NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION

WASHINGTON, D.C.

CONTRACTOR FINAL REPORT

TEST #

70

70 AFD

DOT HS-803 787

BASELINE TEST OF COMPACT VEHICLE SIDE STRUCTURE, 35 mph, 90° IMPACT, TORINO-TO-VOLARE, TEST NO. 9

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1850 West Pinnacle Peak Road
Phoenix, Arizona 85027

Contract No. DOT HS-5-01104
Contract Amt. $114,805

JANUARY 1979
FINAL REPORT

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16 Abstract

Test No. 9 of 11 tests run to evaluate and improve crashworthiness of compact vehicle side structures. This test was run at 35 mph at a striking angle of 90°. A 1975 Ford Torino was the bullet vehicle and a 1976 Plymouth Volare the target vehicle.

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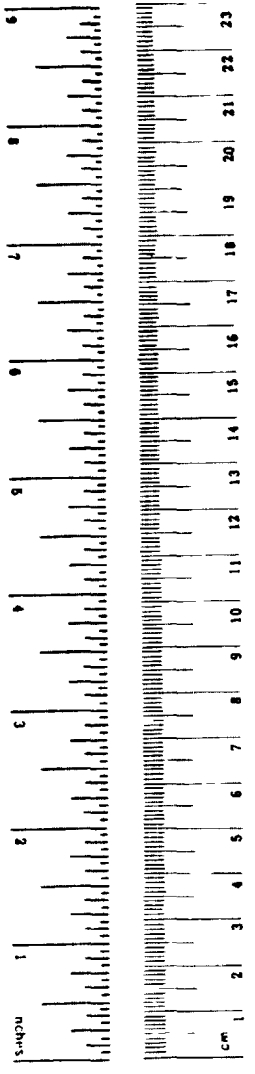
METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures

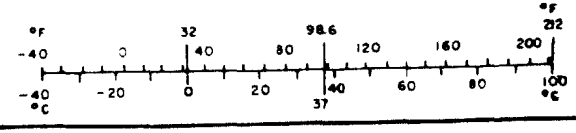
Symbol	When You Know	Multiply by	To Find	Symbol
		LENGTH		
in	inches	*2 5	centimeters	cm
ft	feet	30	centimeters	cm
yd	yards	0 9	meters	m
mi	miles	1 6	kilometers	km
		AREA		
in^2	square inches	6 5	square centimeters	cm^2
ft^2	square feet	0 09	square meters	m^2
yd^2	square yards	0 8	square meters	m^2
mi^2	square miles	2 6	square kilometers	km^2
	acres	0 4	hectares	ha
		MASS (weight)		
oz	ounces	28	grams	g
lb	pounds	0 45	kilograms	kg
	short tons (2000 lb)	0 9	tonnes	t
		VOLUME		
tsp	teaspoons	5	milliliters	ml
Tbsp	tablespoons	15	milliliters	ml
fl oz	fluid ounces	30	milliliters	ml
c	cups	0.24	liters	l
pt	pints	0 47	liters	l
qt	quarts	0 95	liters	l
gal	gallons	3 8	liters	l
ft^3	cubic feet	0 03	cubic meters	m^3
yd^3	cubic yards	0 76	cubic meters	m^3
		TEMPERATURE (exact)		
°F	Fahrenheit temperature	5 9 (after subtracting 32)	Celsius temperature	°C

[illegible] NBS Misc. Pub. [illegible] Weights and Measures, Price $5.50 SD Catalog No. C13.10:286.



Approximate Conversions from Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
		LENGTH		
mm	millimeters	0 04	inches	in
cm	centimeters	0 4	inches	in
m	meters	3 3	feet	ft
m	meters	1 1	yards	yd
km	kilometers	0 6	miles	mi
		AREA		
cm^2	square centimeters	0 16	square inches	in^2
m^2	square meters	1.2	square yards	yd^2
km^2	square kilometers	0 4	square miles	mi^2
ha	hectares (10 000 m^2)	2 5	acres	
		MASS (weight)		
g	grams	0 035	ounces	oz
kg	kilograms	2.2	pounds	lb
t	tonnes (1000 kg)	1 1	short tons	
		VOLUME		
ml	milliliters	0 03	fluid ounces	fl oz
l	liters	2 1	pints	pt
l	liters	1 06	quarts	qt
l	liters	0 26	gallons	gal
m^3	cubic meters	35	cubic feet	ft^3
m^3	cubic meters	1 3	cubic yards	yd^3
		TEMPERATURE (exact)		
°C	Celsius temperature	9/5 (then add 32)	Fahrenheit temperature	°F



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TEST OBJECTIVE

The test reported herein is No. 9 in the test matrix shown on the following page. This test is part of a program aimed at evaluating the improvement in side impact crashworthiness of a compact size production automobile incorporating improved front door structural characteristics. The bullet car is a 1975 Torino for the first nine tests and a 1978 Impala for the last two tests. The target car is a 1976 4-door Plymouth Volare in all cases. The impact height of the cars is the same in all cases except for Test No. 2 where the heights were adjusted to ensure sill engagement.

The entire program consisted of eleven crash tests and one crush test.

The Test 9 cars are shown below in the immediate post-test position.

Figure 1 shows several views of the production Volare door structure.

TEST MATRIX

Test No.	Bullet Car Make	Nominal Impact Speed (mph)	Target Car Make	Orientation* (deg)	Impacted Side	Interior Padding	Comments
1	1975 Torino	25	1976 Volare unmodified	60	Right	No	60° Baseline at 25 mph
2	1975 Torino	25	1976 Volare unmodified	60	Left	No	Car heights adjusted to ensure sill engagement
3	1975 Torino	25	1976 Volare w/modified Right front door	60	Right	No	
4	1975 Torino	35	1976 Volare w/modified Left front door	90	Left	No	
5	1975 Torino	35	1976 Volare w/modified Right front door	60	Right	No	Same as No. 3 but higher impact speed
6	1975 Torino	35	1976 Volare w/modified Right front door	60	Right	Yes	Same as No. 5 with interior padding added
7	1975 Torino	35	1976 Volare w/modified Right front door	60	Right	Yes	Replica of No. 6
8	1975 Torino	35	1976 Volare w/modified Left front door	90	Left	Yes	Same as No. 4 with interior padding added
9	1975 Torino	35	1976 Volare unmodified	90	Left	No	90° Baseline at 35 mph
10	1978 Impala	35	1976 Volare w/modified Right front door	60	Right	Yes	Same as No. 6 but with different bullet car
11	1978 Impala	35	1976 Volare w/modified Left front door	90	Left	Yes	Same as No. 8 but with different bullet car

*With resp ct to Bullet Car line of travel.

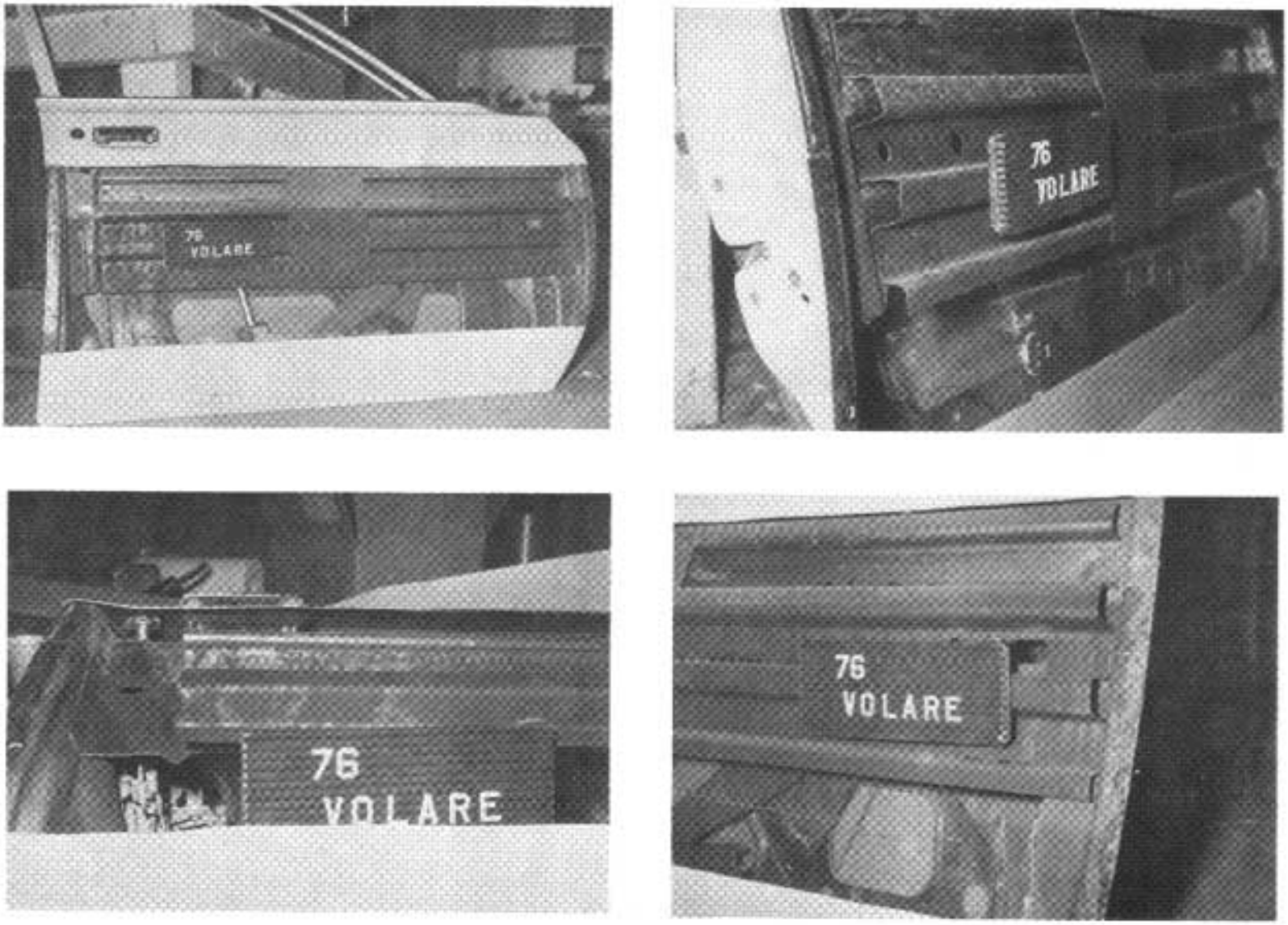


Figure 1. 1976 Volare Door Beam Structure.

PRESENTATION OF RESULTS

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

CRASH TEST SUMMARY

TEST NO. 9 PROJECT Task Order 3

DATE 9/22/77 TIME 11:10 a.m. TEMPERATURE 82°F

TEST CONDITION Torino Front-to-Volare Side (Left)

VEHICLE NO. 1 1975 Ford Torino

VEHICLE NO. 2 1976 Plymouth Volare (unmodified)

	VEHICLE NO. 1	VEHICLE NO. 2
TEST WEIGHT (lb)	4424	4001
IMPACT ANGLE (deg)*	0	90° (Left)
IMPACT VELOCITY (mph)	35.19	0
MAX. CRUSH (in.)	--	13-7/8
BUMPER HEIGHT (in.)	19-3/4	--
SILL HEIGHT (in.)	--	11-3/4

OCCUPANTS	VEHICLE NO. 1	VEHICLE NO. 2
TYPE	Part 572	Part 572
LOCATION	Driver (1), Passenger (3)	Driver (1), L.R. Passenger (4)
RESTRAINT	Standard 1975 Ford Torino Lap and Shoulder Belt	Unrestrained

NUMBER OF DATA CHANNELS 55
NUMBER OF HIGH SPEED CAMERAS 7

*WITH RESPECT TO TOW TRACK CENTERLINE

OBSERVATIONS (VEHICLE NO. 1)

GLAZING All intact

DOORS The LF, LR, and RR doors opened easily; tools were required to open the RF door.

SEAT ANCHORAGES O.K.

RESTRAINTS O.K.

OBSERVATIONS (VEHICLE NO. 2)

GLAZING Windshield cracked on left side; left side window shattered. Rear backlight removed before test.

DOORS The right front and right rear doors opened with difficulty; tools were required to open the left front and left rear doors.

SEAT ANCHORAGES O.K.

RESTRAINTS Not used.

GENERAL COMMENTS

Vehicle 1: No compartment intrusion. Damage all across front; bumper rotated back; front fenders pushed in around tires.

Vehicle 2: Hood opened, right B pillar pushed out. Damage on left side extended from front tire to rear tire; left B pillar pushed in; roof pillar buckled upward. Severe buckling at A, B, and C pillars. Bumper of Torino basically overrode sill; left bumper guard just barely touched the sill, right guard did not touch it at all.

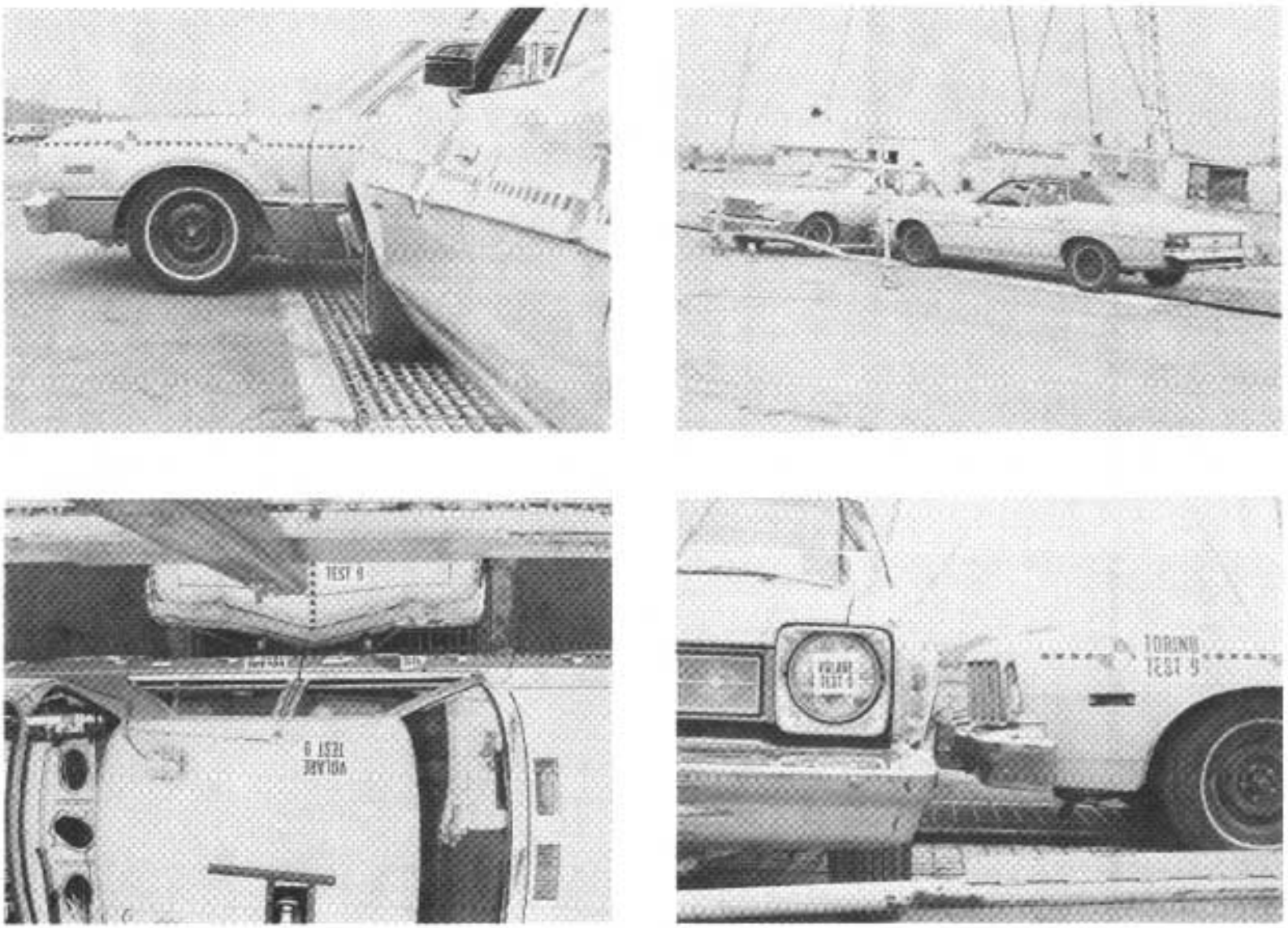


Figure 2. Pre-test No. 9 Vehicle Matching.

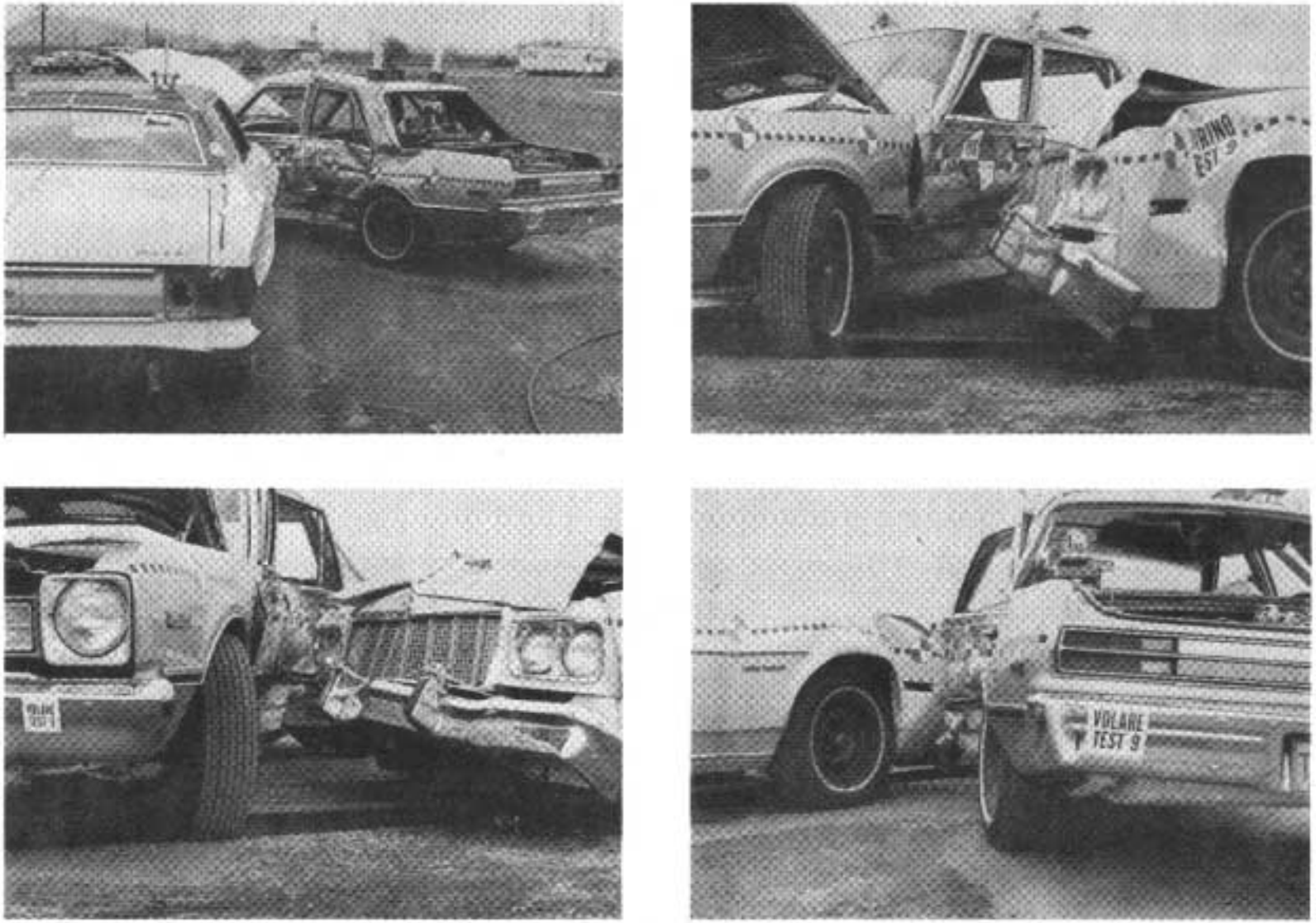


Figure 3. Post-test No. 9 Vehicles.

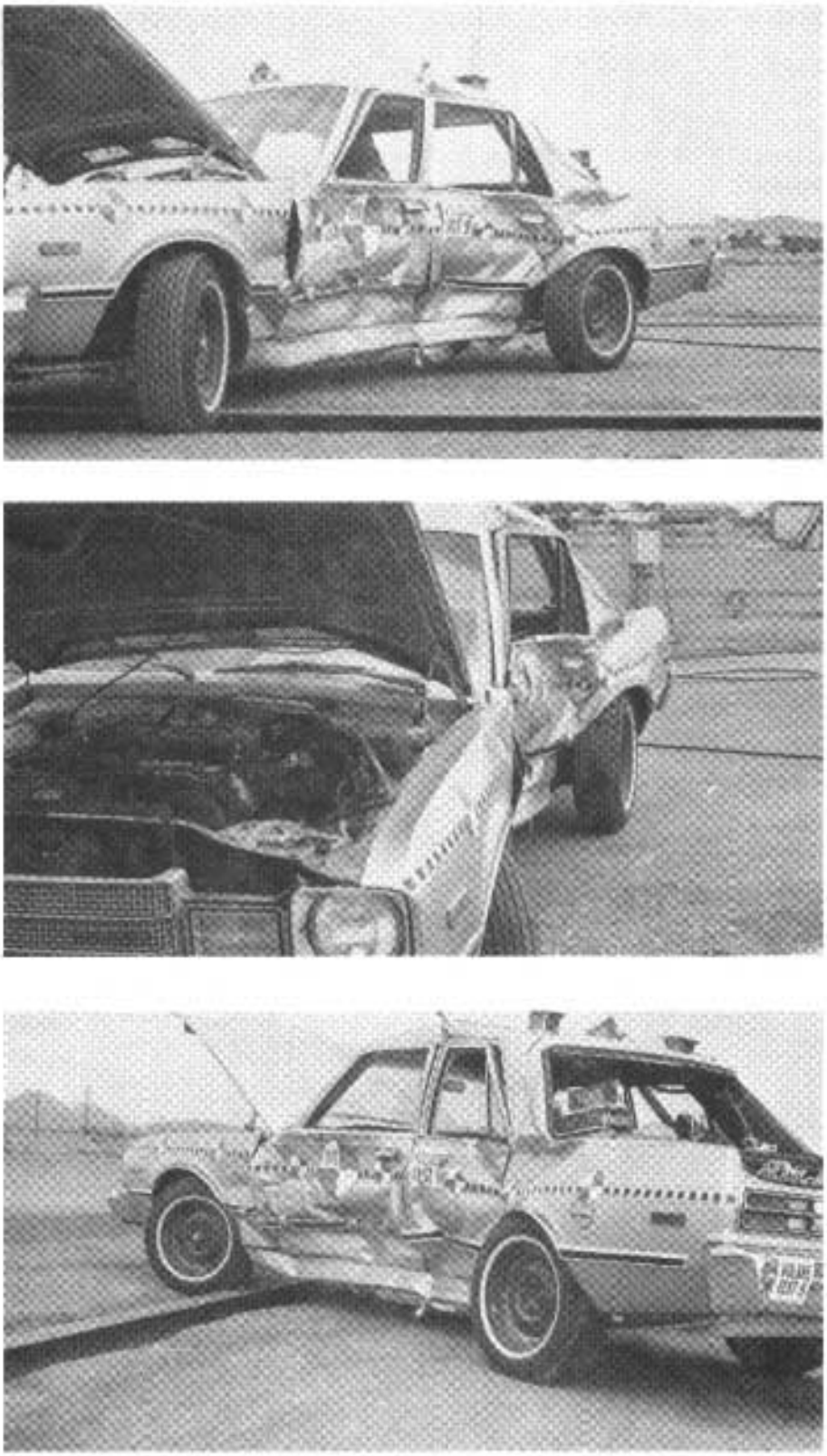


Figure 4. Post-test No. 9 1976 Plymouth Volare.

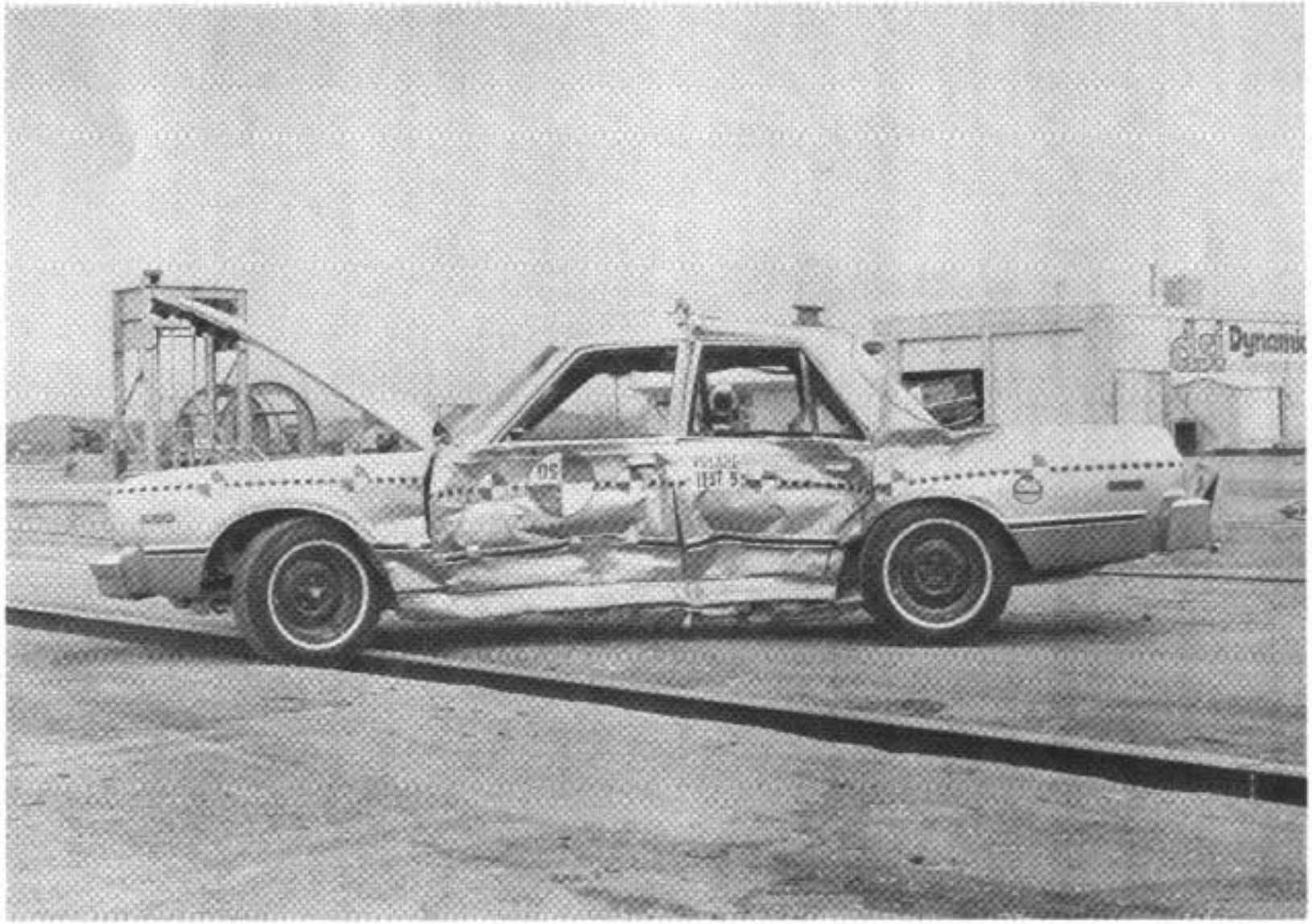
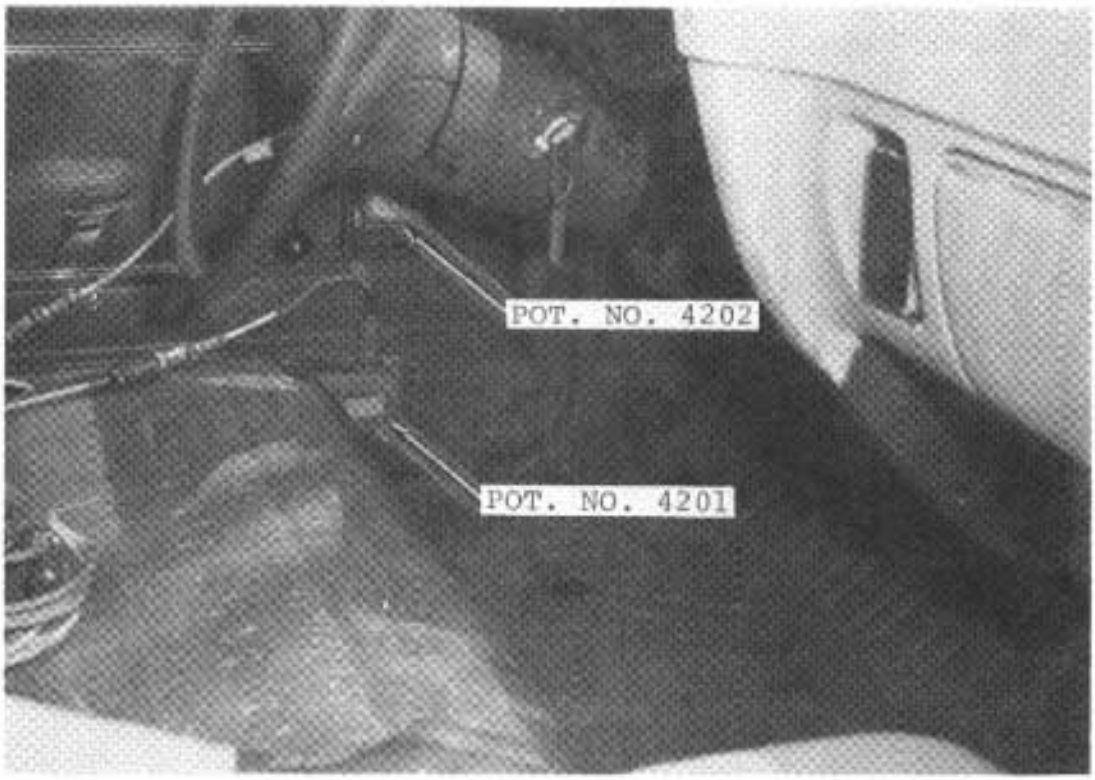


Figure 5. Post-test No. 9 1976 Plymouth Volare Left Side.



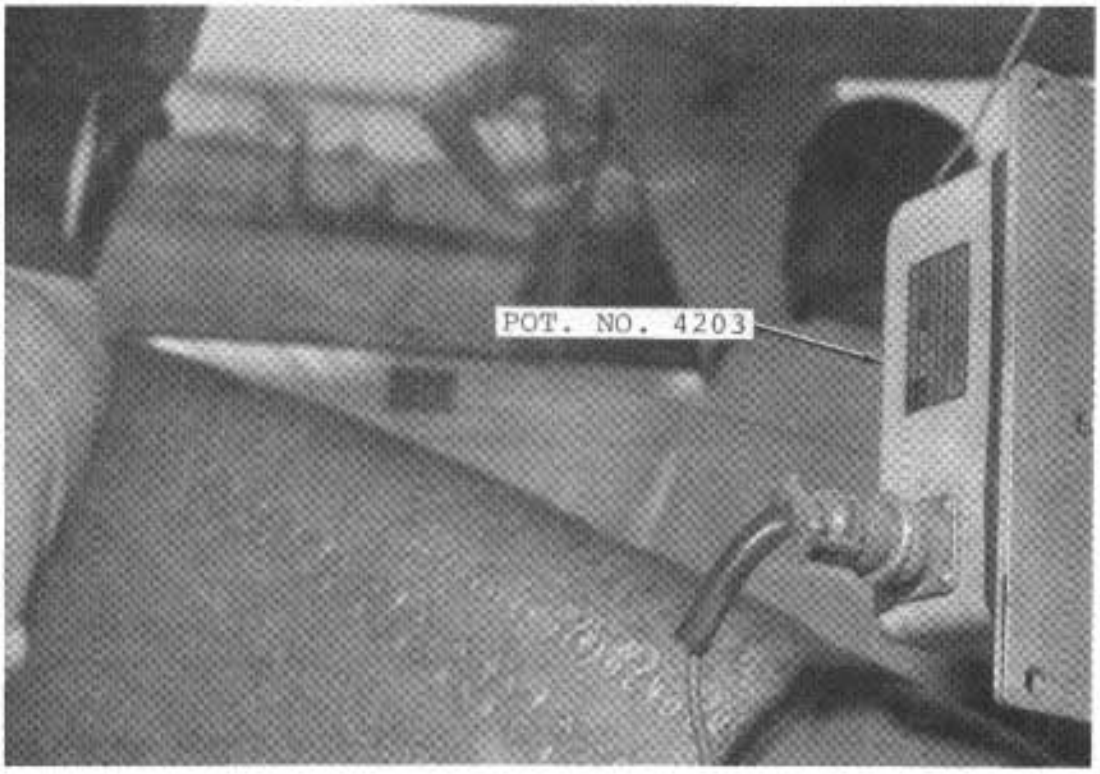


Figure 6. String Potentiometer Locations for Volare Intrusion Measurements.

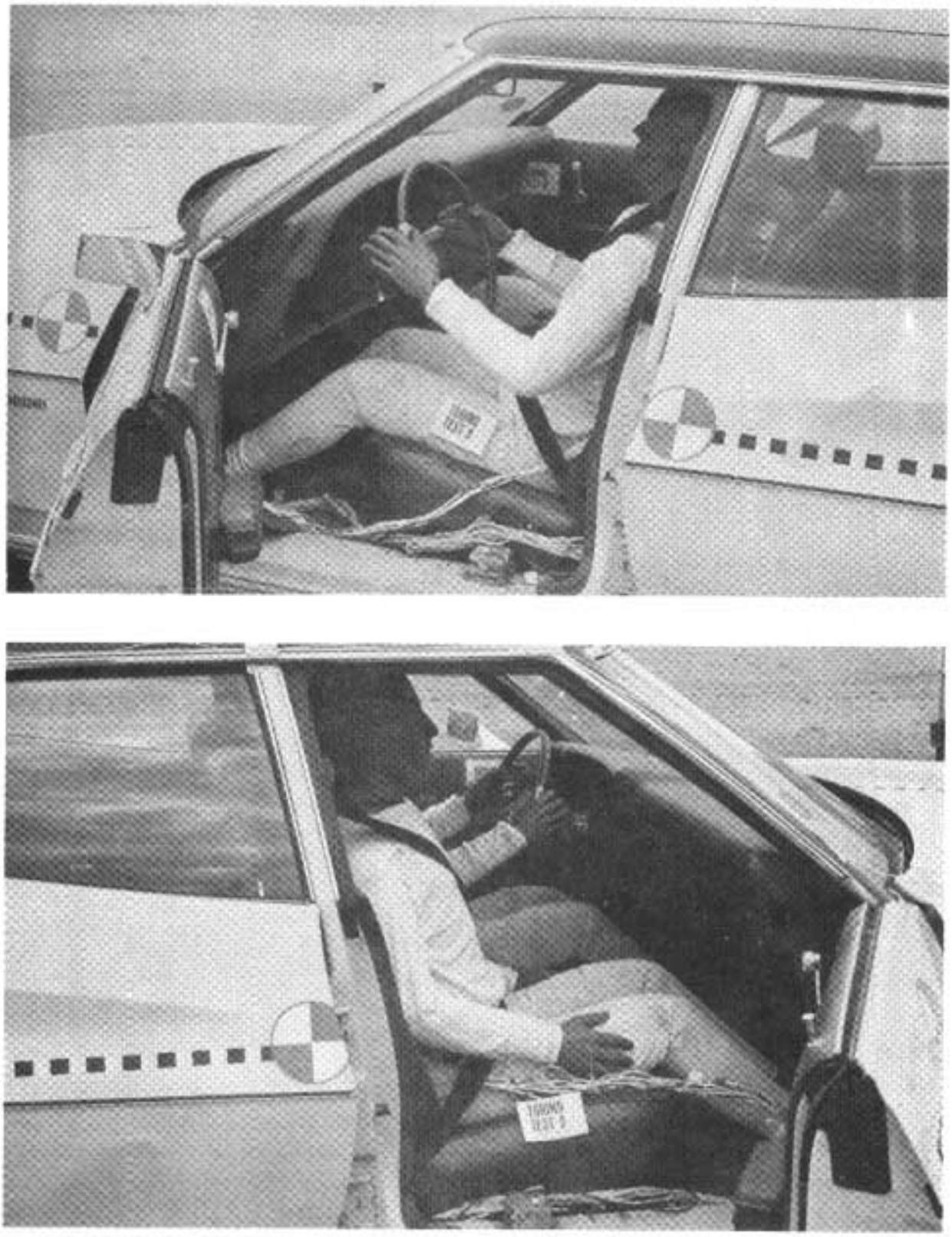


Figure 7. Pre-test No. 9 1975 Ford Torino Interior.

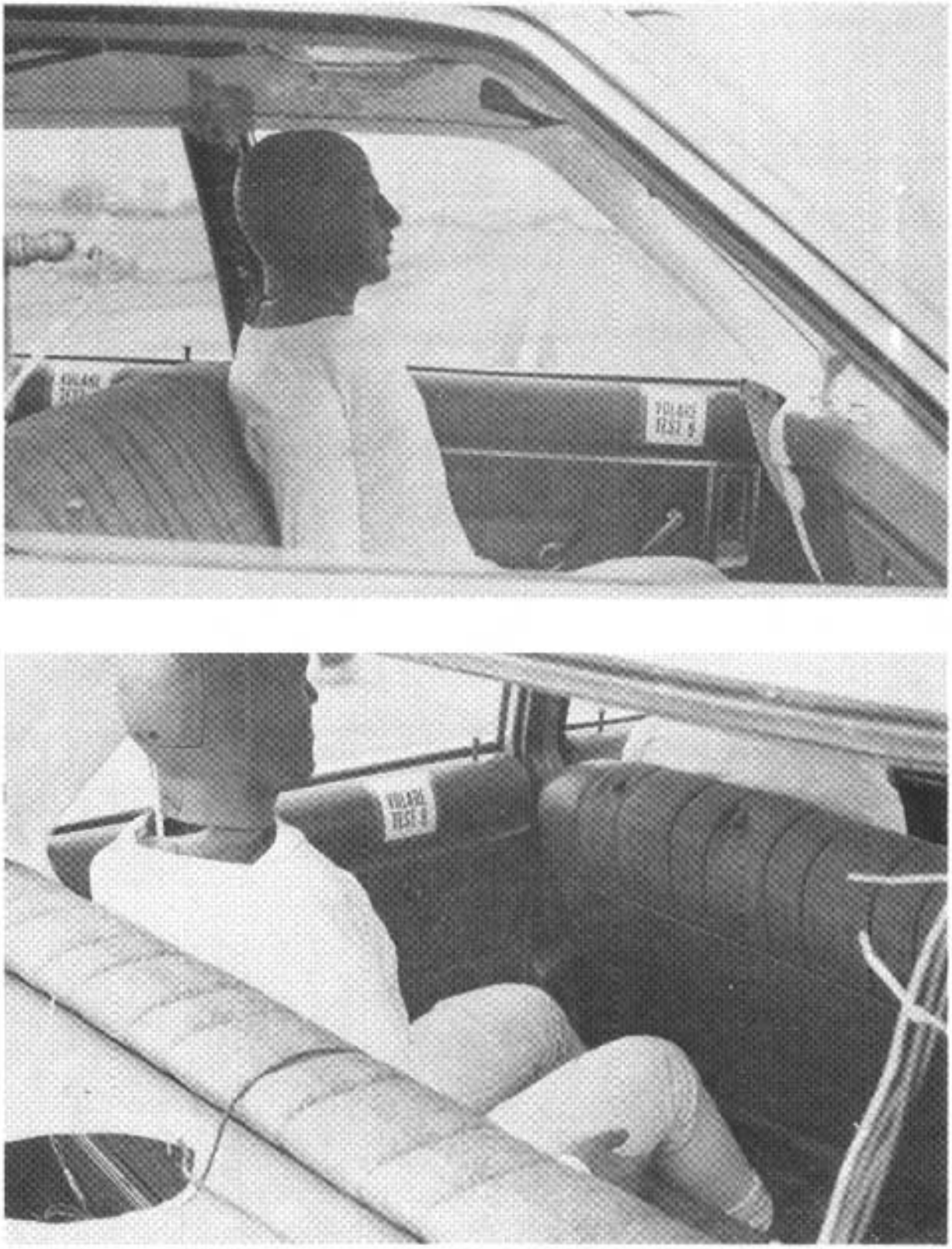


Figure 8. Pre-test No. 9 1976 Plymouth Volare Passenger Interior.

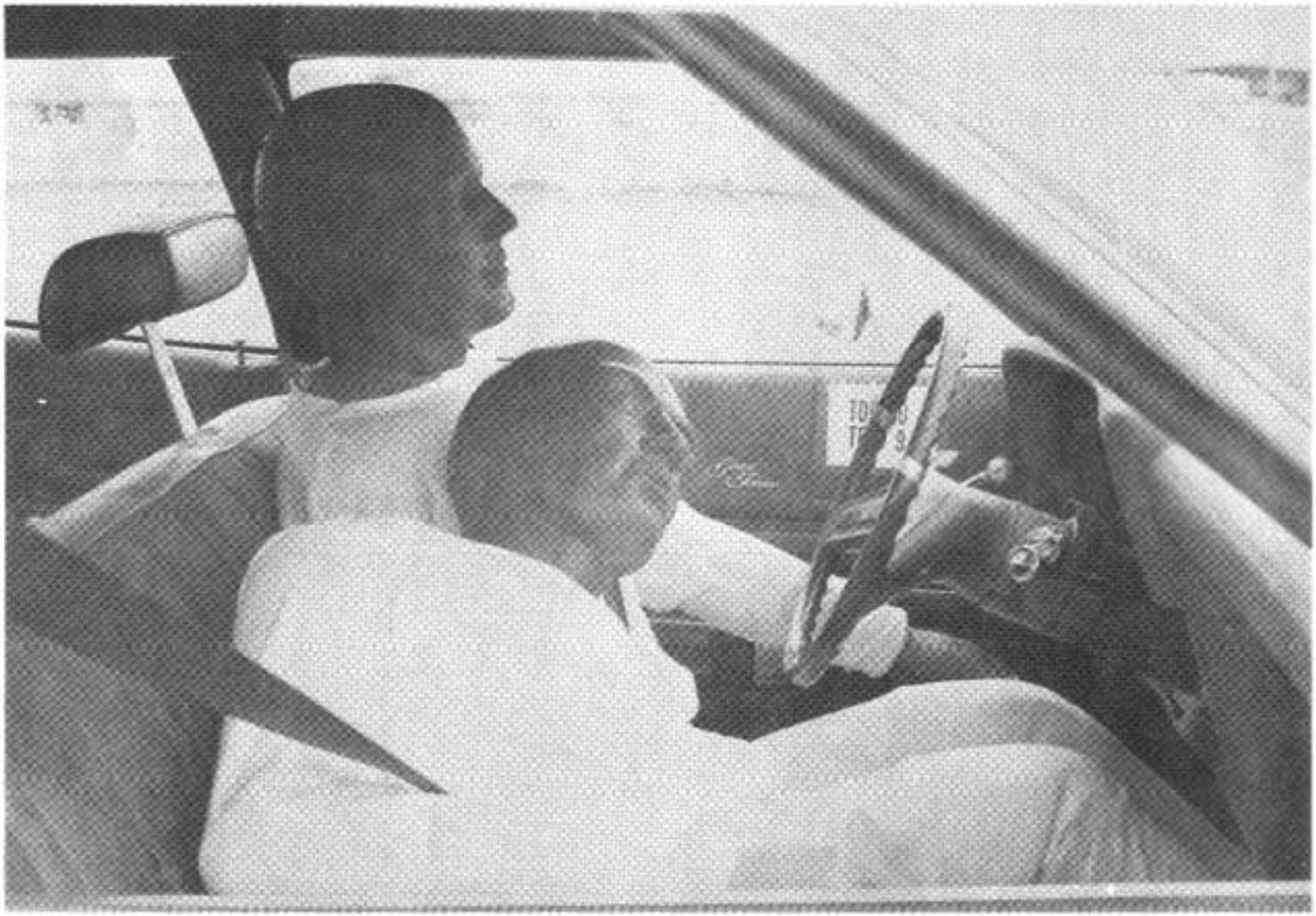


Figure 9. Post-test No. 9 1975 Torino Interior.

Figure 10. Post-test No. 9 1976 Plymouth Volare Interior.

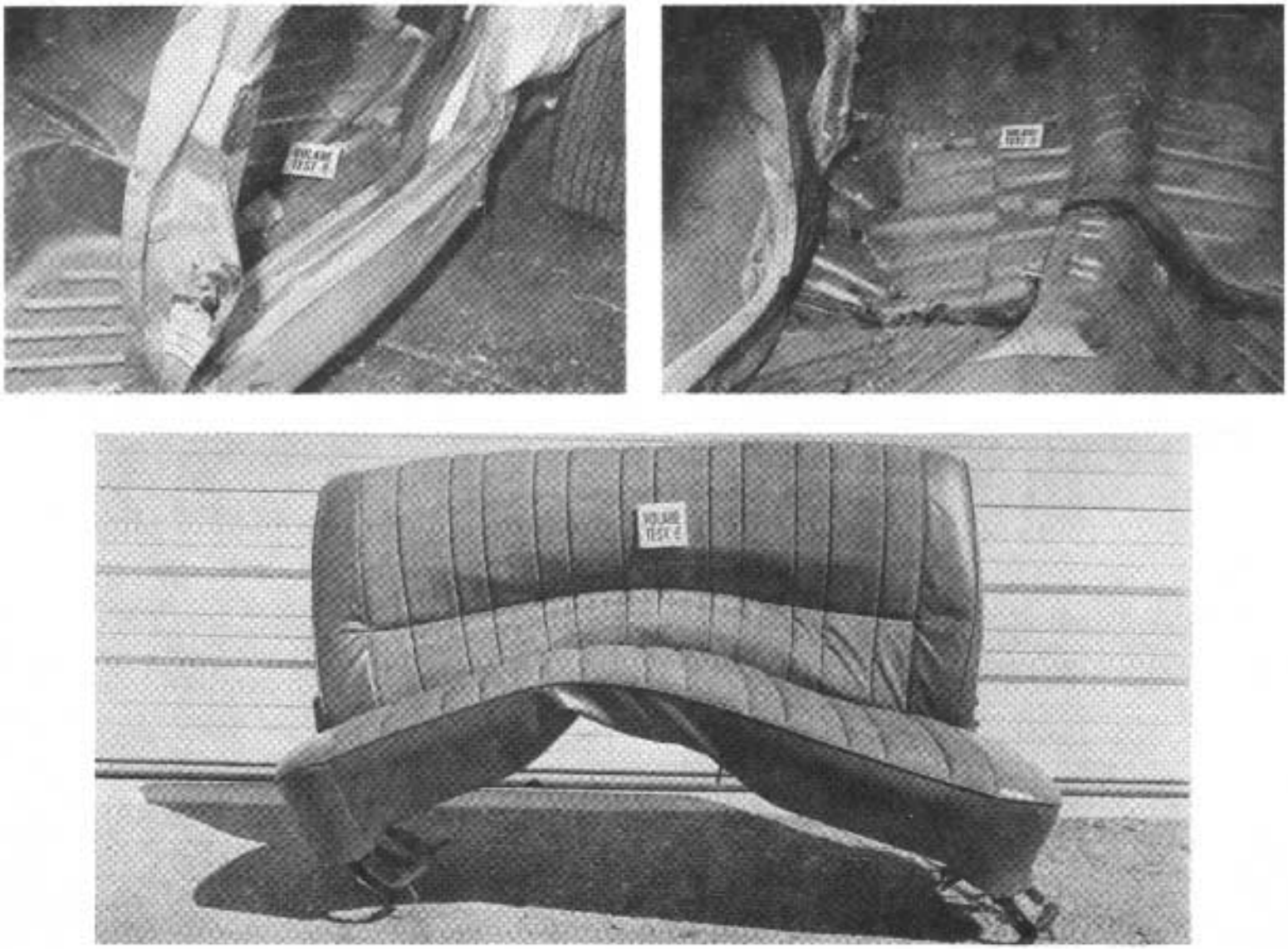


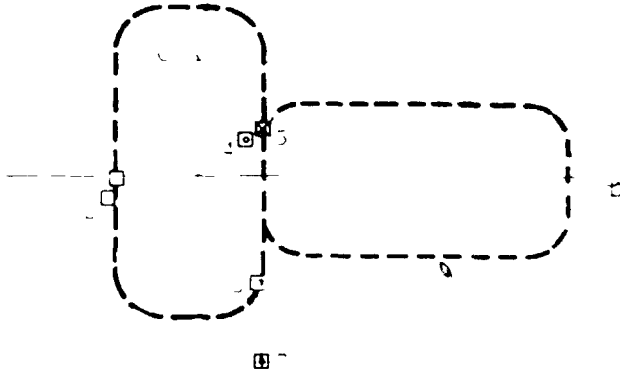
Figure 11. Interior Structural Deformation and Front Seat - 1976 Plymouth Volare.

CAMERA LOCATIONS

Vehicle A (Away) Torino

Vehicle B (Barrier) Volare

Comments



CAMERA	YES
STILLS	X
SLIDES	
MOVIE	X
POLAROID	
VIDEO	
COLOR STILL OF IMPACT	X

CAMERA SYMBOLS

- PIT
- GROUND
- BARRIER
- OVERHEAD
- ON-BOARD

FRAME RATE

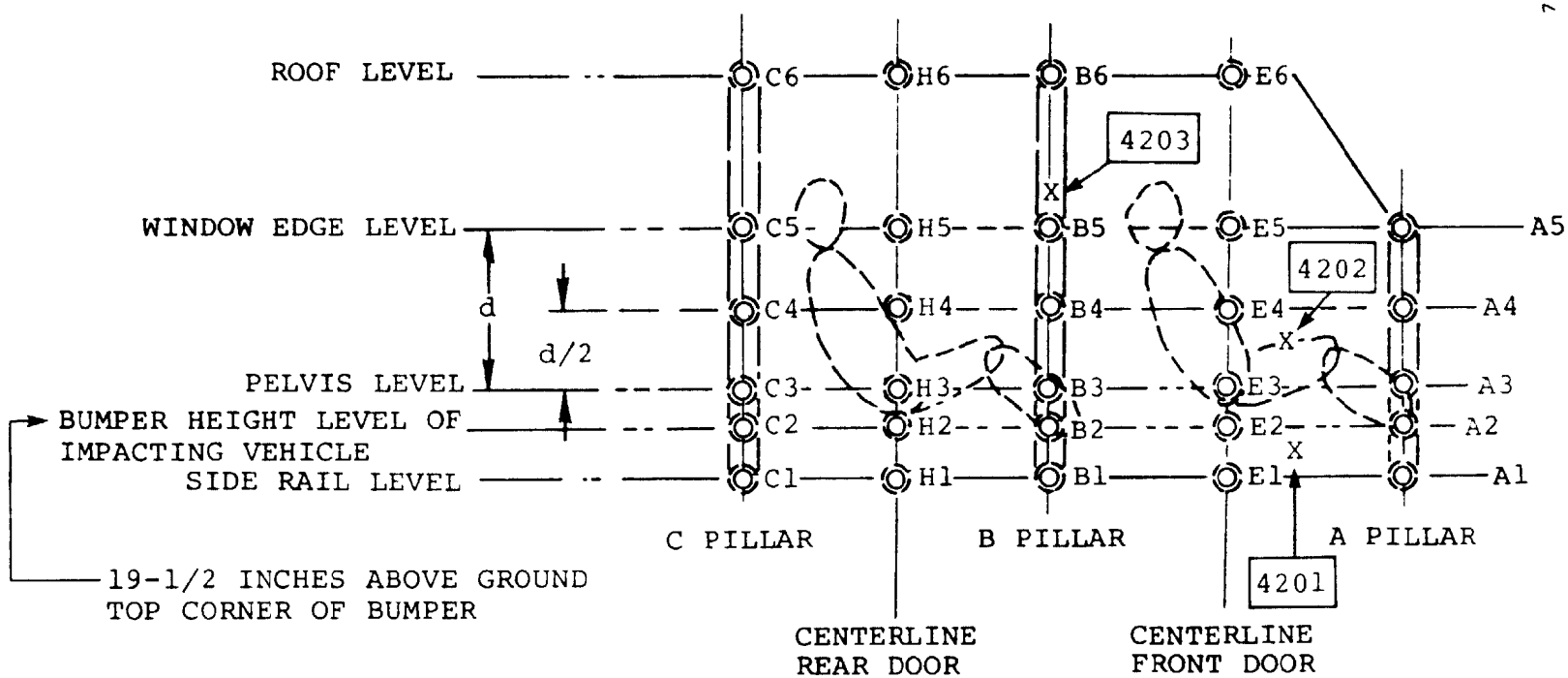
1. 1000 fr sec
2. 200 fr/sec
3. Other 24 fr/sec
4. 400 fr sec
5. 500 fr/sec

TIMING LIGHT SPEED

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

Loc No.	Location	Field of View	Lens Size	Frm Rate	Timg Spd	Ser No	Impact Dist	C L Dist	Ch Light
1	On-Board	Cut hole in roof, views dummies		1000					
2	On-Board	Look through window, views dummies		1000					
3	On-Board	Looks along interior side wall, views dummy interaction with side		1000					
4	Pit	Views under structure		1000					
5	Overhead	Views impact zone		1000					
6	Ground Based	Closeup of impact zone		1000					
[illegible]	Ground Based	Closeup of impact zone		1000					

MAXIMUM OCCUPANT COMPARTMENT INTRUSION WILL BE MEASURED RELATIVE TO AN UNDEFERRED VEHICLE REFERENCE LINE. EXTERIOR INTRUSION SHALL BE MEASURED, AND CONTOUR MAPS OF THE IMPACTED AND IMPACTING VEHICLES WILL BE PREPARED.



X STRING POTENTIOMETER LOCATIONS

O LOCATIONS AT WHICH INTRUSION MEASUREMENTS ARE MADE

Figure 13. Intrusion Measurement Locations.

INTERIOR AND EXTERIOR DIMENSIONS, #9

VEHICLE Volare DATE 9/22/77

D.S. NO. 535 PROJ. TEST NO. 3976 Test #9

Vehicle Dimensions	Pre	Post	Difference
H1	76-7/8	67-1/2	9-3/8
H2	76-3/8	65-7/8	10-1/2
H3	76-1/2	67-1/2	9
H4	76	67-5/8	8-3/8
H5	77-3/4	69	8-3/4
H6	70-7/8	67-5/8	3-1/4
C4	76-3/4	70-1/4	6-1/2
C5	77-1/2	73-1/8	4-3/8
C6	70-7/8	68-3/8	2-1/2
B1	76-1/2	63	13-1/2
B2	79	65-1/8	13-7/8
B3	76-5/8	63-7/8	12-3/4
B4	75-7/8	64	11-7/8
B5	76-3/8	66-1/8	10-1/4
B6	71	66-1/4	4-3/4

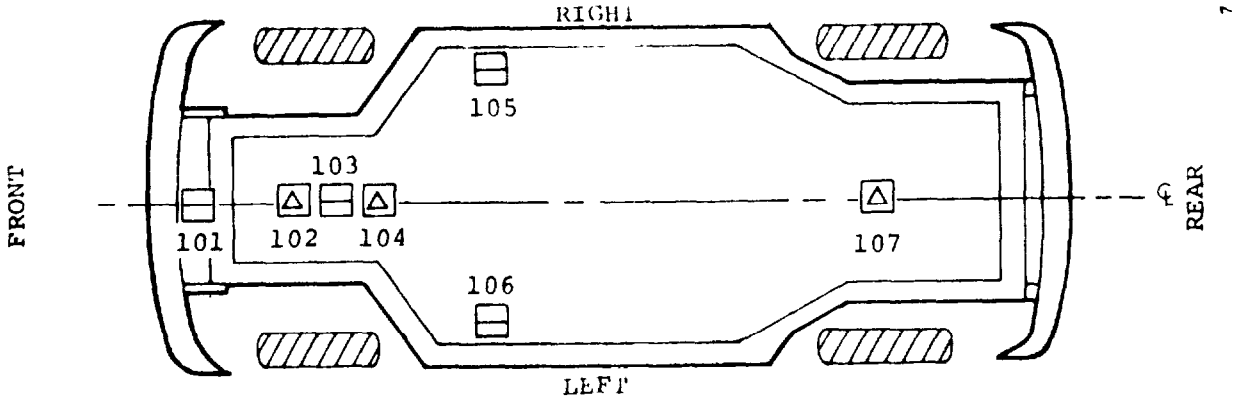
INTERIOR AND EXTERIOR DIMENSIONS, #9

VEHICLE Volare DATE 9/22/77

D.S. NO. 535 PROJ. TEST NO. 3976 Test #9

Vehicle Dimensions	Pre	Post	Difference
E1	77-1/2	66	11-1/2
E2	76-5/8	65-5/8	11
E3	76-7/8	67-5/8	9-1/4
E4	76-3/8	68-7/8	7-1/2
E5	78	71-3/4	6-1/4
E6	75-1/4	70-3/4	4-1/2
A1	78-3/4	69-1/8	9-5/8
A2	78-1/2	69-1/4	9-1/4
A3	78-1/4	70-3/8	7-7/8
A4	77-3/4	72-1/8	5-5/8
A5	78-1/8	73	5-1/8

TEST NO: 9 VEHICLE: TORINO DS NO: 532



LINEAR ACCELEROMETERS

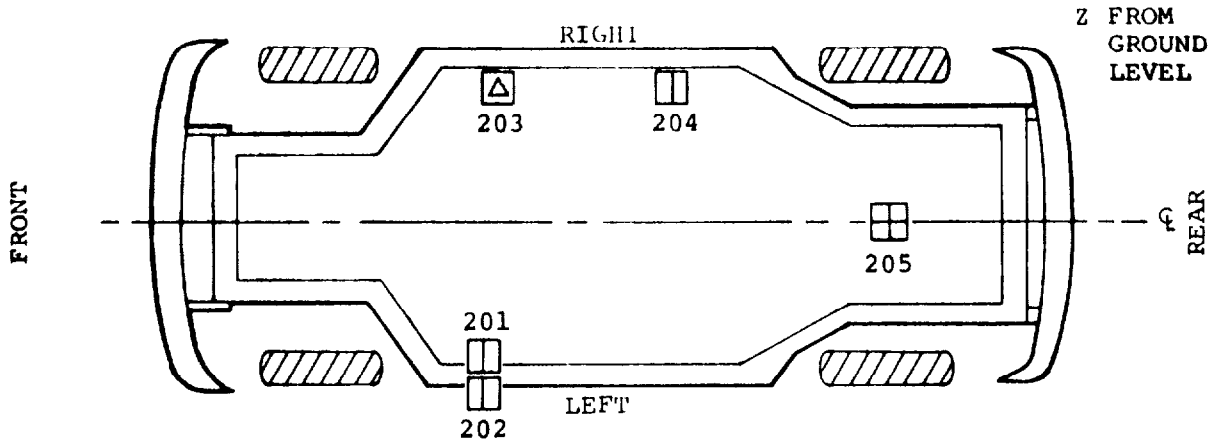
- LONGITUDINAL
- LATERAL
- VERTICAL
- TRIAXIAL

VEHICLE TRANSDUCER LOCATIONS

NO.	DESCRIPTION OF LOCATION	X	Y	Z
101	Behind Front Bumper	X	-	-
102	Engine	X	X	X
103	Front Suspension Right Side (Unsprung Mass)	X	-	-
104	Firewall on Vehicle ℄	X	X	X
105	Rocker Panel Inside Car	X	-	-
106	Rocker Panel Inside Car	X	-	-
107	Vehicle Center Line, Trunk Floor Right Behind Rear Seat	X	X	X

Figure 14. Torino Instrumentation.

TEST NO: 9 VEHICLE: VOLARE DS NO: 535



VEHICLE TRANSDUCER LOCATIONS

NO.	DESCRIPTION OF LOCATION	X	Y	Z
	Accelerometers			
201	Center of Door (inside) at H-Point Height		X	
202	Directly Below No. 1 Mounted on Rocker Panel (inside)		X	
203	Inside on Rocker Panel Front Door Area	X	X	X
204	Inside on Rocker Panel Rear Door Area		X	
205	Trunk Floor on Vehicle Center Line Directly Behind Rear Seat	X	X	
	Displacement (String Potentiometers)(See Note)			
4201	Across Front Doors 3 Inches Above Floor on Door Center Line			
4202	Above No. 1 at Window Ledge			
4203	Across Front Seat Back Between "B" Pillars			

LINEAR ACCELEROMETERS

- LONGITUDINAL
- LATERAL
- VERTICAL
- TRIAXIAL

NOTE: If the dummy or any part of the vehicle contacts the string during impact, the net effect will be to reduce the amount of string retracted which could be interpreted erroneously as less than actual lateral displacement. High-speed films should be viewed to determine whether dummy interference has occurred.

Figure 15. Volare Instrumentation.

INSTRUMENTATION SUMMARY

TEST NO: 9

VEHICLE: Volare

Instrument	Number	Total No. of Channels
Vehicle Accelerometers	5 Locations	8
Dummies - Head(3), Chest(3), Pelvis(2)	2 Locations	16
Load Cells		
Strain Gauges		
String Potentiometers	3 Locations	3
1) Across front floor above tunnel 3" in front of seat		
2) Inside across window ledges directly above string pot #1		
3) Inside above front seat back across the 'B' pillars		

TOTAL 27

VEHICLE: Torino

Instrument	Number	Total No. of Channels
V hicle Accelerometers	7 Locations	13
Dummies - Head (3), Chest(3), Femurs(2)	2 Locations	16
Load Cells	2 Locations	2
Strain Gauges		
String Potentiometers		

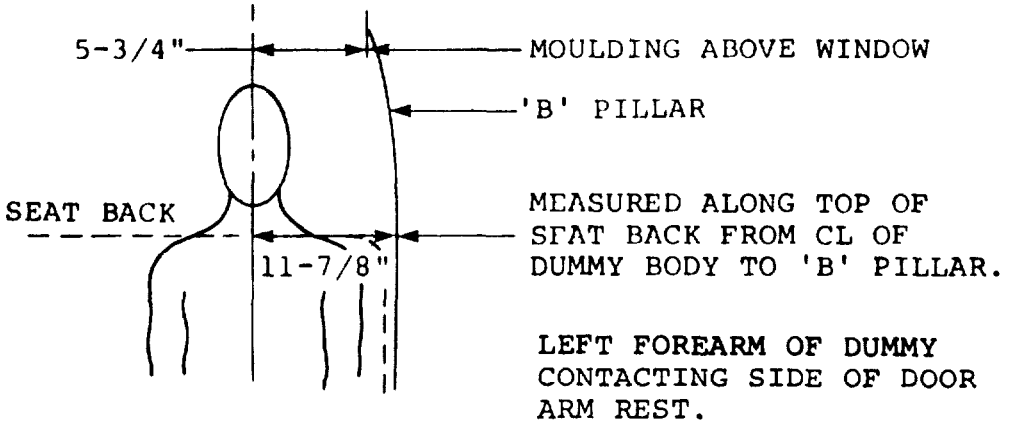
TOTAL 31

Barrier Load Cells: Yes ☐ No ☒

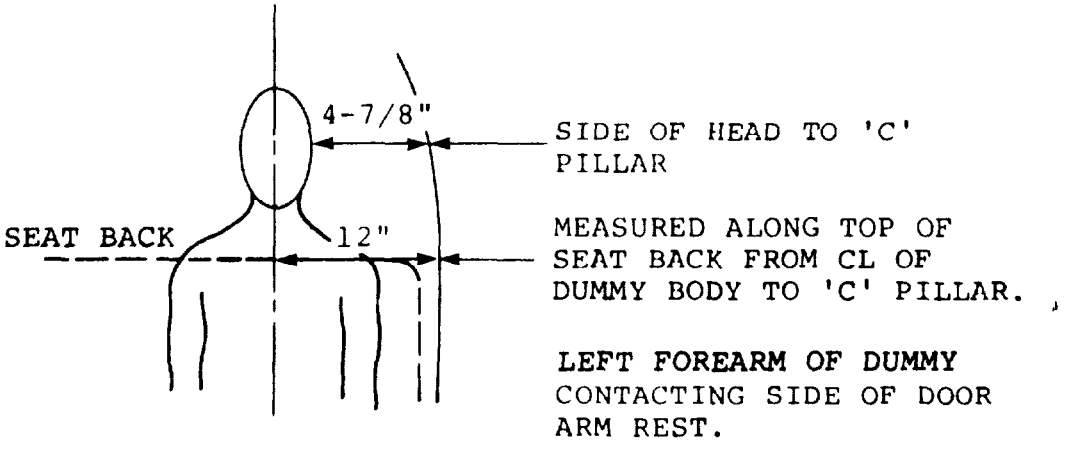
Full Scale: Top Row_____ Bottom Row_____

VEHICLE Volare TEST DATE 9/22/77

TEST NUMBER 9



LEFT FRONT DUMMY



LEFT REAR DUMMY

Volare Dummy Pre-test No. 9 Positions Relative to Side of Car.

DUMMY INJURY CRITERIA VALUES
CAR 2 - 1976 Plymouth Volare

	Maximum Acceleration ("G")											
	Head				Chest				Pelvis			
	X	Y	Z	R	X	Y	Z	R	X	Y	Z	R
Dummy (1)	15	27	24	35	11	55	12	56	20	51		51
Dummy (4)	13	57	35	61	14	57	14	59	28	73		73
Dummy												
Dummy												

	Maximum Force - Femur Load (lb)	
	Right Femur	Left Femur
Dummy (1)	--	--
Dummy (4)	--	--
Dummy		
Dummy		

	Maximum Force - Seat Belts Loads (lb)		
	Shoulder Strap Upper Belt Load	Lap Strap Right Belt Load	Lap Strap Left Belt Load
Dummy (1)	--	--	--
Dummy (4)	--	--	--
Dummy			
Dummy			

	Head Injury Criteria**				Severity Index	
	HIC	t_1 (sec)	t_2 (sec)	Ave. Acc. (G) t_1 to t_2	Head	Chest
Dummy (1)	98	.022	.086	18.8	118	209
Dummy (4)	138	.052	.072	34.3	195	169
Dummy						
Dummy						

*As defined in FMVSS No. 208.

DUMMY INJURY CRITERIA VALUES
CAR 1 - 1975 FORD TORINO

	Maximum Acceleration ("G")											
	Head				Chest				Pelvis			
	X	Y	Z	R	X	Y	Z	R	X	Y	Z	R
Dummy (1)	34	12	26	21	19	2	5	19				
Dummy (3)	48	43	45	74	15	9	4	16				
Dummy												
Dummy												

	Maximum Force - Femur Load (lb)	
	Right Femur	Left Femur
Dummy (1)	335	375
Dummy (3)	281	255
Dummy		
Dummy		

	Maximum Force - Seat Belts Loads (lb)		
	Shoulder Strap Upper Belt Load	Lap Strap Right Belt Load	Lap Strap Left Belt Load
Dummy (1)	--	--	--
Dummy (3)	--	--	--
Dummy			
Dummy			

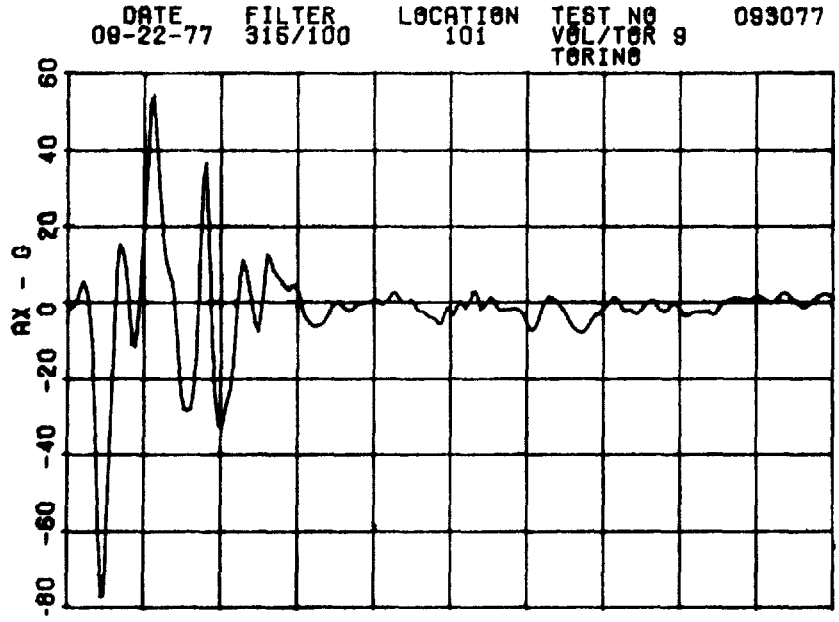
	Head Injury Criteria*				Severity Index	
	HIC	t_1 (Sec)	t_2 (sec)	Ave. Acc. (G) t_1 to t_2	Head	Chest
Dummy (1)	115	.100	.163	20.2	139	50
Dummy (3)	150	.143	.151	51.2	242	41
Dummy						
Dummy						

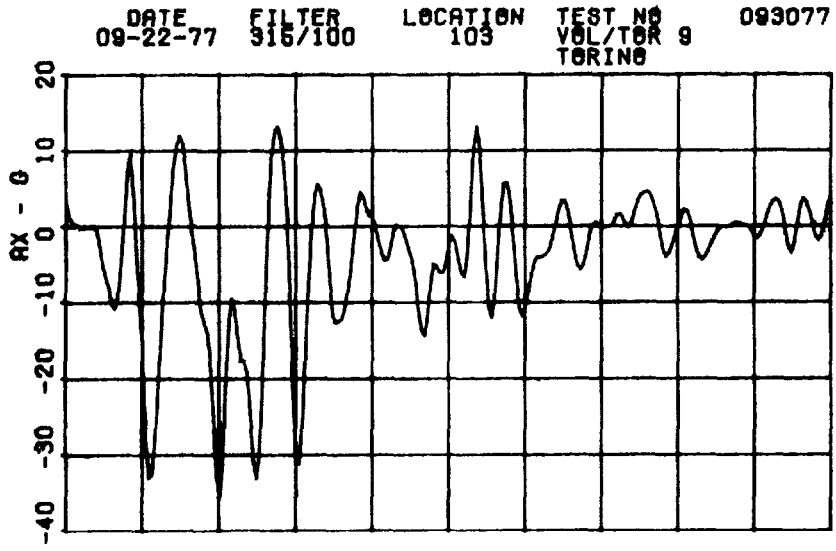
*As defined in FMVSS No. 208.

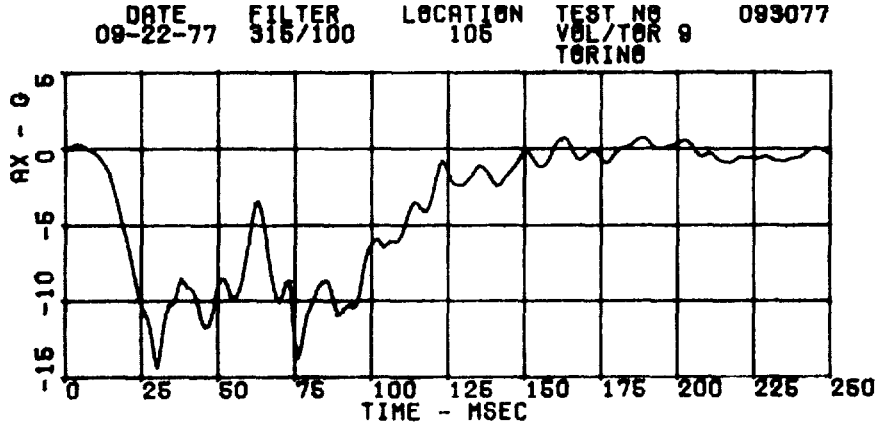
TASK 3, TEST 9

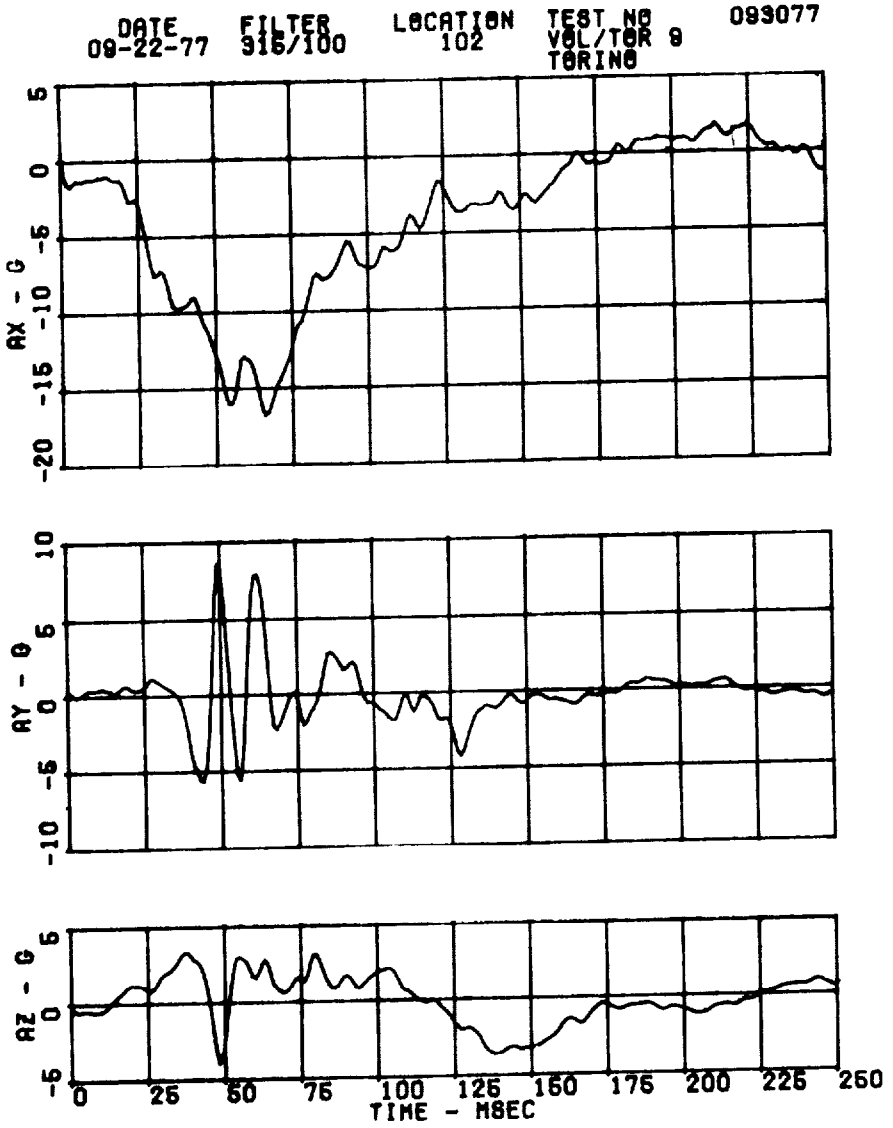
CAR 1 - 1975 TORINO VEHICLE DATA

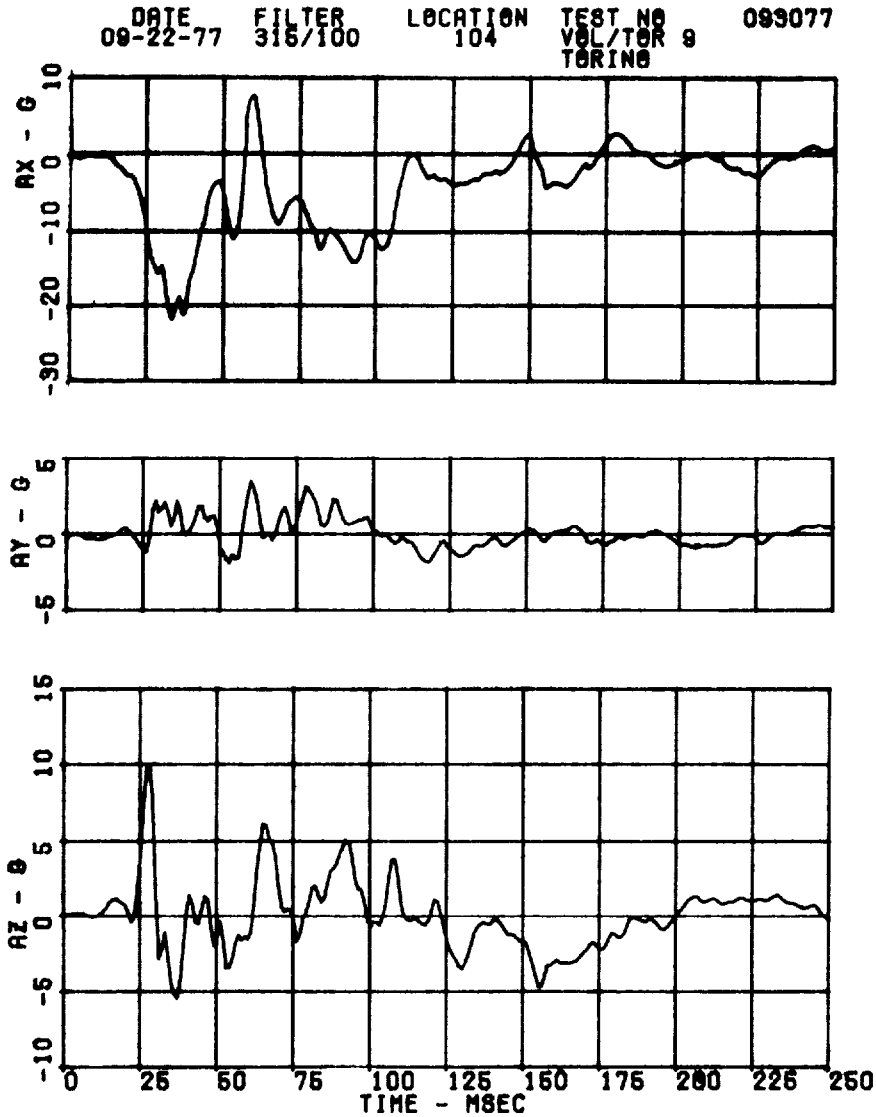
NOTE: All data is filtered at 100 Hz (Class 60, SAE J211). See Figure 14 for location of transducers.

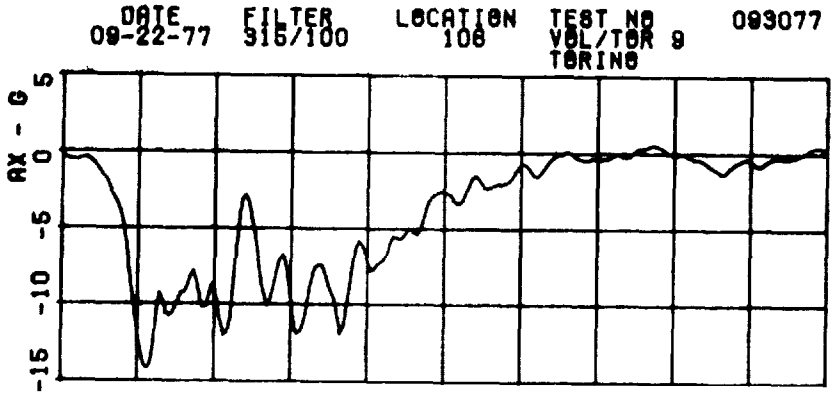

DATE
09-22-77
FILTER
315/100
LOCATION
101
TEST NO
VOL/TOR 9
TORINO
093077
AX - G
60
40
20
0
-20
-40
-60
-80

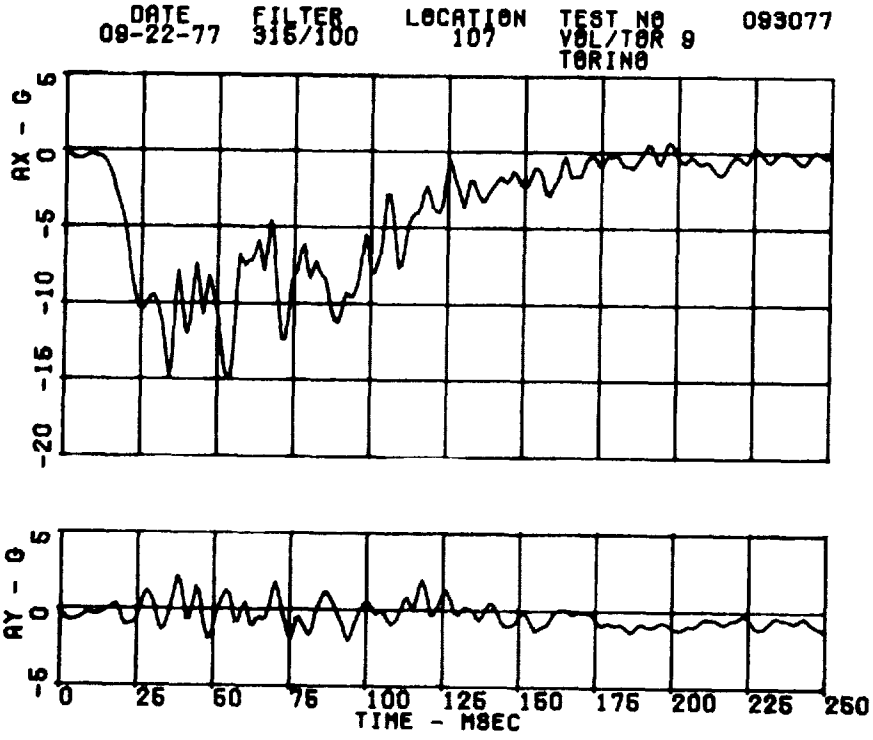

DATE
09-22-77
FILTER
315/100
LOCATION
103
TEST NO
VOL/TOR 9
TORINO
093077
AX - G
20
10
0
-10
-20
-30
-40


DATE
09-22-77
FILTER
315/100
LOCATION
105
TEST NO
VOL/TOR 9
TORINO
093077
AX - G
5
0
-5
-10
-15
0
25
50
75
100
125
150
175
200
225
250
TIME - MSEC


DATE
09-22-77
FILTER
315/100
LOCATION
102
TEST NO
VOL/TOR 9
TORINO
093077
AX - G
5
0
-5
-10
-15
-20
AY - G
10
5
0
-5
-10
AZ - G
5
0
-5
0
25
50
75
100
125
150
175
200
225
250
TIME - MSEC


DATE
09-22-77
FILTER
315/100
LOCATION
104
TEST NO
VOL/TOR 9
TORING
093077
AX - G
10
0
-10
-20
-30
AY - G
5
0
-5
AZ - G
15
10
5
0
-5
-10
0
25
50
75
100
125
150
175
200
225
250
TIME - MSEC

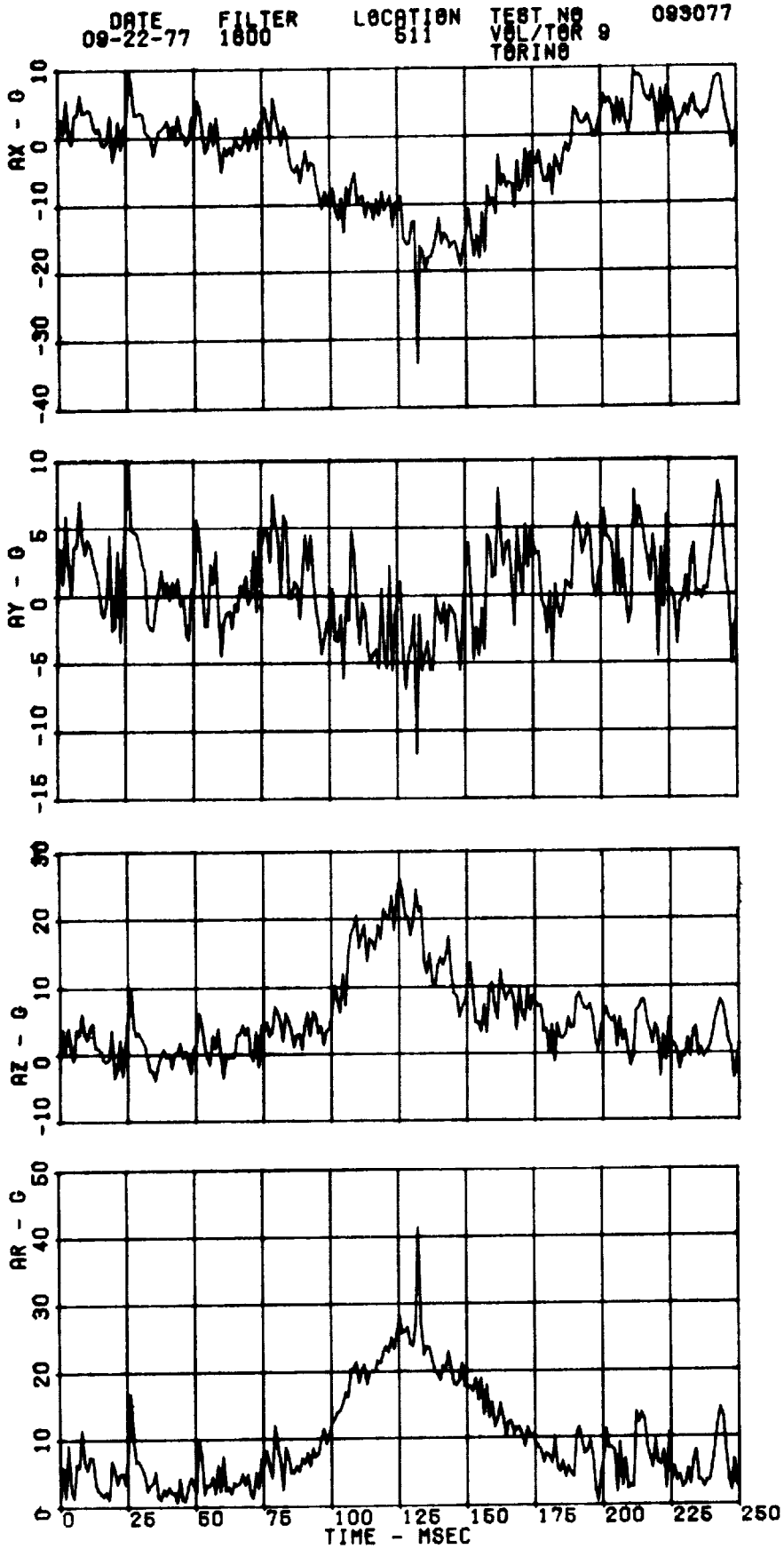

DATE
09-22-77
FILTER
315/100
LOCATION
108
TEST NO
VOL/TOR 9
TORINO
093077
AX - G
5
0
-5
-10
-15

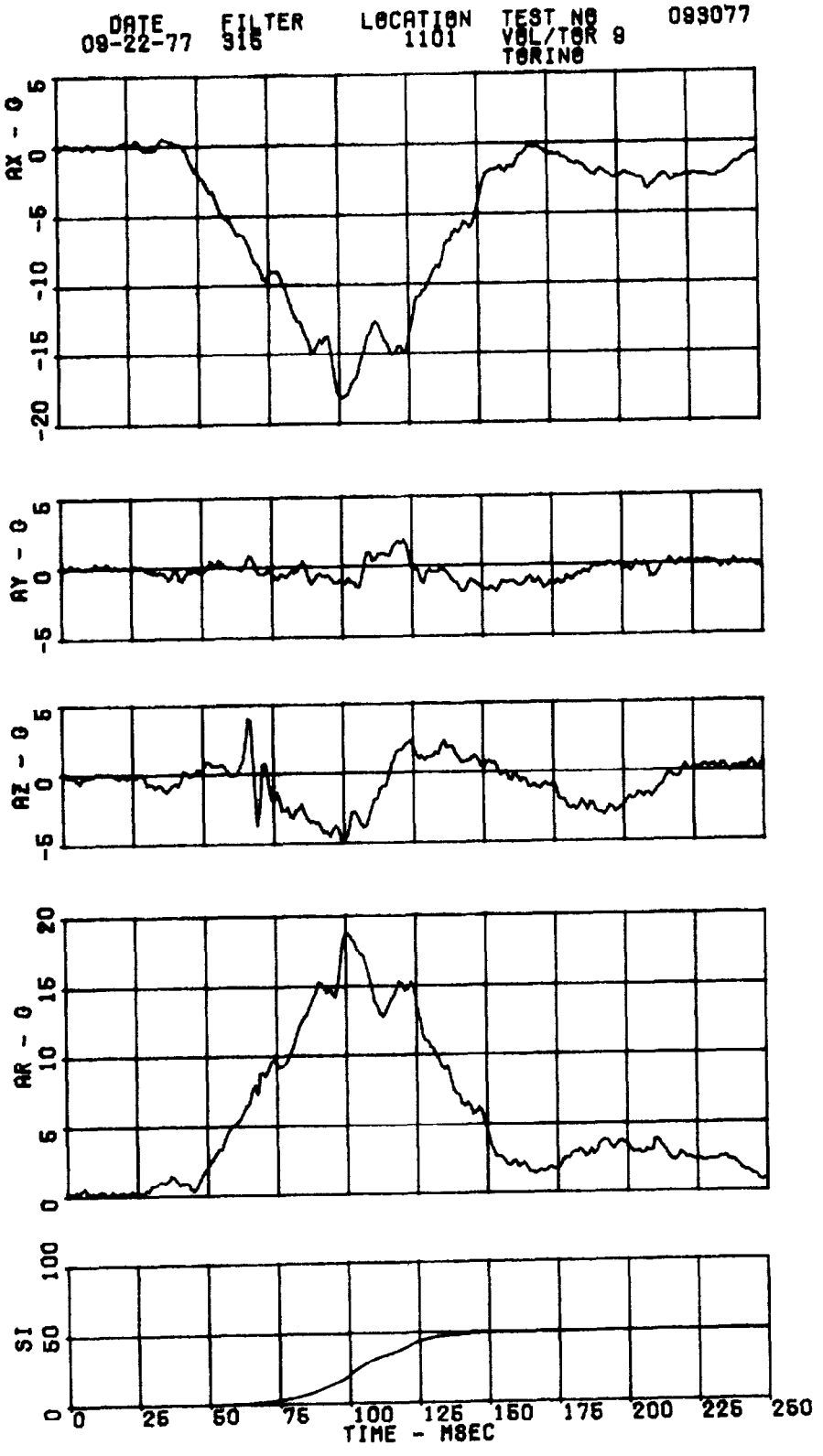

DATE
09-22-77
FILTER
315/100
LOCATION
107
TEST NO
VOL/TOR 9
TORINO
093077
AX - G
5
0
-5
-10
-15
-20
AY - G
5
0
-5
0
25
50
75
100
125
150
175
200
225
250
TIME - MSEC

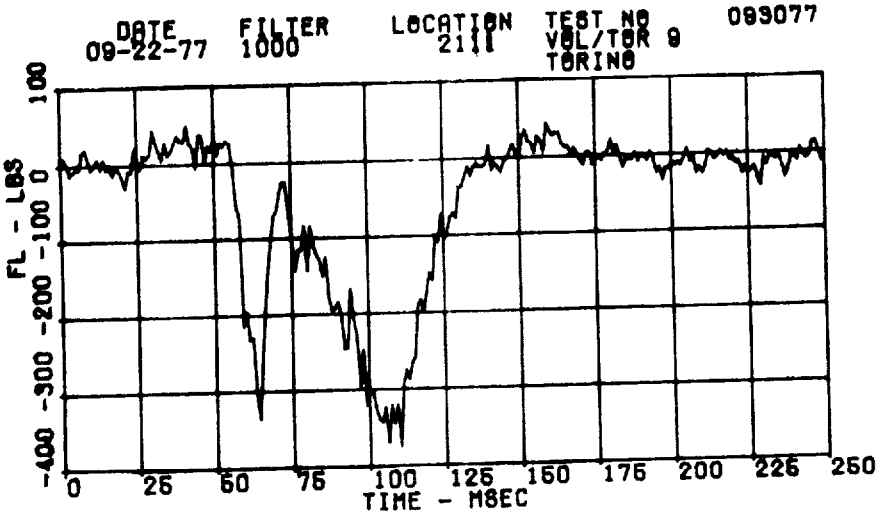
TASK 3, TEST 9

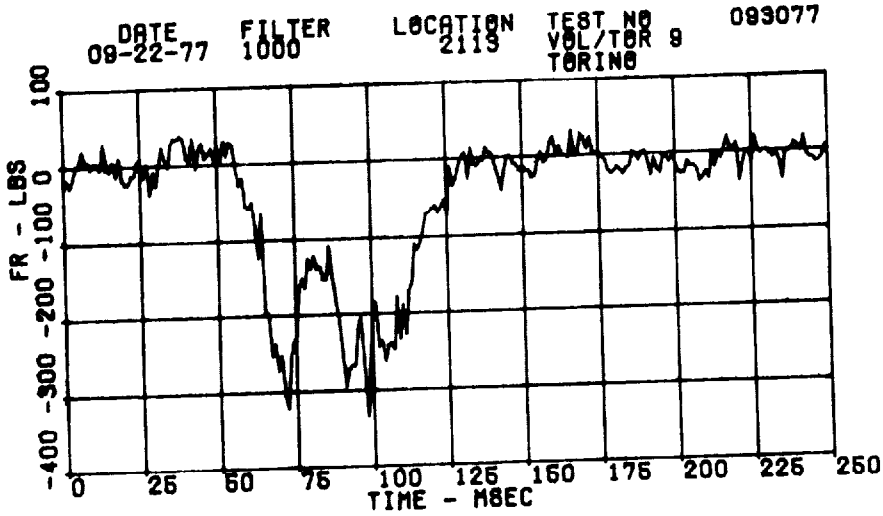
1975 TORINO DUMMY DATA

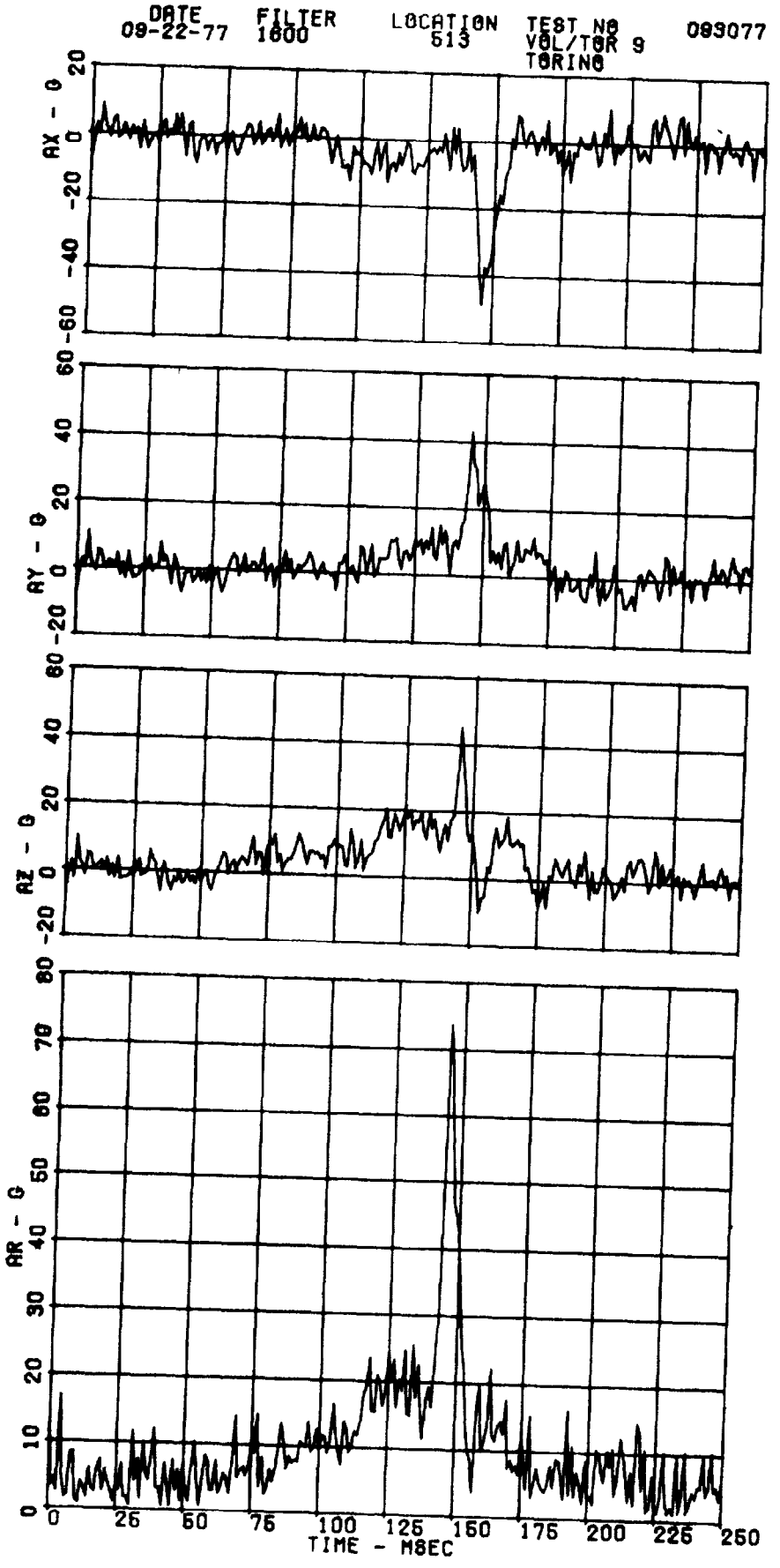
	FILTER CHANNEL CLASS	LOCATION IDENTIFICATION	
		Left Front	Right Front
HEAD ACCELERATION	1000	511	513
CHEST ACCELERATION	180	1101	1103
FEMUR FORCE	600	2111 2113	2131 2133

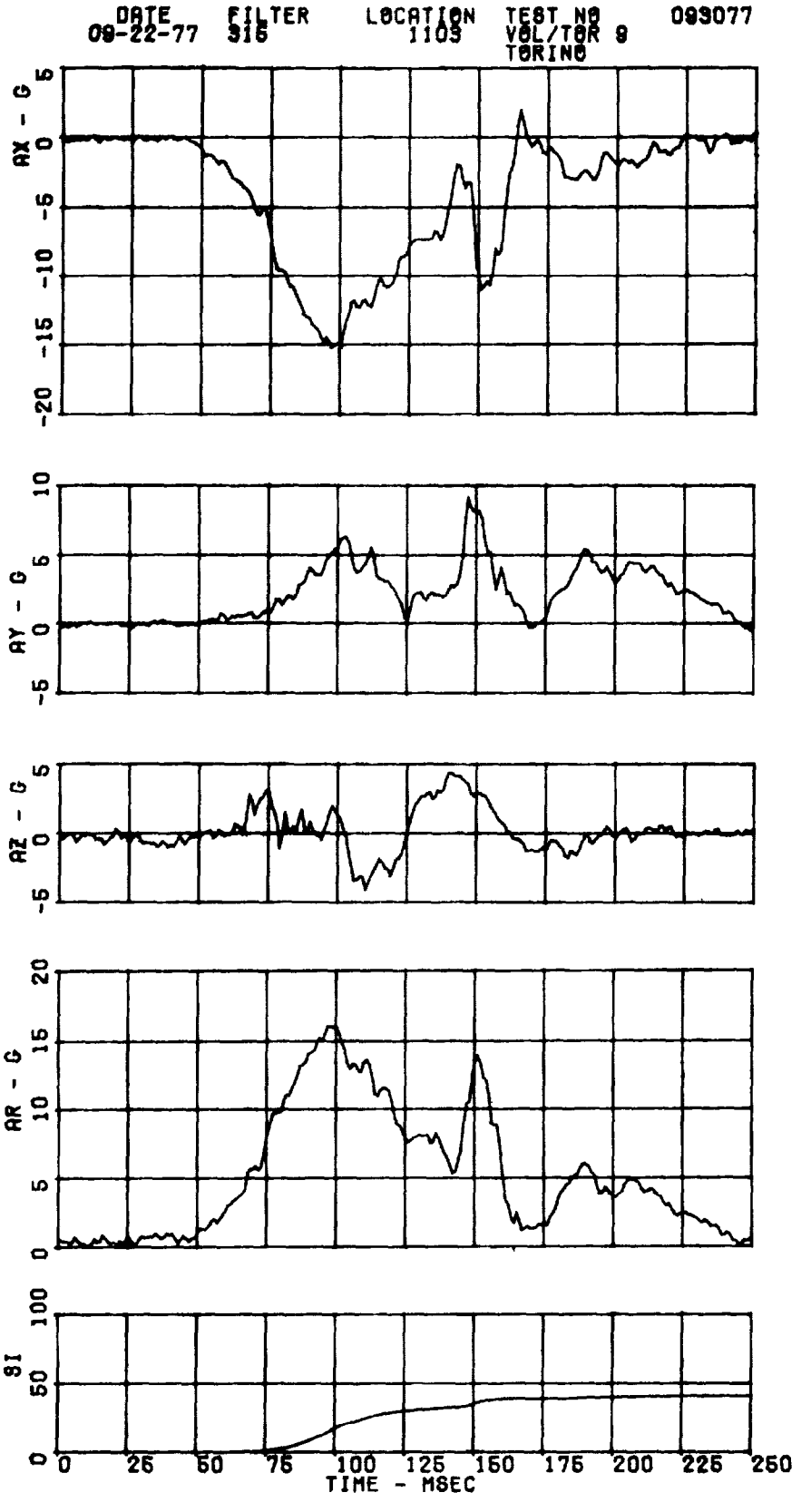

DATE
09-22-77
FILTER
1000
LOCATION
511
TEST NO
VOL/TOR 9
TORINO
093077
AX - G
AY - G
AZ - G
AR - G
TIME - MSEC

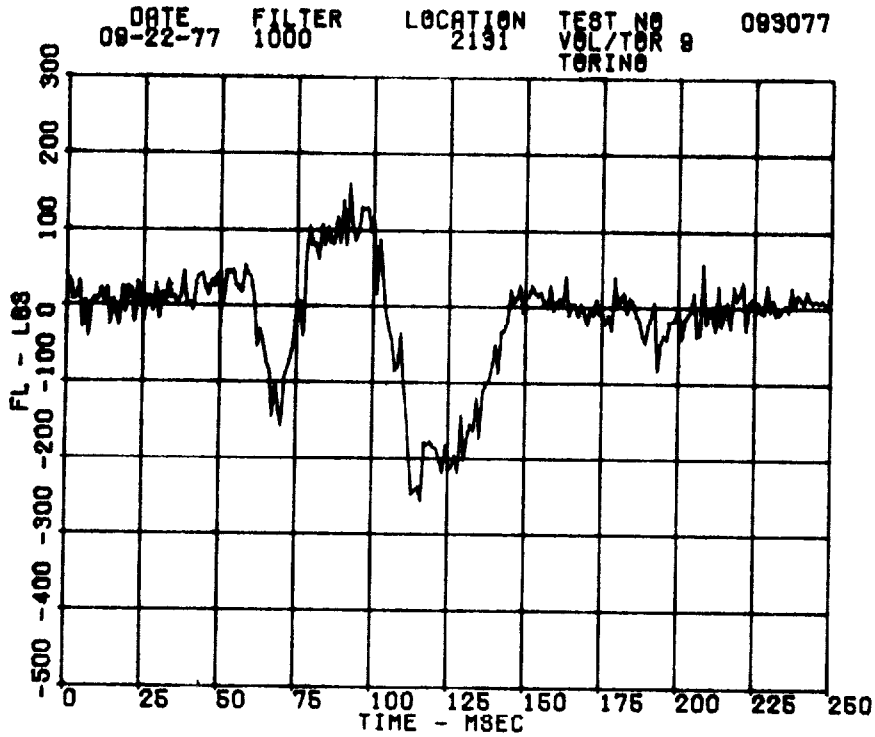

DATE
09-22-77
FILTER
315
LOCATION
1101
TEST NO
VOL/TOR 9
TORINO
093077
AX - G
AY - G
AZ - G
AR - G
SI
TIME - MSEC

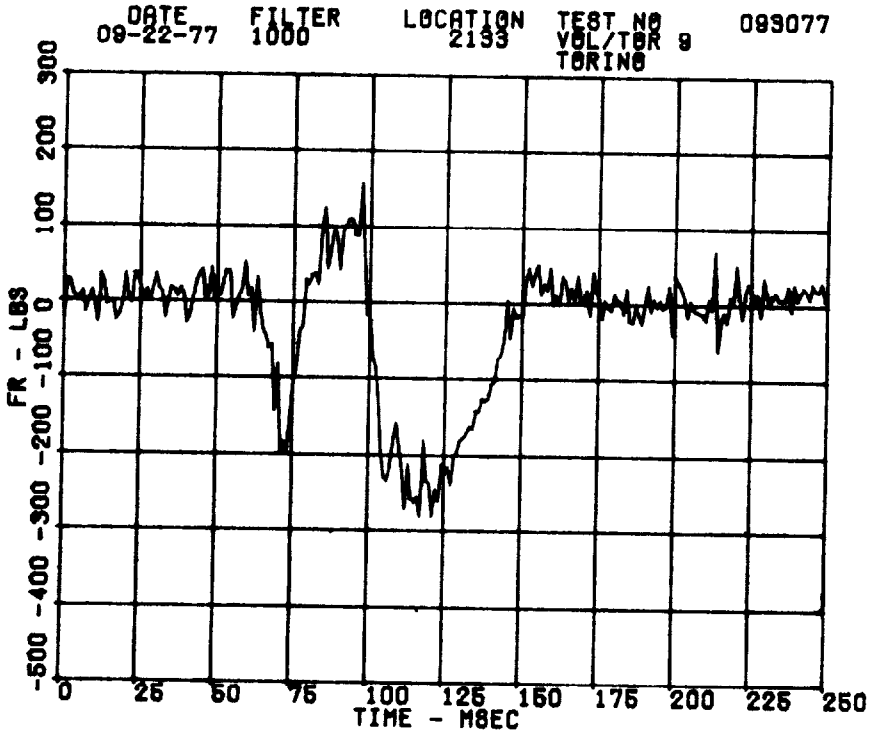

DATE
09-22-77
FILTER
1000
LOCATION
2111
TEST NO
VOL/TOR 9
TORINO
093077
FL - LBS
100
0
-100
-200
-300
-400
0
25
50
75
100
125
150
175
200
225
250
TIME - MSEC


DATE
09-22-77
FILTER
1000
LOCATION
2113
TEST NO
VOL/TOR 9
TORINO
093077
FR - LBS
100
0
-100
-200
-300
-400
0
25
50
75
100
125
150
175
200
225
250
TIME - MSEC


DATE
09-22-77
FILTER
1600
LOCATION
513
TEST NO
VOL/TOR 9
TORING
093077
AX - G
AY - G
AZ - G
AR - G
TIME - MSEC


DATE
09-22-77
FILTER
315
LOCATION
1103
TEST NO
VOL/TOR 9
TORINO
093077
AX - G
5
0
-5
-10
-15
-20
AY - G
10
5
0
-5
AZ - G
5
0
-5
AR - G
20
15
10
5
0
SI
100
50
0
0
25
50
75
100
125
150
175
200
225
250
TIME - MSEC

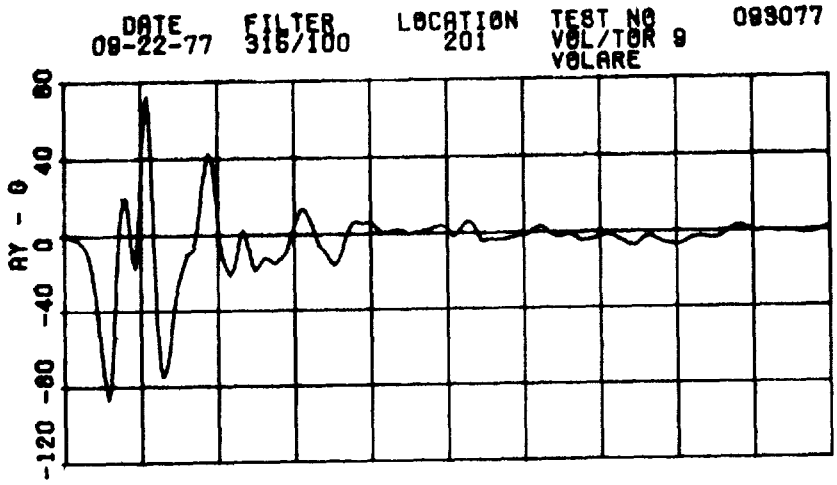

DATE
09-22-77
FILTER
1000
LOCATION
2131
TEST NO
VOL/TOR 9
TORINO
093077
FL - LBS
300
200
100
0
-100
-200
-300
-400
-500
0
25
50
75
100
125
150
175
200
225
250
TIME - MSEC

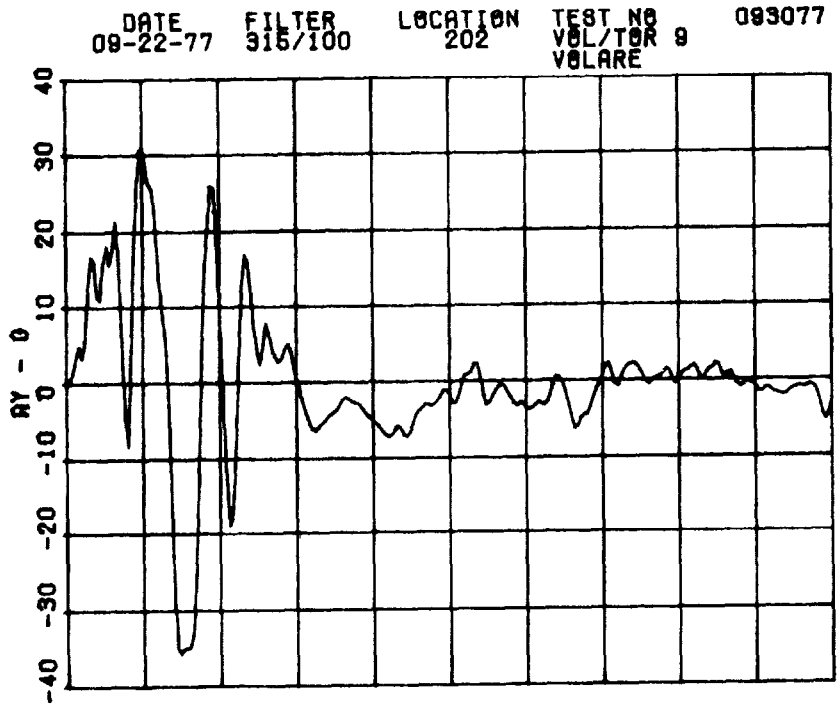

DATE
09-22-77
FILTER
1000
LOCATION
2133
TEST NO
VOL/TOR 9
TORINO
093077
FR - LBS
300
200
100
0
-100
-200
-300
-400
-500
0
25
50
75
100
125
150
175
200
225
250
TIME - MSEC

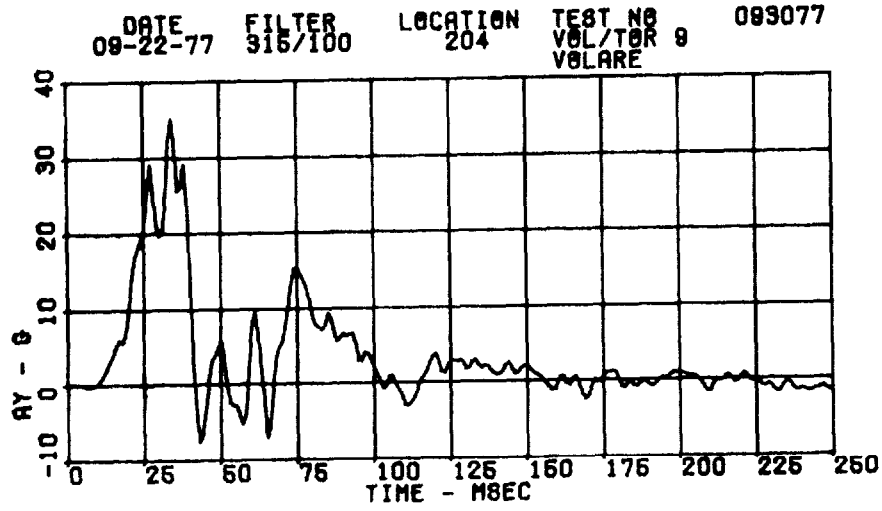
TASK 3, TEST 9

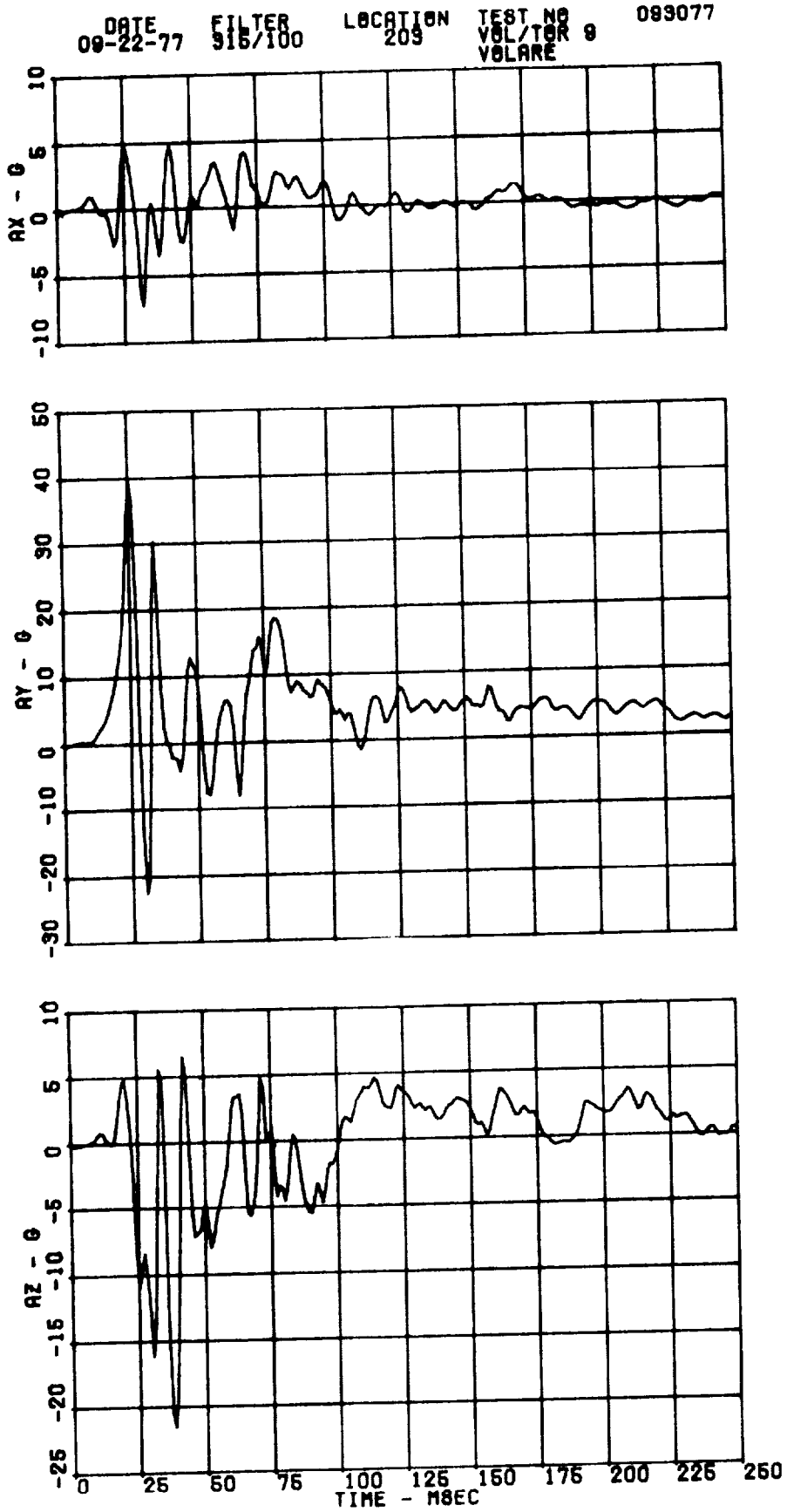
CAR 2 - 1976 VOLARE VEHICLE DATA

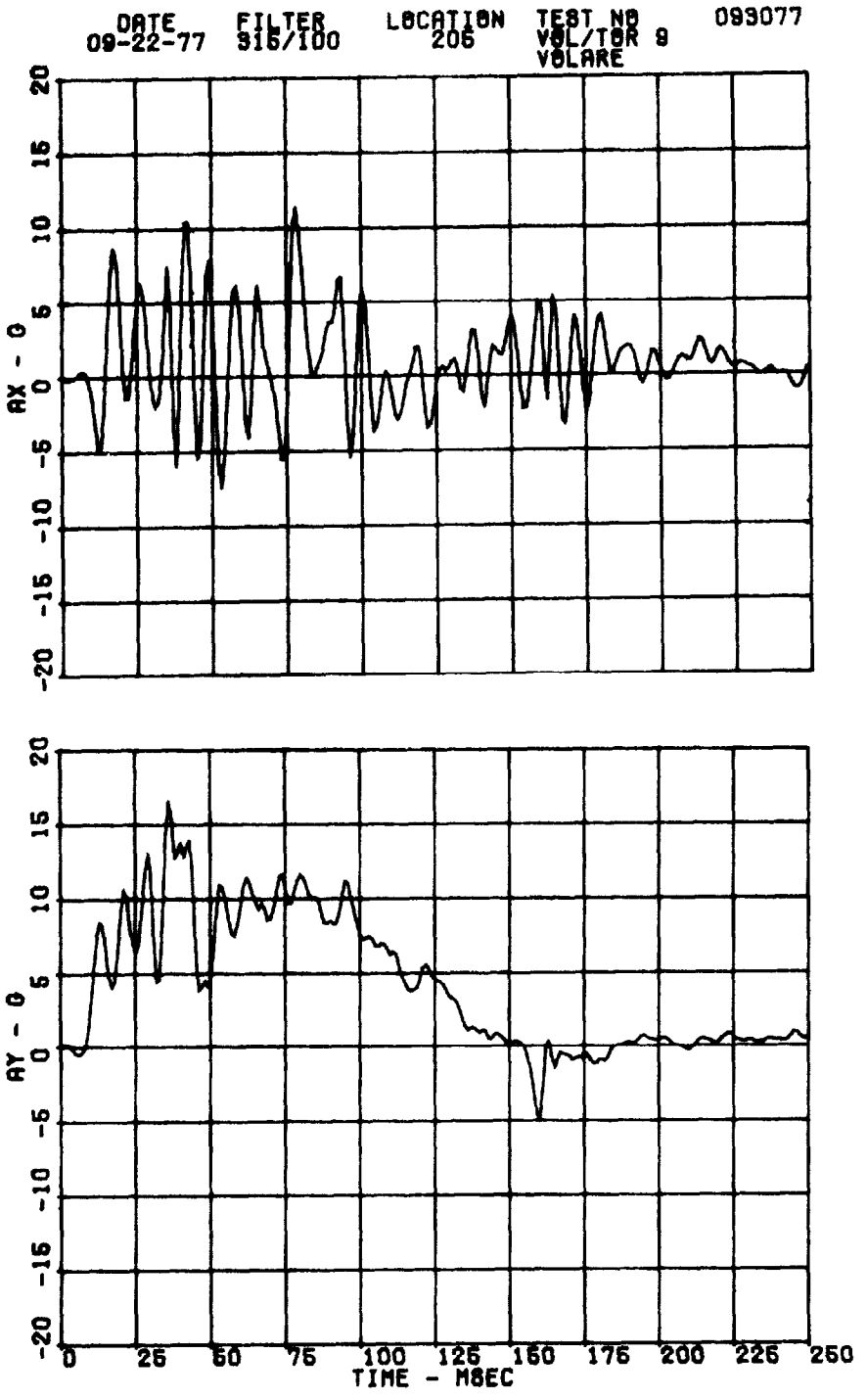
NOTE: All data is filtered at 100 Hz (Class 60, SAE J211). See Figure 15 for location of transducers.


DATE 09-22-77
FILTER 315/100
LOCATION 201
TEST NO VOL/TOR 9 VOLARE
093077
AY - G
80
40
0
-40
-80
-120

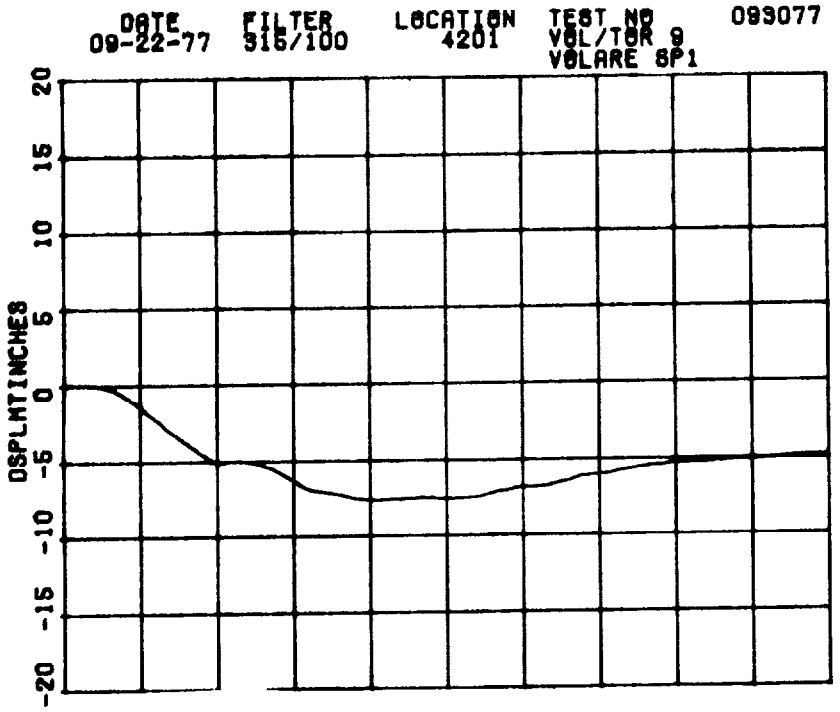

DATE 09-22-77
FILTER 315/100
LOCATION 202
TEST NO VOL/TOR 9 VOLARE
093077
AY - G
40
30
20
10
0
-10
-20
-30
-40

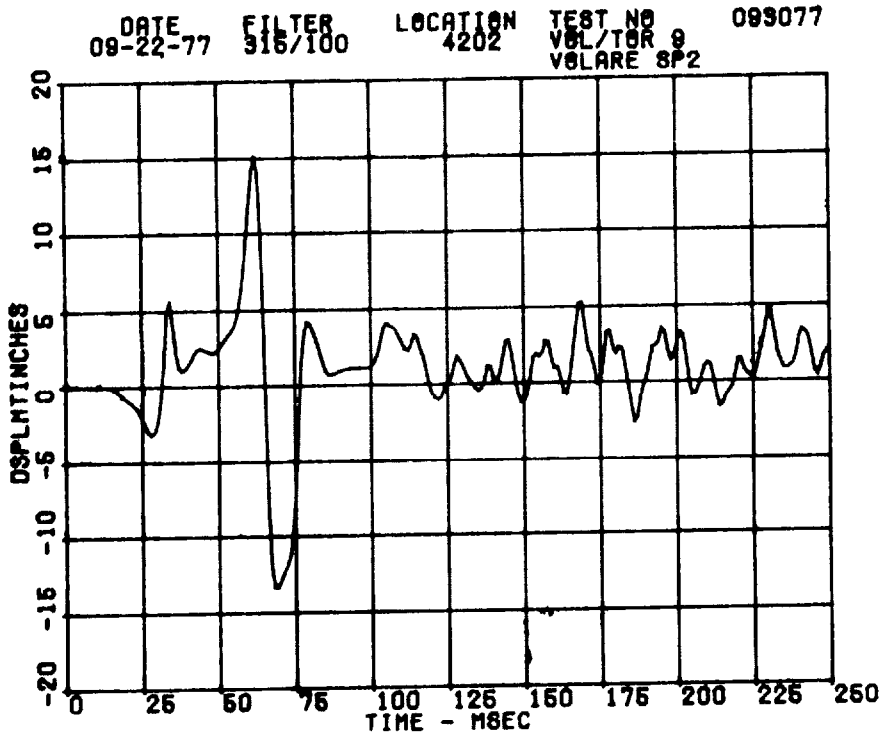

DATE 09-22-77
FILTER 315/100
LOCATION 204
TEST NO VOL/TOR 9 VOLARE
093077
AY - G
40
30
20
10
0
-10
0
25
50
75
100
125
150
175
200
225
250
TIME - MSEC


DATE
09-22-77
FILTER
315/100
LOCATION
203
TEST NO
VOL/TOR 9
VOLARE
093077
AX - G
AY - G
AZ - G
TIME - MSEC


DATE
09-22-77
FILTER
315/100
LOCATION
206
TEST NO
VOL/TOR 9
VOLARE
093077
AX - G
AY - G
20
15
10
5
0
-5
-10
-15
-20
0
25
50
75
100
125
150
175
200
225
250
TIME - MSEC

SEE NOTE ON PAGE 22.



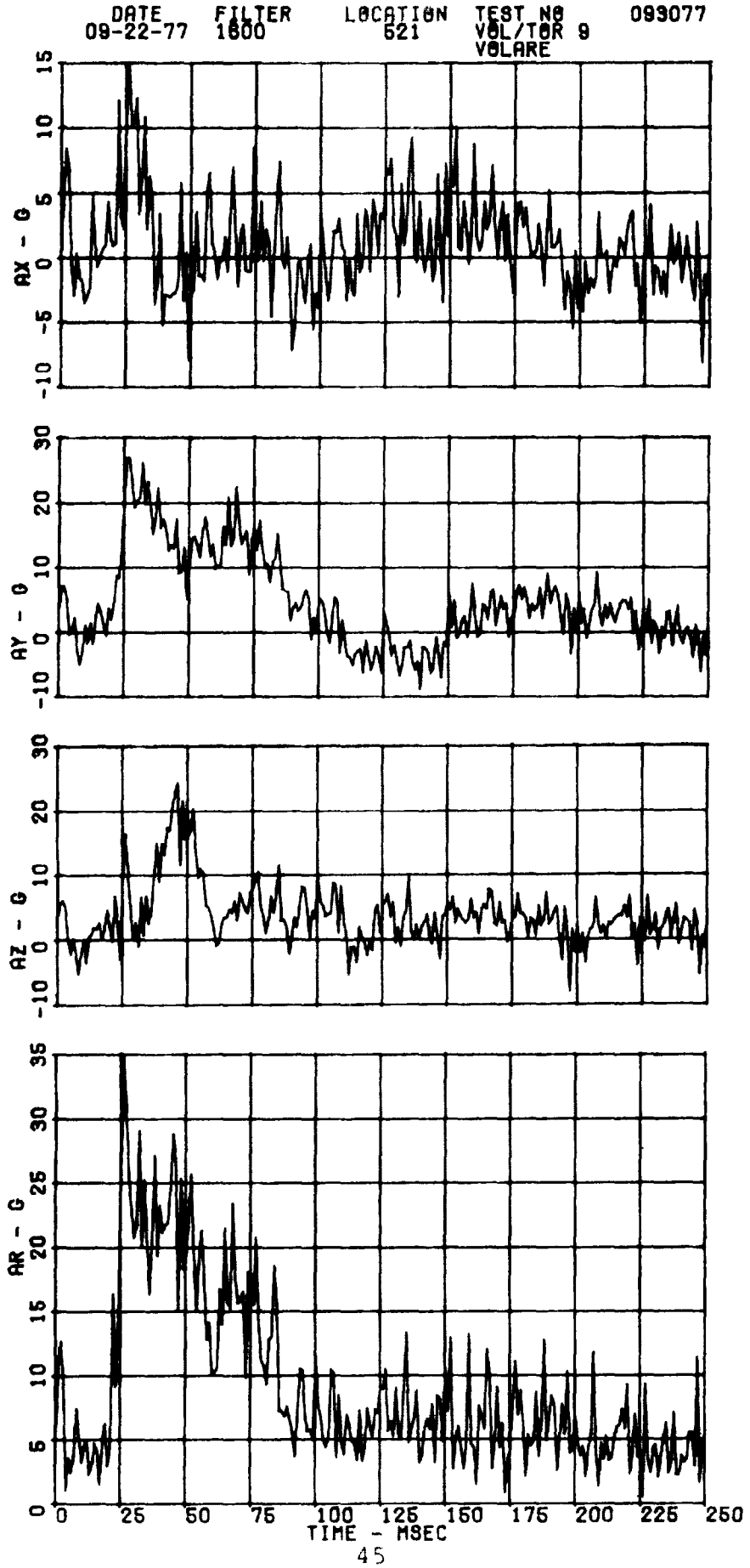


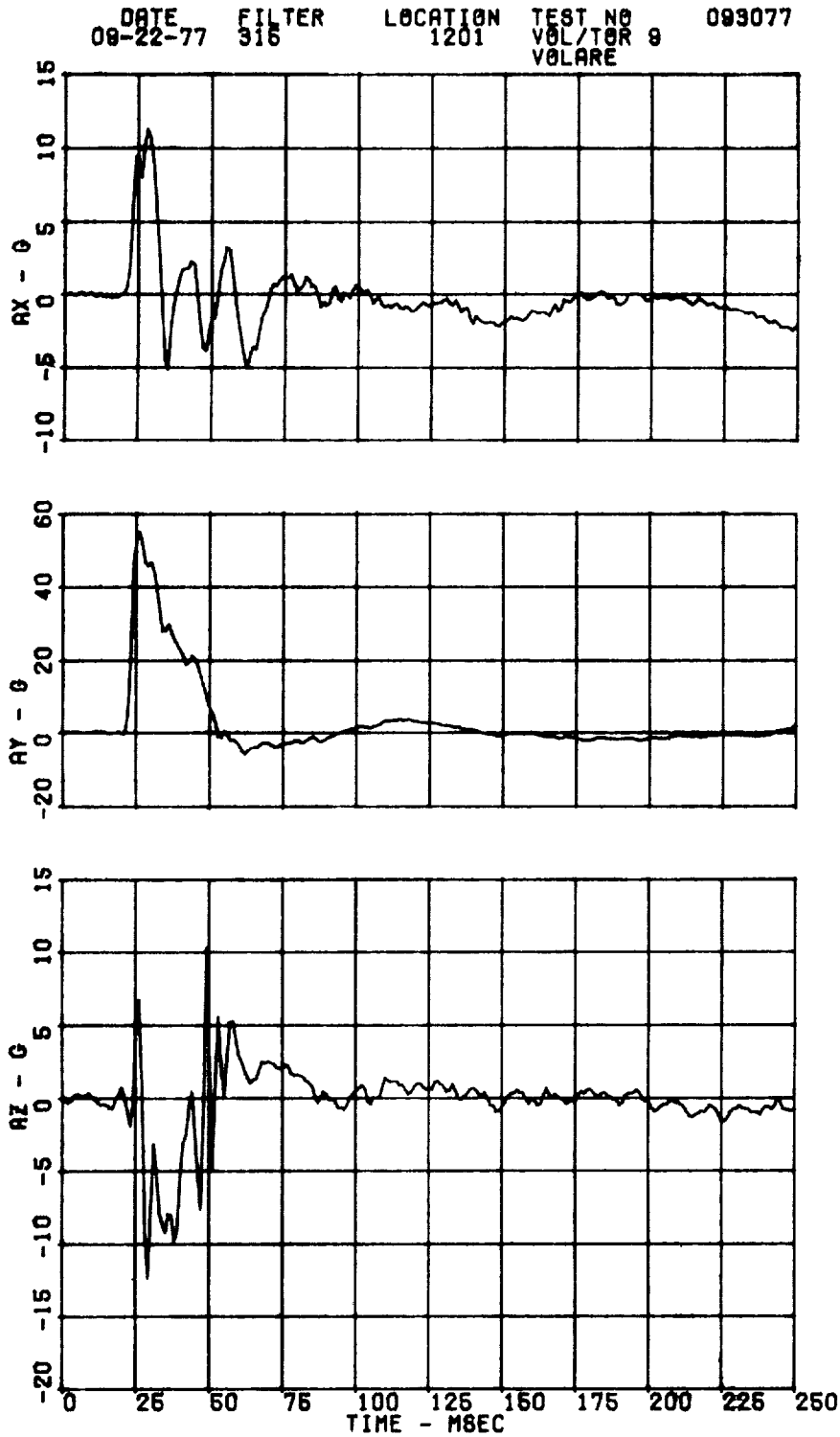
VOL/TOR TEST 9 - STRING POTENTIOMETER 4203
ARTERY SEVERED - NO DATA AVAILABLE

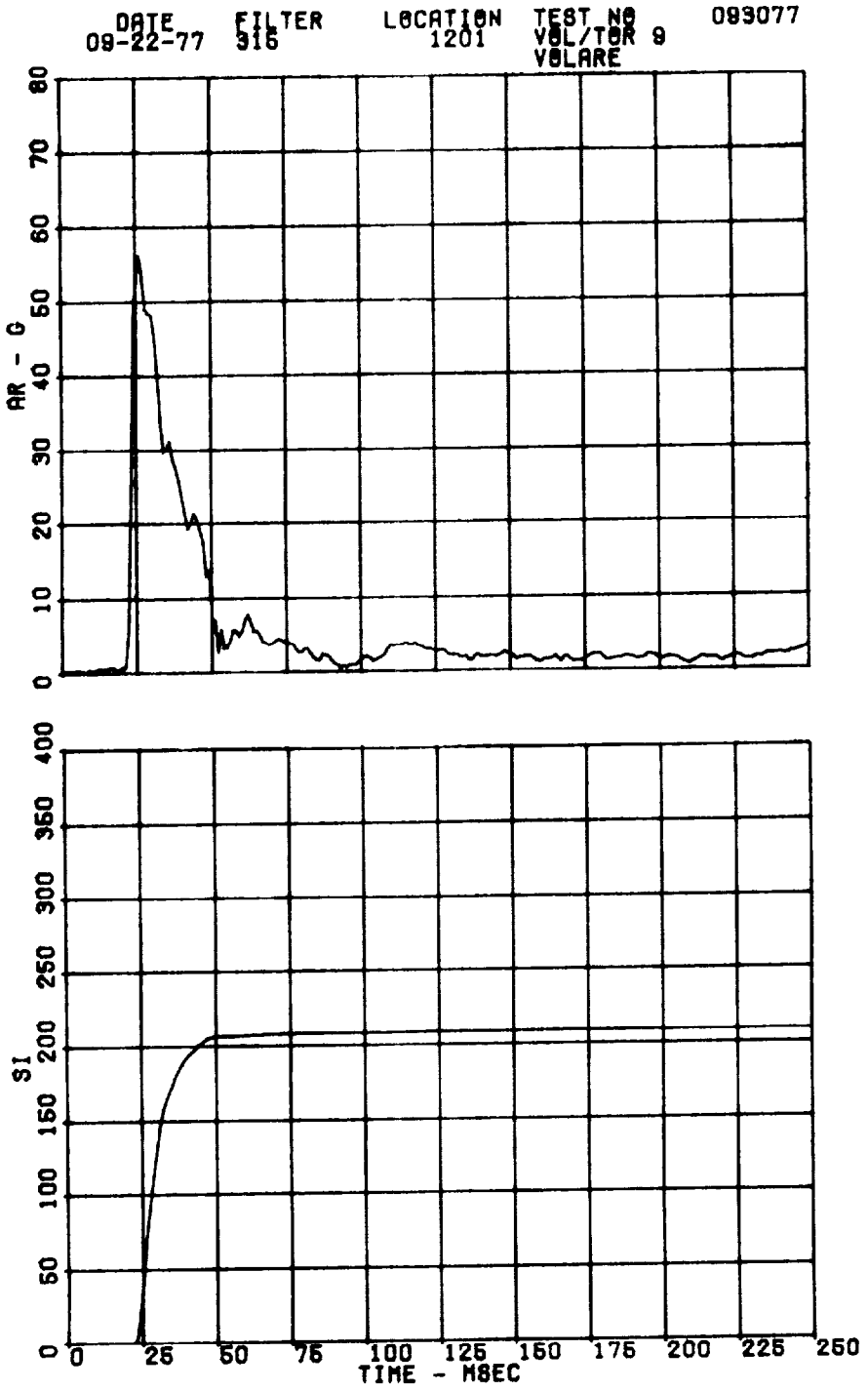
TASK 3, TEST 9

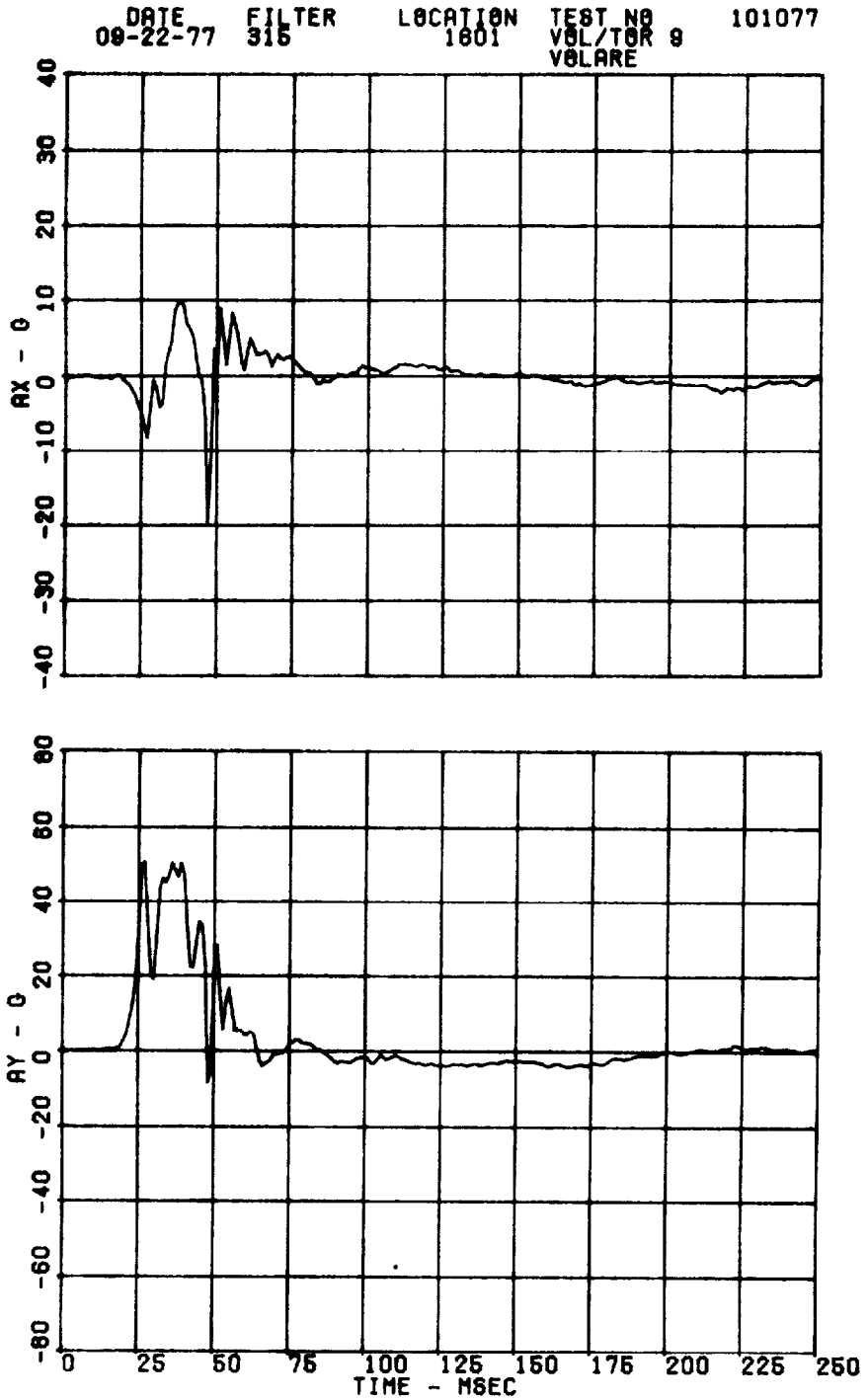
1976 VOLARE DUMMY DATA

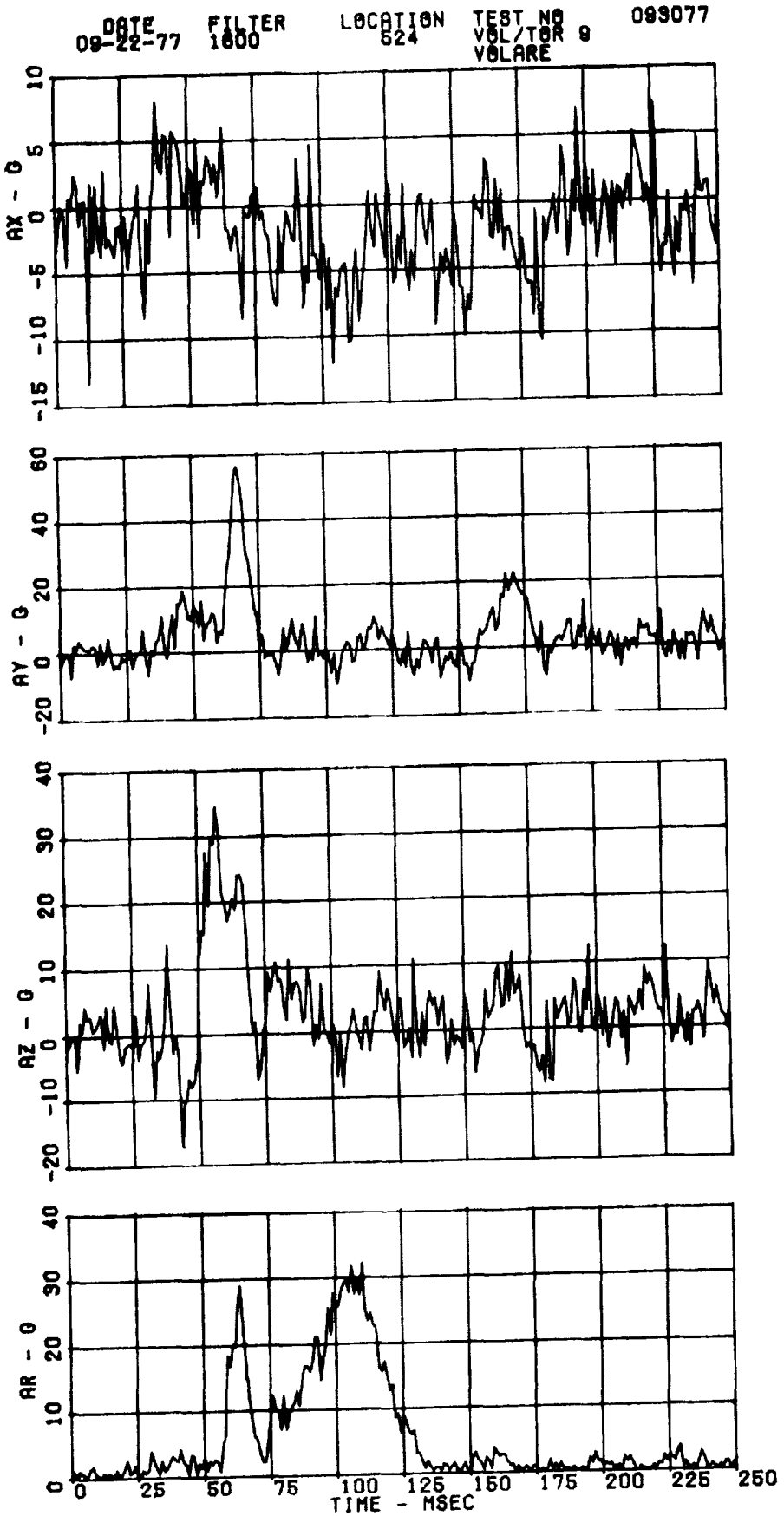
	FILTER CHANNEL CLASS	LOCATION IDENTIFICATION	
		Left Front	Left Rear
HEAD ACCELERATION	1000	521	524
CHEST ACCELERATION	180	1201	1204
FEMUR FORCE	180	1601	1604

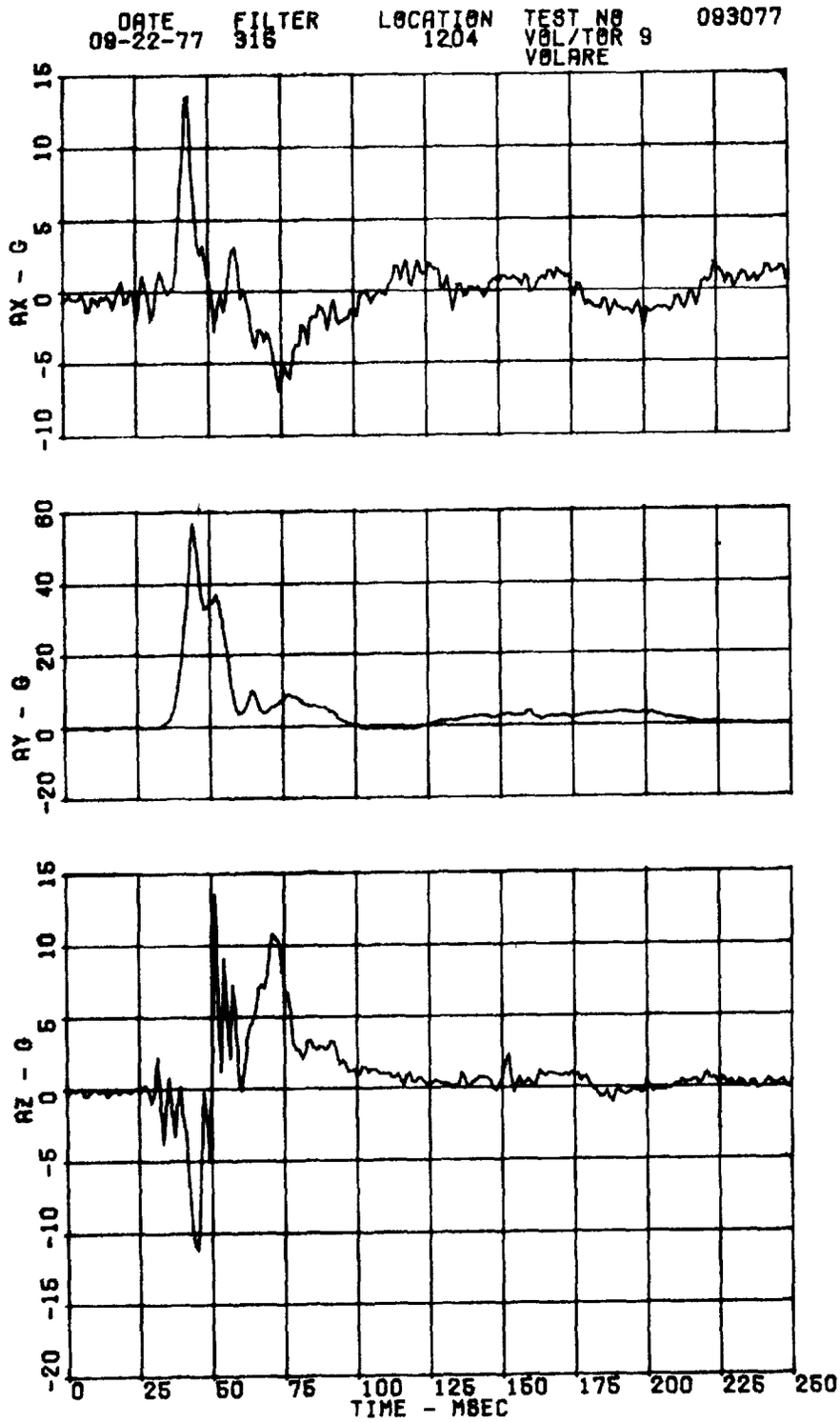

DATE 09-22-77
FILTER 1600
LOCATION 521
TEST NO 093077
VOL/TOR 9
VOLARE
AX - G
AY - G
AZ - G
AR - G
TIME - MSEC

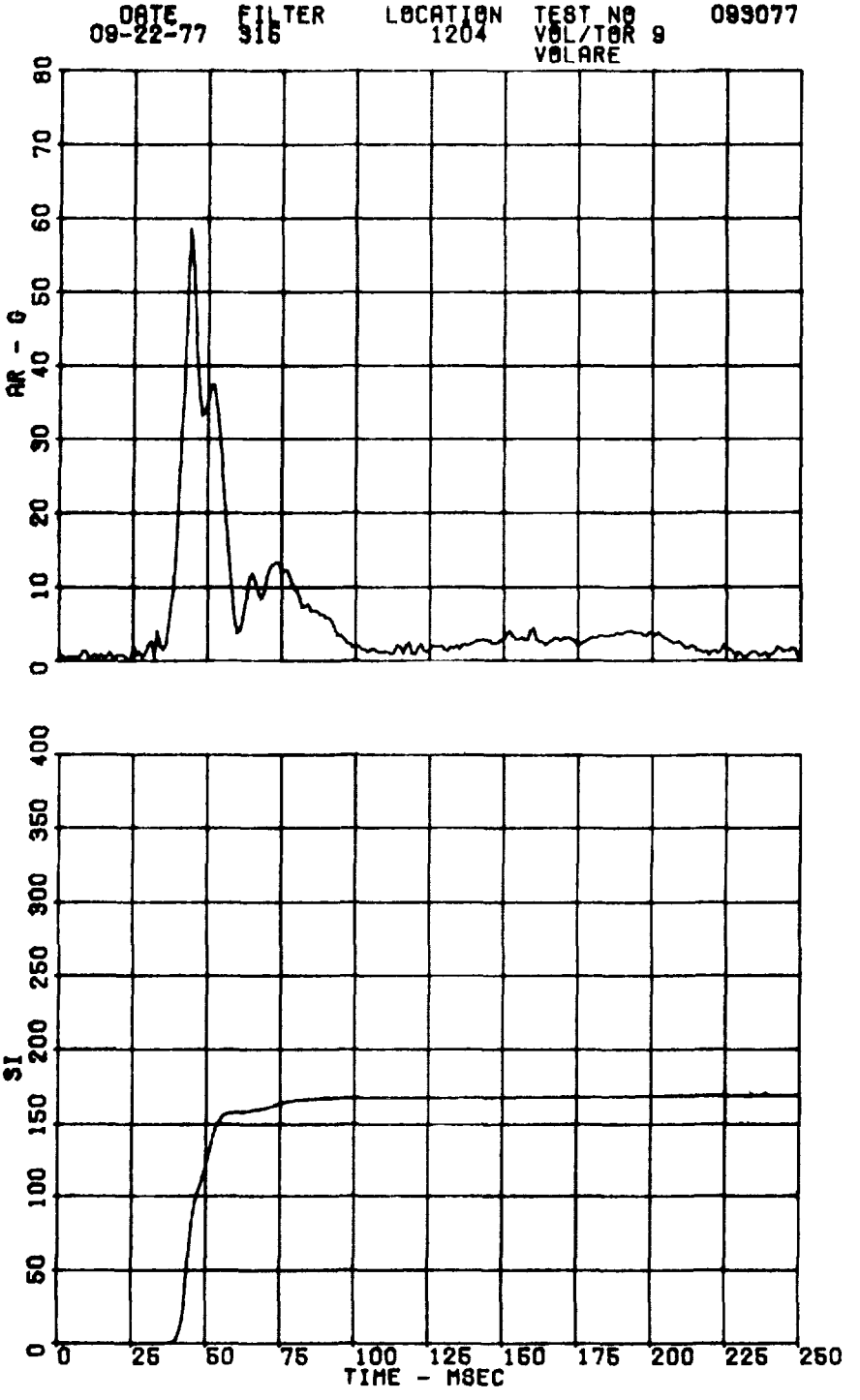

DATE
09-22-77
FILTER
315
LOCATION
1201
TEST NO
VOL/TOR 9
VOLARE
093077
AX - G
AY - G
AZ - G
TIME - MSEC

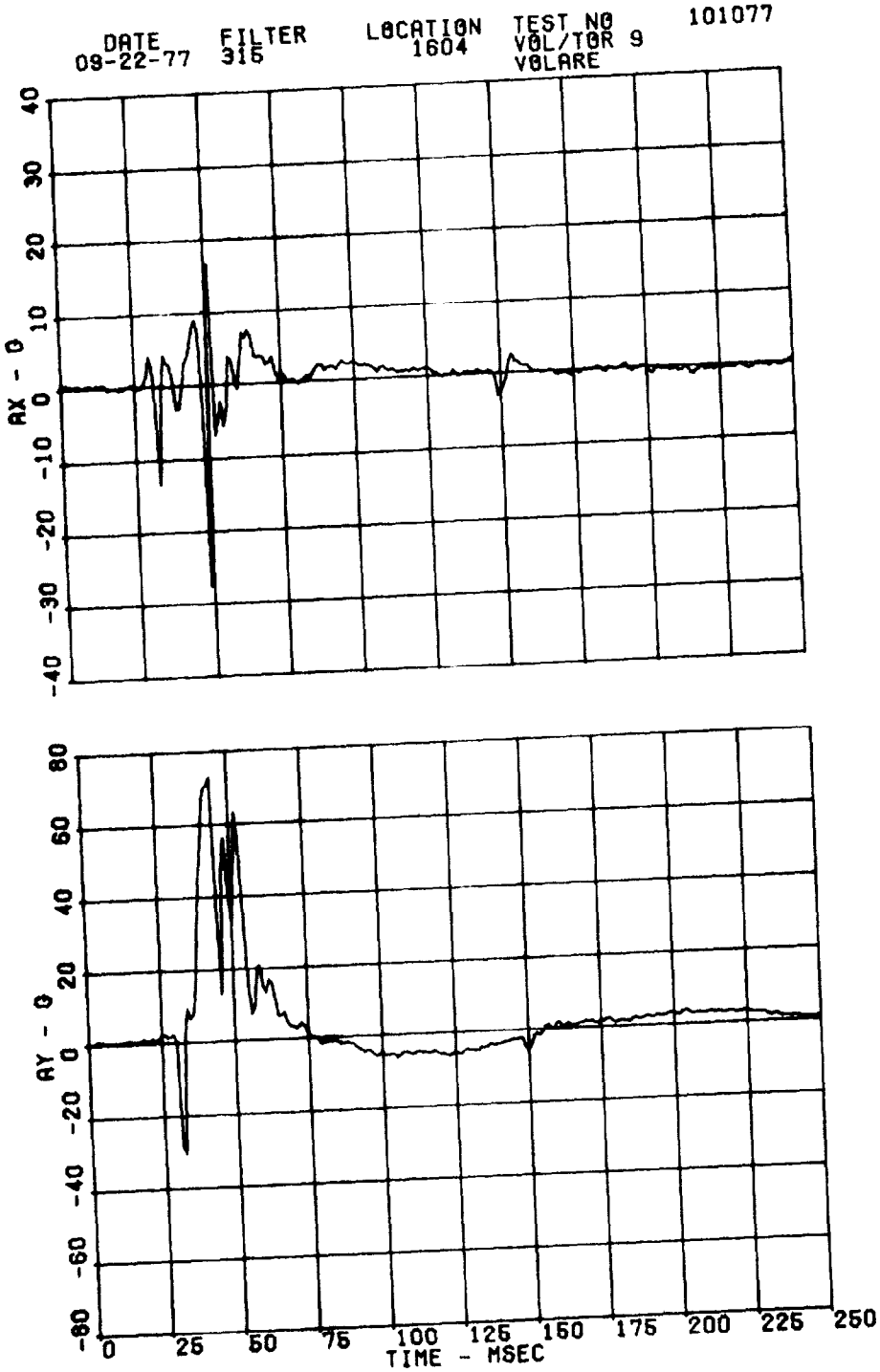

DATE
09-22-77
FILTER
315
LOCATION
1201
TEST NO
VOL/TOR 9
VOLARE
093077
AR - G
0
10
20
30
40
50
60
70
80
SI
0
50
100
150
200
250
300
350
400
0
25
50
75
100
125
150
175
200
225
250
TIME - MSEC


DATE
09-22-77
FILTER
315
LOCATION
1601
TEST NO
VOL/TOR 9
VOLARE
101077
AX - G
40
30
20
10
0
-10
-20
-30
-40
AY - G
80
60
40
20
0
-20
-40
-60
-80
0
25
50
75
100
125
150
175
200
225
250
TIME - MSEC


DATE
09-22-77
FILTER
1000
LOCATION
524
TEST NO
VOL/TOR 9
VOLARE
093077
AX - G
AY - G
AZ - G
AR - G
TIME - MSEC


DATE
09-22-77
FILTER
316
LOCATION
1204
TEST NO
VOL/TOR 9
VOLARE
093077
AX - G
AY - G
AZ - G
TIME - MSEC


DATE
09-22-77
FILTER
315
LOCATION
1204
TEST NO
VOL/TOR 9
VOLARE
093077
AR - G
0
10
20
30
40
50
60
70
80
SI
0
50
100
150
200
250
300
350
400
0
25
50
75
100
125
150
175
200
225
250
TIME - MSEC


DATE
09-22-77
FILTER
315
LOCATION
1604
TEST NO
VOL/TOR 9
VOLARE
101077
AX - G
40
30
20
10
0
-10
-20
-30
-40
AY - G
80
60
40
20
0
-20
-40
-60
-80
0
25
50
75
100
125
150
175
200
225
250
TIME - MSEC