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REPORT NUMBER: 214-CAL-99-8

**SAFETY COMPLIANCE TESTING FOR FMVSS 214
SIDE IMPACT PROTECTION**

GENERAL MOTORS CORPORATION
1999 CHEVROLET VENTURE
EXTENDED 4-DOOR MINIVAN

NHTSA NUMBER: CX0105

CALSPAN CORPORATION
TRANSPORTATION SCIENCES CENTER
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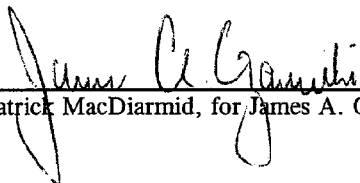
February 18, 1999

FINAL REPORT

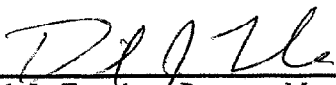
U. S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Enforcement
Office of Vehicle Compliance
400 Seventh Street, SW
Room 6115 (NSA-30)
Washington, DC 20590

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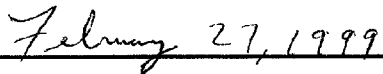
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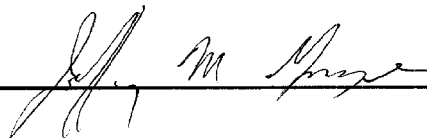

David J. Travale, Program Manager
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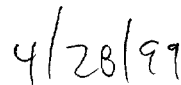

February 27, 1999

FINAL REPORT ACCEPTANCE BY:

Accepted By:



Acceptance Date:


4/28/99

11.187 112:57

TECHNICAL REPORT STANDARD TITLE PAGE

1. Report No. 214-CAL-99-8		2. Government Accession No.		3. Recipient's Catalog No.																															
4. Title and Subtitle Final Report of FMVSS 214 Compliance Side Impact Testing of a 1999 Chevrolet Venture Extended 4-Door Minivan NHTSA No.: CX0105				5. Report Date February 18, 1999																															
				6. Performing Organization Code CAL																															
7. Author(s) Prepared by Patrick G. MacDiarmid, Jr. for James A. Czarnecki, Project Engineer David J. Travale, Program Manager				8. Performing Organization Report No. 8502-8																															
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. DTNH22-97-C-01033																															
12. Sponsoring Agency Name and Address U.S. Department of Transportation National Highway Traffic Safety Administration Office of Vehicle Compliance 400 Seventh Street, SW, Room 6115 Washington, DC 20590				13. Type of Report and Period Covered Final Report, February 1999																															
				14. Sponsoring Agency Code NSA-30																															
15. Supplementary Notes																																			
16. Abstract A 48/24 kph 90° Impact (Moving Deformable Barrier) Compliance Test was conducted on the subject 1999 Chevrolet Venture Extended 4-Door Minivan in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-214D-04 to determine FMVSS 214 Side Impact Protection compliance. This test was conducted at the Calspan Corporation Crash Test Facility in Buffalo, New York, on February 18, 1999. The impact velocity of the Moving Deformable Barrier (MDB) was 52.9 kph, and the ambient temperature at the struck (driver's) side of the target vehicle at the time of impact was 21.7°C. The target vehicle post-test maximum crush was 310 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>58</u></td> <td align="center">g's</td> <td align="center"><u>43</u></td> <td align="center">g's</td> </tr> <tr> <td>Left Lower Rib Acceleration:</td> <td align="center"><u>49</u></td> <td align="center">g's</td> <td align="center"><u>53</u></td> <td align="center">g's</td> </tr> <tr> <td>Lower Spine Acceleration:</td> <td align="center"><u>55</u></td> <td align="center">g's</td> <td align="center"><u>53</u></td> <td align="center">g's</td> </tr> <tr> <td>Thoracic Trauma Index (TTI):</td> <td align="center"><u>56</u></td> <td align="center">g's</td> <td align="center"><u>53</u></td> <td align="center">g's</td> </tr> <tr> <td>Pelvis Acceleration (PEV):</td> <td align="center"><u>69</u></td> <td align="center">g's</td> <td align="center"><u>75</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. The tailgate/rear hatchback door opened during the event.							<u>Front SID</u>		<u>Rear SID</u>		Left Upper Rib Acceleration:	<u>58</u>	g's	<u>43</u>	g's	Left Lower Rib Acceleration:	<u>49</u>	g's	<u>53</u>	g's	Lower Spine Acceleration:	<u>55</u>	g's	<u>53</u>	g's	Thoracic Trauma Index (TTI):	<u>56</u>	g's	<u>53</u>	g's	Pelvis Acceleration (PEV):	<u>69</u>	g's	<u>75</u>	g's
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17. Key Words Compliance Testing Side Impact Protection FMVSS 214 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 259	22. Price																														

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SECTION 1

PURPOSE AND TEST PROCEDURE

This side impact test is part of the FMVSS 214 Side Impact Protection Compliance Test Program sponsored by the National Highway Traffic Safety Administration (NHTSA) under Contract No. DTNH22-97-C-01033. The purpose of this test was to evaluate side impact protection in a 1999 Chevrolet Venture Extended 4-Door Minivan. The test was conducted in accordance with the Office of Vehicle Safety Compliance's Laboratory Test Procedure (TP-214D-04, dated September 1, 1995).

SECTION 2

SUMMARY OF SIDE IMPACT TEST

A 1999 Chevrolet Venture Extended 4-Door Minivan 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 52.9 kph (32.9 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 February 18, 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 OVSC Side Impact Laboratory Test Procedure (TP-214D-04, dated September 1, 1995). Both SIDs were certified prior to this test. 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 41 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)	56	53
PEV (g)	69	75

FMVSS 214D requires that the TTI not exceed 85 for 4 door vehicles and not exceed 90 for 2 door vehicles. Peak lateral pelvis acceleration shall not exceed 130 g's.

The rear hatch opened during the impact event. All vehicle doors were checked prior to the event. A post-test inspection of the rear latch mechanism by the COTR could not confirm whether or not the rear hatch was properly latched prior to the test.

SECTION 3

SUMMARY OF TEST RESULTS

DATA SHEET 1

GENERAL TEST AND VEHICLE PARAMETER DATA

TEST VEHICLE INFORMATION:

Year/Make/Model/Body Style: 1999 Chevrolet Venture Extended 4-Door Minivan
 Vehicle Body Color: Blue VIN: 1GNDX03E3XD121197
 Vehicle NHTSA No.: CX0105 Month & Year of Manufacture: 9/98
 Engine Data: 6 Cylinders; - CID; 3.4 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 386 km
 Options: X A/C; X Power Steering; X Pwr.Brakes; X Pwr. Windows

DATA FROM TIRE PLACARD

Tire Pressure* (at capacity); 240 kPa FRONT
240 kPa REAR
 Recommended Tire Size: P215/70R15
 Tires on Test Vehicle: P215/70R15 ; Manufacturer: Firestone
 Vehicle Capacity Data:
 Number of Occupants: 2 Front; 3 Rear; 3 3rd Seat; 8 Total
 Type of Front Seats: X Bucket; - Bench; - Split Bench
 Type of Front Seat Back: - Fixed; X Adjustable with - Lever or X Knob
 Vehicle Max Capacity Loading = 635 kg (A)
 No. of Occupants x 68.04 kg. = 544.3 kg (B)
 Vehicle Cargo Capacity = 90.7 kg (A-B)

TEST VEHICLE DELIVERED WEIGHT WITH MAXIMUM FLUIDS:

Left Front	=	<u>529.0</u> kg	Left Rear	=	<u>367.0</u> kg
Right Front	=	<u>510.0</u> kg	Right Rear	=	<u>389.0</u> kg
TOTAL FRONT	=	<u>1039.0</u> kg	TOTAL REAR	=	<u>756.0</u> kg
% of Total Weight	=	<u>57.9</u> %	% of Total Weight	=	<u>42.1</u> %
TOTAL WEIGHT	=	<u>1795.0</u> kg			

* Tire pressure used in test.

DATA SHEET 1 (continued)

GENERAL TEST VEHICLE PARAMETER DATA

Vehicle: 1999 Chevrolet Venture

NHTSA No. CX0105

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Test Vehicle Delivered Weight with Max. Fluids	=	<u>1795.0</u>	kg (A)
Maximum Cargo Carrying Capacity of Test Vehicle	=	<u>90.7</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>2048.1</u>	kg (A+B+C)

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

Left Front	=	<u>575.0</u>	kg	Left Rear	=	<u>490.0</u>	kg
Right Front	=	<u>507.0</u>	kg	Right Rear	=	<u>478.0</u>	kg
TOTAL FRONT	=	<u>1082.0</u>	kg	TOTAL REAR	=	<u>968.0</u>	kg
% of Total Weight	=	<u>52.8</u>	%	% of Total Weight	=	<u>47.2</u>	%
TOTAL TEST WEIGHT	=	<u>2050.0</u>	kg				

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

Left Front	=	<u>580.0</u>	kg	Left Rear	=	<u>496.0</u>	kg
Right Front	=	<u>497.0</u>	kg	Right Rear	=	<u>470.0</u>	kg
TOTAL FRONT	=	<u>1077.0</u>	kg	TOTAL REAR	=	<u>966.0</u>	kg
% of Total Weight	=	<u>52.7</u>	%	% of Total Weight	=	<u>47.3</u>	%
TOTAL TEST WEIGHT	=	<u>2043.0</u>	kg				

TEST VEHICLE ATTITUDE (all dimensions in millimeters):

AS DELIVERED:

Left Front	<u>779</u>	Right Front	<u>783</u>	Left Rear	<u>777</u>	Right Rear	<u>781</u>
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FULLY LOADED:

Left Front	<u>760</u>	Right Front	<u>779</u>	Left Rear	<u>727</u>	Right Rear	<u>749</u>
------------	------------	-------------	------------	-----------	------------	------------	------------

READY FOR TEST:

Left Front	<u>761</u>	Right Front	<u>779</u>	Left Rear	<u>730</u>	Right Rear	<u>750</u>
------------	------------	-------------	------------	-----------	------------	------------	------------

Test Vehicle Wheelbase: 3050 millimeters

C.G. = 1442.1 millimeters rearward of front wheel centerline

TOTAL VEHICLE LENGTH:

Right Side	=	<u>4985</u>	millimeters
Left Side	=	<u>4985</u>	millimeters
Centerline	=	<u>5102</u>	millimeters

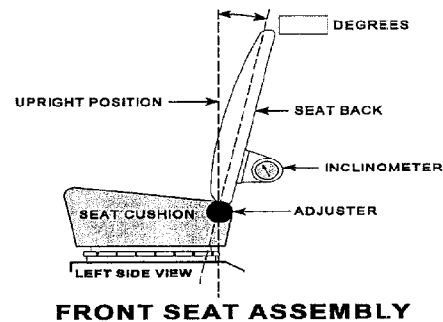
DATA SHEET 1 (continued)

GENERAL TEST VEHICLE PARAMETER DATA

Vehicle: 1999 Chevrolet Venture

NHTSA No. CX0105

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: Mechanical Middle, 9th detent

Total Length of Adjustment Travel: 190 millimeters

Total Number of Adjustment Positions or Detents: 17 Detents

FRONT SEAT BACK ADJUSTMENT POSITION: Seat back centerline 23° on seat back frame

Seat Back Torso Angle: 22° degrees

SECOND POSITION SEAT:

Total Length of Fore/Aft Adjustment Travel: 175 millimeters

Seat Back Adjustment Position: Fixed

ADJUSTABLE STEERING COLUMN POSITION: Mechanical Middle. Detent 3 of 5 total

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:

89.7 liters (Fuel Tank Usable Capacity)

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

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

Wheelbase = 3050 millimeters

Impact Point is 585 millimeters rearward of front axle centerline

(which is 940 millimeters forward of the wheelbase midpoint)

Actual Impact Point is 583 millimeters rearward of front axle centerline

DATA SHEET 2

TEST VEHICLE SUMMARY OF RESULTS

VEHICLE IDENTIFICATION:

Vehicle Year/Make/Model: 1999 Chevrolet Venture

Body Style: Extended 4-Door Minivan

VIN: 1GNDX03E3XD121197

NHTSA No.: CX0105

Test Date: February 18, 1999

Overall Length = 5102 millimeters; Overall Width = 1830 millimeters

VEHICLE TEST WEIGHT (Pre-Test):

Left Front = 580.0 kg Left Rear = 496.0 kg

Right Front = 497.0 kg Right Rear = 470.0 kg

TOTAL FRONT = 1077.0 kg TOTAL REAR = 966.0 kg

TOTAL VEHICLE WEIGHT 2043.0 kg

Wheelbase = 3050 millimeters

Longitudinal C.G. from Center of Front Axle = 1442.1 millimeters

Impact Angle with Respect to Impactor = 90 degrees

ACTUAL IMPACT POINT

Actual Impact Point is 2 mm forward of nominal impact ref. line (Lateral)

Actual Impact Point is 2 mm below nominal impact point (Vertical)

MAXIMUM EXTERIOR STATIC CRUSH:

1. LEVEL 1 (322 mm above ground) = 277 millimeters

2. LEVEL 2 (676 mm above ground) = 310 millimeters

3. LEVEL 3 (717 mm above ground) = 307 millimeters

4. LEVEL 4 (961 mm above ground) = 253 millimeters

5. LEVEL 5 (1631 mm above ground) = -10 millimeters

Maximum Post-Test Intrusion = 310 millimeters

OCCUPANTS:

Front Passenger:

Rear Passenger:

Dummy Identification 027

016

Restraints Used Seatbelt, Side Impact Airbag

Seatbelt

INSTRUMENTATION:

Number of Vehicle Data Channels: = 36

Number of Cameras: Onboard = 3

Offboard = 4

TOTAL = 7

DATA SHEET 3

MOVING DEFORMABLE BARRIER (MDB) SUMMARY

Vehicle: 1999 Chevrolet Venture

NHTSA No. CX0105

MDB FACE MANUFACTURER AND SERIAL NUMBER:

Plascore, Inc. 070C1198-3 078C1198 3991-02

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>52.9</u>	kph				

MAXIMUM STATIC CRUSH OF HONEYCOMB IMPACT FACE:

1. Row A at Center of Bumper Level	=	<u>108</u>	millimeters
2. Row B at Top of Bumper Level	=	<u>64</u>	millimeters
3. Row C at Mid Level	=	<u>34</u>	millimeters
4. Row D at Top of Stack Level	=	<u>83</u>	millimeters

INSTRUMENTATION:

Number of MDB Data Channels	=	<u>5</u>
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DATA SHEET 4

POST-TEST OBSERVATIONS

Vehicle: 1999 Chevrolet Venture

NHTSA No. CX0105

VISIBLE DUMMY CONTACT POINTS:

	<u>LEFT FRONT SID</u>	<u>LEFT REAR SID</u>
Head:	<u>Back of head to the headrest</u>	<u>Back of head to the C-Pillar</u>
Upper Torso:	<u>Side Impact Airbag</u>	<u>Inside door panel</u>
Lower Torso:	<u>Side Impact Airbag</u>	<u>Inside Door Panel</u>
Left Knee:	<u>Inside Door Panel</u>	<u>Inside Door Panel</u>
Right Knee:	<u>Left Knee</u>	<u>Left Knee</u>

DOOR OPENING:

	<u>LEFT DOOR</u>	<u>RIGHT DOOR</u>	<u>TAILGATE/HATCHBACK</u>
Front:	<u>Closed/Inoperable</u>	<u>Closed/Operable</u>	<u>N/A</u>
Rear:	<u>Closed/Inoperable</u>	<u>Closed/Operable</u>	<u>Open/Operable</u>

MDB DISTANCE FROM TARGET IMPACT POINT:

<u>Vertical: 2 mm forward</u>
<u>Horizontal: 2 mm below</u>

ARM REST LOCATIONS:

Front:	<u>195 mm below window opening</u>
Rear:	<u>None</u>

SEAT MOVEMENT:

Front:	<u>None</u>
Rear:	<u>Rear seat reclined upon impact.</u>

GLAZING DAMAGE:

Windshield:	<u>None</u>
Window:	<u>Left side front and rear windows shattered upon impact.</u>

PILLAR PERFORMANCE:

No visible tears or separation.

SILL SEPARATION:

No visible tears or separation.

AIR BAG DEPLOYMENT STATUS:

	<u>Driver</u>	<u>Front Passenger</u>	<u>Rear Passenger</u>
Front	<u>No</u>	<u>No</u>	<u>N/A</u>
Side	<u>Yes</u>	<u>No</u>	<u>N/A</u>

OTHER NOTABLE IMPACT EFFECTS:

The vehicle tailgate unlatched and opened during the event. The rear passenger seatbelt latch broke during the event, as a result, the rear seatbelt latch failure, the rear passenger was not belted after the event. The right rear tire seal broke during the event. Post test sill measurements were taken with a flat right rear tire.

SECTION 4

OCCUPANT AND VEHICLE INFORMATION

DATA SHEET 5

SID INSTRUMENTATION DATA

Vehicle: 1999 Chevrolet Venture

NHTSA No. CX0105

	Front Dummy ID# 027				Rear Dummy ID# 016			
	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	57.7	48.8	-10.2	86.3	42.9	51.2	-8.7	98.1
Upper Rib Lateral . Y(R)	57.8	48.8	-12.2	87.5	40.3	51.8	-9.4	97.5
Lower Rib Lateral . Y	48.5	47.5	-7.3	93.1	52.6	38.2	-10.4	173.1
Lower Rib Lateral . Y(R)	46.7	47.5	-9.1	62.5	47.3	38.2	-9.3	102.5
SPINE ACCELERATIONS:								
Lower Lateral Y	54.9	46.9	-11.8	58.7	53.4	38.8	-17.4	61.2
Lower Lateral Y(R)	54.2	46.9	-11.8	58.7	51.9	38.8	-17.3	61.2
PELVIC ACCELERATIONS:								
Lateral Y	68.9	34.3	-15.6	56.9	75.1	30.6	-20.7	54.3
Lateral Y(R)	63.3	34.4	-13.5	56.9	75.6	30.6	-21.3	54.3

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

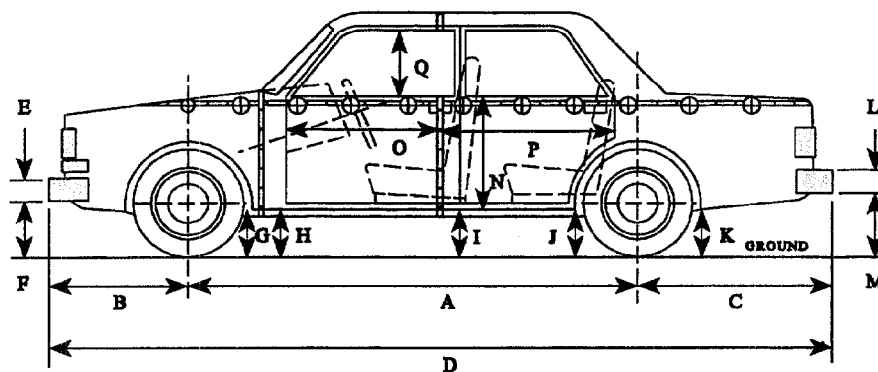
Note: Above data has been FIR filtered, Y(R) denotes redundant Y direction accelerometer.

DATA SHEET 6

VEHICLE SIDE MEASUREMENTS

Vehicle: 1999 Chevrolet Venture

NHTSA No. CX0105



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	3050	-	3013	-37
B	931	-	986	55
C	1121	-	1100	-21
D	5102	-	5099	-3
E	334	-	334	0
F	424	385	409	24
G	246	204	248	44
H	249	206	241	35
I	253	210	252	42
J1	251	215	222	7
J2	269	225	252	27
K	280	239	236	-3
L	219	-	219	0
M	333	293	232	-61
N	806	-	743	-63
O	952	-	936	-16
P	1381	-	1334	-47
Q	516	-	521	5
R	4985	-	4988	3
S	4985	-	4978	-7
T	1830	-	1536	-294

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

E&L = Bumper Thickness
J1 = To Pinch Weld

R = Right Side Length
J2 = To Sill

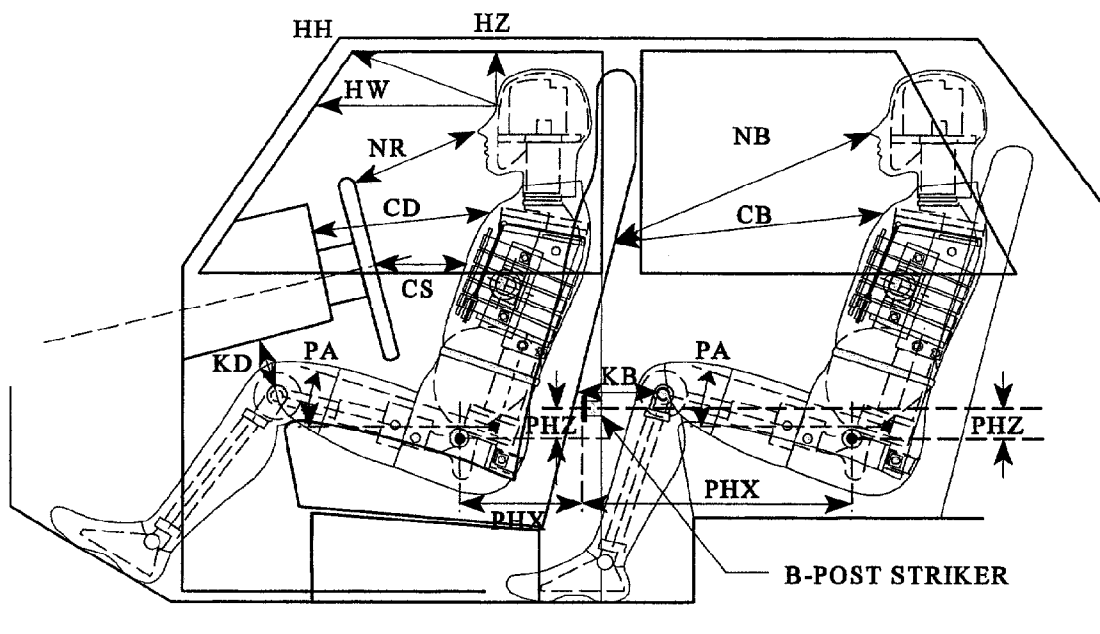
S = Left Side Length

DATA SHEET 7

SID LONGITUDINAL CLEARANCE DIMENSIONS

Vehicle: 1999 Chevrolet Venture

NHTSA No. CX0105



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# 027	LEFT REAR PASS. ID# 016
HH	462	N/A
HW	706	N/A
HZ	242	199
NR/NB	408	644
CD/CB	550	567
CS	284	N/A
KDL(KDA°)/KBL(KDA°)	180 / (29°)	214 / (23°)
KDR(KBA°)/KBR(KBA°)	184 / (32°)	215 / (23°)
PA°	23°	24°
PHX	249	535
PHZ	395	294

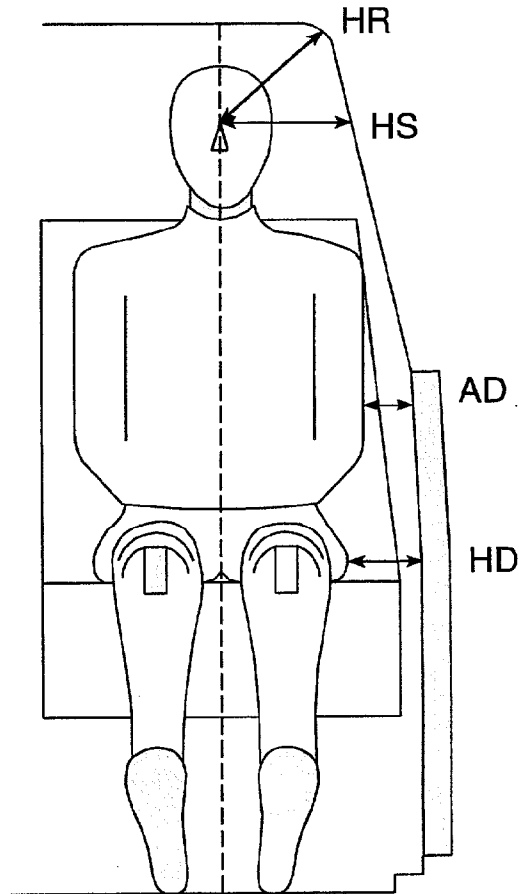
Note: 2-door vehicle shown. Rear dummy PHX & PHZ measurements for 4-door vehicle would use the C-post striker as a reference point.

DATA SHEET 8

SID LATERAL CLEARANCE DIMENSIONS

Vehicle: 1999 Chevrolet Venture

NHTSA No. CX0105



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

	DRIVER ID # <u>027</u>		LEFT REAR PASS. ID # <u>016</u>	
HR	276		197	
HS	351		273	
AD*	LOWER: 123	UPPER: 191	LOWER: 72	UPPER: 123
HD	176		139	

* 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.

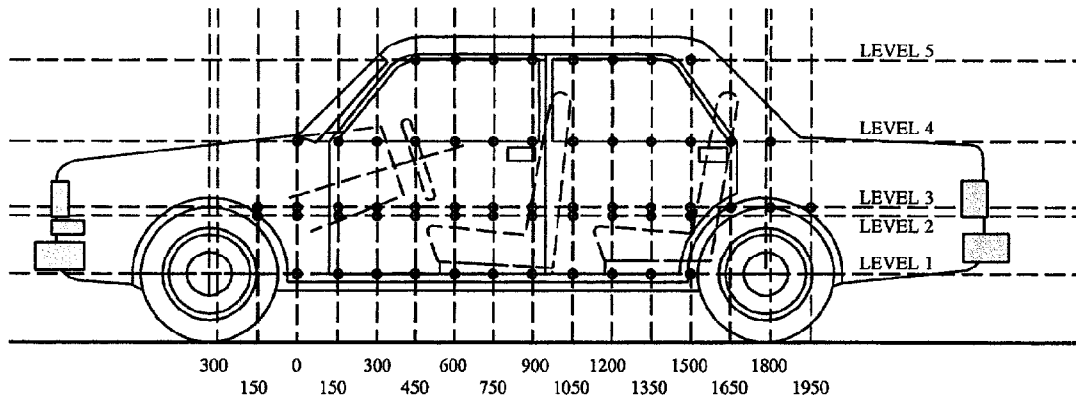
Upper measurement is taken laterally at the center of the upper rib accelerometer height from the SID arm segment to the closest part of the vehicle side.

DATA SHEET 9

VEHICLE SIDE MEASUREMENTS

Vehicle: 1999 Chevrolet Venture

NHTSA No. CX0105



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>1631</u>	millimeters
Level 4 @ Window Sill	=	<u>961</u>	millimeters
Level 3 @ Mid Door	=	<u>717</u>	millimeters
Level 2 @ Occupant H-Point	=	<u>676</u>	millimeters
Level 1 @ Axle Centerline Height (or Sill Top Height)	=	<u>322</u>	millimeters

DATA SHEET 10

VEHICLE EXTERIOR CRUSH PROFILES - ALL LEVELS

Vehicle: 1999 Chevrolet Venture

NHTSA No. CX0105

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

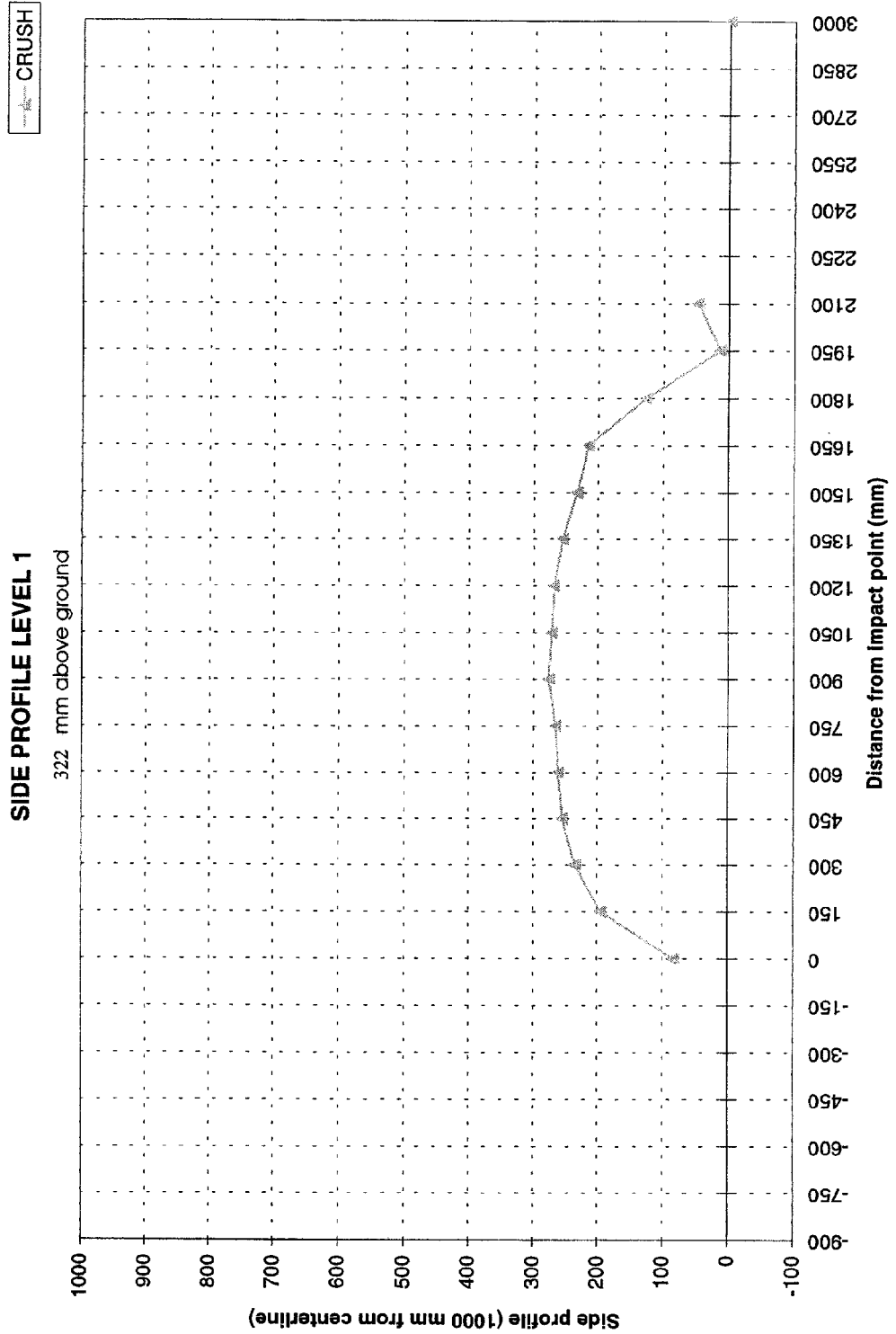
		DISTANCE IN MILLIMETERS (mm) FROM IMPACT POINT																											
LEVEL	HEIGHT (mm)	-900	-750	-600	-450	-300	-150		150	300	450	600	750	900	1050	1200	1350	1500	1650	1800	1950	2100	2250	2400	2550	2700	2850	3000	
LEVEL 1	322	--	--	--	--	--	--		180	175	177	178	178	176	177	178	183	182	182	182	185	187	--	--	--	--	--	185	
SIDE		--	--	--	--	--	--		375	410	432	439	444	453	449	446	438	415	397	309	198	234	--	--	--	--	--		
SILL		N/A	N/A	N/A	N/A	N/A	N/A	N/A		195	235	255	261	266	277	272	268	255	233	215	127	13	47	N/A	N/A	N/A	N/A	N/A	###
LEVEL 2	676	174	138	--	--	--	138		139	137	136	135	133	132	131	133	136	135	137	138	140	142	125	--	--	--	128	136	
H		179	140	--	--	--	135	175	259	337	361	374	384	397	422	441	436	423	418	400	374	293	188	--	--	--	155	159	
POINT		5	2	N/A	N/A	N/A	N/A	37	120	198	224	238	249	264	290	310	303	288	283	263	236	153	77	63	N/A	N/A	N/A	27	23
LEVEL 3	717	176	146	--	--	121	136		135	133	132	132	130	128	128	130	130	133	133	143	139	143	138	108	--	114	145	154	
MID		172	149	--	--	141	171		326	361	369	381	404	423	431	437	411	396	378	353	291	208	201	168	157	154	172	181	
DOOR		4	3	N/A	N/A	20	35	119		191	228	237	249	274	295	303	307	281	263	245	210	152	65	63	60	N/A	40	27	27
LEVEL 4	961	275	223	191	175	165	156		149	144	141	139	135	--	132	--	131	132	132	133	133	134	138	140	143	145	150	152	
WINDOW		234	192	175	164	156	160	208		245	267	278	301	326	357	385	391	360	333	306	279	231	180	199	188	182	183	175	172
SILL		41	31	-16	-11	-9	4	56		96	123	137	162	191	N/A	253	N/A	229	201	174	146	98	46	61	48	39	38	25	20
LEVEL 5	1631	--	--	--	--	--	--		--	--	--	400	378	369	365	359	357	355	353	353	355	357	360	362	365	372	377	381	
WINDOW		--	--	--	--	--	--		--	--	--	382	341	339	341	339	321	304	290	275	261	249	347	349	355	360	362	371	
TOP		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	-18	-37	-30	-24	-20	-36	-51	-63	-78	-94	-108	-13	-13	-10	-12	-15	-10

DATA SHEET 10 (continued)

VEHICLE EXTERIOR CRUSH PROFILES

Vehicle: 1999 Chevrolet Venture

NHTSA No. CX0105

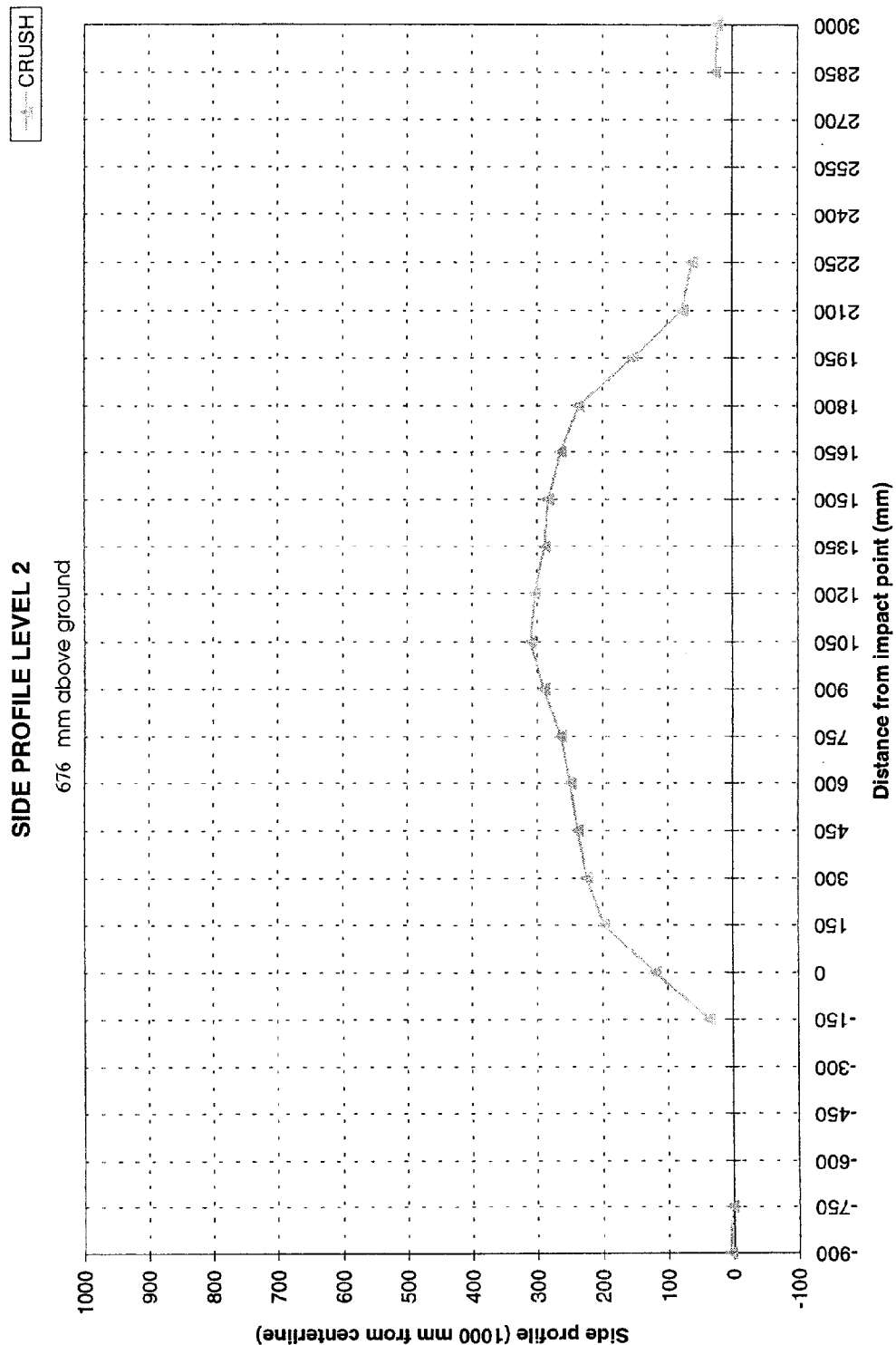


DATA SHEET 10 (continued)

VEHICLE EXTERIOR CRUSH PROFILES

Vehicle: 1999 Chevrolet Venture

NHTSA No. CX0105

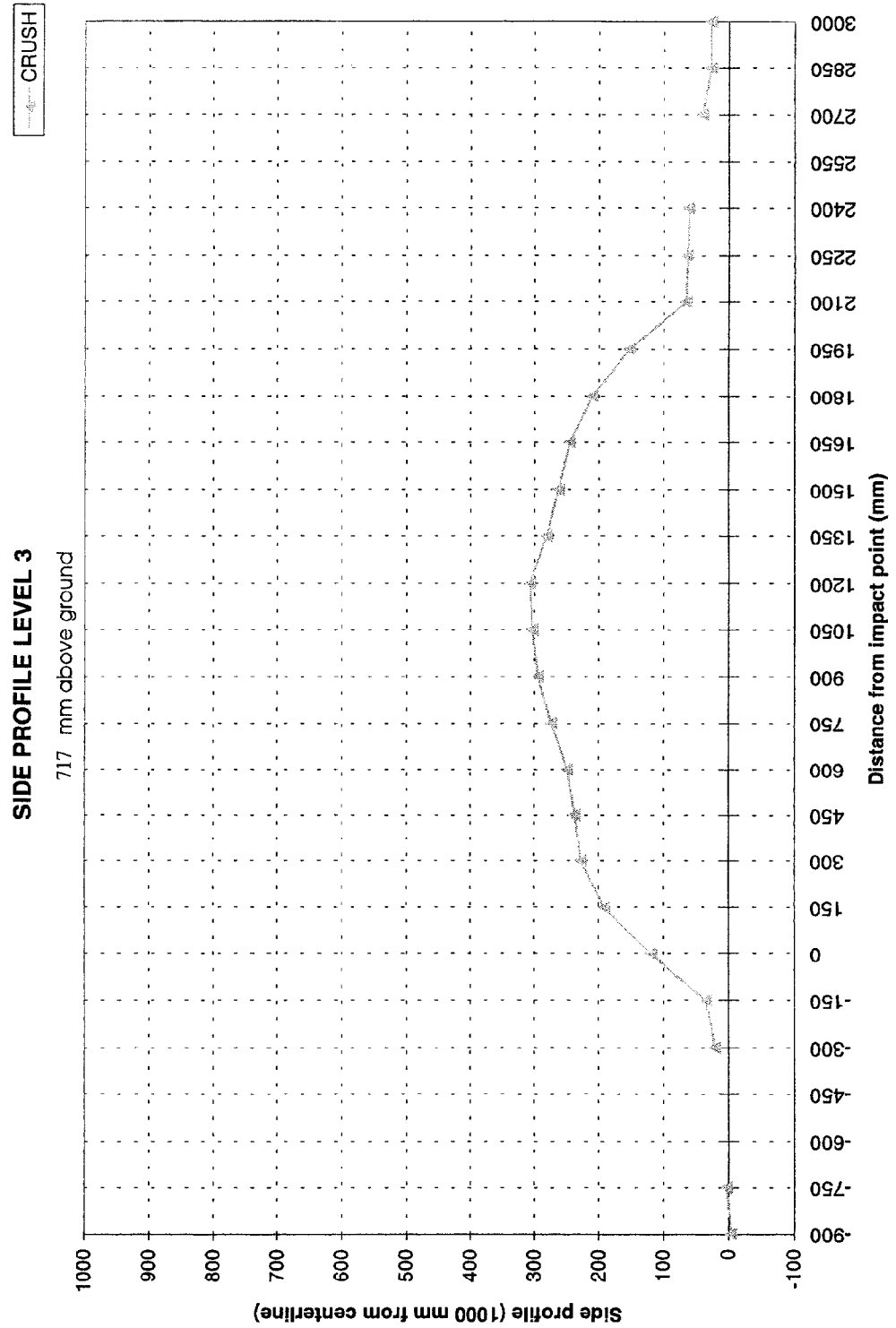


DATA SHEET 10 (continued)

VEHICLE EXTERIOR CRUSH PROFILES

Vehicle: 1999 Chevrolet Venture

NHTSA No. CX0105

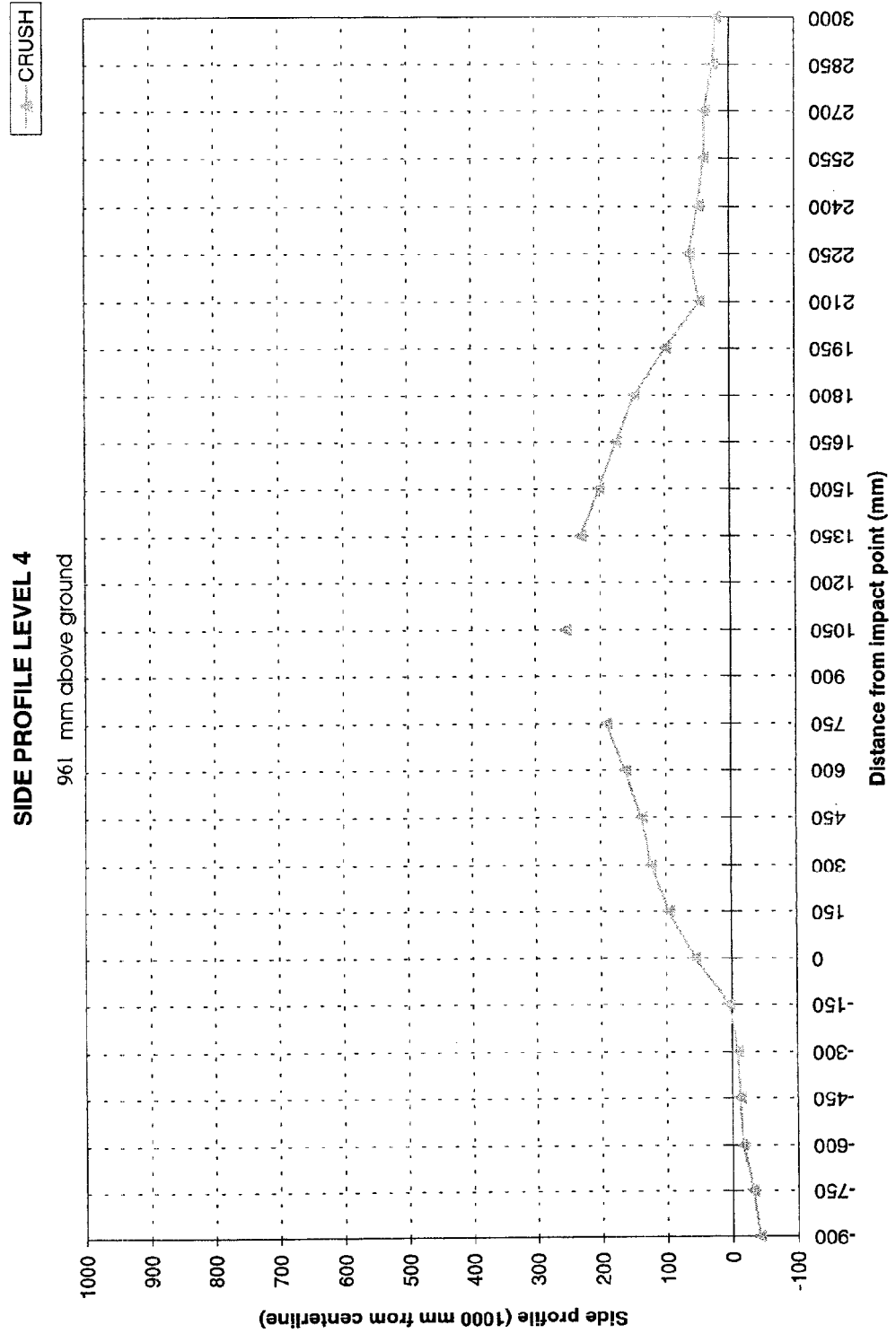


DATA SHEET 10 (continued)

VEHICLE EXTERIOR CRUSH PROFILES

Vehicle: 1999 Chevrolet Venture

NHTSA No. CX0105

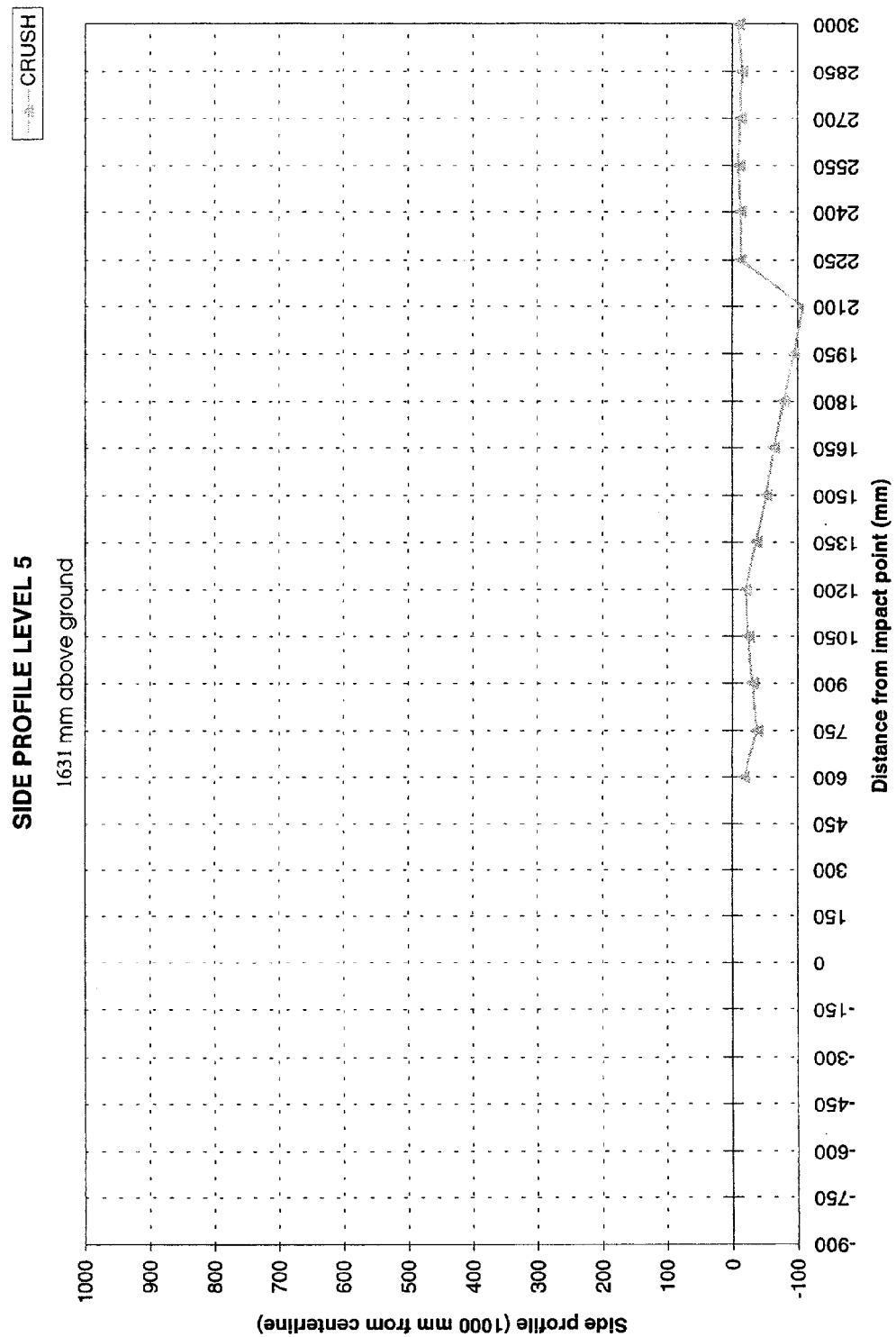


DATA SHEET 10 (continued)

VEHICLE EXTERIOR CRUSH PROFILES

Vehicle: 1999 Chevrolet Venture

NHTSA No. CX0105

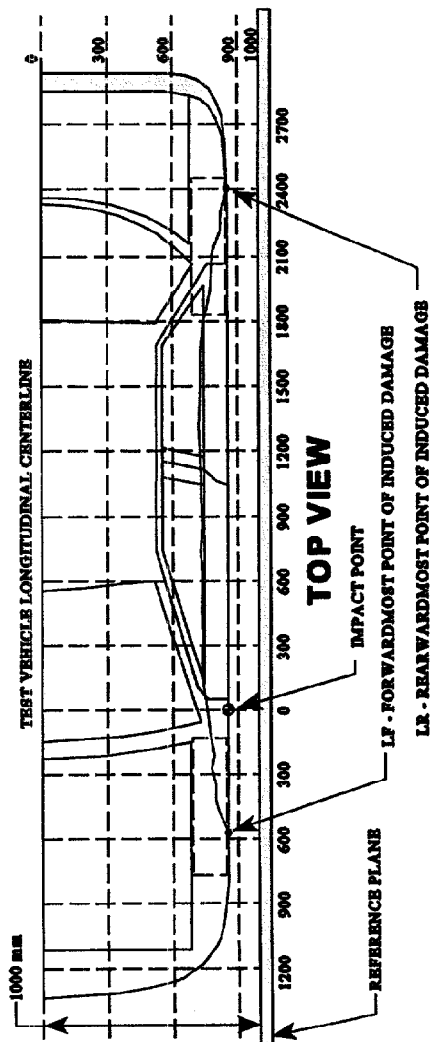


DATA SHEET 11

VEHICLE DAMAGE PROFILE DISTANCES

Vehicle: 1999 Chevrolet Venture

NHTSA No. CX0105



MEASUREMENT CONVENTIONS:
Forward of the impact point (towards front of vehicle) is considered negative (-).
Rearward of the impact point (toward rear 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 = -300 mm)	141	121	20
2	240	347	134	213
3	780	408	129	279
4	1320	416	130	286
5	1860	328	141	187
6	(LR = 2400 mm)	168	108	60

DATA SHEET 12

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

Vehicle: 1999 Chevrolet Venture

NHTSA No. CX0105

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	100	200	300	400	500	600	700	800
LEVEL 4 TOP STACK	813																
		PRE	619	619	619	619	619	619	619	619	619	619	619	619	619	619	619
		POST	702	670	648	627	615	614	618	625	619	623	624	633	643	663	690
LEVEL 3 MID LEVEL	686	CRUSH	83	51	29	8	-4	-5	-1	6	0	0	4	5	14	24	71
		PRE	619	619	619	619	619	619	619	619	619	619	619	619	619	619	619
		POST	653	635	622	610	607	605	606	608	610	610	613	615	617	626	649
LEVEL 2 TOP BUMPER	533	CRUSH	34	16	3	-9	-12	-14	-13	-11	-9	-9	-6	-4	-2	7	30
		PRE	619	619	619	619	619	619	619	619	619	619	619	619	619	619	619
		POST	683	668	651	639	633	624	624	620	619	620	624	623	627	632	638
LEVEL 1 MID BUMPER	432	CRUSH	64	49	32	20	14	5	5	1	0	1	0	5	4	8	13
		PRE	535	519	518	518	518	518	518	518	518	518	518	518	518	519	535
		POST	643	608	588	571	557	545	543	534	533	529	528	528	537	537	554
LEVEL 1 MID BUMPER	432	CRUSH	108	89	70	53	39	27	25	16	15	11	10	10	19	18	19
		PRE	535	519	518	518	518	518	518	518	518	518	518	518	518	519	535
		POST	643	608	588	571	557	545	543	534	533	529	528	528	537	537	554
LEVEL 1 MID BUMPER	432	CRUSH	108	89	70	53	39	27	25	16	15	11	10	10	19	18	19
		PRE	535	519	518	518	518	518	518	518	518	518	518	518	518	519	535
		POST	643	608	588	571	557	545	543	534	533	529	528	528	537	537	554

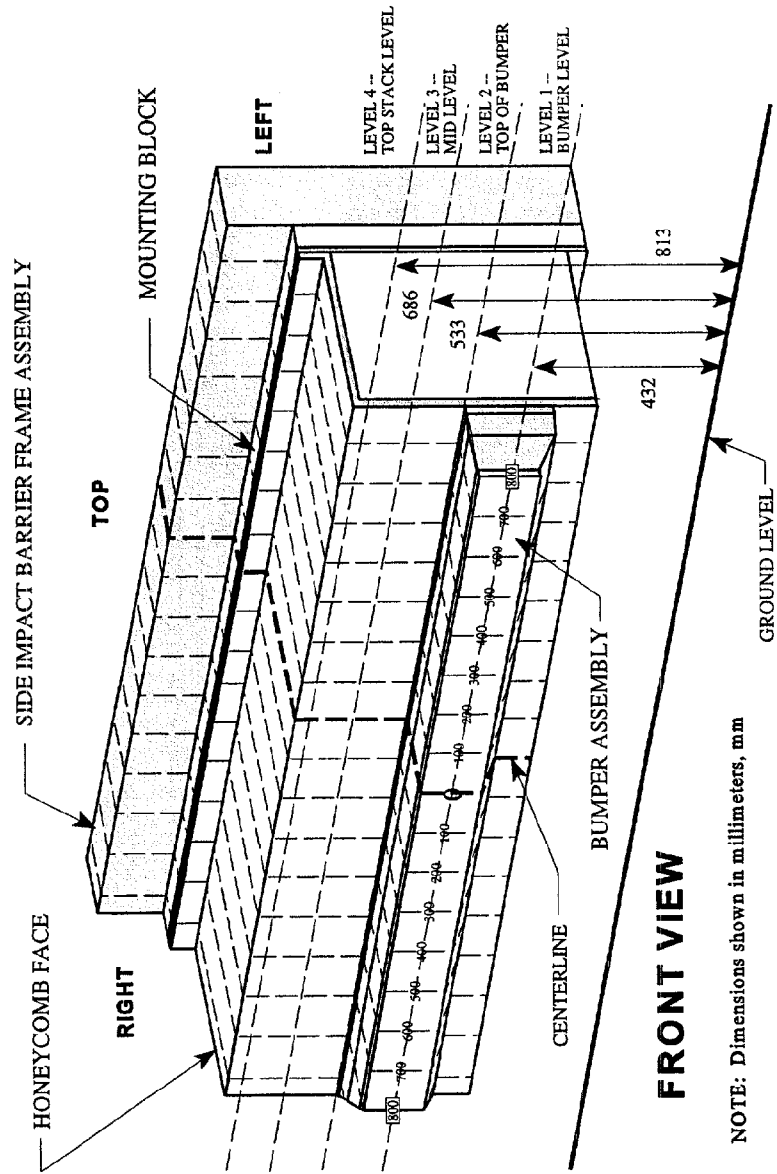
*Heights measured above ground level.

DATA SHEET 12 (continued)

EXTERIOR STATIC CRUSH FOR IMPACTOR FACE

Vehicle: 1999 Chevrolet Venture

NHTSA No. CX0105

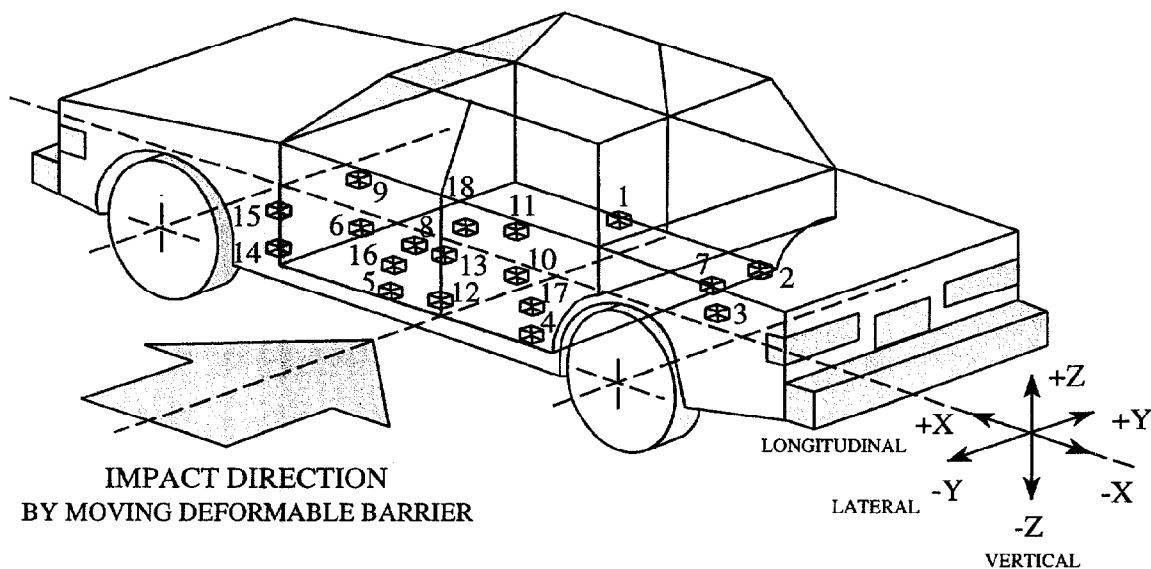


DATA SHEET 13

TEST VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

Vehicle: 1999 Chevrolet Venture

NHTSA No. CX0105



- 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 Chevrolet Venture

NHTSA No. CX0105

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	2308	827	253	pos. neg.	4.4 -4.3	59.7 23.1	19.6 -3.0	18.7 144.9	6.1 -8.3	20.7 0.0	19 -79.8
2	Right Side Sill at Rear Seat	1354	827	253	pos. neg.	4.5 -5.1	59.6 31.3	19.7 -3.5	17.7 160.4	5.4 -7.5	20.9 0.0	17.9 -22
3	Rear Floorpan Above Axle	989	0	559	pos. neg.	1.9 -4.7	49.0 21.7	17.0 -2.3	15.6 414.8	3.6 -4.6	17.3 0.0	15.6 -42.4
4	Left Side Sill at Rear Seat	1354	-661	471	pos. neg.	- -	- -	133.9 -30.6	15.5 31.8	- -	- -	- -
5	Left Side Sill at Front Seat	2308	-661	432	pos. neg.	- -	- -	54.3 -23.1	16.9 48.3	- -	- -	- -
6**	Left Front Door on Centerline	-	-	-	pos. neg.	- -	- -	- -	- -	- -	- -	- -
7	Right Rear Occupant Compartment	1354	429	471	pos. neg.	- -	- -	16.6 -2.0	17.3 414.5	- -	- -	- -
8**	Midrear of Left Front Door	-	-	-	pos. neg.	- -	- -	- -	- -	- -	- -	- -
9**	Left Front Door Upper Centerline	-	-	-	pos. neg.	- -	- -	- -	- -	- -	- -	- -
10**	Midrear of Left Rear Door	-	-	-	pos. neg.	- -	- -	- -	- -	- -	- -	- -
11**	Left Rear Door Upper Centerline	-	-	-	pos. neg.	- -	- -	- -	- -	- -	- -	- -

*Reference: X - Rear Bumper (+ Forward)

Y - Vehicle Centerline (+ To Right)

Z - Ground Level (+ Up)

**Accelerometer was not requested by COTR.

DATA SHEET 13 (continued)

VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

Vehicle: 1999 Chevrolet Venture

NHTSA No. CX0105

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	1689	-771	691	-	-	117.1	5.5	-	-	-	-
					-	-	-55.1	18.8	-	-	-	-
13	Left Middle B-Pillar	1689	-771	903	-	-	130.5	5.7	-	-	-	-
					-	-	-31.0	13.8	-	-	-	-
14	Left Lower A-Pillar	2699	-780	523	-	-	56.3	6.8	-	-	-	-
					-	-	-21.1	13.6	-	-	-	-
15	Left Middle A-Pillar	-	-	-	-	-	-	-	-	-	-	-
					-	-	-	-	-	-	-	-
16	Front Seat Track	1798	-523	529	-	-	62.4	22.1	-	-	-	-
					-	-	-27.2	33.4	-	-	-	-
17	Rear Seat Track	893	-664	541	-	-	37.5	20.9	-	-	-	-
					-	-	-24.6	25.8	-	-	-	-
18	Vehicle CG	2005	0	471	3.0	54.1	20.3	17.5	32.8	17.3	50.9	54.9
					-6.9	16.6	-2.2	499.9	-50.6	54.9	0.0	-40.5

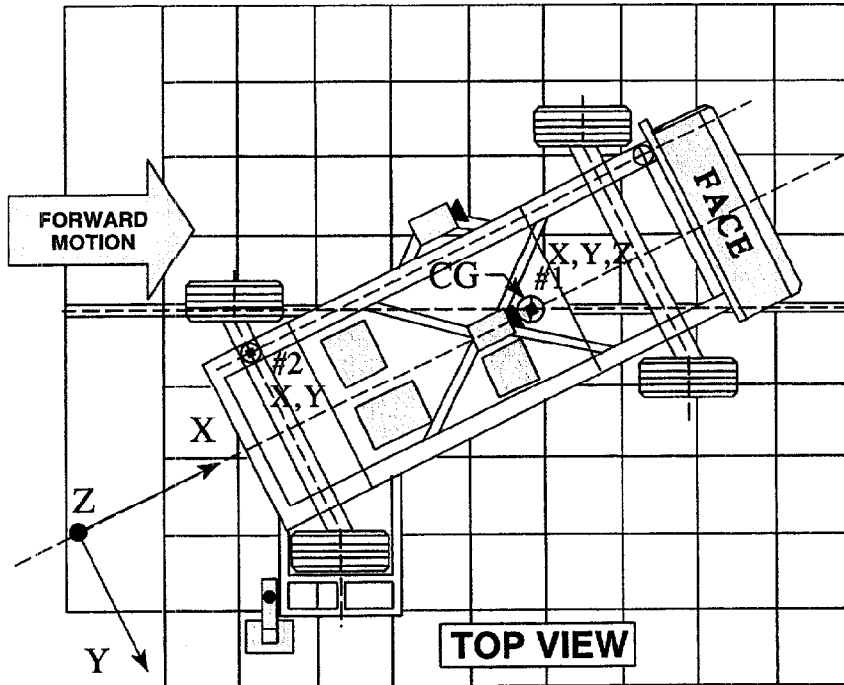
*Reference: X - Rear Bumper (+ Forward) Y - Vehicle Centerline (+ To Right) Z - Ground Level (+ Up)

DATA SHEET 14

MDB ACCELEROMETER LOCATIONS AND DATA SUMMARY

Vehicle: 1999 Chevrolet Venture

NHTSA No. CX0105



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	0.9	110.9	-20.9	40.3
	Lateral..... Y				3.4	0.0	-8.9	25.4
	Vertical..... Z				9.4	64.1	-9.3	103.3
	Resultant..... R				22.9	38.9	-	-
2	Rear Frame Member							
	Longitudinal... X	386	-660	660	1.2	165.4	-22.8	37.6
	Lateral..... Y				3.2	28.4	-3.3	68.3

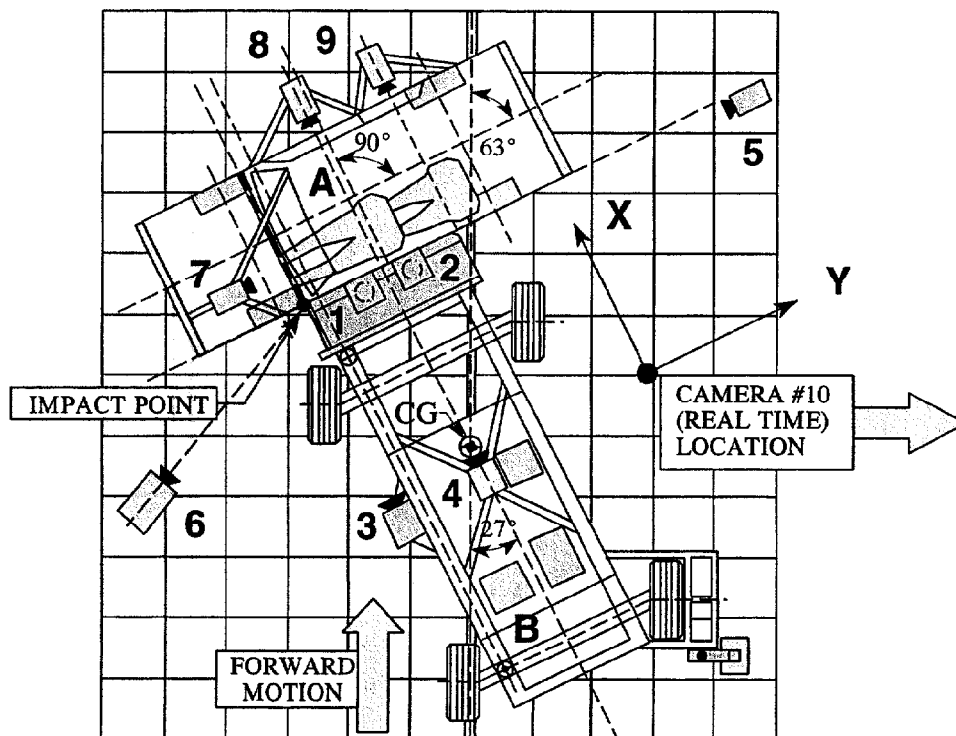
*Reference: X = Rear Bumper (+ Forward)
Y = Vehicle Centerline (+ To Right)
Z = Ground Level (+ Up)
All measurements accurate to within ± 3 mm.

DATA SHEET 15

HIGH SPEED CAMERA LOCATIONS AND DATA SUMMARY

Vehicle: 1999 Chevrolet Venture

NHTSA No. CX0105



Camera No.	View	Coordinates (millimeters)			Angle (deg.)	Lens (mm)	Film Speed (fps)
		X*	Y*	Z*			
1	Overhead view of test vehicle	-771	2209	4880	-90	13	1000
2	Overhead closeup view of impact plane	-431	2420	4880	-90	12.5	1000
3	MDB onboard closeup view of impact point	-1470	0	847	0	13	1000
4	MDB onboard view of driver dummy	-1140	838	1586	-17	7.5	1000
5	Right side ground level overall view	15	9362	1041	-3	25	1000
6	Left side ground level overall view	-2826	-343	1023	-4	13	1000
7	Test vehicle onboard driver front view	433	-834	1375	-2	13	1000
8	Test vehicle onboard driver side view	1765	623	1124	-14	13	1000
9	Test vehicle onboard passenger side view	1773	1579	1165	-14	13	1000
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

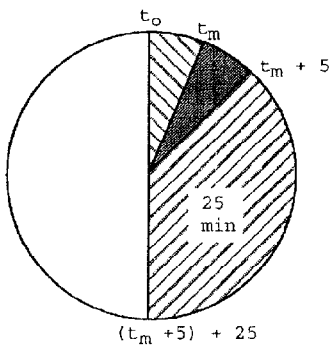
FMVSS 301 FUEL SYSTEM INTEGRITY DATA

NHTSA No.: CX0105 TEST DATE: February 18, 1999
 Vehicle Mfr./Make/Model : 1999 Chevrolet Venture Extended 4-Door Minivan

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 (53.91 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

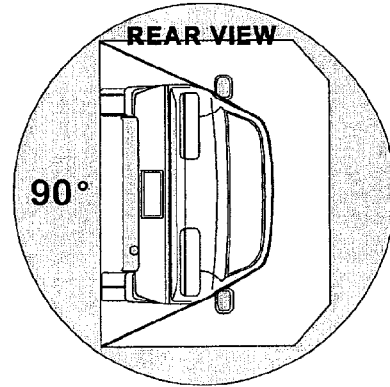
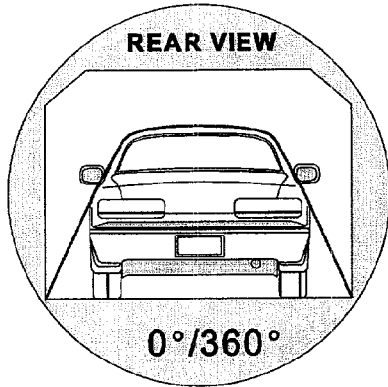
DATA SHEET 17

ROLLOVER DATA

Vehicle: 1999 Chevrolet Venture

NHTSA No. CX0105

0 - 90 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

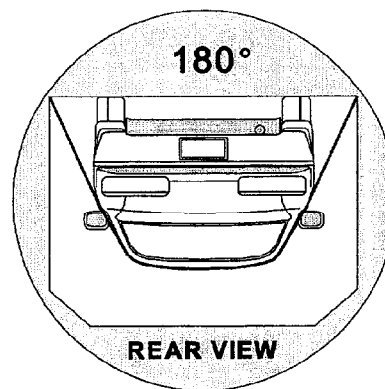
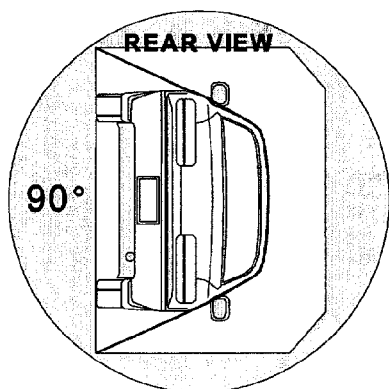
DATA SHEET 17 (continued)

ROLLOVER DATA

Vehicle: 1999 Chevrolet Venture

NHTSA No. CX0105

90 - 180 Degrees



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD :

Rollover Fixture 90° Rotation Time	<u>1</u> minutes <u>08</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>8</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

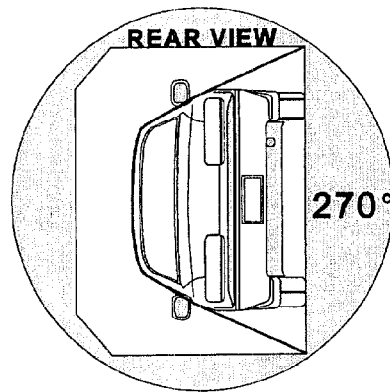
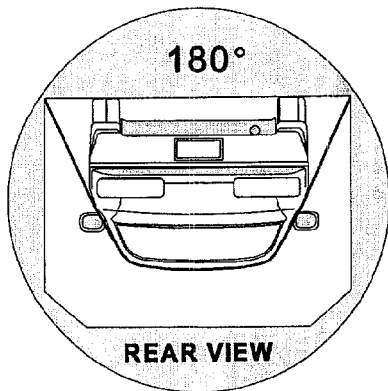
DATA SHEET 17 (continued)

ROLLOVER DATA

Vehicle: 1999 Chevrolet Venture

NHTSA No. CX0105

180 - 270 Degrees



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD :

Rollover Fixture 90° Rotation Time	<u>1</u> minutes <u>07</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>7</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

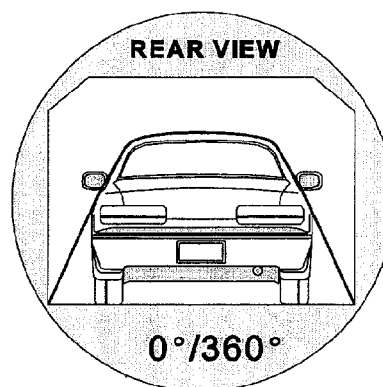
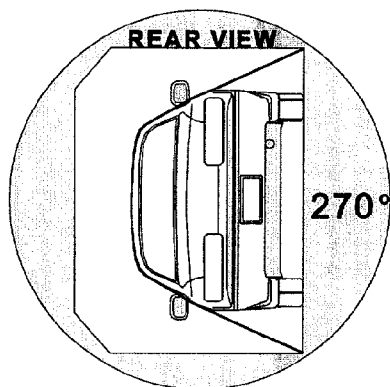
DATA SHEET 17 (continued)

ROLLOVER DATA

Vehicle: 1999 Chevrolet Venture

NHTSA No. CX0105

270 - 360 Degrees



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD :

Rollover Fixture 90° Rotation Time	<u>1</u> minutes <u>15</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>15</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

APPENDIX A

PHOTOGRAPHS

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Figure A- 24	POST-TEST LEFT OCCUPANT COMPARTMENT VIEW OF REAR SID	A- 26
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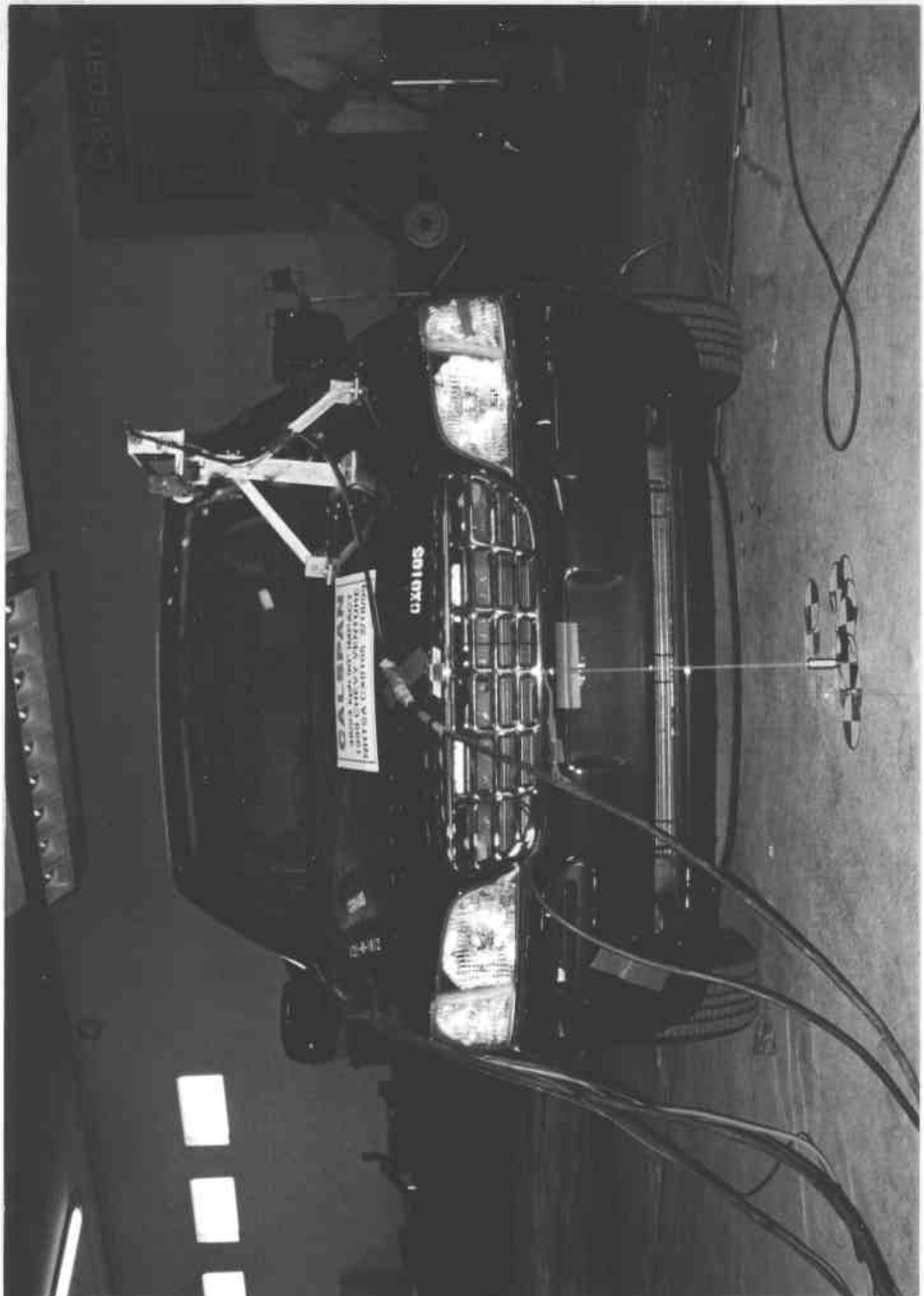


Figure A-1 PRE-TEST FRONTAL VIEW OF TEST VEHICLE



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-6 POST-TEST IMPACTED SIDE VIEW OF TEST VEHICLE



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

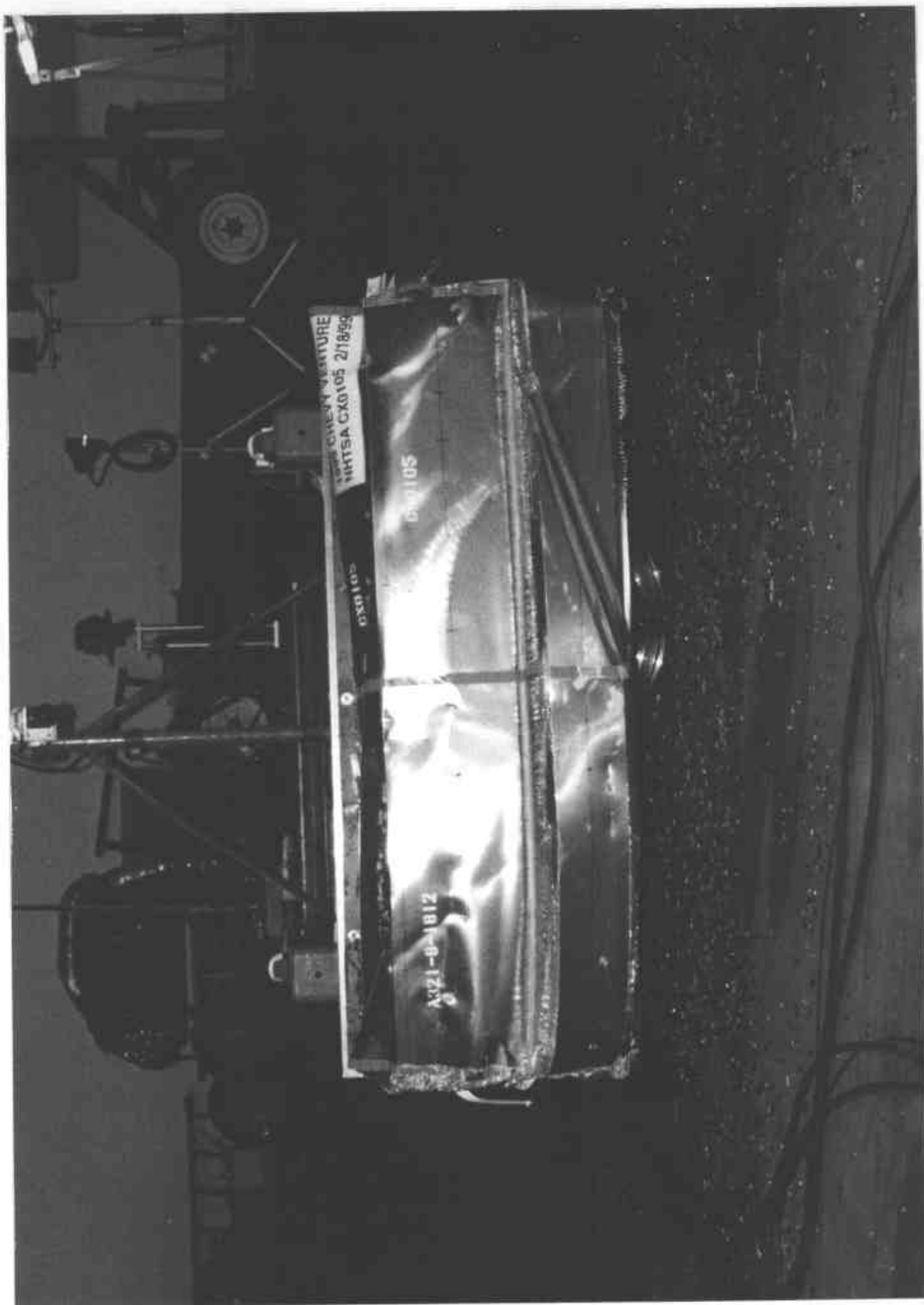


Figure A-8 POST-TEST FRONTAL VIEW OF IMPACTOR FACE



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

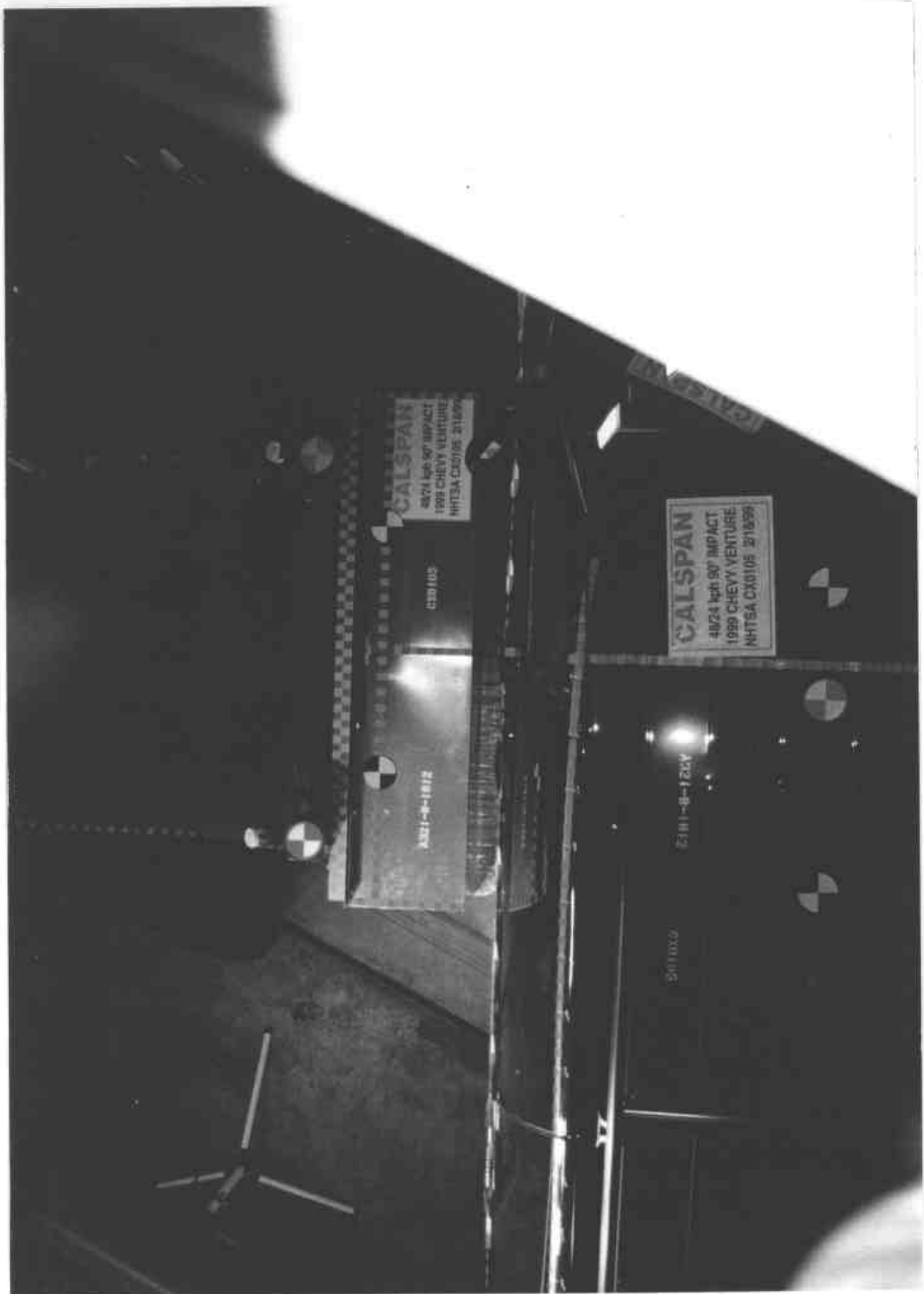


Figure A-15 PRE-TEST OVERHEAD VIEW OF ALIGNED MDB AND VEHICLE



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

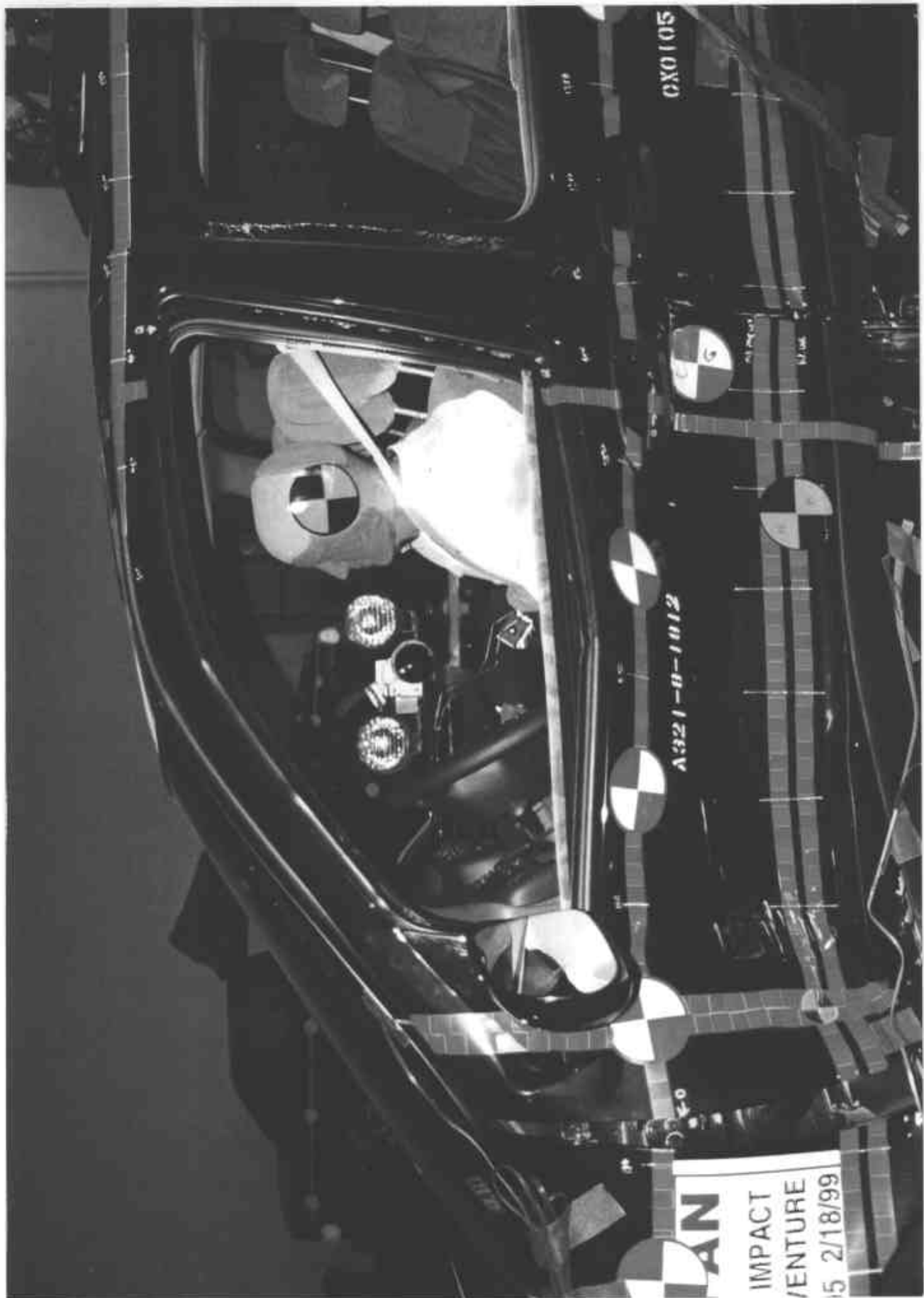


Figure A-22 POST-TEST LEFT OCCUPANT COMPARTMENT VIEW OF FRONT SID

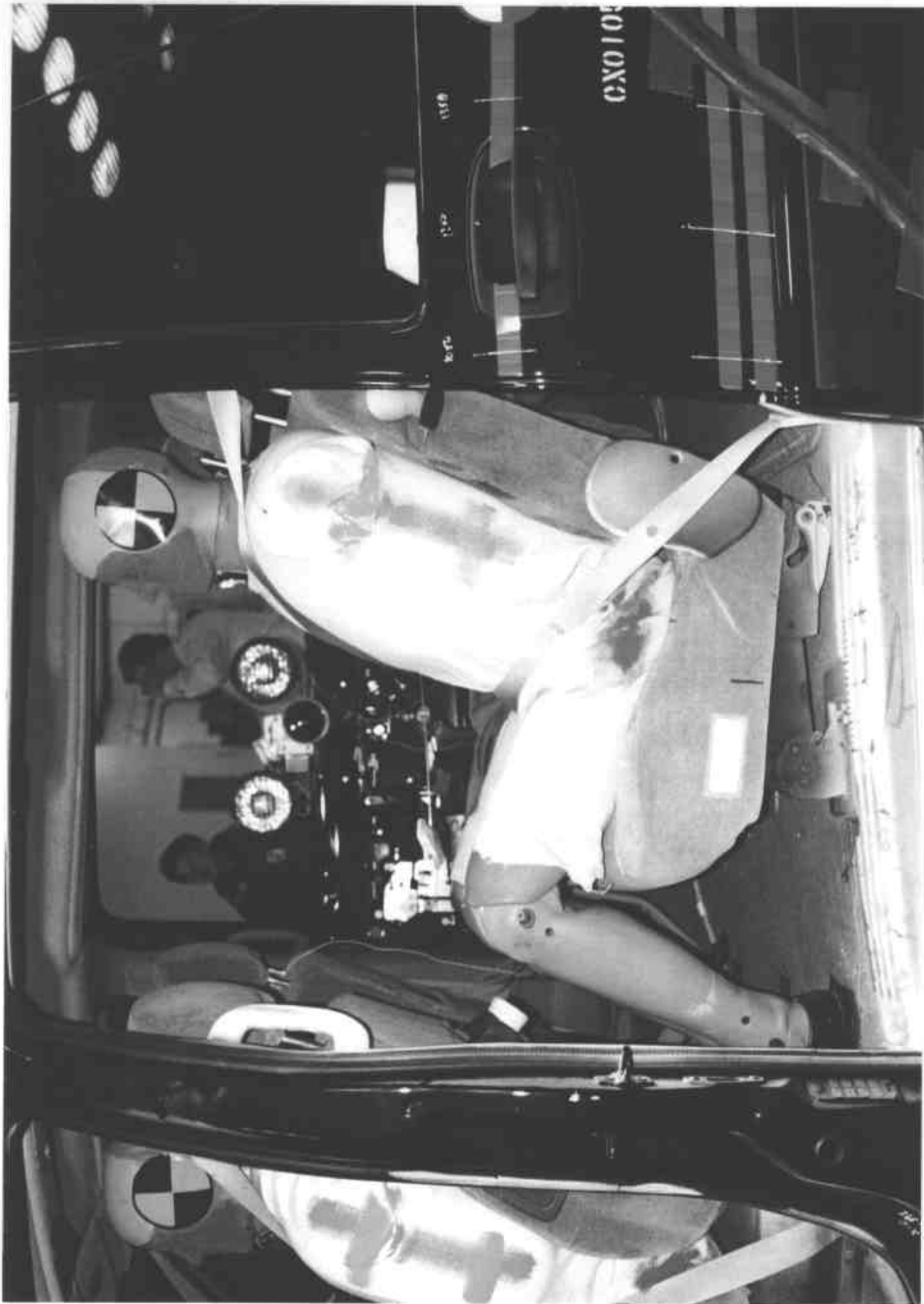


Figure A-23 PRE-TEST LEFT OCCUPANT COMPARTMENT VIEW OF REAR SID

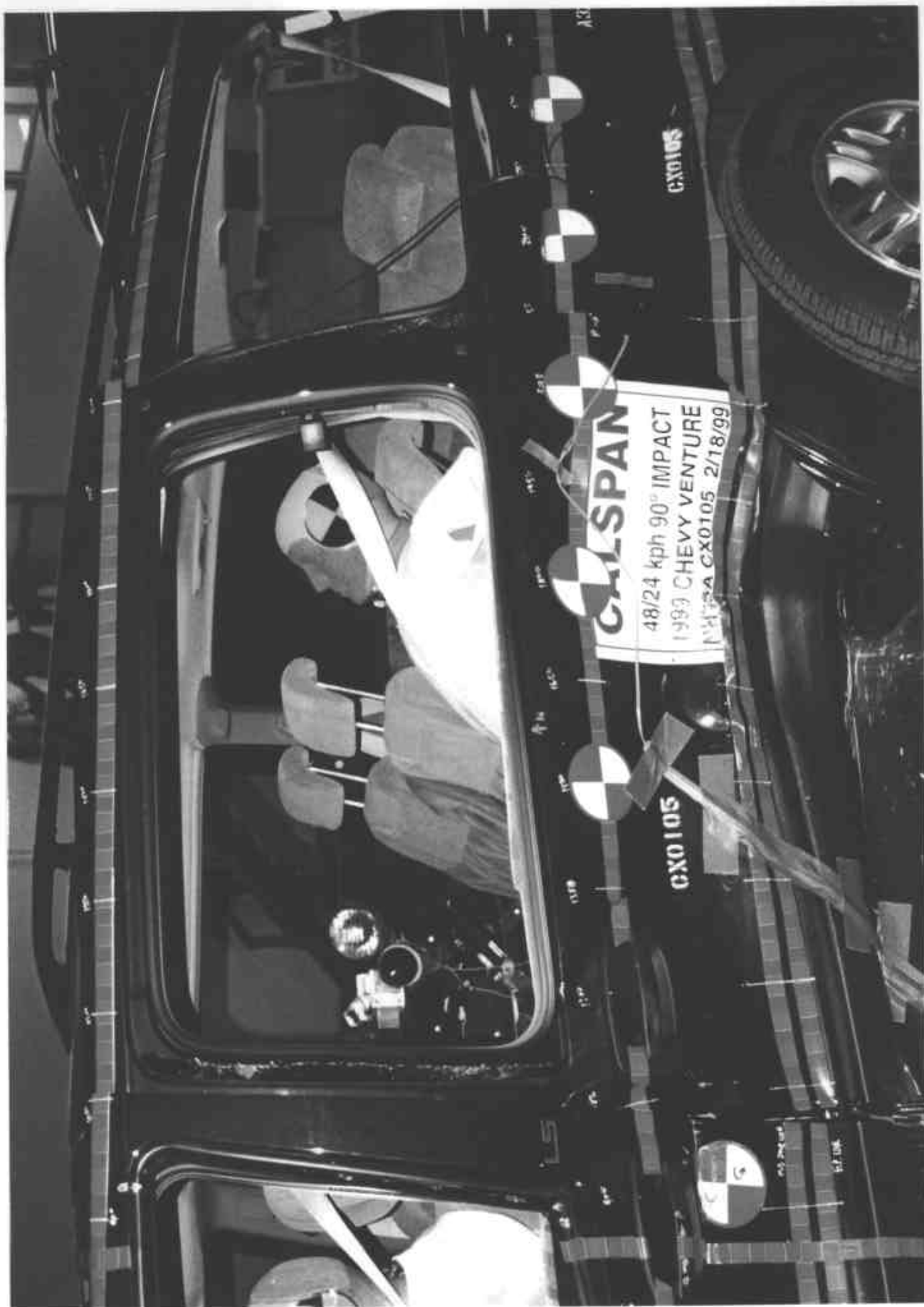


Figure A-24 POST-TEST LEFT OCCUPANT COMPARTMENT VIEW OF REAR SID

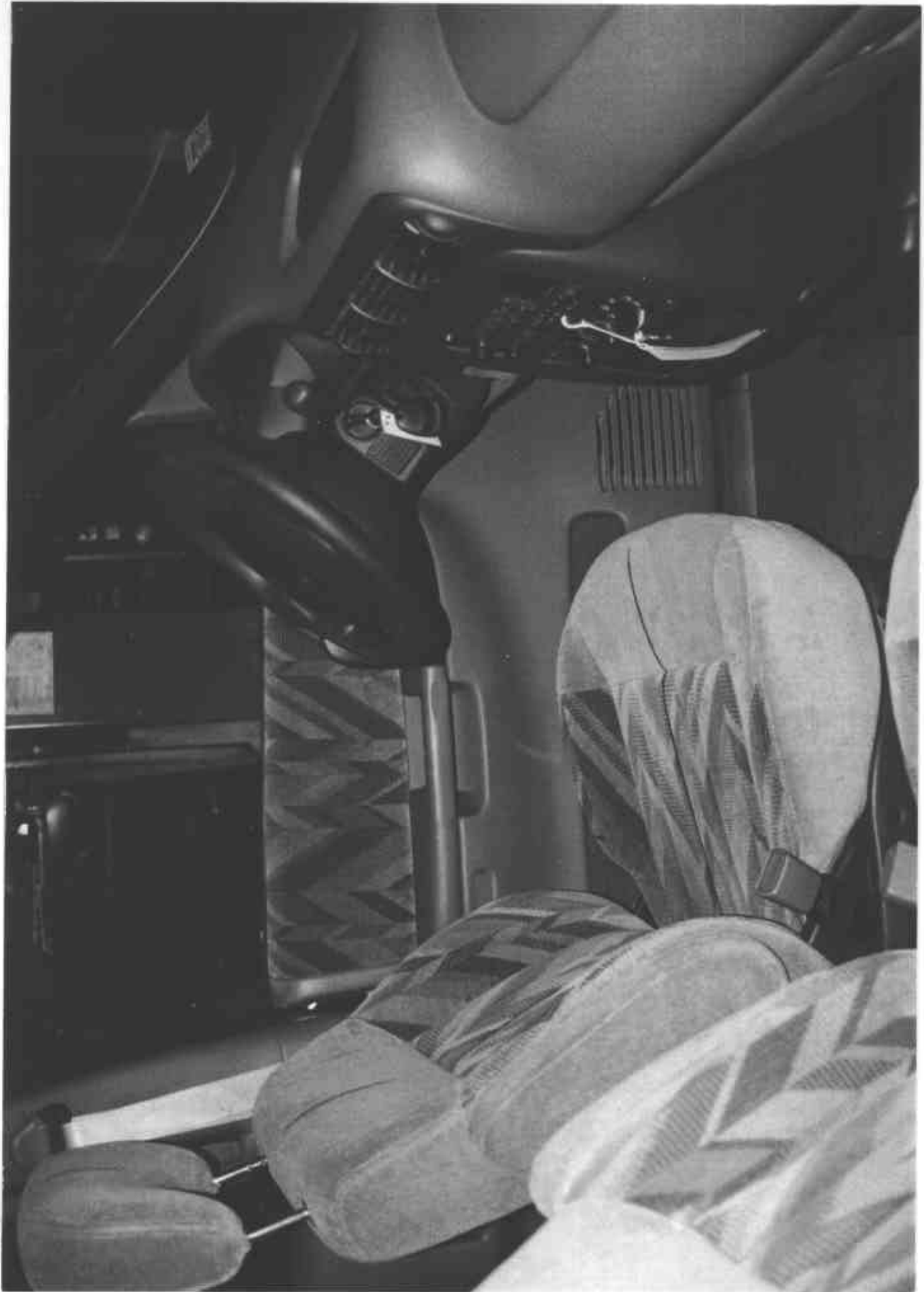


Figure A-25 PRE-TEST INTERIOR OF FRONT DOOR



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

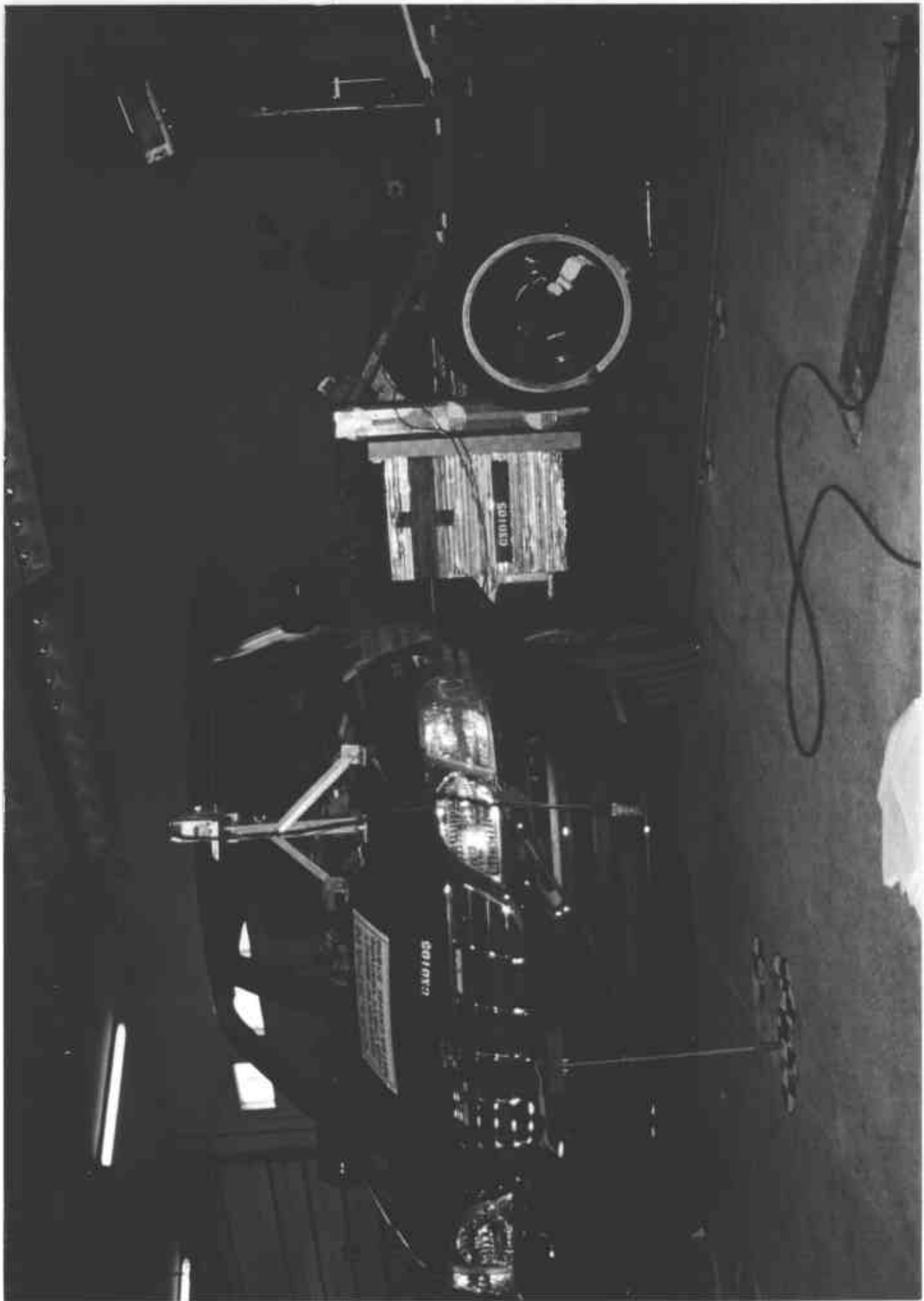


Figure A-29 PRE-TEST LEFT SIDE VIEW OF MDB WITH IMPACTOR FACE IN POSITION



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

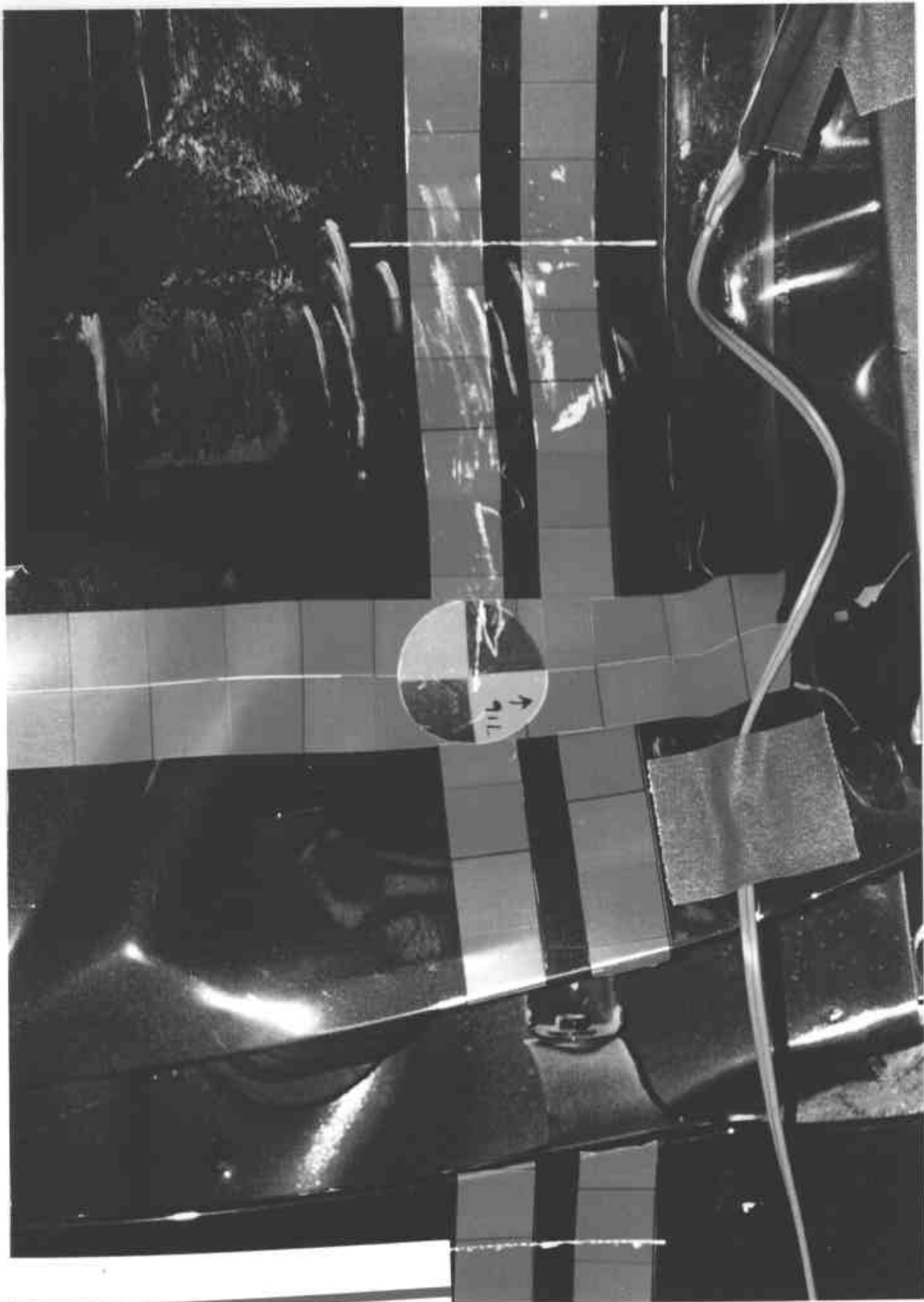


Figure A-31 POST-TEST CLOSE-UP VIEW OF IMPACT POINT TARGET


MFD BY GENERAL MOTORS CORP 09/98
 GVWR GAWR FRT GAWR RR
 2430KG(5357LB) 1250KG(2755LB) 1250KG(2755LB)
 THIS VEHICLE CONFORMS TO ALL APPLICABLE U.S. FEDERAL MOTOR
 VEHICLE SAFETY STANDARDS IN EFFECT ON THE DATE OF
 MANUFACTURE SHOWN ABOVE
1GNDX03E3XD121197 TYPE M P V

MODEL: UM16	AW	COLD TIRE PRESSURE
UPBJ TIRE SIZE SPEED RTG	15X6	242KPA(35PSI)
FRT P215/70R15 S	15X6	242KPA(35PSI)
RR P215/70R15 M	15X6	242KPA(35PSI)
SPA T125/70R15		

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

PHOTOGRAPH NOT AVAILABLE

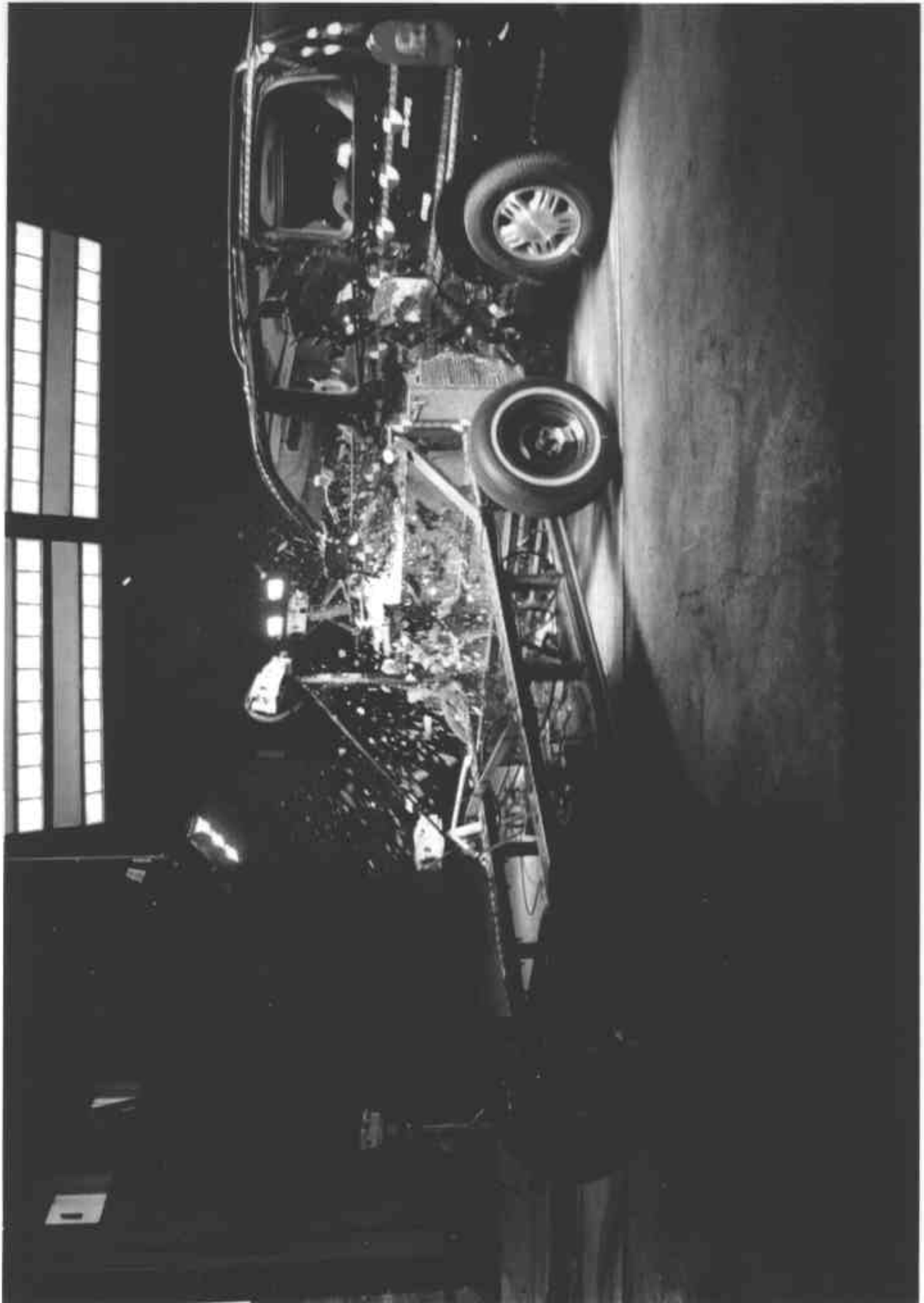


Figure A-34 IMPACT PHOTO



Figure A-35 ROLLOVER 90 DEGREES

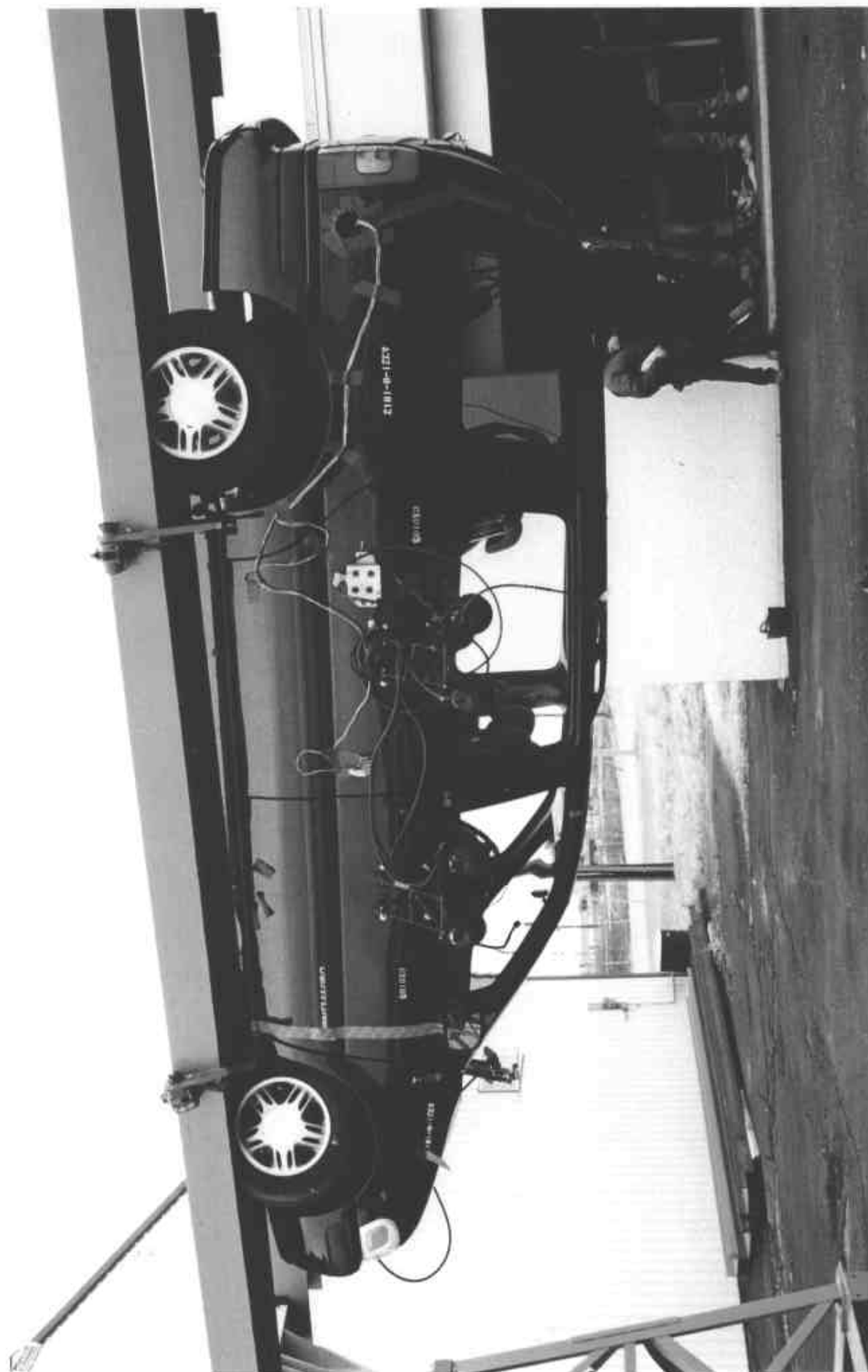


Figure A-36 ROLLOVER 180 DEGREES



Figure A-37 ROLLOVER 270 DEGREES

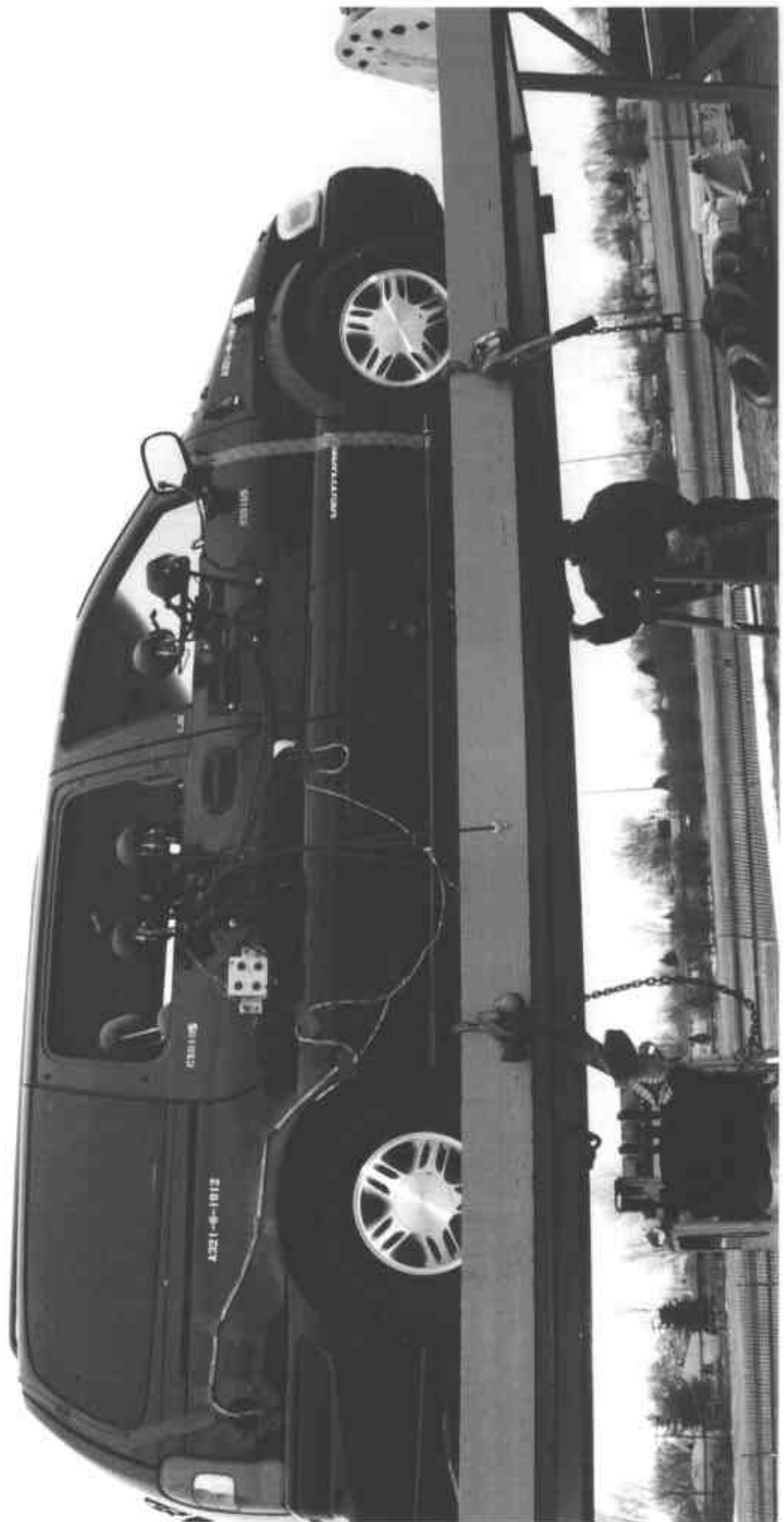


Figure A-38 ROLLOVER 360 DEGREES

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	RIGHT REAR OCCUPANT COMPARTMENT (Y) ACCELERATION VS TIME	B- 55
51	RIGHT REAR OCCUPANT COMPARTMENT (Y) VELOCITY VS TIME	B- 56
52	LOWER B-POST (Y) ACCELERATION VS TIME	B- 57
53	LOWER B-POST (Y) VELOCITY VS TIME	B- 58
54	UPPER B-POST (Y) ACCELERATION VS TIME	B- 59
55	UPPER B-POST (Y) VELOCITY VS TIME	B- 60
56	LOWER A-POST (Y) ACCELERATION VS TIME	B- 61
57	LOWER A-POST (Y) VELOCITY VS TIME	B- 62
58	FRONT SEAT TRACK (Y) ACCELERATION VS TIME	B- 63
59	FRONT SEAT TRACK (Y) VELOCITY VS TIME	B- 64
60	REAR SEAT TRACK (Y) ACCELERATION VS TIME	B- 65
61	REAR SEAT TRACK (Y) VELOCITY VS TIME	B- 66
62	VEHICLE CENTER OF GRAVITY (X) ACCELERATION VS TIME	B- 67
63	VEHICLE CENTER OF GRAVITY (X) VELOCITY VS TIME	B- 68
64	VEHICLE CENTER OF GRAVITY (Y) ACCELERATION VS TIME	B- 69
65	VEHICLE CENTER OF GRAVITY (Y) VELOCITY ACCELERATION VS TIME	B- 70
66	VEHICLE CENTER OF GRAVITY (Z) ACCELERATION VS TIME	B- 71
67	VEHICLE CENTER OF GRAVITY (Z) VELOCITY VS TIME	B- 72
68	VEHICLE CENTER OF GRAVITY RESULTANT ACCELERATION VS TIME	B- 73

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>
69	MDB CENTER OF GRAVITY (X) ACCELERATION VS TIME	B- 74
70	MDB CENTER OF GRAVITY (X) VELOCITY VS TIME	B- 75
71	MDB CENTER OF GRAVITY (Y) ACCELERATION VS TIME	B- 76
72	MDB CENTER OF GRAVITY (Y) VELOCITY VS TIME	B- 77
73	MDB CENTER OF GRAVITY (Z) ACCELERATION VS TIME	B- 78
74	MDB CENTER OF GRAVITY (Z) VELOCITY VS TIME	B- 79
75	MDB CENTER OF GRAVITY RESULTANT ACCELERATION VS TIME	B- 80
76	MDB REAR (X) ACCELERATION VS TIME	B- 81
77	MDB REAR (X) VELOCITY VS TIME	B- 82
78	MDB REAR (Y) ACCELERATION VS TIME	B- 83
79	MDB REAR (Y) VELOCITY VS TIME	B- 84

DRIVER & PASSENGER DUMMY INSTRUMENTATION PLOTS (REDUNDANT)
ACCELERATION DATA - FILTER CLASS 1000
INTEGRATION DATA - FILTER CLASS 180

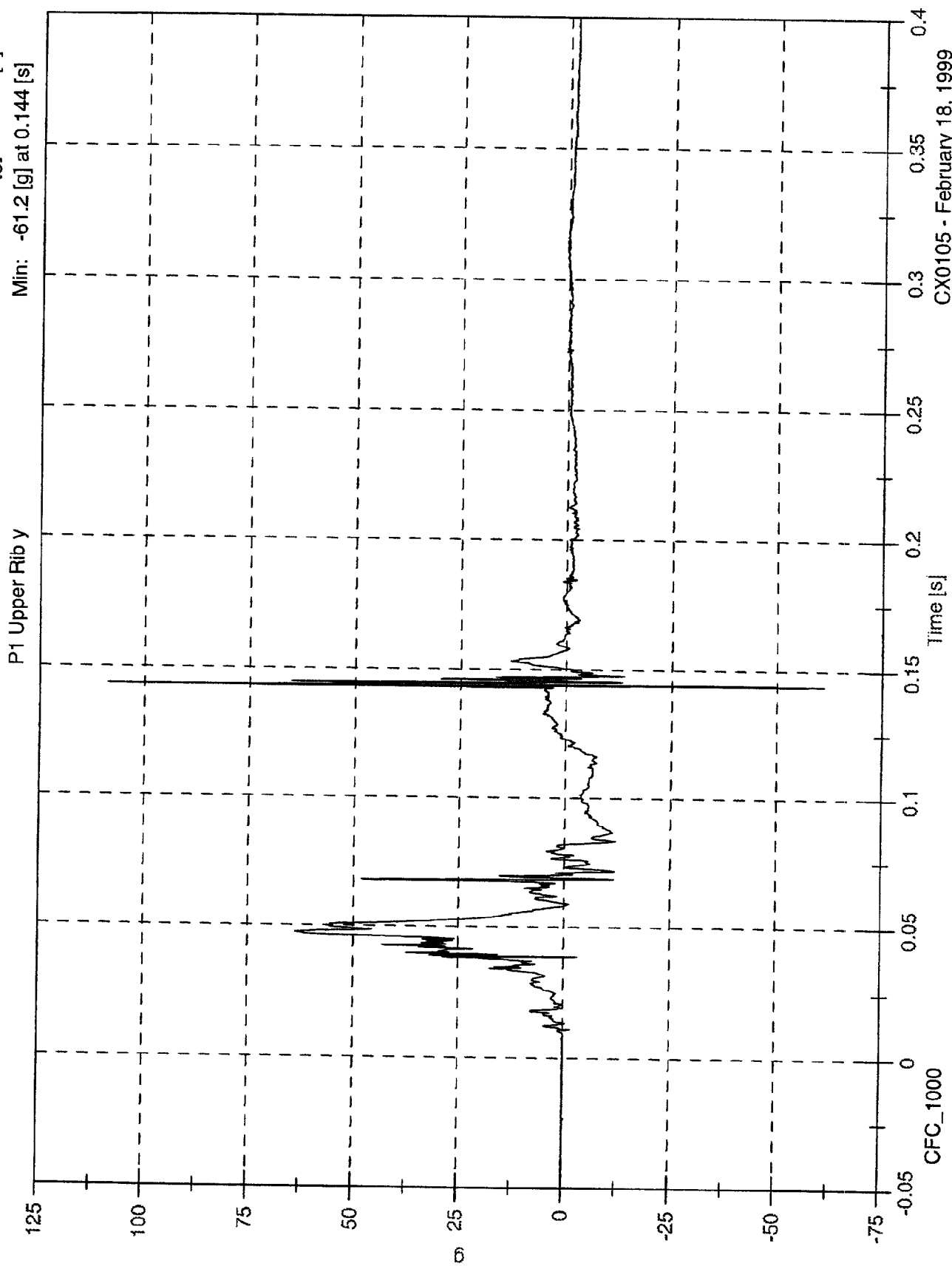
<u>Plot No.</u>	<u>Data Plot Title</u>	<u>Page</u>
80	DRIVER UPPER RIB (Y) ACCELERATION VS TIME	B- 85
81	DRIVER UPPER RIB (Y) VELOCITY VS TIME	B- 86
82	DRIVER LOWER RIB (Y) ACCELERATION VS TIME	B- 87
83	DRIVER LOWER RIB (Y) VELOCITY VS TIME	B- 88
84	DRIVER LOWER SPINE (Y) ACCELERATION VS TIME	B- 89
85	DRIVER LOWER SPINE (Y) VELOCITY VS TIME	B- 90
86	DRIVER PELVIC (Y) ACCELERATION VS TIME	B- 91
87	DRIVER PELVIC (Y) VELOCITY VS TIME	B- 92
88	PASSENGER UPPER RIB (Y) ACCELERATION VS TIME	B- 93
89	PASSENGER UPPER RIB (Y) VELOCITY VS TIME	B- 94
90	PASSENGER LOWER RIB (Y) ACCELERATION VS TIME	B- 95
91	PASSENGER LOWER RIB (Y) VELOCITY VS TIME	B- 96
92	PASSENGER LOWER SPINE (Y) ACCELERATION VS TIME	B- 97
93	PASSENGER LOWER SPINE (Y) VELOCITY VS TIME	B- 98
94	PASSENGER PELVIC (Y) ACCELERATION VS TIME	B- 99
95	PASSENGER PELVIC (Y) VELOCITY VS TIME	B- 100

DRIVER & PASSENGER DUMMY INSTRUMENTATION PLOTS (REDUNDANT)
ACCELERATION DATA - FIR FILTERED

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

214 Test # 8 - 1999 Chevrolet Venture

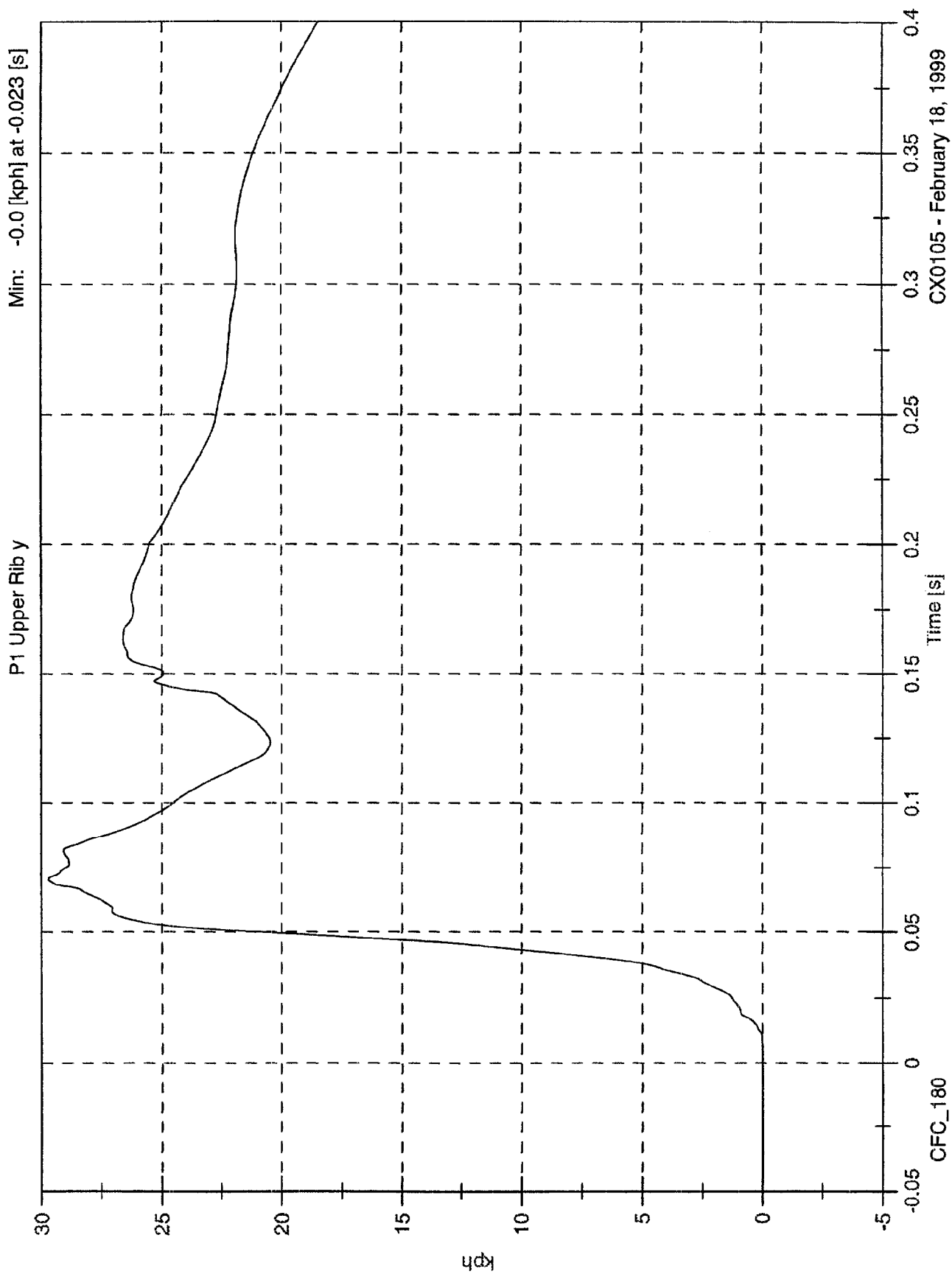
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Min: -61.2 [g] at 0.144 [s]



CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

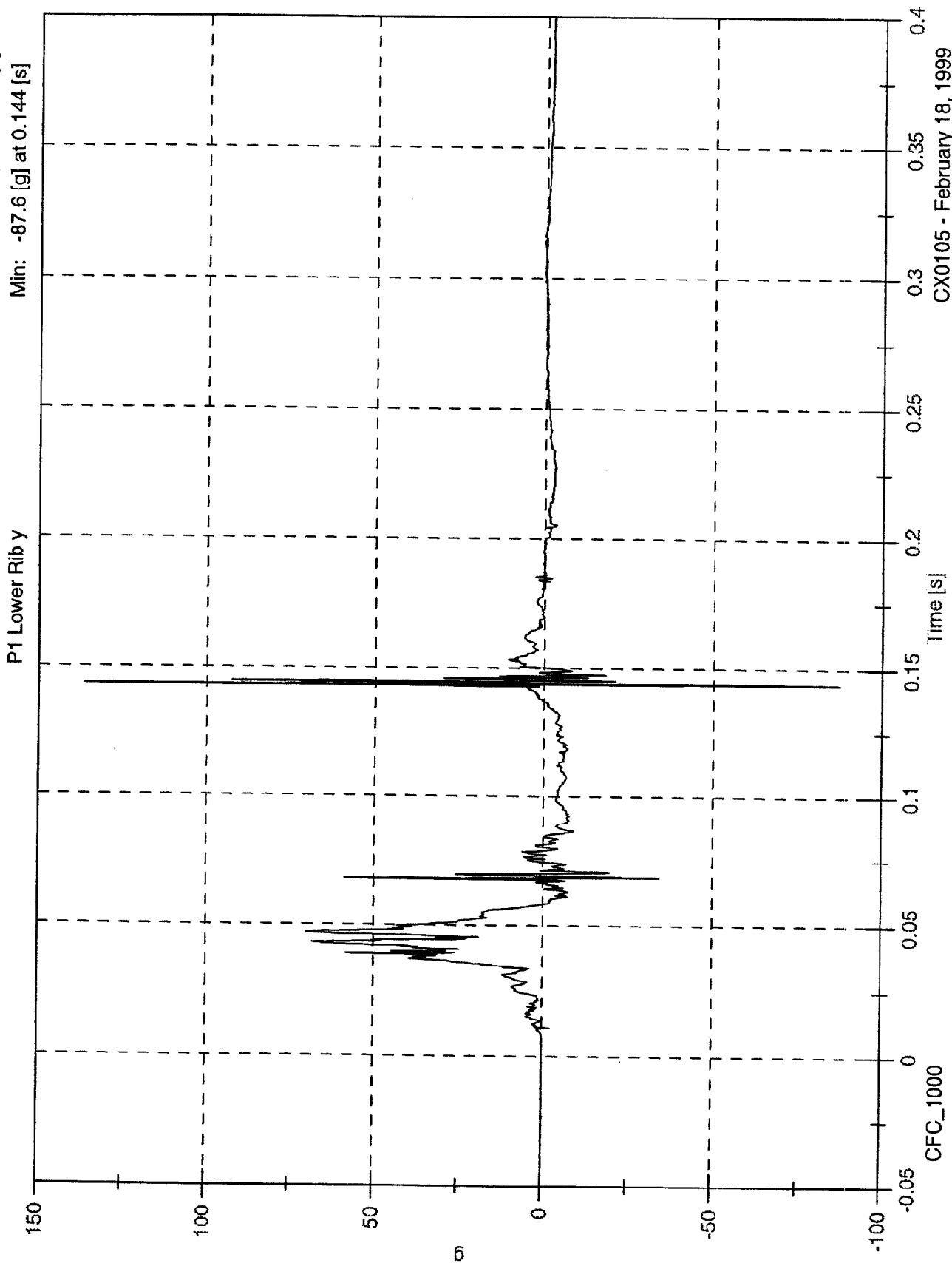
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CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 136.7 [g] at 0.143 [s]
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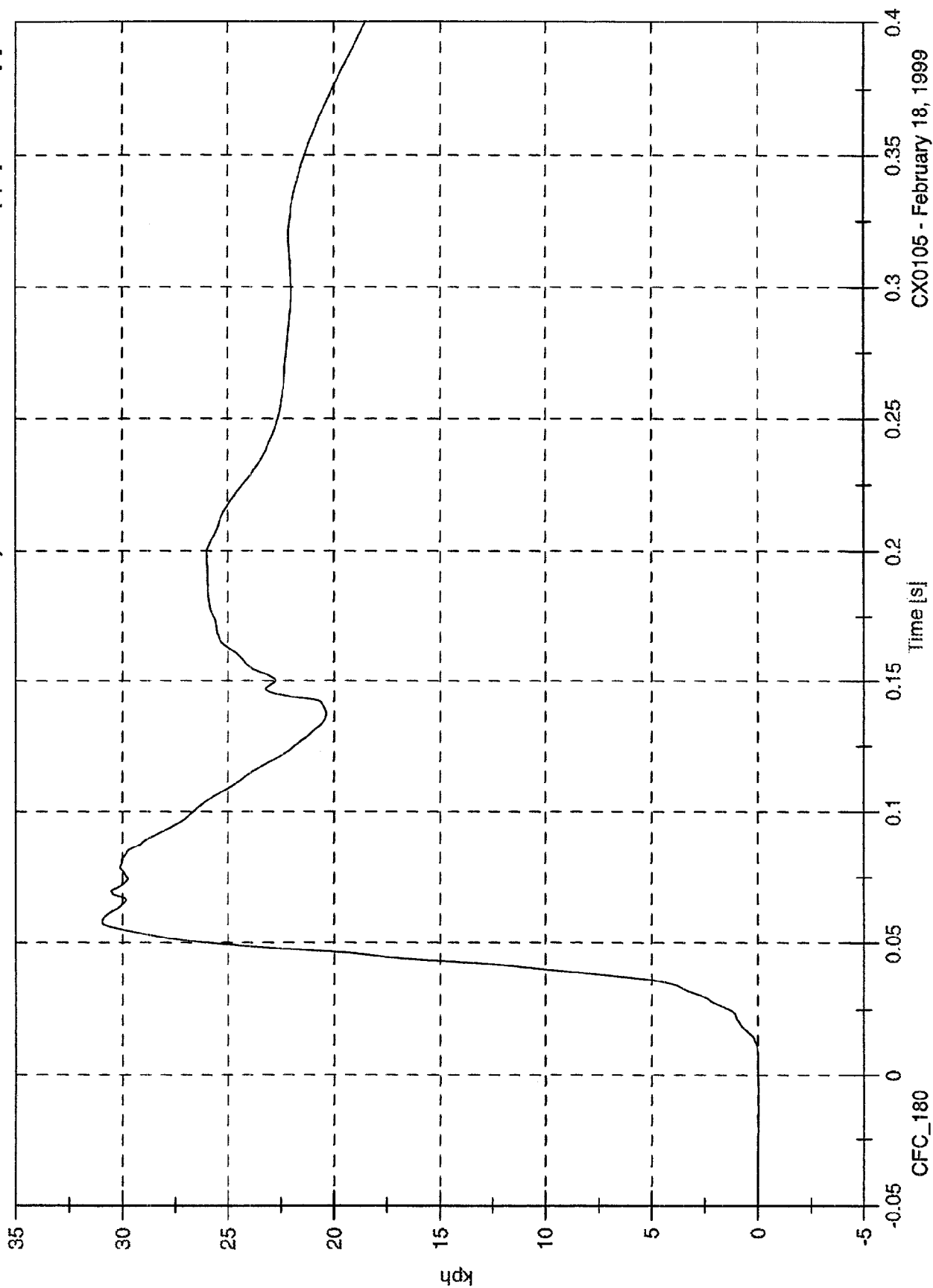
CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

P1 Lower Rib y

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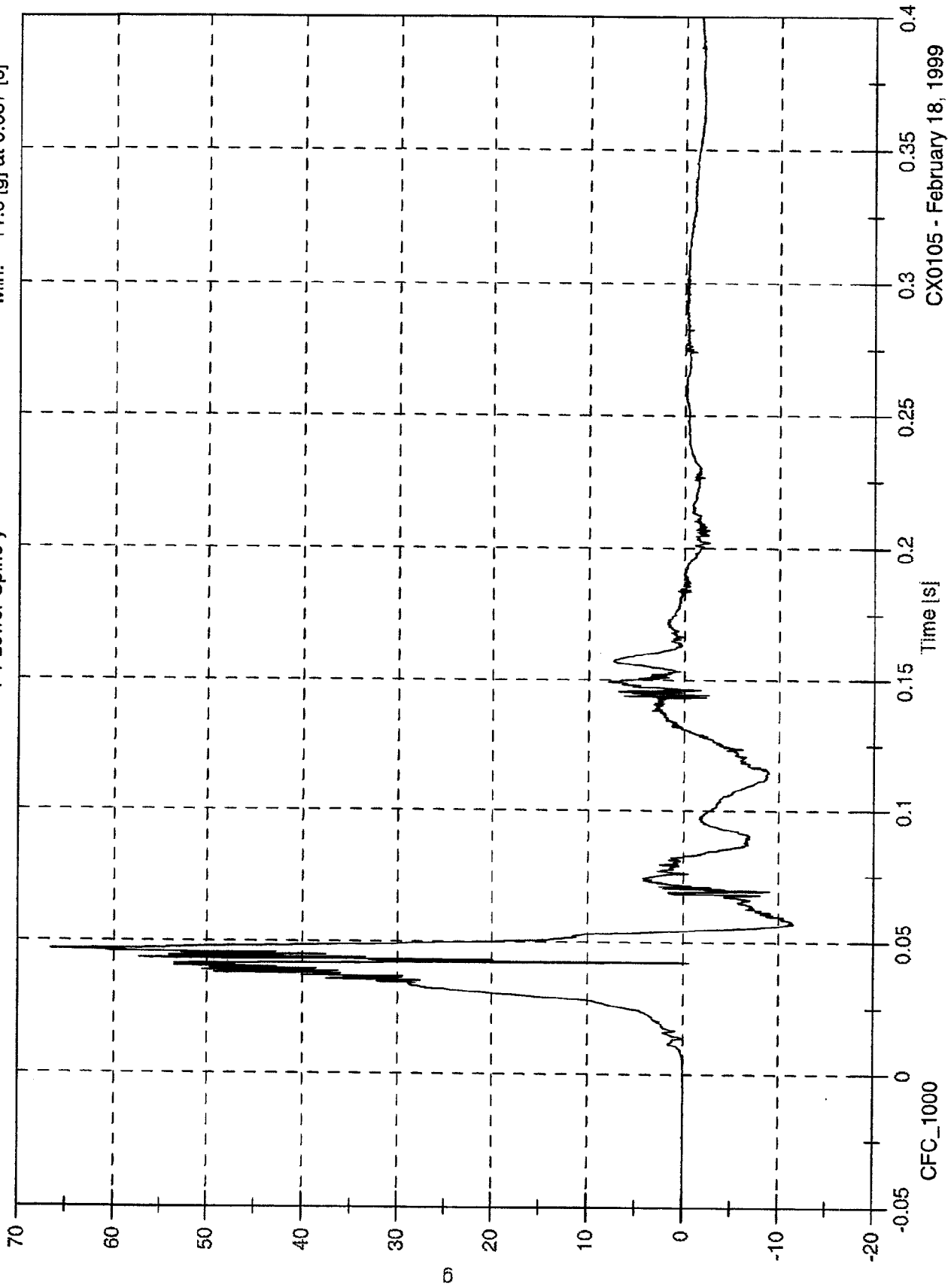


CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

P1 Lower Spine y

Max: 66.6 [g] at 0.047 [s]
Min: -11.6 [g] at 0.057 [s]



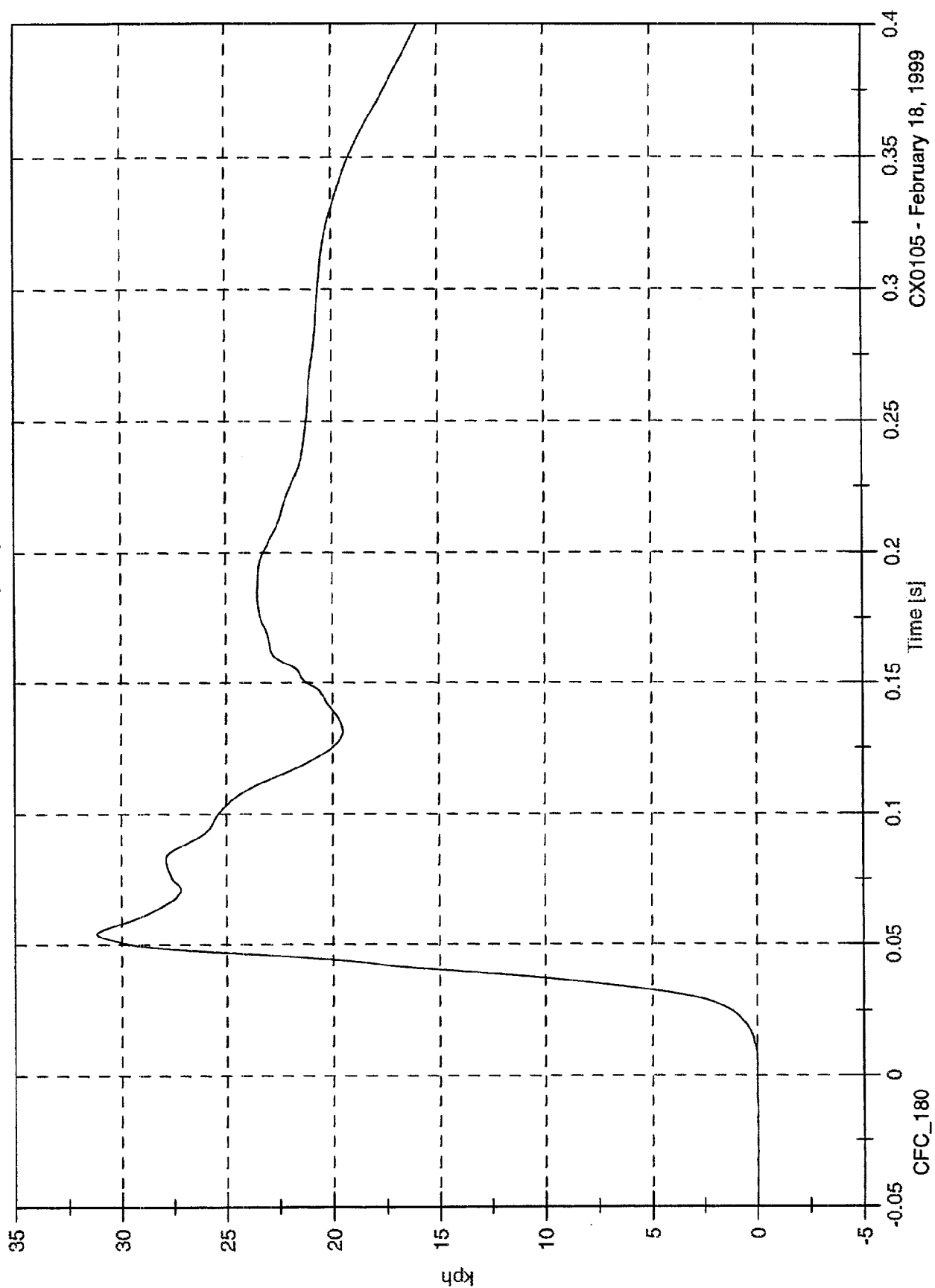
CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 31.2 [kph] at 0.054 [s]

Min: -0.0 [kph] at -0.038 [s]

P1 Lower Spine y



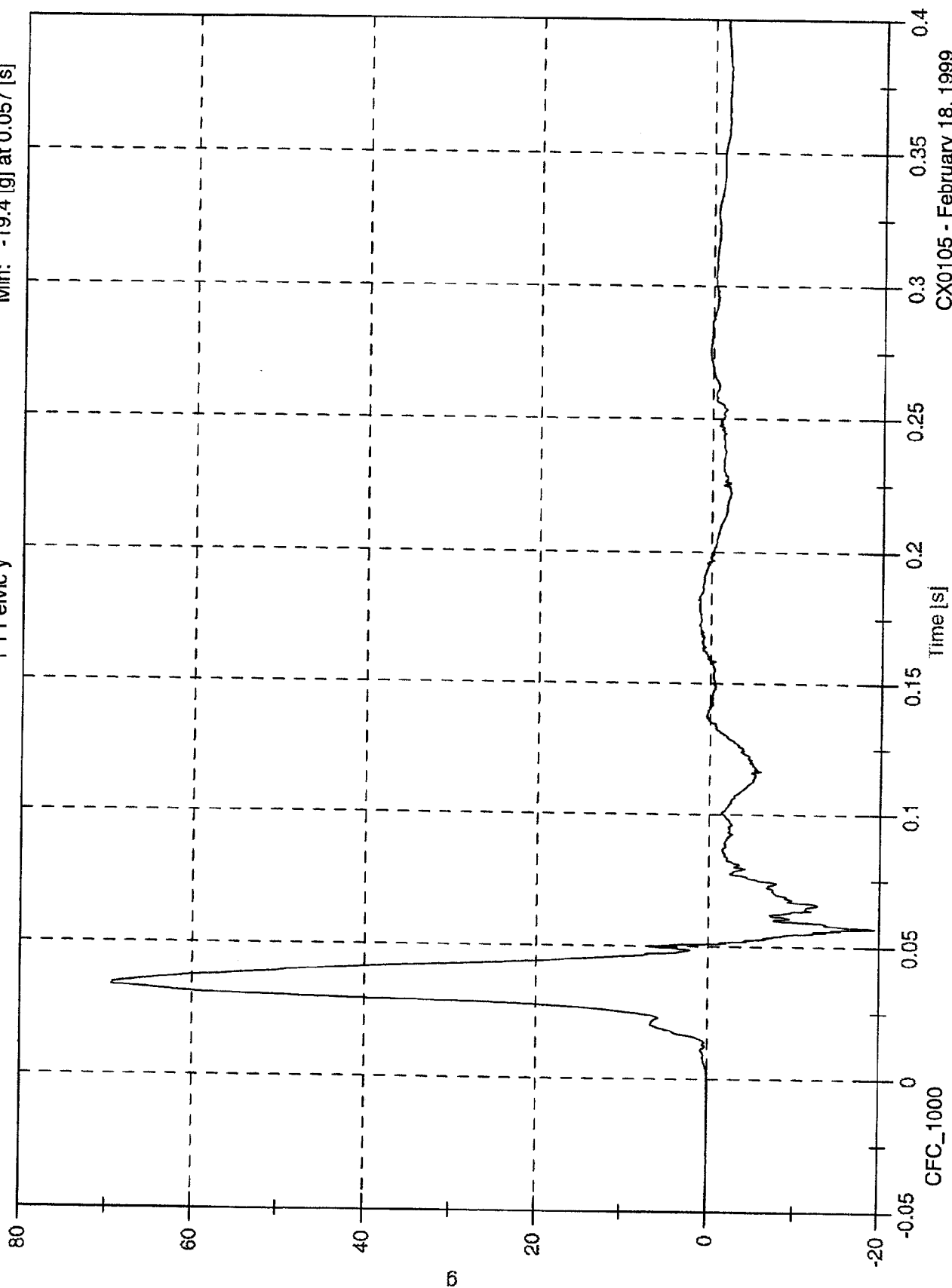
CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

P1 Pelvic y

Max: 69.4 [g] at 0.034 [s]

Min: -19.4 [g] at 0.057 [s]



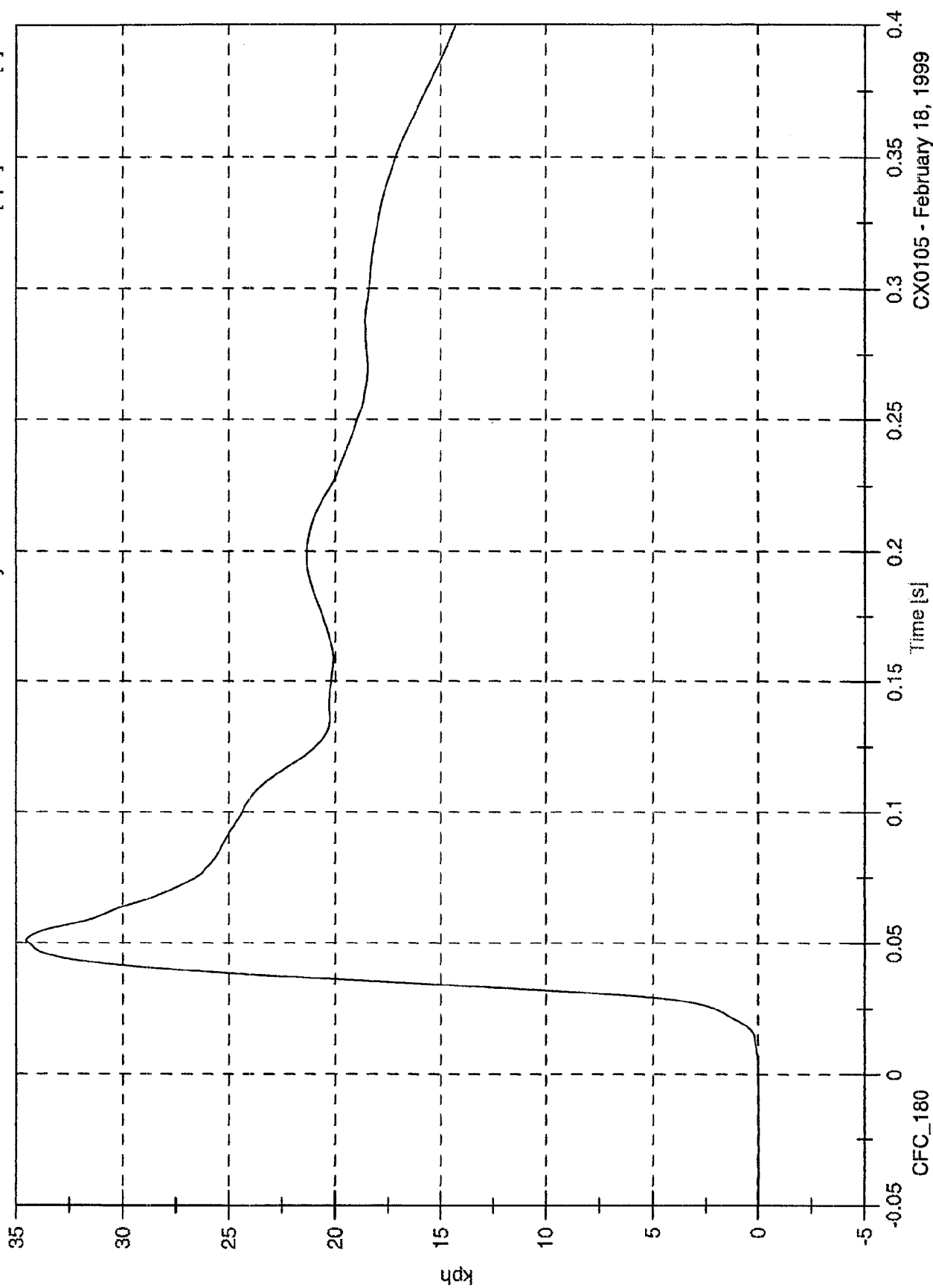
CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 34.5 [kph] at 0.051 [s]

Min: -0.0 [kph] at -0.052 [s]

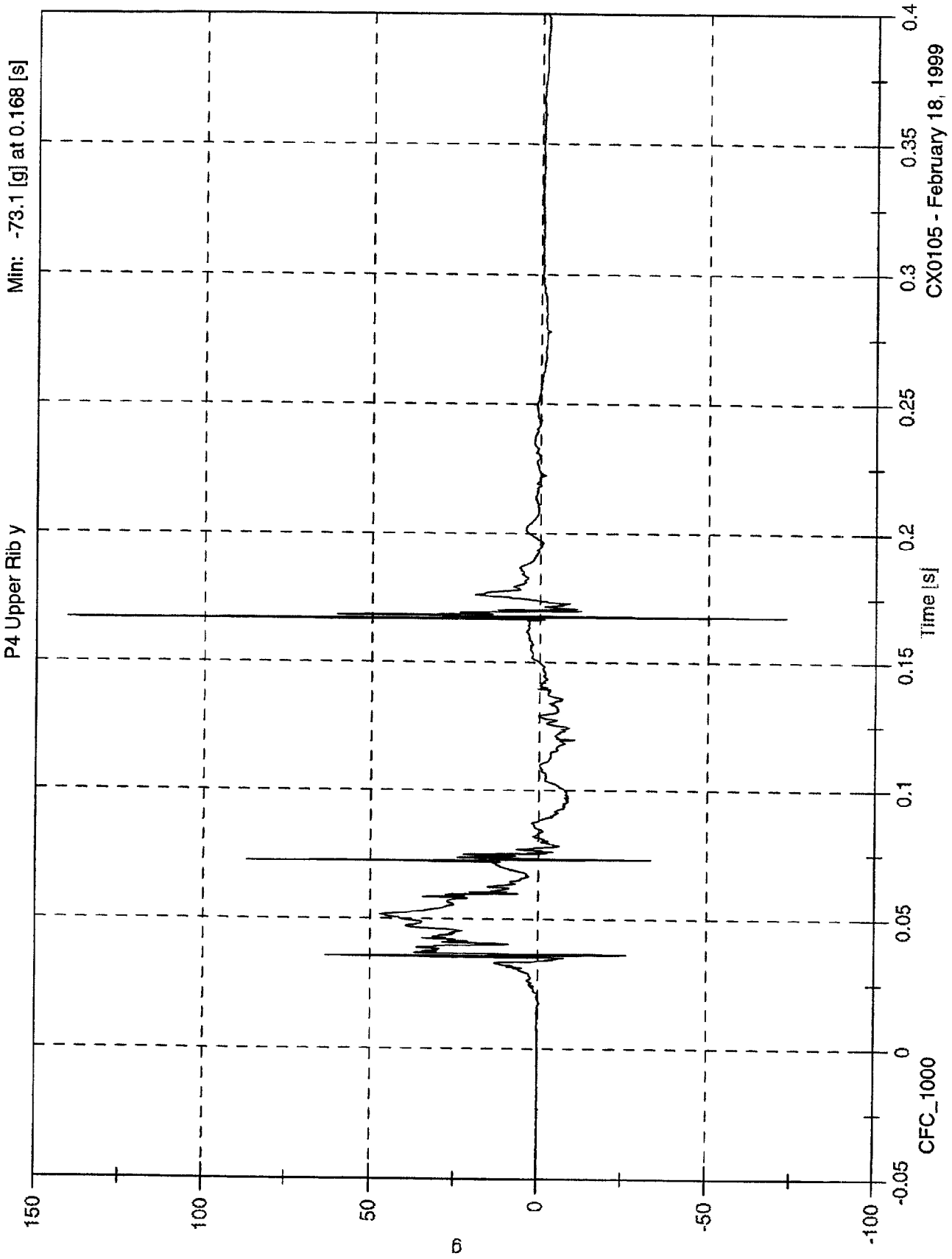
P1 Pelvic y



CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 140.8 [g] at 0.167 [s]
Min: -73.1 [g] at 0.168 [s]



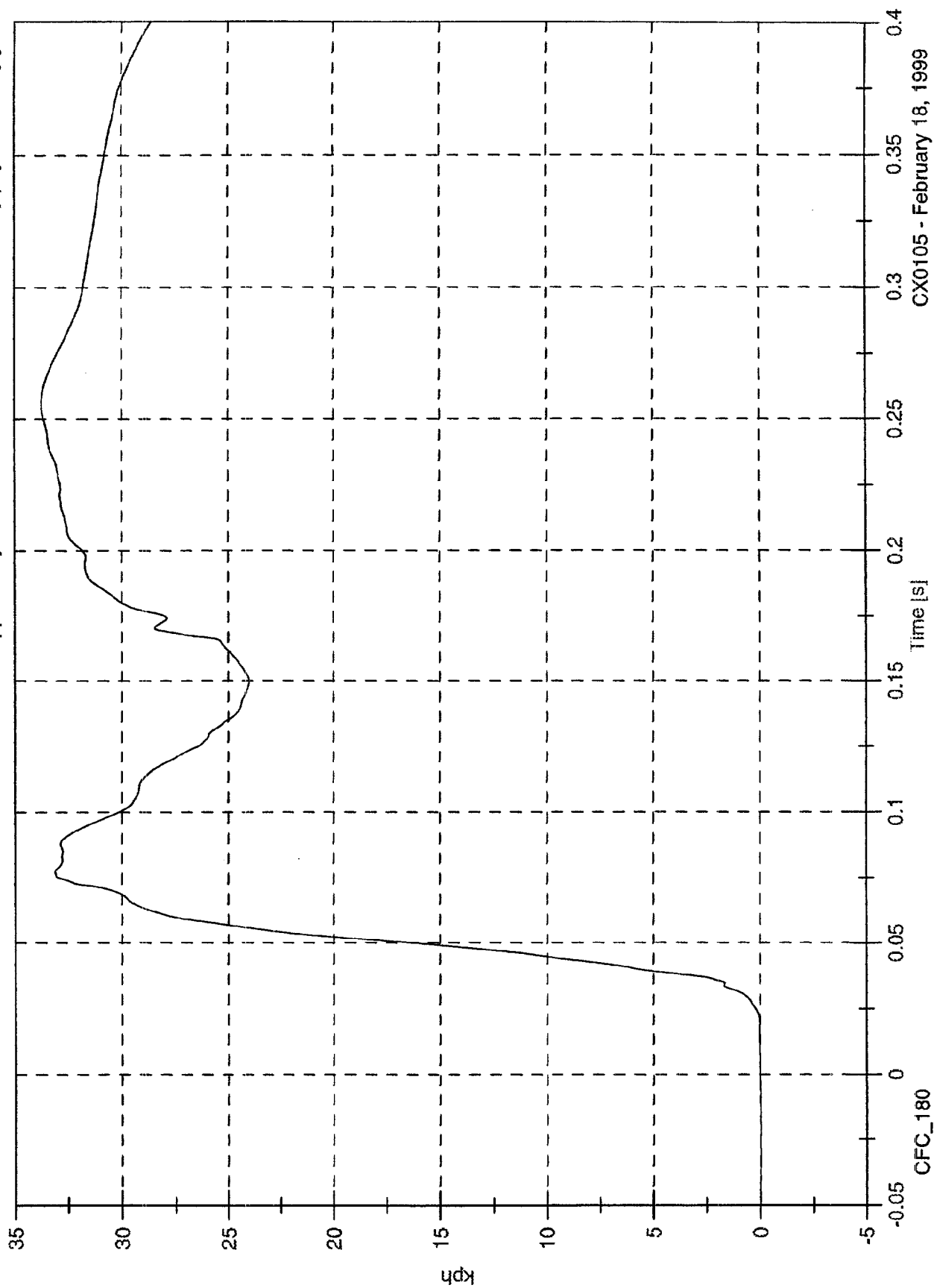
CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 33.7 [kph] at 0.255 [s]

Min: -0.0 [kph] at -0.019 [s]

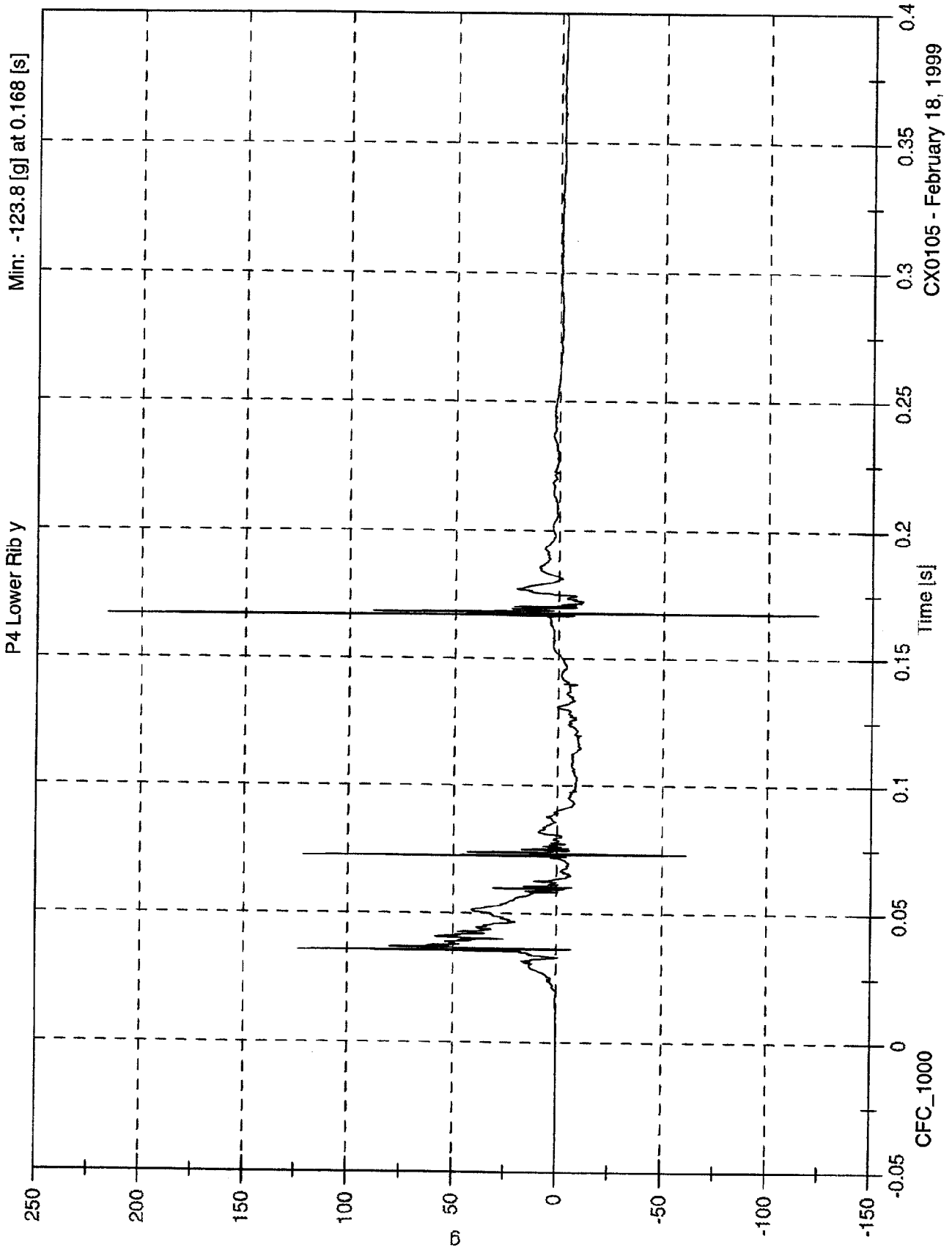
P4 Upper Rib y



CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 216.5 [g] at 0.167 [s]
Min: -123.8 [g] at 0.168 [s]

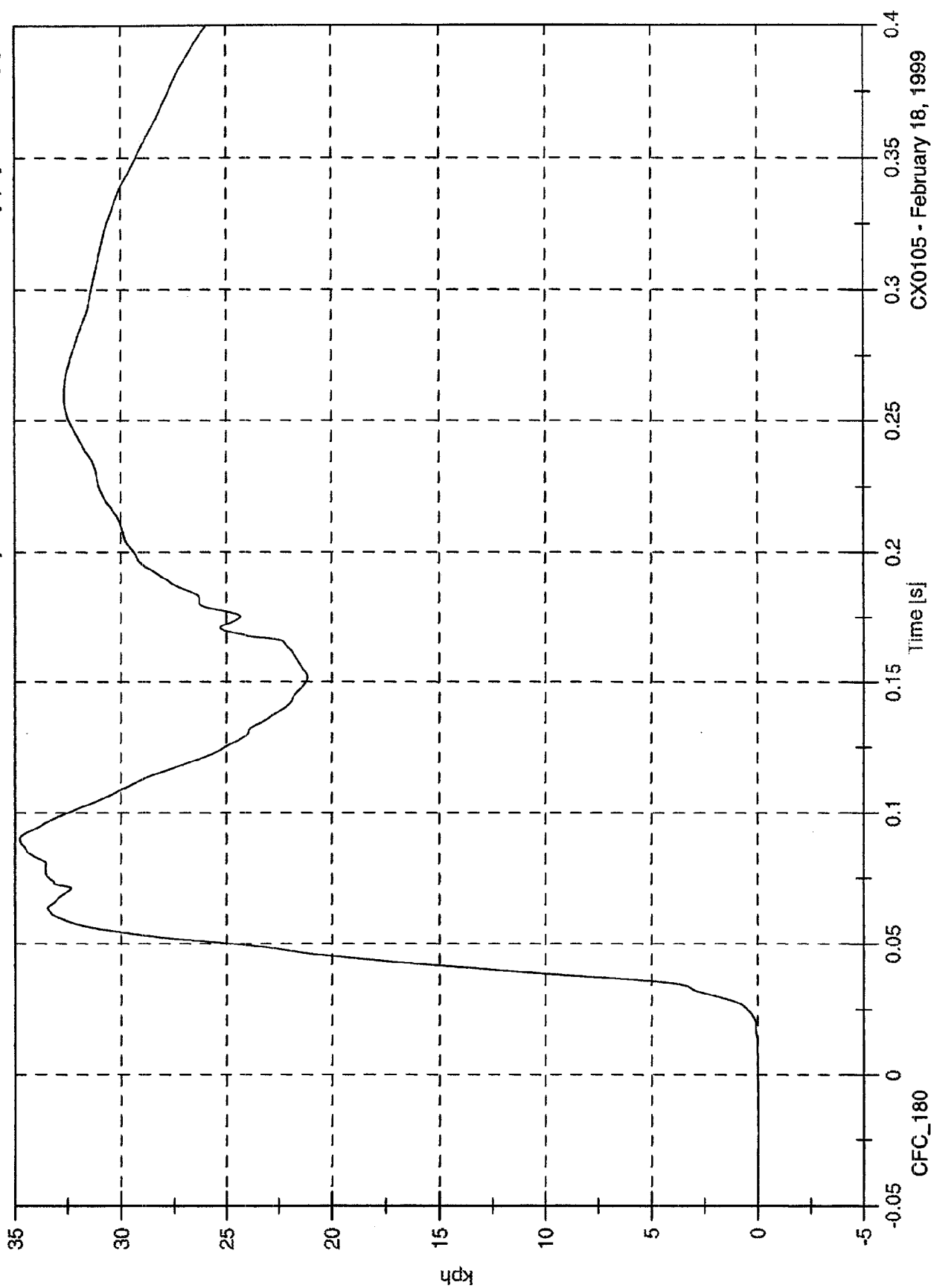


214 Test # 8 - 1999 Chevrolet Venture

Max: 34.8 [kph] at 0.090 [s]

Min: -0.0 [kph] at -0.023 [s]

P4 Lower Rib y

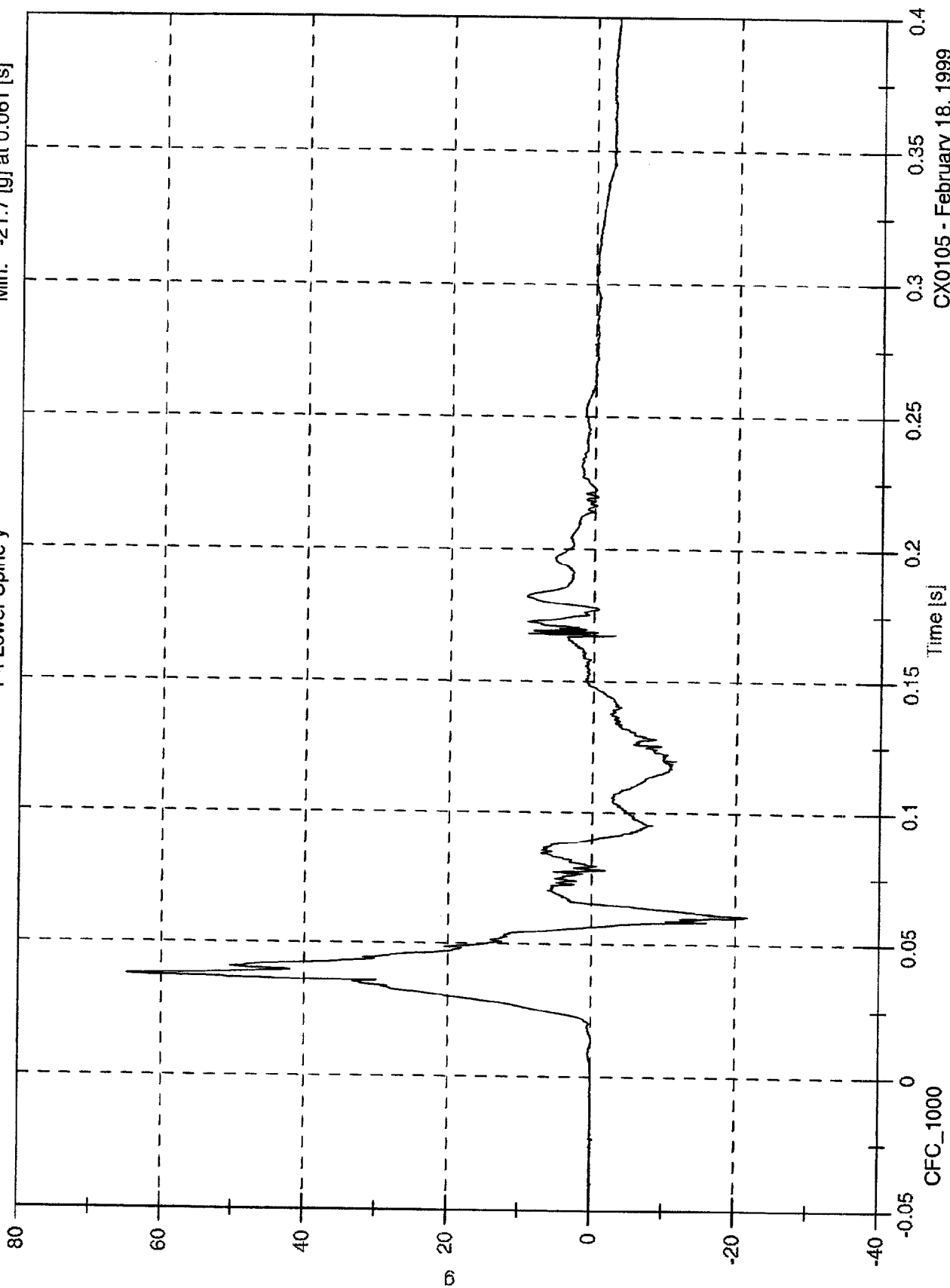


CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 64.8 [g] at 0.038 [s]
Min: -21.7 [g] at 0.061 [s]

P4 Lower Spine y



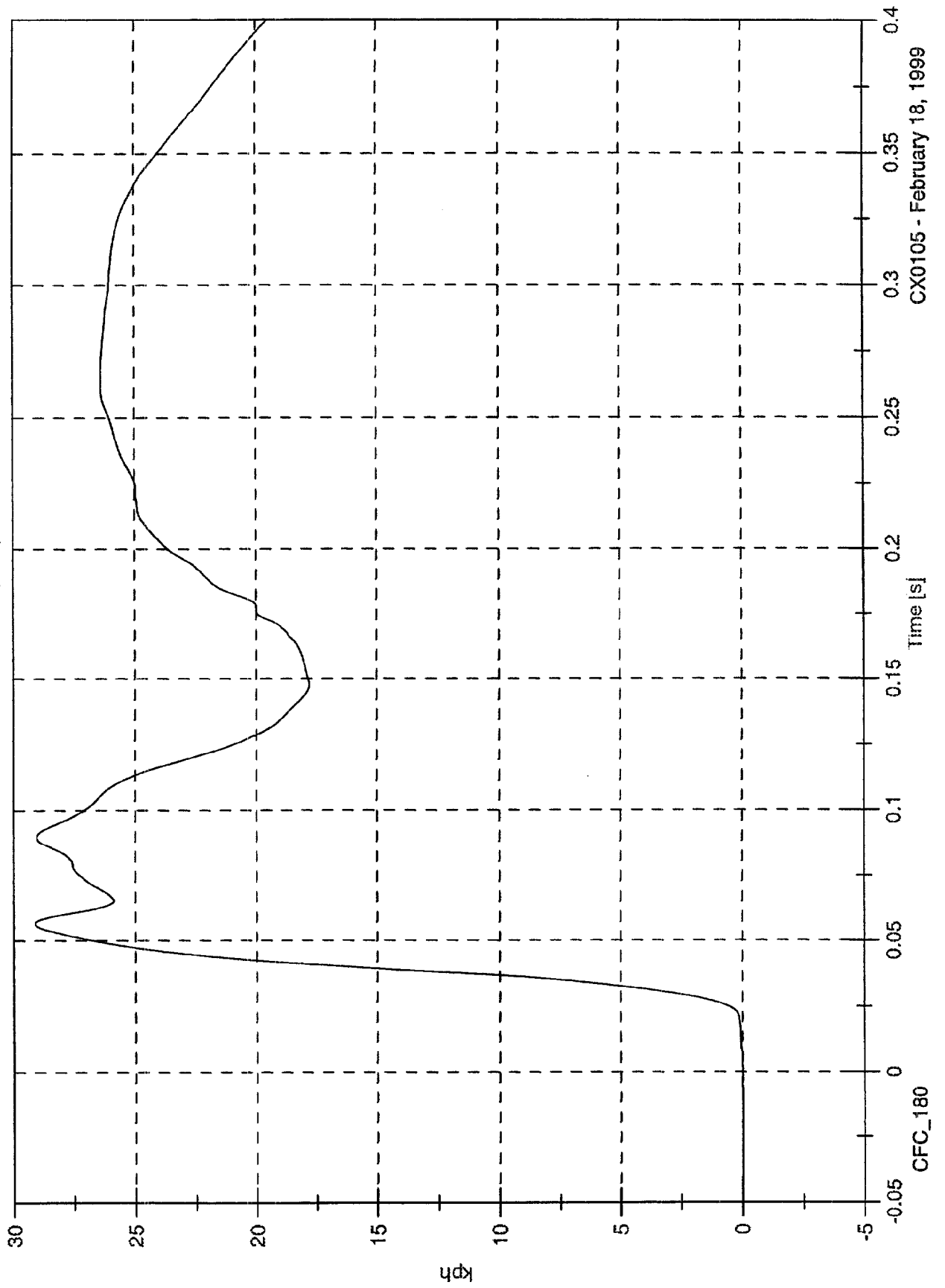
CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 29.1 [kph] at 0.057 [s]

Min: -0.0 [kph] at -0.062 [s]

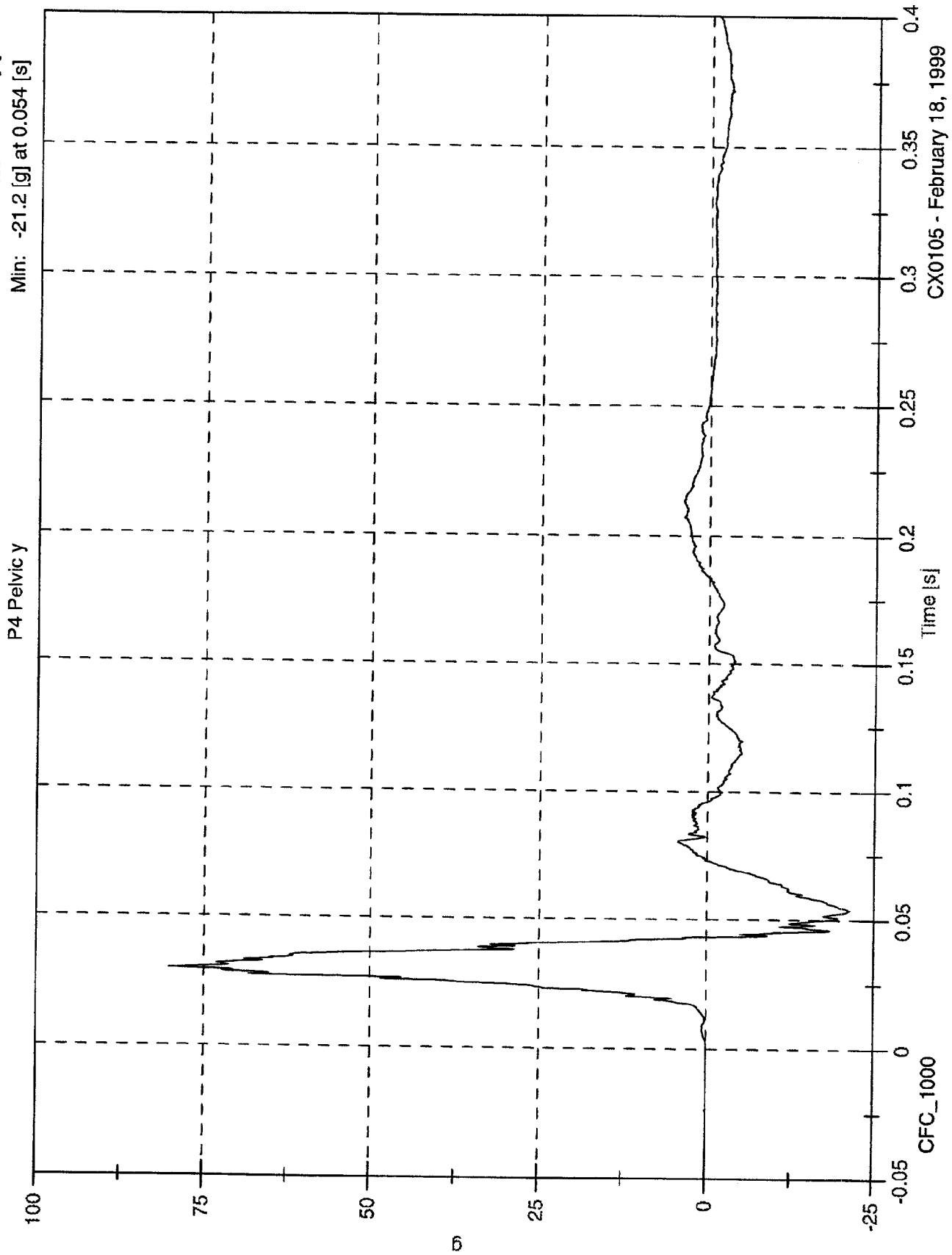
P4 Lower Spine y



CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 80.3 [g] at 0.030 [s]
Min: -21.2 [g] at 0.054 [s]

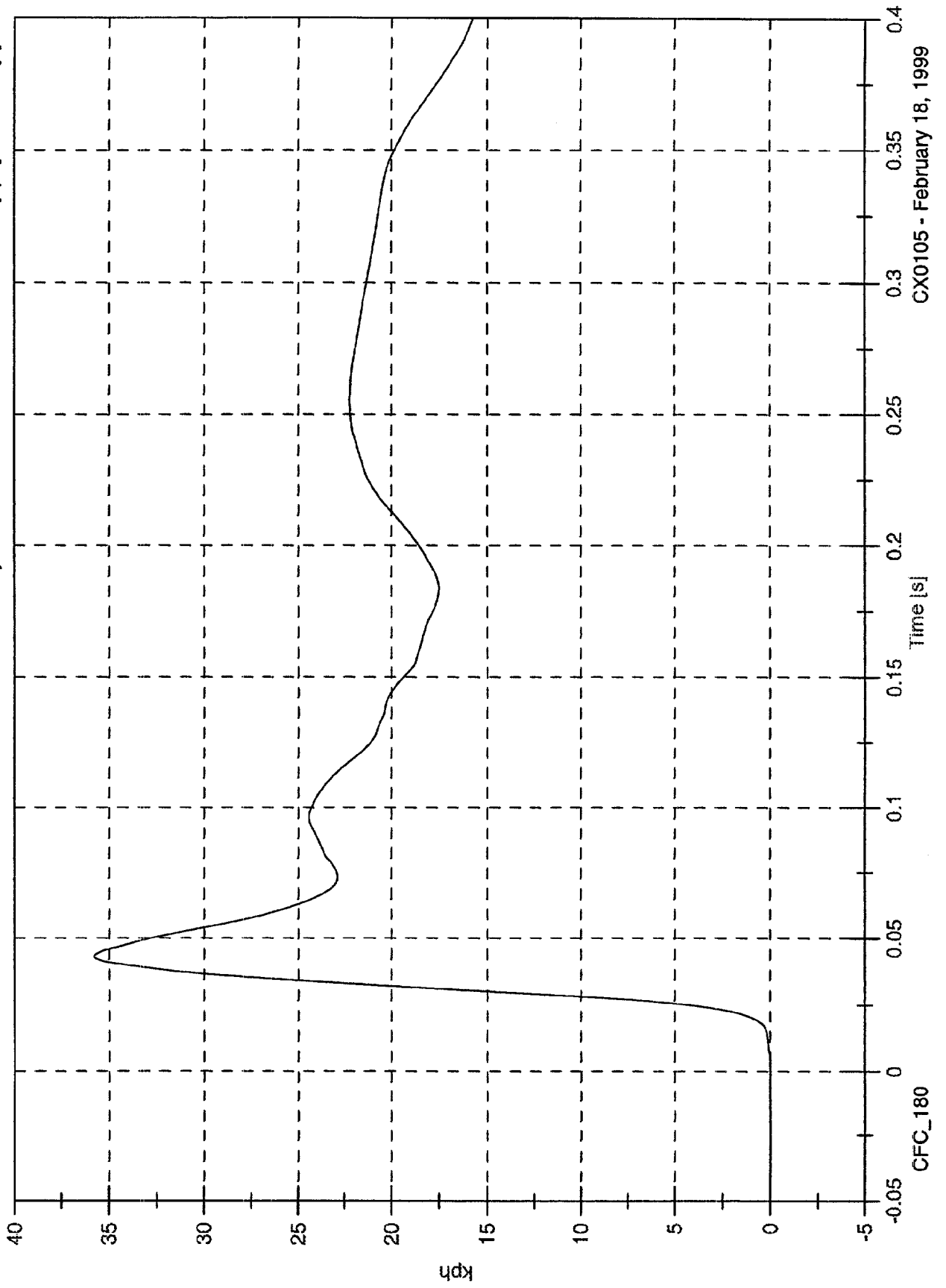


CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 35.8 [kph] at 0.043 [s]
Min: -0.0 [kph] at -0.025 [s]

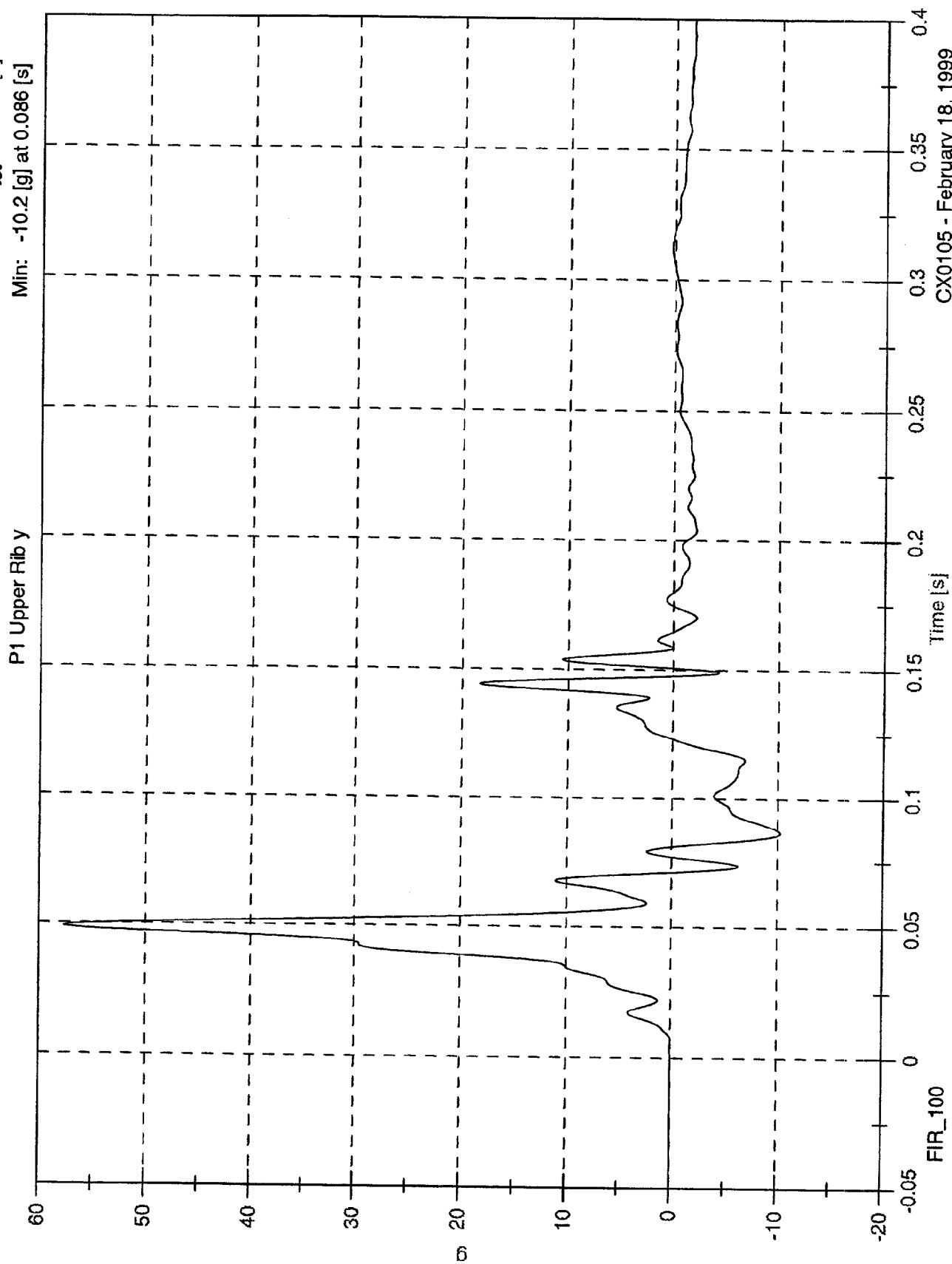
P4 Pelvicy



CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

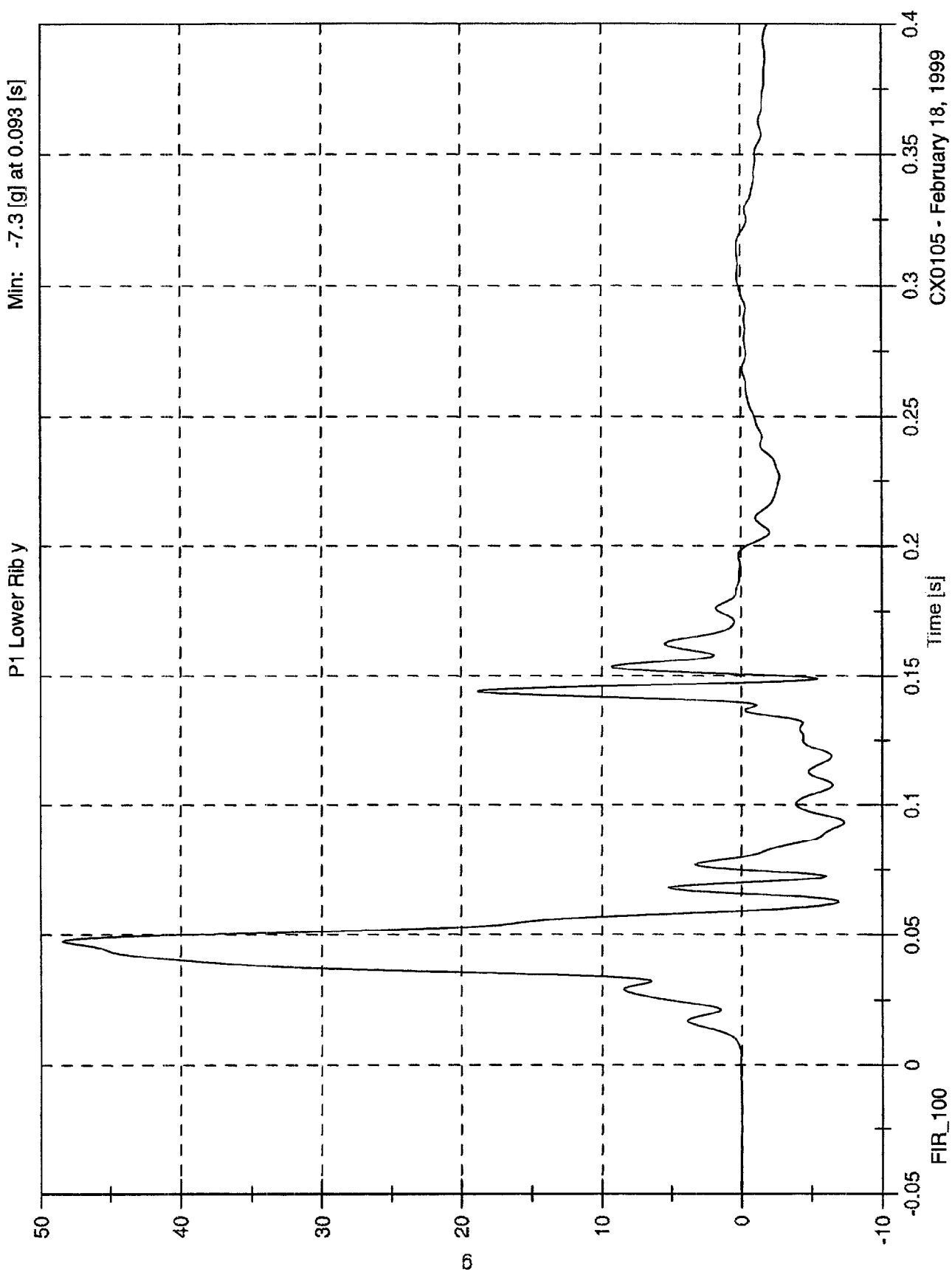
Max: 57.7 [g] at 0.049 [s]
Min: -10.2 [g] at 0.086 [s]



CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 48.5 [g] at 0.048 [s]
Min: -7.3 [g] at 0.093 [s]

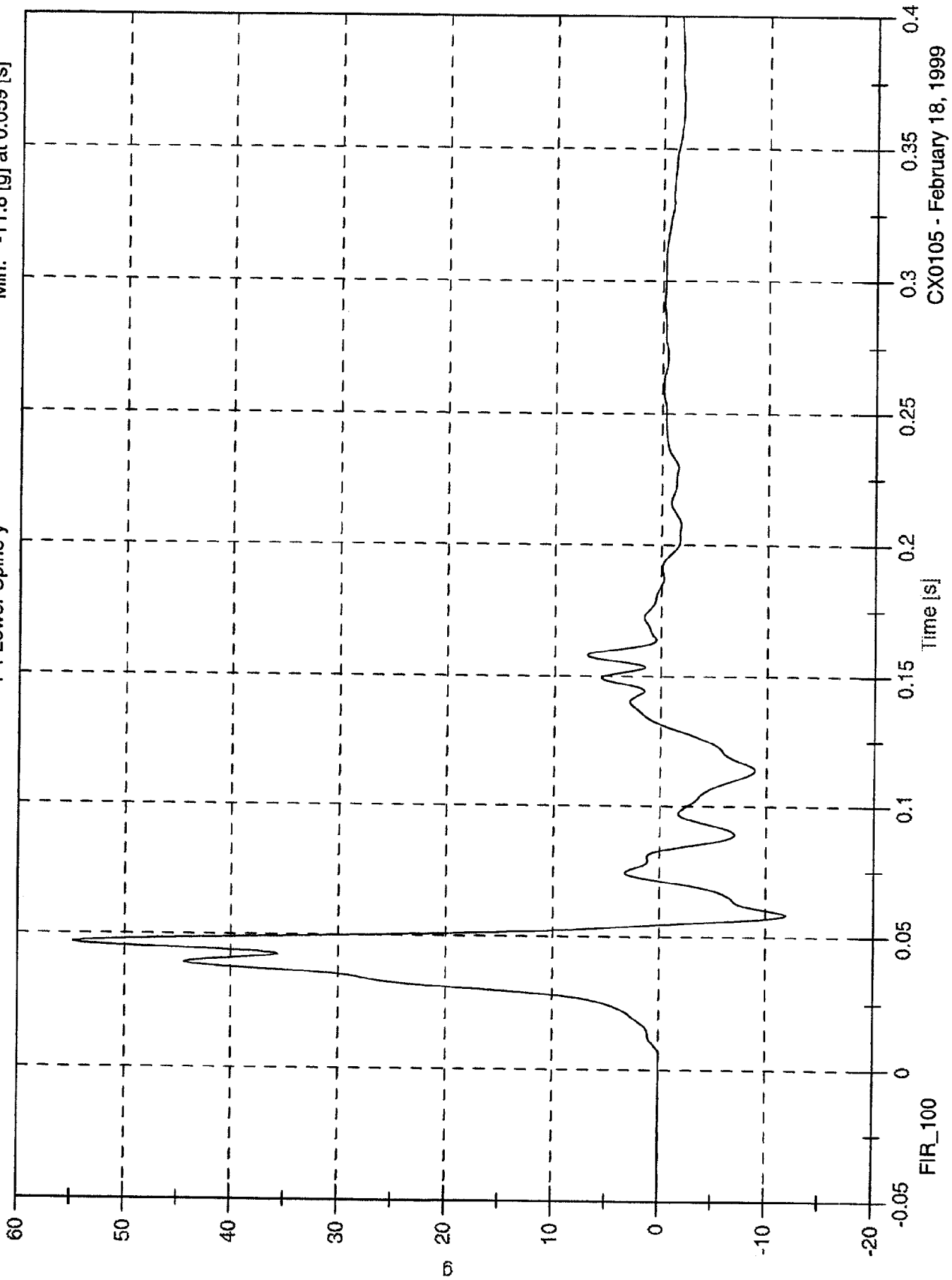


214 Test # 8 - 1999 Chevrolet Venture

Max: 54.9 [g] at 0.047 [s]

Min: -11.8 [g] at 0.059 [s]

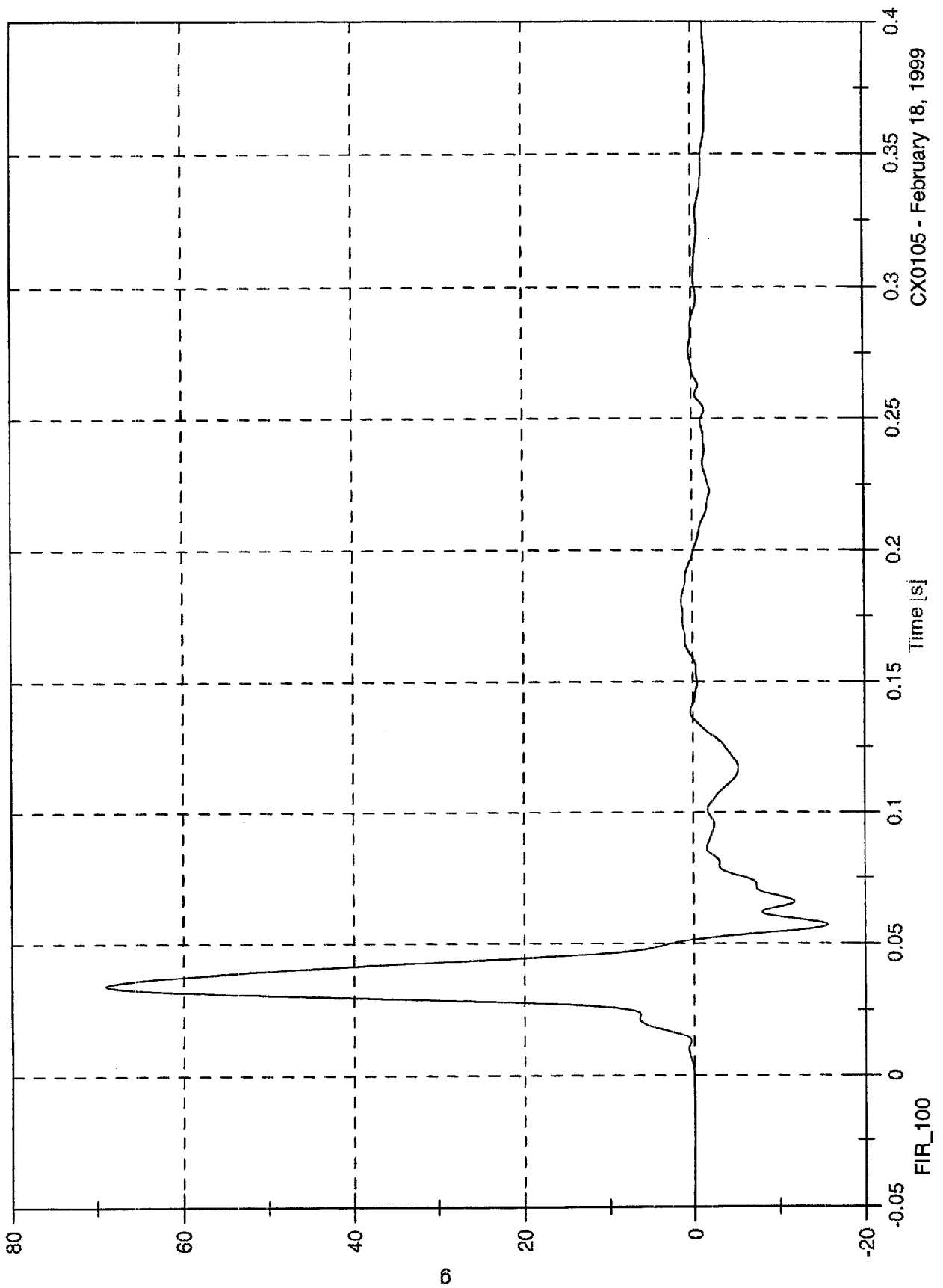
P1 Lower Spine y



214 Test # 8 - 1999 Chevrolet Venture

Max: 68.9 [g] at 0.034 [s]
Min: -15.6 [g] at 0.057 [s]

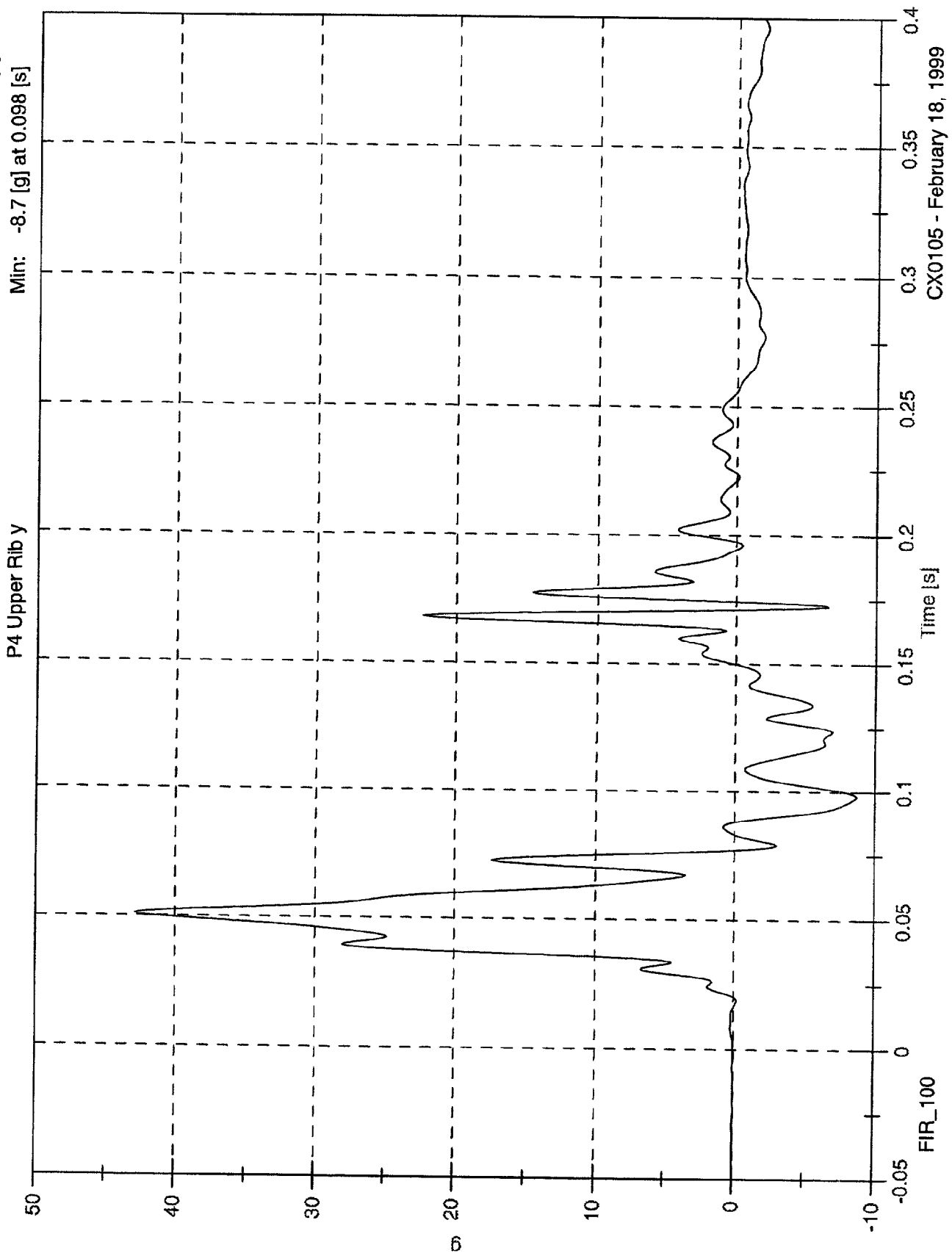
P1 Pelvic y



CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

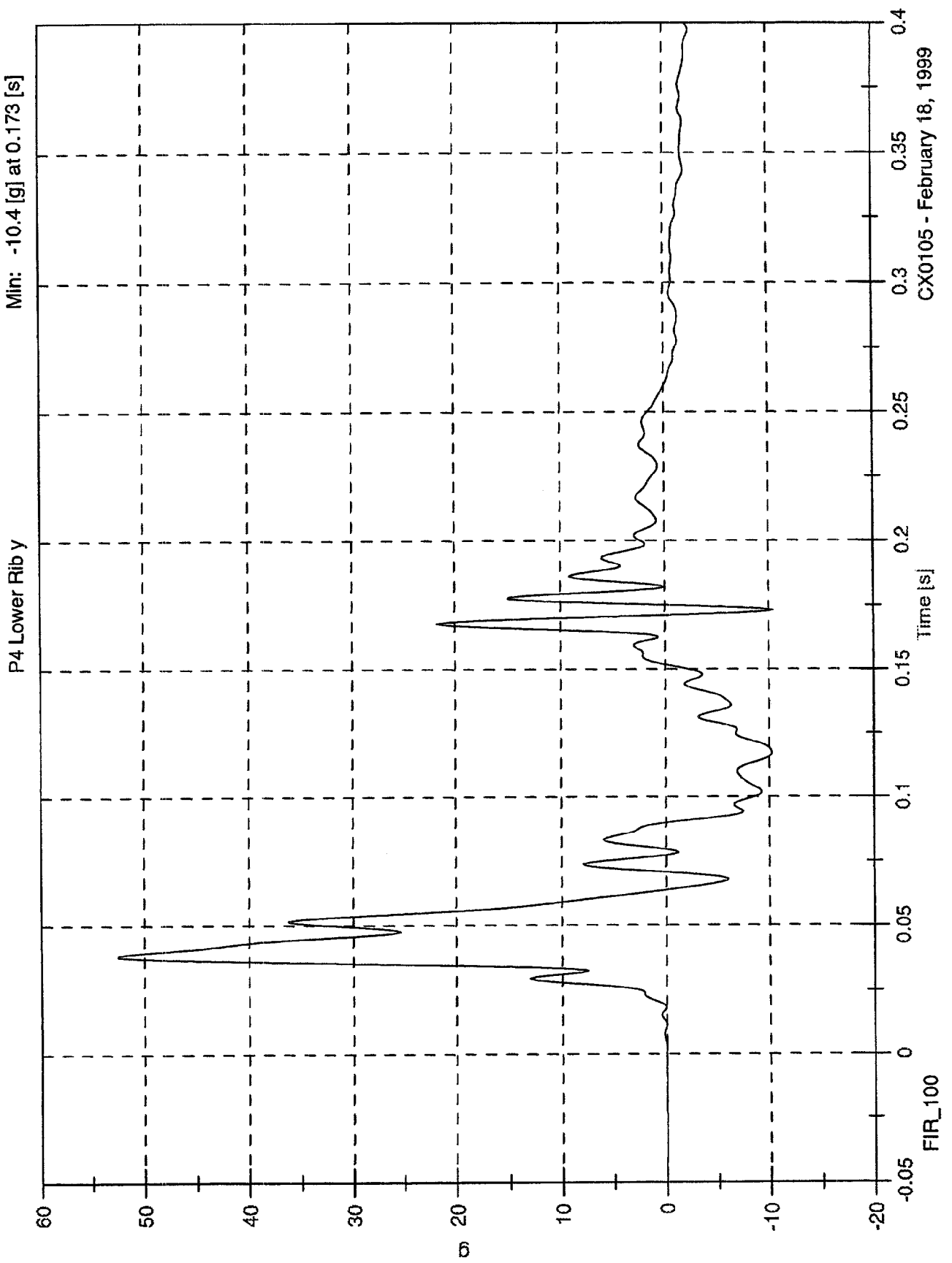
Max: 42.9 [g] at 0.051 [s]
Min: -8.7 [g] at 0.098 [s]



CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

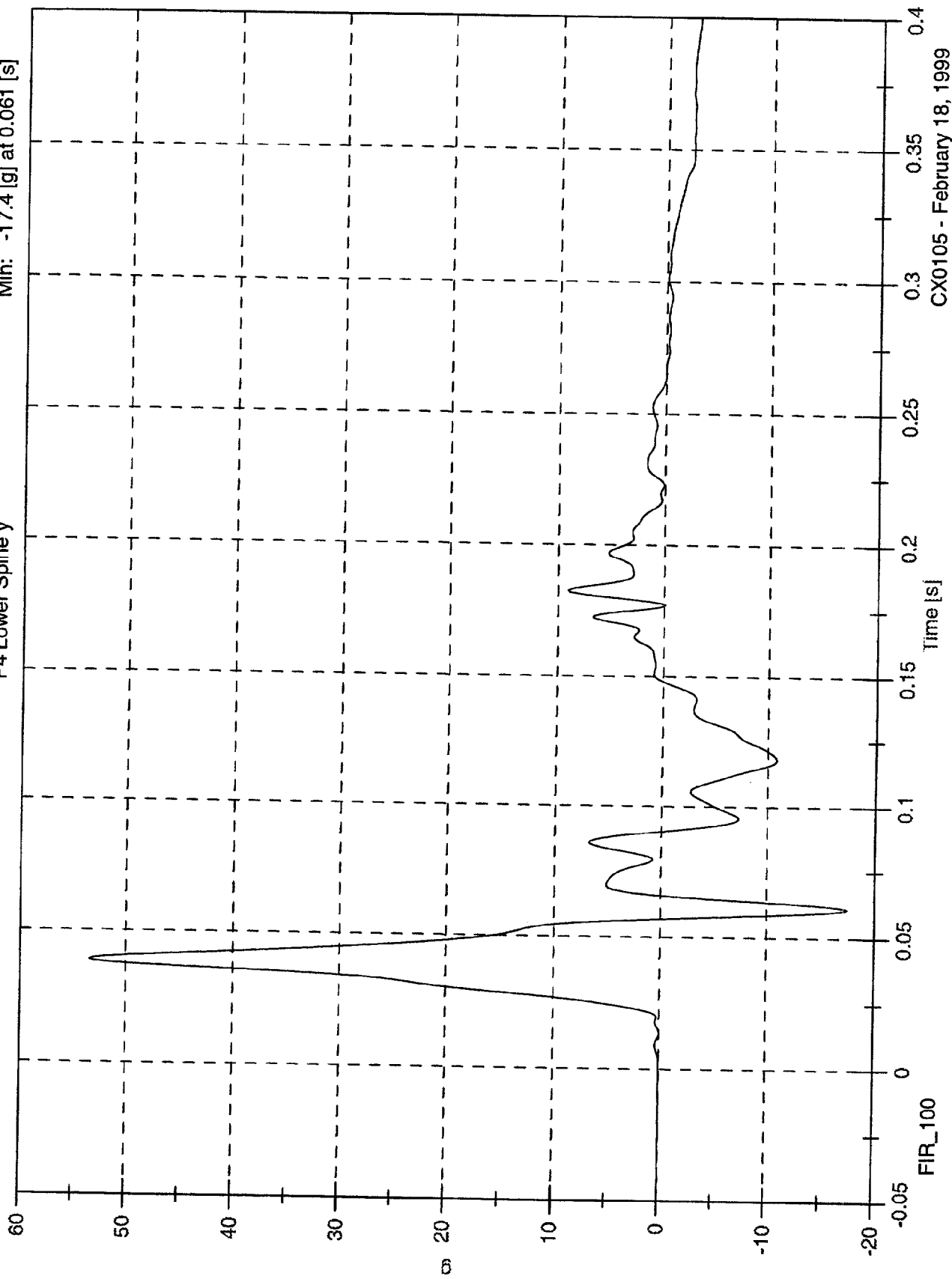
Max: 52.6 [g] at 0.038 [s]
Min: -10.4 [g] at 0.173 [s]



214 Test # 8 - 1999 Chevrolet Venture

Max: 53.4 [g] at 0.039 [s]
Min: -17.4 [g] at 0.061 [s]

P4 Lower Spine y



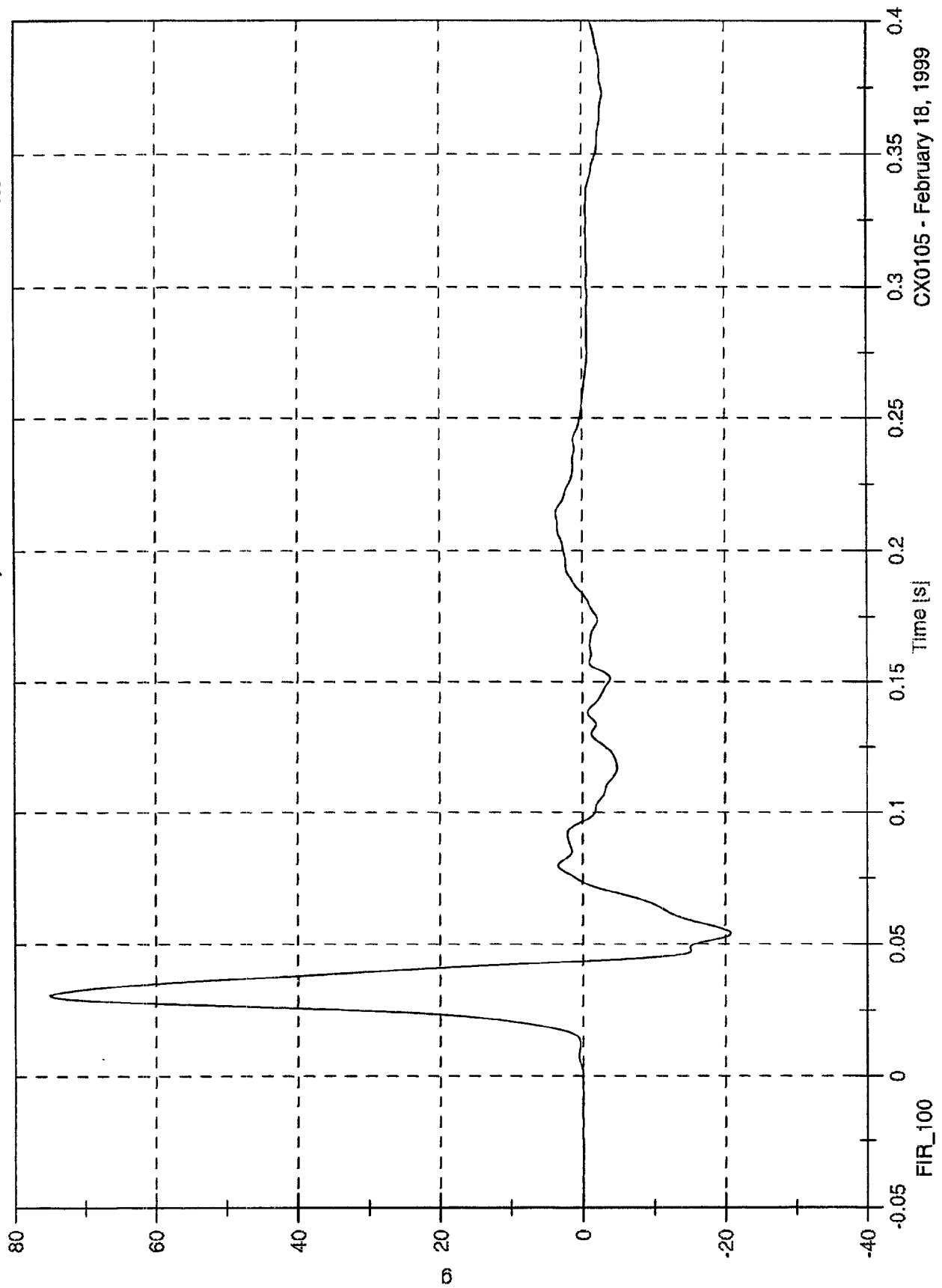
CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 75.1 [g] at 0.031 [s]

Min: -20.7 [g] at 0.054 [s]

P4 Pelvic y

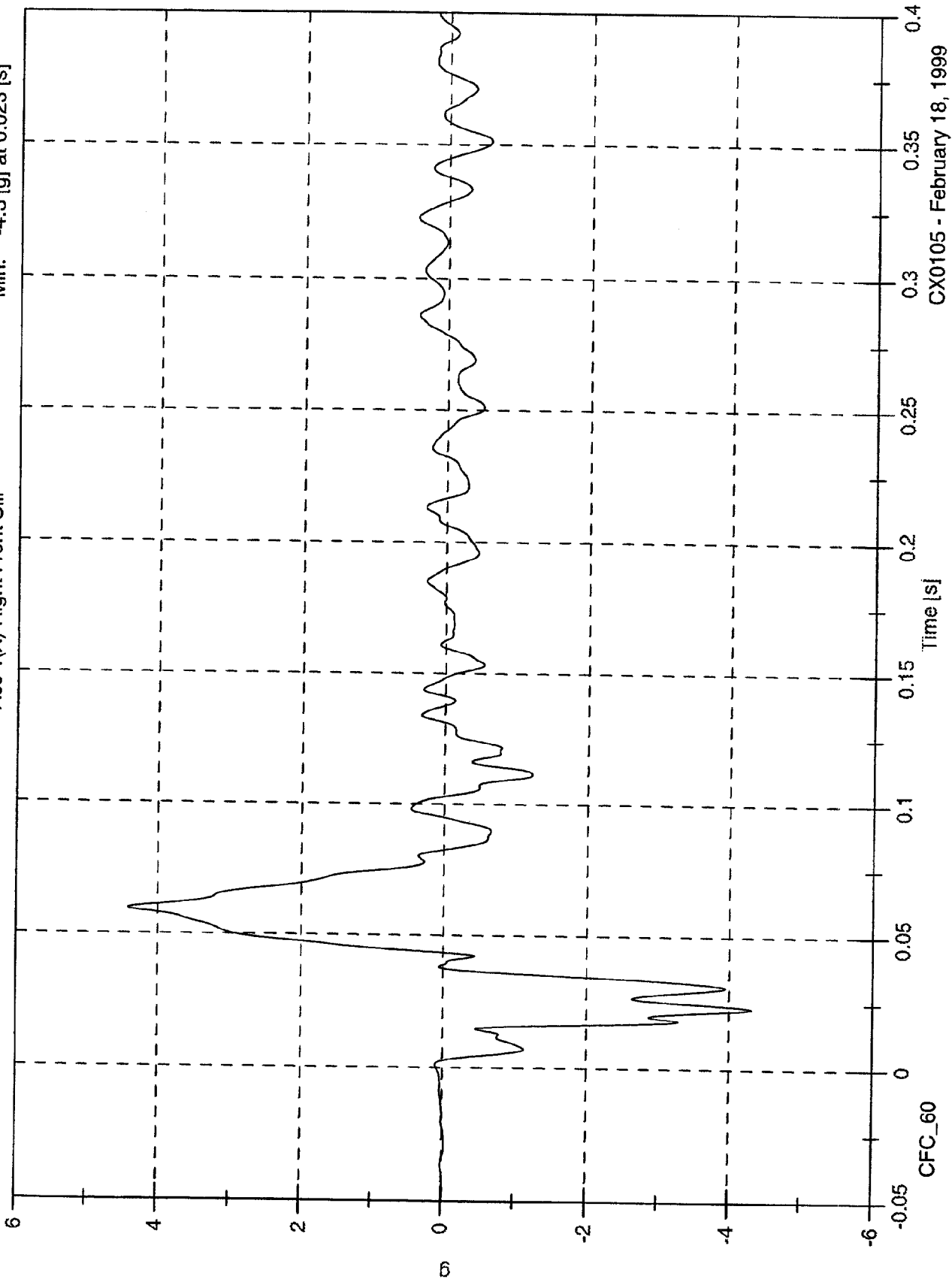


CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 4.4 [g] at 0.060 [s]
Min: -4.3 [g] at 0.023 [s]

Acc 1(X) Right Front Sill



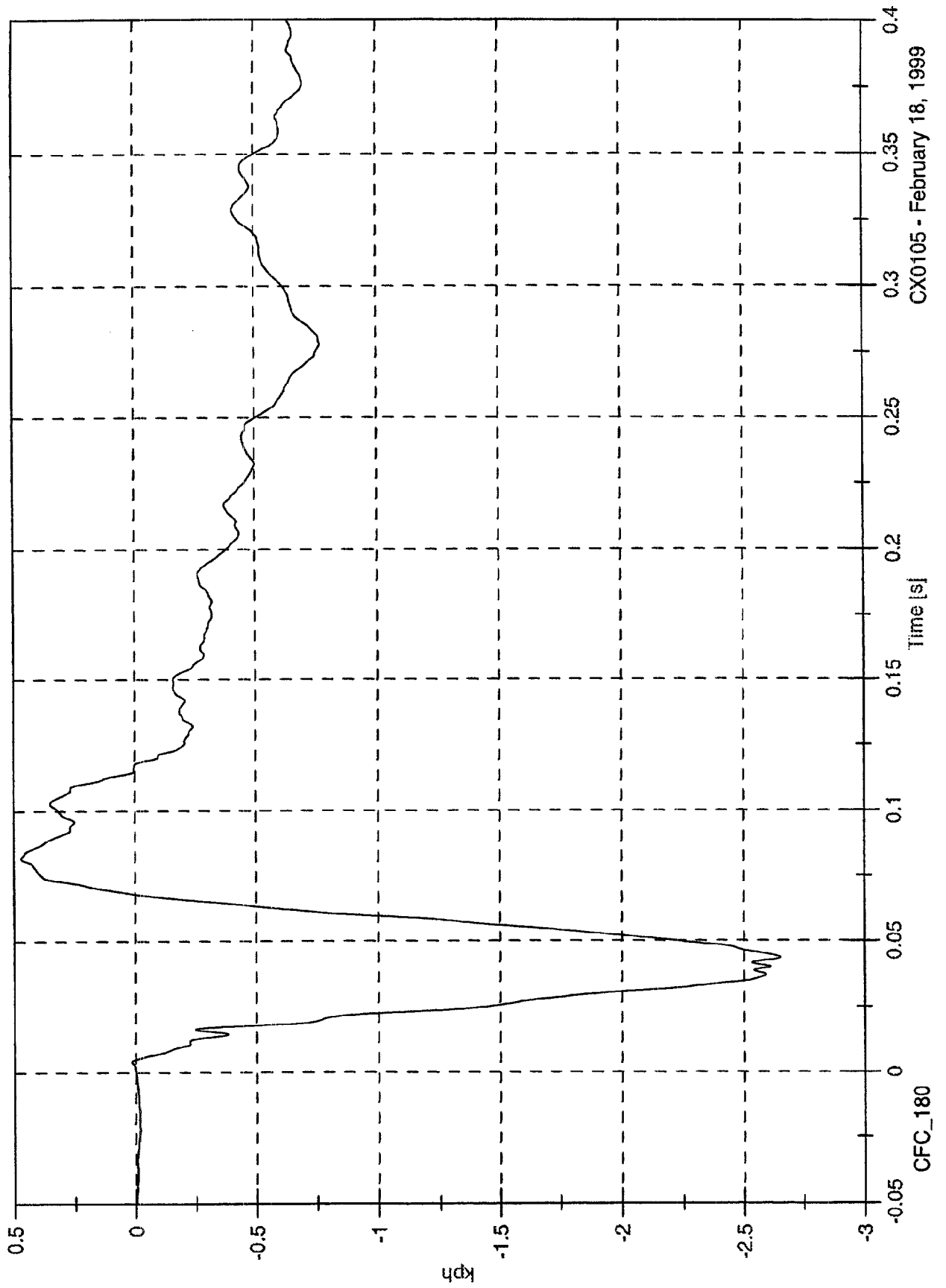
CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Acc 1(X) Right Front Sill

Max: 0.5 [kph] at 0.082 [s]

Min: -2.7 [kph] at 0.044 [s]

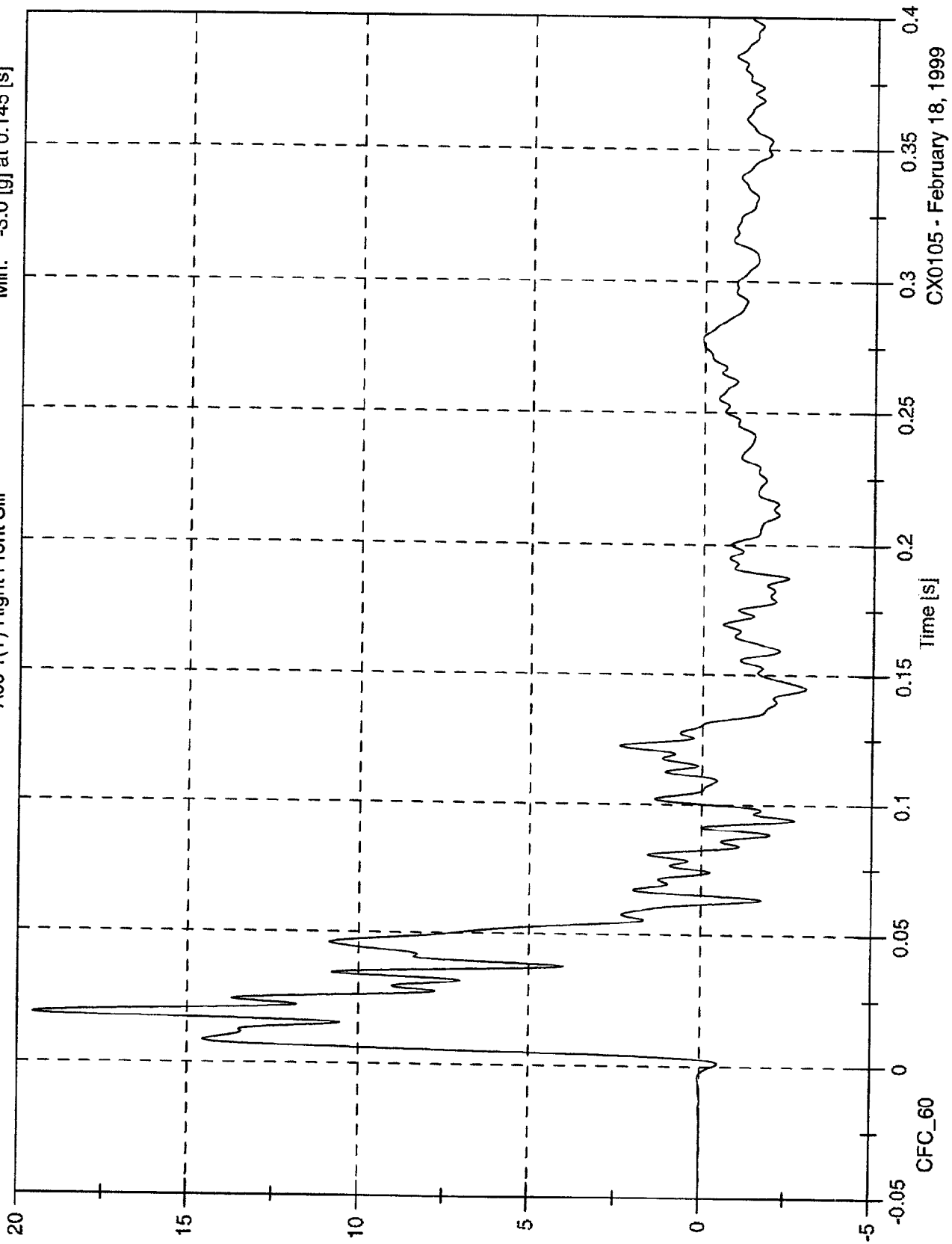


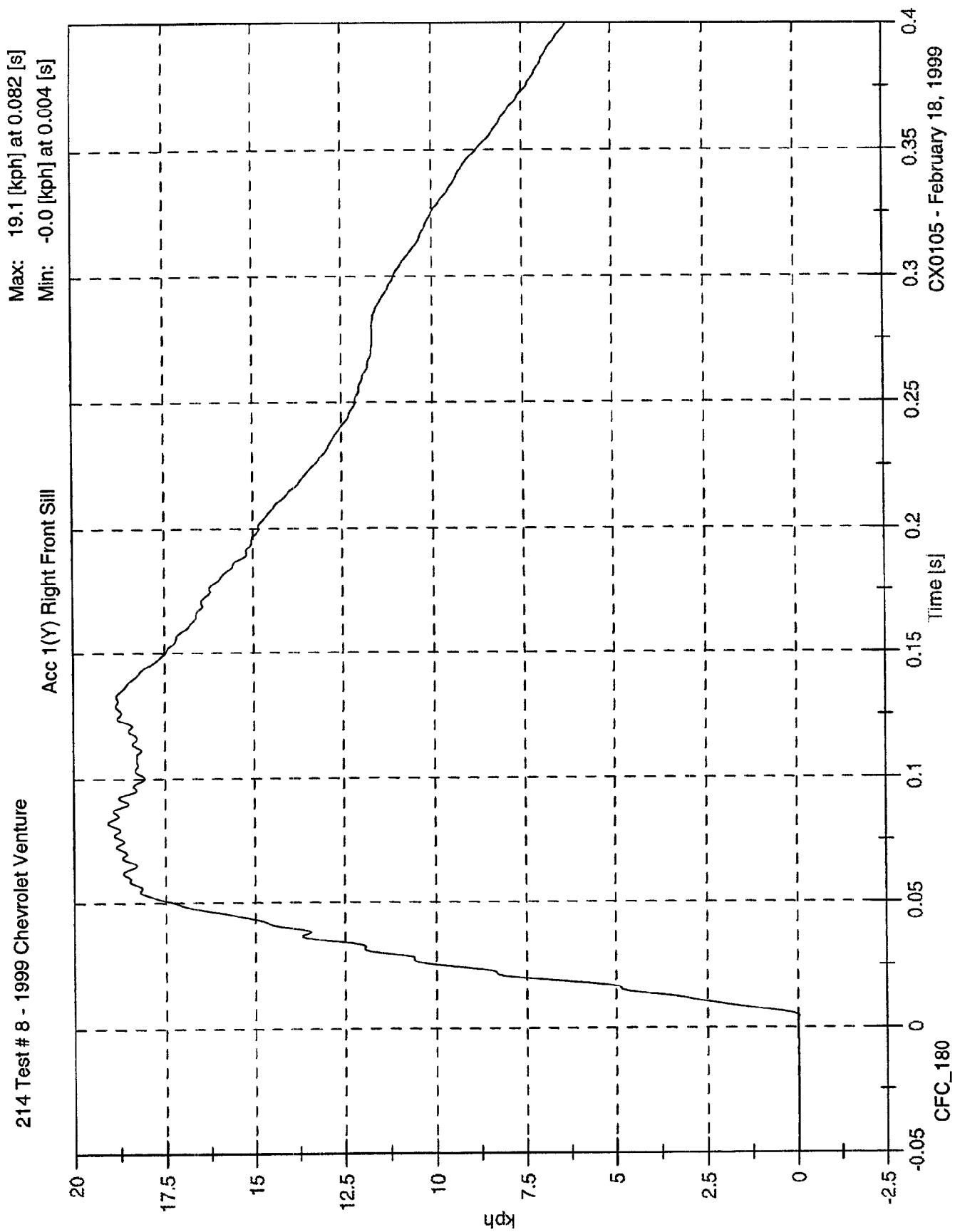
CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 19.6 [g] at 0.019 [s]
Min: -3.0 [g] at 0.145 [s]

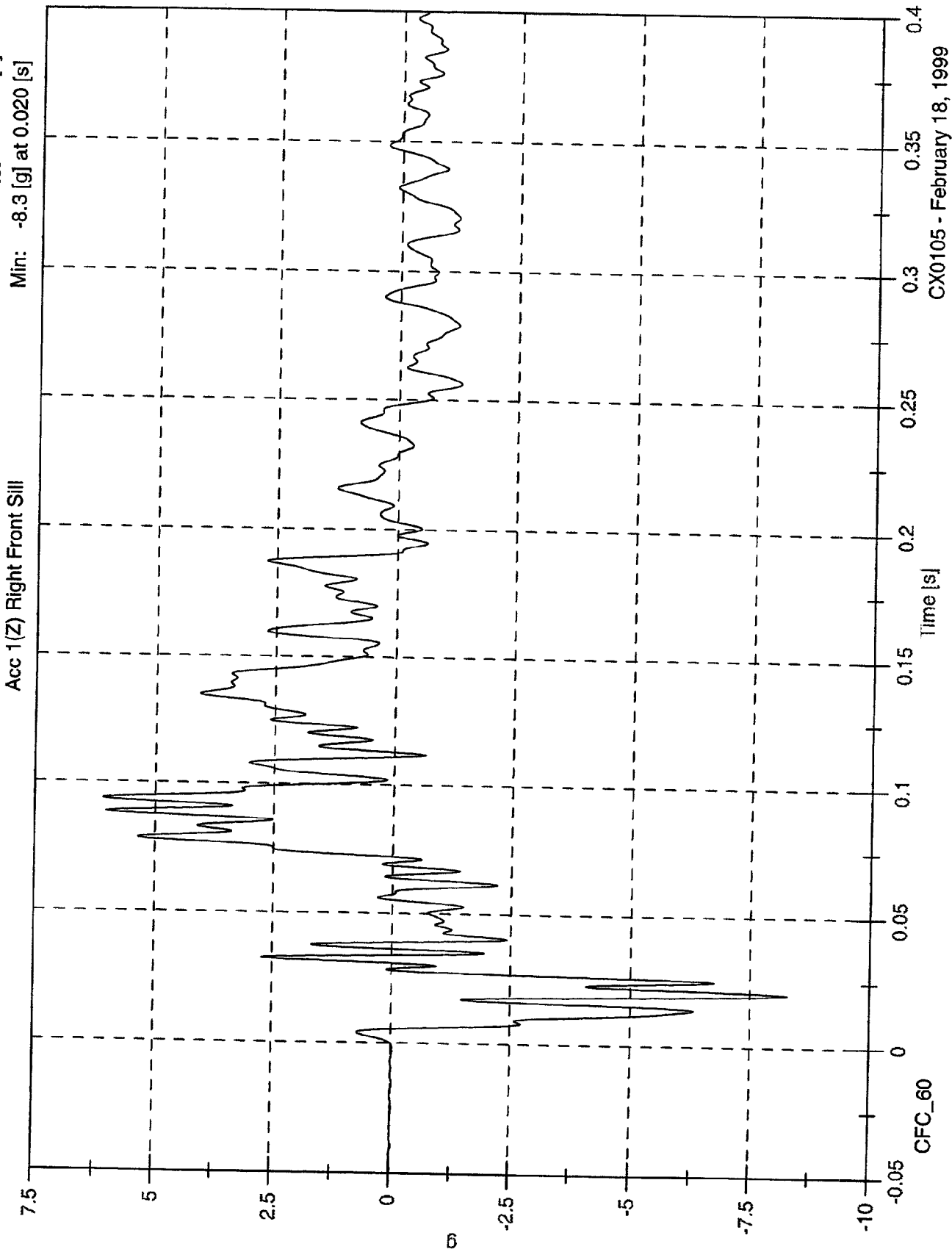
Acc 1(Y) Right Front Sill





214 Test # 8 - 1999 Chevrolet Venture

Max: 6.1 [g] at 0.094 [s]
Min: -8.3 [g] at 0.020 [s]



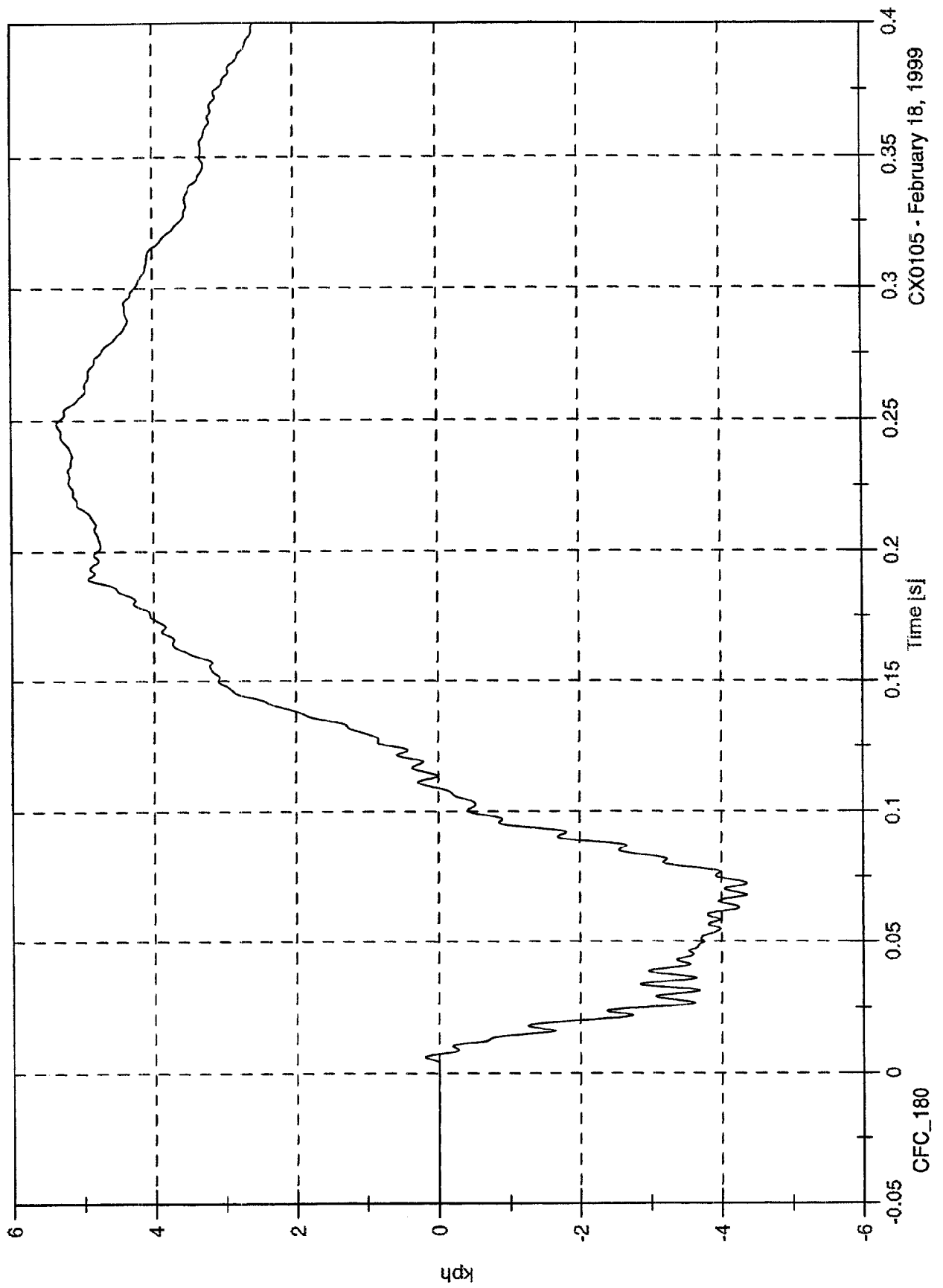
CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Acc 1(Z) Right Front Sill

Max: 5.4 [kph] at 0.249 [s]

Min: -4.4 [kph] at 0.068 [s]

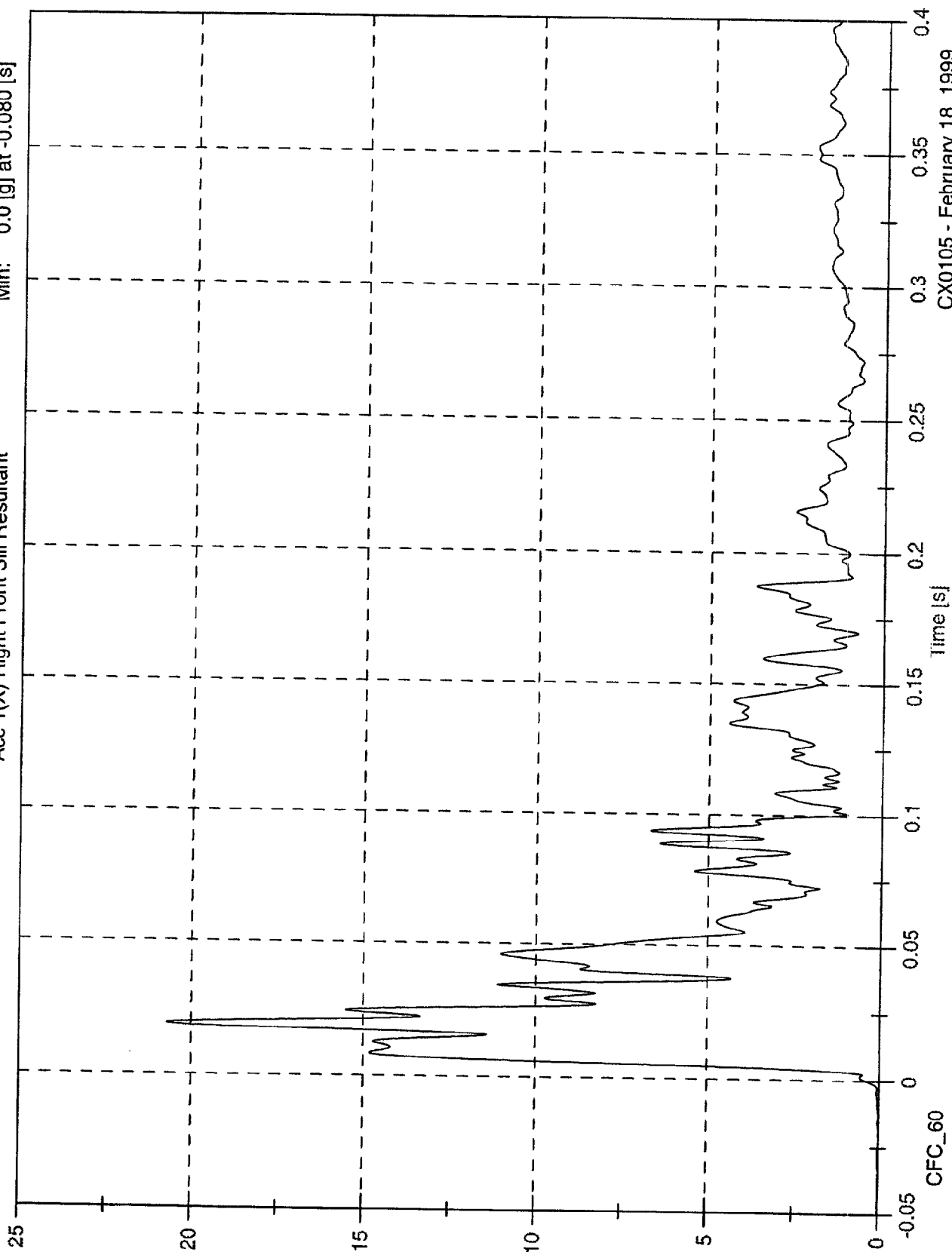


CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 20.7 [g] at 0.019 [s]
Min: 0.0 [g] at -0.080 [s]

Acc 1(X) Right Front Sill Resultant



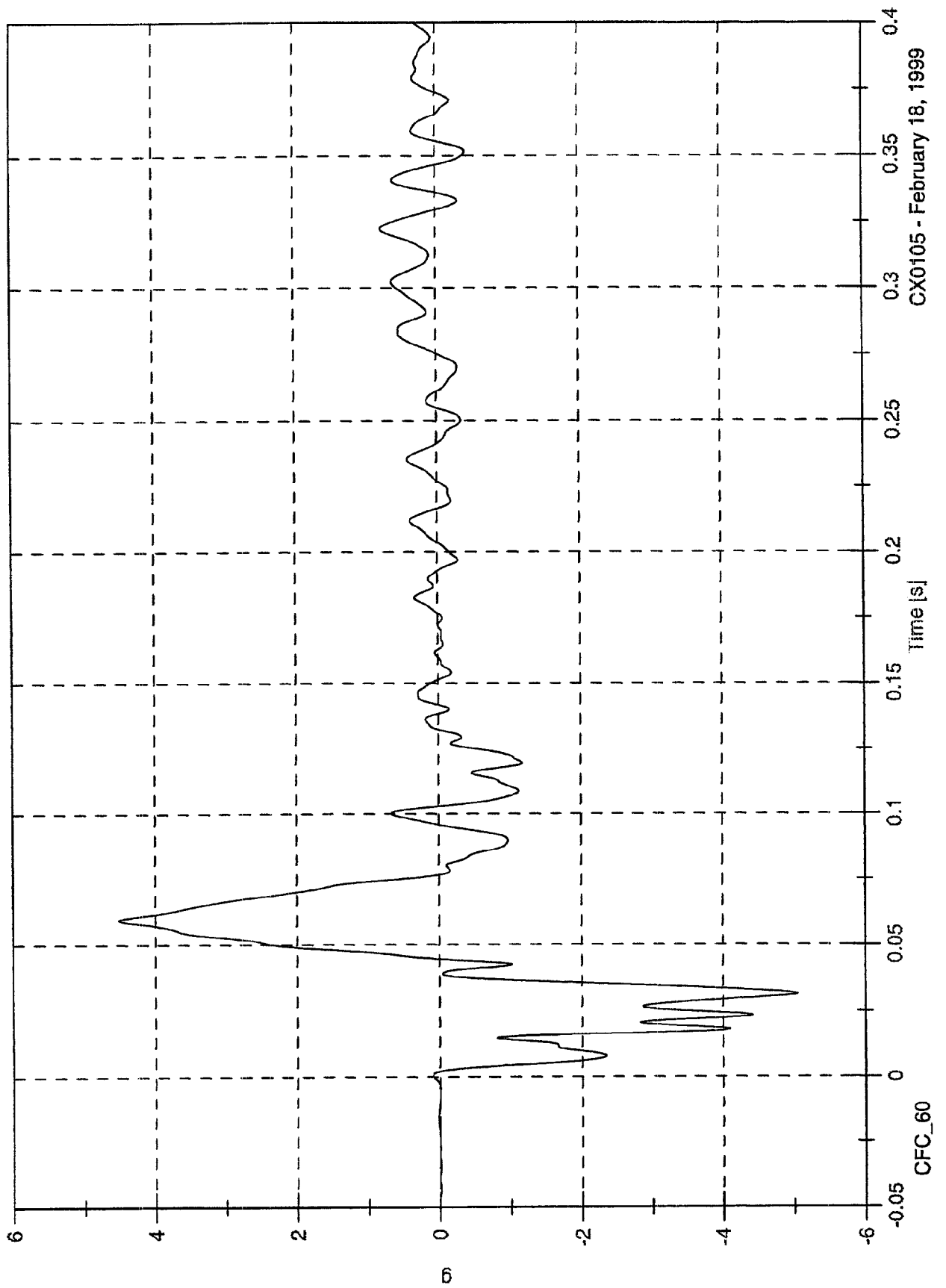
CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 4.5 [g] at 0.060 [s]

Min: -5.1 [g] at 0.031 [s]

Acc 2(X) Right Rear Sill

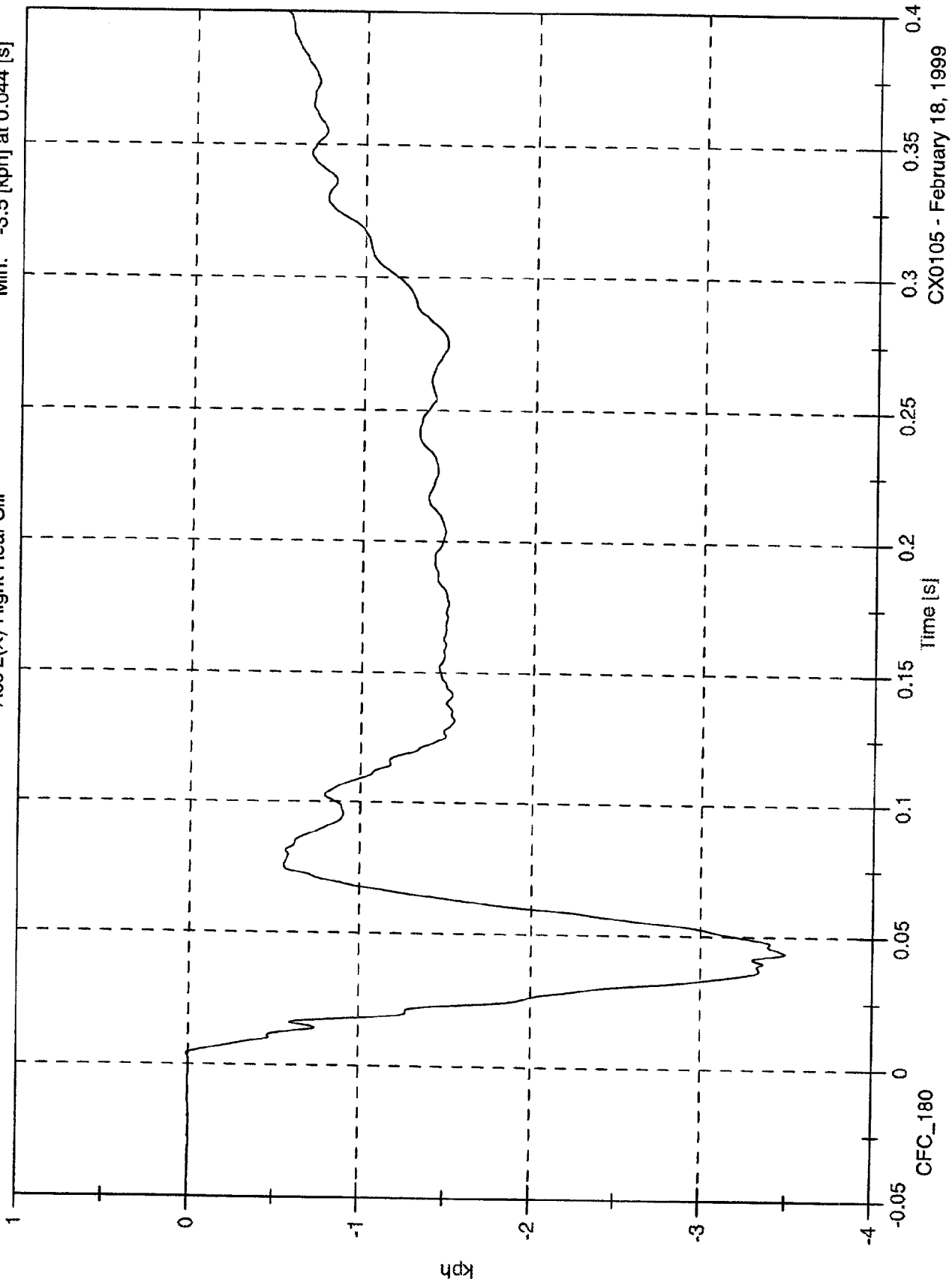


CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 0.6 [kph] at 0.500 [s]
Min: -3.5 [kph] at 0.044 [s]

Acc 2(X) Right Rear Sill



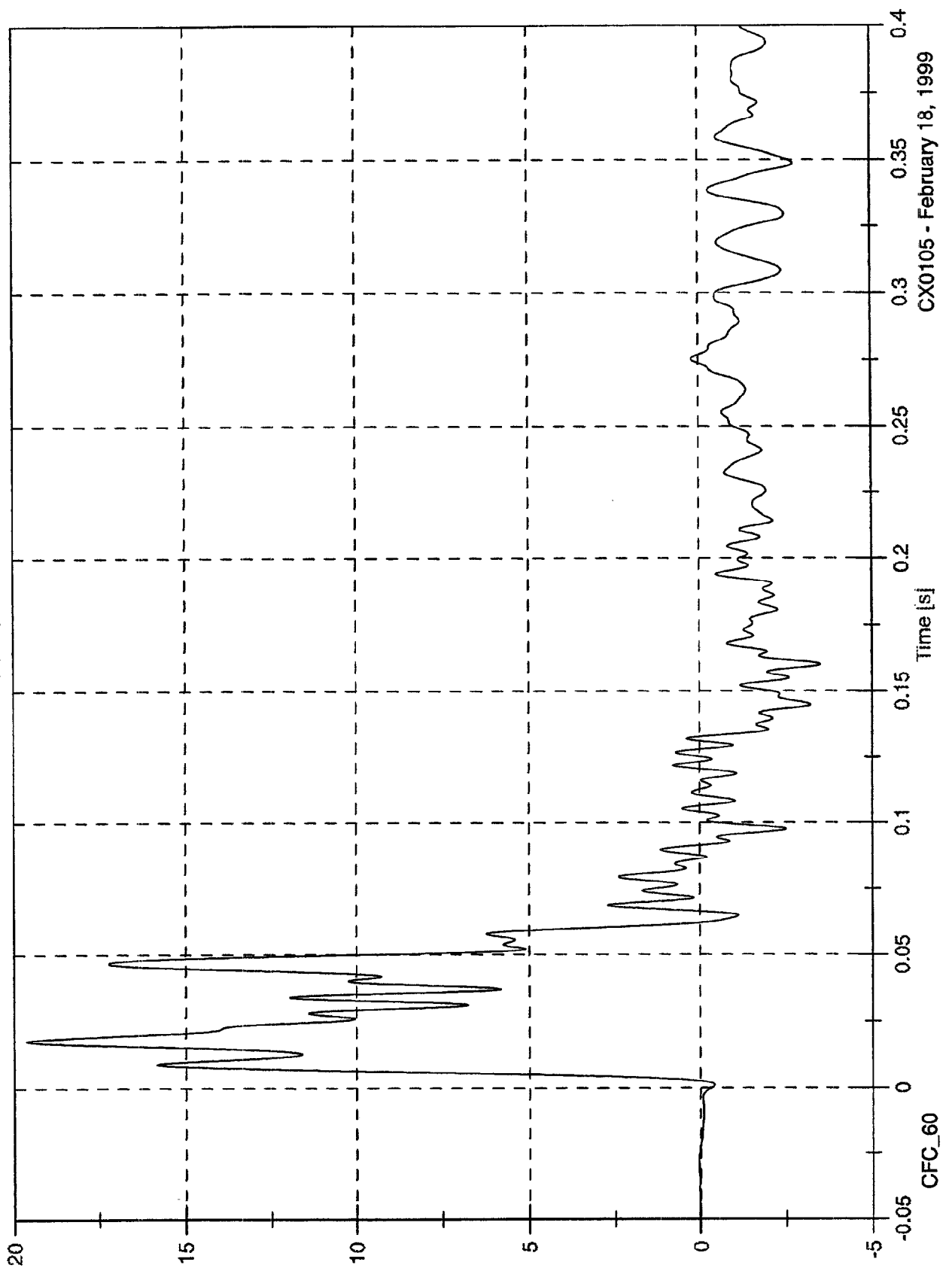
CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 19.7 [g] at 0.018 [s]

Min: -3.5 [g] at 0.160 [s]

Acc 2(Y) Right Rear Sill

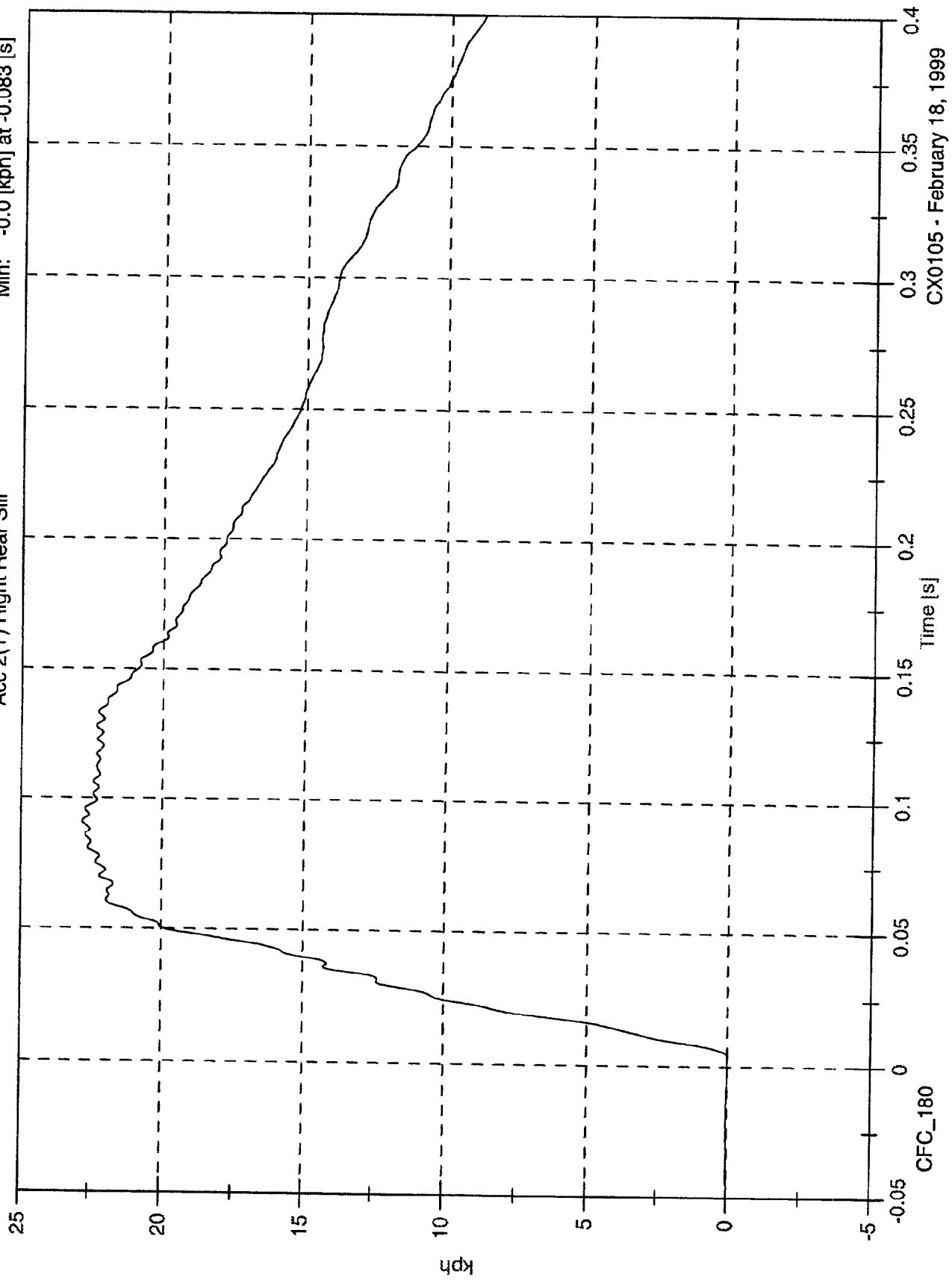


CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 22.8 [kph] at 0.091 [s]
Min: -0.0 [kph] at -0.083 [s]

Acc 2(Y) Right Rear Sill



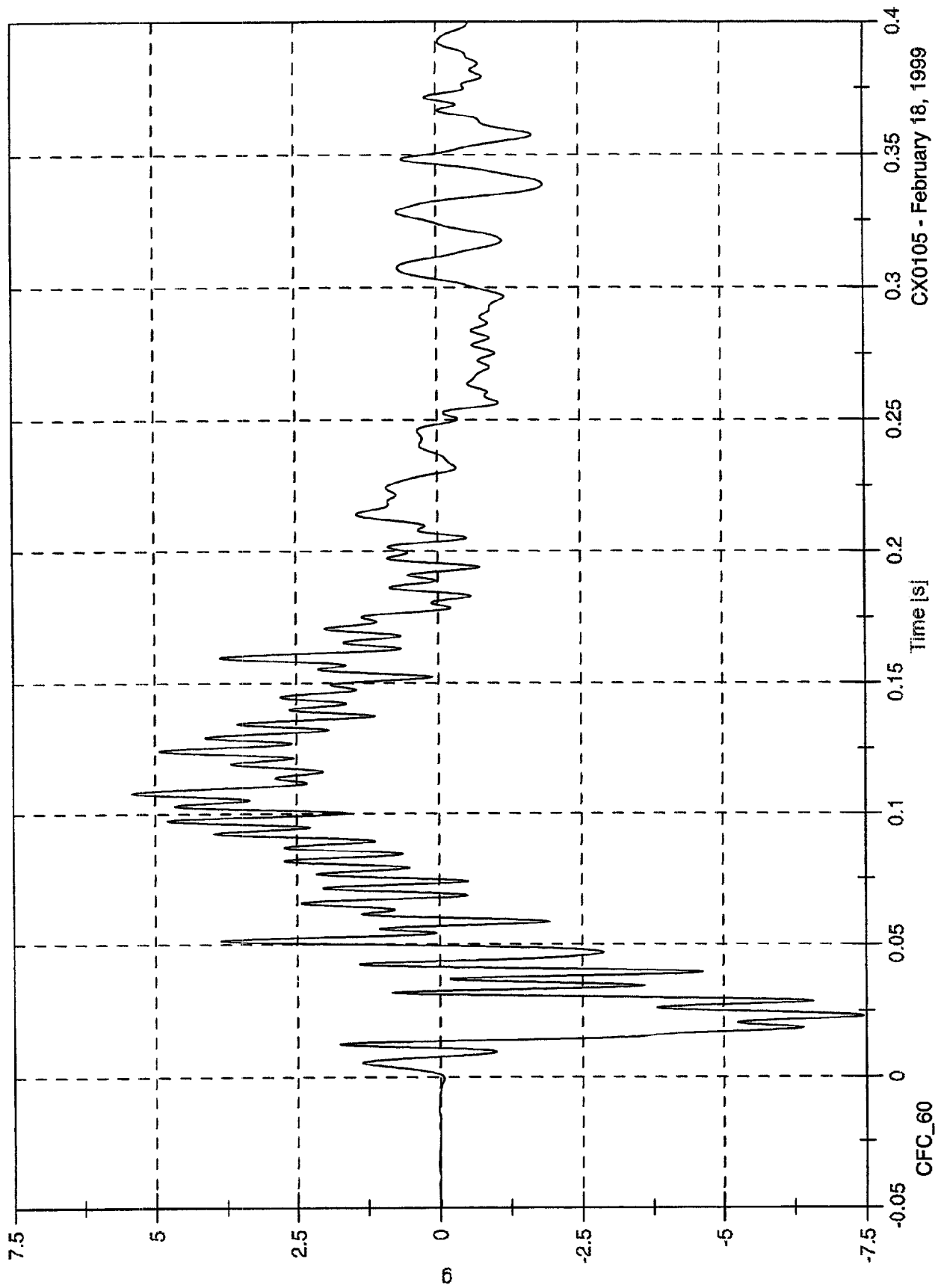
CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 5.4 [g] at 0.108 [s]

Min: -7.5 [g] at 0.023 [s]

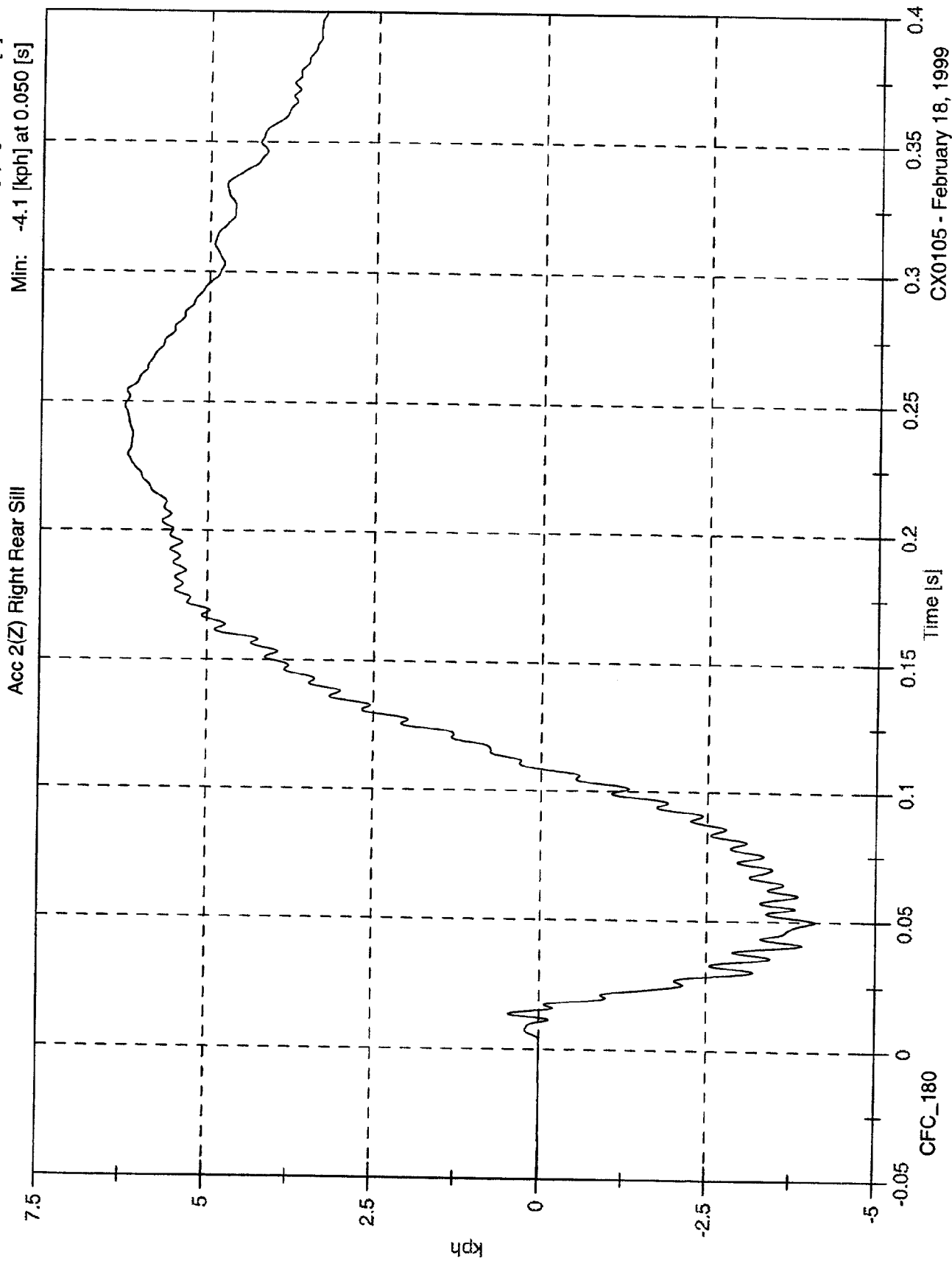
Acc 2(Z) Right Rear Sill



CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 6.2 [kph] at 0.248 [s]
 Min: -4.1 [kph] at 0.050 [s]



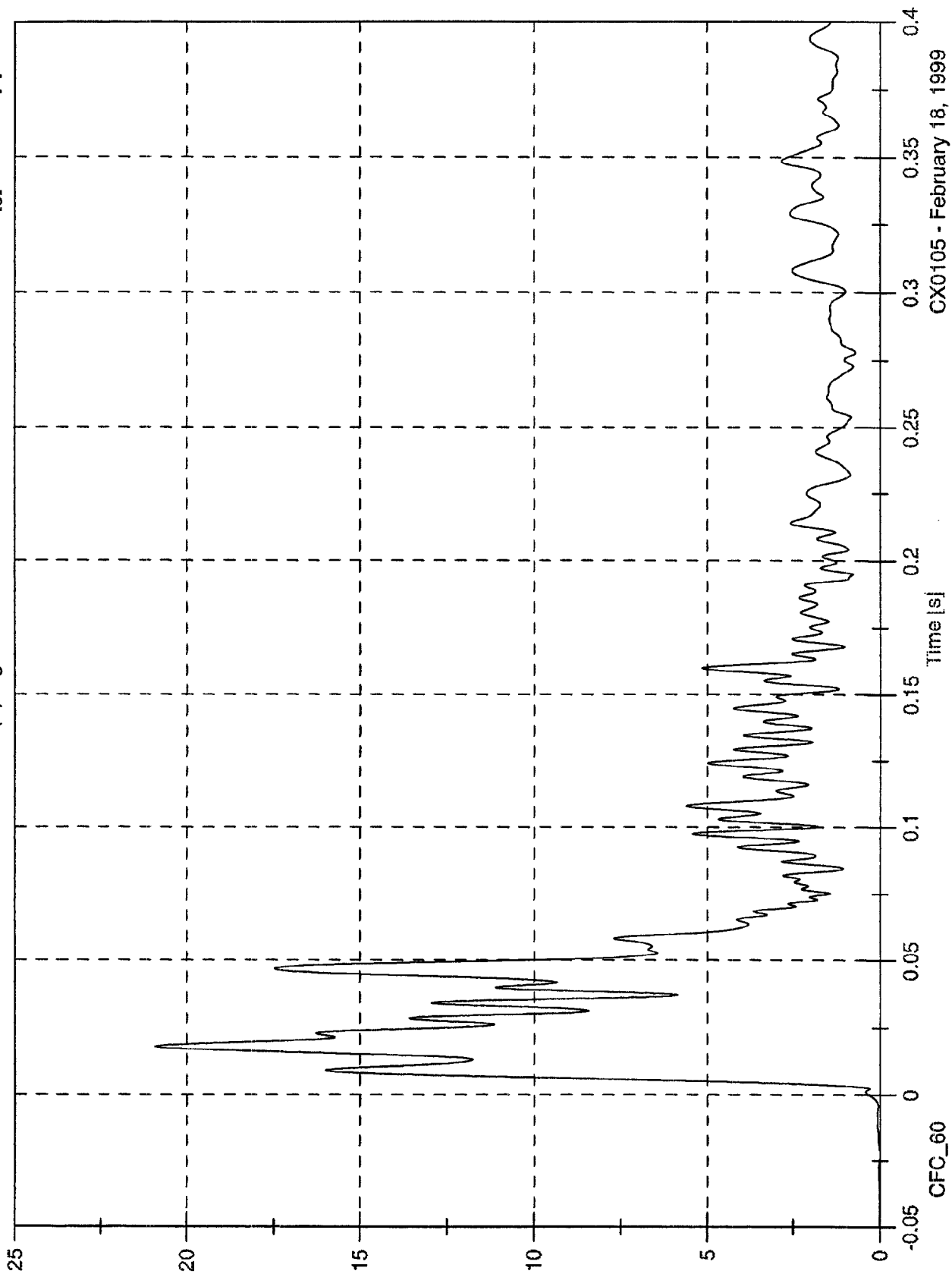
CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 20.9 [g] at 0.018 [s]

Min: 0.0 [g] at -0.022 [s]

Acc 2(X) Right Rear Sill Resultant



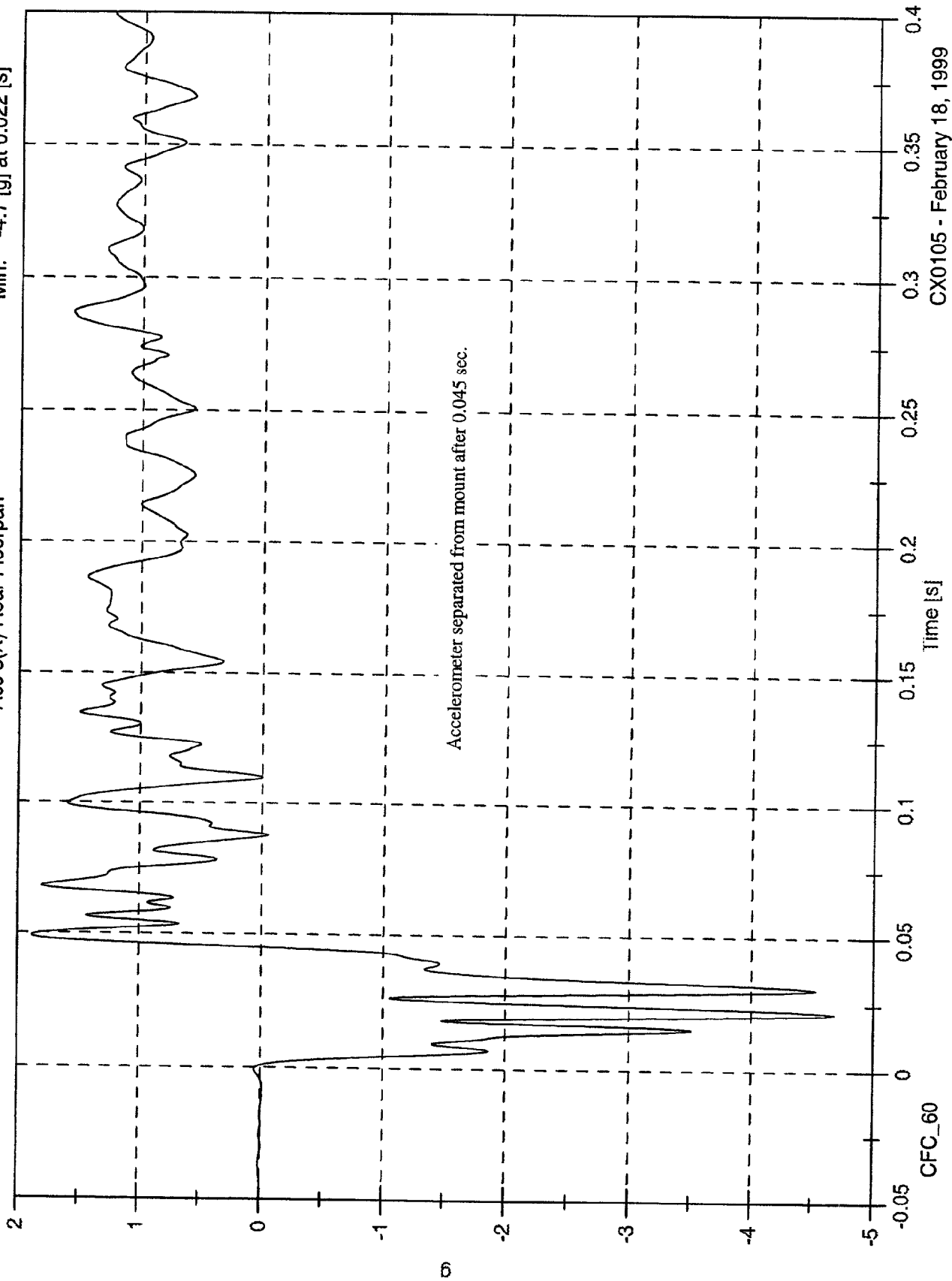
CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 1.9 [g] at 0.049 [s]

Min: -4.7 [g] at 0.022 [s]

Acc 3(X) Rear Floorpan

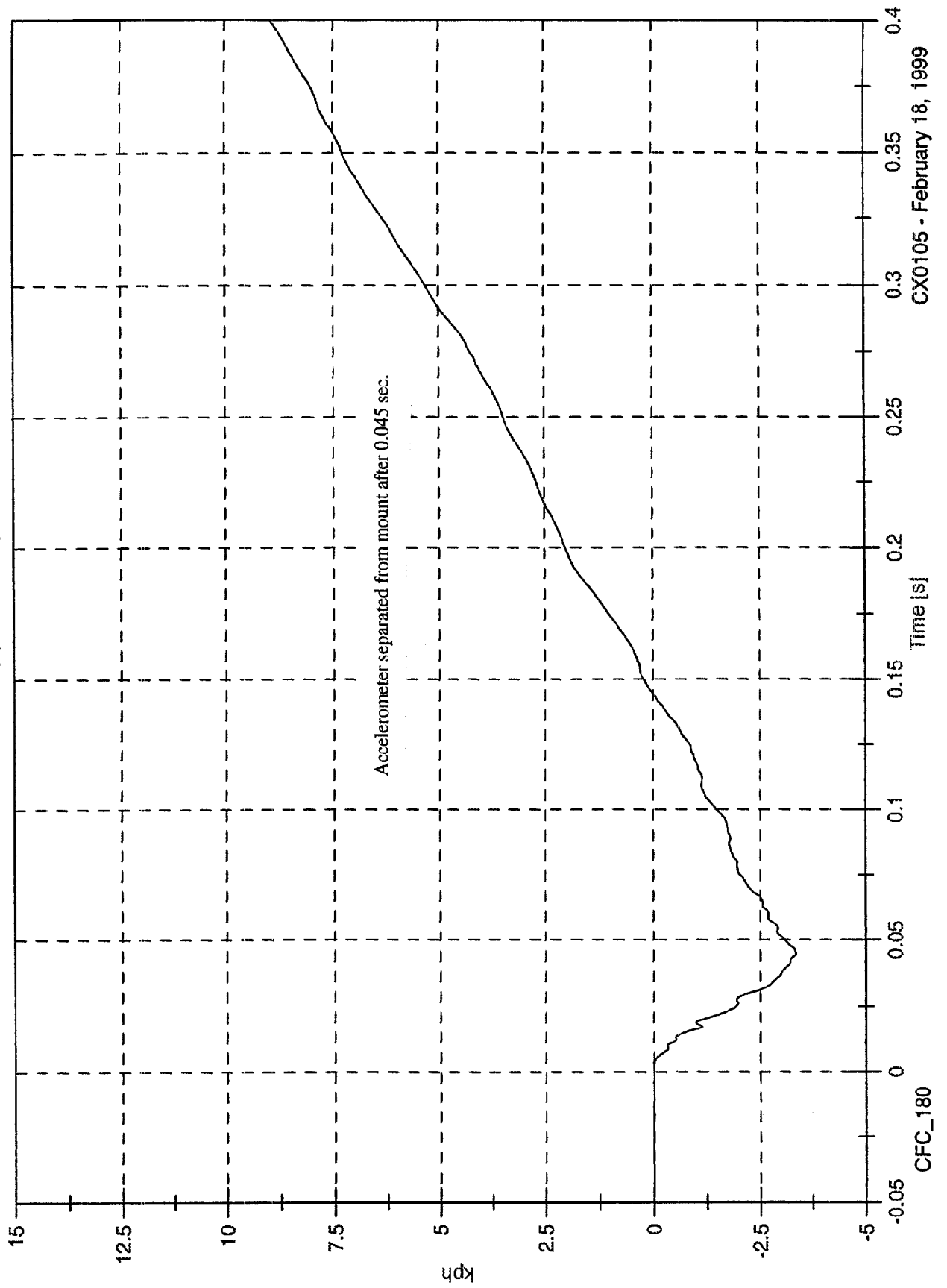


CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 13.0 [kph] at 0.500 [s]
Min: -3.3 [kph] at 0.045 [s]

Acc 3(X) Rear Floorpan

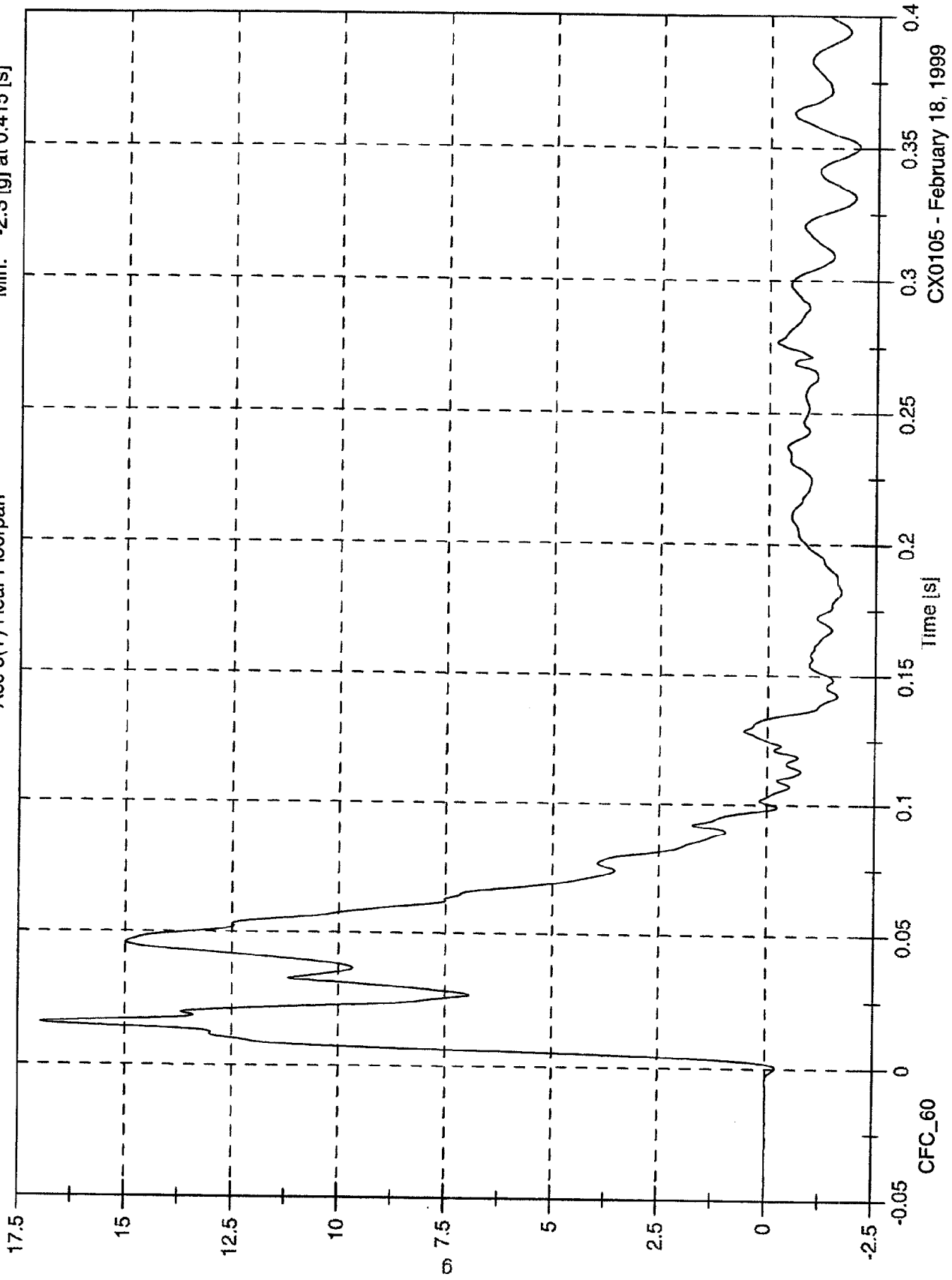


CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 17.0 [g] at 0.016 [s]
Min: -2.3 [g] at 0.415 [s]

Acc 3(Y) Rear Floorpan

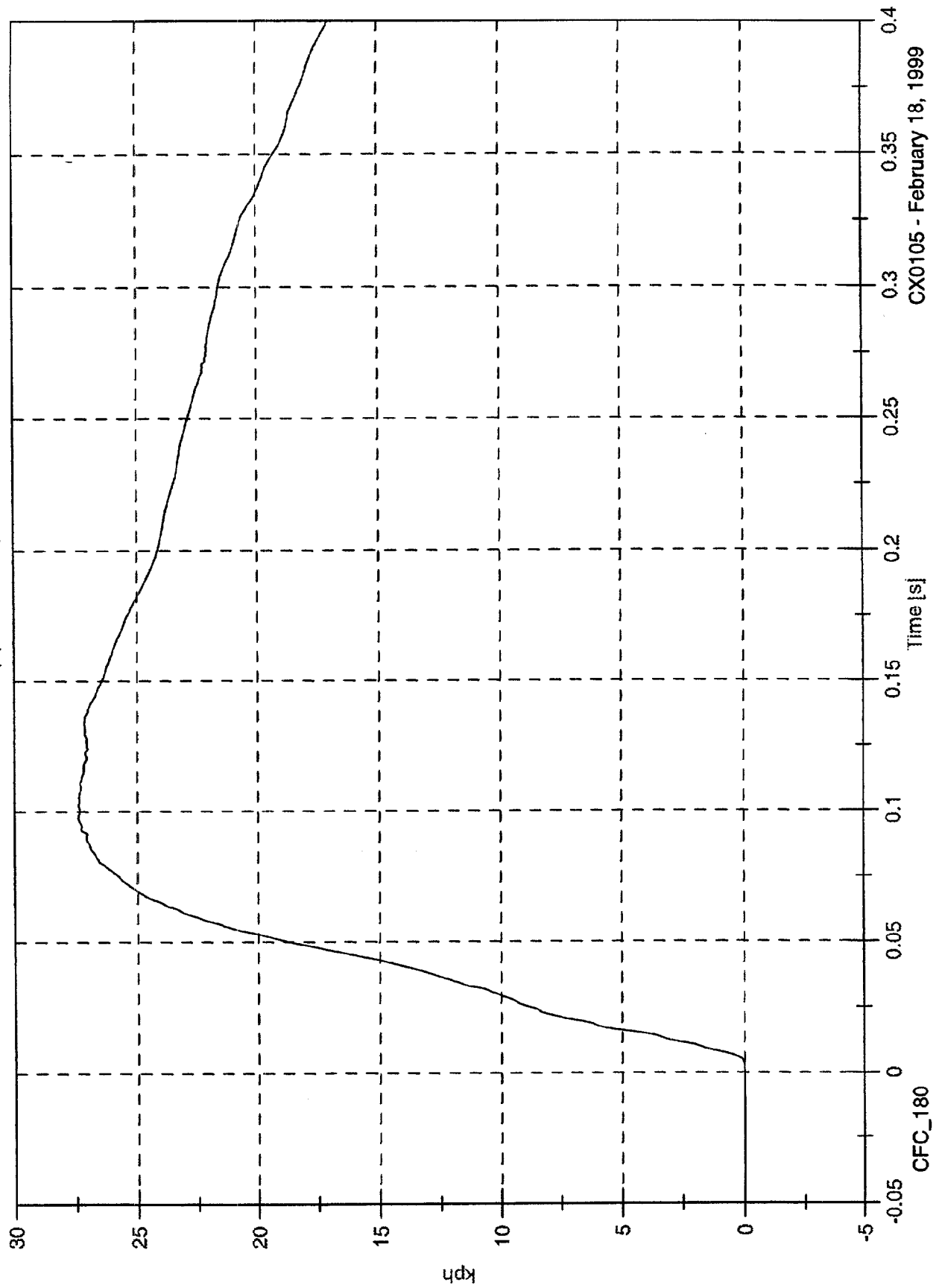


CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Acc 3(Y) Rear Floorpan

Max: 27.4 [kph] at 0.098 [s]
Min: -0.0 [kph] at -0.060 [s]

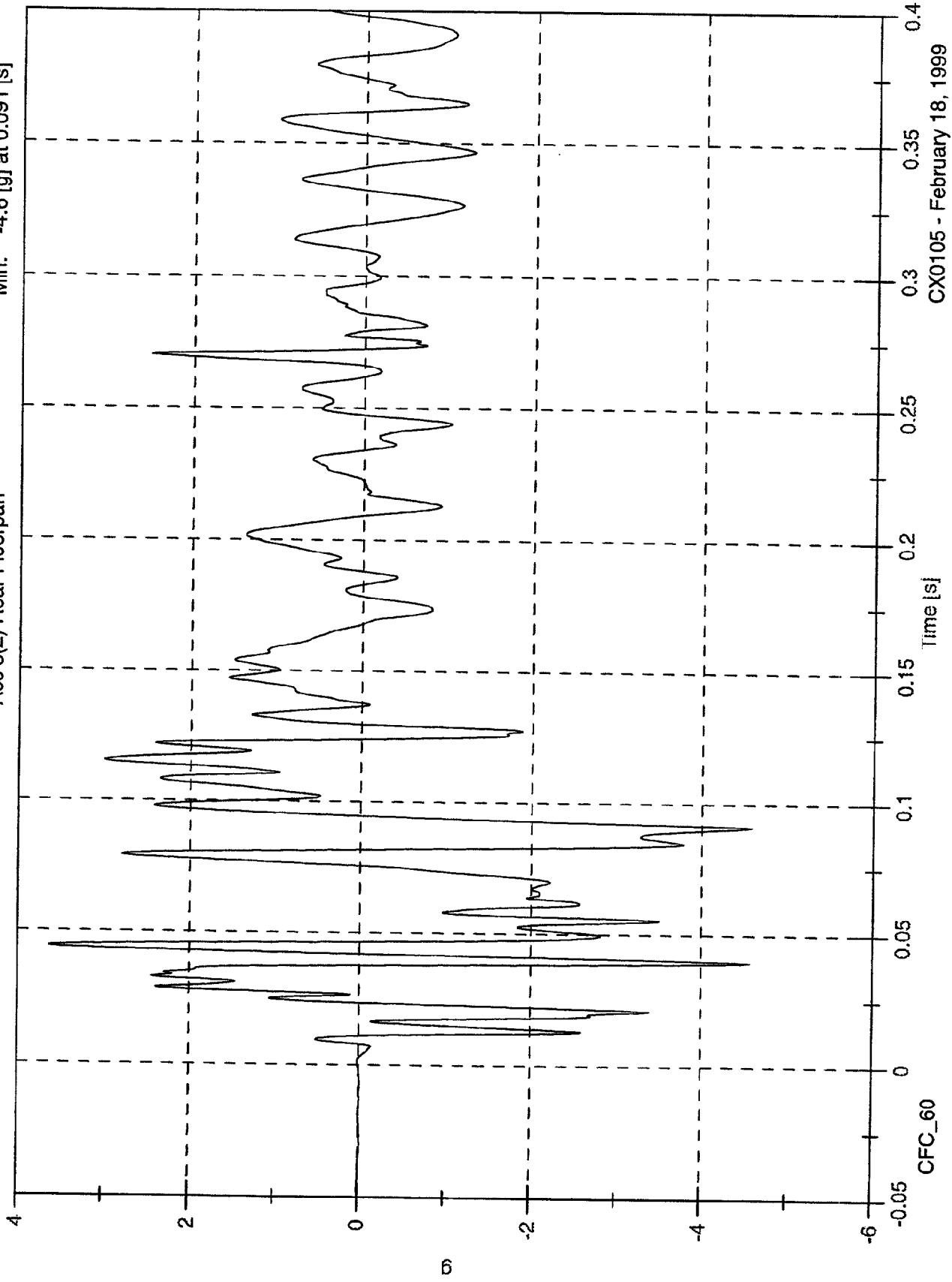


CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 3.6 [g] at 0.044 [s]
Min: -4.6 [g] at 0.091 [s]

Acc 3(Z) Rear Floorpan

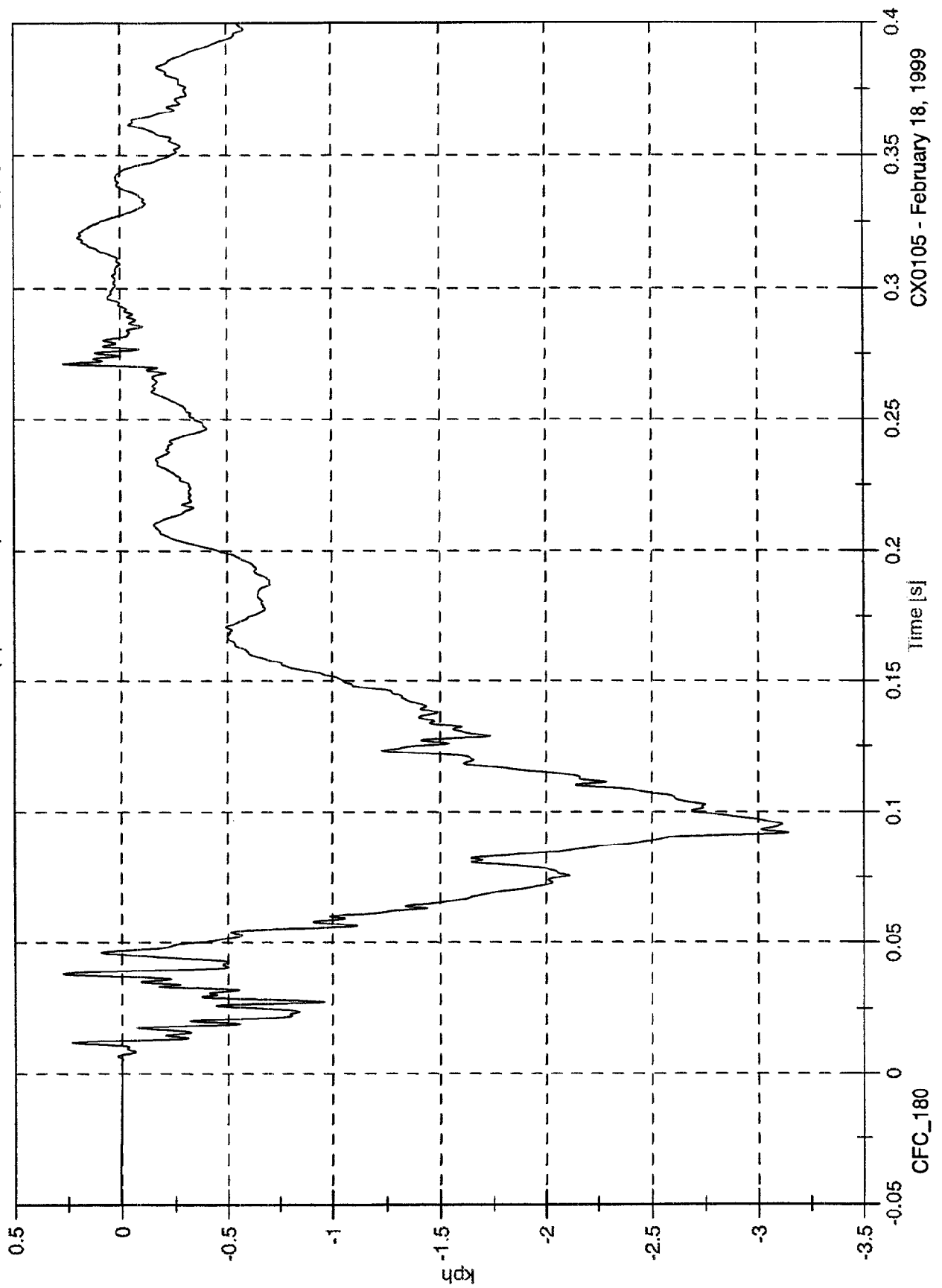


CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 0.3 [kph] at 0.038 [s]
Min: -3.1 [kph] at 0.092 [s]

Acc 3(Z) Rear Floorpan

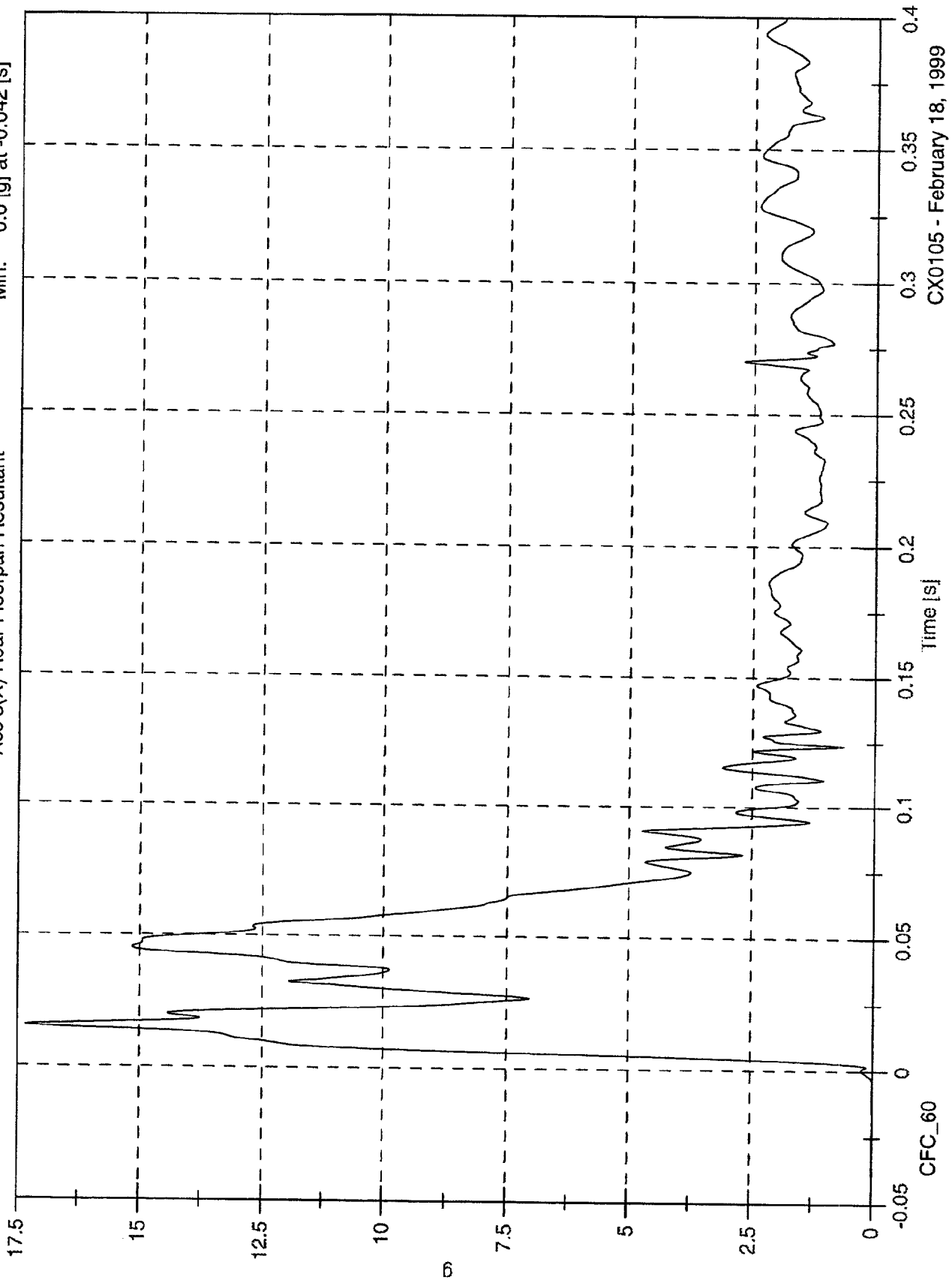


CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 17.3 [g] at 0.016 [s]
Min: 0.0 [g] at -0.042 [s]

Acc 3(X) Rear Floorpan Resultant



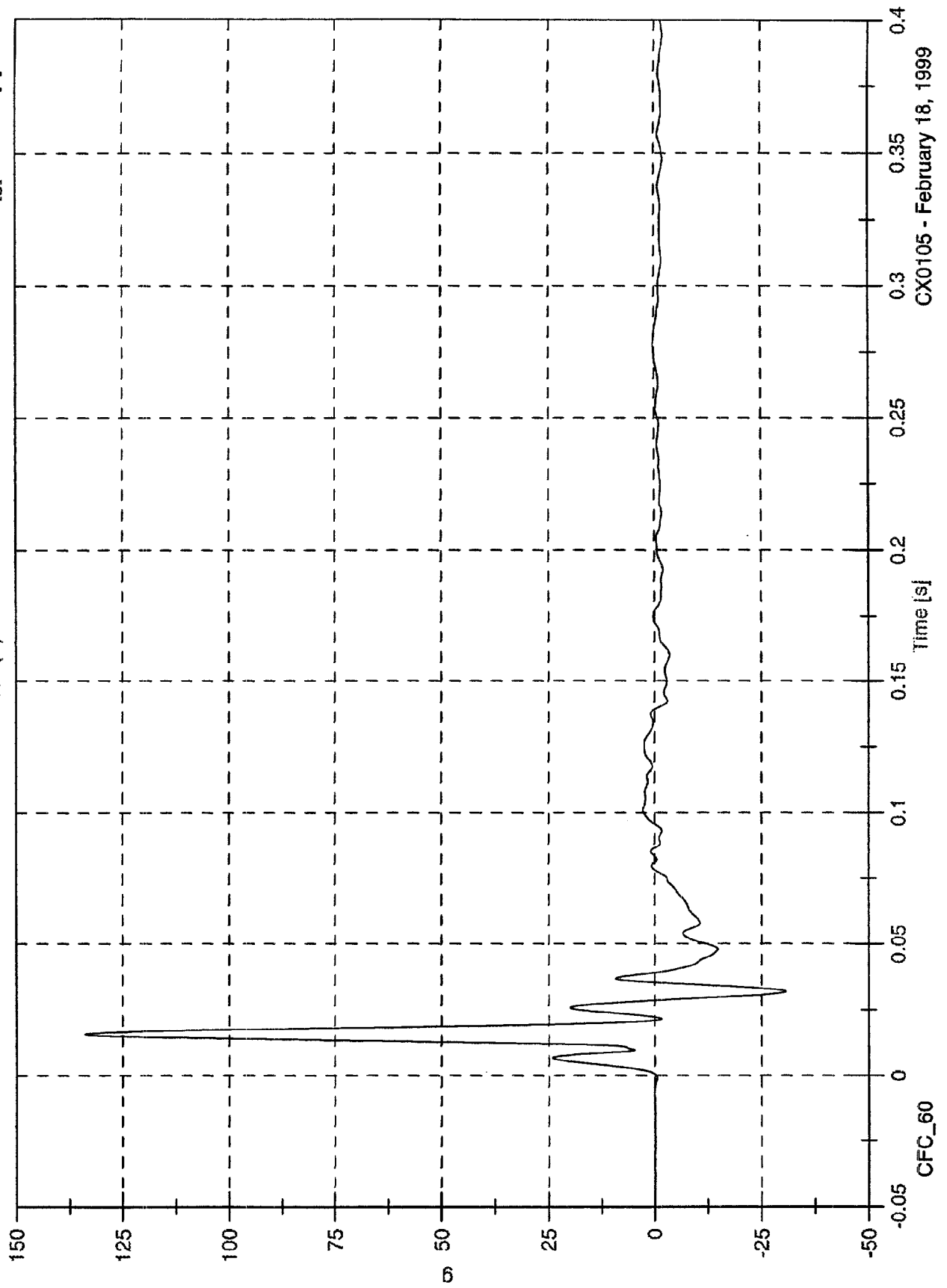
CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 133.9 [g] at 0.016 [s]

Min: -30.6 [g] at 0.032 [s]

Acc 4(Y) Left Rear Sill

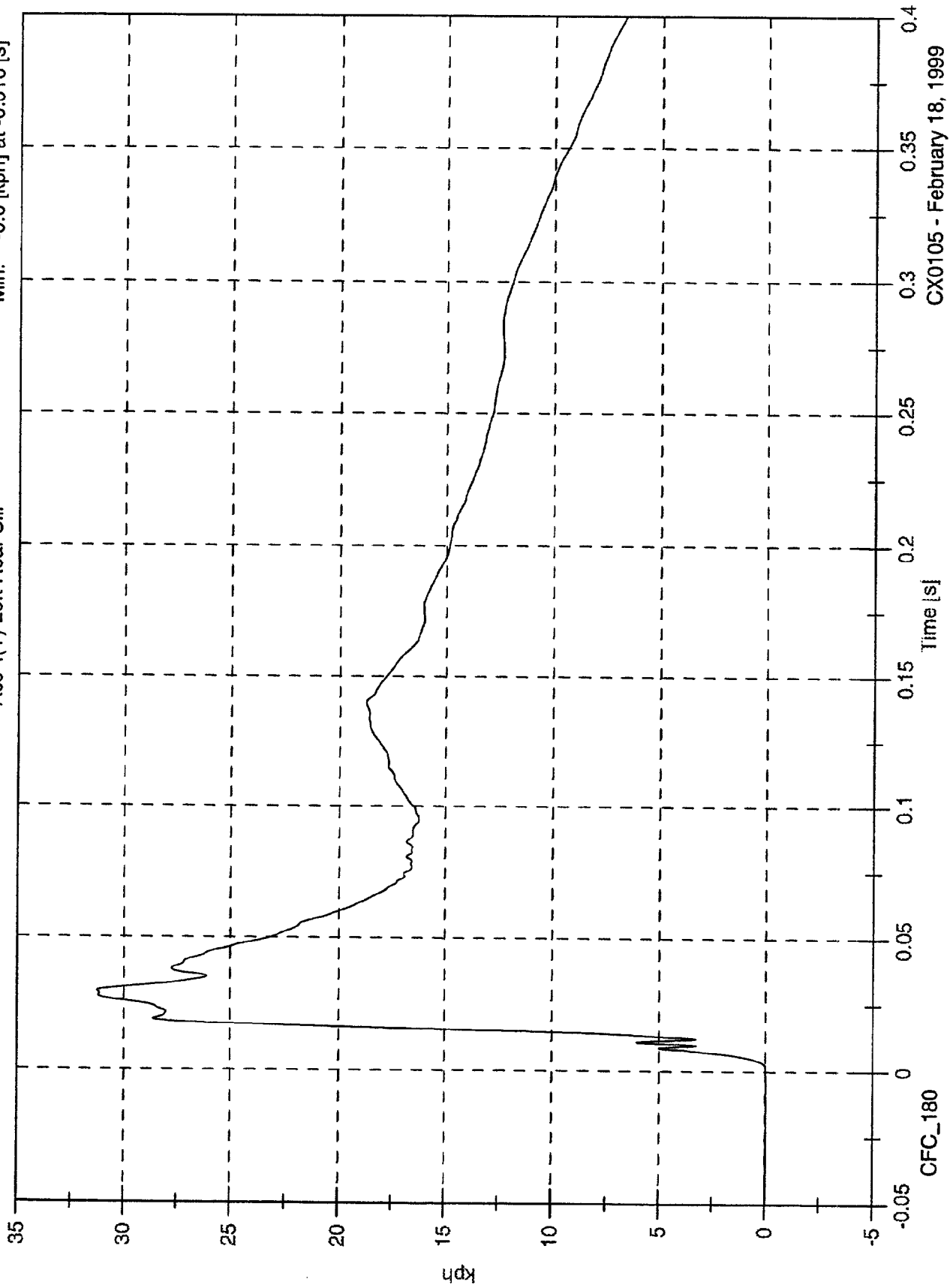


CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 31.3 [kph] at 0.030 [s]
Min: -0.0 [kph] at -0.016 [s]

Acc 4(Y) Left Rear Sill



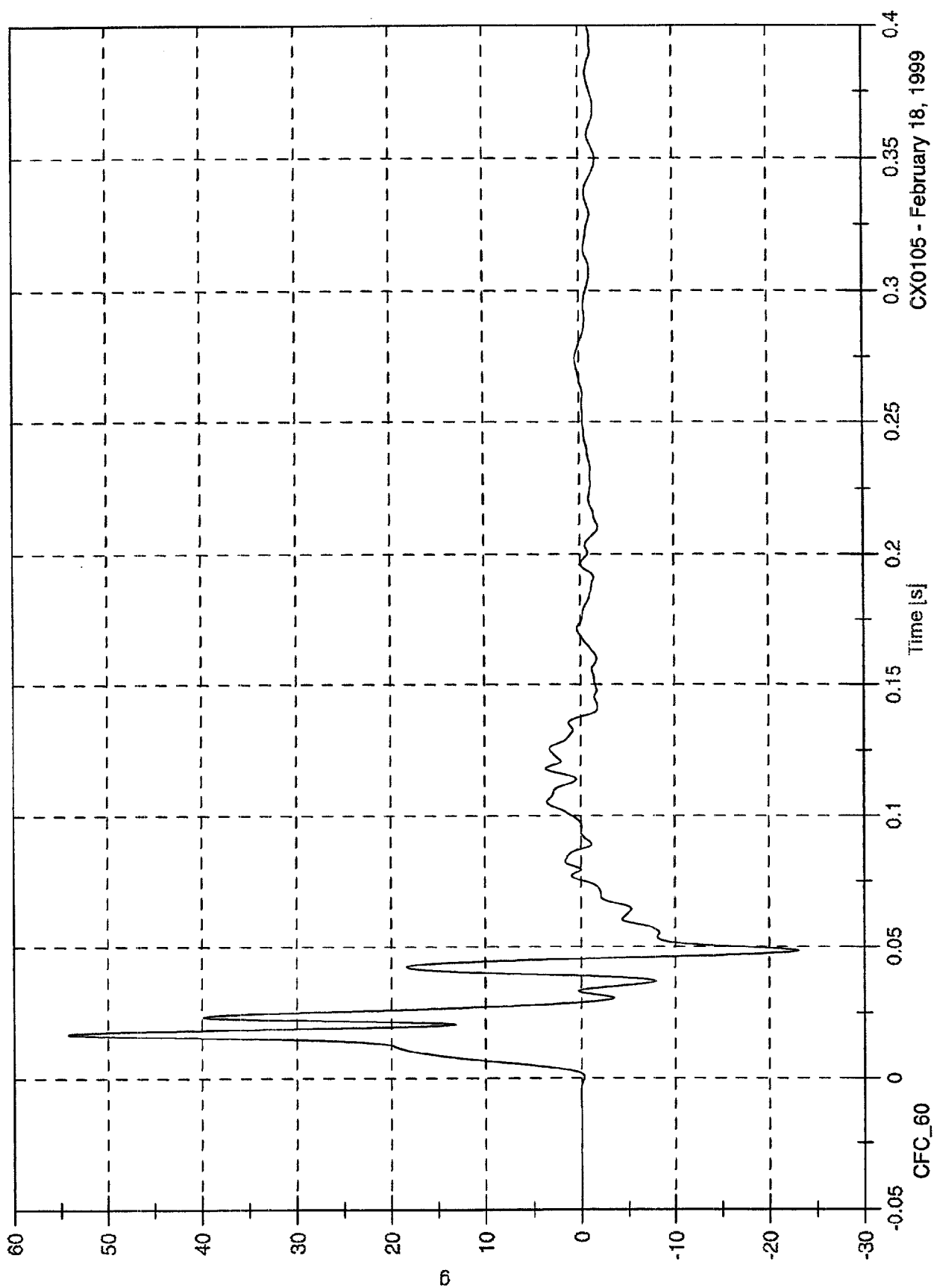
CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 54.3 [g] at 0.017 [s]

Min: -23.1 [g] at 0.048 [s]

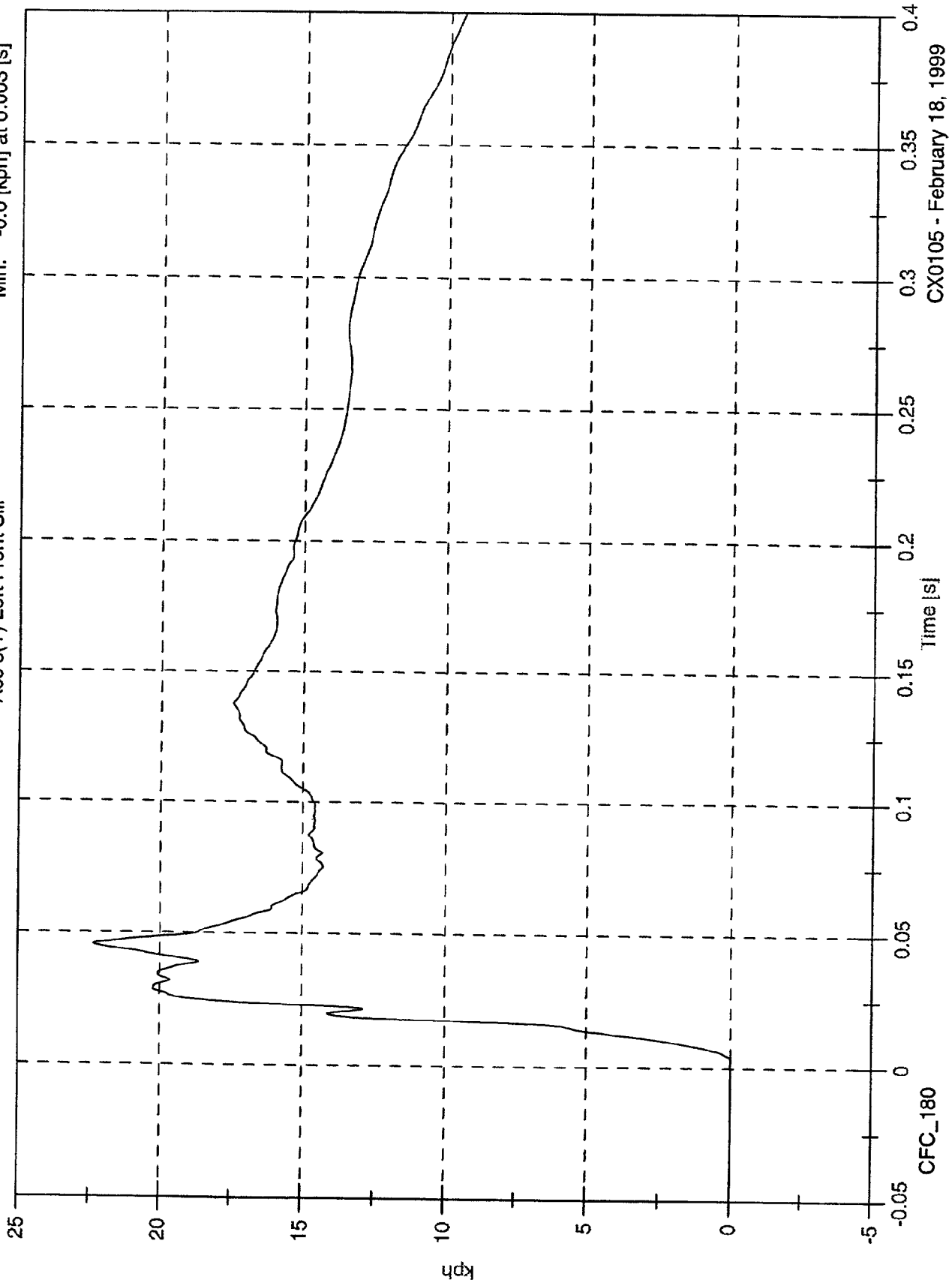
Acc 5(Y) Left Front Sill



214 Test # 8 - 1999 Chevrolet Venture

Max: 22.3 [kph] at 0.046 [s]
Min: -0.0 [kph] at 0.003 [s]

Acc 5(Y) Left Front Sill

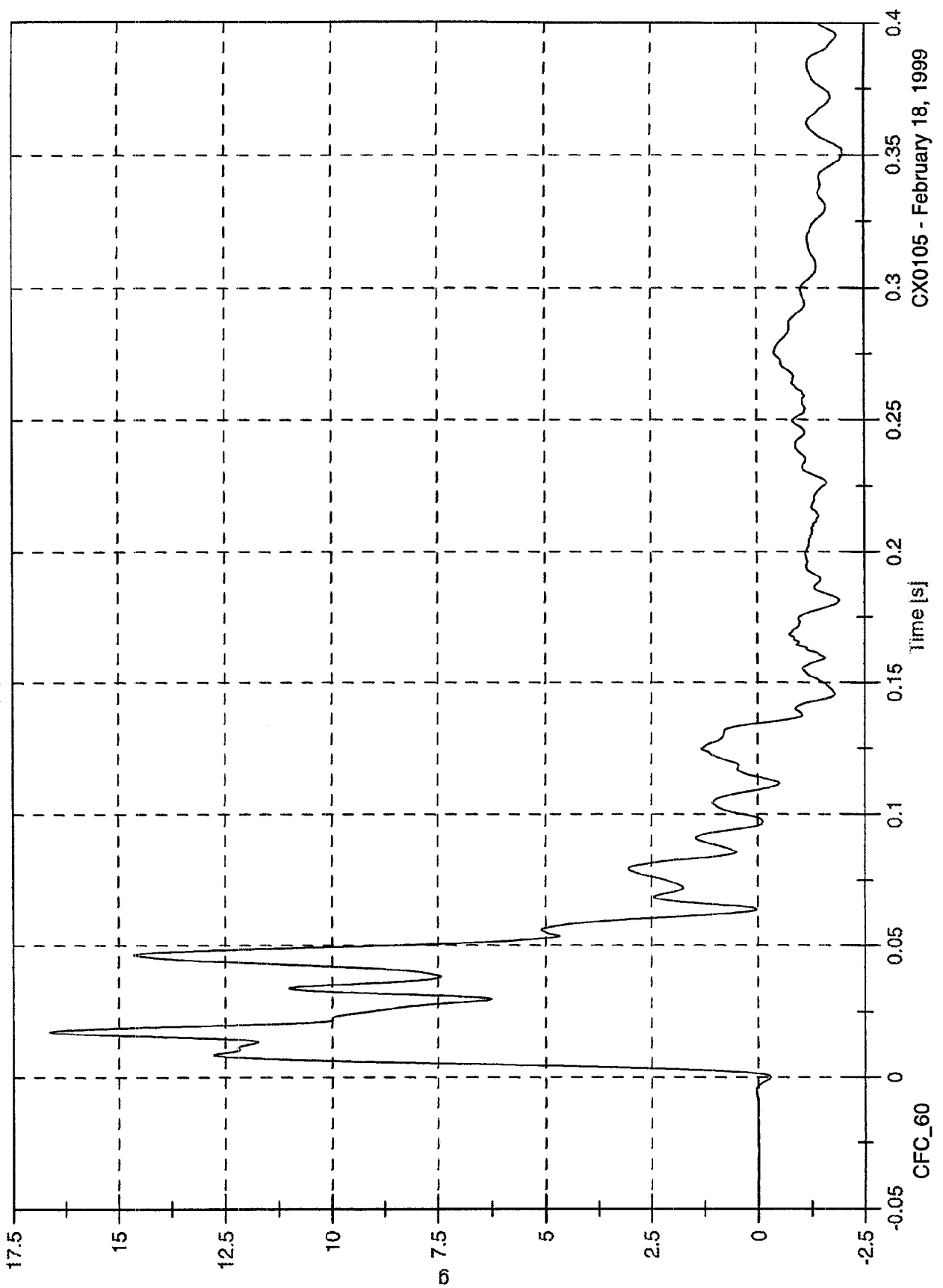


CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 16.6 [g] at 0.017 [s]
Min: -2.0 [g] at 0.414 [s]

Acc 7(Y) Rt Rear Compartment



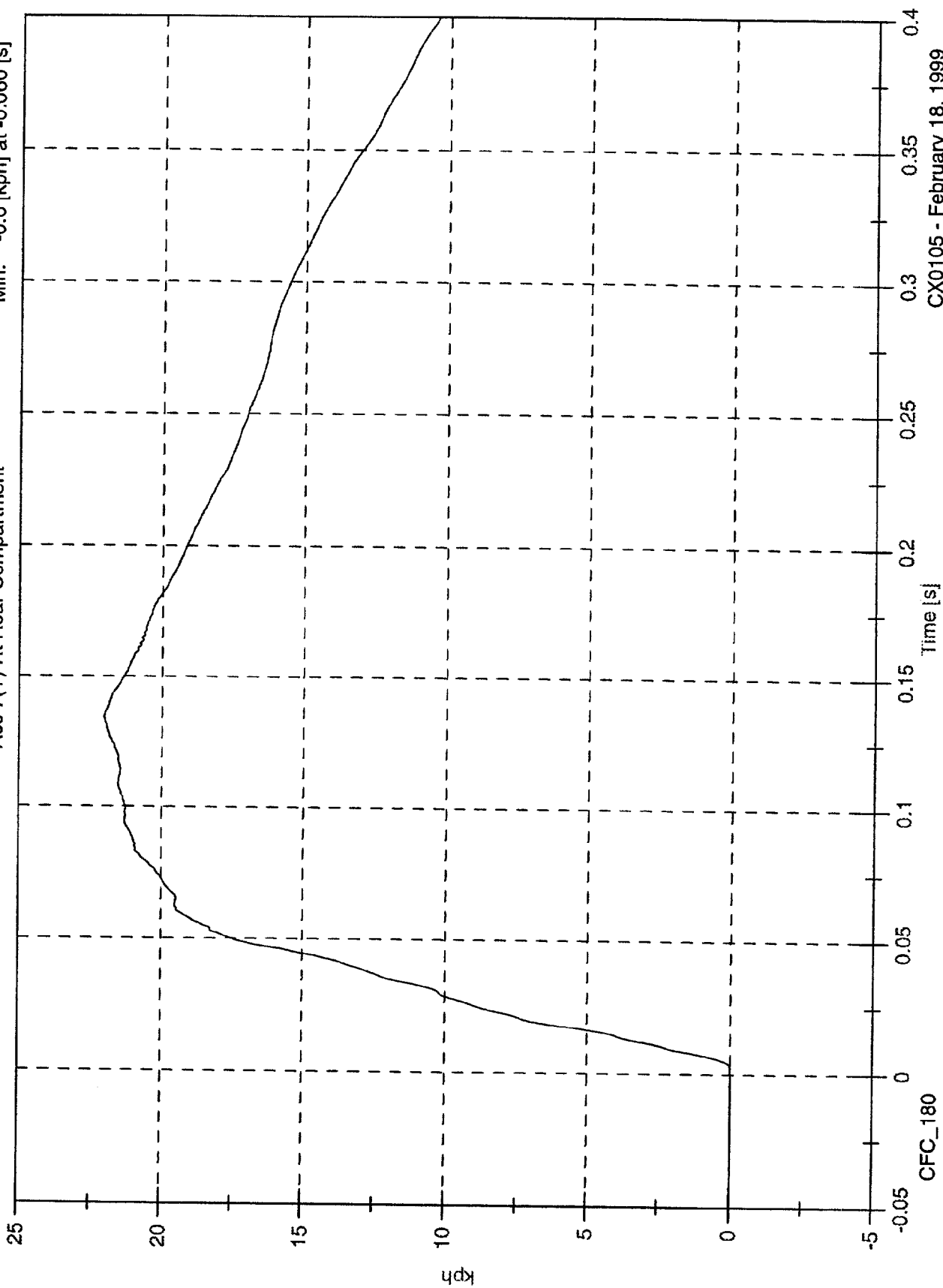
CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 22.0 [kph] at 0.134 [s]

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

Acc 7(Y) Rt Rear Compartment



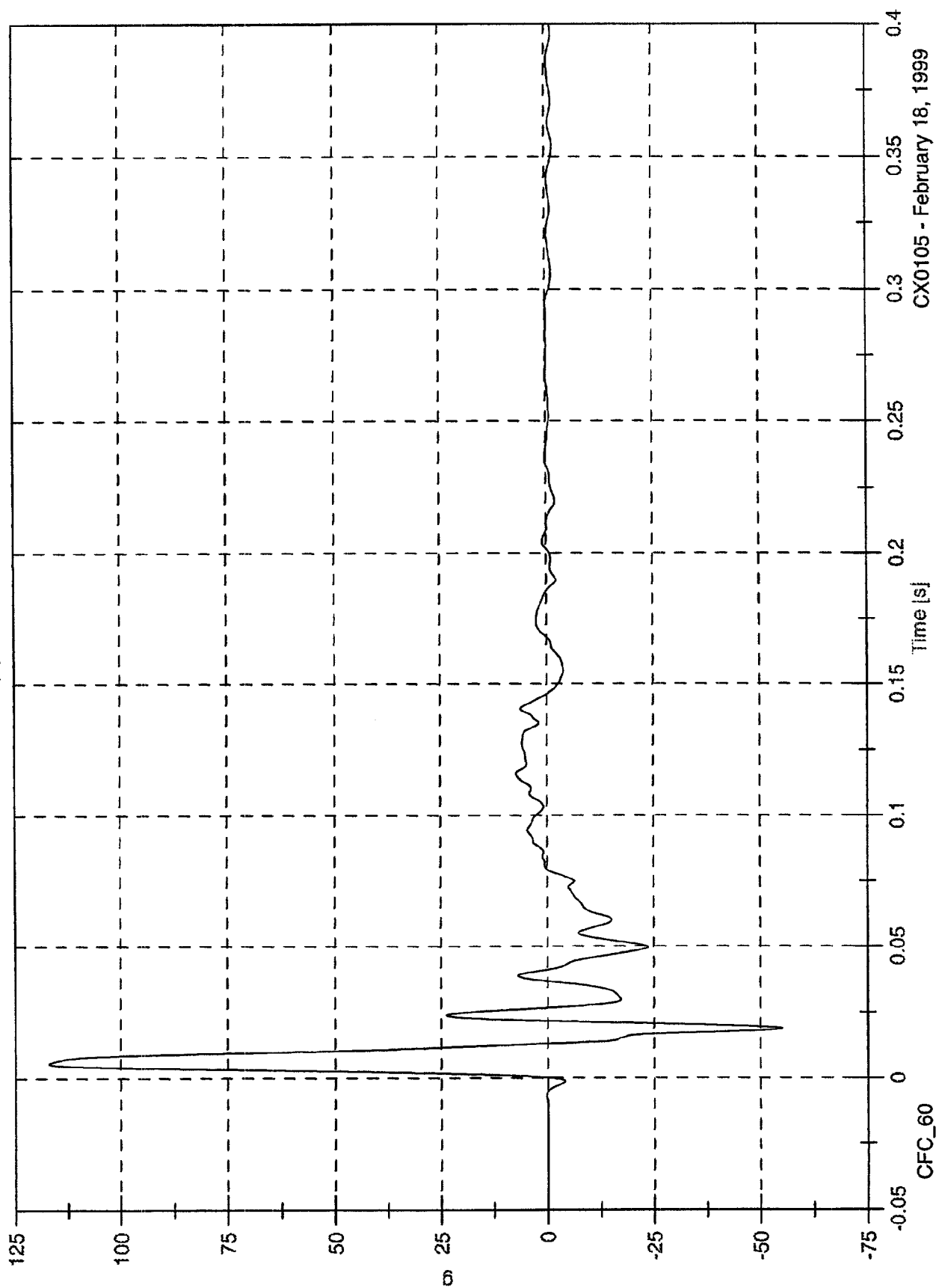
CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Acc 12(Y) Left Lower B-Post

Max: 117.1 [g] at 0.005 [s]

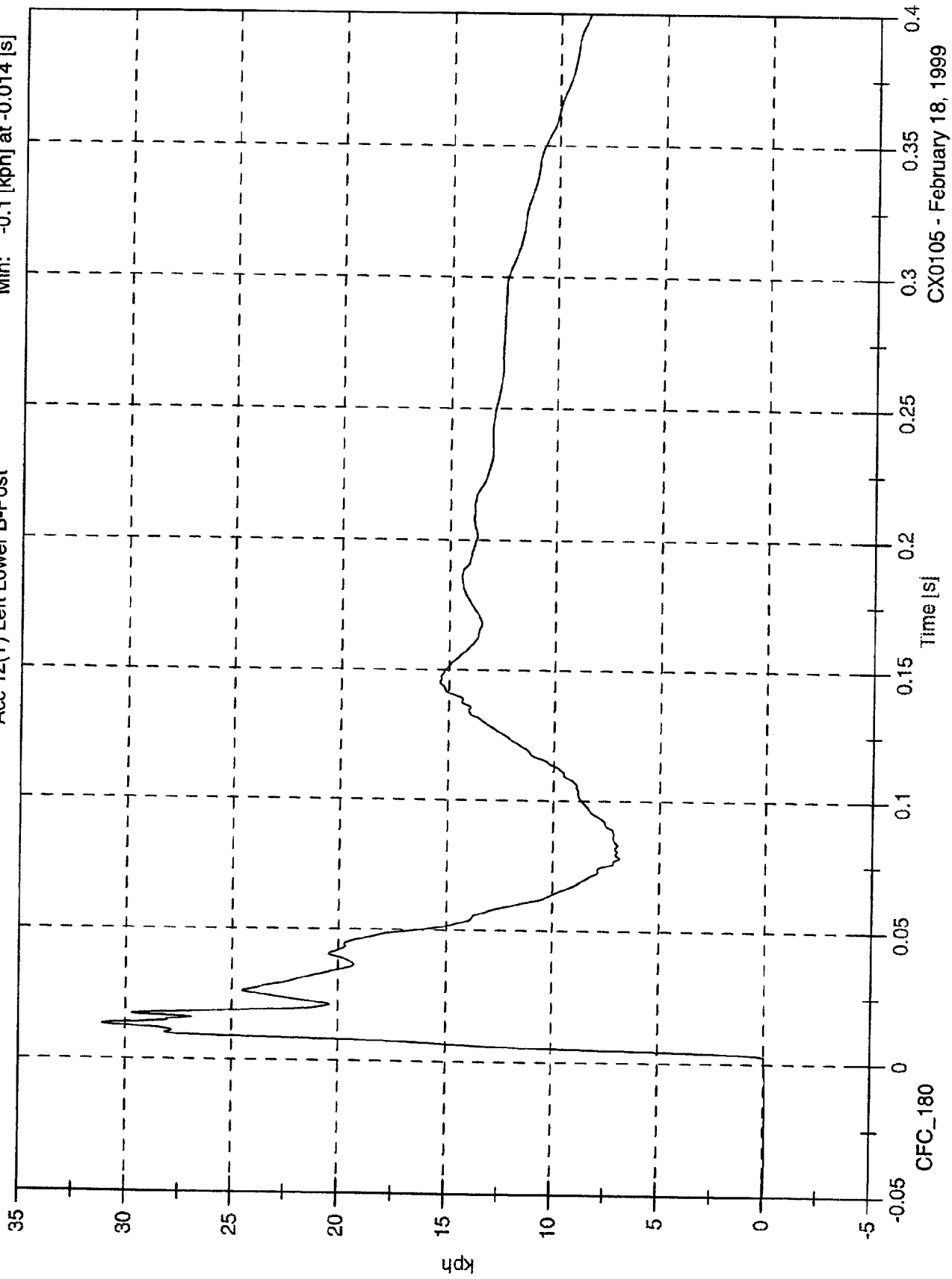
Min: -55.1 [g] at 0.019 [s]



214 Test # 8 - 1999 Chevrolet Venture

Max: 31.1 [kph] at 0.013 [s]
Min: -0.1 [kph] at -0.014 [s]

Acc 12(Y) Left Lower B-Post



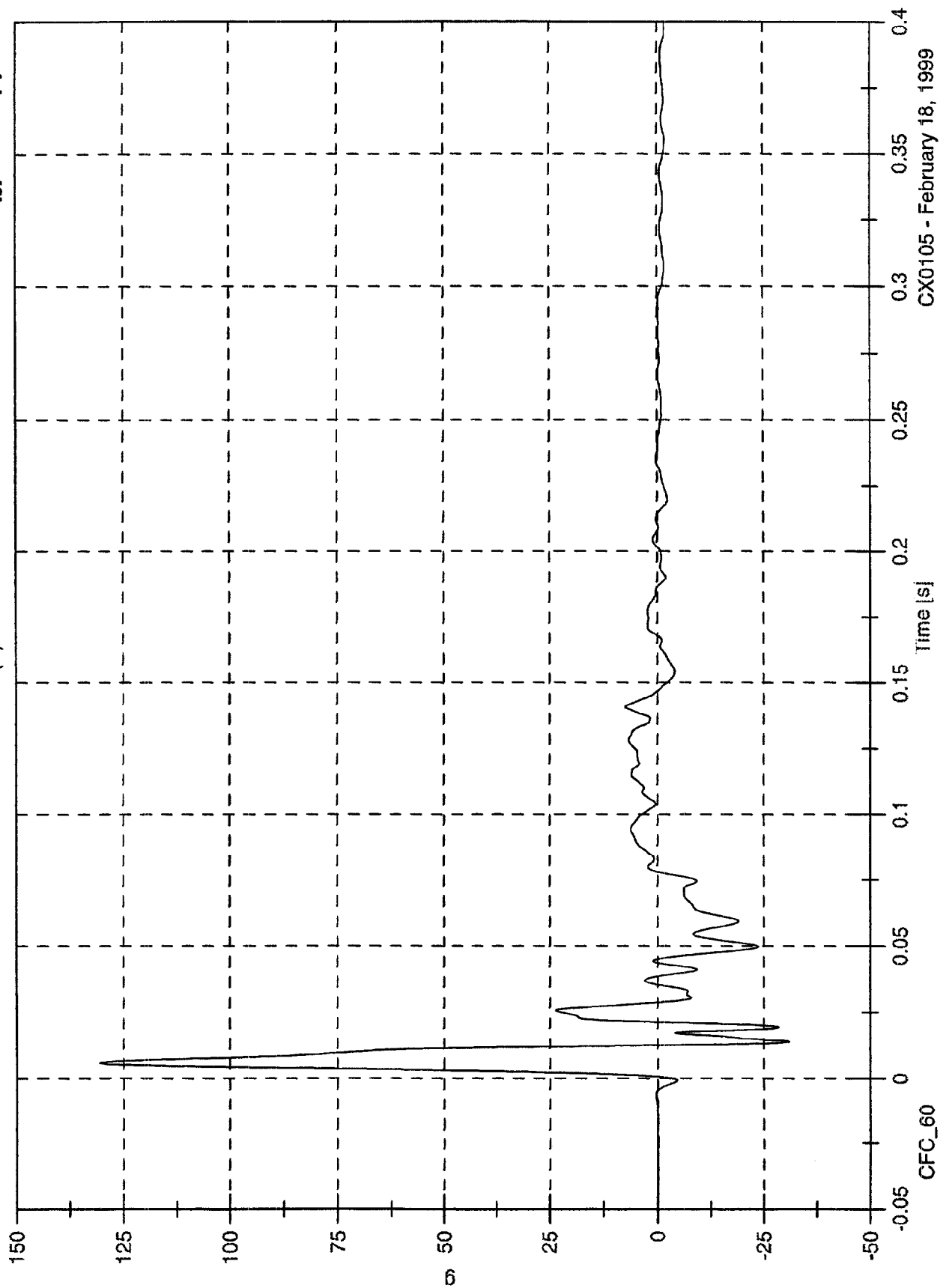
CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 130.5 [g] at 0.006 [s]

Min: -31.0 [g] at 0.014 [s]

Acc 13(Y) Left Mid B-Post



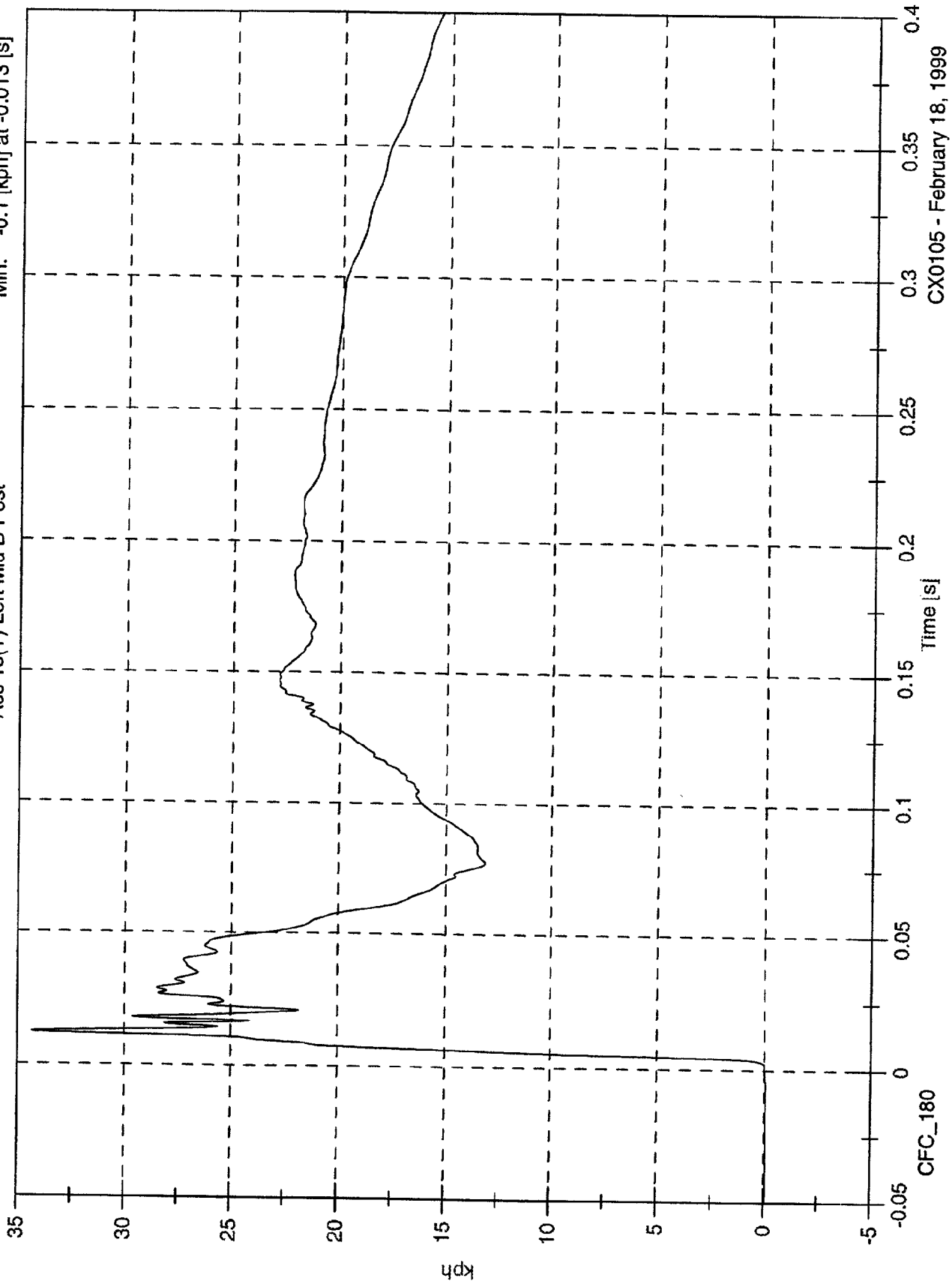
CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 34.3 [kph] at 0.012 [s]

Min: -0.1 [kph] at -0.013 [s]

Acc 13(Y) Left Mid B-Post



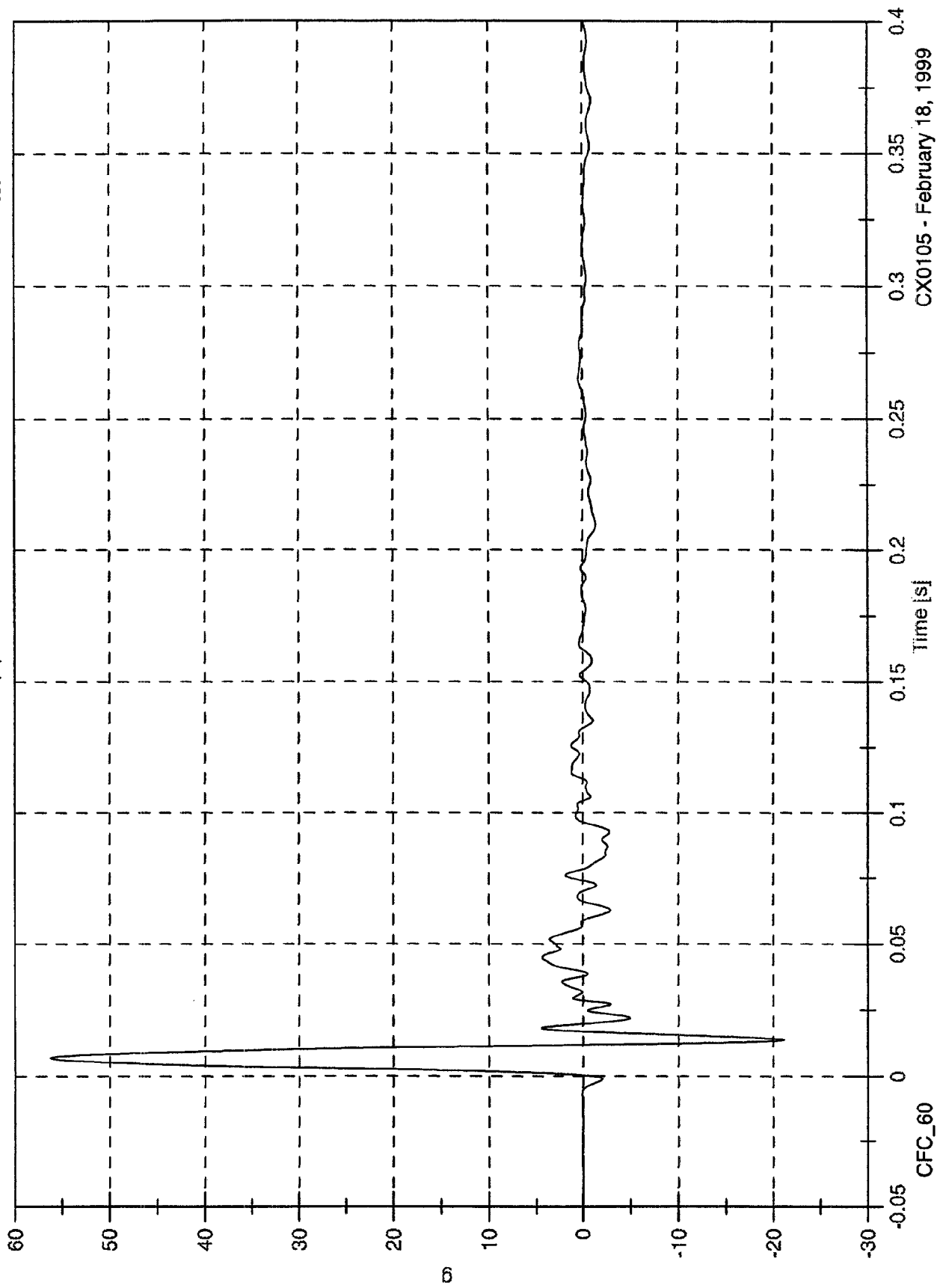
CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Acc 14(Y) Left Lower A Pillar

Max: 56.3 [g] at 0.007 [s]

Min: -21.1 [g] at 0.014 [s]



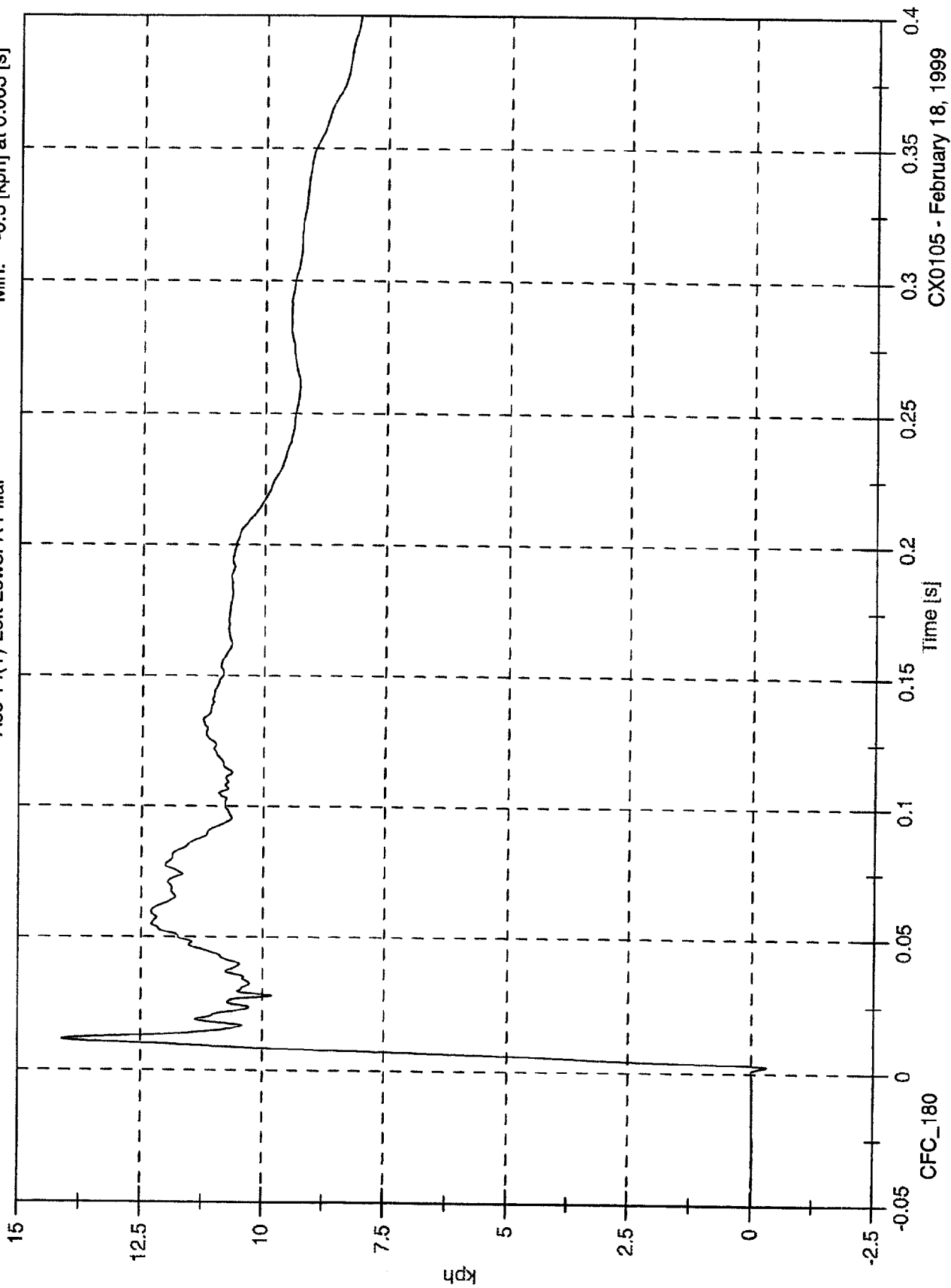
CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Acc 14(Y) Left Lower A Pillar

Max: 14.1 [kph] at 0.011 [s]

Min: -0.3 [kph] at 0.003 [s]



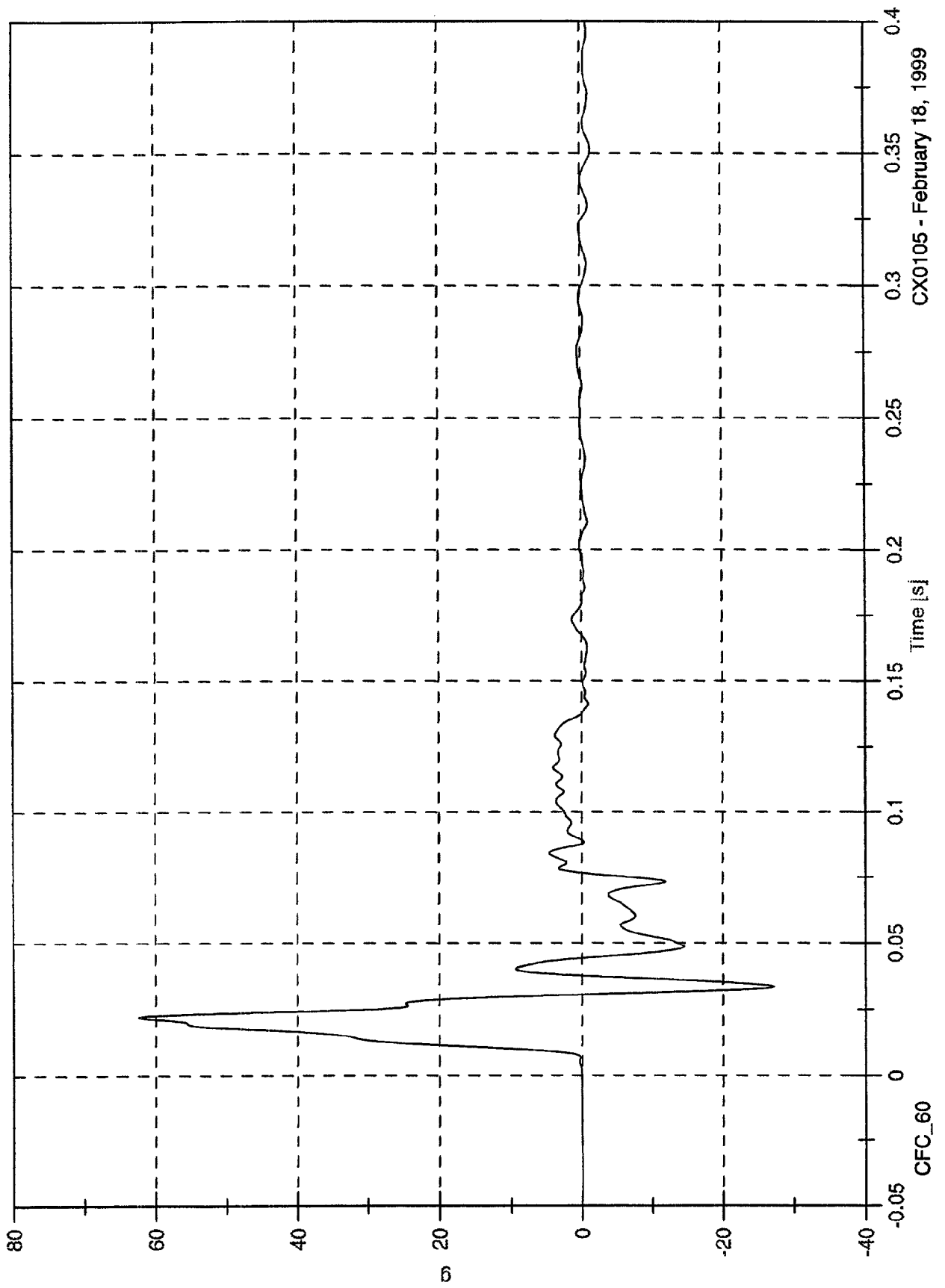
CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 62.4 [g] at 0.022 [s]

Min: -27.2 [g] at 0.033 [s]

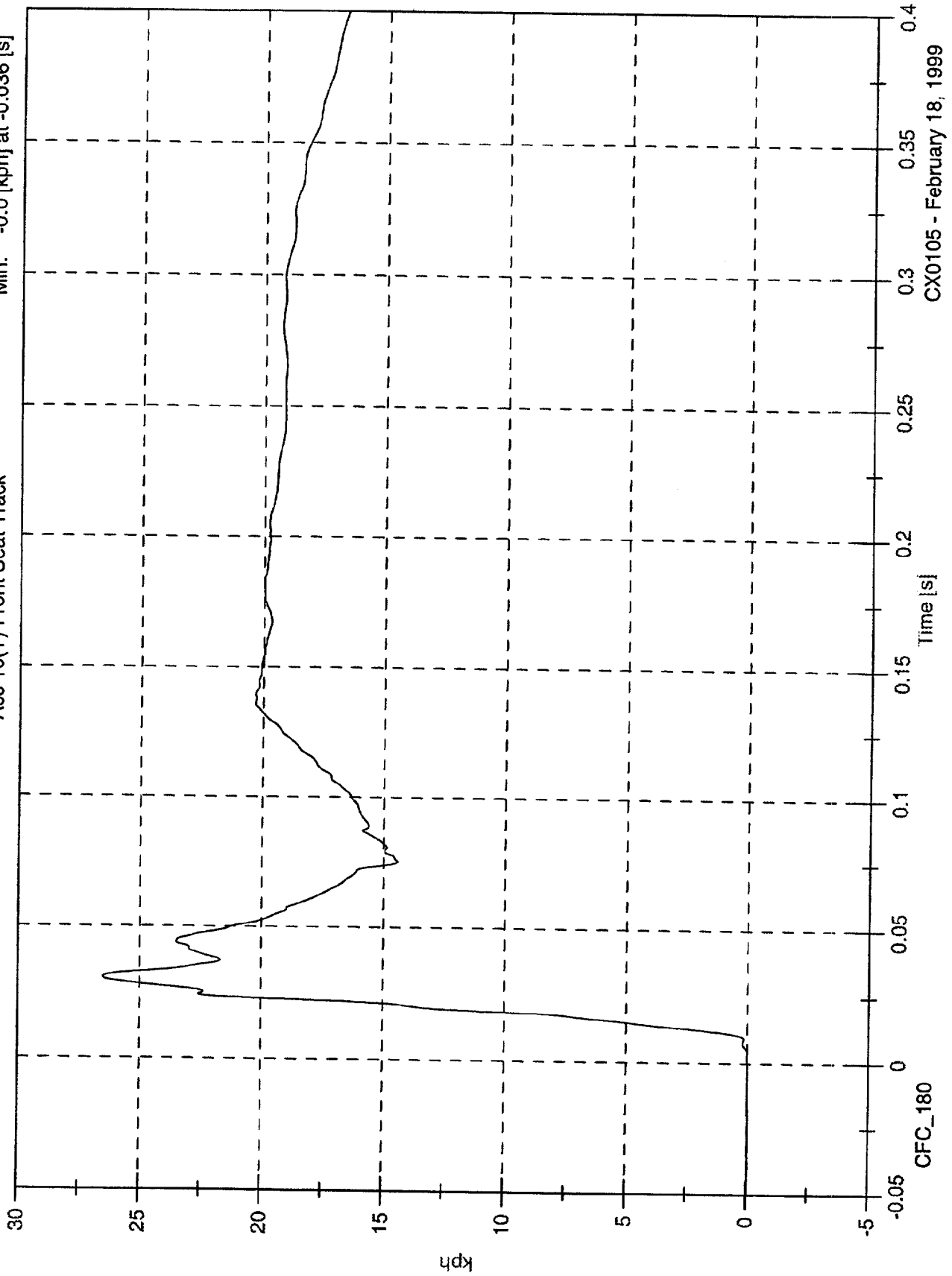
Acc 16(Y) Front Seat Track



214 Test # 8 - 1999 Chevrolet Venture

Acc 16(Y) Front Seat Track

Max: 26.5 [kph] at 0.031 [s]
Min: -0.0 [kph] at -0.036 [s]



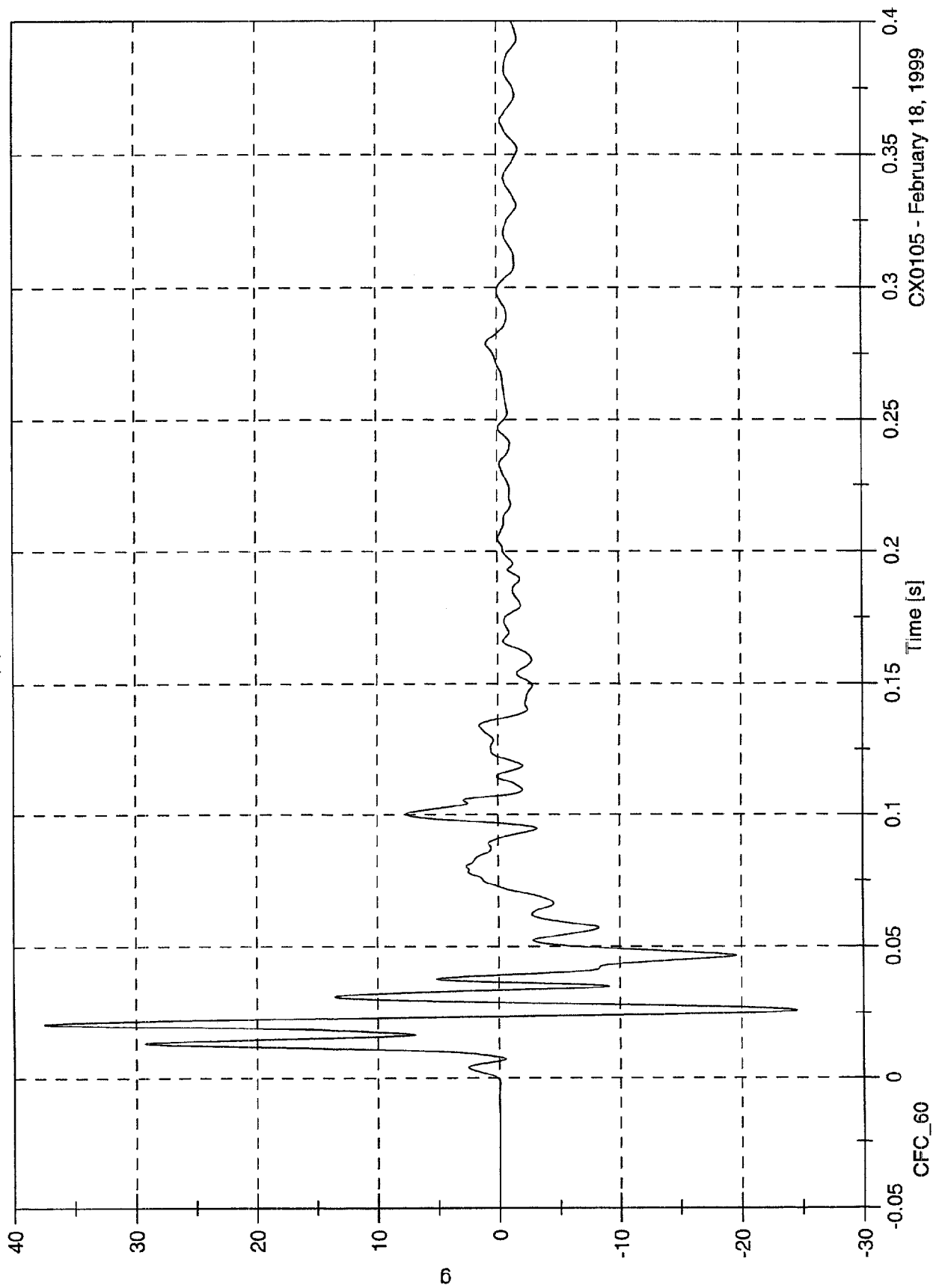
CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 37.5 [g] at 0.021 [s]

Min: -24.6 [g] at 0.026 [s]

Acc 17(Y) Rear Seat Track



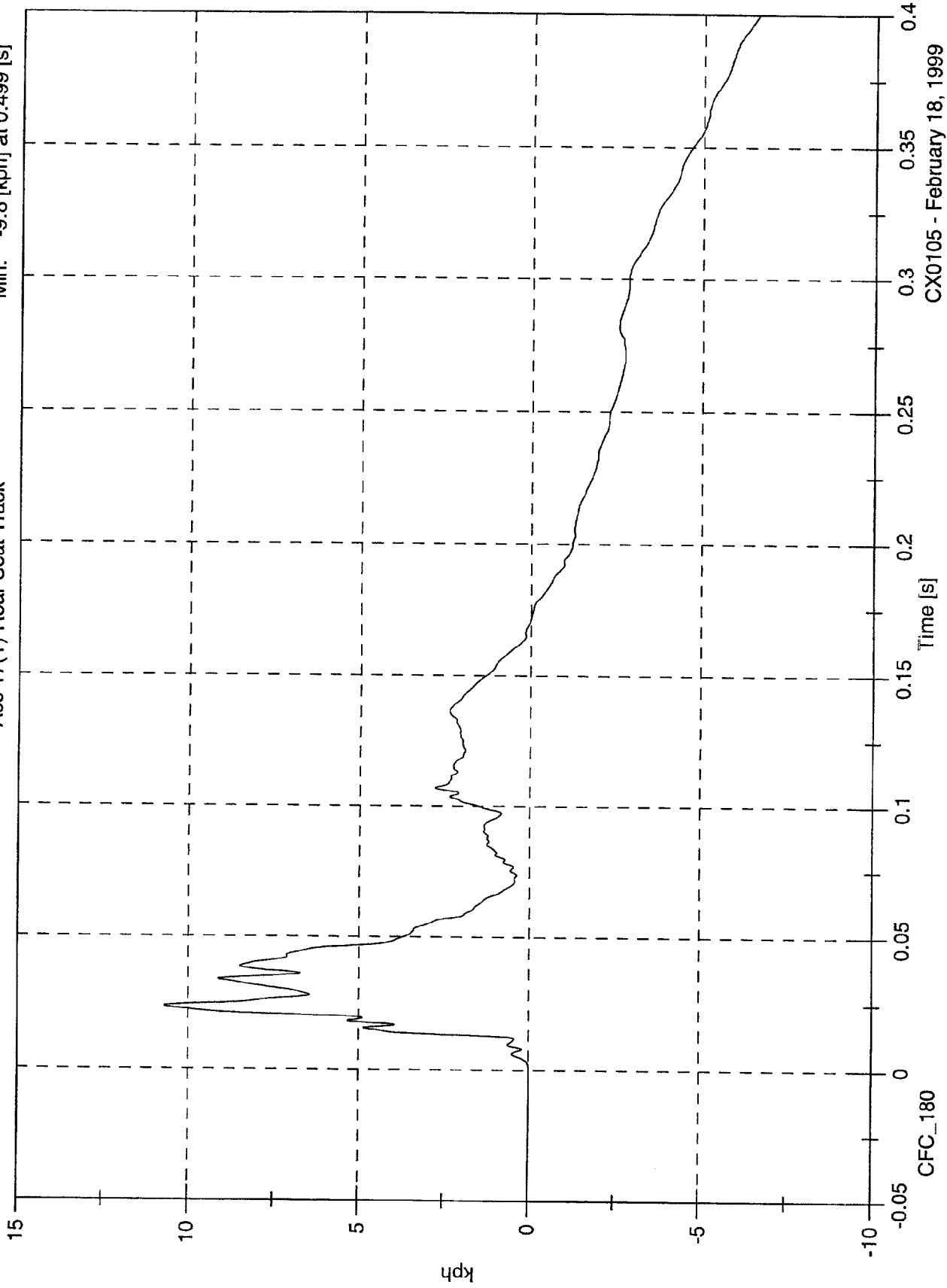
CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 10.7 [kph] at 0.024 [s]

Min: -9.8 [kph] at 0.499 [s]

Acc 17(Y) Rear Seat Track

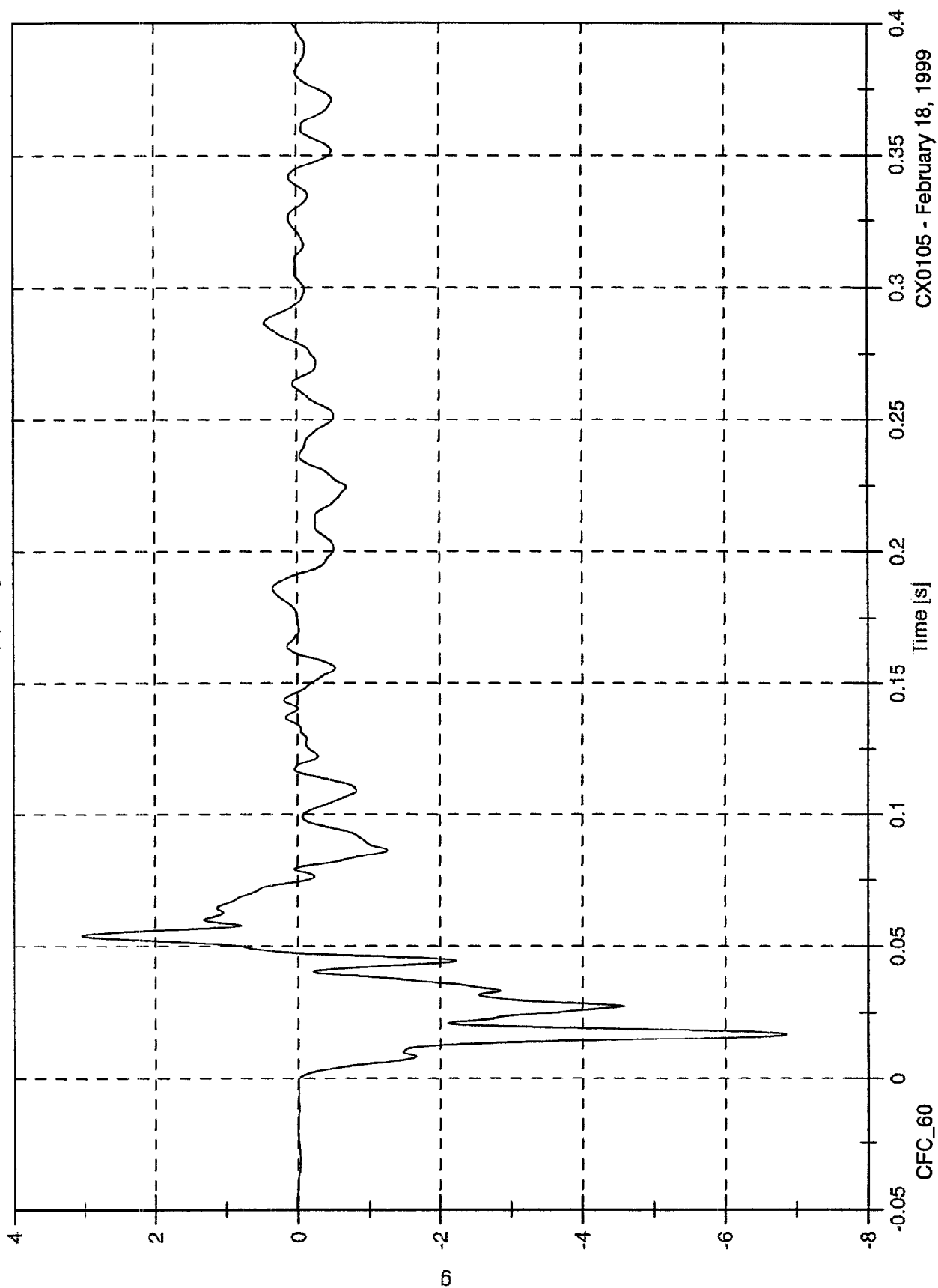


CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 3.0 [g] at 0.054 [s]
Min: -6.9 [g] at 0.017 [s]

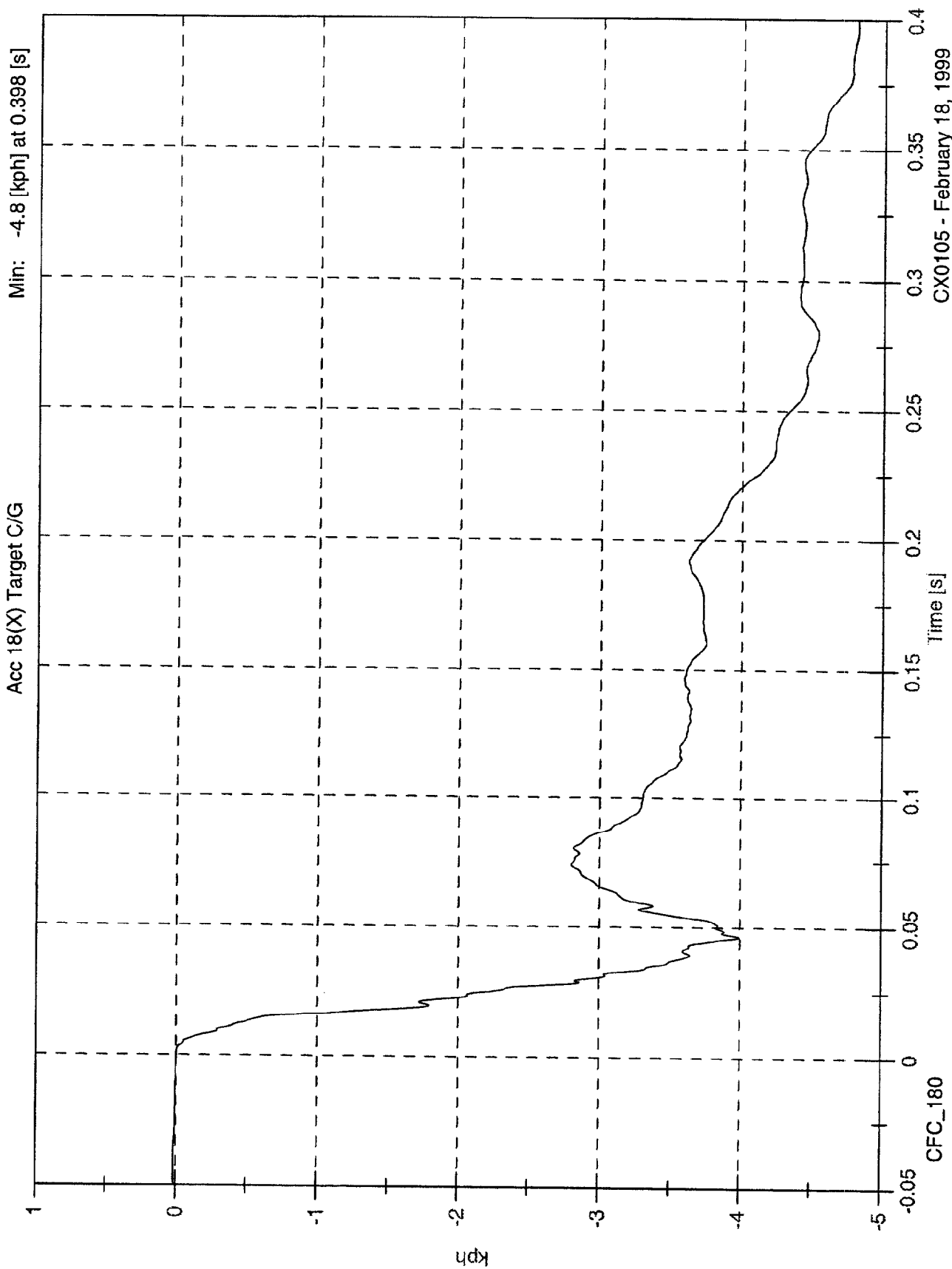
Acc 18(X) Target C/G



CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 0.0 [kph] at -0.039 [s]
Min: -4.8 [kph] at 0.398 [s]

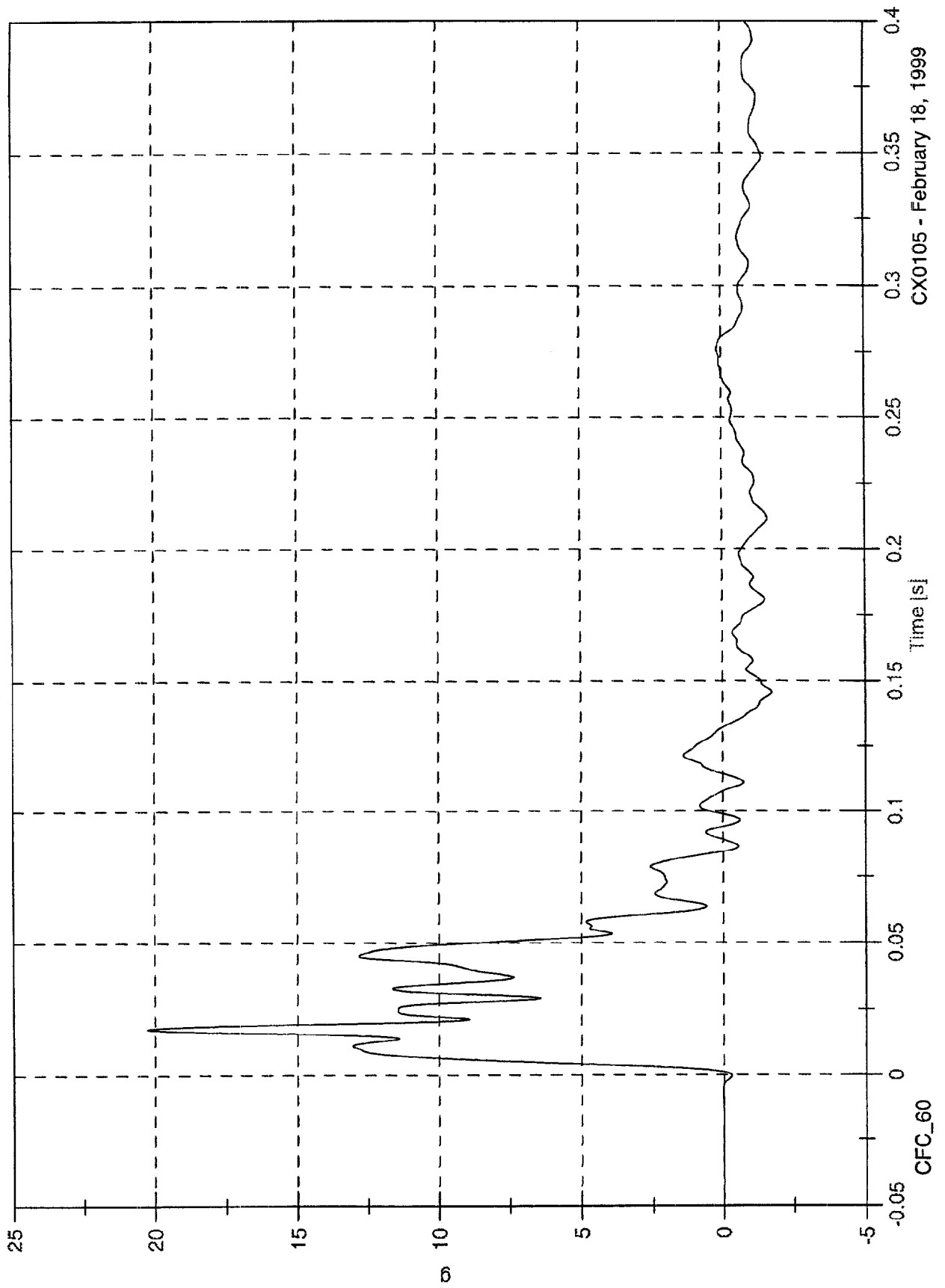


CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 20.3 [g] at 0.018 [s]
Min: -2.2 [g] at 0.500 [s]

Acc 18(Y) Target C/G

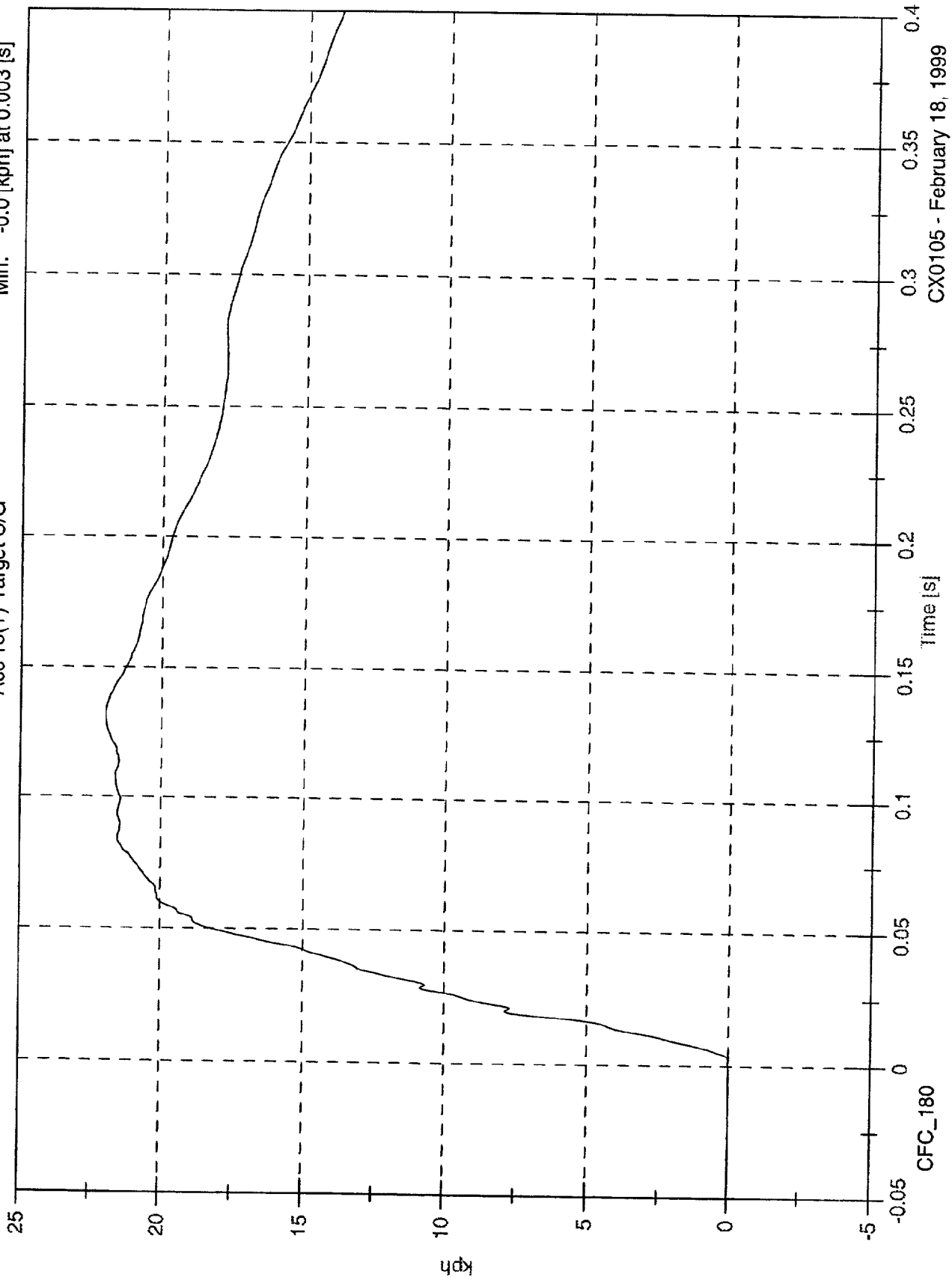


CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 22.0 [kph] at 0.132 [s]
Min: -0.0 [kph] at 0.003 [s]

Acc 18(Y) Target C/G



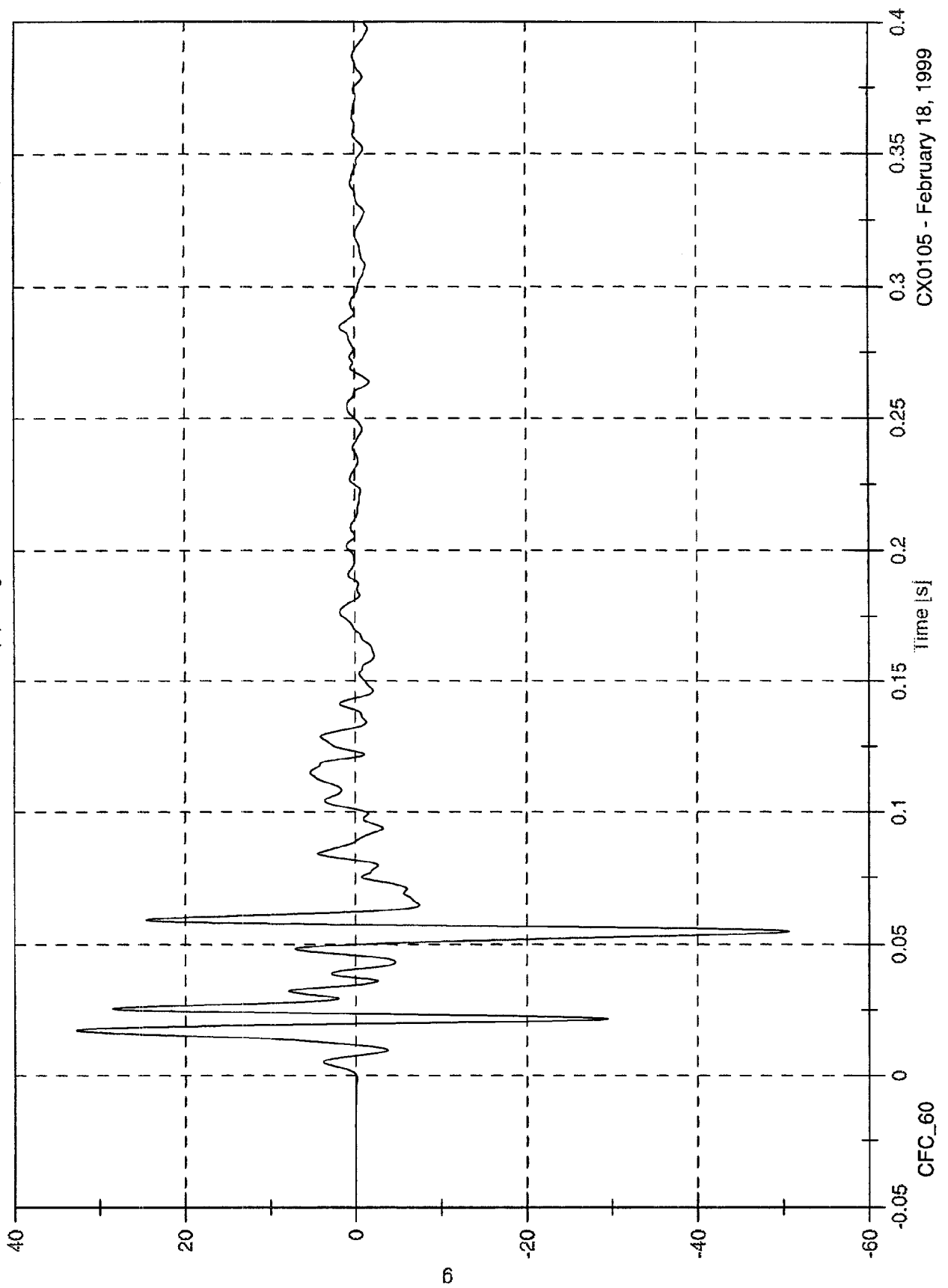
CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 32.8 [g] at 0.017 [s]

Min: -50.6 [g] at 0.055 [s]

Acc 18(Z) Target C/G

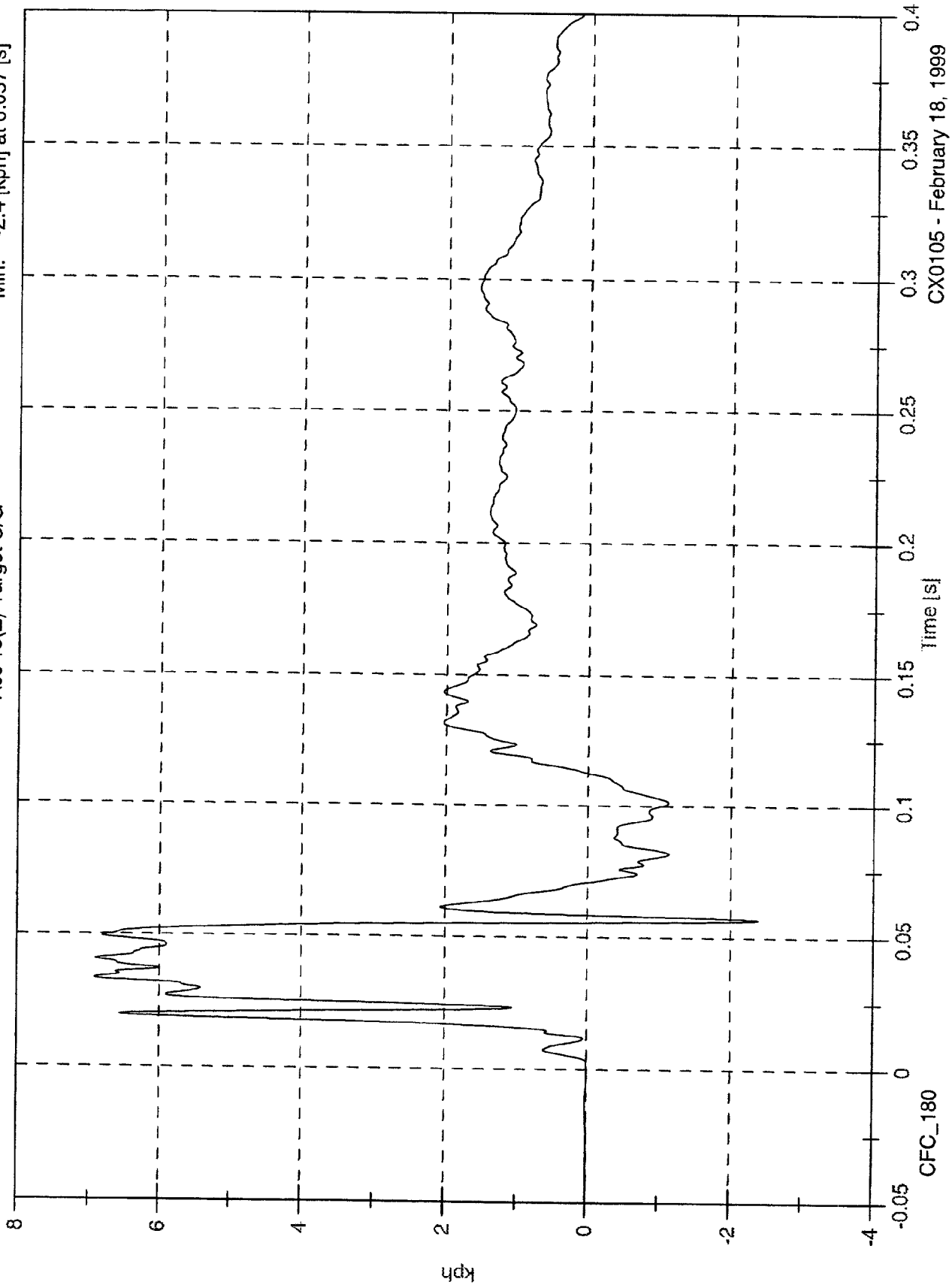


CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 6.9 [kph] at 0.034 [s]
Min: -2.4 [kph] at 0.057 [s]

Acc 18(Z) Target C/G



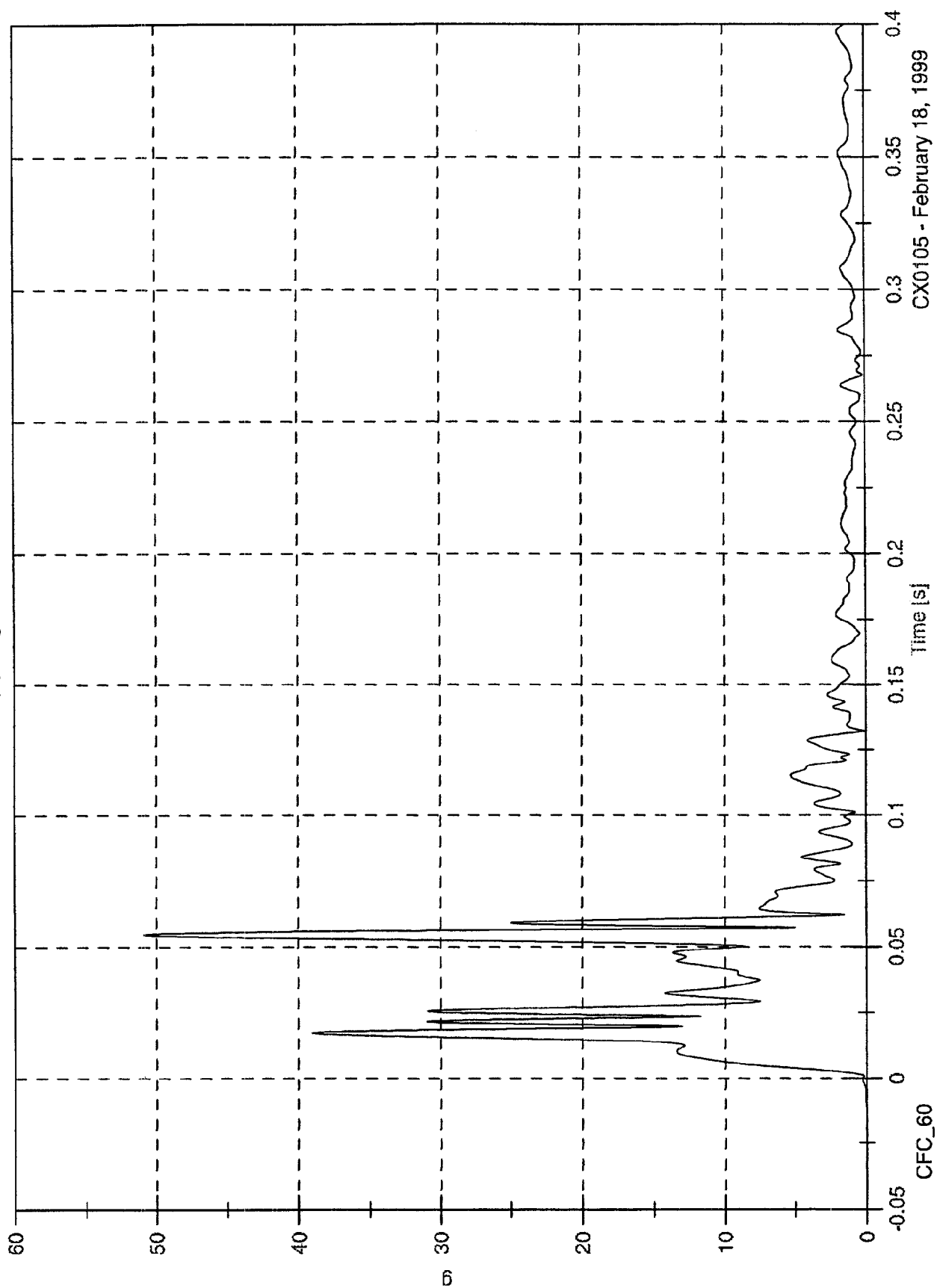
CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 50.9 [g] at 0.055 [s]

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

Acc 18(X) Target C/G Resultant



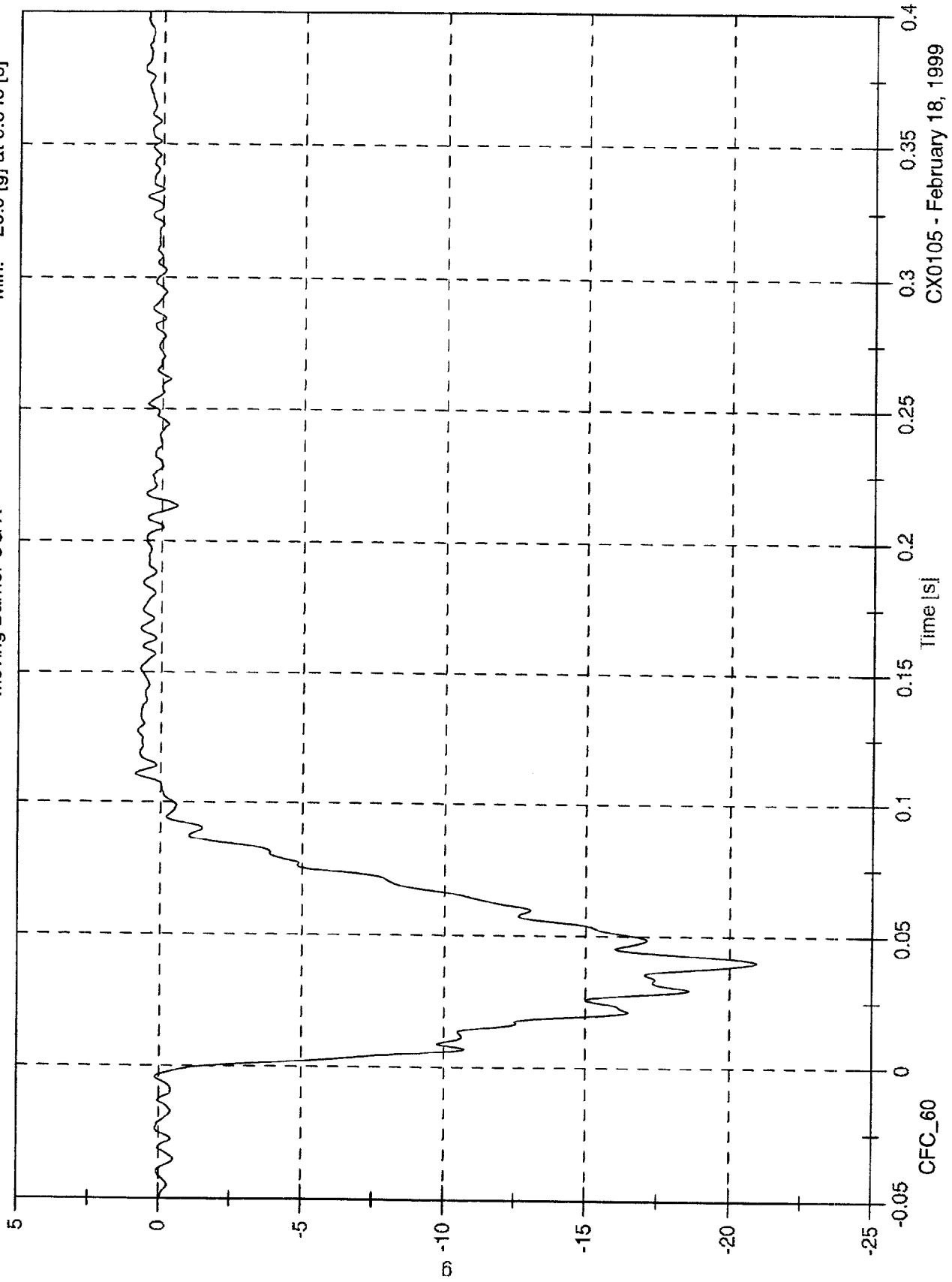
CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 0.9 [g] at 0.111 [s]

Min: -20.9 [g] at 0.040 [s]

Moving Barrier CG X

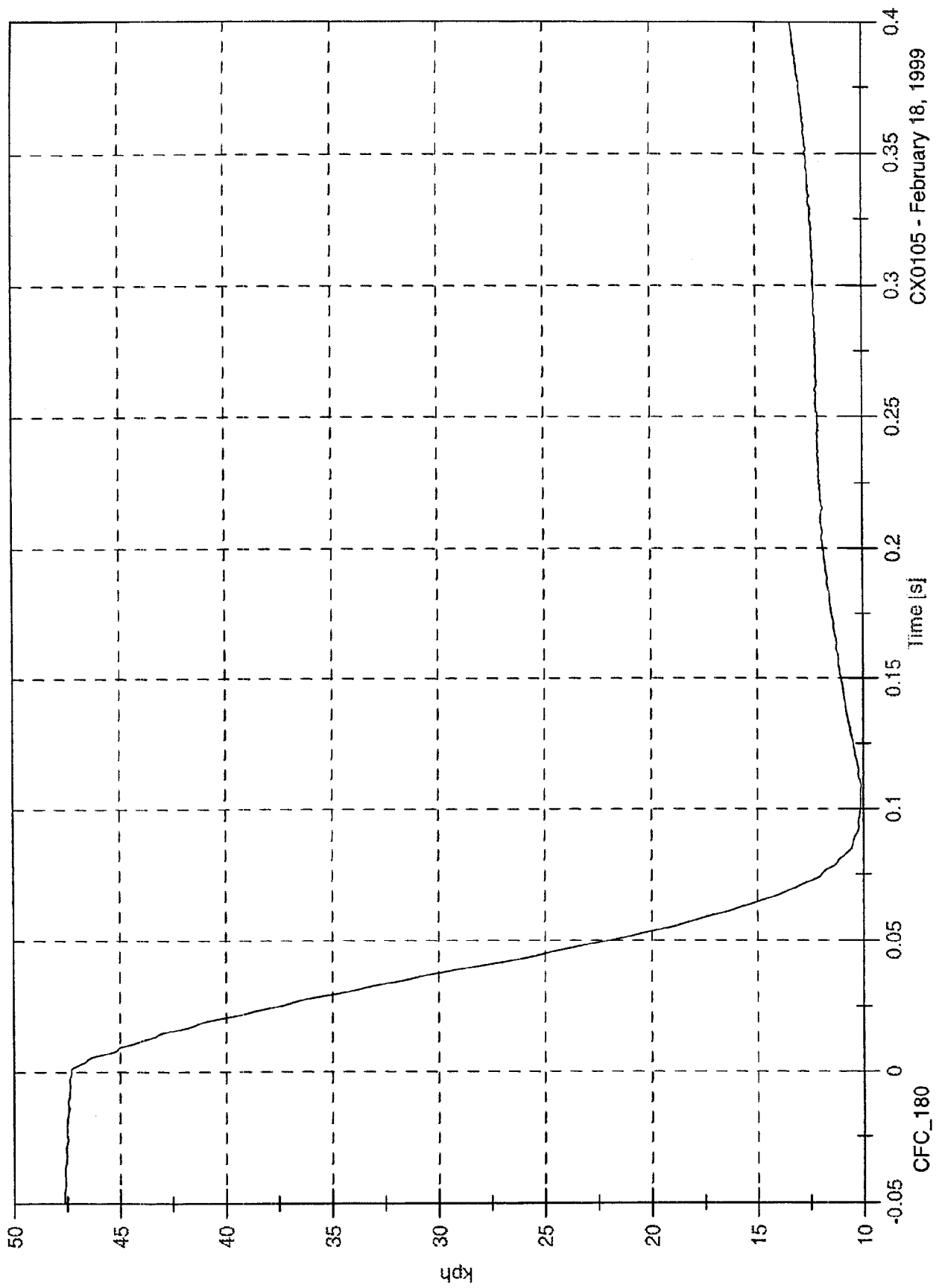


CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Moving Barrier CG X

Max: 47.6 [kph] at -0.046 [s]
Min: 10.1 [kph] at 0.109 [s]

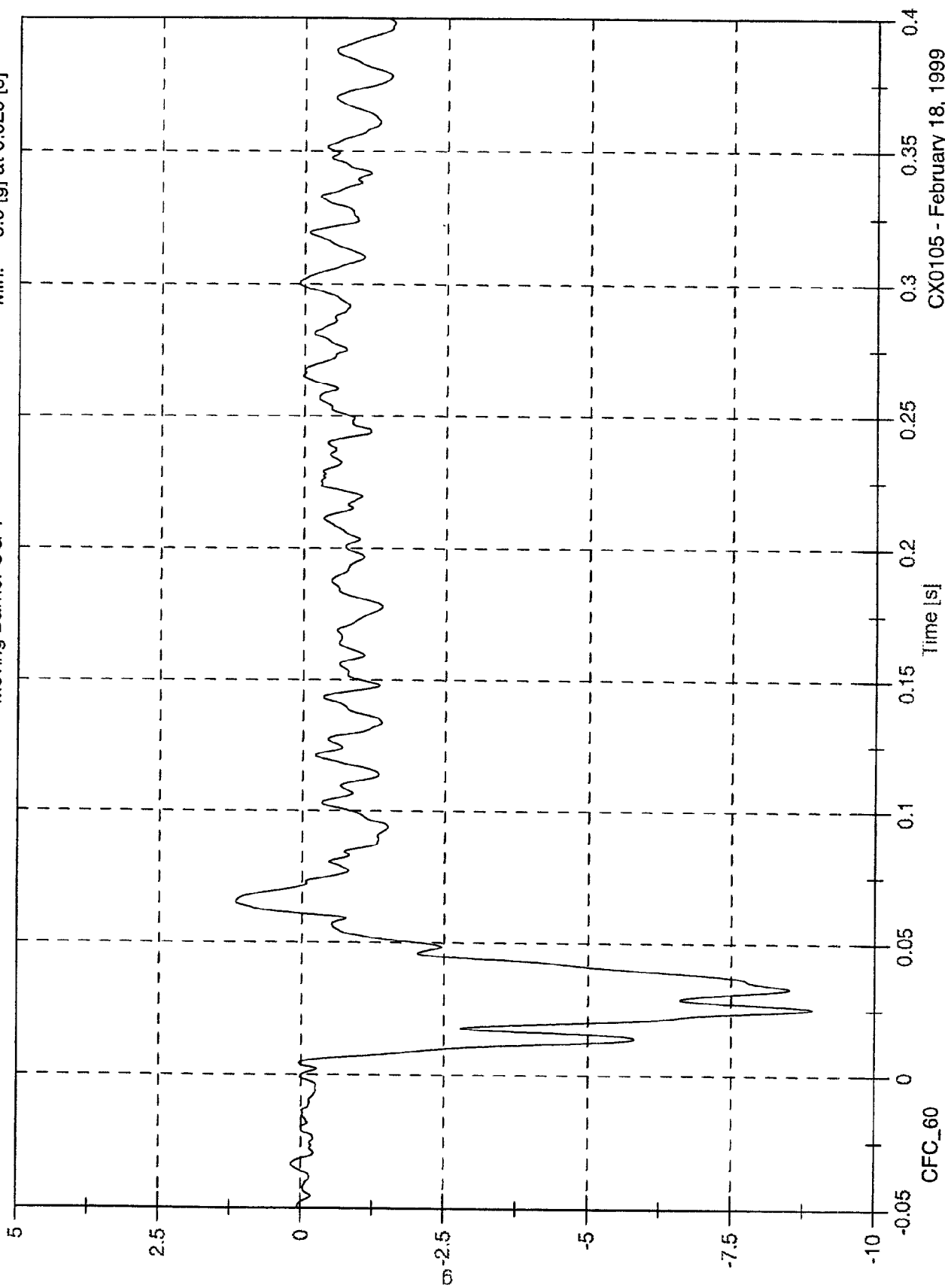


214 Test # 8 - 1999 Chevrolet Venture

Max: 3.4 [g] at 0.000 [s]

Min: -8.9 [g] at 0.025 [s]

Moving Barrier CG Y

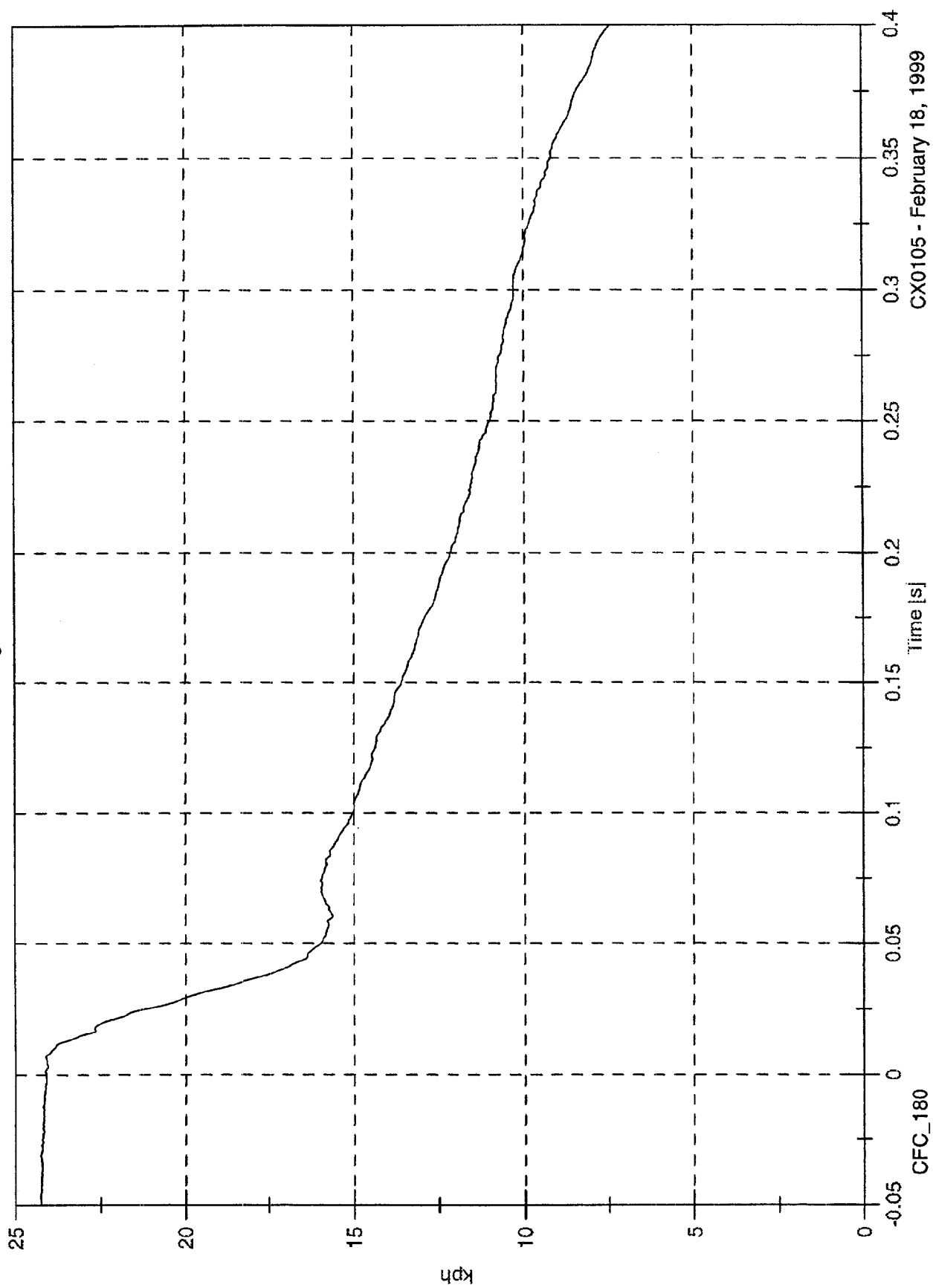


CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 24.3 [kph] at -0.047 [s]
Min: 3.1 [kph] at 0.500 [s]

Moving Barrier CG Y



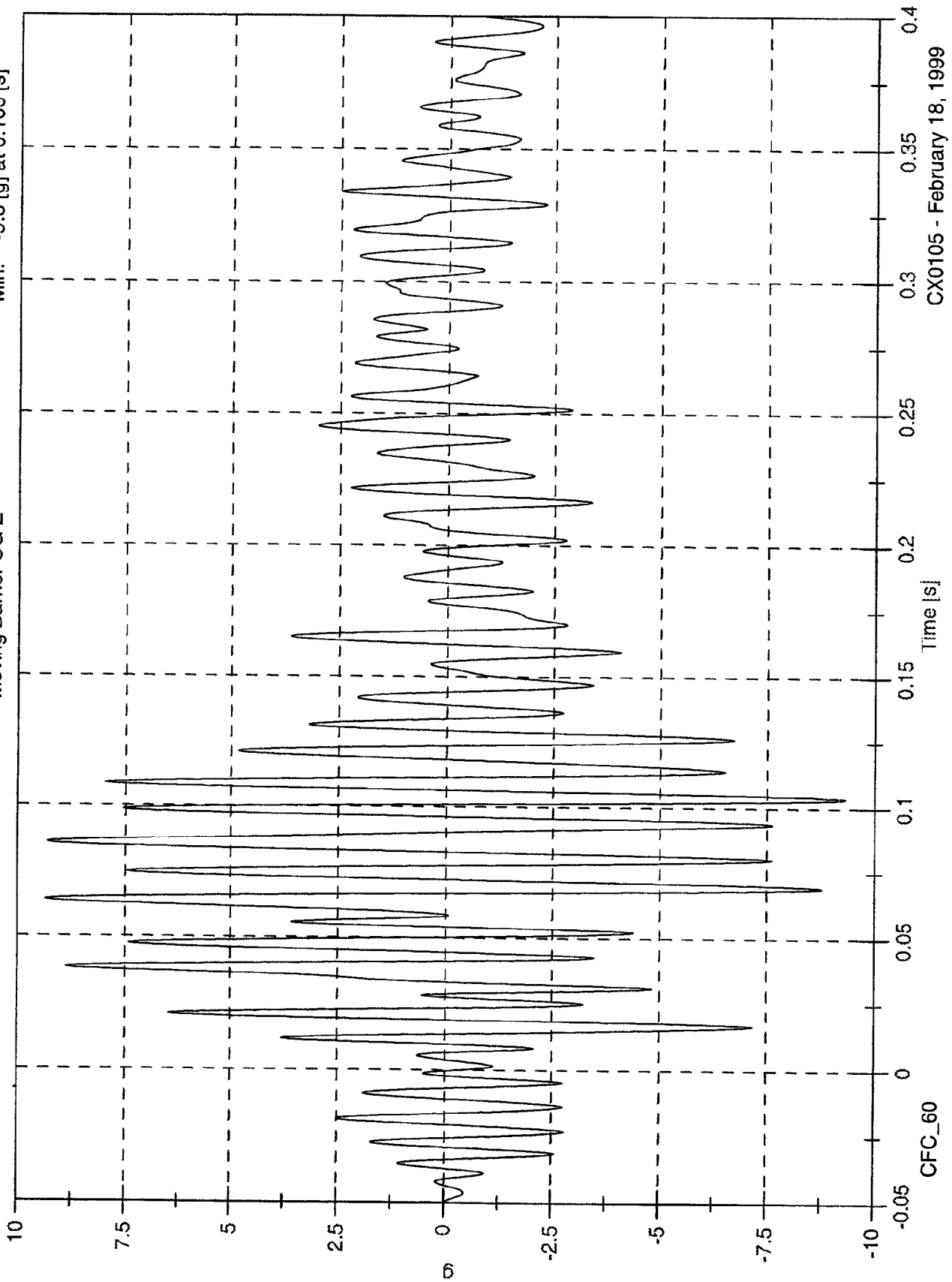
CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 9.4 [g] at 0.064 [s]

Min: -9.3 [g] at 0.103 [s]

Moving Barrier CG Z

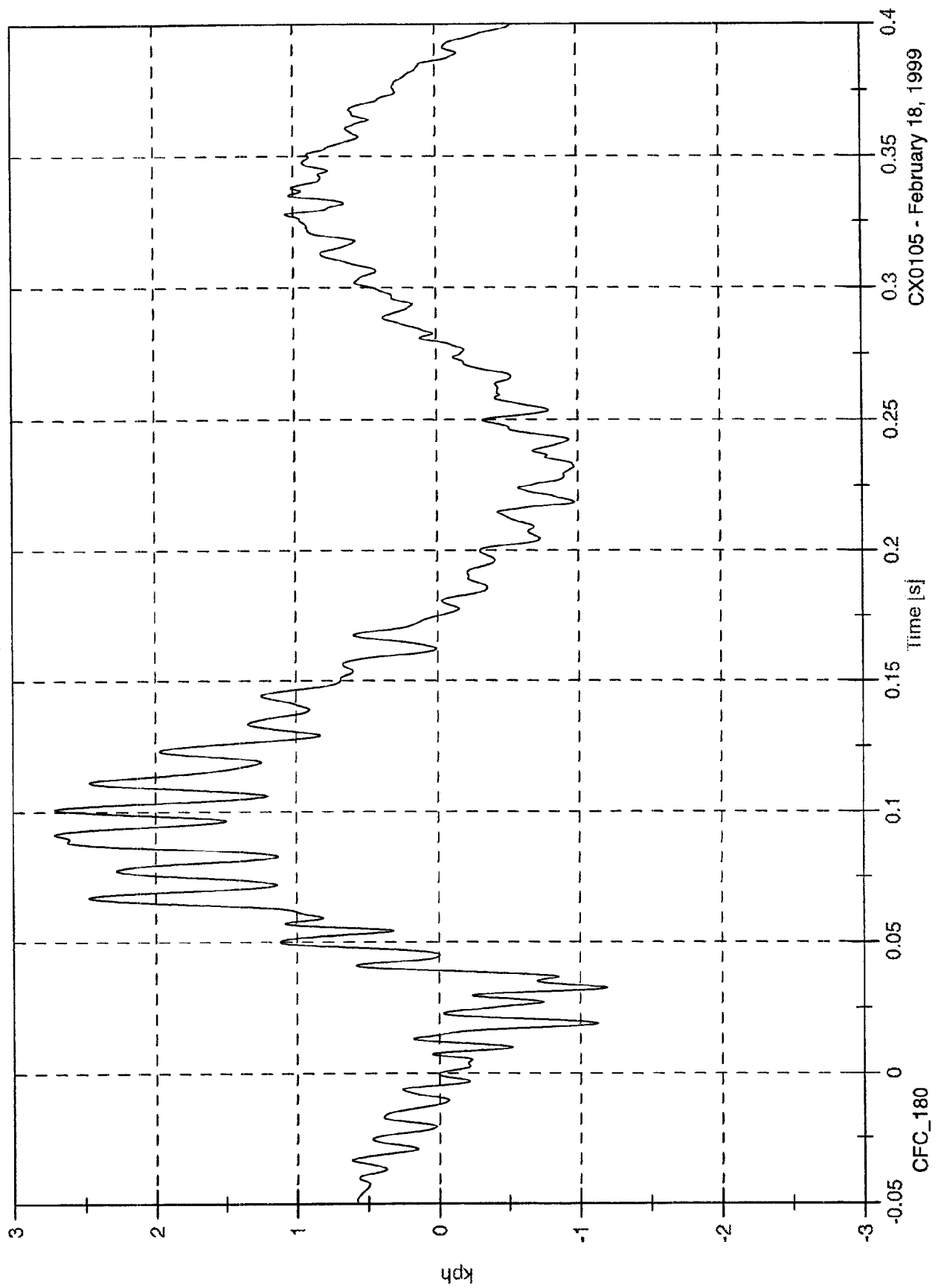


CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 2.7 [kph] at 0.091 [s]
Min: -2.2 [kph] at 0.475 [s]

Moving Barrier CG Z

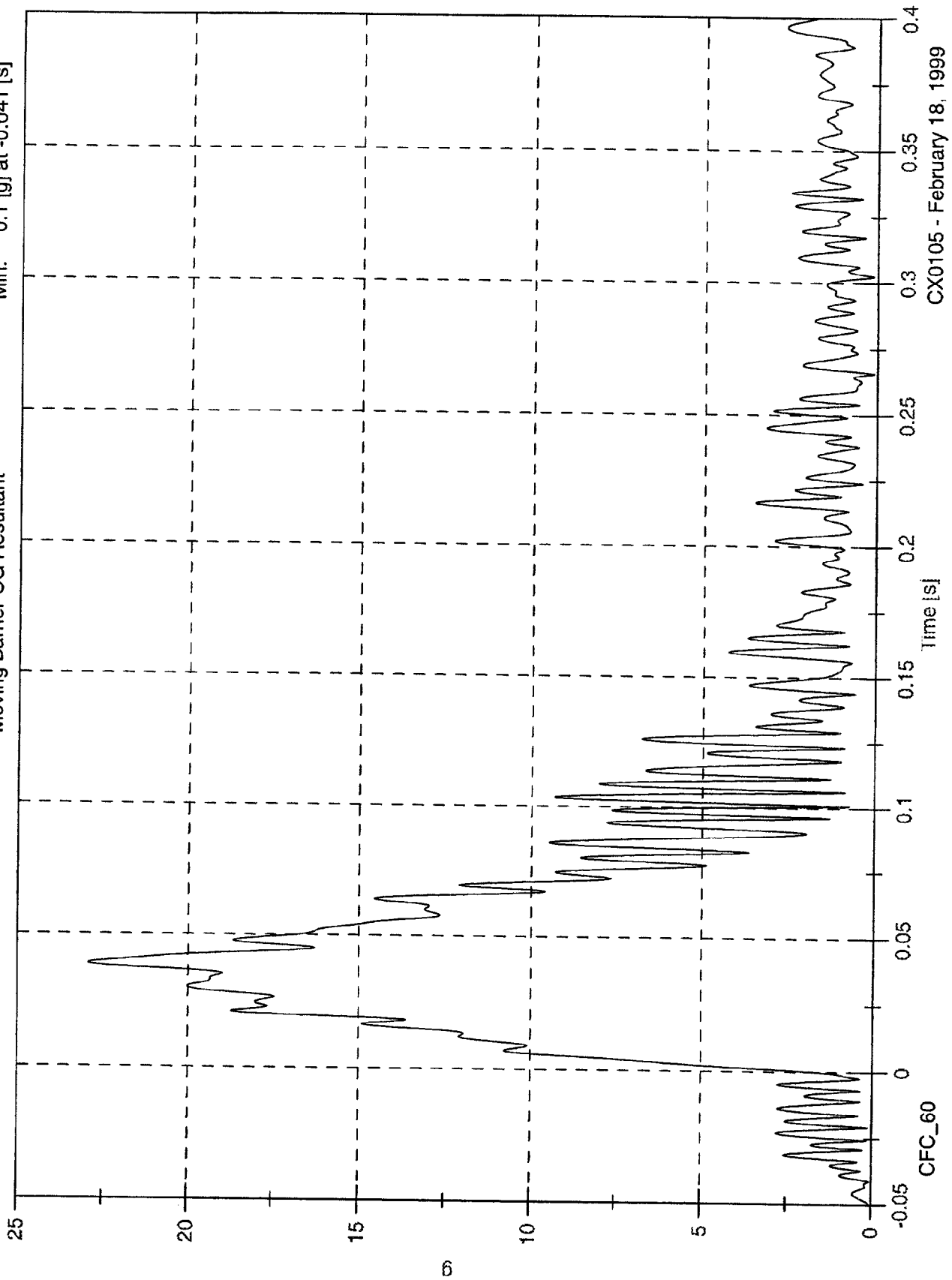


CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 22.9 [g] at 0.039 [s]
Min: 0.1 [g] at -0.041 [s]

Moving Barrier CG Resultant

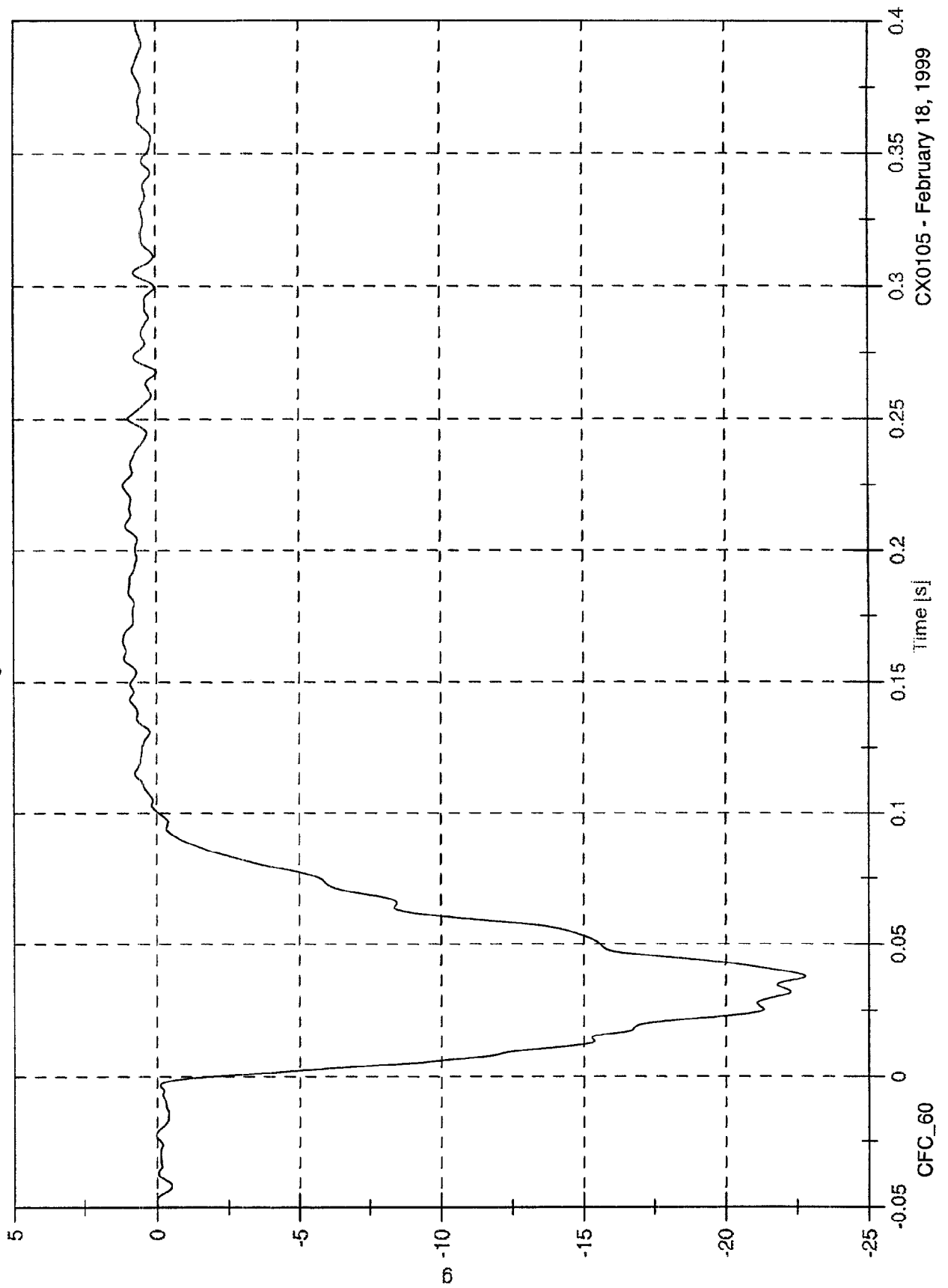


CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 1.2 [g] at 0.165 [s]
Min: -22.8 [g] at 0.038 [s]

Moving Barrier Left Rail X

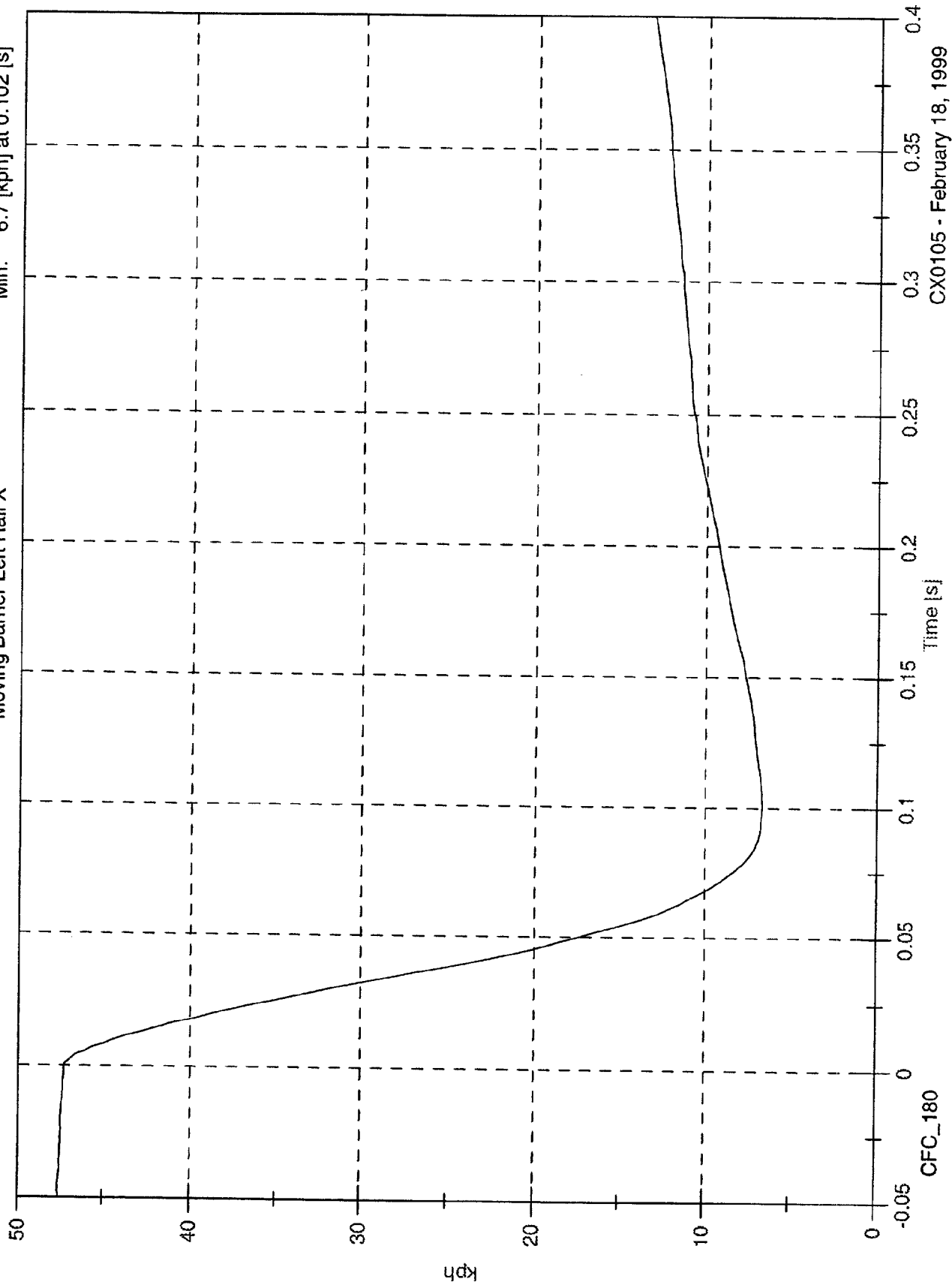


CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 47.6 [kph] at -0.045 [s]
Min: 6.7 [kph] at 0.102 [s]

Moving Barrier Left Rail X



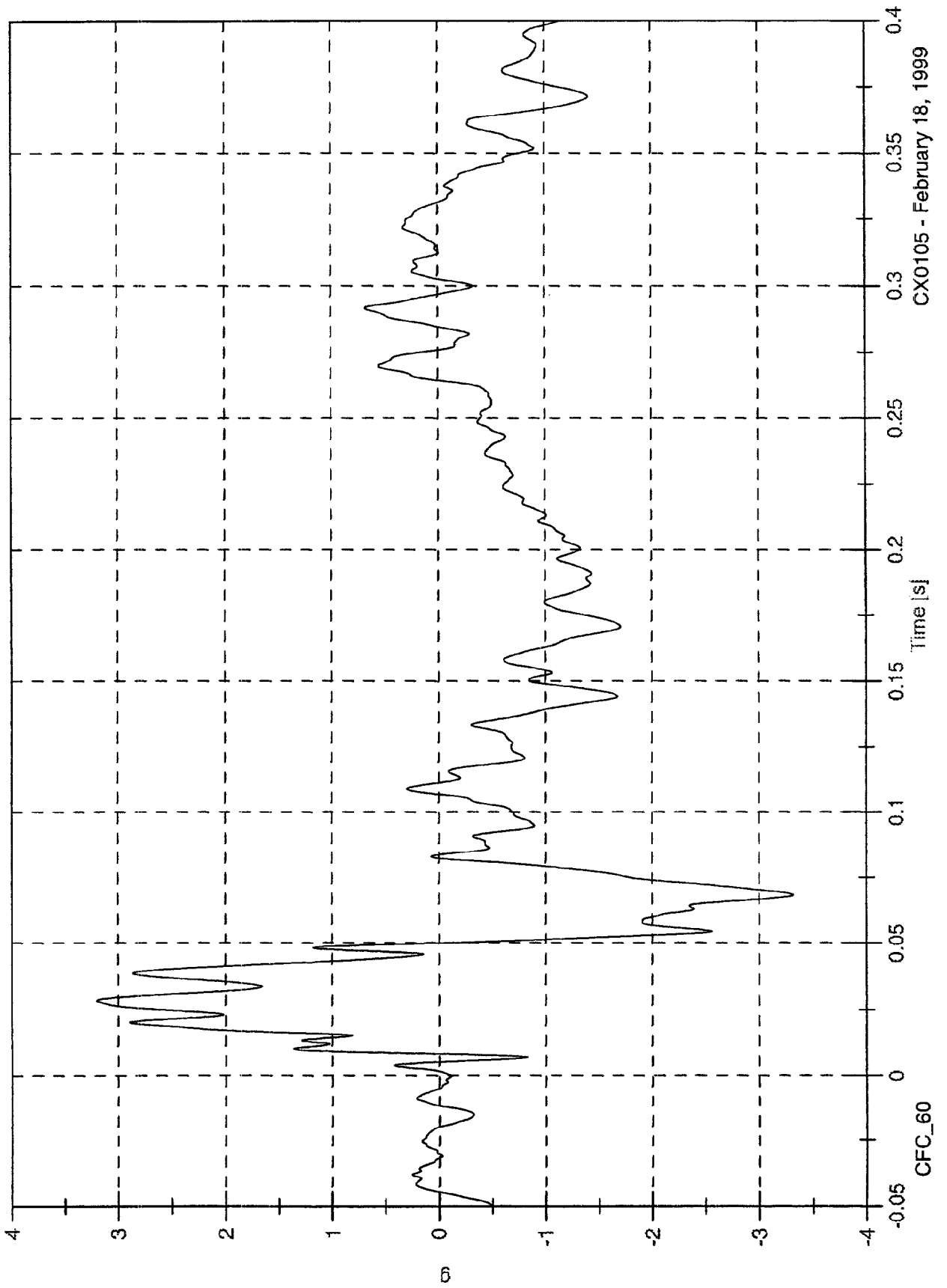
CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 3.2 [g] at 0.028 [s]

Min: -3.3 [g] at 0.068 [s]

Moving Barrier Left Rail Y

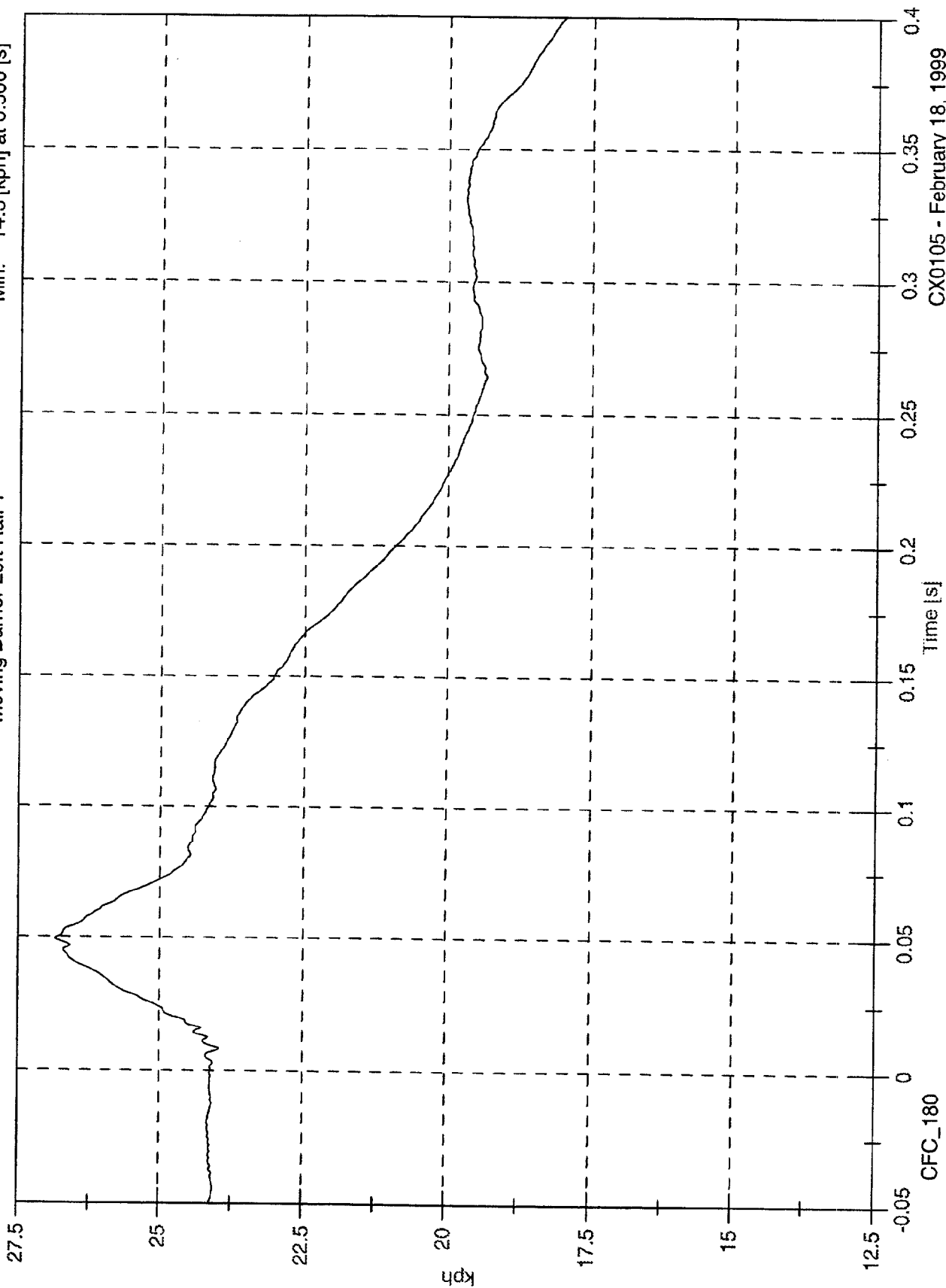


CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 26.8 [kph] at 0.049 [s]
Min: 14.3 [kph] at 0.500 [s]

Moving Barrier Left Rail Y



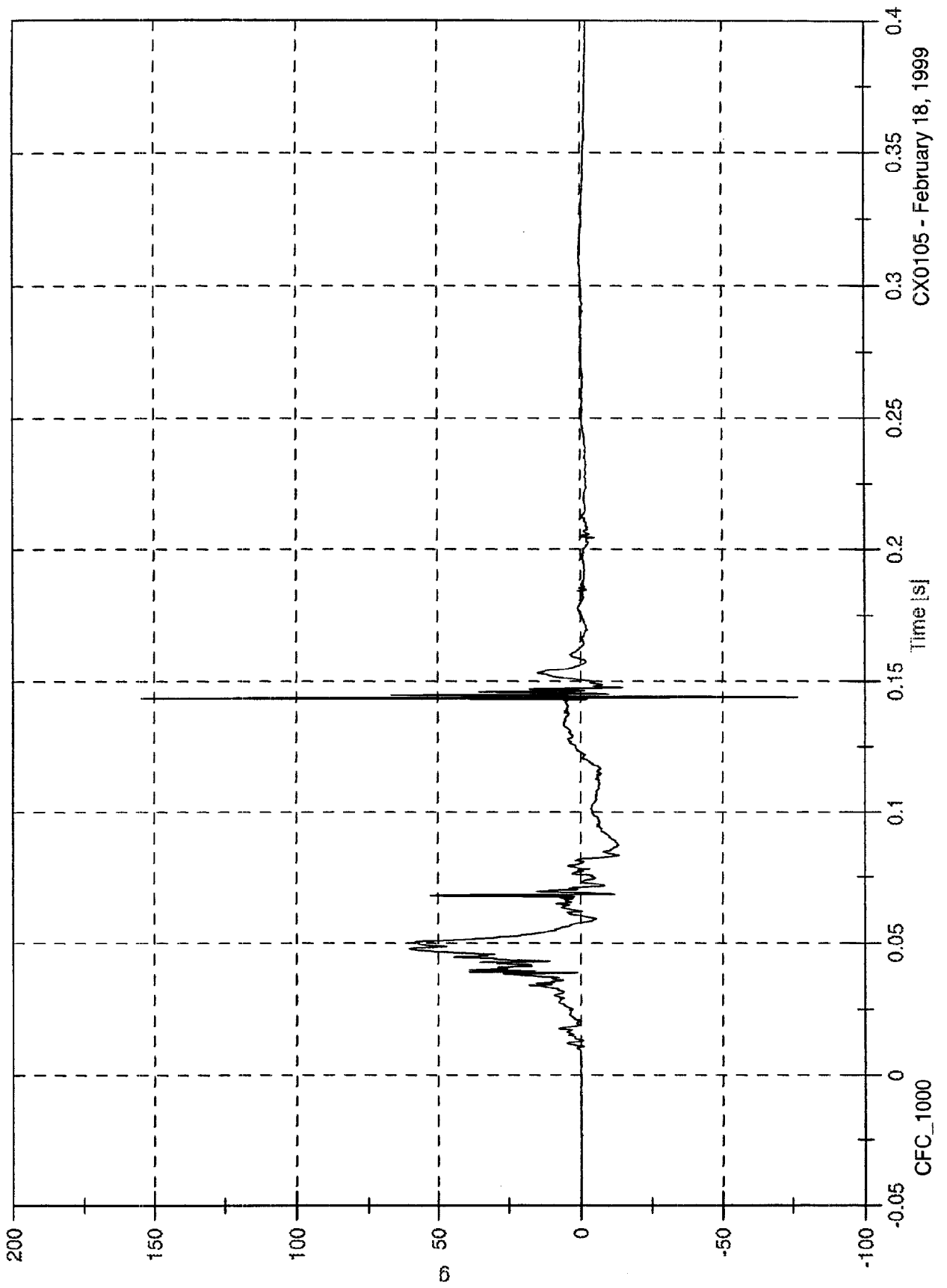
CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 154.5 [g] at 0.143 [s]

Min: -76.5 [g] at 0.144 [s]

P1 Upper Rib Ry

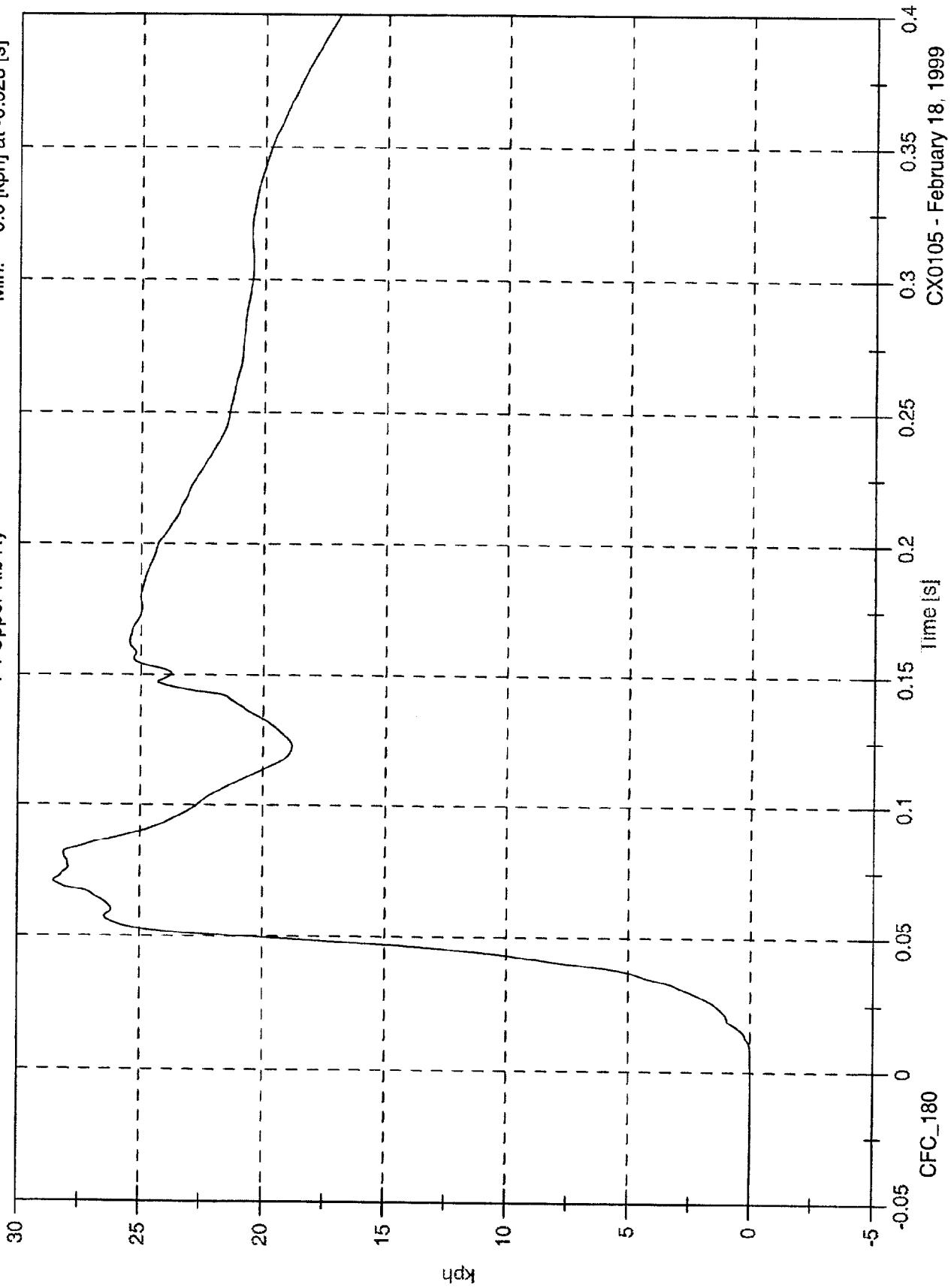


CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

P1 Upper Rib Ry

Max: 28.5 [kph] at 0.071 [s]
Min: -0.0 [kph] at -0.023 [s]



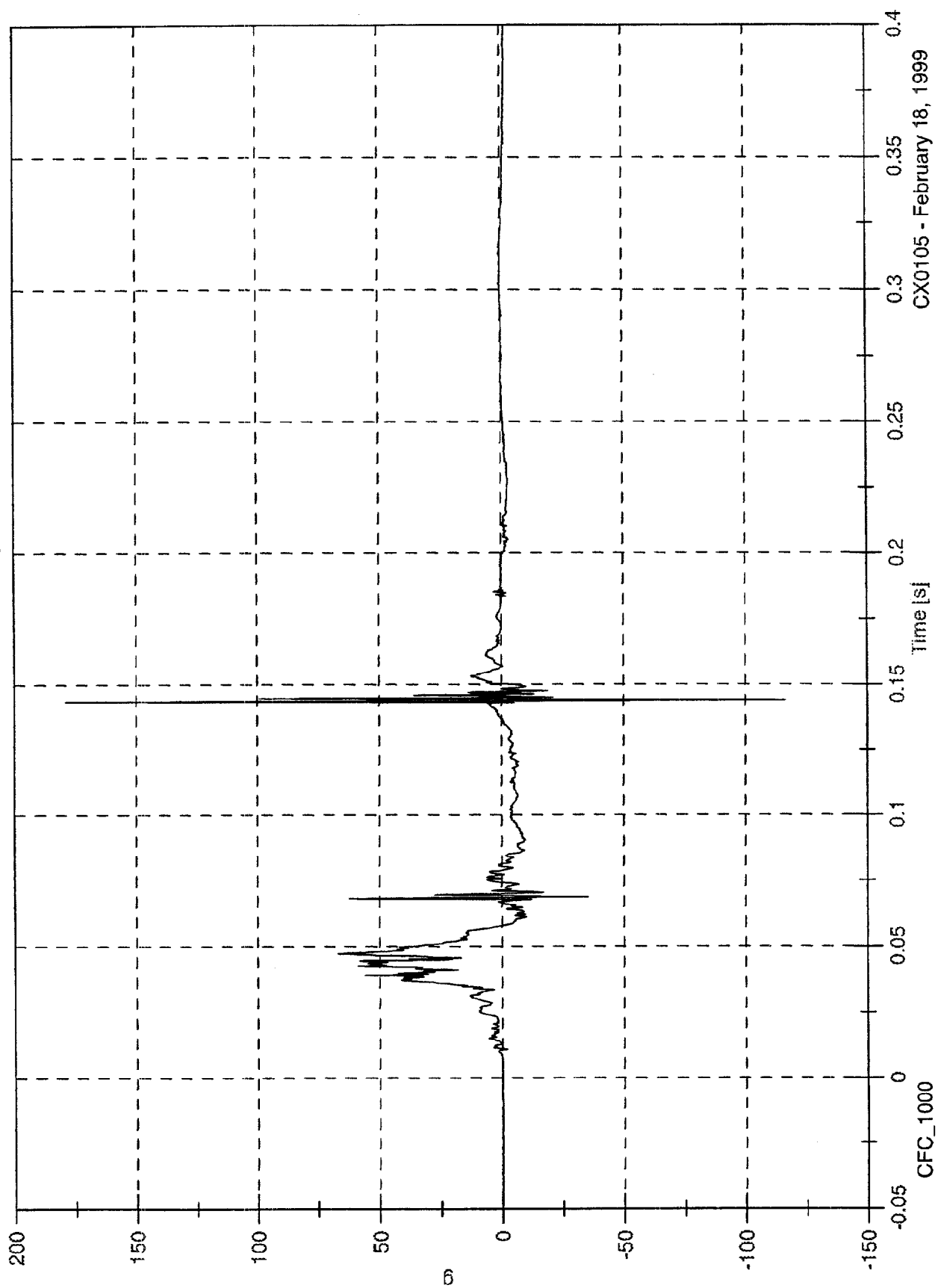
CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 178.8 [g] at 0.143 [s]

Min: -116.3 [g] at 0.144 [s]

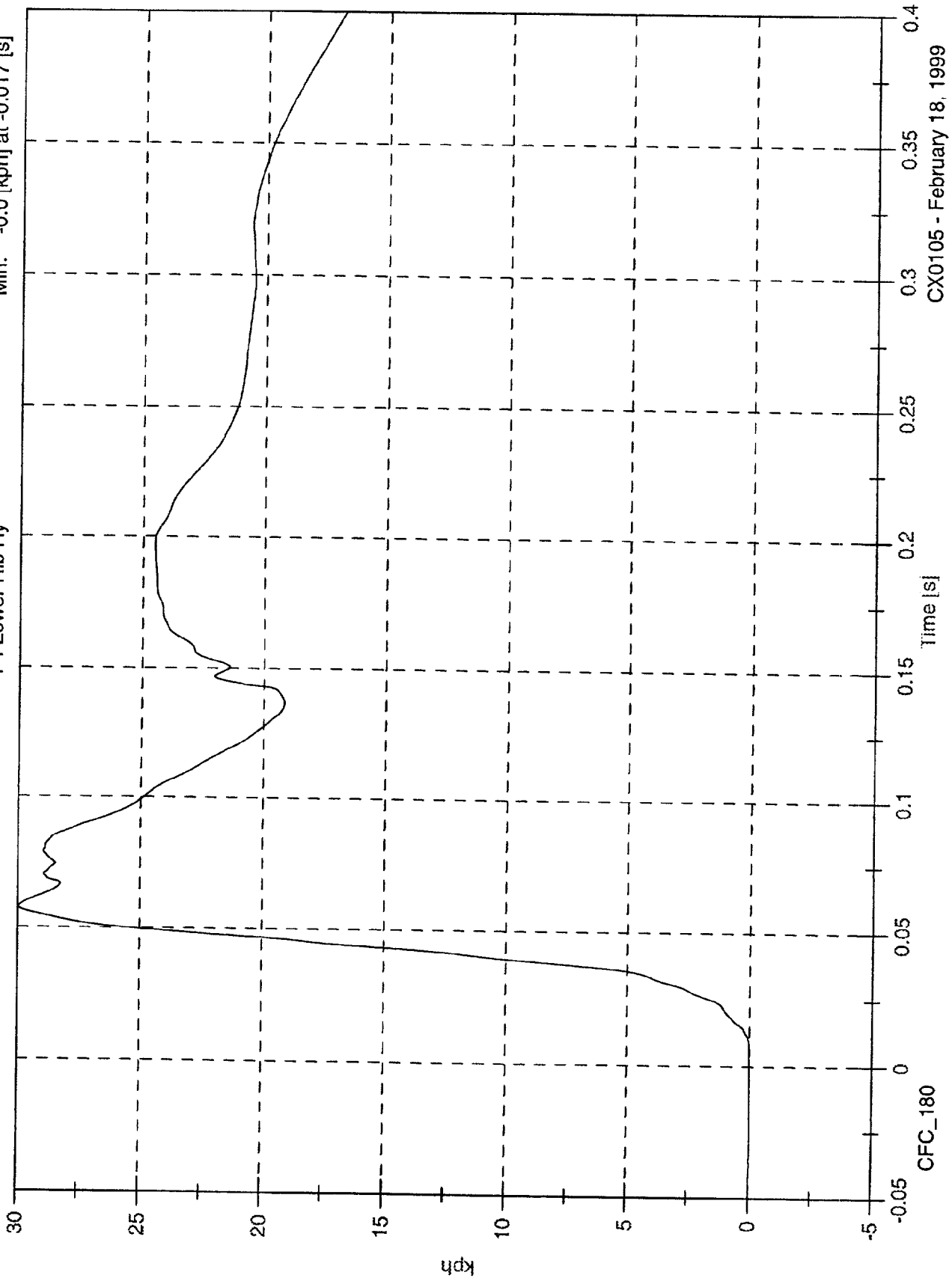
P1 Lower Rib Ry



214 Test # 8 - 1999 Chevrolet Venture

Max: 30.0 [kph] at 0.058 [s]
Min: -0.0 [kph] at -0.017 [s]

P1 Lower Rib Ry



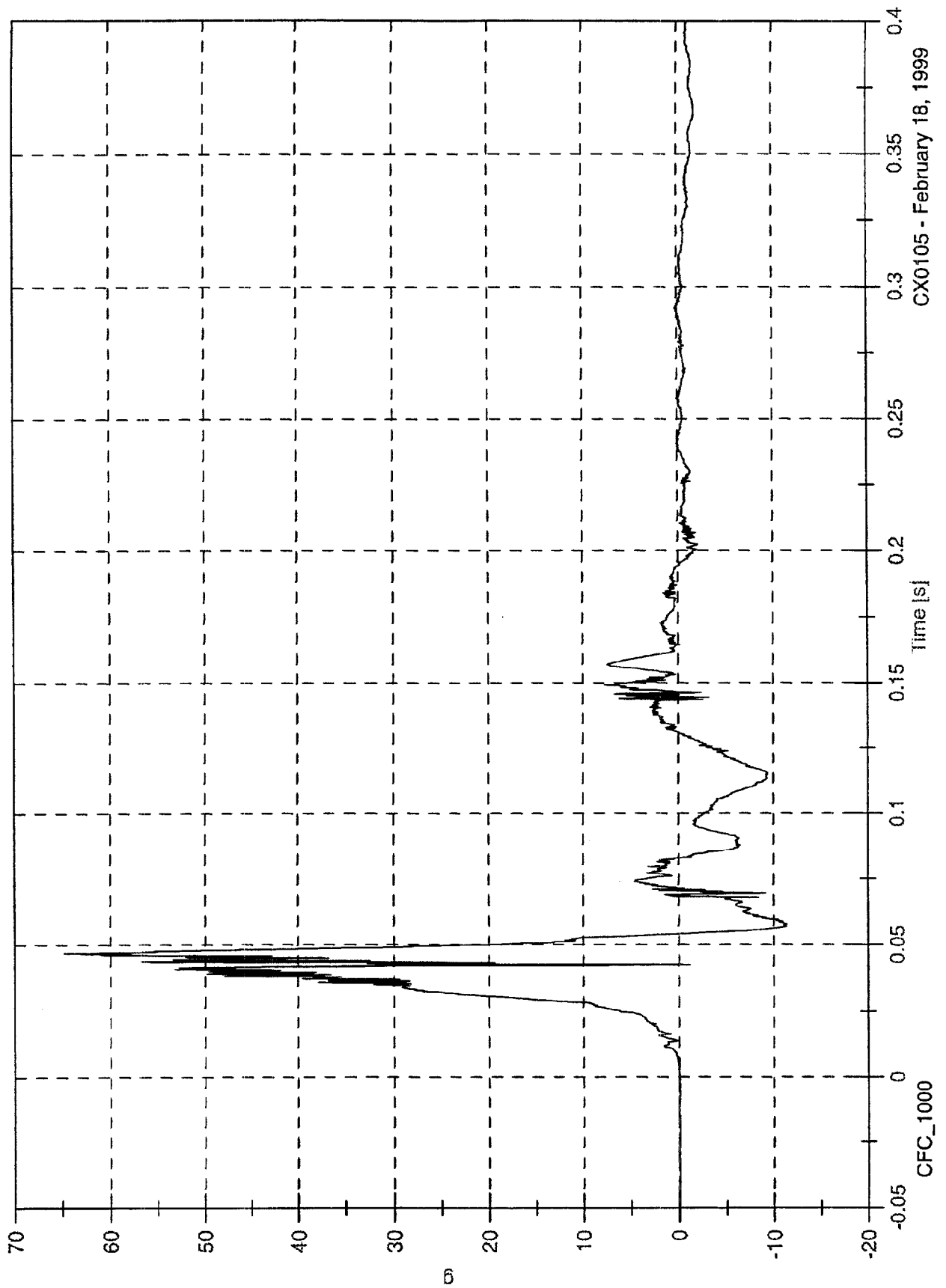
CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 64.8 [g] at 0.047 [s]

Min: -11.4 [g] at 0.058 [s]

P1 Lower Spine Ry

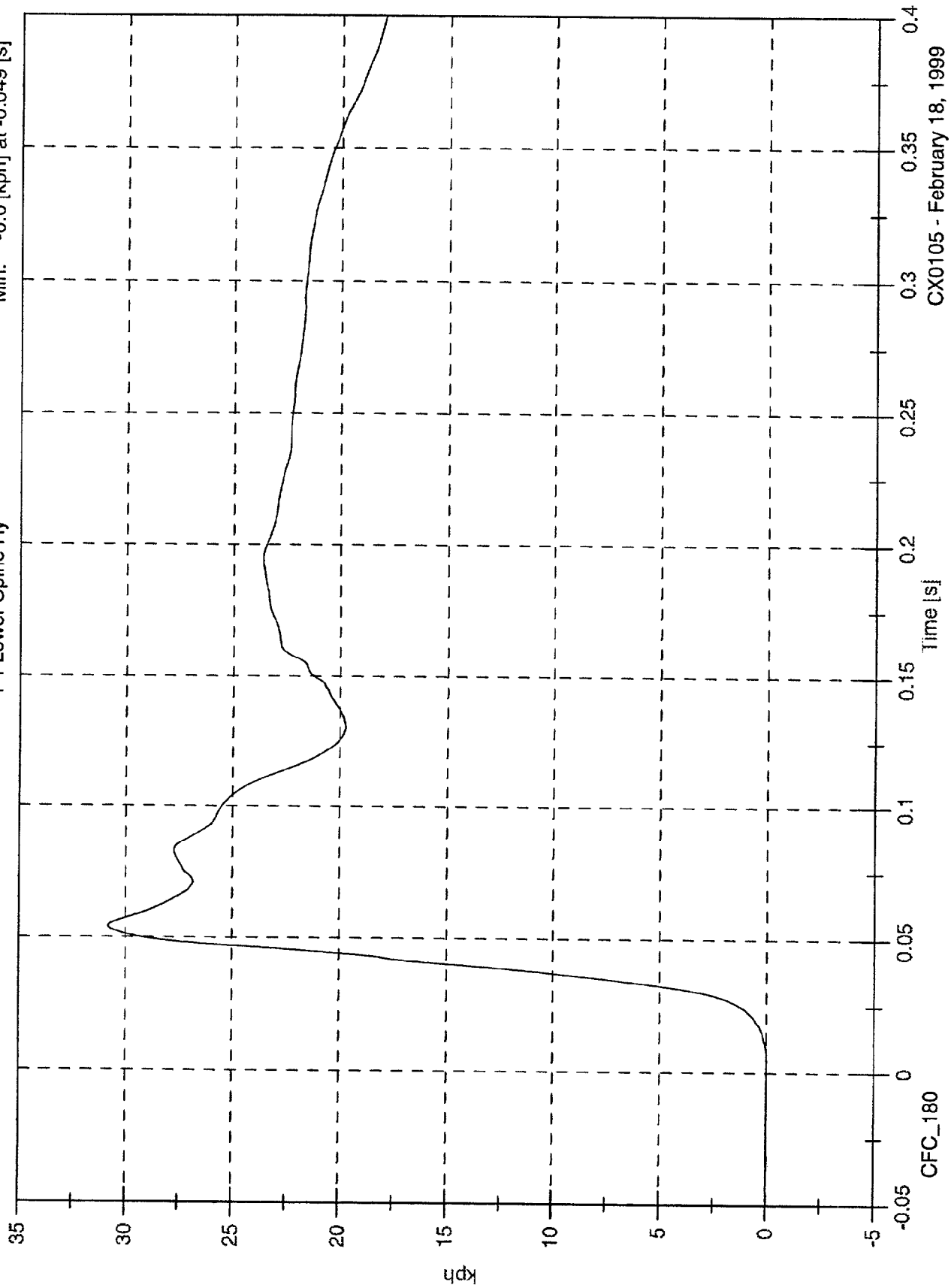


214 Test # 8 - 1999 Chevrolet Venture

P1 Lower Spine Ry

Max: 30.8 [kph] at 0.054 [s]

Min: -0.0 [kph] at -0.049 [s]

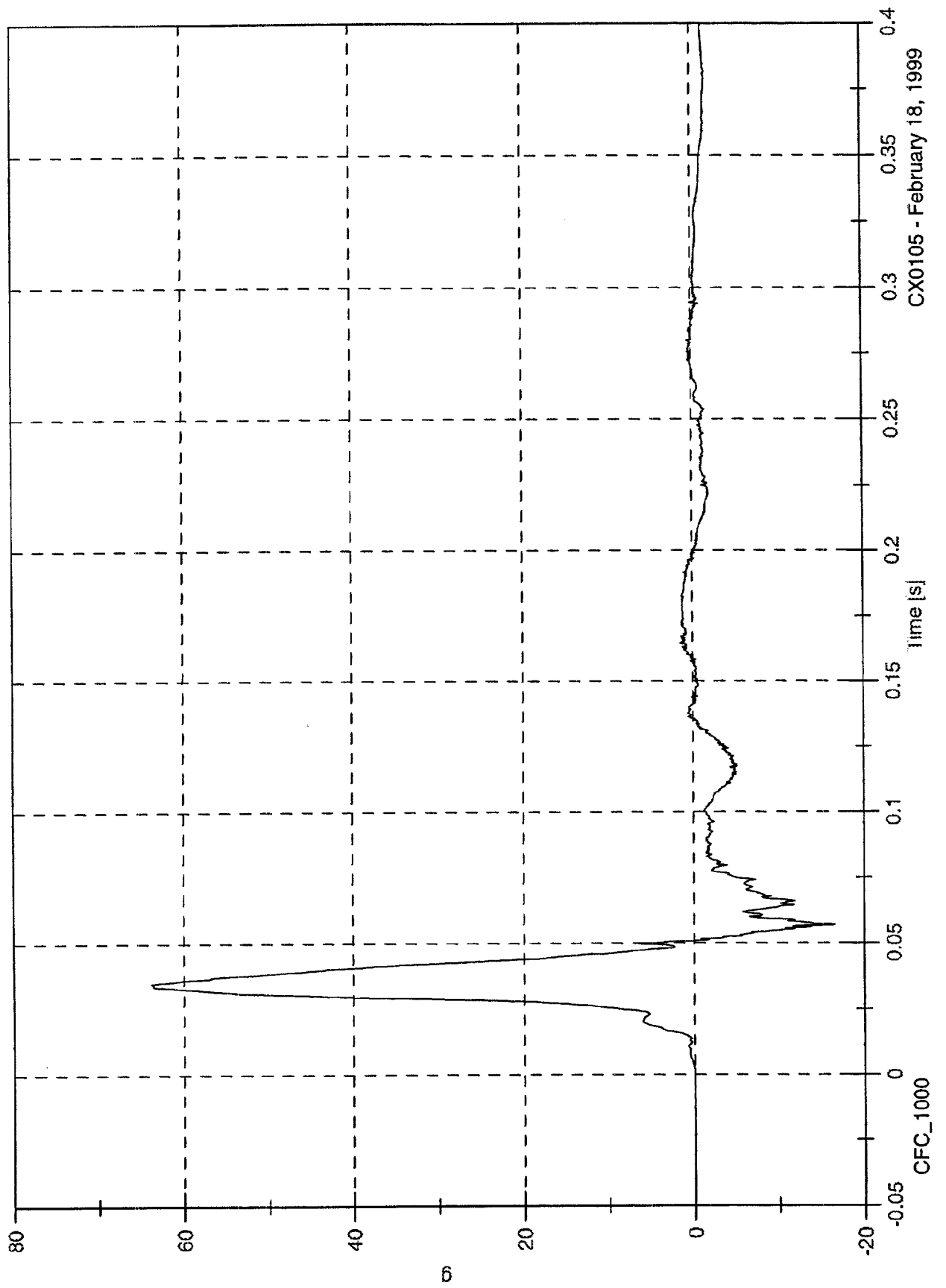


CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 63.8 [g] at 0.035 [s]
Min: -16.5 [g] at 0.057 [s]

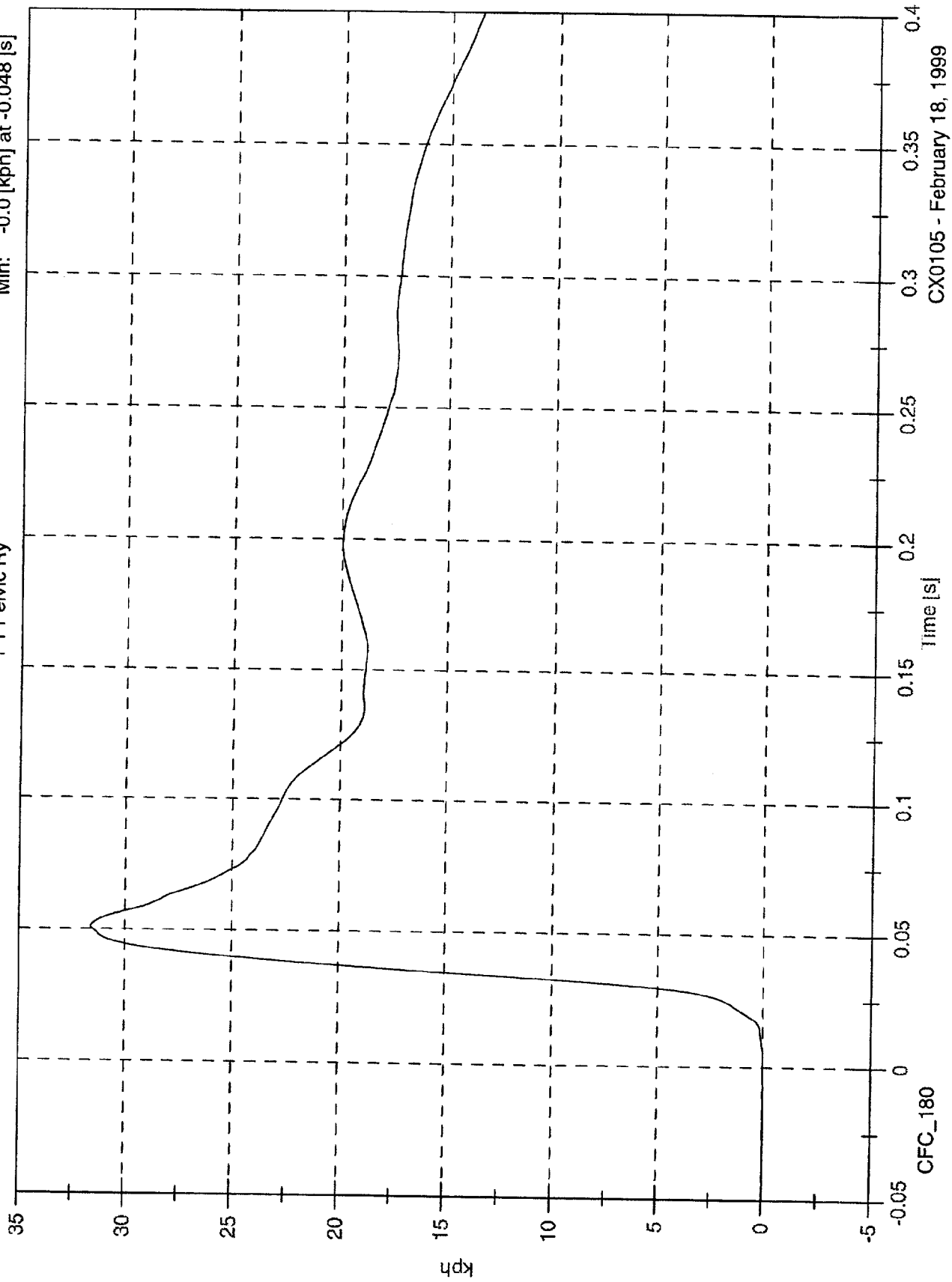
P1 Pelvic Ry



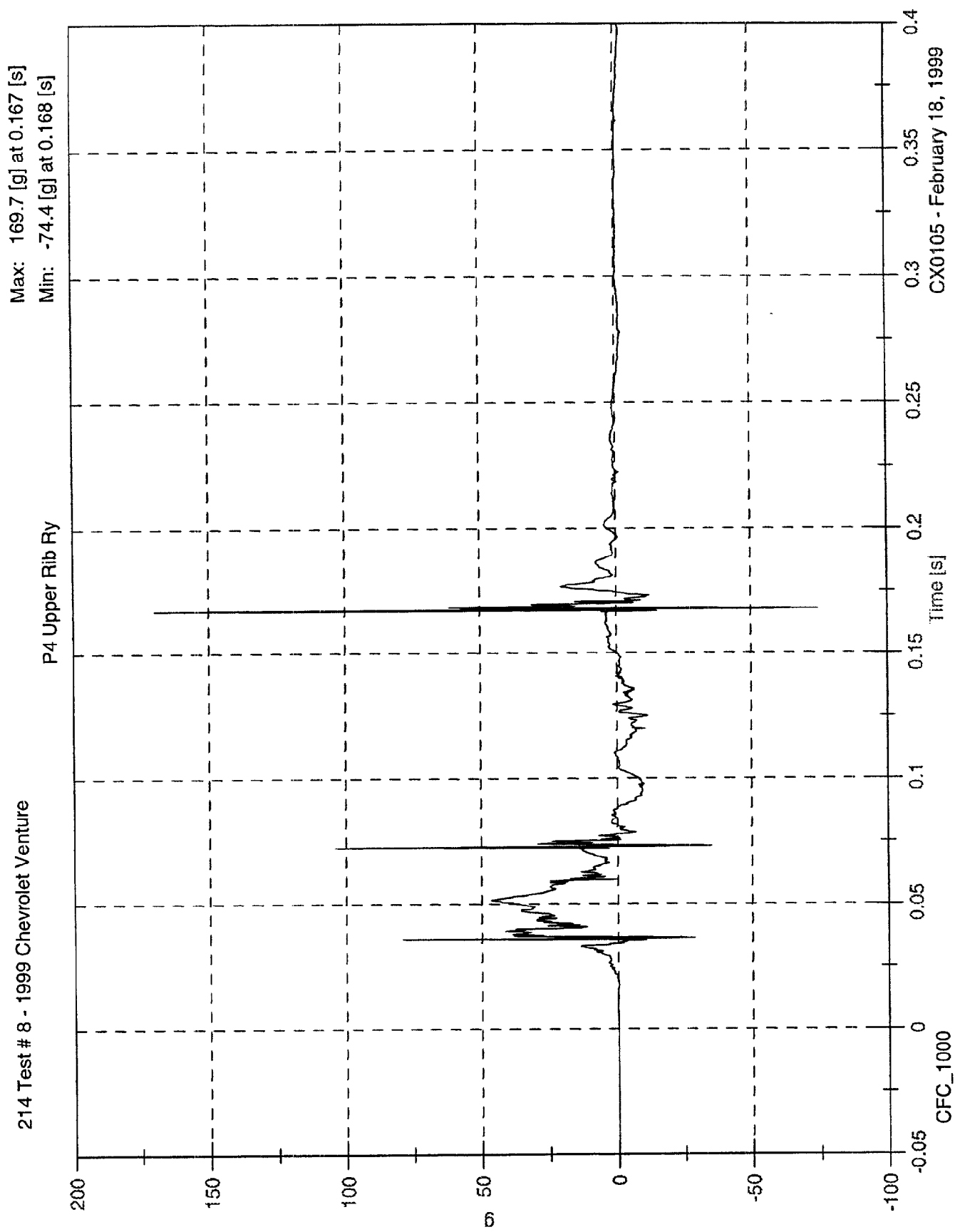
214 Test # 8 - 1999 Chevrolet Venture

Max: 31.6 [kph] at 0.051 [s]
Min: -0.0 [kph] at -0.048 [s]

P1 Pelvic Ry

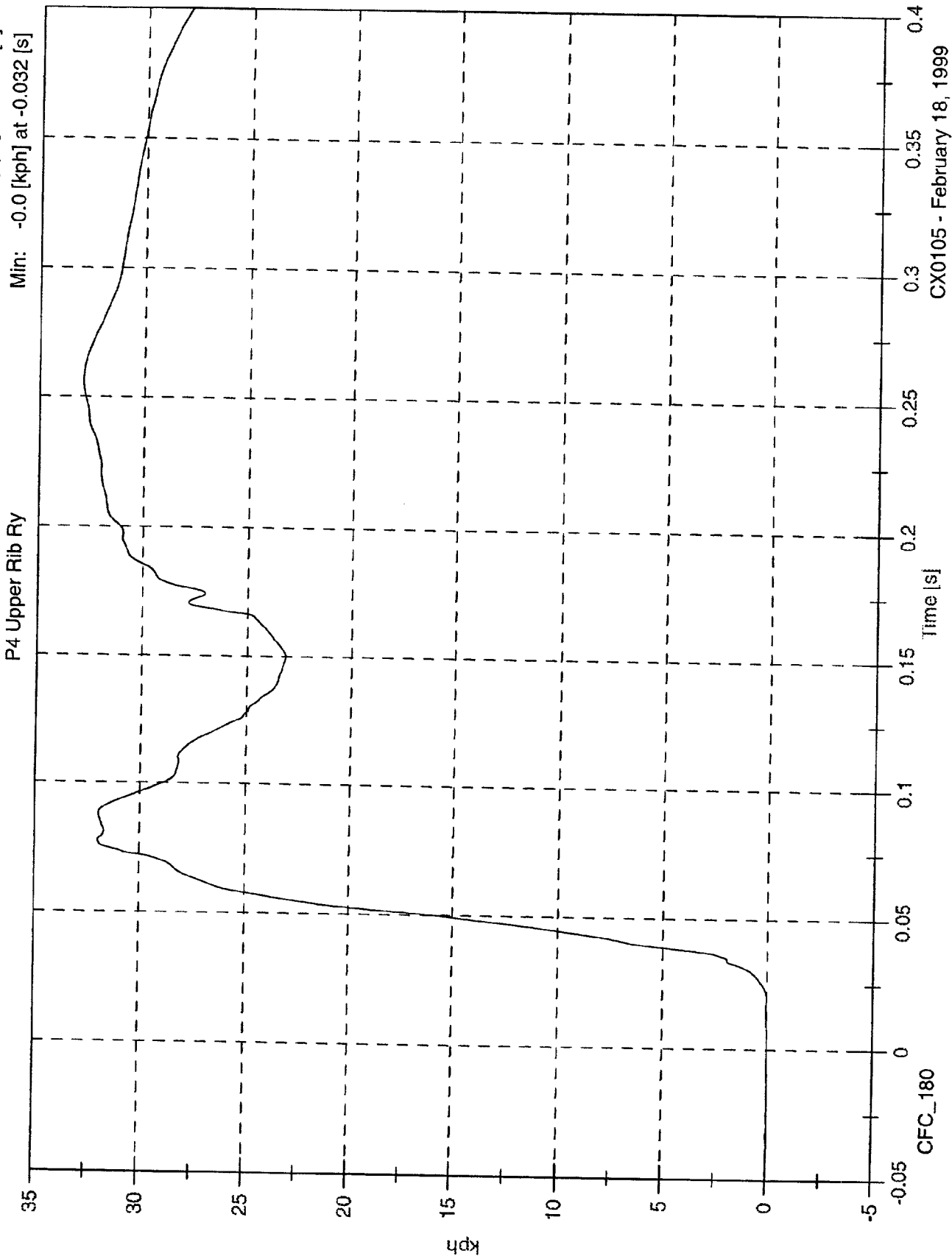


CX0105 - February 18, 1999



214 Test # 8 - 1999 Chevrolet Venture

Max: 32.9 [kph] at 0.256 [s]
Min: -0.0 [kph] at -0.032 [s]



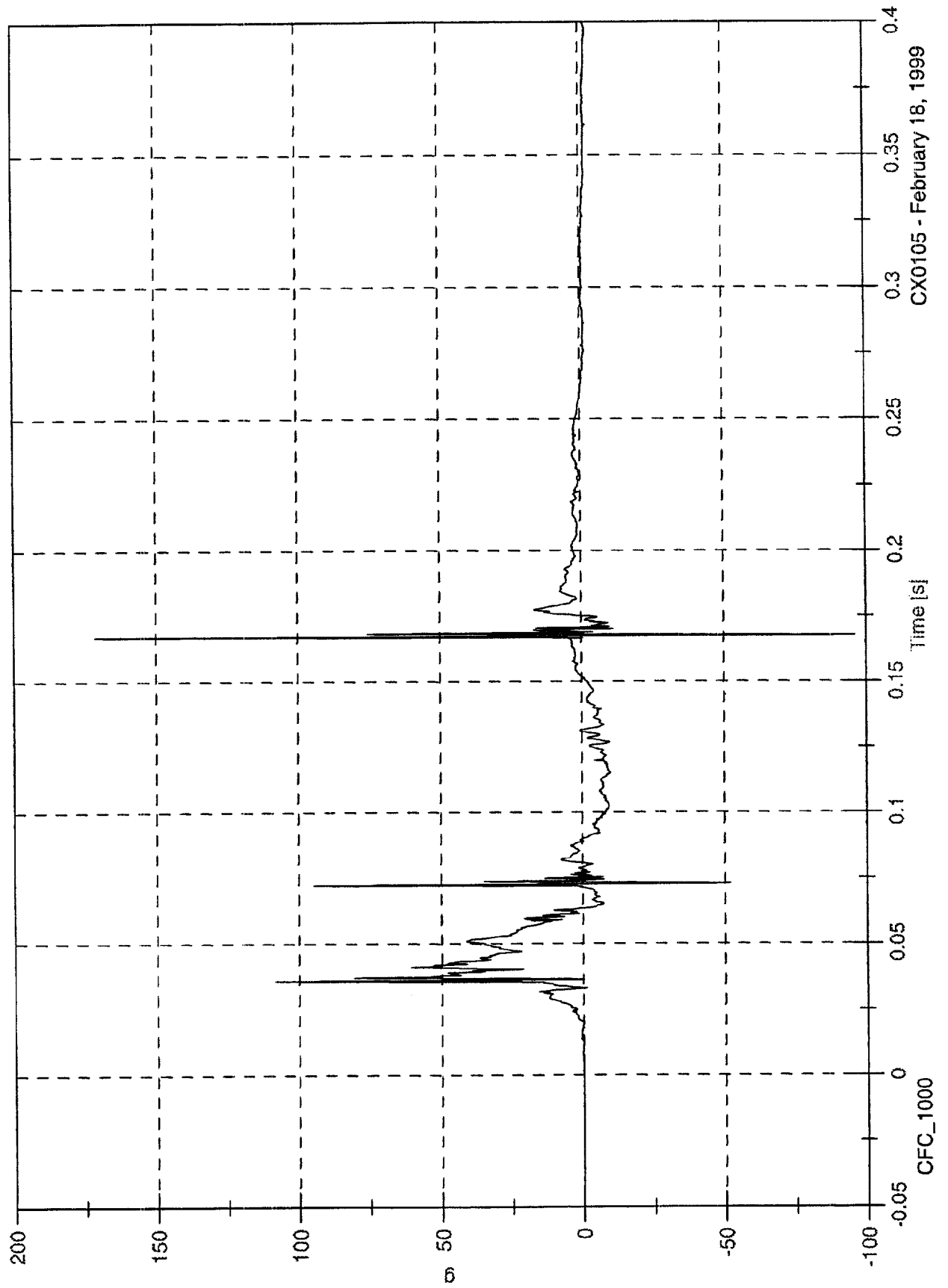
CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 171.5 [g] at 0.167 [s]

Min: -96.0 [g] at 0.168 [s]

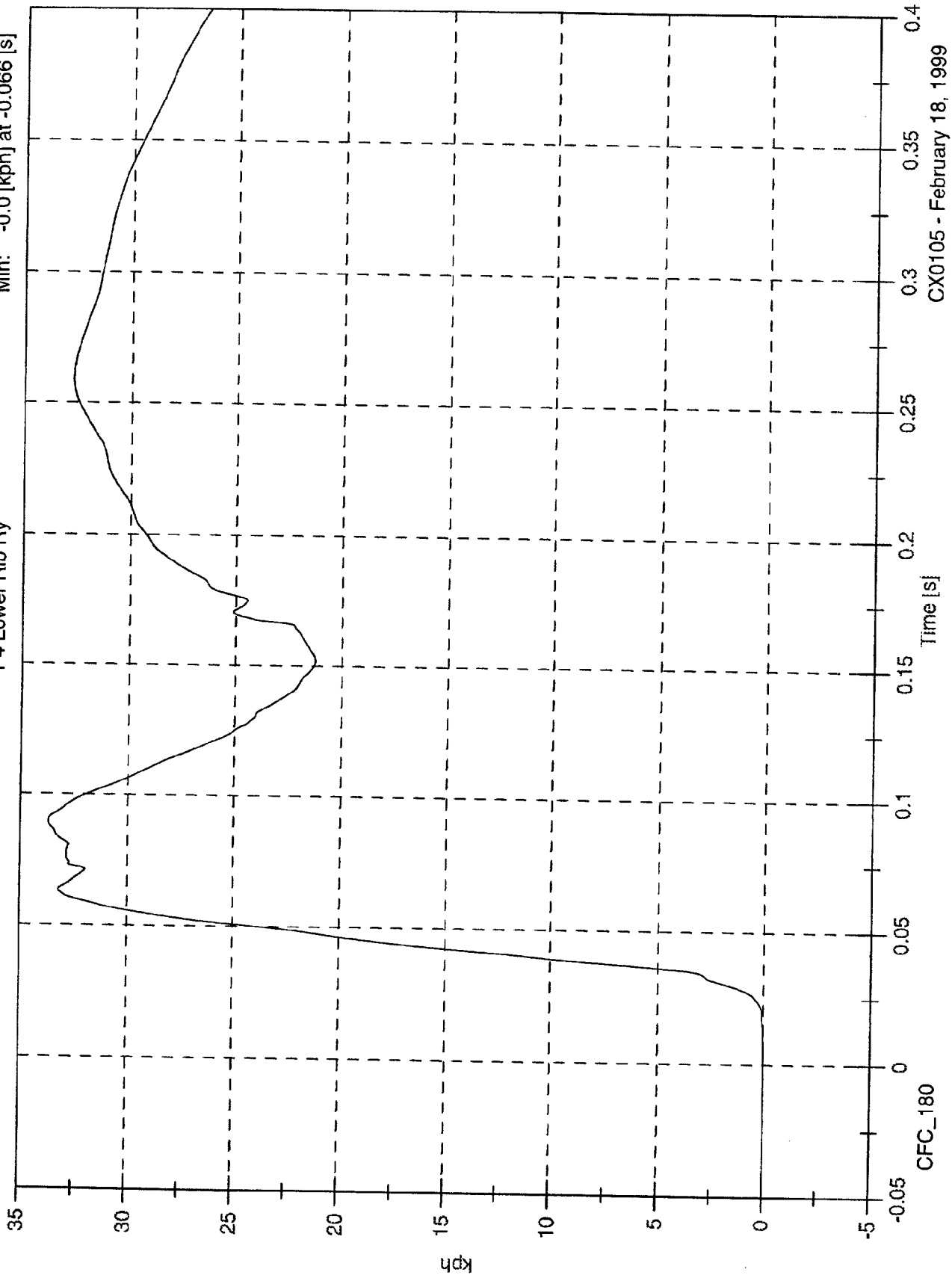
P4 Lower Rib Ry



214 Test # 8 - 1999 Chevrolet Venture

Max: 33.7 [kph] at 0.090 [s]
Min: -0.0 [kph] at -0.066 [s]

P4 Lower Rib Ry



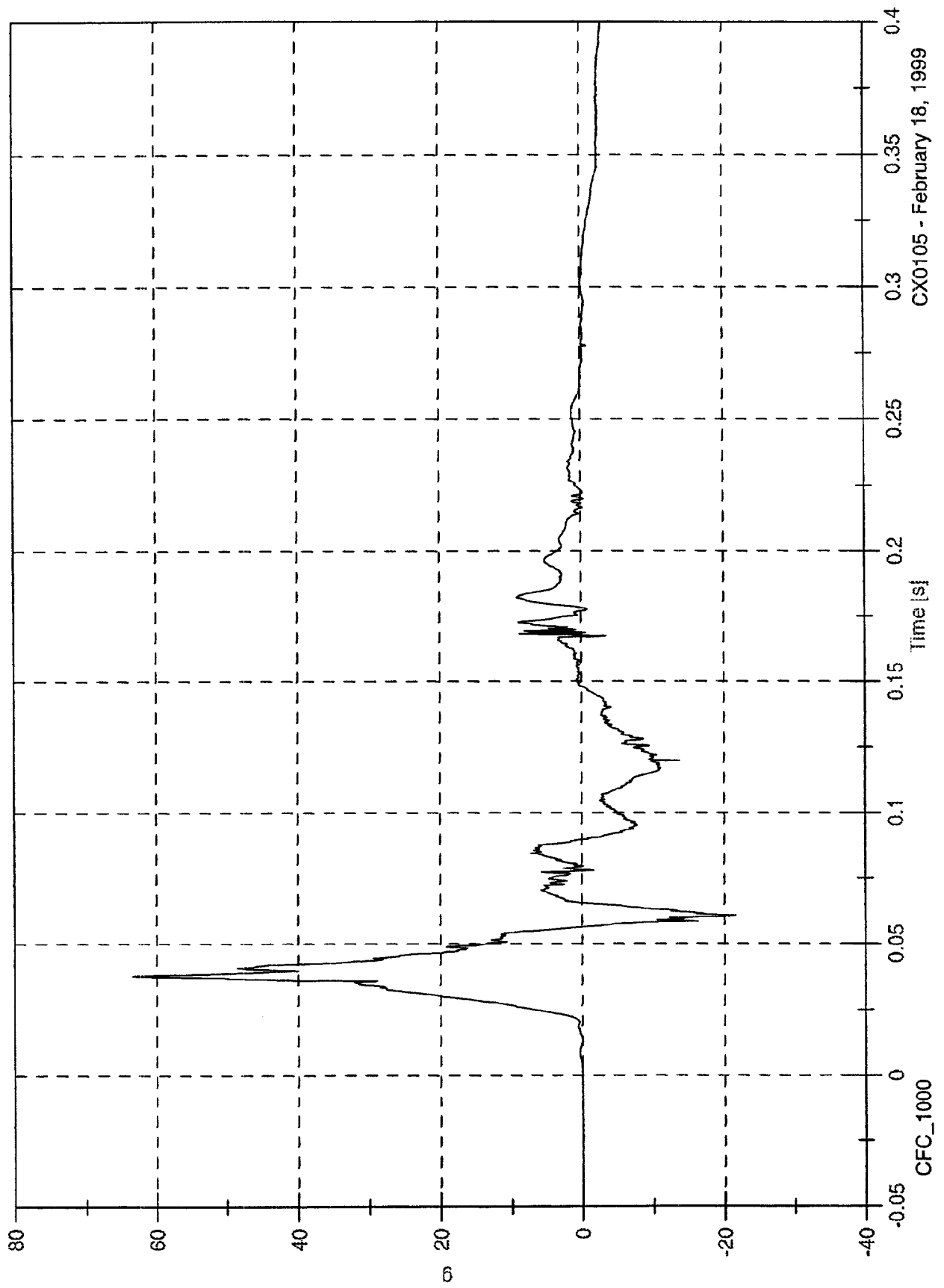
CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

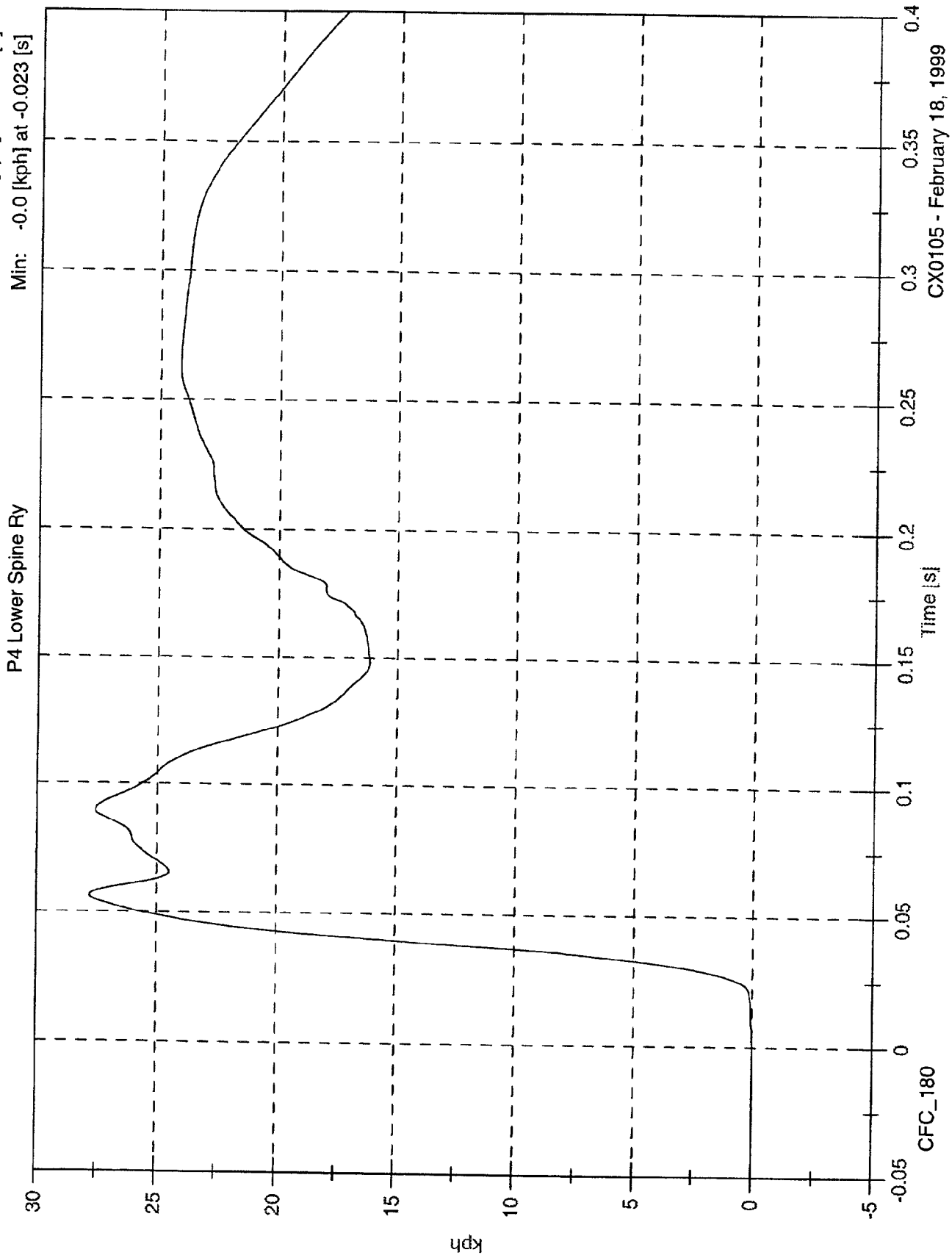
Max: 63.4 [g] at 0.038 [s]

Min: -21.7 [g] at 0.061 [s]

P4 Lower Spine Ry



214 Test # 8 - 1999 Chevrolet Venture



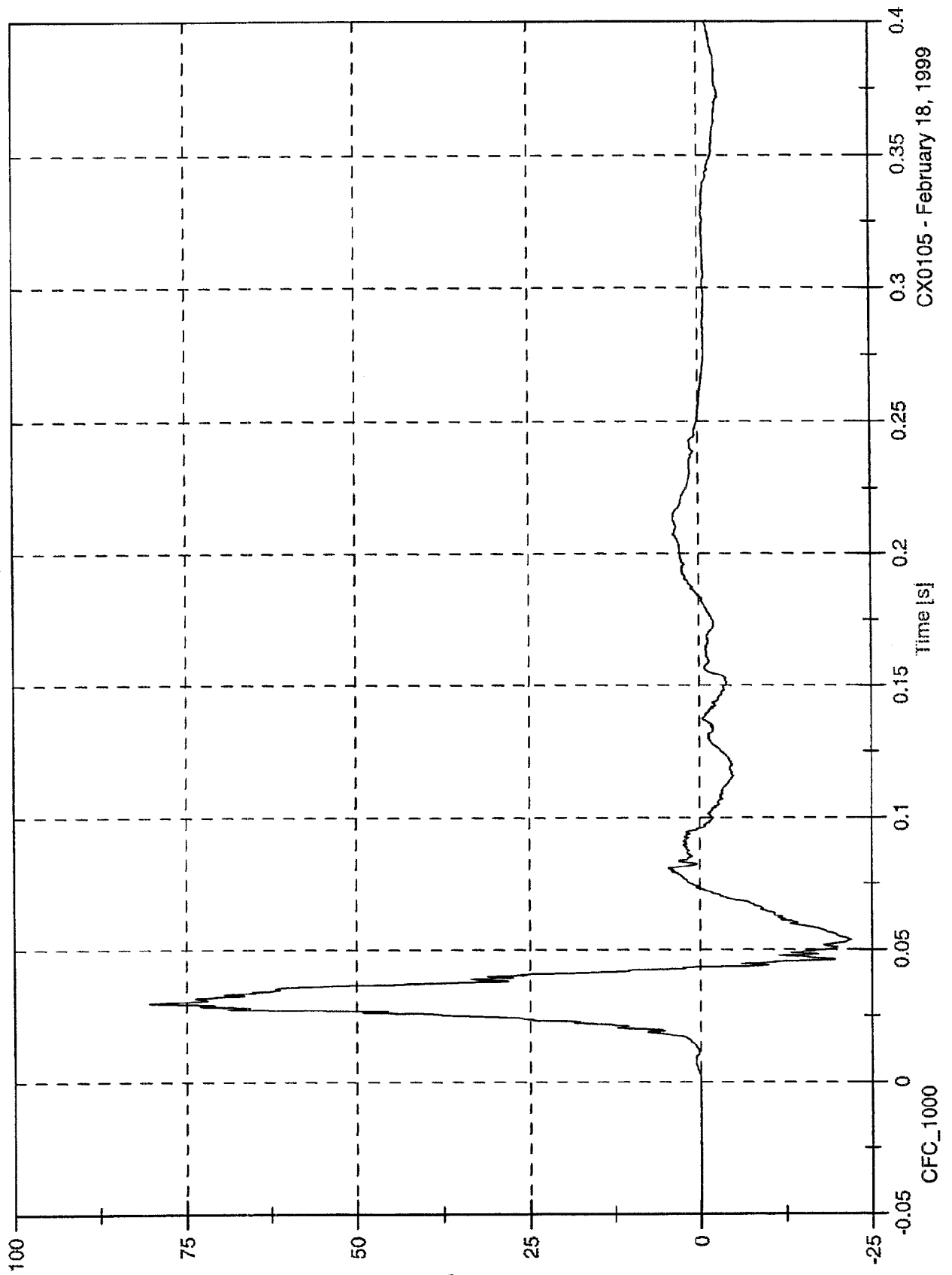
CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

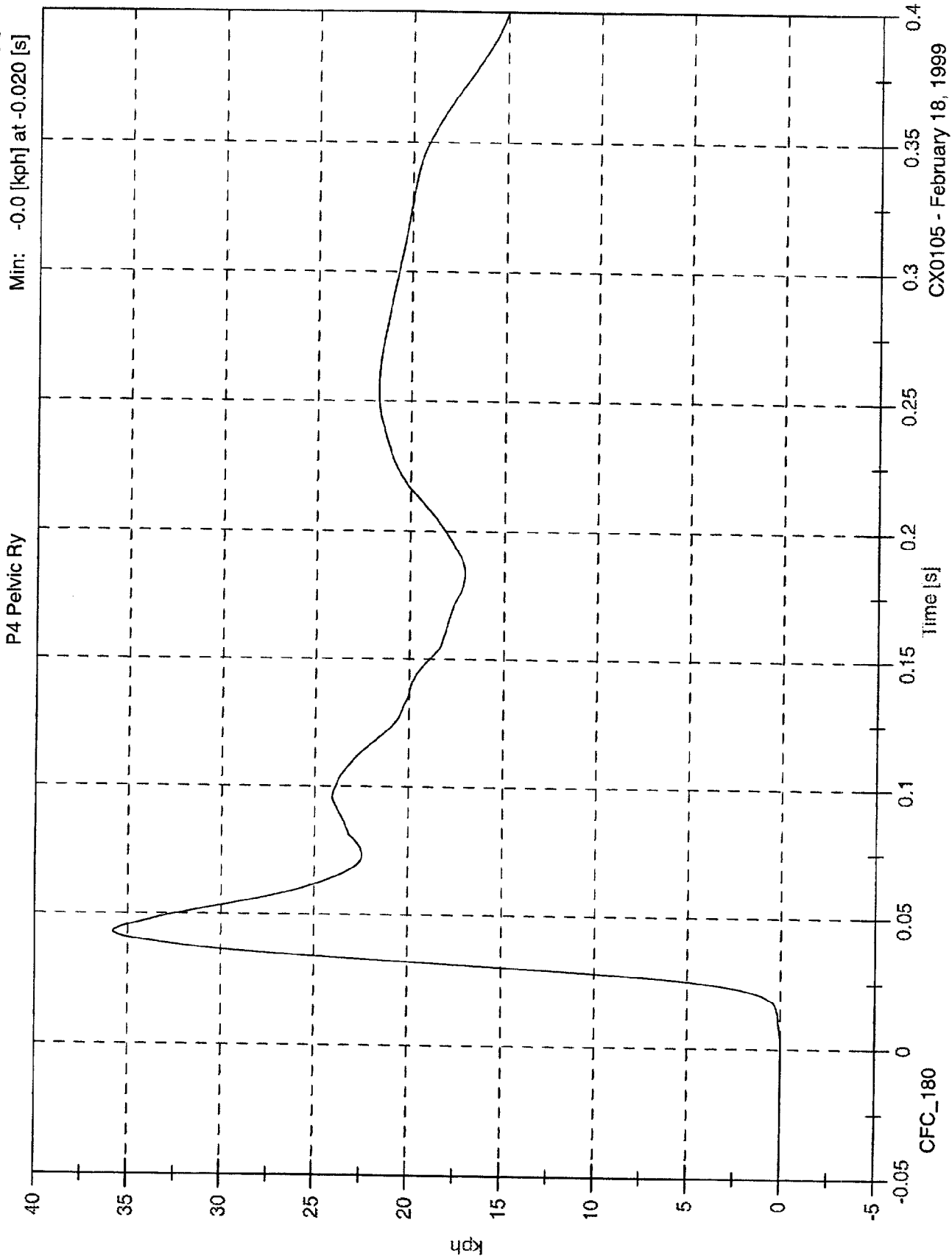
Max: 80.4 [g] at 0.030 [s]

Min: -21.9 [g] at 0.054 [s]

P4 Pelvic Ry



214 Test # 8 - 1999 Chevrolet Venture



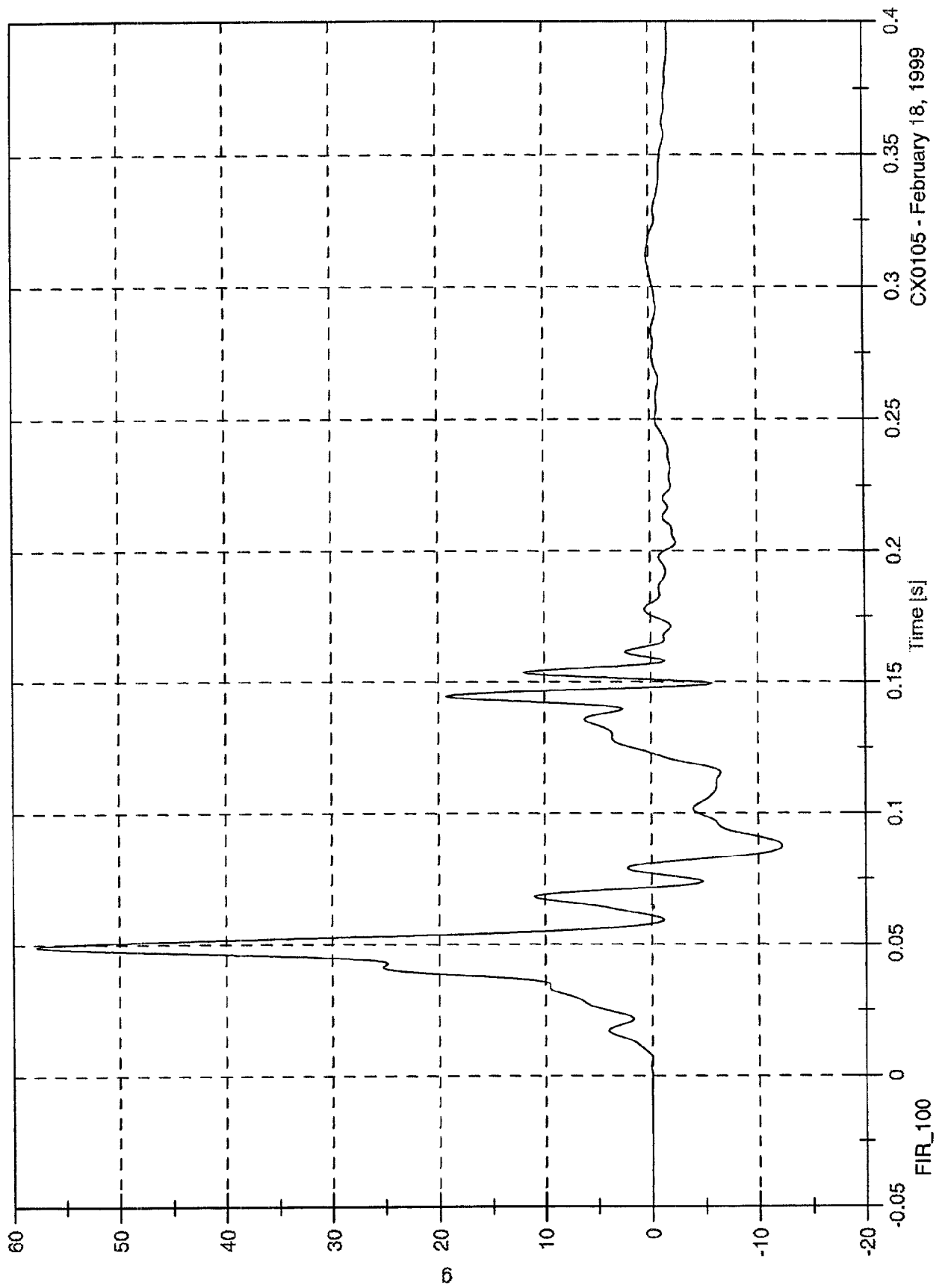
CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 57.8 [g] at 0.049 [s]

Min: -12.2 [g] at 0.087 [s]

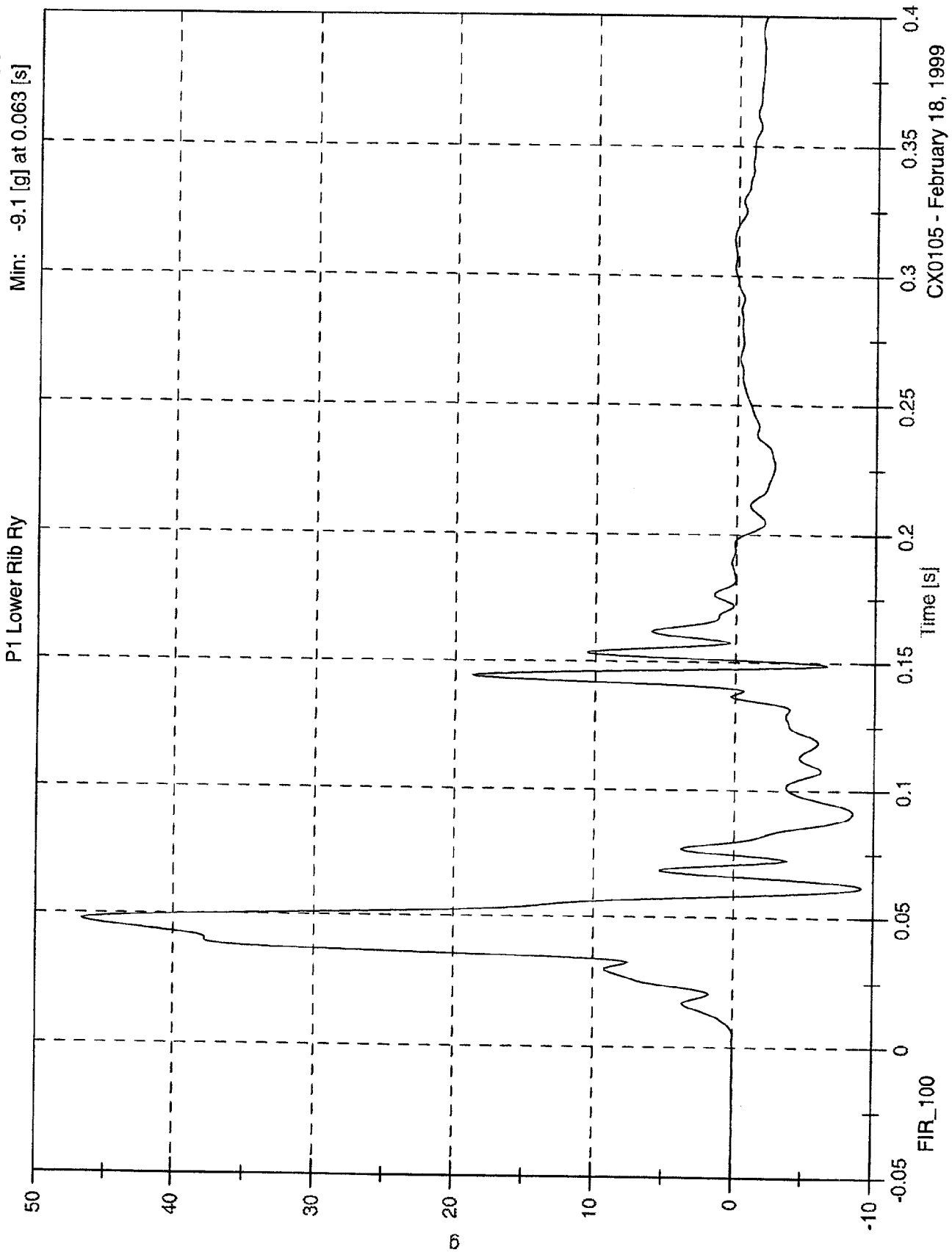
P1 Upper Rib Ry



CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 46.7 [g] at 0.048 [s]
Min: -9.1 [g] at 0.063 [s]



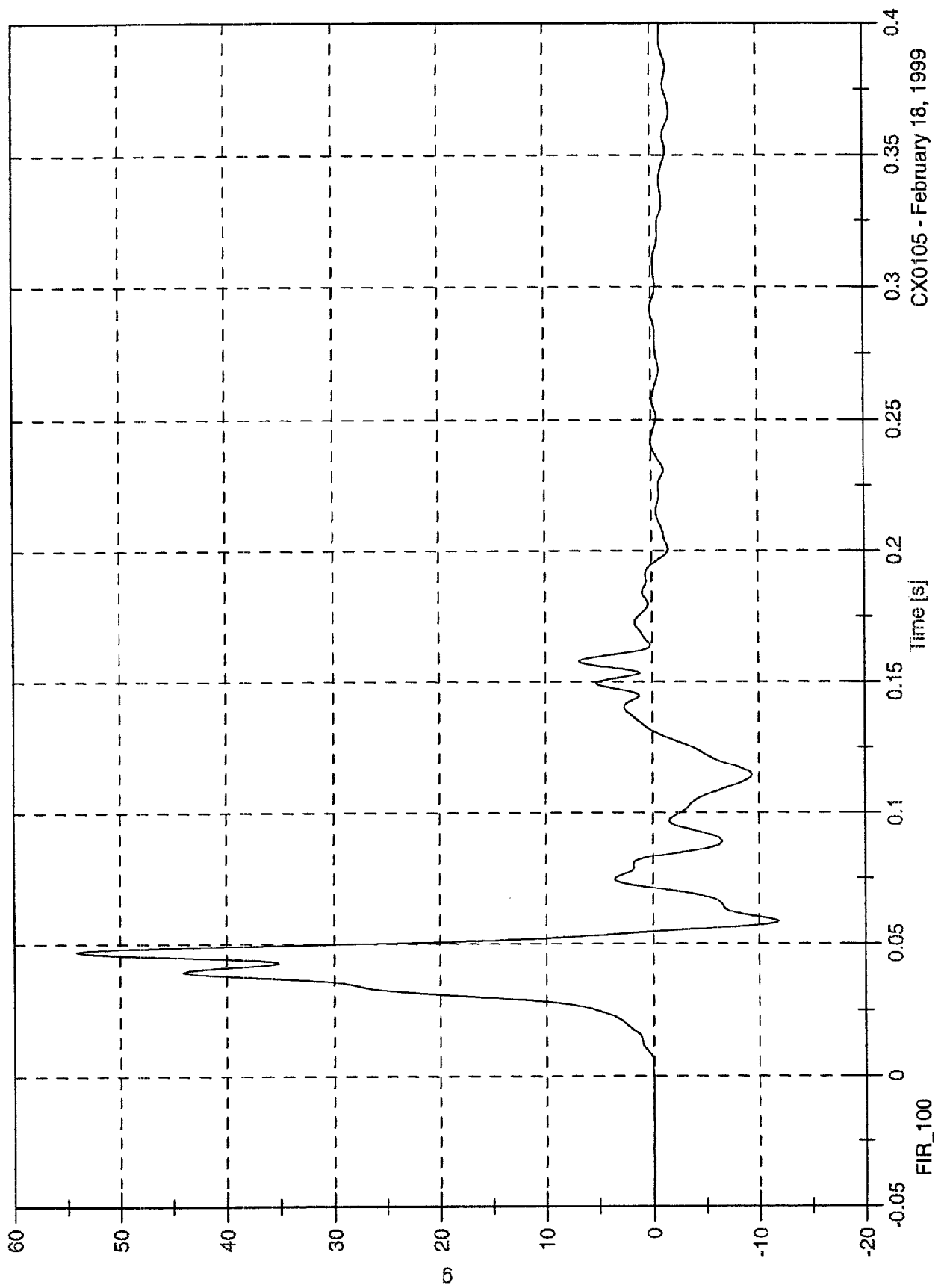
CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

P1 Lower Spine Ry

Max: 54.2 [g] at 0.047 [s]

Min: -11.8 [g] at 0.059 [s]

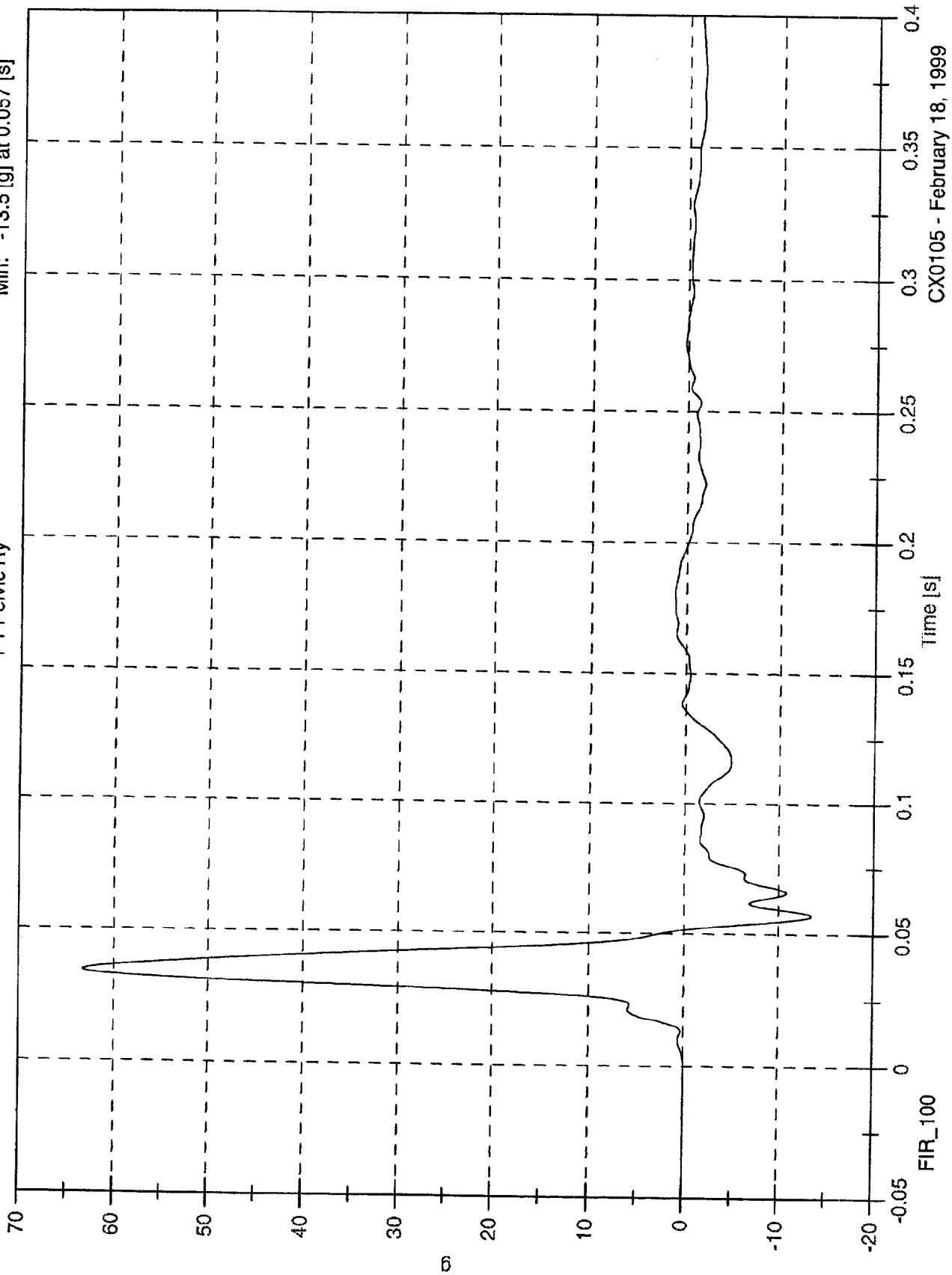


CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 63.3 [g] at 0.034 [s]
Min: -13.5 [g] at 0.057 [s]

P1 Pelvic Ry



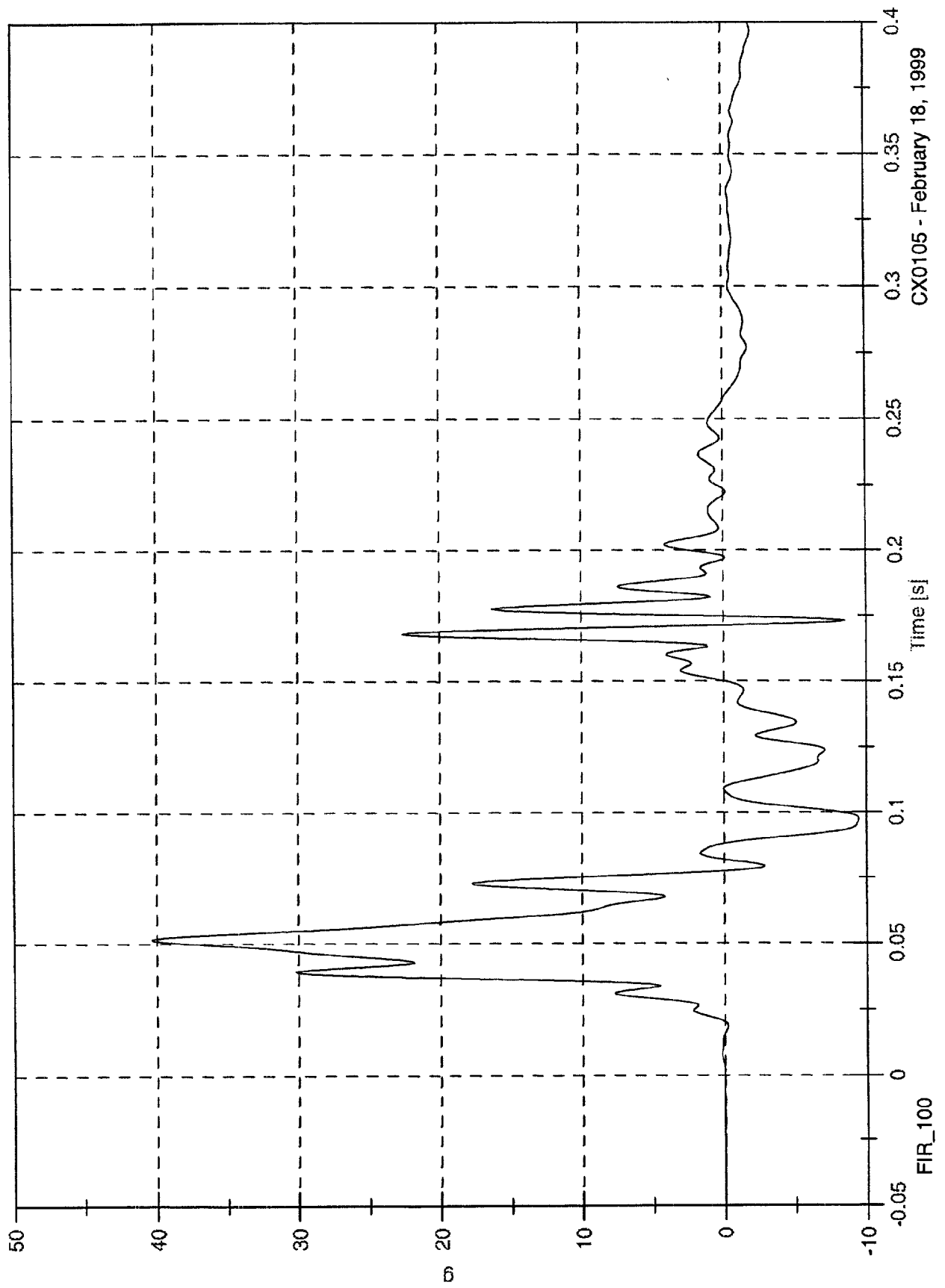
CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 40.3 [g] at 0.052 [s]

Min: -9.4 [g] at 0.097 [s]

P4 Upper Rib Ry



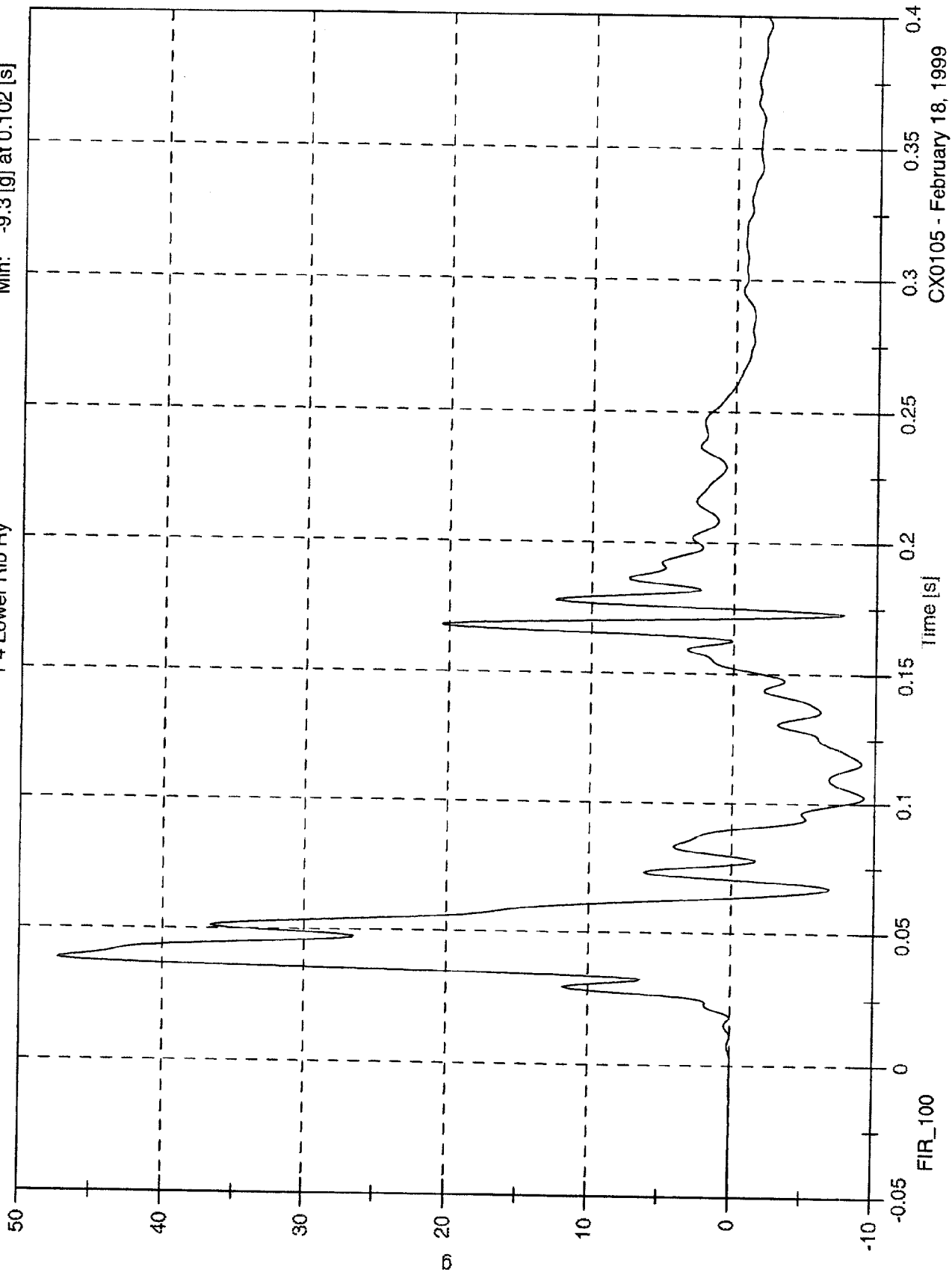
CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 47.3 [g] at 0.038 [s]

Min: -9.3 [g] at 0.102 [s]

P4 Lower Rib Ry

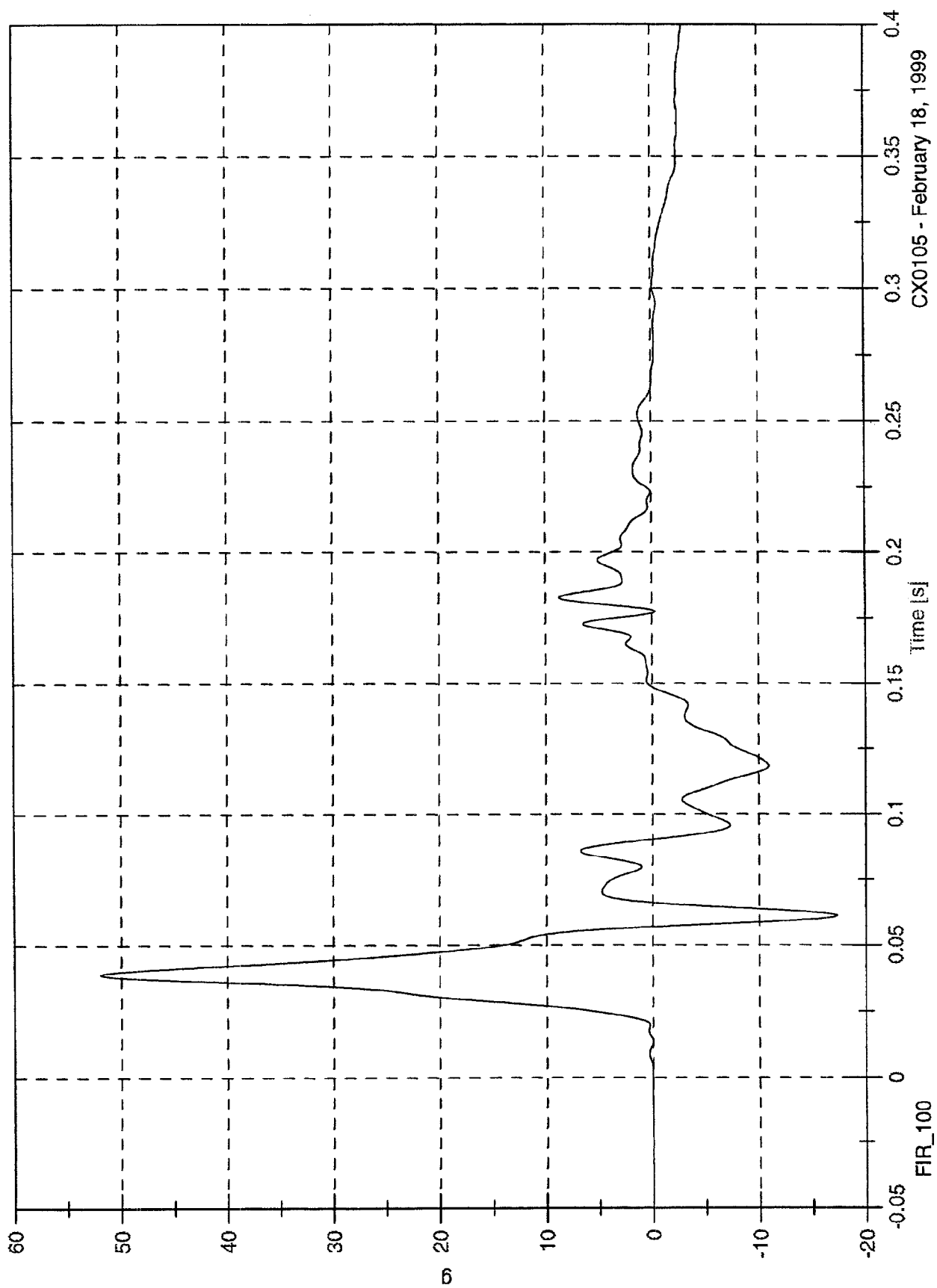


214 Test # 8 - 1999 Chevrolet Venture

Max: 51.9 [g] at 0.039 [s]

Min: -17.3 [g] at 0.061 [s]

P4 Lower Spine Ry



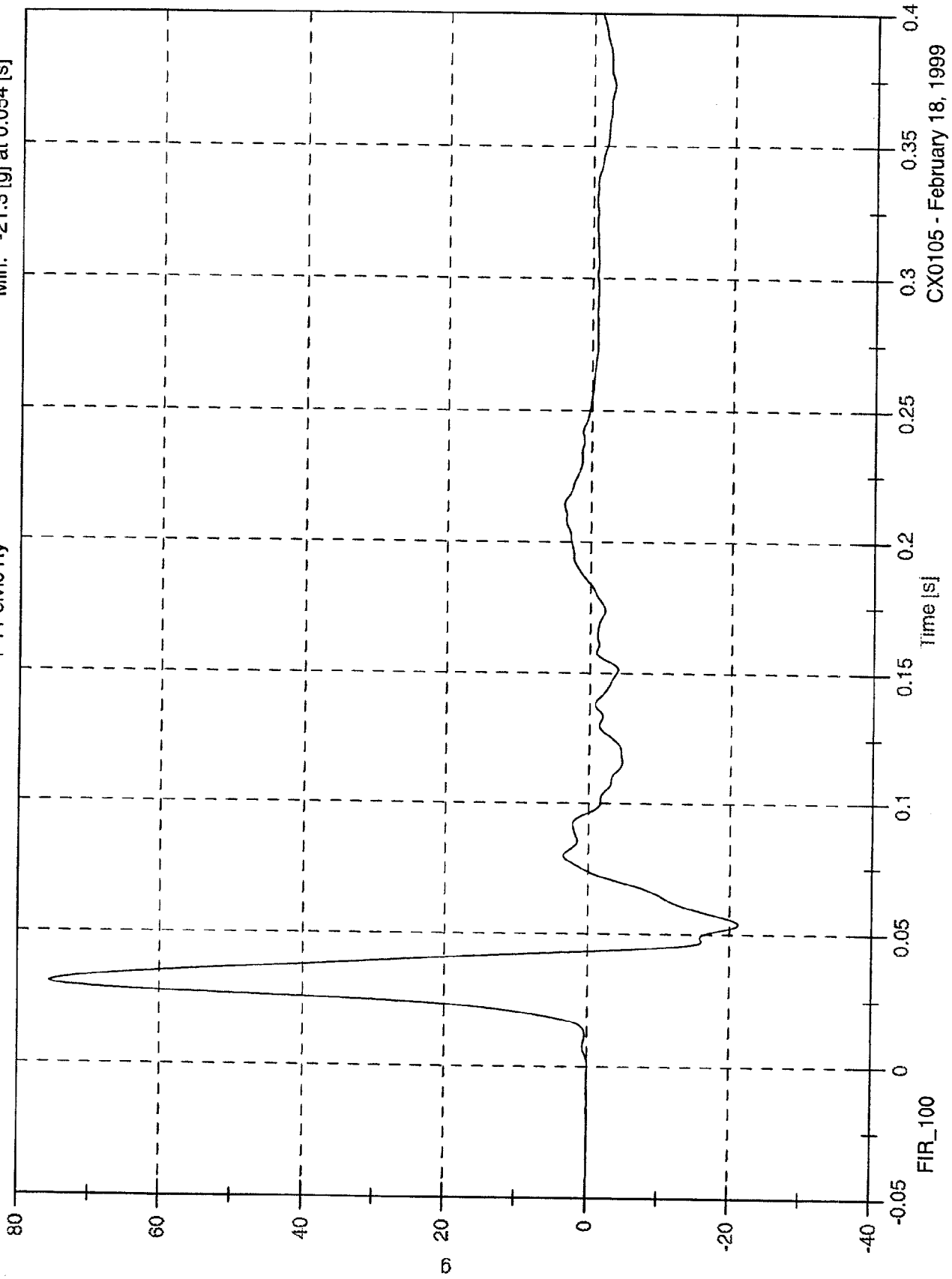
FIR_100

CX0105 - February 18, 1999

214 Test # 8 - 1999 Chevrolet Venture

Max: 75.6 [g] at 0.031 [s]
Min: -21.3 [g] at 0.054 [s]

P4 Pelvic Ry



CX0105 - February 18, 1999

APPENDIX C

SID CONFIGURATION AND PERFORMANCE VERIFICATION DATA

SUMMARY
SID PRE & POST TEST CALIBRATION

CONFIGURED FOR LEFT SIDE IMPACT

Date: 3/11/99

Calspan Sequential Test Number: 1,2

Laboratory Technician:

B. Swiecicki, G. Serbinowski

TEST PARAMETER	SPECIFICATION	SID NO.: 027		SID NO.: 016	
		PRE TEST	POST TEST	PRE TEST	POST TEST
SH- Seated Height (mm)	889 - 909	909	909	902	902
RH- Rib Height (mm)	501 - 521	514	516	513	513
HP- Hip Pivot Height (mm)	99 ref.	99	99	99	99
RD- Rib from Back Line (mm)	229 - 241	236	239	240	239
KV- Knee Pivot from Back Line (mm)	511 - 526	516	516	526	526
SW- Knee Pivot to Floor (mm)	490 - 505	493	493	494	494
HW- Hip Width (mm)	356 - 391	366	366	361	361
THORAX IMPACTS					
TEMPERATURE (°C)	18.9 - 25.5	21.7	21.0	21.7	21.0
RELATIVE HUMIDITY (%)	10 - 70	15	20	15	20
PROBE SPEED (m/s)	4.27 - 4.33	4.30	4.30	4.31	4.28
UPPER RIB (g's)	37 - 46	41.6	42.1	42.3	43.6
LOWER RIB (g's)	37 - 46	44.0	42.6	45.7	44.5
LOWER SPINE (g's)	15 - 22	21.8	21.0	21.6	21.7
PELVIS IMPACT					
TEMPERATURE (°C)	18.9 - 25.5	21.7	21.0	21.7	21.0
RELATIVE HUMIDITY (%)	10 - 70	15	20	15	20
PROBE SPEED (m/s)	4.27 - 4.33	4.31	4.31	4.29	4.30
PELVIS (g's)	40 - 60	50.2	50.1	52.5	40.3

REMARKS: None

**CALIBRATION TEST RESULTS
PRE-TEST**

SID NO.: 027

CONFIGURED FOR LEFT SIDE IMPACT

**CALIBRATION TEST RESULTS SUMMARY
PRE-TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 027
Date: 02-16-99

Calspan Sequential Test Number: 1
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.: 027Calspan Sequential Test Number: 1Date: 02-12-99Laboratory Technician: B. Swiecicki, G. Serbinowski

TEST PARAMETER	SPECIFICATION	TEST RESULTS
SH- Seated Height (mm)	889 - 909	909
RH- Rib Height (mm)	502 - 520	514
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	493
HW- Hip Width (mm)	356 - 391	366

REMARKS: None

THORACIC SHOCK ABSORBER TESTS
PRE-TEST

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 027
Date: 02-15-99

Calspan Sequential Test Number: 1
Laboratory Technician: B. Swiecicki, G. Serbinowski

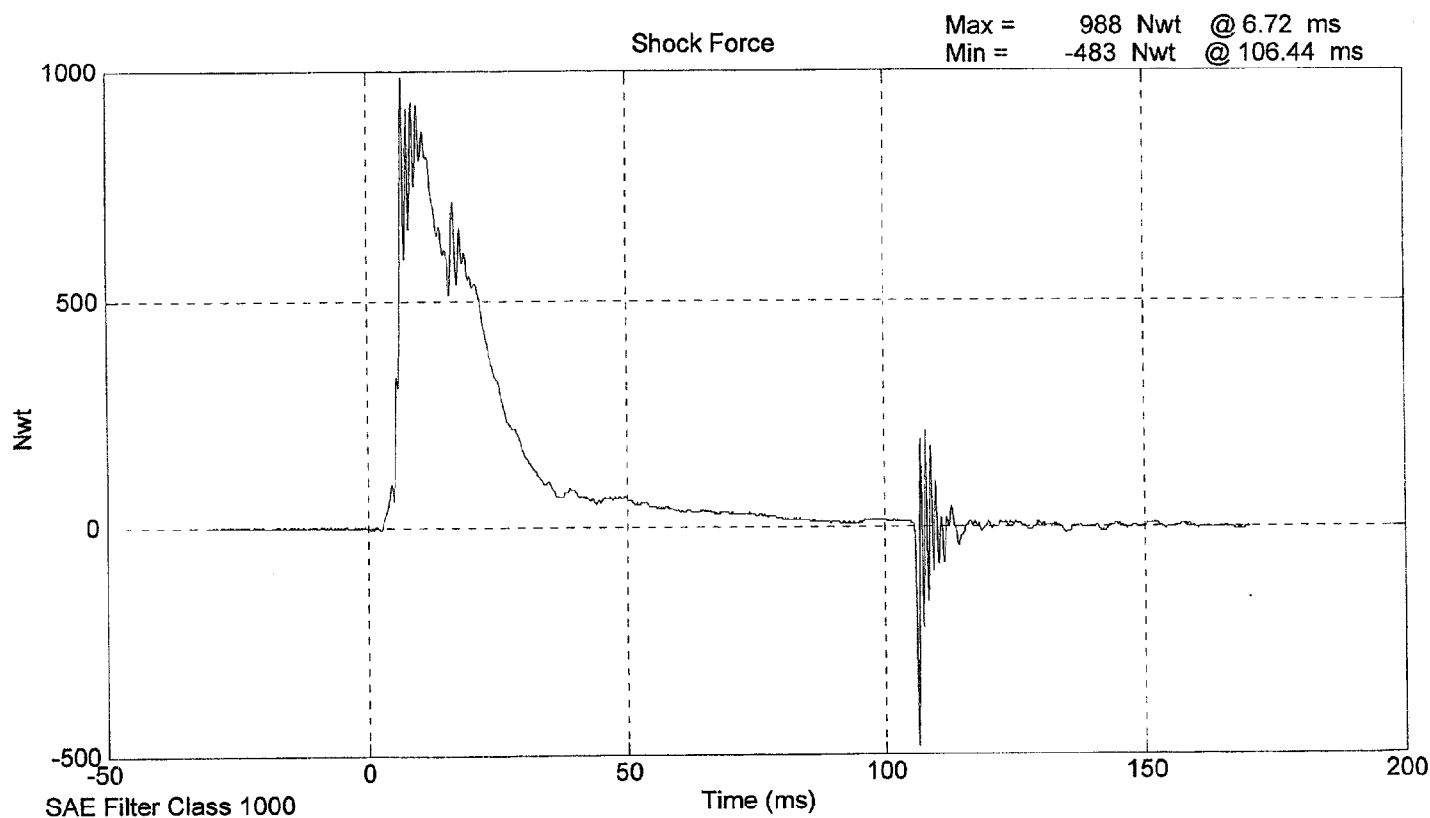
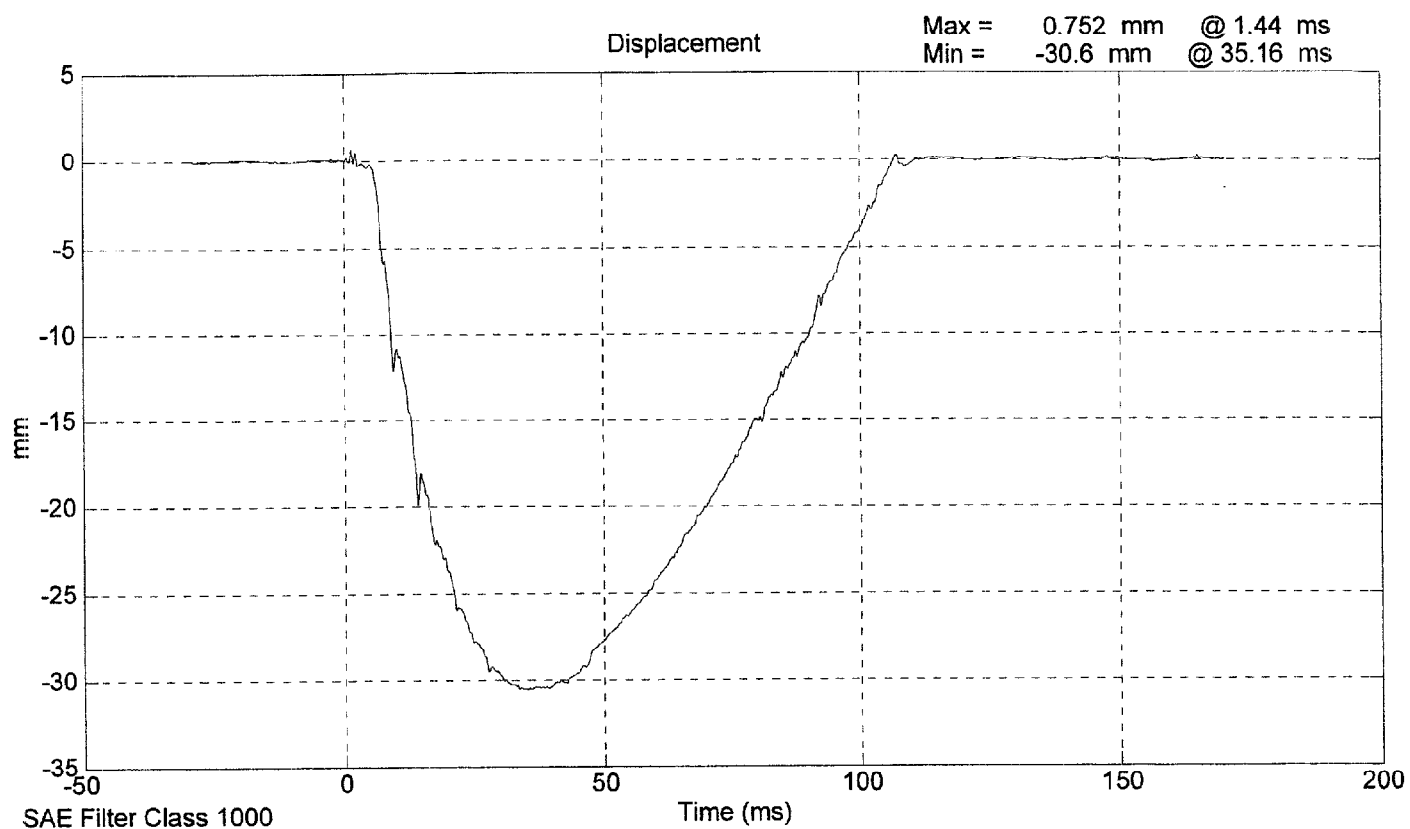
DAMPER IDENTIFICATION: 027

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)		18.9 - 25.5	21.7
RELATIVE HUMIDITY (%)		10 - 70	15
VELOCITY 3.05 m/s	FORCE (N)	836 - 1125	988.0
	DISPLACEMENT (mm)	30 - 35	30.5
VELOCITY 4.27 m/s	FORCE (N)	1730 - 2099	1736.9
	DISPLACEMENT (mm)	32 - 37	34.3
VELOCITY 6.10 m/s	FORCE (N)	3741 - 4448	3771.1
	DISPLACEMENT (mm)	33 - 40	36.3

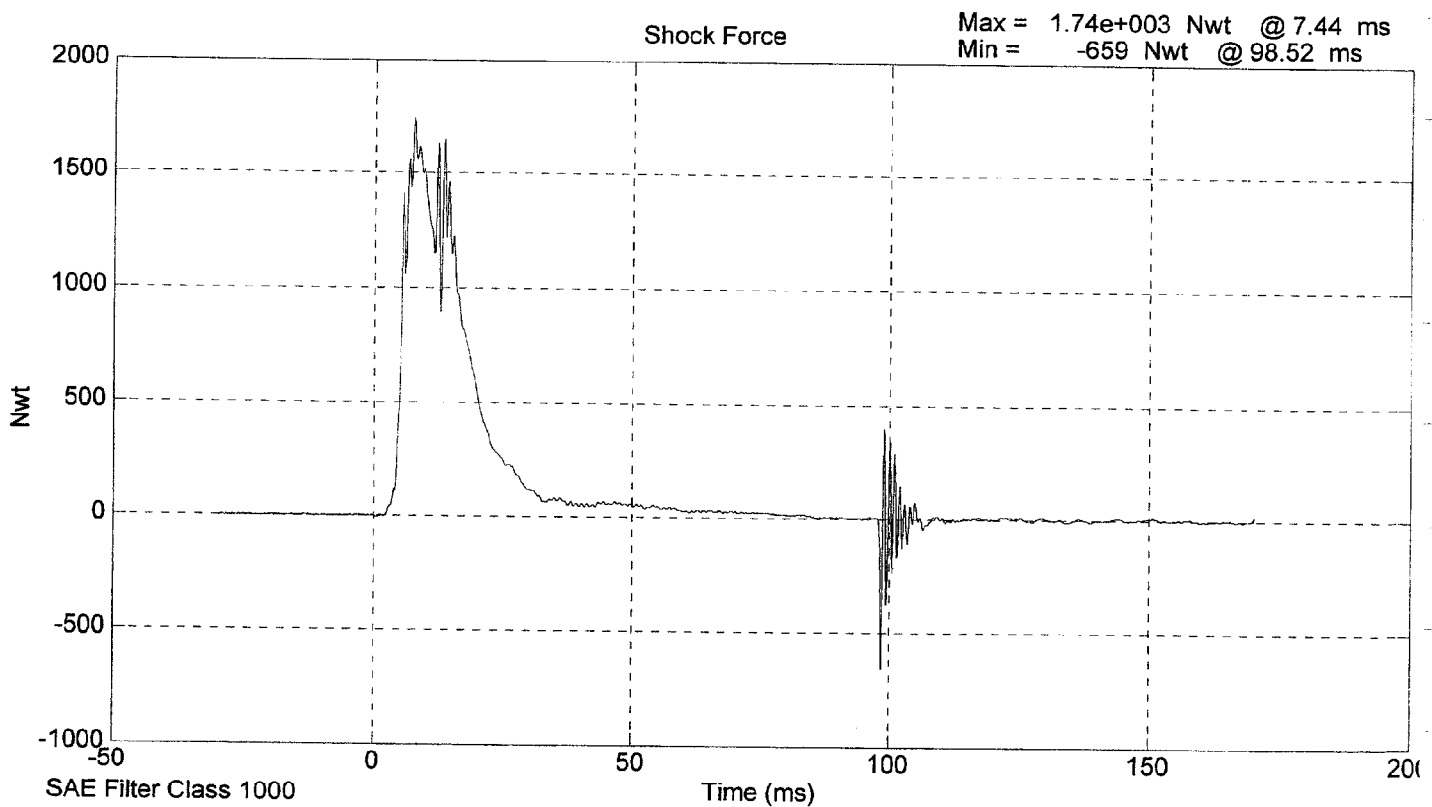
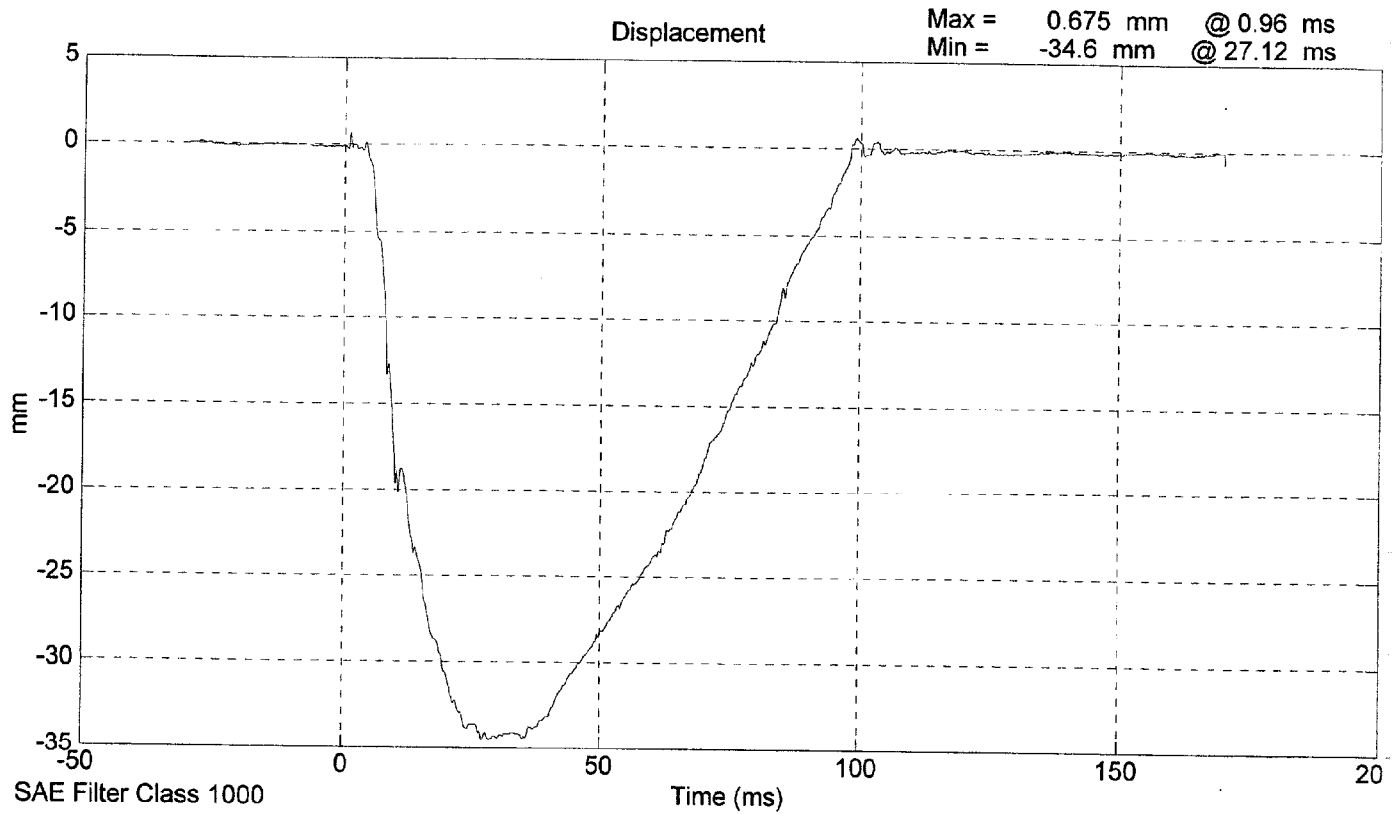
DAMPER SETTING: 5

REMARKS: None

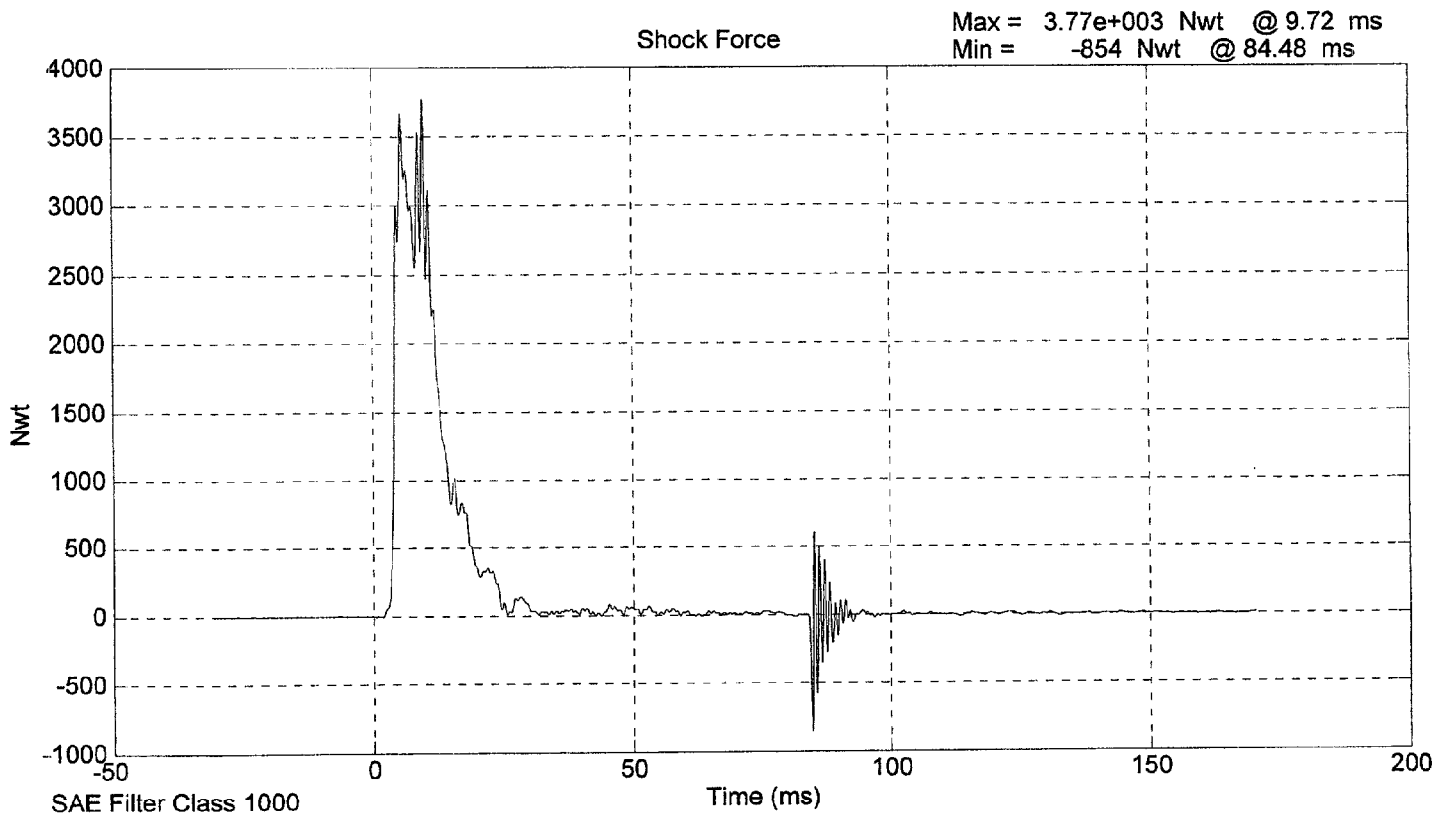
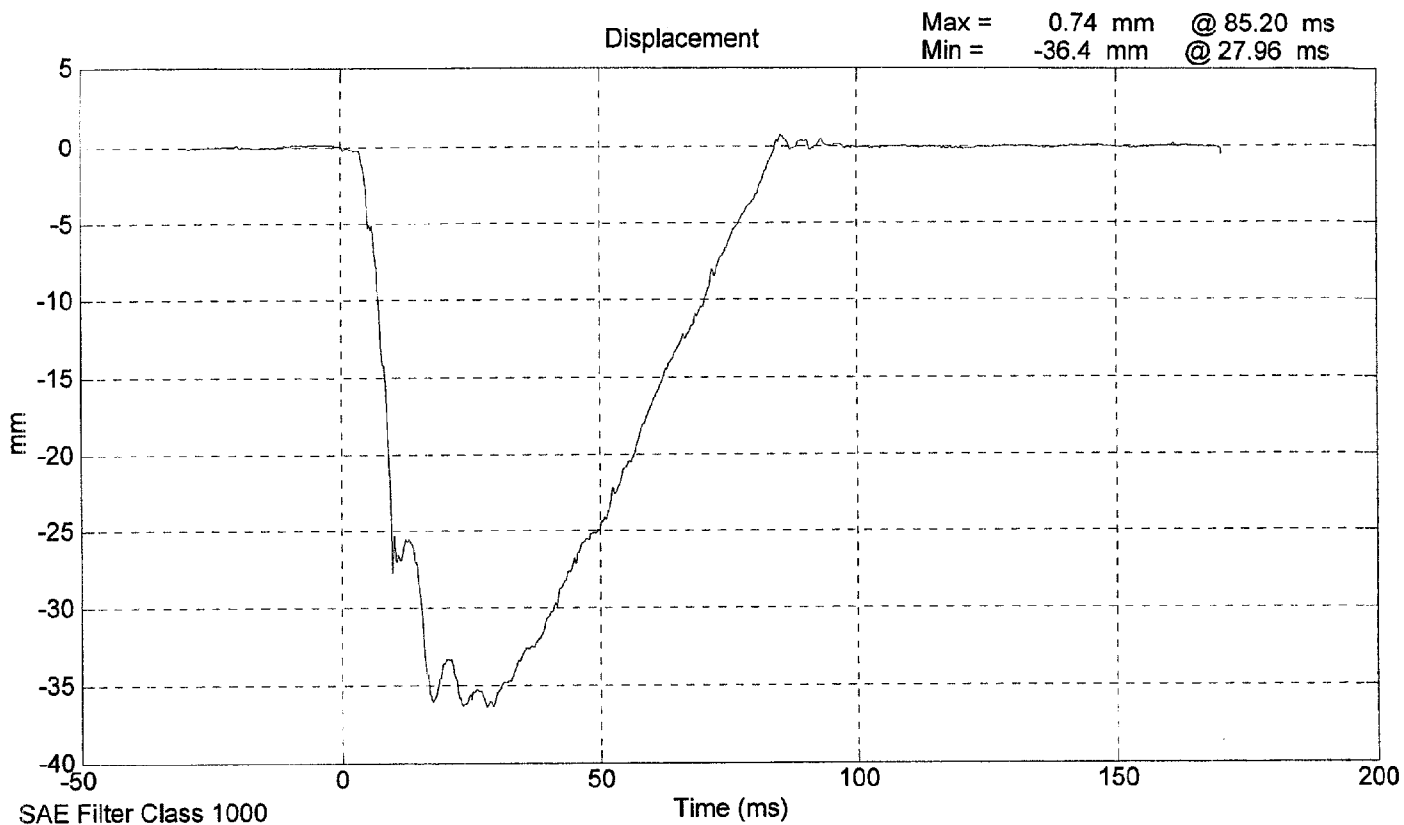
SID Shock Absorber Impact Test 027 @ 3.048 m/s



SID Shock Absorber Impact Test 027 @ 4.2824 m/s



SID Shock Absorber Impact Test 027 @ 6.1204 m/s



**LATERAL THORAX IMPACT TEST
PRE-TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 027

Calspan Sequential Test Number: 1

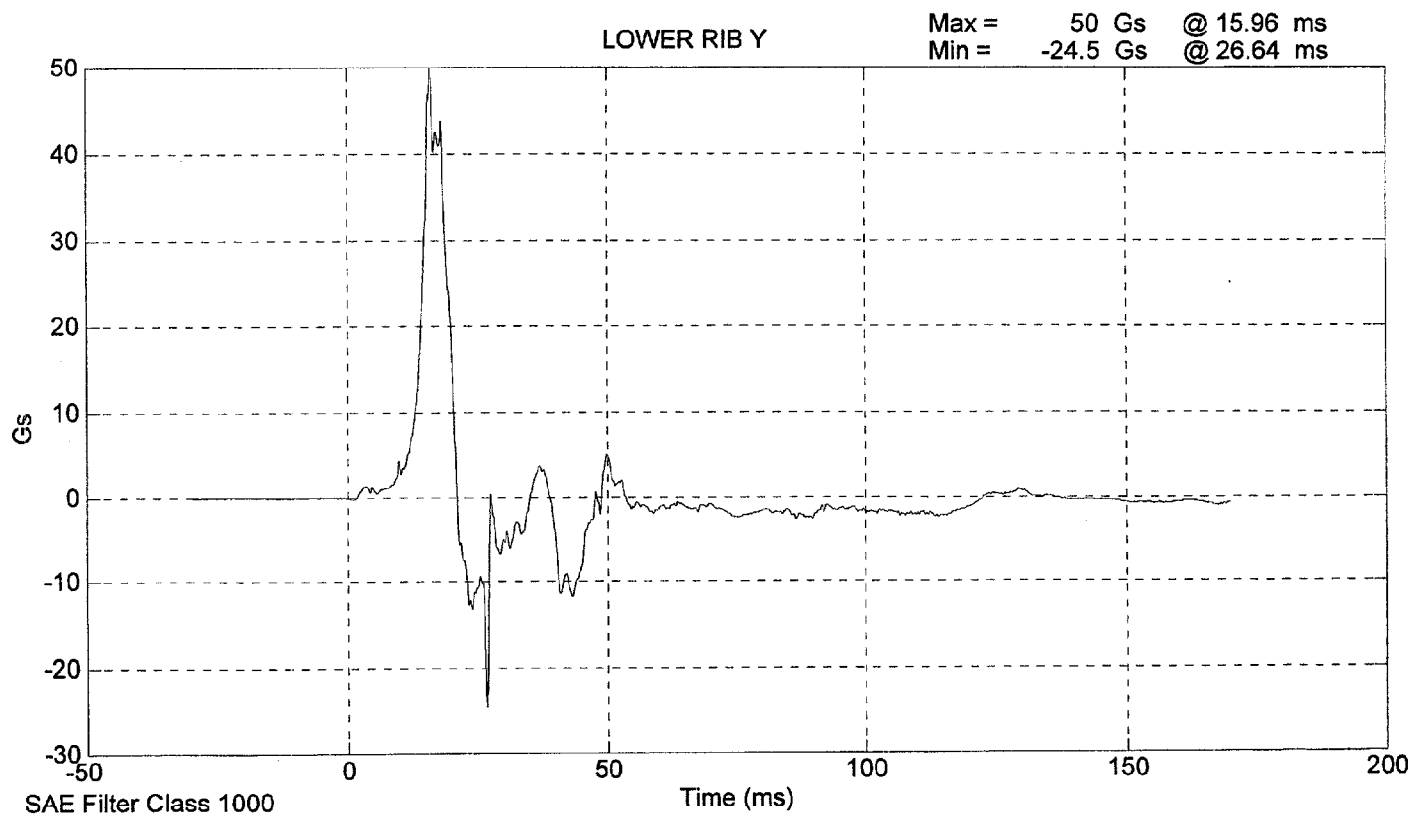
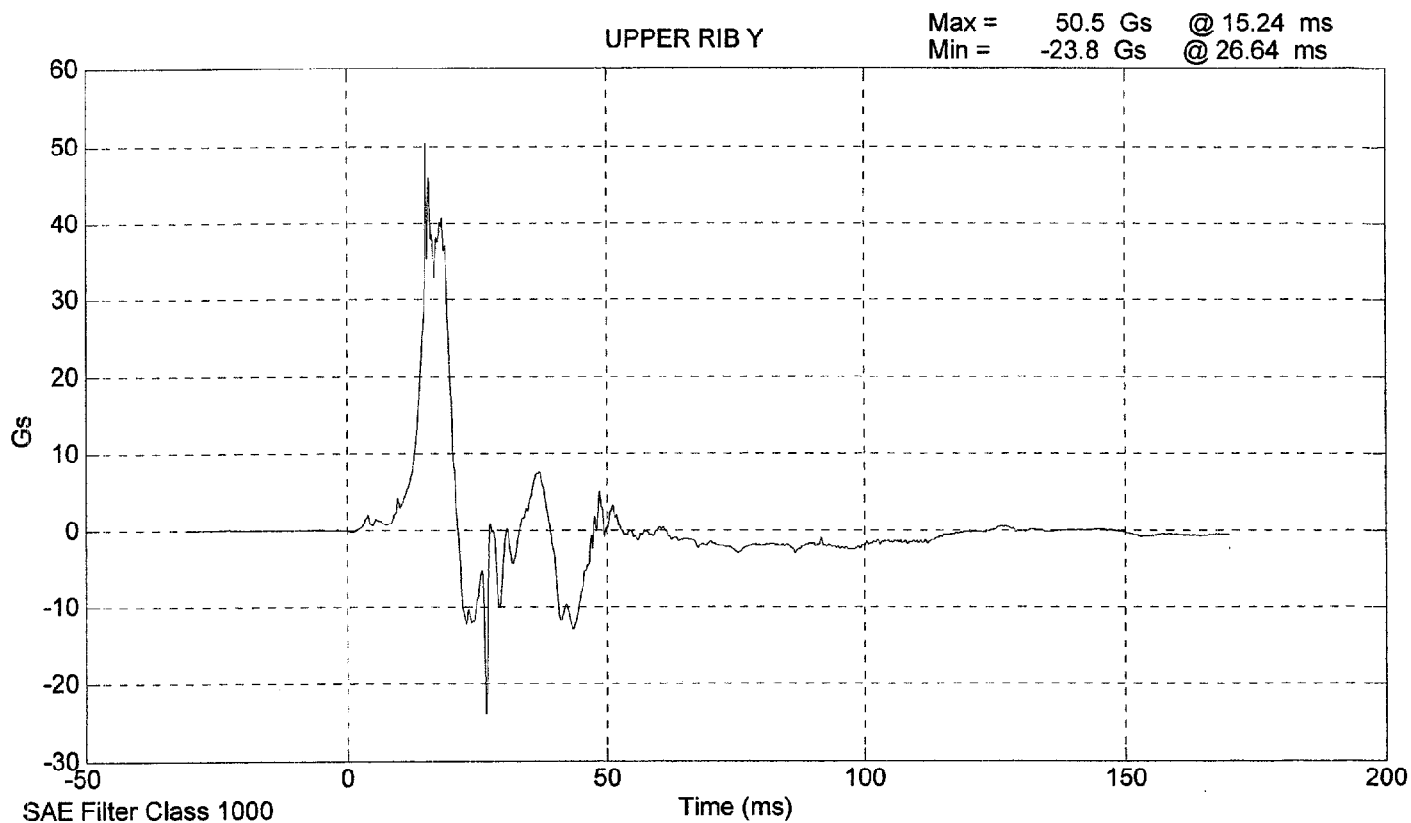
Date: 02-16-99

Laboratory Technician: B. Swiecicki, G. Serbinowski

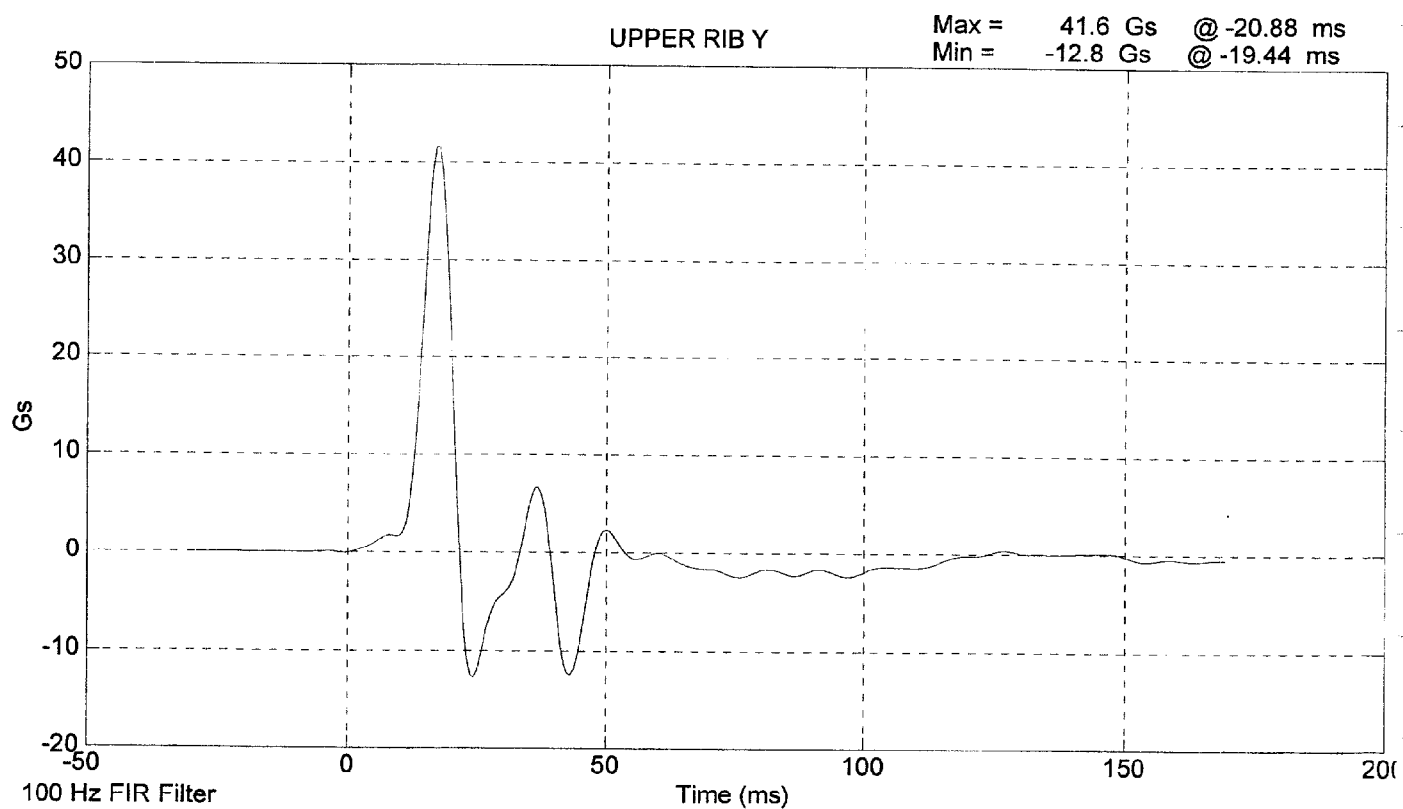
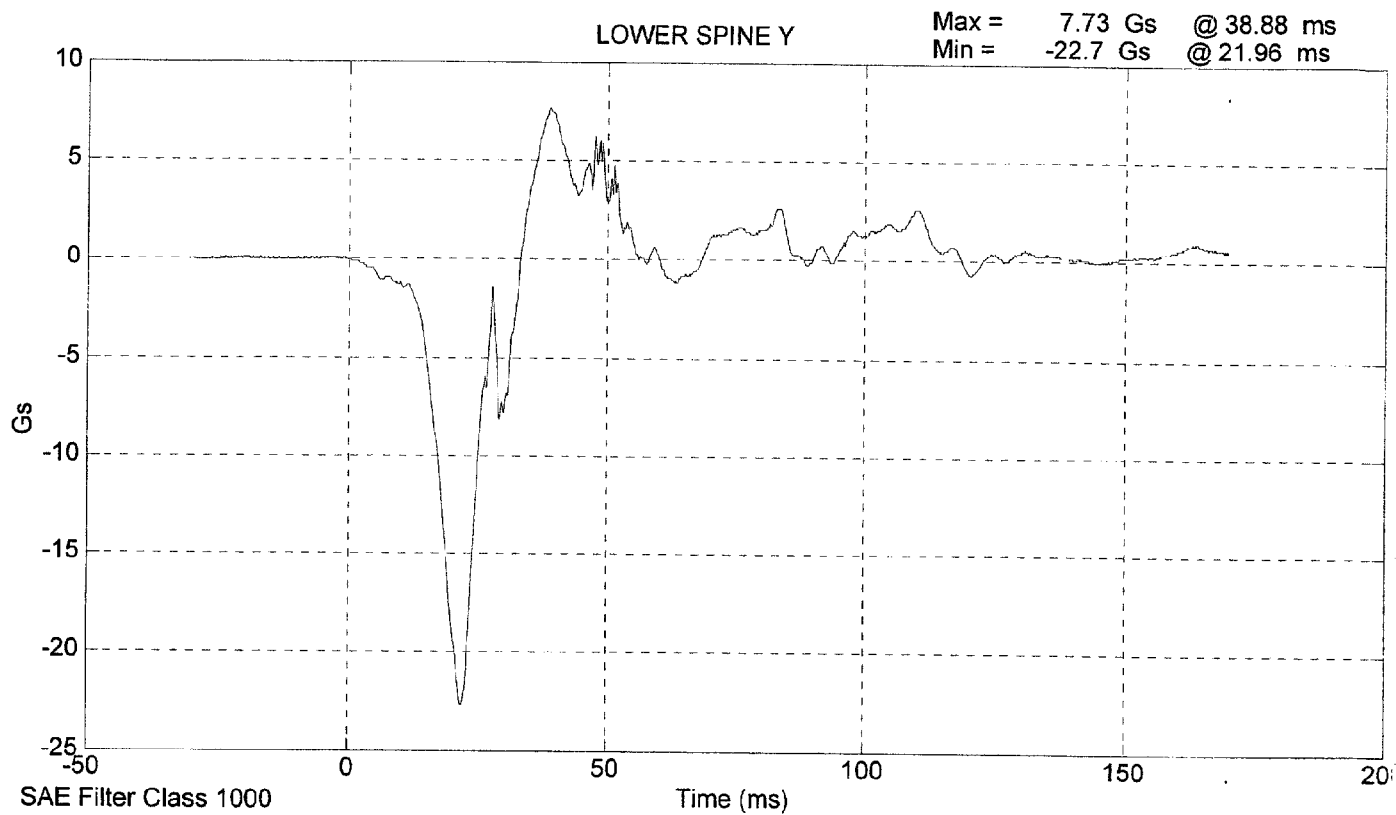
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.7
RELATIVE HUMIDITY (%)	10 - 70	15
PROBE SPEED (m/s)	4.27 - 4.33	4.30
UPPER RIB (g's)	37 - 46	41.6
LOWER RIB (g's)	37 - 46	44.0
LOWER SPINE (g's)	15 - 22	21.8

REMARKS: None

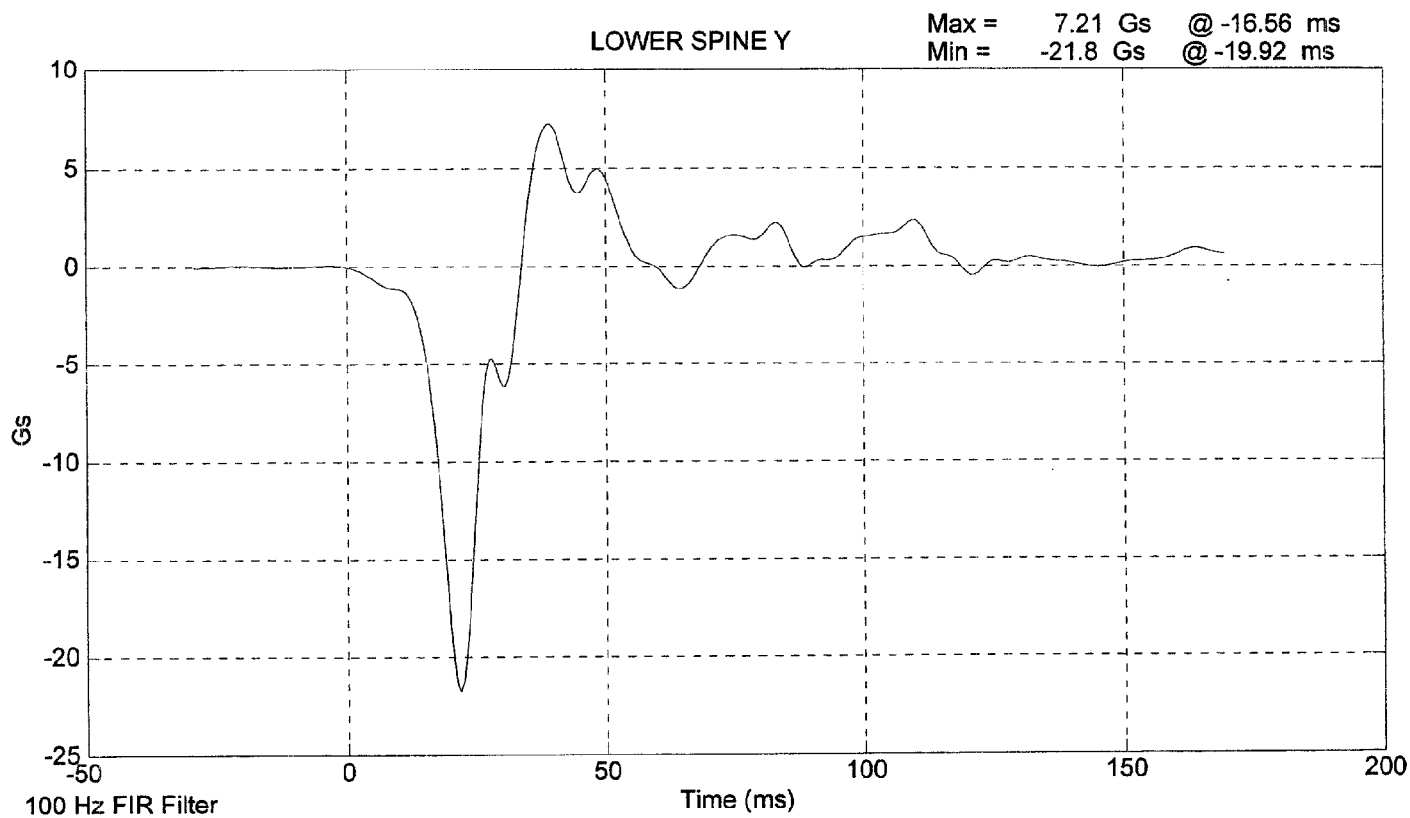
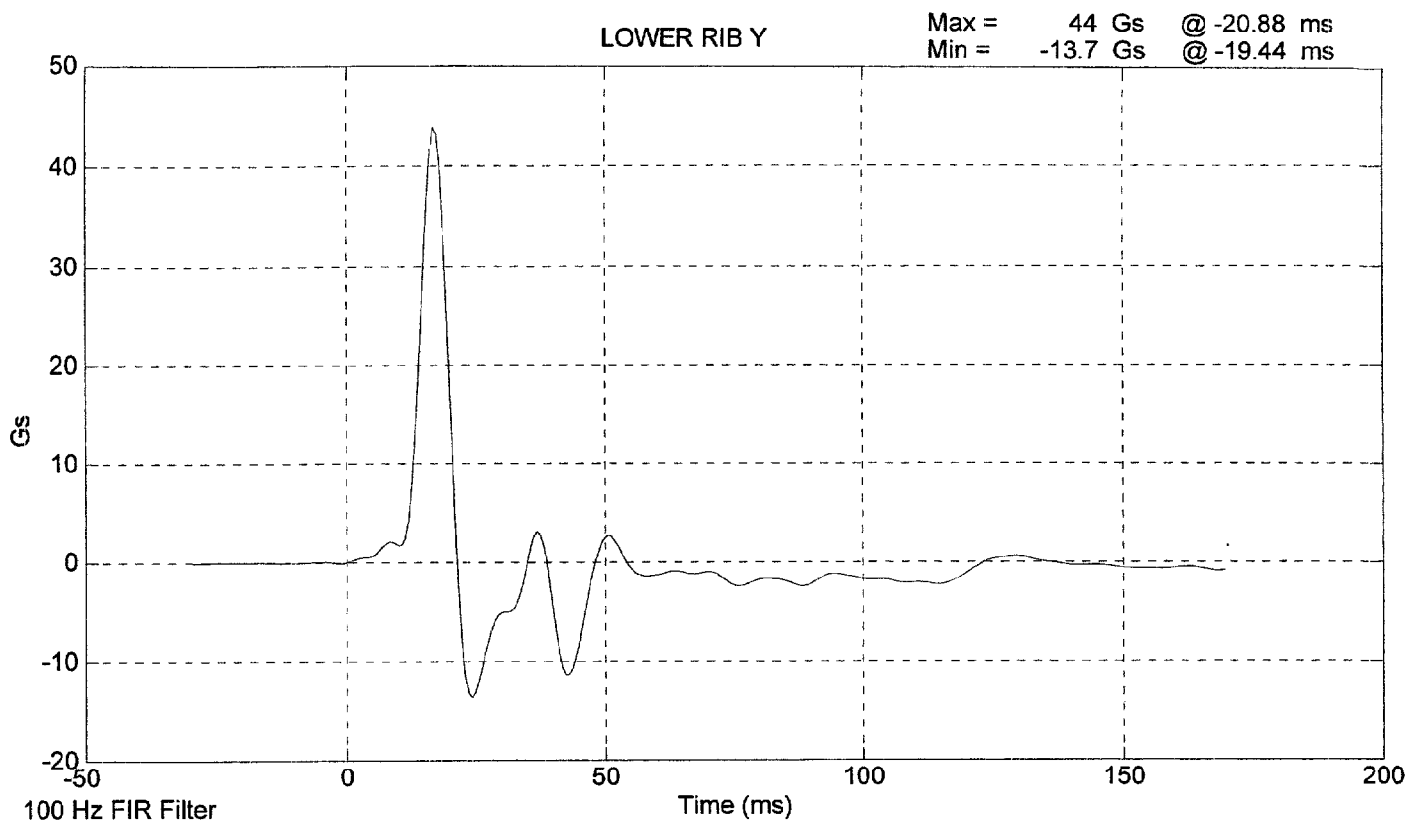
SID 027 THORAX IMPACT TEST @ 4.2977 m/s



SID 027 THORAX IMPACT TEST @ 4.2977 m/s



SID 027 THORAX IMPACT TEST @ 4.2977 m/s



**LATERAL PELVIS IMPACT TEST
PRE-TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 027

Calspan Sequential Test Number: 1

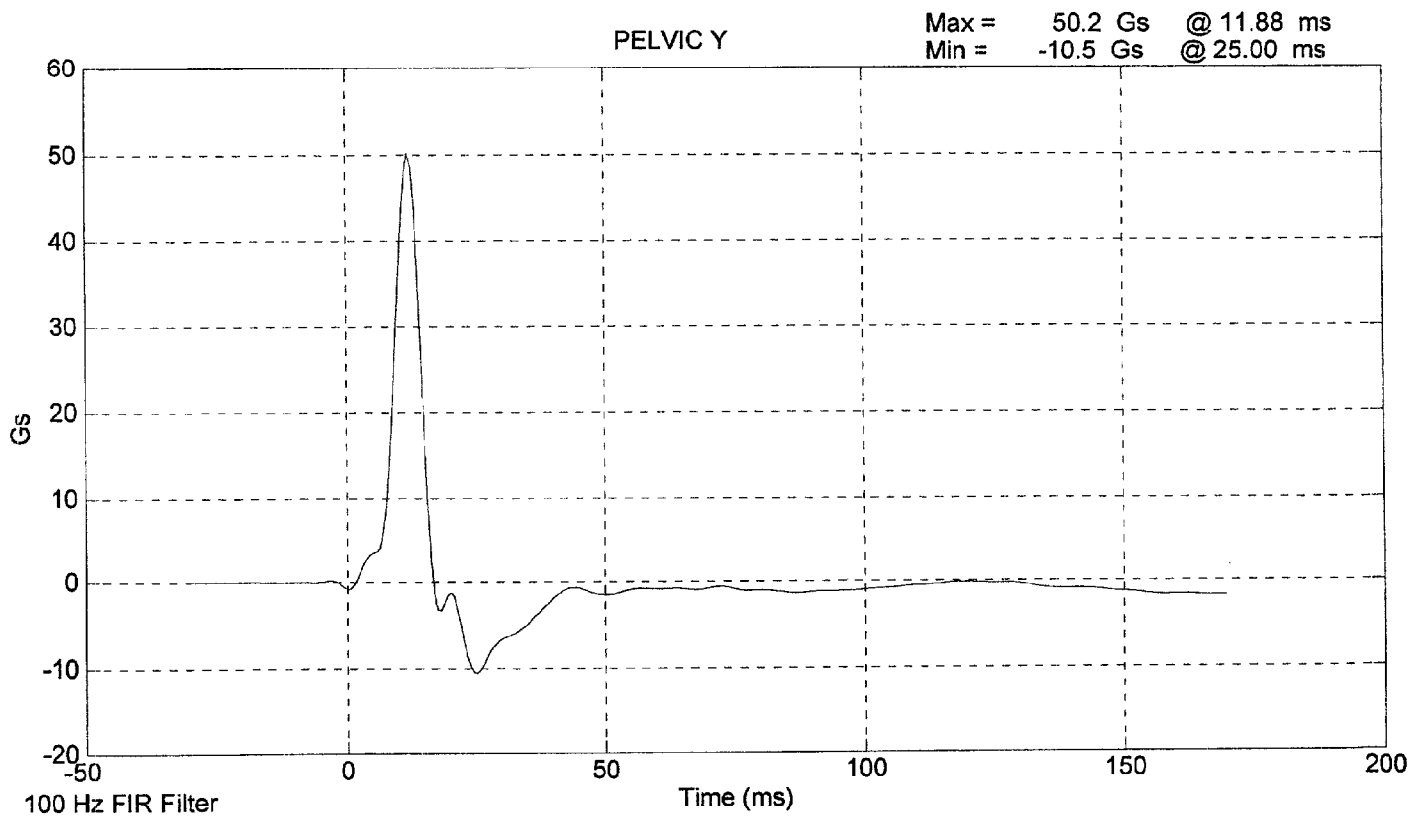
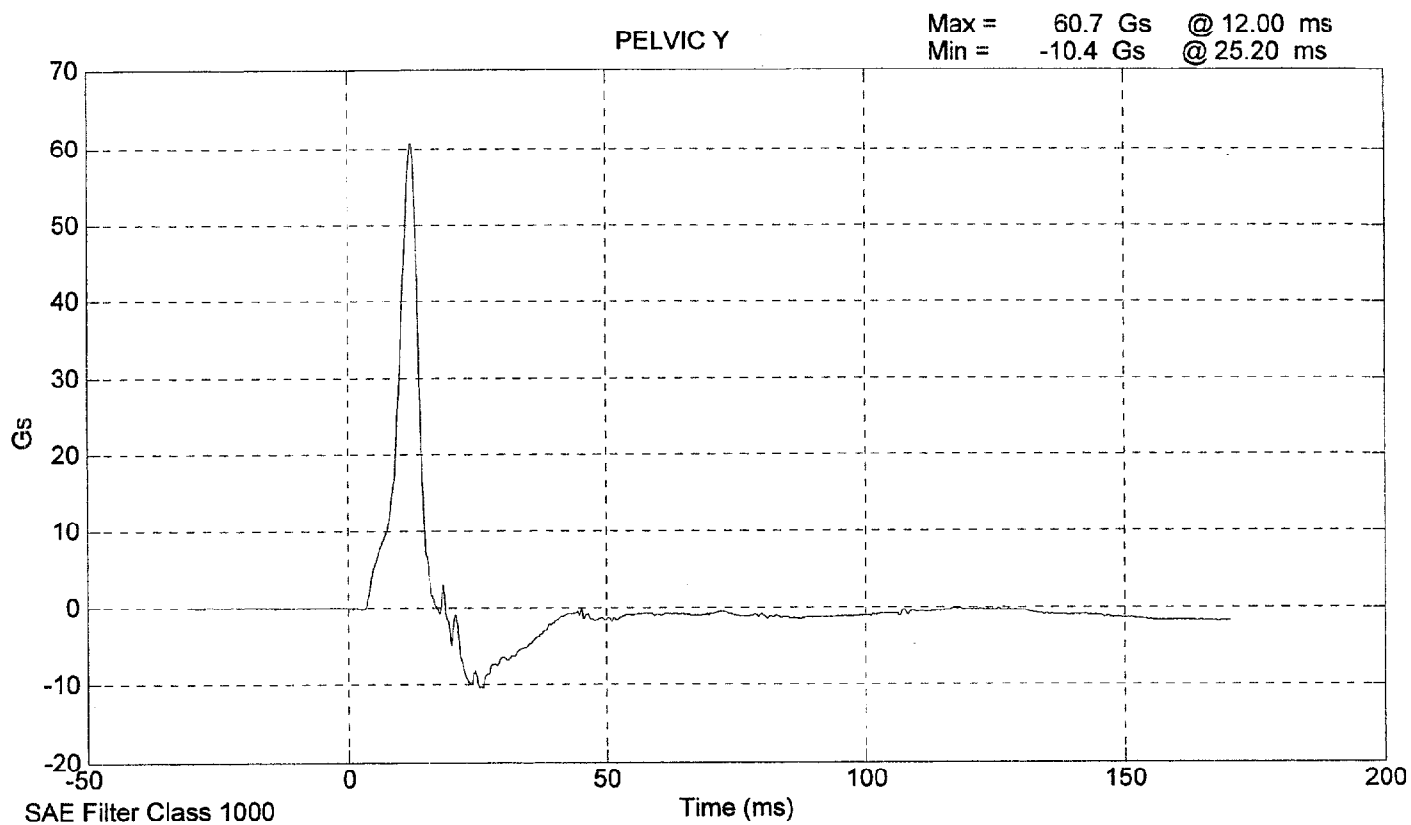
Date: 02-16-99

Laboratory Technician: B. Swiecicki, G. Serbinowski

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.7
RELATIVE HUMIDITY (%)	10 - 70	15
PROBE SPEED (m/s)	4.27 - 4.33	4.31
PELVIS ACCELERATION (g's)	40 - 60	50.22

REMARKS: None

SID 027 PELVIC IMPACT TEST @ 4.3068 m/s



ABDOMINAL COMPRESSION TEST**PRE-TEST**

(Test not required for SID certification)

CONFIGURED FOR LEFT SIDE IMPACTSID Serial No.: 027Calspan Sequential Test Number: 1Date: 02-15-99

Laboratory Technician:

B. Swiecicki, G. Serbinowski

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.7
RELATIVE HUMIDITY (%)	10 - 70	15
FORCE @ 13 mm (N)	104 - 162	106.8
FORCE @ 19 mm (N)	163 - 221	169.0
FORCE @ 25 mm (N)	222 - 280	246.9
FORCE @ 33 mm (N)	325 - 391	371.4

REMARKS: None

Dummy S/N 027

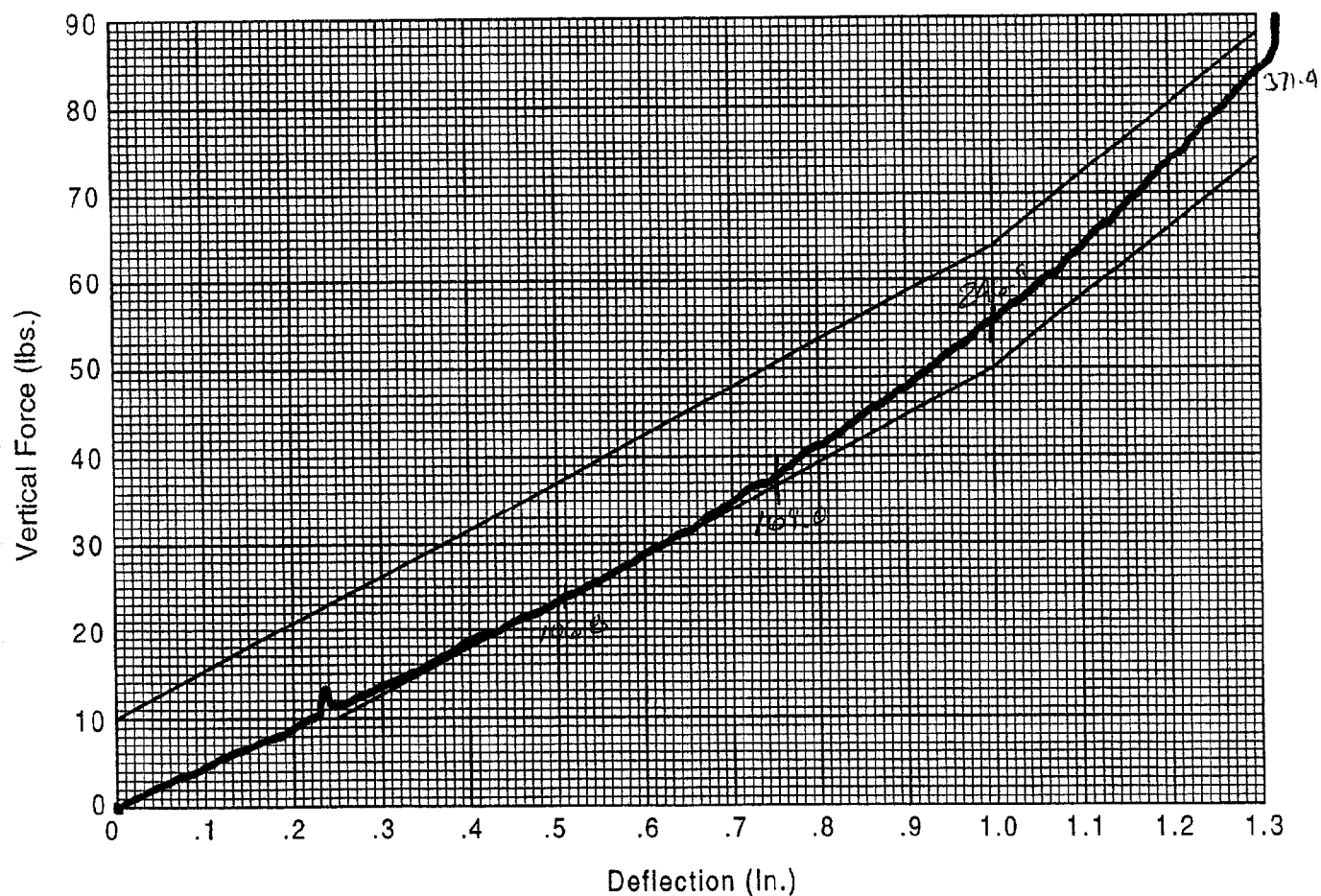
W/A _____

Date 2-15-99

Performed By (GP)

Temp. 71'

Humidity 15%



Hybrid II
Abdomen Static Press

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

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 027
Date: 02-15-99

Calspan Sequential Test Number: 1
Laboratory Technician: B. Swiecicki, G. Serbinowski

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.7
RELATIVE HUMIDITY (%)	10 - 70	16
FORCE @ 0° (N)	0 - 26.7	22.2
FORCE @ 20° (N)	97.8 - 151.2	135.7
FORCE @ 30° (N)	151.2 - 204.6	195.7
FORCE @ 40° (N)	204.6 - 258	246.9
RETURN ANGLE	12° max.	6.5

REMARKS: None

027

2-15-99

W/A

00

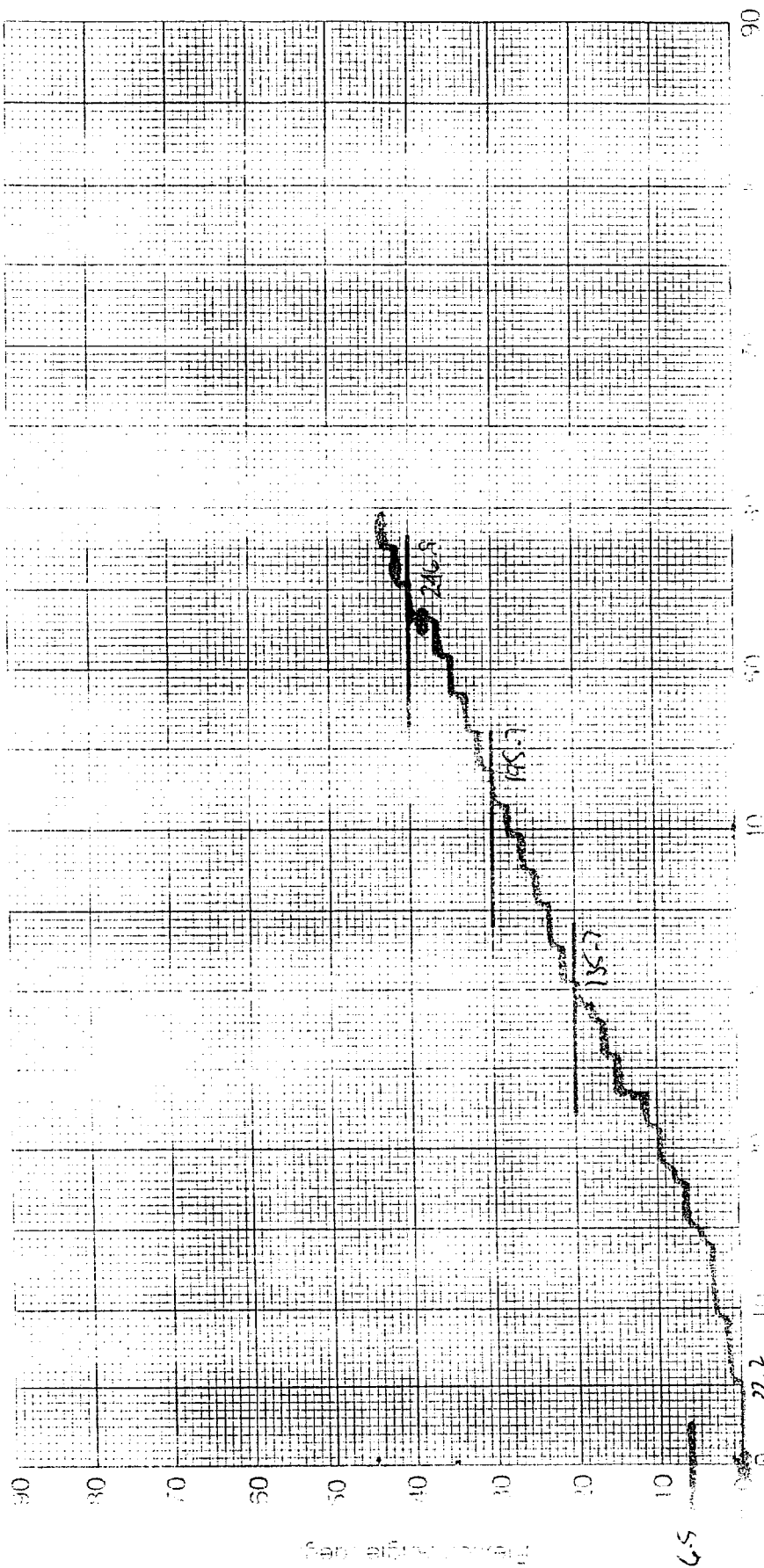
Prefect

Temp

Humidity

71°

16%



PRE-TEST DUMMY INSPECTION LIST

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 027

Calspan Sequential Test Number: 1

Date: 02-12-99

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.: 016

CONFIGURED FOR LEFT SIDE IMPACT

**CALIBRATION TEST RESULTS SUMMARY
PRE-TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 016
Date: 02-16-99

Calspan Sequential Test Number: 1
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.: 016Calspan Sequential Test Number: 1Date: 02-12-99Laboratory Technician: B. Swiecicki, G. Serbinowski

TEST PARAMETER	SPECIFICATION	TEST RESULTS
SH- Seated Height (mm)	889 - 909	902
RH- Rib Height (mm)	502 - 520	513
HP- Hip Pivot Height (mm)	99 ref.	99
RD- Rib from Back Line (mm)	229 - 241	240
KH- Knee Pivot from Back Line (mm)	511 - 526	526
KV- Knee Pivot to Floor (mm)	490 - 505	494
HW- Hip Width (mm)	356 - 391	361

REMARKS: None

**THORACIC SHOCK ABSORBER TESTS
PRE-TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 016 Calspan Sequential Test Number: 1
 Date: 02-15-99 Laboratory Technician: B. Swiecicki, G. Serbinowski

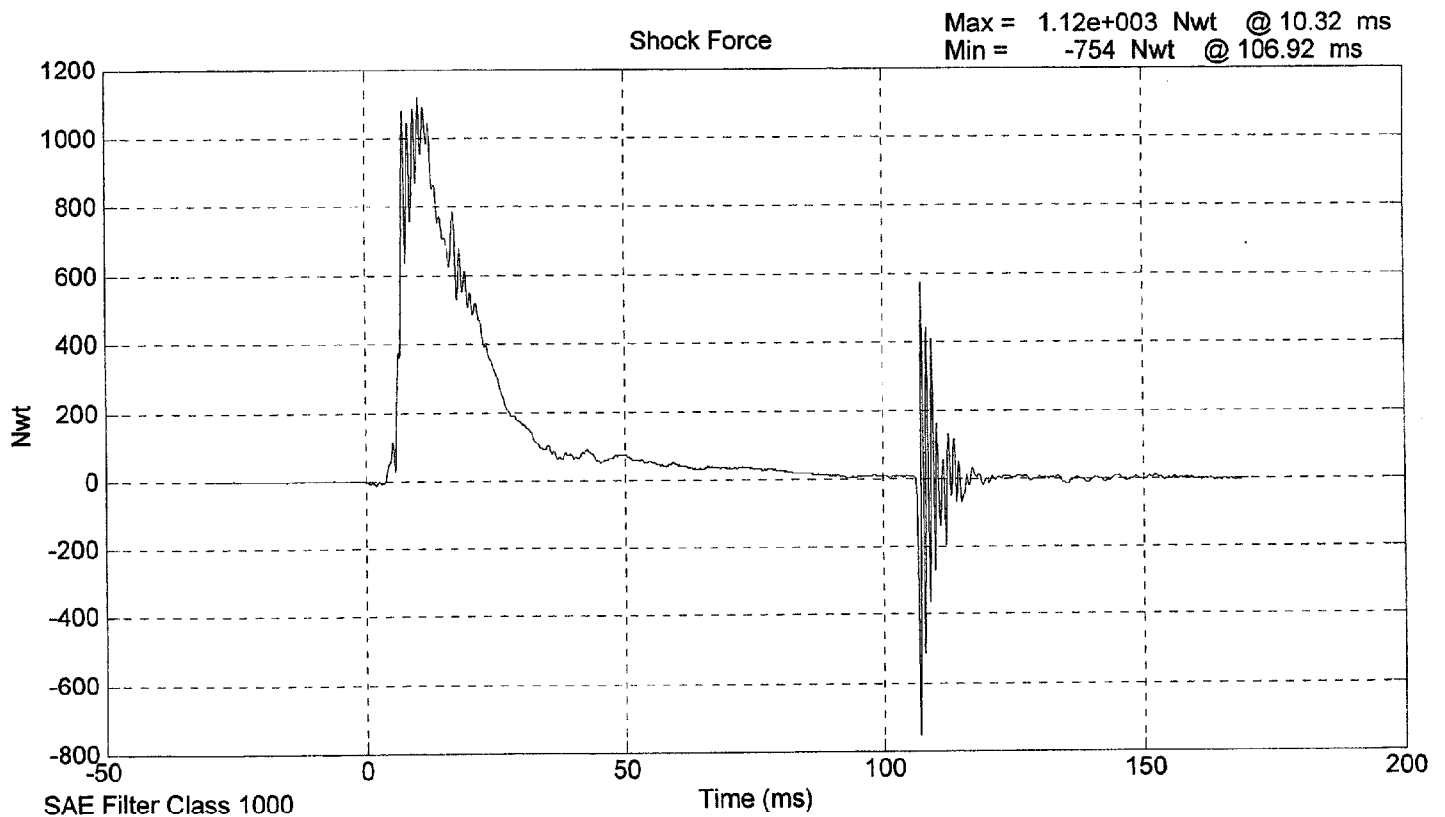
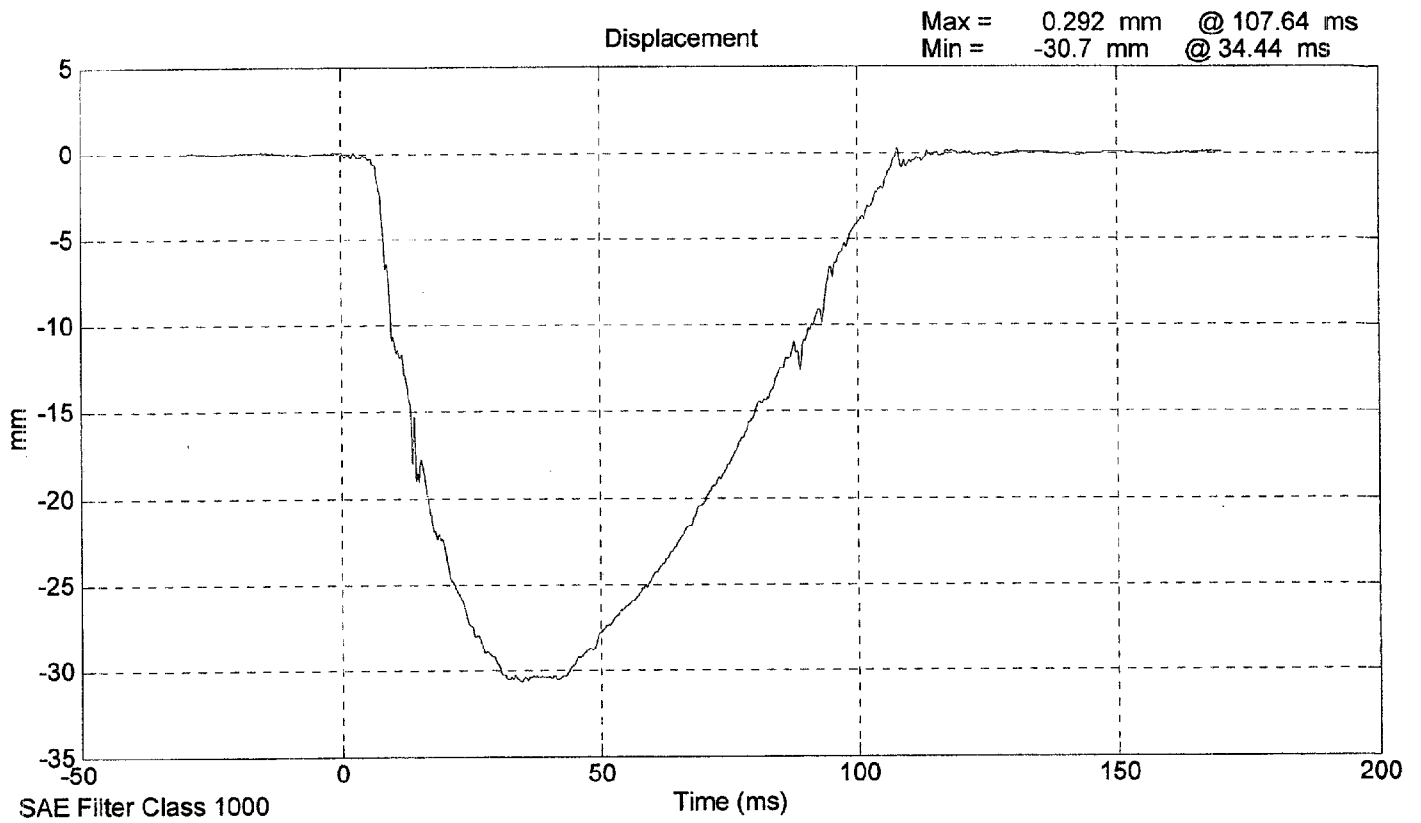
DAMPER IDENTIFICATION: 016

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)		18.9 - 25.5	21.7
RELATIVE HUMIDITY (%)		10 - 70	15
VELOCITY 3.05 m/s	FORCE (N)	836 - 1125	1116.6
	DISPLACEMENT (mm)	30 - 35	30.5
VELOCITY 4.27 m/s	FORCE (N)	1730 - 2099	2065.0
	DISPLACEMENT (mm)	32 - 37	33.0
VELOCITY 6.10 m/s	FORCE (N)	3741 - 4448	3980.3
	DISPLACEMENT (mm)	33 - 40	34.8

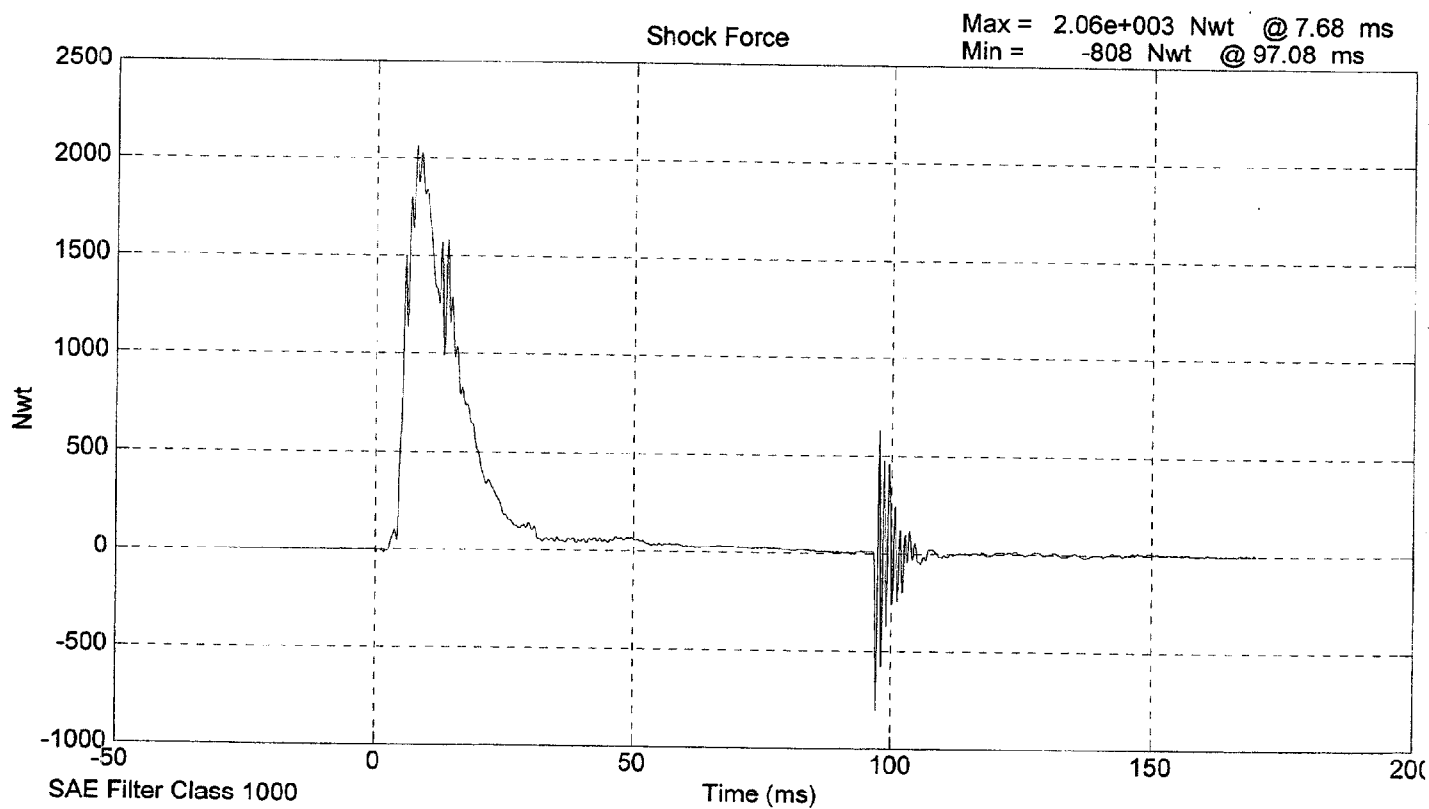
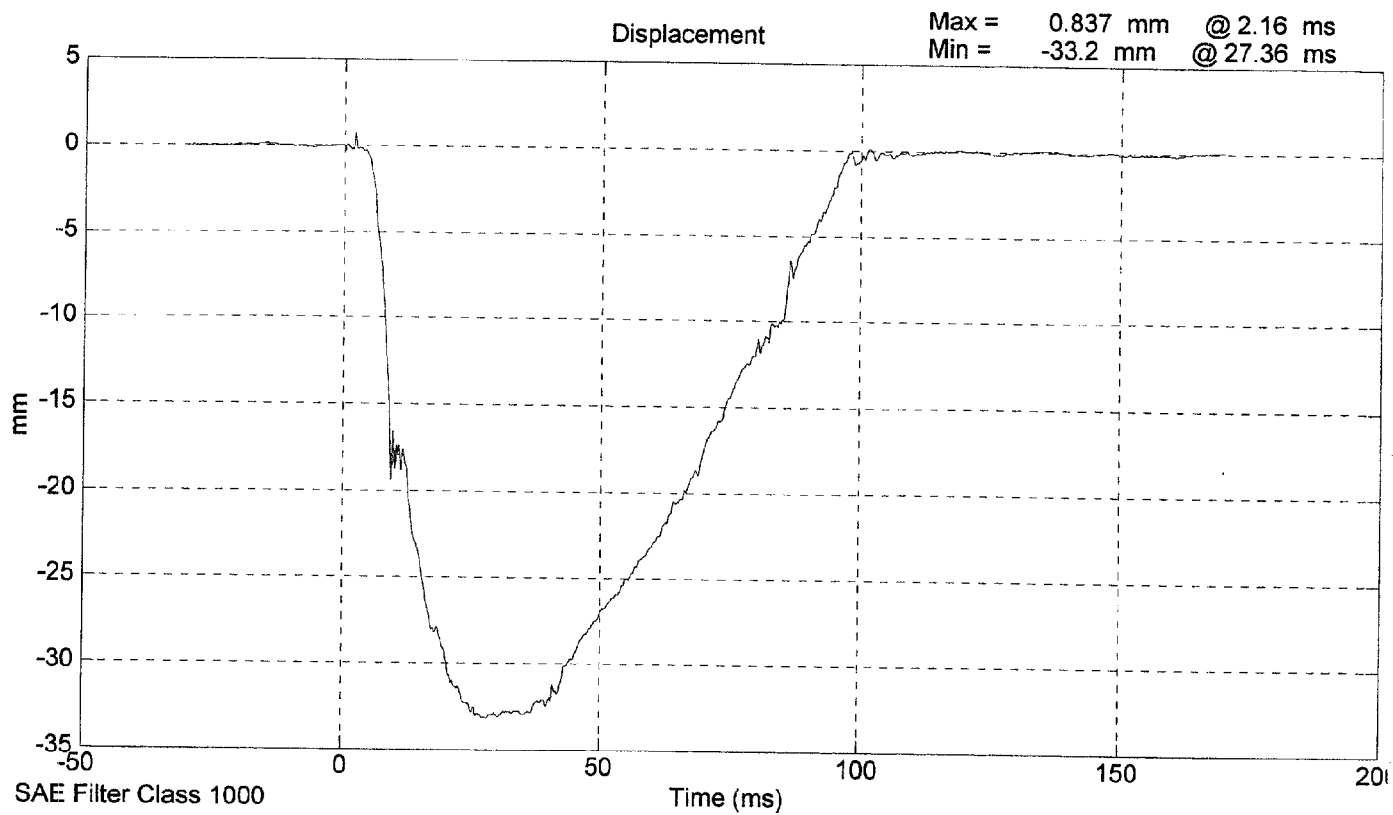
DAMPER SETTING: 5

REMARKS: None

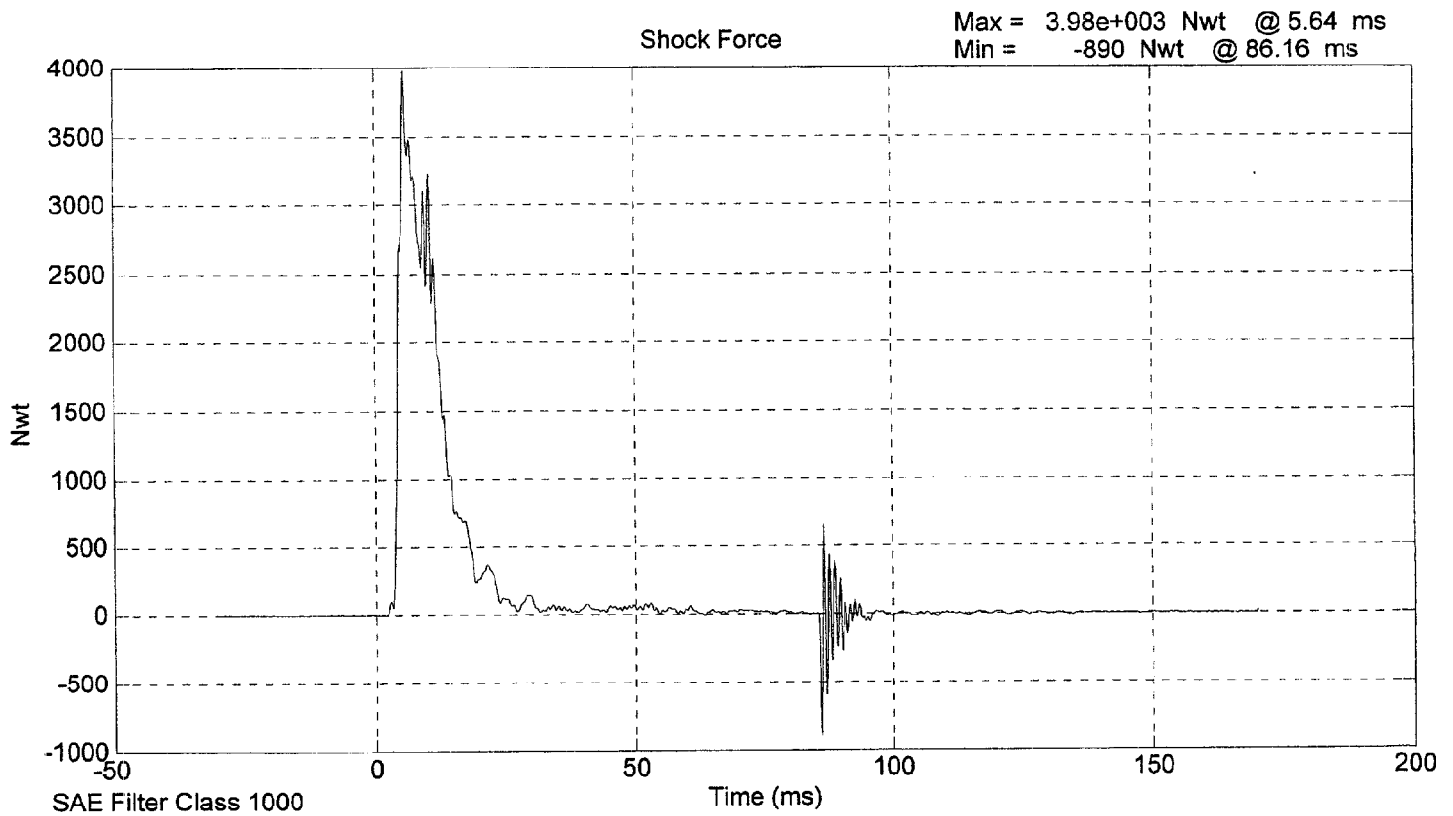
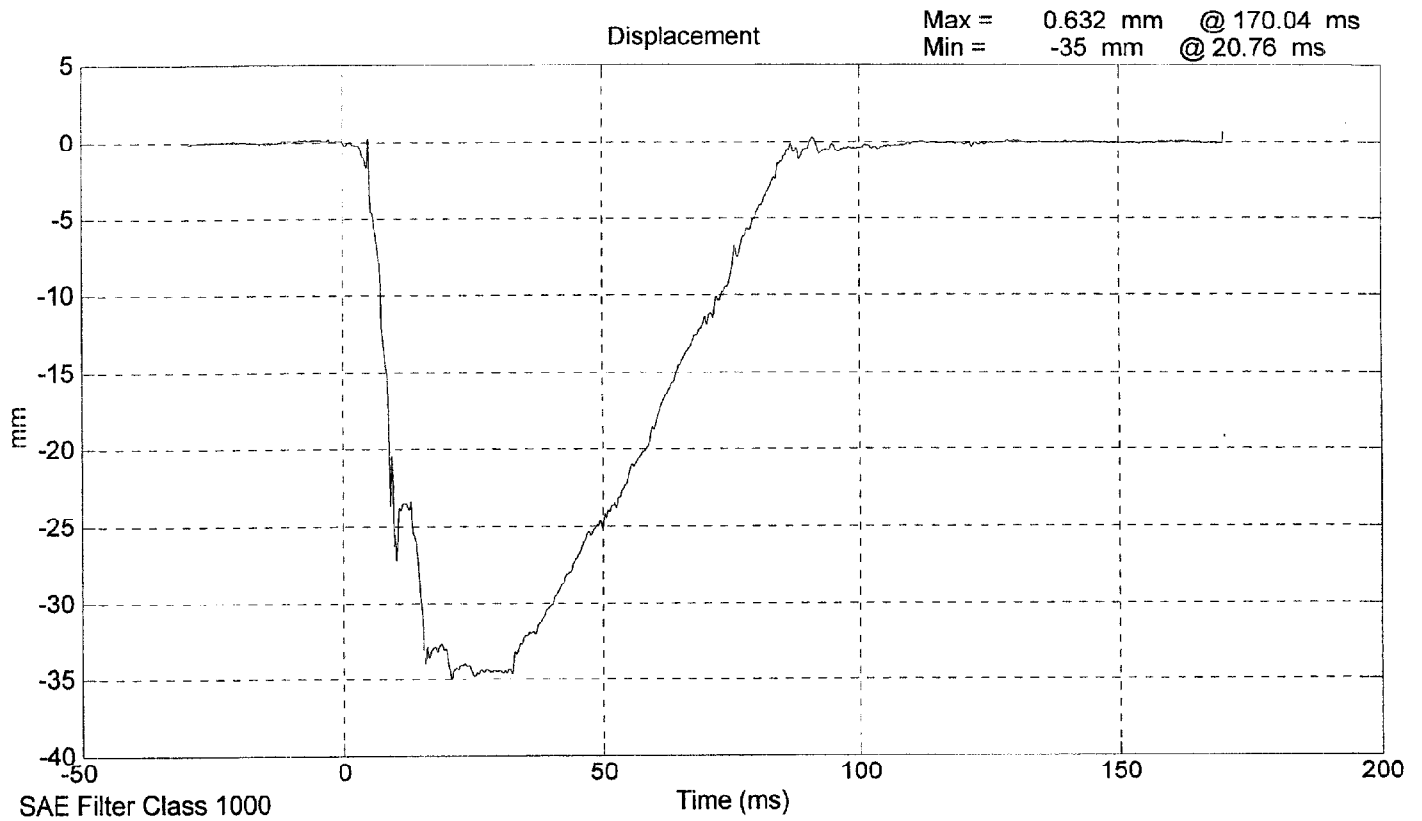
SID Shock Absorber Impact Test 016 @ 3.0358 m/s



SID Shock Absorber Impact Test 016 @ 4.2855 m/s



SID Shock Absorber Impact Test 016 @ 6.1021 m/s



**LATERAL THORAX IMPACT TEST
PRE-TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 016

Calspan Sequential Test Number: 1

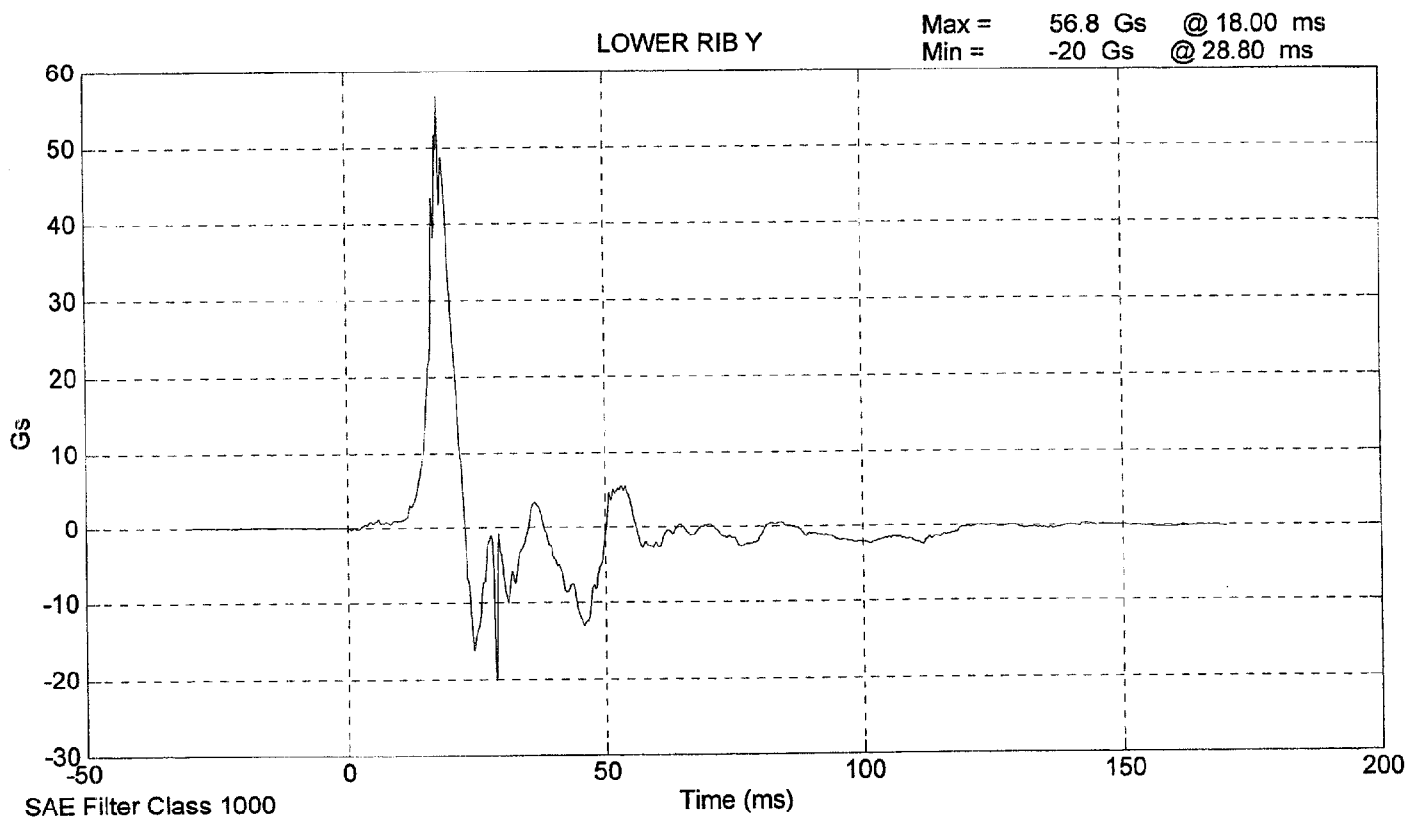
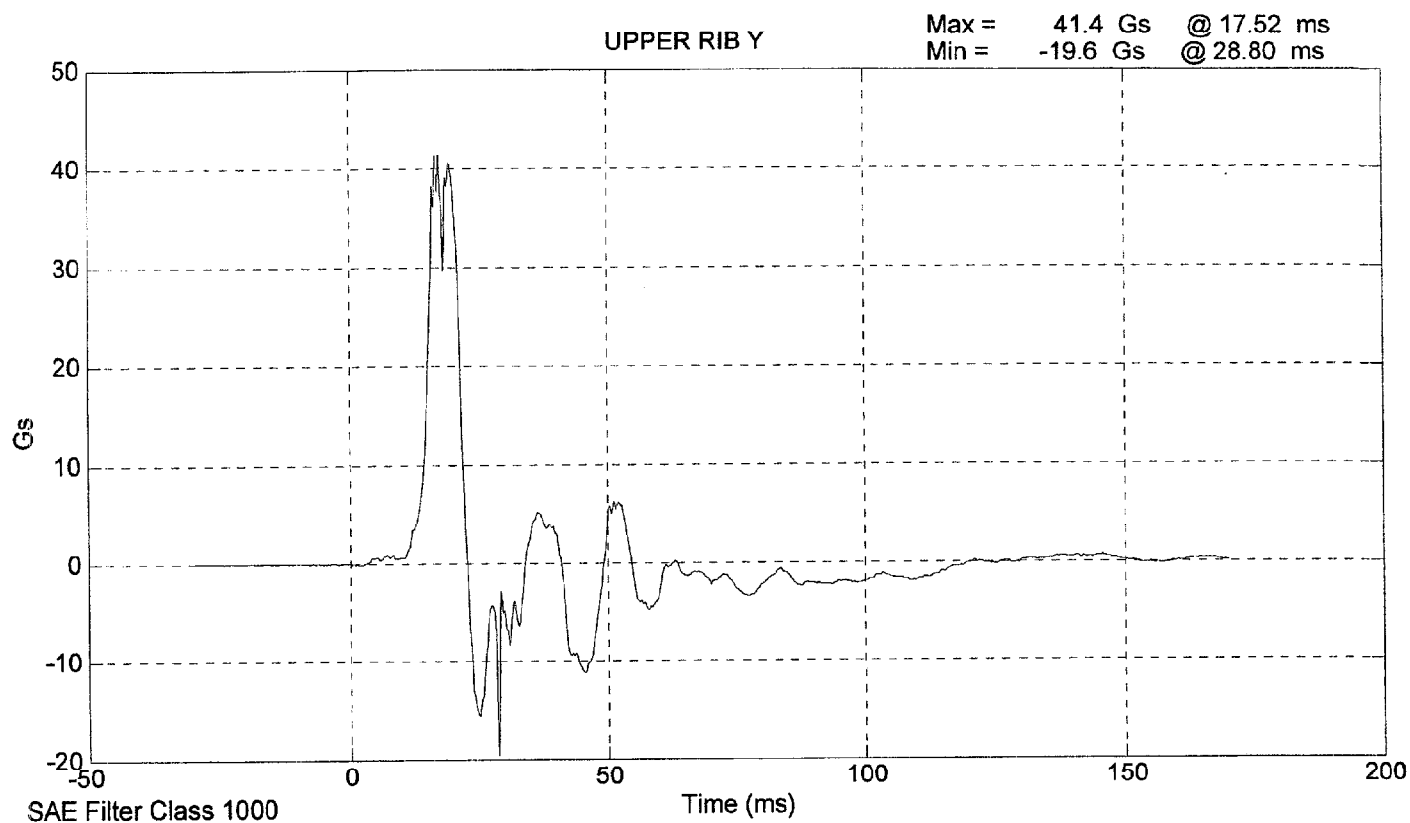
Date: 02-16-99

Laboratory Technician: B. Swiecicki, G. Serbinowski

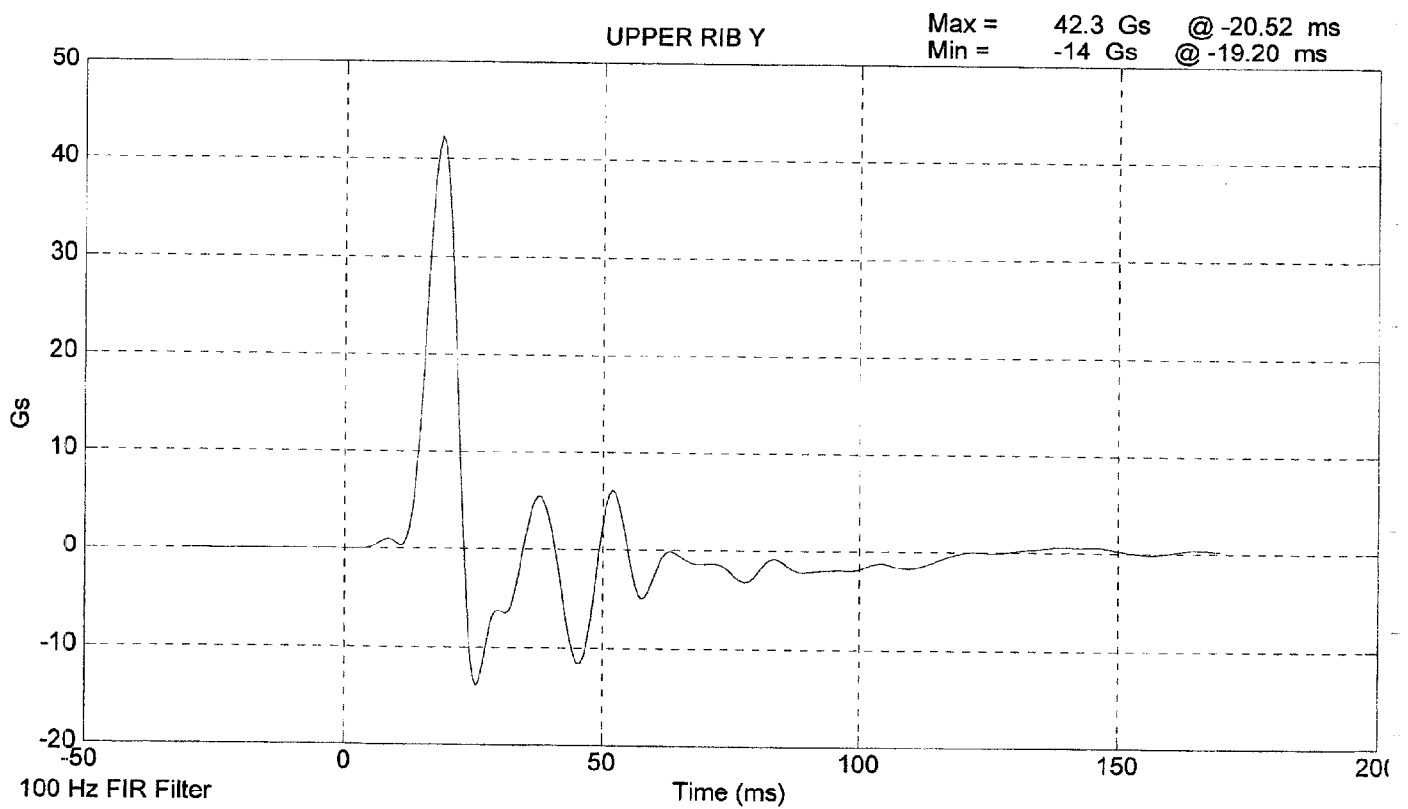
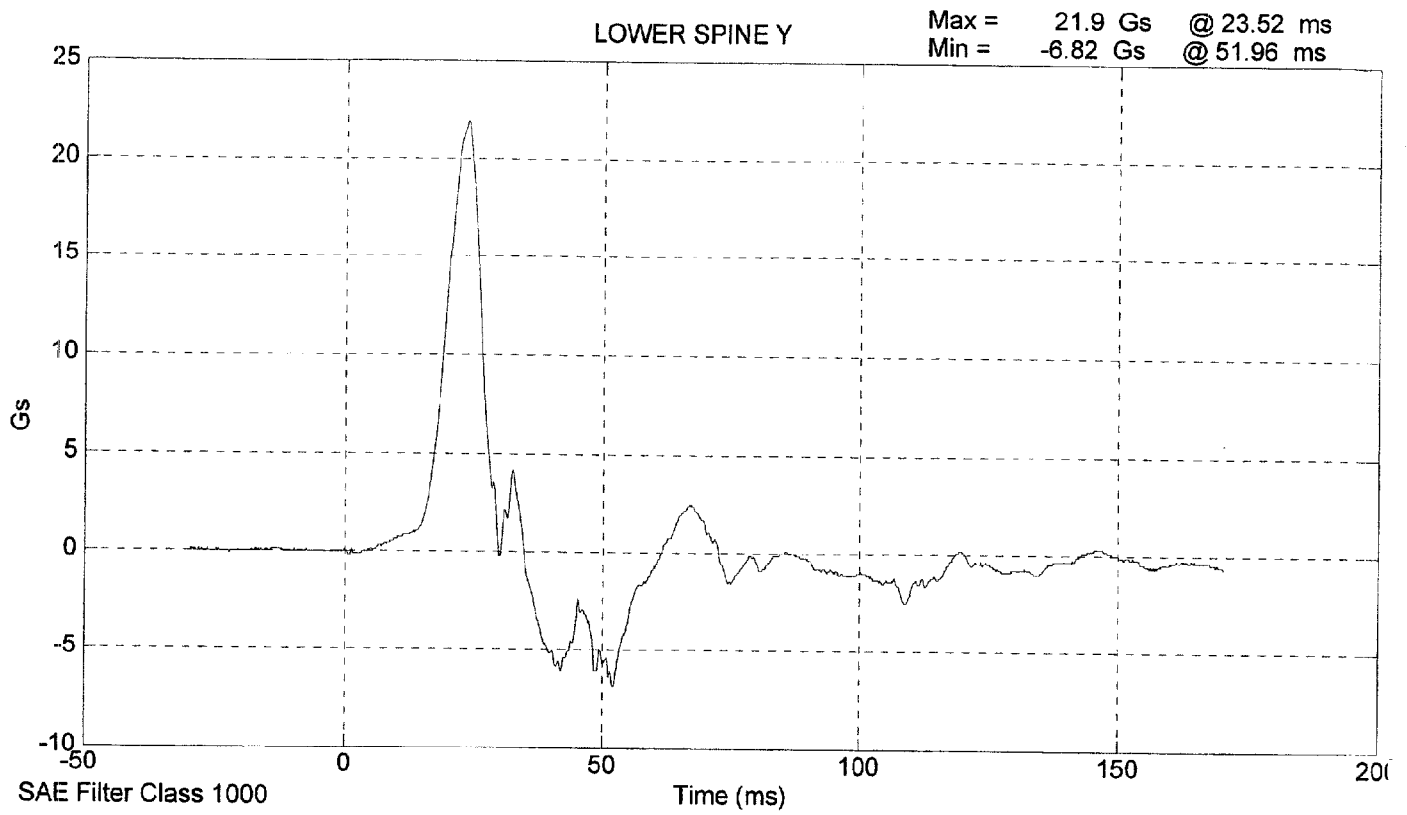
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.7
RELATIVE HUMIDITY (%)	10 - 70	15
PROBE SPEED (m/s)	4.27 - 4.33	4.31
UPPER RIB (g's)	37 - 46	42.3
LOWER RIB (g's)	37 - 46	45.7
LOWER SPINE (g's)	15 - 22	21.6

REMARKS: None

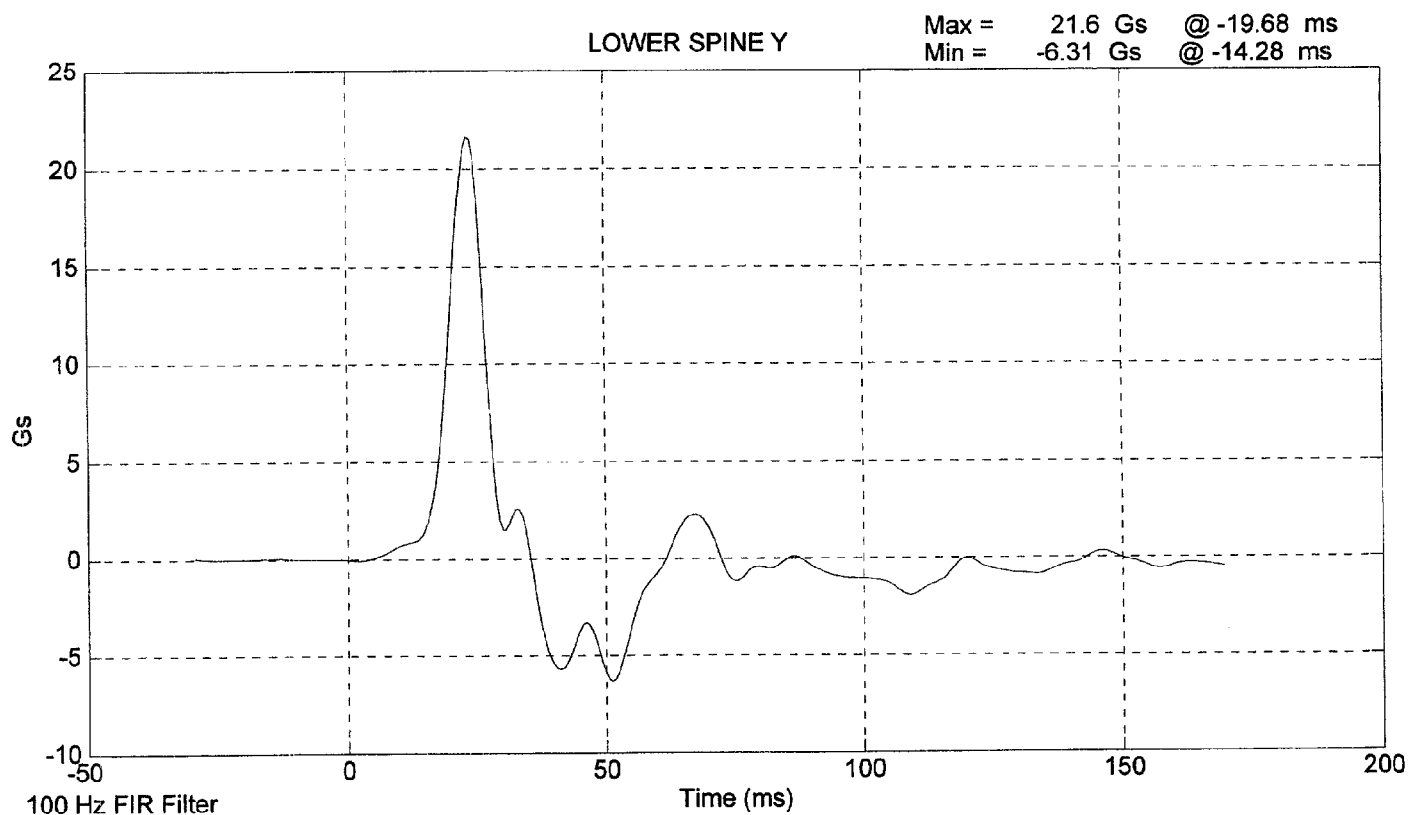
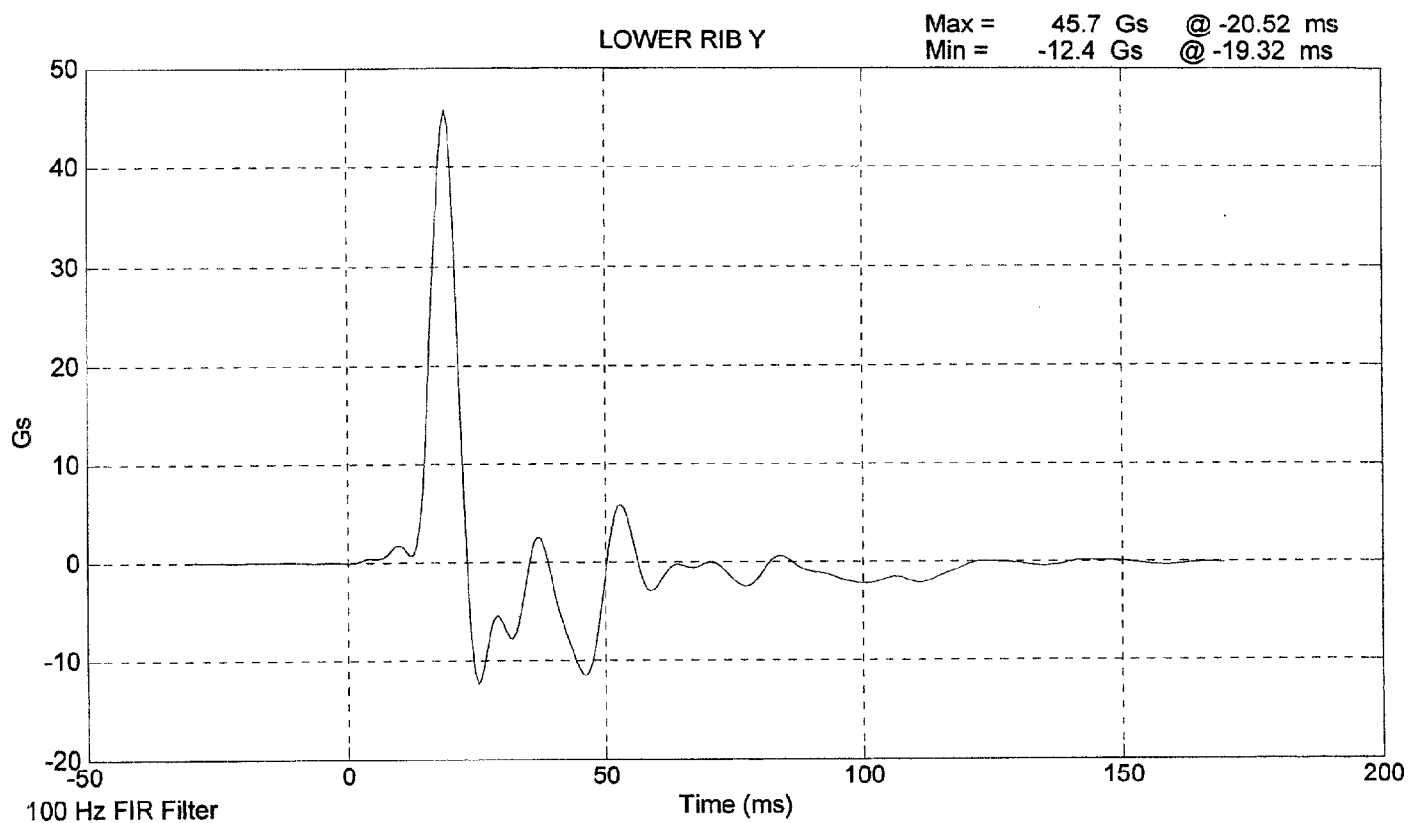
SID 016 THORAX IMPACT TEST @ 4.316 m/s



SID 016 THORAX IMPACT TEST @ 4.316 m/s



SID 016 THORAX IMPACT TEST @ 4.316 m/s



**LATERAL PELVIS IMPACT TEST
PRE-TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 016

Calspan Sequential Test Number: 1

Date: 02-16-99

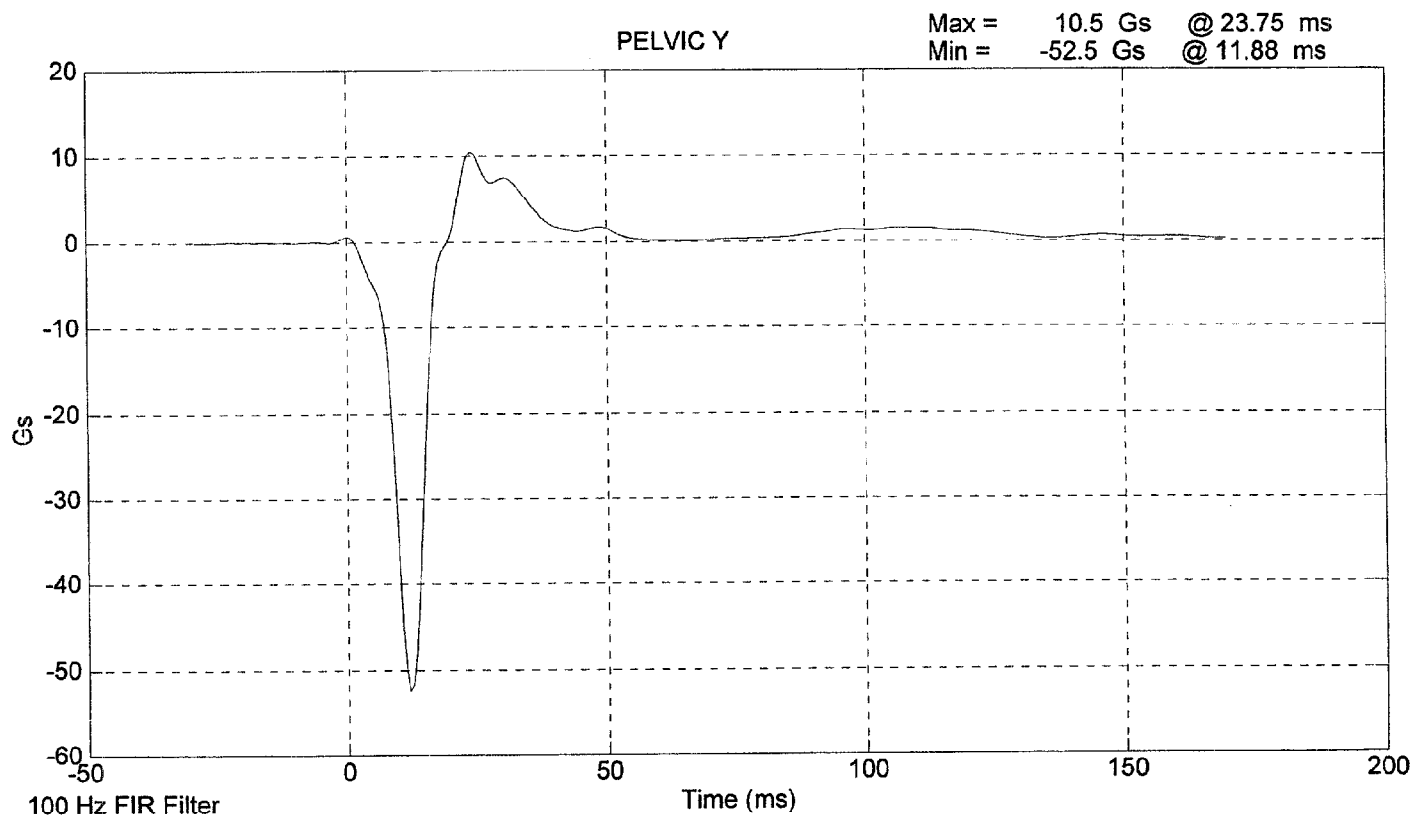
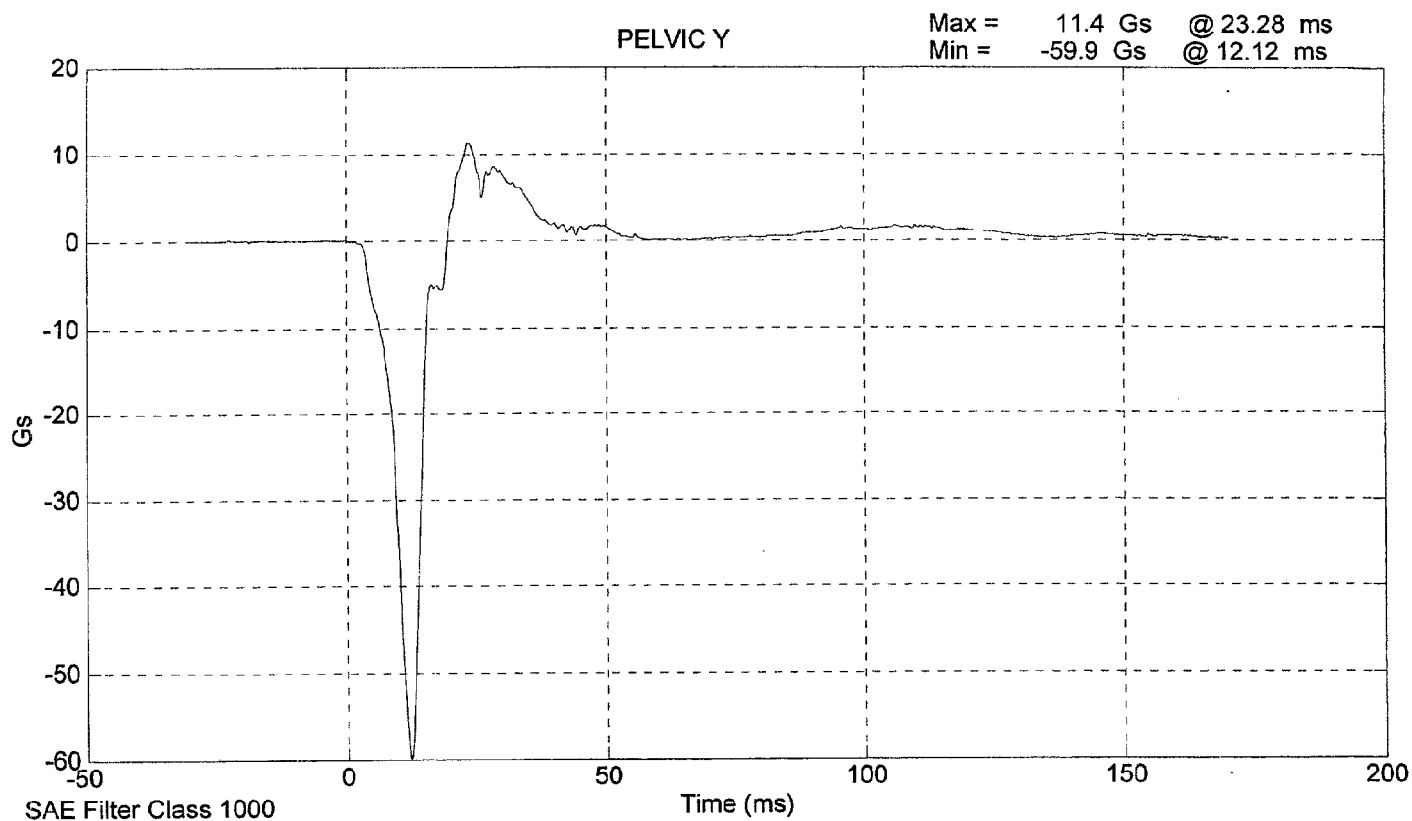
Laboratory Technician:

B. Swiecicki, G. Serbinowski

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.7
RELATIVE HUMIDITY (%)	10 - 70	15
PROBE SPEED (m/s)	4.27 - 4.33	4.29
PELVIS ACCELERATION (g's)	40 - 60	52.5

REMARKS: None

SID 016 PELVIC IMPACT TEST @ 4.2946 m/s



**ABDOMINAL COMPRESSION TEST
PRE-TEST**

(Test not required for SID certification)

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 016

Calspan Sequential Test Number: 1

Date: 02-15-99

Laboratory Technician:

B. Swiecicki, G. Serbinowski

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.7
RELATIVE HUMIDITY (%)	10 - 70	15
FORCE @ 13 mm (N)	104 - 162	109.0
FORCE @ 19 mm (N)	163 - 221	169.0
FORCE @ 25 mm (N)	222 - 280	251.3
FORCE @ 33 mm (N)	325 - 391	375.9

REMARKS: None

Dummy S/N 016

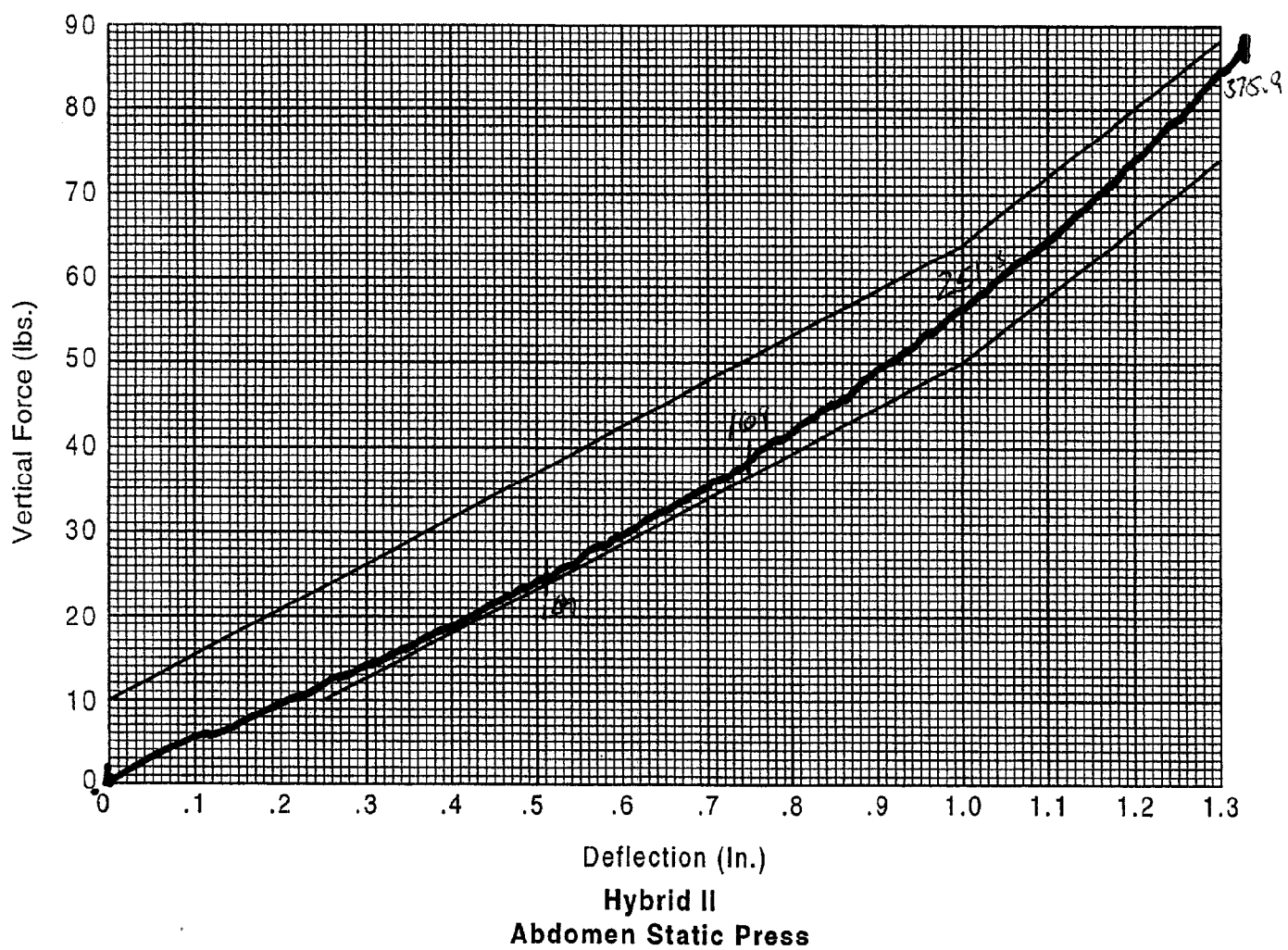
W/A _____

Date 2-15-99

Performed By GO

Temp. 71°

Humidity 15%



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

CONFIGURED FOR LEFT SIDE IMPACT

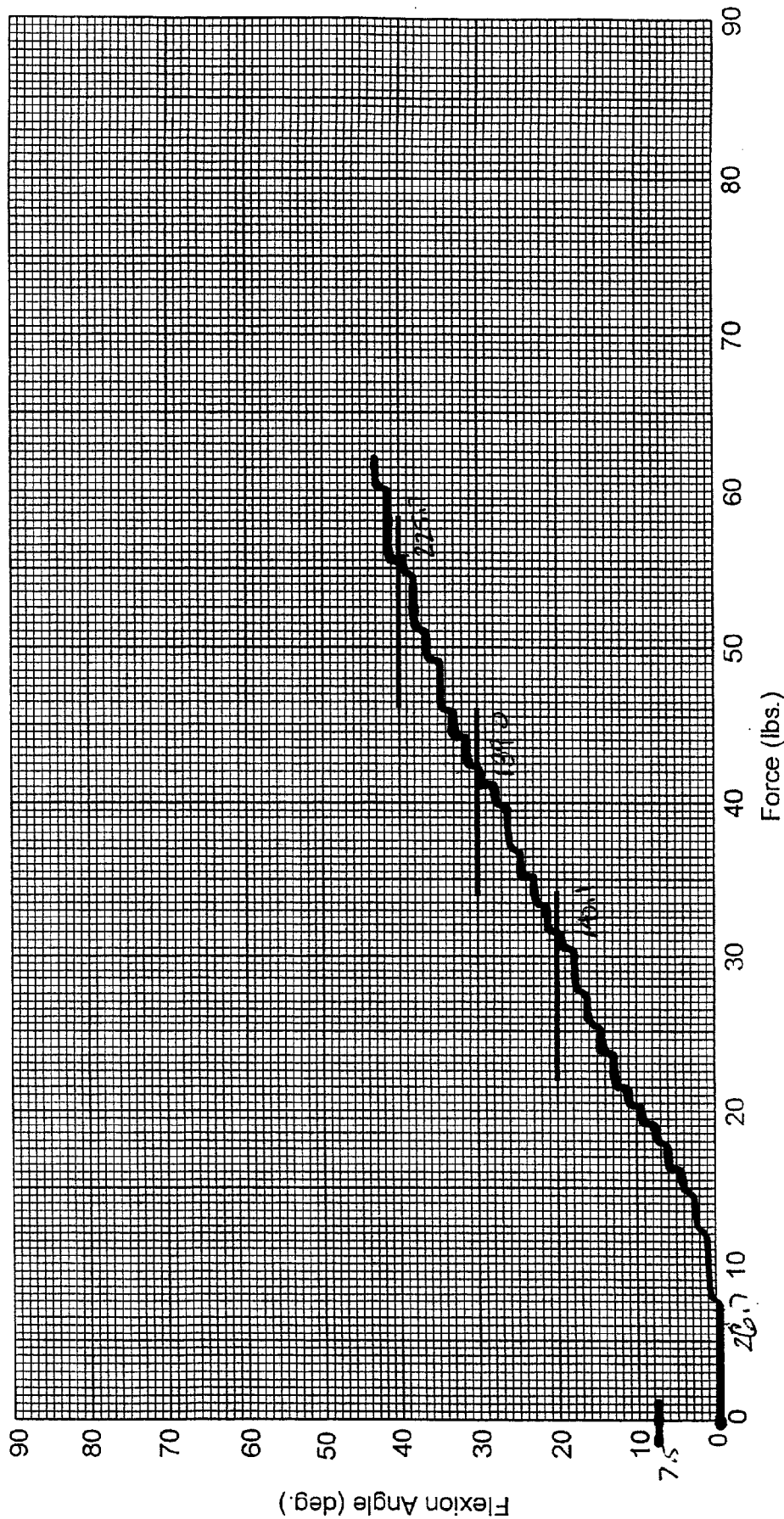
SID Serial No.: 016
Date: 02-15-99

Calspan Sequential Test Number: 1
Laboratory Technician: B. Swiecicki, G. Serbinowski

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.7
RELATIVE HUMIDITY (%)	10 - 70	16
FORCE @ 0° (N)	0 - 26.7	26.7
FORCE @ 20° (N)	97.8 - 151.2	140.1
FORCE @ 30° (N)	151.2 - 204.6	189.0
FORCE @ 40° (N)	204.6 - 258	225.7
RETURN ANGLE	12° max.	7.5

REMARKS: None

Dummy S/N 016
 WIA _____
 Date 2-15-99
 Performed By CS
 Temp. 71°
 Humidity 16%



Hybrid II Lumbar Spine Flexion Test

PRE-TEST DUMMY INSPECTION LIST

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 016

Calspan Sequential Test Number: 1

Date: 02-12-99

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.: 027

CONFIGURED FOR LEFT SIDE IMPACT

**CALIBRATION TEST RESULTS SUMMARY
POST TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 027 Calspan Sequential Test Number: 2
Date: 3/11/99 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.: 027Calspan Sequential Test Number: 2Date: 3/11/99Laboratory Technician: B. Swiecicki, G. Serbinowski

TEST PARAMETER	SPECIFICATION	TEST RESULTS
SH- Seated Height (mm)	889 - 909	909
RH- Rib Height (mm)	502 - 520	516
HP- Hip Pivot Height (mm)	99 ref.	99
RD- Rib from Back Line (mm)	229 - 241	239
KH- Knee Pivot from Back Line (mm)	511 - 526	516
KV- Knee Pivot to Floor (mm)	490 - 505	493
HW- Hip Width (mm)	356 - 391	366

REMARKS: None

**LATERAL THORAX IMPACT TEST
POST TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 027

Calspan Sequential Test Number: 2

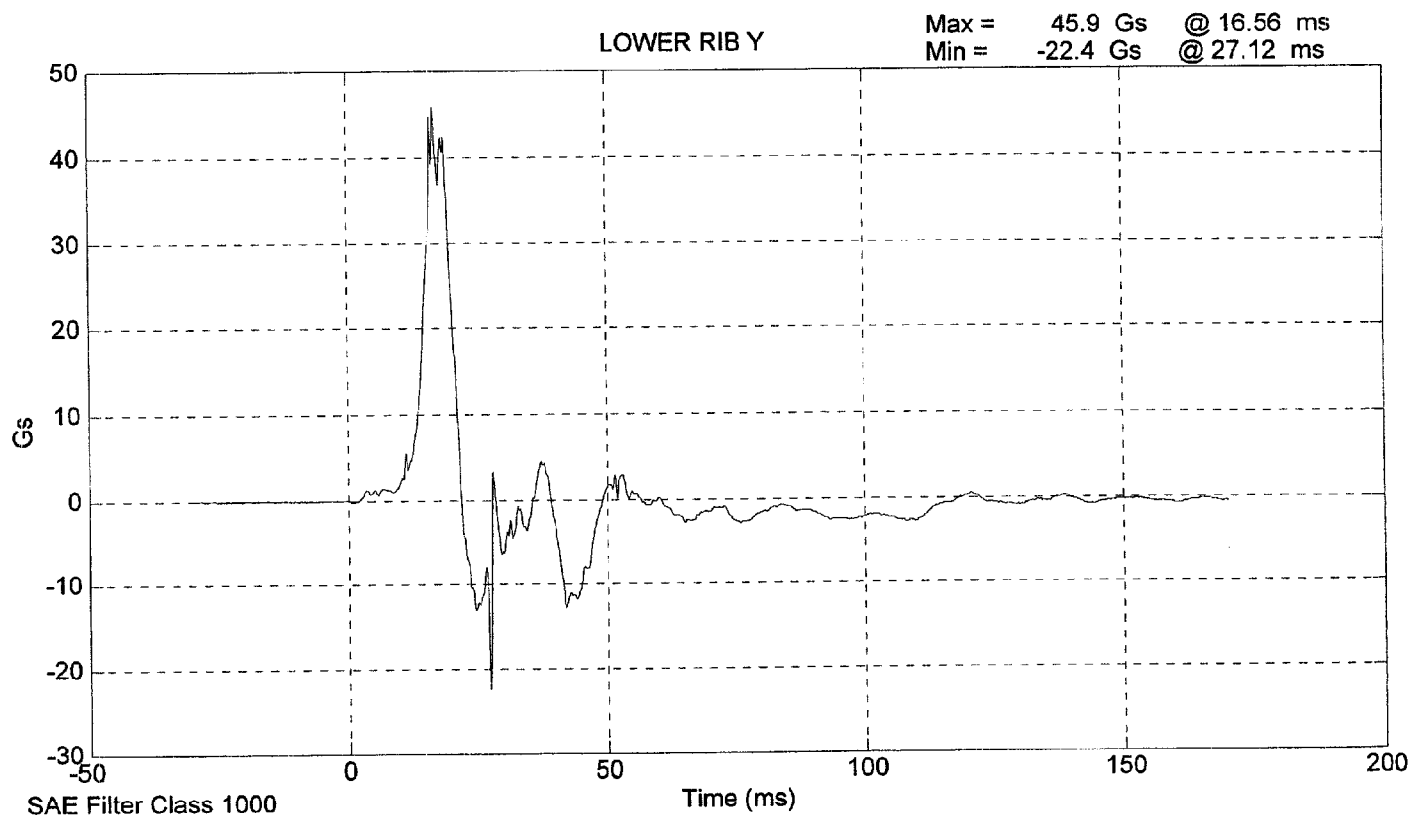
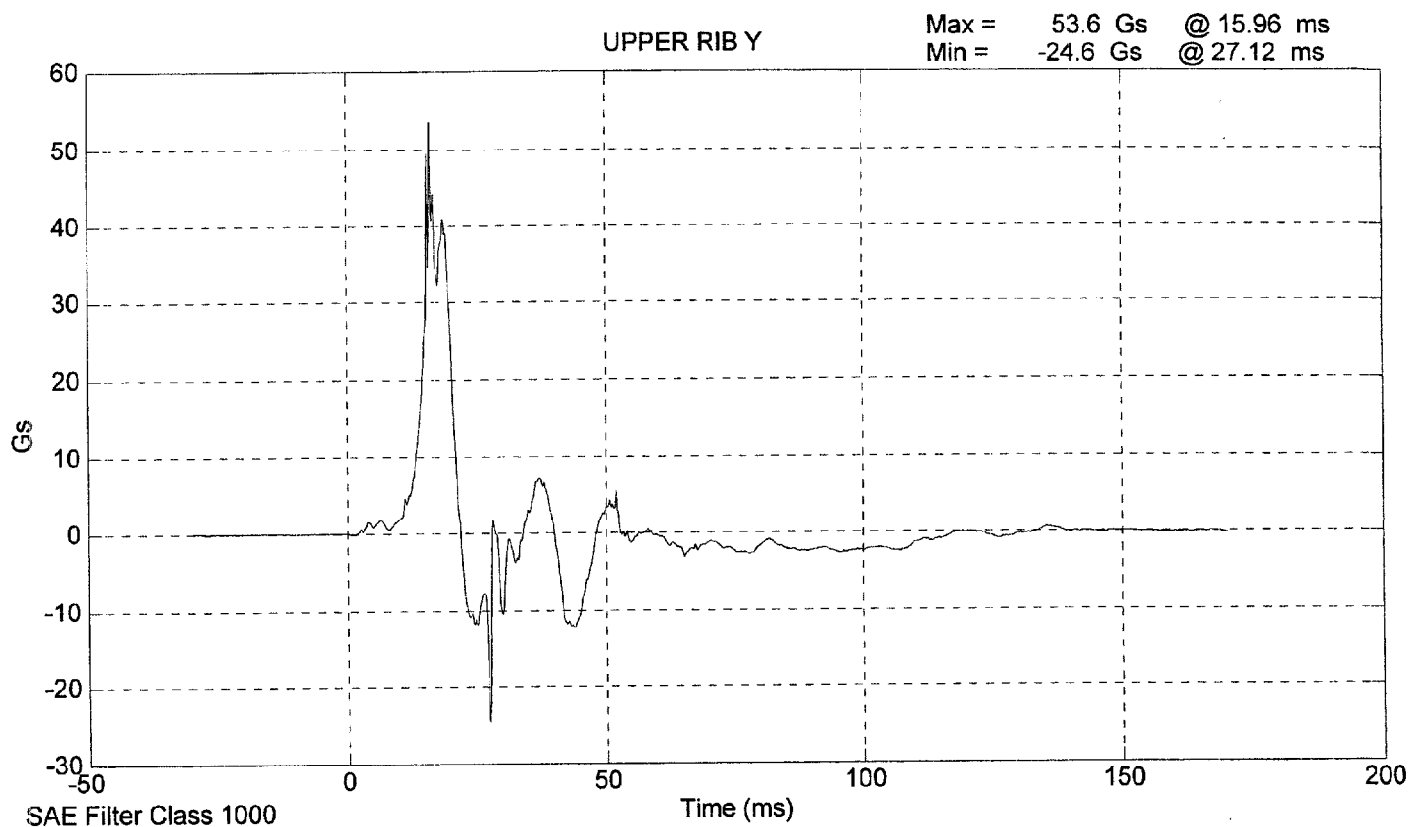
Date: 3/11/99

Laboratory Technician: B. Swiecicki, G. Serbinowski

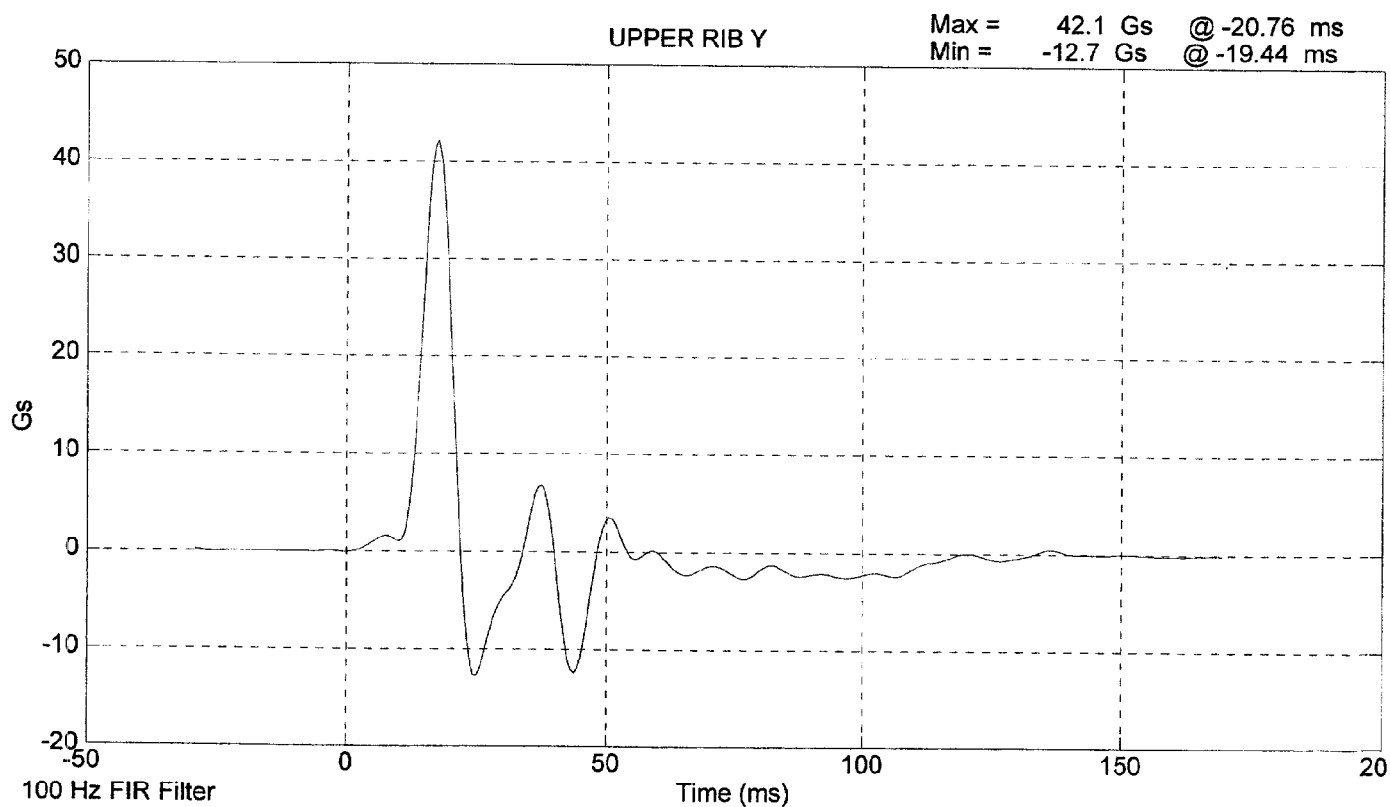
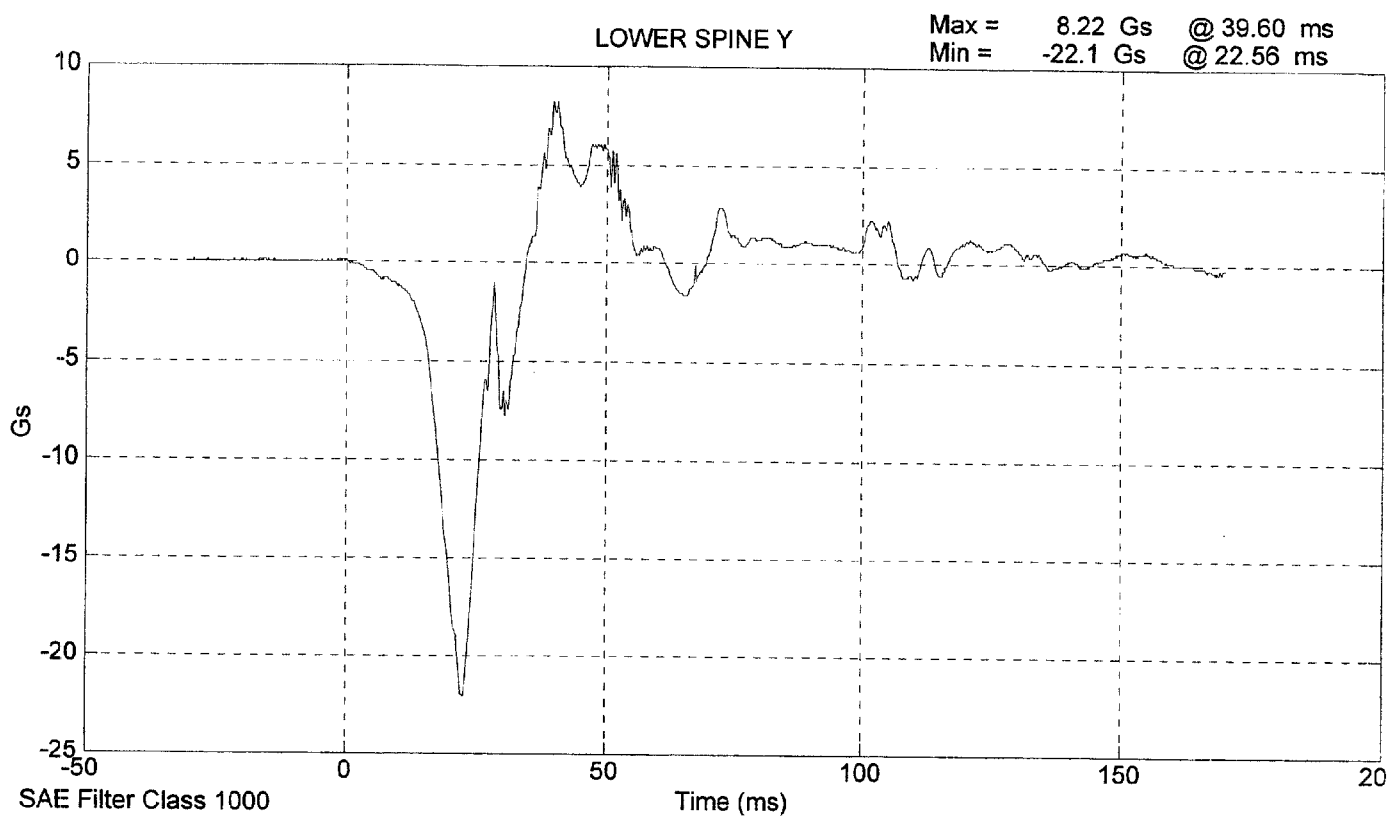
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21
RELATIVE HUMIDITY (%)	10 - 70	20
PROBE SPEED (m/s)	4.27 - 4.33	4.30
UPPER RIB (g's)	37 - 46	42.1
LOWER RIB (g's)	37 - 46	42.6
LOWER SPINE (g's)	15 - 22	20.9

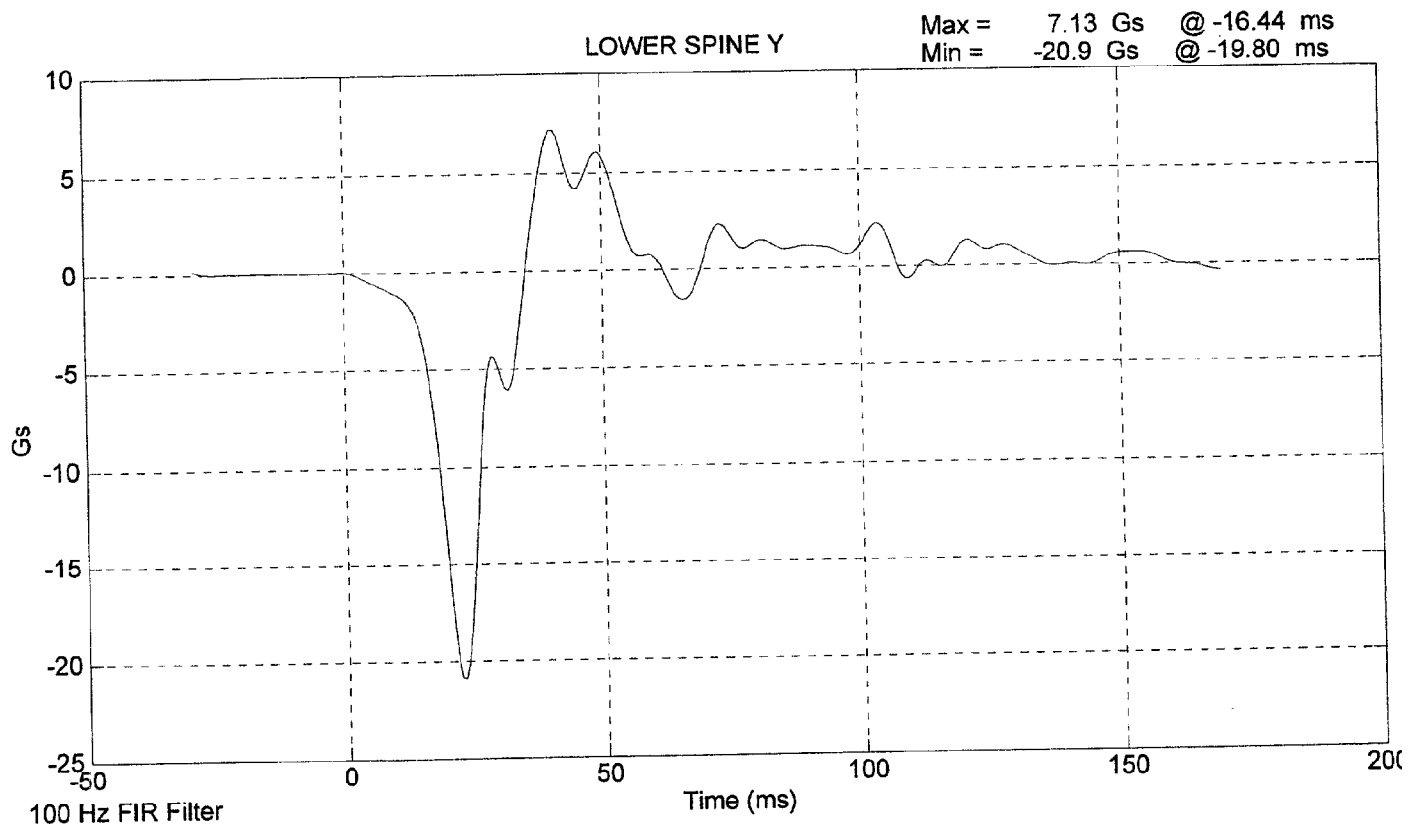
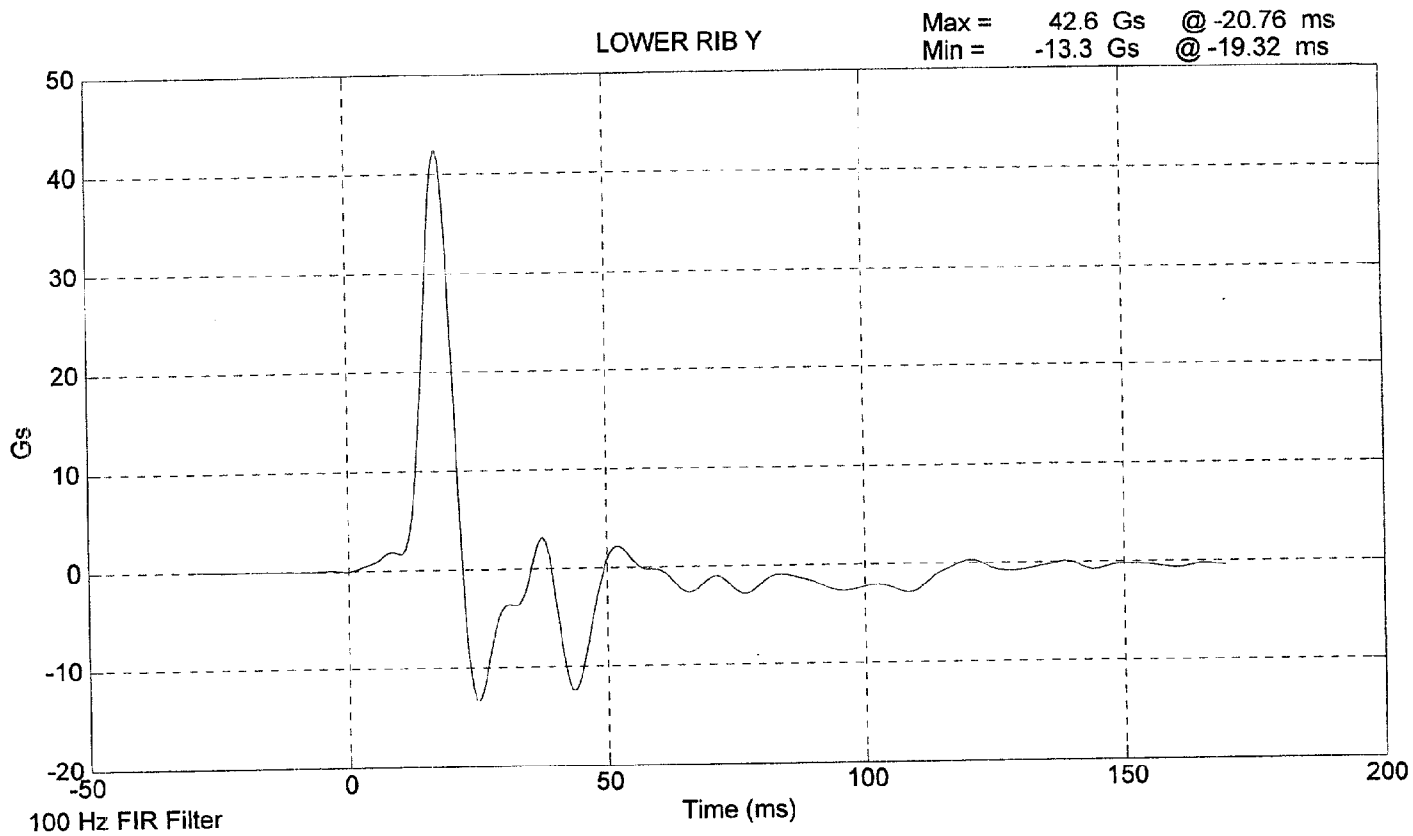
REMARKS: None

SID 027 THORAX IMPACT TEST @ 4.2977 m/s



SID 027 THORAX IMPACT TEST @ 4.2977 m/s





**LATERAL PELVIS IMPACT TEST
POST TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 027

Calspan Sequential Test Number: 2

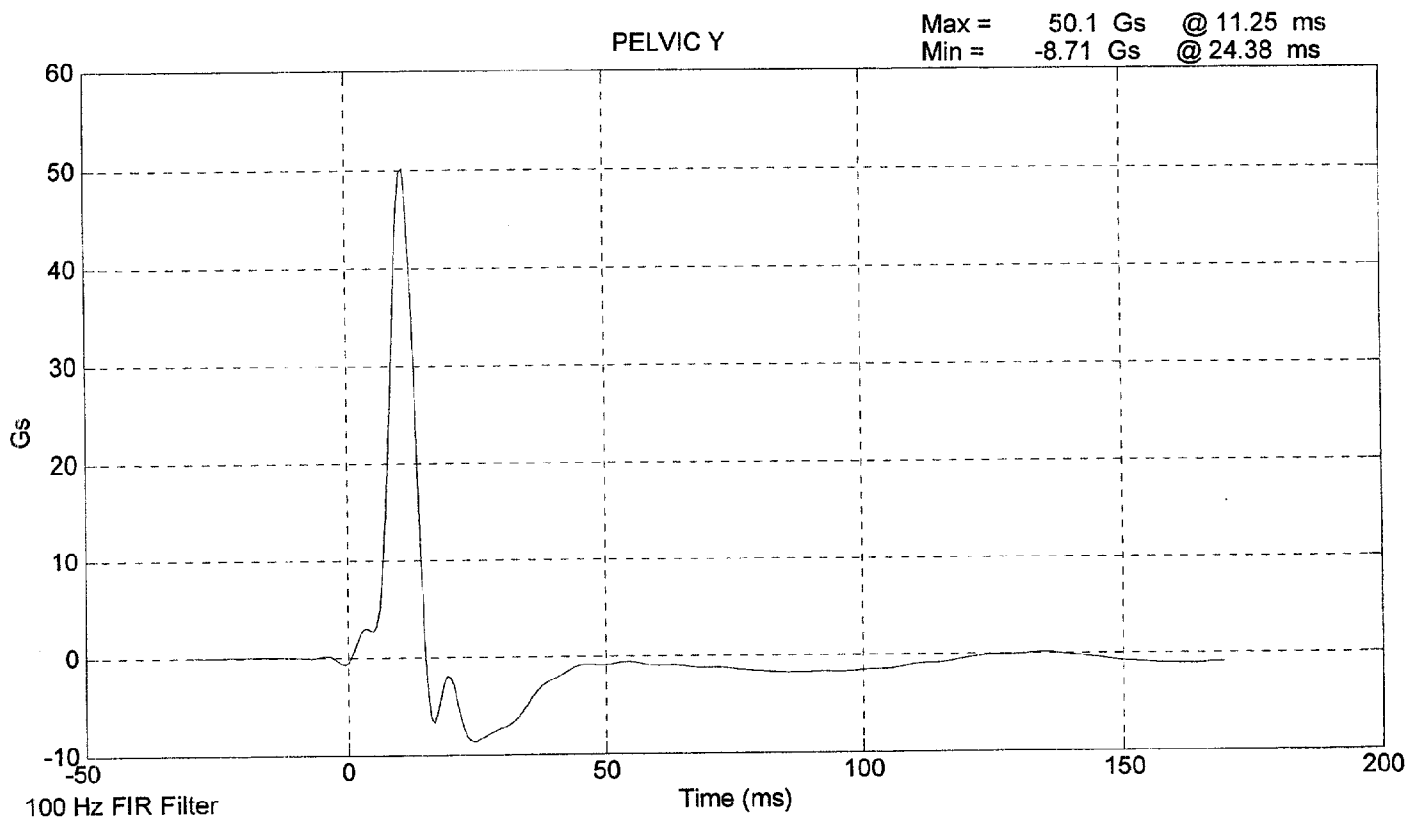
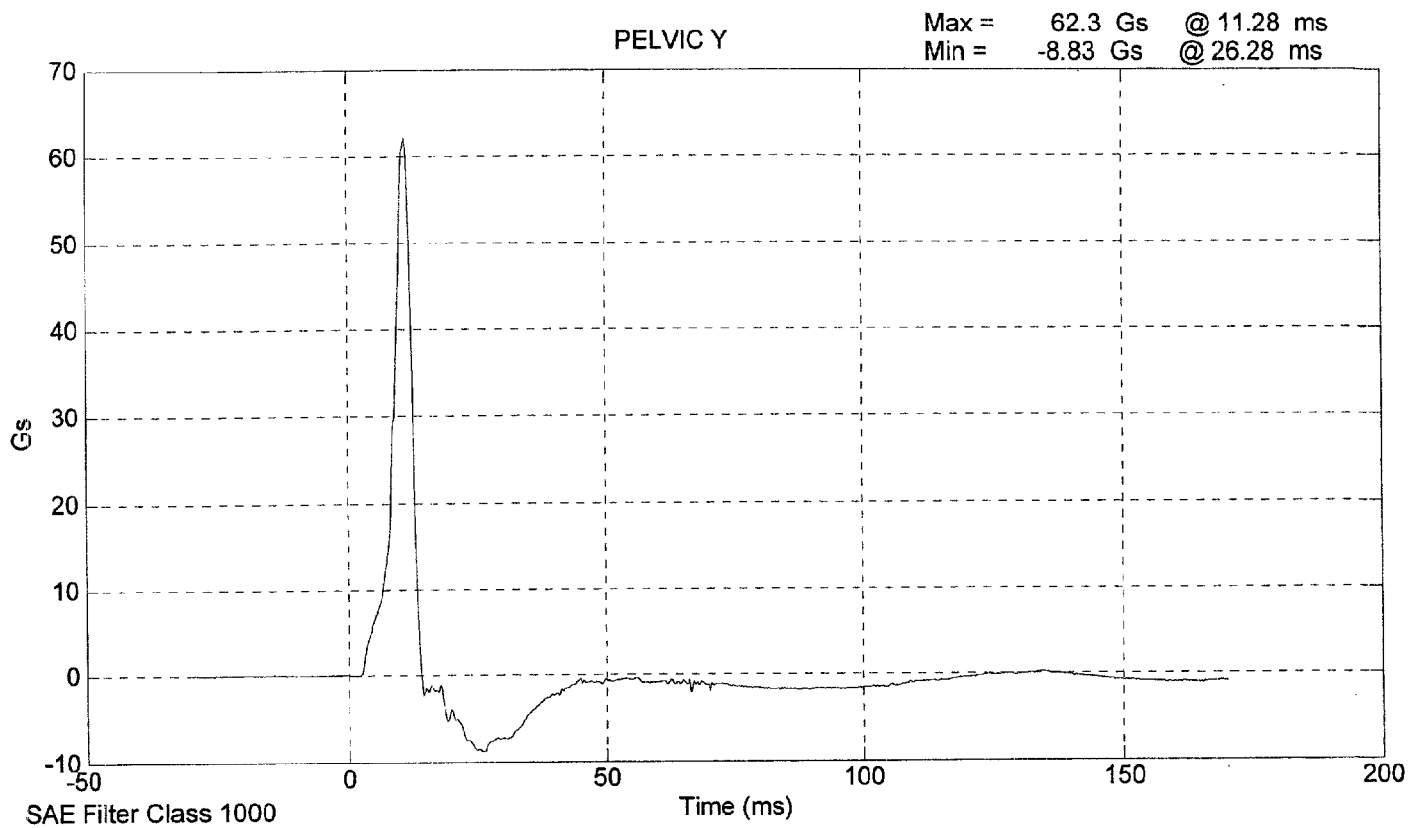
Date: 3/11/99

Laboratory Technician: B. Swiecicki, G. Serbinowski

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21
RELATIVE HUMIDITY (%)	10 - 70	20
PROBE SPEED (m/s)	4.27 - 4.33	4.31
PELVIS ACCELERATION (g's)	40 - 60	50.1

REMARKS: None

SID 027 PELVIC IMPACT TEST @ 4.3068 m/s



**ABDOMINAL COMPRESSION TEST
POST TEST**

(Test not required for SID certification)

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 027
Date: 3/11/99

Calspan Sequential Test Number: 2
Laboratory Technician: B. Swiecicki, G. Serbinowski

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21
RELATIVE HUMIDITY (%)	10 - 70	20
FORCE @ 13 mm (N)	104 - 162	111.2
FORCE @ 19 mm (N)	163 - 221	173.5
FORCE @ 25 mm (N)	222 - 280	249.1
FORCE @ 33 mm (N)	325 - 391	382.5

REMARKS: None

Dummy S/N 027

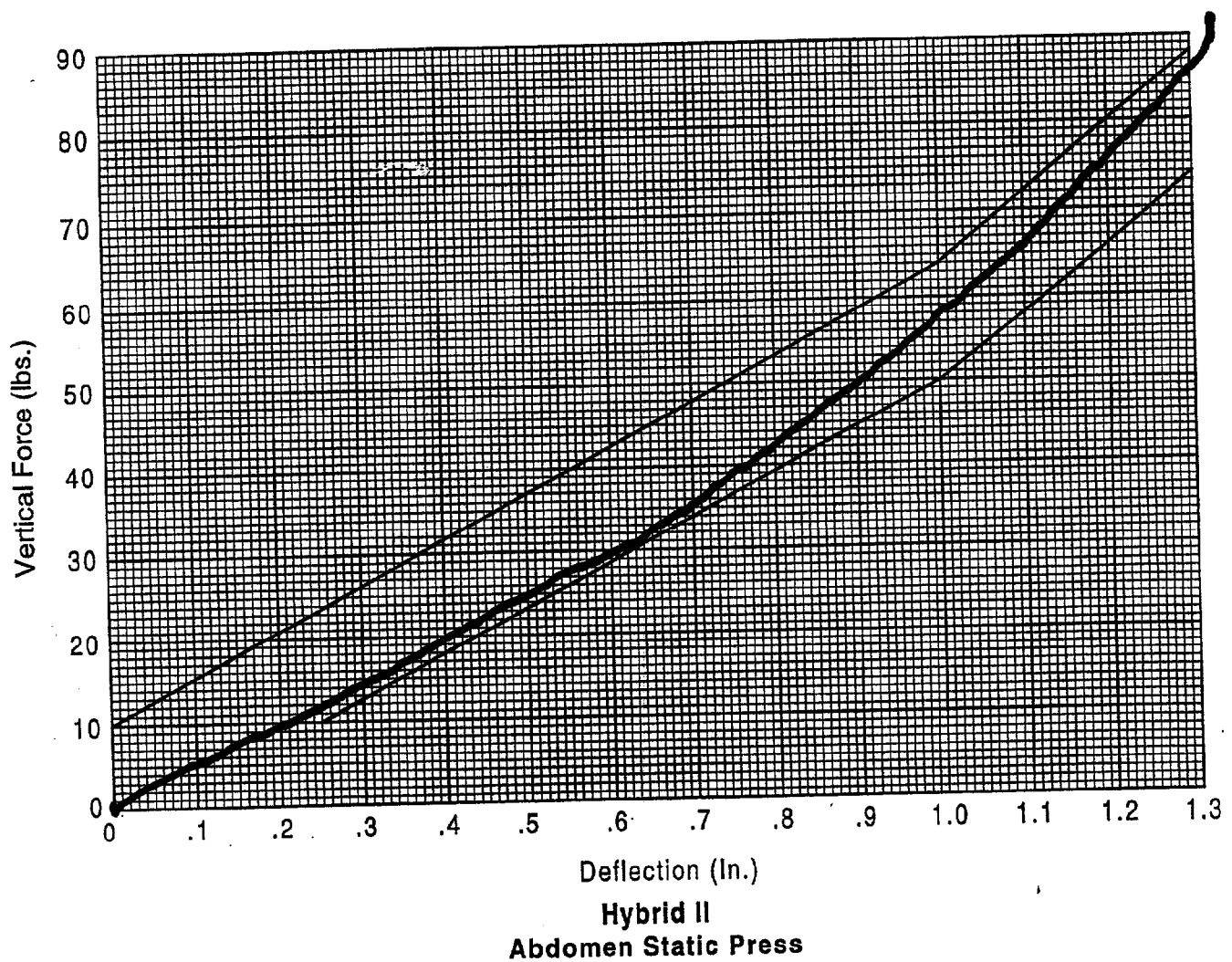
W/A _____

Date 3-11-99

Performed By [Signature]

Temp. 71°

Humidity 20%



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

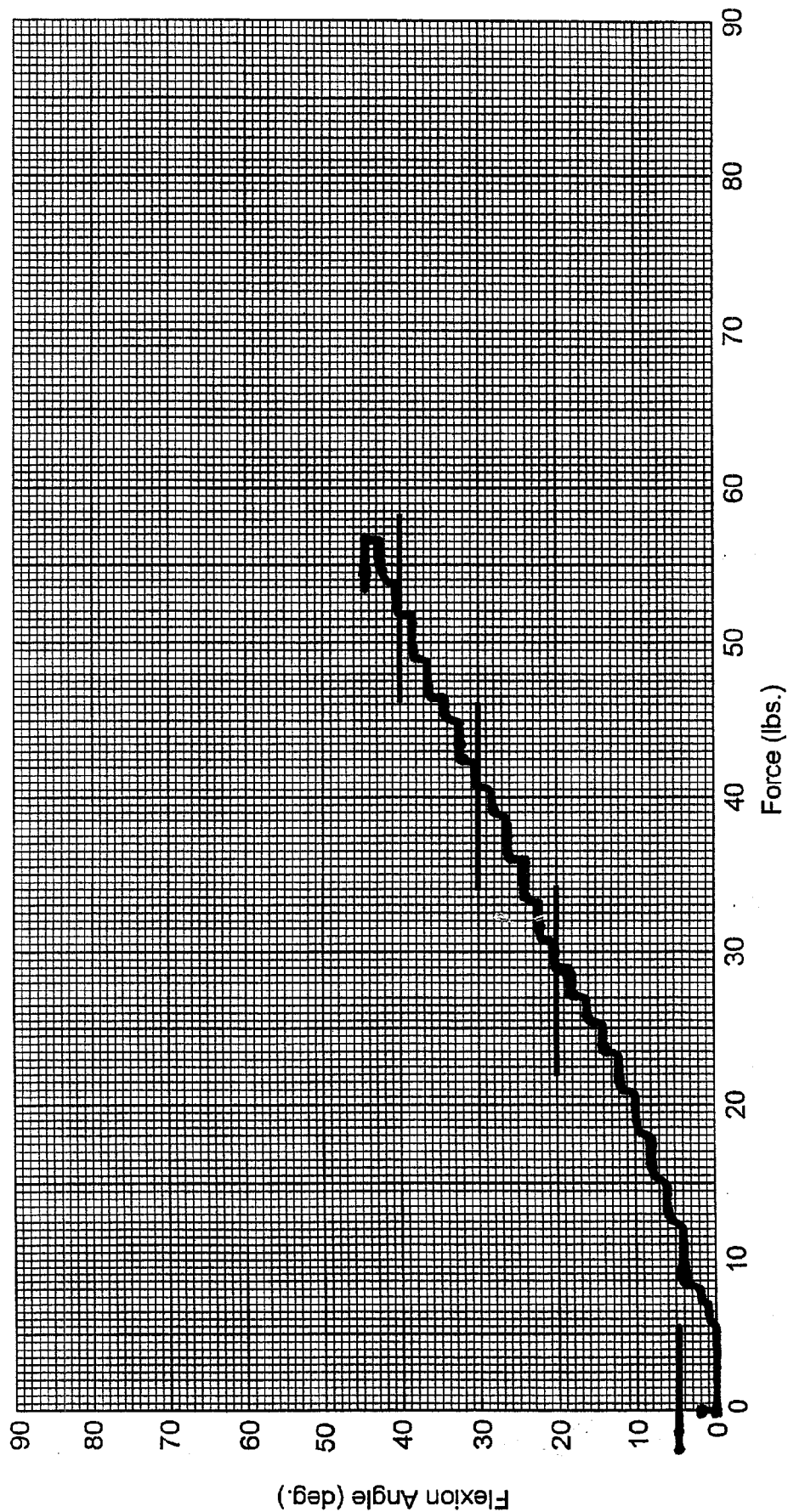
CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 027 Calspan Sequential Test Number: 2
Date: 3/11/99 Laboratory Technician: B. Swiecicki, G. Serbinowski

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21
RELATIVE HUMIDITY (%)	10 - 70	20
FORCE @ 0° (N)	0 - 26.7	0
FORCE @ 20° (N)	97.8 - 151.2	129.0
FORCE @ 30° (N)	151.2 - 204.6	180.2
FORCE @ 40° (N)	204.6 - 258	229.1
RETURN ANGLE	12° max.	6

REMARKS: None

Dummy S/N 027
WIA _____
Date 3-11-99
Performed By [Signature]
Temp. 71°
Humidity 50%



Hybrid II Lumbar Spine Flexion Test

POST TEST DUMMY INSPECTION LIST

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 027 Calspan Sequential Test Number: 2
 Date: 3/11/99 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.: 016

CONFIGURED FOR LEFT SIDE IMPACT

**CALIBRATION TEST RESULTS SUMMARY
POST TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 016

Calspan Sequential Test Number: 2

Date: 3/11/99

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.: 016
Date: 3/11/99

Calspan Sequential Test Number: 2
Laboratory Technician: B. Swiecicki, G. Serbinowski

TEST PARAMETER	SPECIFICATION	TEST RESULTS
SH- Seated Height (mm)	889 - 909	902
RH- Rib Height (mm)	502 - 520	513
HP- Hip Pivot Height (mm)	99 ref.	99
RD- Rib from Back Line (mm)	229 - 241	239
KH- Knee Pivot from Back Line (mm)	511 - 526	526
KV- Knee Pivot to Floor (mm)	490 - 505	494
HW- Hip Width (mm)	356 - 391	361

REMARKS: None

**LATERAL THORAX IMPACT TEST
POST TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 016

Calspan Sequential Test Number: 2

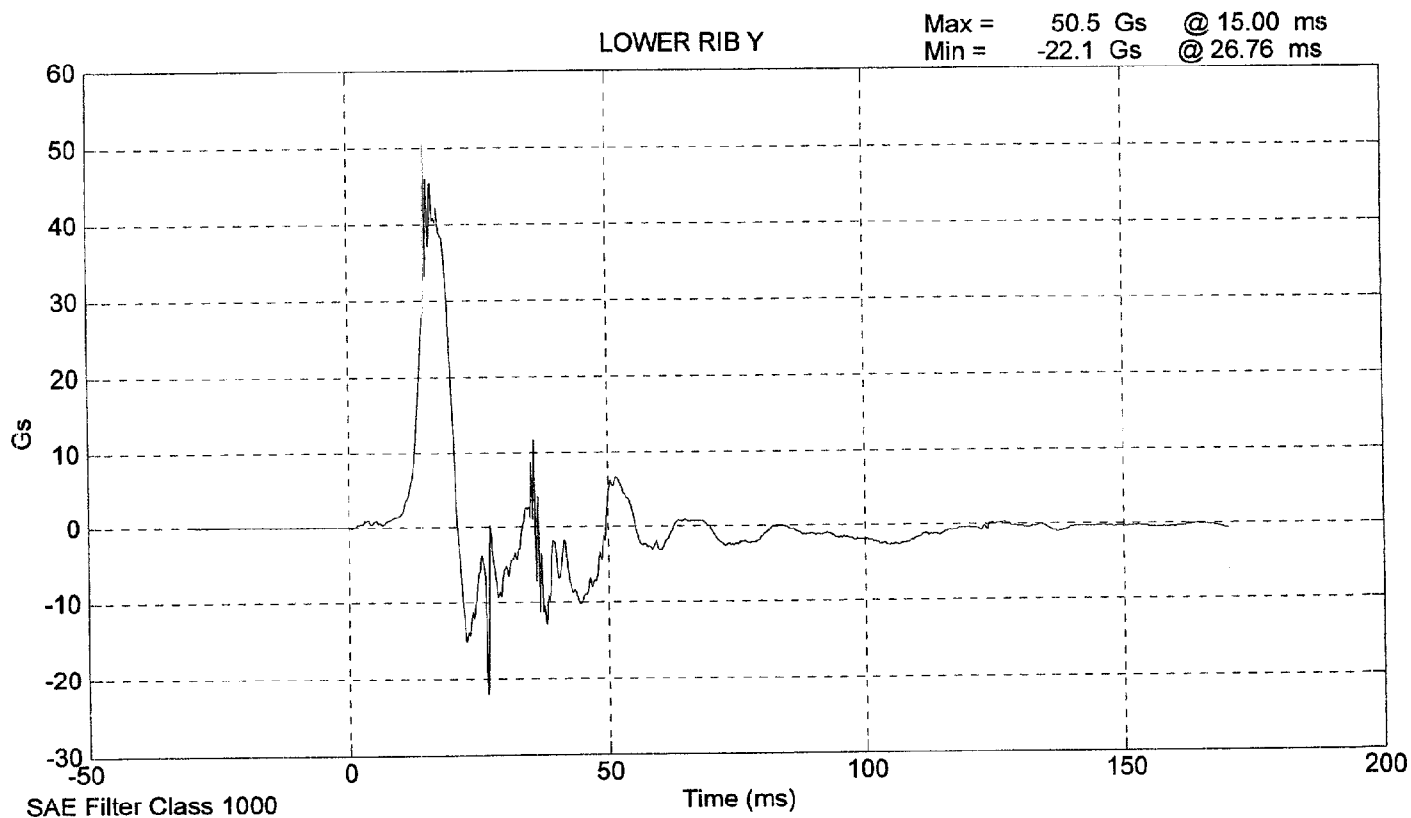
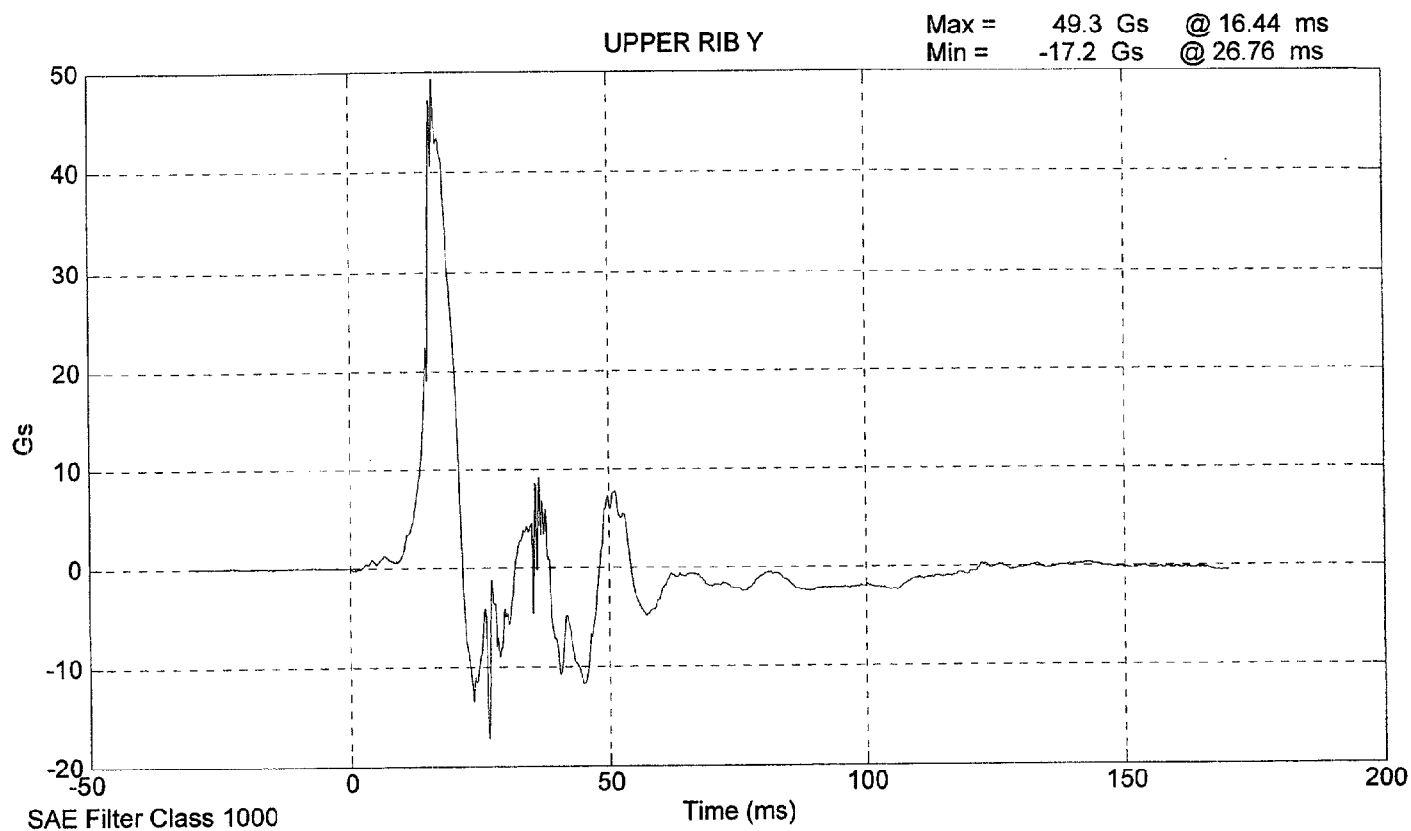
Date: 3/11/99

Laboratory Technician: B. Swiecicki, G. Serbinowski

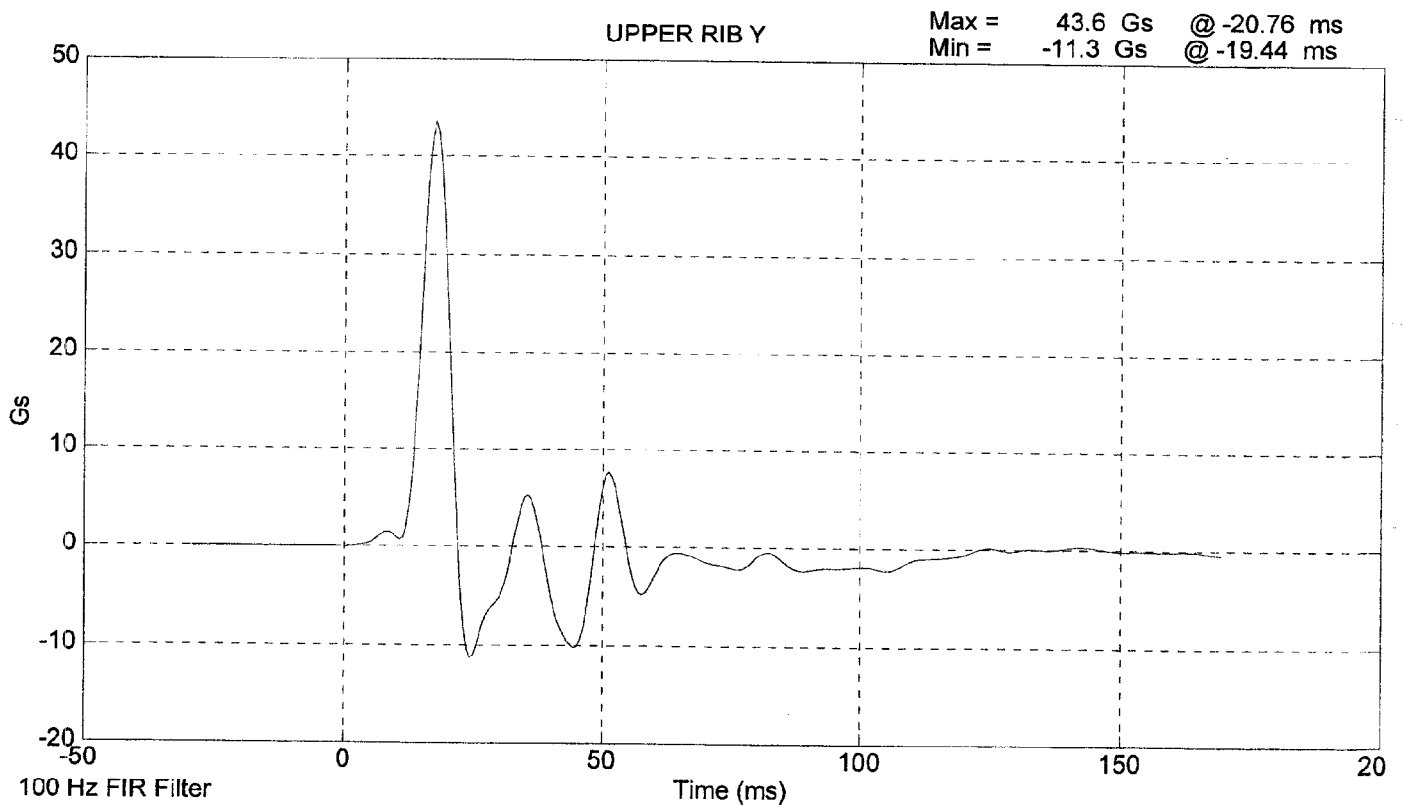
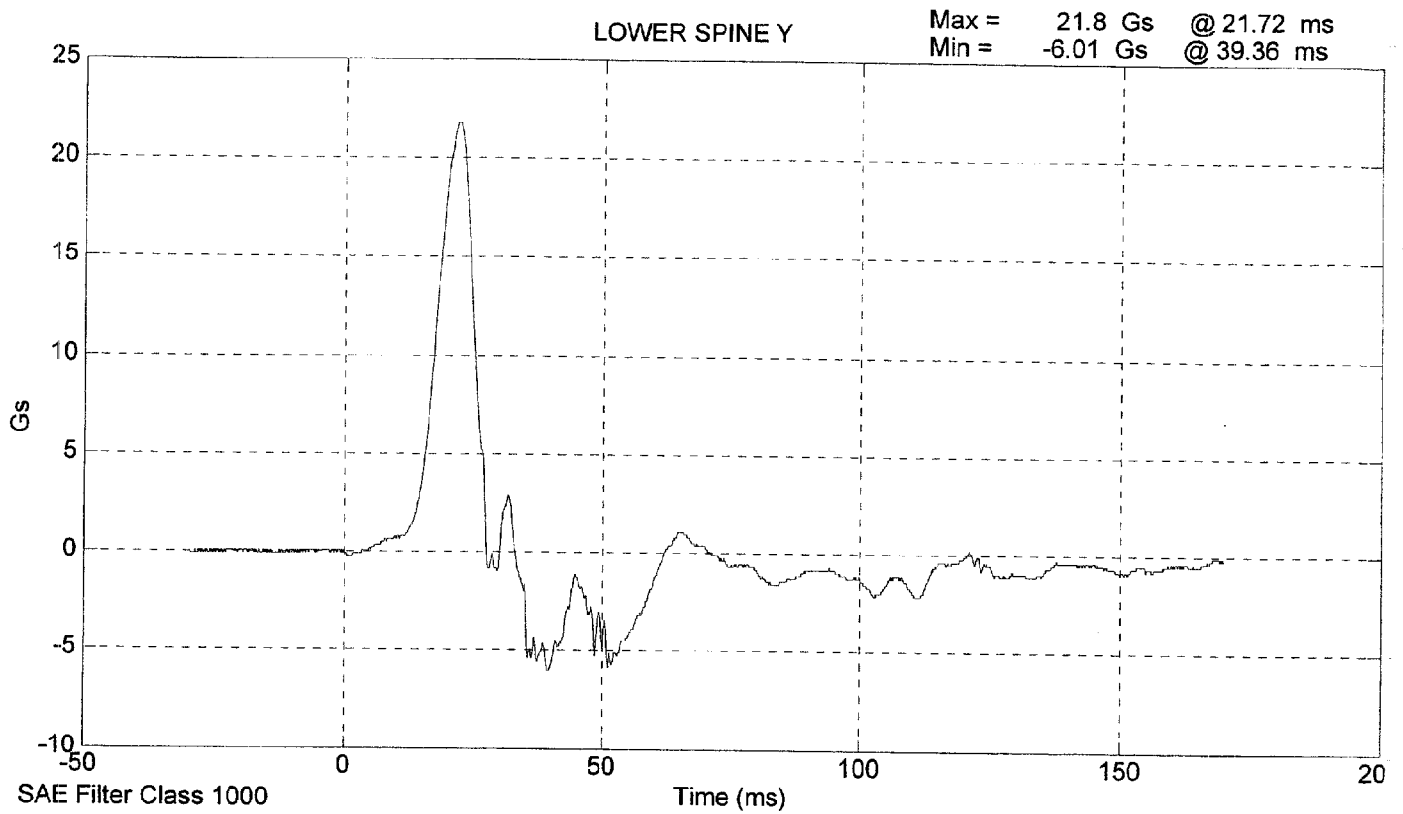
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21
RELATIVE HUMIDITY (%)	10 - 70	20
PROBE SPEED (m/s)	4.27 - 4.33	4.28
UPPER RIB (g's)	37 - 46	43.6
LOWER RIB (g's)	37 - 46	44.5
LOWER SPINE (g's)	15 - 22	21.7

REMARKS: None

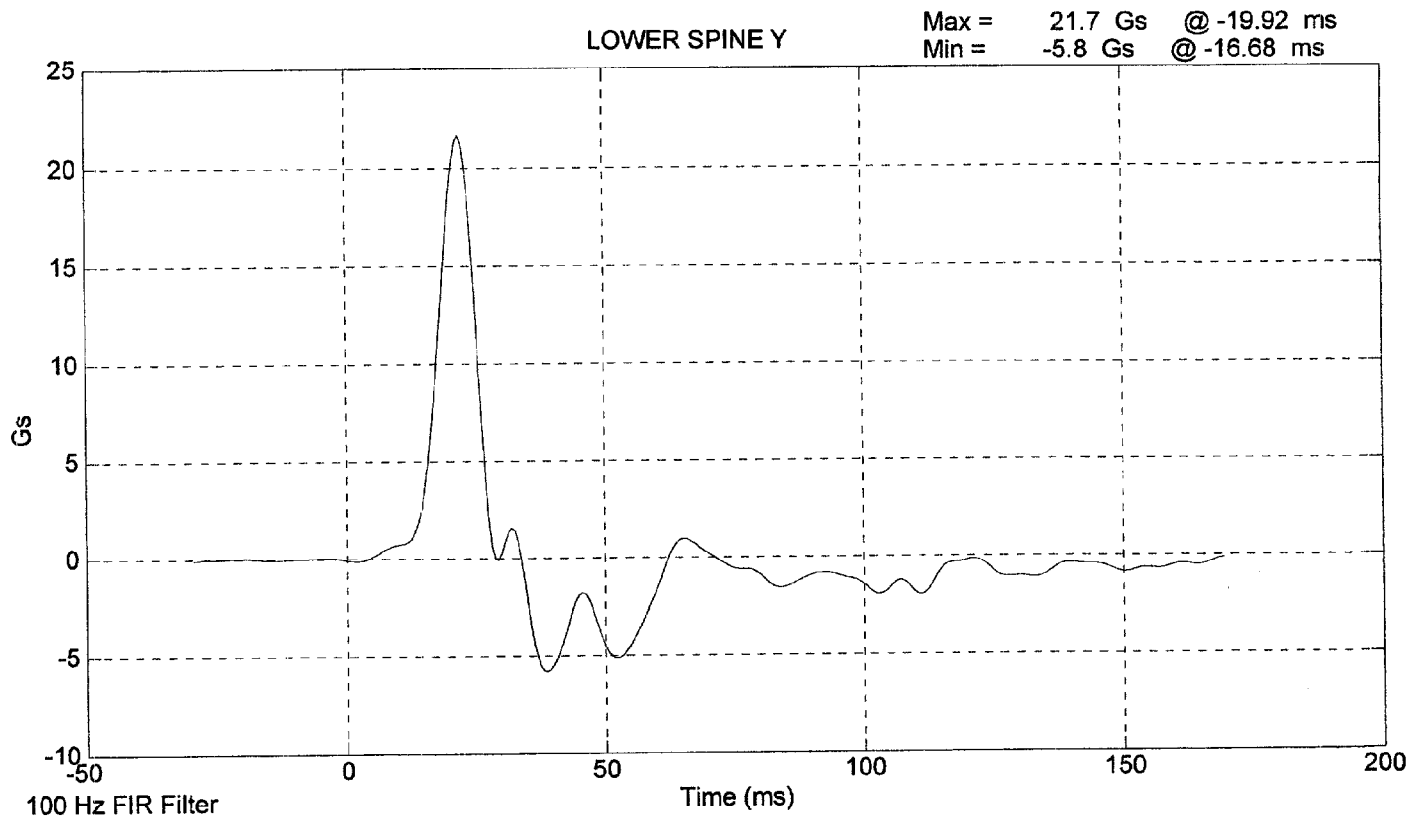
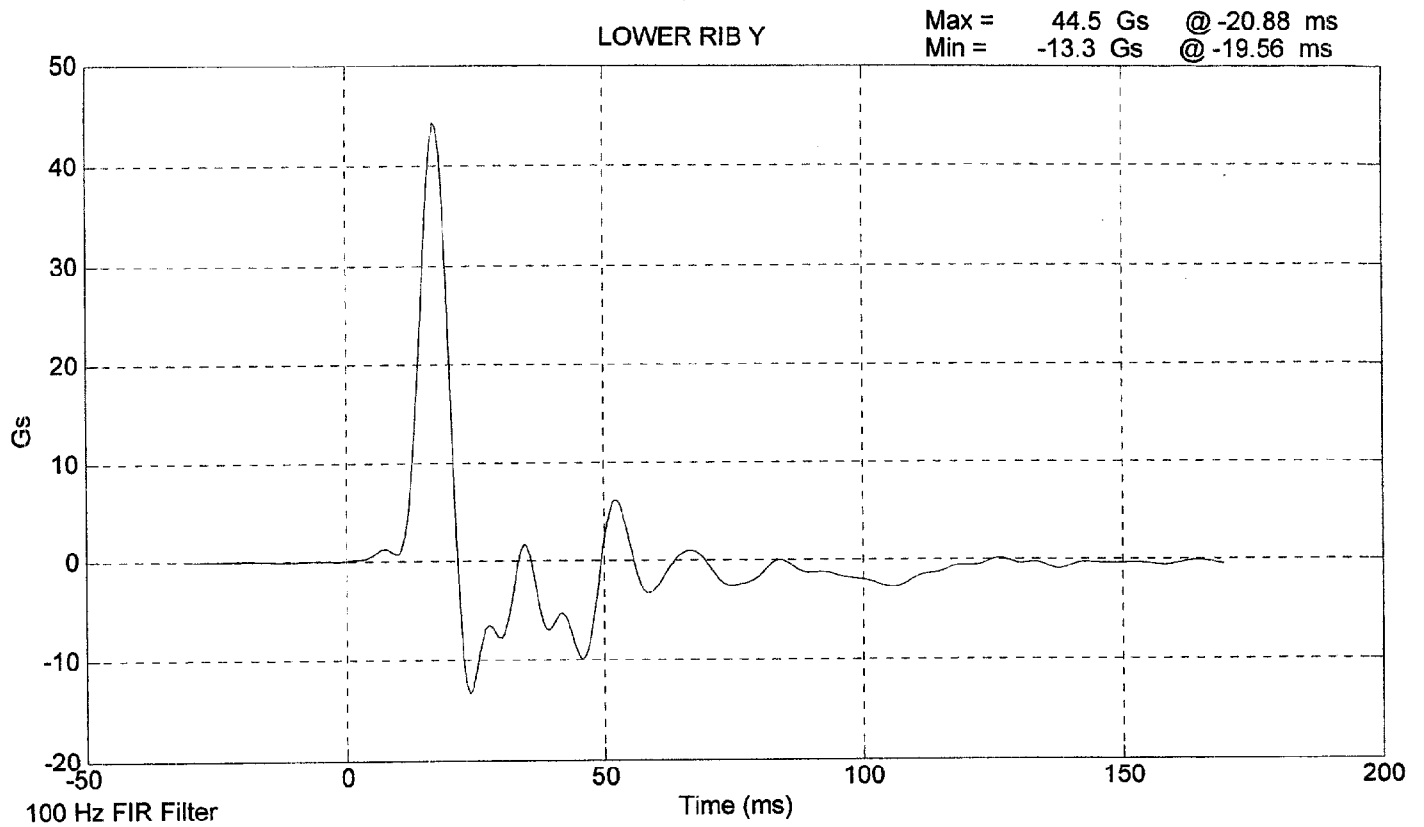
SID 016 THORAX IMPACT TEST @ 4.2763 m/s



SID 016 THORAX IMPACT TEST @ 4.2763 m/s



SID 016 THORAX IMPACT TEST @ 4.2763 m/s



**LATERAL PELVIS IMPACT TEST
POST TEST**

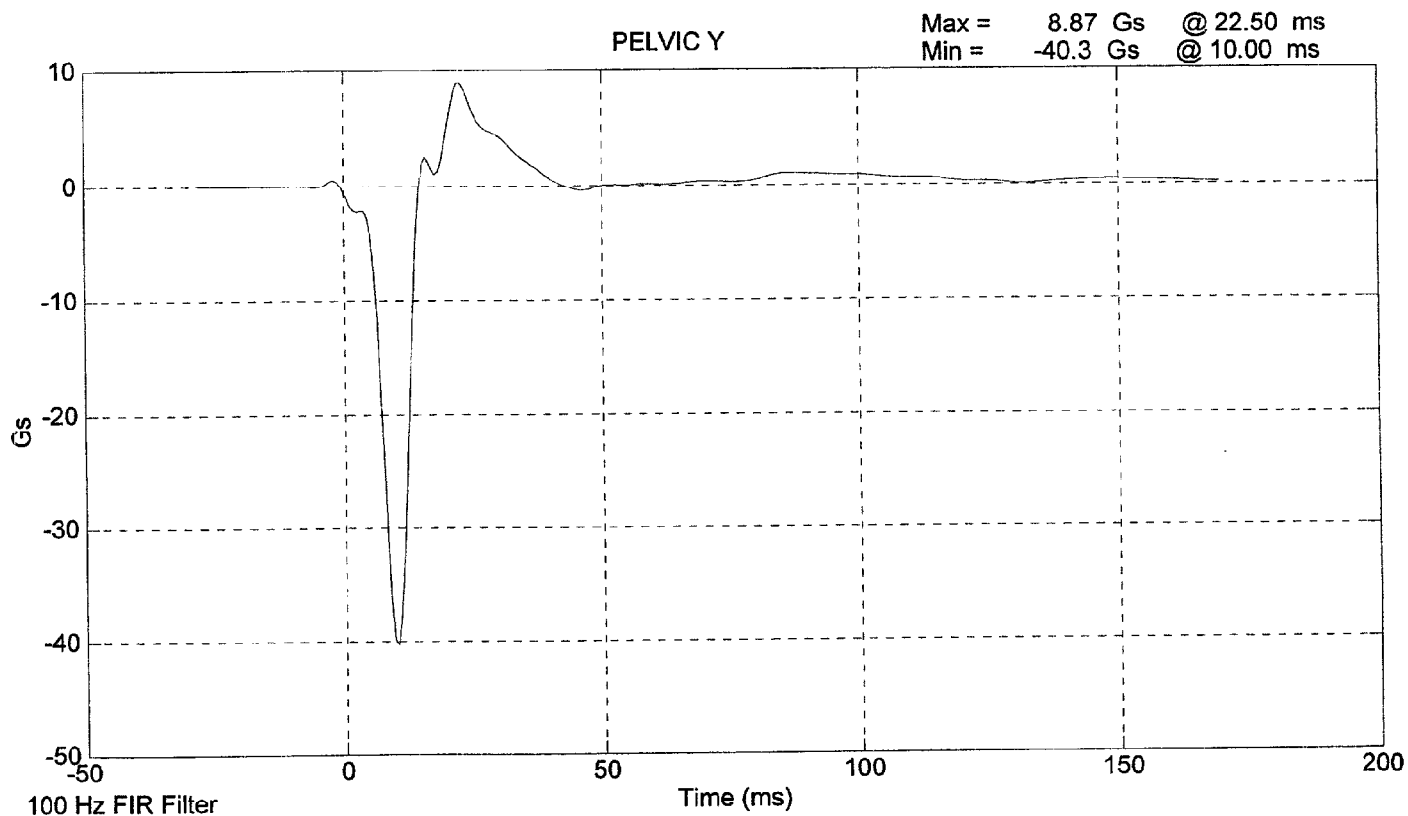
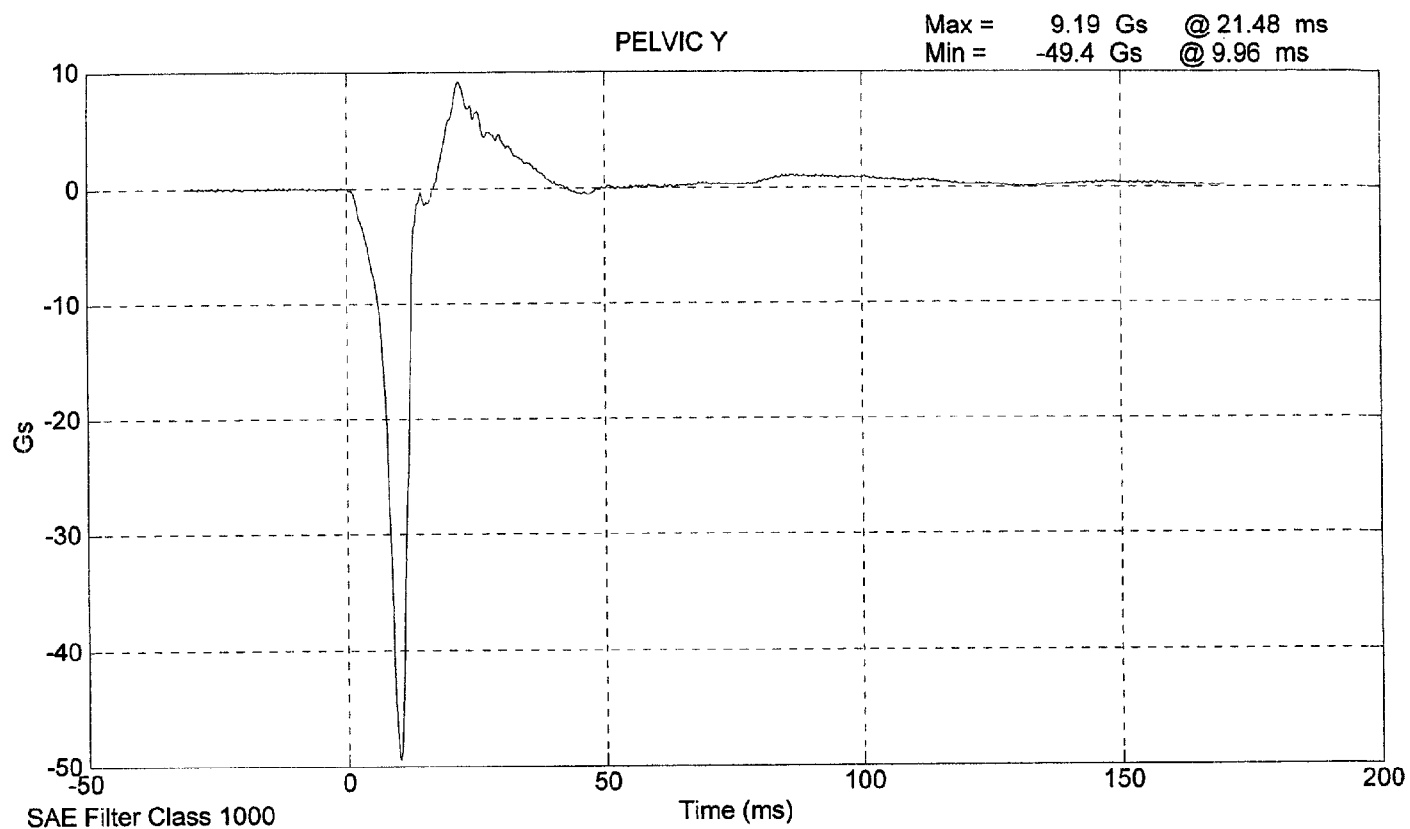
CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 016 Calspan Sequential Test Number: 2
Date: 3/11/99 Laboratory Technician: B. Swiecicki, G. Serbinowski

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21
RELATIVE HUMIDITY (%)	10 - 70	20
PROBE SPEED (m/s)	4.27 - 4.33	4.30
PELVIS ACCELERATION (g's)	40 - 60	40.3

REMARKS: None

SID 016 PELVIC IMPACT TEST @ 4.3038 m/s



**ABDOMINAL COMPRESSION TEST
POST TEST**

(Test not required for SID certification)

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 016
Date: 3/11/99

Calspan Sequential Test Number: 2
Laboratory Technician: B. Swiecicki, G. Serbinowski

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21
RELATIVE HUMIDITY (%)	10 - 70	20
FORCE @ 13 mm (N)	104 - 162	111.2
FORCE @ 19 mm (N)	163 - 221	178.0
FORCE @ 25 mm (N)	222 - 280	258.0
FORCE @ 33 mm (N)	325 - 391	390.3

REMARKS: None

Dummy S/N 016

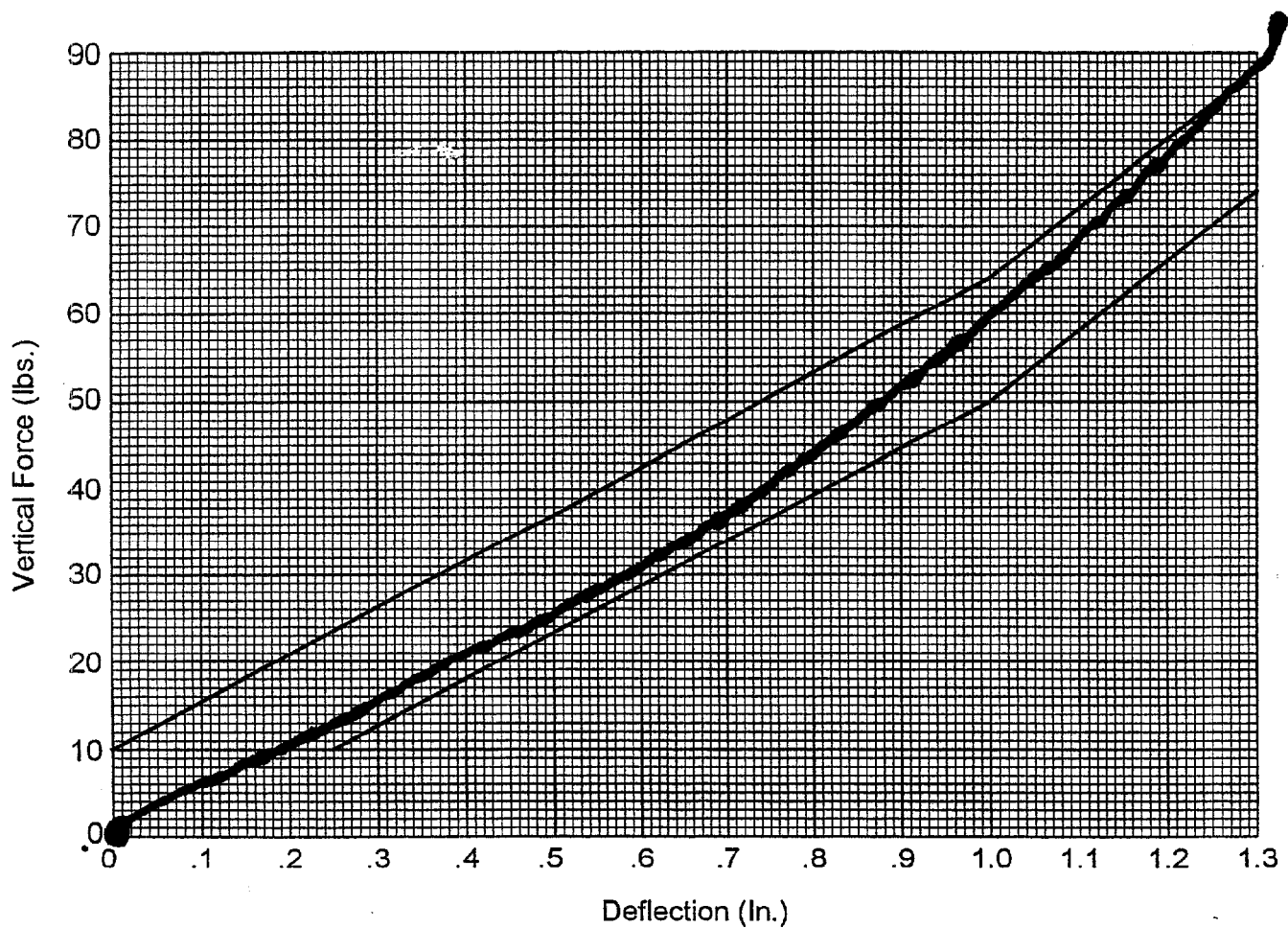
W/A _____

Date 3/11/99

Performed By (G) + BS

Temp. 71°

Humidity 20%



Hybrid II
Abdomen Static Press

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

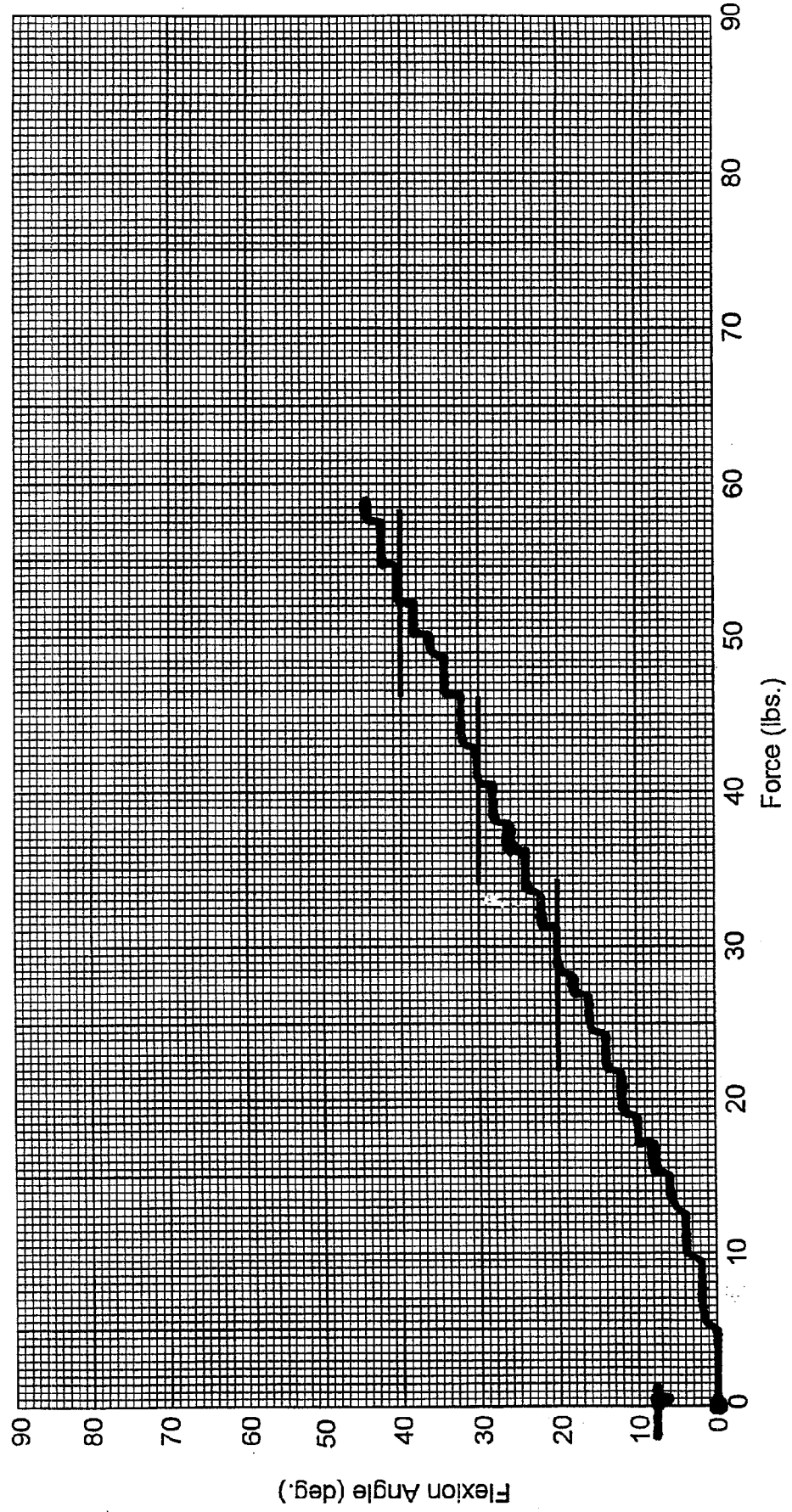
CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 016 Calspan Sequential Test Number: 2
Date: 3/11/99 Laboratory Technician: B. Swiecicki, G. Serbinowski

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21
RELATIVE HUMIDITY (%)	10 - 70	20
FORCE @ 0° (N)	0 - 26.7	0
FORCE @ 20° (N)	97.8 - 151.2	129.0
FORCE @ 30° (N)	151.2 - 204.6	180.2
FORCE @ 40° (N)	204.6 - 258	233.5
RETURN ANGLE	12° max.	8

REMARKS: None

Dummy S/N 016
W/A _____
Date 3-11-99
Performed By GP + GS
Temp. 71°
Humidity 20%



Hybrid II Lumbar Spine Flexion Test

POST TEST DUMMY INSPECTION LIST

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 016
Date: 3/11/99

Calspan Sequential Test Number: 2
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

APPENDIX D

TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

SID INSTRUMENTATION

	FRONT SID NO. 027		
	SERIAL NUMBER	MANUFACTURER	CALIBRATION DATE
UPPER RIB	A14342	Endveco	12/08/98
LOWER RIB	A14261	Endveco	12/08/98
LOWER SPINE	A13938	Endveco	12/02/98
PELVIS	B11118	Endveco	12/14/98
UPPER RIB REDUNDANT	A14246	Endveco	12/08/98
LOWER RIB REDUNDANT	A14358	Endveco	12/08/98
LOWER SPINE REDUNDANT	A13811	Endveco	12/02/98
PELVIS REDUNDANT	A13883	Endveco	12/02/98

	REAR SID NO. 016		
	SERIAL NUMBER	MANUFACTURER	CALIBRATION DATE
UPPER RIB	A14312	Endveco	12/08/98
LOWER RIB	A11544	Endveco	12/10/98
LOWER SPINE	A14372	Endveco	12/03/98
PELVIS	A13492	Endveco	12/14/98
UPPER RIB REDUNDANT	A13513	Endveco	12/14/98
LOWER RIB REDUNDANT	A13517	Endveco	12/11/98
LOWER SPINE REDUNDANT	A14158	Endveco	12/14/98
PELVIS REDUNDANT	A13498	Endveco	12/14/98

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)	AN943	Endveco	10/27/98
RIGHT FRONT SILL (Y)	J18429	Endveco	08/28/98
RIGHT FRONT SILL (Z)	J18650	Endveco	10/27/98
RIGHT REAR SILL (X)	APBB6	Endveco	10/21/98
RIGHT REAR SILL (Y)	J18649	Endveco	10/21/98
RIGHT REAR SILL (Z)	J18400	Endveco	10/21/98
REAR FLOORPAN ABOVE AXLE (X)	AHRC9	Endveco	11/24/98
REAR FLOORPAN ABOVE AXLE (Y)	AC7W8	Endveco	11/24/98
REAR FLOORPAN ABOVE AXLE (Z)	ACC06	Endveco	11/24/98
LEFT REAR SILL (Y)	D74	ICS	10/01/98
LEFT FRONT SILL (Y)	X26	ICS	02/11/99
RIGHT REAR SEAT OCCUPANT COMP. (Y)	D30	ICS	02/11/99
LOWER LEFT B- PILLAR (Y)	J18555	Endveco	10/27/98
MIDDLE LEFT B-PILLAR (Y)	J18439	Endveco	09/01/98
LOWER LEFT A-PILLAR (Y)	APBD7	Endveco	02/01/99
UPPER LEFT A-PILLAR (Y)	-	-	-
FRONT SEAT TRACK (Y)	AC8F6	Endveco	12/02/98
REAR SEAT TRACK (Y)	J18624	Endveco	10/27/98
VEHICLE CG (X)	AP1B7	Endveco	10/14/98
VEHICLE CG (Y)	J18622	Endveco	10/15/98
VEHICLE CG (Z)	AN967	Endveco	10/14/98
MDB CG (X)	CL60	Endveco	09/17/98
MDB CG (Y)	CJ54	Endveco	09/17/98
MDB CG (Z)	CH35	Endveco	09/18/98
MDB REAR FRAME MEMBER (X)	FL04	Endveco	09/17/98
MDB REAR FRAME MEMBER (Y)	GL77	Endveco	09/19/98

REMARKS: None