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REPORT NUMBER: 214-CAL-01-5

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

**DAEWOO MOTOR COMPANY, LTD.
2001 DAEWOO LEGANZA
4-DOOR SEDAN**

NHTSA NUMBER: C10502

**VERIDIAN ENGINEERING
TRANSPORTATION SCIENCES CENTER
P.O. BOX 400
BUFFALO, NEW YORK 14225**



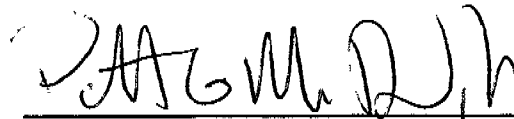
December 4, 2000

FINAL REPORT

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

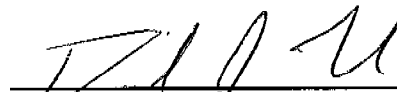
This Final Test Report was prepared for the U.S. Department of Transportation, National Highway Traffic Safety Administration, under Contract No. DTNH22-97-C-01033. This publication is distributed by the U.S. Department of Transportation, National Highway Traffic Safety Administration, in the interest of information exchange. The opinions, findings and conclusions expressed in this publication are those of the author(s) and not necessarily those of the Department of Transportation or the National Highway Traffic Safety Administration. The United States Government assumes no liability for its contents or use thereof. If trade or manufactures' names or products are mentioned, it is only because they are considered essential to the object of the publication and should not be construed as an endorsement. The United States Government does not endorse products or manufacturers.

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16. Abstract A 55/28 kph 90° Side Impact (Moving Deformable Barrier) Indicant Test was conducted on the subject 2001 Daewoo Leganza 4-Door Sedan. This test was performed at the New Car Assessment Program (NCAP) target test velocity of 62.0 kph, which is 8 kph faster than the target velocity required by the Office of Vehicle Safety Compliance's Laboratory Test Procedure (TP-214D-04, dated September 1, 1995). This test was conducted at the Veridian Engineering Crash Test Facility in Buffalo, New York, on December 4, 2000. The impact velocity of the Moving Deformable Barrier (MDB) was 61.8 kph, and the ambient temperature at the struck (driver's) side of the target vehicle at the time of impact was 21 °C. The target vehicle post-test maximum crush was 413 mm at level 2. The test or target vehicle's performance is given below: <table border="0"> <thead> <tr> <th></th> <th align="center"><u>Front SID</u></th> <th></th> <th align="center"><u>Rear SID</u></th> <th></th> </tr> </thead> <tbody> <tr> <td>Left Upper Rib Acceleration:</td> <td align="center"><u>68</u></td> <td align="center">g's</td> <td align="center"><u>69</u></td> <td align="center">g's</td> </tr> <tr> <td>Left Lower Rib Acceleration:</td> <td align="center"><u>61</u></td> <td align="center">g's</td> <td align="center"><u>86</u></td> <td align="center">g's</td> </tr> <tr> <td>Lower Spine Acceleration:</td> <td align="center"><u>76</u></td> <td align="center">g's</td> <td align="center"><u>78</u></td> <td align="center">g's</td> </tr> <tr> <td>Thoracic Trauma Index (TTI):</td> <td align="center"><u>72</u></td> <td align="center">g's</td> <td align="center"><u>82</u></td> <td align="center">g's</td> </tr> <tr> <td>Pelvis Acceleration (PEV):</td> <td align="center"><u>99</u></td> <td align="center">g's</td> <td align="center"><u>134</u></td> <td align="center">g's</td> </tr> </tbody> </table> The two doors on the struck side of the vehicle did not separate from the body at the hinges or latches and the opposite doors did not open during the side impact event.							<u>Front SID</u>		<u>Rear SID</u>		Left Upper Rib Acceleration:	<u>68</u>	g's	<u>69</u>	g's	Left Lower Rib Acceleration:	<u>61</u>	g's	<u>86</u>	g's	Lower Spine Acceleration:	<u>76</u>	g's	<u>78</u>	g's	Thoracic Trauma Index (TTI):	<u>72</u>	g's	<u>82</u>	g's	Pelvis Acceleration (PEV):	<u>99</u>	g's	<u>134</u>	g's
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17. Key Words Compliance Testing Side Impact Protection FMVSS 214 Side Impact Dummy (SID) New Car Assessment Program (NCAP)			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																																
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SECTION 1

PURPOSE AND TEST PROCEDURE

This Side Impact Indicant 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 indicant test was to evaluate side impact protection in a 2001 Daewoo Leganza 4-Door Sedan when tested at the New Car Assessment Program (NCAP) target test velocity of 62.0 kph, which is 8 kph faster than the target velocity required by the Office of Vehicle Safety Compliance's Laboratory Test Procedure (TP-214D-04, dated September 1, 1995).

SECTION 2

SUMMARY OF SIDE IMPACT TEST

This Side Impact Protection Indicant Test was performed at the New Car Assessment Program (NCAP) target test velocity of 62.0 kph, which is 8 kph faster than the target velocity required by the Office of Vehicle Safety Compliance's Laboratory Test Procedure (TP-214D-04, dated September 1, 1995).

A 2001 Daewoo Leganza 4-Door Sedan was impacted on the left or driver's side by a Moving Deformable Barrier (MDB) which was moving forward in a 27° crabbed position to the monorail at a velocity of 61.8 kph (38.4 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 Veridian Engineering Transportation Sciences Center in Buffalo, New York on December 4, 2000. 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. Both SIDs were certified prior to this test. The side impact test was documented by one real-time camera and 10 high-speed cameras. Camera locations and other pertinent camera information are included in this report.

The SIDs were instrumented with the following accelerometers:

1. Head triaxial accelerometer (X,Y,Z-direction)
2. Left Upper Rib (LUR) uniaxial and redundant accelerometer (Y-direction)
3. Left Lower Rib (LLR) uniaxial and redundant accelerometer (Y-direction)
4. Lower Thoracic Spine (T₁₂) uniaxial and redundant accelerometer (Y-direction)
5. 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 48 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)	72	82
PEV (g)	99	134

SECTION 3

SUMMARY OF TEST RESULTS

DATA SHEET 1

GENERAL TEST AND VEHICLE PARAMETER DATA

TEST VEHICLE INFORMATION:

Year/Make/Model/Body Style: 2001 Daewoo Leganza 4-Door Sedan

Vehicle Body Color: Silver VIN: KLAVG69211B292182

Vehicle NHTSA No.: C10502 Month & Year of Manufacture: 07/00

Engine Data: 4 Cylinders; - CID; 2.2 Liters; - cc

Engine Placement: - Longitudinal; or X Lateral

Transmission: 5 Speed; X Manual; - Automatic; X Overdrive

Final Drive: - Rear Wheel Drive; X Front Wheel Drive; - Four Wheel

Odometer Reading 328 km

Options: X A/C; X Power Steering; X Pwr.Brakes; X Pwr. Windows

DATA FROM TIRE PLACARD

Tire Pressure* (at capacity); 200 kPa FRONT
200 kPa REAR

Recommended Tire Size: P205/60R15

Tires on Test Vehicle: P205/60R15 ; Manufacturer: Kumho

Vehicle Capacity Data:

Number of Occupants: 2 Front; 3 Rear; - 3rd Seat; 5 Total

Type of Front Seats: X Bucket; - Bench; - Split Bench

Type of Front Seat Back: - Fixed; X Adjustable with X Lever or - Knob

Vehicle Max Capacity Loading = 400 kg (A)

No. of Occupants x 68.04 kg. = 340.2 kg (B)

Vehicle Cargo Capacity = 59.8 kg (A-B)

TEST VEHICLE DELIVERED WEIGHT WITH MAXIMUM FLUIDS:

Left Front	=	<u>420.5</u> kg	Left Rear	=	<u>283.5</u> kg
Right Front	=	<u>416.0</u> kg	Right Rear	=	<u>283.5</u> kg
TOTAL FRONT	=	<u>836.5</u> kg	TOTAL REAR	=	<u>567.0</u> kg
% of Total Weight	=	<u>59.6</u> %	% of Total Weight	=	<u>40.4</u> %
TOTAL WEIGHT	=	<u>1403.5</u> kg			

* Tire pressure used in test.

DATA SHEET 1 (continued)

GENERAL TEST VEHICLE PARAMETER DATA

Vehicle: 2001 Daewoo Leganza

NHTSA No. C10502

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Test Vehicle Delivered Weight with Max. Fluids	=	<u>1403.5</u>	kg (A)
Maximum Cargo Carrying Capacity of Test Vehicle	=	<u>59.8</u>	kg (B)
Weight of two instrumented Side Impact Dummies	=	<u>162.4</u>	kg (C)
TEST VEHICLE TARGET WEIGHT:	=	<u>1625.7</u>	kg (A+B+C)

FULLY LOADED TEST VEHICLE (UDVW + 2 SIDs + CARGO):

Left Front	=	<u>471.5</u>	kg	Left Rear	=	<u>390.0</u>	kg
Right Front	=	<u>415.5</u>	kg	Right Rear	=	<u>352.0</u>	kg
TOTAL FRONT	=	<u>887.0</u>	kg	TOTAL REAR	=	<u>742.0</u>	kg
% of Total Weight	=	<u>54.5</u>	%	% of Total Weight	=	<u>45.5</u>	%
TOTAL TEST WEIGHT	=	<u>1629.0</u>	kg				

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

Left Front	=	<u>462.5</u>	kg	Left Rear	=	<u>381.0</u>	kg
Right Front	=	<u>423.0</u>	kg	Right Rear	=	<u>351.0</u>	kg
TOTAL FRONT	=	<u>885.5</u>	kg	TOTAL REAR	=	<u>732.0</u>	kg
% of Total Weight	=	<u>54.7</u>	%	% of Total Weight	=	<u>45.3</u>	%
TOTAL TEST WEIGHT	=	<u>1617.5</u>	kg				

TEST VEHICLE ATTITUDE (all dimensions in millimeters):

AS DELIVERED:

Left Front	<u>694</u>	Right Front	<u>692</u>	Left Rear	<u>690</u>	Right Rear	<u>698</u>
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FULLY LOADED:

Left Front	<u>675</u>	Right Front	<u>688</u>	Left Rear	<u>635</u>	Right Rear	<u>657</u>
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READY FOR TEST:

Left Front	<u>677</u>	Right Front	<u>688</u>	Left Rear	<u>644</u>	Right Rear	<u>660</u>
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Test Vehicle Wheelbase: 2674 millimeters

C.G. = 1210.1 millimeters rearward of front wheel centerline

TOTAL VEHICLE LENGTH:

Right Side	=	<u>4598</u>	millimeters
Left Side	=	<u>4602</u>	millimeters
Centerline	=	<u>4670</u>	millimeters

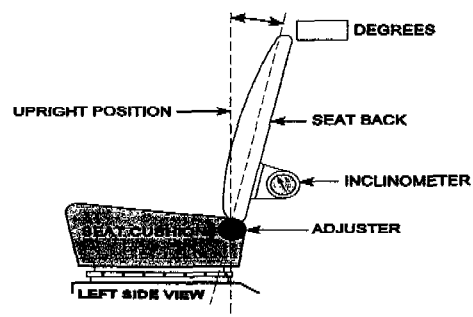
DATA SHEET 1 (continued)

GENERAL TEST VEHICLE PARAMETER DATA

Vehicle: 2001 Daewoo Leganza

NHTSA No. C10502

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 ASSEMBLY

FRONT SEAT TRACK POSITION: The seat was placed in detent 10 from full forward (0).

Total Length of Adjustment Travel: 230 millimeters

Total Number of Adjustment Positions or Detents: 20

FRONT SEAT BACK ADJUSTMENT POSITION: Placed in the 15th detent rearward from full forward (0)

Seat Back Torso Angle: 80 degrees

SECOND POSITION SEAT:

Total Length of Fore/Aft Adjustment Travel: 0 millimeters

Seat Back Adjustment Position: N/A

ADJUSTABLE STEERING COLUMN POSITION: Placed in mid position of 5 detents

WINDOW POSITIONS: Left Front: Closed Left Rear: Closed

Right Front: Removed Right Rear: Removed

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:

59.0 liters (Fuel Tank Usable Capacity)

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

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

Wheelbase = 2674 millimeters

Impact Point is 397 millimeters rearward of front axle centerline

(which is 940 millimeters forward of the wheelbase midpoint)

Actual Impact Point is 392 millimeters rearward of front axle centerline

DATA SHEET 2

TEST VEHICLE SUMMARY OF RESULTS

VEHICLE IDENTIFICATION:

Vehicle Year/Make/Model: 2001 Daewoo Leganza

Body Style: 4-Door Sedan

VIN: KLAVG69211B292182

NHTSA No.: C10502

Test Date: December 4, 2000

Overall Length = 4670 millimeters; Overall Width = 1775 millimeters

VEHICLE TEST WEIGHT (Pre-Test):

Left Front = 462.5 kg Left Rear = 381.0 kg

Right Front = 423.0 kg Right Rear = 351.0 kg

TOTAL FRONT = 885.5 kg TOTAL REAR = 732.0 kg

TOTAL VEHICLE WEIGHT 1617.5 kg

Wheelbase = 2674 millimeters

Longitudinal C.G. from Center of Front Axle = 1210.1 millimeters

Impact Angle with Respect to Impactor = 90 degrees

ACTUAL IMPACT POINT

Actual Impact Point is 5 mm forward of nominal impact ref. line (Lateral)

Actual Impact Point is 7 mm below nominal impact point (Vertical)

MAXIMUM EXTERIOR STATIC CRUSH:

1. LEVEL 1 (228 mm above ground) = 131 millimeters

2. LEVEL 2 (452 mm above ground) = 413 millimeters

3. LEVEL 3 (575 mm above ground) = 349 millimeters

4. LEVEL 4 (825 mm above ground) = 319 millimeters

5. LEVEL 5 (1327 mm above ground) = 112 millimeters

Maximum Post-Test Intrusion = 413 millimeters

OCCUPANTS:

Front Passenger:

Rear Passenger:

Dummy Identification 013

015

Restraints Used 3-Point Seat Belt

3-Point Seat Belt

INSTRUMENTATION:

Number of Vehicle Data Channels: = 43

Number of Cameras: Onboard = 3

Offboard = 7

TOTAL = 10

DATA SHEET 3

MOVING DEFORMABLE BARRIER (MDB) SUMMARY

Vehicle: 2001 Daewoo Leganza

NHTSA No. C10502

MDB FACE MANUFACTURER AND SERIAL NUMBER:

Plascore Inc. 18A0600-1 38C0600

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>61.8</u>	kph				

MAXIMUM STATIC CRUSH OF HONEYCOMB IMPACT FACE:

1. Row A at Center of Bumper Level	=	<u>117</u>	millimeters
2. Row B at Top of Bumper Level	=	<u>96</u>	millimeters
3. Row C at Mid Level	=	<u>144</u>	millimeters
4. Row D at Top of Stack Level	=	<u>150</u>	millimeters

INSTRUMENTATION:

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

POST-TEST OBSERVATIONS

Vehicle: 2001 Dacwoo Leganza

NHTSA No. C10502

VISIBLE DUMMY CONTACT POINTS:

LEFT FRONT SID

Head: The back of the head to the B-Pillar; The side of the face to the left shoulder.

Upper Torso: Door Trim Panel

Lower Torso: Door Trim Panel

Left Knee: Door Trim Panel

Right Knee: Left Knee

LEFT REAR SID

The top of the head to the C-Pillar and roof liner.

Door Trim Panel

Door Trim Panel

Door Trim Panel

Left Knee

DOOR OPENING:

LEFT DOOR

Front: Closed/Inoperable

Rear: Closed/Inoperable

RIGHT DOOR

Closed/Operable

Closed/Operable

MDB DISTANCE FROM TARGET IMPACT POINT:

Vertical: 5 forward

Horizontal: 7 below

ARM REST LOCATIONS:

Front: Inboard

Rear: Inboard

SEAT MOVEMENT:

Front: Front seat was moved inboard during the event

Rear: The rear seat cushion was pushed inboard during the event.

GLAZING DAMAGE:

Windshield: Cracked along A-Pillar

Window: Side glass shattered during the event.

PILLAR PERFORMANCE:

The A- and B-Pillars were forced inboard during the event. With no visible structural defects.

SILL SEPARATION:

No visible tears or separation

AIR BAG DEPLOYMENT STATUS:

	DRIVER	FRONT PASSENGER	REAR PASSENGER
FRONT	Yes	Yes	N/A
SIDE	N/A	N/A	N/A

OTHER NOTABLE IMPACT EFFECTS:

The vehicle trunk opened upon impact. The driver headrest detached during the event.

SECTION 4

OCCUPANT AND VEHICLE INFORMATION

DATA SHEET 5

SID INSTRUMENTATION DATA

Vehicle: 2001 Daewoo Leganza

NHTSA No. C10502

	Front Dummy ID# 013				Rear Dummy ID# 015			
	Pos. Direction		Neg. Direction		Pos. Direction		Neg. Direction	
	Max (g)	Time (msec)	Max (g)	Time (msec)	Max (g)	Time (msec)	Max (g)	Time (msec)
HEAD ACCELERATIONS:								
Longitudinal X	49.3	42.0	-26.8	77.3	18.2	52.3	-22.1	69.0
Lateral Y	119.3	41.6	-8.5	53.2	95.0	49.2	-17.2	39.5
Vertical Z	30.1	127.4	-9.0	41.7	29.0	44.8	-56.4	53.4
Resultant R	129.4	41.7	0.0	-9.8	95.4	49.2	0.0	-10.0
HIC	508.4				530.0			
RIB ACCELERATIONS:								
Upper Rib Lateral . . Y	68.4	26.3	-33.7	68.1	68.8	41.9	-6.2	69.4
Upper Rib Lateral . . Y(R)	71.6	25.7	-35.6	68.1	67.2	41.9	-5.1	69.4
Lower Rib Lateral . . Y	60.8	33.2	-23.8	67.5	86.3	39.4	-23.9	69.4
Lower Rib Lateral . . Y(R)	58.3	33.1	-25.8	68.1	85.8	39.4	-24.5	69.4
SPINE ACCELERATIONS:								
Lower Lateral Y	75.8	38.2	-23.6	82.5	78.1	39.4	-22.8	72.5
Lower Lateral Y(R)	75.8	38.2	-23.5	82.5	77.6	39.4	-23.2	72.5
PELVIC ACCELERATIONS:								
Lateral Y	98.8	30.6	-16.0	74.4	133.7	32.5	-21.6	65.0
Lateral Y(R)	100.0	30.6	-16.0	74.4	136.3	32.5	-22.5	65.0

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

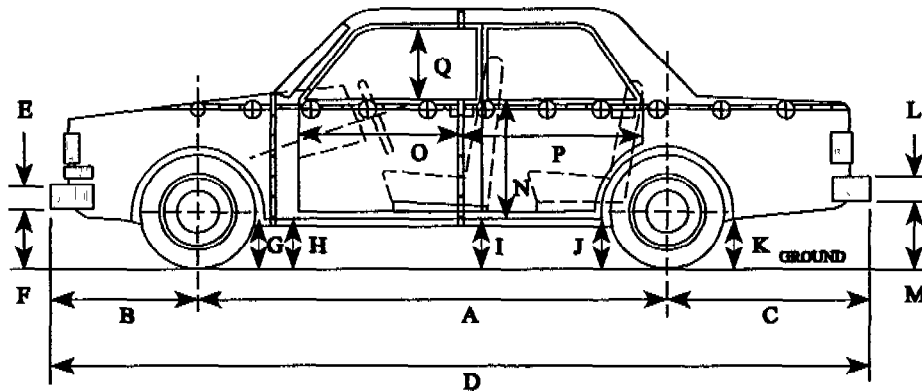
Note: Above data has been FIR filtered, Y(R) denotes redundant Y direction accelerometer.
 Head Accelerations are filtered at SAE Class 1000.

DATA SHEET 6

VEHICLE SIDE MEASUREMENTS

Vehicle: 2001 Daewoo Leganza

NHTSA No. C10502



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	2670	2674	2576	-98
B	938	-	958	20
C	1062	-	1095	33
D	4670	-	4692	22
E	202	-	202	0
F	404	404	433	29
G	288	264	342	78
H	288	264	341	77
I	289	249	347	98
J1	201	158	165	7
J2	299	253	273	20
K	277	222	234	12
L	318	-	318	0
M	396	339	344	5
N	682	-	573	-109
O	720	-	703	-17
P	1286	-	1149	-137
Q	475	-	433	-42
R	4598	-	4582	-16
S	4602	-	4520	-82
T	1775	-	1544	-231

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

E&L = Bumper Thickness
J1 = To Pinch Weld

R = Right Side Length
J2 = To Sill

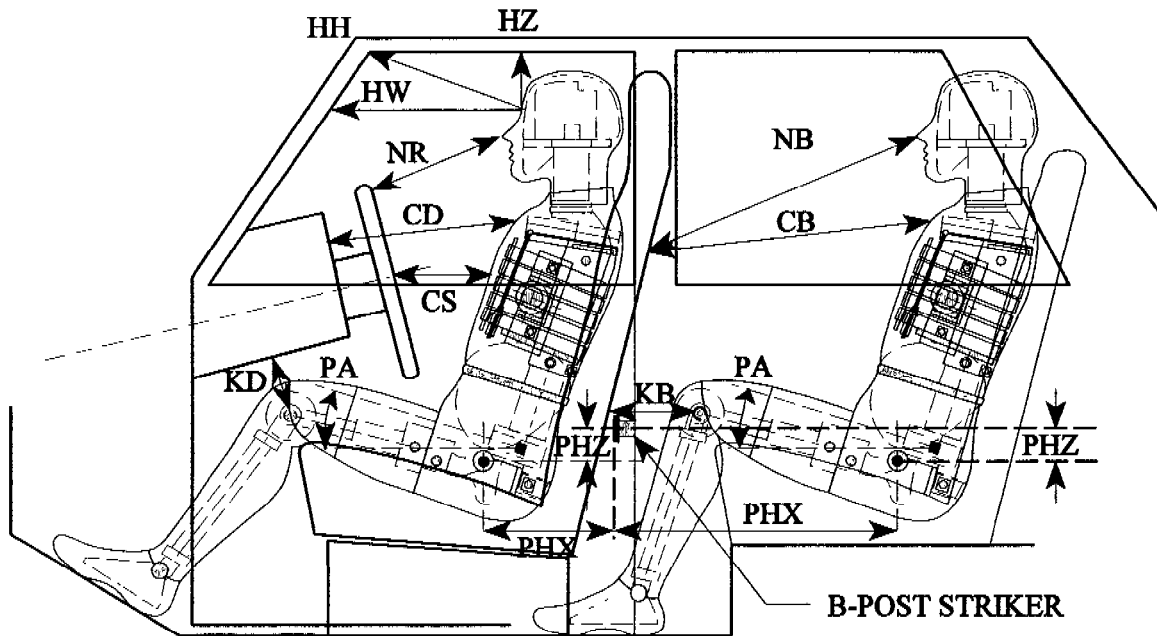
S = Left Side Length

DATA SHEET 7

SID LONGITUDINAL CLEARANCE DIMENSIONS

Vehicle: 2001 Daewoo Leganza

NHTSA No. C10502



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# 013	LEFT REAR PASS. ID# 015
HH	438	N/A
HW	716	N/A
HZ	181	163
NR/NB	520	590
CD/CB	597	500
CS	350	N/A
KDL(KDA°)/KBL(KDA°)	199 / (36 °)	210 / (25 °)
KDR(KBA°)/KBR(KBA°)	183 / (33 °)	217 / (21 °)
PA°	24.0 °	23.8 °
PHX	206	252
PHZ	111	208

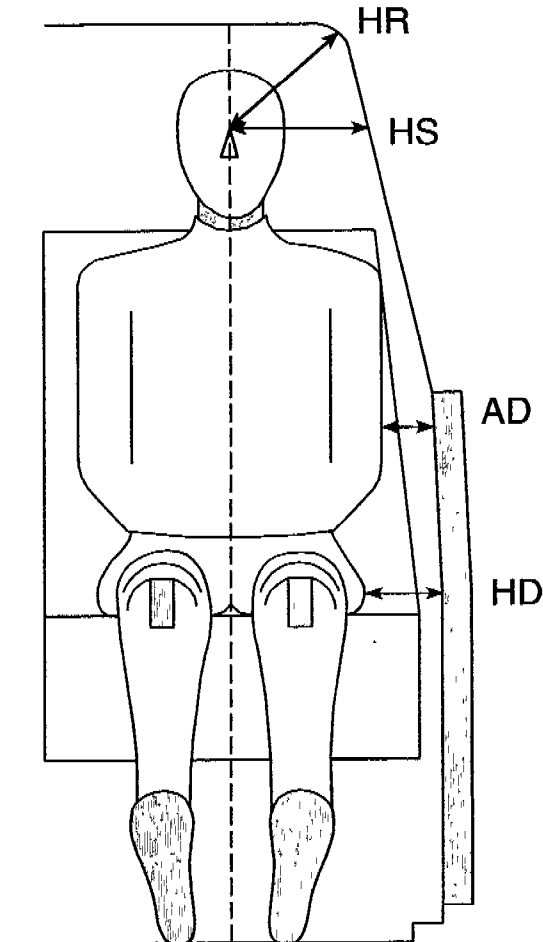
Note: 2-door vehicle shown. Rear dummy PHX & PHZ measurements for 4-door vehicle would use the C-post striker as a reference point.

DATA SHEET 8

SID LATERAL CLEARANCE DIMENSIONS

Vehicle: 2001 Daewoo Leganza

NHTSA No. C10502



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

	DRIVER ID # <u>013</u>		LEFT REAR PASS. ID # <u>015</u>	
HR	226		161	
HS	325		305	
AD*	LOWER: 120	UPPER: 105	LOWER: 112	UPPER: 91
HD	166		172	

* 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.

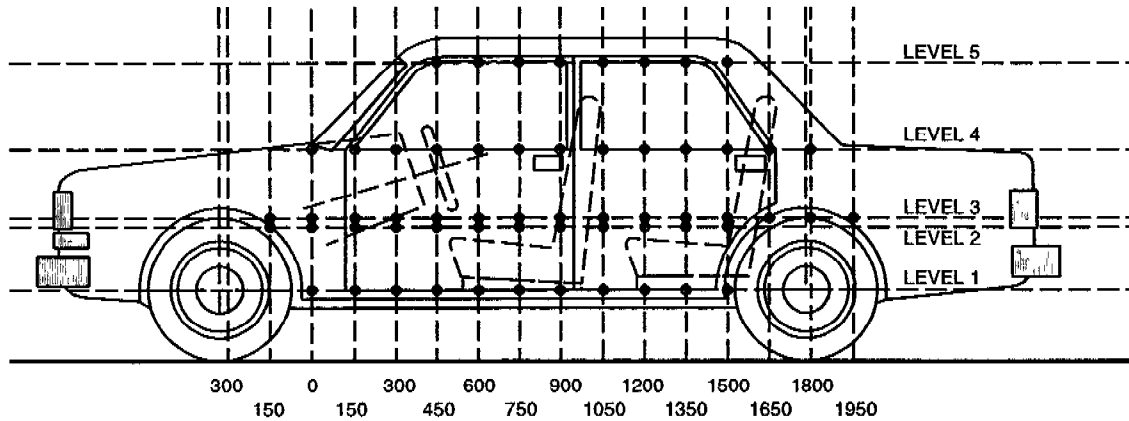
Upper measurement is taken laterally at the center of the upper rib accelerometer height from the SID arm segment to the closest part of the vehicle side.

DATA SHEET 9

VEHICLE SIDE MEASUREMENTS

Vehicle: 2001 Daewoo Leganza

NHTSA No. C10502



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 - 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>1327</u>	millimeters
Level 4 @ Window Sill	=	<u>825</u>	millimeters
Level 3 @ Mid Door	=	<u>575</u>	millimeters
Level 2 @ Occupant H-Point	=	<u>452</u>	millimeters
Level 1 @ Sill Top Height	=	<u>228</u>	millimeters

DATA SHEET 10

VEHICLE EXTERIOR CRUSH PROFILES - ALL LEVELS

Vehicle: 2001 Daewoo Leganza

NHTSA No. C10502

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

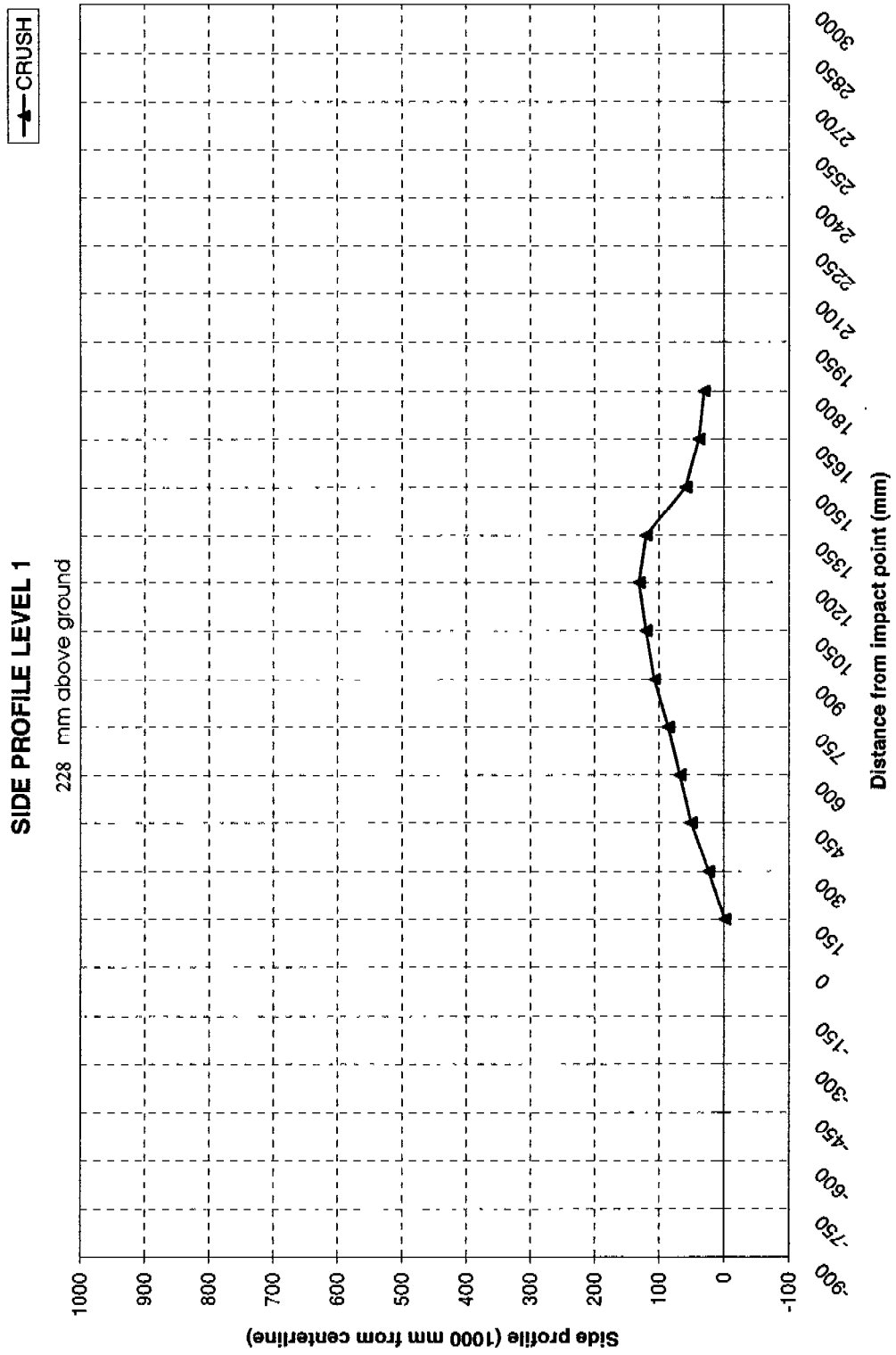
		DISTANCE IN MILLIMETERS (mm) FROM IMPACT POINT																											
LEVEL	HEIGHT (mm)	-900	-750	-600	-450	-300	-150	0	150	300	450	600	750	900	1050	1200	1350	1500	1650	1800	1950	2100	2250	2400	2550	2700	2850	3000	
LEVEL 1 SIDE SILL	228	PRE	-	-	-	-	-	-	197	203	203	202	200	197	196	195	193	192	192	188	-	-	-	-	-	-	-	-	
		POST	-	-	-	-	-	-	196	227	254	270	286	304	316	326	313	251	231	219	-	-	-	-	-	-	-		
		CRUSH	N/A	N/A	N/A	N/A	N/A	N/A	-1	24	51	68	86	107	120	131	120	59	39	31	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
LEVEL 2 H POINT	452	PRE	195	169	-	-	-	145	147	140	138	135	134	134	129	131	131	131	133	134	120	-	-	-	-	169	182	205	
		POST	94	67	-	-	-	-	218	364	394	421	446	465	483	497	509	529	542	546	472	202	-	-	-	170	187	202	
		CRUSH	-101	-102	N/A	N/A	N/A	N/A	73	217	254	283	311	331	349	368	378	398	411	413	338	82	N/A	N/A	N/A	N/A	1	5	-3
LEVEL 3 MID DOOR	575	PRE	208	169	-	-	-	135	145	146	144	142	141	138	139	137	139	139	139	140	140	-	-	-	-	161	182	202	229
		POST	106	69	-	-	-	149	215	329	375	379	396	420	439	457	485	483	488	485	458	360	-	-	167	183	203	228	
		CRUSH	-102	-100	N/A	N/A	N/A	N/A	14	70	183	229	235	254	279	301	318	348	344	349	318	220	N/A	N/A	N/A	6	1	1	-1
LEVEL 4 WINDOW SILL	825	PRE	532	400	293	243	226	214	203	198	189	183	180	177	174	172	171	173	172	174	175	178	183	191	201	210	224	246	271
		POST	434	321	214	184	178	177	183	242	288	339	377	390	408	431	454	482	491	487	419	310	204	210	212	215	225	241	262
		CRUSH	-98	-79	-79	-59	-48	-37	-10	44	99	156	197	213	234	259	283	309	319	313	244	132	21	19	11	5	1	-5	-9
LEVEL 5 WINDOW TOP	1327	PRE	-	-	-	-	-	-	-	-	-	-	-	-	455	434	432	435	443	471	529	-	-	-	-	-	-	-	
		POST	-	-	-	-	-	-	-	-	-	-	-	-	472	499	544	526	503	484	478	528	-	-	-	-	-	-	
		CRUSH	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	17	65	112	94	68	41	7	-1	N/A	N/A	N/A	N/A	N/A	N/A

DATA SHEET 10 (continued)

VEHICLE EXTERIOR CRUSH PROFILES

Vehicle: 2001 Daewoo Leganza

NHTSA No. C10502

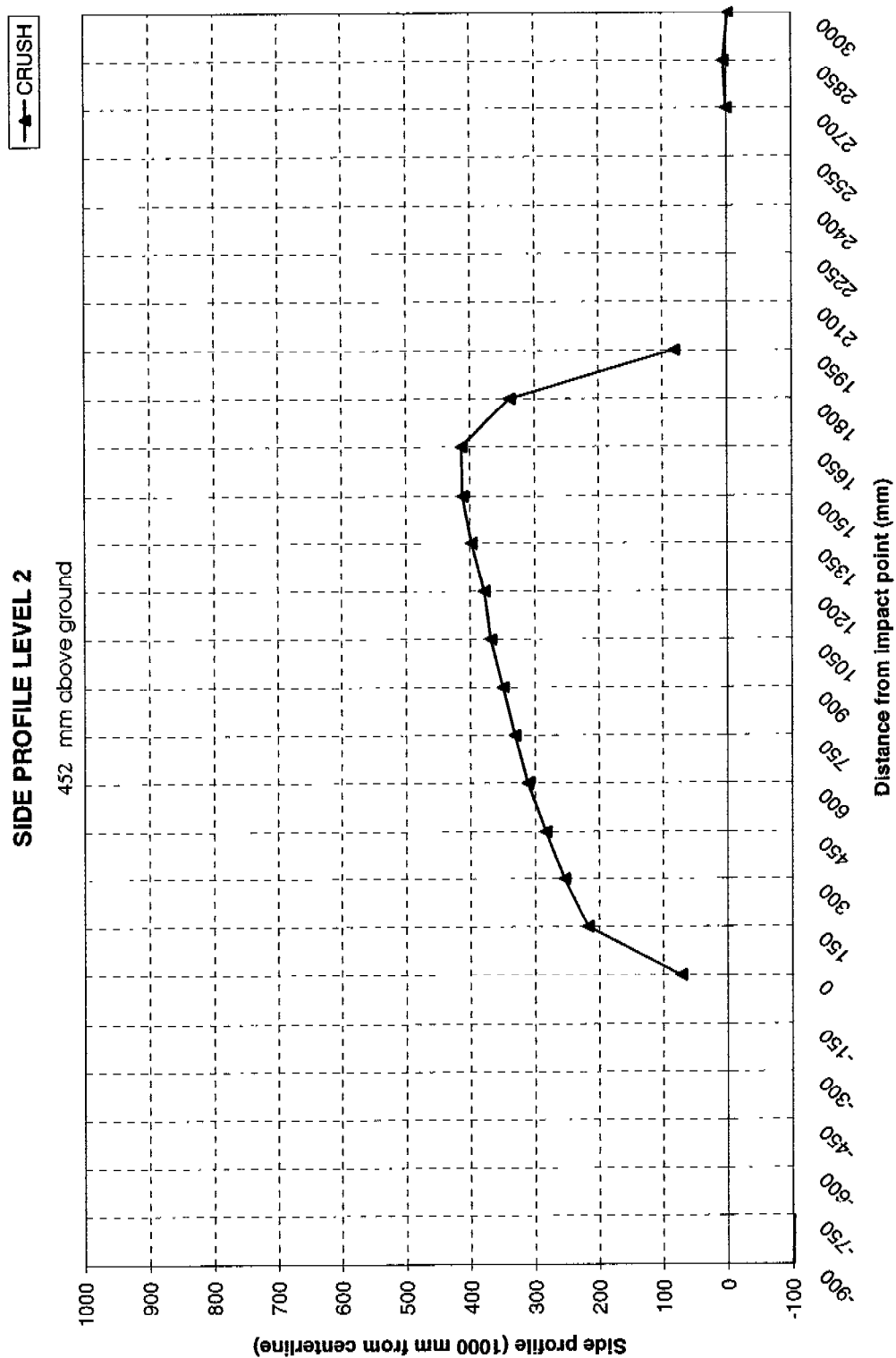


DATA SHEET 10 (continued)

VEHICLE EXTERIOR CRUSH PROFILES

Vehicle: 2001 Daewoo Leganza

NHTSA No. C10502

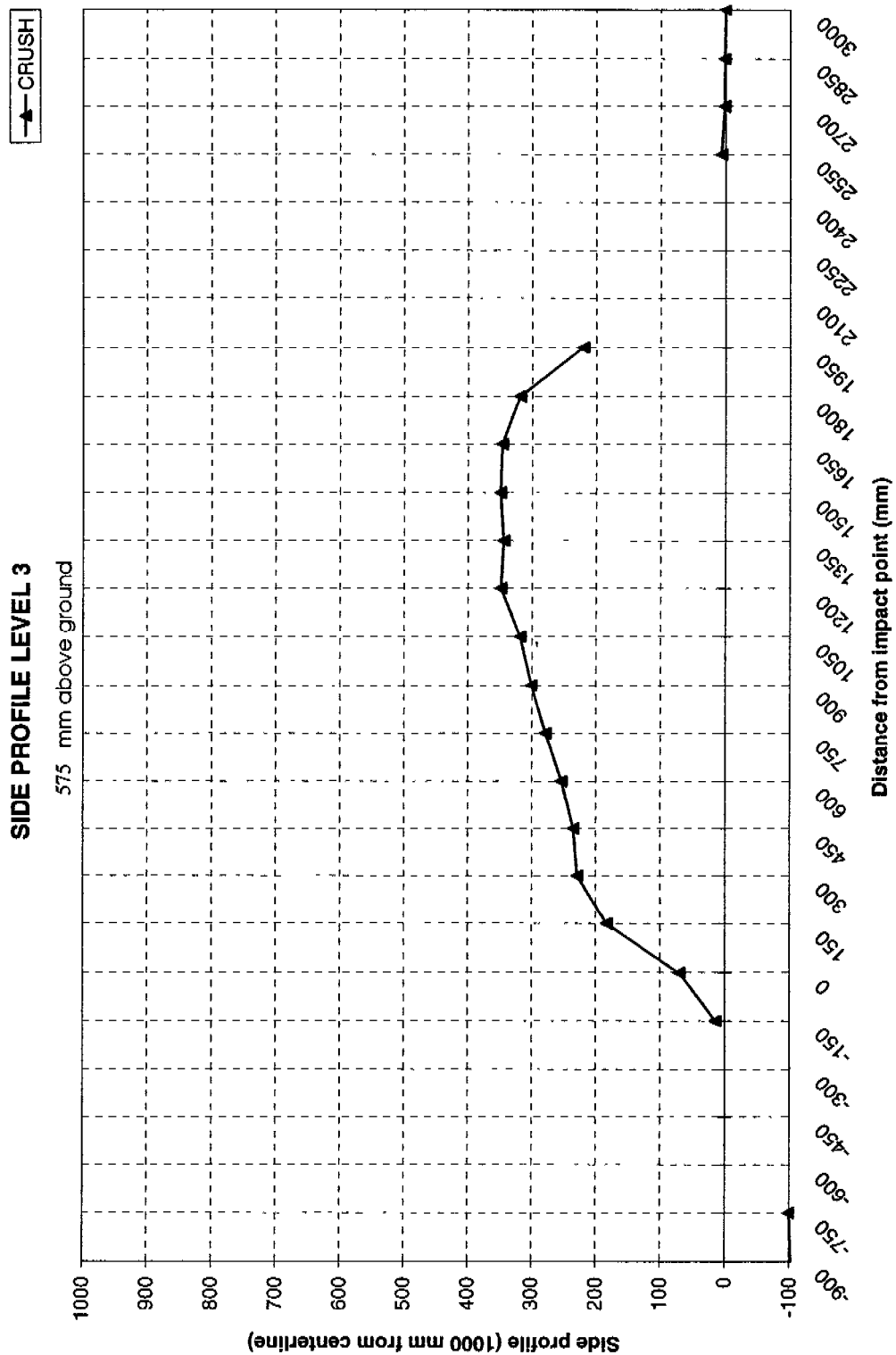


DATA SHEET 10 (continued)

VEHICLE EXTERIOR CRUSH PROFILES

Vehicle: 2001 Daewoo Leganza

NHTSA No. C10502

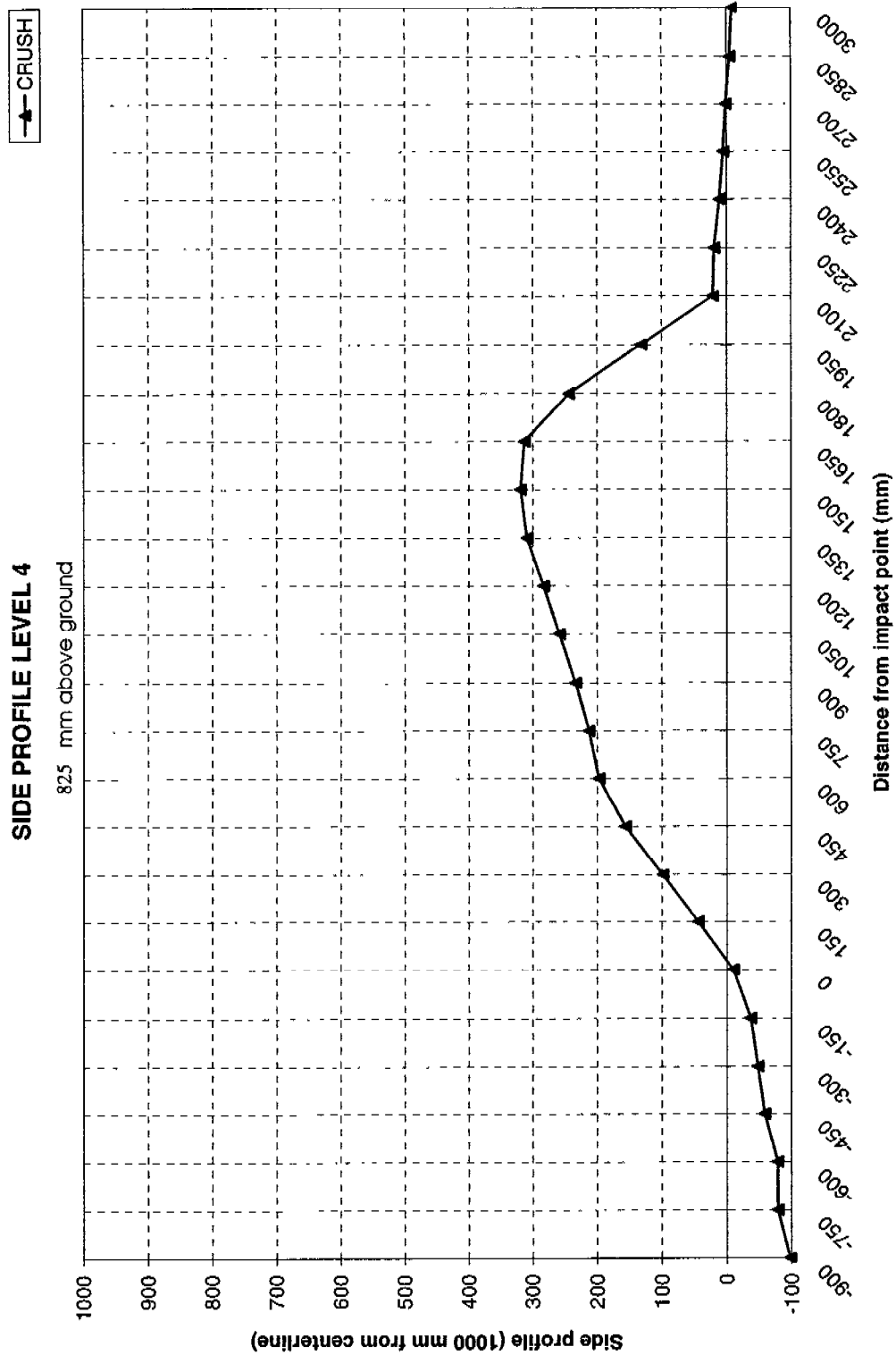


DATA SHEET 10 (continued)

VEHICLE EXTERIOR CRUSH PROFILES

Vehicle: 2001 Daewoo Leganza

NHTSA No. C10502

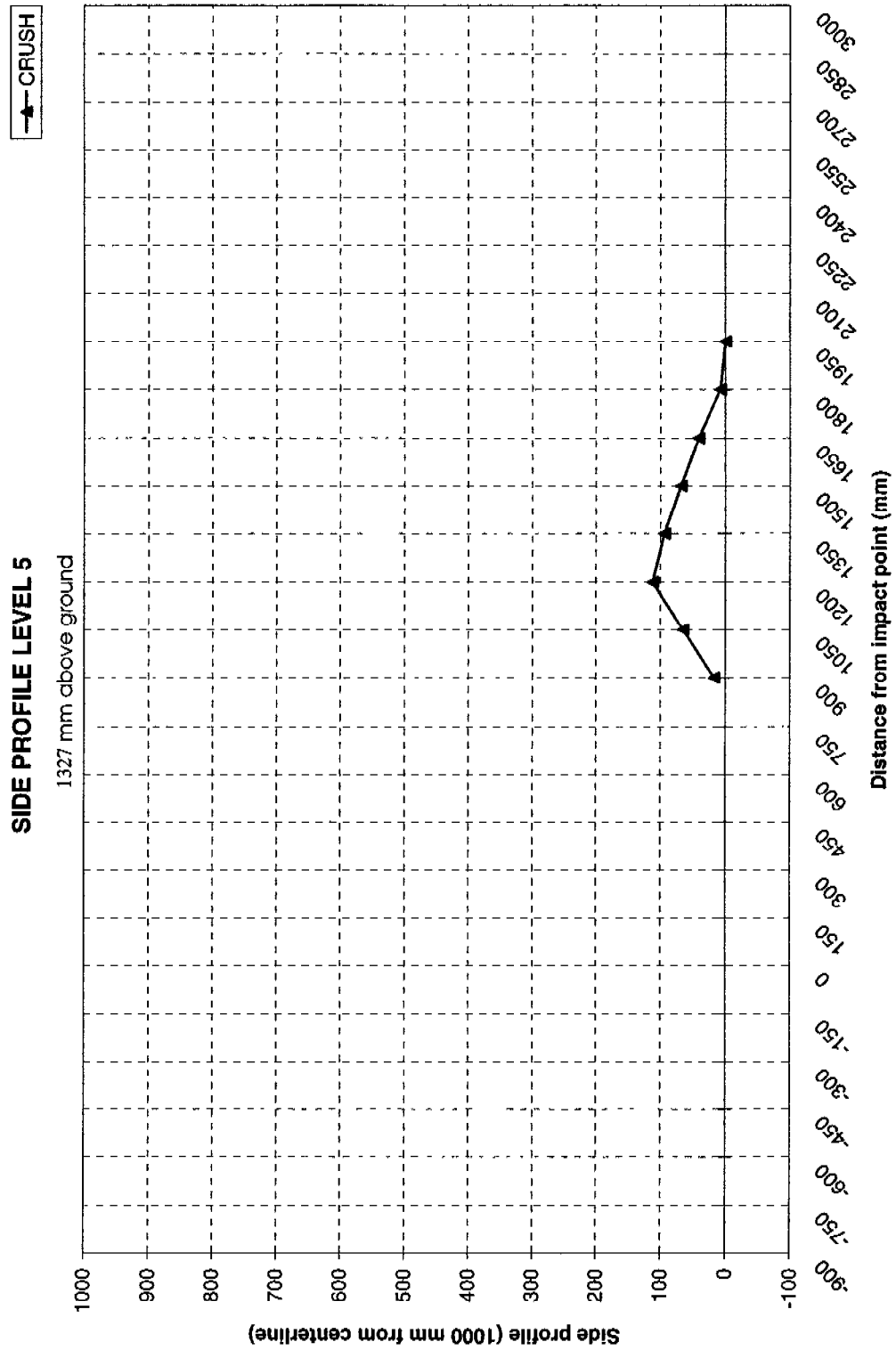


DATA SHEET 10 (continued)

VEHICLE EXTERIOR CRUSH PROFILES

Vehicle: 2001 Daewoo Leganza

NHTSA No. C10502

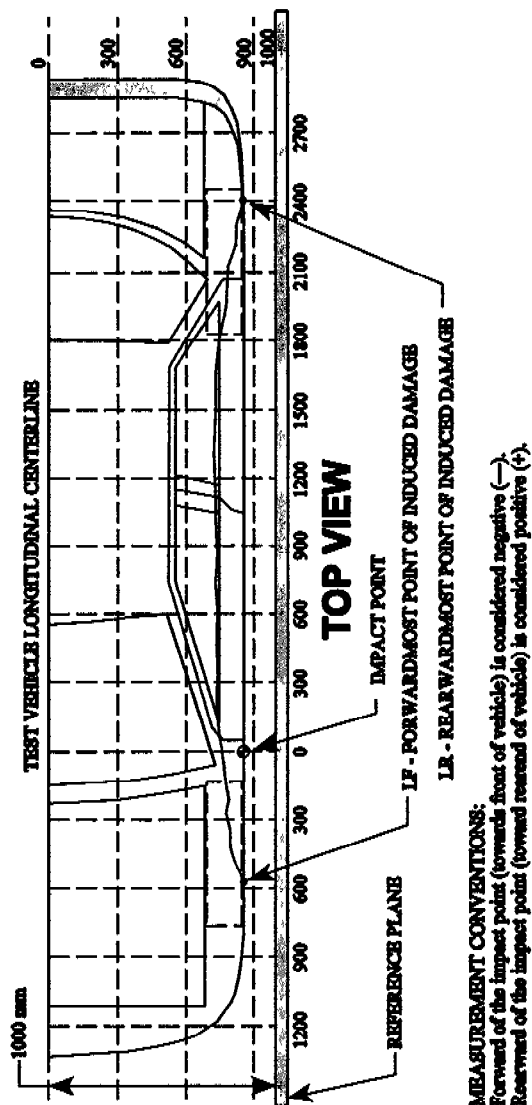


DATA SHEET 11

VEHICLE DAMAGE PROFILE DISTANCES

Vehicle: 2001 Daewoo Leganza

NHTSA No. C10502



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

DPD MEASUREMENTS		POST TEST (mm)	PRETEST (mm)	STATIC CRUSH (mm)
1	(LR = <u>2800</u> mm)	181	177	4
2	2212	208	188	20
3	1624	545	132	413
4	1036	495	129	366
5	448	421	138	283
6	(LF = <u>-140</u> mm)	154	136	18

DATA SHEET 12

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

Vehicle: 2001 Daewoo Leganza

NHTSA No. C10502

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

		DISTANCE RIGHT OF CENTER (mm)										DISTANCE LEFT OF CENTER (mm)									
LEVEL	HEIGHT AT CL (mm)*		800	700	600	500	400	300	200	100			100	200	300	400	500	600	700	800	
LEVEL 4 TOP STACK	813		619	619	619	619	619	619	619	619	619	619	619	619	619	619	619	619	619	619	
		PRE	619	619	619	619	619	619	619	619	619	619	619	619	619	619	619	619	619	619	
		POST	665	613	600	601	608	618	621	624	625	622	636	648	654	685	714	741	769		
	CRUSH	46	-6	-19	-18	-11	-1	2	5	-6	3	17	29	35	66	95	122	150			
LEVEL 3 MID LEVEL	686		619	619	619	619	619	619	619	619	619	619	619	619	619	619	619	619	619	619	
		PRE	619	619	619	619	619	619	619	619	619	619	619	619	619	619	619	619	619	619	
		POST	649	616	611	602	607	618	620	619	615	617	627	630	637	655	678	722	763		
	CRUSH	30	-3	-8	-17	-12	-1	1	0	-4	-2	8	11	18	36	59	103	144			
LEVEL 2 TOP BUMPER	533		619	619	619	619	619	619	619	619	619	619	619	619	619	619	619	619	619	619	
		PRE	619	619	619	619	619	619	619	619	619	619	619	619	619	619	619	619	619	619	
		POST	640	640	638	639	641	643	641	640	640	644	649	648	654	659	671	680	715		
	CRUSH	21	21	19	20	22	24	22	21	21	25	30	29	35	40	52	61	96			
LEVEL 1 MID BUMPER	432		535	519	518	518	518	518	518	518	518	518	518	518	518	518	518	519	535		
		PRE	535	519	518	518	518	518	518	518	518	518	518	518	518	518	518	519	535		
		POST	585	563	560	566	576	577	568	564	566	577	573	582	586	592	605	634	652		
	CRUSH	50	44	42	48	58	59	50	46	43	59	64	68	74	87	115	117				

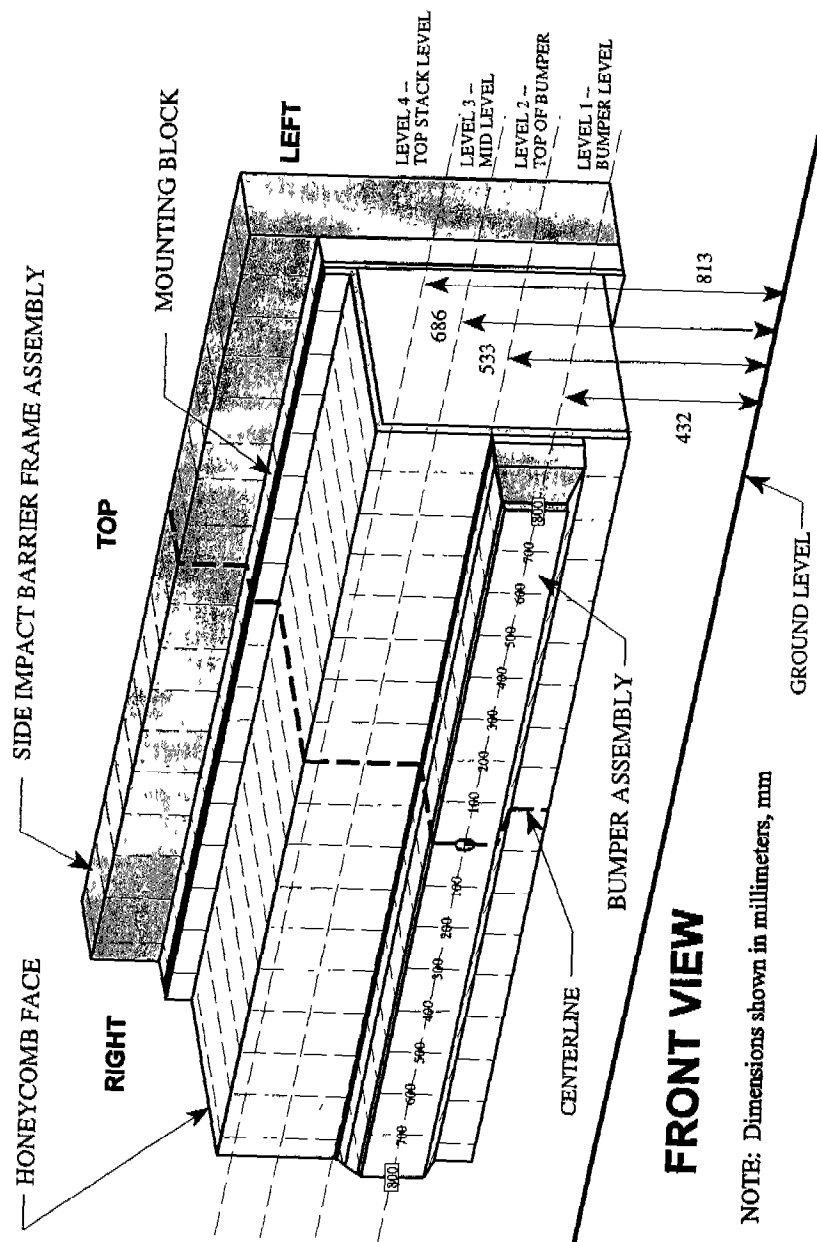
*Heights measured above ground level.

DATA SHEET 12 (continued)

EXTERIOR STATIC CRUSH FOR IMPACTOR FACE

Vehicle: 2001 Daewoo Leganza

NHTSA No. C10502

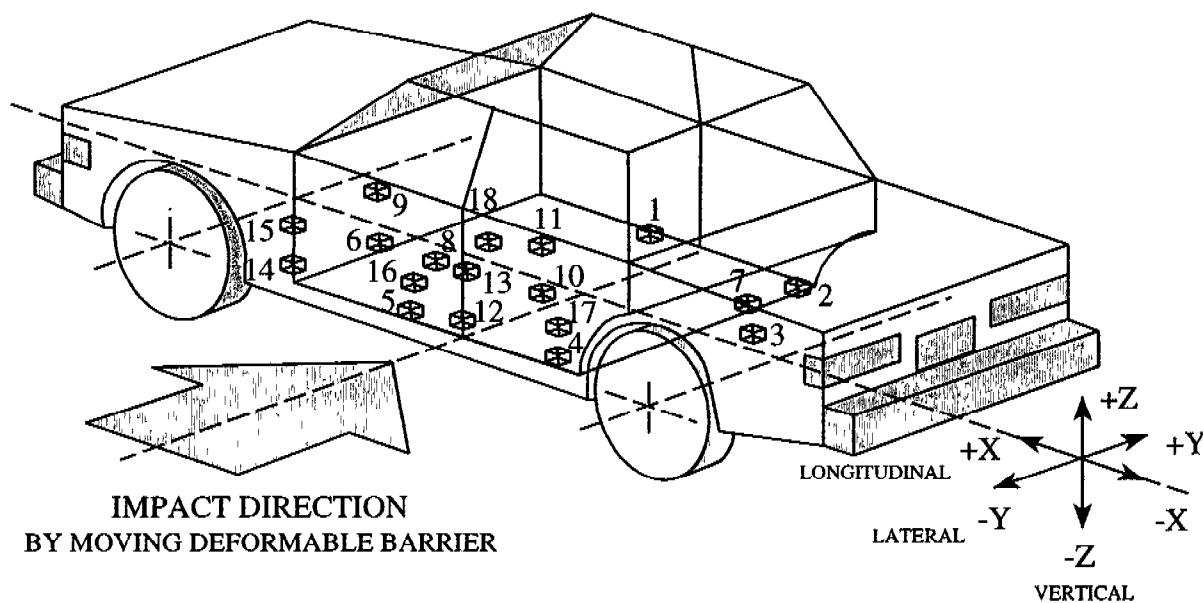


DATA SHEET 13

TEST VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

Vehicle: 2001 Daewoo Leganza

NHTSA No. C10502



- 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: 2001 Daewoo Leganza

NHTSA No. C10502

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	2938	677	307	pos. 4.9 neg. -8.3	29.0 20.3	18.7 -4.9	8.2 63.7	7.4 -6.3	50.5 9.1	20.3 0.0	8.3 -19.3
2	Right Side Sill at Rear Seat	1948	669	273	pos. 5.4 neg. -8.1	29.3 20.1	23.3 -5.3	7.6 72.0	8.3 -7.2	36.7 16.9	24.5 0.0	15.9 -19.7
3	Rear Floorpan Above Axle	1147	5	460	pos. 7.7 neg. -3.5	66.6 29.5	18.9 -2.9	29.1 166.4	9.4 -9.3	53.6 27.1	20.1 0.0	30.1 -4.4
4	Left Side Sill at Rear Seat	1984	-677	280	pos. - neg. -	- -	76.7 -11.8	10.0 28.8	- -	- -	- -	- -
5	Left Side Sill at Front Seat	3010	-669	291	pos. - neg. -	- -	100.8\$ -3.5\$	41.4\$ -0.7\$	- -	- -	- -	- -
6	Left Front Door on Centerline	-	-	-	pos. - neg. -	- -	- -	- -	- -	- -	- -	- -
7	Right Rear Occupant Compartment	2171	525	247	pos. - neg. -	- -	18.8 -4.0	15.8 72.4	- -	- -	- -	- -
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. § - Questionable Data

DATA SHEET 13 (continued)

VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

Vehicle: 2001 Daewoo Leganza

NHTSA No. C10502

Accel. No.	Location	Coordinates (mm)±3			Lat. (y)			Vert. (z)			Resultant	
		X*	Y*	Z*	Max (g)	Time (msec)		Max (g)	Time (msec)		Max (g)	Time (msec)
12	Left Lower B-Pillar	2124	-669	280	pos.	-	111.4	-	10.4	-	-	-
					neg.	-	-24.9	-	16.2	-	-	-
13	Left Middle B-Pillar	2124	-686	843	pos.	-	141.7	-	7.6	-	-	-
					neg.	-	-102.6	-	15.1	-	-	-
14	Left Lower A-Pillar	3240	-698	417	pos.	-	88.0	-	5.0	-	-	-
					neg.	-	-31.9	-	20.8	-	-	-
15	Left Middle A-Pillar	3170	-667	977	pos.	-	24.8	-	19.9	-	-	-
					neg.	-	-9.0	-	24.9	-	-	-
16	Front Seat Track	2344	-565	293	pos.	-	74.9	-	17.0	-	-	-
					neg.	-	-14.3	-	52.1	-	-	-
17	Rear Seat Track	1018	-610	553	pos.	-	22.0	-	27.8	-	-	-
					neg.	-	-3.1	-	163.8	-	-	-
18	Vehicle CG	2316	0	573	pos.	82.8	52.2	102.6	19.6	49.3	121.8	28.8
					neg.	-59.2	-78.0	-43.9	28.9	28.9	0.0	-20.0

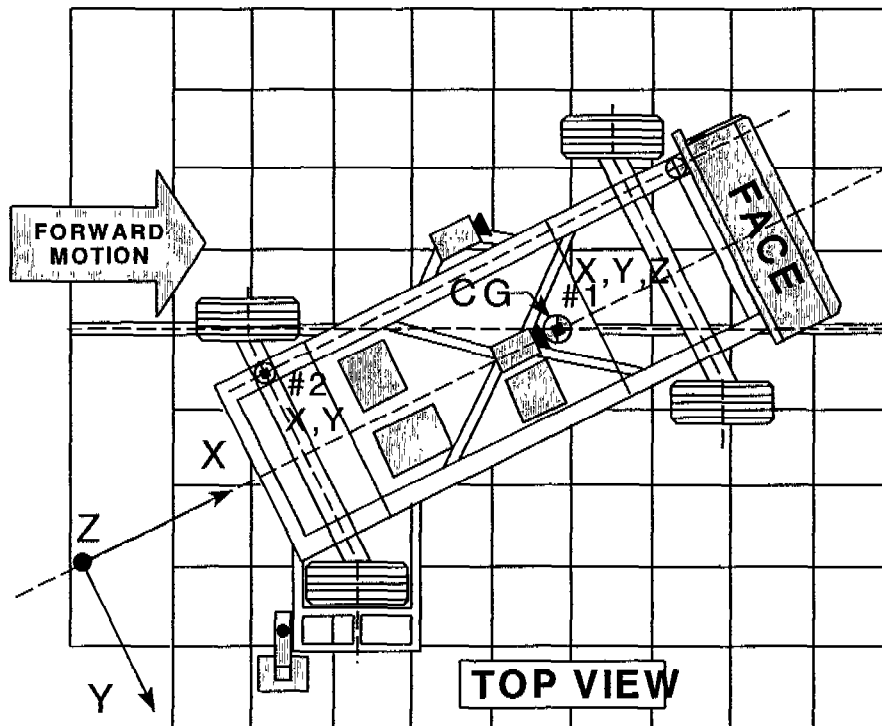
*Reference: X - Rear Bumper (+ Forward) Y - Vehicle Centerline (+ To Right) Z - Ground Level (+ Up)

DATA SHEET 14

MDB ACCELEROMETER LOCATIONS AND DATA SUMMARY

Vehicle: 2001 Daewoo Leganza

NHTSA No. C10502



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	1.4	138.8	-20.9	43.0
	Lateral..... Y				2.3	51.3	-10.1	26.6
	Vertical..... Z				10.2	58.9	-12.2	40.6
	Resultant..... R				24.4	40.9	0.3	-5.1
2	Rear Frame Member							
	Longitudinal... X	386	-660	660	1.9	175.1	-21.3	36.3
	Lateral..... Y				5.7	26.4	-1.2	99.8

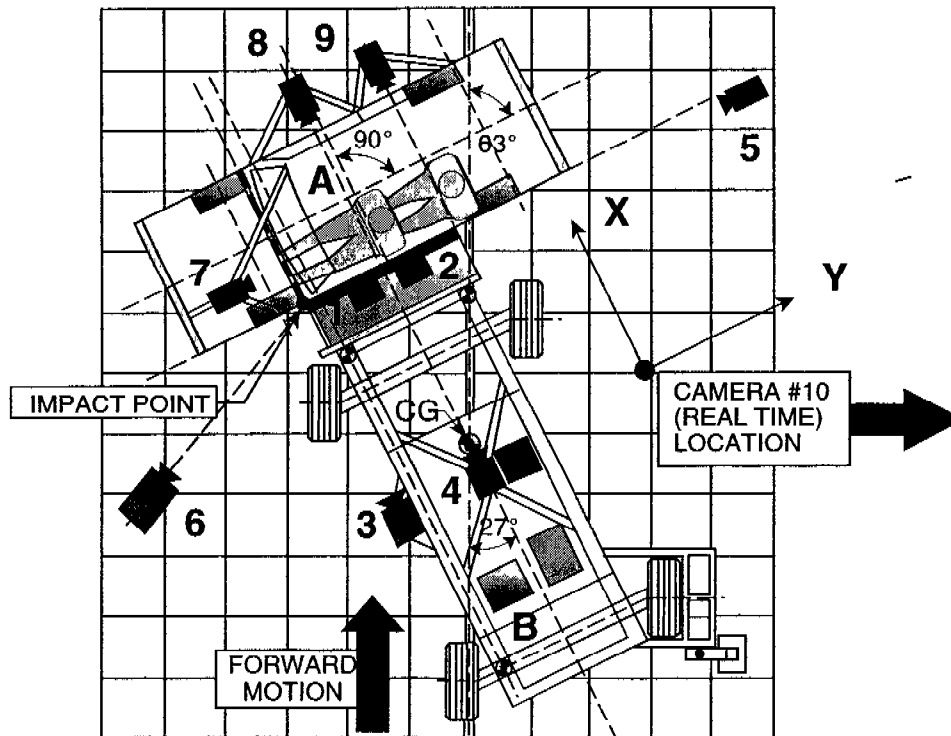
*Reference: X = Rear Bumper (+ Forward)
Y = Vehicle Centerline (+ To Right)
Z = Ground Level (+ Up)
All measurements accurate to within ± 3 mm.

DATA SHEET 15

HIGH SPEED CAMERA LOCATIONS AND DATA SUMMARY

Vehicle: 2001 Daewoo Leganza

NHTSA No. C10502



Camera No.	View	Coordinates (millimeters)			Angle (deg.)	Lens (mm)	Film Speed (fps)
		X*	Y*	Z*			
1	Overhead view of test vehicle	97	833	4880	-90	8	1005
2	Overhead closeup view of impact plane	233	881	4880	-90	12.5	1010
3	MDB onboard closeup view of impact point	-1470	0	847	0	13	1030
4	MDB onboard view of driver dummy	-1140	838	1586	-17	7.5	1005
5	Right side ground level overall view	-270	9511	1091	-4	25	1000
6	Left side ground level overall view	-1745	-1645	1052	-9	13	1010
7	Test vehicle onboard driver front view	-200	565	1240	-13	13	1000
8	Test vehicle onboard driver side view	1599	785	969	-15	8	970
9	Test vehicle onboard passenger side view	1577	1685	1005	-12	8	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

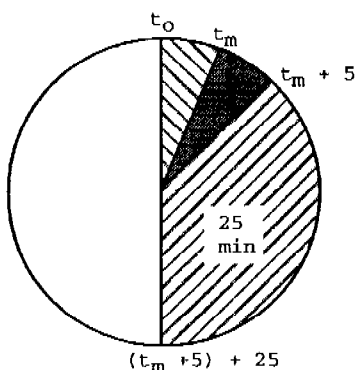
NHTSA No.: C10502 TEST DATE: December 4, 2000

Vehicle Mfg./Make/Model : 2001 Daewoo Leganza 4-Door Sedan

TEST VEHICLE IMPACT TYPE :

- ☐ Frontal (48.28 kph)
- ☐ Oblique (48.28 kph) with ☐ ° barrier face first
contacting the ☐ side
(driver/passenger)
- ☐ Rear Moving Barrier (48.28 kph)
- ☐ Lateral Moving Barrier (32.19 kph)
- ☒ Side Impact Moving Deformable Barrier (61.8 kph)
contacting the ☐ driver ☐ 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

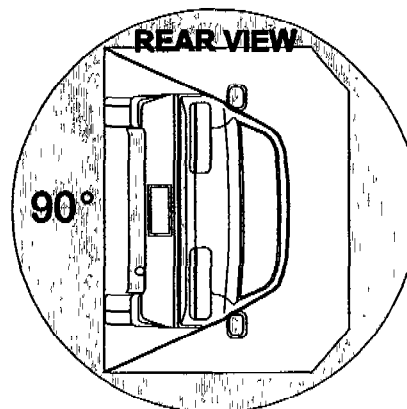
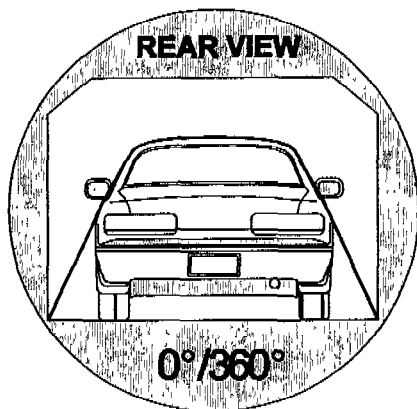
DATA SHEET 17

ROLLOVER DATA

Vehicle: 2001 Daewoo Leganza

NHTSA No. C10502

0 - 90 Degrees



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD :

Rollover Fixture 90° Rotation Time

1 minutes 20 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time +

5 minutes 0 seconds

TOTAL

6 minutes 20 seconds

Next whole minute interval

7 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

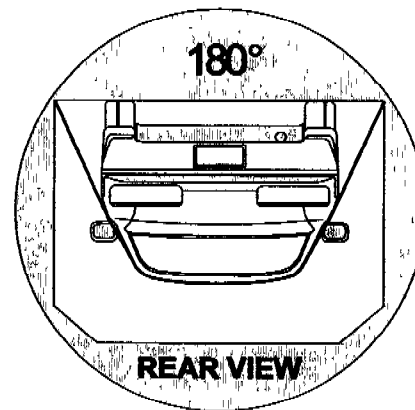
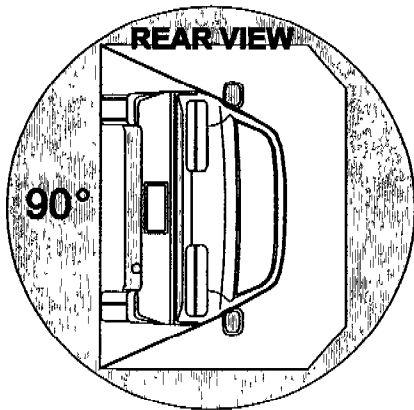
DATA SHEET 17 (continued)

ROLLOVER DATA

Vehicle: 2001 Daewoo Leganza

NHTSA No. C10502

90 - 180 Degrees



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD :

Rollover Fixture 90° Rotation Time	<u>1</u> minutes <u>02</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>2</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

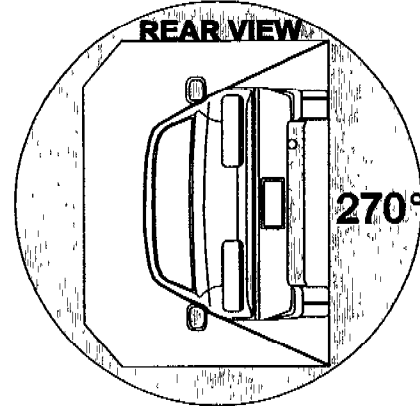
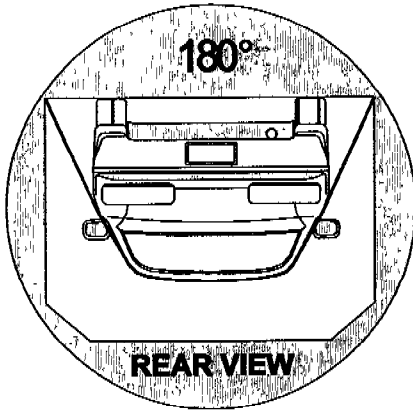
DATA SHEET 17 (continued)

ROLLOVER DATA

Vehicle: 2001 Daewoo Leganza

NHTSA No. C10502

180 - 270 Degrees



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD :

Rollover Fixture 90° Rotation Time	<u>1</u> minutes <u>02</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>2</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

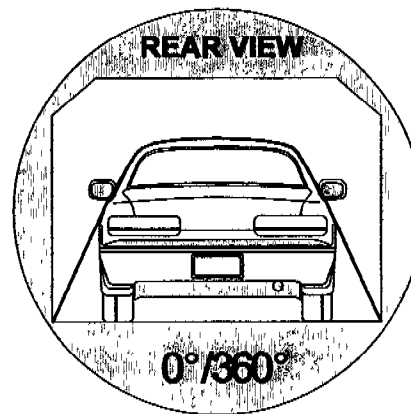
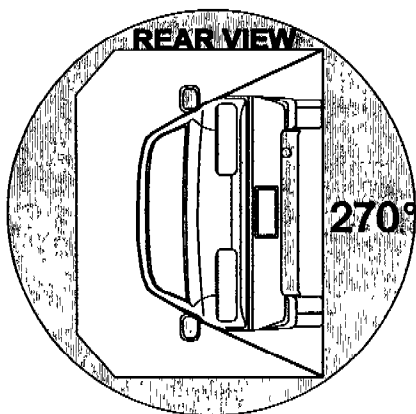
DATA SHEET 17 (continued)

ROLLOVER DATA

Vehicle: 2001 Daewoo Leganza

NHTSA No. C10502

270 - 360 Degrees



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD :

Rollover Fixture 90° Rotation Time	<u>1</u> minutes <u>19</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>19</u> seconds
Next whole minute interval	<u>7</u> minutes

II. FMVSS 301 REQUIREMENTS :

(1) Time Period

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

(2) Maximum Allowable Solvent Spillage

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

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

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

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

IV. SOLVENT SPILLAGE LOCATION(S) :

None

APPENDIX A

PHOTOGRAPHS

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Figure A- 4	POST-TEST REAR VIEW OF TEST VEHICLE	A- 6
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Figure A-1 PRE-TEST FRONTAL VIEW OF TEST VEHICLE





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



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

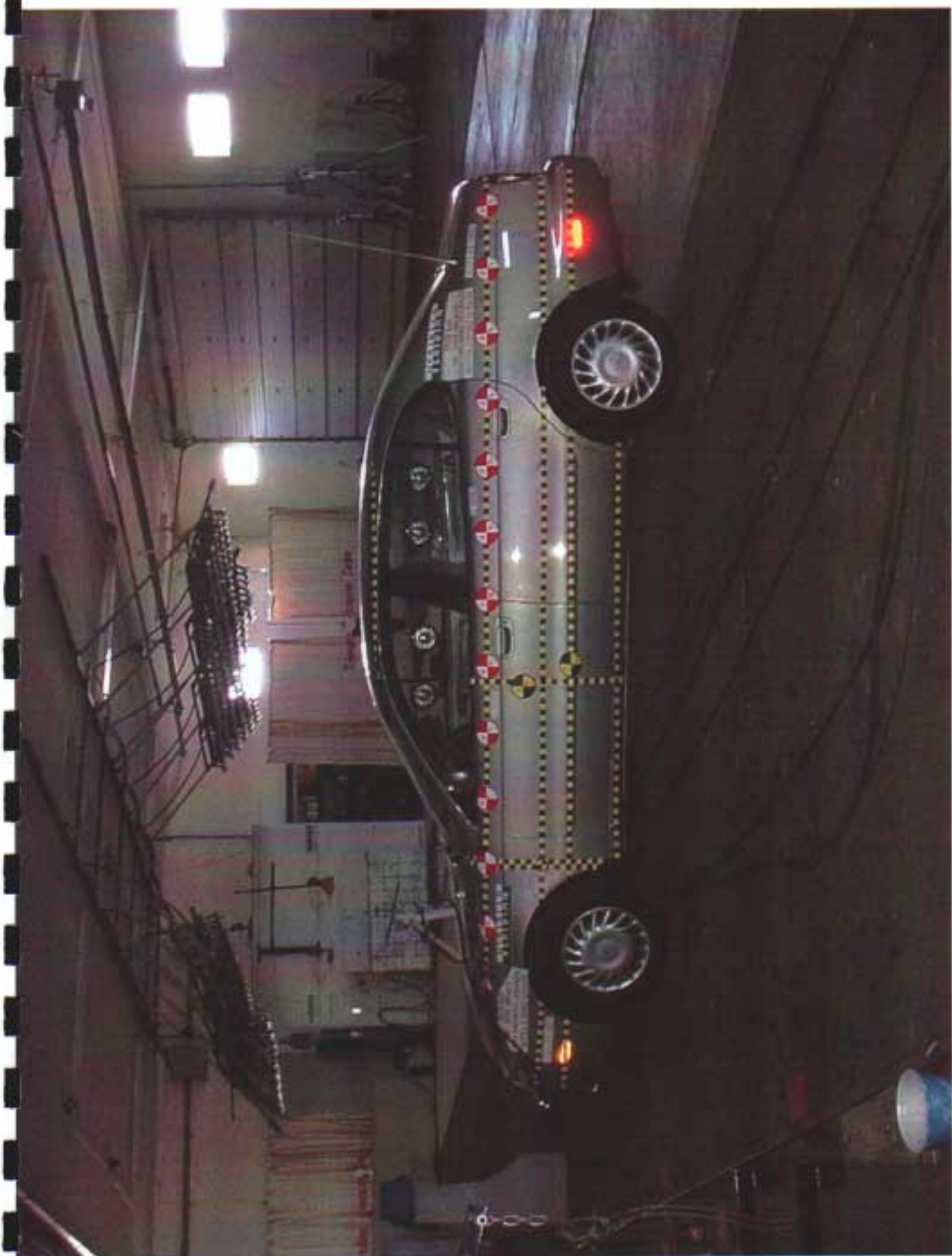


Figure A-5 PRE-TEST IMPACTED SIDE VIEW OF TEST VEHICLE



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



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

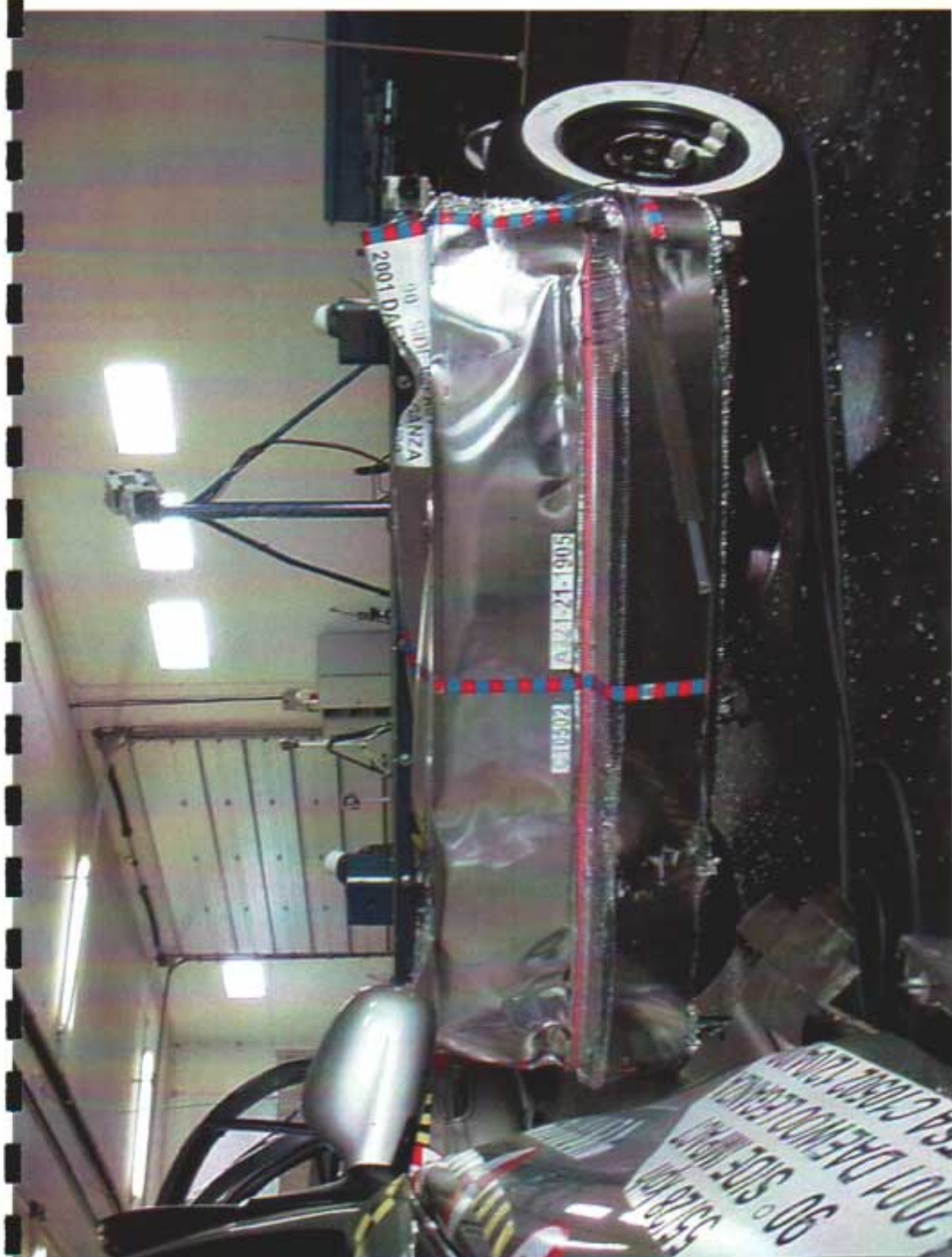


Figure A-8 POST-TEST FRONTAL VIEW OF IMPACTOR FACE

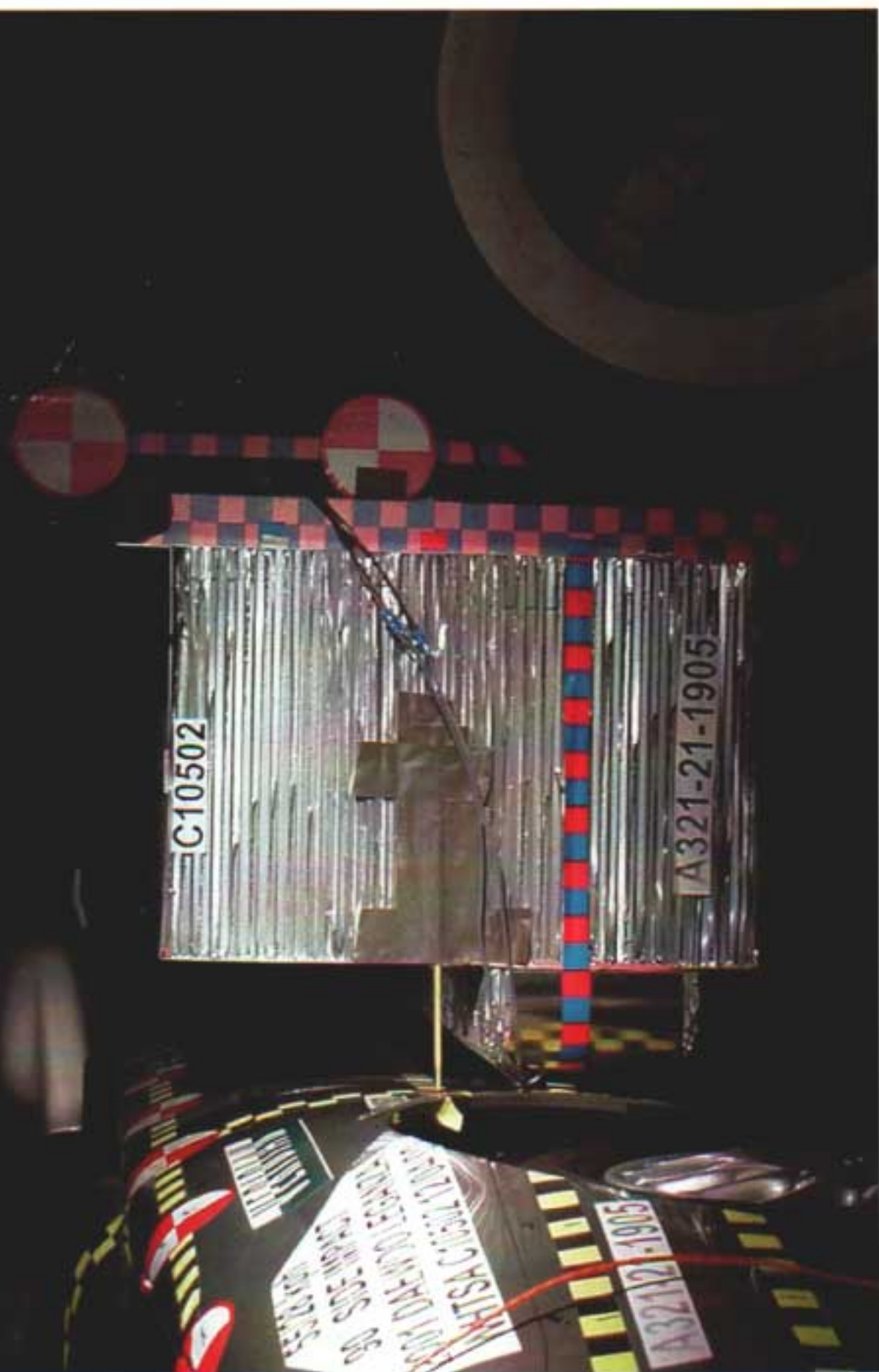


Figure A-9 PRE-TEST LEFT SIDE VIEW OF IMPACTOR FACE

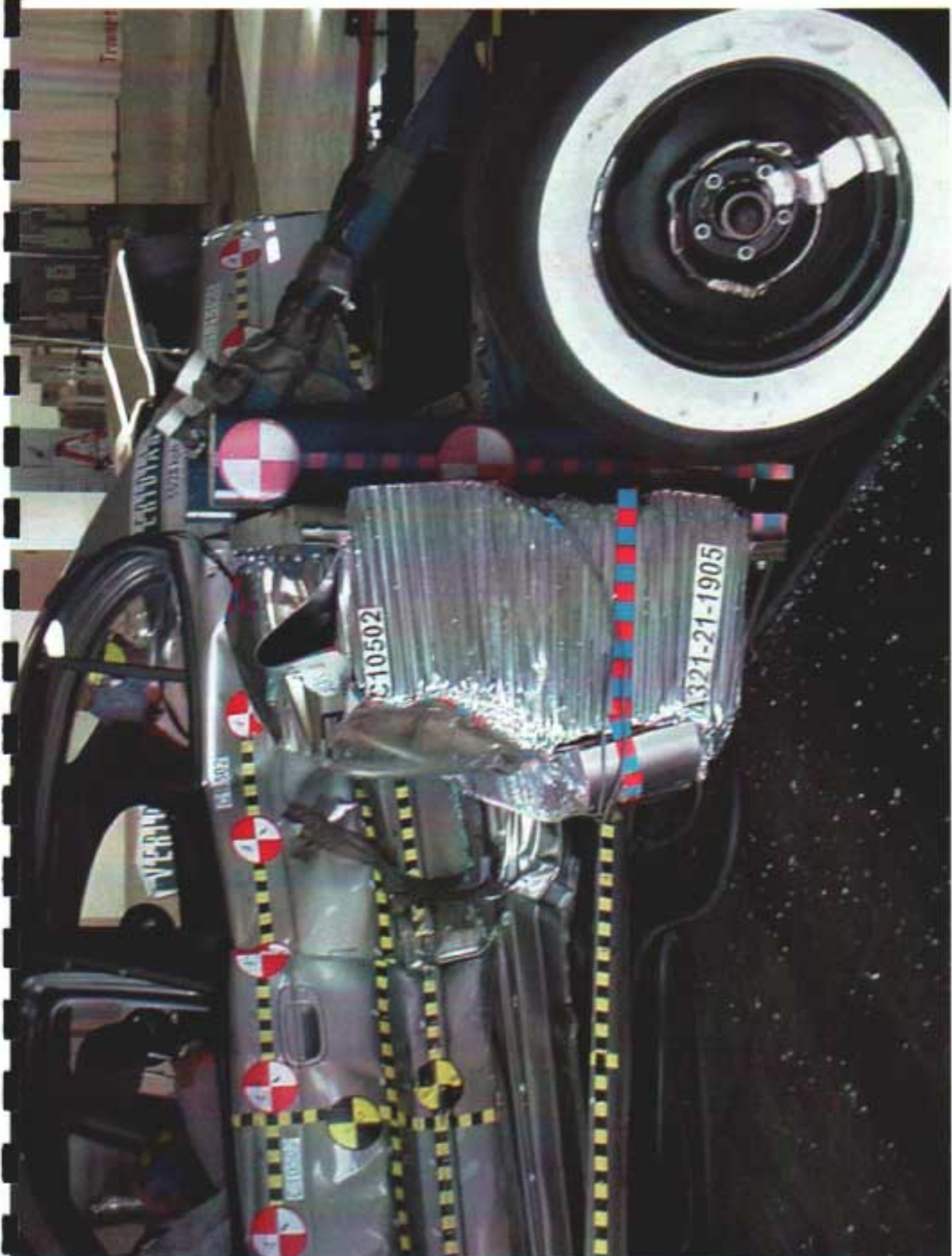


Figure A-10 POST-TEST LEFT SIDE VIEW OF IMPACTOR FACE

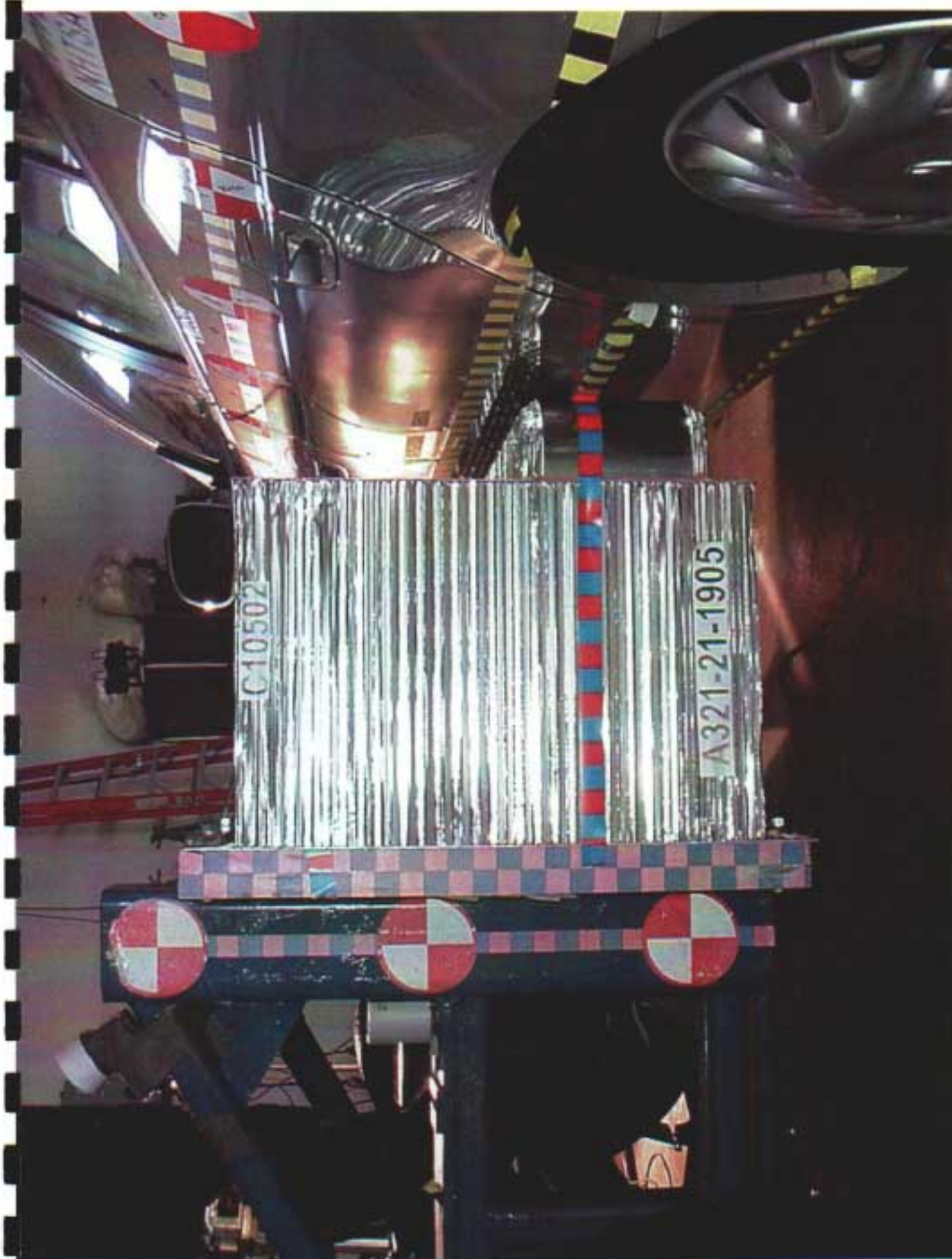


Figure A-11 PRE-TEST RIGHT SIDE VIEW OF IMPACTOR FACE



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



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

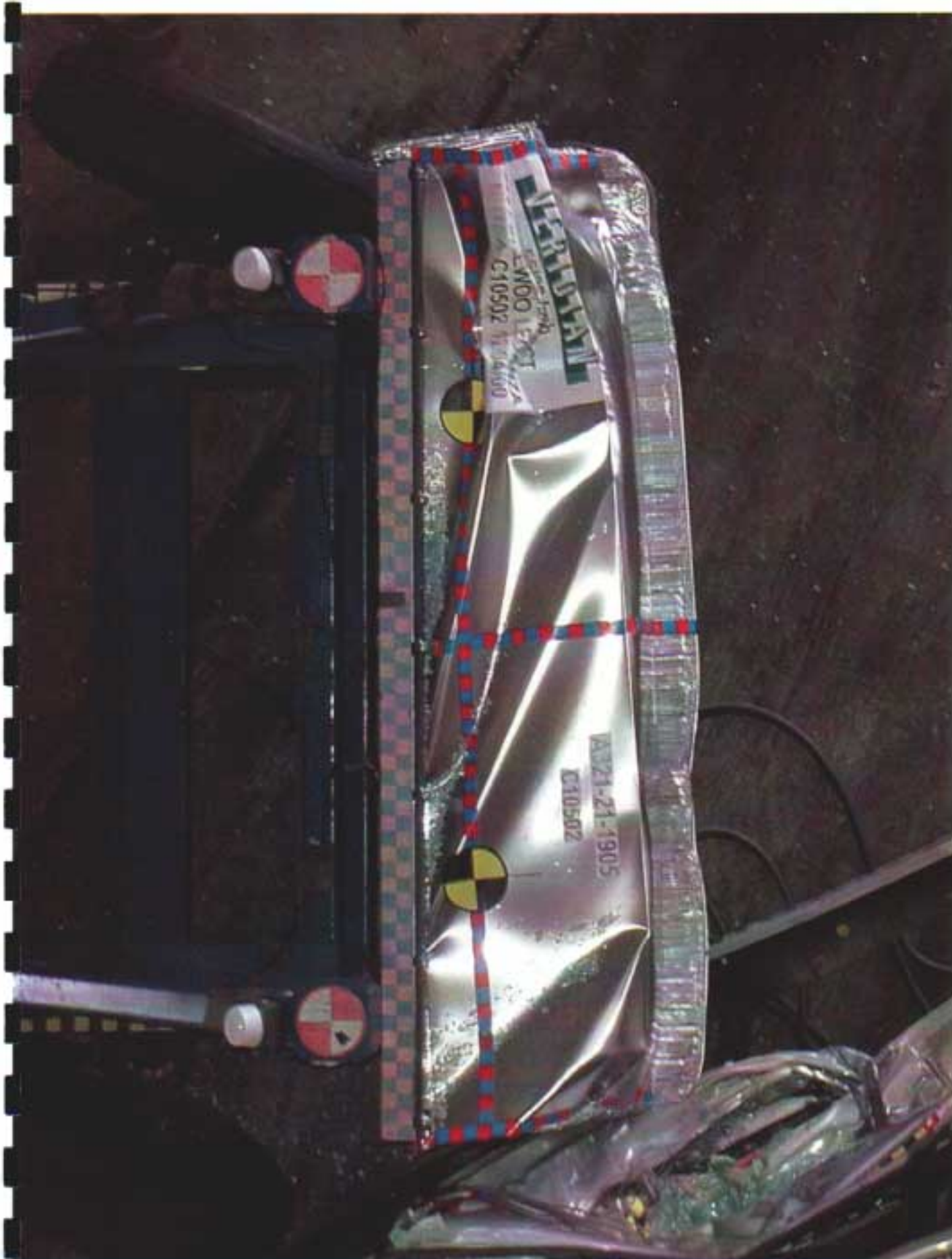
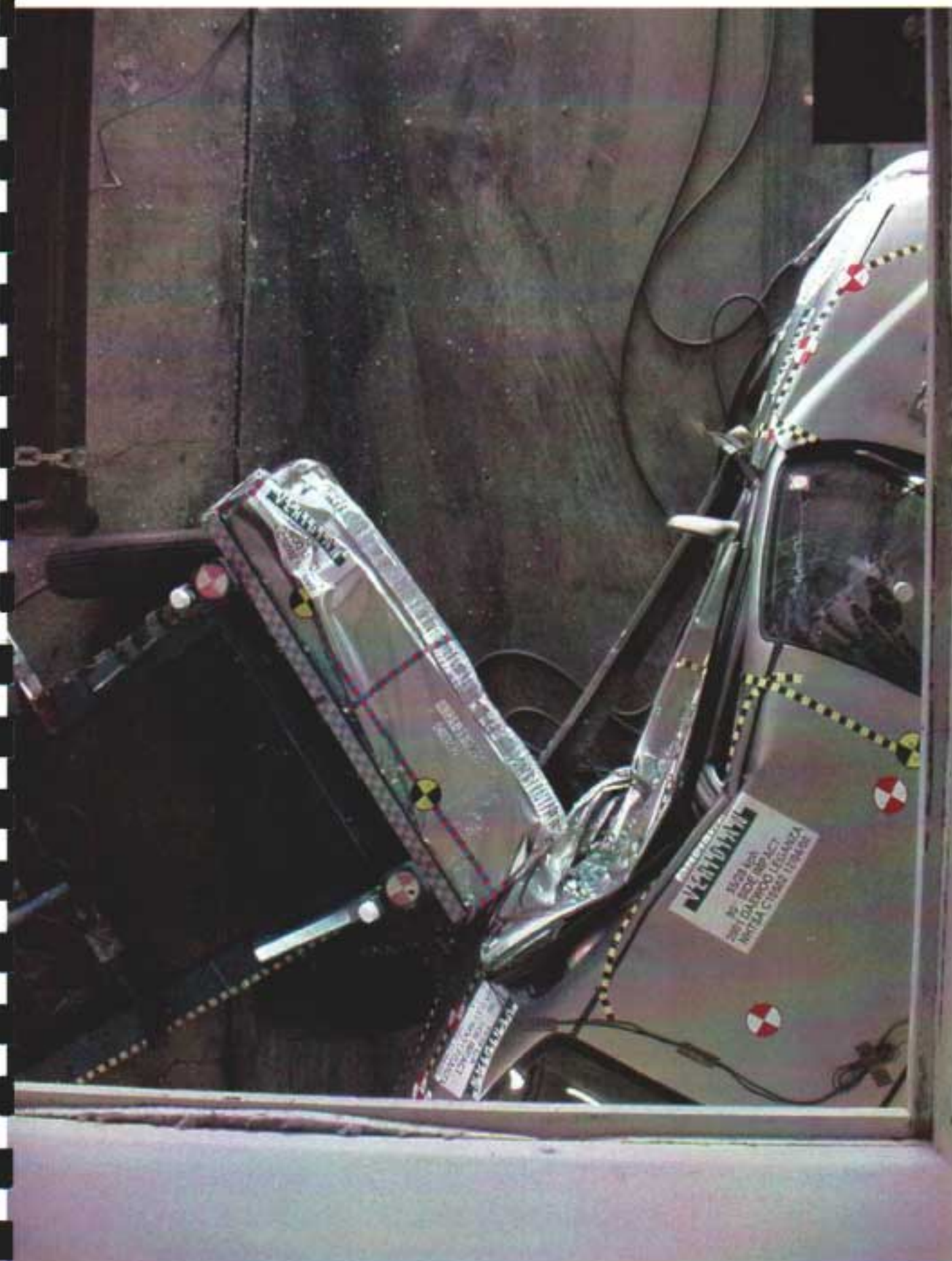


Figure A-14 POST-TEST TOP VIEW OF IMPACTOR FACE



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



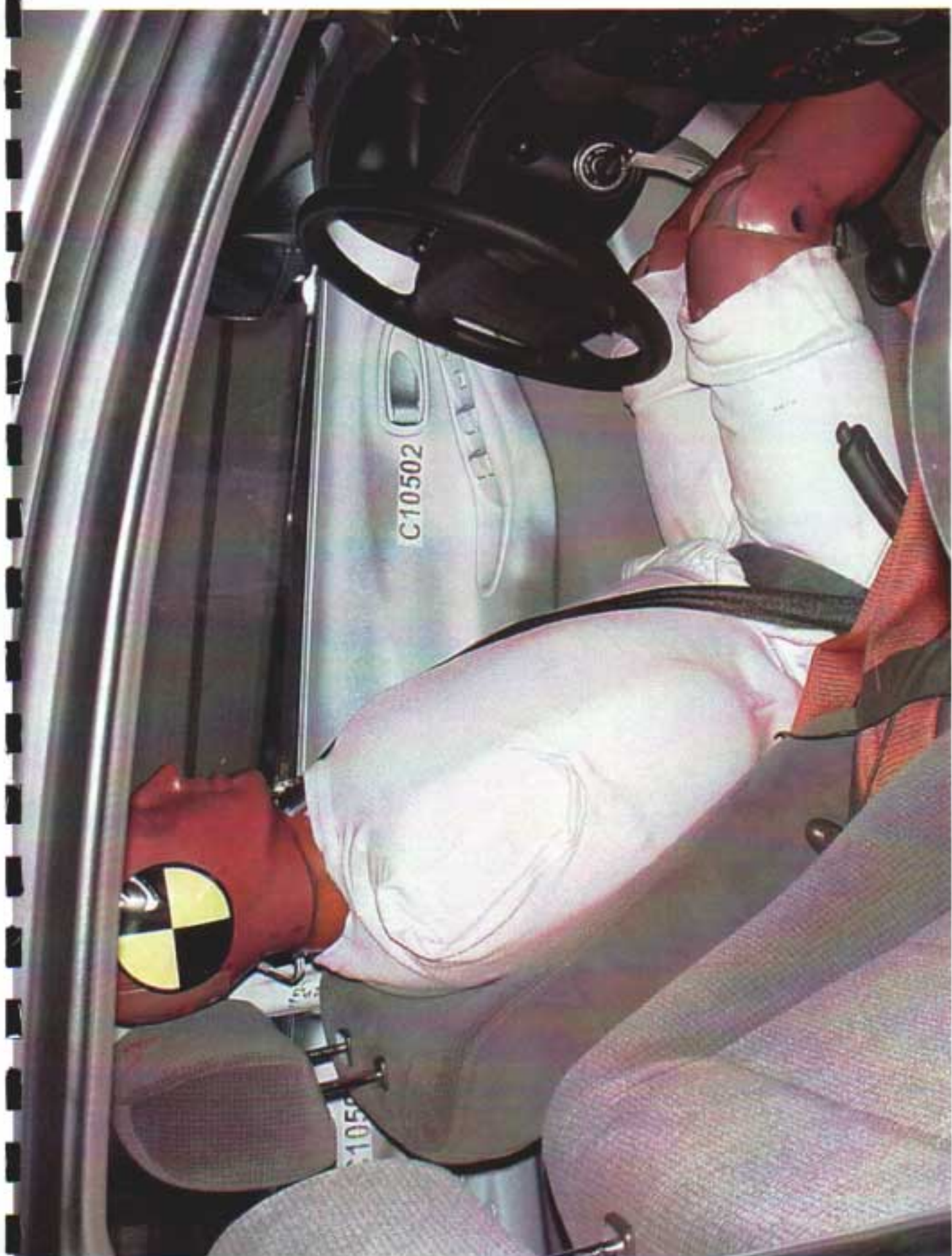


Figure A-17 PRE-TEST RIGHT OCCUPANT COMPARTMENT VIEW OF FRONT SID



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

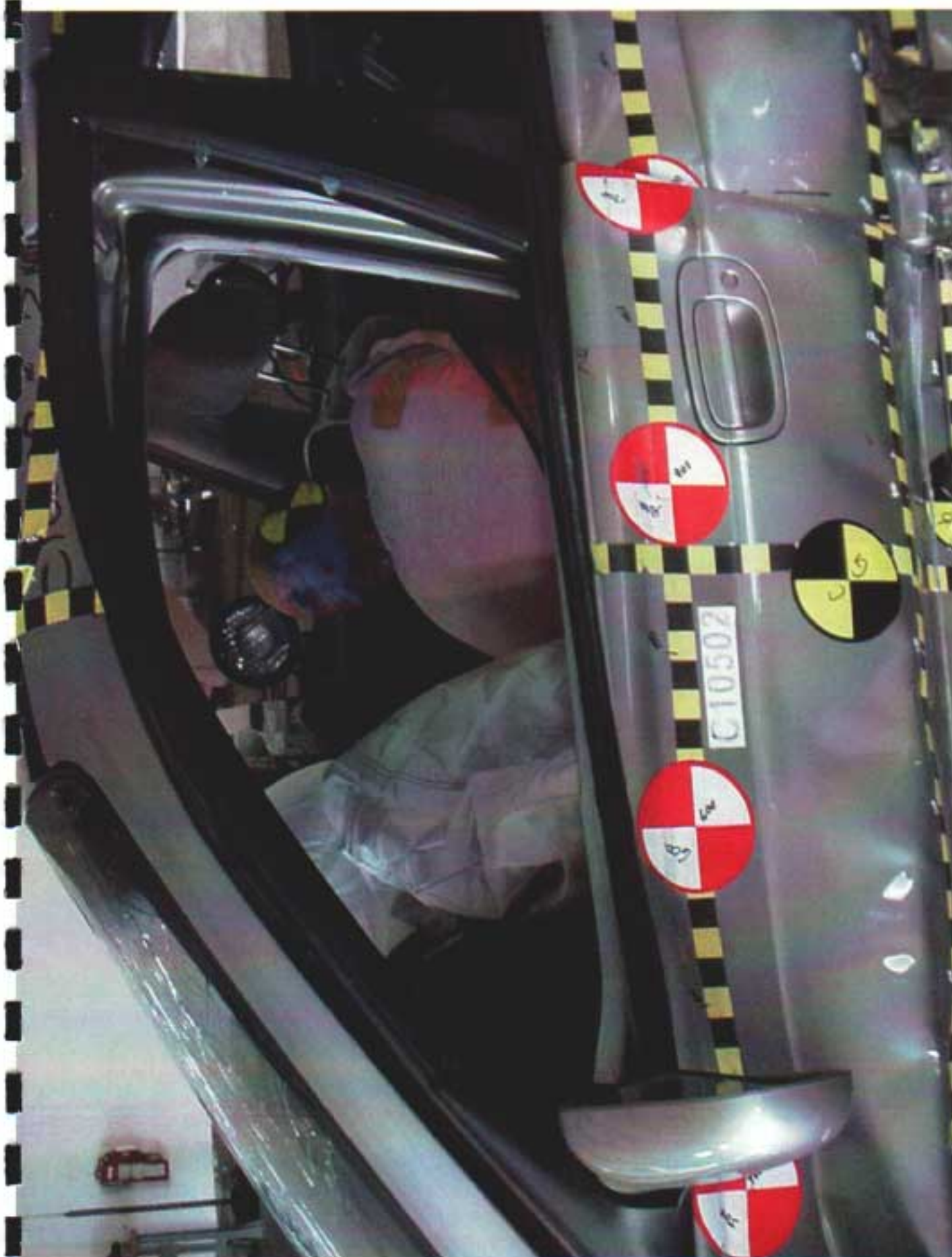


Figure A-22 POST-TEST LEFT OCCUPANT COMPARTMENT VIEW OF FRONT SID

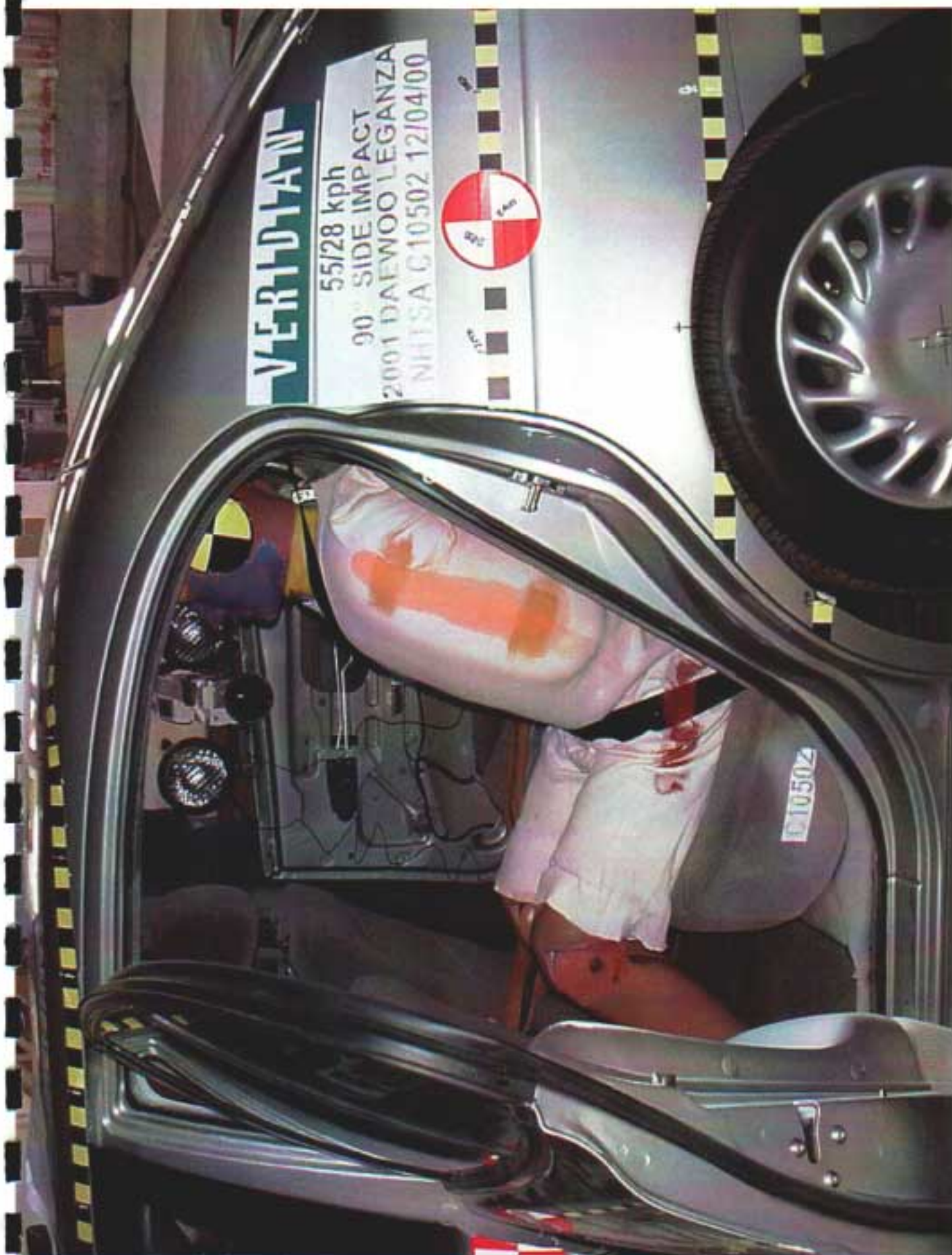


Figure A-23 PRE-TEST LEFT OCCUPANT COMPARTMENT VIEW OF REAR SID

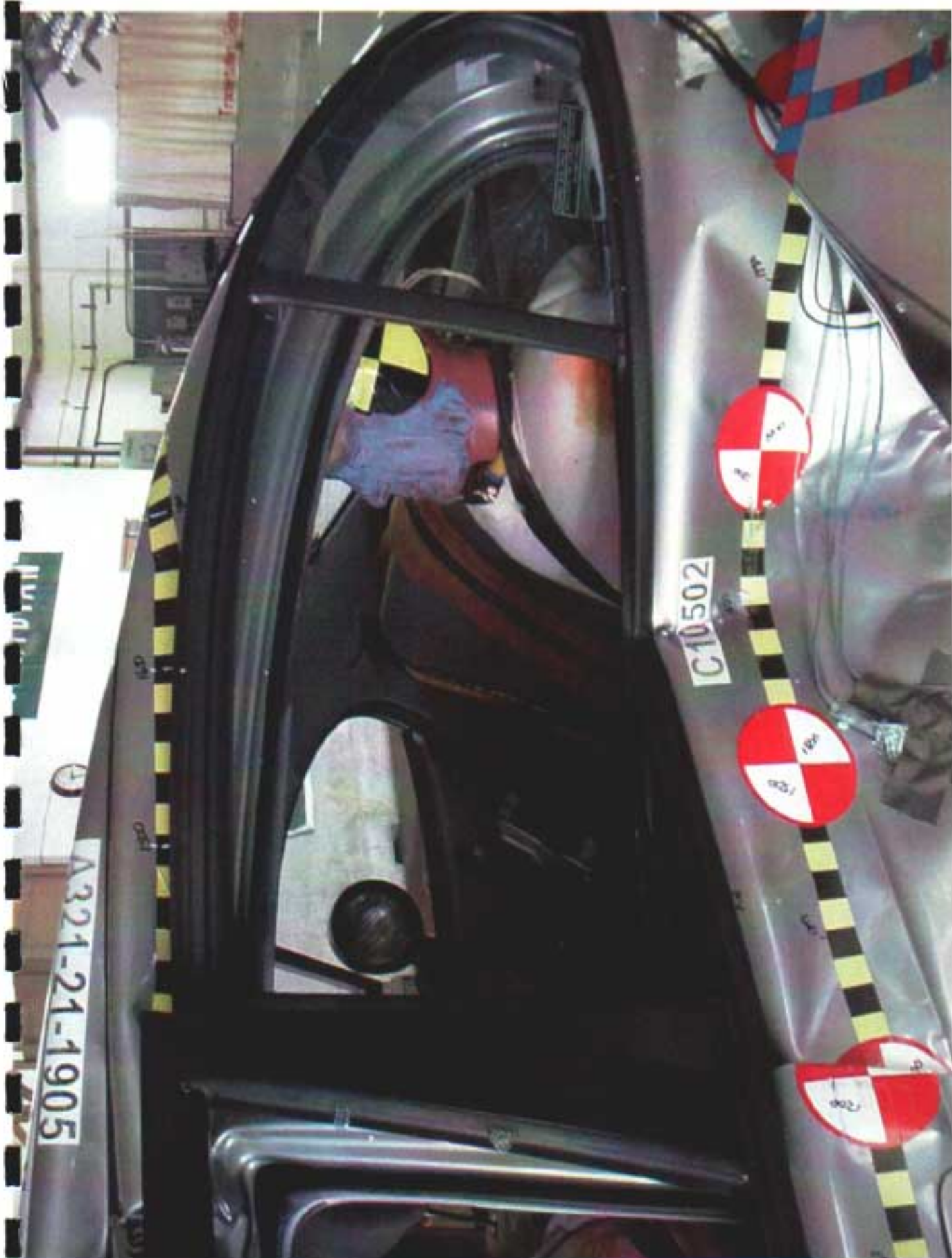


Figure A-24 POST-TEST LEFT OCCUPANT COMPARTMENT VIEW OF REAR SID



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

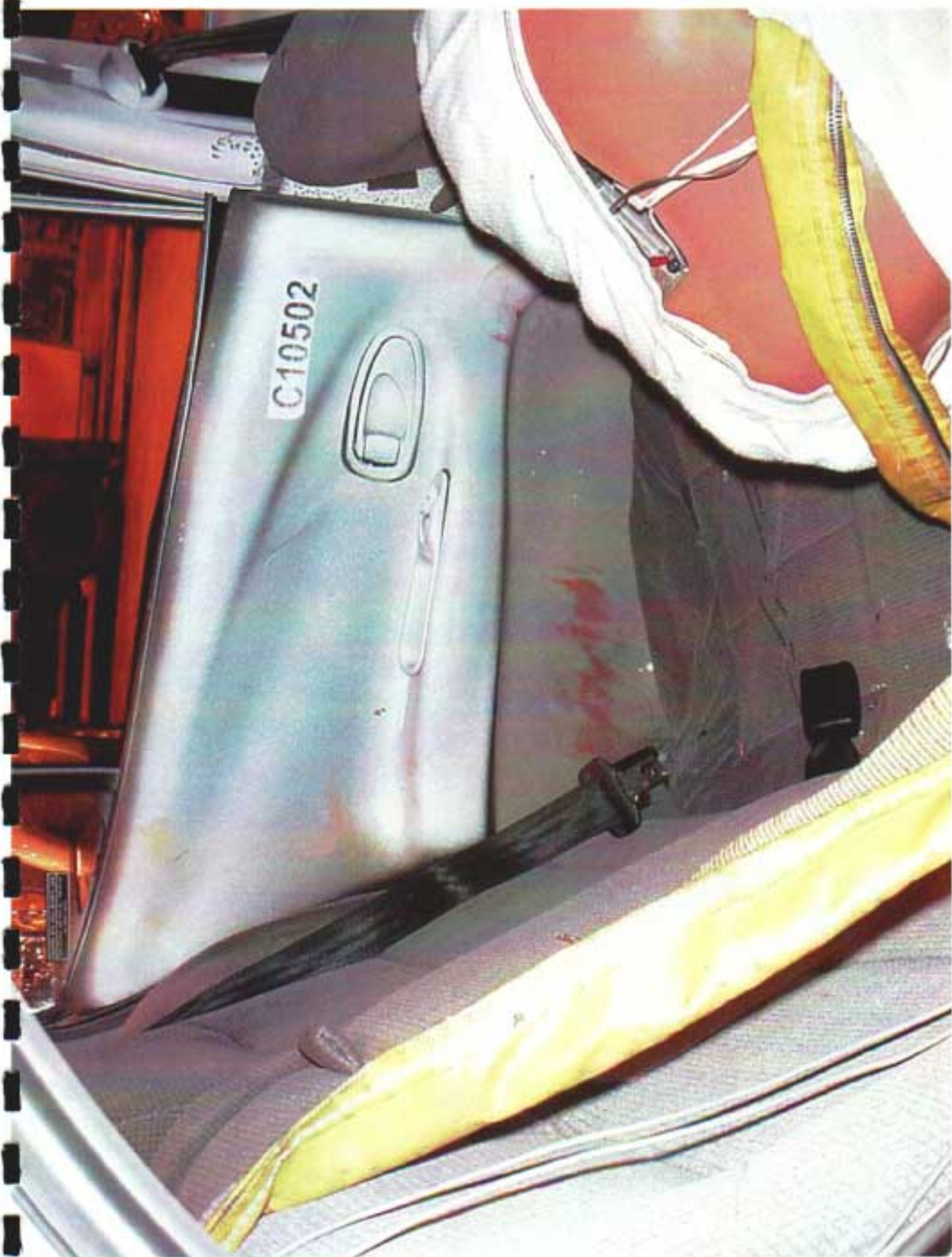


Figure A-28 POST-TEST INTERIOR OF REAR DOOR SHOWING SID IMPACT LOCATIONS



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

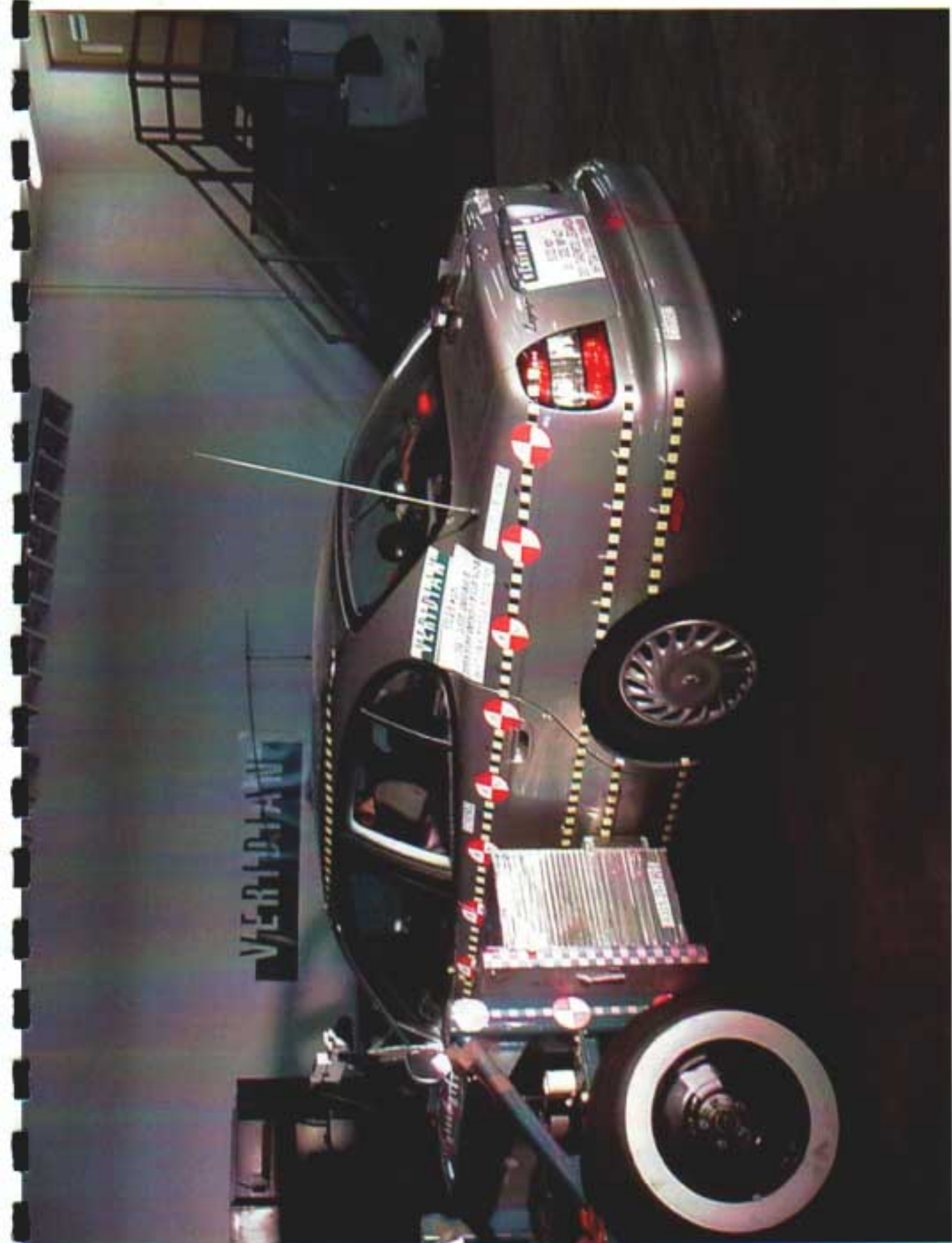


Figure A-30 PRE-TEST RIGHT SIDE VIEW OF MDB WITH IMPACTOR FACE IN POSITION

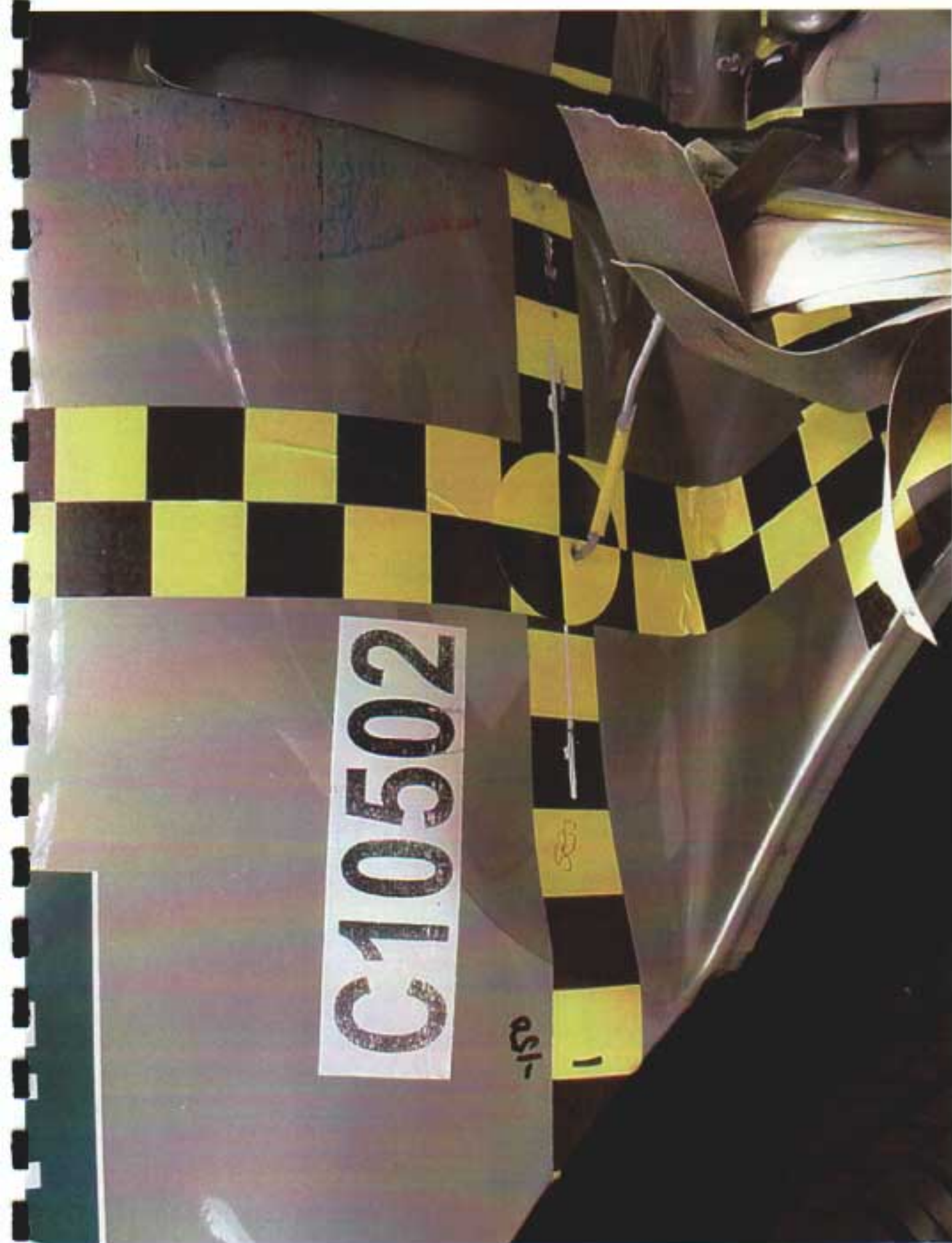


Figure A-31 POST-TEST CLOSE-UP VIEW OF IMPACT POINT TARGET

MFD. BY DAEWOO MOTOR CO., LTD. REPUBLIC OF KOREA
 DATE GWWR GAWR FRT GAWR RR
 07/88 1005LB 2150LB 2965LB
 THIS VEHICLE CONFORMS TO ALL APPLICABLE
 FEDERAL MOTOR VEHICLE SAFETY STANDARDS
 AND THE PREVENTION STANDARDS IN EFFECT
 ON THE DATE OF MANUFACTURE SHOWN ABOVE.
 CLASS 211121
 PASS CAB
 2 N 90 245 195

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

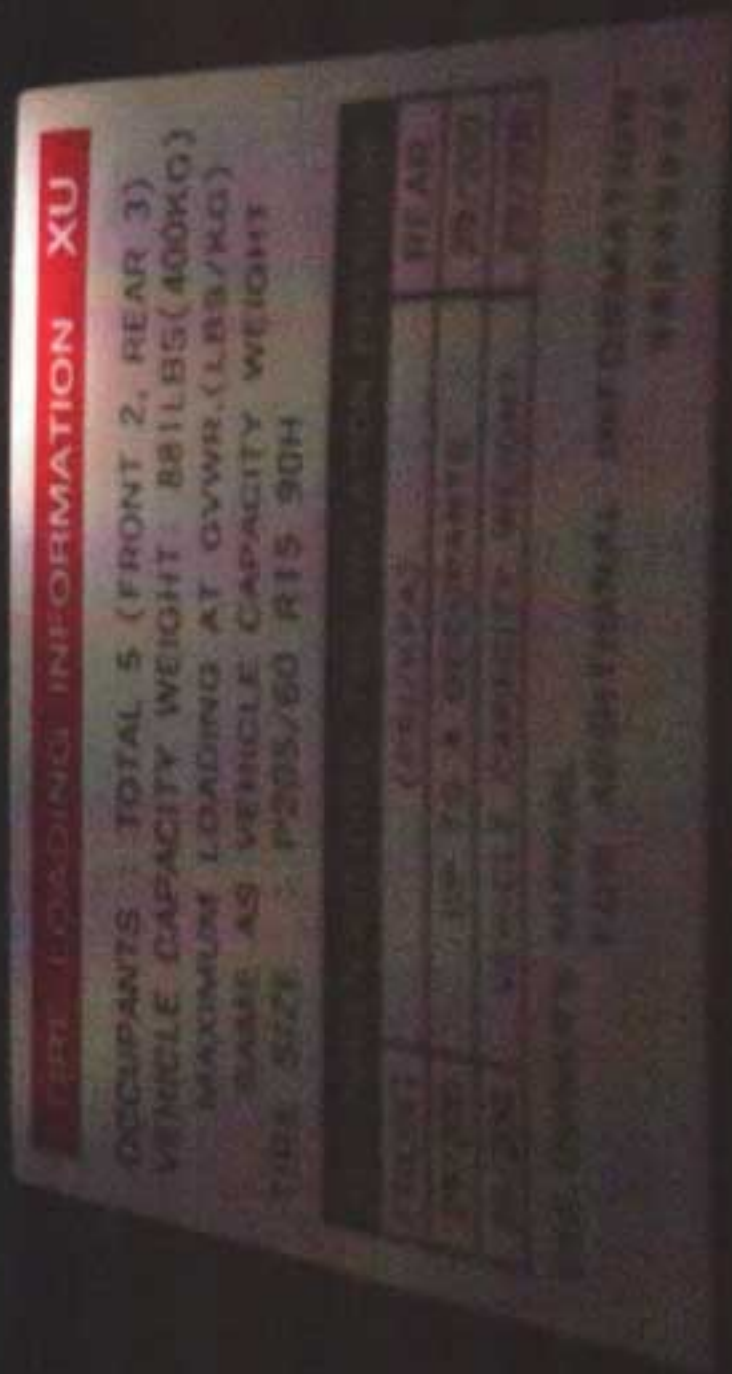


Figure A-33 CLOSE-UP VIEW OF VEHICLE'S TIRE PLACARD LABEL

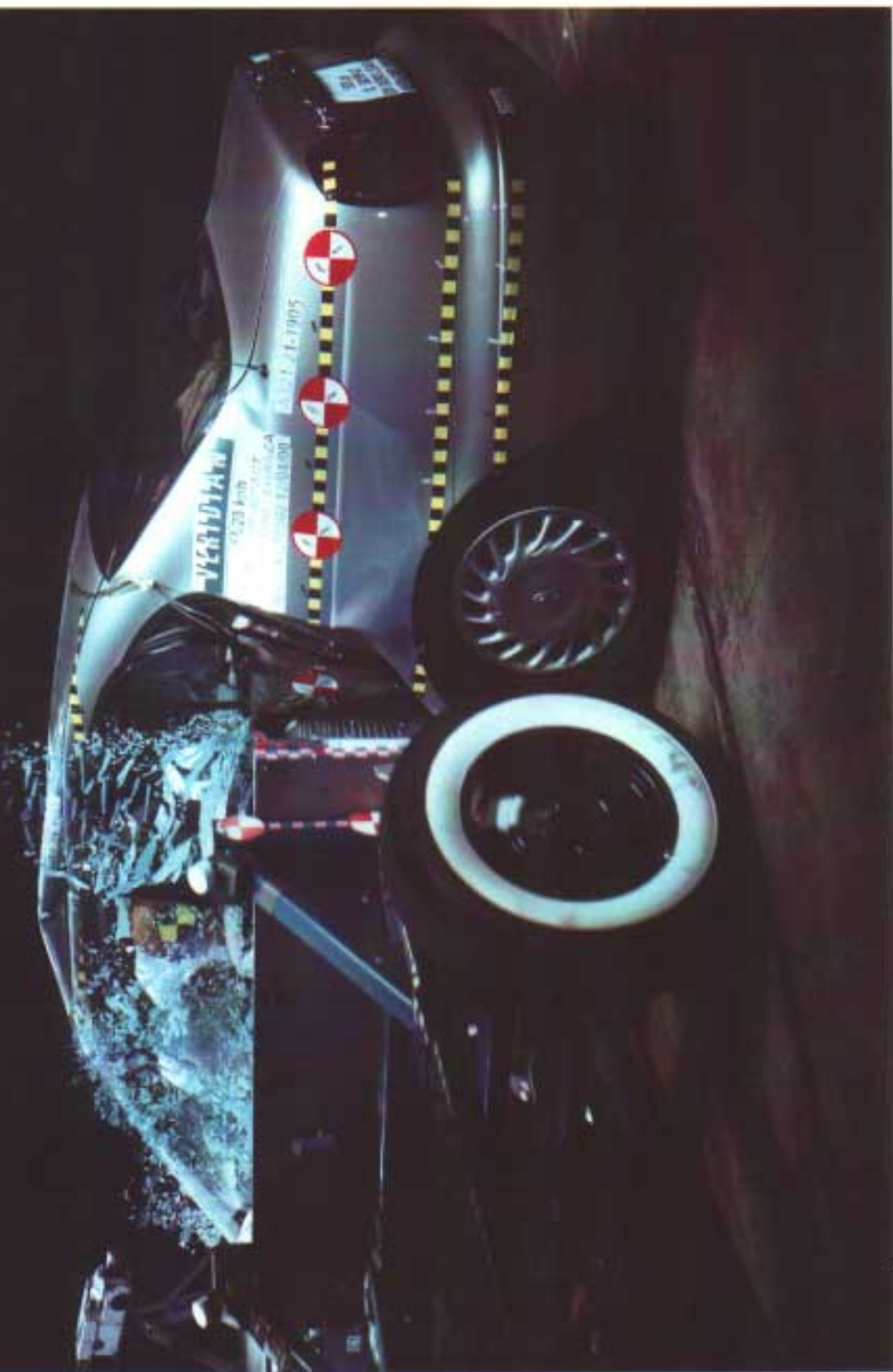


Figure A-34 IMPACT PHOTO



Figure A-35 ROLLOVER 90 DEGREES

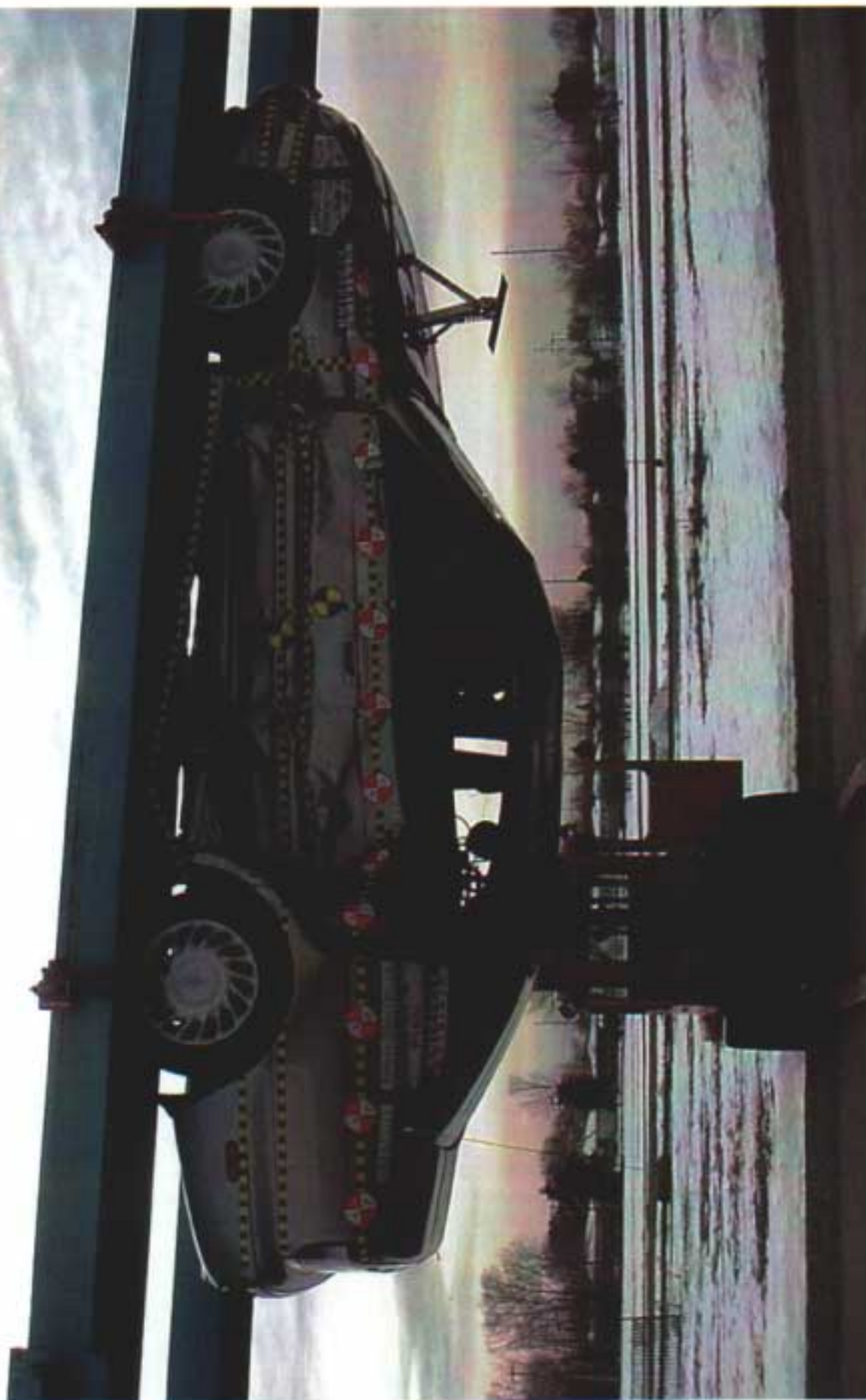


Figure A-36 ROLLOVER 180 DEGREES



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 HEAD (X) ACCELERATION VS TIME	B- 6
2	DRIVER HEAD (X) VELOCITY VS TIME	B- 7
3	DRIVER HEAD (Y) ACCELERATION VS TIME	B- 8
4	DRIVER HEAD (Y) VELOCITY VS TIME	B- 9
5	DRIVER HEAD (Z) ACCELERATION VS TIME	B- 10
6	DRIVER HEAD (Z) VELOCITY VS TIME	B- 11
7	DRIVER HEAD RESULTANT VS TIME	B- 12
8	DRIVER UPPER RIB (Y) ACCELERATION VS TIME	B- 13
9	DRIVER UPPER RIB (Y) VELOCITY VS TIME	B- 14
10	DRIVER LOWER RIB (Y) ACCELERATION VS TIME	B- 15
11	DRIVER LOWER RIB (Y) VELOCITY VS TIME	B- 16
12	DRIVER LOWER SPINE (Y) ACCELERATION VS TIME	B- 17
13	DRIVER LOWER SPINE (Y) VELOCITY VS TIME	B- 18
14	DRIVER PELVIC (Y) ACCELERATION VS TIME	B- 19
15	DRIVER PELVIC (Y) VELOCITY VS TIME	B- 20
16	PASSENGER HEAD (X) ACCELERATION VS TIME	B- 21
17	PASSENGER HEAD (X) VELOCITY VS TIME	B- 22
18	PASSENGER HEAD (Y) ACCELERATION VS TIME	B- 23
19	PASSENGER HEAD (Y) VELOCITY VS TIME	B- 24
20	PASSENGER HEAD (Z) ACCELERATION VS TIME	B- 25
21	PASSENGER HEAD (Z) VELOCITY VS TIME	B- 26
22	PASSENGER HEAD RESULTANT VS TIME	B- 27
23	PASSENGER UPPER RIB (Y) ACCELERATION VS TIME	B- 28
24	PASSENGER UPPER RIB (Y) VELOCITY VS TIME	B- 29
25	PASSENGER LOWER RIB (Y) ACCELERATION VS TIME	B- 30
26	PASSENGER LOWER RIB (Y) VELOCITY VS TIME	B- 31
27	PASSENGER LOWER SPINE (Y) ACCELERATION VS TIME	B- 32
28	PASSENGER LOWER SPINE (Y) VELOCITY VS TIME	B- 33
29	PASSENGER PELVIC (Y) ACCELERATION VS TIME	B- 34
30	PASSENGER PELVIC (Y) VELOCITY VS TIME	B- 35

DRIVER & PASSENGER DUMMY INSTRUMENTATION PLOTS ACCELERATION DATA - FIR FILTERED

<u>Plot No.</u>	<u>Data Plot Title</u>	<u>Page</u>
31	DRIVER UPPER RIB (Y) ACCELERATION VS TIME	B- 36
32	DRIVER LOWER RIB (Y) ACCELERATION VS TIME	B- 37
33	DRIVER LOWER SPINE (Y) ACCELERATION VS TIME	B- 38
34	DRIVER PELVIC (Y) ACCELERATION VS TIME	B- 39
35	PASSENGER UPPER RIB (Y) ACCELERATION VS TIME	B- 40
36	PASSENGER LOWER RIB (Y) ACCELERATION VS TIME	B- 41
37	PASSENGER LOWER SPINE (Y) ACCELERATION VS TIME	B- 42
38	PASSENGER PELVIC (Y) ACCELERATION VS TIME	B- 43

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>
39	RIGHT SIDE SILL AT FRONT SEAT (X) ACCELERATION VS TIME	B- 44
40	RIGHT SIDE SILL AT FRONT SEAT (X) VELOCITY VS TIME	B- 45
41	RIGHT SIDE SILL AT FRONT SEAT (Y) ACCELERATION VS TIME	B- 46
42	RIGHT SIDE SILL AT FRONT SEAT (Y) VELOCITY VS TIME	B- 47
43	RIGHT SIDE SILL AT FRONT SEAT (Z) ACCELERATION VS TIME	B- 48
44	RIGHT SIDE SILL AT FRONT SEAT (Z) VELOCITY VS TIME	B- 49
45	RIGHT SIDE SILL AT FRONT SEAT RESULTANT ACCELERATION VS TIME	B- 50
46	RIGHT SIDE SILL AT REAR SEAT (X) ACCELERATION VS TIME	B- 51
47	RIGHT SIDE SILL AT REAR SEAT (X) VELOCITY VS TIME	B- 52
48	RIGHT SIDE SILL AT REAR SEAT (Y) ACCELERATION VS TIME	B- 53
49	RIGHT SIDE SILL AT REAR SEAT (Y) VELOCITY VS TIME	B- 54
50	RIGHT SIDE SILL AT REAR SEAT (Z) ACCELERATION VS TIME	B- 55
51	RIGHT SIDE SILL AT REAR SEAT (Z) VELOCITY VS TIME	B- 56
52	RIGHT SIDE SILL AT REAR SEAT RESULTANT ACCELERATION VS TIME	B- 57
53	REAR FLOORPAN ABOVE AXLE (X) ACCELERATION VS TIME	B- 58
54	REAR FLOORPAN ABOVE AXLE (X) VELOCITY VS TIME	B- 59
55	REAR FLOORPAN ABOVE AXLE (Y) ACCELERATION VS TIME	B- 60
56	REAR FLOORPAN ABOVE AXLE (Y) VELOCITY VS TIME	B- 61
57	REAR FLOORPAN ABOVE AXLE (Z) ACCELERATION VS TIME	B- 62
58	REAR FLOORPAN ABOVE AXLE (Z) VELOCITY VS TIME	B- 63
59	REAR FLOORPAN ABOVE AXLE RESULTANT ACCELERATION VS TIME	B- 64
60	LEFT SIDE SILL AT REAR SEAT (Y) ACCELERATION VS TIME	B- 65
61	LEFT SIDE SILL AT REAR SEAT (Y) VELOCITY VS TIME	B- 66
62	LEFT SIDE SILL AT FRONT SEAT (Y) ACCELERATION VS TIME	B- 67
63	LEFT SIDE SILL AT FRONT SEAT (Y) VELOCITY VS TIME	B- 68
64	RIGHT REAR OCCUPANT COMPARTMENT (Y) ACCELERATION VS TIME	B- 69
65	RIGHT REAR OCCUPANT COMPARTMENT (Y) VELOCITY VS TIME	B- 70
66	LOWER B-POST (Y) ACCELERATION VS TIME	B- 71
67	LOWER B-POST (Y) VELOCITY VS TIME	B- 72
68	UPPER B-POST (Y) ACCELERATION VS TIME	B- 73
69	UPPER B-POST (Y) VELOCITY VS TIME	B- 74
70	LOWER A-POST (Y) ACCELERATION VS TIME	B- 75
71	LOWER A-POST (Y) VELOCITY VS TIME	B- 76
72	UPPER A-POST (Y) ACCELERATION VS TIME	B- 77
73	UPPER A-POST (Y) VELOCITY VS TIME	B- 78
74	FRONT SEAT TRACK (Y) ACCELERATION VS TIME	B- 79
75	FRONT SEAT TRACK (Y) VELOCITY VS TIME	B- 80
76	REAR SEAT TRACK (Y) ACCELERATION VS TIME	B- 81
77	REAR SEAT TRACK (Y) VELOCITY VS TIME	B- 82

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>
78	VEHICLE CENTER OF GRAVITY (X) ACCELERATION VS TIME	B- 83
79	VEHICLE CENTER OF GRAVITY (X) VELOCITY VS TIME	B- 84
80	VEHICLE CENTER OF GRAVITY (Y) ACCELERATION VS TIME	B- 85
81	VEHICLE CENTER OF GRAVITY (Y) VELOCITY ACCELERATION VS TIME	B- 86
82	VEHICLE CENTER OF GRAVITY (Z) ACCELERATION VS TIME	B- 87
83	VEHICLE CENTER OF GRAVITY (Z) VELOCITY VS TIME	B- 88
84	VEHICLE CENTER OF GRAVITY RESULTANT ACCELERATION VS TIME	B- 89

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>
85	MDB CENTER OF GRAVITY (X) ACCELERATION VS TIME	B- 90
86	MDB CENTER OF GRAVITY (X) VELOCITY VS TIME	B- 91
87	MDB CENTER OF GRAVITY (Y) ACCELERATION VS TIME	B- 92
88	MDB CENTER OF GRAVITY (Y) VELOCITY VS TIME	B- 93
89	MDB CENTER OF GRAVITY (Z) ACCELERATION VS TIME	B- 94
90	MDB CENTER OF GRAVITY (Z) VELOCITY VS TIME	B- 95
91	MDB CENTER OF GRAVITY RESULTANT ACCELERATION VS TIME	B- 96
92	MDB REAR (X) ACCELERATION VS TIME	B- 97
93	MDB REAR (X) VELOCITY VS TIME	B- 98
94	MDB REAR (Y) ACCELERATION VS TIME	B- 99
95	MDB REAR (Y) VELOCITY VS TIME	B- 100

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>
96	DRIVER UPPER RIB (Y) ACCELERATION VS TIME	B- 101
97	DRIVER UPPER RIB (Y) VELOCITY VS TIME	B- 102
98	DRIVER LOWER RIB (Y) ACCELERATION VS TIME	B- 103
99	DRIVER LOWER RIB (Y) VELOCITY VS TIME	B- 104
100	DRIVER LOWER SPINE (Y) ACCELERATION VS TIME	B- 105
101	DRIVER LOWER SPINE (Y) VELOCITY VS TIME	B- 106
102	DRIVER PELVIC (Y) ACCELERATION VS TIME	B- 107
103	DRIVER PELVIC (Y) VELOCITY VS TIME	B- 108
104	PASSENGER UPPER RIB (Y) ACCELERATION VS TIME	B- 109
105	PASSENGER UPPER RIB (Y) VELOCITY VS TIME	B- 110
106	PASSENGER LOWER RIB (Y) ACCELERATION VS TIME	B- 111
107	PASSENGER LOWER RIB (Y) VELOCITY VS TIME	B- 112
108	PASSENGER LOWER SPINE (Y) ACCELERATION VS TIME	B- 113
109	PASSENGER LOWER SPINE (Y) VELOCITY VS TIME	B- 114
110	PASSENGER PELVIC (Y) ACCELERATION VS TIME	B- 115
111	PASSENGER PELVIC (Y) VELOCITY VS TIME	B- 116

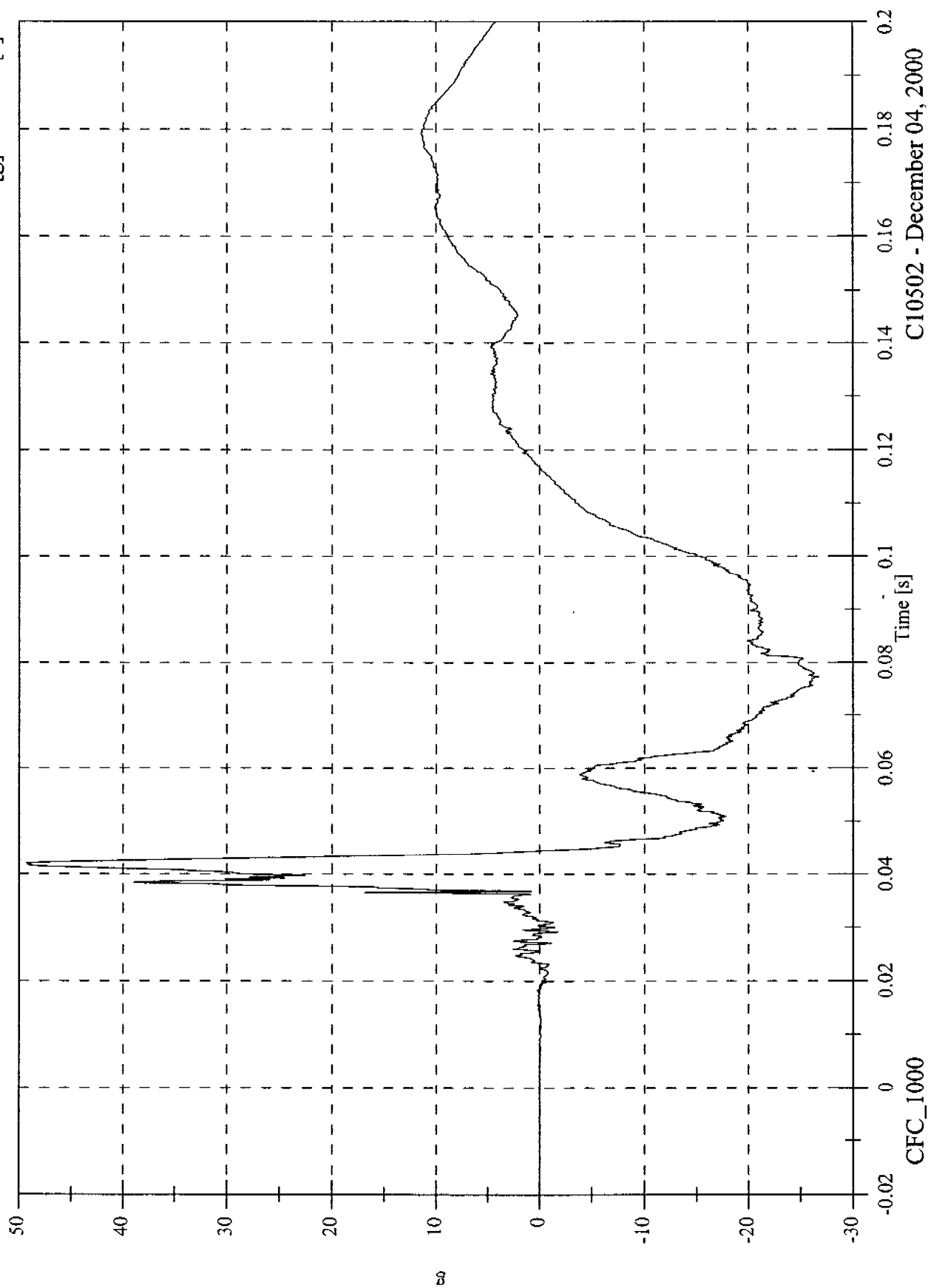
DRIVER & PASSENGER DUMMY INSTRUMENTATION PLOTS (REDUNDANT)
ACCELERATION DATA - FIR FILTERED

<u>Plot No.</u>	<u>Data Plot Title</u>	<u>Page</u>
112	DRIVER UPPER RIB (Y) ACCELERATION VS TIME	B- 117
113	DRIVER LOWER RIB (Y) ACCELERATION VS TIME	B- 118
114	DRIVER LOWER SPINE (Y) ACCELERATION VS TIME	B- 119
115	DRIVER PELVIC (Y) ACCELERATION VS TIME	B- 120
116	PASSENGER UPPER RIB (Y) ACCELERATION VS TIME	B- 121
117	PASSENGER LOWER RIB (Y) ACCELERATION VS TIME	B- 122
118	PASSENGER LOWER SPINE (Y) ACCELERATION VS TIME	B- 123
119	PASSENGER PELVIC (Y) ACCELERATION VS TIME	B- 124

FMVSS 214D Test #5 - 2001 Daewoo Leganza

Max: 49.3 [g] at 0.042 [s]
 Min: -26.8 [g] at 0.077 [s]

P1 Head x

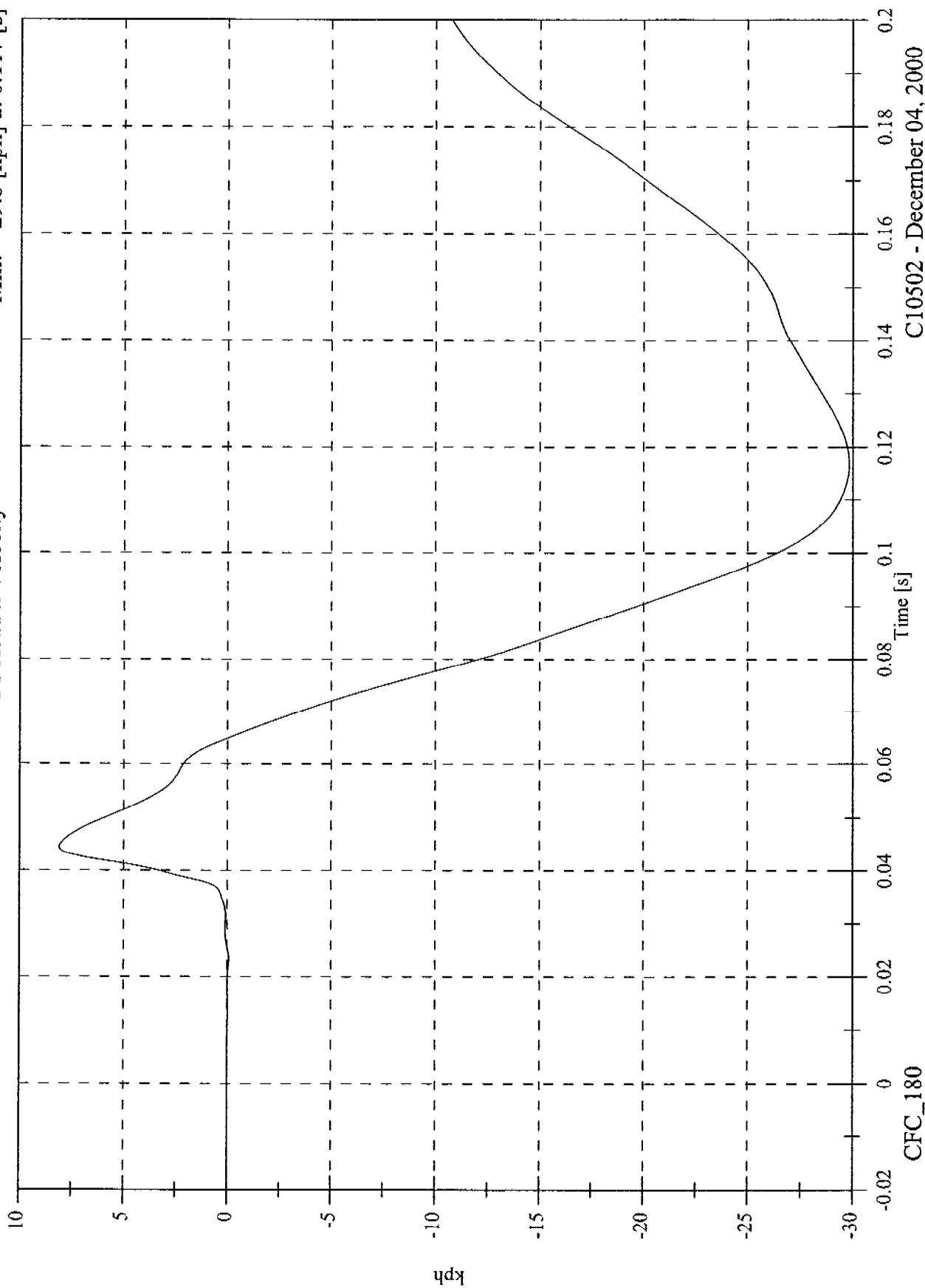


C10502 - December 04, 2000

FMVSS 214D Test #5 - 2001 Daewoo Leganza

Max: 8.1 [kph] at 0.044 [s]
Min: -29.8 [kph] at 0.117 [s]

P1 Head x Velocity

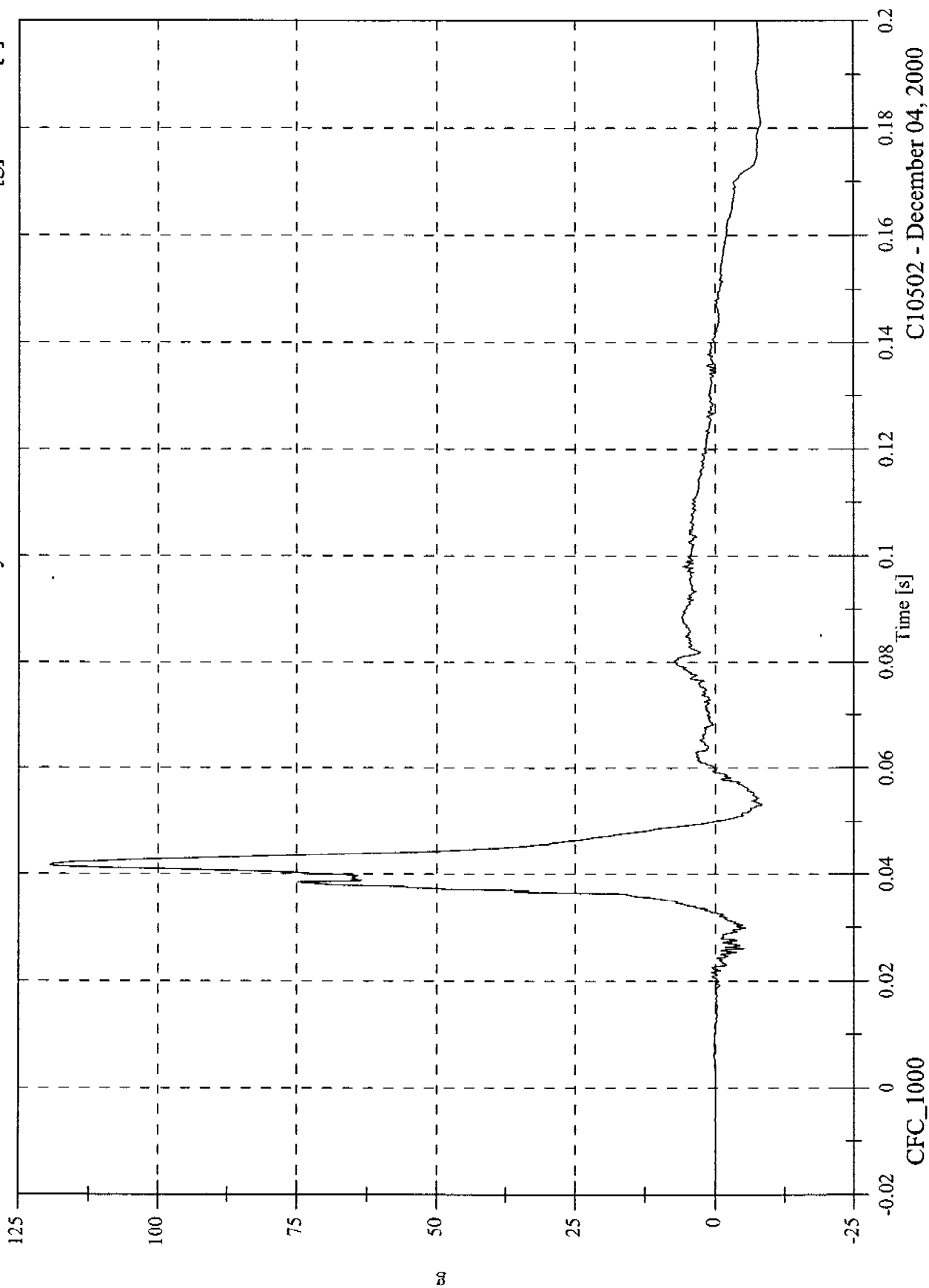


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FMVSS 214D Test #5 - 2001 Daewoo Leganza

Max: 119.3 [g] at 0.042 [s]
Min: -8.5 [g] at 0.053 [s]

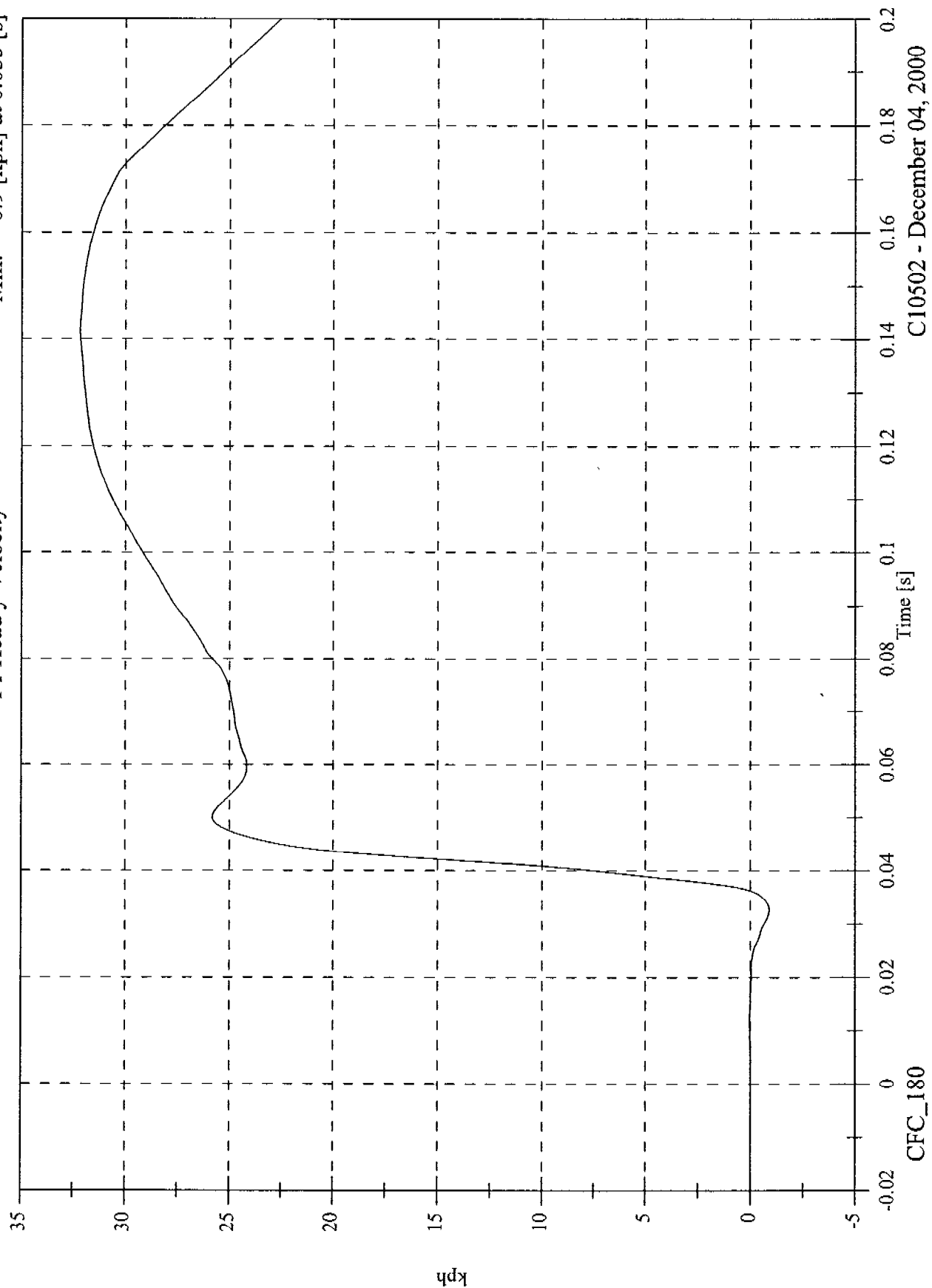
P1 Head y



FMVSS 214D Test #5 - 2001 Daewoo Leganza

P1 Head y Velocity

Max: 32.2 [kph] at 0.142 [s]
Min: -0.9 [kph] at 0.033 [s]

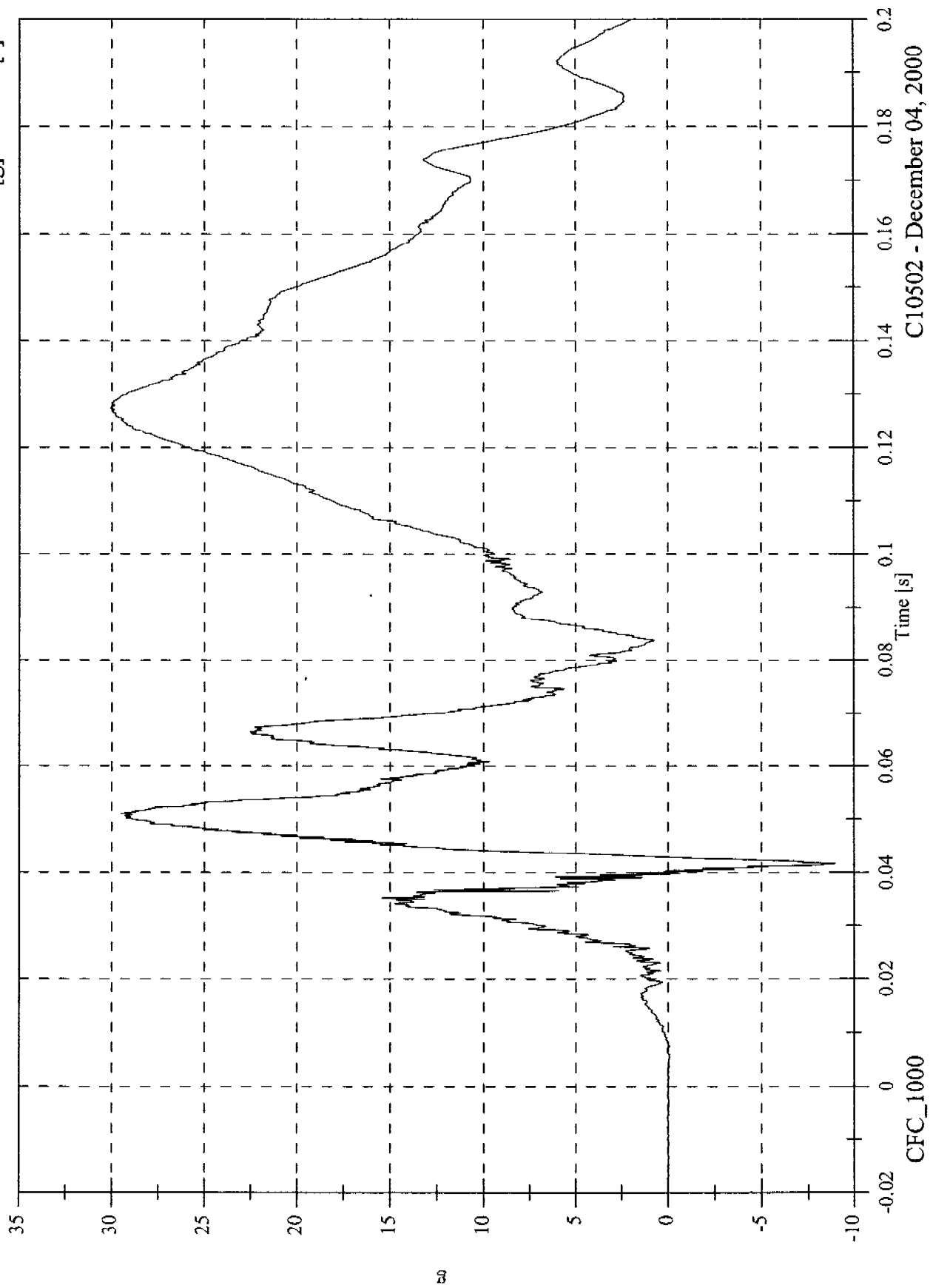


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FMVSS 214D Test #5 - 2001 Daewoo Leganza

Max: 30.1 [g] at 0.127 [s]
Min: -9.0 [g] at 0.042 [s]

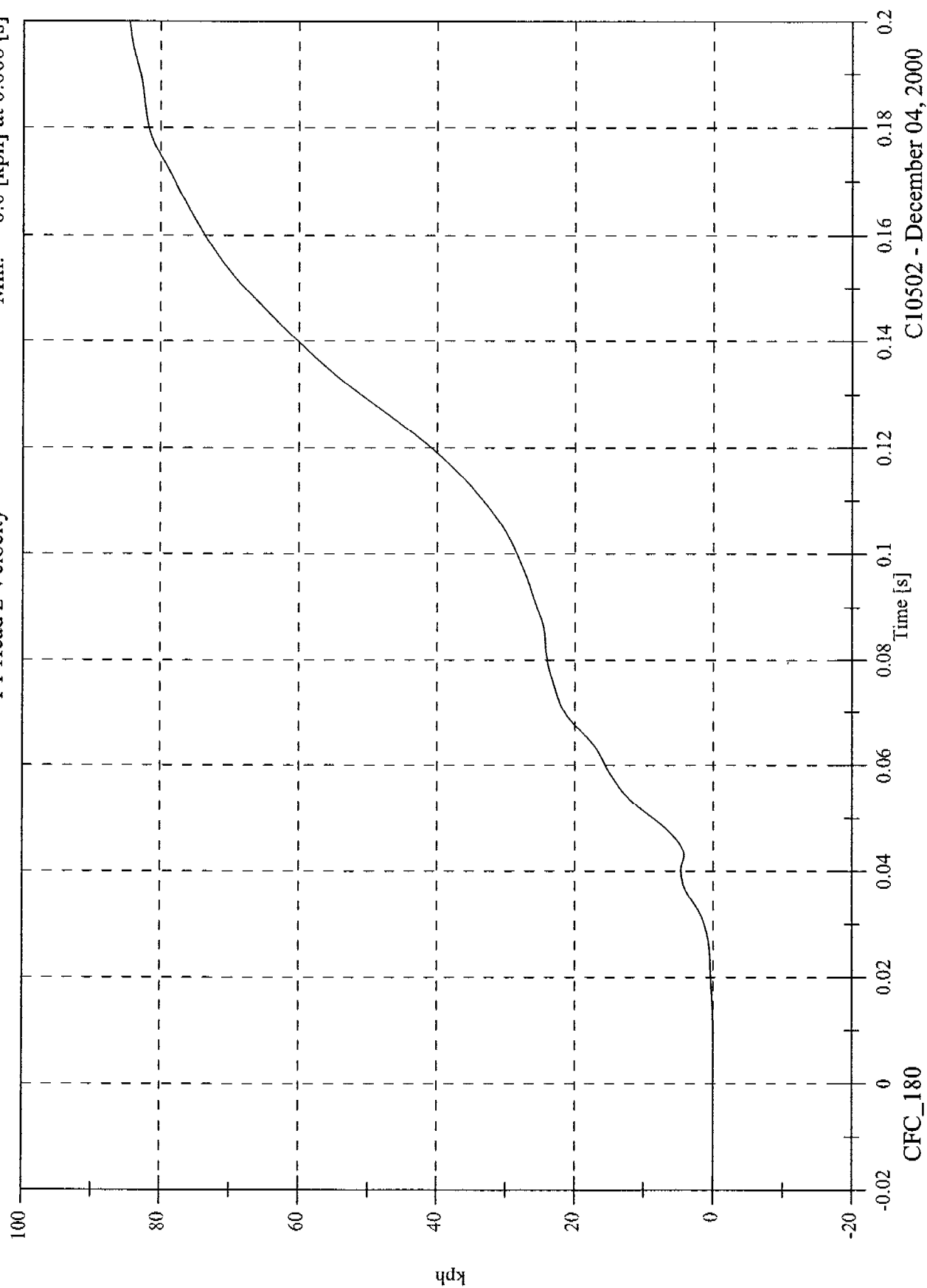
P1 Head z



FMVSS 214D Test #5 - 2001 Daewoo Leganza

Max: 84.6 [kph] at 0.200 [s]
 Min: -0.0 [kph] at 0.008 [s]

P1 Head z Velocity

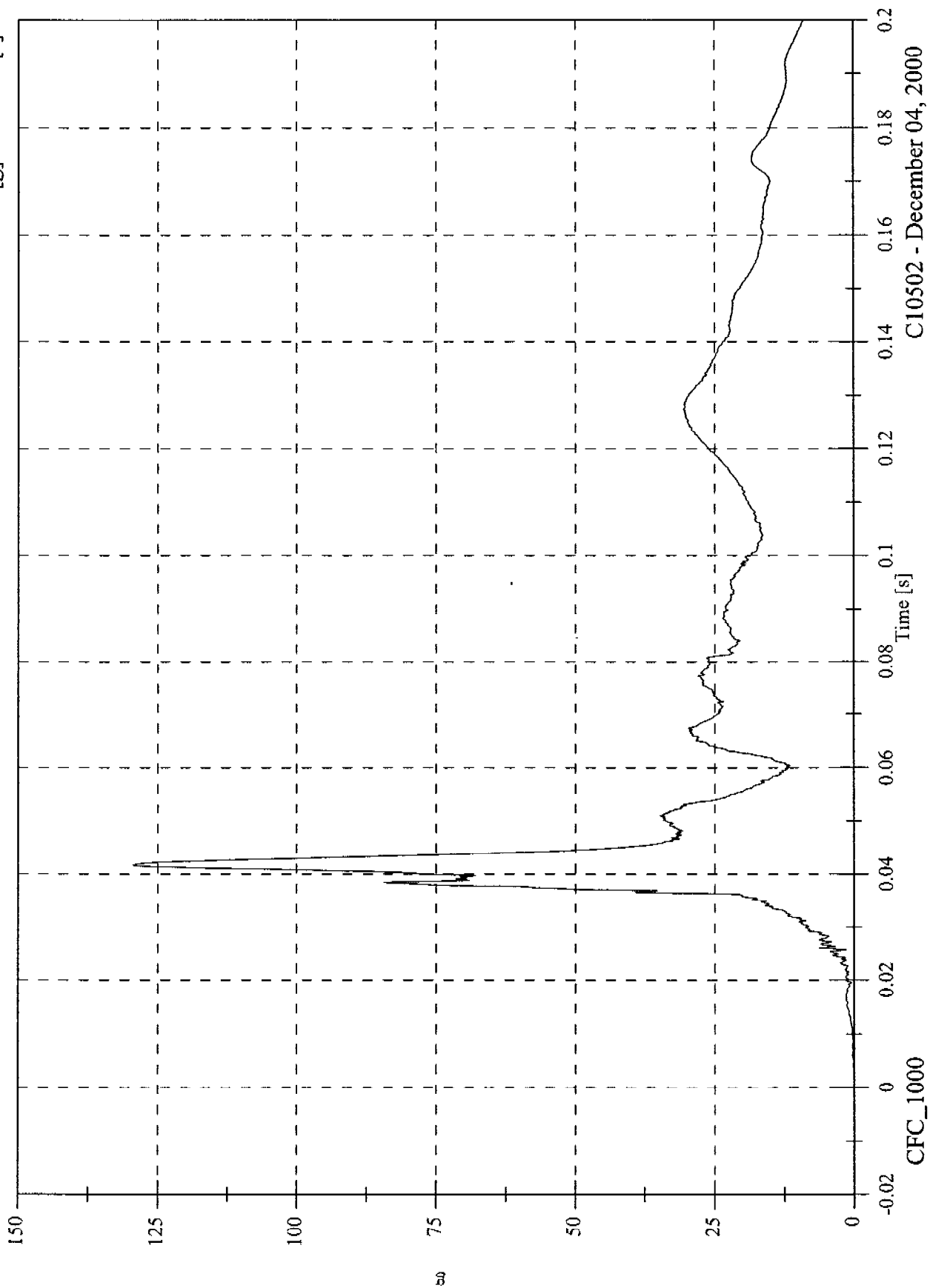


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Max: 129.4 [g] at 0.042 [s]
 Min: 0.0 [g] at -0.010 [s]

P1 Head Resultant

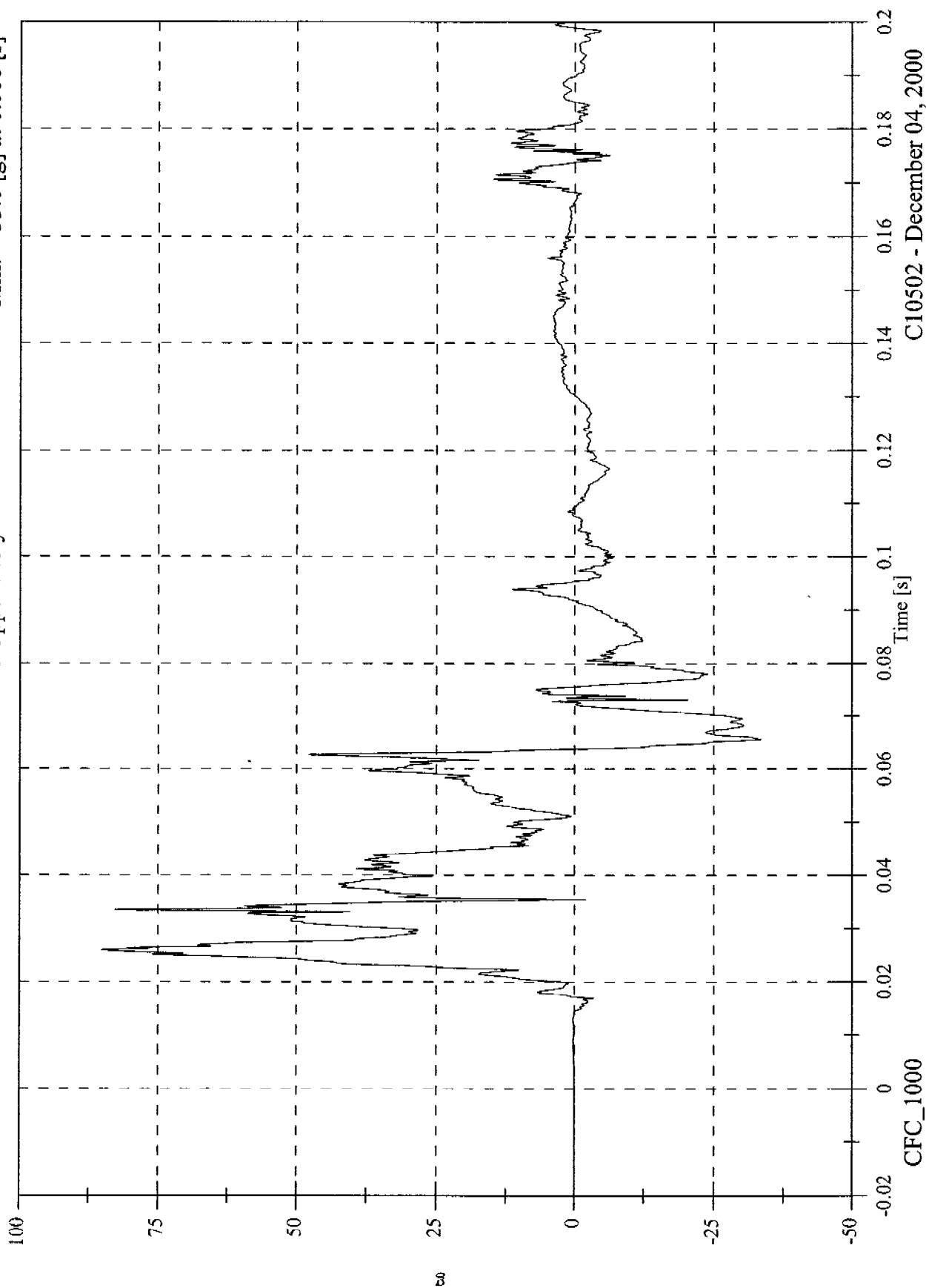


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FMVSS 214D Test #5 - 2001 Daewoo Leganza

P1 Upper Rib y

Max: 85.2 [g] at 0.026 [s]
Min: -33.6 [g] at 0.066 [s]

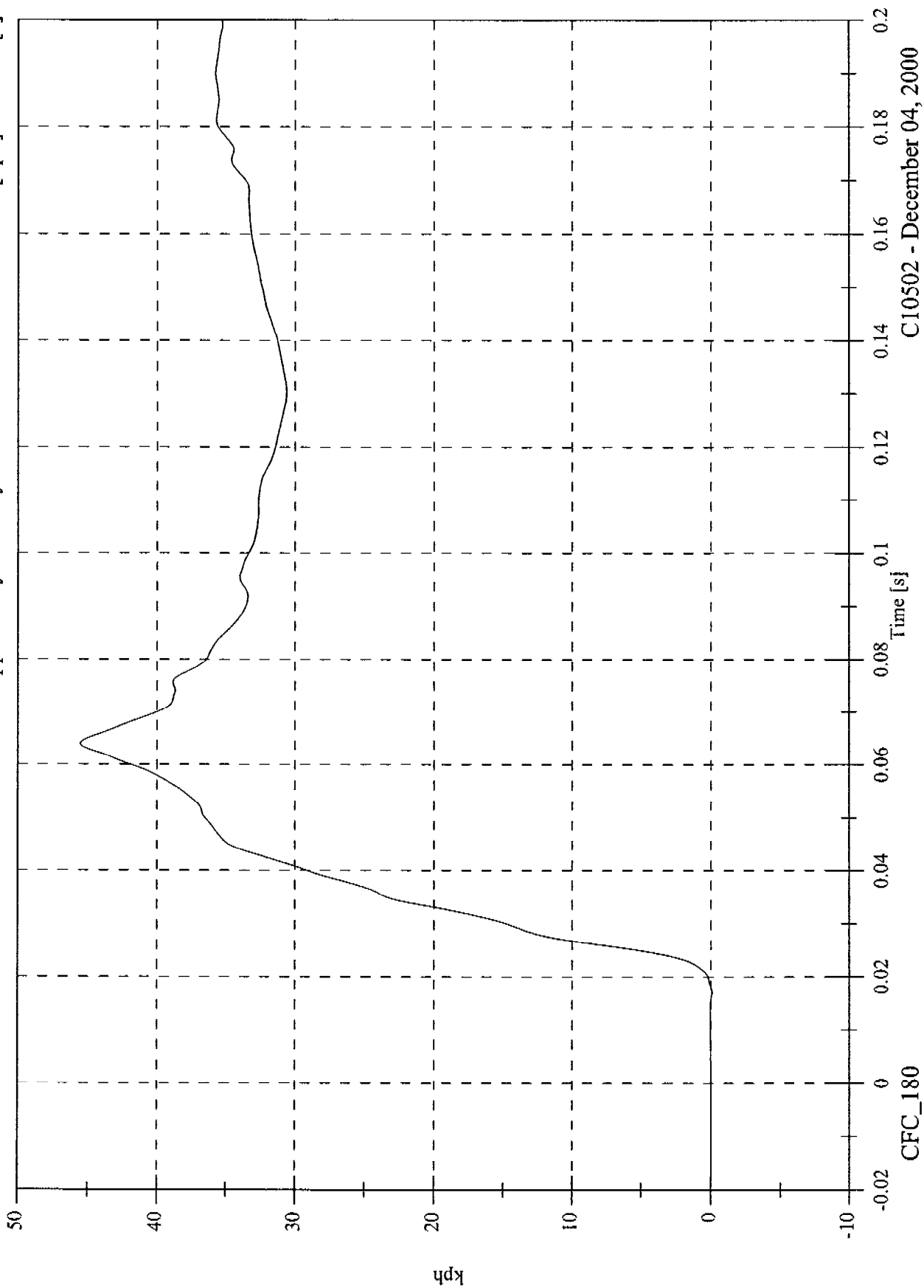


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FMVSS 214D Test #5 - 2001 Daewoo Leganza

Max: 45.5 [kph] at 0.064 [s]
 Min: -0.1 [kph] at 0.017 [s]

P1 Upper Rib y Velocity

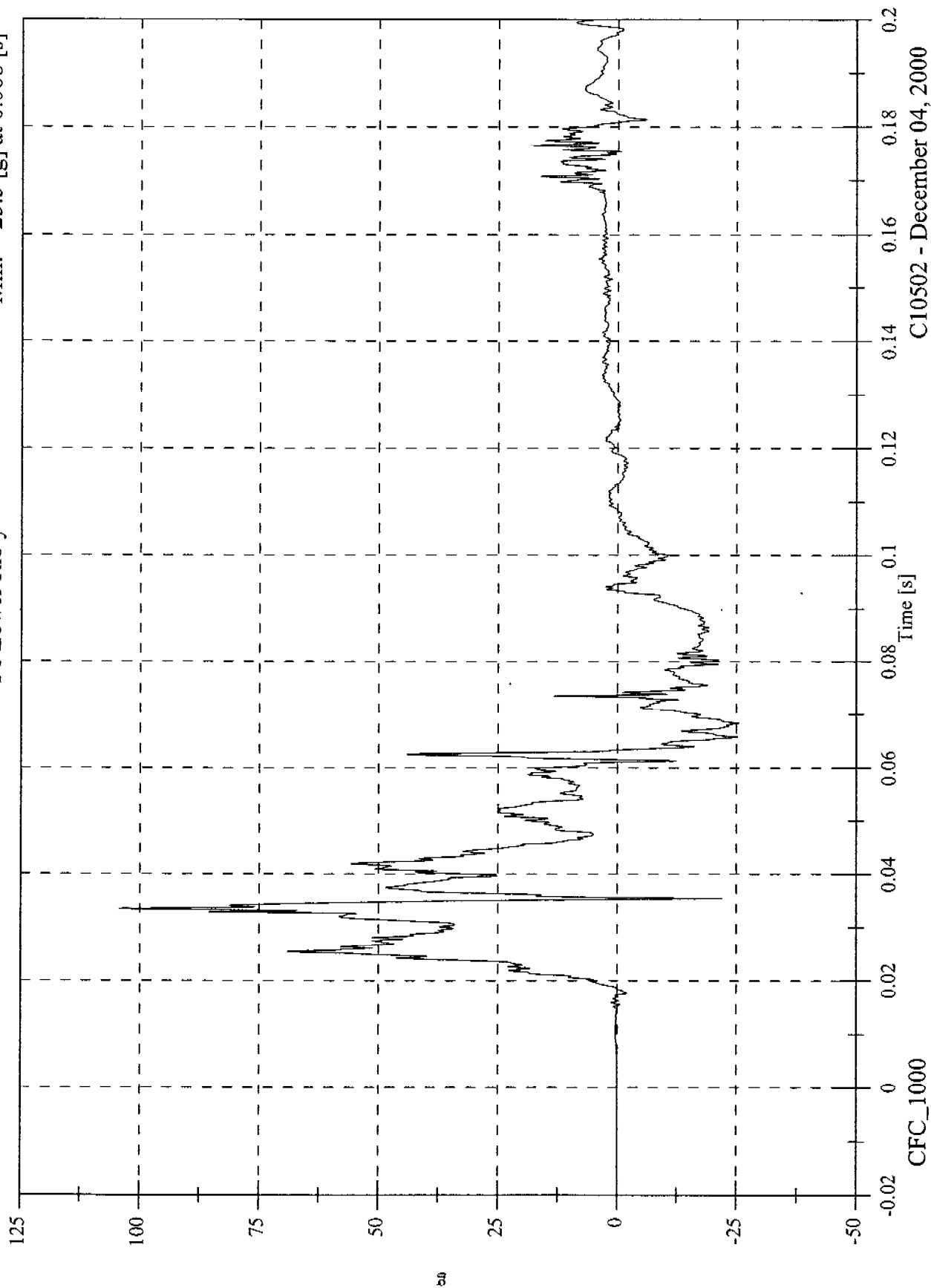


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FMVSS 214D Test #5 - 2001 Daewoo Leganza

Max: 104.2 [g] at 0.033 [s]
Min: -25.5 [g] at 0.068 [s]

P1 Lower Rib y

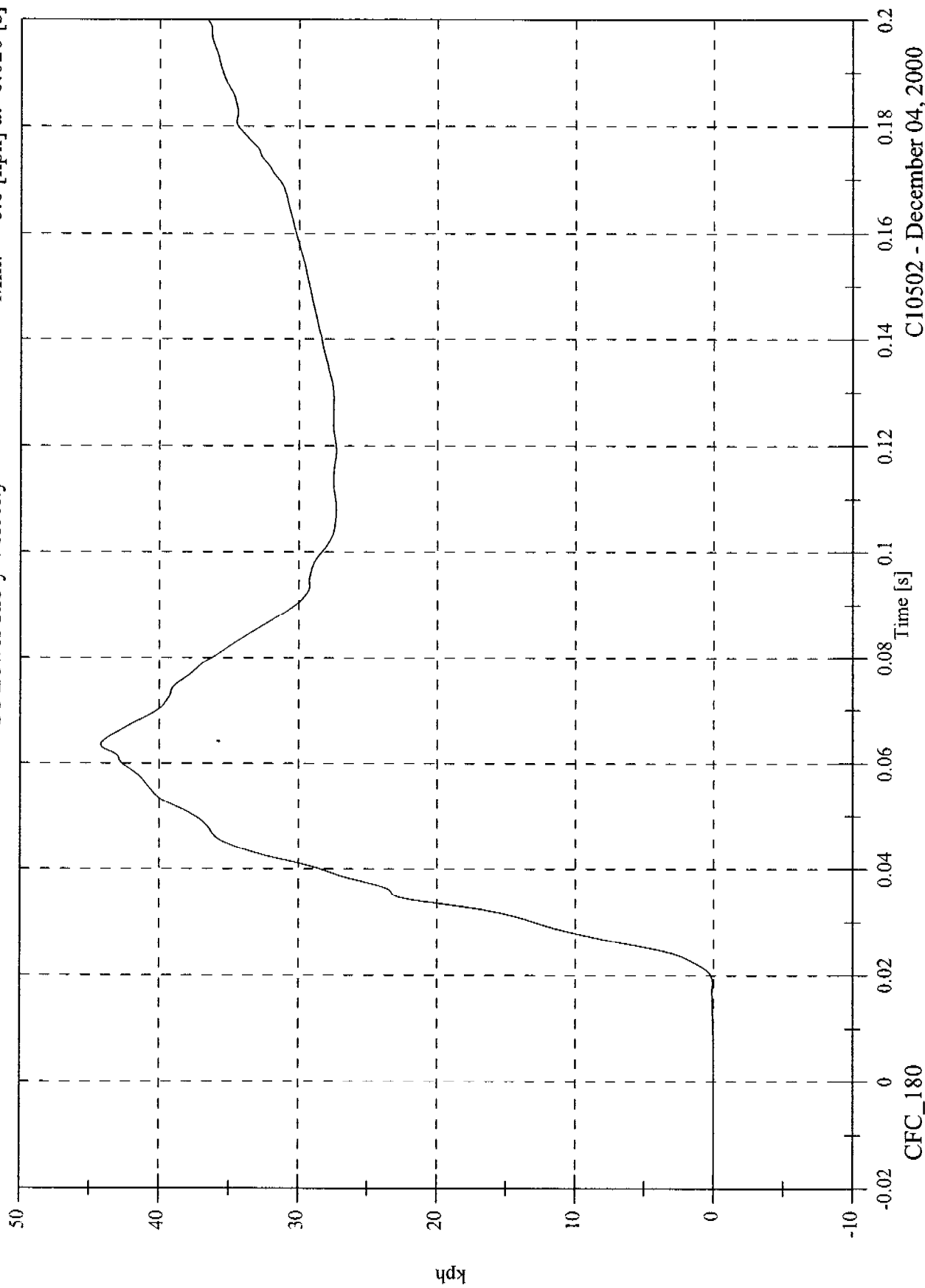


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FMVSS 214D Test #5 - 2001 Daewoo Leganza

Max: 44.2 [kph] at 0.064 [s]
 Min: -0.0 [kph] at -0.020 [s]

P1 Lower Rib y Velocity

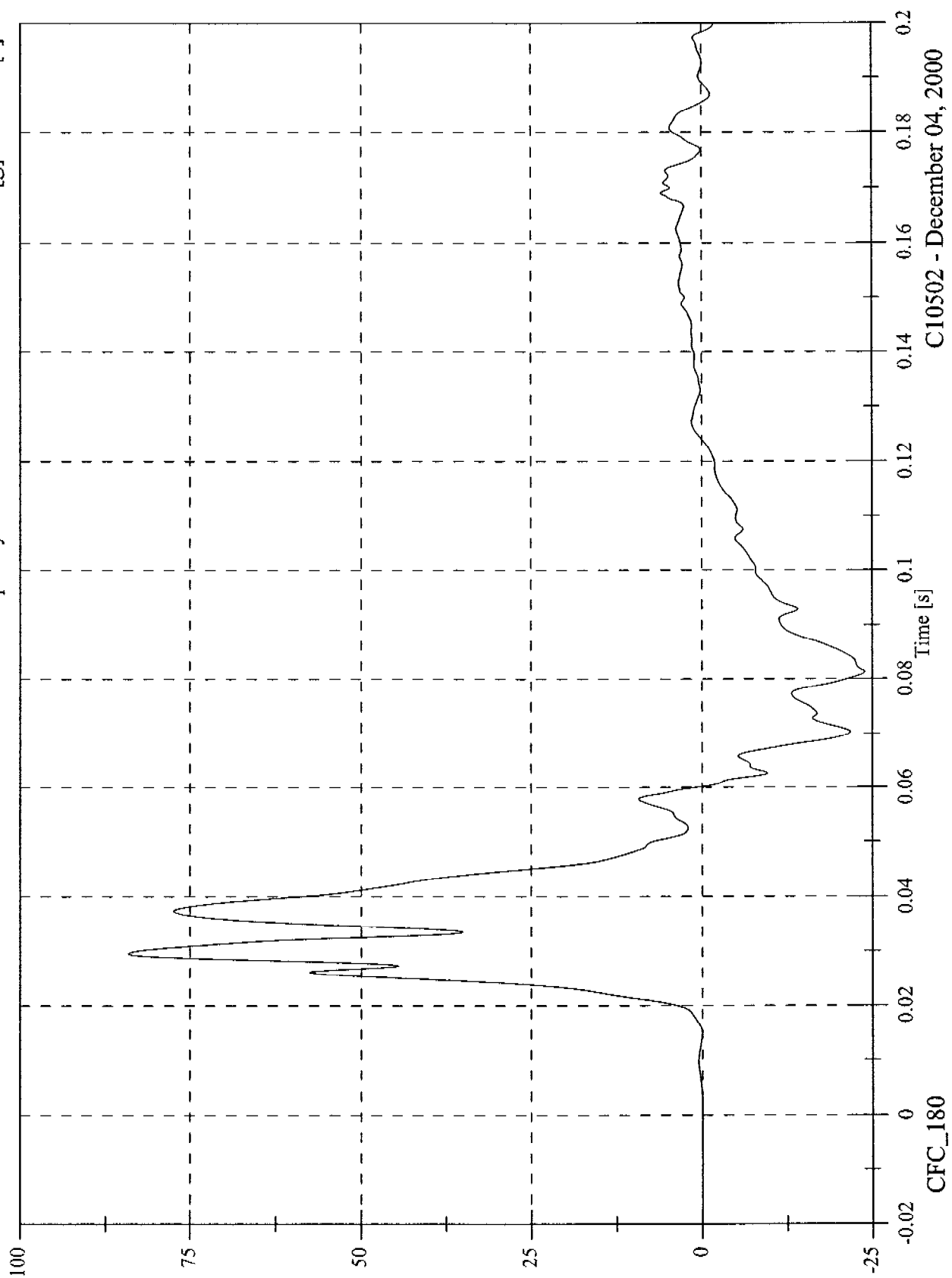


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FMVSS 214D Test #5 - 2001 Daewoo Leganza

Max: 84.1 [g] at 0.030 [s]
Min: -23.9 [g] at 0.081 [s]

P1 Lower Spine y

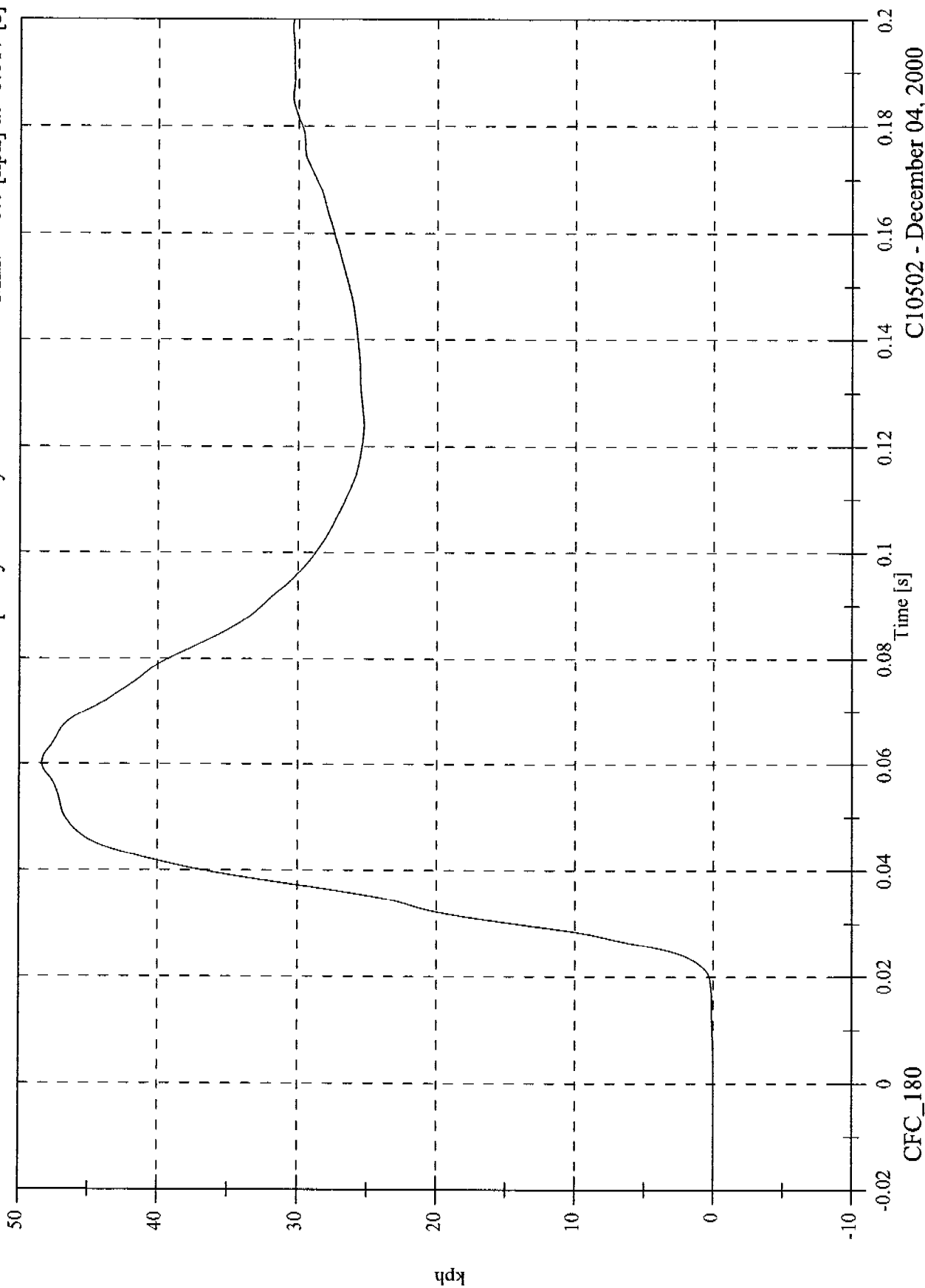


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FMVSS 214D Test #5 - 2001 Daewoo Leganza

P1 Lower Spine y Velocity

Max: 48.4 [kph] at 0.060 [s]
Min: -0.0 [kph] at -0.017 [s]

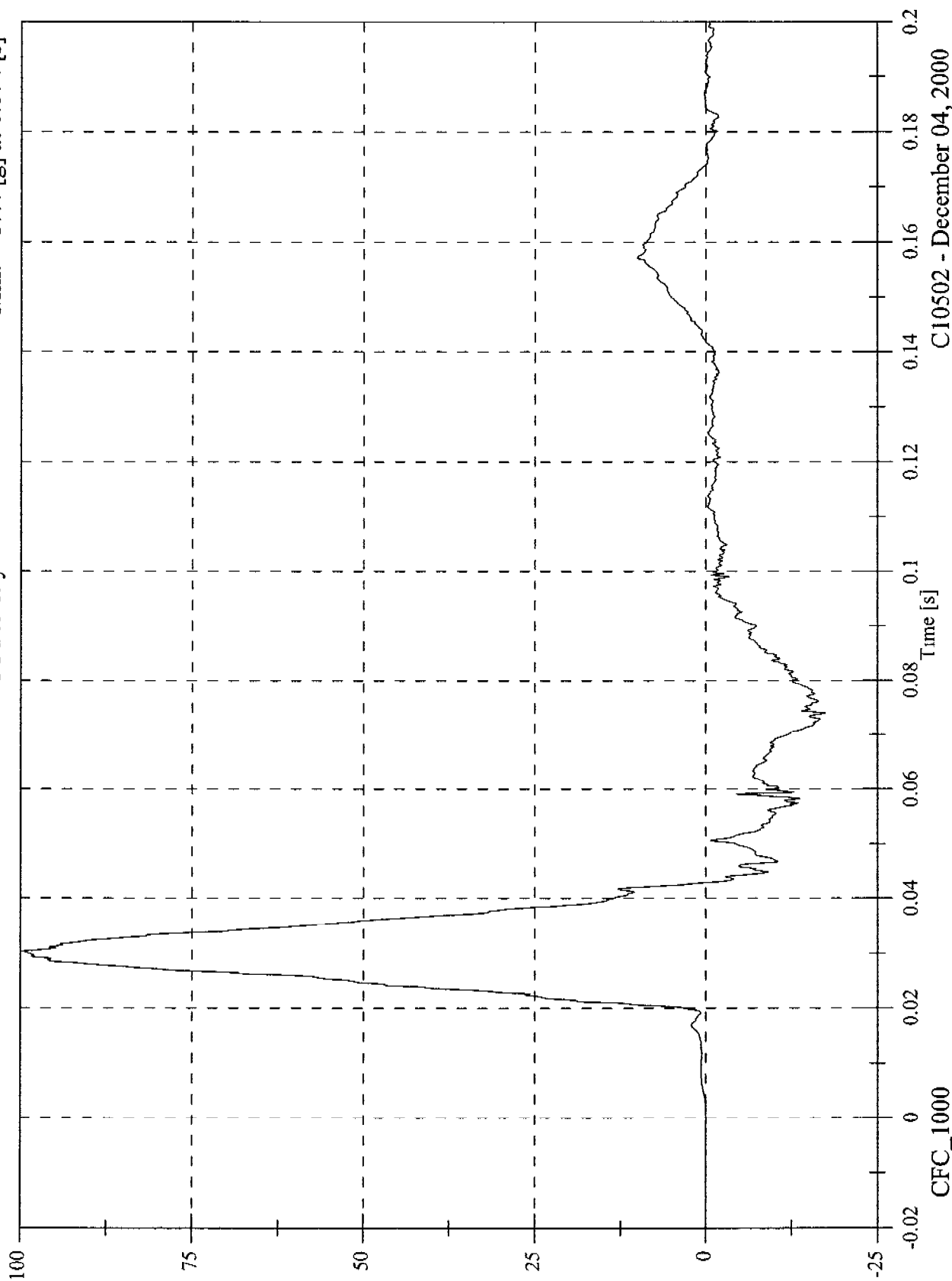


C10502 - December 04, 2000

FMVSS 214D Test #5 - 2001 Daewoo Leganza

P1 Pelvic y

Max: 99.7 [g] at 0.030 [s]
Min: -17.4 [g] at 0.074 [s]



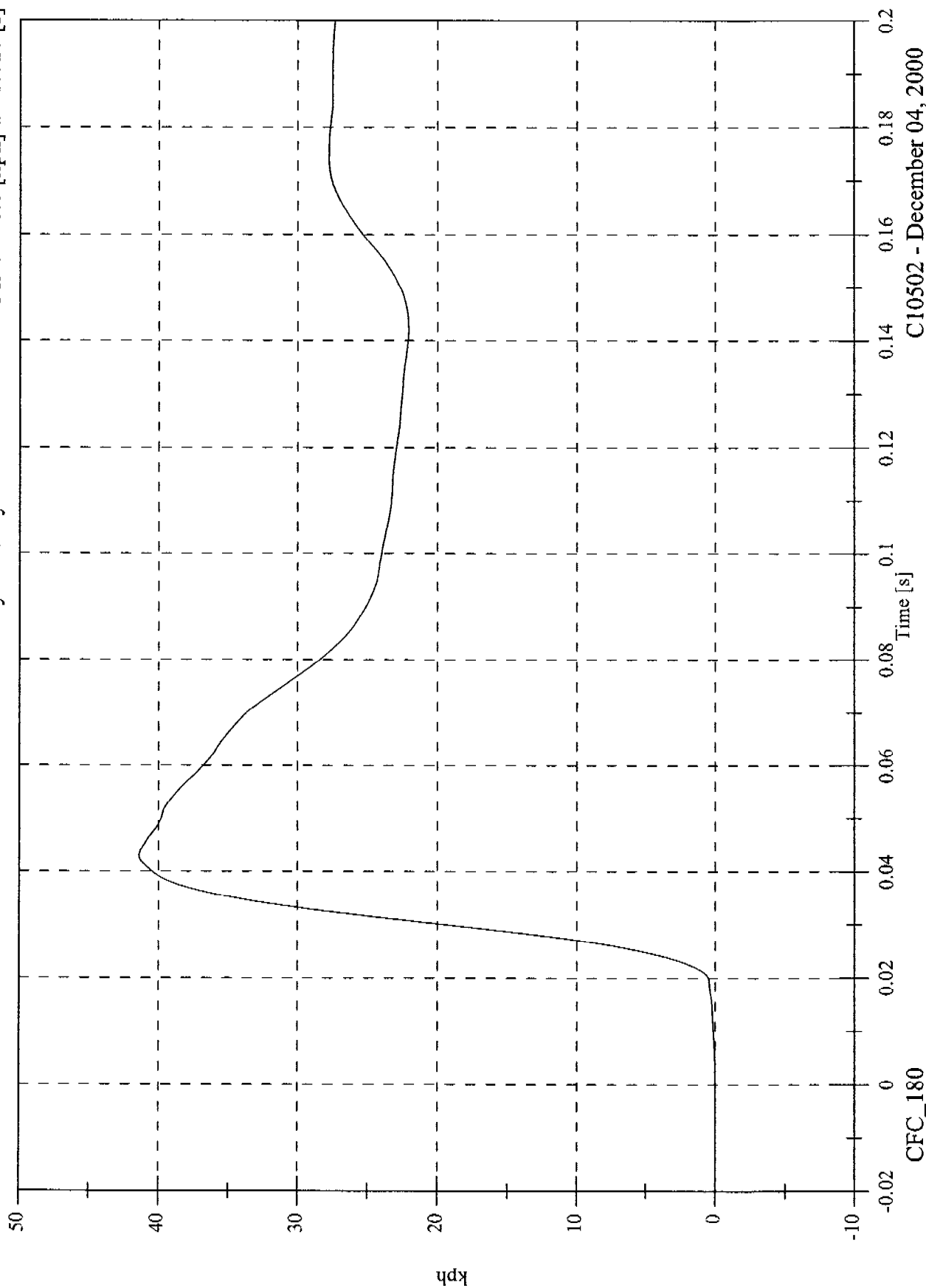
C10502 - December 04, 2000

FMVSS 214D Test #5 - 2001 Daewoo Leganza

Max: 41.4 [kph] at 0.043 [s]

Min: -0.0 [kph] at -0.020 [s]

P1 Pelvic y Velocity

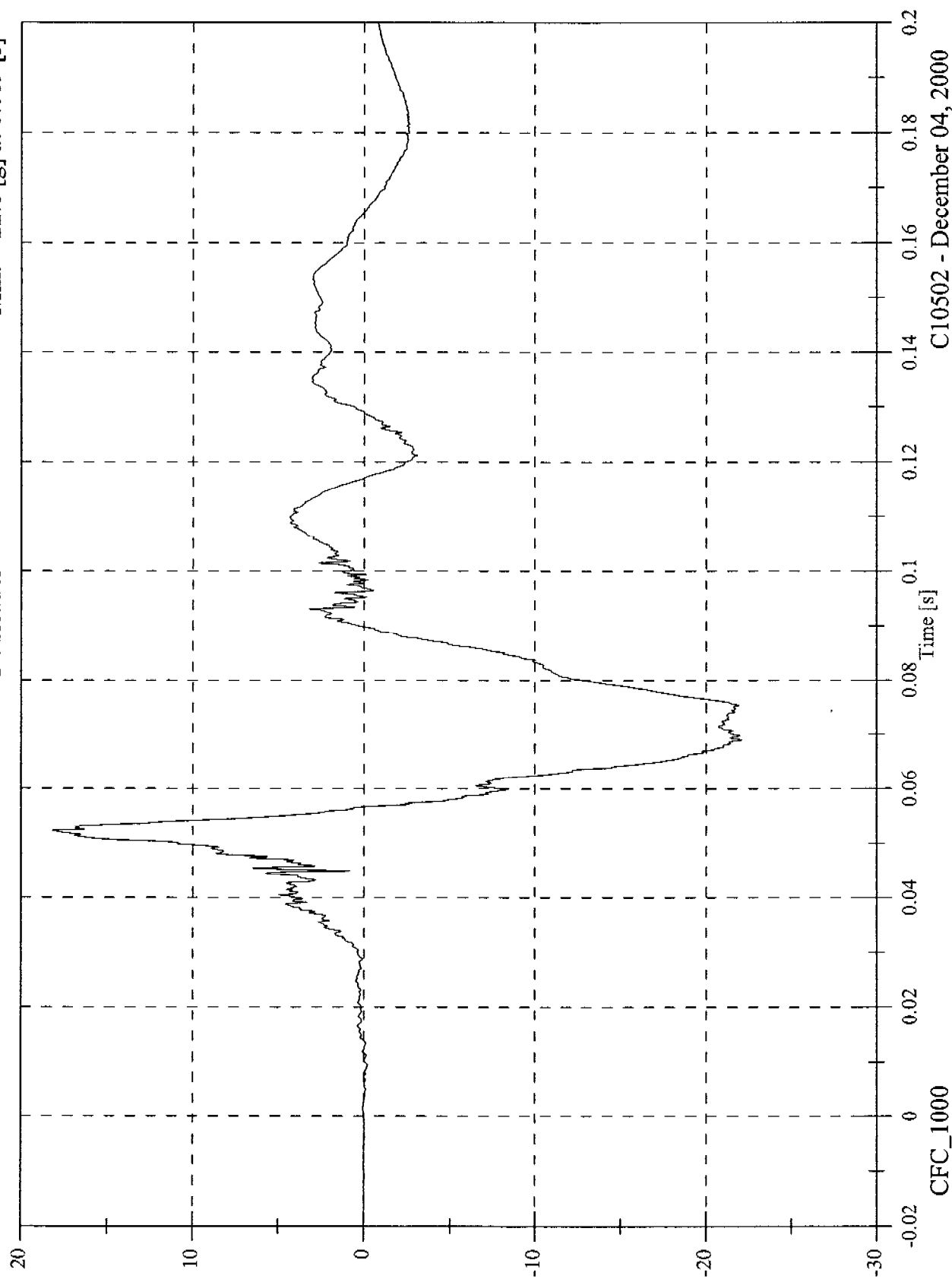


C10502 - December 04, 2000

FMVSS 214D Test #5 - 2001 Daewoo Leganza

Max: 18.2 [g] at 0.052 [s]
Min: -22.1 [g] at 0.069 [s]

P4 Head x

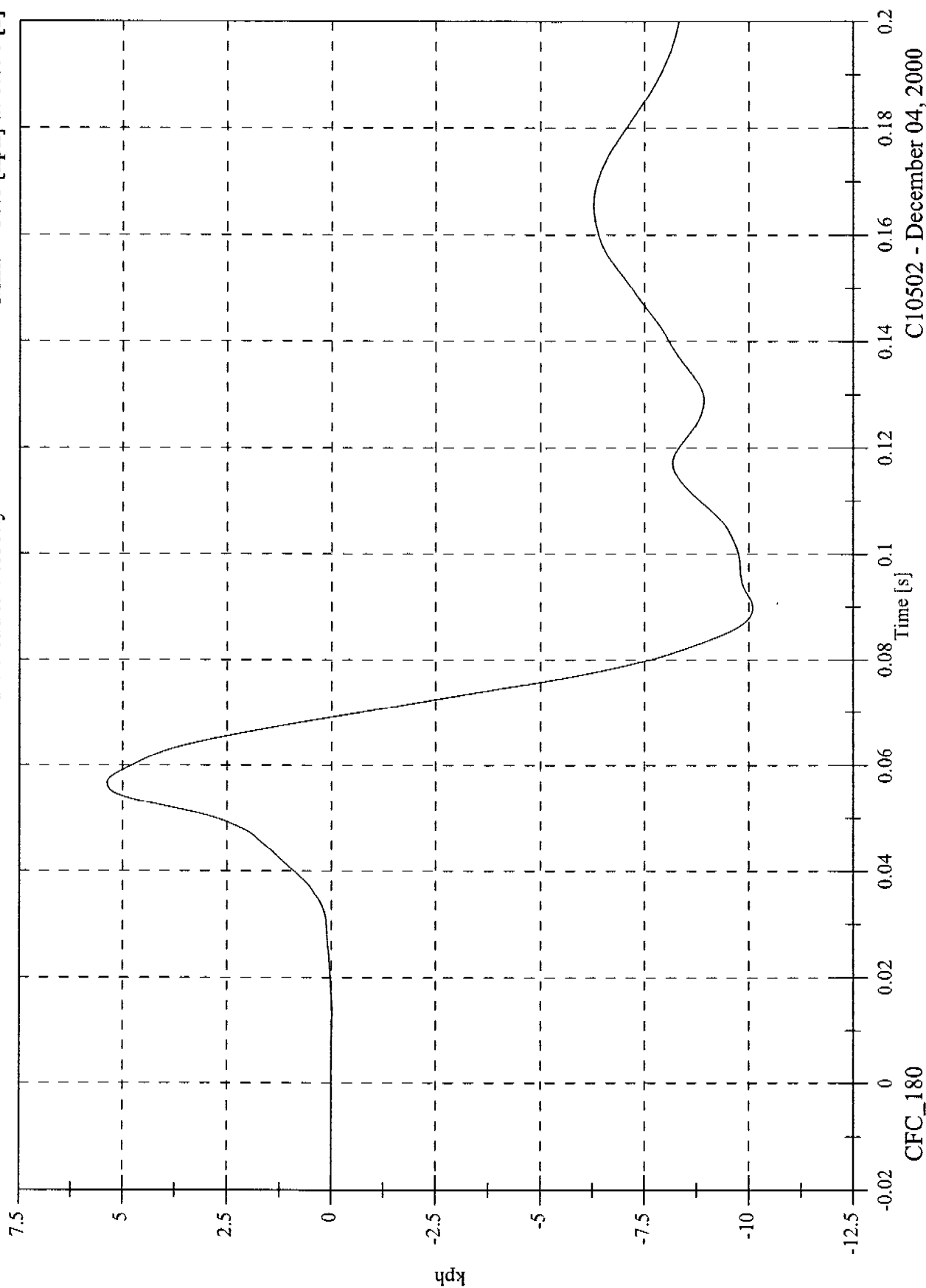


C10502 - December 04, 2000

FMVSS 214D Test #5 - 2001 Daewoo Leganza

Max: 5.4 [kph] at 0.057 [s]
 Min: -10.1 [kph] at 0.090 [s]

P4 Head x Velocity

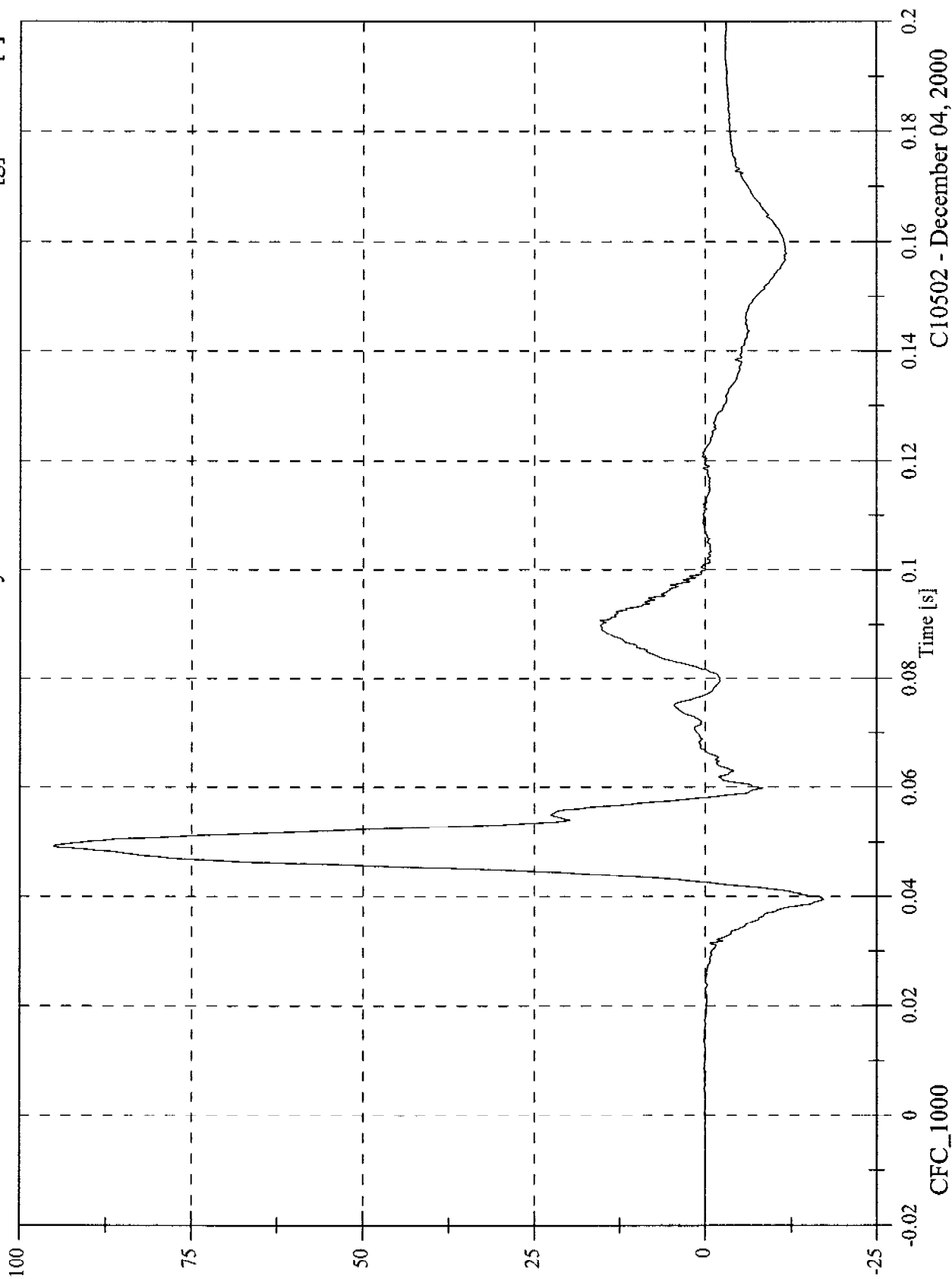


C10502 - December 04, 2000

FMVSS 214D Test #5 - 2001 Daewoo Leganza

P4 Head y

Max: 95.0 [g] at 0.049 [s]
Min: -17.2 [g] at 0.039 [s]

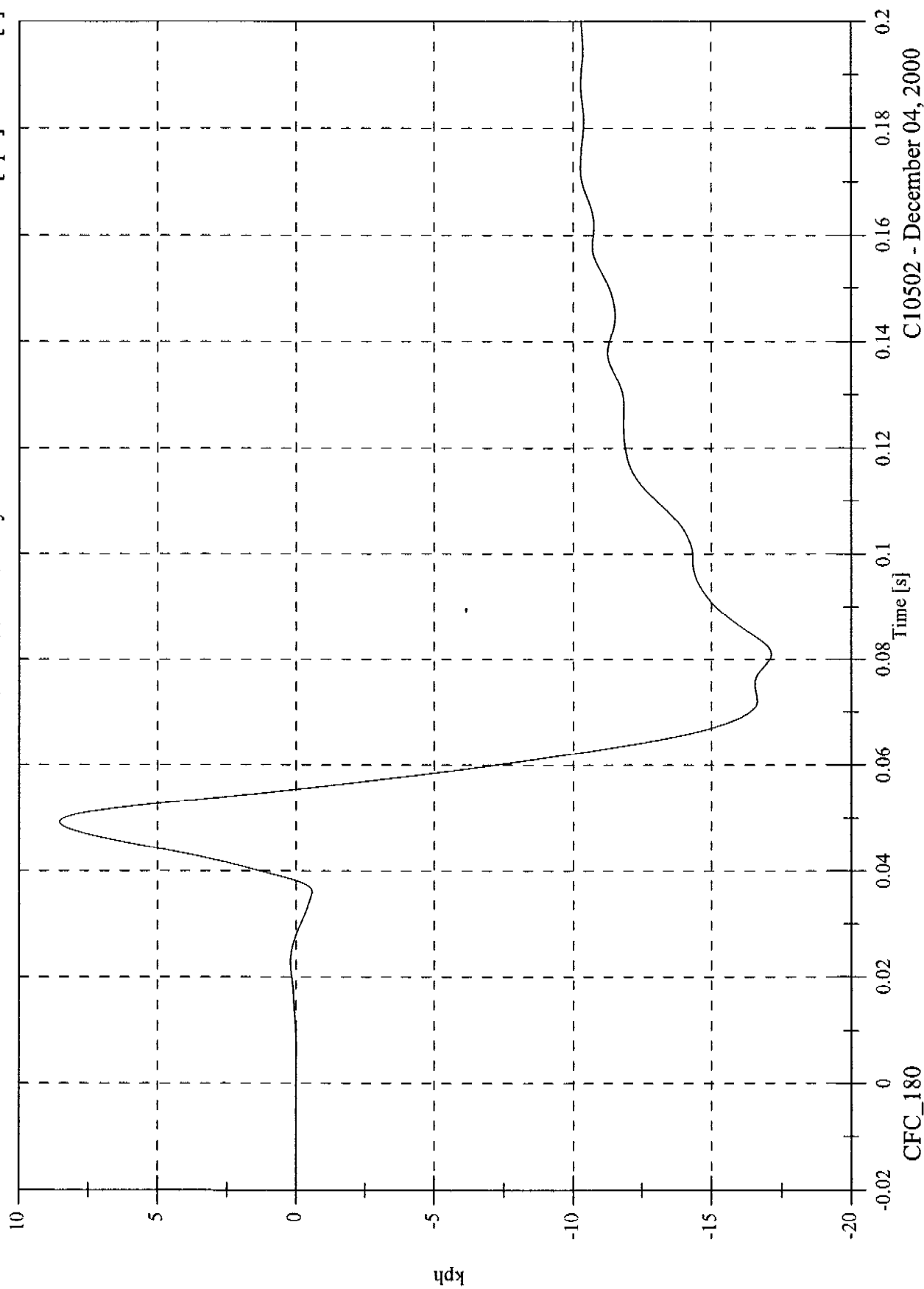


C10502 - December 04, 2000

FMVSS 214D Test #5 - 2001 Daewoo Leganza

Max: 8.5 [kph] at 0.049 [s]
 Min: -17.1 [kph] at 0.081 [s]

P4 Head z Velocity

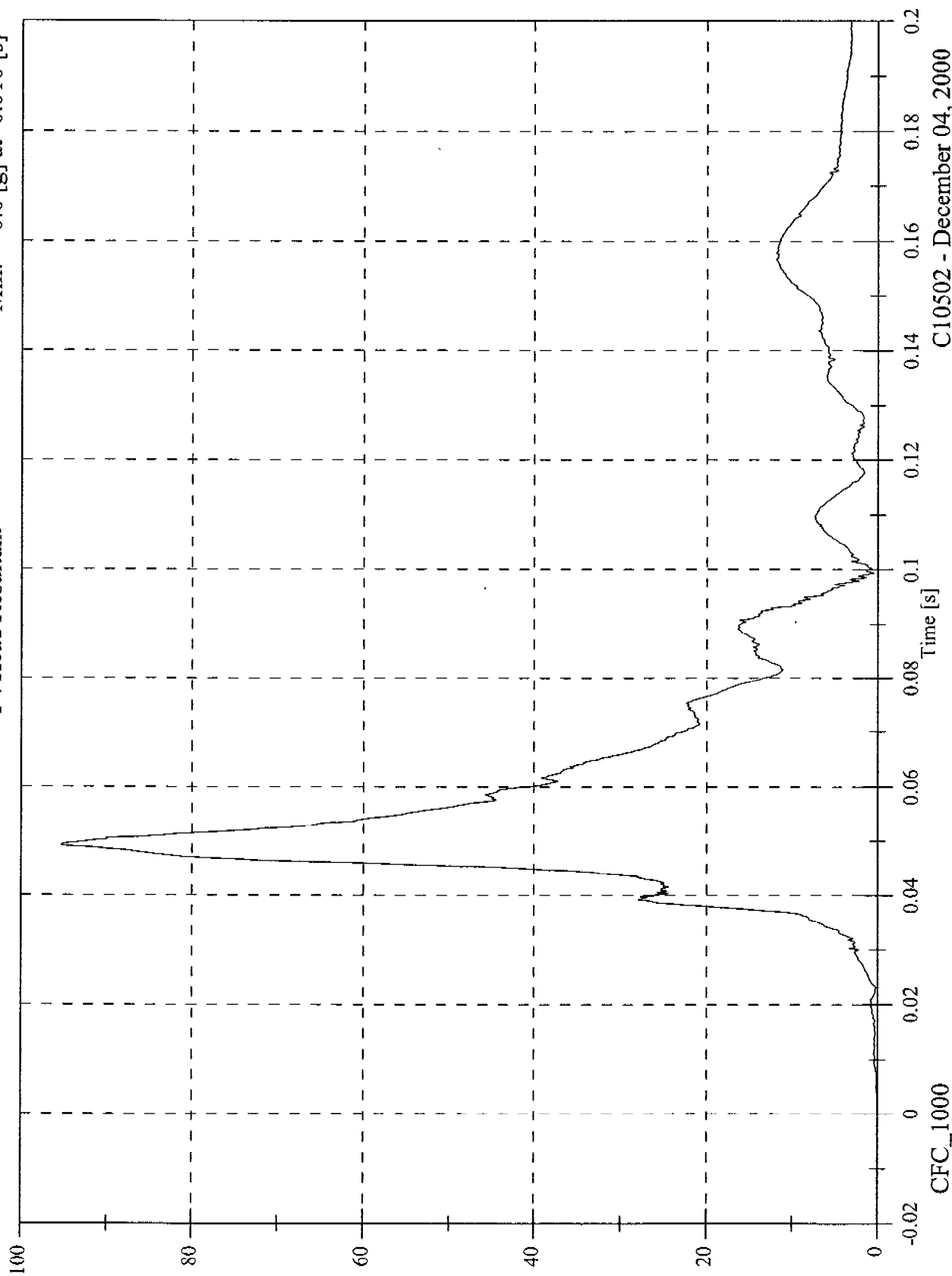


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FMVSS 214D Test #5 - 2001 Daewoo Leganza

P4 Head Resultant

Max: 95.4 [g] at 0.049 [s]
Min: 0.0 [g] at -0.010 [s]

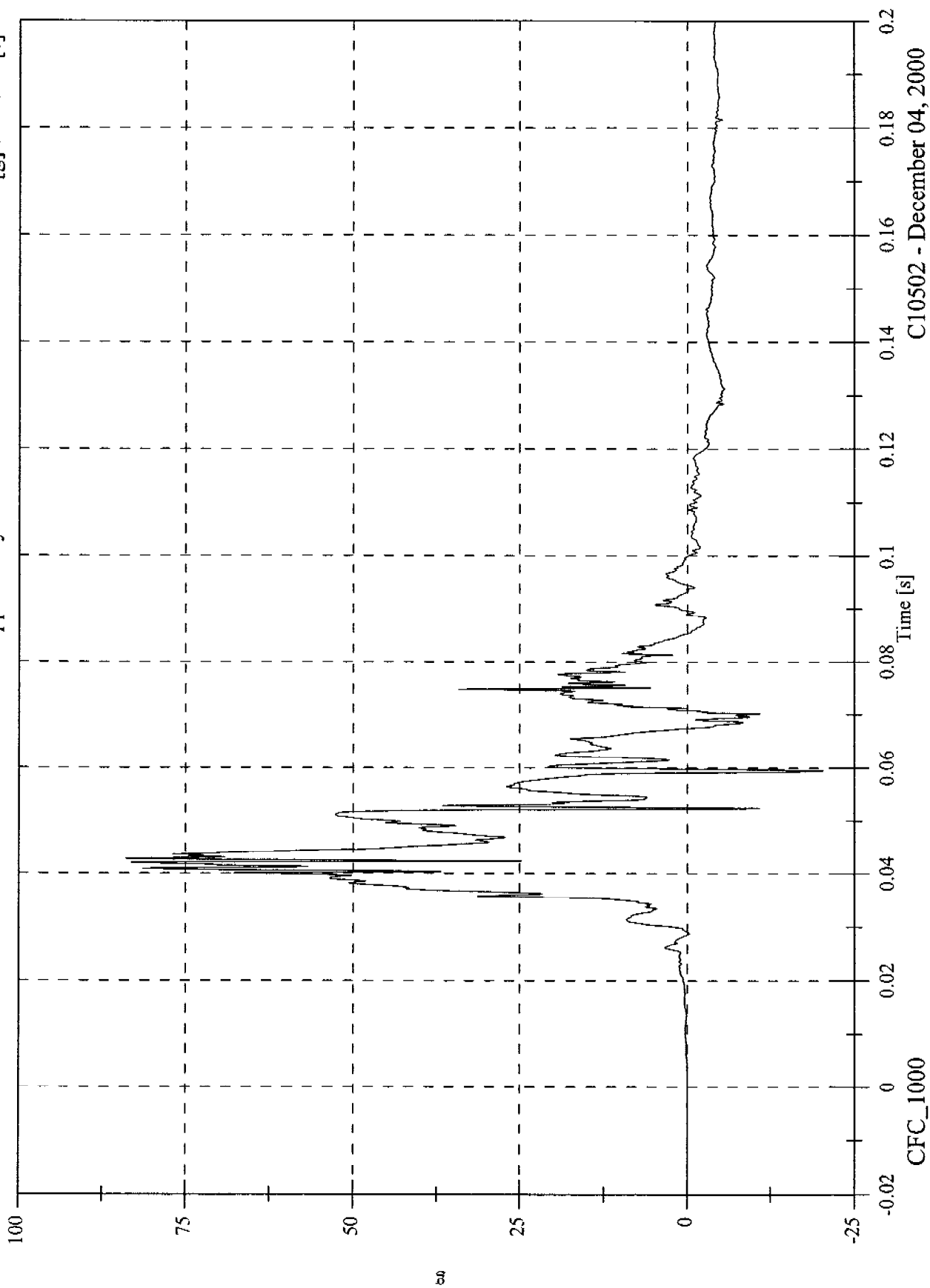


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FMVSS 214D Test #5 - 2001 Daewoo Leganza

Max: 83.9 [g] at 0.043 [s]
Min: -20.3 [g] at 0.059 [s]

P4 Upper Rib y

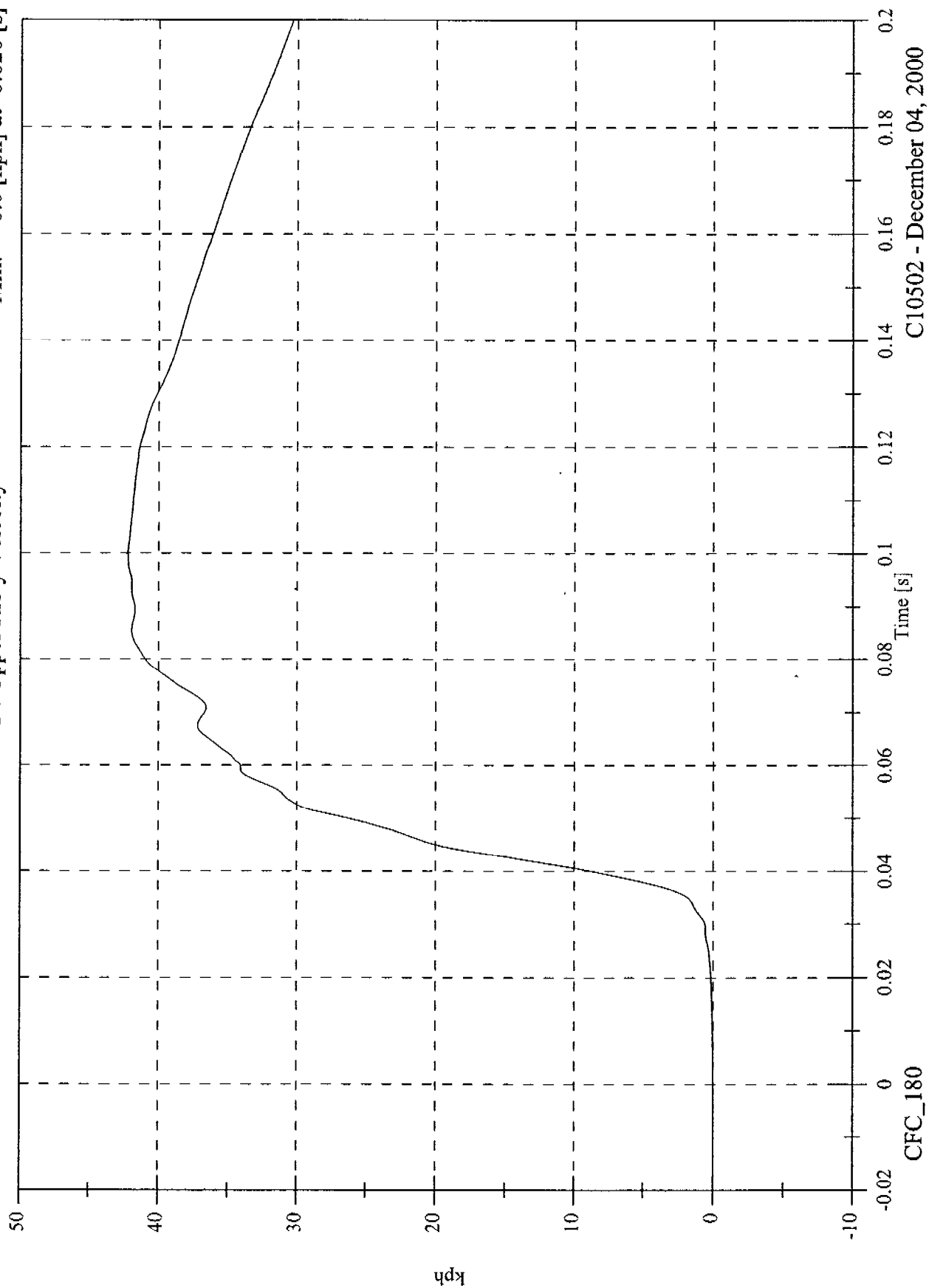


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FMVSS 214D Test #5 - 2001 Daewoo Leganza

P4 Upper Rib y Velocity

Max: 42.2 [kph] at 0.100 [s]
Min: -0.0 [kph] at -0.020 [s]

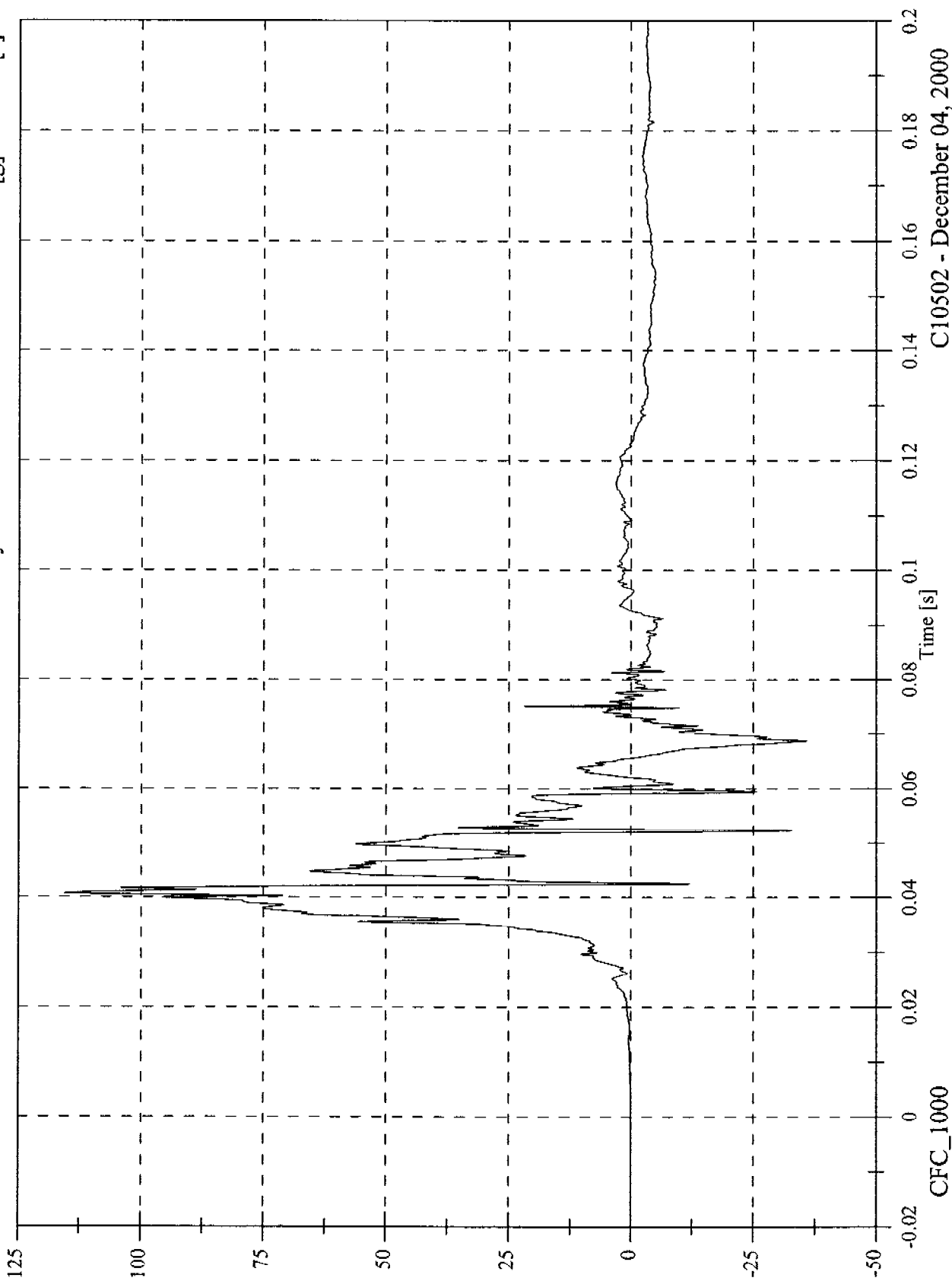


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FMVSS 214D Test #5 - 2001 Daewoo Leganza

P4 Lower Rib y

Max: 115.5 [g] at 0.041 [s]
Min: -35.9 [g] at 0.069 [s]

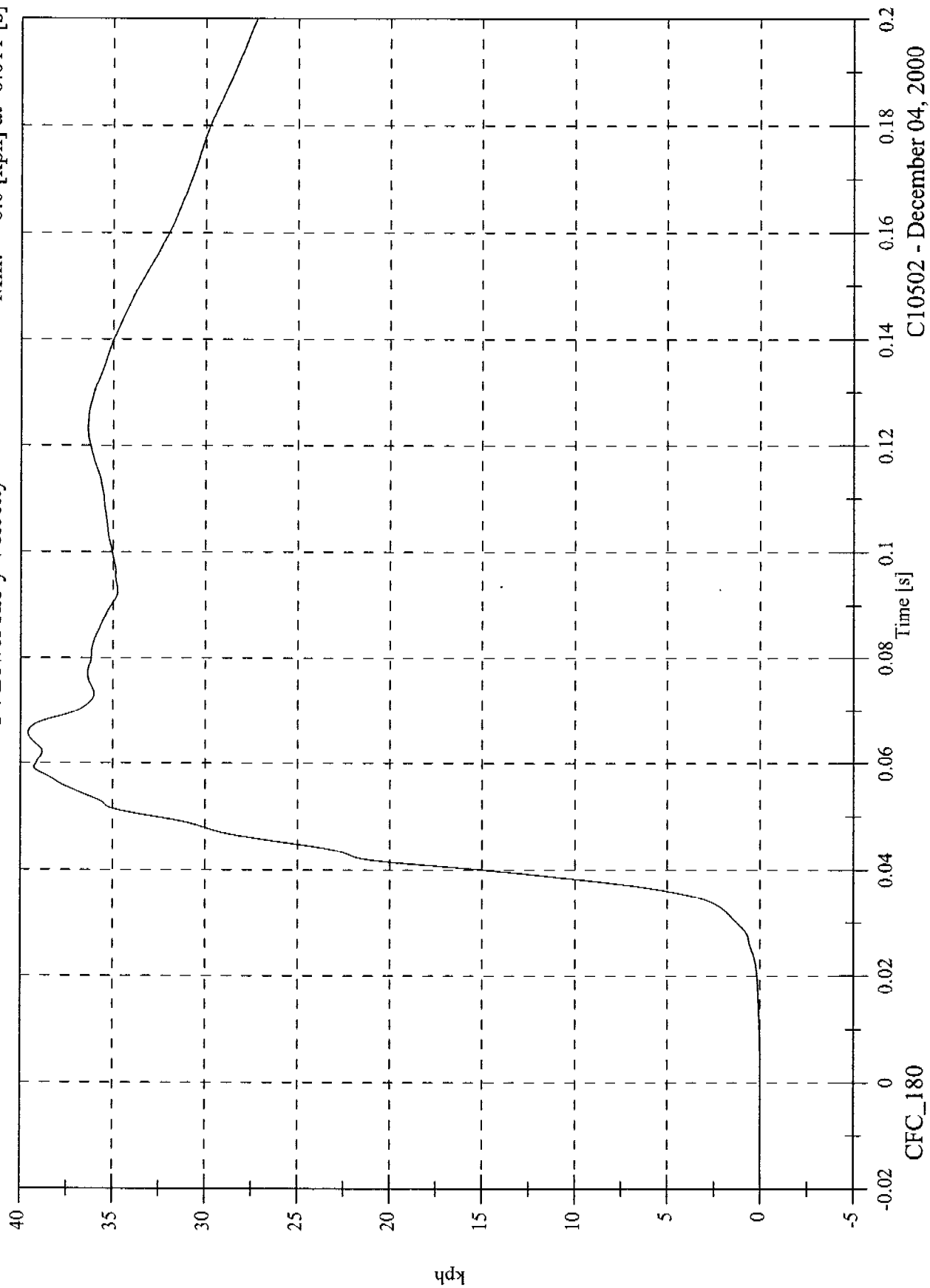


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FMVSS 214D Test #5 - 2001 Daewoo Leganza

Max: 39.6 [kph] at 0.066 [s]
Min: -0.0 [kph] at -0.011 [s]

P4 Lower Rib y Velocity

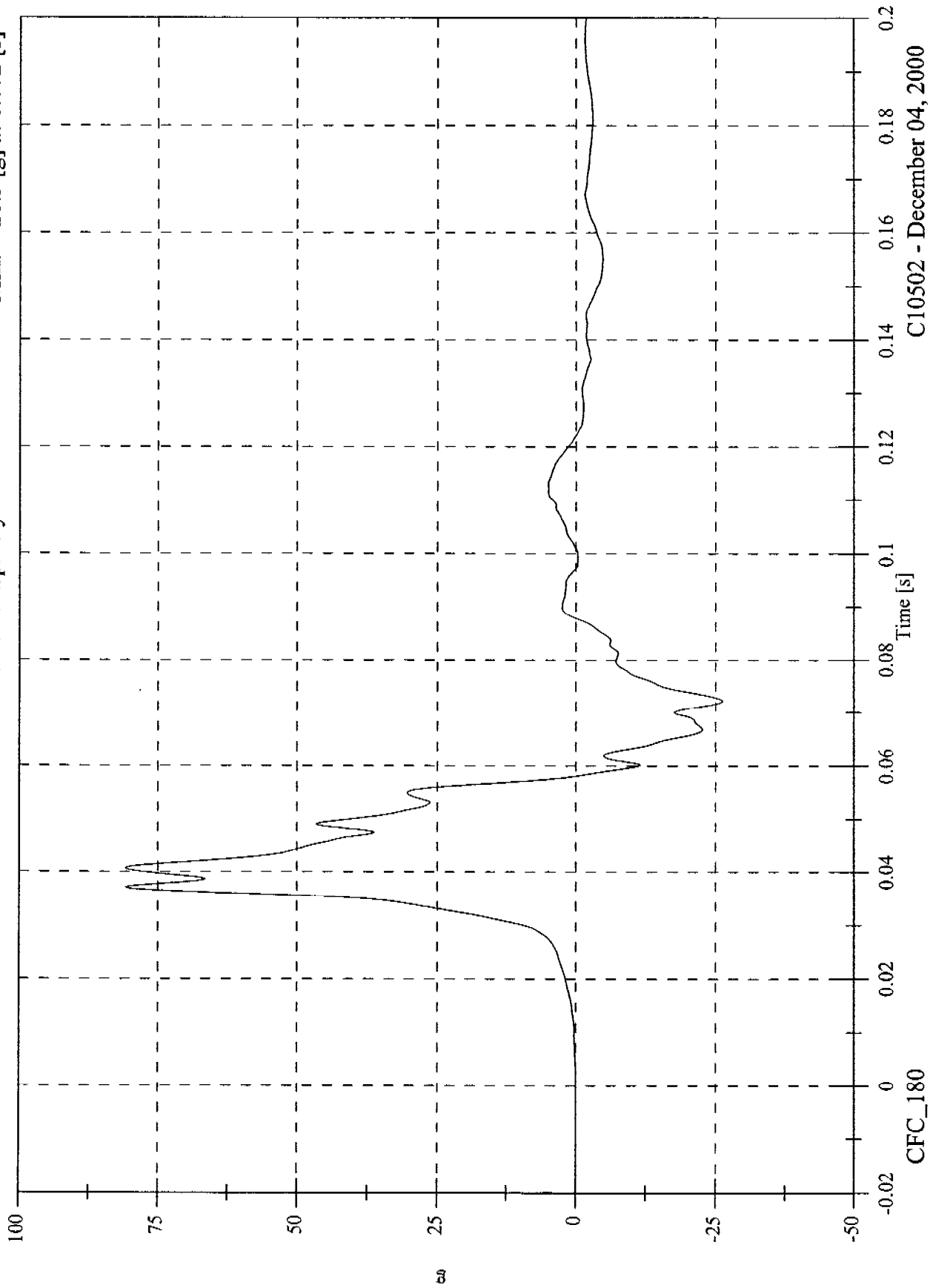


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FMVSS 214D Test #5 - 2001 Daewoo Leganza

P4 Lower Spine y

Max: 80.8 [g] at 0.041 [s]
Min: -26.3 [g] at 0.072 [s]

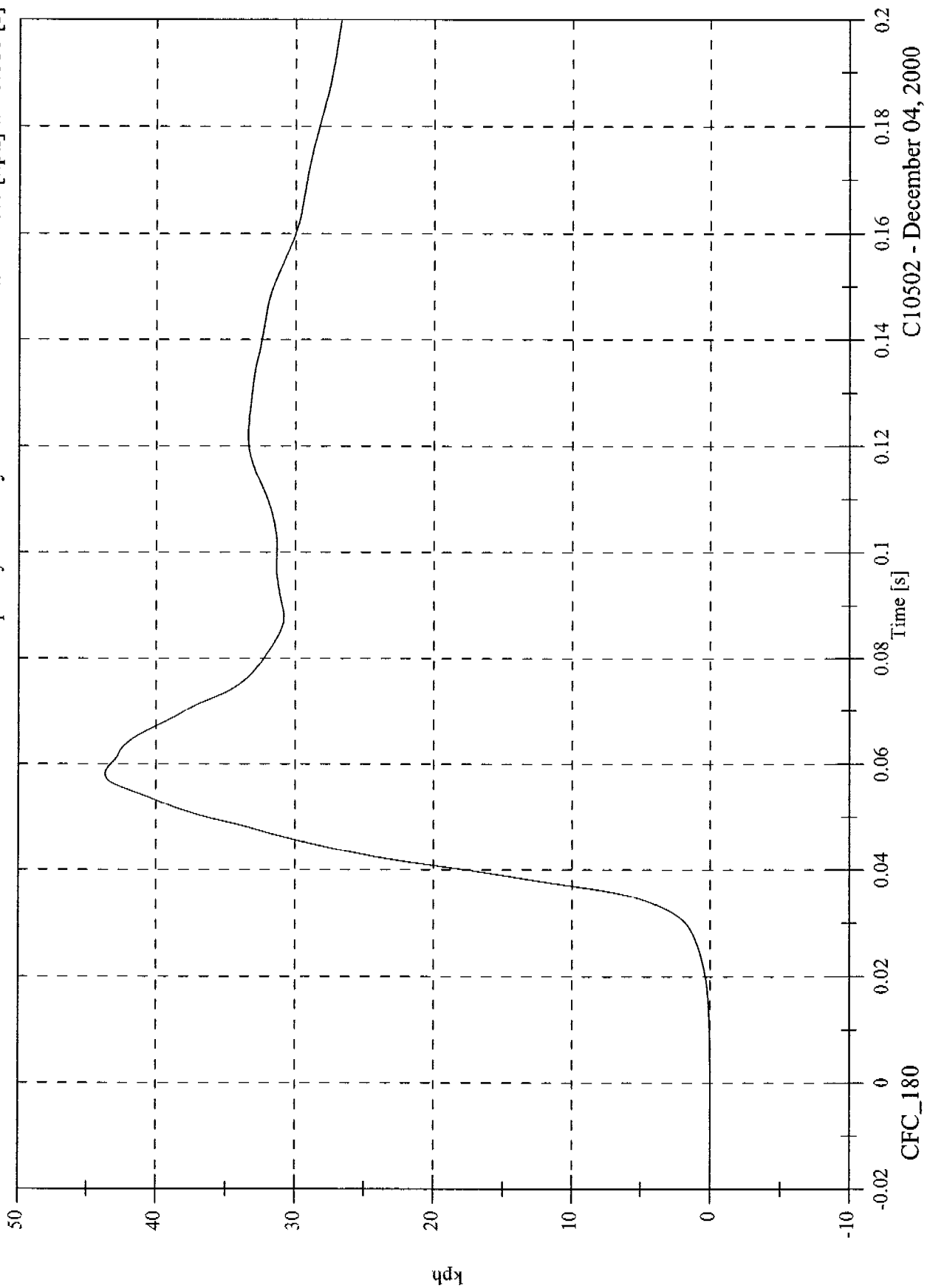


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FMVSS 214D Test #5 - 2001 Daewoo Leganza

P4 Lower Spine y Velocity

Max: 43.7 [kph] at 0.058 [s]
Min: -0.0 [kph] at -0.018 [s]

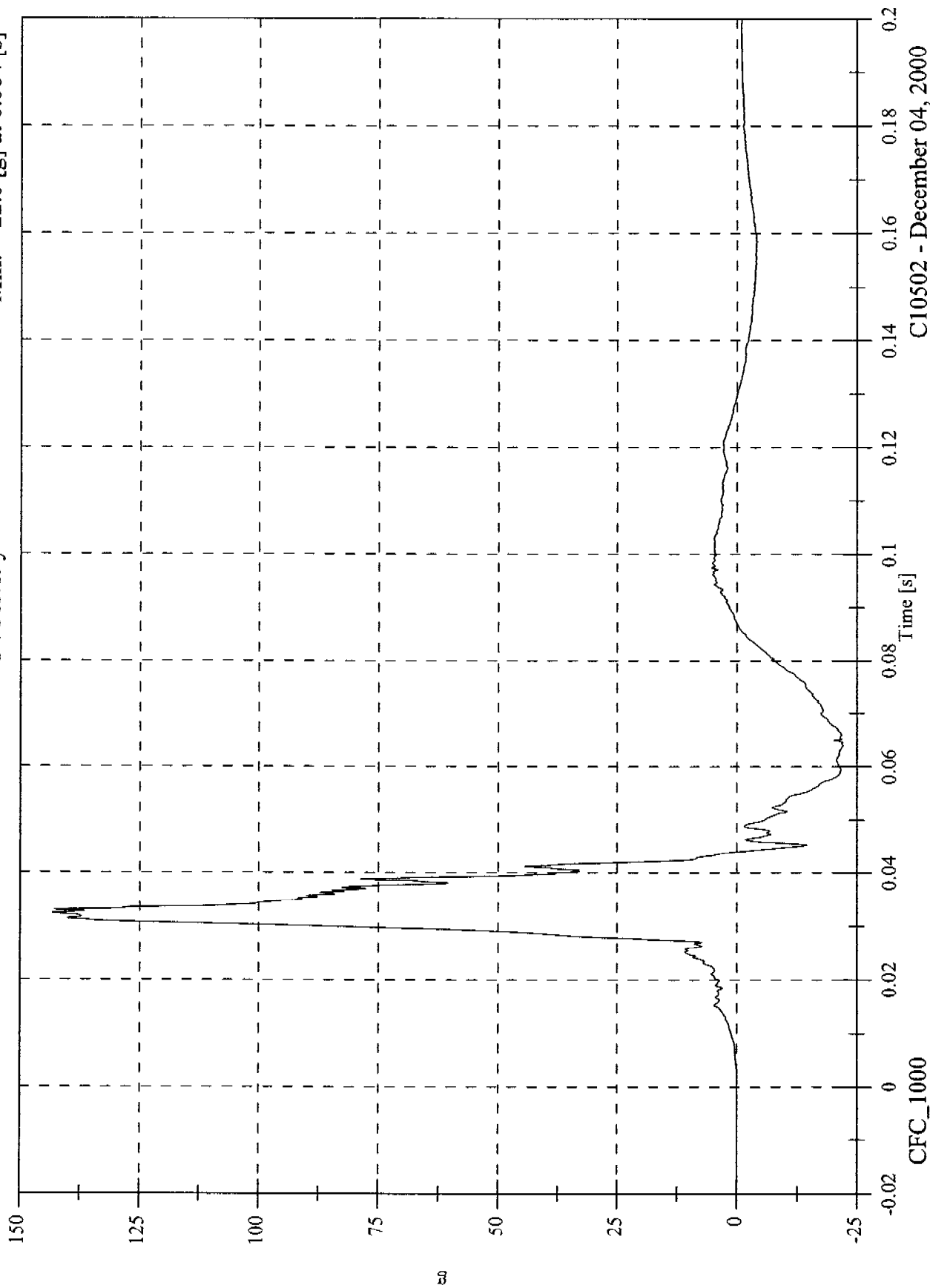


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FMVSS 214D Test #5 - 2001 Daewoo Leganza

Max: 143.2 [g] at 0.032 [s]
Min: -22.0 [g] at 0.064 [s]

P4 Pelvic y

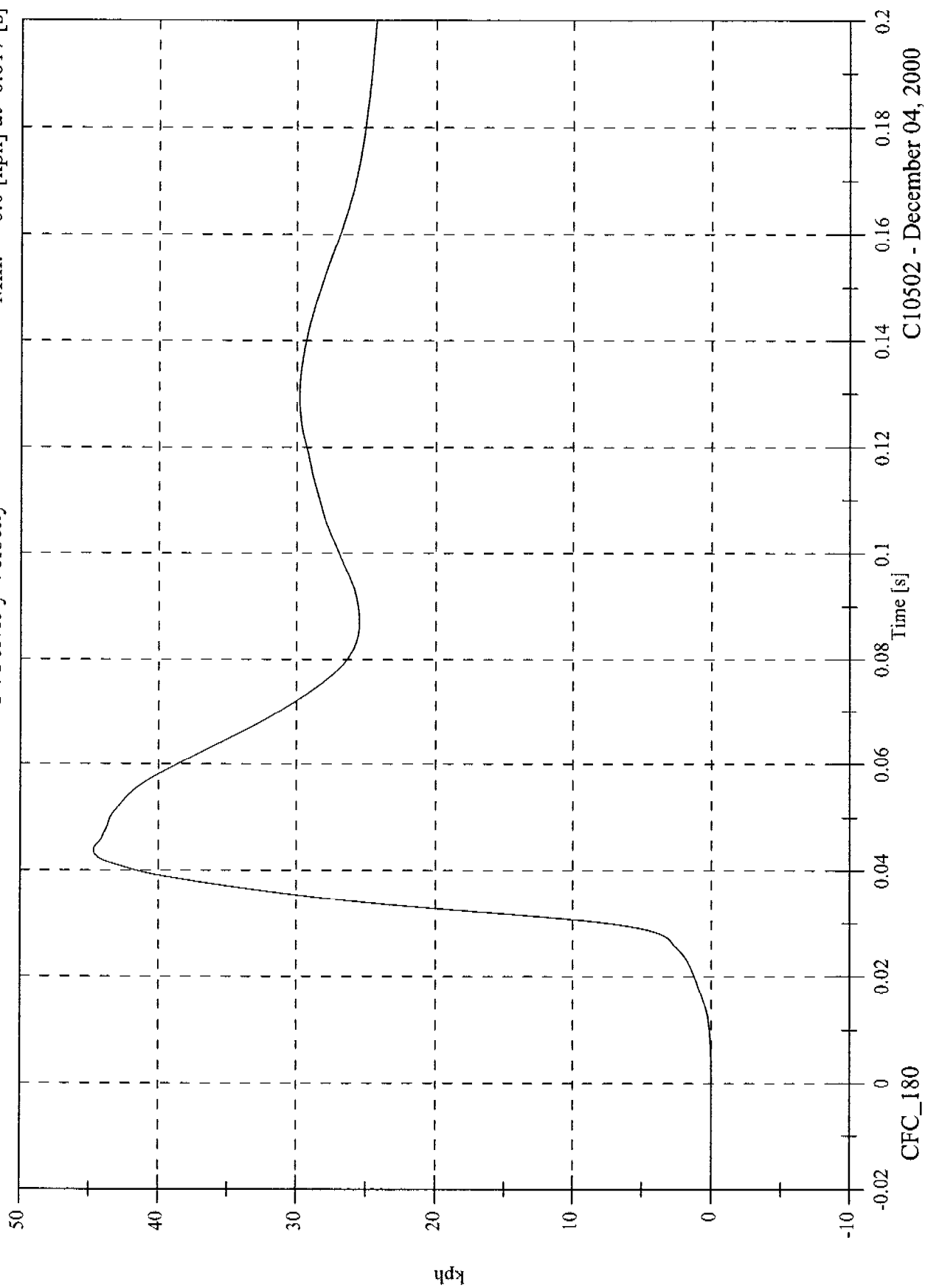


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FMVSS 214D Test #5 - 2001 Daewoo Leganza

Max: 44.7 [kph] at 0.044 [s]
Min: -0.0 [kph] at -0.017 [s]

P4 Pelvic y Velocity



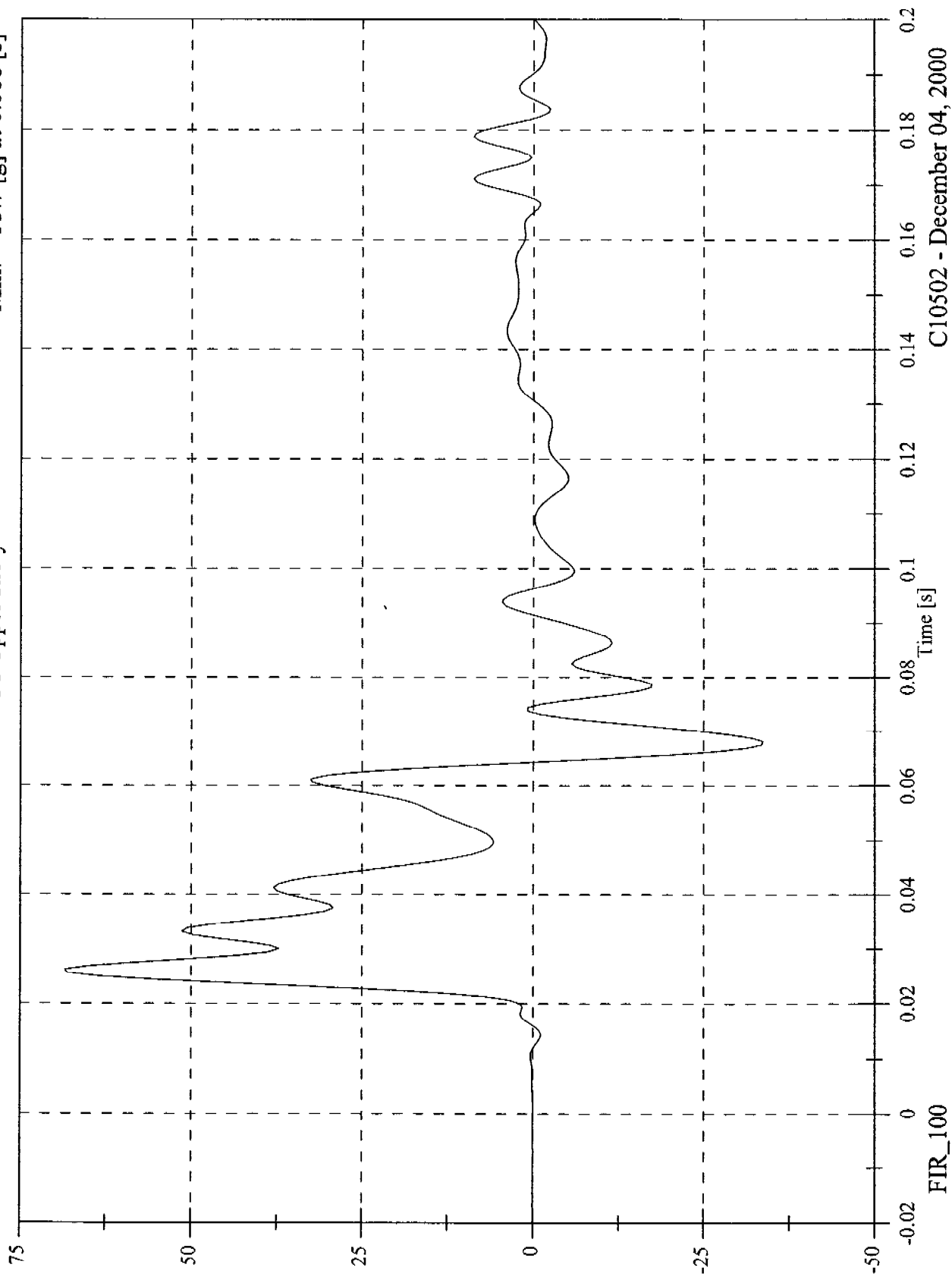
C10502 - December 04, 2000

FMVSS 214D Test #5 - 2001 Daewoo Leganza

P1 Upper Rib y

Max: 68.4 [g] at 0.026 [s]

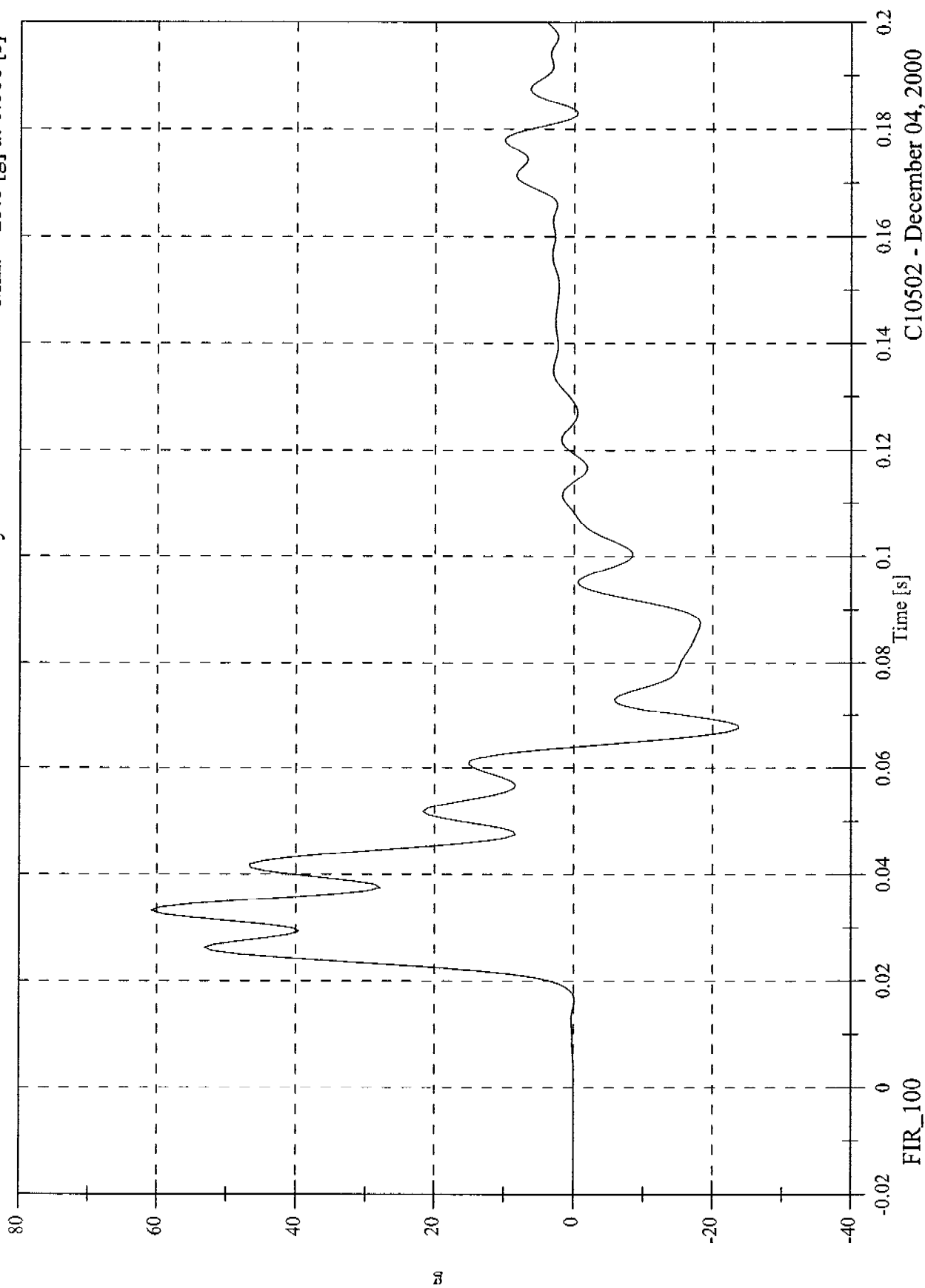
Min: -33.7 [g] at 0.068 [s]



FMVSS 214D Test #5 - 2001 Daewoo Leganza

P1 Lower Rib y

Max: 60.8 [g] at 0.033 [s]
Min: -23.8 [g] at 0.068 [s]

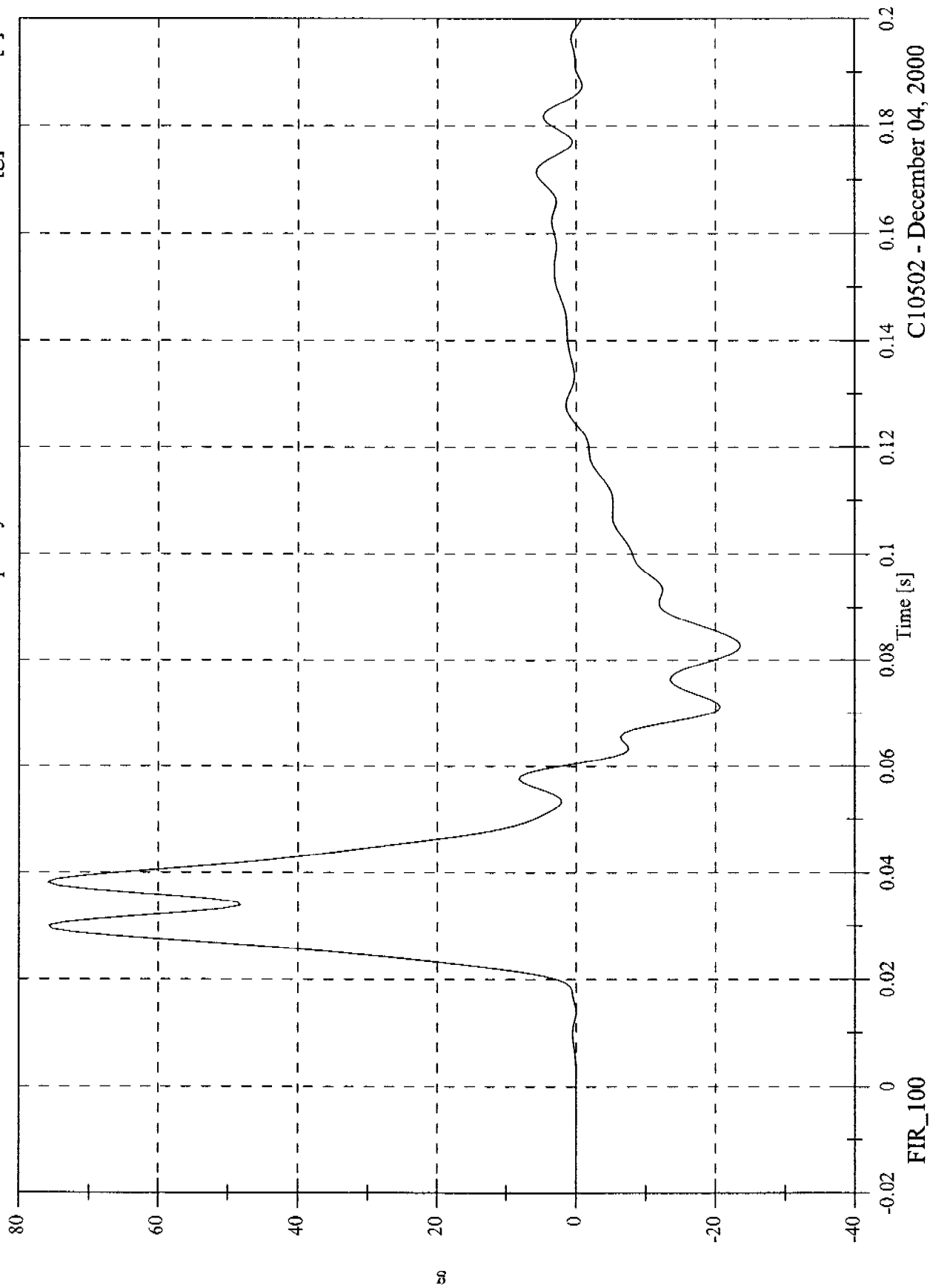


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FMVSS 214D Test #5 - 2001 Daewoo Leganza

Max: 75.8 [g] at 0.038 [s]
Min: -23.6 [g] at 0.083 [s]

P1 Lower Spine y

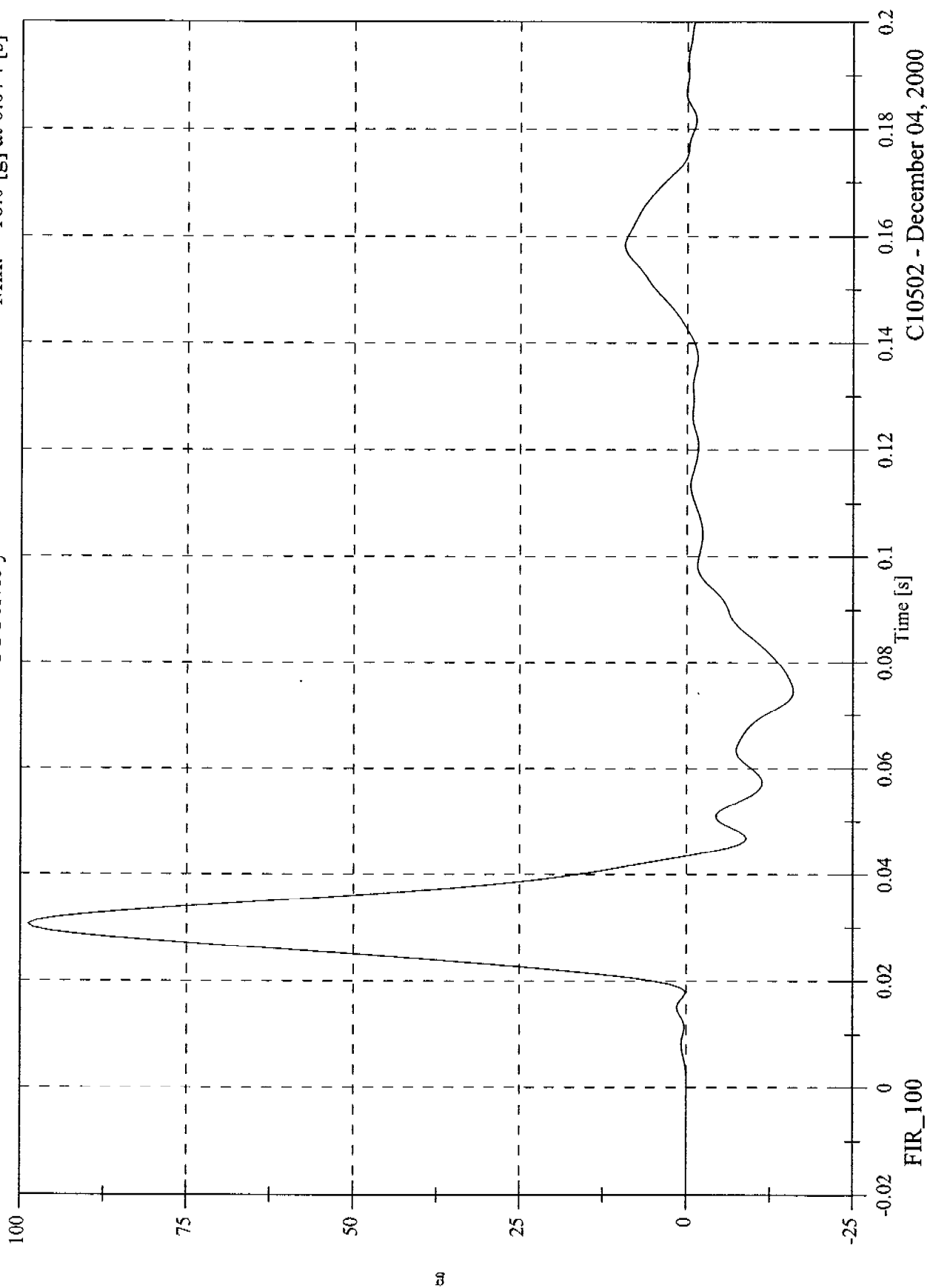


C10502 - December 04, 2000

FMVSS 214D Test #5 - 2001 Daewoo Leganza

Max: 98.8 [g] at 0.031 [s]
Min: -16.0 [g] at 0.074 [s]

P1 Pelvic y

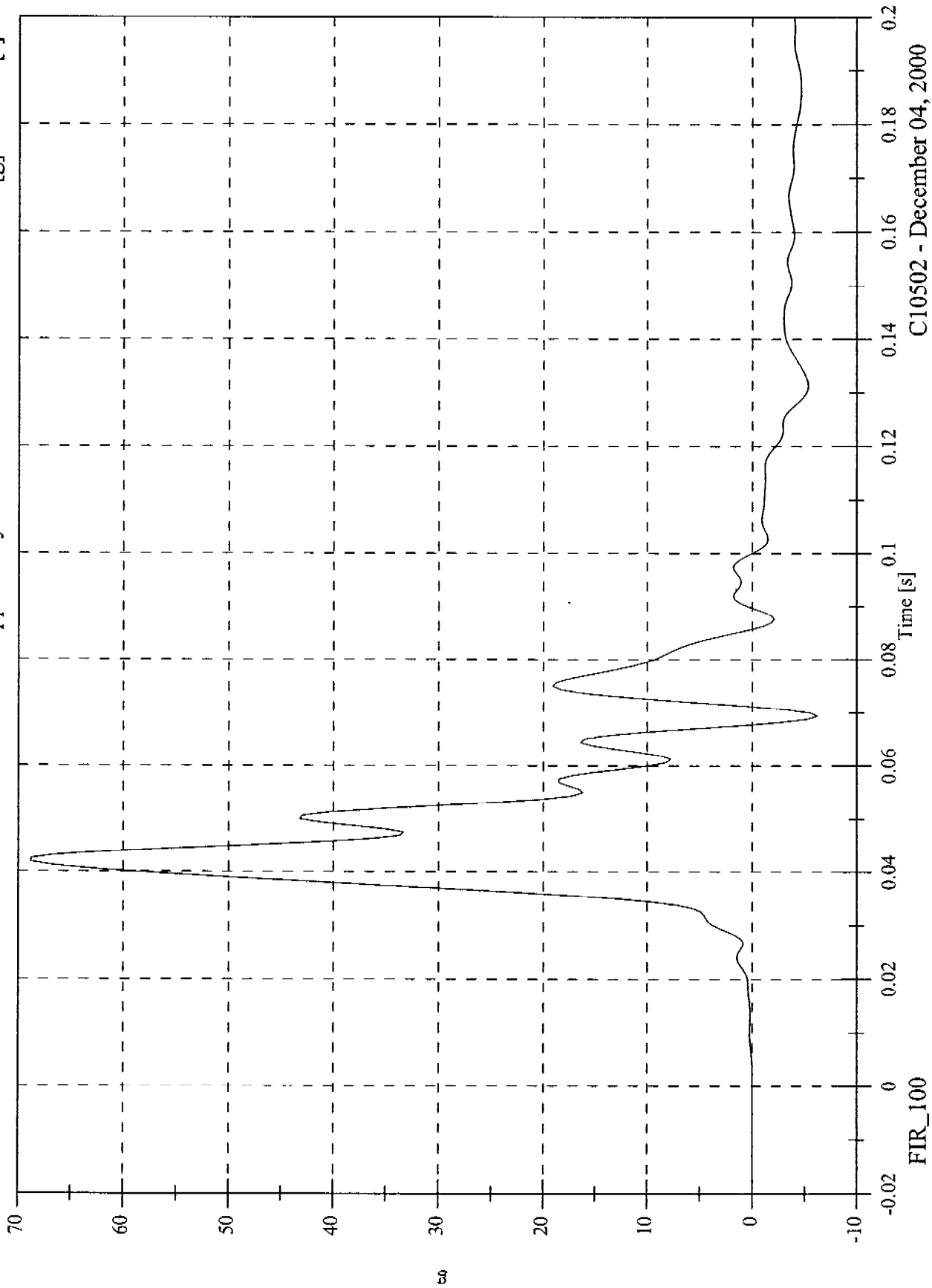


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FMVSS 214D Test #5 - 2001 Daewoo Leganza

Max: 68.8 [g] at 0.042 [s]
Min: -6.2 [g] at 0.069 [s]

P4 Upper Rib y

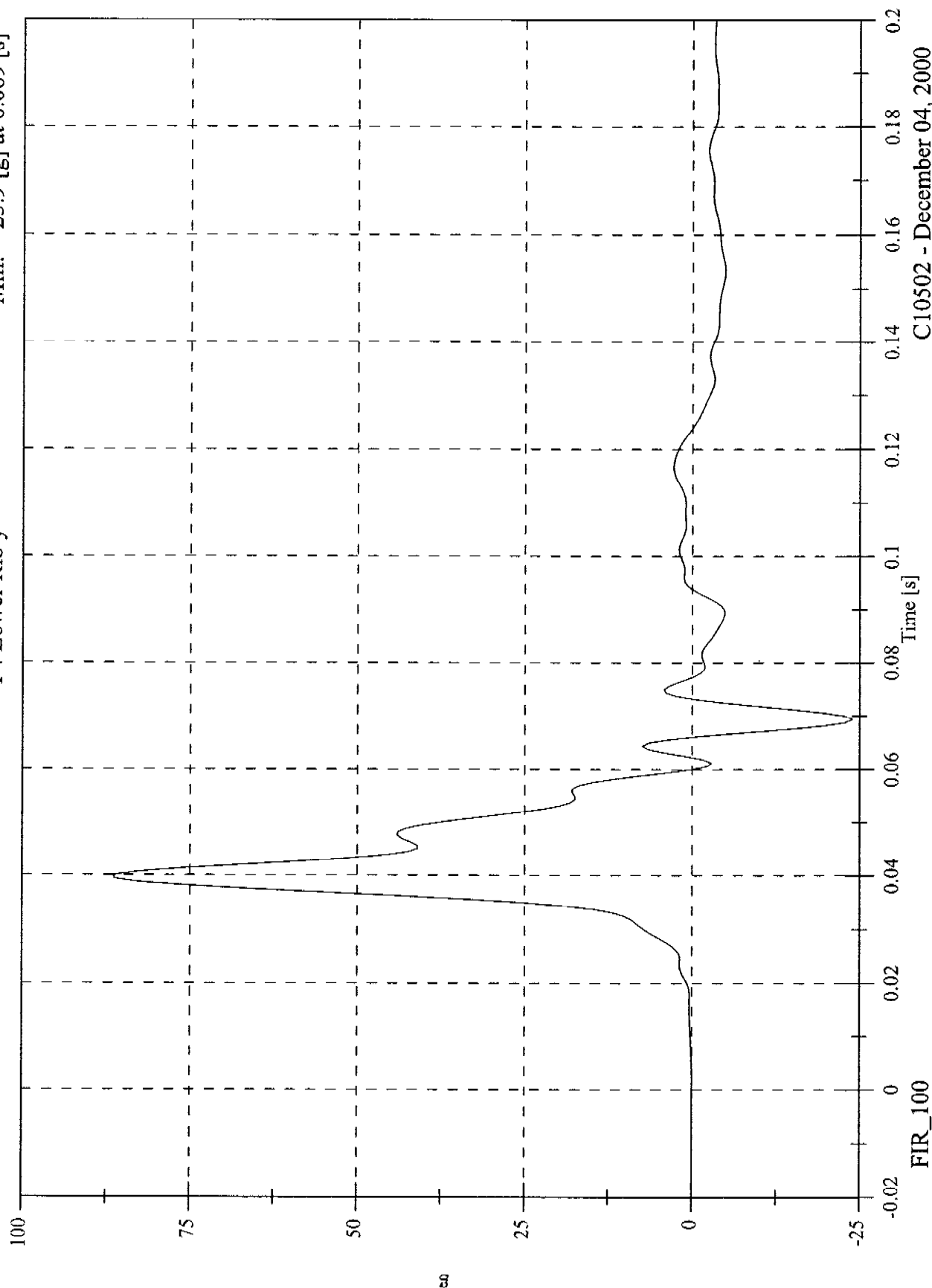


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FMVSS 214D Test #5 - 2001 Daewoo Leganza

P4 Lower Rib y

Max: 86.3 [g] at 0.039 [s]
Min: -23.9 [g] at 0.069 [s]

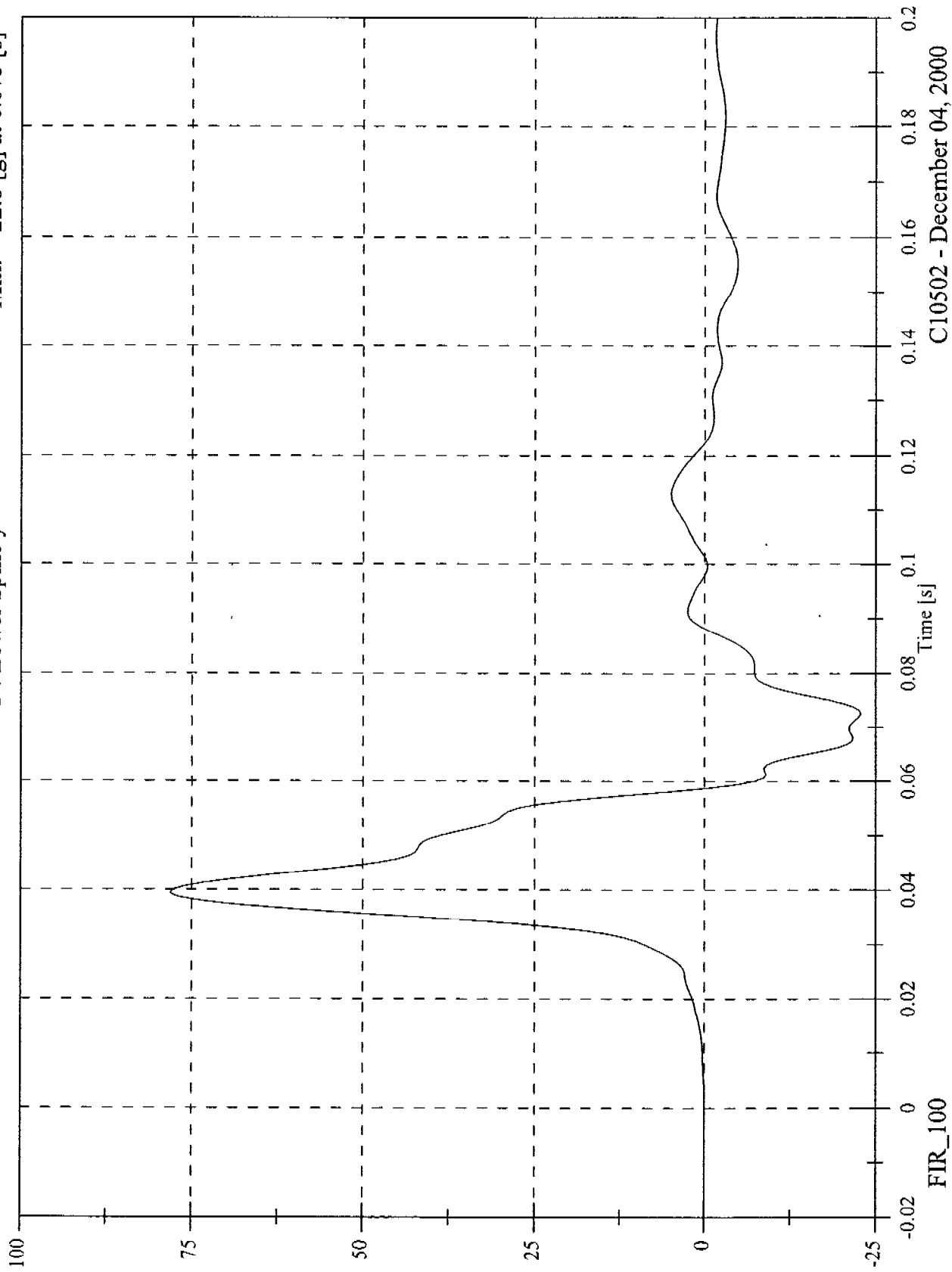


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FMVSS 214D Test #5 - 2001 Daewoo Leganza

Max: 78.1 [g] at 0.039 [s]
Min: -22.8 [g] at 0.073 [s]

P4 Lower Spine y

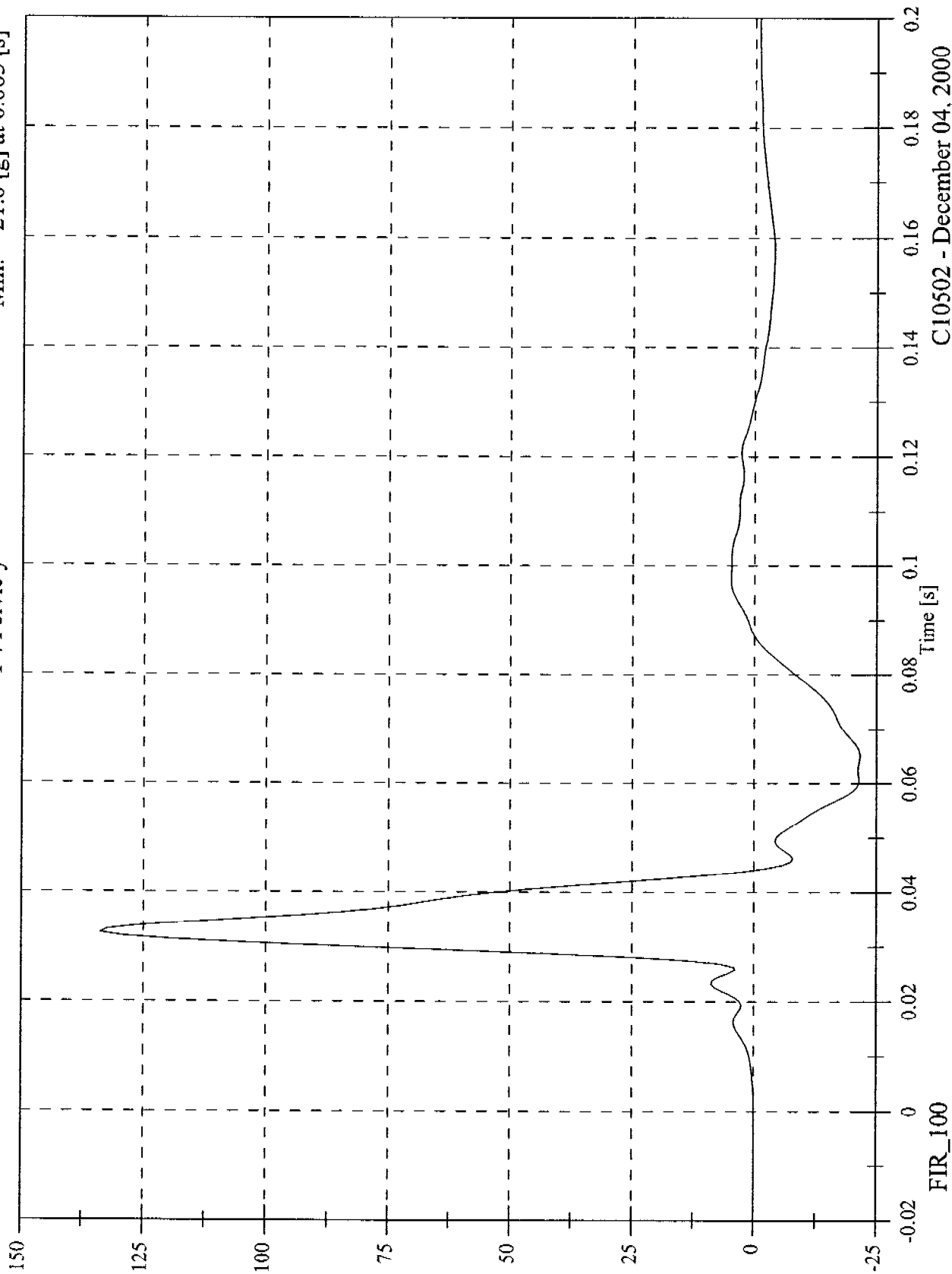


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FMVSS 214D Test #5 - 2001 Daewoo Leganza

Max: 133.7 [g] at 0.033 [s]
Min: -21.6 [g] at 0.065 [s]

P4 Pelvic y

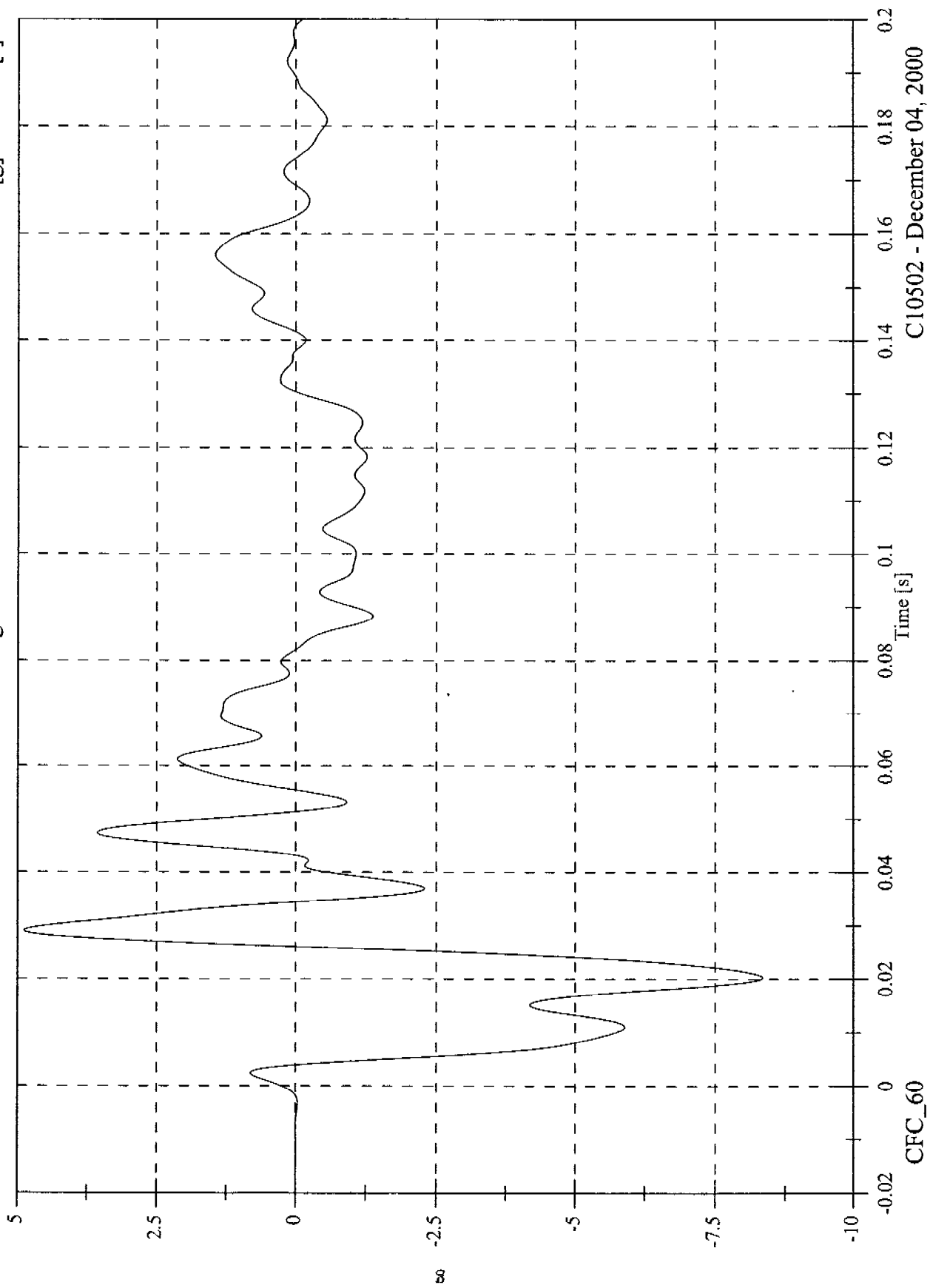


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Acc 1 Right Front Sill X

Max: 4.9 [g] at 0.029 [s]
Min: -8.3 [g] at 0.020 [s]

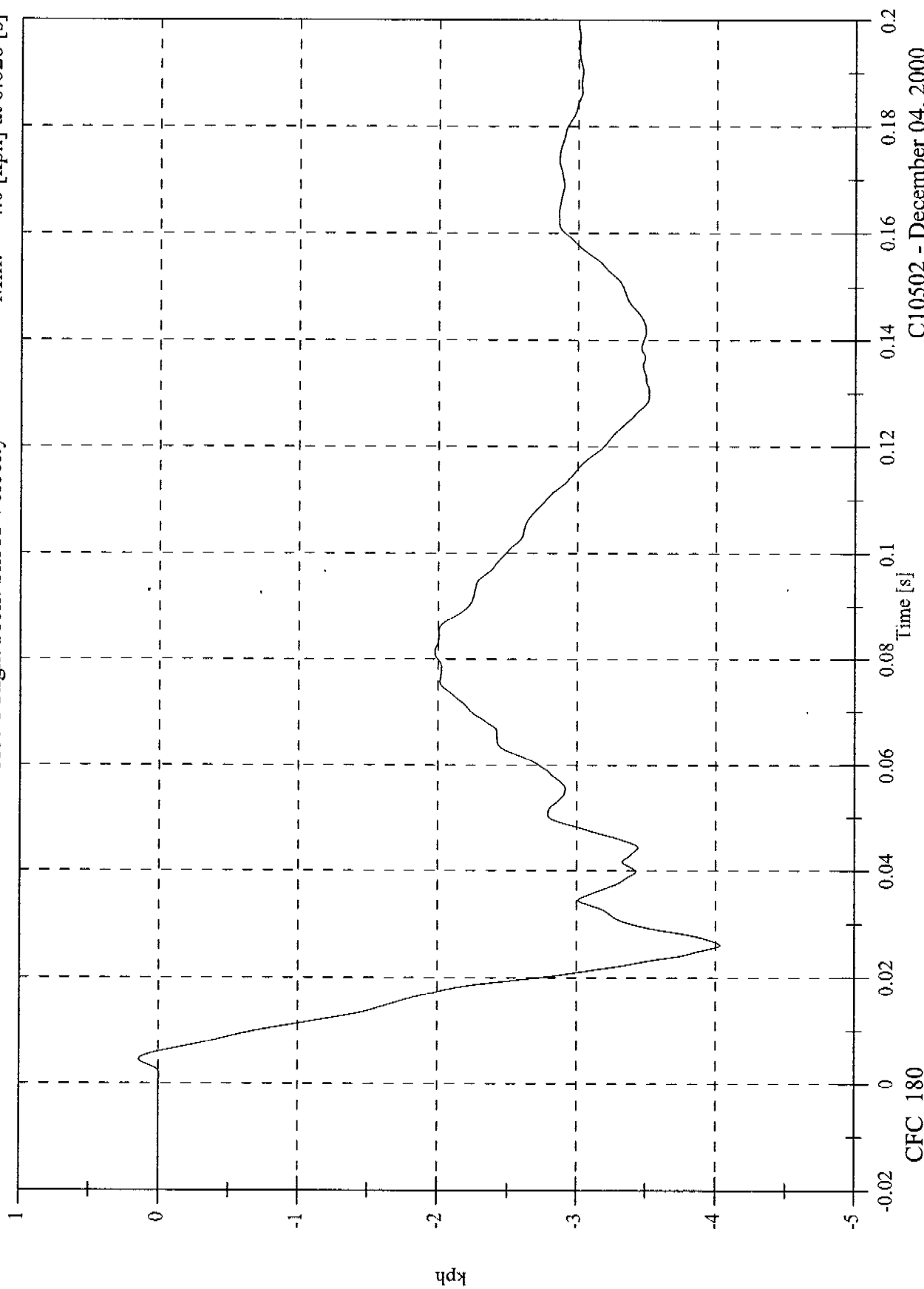


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FMVSS 214D Test #5 - 2001 Daewoo Leganza

Acc 1 Right Front Sill X Velocity

Max: 0.1 [kph] at 0.004 [s]
Min: -4.0 [kph] at 0.026 [s]

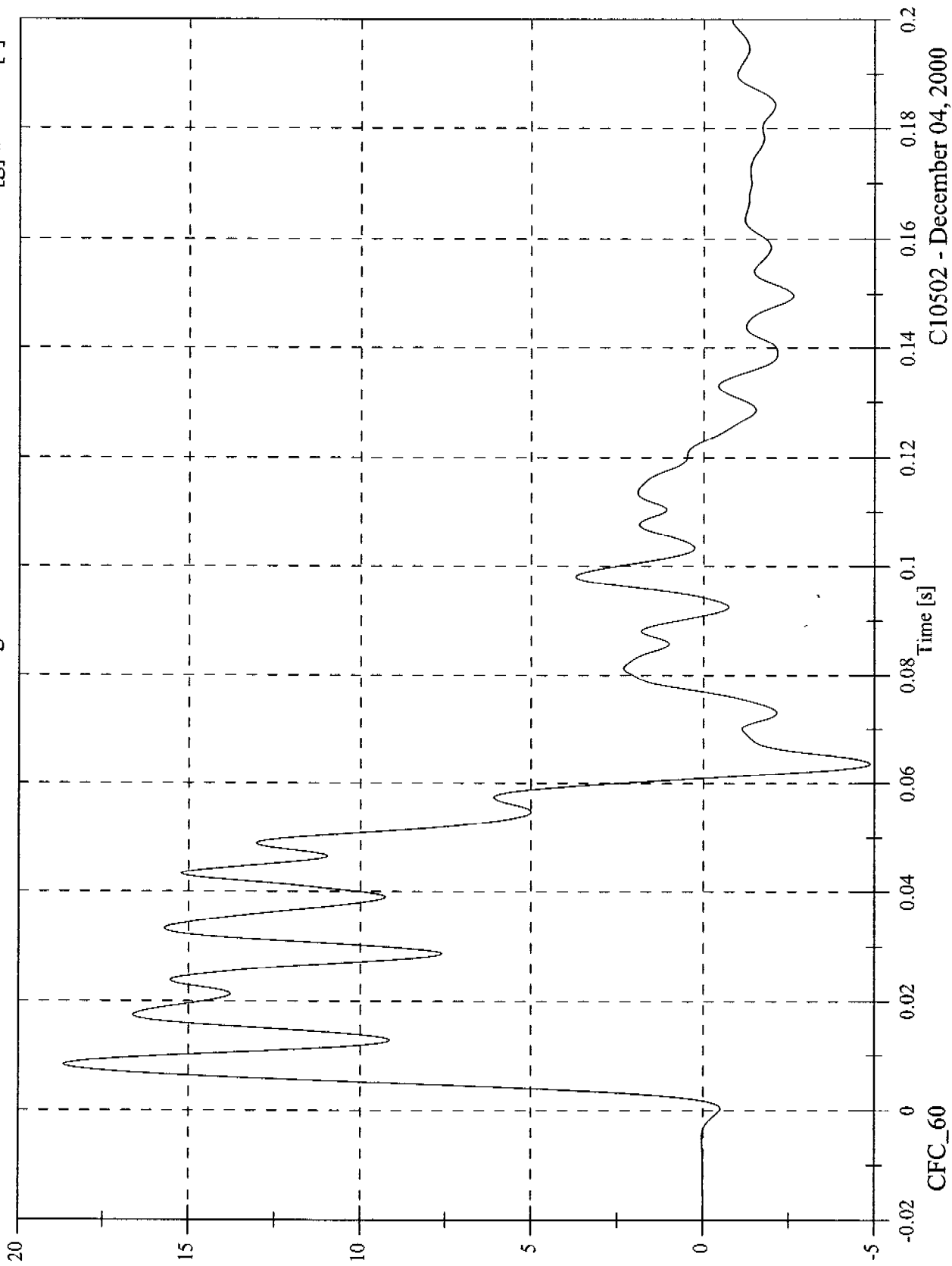


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FMVSS 214D Test #5 - 2001 Daewoo Leganza

Max: 18.7 [g] at 0.008 [s]
 Min: -4.9 [g] at 0.064 [s]

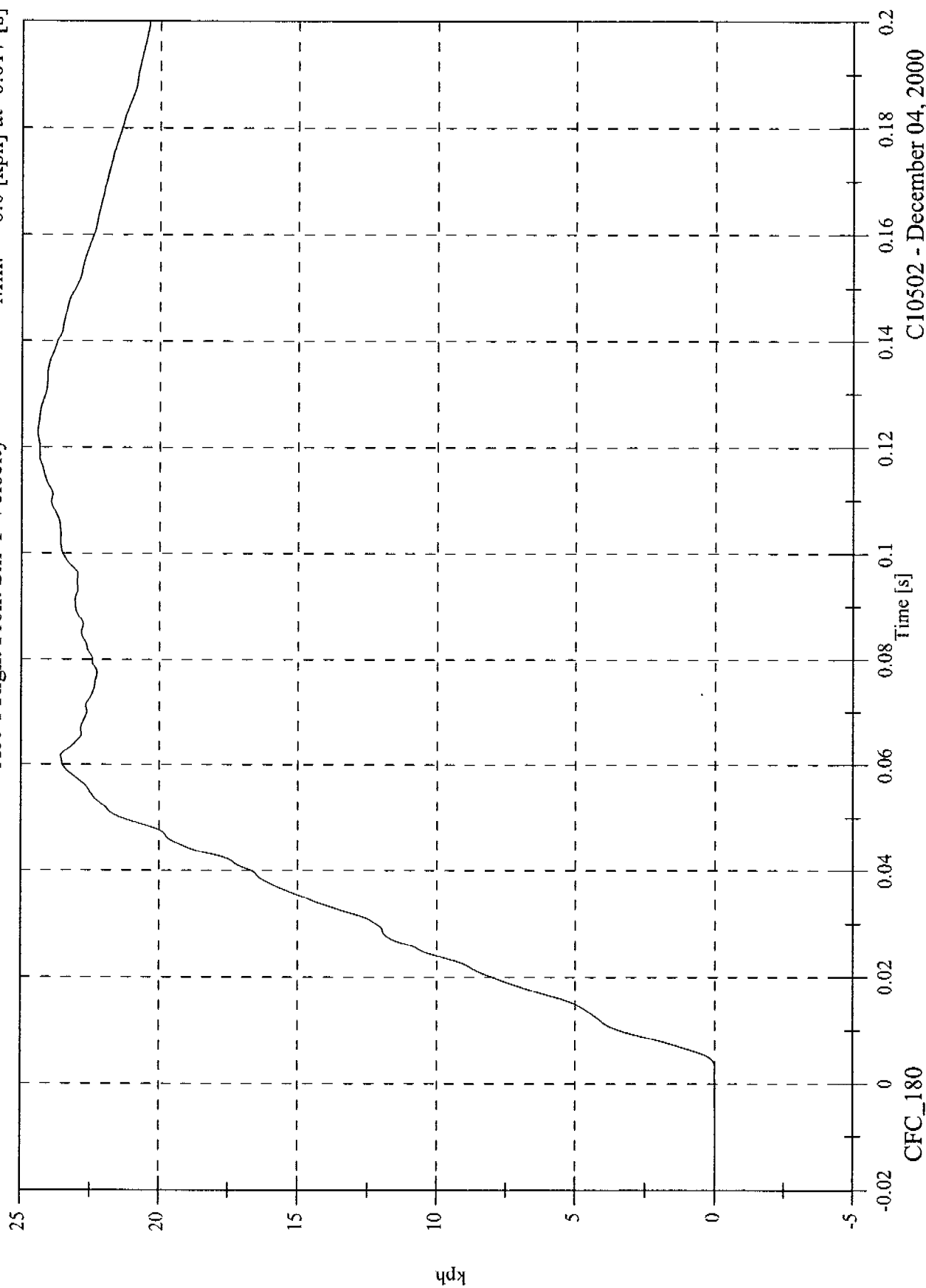
Acc 1 Right Front Sill Y



FMVSS 214D Test #5 - 2001 Daewoo Leganza

Acc I Right Front Sill Y Velocity

Max: 24.4 [kph] at 0.123 [s]
Min: -0.0 [kph] at -0.017 [s]

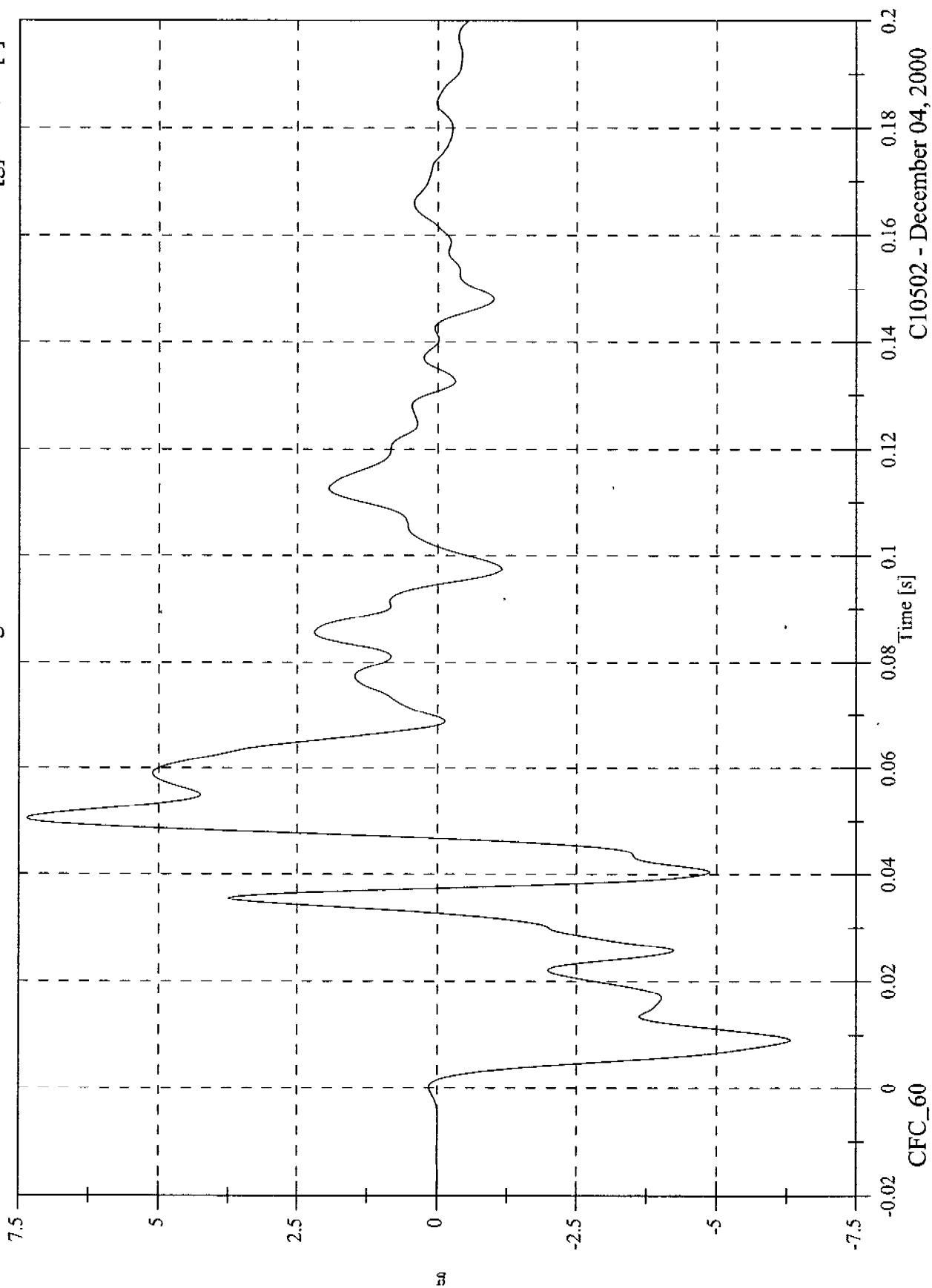


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FMVSS 214D Test #5 - 2001 Daewoo Leganza

Max: 7.4 [g] at 0.051 [s]
 Min: -6.3 [g] at 0.009 [s]

Acc 1 Right Front Sill Z

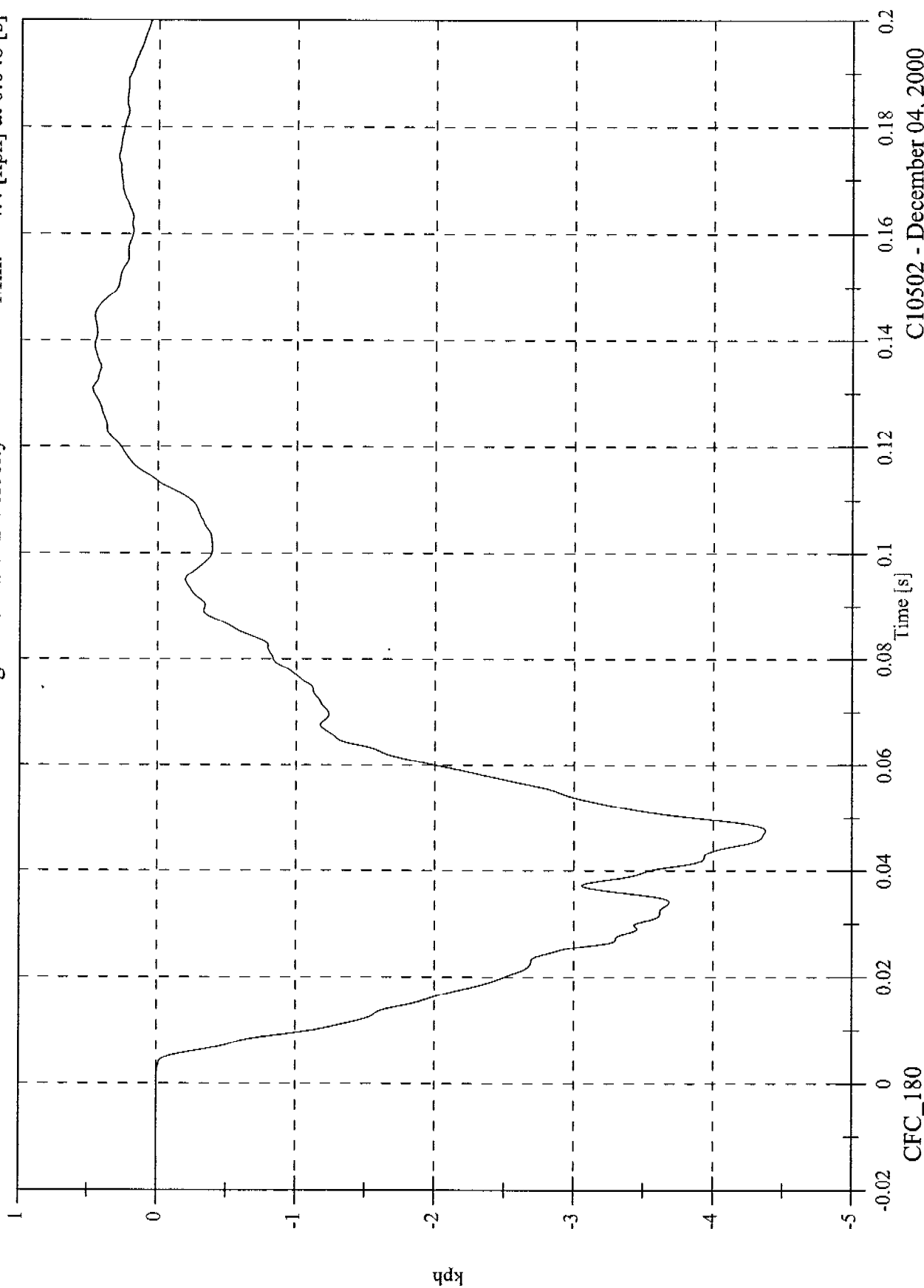


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FMVSS 214D Test #5 - 2001 Daewoo Leganza

Acc 1 Right Front Sill Z Velocity

Max: 0.5 [kph] at 0.131 [s]
Min: -4.4 [kph] at 0.048 [s]

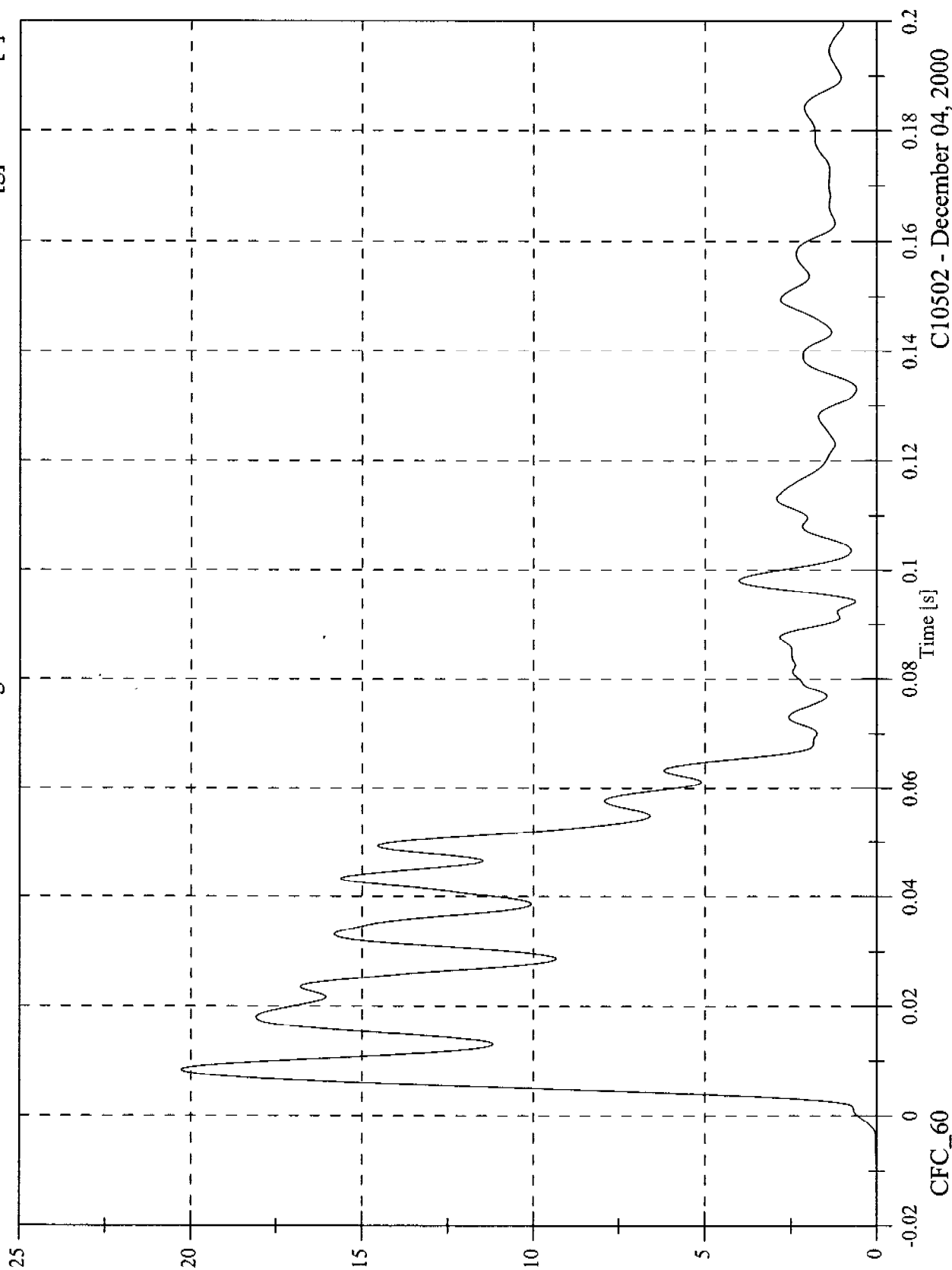


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FMVSS 214D Test #5 - 2001 Daewoo Leganza

Acc 1 Right Front Sill Resultant

Max: 20.3 [g] at 0.008 [s]
Min: 0.0 [g] at -0.019 [s]

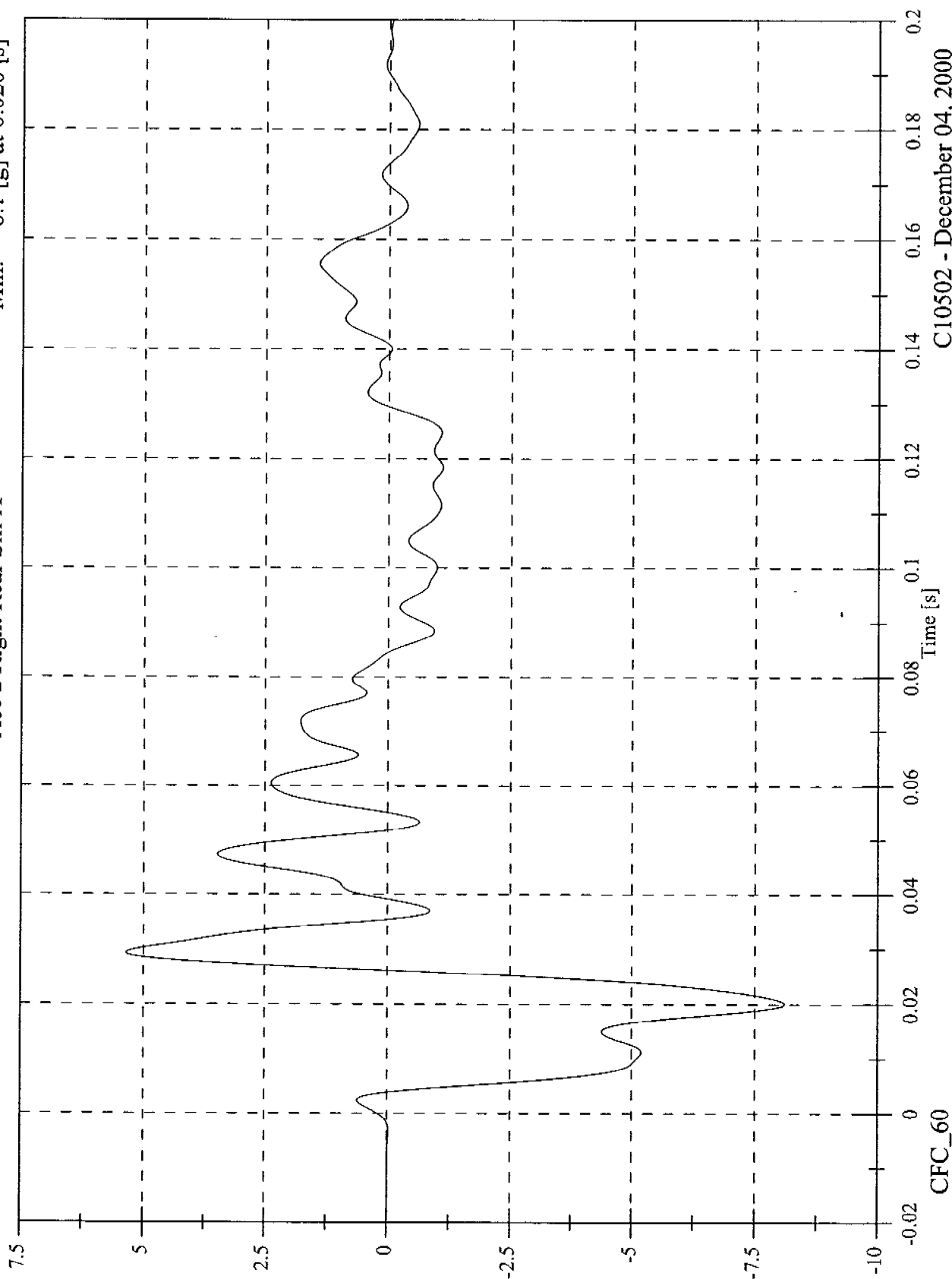


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FMVSS 214D Test #5 - 2001 Daewoo Leganza

Acc 2 Right Rear Sill X

Max: 5.4 [g] at 0.029 [s]
Min: -8.1 [g] at 0.020 [s]

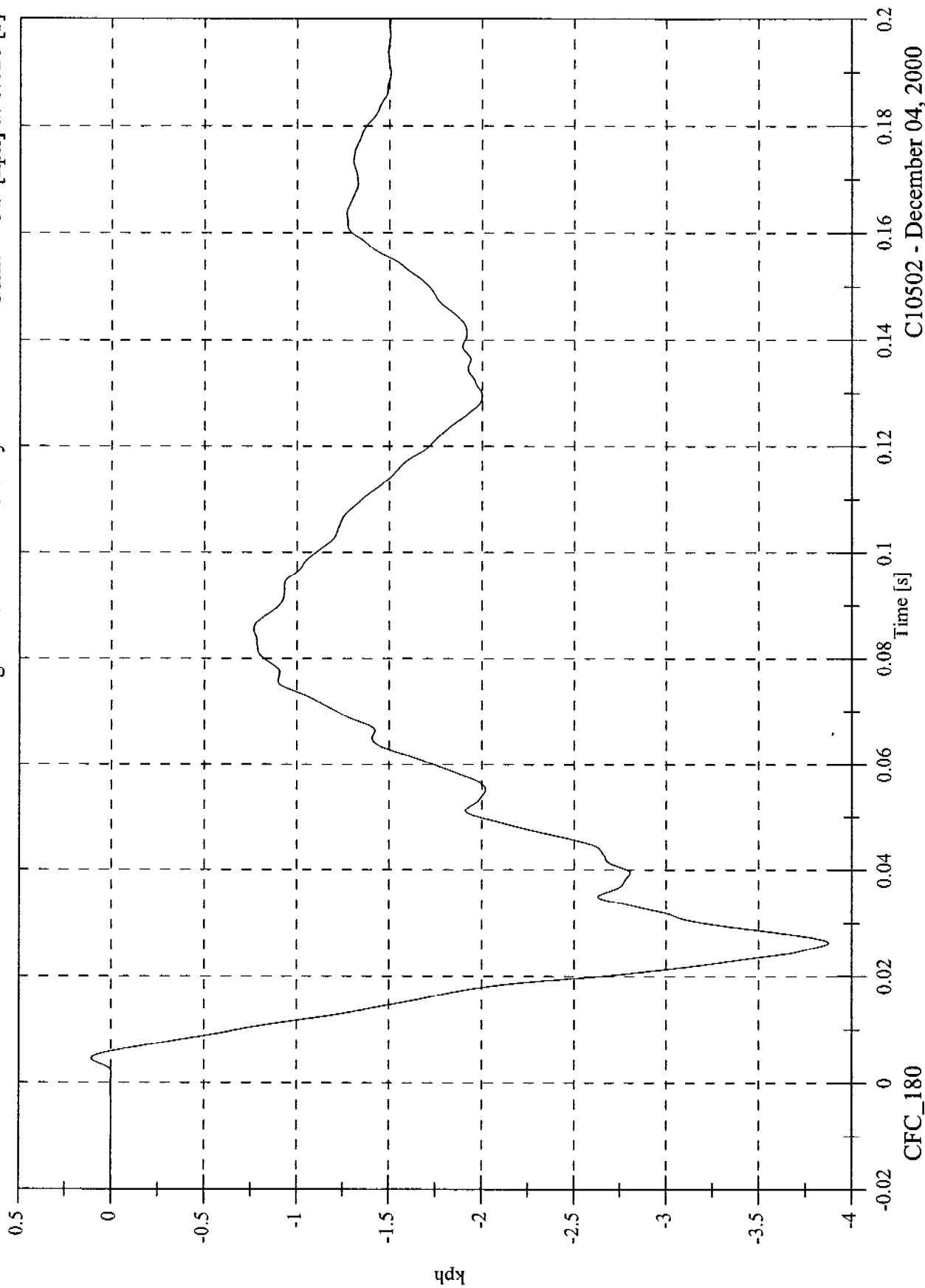


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FMVSS 214D Test #5 - 2001 Daewoo Leganza

Max: 0.1 [kph] at 0.005 [s]
 Min: -3.9 [kph] at 0.026 [s]

Acc 2 Right Rear Sill X Velocity

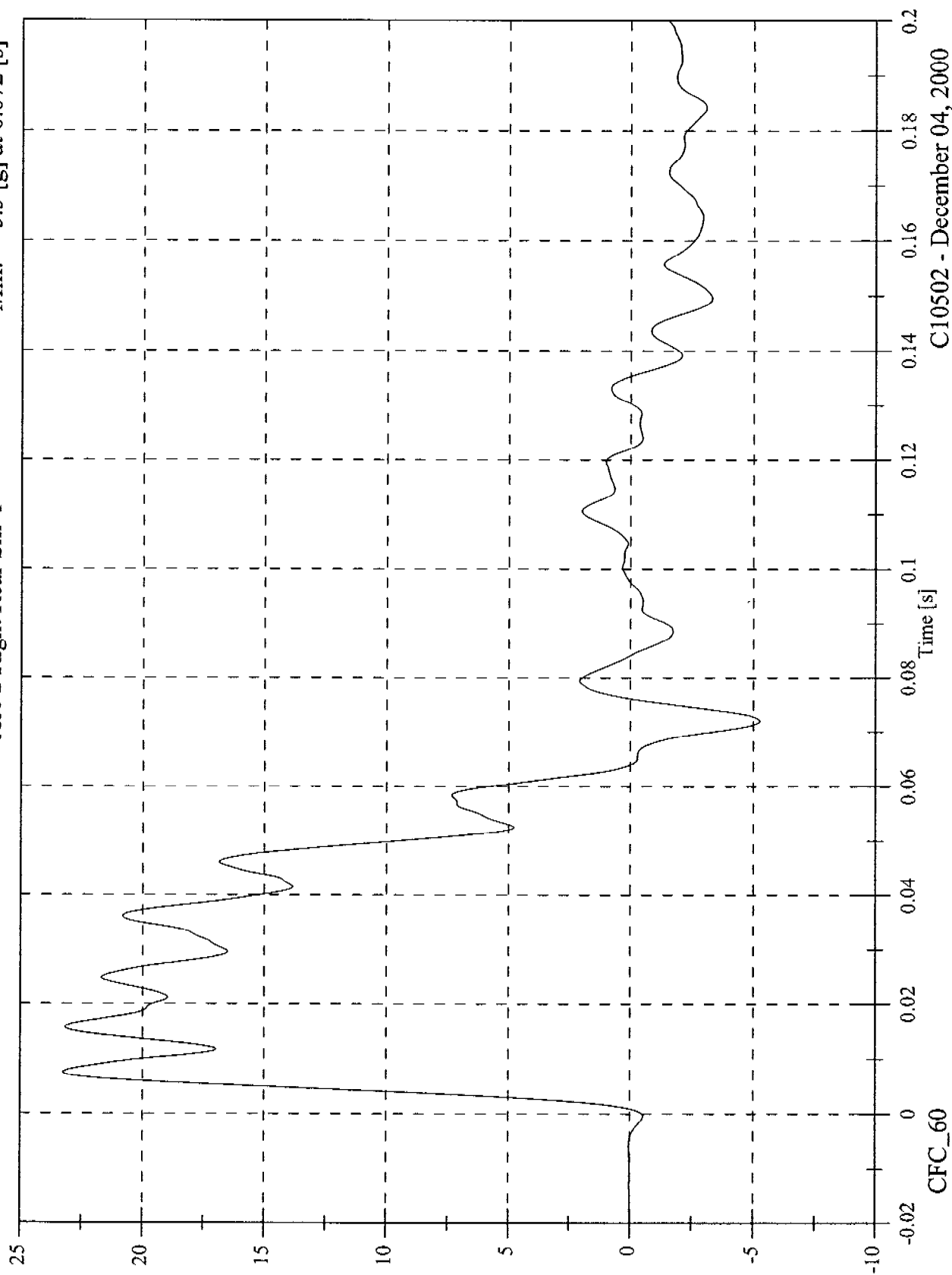


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FMVSS 214D Test #5 - 2001 Daewoo Leganza

Max: 23.3 [g] at 0.008 [s]
 Min: -5.3 [g] at 0.072 [s]

Acc 2 Right Rear Sill Y



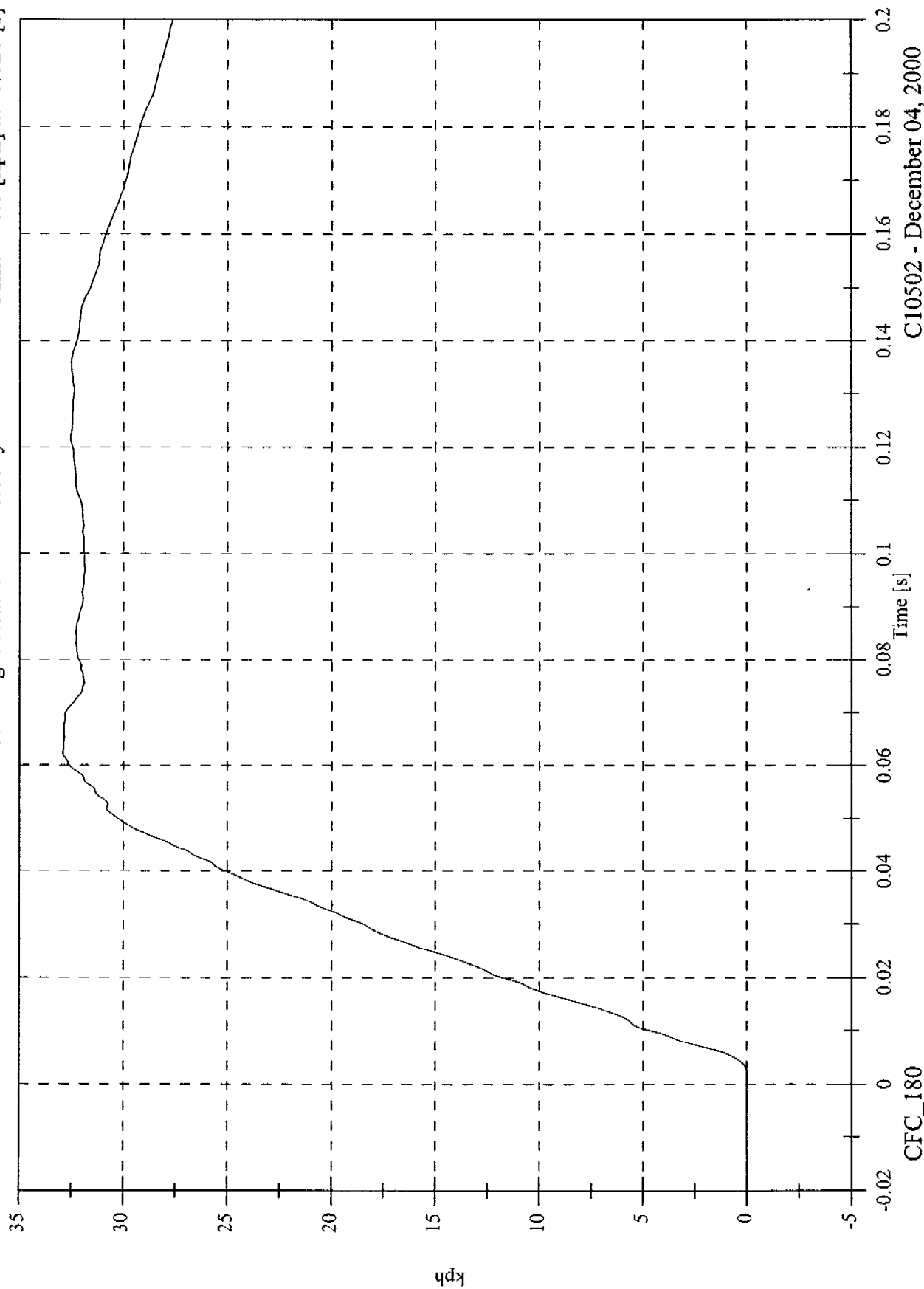
C10502 - December 04, 2000

FMVSS 214D Test #5 - 2001 Daewoo Leganza

Acc 2 Right Rear Sill Y Velocity

Max: 32.9 [kph] at 0.062 [s]

Min: -0.0 [kph] at -0.020 [s]



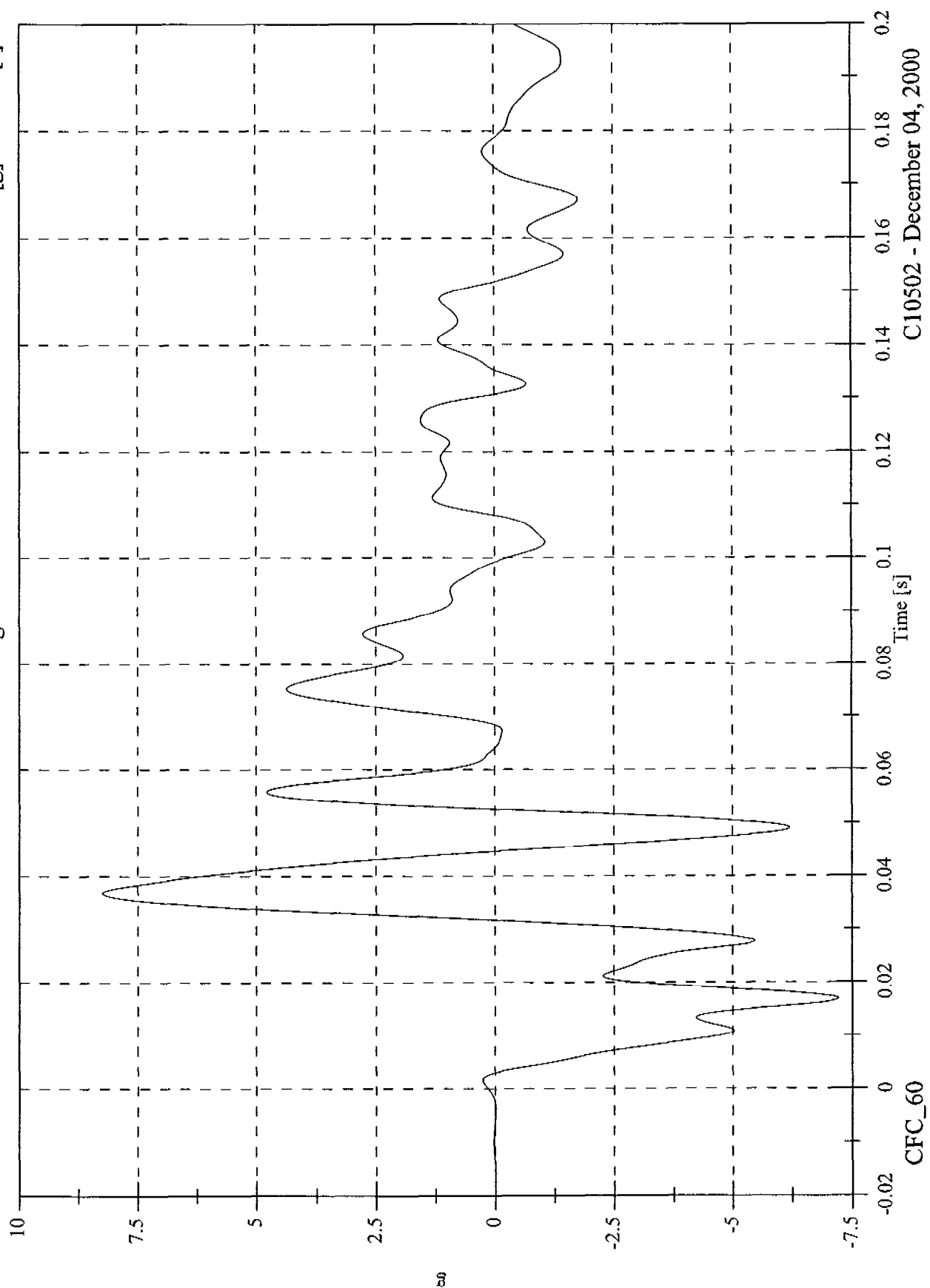
C10502 - December 04, 2000

FMVSS 214D Test #5 - 2001 Daewoo Leganza

Acc 2 Right Rear Sill Z

Max: 8.3 [g] at 0.037 [s]

Min: -7.2 [g] at 0.017 [s]

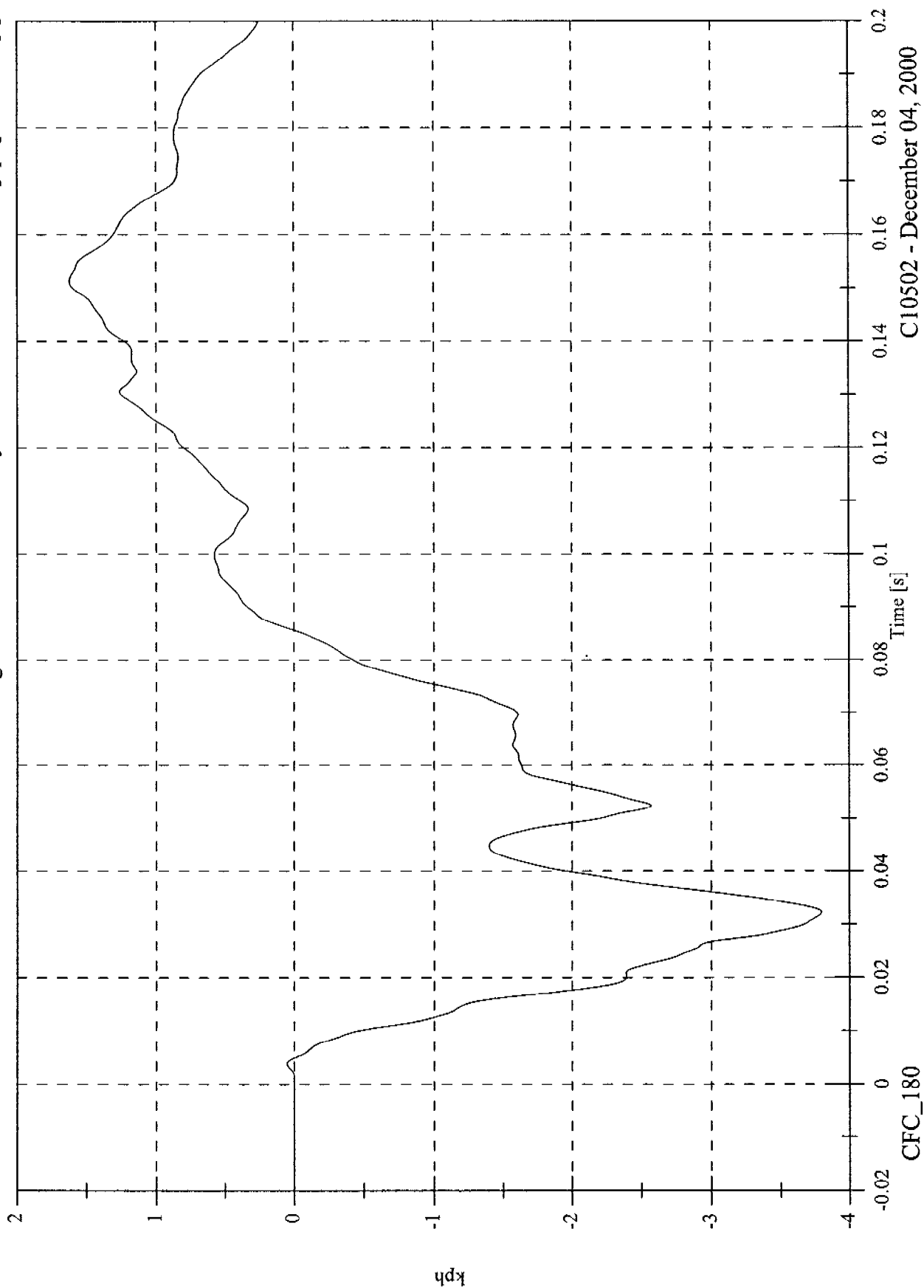


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FMVSS 214D Test #5 - 2001 Daewoo Leganza

Acc 2 Right Rear Sill Z Velocity

Max: 1.6 [kph] at 0.151 [s]
Min: -3.8 [kph] at 0.032 [s]



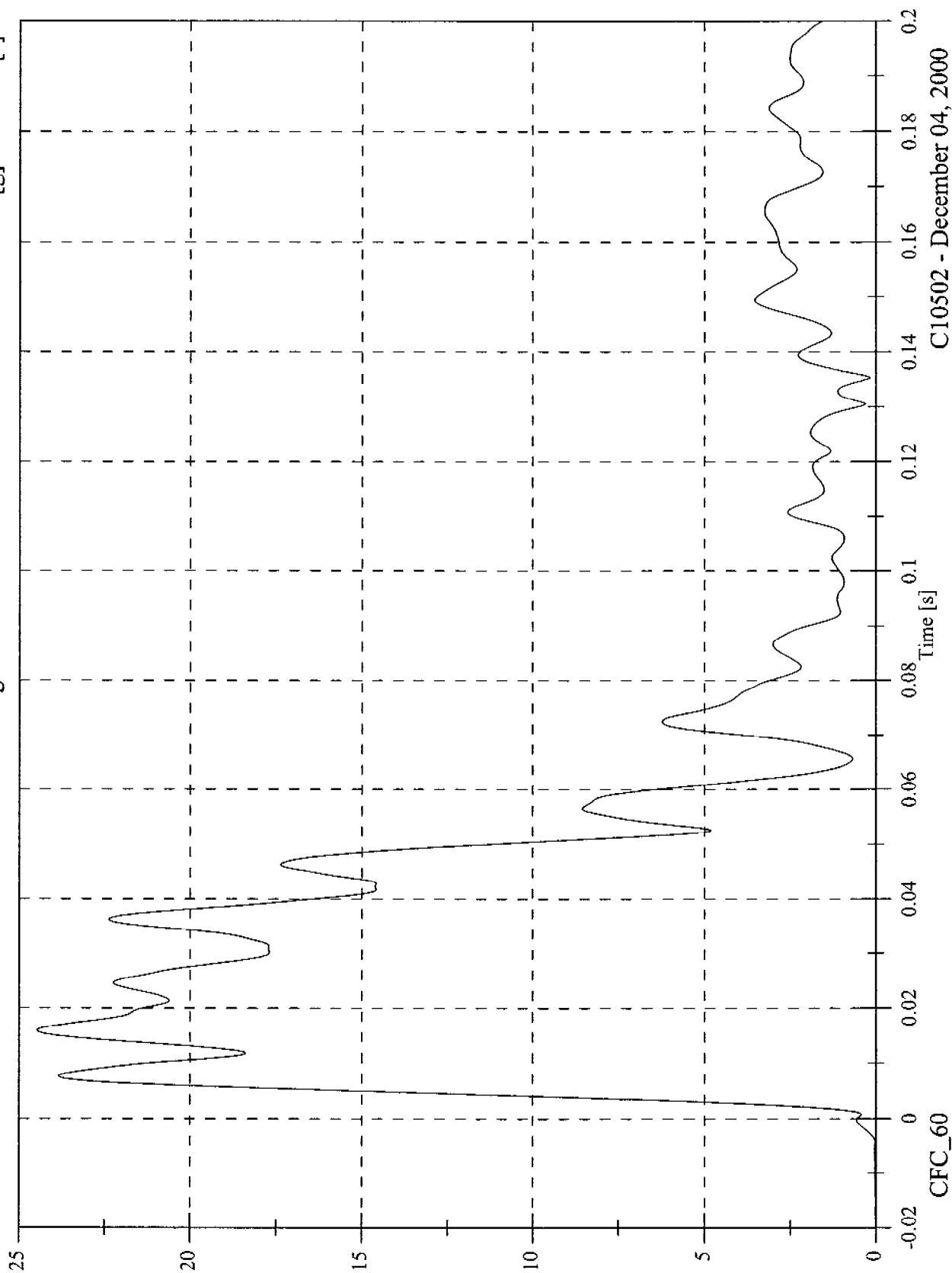
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FMVSS 214D Test #5 - 2001 Daewoo Leganza

Acc 2 Right Rear Sill Resultant

Max: 24.5 [g] at 0.016 [s]

Min: 0.0 [g] at -0.020 [s]

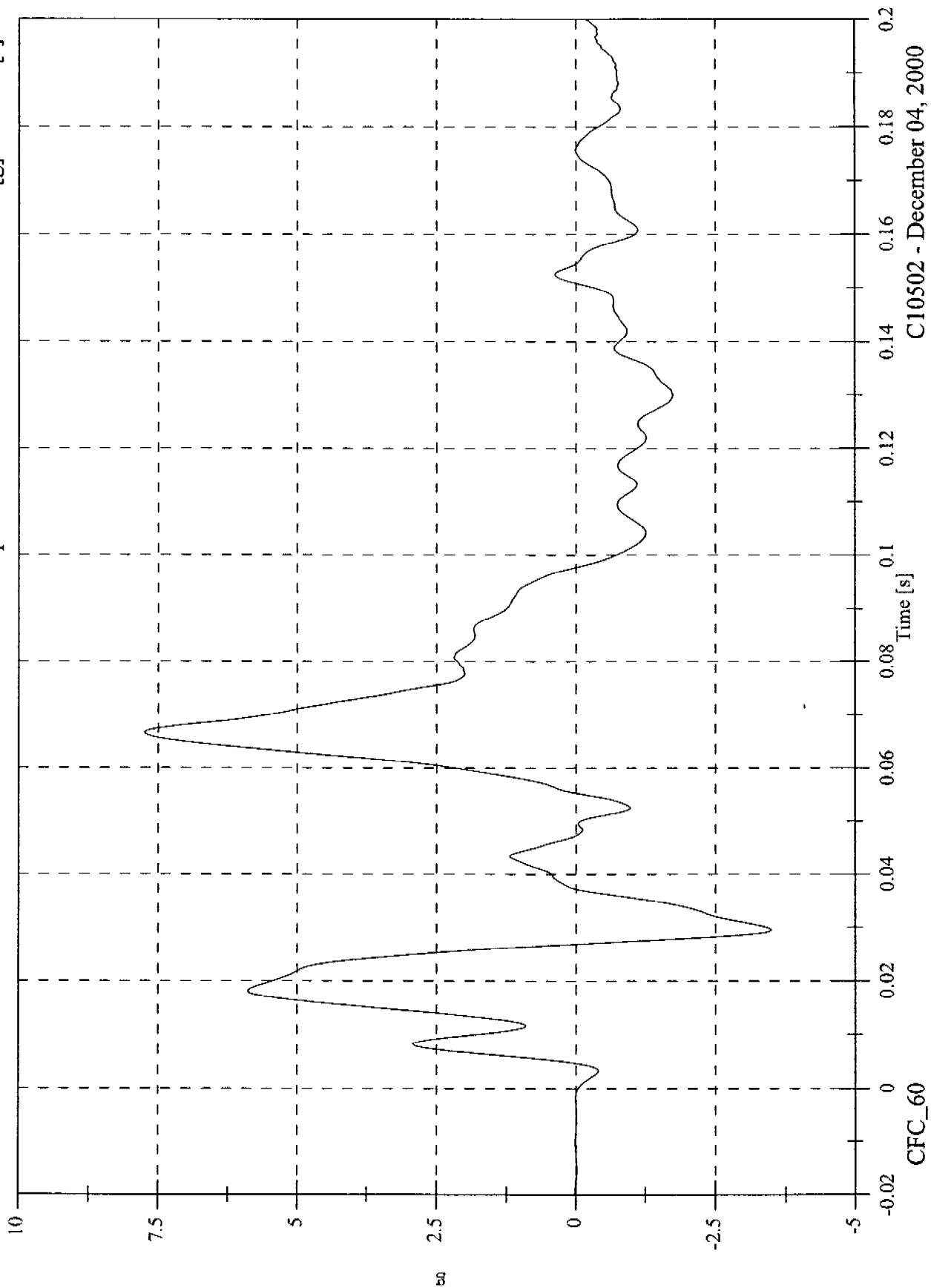


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FMVSS 214D Test #5 - 2001 Daewoo Leganza

Max: 7.7 [g] at 0.067 [s]
Min: -3.5 [g] at 0.029 [s]

Acc 3 Rear Floorpan X

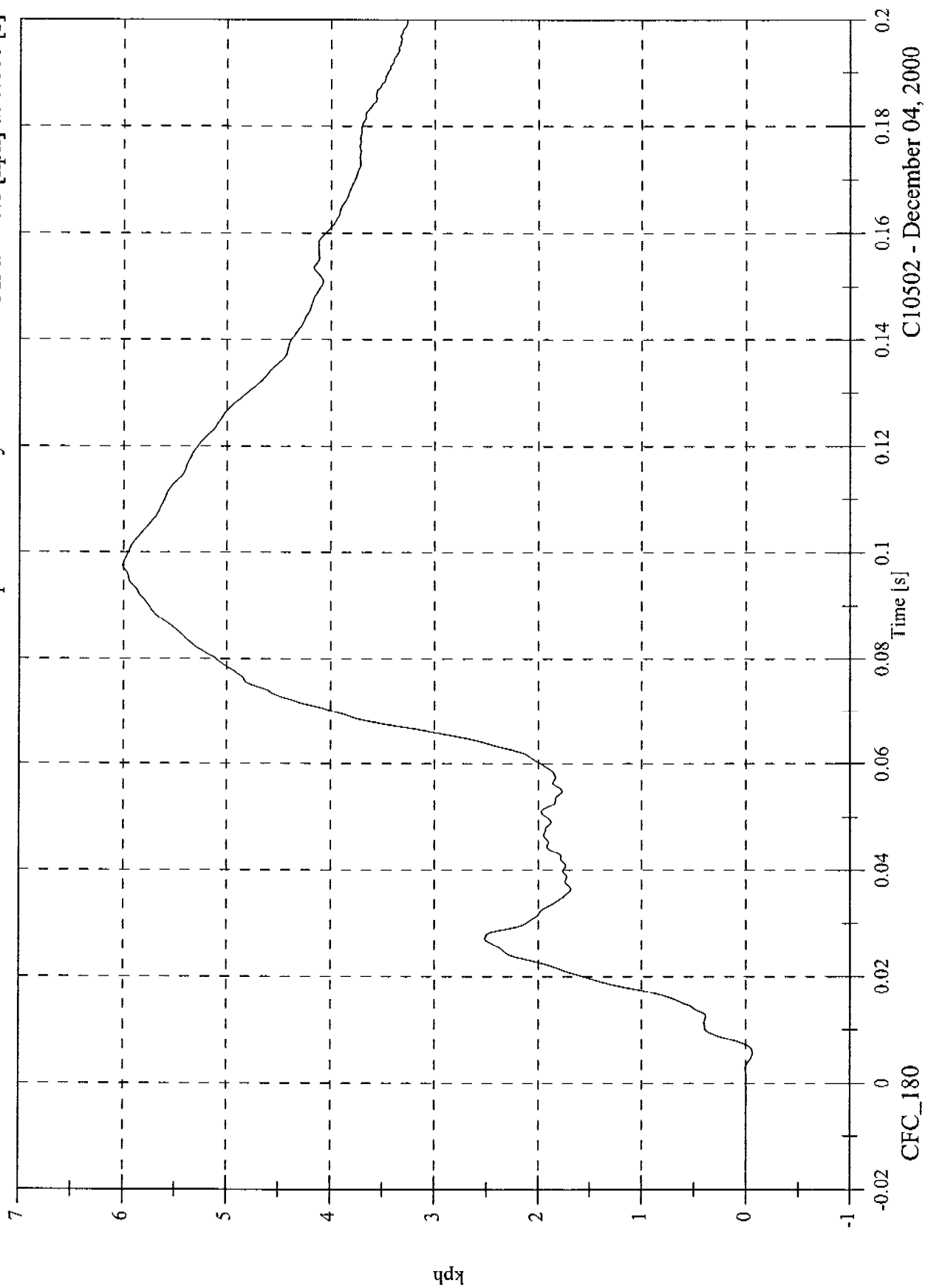


C10502 - December 04, 2000

FMVSS 214D Test #5 - 2001 Daewoo Leganza

Acc 3 Rear Floorpan X Velocity

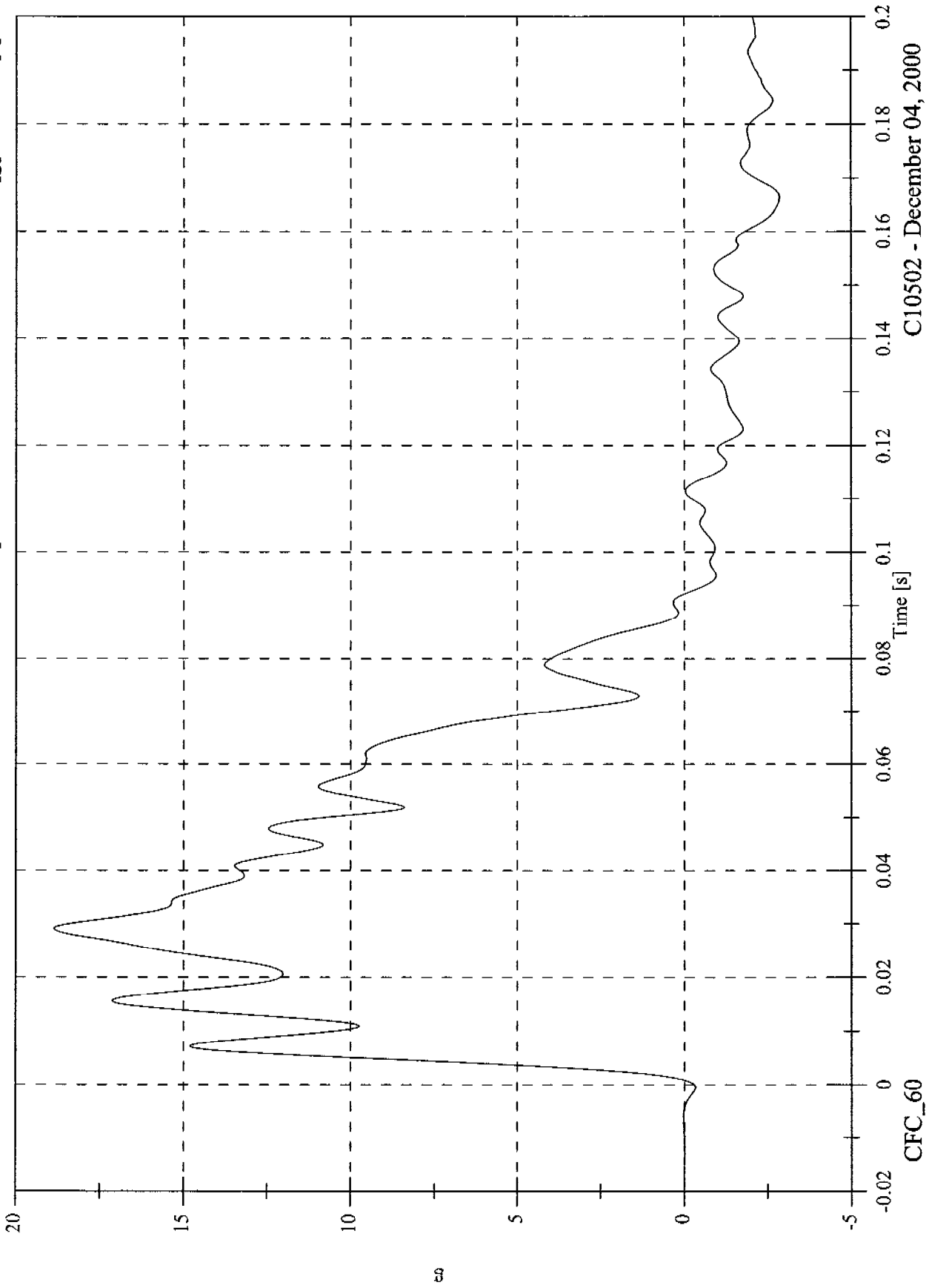
Max: 6.0 [kph] at 0.098 [s]
Min: -0.1 [kph] at 0.006 [s]



FMVSS 214D Test #5 - 2001 Daewoo Leganza

Acc 3 Rear Floorpan Y

Max: 18.9 [g] at 0.029 [s]
Min: -2.9 [g] at 0.166 [s]



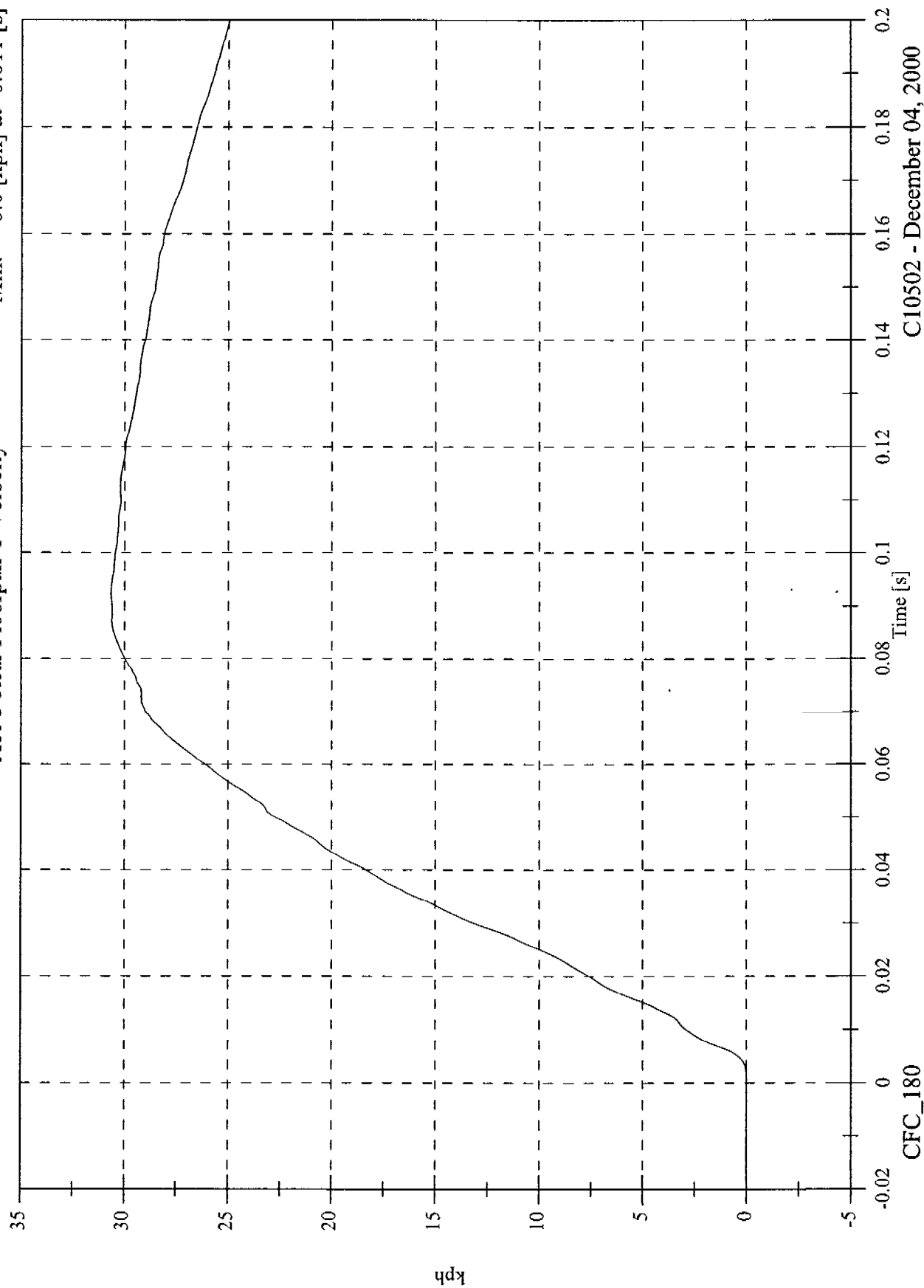
C10502 - December 04, 2000

FMVSS 214D Test #5 - 2001 Daewoo Leganza

Acc 3 Rear Floorpan Y Velocity

Max: 30.6 [kph] at 0.092 [s]

Min: -0.0 [kph] at -0.011 [s]

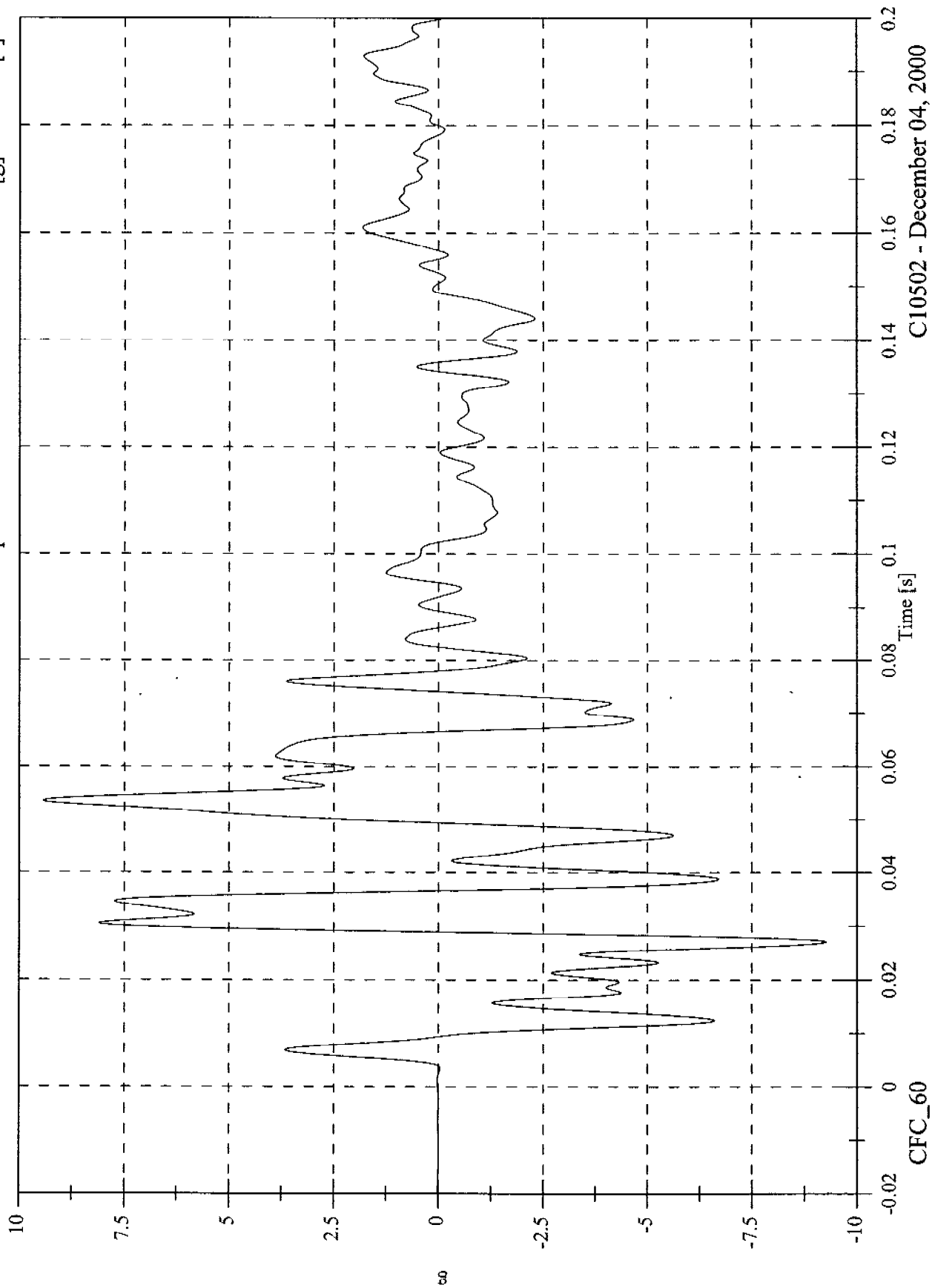


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FMVSS 214D Test #5 - 2001 Daewoo Leganza

Acc 3 Rear Floorpan Z

Max: 9.4 [g] at 0.054 [s]
Min: -9.3 [g] at 0.027 [s]

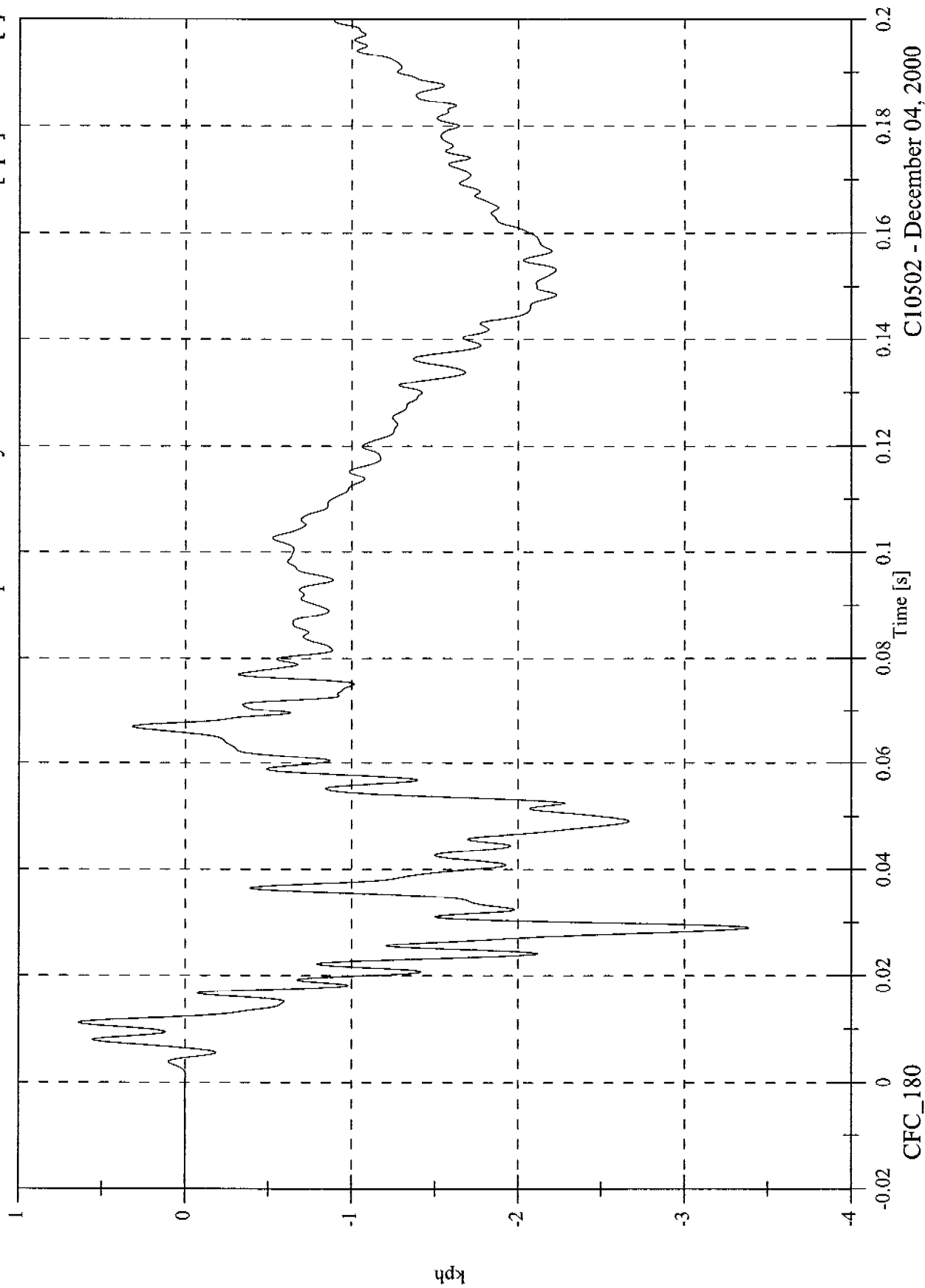


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FMVSS 214D Test #5 - 2001 Daewoo Leganza

Acc 3 Rear Floorpan Z Velocity

Max: 0.6 [kph] at 0.011 [s]
Min: -3.4 [kph] at 0.029 [s]

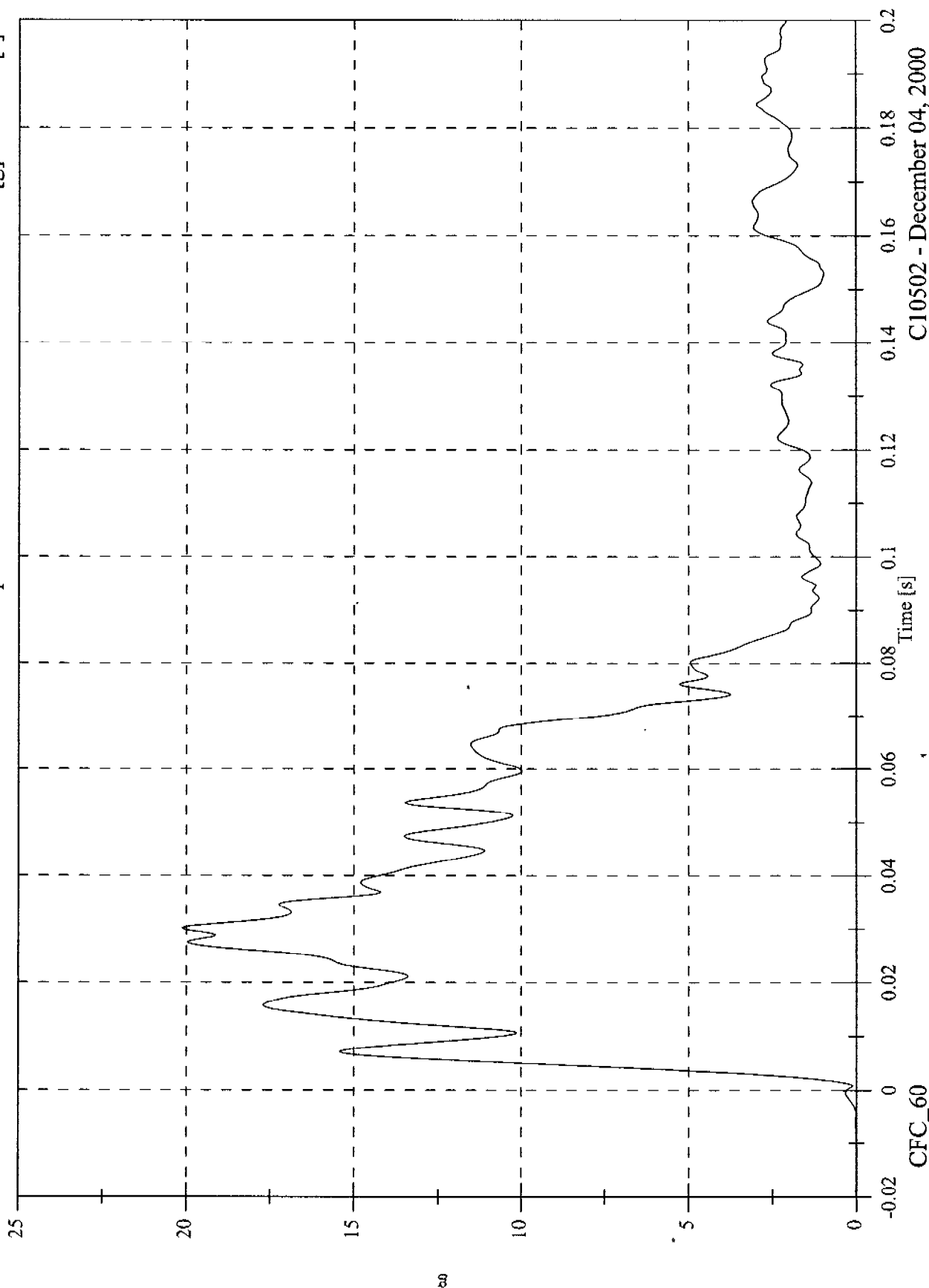


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FMVSS 214D Test #5 - 2001 Daewoo Leganza

Max: 20.1 [g] at 0.030 [s]
Min: 0.0 [g] at -0.004 [s]

Acc 3 Rear Floorpan Resultant



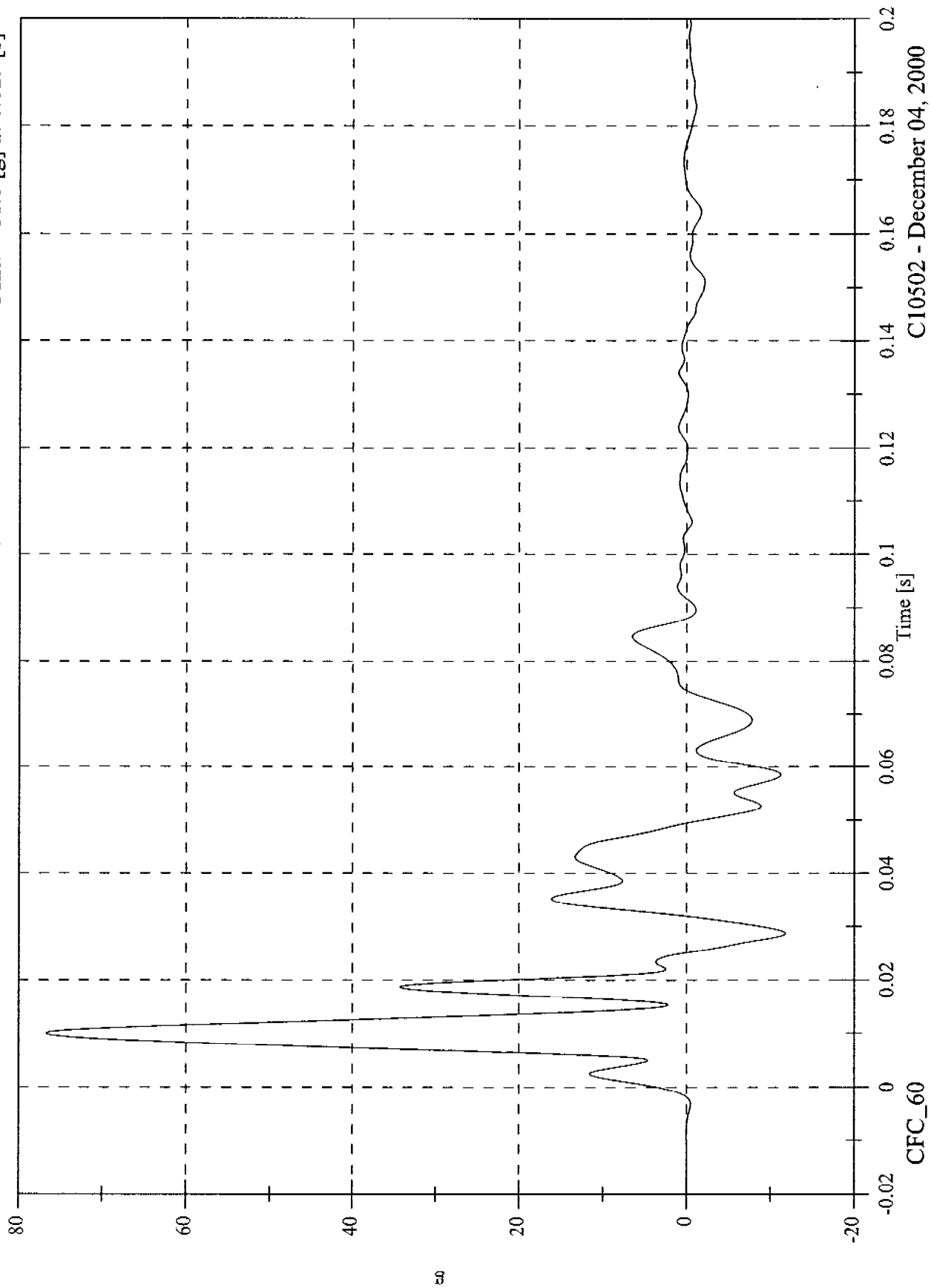
C10502 - December 04, 2000

FMVSS 214D Test #5 - 2001 Daewoo Leganza

Acc 4 Left Rear Sill Y

Max: 76.7 [g] at 0.010 [s]

Min: -11.8 [g] at 0.029 [s]



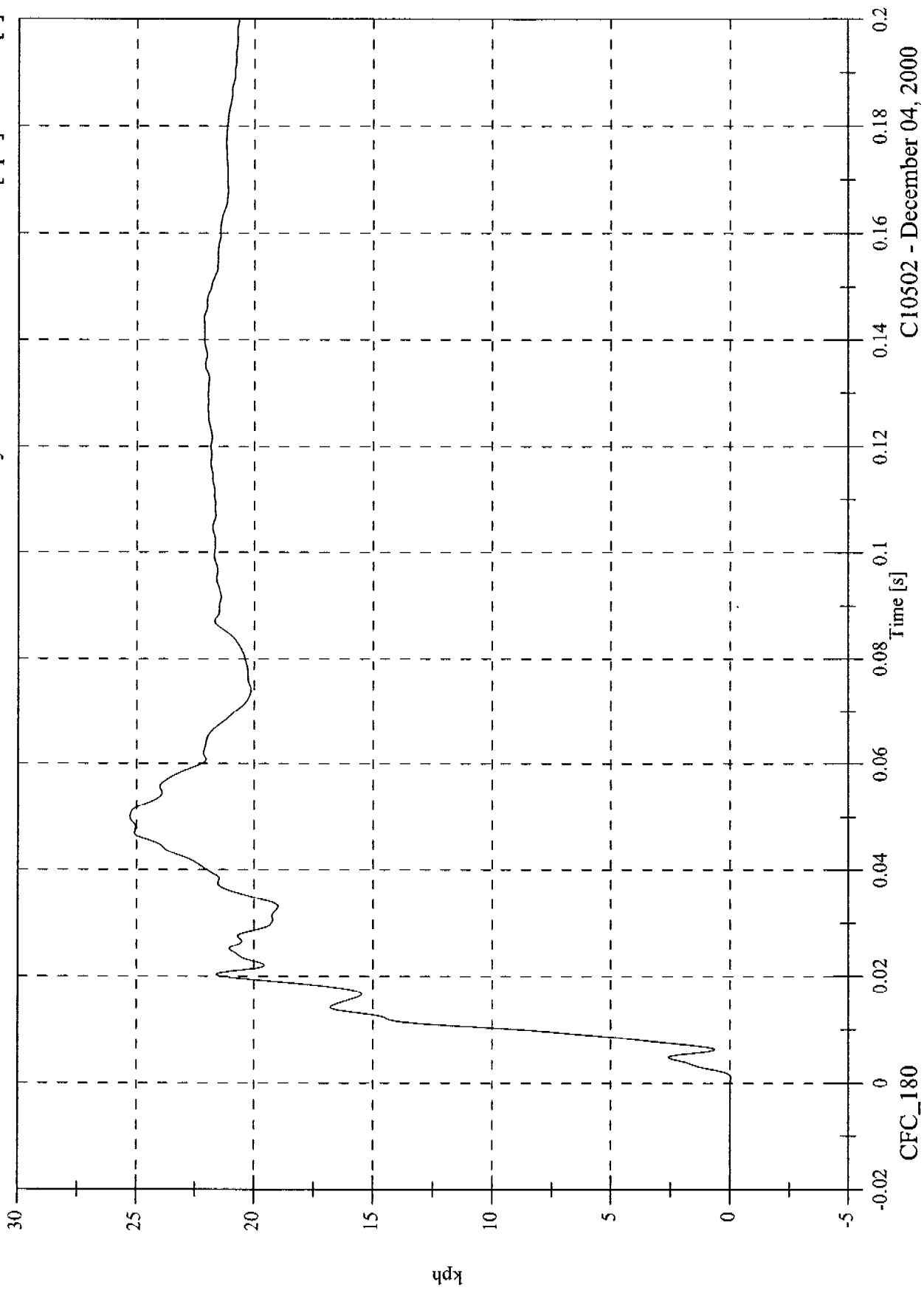
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FMVSS 214D Test #5 - 2001 Daewoo Leganza

Acc 4 Left Rear Sill Y Velocity

Max: 25.3 [kph] at 0.050 [s]

Min: -0.0 [kph] at 0.001 [s]



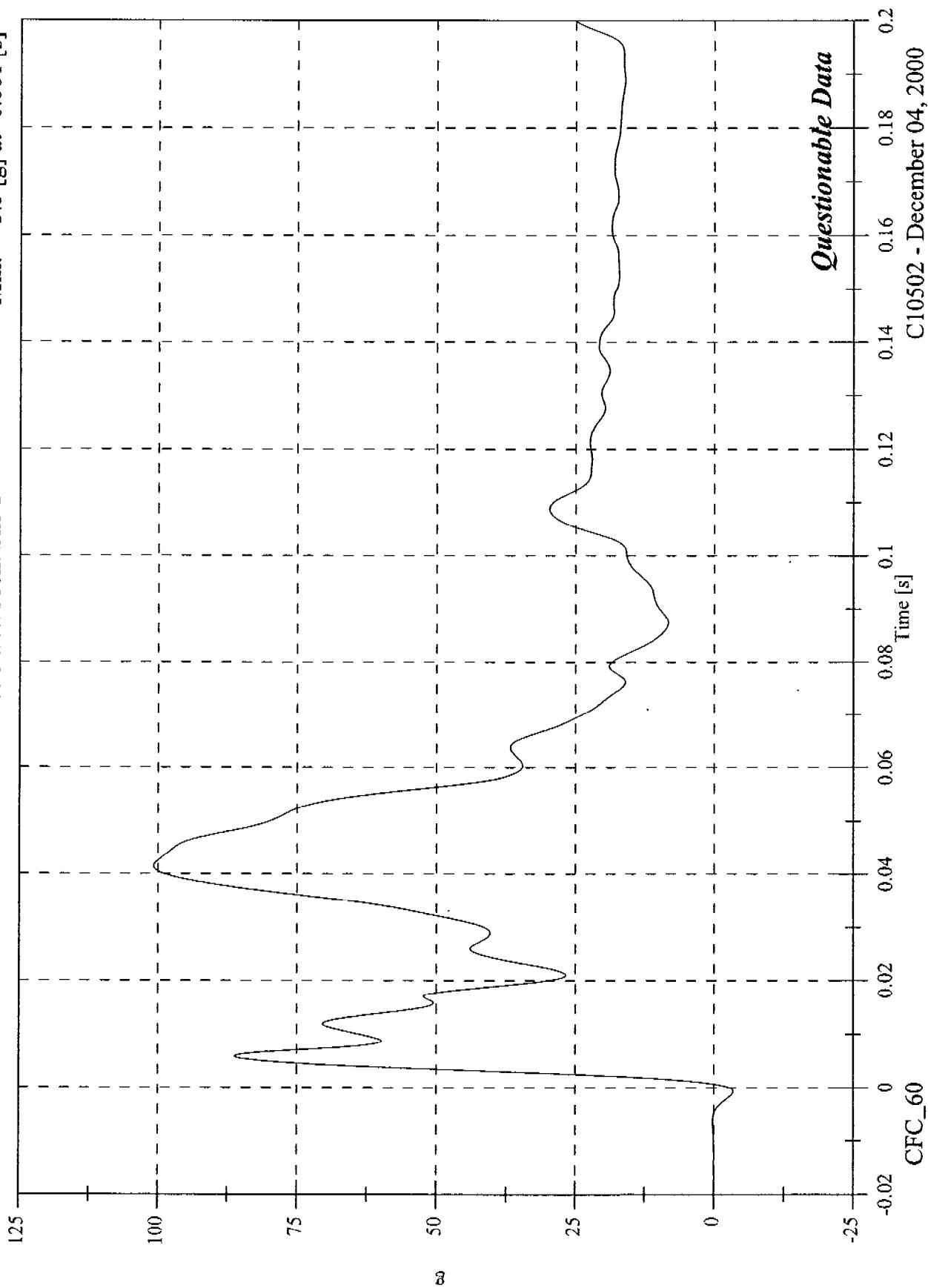
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FMVSS 214D Test #5 - 2001 Daewoo Leganza

Acc 5 Left Front Sill Y

Max: 100.8 [g] at 0.041 [s]

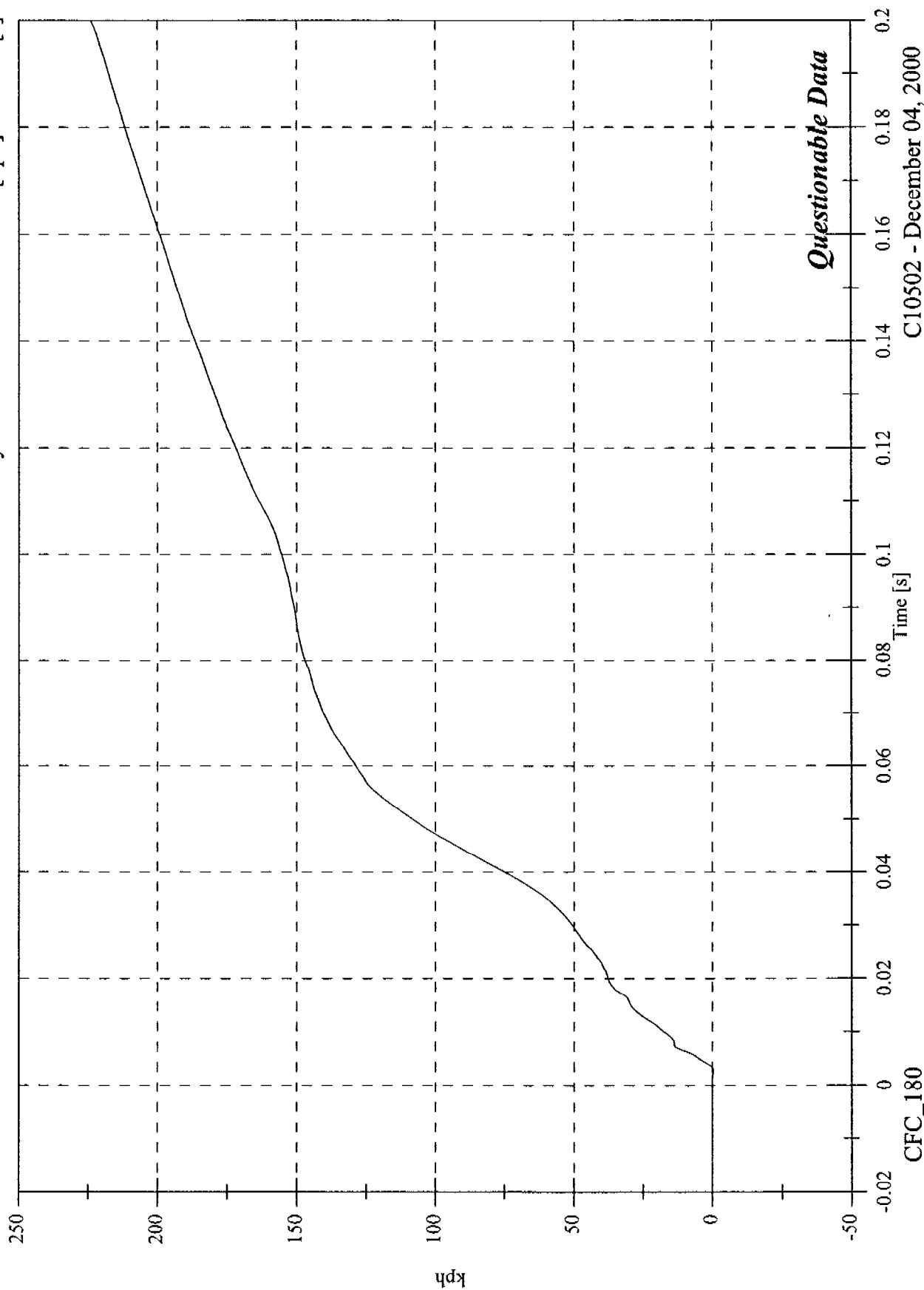
Min: -3.5 [g] at -0.001 [s]



FMVSS 214D Test #5 - 2001 Daewoo Leganza

Max: 224.0 [kph] at 0.200 [s]
 Min: -0.4 [kph] at 0.003 [s]

Acc 5 Left Front Sill Y Velocity



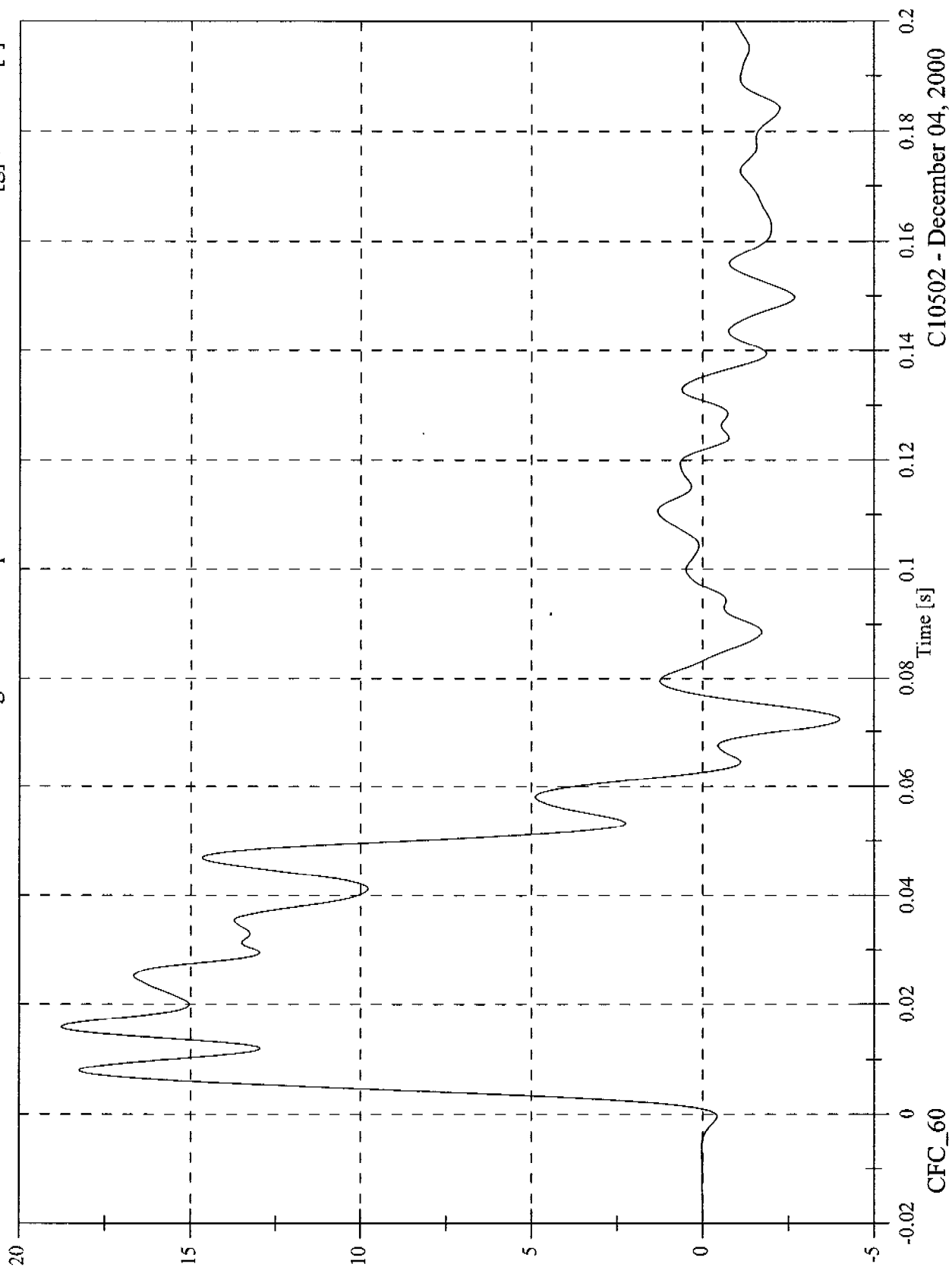
Questionable Data

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FMVSS 214D Test #5 - 2001 Daewoo Leganza

Acc 7 Right Rear Compartment Y

Max: 18.8 [g] at 0.016 [s]
Min: -4.0 [g] at 0.072 [s]

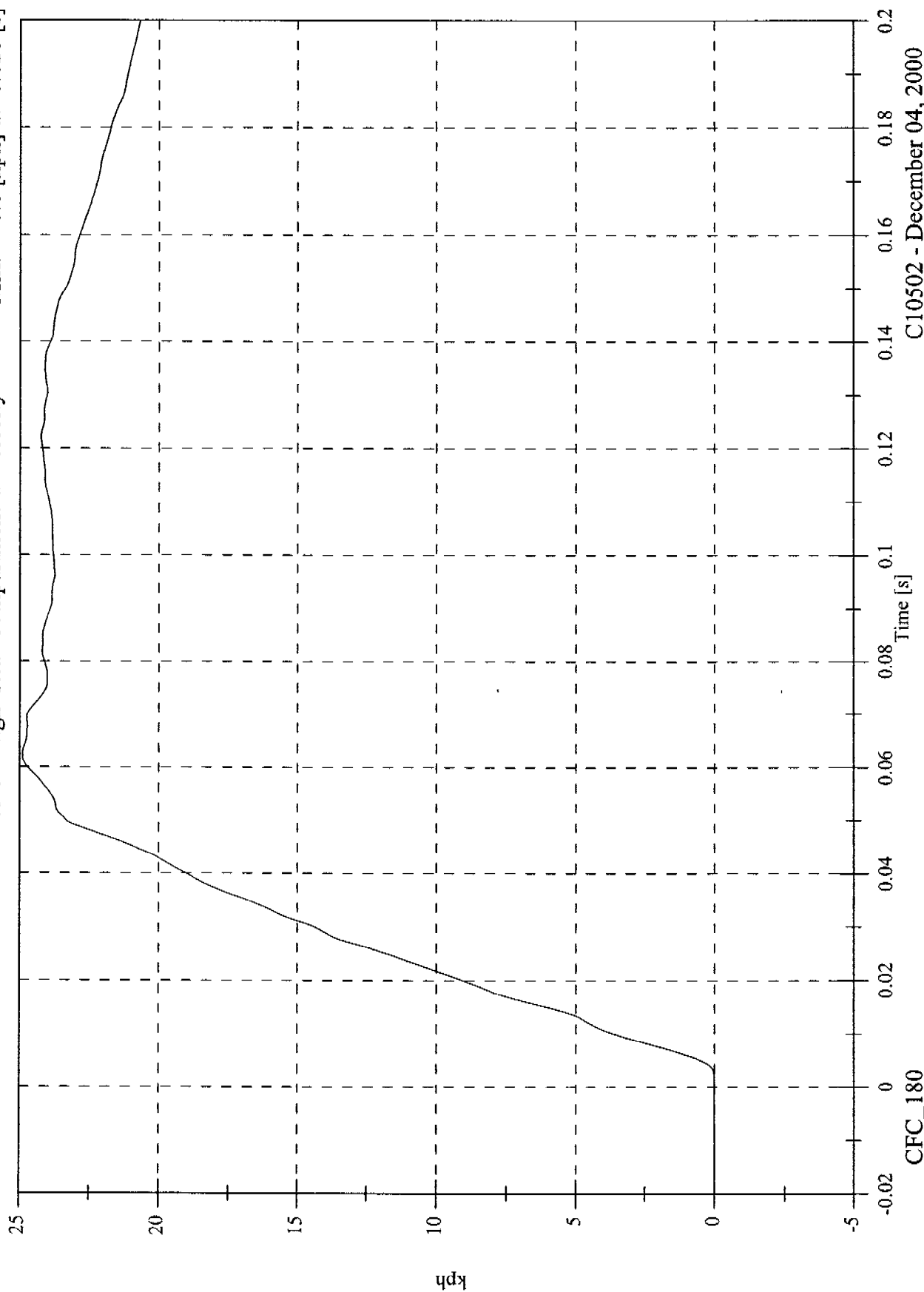


FMVSS 214D Test #5 - 2001 Daewoo Leganza

Acc 7 Right Rear Compartment Y Velocity

Max: 24.9 [kph] at 0.062 [s]

Min: -0.0 [kph] at -0.020 [s]

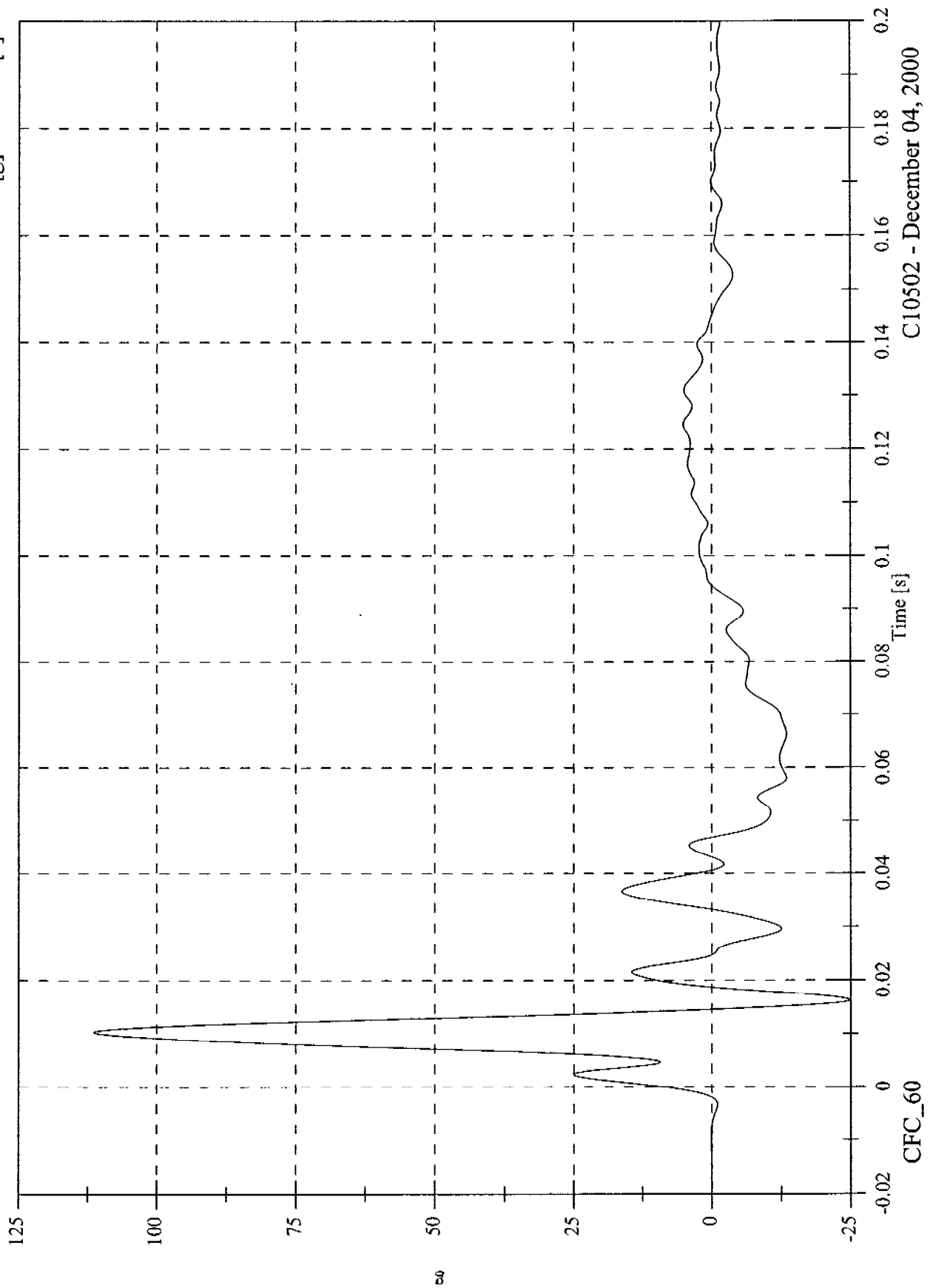


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FMVSS 214D Test #5 - 2001 Daewoo Leganza

Acc 12 Left Lower B Post Y

Max: 111.4 [g] at 0.010 [s]
Min: -24.9 [g] at 0.016 [s]

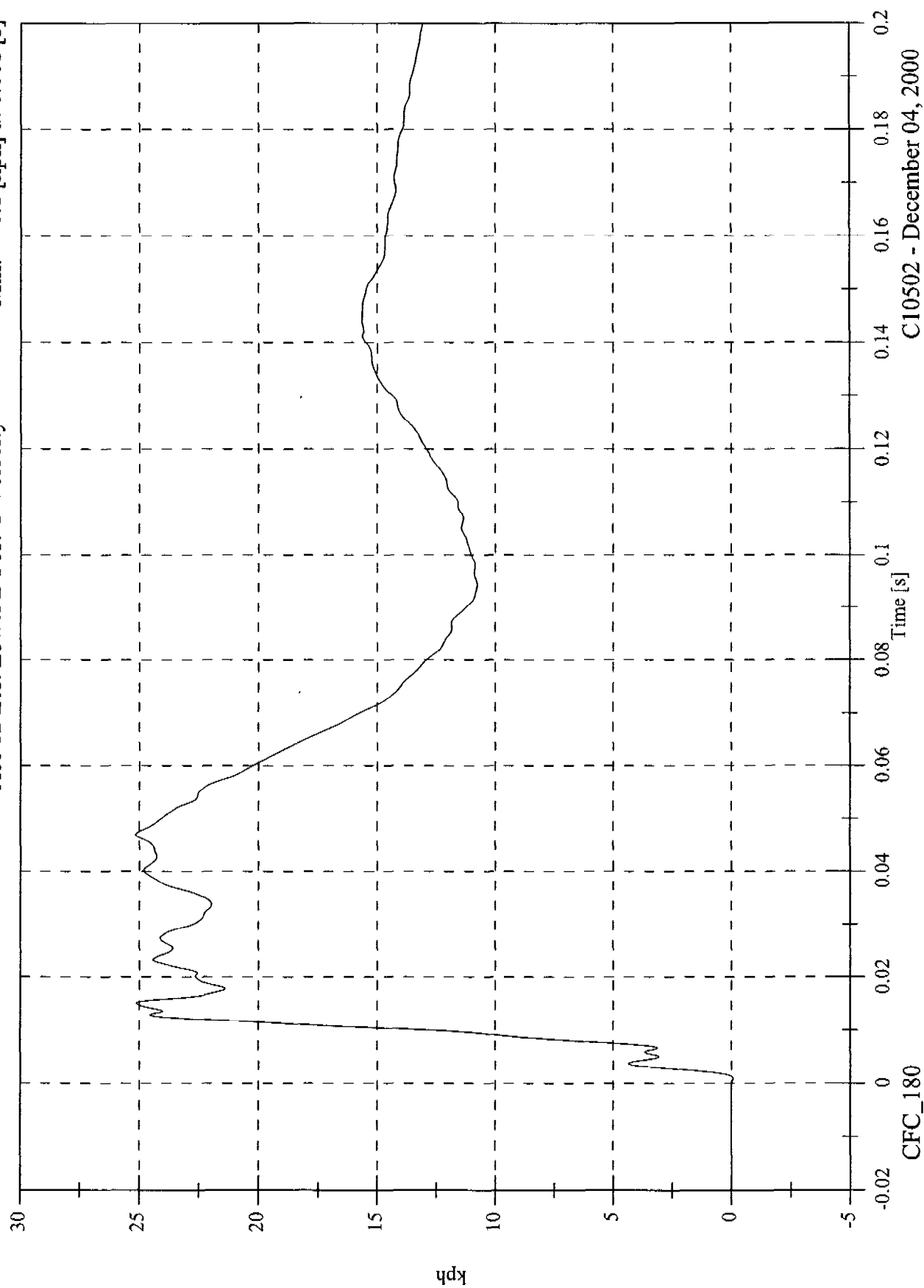


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FMVSS 214D Test #5 - 2001 Daewoo Leganza

Acc 12 Left Lower B Post Y Velocity

Max: 25.1 [kph] at 0.047 [s]
Min: -0.1 [kph] at 0.001 [s]

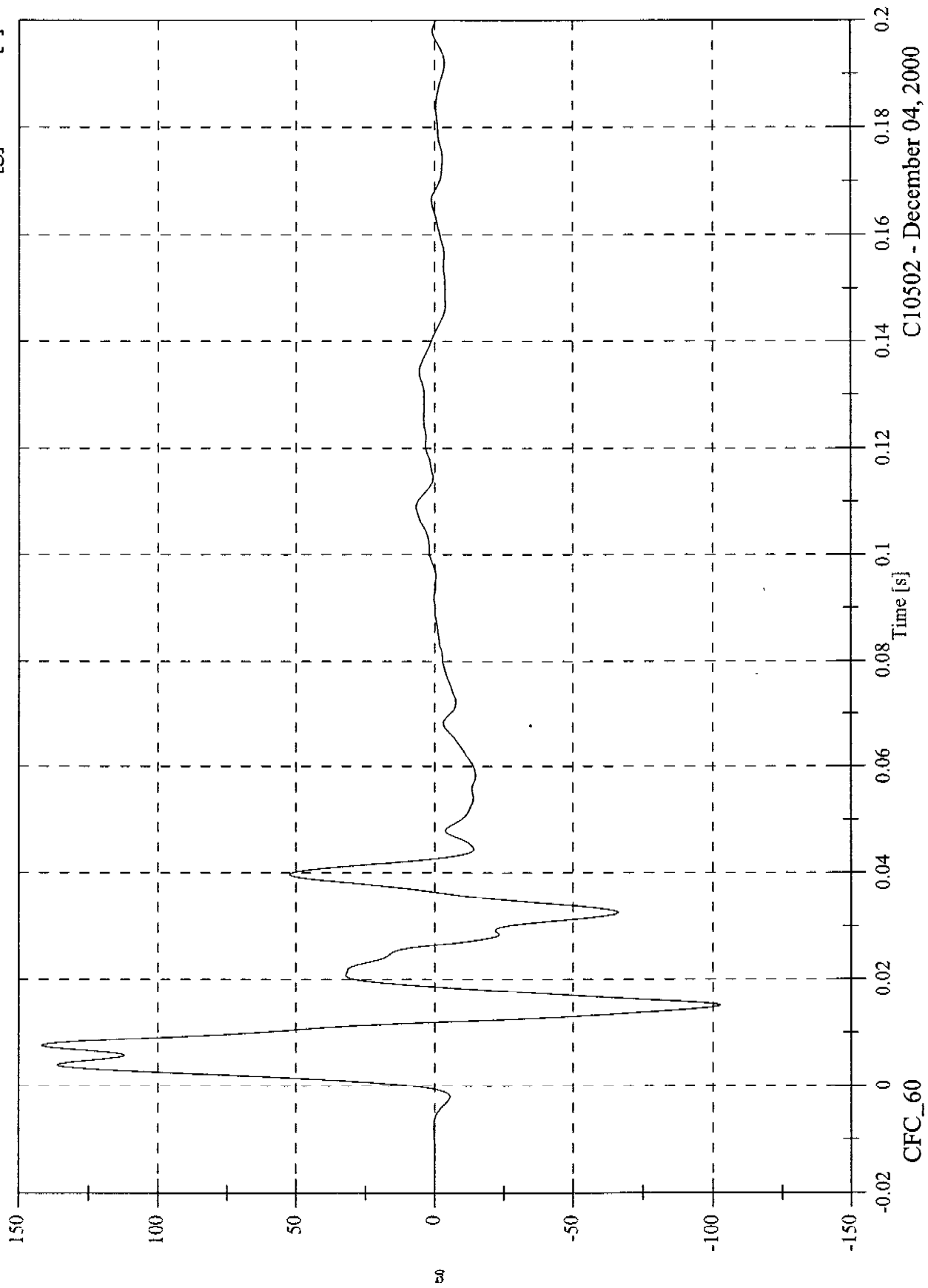


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FMVSS 214D Test #5 - 2001 Daewoo Leganza

Acc 13 Left Mid B Post Y

Max: 141.7 [g] at 0.008 [s]
Min: -102.6 [g] at 0.015 [s]

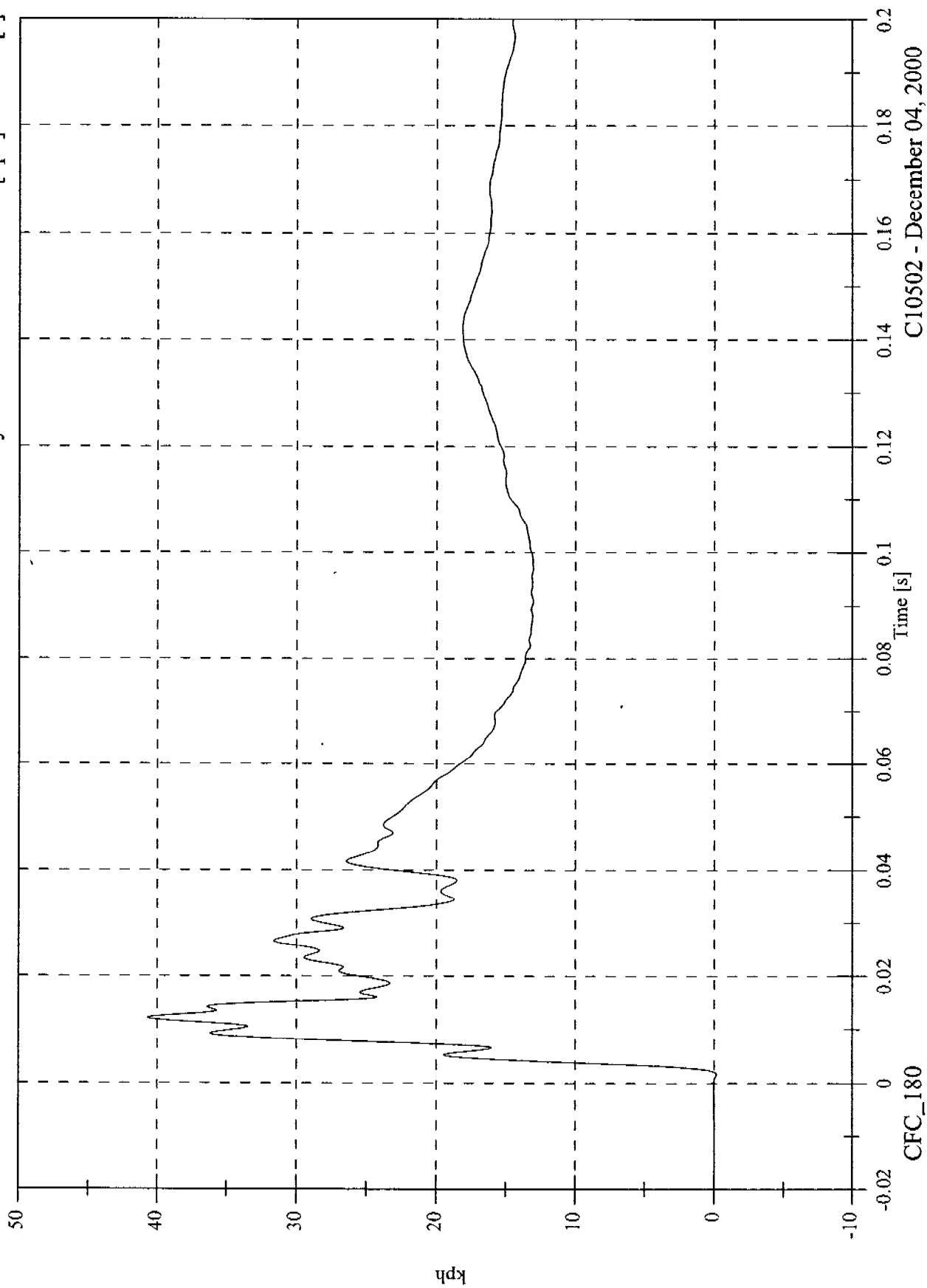


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FMVSS 214D Test #5 - 2001 Daewoo Leganza

Acc 13 Left Mid B Post Y Velocity

Max: 40.7 [kph] at 0.012 [s]
Min: -0.2 [kph] at 0.002 [s]

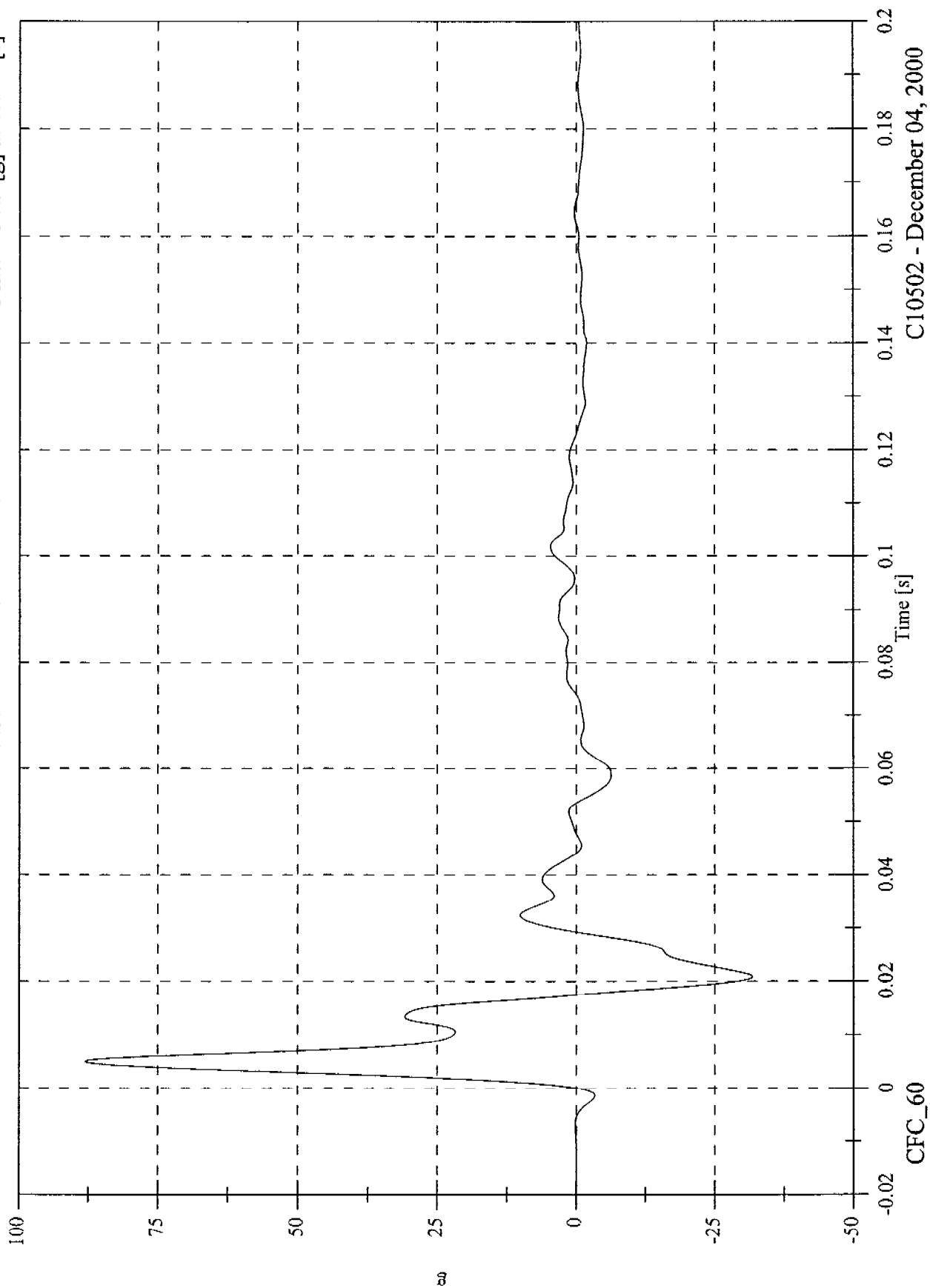


C10502 - December 04, 2000

FMVSS 214D Test #5 - 2001 Daewoo Leganza

Acc 14 Left Lower A Post Y

Max: 88.0 [g] at 0.005 [s]
Min: -31.9 [g] at 0.021 [s]



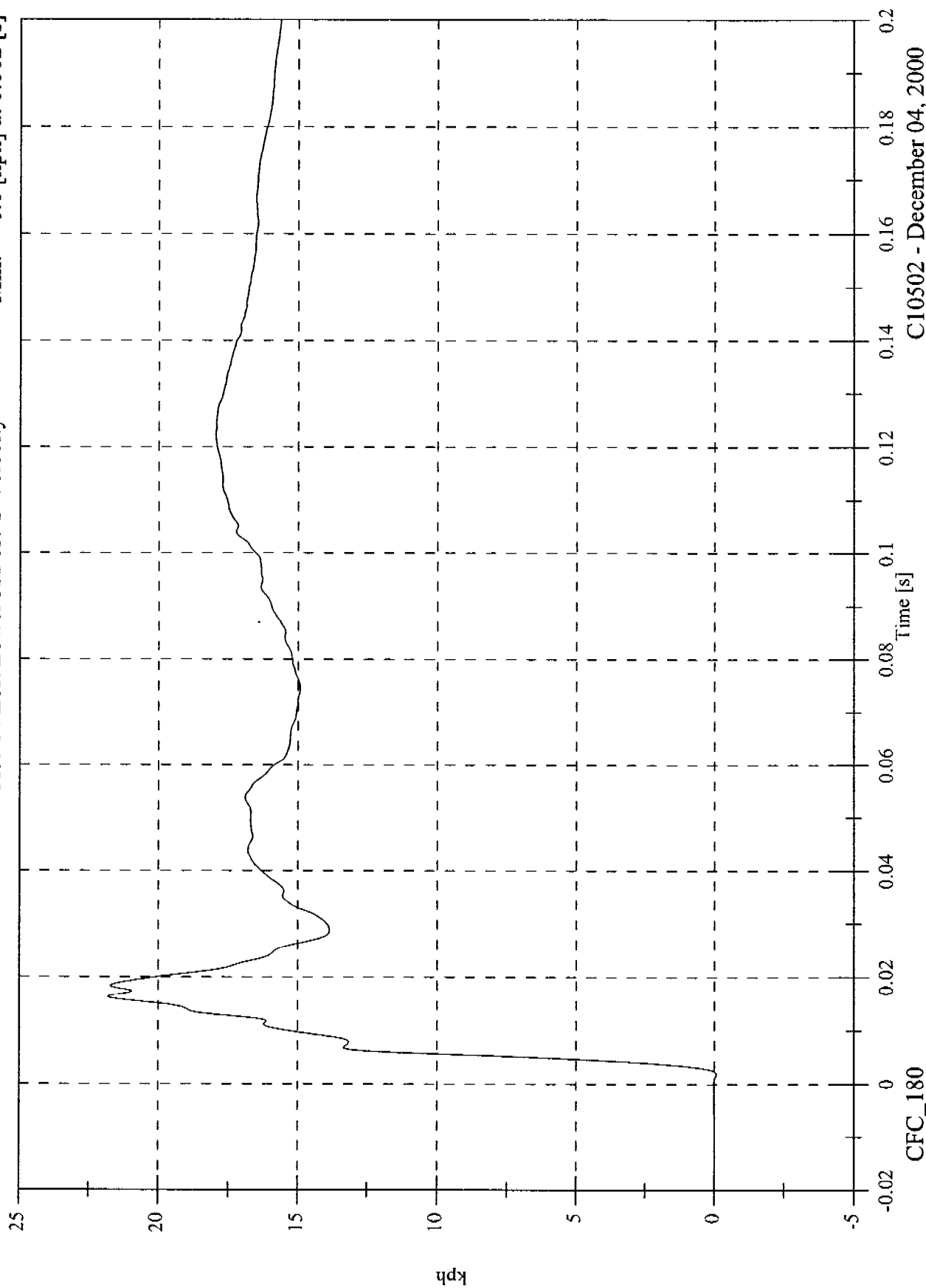
C10502 - December 04, 2000

FMVSS 214D Test #5 - 2001 Daewoo Leganza

Acc 14 Left Lower A Post Y Velocity

Max: 21.8 [kph] at 0.016 [s]

Min: -0.1 [kph] at 0.002 [s]

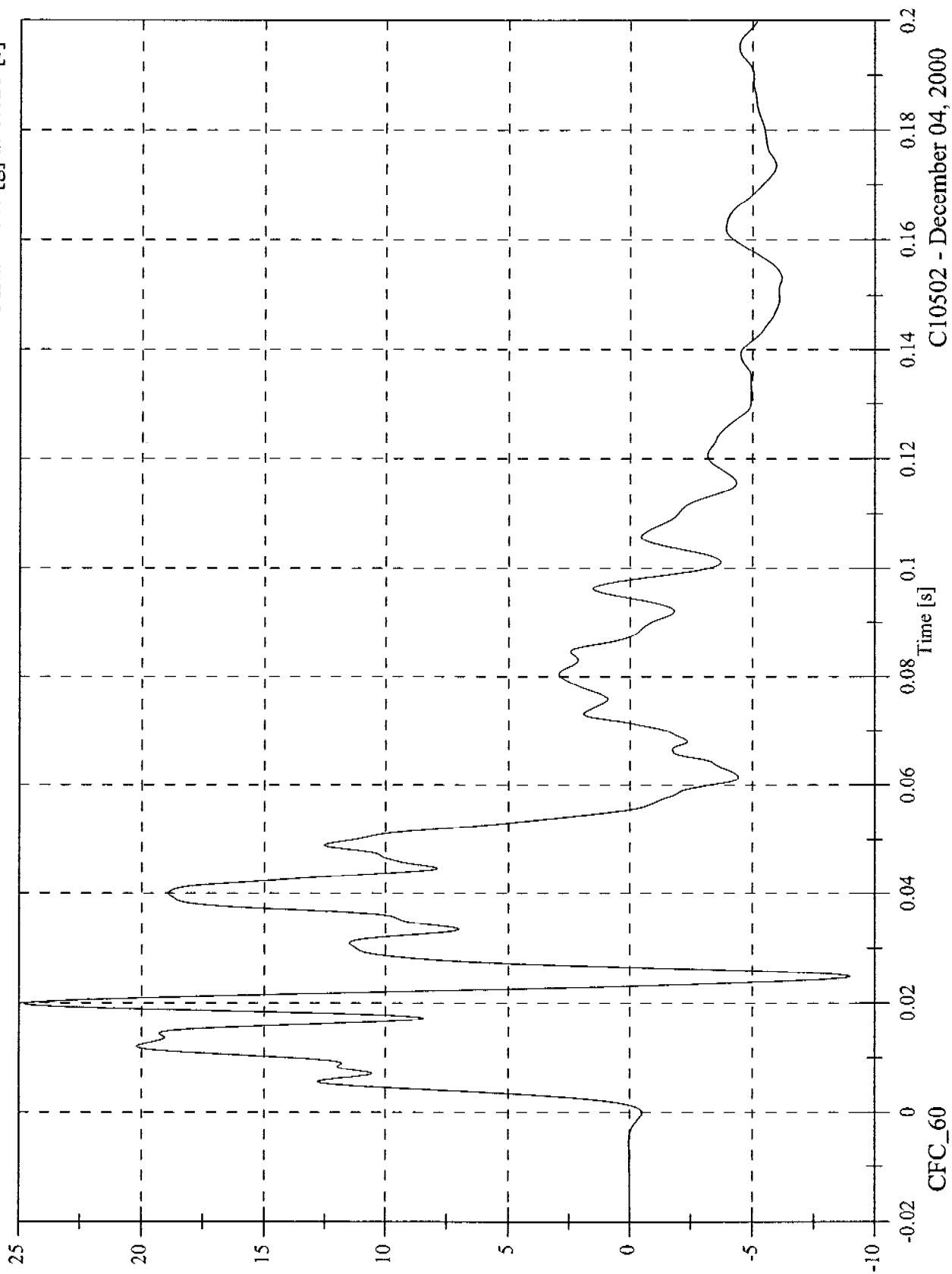


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FMVSS 214D Test #5 - 2001 Daewoo Leganza

Acc 15 Left Mid A Post Y

Max: 24.8 [g] at 0.020 [s]
Min: -9.0 [g] at 0.025 [s]



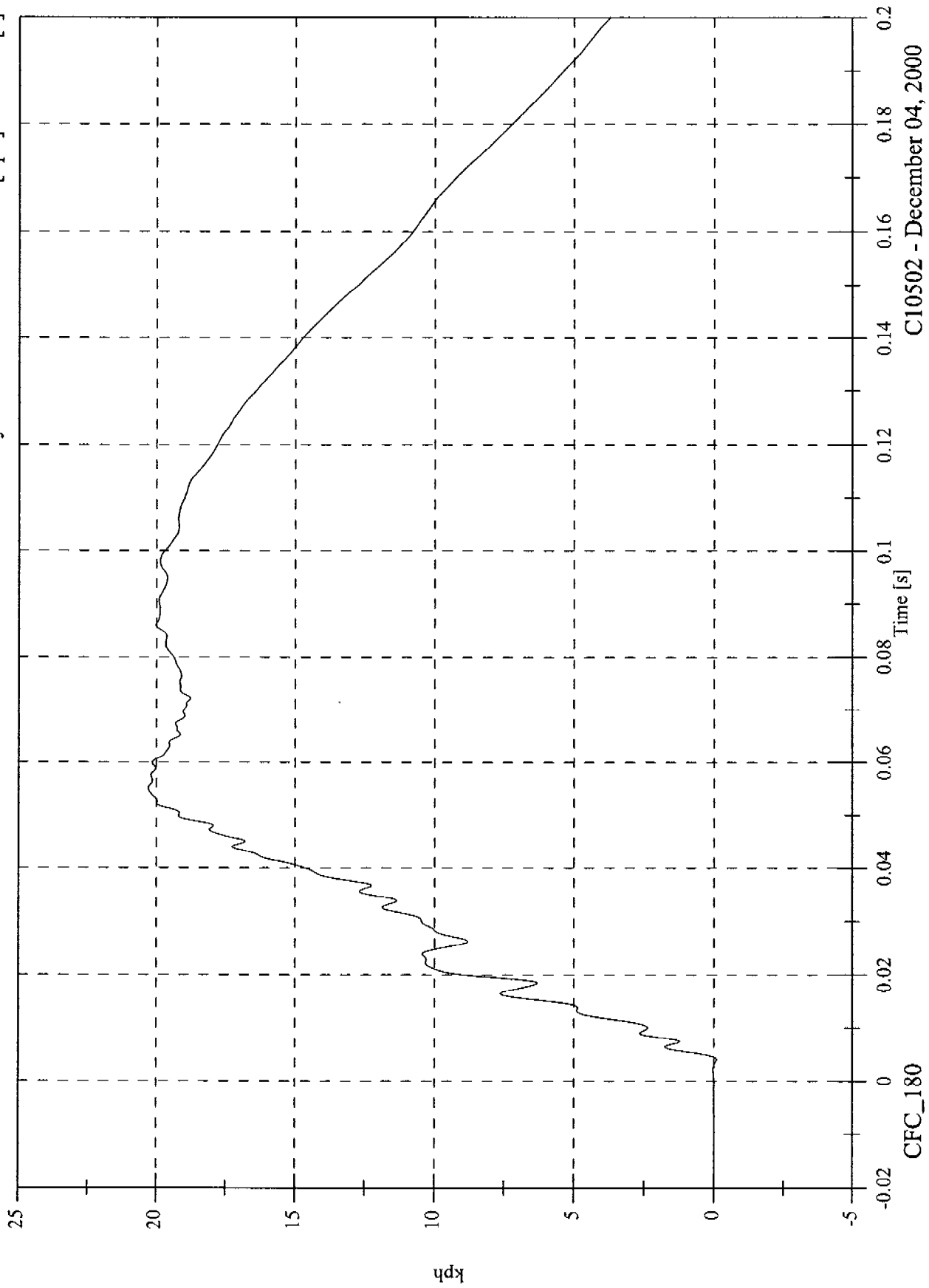
C10502 - December 04, 2000

FMVSS 214D Test #5 - 2001 Daewoo Leganza

Acc 15 Left Mid A Post Y Velocity

Max: 20.3 [kph] at 0.055 [s]

Min: -0.1 [kph] at 0.004 [s]

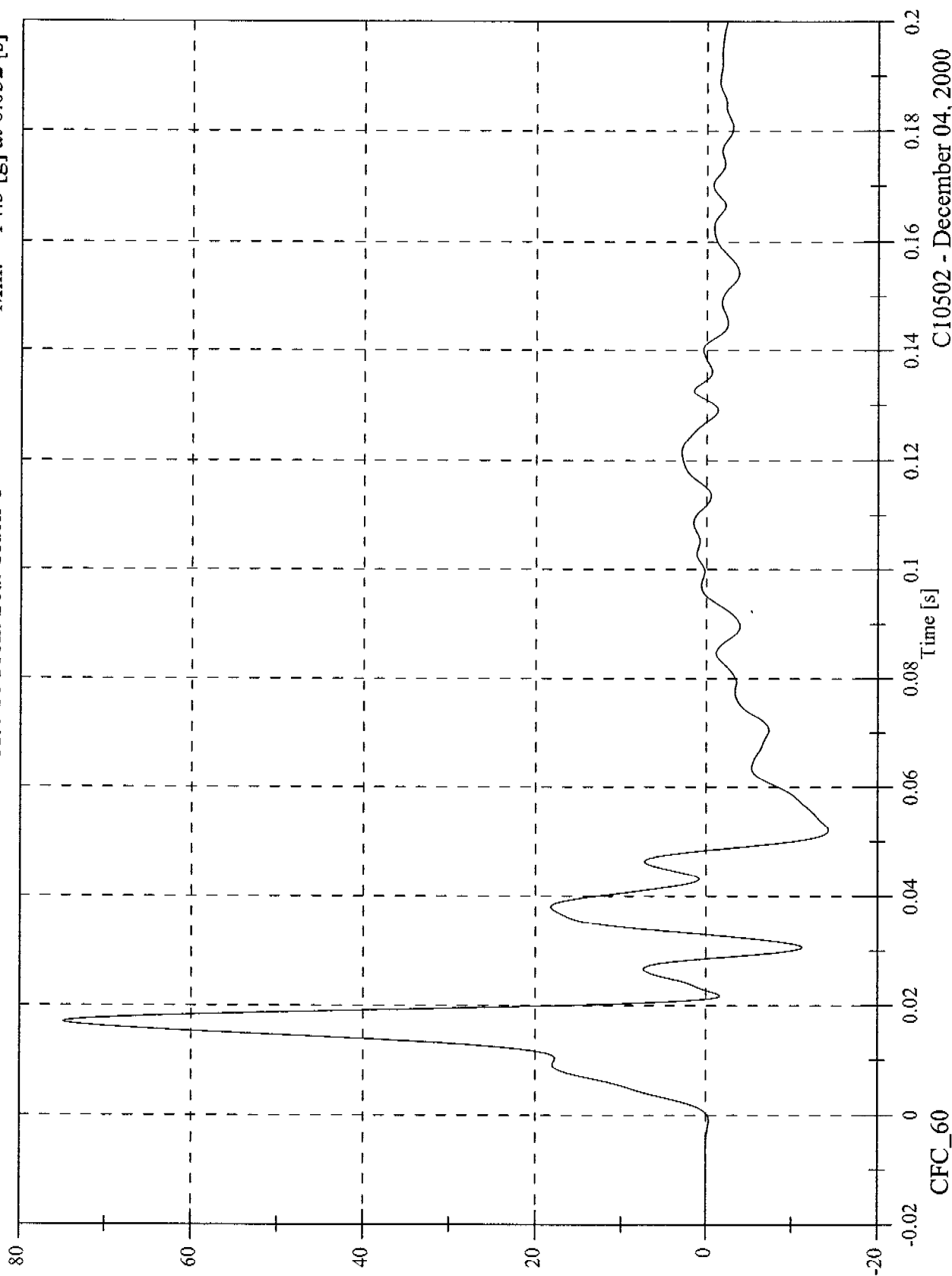


C10502 - December 04, 2000

FMVSS 214D Test #5 - 2001 Daewoo Leganza

Acc 16 Front Seat Track Y

Max: 74.9 [g] at 0.017 [s]
Min: -14.3 [g] at 0.052 [s]



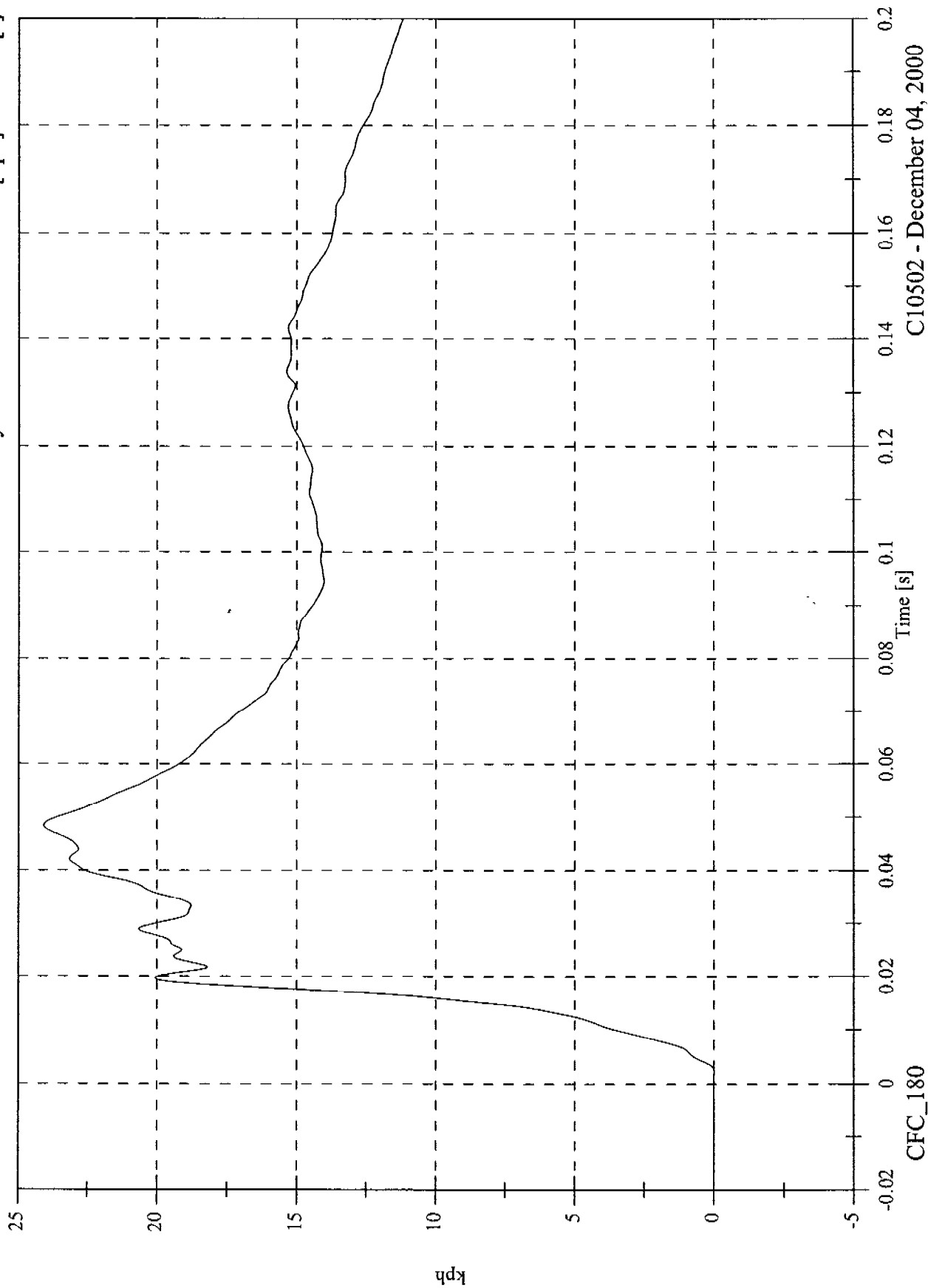
CI0502 - December 04, 2000

FMVSS 214D Test #5 - 2001 Daewoo Leganza

Acc 16 Front Seat Track Y Velocity

Max: 24.1 [kph] at 0.048 [s]

Min: -0.0 [kph] at 0.002 [s]

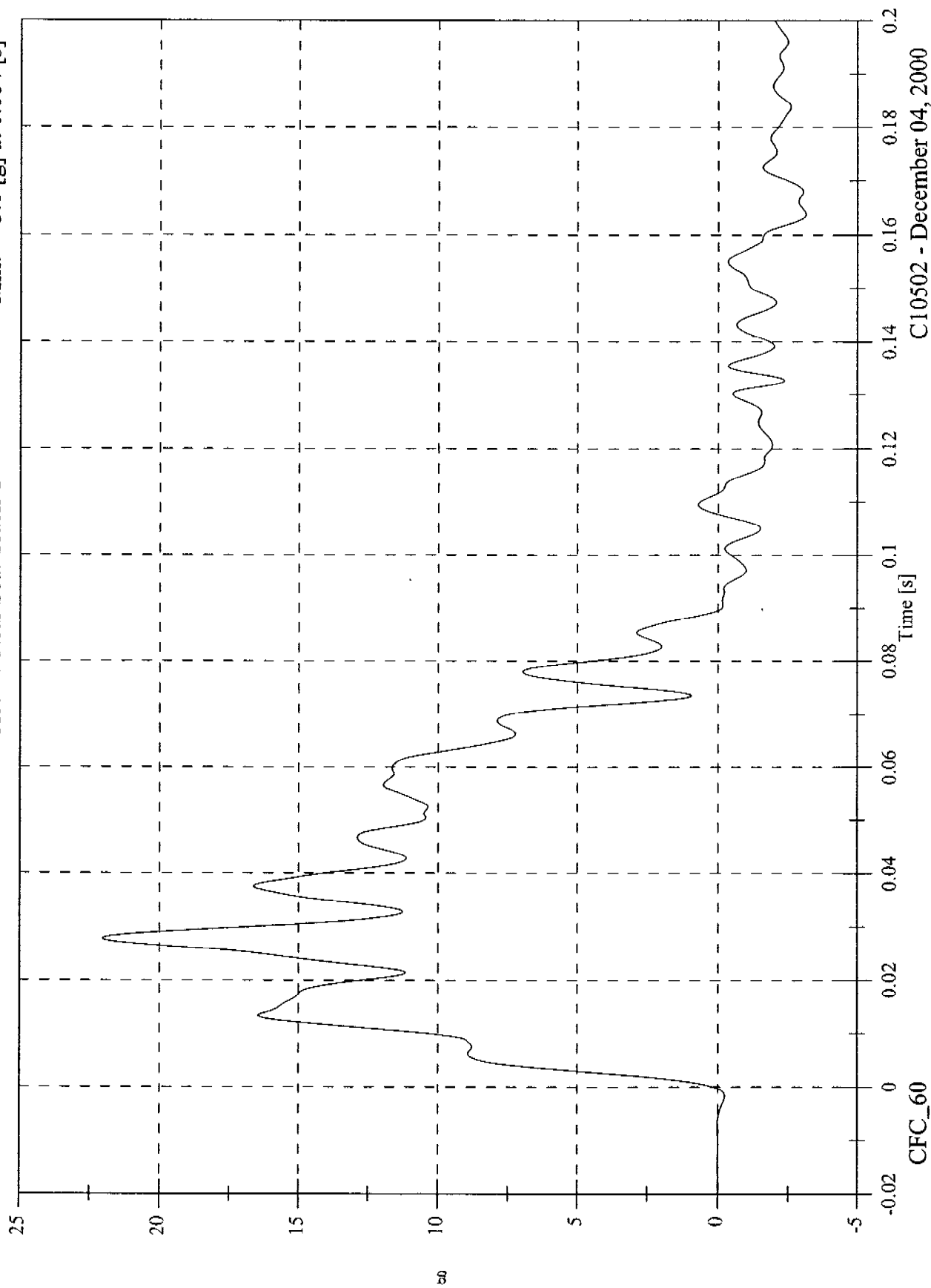


C10502 - December 04, 2000

FMVSS 214D Test #5 - 2001 Daewoo Leganza

Acc 17 Rear Seat Track Y

Max: 22.0 [g] at 0.028 [s]
Min: -3.1 [g] at 0.164 [s]

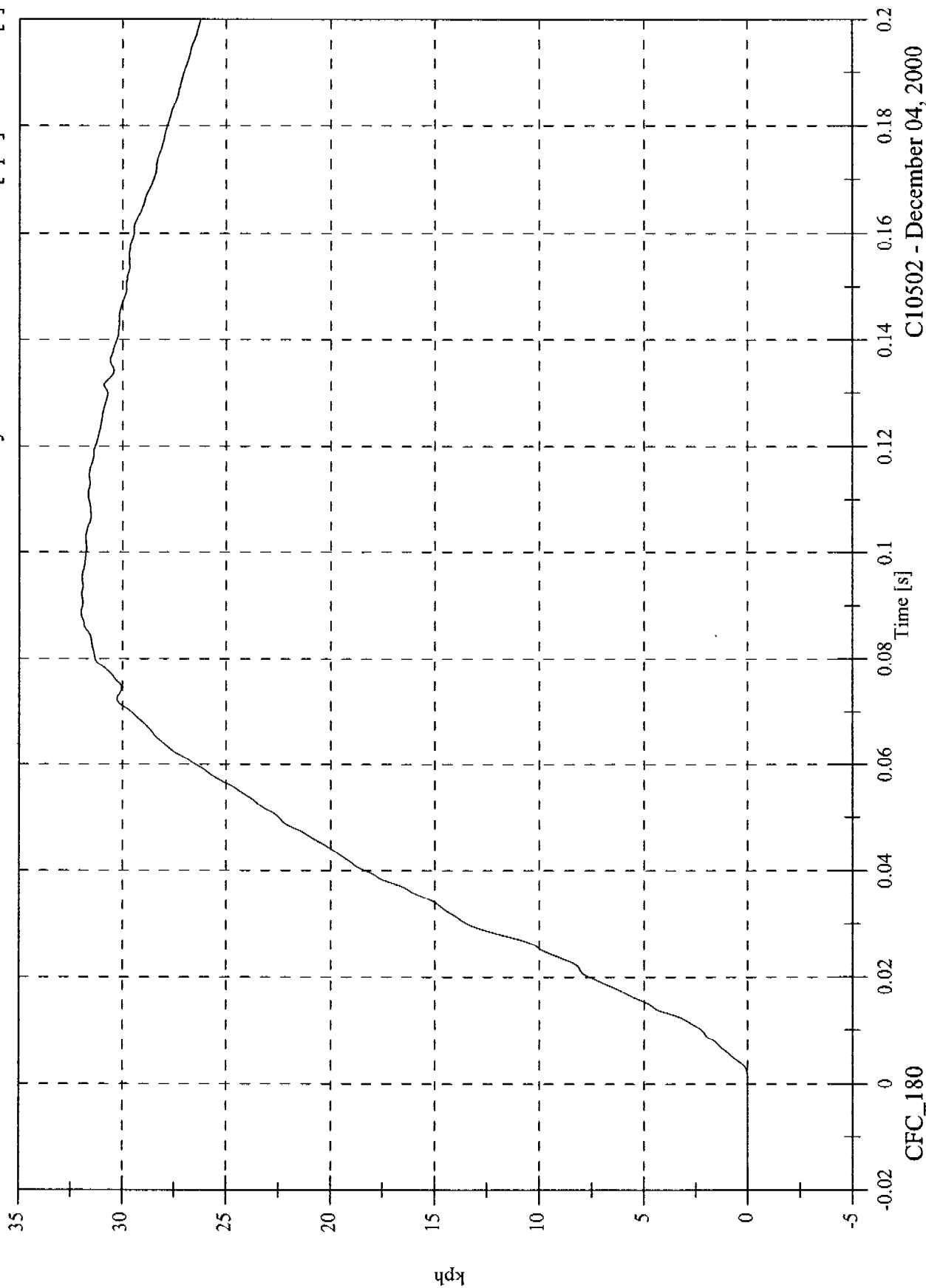


C10502 - December 04, 2000

FMVSS 214D Test #5 - 2001 Daewoo Leganza

Acc 17 Rear Seat Track Y Velocity

Max: 32.0 [kph] at 0.089 [s]
Min: -0.0 [kph] at -0.017 [s]

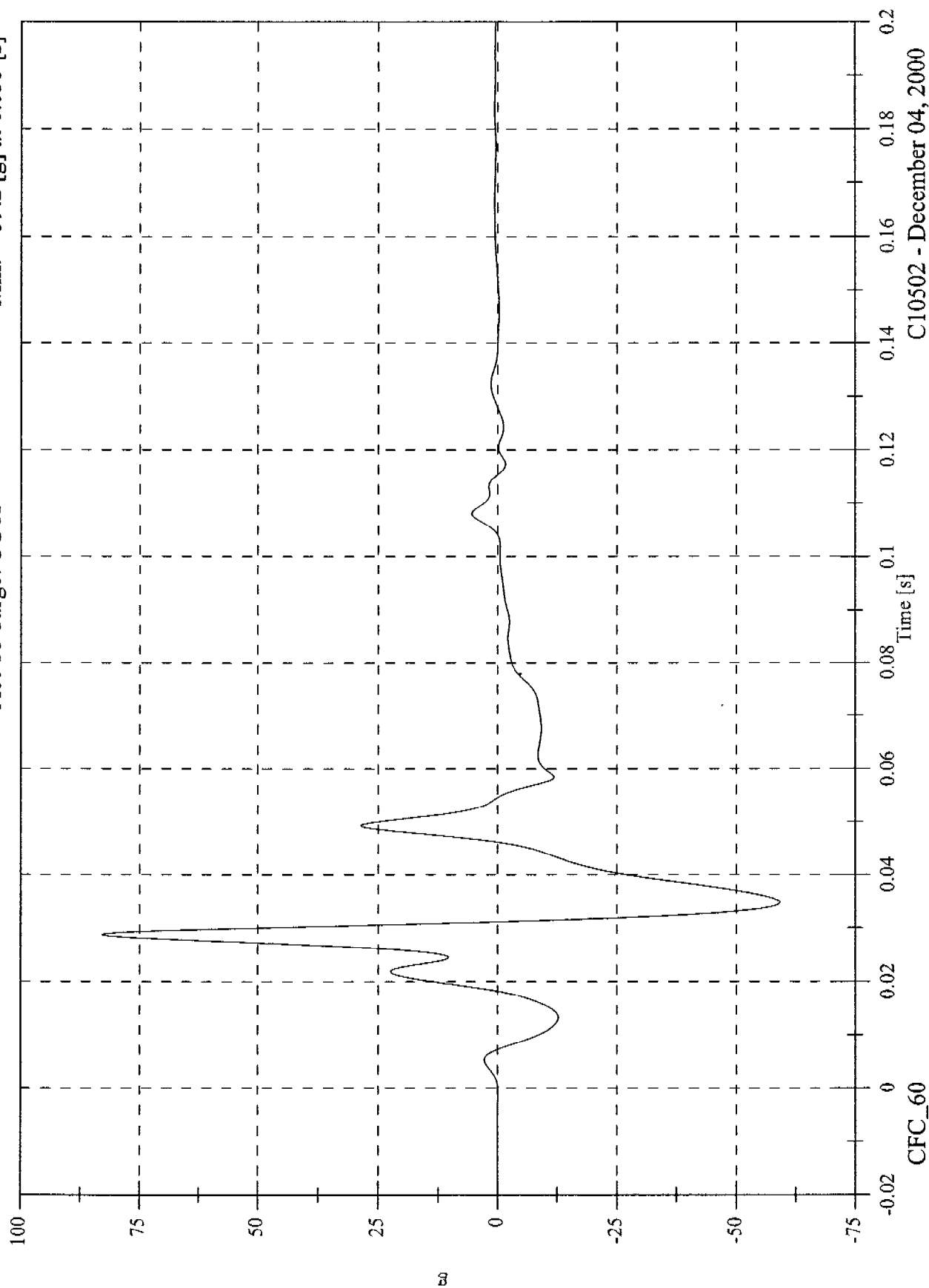


C10502 - December 04, 2000

FMVSS 214D Test #5 - 2001 Daewoo Leganza

Acc 18 Target CG X

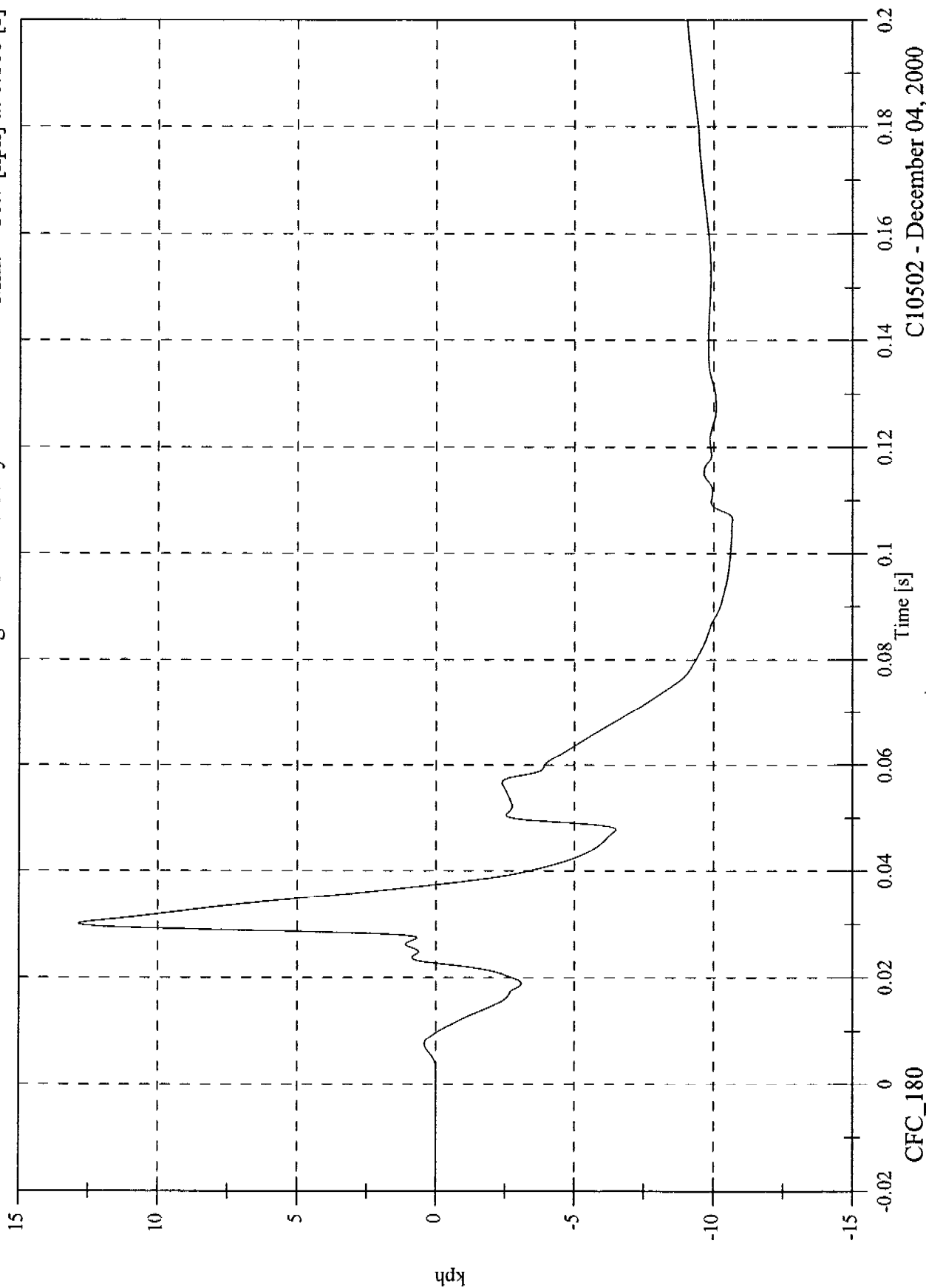
Max: 82.8 [g] at 0.029 [s]
Min: -59.2 [g] at 0.035 [s]



FMVSS 214D Test #5 - 2001 Daewoo Leganza

Acc 18 Target CG X Velocity

Max: 12.9 [kph] at 0.030 [s]
Min: -10.7 [kph] at 0.106 [s]

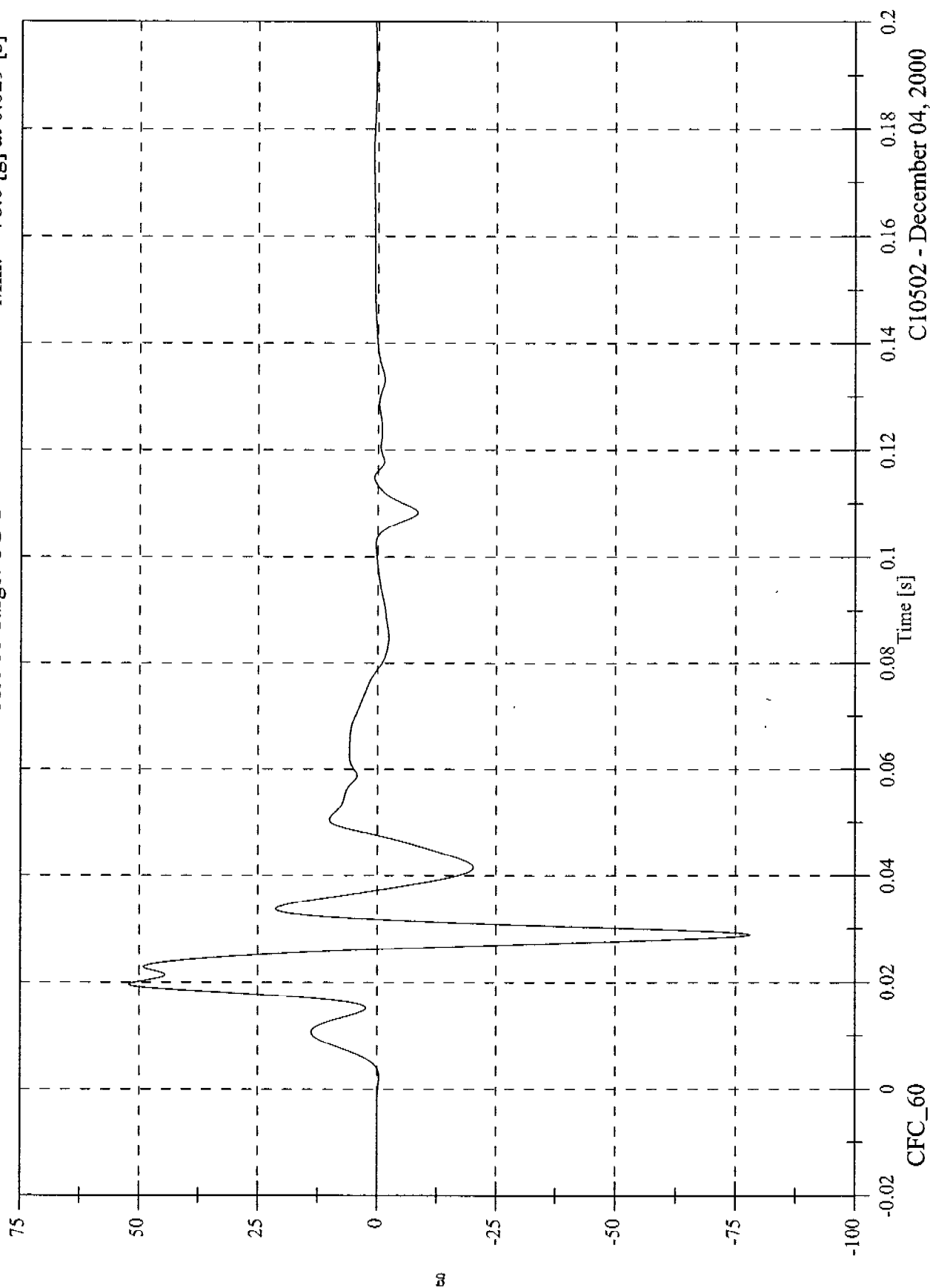


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FMVSS 214D Test #5 - 2001 Daewoo Leganza

Acc 18 Target CG Y

Max: 52.2 [g] at 0.020 [s]
Min: -78.0 [g] at 0.029 [s]

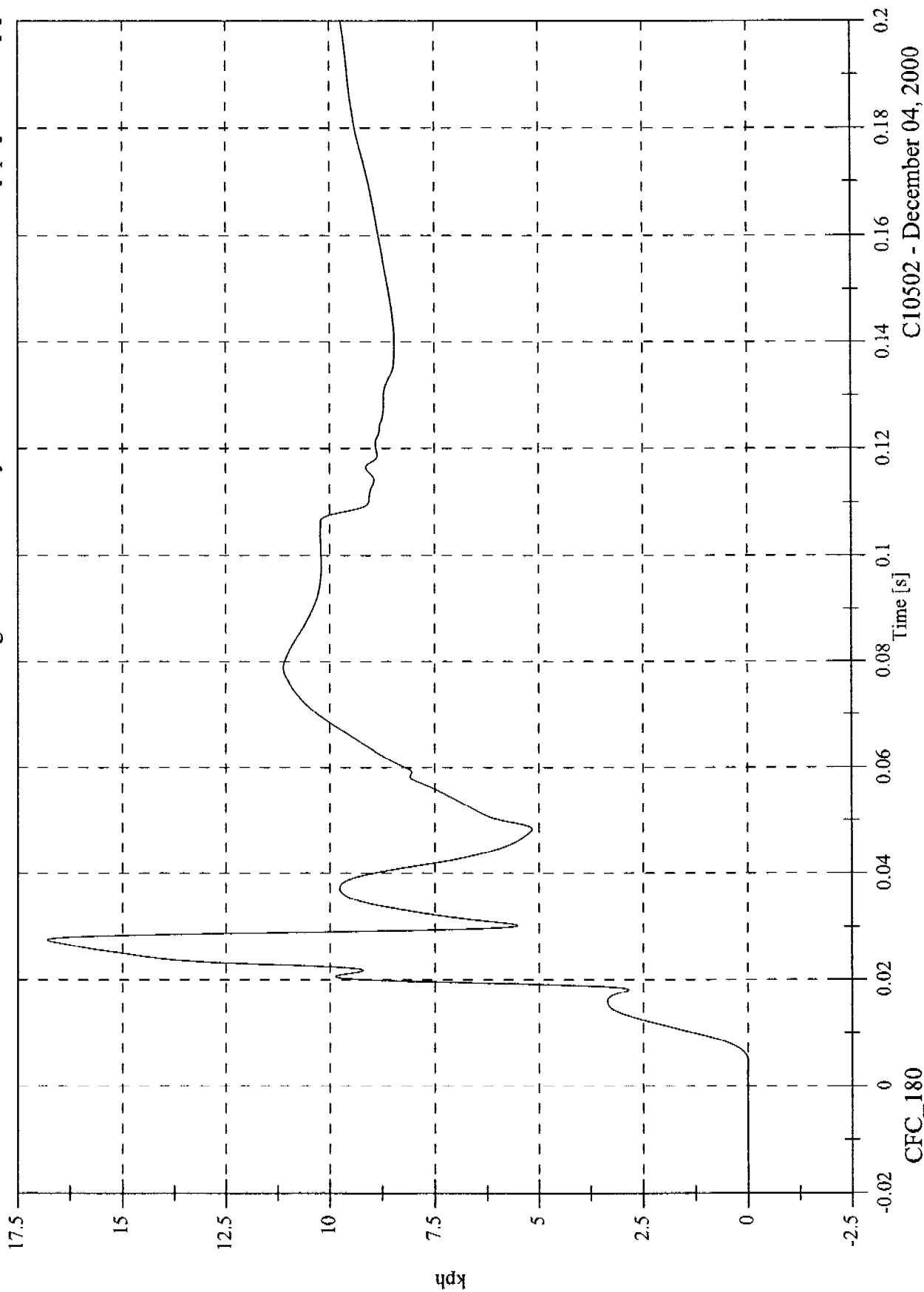


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FMVSS 214D Test #5 - 2001 Daewoo Leganza

Max: 16.8 [kph] at 0.028 [s]
 Min: -0.0 [kph] at 0.005 [s]

Acc 18 Target CG Y Velocity

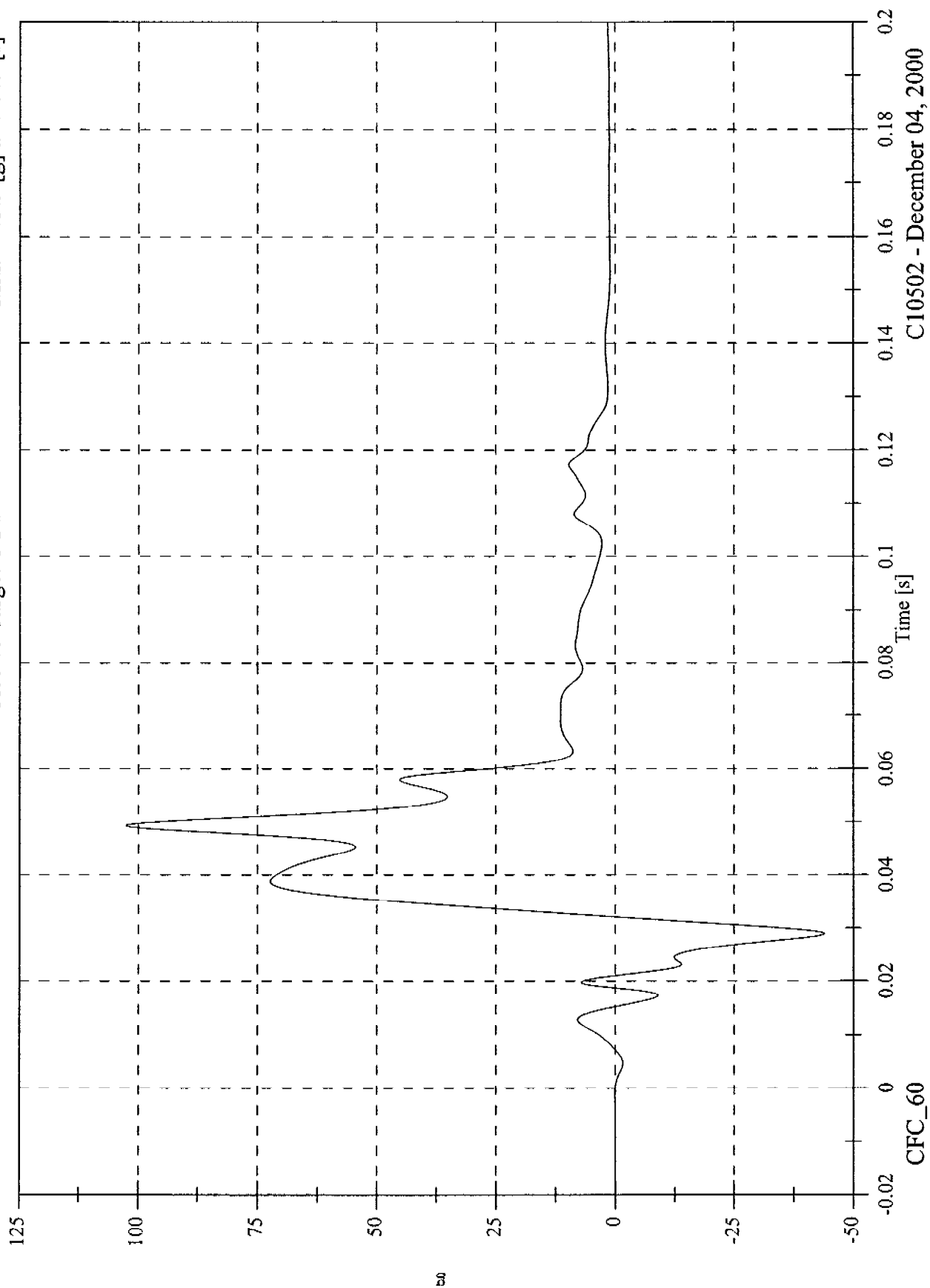


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FMVSS 214D Test #5 - 2001 Daewoo Leganza

Acc 18 Target CG Z

Max: 102.6 [g] at 0.049 [s]
Min: -43.9 [g] at 0.029 [s]

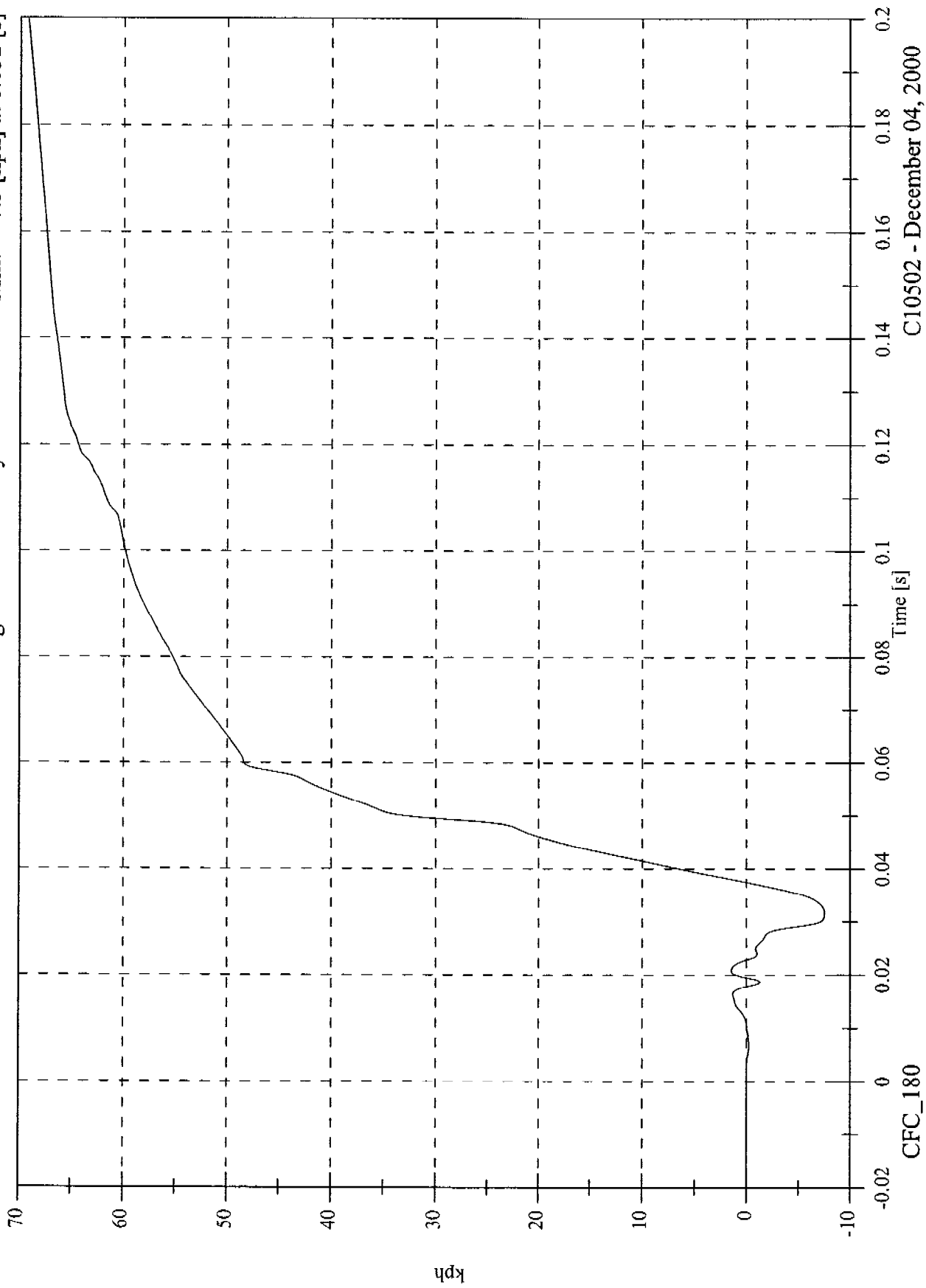


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FMVSS 214D Test #5 - 2001 Daewoo Leganza

Acc 18 Target CG Z Velocity

Max: 69.3 [kph] at 0.200 [s]
Min: -7.5 [kph] at 0.032 [s]

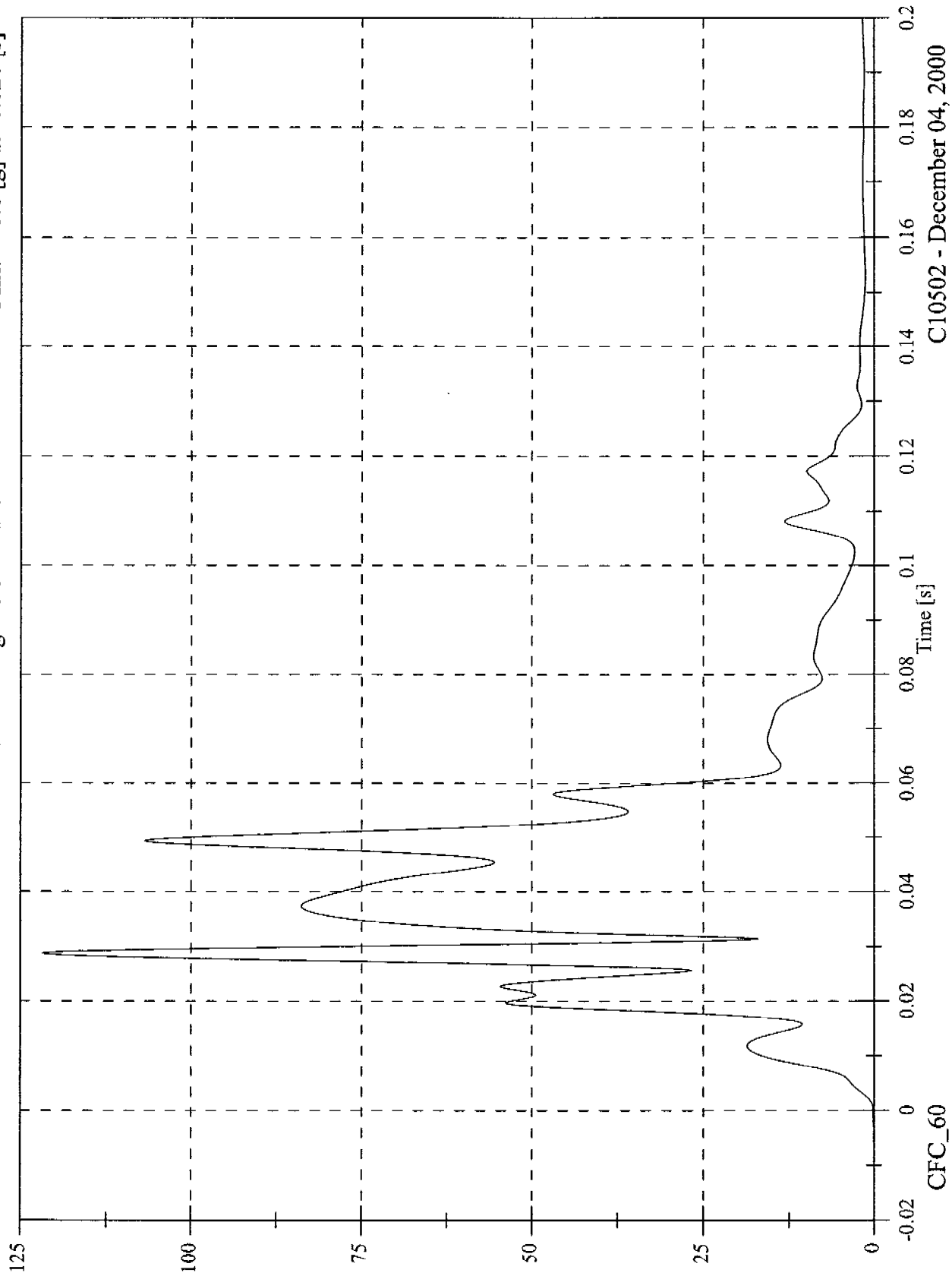


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FMVSS 214D Test #5 - 2001 Daewoo Leganza

Acc 18 Target CG Resultant

Max: 121.8 [g] at 0.029 [s]
Min: 0.0 [g] at -0.020 [s]



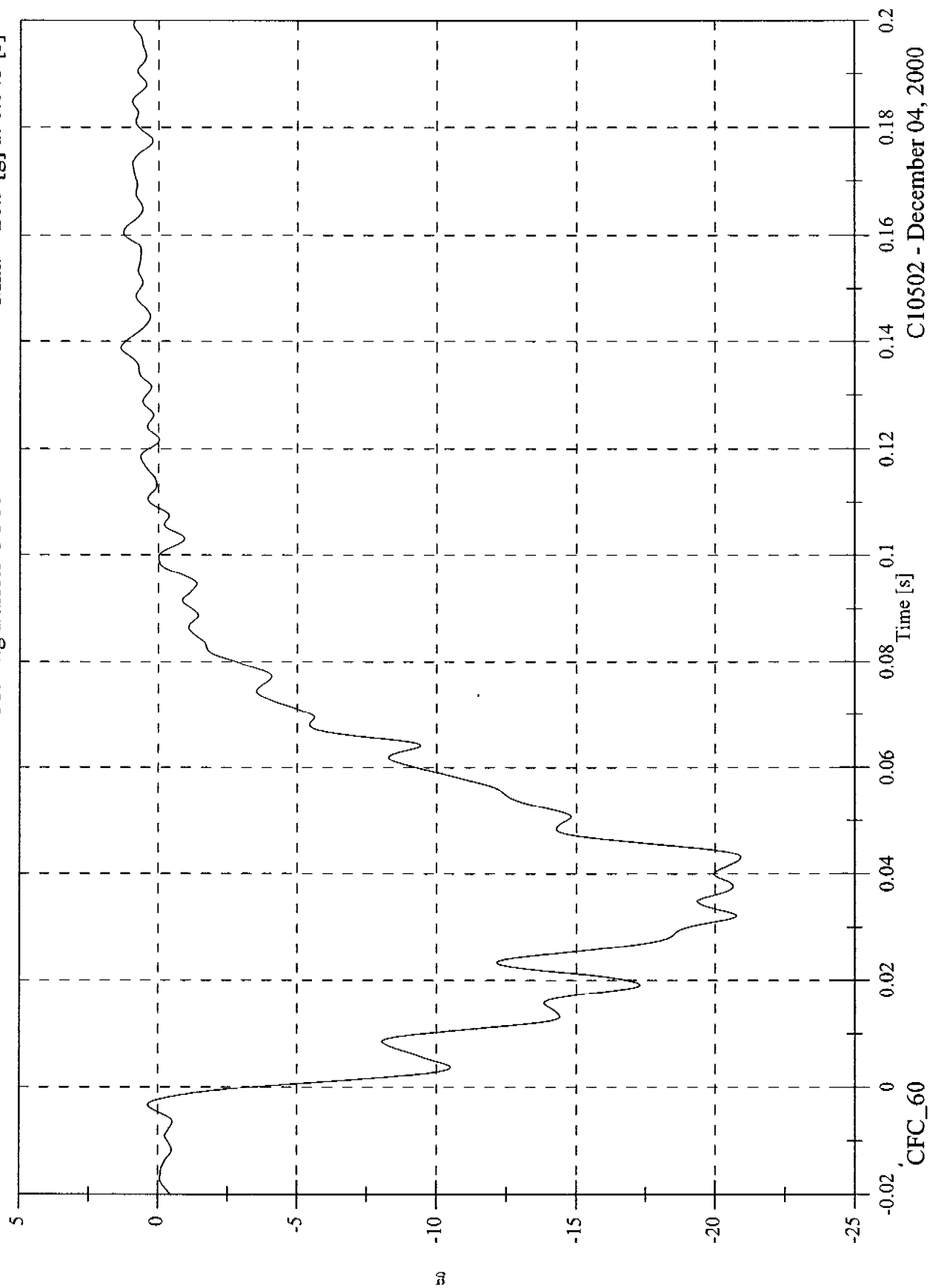
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FMVSS 214D Test #5 - 2001 Daewoo Leganza

Moving Barrier CG X

Max: 1.4 [g] at 0.139 [s]

Min: -20.9 [g] at 0.043 [s]



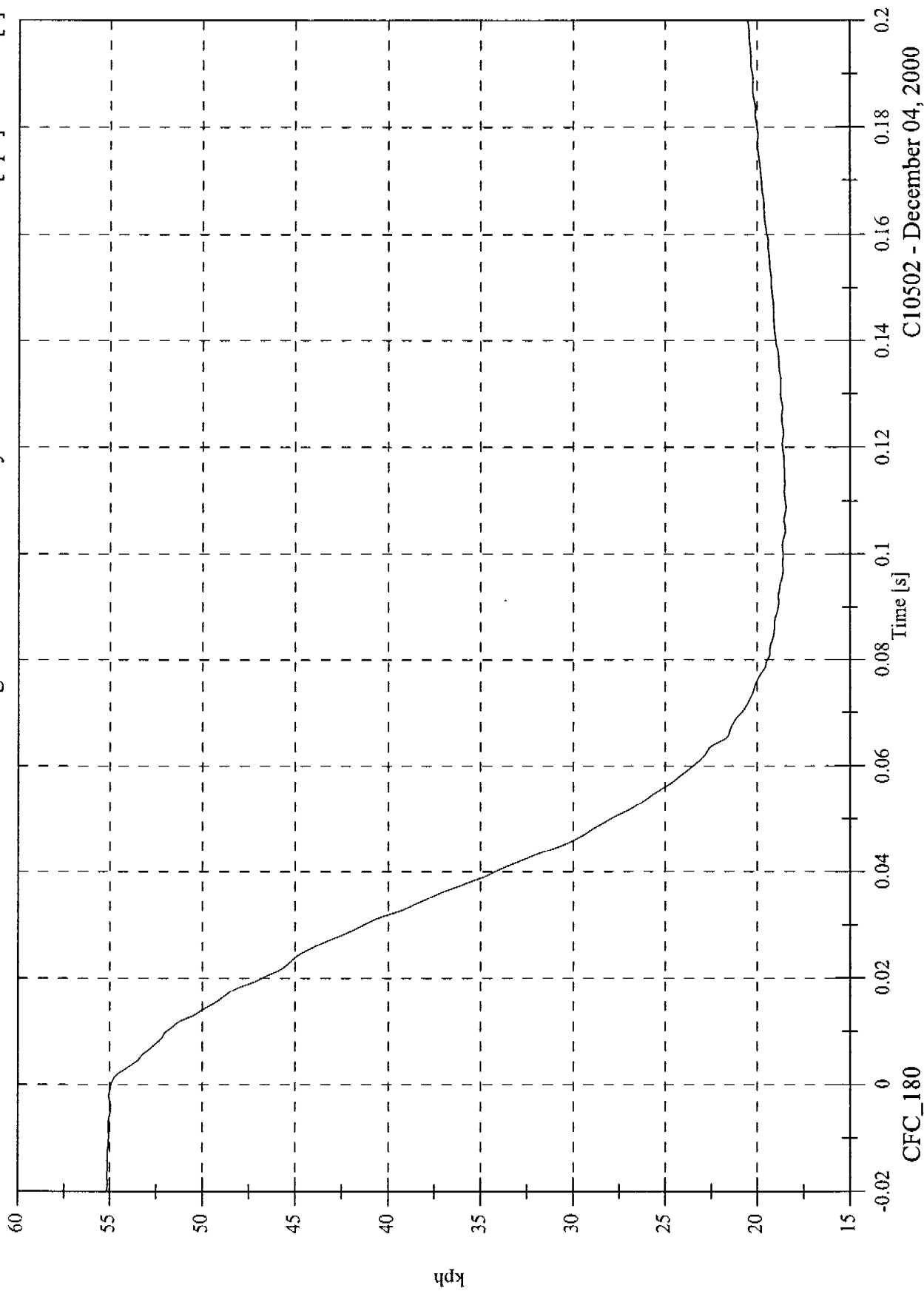
C10502 - December 04, 2000

FMVSS 214D Test #5 - 2001 Daewoo Leganza

Moving Barrier CG X Velocity

Max: 55.2 [kph] at -0.020 [s]

Min: 18.4 [kph] at 0.109 [s]

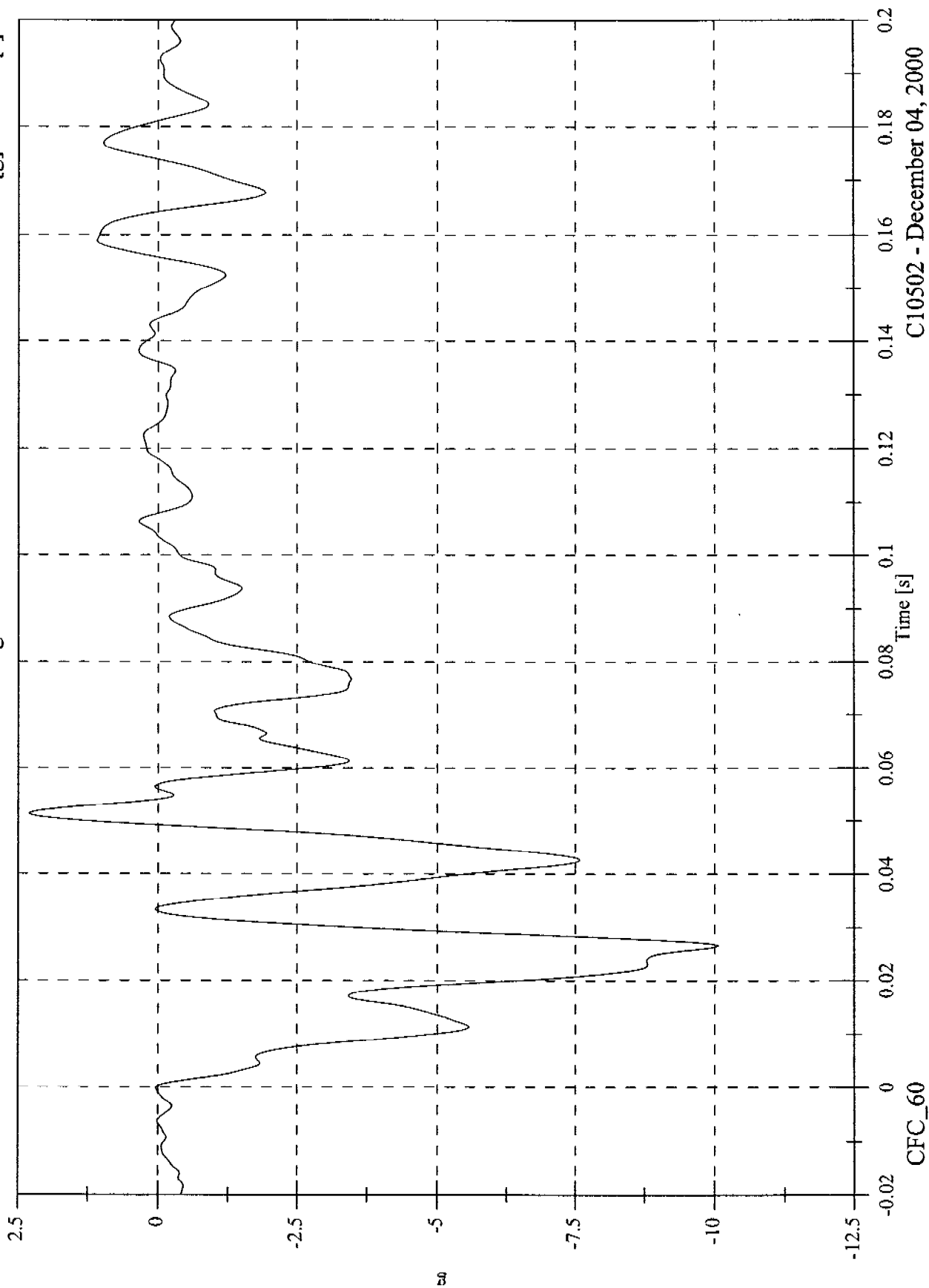


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FMVSS 214D Test #5 - 2001 Daewoo Leganza

Max: 2.3 [g] at 0.051 [s]
 Min: -10.1 [g] at 0.027 [s]

Moving Barrier CG Y

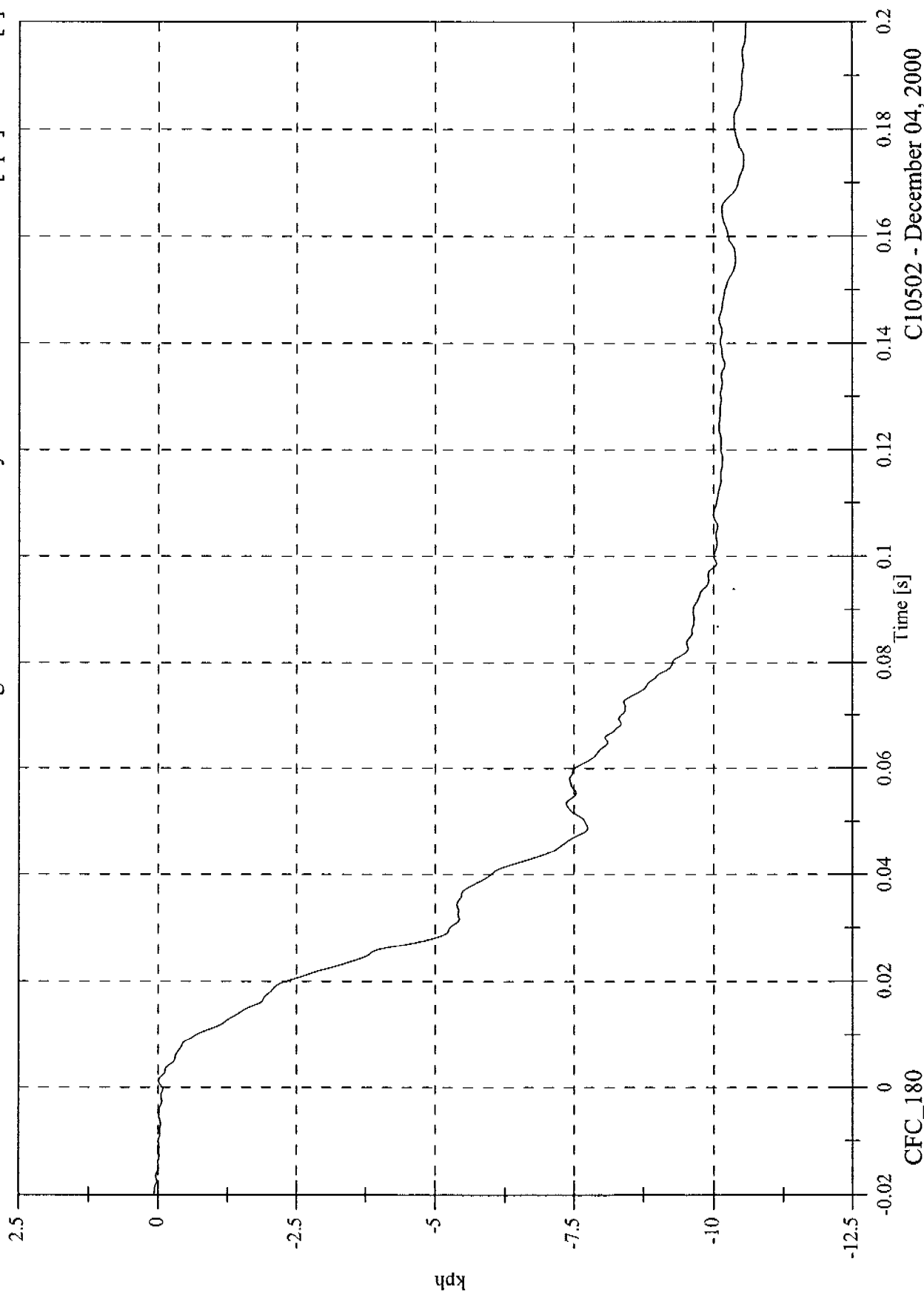


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FMVSS 214D Test #5 - 2001 Daewoo Leganza

Max: 0.1 [kph] at -0.020 [s]
Min: -10.6 [kph] at 0.200 [s]

Moving Barrier CG Y Velocity

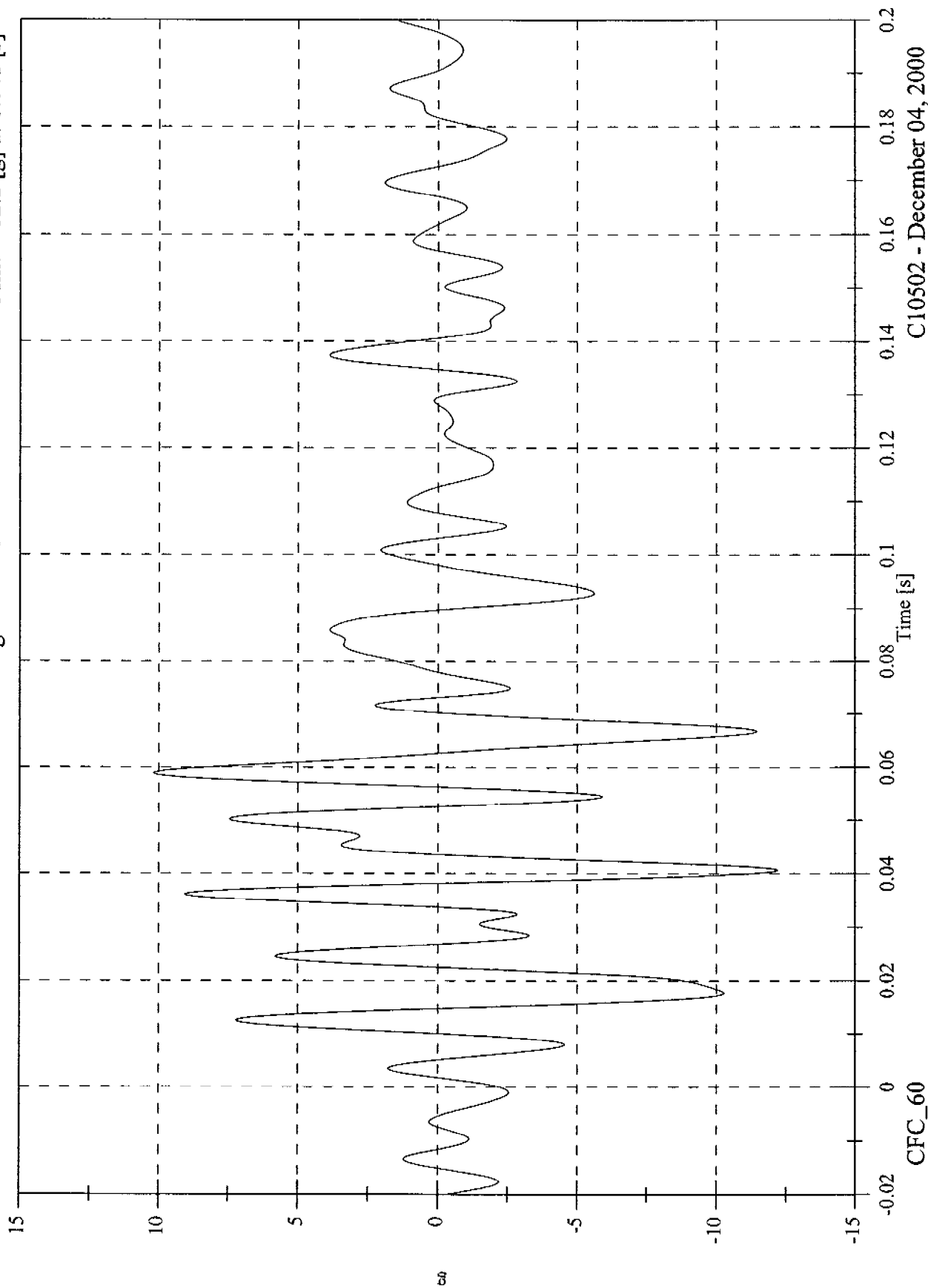


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Max: 10.2 [g] at 0.059 [s]
 Min: -12.2 [g] at 0.041 [s]

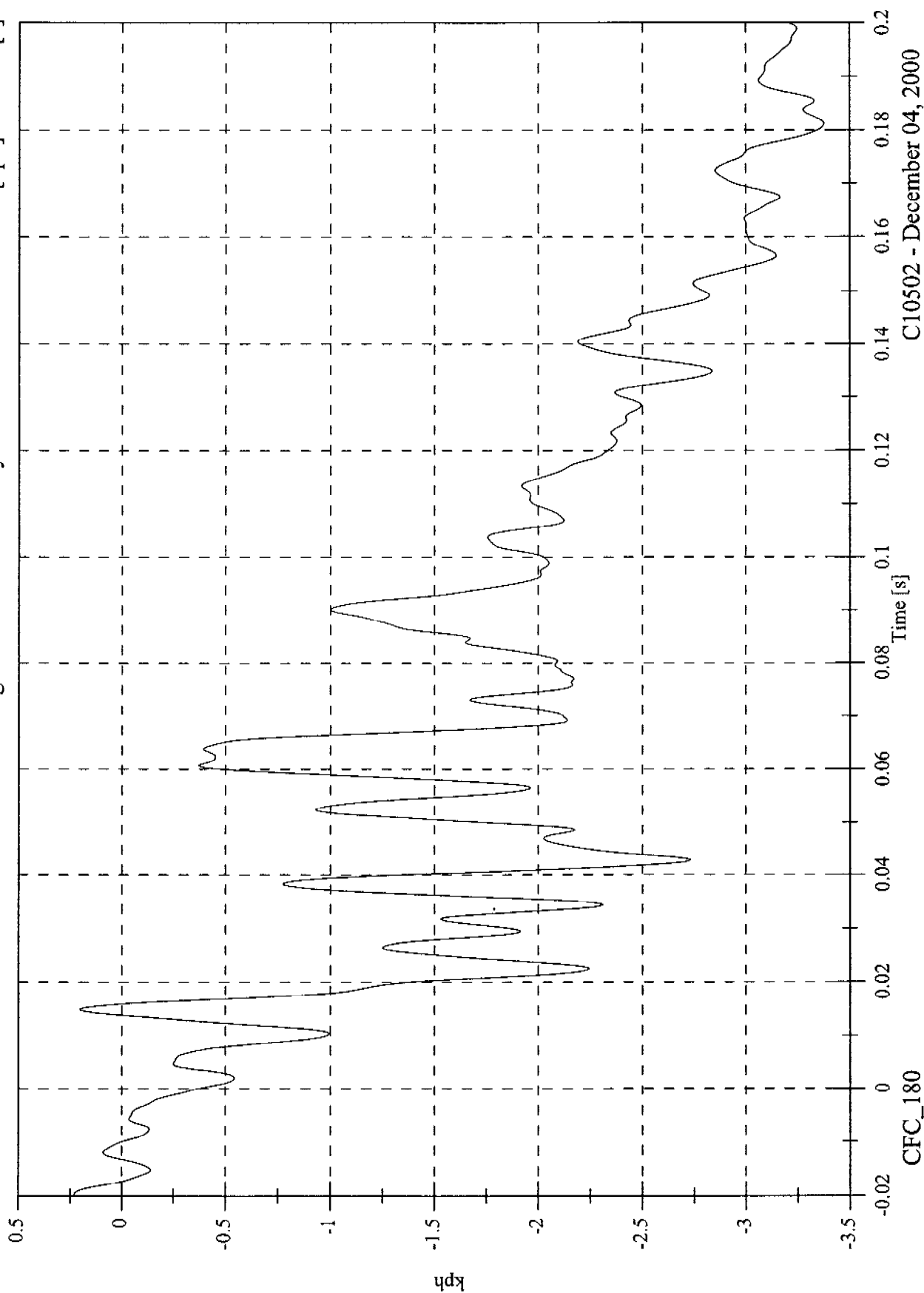
Moving Barrier CG Z



FMVSS 214D Test #5 - 2001 Daewoo Leganza

Moving Barrier CG Z Velocity

Max: 0.2 [kph] at -0.020 [s]
Min: -3.4 [kph] at 0.181 [s]



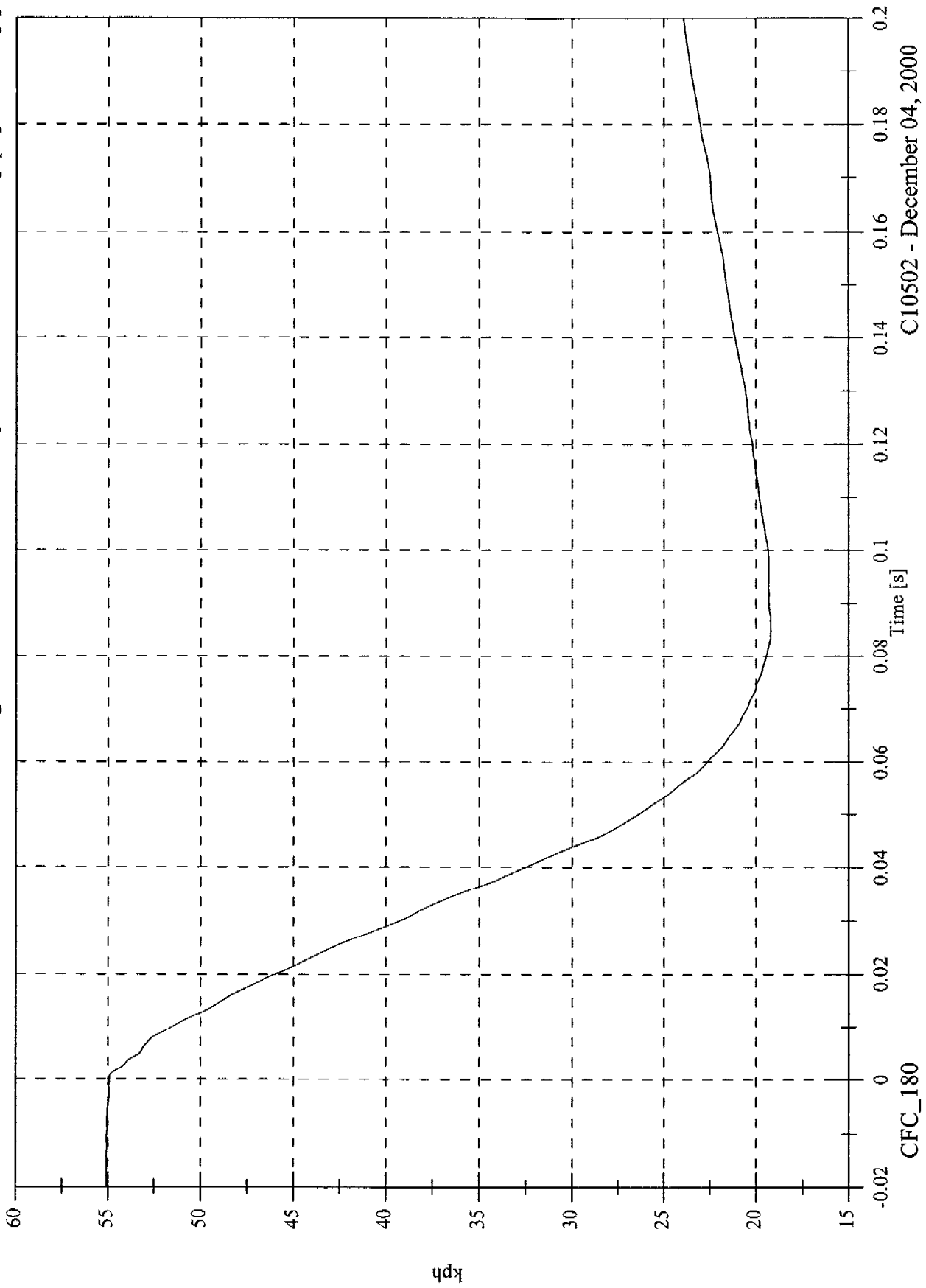
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FMVSS 214D Test #5 - 2001 Daewoo Leganza

Moving Barrier Left Rail X Velocity

Max: 55.1 [kph] at -0.020 [s]

Min: 19.2 [kph] at 0.085 [s]

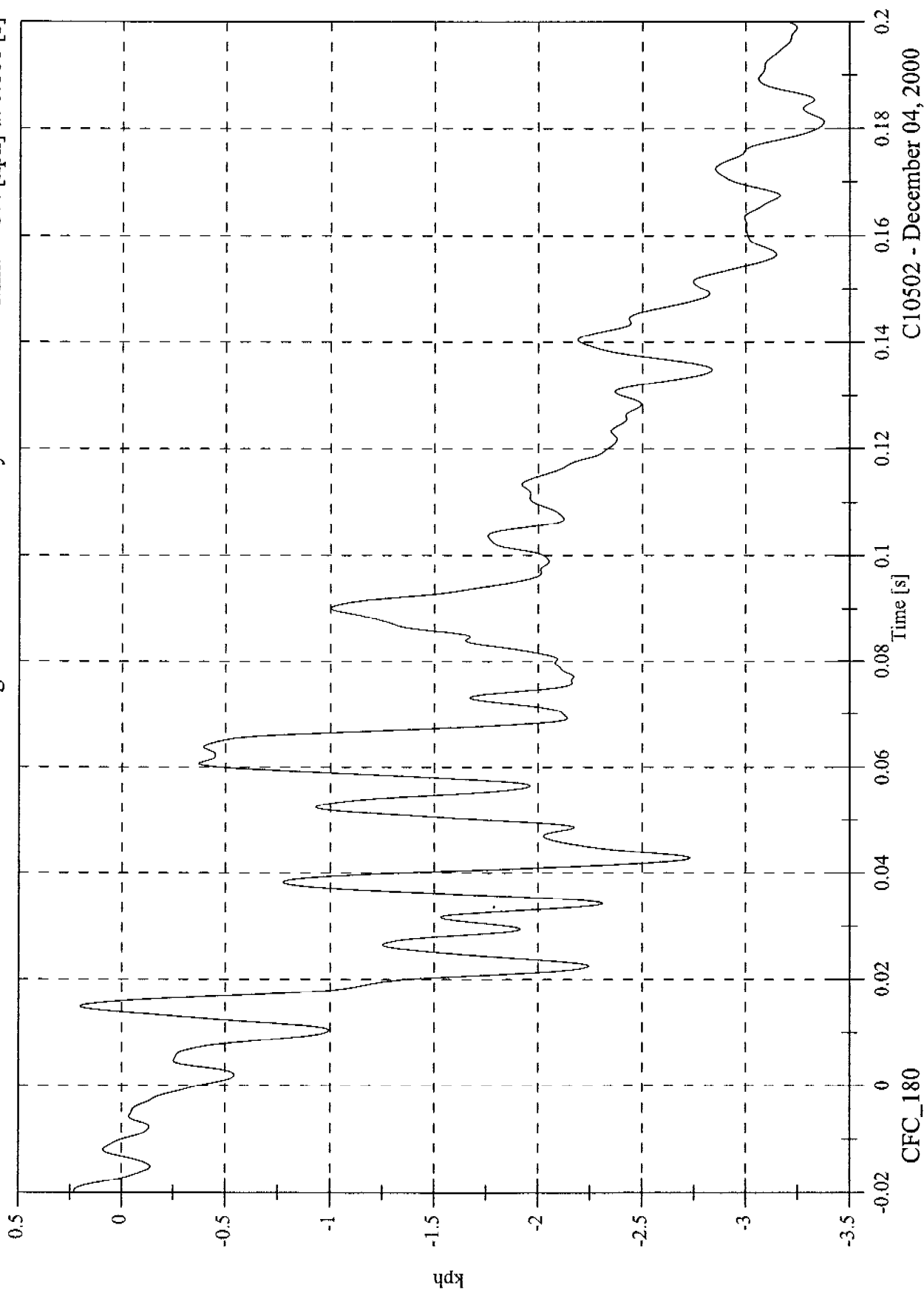


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FMVSS 214D Test #5 - 2001 Daewoo Leganza

Moving Barrier CG Z Velocity

Max: 0.2 [kph] at -0.020 [s]
Min: -3.4 [kph] at 0.181 [s]

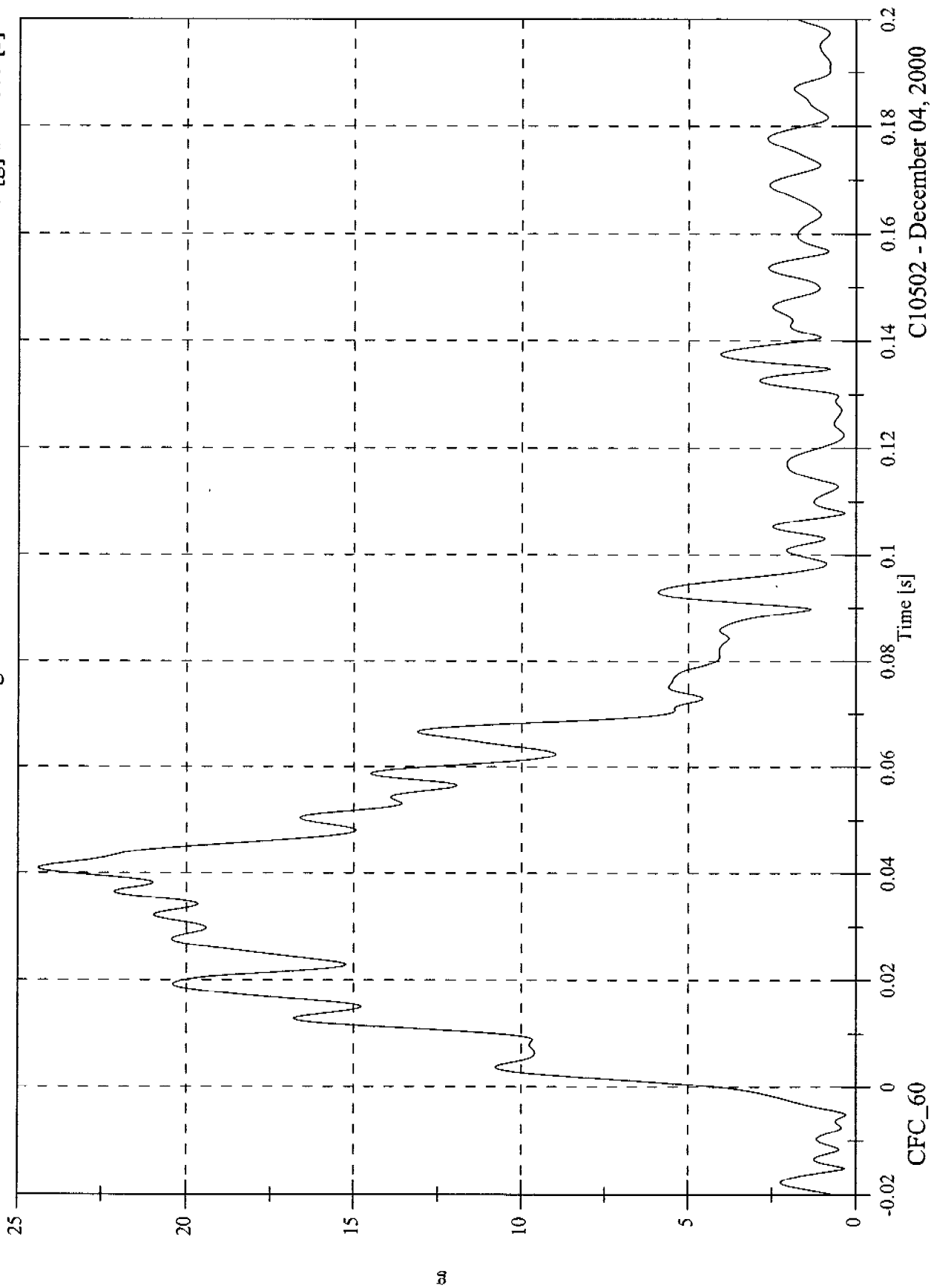


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Max: 24.4 [g] at 0.041 [s]
 Min: 0.3 [g] at -0.005 [s]

Moving Barrier CG Resultant



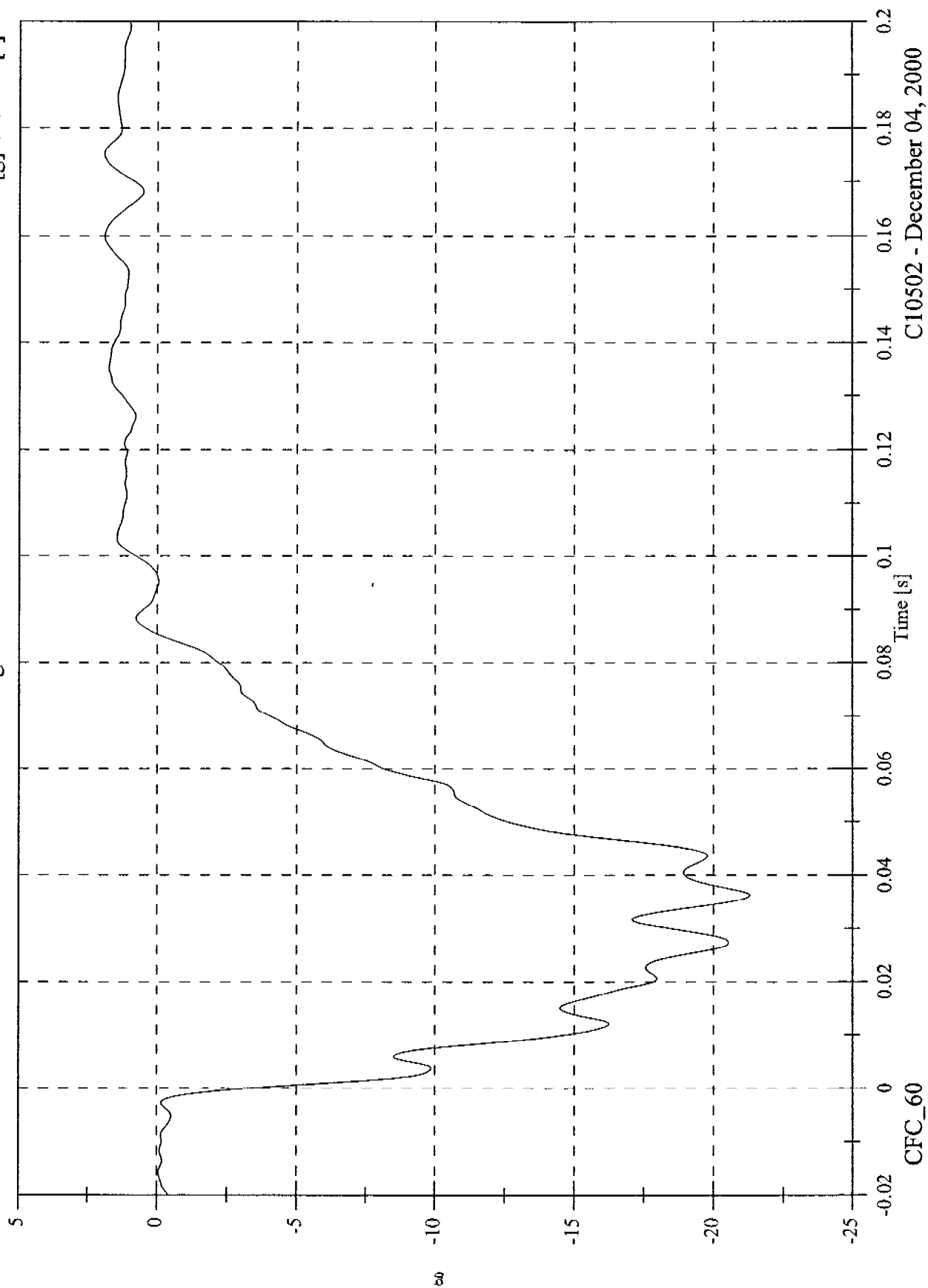
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FMVSS 214D Test #5 - 2001 Daewoo Leganza

Moving Barrier Left Rail X

Max: 1.9 [g] at 0.175 [s]

Min: -21.3 [g] at 0.036 [s]

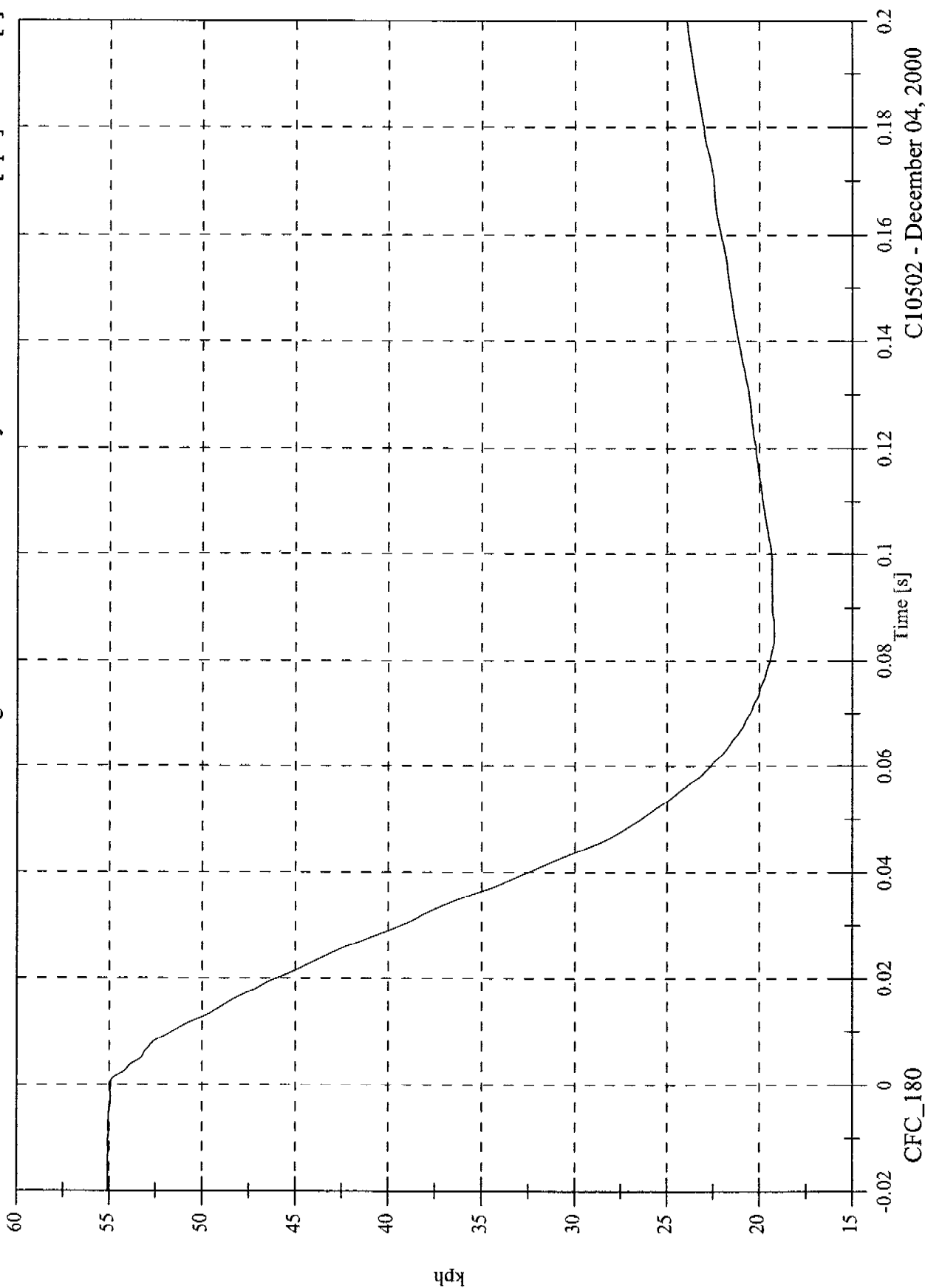


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FMVSS 214D Test #5 - 2001 Daewoo Leganza

Moving Barrier Left Rail X Velocity

Max: 55.1 [kph] at -0.020 [s]
Min: 19.2 [kph] at 0.085 [s]

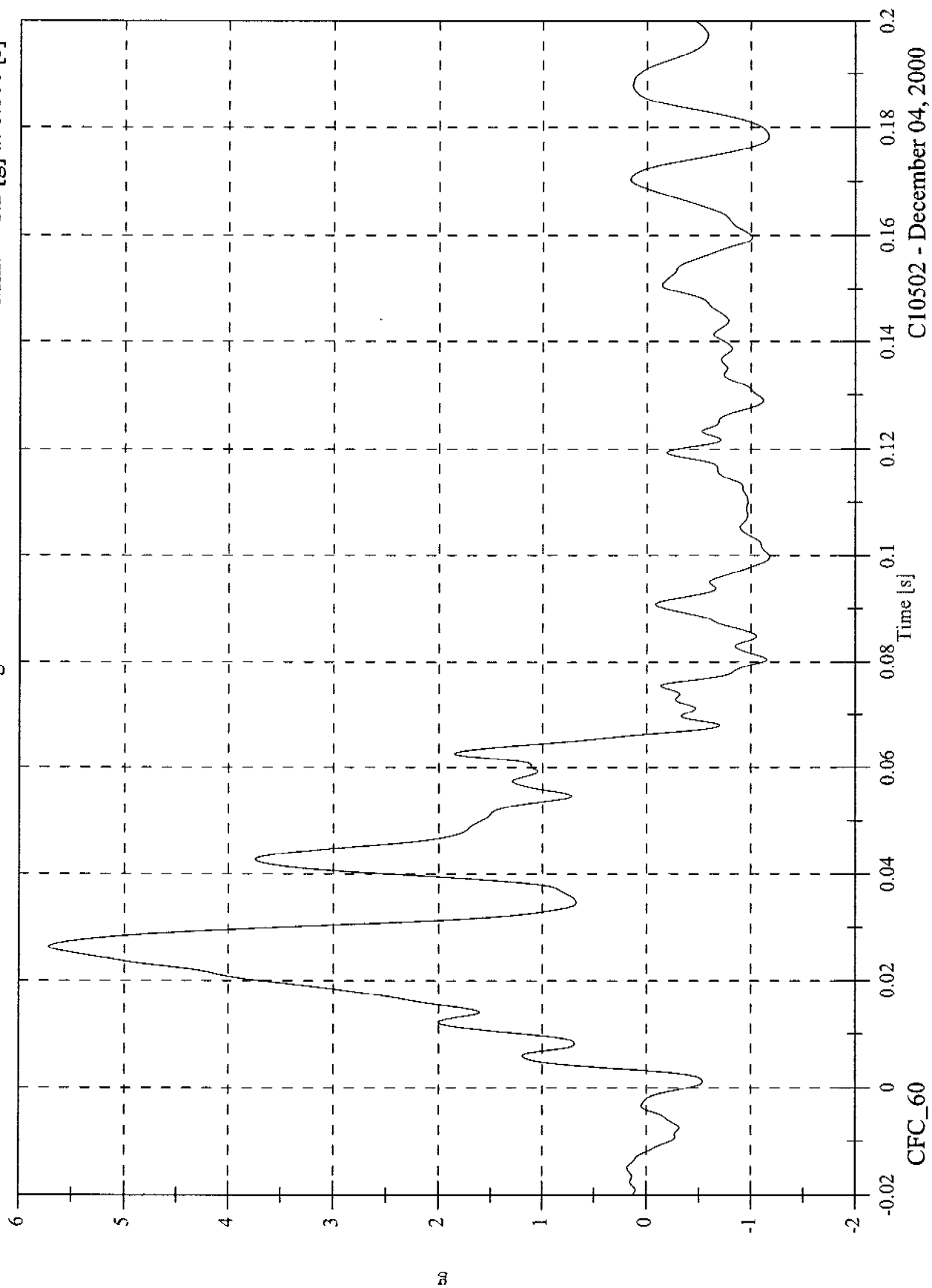


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FMVSS 214D Test #5 - 2001 Daewoo Leganza

Moving Barrier Left Rail Y

Max: 5.7 [g] at 0.026 [s]
Min: -1.2 [g] at 0.100 [s]

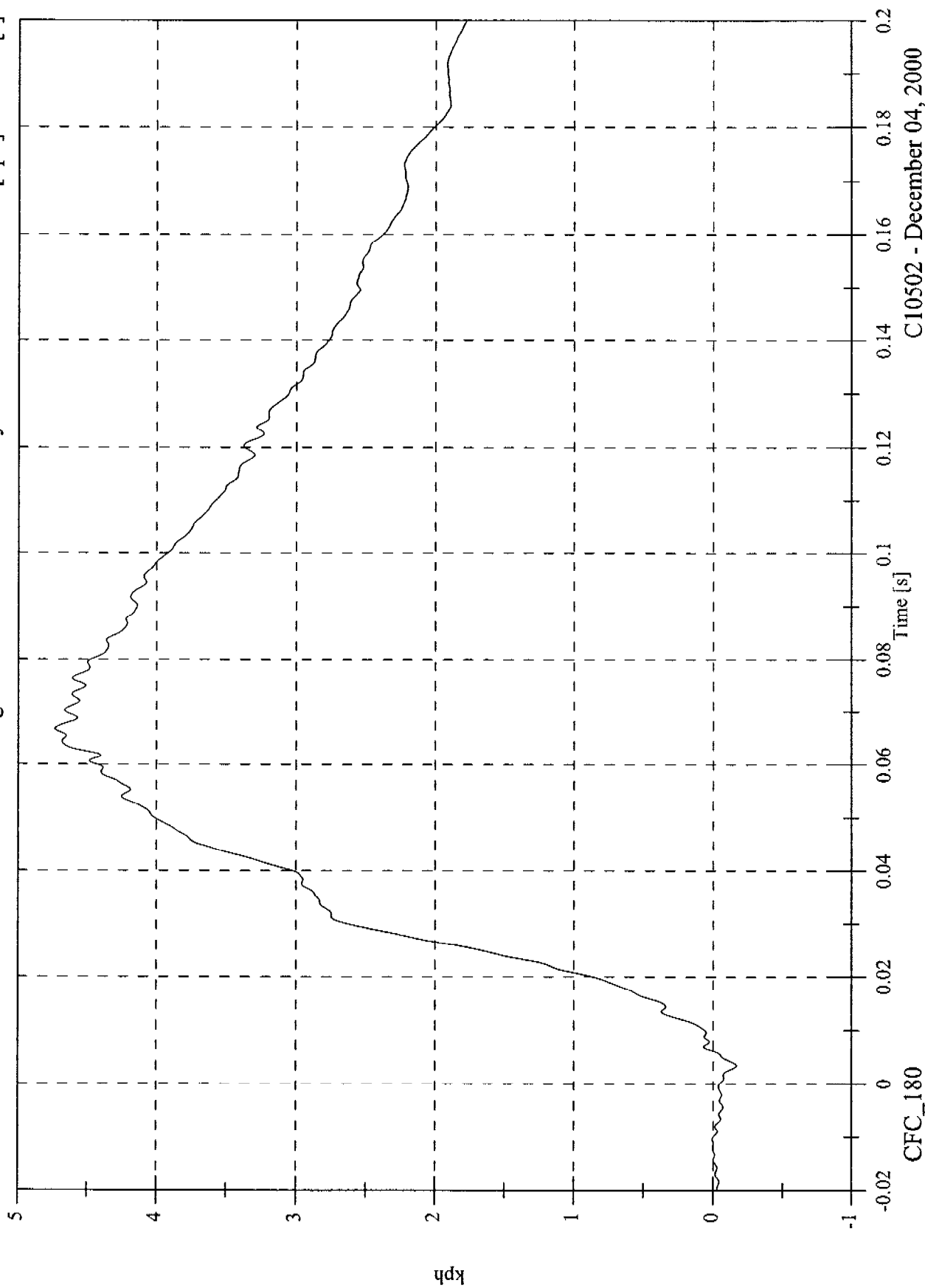


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FMVSS 214D Test #5 - 2001 Daewoo Leganza

Moving Barrier Left Rail Y Velocity

Max: 4.7 [kph] at 0.067 [s]
Min: -0.2 [kph] at 0.003 [s]

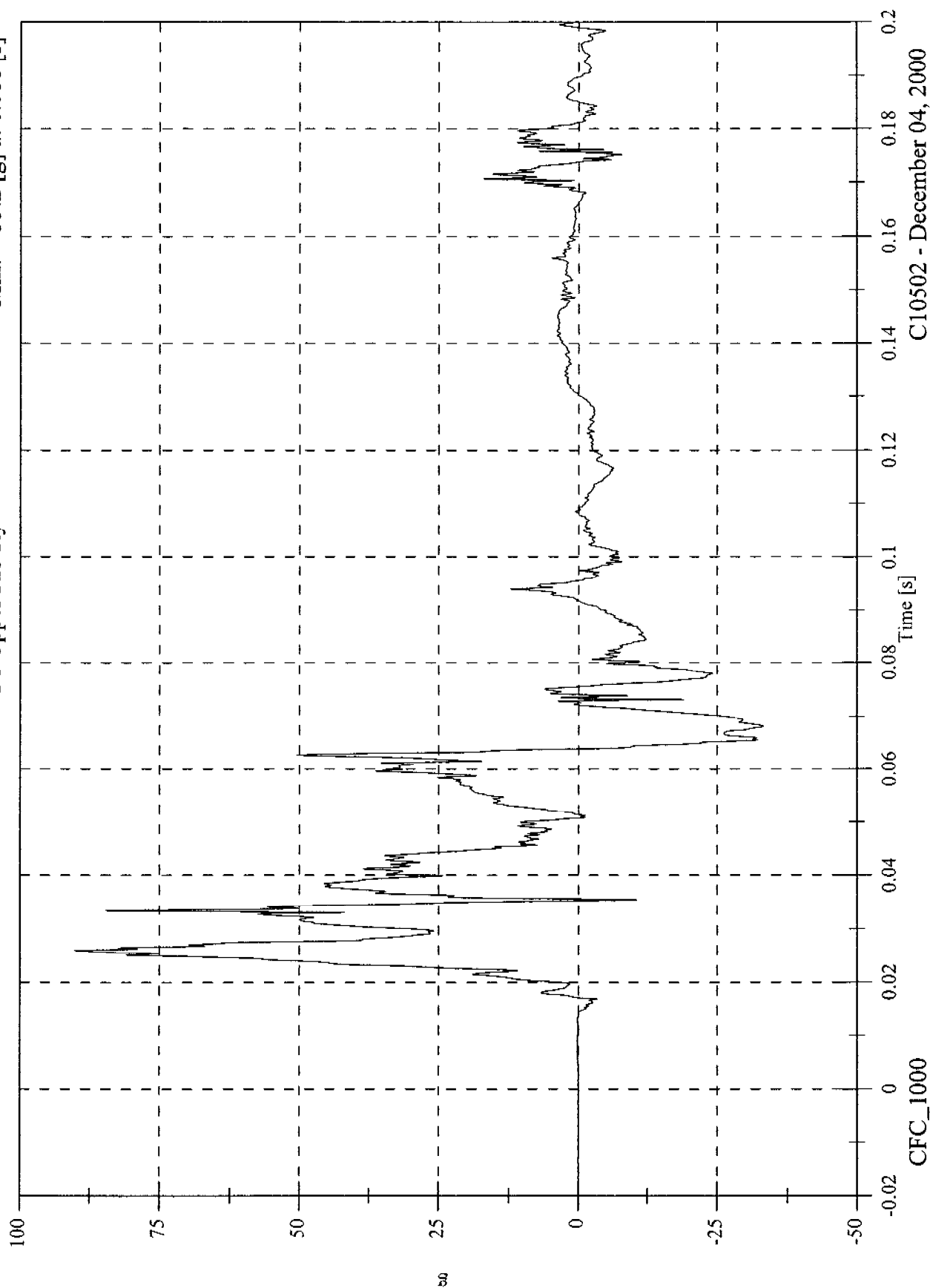


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FMVSS 214D Test #5 - 2001 Daewoo Leganza

P1 Upper Rib Ry

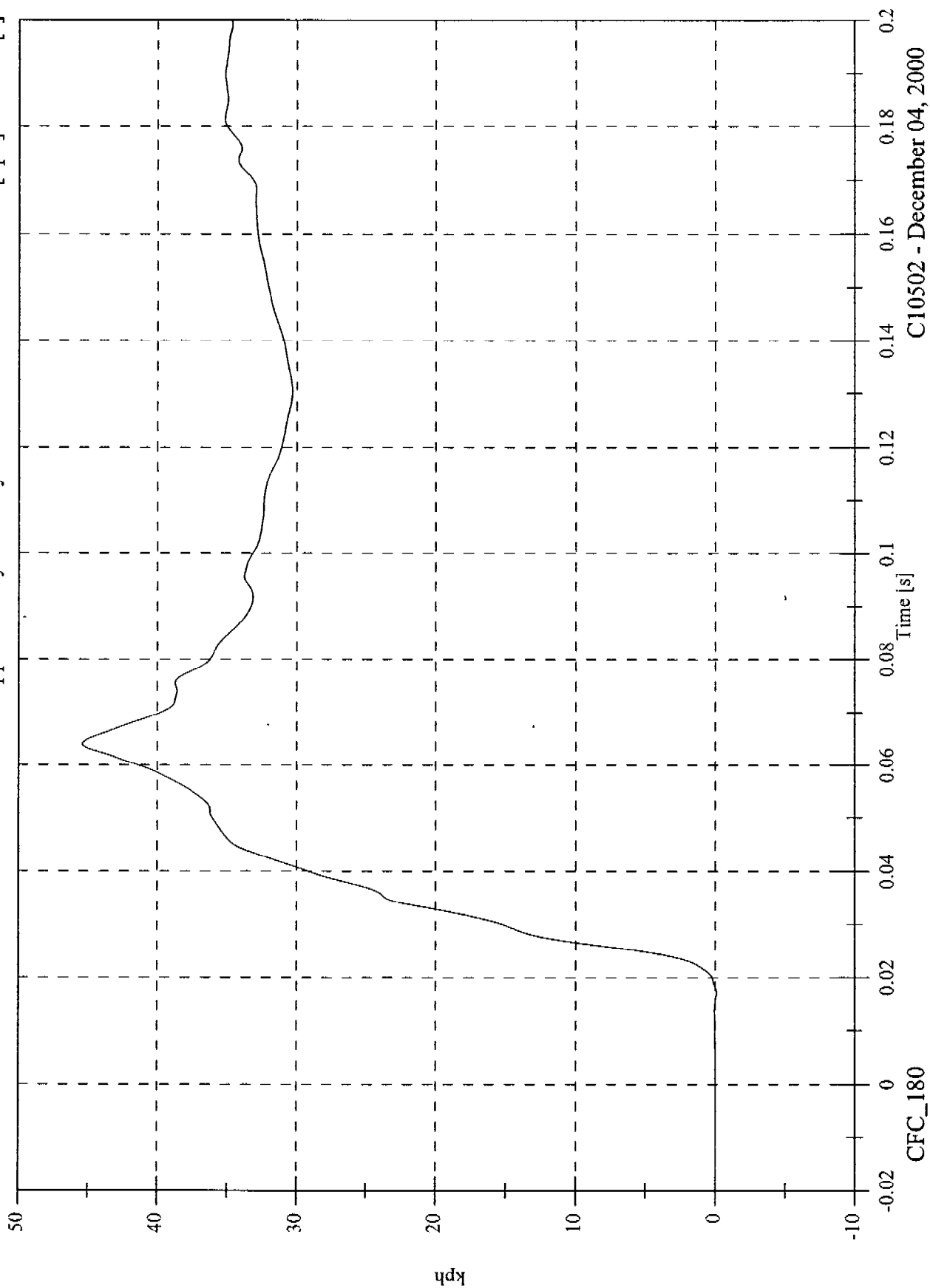
Max: 90.2 [g] at 0.026 [s]
Min: -33.2 [g] at 0.068 [s]



FMVSS 214D Test #5 - 2001 Daewoo Leganza

Max: 45.4 [kph] at 0.064 [s]
 Min: -0.1 [kph] at 0.017 [s]

P1 Upper Rib Ry Velocity

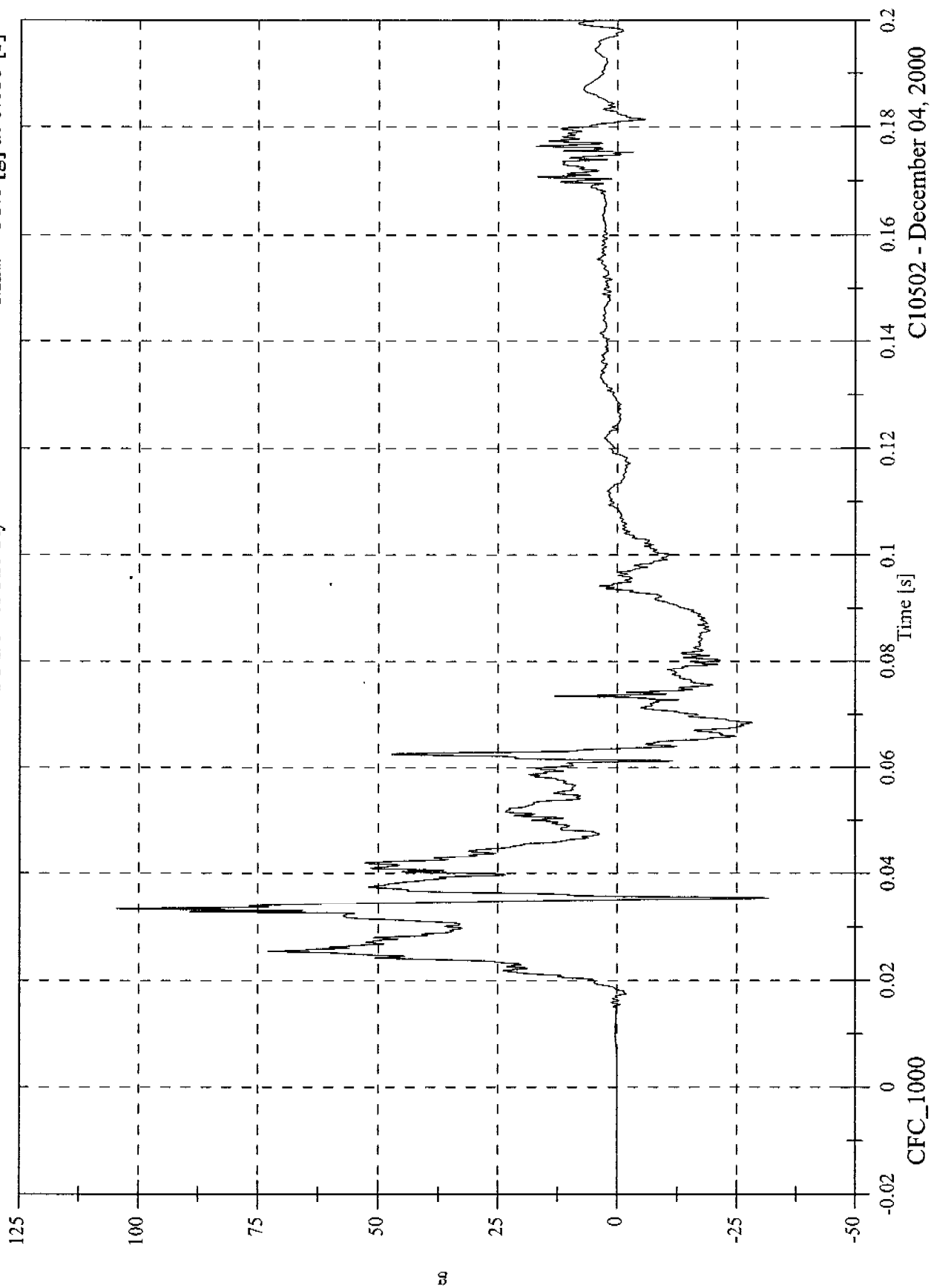


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FMVSS 214D Test #5 - 2001 Daewoo Leganza

P1 Lower Rib Ry

Max: 104.6 [g] at 0.033 [s]
Min: -31.6 [g] at 0.035 [s]

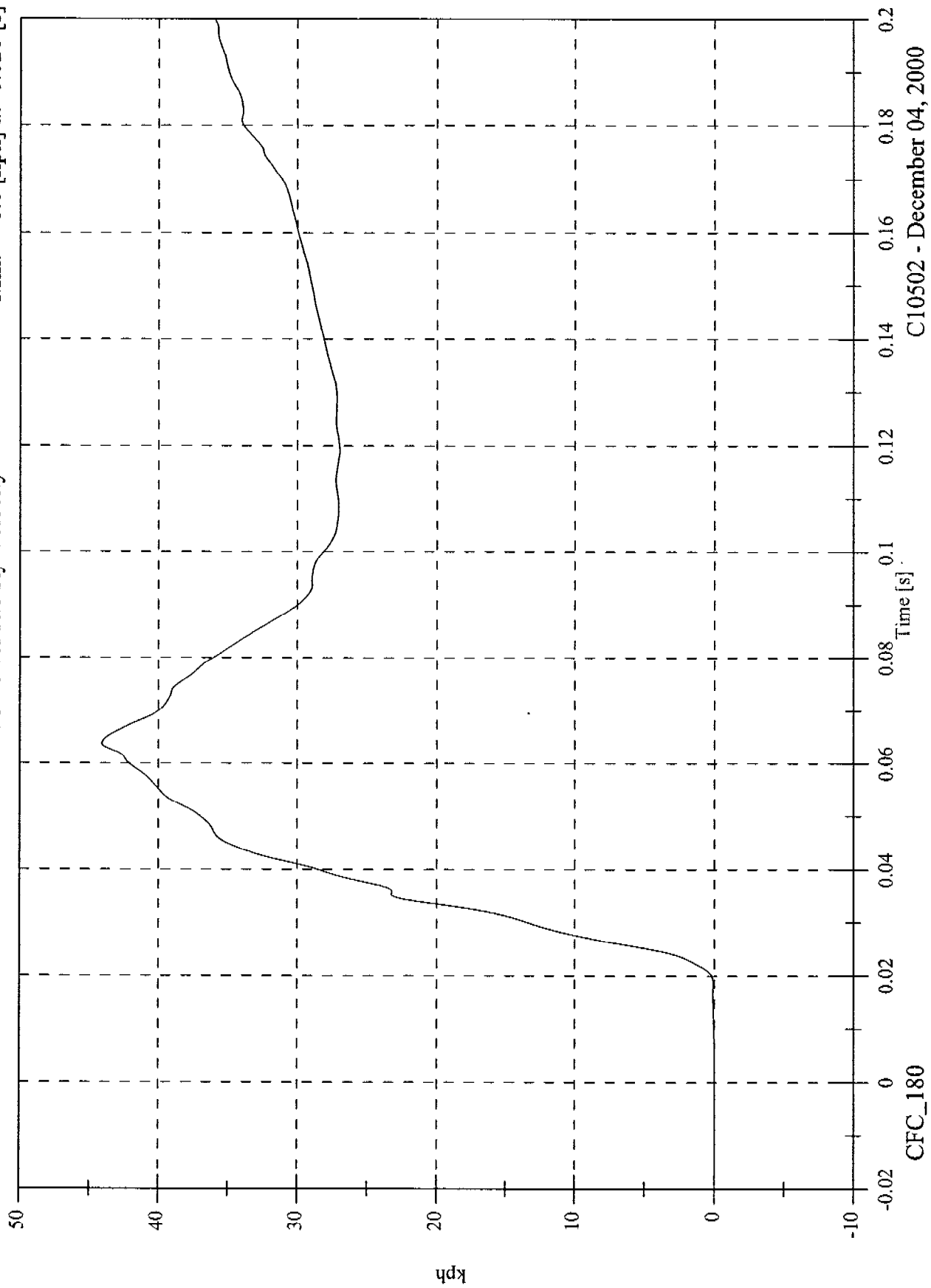


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FMVSS 214D Test #5 - 2001 Daewoo Leganza

P1 Lower Rib Ry Velocity

Max: 44.1 [kph] at 0.064 [s]
Min: -0.0 [kph] at -0.020 [s]

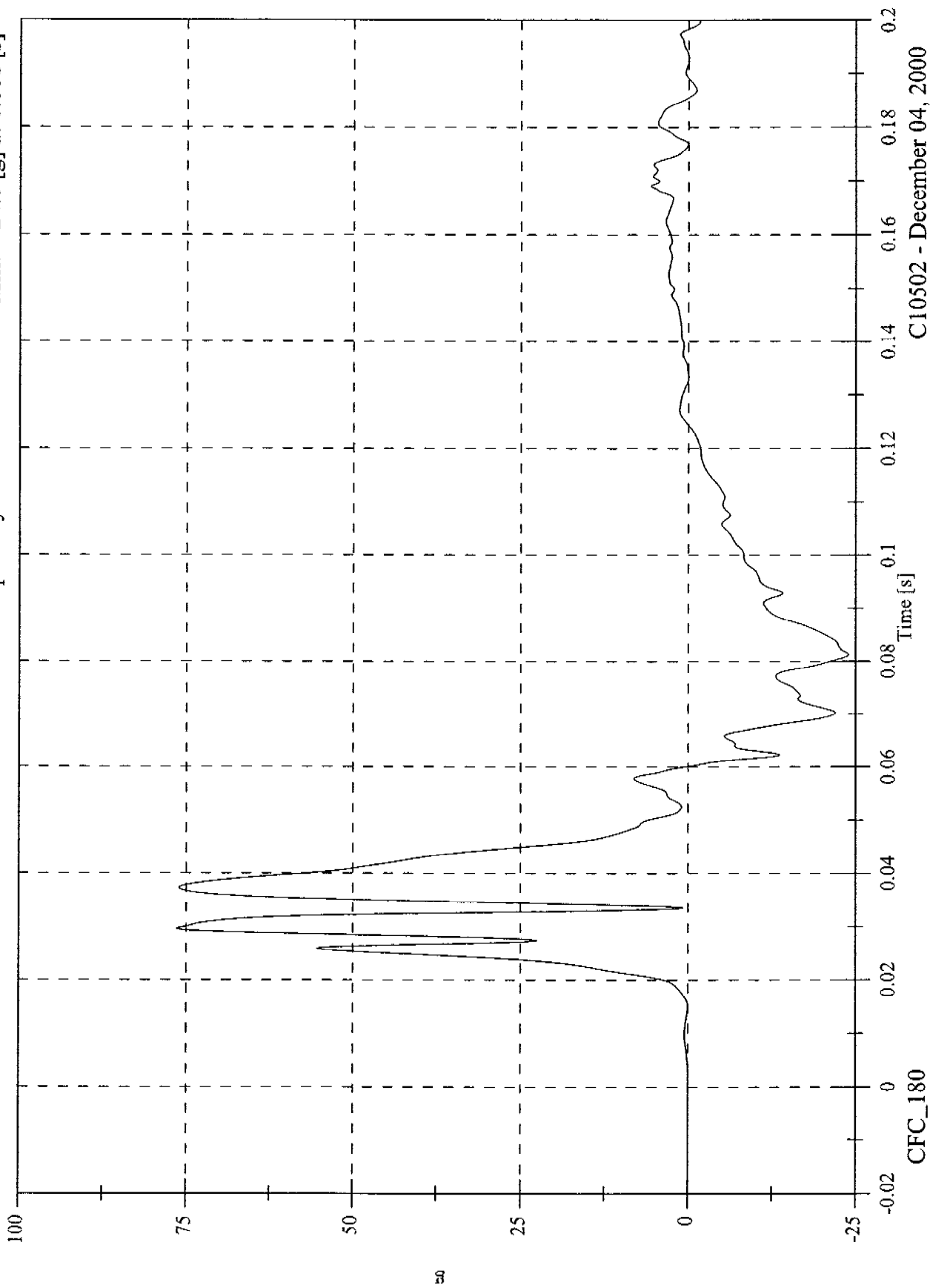


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FMVSS 214D Test #5 - 2001 Daewoo Leganza

Max: 76.4 [g] at 0.030 [s]
Min: -24.0 [g] at 0.081 [s]

P1 Lower Spine Ry

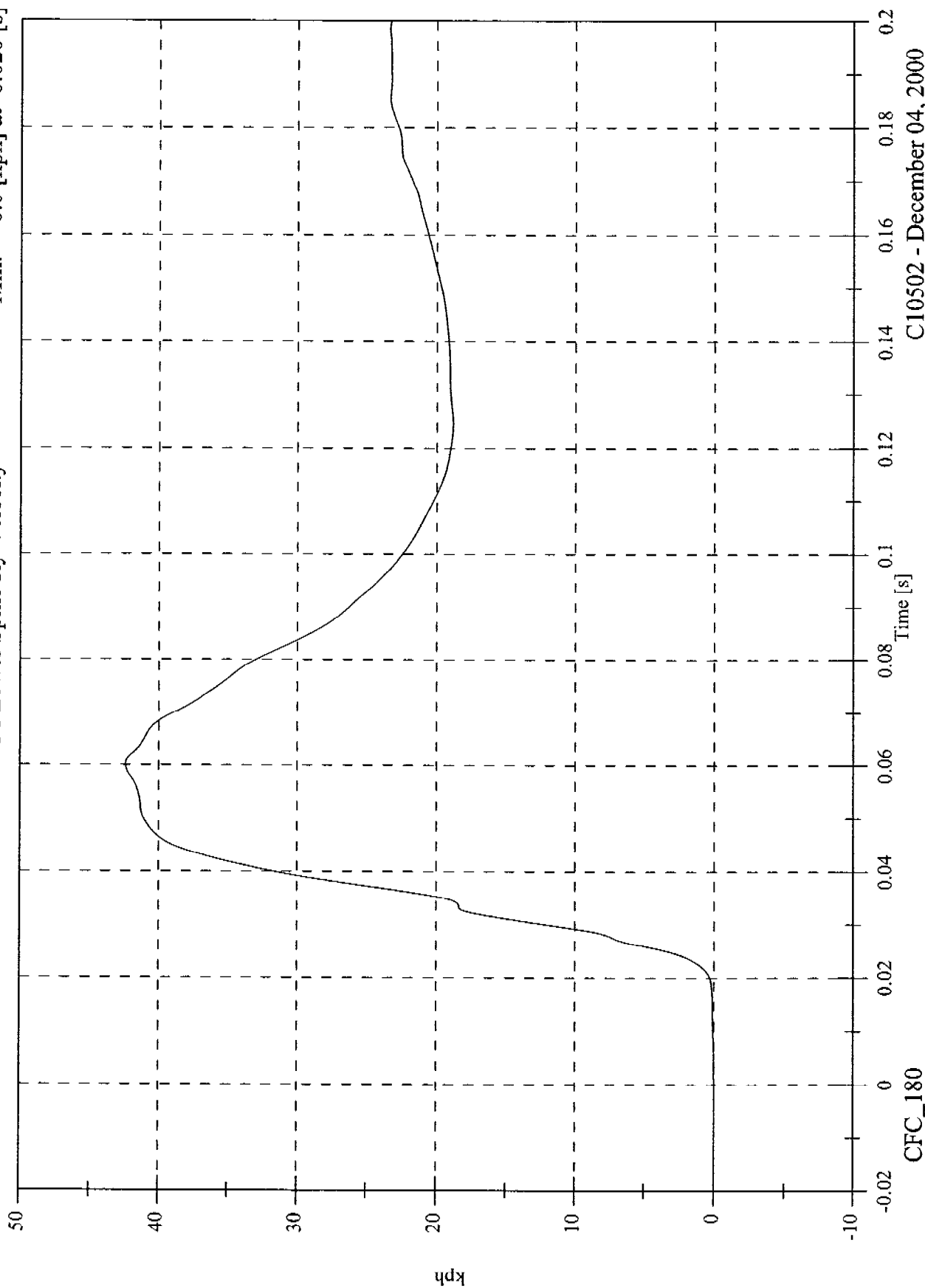


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FMVSS 214D Test #5 - 2001 Daewoo Leganza

Max: 42.4 [kph] at 0.060 [s]
Min: -0.0 [kph] at -0.020 [s]

P1 Lower Spine Ry Velocity

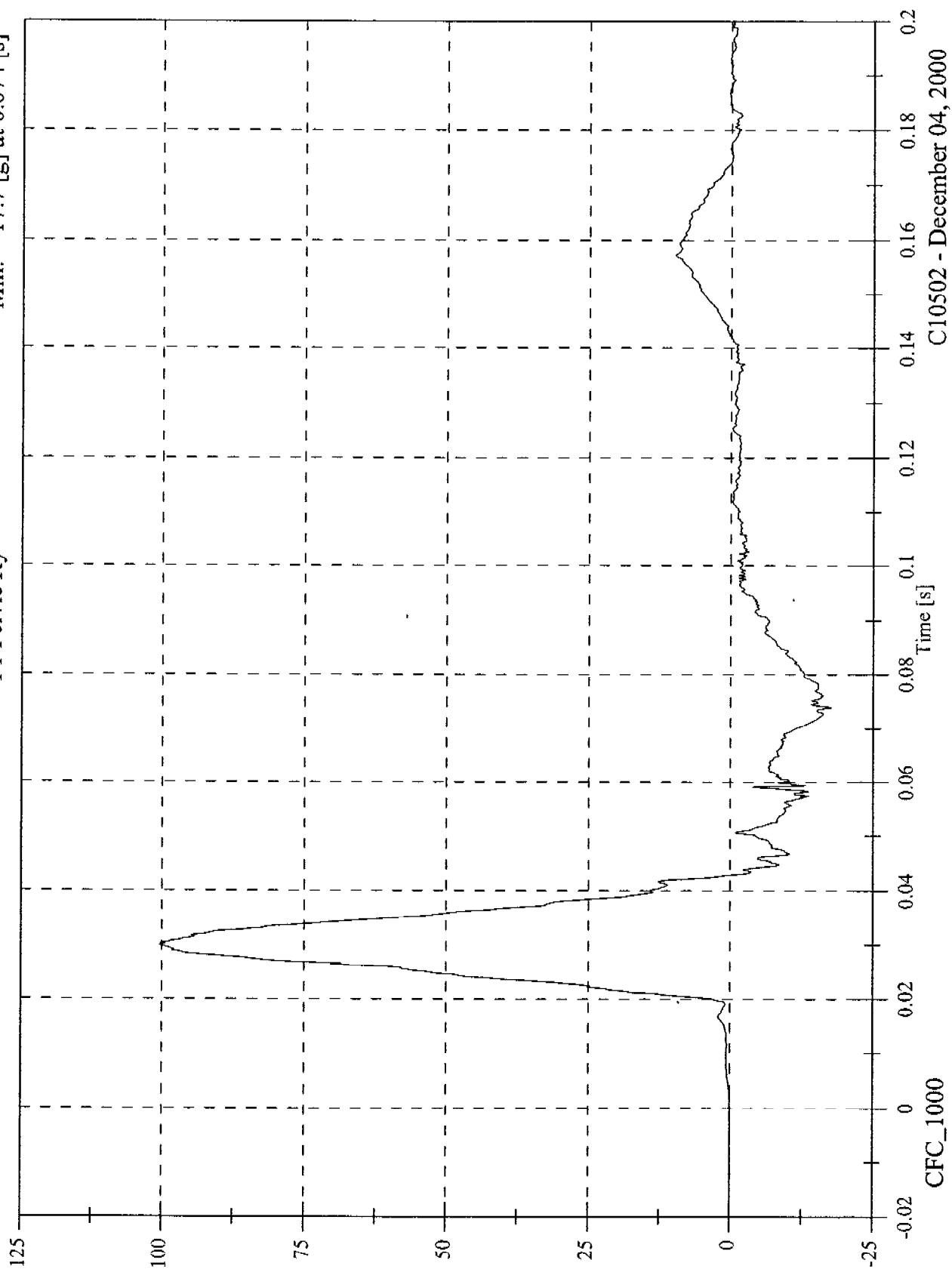


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FMVSS 214D Test #5 - 2001 Daewoo Leganza

P1 Pelvic Ry

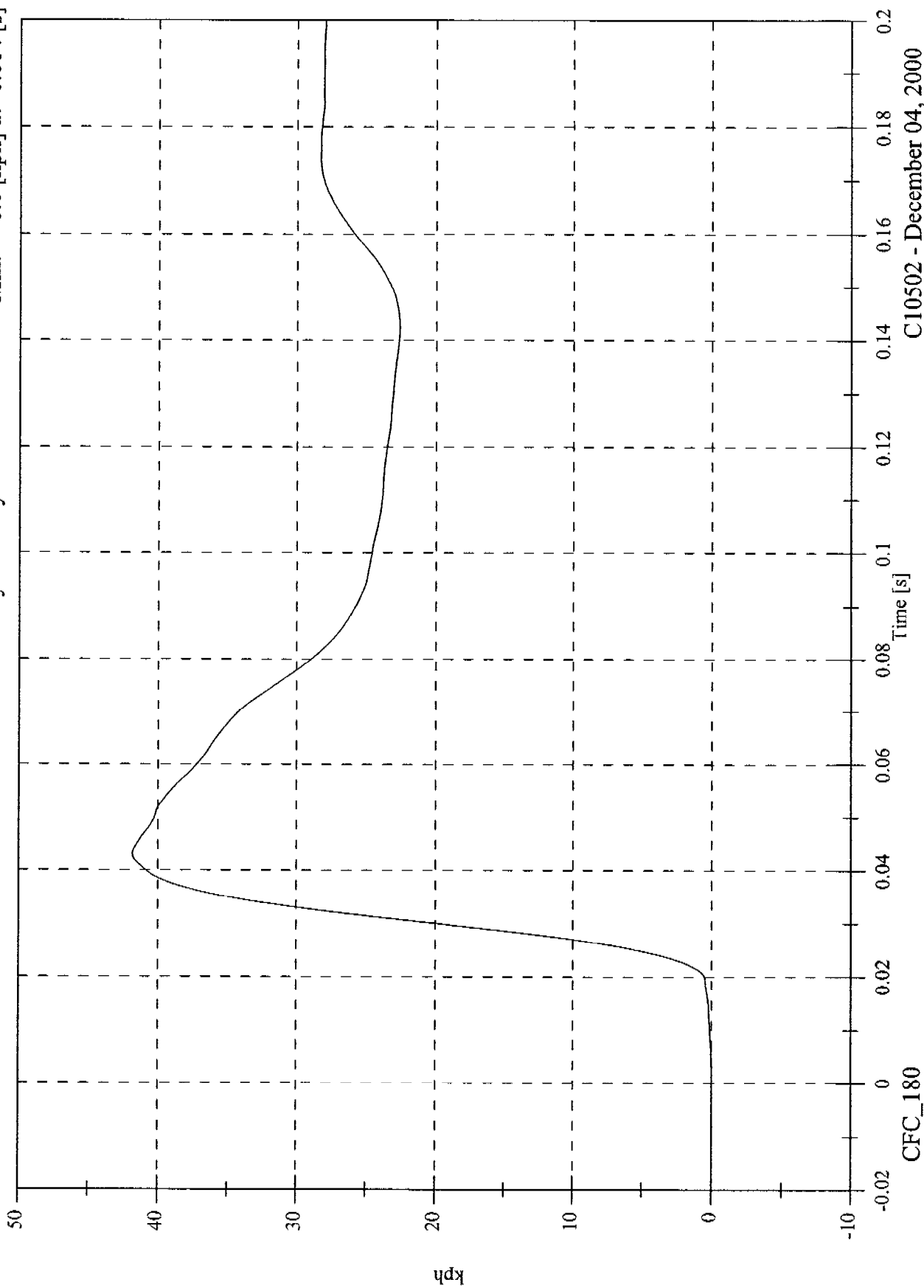
Max: 100.4 [g] at 0.030 [s]
Min: -17.7 [g] at 0.074 [s]



FMVSS 214D Test #5 - 2001 Daewoo Leganza

Max: 41.8 [kph] at 0.043 [s]
Min: -0.0 [kph] at -0.014 [s]

P1 Pelvic Ry Velocity

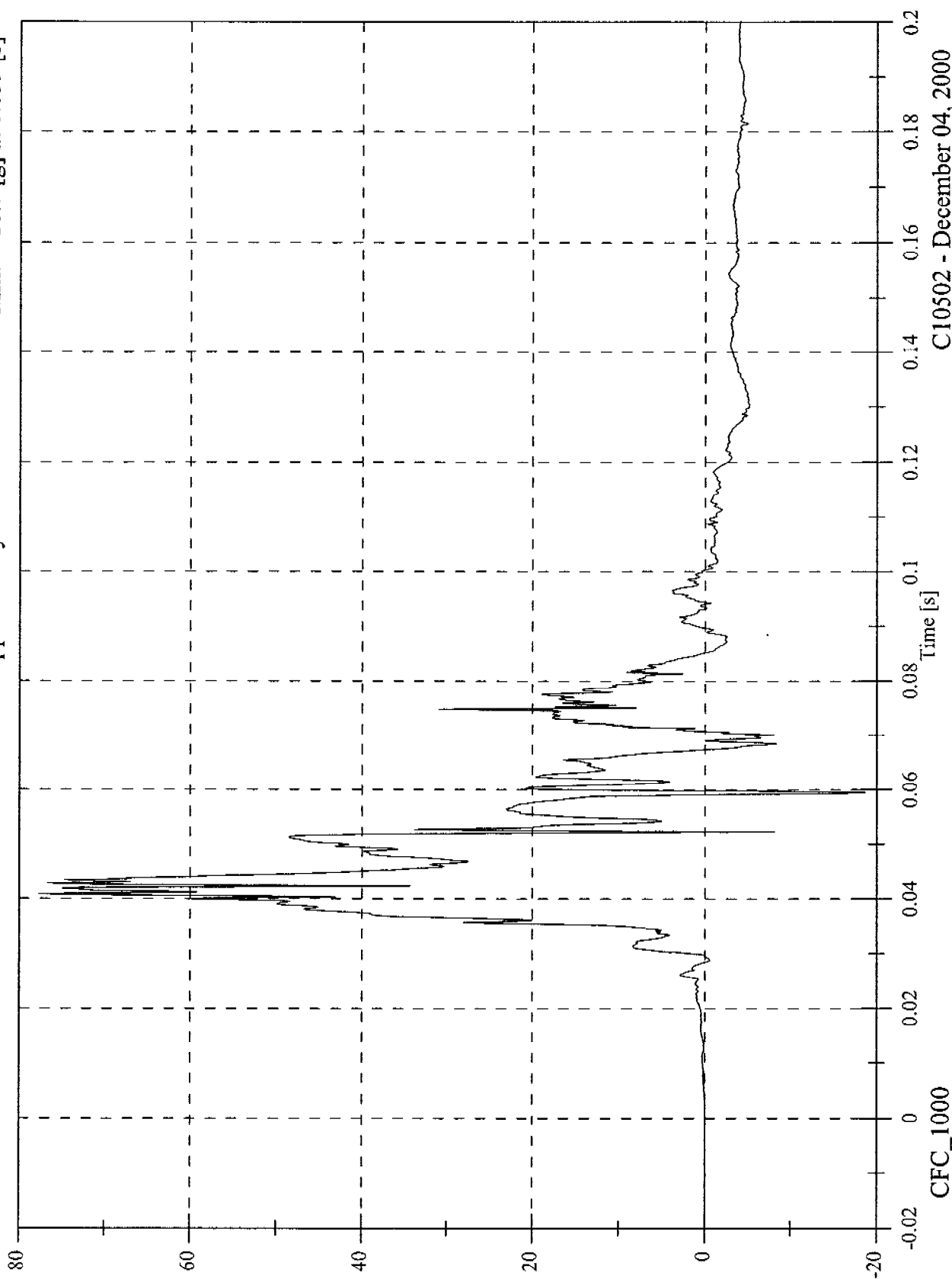


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FMVSS 214D Test #5 - 2001 Daewoo Leganza

Max: 77.7 [g] at 0.041 [s]
Min: -18.7 [g] at 0.059 [s]

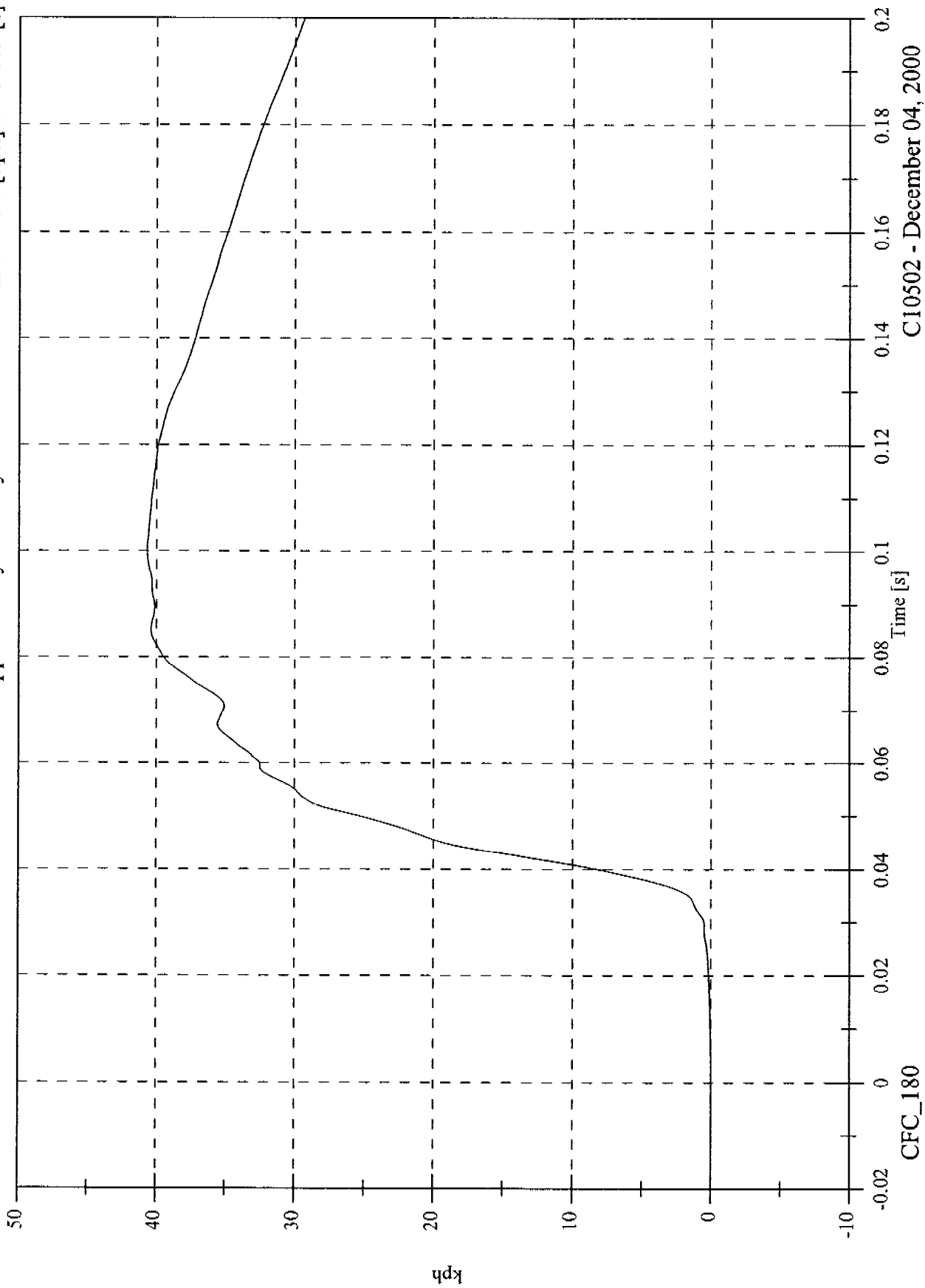
P4 Upper Rib Ry



FMVSS 214D Test #5 - 2001 Daewoo Leganza

P4 Upper Rib Ry Velocity

Max: 40.7 [kph] at 0.100 [s]
Min: -0.0 [kph] at -0.009 [s]

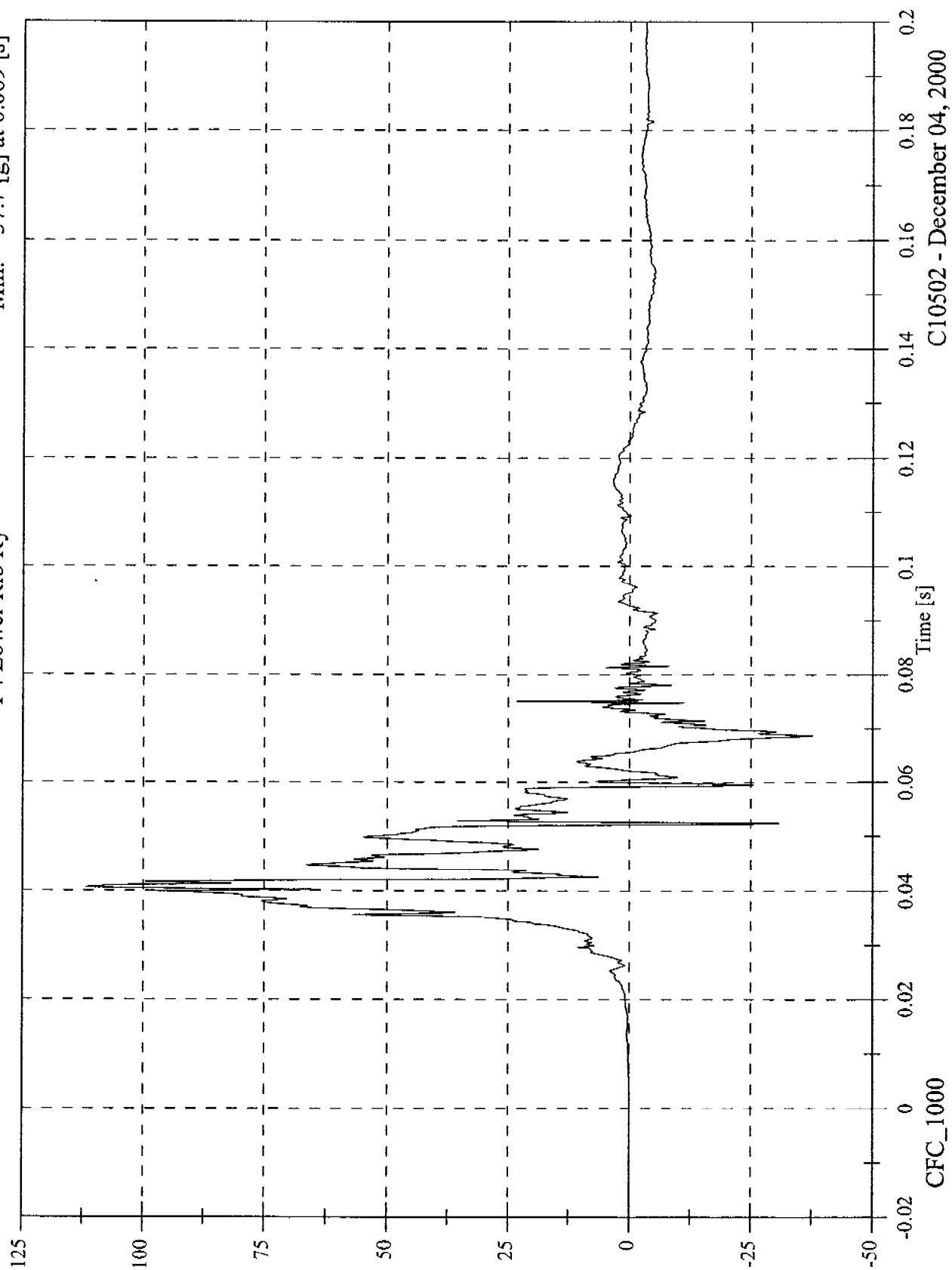


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FMVSS 214D Test #5 - 2001 Daewoo Leganza

Max: 111.9 [g] at 0.041 [s]
Min: -37.7 [g] at 0.069 [s]

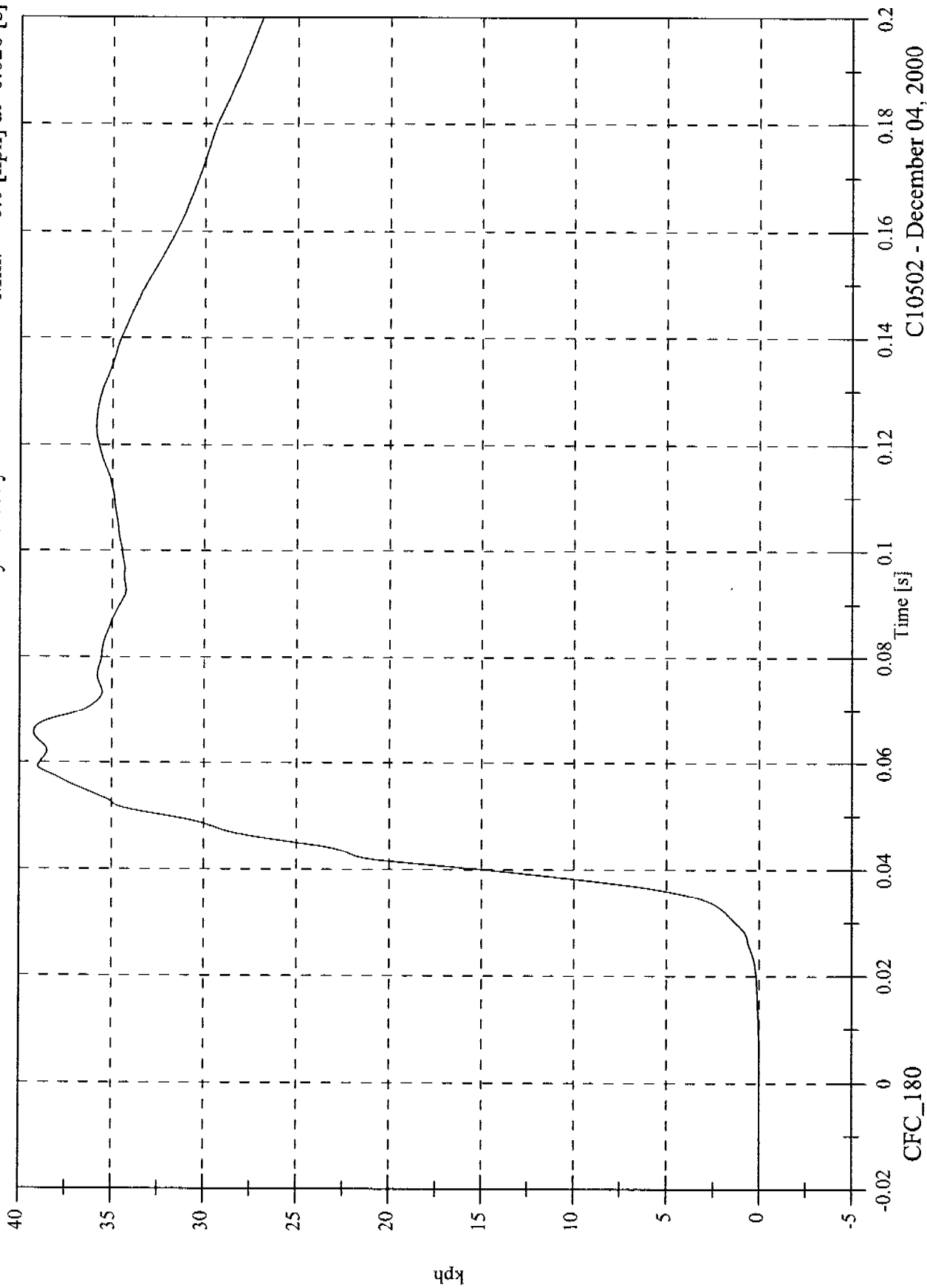
P4 Lower Rib Ry



FMVSS 214D Test #5 - 2001 Daewoo Leganza

P4 Lower Rib Ry Velocity

Max: 39.2 [kph] at 0.066 [s]
Min: -0.0 [kph] at -0.020 [s]



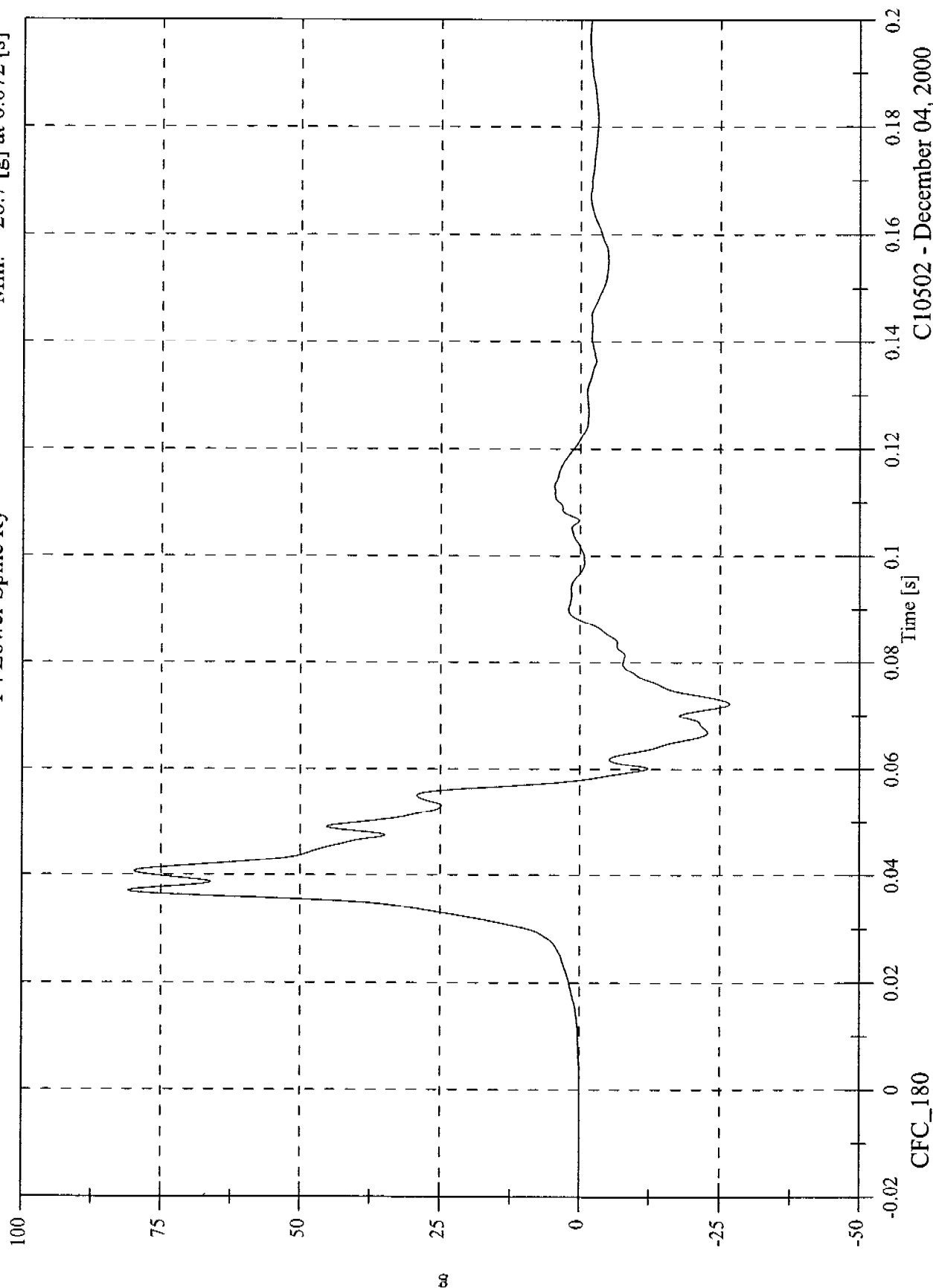
C10502 - December 04, 2000

FMVSS 214D Test #5 - 2001 Daewoo Leganza

P4 Lower Spine Ry

Max: 80.9 [g] at 0.037 [s]

Min: -26.7 [g] at 0.072 [s]

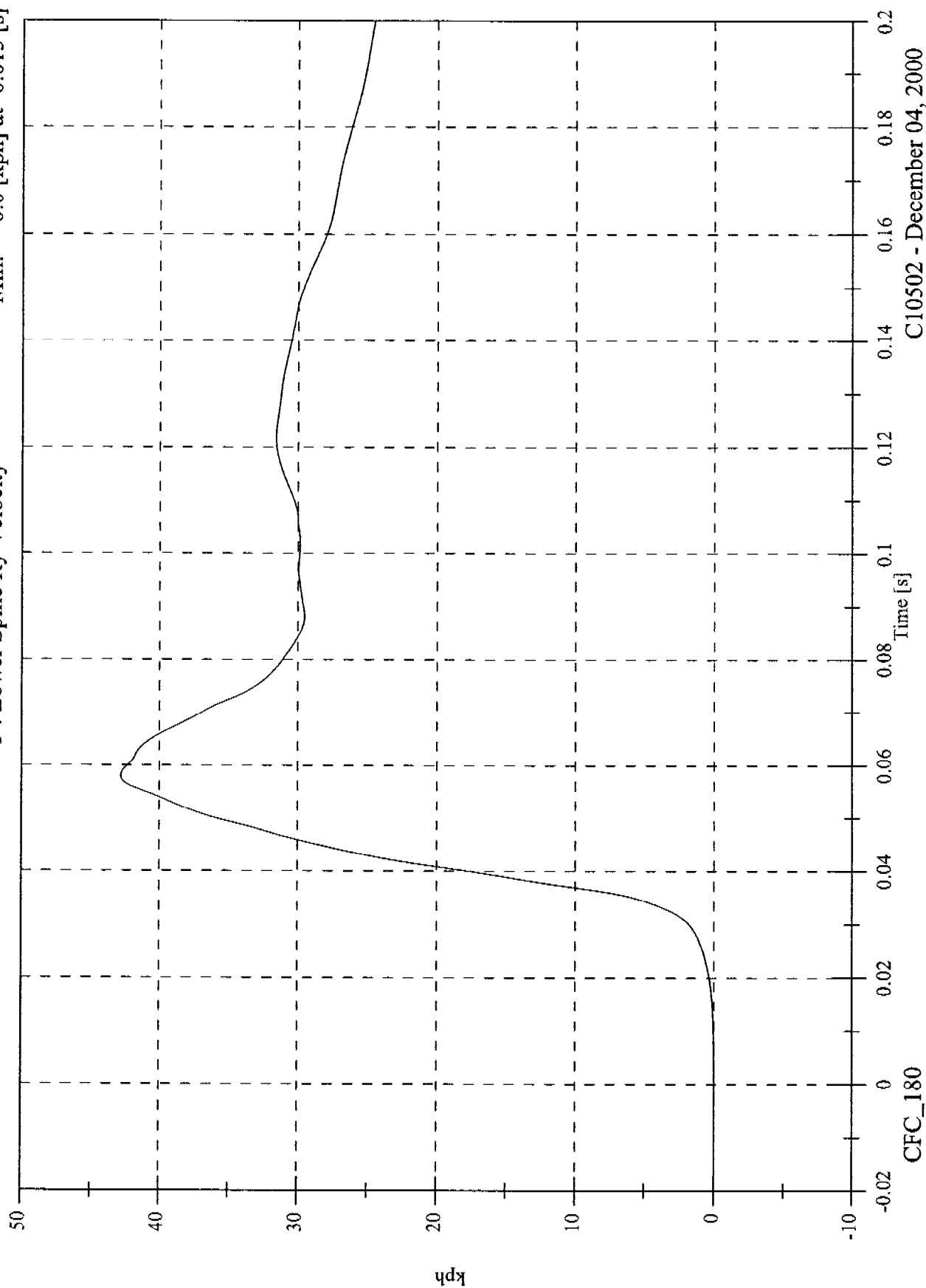


C10502 - December 04, 2000

FMVSS 214D Test #5 - 2001 Daewoo Leganza

P4 Lower Spine Ry Velocity

Max: 42.8 [kph] at 0.058 [s]
Min: -0.0 [kph] at -0.015 [s]

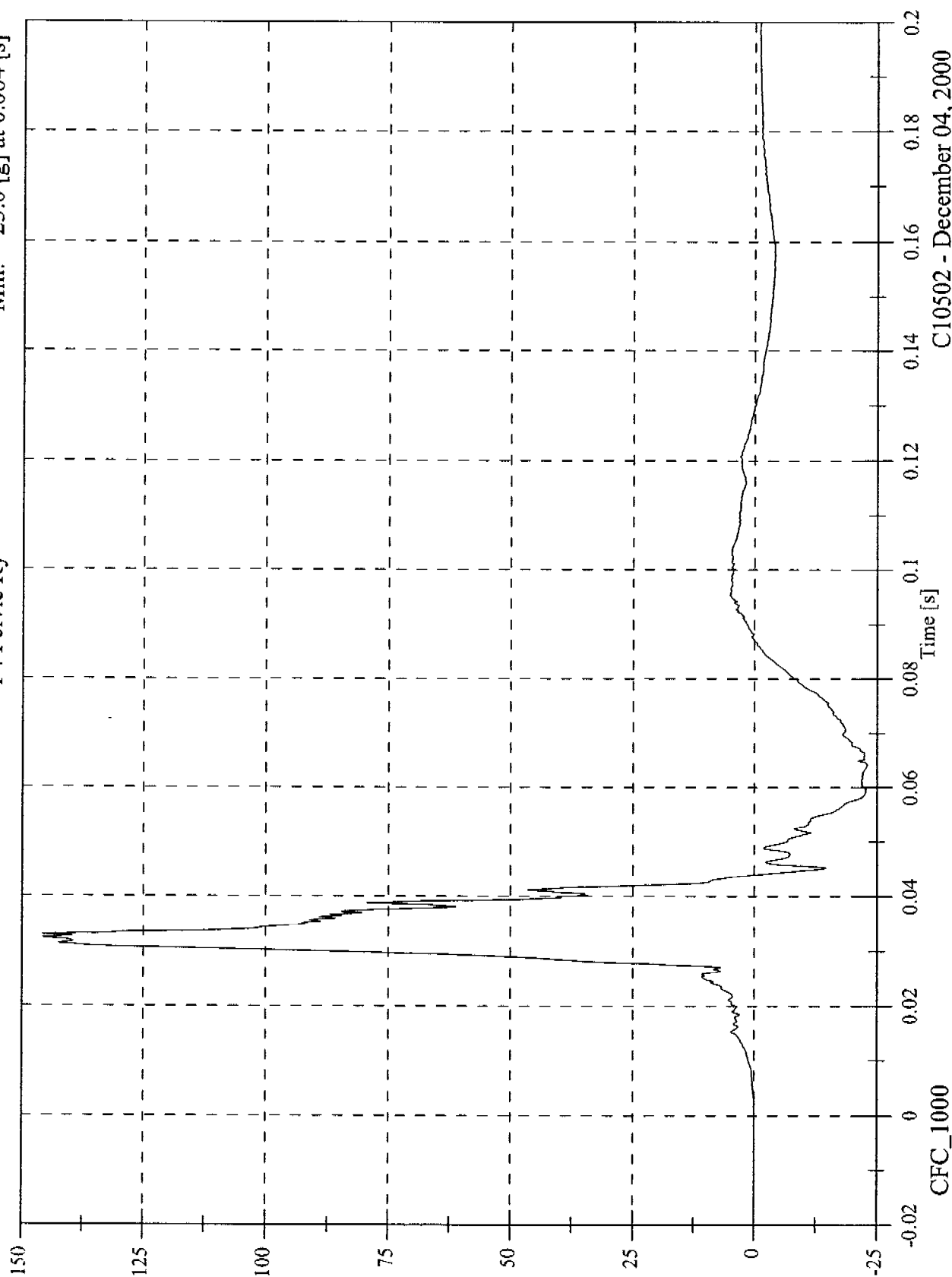


C10502 - December 04, 2000

FMVSS 214D Test #5 - 2001 Daewoo Leganza

Max: 145.8 [g] at 0.033 [s]
Min: -23.0 [g] at 0.064 [s]

P4 Pelvic Ry

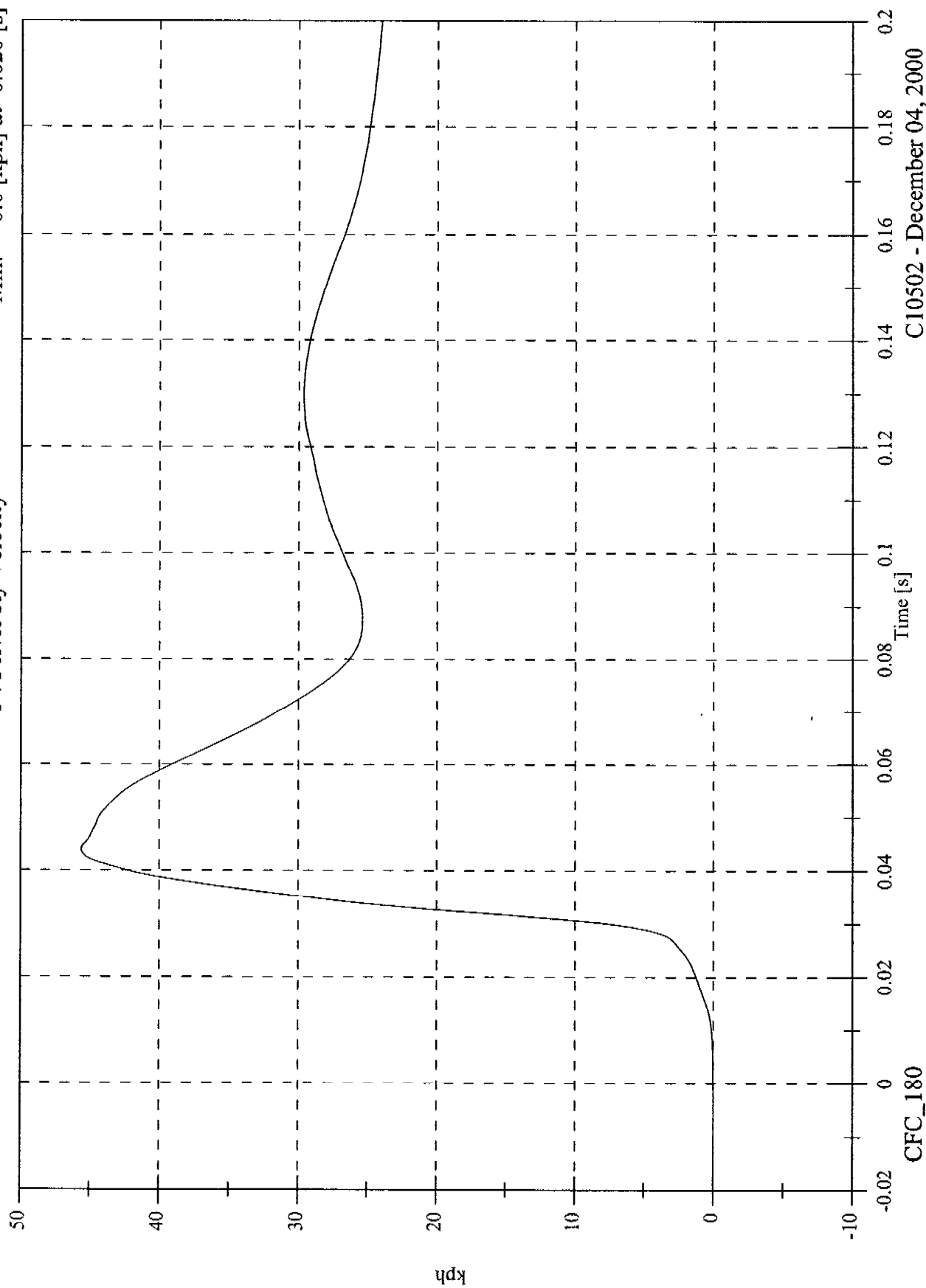


C10502 - December 04, 2000

FMVSS 214D Test #5 - 2001 Daewoo Leganza

Max: 45.6 [kph] at 0.044 [s]
Min: -0.0 [kph] at -0.020 [s]

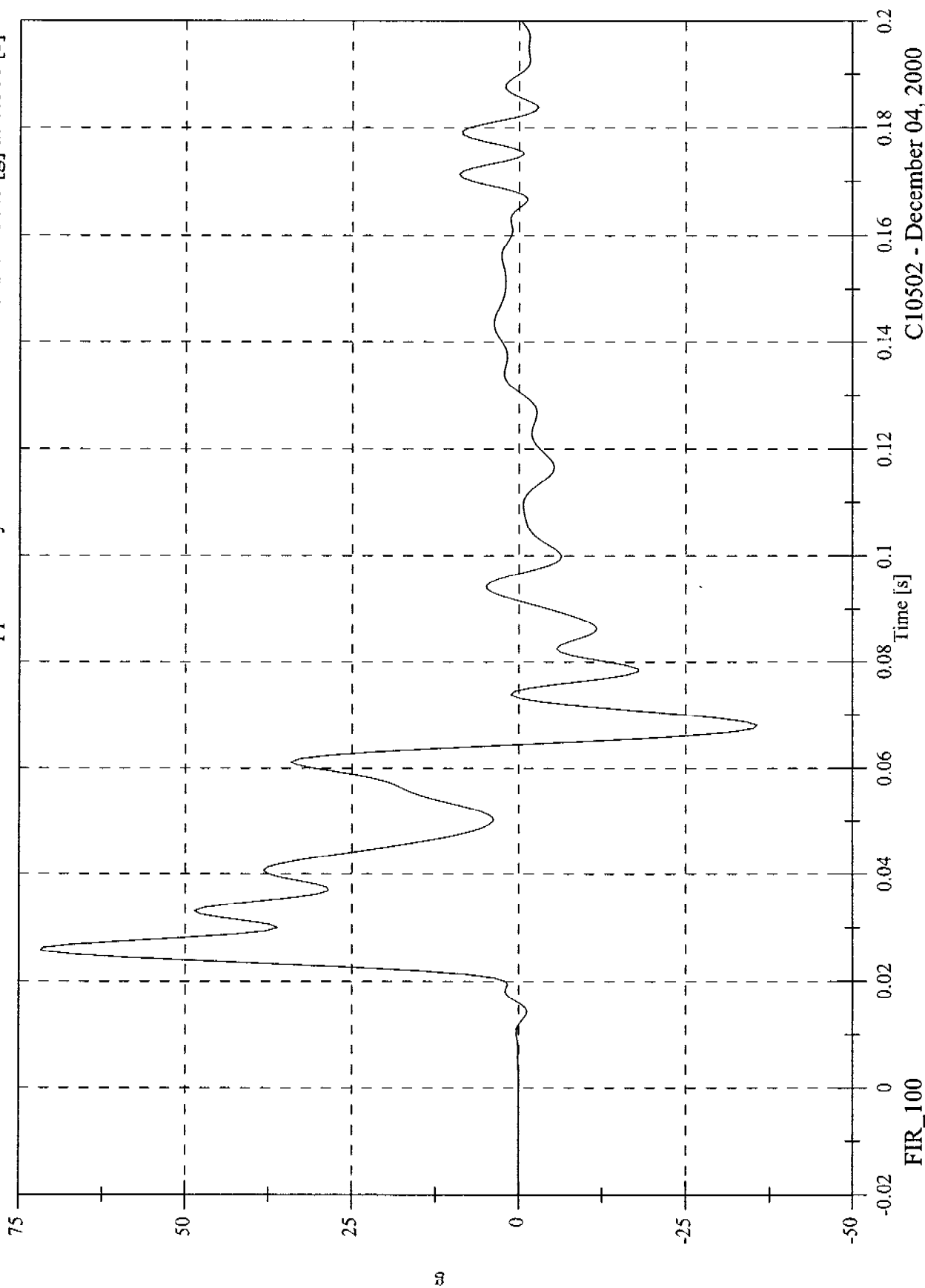
P4 Pelvic Ry Velocity



FMVSS 214D Test #5 - 2001 Daewoo Leganza

P1 Upper Rib Ry

Max: 71.6 [g] at 0.026 [s]
Min: -35.6 [g] at 0.068 [s]

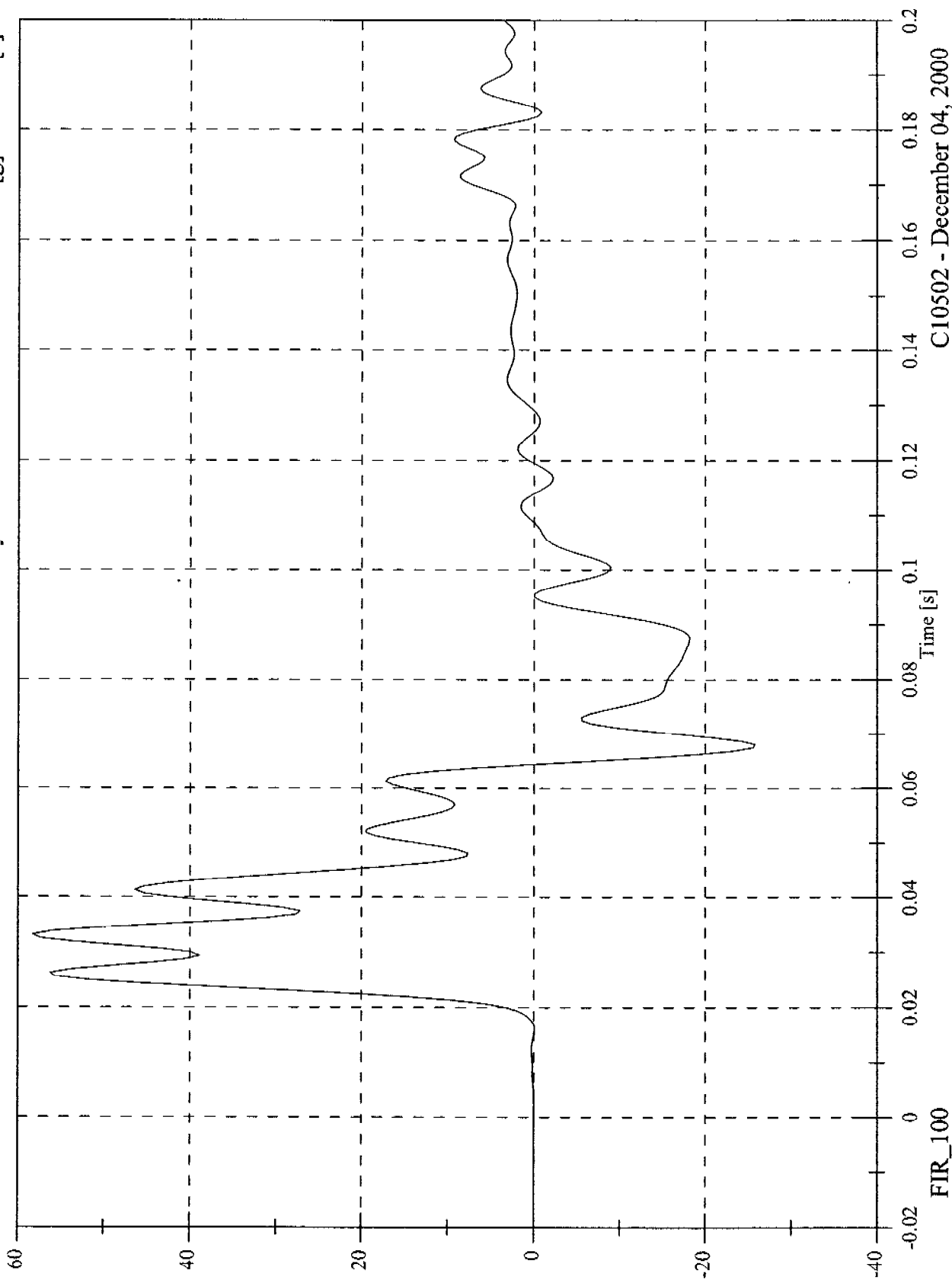


C10502 - December 04, 2000

FMVSS 214D Test #5 - 2001 Daewoo Leganza

P1 Lower Rib Ry

Max: 58.3 [g] at 0.033 [s]
Min: -25.8 [g] at 0.068 [s]



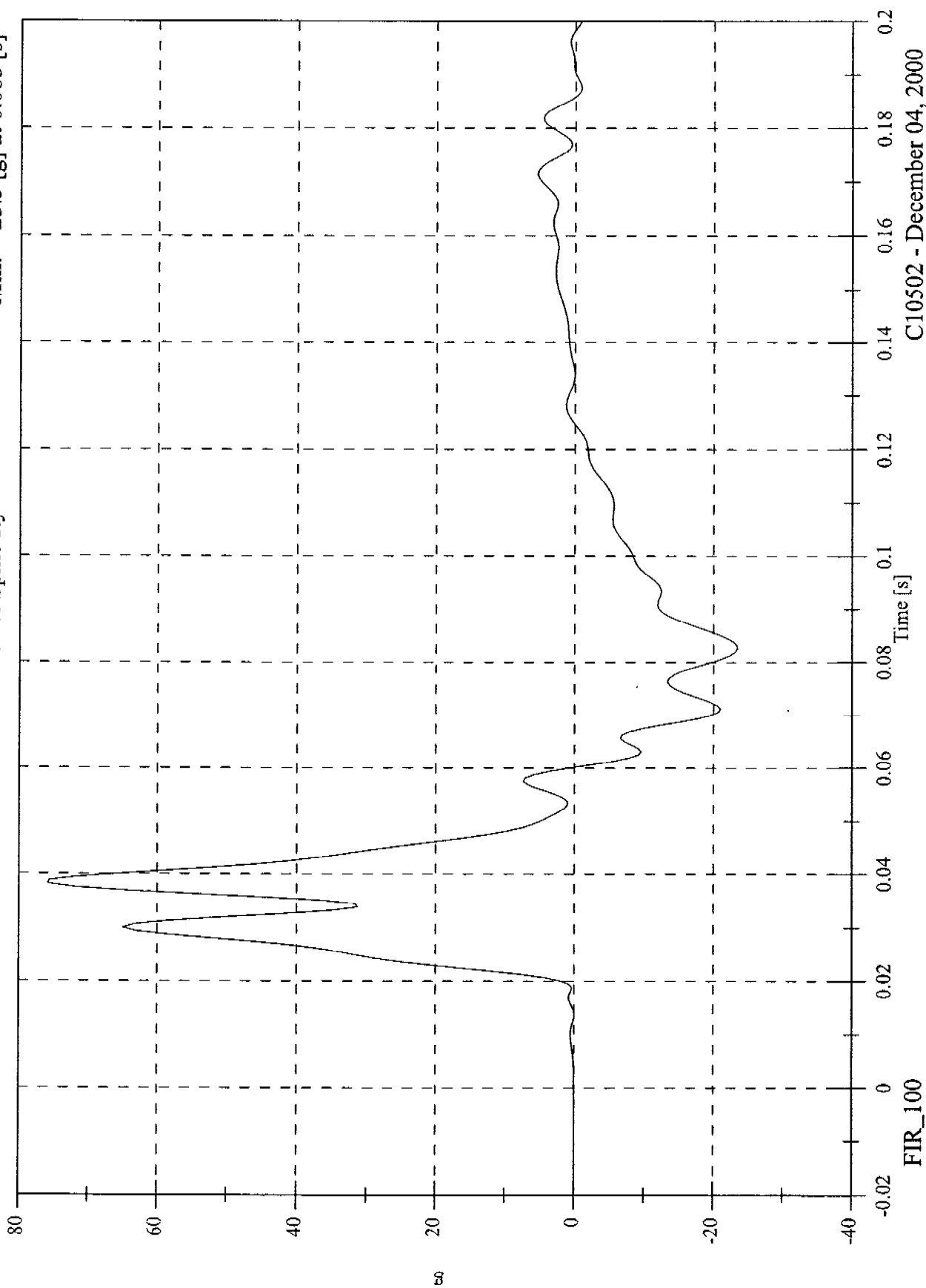
C10502 - December 04, 2000

FMVSS 214D Test #5 - 2001 Daewoo Leganza

Max: 75.8 [g] at 0.038 [s]

Min: -23.5 [g] at 0.083 [s]

P1 Lower Spine Ry

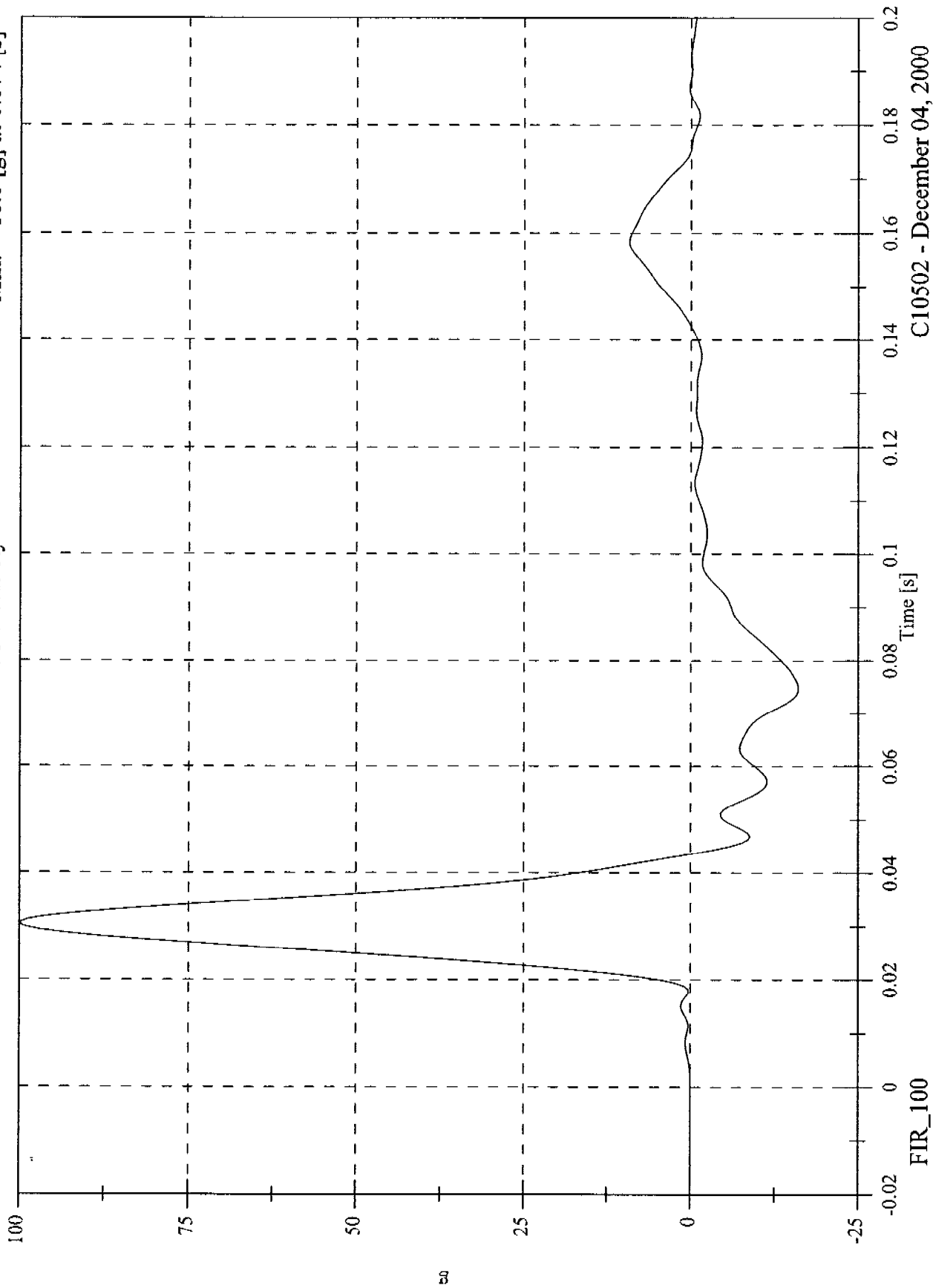


C10502 - December 04, 2000

FMVSS 214D Test #5 - 2001 Daewoo Leganza

P1 Pelvic Ry

Max: 100.0 [g] at 0.031 [s]
Min: -16.0 [g] at 0.074 [s]

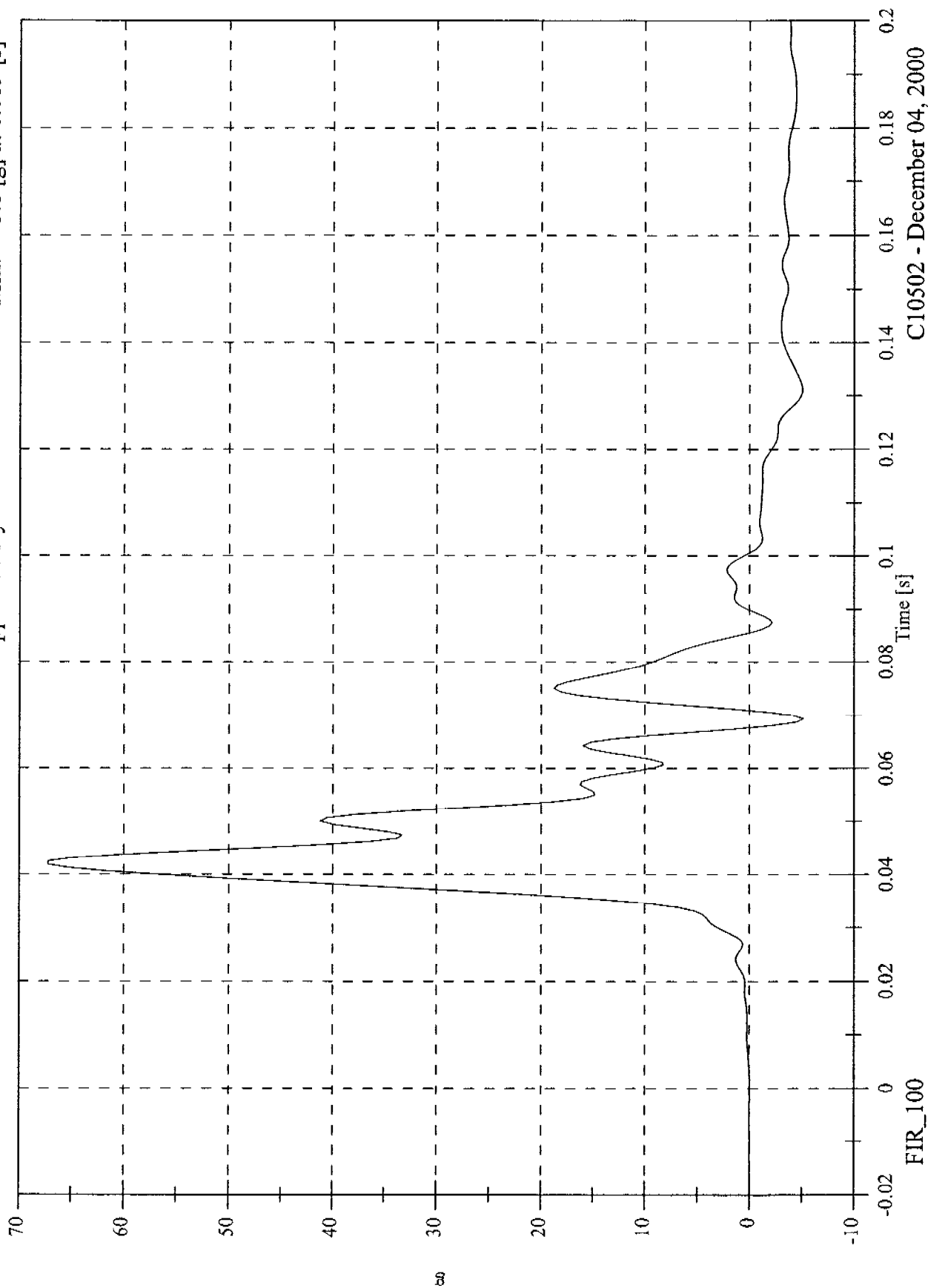


C10502 - December 04, 2000

FMVSS 214D Test #5 - 2001 Daewoo Leganza

P4 Upper Rib Ry

Max: 67.2 [g] at 0.042 [s]
Min: -5.1 [g] at 0.069 [s]

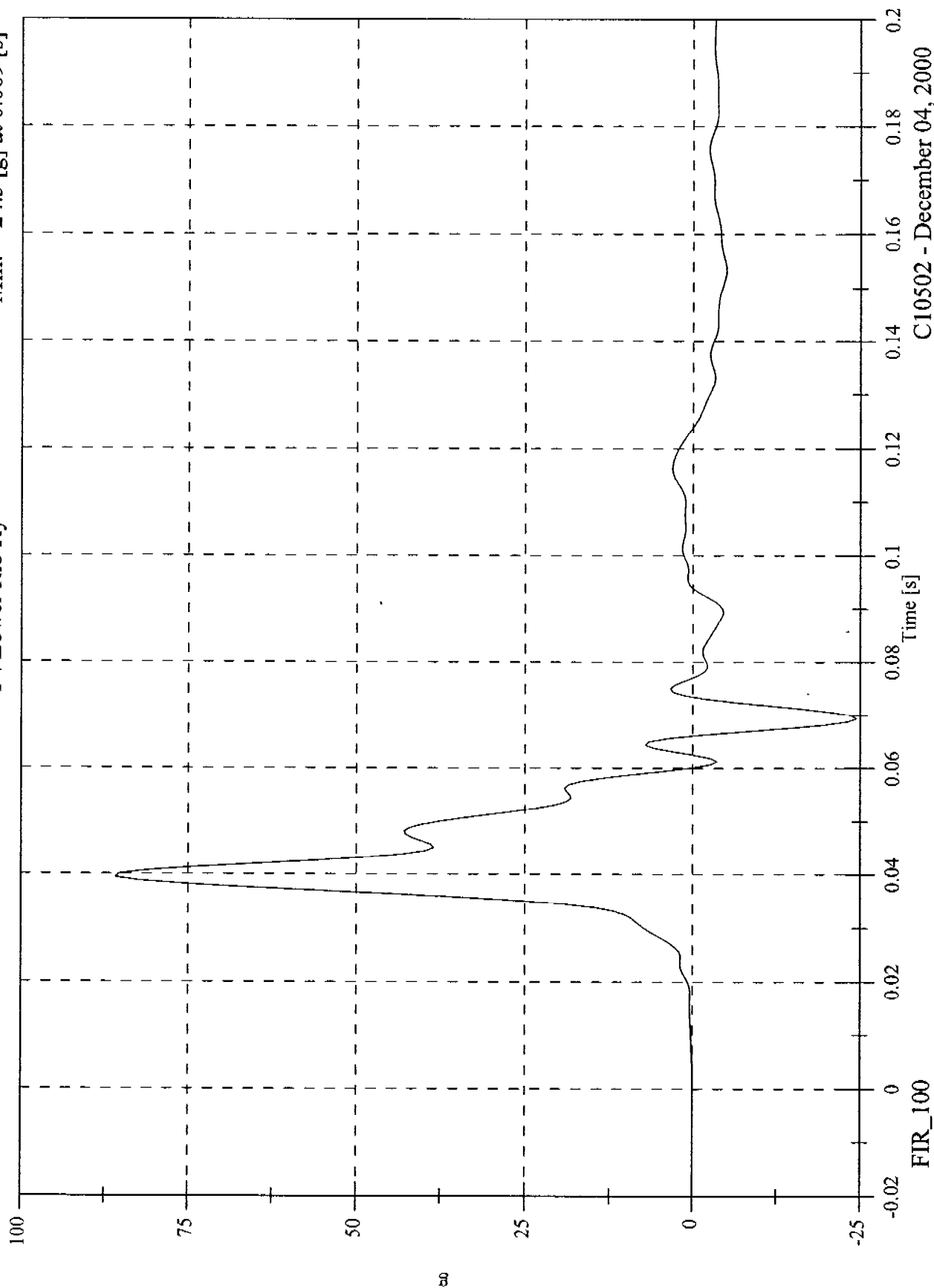


C10502 - December 04, 2000

FMVSS 214D Test #5 - 2001 Daewoo Leganza

P4 Lower Rib Ry

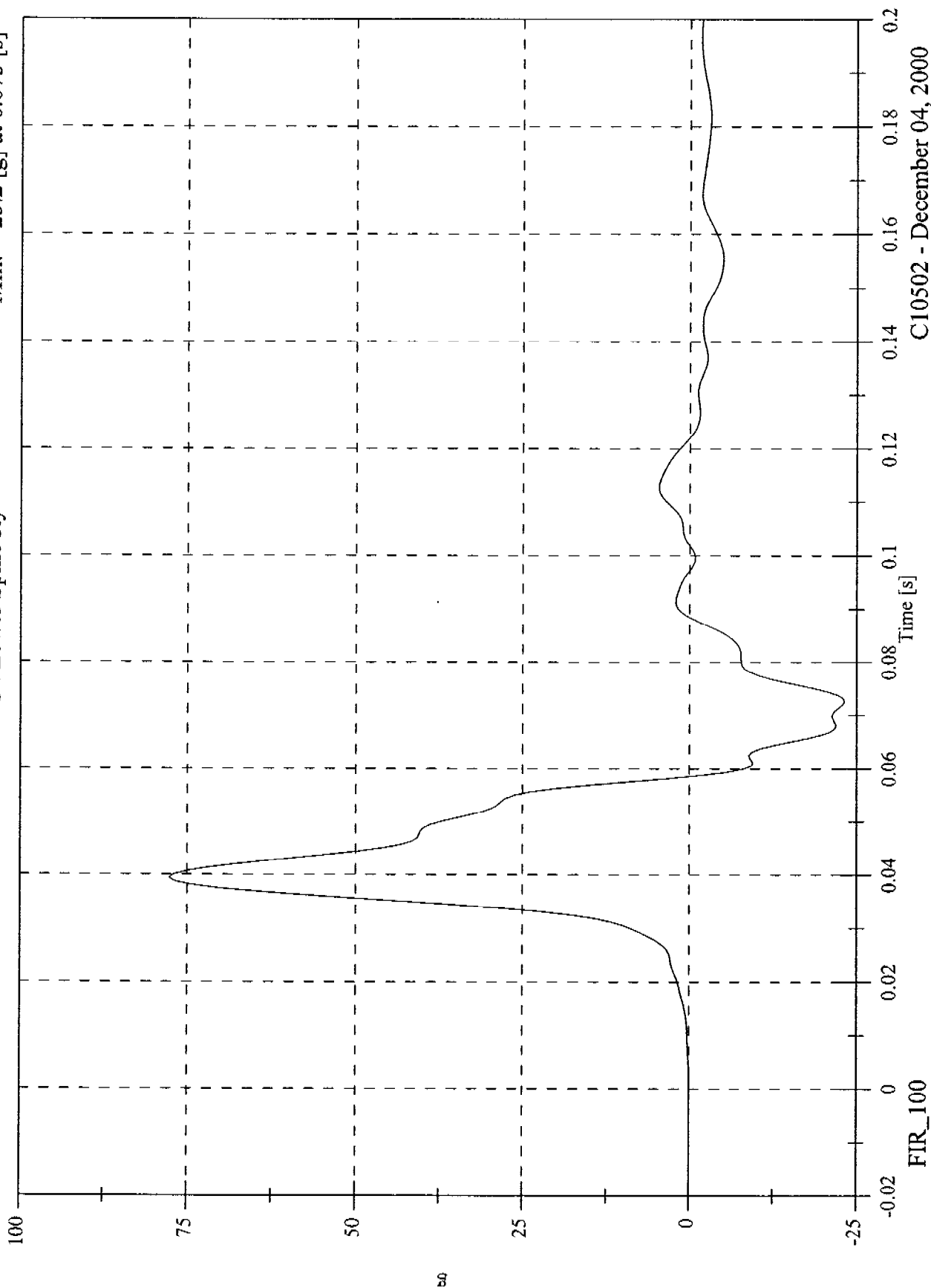
Max: 85.8 [g] at 0.039 [s]
Min: -24.5 [g] at 0.069 [s]



FMVSS 214D Test #5 - 2001 Daewoo Leganza

P4 Lower Spine Ry

Max: 77.6 [g] at 0.039 [s]
Min: -23.2 [g] at 0.073 [s]

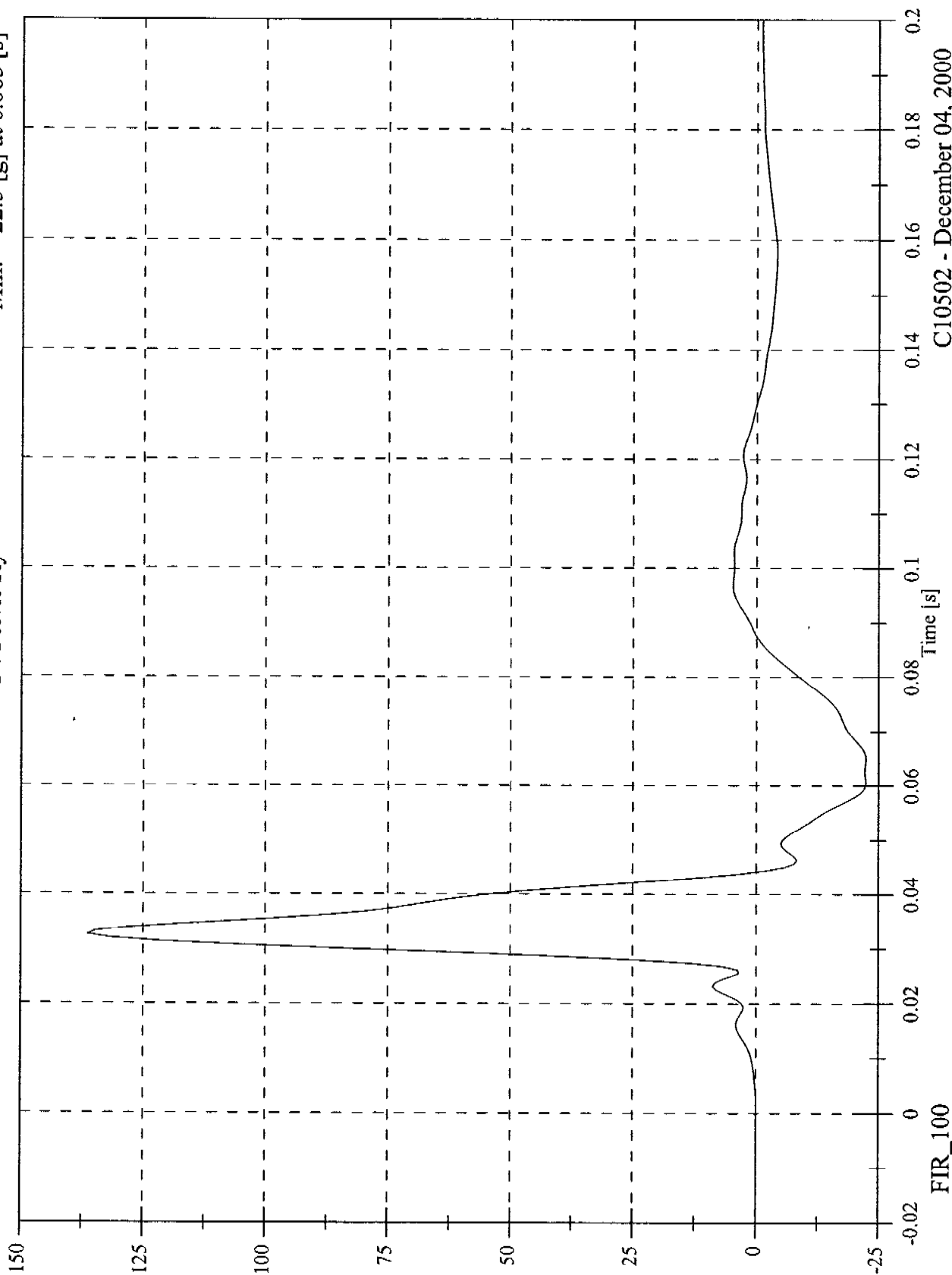


C10502 - December 04, 2000

FMVSS 214D Test #5 - 2001 Daewoo Leganza

Max: 136.3 [g] at 0.033 [s]
 Min: -22.5 [g] at 0.065 [s]

P4 Pelvic Ry



FIR_100

C10502 - December 04, 2000

APPENDIX C

SID CONFIGURATION AND PERFORMANCE VERIFICATION DATA

SUMMARY
SID PRE & POST TEST CALIBRATION

CONFIGURED FOR LEFT SIDE IMPACT

Date: November 30, 2000; January 8, 2001 Sequential Test Number: 1.3,1.4; 1
Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	SID NO.: 013		SID NO.: 015	
		PRE TEST	POST TEST	PRE TEST	POST TEST
SH- Seated Height (mm)	889 - 909	902	902	902	902
RH- Rib Height (mm)	501 - 521	511	511	511	511
HP- Hip Pivot Height (mm)	99 ref.	99	99	99	99
RD- Rib from Back Line (mm)	229 - 241	236	239	239	236
KV- Knee Pivot from Back Line (mm)	511 - 526	518	521	521	518
SW- Knee Pivot to Floor (mm)	490 - 505	493	493	493	493
HW- Hip Width (mm)	356 - 391	373	373	373	371
THORAX IMPACTS					
TEMPERATURE (°C)	18.9 - 25.5	21.7	21.1	21.7	21.7
RELATIVE HUMIDITY (%)	10 - 70	31	31	31	32
PROBE SPEED (m/s)	4.27 - 4.33	4.28	4.29	4.28	4.30
UPPER RIB (g's)	37 - 46	40.0	38.9	42.6	40.9
LOWER RIB (g's)	37 - 46	38.7	38.2	40.2	41.5
LOWER SPINE (g's)	15 - 22	21.3	21.1	21.7	22.8
PELVIS IMPACT					
TEMPERATURE (°C)	18.9 - 25.5	21.7	21.1	21.7	21.7
RELATIVE HUMIDITY (%)	10 - 70	31	31	31	32
PROBE SPEED (m/s)	4.27 - 4.33	4.29	4.27	4.27	4.27
PELVIS (g's)	40 - 60	44.2	43.5	41.2	41.0

REMARKS: None

**CALIBRATION TEST RESULTS
PRE-TEST**

SID NO.: 013

CONFIGURED FOR LEFT SIDE IMPACT

**CALIBRATION TEST RESULTS SUMMARY
PRE-TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 013 Sequential Test Number: 1
Date: November 30, 2000 Laboratory Technician: B. Swiecicki

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.
HEAD DROP 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.: 013 Sequential Test Number: 1
Date: November 30, 2000 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
SH- Seated Height (mm)	889 - 909	902
RH- Rib Height (mm)	502 - 520	511
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	518
KV- Knee Pivot to Floor (mm)	490 - 505	493
HW- Hip Width (mm)	356 - 391	373

REMARKS: None

THORACIC SHOCK ABSORBER TESTS
PRE-TEST

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 013 Sequential Test Number: 1.2
Date: September 26, 2000 Laboratory Technician: B. Swiecicki

DAMPER IDENTIFICATION: 013

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)		18.9 - 25.5	21.1
RELATIVE HUMIDITY (%)		10 - 70	30
VELOCITY 3.05 m/s	FORCE (N)	836 - 1125	1046
	DISPLACEMENT (mm)	30 - 35	30
VELOCITY 4.27 m/s	FORCE (N)	1730 - 2099	1899
	DISPLACEMENT (mm)	32 - 37	34
VELOCITY 6.10 m/s	FORCE (N)	3741 - 4448	4263
	DISPLACEMENT (mm)	33 - 40	36

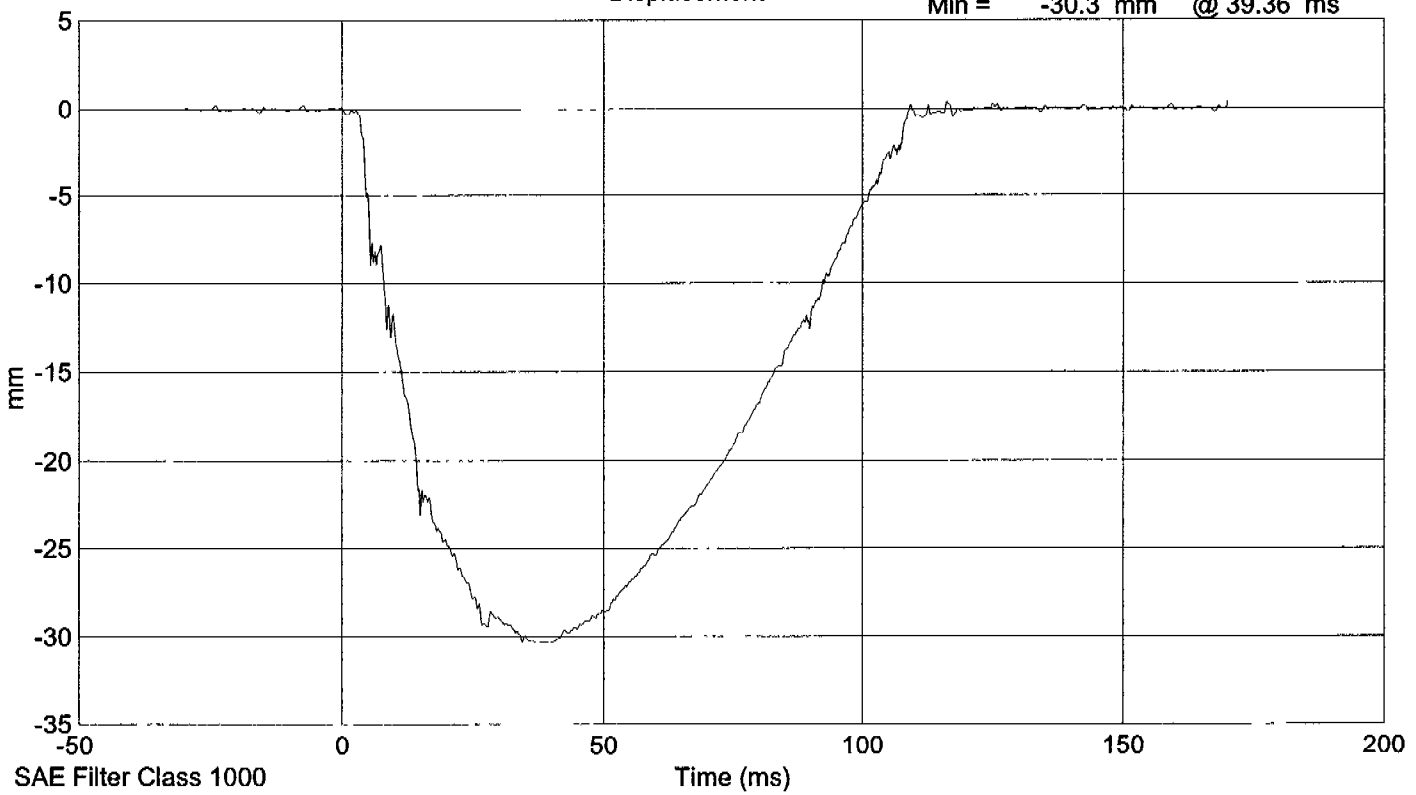
DAMPER SETTING: 5

REMARKS: None

SID 013 Shock Absorber Impact Test @ 3.048 m/s

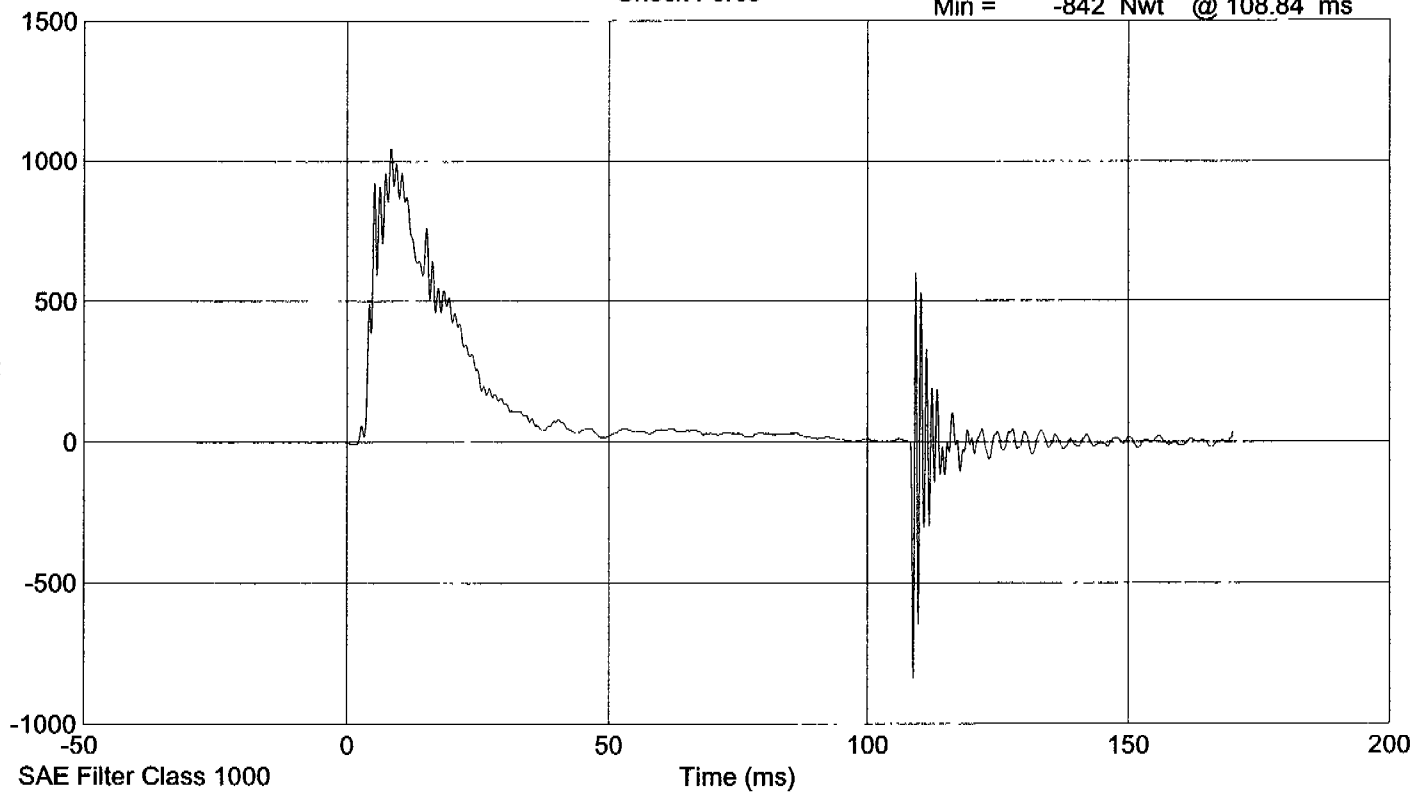
Displacement

Max = 0.434 mm @ 170.04 ms
Min = -30.3 mm @ 39.36 ms

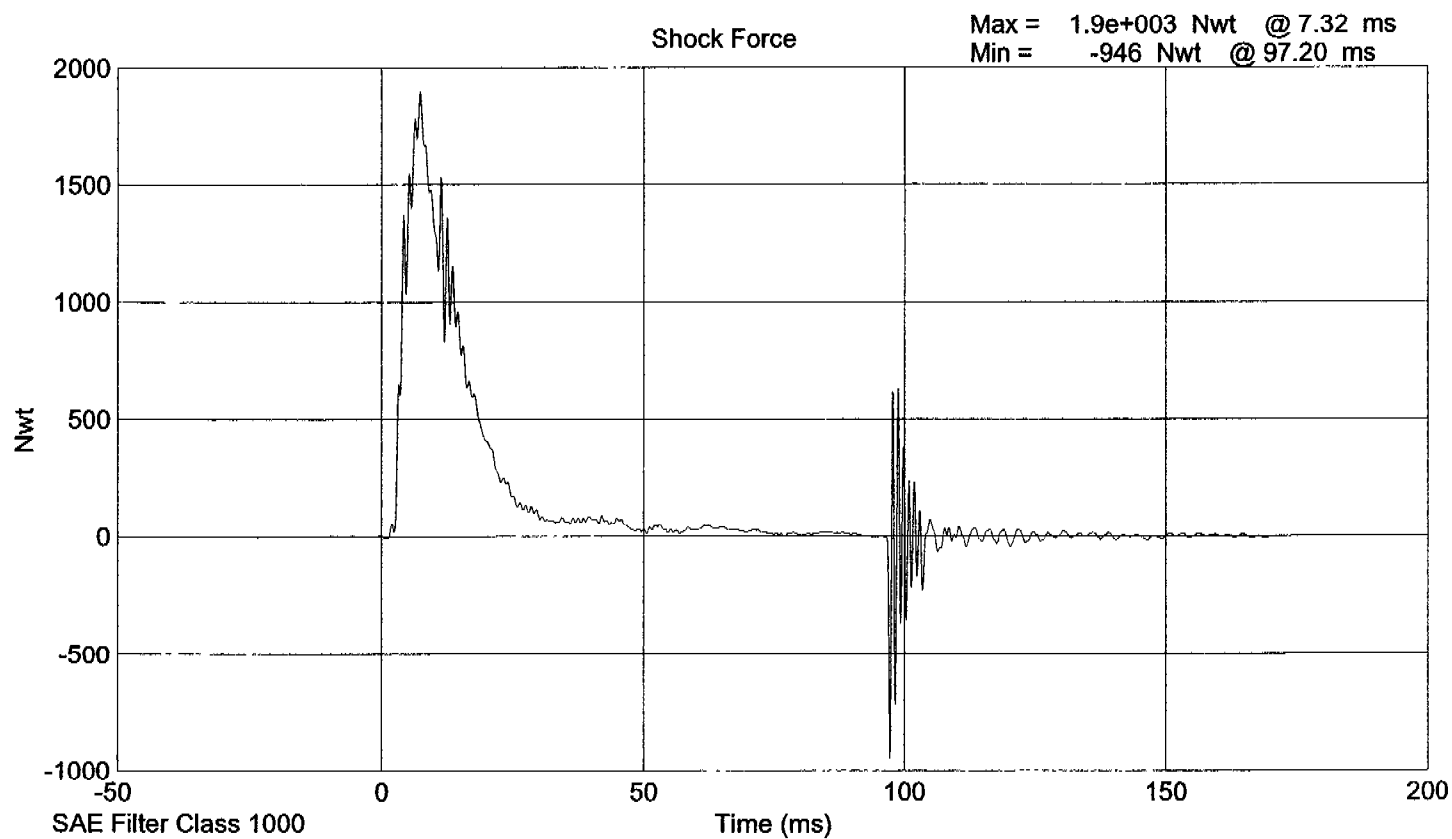
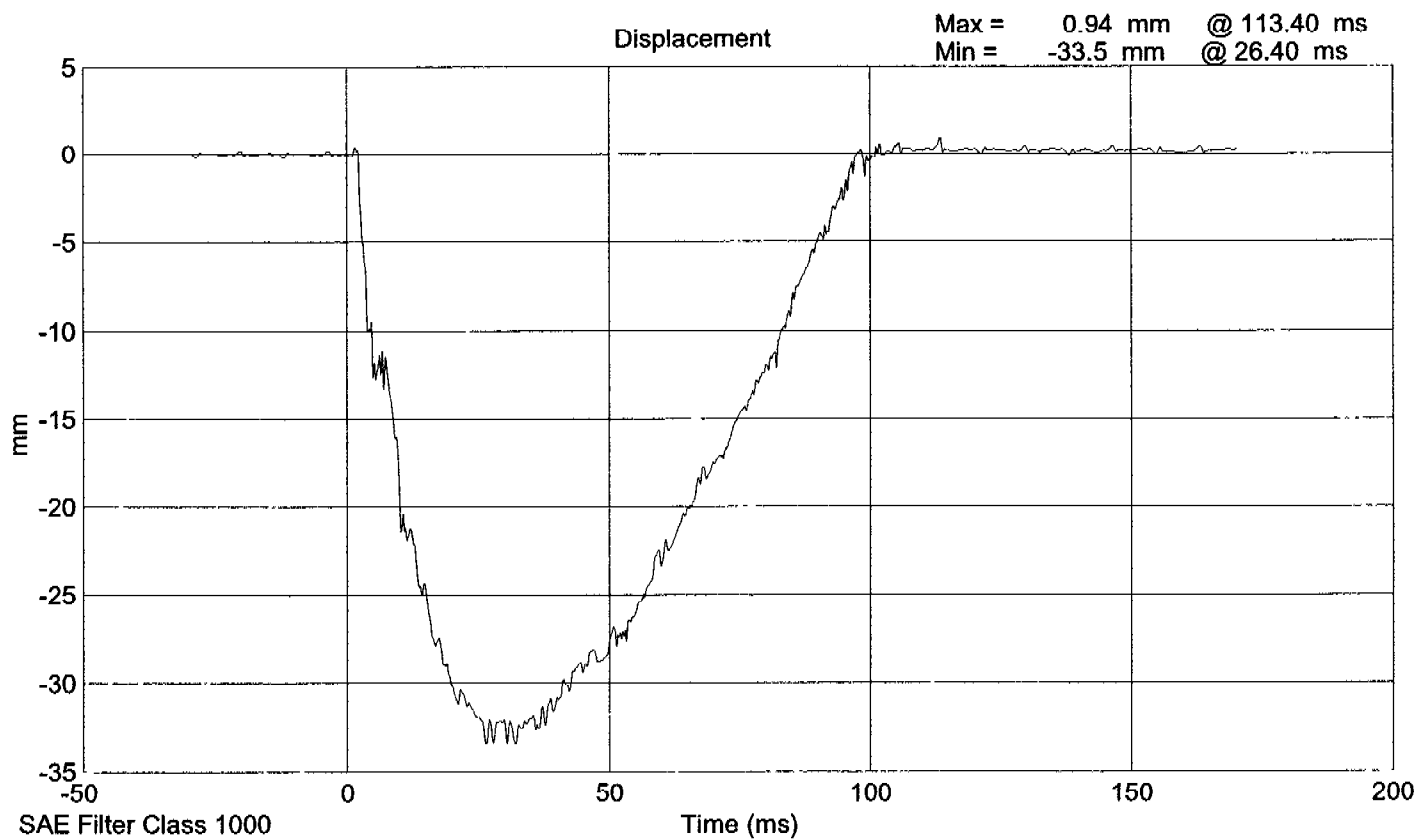


Shock Force

Max = 1.05e+003 Nwt @ 8.28 ms
Min = -842 Nwt @ 108.84 ms



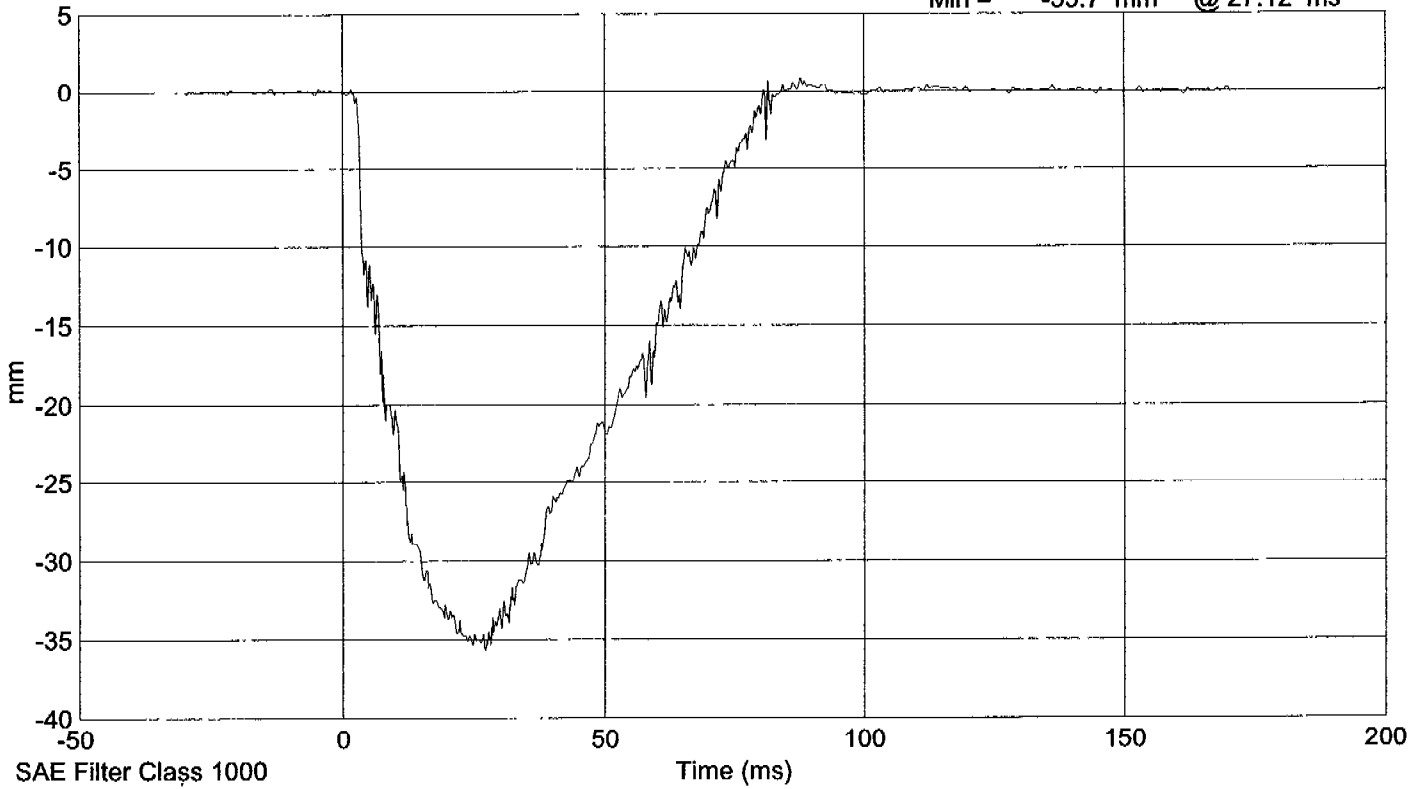
SID 013 Shock Absorber Impact Test @ 4.2672 m/s



SID 013 Shock Absorber Impact Test @ 6.096 m/s

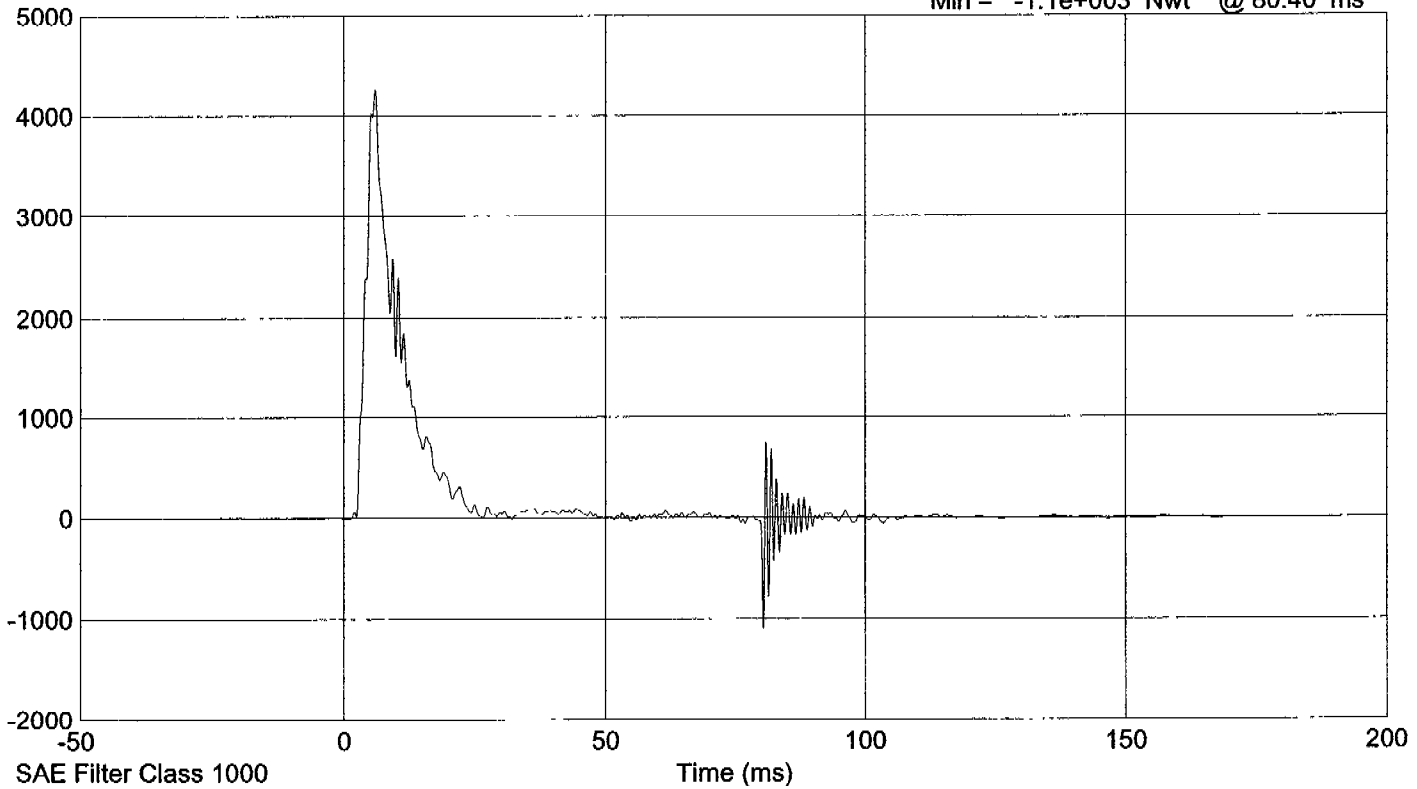
Displacement

Max = 0.839 mm @ 87.84 ms
Min = -35.7 mm @ 27.12 ms



Shock Force

Max = 4.26e+003 Nwt @ 6.00 ms
Min = -1.1e+003 Nwt @ 80.40 ms



**LATERAL THORAX IMPACT TEST
PRE-TEST**

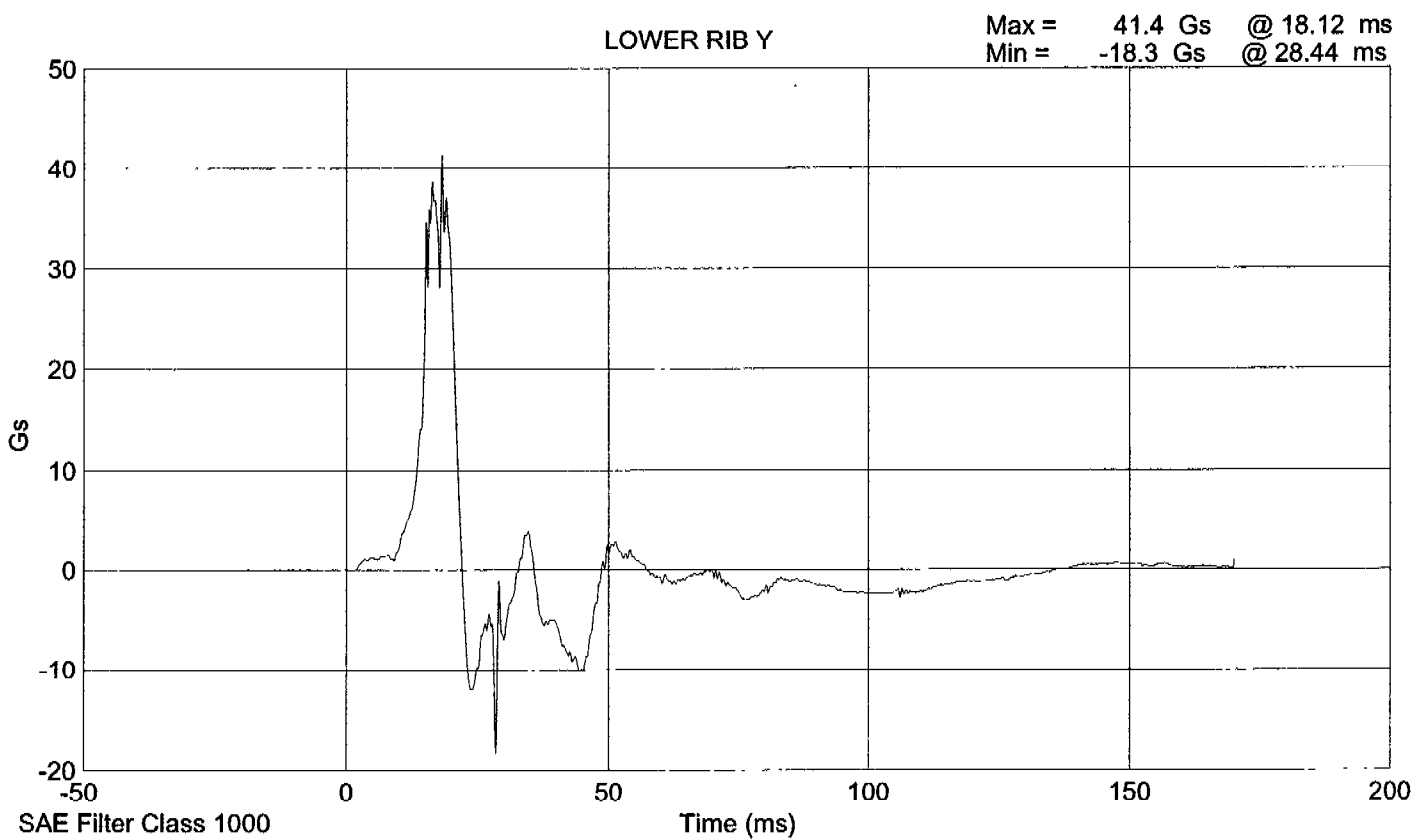
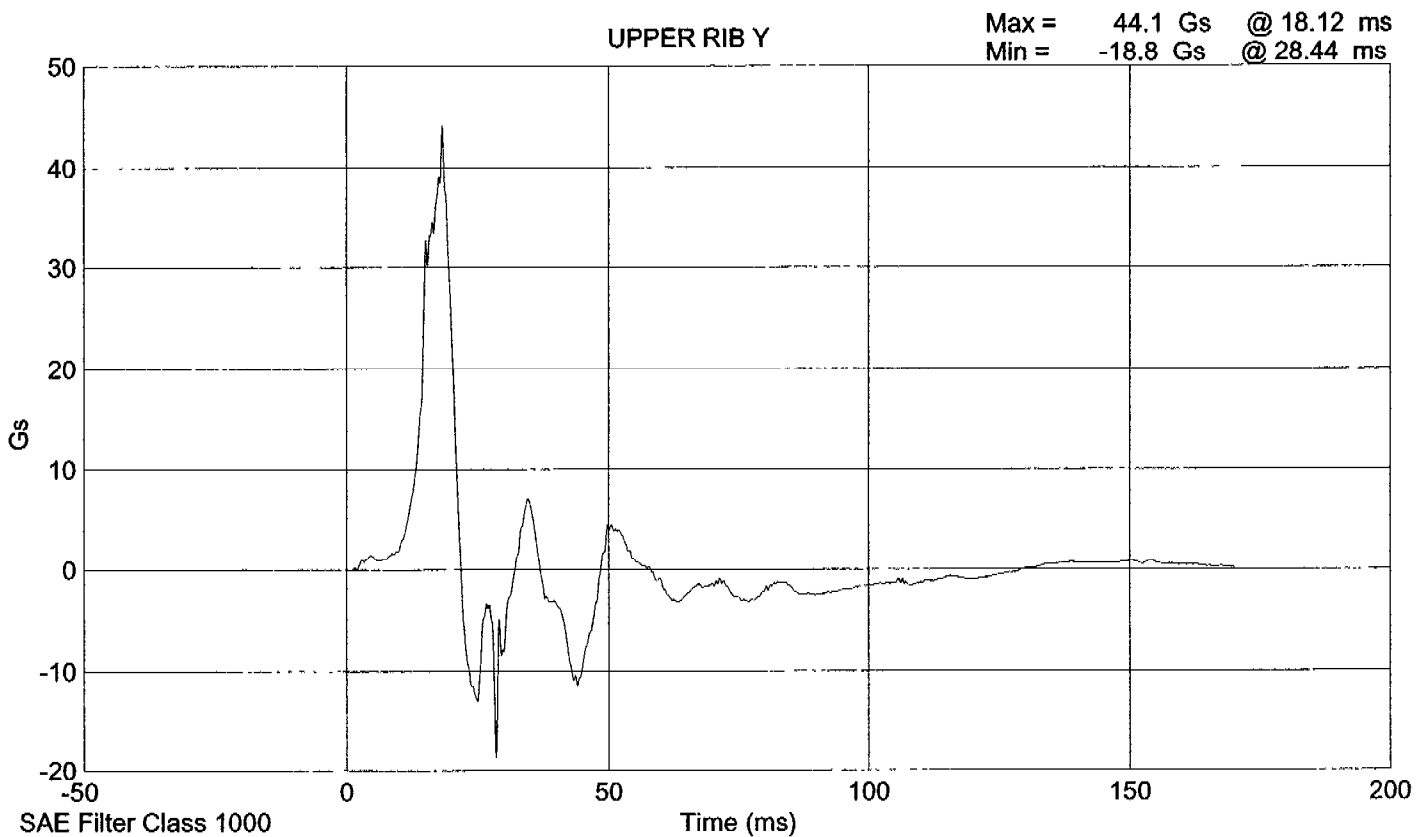
CONFIGURED FOR LEFT SIDE IMPACT

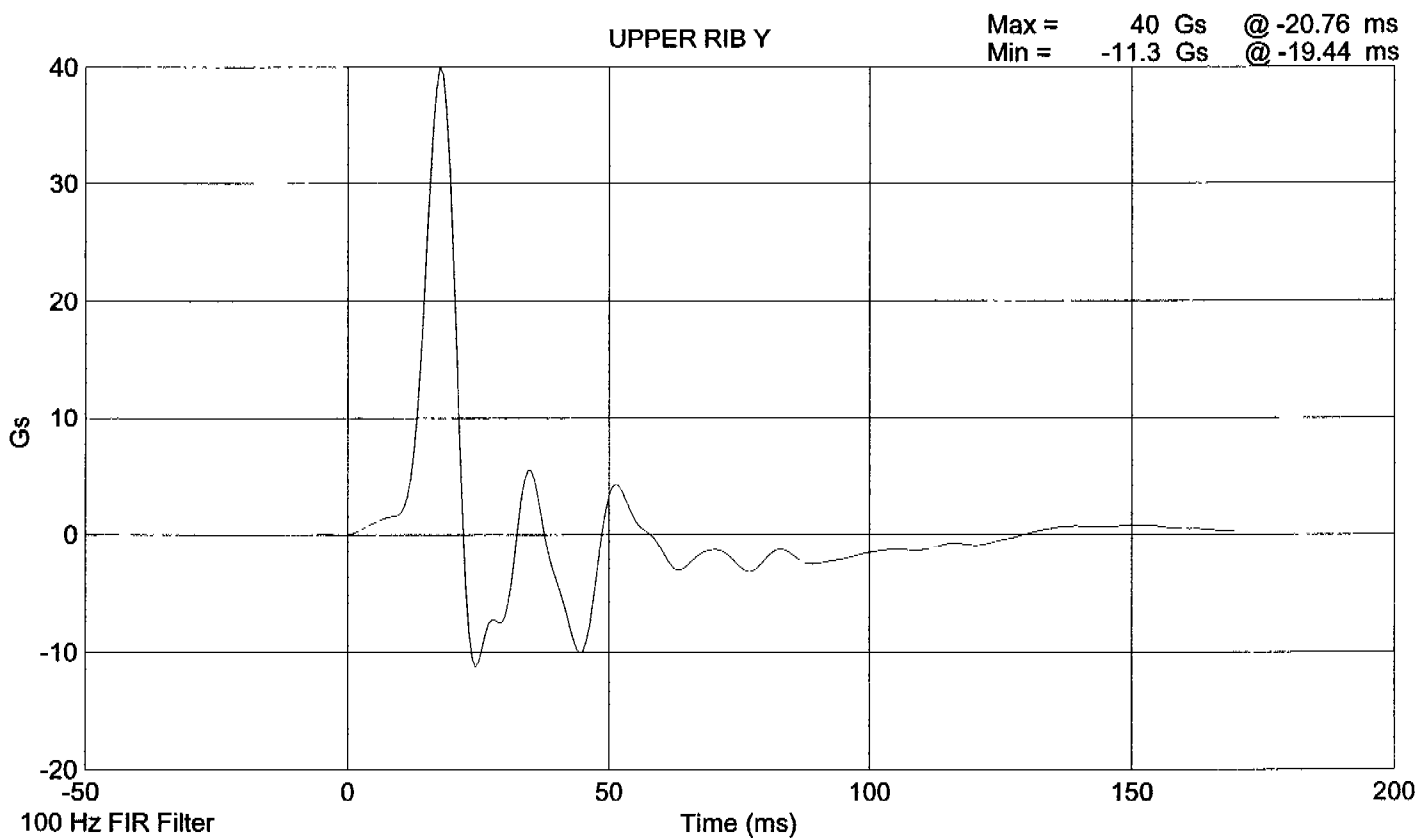
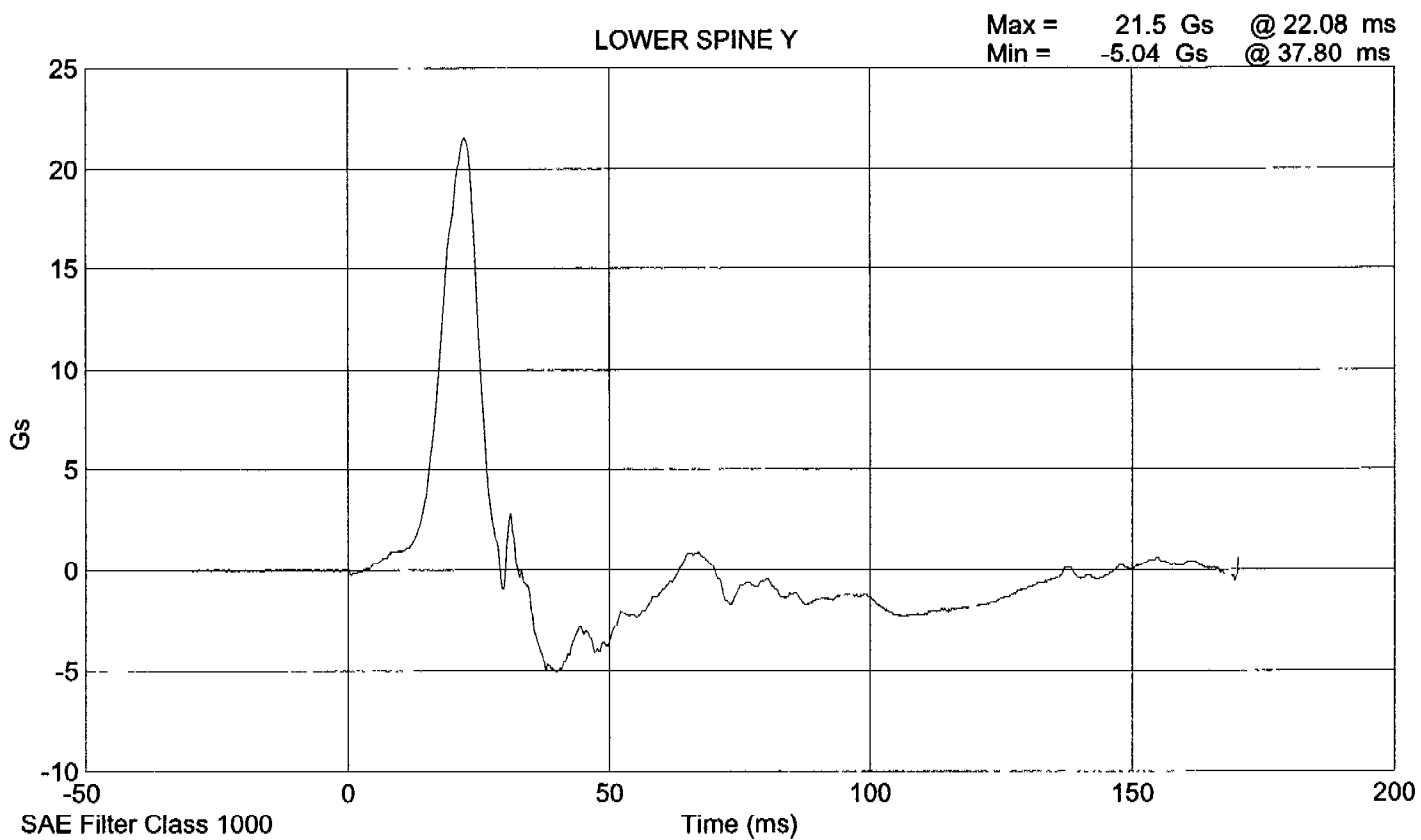
SID Serial No.: 013 Sequential Test Number: 1
Date: November 30, 2000 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.7
RELATIVE HUMIDITY (%)	10 - 70	31
PROBE SPEED (m/s)	4.27 - 4.33	4.28
UPPER RIB (g's)	37 - 46	39.99
LOWER RIB (g's)	37 - 46	38.65
LOWER SPINE (g's)	15 - 22	21.26

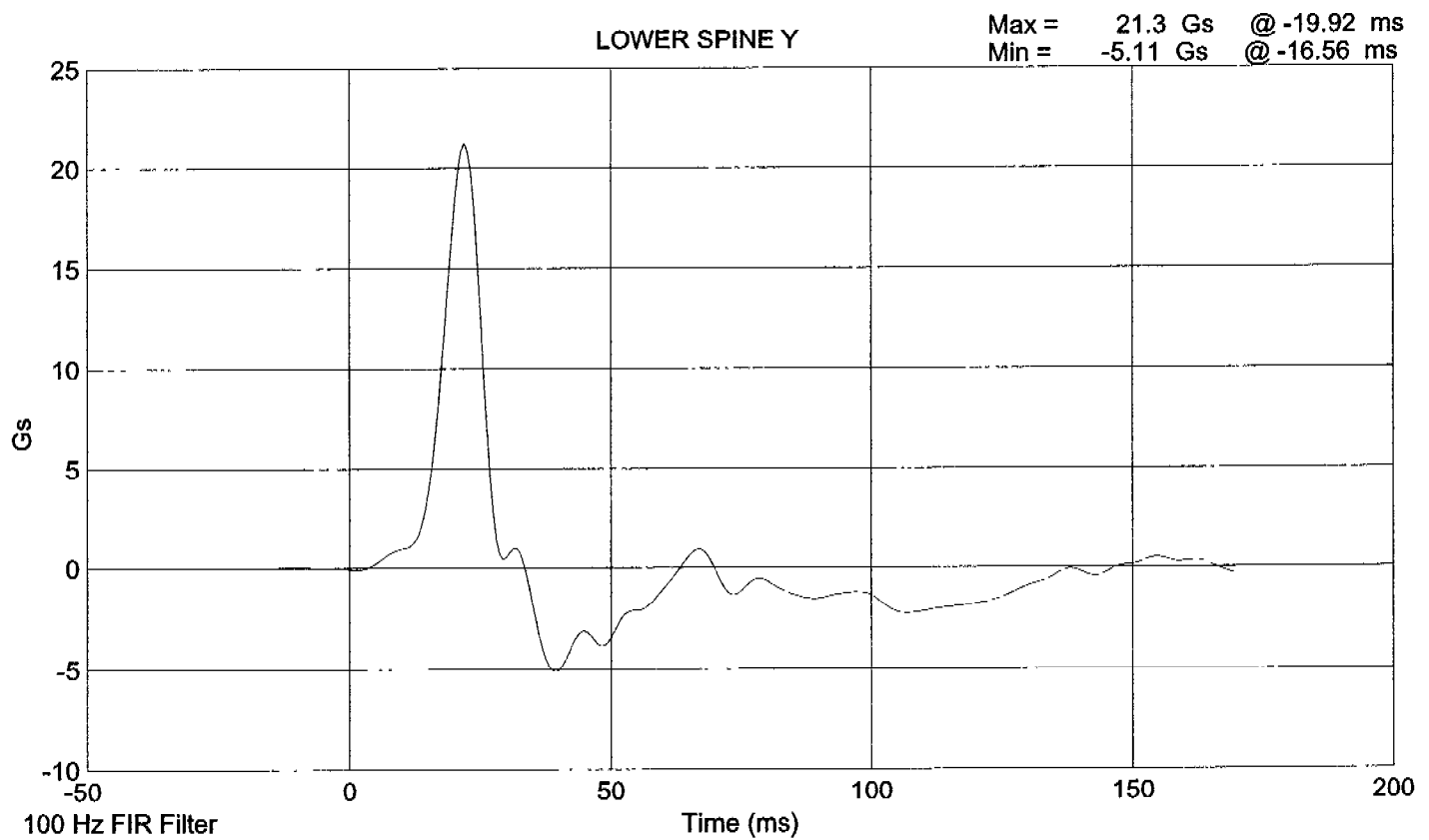
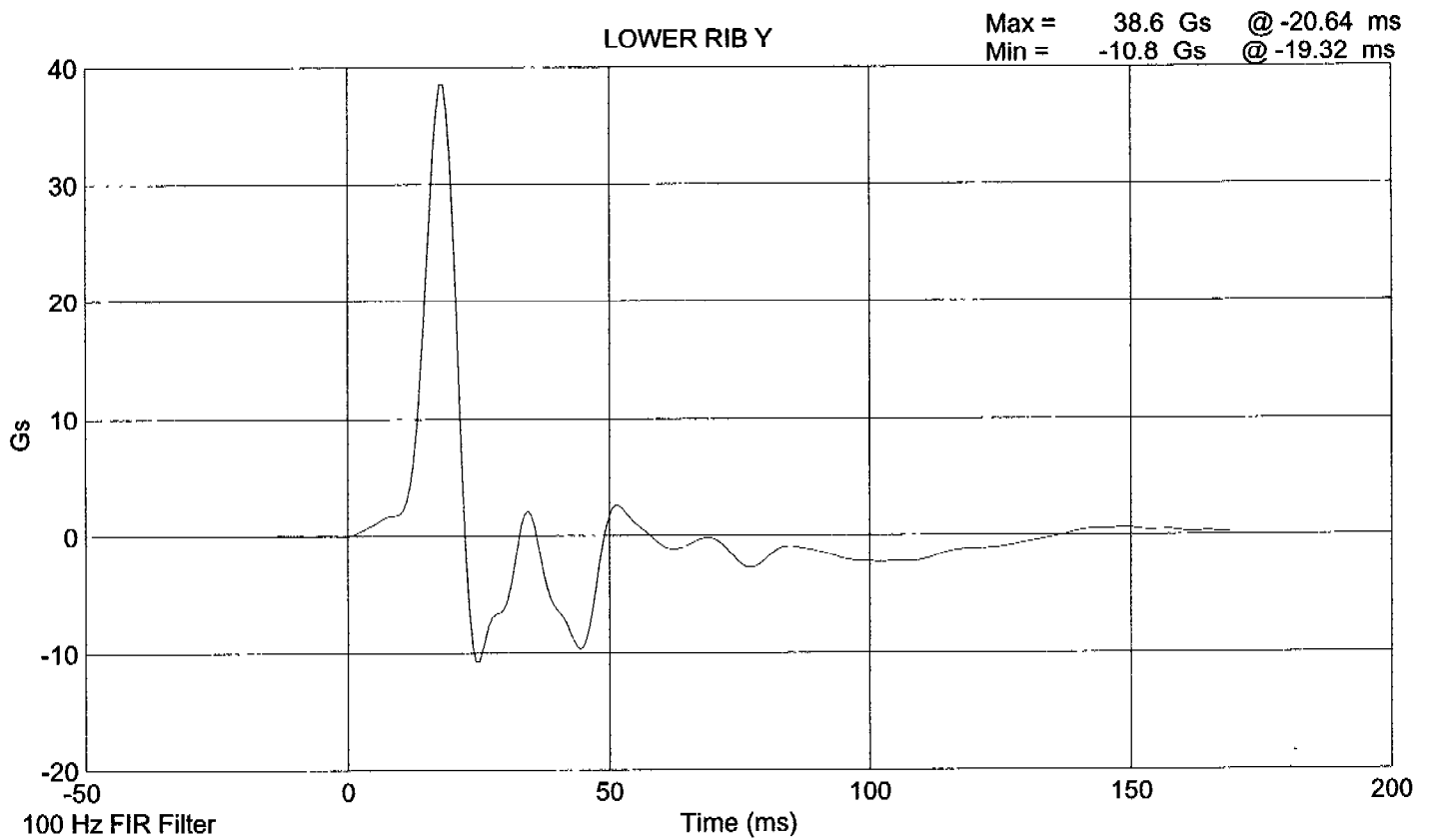
REMARKS: None

SID 013 Thorax Impact Test @ 4.2794 m/s





SID 013 Thorax Impact Test @ 4.2794 m/s



**LATERAL PELVIS IMPACT TEST
PRE-TEST**

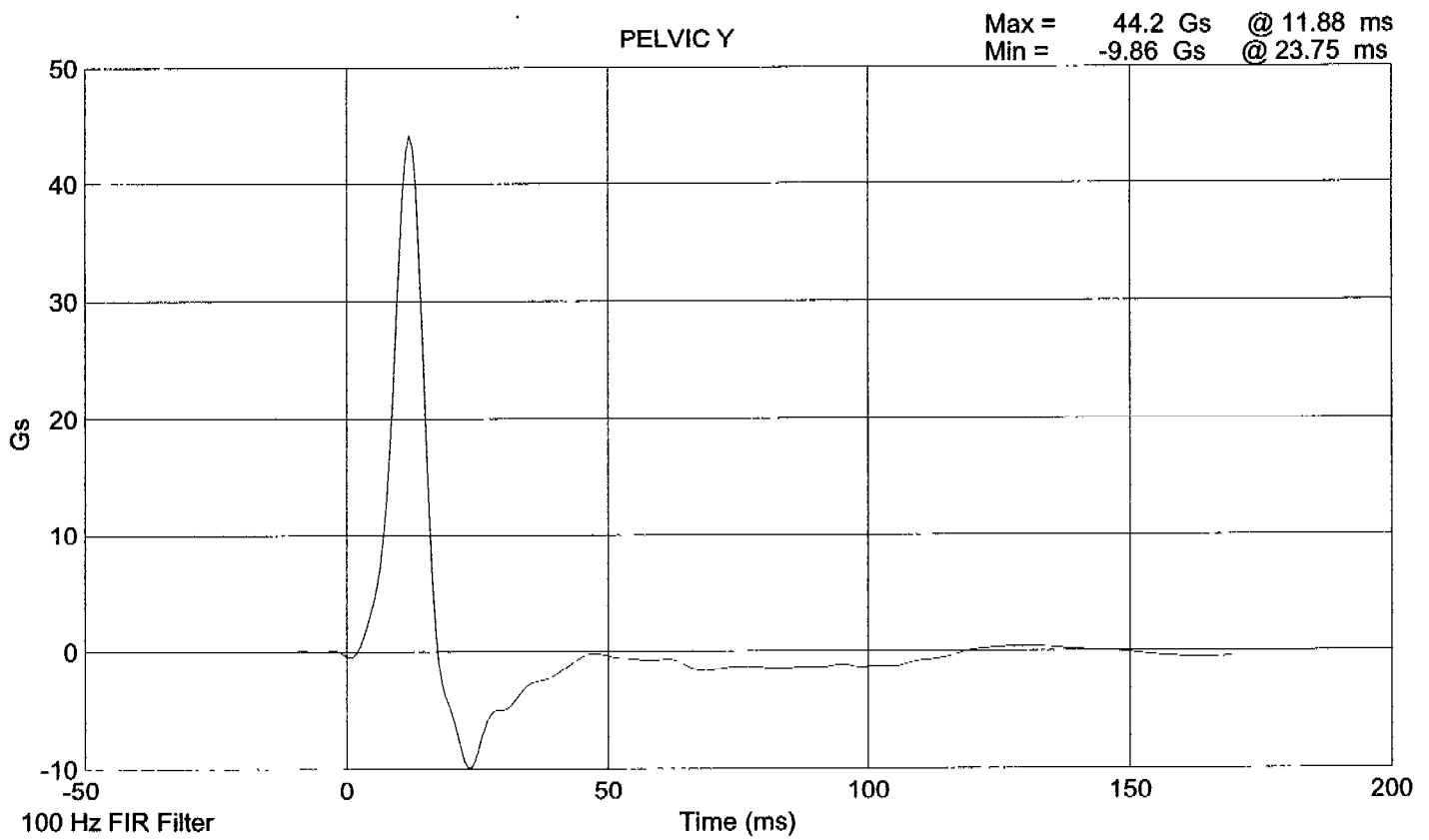
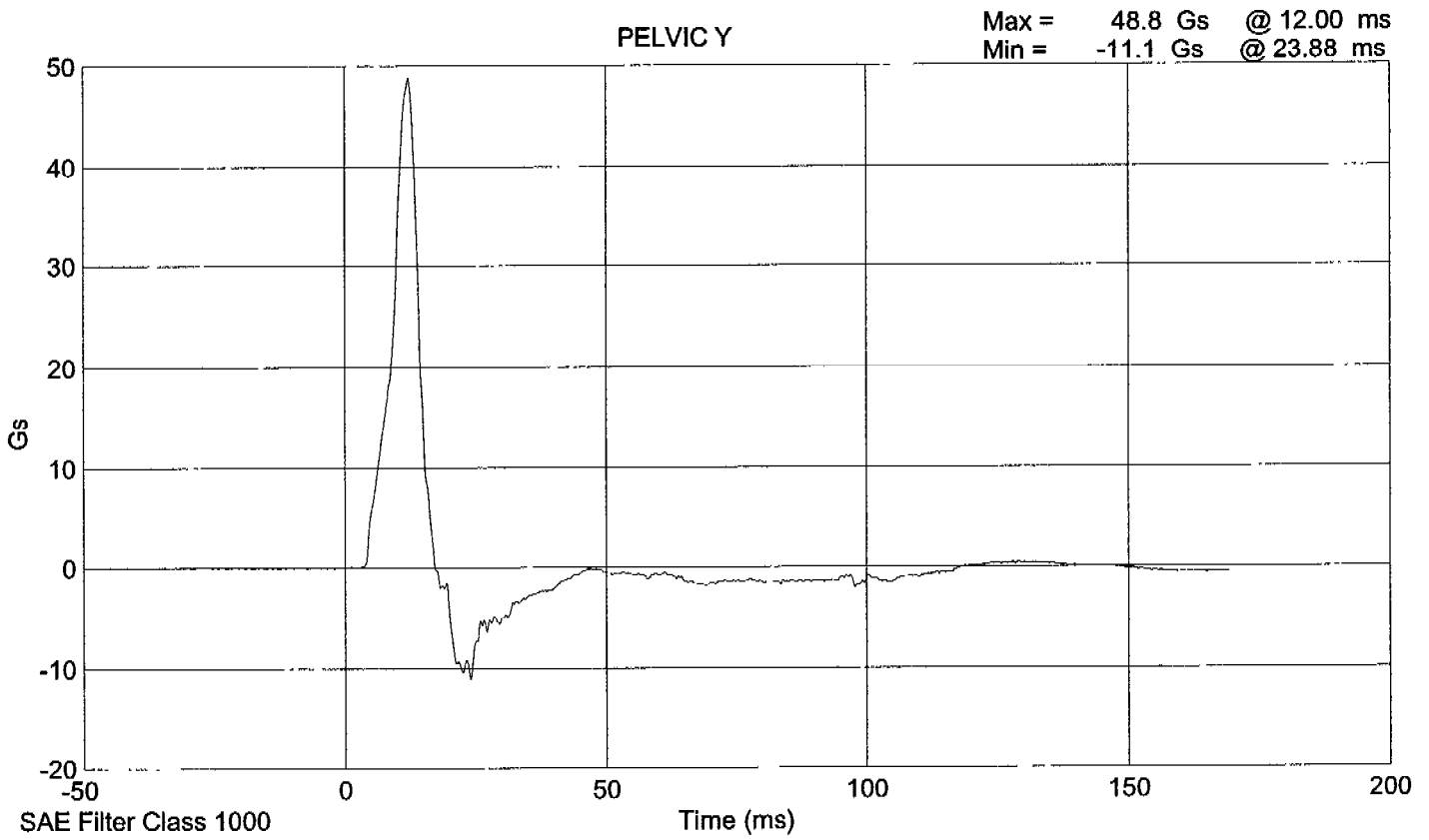
CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 013 Sequential Test Number: 1
Date: November 30, 2000 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.7
RELATIVE HUMIDITY (%)	10 - 70	31
PROBE SPEED (m/s)	4.27 - 4.33	4.29
PELVIS ACCELERATION (g's)	40 - 60	44.2

REMARKS: None

SID 013 Pelvic Impact Test @ 4.2855 m/s



HEAD DROP TEST
PRE-TEST
(Test not required for SID certification)

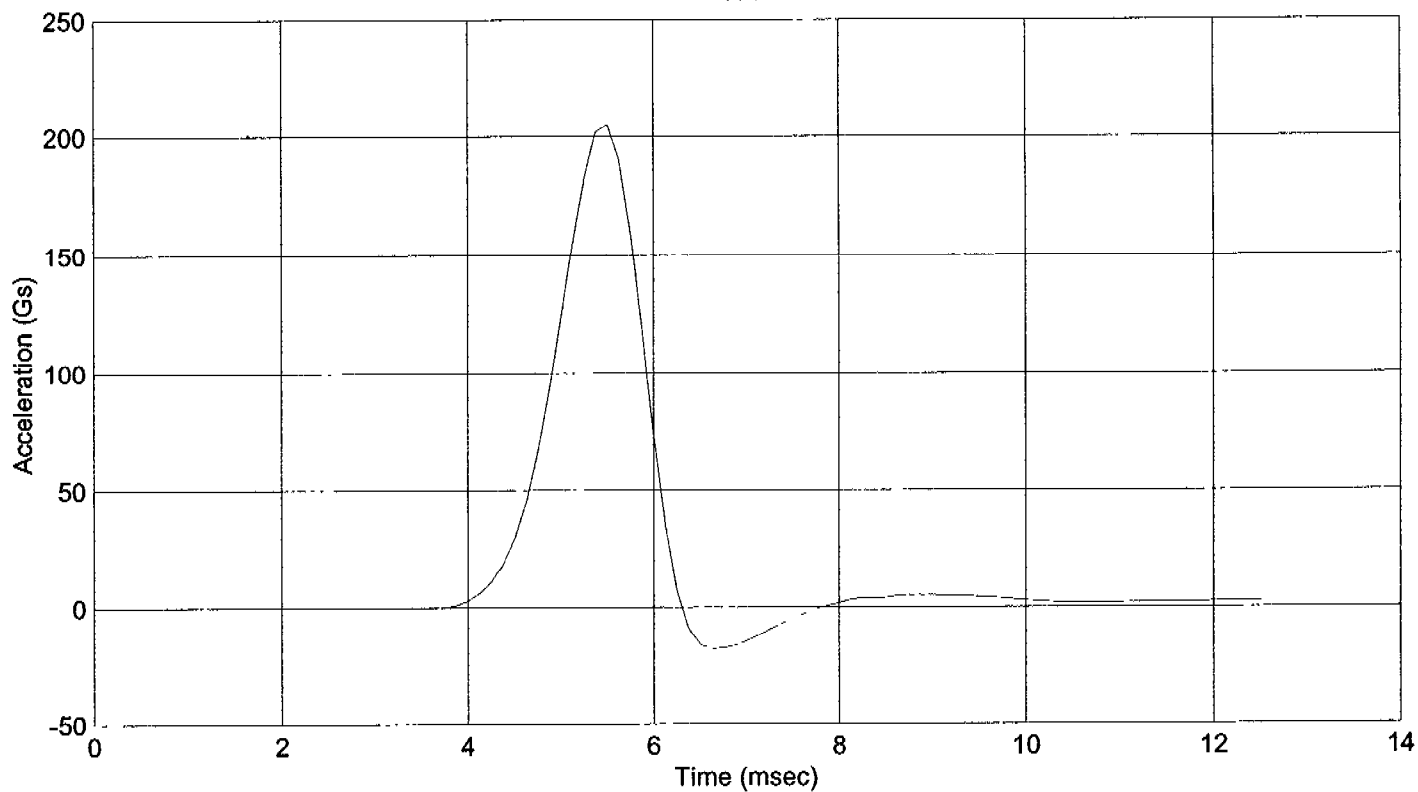
CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 013 Sequential Test Number: 1
Date: November 29, 2000 Laboratory Technician: B. Swiecicki

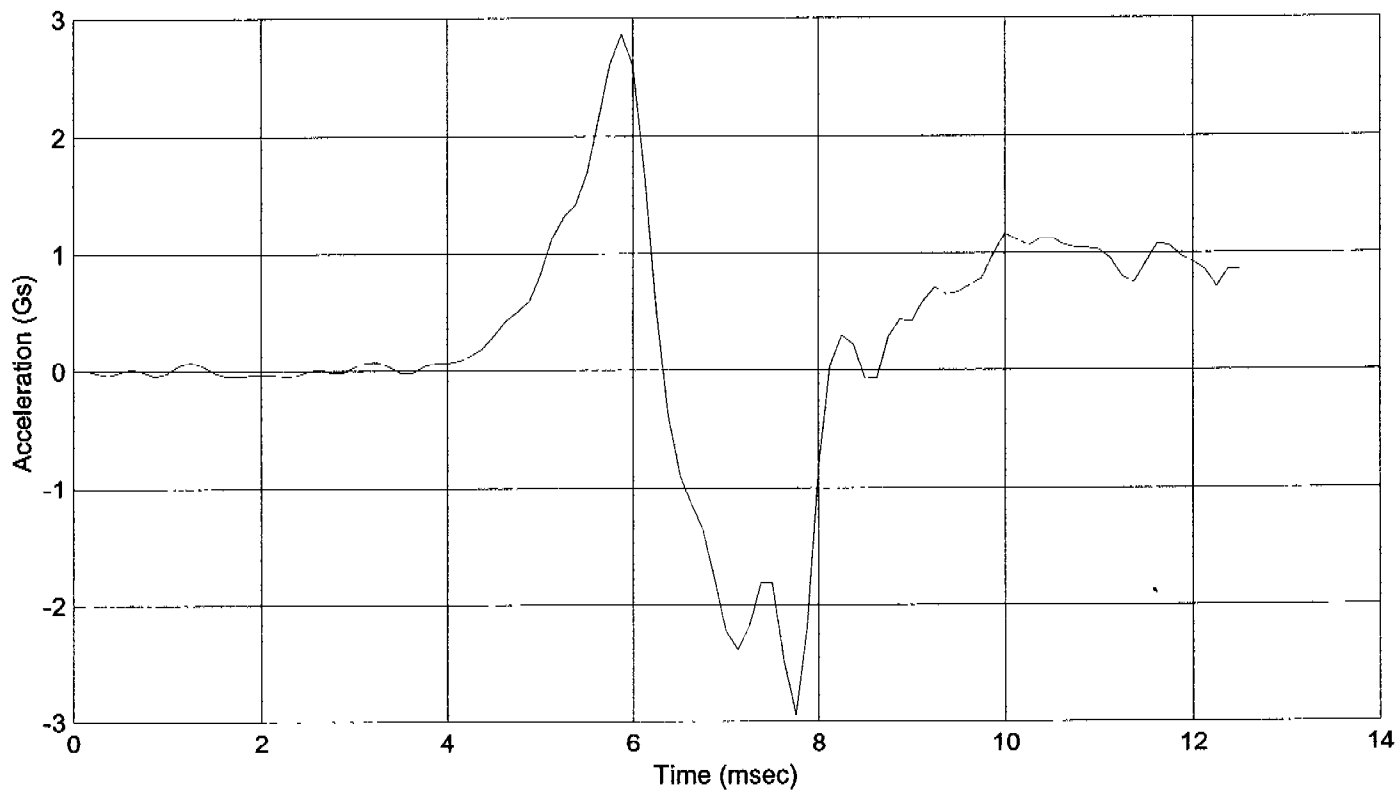
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.7
RELATIVE HUMIDITY (%)	10 - 70	31
PEAK RESULTANT ACCELERATION (Gs)	210 - 260	245.23
PEAK LATERAL ACCELERATION (Gs)	Not to Exceed 10	2.95
UNIMODAL CRITERIA ABOVE 100 Gs (ms)	0.9 - 1.5	1.12

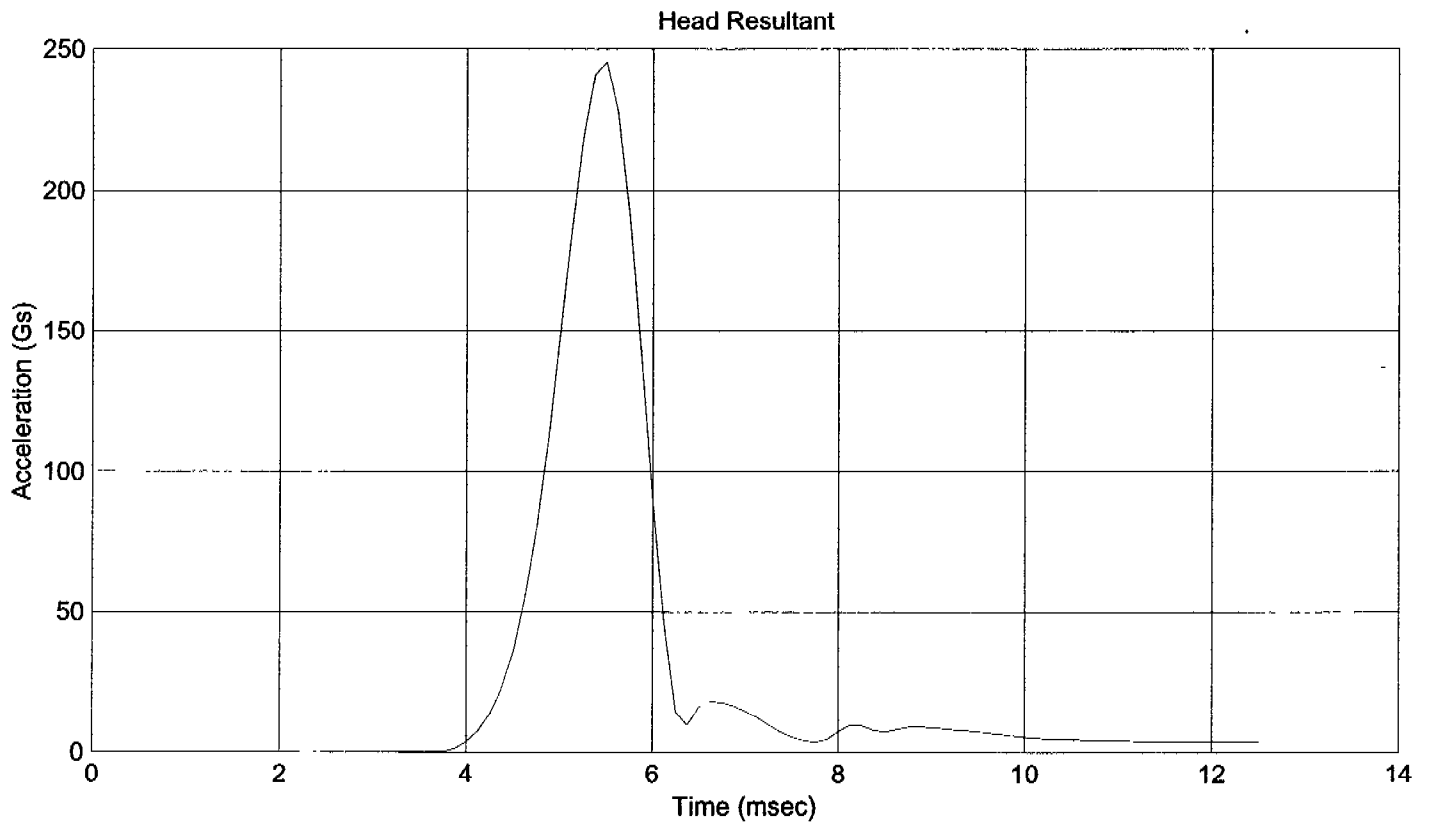
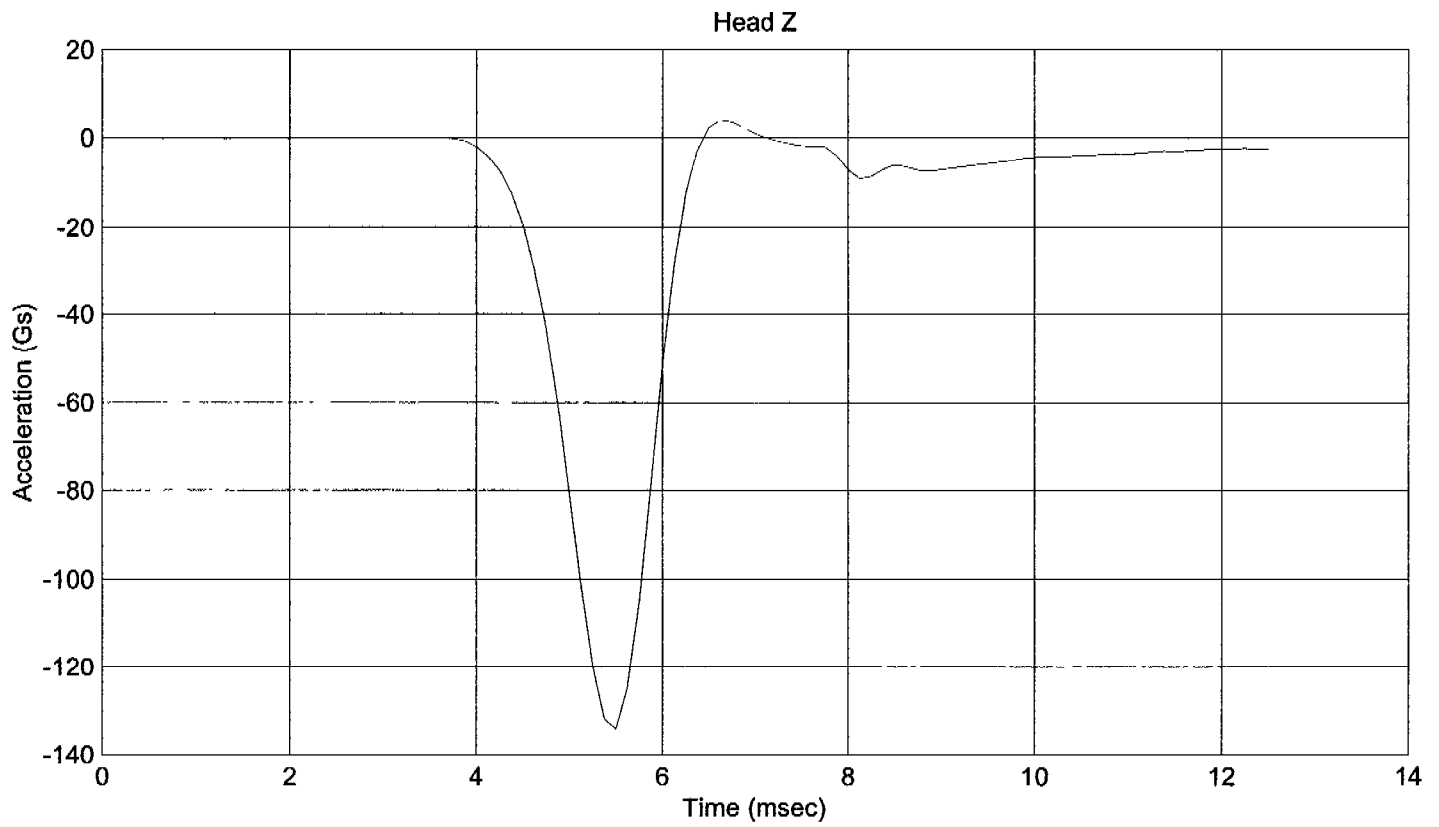
REMARKS: None

Head X



Head Y





ABDOMINAL COMPRESSION TEST**PRE-TEST**

(Test not required for SID certification)

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 013 Sequential Test Number: 1
Date: November 30, 2000 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.7
RELATIVE HUMIDITY (%)	10 - 70	31
FORCE @ 13 mm (N)	104 - 162	109
FORCE @ 19 mm (N)	163 - 221	173
FORCE @ 25 mm (N)	222 - 280	256
FORCE @ 33 mm (N)	325 - 391	383

REMARKS: None

Dummy S/N 013

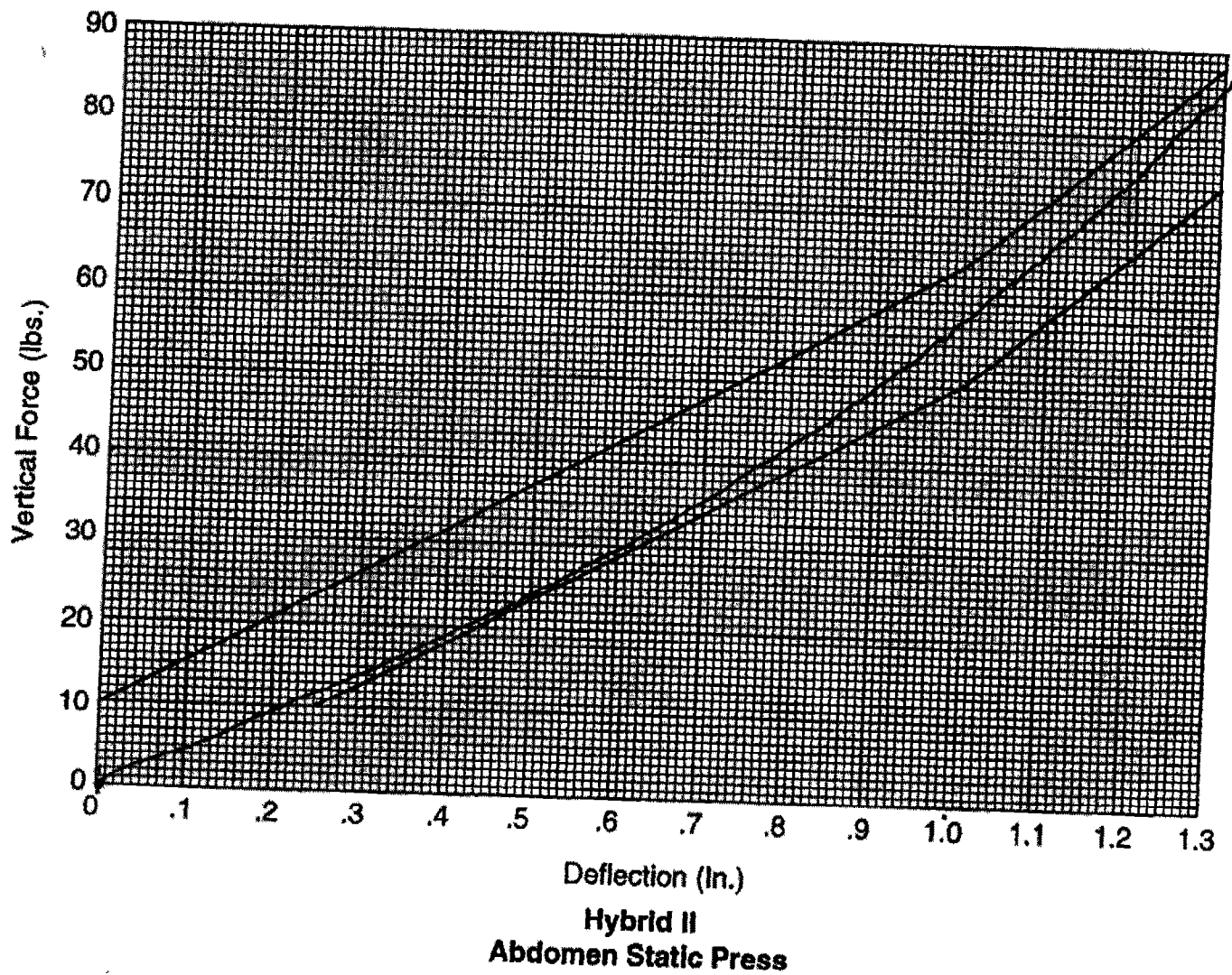
W/A _____

Date 11-30-2000

Performed By BD

Temp. 70°

Humidity 31%



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

CONFIGURED FOR LEFT SIDE IMPACT

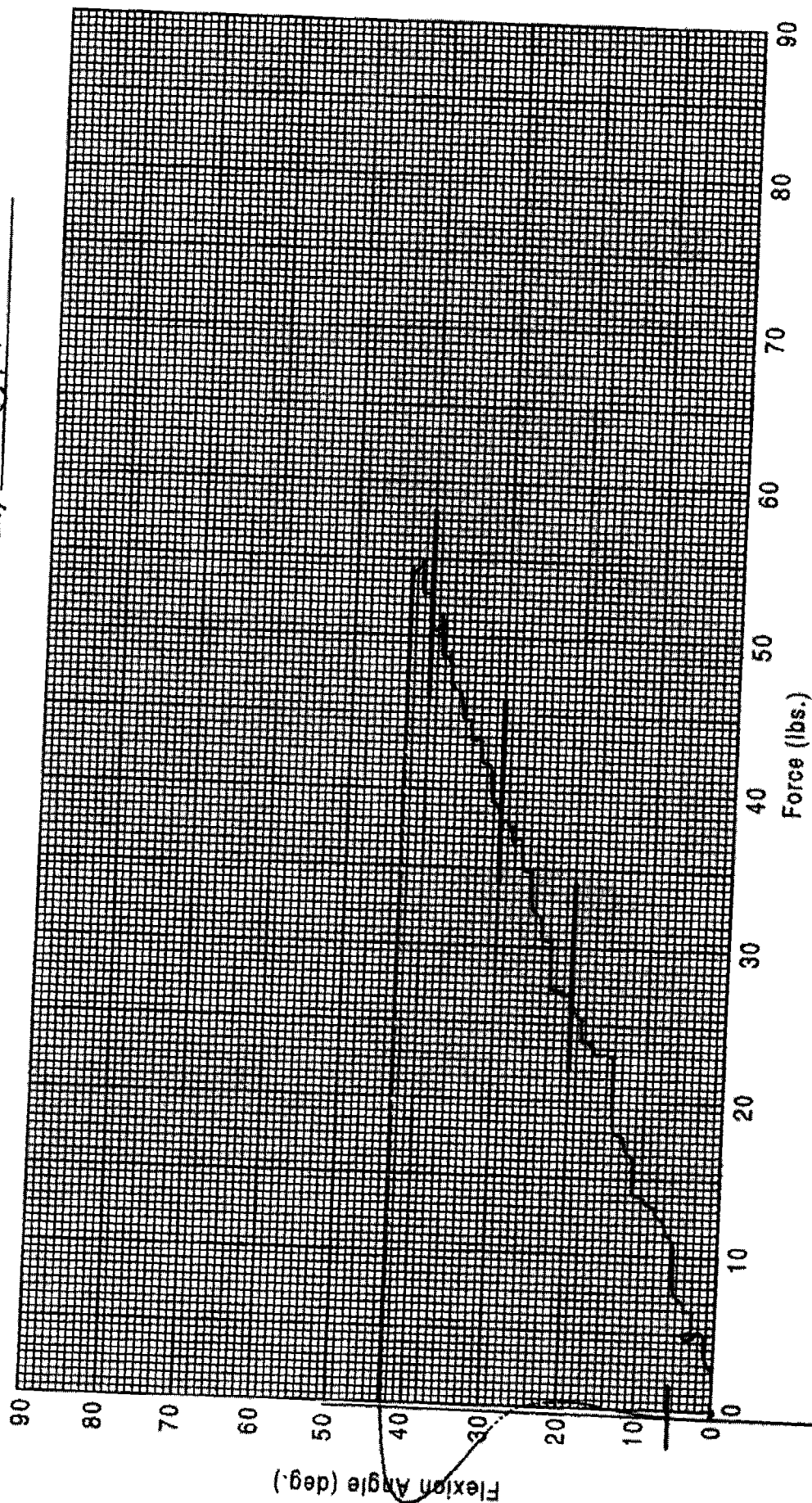
SID Serial No.: 013 Sequential Test Number: 1
Date: November 30, 2000 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.7
RELATIVE HUMIDITY (%)	10 - 70	31
FORCE @ 0° (N)	0 - 26.7	0
FORCE @ 20° (N)	97.8 - 151.2	118
FORCE @ 30° (N)	151.2 - 204.6	171
FORCE @ 40° (N)	204.6 - 258	235
RETURN ANGLE	12° max.	5.5°

REMARKS: None

ORIGINAL

Dummy S/N 013
W/A _____
Date 11-30-2000
Performed By BS
Temp. 71°
Humidity 31%



Hybrid II Lumbar Spine Flexion Test

FM-052-CERT-005-R00

PRE-TEST DUMMY INSPECTION LIST

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 013 Sequential Test Number: 1
 Date: November 30, 2000 Laboratory Technician: B. Swiecicki

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

REMARKS: None

**CALIBRATION TEST RESULTS
PRE-TEST**

SID NO.: 015

CONFIGURED FOR LEFT SIDE IMPACT

**CALIBRATION TEST RESULTS SUMMARY
PRE-TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 015 Sequential Test Number: 1
Date: November 30, 2000 Laboratory Technician: B. Swiecicki

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.
HEAD DROP 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.: 015 Sequential Test Number: 1
Date: November 30, 2000 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
SH- Seated Height (mm)	889 - 909	902
RH- Rib Height (mm)	502 - 520	511
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	521
KV- Knee Pivot to Floor (mm)	490 - 505	493
HW- Hip Width (mm)	356 - 391	373

REMARKS: None

THORACIC SHOCK ABSORBER TESTS

PRE-TEST

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 015 Sequential Test Number: 1.4
 Date: April 19, 2000 Laboratory Technician: B. Swiecicki

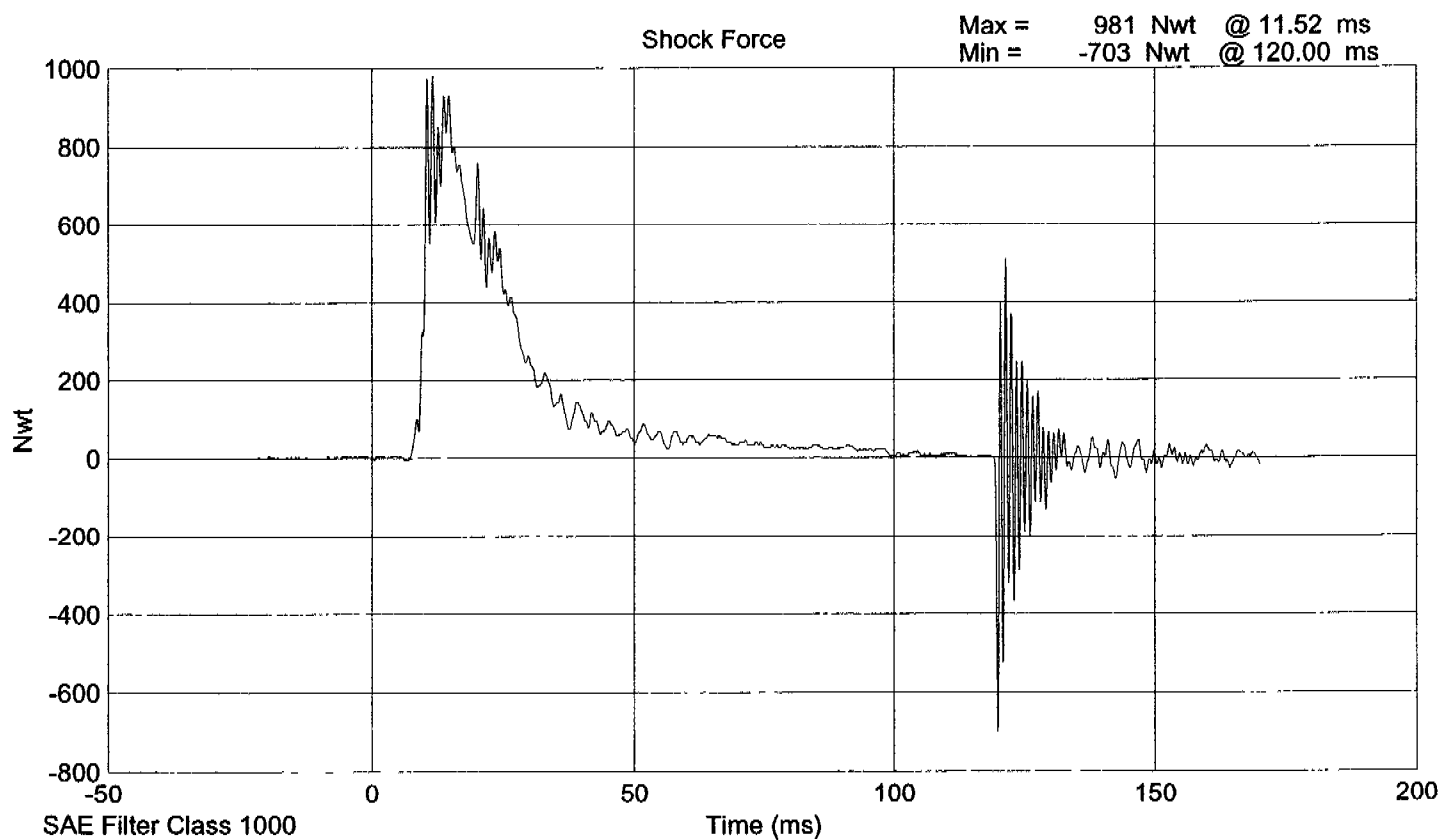
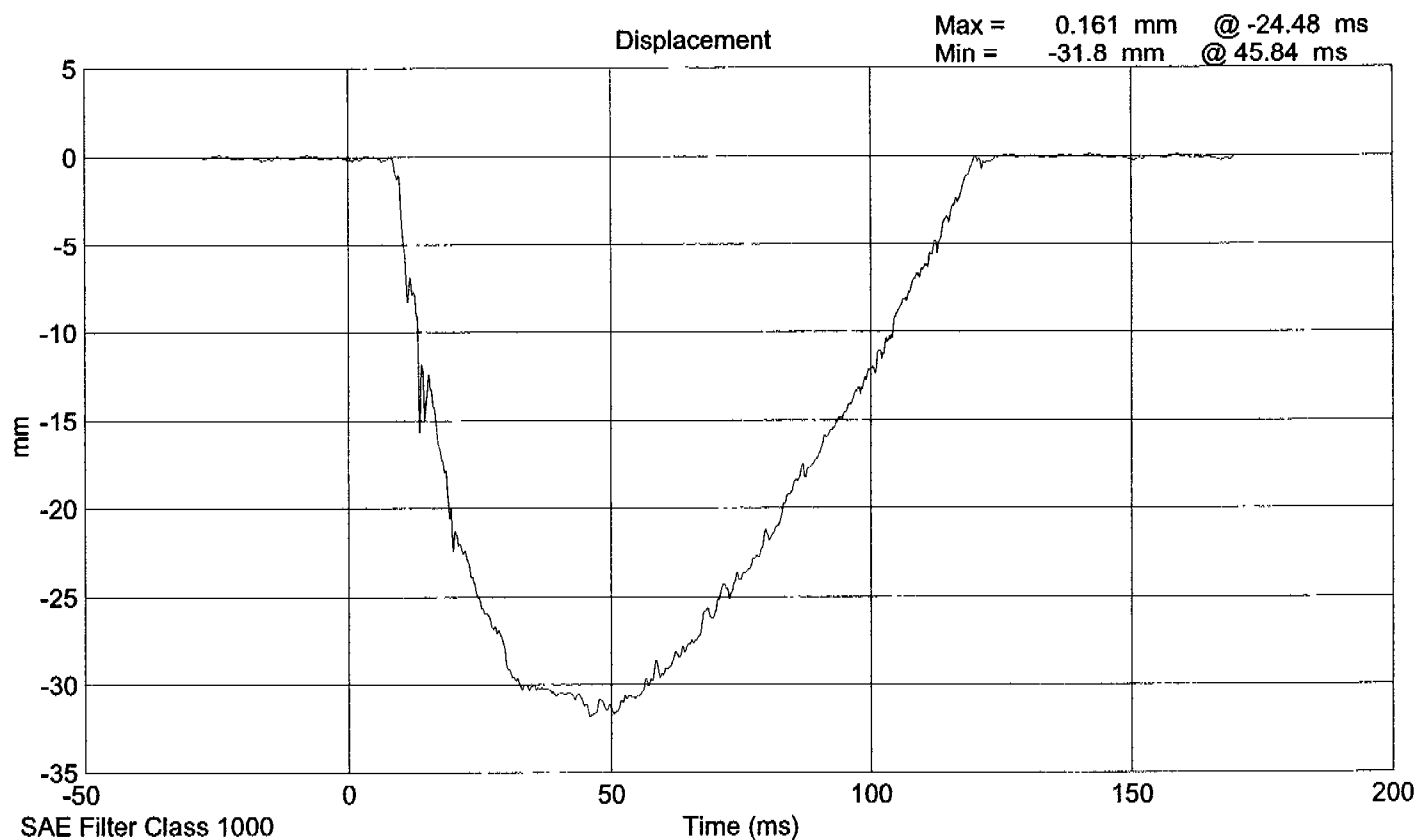
DAMPER IDENTIFICATION: 015

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)		18.9 - 25.5	21.1
RELATIVE HUMIDITY (%)		10 - 70	30
VELOCITY 3.05 m/s	FORCE (N)	836 - 1125	981.2
	DISPLACEMENT (mm)	30 - 35	31.8
VELOCITY 4.27 m/s	FORCE (N)	1730 - 2099	1849.4
	DISPLACEMENT (mm)	32 - 37	34.7
VELOCITY 6.10 m/s	FORCE (N)	3741 - 4448	3925.0
	DISPLACEMENT (mm)	33 - 40	35.1

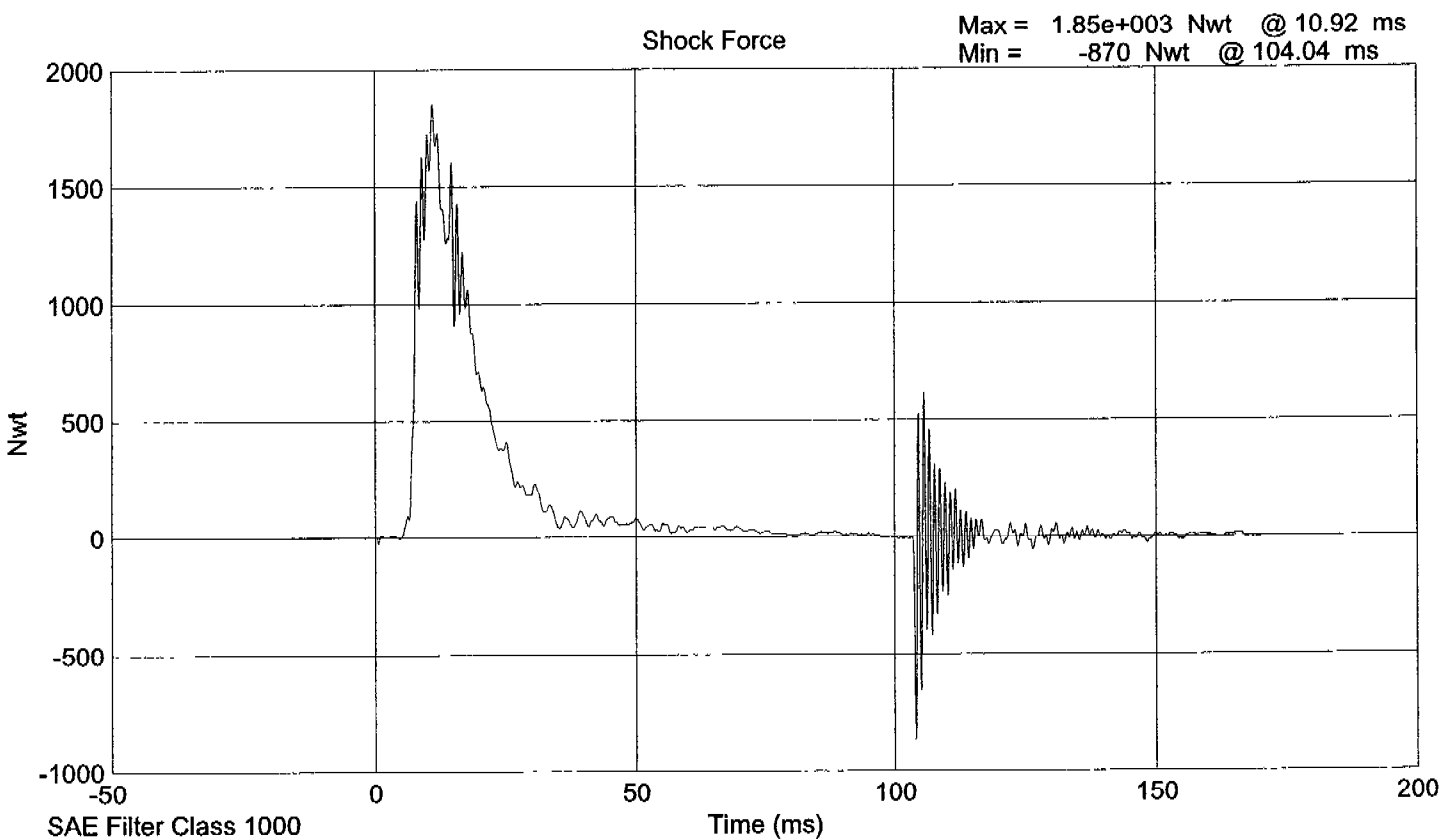
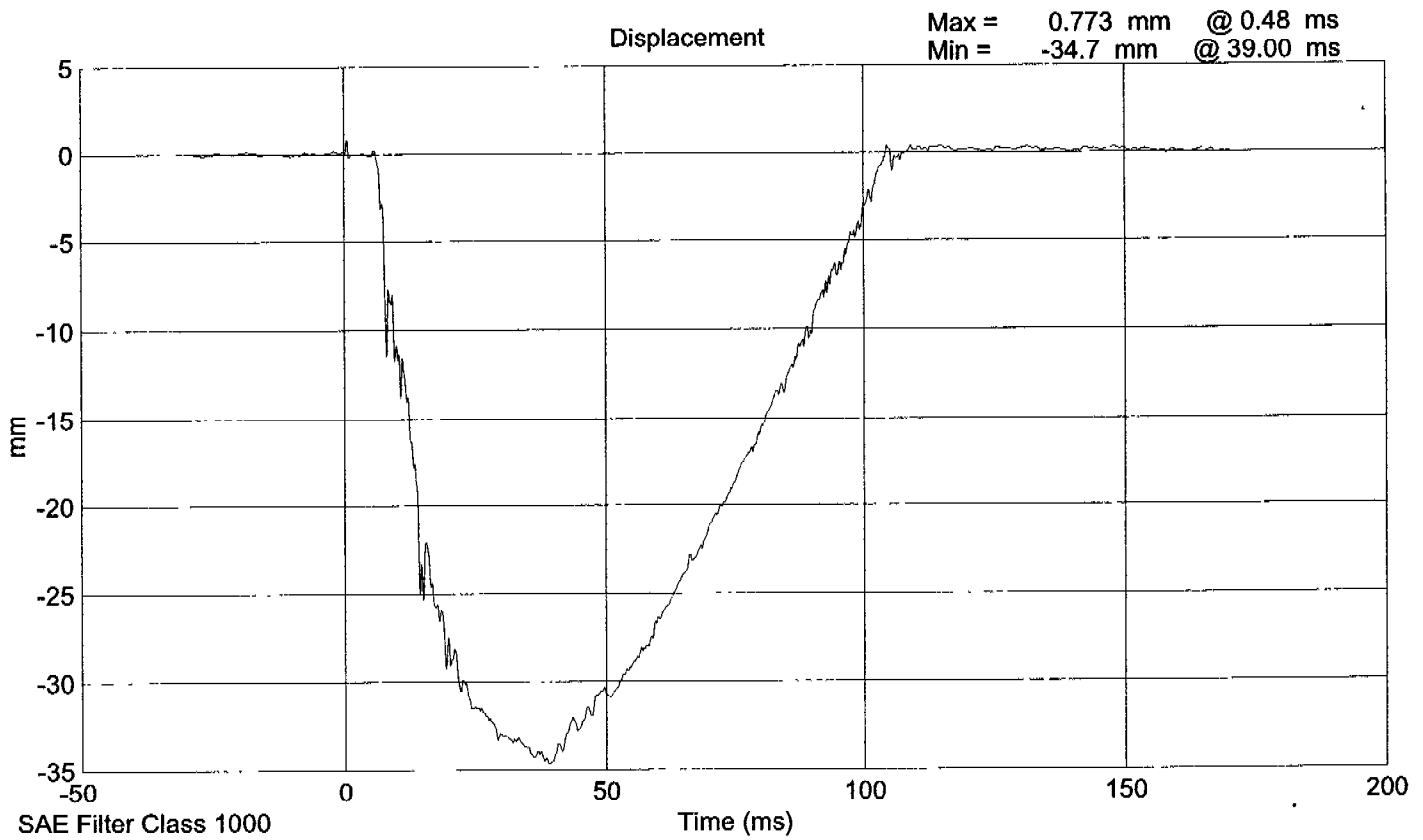
DAMPER SETTING: 5

REMARKS: None

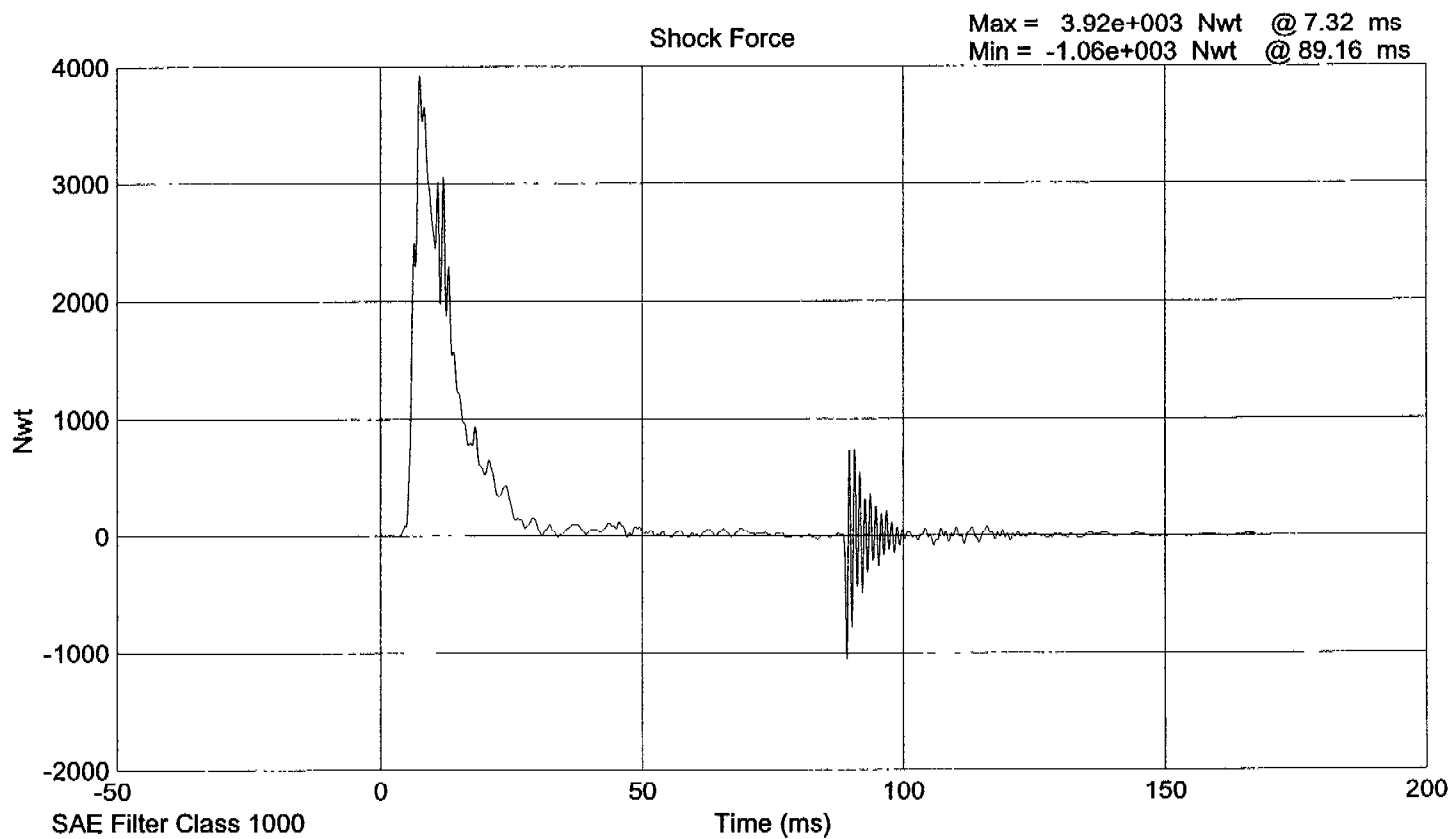
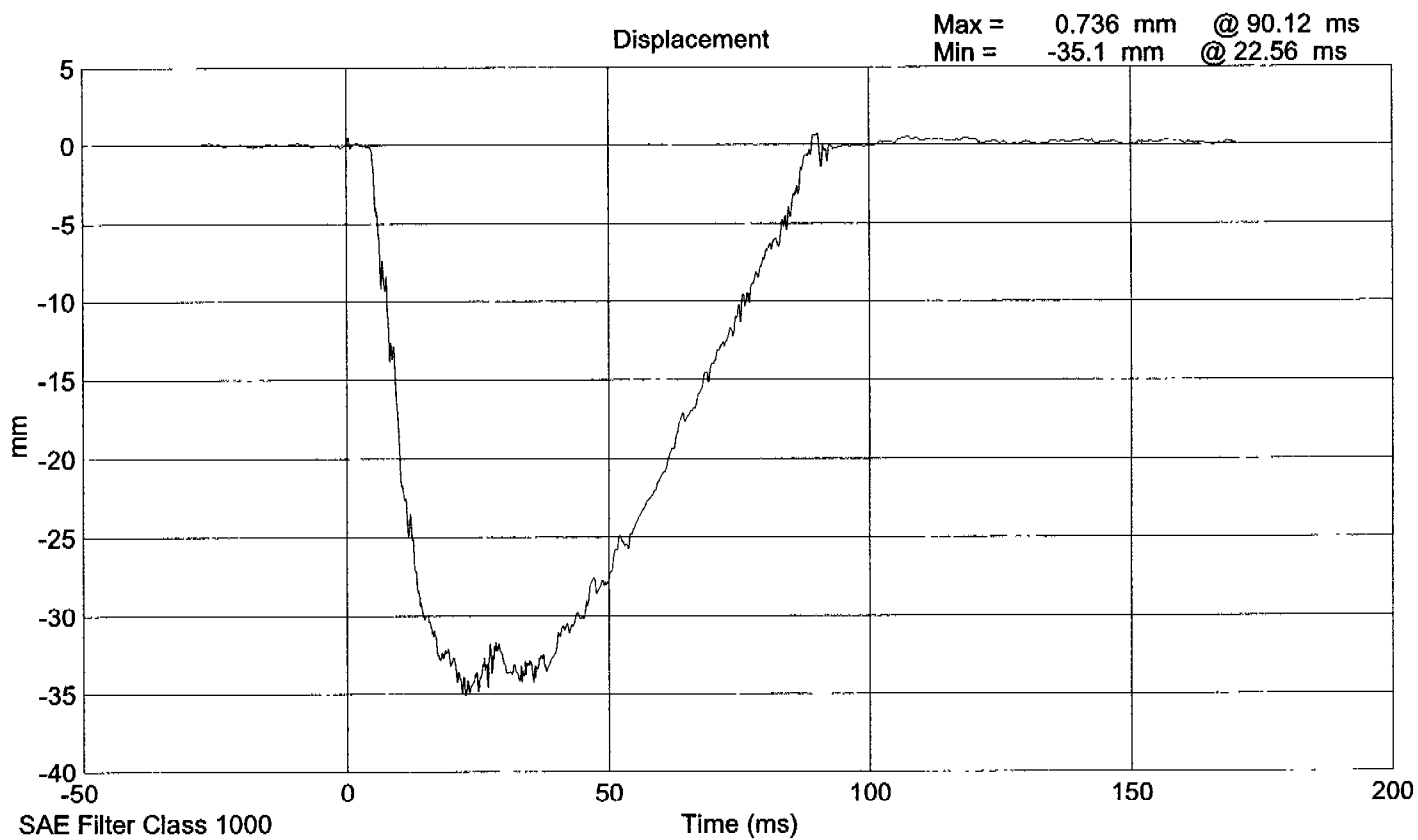
SID 015 Shock Absorber Impact Test @ 3.048 m/s



SID 015 Shock Absorber Impact Test @ 4.572 m/s



SID 015 Shock Absorber Impact Test @ 6.096 m/s



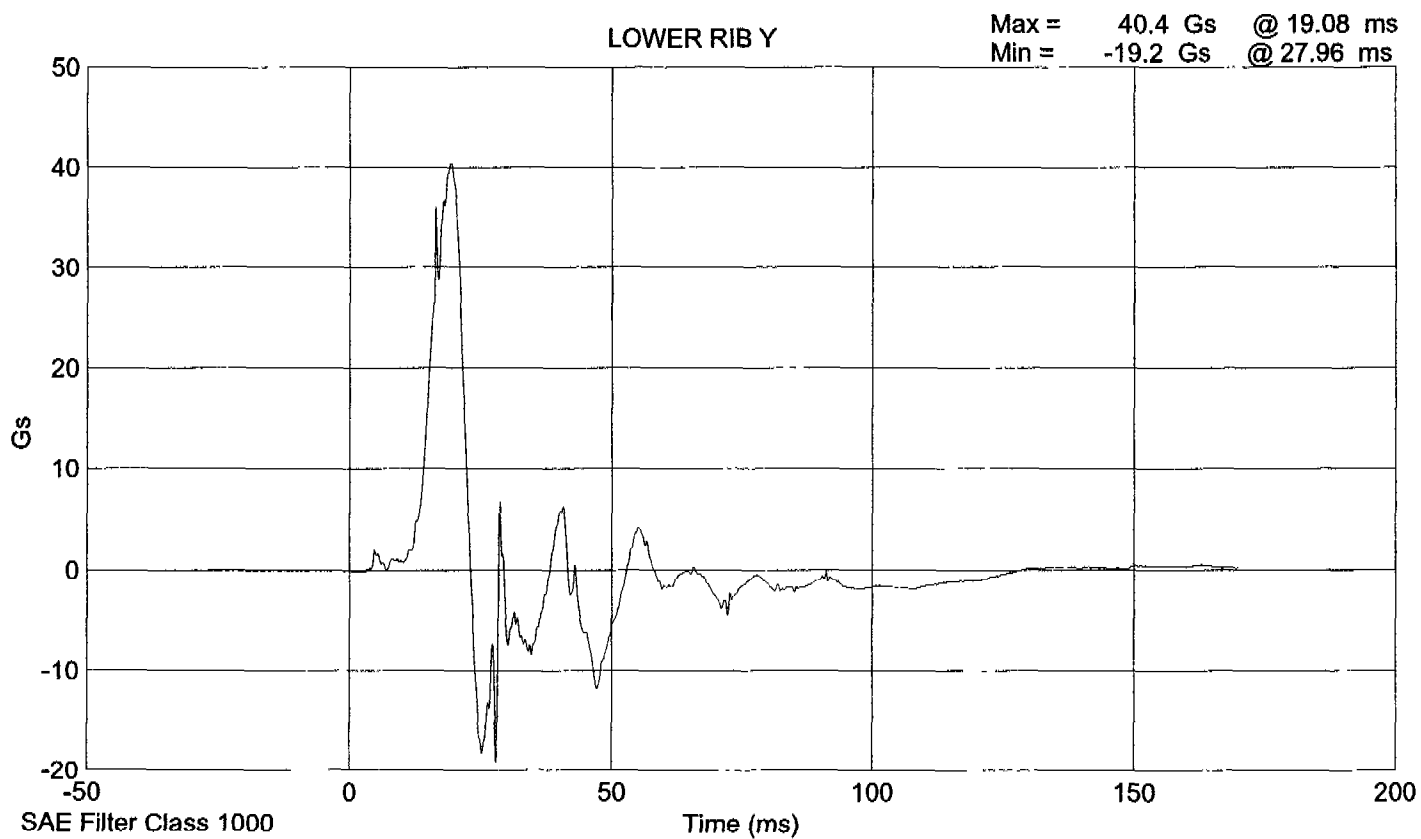
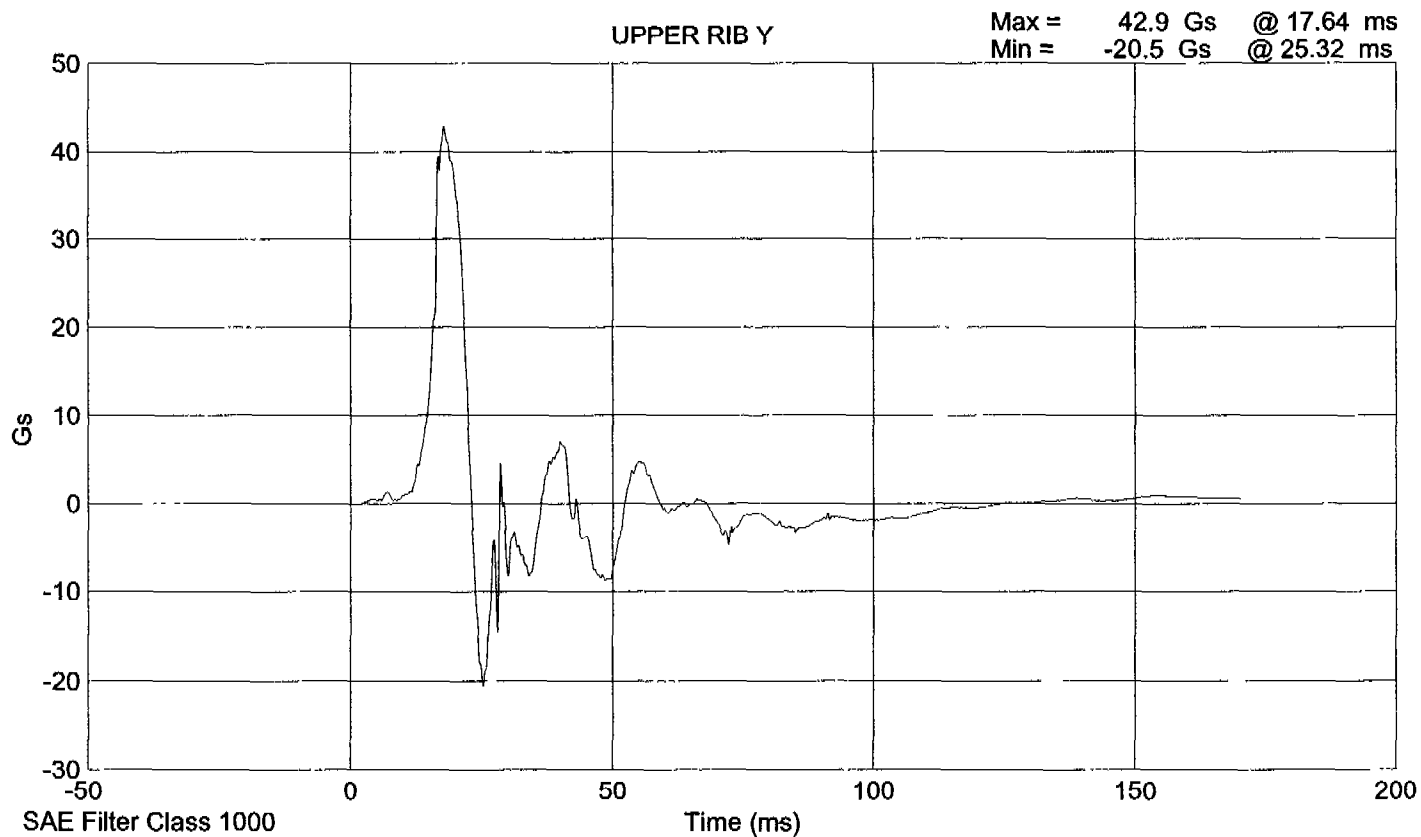
**LATERAL THORAX IMPACT TEST
PRE-TEST**

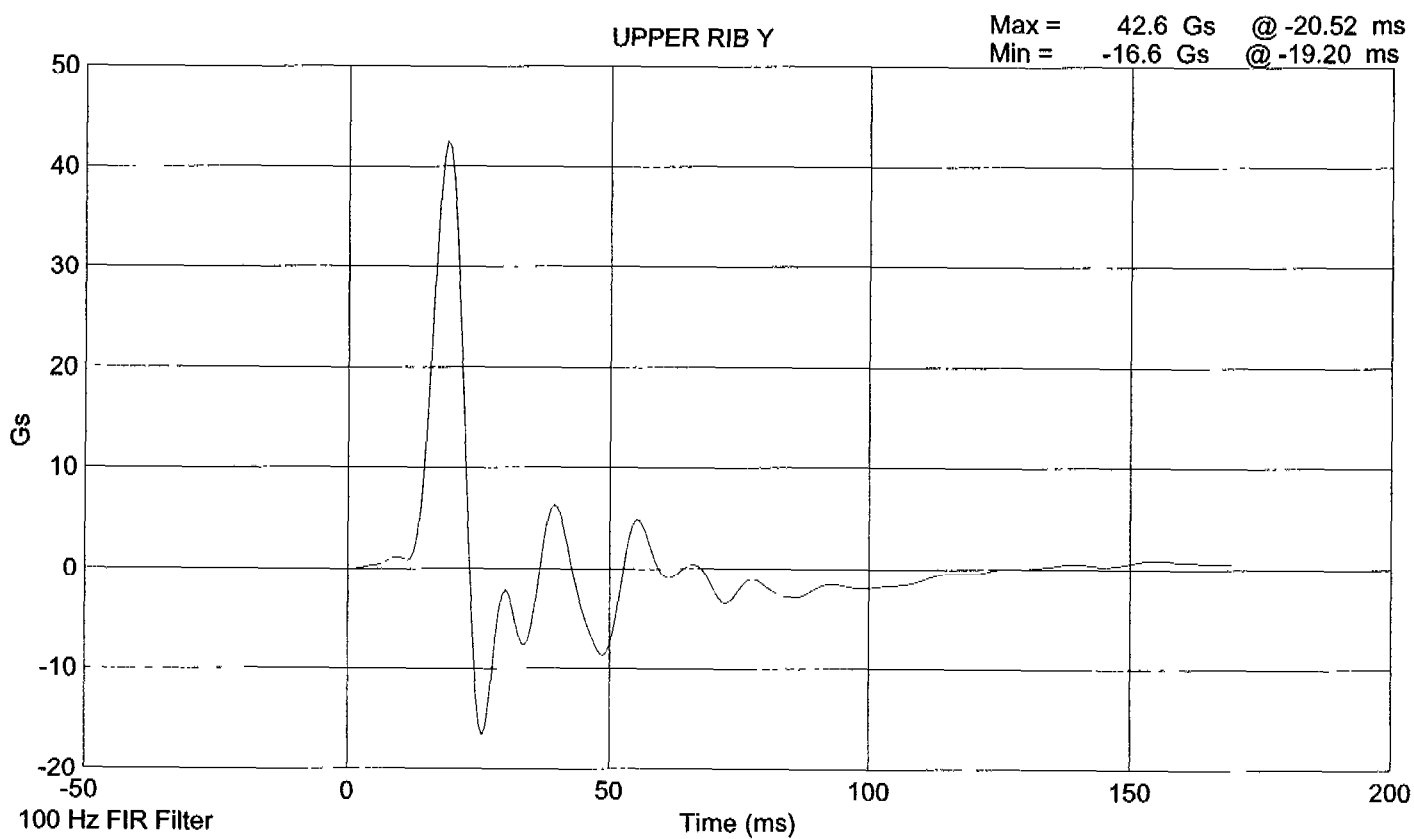
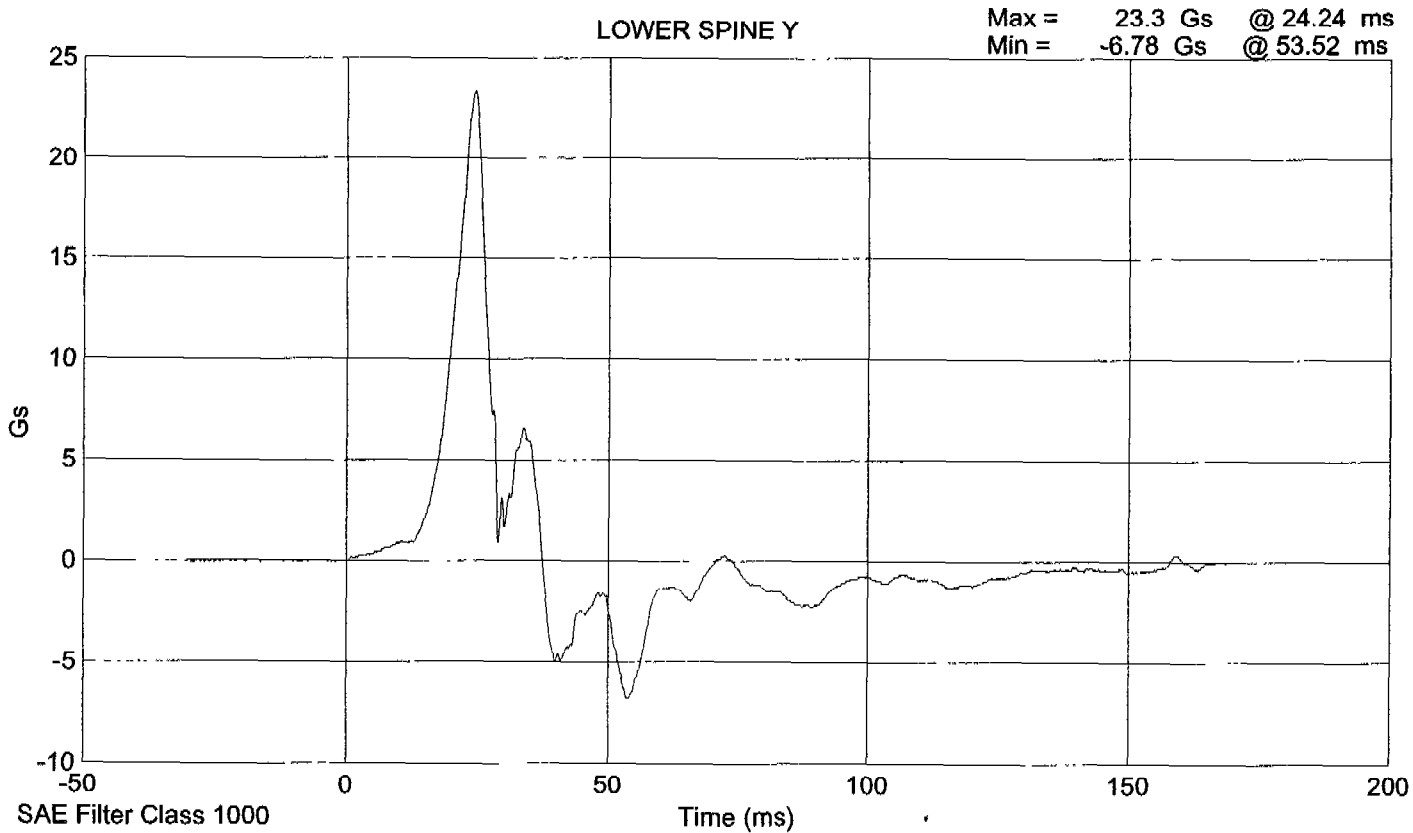
CONFIGURED FOR LEFT SIDE IMPACT

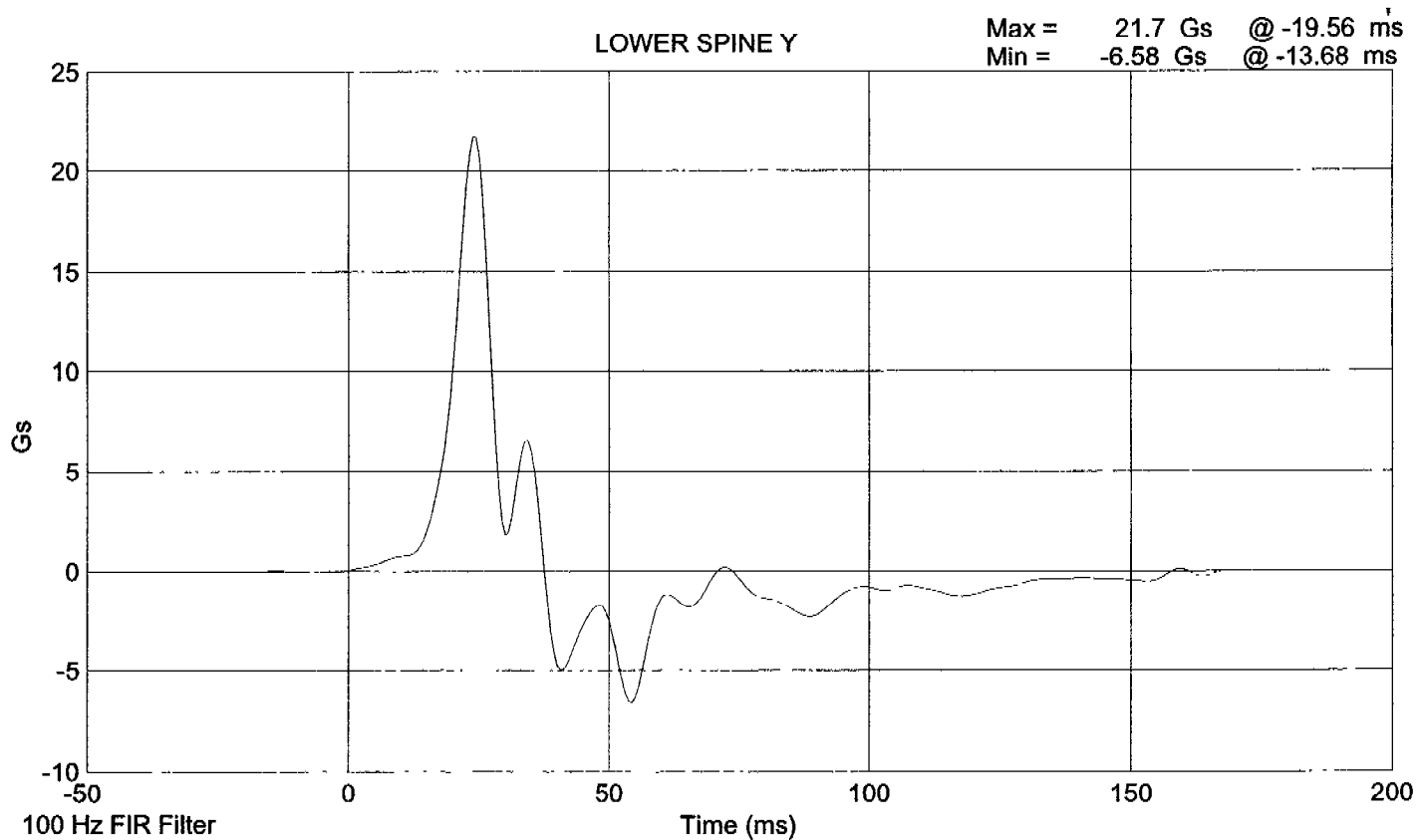
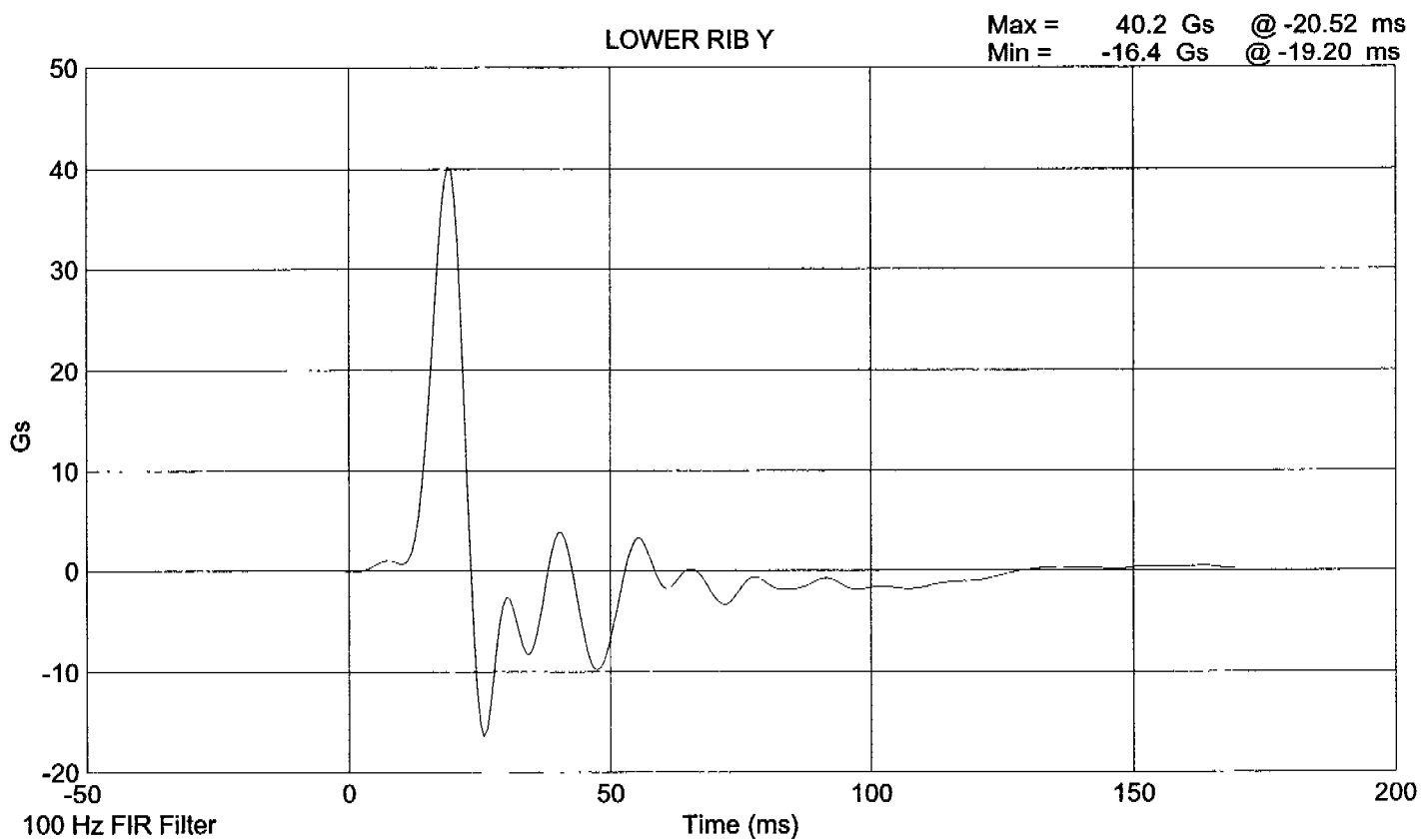
SID Serial No.: 015 Sequential Test Number: 1
Date: November 30, 2000 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.7
RELATIVE HUMIDITY (%)	10 - 70	31
PROBE SPEED (m/s)	4.27 - 4.33	4.28
UPPER RIB (g's)	37 - 46	42.56
LOWER RIB (g's)	37 - 46	40.23
LOWER SPINE (g's)	15 - 22	21.72

REMARKS: None







**LATERAL PELVIS IMPACT TEST
PRE-TEST**

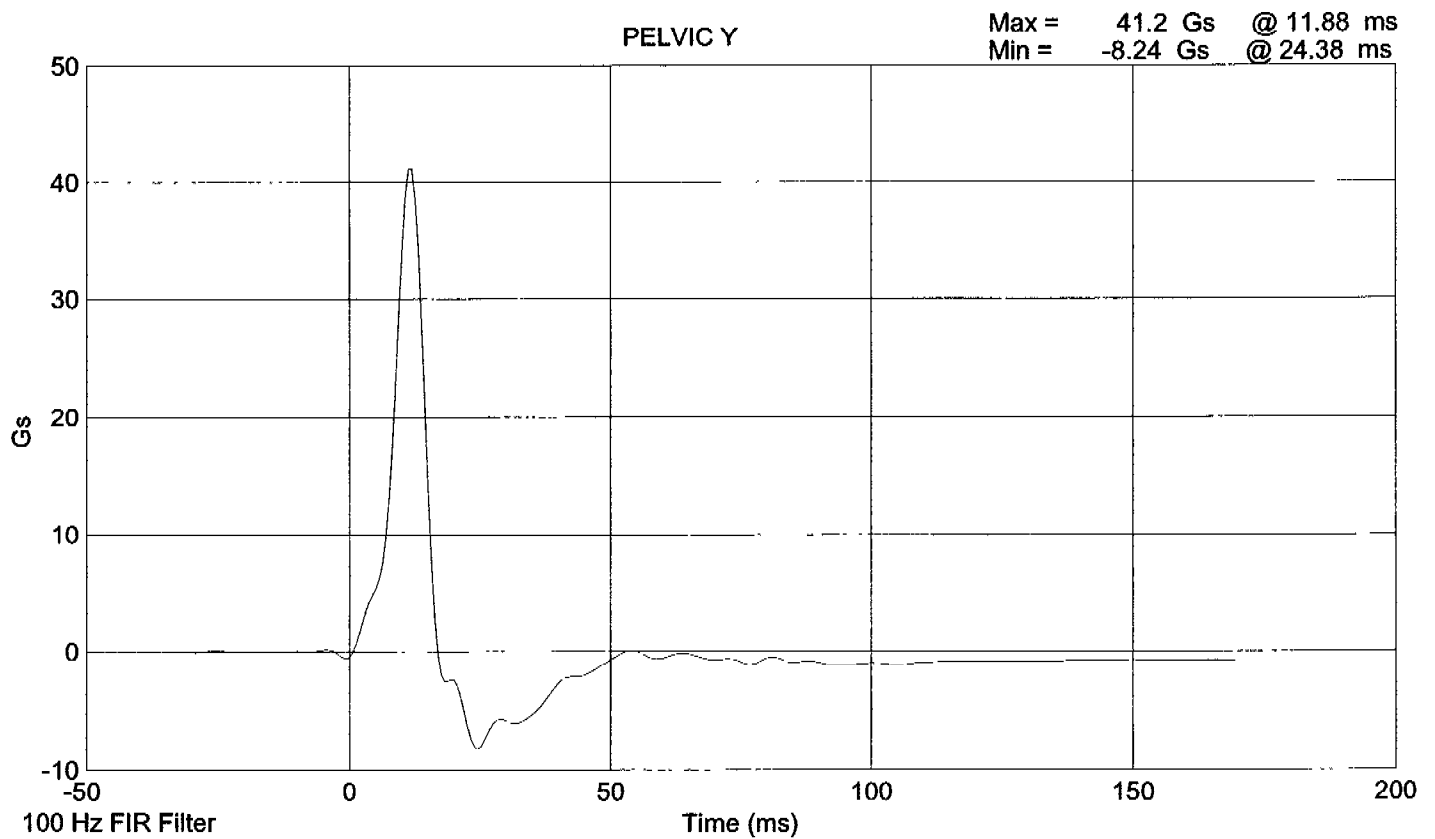
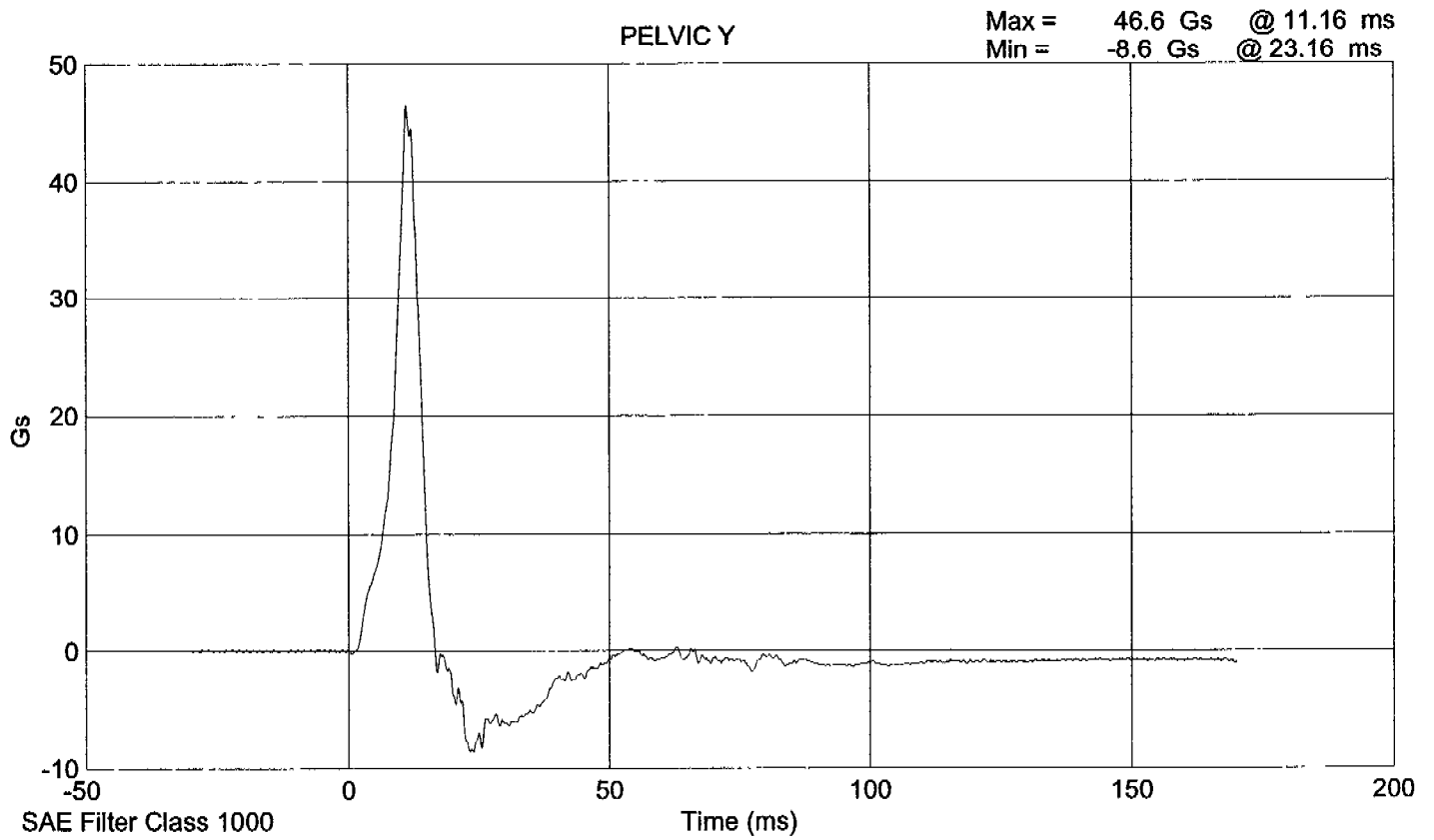
CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 015 Sequential Test Number: 1
Date: November 30, 2000 Laboratory Technician: B. Swiccicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.7
RELATIVE HUMIDITY (%)	10 - 70	31
PROBE SPEED (m/s)	4.27 - 4.33	4.27
PELVIS ACCELERATION (g's)	40 - 60	41.18

REMARKS: None

SID 015 Pelvic Impact Test @ 4.2702 m/s



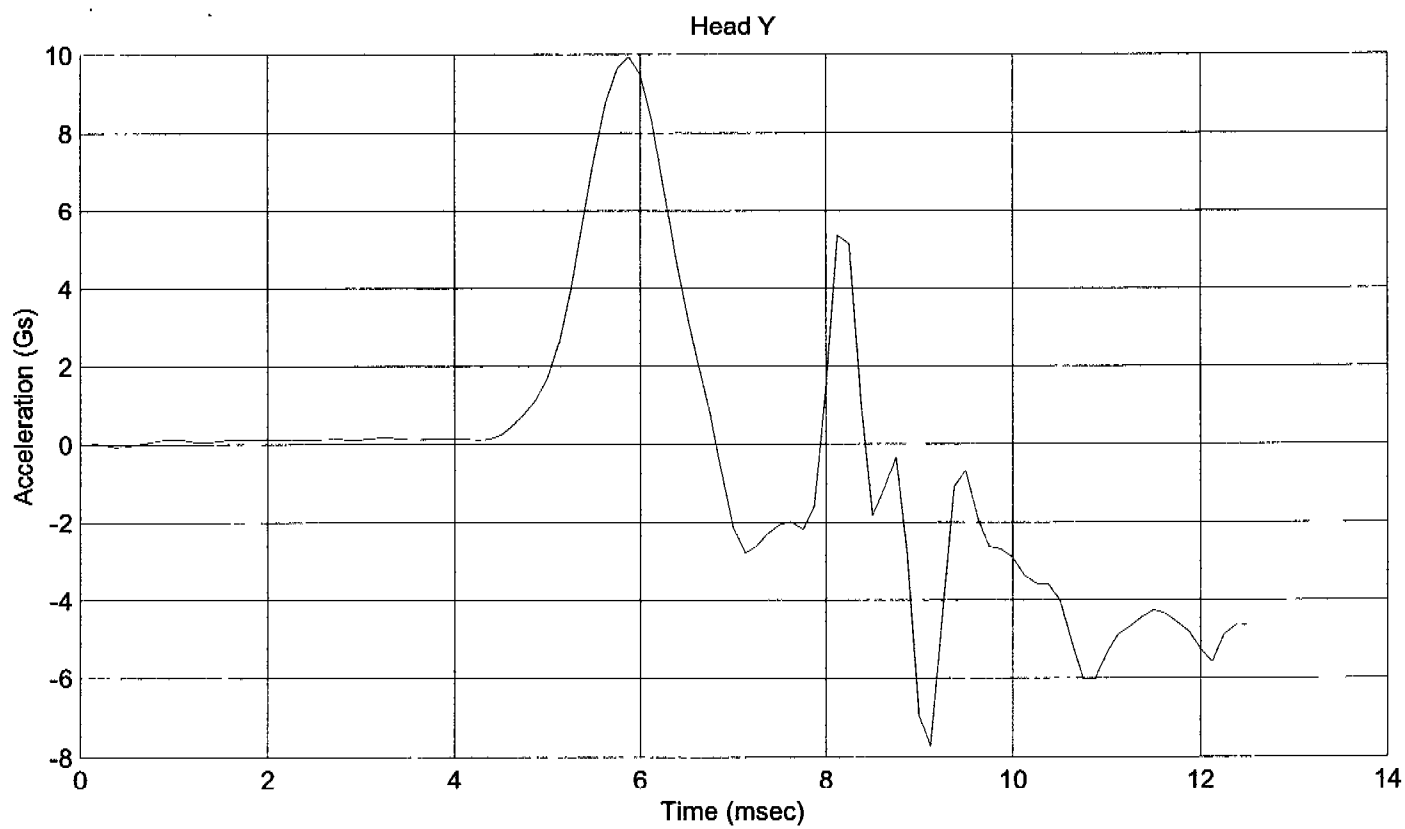
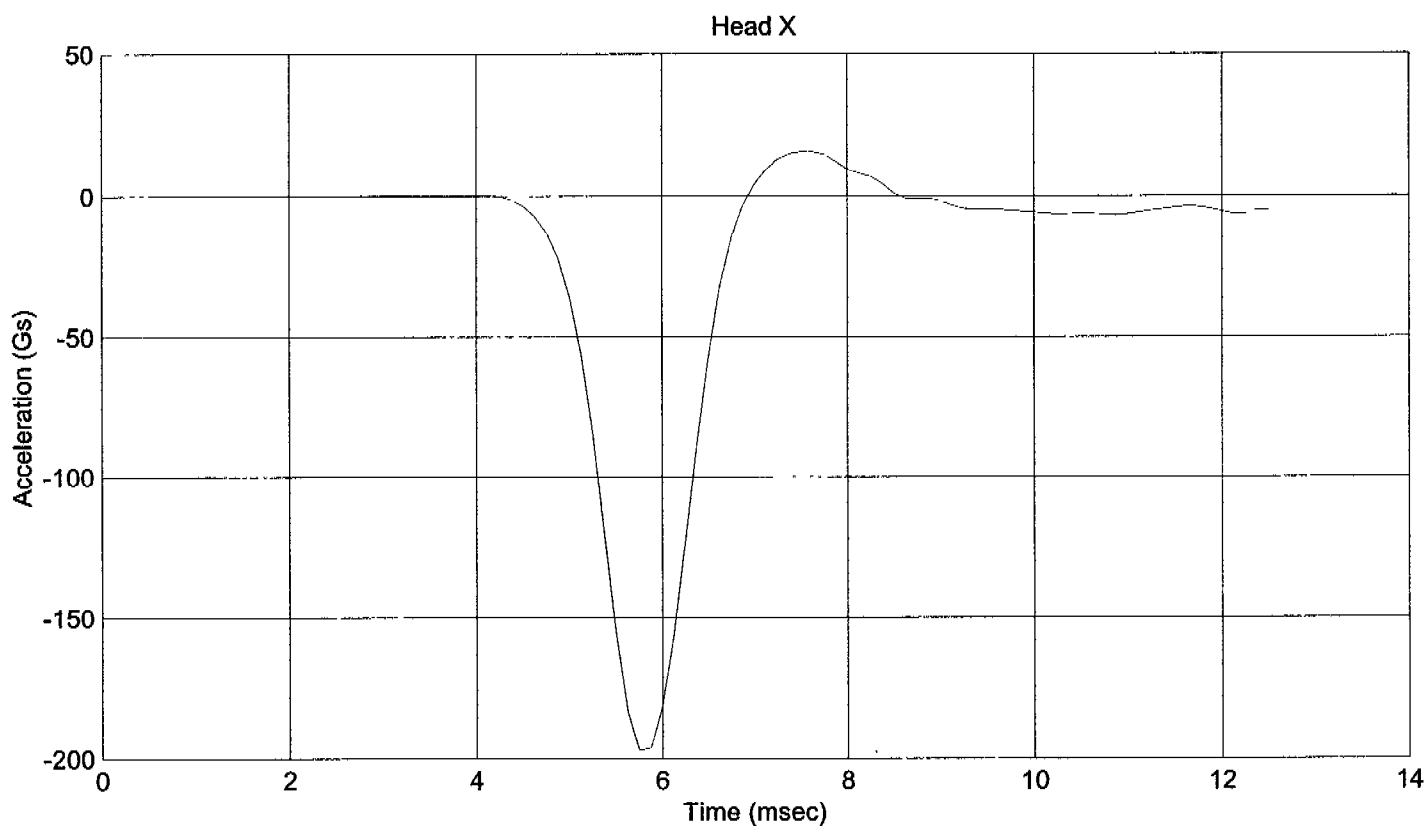
HEAD DROP TEST
PRE-TEST
(Test not required for SID certification)

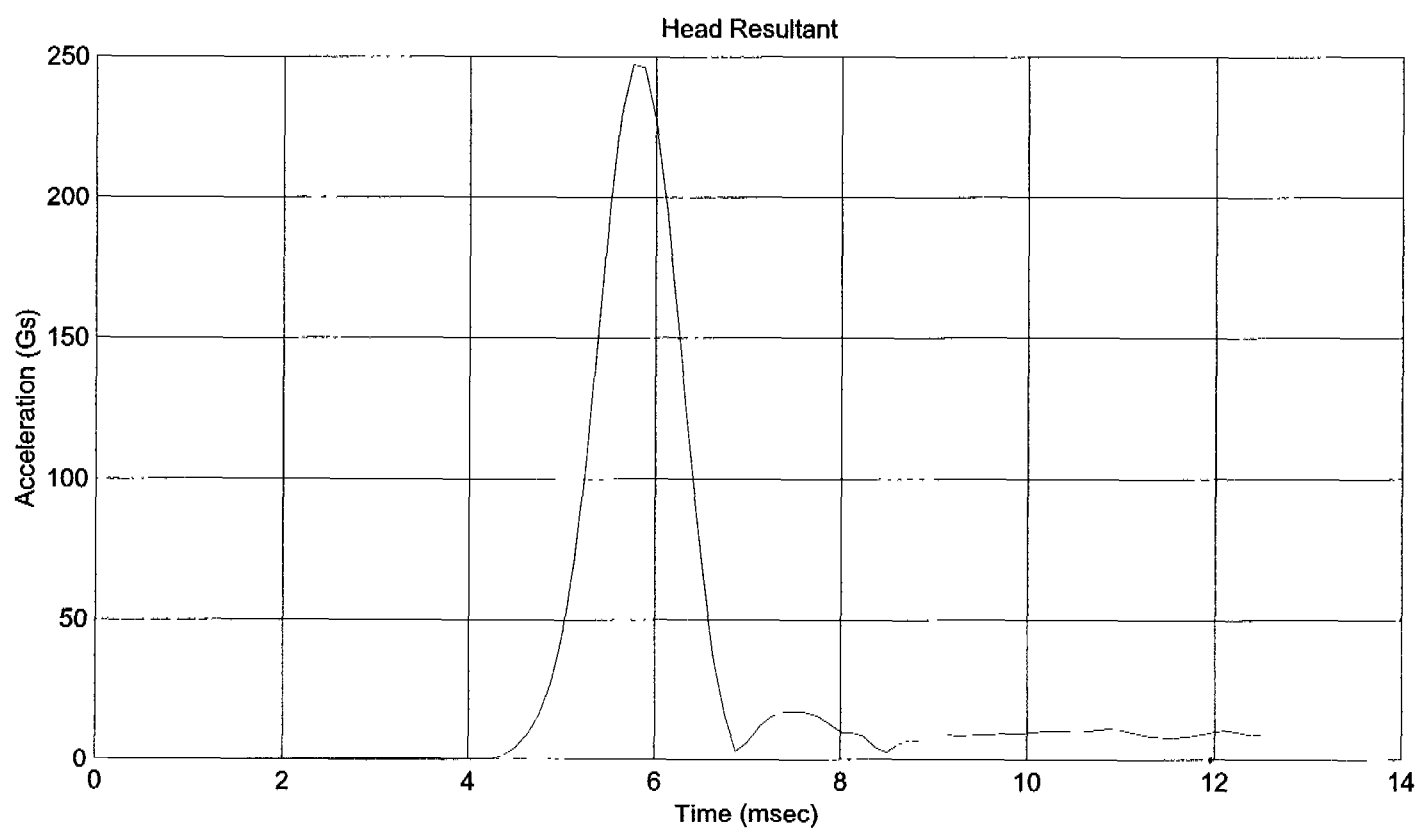
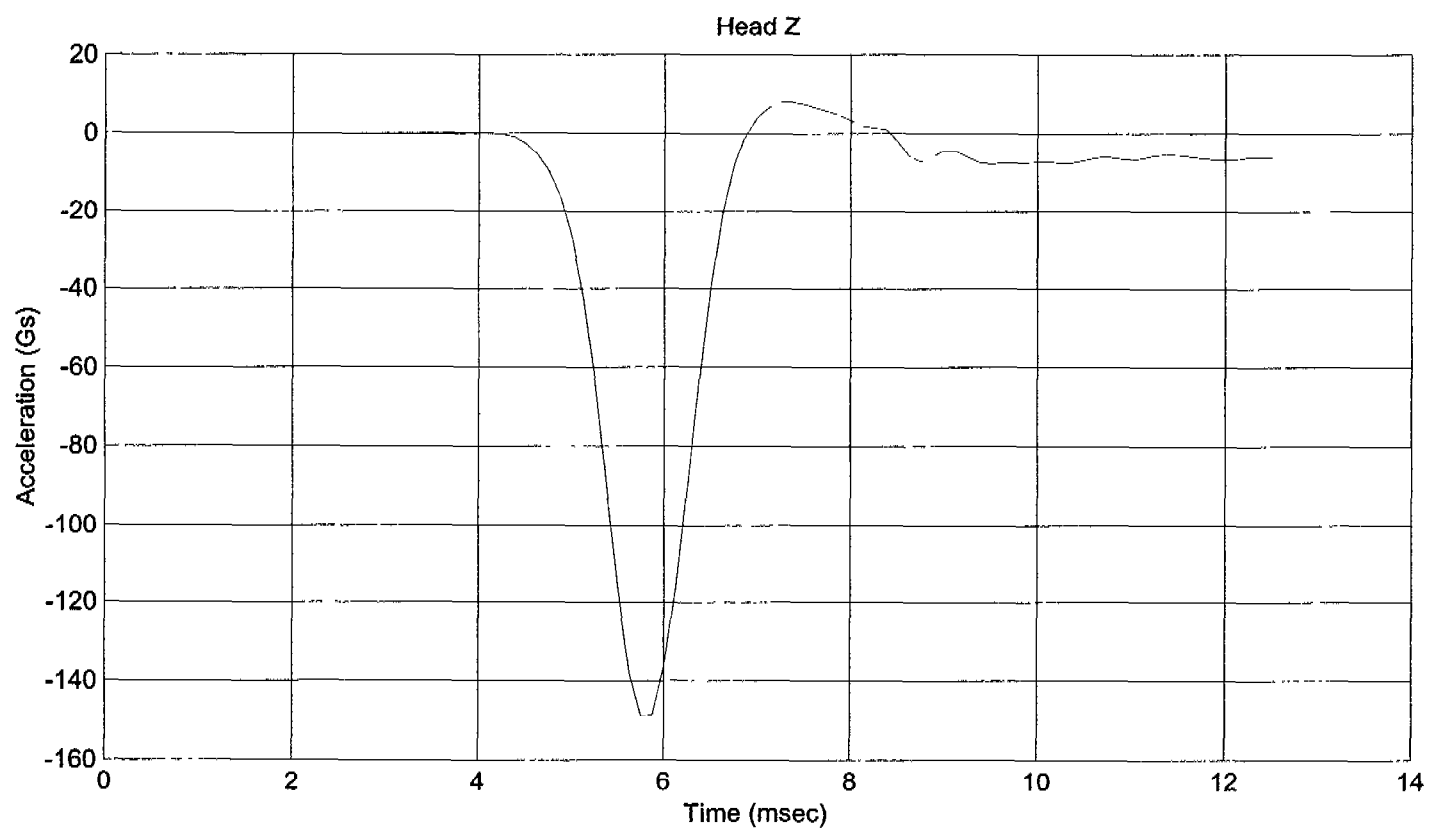
CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 015 Sequential Test Number: 1
Date: November 29, 2000 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.7
RELATIVE HUMIDITY (%)	10 - 70	31
PEAK RESULTANT ACCELERATION (Gs)	210 - 260	247.30
PEAK LATERAL ACCELERATION (Gs)	Not to Exceed 10	9.93
UNIMODAL CRITERIA ABOVE 100 Gs (ms)	0.9 - 1.5	1.12

REMARKS: None





ABDOMINAL COMPRESSION TEST**PRE-TEST**

(Test not required for SID certification)

CONFIGURED FOR LEFT SIDE IMPACTSID Serial No.: 015Sequential Test Number: 1Date: November 30, 2000Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.7
RELATIVE HUMIDITY (%)	10 - 70	31
FORCE @ 13 mm (N)	104 - 162	111
FORCE @ 19 mm (N)	163 - 221	173
FORCE @ 25 mm (N)	222 - 280	245
FORCE @ 33 mm (N)	325 - 391	351

REMARKS: None

Dummy S/N 015

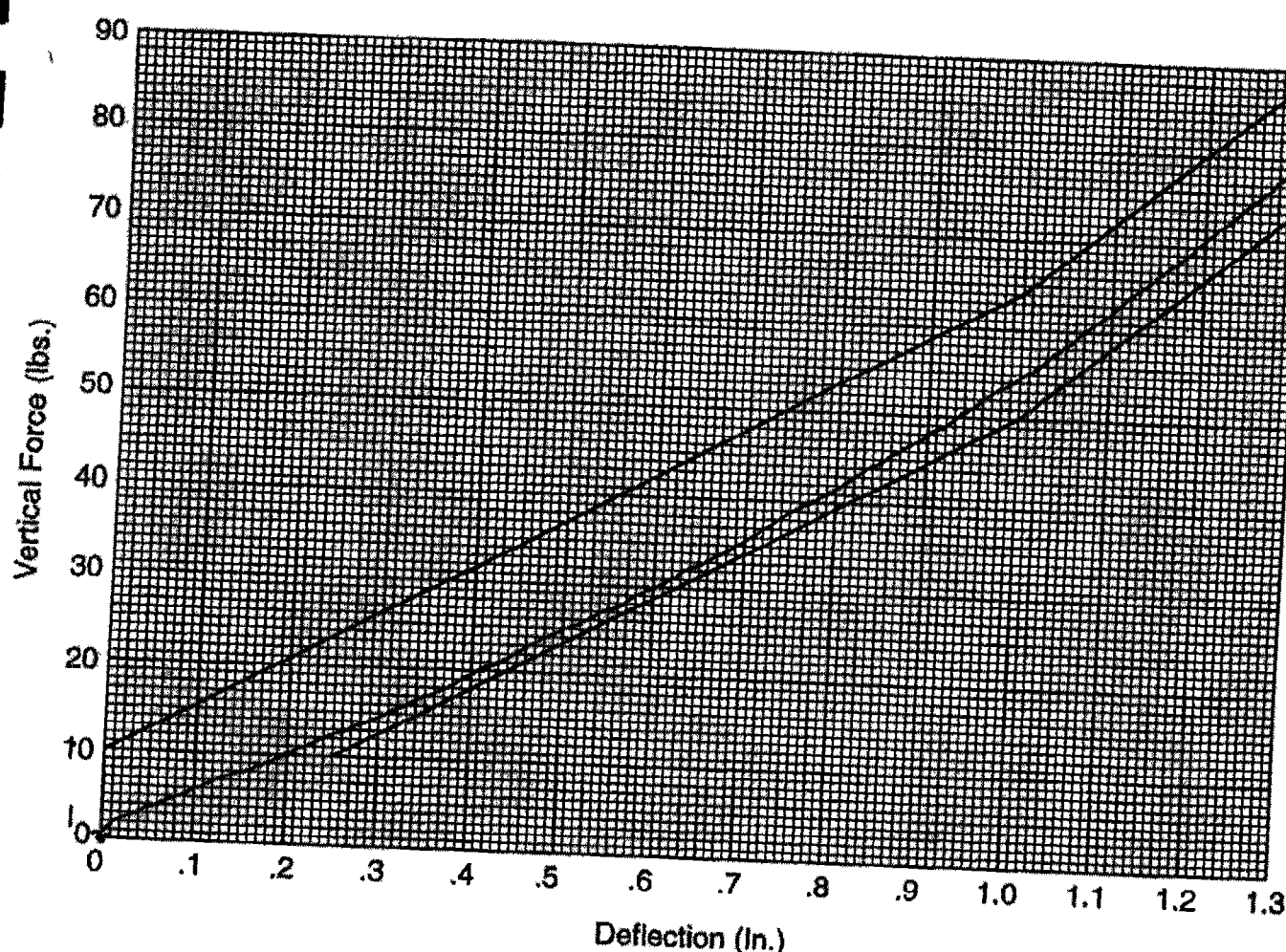
W/A _____

Date 11-30-2000

Performed By [Signature]

Temp. 70°

Humidity 51%



Hybrid II
Abdomen Static Press

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

CONFIGURED FOR LEFT SIDE IMPACT

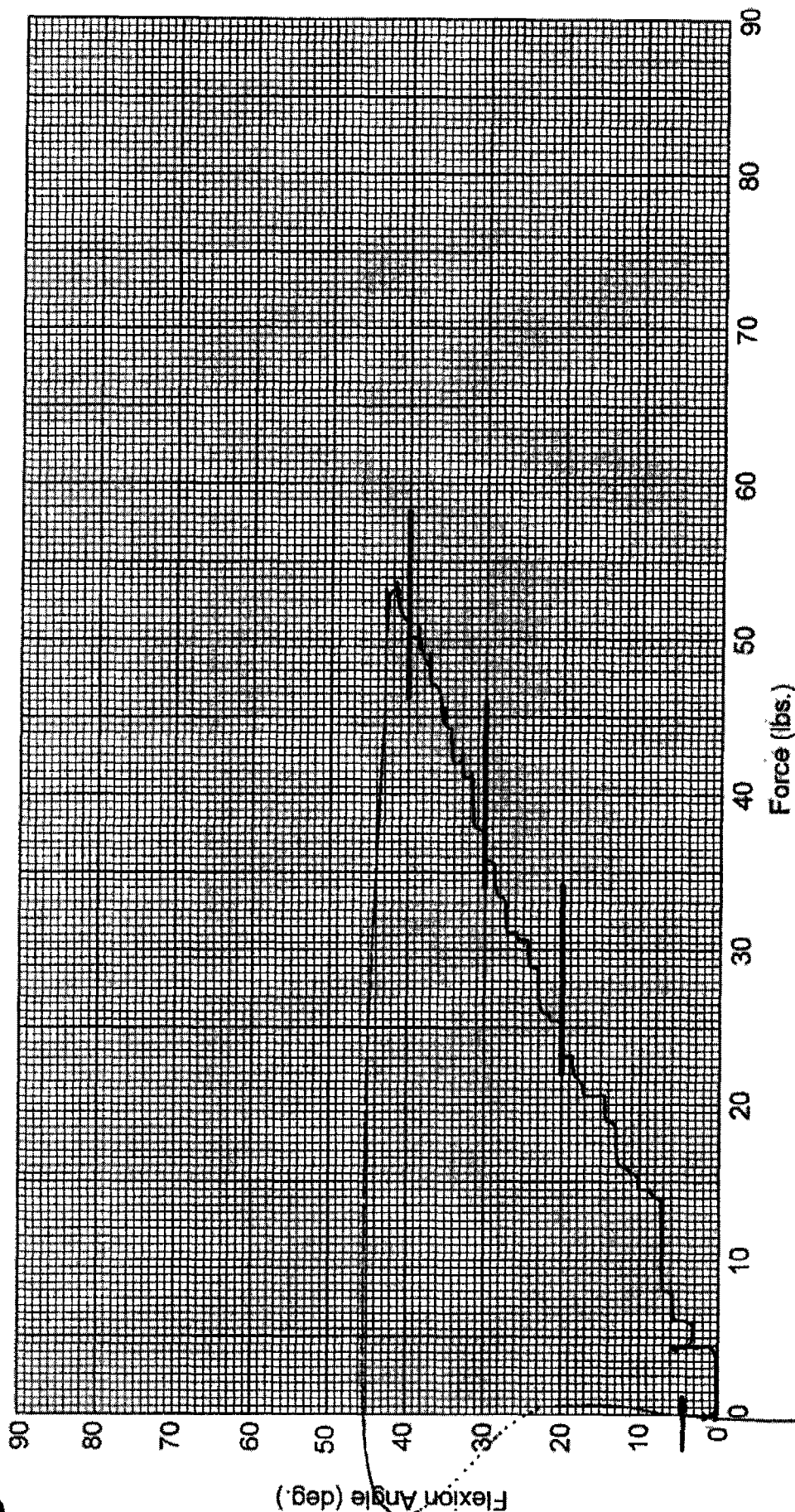
SID Serial No.: 015 Sequential Test Number: 1
Date: November 30, 2000 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.7
RELATIVE HUMIDITY (%)	10 - 70	31
FORCE @ 0° (N)	0 - 26.7	0
FORCE @ 20° (N)	97.8 - 151.2	105
FORCE @ 30° (N)	151.2 - 204.6	162
FORCE @ 40° (N)	204.6 - 258	225
RETURN ANGLE	12° max.	4.5°

REMARKS: None

ORIGINAL

Dummy S/N 015
WIA _____
Date 11-30-2000
Performed By BB
Temp. 71°
Humidity 31%



Hybrid II Lumbar Spine Flexion Test

FM-052-CERT-005-R00

PC32/032 ISC Forms

PRE-TEST DUMMY INSPECTION LIST

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 015 Sequential Test Number: 1
 Date: November 30, 2000 Laboratory Technician: B. Swiecicki

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.: 013

CONFIGURED FOR LEFT SIDE IMPACT

**CALIBRATION TEST RESULTS SUMMARY
POST TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 013 Sequential Test Number: 1
Date: January 8, 2001 Laboratory Technician: B. Swiecicki

TEST	COMMENTS
EXTERNAL DIMENSIONS	Passed all requirements.
LATERAL THORAX IMPACT TEST	Passed all requirements.
LATERAL PELVIS IMPACT TEST	Passed all requirements.
HEAD DROP 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.: 013 Sequential Test Number: 1
Date: January 8, 2001 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
SH- Seated Height (mm)	889 - 909	902
RH- Rib Height (mm)	502 - 520	511
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	521
KV- Knee Pivot to Floor (mm)	490 - 505	493
HW- Hip Width (mm)	356 - 391	373

REMARKS: None

**LATERAL THORAX IMPACT TEST
POST TEST**

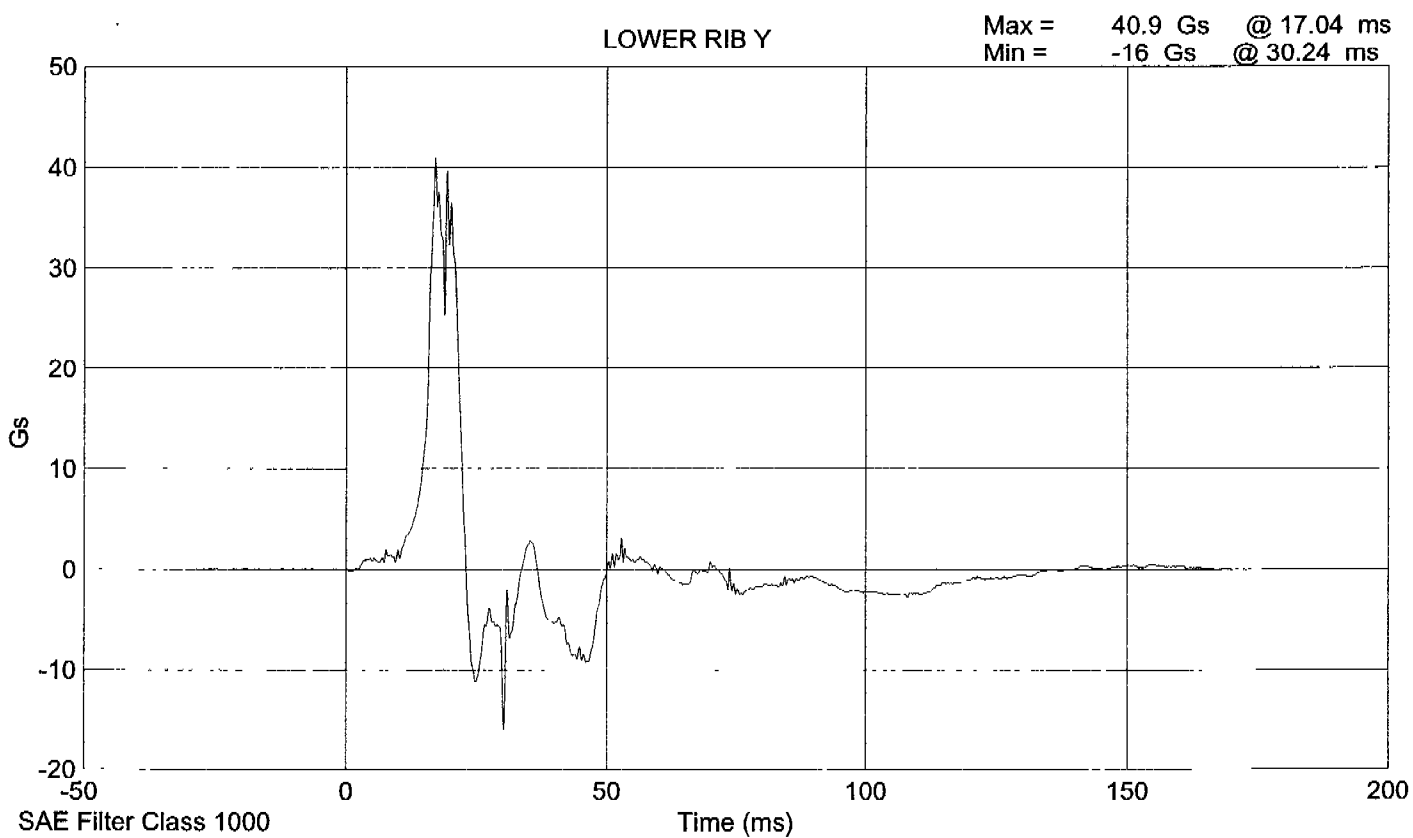
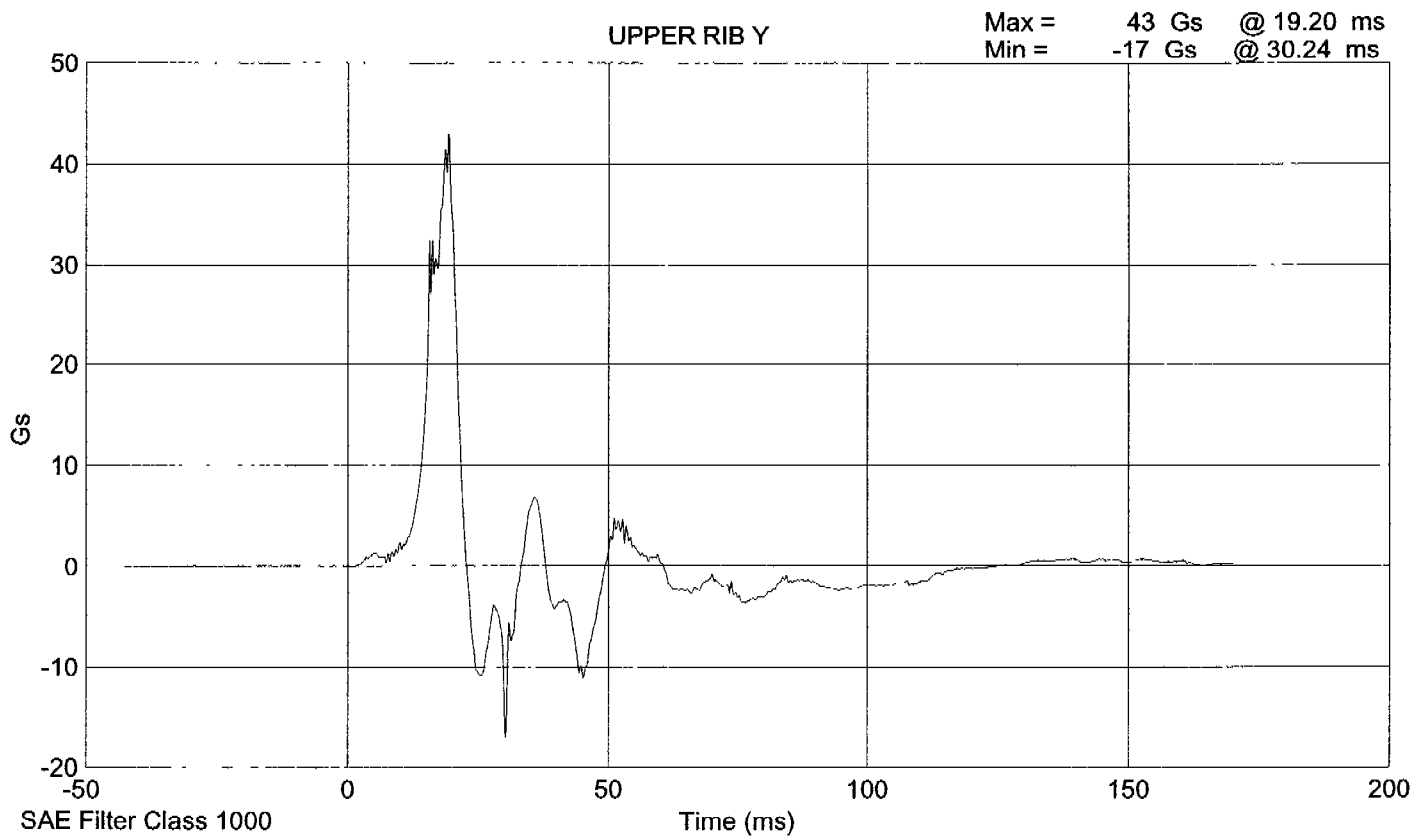
CONFIGURED FOR LEFT SIDE IMPACT

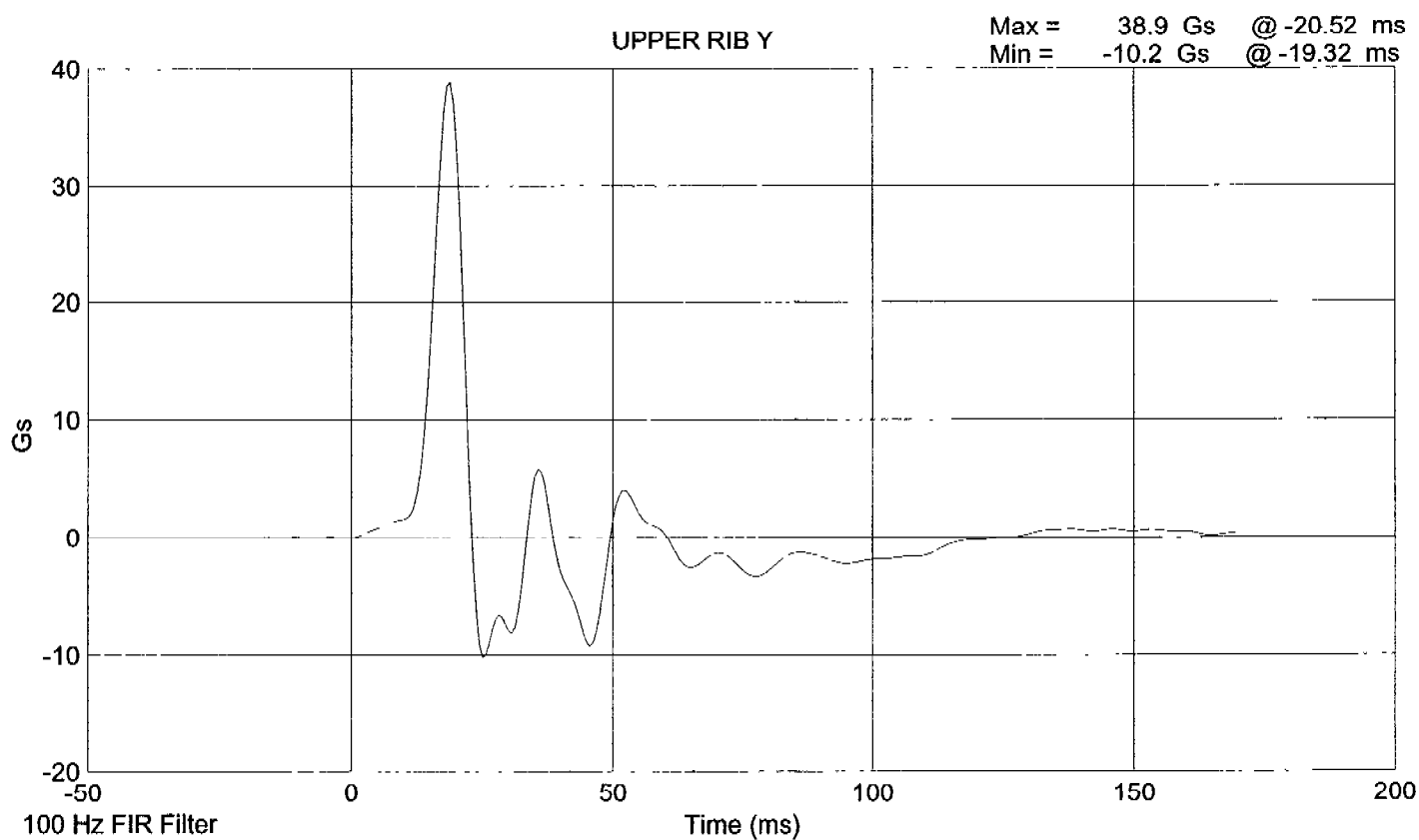
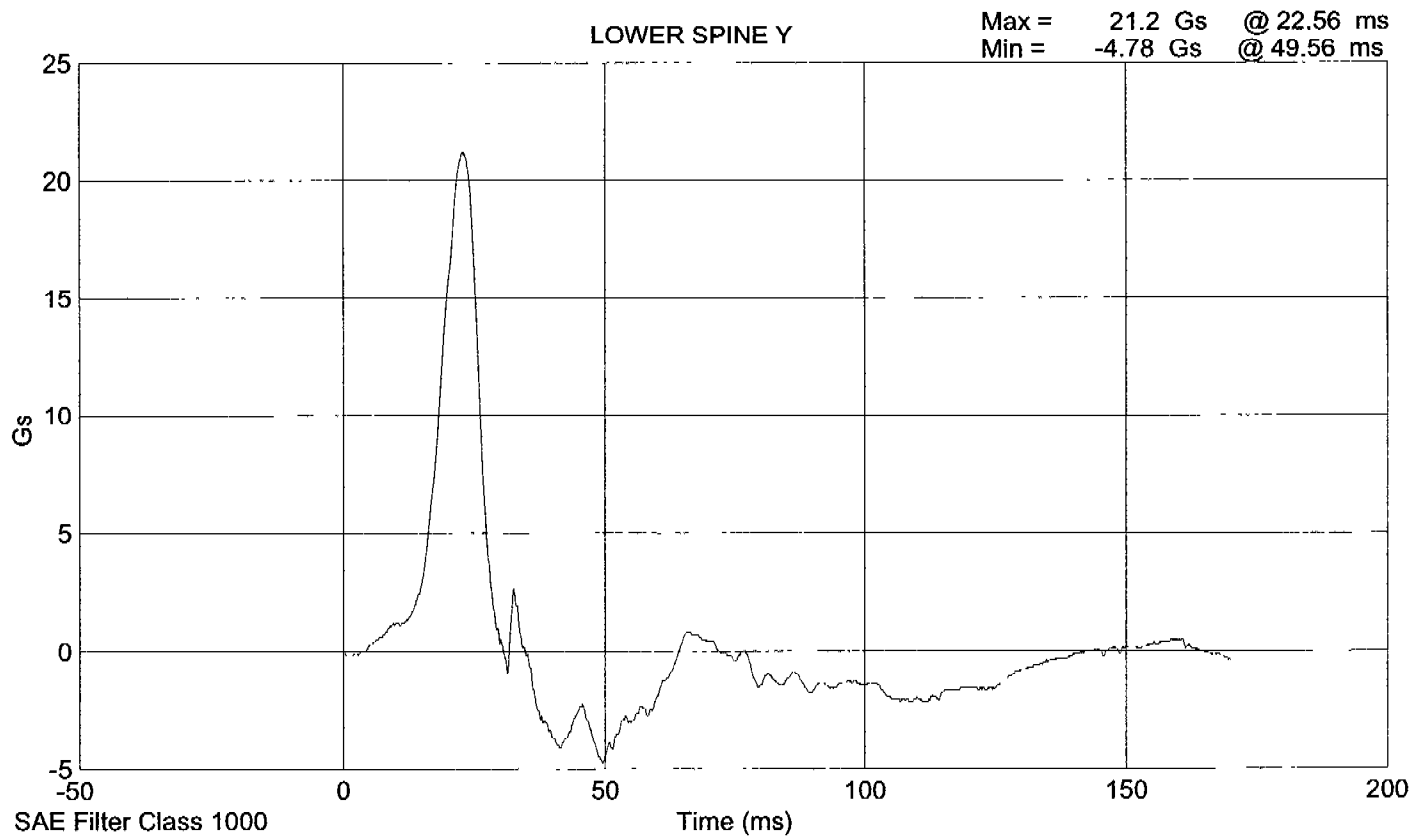
SID Serial No.: 013 Sequential Test Number: 1
Date: January 4, 2001 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.1
RELATIVE HUMIDITY (%)	10 - 70	31
PROBE SPEED (m/s)	4.27 - 4.33	4.29
UPPER RIB (g's)	37 - 46	38.87
LOWER RIB (g's)	37 - 46	38.21
LOWER SPINE (g's)	15 - 22	21.04

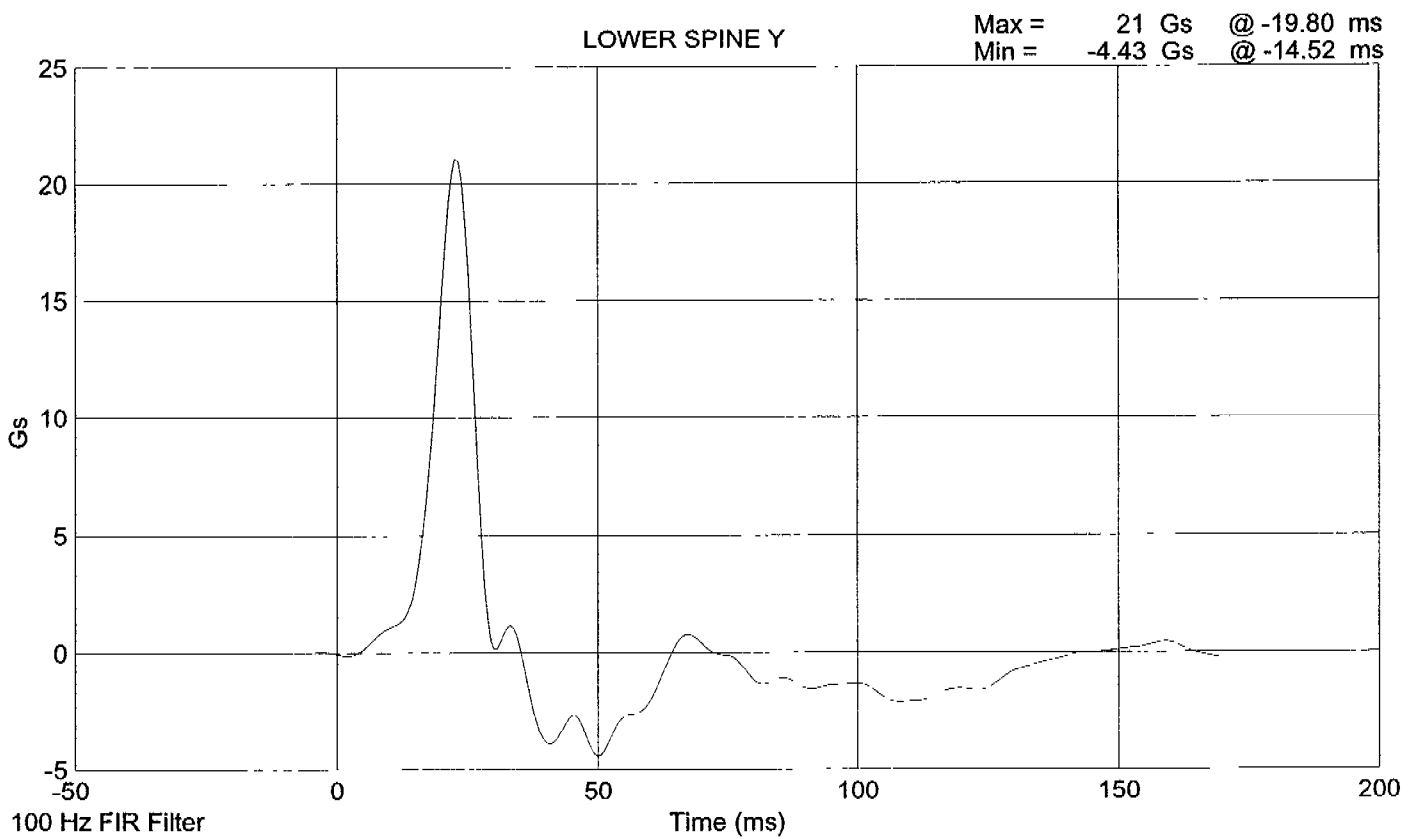
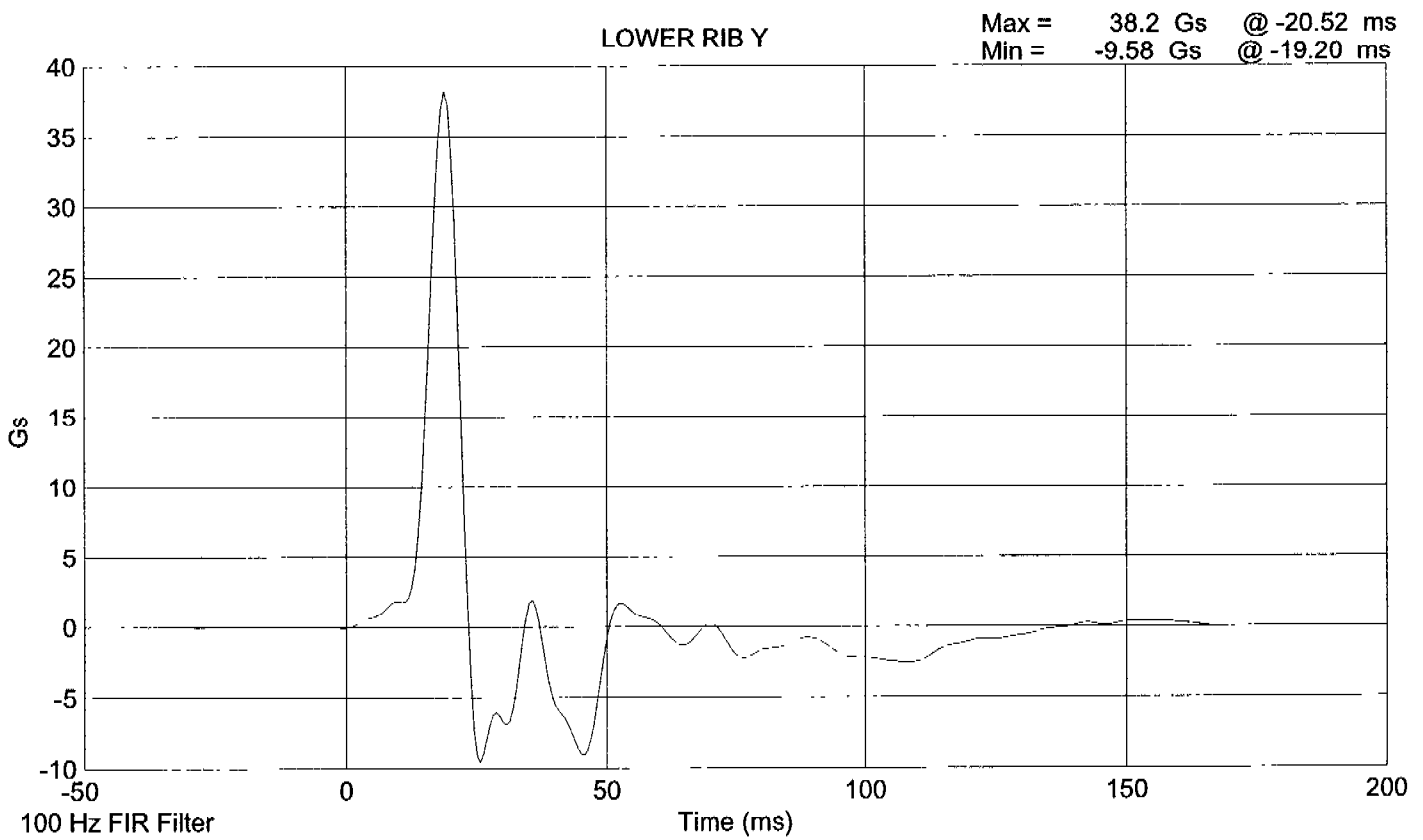
REMARKS: None

SID 013 Thorax Impact Test @ 4.2855 m/s





SID 013 Thorax Impact Test @ 4.2855 m/s



**LATERAL PELVIS IMPACT TEST
POST TEST**

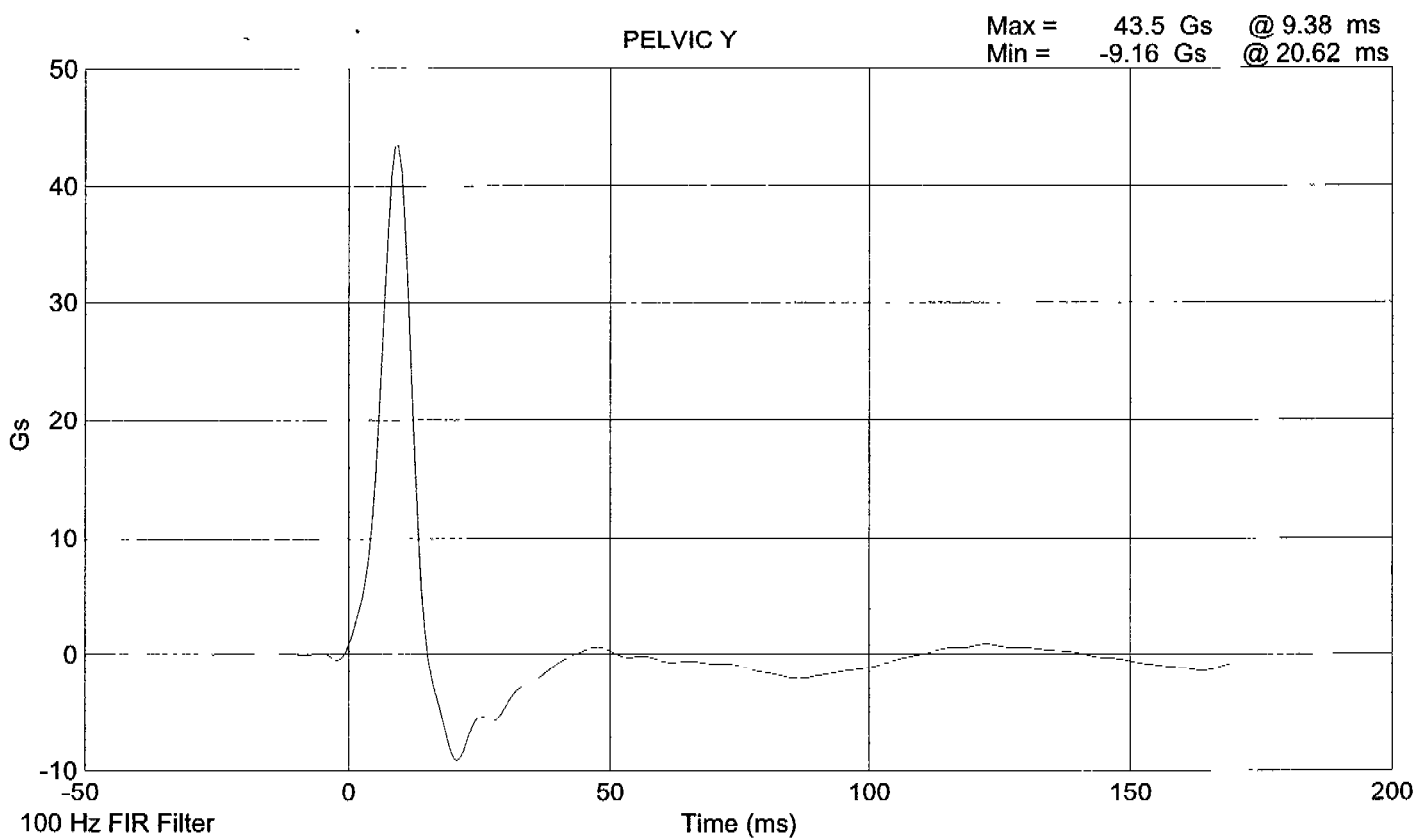
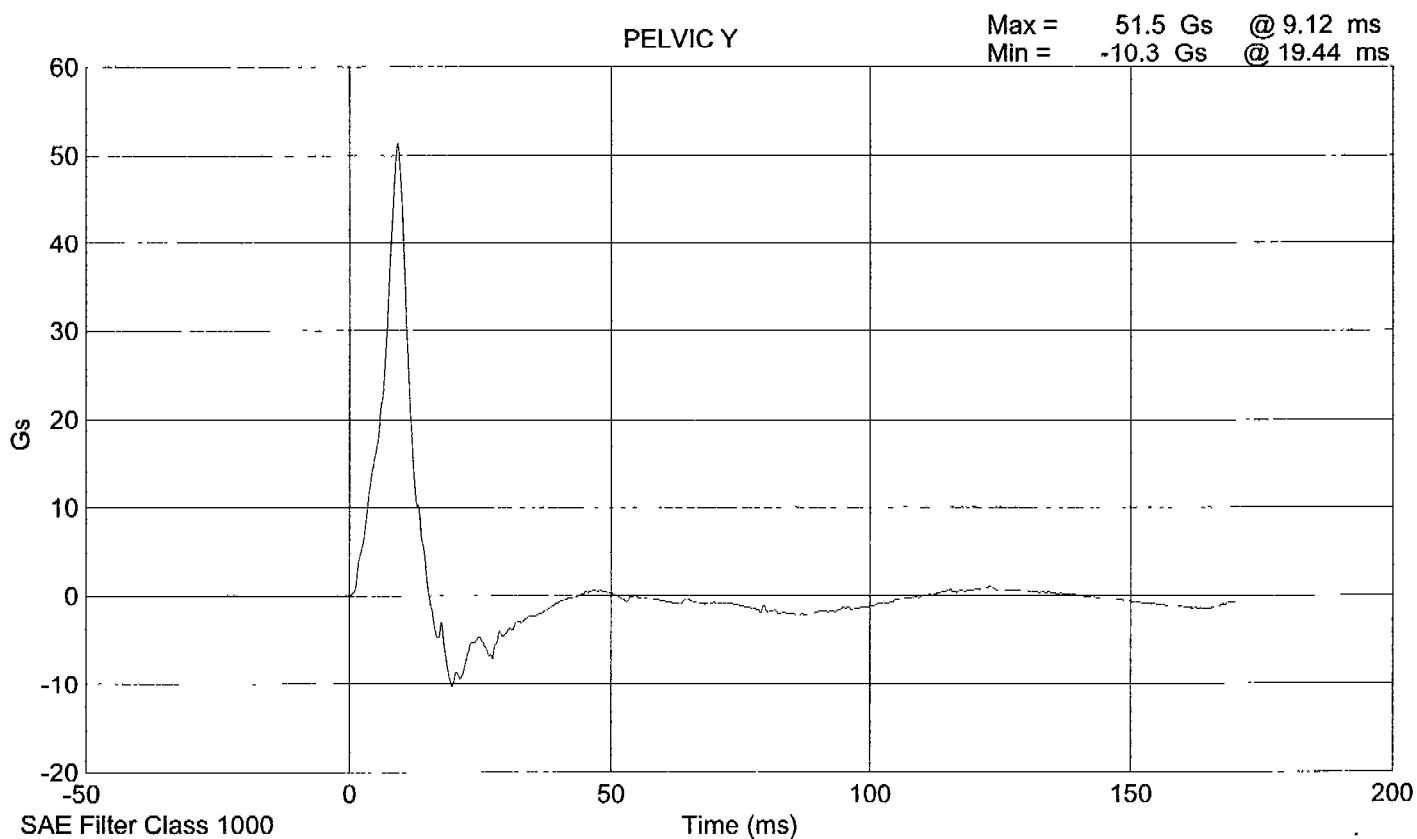
CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 013 Sequential Test Number: 1
Date: January 4, 2001 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.1
RELATIVE HUMIDITY (%)	10 - 70	31
PROBE SPEED (m/s)	4.27 - 4.33	4.27
PELVIS ACCELERATION (g's)	40 - 60	43.5

REMARKS: None

SID 013 Pelvic Impact Test @ 4.2672 m/s



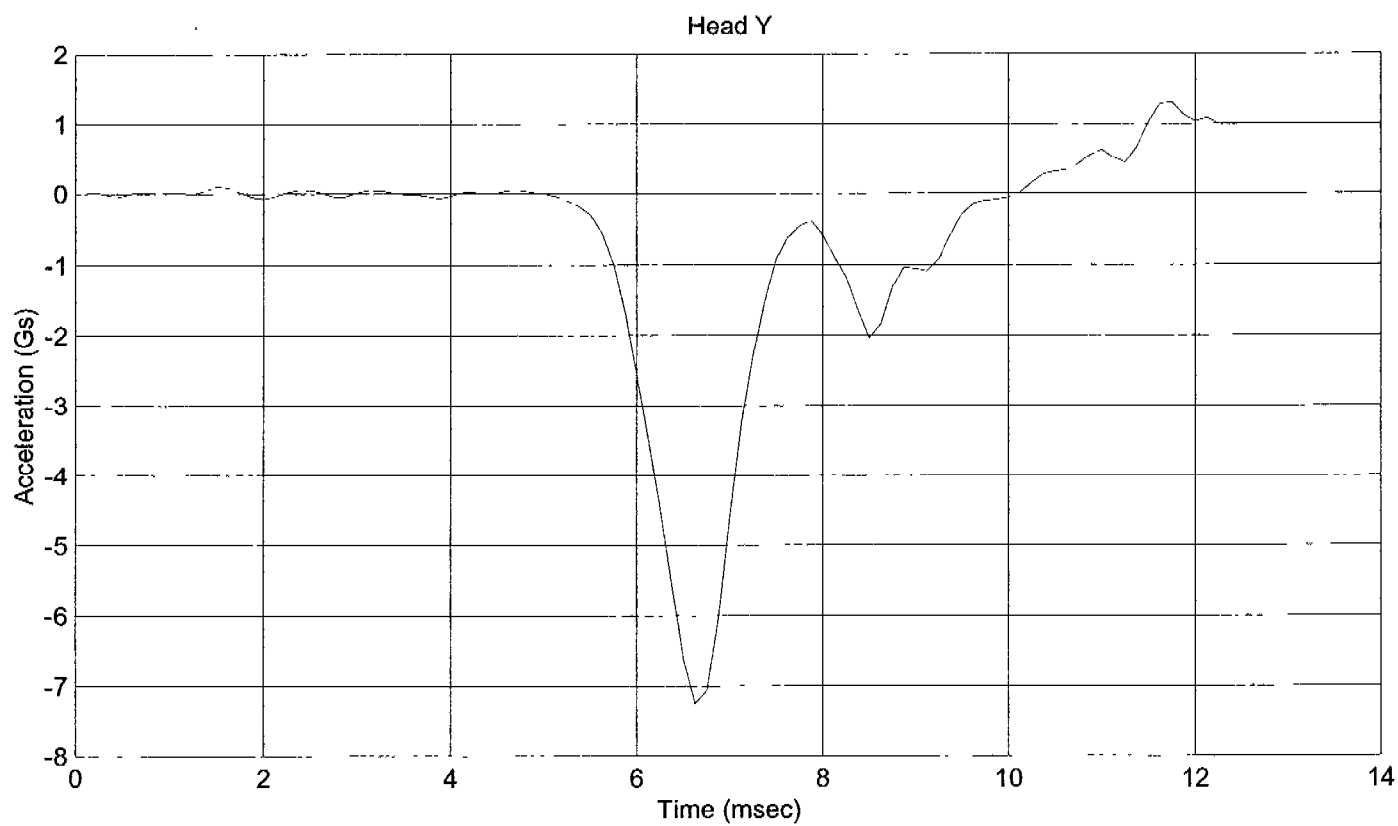
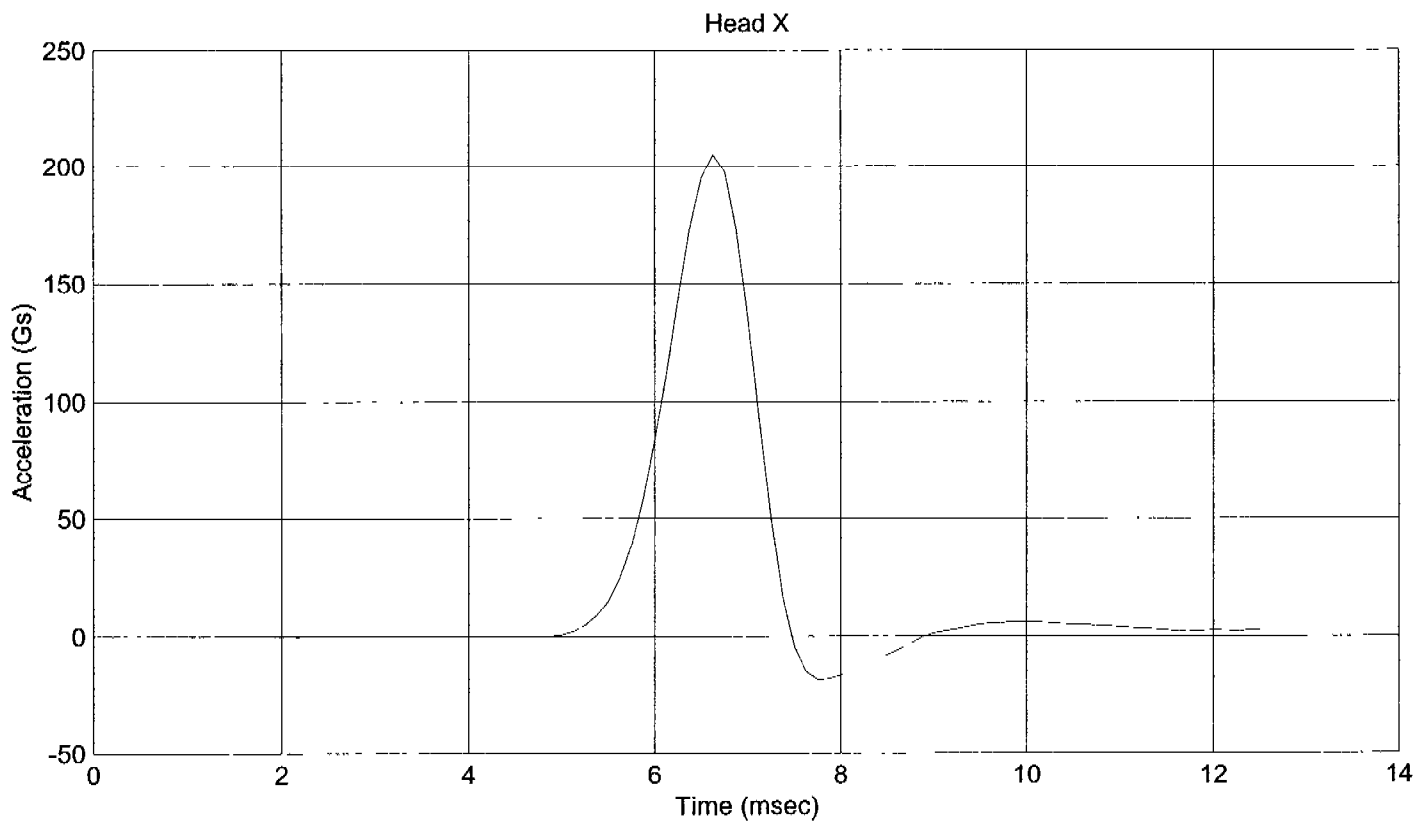
HEAD DROP TEST
POST-TEST
(Test not required for SID certification)

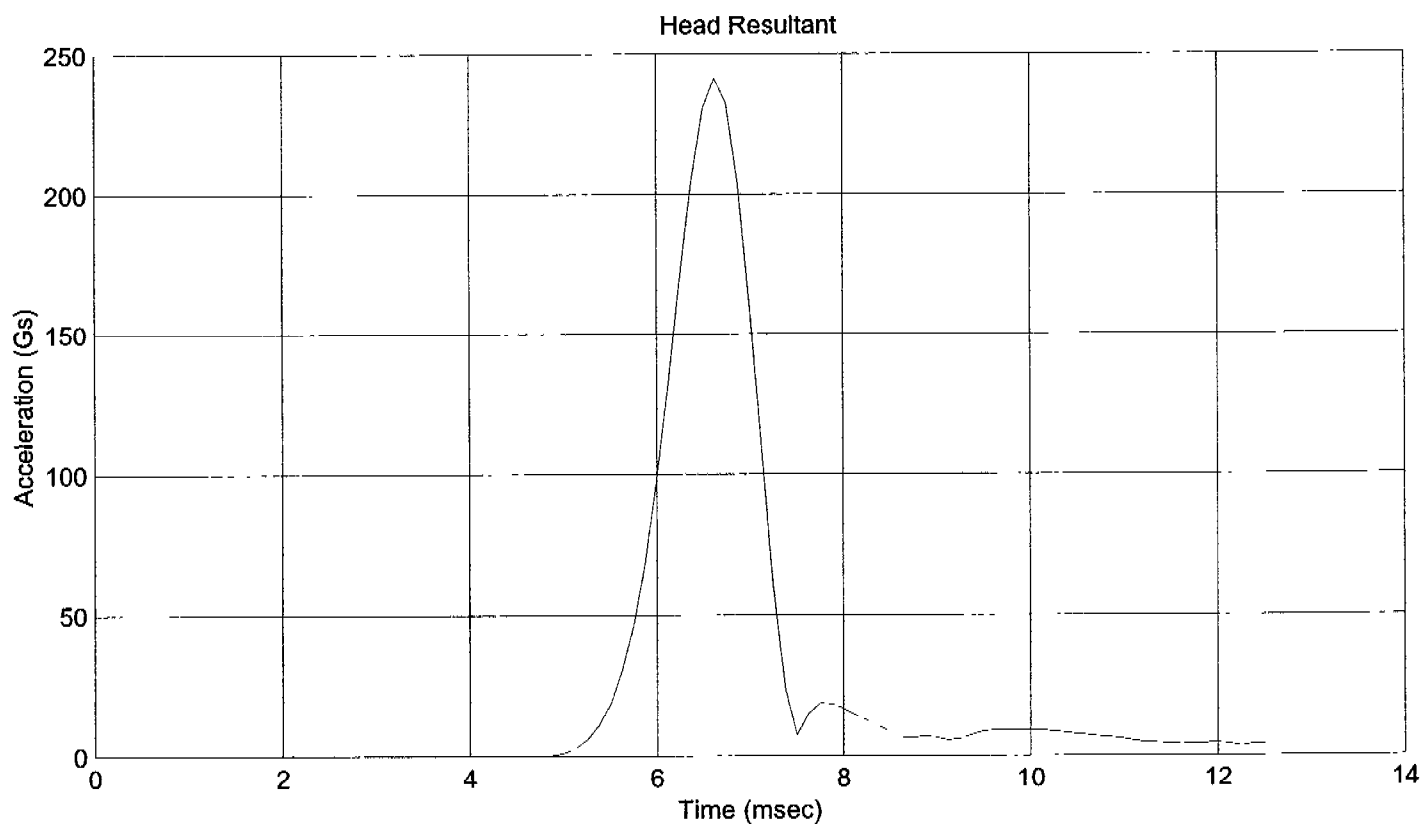
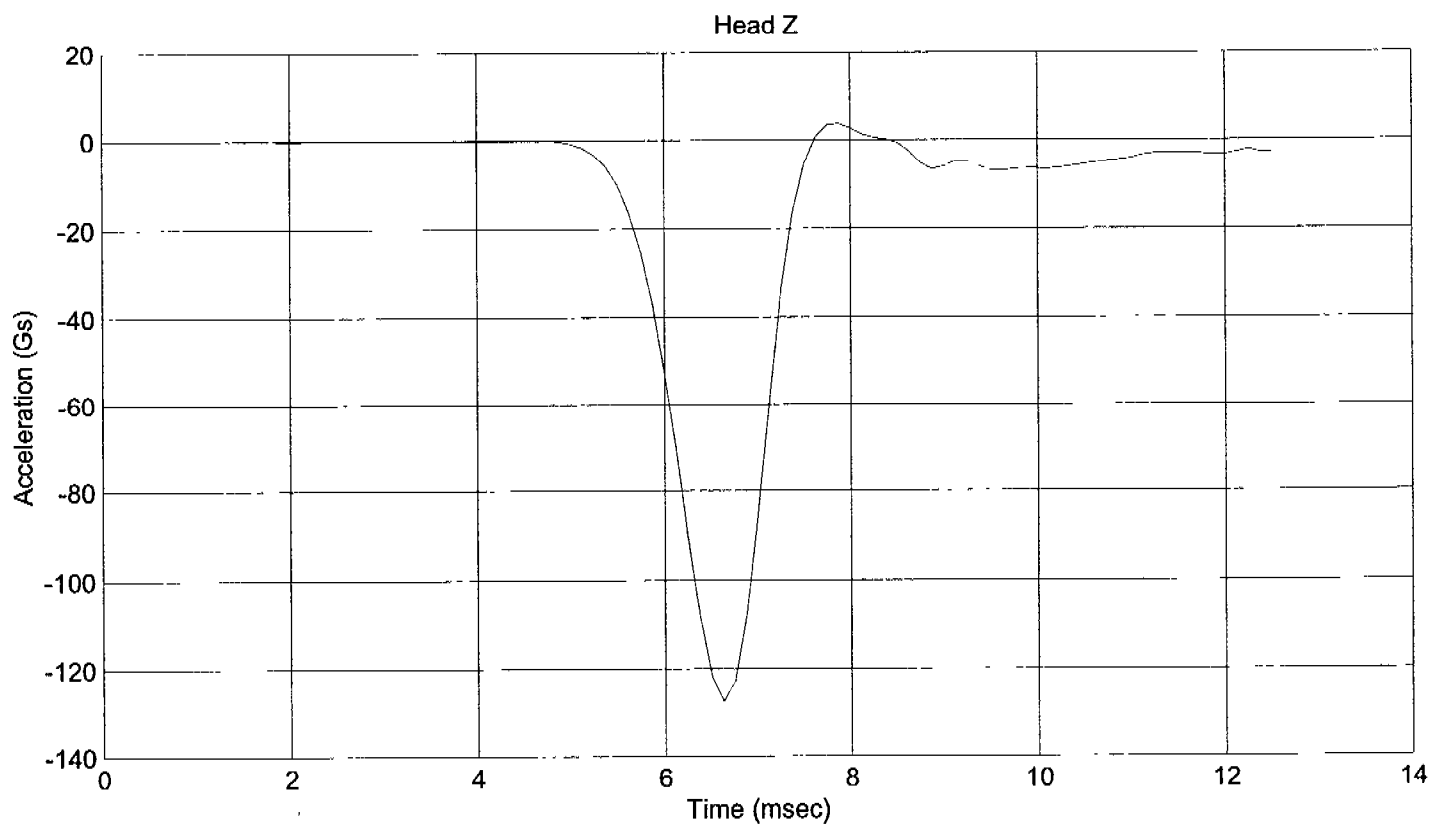
CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 013 Sequential Test Number: 1
Date: January 3, 2001 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.7
RELATIVE HUMIDITY (%)	10 - 70	31
PEAK RESULTANT ACCELERATION (Gs)	210 - 260	241.35
PEAK LATERAL ACCELERATION (Gs)	Not to Exceed 10	7.25
UNIMODAL CRITERIA ABOVE 100 Gs (ms)	0.9 - 1.5	1.12

REMARKS: None





ABDOMINAL COMPRESSION TEST**POST TEST**

(Test not required for SID certification)

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 013 Sequential Test Number: 1
Date: January 8, 2001 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.7
RELATIVE HUMIDITY (%)	10 - 70	32
FORCE @ 13 mm (N)	104 - 162	115.7
FORCE @ 19 mm (N)	163 - 221	177.9
FORCE @ 25 mm (N)	222 - 280	264.7
FORCE @ 33 mm (N)	325 - 391	382.5

REMARKS: None

Dummy S/N 13

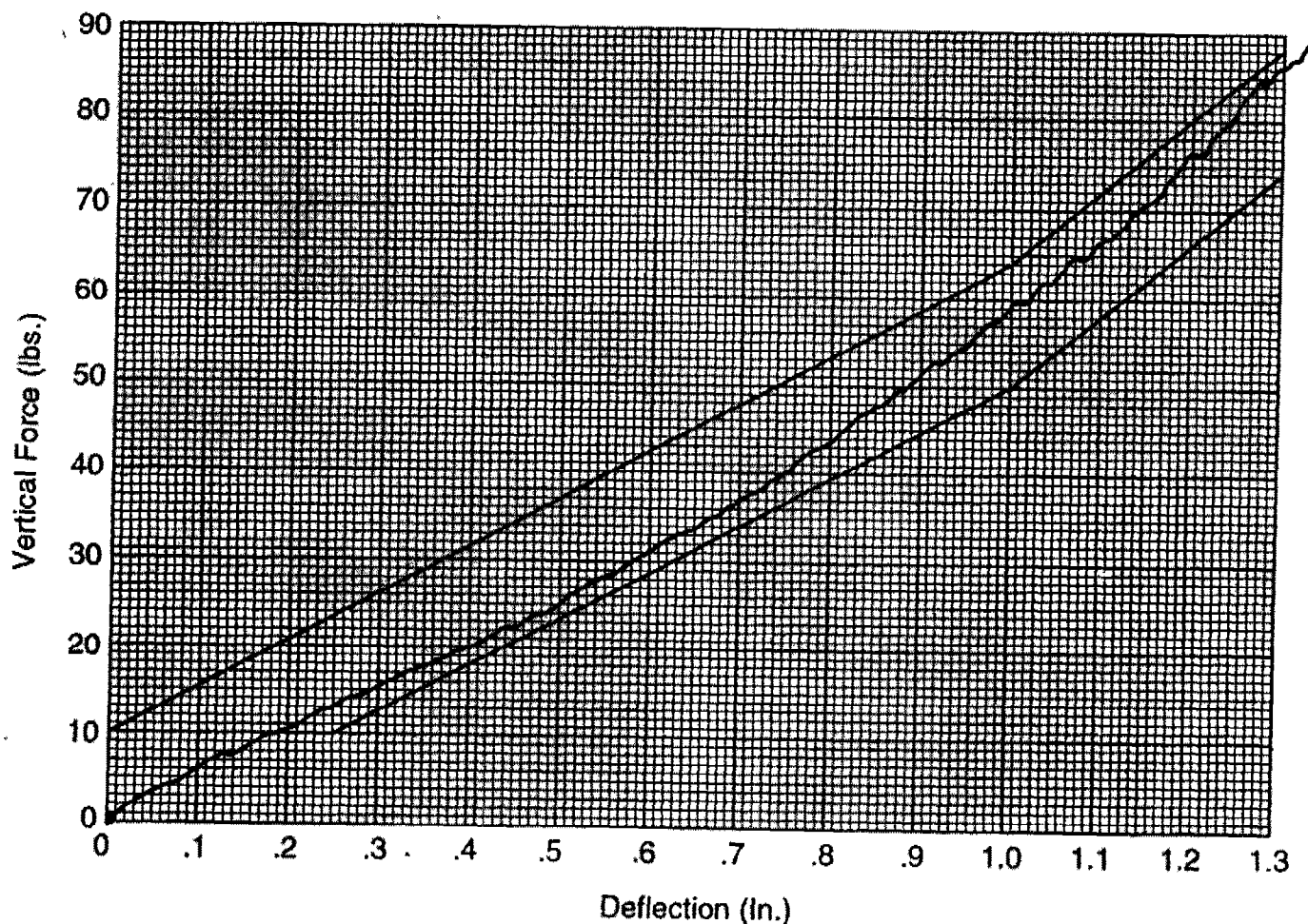
W/A _____

Date 1-8-2001

Performed By [Signature]

Temp. 71°

Humidity 32%



Hybrid II
Abdomen Static Press

ORIGINAL

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

CONFIGURED FOR LEFT SIDE IMPACT

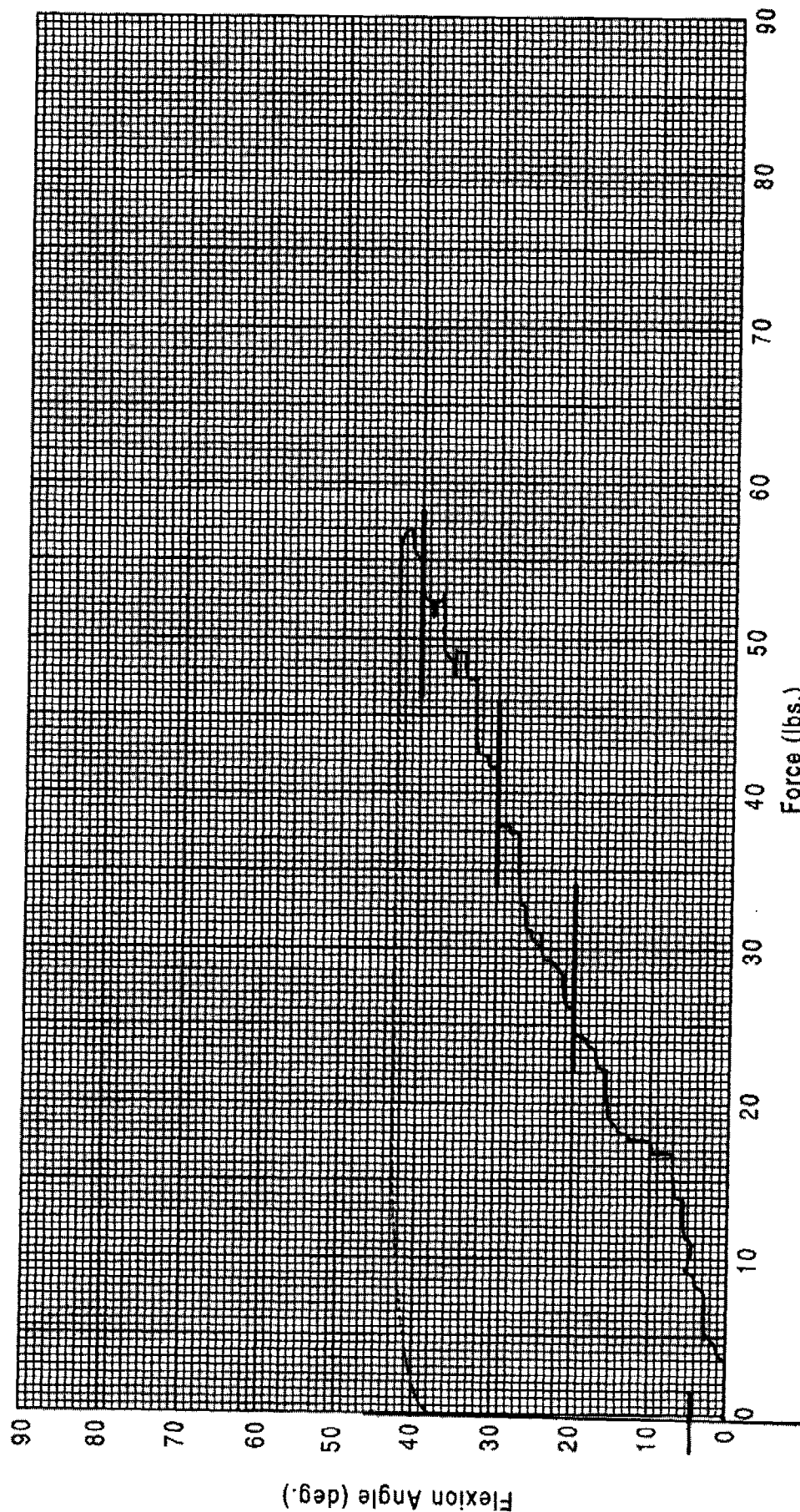
SID Serial No.: 013 Sequential Test Number: 1
Date: January 4, 2001 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.1
RELATIVE HUMIDITY (%)	10 - 70	31
FORCE @ 0° (N)	0 - 26.7	0
FORCE @ 20° (N)	97.8 - 151.2	101.0
FORCE @ 30° (N)	151.2 - 204.6	169.0
FORCE @ 40° (N)	204.6 - 258	235.8
RETURN ANGLE	12° max.	4.1°

REMARKS: None

ORIGINAL

Dummy S/N 13
W/A _____
Date 1-4-2001
Performed By [Signature]
Temp. 70°
Humidity 31%



Hybrid II Lumbar Spine Flexion Test

FM-052-CERT-005-R00

PC32/D32 ISO Forms

POST TEST DUMMY INSPECTION LIST

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 013 Sequential Test Number: 1
 Date: January 8, 2001 Laboratory Technician: B. Swiecicki

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

REMARKS: None

**CALIBRATION TEST RESULTS
POST TEST**

SID NO.: 015

CONFIGURED FOR LEFT SIDE IMPACT

**CALIBRATION TEST RESULTS SUMMARY
POST TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 015 Sequential Test Number: 1
Date: January 8, 2001 Laboratory Technician: B. Swiecicki

TEST	COMMENTS
EXTERNAL DIMENSIONS	Passed all requirements.
LATERAL THORAX IMPACT TEST	Passed all requirements.
LATERAL PELVIS IMPACT TEST	Passed all requirements.
HEAD DROP 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.: 015 Sequential Test Number: 1
Date: January 8, 2001 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
SH- Seated Height (mm)	889 - 909	902
RH- Rib Height (mm)	502 - 520	511
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	518
KV- Knee Pivot to Floor (mm)	490 - 505	493
HW- Hip Width (mm)	356 - 391	371

REMARKS: None

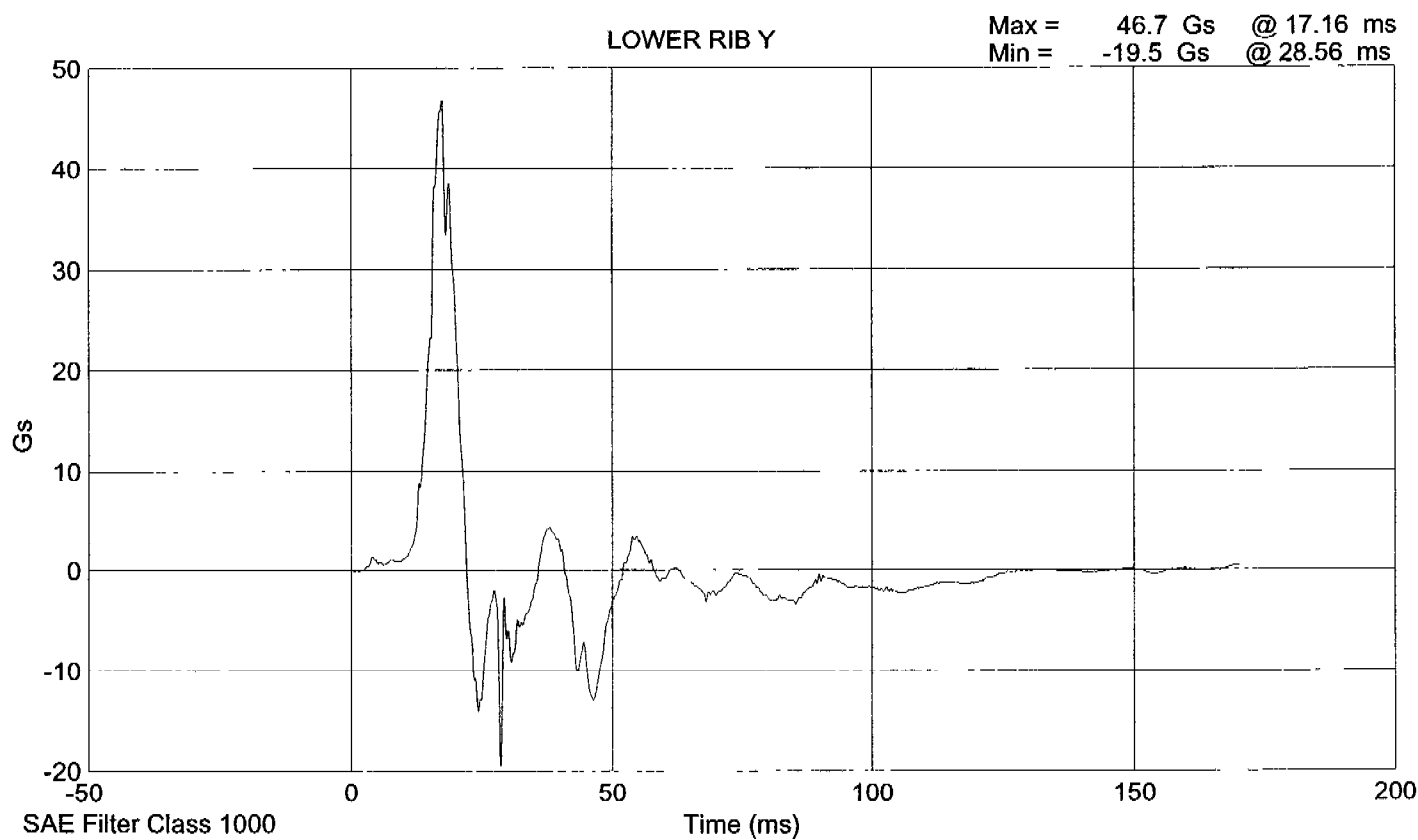
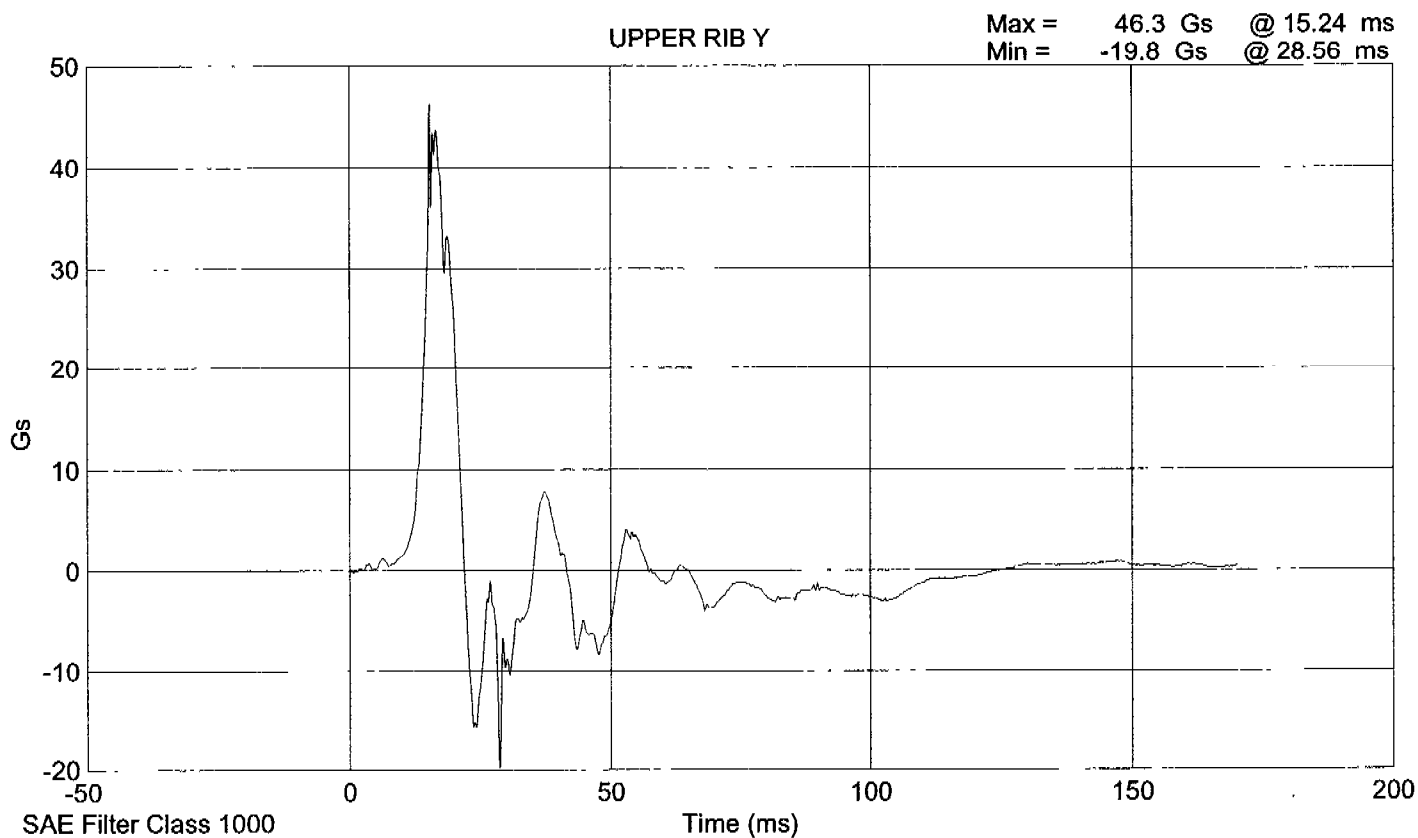
**LATERAL THORAX IMPACT TEST
POST TEST**

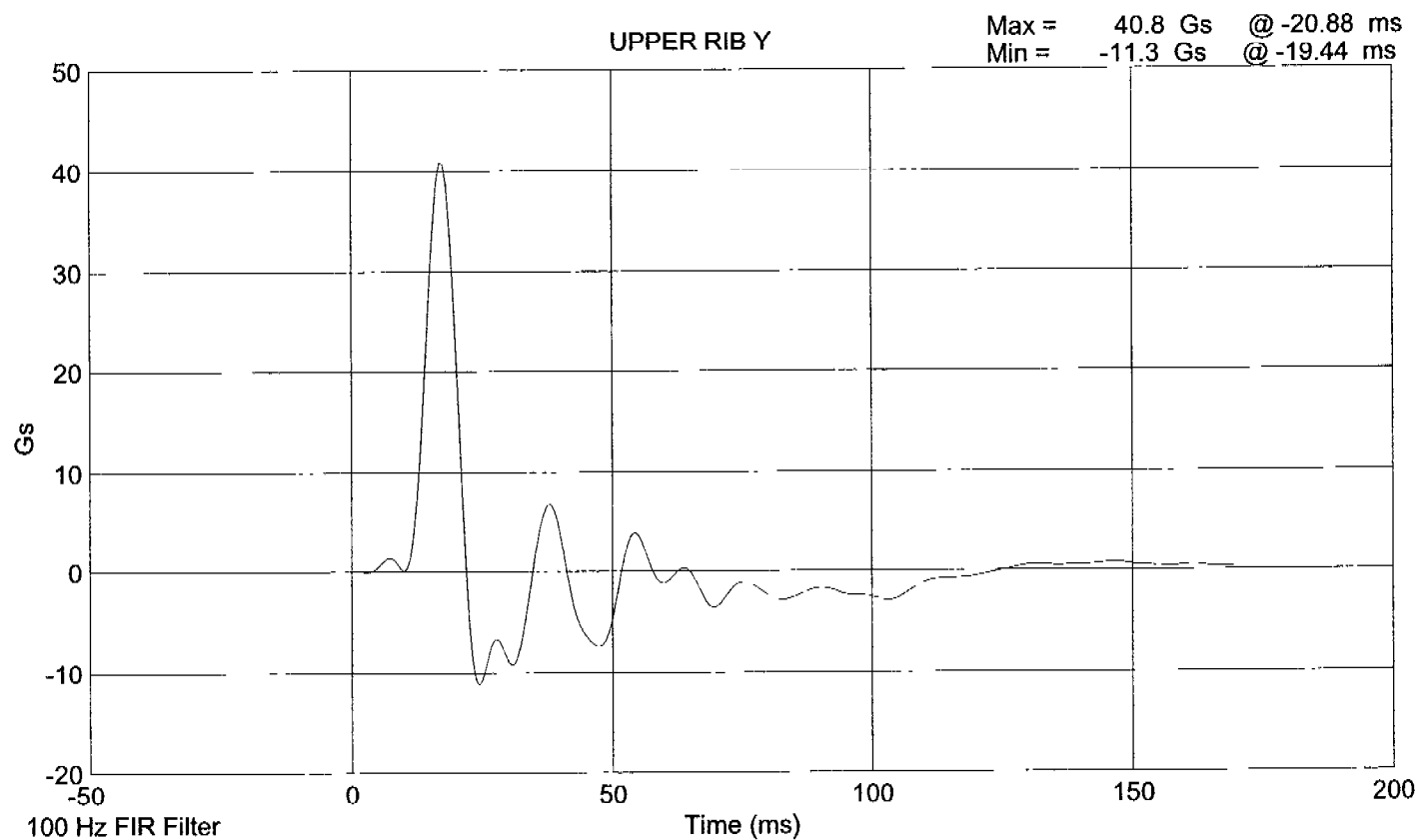
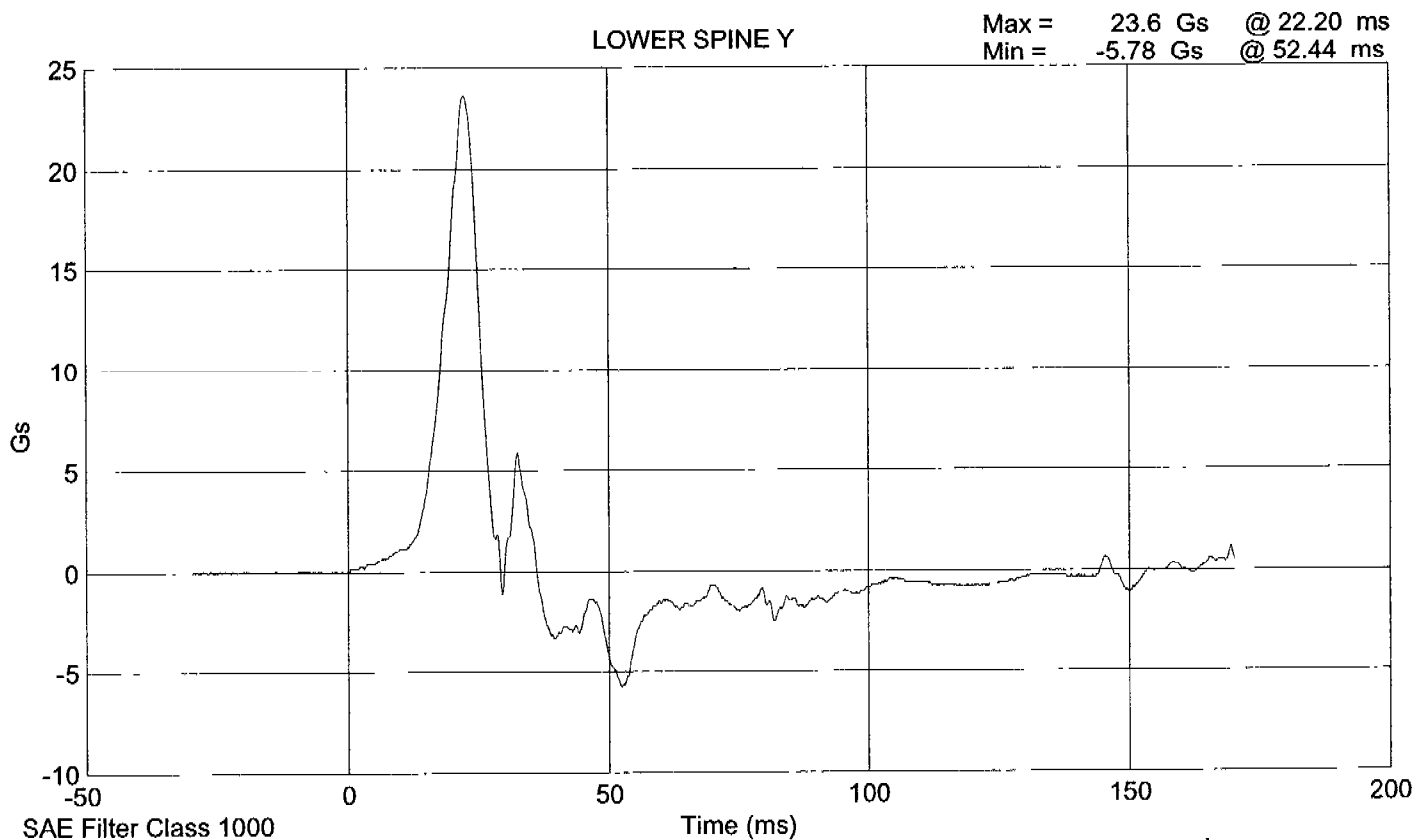
CONFIGURED FOR LEFT SIDE IMPACT

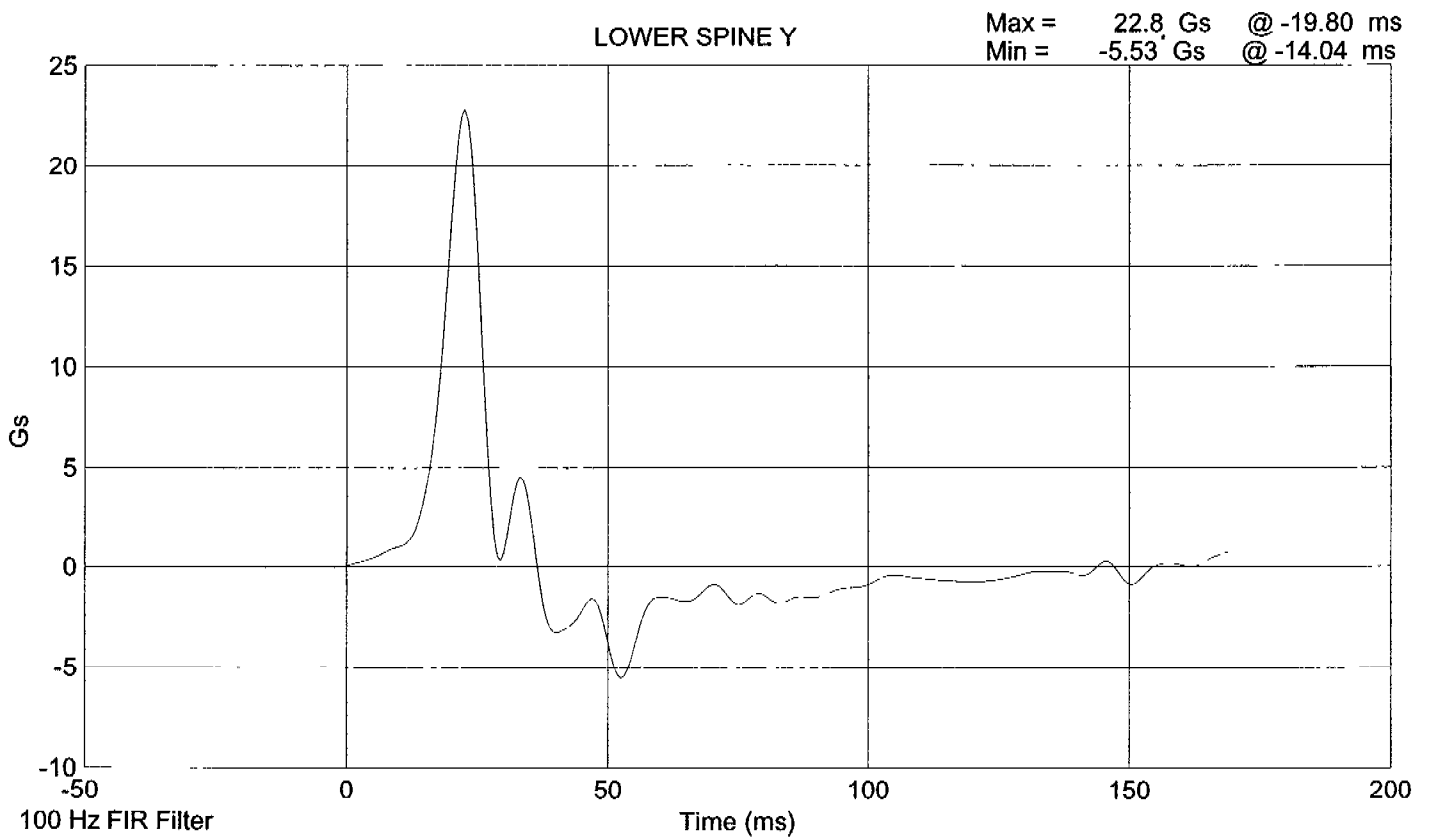
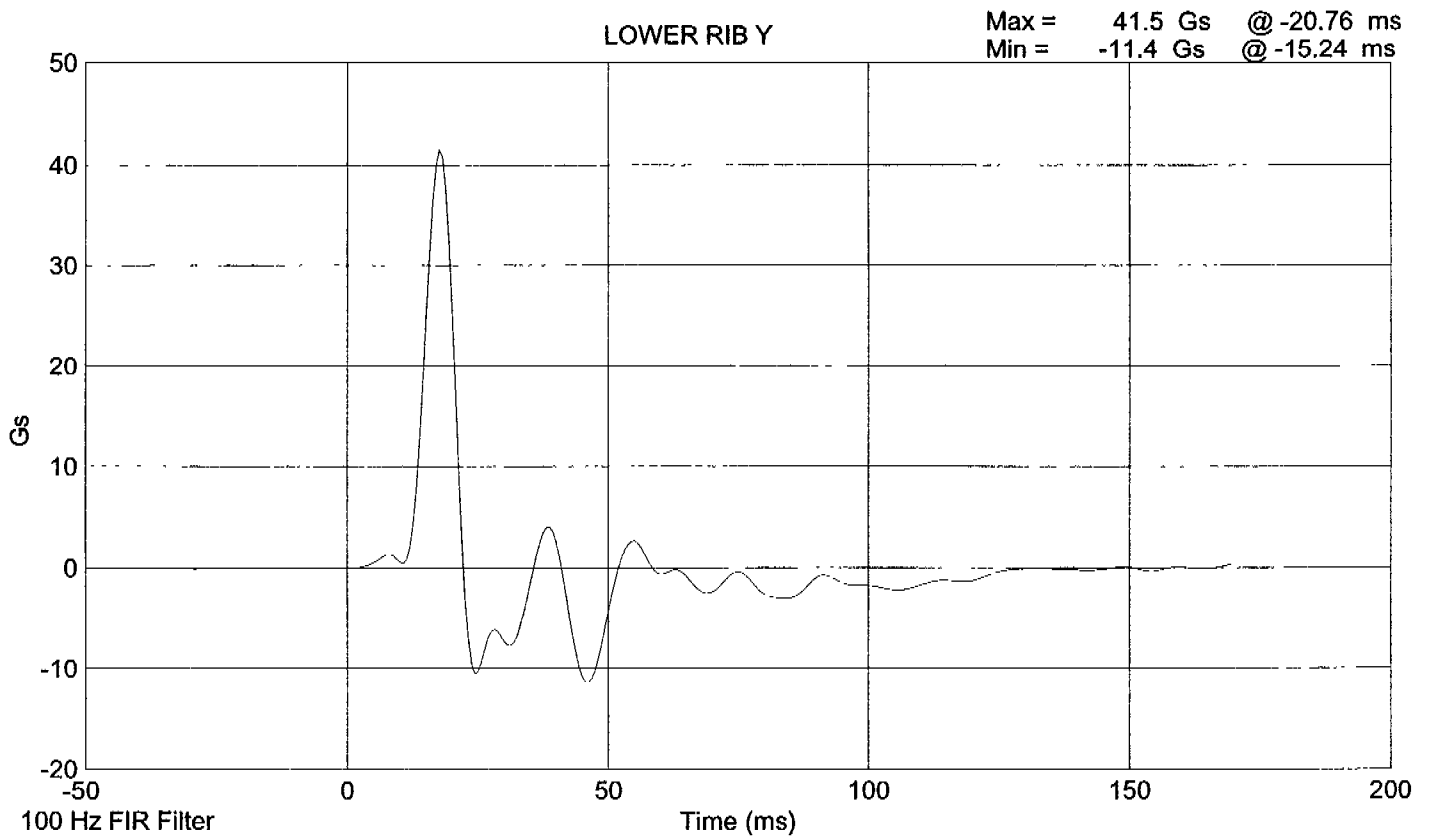
SID Serial No.: 015 Sequential Test Number: 1
Date: January 5, 2001 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.7
RELATIVE HUMIDITY (%)	10 - 70	32
PROBE SPEED (m/s)	4.27 - 4.33	4.30
UPPER RIB (g's)	37 - 46	40.85
LOWER RIB (g's)	37 - 46	41.51
LOWER SPINE (g's)	15 - 22	22.83

REMARKS: None







**LATERAL PELVIS IMPACT TEST
POST TEST**

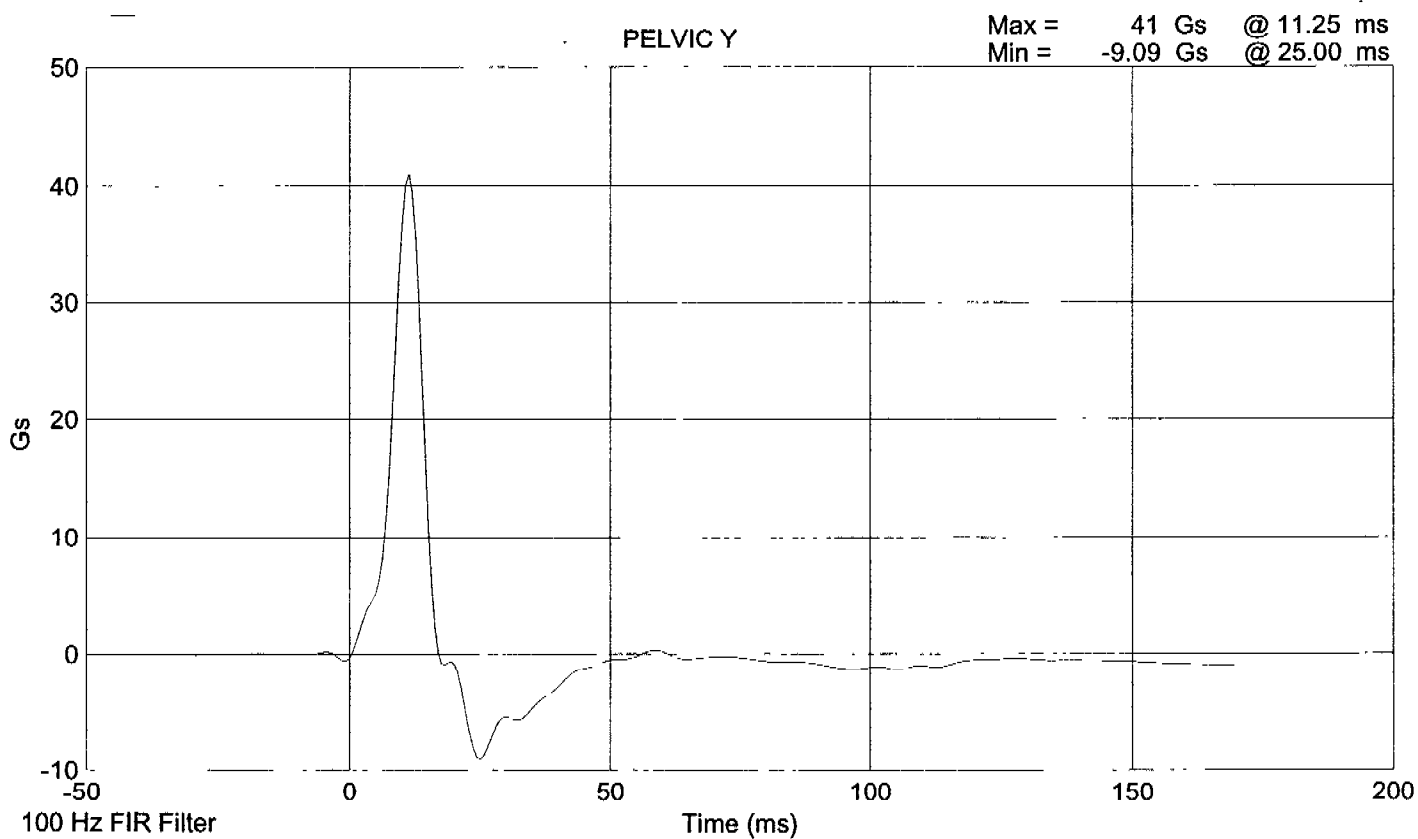
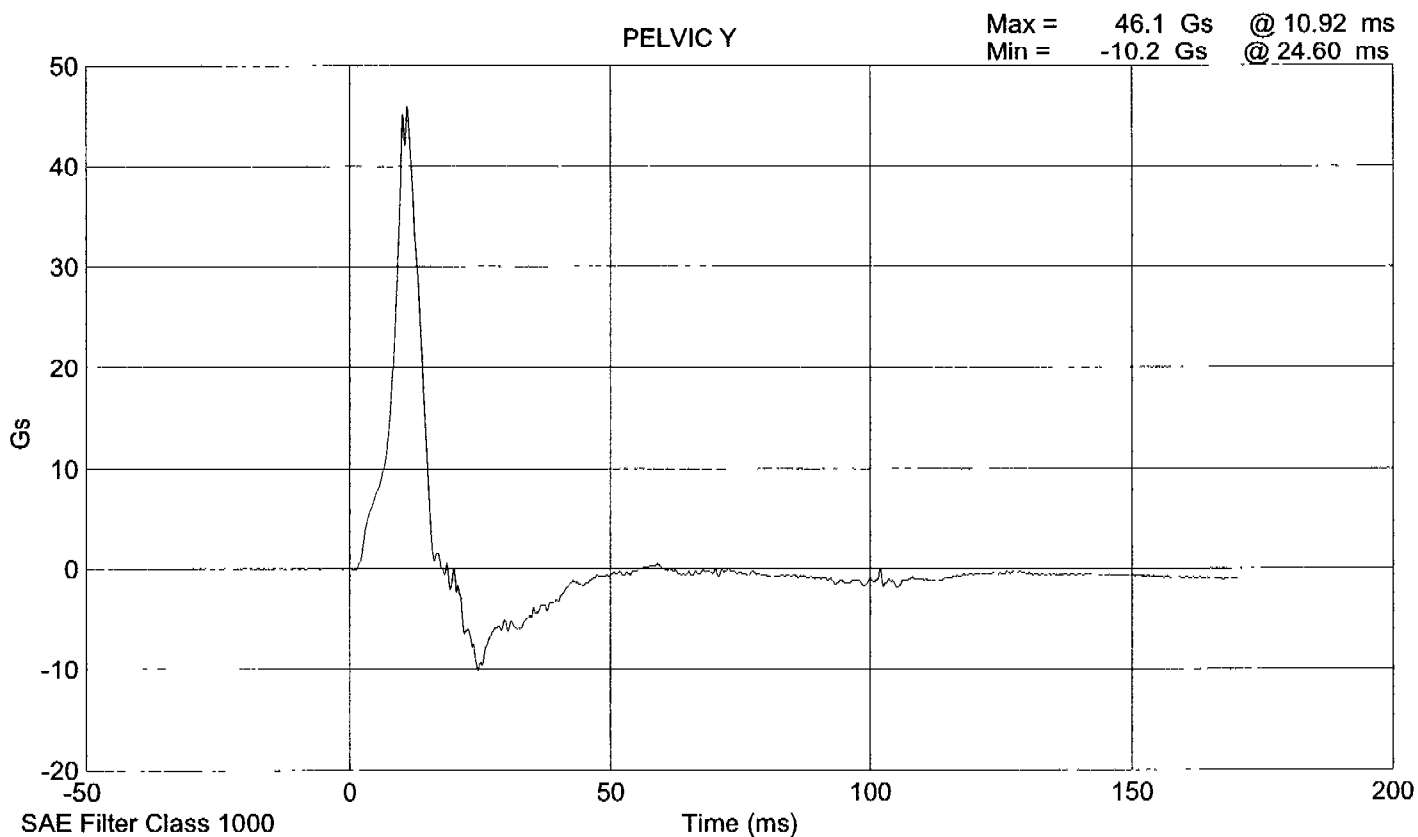
CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 015 Sequential Test Number: 1
Date: January 5, 2001 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.7
RELATIVE HUMIDITY (%)	10 - 70	32
PROBE SPEED (m/s)	4.27 - 4.33	4.27
PELVIS ACCELERATION (g's)	40 - 60	40.97

REMARKS: None

SID 015 Pelvic Impact Test @ 4.2702 m/s



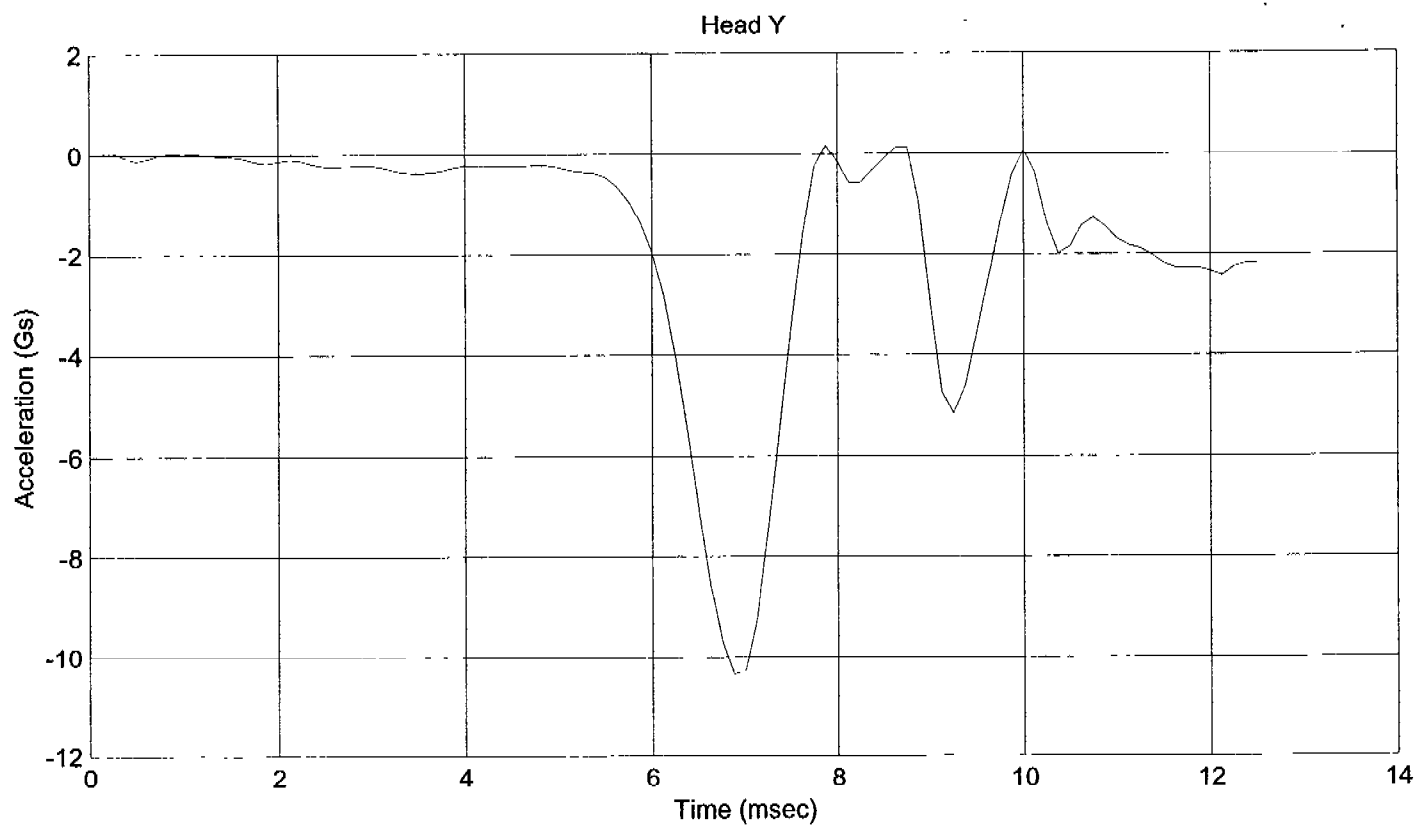
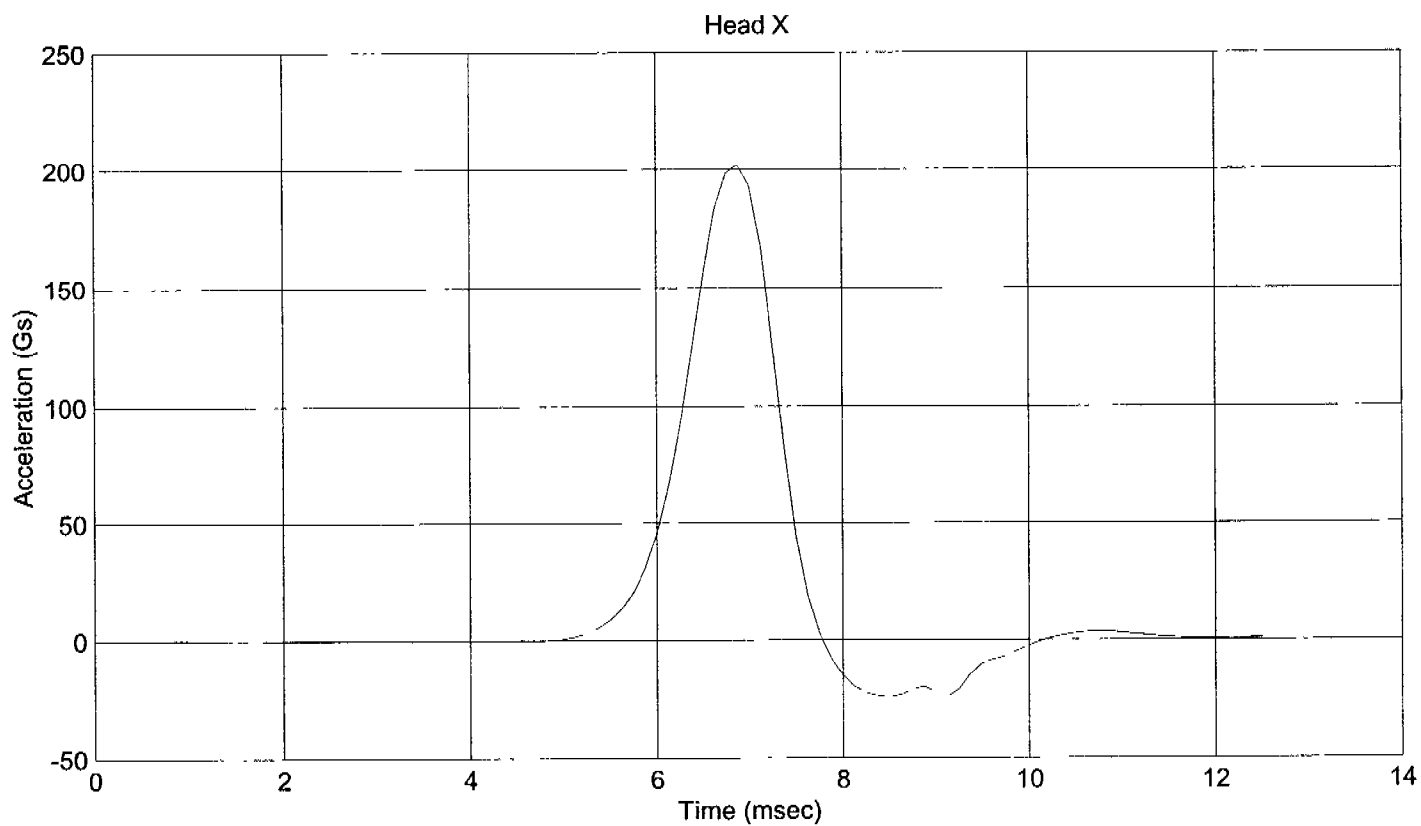
HEAD DROP TEST
POST-TEST
(Test not required for SID certification)

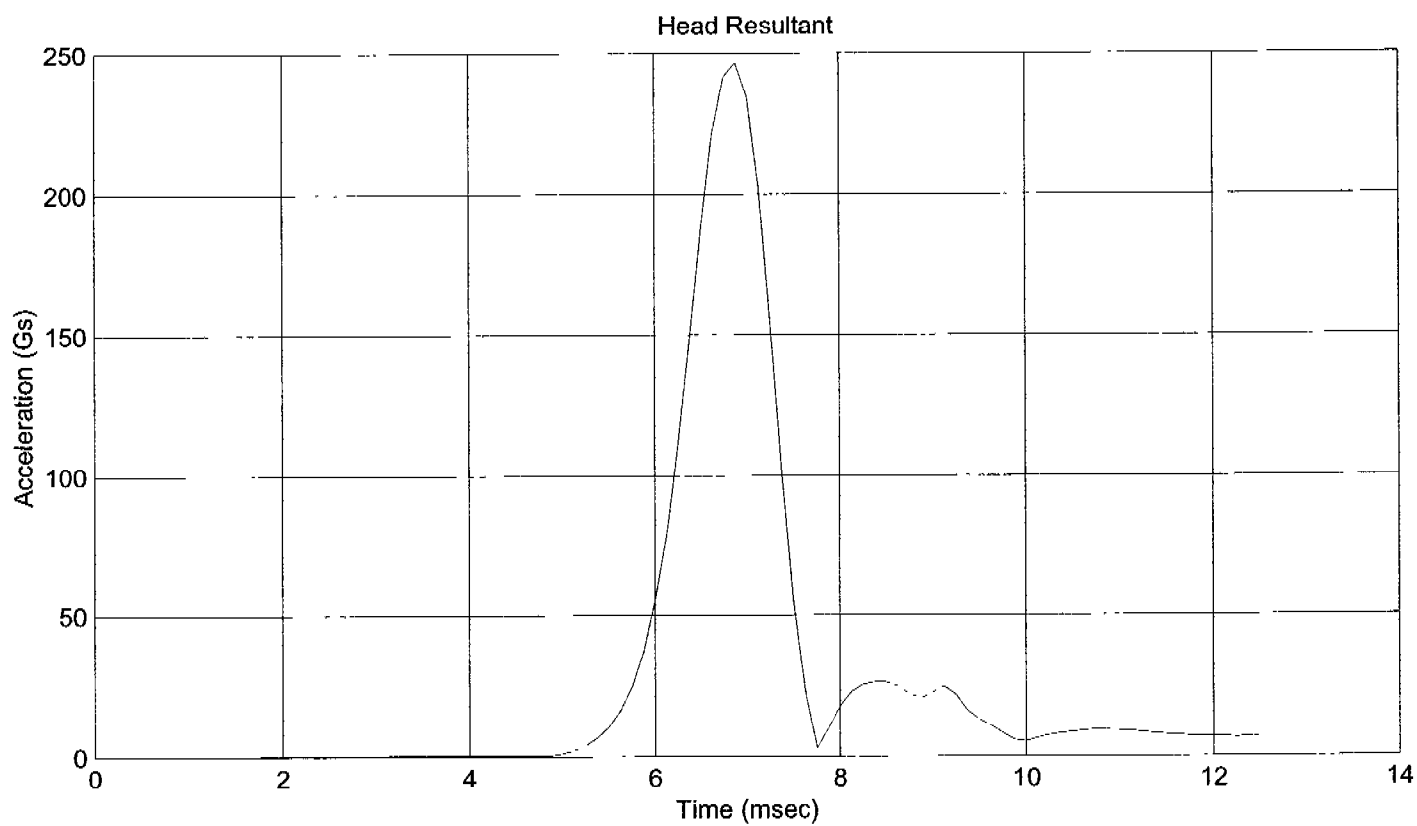
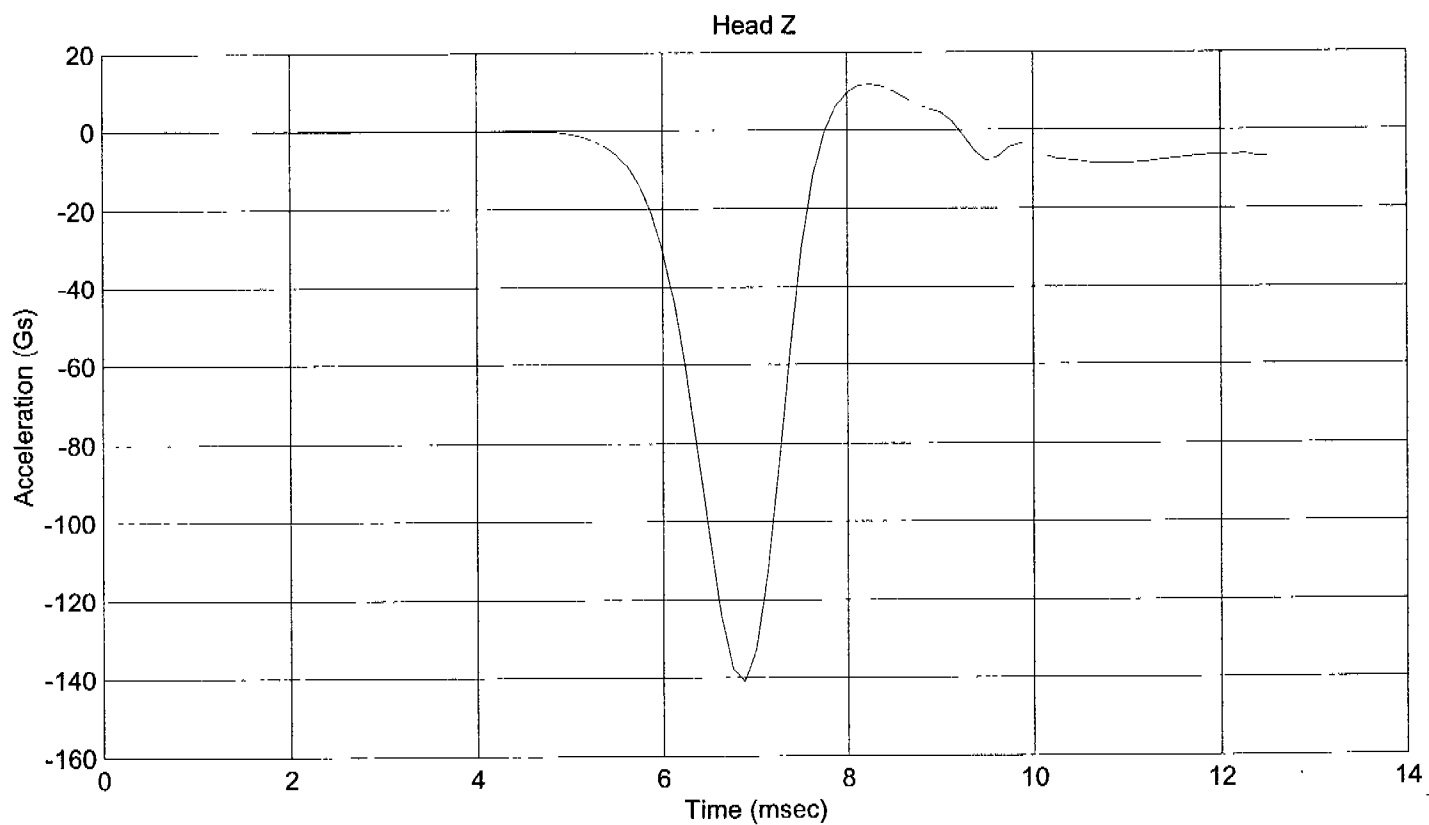
CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 015 Sequential Test Number: 1
Date: January 5, 2001 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.7
RELATIVE HUMIDITY (%)	10 - 70	31.0
PEAK RESULTANT ACCELERATION (Gs)	210 - 260	246.65
PEAK LATERAL ACCELERATION (Gs)	Not to Exceed 10	9.36
UNIMODAL CRITERIA ABOVE 100 Gs (ms)	0.9 - 1.5	1.12

REMARKS: None





Dummy S/N 15

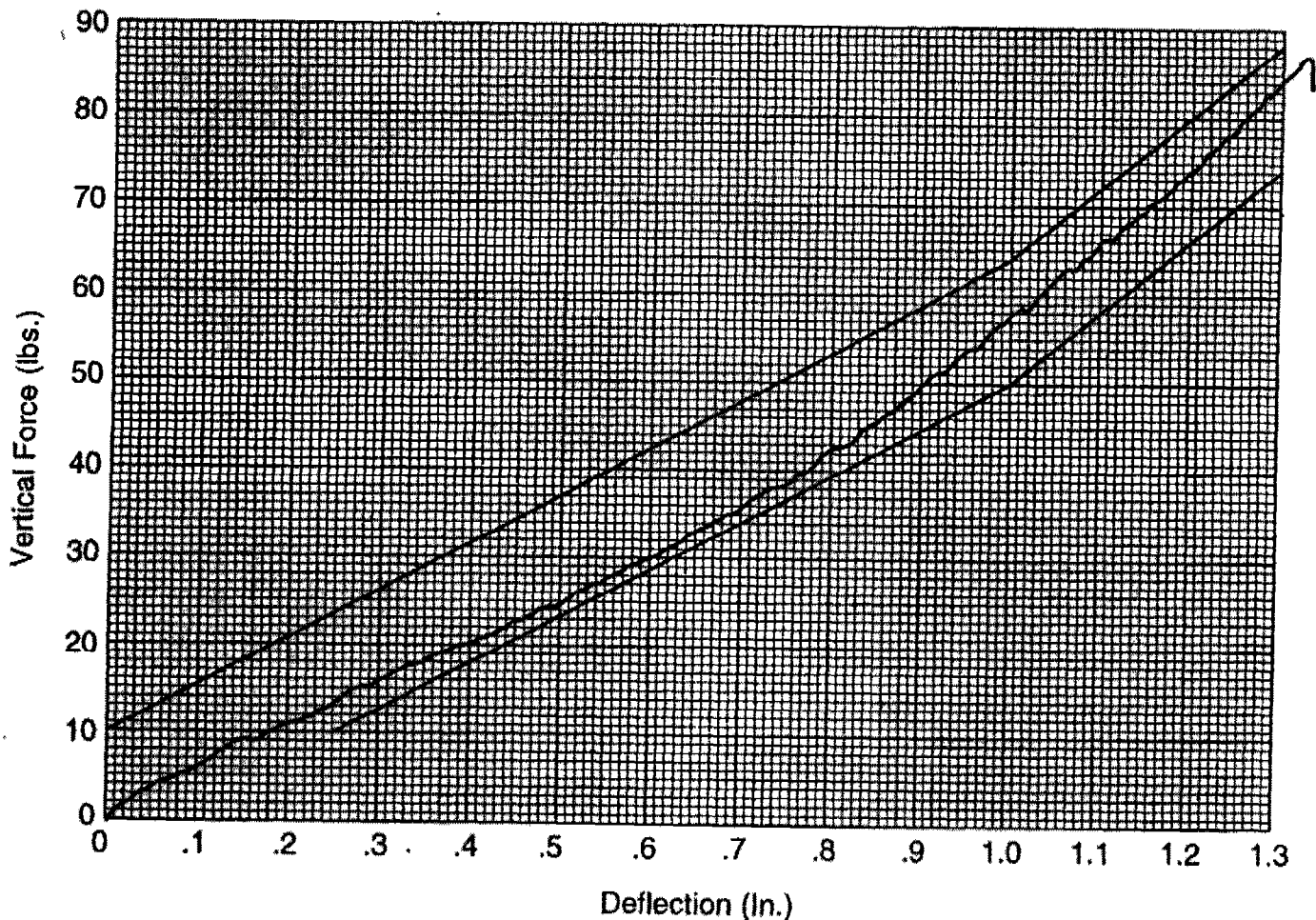
W/A _____

Date 1-8-2001

Performed By [Signature]

Temp. 76°

Humidity 32%



Hybrid II
Abdomen Static Press

ORIGINAL

ABDOMINAL COMPRESSION TEST**POST TEST**

(Test not required for SID certification)

CONFIGURED FOR LEFT SIDE IMPACT

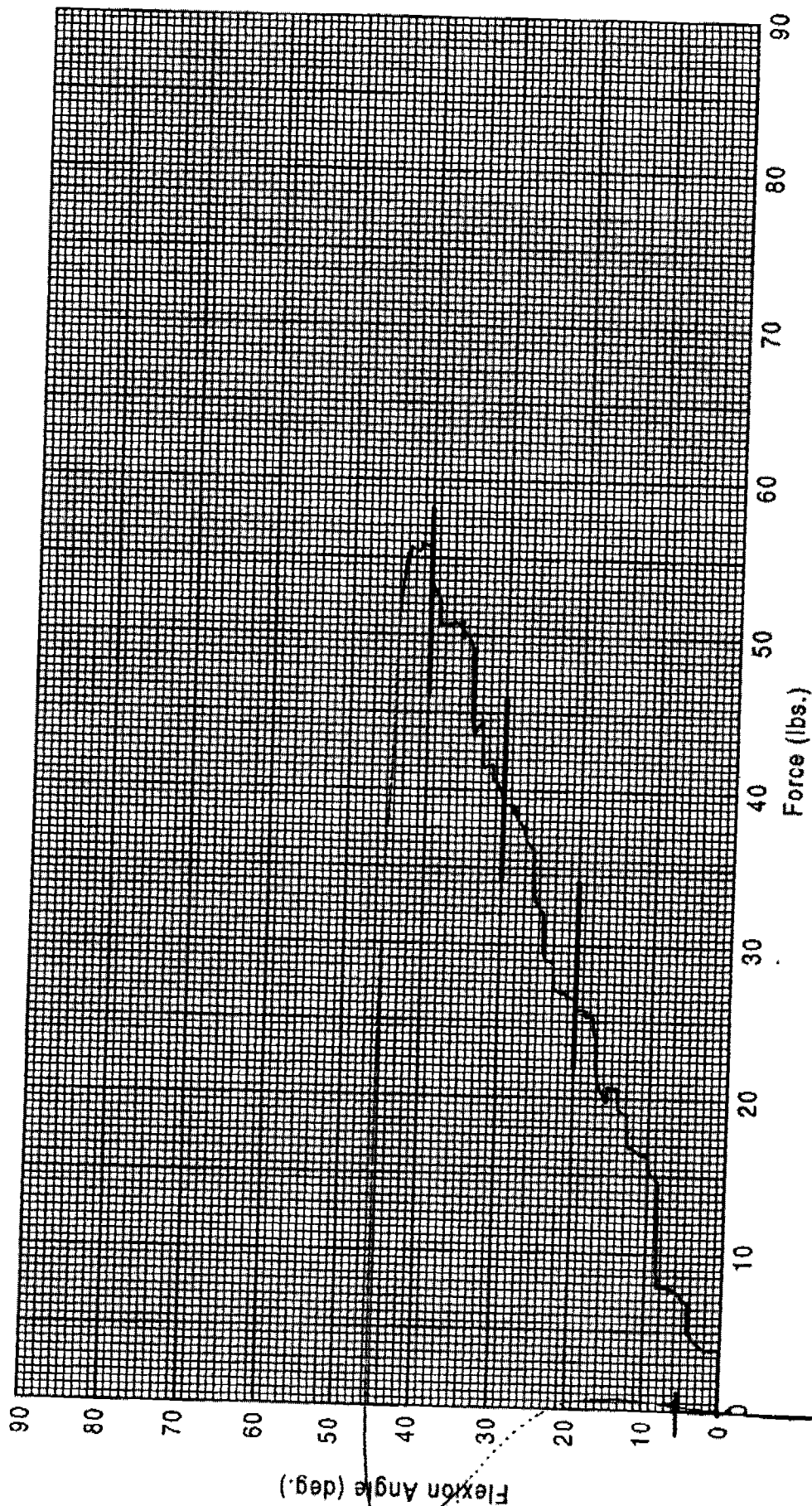
SID Serial No.: 015 Sequential Test Number: 1
Date: January 8, 2001 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.7
RELATIVE HUMIDITY (%)	10 - 70	32
FORCE @ 13 mm (N)	104 - 162	113.4
FORCE @ 19 mm (N)	163 - 221	169.5
FORCE @ 25 mm (N)	222 - 280	257.1
FORCE @ 33 mm (N)	325 - 391	373.7

REMARKS: None

Dummy S/N 15
W/A _____
Date 1-4-2001
Performed By [Signature]
Temp. 70°
Humidity 31%

ORIGINAL



Hybrid II Lumbar Spine Flexion Test

FM-052-CERT-005-R00

PC32052 ISO Form

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

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 015 Sequential Test Number: 1
Date: January 4, 2001 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.1
RELATIVE HUMIDITY (%)	10 - 70	31
FORCE @ 0° (N)	0 - 26.7	0
FORCE @ 20° (N)	97.8 - 151.2	115.7
FORCE @ 30° (N)	151.2 - 204.6	173.5
FORCE @ 40° (N)	204.6 - 258	238.0
RETURN ANGLE	12° max.	5.5°

REMARKS: None

POST TEST DUMMY INSPECTION LIST

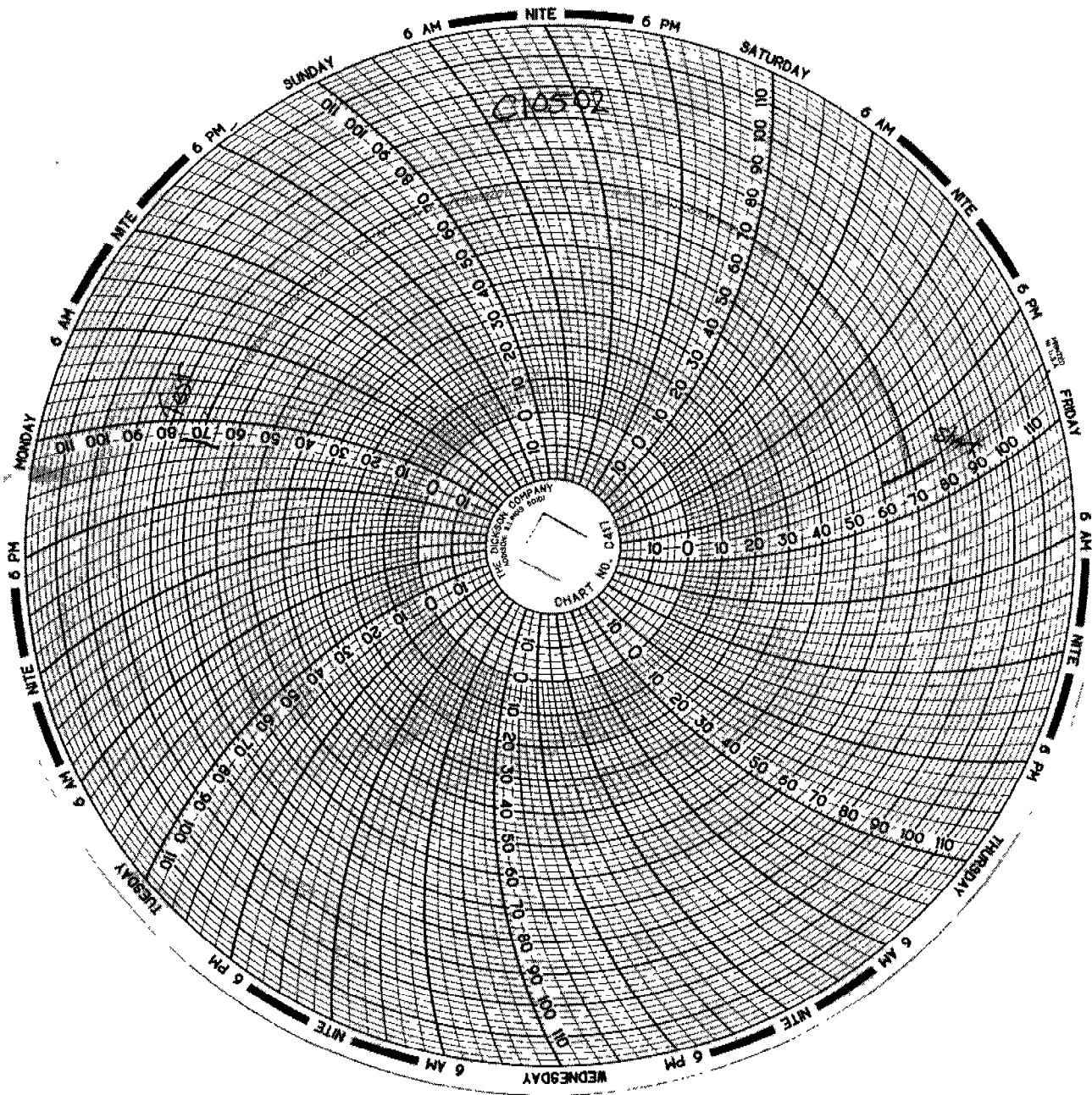
CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 015 Sequential Test Number: 1
 Date: January 8, 2001 Laboratory Technician: B. Swiecicki

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

REMARKS: None

TEMPERATURE TRACE



APPENDIX D

TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

SID INSTRUMENTATION

	FRONT SID NO. 013		
	SERIAL NUMBER	MANUFACTURER	CALIBRATION DATE
HEAD (X)	AC-P16813	ENDEVCO	13-Sep-00
HEAD (Y)	AC-P17255	ENDEVCO	14-Sep-00
HEAD (Z)	AC-P17145	ENDEVCO	14-Sep-00
UPPER RIB (Y)	AC-P16761	ENDEVCO	14-Sep-00
LOWER RIB (Y)	AC-P17131	ENDEVCO	14-Sep-00
LOWER SPINE (Y)	AC-P15736	ENDEVCO	14-Sep-00
PELVIS (Y)	AC-P16628	ENDEVCO	14-Sep-00
UPPER RIB REDUNDANT (Y)	AC-P17247	ENDEVCO	14-Sep-00
LOWER RIB REDUNDANT (Y)	AC-P16616	ENDEVCO	13-Sep-00
LOWER SPINE REDUNDANT (Y)	AC-P17288	ENDEVCO	14-Sep-00
PELVIS REDUNDANT (Y)	AC-P16575	ENDEVCO	14-Sep-00

	REAR SID NO.: 015		
	SERIAL NUMBER	MANUFACTURER	CALIBRATION DATE
HEAD (X)	AC-J32779	ENDEVCO	07-Aug-00
HEAD (Y)	AC-J33030	ENDEVCO	21-Jun-00
HEAD (Z)	AC-J33032	ENDEVCO	19-Jun-00
UPPER RIB (Y)	AC-J33021	ENDEVCO	19-Jun-00
LOWER RIB (Y)	AC-P16862	ENDEVCO	07-Sep-00
LOWER SPINE (Y)	AC-P16656	ENDEVCO	07-Sep-00
PELVIS (Y)	AC-P16866	ENDEVCO	06-Sep-00
UPPER RIB REDUNDANT (Y)	AC-P16676	ENDEVCO	07-Sep-00
LOWER RIB REDUNDANT (Y)	AC-P16645	ENDEVCO	07-Sep-00
LOWER SPINE REDUNDANT (Y)	AC-P16823	ENDEVCO	13-Sep-00
PELVIS REDUNDANT (Y)	AC-P16843	ENDEVCO	07-Sep-00

REMARKS: None

TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

VEHICLE AND MDB INSTRUMENTATION

	VEHICLE AND MDB INSTRUMENTS		
	SERIAL NUMBER	MANUFACTURER	CALIBRATION DATE
RIGHT FRONT SILL (X)	AC-B11407	ENDEVCO	07-Aug-00
RIGHT FRONT SILL (Y)	AC-B11408	ENDEVCO	07-Aug-00
RIGHT FRONT SILL (Z)	AC-B10827	ENDEVCO	07-Aug-00
RIGHT REAR SILL (X)	AC-B11073	ENDEVCO	07-Sep-00
RIGHT REAR SILL (Y)	AC-B10954	ENDEVCO	07-Sep-00
RIGHT REAR SILL (Z)	AC-J27941	ENDEVCO	31-Aug-00
REAR FLOORPAN ABOVE AXLE (X)	AC-BB14	ENDEVCO	18-Sep-00
REAR FLOORPAN ABOVE AXLE (Y)	AC-AP064	ENDEVCO	18-Sep-00
REAR FLOORPAN ABOVE AXLE (Z)	AC-B10955	ENDEVCO	18-Sep-00
LEFT REAR SILL (Y)	AC-A14342	ENDEVCO	15-Nov-00
LEFT FRONT SILL (Y)	AC-A13926	ENDEVCO	12-Jun-00
RIGHT REAR SEAT OCCUPANT COMP. (Y)	AC-D88	ICS	14-Aug-00
LOWER LEFT B- PILLAR (Y)	AC-A14510	ENDEVCO	15-Nov-00
MIDDLE LEFT B-PILLAR (Y)	AC-A14261	ENDEVCO	15-Nov-00
LOWER LEFT A-PILLAR (Y)	AC-A13599	ENDEVCO	27-Nov-00
UPPER LEFT A-PILLAR (Y)	AC-A13883	ENDEVCO	27-Nov-00
FRONT SEAT TRACK (Y)	AC-A13565	ENDEVCO	15-Nov-00
REAR SEAT TRACK (Y)	AC-A14314	ENDEVCO	27-Nov-00
VEHICLE CG (X)	AC-B11351	ENDEVCO	08-Sep-00
VEHICLE CG (Y)	AC-ACC06	ENDEVCO	08-Sep-00
VEHICLE CG (Z)	AC-B10481	ENDEVCO	08-Sep-00
MDB CG (X)	AC-CL60	ENDEVCO	31-Aug-00
MDB CG (Y)	AC-CJ54	ENDEVCO	31-Aug-00
MDB CG (Z)	AC-GK12	ENDEVCO	31-Aug-00
MDB REAR FRAME MEMBER (X)	AC-CX05	ENDEVCO	31-Aug-00
MDB REAR FRAME MEMBER (Y)	AC-A27F	ENDEVCO	31-Aug-00

REMARKS: None