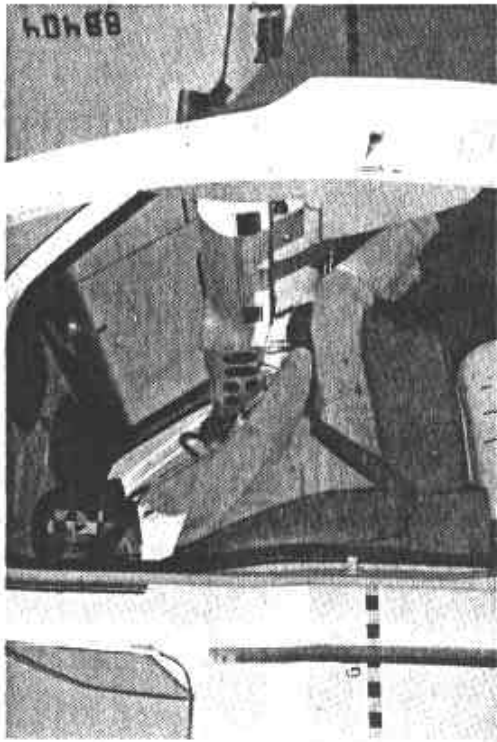


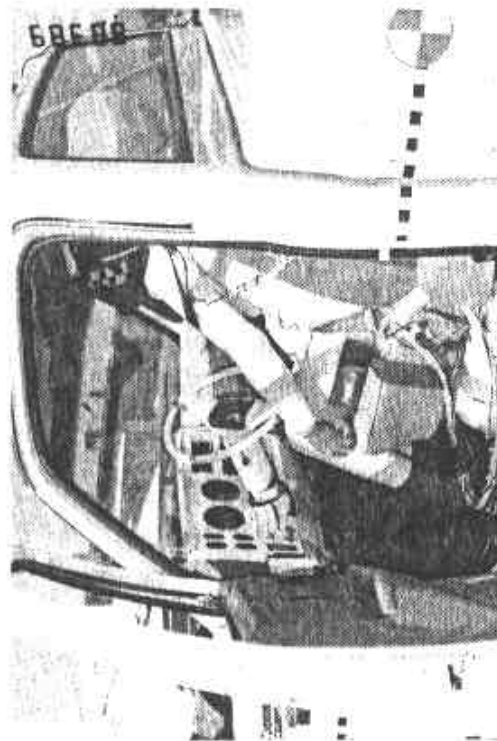
Figure 2-5. Post-test Plymouth Horizon Configuration (Test 3051-1).



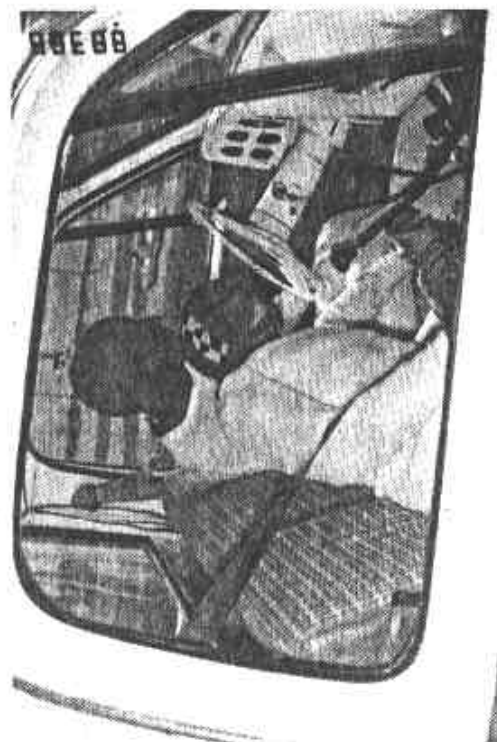
a) Pre-test Driver



c) Pre-test Passenger

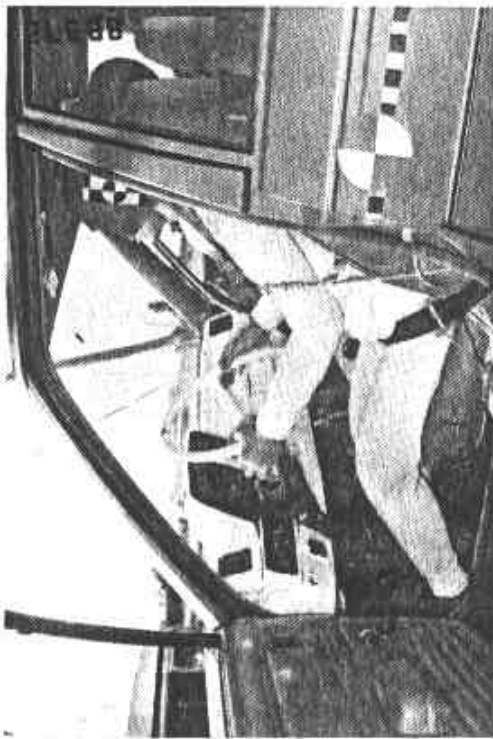


b) Post-test Driver

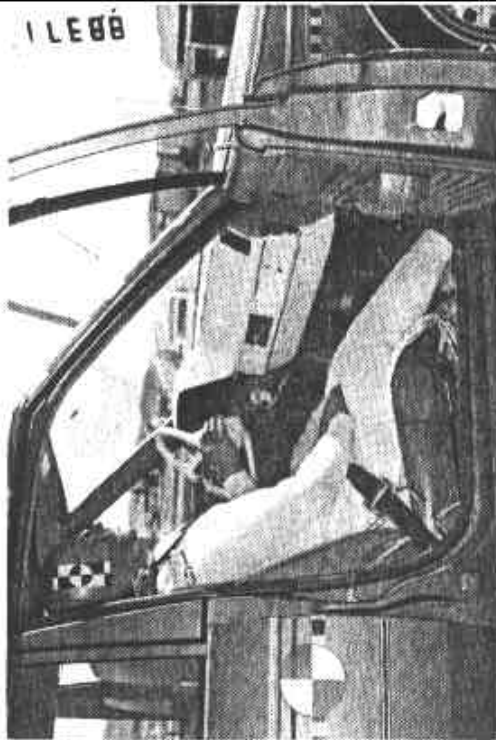


d) Post-test Passenger

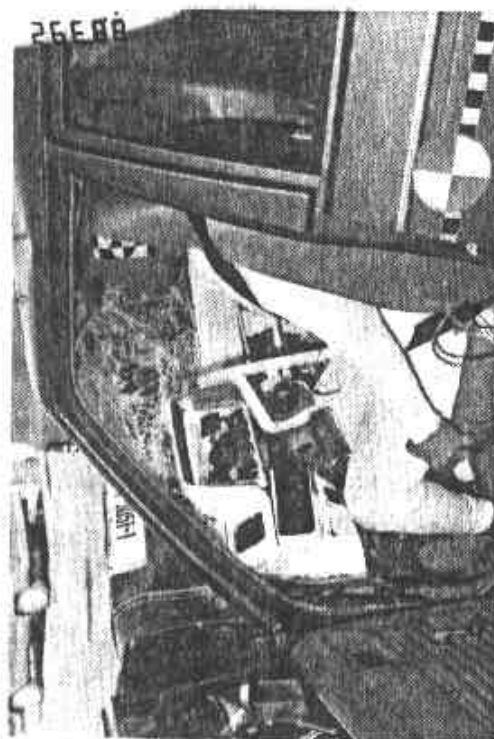
Figure 2-6. Chevrolet C-10 Truck Dummy Configuration (Test 3051-1).



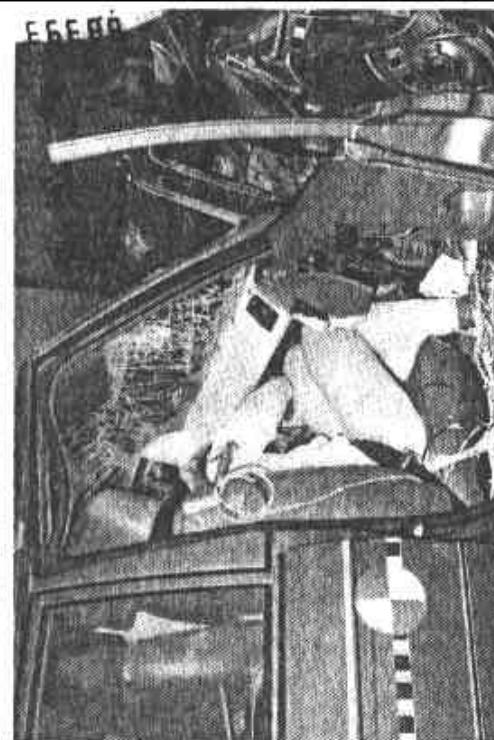
a) Pre-test Driver



c) Pre-test Passenger



b) Post-test Driver



d) Post-test Passenger

Figure 2-7. Plymouth Horizon Dummy Configuration (Test 3051-1).

TABLE 2-10. CHRONOLOGY OF EVENTS (TEST 3051-1)

Time (msec)	Chevrolet C-10 Truck	Time (msec)	Plymouth Horizon
0	Impact (visual)	0	Impact (visual)
7	Truck overrides bumper	4	Bumper begins rolldown
18	Fender begins to buckle	9	Edge of hood contacts grille
33	Left fender bends under and touches tire	18	Front of fender buckles
40	Hood latch fails - opens	26	Hood latch fails and begins to buckle
45	Front tires leave ground and driver starts forward motion	57	Passenger's head hits sun visor
52	Left front wheel pushed back	64	Driver's head hits sun visor
108	Driver's head hits steering wheel - maximum inclination 8.25°	67	Maximum rear wheel forward motion
146	Frame of truck buckles behind cab	69	Hood buckles into windshield
330	Driver back in position	95	Passenger's head hits windshield
357	Maximum front of vehicle off ground 16.3"	98	Maximum underride of car
391	Passenger back in position	104	Maximum mutual dynamic crush 58.1"; maximum forward motion of car
624	Vehicles separate	276	Passenger's head back on head rest
809	Front end down - first bounce and rebound	363	Maximum off ground front 6.75° inclination
920	Driver head hits steering wheel second time	624	Vehicles separate
1275	Maximum forward travel of vehicle		

NOTE: Occupants of truck rebound back and forth three times during crash.

TABLE 2-11. SUMMARY OF POST-TEST OBSERVATIONS - CHEVROLET
C-10 TRUCK (TEST 3051-1)

VEHICLE: 1979 Chevrolet C-10 Truck

Dummy Contact Points:	Left Front	Right Front
Head-----	Top of Steering Wheel	No contact
Chest-----	Steering Column	No contact
Knees-----	No contact	No contact

Glazing: 100% intact

Doors: Left front door opened easily.

Right front door required tools

Seat Belt Anchorages and Restraints: OK. No seat movement

Vehicle Centerline to Barrier Centerline: Front - 11" to the
left. Rear - 1" to right

Fuel Leakage: None

General Observations: Hood latch failed. Front of truck 10 ft
from impact. 9 ft. between vehicles. Passenger leaning over 60°
from vertical. Front bumper rotated down and showed override of
Horizon bumper. Engine/radiator did not show as much crush as
bumper. Moderate compartment intrusion. Truck bumper deformed
greater at points where Horizon frame struts contacted it.

TABLE 2-12. SUMMARY OF POST-TEST OBSERVATIONS - PLYMOUTH
HORIZON (TEST 3051-1)

VEHICLE: 1978 Plymouth Horizon 4-door Sedan

Dummy Contact Points:	Left Front	Right Front
Head-----	Top of Steering Wheel	Windshield and Front Hood of Car
Chest-----	Steering Wheel Hub	No contact
Knees-----	Knee Bolsters	Glove Compartment

Glazing: Intact, but completely shattered

Doors: Left front door was difficult to open. All others
required tools to open.

Seat Belt Anchorages and Restraints: OK. LF seat movement - 1/2"
forward movement. RF seat 1" forward movement

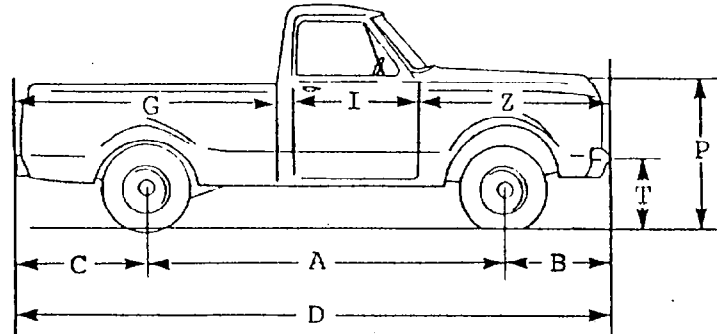
Vehicle Centerline to Barrier Centerline: Front - 3" right.

Rear - 2" left.

Fuel Leakage: 1 oz/min. Approx. 2.3 oz/min.

General Observations: Hood latch failed and was pushed back by
grille of truck. Rear seat broke loose. Front of car 19 ft from
impact point. Fuel leakage caused by exhaust bracket hitting tank.
Engine pushed back to firewall. Extreme compartment intrusion.

TABLE 2-13. PRE-TEST AND POST-TEST DIMENSION MEASUREMENTS -
BULLET VEHICLE (TEST 3051-1)



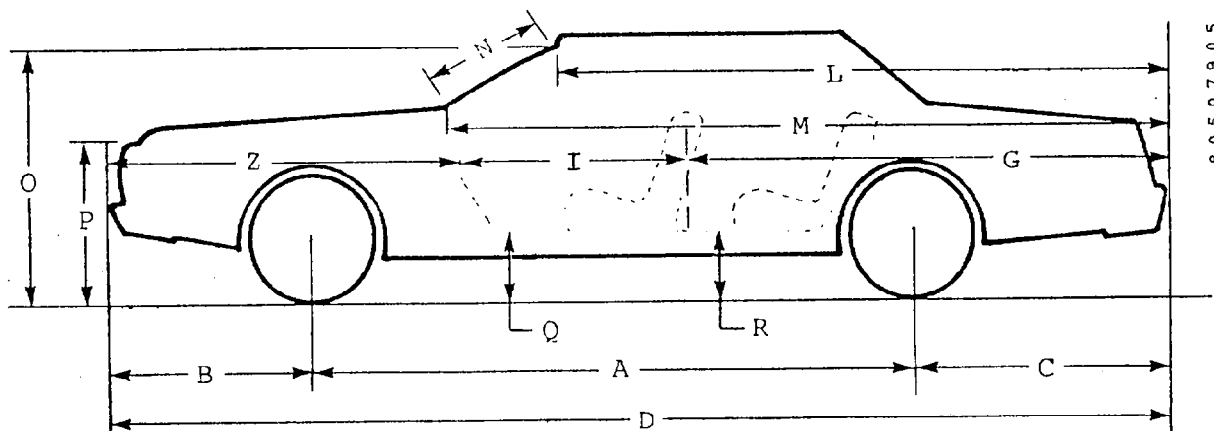
80902302

VEHICLE: 1979 Chevrolet C-10 Truck

	Pre-test (in.)		Post-test (in.)		Difference (in.)	
	LS	RS	LS	RS	LS	RS
A	131.7	131.4	126.3	125.1	5.4	6.3
B	33.6	33.7	21.5	20.4	12.1	13.3
C	51.7	52.1	51.9	52.0	-0.2	0.1
D	217.0	217.2	199.7	197.5	17.3	19.7
I	38.9	38.9	39.0	38.9	-0.1	0.0
G	107.6	107.9	108.3	108.5	-0.7	-0.6
P	39.6	40.0	29.2	29.1	10.4	10.9
T	23.3	23.3	14.5	17.9	6.8	5.4
Z	64.1	64.4	45.9	43.9	18.2	20.5

Diff = pre - post

TABLE 2-14. PRE-TEST AND POST-TEST DIMENSION MEASUREMENTS -
TARGET VEHICLE (TEST 3051-1)



VEHICLE: 1978 Plymouth Horizon 4-door Sedan

	Pre-test (in.)		Post-test (in.)		Difference (in.)	
	LS	RS	LS	RS	LS	RS
A	99.3	99.5	96.1	93.6	3.2	5.9
B	31.2	31.5	22.4	18.4	8.8	13.1
C	32.6	32.4	32.0	31.9	0.6	0.5
D	163.1	163.4	150.5	143.9	12.6	19.5
I	37.6	37.6	36.8	33.4	0.8	4.2
G	73.3	73.1	73.1	72.6	0.2	0.5
L	89.3	89.4	91.6	91.8	-1.7	-2.4
M	109.5	109.3	109.1	105.1	0.4	4.2
N	26.3	26.5	26.4	26.5	-0.1	0.0
O	53.4	53.3	49.0	50.7	4.4	2.6
P	30.0	29.7	29.7	30.1	0.3	-0.4
Q	14.1	14.0	7.8	10.1	6.3	3.9
R	14.4	14.4	11.2	6.3	3.2	8.1
Z	52.2	52.7	40.6	37.9	11.6	14.8

TABLE 2-15. CHEVROLET C-10 TRUCK EXTERIOR PROFILES AND STATIC CRUSH (TEST 3051-1)

Location	Height at E	RP**	Distance Left of Center (in.)*						Distance Right of Center (in.)*						
			36	30	24	18	12	6	0	6	12	18	24	30	36
Pre-test Profile (Distance from R.P. - in.)															
Hood Level	40.1	220	8.1	7.8	6.0	5.8	5.6	5.5	5.4	5.5	5.6	5.8	6.0	7.9	8.2
Between Bumper/Hood	34.5	220	8.3	9.5	6.4	6.2	6.0	5.9	5.7	5.9	6.1	6.2	6.4	9.4	8.2
Bumper Level	20.9	220	5.2	4.0	3.8	3.5	3.4	3.7	3.7	3.7	3.3	3.4	3.6	3.9	5.0
Post-test Profile (Distance from R.P. - in.)															
Hood Level	31.4	215	5.1	5.5	5.0	4.9	4.7	4.6	4.6	5.0	5.5	6.3	7.2	7.2	6.5
Between Bumper/Hood	28.8	215	8.2	10.0	16.2	13.5	14.3	15.2	15.2	15.3	16.1	15.3	18.0	14.7	10.5
Bumper Level	19.4	215	17.4	16.6	17.0	16.9	16.5	17.3	17.2	17.0	15.4	17.6	19.7	18.5	18.5
Post-test Static Crush (in.)															
Hood Level	8.7		2.0	2.7	4.0	4.1	4.1	4.1	4.2	4.5	4.9	5.5	6.2	4.3	3.3
Between Bumper/Hood	5.8		4.9	5.5	14.8	12.3	13.3	14.3	14.5	14.4	15.0	15.1	16.6	10.3	7.3
Bumper Level	1.5		17.2	17.6	18.2	18.4	18.1	18.6	18.5	18.3	17.1	19.2	21.1	19.6	18.5

*As viewed from driver position in truck.

**Reference Plane from rear bumper of truck.

TABLE 2-16. CHEVROLET C-10 TRUCK INTERIOR PROFILES AND STATIC CRUSH (TEST 3051-1)

Location	Height at E	RP**	Distance Left of Center (in.)*						Distance Right of Center (in.)*					
			36	30	24	18	12	6	0	6	12	18	24	30
Pre-test Profile (Distance from R.P. - in.)														
Dash Level	49.7	135.0	14.5	16.4	16.6	16.5	14.5	19.2	19.2	19.1	19.0	18.2	17.6	
Knee Level	38.5	135.0	15.8	17.9	18.7	18.0	16.0	18.4	18.1	18.1	17.9	17.5	17.1	
Floor Level	28.2	139.9	21.5	21.6	21.9	21.8	21.1	20.5	20.0	21.3	21.1	21.3	20.7	
Post-test Profile (Distance from R.P. - in.)														
Dash Level	47.6	130.0	19.6	21.4	21.9	21.4	19.5	24.3	24.3	24.3	24.2	23.3	22.5	
Knee Level	36.3	130.0	20.8	22.9	23.2	23.0	21.1	23.3	23.0	23.1	23.1	22.5	22.2	
Floor Level	26.9	143.0	18.3	18.3	18.0	17.9	16.5	15.4	15.1	17.5	18.0	18.0	17.7	
Post-test Static Crush (in.)														
Dash Level	2.1		-0.1	0.0	-0.3	0.1	0.0	-0.1	-0.1	-0.2	-0.2	-0.1	0.1	
Knee Level	2.2		0.0	0.0	0.0	0.0	-0.1	0.1	0.1	0.0	-0.2	0.0	-0.1	
Floor Level	1.3		0.1	0.2	0.8	0.8	1.5	2.0	1.8	0.7	0.0	0.2	-0.1	

*As viewed from driver position in truck.
**Reference Plane from rear bumper of truck.

*As viewed from driver position in truck.

**Reference Plane from rear bumper of truck.

TABLE 2-17. PLYMOUTH HORIZON EXTERIOR PROFILES AND STATIC CRUSH (TEST 3051-1)

Location	Height at E RP**	Distance Left of Center (in.)*						Distance Right of Center (in.)*					
		36	30	24	18	12	6	0	6	12	18	24	30
Pre-test Profile (Distance from R.P. - in.)													
Hood Level	29.7	165		10.1	9.4	9.0	8.8	8.6	8.8	9.0	9.4	10.0	
Between Bumper/Hood	25.6	165		8.7	9.5	7.7	7.5	7.0	7.5	7.6	9.6	8.8	
Bumper Level	17.7	165		2.7	2.2	1.9	1.6	1.6	1.7	1.9	2.3	2.6	
Post-test Profile (Distance from R.P. - in.)													
Hood Level	32.9	155		15.3	16.9	15.5	15.5	16.5	17.1	17.4	19.0	18.4	
Between Bumper/Hood	25.5	155		23.0	20.4	23.6	22.9	21.6	23.7	23.1	24.3	23.1	
Bumper Level	15.6	155		7.1	9.2	11.5	11.1	11.4	11.8	12.4	11.6	12.5	
Post-test Static Crush (in.)													
Hood Level	-3.2			15.2	17.5	16.5	16.7	17.9	18.3	18.4	19.6	18.4	
Between Bumper/Hood	0.1			24.3	20.9	25.9	25.4	24.6	26.2	25.5	24.7	24.3	
Bumper Level	2.1			14.4	17.0	19.6	19.5	19.8	20.1	20.5	19.3	19.9	

*As viewed from driver position in car.

**Reference Plane from rear bumper of car.

TABLE 2-18. PLYMOUTH HORIZON INTERIOR PROFILES AND STATIC CRUSH (TEST 3051-1)

Location	Height at E RP**	Distance Left of Center (in.)*						Distance Right of Center (in.)*						
		36	30	24	18	12	6	0	6	12	18	24	30	36
Pre-test Profile (Distance from R.P. - in.)														
Dash Level	36.7 90			16.8	12.5	12.9	18.6	18.7	18.5	18.3	17.6	16.9		
Knee Level	27.5 90			17.0	17.3	17.0	18.0	18.3	18.1	17.9	17.5	16.8		
Floor Level	15.2 98.4			19.4	22.9	22.9	22.9	19.8	21.3	21.3	21.0	18.9		
Post-test Profile (Distance from R.P. - in.)														
Dash Level	30.9 86			19.2	16.3	16.0	19.0	18.6	18.0	16.9	16.0	14.6		
Knee Level	23.0 86			15.7	16.1	14.1	14.8	13.7	13.6	25.3 ***	26.1 ***	11.7 ***		
Floor Level	9.6 99			16.4	16.5	15.5	15.2	12.2	11.1	14.0	13.7	15.1		
Post-test Static Crush (in.)														
Dash Level	5.8			1.6	0.2	0.9	3.6	4.1	4.5	5.4	5.6	6.3		
Knee Level	4.5			5.3	5.2	6.9	7.2	8.6	8.5	-3.4 ***	-4.6 ***	9.1 ***		
Floor Level	5.8			2.4	5.8	6.8	7.1	7.0	9.6	6.7	6.7	3.2		

*As viewed from driver position in car.

**Reference Plane from rear bumper of car.

***To firewall.

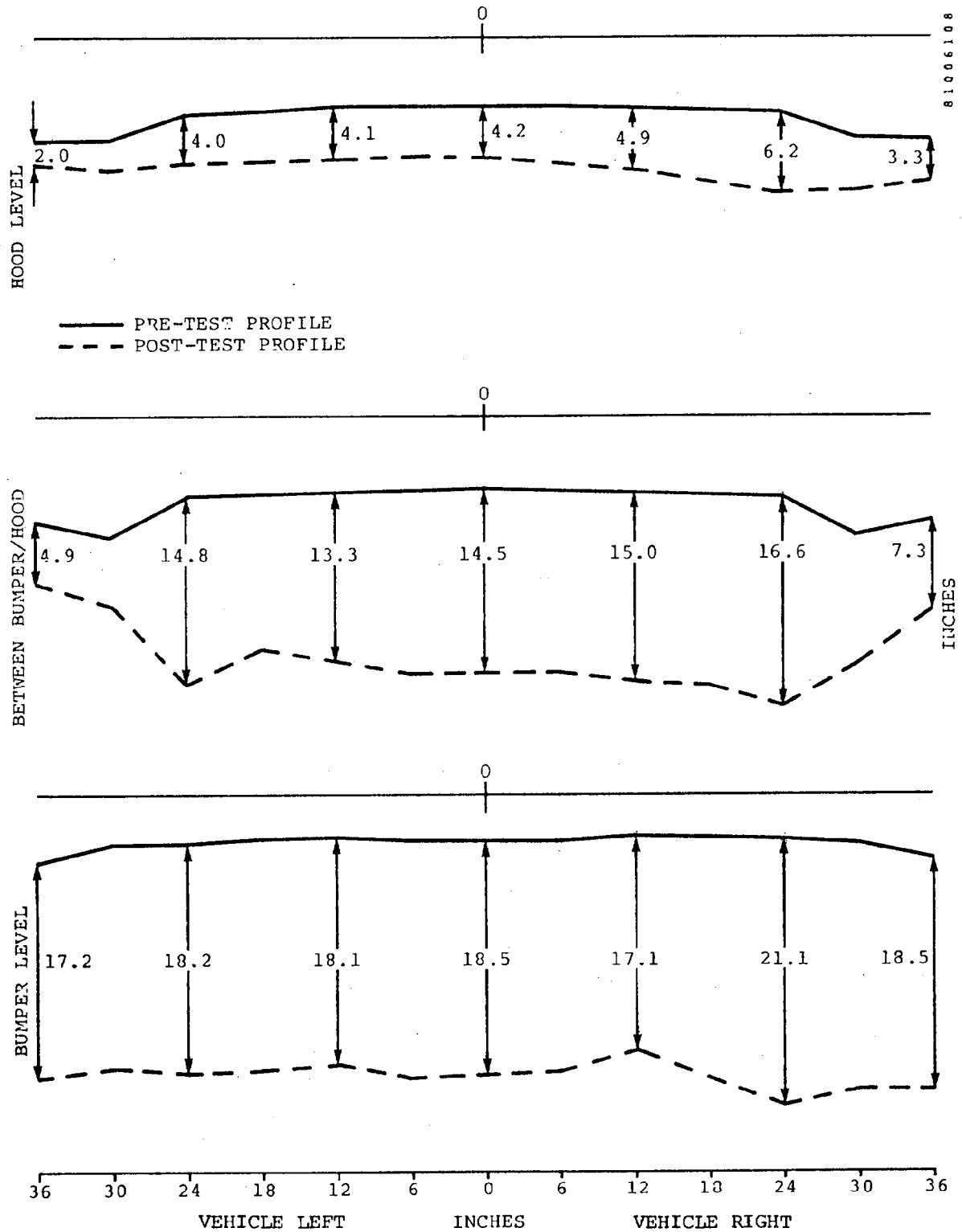


Figure 2-8. Chevrolet C-10 Truck Exterior Static Crush (Test 3051-1).

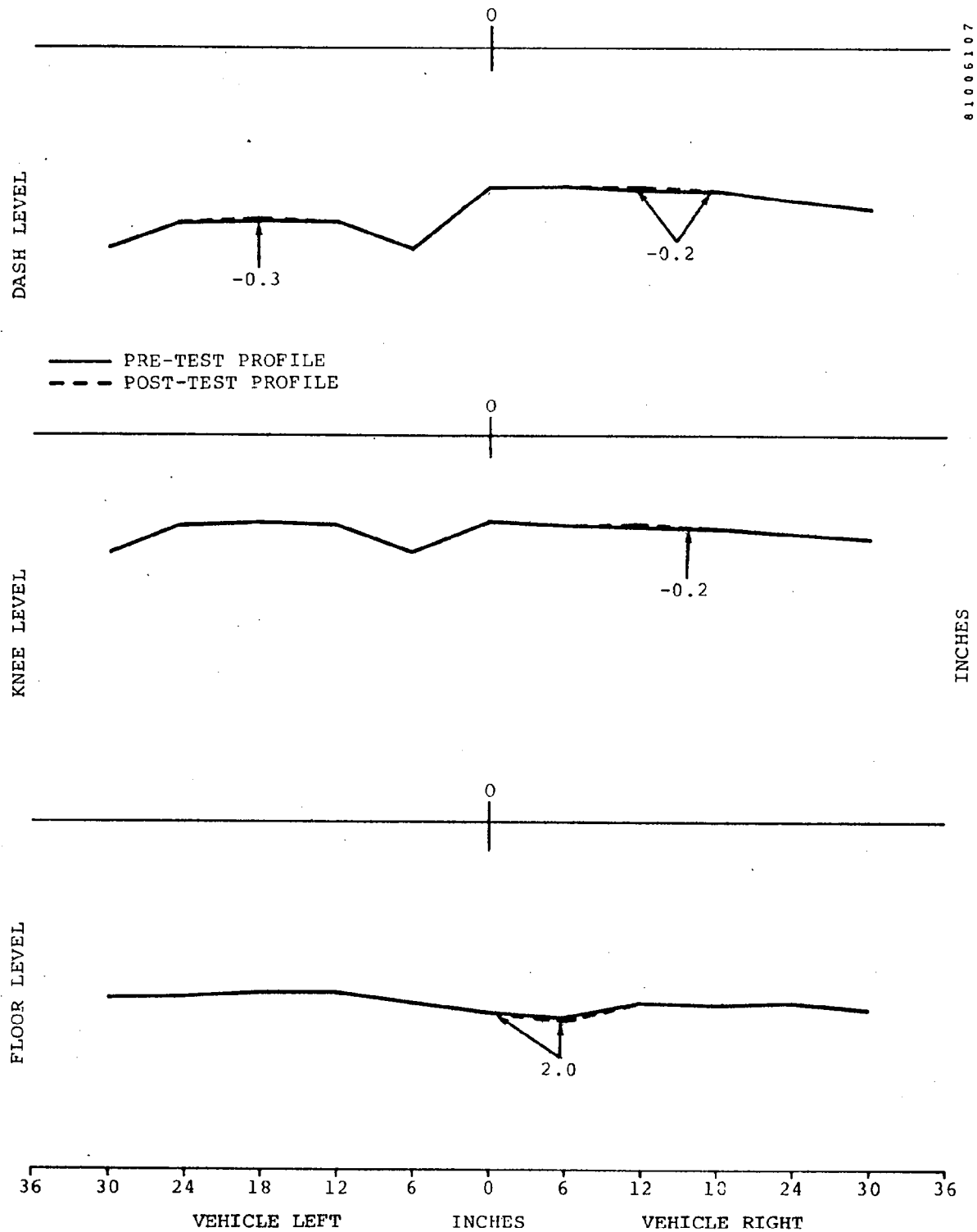


Figure 2-9. Chevrolet C-10 Truck Interior Intrusion
(Test 3051-1).

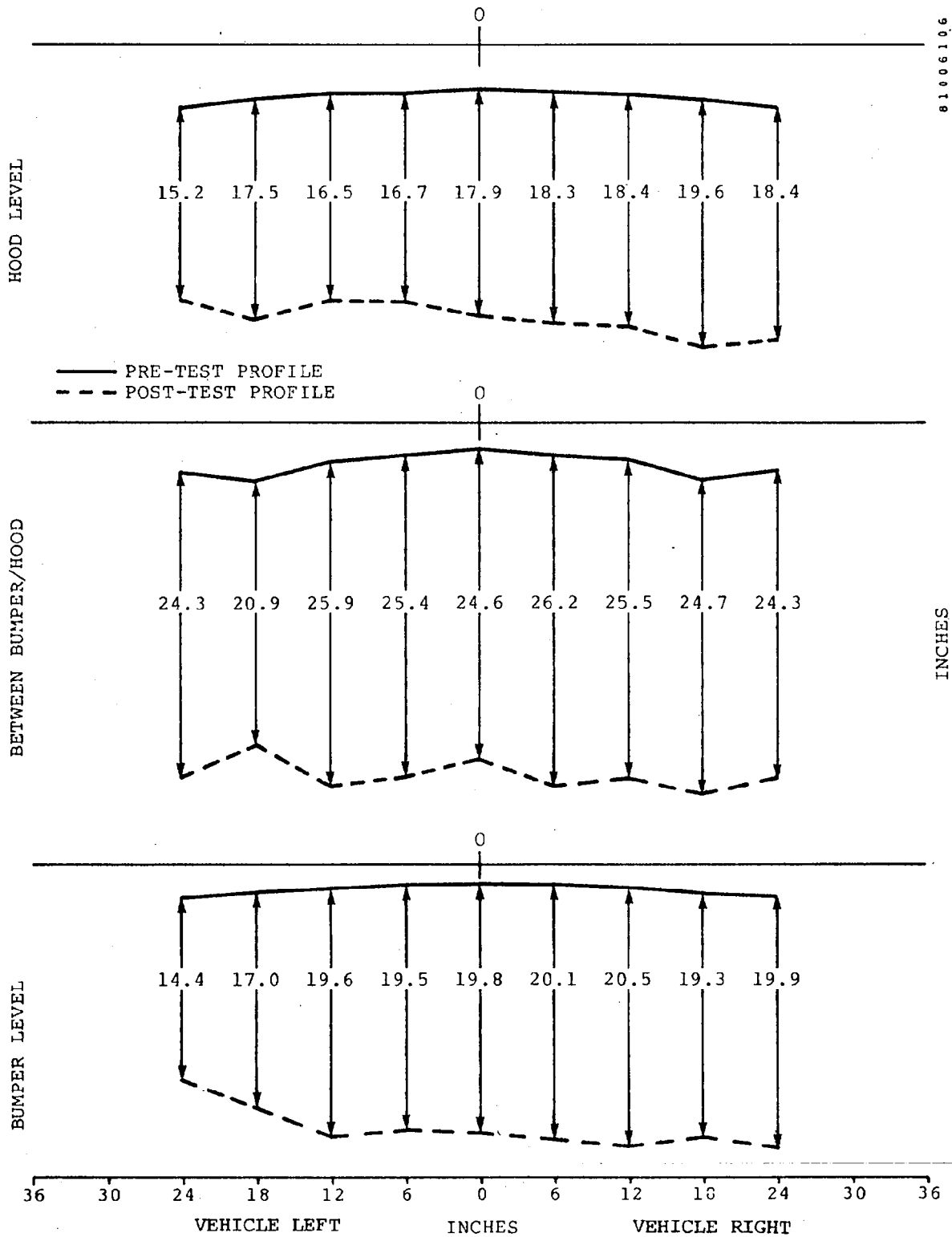


Figure 2-10. Plymouth Horizon Exterior Static Crush (Test 3051-1).

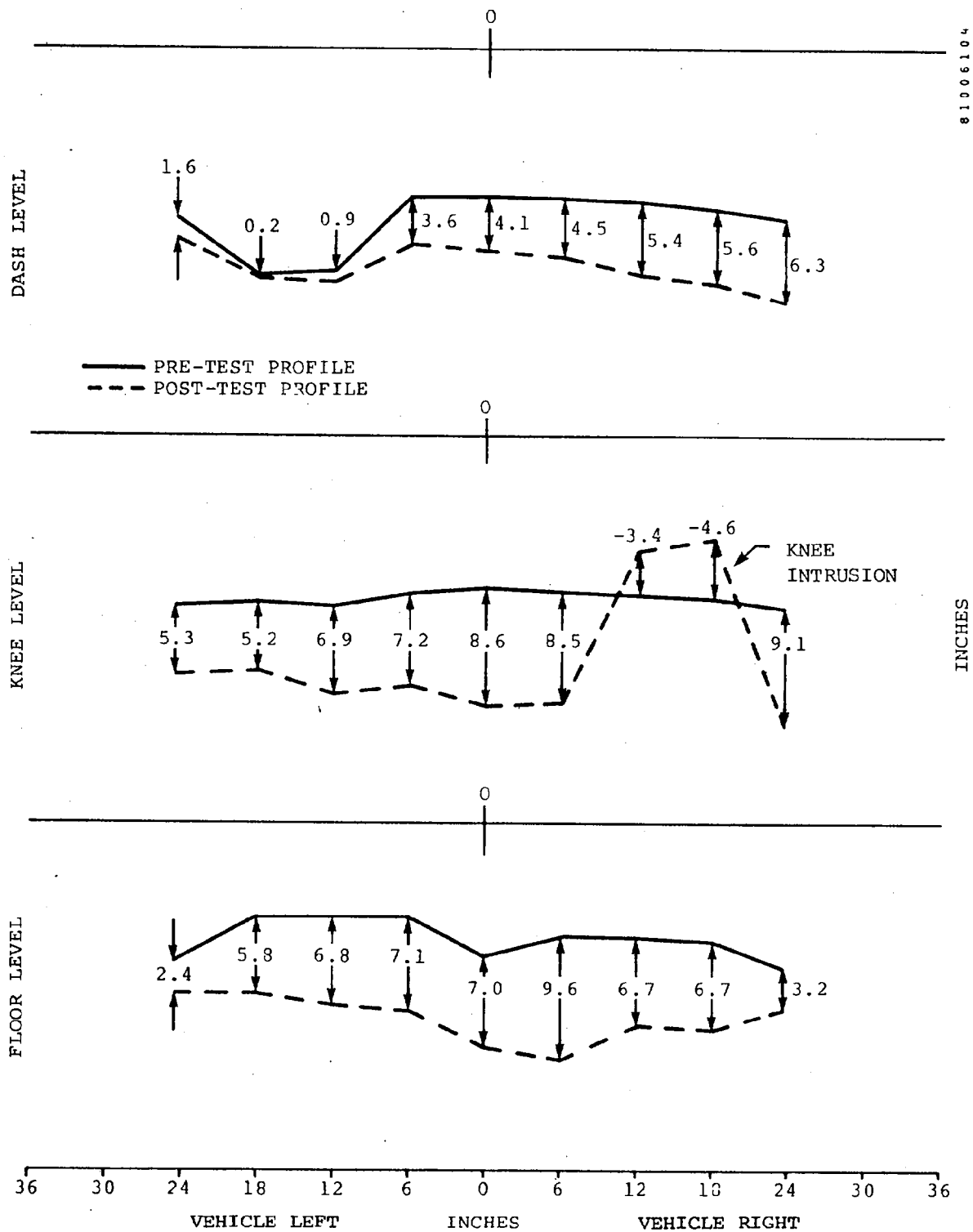


Figure 2-11. Plymouth Horizon Interior Intrusion (Test 3051-1).

TABLE 2-19. CHEVROLET C-10 TRUCK STEERING WHEEL MEASUREMENTS
AND DISPLACEMENT VALUES (TEST 3051-1).

Wheel Location	Pre-test (in.)			Post-test (in.)			Displacement (in.)		
	X*	Y*	Z*	X	Y	Z	X	Y	Z
Top	141.0	-18.0	53.9	142.7	-17.8	50.9	-1.7	-0.2	3.0
Bottom	134.8	-18.0	39.9	137.0	-17.8	36.8	-2.2	-0.2	3.1
Hub	138.6	-18.0	46.3	140.4	-17.8	44.1	-1.8	-0.2	2.1

*Reference for X, Y, and Z measurements are rear bumper, vehicle centerline and ground level, respectively.

TABLE 2-20. PLYMOUTH HORIZON STEERING WHEEL MEASUREMENTS
AND DISPLACEMENT VALUES (TEST 3051-1)

Wheel Location	Pre-test (in.)			Post-test (in.)			Displacement (in.)		
	X*	Y*	Z*	X	Y	Z	X	Y	Z
Top	99.1	-13.0	42.1	99.9	-14.3	35.1	-0.8	1.3	7.0
Bottom	92.2	-13.0	29.7	89.2	-11.9	21.3	3.0	-1.1	8.4
Hub	99.2	-13.0	33.9	98.4	-17.0	27.0	0.8	4.0	6.9

*Reference for X, Y, and Z measurements are rear bumper, vehicle centerline and ground level, respectively.

TABLE 2-21. SUMMARY OF VEHICLE ACCELEROMETER DATA (TEST 3051-1)

VEHICLE: 1979 Chevrolet C-10 Truck

Accelerometer* No.	Maximum Acceleration		Minimum Velocity		Maximum Displacement	
	A (G)	Time (msec)	V (mph)	Time (msec)	S (in.)	Time (msec)
1X	-26.6	20	+3.9	152	+46.2	200
1Z	-12.7	25	-6.1	146	+10.1	200
2X	-28.3	46	+4.3	149	+46.1	200
2Z	-12.0	50	-5.5	142	-7.6	200
Average 1X and 2X	-26.1	20	+4.1	151	+46.2	200
3X	-26.1	53	+4.1	200	+45.5	200
3Z	-11.1	62	-7.6	116	-18.0	200

VEHICLE: 1978 Plymouth Horizon 4-door Sedan

1X	-39.8	34	-12.3	72	+22.8	73
1Z	-45.0	60	-7.2	63	-2.1	82
2X	-47.5	53	-11.3	147	+24.2	80
2Z	+41.5	9	-6.6	63	-2.2	200
Average 1X and 2X	-41.1	53	-11.7	146	+23.5	76
3X	-86.7	24	-11.9	59	+13.4	44

*See Figures 2-1 and 2-2 for definition of accelerometer locations.

TABLE 2-22. OCCUPANT RESPONSE DATA SUMMARY (TEST 3051-1)

VEHICLE: 1979 Chevrolet C-10 Truck					VEHICLE: 1978 Plymouth Horizon 4-dr Sedan				
	LEFT FRONT OCCUPANT		RIGHT FRONT OCCUPANT		LEFT FRONT OCCUPANT		RIGHT FRONT OCCUPANT		
	MAX VALUE (G)	T (MSEC)	MAX VALUE (G)	T (MSEC)	MAX VALUE (G)	T (MSEC)	MAX VALUE (G)	T (MSEC)	
HEAD									
X	-58.1	88	ND		-187.7	69	-249.6	86	
Y	-15.9	112	ND		-51.5	69	+50.3	85	
Z	+33.7	96	ND		+70.5	90	+68.5	85	
R*	57.0	106	ND		92.2	92	201.6	88	
HIC	385 @ 87-117				1030 @ 68-106		3318 @ 84-89		
CHEST									
X	-43.9	95	ND		-54.9	65	-43.2	104	
Y	-10.3	92	ND		-35.8	84	+22.9	106	
Z	-9.1	98	ND		+17.5	51	+17.4	94	
R*	42.2	93	ND		51.0	67	44.7	103	
SI	175 @ 200				499 @ 200		411 @ 200		
	MAX VALUE (LB)	T (MSEC)	MAX VALUE (LB)	T (MSEC)	MAX VALUE (LB)	T (MSEC)	MAX VALUE (LB)	T (MSEC)	
FEMURS									
LF	ND		ND		-525	58	-1283	69	
RT	ND		ND		-739	69	-1875	73	

*3-msec clip

ND = No Data (Data not measured)

TABLE 2-23. SUMMARY OF RESTRAINT SYSTEM DATA
(TEST 3051-1)

VEHICLE: 1979 Chevrolet C-10 Truck	Peak Load (lb)	@	Time (msec)
---------------------------------------	-------------------	---	----------------

Left Front Occupant

Peak Shoulder Belt Load	882	@	105
Peak Left Lap Belt Load	779	@	88
Peak Right Lap Belt Load			ND

Right Front Occupant

Peak Shoulder Belt Load			ND
Peak Left Lap Belt Load			ND
Peak Right Lap Belt Load			ND

VEHICLE: 1978 Plymouth Horizon 4-door Sedan	Peak Load (lb)	@	Time (msec)
--	-------------------	---	----------------

Left Front Occupant

Peak Shoulder Belt Load	1286	@	75
Peak Left Lap Belt Load	2040	@	59
Peak Right Lap Belt Load	1722	@	60

Right Front Occupant

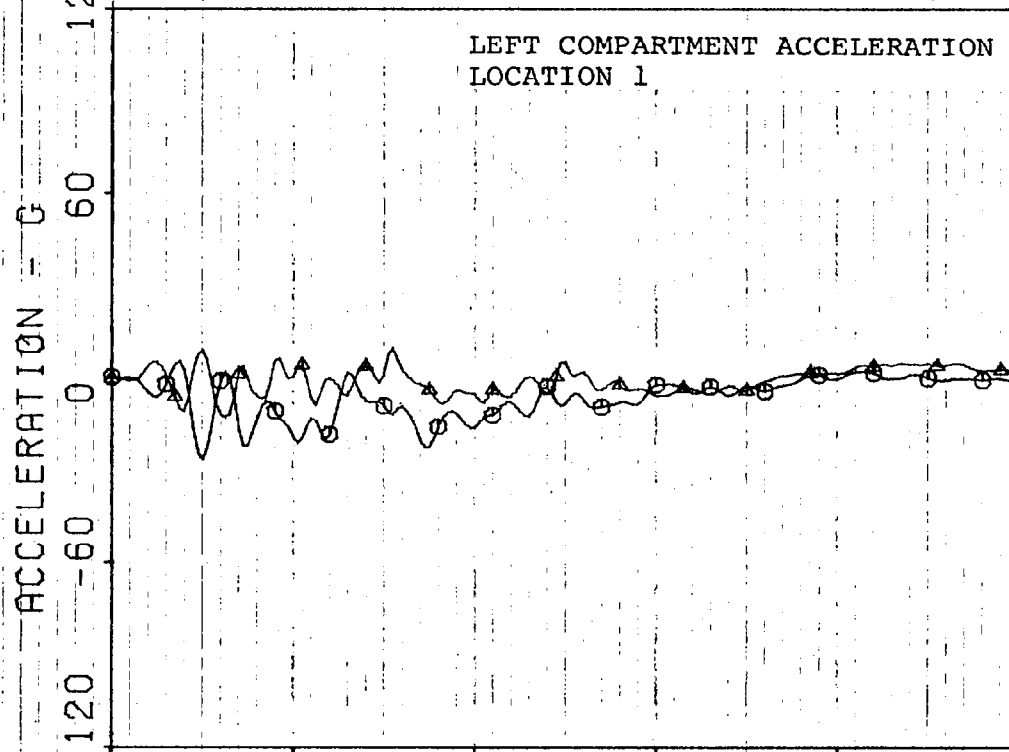
Peak Shoulder Belt Load	1676	@	75
Peak Left Lap Belt Load	1664	@	65
Peak Right Lap Belt Load	2058	@	65

ND = No Data (Data not measured)

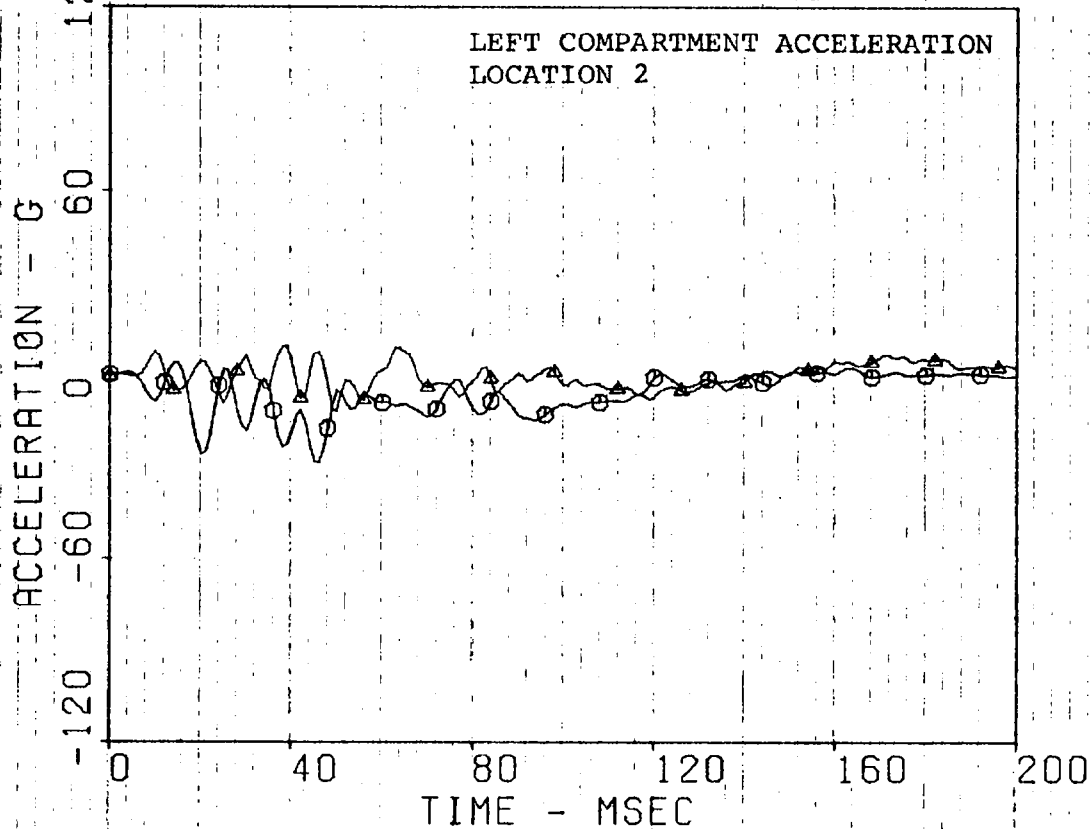
APPENDIX A

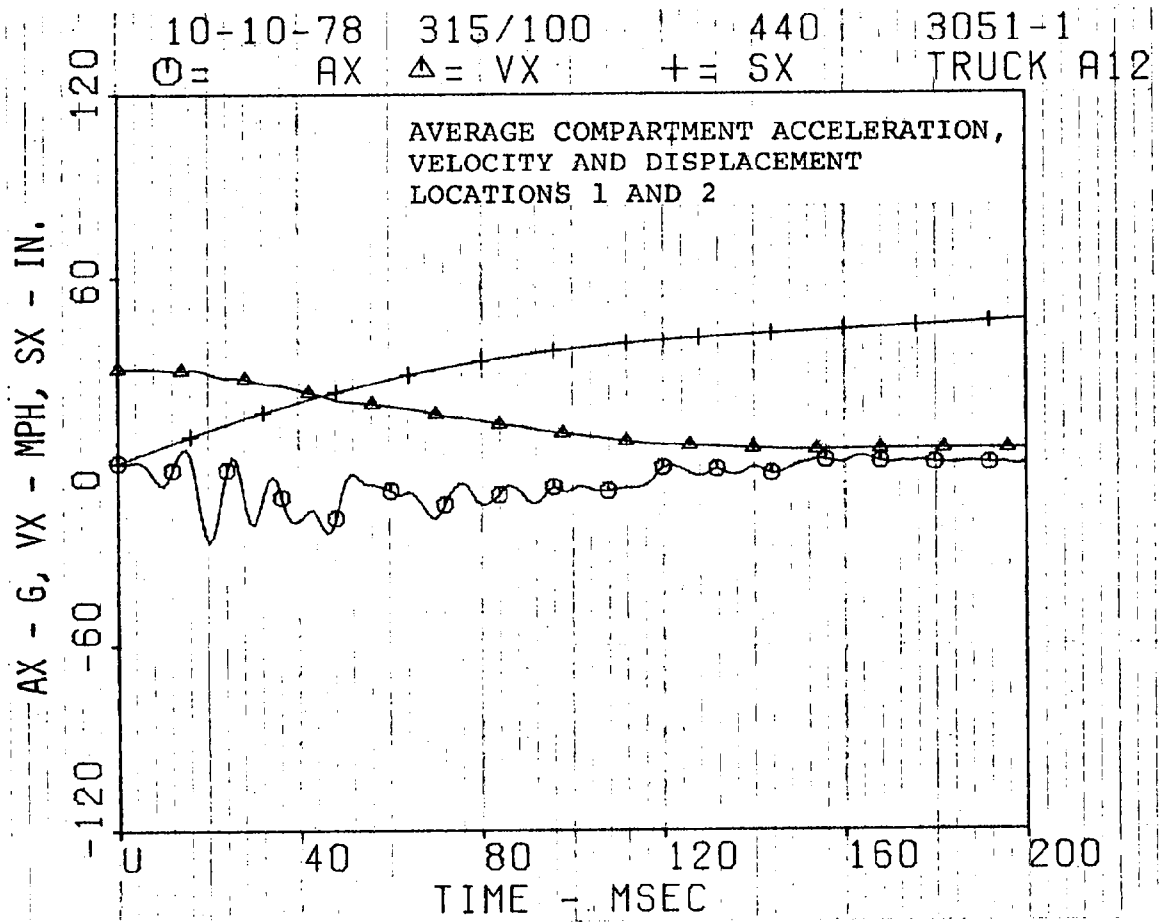
CALCOMP PLOTS FOR
TEST NO. 3051-1

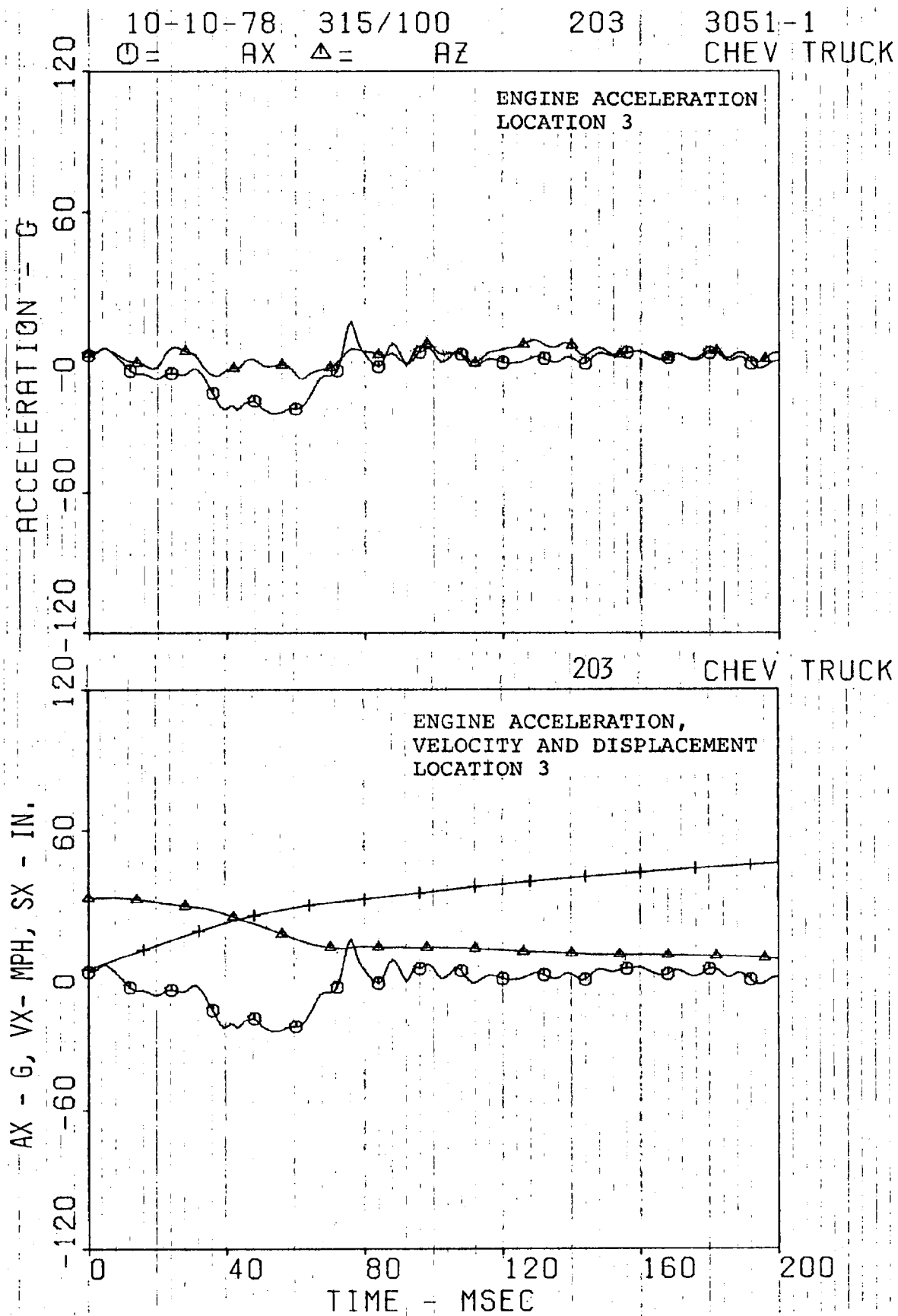
10-10-78 315/100 201 3051-1
O = AX Δ = AZ CHEV TRUCK

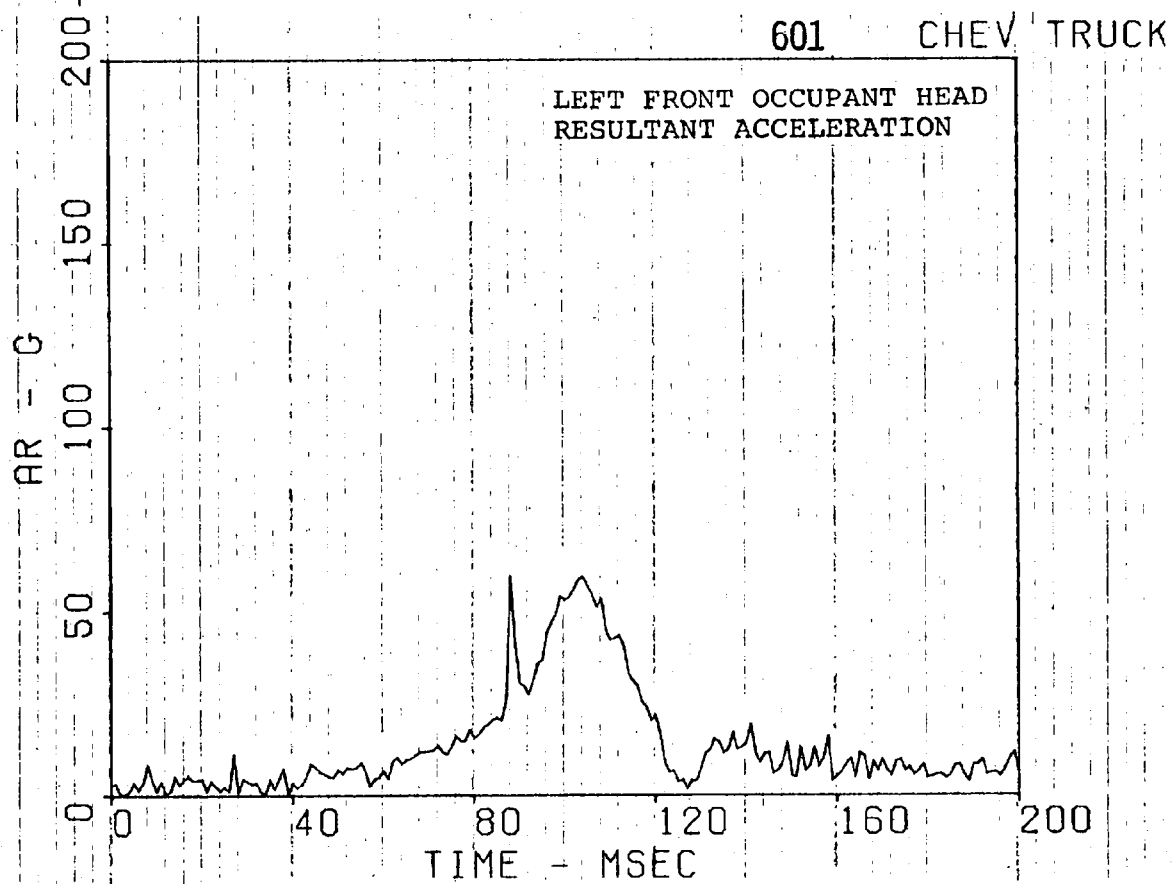
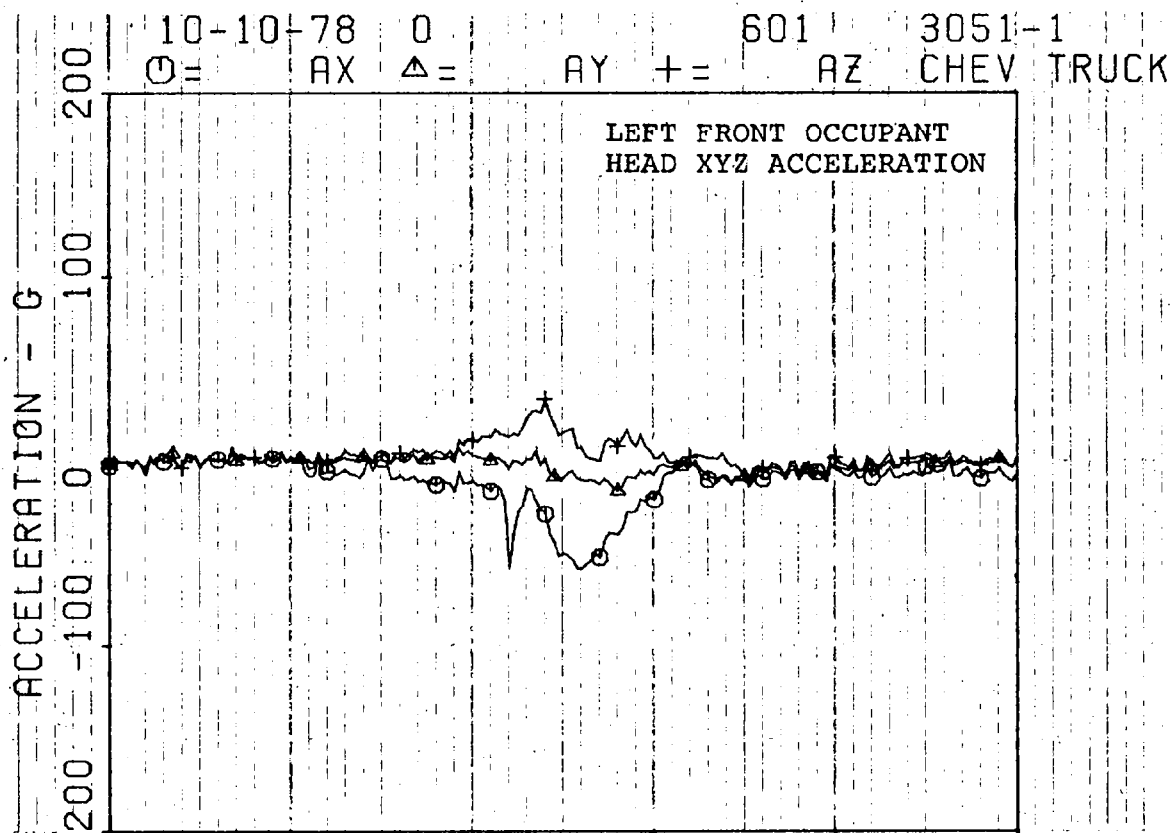


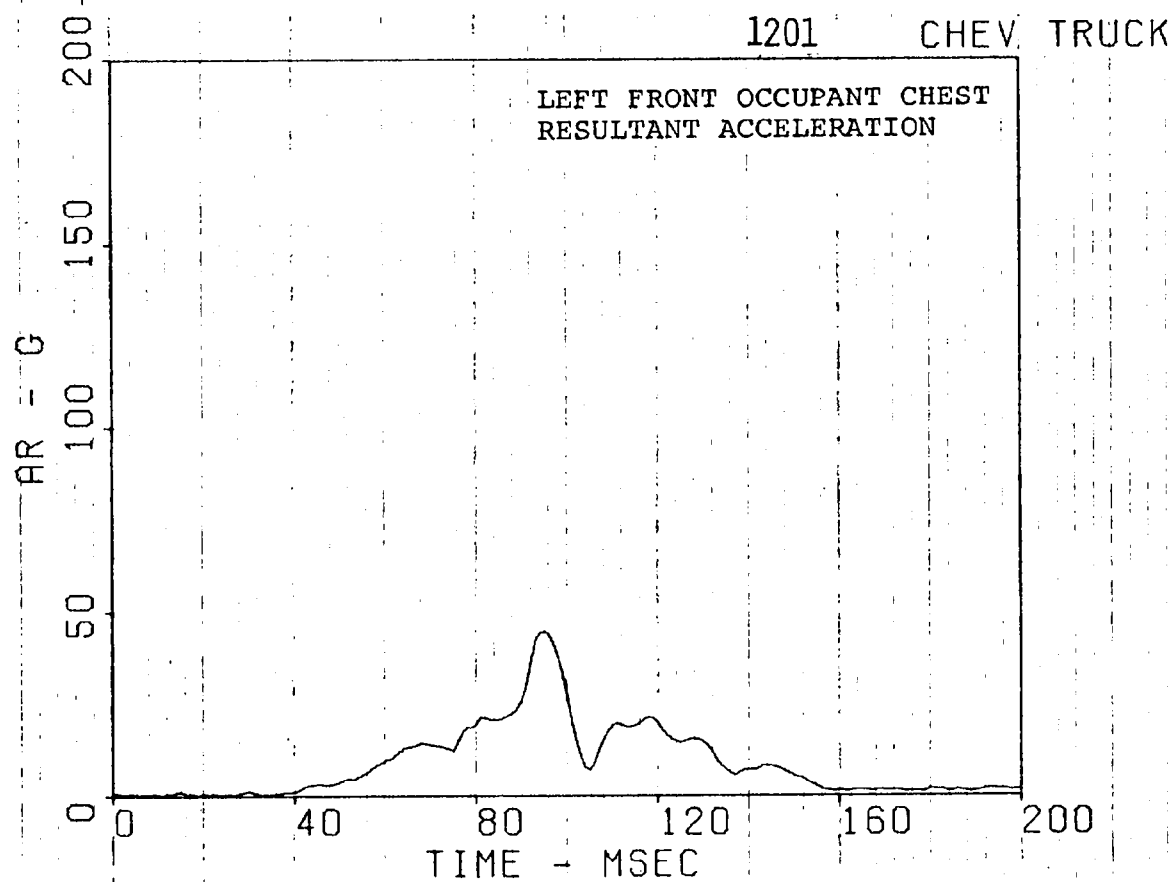
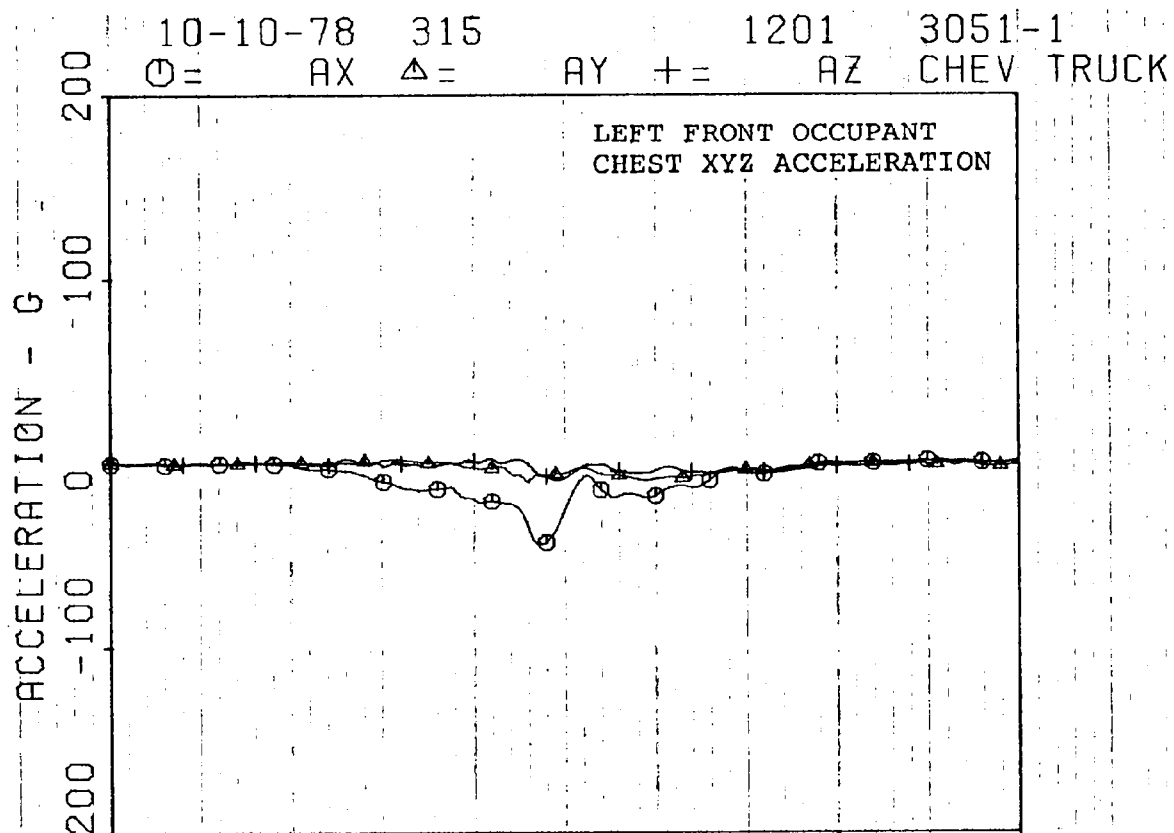
O = AX Δ = AZ 202 CHEV TRUCK

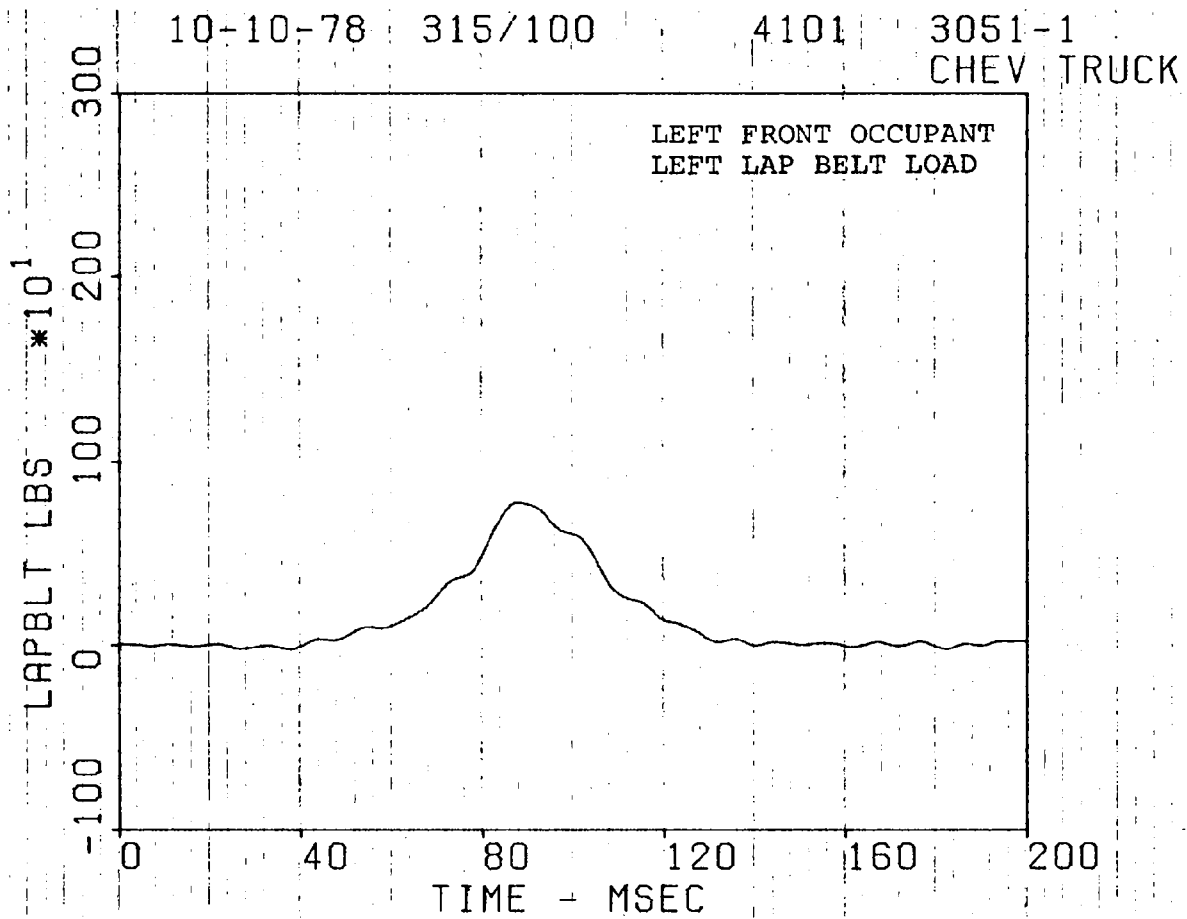


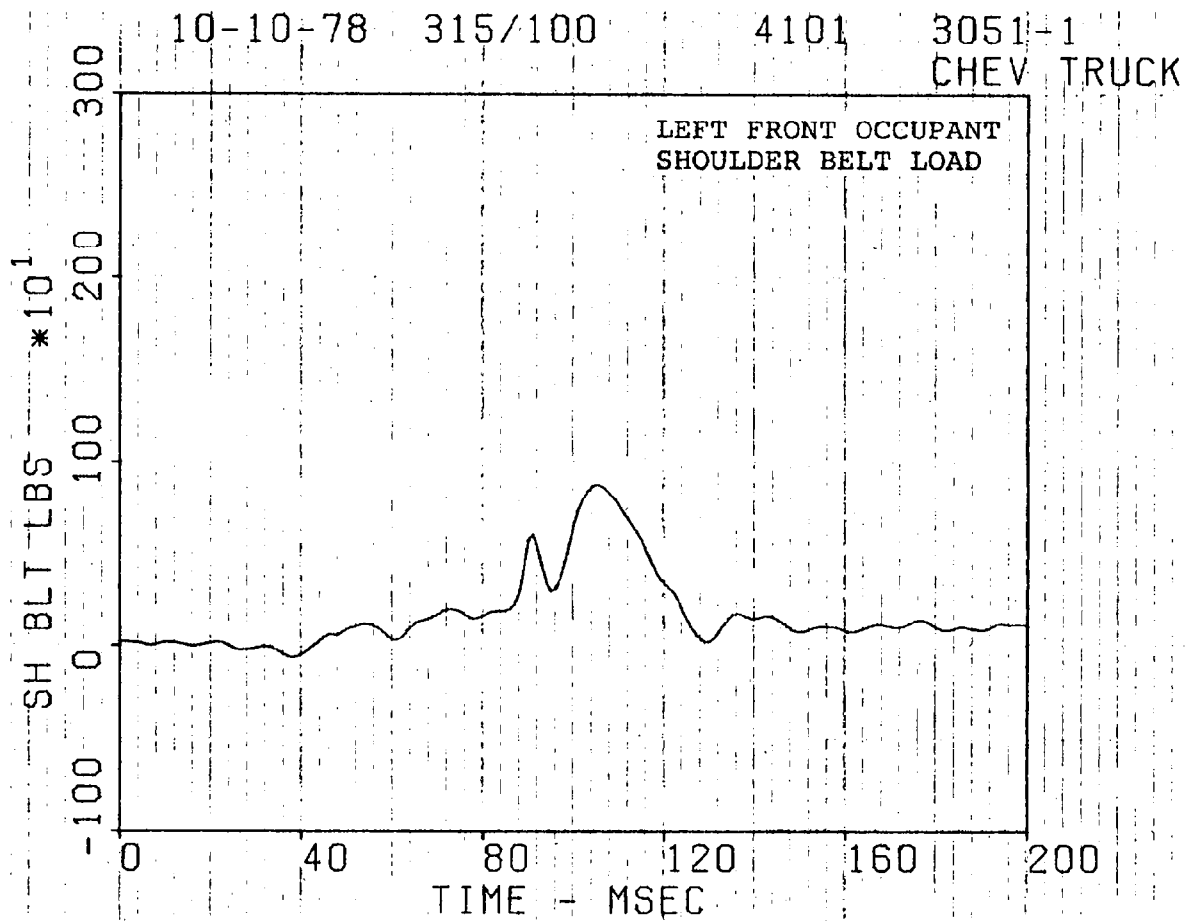


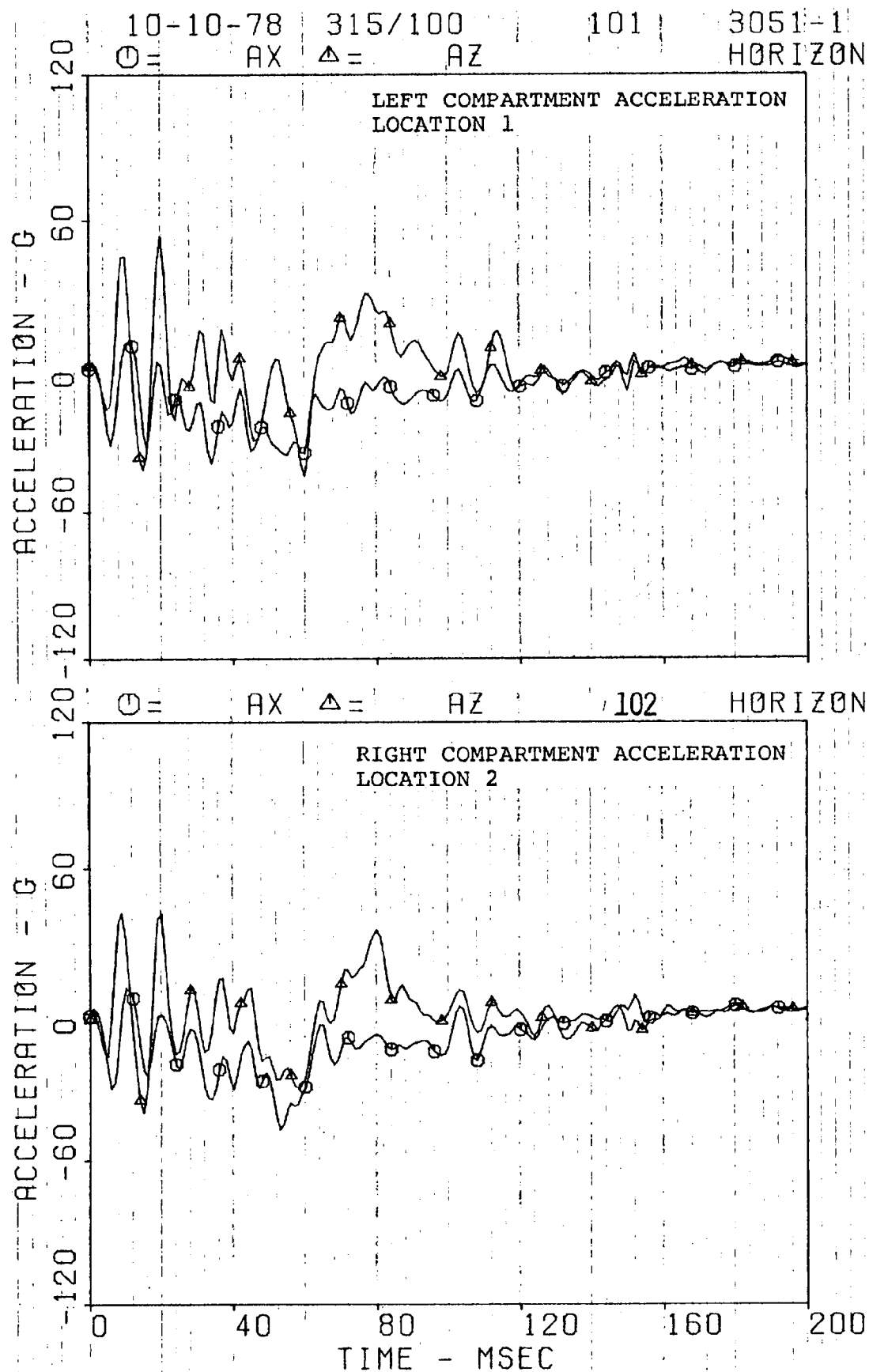


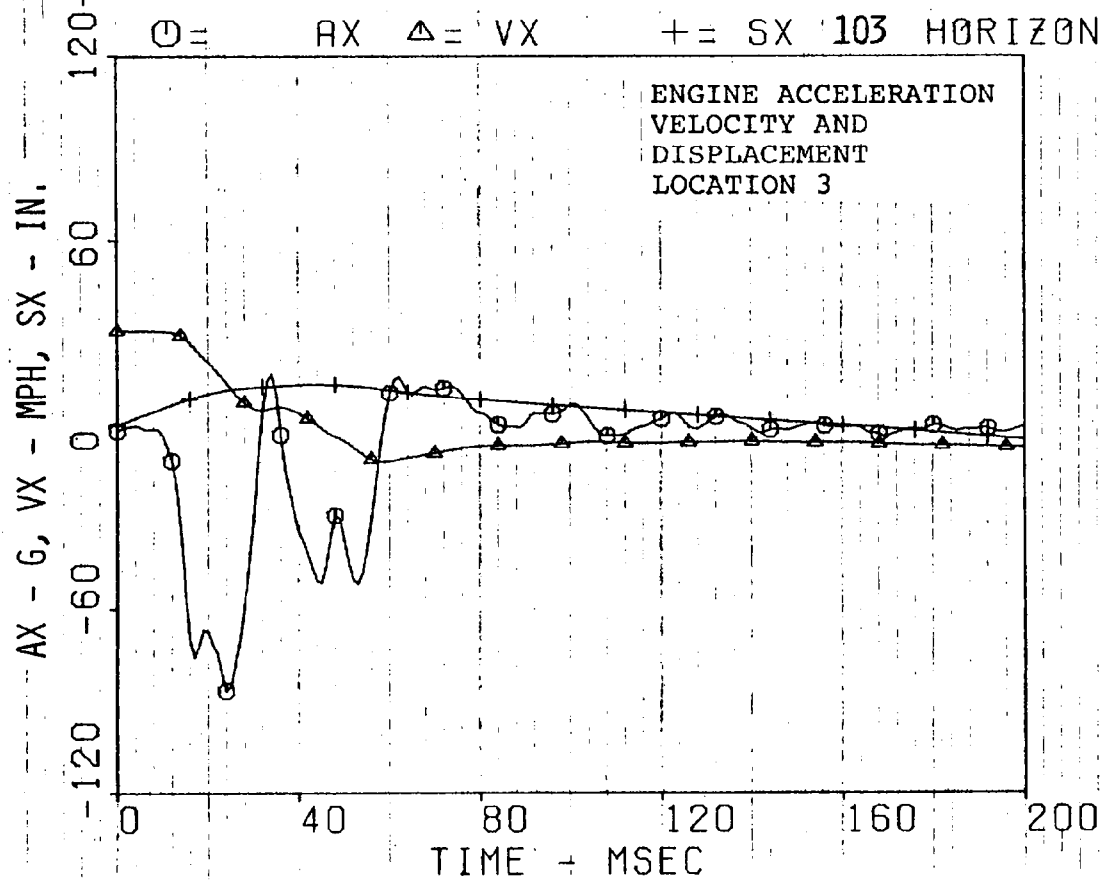
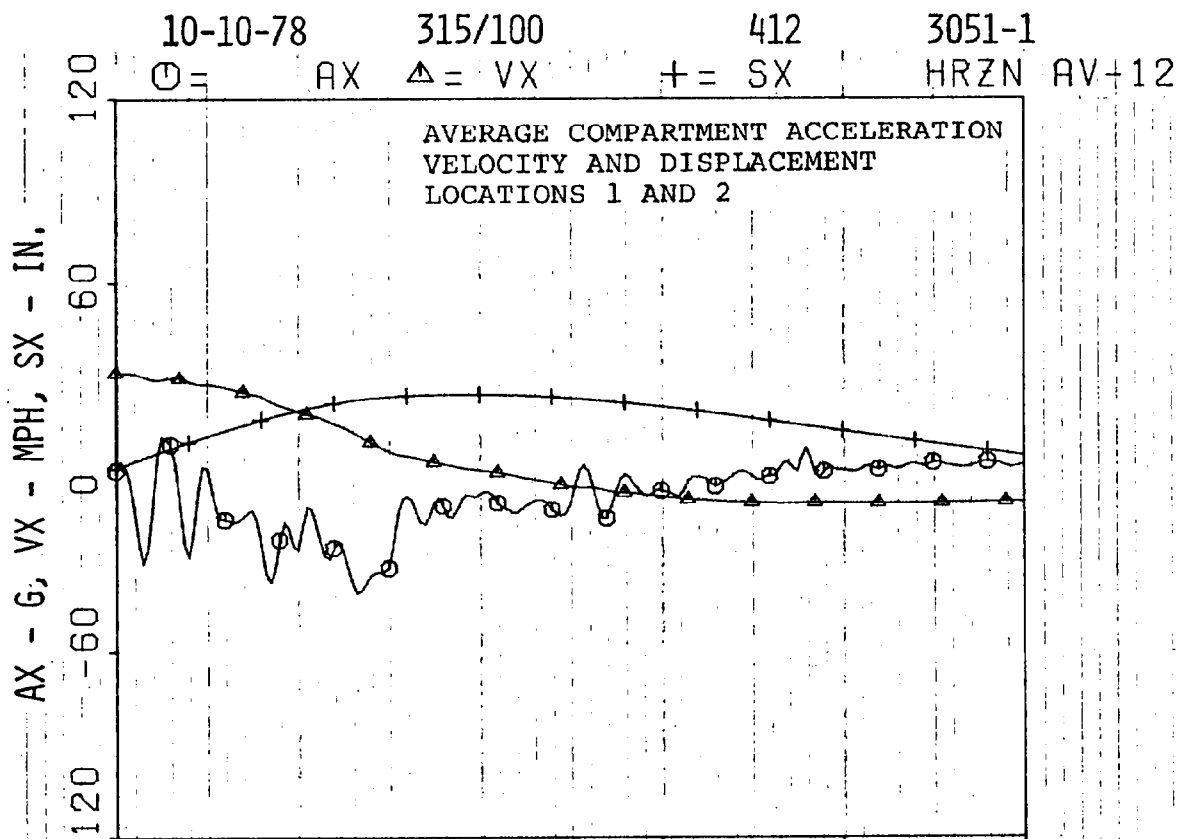












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501

3051-1

⊖ =

AX

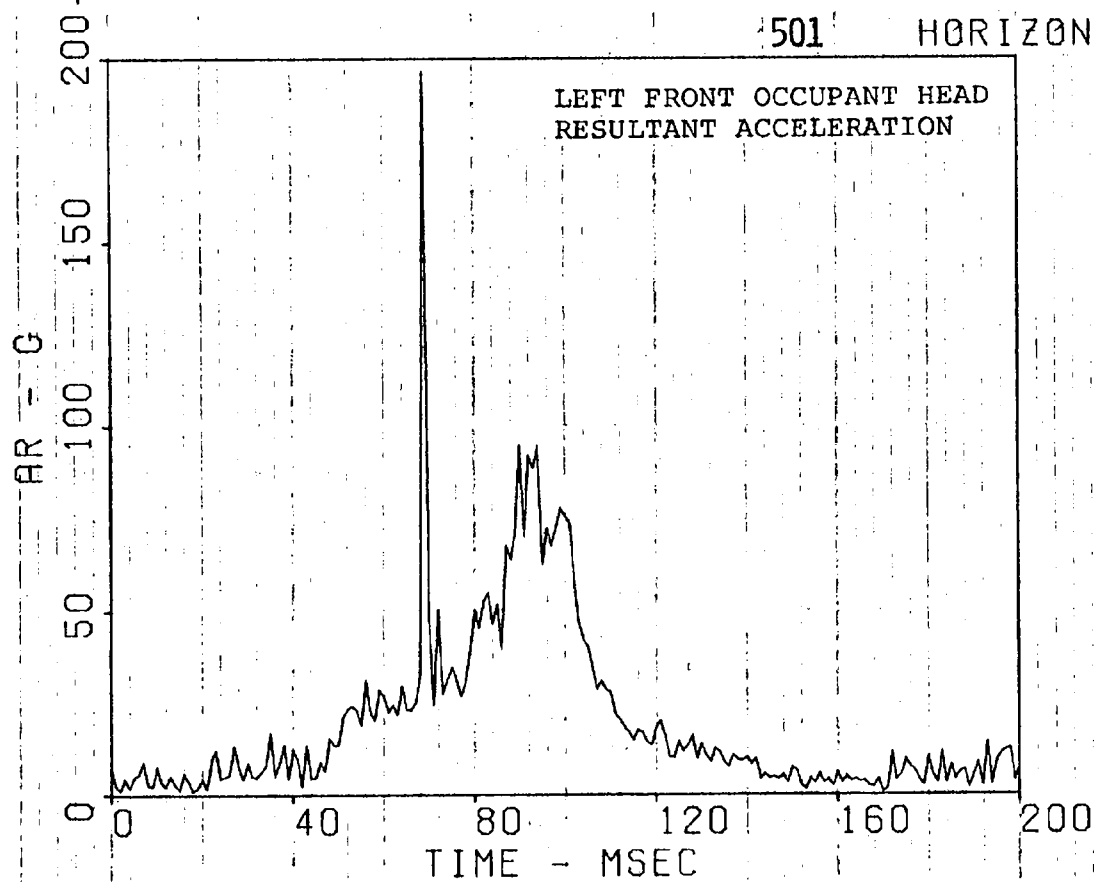
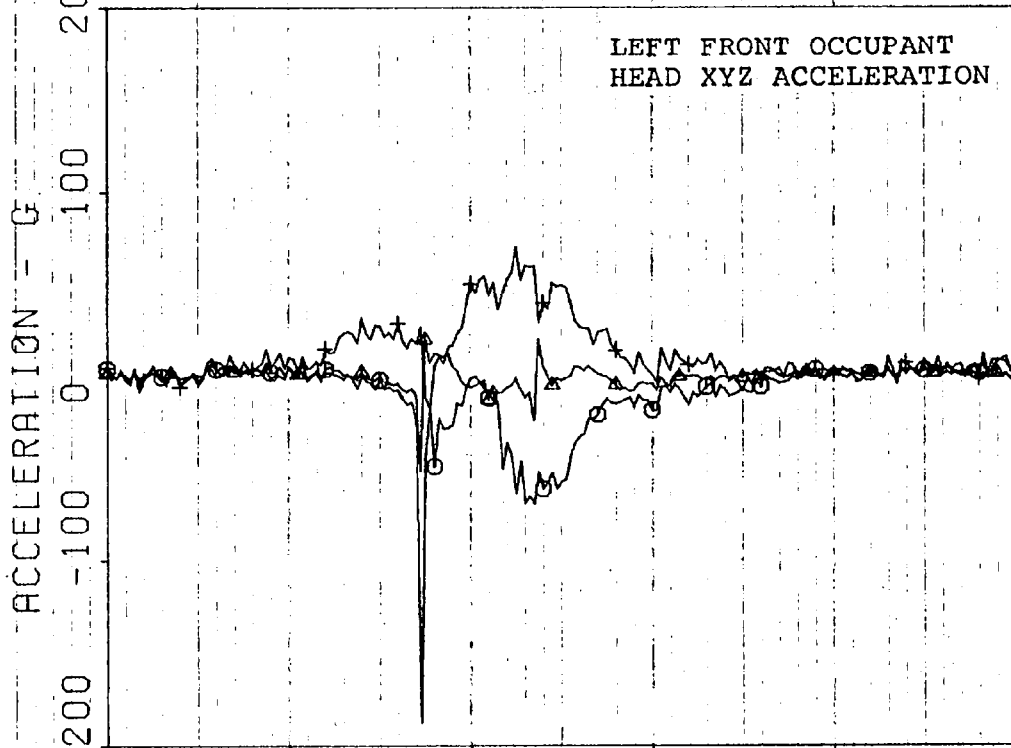
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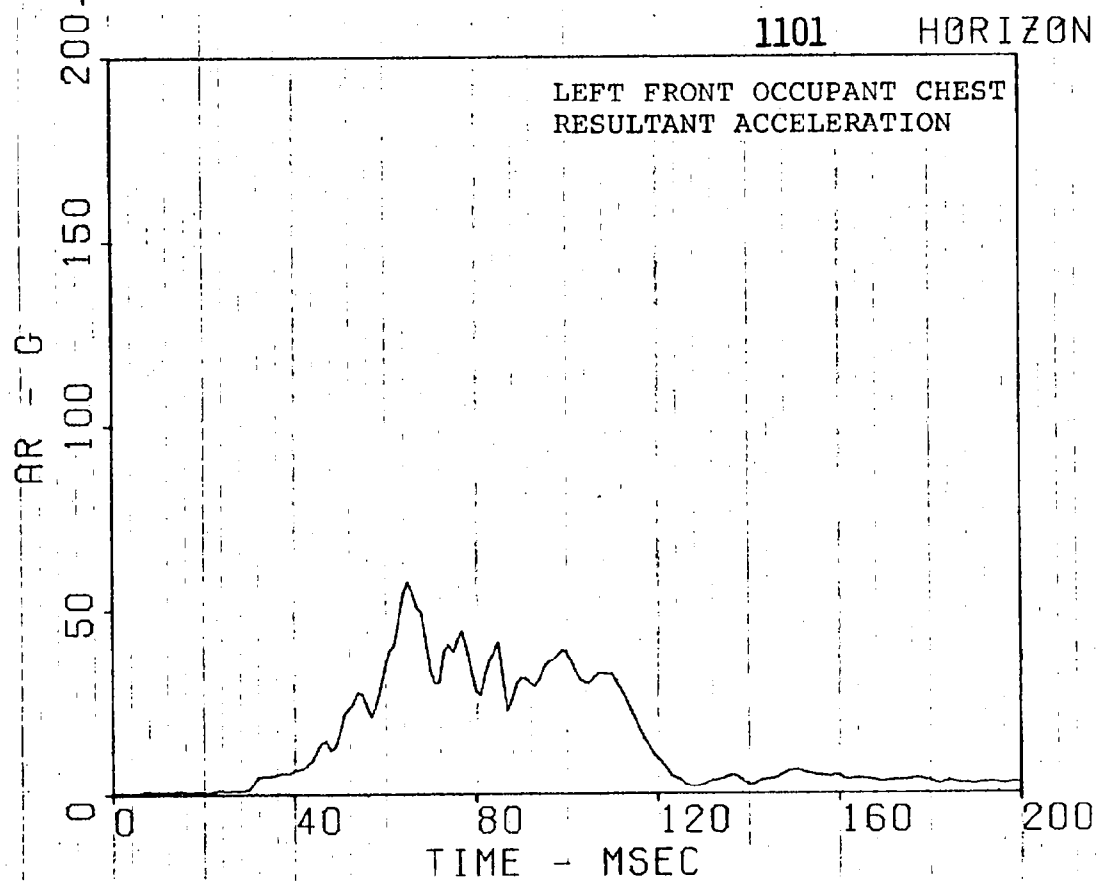
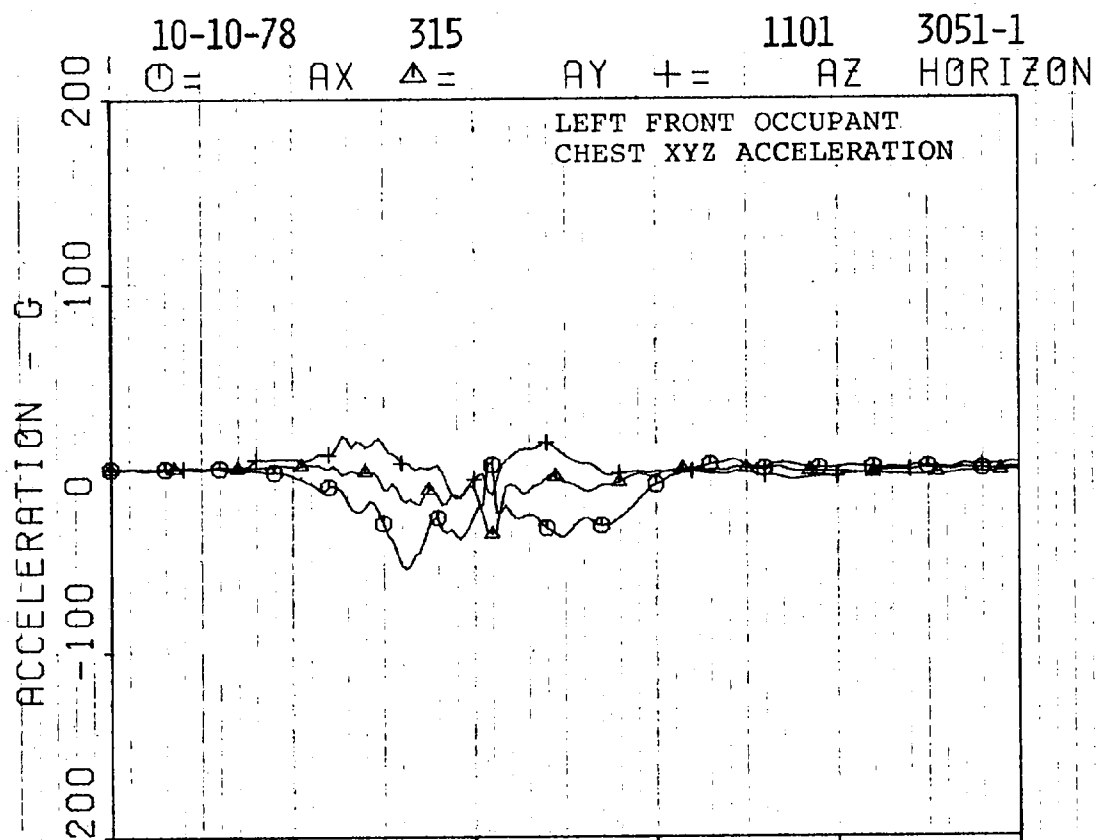
AY

+=

AZ

HORIZON



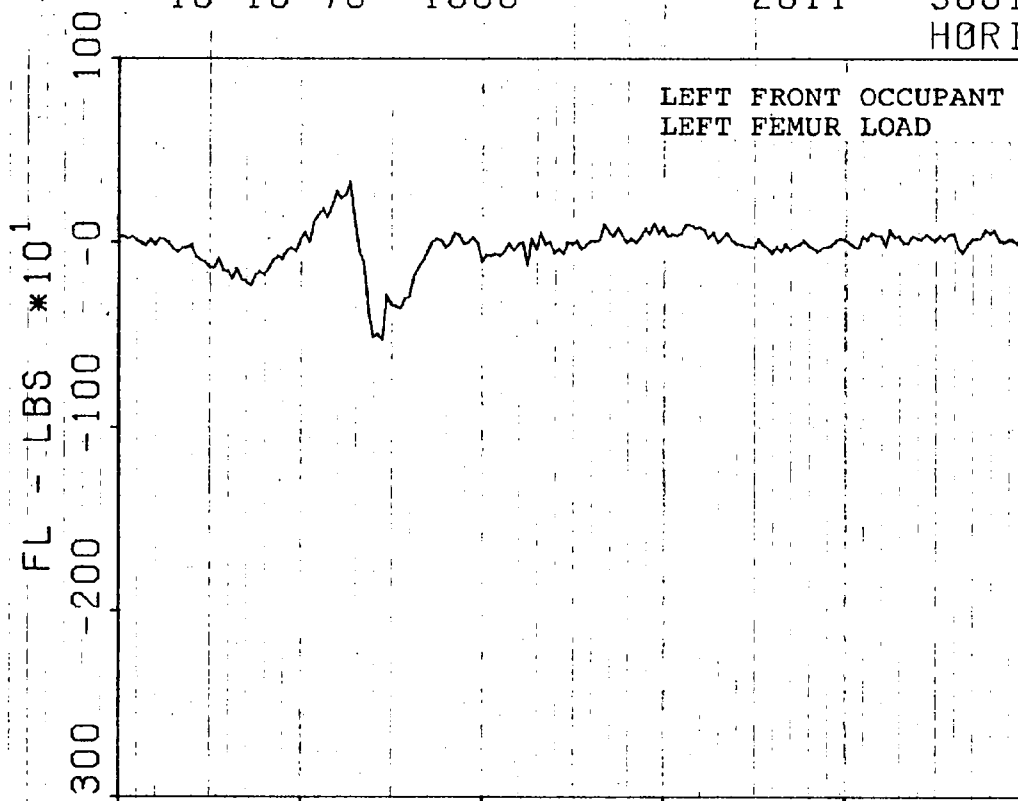


10-10-78 1000

2011

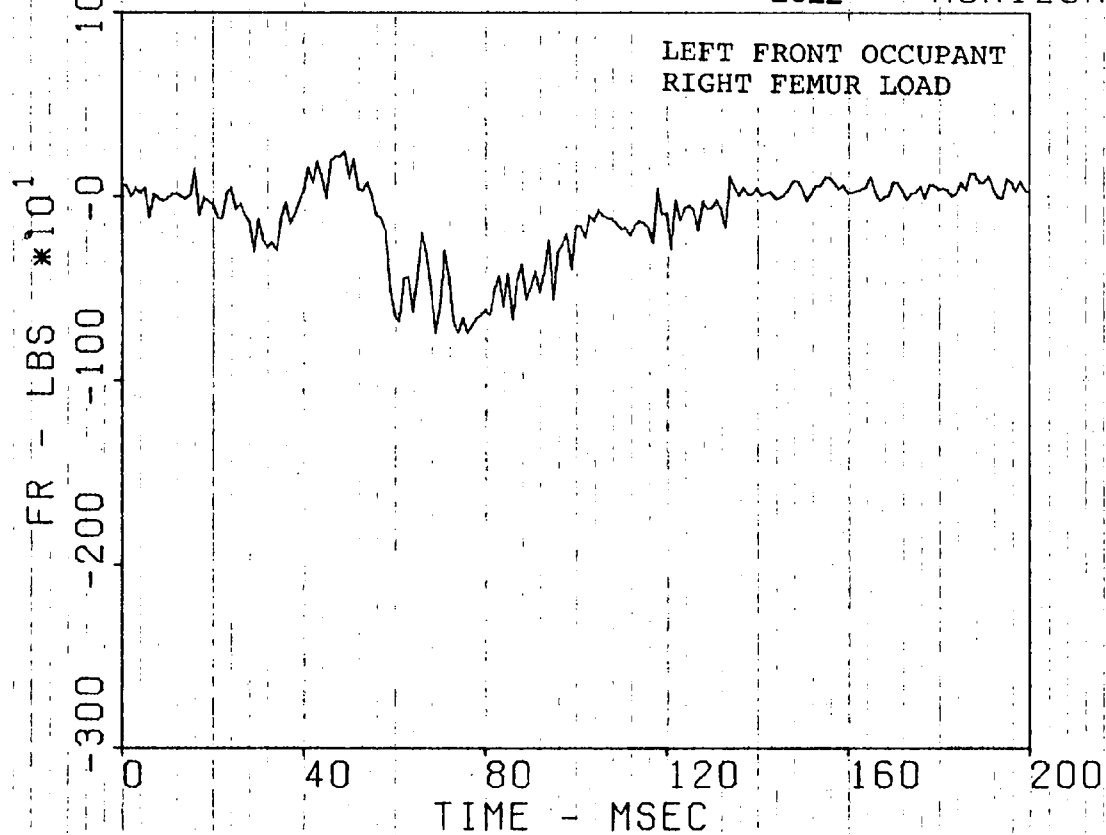
3051-1

HORIZON



2012

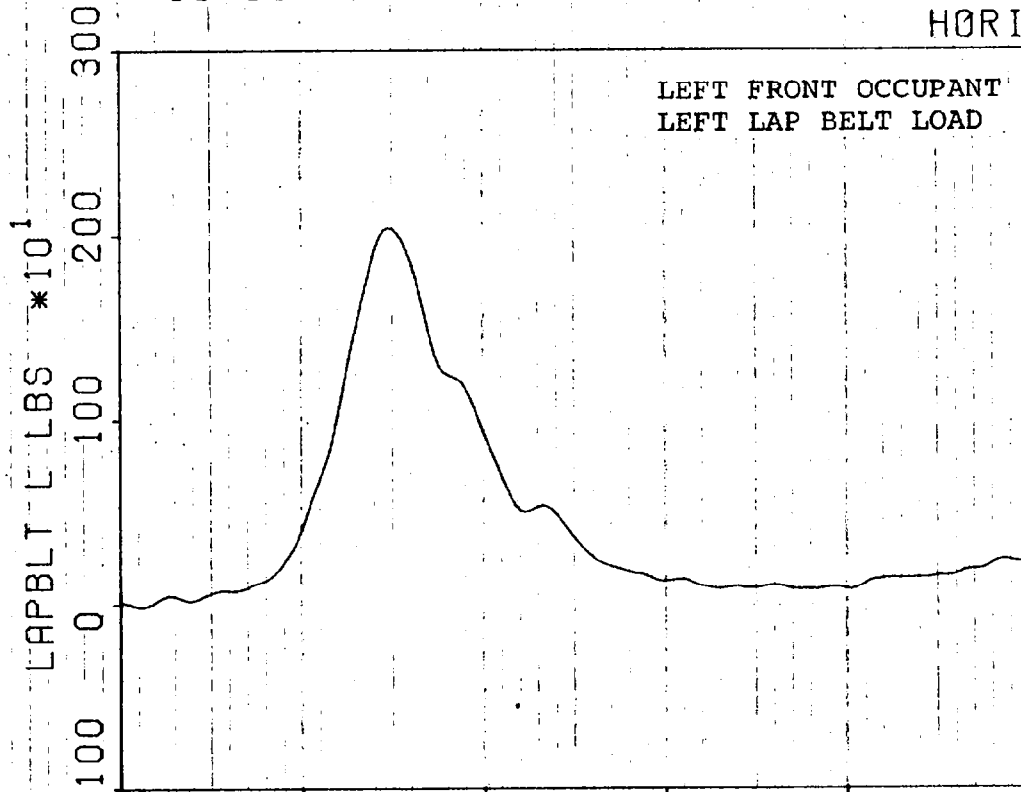
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10-10-78 315/100

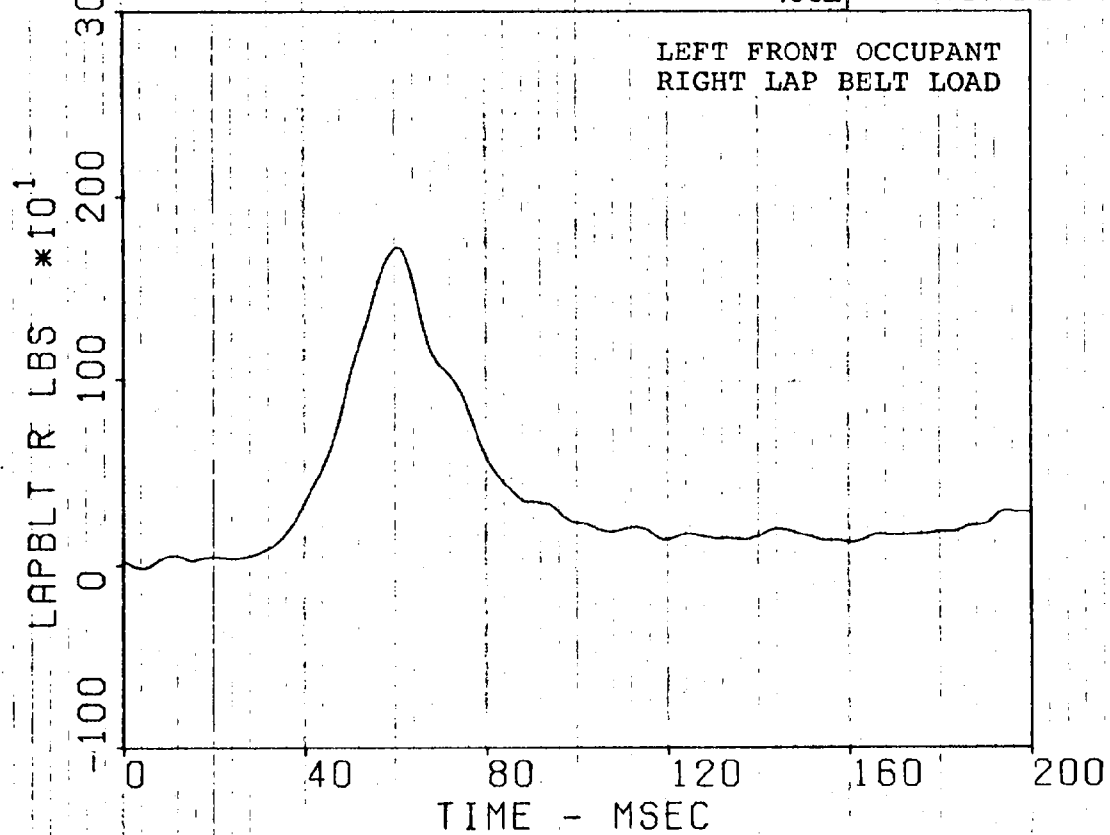
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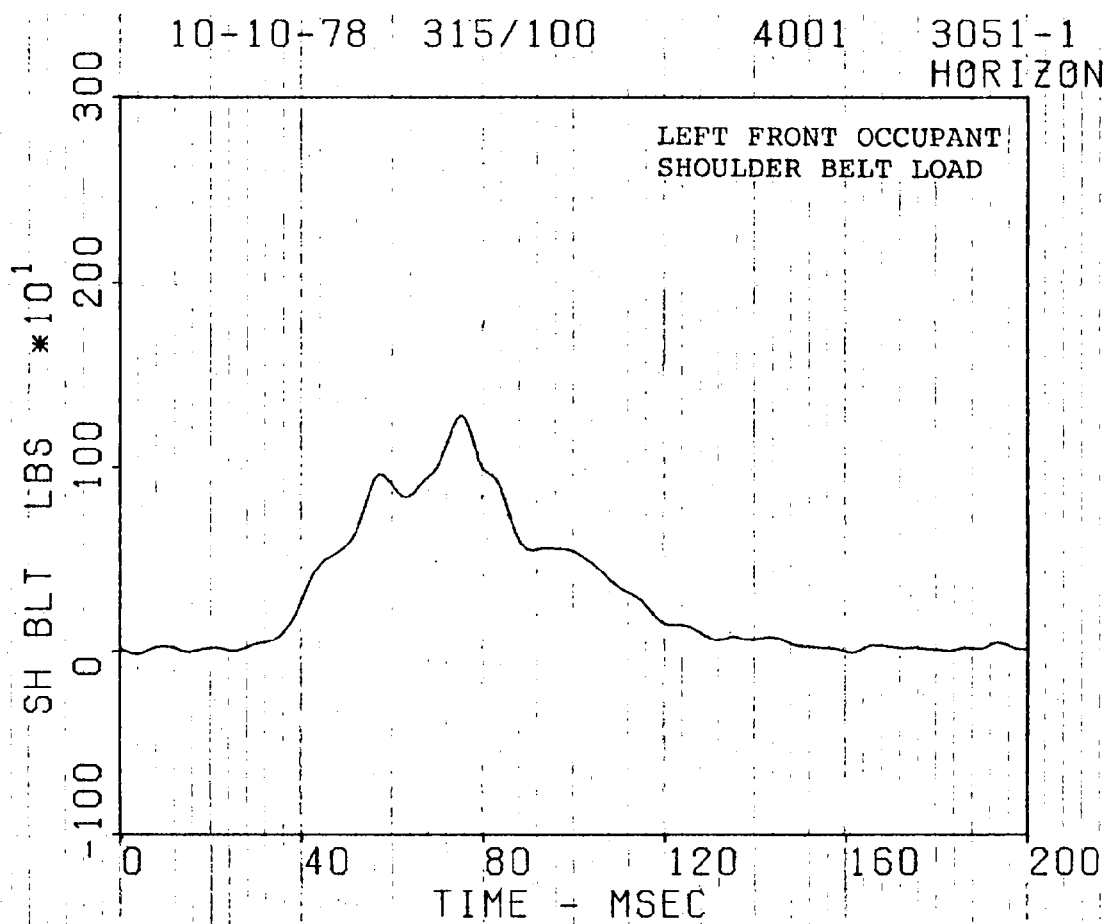
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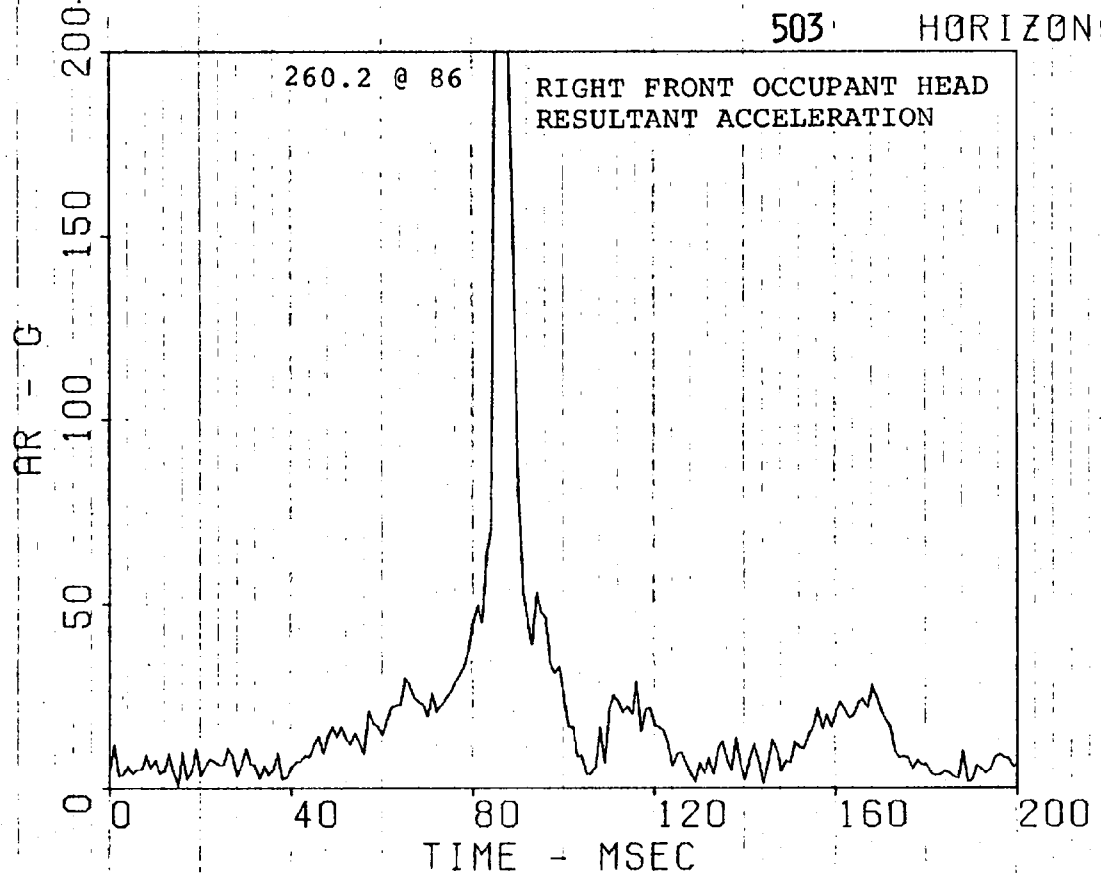
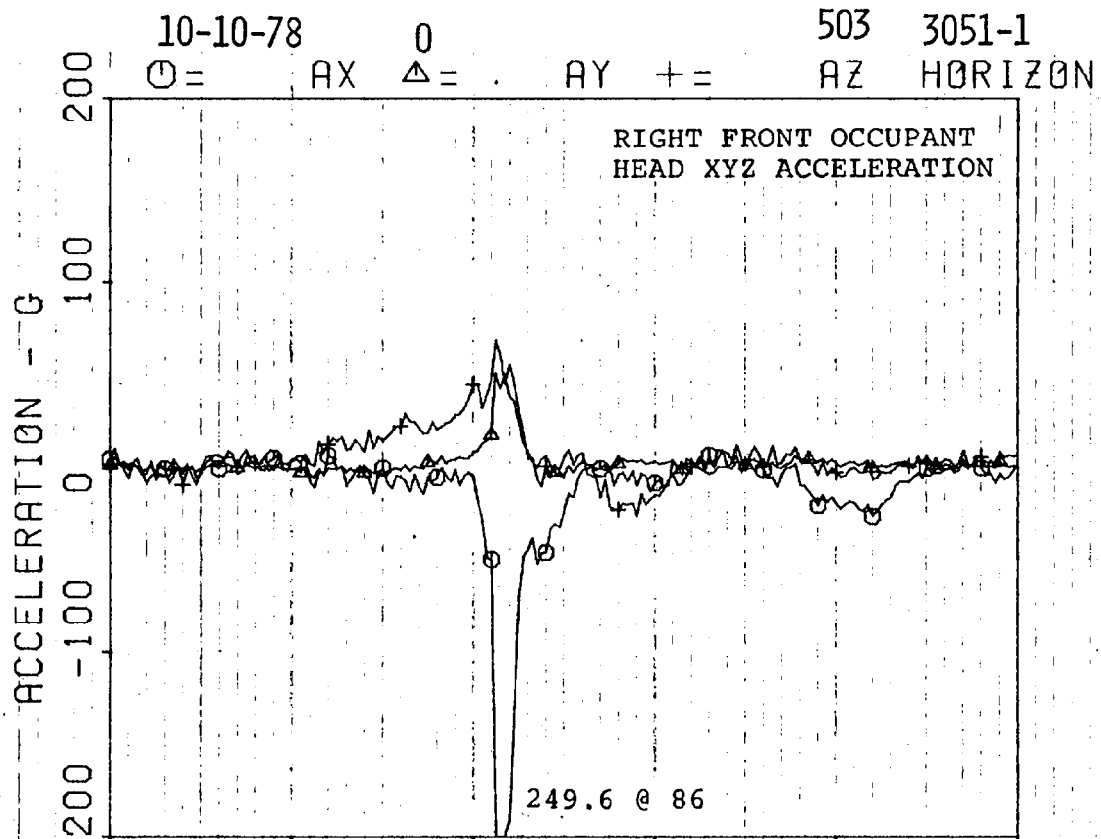


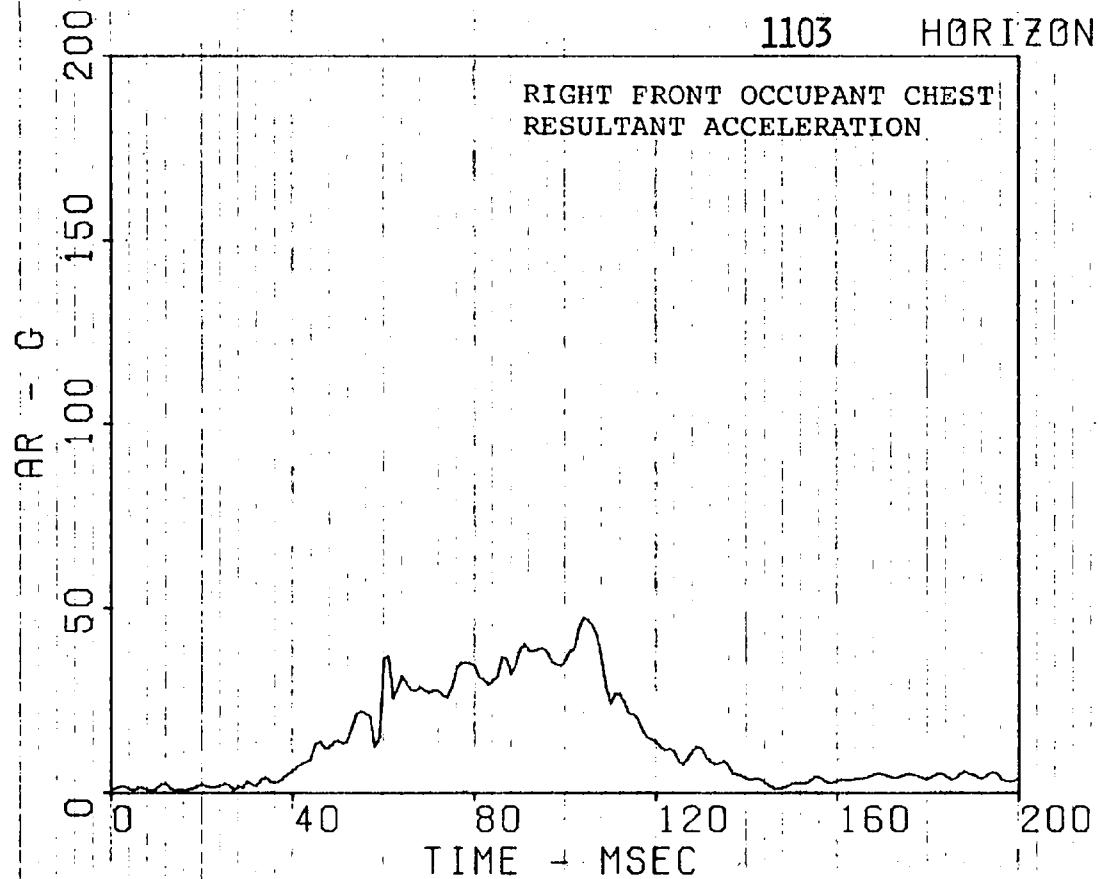
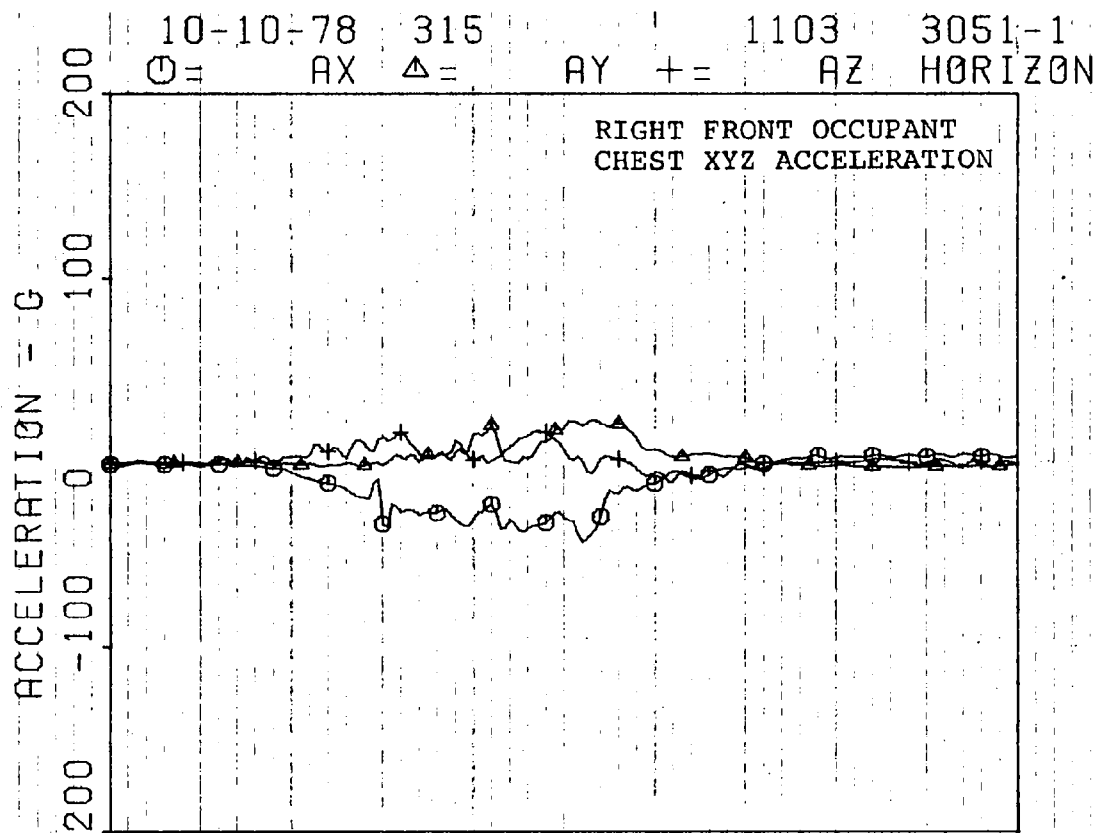
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HORIZON





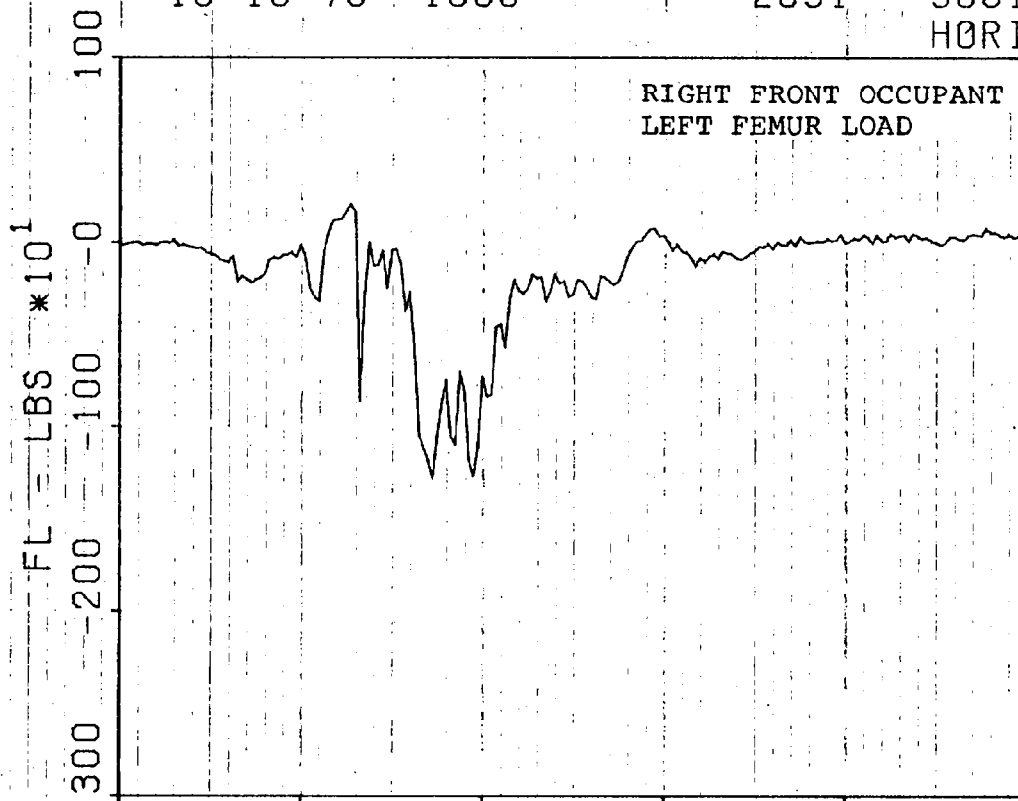




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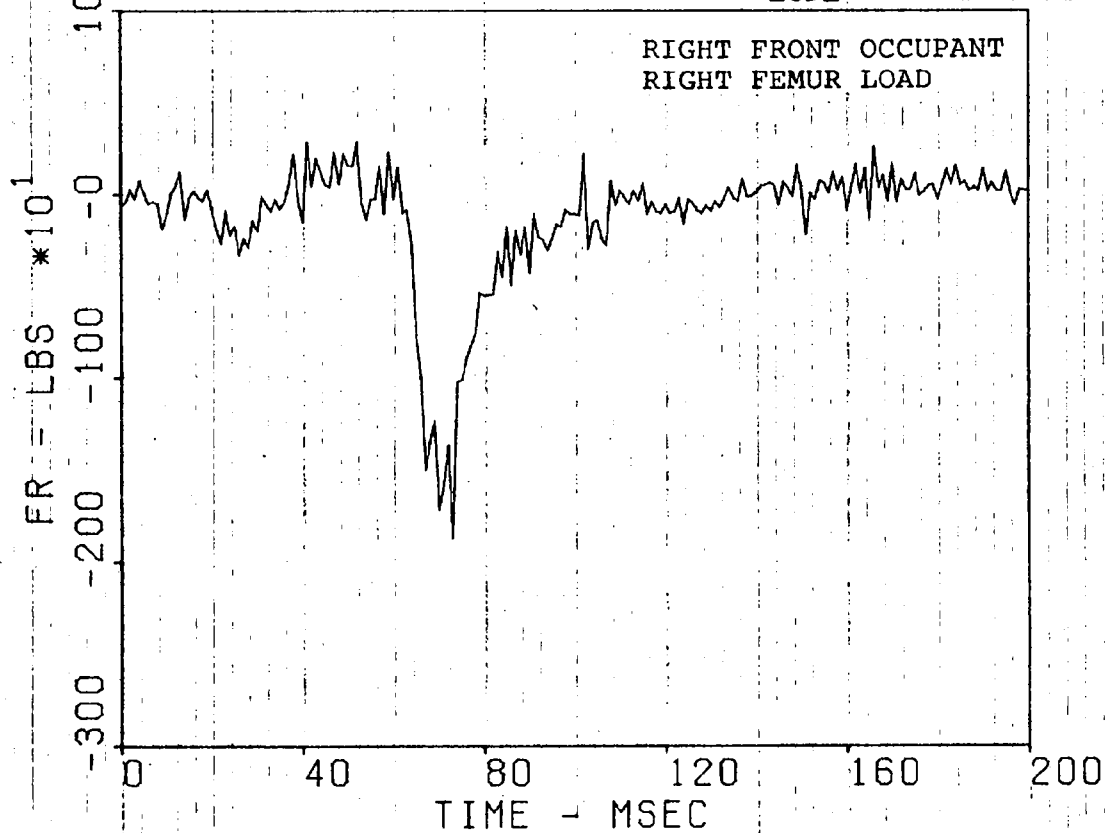
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3051-1
HORIZON



2032

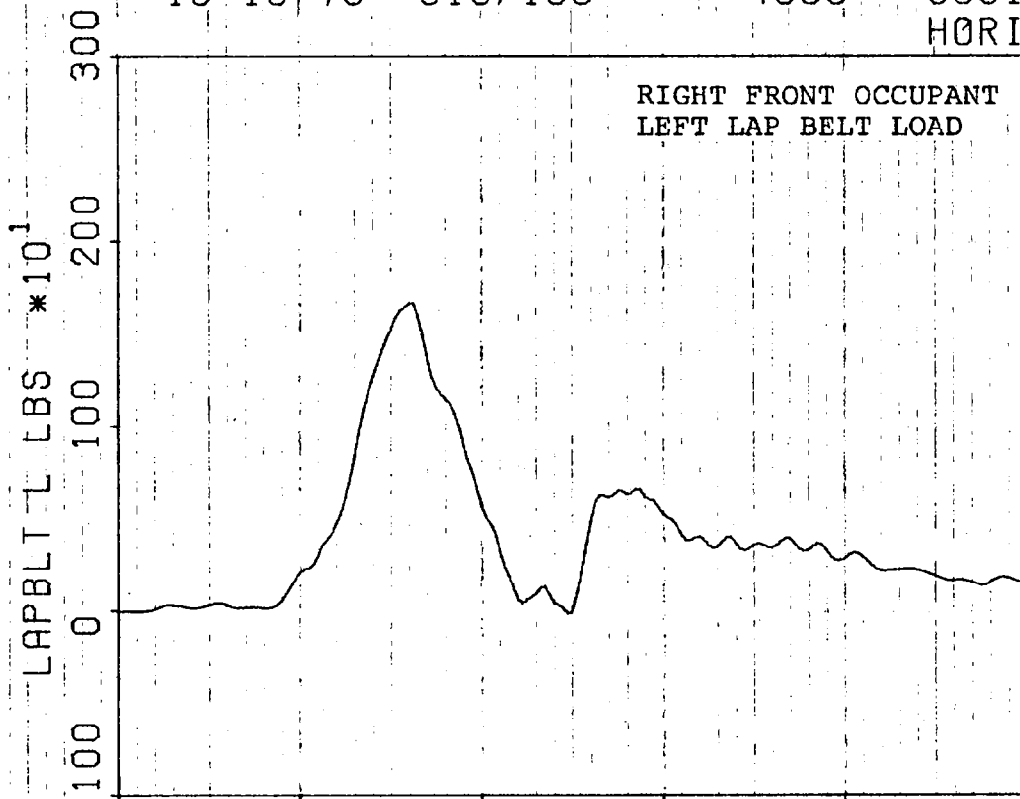
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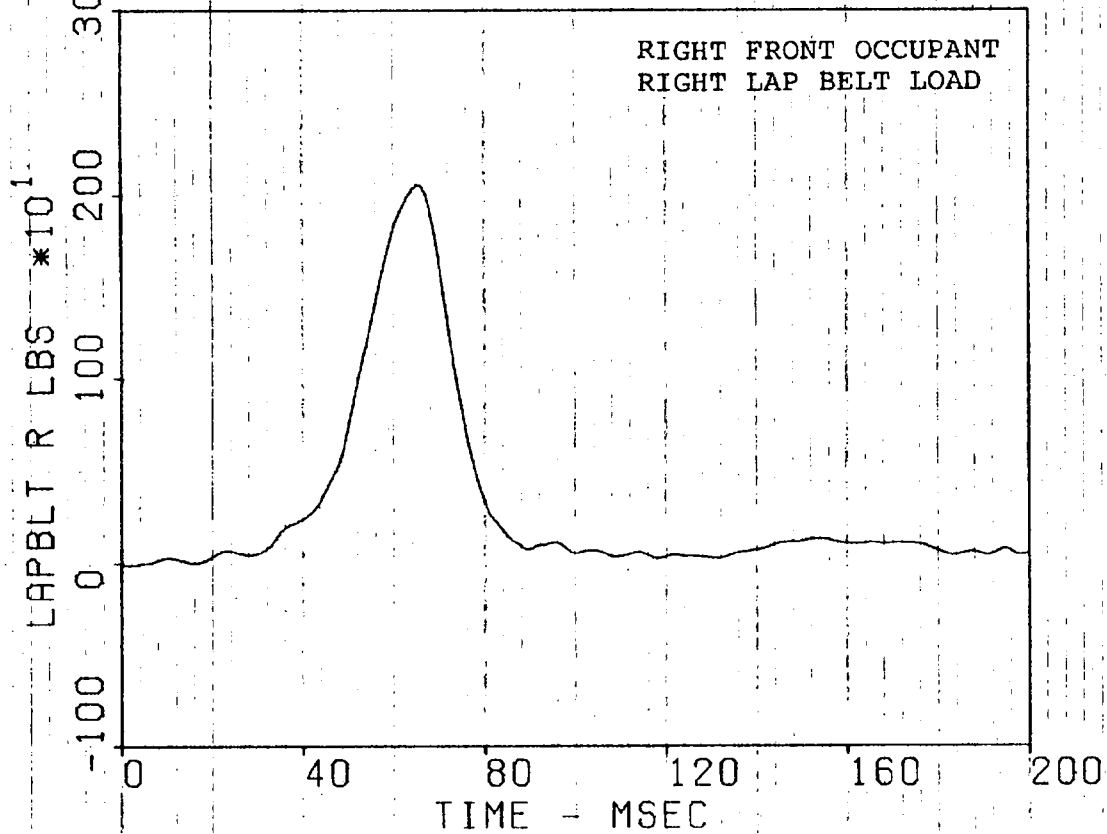
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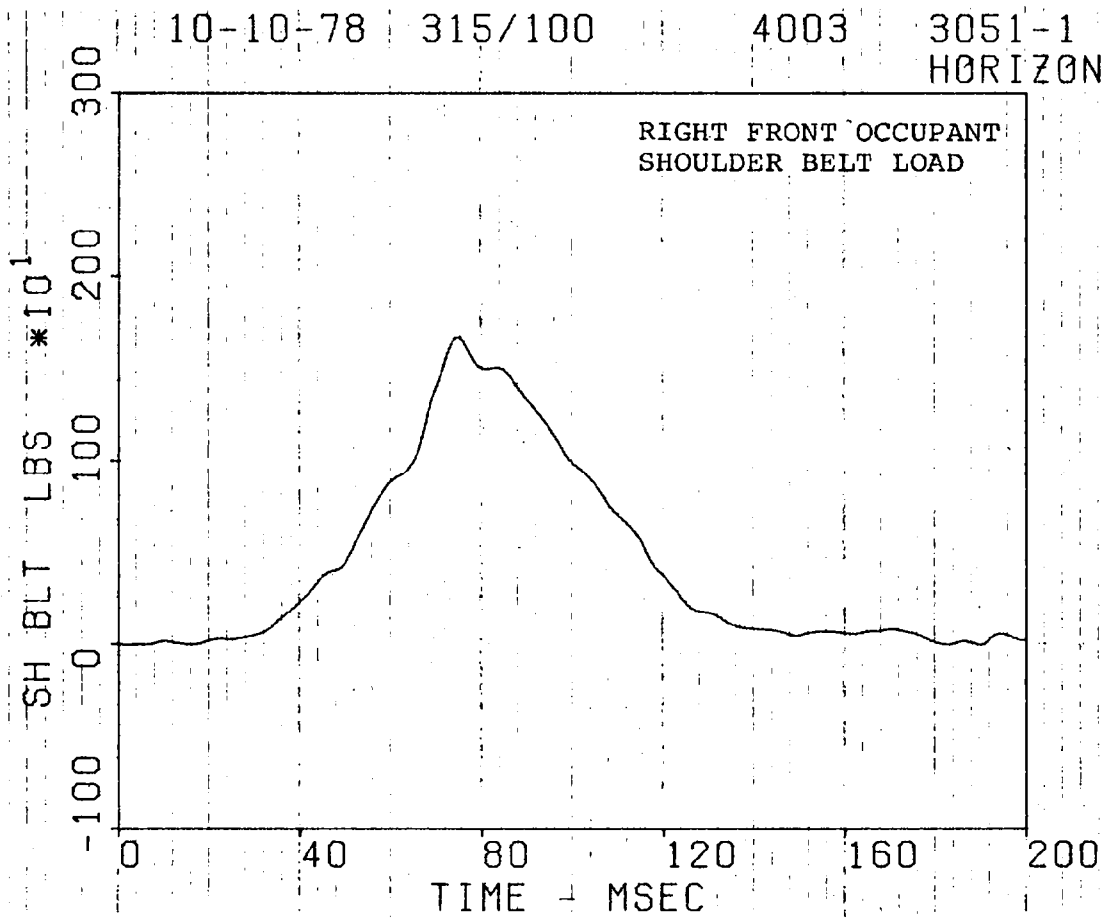
3051-1
HORIZON



4003

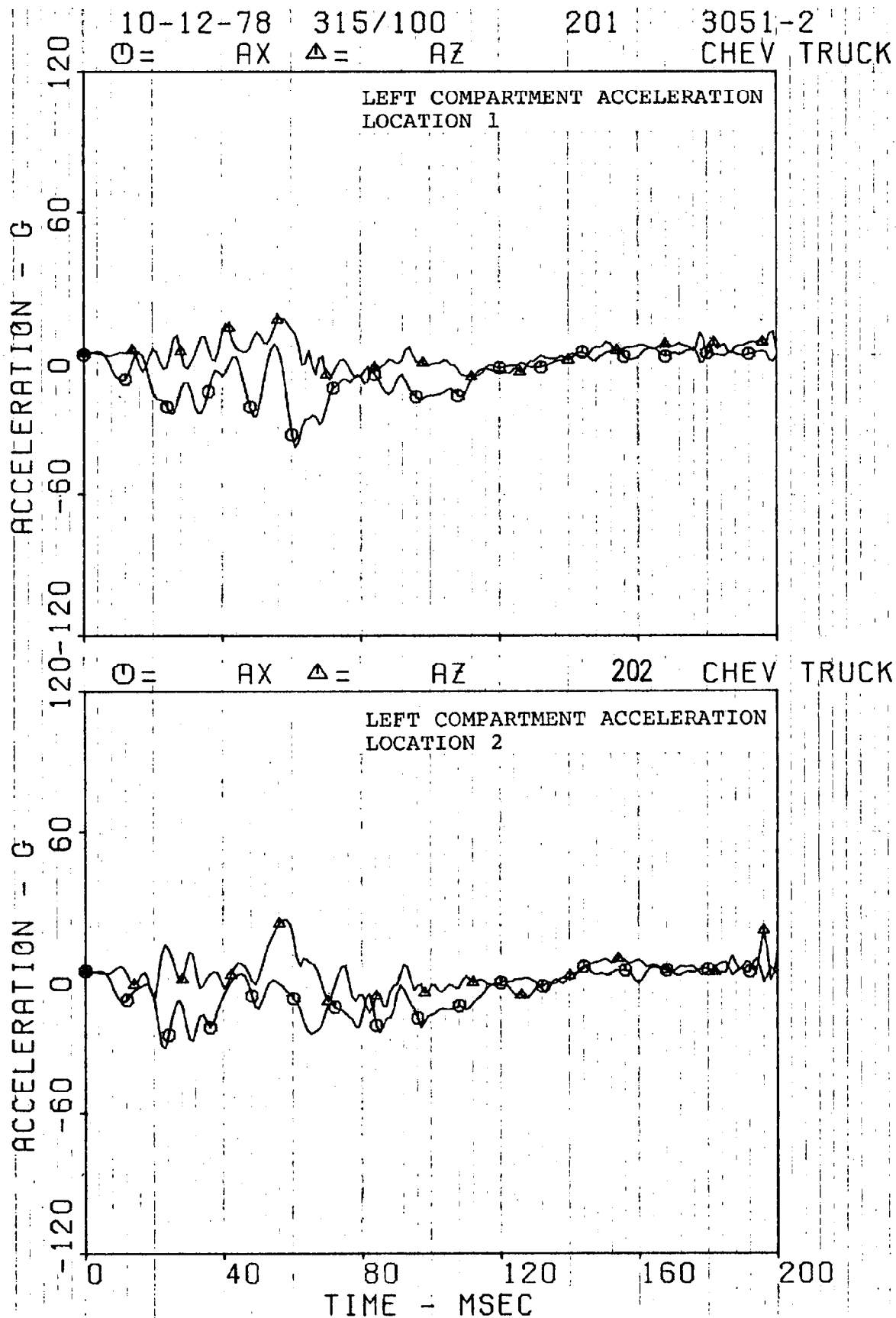
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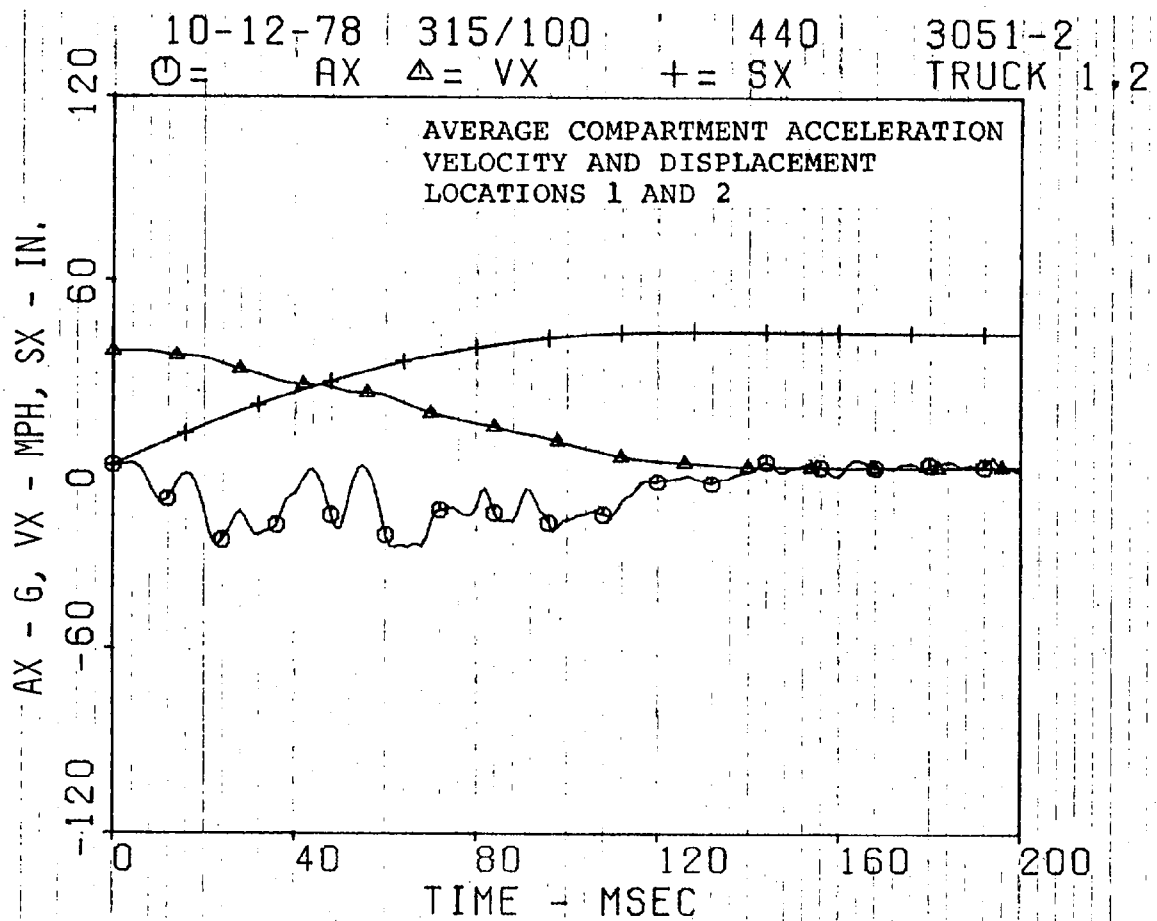


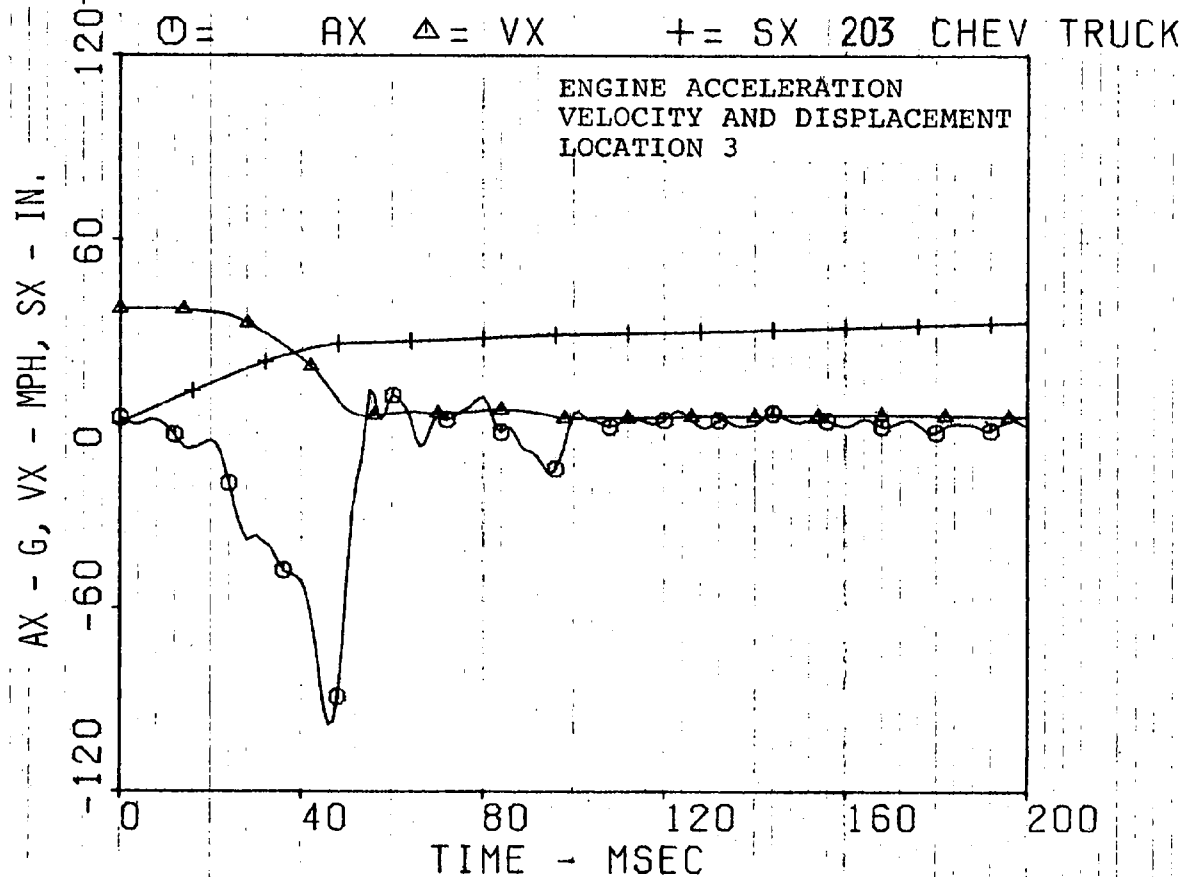
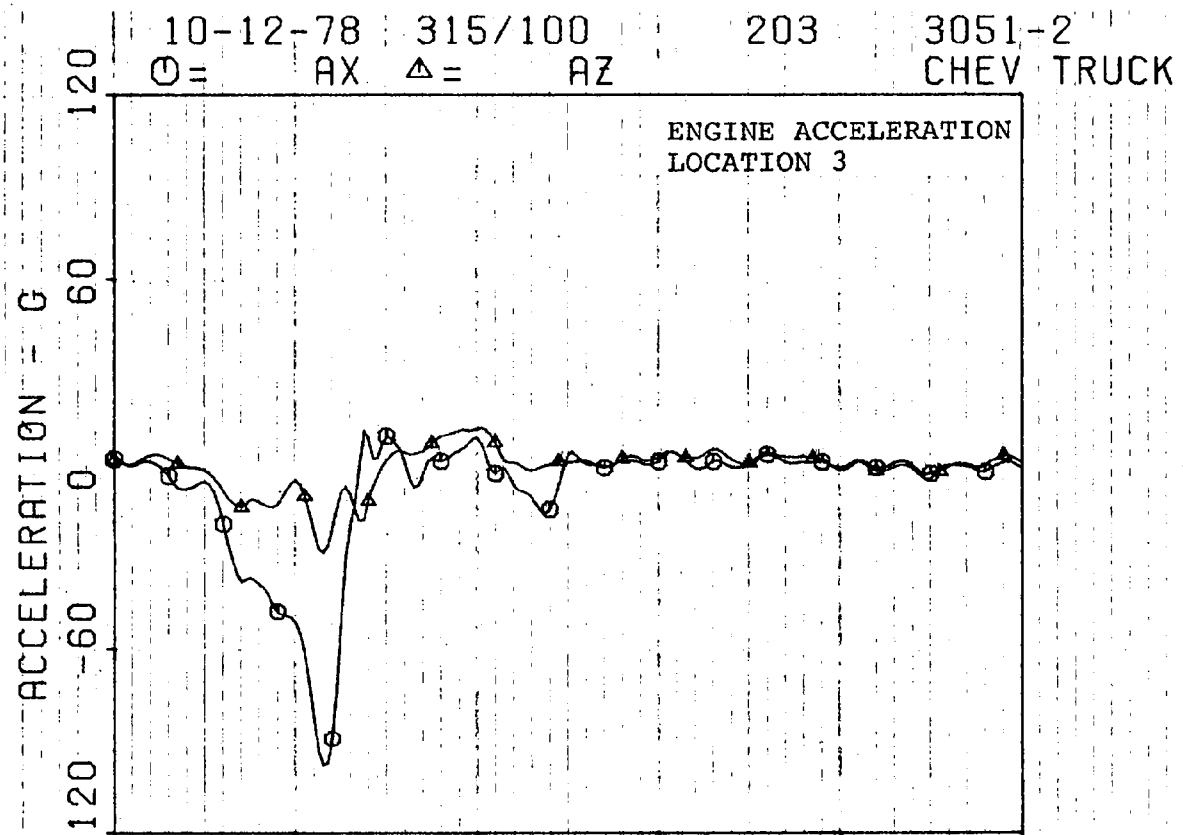


APPENDIX B

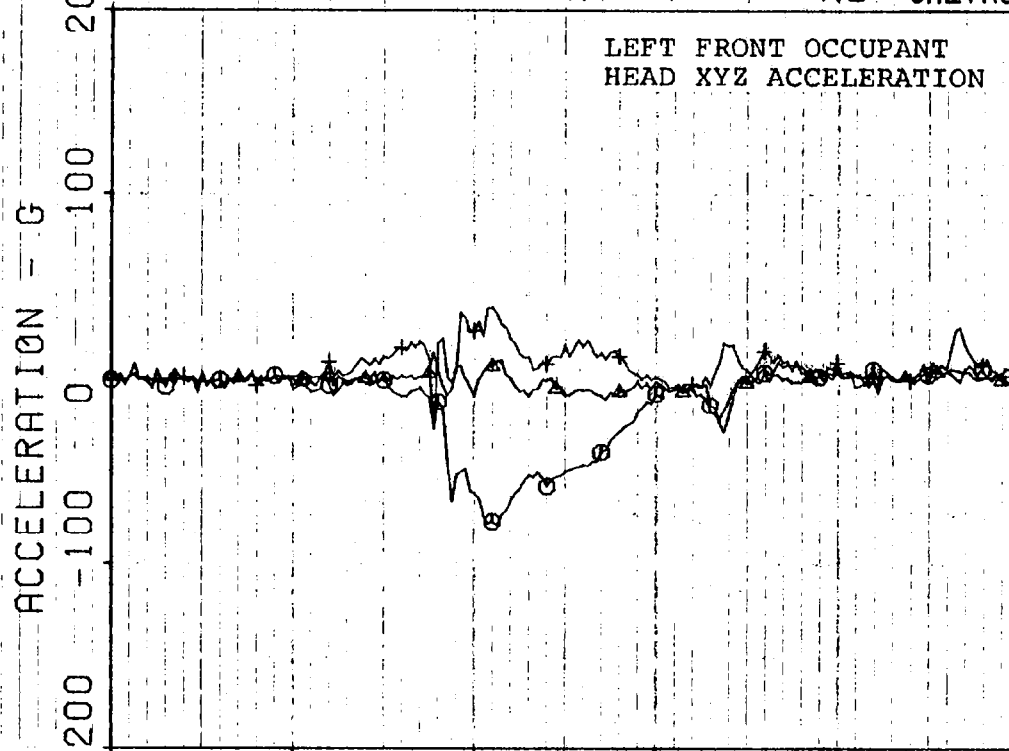
CALCOMP PLOTS FOR
TEST NO. 3051-2



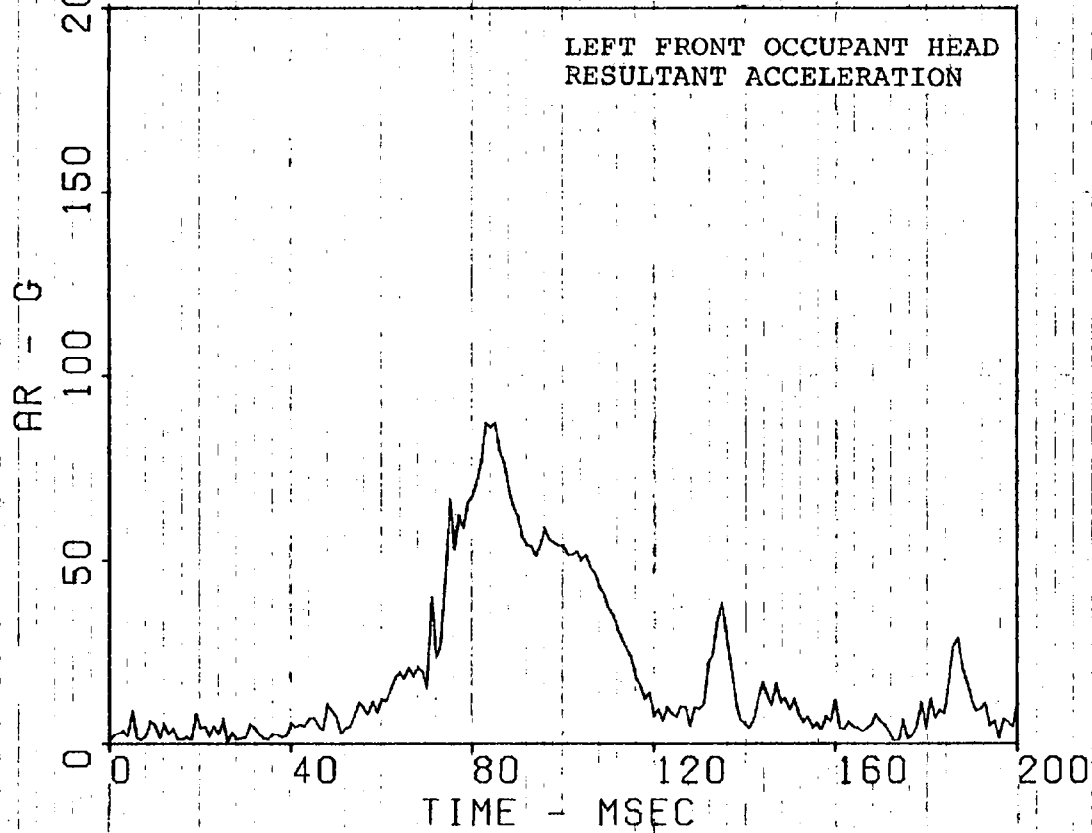


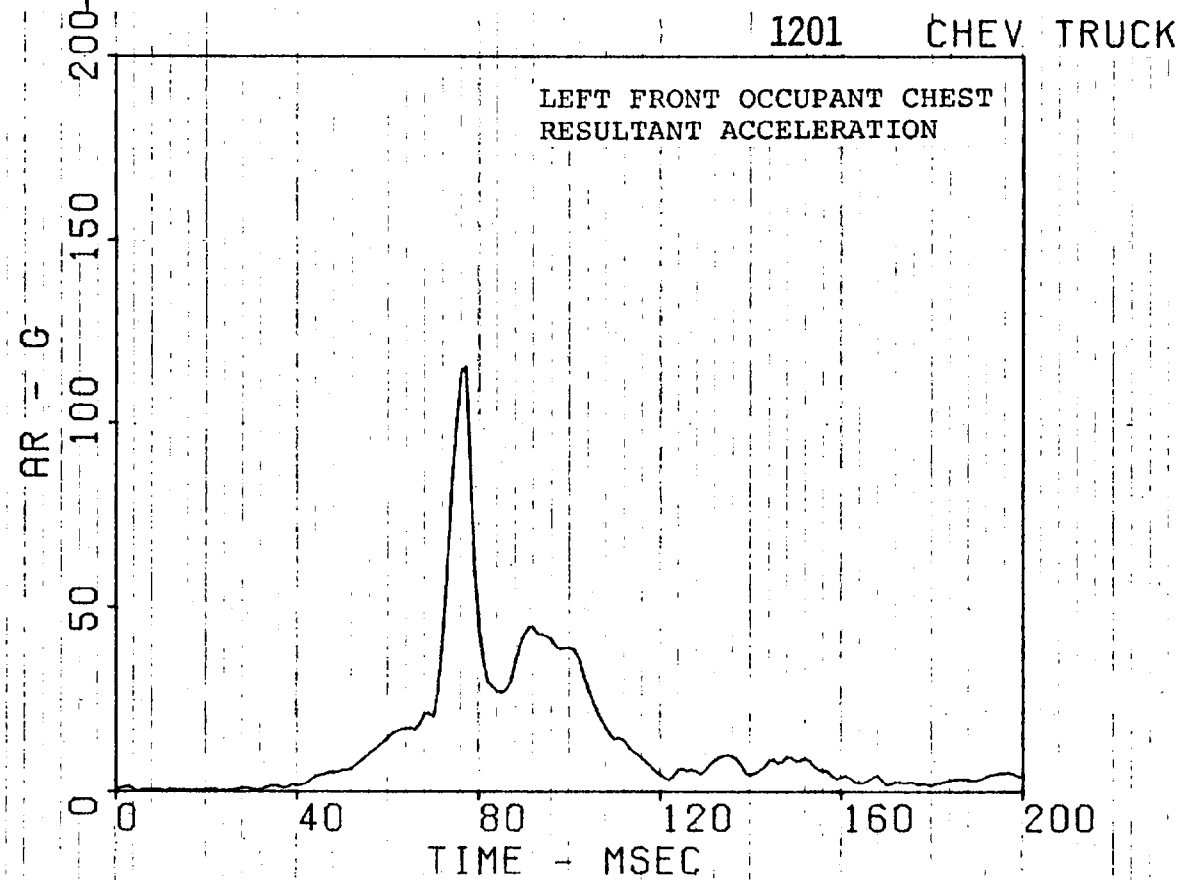
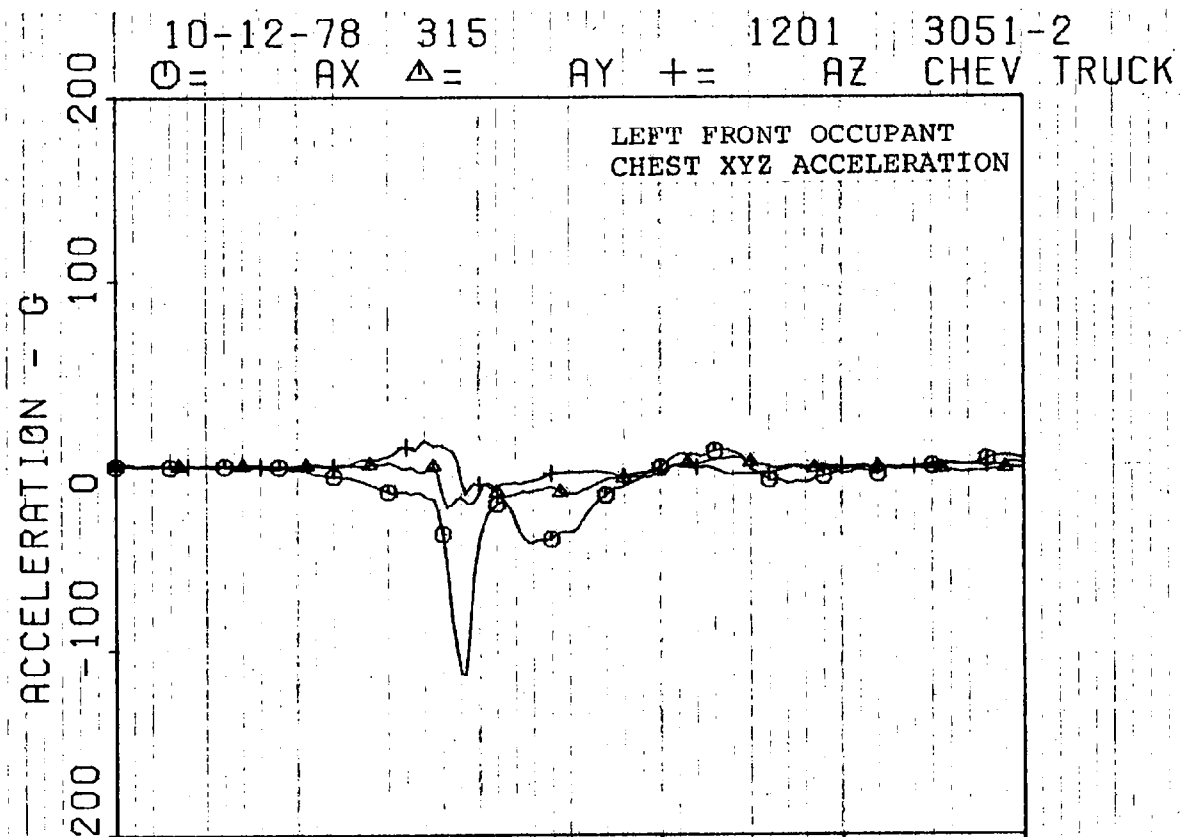


10-12-78 1600 601 3051-2
O= AX Δ= AY += AZ CHEVROLET TRUCK



601 CHEVROLET TRUCK



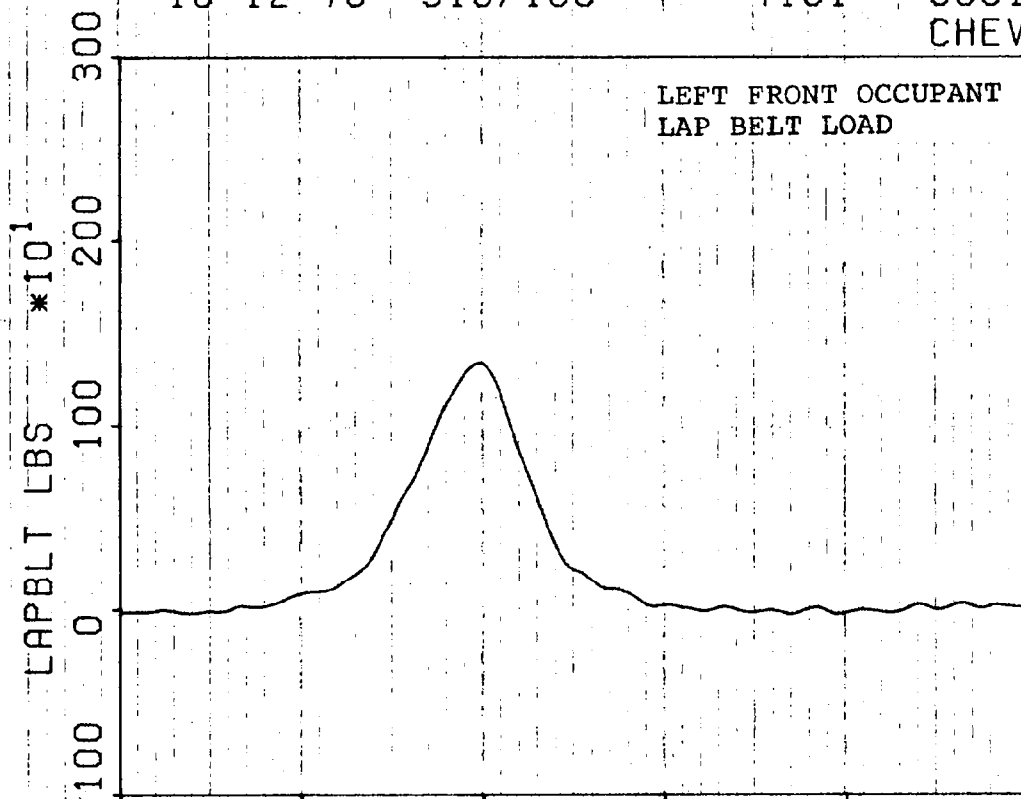


10-12-78 315/100

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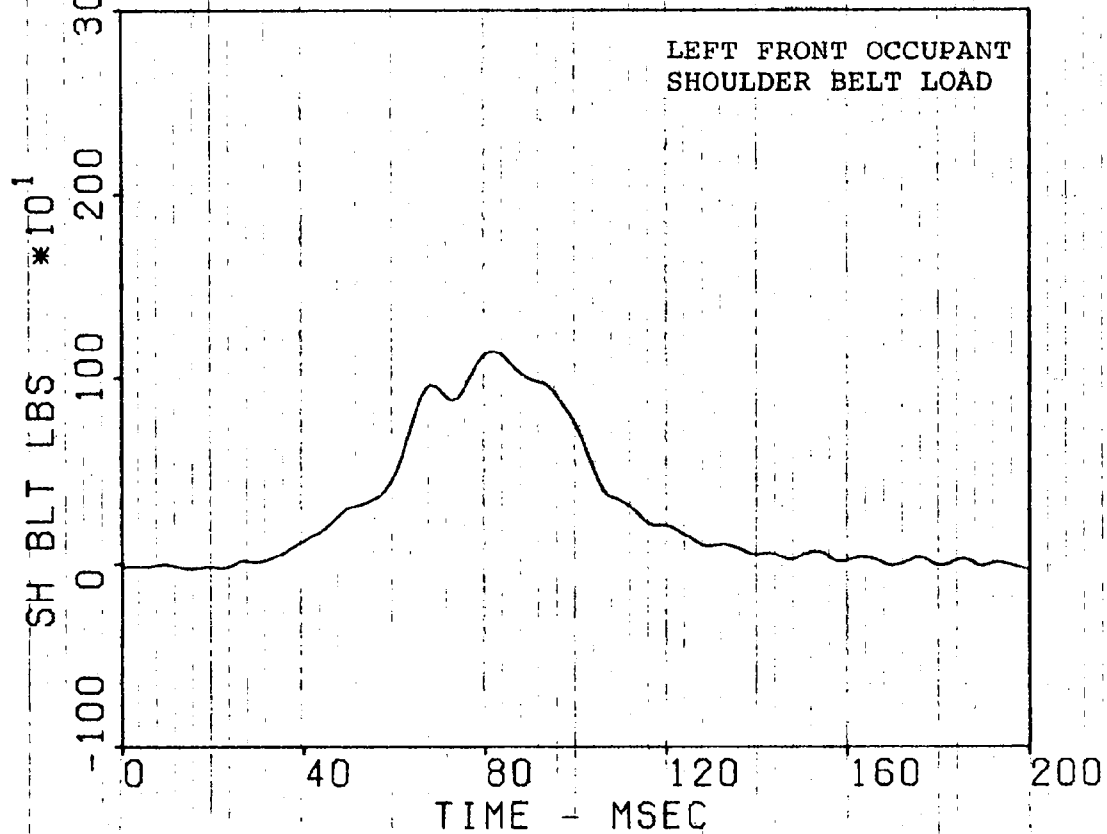
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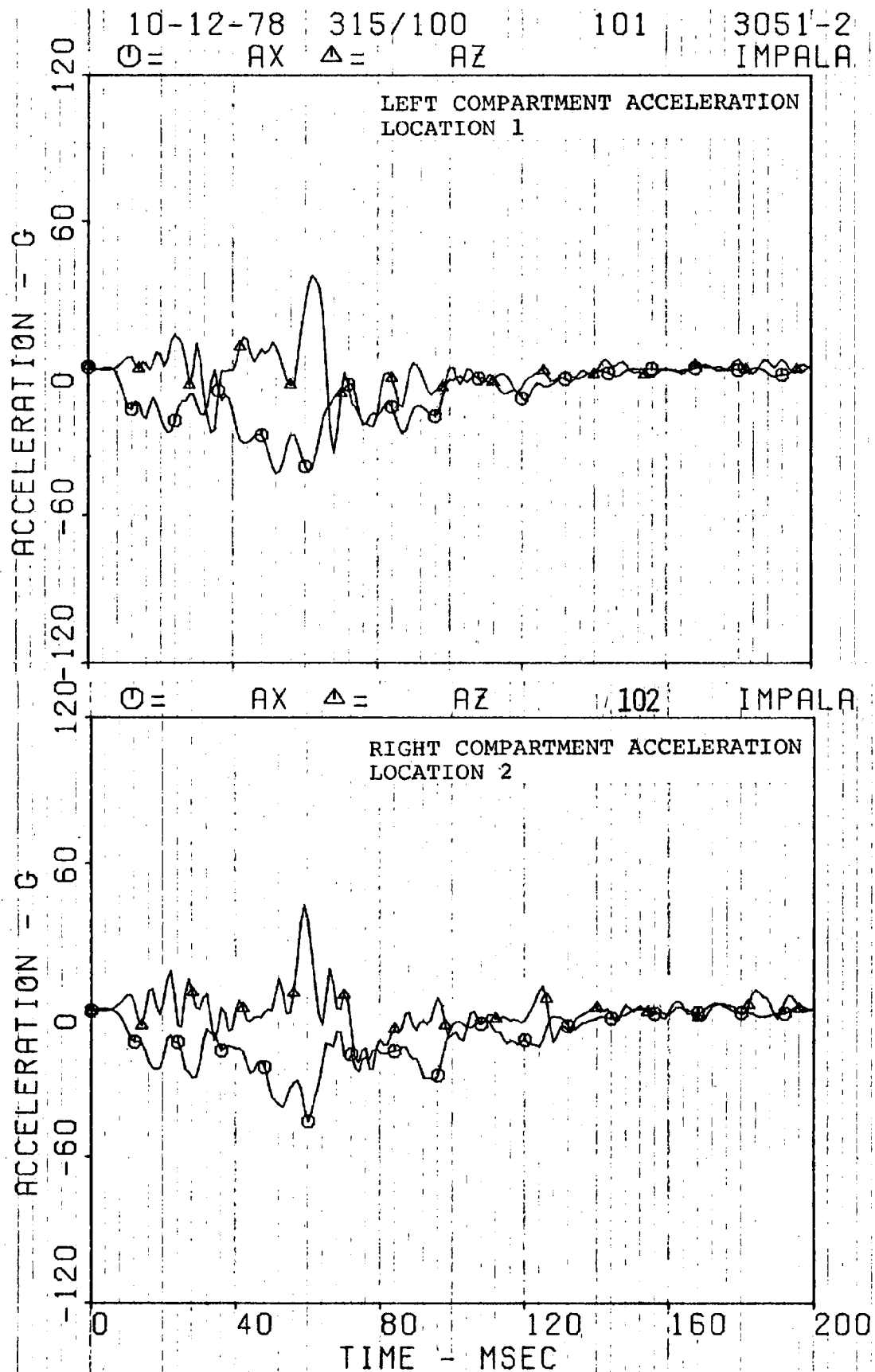
CHEV TRUCK

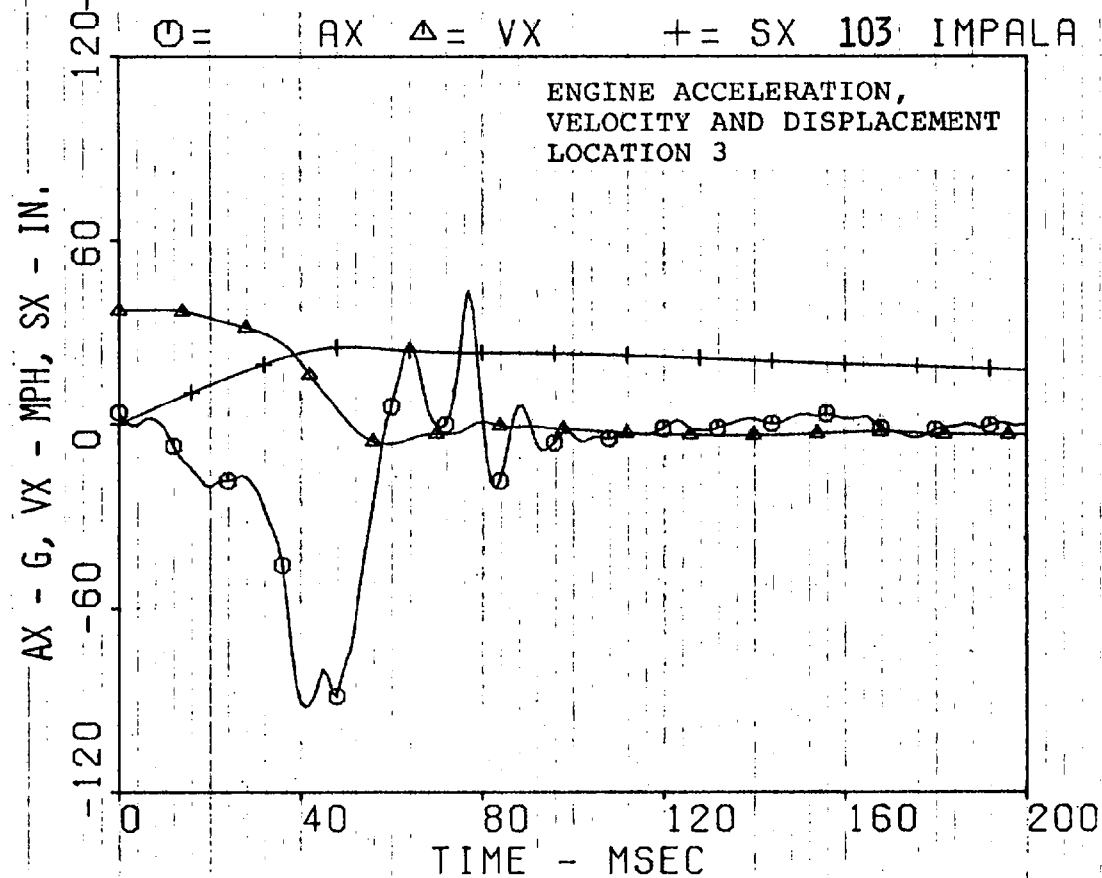
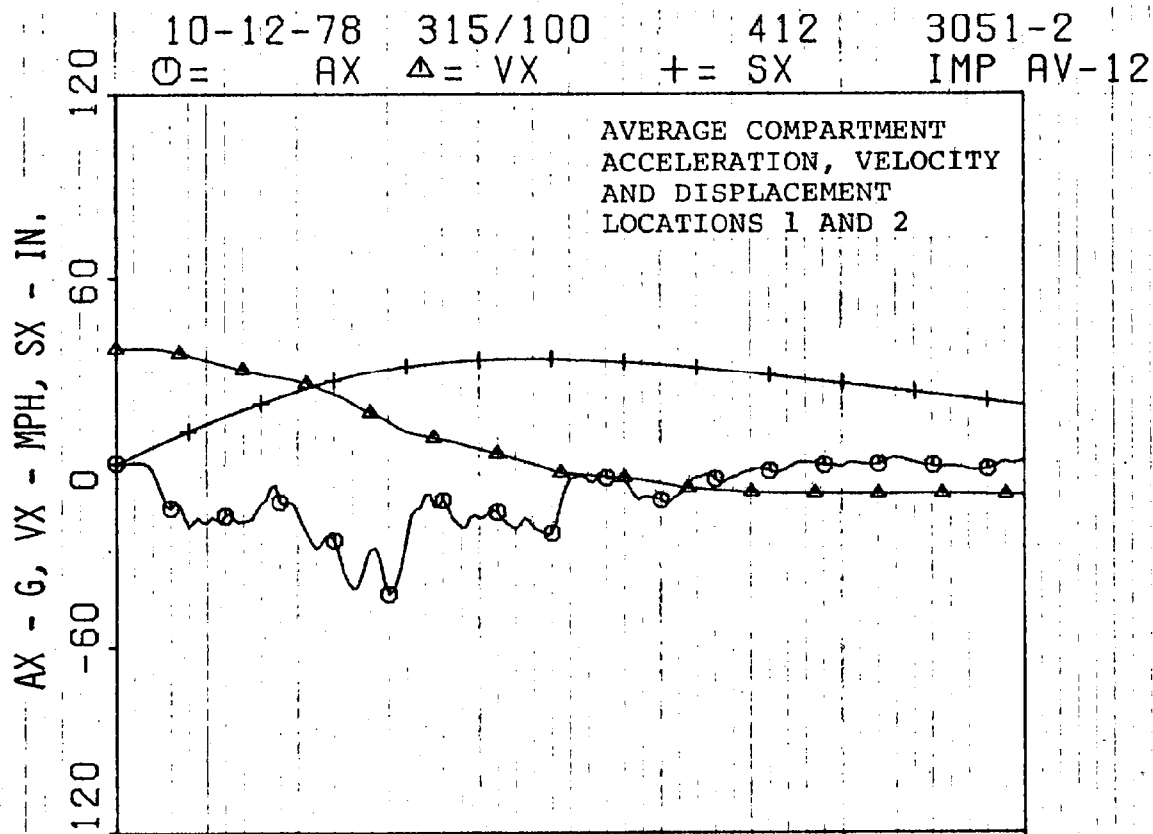


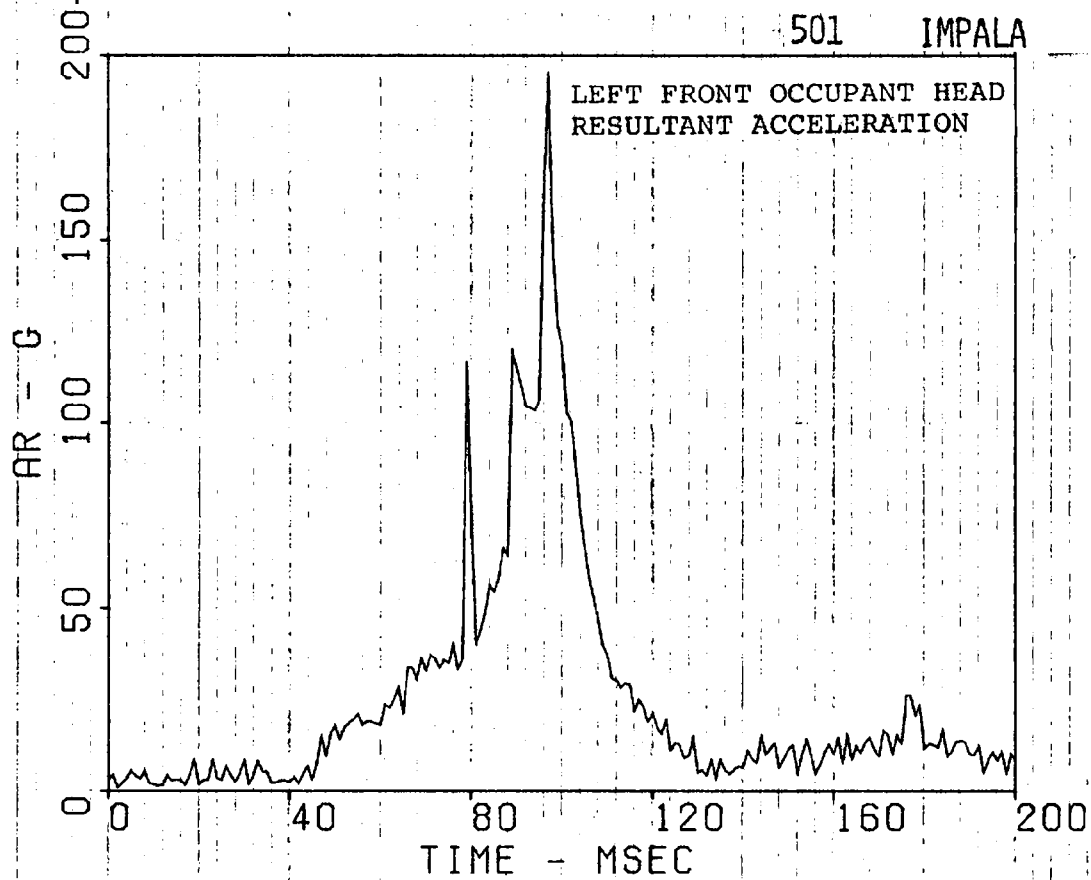
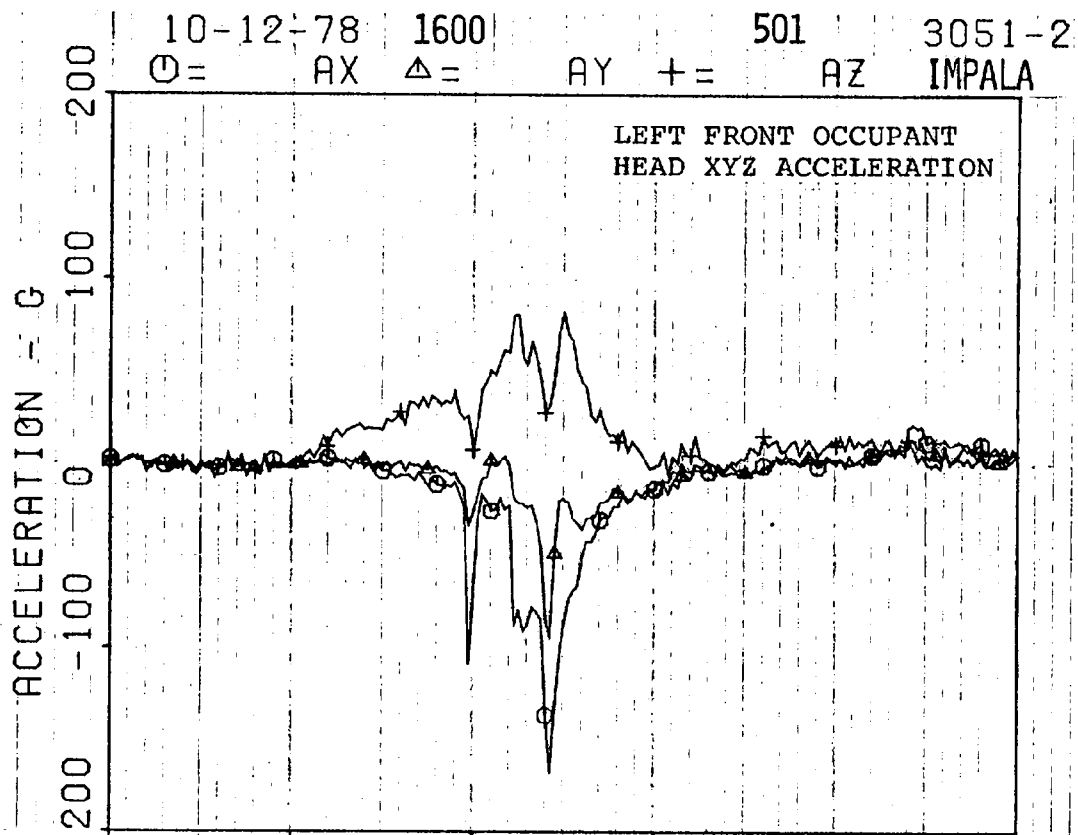
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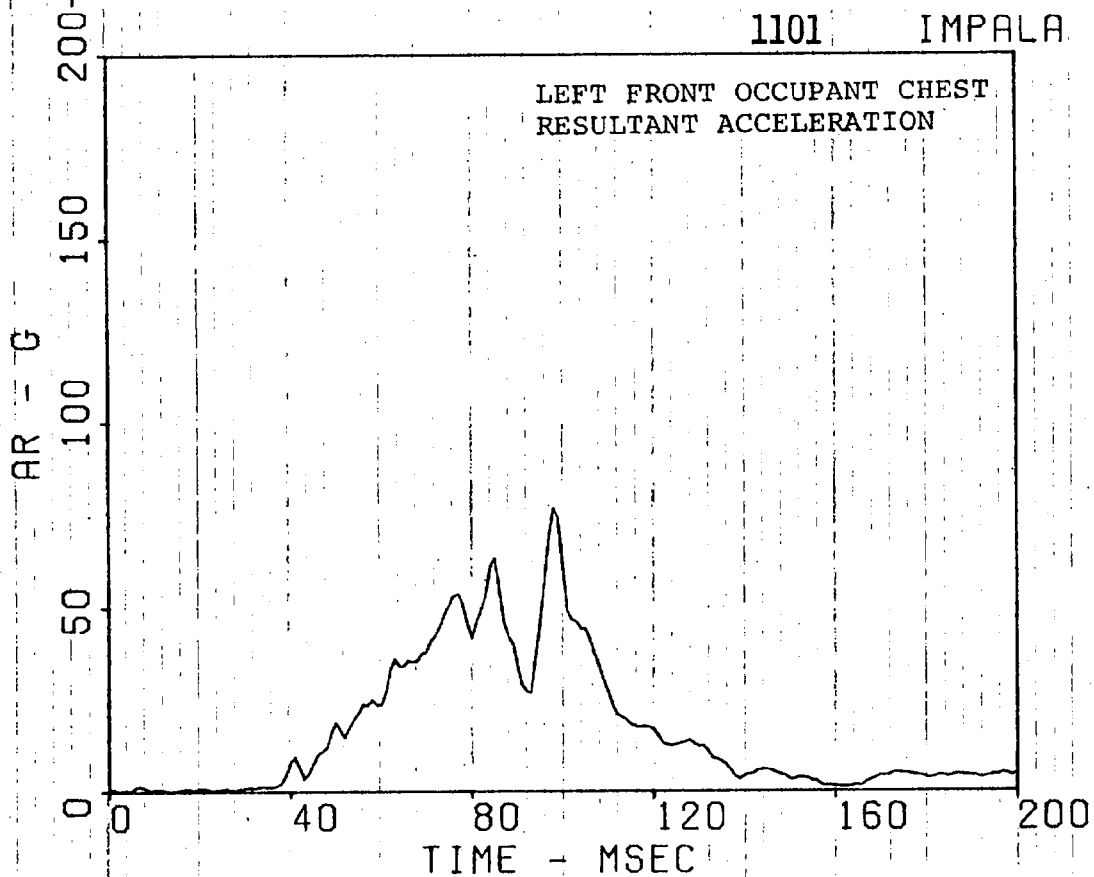
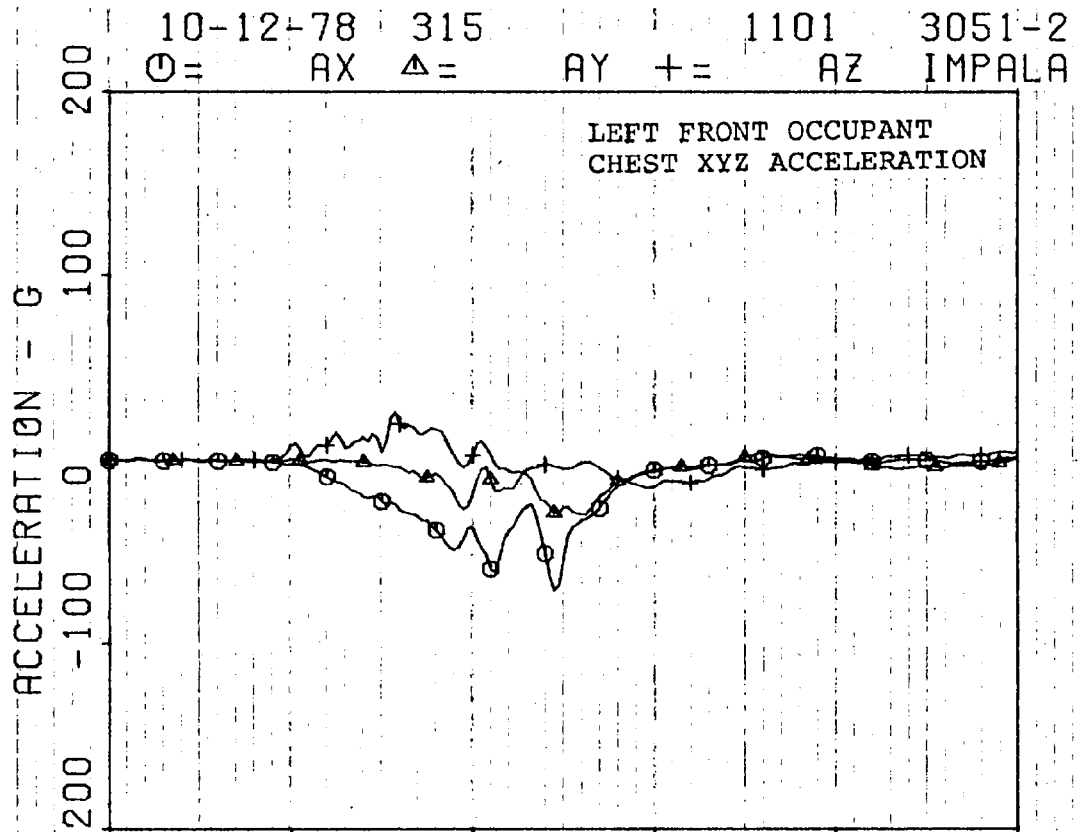
CHEV TRUCK









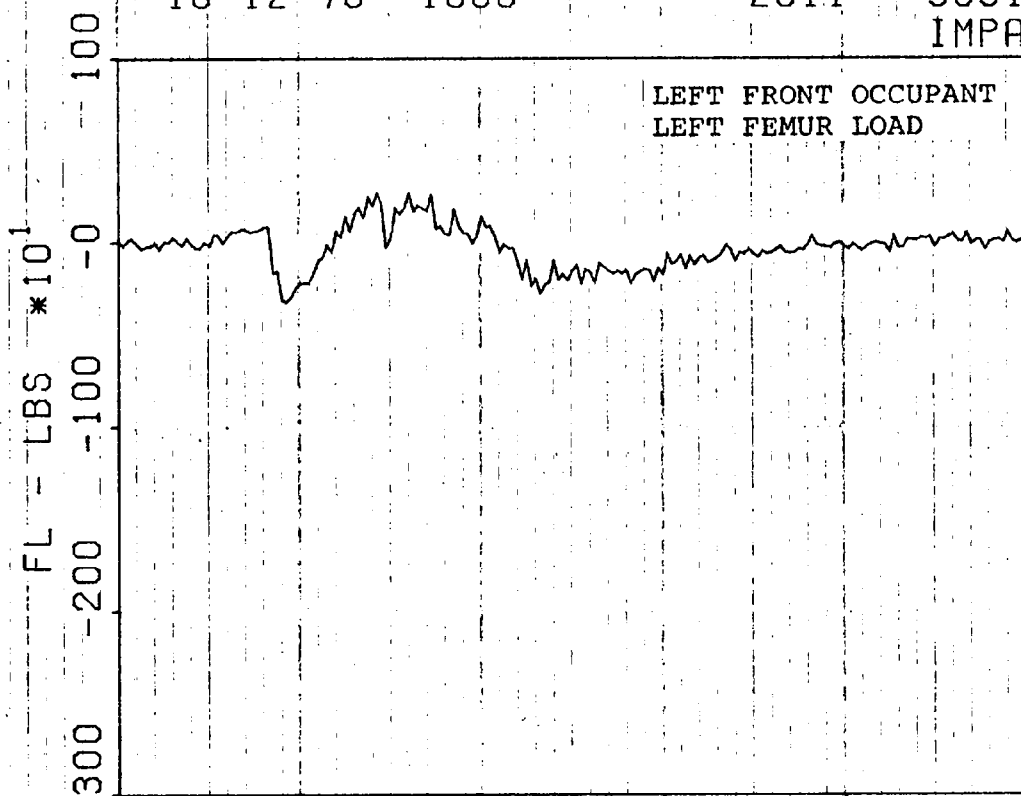


10-12-78 1000

2011

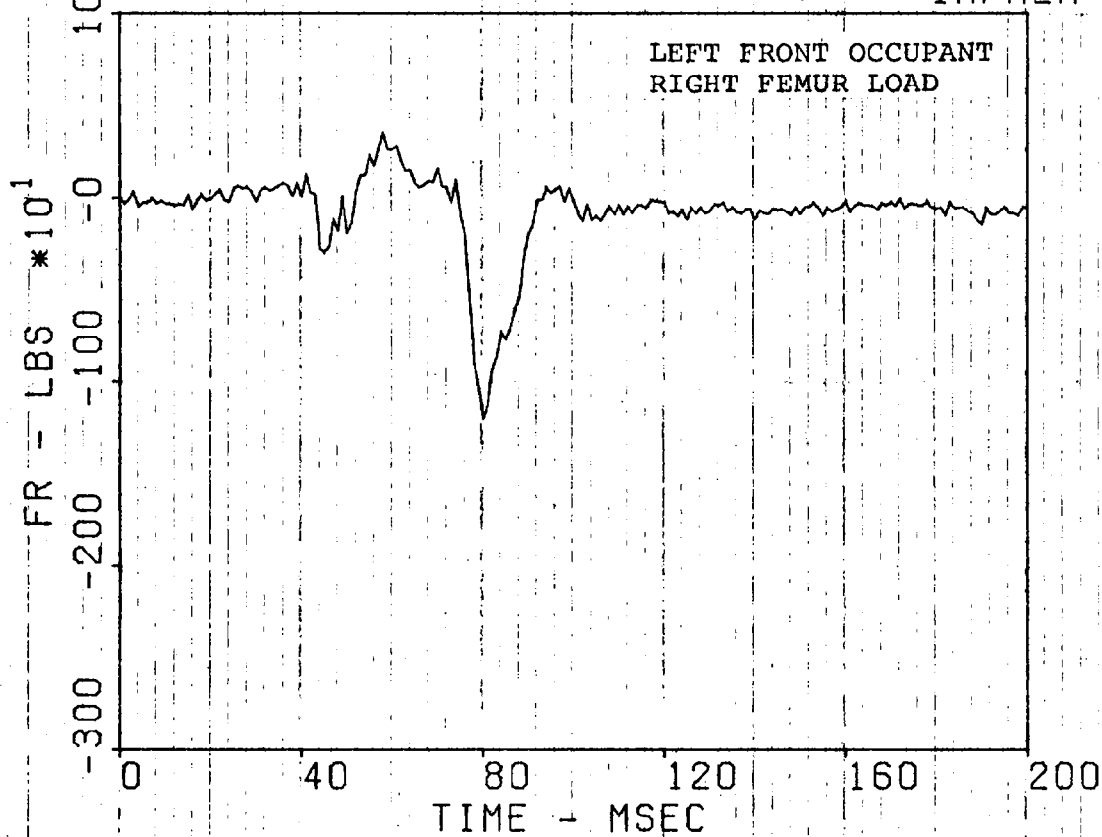
3051-2

IMPALA



2012

IMPALA

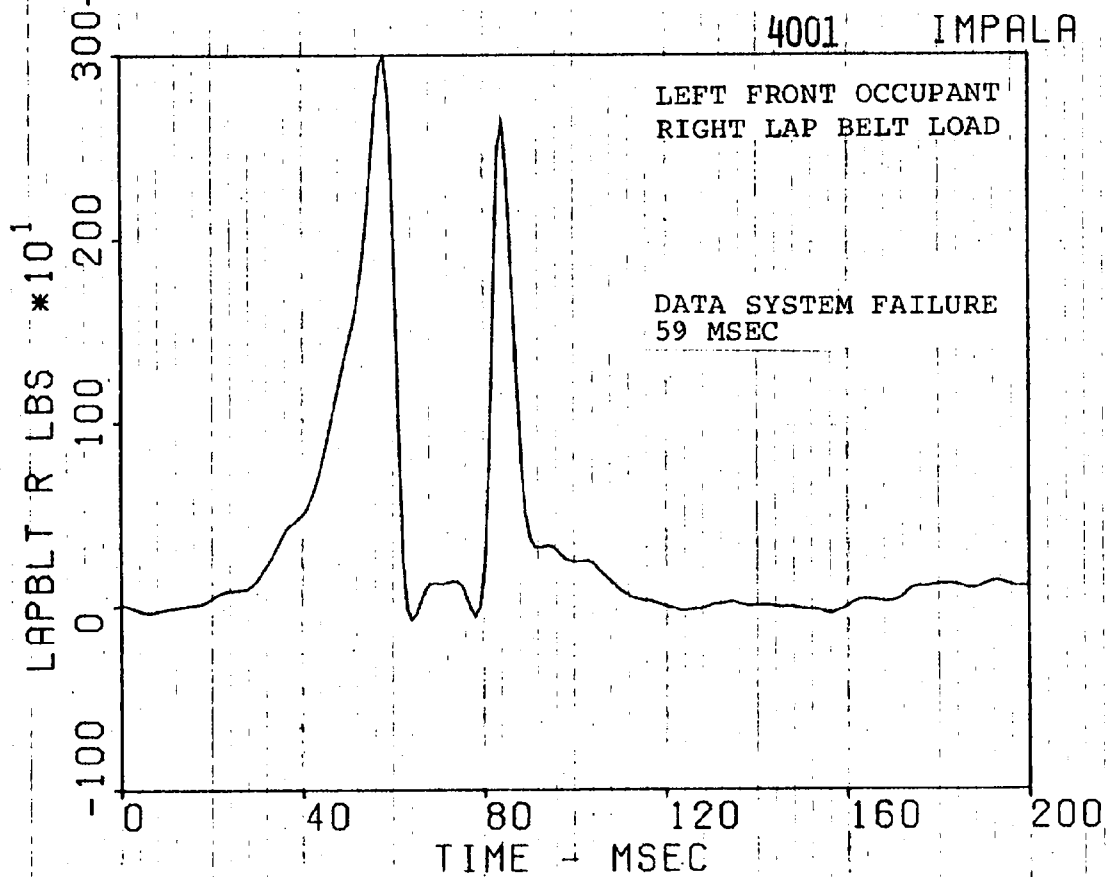
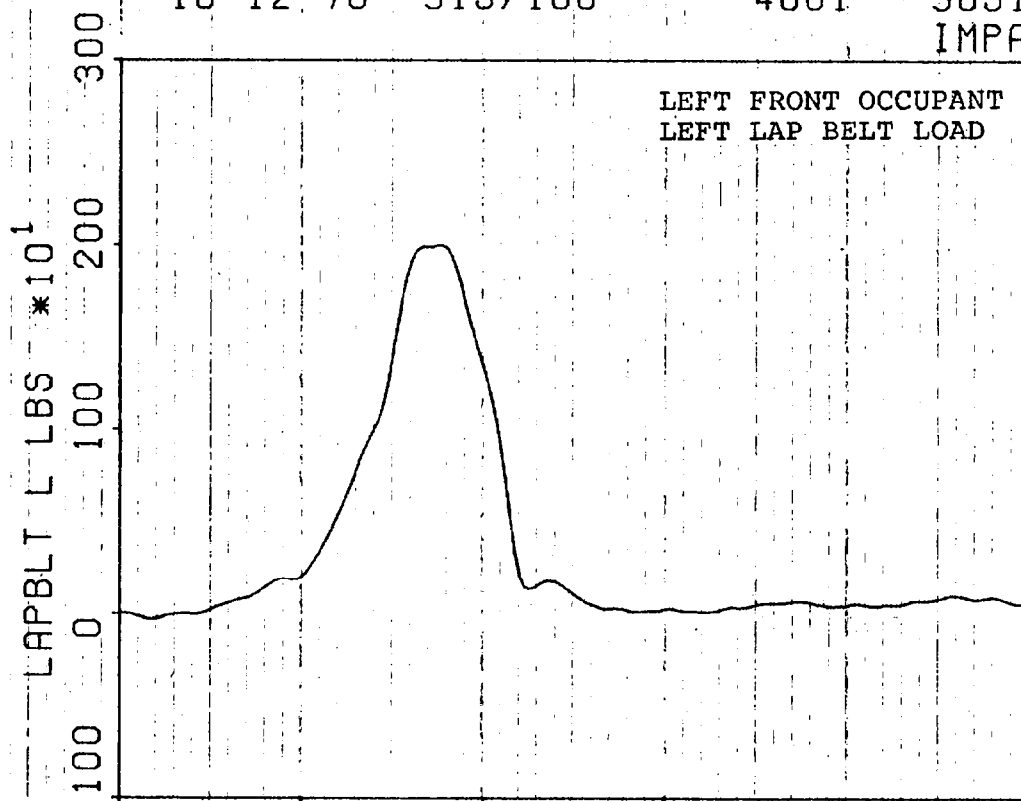


10-12-78 315/100

4001

3051-2

IMPALA



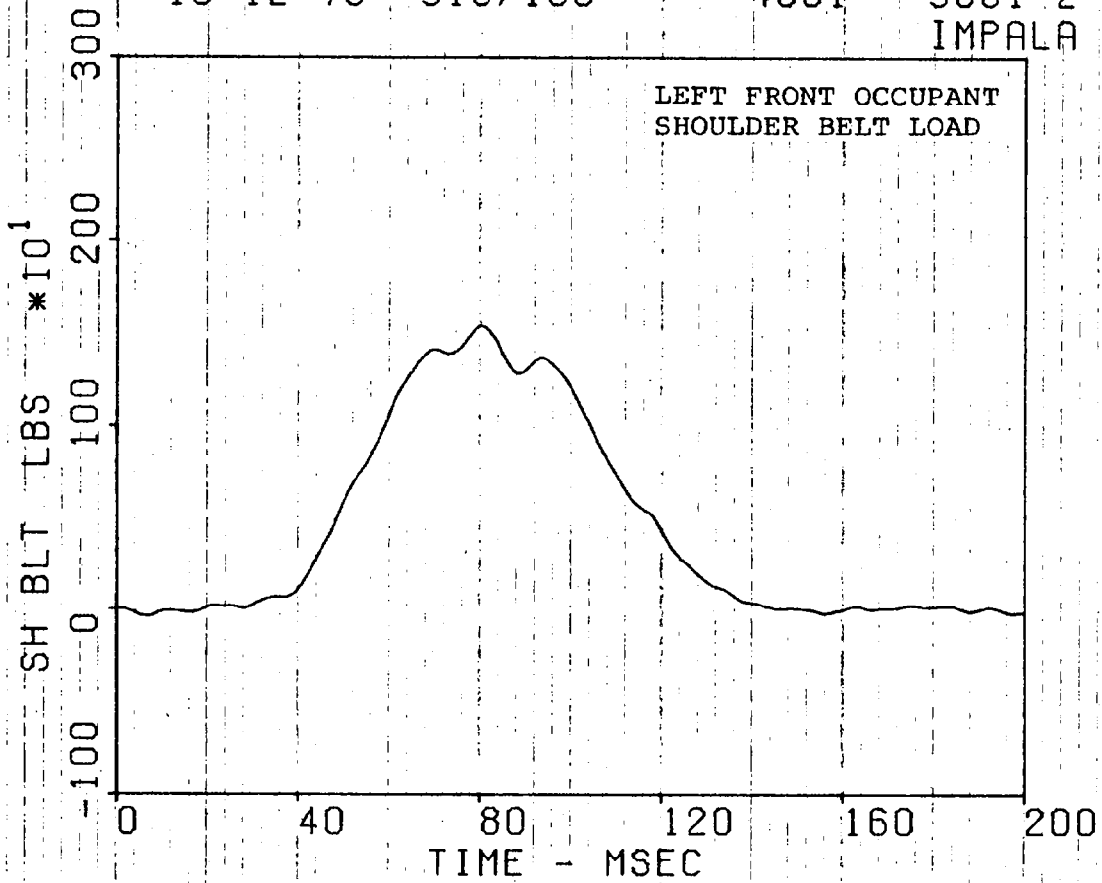
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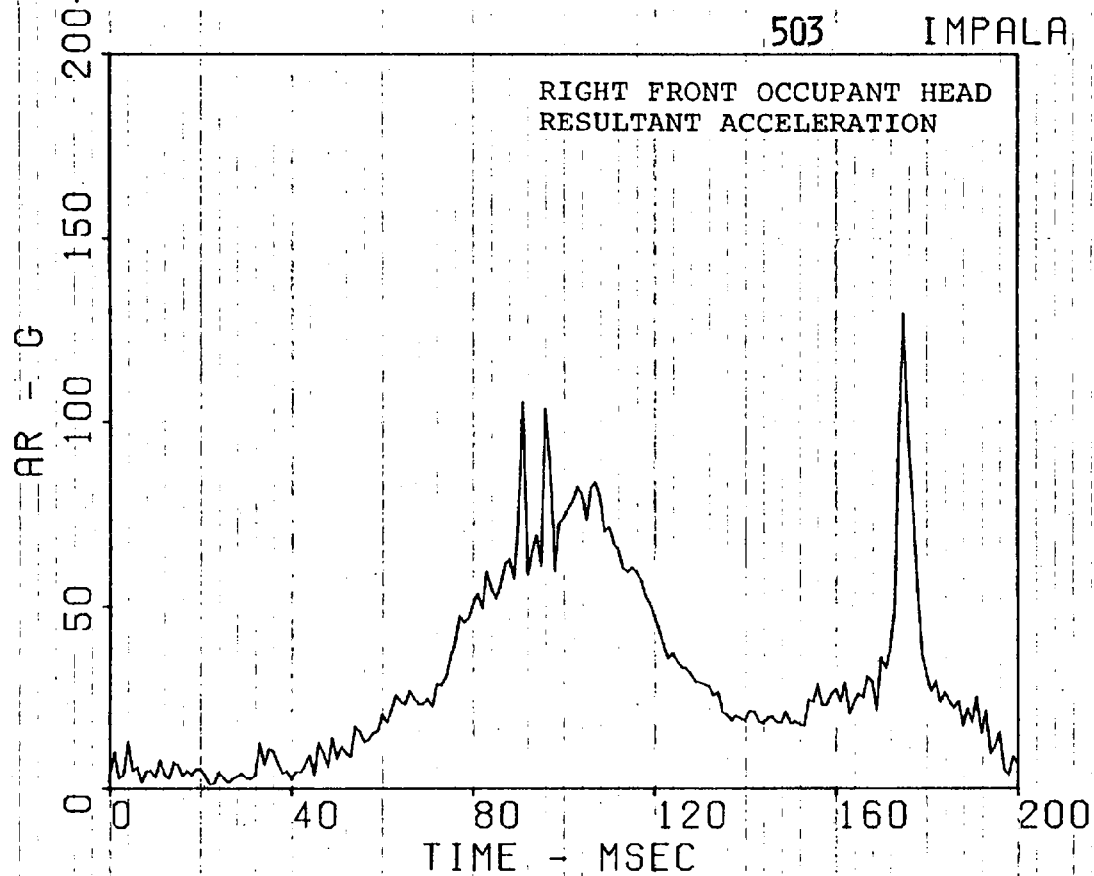
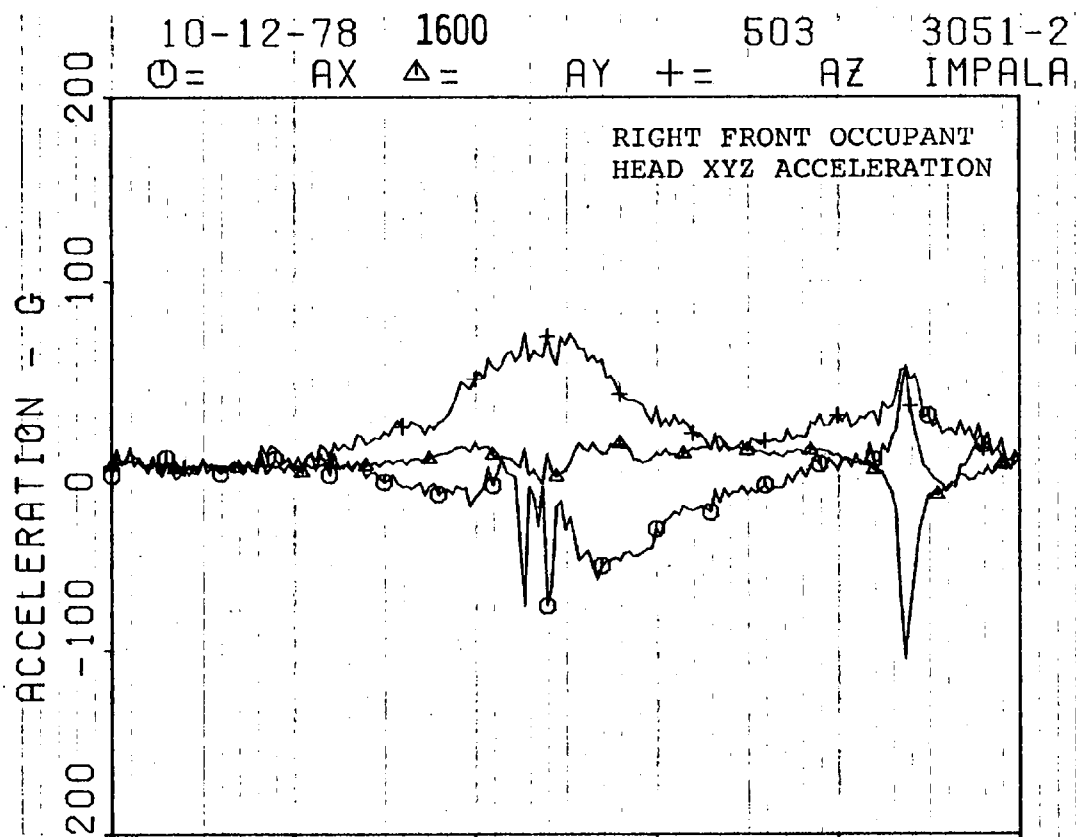
315/100

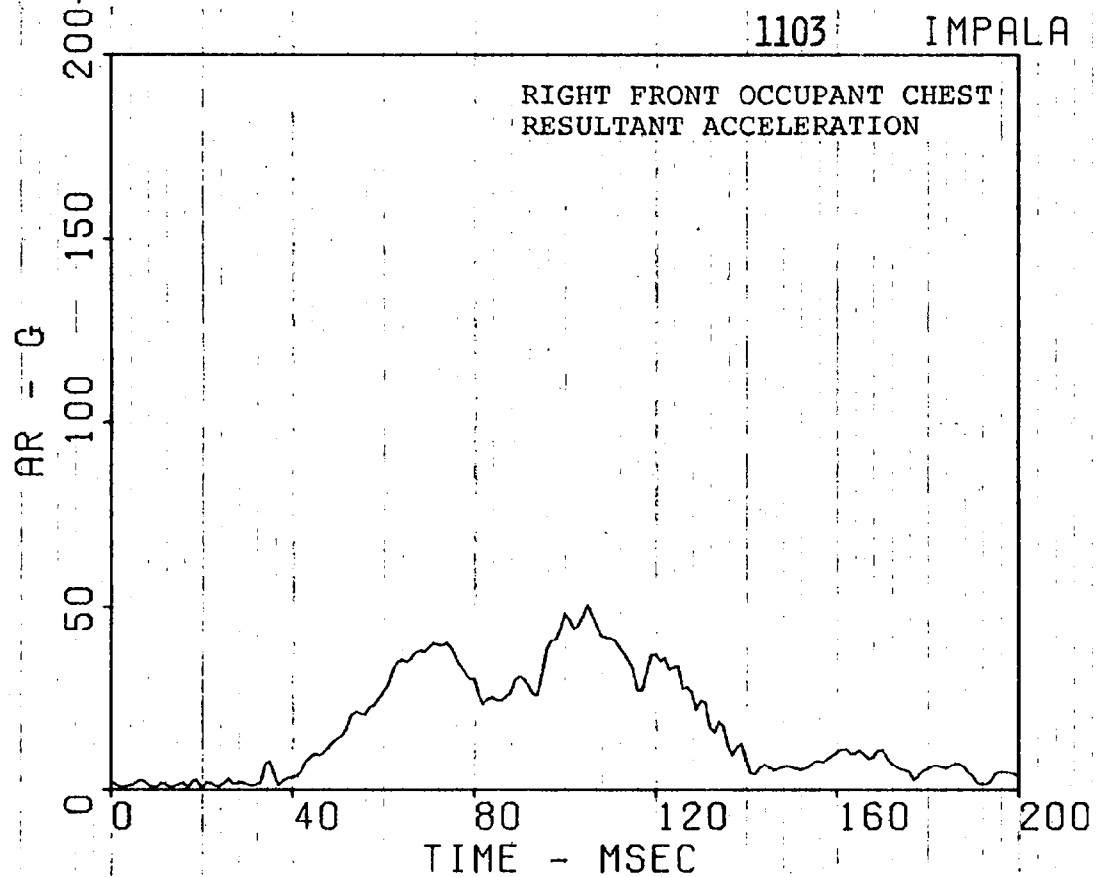
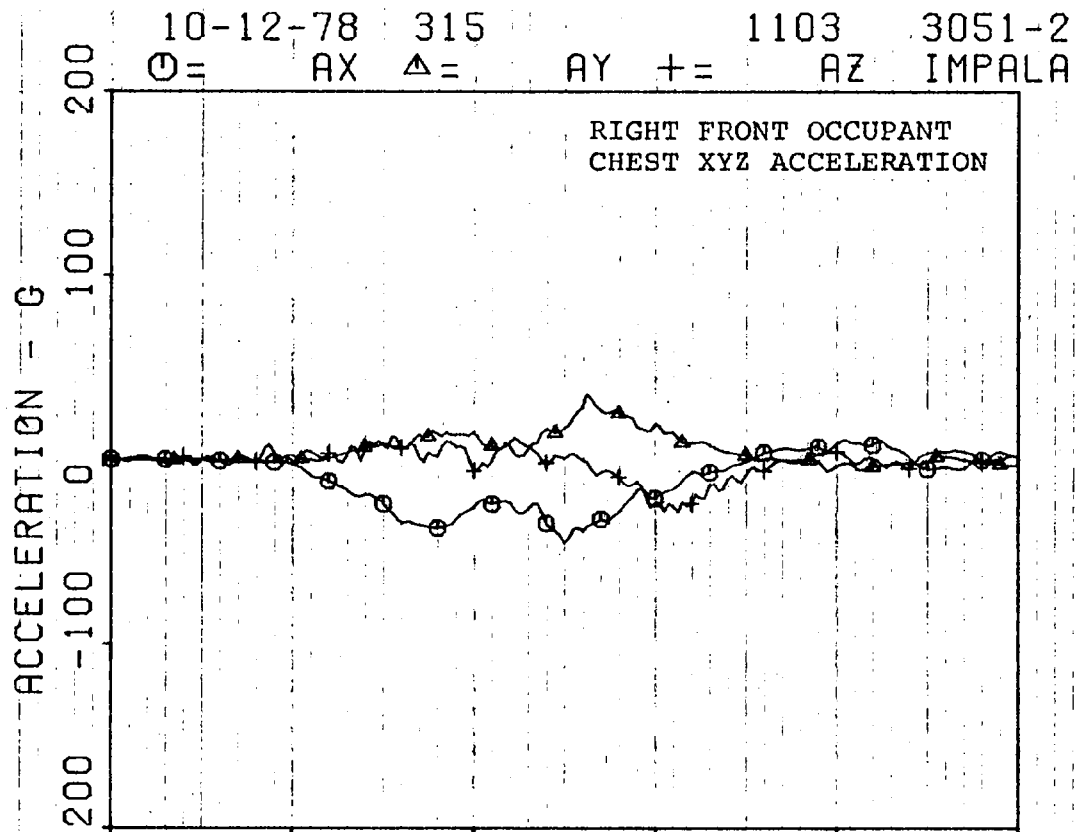
4001

3051-2

IMPALA



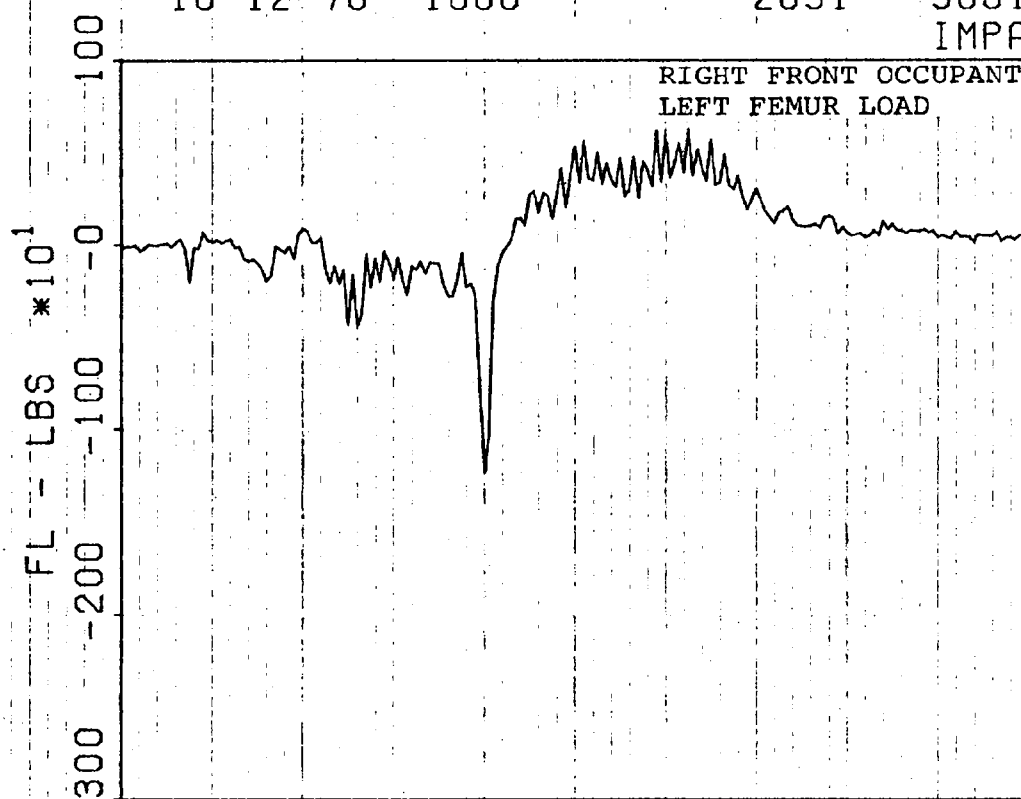




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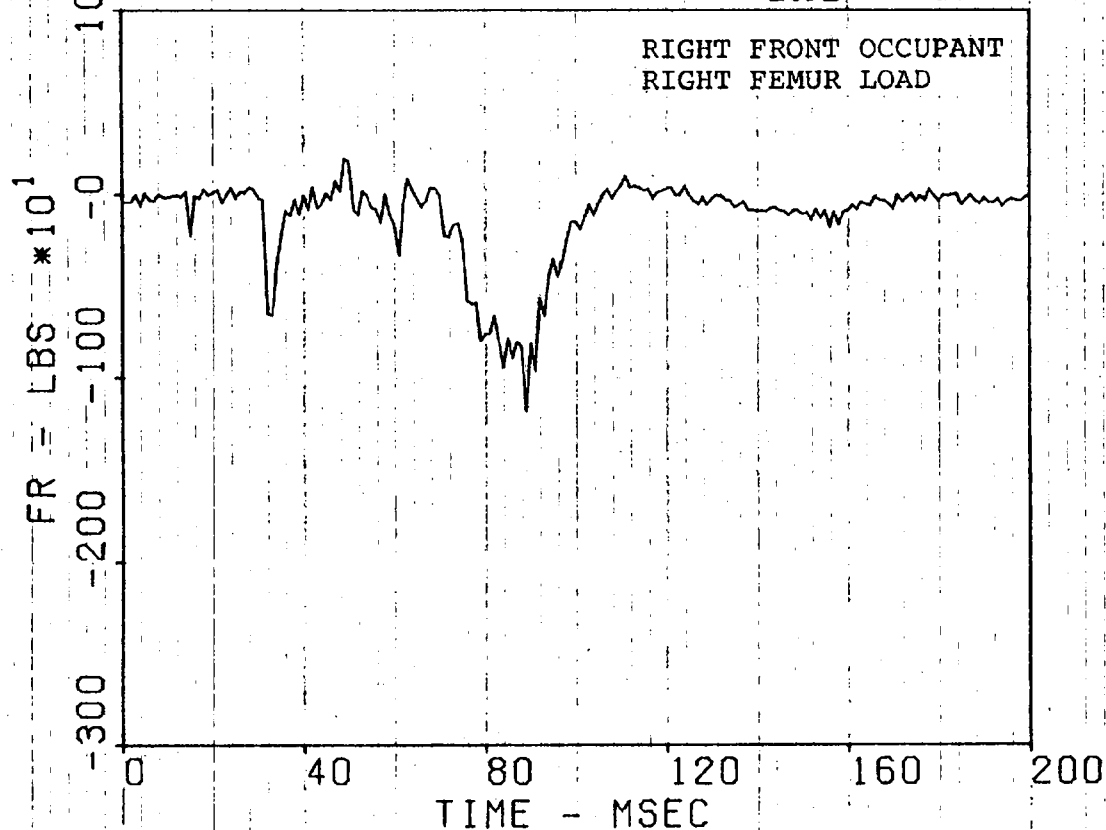
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3051-2
IMPALA

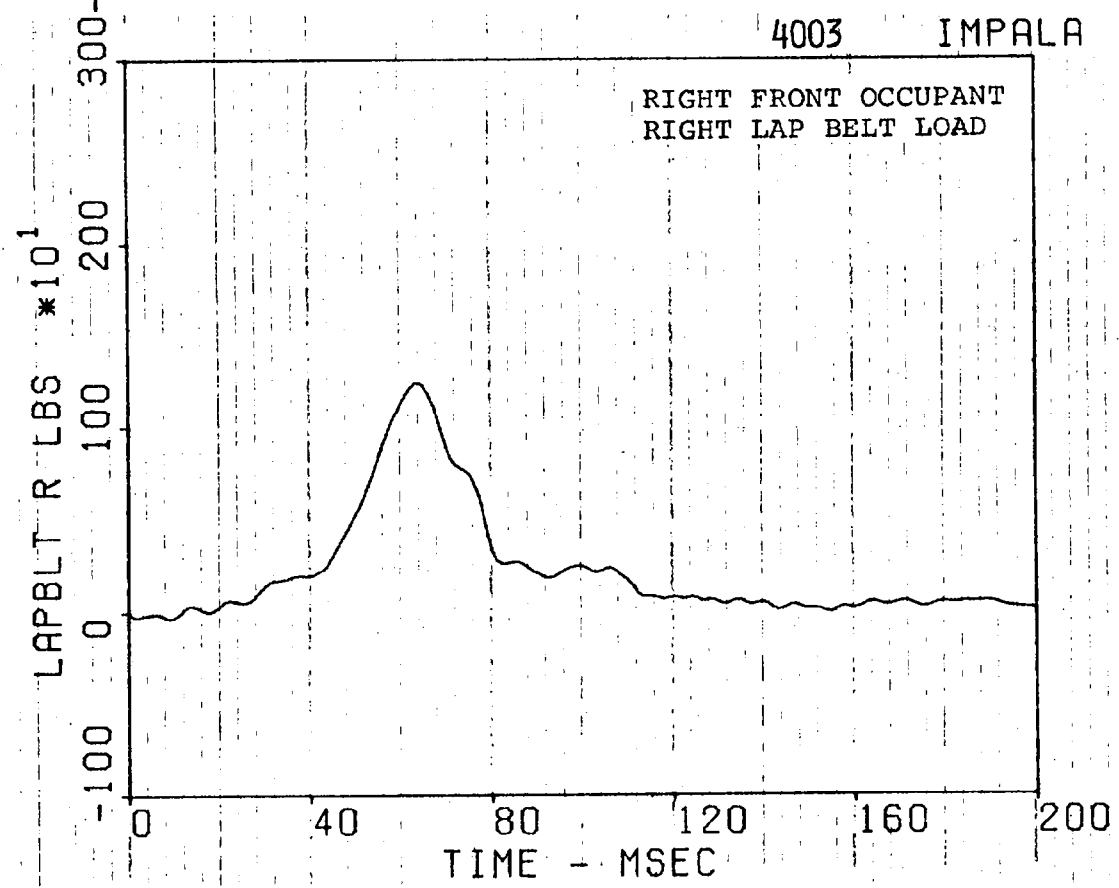
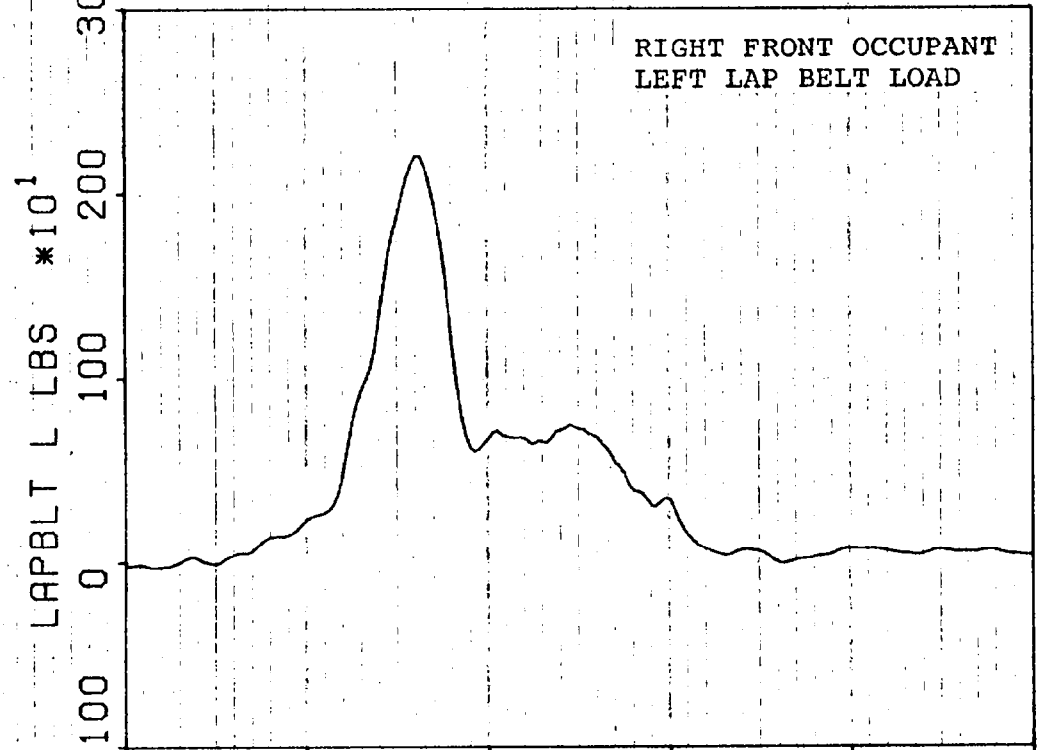


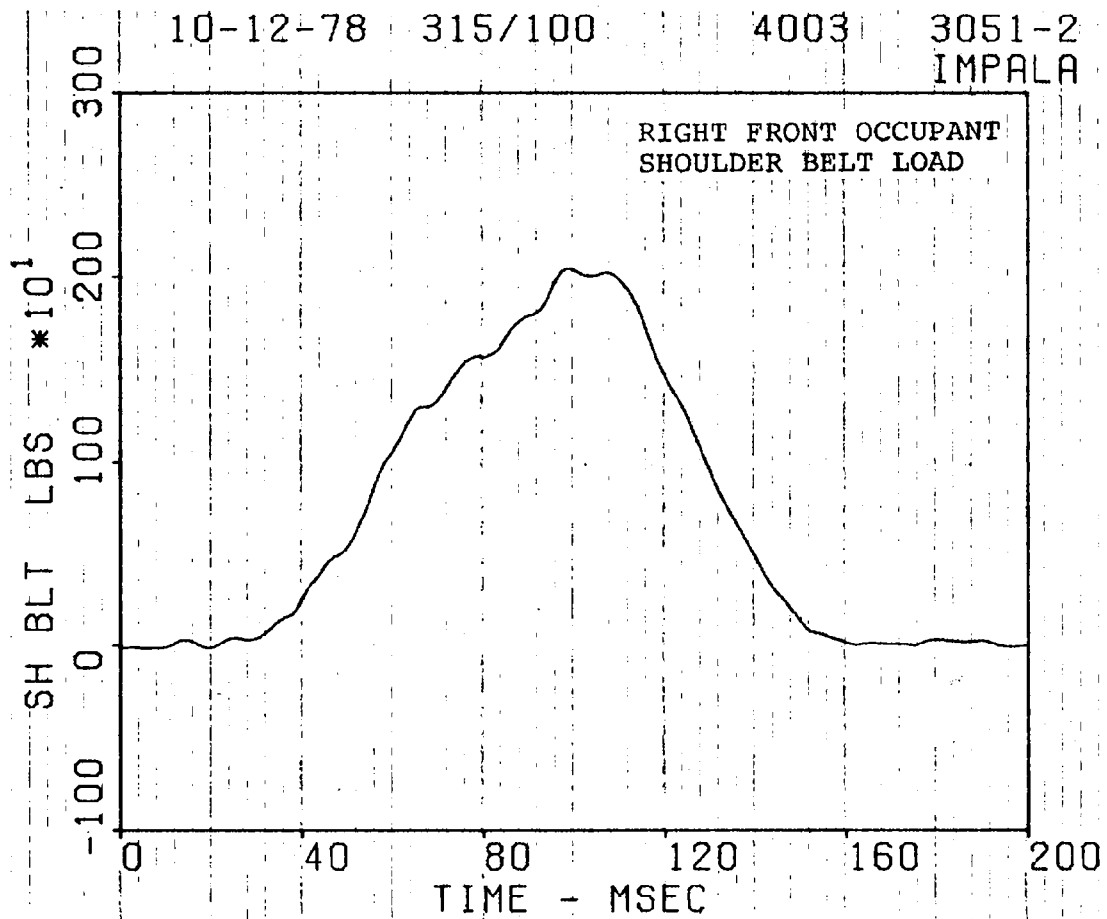
2032

IMPALA



10-12-78 315/100 4003 3051-2
IMPALA





3.0 PRESENTATION OF RESULTS - TEST NO. 3051-2

This section of the report presents the results of Test No. 3051-2, a head-on, symmetric crash test between a 1979 Chevrolet C-10 pickup truck (bullet vehicle) and a 1979 Chevrolet Impala 4-door sedan (target vehicle).

This report presents all test results without analysis or discussion. Included in this document are: still photographs, the electronic data in plotted form, film chronologies, vehicle damage sketches and tabulated pre- and post-test dimensions, accelerometer location identification, summaries of electronic data, and summaries of the simulated occupant data, including injury criteria values. High-speed motion pictures were also obtained for this test and have been submitted to the sponsor. Appendix B contains Calcomp plots of all electronic data for this test.

TABLE 3-1. CRASH TEST SUMMARY (TEST 3051-2)

TEST NO.	3051-2	CONTRACT:	DOT-HS-8-01942
TEST DATE:	October 12, 1978	TIME:	1411
TEMPERATURE:	95	°F	
TEST CONFIGURATION:	Front-to-Front Head-on		
VEHICLE NO. 1:	1979 Chevrolet C-10 Truck		
VEHICLE NO. 2:	1979 Chevrolet Impala 4-door Sedan		
VEHICLE DATA	VEHICLE NO. 1	VEHICLE NO. 2	
Overall Length/Width (in.)	217.2/78.0	212.1/76.0	
Test Weight by Wheel (lb)	LF 1375 RF 1379 LR 1261 RR 1167	LF 1121 RF 1100 LR 1087 RR 1096	
Total Weight (lb)	5182	4404	
Wheelbase (in.)	131.8	116.1	
Longitudinal C.G. (From Center of Front Axle) (in.)	61.8	57.5	
Impact Angle (deg)*	0	180	
Offset Distance (in.)	0	0	
Car Speed (mph)	37.25	37.25	
Final Speed (mph @ msec)	-0.3 @ 195	-10.1 @ 195	
Velocity Change (mph)	37.52	47.35	
Maximum Compartment Acceleration (G @ msec)	-27.1 @ 65	-42.6 @ 60	
Maximum Engine Acceleration (G @ msec)	-97.8 @ 46	-91.9 @ 41	
Maximum Mutual Dynamic Crush (Film Data) (in.)		87.3	
Maximum Static Crush			
• Hood Level (in.)	19.7	37.8	
• Between Hood/Bumper (in.)	27.9	35.6	
• Bumper Level (in.)	32.8	36.0	
Maximum Post-Test Intrusion (in.)	15.0	7.1	
OCCUPANTS			
Type	Alderson Part 572	Alderson Part 572	
Location	LF - Driver RF - Passenger	LF - Driver RF - Passenger	
Restraints	Standard Lap/ Shoulder Belt	Standard Lap/ Shoulder Belt	
INSTRUMENTATION			
Number of Data Channels	14	28	
Number of Cameras		5	

*With respect to tow track centerline.

TABLE 3-2. BULLET VEHICLE INSPECTION SHEET (TEST 3051-2)

Contractor: Dynamic Science, Inc. Contract No.: DOT-HS-8-01942

VIN NO.: CCL449F316980 Make: Chevrolet Pickup Truck

NHTSA No.: R&D

Year: 1979 Color: White Model: C-10

Auto Trans: yes ☐ no ☒ Pwr Steering: yes ☒ no ☐ Seats: Bench: X

Pwr Brakes: yes ☒ no ☐ Auto Speed Cont: yes ☐ no ☒ (front) Bucket: _____

Pwr Seats: yes ☐ no ☒ Anti Skid Brake: yes ☐ no ☒ Split

Pwr Windows: yes ☐ no ☒ Air Conditioning: yes ☒ no ☐ Bench: _____

Tinted Glass: yes ☒ no ☐ Rear Window Def.: yes ☐ no ☒ Split

Radio: yes ☐ no ☒ Brakes: drum: R disc: F Back

Clock: yes ☐ no ☒ Uniroyal, F - Glass Bench: _____

Tire Size: L78-15 Ply Rating: _____ Mfg. & Line: Belt, R - Snow Plow

Bias Ply: X Belted: _____ Radial: _____ / Type: V-8 Eng. Total 350
Cylinders: 8 Displ: CID

Trans, # Fwd. Speeds: 4 Shipping Weight: _____ Odometer: 10

Dealer (name, address, and phone number)

Courtesy Chevrolet
1233 East Camelback Road
Phoenix, Arizona

Remarks (list additional accessories not listed above)

Dual Fuel Tanks

Date of Manufacture: 9-78 Dynamic Science No.: 756 Date Received: 9-29-78

Tilting Steering Wheel: yes ☐ no ☒ Telescoping Steering Wheel: yes ☐ no ☒

Fuel Capacity: _____ "Space Saver" Spare Tire yes ☐ no ☒
(from owner's manual)

Restraint System: Standard Lap/Shoulder Belts

1. Is the vehicle stock throughout? Describe: Yes, except 164 lb of lead as ballast placed over rear axle. All fluids drained except fuel tanks 100% full of water. Windshield wipers & mirrors removed.

2. Does vehicle show evidence of prior accident history? Describe: No.

3. Does vehicle show any significant corrosion? Describe: No.

4. Check condition of the front bumper and frame: OK

TABLE 3-3. TARGET VEHICLE INSPECTION SHEET (TEST 3051-2)

Contractor: Dynamic Science, Inc. Contract No.: DOT-HS-8-01942

VIN NO.: 1L69L9C103704 Make: Chevrolet

NHTSA No.: R&D

Year: 1979 Color: Blue Model: Impala

Auto Trans: yes ☒ no ☐ Pwr Steering: yes ☒ no ☐ Seats: Bench: X

Pwr Brakes: yes ☒ no ☐ Auto Speed Cont: yes ☐ no ☒ (front) Bucket: _____

Pwr Seats: yes ☐ no ☒ Anti Skid Brake: yes ☐ no ☒ Split

Pwr Windows: yes ☐ no ☒ Air Conditioning: yes ☒ no ☐ Bench: _____

Tinted Glass: yes ☒ no ☐ Rear Window Def.: yes ☐ no ☒ Split

Radio: yes ☒ no ☐ Brakes: drum: R disc: F Back

Clock: yes ☐ no ☒ Bench: _____

Tire Size: FR78-15 Ply Rating: _____ Mfg. & Line: Uniroyal

Bias Ply: _____ Belted: _____ Radial ☒ / Type: V-8 Eng. Cylinders: 8 Total 350

Trans. & Fwd. Speeds: 3 Shipping Weight: _____ Odometer: 24 Displ: CID

Dealer (name, address, and phone number)

Courtesy Chevrolet
1233 East Camelback Road
Phoenix, Arizona

Remarks (list additional accessories not listed above)

White Vinyl Roof

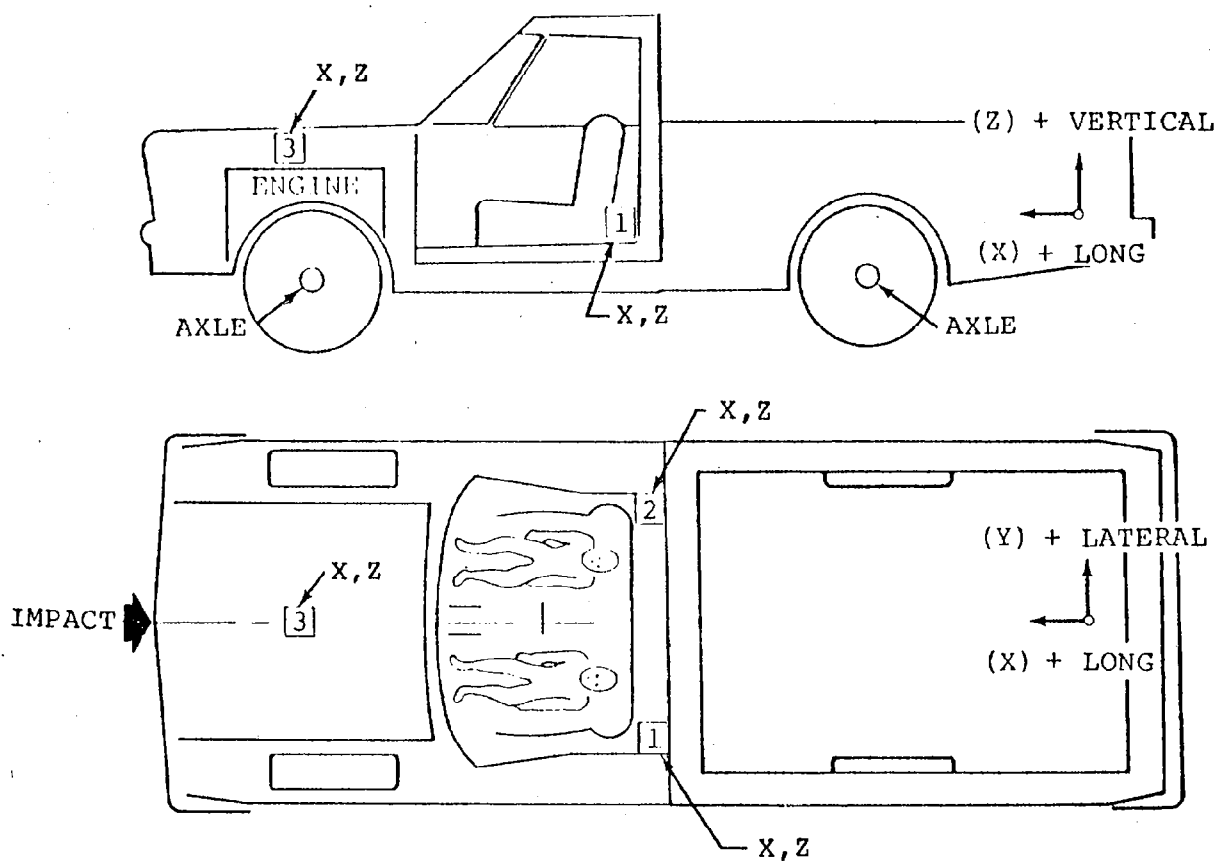
Date of Manufacture: 9-78 Dynamic Science No.: 754 Date Received: 9-28-78

Tilting Steering Wheel: yes ☐ no ☒ Telescoping Steering Wheel: yes ☐ no ☒

Fuel Capacity: _____ "Space Saver" Spare Tire yes ☐ no ☒
(from owner's manual)

Restraint System: Standard lap/shoulder belts

1. Is the vehicle stock throughout? Describe: Yes, except mirrors, windshield wipers, wheel covers, spare tire, jack removed. 162 lb of lead added as ballast in trunk and in right rear passenger floorboard.
2. Does vehicle show evidence of prior accident history? Describe: No.
3. Does vehicle show any significant corrosion? Describe: No.
4. Check condition of the front bumper and frame: OK, no bumper guards



VEHICLE ACCELEROMETER LOCATIONS AND PHYSICAL COORDINATES					MAXIMUM EXPECTED READINGS		
NO.	DESCRIPTION OF LOCATION	X**	Y**	Z**	LONG*	LAT*	VERT*
1	Rocker panel near B-pillar behind driver's seat	111.5	-27.0	28.3	50		50
2	Rocker panel near B-pillar behind passenger's seat	111.5	28.0	28.1	50		50
3	Top of engine block	181.5	0	35.5	200		200

*In G

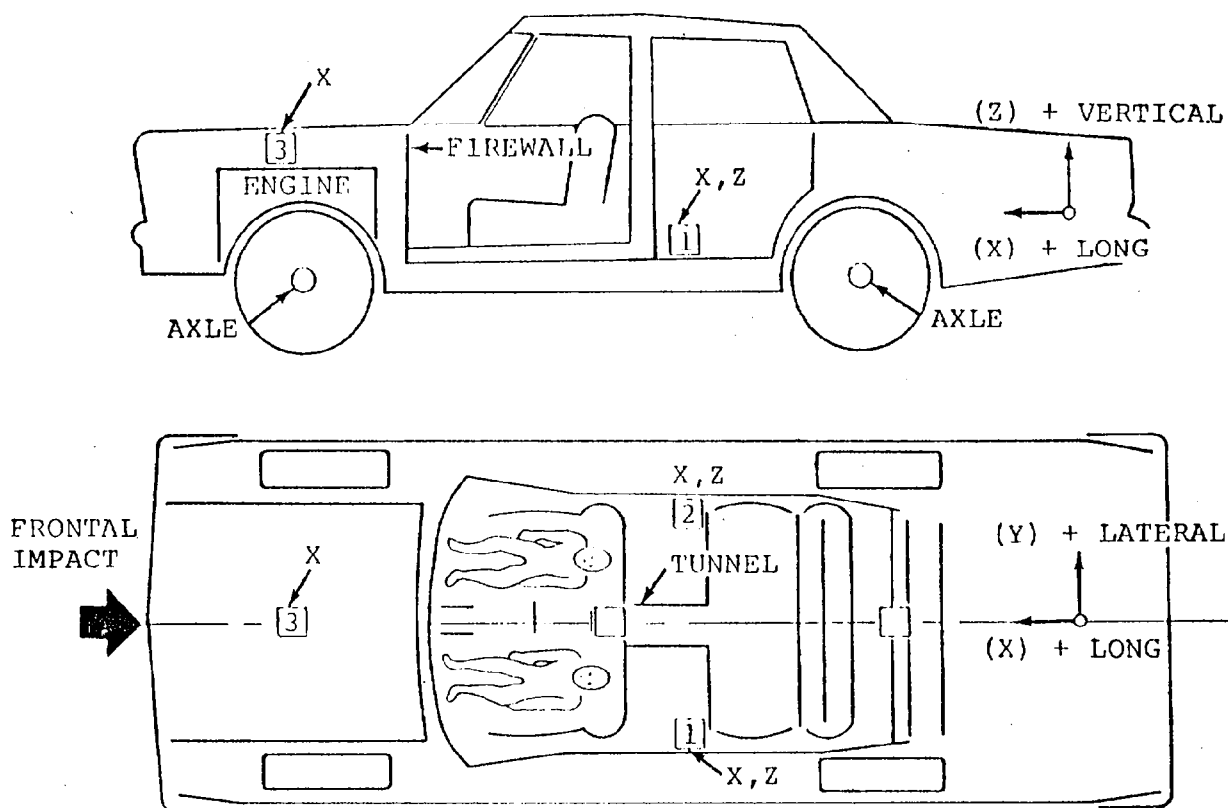
**Reference points:

X - Direction - Centerline of rear bumper

Y - Direction - Centerline of vehicle - left centerline (-), right centerline (+)

Z - Direction - Ground level

Figure 3-1. 1979 Chevrolet C-10 Truck Accelerometer Instrumentation (Test 3051-2).



VEHICLE ACCELEROMETER LOCATIONS AND PHYSICAL COORDINATES				MAXIMUM EXPECTED READINGS		
NO.	DESCRIPTION OF LOCATION	X**	Y**	Z**	LONG*	LAT* VERT*
1	Rocker panel near B-pillar behind driver's seat	104.5	-21.6	9.5	50	50
2	Rocker panel near B-pillar behind passenger's seat	104	20.5	9.5	50	50
3	Top of engine block	168.0	0	30.5	200	

*In G

**Reference points:

X - Direction - Centerline of rear bumper

Y - Direction - Centerline of vehicle - left centerline (-), right centerline (+)

Z - Direction - Ground level

Figure 3-2. 1979 Chevrolet Impala Accelerometer Instrumentation (Test 3051-2).

TABLE 3-4. INSTRUMENTATION SUMMARY (TEST 3051-2)

TEST NO. 3051-2 VEHICLE: 1979 Chevrolet C-10 Truck

<u>Instrument</u>	<u>Numbers</u>	<u>Total No. of Data Channels</u>
Vehicle Accelerometers*	3 locations	6
Dummy Instrumentation = Head (3), Chest (3)	1 location	6
Seat Belt Load Cells = Lap (1), Shoulder (1)	1 location	2
TOTAL		14 - 1 RSCM

VEHICLE: 1979 Chevrolet Impala

Vehicle Accelerometers**	3 locations	5
Dummy Instrumentation = Head (3), Chest (3), Femur (2)	2 locations	16
Seat Belt Load Cells = Lap (2), Shoulder (1)	2 locations	6
Impact Switch		1
TOTAL		28 - 2 RSCM's

*See Figure 3-1 for locations.

**See Figure 3-2 for locations.

TABLE 3-5. CAMERA LOCATIONS - HEAD-ON IMPACT (TEST 3051-2)

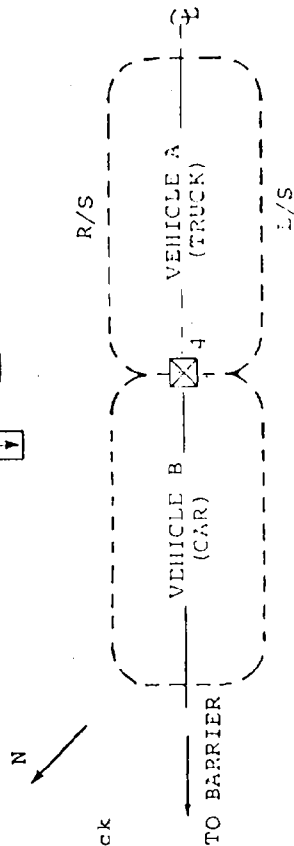
Test No: 2 Test Date: See Table 1-1

Test Type: Truck-to-Car Head-On Impact Tests

Vehicle A (Away): 1978 Chevrolet C-10 Pickup Truck

Vehicle B (Barrier): 1977 Chevrolet Impala

Comments: All high-speed cameras will be perpendicular to the line of vehicle travel



CAMERA SYMBOLS

1. 1000 fr/sec
2. 200 fr/sec
3. Other 24 fr/sec
4. 400 fr/sec
5. 500 fr/sec

FRAME RATE

CAMERA	YES
STILLS	X
SLIDES	X
MOVIE	X
POLAROID	

- GROUND
- BARRIER
- OVERHEAD
- ON-BOARD

TIMING LIGHT SPEED

1. 100 Hz (10 msec/light)
2. 200 Hz (5 msec/light)
3. Other

HAND

HELD

1 6

Loc. No.	Location	Field of View	Lens Size	Frm Rate	Trng Spd	Ser No	Impact Dist-X	C.L. Dist-Y	CAM Hght-Z
1	Left Side	Overall of Truck and Car	13	1	1				
2	Right Side	B-Pillar-to-B-Pillar of Both Vehicles	13	1	1				
3	Right Side	Front Occupant Compartment of Car B	Var	5	1				
4	Overhead	Front Half of Both Vehicles at Impact	13	1	1				
5	Left Side	Panning Test and Overall Results		3					
6	Left Side	Impact of Cars at ~ 100 msec (Still Camera 4x5 Color Negative)							

TABLE 3-6. SUMMARY OF PRE-TEST ENGINE/BUMPER/FIREWALL CHARACTERISTICS - CHEVROLET C-10 TRUCK (TEST 3051-2)

Test No.	3051-2	Type	Head-On Symmetric
Car Model	Chevrolet C-10 Truck	Dynamic Science No.	756
Engine Size	350 CID		
Engine Weight* (lb)	675		
Engine Height/Width (in.)	34.7/21.0		
Bumper to Engine (in.)	28.8		
Engine Length (in.)	21.8		
Engine to Firewall (in.)	2.3		
Bumper to Firewall (in.)	52.9		
Bumper Height (max/min) (in.)	24.1/14.9		

*Includes engine and rigid attachments such as transmission and drive train.

TABLE 3-7. PRE-TEST DUMMY POSITIONS - CHEVROLET C-10 TRUCK (TEST 3051-2)

Distances (in.)	Driver	Passenger
Chest to Steering Wheel Hub (horizontal)	11.2	
Nose to Steering Wheel Upper Rim	15.3	
Nose to Windshield (horizontal)	25.0	26.3
Knee to Lower Panel (closest point)		
Left	7.8	6.0
Right	7.9	6.6
Chest to Dash (horizontal)	24.8	23.6
Forehead to Header	19.0	20.8
Dummy Serial Number	A03	A04

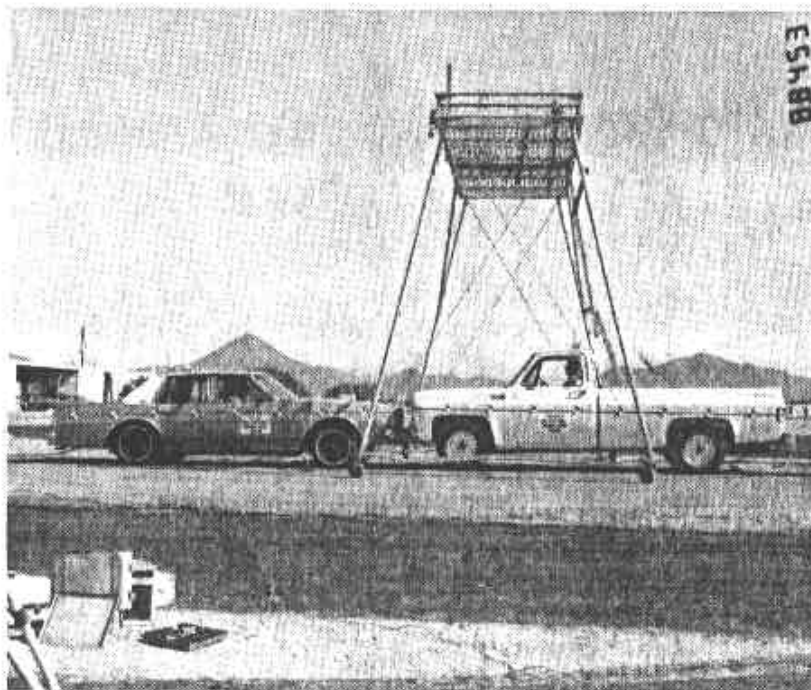
TABLE 3-8. SUMMARY OF PRE-TEST ENGINE/BUMPER/FIREWALL CHARACTERISTICS - CHEVROLET IMPALA (TEST 3051-2)

Test No.	3051-2	Type	Head-On Symmetric
Car Model	Chevrolet Impala	Dynamic Science No.	754
Engine Size	350 CID		
Engine Weight* (lb)	675		
Engine Height/Width (in.)	29.6/21.5		
Bumper to Engine (in.)	34.8		
Engine Length (in.)	21.8		
Engine to Firewall (in.)	3.9		
Bumper to Firewall (in.)	60.5		
Bumper Height (max/min) (in.)	23.0/13.2		

*Includes engine and rigid attachments such as transmission and drive train.

TABLE 3-9. PRE-TEST DUMMY POSITIONS - CHEVROLET IMPALA (TEST 3051-2)

Distances (in.)	Driver	Passenger
Chest to Steering Wheel Hub (horizontal)	12.6	
Nose to Steering Wheel Upper Rim	15.6	
Nose to Windshield (horizontal)	22.8	22.4
Knee to Lower Panel (closest point)		
Left	7.5	7.5
Right	7.2	7.6
Chest to Dash (horizontal)	19.5	20.2
Forehead to Header	14.9	15.7
Dummy Serial Number	759	760



a) Pre-test



b) Post-test

Figure 3-3. Vehicle Configuration (Test 3051-2).

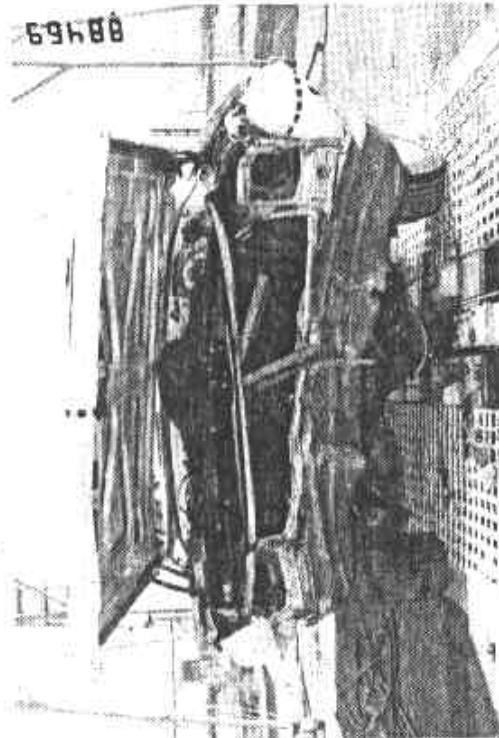
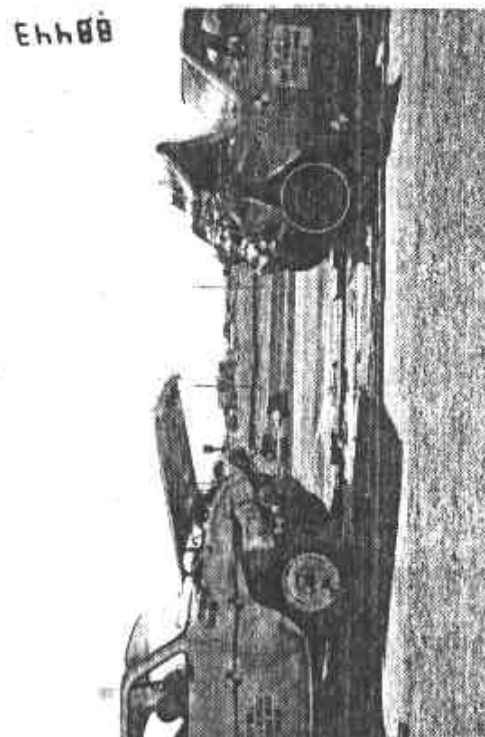
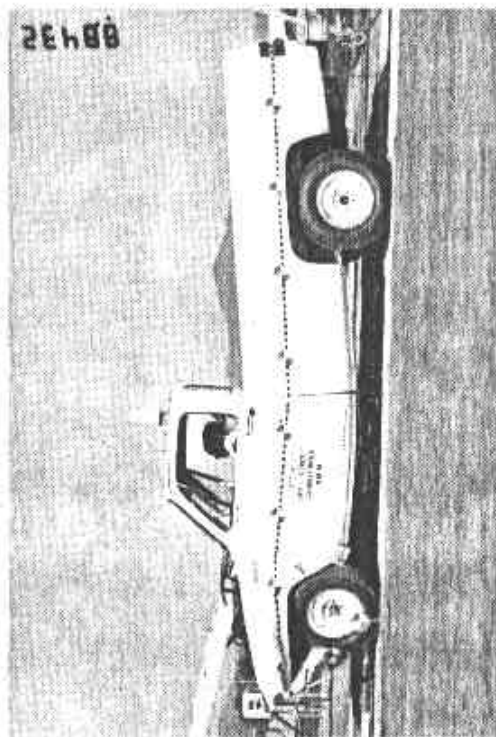


Figure 3-4. Post-test Chevrolet C-10 Truck Configuration (Test 3051-2).

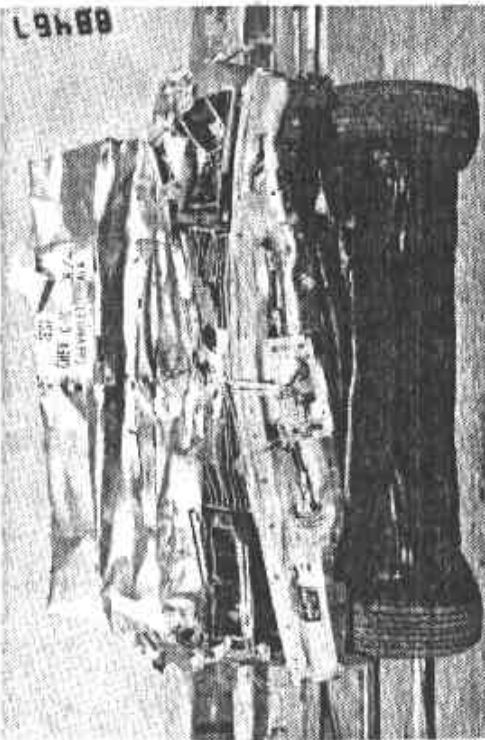
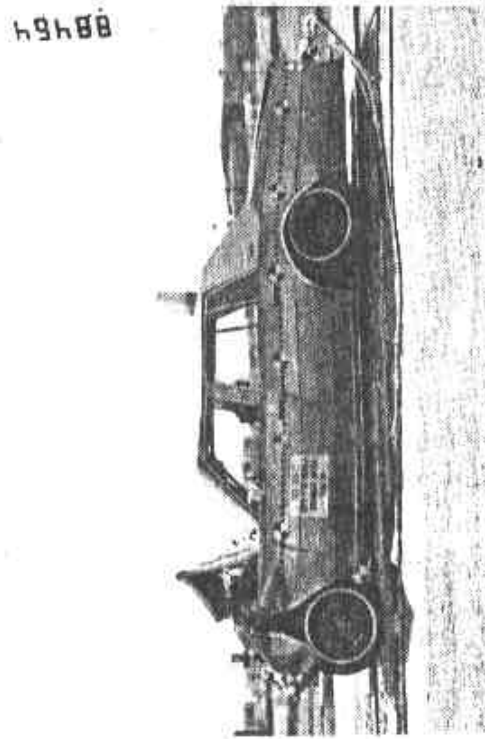
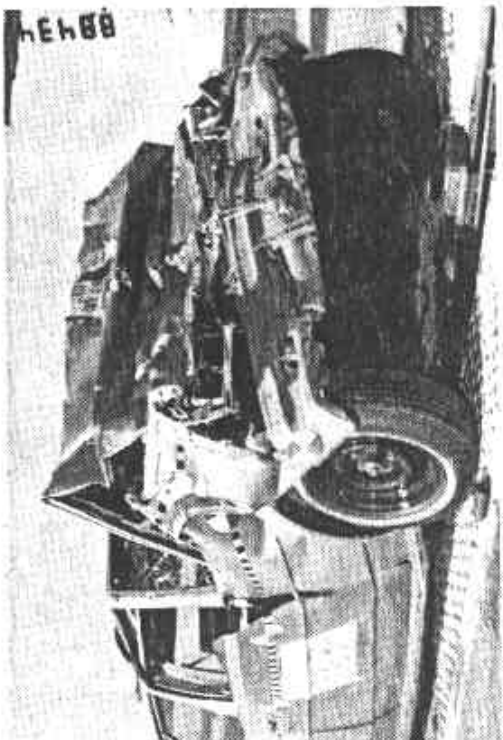
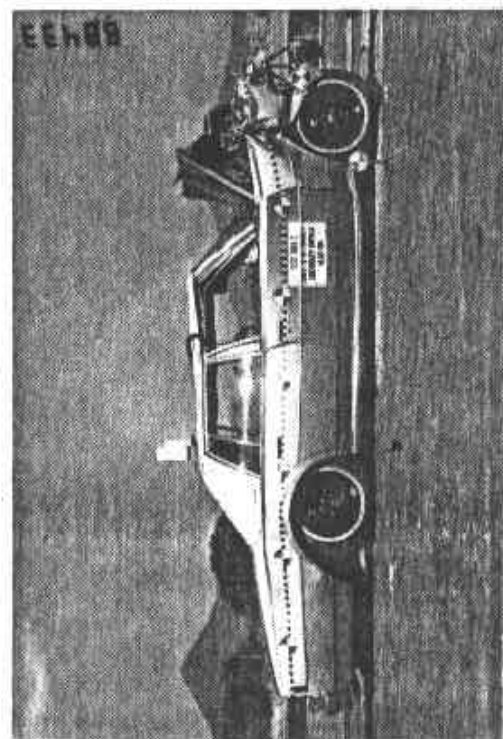
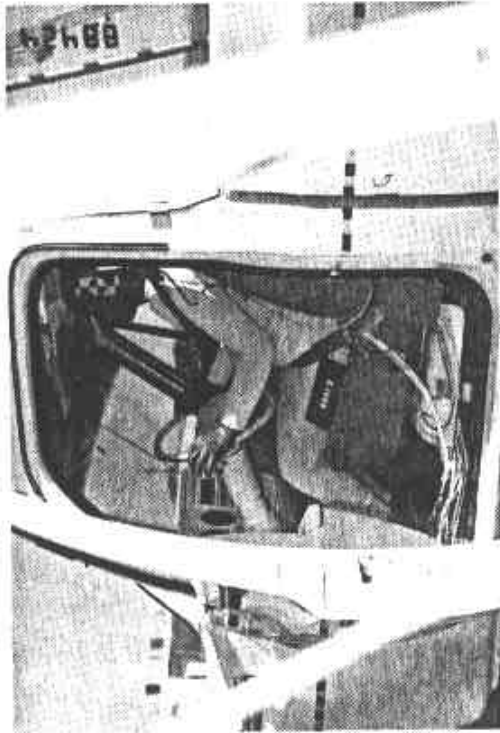
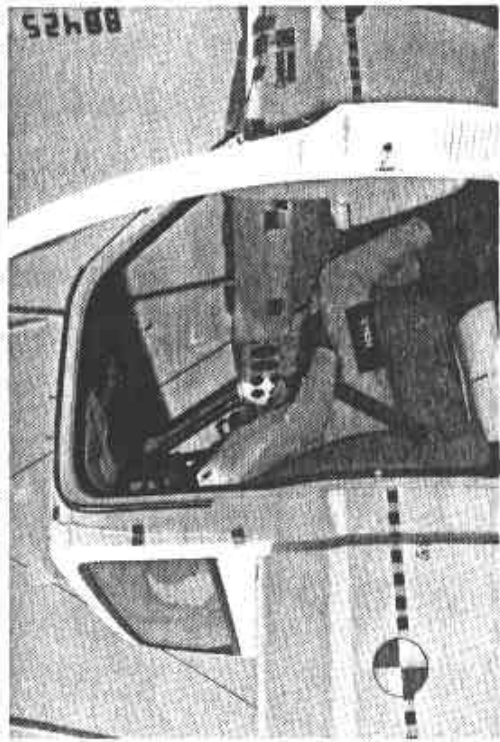


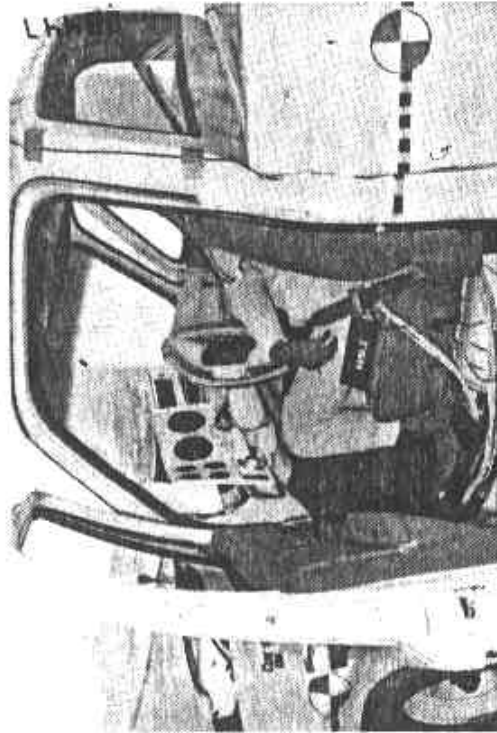
Figure 3-5. Post-test Chevrolet Impala Configuration (Test 3051-2).



a) Pre-test Driver



c) Pre-test Passenger

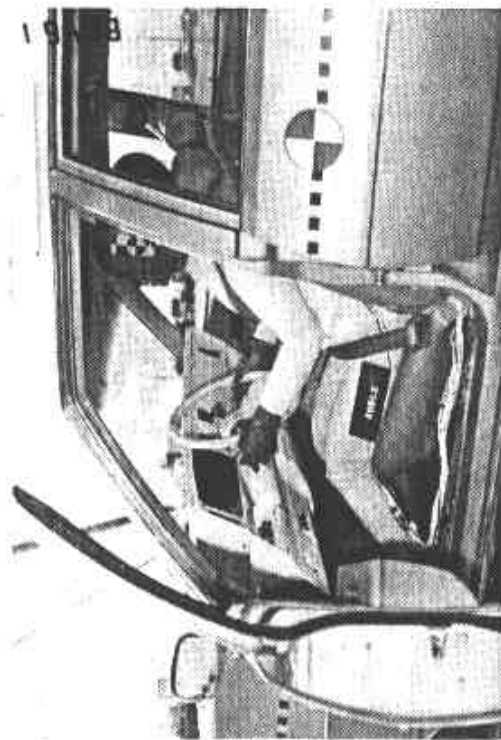


b) Post-test Driver

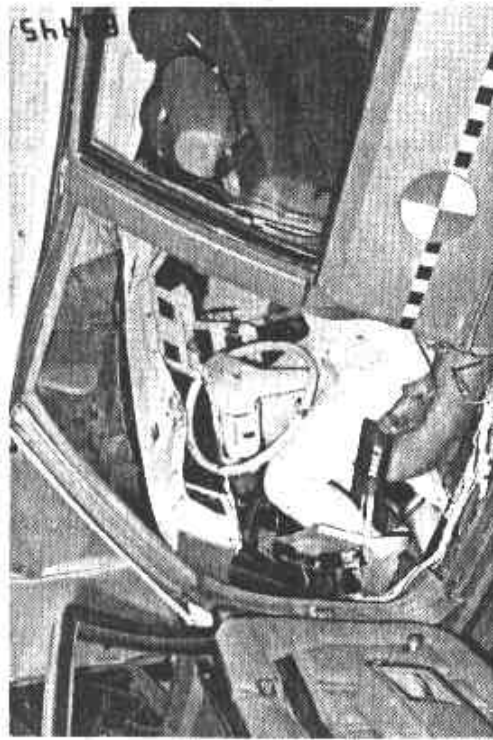


d) Post-test Passenger

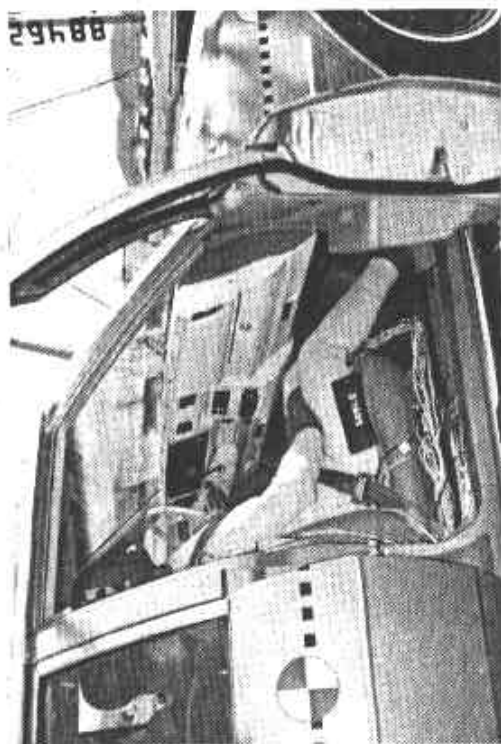
Figure 3-6. Chevrolet C-10 Truck Dummy Configuration (Test 3051-2).



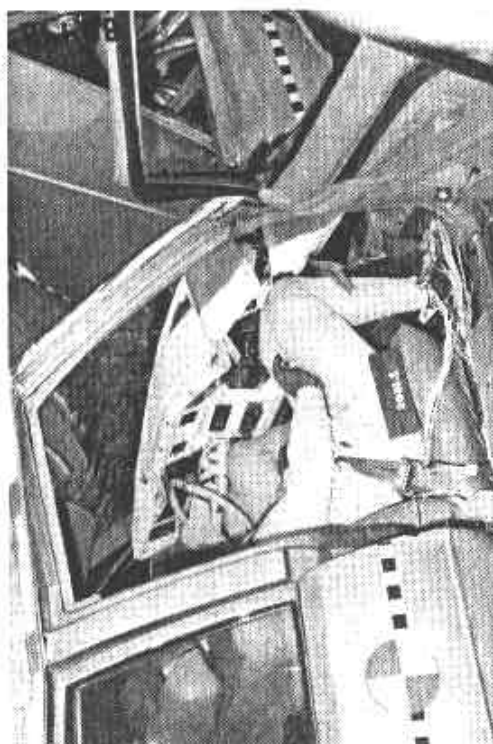
a) Pre-test Driver



b) Post-test Driver



c) Pre-test Passenger



d) Post-test Passenger

Figure 3-7. Chevrolet Impala Dummy Configuration (Test 3051-2).

TABLE 3-10. CHRONOLOGY OF EVENTS
(TEST 3051-2)

Time (msec)	Chevrolet C-10 Truck	Time (msec)	Chevrolet Impala
0	Impact (visual)	0	Impact (visual)
18	Front fenders start to buckle	12	Front fenders start to buckle
21	Hood latch on truck fails	37	Rear axle breaks
48	Front wheels of the two vehicles strike each other	86	Driver hits steering wheel with chest
67	Front tires leave the ground, driver strikes steering wheel with chest	95	Driver hits top of steering wheel with chin
73	Driver hits top of steering wheel with chin	98	Rear axle breaks
75	Frame bends downward behind passenger compartment	99	Car stops forward motion
98	Driver's forward motion stops	107	Passenger hits dash with head
103	Passenger hits dash	115	Rear wheels leave ground
113	Maximum mutual dynamic crush (87.3 in.)	121	Passenger stops forward motion
115	Passenger stops forward motion	125	Car maximum declination (8.5°)
118	Truck stops forward motion	171	Passenger recontacts seat back
172	Driver recontacts seat back	198	Driver recontacts seat back
209	Passenger recontacts seat back	242	Impala airborne
255	Truck maximum inclination (6.25°)	282	Rear tires recontact ground
541	Rear wheels recontact ground.		

TABLE 3-11. SUMMARY OF POST-TEST OBSERVATIONS - CHEVROLET C-10 TRUCK (TEST 3051-2)

VEHICLE: 1979 Chevrolet C-10 Truck

Dummy Contact Points:	Left Front	Right Front
Head-----	Top of Steering Wheel	Dash Panel
Chest-----	Steering Wheel and Hub	No contact
Knees-----	Knee Bolsters	Glove Compartment

Glazing: Intact. No cracks in windshield.

Doors: All doors required tools to open.

Seat Belt Anchorages and Restraints: OK. No seat movement.

Vehicle Centerline to Barrier Centerline: Front - 3". Rear - 0"

Fuel Leakage: None.

General Observations: Hood latch failed. Manual transmission broken and touching ground. Bell housing broken. RF tire flat. LF tire and rim bent inboard from bent steering linkage. Jack from truck thrown 38' from impact point. Floorboard intrusion extensive especially near center of vehicle. Frame struts of Impala bent truck bumper more. Instrument panel loose from impact. Front of vehicle 11" from impact point.

TABLE 3-12. SUMMARY OF POST-TEST OBSERVATIONS - CHEVROLET
IMPALA (TEST 3051-2)

VEHICLE: 1979 Chevrolet Impala 4-door Sedan

Dummy Contact Points:	Left Front	Right Front
Head-----	Top of Steering	Dash Panel
	Wheel and Dash Panel	
Chest-----	Steering Wheel and	No contact
	Hub	
Knees-----	Knee Bolsters	Glove Compartment

Glazing: Intact, but windshield severely cracked.

Doors: Left front was difficult to open. All others required tools to open.

Seat Belt Anchorages and Restraints: OK. Front seat moved forward 0.5"

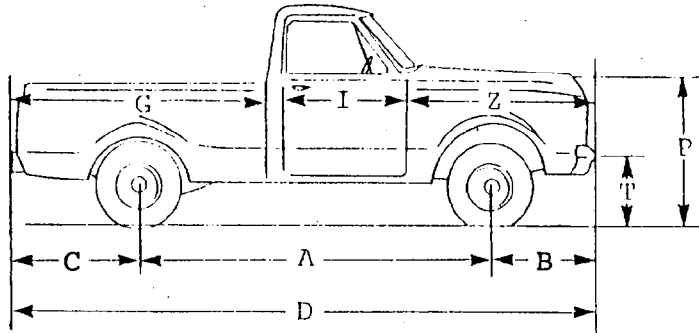
Vehicle Centerline to Barrier Centerline: No rotation.

Fuel Leakage: None.

General Observations: Rear axle broken in two at differential.

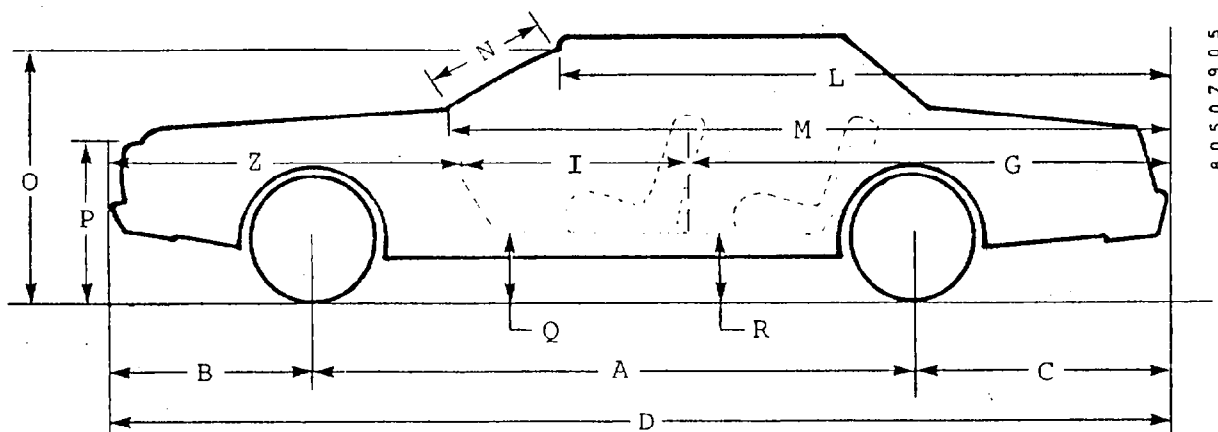
Deformation to rear fender of car. Front of car 83" from impact point. Distance between vehicles 72". Front bumper rotated upward. Engine/transmission caused extensive compartment intrusion. Engine of truck overrode engine of car. Deformation of front door sill evident on both sides.

80902302



	Pre-test (in.)		Post-test (in.)		Difference (in.)	
	LS	RS	LS	RS	LS	RS
A	131.7	132.0	117.7	116.6	14.0	15.4
B	33.4	33.4	18.5	20.1	14.9	13.3
C	51.9	52.0	51.7	51.9	0.2	0.1
D	217.0	217.4	187.9	188.6	29.1	28.8
I	38.9	38.9	37.2	36.5	1.7	2.4
G	107.3	108.0	107.7	108.4	-0.4	-0.4
P	39.6	39.6	33.9	33.6	5.7	6.0
T	23.0	23.0	14.5	20.1	8.5	2.9
Z	64.2	63.8	43.0	43.7	21.2	20.1

TABLE 3-14. PRE-TEST AND POST-TEST DIMENSION MEASUREMENTS -
TARGET VEHICLE (TEST 3051-2)



VEHICLE: 1979 Chevrolet Impala 4-door Sedan

	Pre-test (in.)		Post-test (in.)		Difference (in.)	
	LS	RS	LS	RS	LS	RS
A	116.0	116.1	109.5	105.1	6.5	11.0
B	39.9	39.9	20.6	15.2	19.3	24.7
C	56.1	56.0	54.6	58.6	1.5	-1.6
D	212.0	212.1	184.7	178.9	27.3	33.3
I	37.0	36.9	35.6	34.2	1.4	2.7
G	104.0	104.0	102.9	103.6	1.1	0.4
L	120.9	120.5	119.9	120.4	0.1	0.1
M	140.4	140.2	136.6	135.6	3.8	4.6
N	26.3	26.2	26.3	26.1	0.0	0.1
O	55.4	55.0	51.6	52.7	3.8	2.3
P	31.2	31.2	36.1	37.5	-4.9	-6.3
Q	14.3	14.2	8.8	8.9	5.5	5.3
R	14.0	14.1	7.6	8.4	6.4	5.7
Z	71.0	71.2	46.2	41.1	24.8	30.1

TABLE 3-15. CHEVROLET C-10 TRUCK EXTERIOR PROFILES AND STATIC CRUSH (TEST 3051-2)

Location	Height at E	RP**	Distance Left of Center (in.)*						Distance Right of Center (in.)*						
			36	30	24	18	12	6	0	6	12	18	24	30	36
Pre-test Profile (Distance from R.P. - in.)															
Hood Level	39.9	220	8.6	8.3	6.4	6.2	6.0	5.8	5.7	5.7	5.8	5.9	6.0	7.7	8.0
Between Bumper/Hood	34.4	220	8.7	9.7	6.6	6.5	6.3	6.1	5.9	6.1	6.2	6.3	6.4	9.3	8.1
Bumper Level	20.4	220	5.4	4.1	3.8	3.5	3.4	3.7	3.7	3.6	3.1	3.3	3.5	3.7	5.0
Post-test Profile (Distance from R.P. - in.)															
Hood Level	34.7	205	8.8	12.1	11.1	10.3	9.0	8.7	8.4	8.0	7.7	7.9	8.6	8.4	5.7
Between Bumper/Hood	31.1	205	14.3	22.5	19.5	17.5	16.9	15.3	14.4	14.7	16.4	16.6	16.0	17.0	12.9
Bumper Level	20.4	205	17.9	18.5	18.9	18.3	17.9	20.3	21.5	21.4	19.7	19.6	19.2	18.9	18.3
Post-test Static Crush (in.)															
Hood Level	5.2		15.2	18.8	19.7	19.1	18.0	17.9	17.7	17.7	16.9	17.0	17.6	15.7	12.7
Between Bumper/Hood	3.3		20.6	27.8	27.9	26.0	25.6	24.2	23.5	23.6	25.2	25.3	24.6	22.7	19.8
Bumper Level	0.0		27.5	29.4	30.1	29.8	29.5	31.6	32.8	32.8	31.6	31.3	30.7	30.2	28.3

*As viewed from driver position in truck.

**Reference Plane from rear bumper of truck.

TABLE 3-16. CHEVROLET C-10 TRUCK INTERIOR PROFILES AND STATIC CRUSH (TEST 3051-2)

Location	Height at E RP**	Distance Left of Center (in.)*						Distance Right of Center (in.)*					
		36	30	24	18	12	6	0	6	12	18	24	30
Pre-test Profile (Distance from R.P. - in.)													
Dash Level	49.9	130.0	19.3	21.5	21.5	21.0	19.4	24.5	24.4	24.3	24.2	24.0	23.4
Knee Level	39.4	130.0	20.0	22.0	20.0	22.0	20.3	22.4	22.4	22.5	22.4	22.1	21.9
Floor Level	27.8	142.3	19.0	19.4	19.8	20.1	19.0	18.3	18.0	19.2	19.4	19.3	19.1
Post-test Profile (Distance from R.P. - in.)													
Dash Level	49.6	130.0	15.6	17.4	17.5	17.0	15.5	20.4	20.5	20.5	20.4	20.3	19.7
Knee Level	39.4	130.0	15.3	17.5	14.0	15.7	15.4	17.1	18.3	20.1	21.1	21.0	19.0
Floor Level	29.7	139.0	19.4	15.6	13.3	11.2	8.0	6.6	6.8	9.4	12.1	15.6	17.1
Post-test Static Crush (in.)													
Dash Level	0.3		3.7	4.1	4.0	4.0	3.9	4.1	3.9	3.8	3.8	3.7	3.7
Knee Level	0.0		4.7	4.5	6.0	6.3	4.9	5.3	6.1	2.4	1.3	1.1	2.9
Floor Level	-1.9		2.9	7.1	9.8	12.2	14.3	15.0	14.5	13.1	10.6	7.0	5.3
*As viewed from driver position in truck.													
**Reference Plane from rear bumper of truck.													

*As viewed from driver position in truck.

**Reference Plane from rear bumper of truck.

TABLE 3-17. CHEVROLET IMPALA EXTERIOR PROFILES AND STATIC CRUSH (TEST 3051-2)

Location	Height at E	Distance Left of Center (in.)*						Distance Right of Center (in.)*							
		RP**	34	30	24	18	12	6	0	6	12	18	24	30	34
Pre-test Profile (Distance from R.P. - in.)															
Hood Level	32.0	215	11.8	11.4	10.6	9.8	9.0	8.2	7.4	8.2	9.0	9.9	10.6	11.3	11.8
Between Bumper/Hood	27.4	215	11.4	12.9	13.0	9.5	9.5	8.7	7.3	8.7	9.5	9.6	13.1	12.9	11.5
Bumper Level	20.2	215	7.4	7.0	6.2	5.4	4.6	3.8	3.1	3.8	4.6	5.4	6.1	6.9	7.4
Post-test Profile (Distance from R.P. - in.)															
Hood Level	37.3	190	19.8	19.3	20.0	19.3	19.4	19.9	20.2	20.4	18.8	17.6	16.9	15.4	14.6
Between Bumper/Hood	35.1	190	18.3	18.9	17.9	14.1	15.0	17.4	17.9	17.0	17.9	17.1	18.5	17.7	15.1
Bumper Level	30.0	190	10.5	11.0	11.2	12.0	13.8	12.6	12.3	13.5	15.6	16.0	14.7	15.0	14.8
Post-test Static Crush (in.)															
Hood Level	-5.3	32.0	32.9	34.4	34.5	35.4	36.7	37.8	37.2	34.8	32.8	31.3	29.1	27.8	
Between Bumper/Hood	-7.7	31.9	31.0	29.9	29.6	30.5	33.7	35.6	33.3	33.4	32.5	30.4	29.8	38.6	
Bumper Level	-10.2	28.1	29.0	30.0	31.6	34.2	33.8	34.2	34.7	36.0	35.6	33.6	33.1	32.4	

*As viewed from driver position in car.

**Reference Plane from rear bumper of car.

TABLE 3-18. CHEVROLET IMPALA INTERIOR PROFILES AND STATIC CRUSH (TEST 3051-2)

Location	Height at E	RP**	Distance Left of Center (in.)*					Distance Right of Center (in.)*					
			28	24	18	12	6	0	6	12	18	24	28
Pre-test Profile (Distance from R.P. - in.)													
Dash Level	42.0	120	10.5	11.1	11.6	11.8	12.1	12.1	12.0	11.9	11.6	11.1	10.5
Knee Level	31.5	120	15.6	15.9	16.2	16.2	16.5	16.1	16.4	16.3	16.2	15.9	15.6
Floor Level	21.2	131	18.7	18.5	18.9	20.1	17.6	15.6	16.4	18.9	18.8	18.6	18.5
Post-test Profile (Distance from R.P. - in.)													
Dash Level	35.8	120	6.5	7.4	8.5	8.6	8.0	8.1	7.9	8.0	8.0	6.5	5.0
Knee Level	26.4	120	12.4	12.5	30.4	27.9	13.0	12.5	12.6	20.6	20.6	12.7	13.3
Floor Level	16.1	130	17.0	15.6	14.5	15.2	11.8	11.4	11.7	12.8	13.6	15.9	17.0
Post-test Static Crush (in.)													
Dash Level	6.2		4.0	3.7	3.1	3.2	4.1	4.0	4.1	3.9	3.6	5.6	5.5
Knee Level	5.1		3.2	3.4	-14.2	-13.7	3.5	3.6	3.8	-4.3	-4.4	3.2	2.3
Floor Level	5.1		2.7	3.9	5.4	5.9	6.8	5.2	5.7	7.1	6.2	2.7	2.5

As viewed from driver position in car.
**Reference Plane from rear bumper of car.

*As viewed from driver position in car.

**Reference Plane from rear bumper of car.

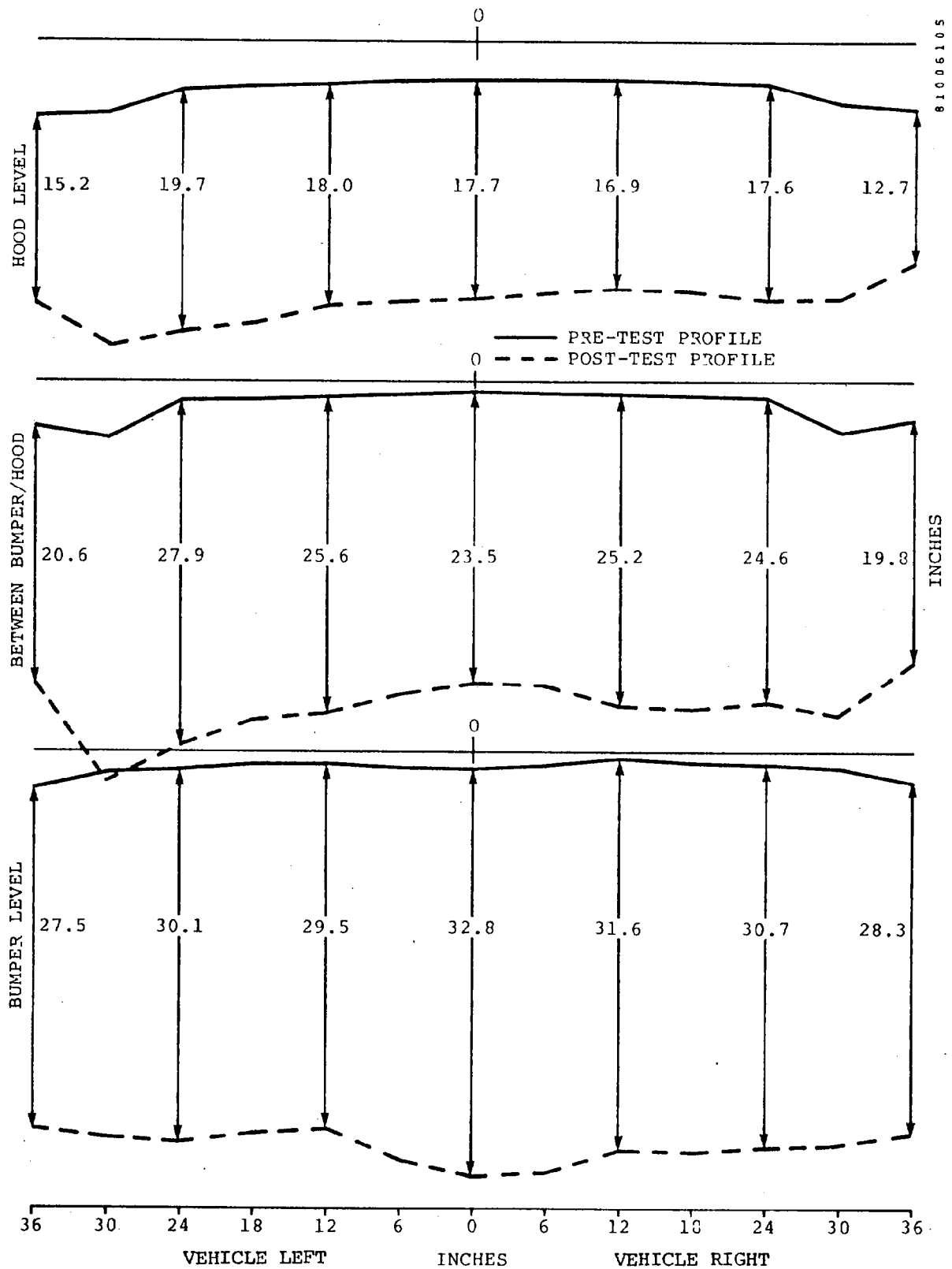


Figure 3-8. Chevrolet C-10 Truck Exterior Static Crush (Test 3051-2).

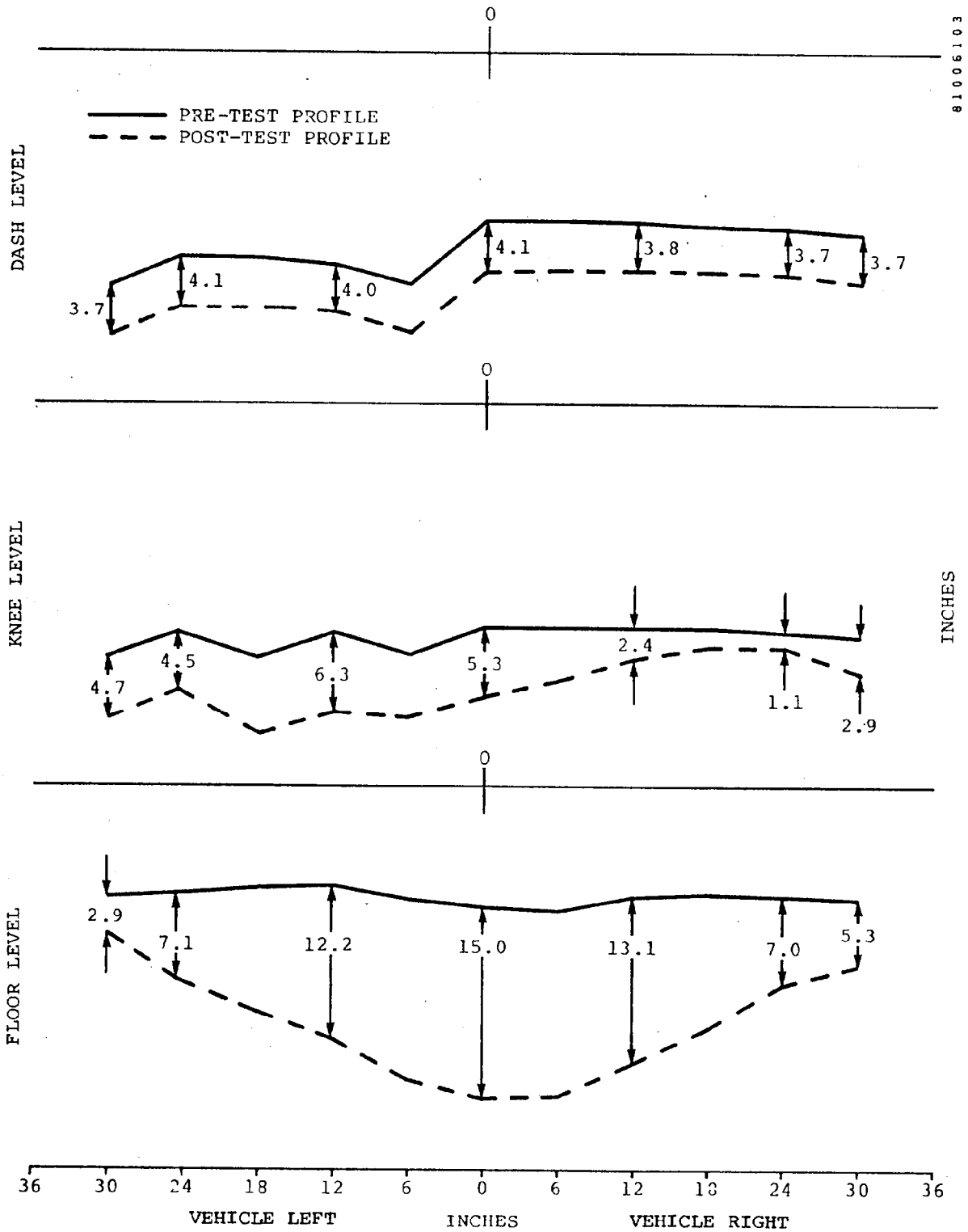


Figure 3-9. Chevrolet C-10 Truck Interior Intrusion (Test 3051-2).

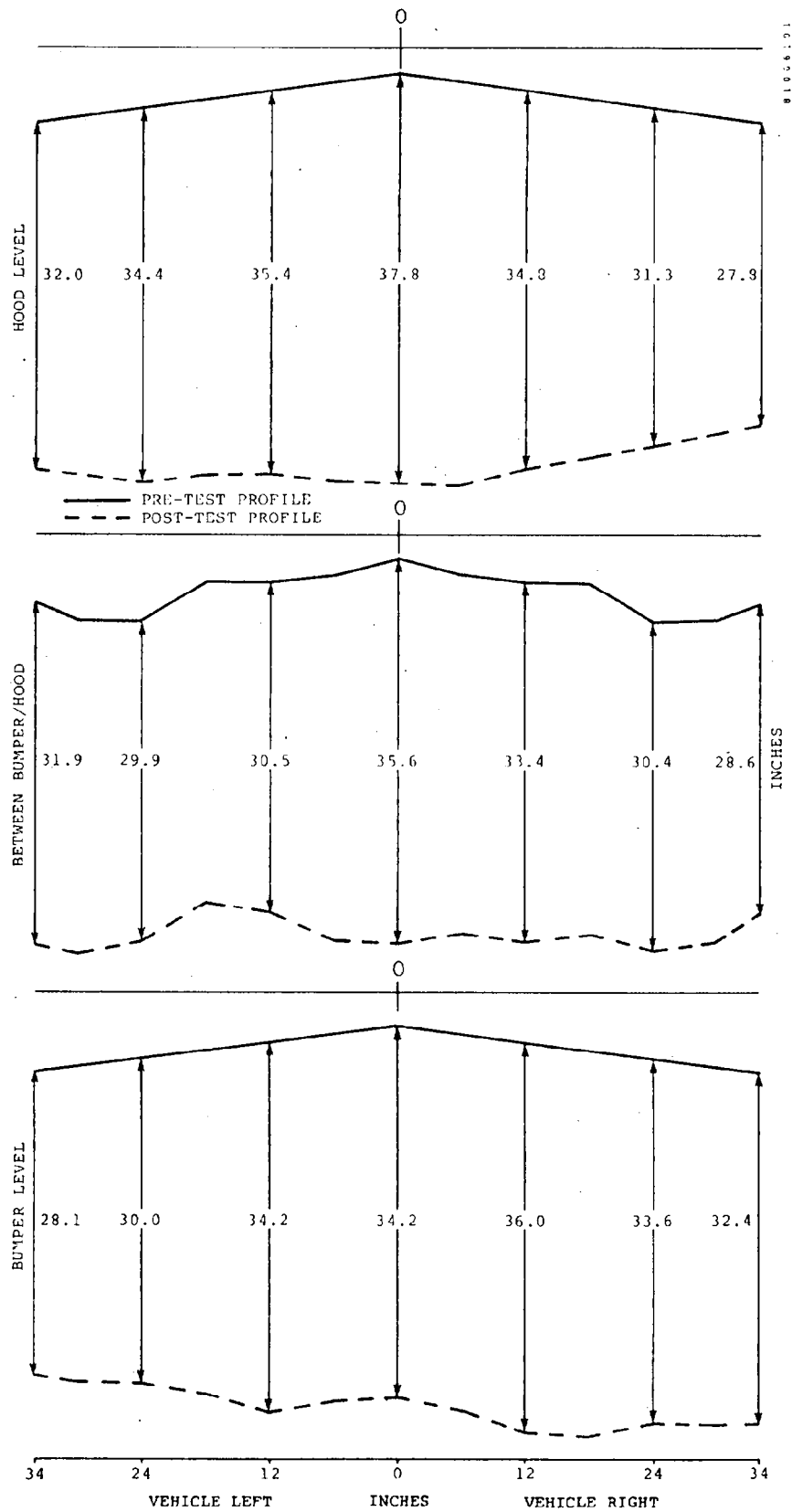


Figure 3-10. Chevrolet Impala Exterior Static Crush (Test 3051-2).

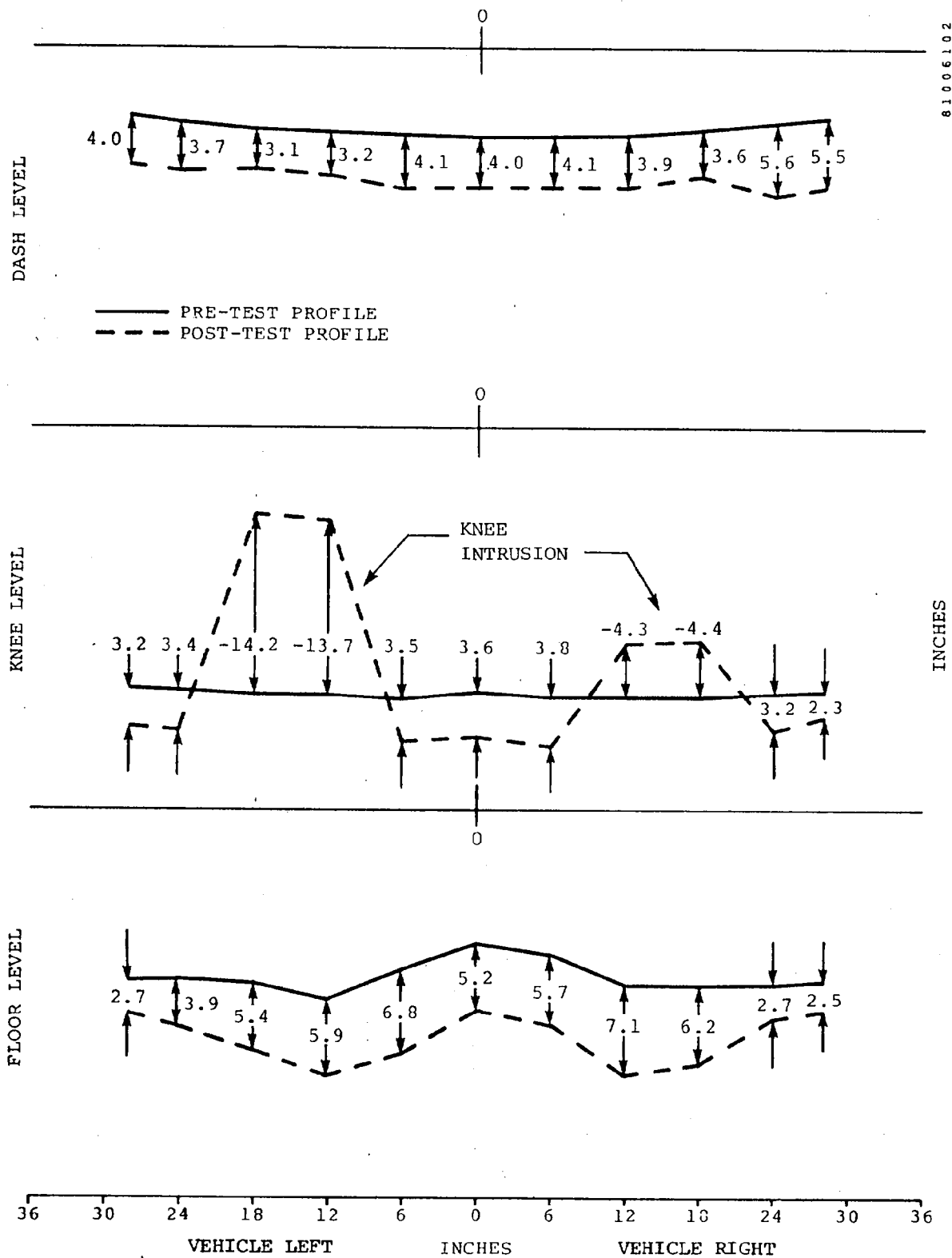


Figure 3-11. Chevrolet Impala Interior Static Intrusion (Test 3051-2).

TABLE 3-19. CHEVROLET C-10 TRUCK STEERING WHEEL MEASUREMENTS
AND DISPLACEMENT VALUES (TEST 3051-2)

Wheel Location	Pre-test (in.)			Post-test (in.)			Displacement (in.)		
	X*	Y*	Z*	X	Y	Z	X	Y	Z
Top	140.7	-18.3	53.2	135.5	-19.5	48.5	5.2	1.2	4.7
Bottom	134.1	-18.3	39.3	134.2	-18.0	34.4	-0.1	-0.3	4.9
Hub	138.5	-18.3	45.6	134.0	-18.9	42.2	4.5	-0.6	3.4

*Reference for X, Y, and Z measurements are rear bumper, vehicle centerline and ground level, respectively.

TABLE 3-20. CHEVROLET IMPALA STEERING WHEEL MEASUREMENTS
AND DISPLACEMENT VALUES (TEST 3051-2)

Wheel Location	Pre-test (in.)			Post-test (in.)			Displacement (in.)		
	X*	Y*	Z*	X	Y	Z	X	Y	Z
Top	126.4	-15.4	43.7	129.4	-19.5	33.0	-3.0	4.1	10.7
Bottom	121.9	-15.4	36.5	122.9	-11.9	29.1	-1.0	-3.5	7.4
Hub	125.5	-15.4	30.1	123.4	-15.3	21.8	2.1	-0.1	8.3

*Reference for X, Y, and Z measurements are rear bumper, vehicle centerline and ground level, respectively.

TABLE 3-21. SUMMARY OF VEHICLE ACCELEROMETER DATA
(TEST 3051-2)

VEHICLE: 1979 Chevrolet C-10 Truck

Accelerometer Number	Maximum Acceleration		Minimum Velocity		Maximum Displacement	
	A (G)	Time (msec)	V (mph)	Time (msec)	S (in.)	Time (msec)
1X	-40.3	61	-0.6	161	+43.9	135
1Z	+15.1	57	-5.3	146	-4.8	200
2X	-32.5	23	-0.7	162	+43.6	136
2Z	+22.6	58	-7.1	143	-7.6	200
Ave 1X and 2X	-27.1	65	-0.7	162	+43.8	135
3X	-97.8	46	+1.5	99	32.7	200
3Z	-28.6	46	-10.1	59	-16.5	200

VEHICLE: 1979 Chevrolet Impala 4-door Sedan

1X	-42.8	52	-8.9	199	+33.7	91
1Z	+37.9	62	-4.9	166	-5.0	200
2X	-45.5	60	-11.5	194	+34.0	92
2Z	+42.9	52	-3.2	171	+3.3	101
Ave 1X and 2X	-42.6	60	-10.1	195	+33.9	91
3X	-91.9	41	-6.4	59	+25.4	51

NOTE: See Figures 3-1 and 3-2 for definition of accelerometer locations.

TABLE 3-22. OCCUPANT RESPONSE DATA SUMMARY (TEST 3051-2)

VEHICLE: 1979 Chevrolet C-10 Truck						VEHICLE: 1979 Chevrolet Impala, 4-dr Sedan					
	LEFT FRONT OCCUPANT		RIGHT FRONT OCCUPANT			LEFT FRONT OCCUPANT		RIGHT FRONT OCCUPANT			
	MAX VALUE (G)	T (MSEC)	MAX VALUE (G)	T (MSEC)		MAX VALUE (G)	T (MSEC)	MAX VALUE (G)	T (MSEC)		
HEAD											
	X	79.4	85	ND		-168.0	97	-76.1	91		
	Y	-21.7	134	ND		95.1	97	-105.1	175		
	Z	+38.3	84	ND		+82.1	100	+72.3	91		
	R	79.9	86	ND		127.2	99	99.1	174		
	HIC	1007 @ 73-111				2406 @ 88-105		1543 @ 76-122			
CHEST											
	X	-113.1	77	ND		-71.0	98	-45.0	100		
	Y	-22.7	73	ND		-29.9	105	+35.4	105		
	Z	-14.9	77	ND		+25.8	63	-28.2	125		
	R	88.7	78	ND		63.4	85	47.7	104		
	SI	852 @ 200				790 @ 200		574 @ 200			
	MAX VALUE (G)	T (MSEC)	MAX VALUE (G)	T (MSEC)	MAX VALUE (G)	T (MSEC)	MAX VALUE (G)	T (MSEC)			
FEMURS											
	LF	ND		ND		-322	37	-1239	80		
	RT	ND		ND		-1199	80	-1182	89		

*3-msec clip

ND = No Data (Data not measured)

TABLE 3-23. SUMMARY OF RESTRAINT SYSTEM DATA
(TEST 3051-2)

VEHICLE: 1979 Chevrolet C-10 Truck	Peak Load (lb)	@	Time (msec)
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Left Front Occupant

Peak Shoulder Belt Load	1142	@	82
Peak Left Lap Belt Load	1336	@	79
Peak Right Lap Belt Load			ND

Right Front Occupant

Peak Shoulder Belt Load			ND
Peak Left Lap Belt Load			ND
Peak Right Lap Belt Load			ND

VEHICLE: 1979 Chevrolet Impala 4-door Sedan	Peak Load (lb)	@	Time (msec)
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Left Front Occupant

Peak Shoulder Belt Load	1550	@	80
Peak Left Lap Belt Load	2000	@	71
Peak Right Lap Belt Load	3021	@	58*

Right Front Occupant

Peak Shoulder Belt Load	2045	@	99
Peak Left Lap Belt Load	2202	@	64
Peak Right Lap Belt Load	1241	@	64

ND = No Data (Data not measured)

*Data System Failure. Data not valid after 59 msec.