This test report was mislabeled. The correct test number is 116.

179

ACCELERATION AND DIMENSIONAL DATA ON SELECTED 1978 AUTOMOTIVE VEHICLES

E. Enserink

Contract DOT-HS-6-01478

October 1978

FINAL REPORT

Copies of this report are available from Technical Reference Division, National Highway Traffic Safety Administration, Room 5108, Nassif Building, 400 7th Street, S.W., Washington, D.C. 20590

Prepared for:

U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
WASHINGTON, D.C. 20590

TECHNICAL REPORT STANDARD TITLE PAGE

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.
4. Title and Subtitle ACCELERATION AND DIMENSIONAL DATA ON SELECTED 1978 AUTOMOTIVE VEHICLES		5. Report Date October 1978 6. Performing Orgn Code
7. Author(s) E. Enserink		8. Performing Orgn Rpt No. 3005-78-189
9. Performing Organization Name and Address Dynamic Science, Inc. A Talley Industries Company 1850 West Pinnacle Peak Road Phoenix, Arizona 85027		10. Work Unit No. 11. Contract or Grant No. DOT-HS-6-01478
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Washington, D.C. 20590		13. Type of Report and Period Covered FINAL REPORT February - September 1978 14. Sponsoring Agency Code
15. Supplementary Notes		

16. Abstract

This report presents crash acceleration data and pre- and post-test dimensional data on 45 selected 1978 passenger cars and pickup trucks which were subjected to impact tests per the requirements of FMVSS 301-75 - Standards Enforcement Testing of Fuel System Integrity.

17. Key Words	18. Distribution Statement
Automotive Vehicle, Crash Testing, Acceleration, Dimensions, Rear End Impact, Frontal Impact	Copies of this report are available from Technical Reference Division, National Highway Traffic Safety Administration, Room 5108, Nassif Building, 400 7th Street, S.W., Washington, D.C. 20590

19. Security Classif. (of this report)	20. Security Classif. (of this page)	21. No. Pages	22. Price
Unclassified	Unclassified	285	

Form DOT F 1700.7 (8-69)

Prepared for the Department of Transportation, National Highway Traffic Safety Administration, under Contract No. DOT-HS-6-01478.

INTRODUCTION

This report presents acceleration and dimensional data on selected 1978 passenger cars and pickups which were subjected to impact tests per the requirements of FMVSS 301-75.

The vehicles shown in Table 1 are included in this report. The acceleration data were all filtered per Class 60 of SAE J211a.

The report is organized by sections for each impact type (i.e. rear, front, etc.).

Placement of the accelerometers on the vehicle depended on the impact direction and is shown for each type of impact in the particular section relating to that impact direction.

This test report was mislabeled. The correct test number is 116.

TABLE 1. LIST OF VEHICLES (1978 MODELS)

	Test Date (1978)	Impact Speed (mph)	See Page
Section 1 - Passenger Car Rear End Impact			4
Chevrolet Caprice Four-Door Sedan	Feb. 6	29.44	7 167
Ford Granada Four-Door Sedan	Feb. 6	29.04	13 166
Oldsmobile Delta Two-Door Coupe	Feb. 7	28.98	19 164
Chevrolet Monza Three-Door Hatchback	Feb. 7	29.21	25 165
Chevrolet Chevette Four-Door Sedan	March 13	29.64	31 176
Toyota Corolla Two-Door Sedan	March 30	29.50	37 169
Subaru DL Four-Door Sedan	March 30	29.31	43 199 ✱
Plymouth Sapporo Two-Door Coupe	April 3	29.80	49 120
Triumph Spitfire Two-Door Coupe	April 4	29.65	55
Pontiac LeMans Two-Door Coupe	April 5	29.44	61 117
BMW 320i Two-Door Coupe	April 5	29.52	67 169
Buick Regal Two-Door Coupe	April 6	29.9	73 116
Pontiac Phoenix Four-Door Sedan	April 7	28.81	79
Ford Fiesta Three-Door Hatchback	April 8	29.81	85
Mazda Cosmo Two-Door Sedan	April 8	29.00	91 171
Plymouth Horizon Four-Door Hatchback	April 5	29.44	97
Buick Opel Two-Door Sedan	April 11	30.27	103 130
Pontiac Sunbird Three-Door Hatchback	April 27	29.32	109
Fiat 124 Spider Two-Door Coupe	April 28	29.48	115 110
Chevrolet Malibu Four-Door Sedan	Sep. 13	29.83	121 106
Dodge Diplomat Two-Door Coupe	Sep. 26	29.73	128
Datsun 510 Two-Door Coupe	Sep. 27	29.52	135 129
Ford Fairmont Two-Door Sedan	Sep. 27	29.49	142 134
Saab 99GL Three-Door Hatchback	Sep. 28	29.29	149
Honda Accord Three-Door Hatchback	Sep. 28	29.64	156 112 ✱

9-28-78

TABLE 1. LIST OF VEHICLES (CONTD)

	Test Date (1978)	Impact Speed (mph)	See Page
Section 2 - Passenger Car Frontal Impact			163
Subaru Brat Multipurpose Passenger Vehicle	March 16	29.56	166
Oldsmobile Cutlass Two-Door Coupe	May 4	29.84	171
Pontiac Grand Prix Two-Door Coupe	May 11	29.36	176 172
Chevrolet Monte Carlo Two-Door Coupe	May 12	29.45	181 442
Buick LeSabre Two-Door Coupe	May 17	29.65	186 50
Datsun F-10 Station Wagon	May 18	29.80	191
Mazda RX-4 Station Wagon	May 22	30.04	196 135
Dodge Monaco Two-Door Coupe	June 20	29.37	201
Toyota Cressida Station Wagon	June 22	29.61	206 125
VW Rabbit Four-Door Hatchback	June 26	29.58	211 123
Section 3 - Truck Rear End Impact			216
Jeep CJ5 Multipurpose Passenger Vehicle	March 8	29.36	219
Ford Ranchero Pickup	March 8	29.11	225 175
Chevrolet G-10 Van	March 9	29.18	231 121
Ford F-100 Pickup	March 9	29.66	237 115
Datsun Pickup	April 4	29.40	243
Dodge D-100 Pickup	April 5	29.43	249
GMC C1500 Pickup	4-6-78 April 6	29.18	255 179#
Dodge B-100 Van	April 10	29.20	261 105
Toyota Pickup	April 28	29.48	267 111
Ford E100 Van	Sep. 13	29.48	273 131

SECTION 1
PASSENGER CAR REAR END IMPACT

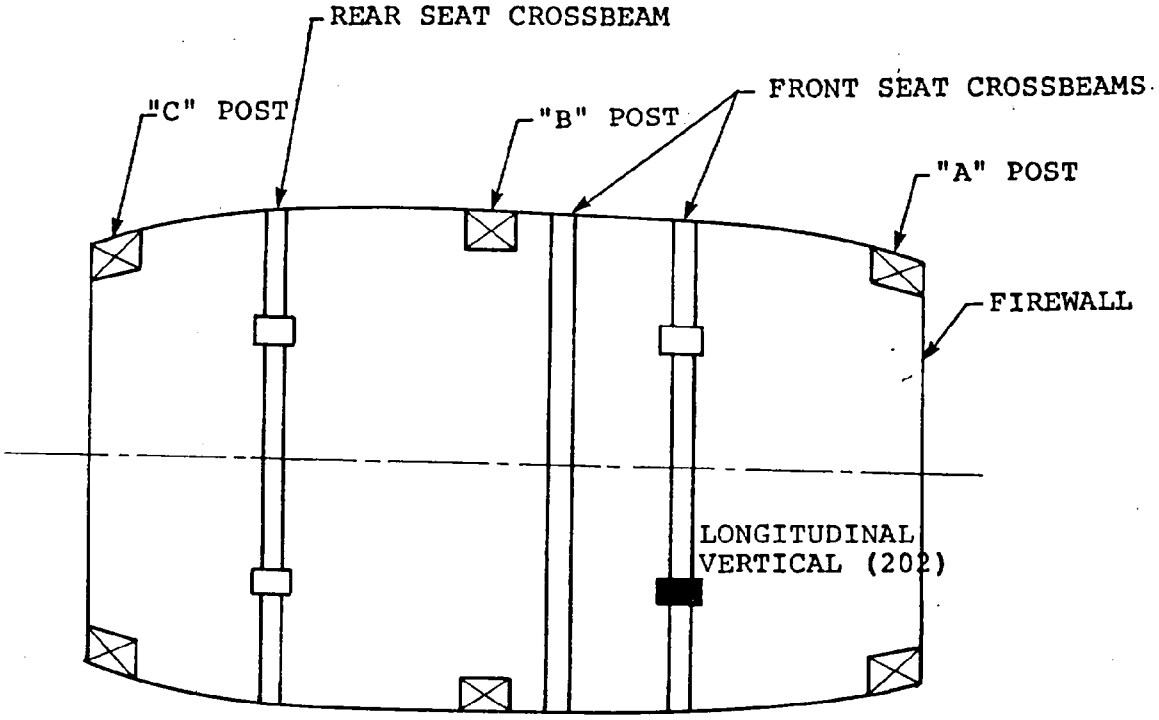


Figure 1. Accelerometer Location for Passenger Car Rear End Impacts.

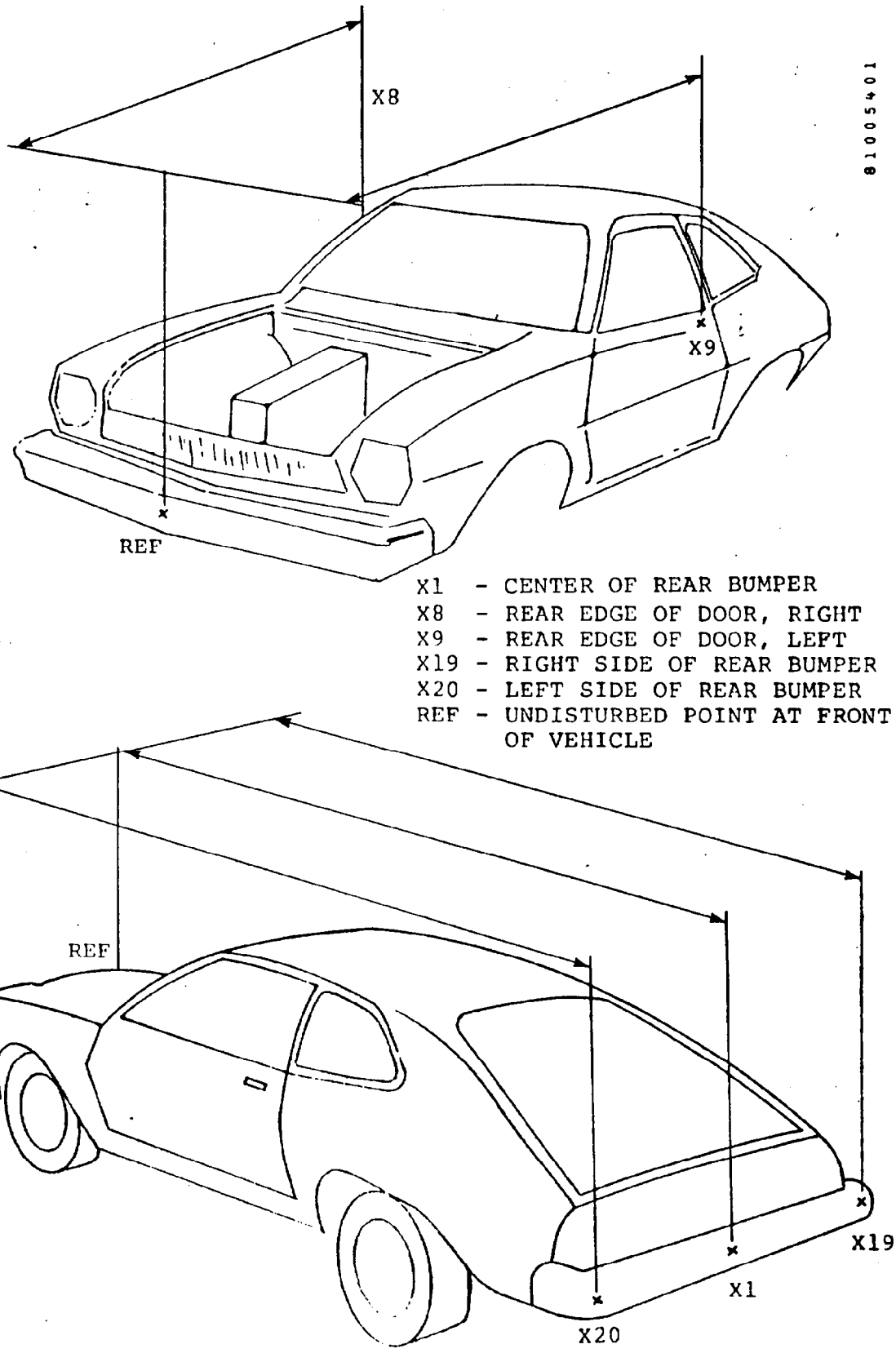


Figure 2. Dimensional Measurements for FMVSS 301-75 Rear Impacts Conducted After April 1977.

METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
	LENGTH			
in	inches	2.5	centimeters	cm
ft	feet	30	centimeters	cm
yd	yards	0.9	meters	m
mi	miles	1.6	kilometers	km
	AREA			
in^2	square inches	6.5	square centimeters	cm^2
ft^2	square feet	0.09	square meters	m^2
yd^2	square yards	0.8	square meters	m^2
mi^2	square miles	2.6	square kilometers	km^2
	acres	0.4	hectares	ha
	MASS (weight)			
oz	ounces	28	grams	g
lb	pounds	0.45	kilograms	kg
	short tons (2000 lb)	0.9	metric ton	t
	VOLUME			
tsp	teaspoons	5	milliliters	mL
Tbsp	tablespoons	15	milliliters	mL
in^3	cubic inches	16	milliliters	mL
fl oz	fluid ounces	30	milliliters	mL
c	cups	0.24	liters	L
pt	pints	0.47	liters	L
qt	quarts	0.95	liters	L
gal	gallons	3.8	liters	L
ft^3	cubic feet	0.03	cubic meters	m^3
yd^3	cubic yards	0.76	cubic meters	m^3
	TEMPERATURE (exact)			
°F	degrees Fahrenheit	5/9 (after subtracting 32)	degrees Celsius	°C

Approximate Conversions from Metric Measures

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

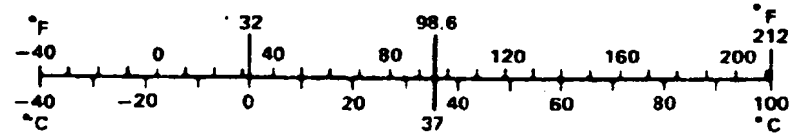


TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

This test report was mislabeled. The correct test number is 116.

179

SUMMARY OF TEST CONDITIONS
1978 Buick Regal Two-Door Hardtop, NHTSA 780110

TEST VEHICLE IDENTIFICATION

Manufacturer: General Motors Corporation
Make/Model: Buick Regal
Body Style: Two-Door Hardtop Model Year: 1978
VIN: 4J47U8Z114120 ; Build Date: 12/77
NHTSA No.: 780110 ; Color: Silver
Engine Data: 8 cylinders; 305 c.i.d.
Transmission Data: - speed
☐ Manual ☒ Automatic
Major Options: Power brakes, tinted glass, radio, power steering, air conditioning

TEST CONDITIONS

Date of Test: April 6, 1978 ; Time of Test: 1402
Ambient Temperature 75 °F at impact area

TEST VEHICLE WEIGHT (data taken from tire pressure placard)

Vehicle Capacity Weight: 1060 lb
Designated Seating Capacity: Front 3
Rear 3
Total 6

GVWR (taken from Certification Label): 4544 lb
GAWR Front: 2293 lb
GAWR Rear: 2251 lb

Vehicle Delivered Weight (fluids to capacity)
Front: 1966 lb
Rear: 1370 lb
Total: 3336 lb

Calculated Vehicle Test Weight: 3824 lb

Actual Vehicle Test Weight
Front: 2094 lb
Rear: 1726 lb
Total: 3820 lb

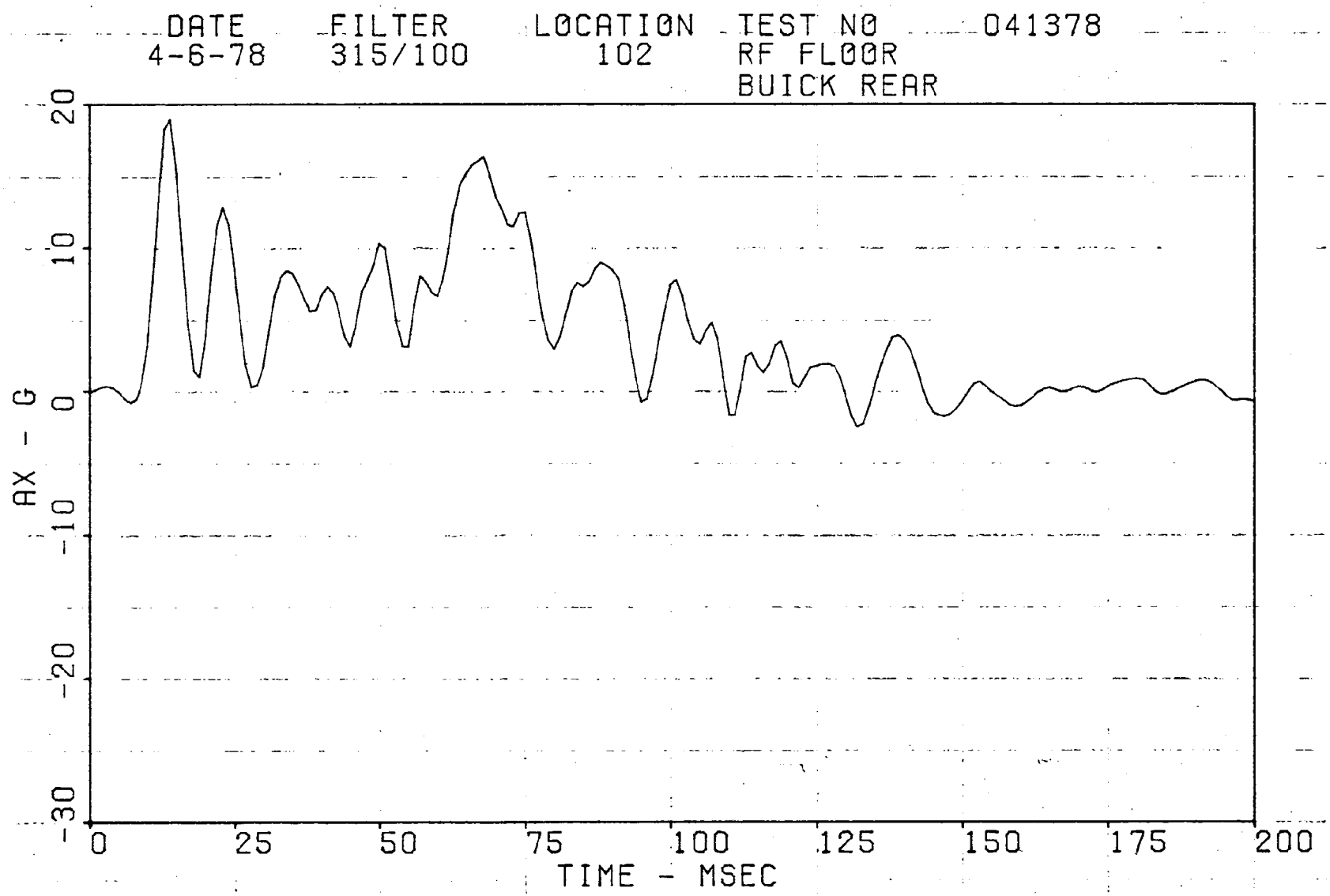
REMARKS:

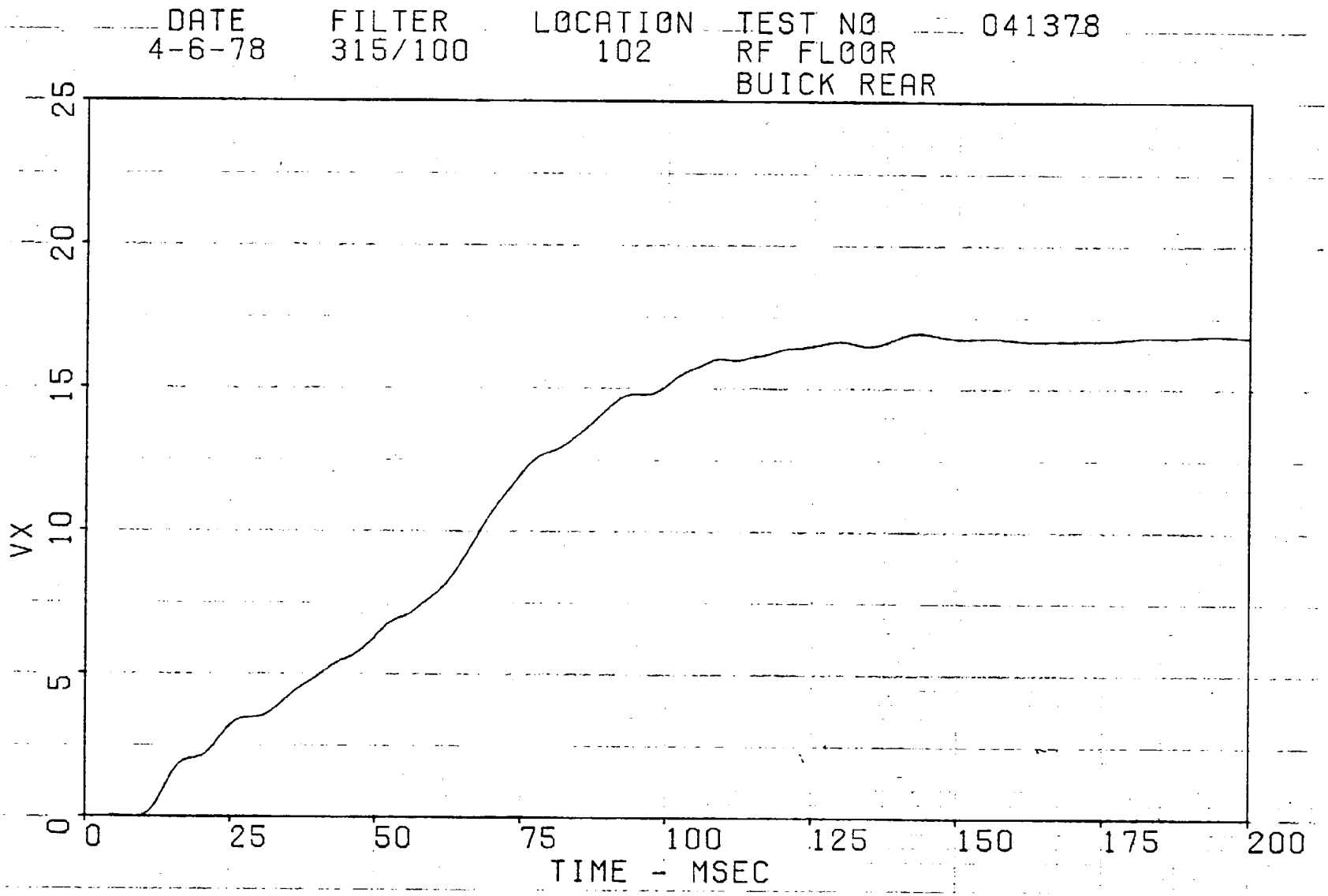
PRE- AND POST-TEST MEASUREMENT DATA SHEET

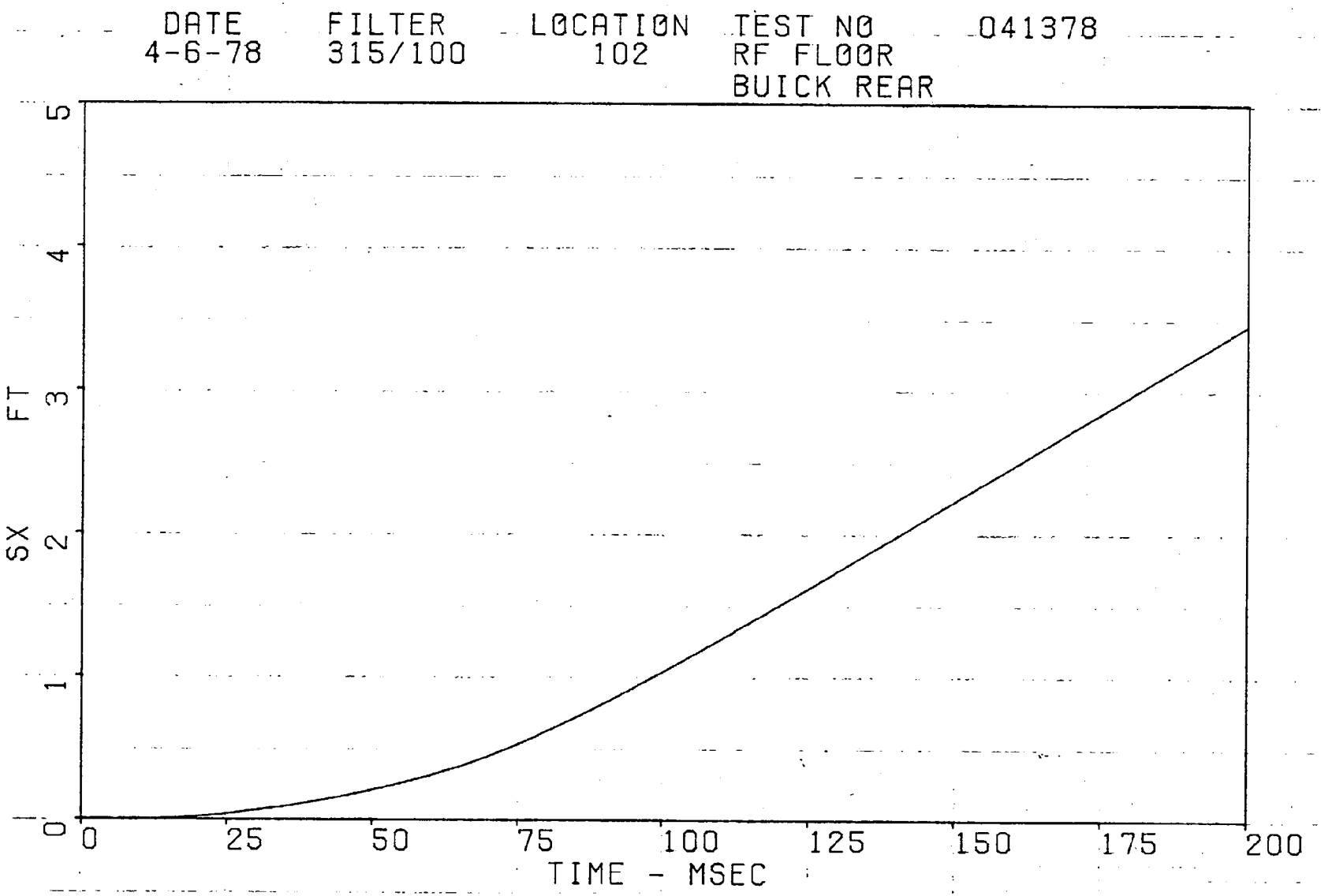
VEHICLE: 1978 Buick Regal

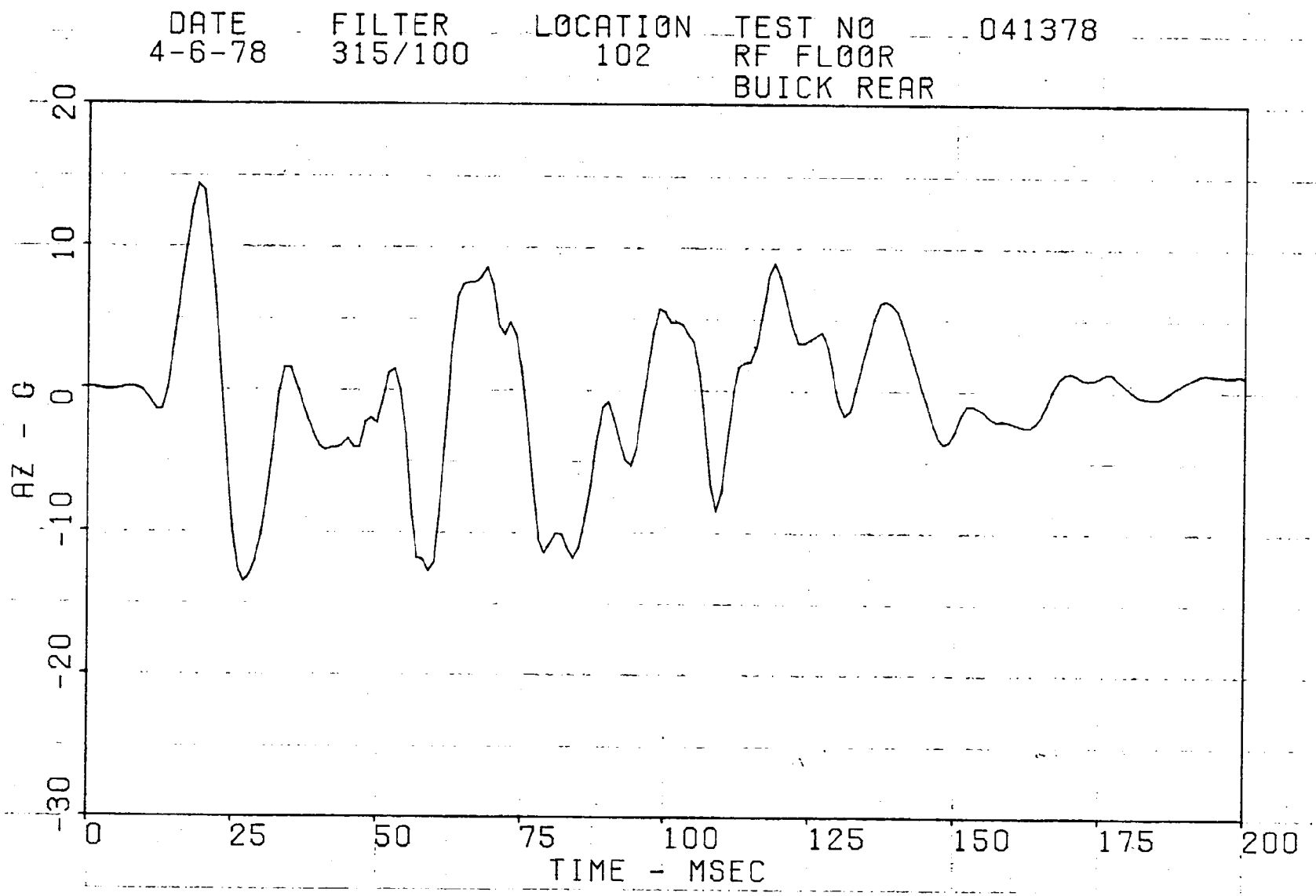
TYPE OF IMPACT: Rear

Measurement Point	Distance to Datum Reference (in.)	
	Pre-test	Post-test
X1	198.8	181.0
X8	120.0	120.0
X9	119.5	119.3
X19	197.5	180.5
X20	197.5	182.5


DATE
4-6-78
FILTER
315/100
LOCATION
102
TEST NO
041378
RF FLOOR
BUICK REAR
AX - G
20
10
0
-10
-20
-30
0
25
50
75
100
125
150
175
200
TIME - MSEC


DATE
4-6-78
FILTER
315/100
LOCATION
102
TEST NO
041378
RF FLOOR
BUICK REAR
VX
0
5
10
15
20
25
0
25
50
75
100
125
150
175
200
TIME - MSEC


DATE
4-6-78
FILTER
315/100
LOCATION
102
TEST NO
041378
RF FLOOR
BUICK REAR
SX FT
0
1
2
3
4
5
0
25
50
75
100
125
150
175
200
TIME - MSEC


DATE
4-6-78
FILTER
315/100
LOCATION
102
TEST NO
041378
RF FLOOR
BUICK REAR
AZ - G
20
10
0
-10
-20
-30
0
25
50
75
100
125
150
175
200
TIME - MSEC