

V3040

REPORT NUMBER: SNCAP-CAL-99-03

**NEW CAR ASSESSMENT PROGRAM
SIDE IMPACT TEST**

GENERAL MOTORS CORP.
1999 PONTIAC GRAND AM
4-DOOR SEDAN

NHTSA NUMBER: MX0110

CALSPAN TEST NUMBER: 8506-3

CALSPAN CORPORATION
TRANSPORTATION SCIENCES CENTER
P.O. BOX 400
BUFFALO, NEW YORK 14225



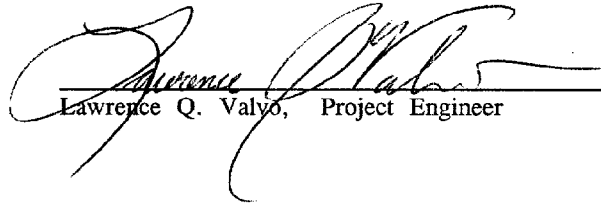
January 26, 1999

FINAL REPORT

U. S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Safety Performance Standards
Office of Crashworthiness Standards
Mail Code: NPS-10
400 Seventh Street, SW, Room No. 5313
Washington, DC 20590

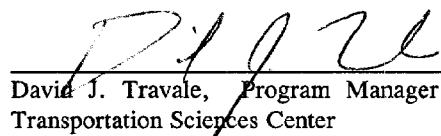
This Final Test Report was prepared for the U.S. Department of Transportation, National Highway Traffic Safety Administration, under Contract No. DTNH22-98-C-02001. This document is disseminated under the sponsorship of the U.S. Department of Transportation in the interest of information exchange. The United States Government assumes no liability for its contents or use thereof.

Prepared By:



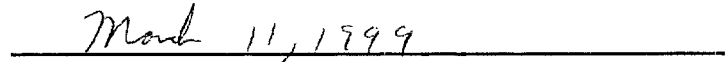
Lawrence Q. Valvo, Project Engineer

Approved By:



David J. Travale, Program Manager
Transportation Sciences Center

Approval Date:



March 11, 1999

FINAL REPORT ACCEPTANCE BY:

Accepted By:

Acceptance Date:

TECHNICAL REPORT STANDARD TITLE PAGE

1. Report No. SNCAP-CAL-99-03		2. Government Accession No.		3. Recipient's Catalog No.																															
4. Title and Subtitle Final Report of new Car Assessment Program Side Impact Testing of a 1999 Pontiac Grand Am 4-Door Sedan NHTSA No.: MX0110				5. Report Date January 26, 1999																															
				6. Performing Organization Code CAL																															
7. Author(s) Lawrence Q. Valvo, Project Engineer David J. Travale, Program Manager				8. Performing Organization Report No. 8506-3																															
9. Performing Organization Name and Address Calspan Transportation Sciences Center P.O. Box 400 Buffalo, New York 14225				10. Work Unit No.																															
				11. Contract or Grant No. DTNH22-98-C-02001																															
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Office of Crashworthiness Standards Mail Code: NPS-10 400 Seventh, SW, Room 5313 Washington, D.C. 20590				13. Type of Report and Period Covered Final Report January 1998 - February 1998																															
				14. Sponsoring Agency Code NPS-10																															
15. Supplementary Notes																																			
16. Abstract A 55/28 kph 90° Impact Moving Deformable Barrier NCAP Side Impact Test Test was conducted on the subject 1999 Pontiac Grand Am 4-Door Sedan in accordance with the specifications of the Office of Crashworthiness Standards Test Procedure for the generation of consumer information on vehicle side crash protection. This test was conducted at the Calspan Corporation Crash Test Facility in Buffalo, New York, on January 26, 1999. The impact velocity of the Moving Deformable Barrier (MDB) was 62.1 kph, and the ambient temperature at the struck (driver's) side of the target vehicle at the time of impact was 22.2 °C. The target vehicle post-test maximum crush was 405 mm at level 2. The test or target vehicle's performance is given below: <table border="0"> <thead> <tr> <th></th> <th align="center"><u>Front SID</u></th> <th></th> <th align="center"><u>Rear SID</u></th> <th></th> </tr> </thead> <tbody> <tr> <td>Left Upper Rib Acceleration:</td> <td align="center"><u>68</u></td> <td align="center">g's</td> <td align="center"><u>80</u></td> <td align="center">g's</td> </tr> <tr> <td>Left Lower Rib Acceleration:</td> <td align="center"><u>57</u></td> <td align="center">g's</td> <td align="center"><u>82</u></td> <td align="center">g's</td> </tr> <tr> <td>Lower Spine Acceleration:</td> <td align="center"><u>97</u></td> <td align="center">g's</td> <td align="center"><u>94</u></td> <td align="center">g's</td> </tr> <tr> <td>Thoracic Trauma Index (TTI):</td> <td align="center"><u>82</u></td> <td align="center">g's</td> <td align="center"><u>88</u></td> <td align="center">g's</td> </tr> <tr> <td>Pelvis Acceleration (PEV):</td> <td align="center"><u>102</u></td> <td align="center">g's</td> <td align="center"><u>112</u></td> <td align="center">g's</td> </tr> </tbody> </table> The two doors on the struck side of the vehicle did not separate from the body at the hinges or latches and the opposite doors did not open during the side impact event.							<u>Front SID</u>		<u>Rear SID</u>		Left Upper Rib Acceleration:	<u>68</u>	g's	<u>80</u>	g's	Left Lower Rib Acceleration:	<u>57</u>	g's	<u>82</u>	g's	Lower Spine Acceleration:	<u>97</u>	g's	<u>94</u>	g's	Thoracic Trauma Index (TTI):	<u>82</u>	g's	<u>88</u>	g's	Pelvis Acceleration (PEV):	<u>102</u>	g's	<u>112</u>	g's
	<u>Front SID</u>		<u>Rear SID</u>																																
Left Upper Rib Acceleration:	<u>68</u>	g's	<u>80</u>	g's																															
Left Lower Rib Acceleration:	<u>57</u>	g's	<u>82</u>	g's																															
Lower Spine Acceleration:	<u>97</u>	g's	<u>94</u>	g's																															
Thoracic Trauma Index (TTI):	<u>82</u>	g's	<u>88</u>	g's																															
Pelvis Acceleration (PEV):	<u>102</u>	g's	<u>112</u>	g's																															
17. Key Words New Car Assessment Program (NCAP) Side Impact MDB Side Impact Dummy (SID)			18. Distribution Statement Copies of this report are available from: National Highway Traffic Safety Administration Technical Reference Division Room 5108 (NAD-52) 400 Seventh St., S.W. Washington, D.C. 20590 Telephone No. (202) 366-4946 ATTN: Robert Hornicle																																
19. Security Classification of Report UNCLASSIFIED		20. Security Classification of Page UNCLASSIFIED		21. No. of Pages 269																															
22. Price																																			

TABLE OF CONTENTS

<u>Section</u>	<u>Page No.</u>
1 PURPOSE AND TEST PROCEDURE	1-1
2 SUMMARY OF SIDE IMPACT TEST	2-1
3 VEHICLE TEST DATA	3-1
Data Sheet 1 - General Vehicle Test Parameter Data	3-2
Data Sheet 2 - Test Vehicle Summary of Results	3-5
Data Sheet 3 - Moving Deformable Barrier (MDB) Summary	3-6
Data Sheet 4 - Post Test Observations	3-7
4 OCCUPANT AND VEHICLE INFORMATION	4-1
Data Sheet 5 - SID Instrumentation Data	4-2
Data Sheet 6 - Vehicle Pre- And Post Test Measurements	4-3
Data Sheet 7 - SID Longitudinal Clearance Dimensions	4-4
Data Sheet 8 - SID Lateral Clearance Dimensions	4-5
Data Sheet 9 - Vehicle Side Measurements	4-6
Data Sheet 10 - Vehicle Exterior Crush Profiles - All Levels	4-7
Data Sheet 11 - Vehicle Damage Profile Distances	4-13
Data Sheet 12 - Exterior Static Crush For Impactor Face	4-14
Data Sheet 13 - Test Vehicle Accelerometer Locations And Data Summary	4-16
Data Sheet 14 - MDB Accelerometer Locations and Data Summary	4-19
Data Sheet 15 - High Speed Camera Locations and Data	4-20
5 VEHICLE FUEL SYSTEM INTEGRITY	5-1
Data Sheet 16 - FMVSS 301 Fuel System Integrity Data	5-2
Data Sheet 17 - FMVSS 301 Rollover Data	5-3
APPENDIX A PHOTOGRAPHS	A-1
APPENDIX B VEHICLE, MDB AND SID RESPONSE DATA	B-1
APPENDIX C SID CONFIGURATION AND PERFORMANCE VERIFICATION DATA	C-1
APPENDIX D TEST EQUIPMENT LIST AND CALIBRATION INFORMATION	D-1

SECTION 1

PURPOSE AND TEST PROCEDURE

This side impact test is part of the FY99 New Car Assessment Program Side Impact Protection Compliance Test Program sponsored by the National Highway Traffic Safety Administration (NHTSA) under Contract No. DTNH22-98-C-02001. The purpose of this test was to generate comparative side impact performance in a 1999 Pontiac Grand Am 4-Door Sedan. The test was conducted in accordance with the Office of Crashworthiness Standards's Laboratory Test Procedure dated July, 1997.

SECTION 2

SUMMARY OF SIDE IMPACT TEST

A 1999 Pontiac Grand Am 4-Door Sedan was impacted on the left or driver's side by a Moving Deformable Barrier (MDB) which was moving forward in a 27° crabbed position to the monorail at a velocity of 62.1 kph (38.6 mph). The target vehicle was stationary and was positioned at an angle of 63° to the line of forward motion. The side impact test was conducted by the Calspan Corporation Transportation Sciences Center in Buffalo, New York on January 26, 1999. Pre- and post-test photographs of the test vehicle, the moving deformable barrier (MDB), and the side impact dummies (SIDs) are included in appendix A.

Two restrained Side Impact Dummies (SIDs) were placed in the driver (Pos. #1) and left rear (Pos. #4) designated seating positions according to the instructions specified in the OCWS Side Impact Laboratory Test Procedure which is dated July, 1997. The side impact test was documented by one real-time camera and 9 high-speed cameras. Camera locations and other pertinent camera information are included in this report.

The SIDs were instrumented with the following accelerometers:

1. Left Upper Rib (LUR) uniaxial and redundant accelerometer (Y-direction)
2. Left Lower Rib (LLR) uniaxial and redundant accelerometer (Y-direction)
3. Lower Thoracic Spine (T₁₂) uniaxial and redundant accelerometer (Y-direction)
4. Pelvic (PEV) section uniaxial and redundant accelerometer (Y-direction)

A summary of the side impact dummy (SID) configuration and verification test data can be found in Appendix C. A total of 46 channels of data were recorded. Appendix B contains the vehicle, MDB and dummy response data traces.

The following table summarizes the results of the test.

Injury Criteria	Front SID	Rear SID
TTI (g)	82	88
PEV (g)	102	112

SECTION 3

SUMMARY OF TEST RESULTS

DATA SHEET 1

GENERAL TEST AND VEHICLE PARAMETER DATA

TEST VEHICLE INFORMATION:

Year/Make/Model/Body Style: 1999 Pontiac Grand Am 4-Door Sedan
 Vehicle Body Color: Green-Blue VIN: 1G2NE52TXXC540433
 Vehicle NHTSA No.: MX0110 Month & Year of Manufacture: 11/98
 Engine Data: 4 Cylinders; - CID; 2.4 Liters; - cc
 Engine Placement: - Longitudinal; or X Lateral
 Transmission: 4 Speed; - Manual; X Automatic; X Overdrive
 Final Drive: - Rear Wheel Drive; X Front Wheel Drive; - Four Wheel
 Odometer Reading 43 km
 Options: X A/C; X Power Steering; X Pwr.Brakes; X Pwr. Windows

DATA FROM TIRE PLACARD

Tire Pressure* (at capacity); 210 kPa FRONT
210 kPa REAR

Recommended Tire Size: P215/60 R15
 Tires on Test Vehicle: P215/60 R15 ; Manufacturer: BFGoodrich

Vehicle Capacity Data:
 Number of Occupants: 2 Front; 3 Rear; - 3rd Seat; 5 Total
 Type of Front Seats: X Bucket; - Bench; - Split Bench
 Type of Front Seat Back: - Fixed; X Adjustable with X Lever or - Knob
 Vehicle Max Capacity Loading = 408.0 kg (A)
 No. of Occupants x 68.04 kg. = 340.2 kg (B)
 Vehicle Cargo Capacity = 67.8 kg (A-B)

TEST VEHICLE DELIVERED WEIGHT WITH MAXIMUM FLUIDS:

Left Front	=	<u>451.0</u> kg	Left Rear	=	<u>253.5</u> kg
Right Front	=	<u>443.5</u> kg	Right Rear	=	<u>253.0</u> kg
TOTAL FRONT	=	<u>894.5</u> kg	TOTAL REAR	=	<u>506.5</u> kg
% of Total Weight	=	<u>63.8</u> %	% of Total Weight	=	<u>36.2</u> %
TOTAL WEIGHT	=	<u>1401.0</u> kg			

* Tire pressure used in test.

DATA SHEET 1 (continued)

GENERAL TEST VEHICLE PARAMETER DATA

Vehicle: 1999 Pontiac Grand Am

NHTSA No. MX0110

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Test Vehicle Delivered Weight with Max. Fluids	=	<u>1401.0</u>	kg (A)
Maximum Cargo Carrying Capacity of Test Vehicle	=	<u>67.8</u>	kg (B)
Weight of instrumented Side Impact Dummies (1 or 2 X <u>81.2</u> kg)	=	<u>162.4</u>	kg (C)
TEST VEHICLE TARGET WEIGHT:	=	<u>1631.2</u>	kg (A+B+C)

FULLY LOADED TEST VEHICLE (UDYW + 1 or 2 SID(s) + CARGO):

Left Front	=	<u>501.0</u>	kg	Left Rear	=	<u>369.5</u>	kg
Right Front	=	<u>442.0</u>	kg	Right Rear	=	<u>325.5</u>	kg
TOTAL FRONT	=	<u>943.0</u>	kg	TOTAL REAR	=	<u>695.0</u>	kg
% of Total Weight	=	<u>57.6</u>	%	% of Total Weight	=	<u>42.4</u>	%
TOTAL TEST WEIGHT	=	<u>1638.0</u>	kg				

AS TESTED WEIGHT OF TEST VEHICLE (1 OR 2 SID(s) + CARGO + EQUIPMENT & INSTRUMENTATION):

Left Front	=	<u>499.0</u>	kg	Left Rear	=	<u>359.0</u>	kg
Right Front	=	<u>446.5</u>	kg	Right Rear	=	<u>320.0</u>	kg
TOTAL FRONT	=	<u>945.5</u>	kg	TOTAL REAR	=	<u>679.0</u>	kg
% of Total Weight	=	<u>58.2</u>	%	% of Total Weight	=	<u>41.8</u>	%
TOTAL TEST WEIGHT	=	<u>1624.5</u>	kg				

TEST VEHICLE ATTITUDE (all dimensions in millimeters):

AS DELIVERED:

Left Front	<u>694</u>	Right Front	<u>689</u>	Left Rear	<u>703</u>	Right Rear	<u>708</u>
------------	------------	-------------	------------	-----------	------------	------------	------------

FULLY LOADED:

Left Front	<u>672</u>	Right Front	<u>685</u>	Left Rear	<u>650</u>	Right Rear	<u>666</u>
------------	------------	-------------	------------	-----------	------------	------------	------------

READY FOR TEST:

Left Front	<u>674</u>	Right Front	<u>685</u>	Left Rear	<u>652</u>	Right Rear	<u>669</u>
------------	------------	-------------	------------	-----------	------------	------------	------------

Test Vehicle Wheelbase: 2723 millimeters

C.G. = 1138 millimeters rearward of front wheel centerline

TOTAL VEHICLE LENGTH:

Right Side	=	<u>4616</u>	millimeters
Left Side	=	<u>4616</u>	millimeters
Centerline	=	<u>4720</u>	millimeters

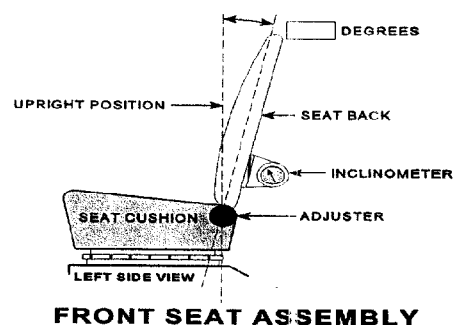
DATA SHEET 1 (continued)

GENERAL TEST VEHICLE PARAMETER DATA

Vehicle: 1999 Pontiac Grand Am

NHTSA No. MX0110

Nominal Design Riding Position for adjustable driver and passenger seat backs. Please describe how to position the inclinometer to measure the seat back angle. Include description of the location of the adjustment latch detent, if applicable.



FRONT SEAT CUSHION PLACEMENT: Mid-position

Total Length of Adjustment Travel: 240 millimeters

Total Number of Adjustment Positions or Detents: 25

FRONT SEAT BACK ADJUSTMENT POSITION: 27 degrees measured on seat back frame with ATD in seat.

Seat Back Torso Angle: 27 degrees

SECOND POSITION SEAT:

Total Length of Fore/Aft Adjustment Travel: 0 millimeters

Seat Back Adjustment Position: Fixed

ADJUSTABLE STEERING COLUMN POSITION: Mid-position

WINDOW POSITIONS: Left Front: Closed Left Rear: Closed

Right Front: Open Right Rear: Open

Note: Windows will be in closed position on struck side of test vehicle and in open position on opposite side.

AMOUNT OF STODDARD SOLVENT IN FUEL TANK:

56.8 liters (Fuel Tank Usable Capacity)

52.6 liters used for test (92%-94% of Fuel Tank Usable Capacity)

LOCATION OF IMPACT POINT ON TEST VEHICLE SIDE TO BE IMPACTED:

Wheelbase = 2723 millimeters

Impact Point is 422 millimeters rearward of front axle centerline

(which is 940 millimeters forward of the wheelbase midpoint)

Actual Impact Point is 412 millimeters rearward of front axle centerline

DATA SHEET 2

TEST VEHICLE SUMMARY OF RESULTS

VEHICLE IDENTIFICATION:

Vehicle Year/Make/Model: 1999 Pontiac Grand Am

Body Style: 4-Door Sedan

VIN: 1G2NE52TXXC540433

NHTSA No.: MX0110

Test Date: January 26, 1999

Overall Length = 4720 millimeters; Overall Width = 1757 millimeters

VEHICLE TEST WEIGHT (Pre-Test):

Left Front = 499.0 kg Left Rear = 359.0 kg

Right Front = 446.5 kg Right Rear = 320.0 kg

TOTAL FRONT = 945.5 kg TOTAL REAR = 679.0 kg

TOTAL VEHICLE WEIGHT 1624.5 kg

Wheelbase = 2723 millimeters

Longitudinal C.G. from Center of Front Axle = 1138 millimeters

Impact Angle with Respect to Impactor = 90 degrees

ACTUAL IMPACT POINT

Actual Impact Point is 10 mm forward of nominal impact ref. line (Lateral)

Actual Impact Point is 4 mm above nominal impact point (Vertical)

MAXIMUM EXTERIOR STATIC CRUSH:

1. LEVEL 1 (221 mm above ground) = 224 millimeters

2. LEVEL 2 (464 mm above ground) = 405 millimeters

3. LEVEL 3 (602 mm above ground) = 370 millimeters

4. LEVEL 4 (842 mm above ground) = 381 millimeters

5. LEVEL 5 (1309 mm above ground) = 40 millimeters

Maximum Post-Test Intrusion = 405 millimeters

OCCUPANTS:

Front Passenger:

Rear Passenger:

Dummy Identification 268

015

Restraints Used 3-point active seat belt

3-point active seat belt

INSTRUMENTATION:

Number of Vehicle Data Channels: = 25

Number of Cameras: Onboard = 3

Offboard = 6

TOTAL = 9

DATA SHEET 3

MOVING DEFORMABLE BARRIER (MDB) SUMMARY

Vehicle: 1999 Pontiac Grand Am

NHTSA No. MX0110

MDB FACE MANUFACTURER AND SERIAL NUMBER:

130A1098-3; 058A1198; 3991-01

POSITION OF IMPACT (MDB) ON MONORAIL:

Crabbed 27° to left

MDB DETAILS:

Overall Width of Framework Carriage	=	<u>1250</u>	millimeters
Overall Length of MDB (incl. honeycomb impact face)	=	<u>4120</u>	millimeters
Wheelbase of Framework Carriage	=	<u>2590</u>	millimeters
Tread of Framework Carriage (Front & Rear)	=	<u>1875</u>	millimeters
C.G. Location Rearward of Front Axle	=	<u>1104</u>	millimeters

MDB WEIGHT:

Left Front	=	<u>409.5</u>	kg	Left Rear	=	<u>281.5</u>	kg
Right Front	=	<u>372.5</u>	kg	Right Rear	=	<u>299.0</u>	kg
TOTAL FRONT	=	<u>782.0</u>	kg	TOTAL REAR	=	<u>580.5</u>	kg
TOTAL MDB WEIGHT	=	<u>1362.5</u>	kg				
Impact Angle (MDB C/L to Target Vehicle C/L)	=	<u>90</u>	degrees				
Impact Speed	=	<u>62.1</u>	kph				

MAXIMUM STATIC CRUSH OF HONEYCOMB IMPACT FACE:

1. Row A at Center of Bumper Level	=	<u>114</u>	millimeters
2. Row B at Top of Bumper Level	=	<u>85</u>	millimeters
3. Row C at Mid Level	=	<u>134</u>	millimeters
4. Row D at Top of Stack Level	=	<u>156</u>	millimeters

INSTRUMENTATION:

Number of MDB Data Channels	=	<u>5</u>
-----------------------------	---	----------

DATA SHEET 4

POST-TEST OBSERVATIONS

Vehicle: 1999 Pontiac Grand Am

NHTSA No. MX0110

VISIBLE DUMMY CONTACT POINTS:

	<u>LEFT FRONT SID</u>	<u>LEFT REAR SID</u>
Head:	<u>Left side of forehead to top of door trim 180 mm forward of the B-pillar</u>	<u>Left side of head to C-pillar</u>
Upper Torso:	<u>Upper torso to upper rear portion of door trim</u>	<u>Upper torso to rear portion of door trim</u>
Lower Torso:	<u>Lower torso to rear of arm rest; Pelvis to door trim below arm rest</u>	<u>Lower torso to mid-rear portion of door trim above arm rest</u>
Left Knee:	<u>Left knee to door trim between speaker and arm rest</u>	<u>Left knee to front portion of door trim below arm rest</u>
Right Knee:	<u>Right knee to left knee</u>	<u>Right knee to left knee</u>

DOOR OPENING:

	<u>LEFT DOOR</u>	<u>RIGHT DOOR</u>
Front:	<u>Closed / Inoperable</u>	<u>Closed / Operable</u>
Rear:	<u>Closed / Inoperable</u>	<u>Closed / Operable</u>

MDB DISTANCE FROM TARGET IMPACT POINT:

<u>Vertical: 4 mm above</u>
<u>Horizontal: 10 mm forward</u>

ARM REST LOCATIONS:

Front:	<u>235 mm below bottom of window opening</u>
Rear:	<u>285 mm below bottom of window opening</u>

SEAT MOVEMENT:

Front:	<u>Left front seat back was pushed inboard against the center console and right front seat back</u>
Rear:	<u>Left seat cushion bolster was pushed upward and inboard by the left rear door</u>

GLAZING DAMAGE:

Windshield:	<u>Left side of windshield cracked during the impact</u>
Window:	<u>Left side windows shattered at impact</u>

PILLAR PERFORMANCE:

No visible tears or separations

SILL SEPARATION:

None

AIRBAG DEPLOYMENT STATUS:

	<u>DRIVER</u>	<u>FRONT PASSENGER</u>	<u>REAR PASSENGER</u>
<u>FRONT</u>	<u>No</u>	<u>No</u>	<u>N/A</u>
<u>SIDE</u>	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>

OTHER NOTABLE IMPACT EFFECTS:

None

SECTION 4

OCCUPANT AND VEHICLE INFORMATION

DATA SHEET 5

SID INSTRUMENTATION DATA

Vehicle: 1999 Pontiac Grand Am

NHTSA No. MX0110

	Front Dummy ID# 268				Rear Dummy ID# 015			
	Pos. Direction		Neg. Direction		Pos. Direction		Neg. Direction	
	Max (g)	Time (msec)	Max (g)	Time (msec)	Max (g)	Time (msec)	Max (g)	Time (msec)
RIB ACCELERATIONS:								
Upper Rib Lateral . Y	68.0	25.7	-40.2	65.6	80.0	39.4	-6.2	125.0
Upper Rib Lateral . Y(R)	73.0	25.6	-39.8	66.2	85.9	39.4	-8.4	56.2
Lower Rib Lateral . Y	57.1	25.0	-39.1	65.7	81.8	37.5	-22.9	73.1
Lower Rib Lateral . Y(R)	51.3	36.3	-39.6	65.0	89.2	37.5	-23.0	73.1
SPINE ACCELERATIONS:								
Lower Lateral Y	96.7	29.3	-35.9	58.1	93.7	40.0	-36.0	63.2
Lower Lateral Y(R)	97.7	29.3	-35.8	58.1	95.4	40.0	-35.8	63.2
PELVIC ACCELERATIONS:								
Lateral Y	101.8	27.5	-18.6	52.5	111.9	36.3	-24.6	67.5
Lateral Y(R)	102.1	27.5	-18.7	52.5	108.5	36.3	-23.7	67.5

REFERENCE: Positive Direction - Longitudinal (X) = forward
 Lateral (Y) = to right
 Vertical (Z) = up
 Negative Direction - Longitudinal (X) = rearward
 Lateral (Y) = to left
 Vertical (Z) = down

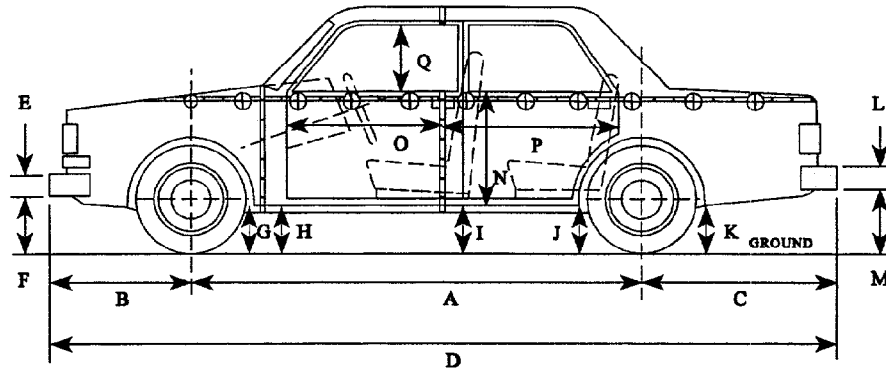
Note: Above data has been FIR filtered, Y(R) denotes redundant Y direction accelerometer.

DATA SHEET 6

VEHICLE SIDE MEASUREMENTS

Vehicle: 1999 Pontiac Grand Am

NHTSA No. MX0110



LEFT SIDE VIEW

NOTE: all dimensions are in millimeters with tolerance of ± 3 mm

	PRE-TEST (as delivered)	PRE-TEST (as tested)	POST-TEST (as tested)	Δ CHANGE
A	2723	-	2641	-82
B	996	-	1044	48
C	1001	-	1000	-1
D	4720	-	4685	-35
E	156	-	156	0
F	390	389	418	29
G	234	212	254	42
H	234	212	246	34
I	242	208	182	-26
J1	220	173	146	-27
J2	243	196	172	-24
K	280	218	238	20
L	380	-	380	0
M	335	275	298	23
N	659	-	567	-92
O	771	-	765	-6
P	1161	-	1029	-132
Q	452	-	429	-23
R	4616	-	4611	-5
S	4616	-	4545	-71
T	1757	-	1455	-302

D = Length at Centerline
T = Width at B-Pillar

E&L = Bumper Thickness
J1 = To Pinch Weld

R = Right Side Length
J2 = To Sill

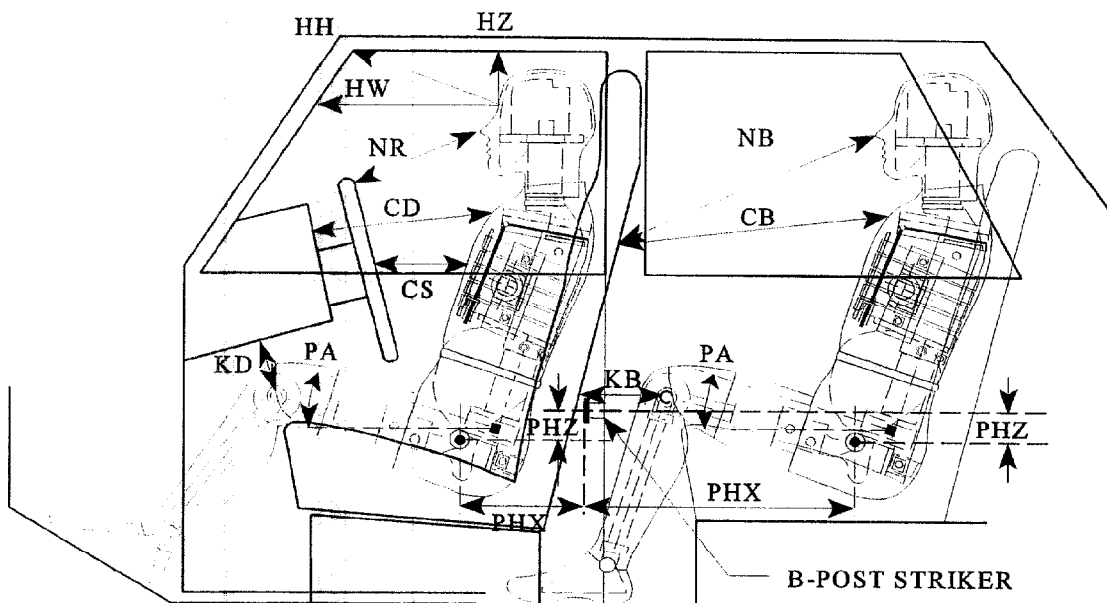
S = Left Side Length

DATA SHEET 7

SID LONGITUDINAL CLEARANCE DIMENSIONS

Vehicle: 1999 Pontiac Grand Am

NHTSA No. MX0110



LEFT SIDE VIEW

NOTE: 2-DOOR VEHICLE SHOWN.
REAR DUMMY PHX & PHZ
MEASUREMENTS FOR A 4-DOOR
VEHICLE WOULD USE THE C-POST
STRIKER AS A REFERENCE POINT

NOTE: All dimensions are in millimeters with tolerance of ± 3 mm

	DRIVER ID# 268	LEFT REAR PASS. ID# 015
HH	321	N/A
HW	542	N/A
HZ	152	120
NR/NB	422	655
CD/CB	526	568
CS	286	N/A
KDL(KDA°)/KBL(KDA°)	165 / (41°)	235 / (40°)
KDR(KBA°)/KBR(KBA°)	164 / (41°)	242 / (41°)
PA°	24.5°	24.1°
PHX	212	258
PHZ	118	288

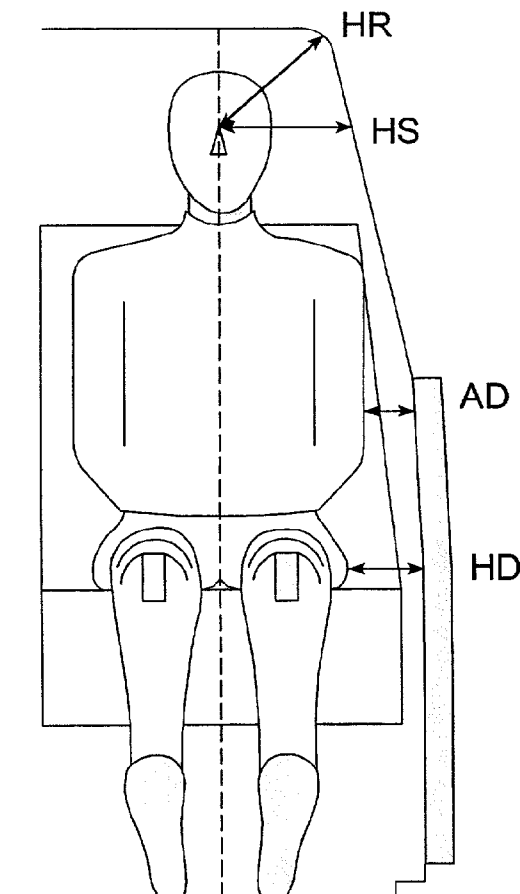
Note: 2-door vehicle shown. Rear dummy PHX & PHZ measurements for 4-door vehicle would use the C-post striker as a reference point.

DATA SHEET 8

SID LATERAL CLEARANCE DIMENSIONS

Vehicle: 1999 Pontiac Grand Am

NHTSA No. MX0110



NOTE: All dimensions are in millimeters with tolerance of ± 3 mm

	DRIVER ID # <u>268</u>		LEFT REAR PASS. ID # <u>015</u>	
HR	185		158	
HS	308		315	
AD*	LOWER: 110	UPPER: 96	LOWER: 117	UPPER: 79
HD	140		144	

* Lower measurement is taken laterally at the center of the lower rib accelerometer height from the SID arm segment to the closest part of the vehicle side.

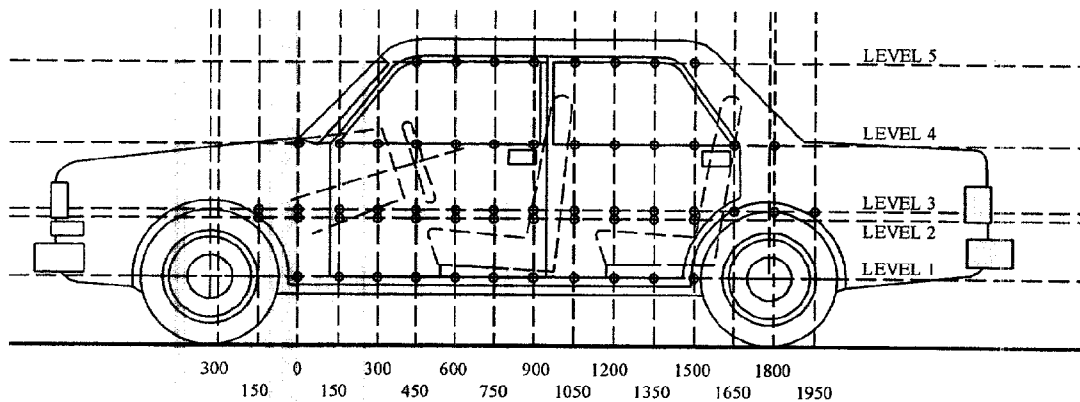
Upper measurement is taken laterally at the center of the upper rib accelerometer height from the SID arm segment to the closest part of the vehicle side.

DATA SHEET 9

VEHICLE SIDE MEASUREMENTS

Vehicle: 1999 Pontiac Grand Am

NHTSA No. MX0110



LEFT SIDE VIEW

NOTE: All measurements are in millimeters (mm)

LEVEL 5 - WINDOW TOP
 LEVEL 4 - WINDOW SILL
 LEVEL 3 - MID-DOOR
 LEVEL 2 - OCCUPANT H-POINT
 LEVEL 1 - AXLE CENTERLINE HEIGHT OR SILL TOP HEIGHT

MEASUREMENTS ARE TAKEN WHEN THE VEHICLE IS IN THE "AS TESTED" CONFIGURATION.

Measurements Along the Vertical 750 mm Line Shown Above:

Level 5 @ Window Top	=	<u>1309</u>	millimeters
Level 4 @ Window Sill	=	<u>842</u>	millimeters
Level 3 @ Mid Door	=	<u>602</u>	millimeters
Level 2 @ Occupant H-Point	=	<u>464</u>	millimeters
Level 1 @ Axle Centerline Height (or Sill Top Height)	=	<u>221</u>	millimeters

DATA SHEET 10

VEHICLE EXTERIOR CRUSH PROFILES - ALL LEVELS

Vehicle: 1999 Pontiac Grand Am

NHTSA No. MX0110

NOTE: All dimensions are in millimeters with a tolerance of ± 3 mm

		DISTANCE IN MILLIMETERS (mm) FROM IMPACT POINT																											
LEVEL	HEIGHT (mm)	-900	-750	-600	-450	-300	-150	0	150	300	450	600	750	900	1050	1200	1350	1500	1650	1800	1950	2100	2250	2400	2550	2700	2850	3000	
LEVEL 1 SIDE SILL	PRE	-	-	-	-	-	-	153	200	204	205	202	200	201	197	192	192	190	188	181	-	-	-	-	-	-	-	-	
	POST	-	-	-	-	-	-	191	283	297	317	334	361	376	399	416	380	312	265	217	-	-	-	-	-	-	-		
	CRUSH	N/A	N/A	N/A	N/A	N/A	N/A	23	83	93	112	132	161	175	202	224	188	122	76	36	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
LEVEL 2 H POINT	PRE	171	-	-	-	-	-	143	146	138	135	132	127	126	124	130	124	128	132	132	121	-	-	-	-	130	144	155	
	POST	98	-	-	-	-	-	396	433	460	476	483	497	513	529	516	512	509	504	413	173	-	-	-	-	123	148	141	
	CRUSH	-73	N/A	N/A	N/A	N/A	N/A	253	287	322	341	351	370	387	405	386	388	381	372	281	52	N/A	N/A	N/A	N/A	-7	4	-14	
LEVEL 3 MID DOOR	PRE	189	153	-	-	-	-	116	150	152	146	146	143	142	137	135	131	129	128	131	119	-	-	-	118	136	147	170	
	POST	130	100	-	-	-	-	131	201	351	388	407	426	451	465	484	505	491	478	470	444	317	-	-	126	145	156	161	
	CRUSH	-59	-53	N/A	N/A	N/A	N/A	15	51	199	233	261	280	308	323	347	370	360	349	342	313	198	N/A	N/A	N/A	8	9	9	-9
LEVEL 4 WINDOW SILL	PRE	-	-	-	-	-	-	239	220	199	194	185	180	173	167	165	162	159	160	157	153	153	158	158	165	177	187	231	
	POST	-	-	-	-	-	-	219	210	305	363	410	431	453	473	491	519	543	532	504	407	295	181	187	182	160	177	193	232
	CRUSH	N/A	N/A	N/A	N/A	N/A	N/A	-20	10	96	184	216	246	273	300	324	354	381	373	344	250	142	28	29	24	-5	0	6	1
LEVEL 5 WINDOW TOP	PRE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	POST	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	CRUSH	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	12	-14	24	40	34	-29	-85	-6	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

DATA SHEET 10 (continued)

VEHICLE EXTERIOR CRUSH PROFILES

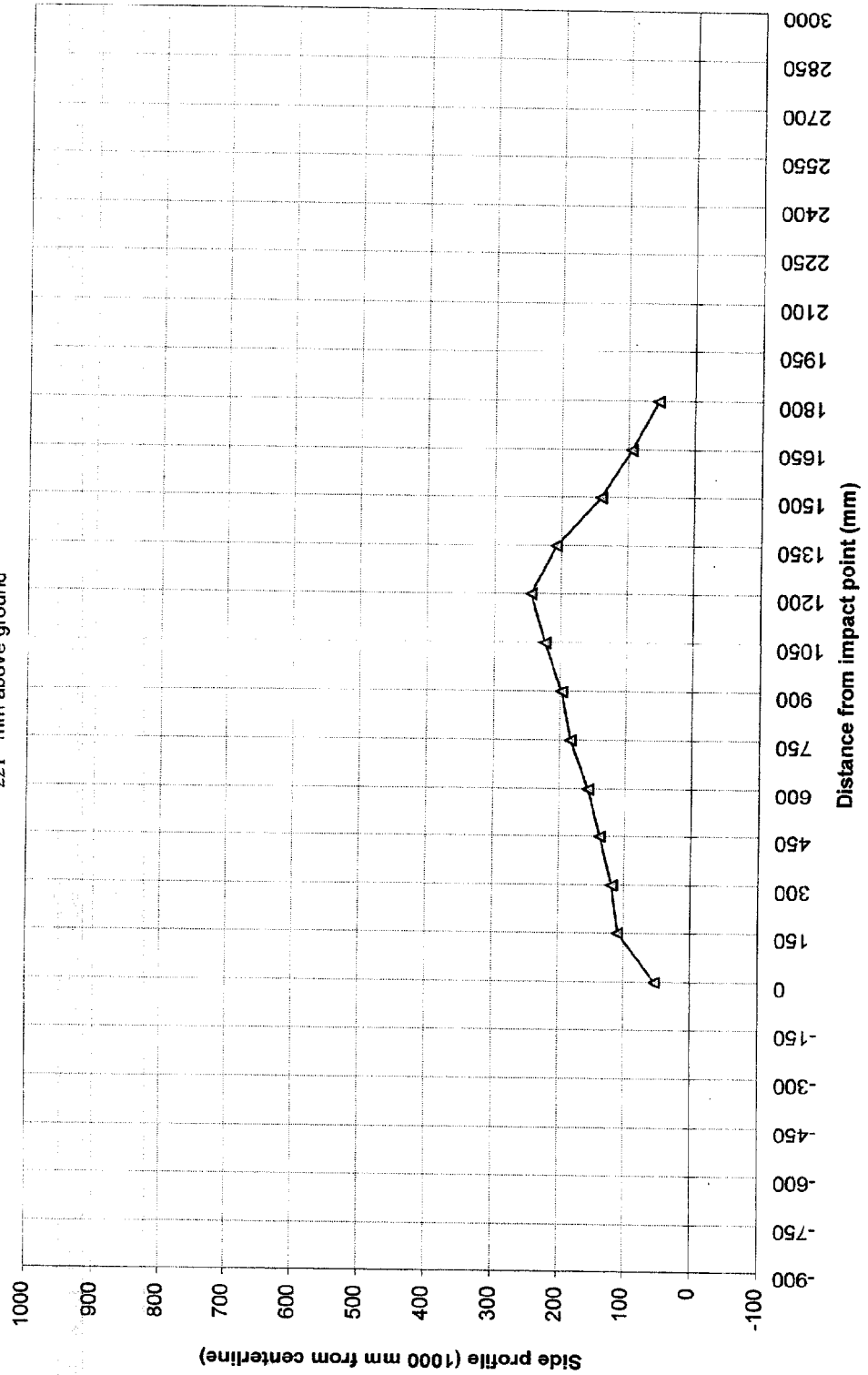
Vehicle: 1999 Pontiac Grand Am

NHTSA No. MX0110

SIDE PROFILE LEVEL 1

221 mm above ground

CRUSH



DATA SHEET 10 (continued)

VEHICLE EXTERIOR CRUSH PROFILES

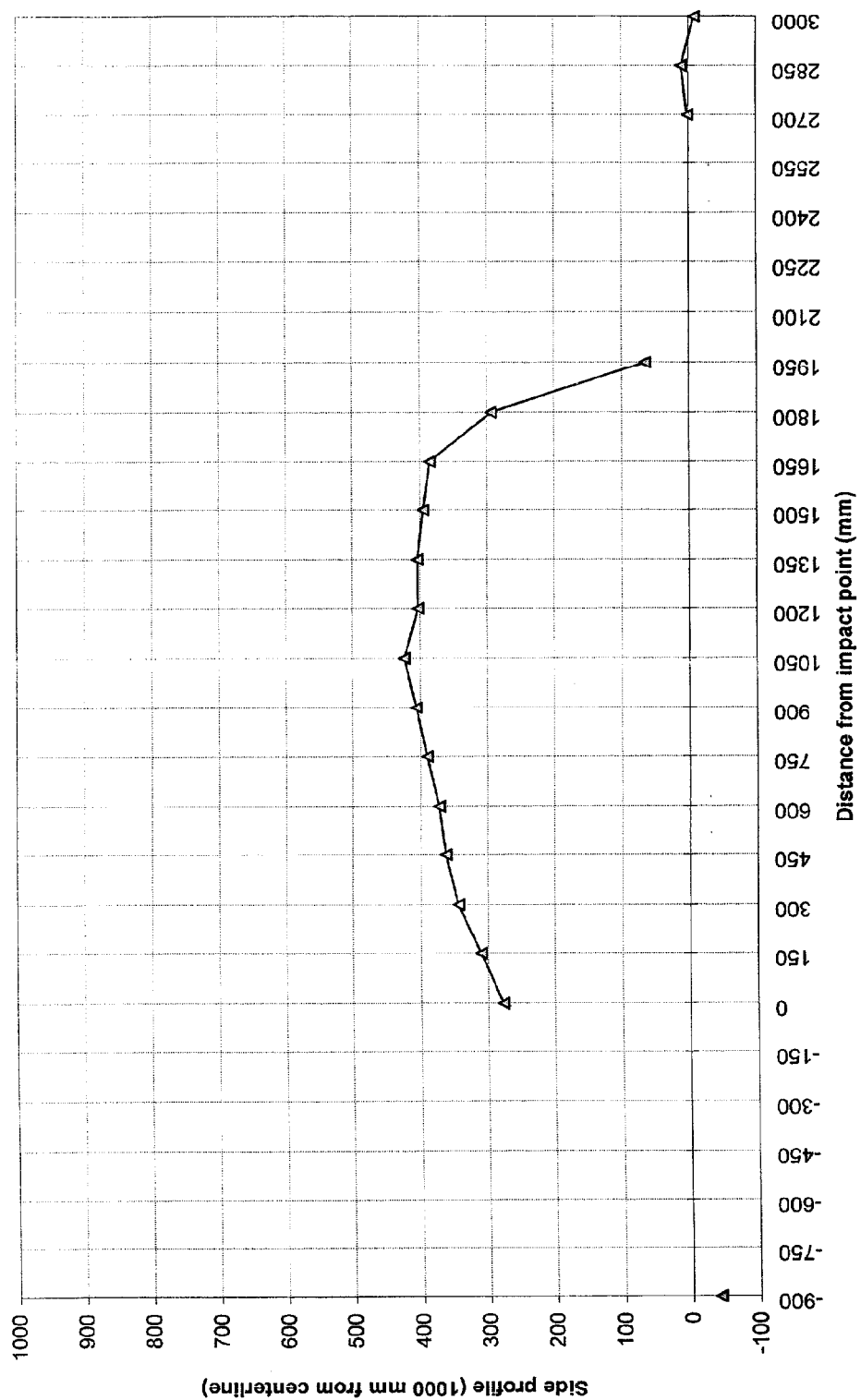
Vehicle: 1999 Pontiac Grand Am

NHTSA No. MX0110

SIDE PROFILE LEVEL 2

464 mm above ground

—▲— CRUSH



DATA SHEET 10 (continued)

VEHICLE EXTERIOR CRUSH PROFILES

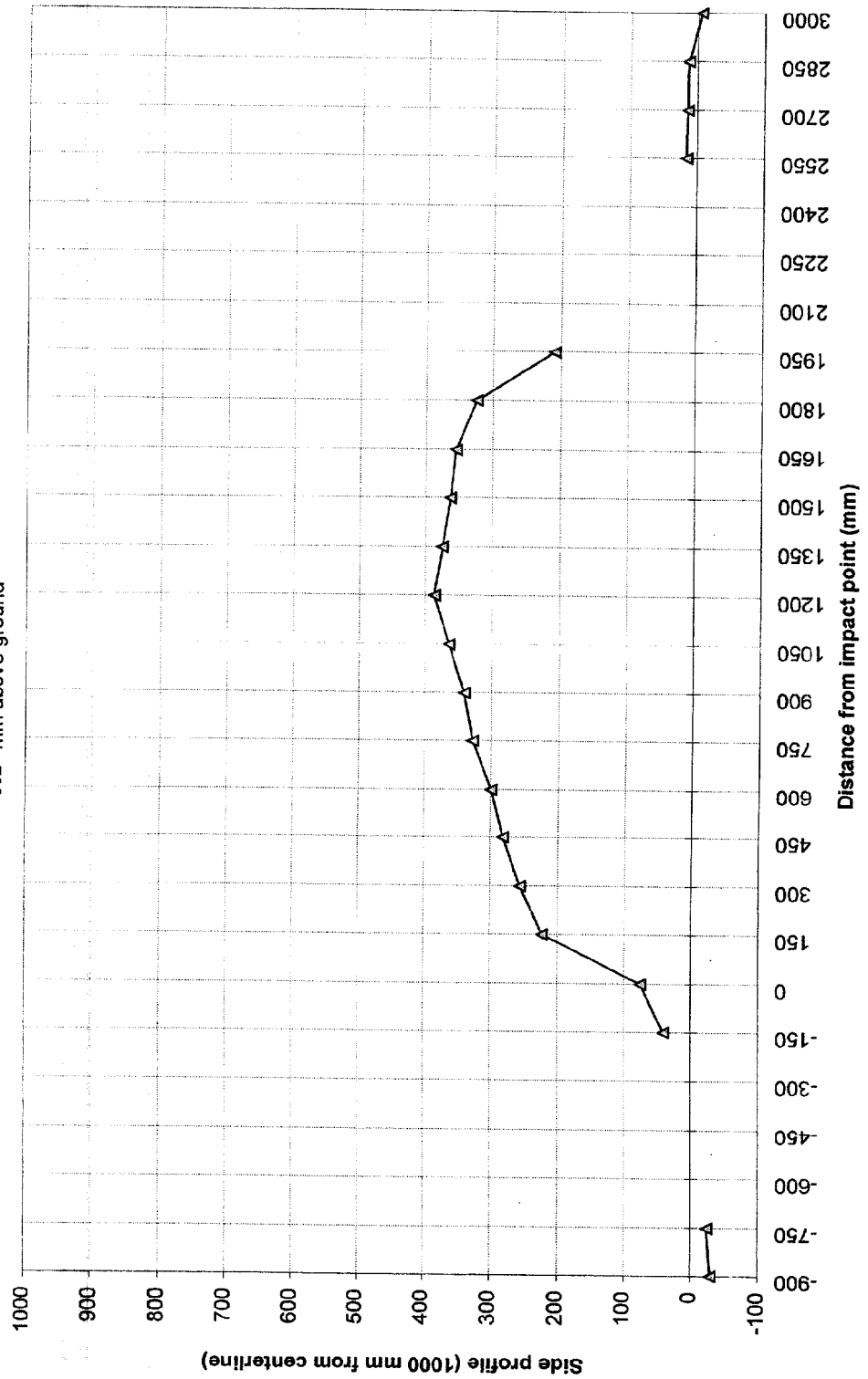
Vehicle: 1999 Pontiac Grand Am

NHTSA No. MX0110

SIDE PROFILE LEVEL 3

602 mm above ground

—△— CRUSH



DATA SHEET 10 (continued)

VEHICLE EXTERIOR CRUSH PROFILES

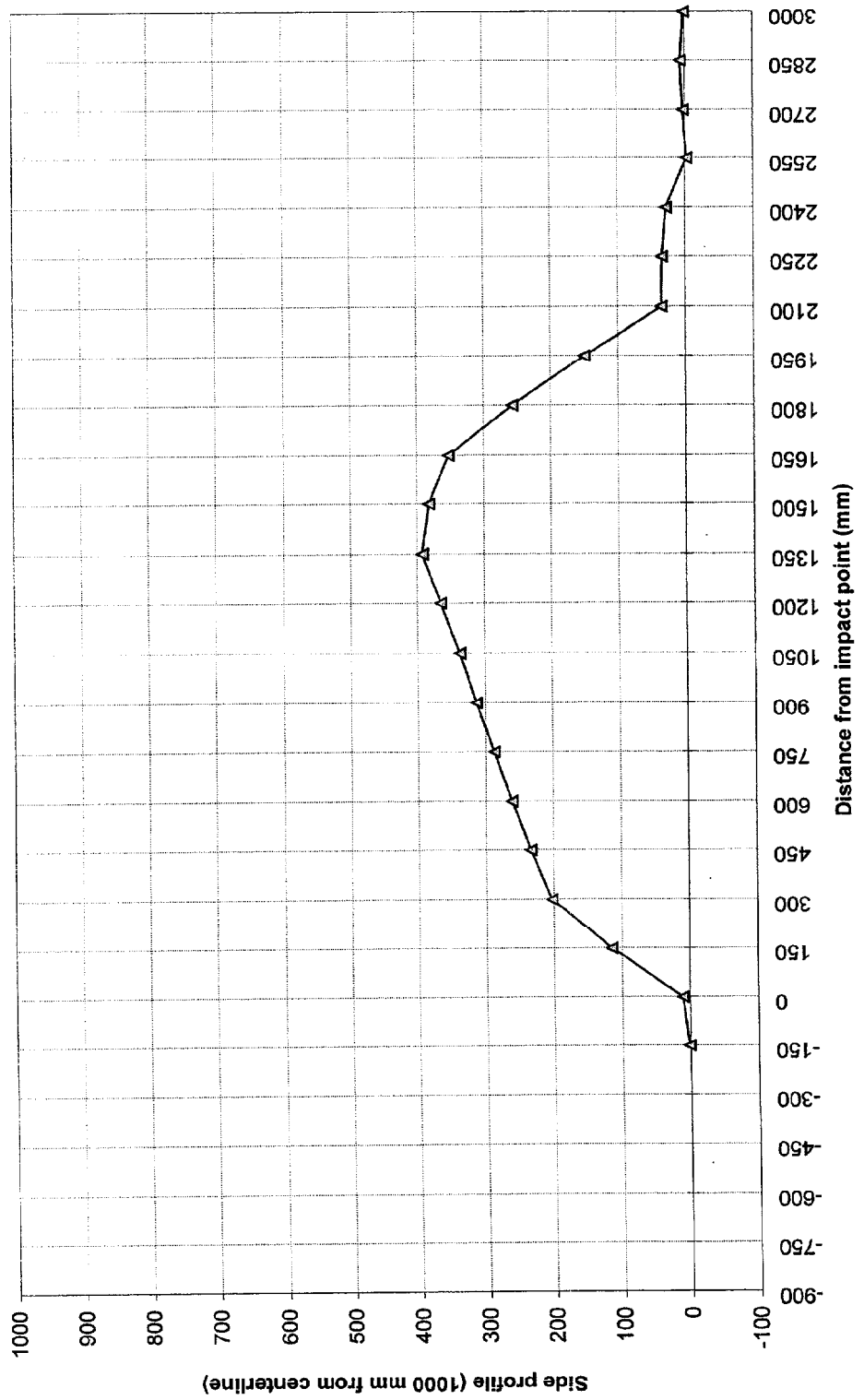
Vehicle: 1999 Pontiac Grand Am

NHTSA No. MX0110

SIDE PROFILE LEVEL 4

842 mm above ground

—▲— CRUSH



DATA SHEET 10 (continued)

VEHICLE EXTERIOR CRUSH PROFILES

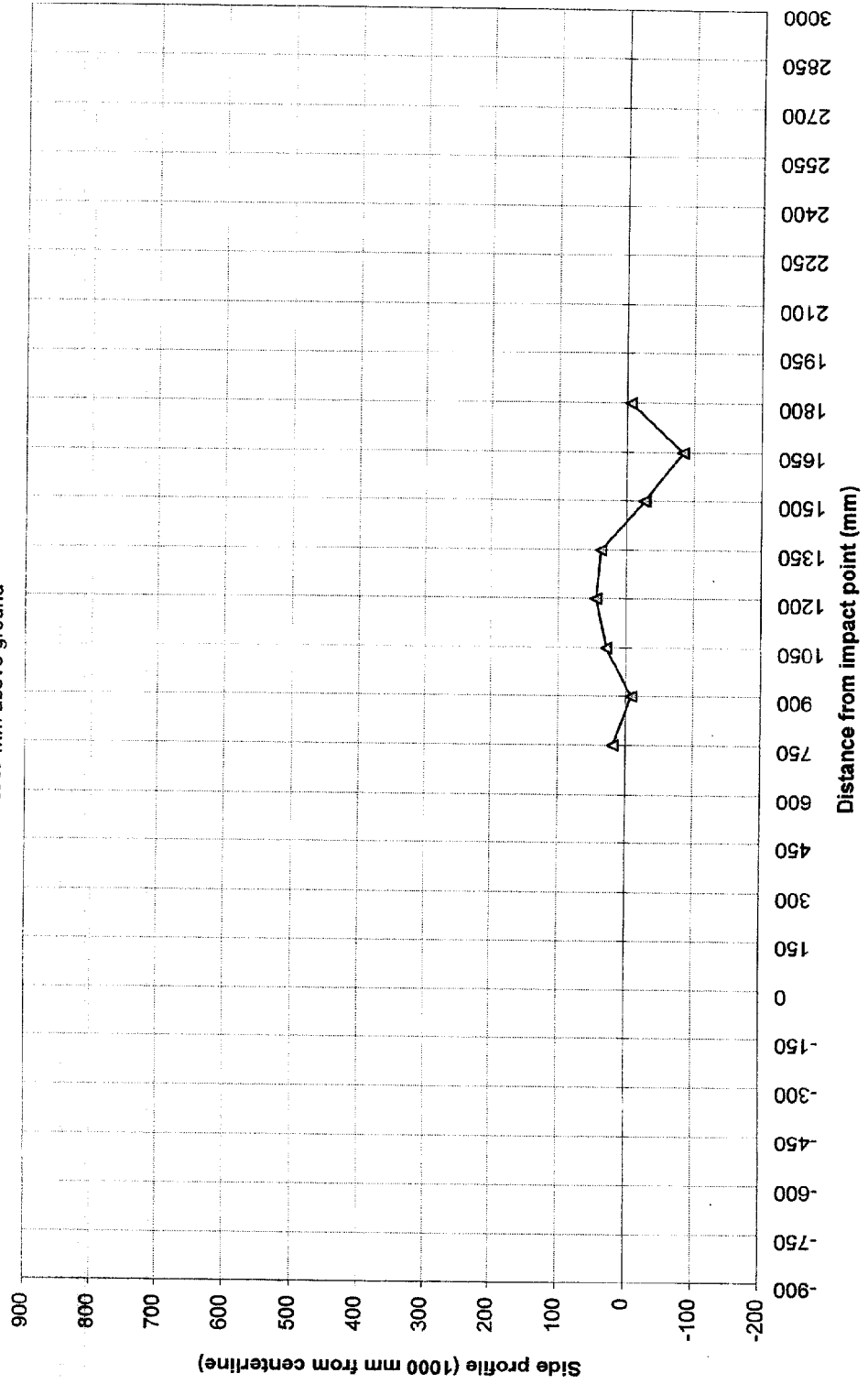
Vehicle: 1999 Pontiac Grand Am

NHTSA No. MX0110

SIDE PROFILE LEVEL 5

1309 mm above ground

—▲— CRUSH

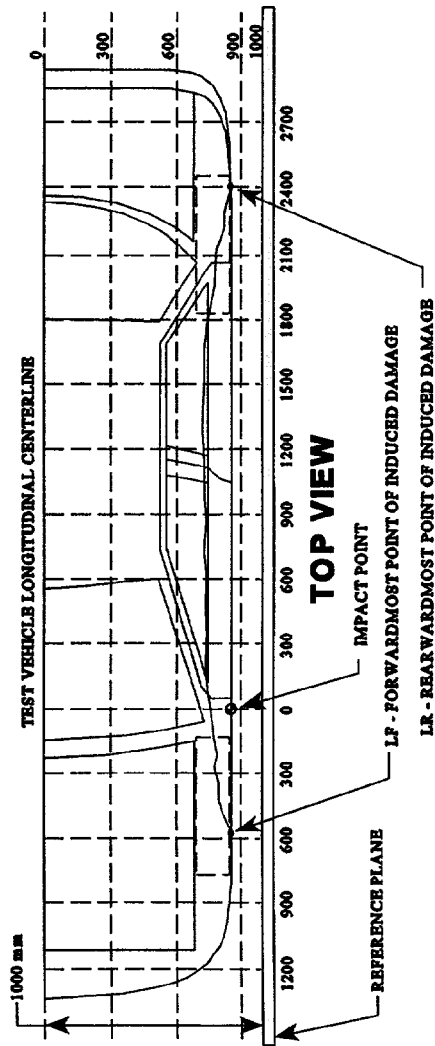


DATA SHEET 11

VEHICLE DAMAGE PROFILE DISTANCES

Vehicle: 1999 Pontiac Grand Am

NHTSA No. MX0110



MEASUREMENT CONVENTIONS:

Forward of the impact point (towards front of vehicle) is considered negative (-).
Rearward of the impact point (toward rearward of vehicle) is considered positive (+).

NOTE: All dimensions are in millimeters with tolerance of ± 3 mm.

DPD MEASUREMENTS		POST TEST (mm)	PRETEST (mm)	STATIC CRUSH (mm)
1	(LF = -150 mm)	131	116	15
2	380	169	136	33
3	910	514	126	388
4	1440	510	126	384
5	1970	280	153	127
6	(LR = 2500 mm)	167	163	4

DATA SHEET 12

EXTERIOR STATIC CRUSH FOR IMPACTOR FACE
(Grid as looking at MDB from front)

Vehicle: 1999 Pontiac Grand Am

NHTSA No. MX0110

NOTE: All dimensions are in millimeters with a tolerance of ± 3 mm

LEVEL	HEIGHT AT CL (mm)*	DISTANCE RIGHT OF CENTER (mm)								DISTANCE LEFT OF CENTER (mm)							
		800	700	600	500	400	300	200	100								
LEVEL 4 TOP STACK	813																
		PRE	619	619	619	619	619	619	619	619	619	619	619	619	619	619	619
		POST	678	623	604	603	609	615	625	622	622	633	641	651	670	708	775
		CRUSH	59	4	-15	-16	-10	-4	6	3	6	8	14	22	32	51	89
LEVEL 3 MID LEVEL	686																
		PRE	619	619	619	619	619	619	619	619	619	619	619	619	619	619	619
		POST	637	609	608	610	611	616	622	621	622	621	624	630	644	683	753
		CRUSH	18	-10	-11	-9	-8	-3	3	2	3	3	2	5	11	25	64
LEVEL 2 TOP BUMPER	559																
		PRE	619	619	619	619	619	619	619	619	619	619	619	619	619	619	619
		POST	684	671	657	646	643	639	637	639	647	654	660	664	673	691	704
		CRUSH	65	52	38	27	24	20	18	20	28	35	37	41	45	54	72
LEVEL 1 MID BUMPER	432																
		PRE	535	519	518	518	518	518	518	518	518	518	518	518	518	519	535
		POST	629	608	591	574	569	567	563	564	573	577	589	589	601	628	649
		CRUSH	94	89	73	56	51	49	45	46	55	59	61	71	71	83	109
																	114

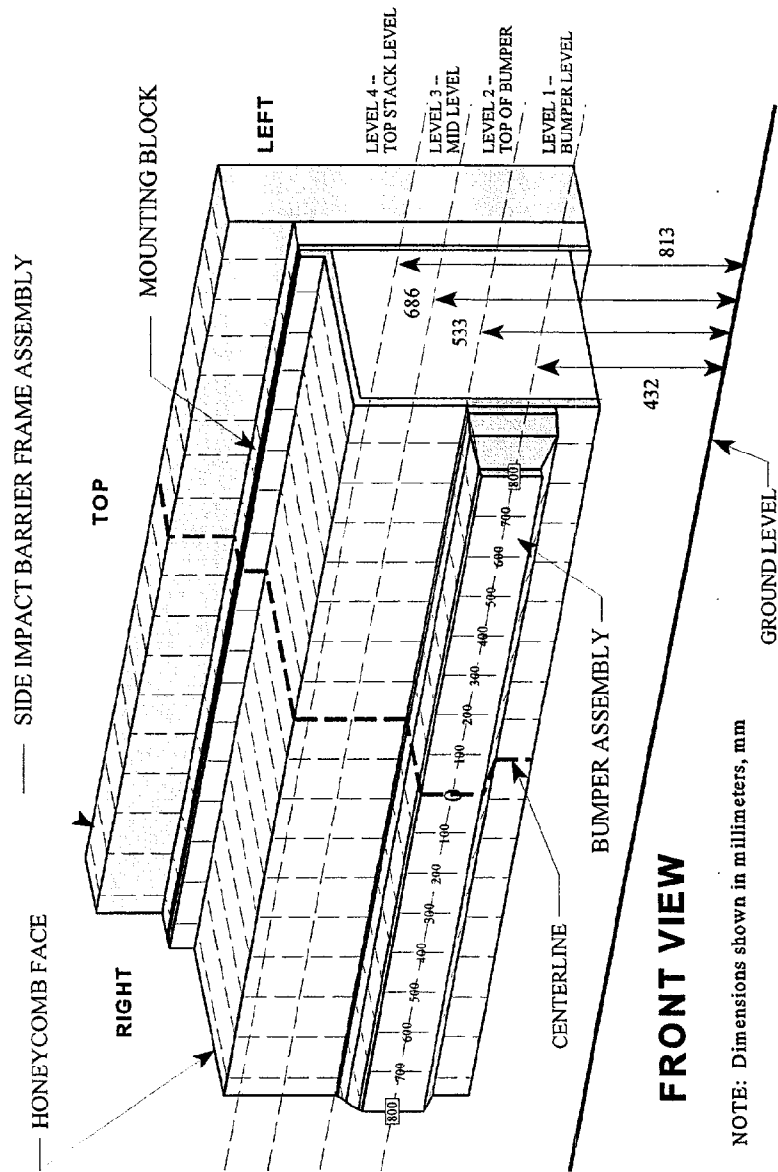
*Heights measured above ground level.

DATA SHEET 12 (continued)

EXTERIOR STATIC CRUSH FOR IMPACTOR FACE

Vehicle: 1999 Pontiac Grand Am

NHTSA No. MX0110

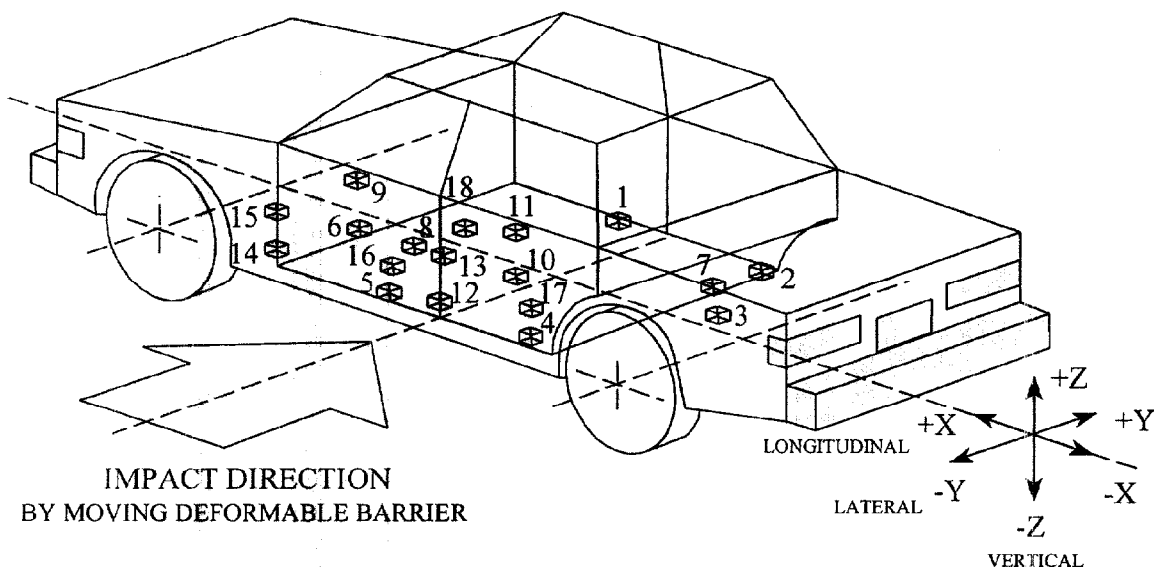


DATA SHEET 13

TEST VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

Vehicle: 1999 Pontiac Grand Am

NHTSA No. MX0110



- 1-Right Side Sill @ Front Seat
- 2-Right Side Sill @ Rear Seat
- 3-Rear Floorpan Above Axle
- 4-Left Side Sill @ Rear Seat
- 5-Left Side Sill @ Front Seat
- 6-Left Front Door on Centerline
- 7-Right Rear Occupant Compartment
- 8-Midrear of Left Front Door
- 9-Left Front Door Upper Centerline

- 10-Midrear of Left Rear Door
- 11-Left Rear Door Upper Centerline
- 12-Left Lower B-Pillar
- 13-Left Middle B-Pillar
- 14-Left Lower A-Pillar
- 15-Left Middle A-Pillar
- 16-Front Seat Track
- 17-Rear Seat Track
- 18-Vehicle CG

DATA SHEET 13 (continued)

VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

Vehicle: 1999 Pontiac Grand Am

NHTSA No. MX0110

Accel. No.	Location	Coordinates (mm) ± 3			Long. (x)		Lat. (y)		Vert. (z)		Resultant	
		X*	Y*	Z*	Max (g)	Time (msec)	Max (g)	Time (msec)	Max (g)	Time (msec)	Max (g)	Time (msec)
1	Right Side Sill at Front Seat	2824	-639	281	pos. neg.	†	516.0 -14.7	96.1 77.5	5.3 -4.3	43.8 11.2	516.0 -	96.1 -
2	Right Side Sill at Rear Seat	1946	-636	270	pos. neg.	2.3 45.0 -6.8	22.5 -2.1	18.4 193.8	6.2 -7.5	40.1 16.1	23.6 -	18.3 -
3	Rear Floorpan Above Axle	1168	0	454	pos. neg.	3.1 36.6 -5.8	22.0 -3.9	38.1 182.7	9.8 -10.2	33.5 52.3	22.7 -	37.2 -
4	Left Side Sill at Rear Seat	1946	636	261	pos. neg.	-	77.6 -28.2	14.7 27.0	-	-	-	-
5	Left Side Sill at Front Seat	2824	639	270	pos. neg.	-	64.5 -13.9	13.3 22.7	-	-	-	-
6	Left Front Door on Centerline	2654	778	599	pos. neg.	-	†	†	-	-	-	-
7	Right Rear Occupant Compartment	1984	-346	185	pos. neg.	-	26.0 -2.1	18.3 194.0	-	-	-	-
8	Midrear of Left Front Door	2316	746	586	pos. neg.	-	103.2 -43.8	4.1 25.4	-	-	-	-
9	Left Front Door Upper Centerline	2648	745	790	pos. neg.	-	160.7 -83.5	15.8 23.9	-	-	-	-
10	Midrear of Left Rear Door	1734	758	641	pos. neg.	-	187.5 -90.7	7.9 26.4	-	-	-	-
11	Left Rear Door Upper Centerline	1744	730	821	pos. neg.	-	80.5 -37.4	20.4 39.6	-	-	-	-

*Reference: X - Rear Bumper (+ Forward)

Y - Vehicle Centerline (+ To Right)

Z - Ground Level (+ Up)

**Accelerometer was not requested by COTR.

† Data is questionable, transducer cable opened during the impact.

DATA SHEET 13 (continued)

VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

Vehicle: 1999 Pontiac Grand Am

NHTSA No. MX0110

Accel. No.	Location	Coordinates (mm) ±3			Long. (x)		Lat. (y)		Vert. (z)		Resultant	
		X*	Y*	Z*	Max (g)	Time (msec)	Max (g)	Time (msec)	Max (g)	Time (msec)	Max (g)	Time (msec)
12	Left Lower B-Pillar	2228	698	529	-	-	41.2 -28.6	6.1 26.6	-	-	-	-
13	Left Middle B-Pillar	2199	708	817	-	-	63.2 -22.9	3.6 55.0	-	-	-	-
14	Left Lower A-Pillar	3266	645	518	-	-	99.4 -81.0	4.8 29.0	-	-	-	-
15	Left Middle A-Pillar	-	-	-	-	-	†	†	-	-	-	-
16	Front Seat Track	2356	481	258	-	-	65.2 -48.9	17.2 34.7	-	-	-	-
17	Rear Seat Track	1166	-335	450	-	-	22.4 -2.1	37.2 185.6	-	-	-	-
18	Vehicle CG	2272	0	490	21.5 -11.6	85.0 23.0	35.0 -19.2	17.7 82.5	31.7 -18.1	83.2 37.1	35.8	83.1

*Reference: X - Rear Bumper (+ Forward) Y - Vehicle Centerline (+ To Right) Z - Ground Level (+ Up)

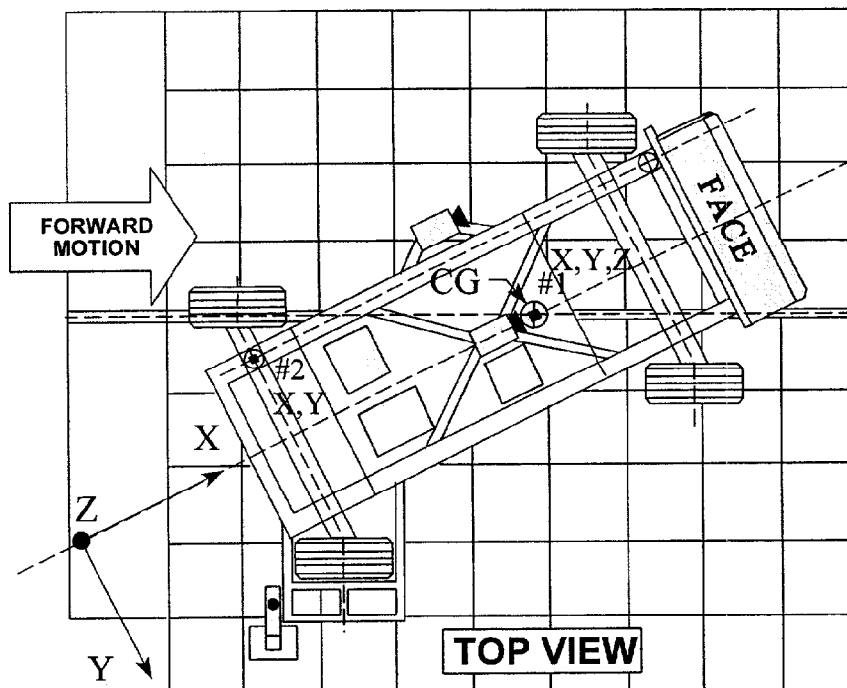
† No accessible mounting location, transducer not installed on vehicle.

DATA SHEET 14

MDB ACCELEROMETER LOCATIONS AND DATA SUMMARY

Vehicle: 1999 Pontiac Grand Am

NHTSA No. MX0110



Accel. No.	Location	Coordinates (millimeters)			Pos. Direct.		Neg. Direct.	
		X*	Y*	Z*	Max (g)	Time (msec)	Max (g)	Time (msec)
1	MDB Center of Gravity							
	Longitudinal... X	1859	0	330	0.8	158.9	-20.1	38.2
	Lateral..... Y				3.4	54.3	-8.6	27.4
	Vertical..... Z				13.9	60.6	-13.4	79.1
	Resultant..... R				23.3	30.6	-	-
2	Rear Frame Member							
	Longitudinal... X	386	-660	660	1.6	382.2	-22.9	31.7
	Lateral..... Y				5.9	26.4	-1.4	155.4

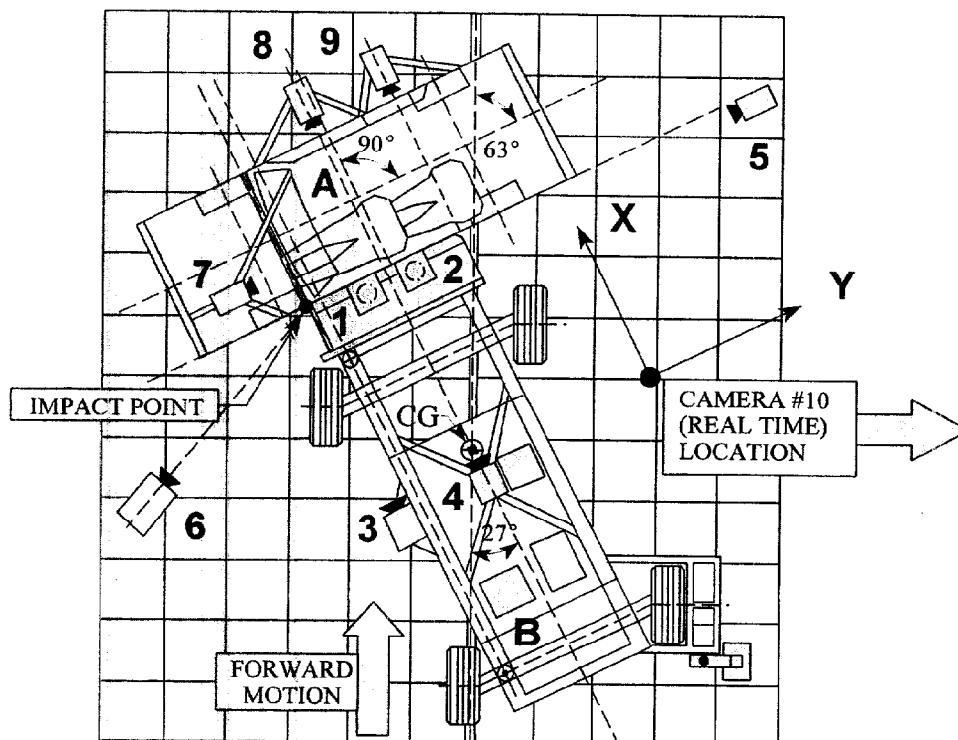
*Reference: X = Rear Bumper (+ Forward)
Y = Vehicle Centerline (+ To Right)
Z = Ground Level (+ Up)
All measurements accurate to within ± 3 mm.

DATA SHEET 15

HIGH SPEED CAMERA LOCATIONS AND DATA SUMMARY

Vehicle: 1999 Pontiac Grand Am

NHTSA No. MX0110



Camera No.	View	Coordinates (millimeters)			Angle (deg.)	Lens (mm)	Film Speed (fps)
		X*	Y*	Z*			
1	Overhead view of test vehicle	370	985	4880	-90	8	1020
2	Overhead closeup view of impact plane	75	858	4880	-90	12.5	1020
3	MDB onboard closeup view of impact point	-1470	0	847	0	13	615
4	MDB onboard view of driver dummy	-1140	838	1586	-17	7.5	680
5	Right side ground level overall view	186	8952	1105	-3	25	1005
6	Left side ground level overall view	-1831	-1732	1025	-7	13	1015
7	Test vehicle onboard driver front view	542	-547	1250	-9	13	1000
8	Test vehicle onboard driver side view	1675	823	1024	-11	8	1015
9	Test vehicle onboard passenger side view	1647	1753	986	-12	8	1015
10	Real time film coverage of test	-	-	-	-	-	24

* Reference (from point of impact); all measurements accurate to within ± 6 mm.

+X = Forward

+Y = To Right

+Z = Upward

SECTION 5

FUEL SYSTEM INTEGRITY

DATA SHEET 16

FMVSS 301 FUEL SYSTEM INTEGRITY DATA

NHTSA No.: MX0110

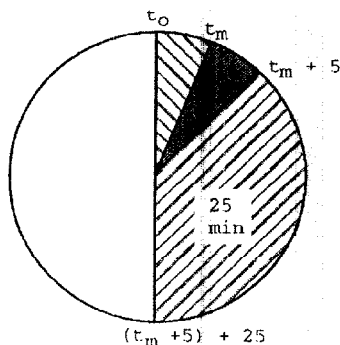
TEST DATE: January 26, 1999

Vehicle Mfgr./Make/Model : 1999 Pontiac Grand Am 4-Door Sedan

TEST VEHICLE IMPACT TYPE :

- Frontal (48.28 kph)
- Oblique (48.28 kph) with - ° barrier face first
contacting the - side
(driver/passenger)
- Rear Moving Barrier (48.28 kph)
- Lateral Moving Barrier (32.19 kph)
- X Side Impact Moving Deformable Barrier (62.0 kph)
contacting the driver side side
(driver/passenger)

FUEL SPILLAGE MEASUREMENT:



1. From impact until vehicle motion ceases
2. For five minute period after vehicle motion ceases
3. For next 25 minutes

ACTUAL	MAX ALLOWED
0 g	28 g
0 g	142 g
0 g	28 g/1 min.

SOLVENT SPILLAGE DETAILS :

None

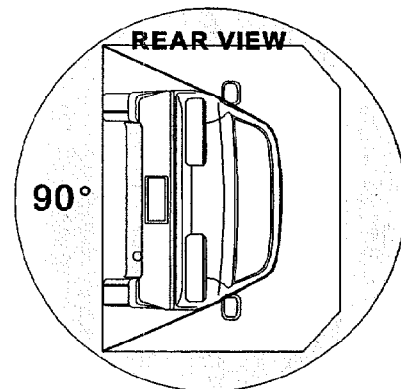
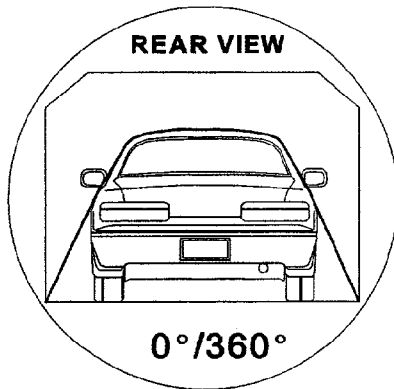
DATA SHEET 17

ROLLOVER DATA

Vehicle: 1999 Pontiac Grand Am

NHTSA No. MX0110

0 - 90 Degrees



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD :

Rollover Fixture 90° Rotation Time	<u>1</u> minutes <u>12</u> seconds
(Spec. Range = 1 to 3 minutes)	
FMVSS 301 Position Hold Time +	<u>5</u> minutes <u>0</u> seconds
TOTAL	<u>6</u> minutes <u>12</u> seconds
Next whole minute interval	<u>7</u> minutes

II. FMVSS 301 REQUIREMENTS :

(1) Time Period

First 5 minutes FROM onset of rotation	6th min.	7th min.	8th min. (if required)
--	----------	----------	------------------------

(2) Maximum Allowable Solvent Spillage

142 g	28 g	28 g	28 g
-------	------	------	------

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

0 g	0 g	0 g	N/A
-----	-----	-----	-----

Note: Record spillage for whole minute intervals only as determined above.

IV. SOLVENT SPILLAGE LOCATION(S) :

None

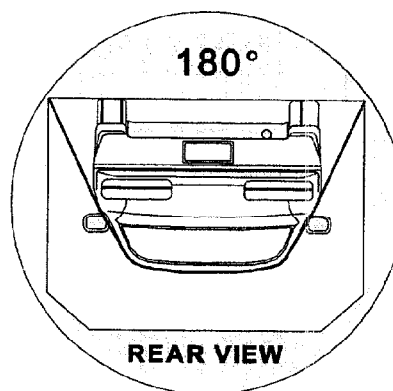
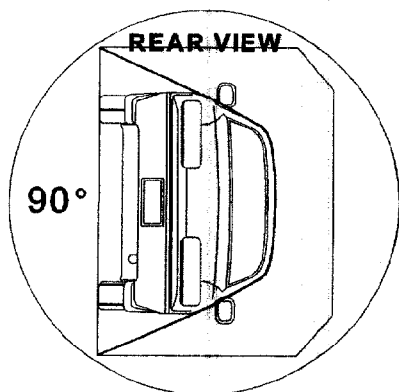
DATA SHEET 17 (continued)

ROLLOVER DATA

Vehicle: 1999 Pontiac Grand Am

NHTSA No. MX0110

90 - 180 Degrees



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD :

Rollover Fixture 90° Rotation Time	<u>1</u>	minutes	<u>11</u>	seconds
(Spec. Range = 1 to 3 minutes)				
FMVSS 301 Position Hold Time +	<u>5</u>	minutes	<u>0</u>	seconds
TOTAL	<u>6</u>	minutes	<u>11</u>	seconds
Next whole minute interval	<u>7</u>	minutes		

II. FMVSS 301 REQUIREMENTS :

(1) Time Period

First 5 minutes FROM onset of rotation	6th min.	7th min.	8th min. (if required)
--	----------	----------	------------------------

(2) Maximum Allowable Solvent Spillage

<u>142 g</u>	<u>28 g</u>	<u>28 g</u>	<u>28 g</u>
--------------	-------------	-------------	-------------

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

<u>0 g</u>	<u>0 g</u>	<u>0 g</u>	<u>N/A</u>
------------	------------	------------	------------

Note: Record spillage for whole minute intervals only as determined above.

IV. SOLVENT SPILLAGE LOCATION(S) :

None

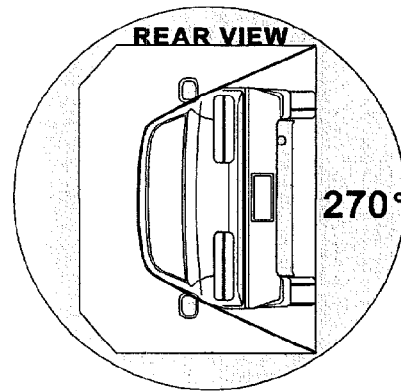
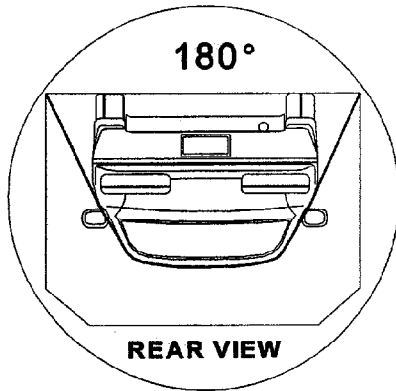
DATA SHEET 17 (continued)

ROLLOVER DATA

Vehicle: 1999 Pontiac Grand Am

NHTSA No. MX0110

180 - 270 Degrees



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD :

Rollover Fixture 90° Rotation Time	<u>1</u> minutes <u>13</u> seconds
(Spec. Range = 1 to 3 minutes)	
FMVSS 301 Position Hold Time +	<u>5</u> minutes <u>0</u> seconds
TOTAL	<u>6</u> minutes <u>13</u> seconds
Next whole minute interval	<u>7</u> minutes

II. FMVSS 301 REQUIREMENTS :

(1) Time Period

First 5 minutes FROM onset of rotation	6th min.	7th min.	8th min. (if required)
--	----------	----------	------------------------

(2) Maximum Allowable Solvent Spillage

142 g	28 g	28 g	28 g
-------	------	------	------

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

0 g	0 g	0 g	N/A
-----	-----	-----	-----

Note: Record spillage for whole minute intervals only as determined above.

IV. SOLVENT SPILLAGE LOCATION(S) :

None

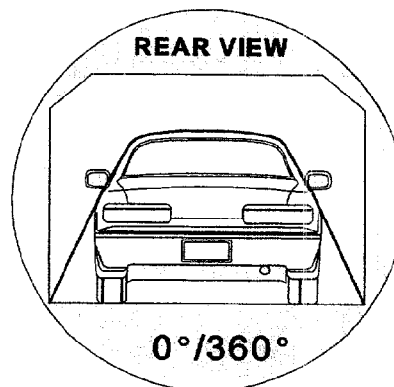
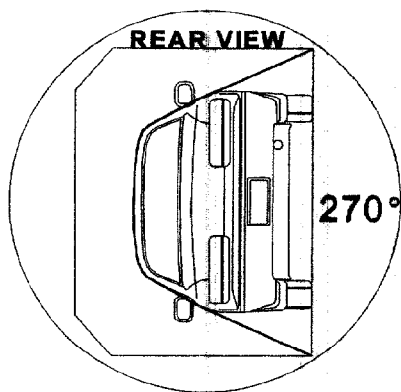
DATA SHEET 17 (continued)

ROLLOVER DATA

Vehicle: 1999 Pontiac Grand Am

NHTSA No. MX0110

270 - 360 Degrees



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD :

Rollover Fixture 90° Rotation Time	<u>1</u> minutes <u>9</u> seconds
(Spec. Range = 1 to 3 minutes)	
FMVSS 301 Position Hold Time +	<u>5</u> minutes <u>0</u> seconds
TOTAL	<u>6</u> minutes <u>9</u> seconds
Next whole minute interval	<u>7</u> minutes

II. FMVSS 301 REQUIREMENTS :

(1) Time Period

First 5 minutes FROM onset of rotation	6th min.	7th min.	8th min. (if required)
--	----------	----------	------------------------

(2) Maximum Allowable Solvent Spillage

142 g	28 g	28 g	28 g
-------	------	------	------

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

0 g	0 g	0 g	N/A
-----	-----	-----	-----

Note: Record spillage for whole minute intervals only as determined above.

IV. SOLVENT SPILLAGE LOCATION(S) :

None

APPENDIX A

PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

<u>Figure</u>	<u>Photograph Title</u>	<u>Page</u>
Figure A- 1	PRE-TEST FRONTAL VIEW OF TEST VEHICLE	A- 3
Figure A- 2	POST-TEST FRONTAL VIEW OF TEST VEHICLE	A- 4
Figure A- 3	PRE-TEST REAR VIEW OF TEST VEHICLE	A- 5
Figure A- 4	POST-TEST REAR VIEW OF TEST VEHICLE	A- 6
Figure A- 5	PRE-TEST IMPACTED SIDE VIEW OF TEST VEHICLE	A- 7
Figure A- 6	POST-TEST IMPACTED SIDE VIEW OF TEST VEHICLE	A- 8
Figure A- 7	PRE-TEST FRONTAL VIEW OF IMPACTOR FACE	A- 9
Figure A- 8	POST-TEST FRONTAL VIEW OF IMPACTOR FACE	A- 10
Figure A- 9	PRE-TEST LEFT SIDE VIEW OF IMPACTOR FACE	A- 11
Figure A- 10	POST-TEST LEFT SIDE VIEW OF IMPACTOR FACE	A- 12
Figure A- 11	PRE-TEST RIGHT SIDE VIEW OF IMPACTOR FACE	A- 13
Figure A- 12	POST-TEST RIGHT SIDE VIEW OF IMPACTOR FACE	A- 14
Figure A- 13	PRE-TEST TOP VIEW OF IMPACTOR FACE	A- 15
Figure A- 14	POST-TEST TOP VIEW OF IMPACTOR FACE	A- 16
Figure A- 15	PRE-TEST OVERHEAD VIEW OF ALIGNED MDB AND VEHICLE	A- 17
Figure A- 16	POST-TEST OVERHEAD VIEW OF MDB AND VEHICLE	A- 18
Figure A- 17	PRE-TEST RIGHT OCCUPANT COMPARTMENT VIEW OF FRONT SID	A- 19
Figure A- 18	POST-TEST RIGHT OCCUPANT COMPARTMENT VIEW OF FRONT SID	A- 20
Figure A- 19	PRE-TEST RIGHT OCCUPANT COMPARTMENT VIEW OF REAR SID	A- 21
Figure A- 20	POST-TEST RIGHT OCCUPANT COMPARTMENT VIEW OF REAR SID	A- 22
Figure A- 21	PRE-TEST LEFT OCCUPANT COMPARTMENT VIEW OF FRONT SID	A- 23
Figure A- 22	POST-TEST LEFT OCCUPANT COMPARTMENT VIEW OF FRONT SID	A- 24
Figure A- 23	PRE-TEST LEFT OCCUPANT COMPARTMENT VIEW OF REAR SID	A- 25
Figure A- 24	POST-TEST LEFT OCCUPANT COMPARTMENT VIEW OF REAR SID	A- 26
Figure A- 25	PRE-TEST INTERIOR OF FRONT DOOR	A- 27
Figure A- 26	POST-TEST INTERIOR OF FRONT DOOR SHOWING SID IMPACT LOCATIONS	A- 28
Figure A- 27	PRE-TEST INTERIOR OF REAR DOOR	A- 29
Figure A- 28	POST-TEST INTERIOR OF REAR DOOR SHOWING SID IMPACT LOCATIONS	A- 30
Figure A- 29	PRE-TEST LEFT SIDE VIEW OF MDB WITH IMPACTOR FACE IN POSITION	A- 31
Figure A- 30	PRE-TEST RIGHT SIDE VIEW OF MDB WITH IMPACTOR FACE IN POSITION	A- 32
Figure A- 31	POST-TEST CLOSE-UP VIEW OF IMPACT POINT TARGET	A- 33
Figure A- 32	CLOSE-UP VIEW OF VEHICLE'S CERTIFICATION LABEL	A- 34
Figure A- 33	CLOSE-UP VIEW OF VEHICLE'S TIRE PLACARD LABEL	A- 35
Figure A- 34	IMPACT PHOTO	A- 36
Figure A- 35	ROLLOVER 90 DEGREES	A- 37
Figure A- 36	ROLLOVER 180 DEGREES	A- 38
Figure A- 37	ROLLOVER 270 DEGREES	A- 39
Figure A- 38	ROLLOVER 360 DEGREES	A- 40

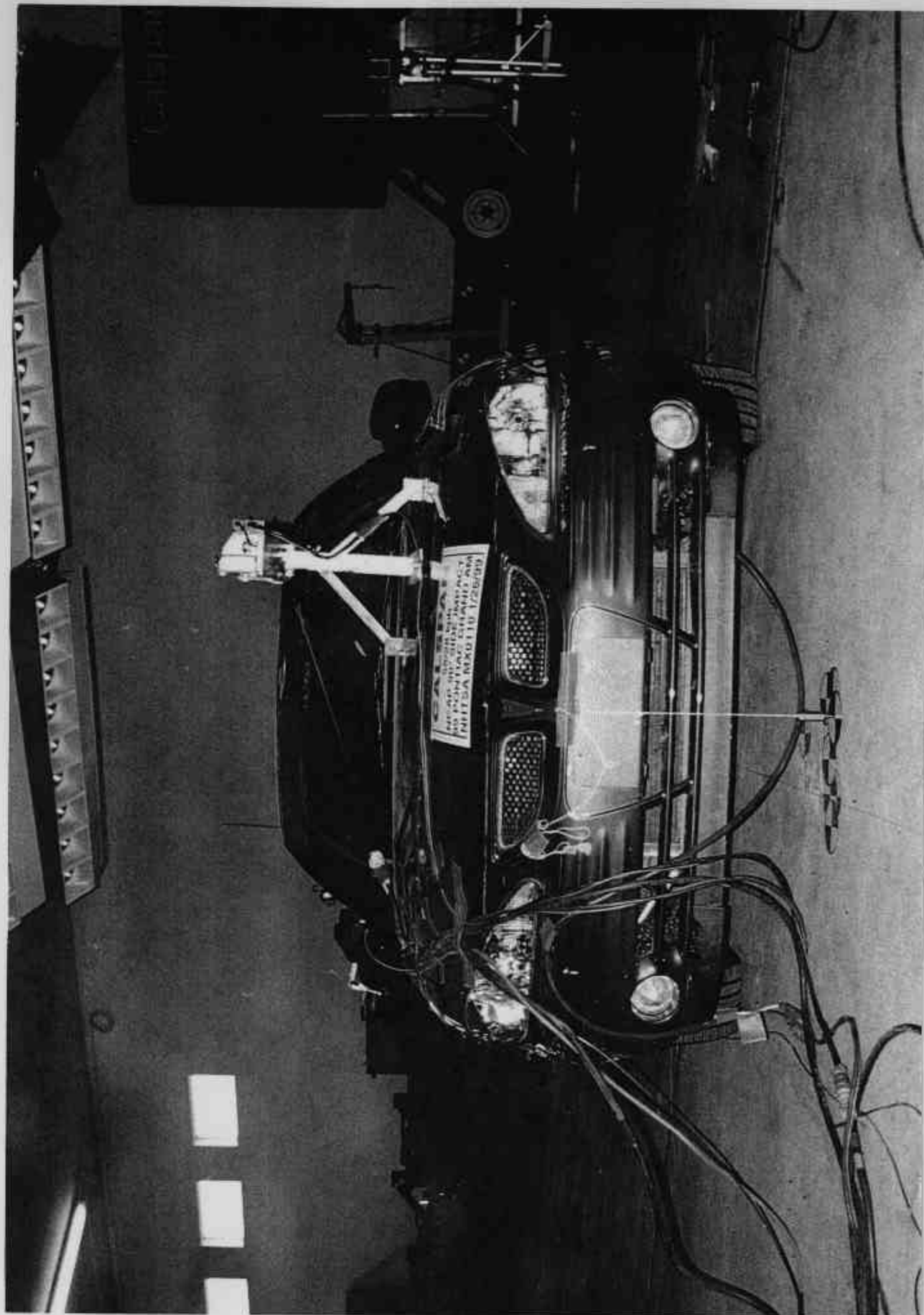


Figure A-1 PRE-TEST FRONTAL VIEW OF TEST VEHICLE

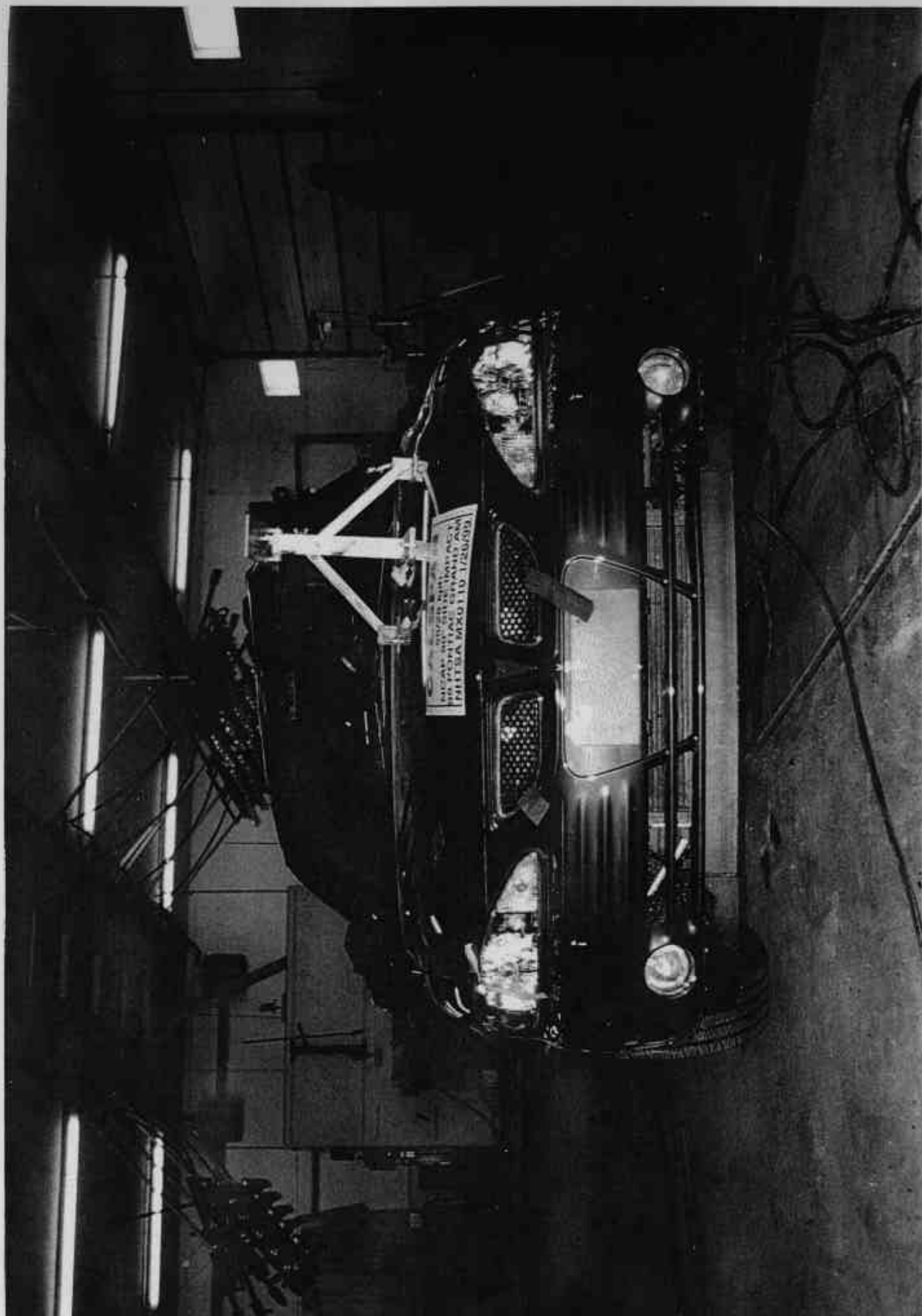


Figure A-2 POST-TEST FRONTAL VIEW OF TEST VEHICLE



Figure A-3 PRE-TEST REAR VIEW OF TEST VEHICLE



Figure A-4 POST-TEST REAR VIEW OF TEST VEHICLE

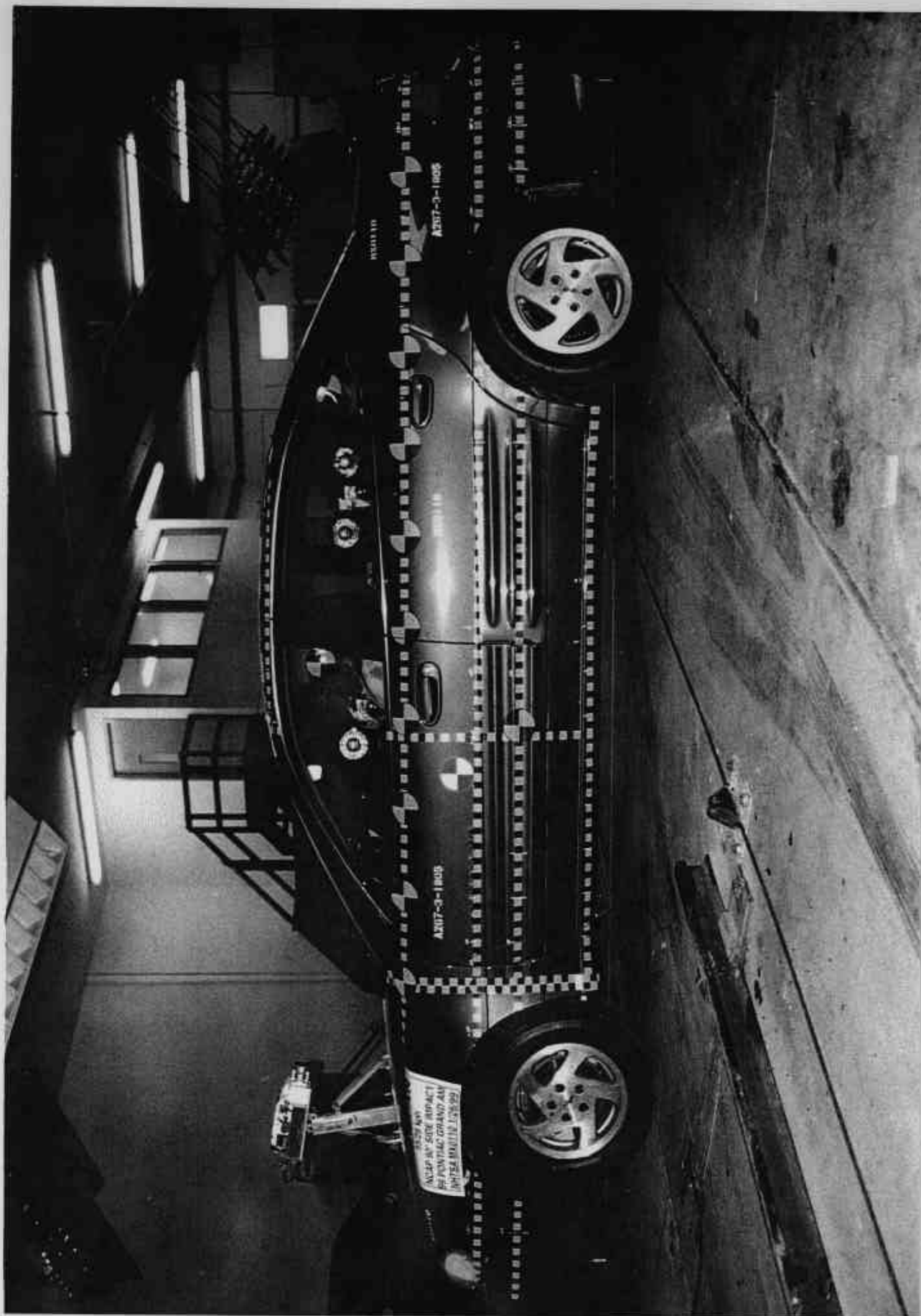


Figure A-5 PRE-TEST IMPACTED SIDE VIEW OF TEST VEHICLE

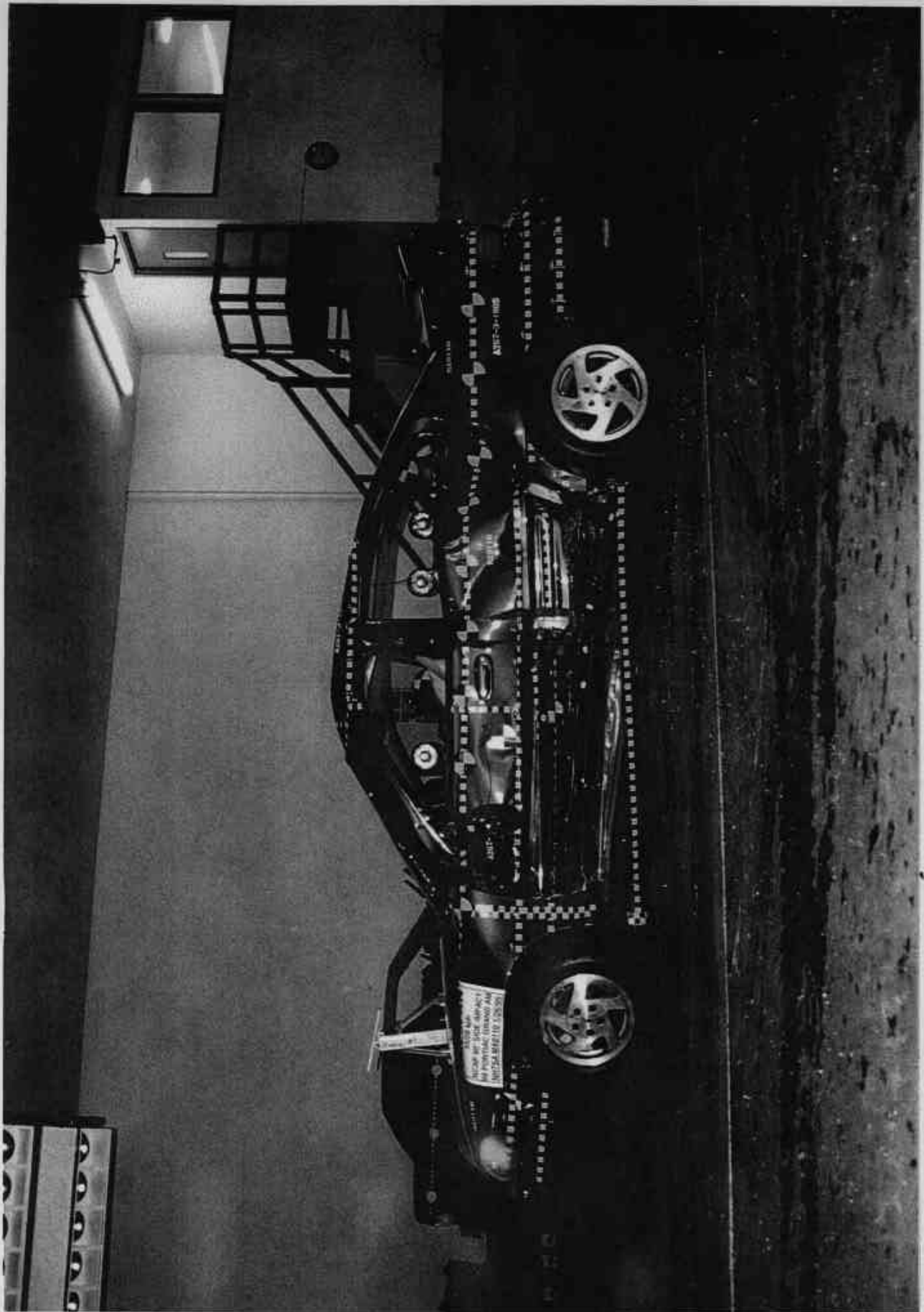


Figure A-6 POST-TEST IMPACTED SIDE VIEW OF TEST VEHICLE

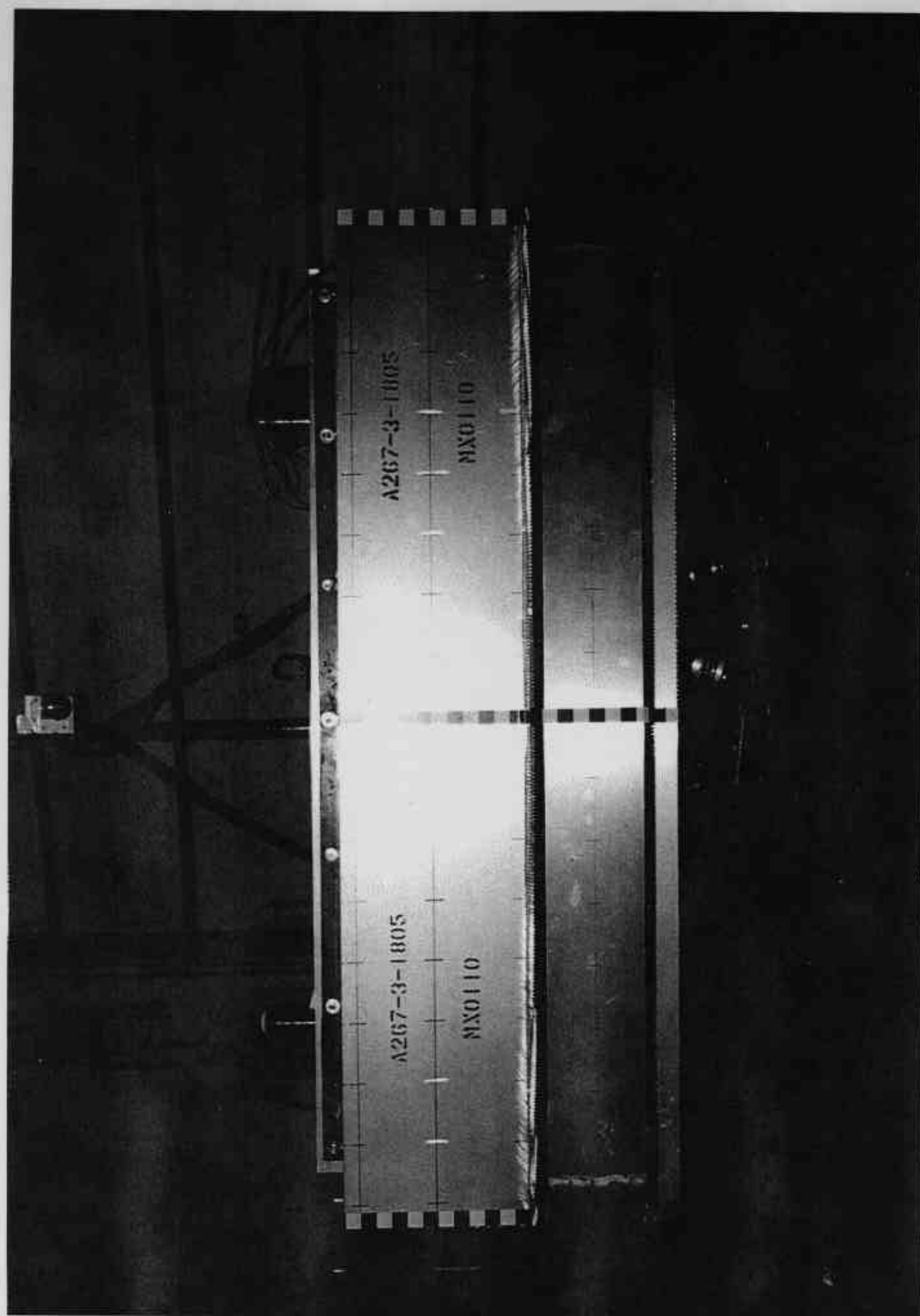


Figure A-7 PRE-TEST FRONTAL VIEW OF IMPACTOR FACE

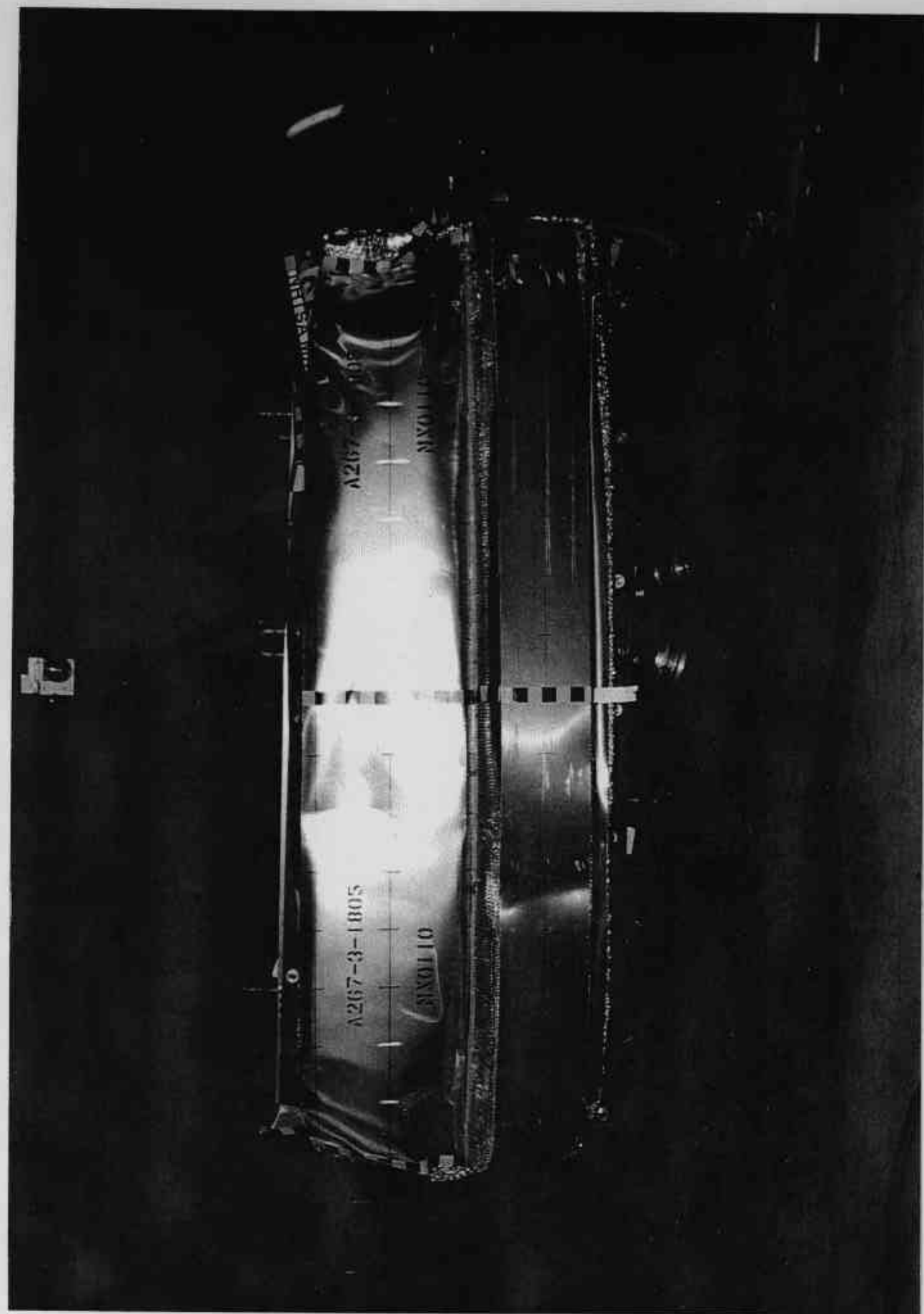


Figure A-8 POST-TEST FRONTAL VIEW OF IMPACTOR FACE

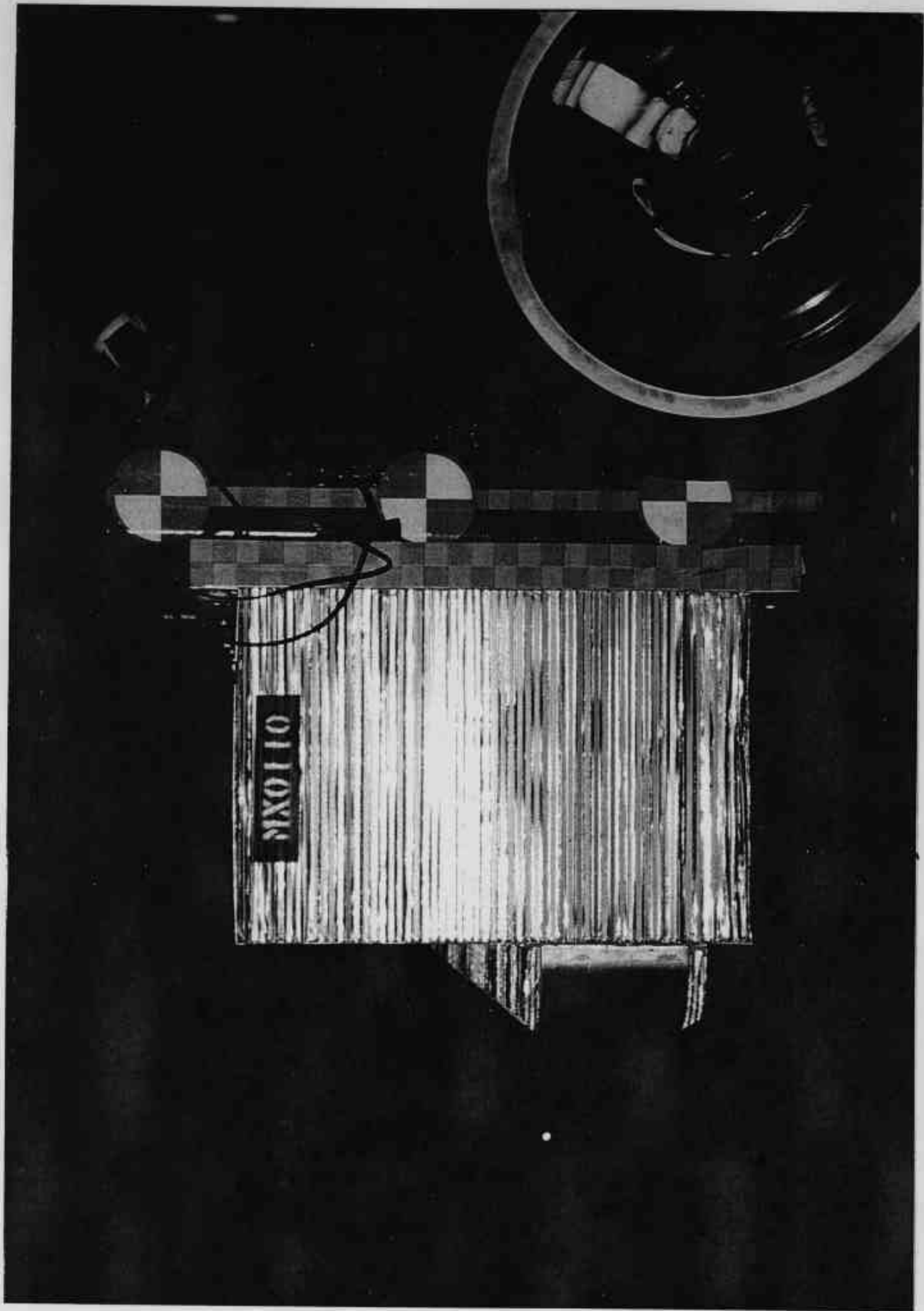


Figure A-9 PRE-TEST LEFT SIDE VIEW OF IMPACTOR FACE

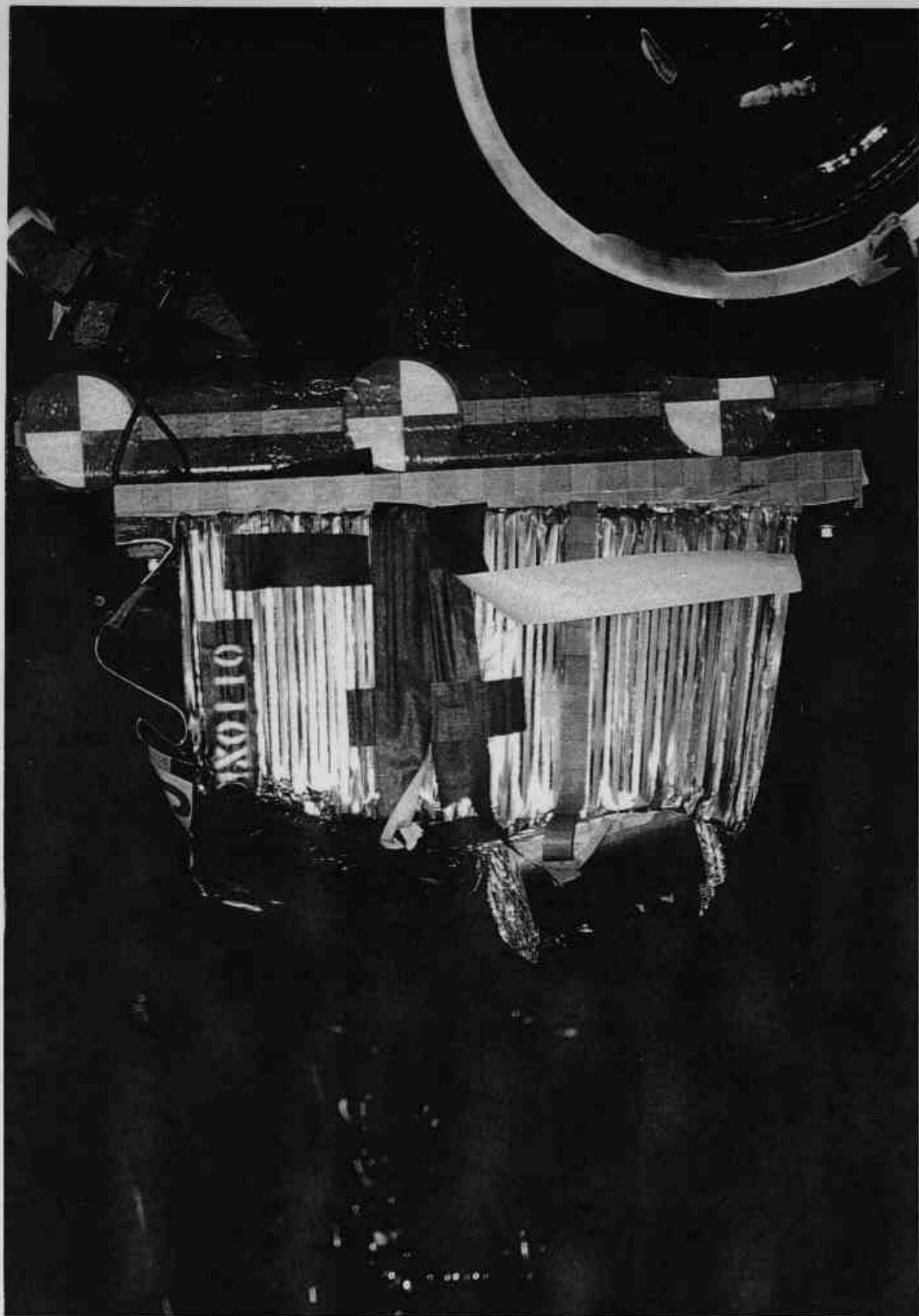


Figure A-10 POST-TEST LEFT SIDE VIEW OF IMPACTOR FACE



Figure A-11 PRE-TEST RIGHT SIDE VIEW OF IMPACTOR FACE

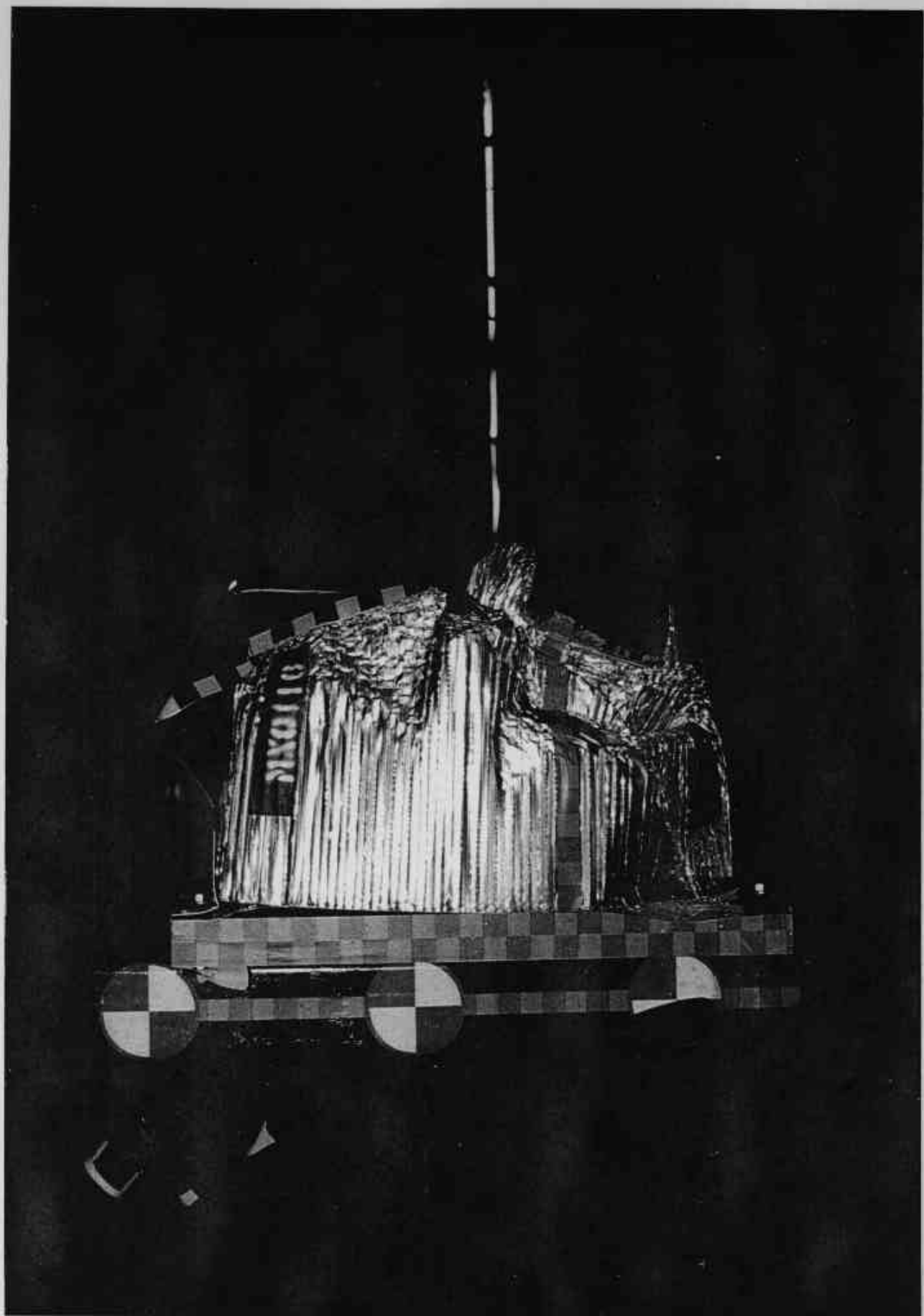


Figure A-12 POST-TEST RIGHT SIDE VIEW OF IMPACTOR FACE

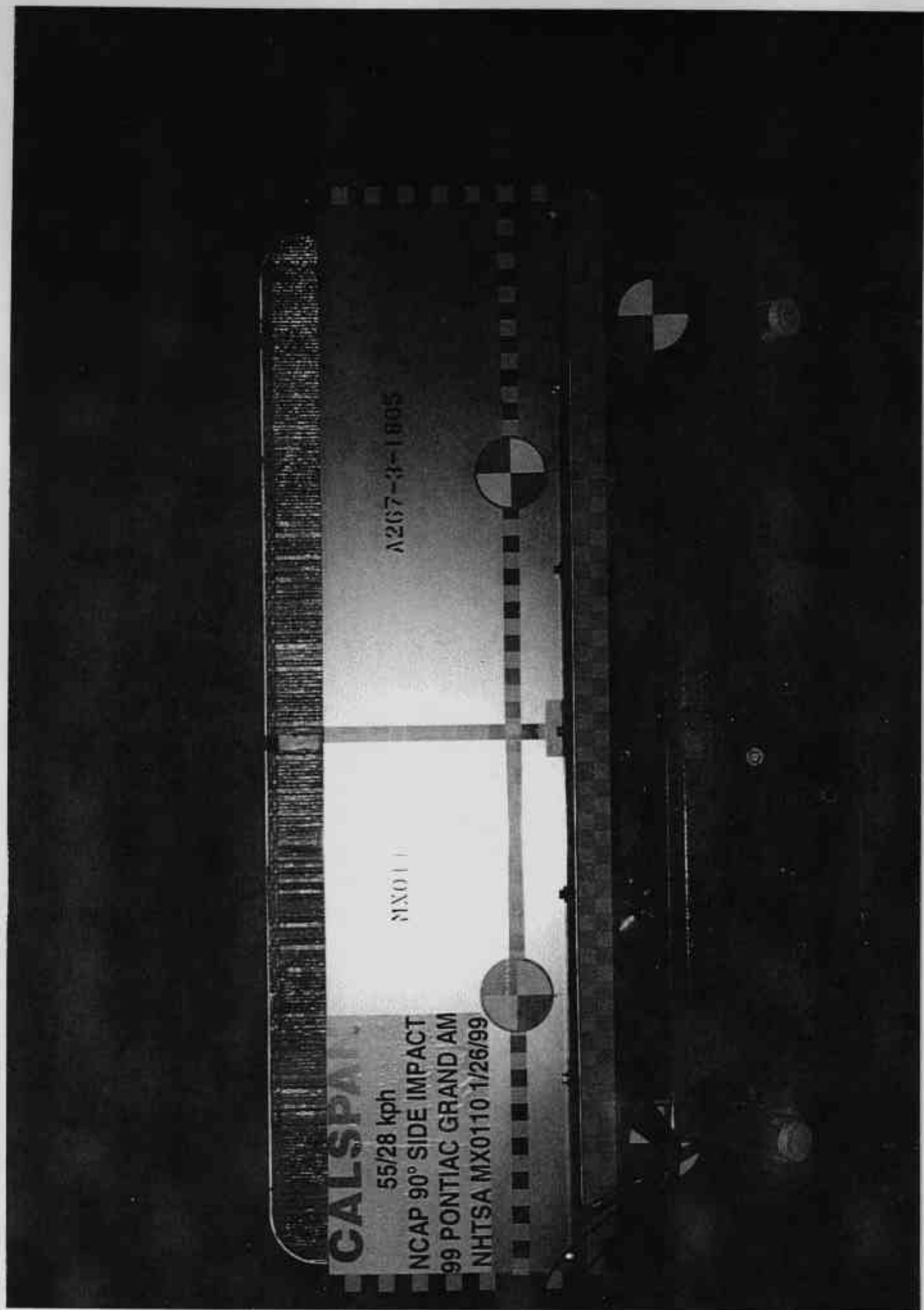


Figure A-13 PRE-TEST TOP VIEW OF IMPACTOR FACE

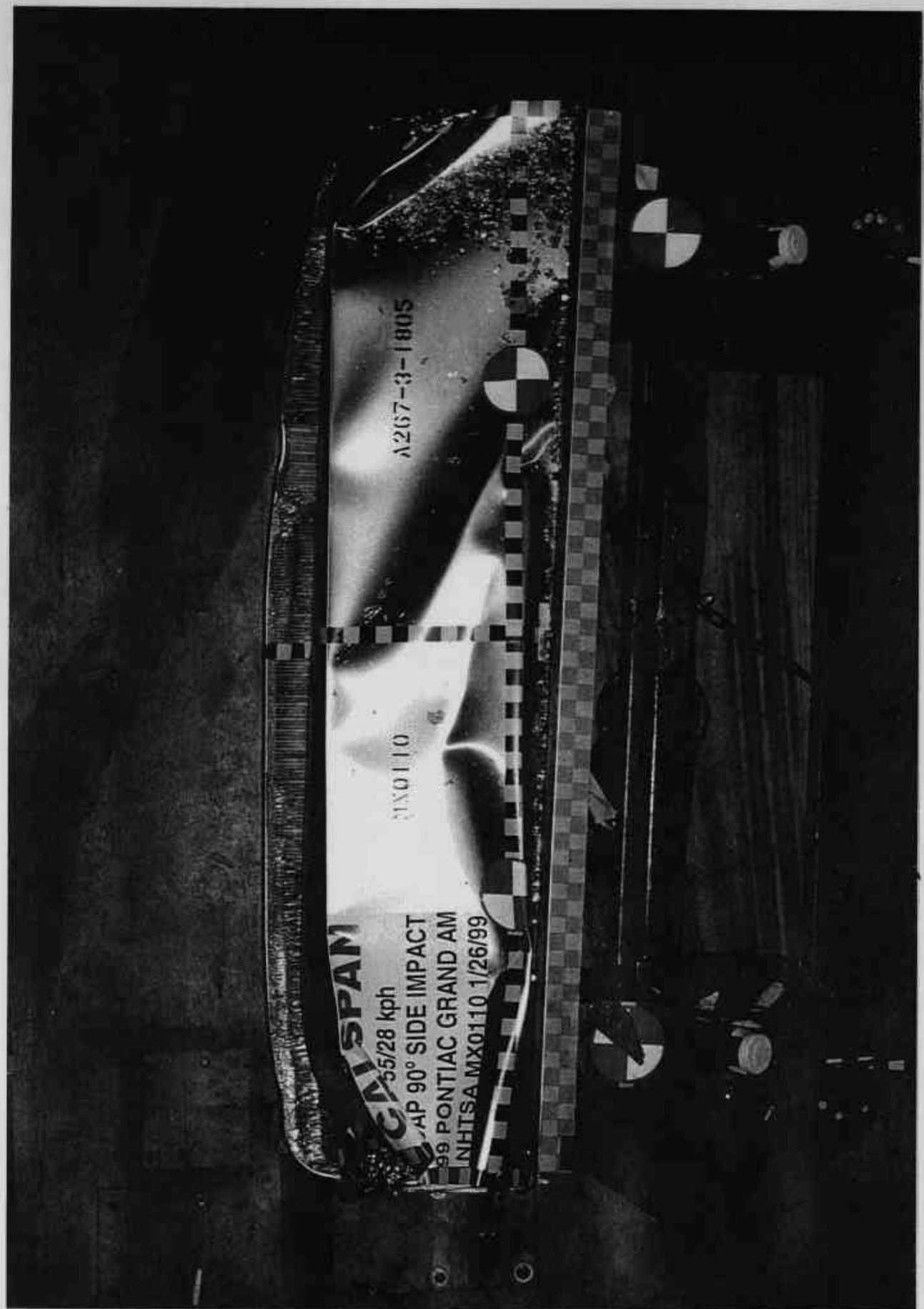


Figure A-14 POST-TEST TOP VIEW OF IMPACTOR FACE

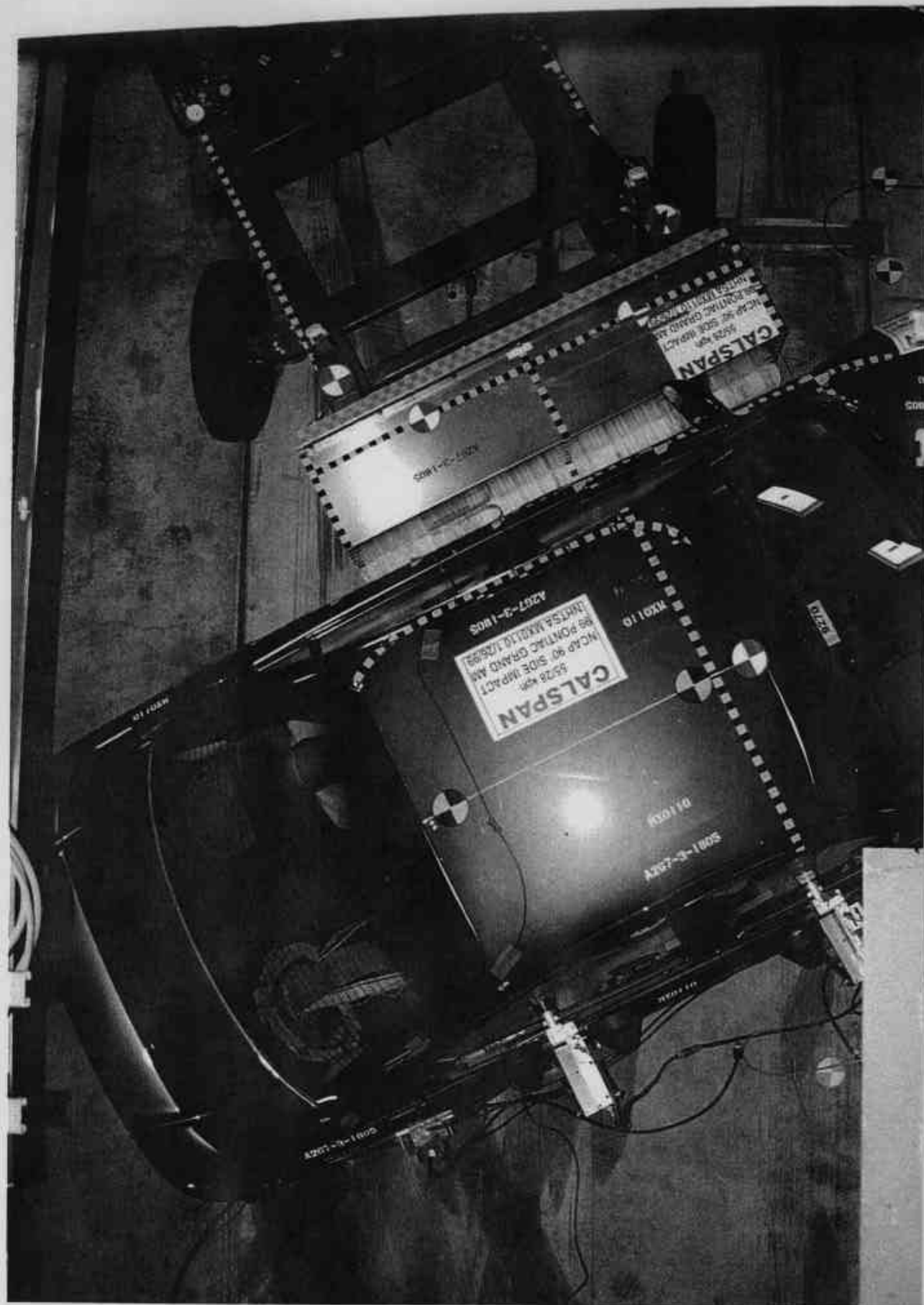


Figure A-15 PRE-TEST OVERHEAD VIEW OF ALIGNED MDB AND VEHICLE

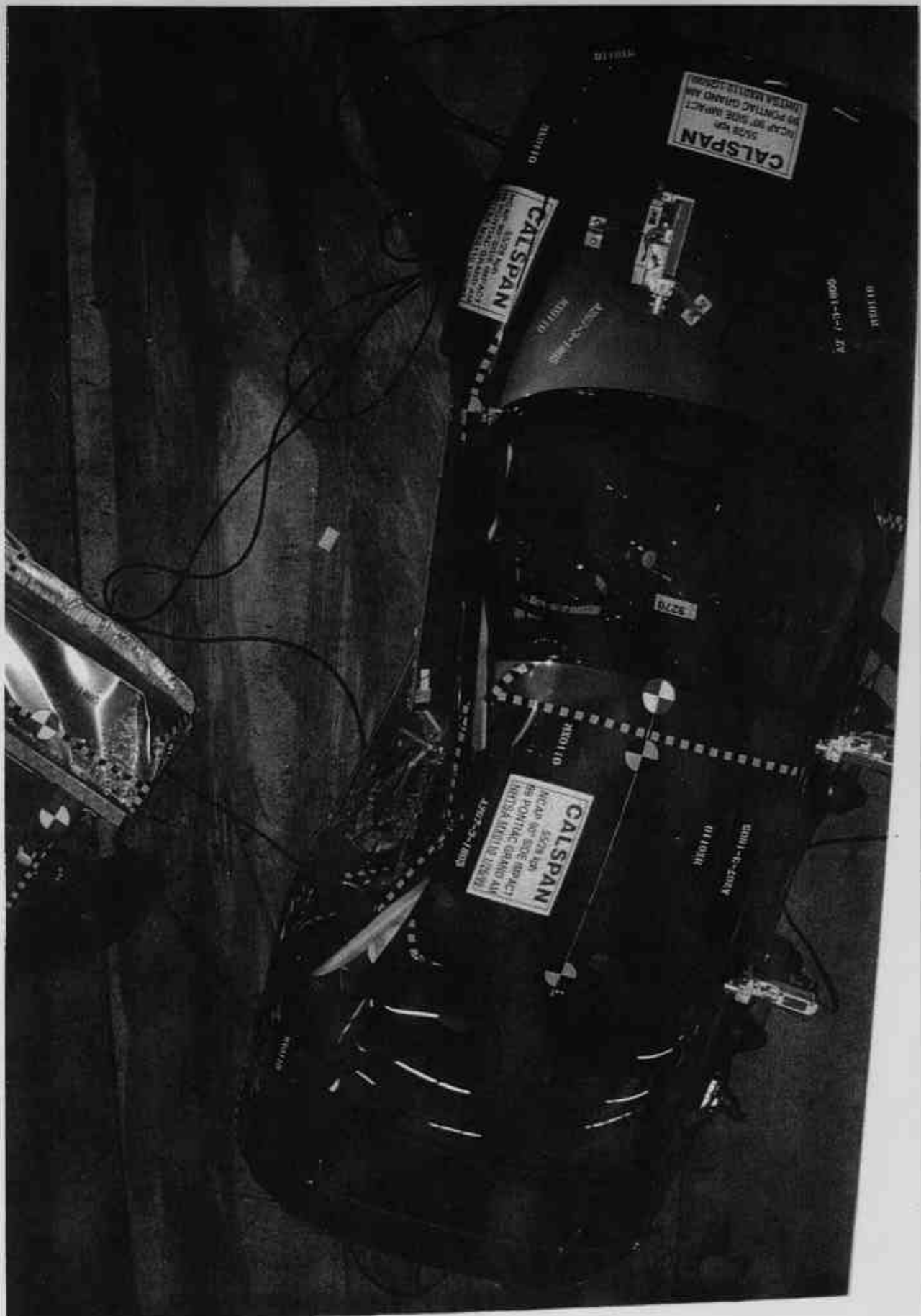


Figure A-16 POST-TEST OVERHEAD VIEW OF MDB AND VEHICLE

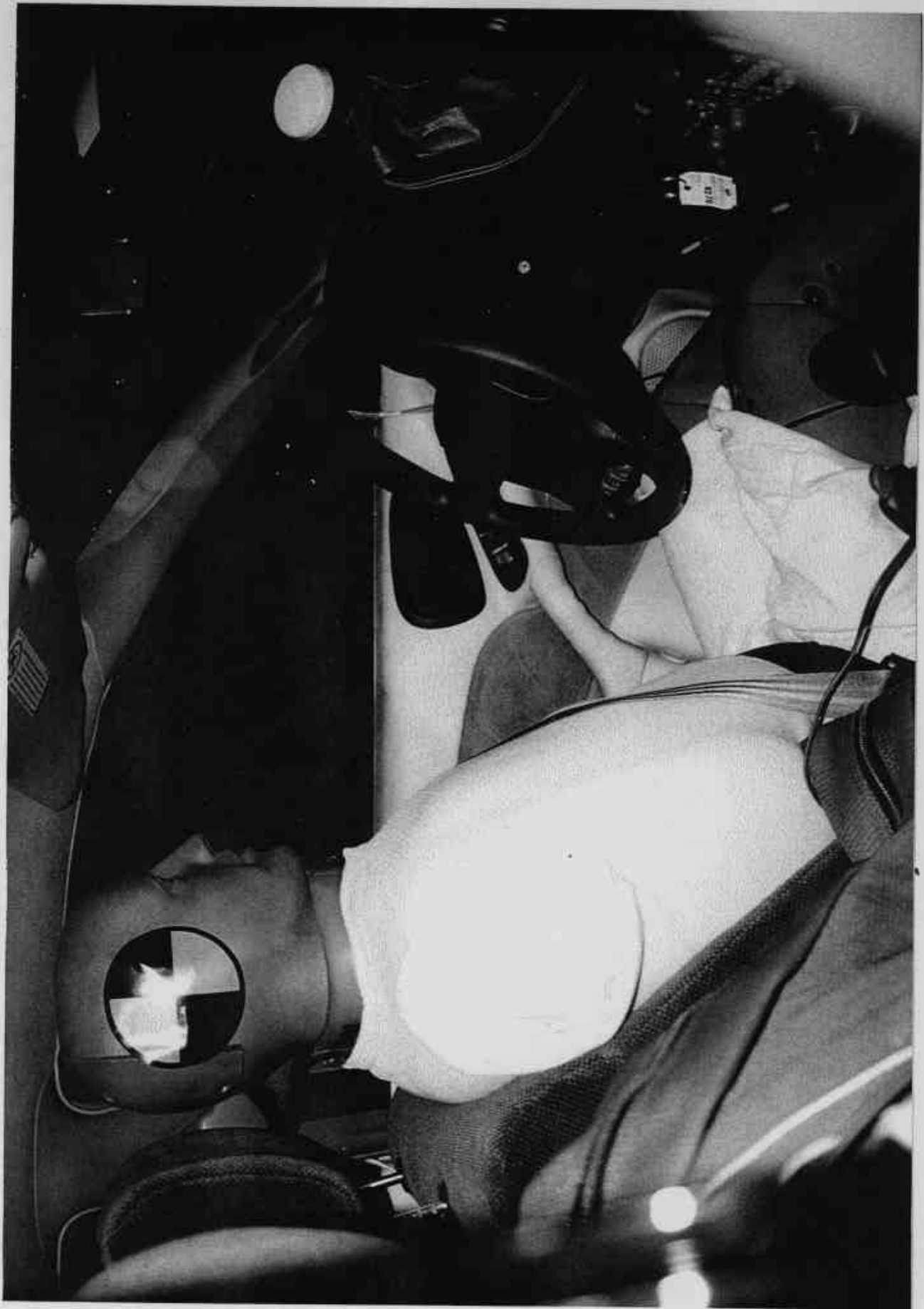


Figure A-17 PRE-TEST RIGHT OCCUPANT COMPARTMENT VIEW OF FRONT SID

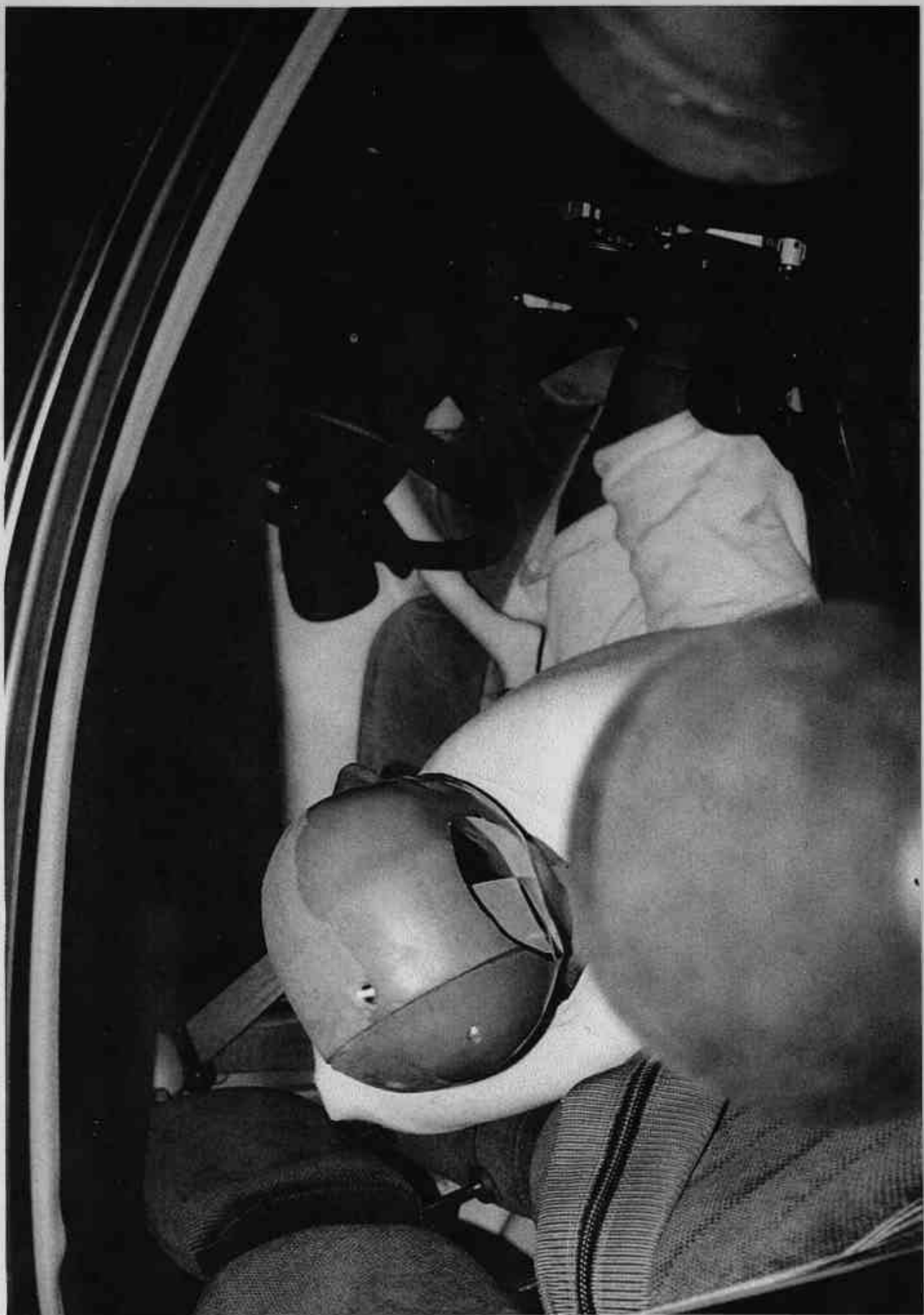


Figure A-18 POST-TEST RIGHT OCCUPANT COMPARTMENT VIEW OF FRONT SID



Figure A-19 PRE-TEST RIGHT OCCUPANT COMPARTMENT VIEW OF REAR SID



Figure A-20 POST-TEST RIGHT OCCUPANT COMPARTMENT VIEW OF REAR SID



Figure A-21 PRE-TEST LEFT OCCUPANT COMPARTMENT VIEW OF FRONT SID



Figure A-22 POST-TEST LEFT OCCUPANT COMPARTMENT VIEW OF FRONT SID

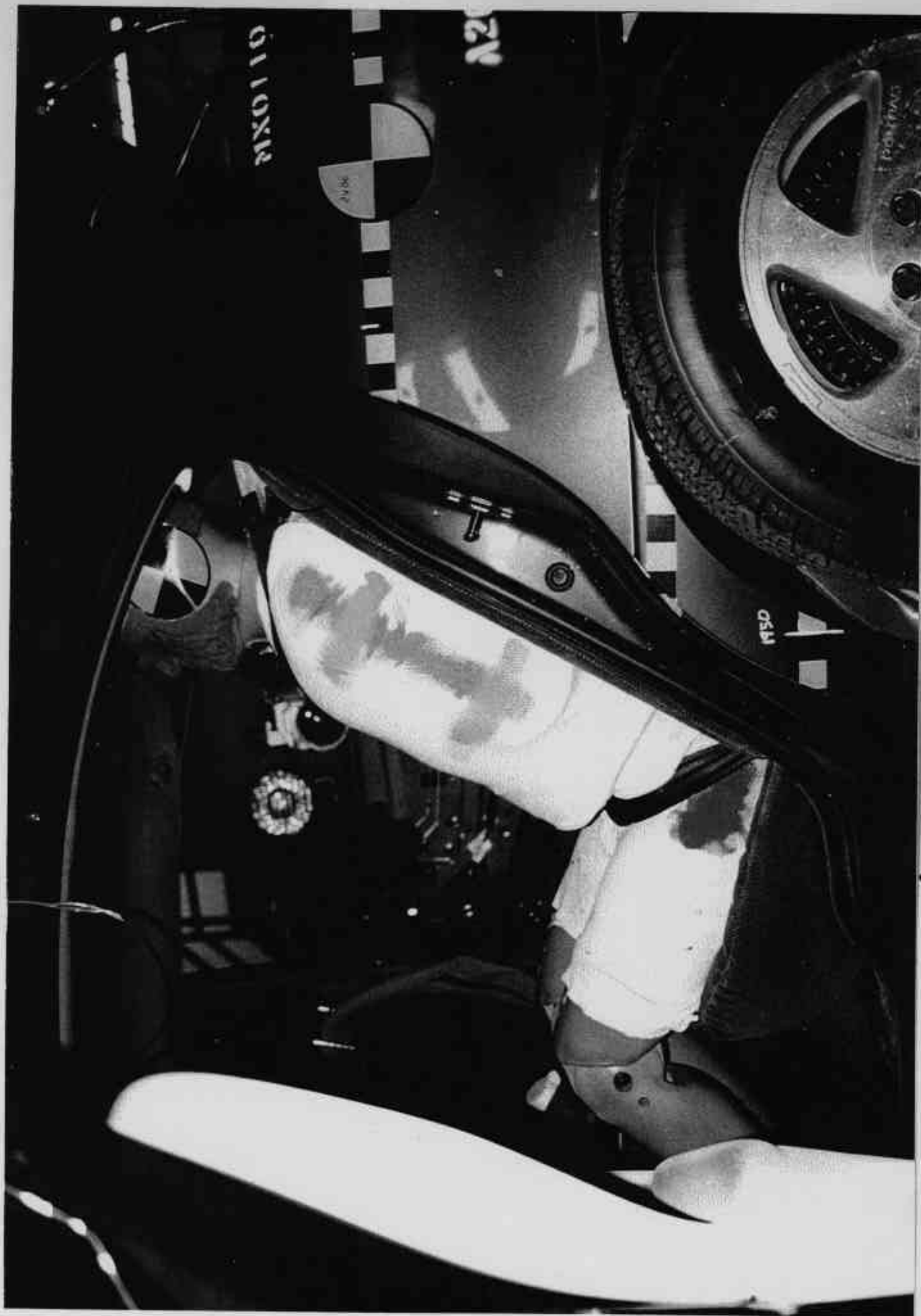


Figure A-23 PRE-TEST LEFT OCCUPANT COMPARTMENT VIEW OF REAR SID



Figure A-24 POST-TEST LEFT OCCUPANT COMPARTMENT VIEW OF REAR SID

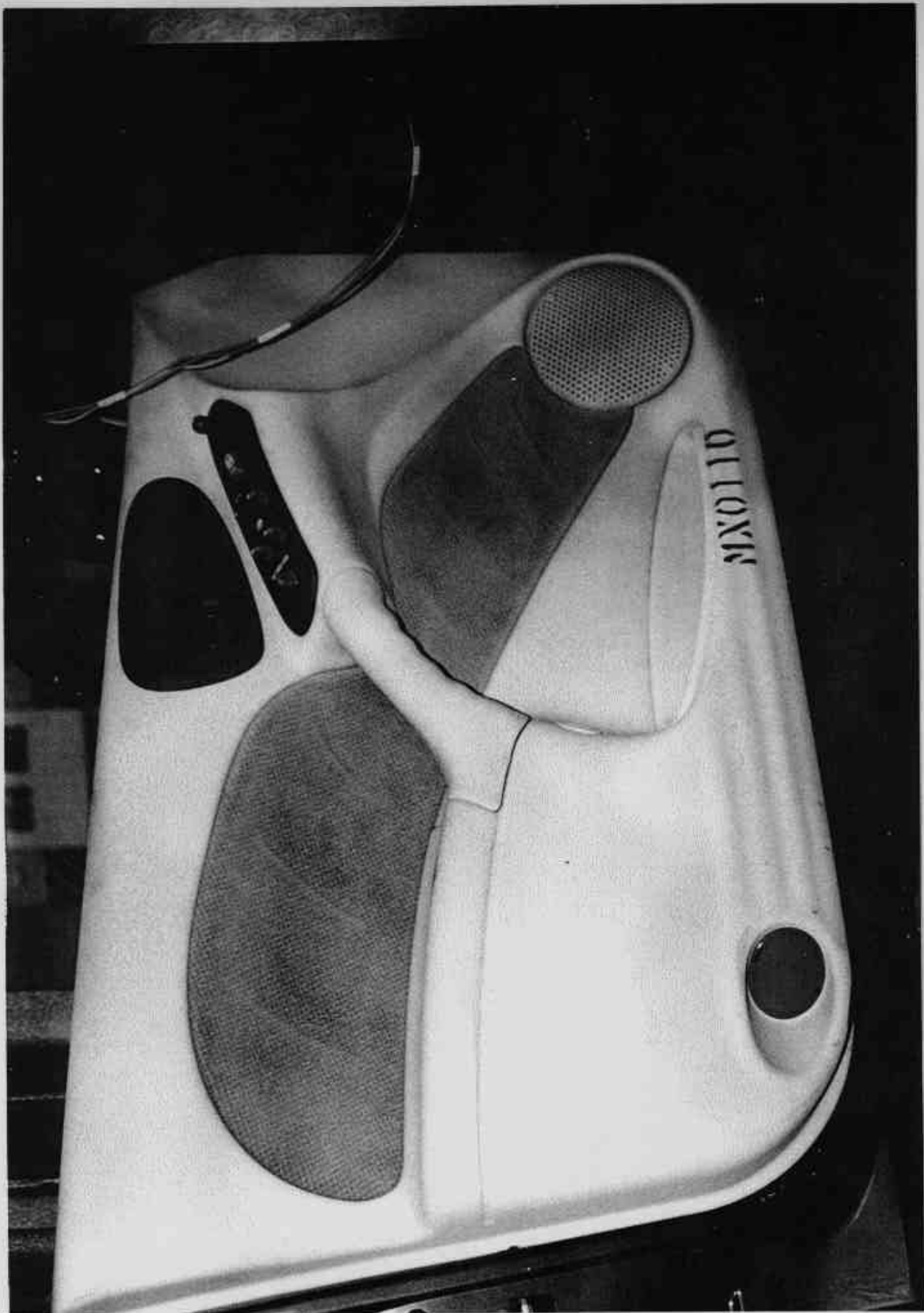


Figure A-25 PRE-TEST INTERIOR OF FRONT DOOR

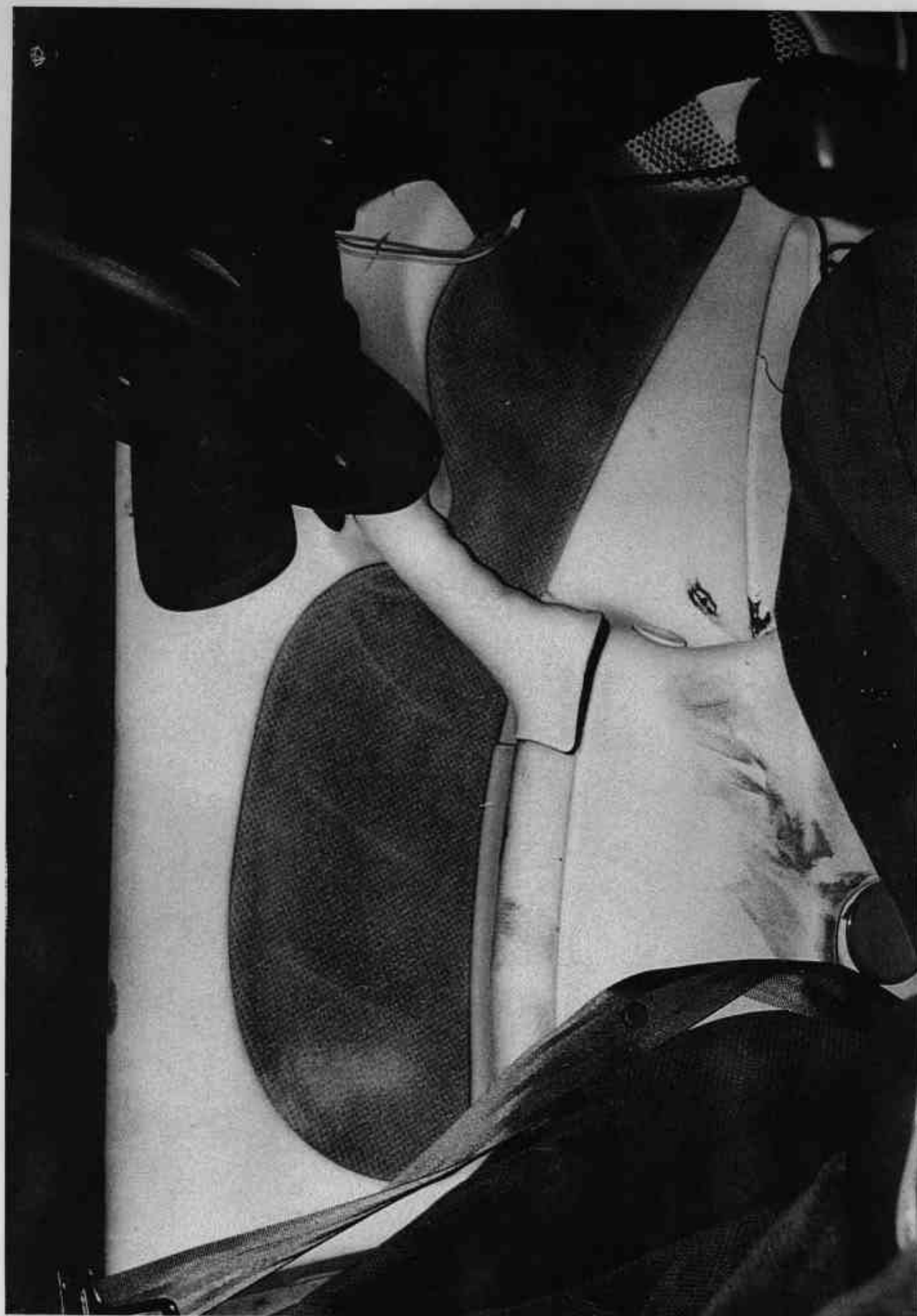


Figure A-26 POST-TEST INTERIOR OF FRONT DOOR SHOWING SID IMPACT LOCATIONS

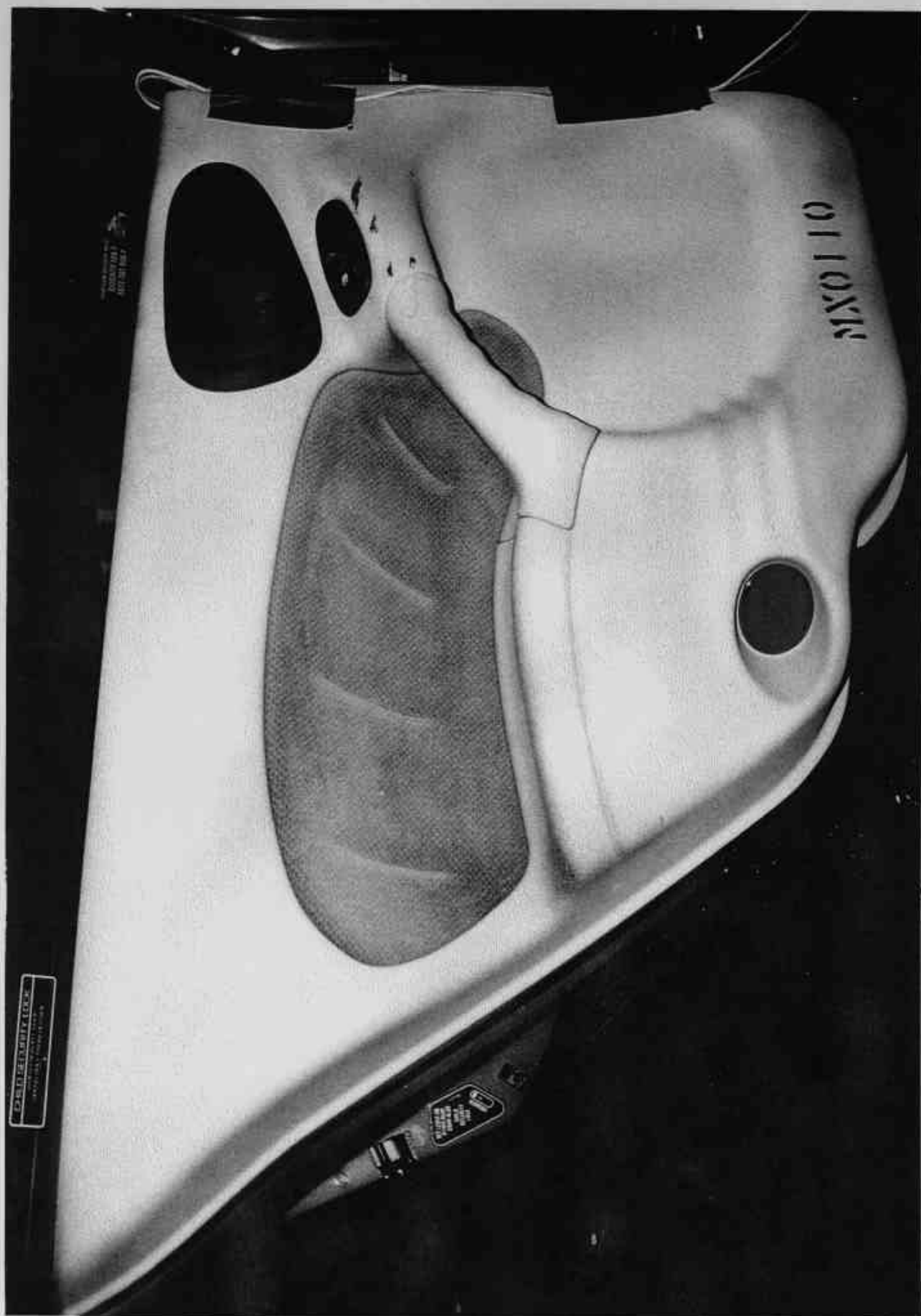


Figure A-27 PRE-TEST INTERIOR OF REAR DOOR

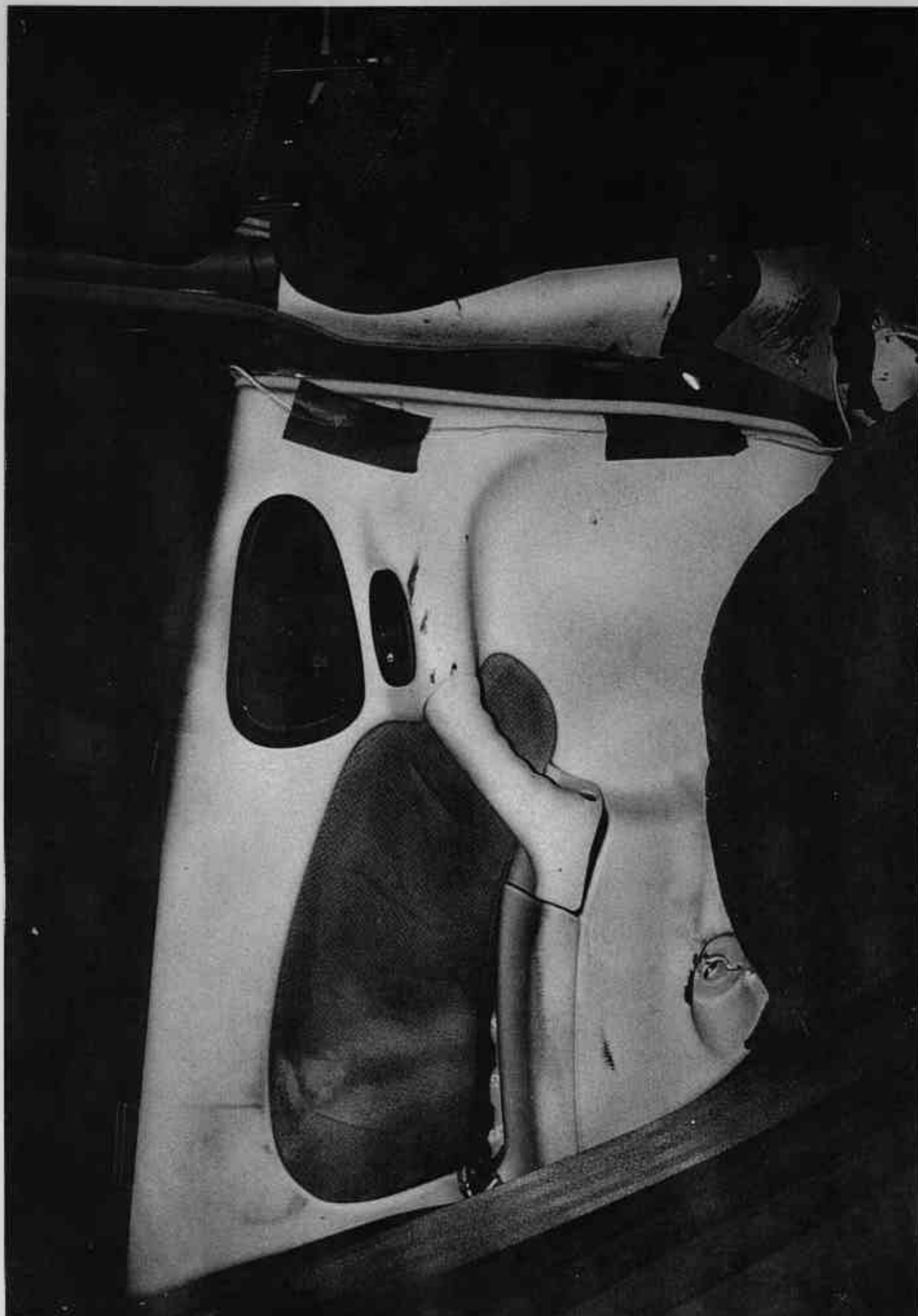


Figure A-28 POST-TEST INTERIOR OF REAR DOOR SHOWING SID IMPACT LOCATIONS

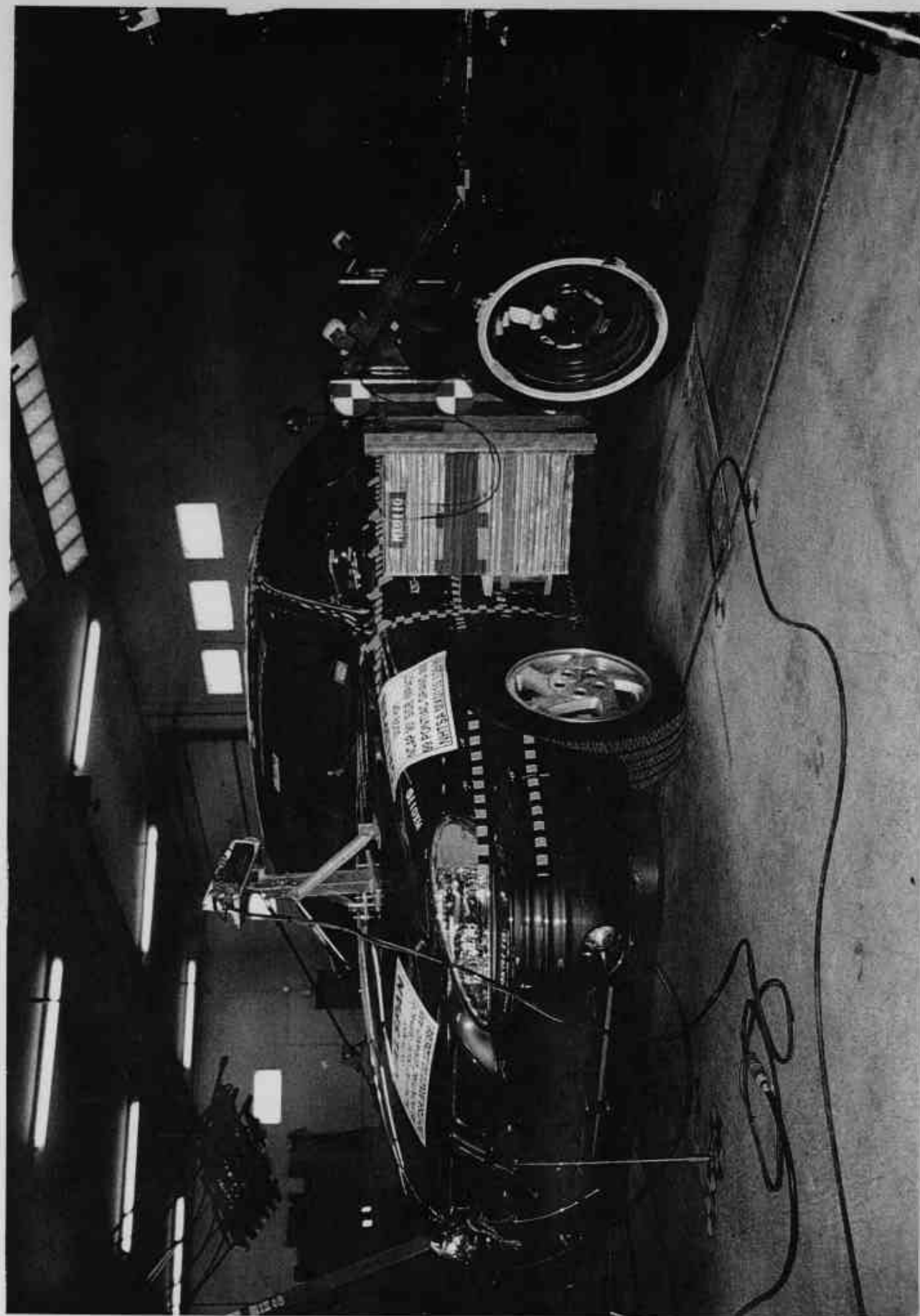


Figure A-29 PRE-TEST LEFT SIDE VIEW OF MDB WITH IMPACTOR FACE IN POSITION

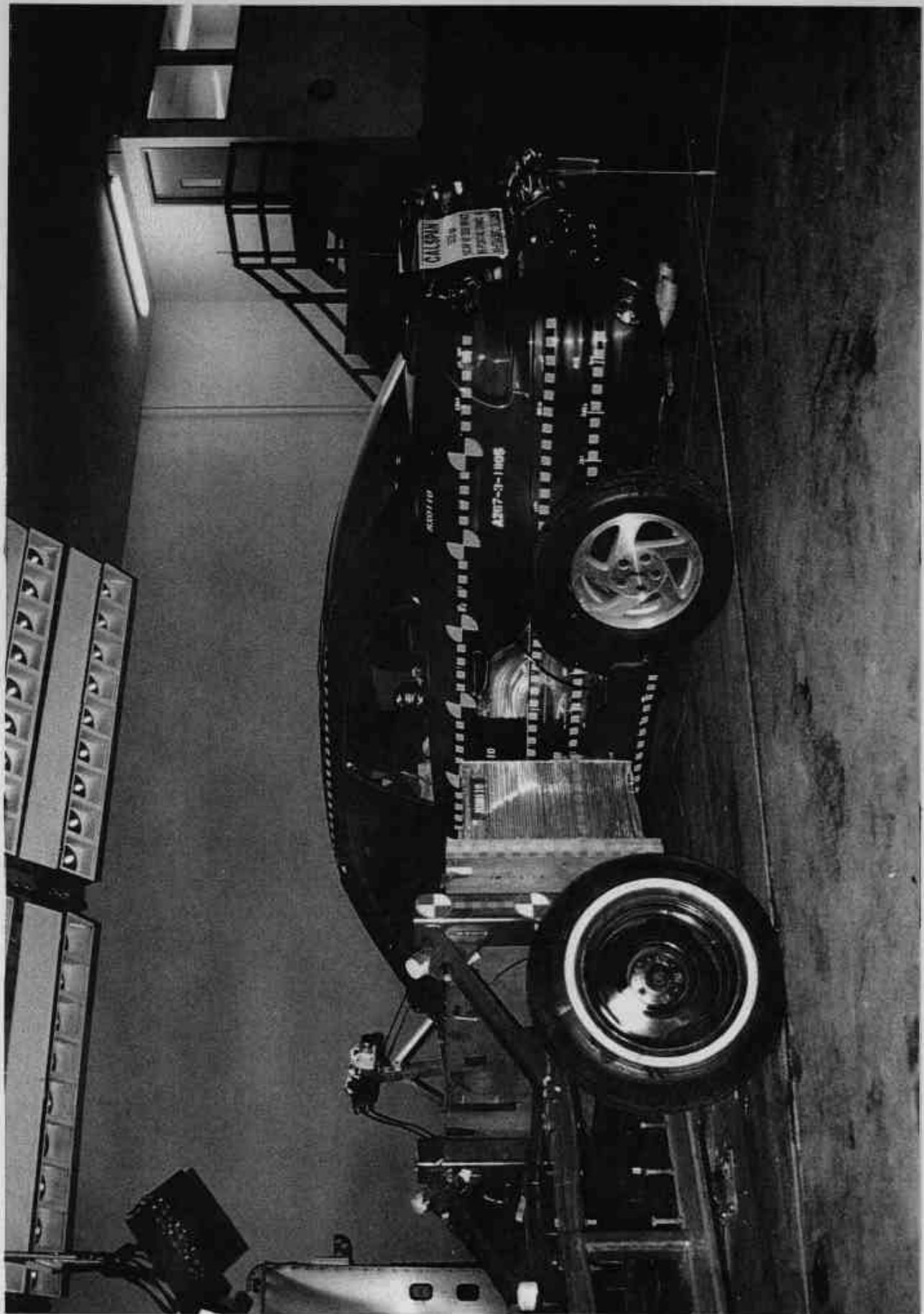


Figure A-30 PRE-TEST RIGHT SIDE VIEW OF MDB WITH IMPACTOR FACE IN POSITION

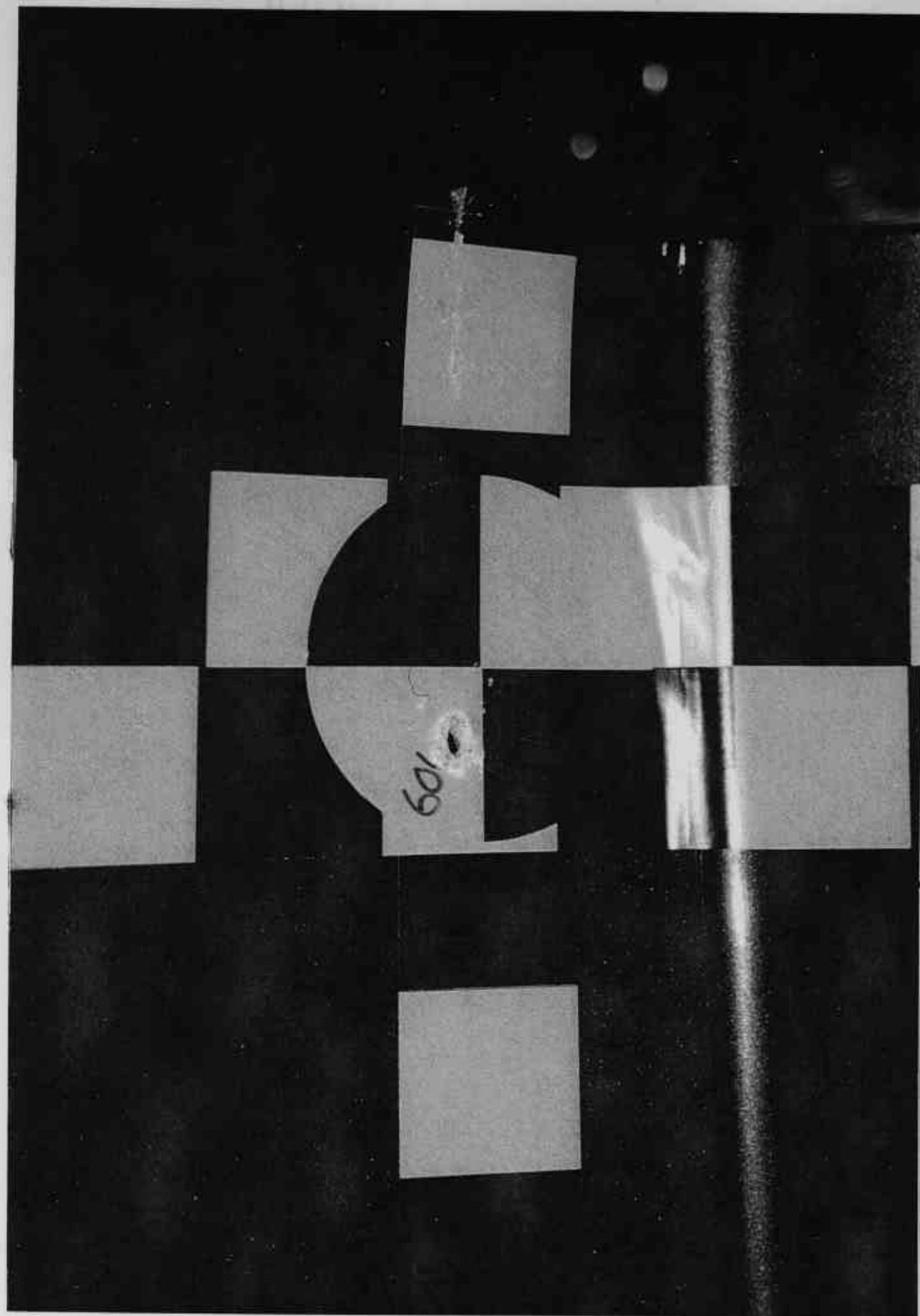


Figure A-31 POST-TEST CLOSE-UP VIEW OF IMPACT POINT TARGET

FRT P215/60R15 S 210KPA(30PSI)
RR P215/60R15 S 210KPA(30PSI)
SPA T125/70D15 M 420KPA(60PSI)

IF TIRES ARE HOT, ADD 28KPA(4PSI)
SEE OWNER'S MANUAL FOR MORE INFORMATION



MFD BY GENERAL MOTORS CORP

DATE
11/98

GVWR
1815 KG
3999 LB

GAWR RR
793 KG
1747 LB

GAWR FRT
1322 KG
2922 LB

THIS VEHICLE CONFORMS TO ALL APPLICABLE U.S. FEDERAL MOTOR
VEHICLE SAFETY, BUMPER, AND THEFT PREVENTION STANDARDS IN
EFFECT ON THE DATE OF MANUFACTURE SHOWN ABOVE.

1G2NE52TXXC540433

TYPE: PASS CAR

Figure A-32 CLOSE-UP VIEW OF VEHICLE'S CERTIFICATION LABEL

TIRE - LOADING INFORMATION

OCCUPANTS		VEHICLE CAP. WT.			
FRT.	CTR.	RR.	TOTAL	KG	LBS
2	0	3	5	408	899

MAX. LOADING @ GVWR SAME AS VEHICLE CAPACITY WEIGHT.
1G2NE52TXXC540483

MODEL: NE69 NBJ

TIRE SIZE	SPEED RTG	COLD TIRE PRESSURE
FRT P215/60R15	S	210KPA(30PSI)
RR P215/60R15	S	210KPA(30PSI)
SPA T125/70D15	M	420KPA(60PSI)

IF TIRES ARE HOT, ADD 28KPA(4PSI)
 SEE OWNER'S MANUAL FOR MORE INFORMATION

MFD BY GENERAL MOTORS CORP

DATE	GVWR	GAWR FRT	GAWR RR
11/98	1815 KG	1022 KG	793 KG
	3000 LR	2252 LB	1747 LB

Figure A-33 CLOSE-UP VIEW OF VEHICLE'S TIRE PLACARD LABEL

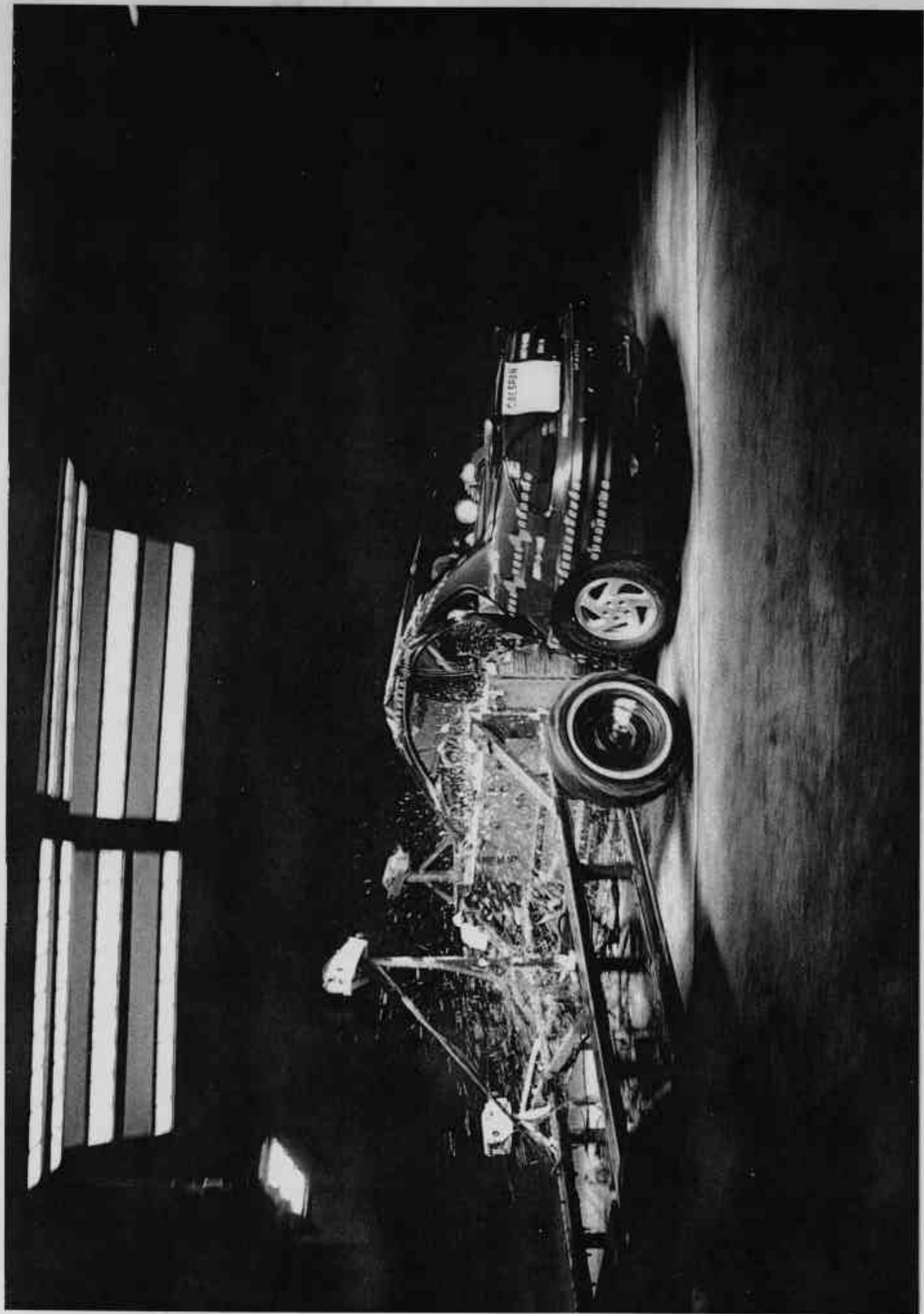


Figure A-34 IMPACT PHOTO



Figure A-35 ROLLOVER 90 DEGREES

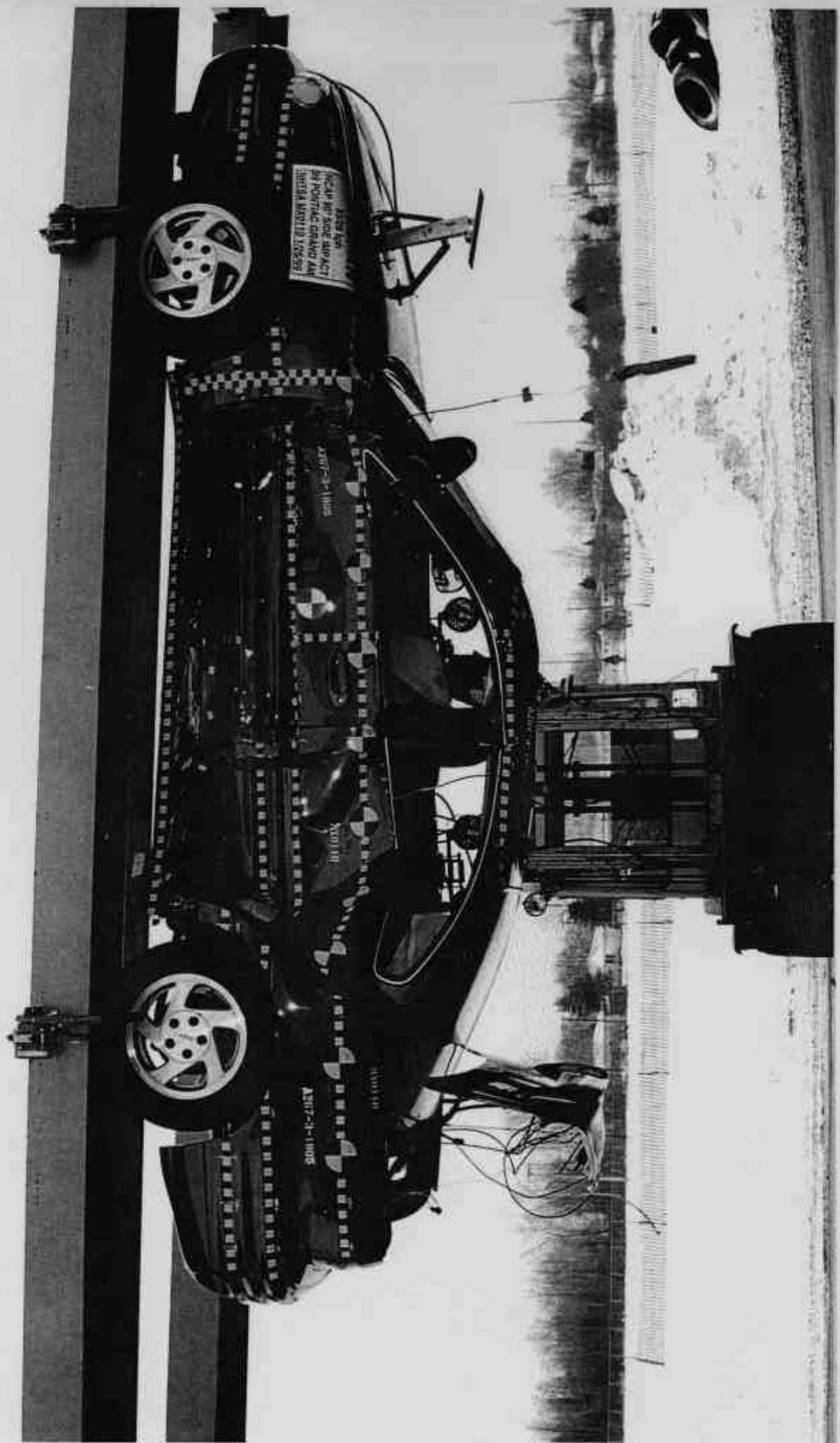


Figure A-36 ROLLOVER 180 DEGREES



A-39



Figure A-37 ROLLOVER 270 DEGREES

8506-3



Figure A-38 ROLLOVER 360 DEGREES

APPENDIX B

VEHICLE, MDB AND SID RESPONSE DATA

TABLE OF DATA PLOTS

DRIVER AND PASSENGER DUMMY INSTRUMENTATION PLOTS

ACCELERATION DATA - FILTER CLASS 1000

INTEGRATION DATA - FILTER CLASS 180

<u>Plot No.</u>	<u>Data Plot Title</u>	<u>Page</u>
1	DRIVER UPPER RIB (Y) ACCELERATION VS TIME	B- 6
2	DRIVER UPPER RIB (Y) VELOCITY VS TIME	B- 7
3	DRIVER LOWER RIB (Y) ACCELERATION VS TIME	B- 8
4	DRIVER LOWER RIB (Y) VELOCITY VS TIME	B- 9
5	DRIVER LOWER SPINE (Y) ACCELERATION VS TIME	B- 10
6	DRIVER LOWER SPINE (Y) VELOCITY VS TIME	B- 11
7	DRIVER PELVIC (Y) ACCELERATION VS TIME	B- 12
8	DRIVER PELVIC (Y) VELOCITY VS TIME	B- 13
9	PASSENGER UPPER RIB (Y) ACCELERATION VS TIME	B- 14
10	PASSENGER UPPER RIB (Y) VELOCITY VS TIME	B- 15
11	PASSENGER LOWER RIB (Y) ACCELERATION VS TIME	B- 16
12	PASSENGER LOWER RIB (Y) VELOCITY VS TIME	B- 17
13	PASSENGER LOWER SPINE (Y) ACCELERATION VS TIME	B- 18
14	PASSENGER LOWER SPINE (Y) VELOCITY VS TIME	B- 19
15	PASSENGER PELVIC (Y) ACCELERATION VS TIME	B- 20
16	PASSENGER PELVIC (Y) VELOCITY VS TIME	B- 21

DRIVER & PASSENGER DUMMY INSTRUMENTATION PLOTS

ACCELERATION DATA - FIR FILTERED

<u>Plot No.</u>	<u>Data Plot Title</u>	<u>Page</u>
17	DRIVER UPPER RIB (Y) ACCELERATION VS TIME	B- 22
18	DRIVER LOWER RIB (Y) ACCELERATION VS TIME	B- 23
19	DRIVER LOWER SPINE (Y) ACCELERATION VS TIME	B- 24
20	DRIVER PELVIC (Y) ACCELERATION VS TIME	B- 25
21	PASSENGER UPPER RIB (Y) ACCELERATION VS TIME	B- 26
22	PASSENGER LOWER RIB (Y) ACCELERATION VS TIME	B- 27
23	PASSENGER LOWER SPINE (Y) ACCELERATION VS TIME	B- 28
24	PASSENGER PELVIC (Y) ACCELERATION VS TIME	B- 29

TEST VEHICLE INSTRUMENTATION PLOTS
ACCELERATION DATA - FILTER CLASS 60
INTEGRATION DATA - FILTER CLASS 180

<u>Plot No.</u>	<u>Data Plot Title</u>	<u>Page</u>
25	RIGHT SIDE SILL AT FRONT SEAT (X) ACCELERATION VS TIME	B- 30
26	RIGHT SIDE SILL AT FRONT SEAT (X) VELOCITY VS TIME	B- 31
27	RIGHT SIDE SILL AT FRONT SEAT (Y) ACCELERATION VS TIME	B- 32
28	RIGHT SIDE SILL AT FRONT SEAT (Y) VELOCITY VS TIME	B- 33
29	RIGHT SIDE SILL AT FRONT SEAT (Z) ACCELERATION VS TIME	B- 34
30	RIGHT SIDE SILL AT FRONT SEAT (Z) VELOCITY VS TIME	B- 35
31	RIGHT SIDE SILL AT FRONT SEAT RESULTANT ACCELERATION VS TIME	B- 36
32	RIGHT SIDE SILL AT REAR SEAT (X) ACCELERATION VS TIME	B- 37
33	RIGHT SIDE SILL AT REAR SEAT (X) VELOCITY VS TIME	B- 38
34	RIGHT SIDE SILL AT REAR SEAT (Y) ACCELERATION VS TIME	B- 39
35	RIGHT SIDE SILL AT REAR SEAT (Y) VELOCITY VS TIME	B- 40
36	RIGHT SIDE SILL AT REAR SEAT (Z) ACCELERATION VS TIME	B- 41
37	RIGHT SIDE SILL AT REAR SEAT (Z) VELOCITY VS TIME	B- 42
38	RIGHT SIDE SILL AT REAR SEAT RESULTANT ACCELERATION VS TIME	B- 43
39	REAR FLOORPAN ABOVE AXLE (X) ACCELERATION VS TIME	B- 44
40	REAR FLOORPAN ABOVE AXLE (X) VELOCITY VS TIME	B- 45
41	REAR FLOORPAN ABOVE AXLE (Y) ACCELERATION VS TIME	B- 46
42	REAR FLOORPAN ABOVE AXLE (Y) VELOCITY VS TIME	B- 47
43	REAR FLOORPAN ABOVE AXLE (Z) ACCELERATION VS TIME	B- 48
44	REAR FLOORPAN ABOVE AXLE (Z) VELOCITY VS TIME	B- 49
45	REAR FLOORPAN ABOVE AXLE RESULTANT ACCELERATION VS TIME	B- 50
46	LEFT SIDE SILL AT REAR SEAT (Y) ACCELERATION VS TIME	B- 51
47	LEFT SIDE SILL AT REAR SEAT (Y) VELOCITY VS TIME	B- 52
48	LEFT SIDE SILL AT FRONT SEAT (Y) ACCELERATION VS TIME	B- 53
49	LEFT SIDE SILL AT FRONT SEAT (Y) VELOCITY VS TIME	B- 54
50	LEFT FRONT DOOR ON CENTERLINE (Y) ACCELERATION VS TIME	B- 55
51	LEFT FRONT DOOR ON CENTERLINE (Y) VELOCITY VS TIME	B- 56
52	RIGHT REAR OCCUPANT COMPARTMENT (Y) ACCELERATION VS TIME	B- 57
53	RIGHT REAR OCCUPANT COMPARTMENT (Y) VELOCITY VS TIME	B- 58
54	MID REAR OF LEFT FRONT DOOR (Y) ACCELERATION VS TIME	B- 59
55	MID REAR OF LEFT FRONT DOOR (Y) VELOCITY VS TIME	B- 60
56	LEFT FRONT DOOR UPPER CENTERLINE (Y) ACCELERATION VS TIME	B- 61
57	LEFT FRONT DOOR UPPER CENTERLINE (Y) VELOCITY VS TIME	B- 62
58	MID REAR OF LEFT REAR DOOR (Y) ACCELERATION VS TIME	B- 63
59	MID REAR OF LEFT REAR DOOR (Y) VELOCITY VS TIME	B- 64
60	LEFT REAR DOOR UPPER CENTERLINE (Y) ACCELERATION VS TIME	B- 65
61	LEFT REAR DOOR UPPER CENTERLINE (Y) VELOCITY VS TIME	B- 66
62	LOWER B-POST (Y) ACCELERATION VS TIME	B- 67
63	LOWER B-POST (Y) VELOCITY VS TIME	B- 68
64	UPPER B-POST (Y) ACCELERATION VS TIME	B- 69
65	UPPER B-POST (Y) VELOCITY VS TIME	B- 70
66	LOWER A-POST (Y) ACCELERATION VS TIME	B- 71
67	LOWER A-POST (Y) VELOCITY VS TIME	B- 72
68	UPPER A-POST (Y) ACCELERATION VS TIME	B- 73
69	UPPER A-POST (Y) VELOCITY VS TIME	B- 74

70	FRONT SEAT TRACK (Y) ACCELERATION VS TIME	B- 75
71	FRONT SEAT TRACK (Y) VELOCITY VS TIME	B- 76
72	REAR SEAT TRACK (Y) ACCELERATION VS TIME	B- 77
73	REAR SEAT TRACK (Y) VELOCITY VS TIME	B- 78
74	VEHICLE CENTER OF GRAVITY (X) ACCELERATION VS TIME	B- 79
75	VEHICLE CENTER OF GRAVITY (X) VELOCITY VS TIME	B- 80
76	VEHICLE CENTER OF GRAVITY (Y) ACCELERATION VS TIME	B- 81
77	VEHICLE CENTER OF GRAVITY (Y) VELOCITY ACCELERATION VS TIME	B- 82
78	VEHICLE CENTER OF GRAVITY (Z) ACCELERATION VS TIME	B- 83
79	VEHICLE CENTER OF GRAVITY (Z) VELOCITY VS TIME	B- 84
80	VEHICLE CENTER OF GRAVITY RESULTANT ACCELERATION VS TIME	B- 85

MDB INSTRUMENTATION PLOTS
 ACCELERATION DATA - FILTER CLASS 60
 INTEGRATION DATA - FILTER CLASS 180

<u>Plot No.</u>	<u>Data Plot Title</u>	<u>Page</u>
81	MDB CENTER OF GRAVITY (X) ACCELERATION VS TIME	B- 86
82	MDB CENTER OF GRAVITY (X) VELOCITY VS TIME	B- 87
83	MDB CENTER OF GRAVITY (Y) ACCELERATION VS TIME	B- 88
84	MDB CENTER OF GRAVITY (Y) VELOCITY VS TIME	B- 89
85	MDB CENTER OF GRAVITY (Z) ACCELERATION VS TIME	B- 90
86	MDB CENTER OF GRAVITY (Z) VELOCITY VS TIME	B- 91
87	MDB CENTER OF GRAVITY RESULTANT ACCELERATION VS TIME	B- 92
88	MDB REAR (X) ACCELERATION VS TIME	B- 93
89	MDB REAR (X) VELOCITY VS TIME	B- 94
90	MDB REAR (Y) ACCELERATION VS TIME	B- 95
91	MDB REAR (Y) VELOCITY VS TIME	B- 96

DRIVER & PASSENGER DUMMY INSTRUMENTATION PLOTS (REDUNDANT)

ACCELERATION DATA - FILTER CLASS 1000

INTEGRATION DATA - FILTER CLASS 180

<u>Plot No.</u>	<u>Data Plot Title</u>	<u>Page</u>
92	DRIVER UPPER RIB (Y) ACCELERATION VS TIME	B- 97
93	DRIVER UPPER RIB (Y) VELOCITY VS TIME	B- 98
94	DRIVER LOWER RIB (Y) ACCELERATION VS TIME	B- 99
95	DRIVER LOWER RIB (Y) VELOCITY VS TIME	B- 100
96	DRIVER LOWER SPINE (Y) ACCELERATION VS TIME	B- 101
97	DRIVER LOWER SPINE (Y) VELOCITY VS TIME	B- 102
98	DRIVER PELVIC (Y) ACCELERATION VS TIME	B- 103
99	DRIVER PELVIC (Y) VELOCITY VS TIME	B- 104
100	PASSENGER UPPER RIB (Y) ACCELERATION VS TIME	B- 105
101	PASSENGER UPPER RIB (Y) VELOCITY VS TIME	B- 106
102	PASSENGER LOWER RIB (Y) ACCELERATION VS TIME	B- 107
103	PASSENGER LOWER RIB (Y) VELOCITY VS TIME	B- 108
104	PASSENGER LOWER SPINE (Y) ACCELERATION VS TIME	B- 109
105	PASSENGER LOWER SPINE (Y) VELOCITY VS TIME	B- 110
106	PASSENGER PELVIC (Y) ACCELERATION VS TIME	B- 111
107	PASSENGER PELVIC (Y) VELOCITY VS TIME	B- 112

DRIVER & PASSENGER DUMMY INSTRUMENTATION PLOTS (REDUNDANT)

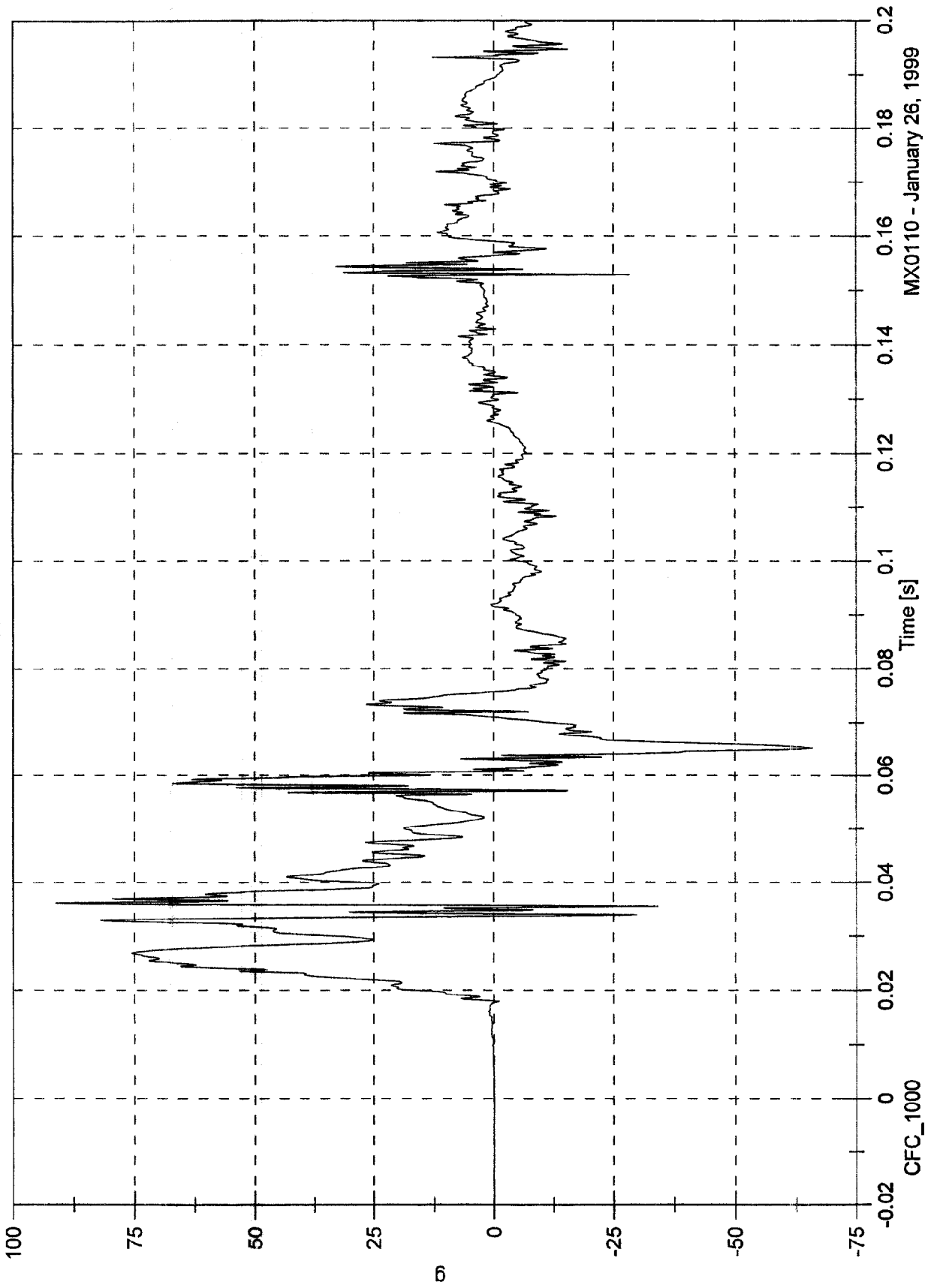
ACCELERATION DATA - FIR FILTERED

<u>Plot No.</u>	<u>Data Plot Title</u>	<u>Page</u>
108	DRIVER UPPER RIB (Y) ACCELERATION VS TIME	B- 113
109	DRIVER LOWER RIB (Y) ACCELERATION VS TIME	B- 114
110	DRIVER LOWER SPINE (Y) ACCELERATION VS TIME	B- 115
111	DRIVER PELVIC (Y) ACCELERATION VS TIME	B- 116
112	PASSENGER UPPER RIB (Y) ACCELERATION VS TIME	B- 117
113	PASSENGER LOWER RIB (Y) ACCELERATION VS TIME	B- 118
114	PASSENGER LOWER SPINE (Y) ACCELERATION VS TIME	B- 119
115	PASSENGER PELVIC (Y) ACCELERATION VS TIME	B- 120

SNCAP test # 3 - 1999 Pontiac Grand Am

P1 Upper Rib y

Max: 91.1 [g] at 0.036 [s]
Min: -66.0 [g] at 0.065 [s]

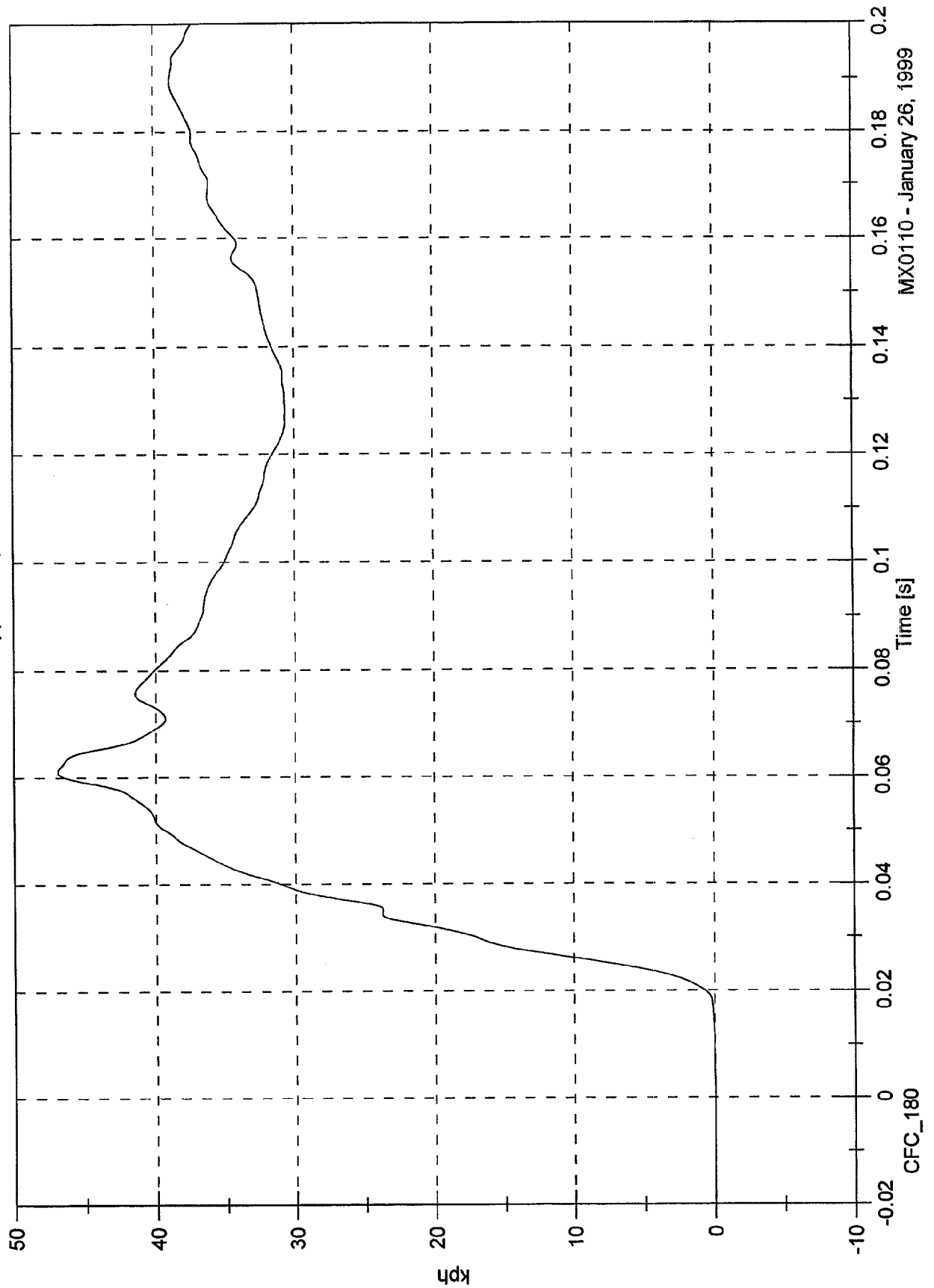


MX0110 - January 26, 1999

SNCAP test # 3 - 1999 Pontiac Grand Am

P1 Upper Rib y

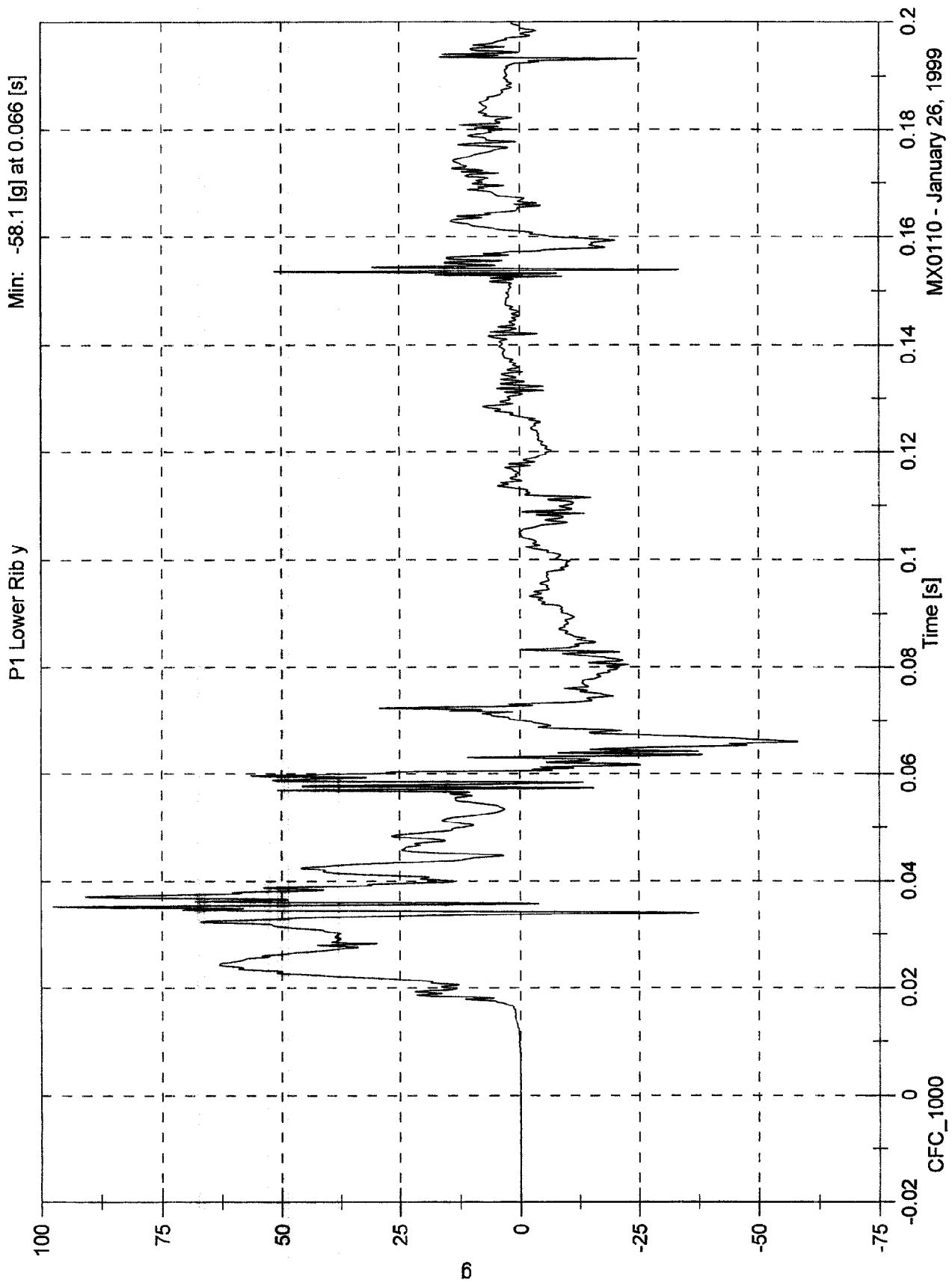
Max: 46.9 [kph] at 0.061 [s]
Min: -0.0 [kph] at -0.059 [s]



MX0110 - January 26, 1999

SNCAP test # 3 - 1999 Pontiac Grand Am

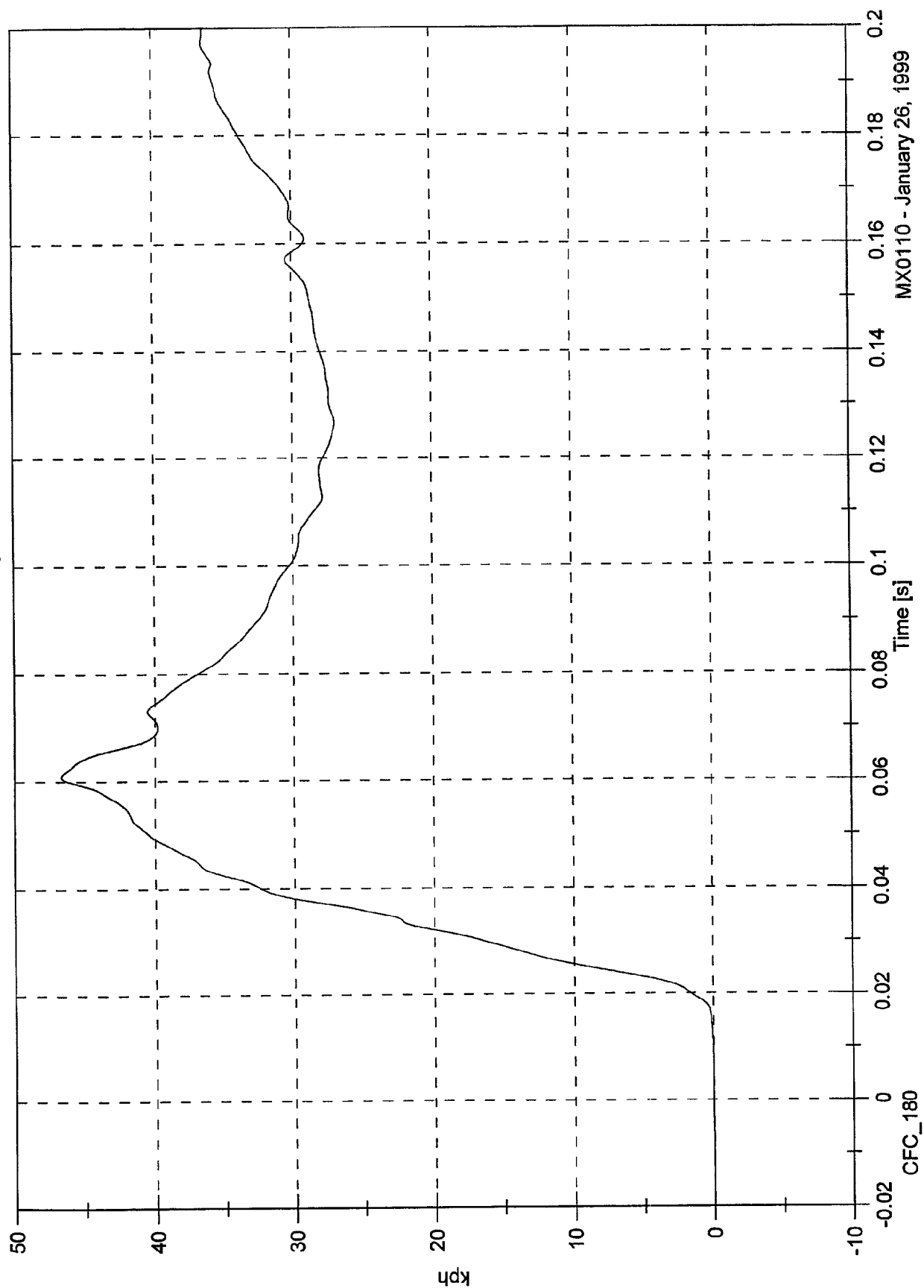
Max: 97.5 [g] at 0.035 [s]
Min: -58.1 [g] at 0.066 [s]



SNCAP test # 3 - 1999 Pontiac Grand Am

P1 Lower Rib y

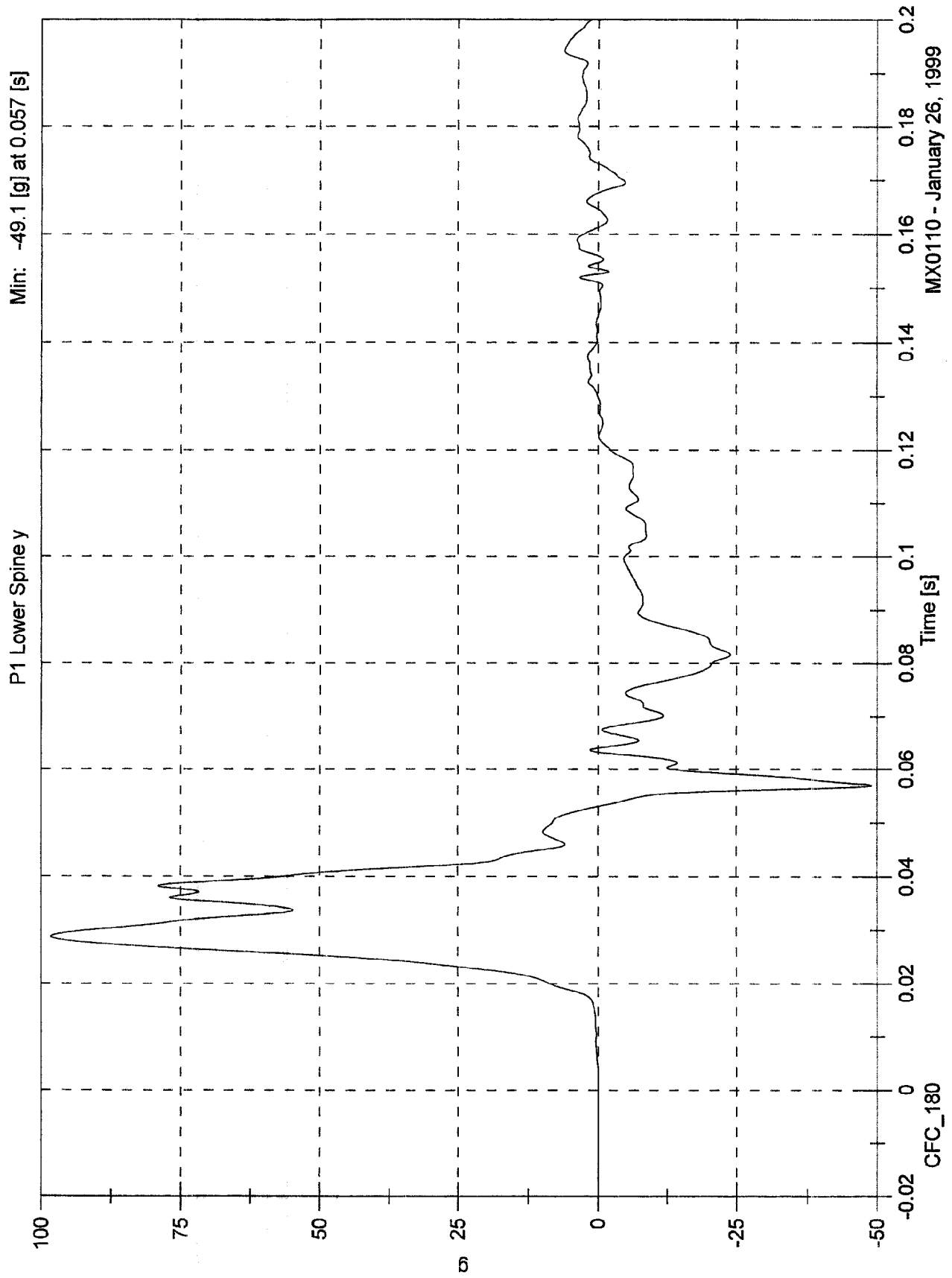
Max: 46.7 [kph] at 0.061 [s]
Min: -0.0 [kph] at -0.063 [s]



MX0110 - January 26, 1999

SNCAP test # 3 - 1999 Pontiac Grand Am

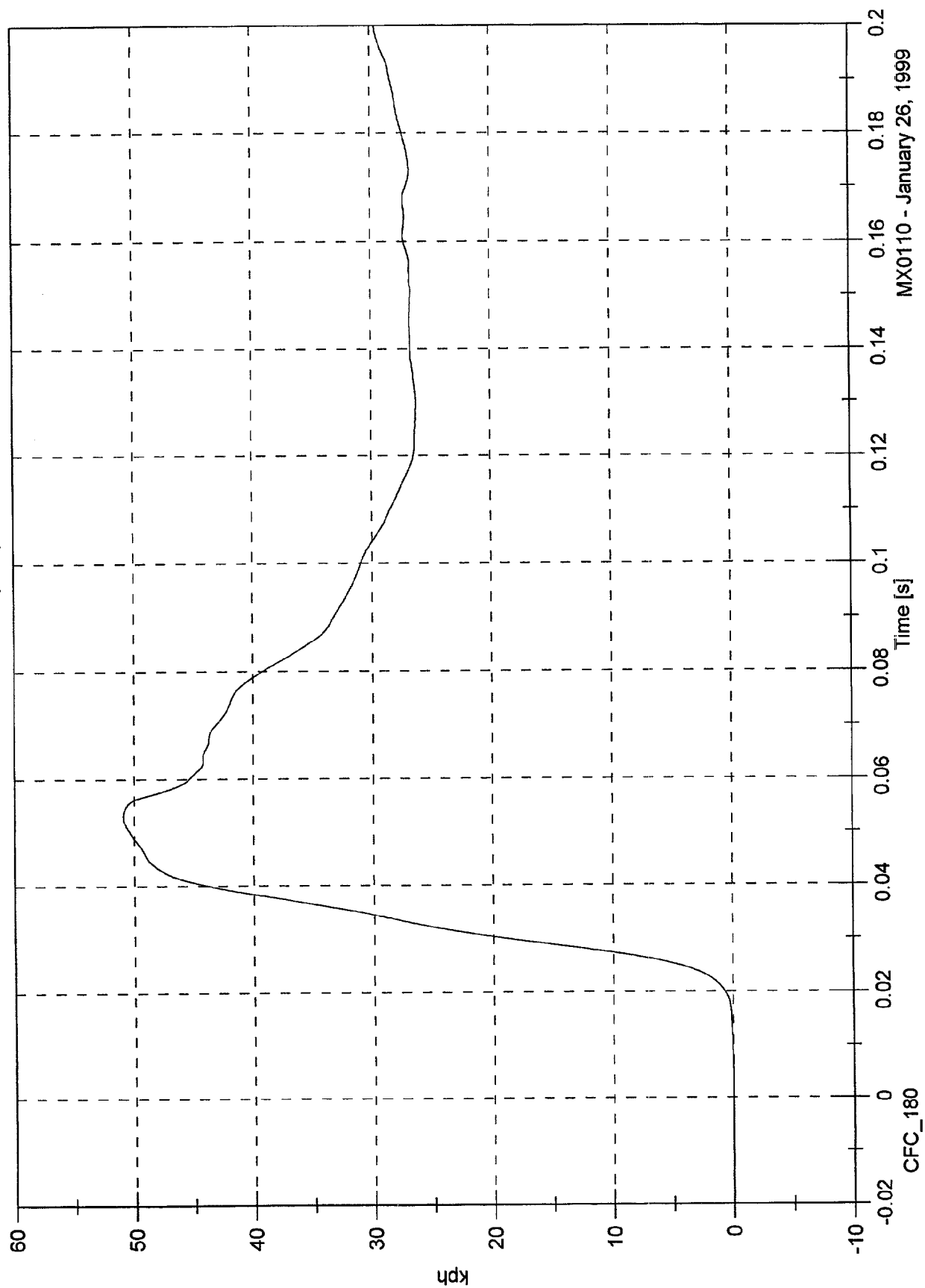
Max: 98.3 [g] at 0.029 [s]
Min: -49.1 [g] at 0.057 [s]



SNCAP test # 3 - 1999 Pontiac Grand Am

P1 Lower Spine y

Max: 50.9 [kph] at 0.053 [s]
Min: -0.0 [kph] at -0.026 [s]

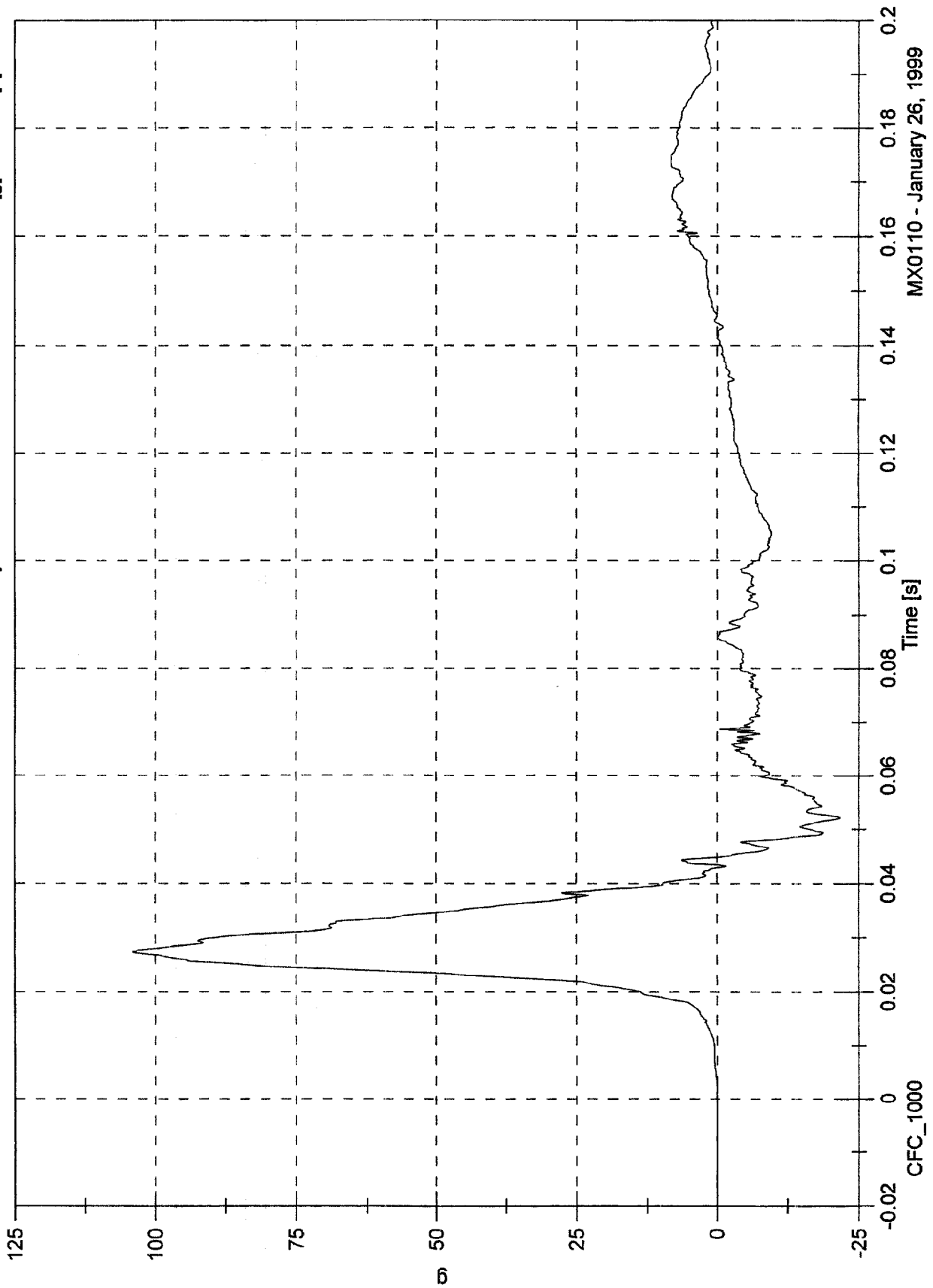


MX0110 - January 26, 1999

SNCAP test # 3 - 1999 Pontiac Grand Am

P1 Pelvic y

Max: 104.1 [g] at 0.027 [s]
Min: -21.8 [g] at 0.052 [s]

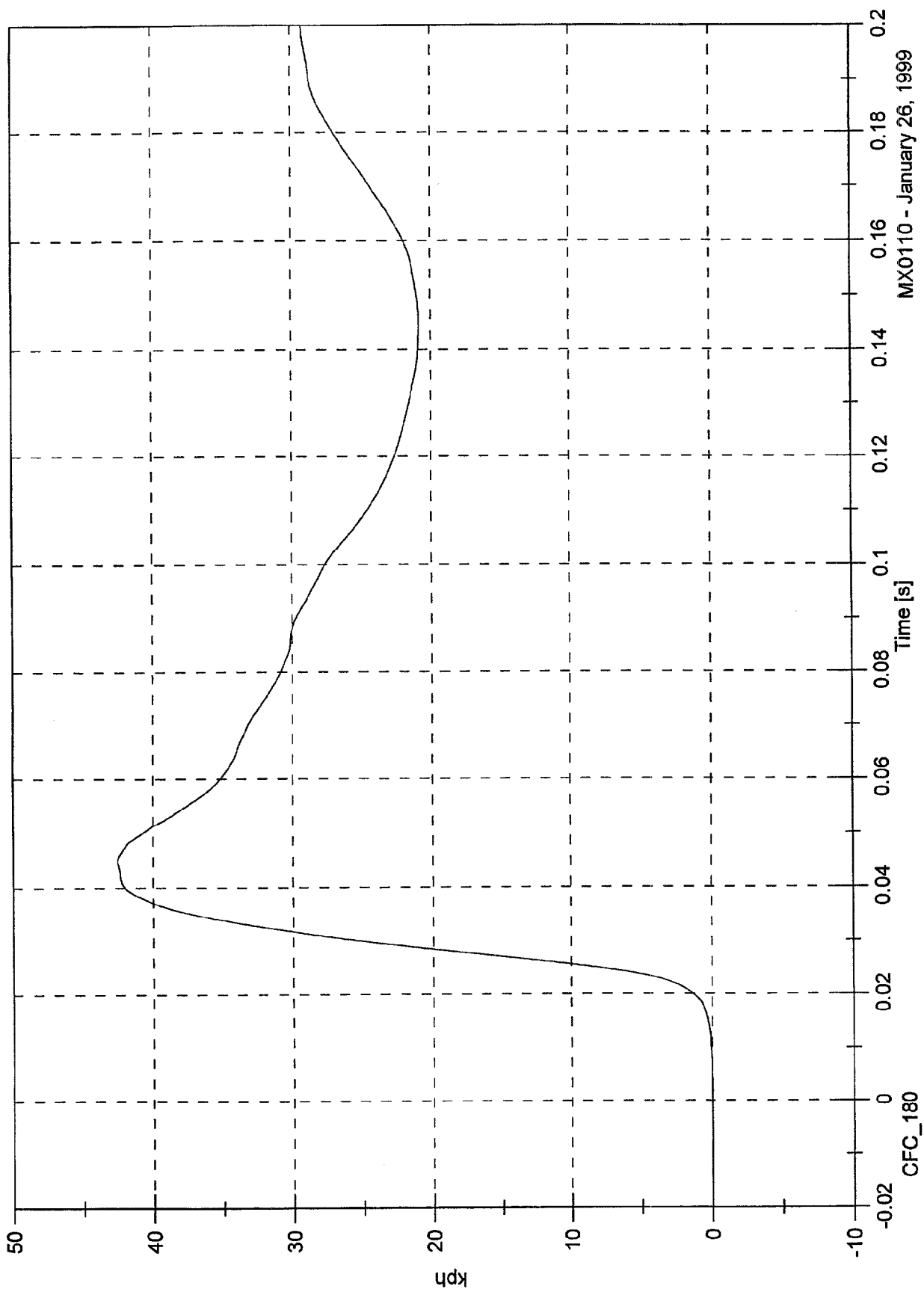


MX0110 - January 26, 1999

SNCAP test # 3 - 1999 Pontiac Grand Am

Max: 42.5 [kph] at 0.045 [s]
 Min: -0.0 [kph] at -0.026 [s]

P1 Pelvic y

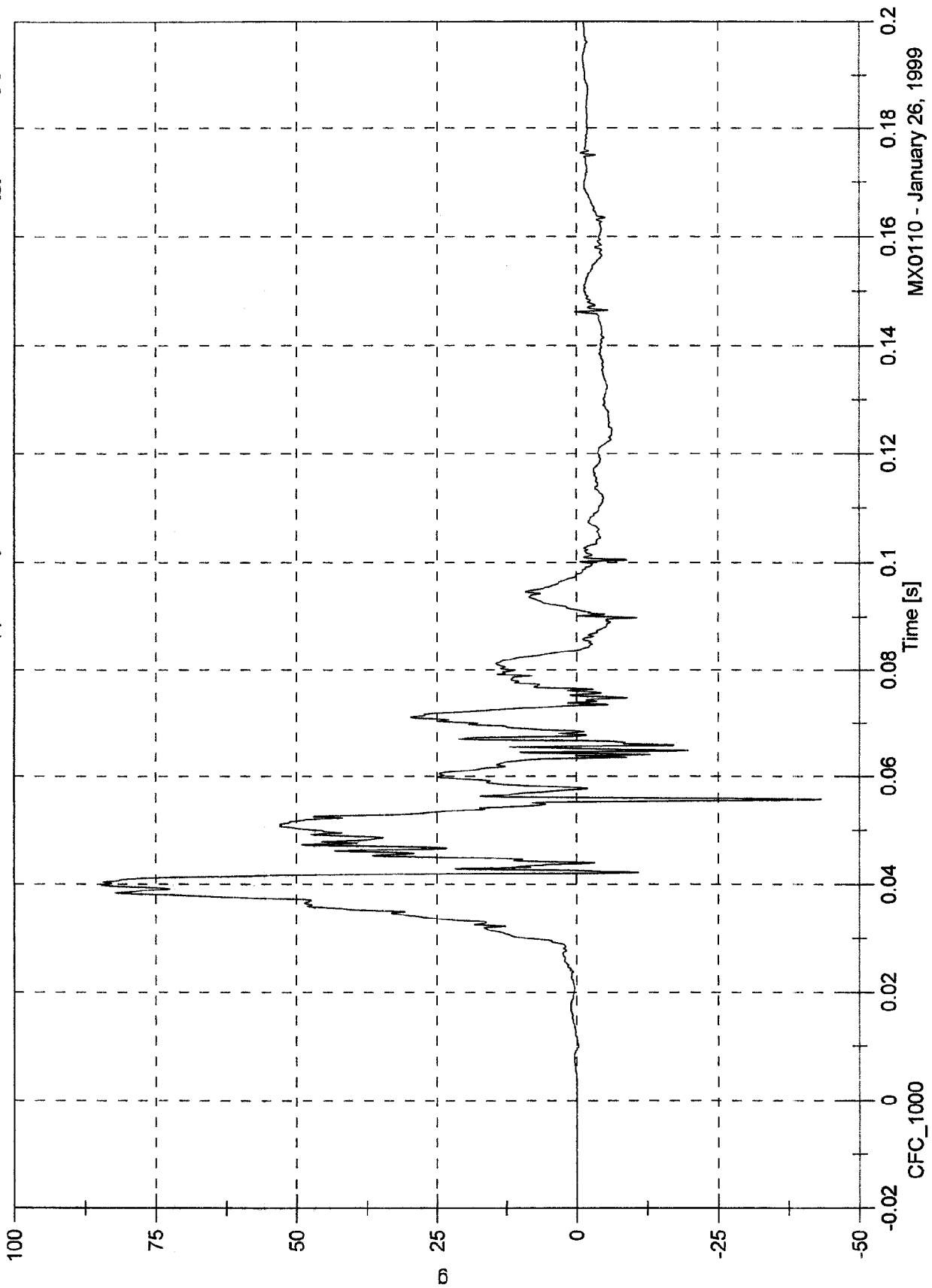


MX0110 - January 26, 1999

SNCAP test # 3 - 1999 Pontiac Grand Am

Max: 84.6 [g] at 0.040 [s]
Min: -43.3 [g] at 0.056 [s]

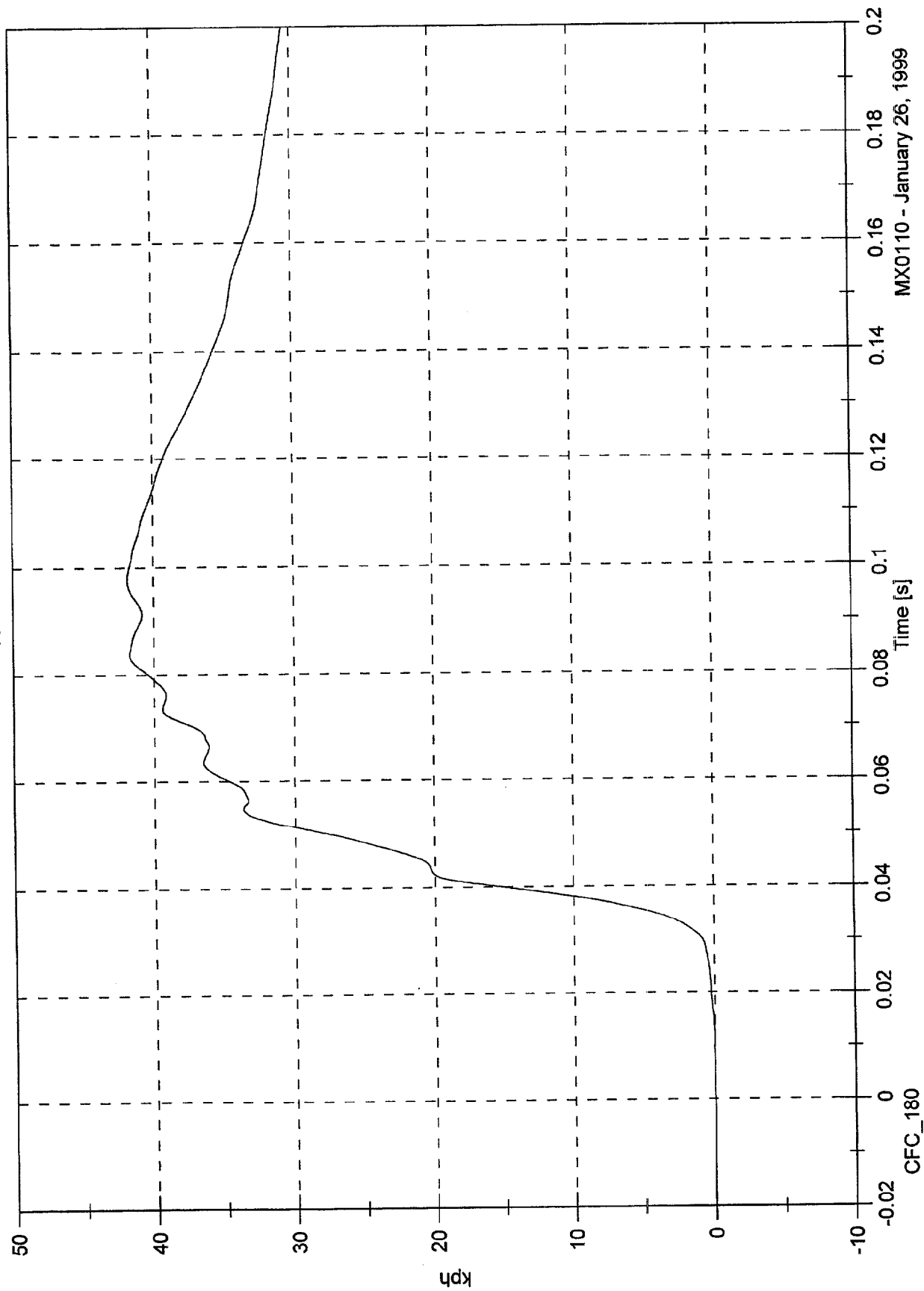
P4 Upper Rib y



SNCAP test # 3 - 1999 Pontiac Grand Am

P4 Upper Rib y

Max: 41.9 [kph] at 0.098 [s]
Min: -0.0 [kph] at -0.028 [s]

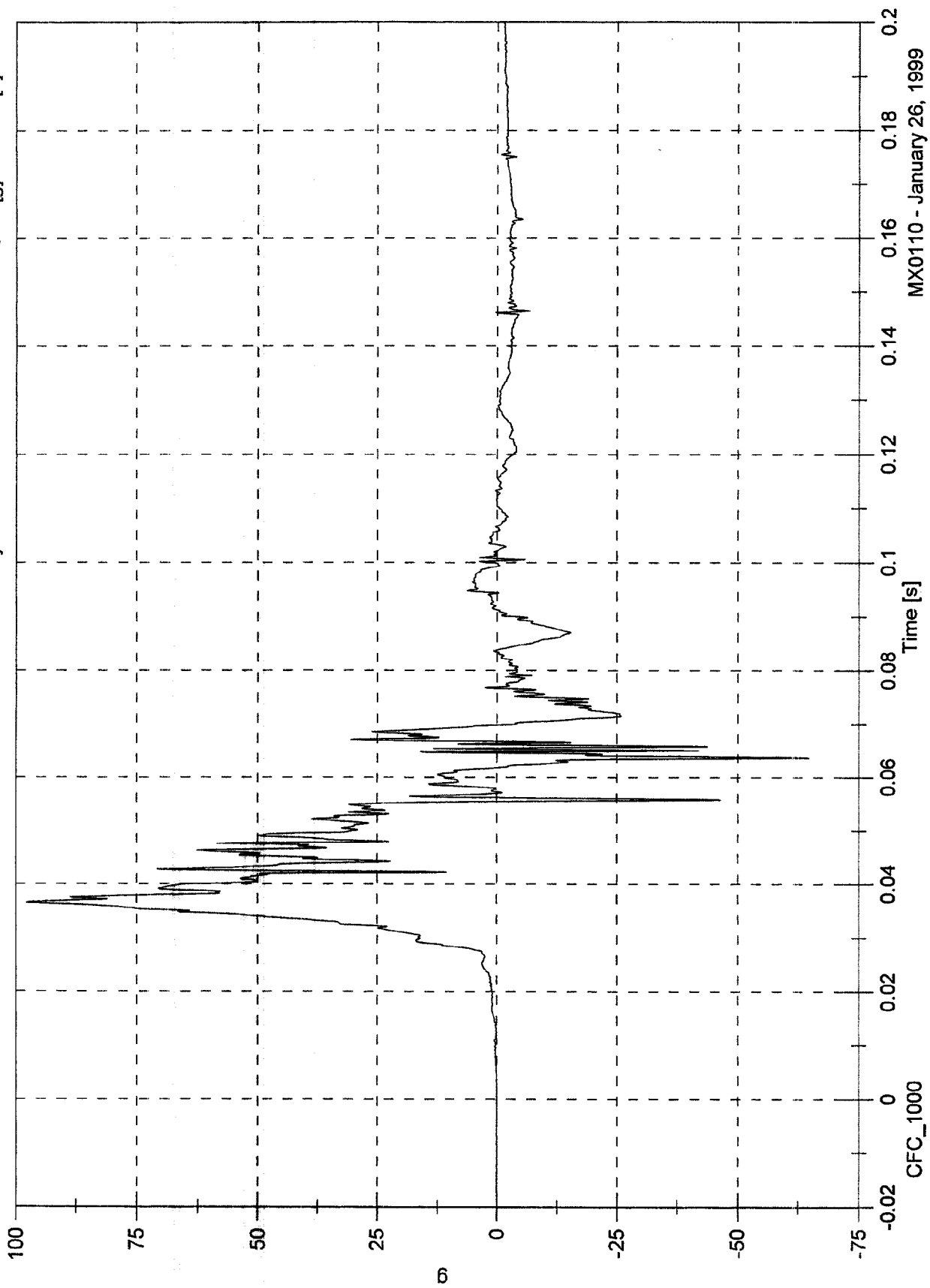


MX0110 - January 26, 1999

SNCAP test # 3 - 1999 Pontiac Grand Am

Max: 97.7 [g] at 0.036 [s]
Min: -64.7 [g] at 0.064 [s]

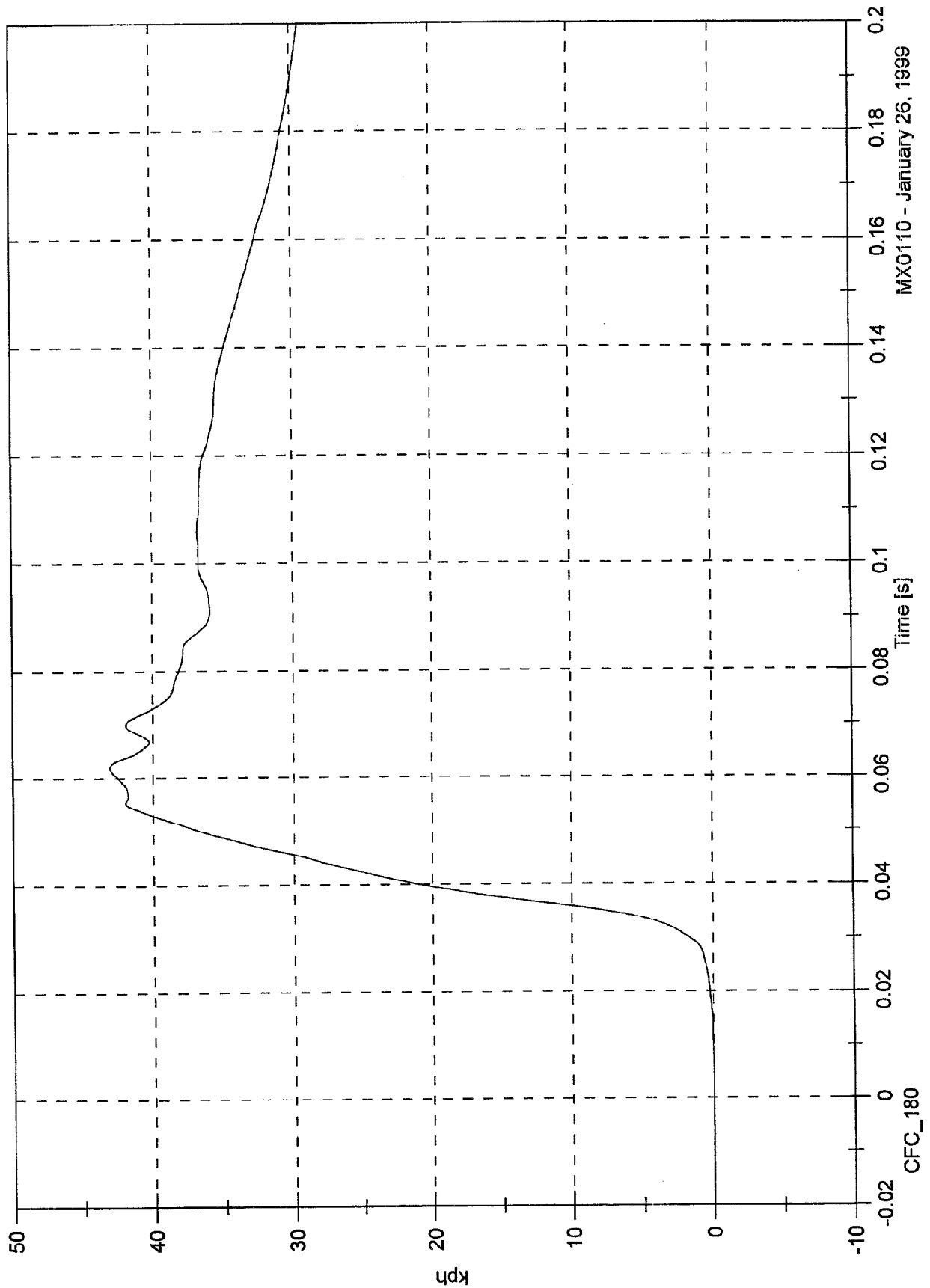
P4 Lower Rib y



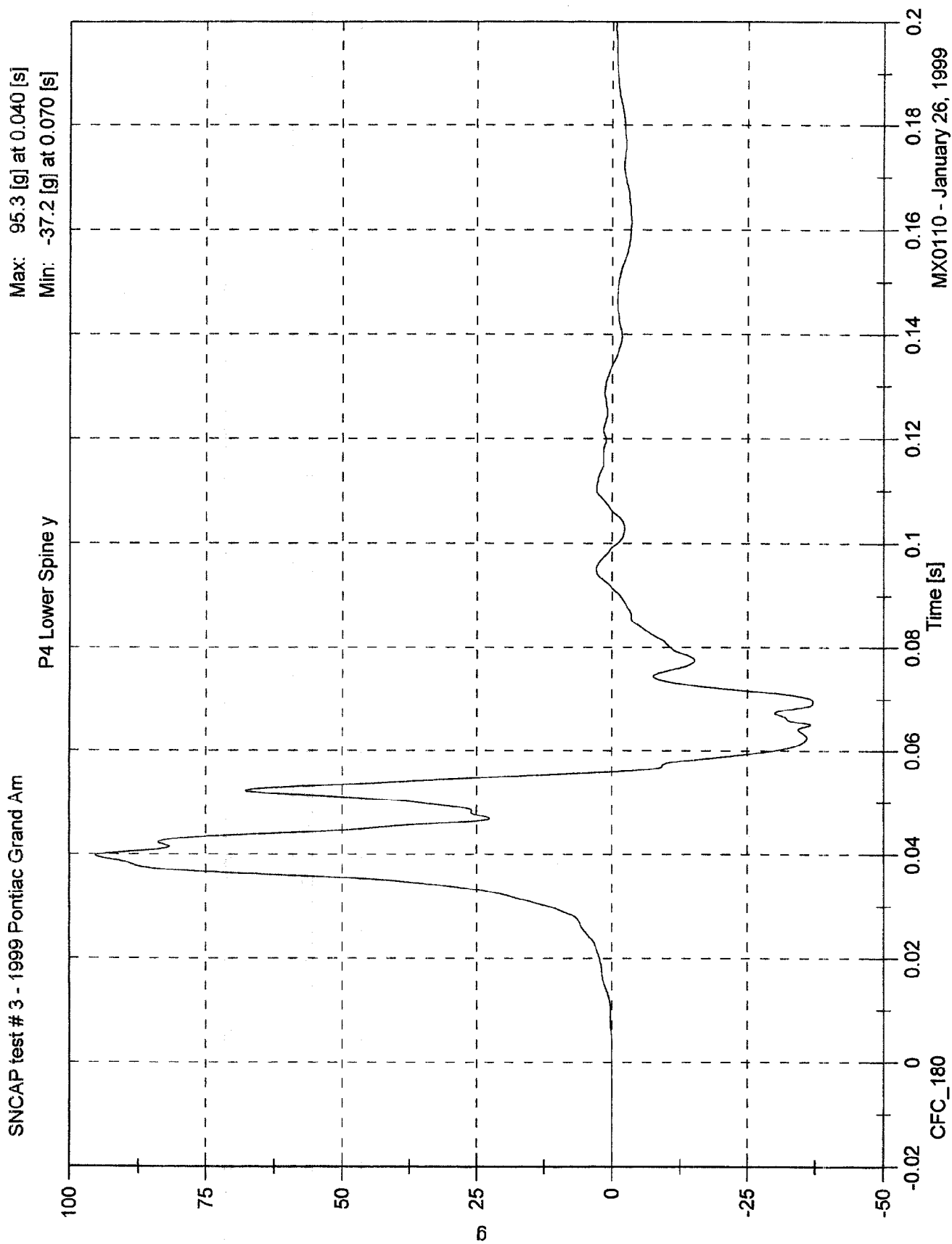
SNCAP test # 3 - 1999 Pontiac Grand Am

Max: 43.1 [kph] at 0.062 [s]
 Min: -0.0 [kph] at -0.053 [s]

P4 Lower Rib y



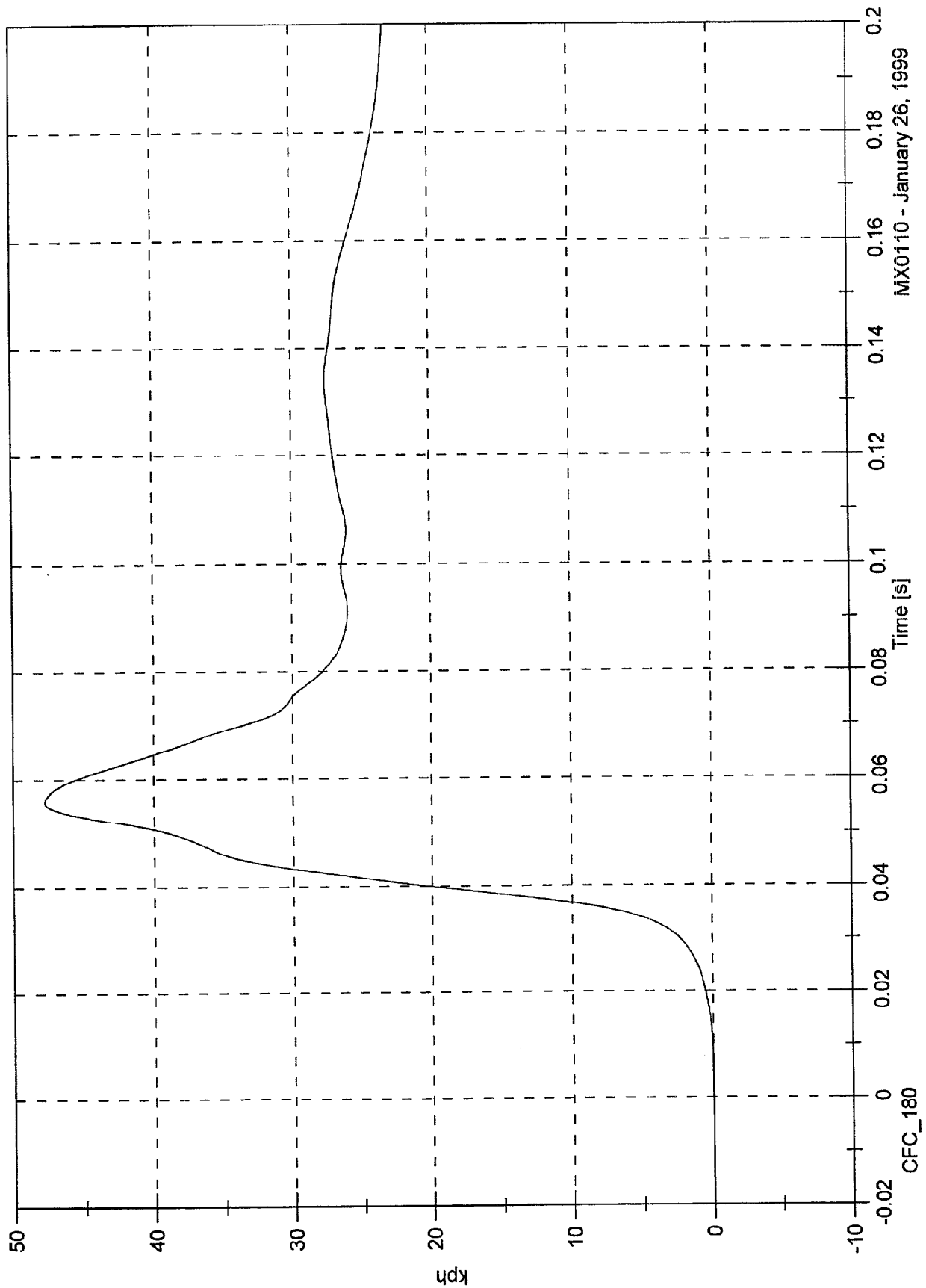
MX0110 - January 26, 1999



SNCAP test # 3 - 1999 Pontiac Grand Am

Max: 47.8 [kph] at 0.056 [s]
Min: -0.0 [kph] at -0.039 [s]

P4 Lower Spine y

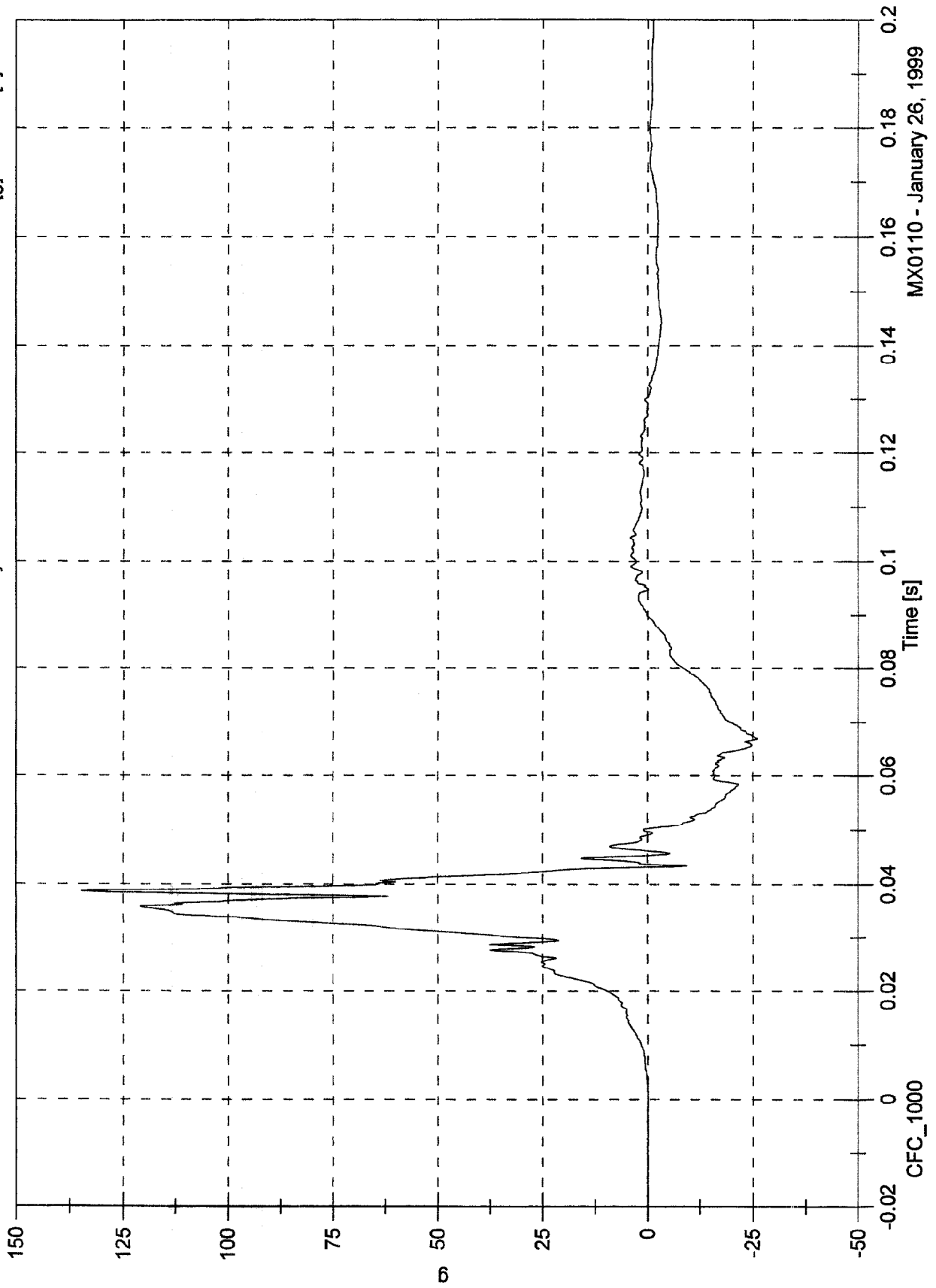


MX0110 - January 26, 1999

SNCAP test # 3 - 1999 Pontiac Grand Am

Max: 134.7 [g] at 0.039 [s]
Min: -26.0 [g] at 0.067 [s]

P4 Pelvic y

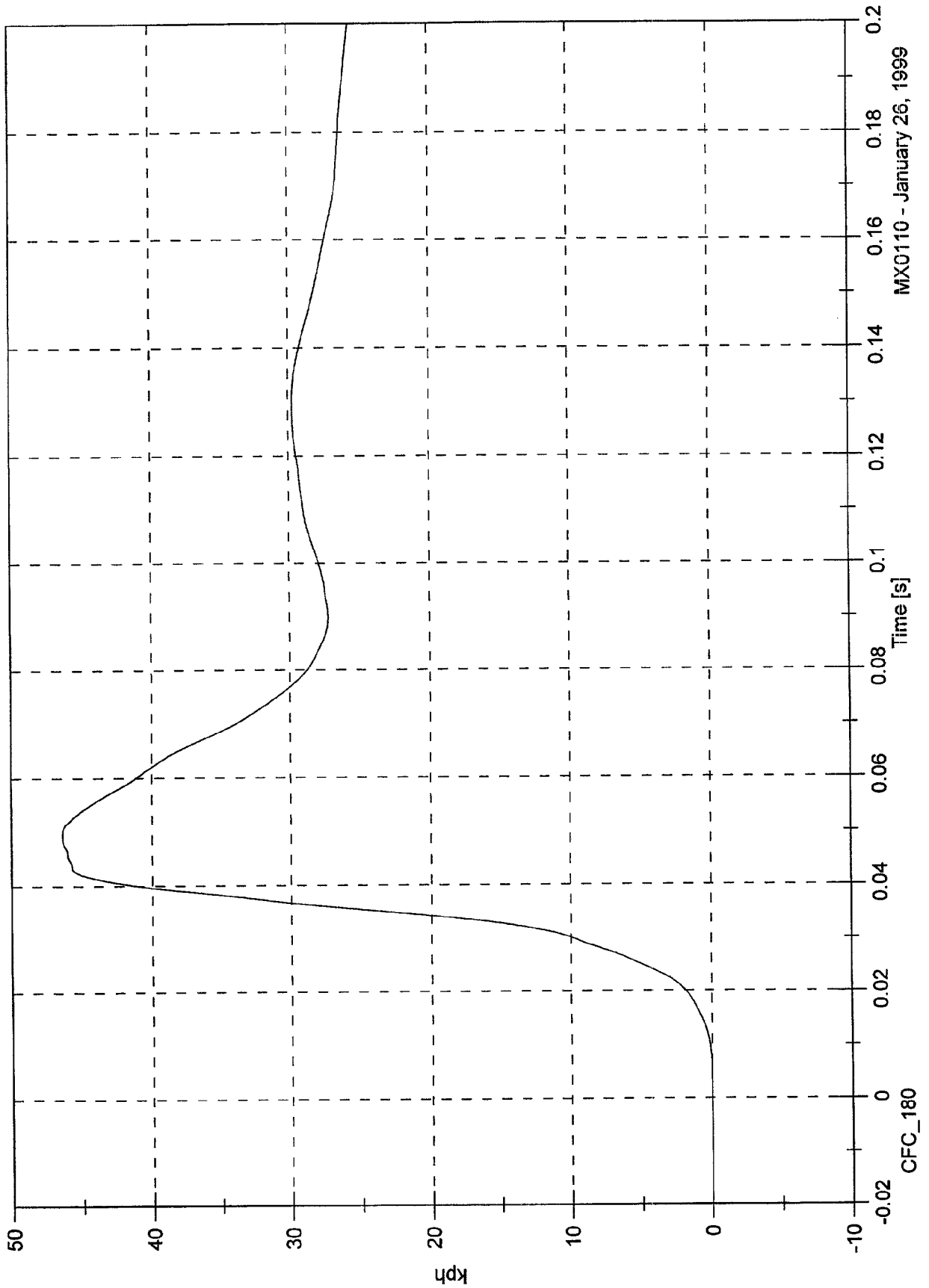


MX0110 - January 26, 1999

SNCAP test # 3 - 1999 Pontiac Grand Am

Max: 46.4 [kph] at 0.050 [s]
Min: -0.0 [kph] at -0.058 [s]

P4 Pelvic y

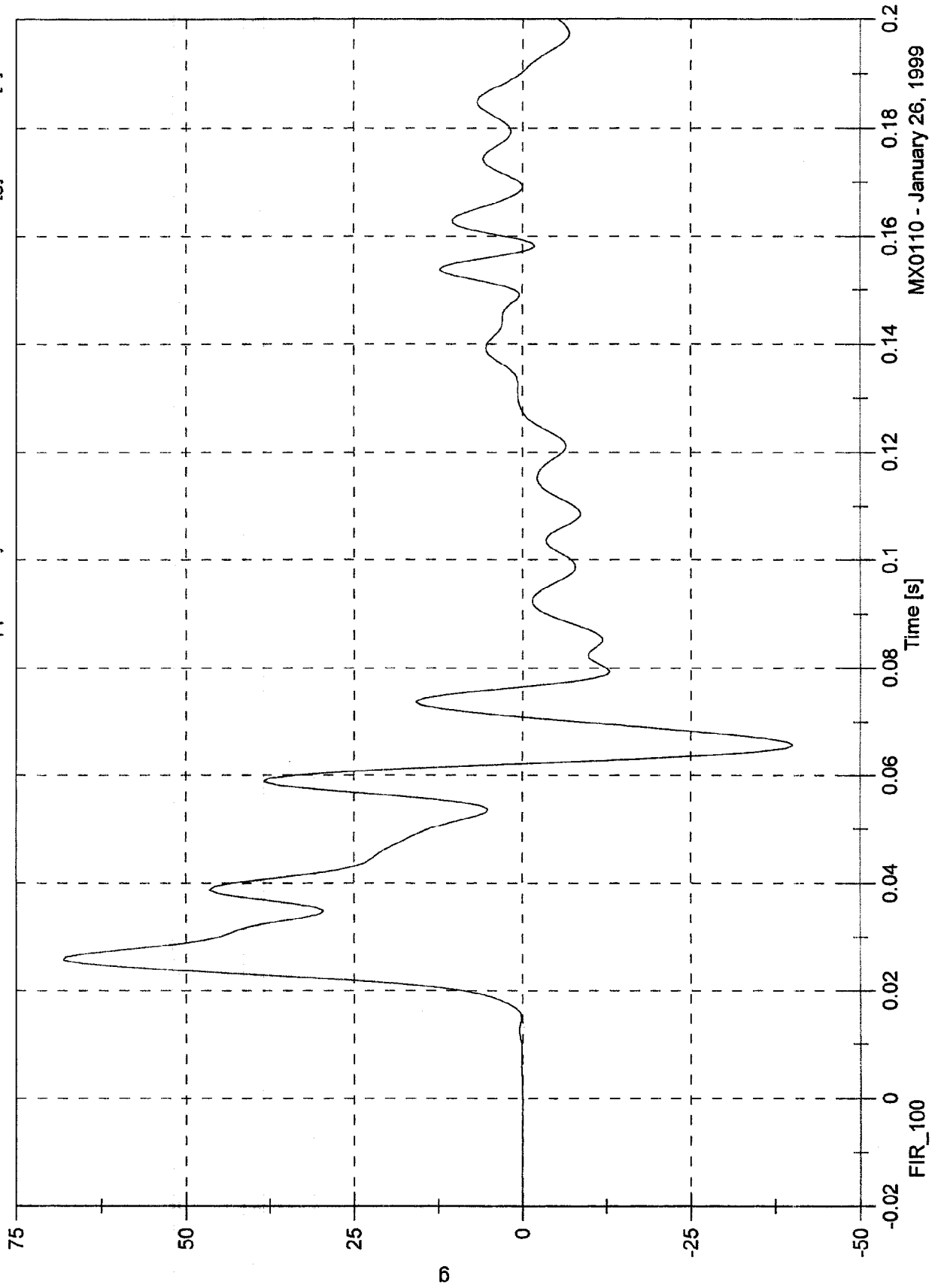


MX0110 - January 26, 1999

SNCAP test # 3 - 1999 Pontiac Grand Am

Max: 68.0 [g] at 0.026 [s]
Min: -40.2 [g] at 0.066 [s]

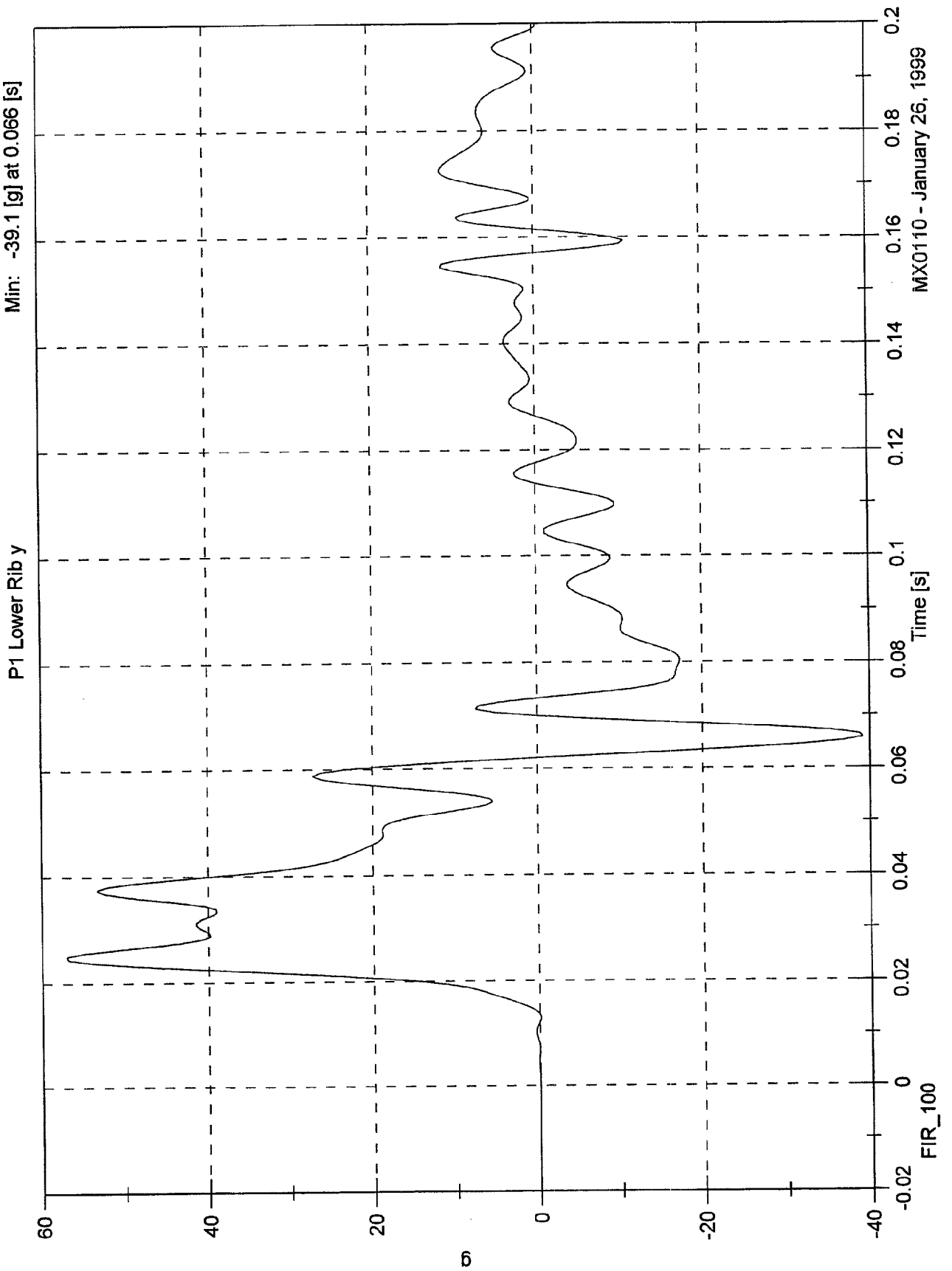
P1 Upper Rib y



MX0110 - January 26, 1999

SNCAP test # 3 - 1999 Pontiac Grand Am

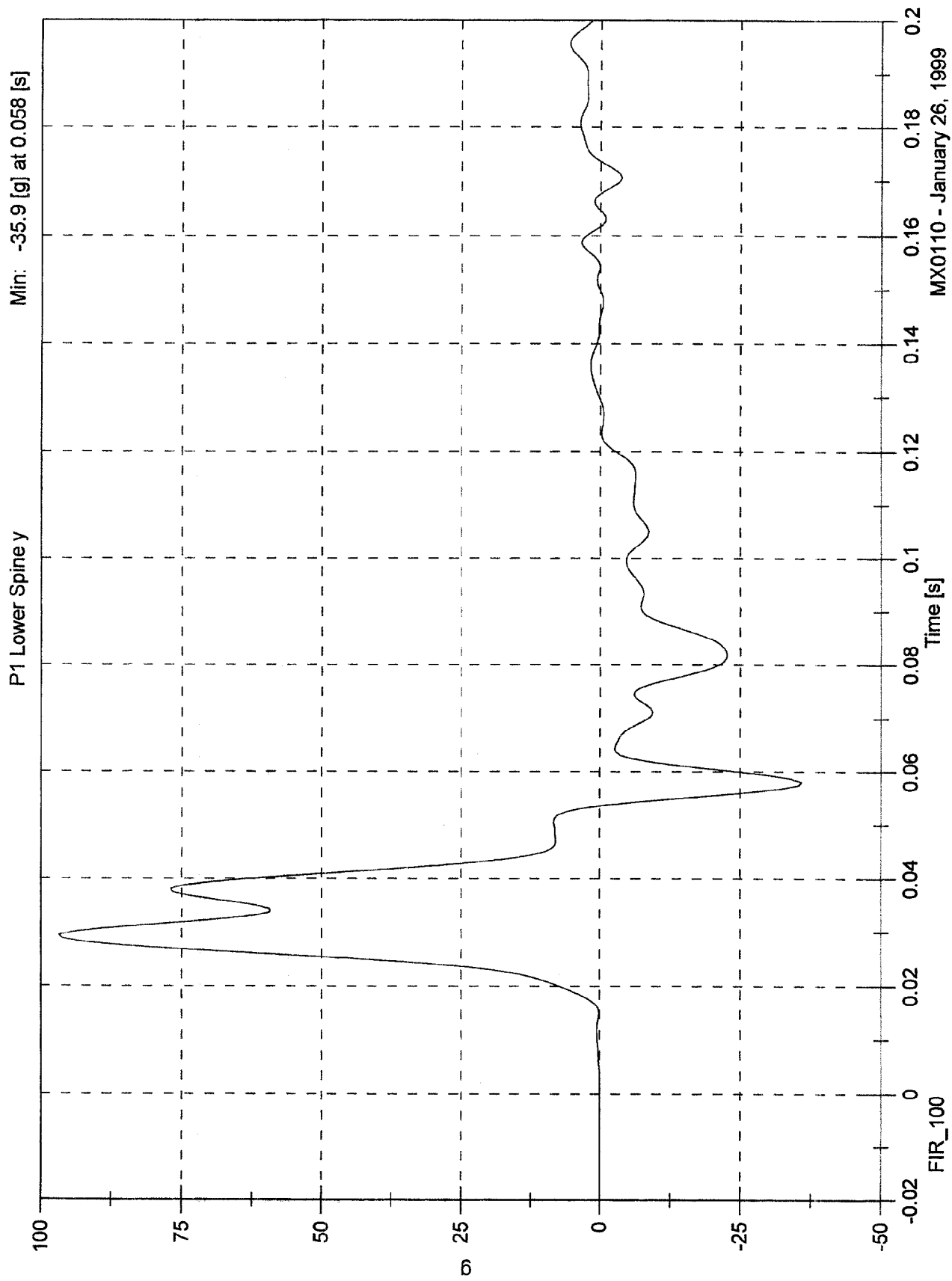
Max: 57.1 [g] at 0.025 [s]
Min: -39.1 [g] at 0.066 [s]



MX0110 - January 26, 1999

SNCAP test # 3 - 1999 Pontiac Grand Am

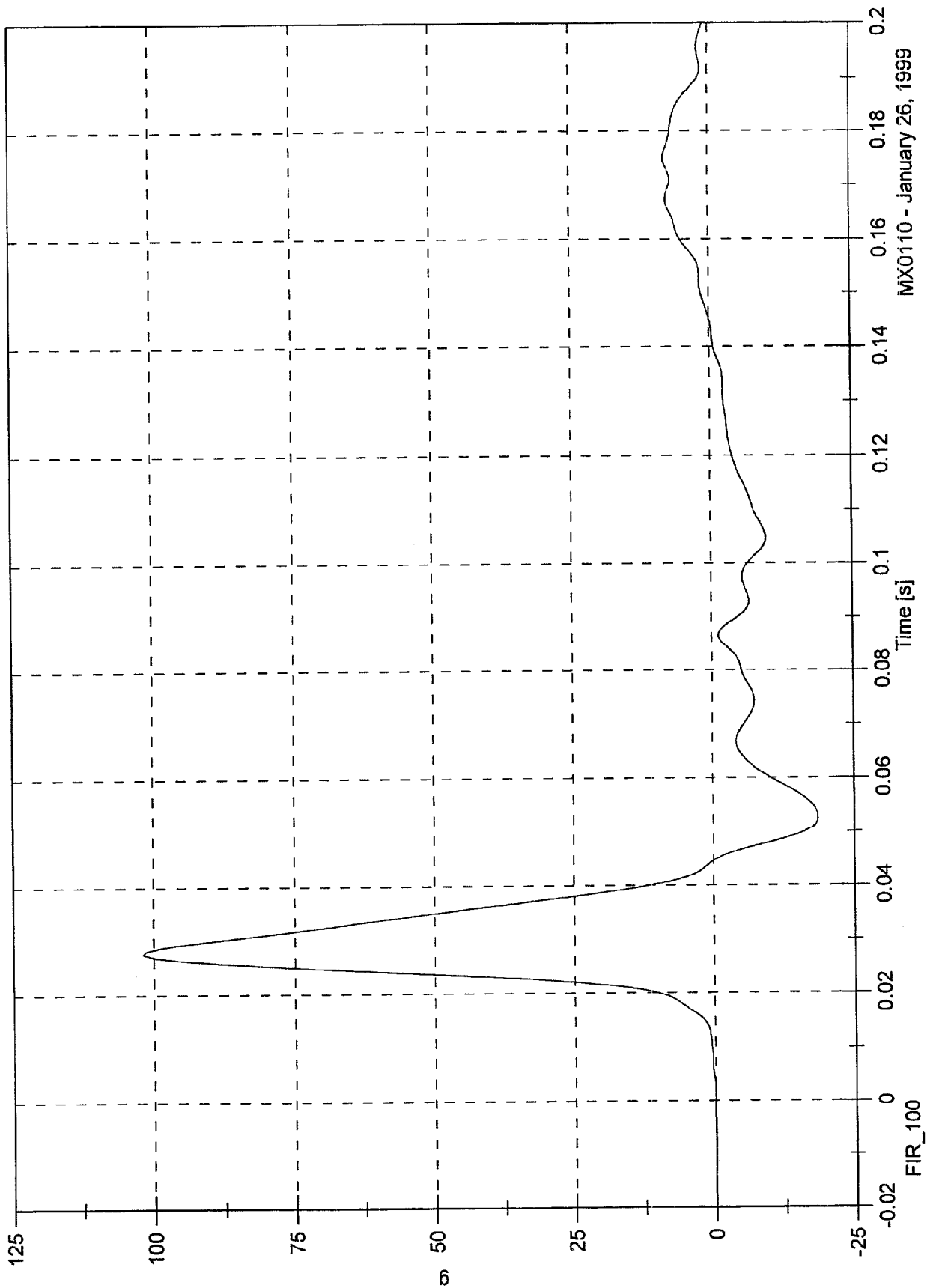
Max: 96.7 [g] at 0.029 [s]
Min: -35.9 [g] at 0.058 [s]



SNCAP test # 3 - 1999 Pontiac Grand Am

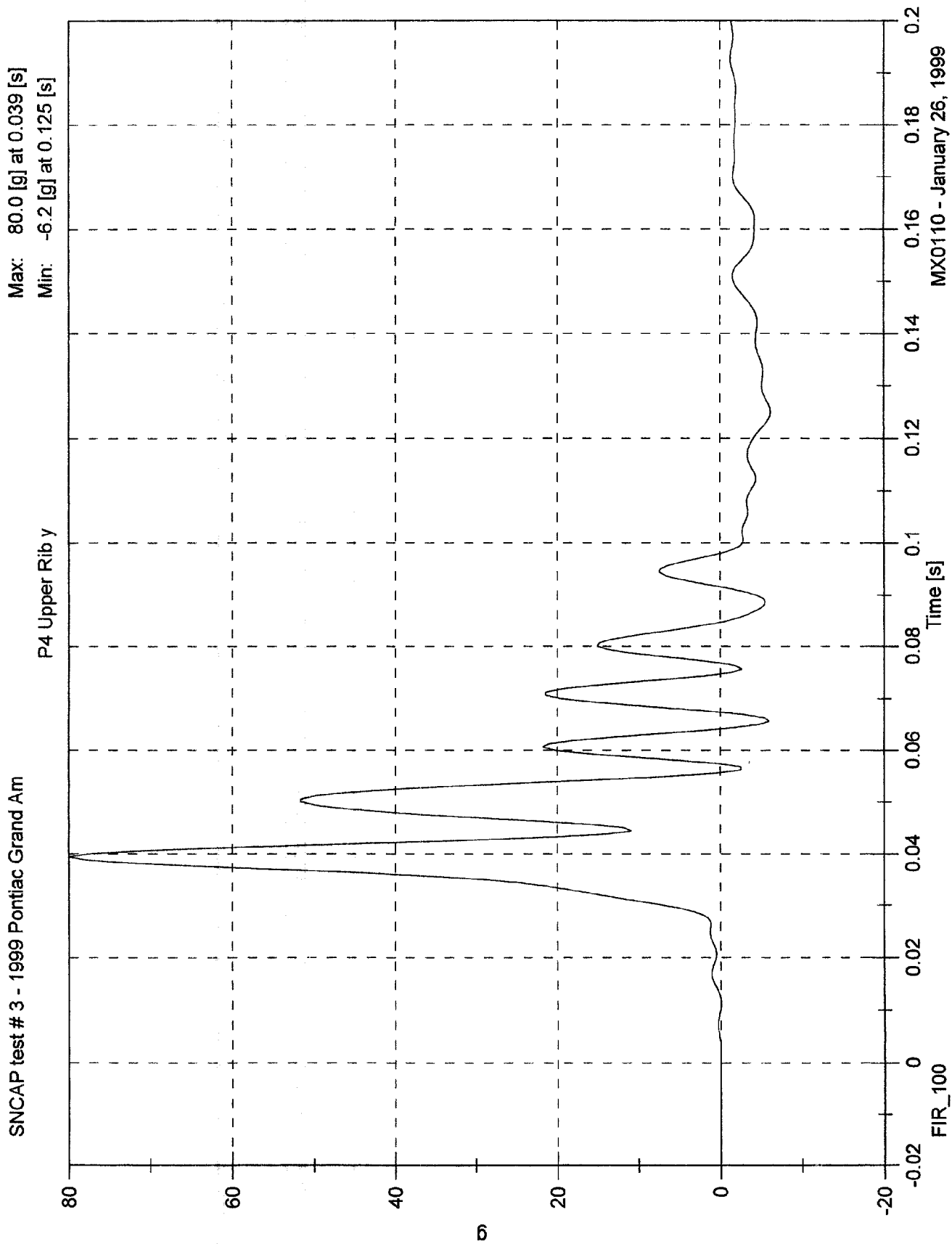
Max: 101.8 [g] at 0.028 [s]
Min: -18.6 [g] at 0.053 [s]

P1 Pelvic y



MX0110 - January 26, 1999

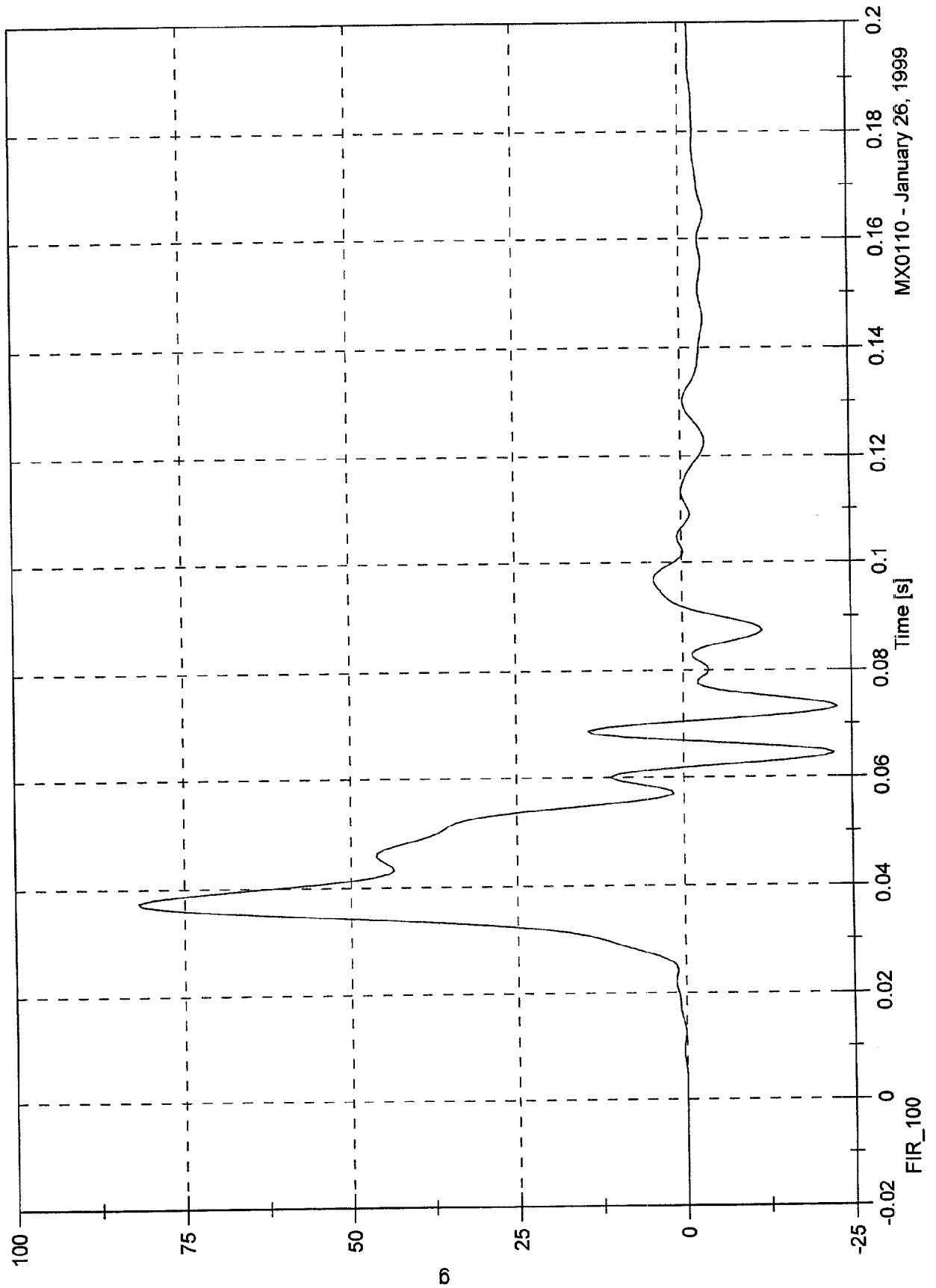
FIR_100



Max: 81.8 [g] at 0.038 [s]
Min: -22.9 [g] at 0.073 [s]

SNCAP test # 3 - 1999 Pontiac Grand Am

P4 Lower Rib y

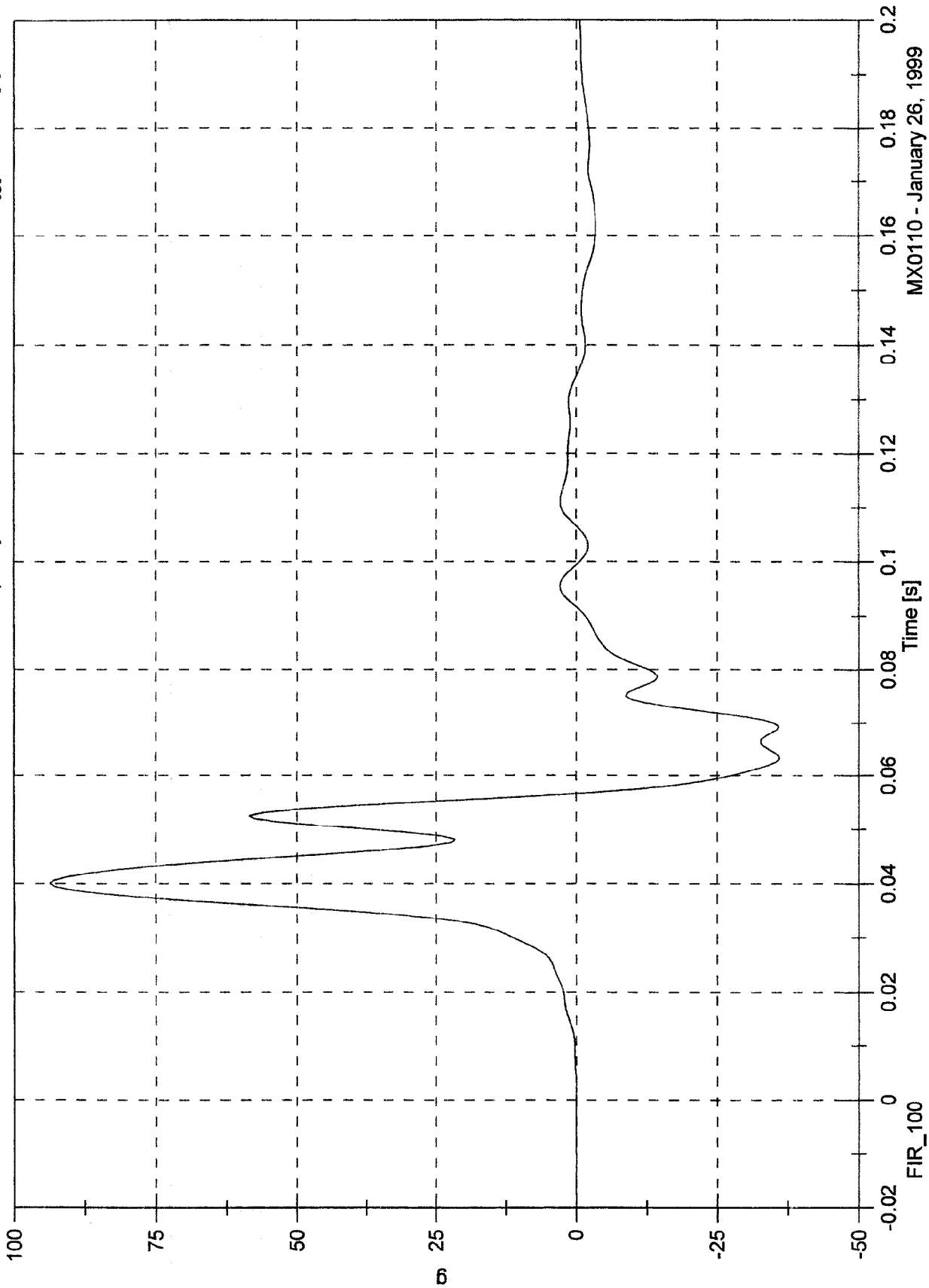


MX0110 - January 26, 1999

SNCAP test # 3 - 1999 Pontiac Grand Am

Max: 93.7 [g] at 0.040 [s]
Min: -36.0 [g] at 0.063 [s]

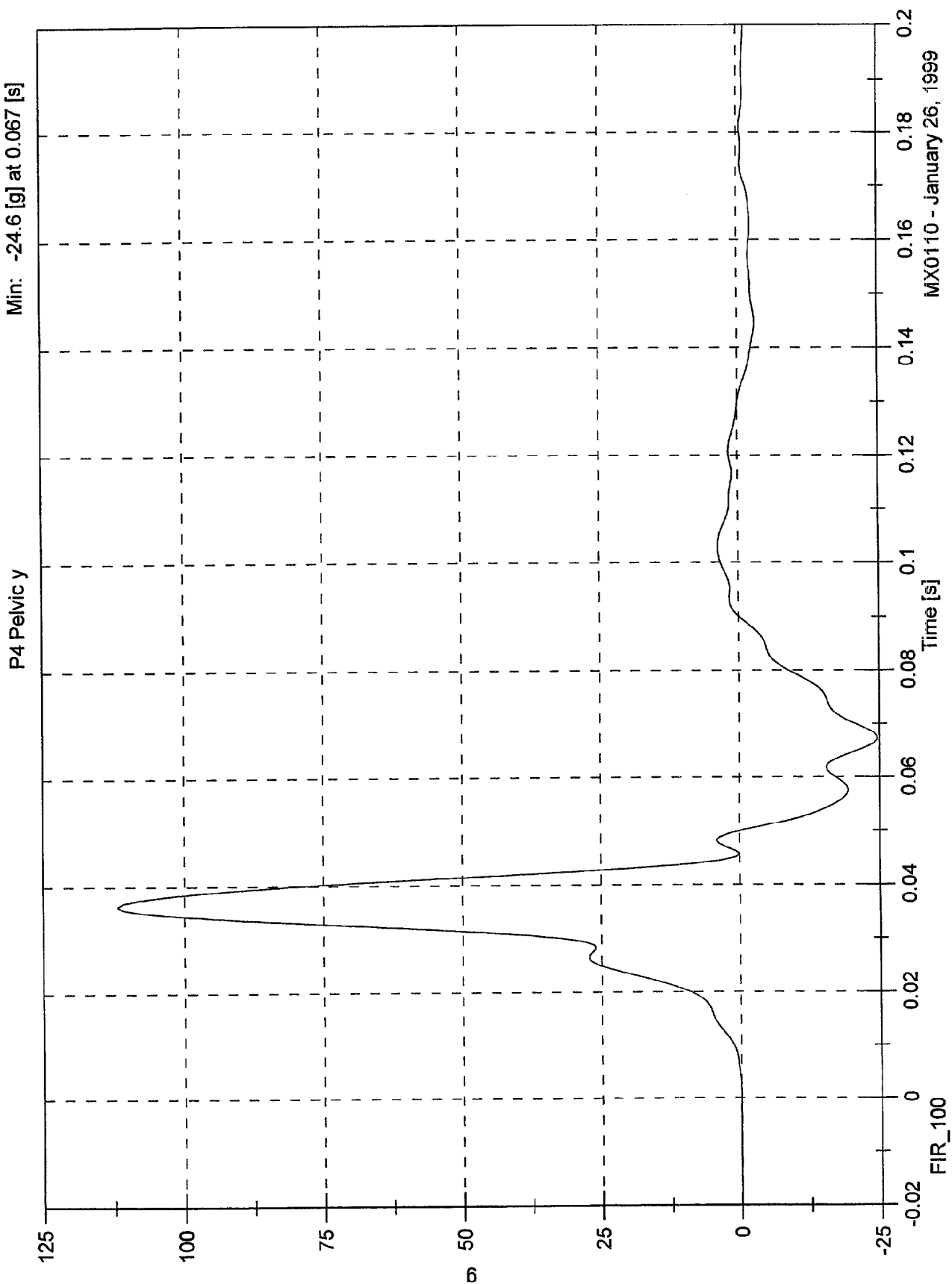
P4 Lower Spine y



MX0110 - January 26, 1999

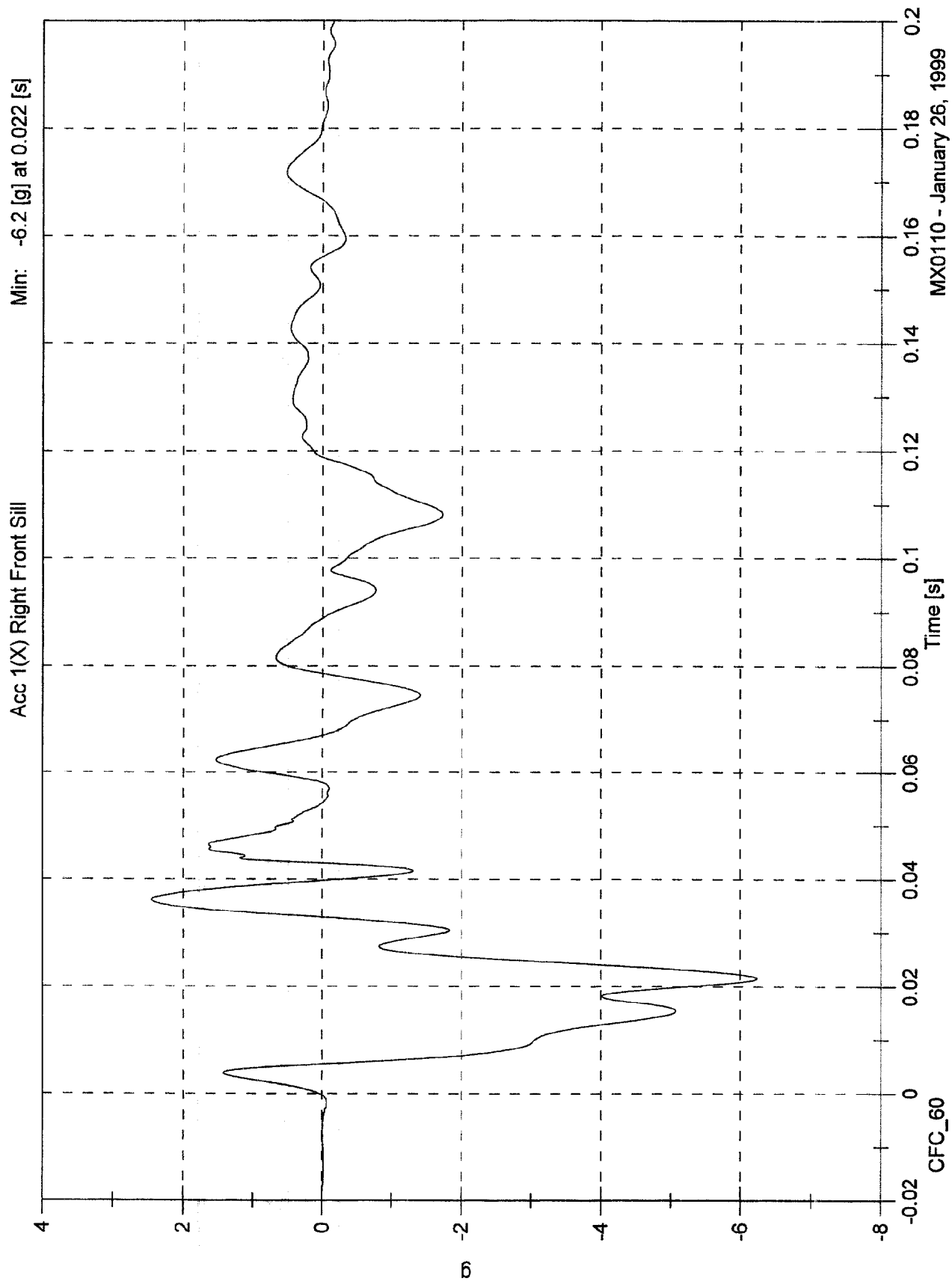
SNCAP test # 3 - 1999 Pontiac Grand Am

Max: 111.9 [g] at 0.036 [s]
Min: -24.6 [g] at 0.067 [s]



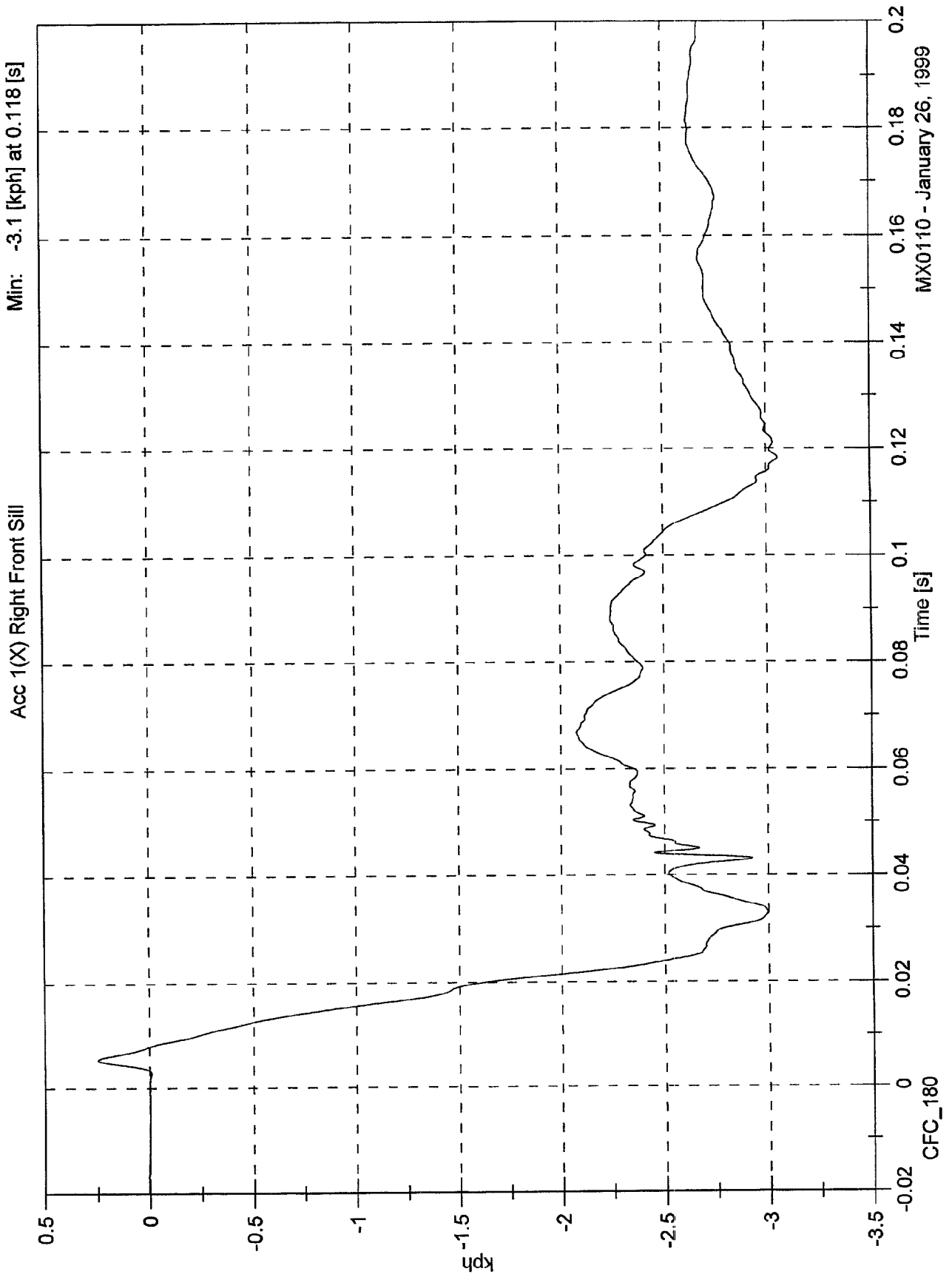
SNCAP test # 3 - 1999 Pontiac Grand Am

Max: 2.4 [g] at 0.036 [s]
Min: -6.2 [g] at 0.022 [s]



SNCAP test # 3 - 1999 Pontiac Grand Am

Max: 0.2 [kph] at 0.005 [s]
Min: -3.1 [kph] at 0.118 [s]

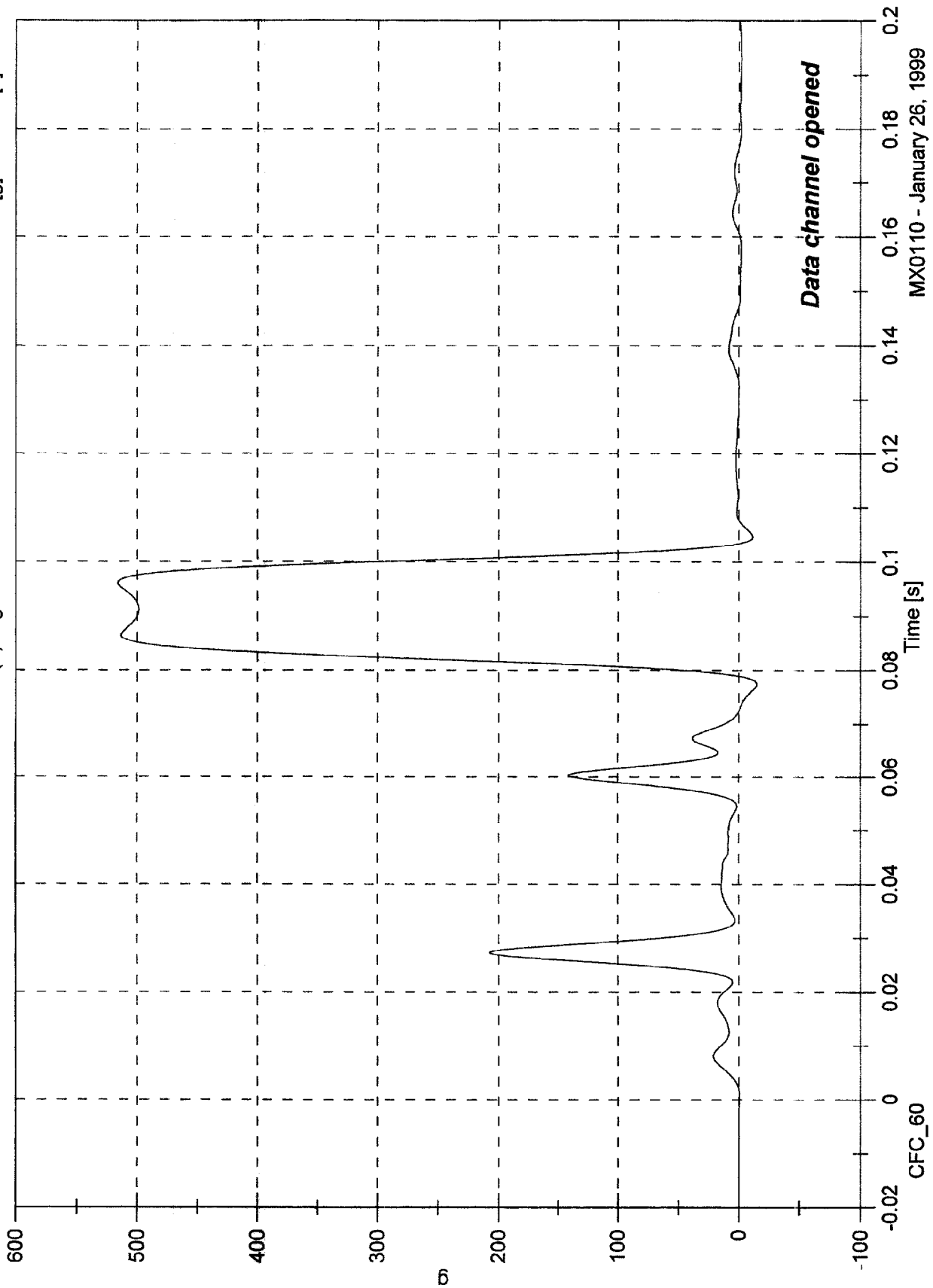


MX0110 - January 26, 1999

SNCAP test # 3 - 1999 Pontiac Grand Am

Max: 516.0 [g] at 0.096 [s]
Min: -14.7 [g] at 0.077 [s]

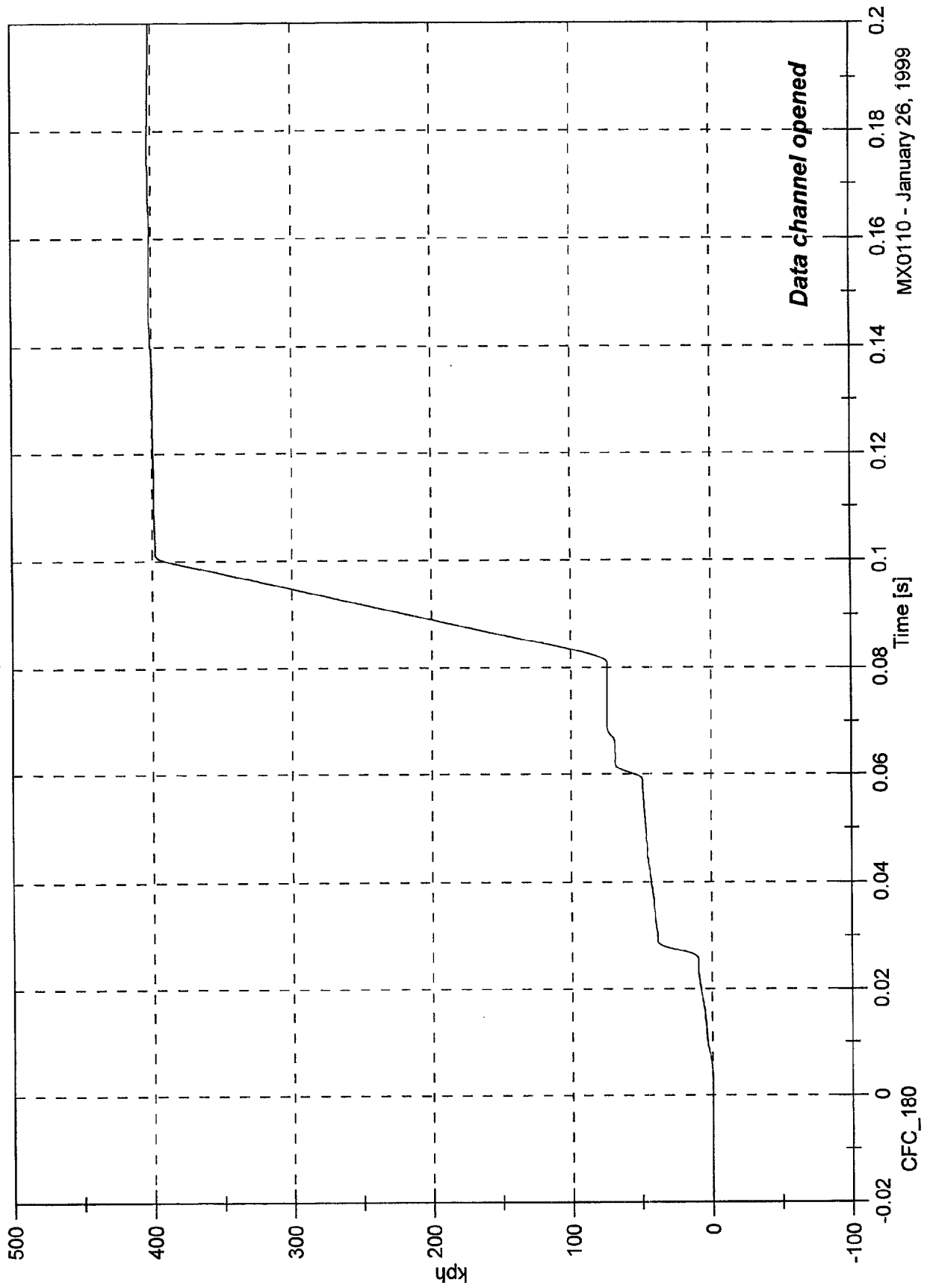
Acc 1(Y) Right Front Sill



SNCAP test # 3 - 1999 Pontiac Grand Am

Acc 1(Y) Right Front Sill

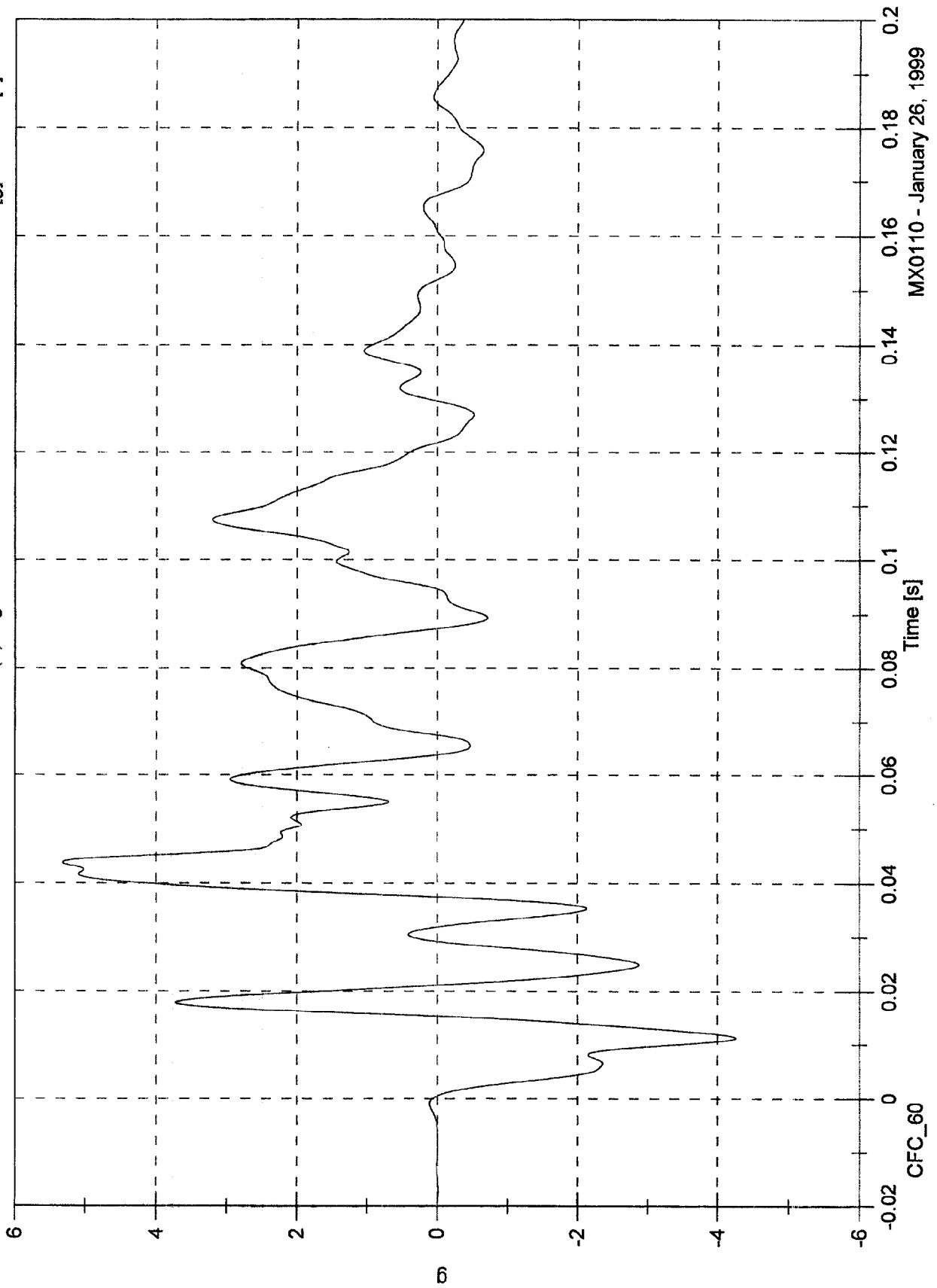
Max: 402.9 [kph] at 0.176 [s]
Min: -0.0 [kph] at -0.052 [s]



SNCAP test # 3 - 1999 Pontiac Grand Am

Max: 5.3 [g] at 0.044 [s]
Min: -4.3 [g] at 0.011 [s]

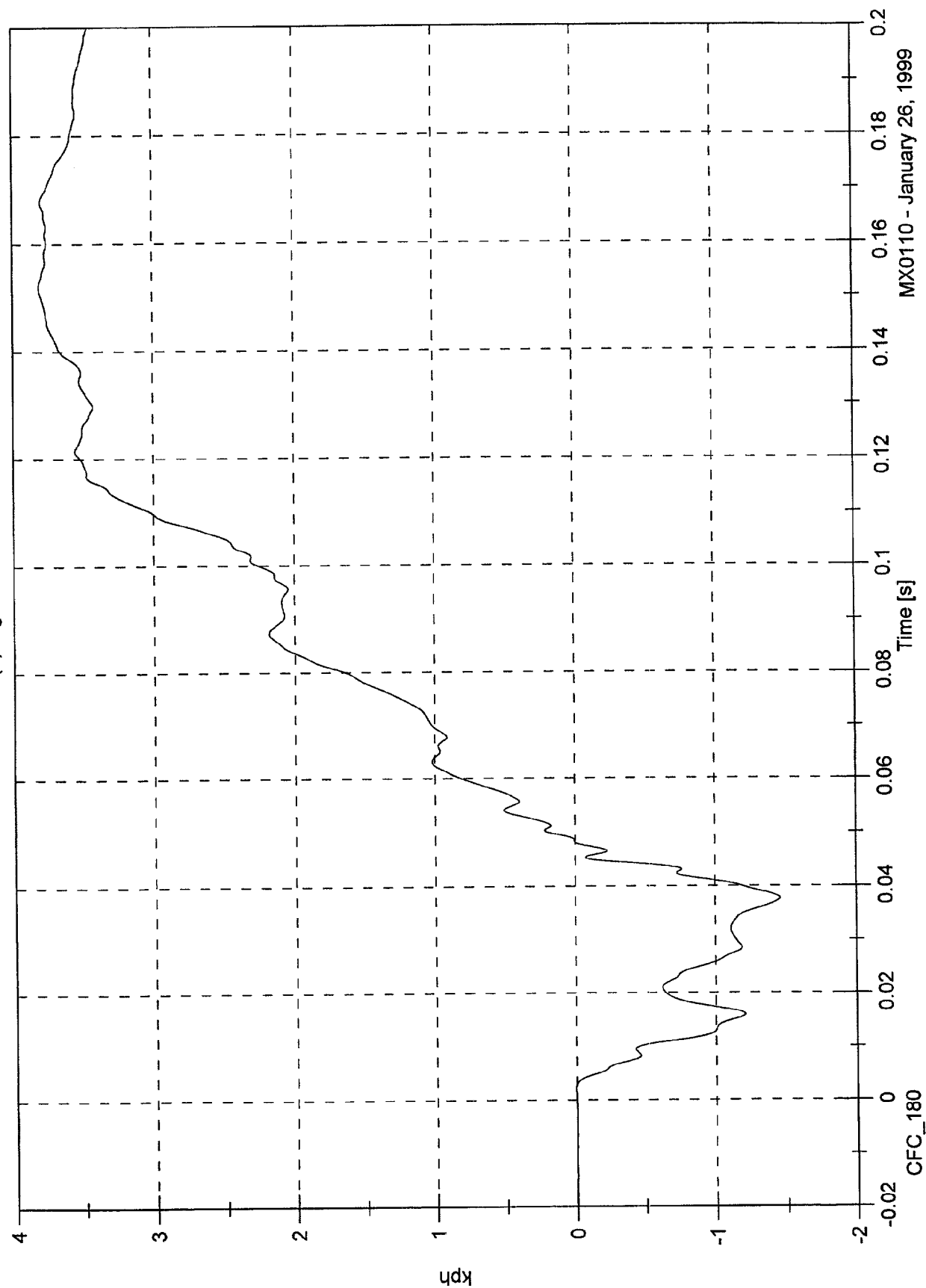
Acc 1(Z) Right Front Sill



SNCAP test # 3 - 1999 Pontiac Grand Am

Max: 3.8 [kph] at 0.152 [s]
Min: -1.5 [kph] at 0.038 [s]

Acc 1(Z) Right Front Sill

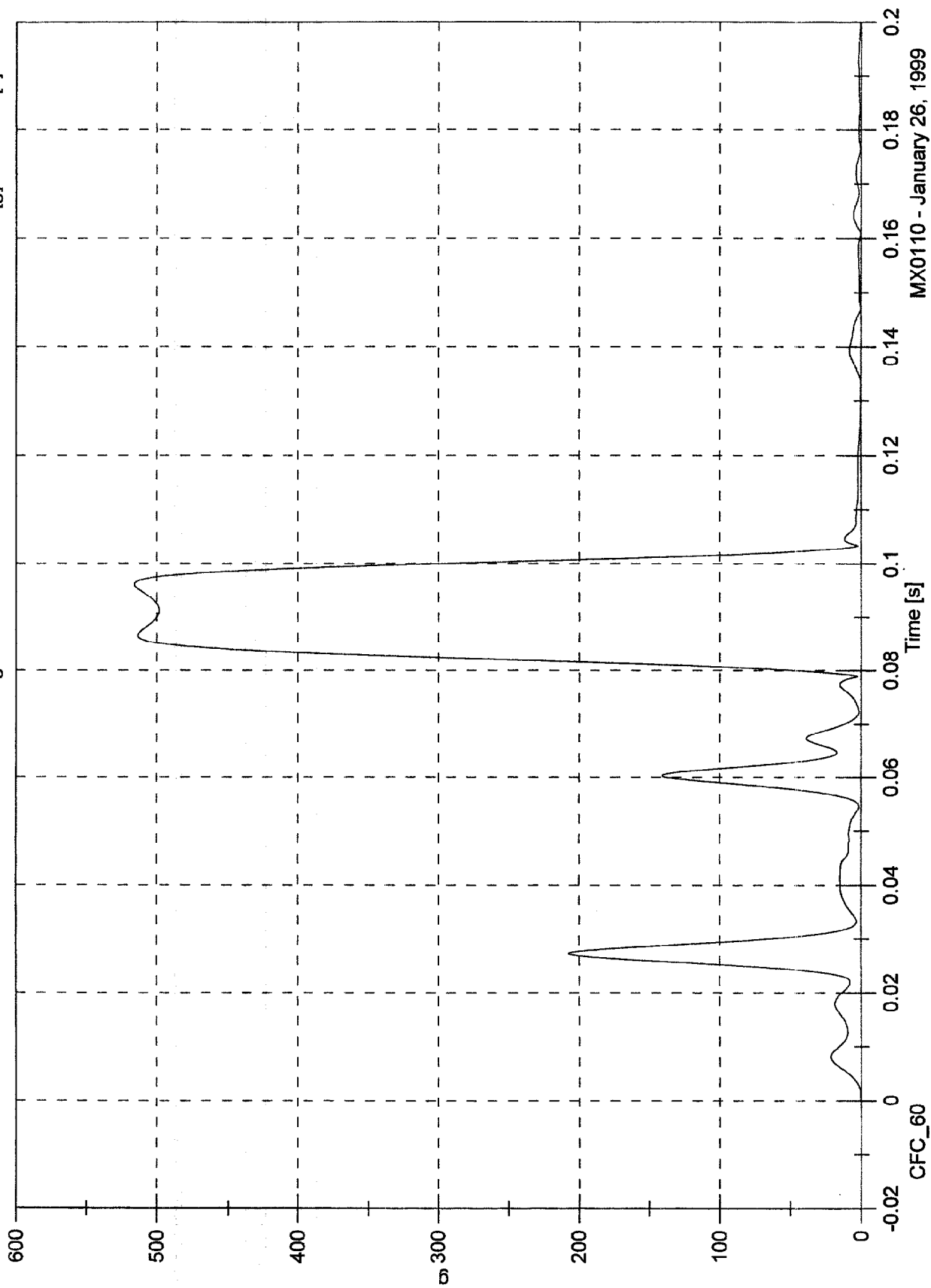


MX0110 - January 26, 1999

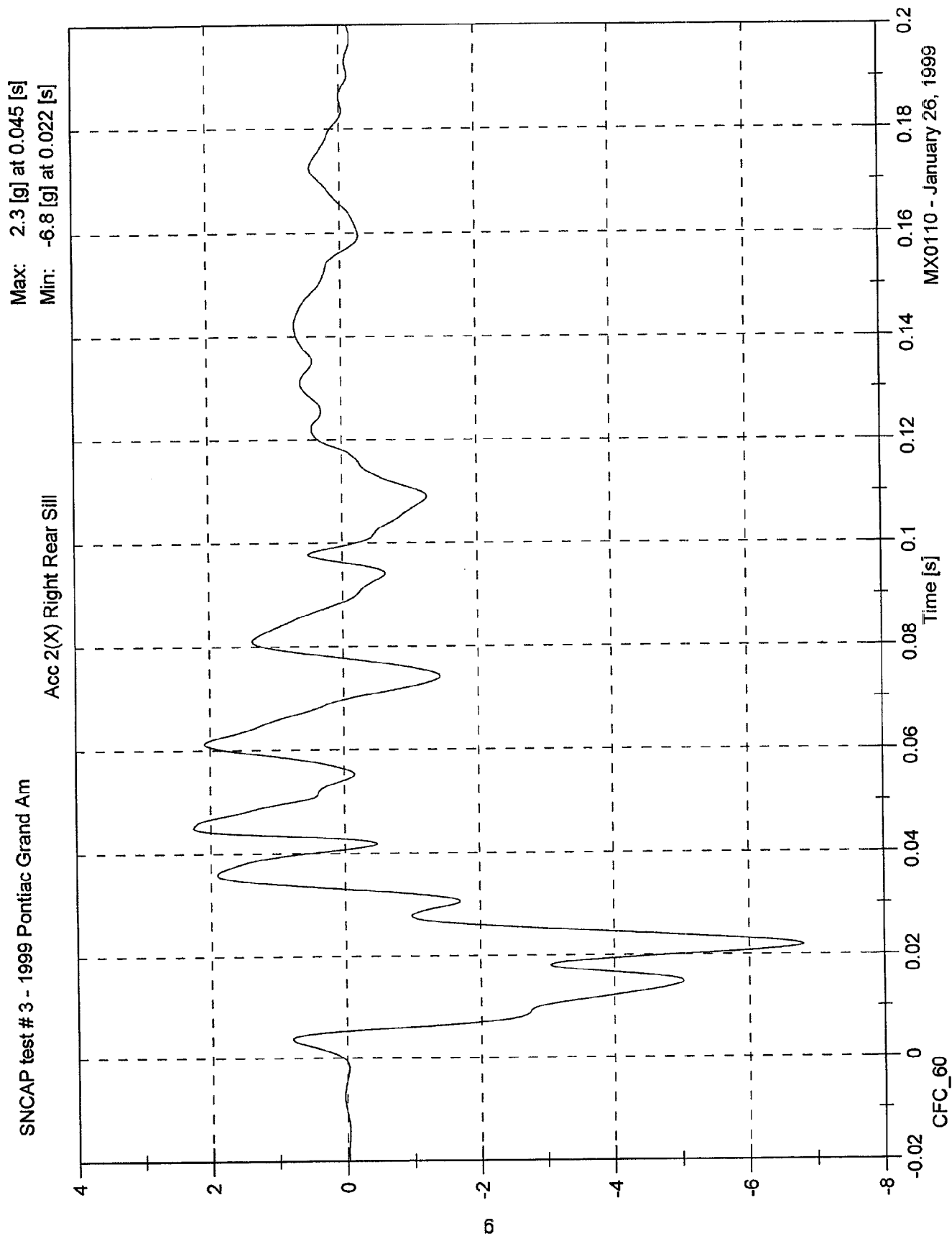
SNCAP test # 3 - 1999 Pontiac Grand Am

Max: 516.0 [g] at 0.096 [s]
Min: 0.0 [g] at -0.083 [s]

Acc 1 Right Front Sill Resultant



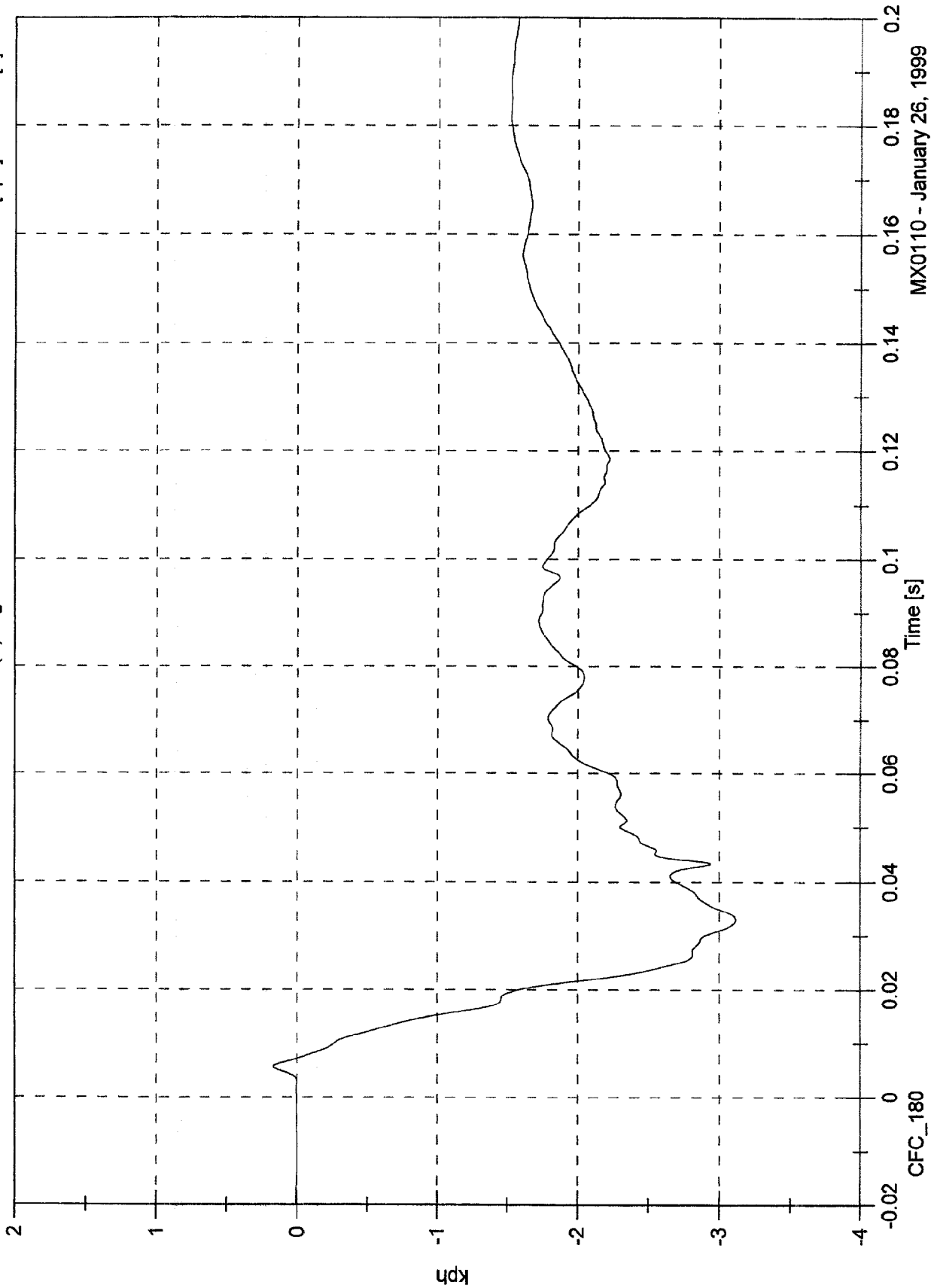
MX0110 - January 26, 1999



SNCAP test # 3 - 1999 Pontiac Grand Am

Max: 1.5 [kph] at 0.500 [s]
Min: -3.1 [kph] at 0.033 [s]

Acc 2(X) Right Rear Sill



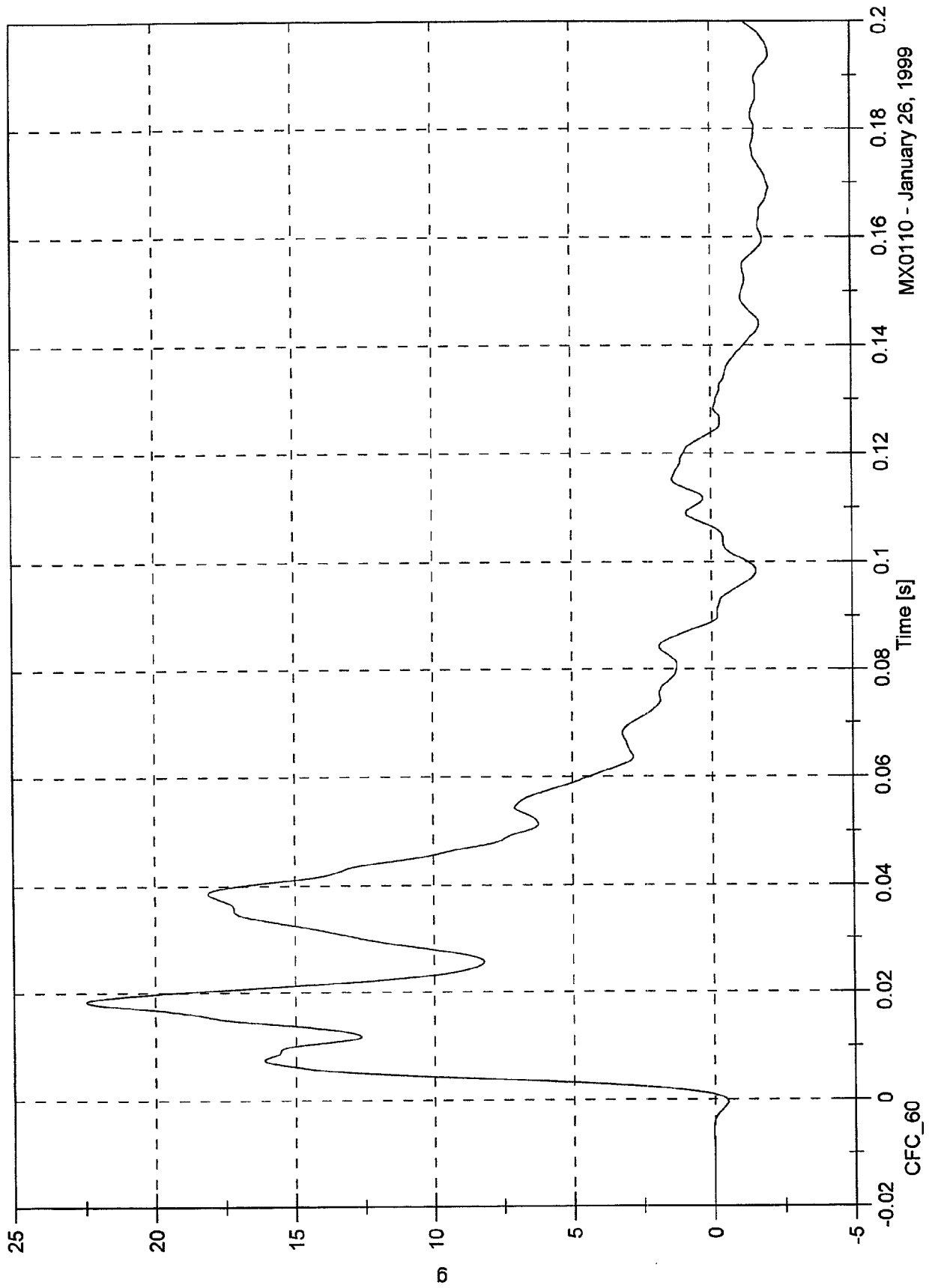
MX0110 - January 26, 1999

SNCAP test # 3 - 1999 Pontiac Grand Am

Acc 2(Y) Right Rear Sill

Max: 22.5 [g] at 0.018 [s]

Min: -2.1 [g] at 0.194 [s]

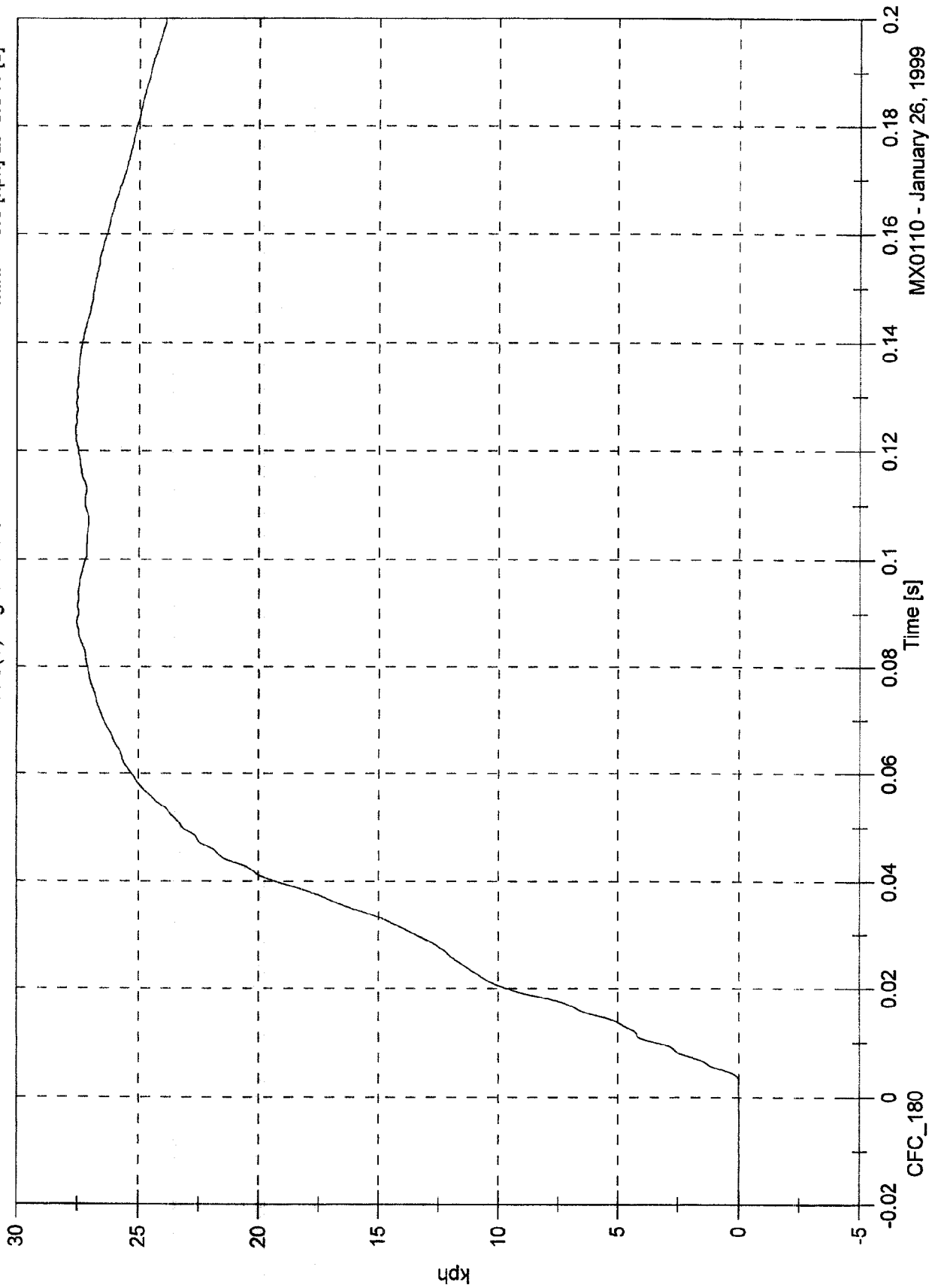


MX0110 - January 26, 1999

SNCAP test # 3 - 1999 Pontiac Grand Am

Acc 2(Y) Right Rear Sill

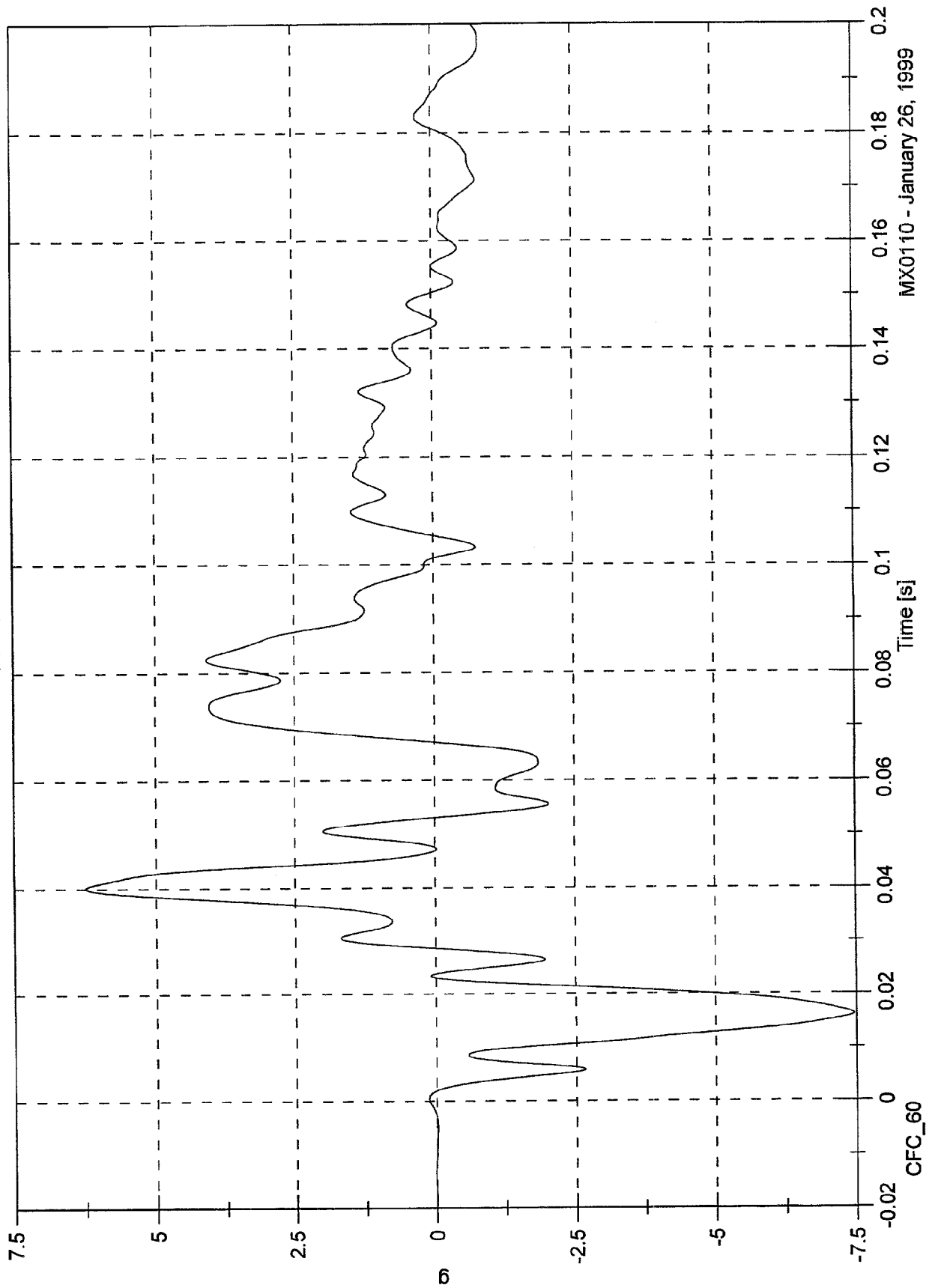
Max: 27.6 [kph] at 0.124 [s]
Min: -0.0 [kph] at -0.041 [s]



SNCAP test # 3 - 1999 Pontiac Grand Am

Max: 6.2 [g] at 0.040 [s]
Min: -7.5 [g] at 0.016 [s]

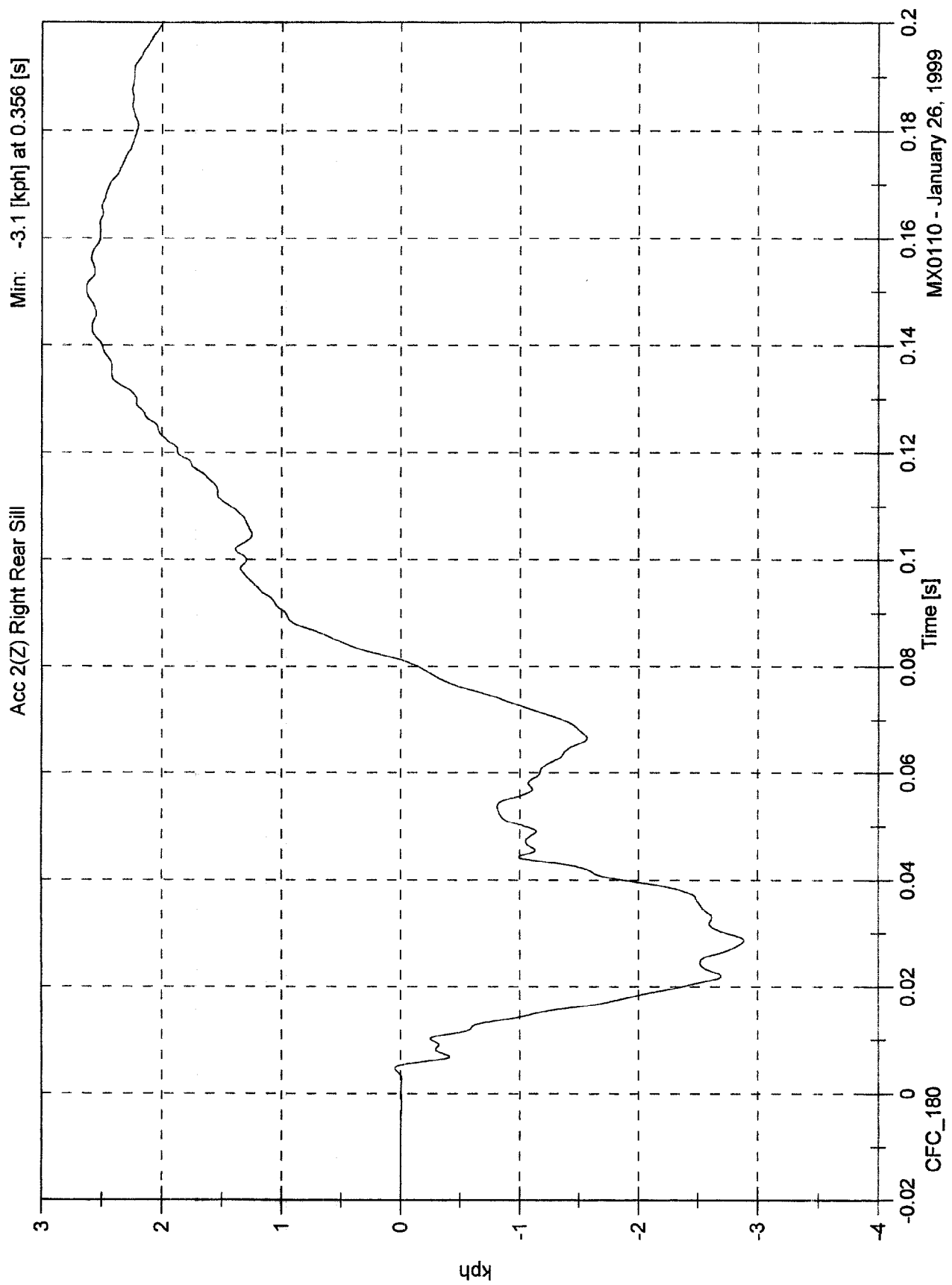
Acc 2(Z) Right Rear Sill



MX0110 - January 26, 1999

SNCAP test # 3 - 1999 Pontiac Grand Am

Max: 2.6 [kph] at 0.150 [s]
Min: -3.1 [kph] at 0.356 [s]

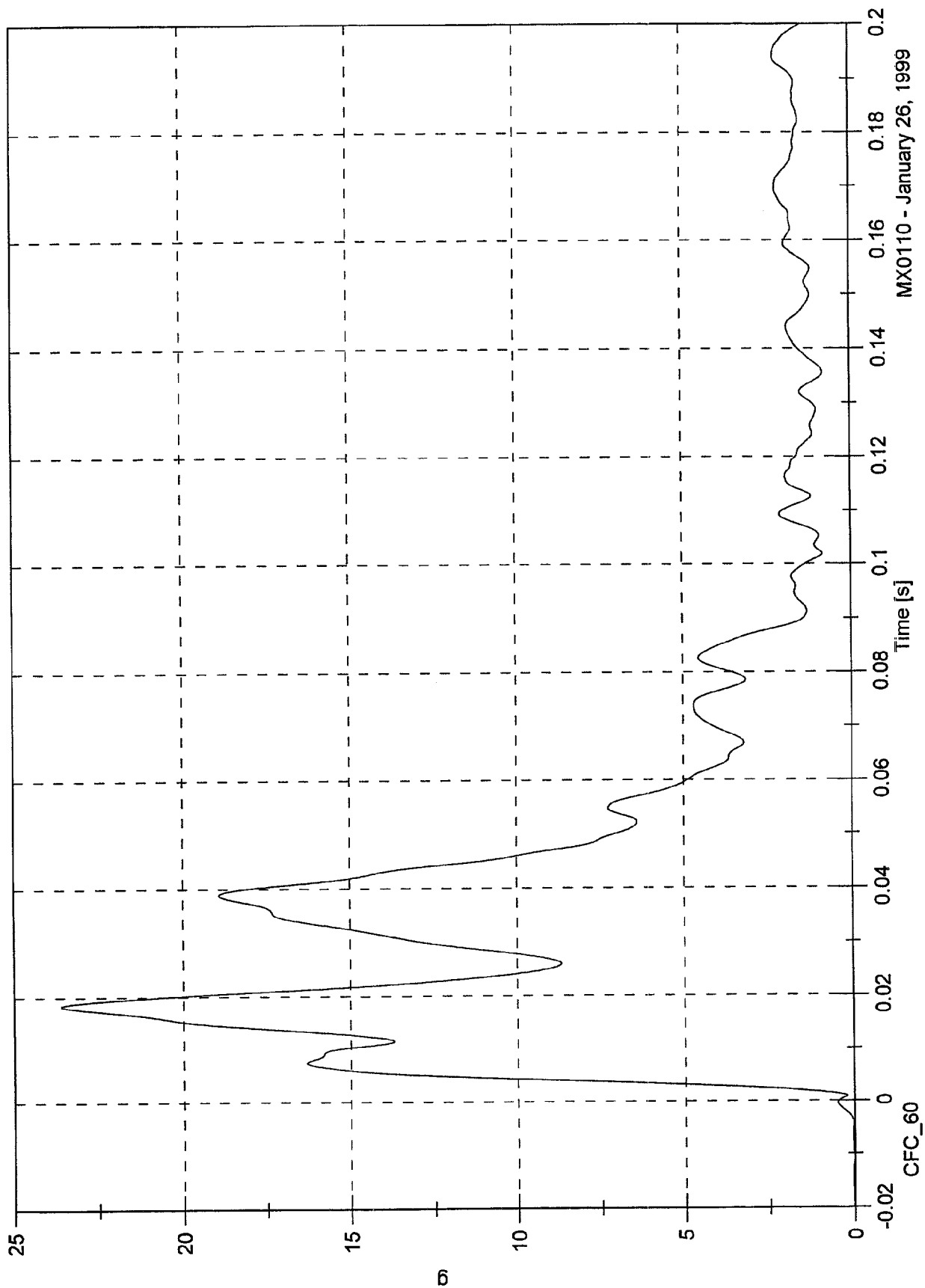


MX0110 - January 26, 1999

SNCAP test # 3 - 1999 Pontiac Grand Am

Acc 2 Right Rear Sill Resultant

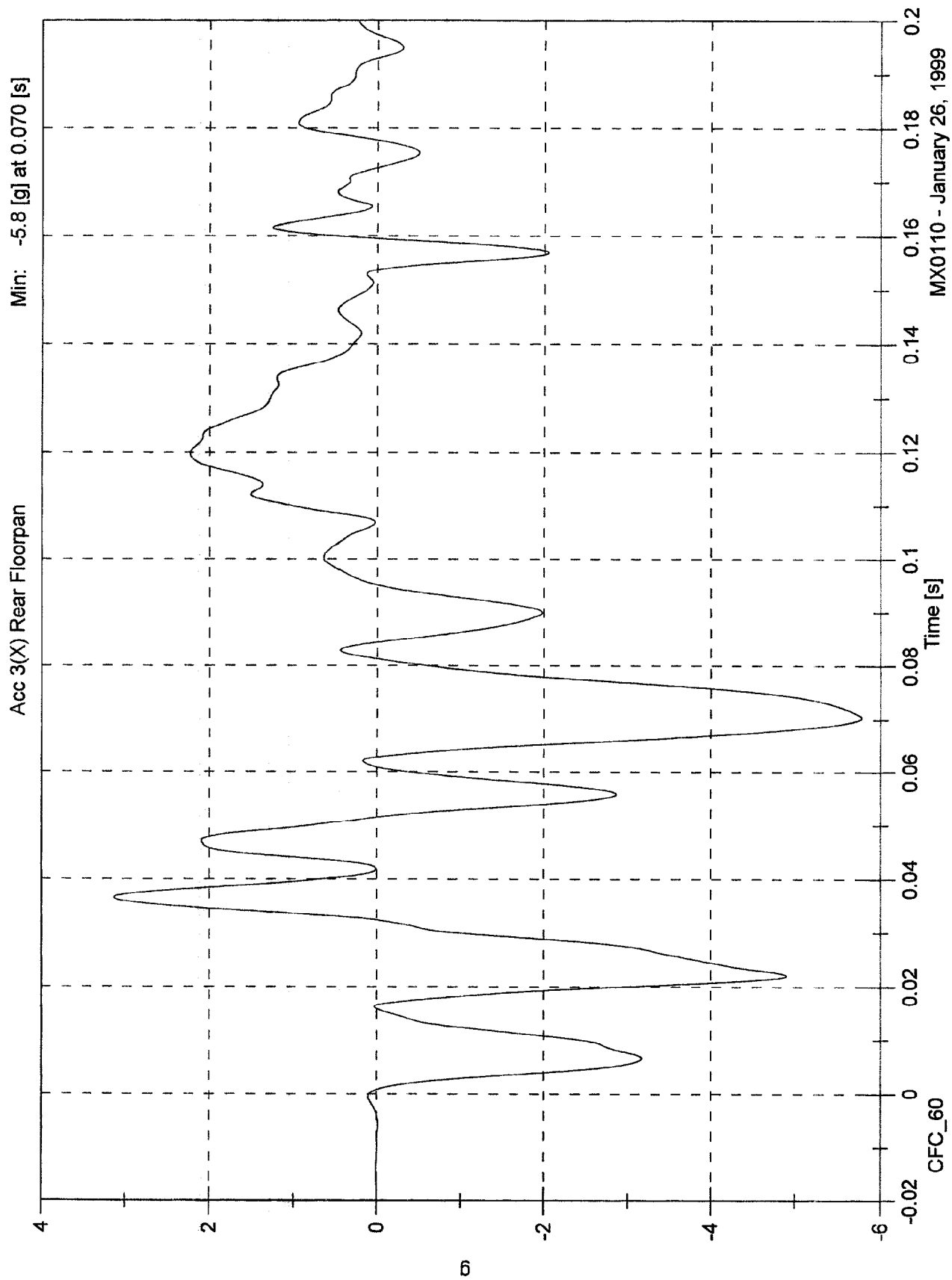
Max: 23.6 [g] at 0.018 [s]
Min: 0.0 [g] at -0.011 [s]



MX0110 - January 26, 1999

SNCAP test # 3 - 1999 Pontiac Grand Am

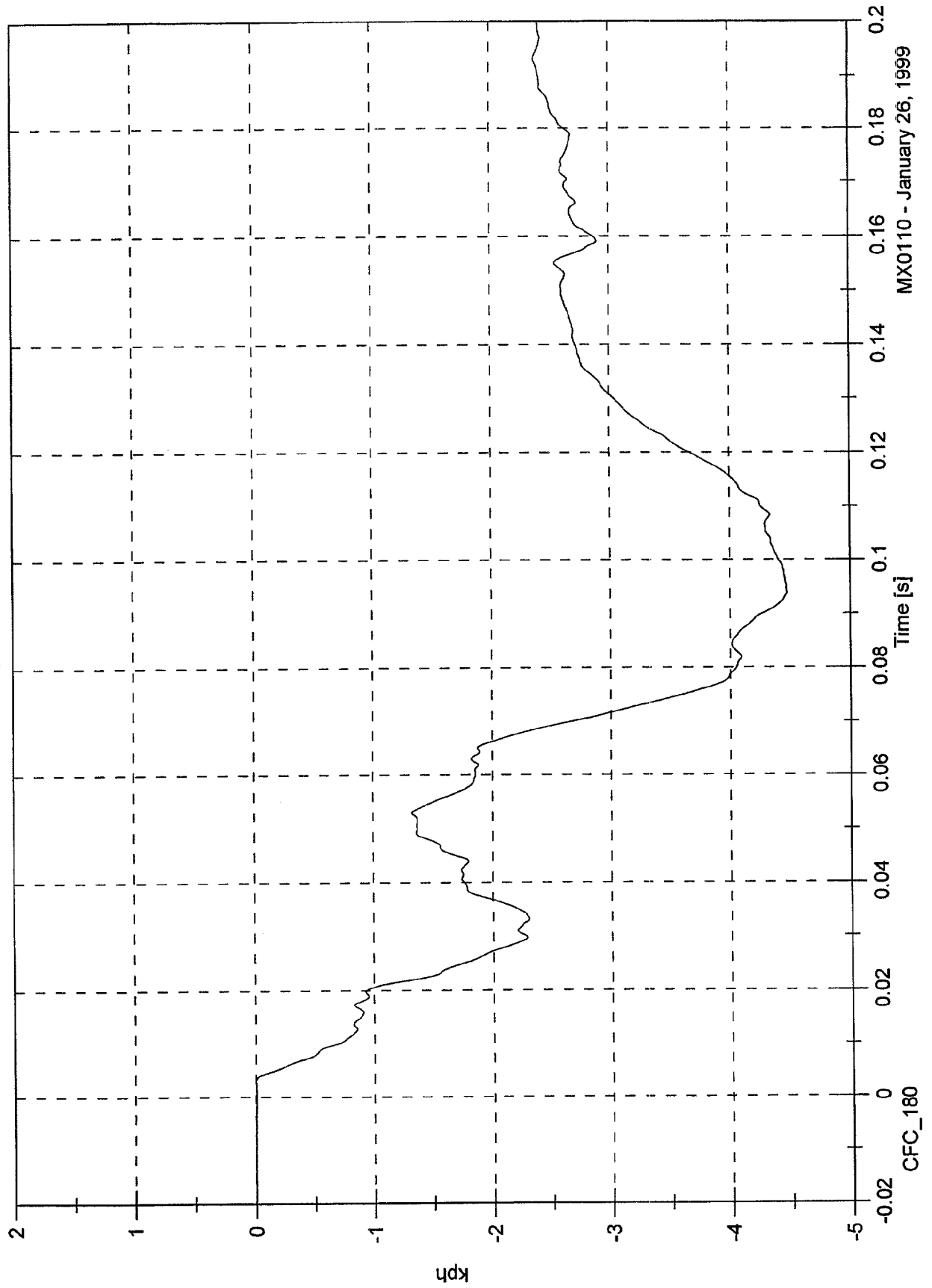
Max: 3.1 [g] at 0.037 [s]
Min: -5.8 [g] at 0.070 [s]



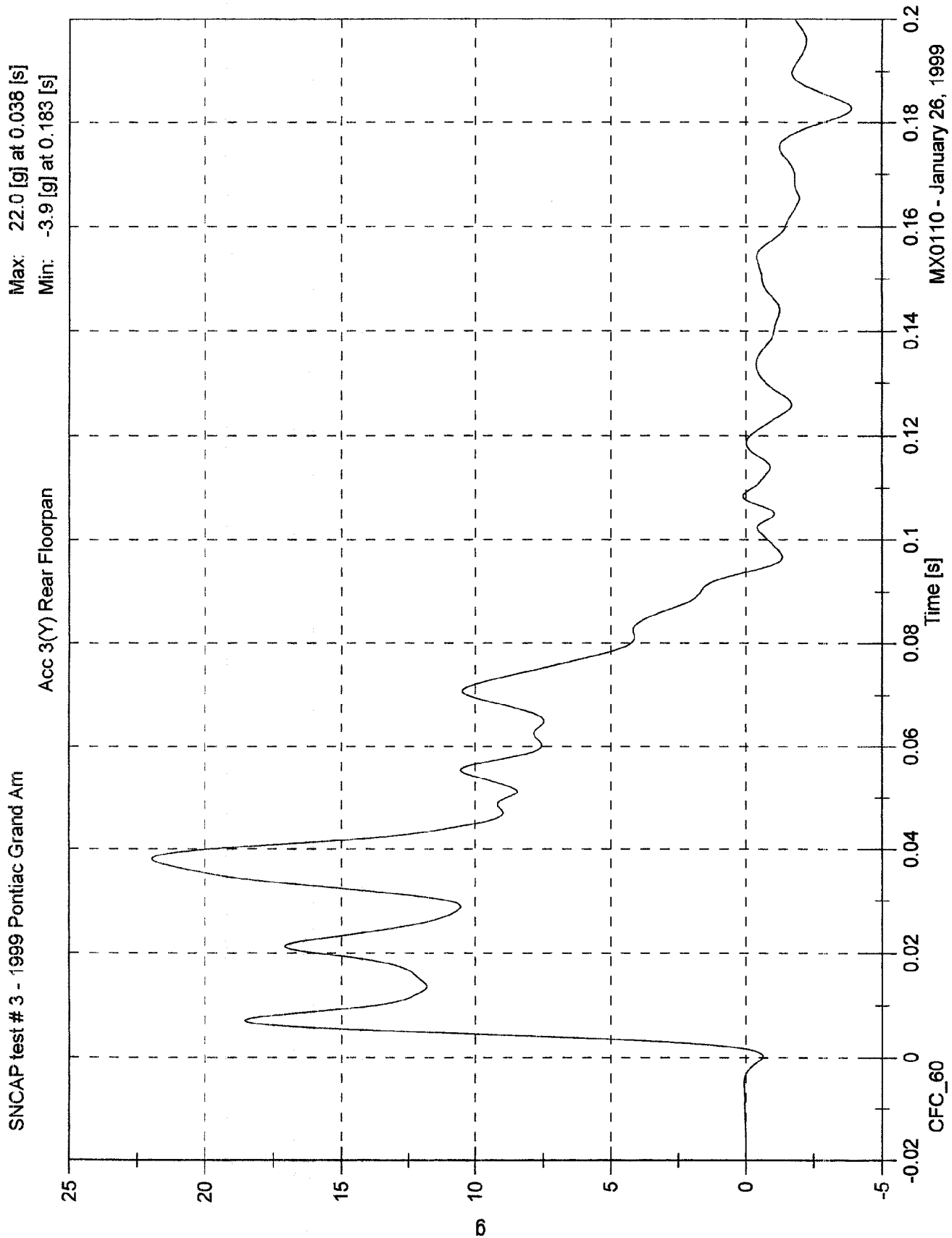
SNCAP test # 3 - 1999 Pontiac Grand Am

Acc 3(X) Rear Floorpan

Max: 1.5 [kph] at 0.499 [s]
Min: -4.5 [kph] at 0.094 [s]



MX0110 - January 26, 1999

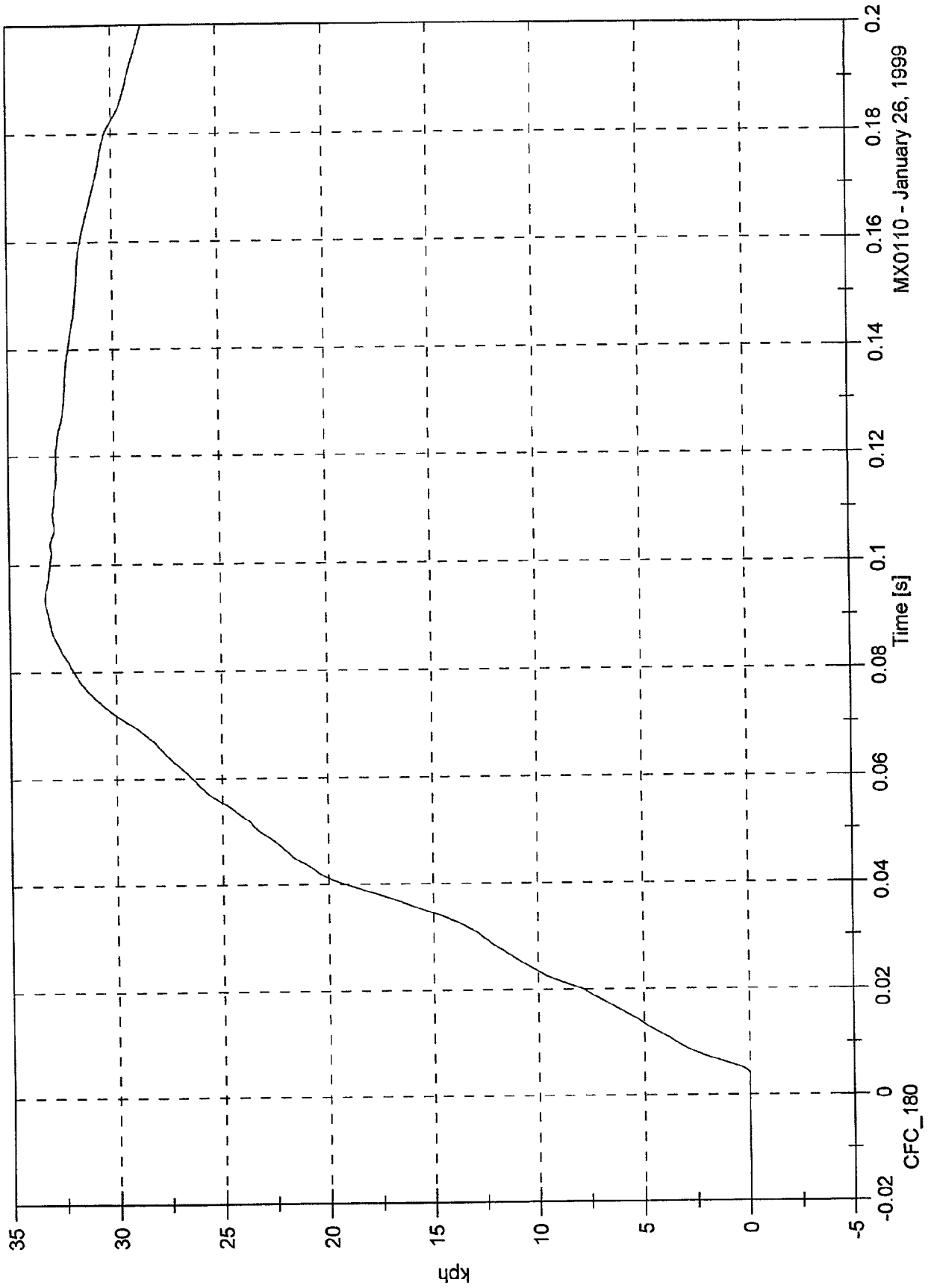


SNCAP test # 3 - 1999 Pontiac Grand Am

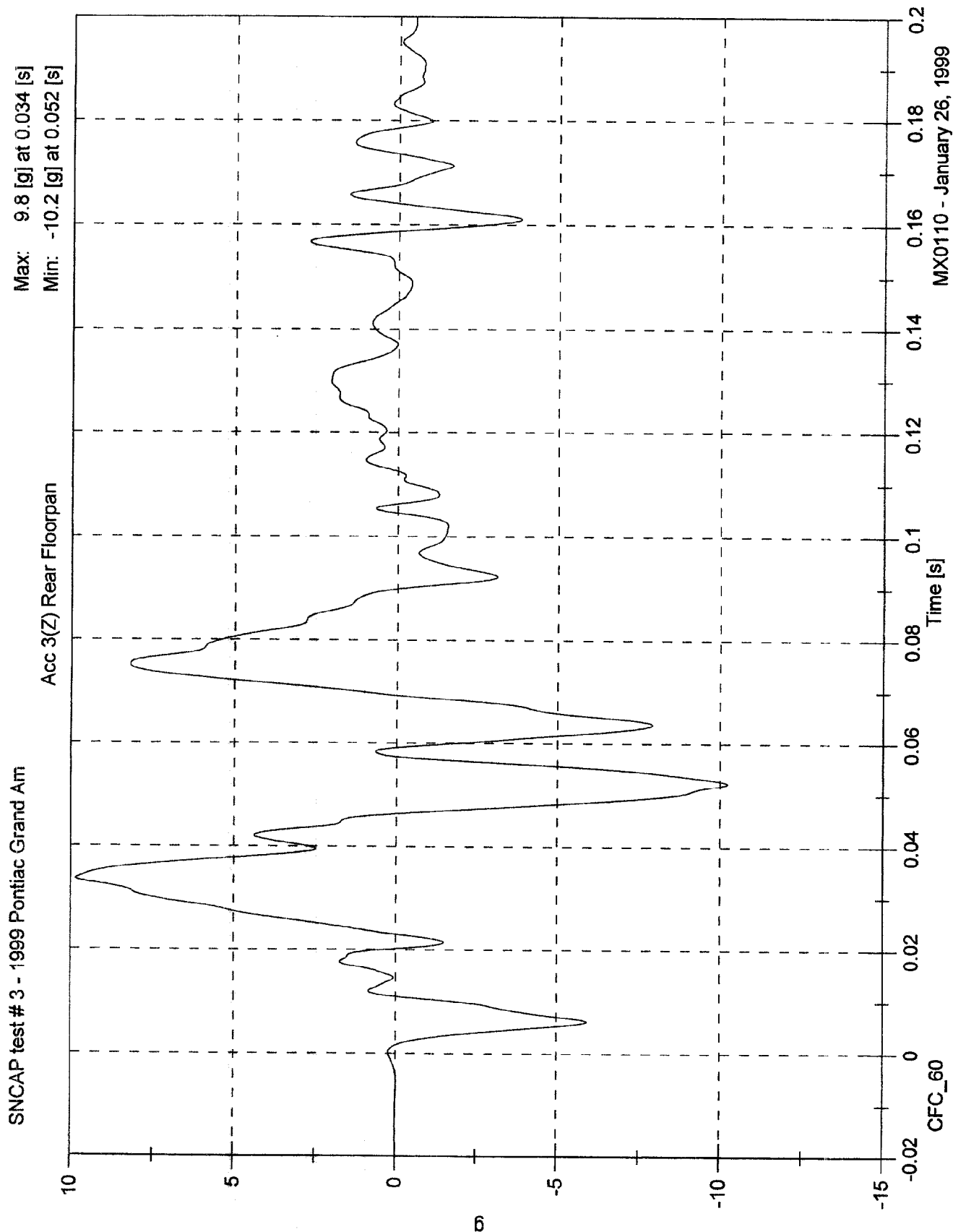
Max: 33.3 [kph] at 0.094 [s]

Min: -0.0 [kph] at -0.054 [s]

Acc 3(Y) Rear Floorpan



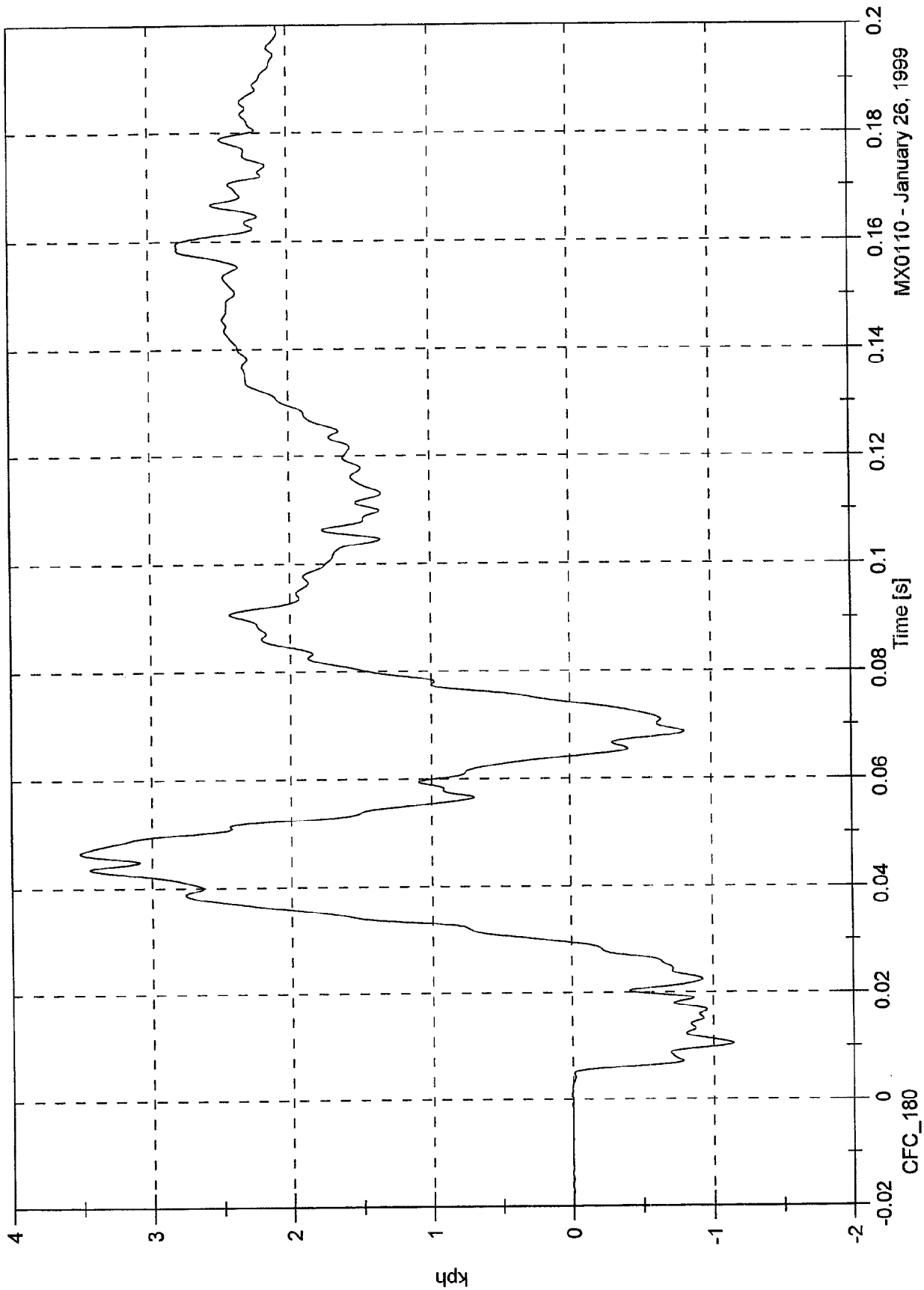
MX0110 - January 26, 1999



SNCAP test # 3 - 1999 Pontiac Grand Am

Max: 3.5 [kph] at 0.046 [s]
 Min: -1.1 [kph] at 0.010 [s]

Acc 3(Z) Rear Floorpan

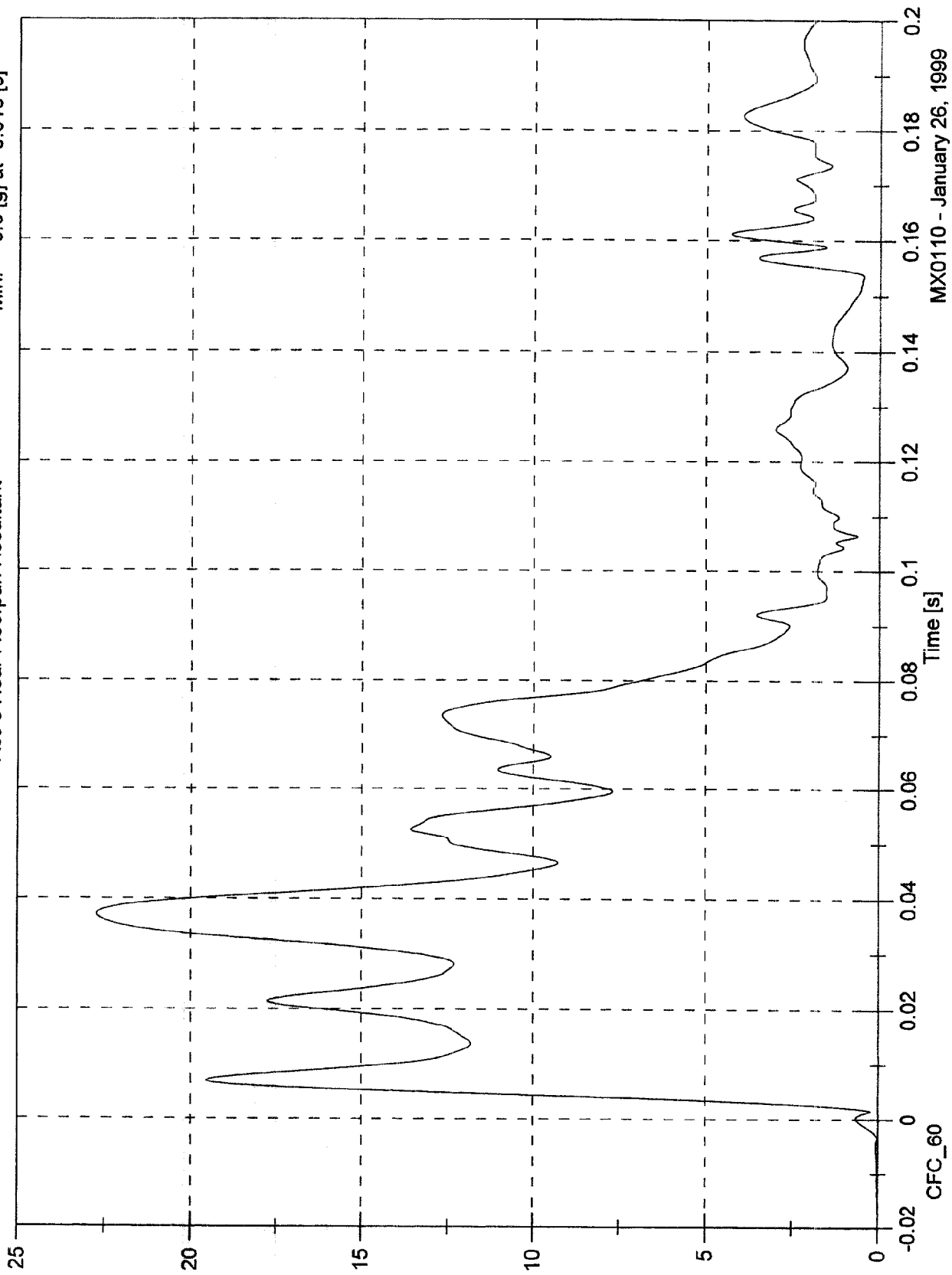


MX0110 - January 26, 1999

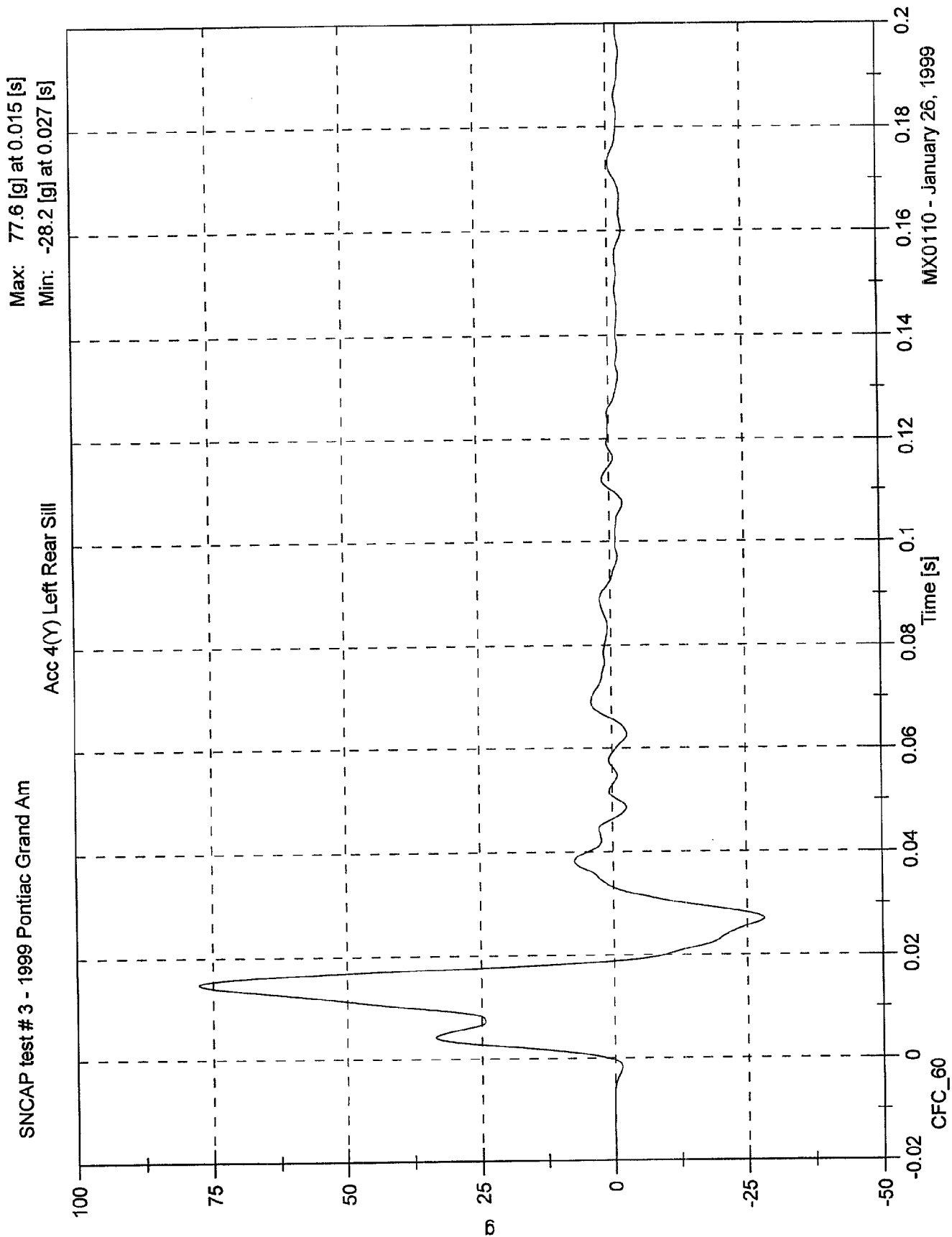
SNCAP test # 3 - 1999 Pontiac Grand Am

Acc 3 Rear Floorpan Resultant

Max: 22.7 [g] at 0.037 [s]
Min: 0.0 [g] at -0.018 [s]



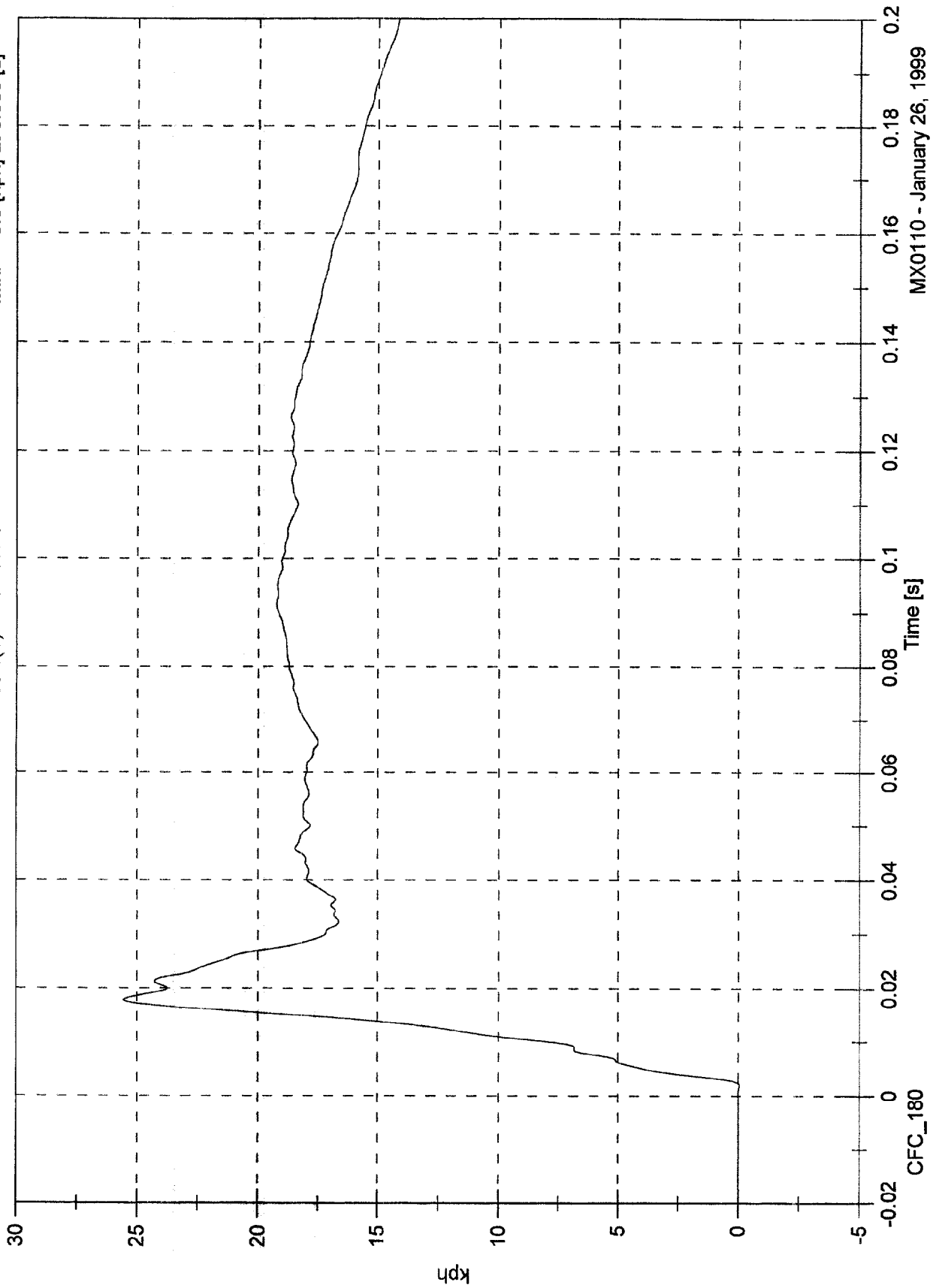
MX0110 - January 26, 1999



SNCAP test # 3 - 1999 Pontiac Grand Am

Acc 4(Y) Left Rear Sill

Max: 25.6 [kph] at 0.018 [s]
Min: -0.3 [kph] at 0.500 [s]

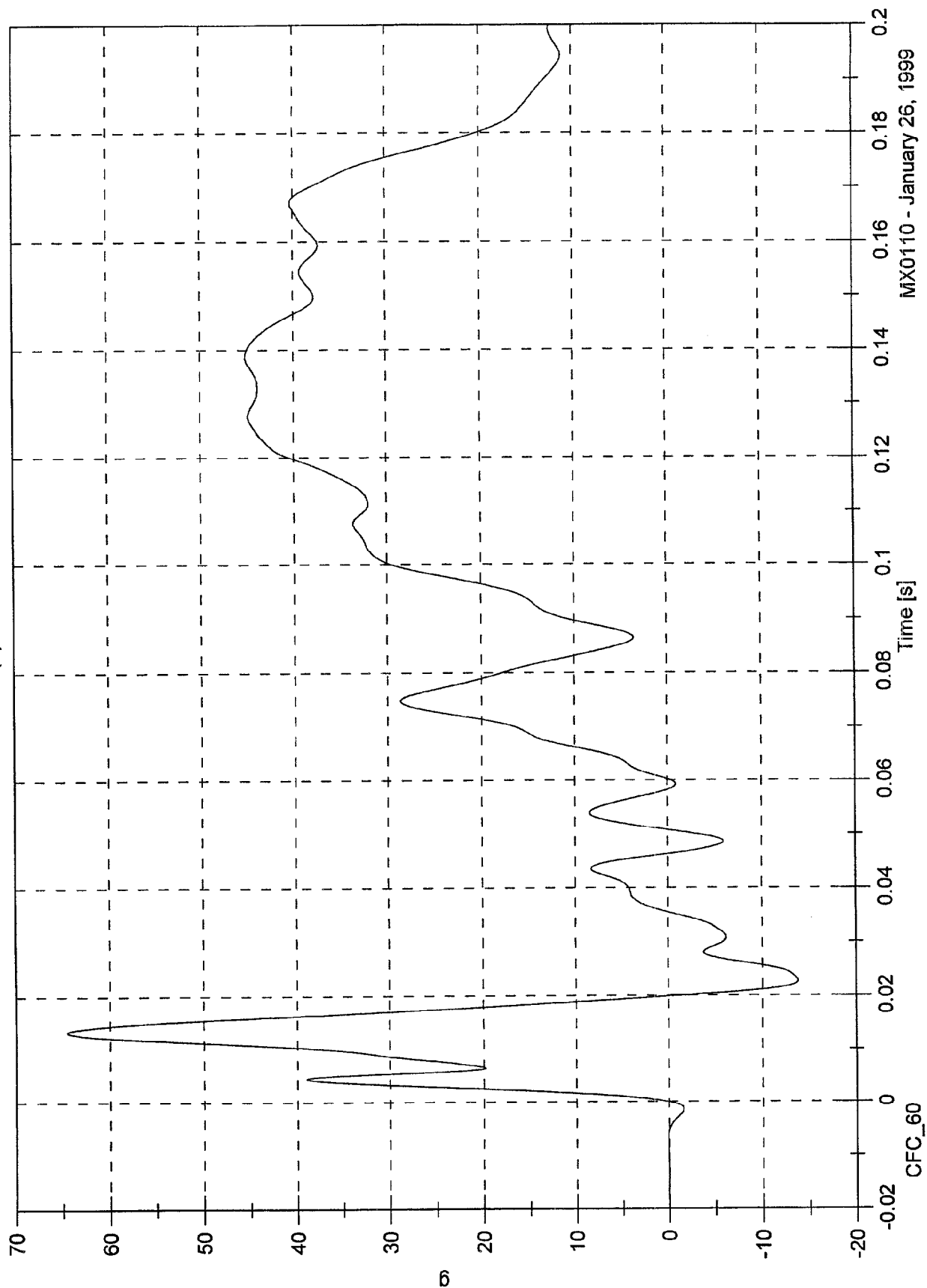


MX0110 - January 26, 1999

SNCAP test # 3 - 1999 Pontiac Grand Am

Acc 5(Y) Left Front Sill

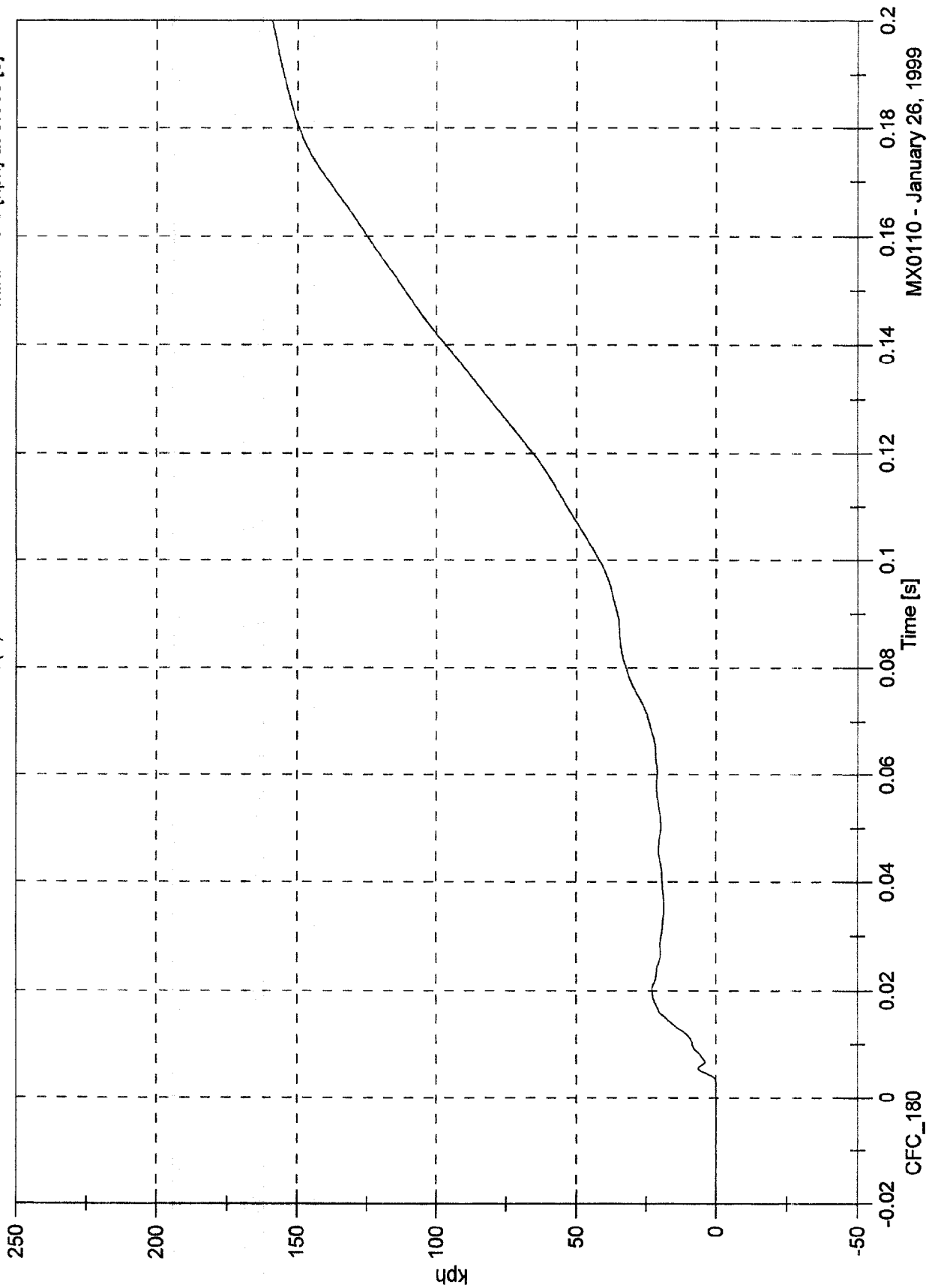
Max: 64.5 [g] at 0.013 [s]
Min: -13.9 [g] at 0.023 [s]



SNCAP test # 3 - 1999 Pontiac Grand Am

Acc 5(Y) Left Front Sill

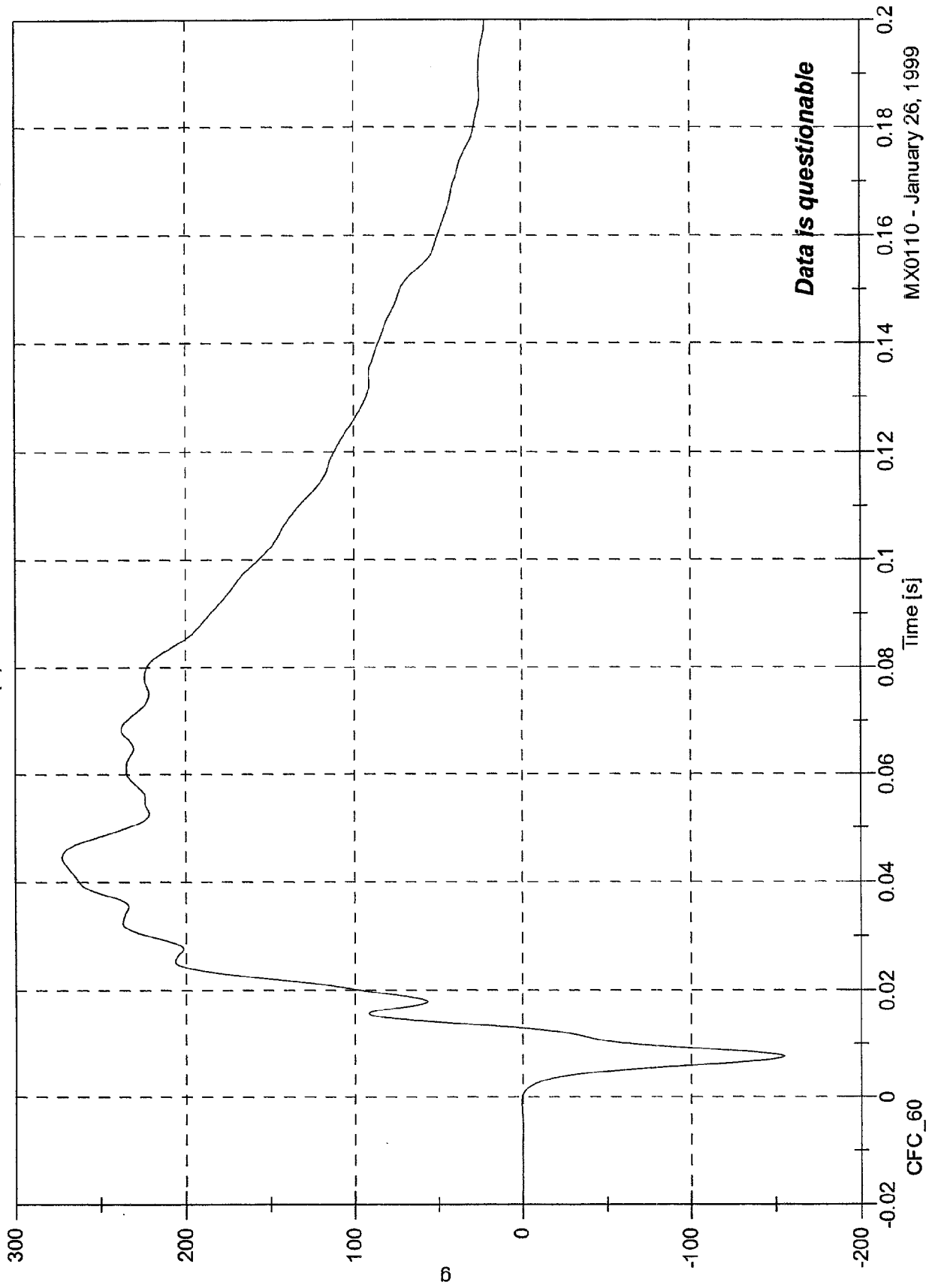
Max: 235.5 [kph] at 0.500 [s]
Min: -0.0 [kph] at 0.003 [s]



SNCAP test # 3 - 1999 Pontiac Grand Am

Max: 272.5 [g] at 0.045 [s]
Min: -155.3 [g] at 0.008 [s]

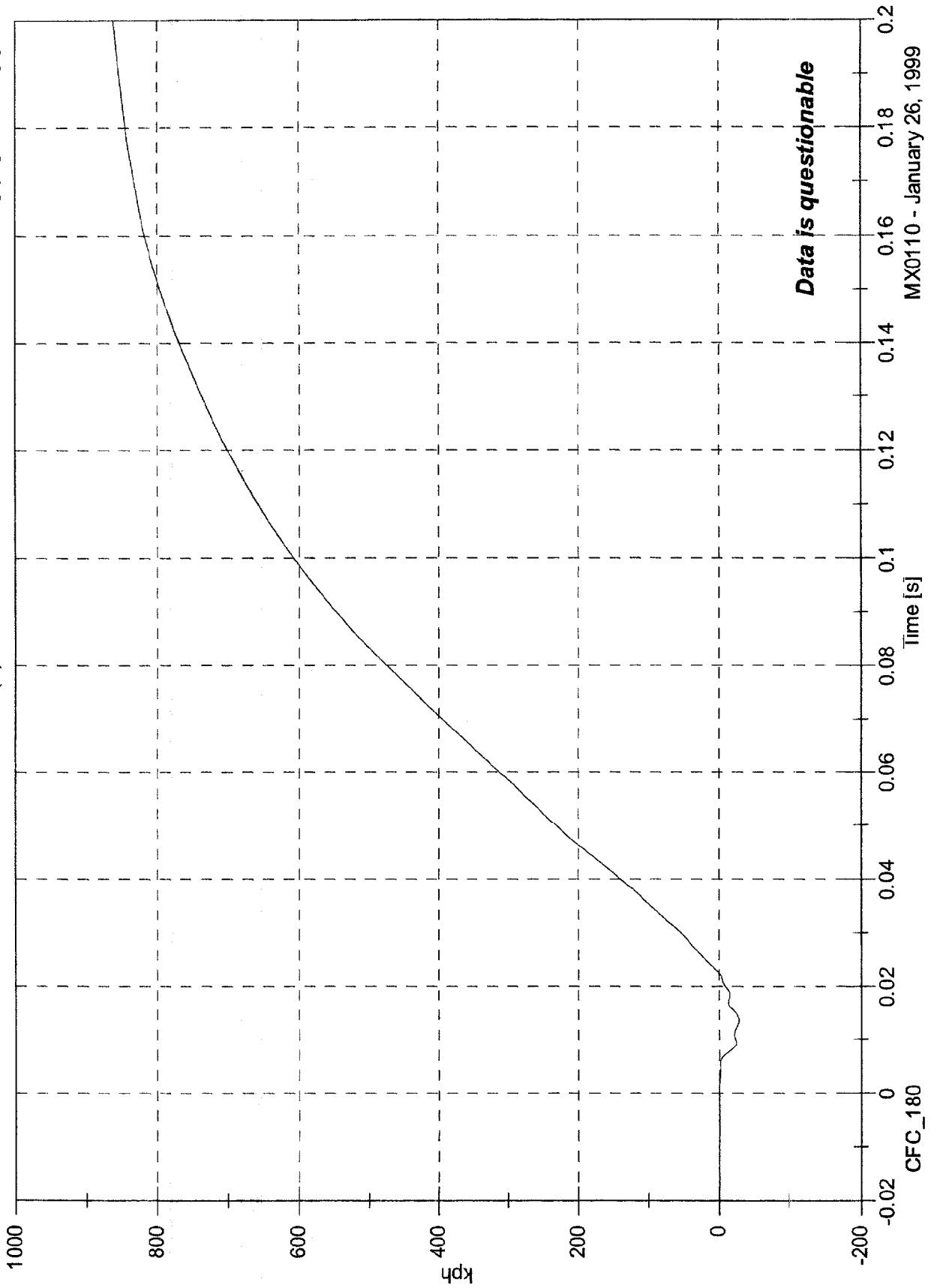
Acc 6(Y) Left Front Door C/L



SNCAP test # 3 - 1999 Pontiac Grand Am

Max: 931.1 [kph] at 0.500 [s]
Min: -28.7 [kph] at 0.013 [s]

Acc 6(Y) Left Front Door C/L

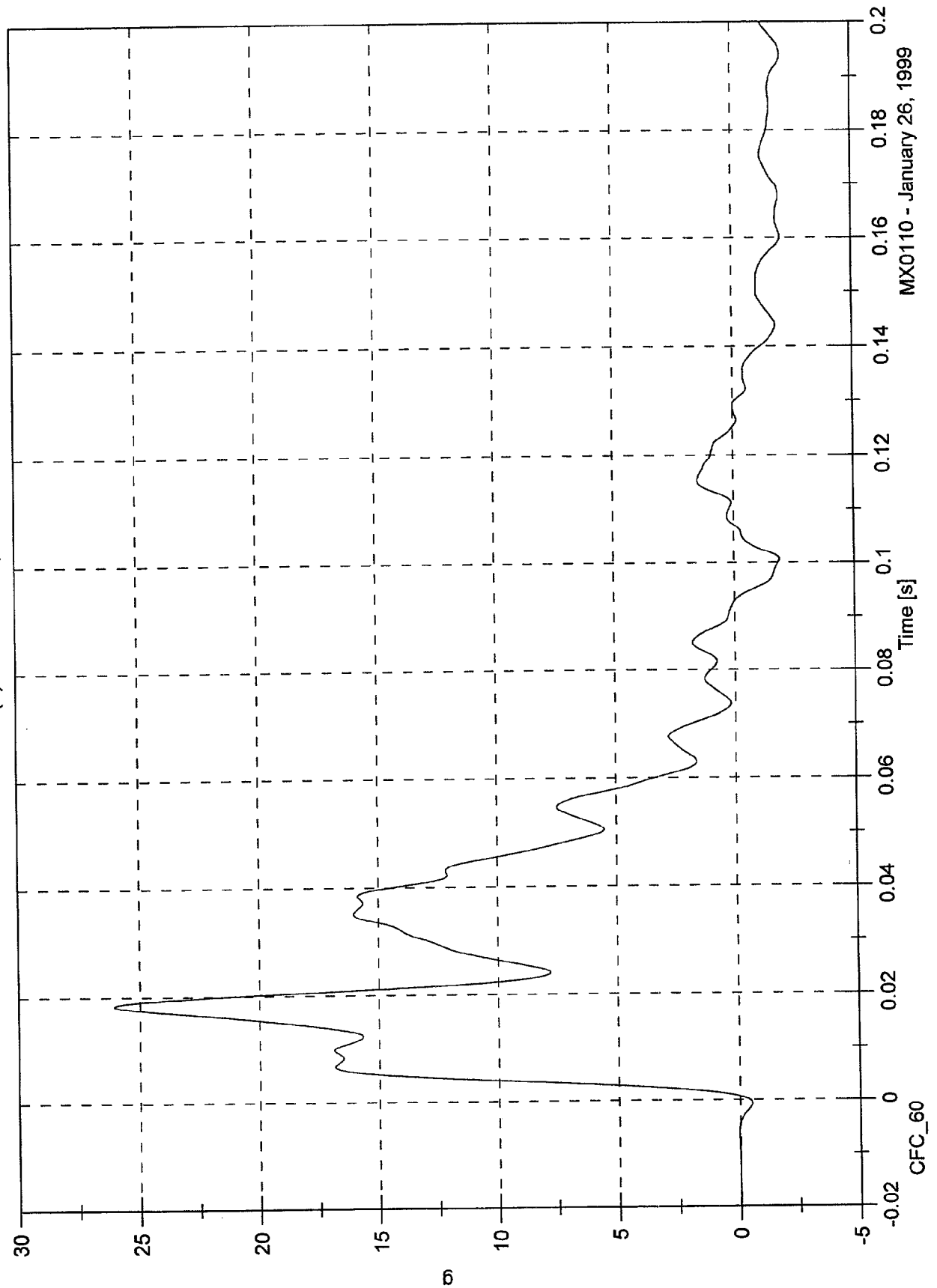


SNCAP test # 3 - 1999 Pontiac Grand Am

Acc 7(Y) Rt Rear Compartment

Max: 26.0 [g] at 0.018 [s]

Min: -2.1 [g] at 0.194 [s]



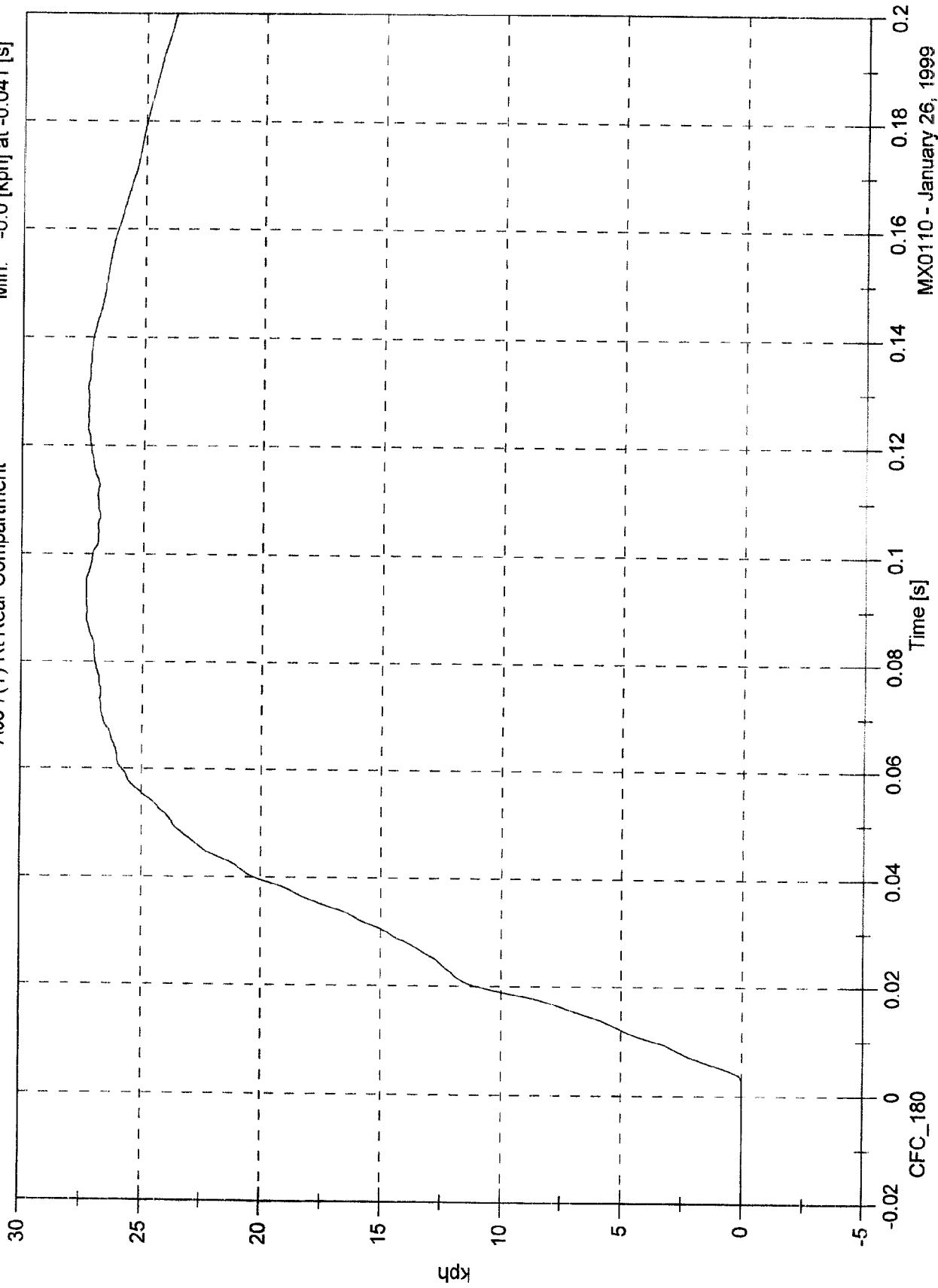
MX0110 - January 26, 1999

SNCAP test # 3 - 1999 Pontiac Grand Am

Max: 27.3 [kph] at 0.095 [s]

Min: -0.0 [kph] at -0.041 [s]

Acc 7(Y) Rt Rear Compartment

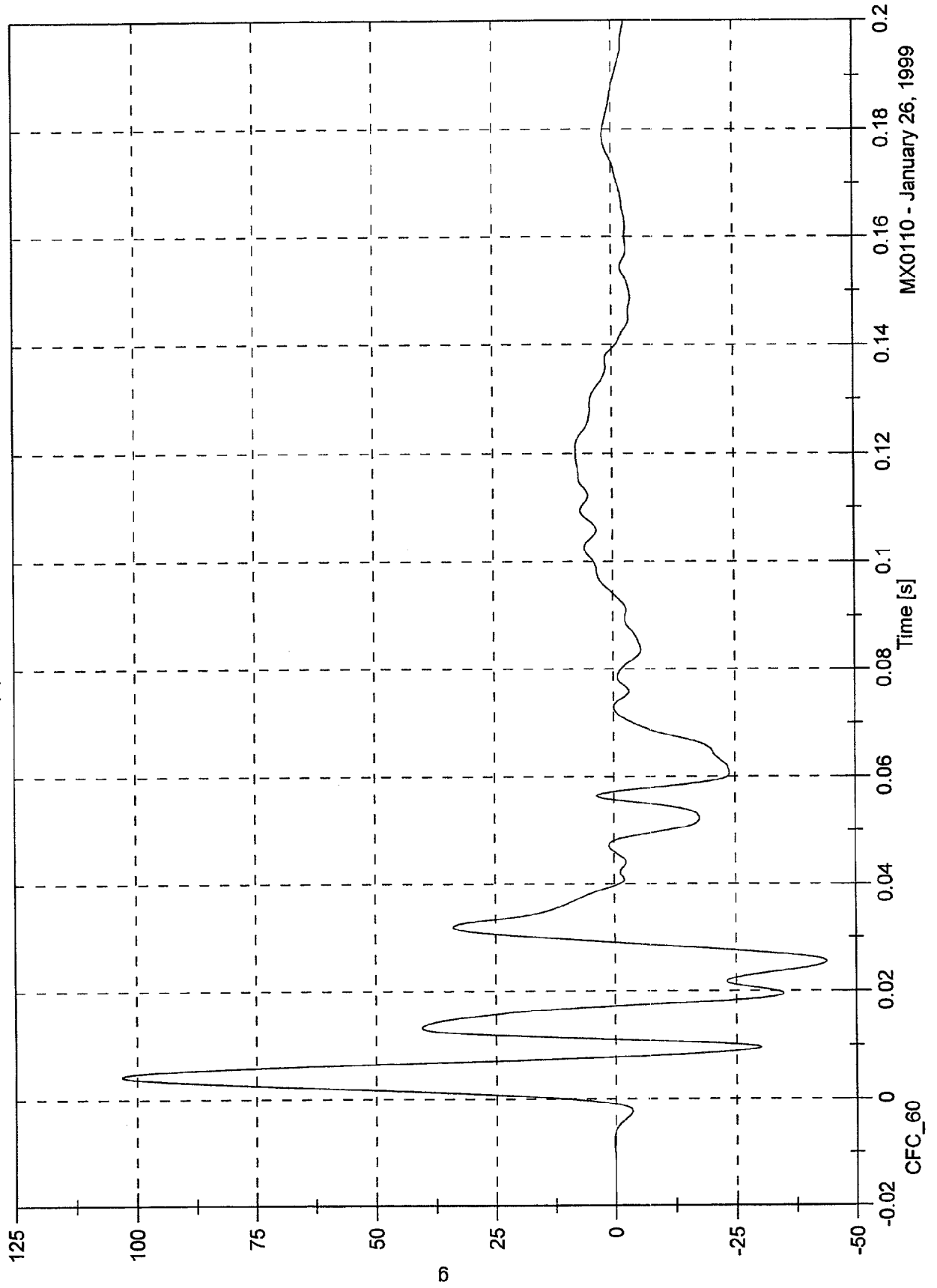


MX0110 - January 26, 1999

SNCAP test # 3 - 1999 Pontiac Grand Am

Max: 103.2 [g] at 0.004 [s]
Min: -43.8 [g] at 0.025 [s]

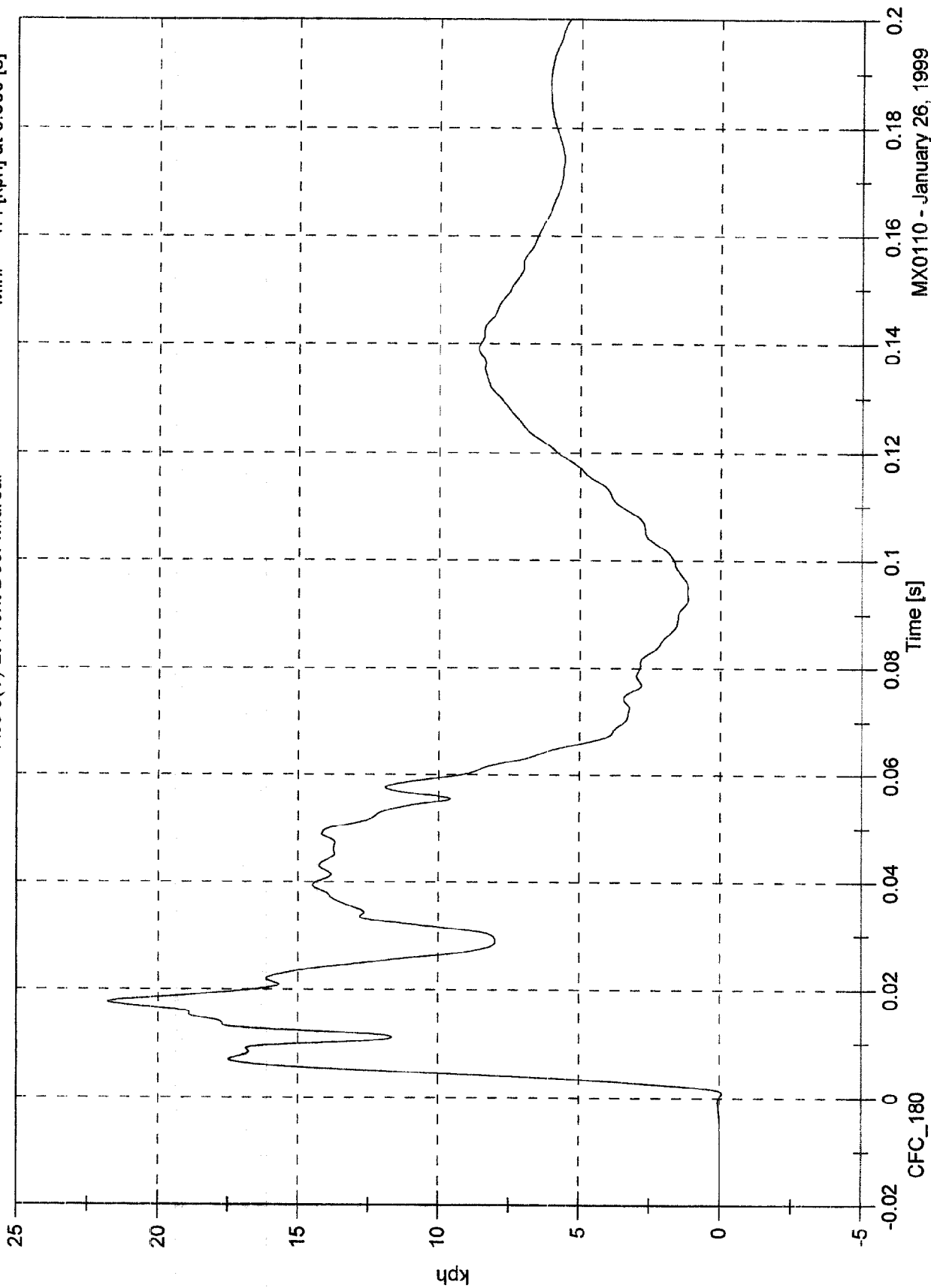
Acc 8(Y) Lt Front Door Midrear



SNCAP test # 3 - 1999 Pontiac Grand Am

Acc 8(Y) Lt Front Door Midrear

Max: 21.8 [kph] at 0.018 [s]
Min: -1.4 [kph] at 0.500 [s]

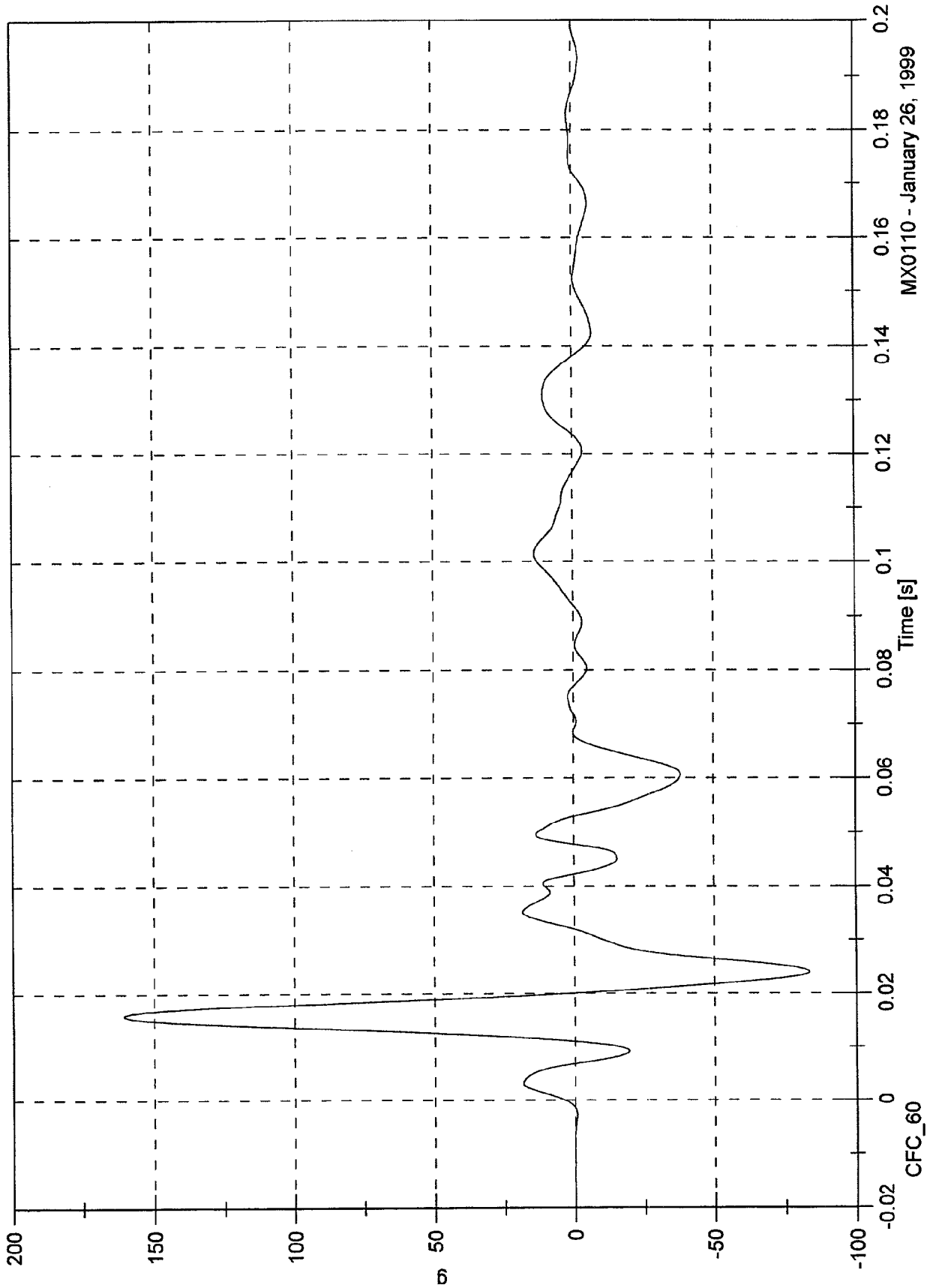


MX0110 - January 26, 1999

SNCAP test # 3 - 1999 Pontiac Grand Am

Max: 160.7 [g] at 0.016 [s]
Min: -83.5 [g] at 0.024 [s]

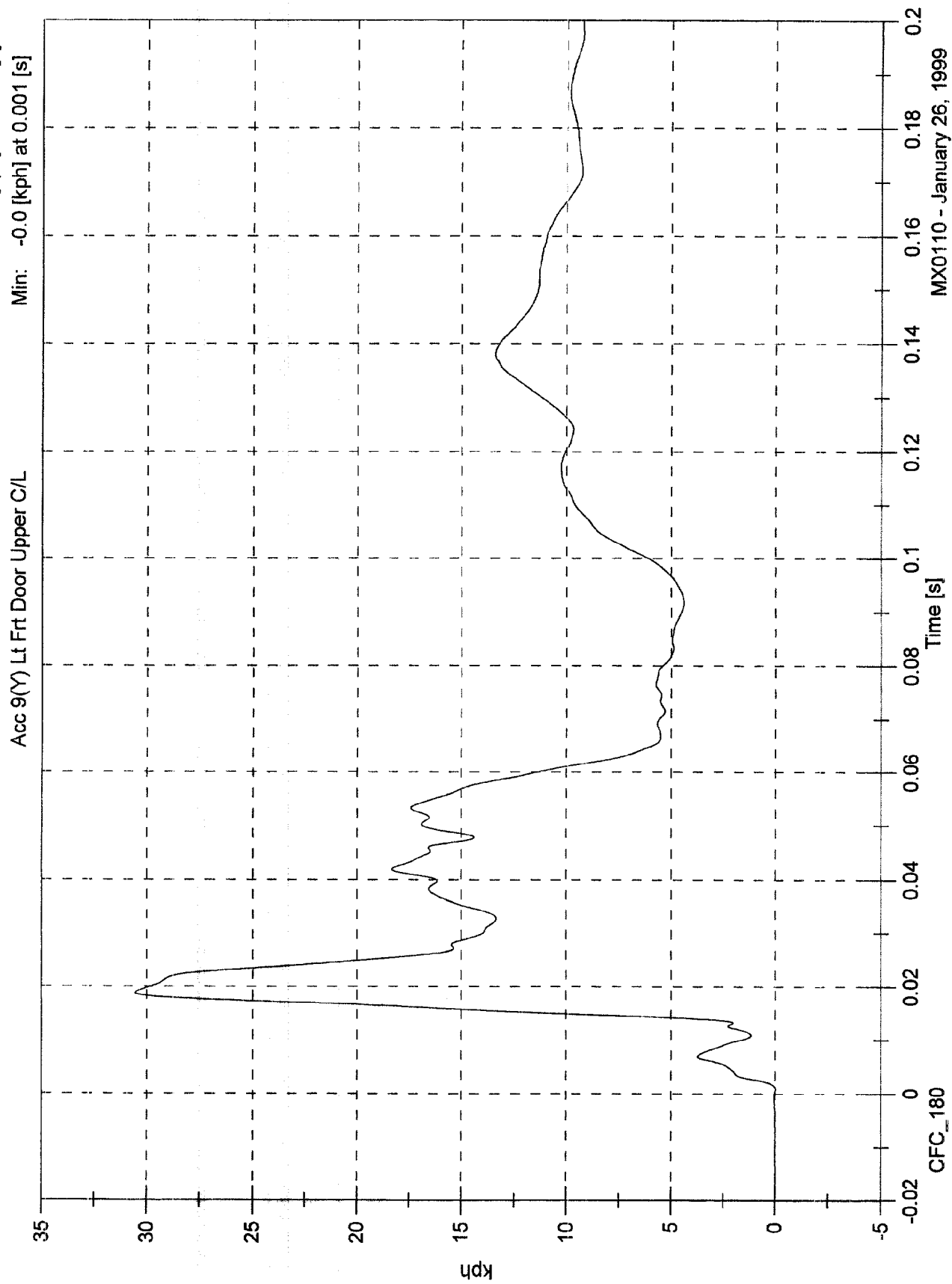
Acc 9(Y) Lt Frt Door Upper C/L



MX0110 - January 26, 1999

SNCAP test # 3 - 1999 Pontiac Grand Am

Max: 30.6 [kph] at 0.019 [s]
 Min: -0.0 [kph] at 0.001 [s]



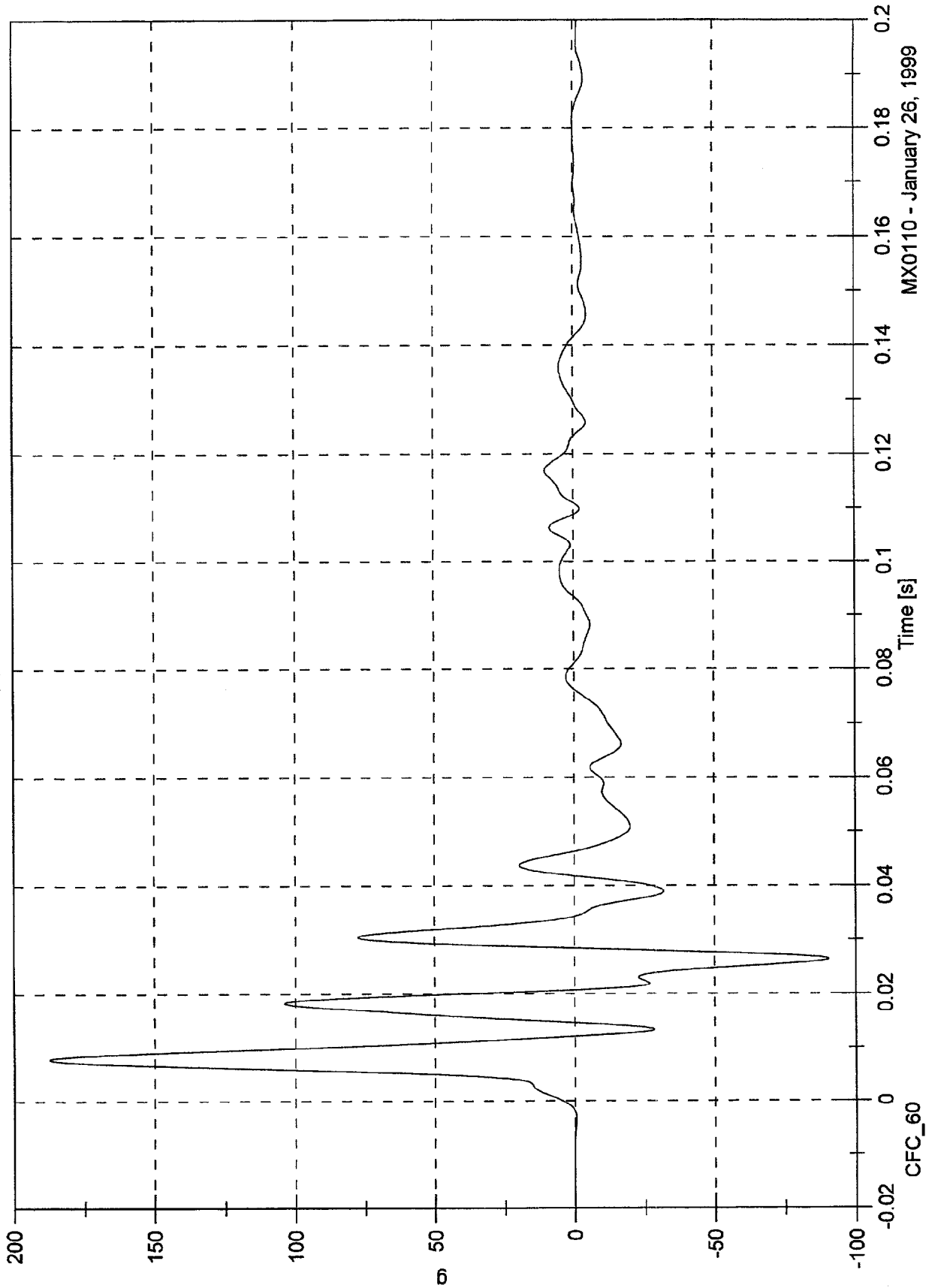
MX0110 - January 26, 1999

SNCAP test # 3 - 1999 Pontiac Grand Am

Acc 10(Y) Lt Rear Door Midrear

Max: 187.5 [g] at 0.008 [s]

Min: -90.7 [g] at 0.026 [s]

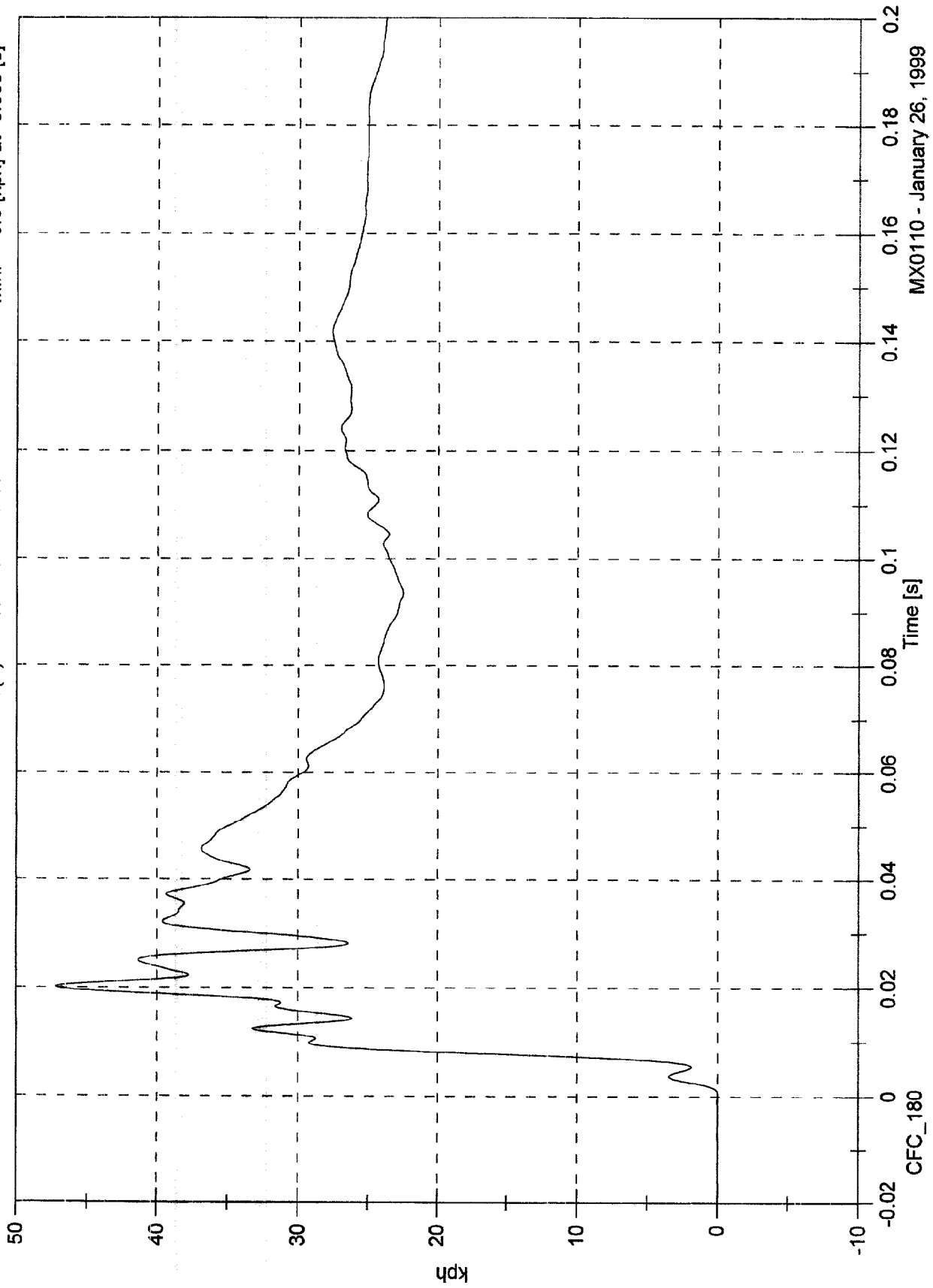


MX0110 - January 26, 1999

SNCAP test # 3 - 1999 Pontiac Grand Am

Acc 10(Y) Lt Rear Door Midrear

Max: 47.2 [kph] at 0.020 [s]
Min: -0.0 [kph] at -0.058 [s]

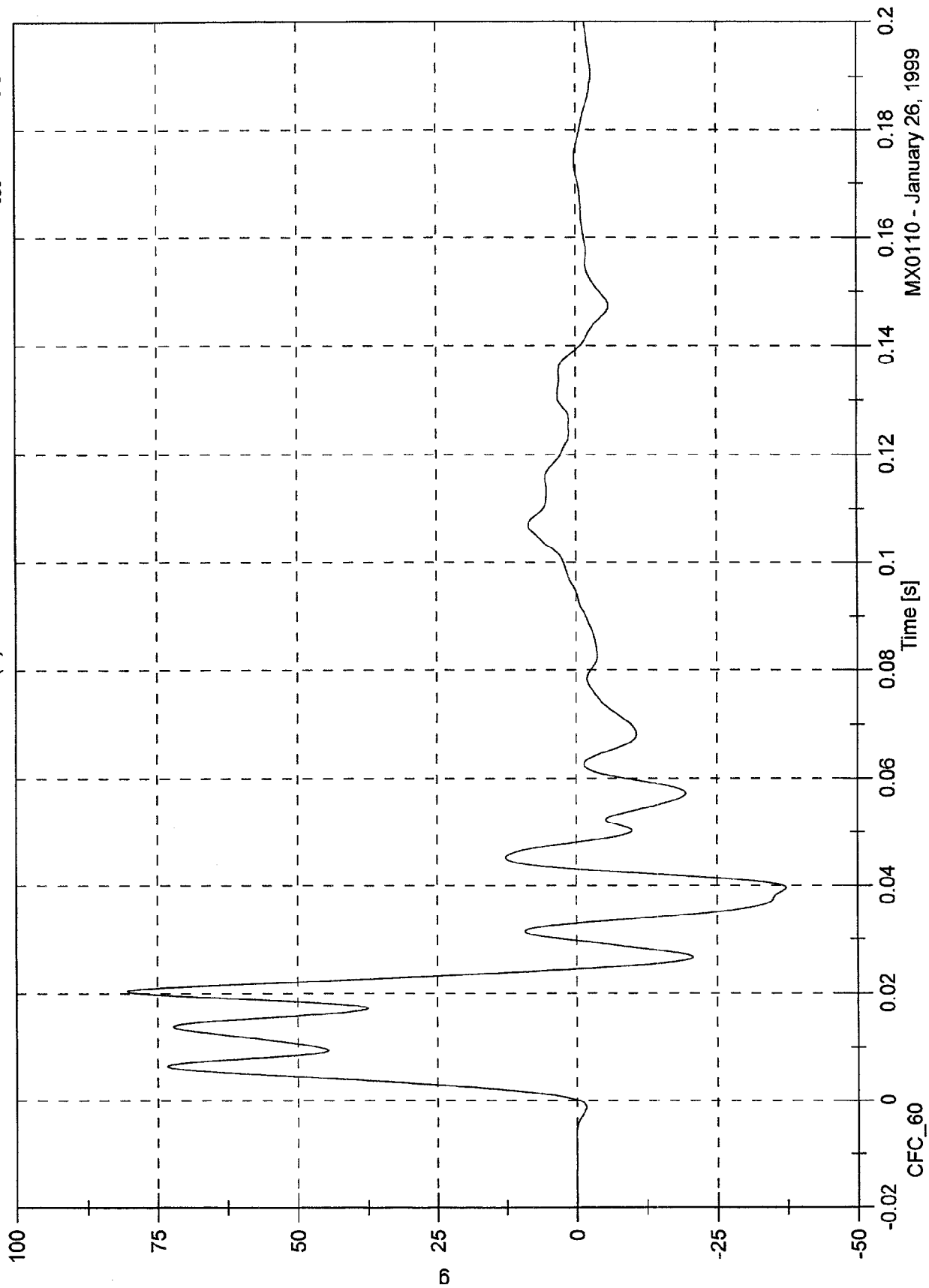


MX0110 - January 26, 1999

SNCAP test # 3 - 1999 Pontiac Grand Am

Acc 11(Y) Front Seat Track

Max: 80.5 [g] at 0.020 [s]
Min: -37.4 [g] at 0.040 [s]

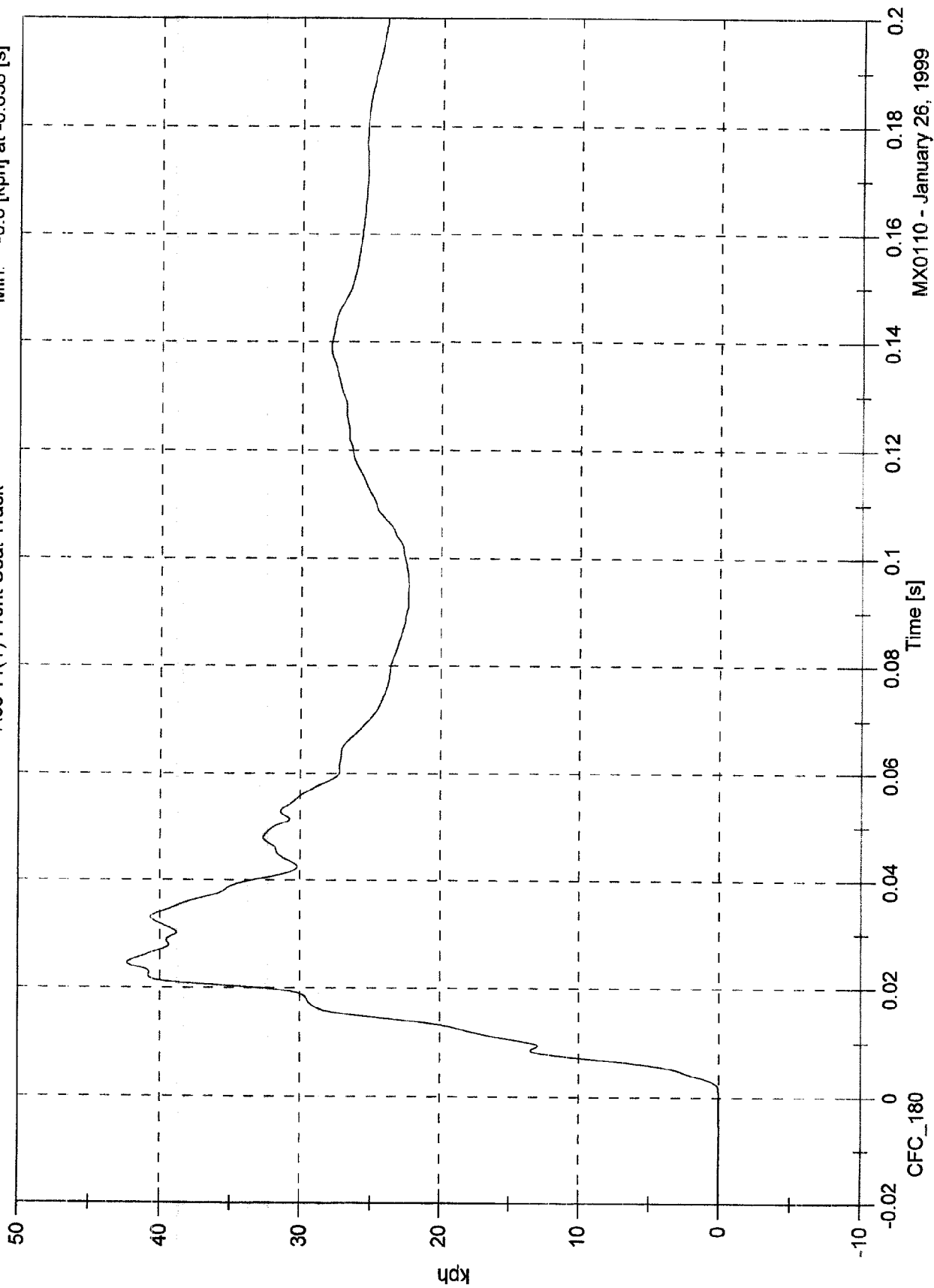


MX0110 - January 26, 1999

SNCAP test # 3 - 1999 Pontiac Grand Am

Acc 11(Y) Front Seat Track

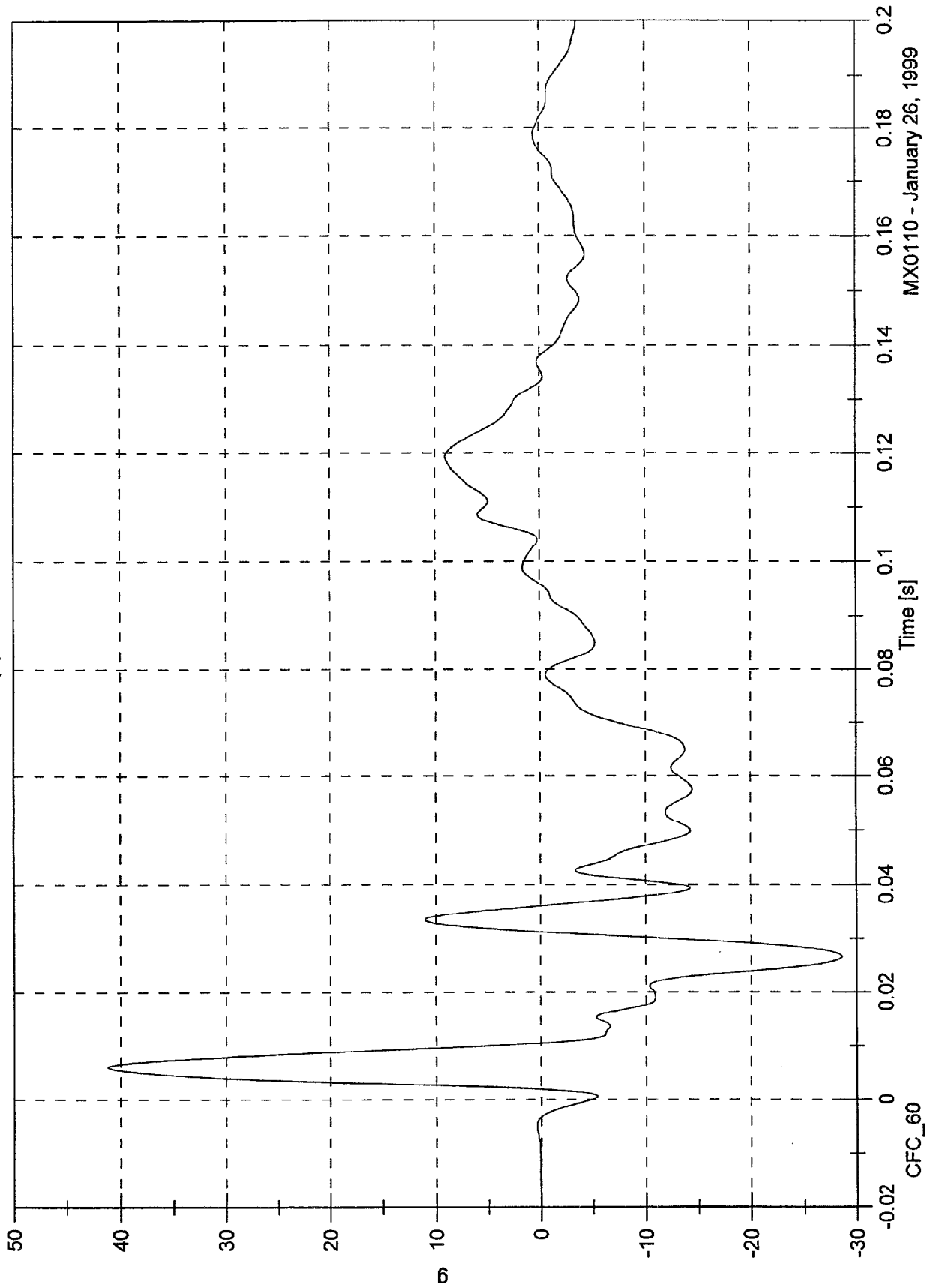
Max: 42.3 [kph] at 0.024 [s]
Min: -0.0 [kph] at -0.058 [s]



SNCAP test # 3 - 1999 Pontiac Grand Am

Max: 41.2 [g] at 0.006 [s]
Min: -28.6 [g] at 0.027 [s]

Acc 12(Y) Left Lower B-Post



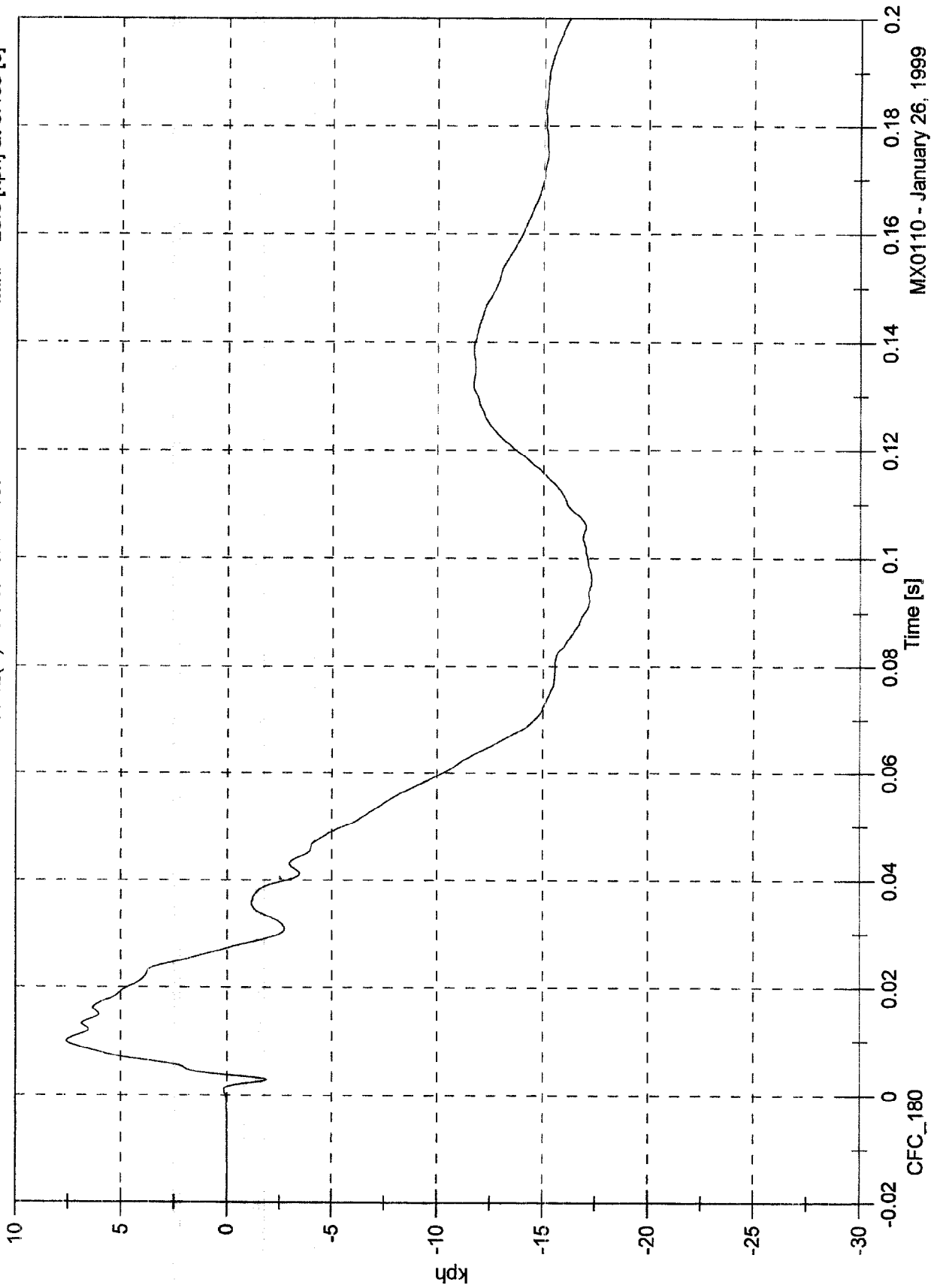
MX0110 - January 26, 1999

SNCAP test # 3 - 1999 Pontiac Grand Am

Acc 12(Y) Left Lower B-Post

Max: 7.6 [kph] at 0.010 [s]

Min: -28.6 [kph] at 0.499 [s]

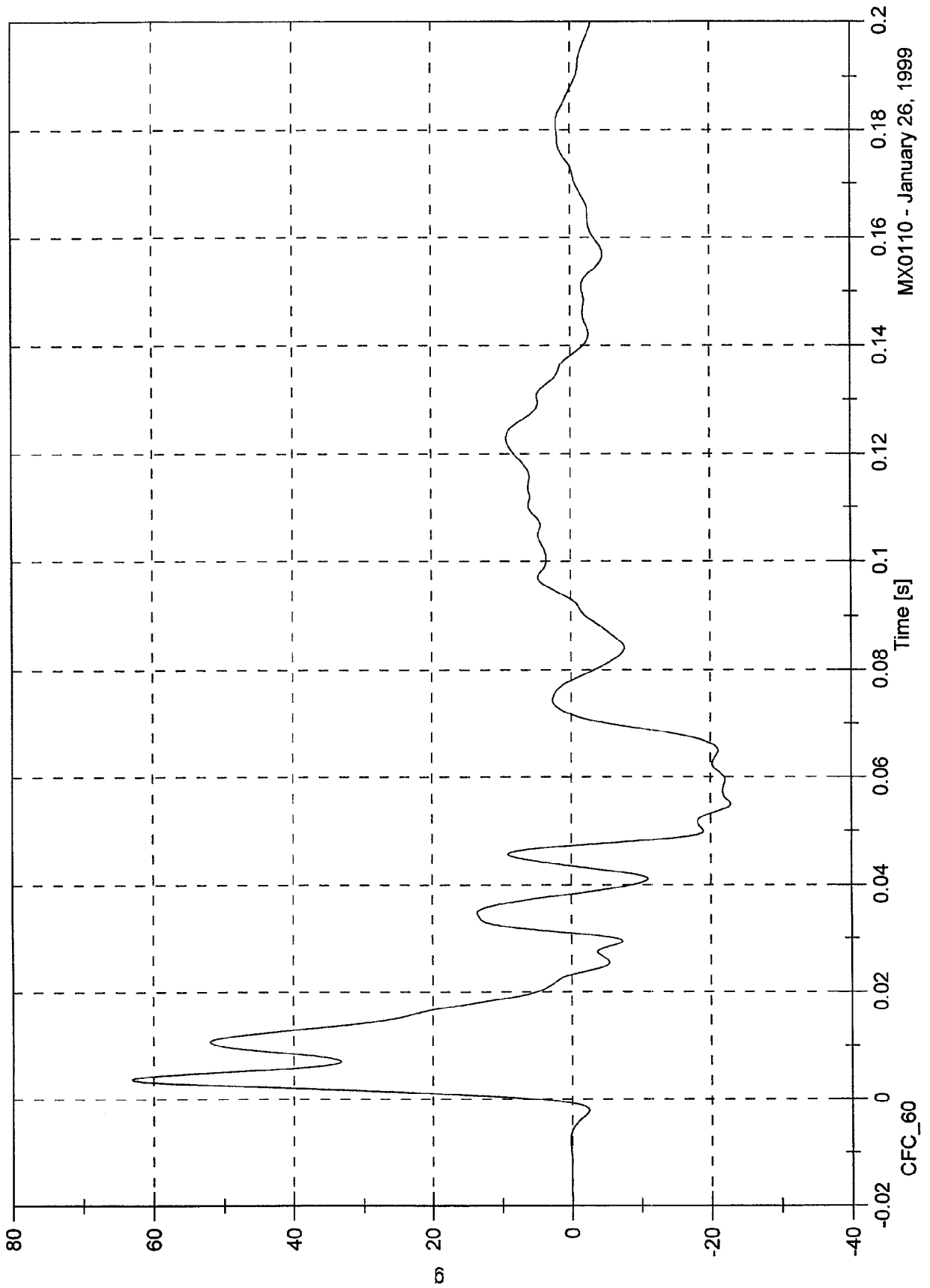


MX0110 - January 26, 1999

SNCAP test # 3 - 1999 Pontiac Grand Am

Acc 13(Y) Left Mid B-Post

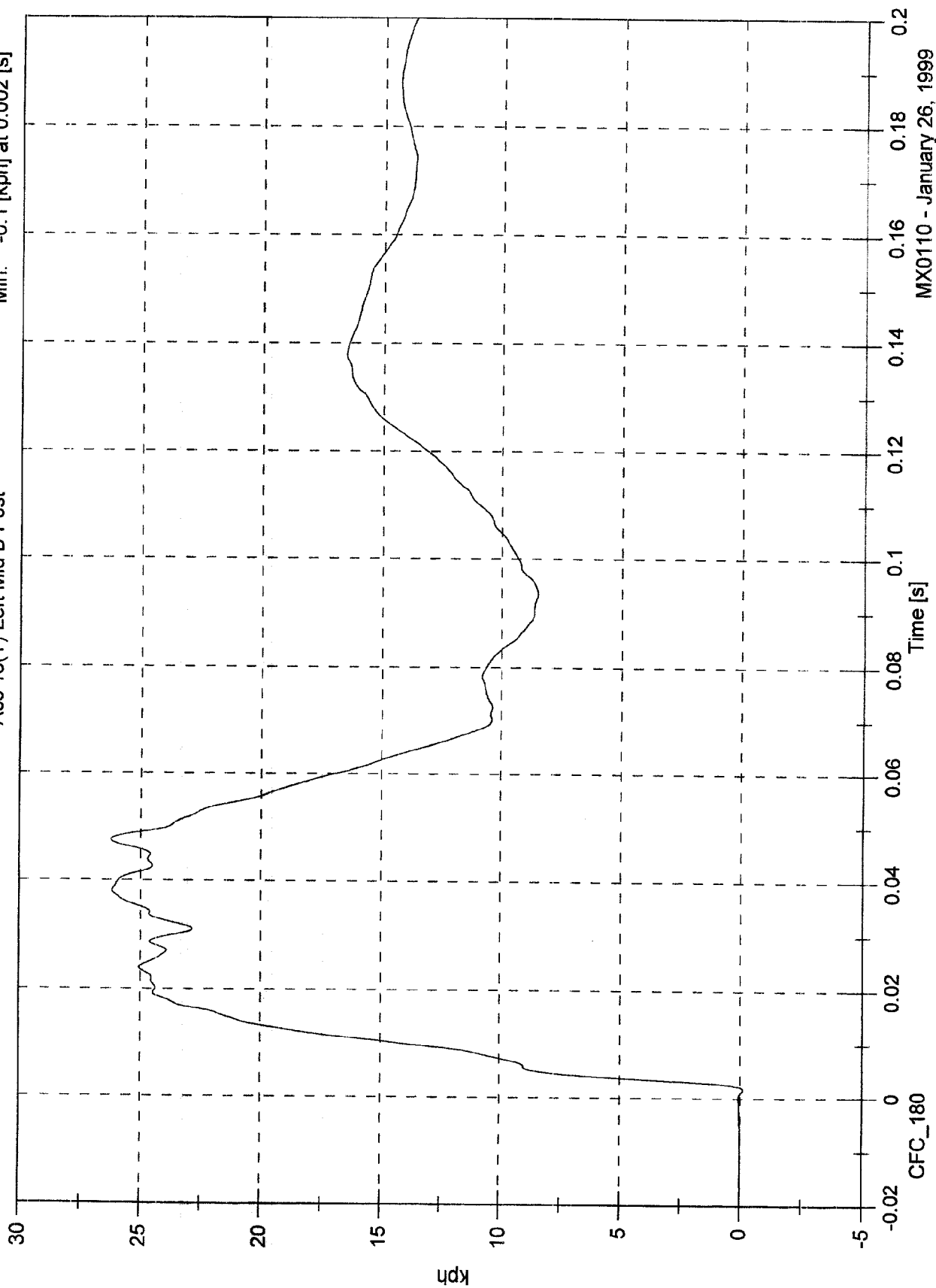
Max: 63.2 [g] at 0.004 [s]
Min: -22.9 [g] at 0.055 [s]



SNCAP test # 3 - 1999 Pontiac Grand Am

Acc 13(Y) Left Mid B-Post

Max: 26.2 [kph] at 0.048 [s]
Min: -0.1 [kph] at 0.002 [s]



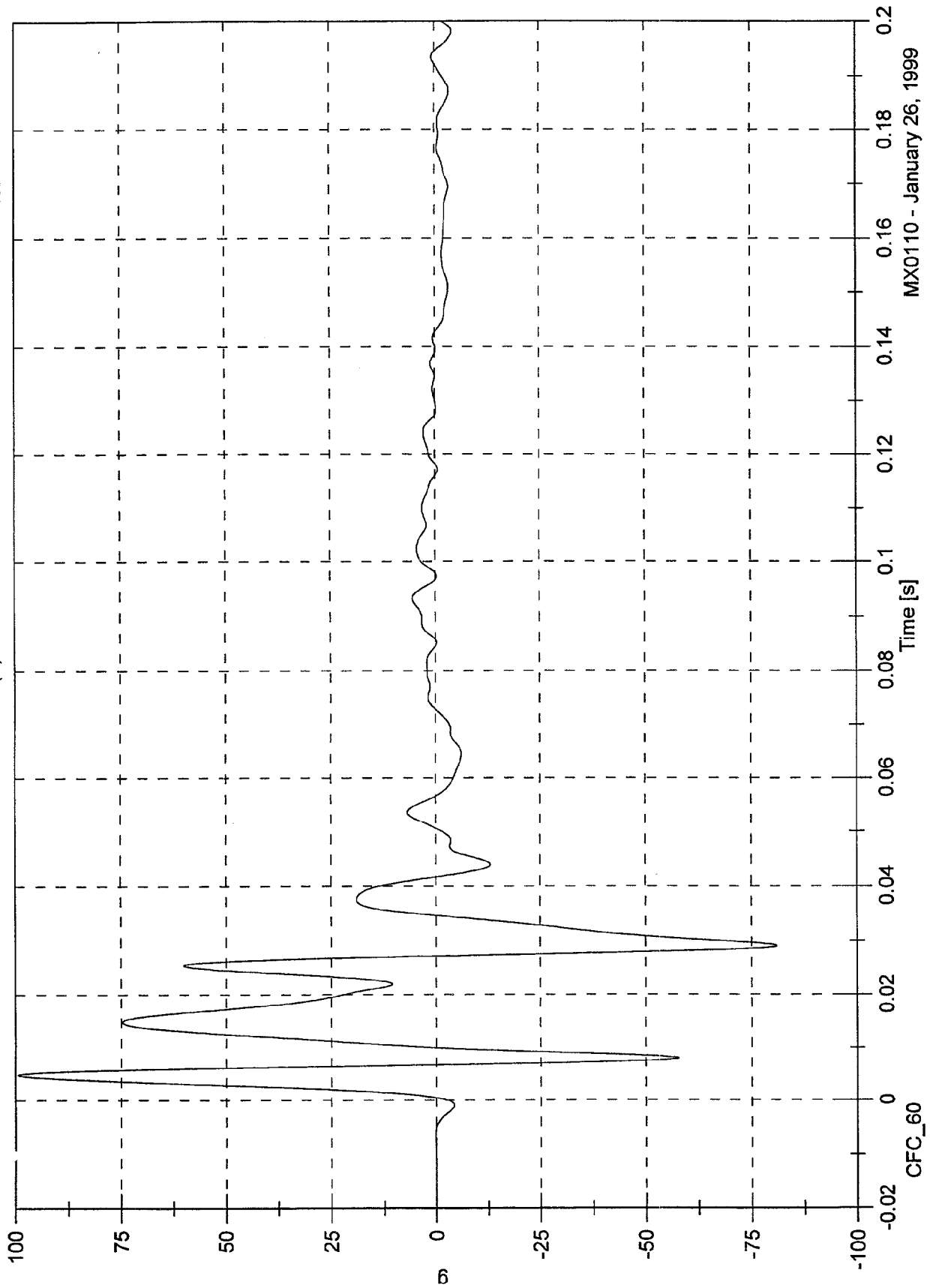
MX0110 - January 26, 1999

SNCAP test # 3 - 1999 Pontiac Grand Am

Acc 14(Y) Left Lower A Pillar

Max: 99.4 [g] at 0.005 [s]

Min: -81.0 [g] at 0.029 [s]

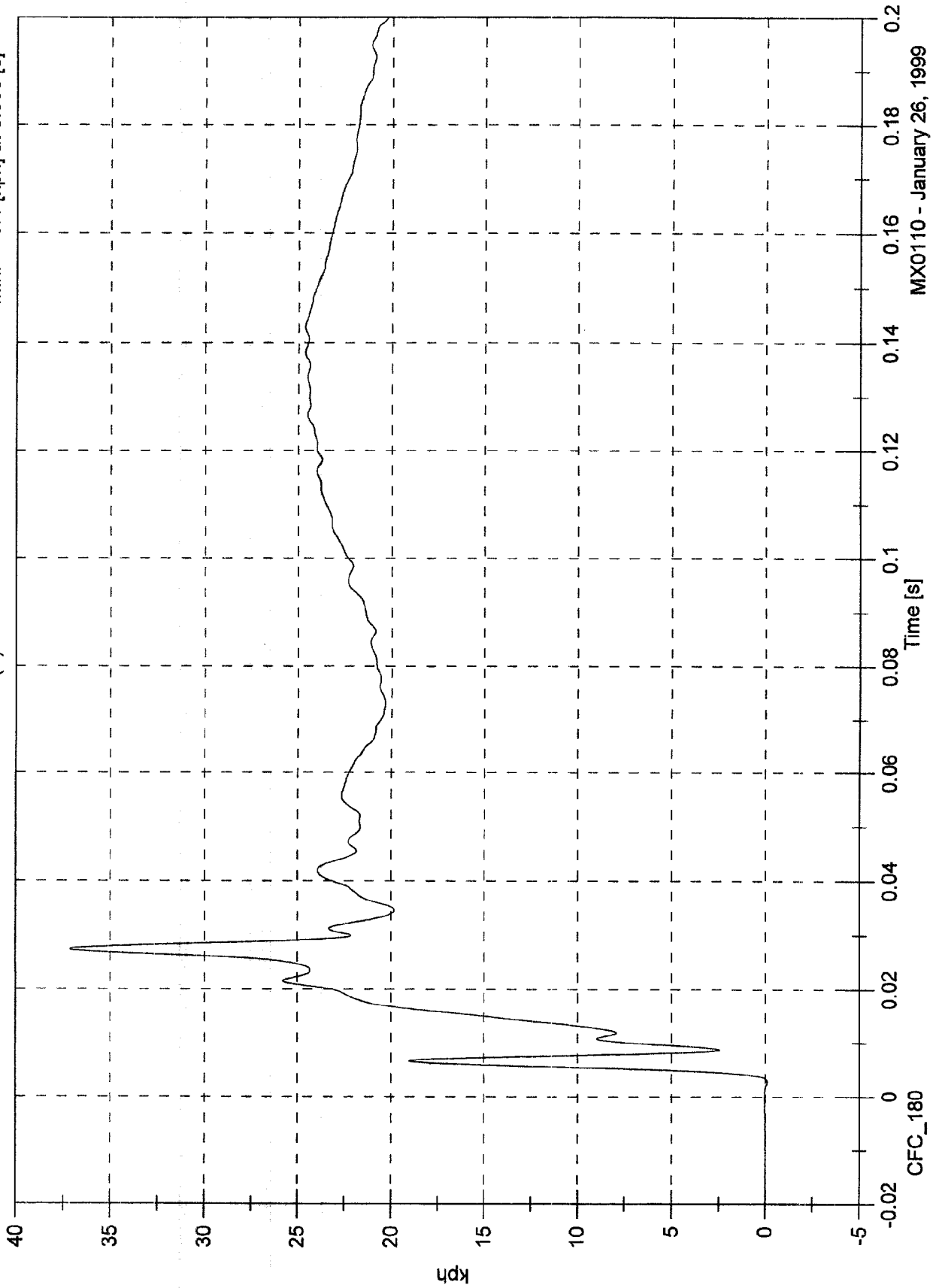


MX0110 - January 26, 1999

SNCAP test # 3 - 1999 Pontiac Grand Am

Acc 14(Y) Left Lower A Pillar

Max: 37.2 [kph] at 0.027 [s]
Min: -0.1 [kph] at 0.003 [s]

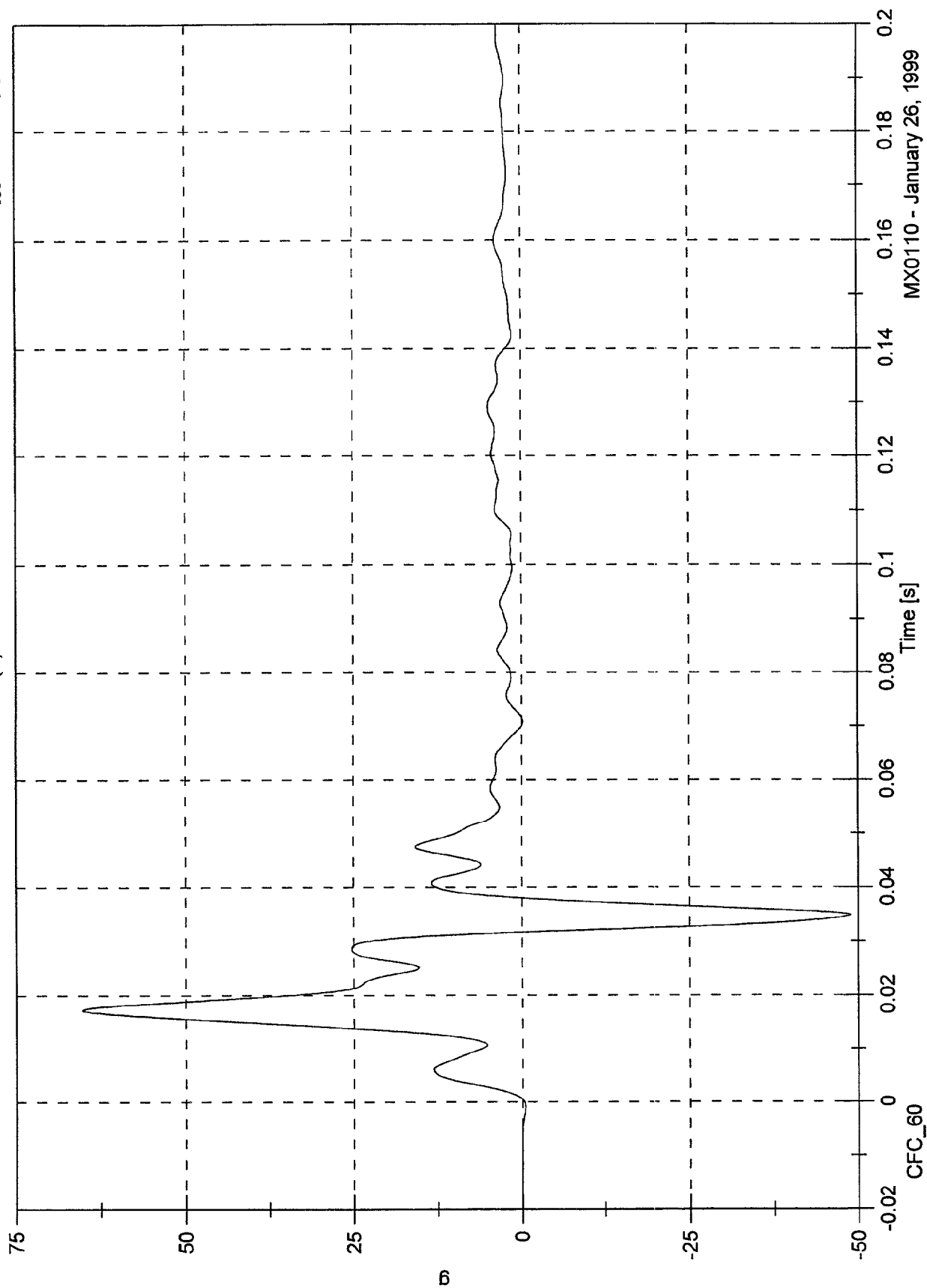


MX0110 - January 26, 1999

SNCAP test # 3 - 1999 Pontiac Grand Am

Max: 65.2 [g] at 0.017 [s]
Min: -48.9 [g] at 0.035 [s]

Acc 16(Y) Front Seat Track

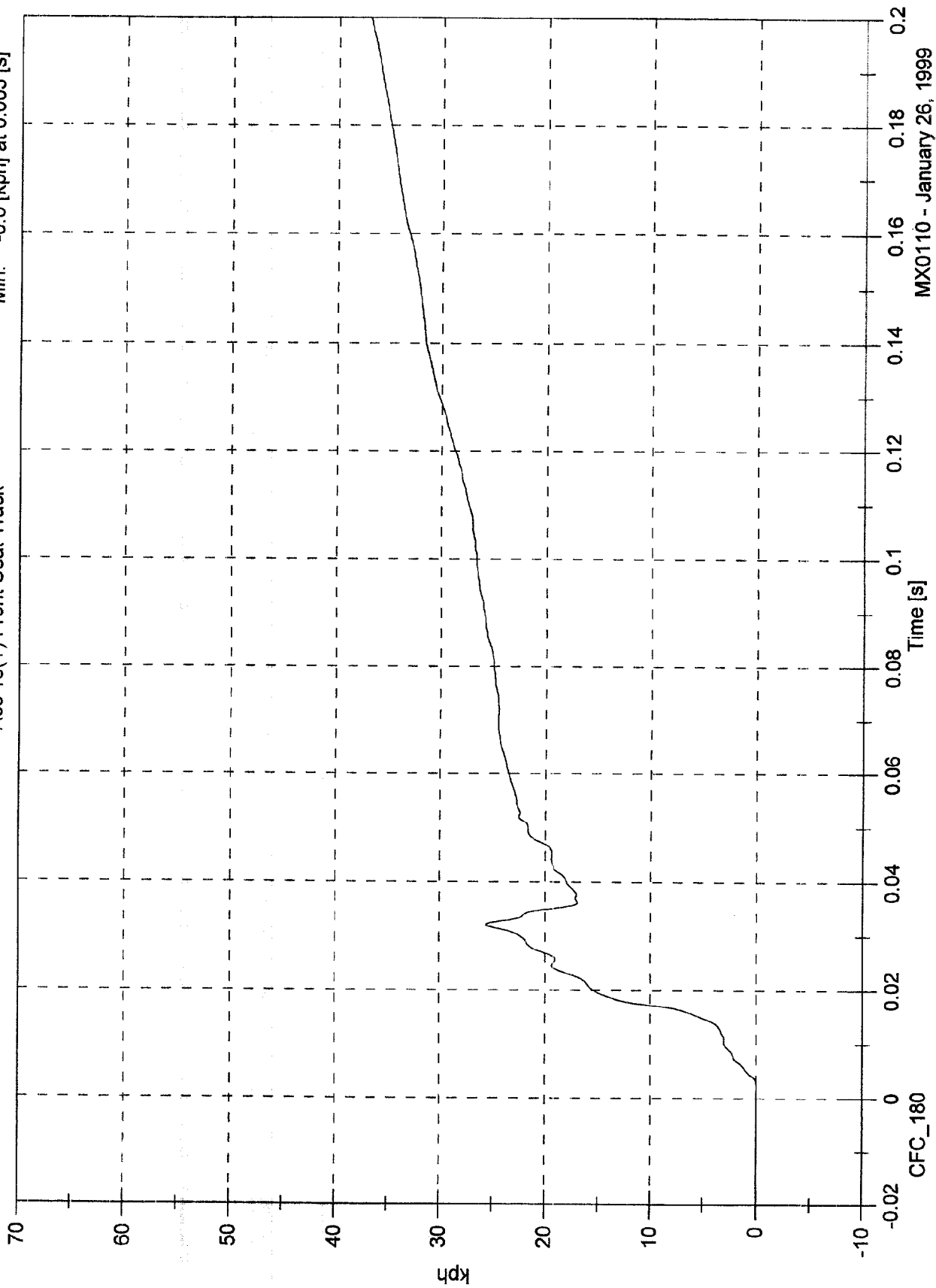


MX0110 - January 26, 1999

SNCAP test # 3 - 1999 Pontiac Grand Am

Acc 16(Y) Front Seat Track

Max: 68.1 [kph] at 0.500 [s]
Min: -0.0 [kph] at 0.003 [s]



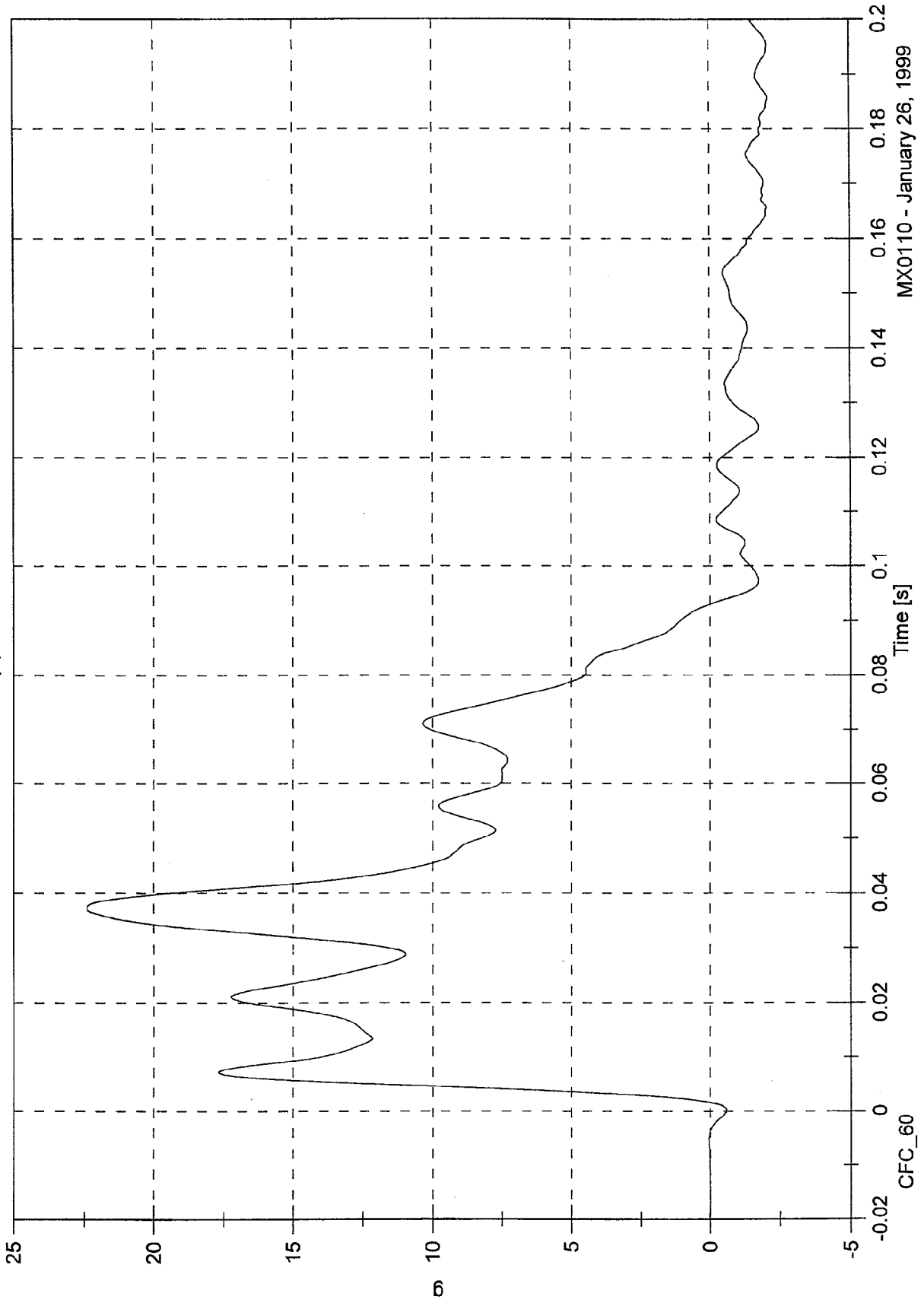
MX0110 - January 26, 1999

SNCAP test # 3 - 1999 Pontiac Grand Am

Acc 17(Y) Rear Seat Track

Max: 22.4 [g] at 0.037 [s]

Min: -2.1 [g] at 0.186 [s]



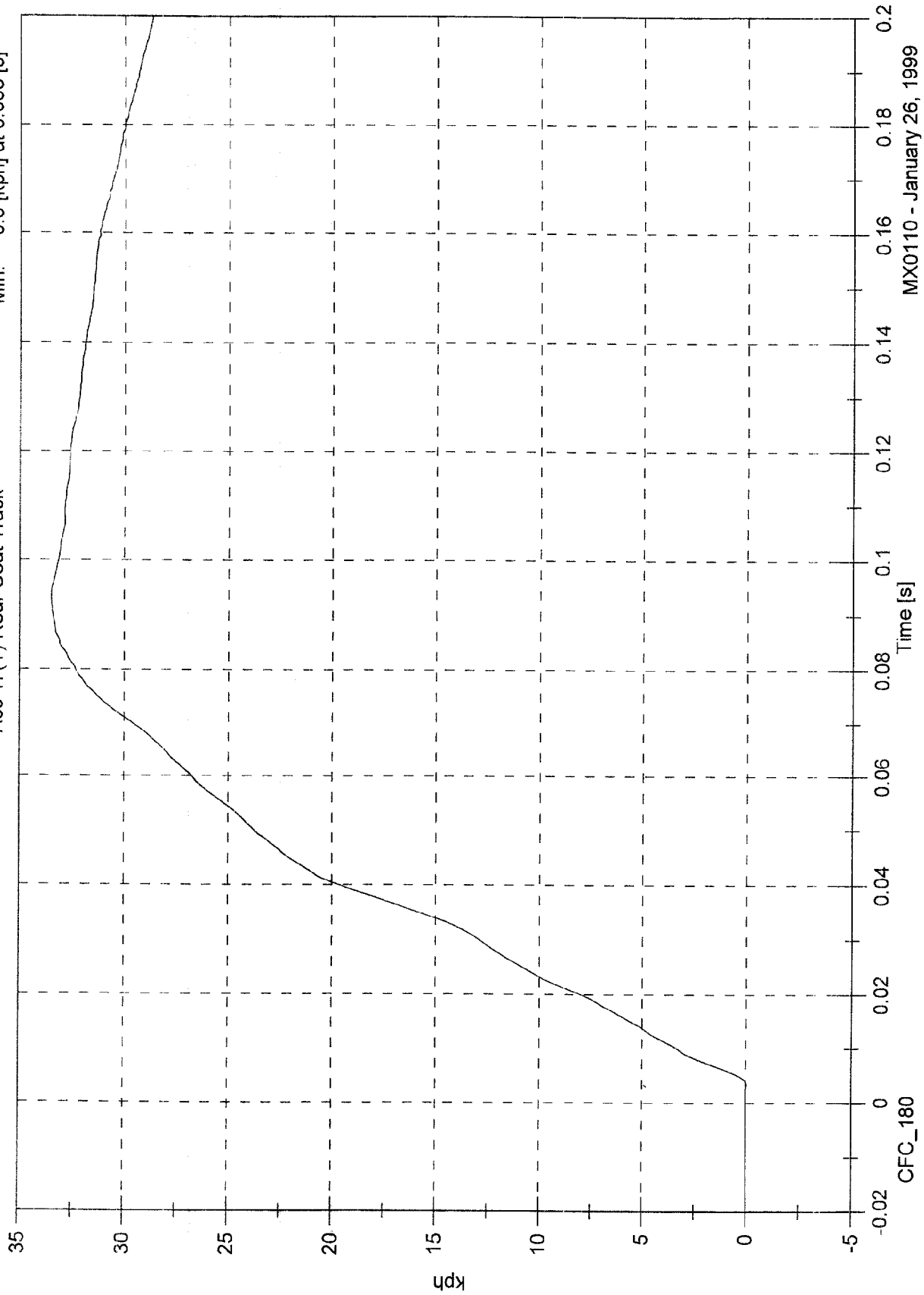
MX0110 - January 26, 1999

SNCAP test # 3 - 1999 Pontiac Grand Am

Max: 33.5 [kph] at 0.093 [s]

Min: -0.0 [kph] at 0.003 [s]

Acc 17(Y) Rear Seat Track

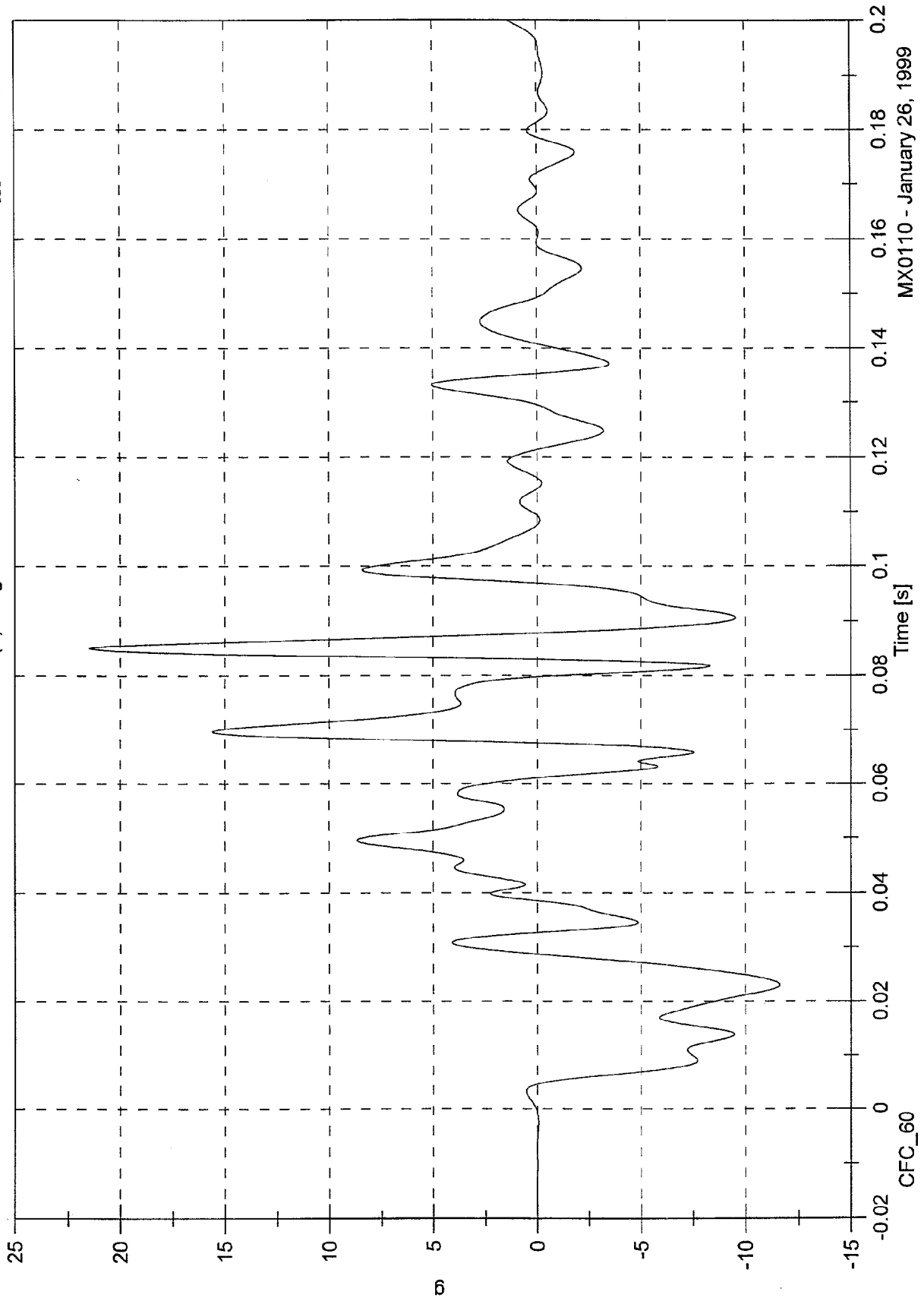


MX0110 - January 26, 1999

SNCAP test # 3 - 1999 Pontiac Grand Am

Max: 21.5 [g] at 0.085 [s]
Min: -11.6 [g] at 0.023 [s]

Acc 18(X) Target C/G

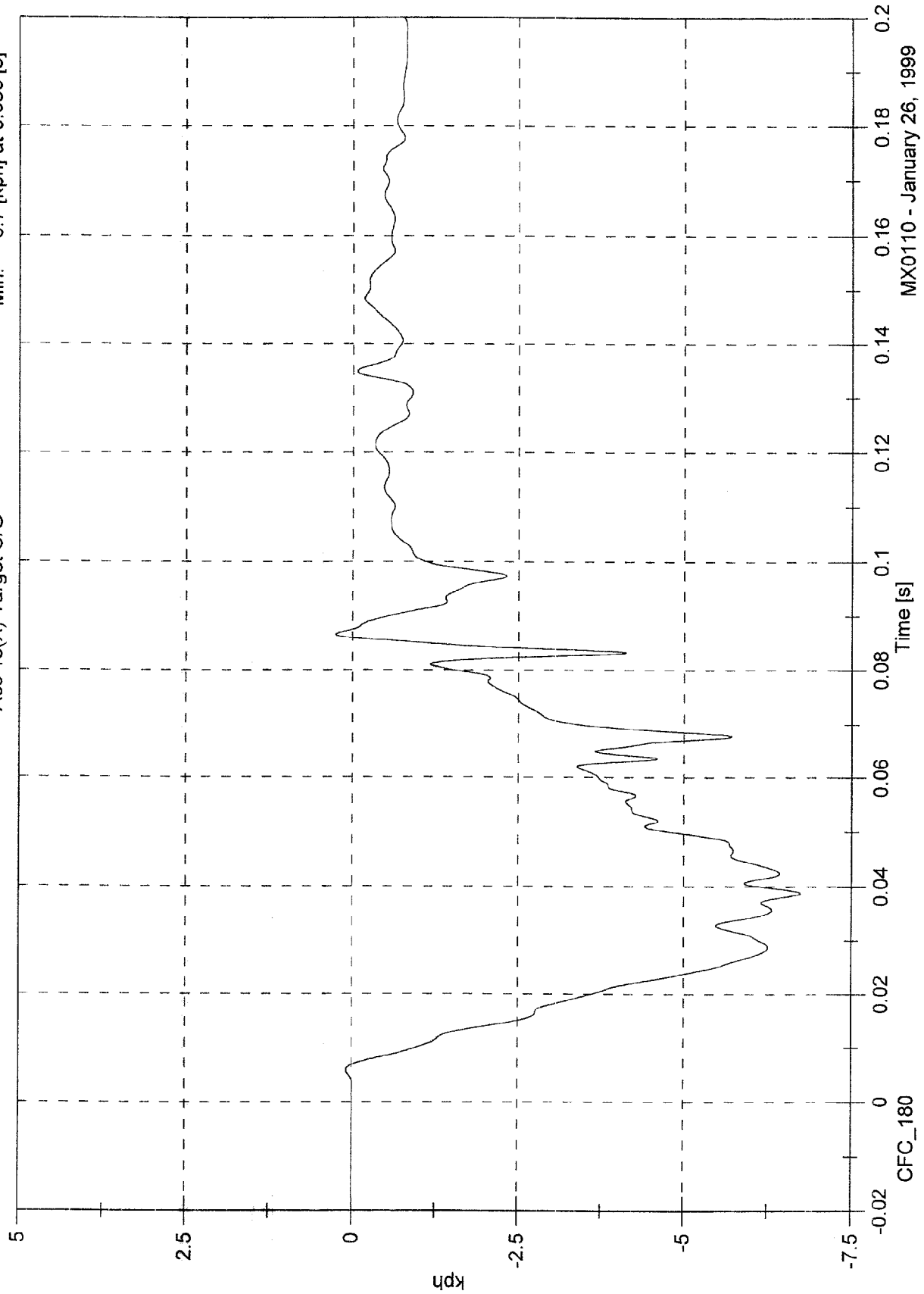


MX0110 - January 26, 1999

SNCAP test # 3 - 1999 Pontiac Grand Am

Max: 4.1 [kph] at 0.500 [s]
Min: -6.7 [kph] at 0.039 [s]

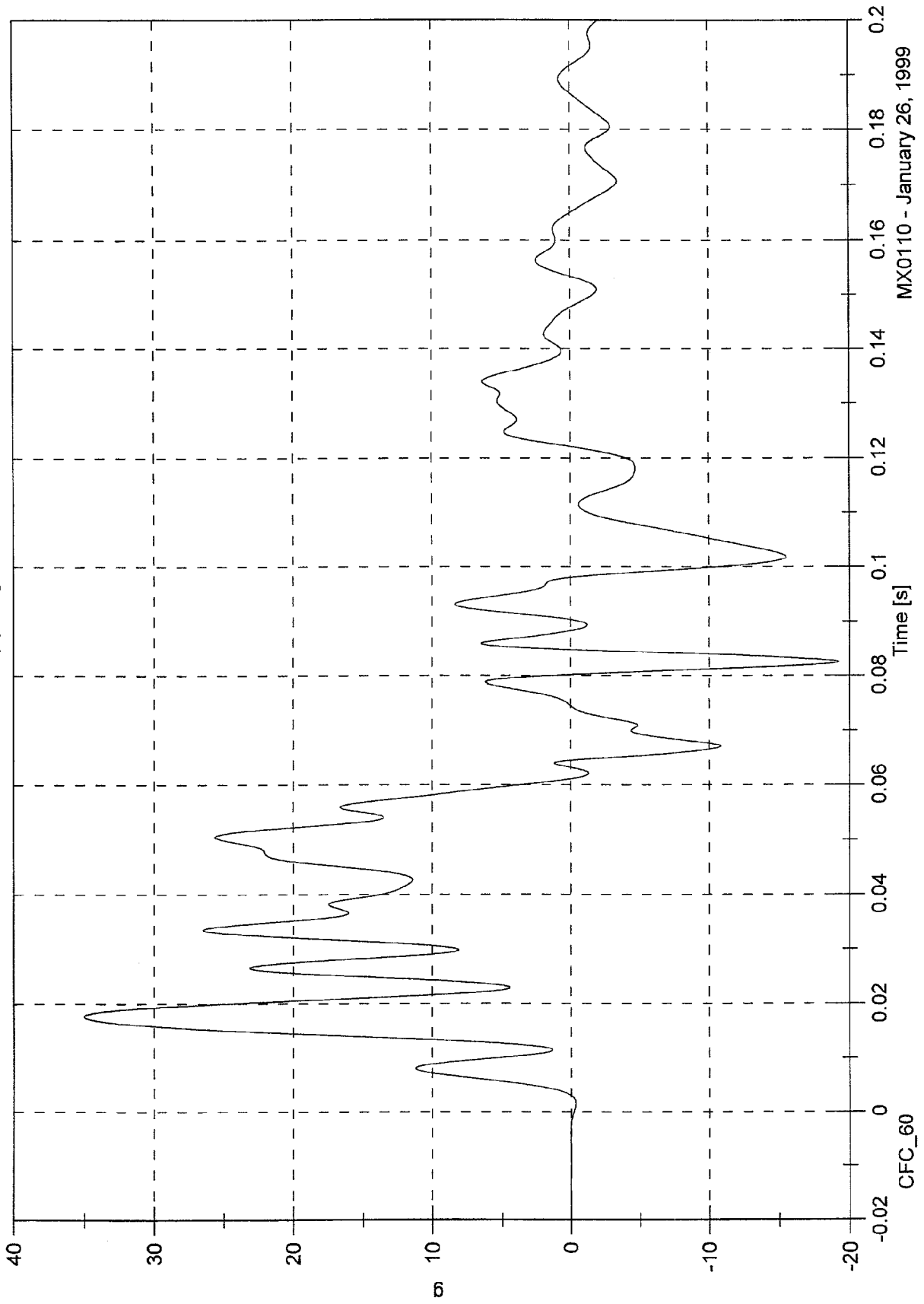
Acc 18(X) Target C/G



SNCAP test # 3 - 1999 Pontiac Grand Am

Max: 35.0 [g] at 0.018 [s]
Min: -19.2 [g] at 0.082 [s]

Acc 18(Y) Target C/G

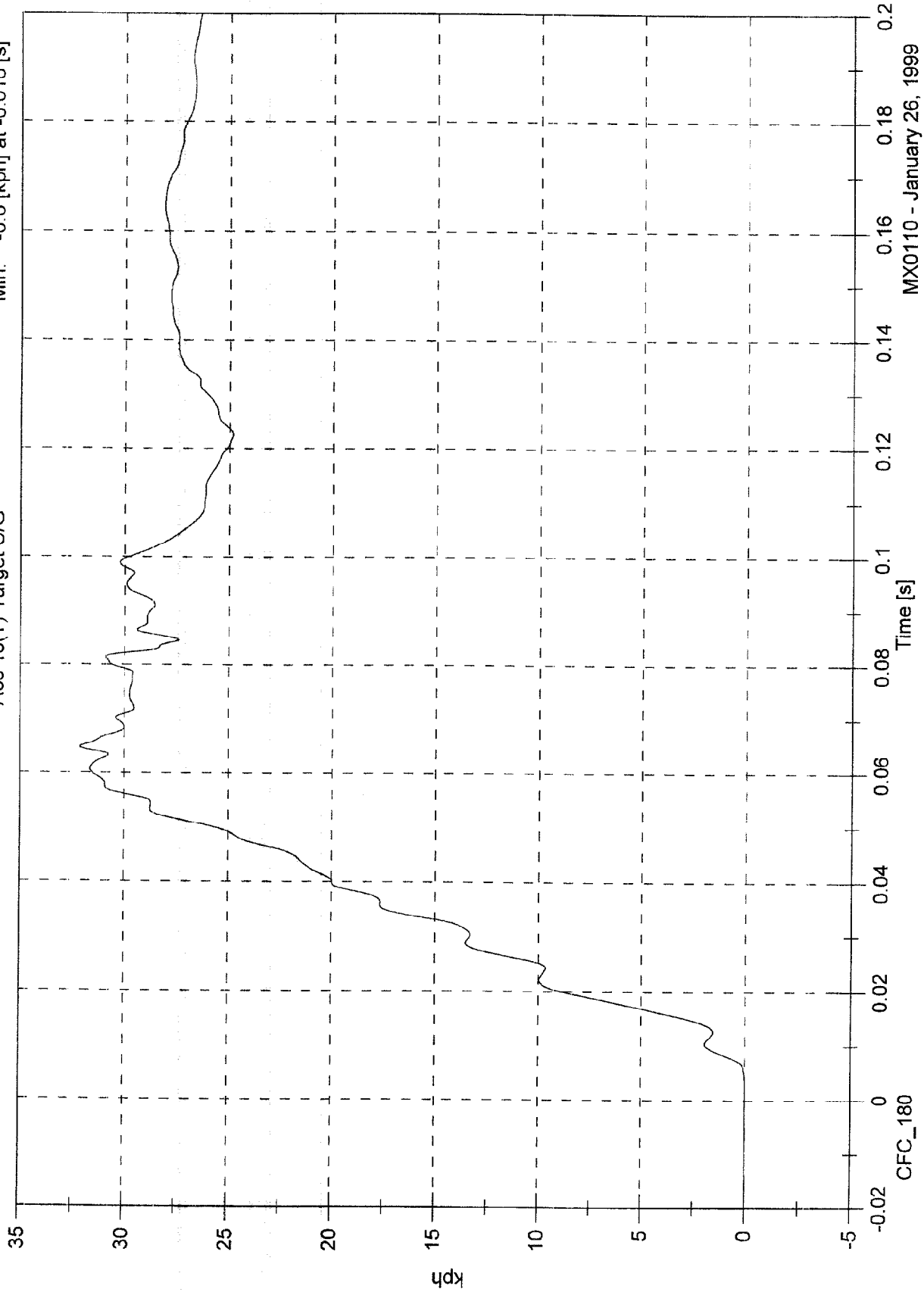


SNCAP test # 3 - 1999 Pontiac Grand Am

Max: 32.1 [kph] at 0.065 [s]

Min: -0.0 [kph] at -0.016 [s]

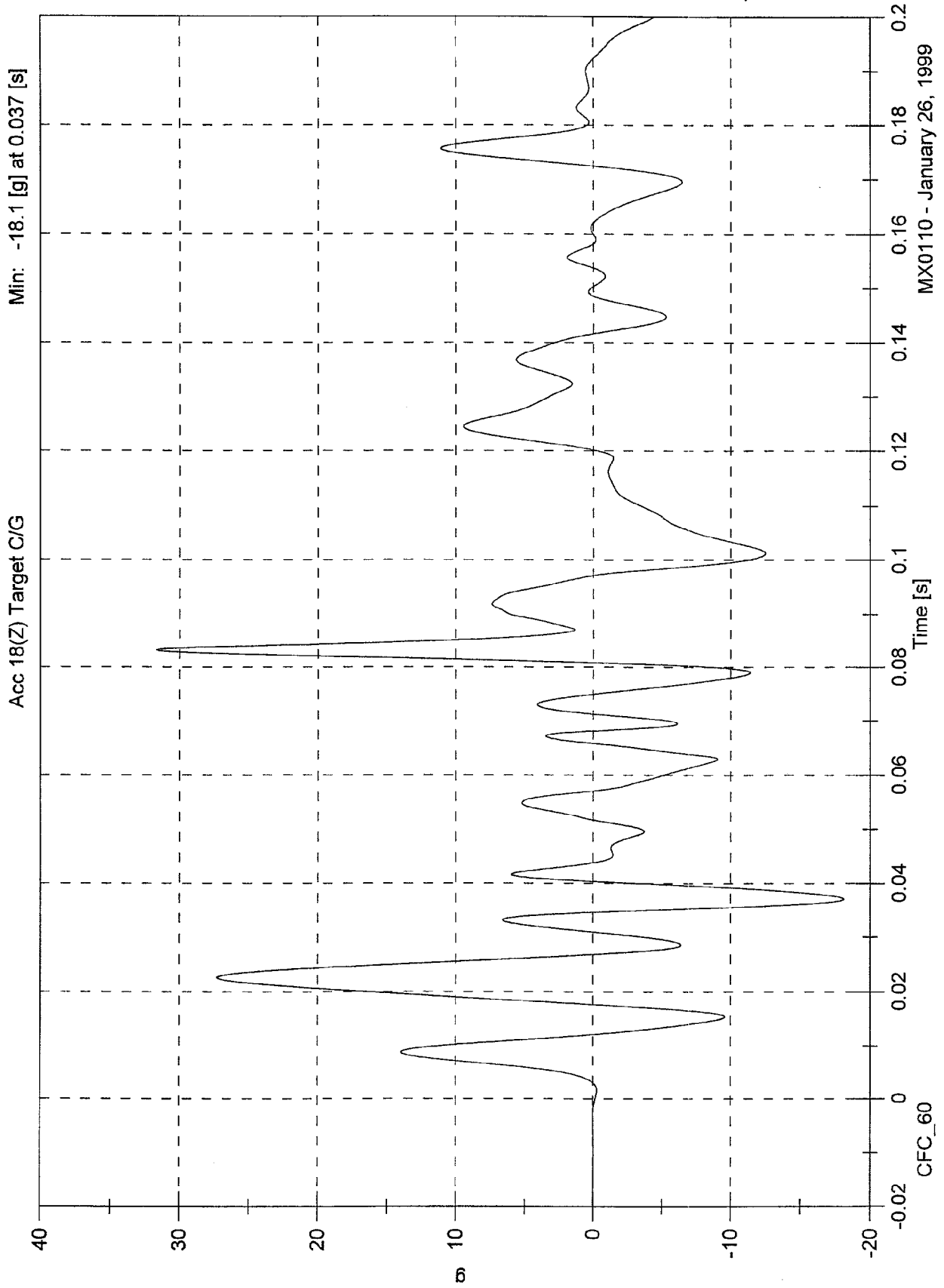
Acc 18(Y) Target C/G



MX0110 - January 26, 1999

SNCAP test # 3 - 1999 Pontiac Grand Am

Max: 31.7 [g] at 0.083 [s]
Min: -18.1 [g] at 0.037 [s]



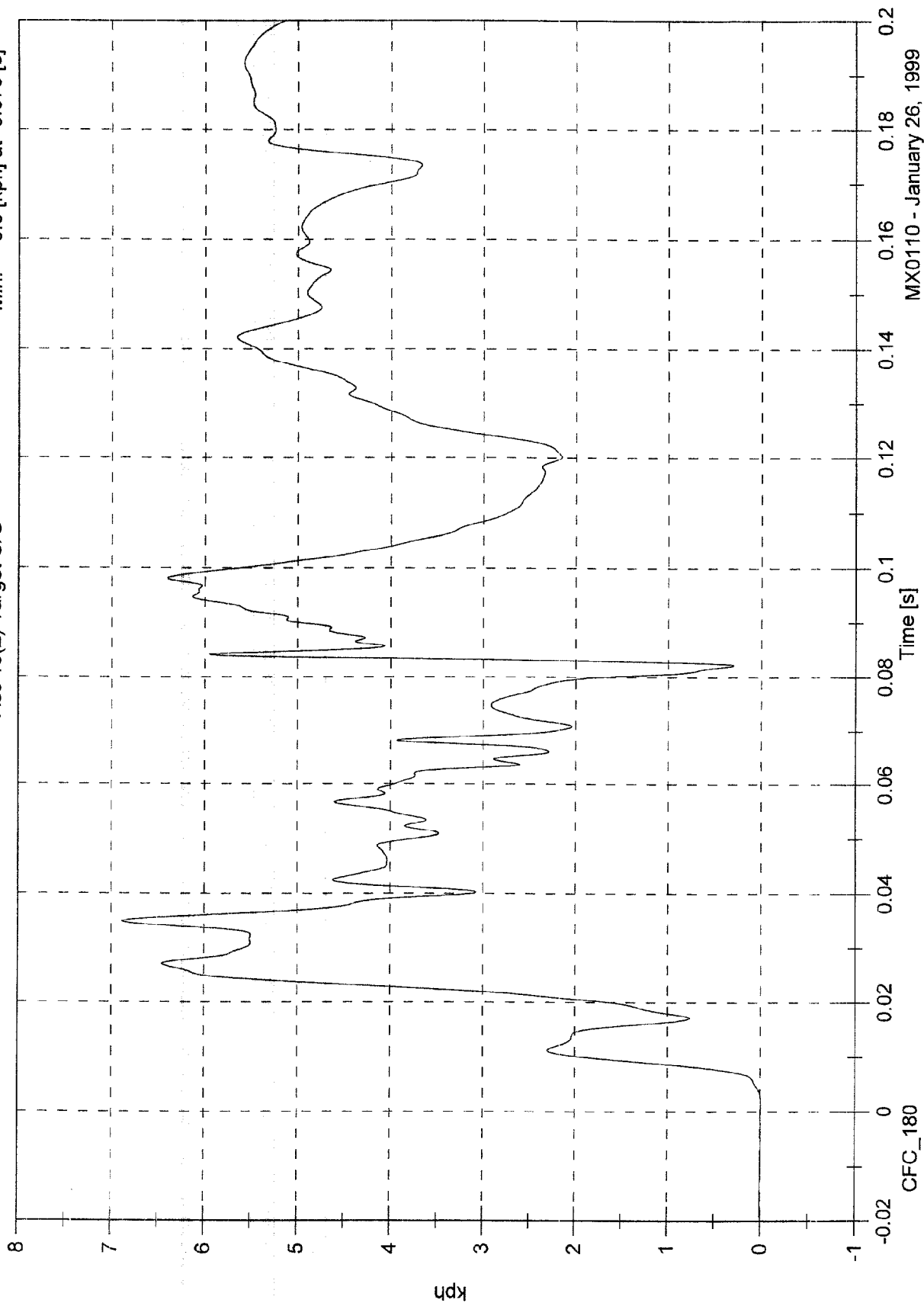
MX0110 - January 26, 1999

SNCAP test # 3 - 1999 Pontiac Grand Am

Max: 7.2 [kph] at 0.235 [s]

Min: -0.0 [kph] at -0.073 [s]

Acc 18(Z) Target C/G

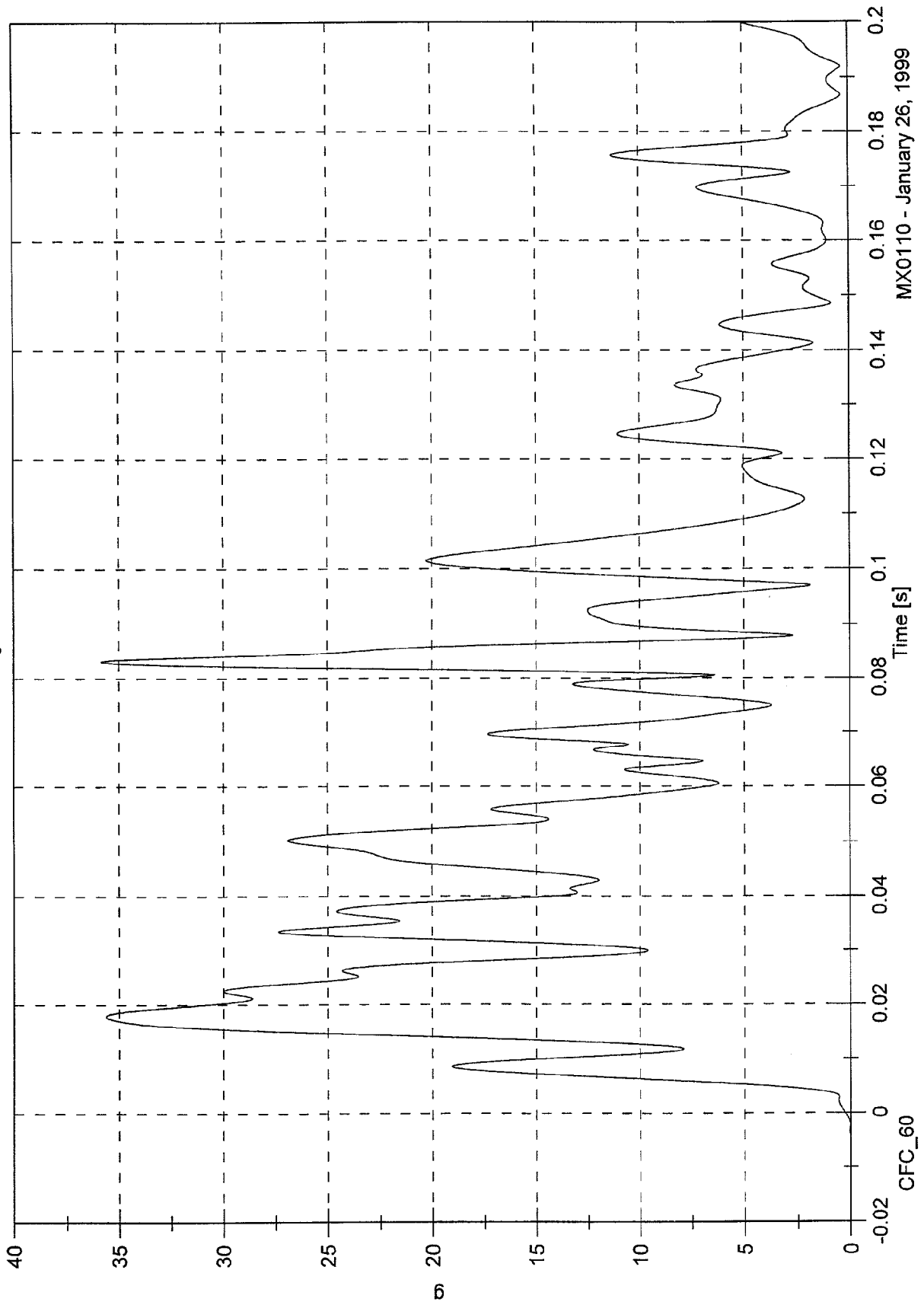


MX0110 - January 26, 1999

SNCAP test # 3 - 1999 Pontiac Grand Am

Max: 35.8 [g] at 0.083 [s]
Min: 0.0 [g] at -0.062 [s]

Acc 18 Target C/G Resultant

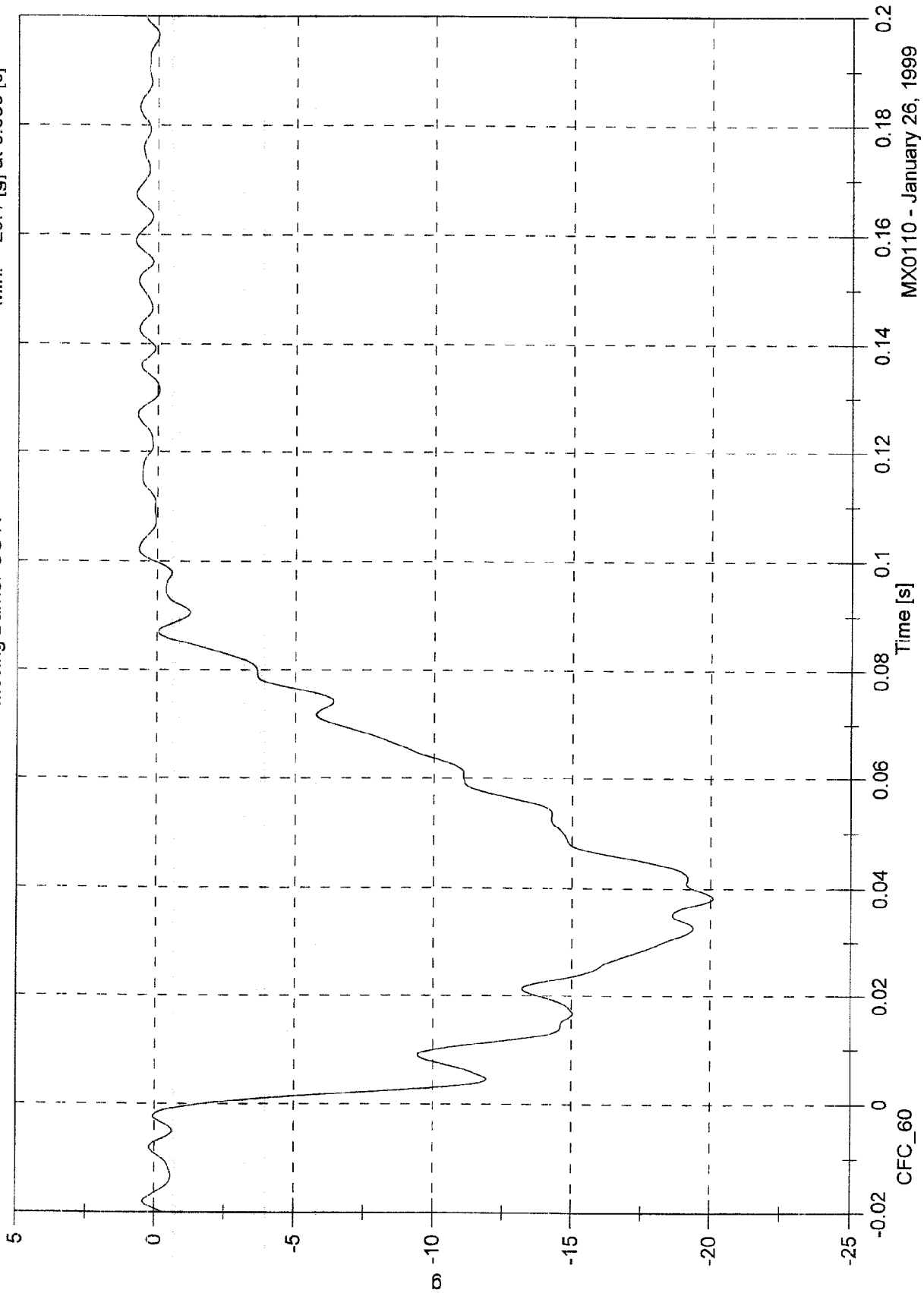


SNCAP test # 3 - 1999 Pontiac Grand Am

Max: 0.8 [g] at 0.159 [s]

Min: -20.1 [g] at 0.038 [s]

Moving Barrier CG X



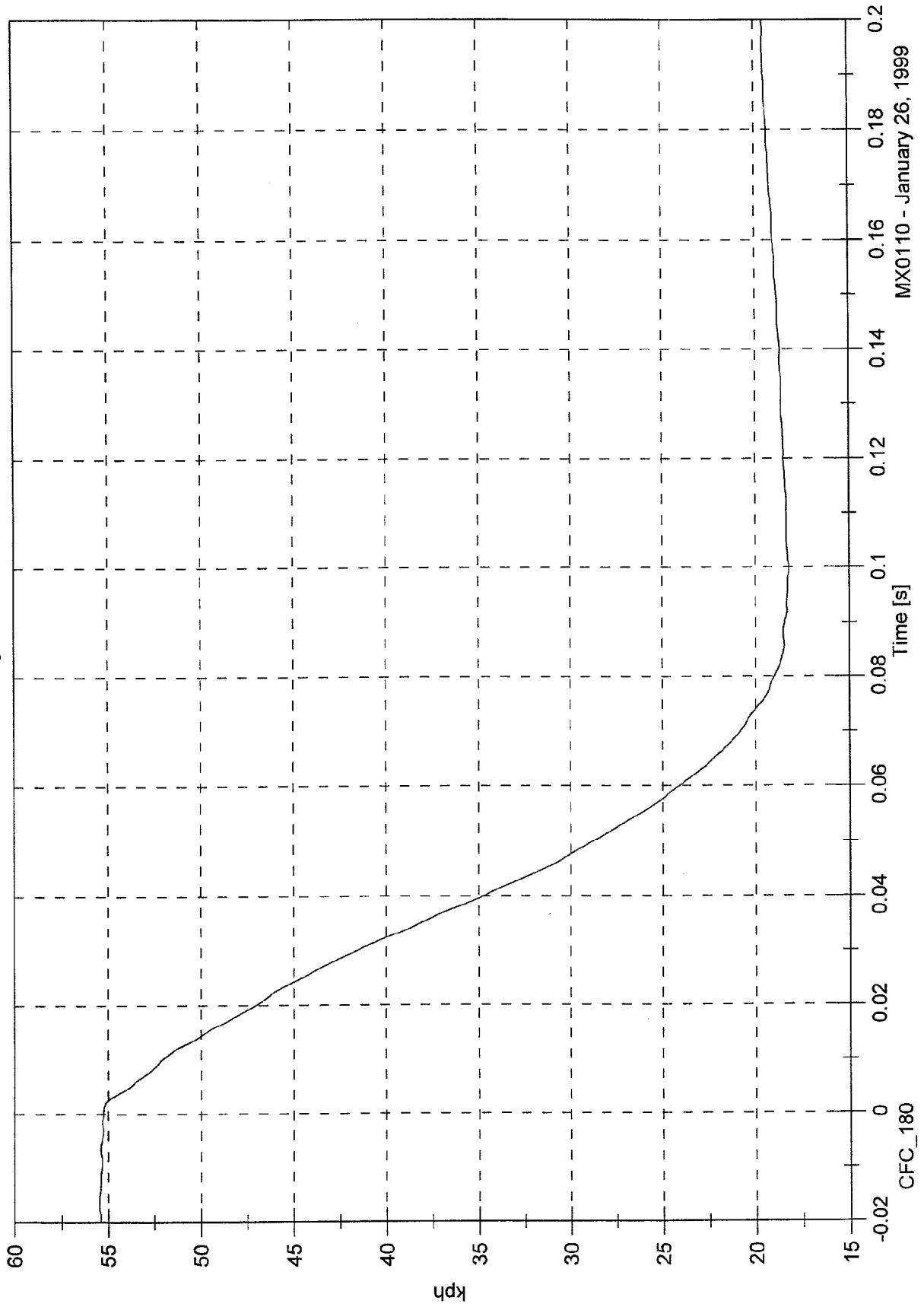
MX0110 - January 26, 1999

SNCAP test # 3 - 1999 Pontiac Grand Am

Max: 55.6 [kph] at -0.033 [s]

Min: 18.2 [kph] at 0.100 [s]

Moving Barrier CG X

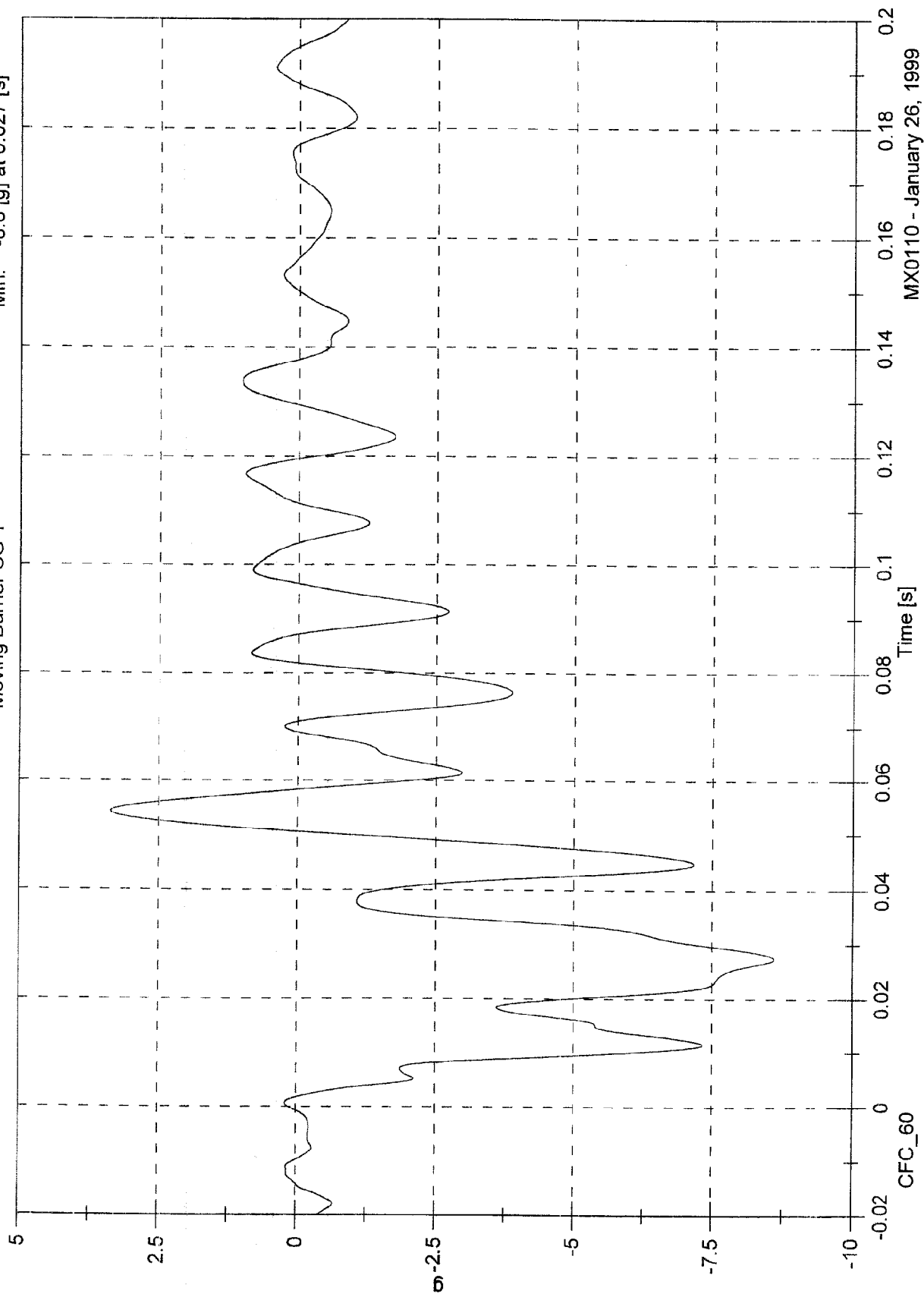


MX0110 - January 26, 1999

SNCAP test # 3 - 1999 Pontiac Grand Am

Max: 3.4 [g] at 0.054 [s]
Min: -8.6 [g] at 0.027 [s]

Moving Barrier CG Y



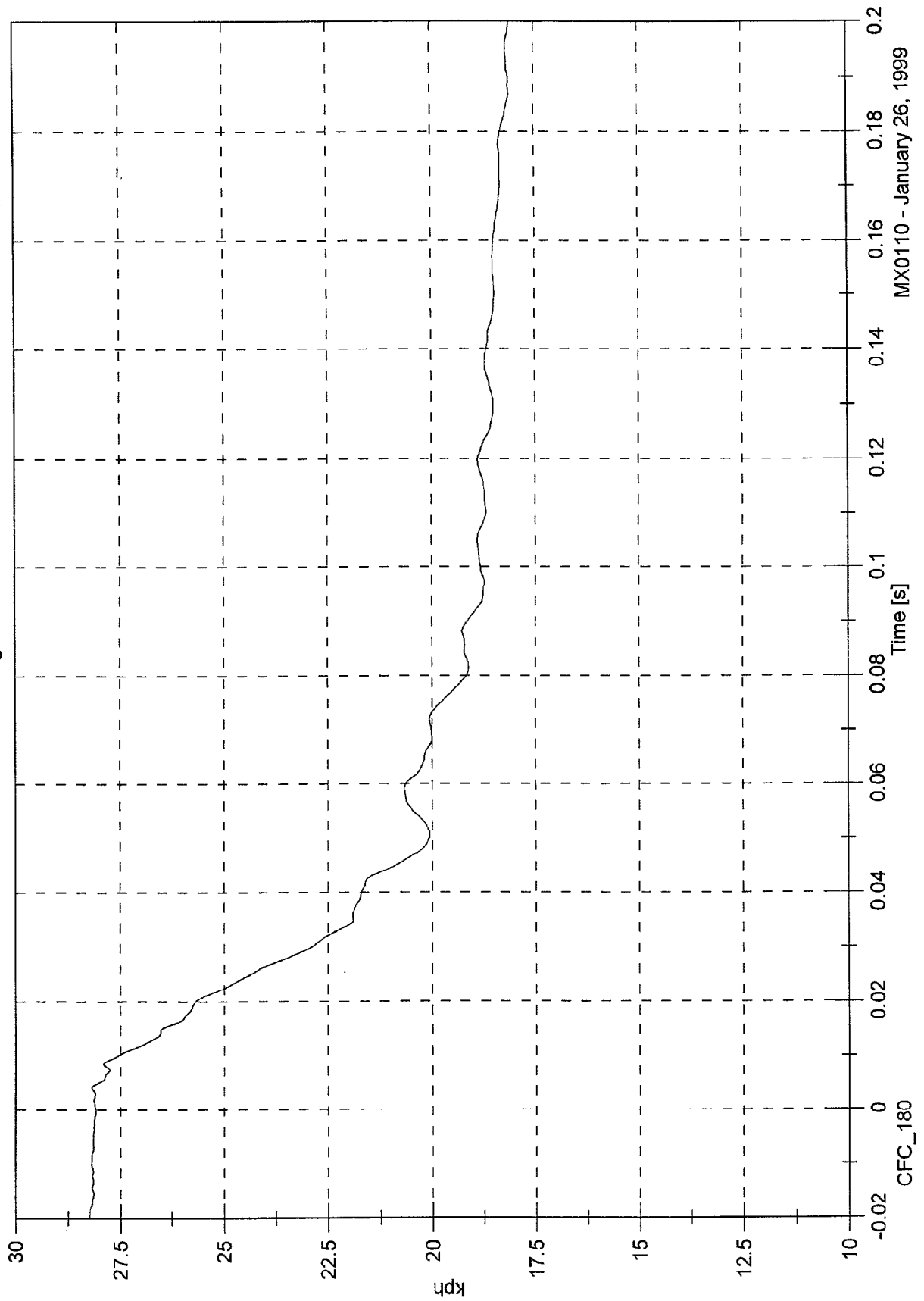
MX0110 - January 26, 1999

SNCAP test # 3 - 1999 Pontiac Grand Am

Moving Barrier CG Y

Max: 28.4 [kph] at -0.043 [s]

Min: 11.7 [kph] at 0.499 [s]



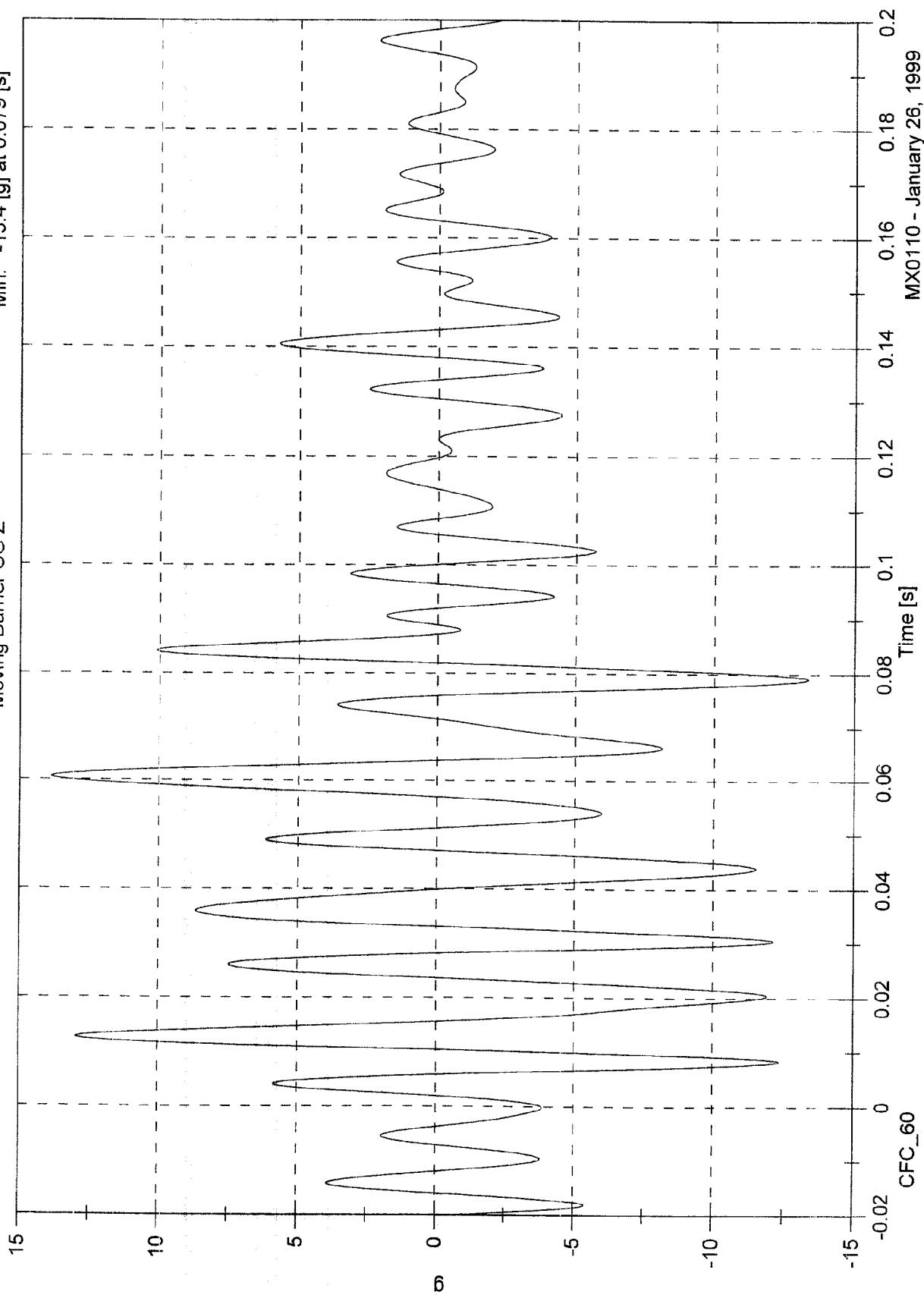
MX0110 - January 26, 1999

SNCAP test # 3 - 1999 Pontiac Grand Am

Max: 13.9 [g] at 0.061 [s]

Min: -13.4 [g] at 0.079 [s]

Moving Barrier CG Z

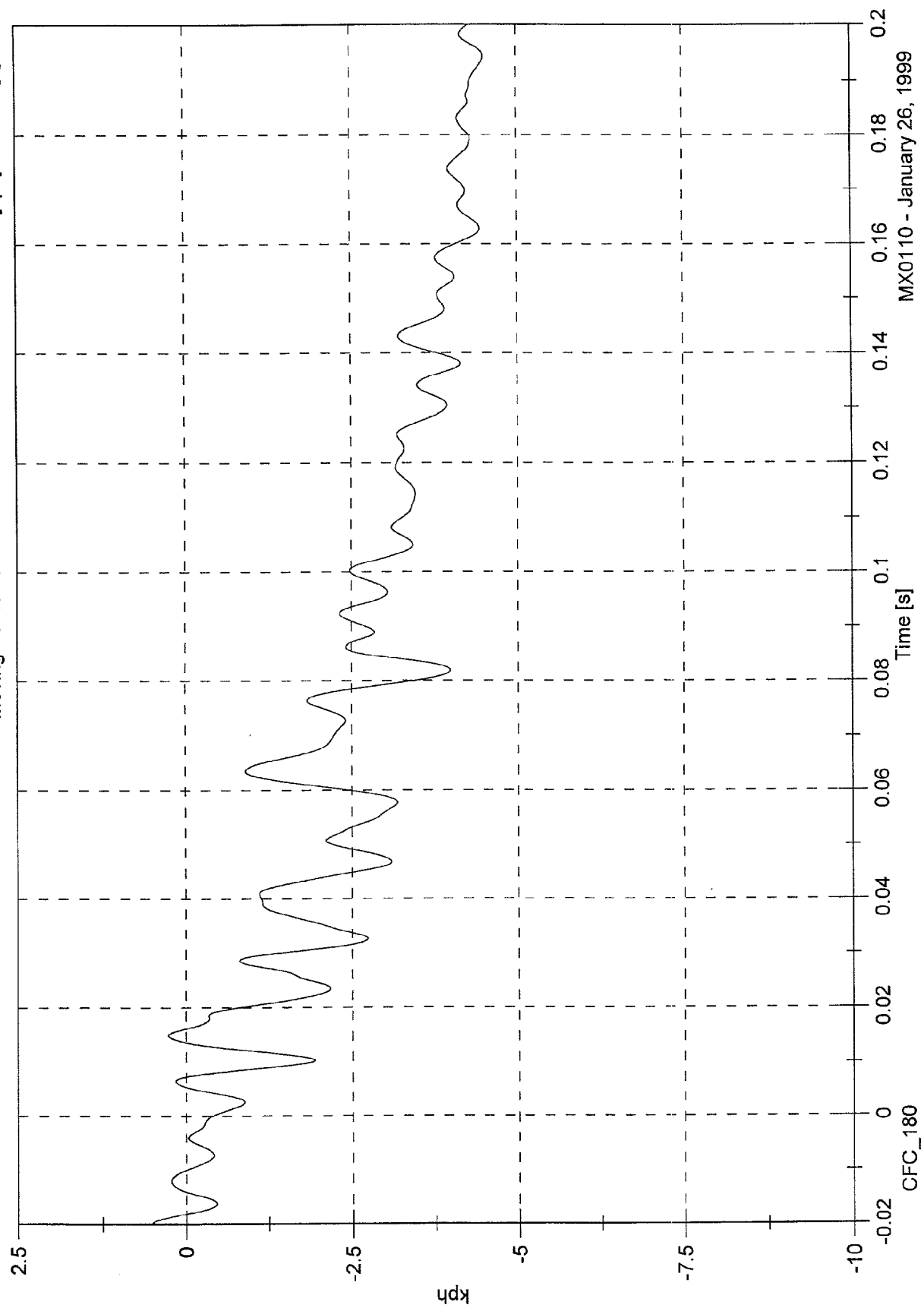


SNCAP test # 3 - 1999 Pontiac Grand Am

Max: 0.5 [kph] at -0.020 [s]

Min: -9.7 [kph] at 0.494 [s]

Moving Barrier CG Z

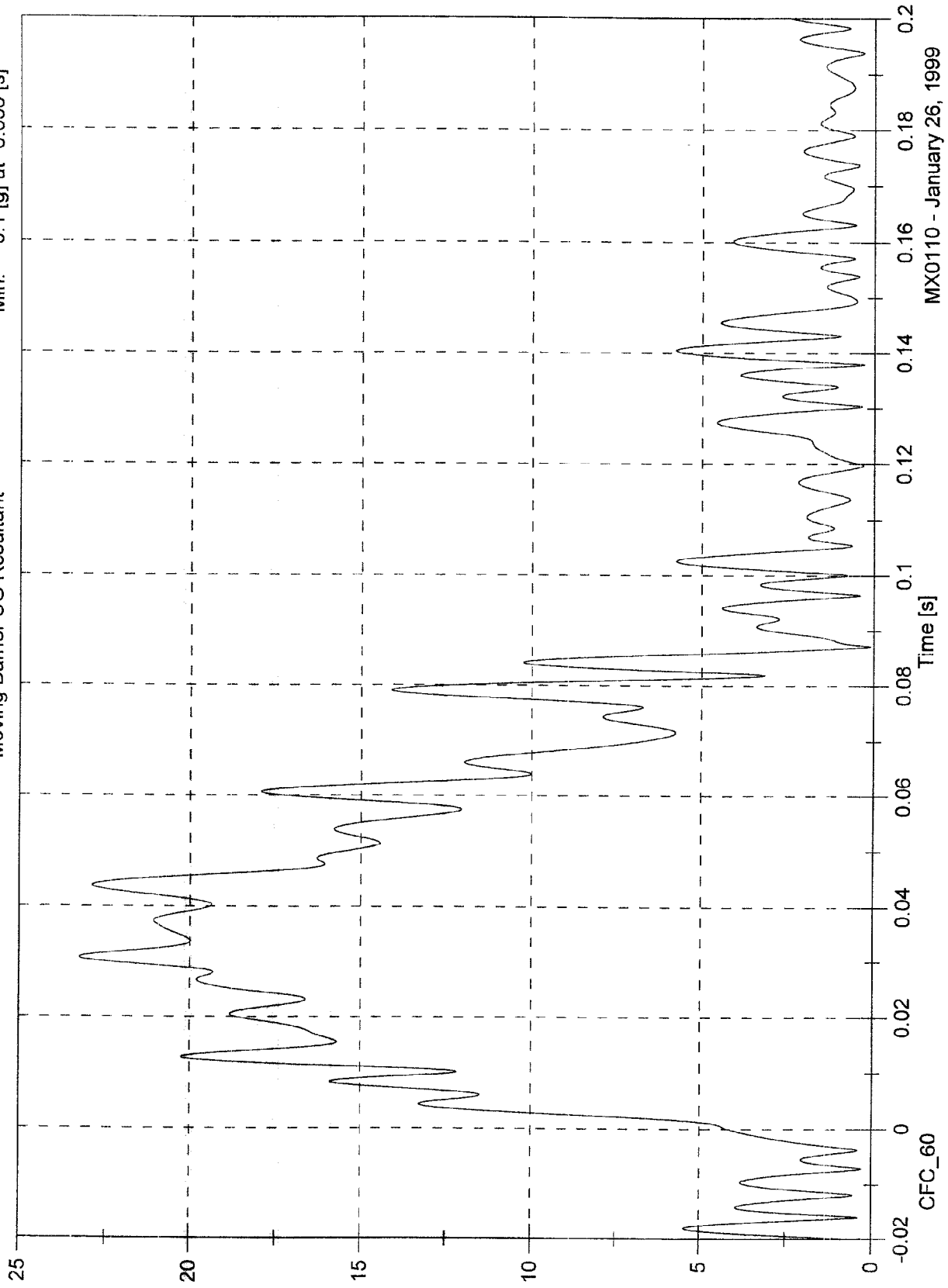


MX0110 - January 26, 1999

SNCAP test # 3 - 1999 Pontiac Grand Am

Max: 23.3 [g] at 0.031 [s]
Min: 0.1 [g] at -0.035 [s]

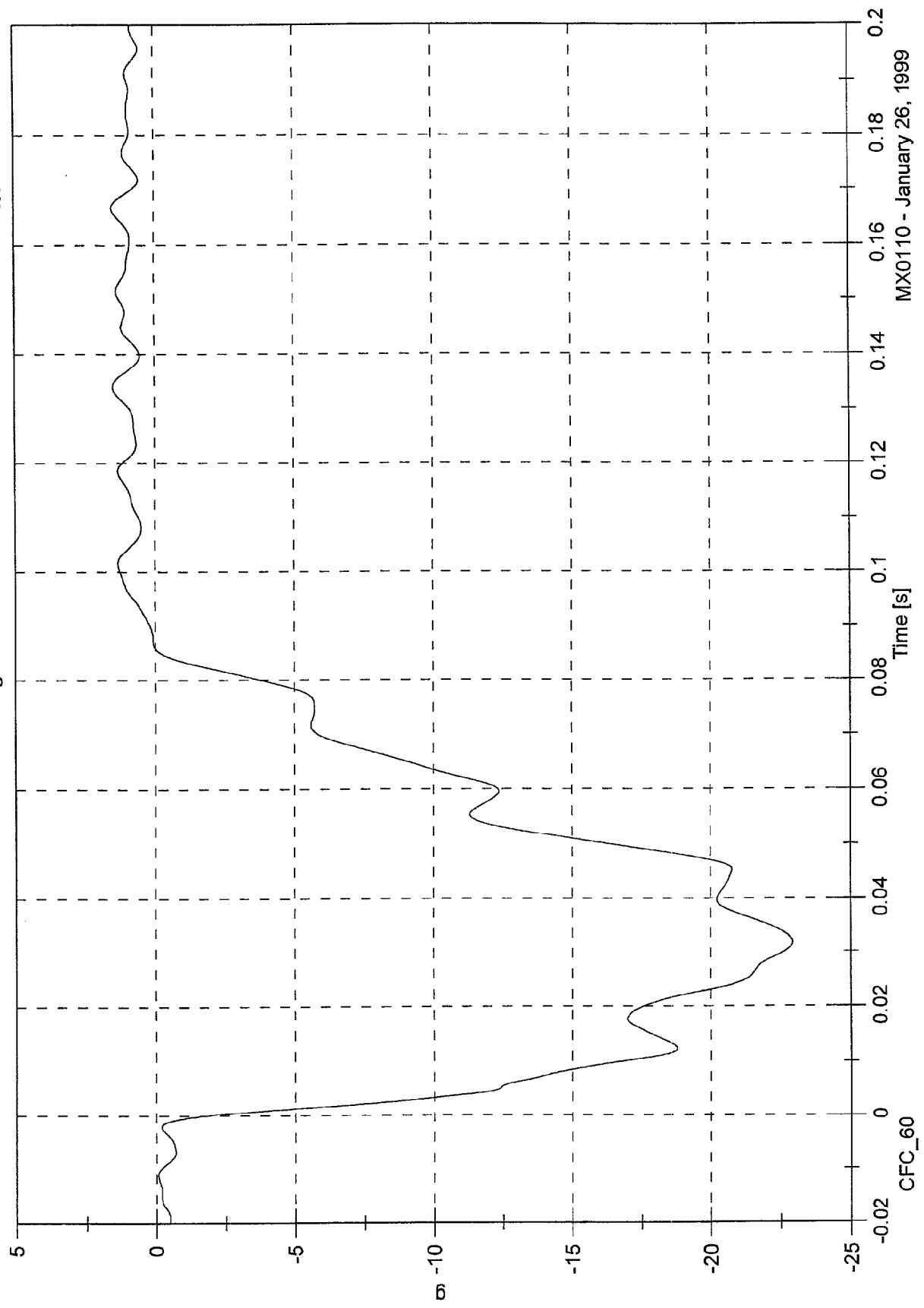
Moving Barrier CG Resultant



SNCAP test # 3 - 1999 Pontiac Grand Am

Moving Barrier Left Rail X

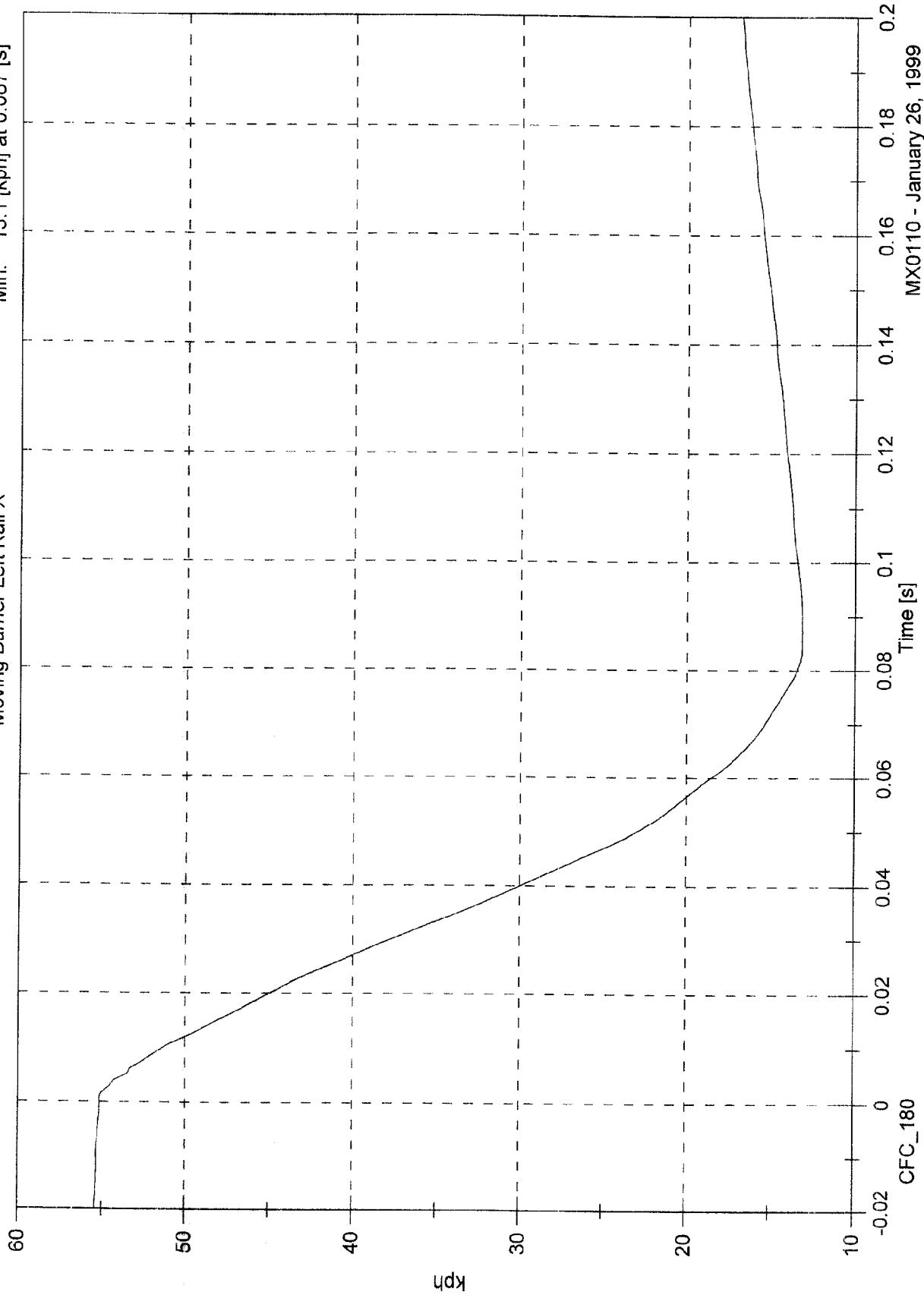
Max: 1.6 [g] at 0.382 [s]
Min: -22.9 [g] at 0.032 [s]



SNCAP test # 3 - 1999 Pontiac Grand Am

Max: 55.5 [kph] at -0.032 [s]
Min: 13.1 [kph] at 0.087 [s]

Moving Barrier Left Rail X

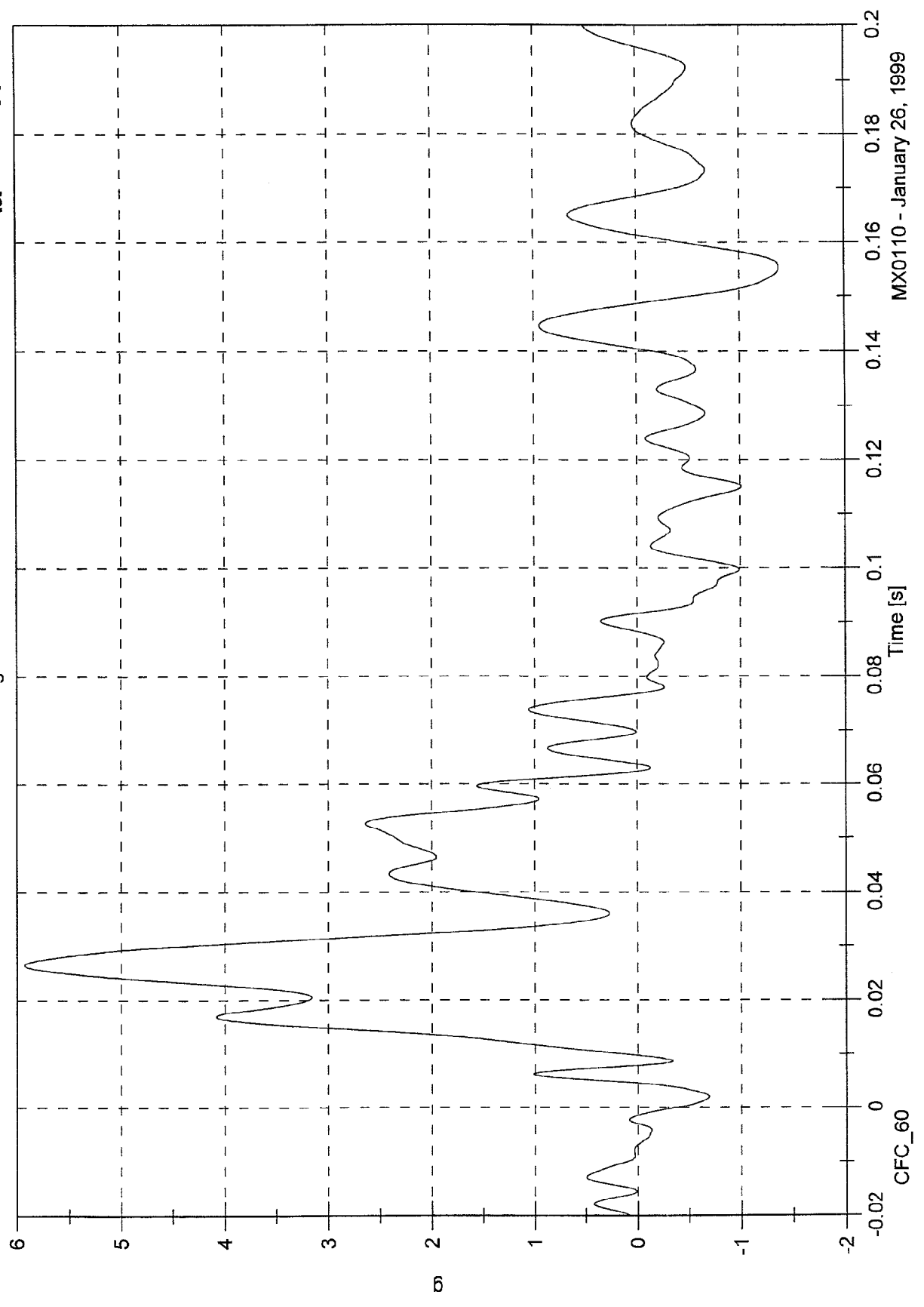


MX0110 - January 26, 1999

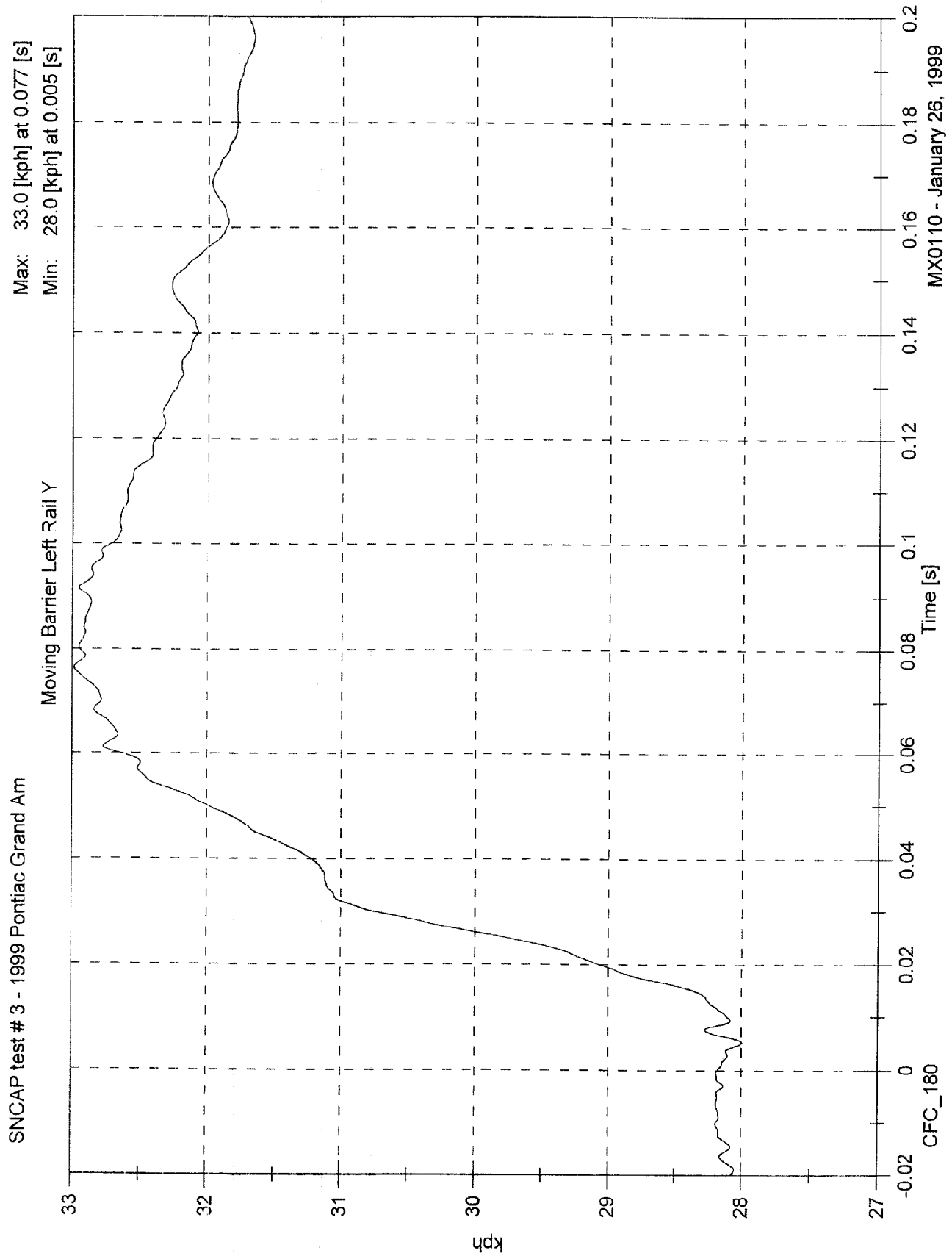
SNCAP test # 3 - 1999 Pontiac Grand Am

Moving Barrier Left Rail Y

Max: 5.9 [g] at 0.026 [s]
Min: -1.4 [g] at 0.155 [s]



MX0110 - January 26, 1999

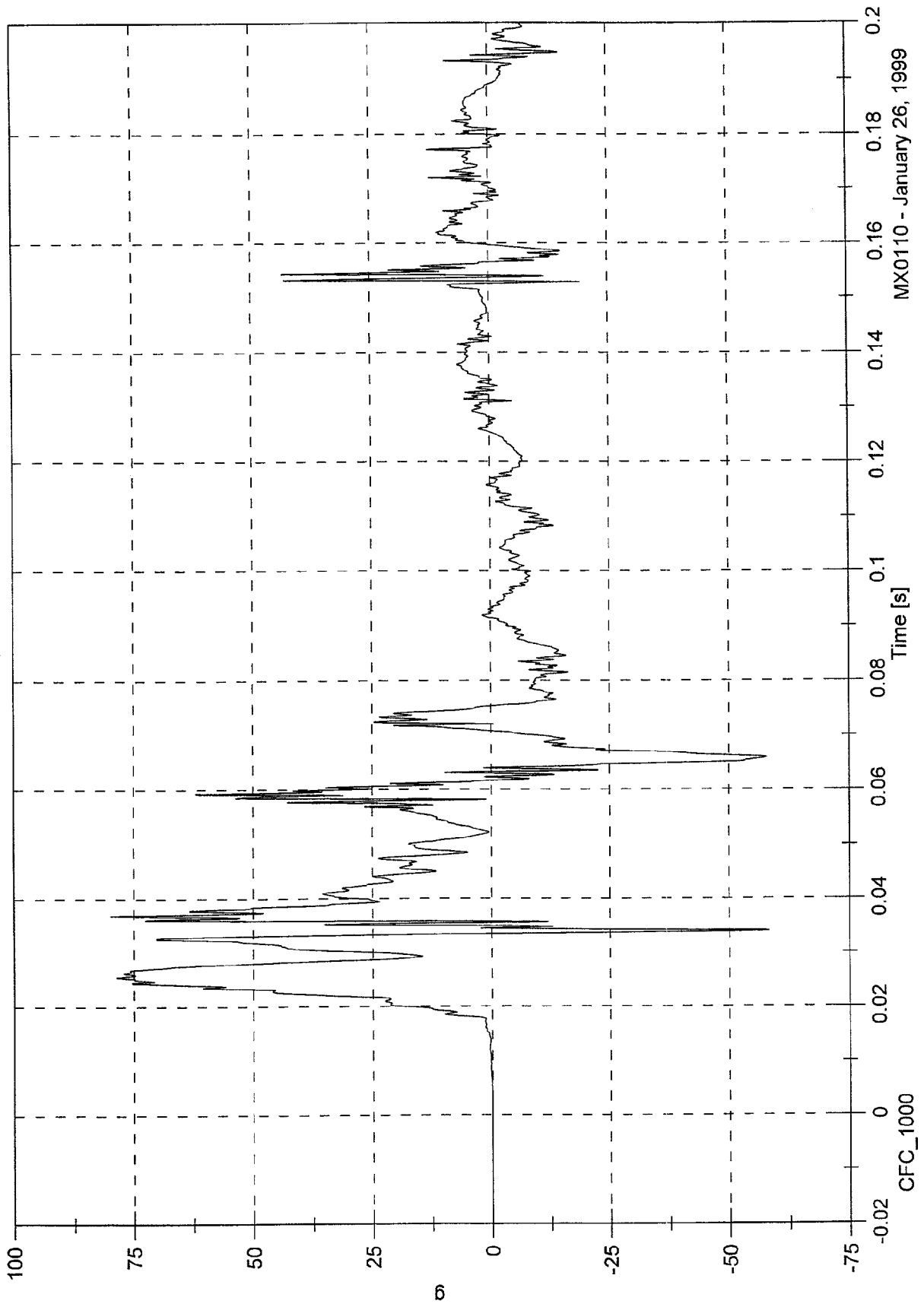


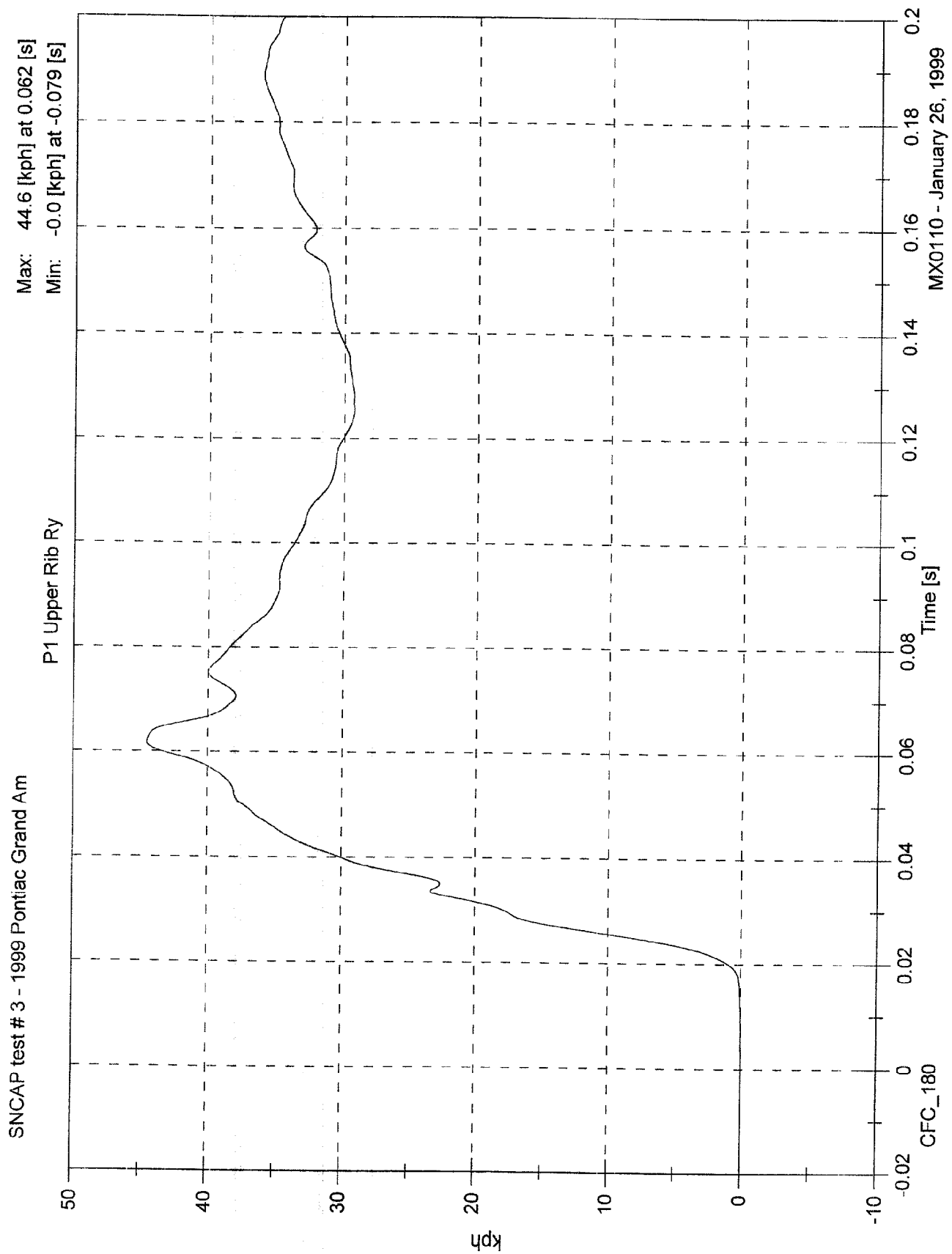
SNCAP test # 3 - 1999 Pontiac Grand Am

Max: 79.9 [g] at 0.037 [s]

Min: -58.3 [g] at 0.034 [s]

P1 Upper Rib Ry

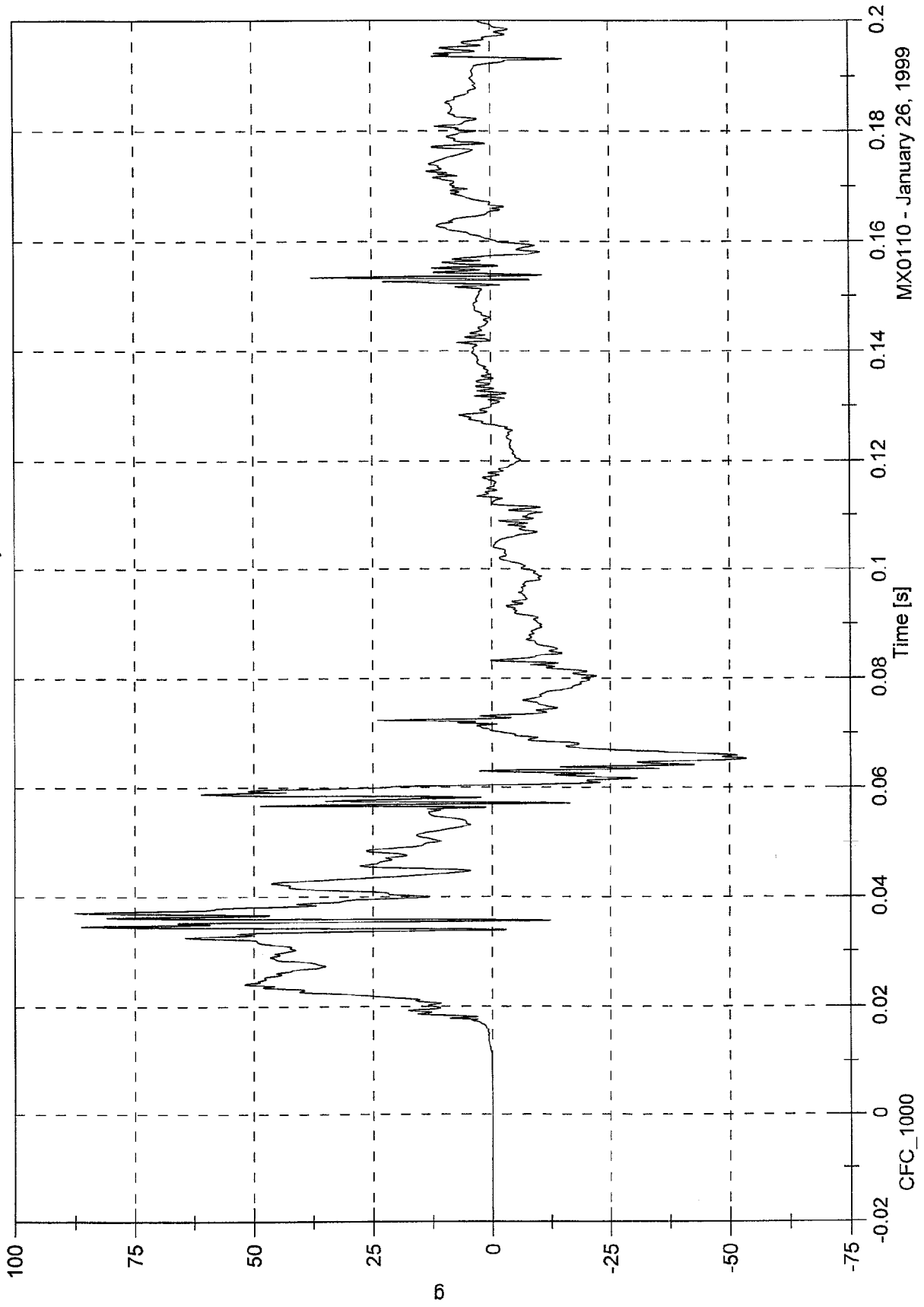




SNCAP test # 3 - 1999 Pontiac Grand Am

Max: 87.5 [g] at 0.037 [s]
Min: -53.4 [g] at 0.065 [s]

P1 Lower Rib Ry

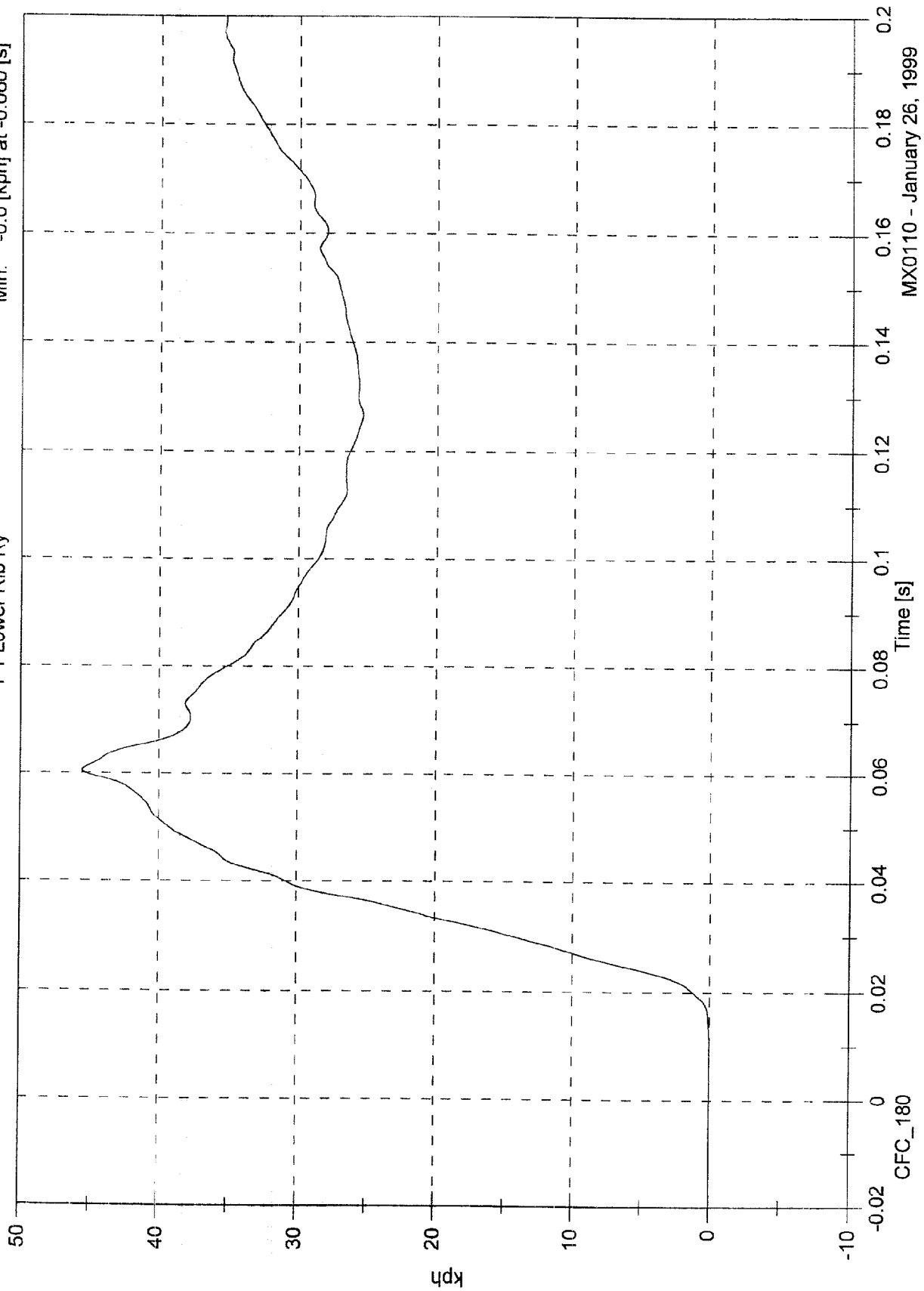


MX0110 - January 26, 1999

SNCAP test # 3 - 1999 Pontiac Grand Am

Max: 45.6 [kph] at 0.060 [s]
Min: -0.0 [kph] at -0.060 [s]

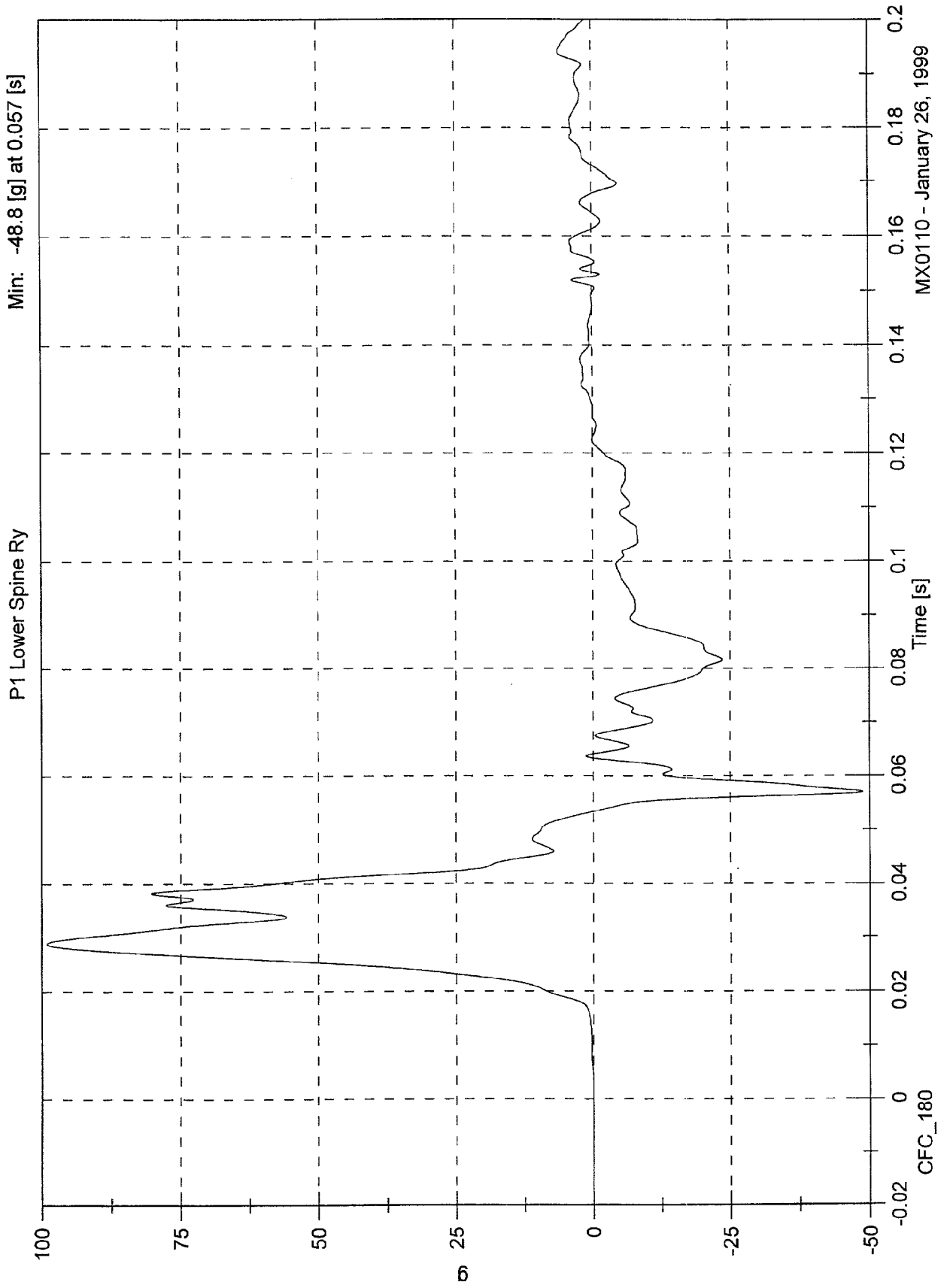
P1 Lower Rib Ry



MX0110 - January 26, 1999

SNCAP test # 3 - 1999 Pontiac Grand Am

Max: 99.1 [g] at 0.029 [s]
Min: -48.8 [g] at 0.057 [s]

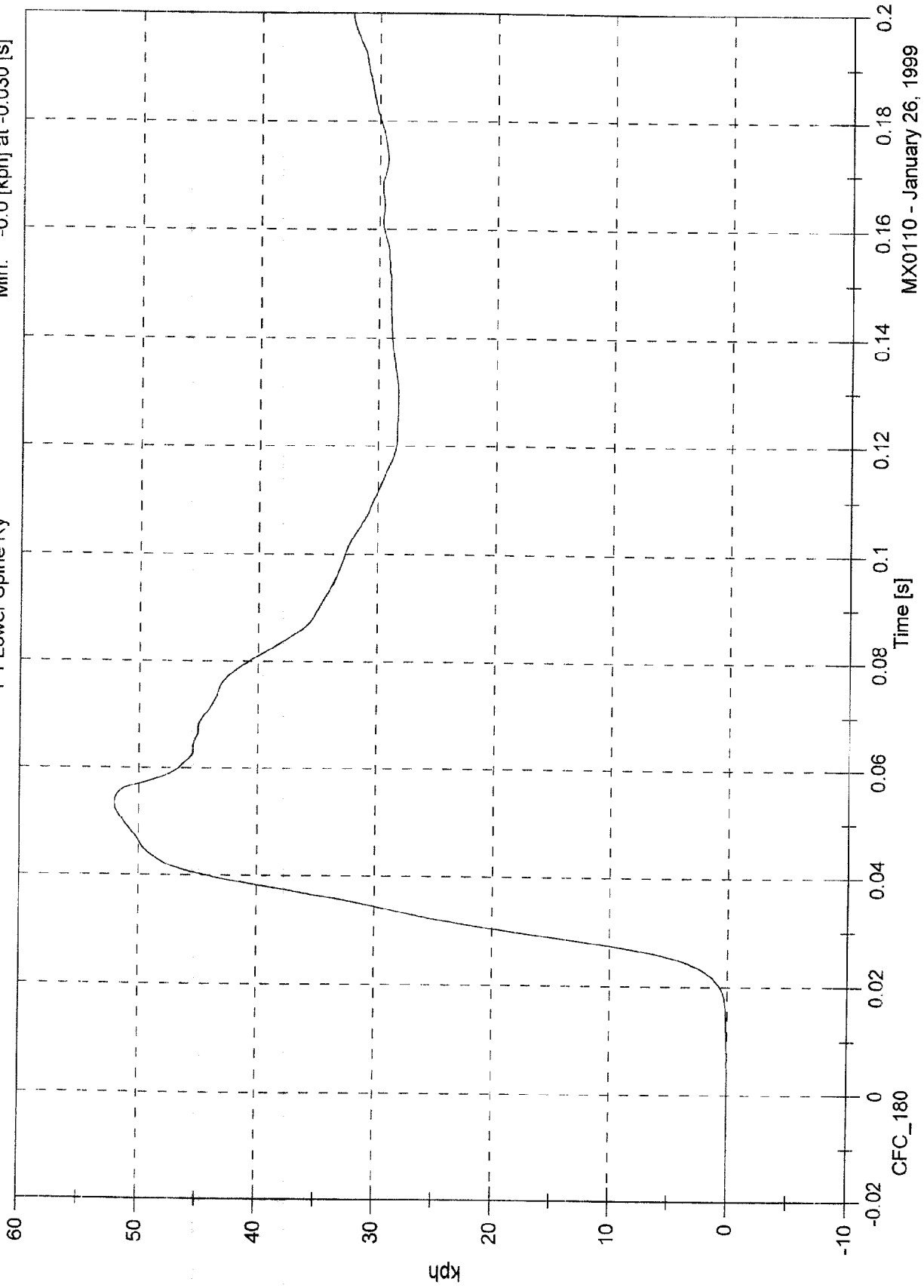


SNCAP test # 3 - 1999 Pontiac Grand Am

P1 Lower Spine Ry

Max: 52.0 [kph] at 0.053 [s]

Min: -0.0 [kph] at -0.030 [s]



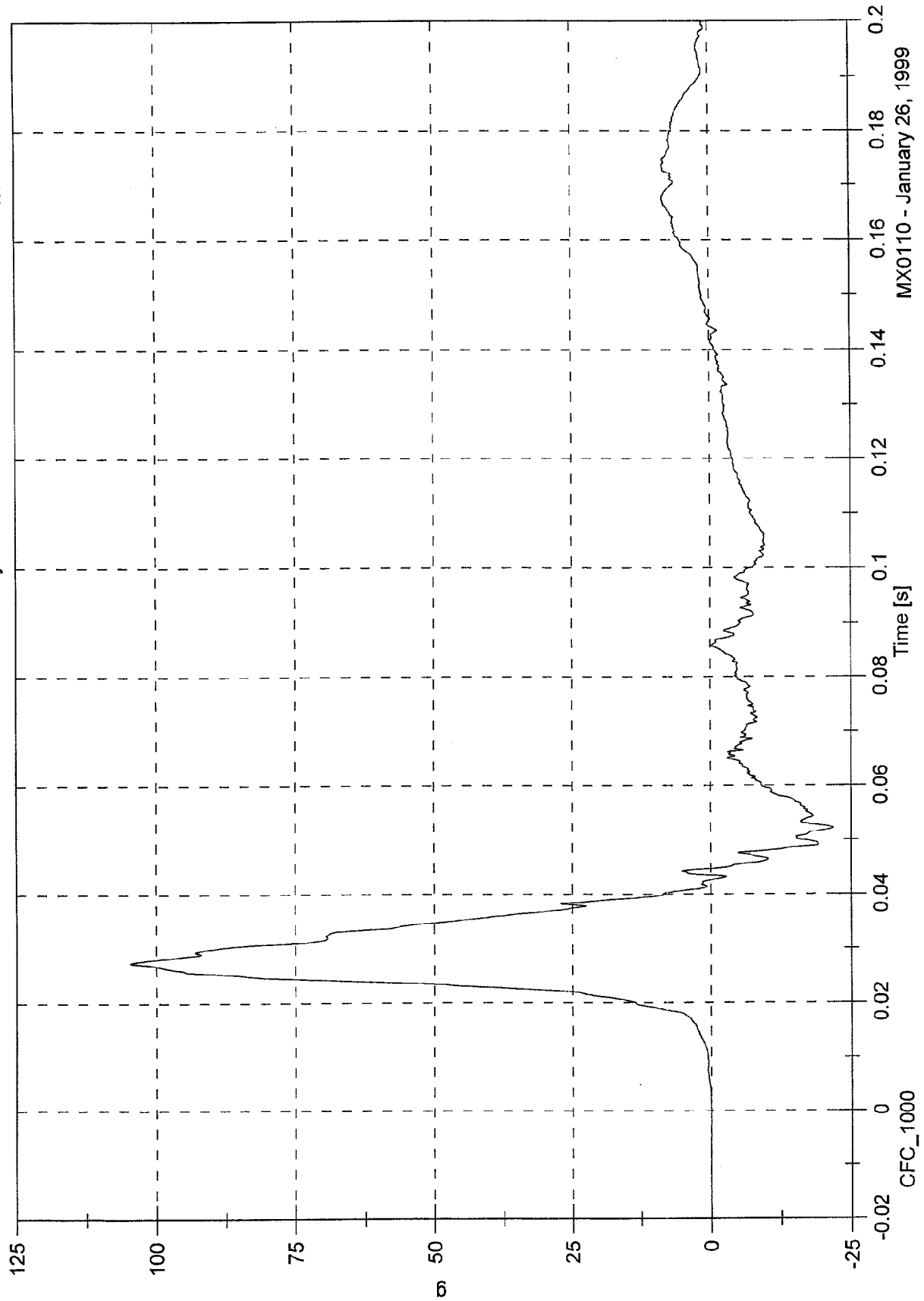
MX0110 - January 26, 1999

SNCAP test # 3 - 1999 Pontiac Grand Am

Max: 104.7 [g] at 0.027 [s]

Min: -21.8 [g] at 0.052 [s]

P1 Pelvic Ry

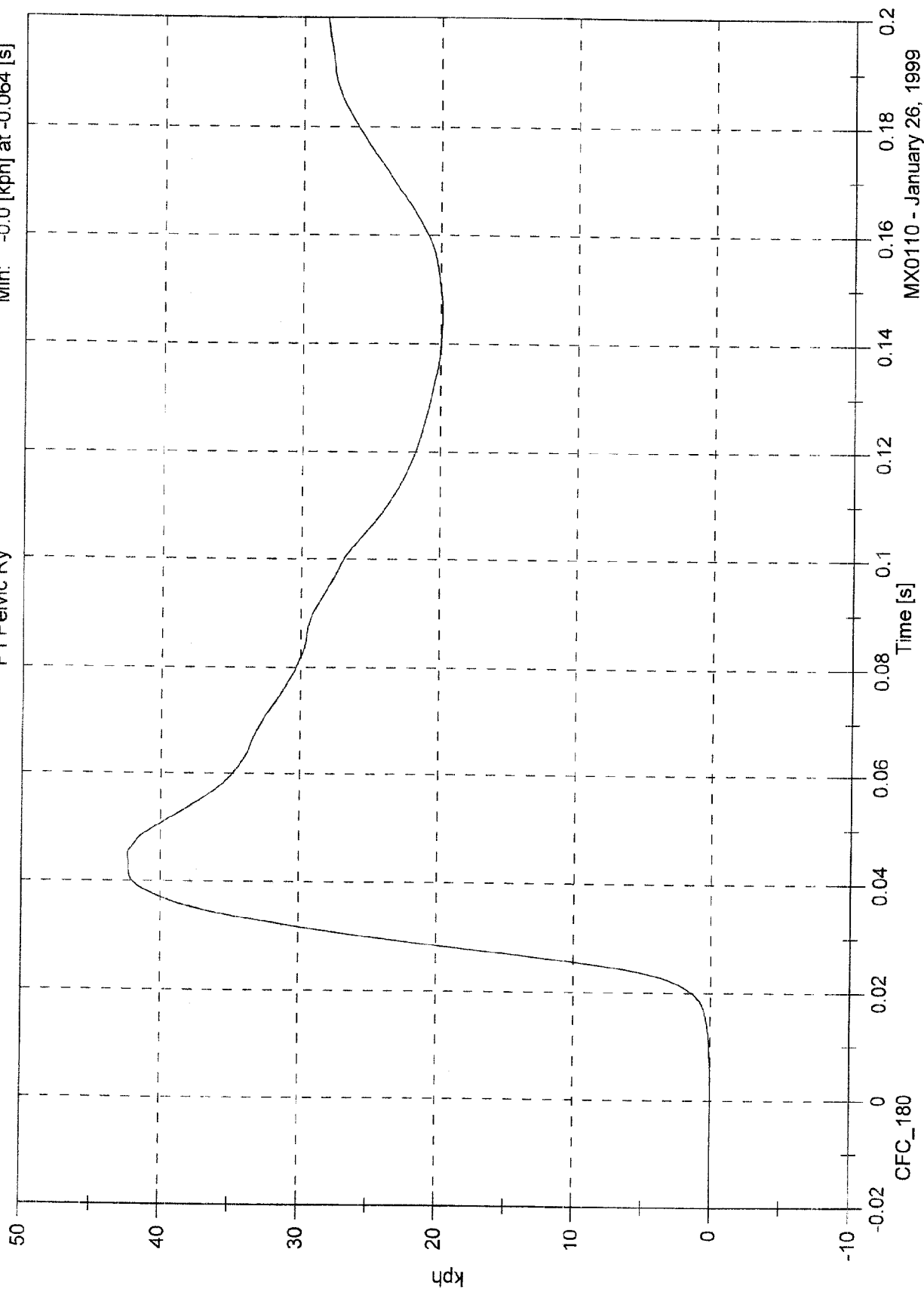


SNCAP test # 3 - 1999 Pontiac Grand Am

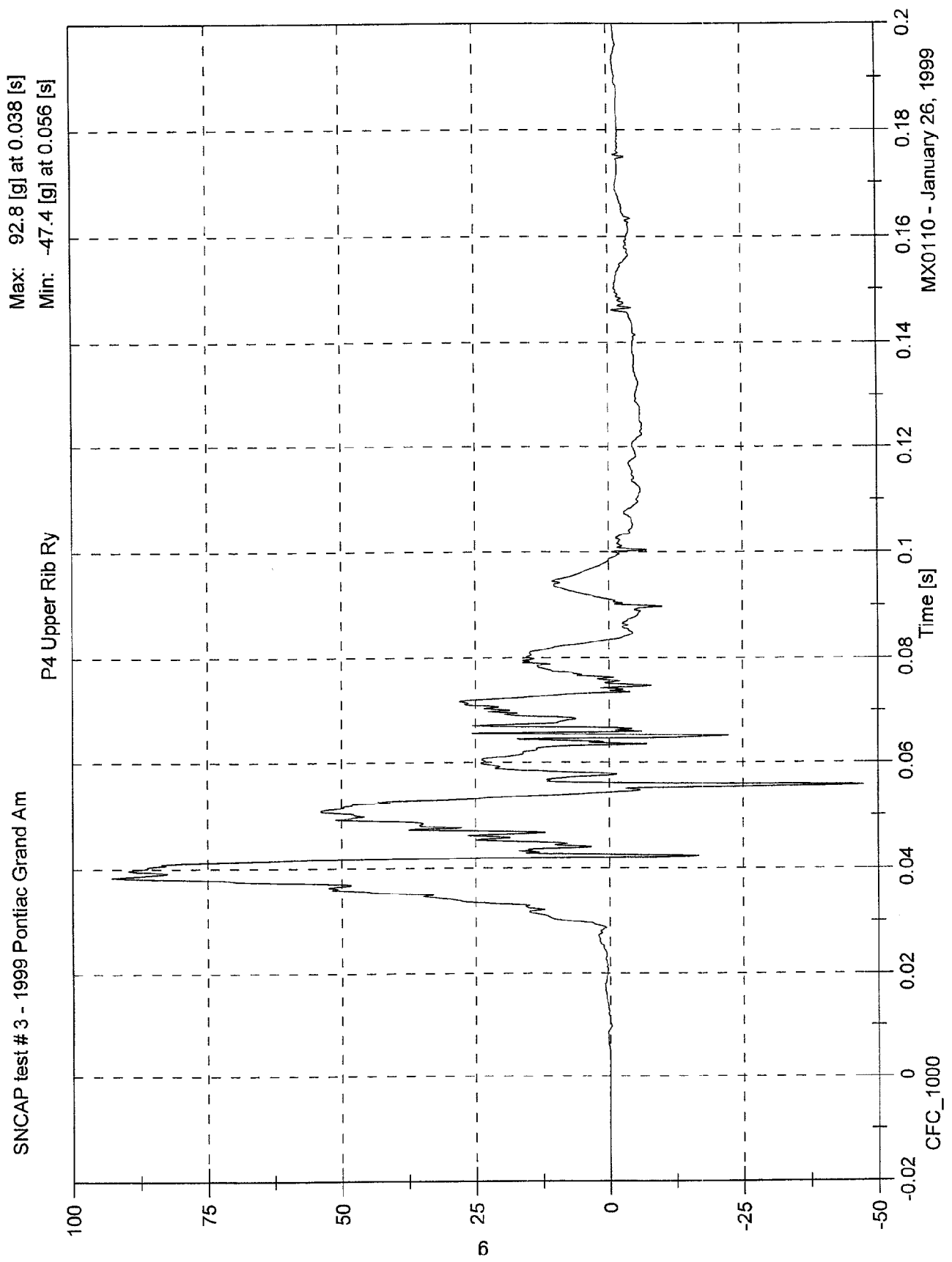
P1 Pelvic Ry

Max: 42.4 [kph] at 0.045 [s]

Min: -0.0 [kph] at -0.064 [s]



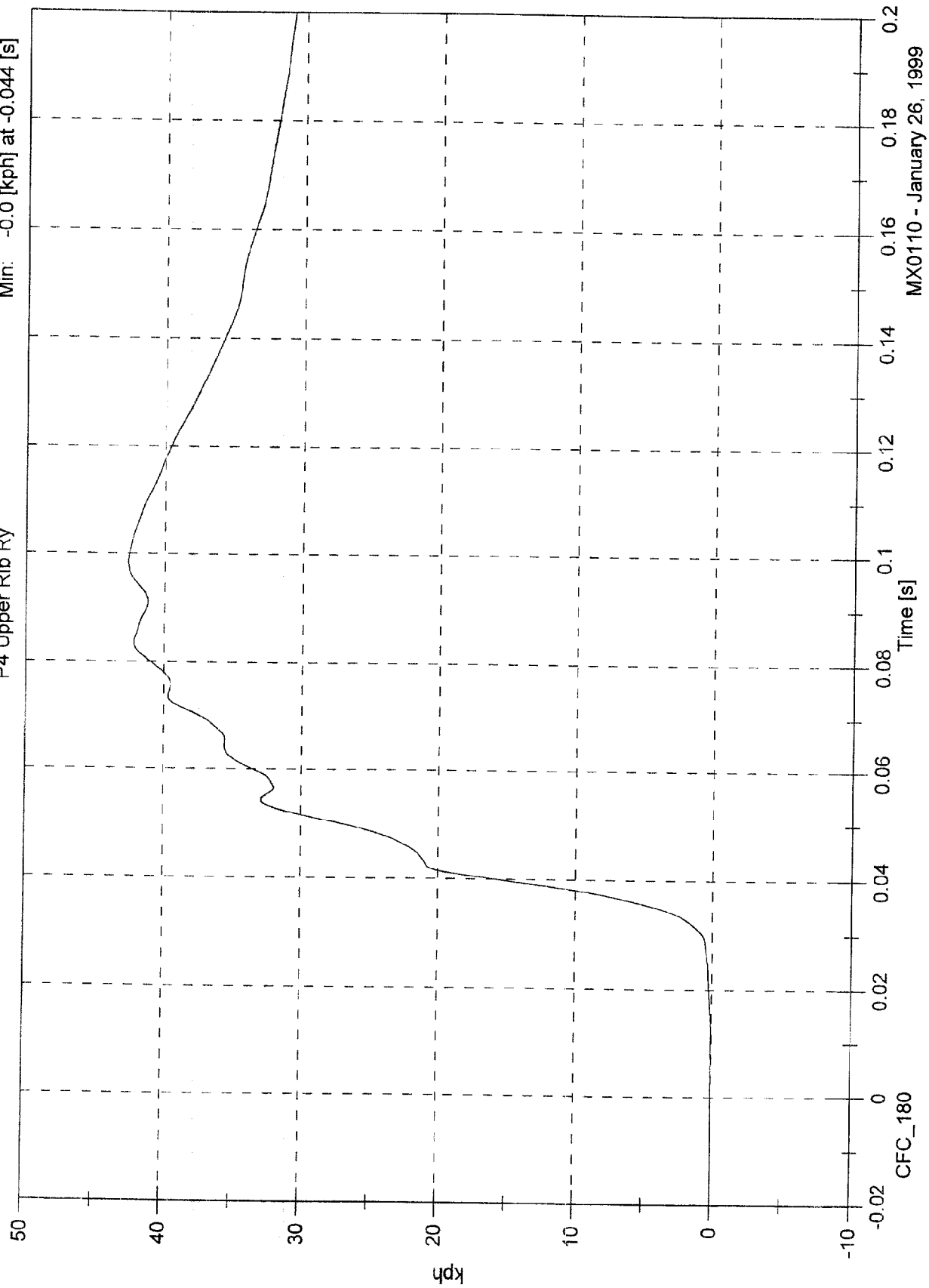
MX0110 - January 26, 1999



SNCAP test # 3 - 1999 Pontiac Grand Am

P4 Upper Rib Ry

Max: 42.7 [kph] at 0.098 [s]
Min: -0.0 [kph] at -0.044 [s]

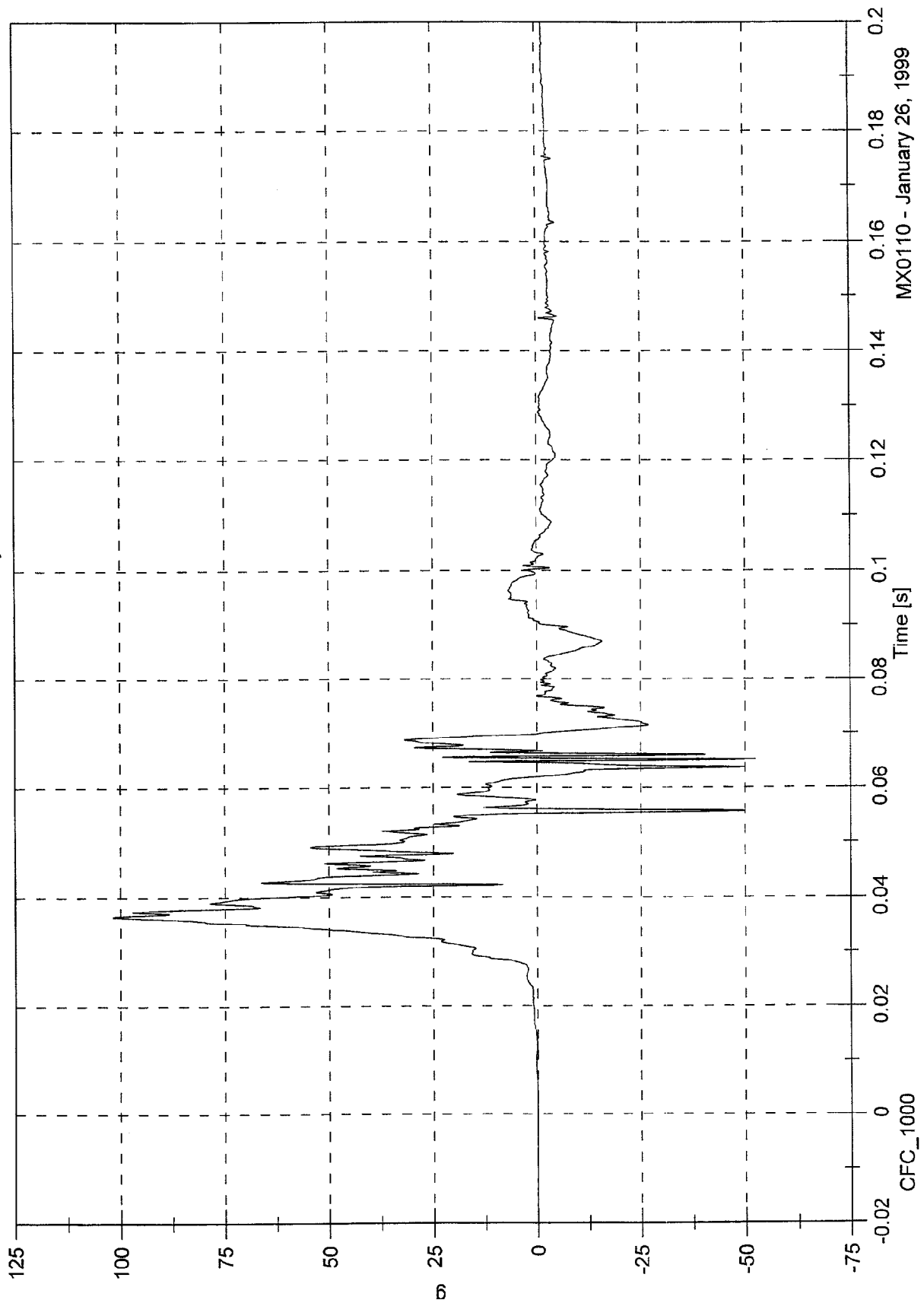


MX0110 - January 26, 1999

SNCAP test # 3 - 1999 Pontiac Grand Am

Max: 101.8 [g] at 0.036 [s]
Min: -52.4 [g] at 0.065 [s]

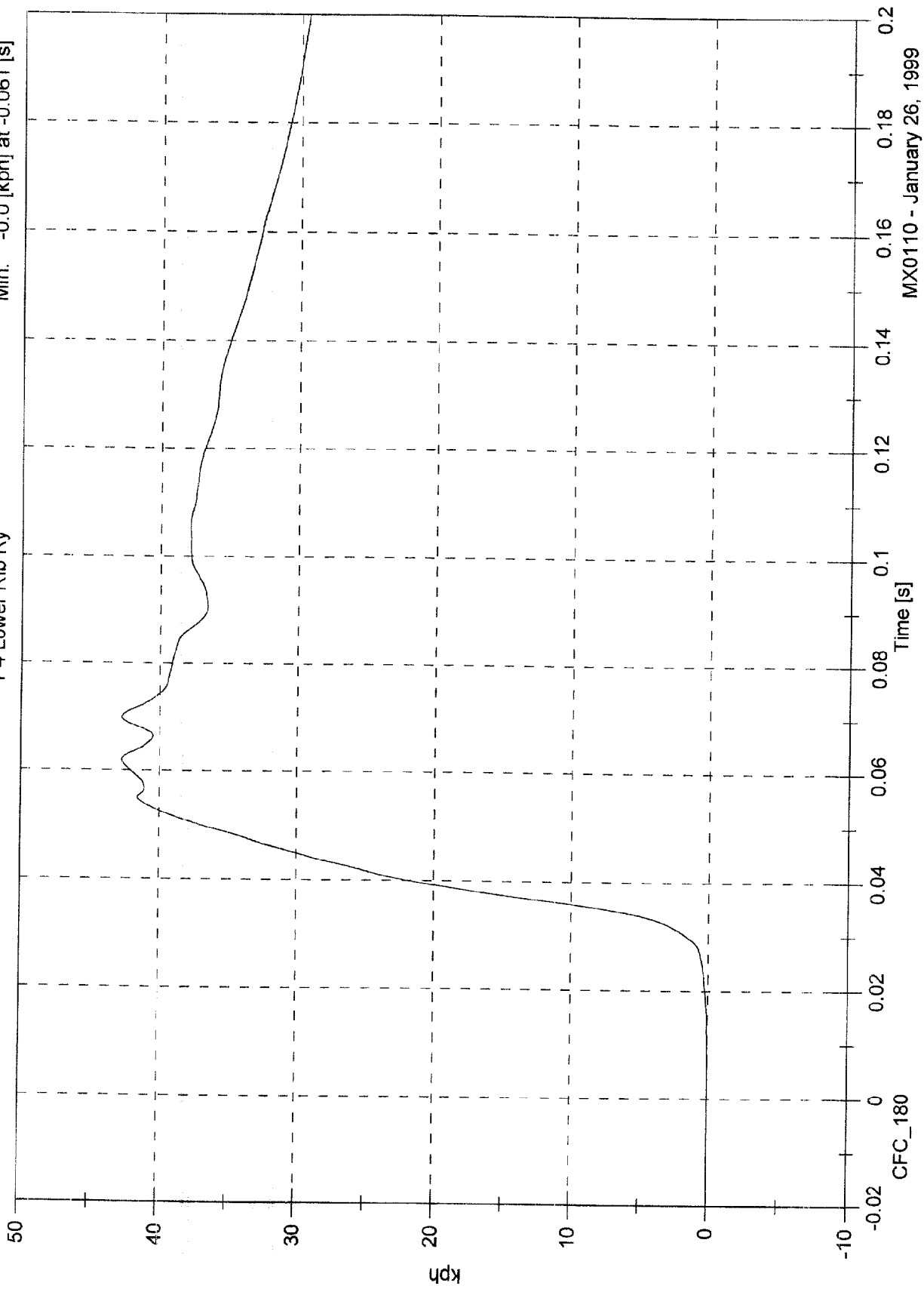
P4 Lower Rib Ry



SNCAP test # 3 - 1999 Pontiac Grand Am

P4 Lower Rib Ry

Max: 42.7 [kph] at 0.070 [s]
Min: -0.0 [kph] at -0.061 [s]

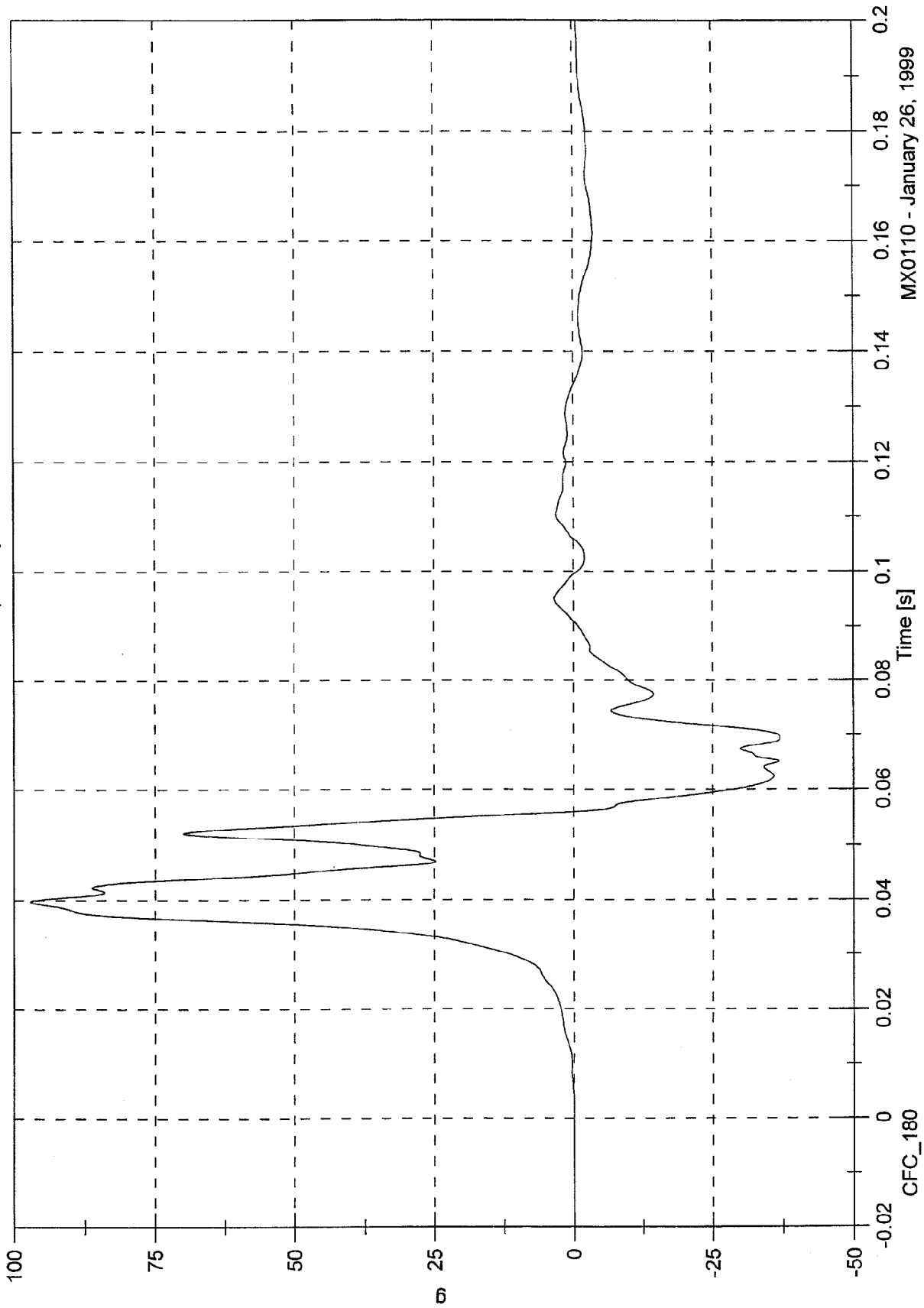


MX0110 - January 26, 1999

SNCAP test # 3 - 1999 Pontiac Grand Am

P4 Lower Spine Ry

Max: 97.1 [g] at 0.040 [s]
Min: -37.0 [g] at 0.069 [s]

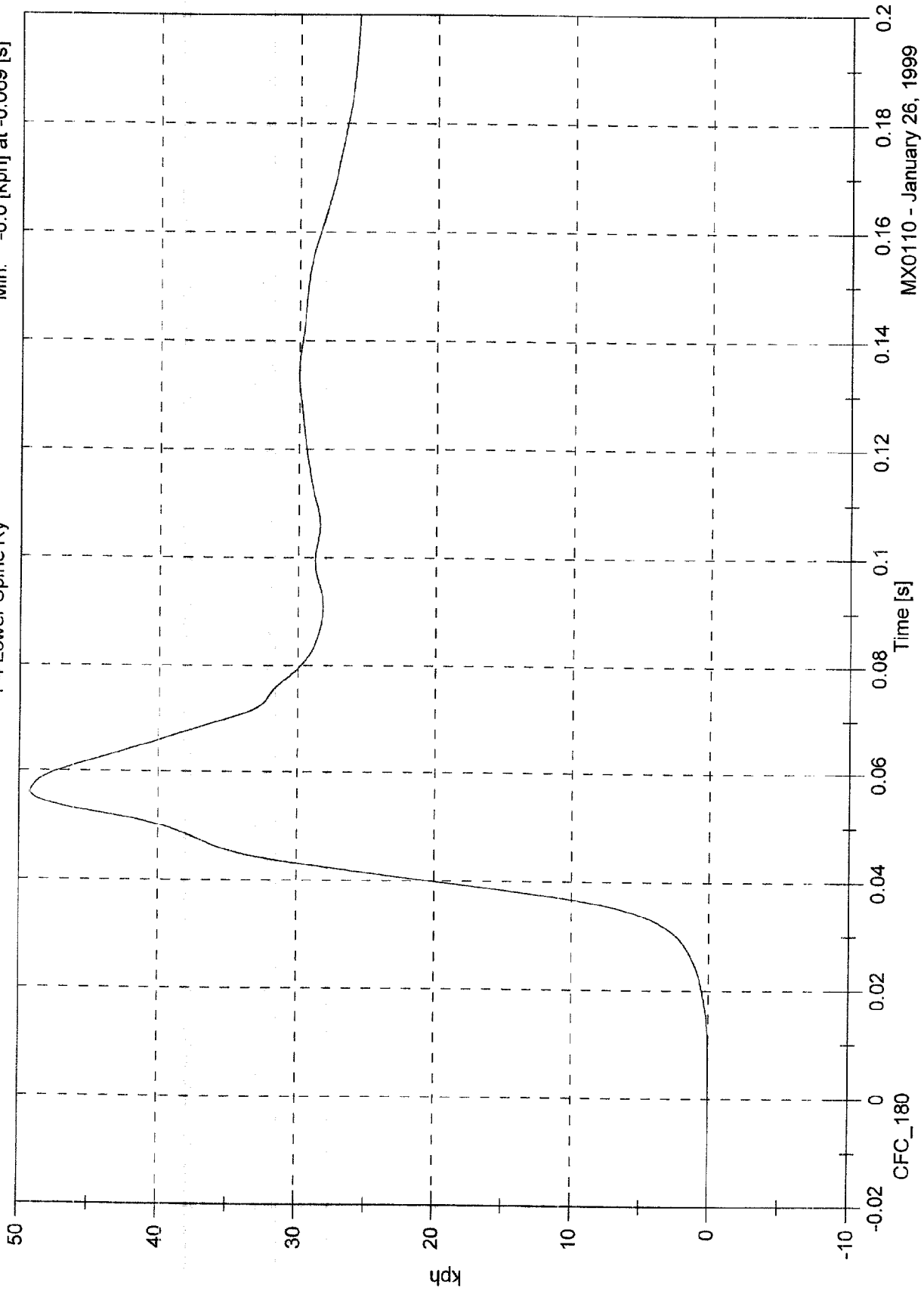


MX0110 - January 26, 1999

SNCAP test # 3 - 1999 Pontiac Grand Am

P4 Lower Spine Ry

Max: 49.2 [kph] at 0.056 [s]
Min: -0.0 [kph] at -0.069 [s]

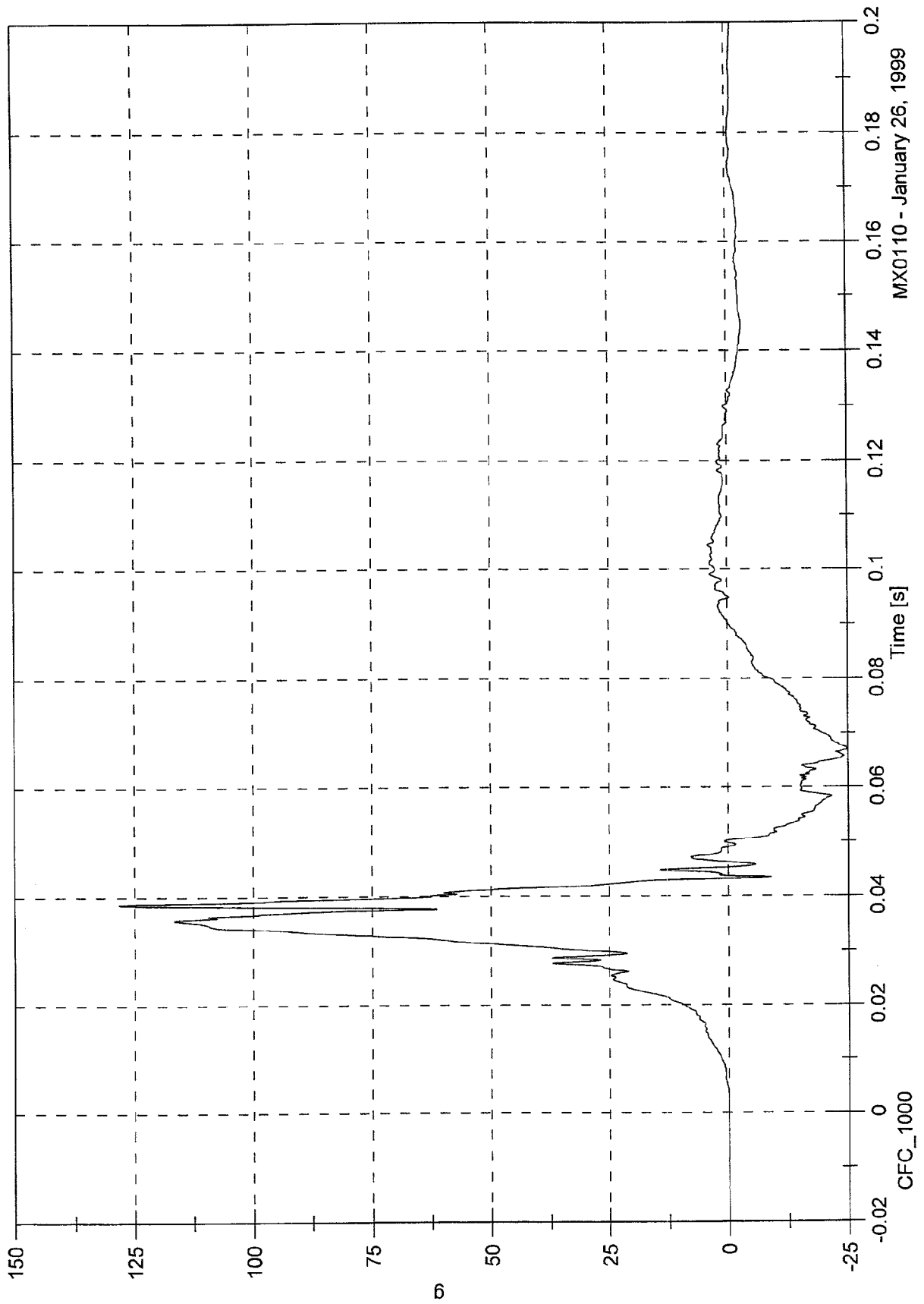


MX0110 - January 26, 1999

SNCAP test # 3 - 1999 Pontiac Grand Am

P4 Pelvic Ry

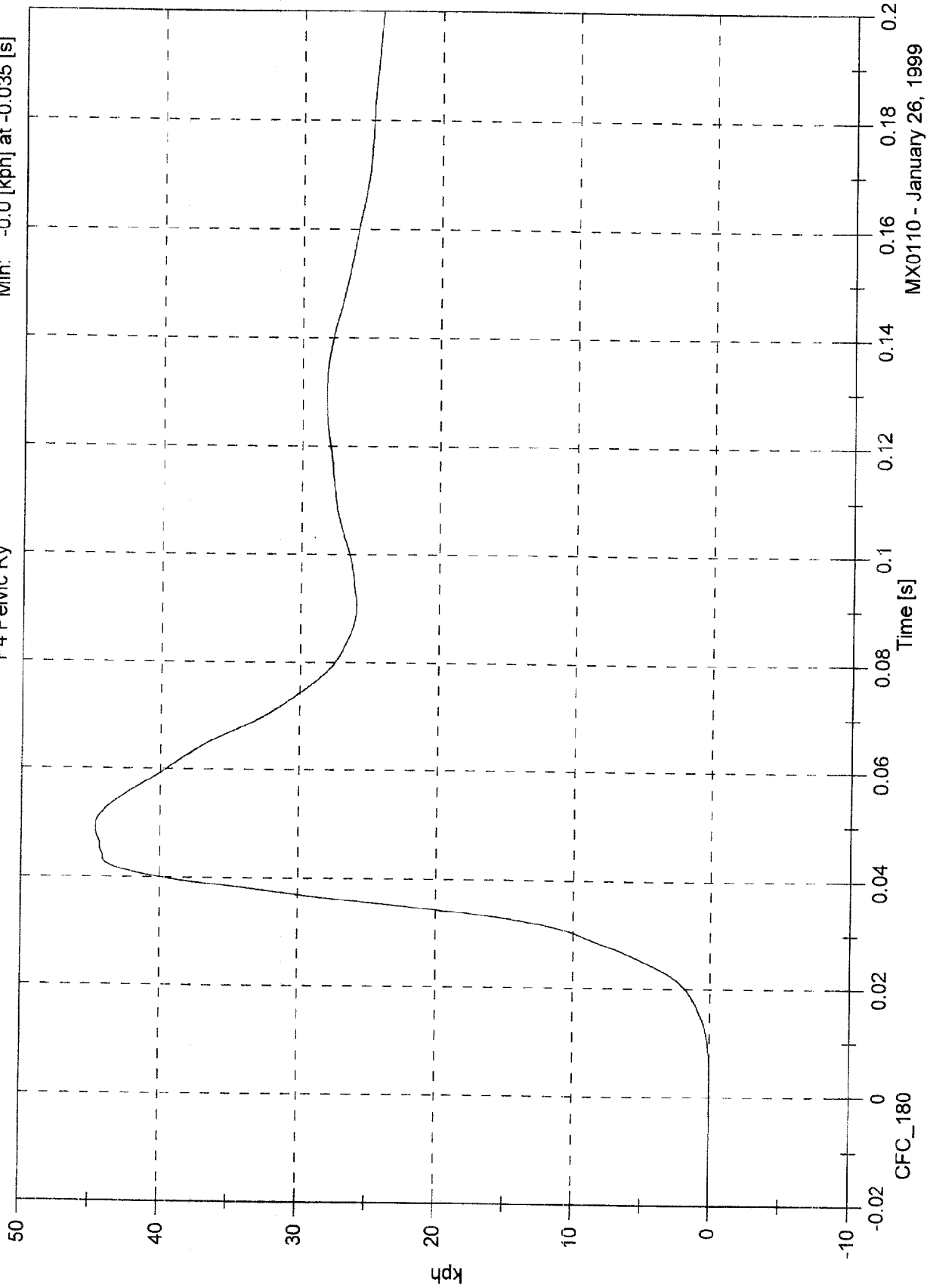
Max: 128.3 [g] at 0.039 [s]
Min: -24.9 [g] at 0.067 [s]



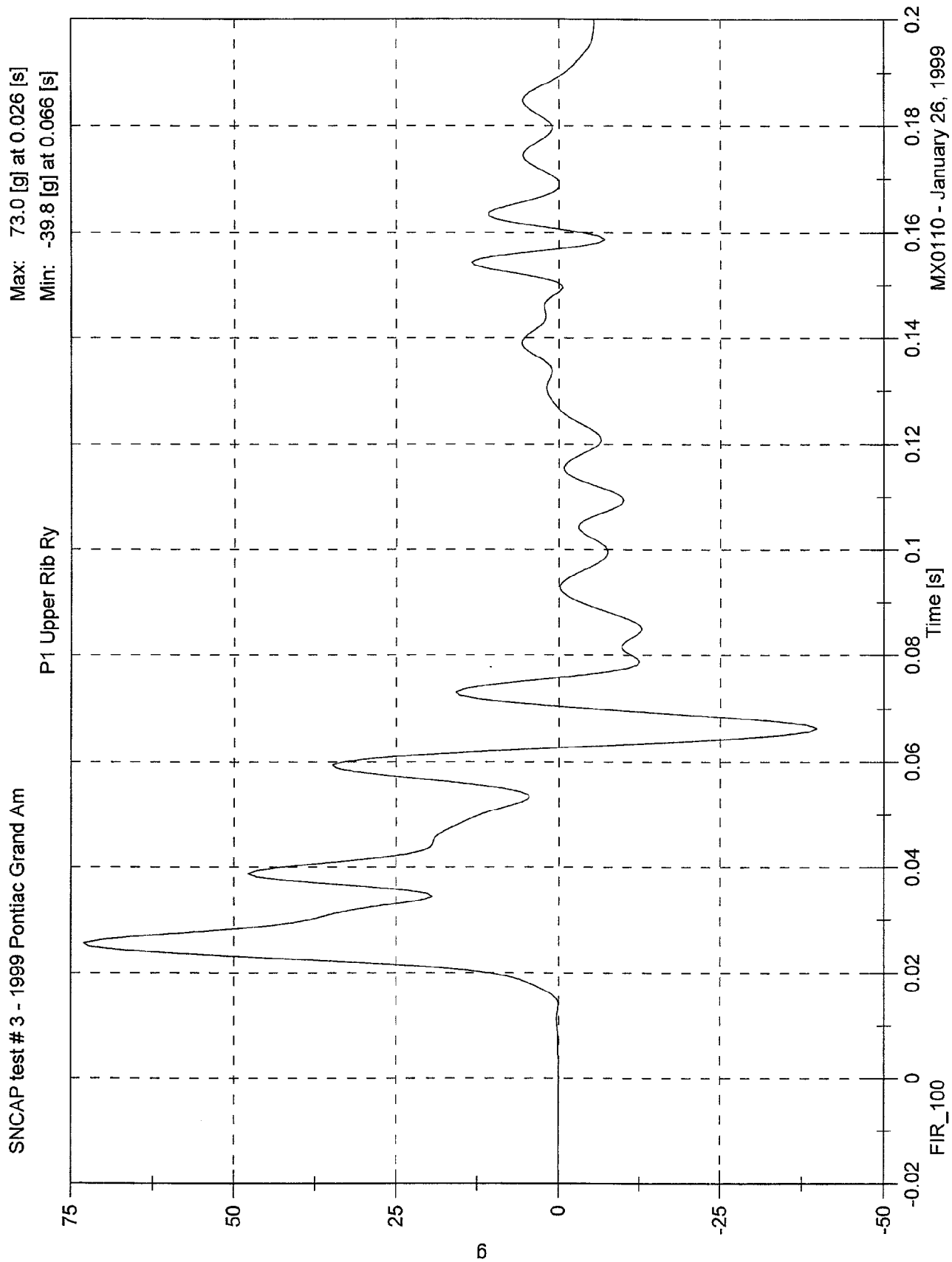
SNCAP test # 3 - 1999 Pontiac Grand Am

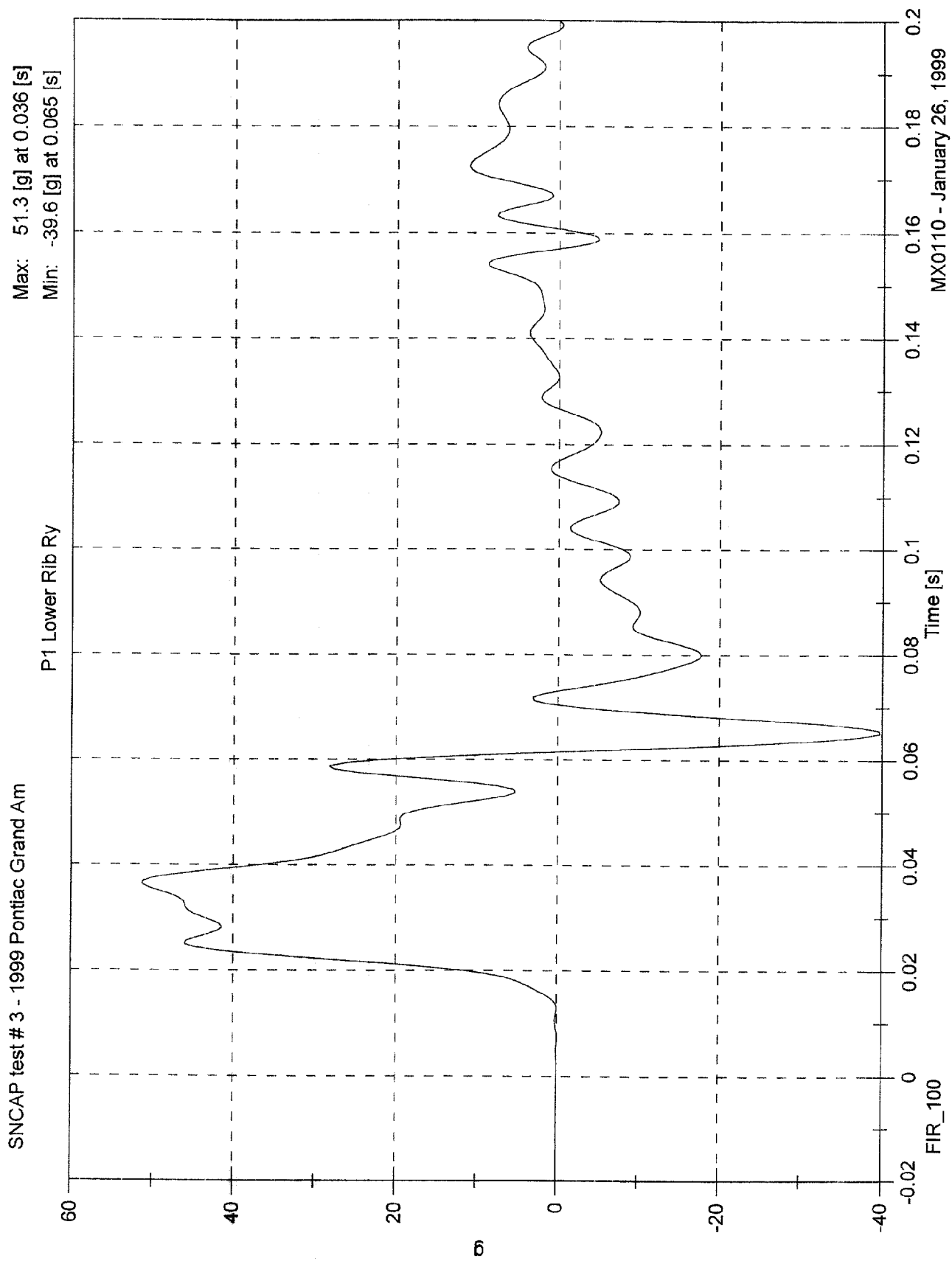
Max: 44.7 [kph] at 0.049 [s]
Min: -0.0 [kph] at -0.035 [s]

P4 Pelvic Ry



MX0110 - January 26, 1999

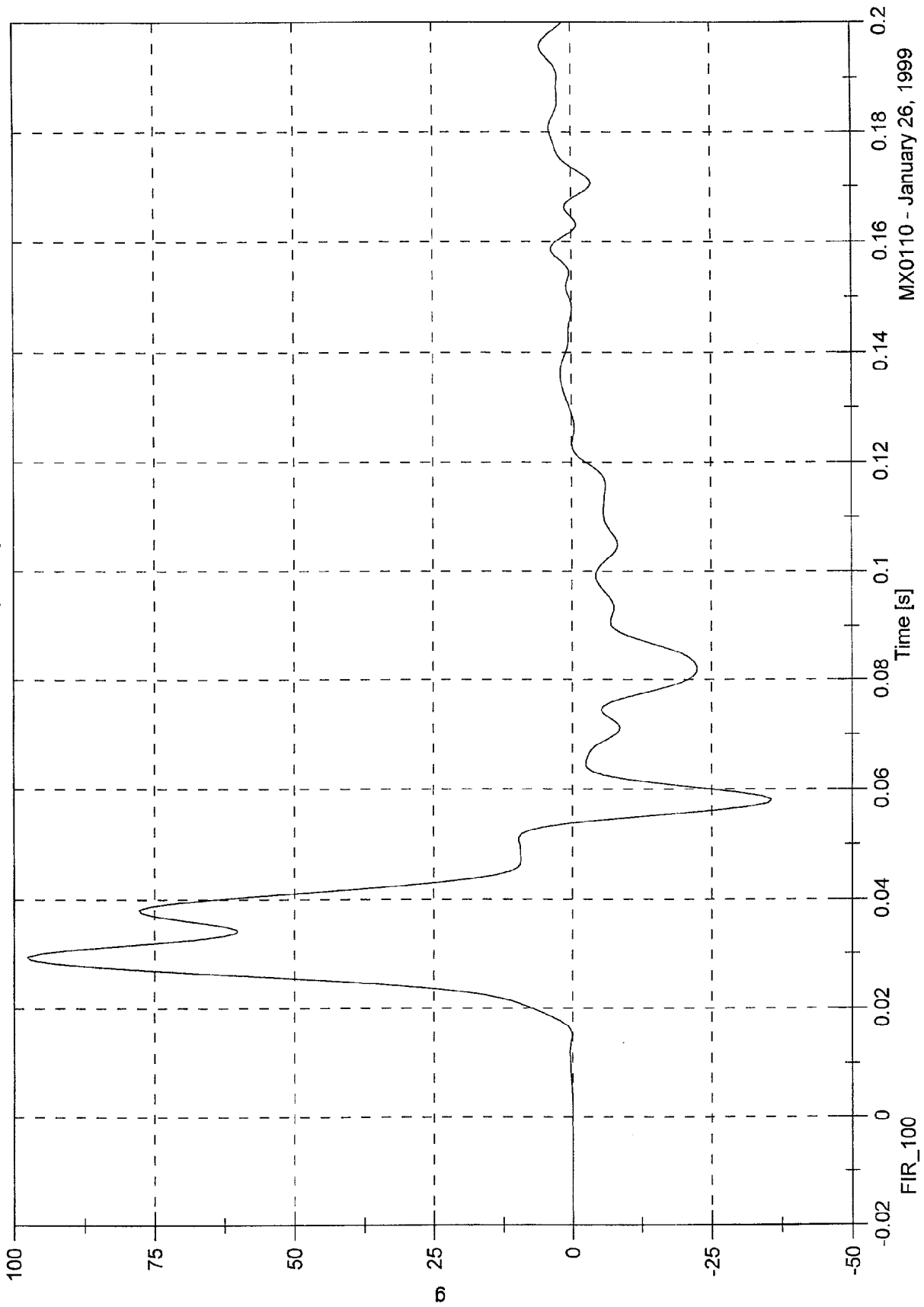




SNCAP test # 3 - 1999 Pontiac Grand Am

P1 Lower Spine Ry

Max: 97.7 [g] at 0.029 [s]
Min: -35.8 [g] at 0.058 [s]

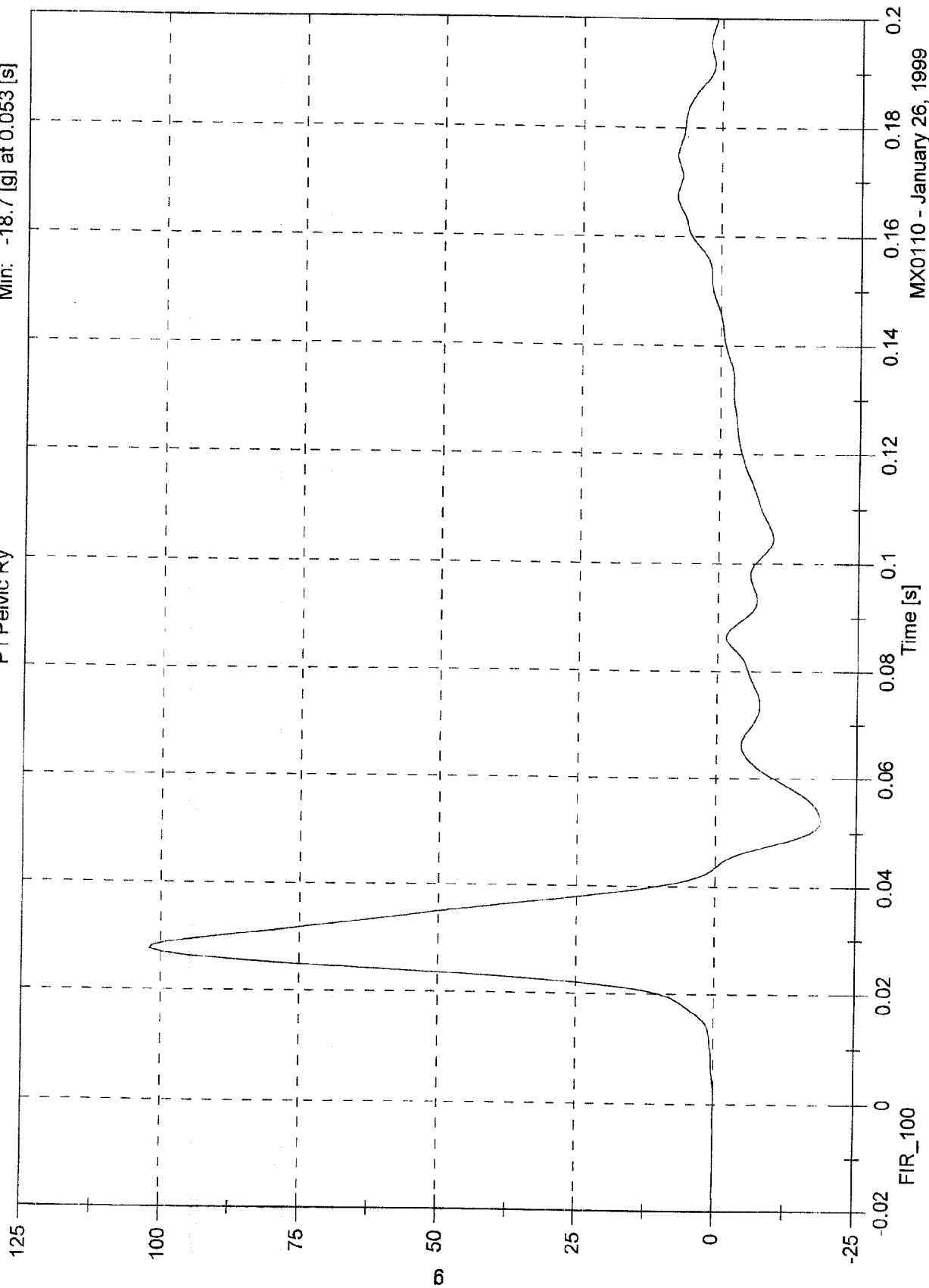


MX0110 - January 26, 1999

SNCAP test # 3 - 1999 Pontiac Grand Am

P1 Pelvic Ry

Max: 102.1 [g] at 0.028 [s]
Min: -18.7 [g] at 0.053 [s]



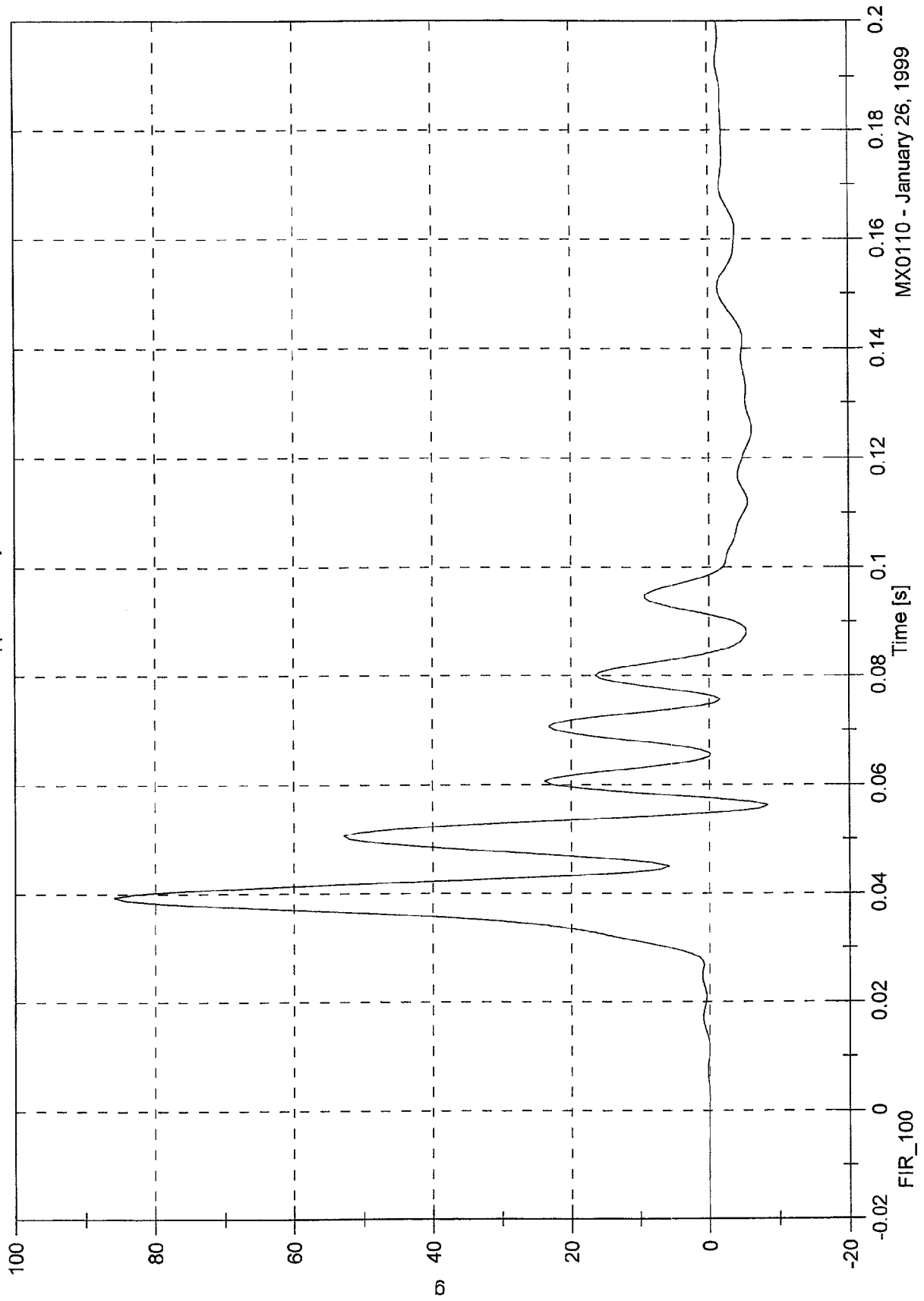
MX0110 - January 26, 1999

SNCAP test # 3 - 1999 Pontiac Grand Am

P4 Upper Rib Ry

Max: 85.9 [g] at 0.039 [s]

Min: -8.4 [g] at 0.056 [s]



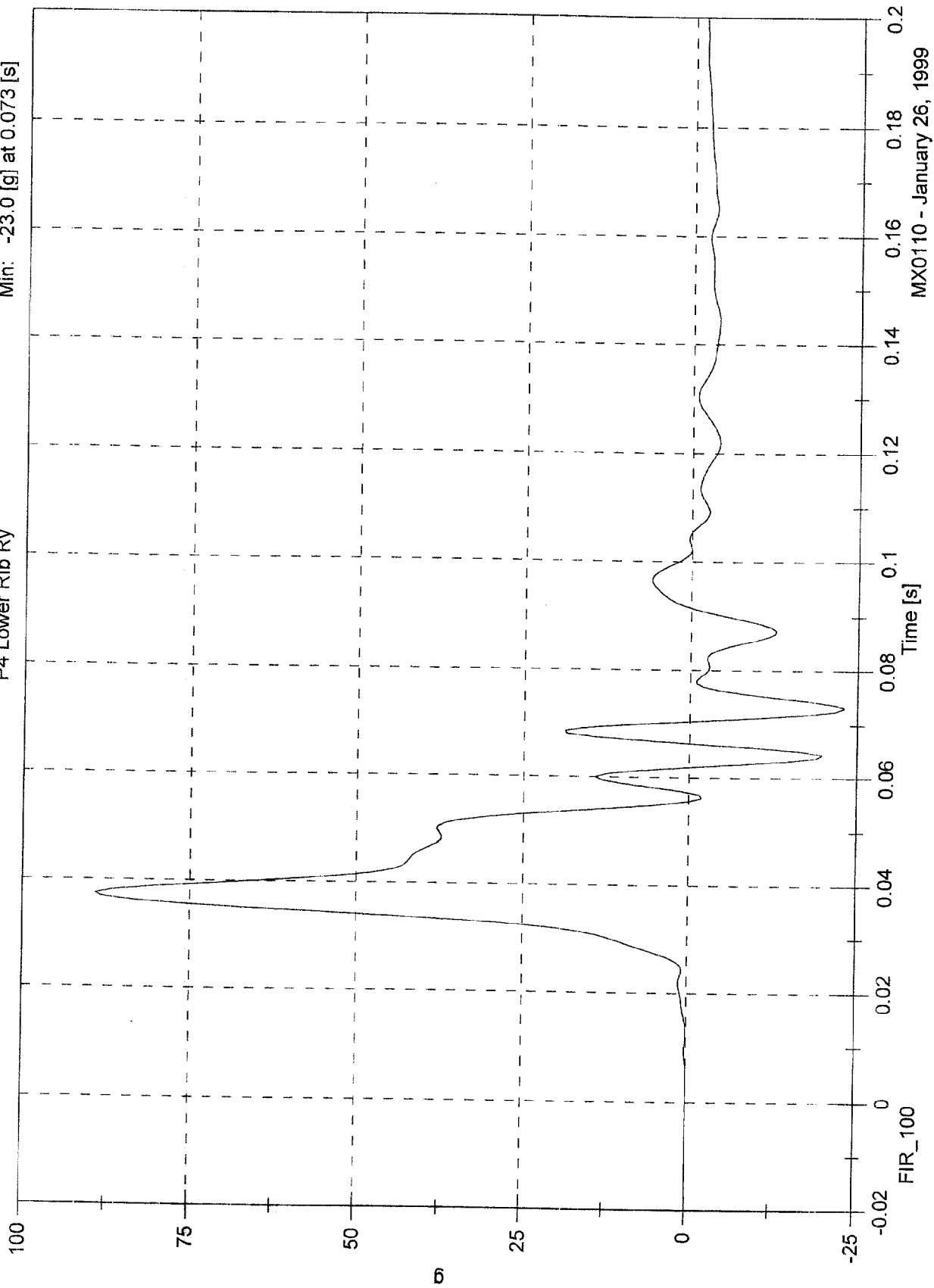
MX0110 - January 26, 1999

SNCAP test # 3 - 1999 Pontiac Grand Am

P4 Lower Rib Ry

Max: 89.2 [g] at 0.038 [s]

Min: -23.0 [g] at 0.073 [s]

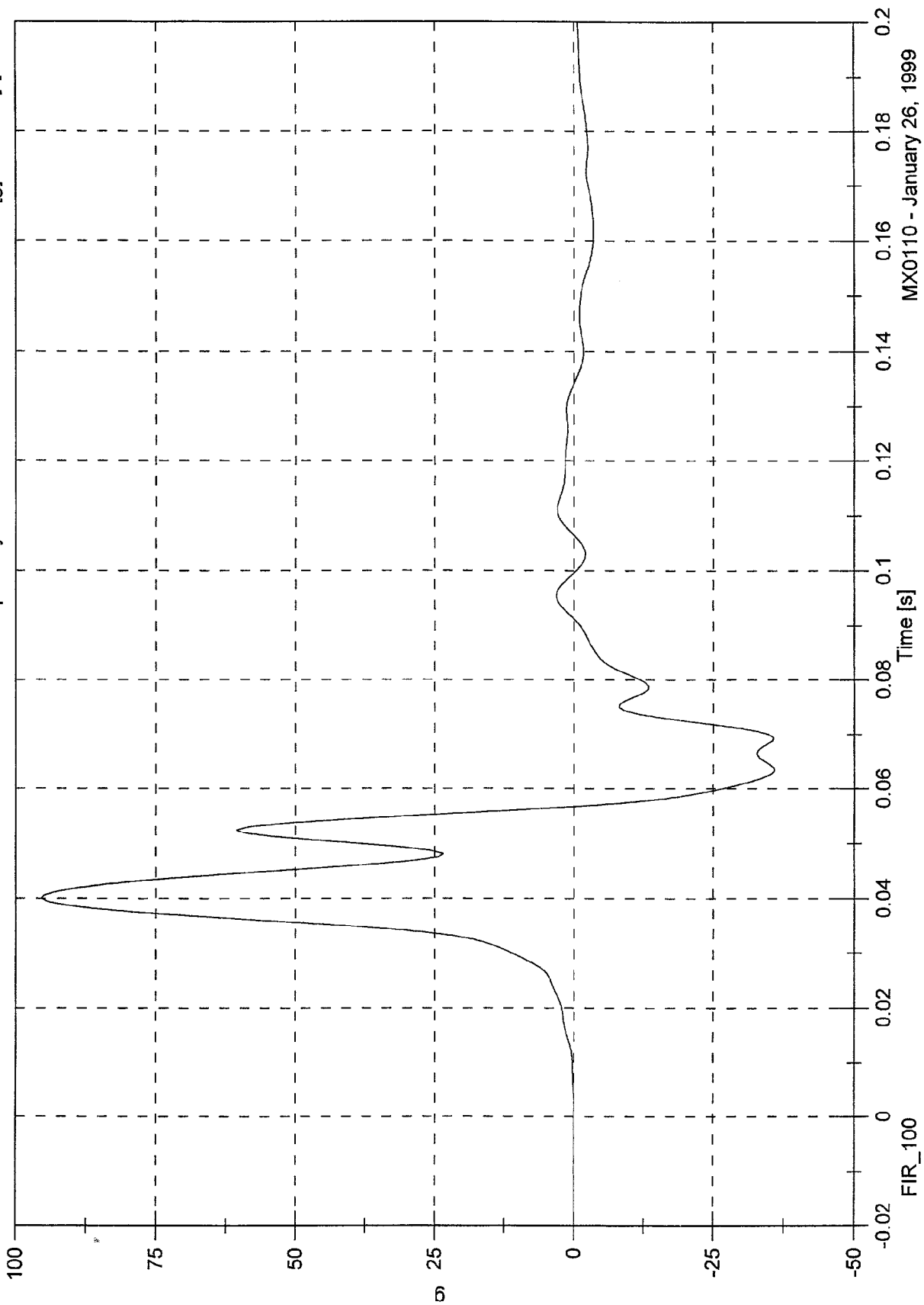


MX0110 - January 26, 1999

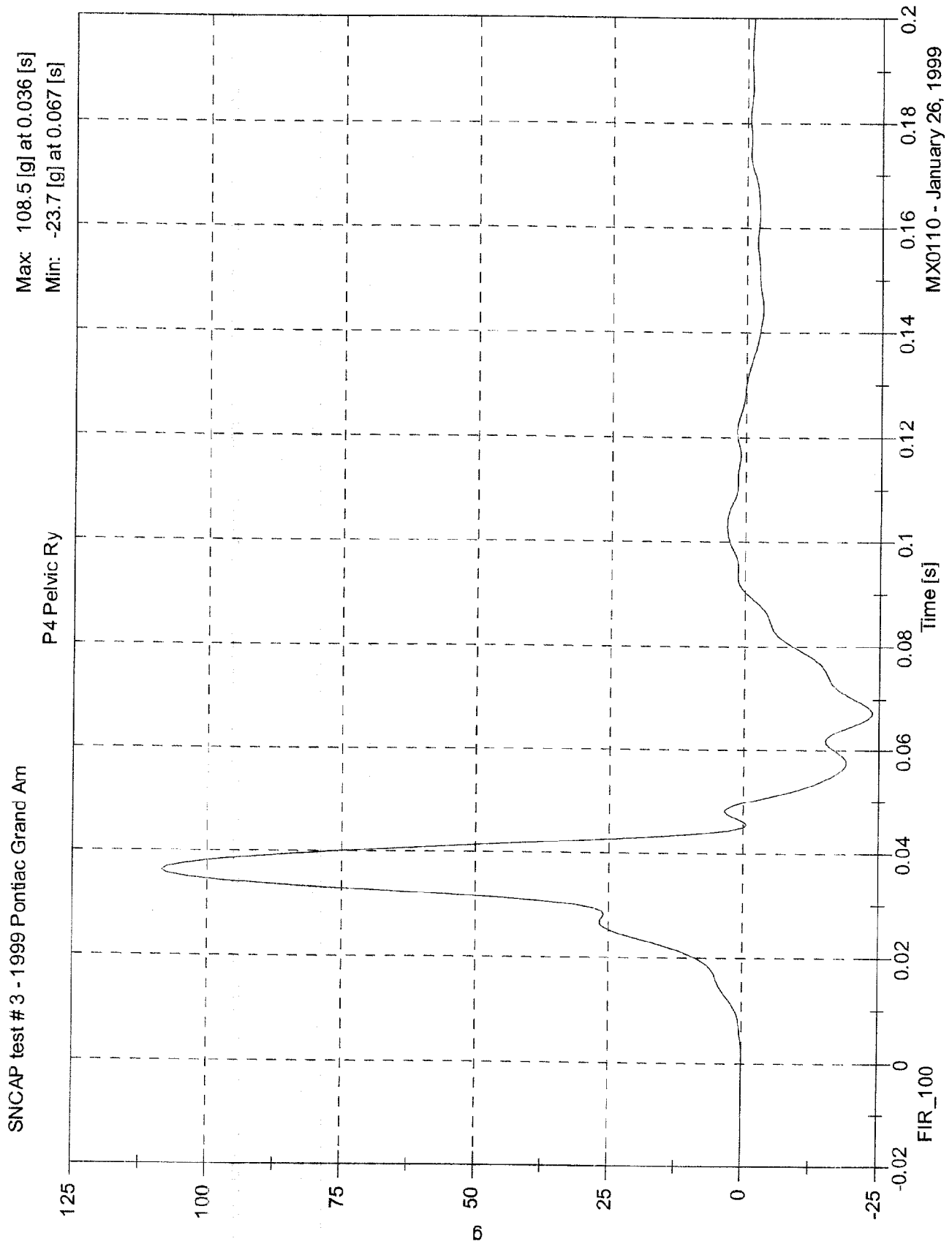
SNCAP test # 3 - 1999 Pontiac Grand Am

P4 Lower Spine Ry

Max: 95.4 [g] at 0.040 [s]
Min: -35.8 [g] at 0.063 [s]



MX0110 - January 26, 1999



APPENDIX C

SID CONFIGURATION AND PERFORMANCE VERIFICATION DATA

SUMMARY
SID PRE & POST TEST CALIBRATION

CONFIGURED FOR LEFT SIDE IMPACT

Date: 1/22/99; 1/28/99

Calspan Sequential Test Number:

Driver: 4, 5 Passenger: 5, 6

Laboratory Technician:

B. Swiecicki, G. Serbinowski

TEST PARAMETER	SPECIFICATION	SID NO.: 268		SID NO.: 015	
		PRE TEST	POST TEST	PRE TEST	POST TEST
SH- Seated Height (mm)	889 - 909	899	899	907	904
RH- Rib Height (mm)	501 - 521	516	516	513	509
HP- Hip Pivot Height (mm)	99 ref.	99	99	99	99
RD- Rib from Back Line (mm)	229 - 241	231	231	236	236
KV- Knee Pivot from Back Line (mm)	511 - 526	521	518	516	521
SW- Knee Pivot to Floor (mm)	490 - 505	495	495	492	493
HW- Hip Width (mm)	356 - 391	368	371	366	368
THORAX IMPACTS					
TEMPERATURE (°C)	18.9 - 25.5	21.1	22.8	21.1	22.8
RELATIVE HUMIDITY (%)	10 -70	31	22	25	22
PROBE SPEED (m/s)	4.27 - 4.33	4.32	4.28	4.30	4.32
UPPER RIB (g's)	37 - 46	38.8	41.4	43.6	45.9
LOWER RIB (g's)	37 - 46	41.4	43.6	45.0	46.5
LOWER SPINE (g's)	15 -22	22.1	22.8	21.9	21.9
PELVIS IMPACT					
TEMPERATURE (°C)	18.9 - 25.5	21.1	22.8	21.1	22.8
RELATIVE HUMIDITY (%)	10 - 70	31	22	25	22
PROBE SPEED (m/s)	4.27 - 4.33	4.32	4.29	4.29	4.31
PELVIS (g's)	40 -60	53.8	54.5	41.1	41.1

REMARKS: None

CALIBRATION TEST RESULTS
PRE-TEST

SID NO.: 268

CONFIGURED FOR LEFT SIDE IMPACT

**CALIBRATION TEST RESULTS SUMMARY
PRE-TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 268

Calspan Sequential Test Number: 4

Date: 1/21/99

Laboratory Technician: B. Swiecicki, G. Serbinowski

TEST	COMMENTS
EXTERNAL DIMENSIONS	Passed all requirements.
THORACIC SHOCK ABSORBER TEST	Passed all requirements.
LATERAL THORAX IMPACT TEST	Passed all requirements.
LATERAL PELVIS IMPACT TEST	Passed all requirements.
ABDOMINAL COMPRESSION TEST*	Passed all requirements.
LUMBAR FLEXION TEST*	Passed all requirements.

* Test not required for SID certification.

REMARKS: None

EXTERNAL DIMENSIONS**PRE-TEST****CONFIGURED FOR LEFT SIDE IMPACT**SID Serial No.: 268Calspan Sequential Test Number: 4Date: 1/21/99Laboratory Technician: B. Swiecicki, G. Serbinowski

TEST PARAMETER	SPECIFICATION	TEST RESULTS
SH- Seated Height (mm)	889 - 909	899
RH- Rib Height (mm)	502 - 520	516
HP- Hip Pivot Height (mm)	99 ref.	99
RD- Rib from Back Line (mm)	229 - 241	231
KH- Knee Pivot from Back Line (mm)	511 - 526	521
KV- Knee Pivot to Floor (mm)	490 - 505	495
HW- Hip Width (mm)	356 - 391	368

REMARKS: None

THORACIC SHOCK ABSORBER TESTS
PRE-TEST

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 268

Calspan Sequential Test Number: 1.4

Date: 9/21/98

Laboratory Technician: B. Swiecicki, G. Serbinowski

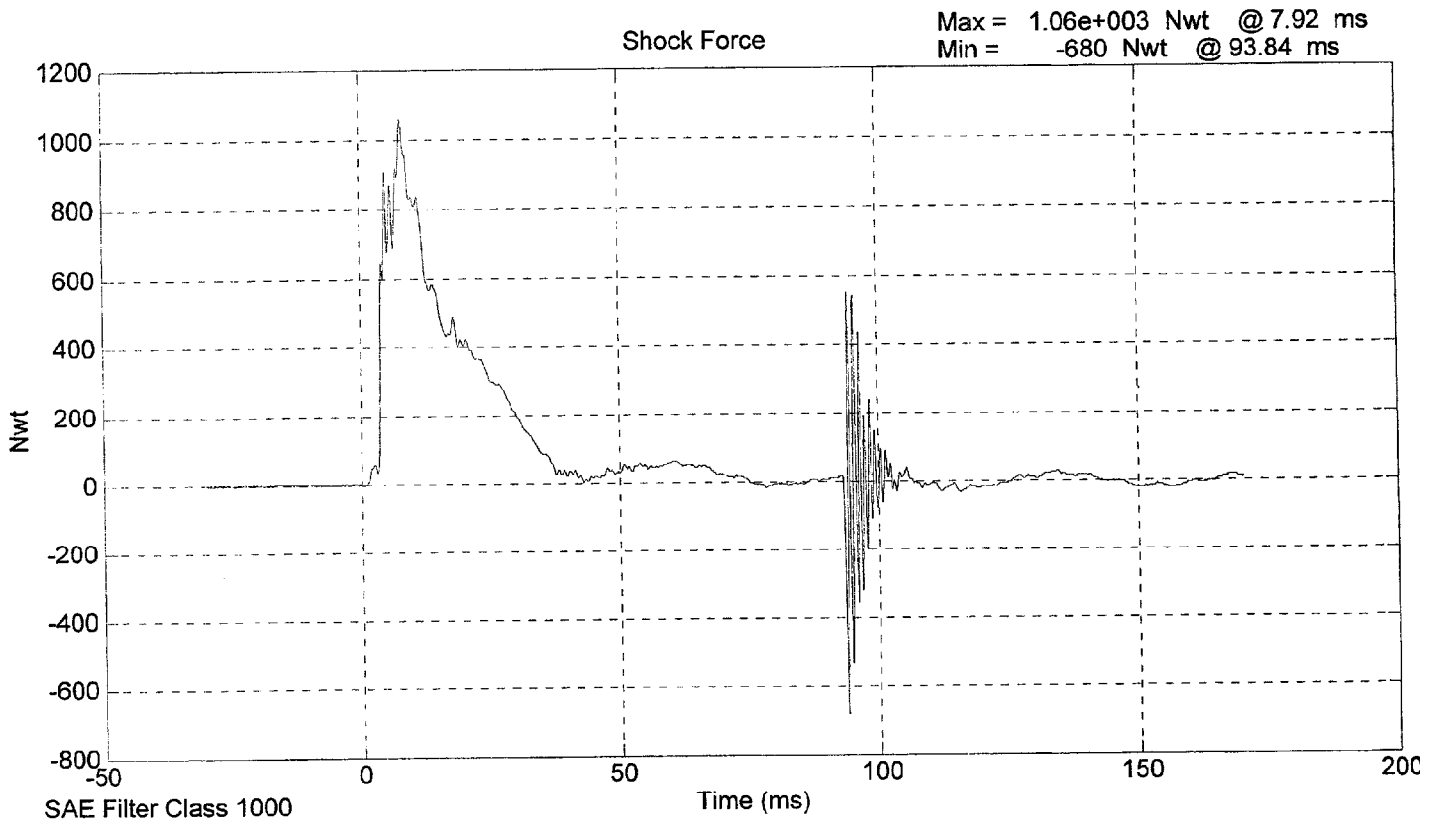
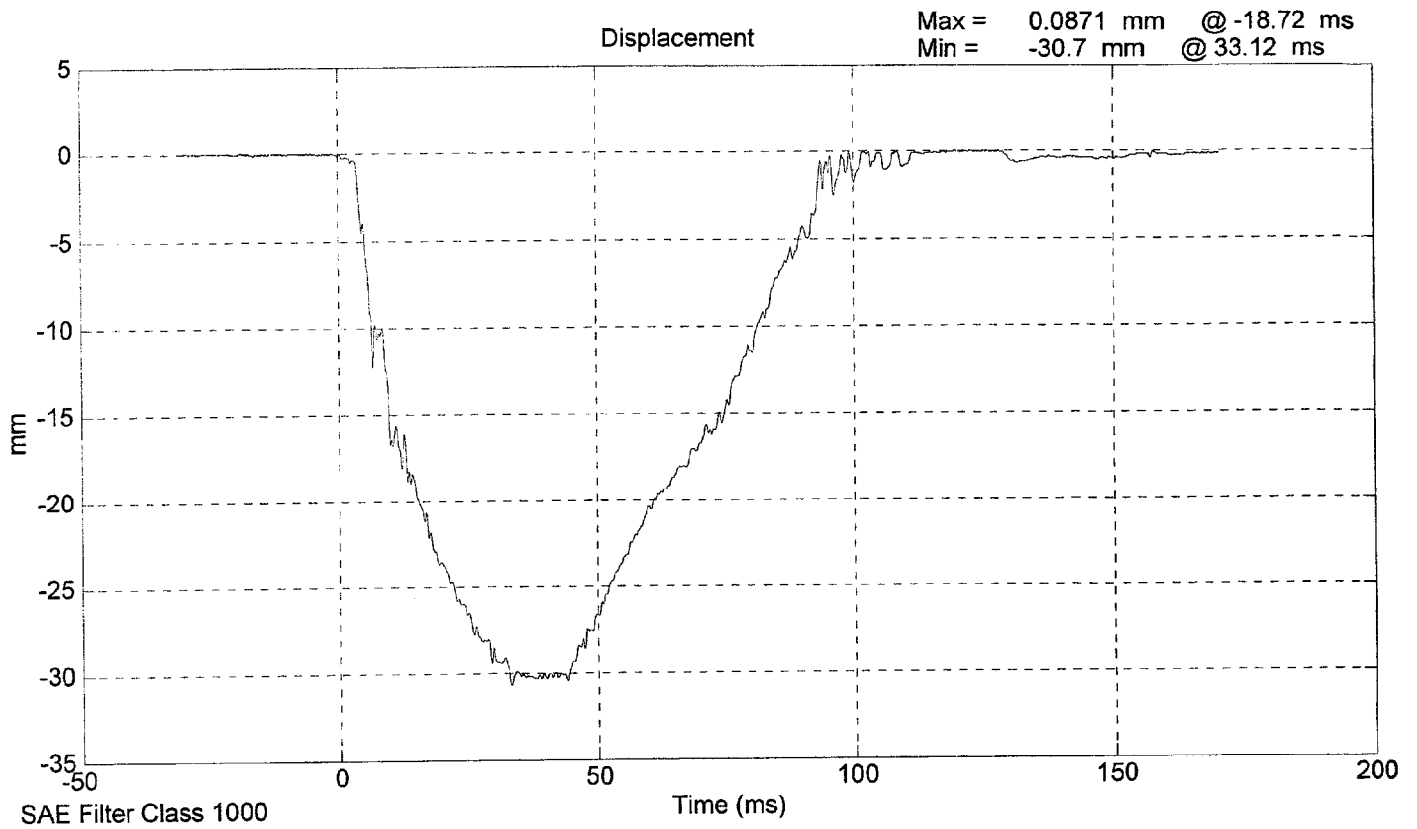
DAMPER IDENTIFICATION: 268

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)		18.9 - 25.5	21.1
RELATIVE HUMIDITY (%)		10 - 70	45
VELOCITY 3.05 m/s	FORCE (N)	836 - 1125	1059.6
	DISPLACEMENT (mm)	30 - 35	30.7
VELOCITY 4.27 m/s	FORCE (N)	1730 - 2099	1985.9
	DISPLACEMENT (mm)	32 - 37	33.5
VELOCITY 6.10 m/s	FORCE (N)	3741 - 4448	4097.8
	DISPLACEMENT (mm)	33 - 40	36.0

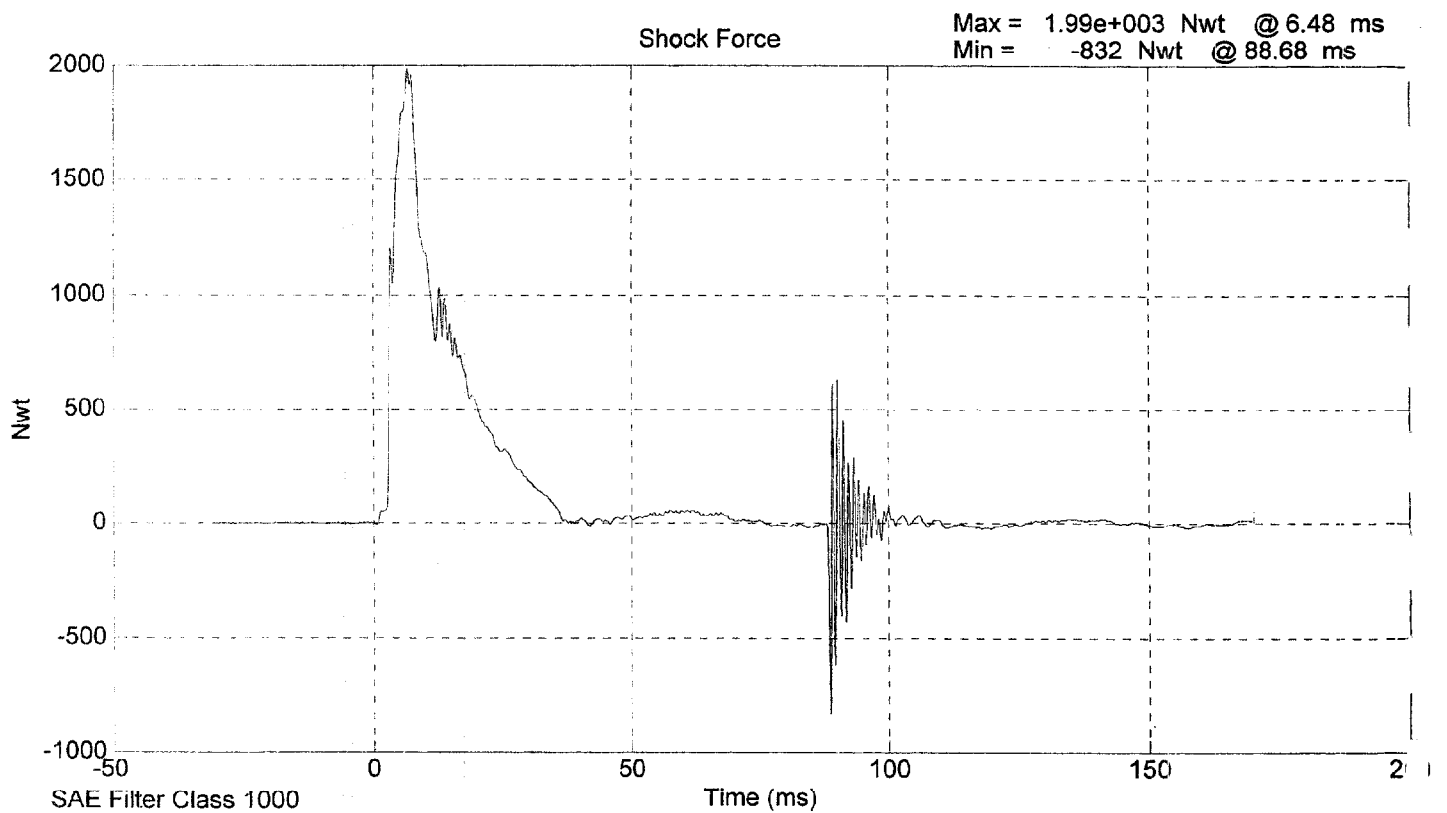
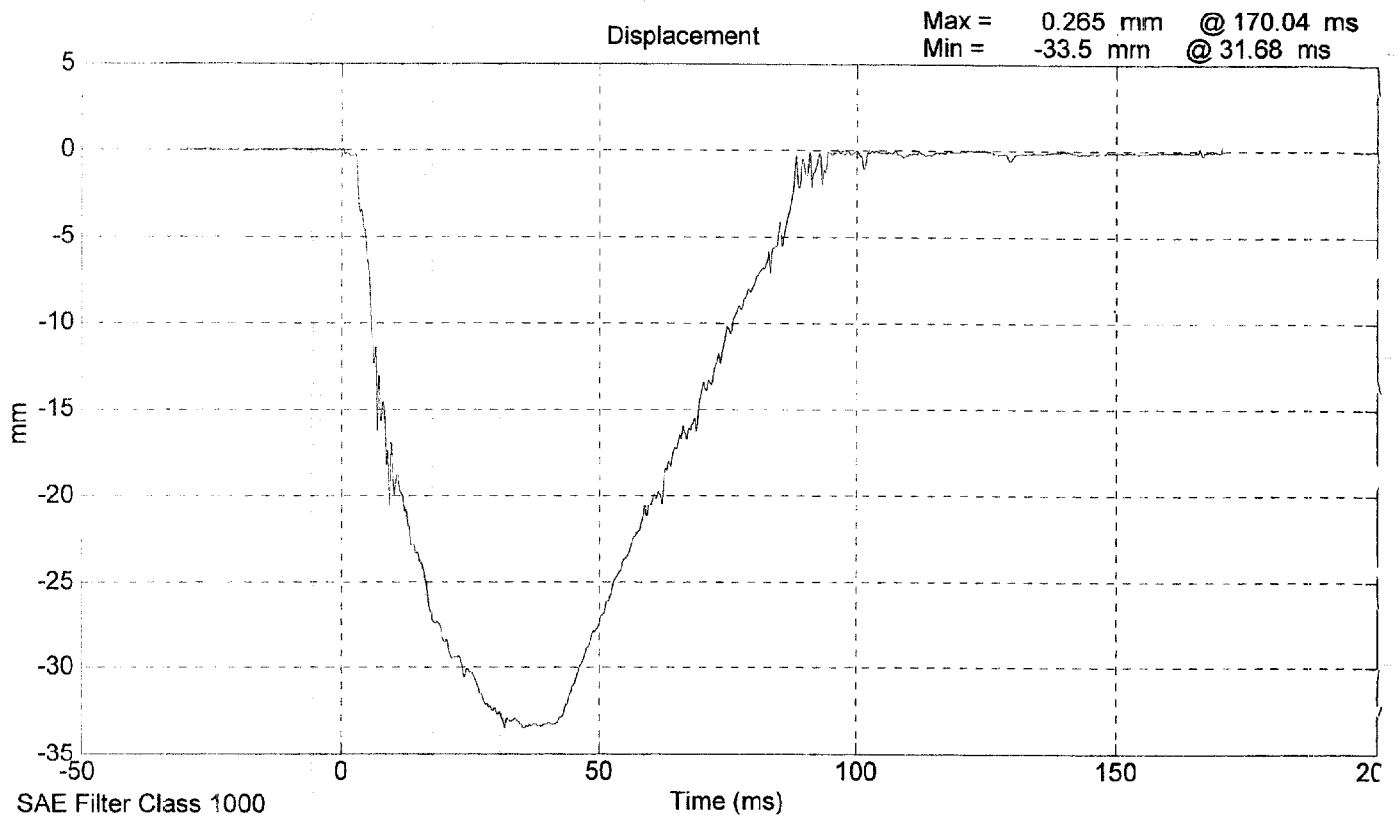
DAMPER SETTING: 5

REMARKS: None

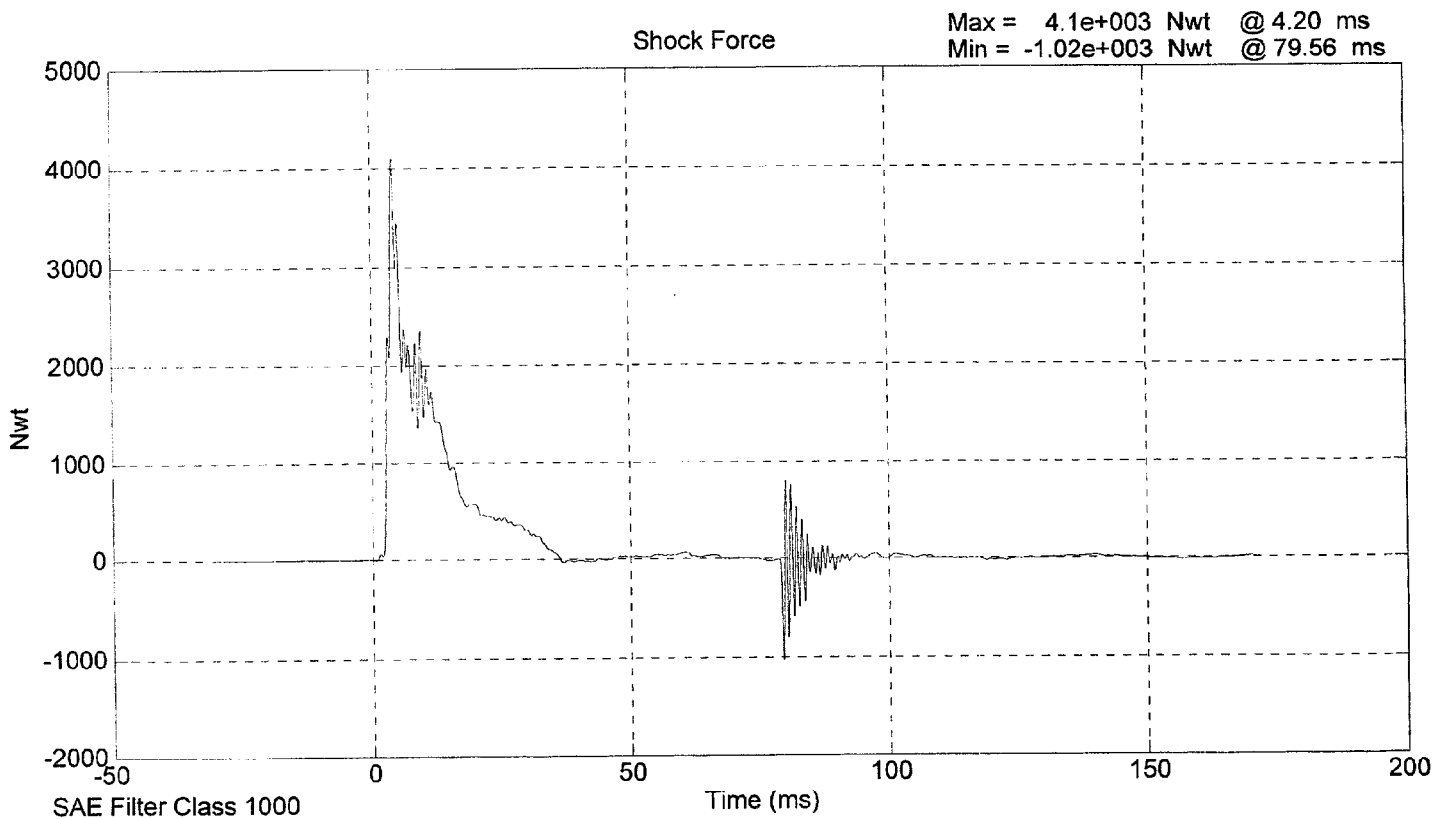
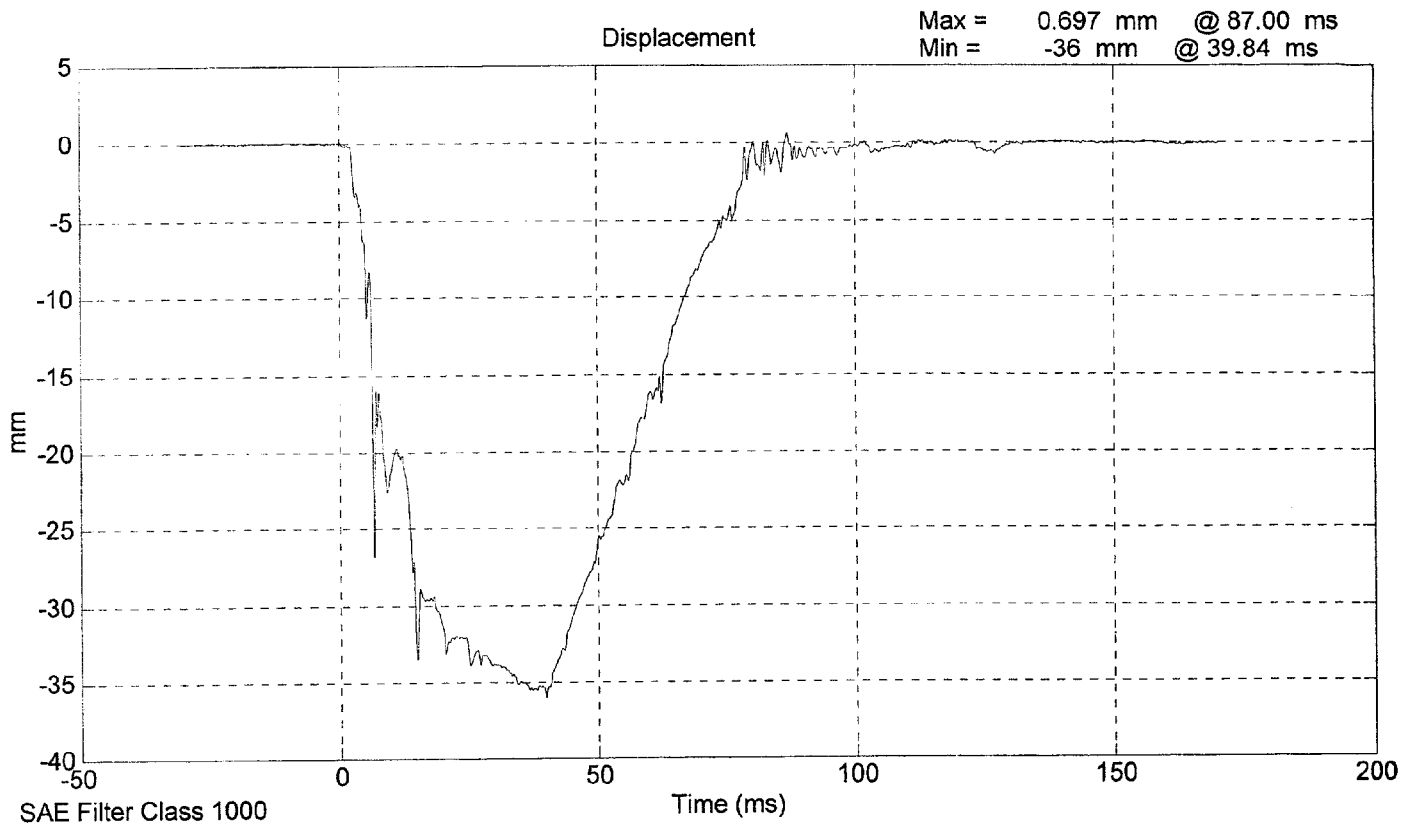
SID Shock Absorber Impact Test 268 @ 3.045 m/s



SID Shock Absorber Impact Test 268 @ 4.2642 m/s



SID Shock Absorber Impact Test 268 @ 6.1265 m/s



**LATERAL THORAX IMPACT TEST
PRE-TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 268

Calspan Sequential Test Number: 4

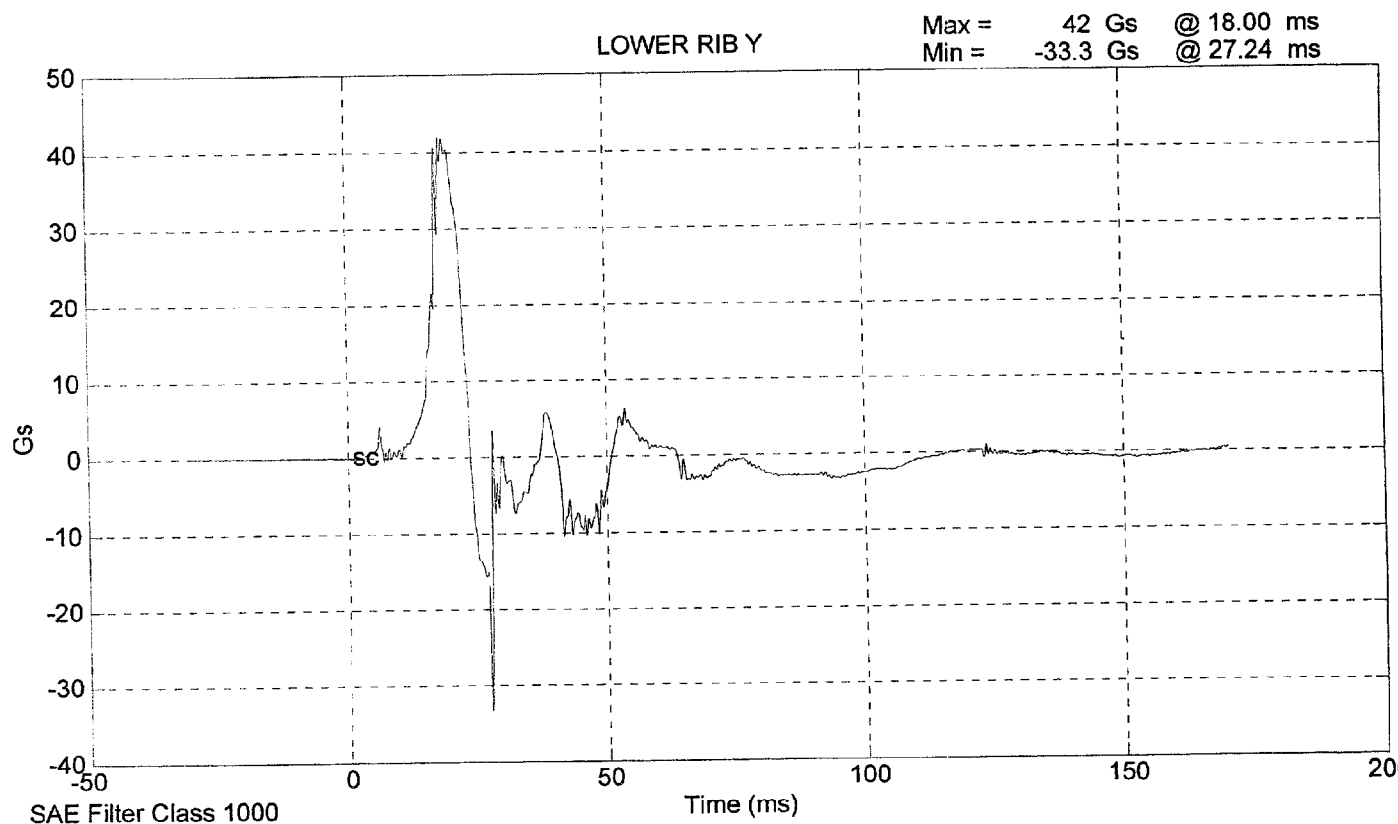
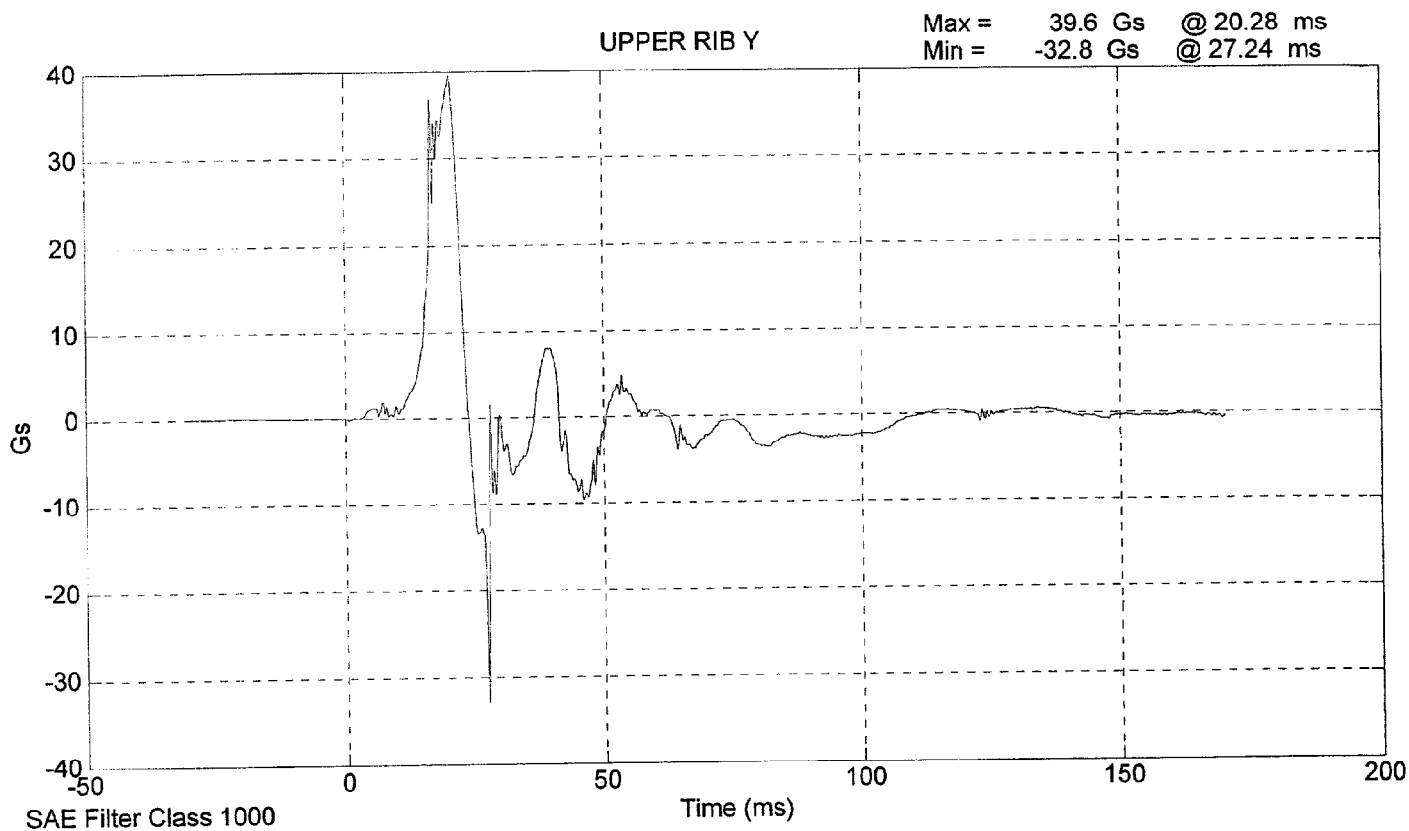
Date: 1/21/99

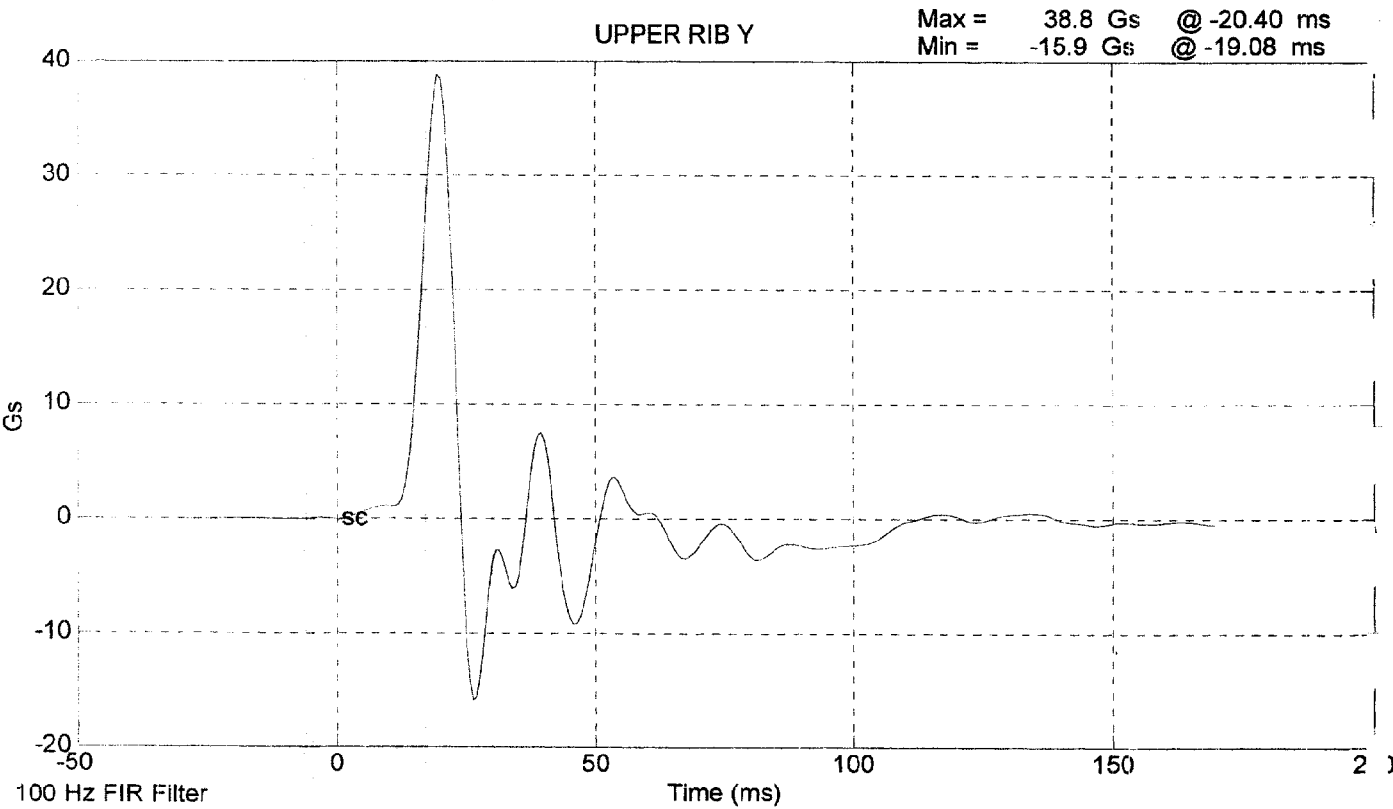
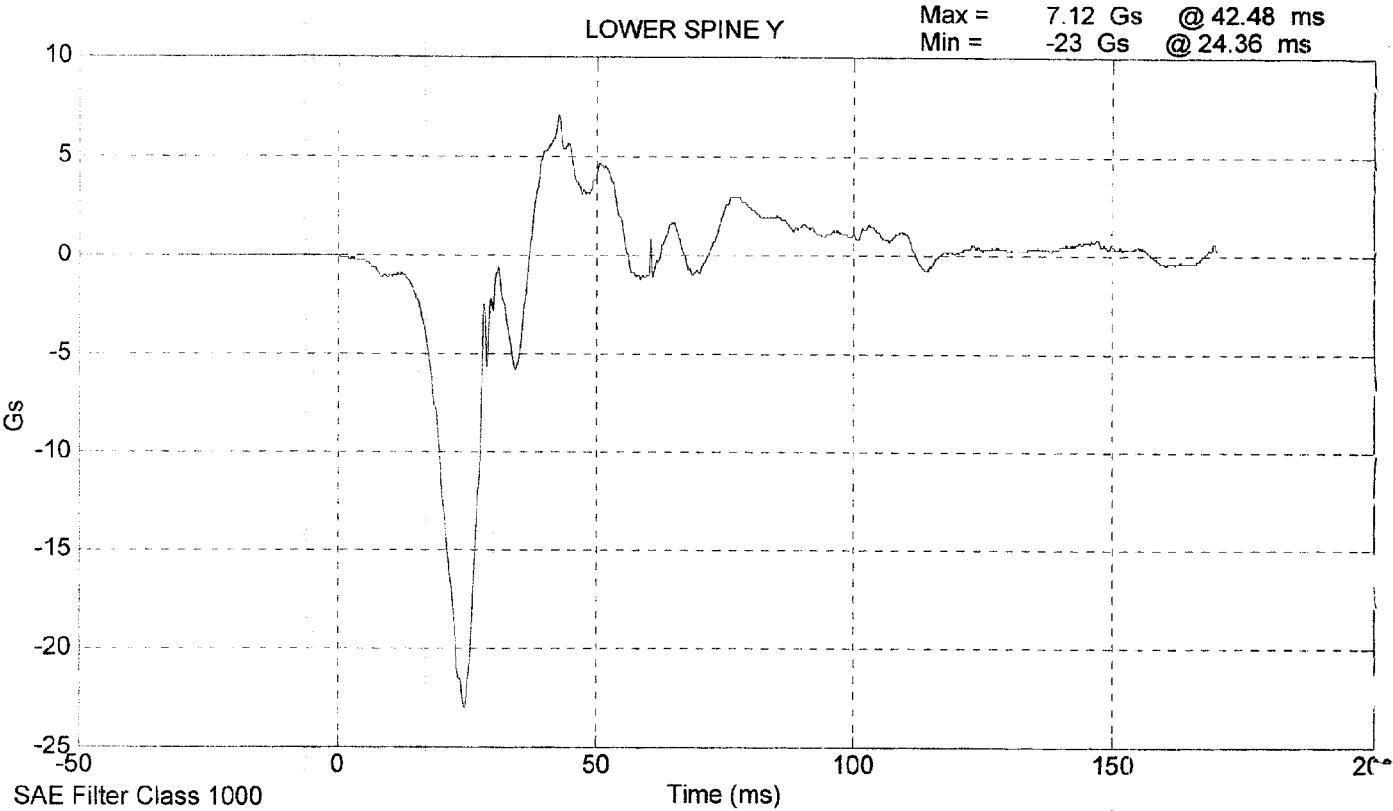
Laboratory Technician: B. Swiecicki, G. Serbinowski

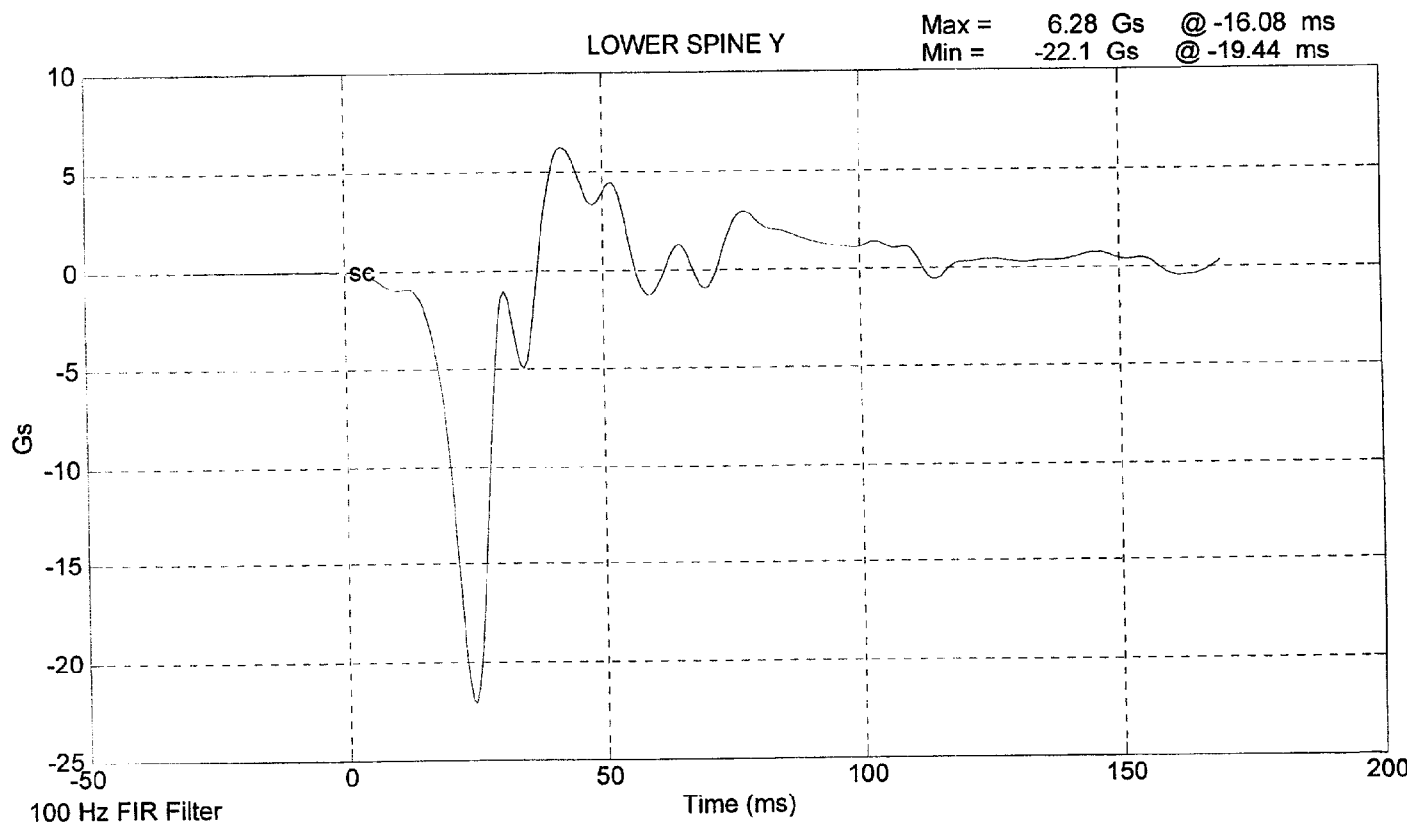
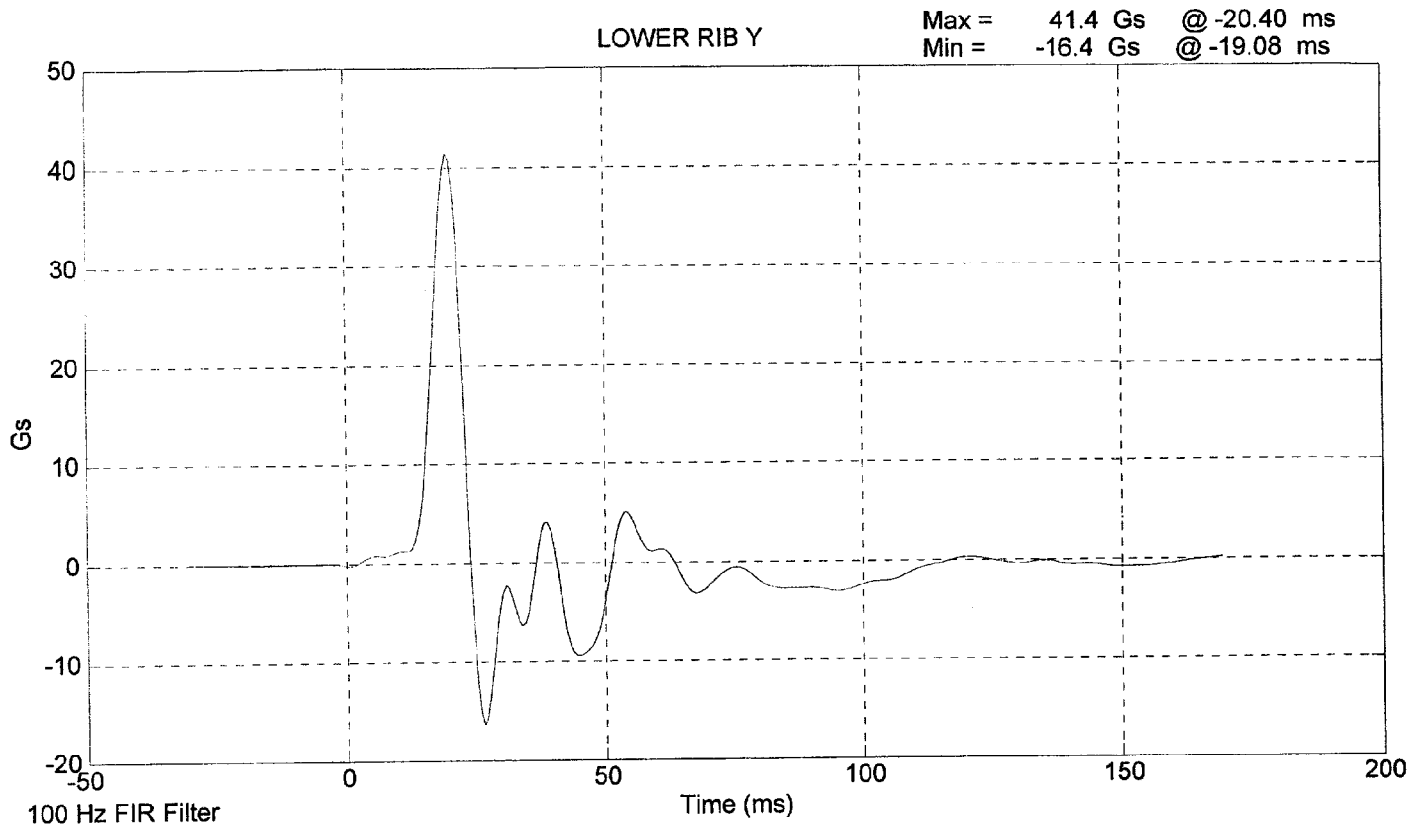
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.1
RELATIVE HUMIDITY (%)	10 - 70	31
PROBE SPEED (m/s)	4.27 - 4.33	4.32
UPPER RIB (g's)	37 - 46	38.8
LOWER RIB (g's)	37 - 46	41.4
LOWER SPINE (g's)	15 - 22	22.1

REMARKS: None

SID 268 Thorax Impact Test @ 4.3221 m/s







**LATERAL PELVIS IMPACT TEST
PRE-TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 268

Calspan Sequential Test Number: 4

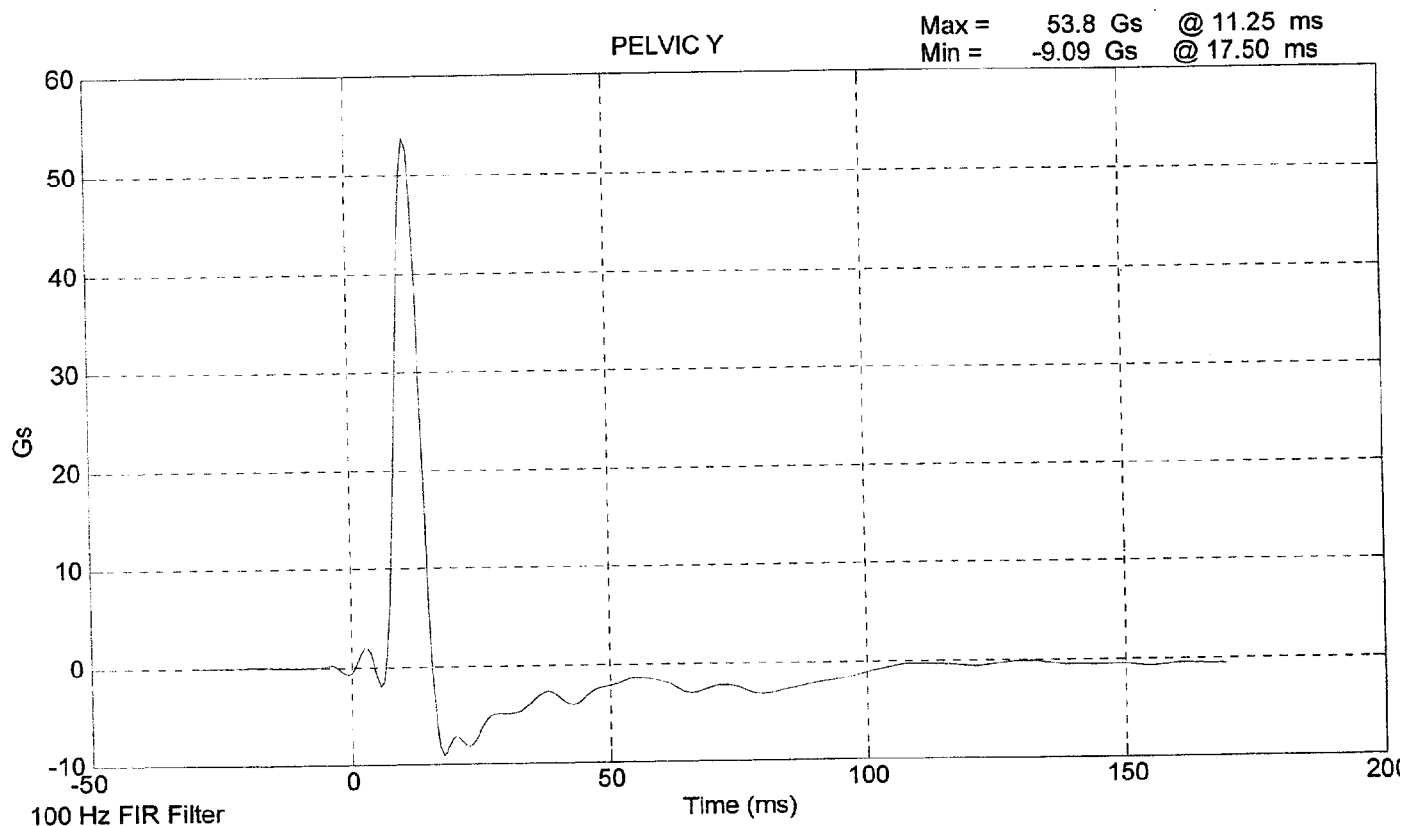
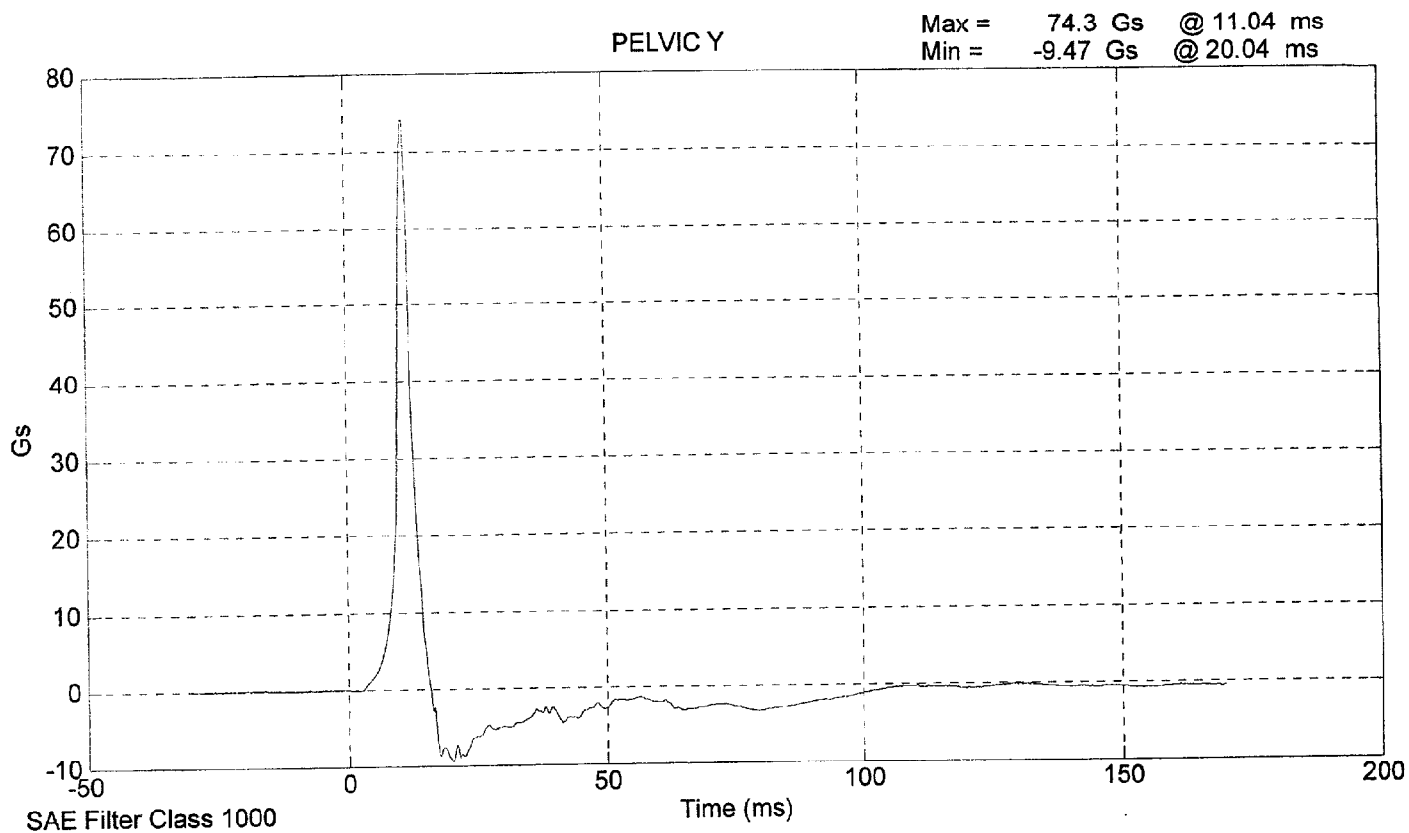
Date: 1/21/99

Laboratory Technician: B. Swiecicki, G. Serbinowski

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.1
RELATIVE HUMIDITY (%)	10 - 70	31
PROBE SPEED (m/s)	4.27 - 4.33	4.32
PELVIS ACCELERATION (g's)	40 - 60	53.8

REMARKS: None

SID 268 Pelvic Impact Test @ 4.3221 m/s



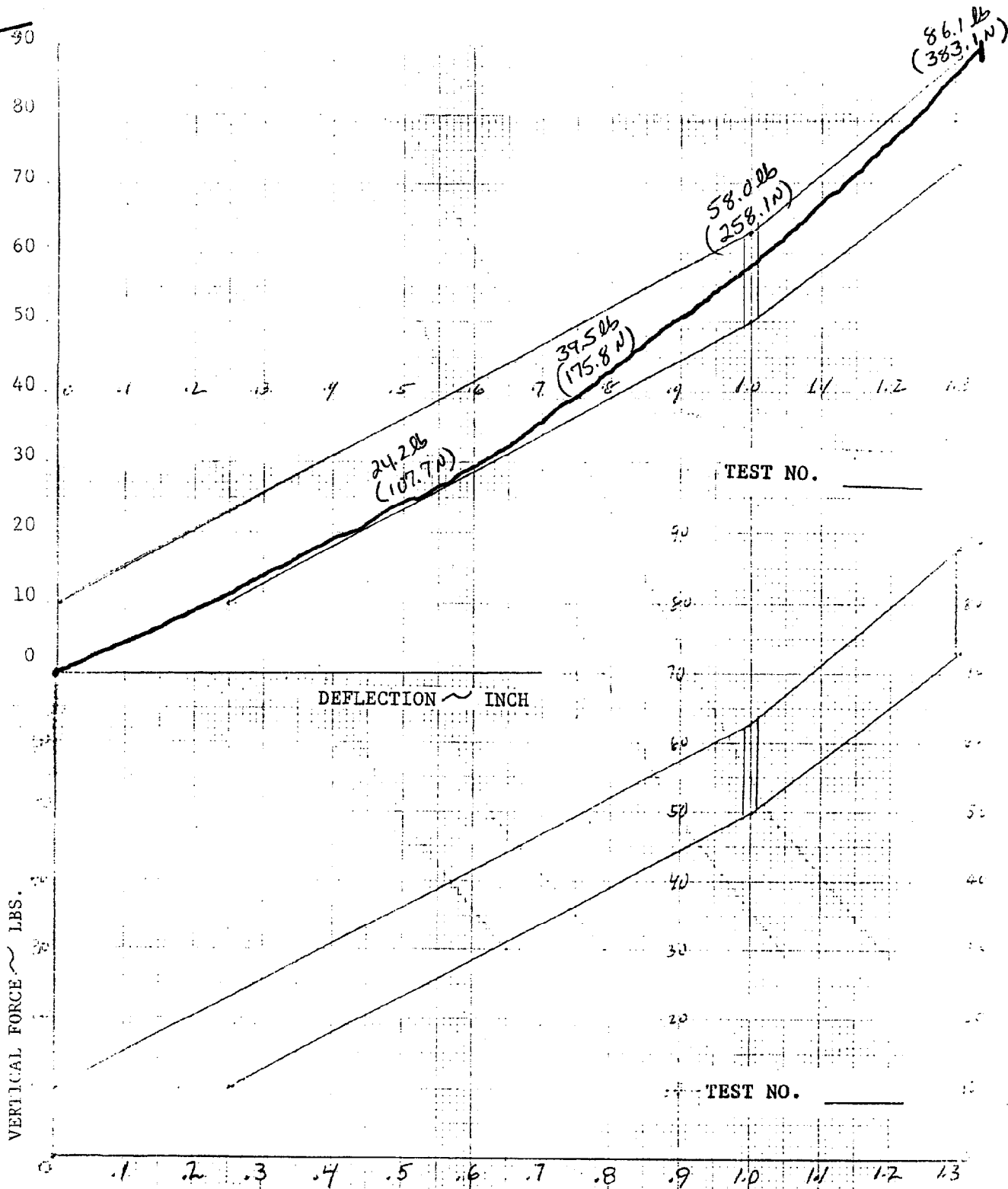
ABDOMINAL COMPRESSION TEST**PRE-TEST**

(Test not required for SID certification)

CONFIGURED FOR LEFT SIDE IMPACTSID Serial No.: 268Calspan Sequential Test Number: 4Date: 1/21/99Laboratory Technician: B. Swiecicki, G. Serbinowski

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.1
RELATIVE HUMIDITY (%)	10 - 70	31
FORCE @ 13 mm (N)	104 - 162	107.7
FORCE @ 19 mm (N)	163 - 221	175.8
FORCE @ 25 mm (N)	222 - 280	258.1
FORCE @ 33 mm (N)	325 - 391	383.1

REMARKS: None



DUMMY S/R 268
 DATE 1/21/99
 CONTRACT AUTHORIZATION _____
 TEMP. 70 HUMIDITY 31
 PERFORMED BY SS + SS

PART 572
 ABDOMEN STATIC PRESS
 DOT - 13 DEC. '77

LUMBAR FLEXION TEST
PRE-TEST
(Test not required for SID certification)

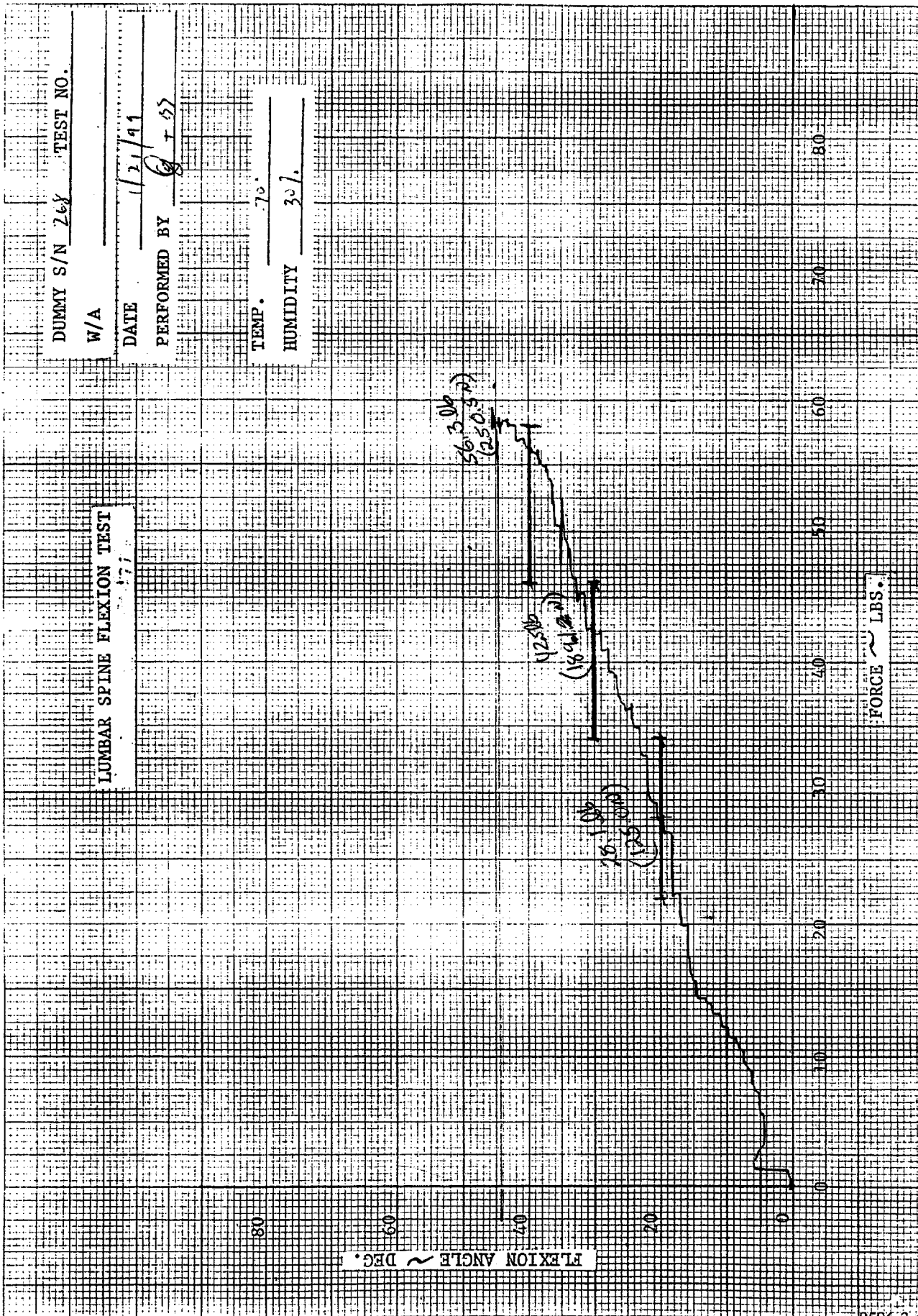
CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 268
Date: 1/21/99

Calspan Sequential Test Number: 4
Laboratory Technician: B. Swiecicki, G. Serbinowski

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.1
RELATIVE HUMIDITY (%)	10 - 70	31
FORCE @ 0° (N)	0 - 26.7	0
FORCE @ 20° (N)	97.8 - 151.2	125.0
FORCE @ 30° (N)	151.2 - 204.6	189.1
FORCE @ 40° (N)	204.6 - 258	250.5
RETURN ANGLE	12° max.	5.0

REMARKS: None



PRE-TEST DUMMY INSPECTION LIST

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 268

Calspan Sequential Test Number: 4

Date: 1/21/99

Laboratory Technician: B. Swiecicki, G. Serbinowski

PART	ITEMS CHECKED	COMMENTS
SKIN	VISUAL INSPECTION	OK
HEAD	VISUAL, BALLAST, ACCELEROMETER MOUNT	OK
NECK	VISUAL, CABLE TORQUE	OK
SPINE BOX	VISUAL, BALLAST, WELDMENT, ACCELEROMETER MOUNT	OK
RIB CAGE	VISUAL, MEASURE, STIFFENERS	OK
STERNUM	VISUAL	OK
LUMBAR SPINE	VISUAL	OK
ABDOMEN	VISUAL	OK
PELVIS	VISUAL, PALPATE, ACCELEROMETER MOUNT	OK
UPPER LEGS	VISUAL	OK
KNEES	VISUAL, STOPS, INSERTS	OK
LOWER LEGS	VISUAL, RANGE OF MOTION	OK
ANKLES	VISUAL, RANGE OF MOTION	OK
FEET	VISUAL, RANGE OF MOTION	OK
JOINTS	1 TO 2 g RANGE	OK
OTHER	NONE	-

REMARKS: None

CALIBRATION TEST RESULTS
PRE-TEST

SID NO.: 015

CONFIGURED FOR LEFT SIDE IMPACT

**CALIBRATION TEST RESULTS SUMMARY
PRE-TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 015

Calspan Sequential Test Number: 5

Date: 1/22/99

Laboratory Technician: B. Swiecicki, G. Serbinowski

TEST	COMMENTS
EXTERNAL DIMENSIONS	Passed all requirements.
THORACIC SHOCK ABSORBER TEST	Passed all requirements.
LATERAL THORAX IMPACT TEST	Passed all requirements.
LATERAL PELVIS IMPACT TEST	Passed all requirements.
ABDOMINAL COMPRESSION TEST*	Passed all requirements.
LUMBAR FLEXION TEST*	Passed all requirements.

* Test not required for SID certification.

REMARKS: None

EXTERNAL DIMENSIONS**PRE-TEST****CONFIGURED FOR LEFT SIDE IMPACT**SID Serial No.: 015Calspan Sequential Test Number: 5Date: 1/22/99Laboratory Technician: B. Swiecicki, G. Serbinowski

TEST PARAMETER	SPECIFICATION	TEST RESULTS
SH- Seated Height (mm)	889 - 909	907
RH- Rib Height (mm)	502 - 520	513
HP- Hip Pivot Height (mm)	99 ref.	99
RD- Rib from Back Line (mm)	229 - 241	236
KH- Knee Pivot from Back Line (mm)	511 - 526	516
KV- Knee Pivot to Floor (mm)	490 - 505	492
HW- Hip Width (mm)	356 - 391	366

REMARKS: None

**LATERAL THORAX IMPACT TEST
PRE-TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 015

Calspan Sequential Test Number: 5

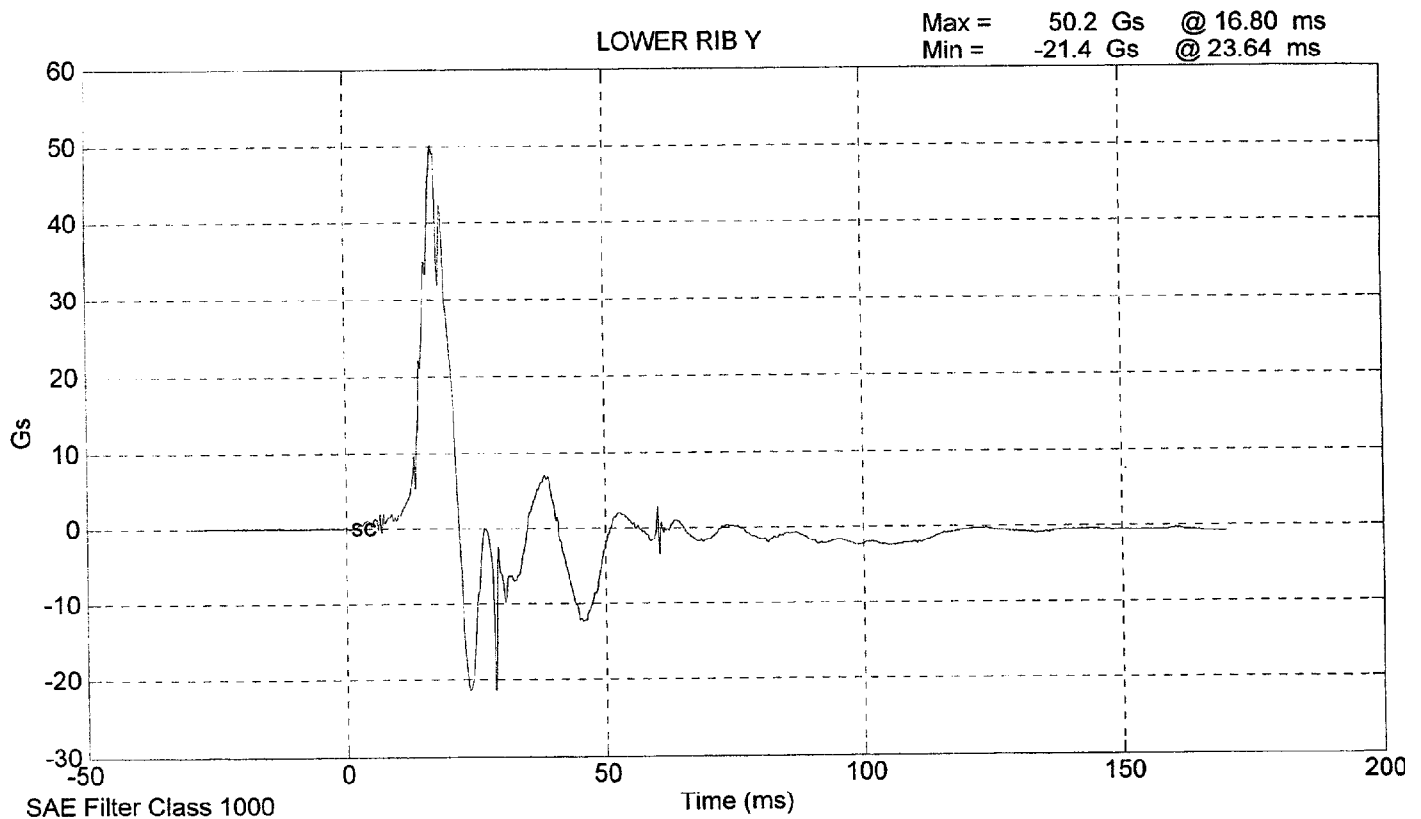
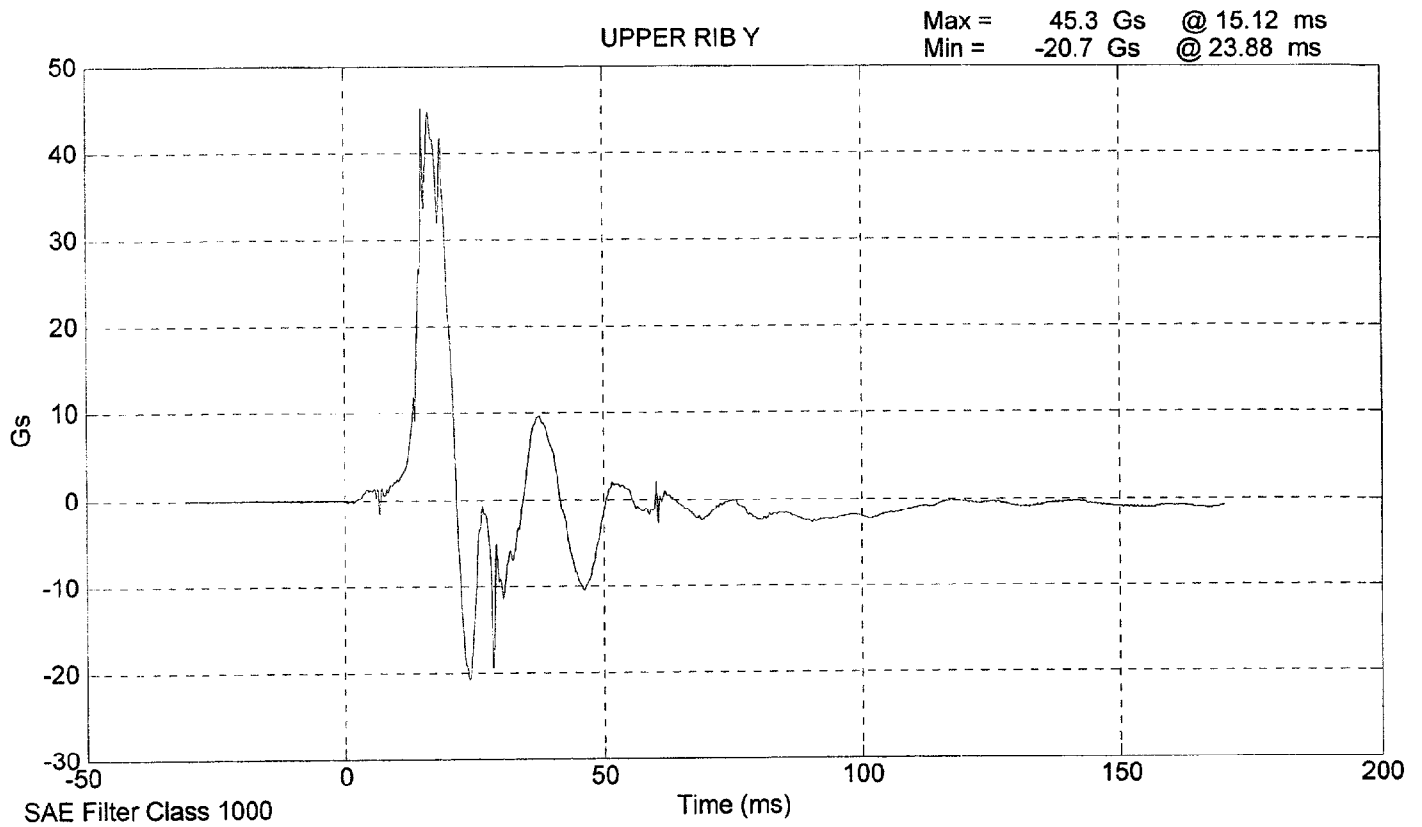
Date: 1/22/99

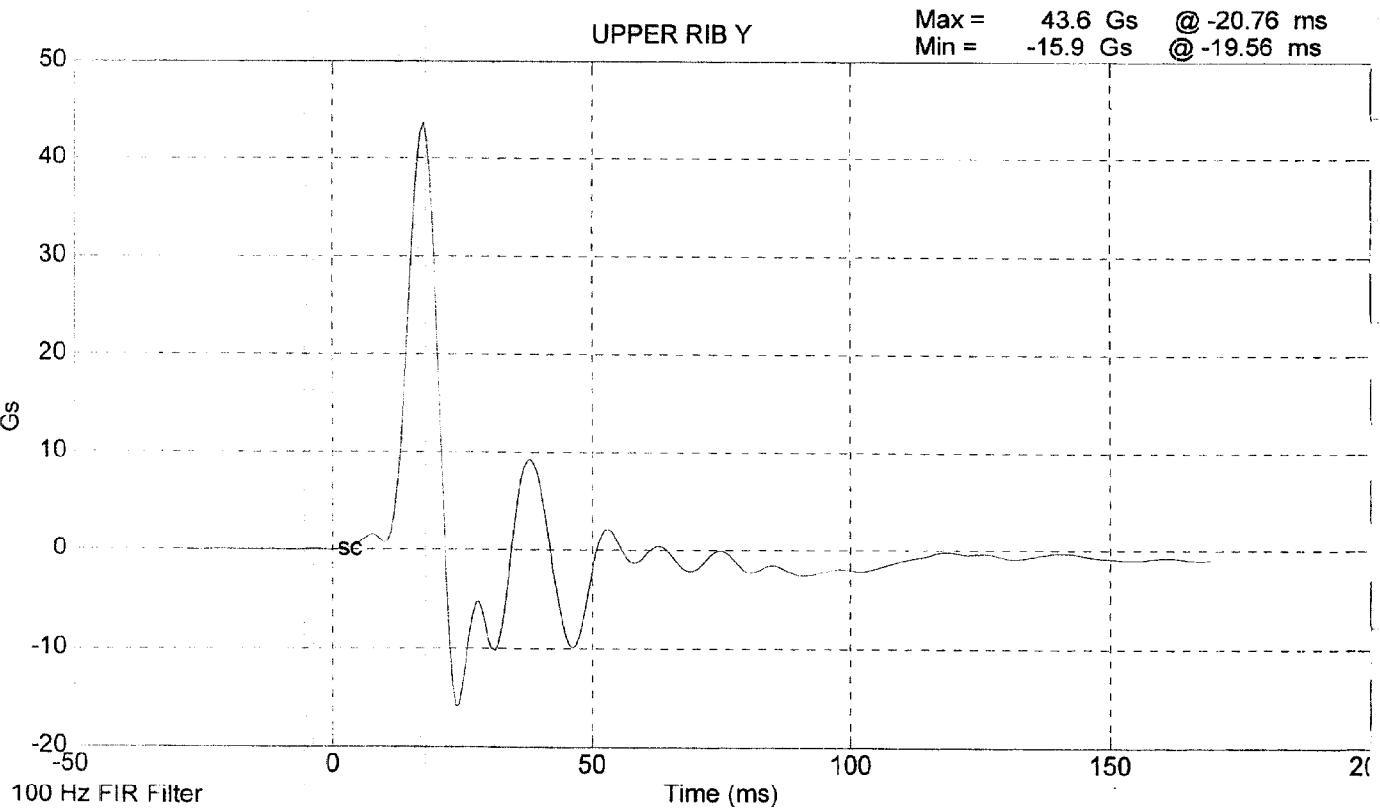
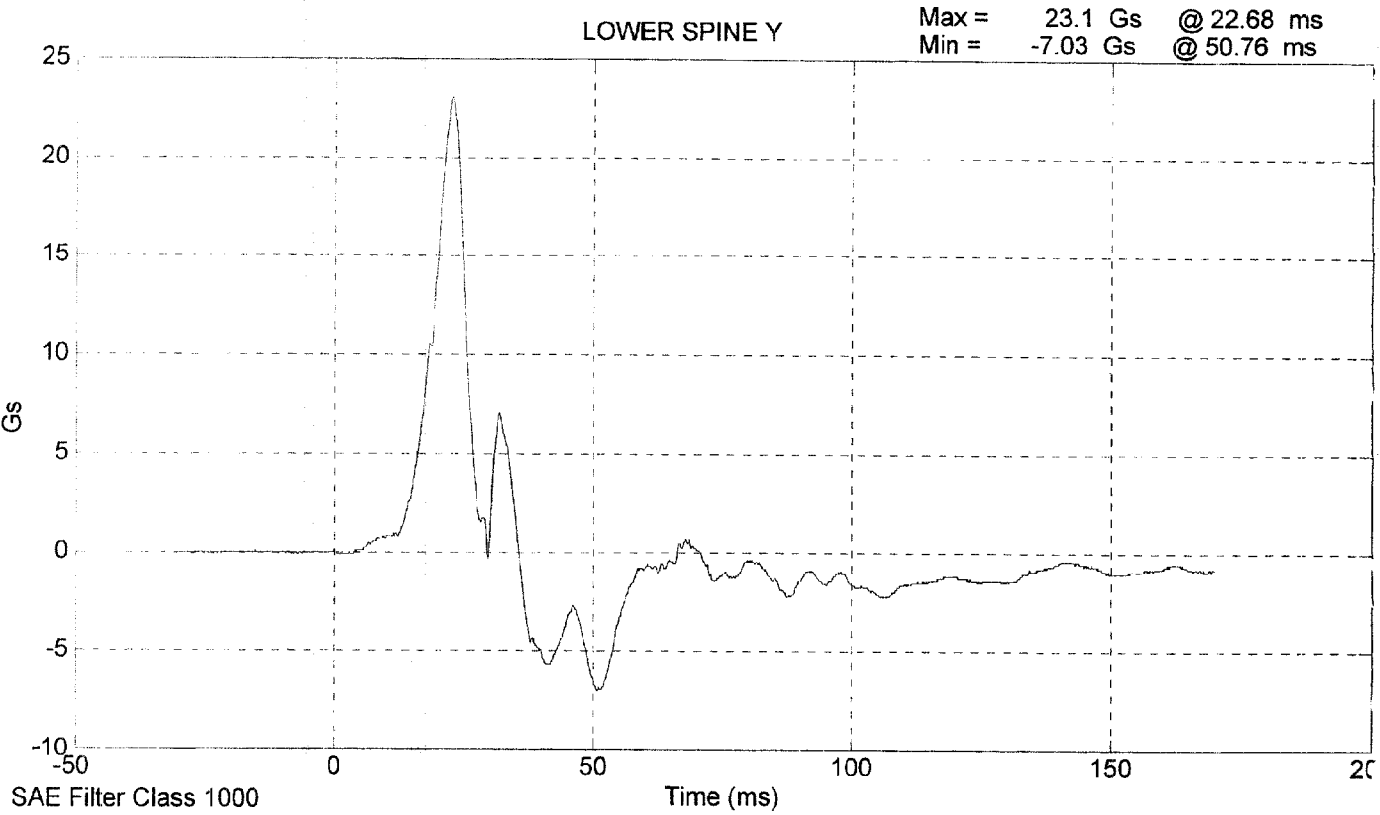
Laboratory Technician: B. Swiecicki, G. Serbinowski

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.1
RELATIVE HUMIDITY (%)	10 - 70	25
PROBE SPEED (m/s)	4.27 - 4.33	4.30
UPPER RIB (g's)	37 - 46	43.6
LOWER RIB (g's)	37 - 46	45.0
LOWER SPINE (g's)	15 - 22	21.9

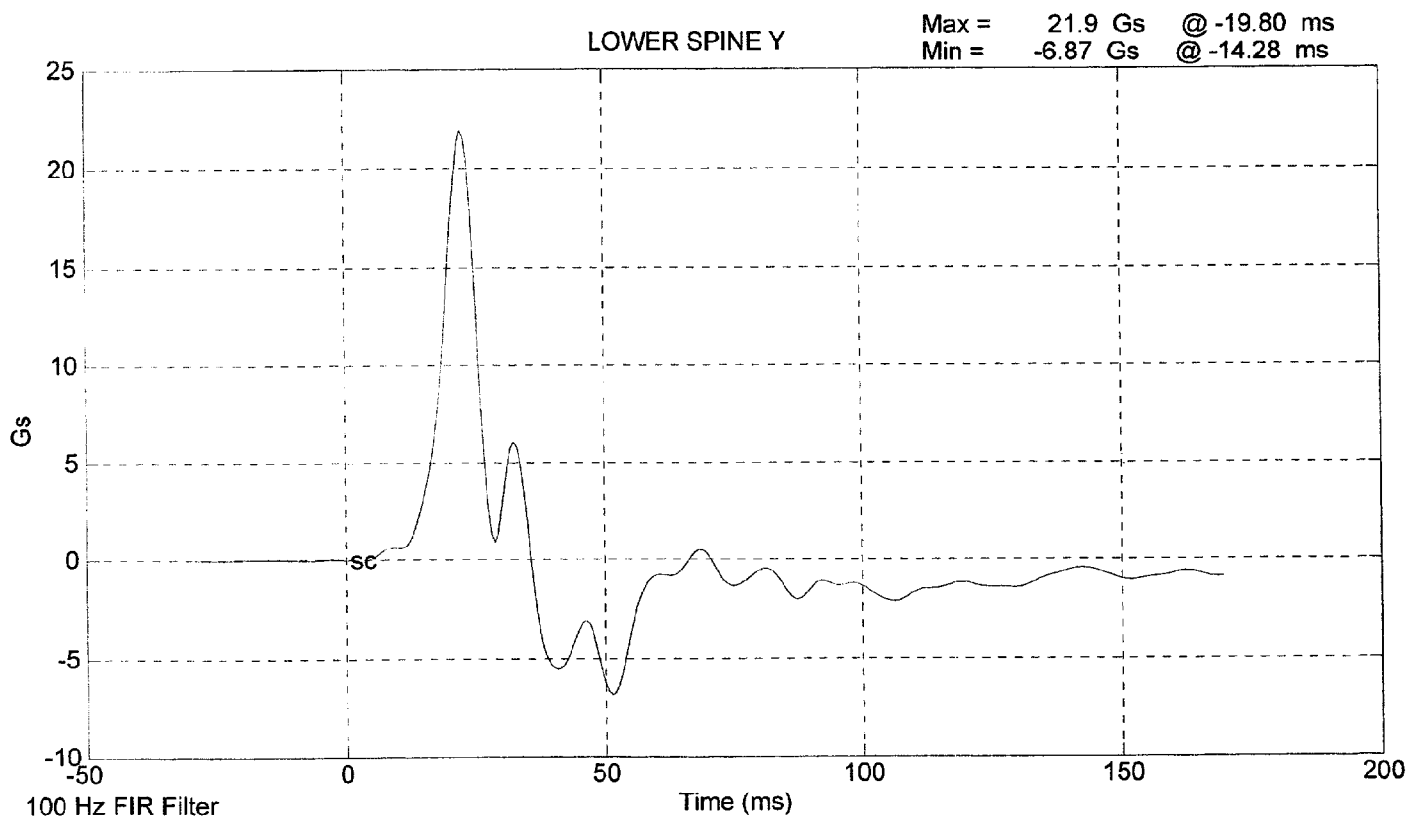
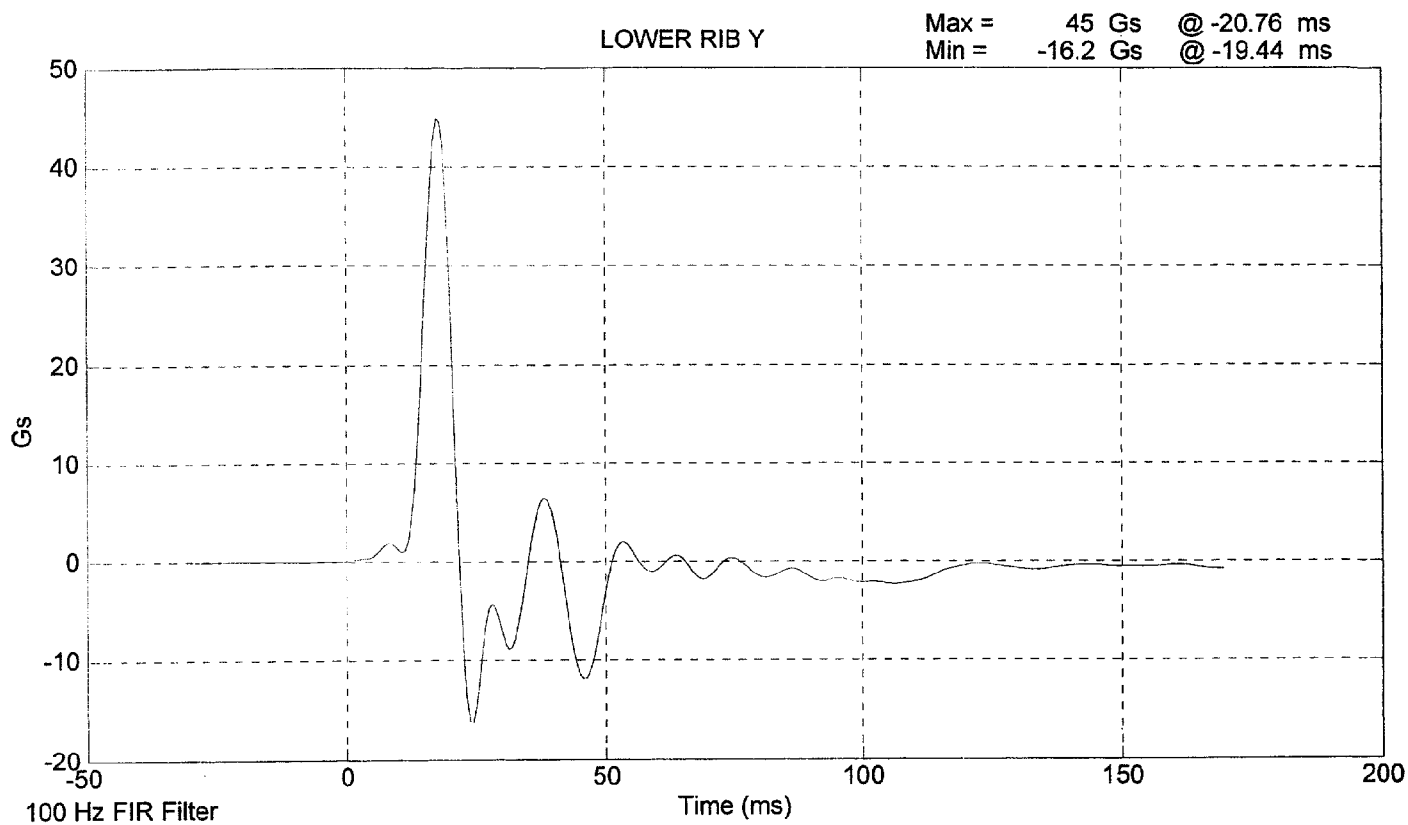
REMARKS: None

SID 015 THORAX IMPACT TEST @ 4.2977 m/s





SID 015 THORAX IMPACT TEST @ 4.2977 m/s



**LATERAL PELVIS IMPACT TEST
PRE-TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 015

Calspan Sequential Test Number: 5

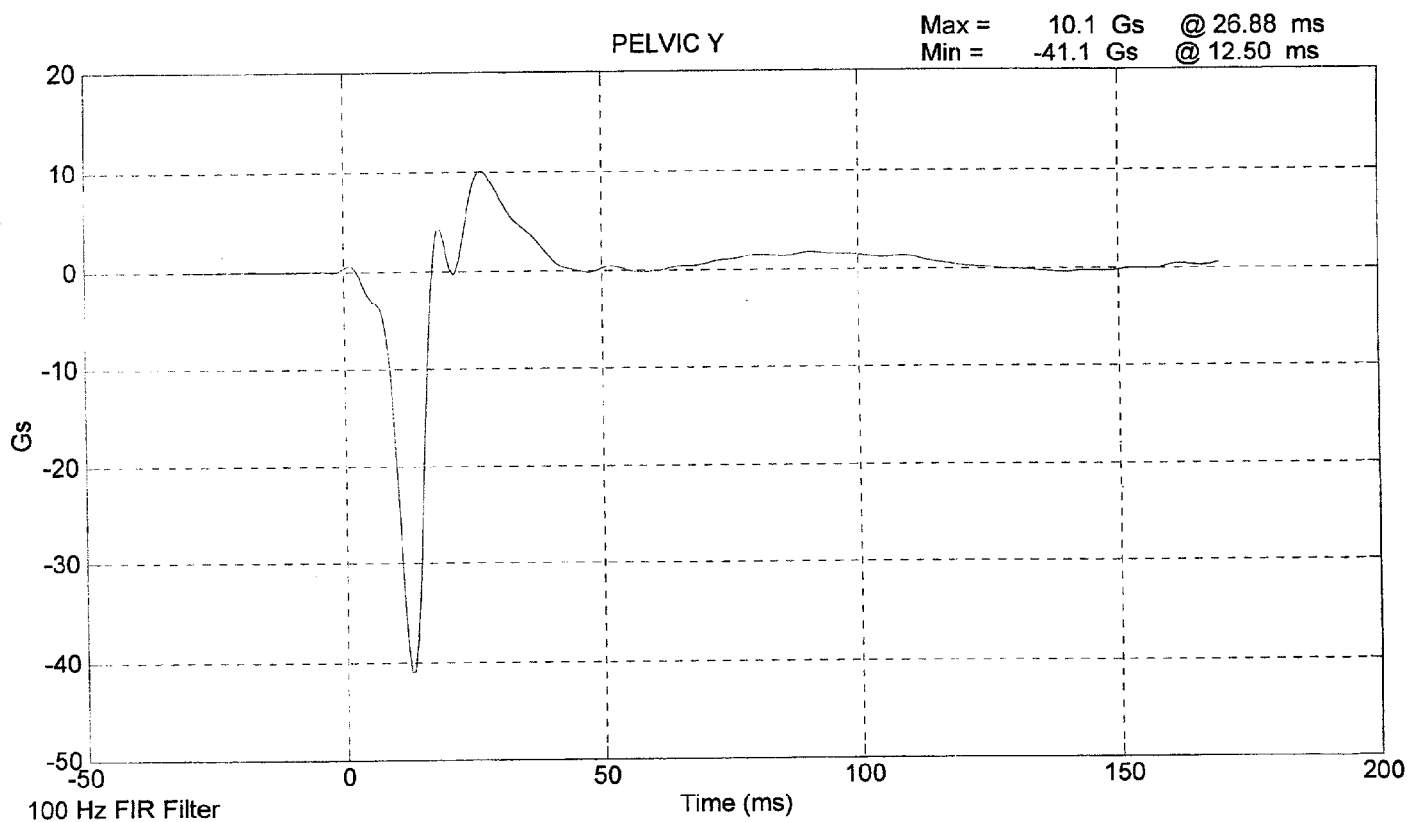
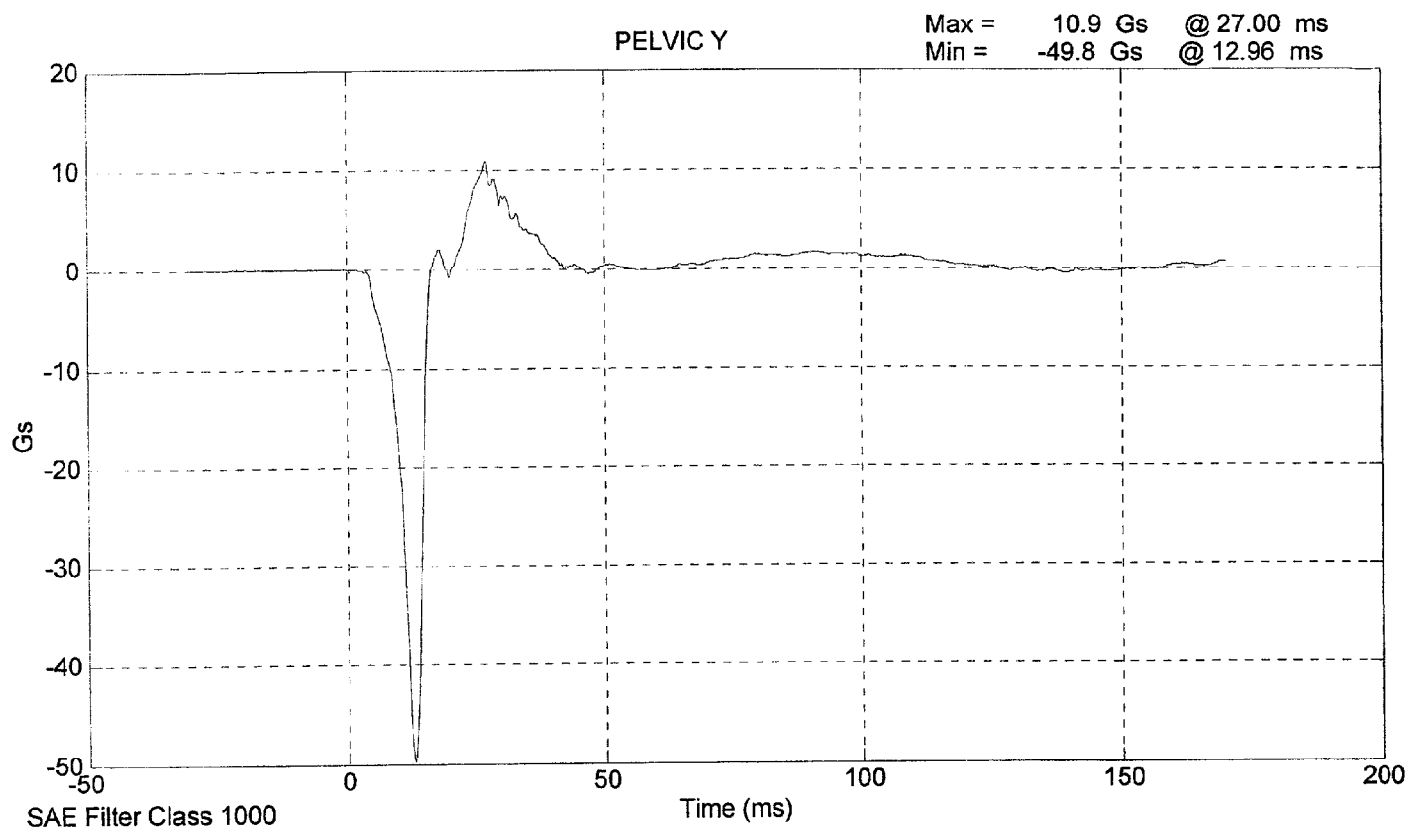
Date: 1/22/99

Laboratory Technician: B. Swiecicki, G. Serbinowski

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.1
RELATIVE HUMIDITY (%)	10 - 70	25
PROBE SPEED (m/s)	4.27 - 4.33	4.29
PELVIS ACCELERATION (g's)	40 - 60	41.1

REMARKS: None

SID 015 Pelvic Impact Test @ 4.2916 m/s



ABDOMINAL COMPRESSION TEST**PRE-TEST**

(Test not required for SID certification)

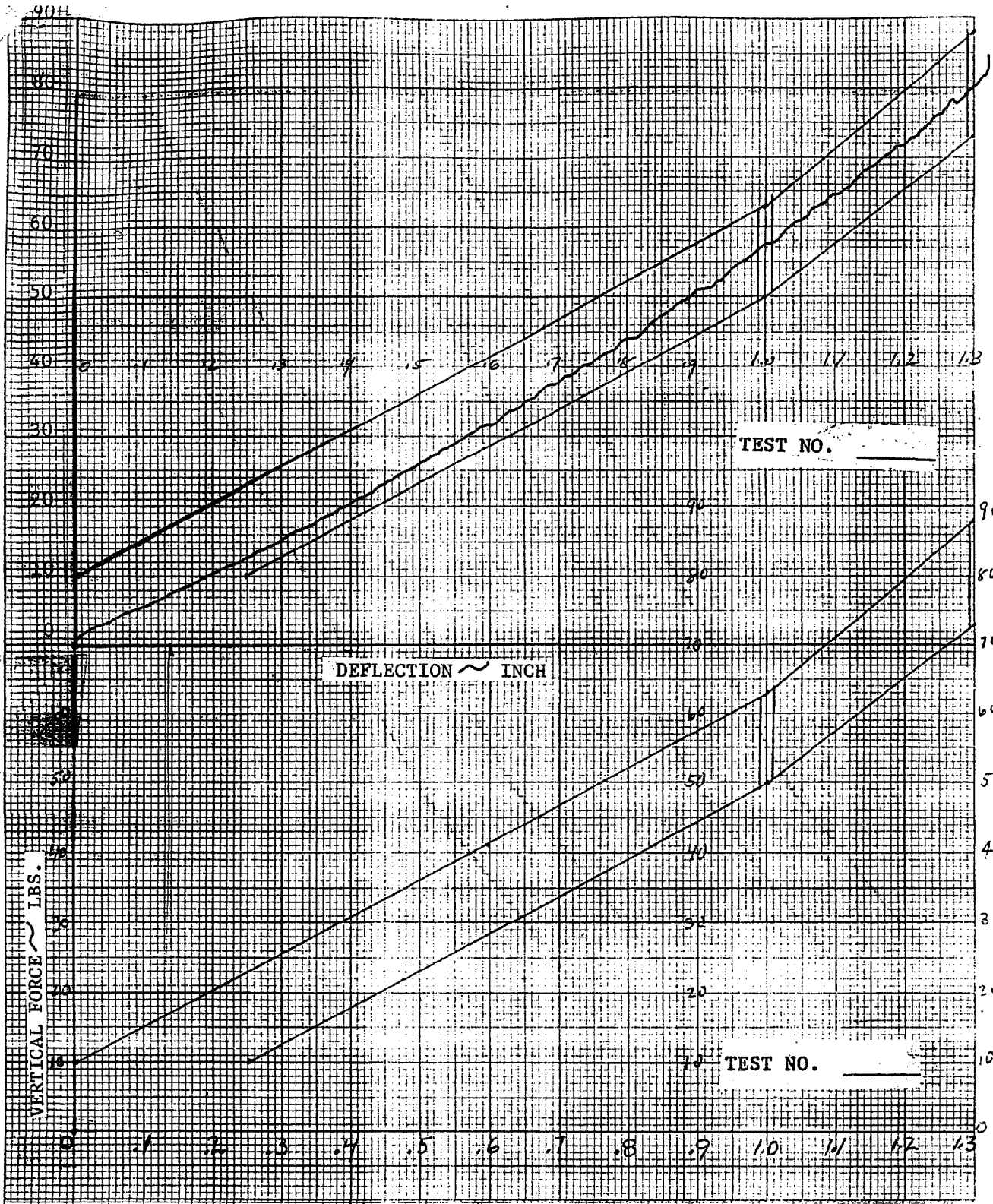
CONFIGURED FOR LEFT SIDE IMPACTSID Serial No.: 015Calspan Sequential Test Number: 5Date: 1/21/99Laboratory Technician: B. Swiecicki, G. Serbinowski

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.1
RELATIVE HUMIDITY (%)	10 - 70	25
FORCE @ 13 mm (N)	104 - 162	118
FORCE @ 19 mm (N)	163 - 221	180.6
FORCE @ 25 mm (N)	222 - 280	255.8
FORCE @ 33 mm (N)	325 - 391	355.4

REMARKS: None

DEFENSE RESEARCH AND ENGINEERING AGENCY
WASHINGTON, D.C. 20305

170005
12 JAN 1978



DUMMY S/N	015
DATE	1/21/99
CONTRACT AUTHORIZATION	
TEMP	70
HUMIDITY	25%
PERFORMED BY	(C) + BS
PART 572 ABDOMEN STATIC PRESS DOT - 13 DEC. '77	

LUMBAR FLEXION TEST
PRE-TEST
(Test not required for SID certification)

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 015
Date: 1/21/99

Calspan Sequential Test Number: 5
Laboratory Technician: B. Swiecicki, G. Serbinowski

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.1
RELATIVE HUMIDITY (%)	10 - 70	25
FORCE @ 0° (N)	0 - 26.7	0
FORCE @ 20° (N)	97.8 - 151.2	141.2
FORCE @ 30° (N)	151.2 - 204.6	187.9
FORCE @ 40° (N)	204.6 - 258	242.4
RETURN ANGLE	12° max.	9.8

REMARKS: None

DUMMY S/N 015 TEST NO.

W/A

DATE 1-21-79

PERFORMED BY BS (15)

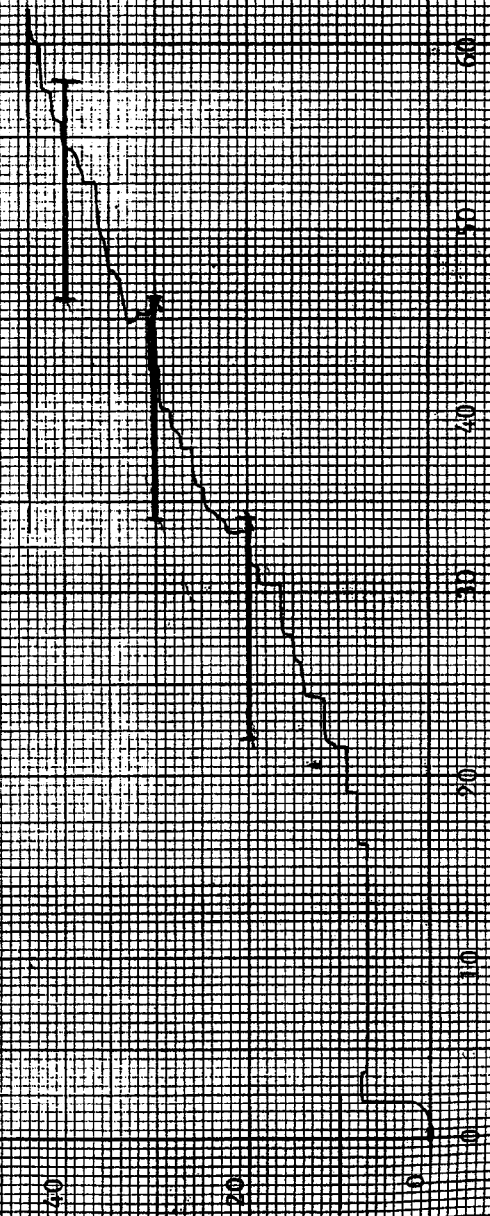
TEMP. 76.

HUMIDITY 25%

LUMBAR SPINE FLEXION TEST

FLEXION ANGLE ~ DEG.

FORCE ~ LBS.



PRE-TEST DUMMY INSPECTION LIST

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 015

Calspan Sequential Test Number: 5

Date: 1/22/99

Laboratory Technician: B. Swiecicki, G. Serbinowski

PART	ITEMS CHECKED	COMMENTS
SKIN	VISUAL INSPECTION	OK
HEAD	VISUAL, BALLAST, ACCELEROMETER MOUNT	OK
NECK	VISUAL, CABLE TORQUE	OK
SPINE BOX	VISUAL, BALLAST, WELDMENT, ACCELEROMETER MOUNT	OK
RIB CAGE	VISUAL, MEASURE, STIFFENERS	OK
STERNUM	VISUAL	OK
LUMBAR SPINE	VISUAL	OK
ABDOMEN	VISUAL	OK
PELVIS	VISUAL, PALPATE, ACCELEROMETER MOUNT	OK
UPPER LEGS	VISUAL	OK
KNEES	VISUAL, STOPS, INSERTS	OK
LOWER LEGS	VISUAL, RANGE OF MOTION	OK
ANKLES	VISUAL, RANGE OF MOTION	OK
FEET	VISUAL, RANGE OF MOTION	OK
JOINTS	1 TO 2 g RANGE	OK
OTHER	NONE	-

REMARKS: None

**CALIBRATION TEST RESULTS
POST TEST**

SID NO.: 268

CONFIGURED FOR LEFT SIDE IMPACT

**CALIBRATION TEST RESULTS SUMMARY
POST TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 268

Calspan Sequential Test Number: 5

Date: 1/22/99

Laboratory Technician: B. Swiecicki, G. Serbinowski

TEST	COMMENTS
EXTERNAL DIMENSIONS	Passed all requirements.
LATERAL THORAX IMPACT TEST	Passed all requirements.
LATERAL PELVIS IMPACT TEST	Passed all requirements.
ABDOMINAL COMPRESSION TEST*	Passed all requirements.
LUMBAR FLEXION TEST*	Passed all requirements.

* Test not required for SID certification.

REMARKS: None

**EXTERNAL DIMENSIONS
POST TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 268

Calspan Sequential Test Number: 5

Date: 1/28/99

Laboratory Technician: B. Swiecicki, G. Serbinowski

TEST PARAMETER	SPECIFICATION	TEST RESULTS
SH- Seated Height (mm)	889 - 909	899
RH- Rib Height (mm)	502 - 520	516
HP- Hip Pivot Height (mm)	99 ref.	99
RD- Rib from Back Line (mm)	229 - 241	231
KH- Knee Pivot from Back Line (mm)	511 - 526	518
KV- Knee Pivot to Floor (mm)	490 - 505	495
HW- Hip Width (mm)	356 - 391	371

REMARKS: None

**LATERAL THORAX IMPACT TEST
POST TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 268

Calspan Sequential Test Number: 5

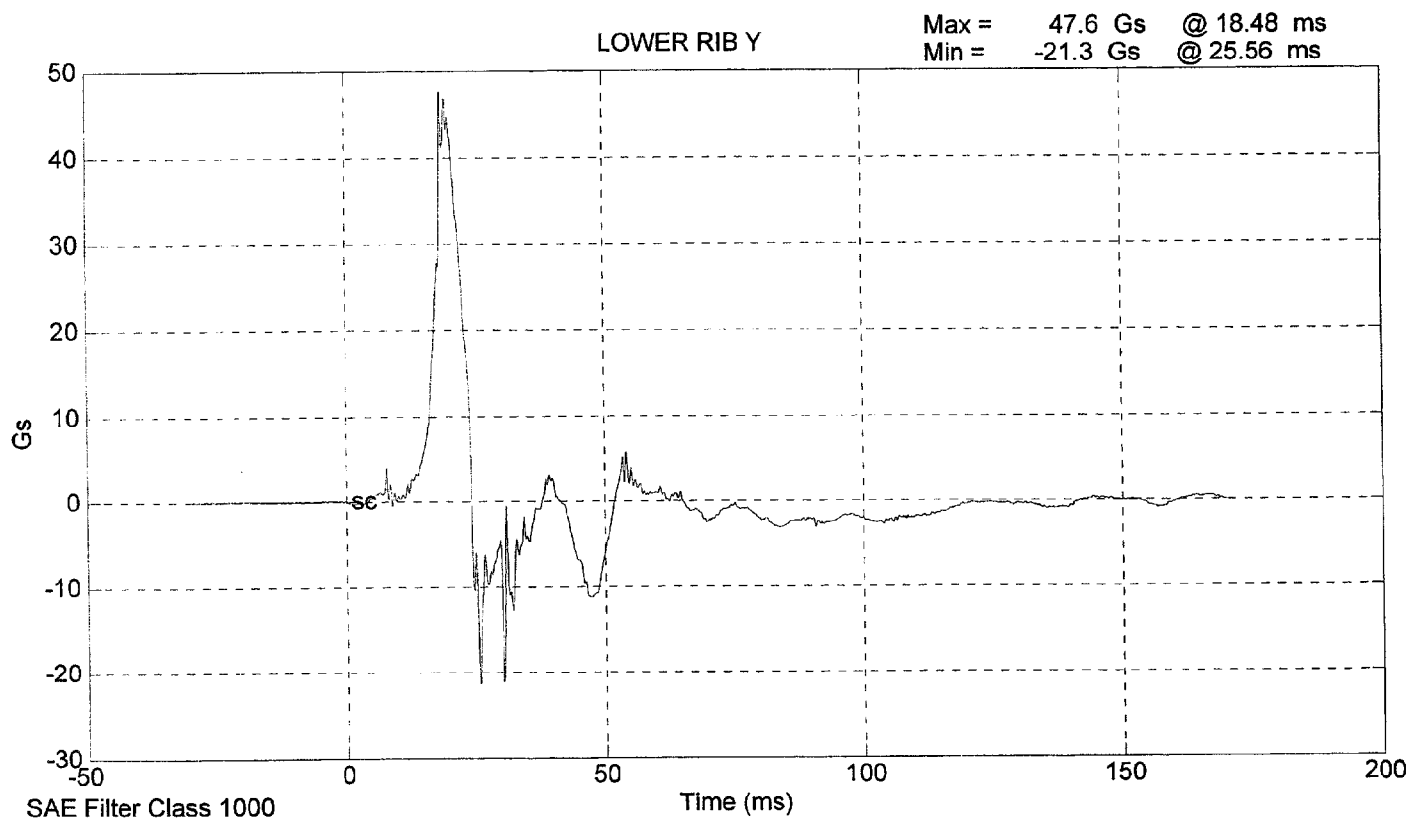
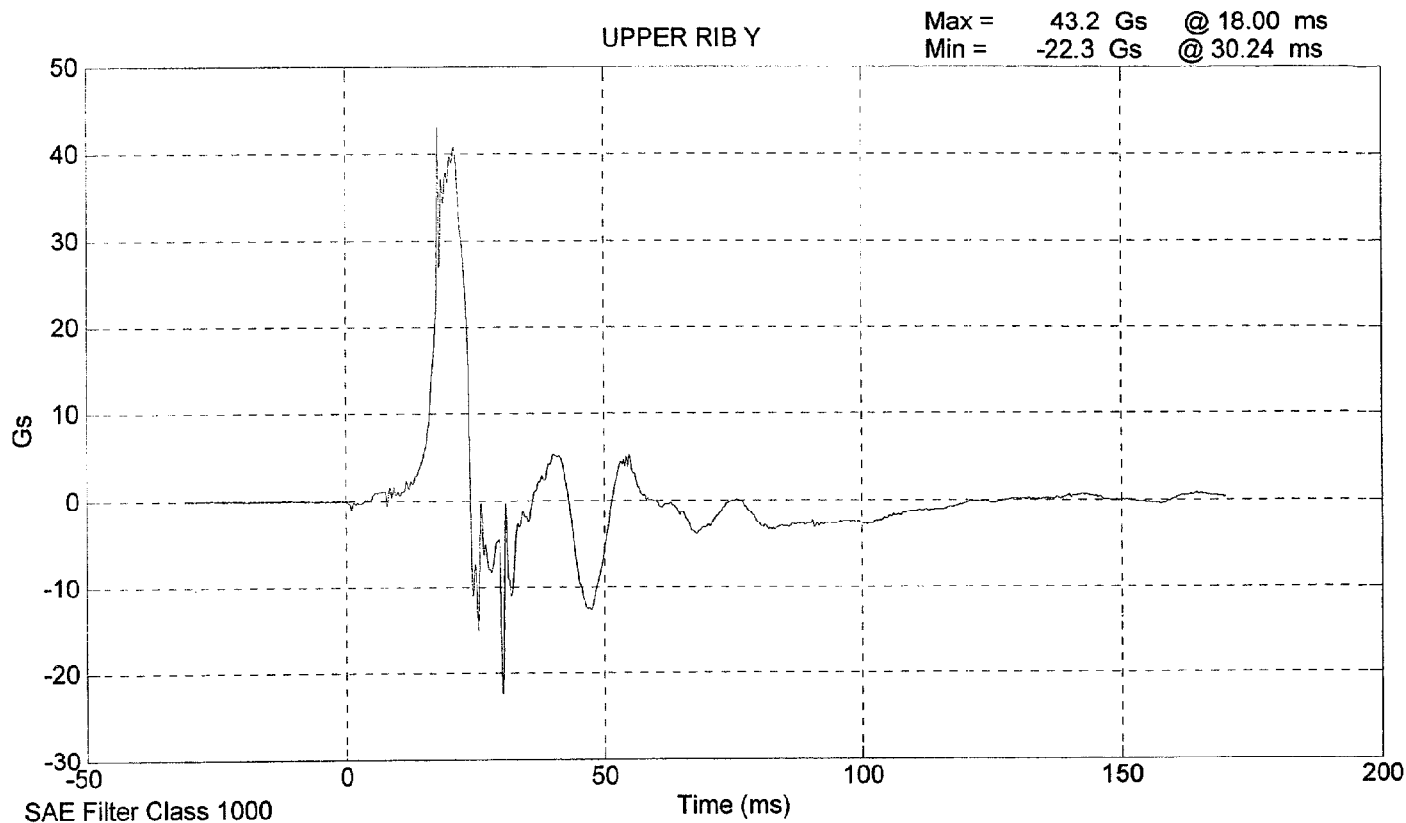
Date: 1/28/99

Laboratory Technician: B. Swiecicki, G. Serbinowski

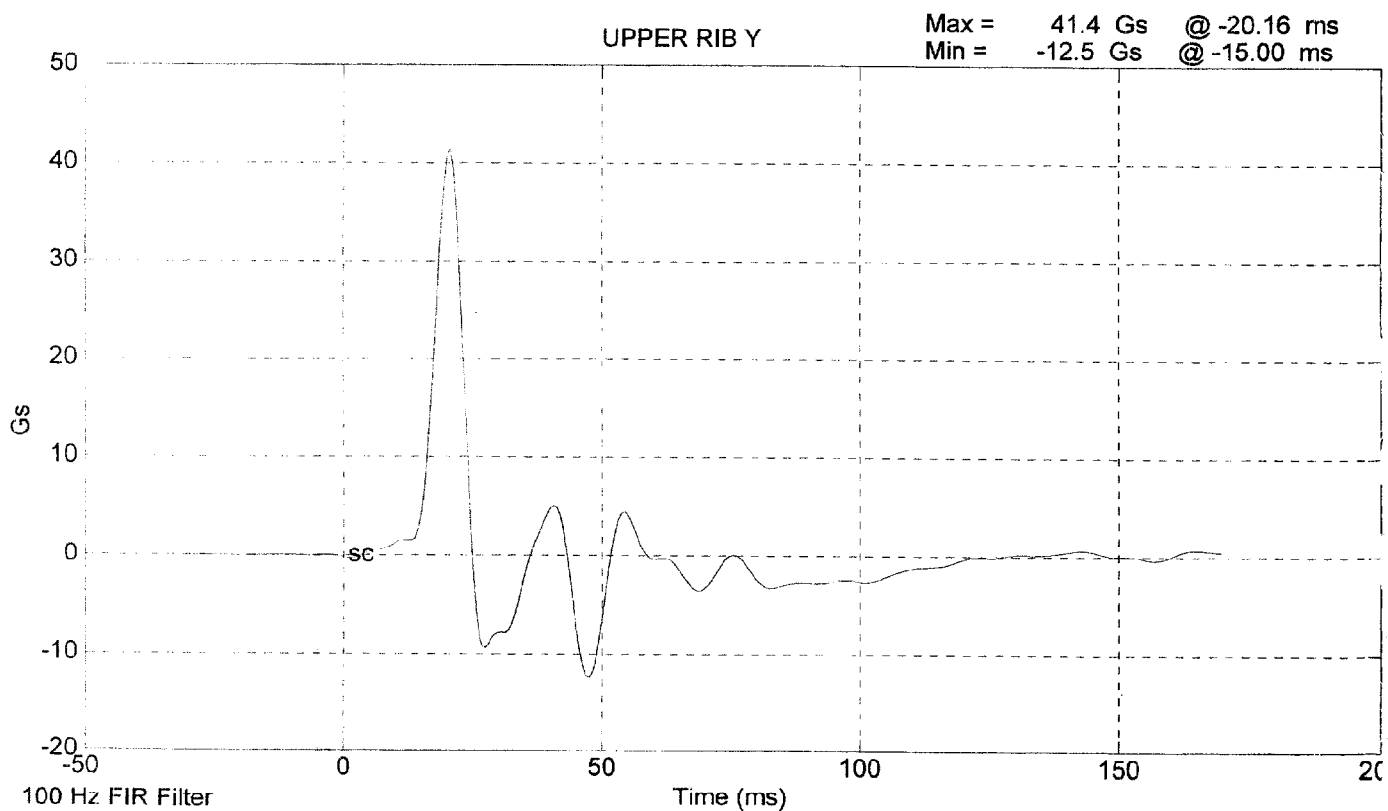
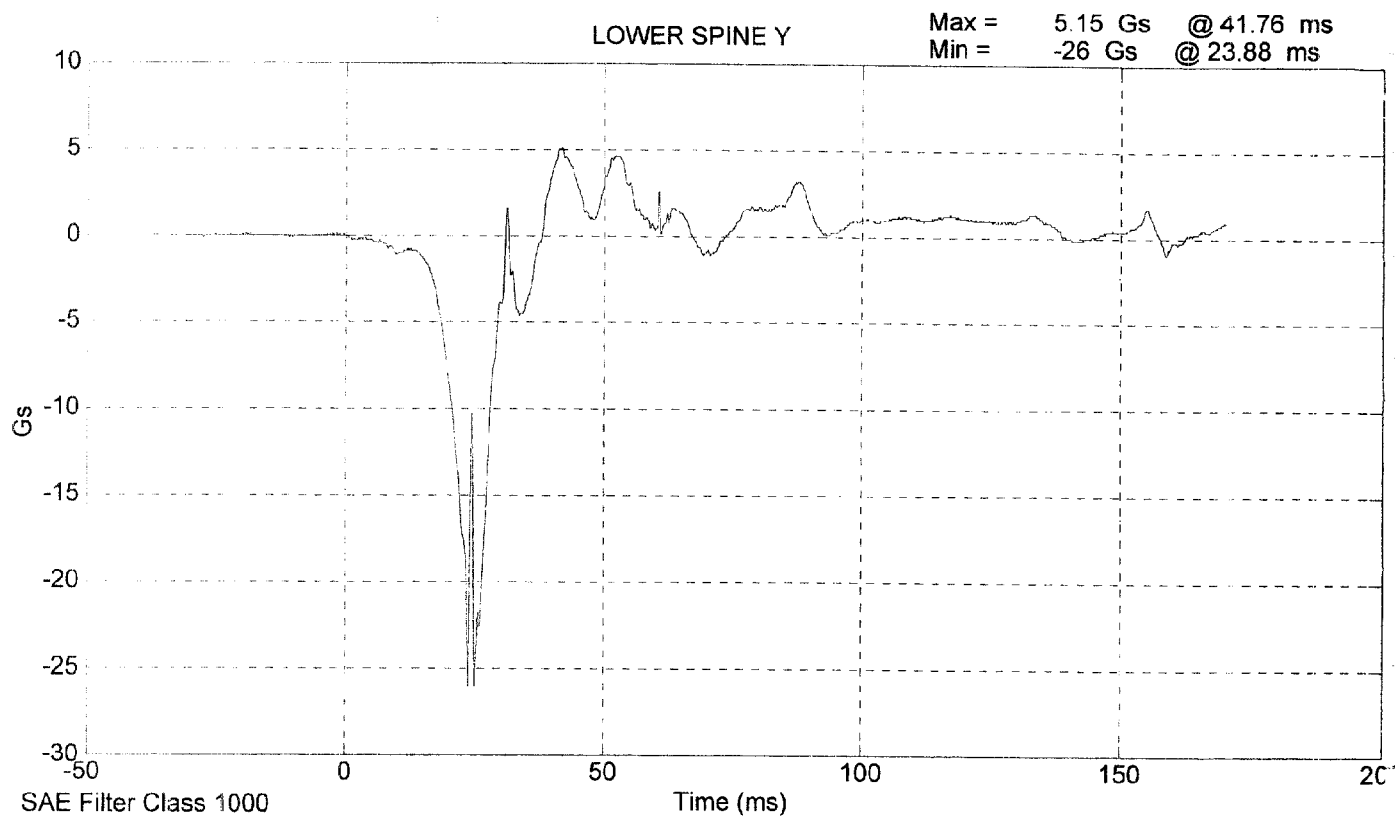
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	22.8
RELATIVE HUMIDITY (%)	10 - 70	22
PROBE SPEED (m/s)	4.27 - 4.33	4.28
UPPER RIB (g's)	37 - 46	41.40
LOWER RIB (g's)	37 - 46	43.56
LOWER SPINE (g's)	15 - 22	21.44

REMARKS: None

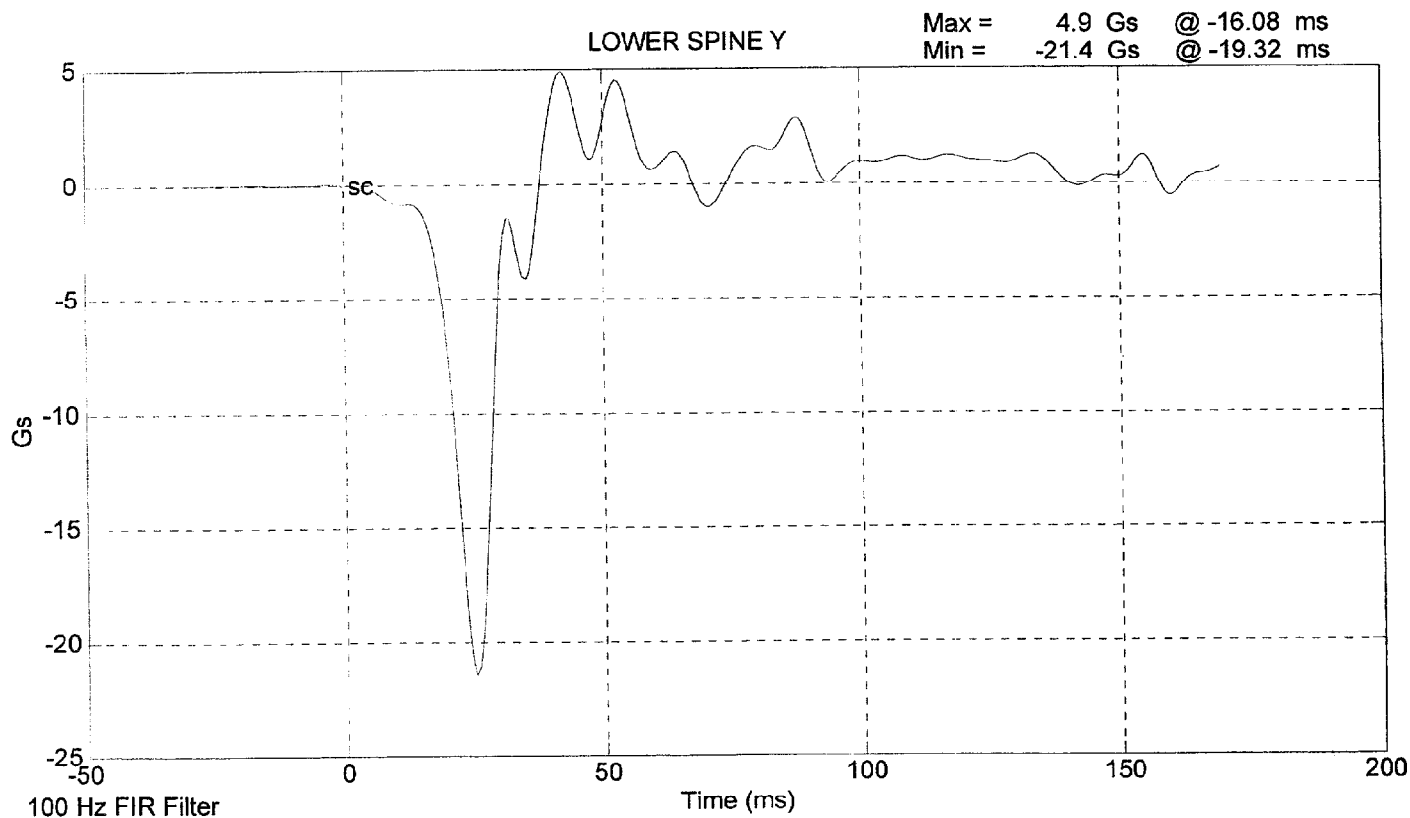
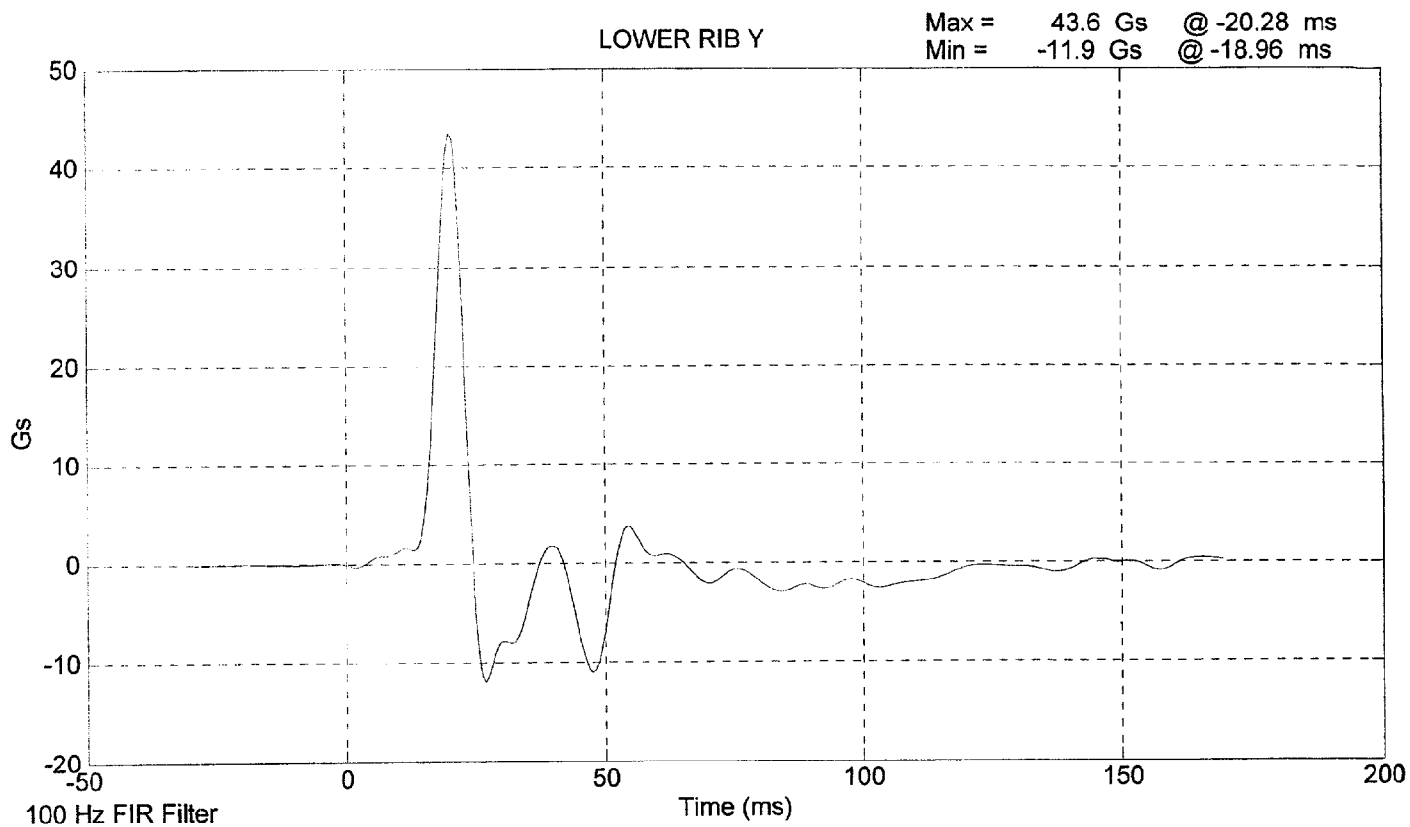
SID 268 THORAX IMPACT TEST @ 4.2763 m/s



SID 268 THORAX IMPACT TEST @ 4.2763 m/s



SID 268 THORAX IMPACT TEST @ 4.2763 m/s



**LATERAL PELVIS IMPACT TEST
POST TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 268

Calspan Sequential Test Number: 5

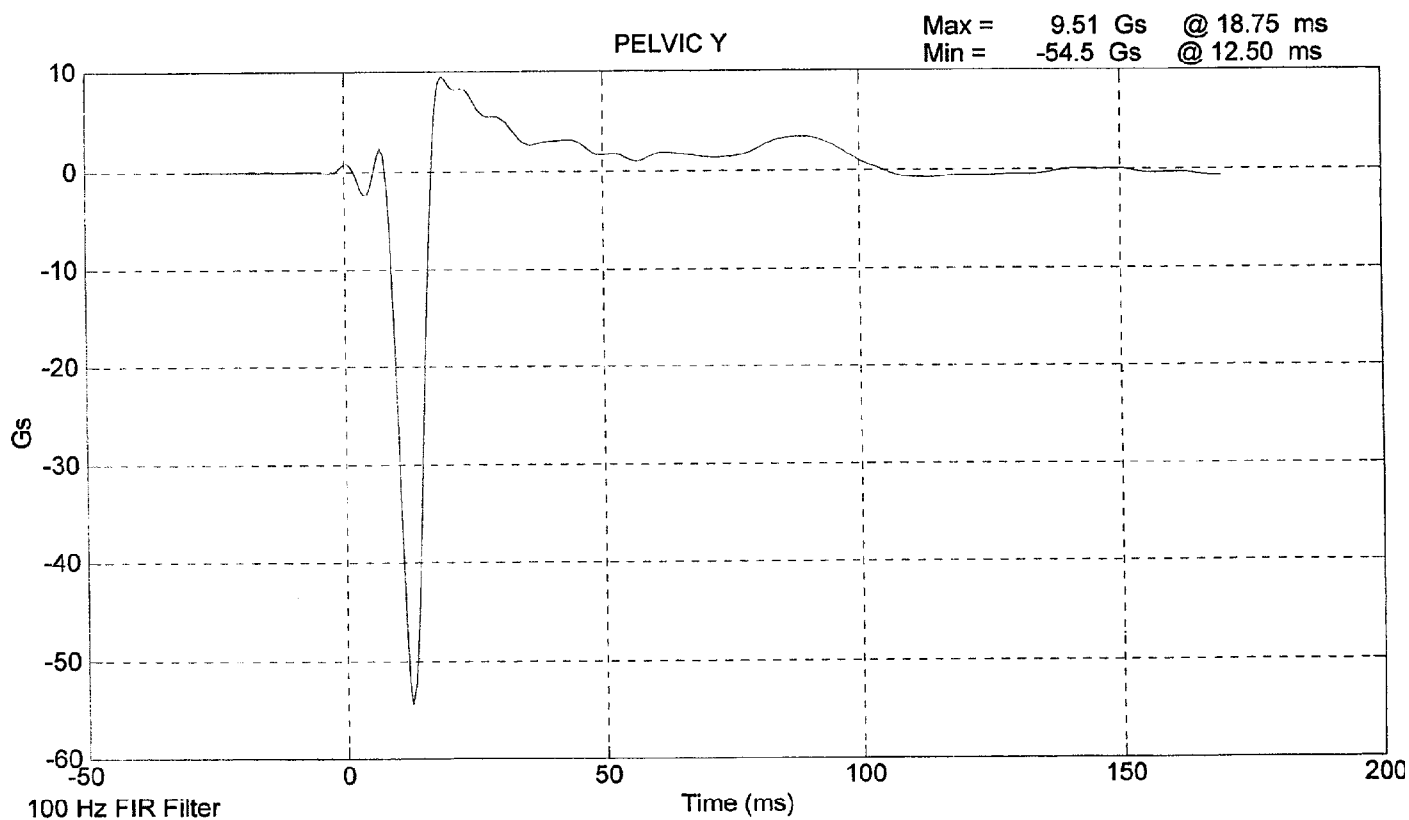
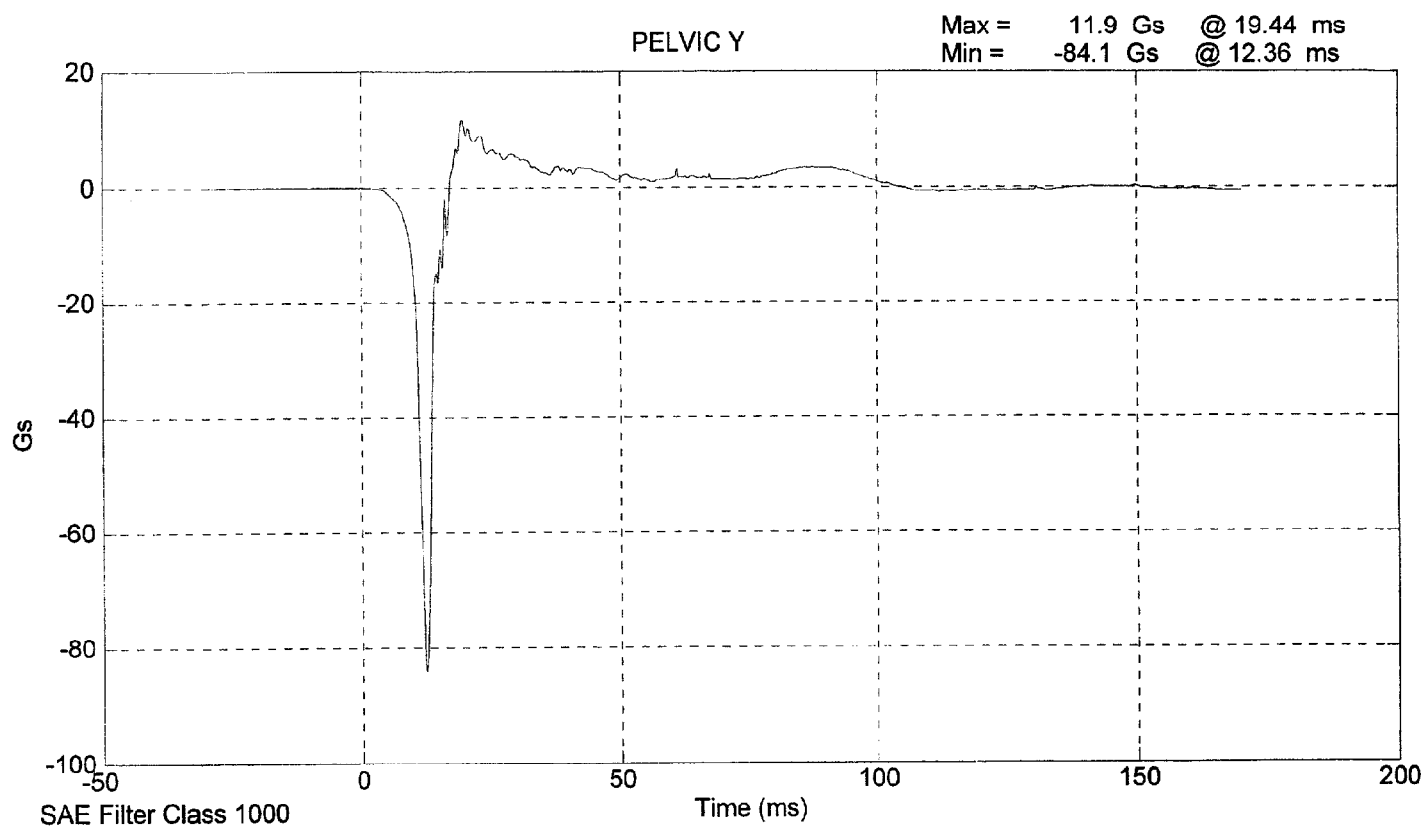
Date: 1/28/99

Laboratory Technician: B. Swiecicki, G. Serbinowski

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	22.8
RELATIVE HUMIDITY (%)	10 - 70	22
PROBE SPEED (m/s)	4.27 - 4.33	4.29
PELVIS ACCELERATION (g's)	40 - 60	54.48

REMARKS: None

SID 268 PELVIC IMPACT TEST @ 4.2916 m/s



ABDOMINAL COMPRESSION TEST**POST TEST**

(Test not required for SID certification)

CONFIGURED FOR LEFT SIDE IMPACTSID Serial No.: 268Calspan Sequential Test Number: 5Date: 1/28/99Laboratory Technician: B. Swiecicki, G. Serbinowski

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	22.8
RELATIVE HUMIDITY (%)	10 - 70	22
FORCE @ 13 mm (N)	104 - 162	117.9
FORCE @ 19 mm (N)	163 - 221	175.7
FORCE @ 25 mm (N)	222 - 280	246.9
FORCE @ 33 mm (N)	325 - 391	382.5

REMARKS: None

Dummy S/N 268

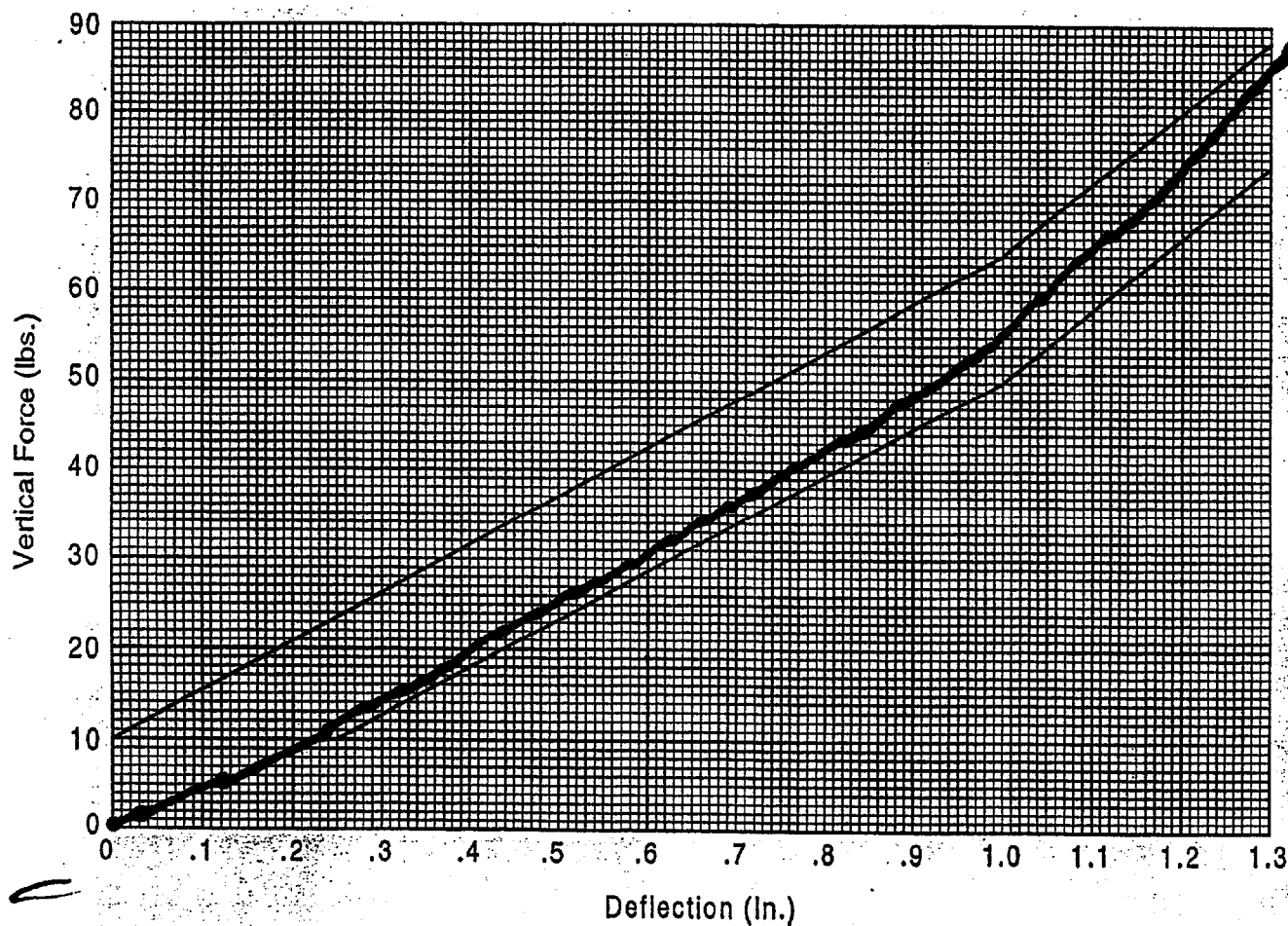
W/A _____

Date 1/28/99

Performed By BSF

Temp. 71°

Humidity 22%



Hybrid II
Abdomen Static Press

LUMBAR FLEXION TEST
POST TEST
(Test not required for SID certification)

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 268

Calspan Sequential Test Number: 5

Date: 1/28/99

Laboratory Technician: B. Swiecicki, G. Serbinowski

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	22.8
RELATIVE HUMIDITY (%)	10 - 70	22
FORCE @ 0° (N)	0 - 26.7	0
FORCE @ 20° (N)	97.8 - 151.2	142.3
FORCE @ 30° (N)	151.2 - 204.6	193.5
FORCE @ 40° (N)	204.6 - 258	255.8
RETURN ANGLE	12° max.	9.8

REMARKS: None

Frequency 100

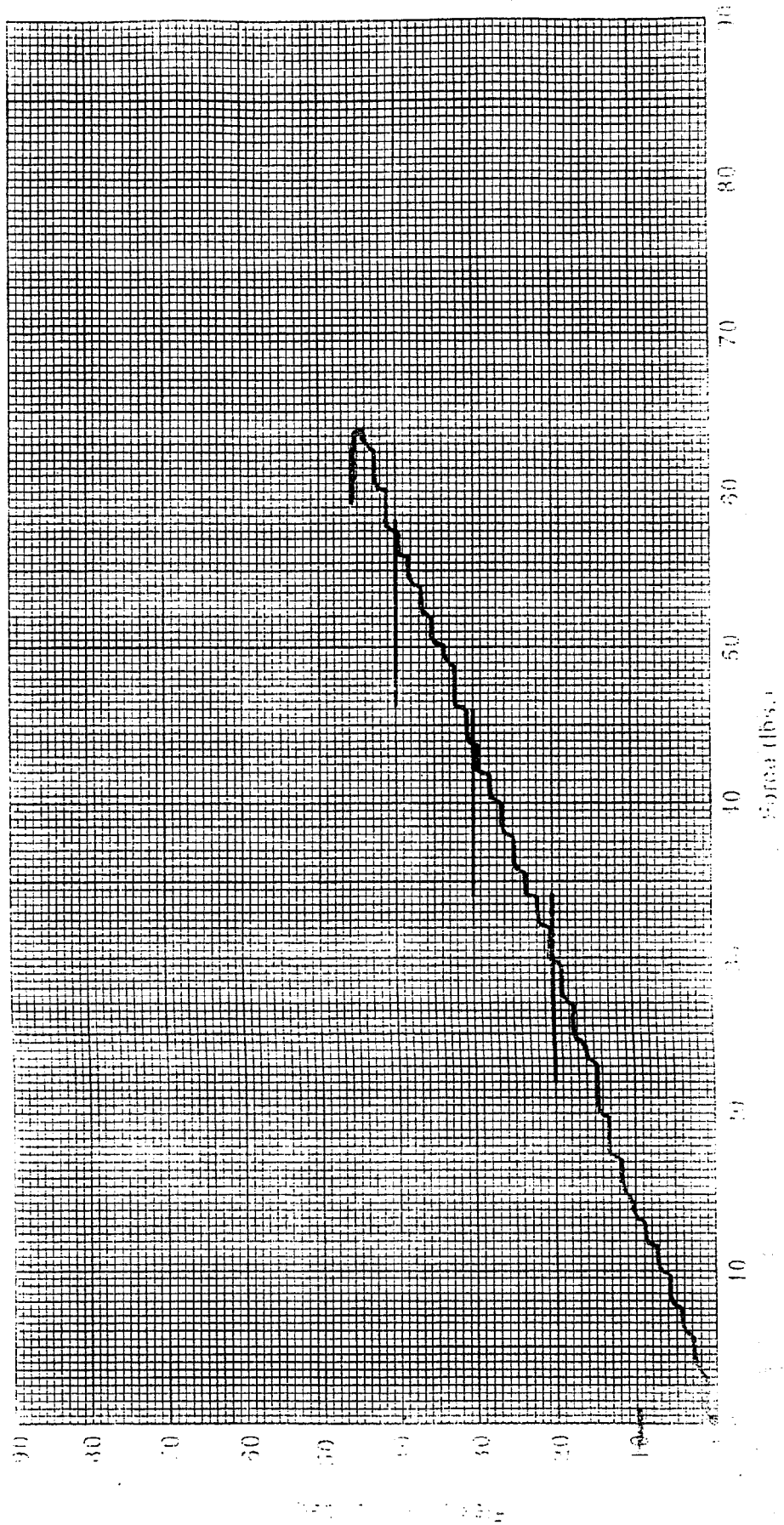
W/A

Date

Performed By

Temp.

Humidity



Force (lbs)

POST TEST DUMMY INSPECTION LIST

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 268
 Date: 1/28/99

Calspan Sequential Test Number: 5
 Laboratory Technician: B. Swiecicki, G. Serbinowski

PART	ITEMS CHECKED	COMMENTS
SKIN	VISUAL INSPECTION	OK
HEAD	VISUAL, BALLAST, ACCELEROMETER MOUNT	OK
NECK	VISUAL, CABLE TORQUE	OK
SPINE BOX	VISUAL, BALLAST, WELDMENT, ACCELEROMETER MOUNT	OK
RIB CAGE	VISUAL, MEASURE, STIFFENERS	OK
STERNUM	VISUAL	OK
LUMBAR SPINE	VISUAL	OK
ABDOMEN	VISUAL	OK
PELVIS	VISUAL, PALPATE, ACCELEROMETER MOUNT	OK
UPPER LEGS	VISUAL	OK
KNEES	VISUAL, STOPS, INSERTS	OK
LOWER LEGS	VISUAL, RANGE OF MOTION	OK
ANKLES	VISUAL, RANGE OF MOTION	OK
FEET	VISUAL, RANGE OF MOTION	OK
JOINTS	1 TO 2 g RANGE	OK
OTHER	NONE	-

REMARKS: None

**CALIBRATION TEST RESULTS
POST TEST**

SID NO.: 015

CONFIGURED FOR LEFT SIDE IMPACT

**CALIBRATION TEST RESULTS SUMMARY
POST TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 015

Calspan Sequential Test Number: 6

Date: 1/28/99

Laboratory Technician: B. Swiecicki, G. Serbinowski

TEST	COMMENTS
EXTERNAL DIMENSIONS	Passed all requirements.
LATERAL THORAX IMPACT TEST	Passed all requirements.
LATERAL PELVIS IMPACT TEST	Passed all requirements.
ABDOMINAL COMPRESSION TEST*	Passed all requirements.
LUMBAR FLEXION TEST*	Passed all requirements.

* Test not required for SID certification.

REMARKS: None

EXTERNAL DIMENSIONS**POST TEST****CONFIGURED FOR LEFT SIDE IMPACT**SID Serial No.: 015Calspan Sequential Test Number: 6Date: 1/28/99Laboratory Technician: B. Swiecicki, G. Serbinowski

TEST PARAMETER	SPECIFICATION	TEST RESULTS
SH- Seated Height (mm)	889 - 909	904
RH- Rib Height (mm)	502 - 520	509
HP- Hip Pivot Height (mm)	99 ref.	99
RD- Rib from Back Line (mm)	229 - 241	236
KH- Knee Pivot from Back Line (mm)	511 - 526	521
KV- Knee Pivot to Floor (mm)	490 - 505	493
HW- Hip Width (mm)	356 - 391	368

REMARKS: None

**LATERAL THORAX IMPACT TEST
POST TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 015

Calspan Sequential Test Number: 6

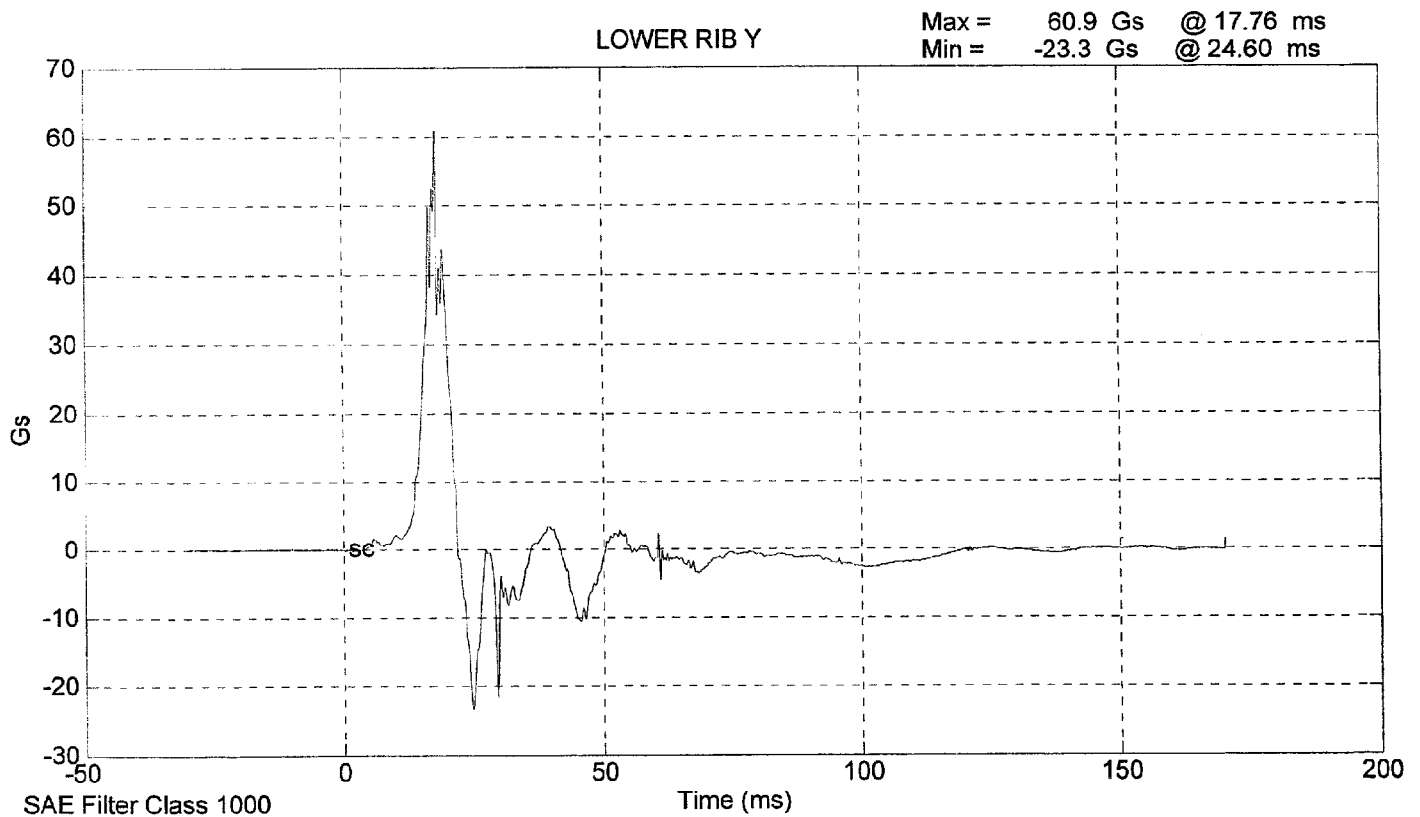
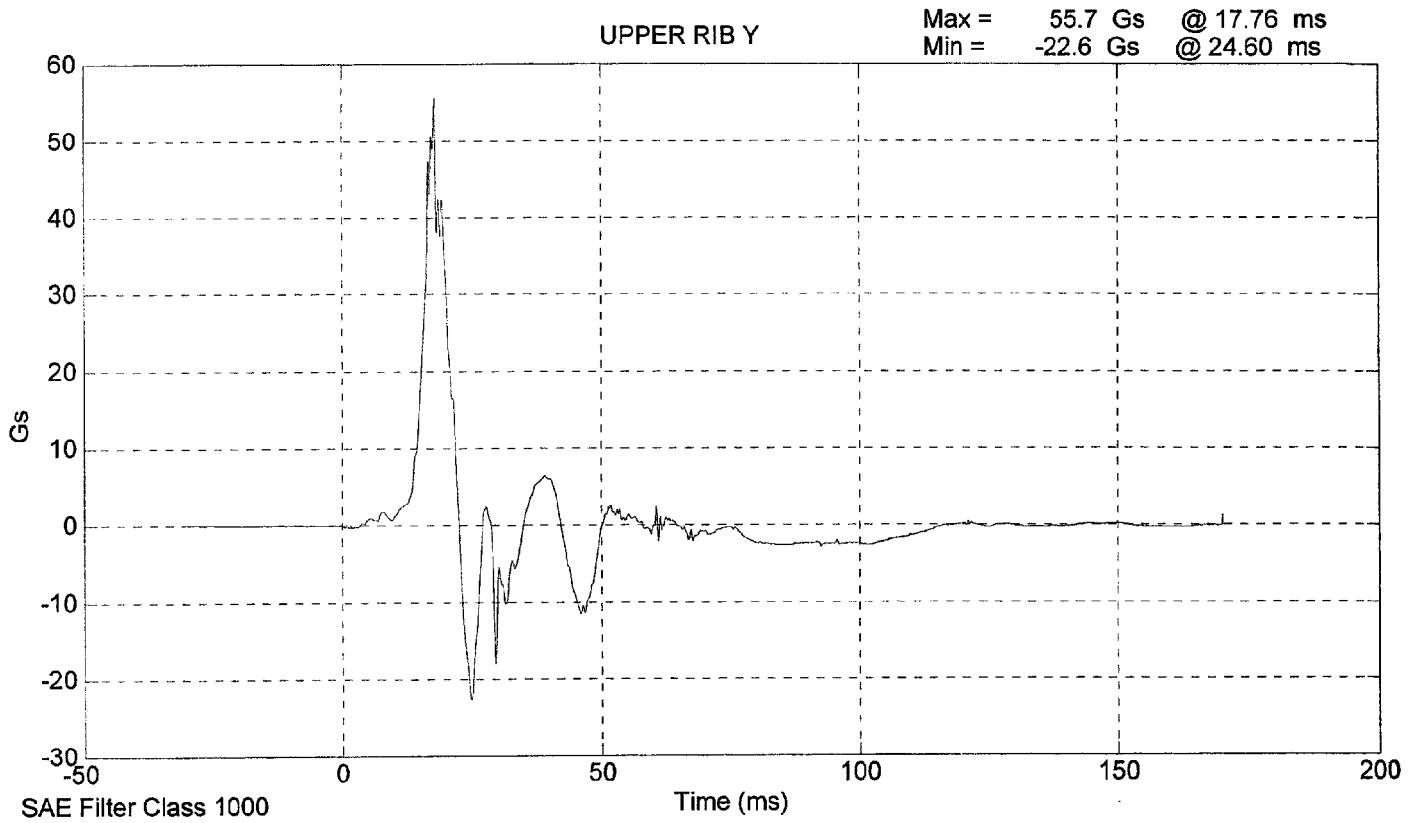
Date: 1/27/99

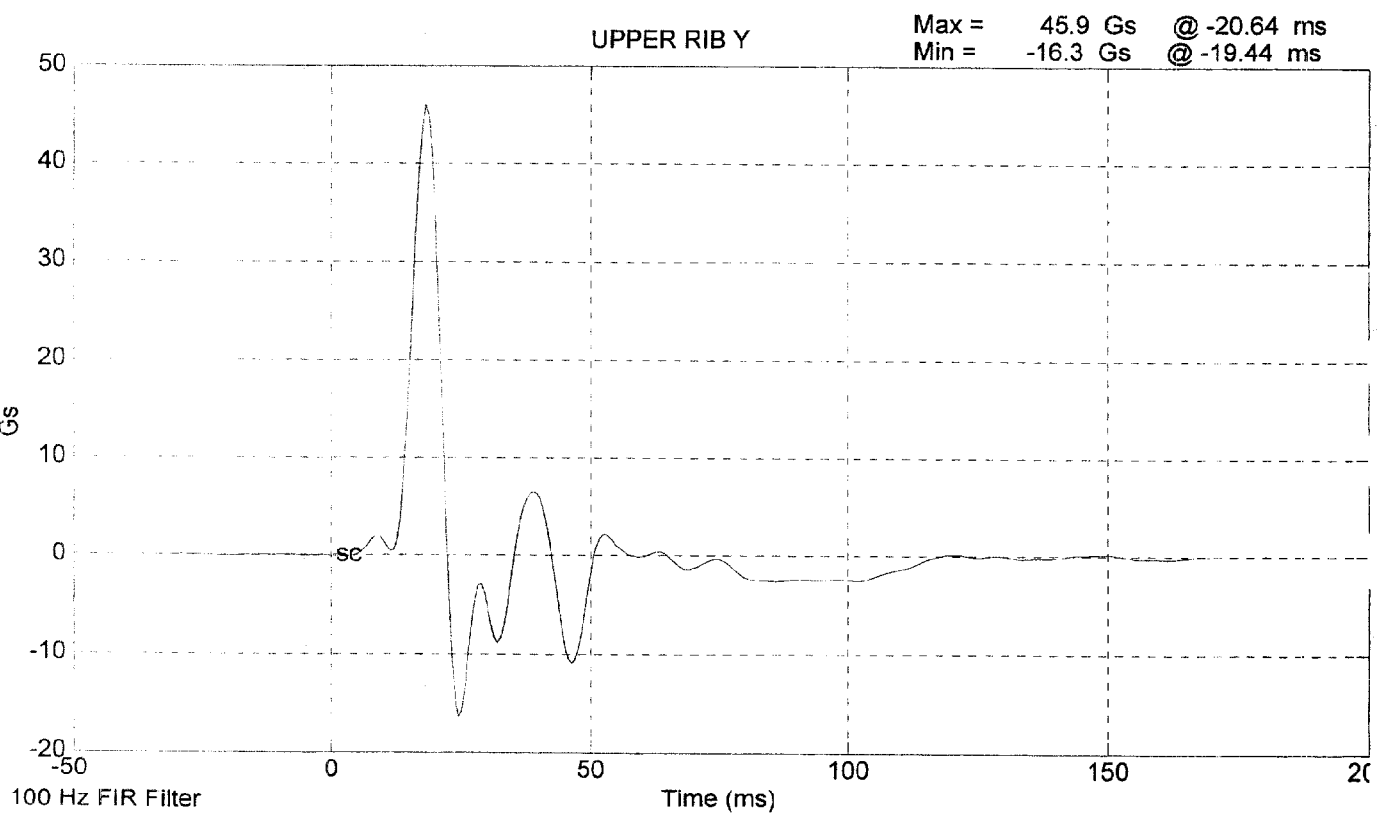
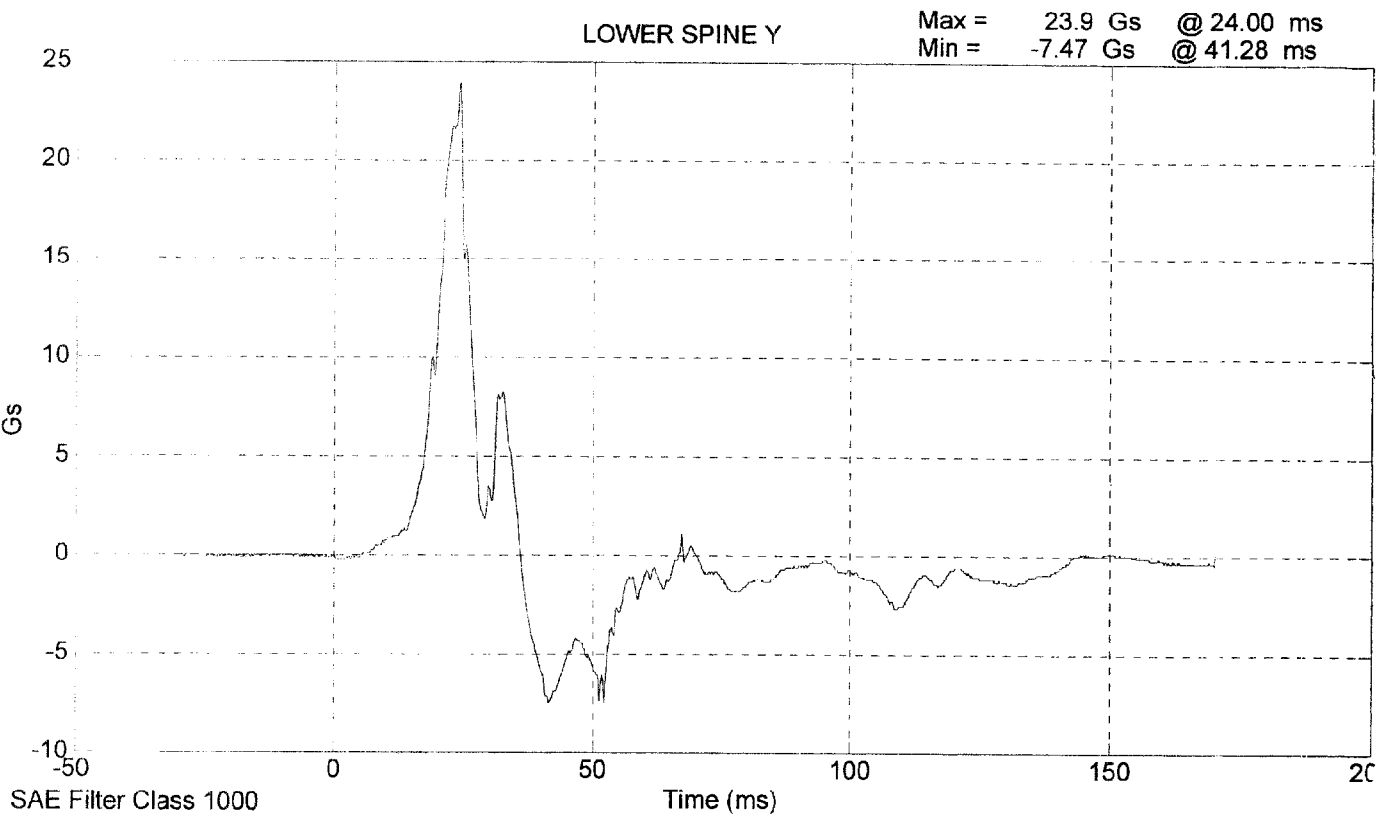
Laboratory Technician: B. Swiecicki, G. Serbinowski

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	22.8
RELATIVE HUMIDITY (%)	10 - 70	22
PROBE SPEED (m/s)	4.27 - 4.33	4.32
UPPER RIB (g's)	37 - 46	45.93
LOWER RIB (g's)	37 - 46	46.49
LOWER SPINE (g's)	15 - 22	21.89

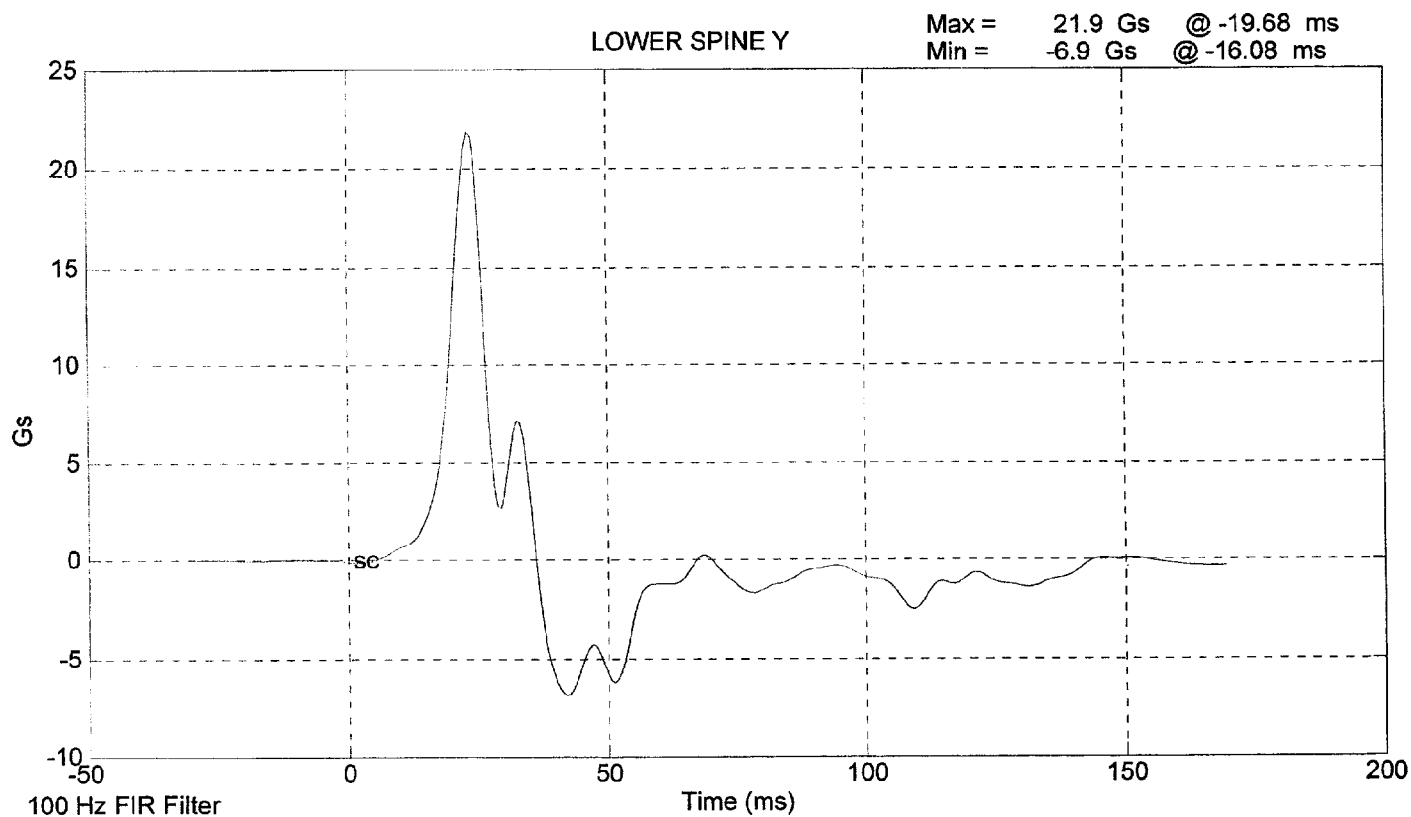
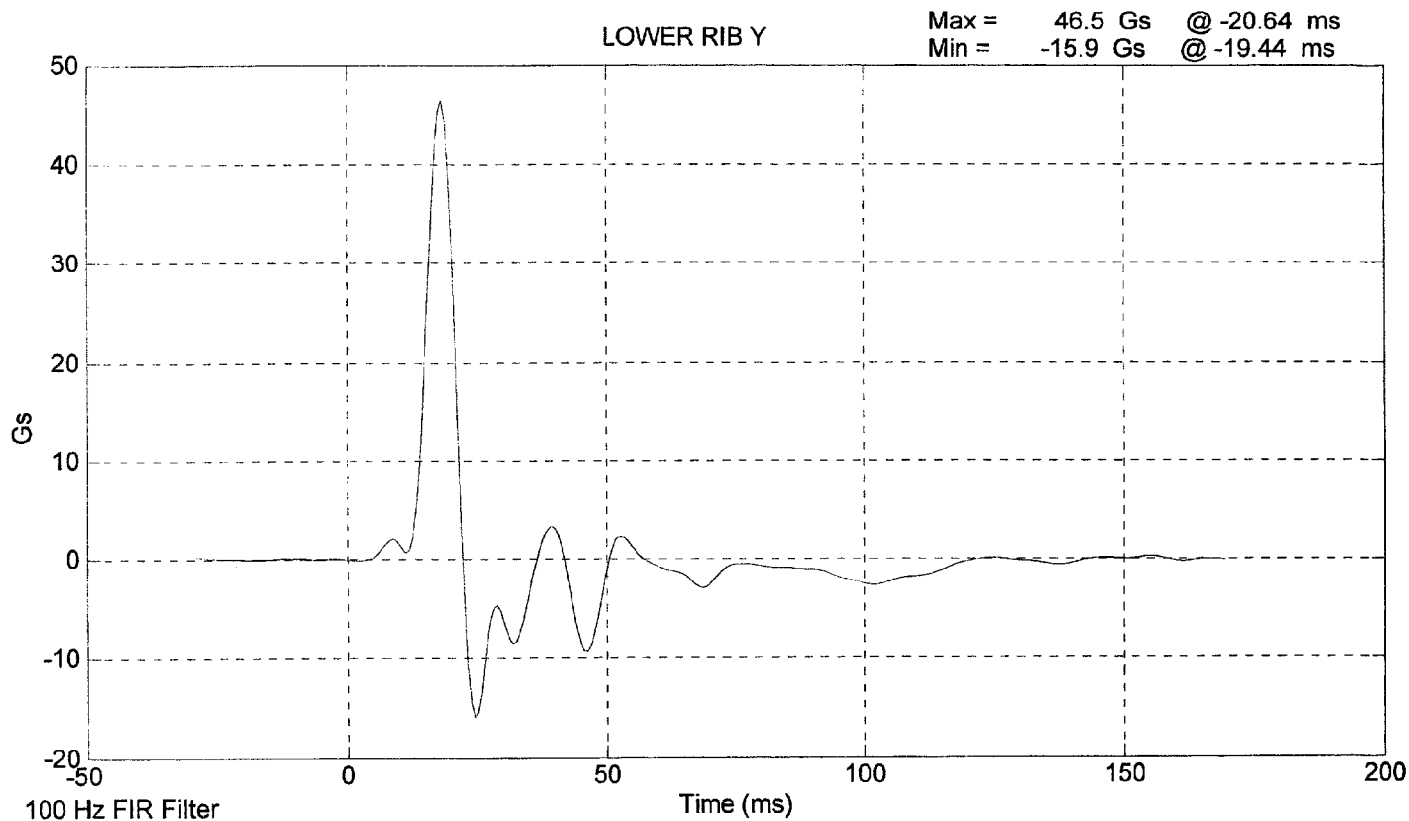
REMARKS: None

SID 015 THORAX IMPACT TEST @ 4.3221 m/s





SID 015 THORAX IMPACT TEST @ 4.3221 m/s



**LATERAL PELVIS IMPACT TEST
POST TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 015

Calspan Sequential Test Number: 6

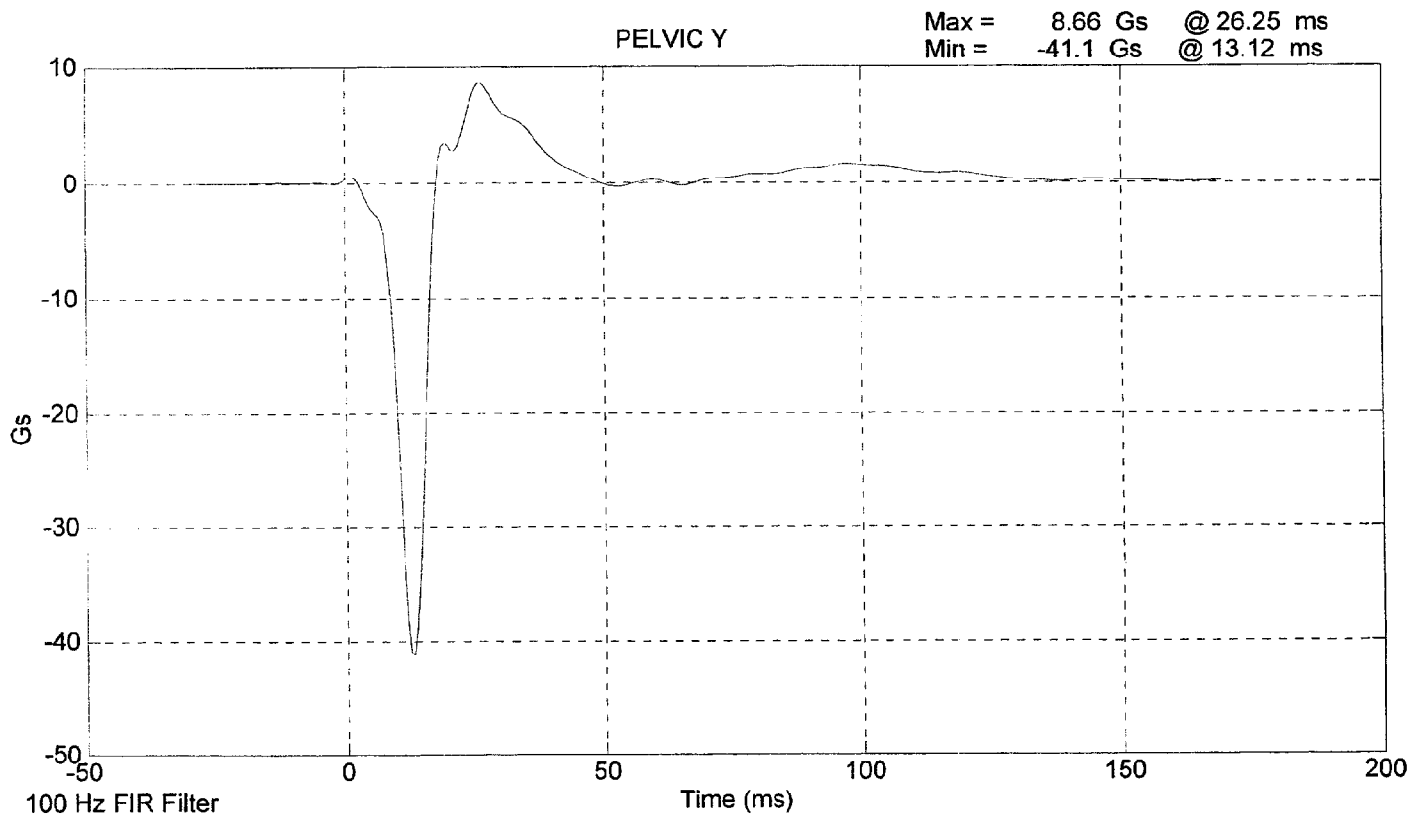
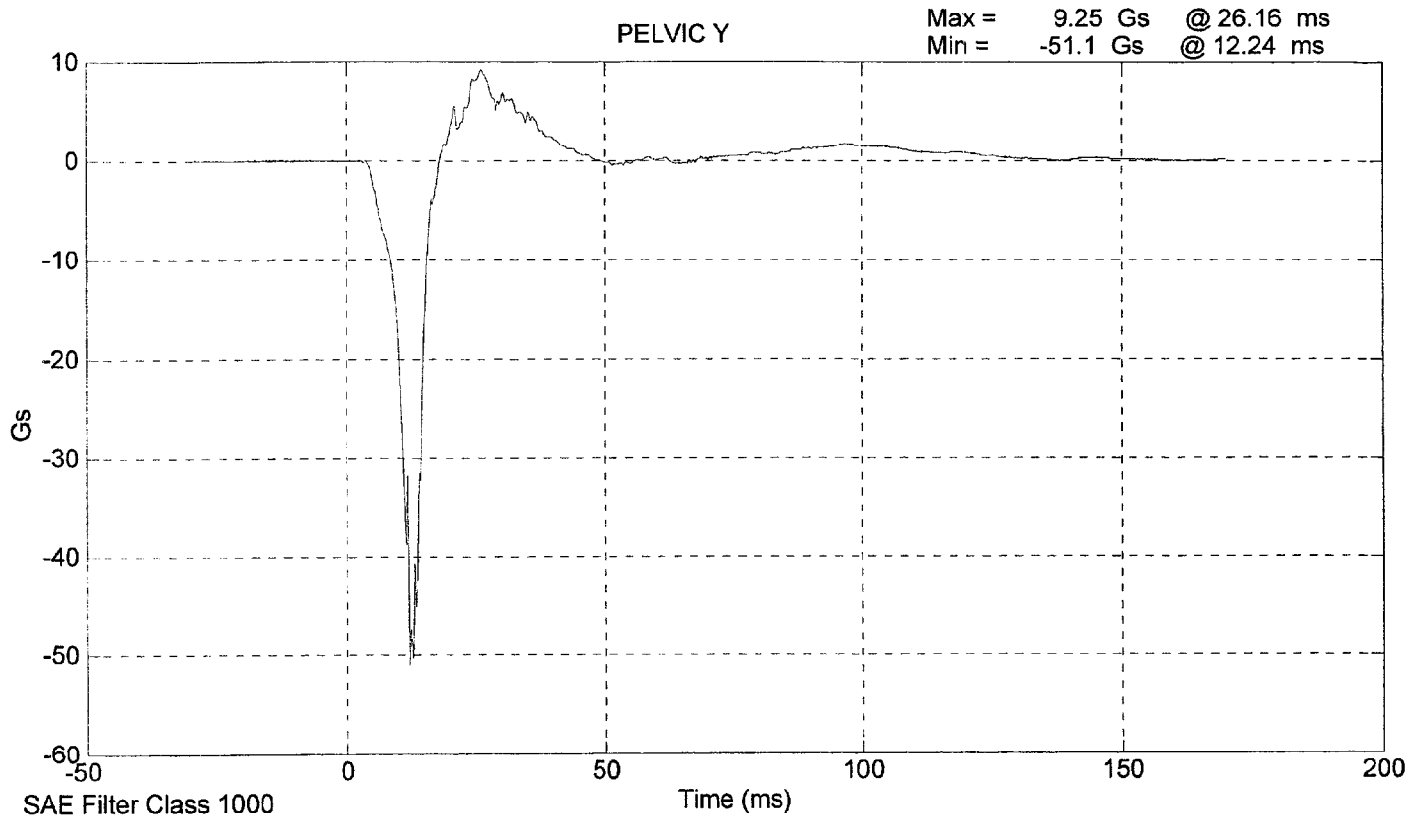
Date: 1/28/99

Laboratory Technician: B. Swiecicki, G. Serbinowski

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	22.8
RELATIVE HUMIDITY (%)	10 - 70	22
PROBE SPEED (m/s)	4.27 - 4.33	4.31
PELVIS ACCELERATION (g's)	40 - 60	41.1

REMARKS: None

SID 015 PELVIC IMPACT TEST @ 4.3099 m/s



**ABDOMINAL COMPRESSION TEST
POST TEST**

(Test not required for SID certification)

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 015
Date: 1/28/99

Calspan Sequential Test Number: 6
Laboratory Technician: B. Swiecicki, G. Serbinowski

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	22.8
RELATIVE HUMIDITY (%)	10 - 70	22
FORCE @ 13 mm (N)	104 - 162	106.8
FORCE @ 19 mm (N)	163 - 221	177.0
FORCE @ 25 mm (N)	222 - 280	258.0
FORCE @ 33 mm (N)	325 - 391	390.6

REMARKS: None

Dummy S/N 015

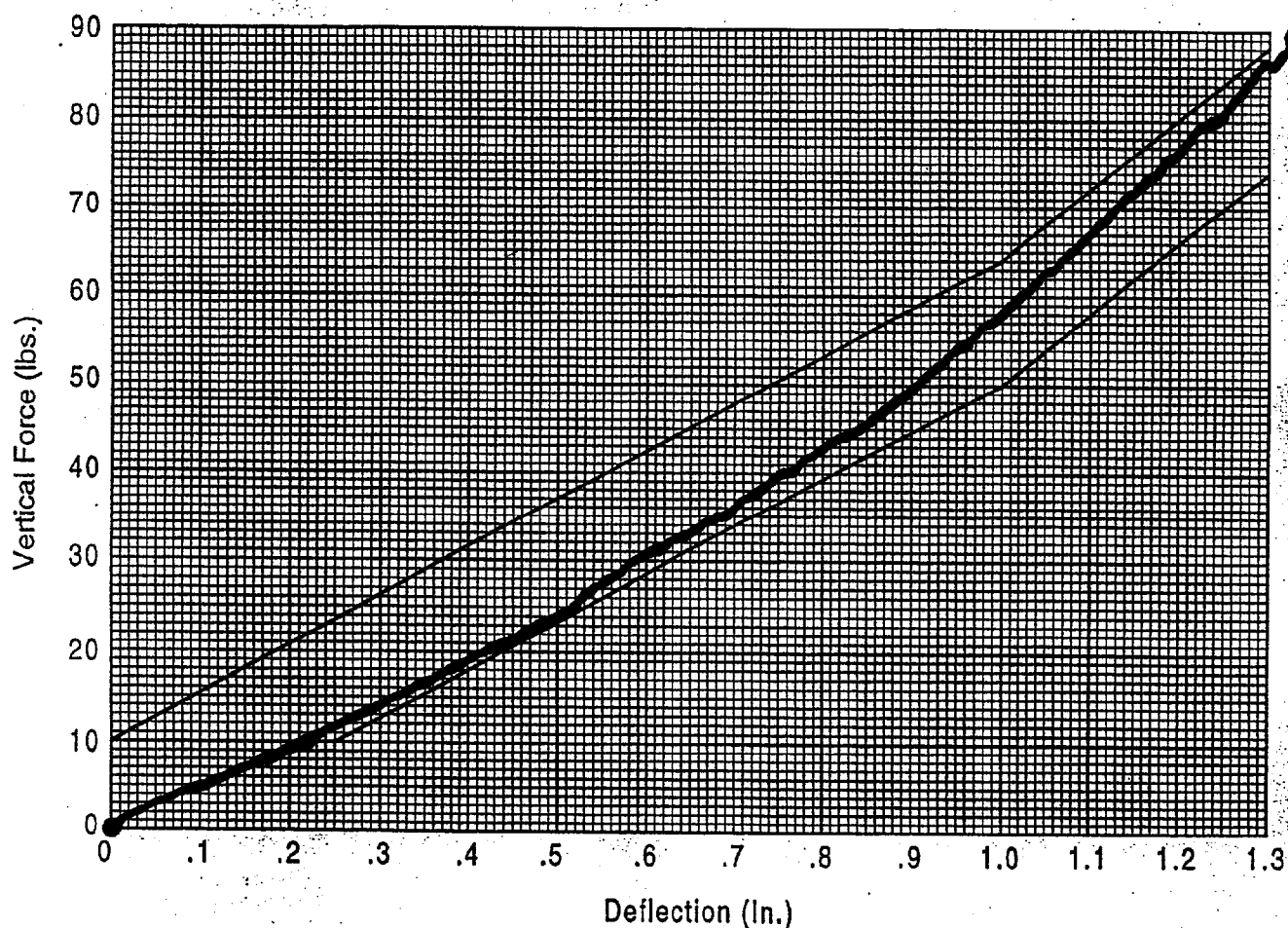
W/A _____

Date 1/25/99

Performed By BS + [Signature]

Temp. 73°

Humidity 22%



Hybrid II
Abdomen Static Press

LUMBAR FLEXION TEST
POST TEST
(Test not required for SID certification)

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 015

Calspan Sequential Test Number: 6

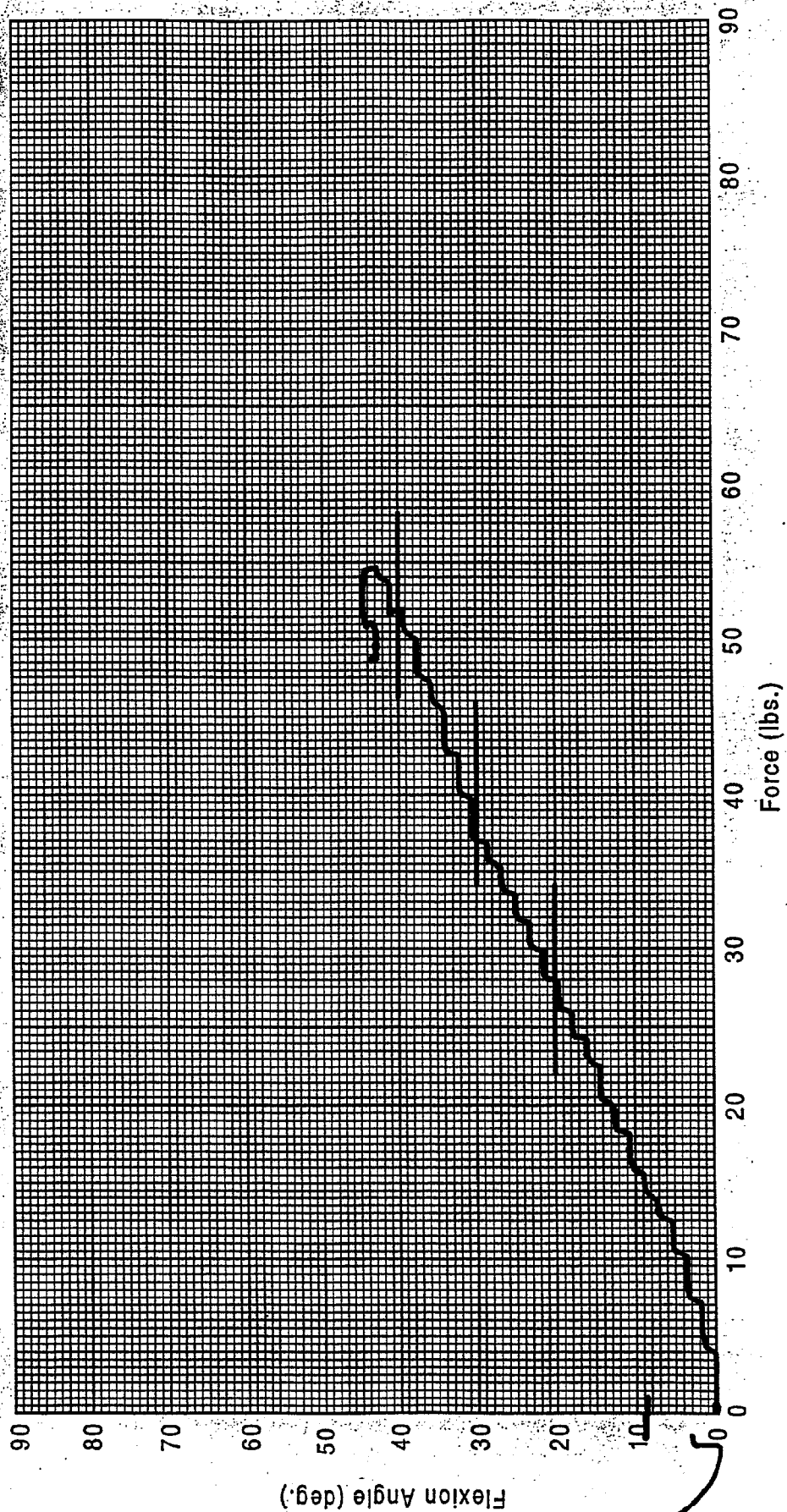
Date: 1/28/99

Laboratory Technician: B. Swiecicki, G. Serbinowski

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	22.8
RELATIVE HUMIDITY (%)	10 - 70	22
FORCE @ 0° (N)	0 - 26.7	0
FORCE @ 20° (N)	97.8 - 151.2	124.4
FORCE @ 30° (N)	151.2 - 204.6	175.7
FORCE @ 40° (N)	204.6 - 258	231.3
RETURN ANGLE	12° max.	8.9

REMARKS: None

Dummy S/N 015
 W/A _____
 Date 1/20/99
 Performed By BS + G
 Temp. 73°
 Humidity 22%



Hybrid II Lumbar Spine Flexion Test

POST TEST DUMMY INSPECTION LIST
CONFIGURED FOR LEFT SIDE IMPACT

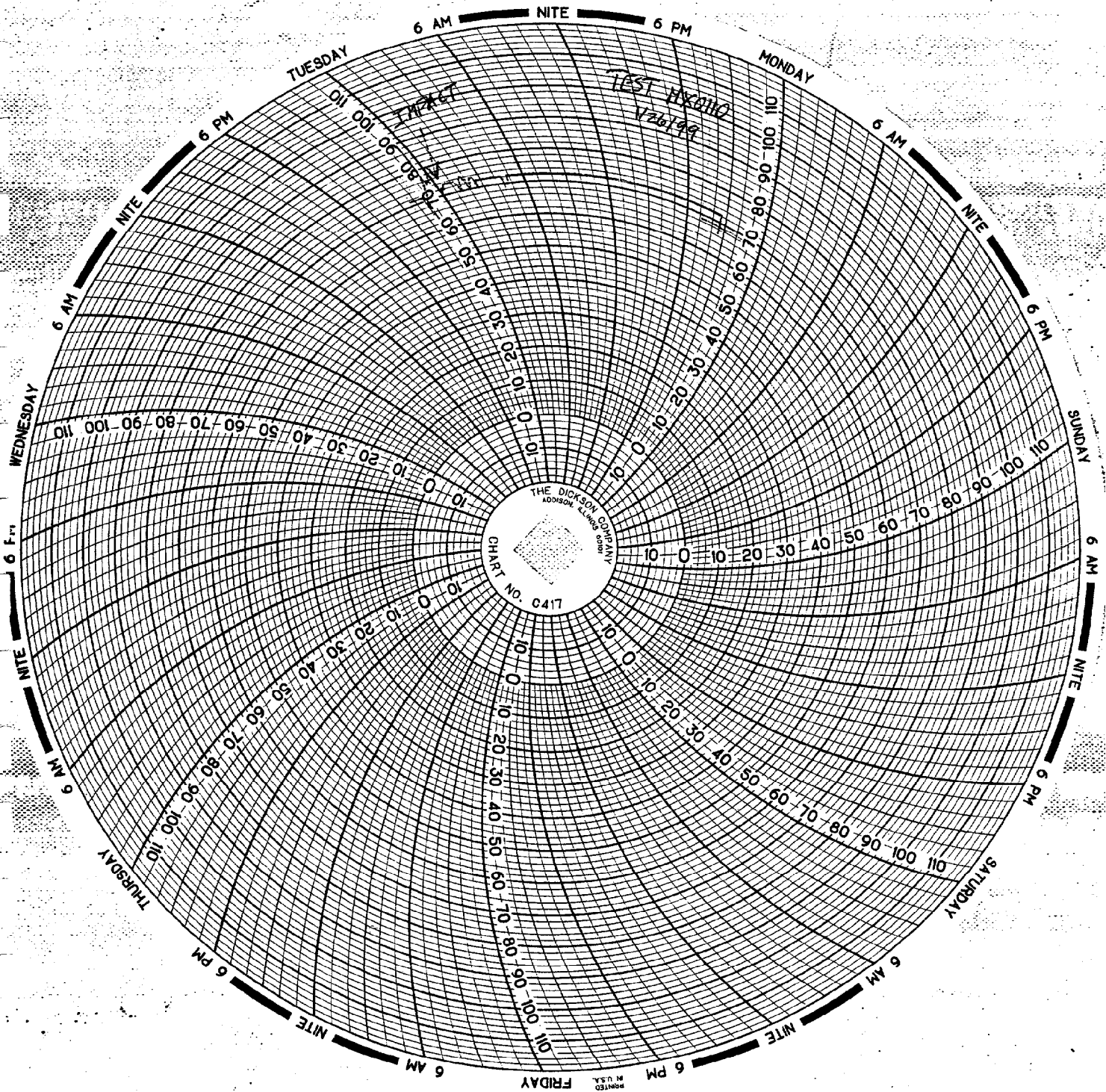
SID Serial No.: 015
Date: 1/28/99

Calspan Sequential Test Number: 6
Laboratory Technician: B. Swiecicki, G. Serbinowski

PART	ITEMS CHECKED	COMMENTS
SKIN	VISUAL INSPECTION	OK
HEAD	VISUAL, BALLAST, ACCELEROMETER MOUNT	OK
NECK	VISUAL, CABLE TORQUE	OK
SPINE BOX	VISUAL, BALLAST, WELDMENT, ACCELEROMETER MOUNT	OK
RIB CAGE	VISUAL, MEASURE, STIFFENERS	OK
STERNUM	VISUAL	OK
LUMBAR SPINE	VISUAL	OK
ABDOMEN	VISUAL	OK
PELVIS	VISUAL, PALPATE, ACCELEROMETER MOUNT	OK
UPPER LEGS	VISUAL	OK
KNEES	VISUAL, STOPS, INSERTS	OK
LOWER LEGS	VISUAL, RANGE OF MOTION	OK
ANKLES	VISUAL, RANGE OF MOTION	OK
FEET	VISUAL, RANGE OF MOTION	OK
JOINTS	1 TO 2 g RANGE	OK
OTHER	NONE	-

REMARKS: None

TEMPERATURE TRACE



APPENDIX D

TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

SID INSTRUMENTATION

FRONT SID NO.: 268			
	SERIAL NUMBER	MANUFACTURER	CALIBRATION DATE
UPPER RIB	AC-A14256	ENDEVCO	12/8/98
LOWER RIB	AC-A14314	ENDEVCO	12/7/98
LOWER SPINE	AC-A13941	ENDEVCO	12/2/98
PELVIS	AC-A14131	ENDEVCO	1/25/99
UPPER RIB REDUNDANT	AC-A13012	ENDEVCO	12/21/98
LOWER RIB REDUNDANT	AC-A13926	ENDEVCO	12/21/98
LOWER SPINE REDUNDANT	AC-A13937	ENDEVCO	12/2/98
PELVIS REDUNDANT	AC-A13850	ENDEVCO	12/28/98

REAR SID NO.: 015			
	SERIAL NUMBER	MANUFACTURER	CALIBRATION DATE
UPPER RIB	AC-A14173	ENDEVCO	12/21/98
LOWER RIB	AC-A13568	ENDEVCO	12/21/98
LOWER SPINE	AC-A13565	ENDEVCO	12/22/98
PELVIS	AC-AA4P6	ENDEVCO	12/22/98
UPPER RIB REDUNDANT	AC-A12776	ENDEVCO	12/21/98
LOWER RIB REDUNDANT	AC-A12480	ENDEVCO	12/21/98
LOWER SPINE REDUNDANT	AC-A13599	ENDEVCO	12/22/98
PELVIS REDUNDANT	AC-A13929	ENDEVCO	12/22/98

REMARKS: None

TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

VEHICLE AND MDB INSTRUMENTATION

	VEHICLE AND MDB INSTRUMENTS		
	SERIAL NUMBER	MANUFACTURER	CALIBRATION DATE
RIGHT FRONT SILL (X)	AC-AN943	ENDEVCO	10/27/98
RIGHT FRONT SILL (Y)	AC-J18650	ENDEVCO	10/27/98
RIGHT FRONT SILL (Z)	AC-J18429	ENDEVCO	8/28/98
RIGHT REAR SILL (X)	AC-J18649	ENDEVCO	10/21/98
RIGHT REAR SILL (Y)	AC-APBB6	ENDEVCO	10/21/98
RIGHT REAR SILL (Z)	AC-J18400	ENDEVCO	10/21/98
REAR FLOORPAN ABOVE AXLE (X)	AC-AC7W8	ENDEVCO	11/24/98
REAR FLOORPAN ABOVE AXLE (Y)	AC-AHRC9	ENDEVCO	11/24/98
REAR FLOORPAN ABOVE AXLE (Z)	AC-ACC06	ENDEVCO	11/24/98
LEFT REAR SILL (Y)	AC-Z08	ENTRAN	11/25/98
LEFT FRONT SILL (Y)	AC-AN25	ENDEVCO	12/28/98
LEFT FRONT DOOR CENTERLINE (Y)	AC-BB51	ENDEVCO	11/25/98
RIGHT REAR SEAT OCCUPANT COMP. (Y)	AC-D79	ICS	12/11/98
MID REAR OF LEFT FRONT DOOR (Y)	AC-J18555	ENDEVCO	10/27/98
LEFT FRONT DOOR UPPER C/L (Y)	AC-A14172	ENDEVCO	9/1/98
MID REAR OF LEFT REAR DOOR (Y)	AC-J18646	ENDEVCO	8/28/98
LEFT REAR DOOR UPPER C/L (Y)	AC-D03	ENTRAN	11/25/98
LOWER LEFT B- PILLAR (Y)	AC-B10955	ENDEVCO	9/1/98
MIDDLE LEFT B-PILLAR (Y)	AC-B11351	ENDEVCO	9/1/98
LOWER LEFT A-PILLAR (Y)	AC-J18439	ENDEVCO	9/1/98
UPPER LEFT A-PILLAR (Y)	-	-	-
FRONT SEAT TRACK (Y)	AC-Z02	ENTRAN	11/25/98
REAR SEAT TRACK (Y)	AC-D69	ICS	8/18/98
VEHICLE CG (X)	AC-J18622	ENDEVCO	10/15/98
VEHICLE CG (Y)	AC-AP1B7	ENDEVCO	10/14/98
VEHICLE CG (Z)	AC-AN967	ENDEVCO	10/14/98
MDB CG (X)	AC-CL60	ENDEVCO	9/17/98
MDB CG (Y)	AC-CJ54	ENDEVCO	9/17/98
MDB CG (Z)	AC-CH35	ENDEVCO	9/18/98
MDB REAR FRAME MEMBER (X)	AC-FL04	ENDEVCO	9/17/98
MDB REAR FRAME MEMBER (Y)	AC-GL77	ENDEVCO	9/19/98

REMARKS: None