

V3164

REPORT NUMBER: SNCAP-CAL-99-7

**NEW CAR ASSESSMENT PROGRAM
SIDE IMPACT TEST**

**VOLKSWAGEN DE MEXICO S.A. DE C.V.
1999 VOLKSWAGEN NEW BEETLE
2-DOOR COUPE**

NHTSA NUMBER: VW002

VERIDIAN ENGINEERING TEST NUMBER: 8532-2

**VERIDIAN ENGINEERING
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July 22, 1999

FINAL REPORT

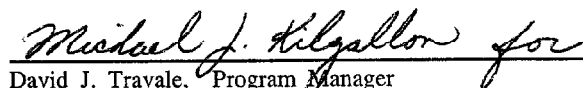
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National Highway Traffic Safety Administration
Safety Performance Standards
Office of Crashworthiness Standards
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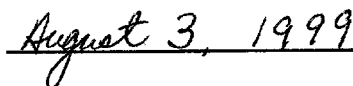
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4. Title and Subtitle Final Report of new Car Assessment Program Side Impact Testing of a 1999 Volkswagen New Beetle 2-Door Coupe NHTSA No.: VW002				5. Report Date July 22, 1999																															
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15. Supplementary Notes																																			
16. Abstract A 55/28 kph 90° Impact Moving Deformable Barrier NCAP Side Impact Test Test was conducted on the subject 1999 Volkswagen New Beetle 2-Door Coupe in accordance with the specifications of the Office of Crashworthiness Standards Test Procedure for the generation of consumer information on vehicle side crash protection. This test was conducted at the Veridian Engineering Crash Test Facility in Buffalo, New York, on July 22, 1999. 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 22 °C. The target vehicle post-test maximum crush was 314 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>45</u></td> <td align="center">g's</td> <td align="center"><u>61</u></td> <td align="center">g's</td> </tr> <tr> <td>Left Lower Rib Acceleration:</td> <td align="center"><u>46</u></td> <td align="center">g's</td> <td align="center"><u>78</u></td> <td align="center">g's</td> </tr> <tr> <td>Lower Spine Acceleration:</td> <td align="center"><u>59</u></td> <td align="center">g's</td> <td align="center"><u>85</u></td> <td align="center">g's</td> </tr> <tr> <td>Thoracic Trauma Index (TTI):</td> <td align="center"><u>52</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>94</u></td> <td align="center">g's</td> <td align="center"><u>70</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>45</u>	g's	<u>61</u>	g's	Left Lower Rib Acceleration:	<u>46</u>	g's	<u>78</u>	g's	Lower Spine Acceleration:	<u>59</u>	g's	<u>85</u>	g's	Thoracic Trauma Index (TTI):	<u>52</u>	g's	<u>82</u>	g's	Pelvis Acceleration (PEV):	<u>94</u>	g's	<u>70</u>	g's
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17. Key Words New Car Assessment Program (NCAP) Side Impact MDB Side Impact Dummy (SID)			18. Distribution Statement <u>Copies of this report are available from:</u> 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 Homicle																																
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SECTION 1

PURPOSE AND TEST PROCEDURE

This side impact test is part of the FY99 New Car Assessment Program Side Impact Protection sponsored under Contract No. SO685. The purpose of this test was to generate comparative side impact performance in a 1999 Volkswagen New Beetle 2-Door Coupe. The test was conducted in accordance with the Office of Crashworthiness Standards's Laboratory Test Procedure dated July, 1997.

SECTION 2

SUMMARY OF SIDE IMPACT TEST

A 1999 Volkswagen New Beetle 2-Door Coupe 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 July 22, 1999. Pre- and post-test photographs of the test vehicle, the moving deformable barrier (MDB), and the side impact dummies (SIDs) are included in Appendix A.

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

The SIDs were instrumented with the following accelerometers:

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

A summary of the side impact dummy (SID) configuration and verification test data can be found in Appendix C. A total of 45 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)	52	82
PEV (g)	94	70

SECTION 3

SUMMARY OF TEST RESULTS

DATA SHEET 1

GENERAL TEST AND VEHICLE PARAMETER DATA

TEST VEHICLE INFORMATION:

Year/Make/Model/Body Style: 1999 Volkswagen New Beetle 2-Door Coupe
 Vehicle Body Color: White VIN: 3VWCC21C2XM474531
 Vehicle NHTSA No.: VW002 Month & Year of Manufacture: 6/99
 Engine Data: 4 Cylinders; - CID; 1.8 Liters; - cc
 Engine Placement: - Longitudinal; or X Lateral
 Transmission: 4 Speed; - Manual; X Automatic; X Overdrive
 Final Drive: - Rear Wheel Drive; X Front Wheel Drive; - Four Wheel
 Odometer Reading 21 km
 Options: X A/C; X Power Steering; X Pwr.Brakes; X Pwr. Windows

DATA FROM TIRE PLACARD

Tire Pressure* (at capacity); 221 kPa FRONT
241 kPa REAR
 Recommended Tire Size: P205/55R16
 Tires on Test Vehicle: P205/55R16 ; Manufacturer: Michelin
 Vehicle Capacity Data:
 Number of Occupants: 2 Front; 2 Rear; - 3rd Seat; 4 Total
 Type of Front Seats: X Bucket; - Bench; - Split Bench
 Type of Front Seat Back: - Fixed; X Adjustable with - Lever or X Knob
 Vehicle Max Capacity Loading = 390.1 kg (A)
 No. of Occupants x 68.04 kg. = 272.2 kg (B)
 Vehicle Cargo Capacity = 117.9 kg (A-B)

TEST VEHICLE DELIVERED WEIGHT WITH MAXIMUM FLUIDS:

Left Front	=	<u>411.0</u> kg	Left Rear	=	<u>244.5</u> kg
Right Front	=	<u>422.5</u> kg	Right Rear	=	<u>222.5</u> kg
TOTAL FRONT	=	<u>833.5</u> kg	TOTAL REAR	=	<u>467.0</u> kg
% of Total Weight	=	<u>64.1</u> %	% of Total Weight	=	<u>35.9</u> %
TOTAL WEIGHT	=	<u>1300.5</u> kg			

* Tire pressure used in test.

DATA SHEET 1 (continued)

GENERAL TEST VEHICLE PARAMETER DATA

Vehicle: 1999 Volkswagen New Beetle

NHTSA No. VW002

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Test Vehicle Delivered Weight with Max. Fluids	=	<u>1300.5</u>	kg (A)
Maximum Cargo Carrying Capacity of Test Vehicle	=	<u>117.9</u>	kg (B)
Weight of instrumented Side Impact Dummies	=	<u>162.4</u>	kg (C)
TEST VEHICLE TARGET WEIGHT:	=	<u>1580.8</u>	kg (A+B+C)

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

Left Front	=	<u>463.0</u>	kg	Left Rear	=	<u>378.5</u>	kg
Right Front	=	<u>428.5</u>	kg	Right Rear	=	<u>315.0</u>	kg
TOTAL FRONT	=	<u>891.5</u>	kg	TOTAL REAR	=	<u>693.5</u>	kg
% of Total Weight	=	<u>56.2</u>	%	% of Total Weight =	=	<u>43.8</u>	%
TOTAL TEST WEIGHT=		<u>1585.0</u>	kg				

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

Left Front	=	<u>455.0</u>	kg	Left Rear	=	<u>360.5</u>	kg
Right Front	=	<u>431.0</u>	kg	Right Rear	=	<u>326.5</u>	kg
TOTAL FRONT	=	<u>886.0</u>	kg	TOTAL REAR	=	<u>687.0</u>	kg
% of Total Weight	=	<u>56.3</u>	%	% of Total Weight =	=	<u>43.7</u>	%
TOTAL TEST WEIGHT=		<u>1573.0</u>	kg				

TEST VEHICLE ATTITUDE (all dimensions in millimeters):

AS DELIVERED:

Left Front	<u>692</u>	Right Front	<u>698</u>	Left Rear	<u>708</u>	Right Rear	<u>713</u>
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FULLY LOADED:

Left Front	<u>674</u>	Right Front	<u>690</u>	Left Rear	<u>655</u>	Right Rear	<u>671</u>
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READY FOR TEST:

Left Front	<u>676</u>	Right Front	<u>691</u>	Left Rear	<u>660</u>	Right Rear	<u>671</u>
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Test Vehicle Wheelbase: 2512 millimeters

C.G. = 1097.1 millimeters rearward of front wheel centerline

TOTAL VEHICLE LENGTH:

Right Side	=	<u>4005</u>	millimeters
Left Side	=	<u>4005</u>	millimeters
Centerline	=	<u>4085</u>	millimeters

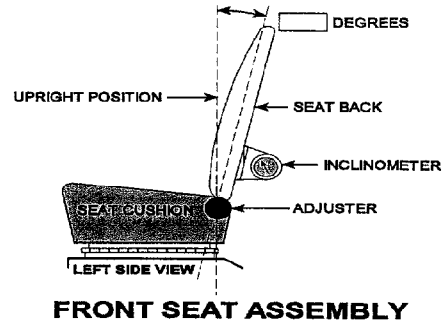
DATA SHEET 1 (continued)

GENERAL TEST VEHICLE PARAMETER DATA

Vehicle: 1999 Volkswagen New Beetle

NHTSA No. VW002

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



FRONT SEAT CUSHION PLACEMENT: Seat positioned in detent 7, where the forward most detent is 0.

Total Length of Adjustment Travel: 240 millimeters

Total Number of Adjustment Positions or Detents: There are 14 total detents.

FRONT SEAT BACK ADJUSTMENT POSITION: Adjust seat so H-point machine torso reads 21°

Seat Back Torso Angle: 21 degrees

SECOND POSITION SEAT:

Total Length of Fore/Aft Adjustment Travel: 0 millimeters

Seat Back Adjustment Position: Not Applicable

ADJUSTABLE STEERING COLUMN POSITION: _____

WINDOW POSITIONS: Left Front: Closed Left Rear: Fixed

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:

54.9 liters (Fuel Tank Usable Capacity)

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

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

Wheelbase = 2512 millimeters

Impact Point is 316 millimeters rearward of front axle centerline

(which is 940 millimeters forward of the wheelbase midpoint)

Actual Impact Point is 323 millimeters rearward of front axle centerline

DATA SHEET 2

TEST VEHICLE SUMMARY OF RESULTS

VEHICLE IDENTIFICATION:

Vehicle Year/Make/Model: 1999 Volkswagen New Beetle

Body Style: 2-Door Coupe

VIN: 3VWCC21C2XM474531

NHTSA No.: VW002

Test Date: July 22, 1999

Overall Length = 4085 millimeters; Overall Width = 1660 millimeters

VEHICLE TEST WEIGHT (Pre-Test):

Left Front = 455.0 kg Left Rear = 360.5 kg

Right Front = 431.0 kg Right Rear = 326.5 kg

TOTAL FRONT = 886.0 kg TOTAL REAR = 687.0 kg

TOTAL VEHICLE WEIGHT 1573.0 kg

Wheelbase = 2512 millimeters

Longitudinal C.G. from Center of Front Axle = 1097.1 millimeters

Impact Angle with Respect to Impactor = 90 degrees

ACTUAL IMPACT POINT

Actual Impact Point is 7 mm Rearward of nominal impact ref. line (Lateral)

Actual Impact Point is 0 mm on the nominal impact point (Vertical)

MAXIMUM EXTERIOR STATIC CRUSH:

1. LEVEL 1 (306 mm above ground) = 205 millimeters

2. LEVEL 2 (489 mm above ground) = 314 millimeters

3. LEVEL 3 (580 mm above ground) = 276 millimeters

4. LEVEL 4 (850 mm above ground) = 276 millimeters

5. LEVEL 5 (1370 mm above ground) = 20 millimeters

Maximum Post-Test Intrusion = 314 millimeters

OCCUPANTS:

Front Passenger:

Rear Passenger:

Dummy Identification 016

027

Restraints Used Seatbelt, Side Airbag

Seatbelt

INSTRUMENTATION:

Number of Vehicle Data Channels: = 42

Number of Cameras: Onboard = 3

Offboard = 6

TOTAL = 9

DATA SHEET 3

MOVING DEFORMABLE BARRIER (MDB) SUMMARY

Vehicle: 1999 Volkswagen New Beetle

NHTSA No. VW002

MDB FACE MANUFACTURER AND SERIAL NUMBER:

Plascore, Inc. 68A0599-2 68A06991009

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>432</u>	millimeters
2. Row B at Top of Bumper Level	=	<u>533</u>	millimeters
3. Row C at Mid Level	=	<u>686</u>	millimeters
4. Row D at Top of Stack Level	=	<u>813</u>	millimeters

INSTRUMENTATION:

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

POST-TEST OBSERVATIONS

Vehicle: 1999 Volkswagen New Beetle

NHTSA No. VW002

VISIBLE DUMMY CONTACT POINTS:

LEFT FRONT SID

The back of the head to the headrest. The side of the head to the left shoulder. The top of the head to the top of the door panel.

Head: _____

Upper Torso: Side airbag and door trim panel

Lower Torso: Side airbag

Left Knee: Door trim panel

Right Knee: None

LEFT REAR SID

The side of the head to the c-pillar trim

Interior trim panel

Interior trim panel

Interior trim panel

None

DOOR OPENING:

LEFT DOOR

RIGHT DOOR

LIFTGATE

Front: Closed/Inoperable

Closed/Operable

N/A

Rear: Not Applicable

Not Applicable

Closed/Operable

MDB DISTANCE FROM TARGET IMPACT POINT:

Vertical: 0 mm

Horizontal: 7 mm rear

ARM REST LOCATIONS:

Front: The front armrest was pushed inward during the event

Rear: The rear armrest was pushed inward and rotated downward during the event

SEAT MOVEMENT:

Front: The front seat was pushed inboard during the event

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

GLAZING DAMAGE:

Windshield: The windshield cracked along the A-pillar

Window: The left side vehicle glass shattered during the event

PILLAR PERFORMANCE:

Both the A- and B-pillars remained in tact during the event. There were no visible separations or failures

SILL SEPARATION:

There were no visible tears or separation

AIR BAG DEPLOYMENT STATUS:

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

OTHER NOTABLE IMPACT EFFECTS:

None

SECTION 4

OCCUPANT AND VEHICLE INFORMATION

DATA SHEET 5

SID INSTRUMENTATION DATA

Vehicle: 1999 Volkswagen New Beetle

NHTSA No. VW002

	Front Dummy ID# 016				Rear Dummy ID# 027			
	Pos. Direction		Neg. Direction		Pos. Direction		Neg. Direction	
	Max (g)	Time (mscc)	Max (g)	Time (mscc)	Max (g)	Time (mscc)	Max (g)	Time (mscc)
RIB ACCELERATIONS:								
Upper Rib Lateral .. Y	44.8	39.4	-11.6	140.0	61.4	41.2	-10.1	129.4
Upper Rib Lateral .. Y(R)	40.7	23.7	-13.3	140.0	60.4	50.0	-10.9	129.4
Lower Rib Lateral .. Y	46.4	26.2	-13.1	140.0	78.3	40.6	-18.7	65.6
Lower Rib Lateral .. Y(R)	56.7	26.2	-16.2	140.0	73.3	41.2	-23.0	66.2
SPINE ACCELERATIONS:								
Lower Lateral Y	58.6	26.2	-13.9	78.1	84.9	45.0	-26.9	70.6
Lower Lateral Y(R)	64.7	26.2	-15.7	78.1	84.0	45.0	-26.9	70.6
PELVIC ACCELERATIONS:								
Lateral Y	94.4	24.4	-64.9	77.5	70.0	37.5	-6.6	76.2
Lateral Y(R)	95.3	24.4	-22.1	46.2	71.1	37.5	-6.8	75.6

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

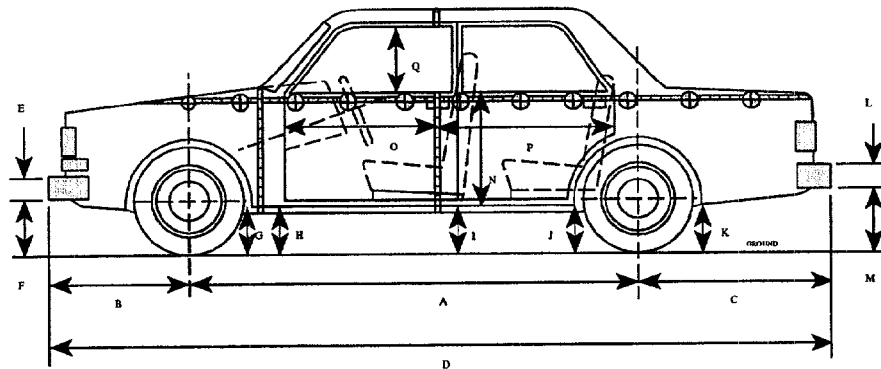
Note: Above data has been FIR filtered, Y(R) denotes redundant Y direction accelerometer.

DATA SHEET 6

VEHICLE SIDE MEASUREMENTS

Vehicle: 1999 Volkswagen New Beetle

NHTSA No. VW002



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	2512	-	2509	-3
B	832	-	845	13
C	733	-	716	-17
D	4085	-	4070	-15
E	145	-	145	0
F	193	194	198	4
G	203	161	302	141
H	176	155	270	115
I	207	167	301	134
J1	196	156	190	34
J2	200	155	214	59
K	230	173	174	1
L	190	-	190	0
M	280	222	234	12
N	680	-	578	-102
O	1158	-	1145	-13
P	-	-	-	0
Q	494	-	485	-9
R	4005	-	3995	-10
S	4005	-	3987	-18
T	1660	-	1625	-35

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

E&L = Bumper Thickness
J1 = To Pinch Weld

R = Right Side Length
J2 = To Sill

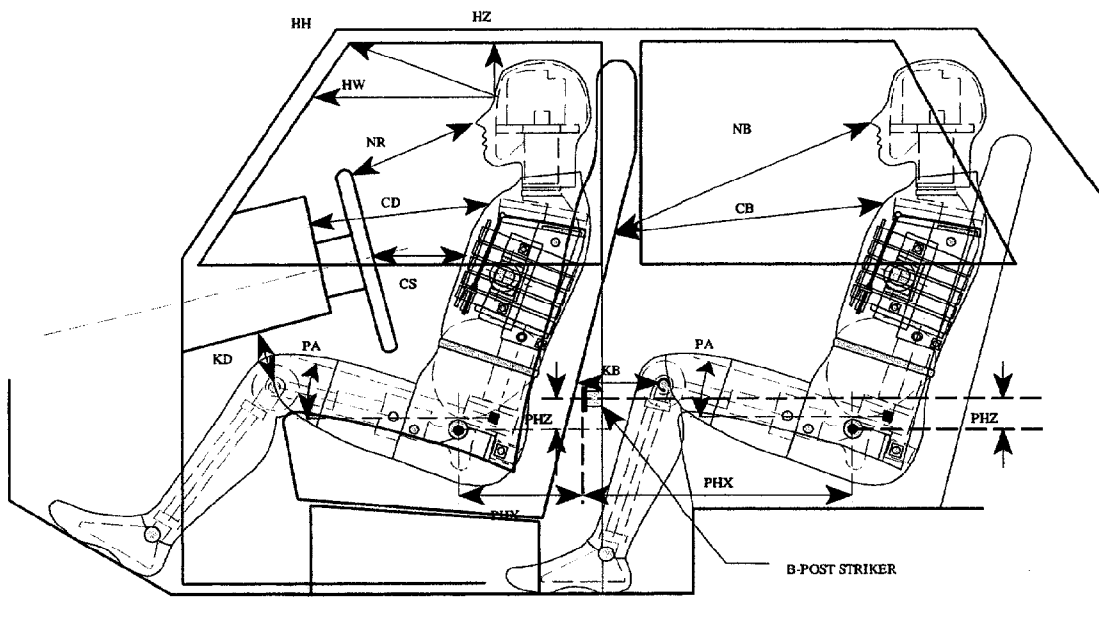
S = Left Side Length

DATA SHEET 7

SID LONGITUDINAL CLEARANCE DIMENSIONS

Vehicle: 1999 Volkswagen New Beetle

NHTSA No. VW002



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# <u>016</u>	LEFT REAR PASS. ID# <u>027</u>
HH	622	N/A
HW	917	N/A
HZ	275	119
NR/NB	469	452
CD/CB	561 (125 mm down)	384
CS	316	N/A
KDL(KDA°)/KBL(KDA°)	198 / (26°)	100 / (34°) (to bolster)
KDR(KBA°)/KBR(KBA°)	199 / (30°)	141 / (39°) (to back)
PA°	23.6°	24.6°
PHX	310	479
PHZ	240	210

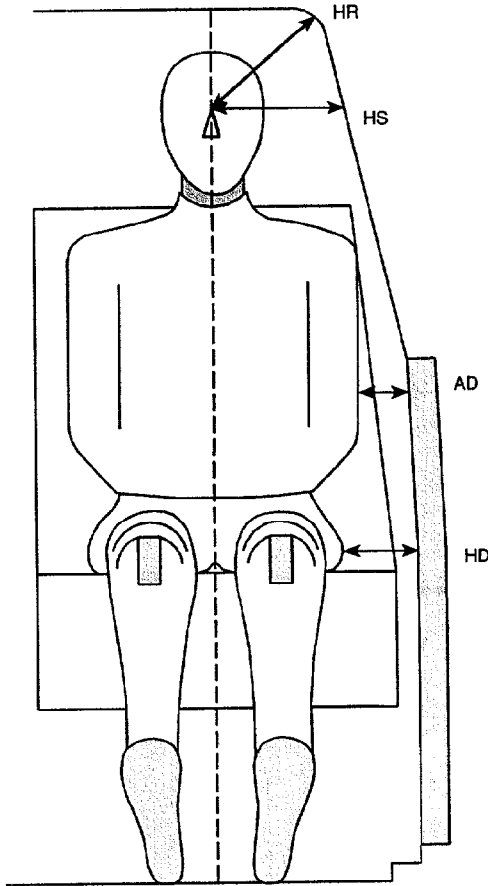
Note: 2-door vehicle shown. Rear dummy PHX & PHZ measurements for 4-door vehicle would use the C-post striker as a reference point.

DATA SHEET 8

SID LATERAL CLEARANCE DIMENSIONS

Vehicle: 1999 Volkswagen New Beetle

NHTSA No. VW002



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

	DRIVER ID # <u>016</u>		LEFT REAR PASS. ID # <u>027</u>	
HR	254		134	
HS	340		213 (to pillar trim)	
AD*	LOWER: 115	UPPER: 89	LOWER: 131	UPPER: 87
HD	165		195	

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

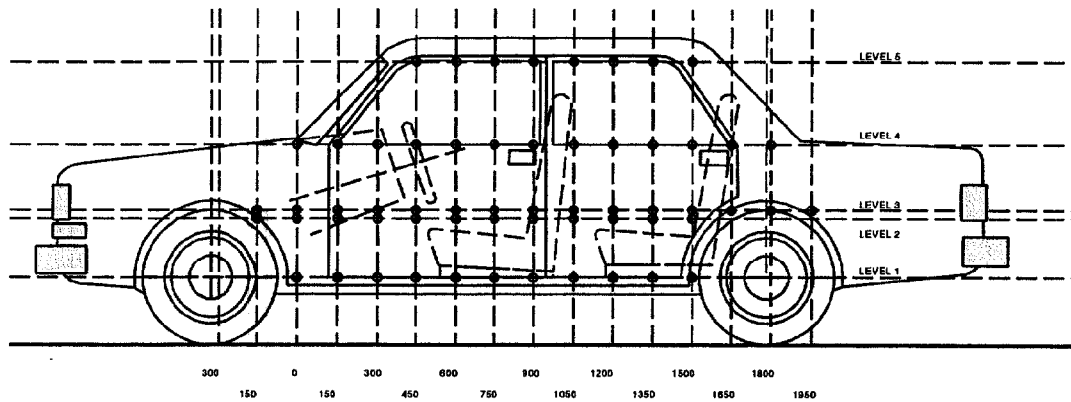
Upper measurement is taken laterally at the center of the upper rib accelerometer height from the SID arm segment to the closest part of the vehicle side.

DATA SHEET 9

VEHICLE SIDE MEASUREMENTS

Vehicle: 1999 Volkswagen New Beetle

NHTSA No. VW002



LEFT SIDE VIEW

NOTE: All measurements are in millimeters (mm)

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

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

Measurements Along the Vertical 750 mm Line Shown Above:

Level 5 @ Window Top	=	<u>1370</u>	millimeters
Level 4 @ Window Sill	=	<u>850</u>	millimeters
Level 3 @ Mid Door	=	<u>580</u>	millimeters
Level 2 @ Occupant H-Point	=	<u>489</u>	millimeters
Level 1 @ Axle Centerline Height (or Sill Top Height)	=	<u>306</u>	millimeters

DATA SHEET 10

VEHICLE EXTERIOR CRUSH PROFILES - ALL LEVELS

NHTSA No. VW002

Vehicle: 1999 Volkswagen New Beetle

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

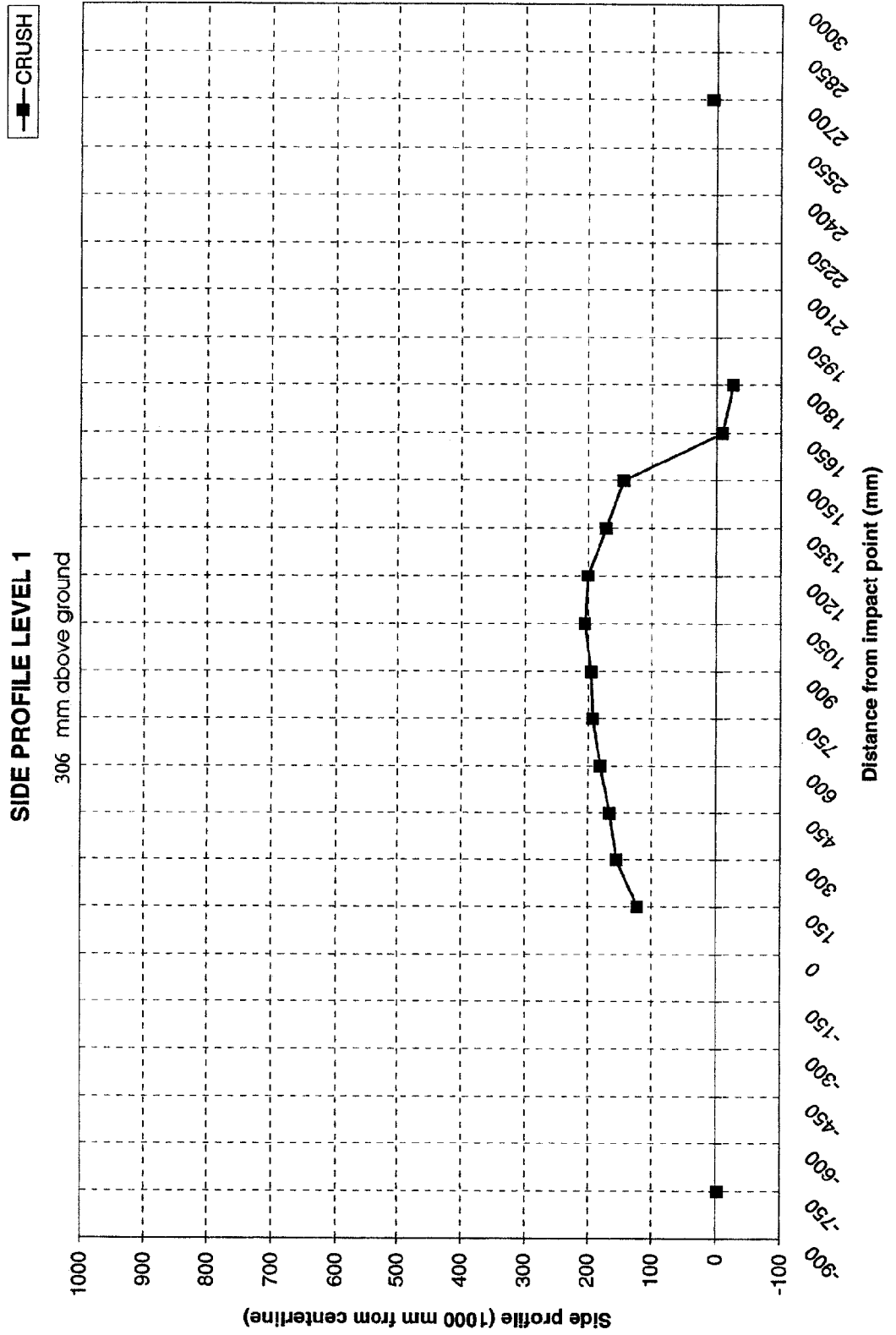
		DISTANCE IN MILLIMETERS (mm) FROM IMPACT POINT																											
LEVEL	HEIGHT (mm)	-900	-750	-600	-450	-300	-150	0	150	300	450	600	750	900	1050	1200	1350	1500	1650	1800	1950	2100	2250	2400	2550	2700	2850	3000	
LEVEL 1 SIDE SILL																													
	PRE	-	187	-	-	-	-	-	141	207	201	202	198	201	199	204	207	206	181	161	-	-	-	-	-	262	-	-	
	POST	-	185	-	-	-	-	-	263	362	367	383	391	396	404	404	379	350	172	135	-	-	-	-	-	268	-	-	
	CRUSH	N/A	-2	N/A	N/A	N/A	N/A	N/A	122	155	166	181	193	195	205	200	172	144	-9	-26	N/A	N/A	N/A	N/A	N/A	6	N/A	N/A	
LEVEL 2 H POINT																													
	PRE	-	163	-	-	-	-	135	141	192	186	182	176	178	179	184	190	199	205	153	-	-	-	-	190	257	-	-	
	POST	-	155	-	-	-	-	240	294	395	447	462	472	484	491	498	497	480	470	190	-	-	-	-	198	266	-	-	
	CRUSH	N/A	-8	N/A	N/A	N/A	N/A	105	153	203	261	280	296	306	312	314	307	281	265	37	N/A	N/A	N/A	N/A	8	9	N/A	N/A	
LEVEL 3 MID DOOR																													
	PRE	-	177	132	-	-	-	122	166	191	184	176	175	174	178	184	191	197	207	160	156	-	-	-	204	292	-	-	
	POST	-	171	125	-	-	-	207	247	379	404	417	424	433	445	451	467	469	468	260	198	-	-	-	214	300	-	-	
	CRUSH	N/A	-6	-7	N/A	N/A	N/A	85	81	188	220	241	249	259	267	267	276	272	261	100	42	N/A	N/A	N/A	10	8	N/A	N/A	
LEVEL 4 WINDOW SILL																													
	PRE	-	-	-	-	-	267	24	230	218	208	205	202	202	203	207	218	233	242	253	274	-	-	-	-	-	-	-	
	POST	-	-	-	-	-	265	268	284	348	365	395	412	434	449	458	485	509	482	451	377	-	-	-	-	-	-	-	
	CRUSH	N/A	N/A	N/A	N/A	N/A	-2	27	54	130	157	190	210	232	246	251	267	276	240	198	103	N/A	N/A	N/A	N/A	N/A	N/A	N/A	
LEVEL 5 WINDOW TOP																													
	PRE	-	-	-	-	-	-	-	-	-	506	447	423	422	426	430	437	451	499	-	-	-	-	-	-	-	-	-	
	POST	-	-	-	-	-	-	-	-	-	507	443	422	428	438	450	456	456	502	-	-	-	-	-	-	-	-	-	
	CRUSH	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	1	-4	-1	6	12	20	19	5	3	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

DATA SHEET 10 (continued)

VEHICLE EXTERIOR CRUSH PROFILES

Vehicle: 1999 Volkswagen New Beetle

NHTSA No. VW002



DATA SHEET 10 (continued)

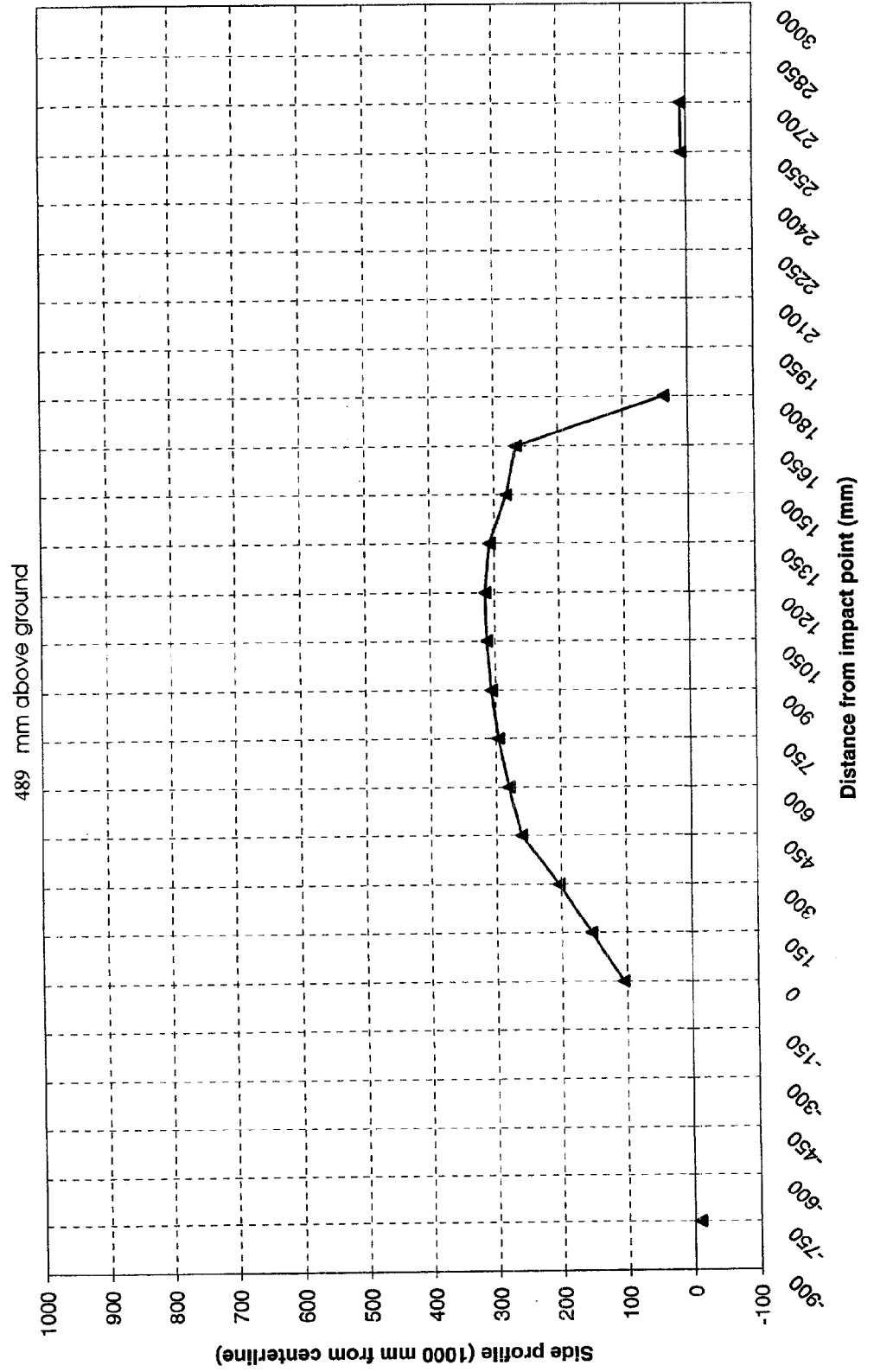
VEHICLE EXTERIOR CRUSH PROFILES

Vehicle: 1999 Volkswagen New Beetle

NHTSA No. VW002

—▲— CRUSH

SIDE PROFILE LEVEL 2



DATA SHEET 10 (continued)

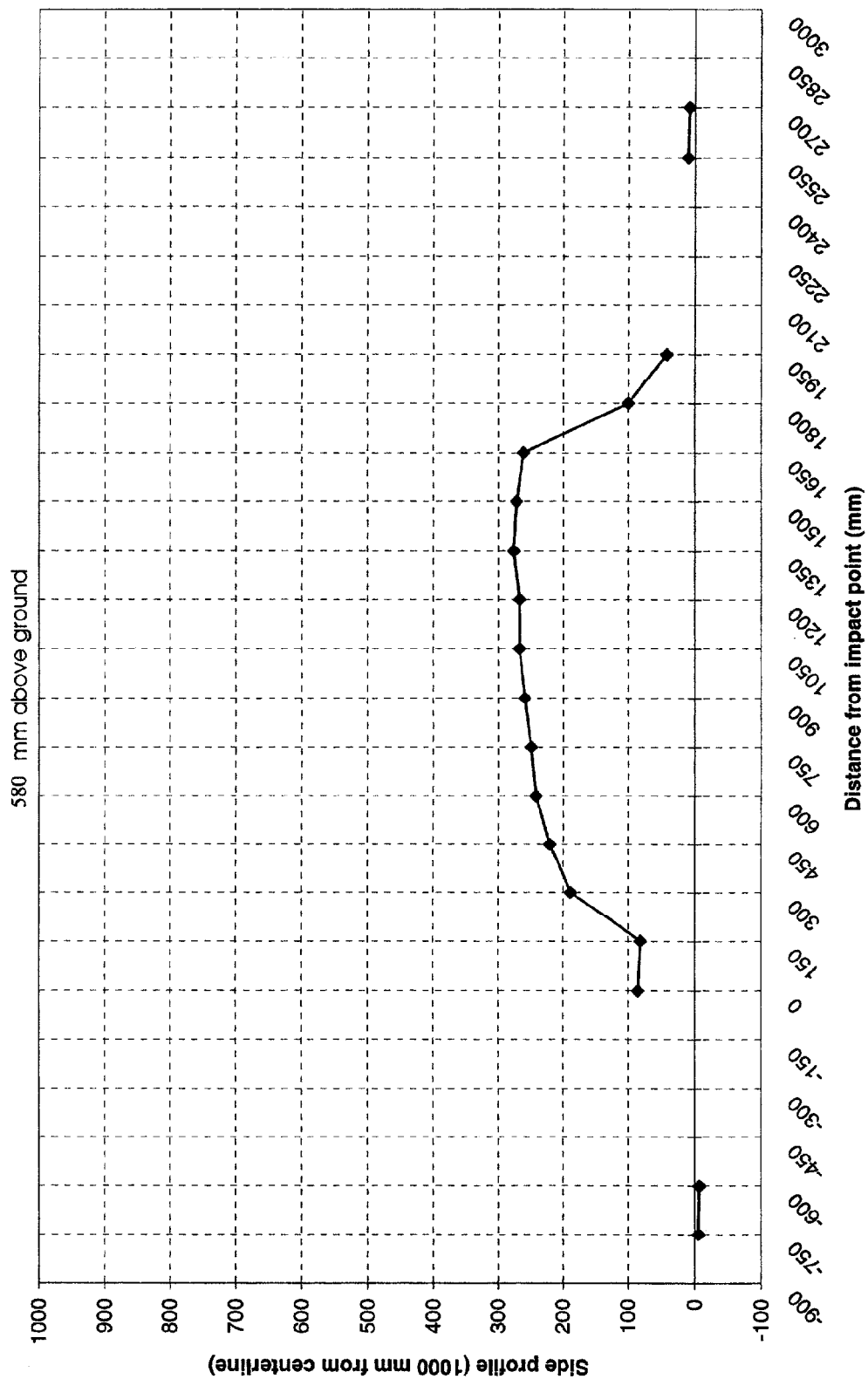
VEHICLE EXTERIOR CRUSH PROFILES

Vehicle: 1999 Volkswagen New Beetle

NHTSA No. VW002

SIDE PROFILE LEVEL 3

—●— CRUSH



DATA SHEET 10 (continued)

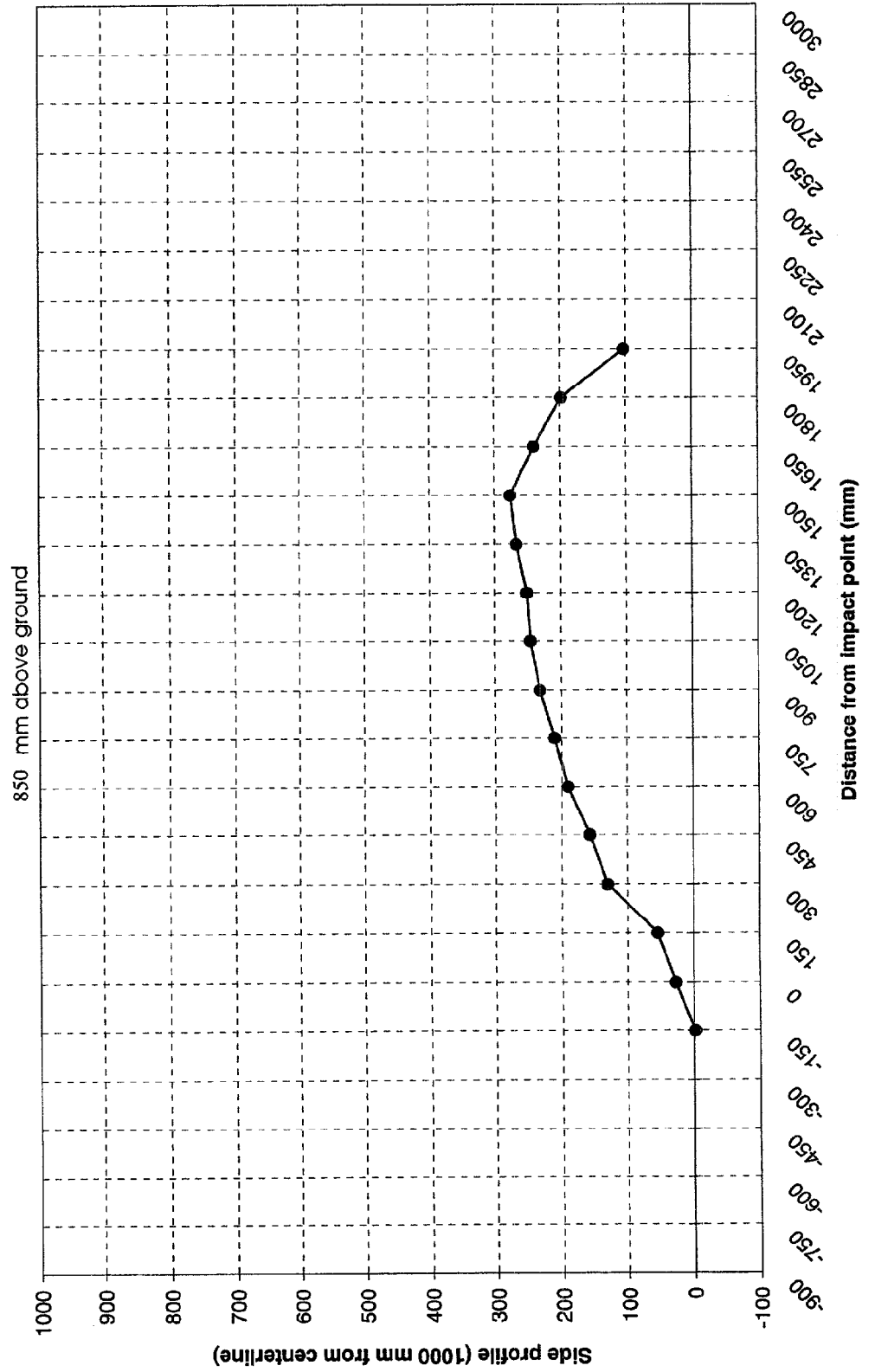
VEHICLE EXTERIOR CRUSH PROFILES

Vehicle: 1999 Volkswagen New Beetle

NHTSA No. VW002

—●— CRUSH

SIDE PROFILE LEVEL 4

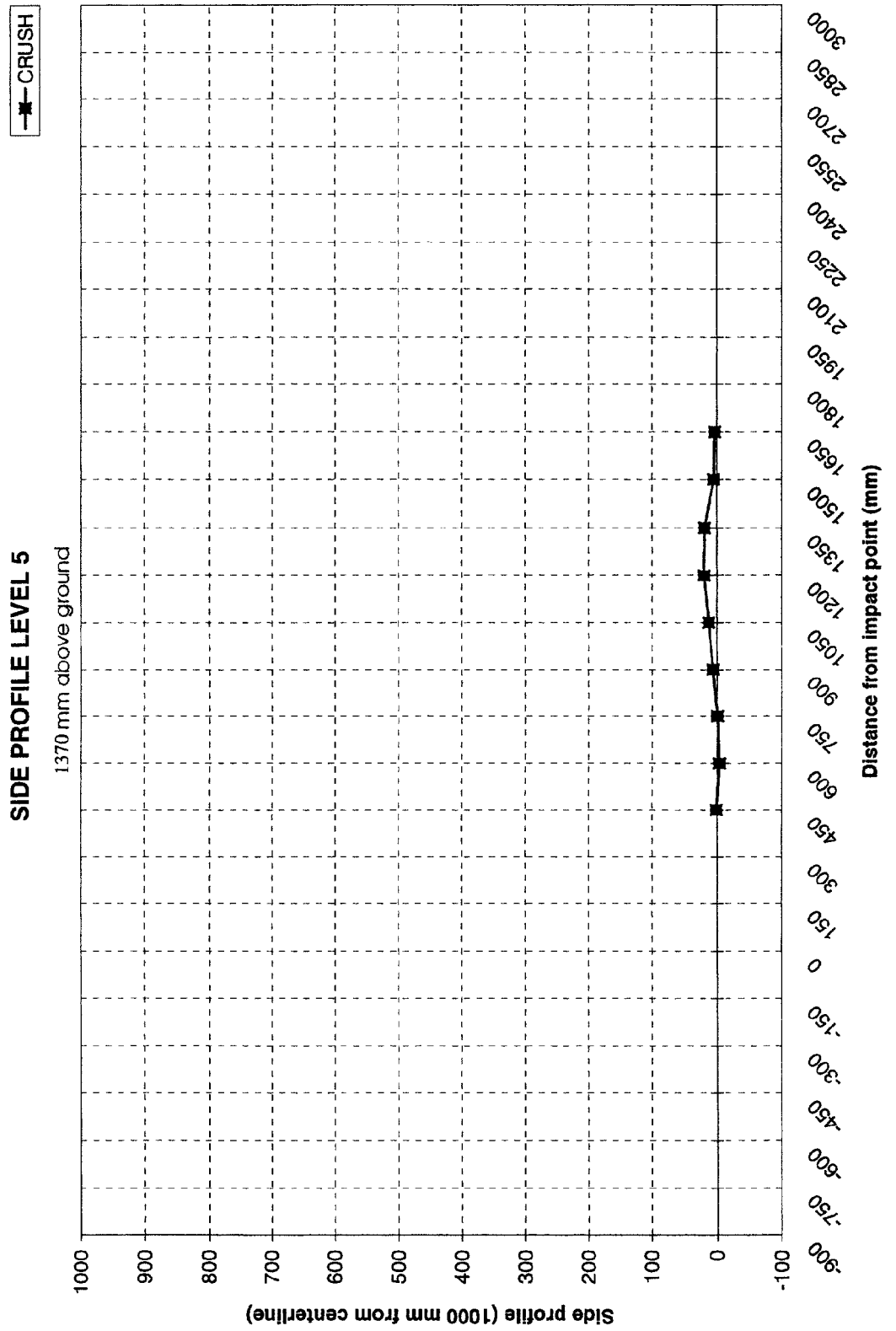


DATA SHEET 10 (continued)

VEHICLE EXTERIOR CRUSH PROFILES

Vehicle: 1999 Volkswagen New Beetle

NHTSA No. VW002

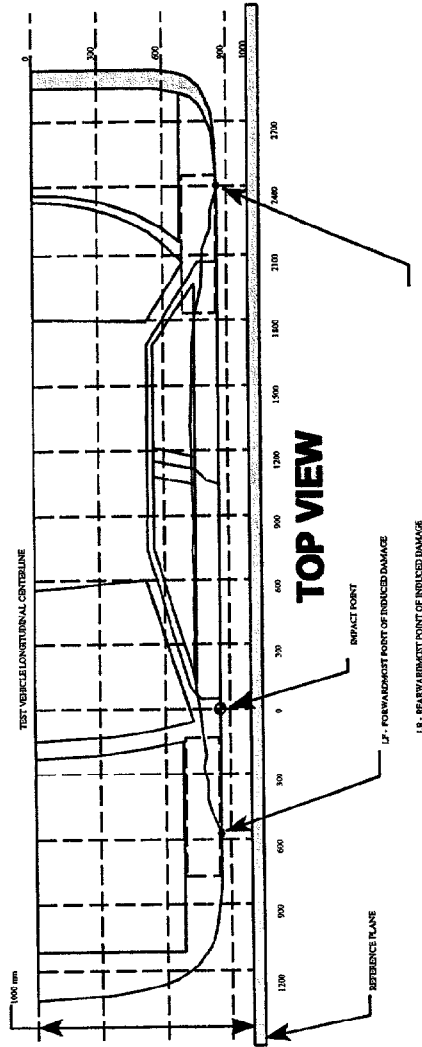


DATA SHEET 11

VEHICLE DAMAGE PROFILE DISTANCES

NHTSA No. VW002

Vehicle: 1999 Volkswagen New Beetle



MEASUREMENT CONVENTIONS:
Forward of the impact point (forward of vehicle) is considered negative (-).
Rearward of the impact point (rearward of vehicle) is considered positive (+).

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

DPD MEASUREMENTS		POST TEST (mm)	PRETEST (mm)	STATIC CRUSH (mm)
1	(LF = -750 mm)	171	177	-6
2	-90	266	257	9
3	570	459	183	276
4	1230	498	185	313
5	1890	407	266	141
6	(LR = 2550 mm)	214	204	10

DATA SHEET 12

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

Vehicle: 1999 Volkswagen New Beetle

NHTSA No. VW002

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

LEVEL	HEIGHT AT CL (mm)*	DISTANCE RIGHT OF CENTER (mm)									DISTANCE LEFT OF CENTER (mm)							
		800	700	600	500	400	300	200	100		100	200	300	400	500	600	700	800
LEVEL 4		619	619	619	619	619	619	619	619		619	619	619	619	619	619	619	619
TOP	813	682	648	617	602	610	619	621	624	630	637	643	651	664	679	694	713	768
STACK	CRUSH	63	29	-2	-17	-9	0	2	5	11	18	24	32	45	60	75	94	149
LEVEL 3		619	619	619	619	619	619	619	619	619	619	619	619	619	619	619	619	619
MID	686	664	619	612	614	621	628	622	620	617	619	623	628	635	648	665	693	755
LEVEL	CRUSH	45	0	-7	-5	2	9	3	1	2	0	4	9	16	29	46	74	136
LEVEL 2		619	619	619	619	619	619	619	619	619	619	619	619	619	619	619	619	619
TOP	533	680	676	672	666	660	647	644	648	649	652	654	658	666	676	696	720	751
BUMPER	CRUSH	61	57	53	47	41	28	25	29	30	33	35	39	47	57	77	101	132
LEVEL 1		535	519	518	518	518	518	518	518	518	518	518	518	518	518	518	519	535
MID	432	669	663	647	639	622	619	614	603	606	603	601	606	609	618	633	658	650
BUMPER	CRUSH	134	144	129	121	104	101	96	85	88	85	83	88	91	100	115	139	115

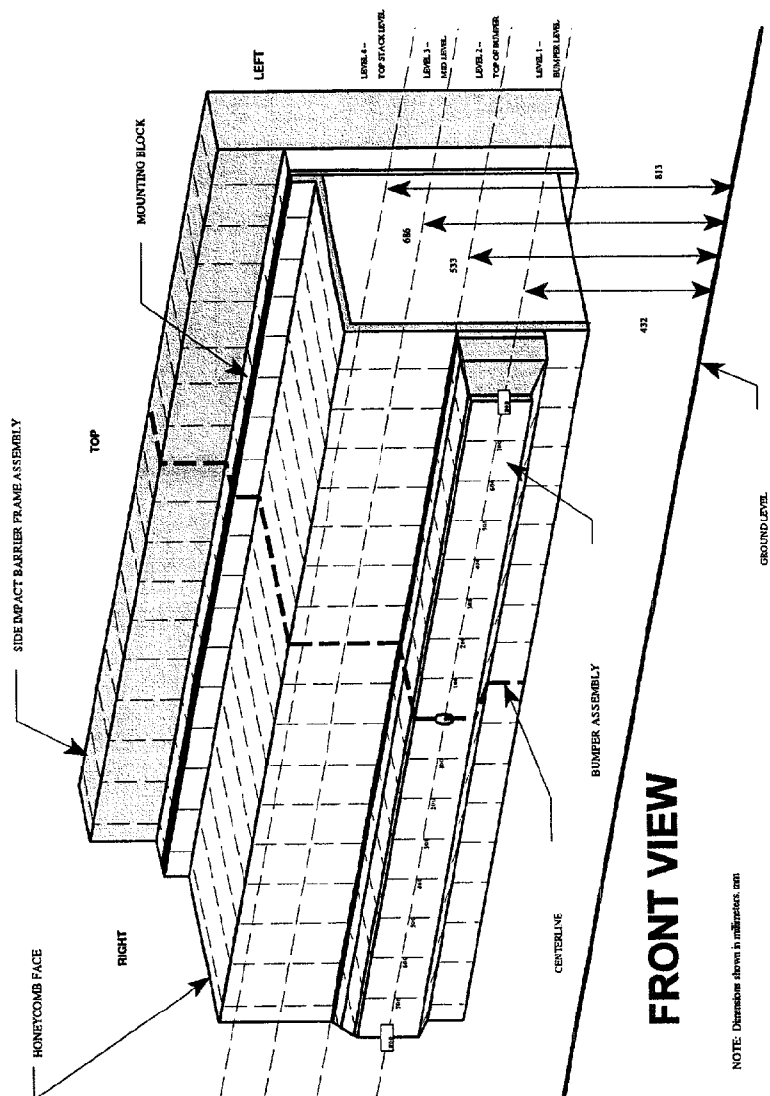
*Heights measured above ground level.

DATA SHEET 12 (continued)

EXTERIOR STATIC CRUSH FOR IMPACTOR FACE

Vehicle: 1999 Volkswagen New Beetle

NHTSA No. VW002



FRONT VIEW

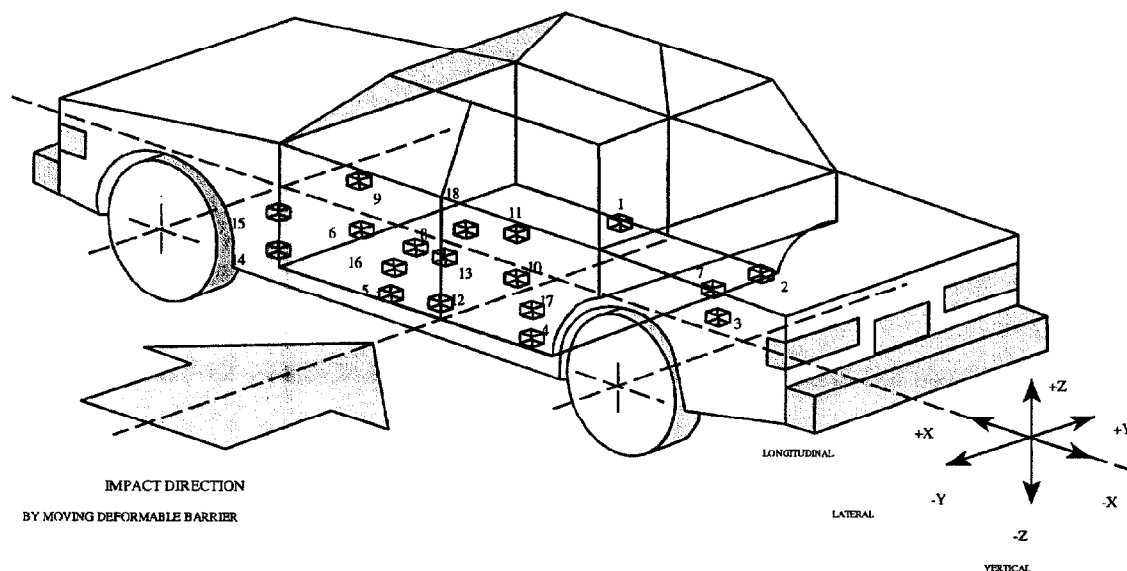
NOTE: Dimensions shown in millimeters, mm

DATA SHEET 13

TEST VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

Vehicle: 1999 Volkswagen New Beetle

NHTSA No. VW002



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

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

DATA SHEET 13 (continued)

VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

Vehicle: 1999 Volkswagen New Beetle

NHTSA No. VW002

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	2390	839	199	pos. 4.1 neg. -4.7	39.9 23.2	36.4 -5.0	8.8 73.4	9.8 -13.5	43.6 18.3	38.1 0.0	8.9 -39.0
2	Right Side Sill at Rear Seat	1590	845	196	pos. 4.7 neg. -3.5	39.9 22.8	40.1 -10.3	9.1 14.3	9.4 -14.7	34.8 18.3	41.3 0.0	9.1 -91.1
3	Rear Floorpan Above Axle	965	0	435	pos. 6.9 neg. -2.4	24.8 60.7	22.3 -2.3	9.2 93.5	19.7 -20.4	12.6 17.2	27.0 0.0	8.3 -89.3
4	Left Side Sill at Rear Seat	1590	-777	270	pos. - neg. -	- -	25.3# -33.3#	6.8# 28.8#	- -	- -	- -	- -
5	Left Side Sill at Front Seat	2390	-781	278	pos. - neg. -	- -	51.6 -16.6	6.7 28.7	- -	- -	- -	- -
6	Left Front Door on Centerline	2764	-732	612	pos. - neg. -	- -	226.5 -107.8	8.1 15.5	- -	- -	- -	- -
7	Right Rear Occupant Compartment	1671	290	185	pos. - neg. -	- -	23.8 -2.0	8.4 95.1	- -	- -	- -	- -
8	Midrear of Left Front Door	1766	-695	605	pos. - neg. -	- -	1060.1 A -35.5 A	73.9 A 82.3 A	- -	- -	- -	- -
9	Left Front Door Upper Centerline	2264	-721	892	pos. - neg. -	- -	150.5 -47.8	16.9 23.7	- -	- -	- -	- -
10	Midrear of Left Rear Door	1148	-697	615	pos. - neg. -	- -	114.9 -16.9	4.5 24.7	- -	- -	- -	- -
11	Left Rear Door Upper Centerline	1345	-705	882	pos. - neg. -	- -	88.1 -54.6	19.5 31.1	- -	- -	- -	- -

*Reference: X - Rear Bumper (+ Forward)

**Accelerometer was not requested by COTR.

Y - Vehicle Centerline (+ To Right) Z - Ground Level (+ Up)
- Data questionable after 18 ms
A - Data is questionable

DATA SHEET 13 (continued)

VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

Vehicle: 1999 Volkswagen New Beetle

NHTSA No. VW002

Accel. No.	Location	Coordinates (mm)±3			Lat. (y)		Vert. (z)		Resultant	
		X*	Y*	Z*						
12	Left Lower B-Pillar	1711	-708	408	pos.	-	Max (g)	Time (msec)	Max (g)	Time (msec)
					neg.	-	156.4	5.4	-	-
13	Left Middle B-Pillar	1669	-697	727	pos.	-	-27.7	18.5	-	-
					neg.	-	152.3	5.8	-	-
14	Left Lower A-Pillar	2722	-719	420	pos.	-	-32.2	28.5	-	-
					neg.	-	114.2	5.1	-	-
15	Left Middle A-Pillar	3170	-634	854	pos.	-	-23.0	14.6	-	-
					neg.	-	18.6	58.1	-	-
16	Front Seat Track	1914	-563	236	pos.	-	-2.8	110.3	-	-
					neg.	-	67.4	16.0	-	-
17	Rear Seat Track	965	-289	430	pos.	-	-19.1	20.6	-	-
					neg.	-	146.0	18.6	-	-
18	Vehicle CG	2419	0	526	pos.	-	-0.5	0.4	-	-
					neg.	-	38.0	13.2	9.7	34.7
							-8.6	16.6	-13.6	10.9
									39.0	12.9
									0.0	-10.7

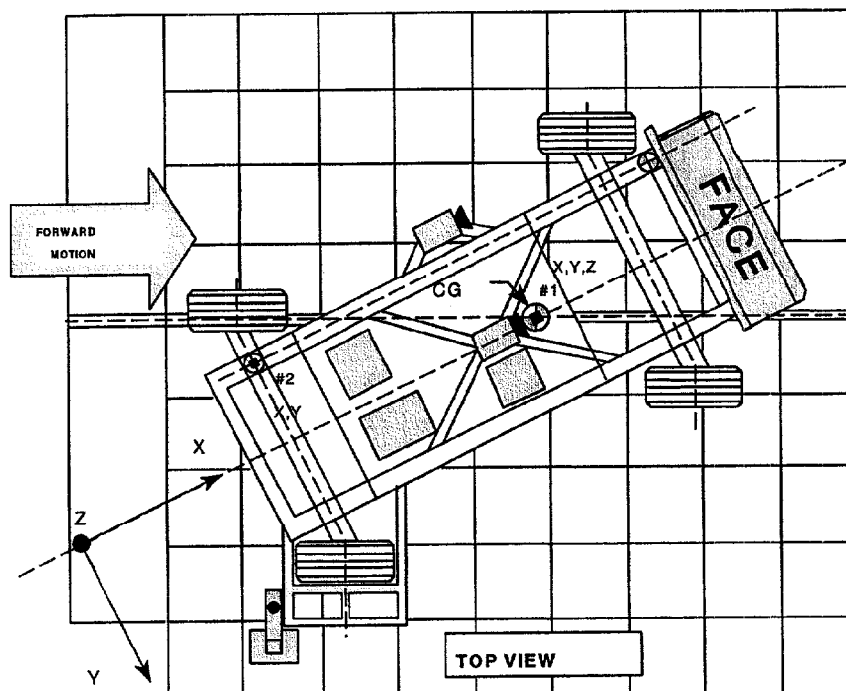
*Reference: X - Rear Bumper (+ Forward) Y - Vehicle Centerline (+ To Right) Z - Ground Level (+ Up)

DATA SHEET 14

MDB ACCELEROMETER LOCATIONS AND DATA SUMMARY

Vehicle: 1999 Volkswagen New Beetle

NHTSA No. VW002



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	2.3	499.9	-20.6	41.0
	Lateral..... Y				0.9	64.8	-7.7	30.1
	Vertical..... Z				13.9	63.7	-14.1	41.7
	Resultant..... R				25.4	41.6	-	-
2	Rear Frame Member							
	Longitudinal... X	386	-660	660	1.9	129.8	-21.0	29.3
	Lateral..... Y				4.2	30.4	-1.5	100.5

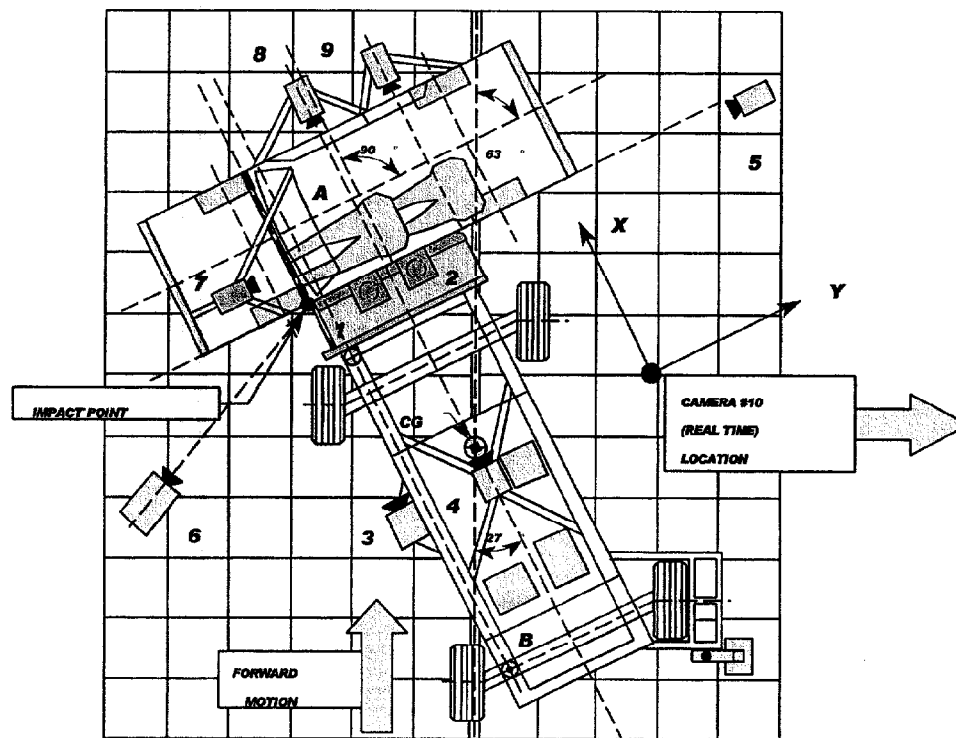
*Reference: X = Rear Bumper (+ Forward)
Y = Vehicle Centerline (+ To Right)
Z = Ground Level (+ Up)
All measurements accurate to within ± 3 mm.

DATA SHEET 15

HIGH SPEED CAMERA LOCATIONS AND DATA SUMMARY

Vehicle: 1999 Volkswagen New Beetle

NHTSA No. VW002



Camera No.	View	Coordinates (millimeters)			Angle (deg.)	Lens (mm)	Film Speed (fps)
		X*	Y*	Z*			
1	Overhead view of test vehicle	-41	780	4880	-90	8	1000
2	Overhead closeup view of impact plane	-378	976	4880	-90	12.5	1000
3	MDB onboard closeup view of impact point	1470	0	847	0	13	1000
4	MDB onboard view of driver dummy	1140	838	1586	-17	7.5	1000
5	Right side ground level overall view	240	8915	1070	-3	25	1000
6	Left side ground level overall view	-1710	-1877	1028	-8	13	1020
7	Test vehicle onboard driver front view	553	-186	1293	-13	13	840
8	Test vehicle onboard driver side view	1672	858	1011	-12	8	855
9	Test vehicle onboard passenger side view	1659	1643	1014	-12	8	N.T.
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

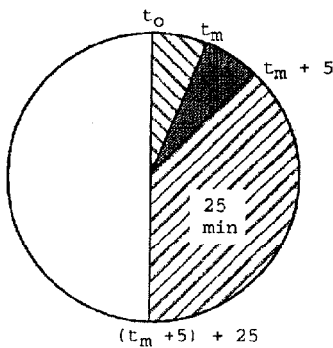
NHTSA No.: VW002 TEST DATE: July 22, 1999

Vehicle Mfgr./Make/Model : 1999 Volkswagen New Beetle 2-Door Coupe

TEST VEHICLE IMPACT TYPE :

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

FUEL SPILLAGE MEASUREMENT:



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

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

SOLVENT SPILLAGE DETAILS :

None

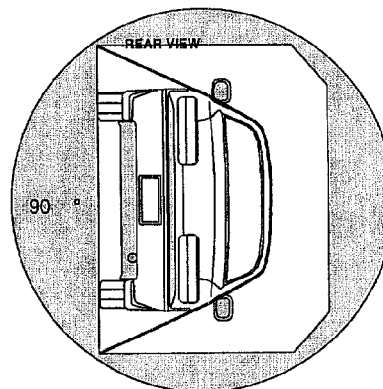
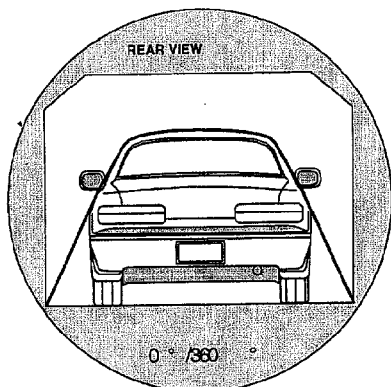
DATA SHEET 17

ROLLOVER DATA

Vehicle: 1999 Volkswagen New Beetle

NHTSA No. VW002

0 - 90 Degrees



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD :

Rollover Fixture 90° Rotation Time

1 minutes 13 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time +

5 minutes 0 seconds

TOTAL

6 minutes 13 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

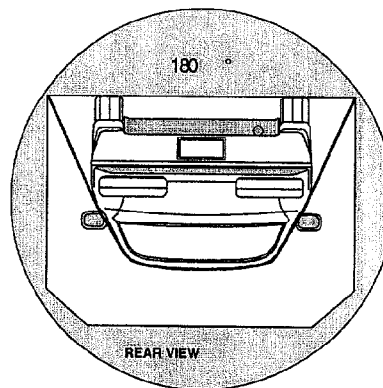
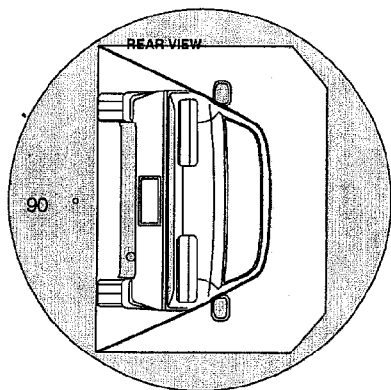
DATA SHEET 17 (continued)

ROLLOVER DATA

Vehicle: 1999 Volkswagen New Beetle

NHTSA No. VW002

90 - 180 Degrees



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD :

Rollover Fixture 90° Rotation Time

1 minutes 01 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time +

5 minutes 0 seconds

TOTAL

6 minutes 1 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

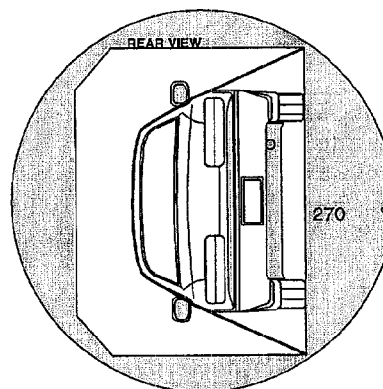
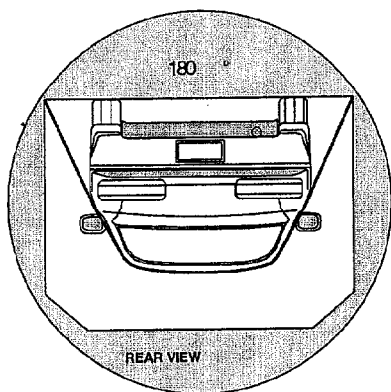
DATA SHEET 17 (continued)

ROLLOVER DATA

Vehicle: 1999 Volkswagen New Beetle

NHTSA No. VW002

180 - 270 Degrees



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD :

Rollover Fixture 90° Rotation Time

1 minutes 03 seconds

(Spec. Range = 1 to 3 minutes)

FMVSS 301 Position Hold Time +

5 minutes 0 seconds

TOTAL

6 minutes 3 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

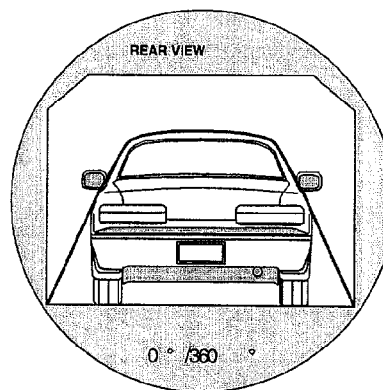
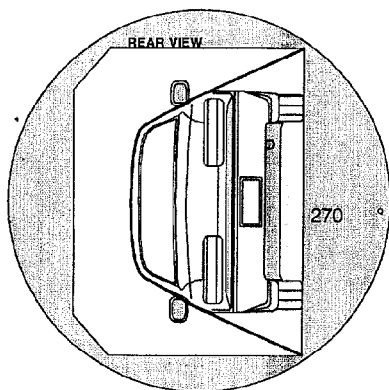
DATA SHEET 17 (continued)

ROLLOVER DATA

Vehicle: 1999 Volkswagen New Beetle

NHTSA No. VW002

270 - 360 Degrees



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD :

Rollover Fixture 90° Rotation Time	<u>1</u> minutes	<u>10</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>10</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- 38	ROLLOVER 360 DEGREES	A- 40



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

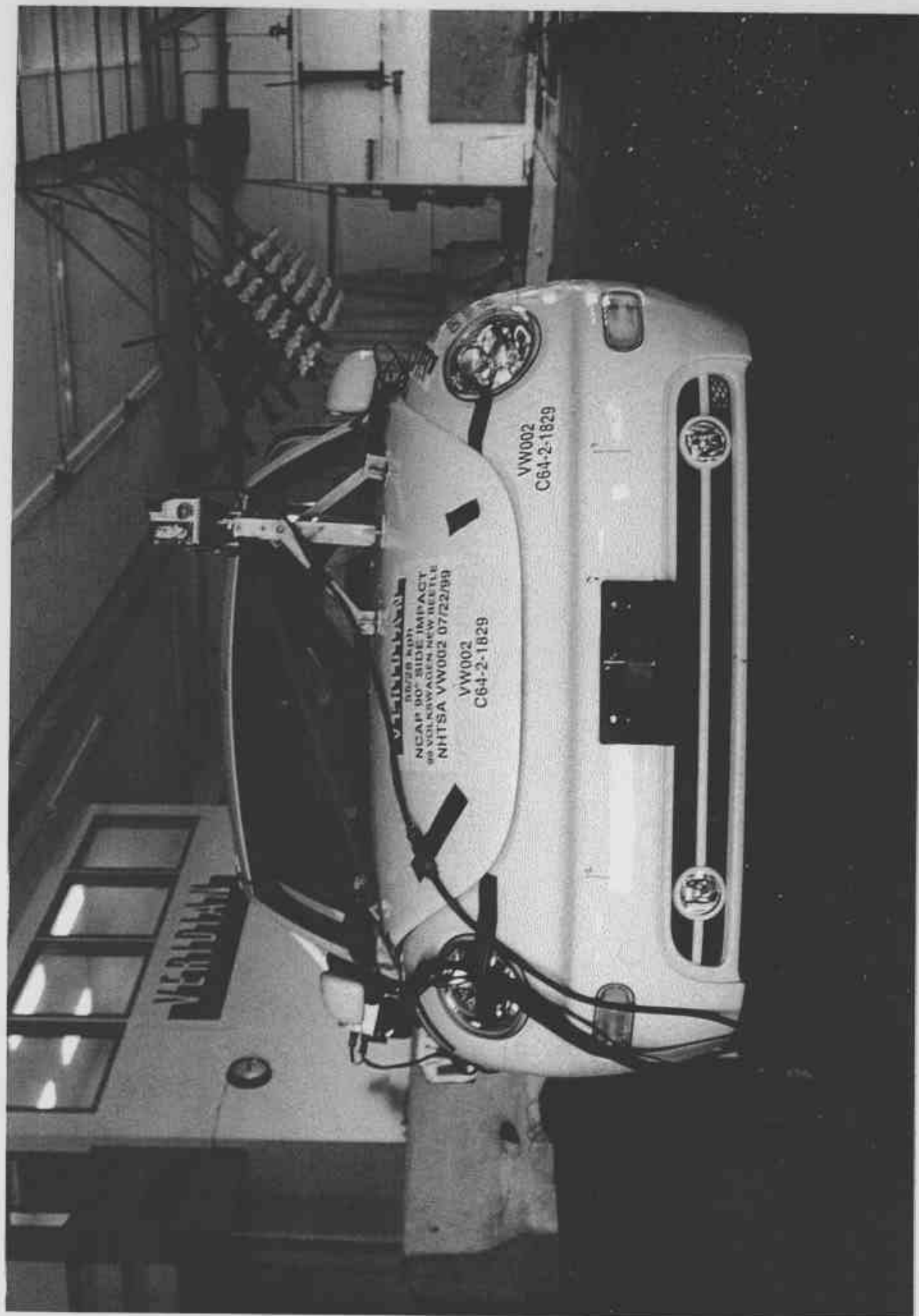


Figure A-2 POST-TEST FRONTAL VIEW OF TEST VEHICLE



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

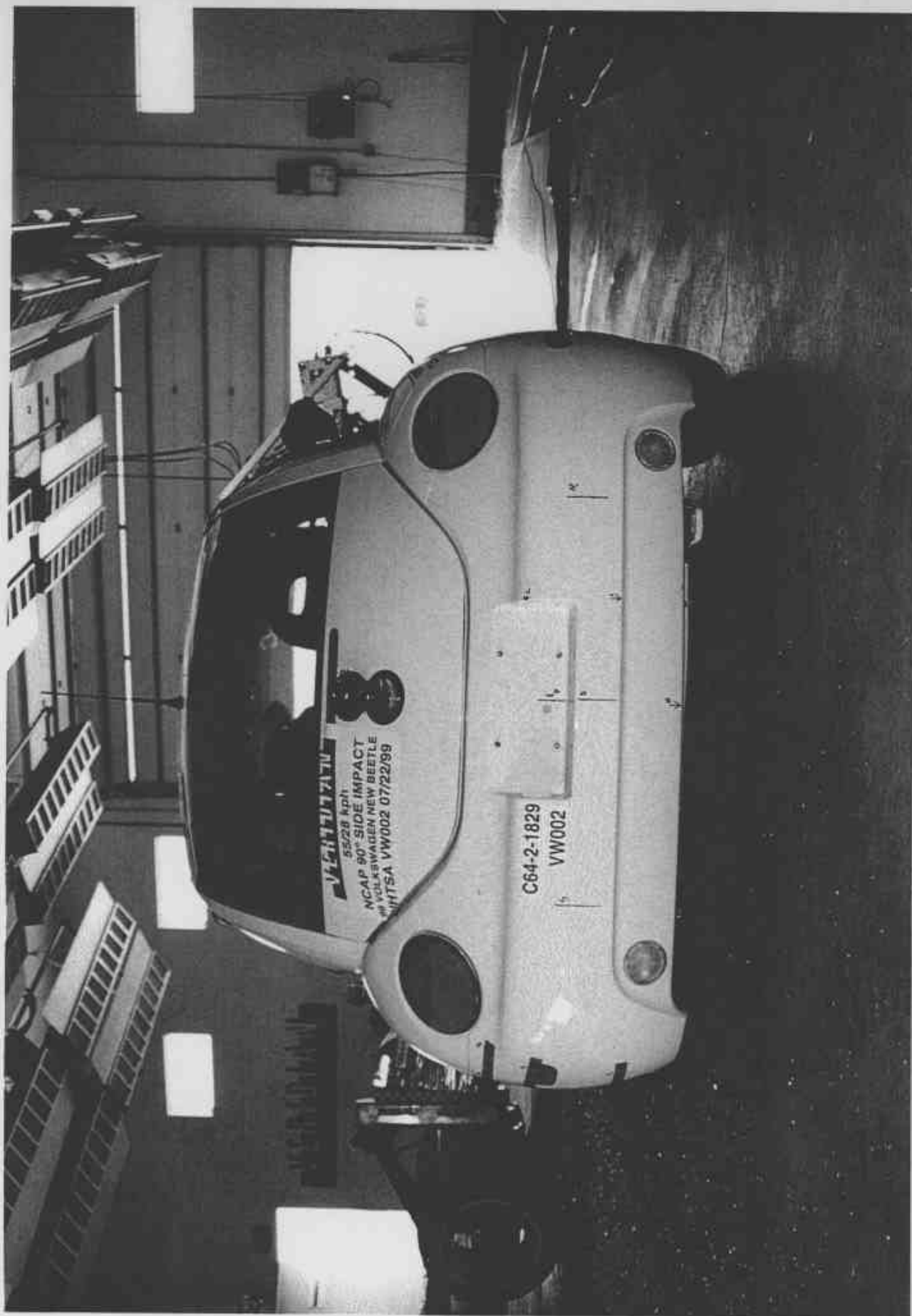


Figure A-4 POST-TEST REAR VIEW OF TEST VEHICLE

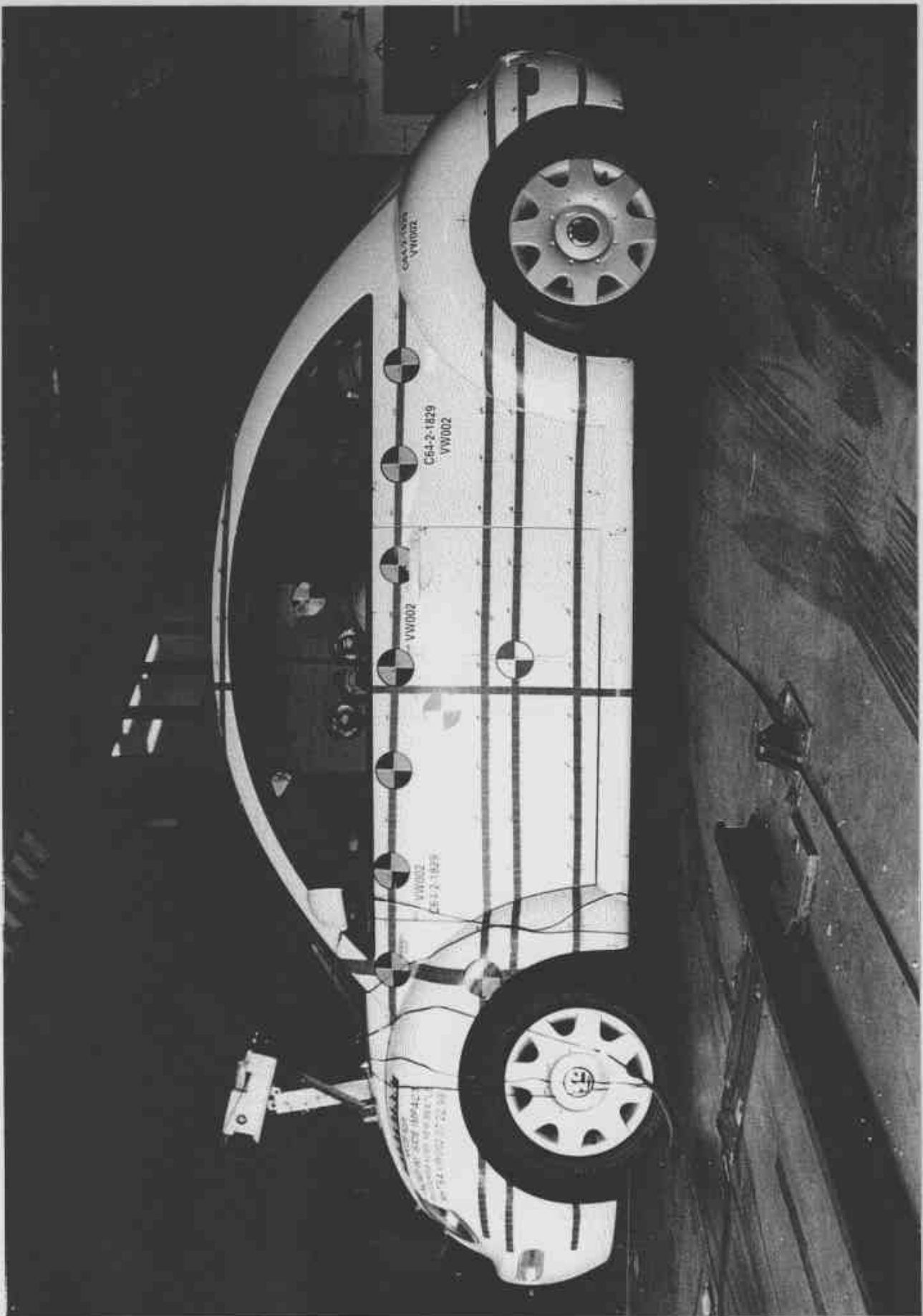


Figure A-5 PRE-TEST IMPACTED SIDE VIEW OF TEST VEHICLE

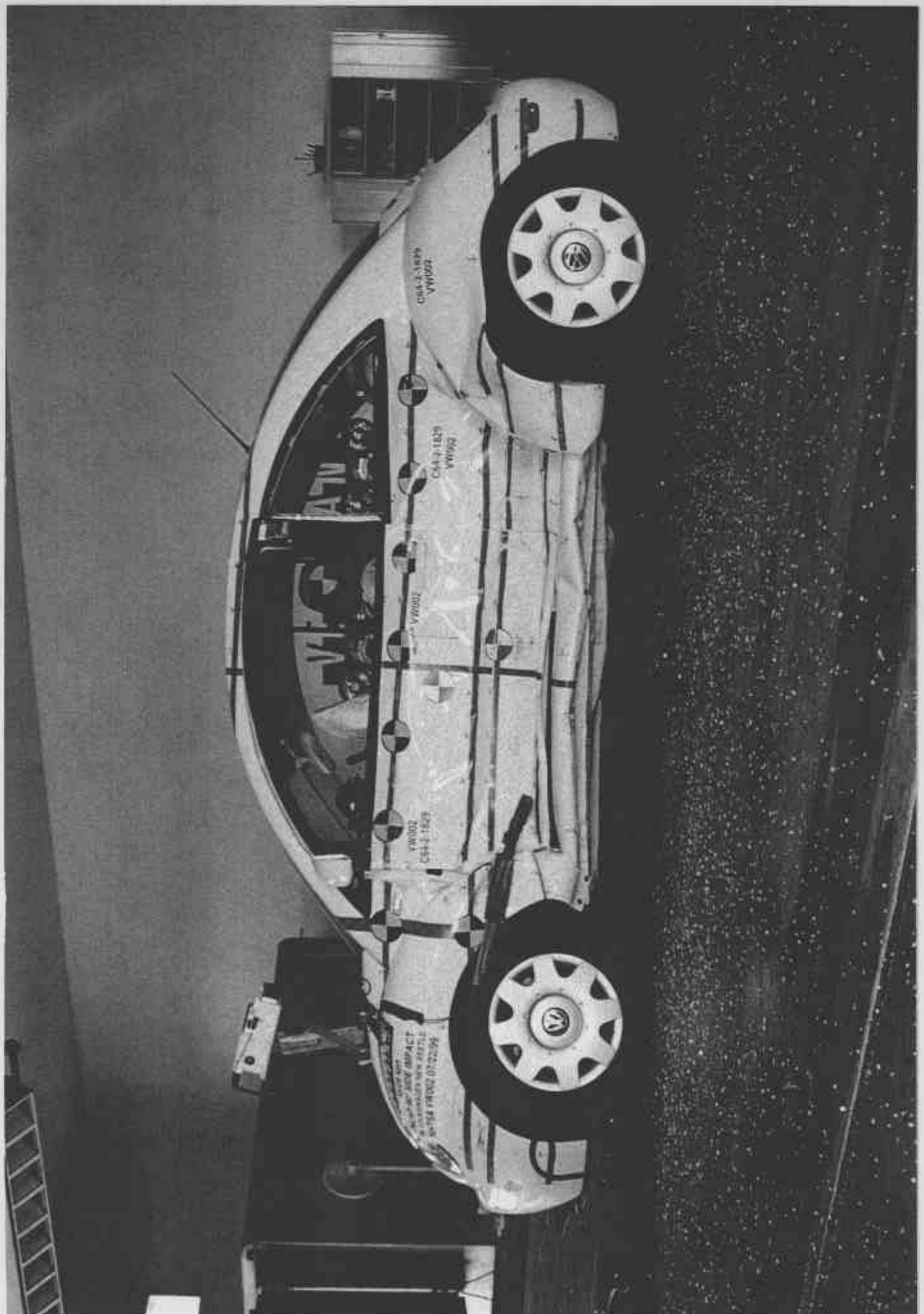


Figure A-6 POST-TEST IMPACTED SIDE VIEW OF TEST VEHICLE



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



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

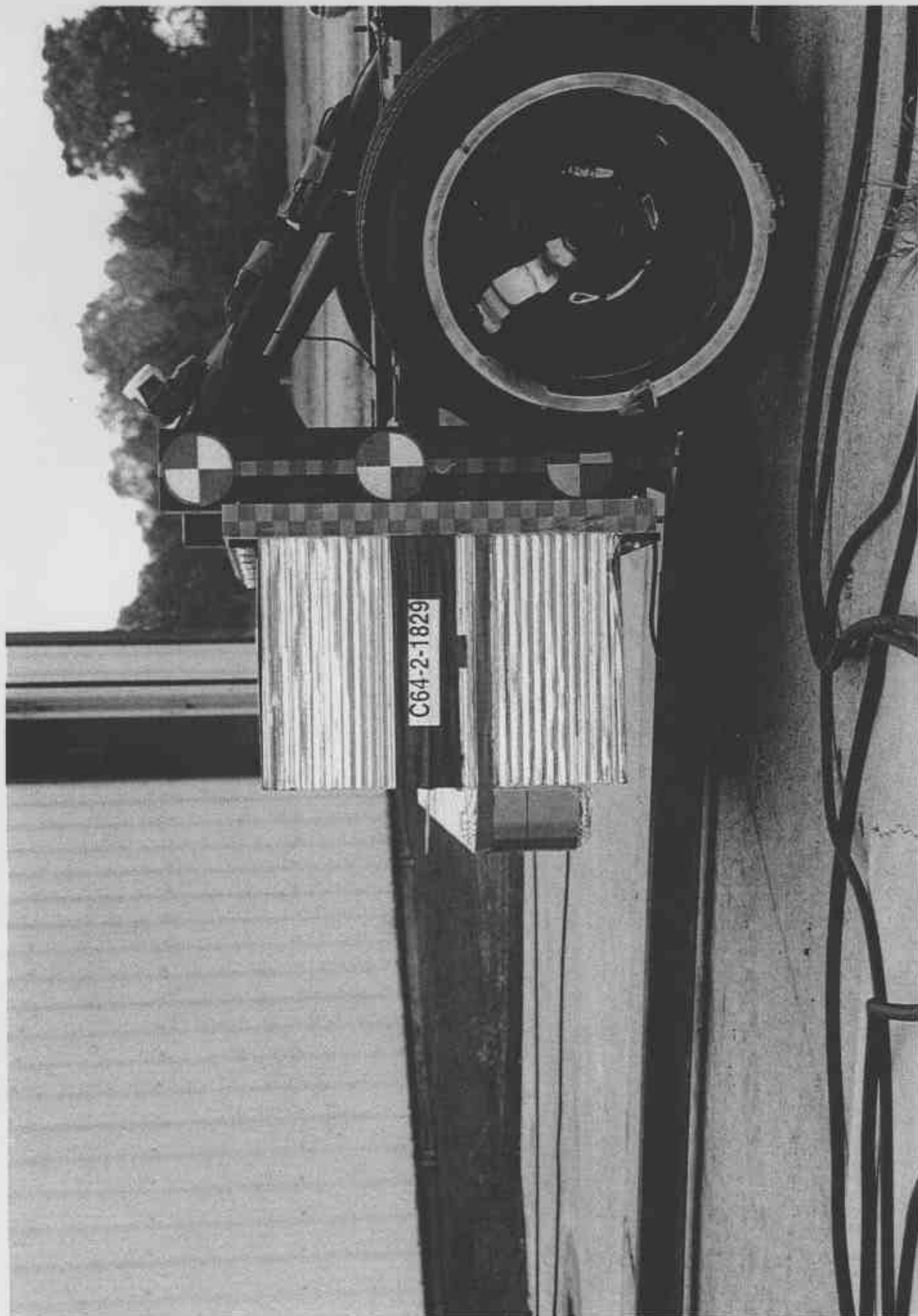


Figure A-9 PRE-TEST LEFT SIDE VIEW OF IMPACTOR FACE



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

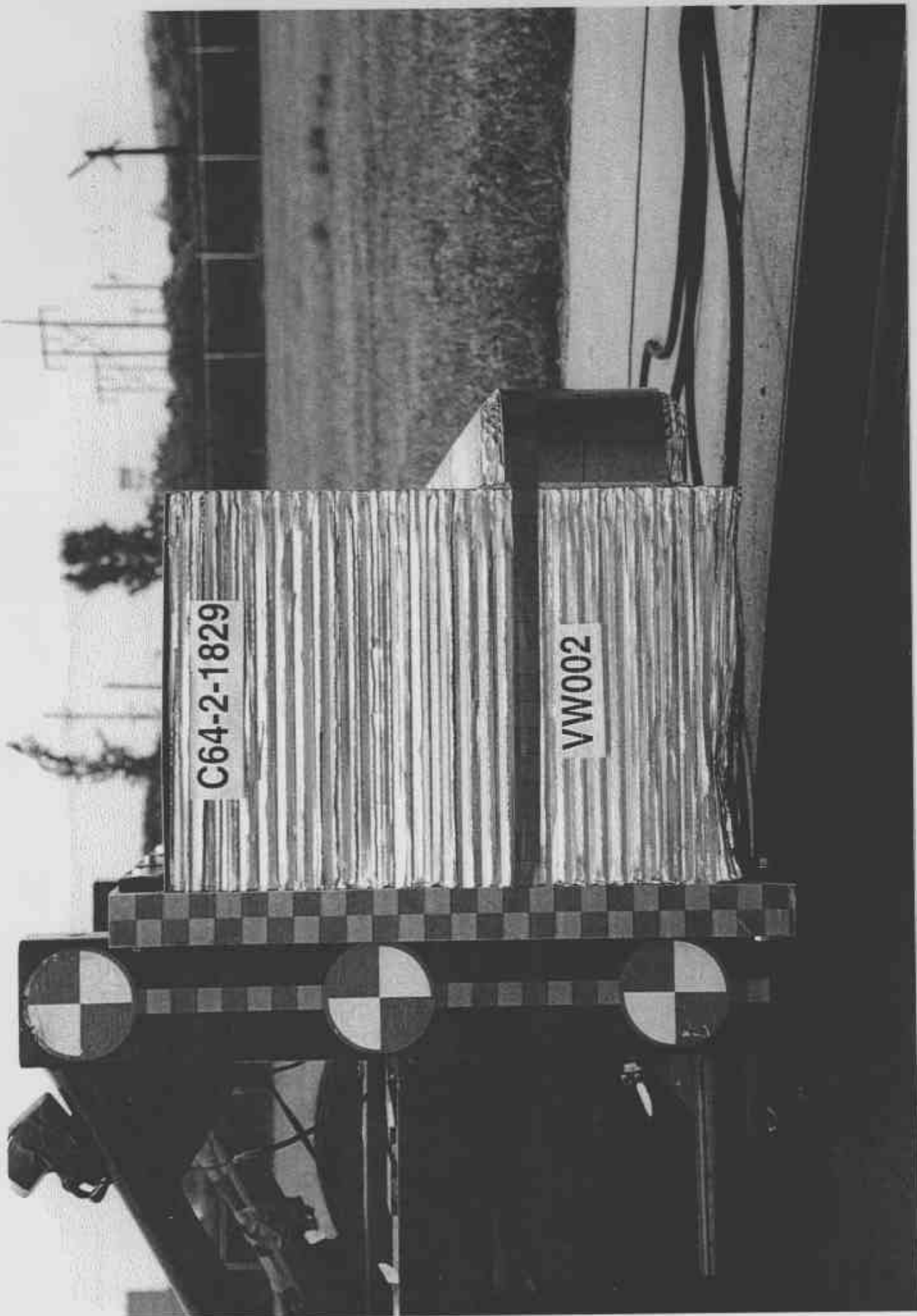


Figure A-11 PRE-TEST RIGHT SIDE VIEW OF IMPACTOR FACE



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



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



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



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



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

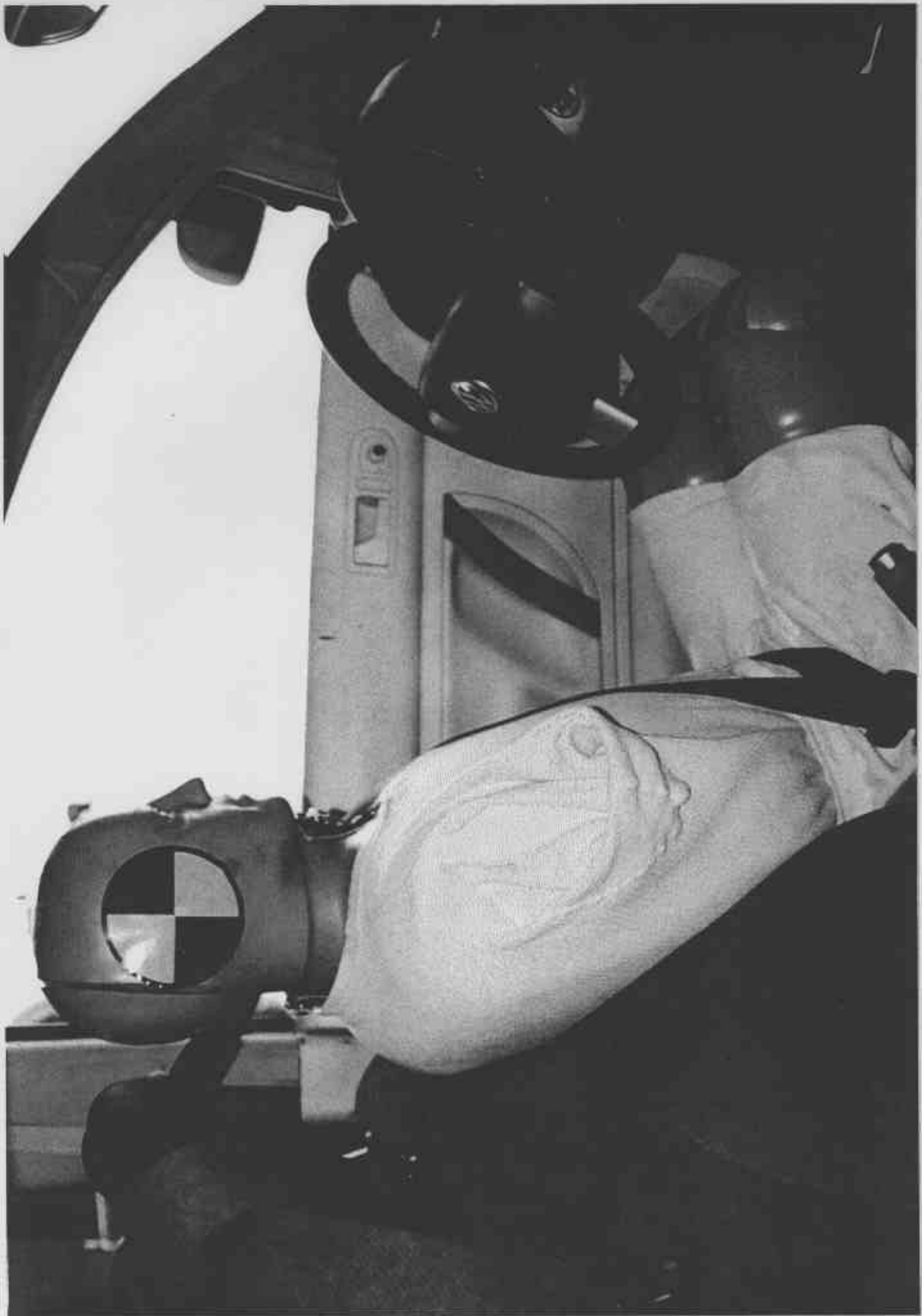


Figure A-17 PRE-TEST RIGHT OCCUPANT COMPARTMENT VIEW OF FRONT SID



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

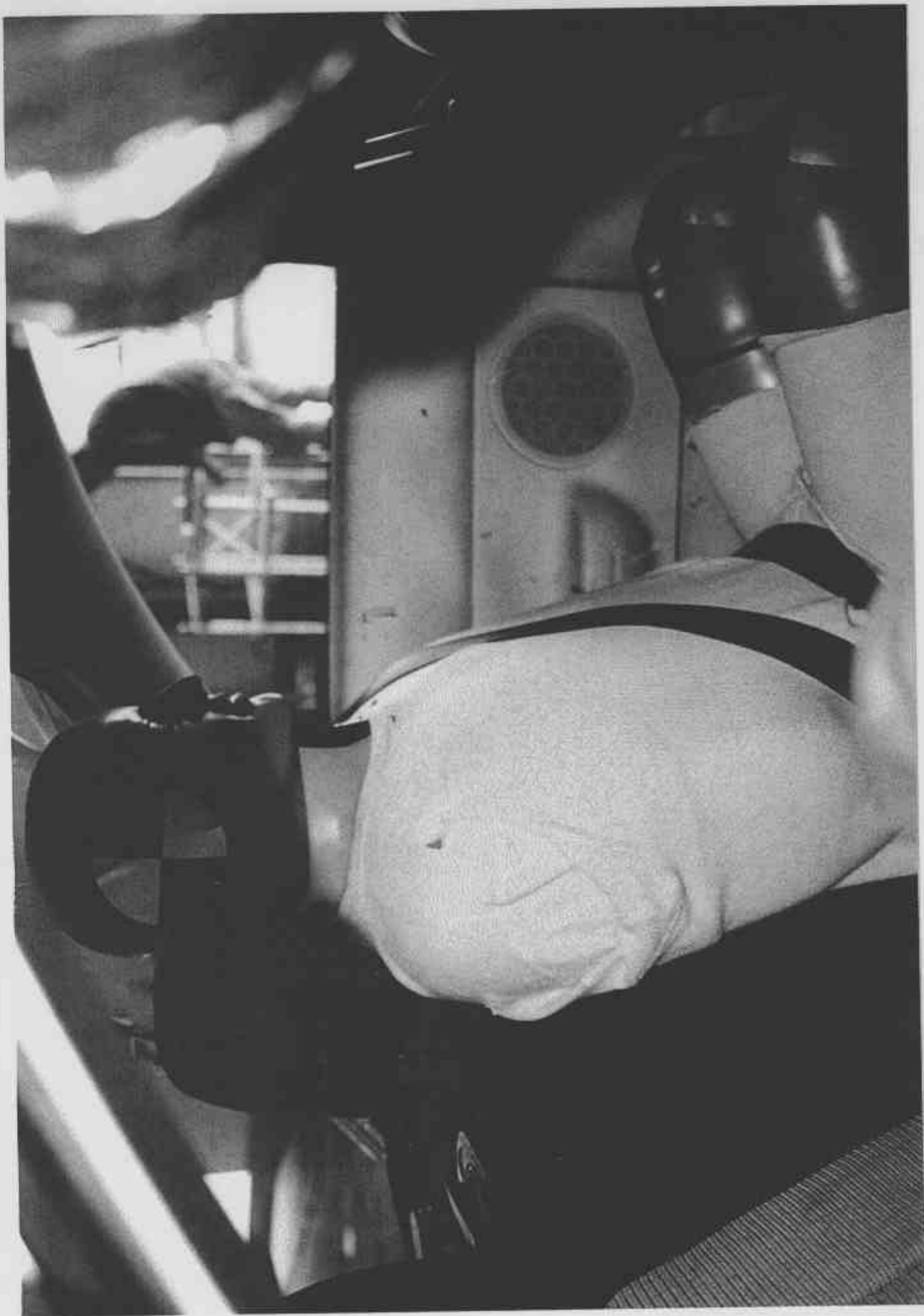


Figure A-19 PRE-TEST RIGHT OCCUPANT COMPARTMENT VIEW OF REAR SID



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



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



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



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

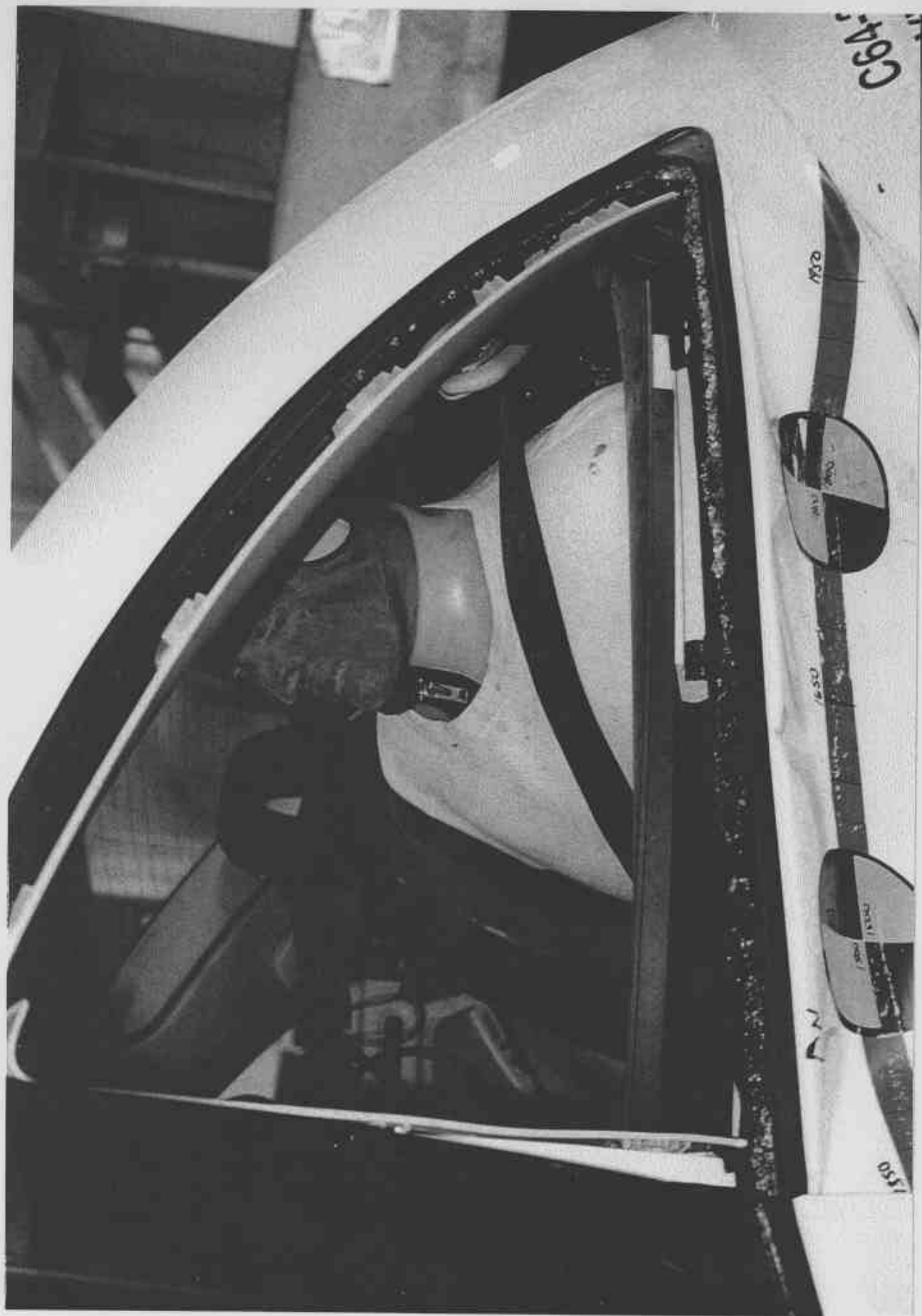


Figure A-24 POST-TEST LEFT OCCUPANT COMPARTMENT VIEW OF REAR SID

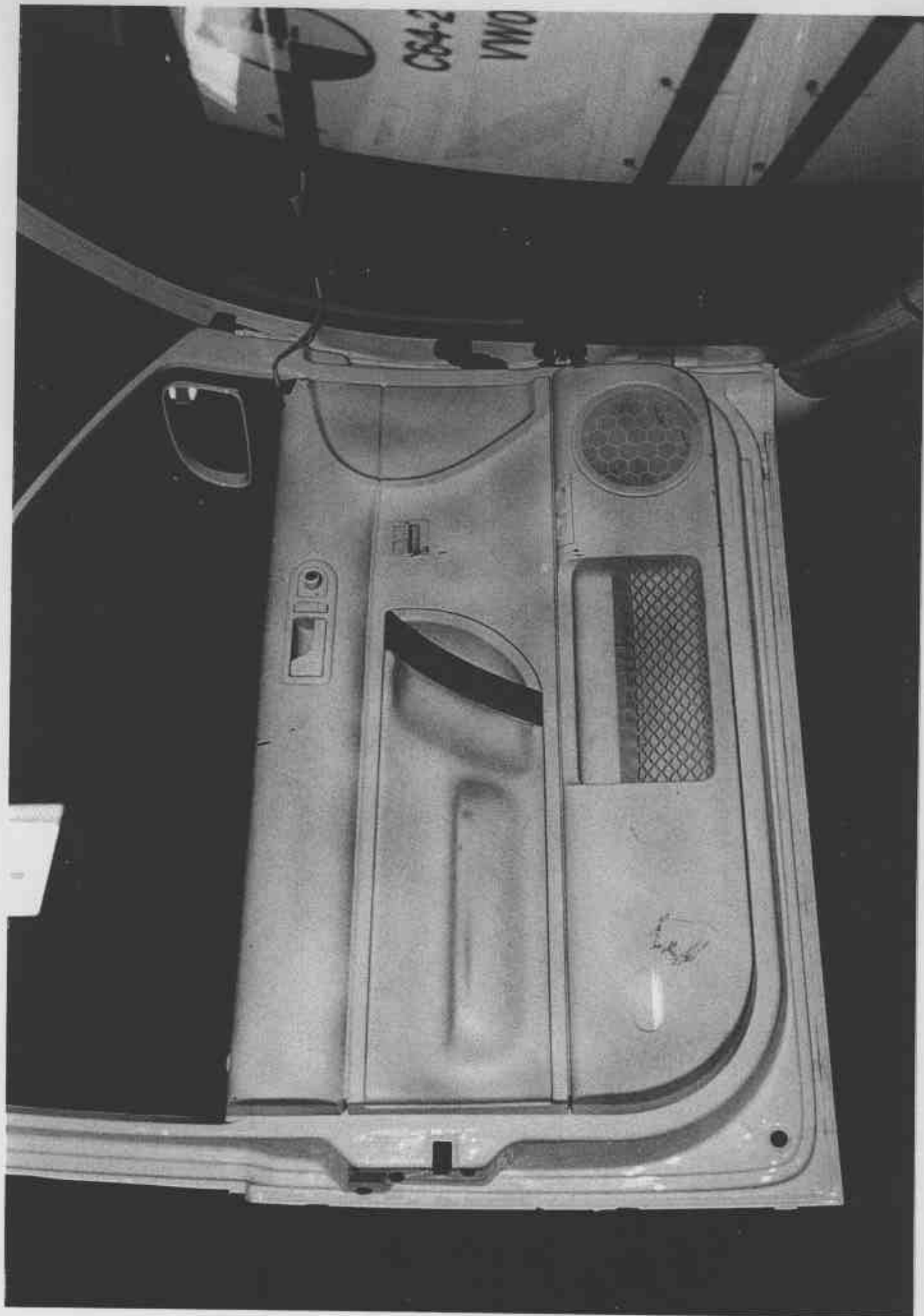


Figure A-25 PRE-TEST INTERIOR OF FRONT DOOR



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

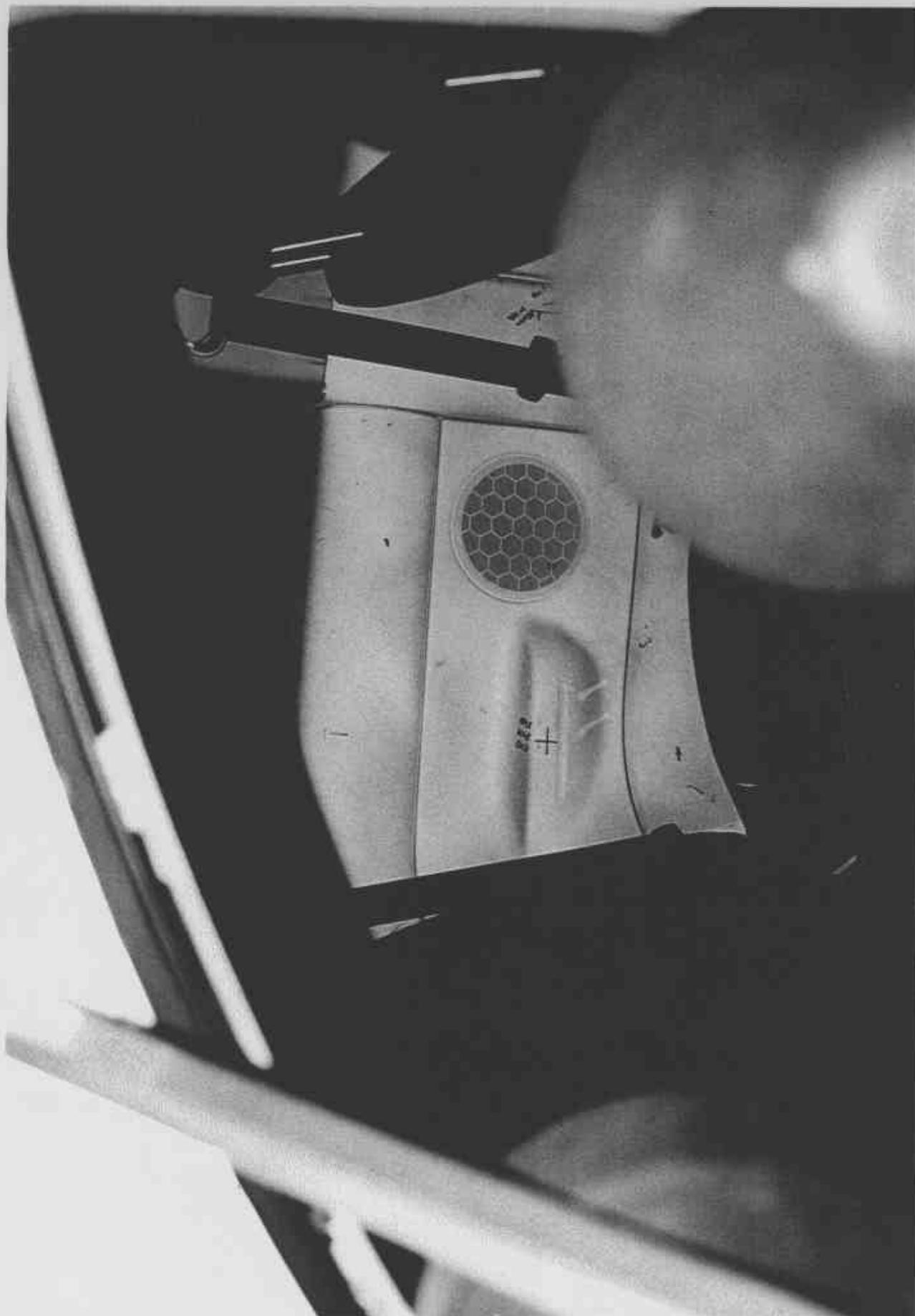


Figure A-27 PRE-TEST REAR INTERIOR PANEL

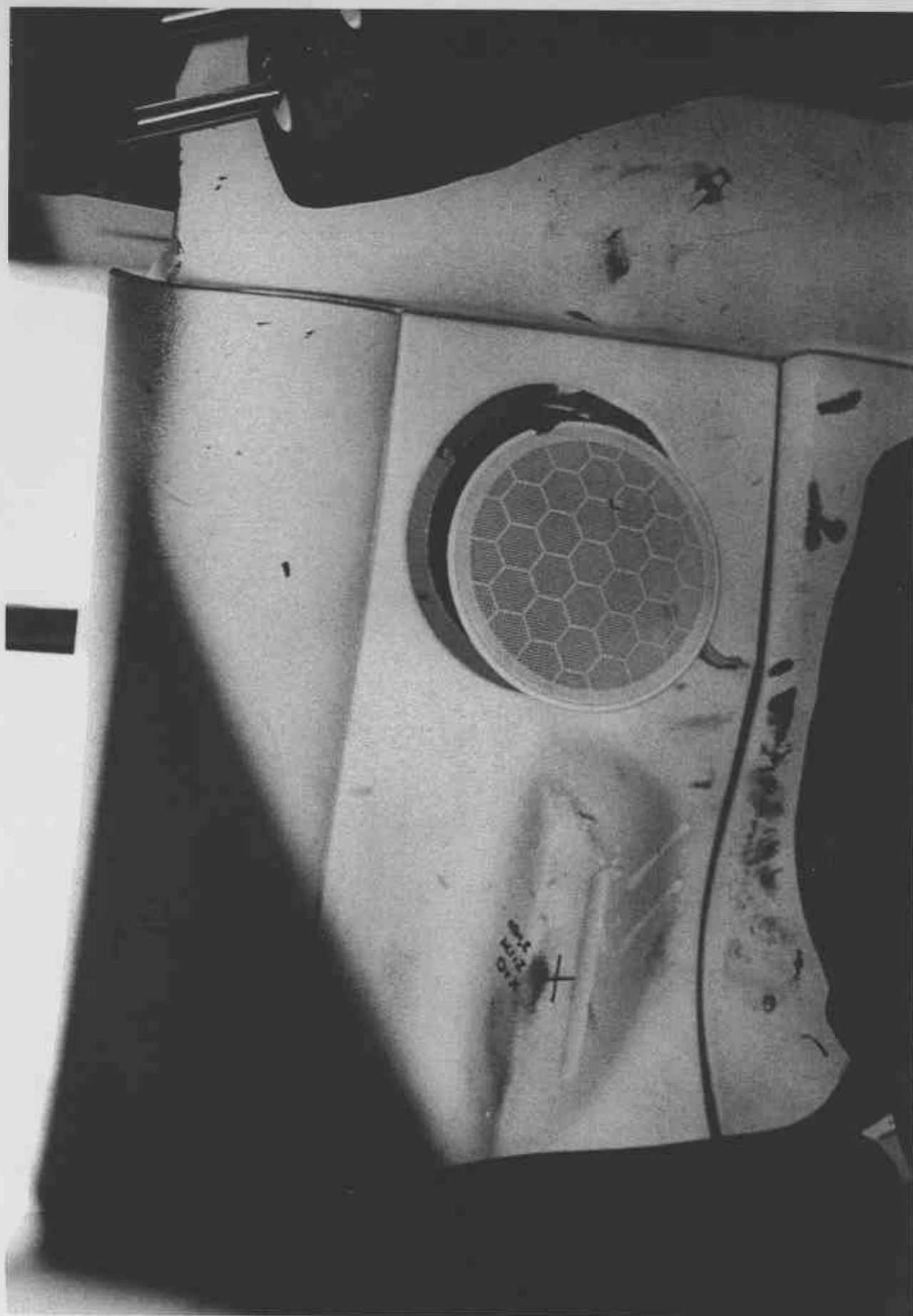


Figure A-28 POST-TEST REAR INTERIOR PANEL SHOWING SID IMPACT LOCATIONS



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

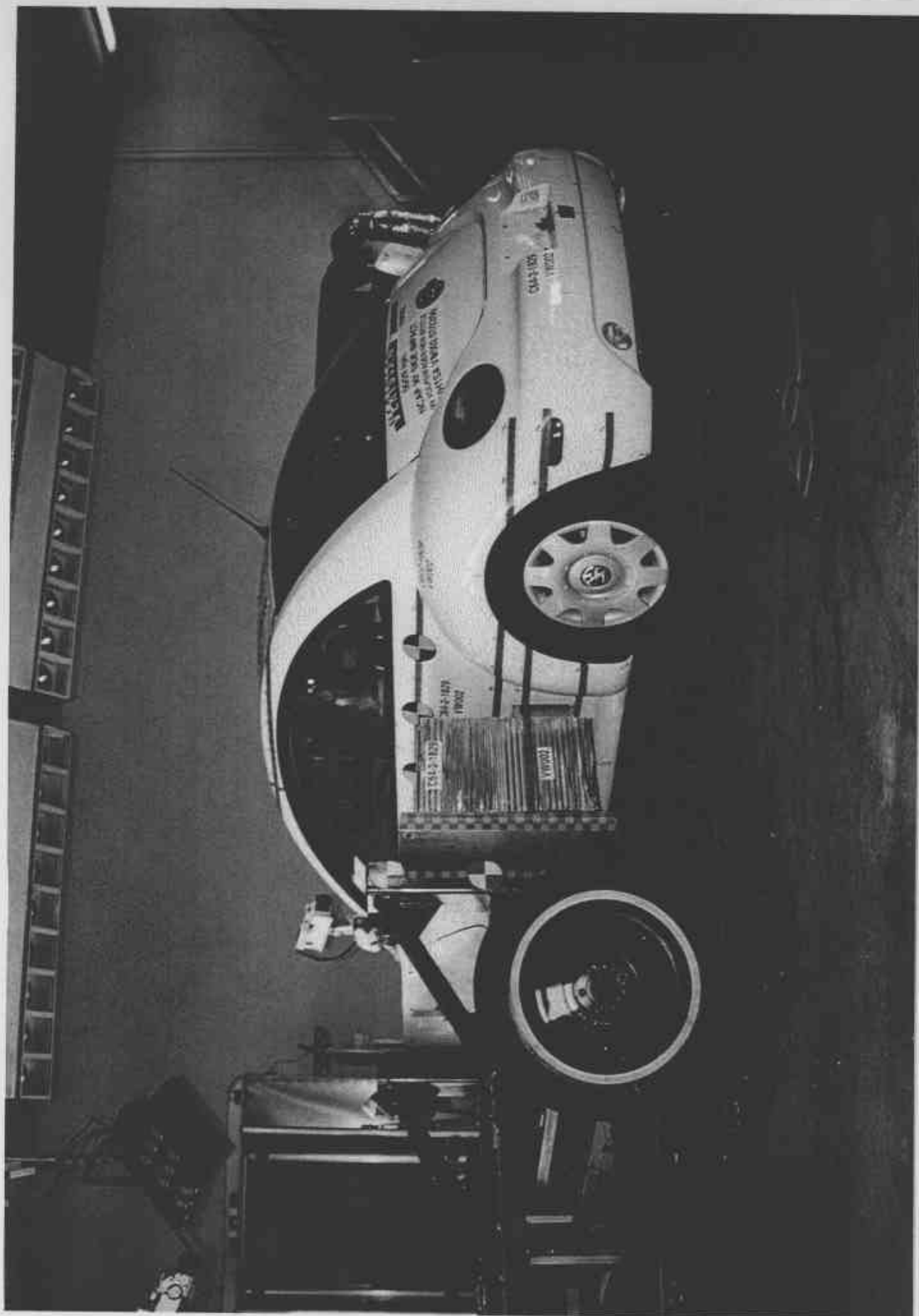


Figure A-30 PRE-TEST RIGHT SIDE VIEW OF MDB WITH IMPACTOR FACE IN POSITION

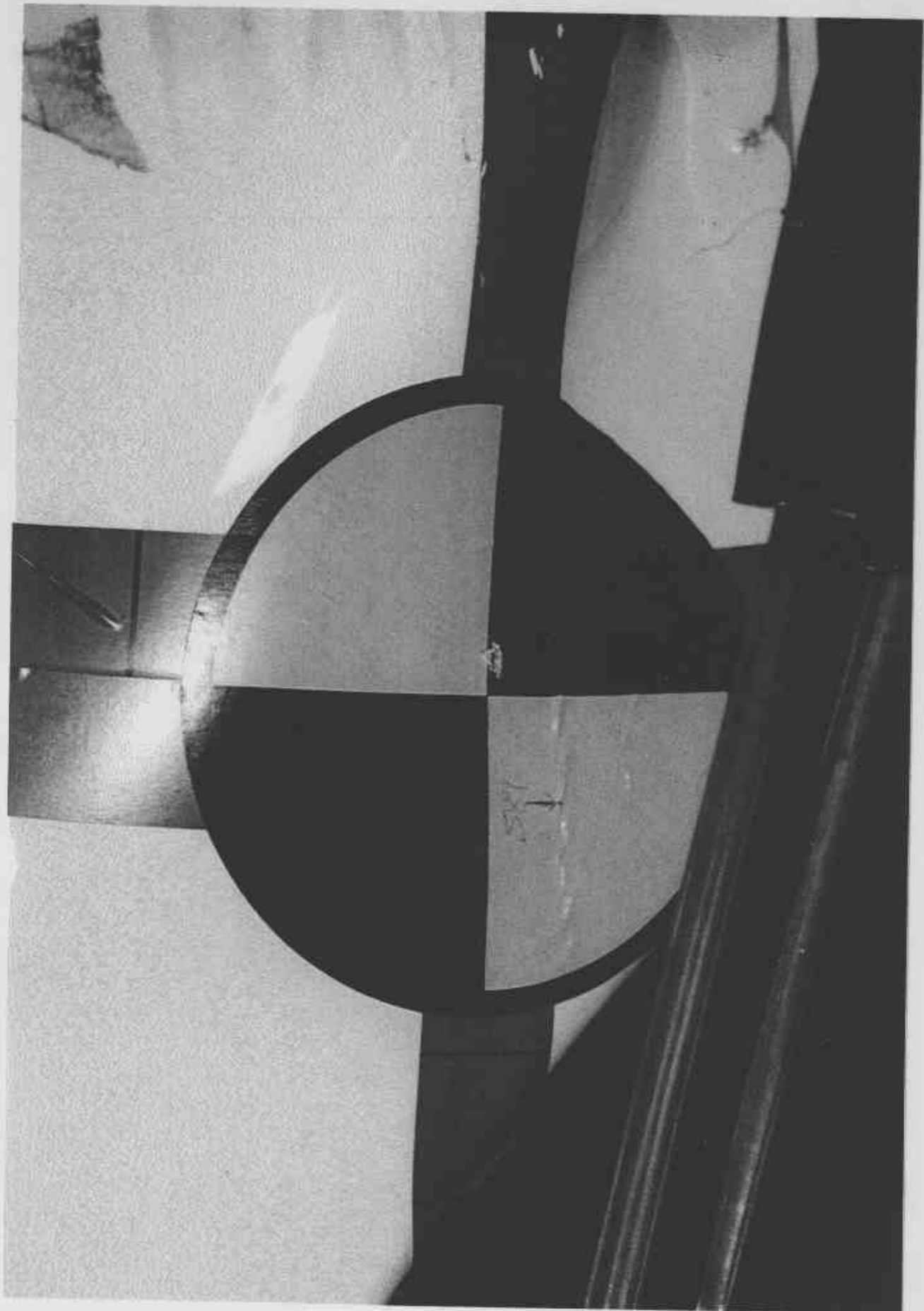


Figure A-31 POST-TEST CLOSE-UP VIEW OF IMPACT POINT TARGET

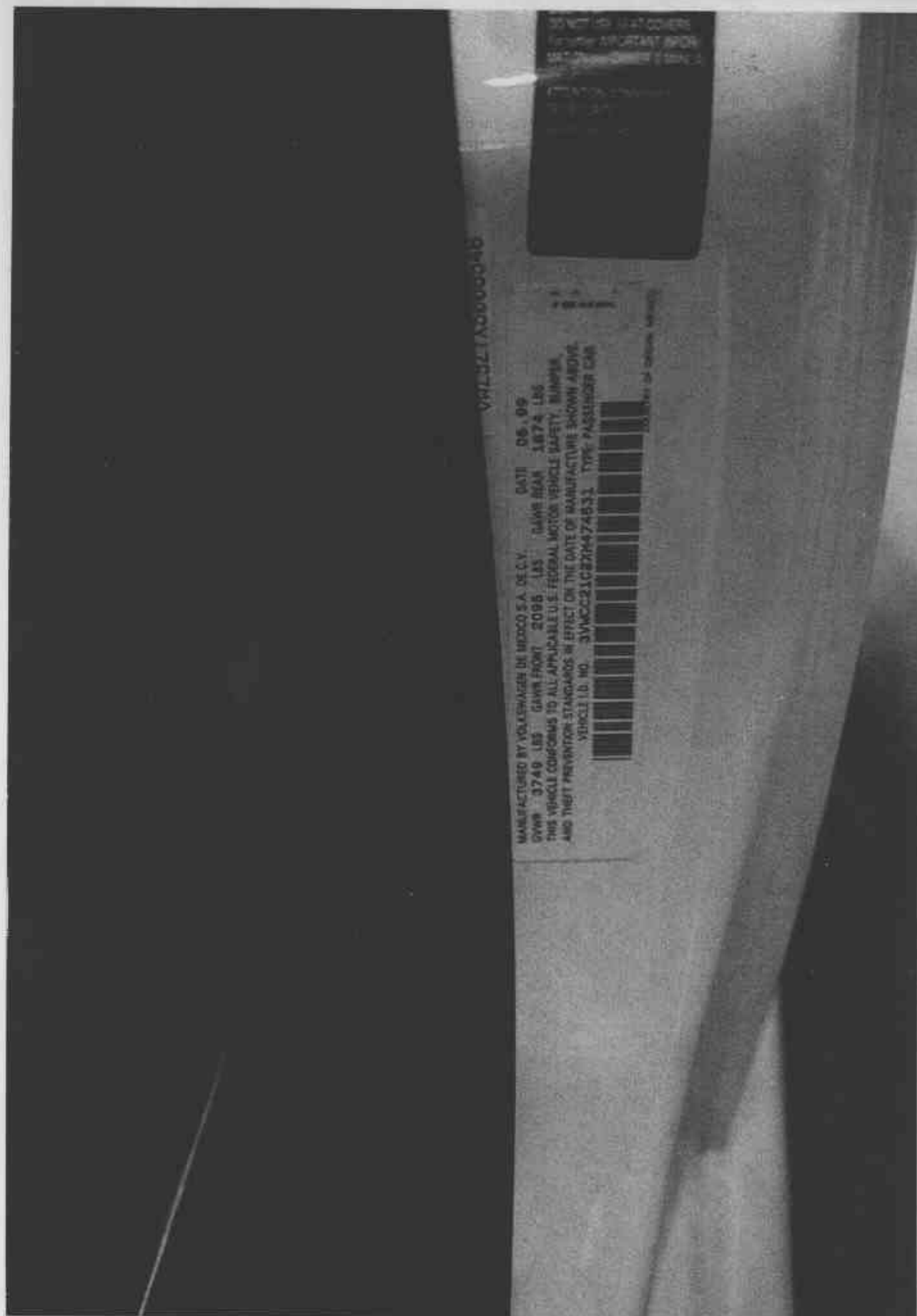


Figure A-32 CLOSE-UP VIEW OF VEHICLE'S CERTIFICATION LABEL



UNLEADED FUEL ONLY
 REGULAR MINR + M/2 87
 CARBURANT SANS PLOMB
 NORMALE MINRON 91

MAX. LOAD (VEHICLE CAPACITY WEIGHTS)			
W provided	Dist	Max Wt.	Aut. Ty.
		850	850
DESIGNATED RELATING CAPACITY / A 2 front / 2 rear			
COLD TIRE INFLATION PRESSURE			
Tire size		PSI	kg/cm ²
185/65 R15 91H		63	4.5
185/65 R15 91H		57	4.0
185/65 R15 91H		51	3.5
Up to 185/65 R15 91H		28	2.0
Up to 185/65 R15 91H		26	1.8
Up to 185/65 R15 91H		24	1.6
Up to 185/65 R15 91H		22	1.4
Up to 185/65 R15 91H		20	1.2
Up to 185/65 R15 91H		18	1.0
Up to 185/65 R15 91H		16	0.8
Up to 185/65 R15 91H		14	0.6
Up to 185/65 R15 91H		12	0.4
Up to 185/65 R15 91H		10	0.3
Up to 185/65 R15 91H		8	0.2
Up to 185/65 R15 91H		6	0.1
Up to 185/65 R15 91H		4	0.0
Up to 185/65 R15 91H		2	0.0
Up to 185/65 R15 91H		0	0.0

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

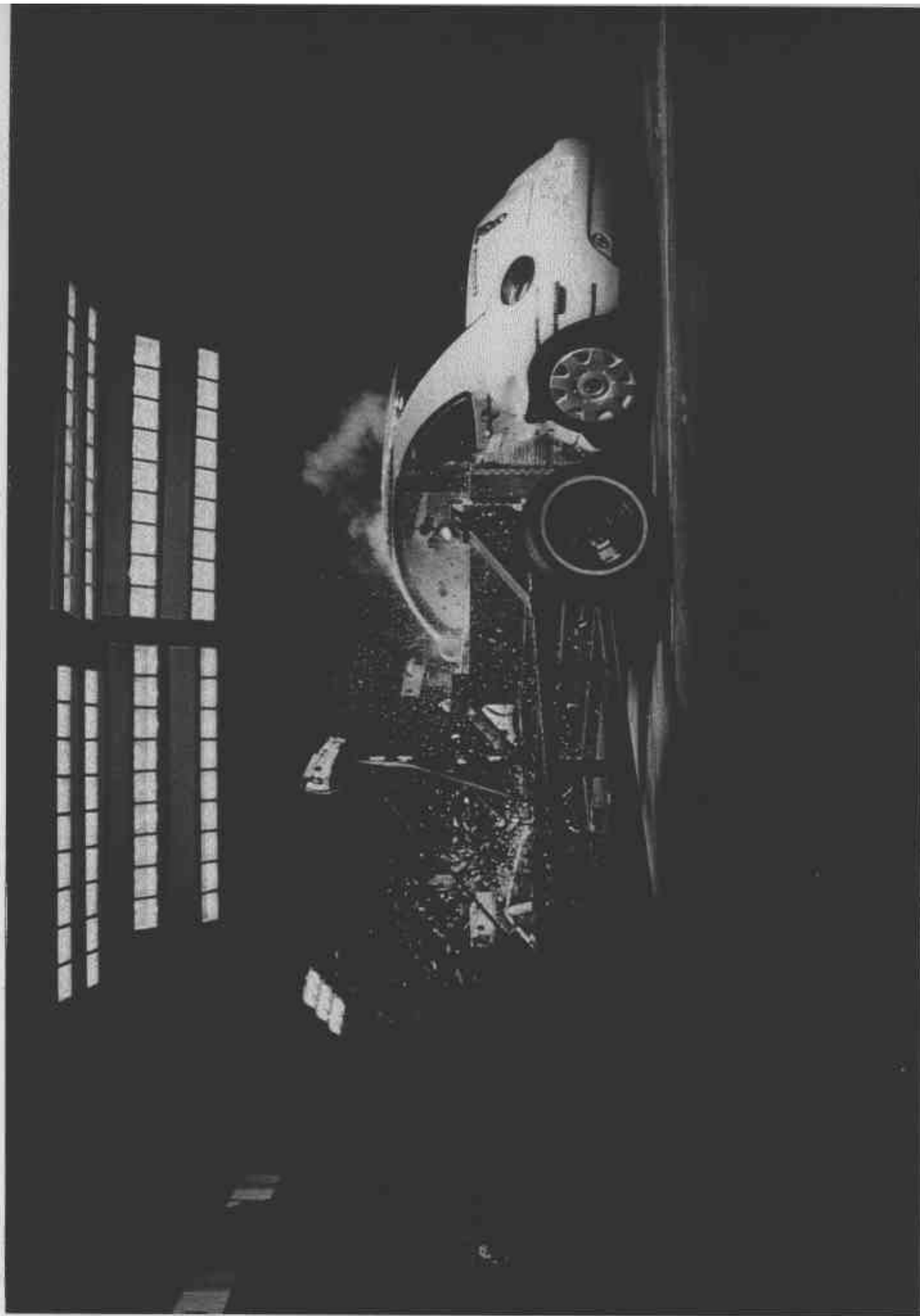


Figure A-34 IMPACT PHOTO

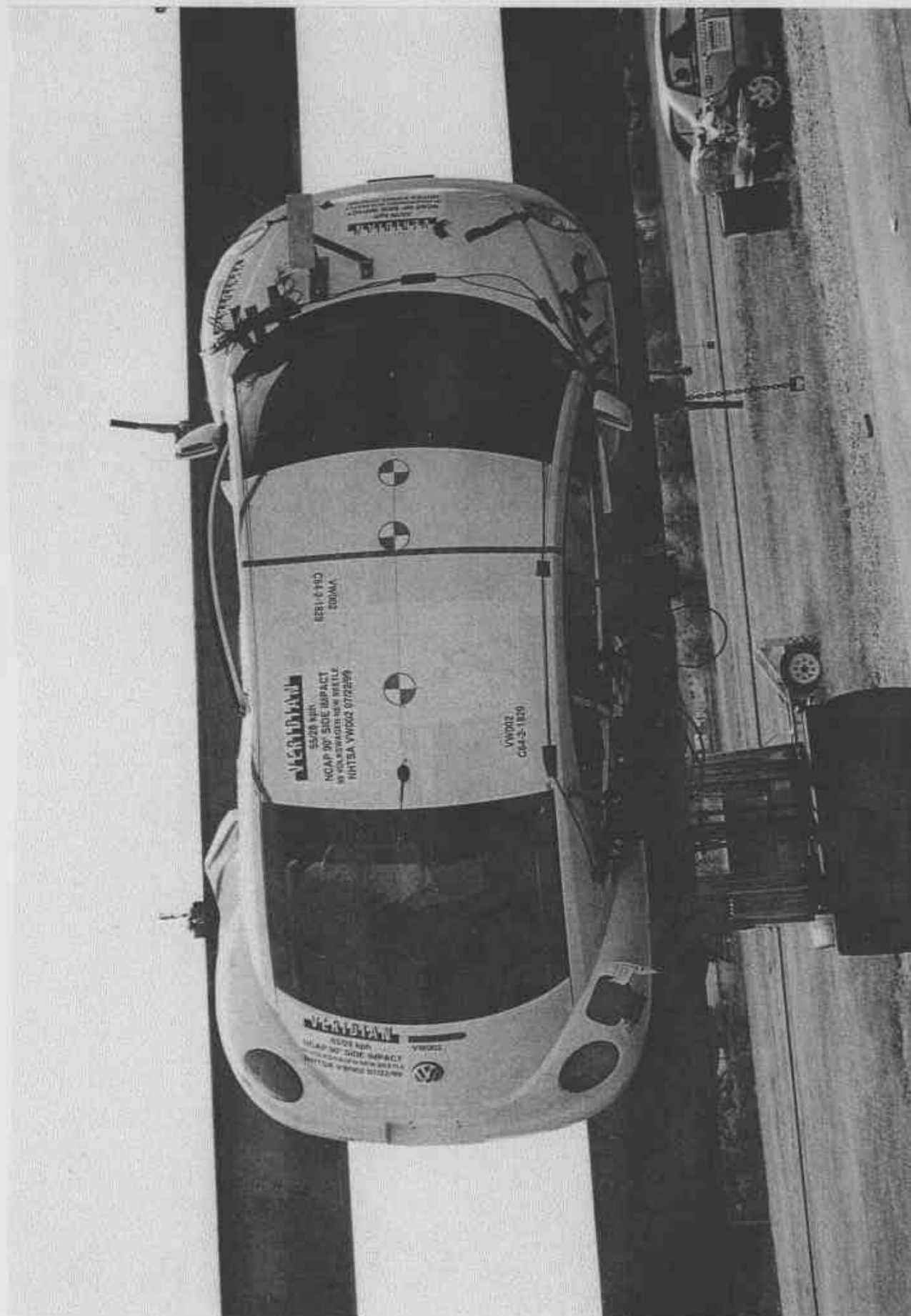
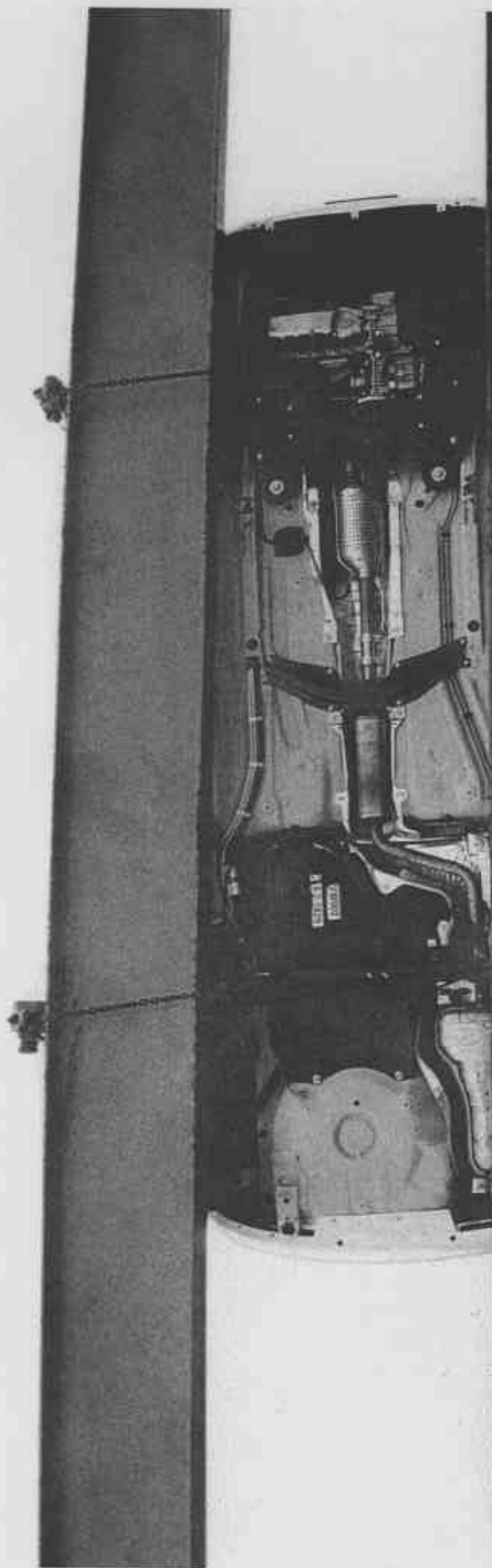


Figure A-35 ROLLOVER 90 DEGREES



Figure A-36 ROLLOVER 180 DEGREES



A-39

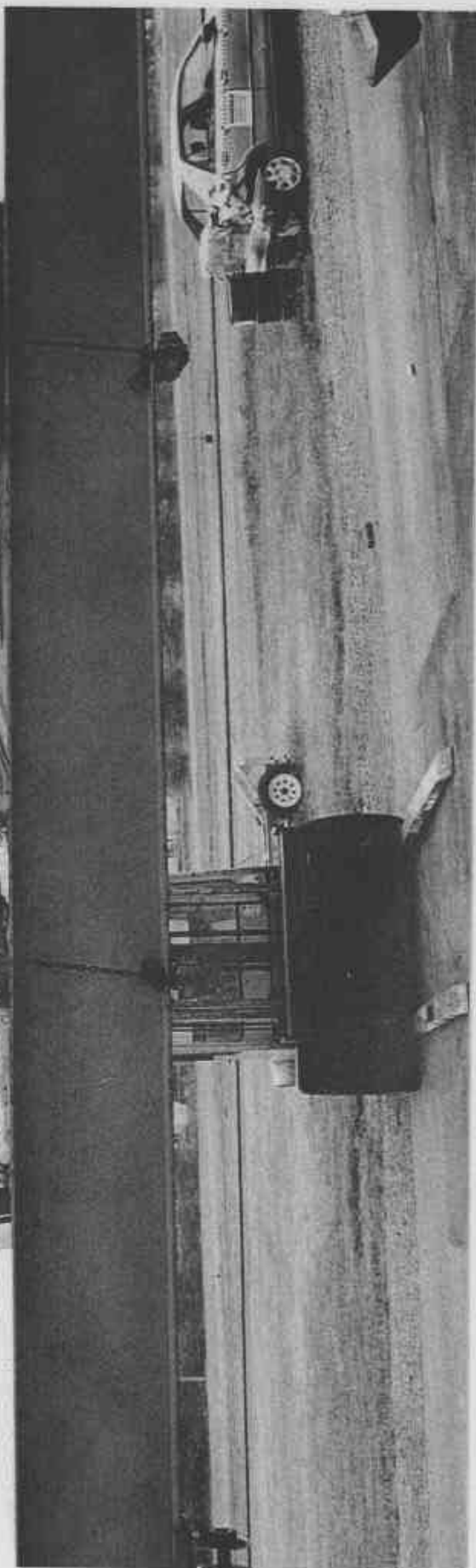


Figure A-37 ROLLOVER 270 DEGREES

8532-2



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, LOWER SPINE - FILTER CLASS 180 INTEGRATION DATA - FILTER CLASS 180

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

DRIVER & PASSENGER DUMMY INSTRUMENTATION PLOTS ACCELERATION DATA - FIR FILTERED

<u>Plot No.</u>	<u>Data Plot Title</u>	<u>Page</u>
17	DRIVER UPPER RIB (Y) ACCELERATION VS TIME	B- 23
18	DRIVER LOWER RIB (Y) ACCELERATION VS TIME	B- 24
19	DRIVER LOWER SPINE (Y) ACCELERATION VS TIME	B- 25
20	DRIVER PELVIC (Y) ACCELERATION VS TIME	B- 26
21	PASSENGER UPPER RIB (Y) ACCELERATION VS TIME	B- 27
22	PASSENGER LOWER RIB (Y) ACCELERATION VS TIME	B- 28
23	PASSENGER LOWER SPINE (Y) ACCELERATION VS TIME	B- 29
24	PASSENGER PELVIC (Y) ACCELERATION VS TIME	B- 30

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

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

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

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

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

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

<u>Plot No.</u>	<u>Data Plot Title</u>	<u>Page</u>
82	DRIVER UPPER RIB (Y) ACCELERATION VS TIME	B- 87
83	DRIVER UPPER RIB (Y) VELOCITY VS TIME	B- 88
84	DRIVER LOWER RIB (Y) ACCELERATION VS TIME	B- 89
85	DRIVER LOWER RIB (Y) VELOCITY VS TIME	B- 90
86	DRIVER LOWER SPINE (Y) ACCELERATION VS TIME	B- 91
87	DRIVER LOWER SPINE (Y) VELOCITY VS TIME	B- 92
88	DRIVER PELVIC (Y) ACCELERATION VS TIME	B- 93
89	DRIVER PELVIC (Y) VELOCITY VS TIME	B- 94
90	PASSENGER UPPER RIB (Y) ACCELERATION VS TIME	B- 95
91	PASSENGER UPPER RIB (Y) VELOCITY VS TIME	B- 96
92	PASSENGER LOWER RIB (Y) ACCELERATION VS TIME	B- 97
93	PASSENGER LOWER RIB (Y) VELOCITY VS TIME	B- 98
94	PASSENGER LOWER SPINE (Y) ACCELERATION VS TIME	B- 99
95	PASSENGER LOWER SPINE (Y) VELOCITY VS TIME	B- 100
96	PASSENGER PELVIC (Y) ACCELERATION VS TIME	B- 101
97	PASSENGER PELVIC (Y) VELOCITY VS TIME	B- 102

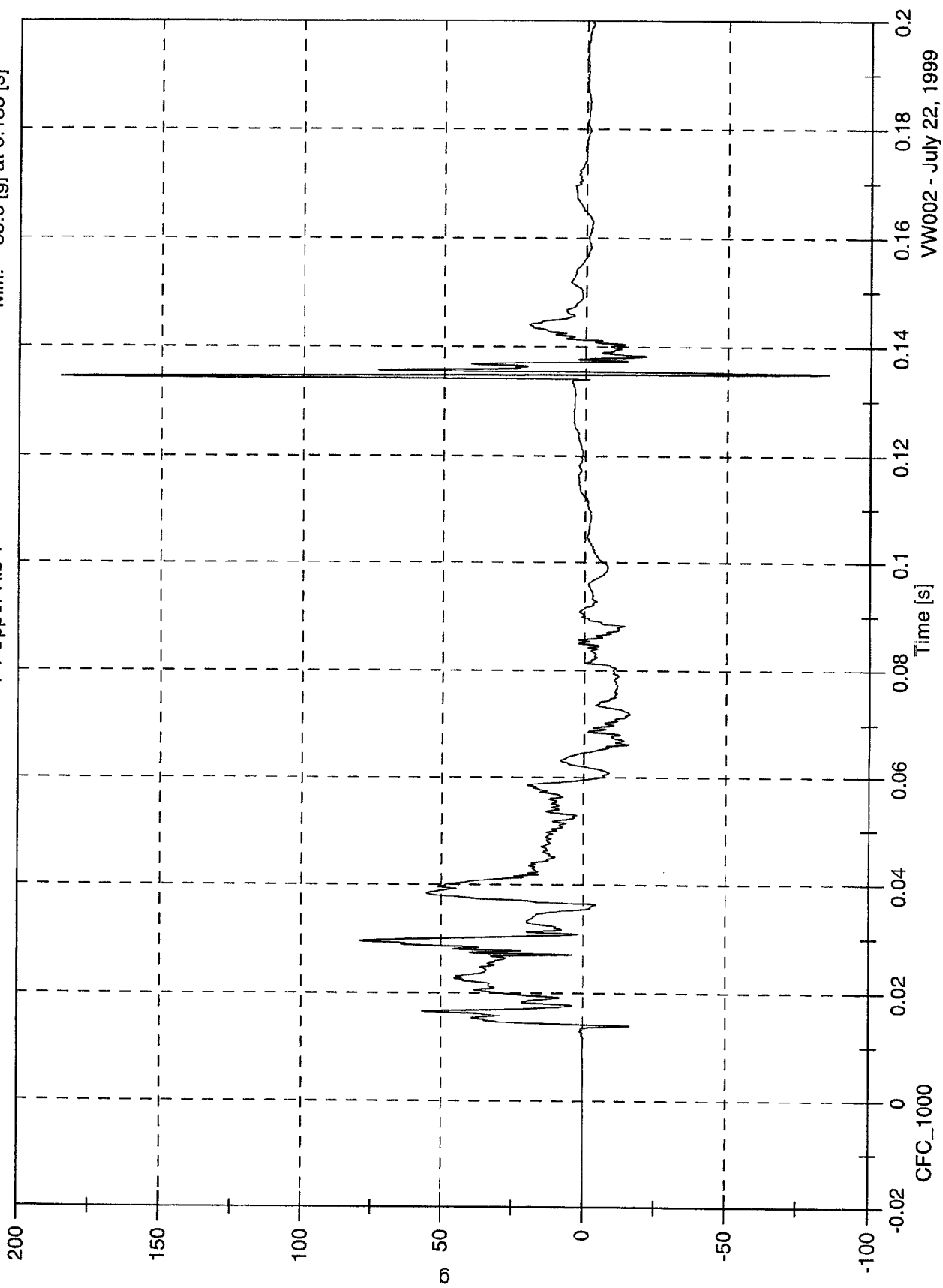
DRIVER & PASSENGER DUMMY INSTRUMENTATION PLOTS (REDUNDANT)
ACCELERATION DATA - FIR FILTERED

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

SNCAP Test#1 VW Beetle

P1 Upper Rib Y

Max: 185.6 [g] at 0.134 [s]
Min: -85.6 [g] at 0.135 [s]

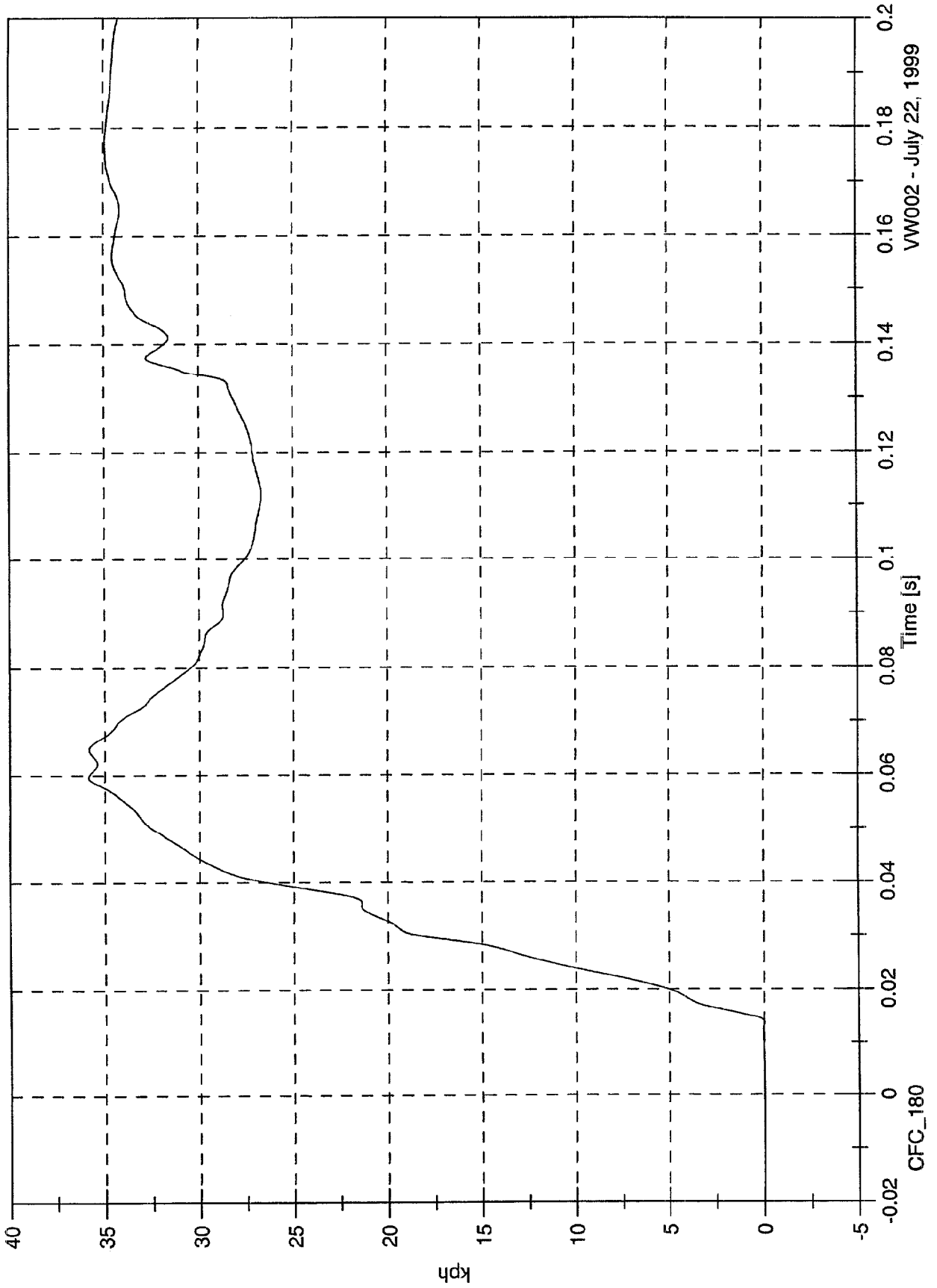


SNCAP Test#1 VW Beetle

Max: 35.8 [kph] at 0.060 [s]

Min: -0.0 [kph] at 0.014 [s]

P1 Upper Rib Y Velocity

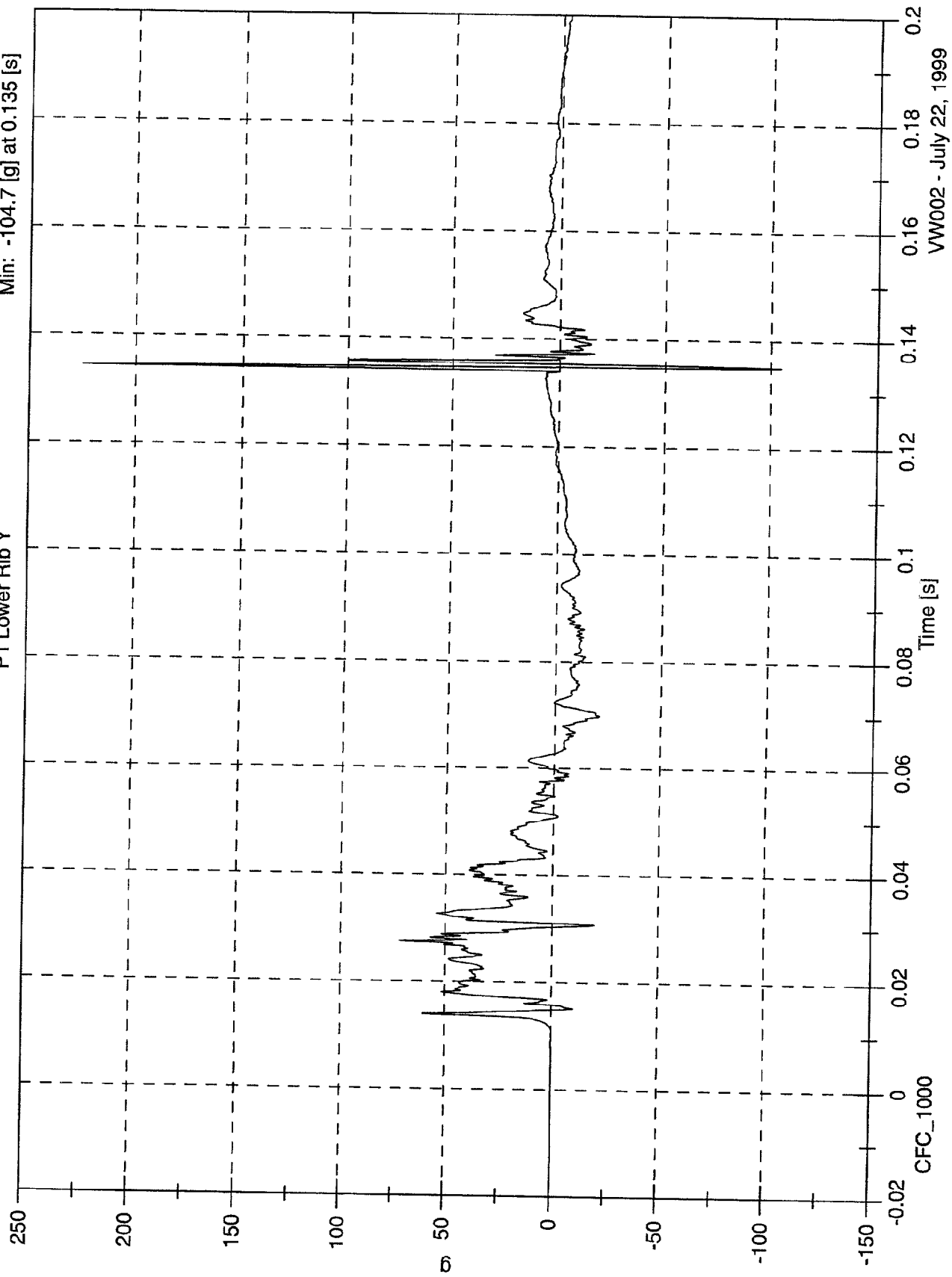


VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

P1 Lower Rib Y

Max: 225.0 [g] at 0.134 [s]
Min: -104.7 [g] at 0.135 [s]

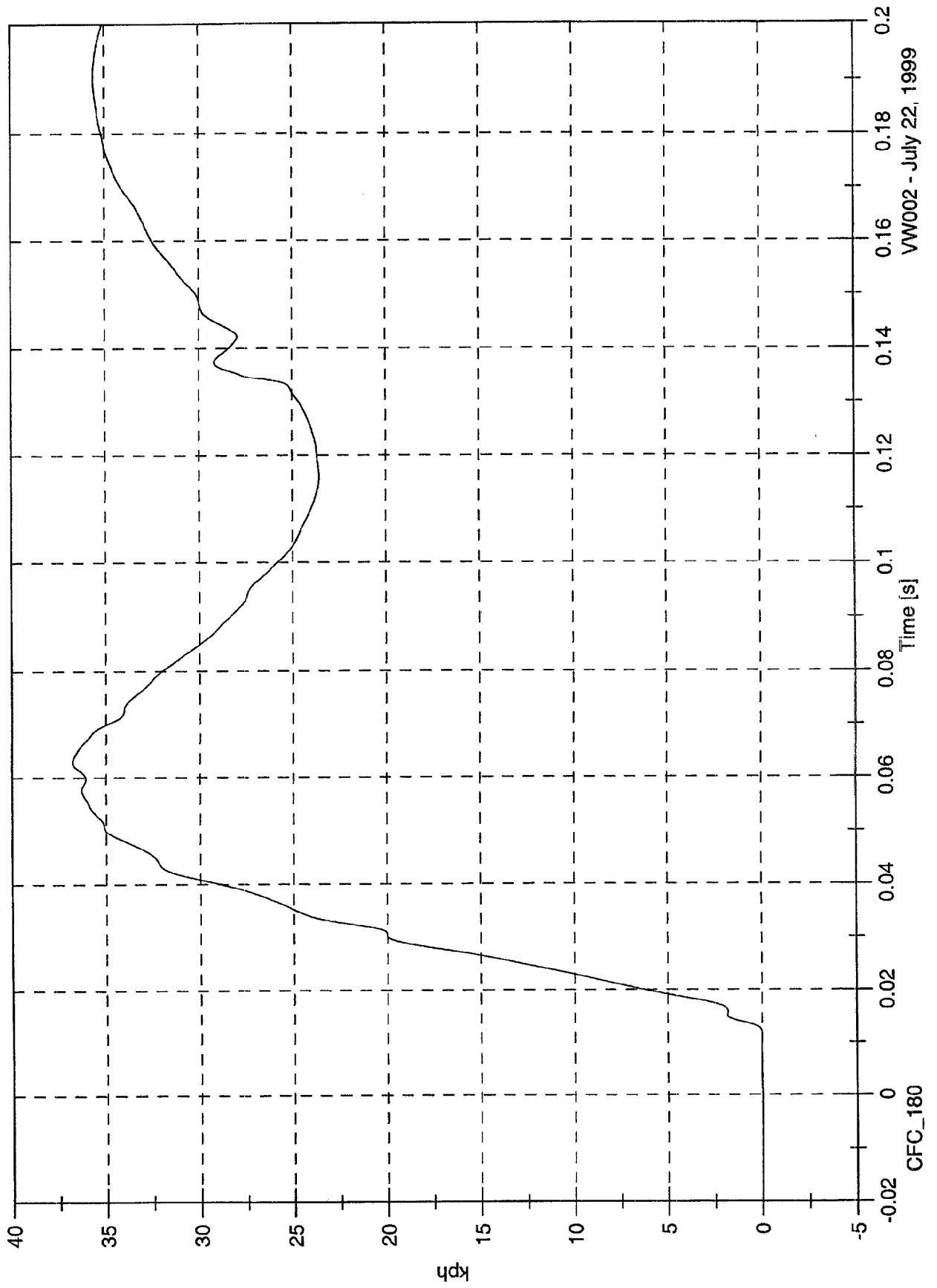


SNCAP Test#1 VW Beetle

Max: 36.8 [kph] at 0.063 [s]

Min: -0.0 [kph] at -0.046 [s]

P1 Lower Rib Y Velocity



CFC_180

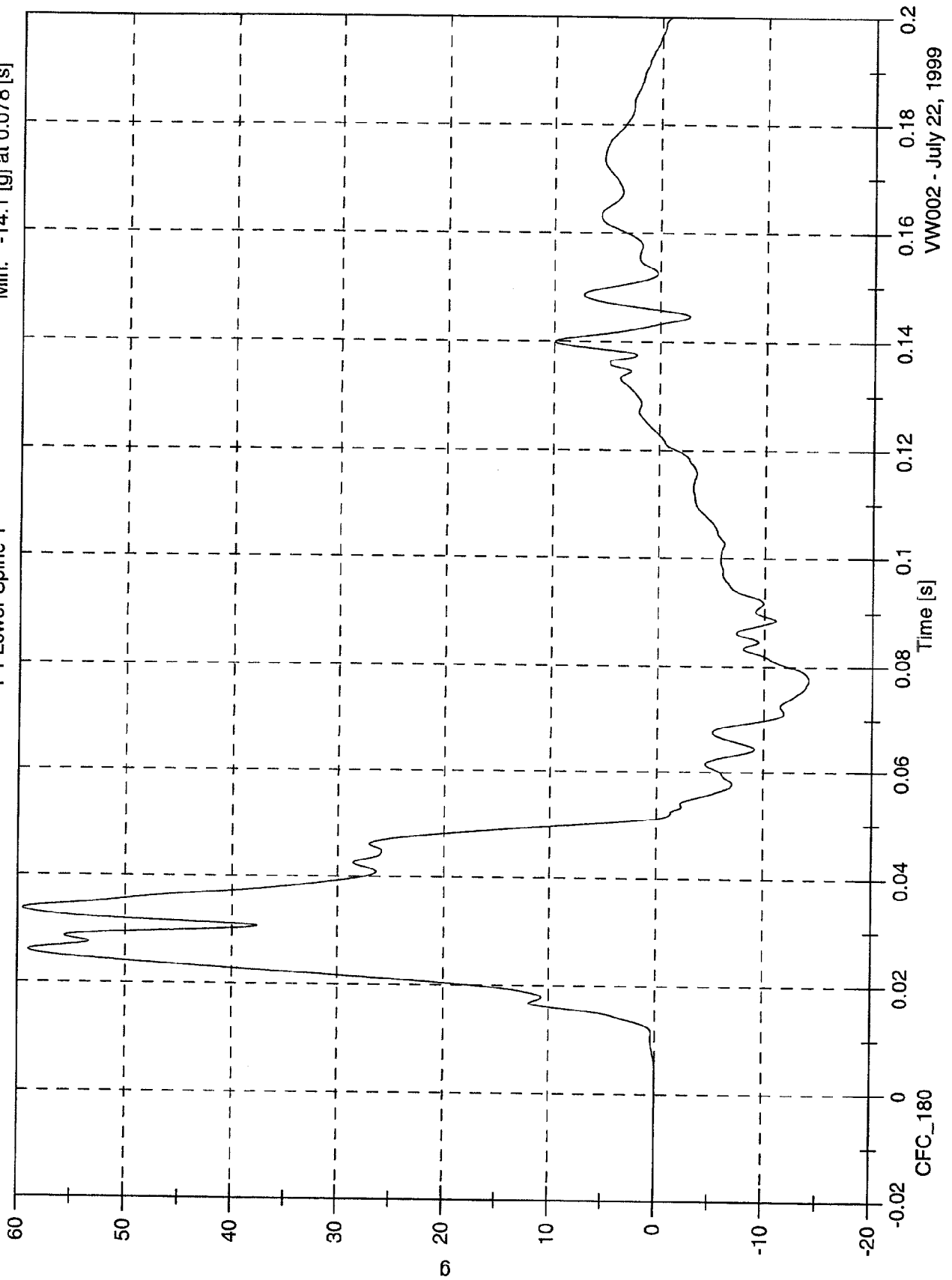
VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Max: 59.6 [g] at 0.034 [s]

Min: -14.1 [g] at 0.078 [s]

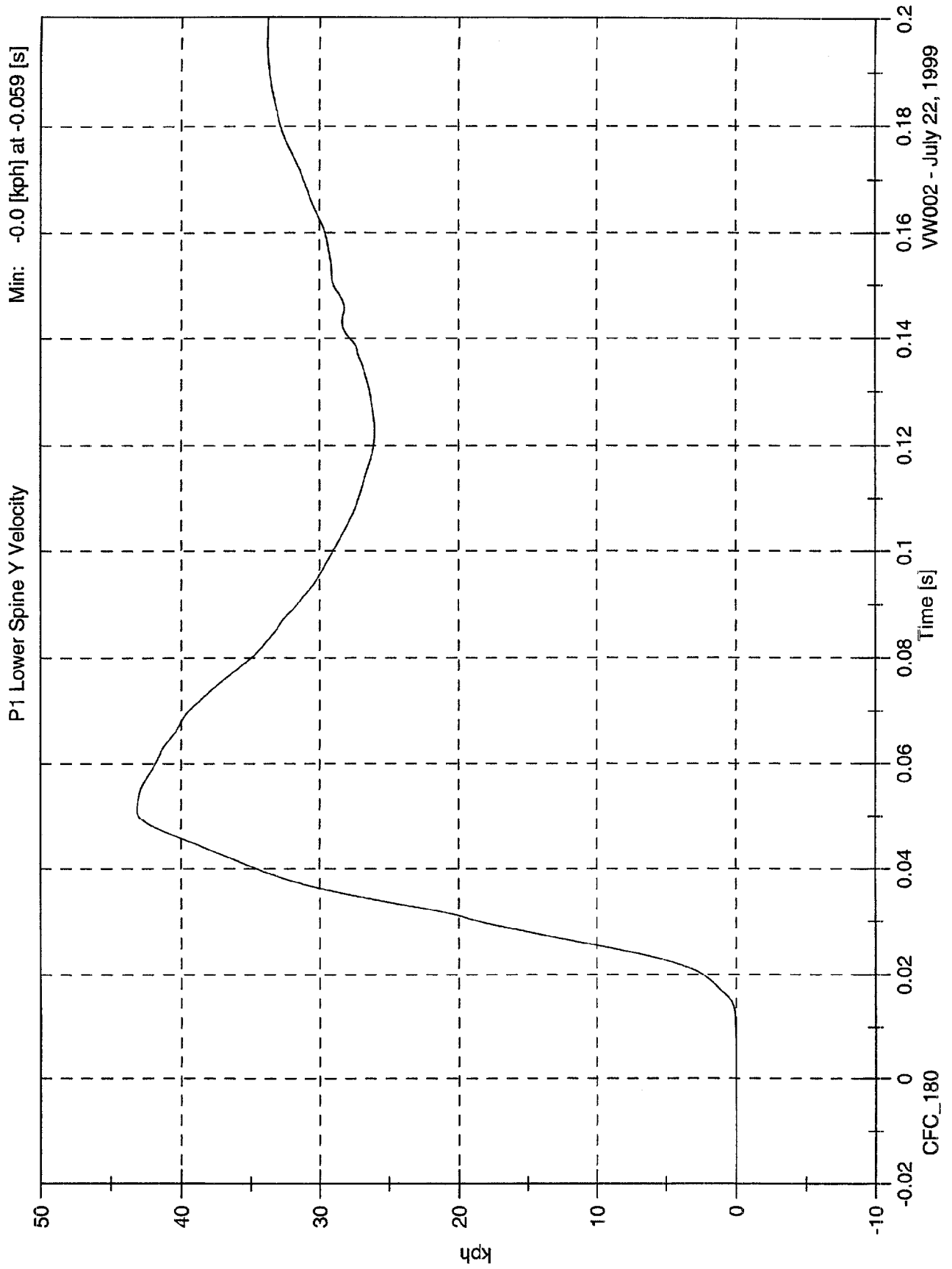
P1 Lower Spine Y



VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Max: 43.1 [kph] at 0.051 [s]
Min: -0.0 [kph] at -0.059 [s]



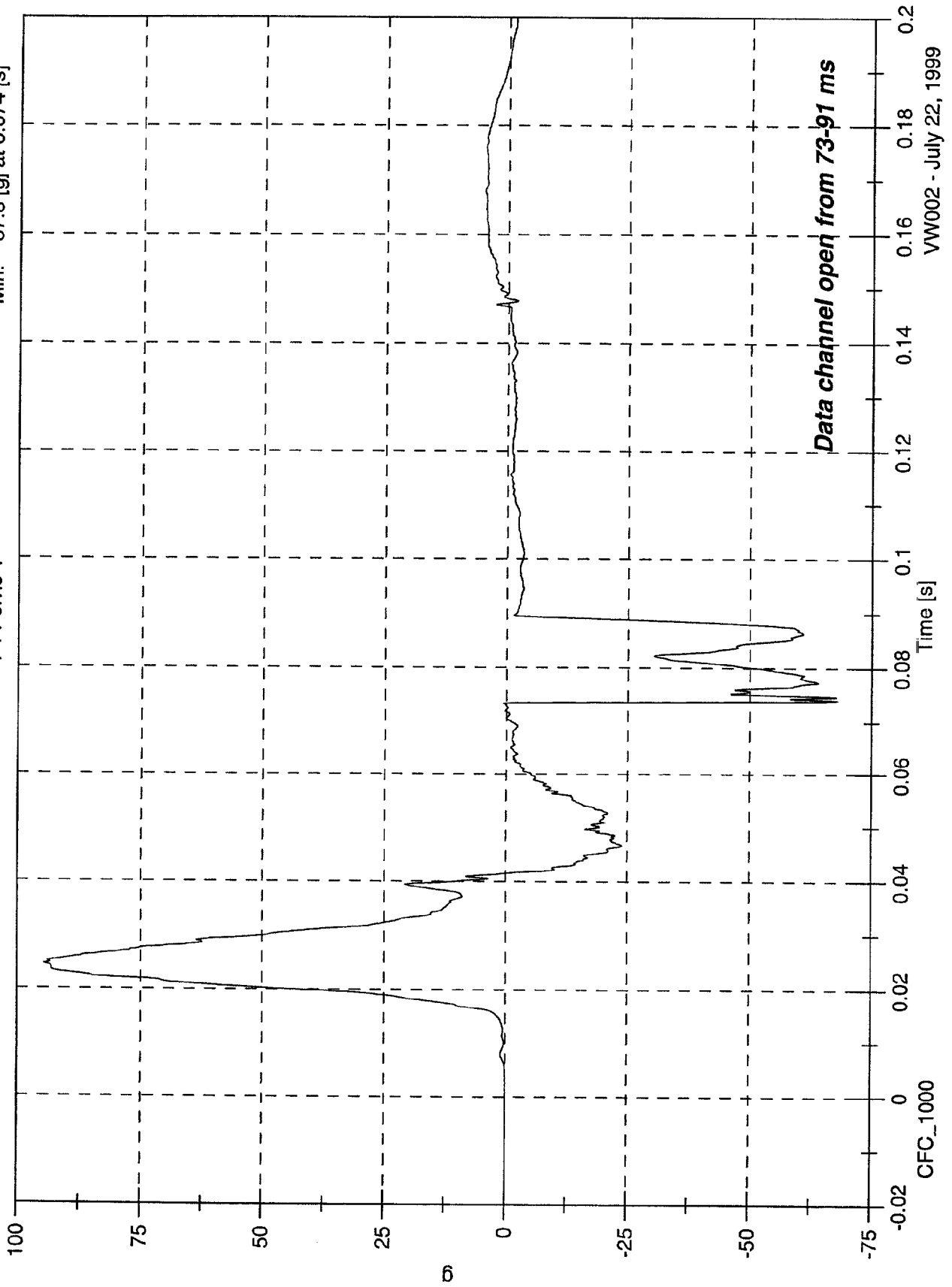
VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Max: 94.5 [g] at 0.025 [s]

Min: -67.8 [g] at 0.074 [s]

P1 Pelvic Y

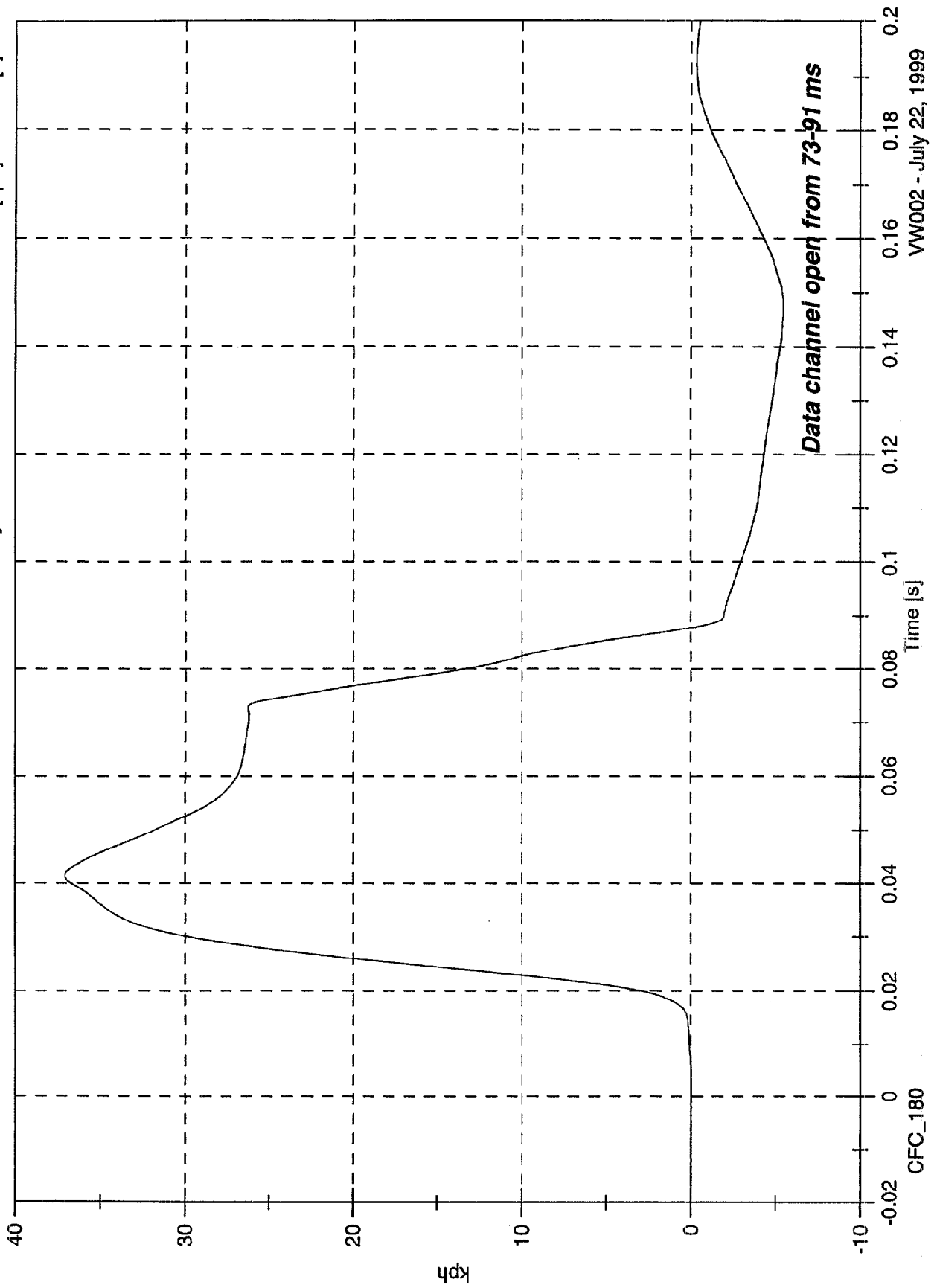


VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Max: 37.1 [kph] at 0.041 [s]
Min: -8.4 [kph] at 0.500 [s]

P1 Pelvic Y Velocity



Data channel open from 73-91 ms

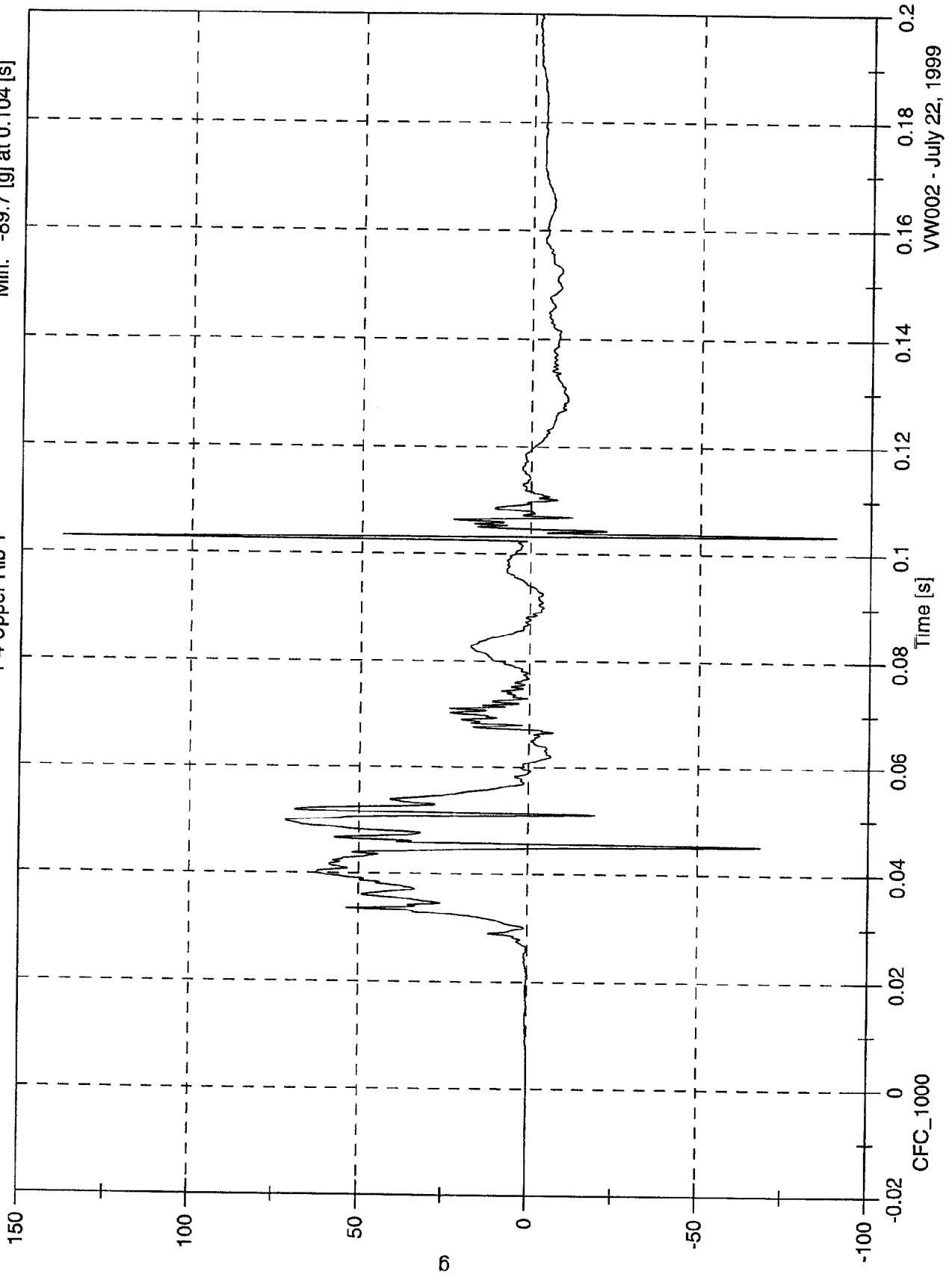
VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

P4 Upper Rib Y

Max: 138.1 [g] at 0.103 [s]

Min: -89.7 [g] at 0.104 [s]

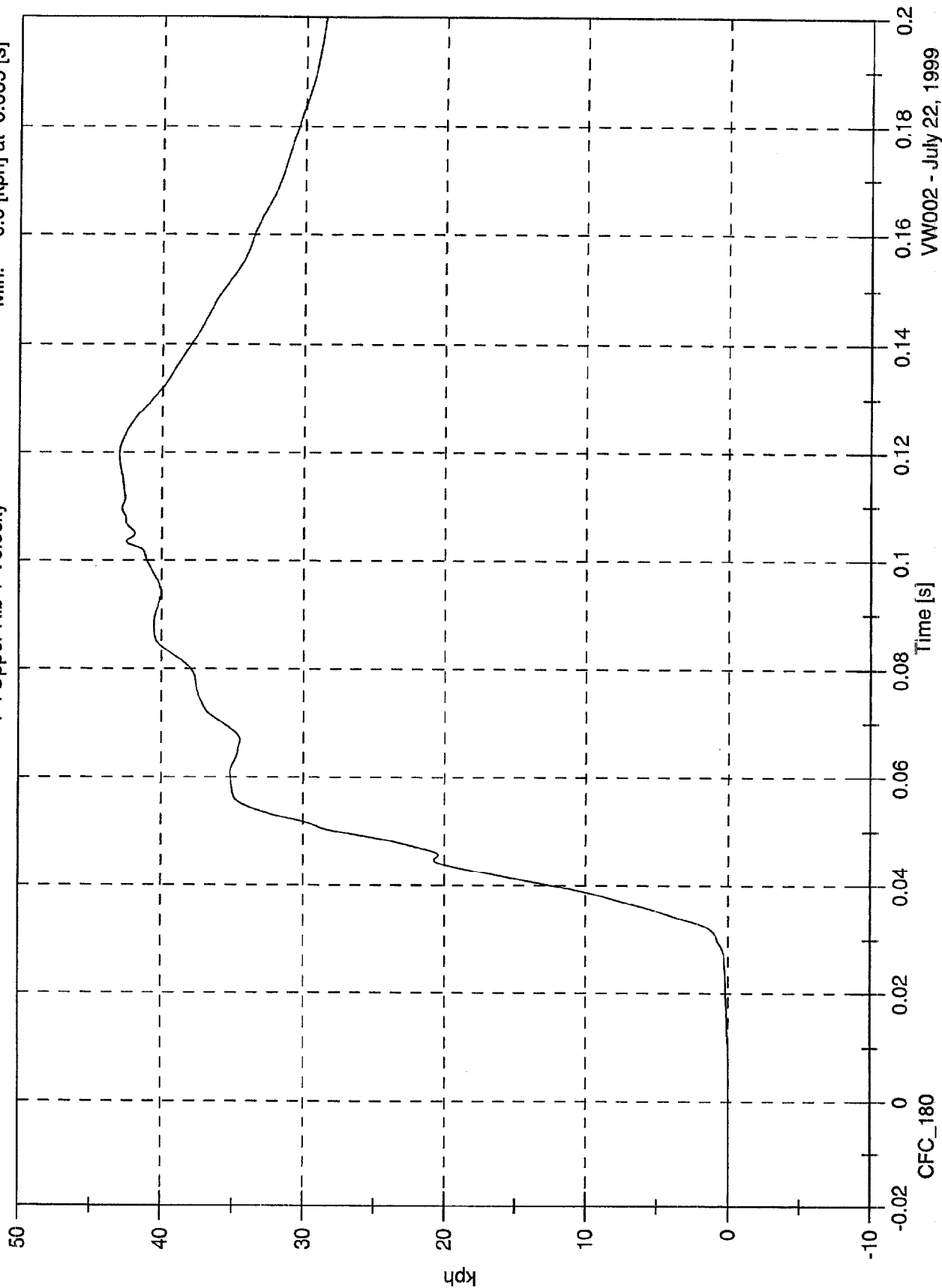


VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Max: 43.0 [kph] at 0.120 [s]
Min: -0.0 [kph] at -0.069 [s]

P4 Upper Rib Y Velocity



CFC_180

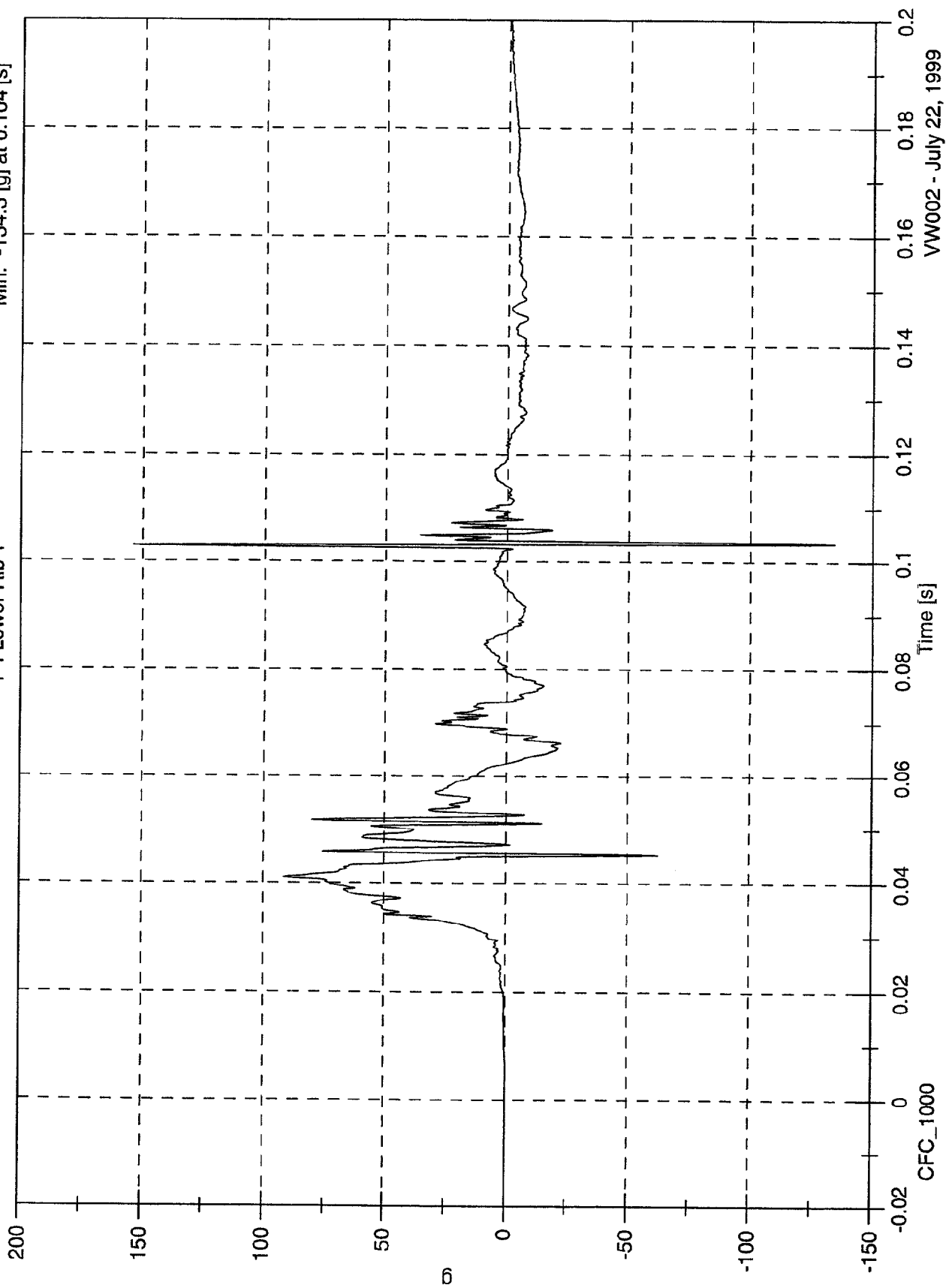
VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Max: 153.8 [g] at 0.103 [s]

Min: -134.3 [g] at 0.104 [s]

P4 Lower Rib Y

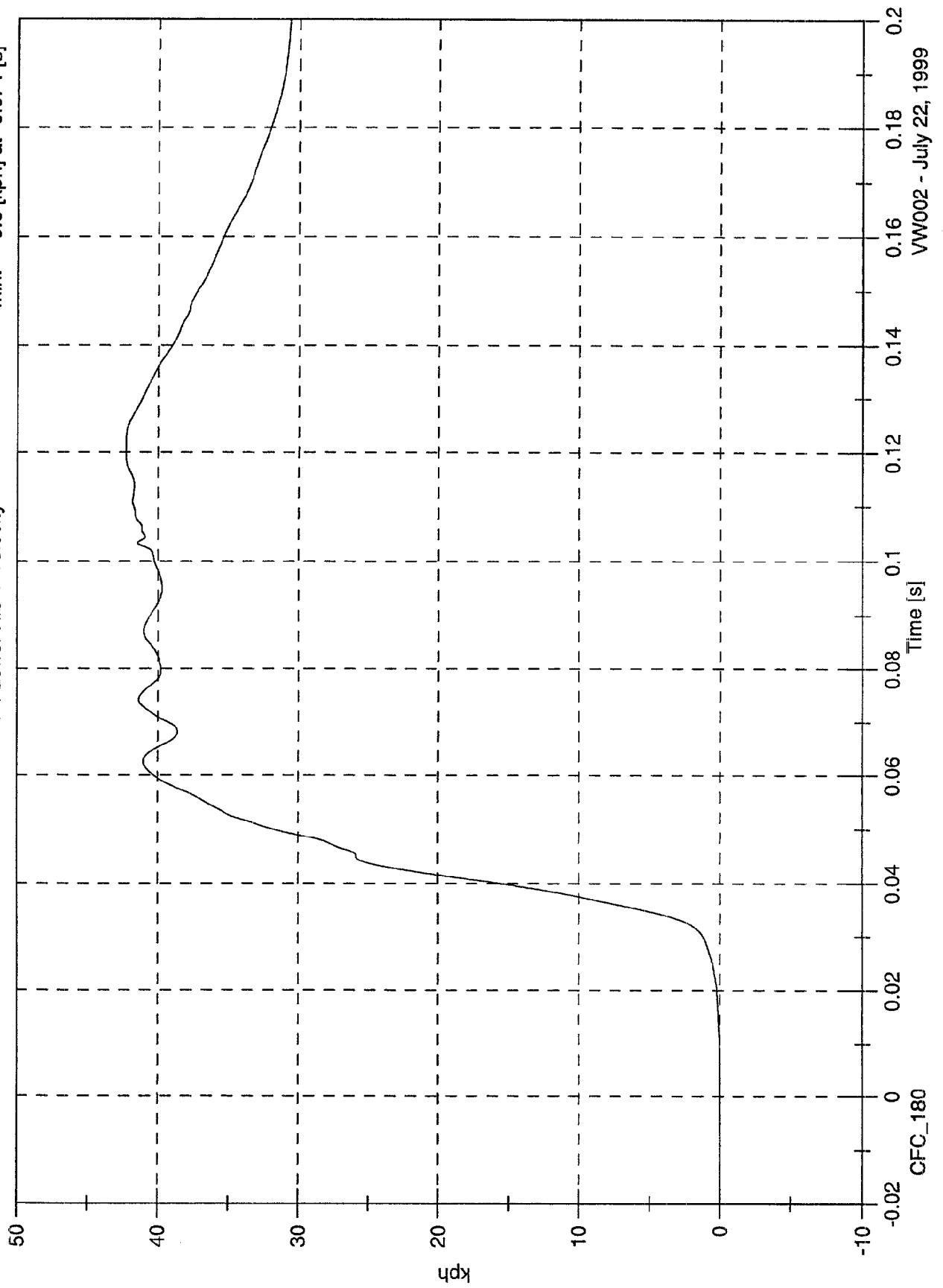


SNCAP Test#1 VW Beetle

Max: 42.3 [kph] at 0.122 [s]

Min: -0.0 [kph] at -0.074 [s]

P4 Lower Rib Y Velocity



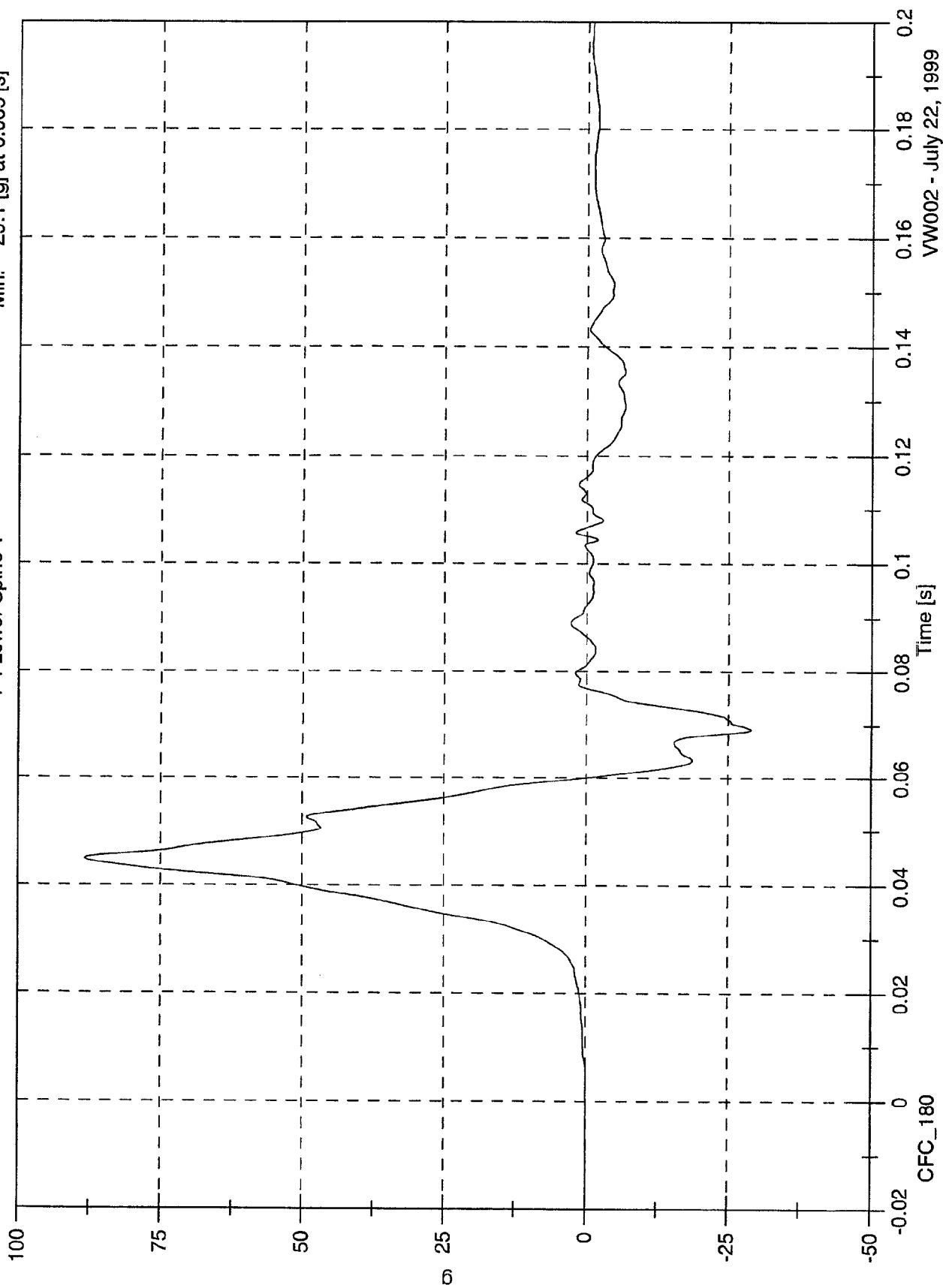
CFC_180

VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Max: 88.3 [g] at 0.045 [s]
Min: -29.1 [g] at 0.069 [s]

P4 Lower Spine Y



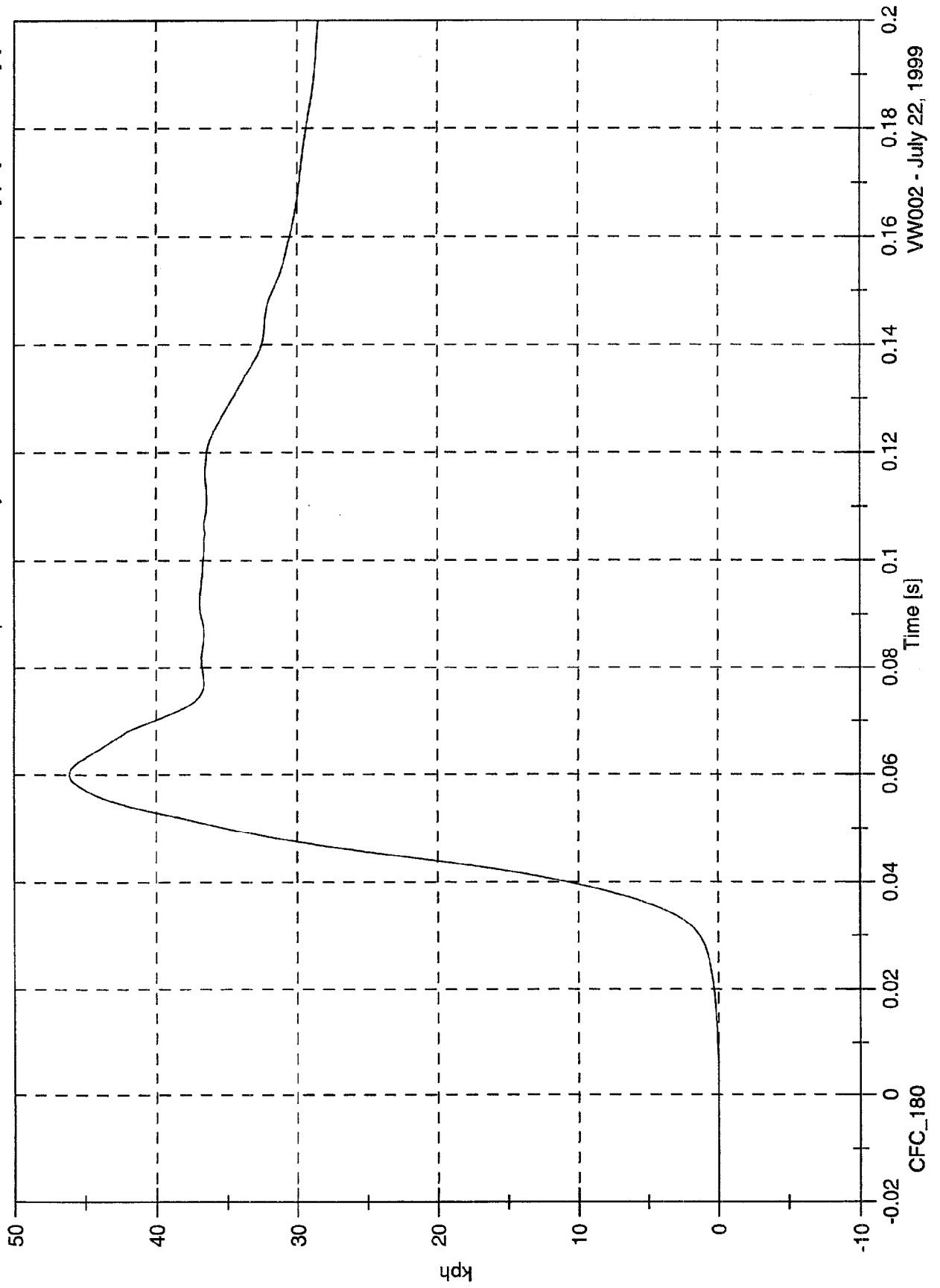
VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Max: 46.1 [kph] at 0.060 [s]

Min: -0.0 [kph] at -0.069 [s]

P4 Lower Spine Y Velocity

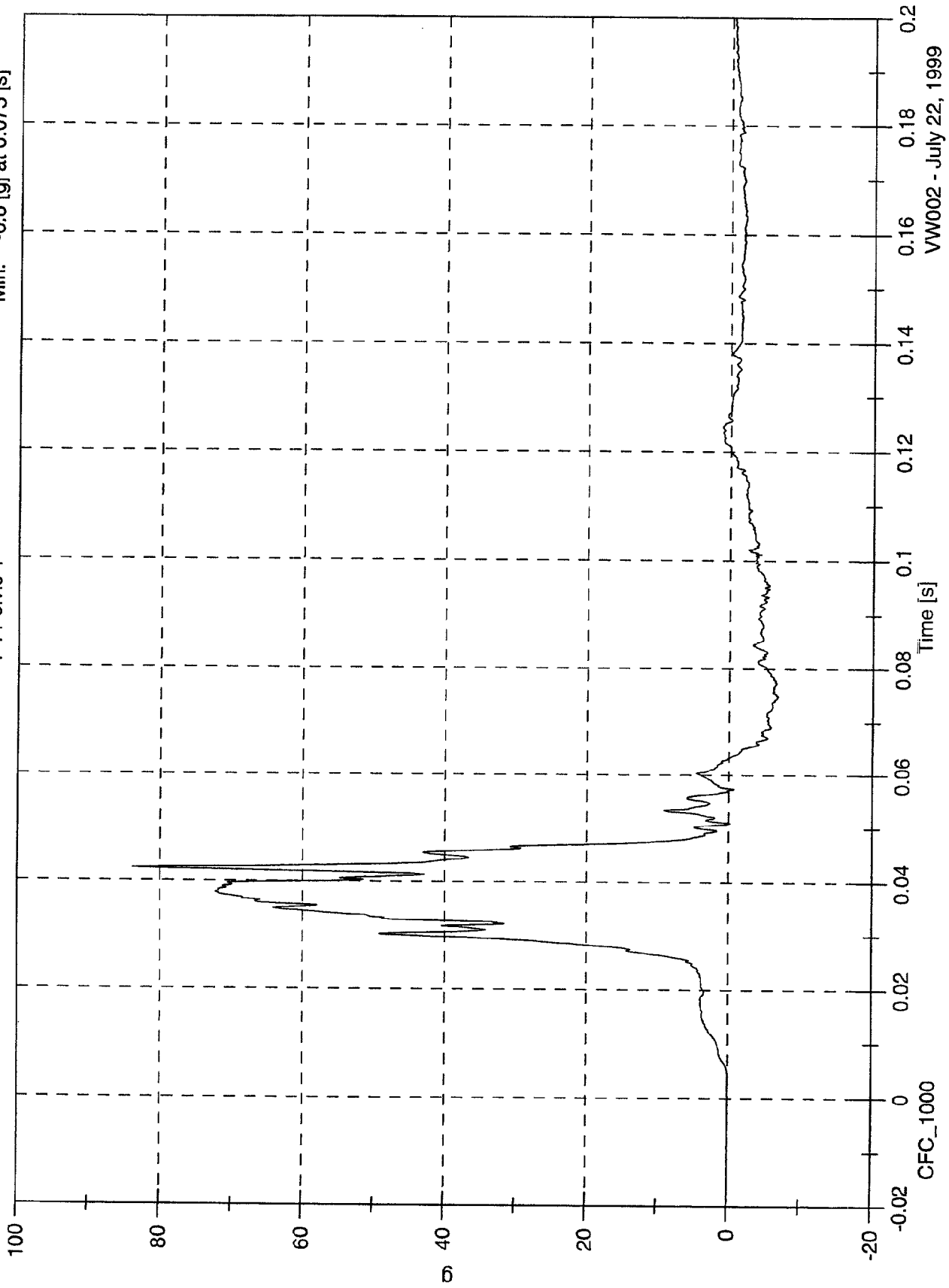


VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Max: 83.8 [g] at 0.042 [s]
Min: -6.8 [g] at 0.075 [s]

P4 Pelvic Y



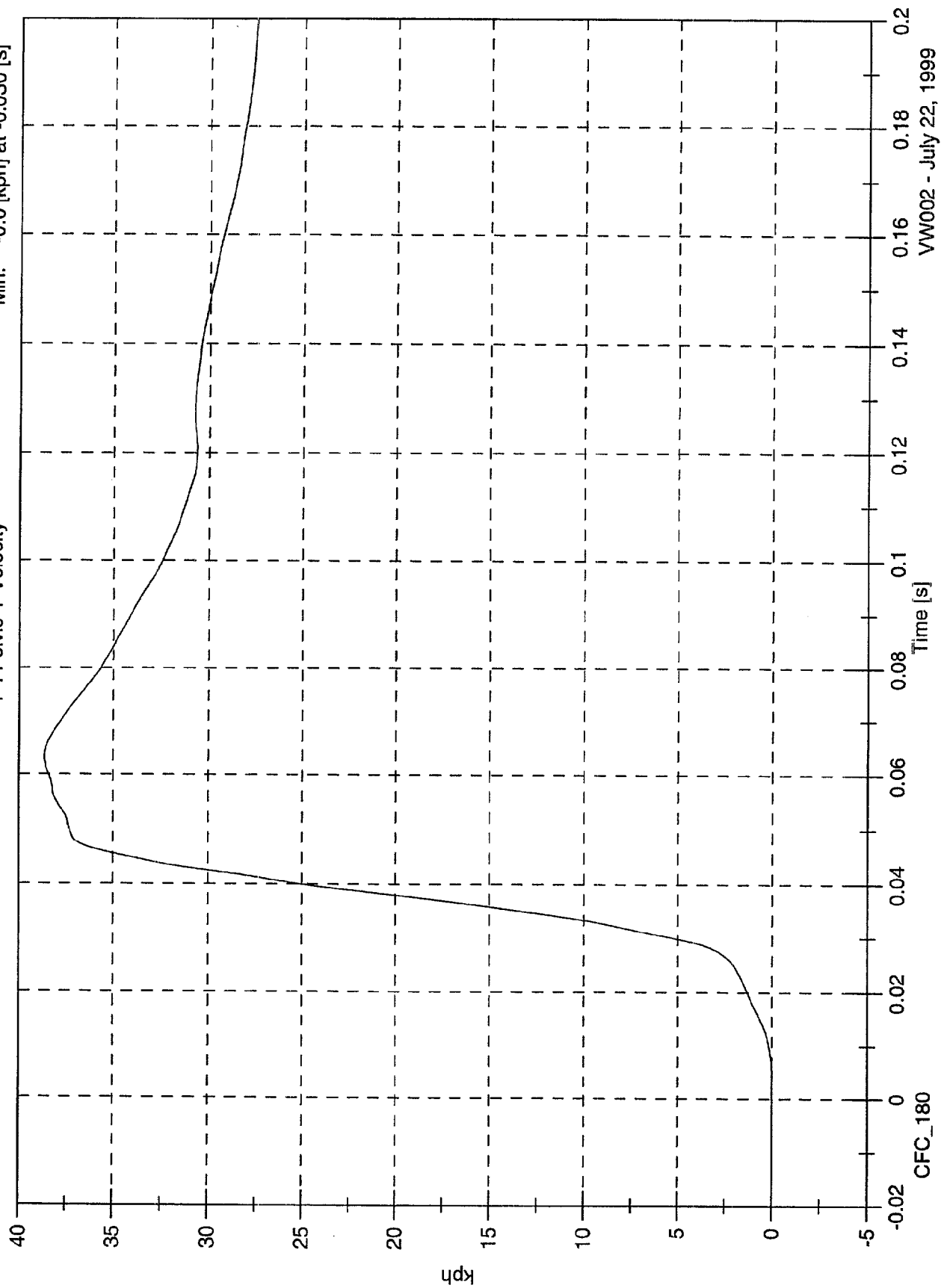
VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Max: 38.7 [kph] at 0.063 [s]

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

P4 Pelvic Y Velocity



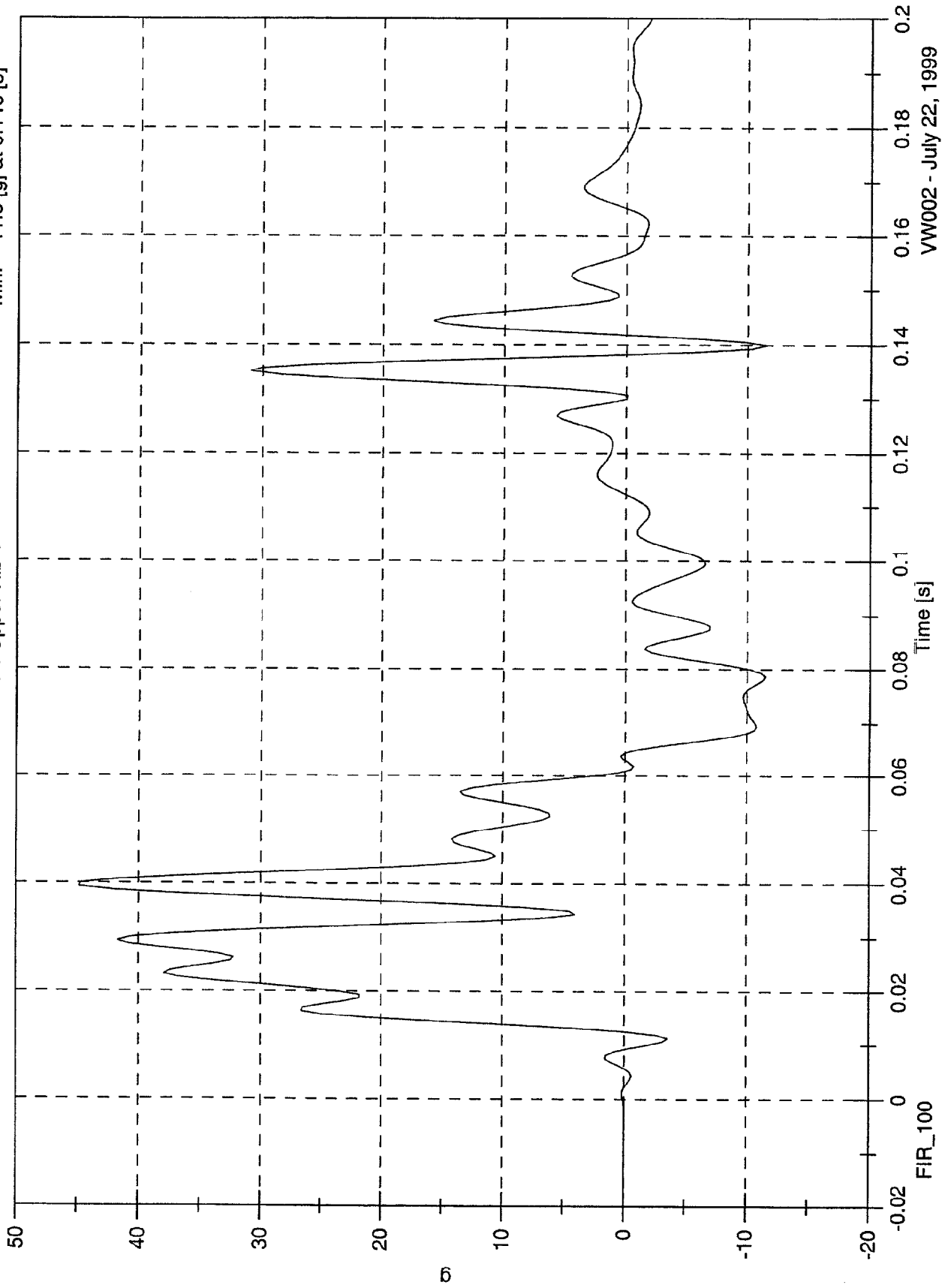
VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

P1 Upper Rib Y

Max: 44.8 [g] at 0.039 [s]

Min: -11.6 [g] at 0.140 [s]

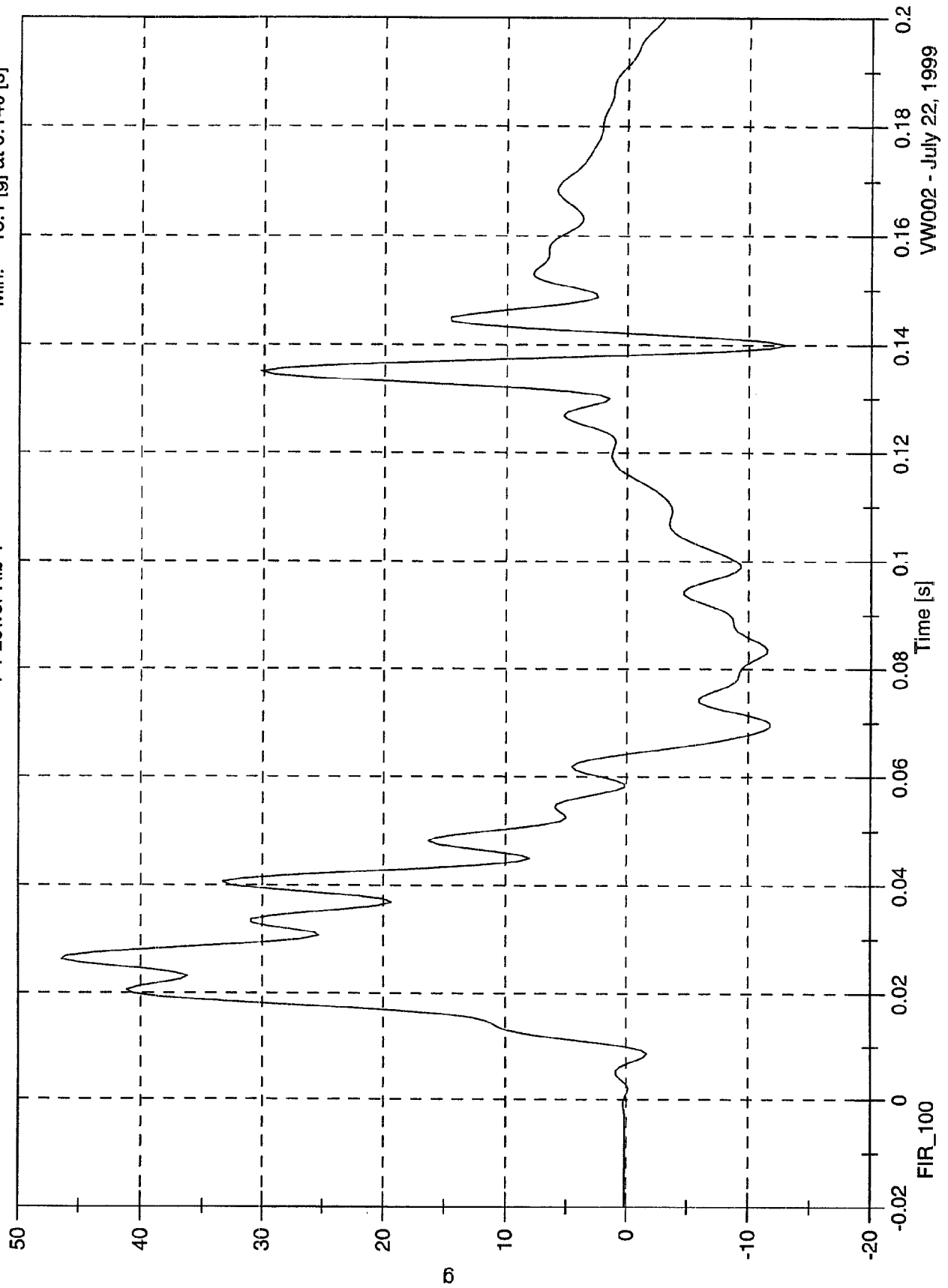


VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Max: 46.4 [g] at 0.026 [s]
Min: -13.1 [g] at 0.140 [s]

P1 Lower Rib Y



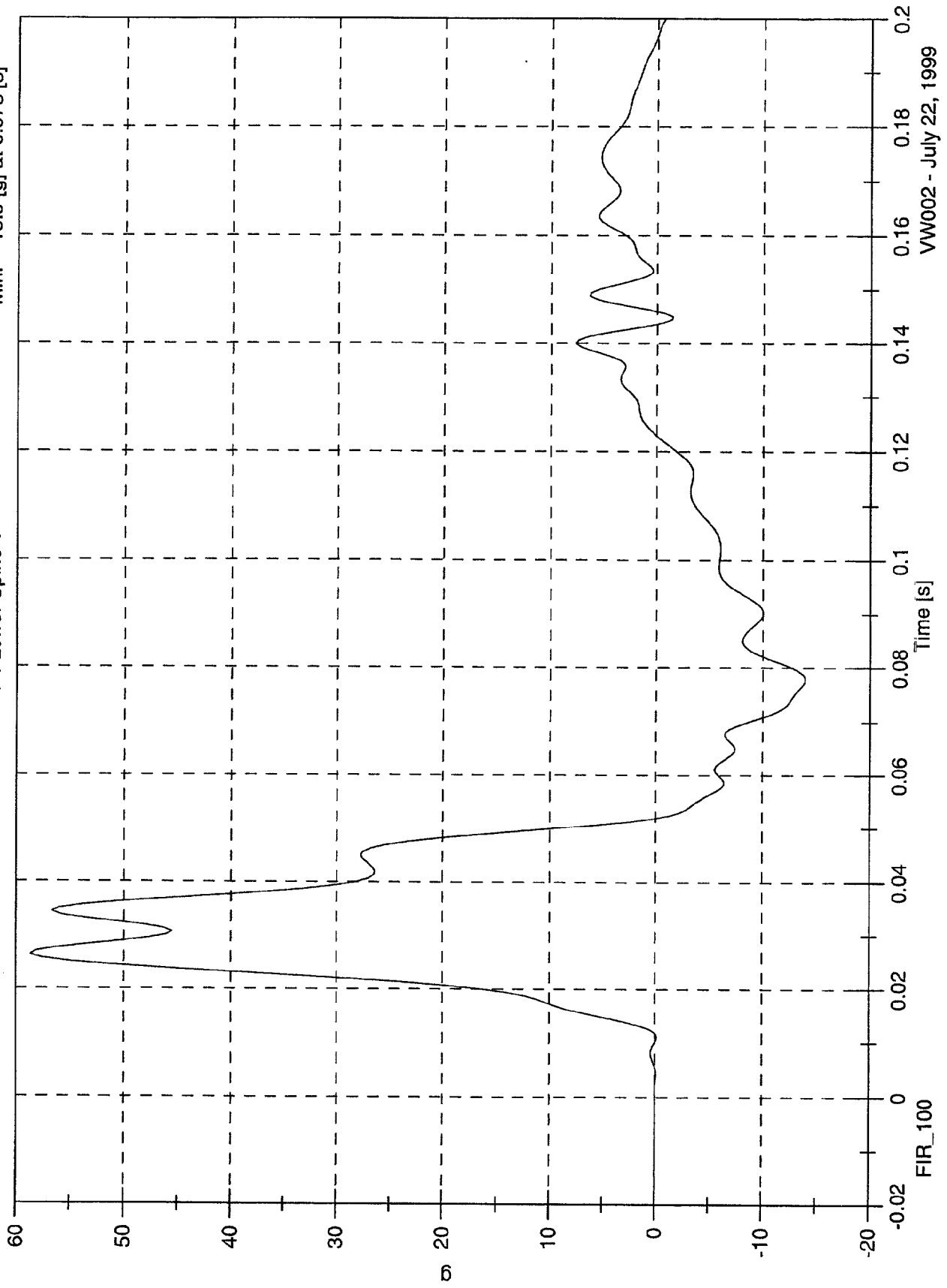
VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Max: 58.6 [g] at 0.026 [s]

Min: -13.9 [g] at 0.078 [s]

P1 Lower Spine Y

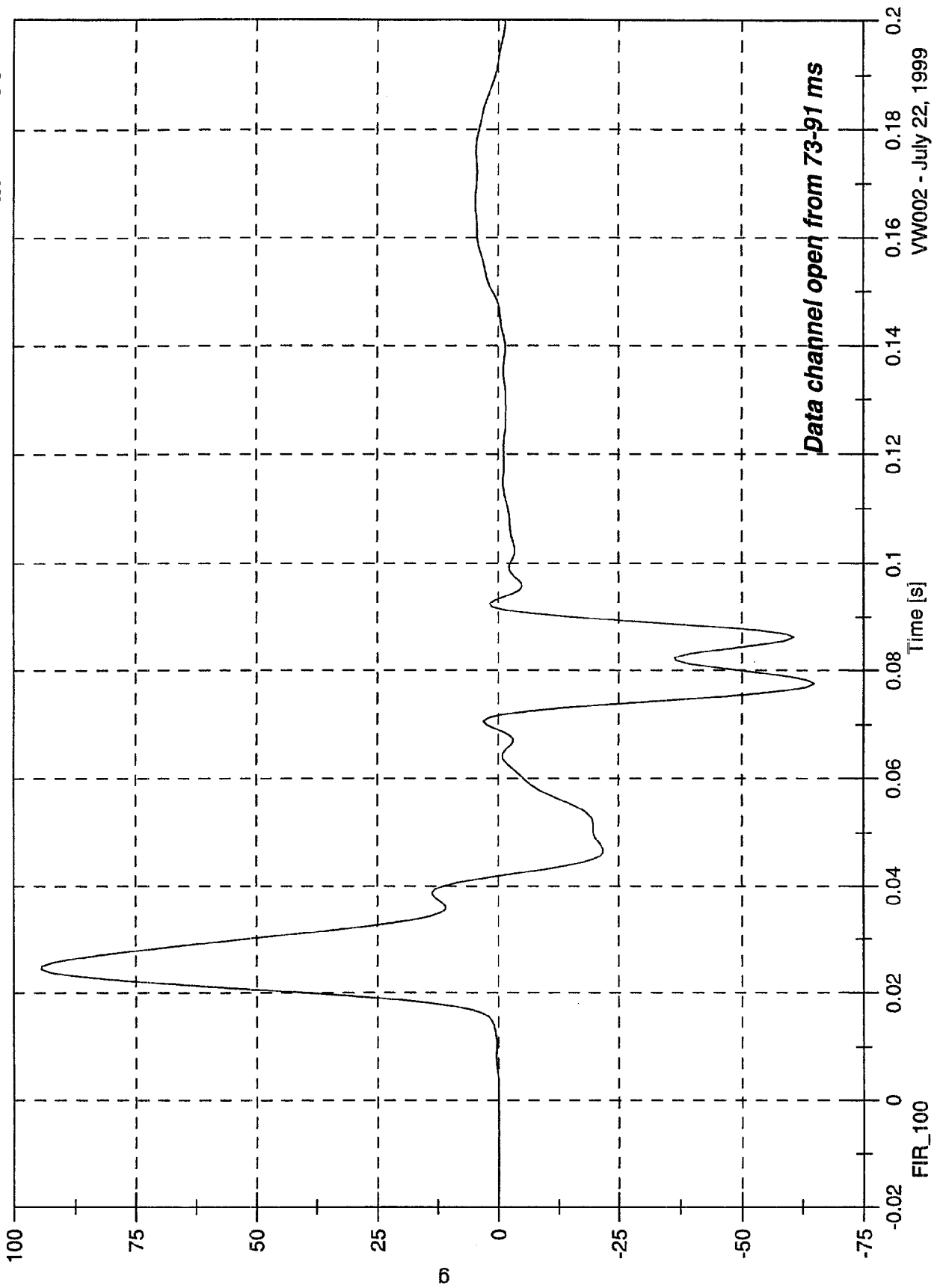


VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Max: 94.4 [g] at 0.024 [s]
Min: -64.9 [g] at 0.078 [s]

P1 Pelvic Y

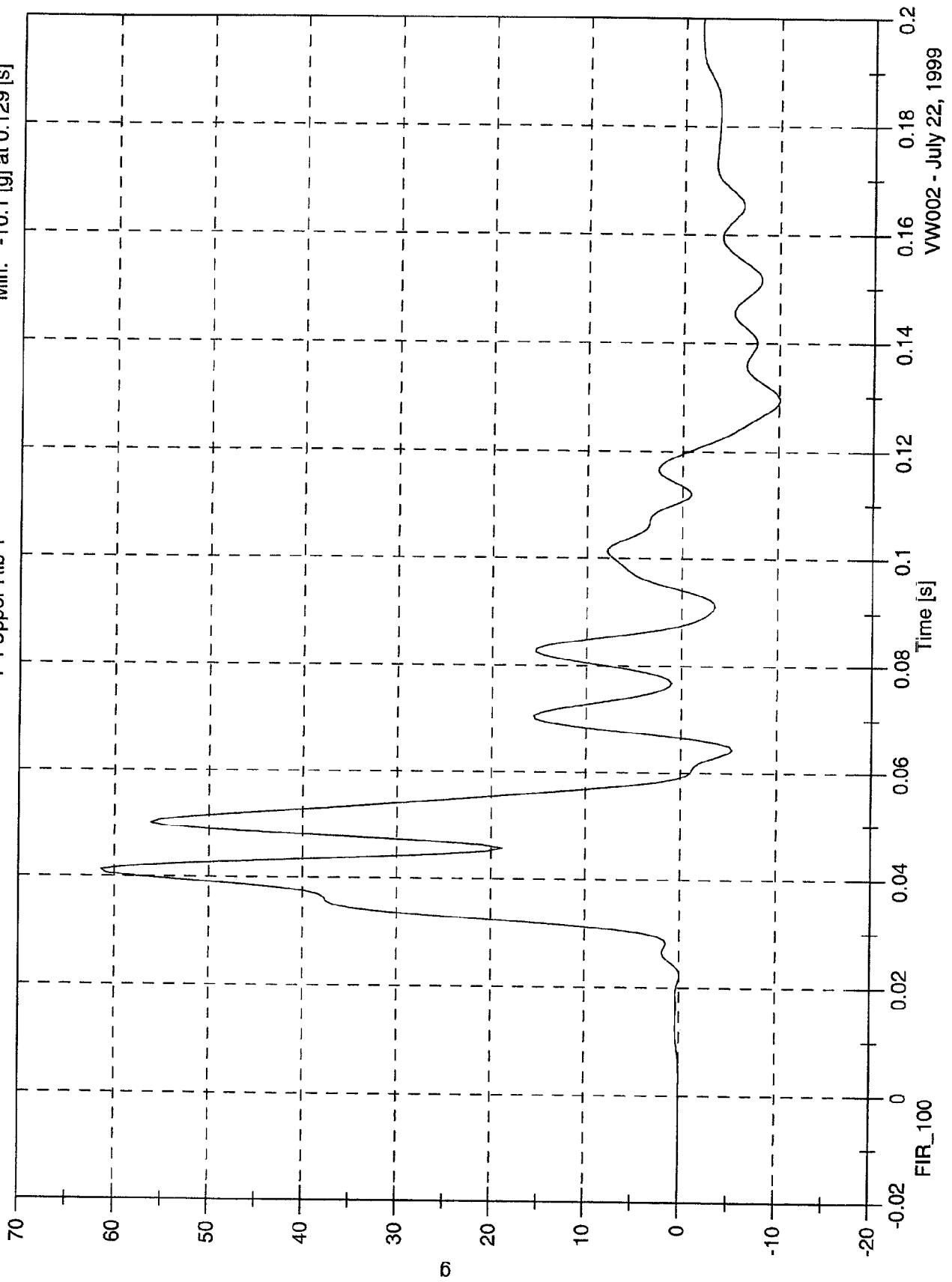


VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

P4 Upper Rib Y

Max: 61.4 [g] at 0.041 [s]
Min: -10.1 [g] at 0.129 [s]

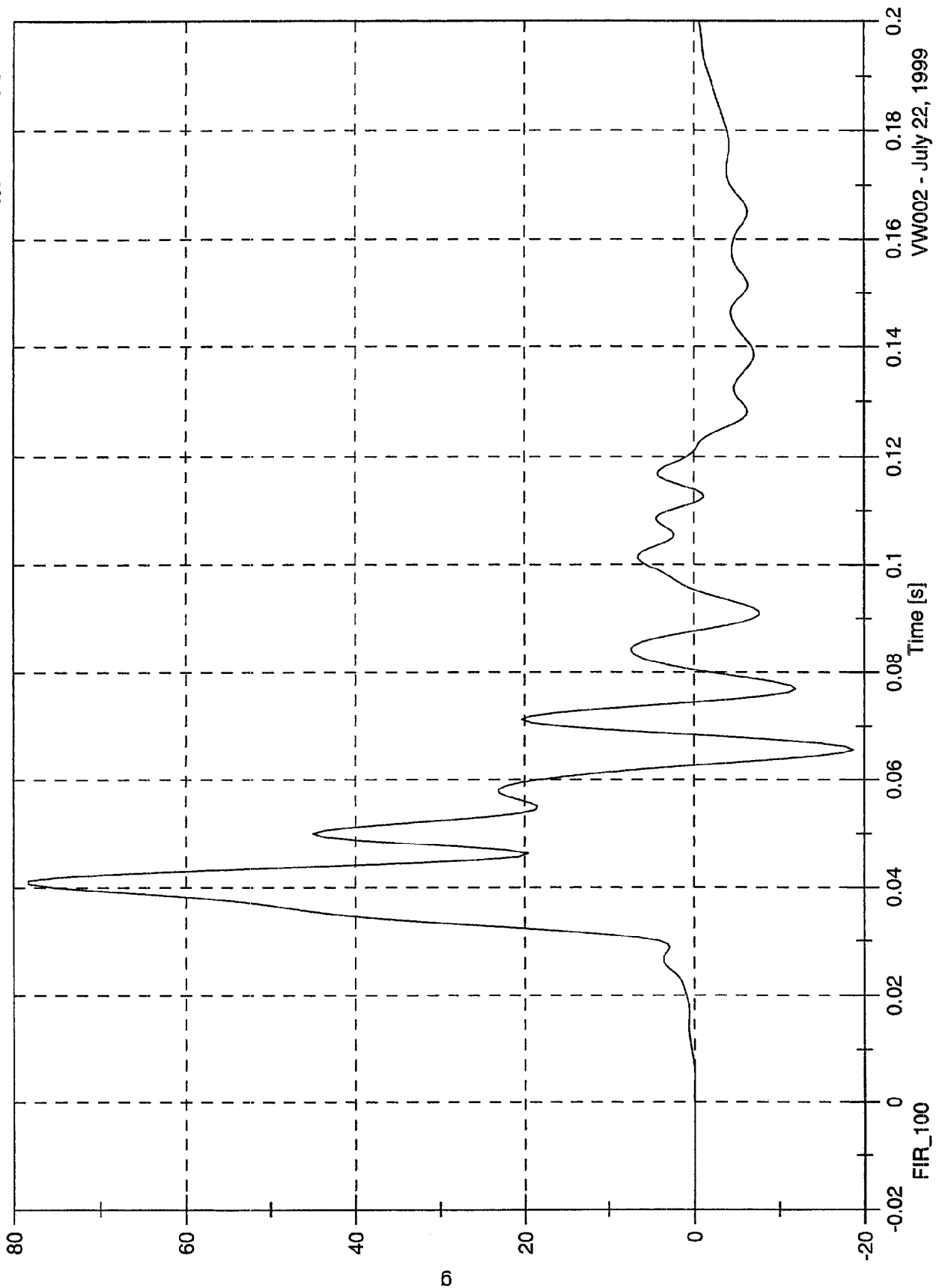


SNCAP Test#1 VW Beetle

P4 Lower Rib Y

Max: 78.3 [g] at 0.041 [s]

Min: -18.7 [g] at 0.066 [s]

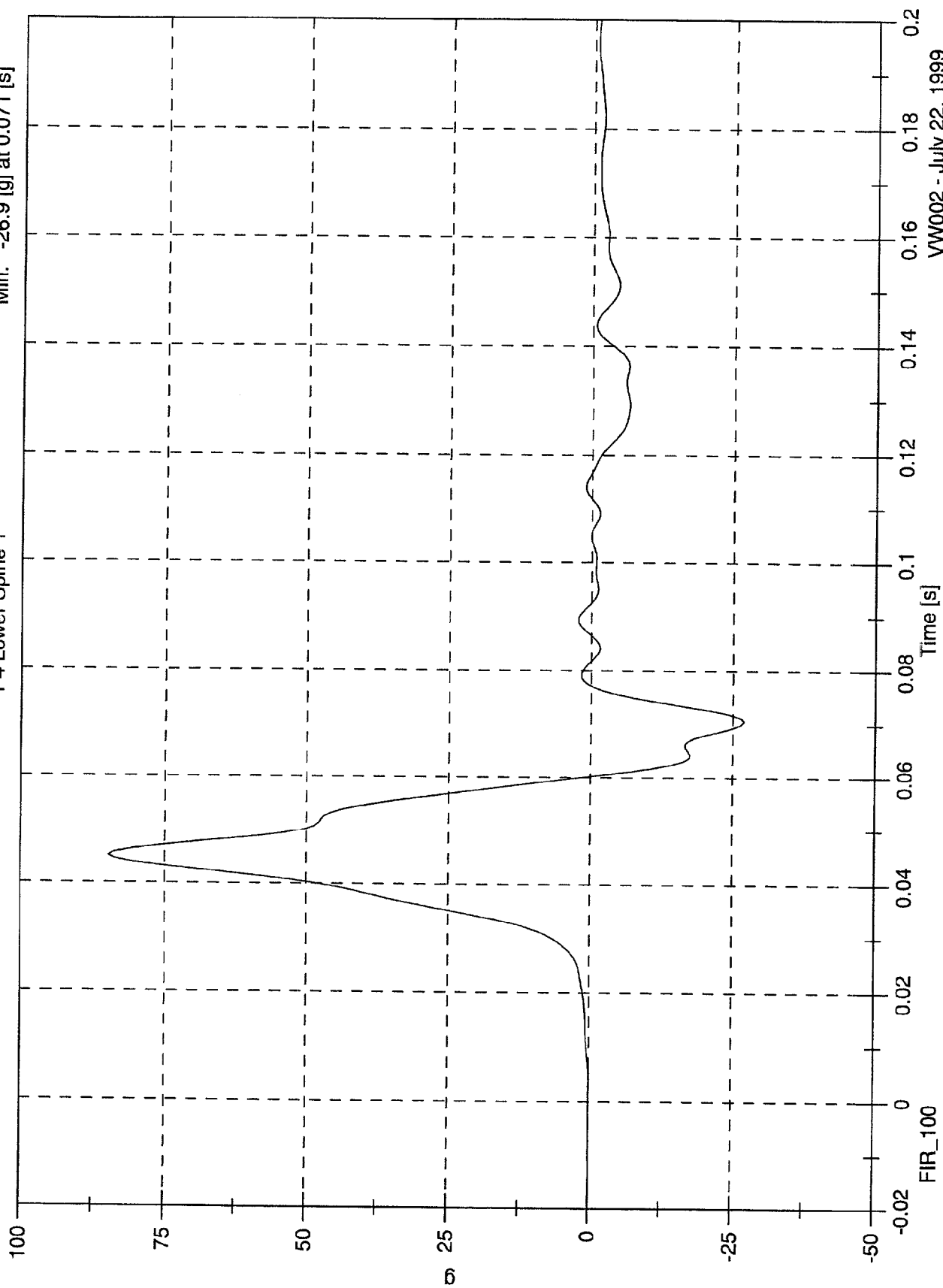


VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Max: 84.9 [g] at 0.045 [s]
Min: -26.9 [g] at 0.071 [s]

P4 Lower Spine Y



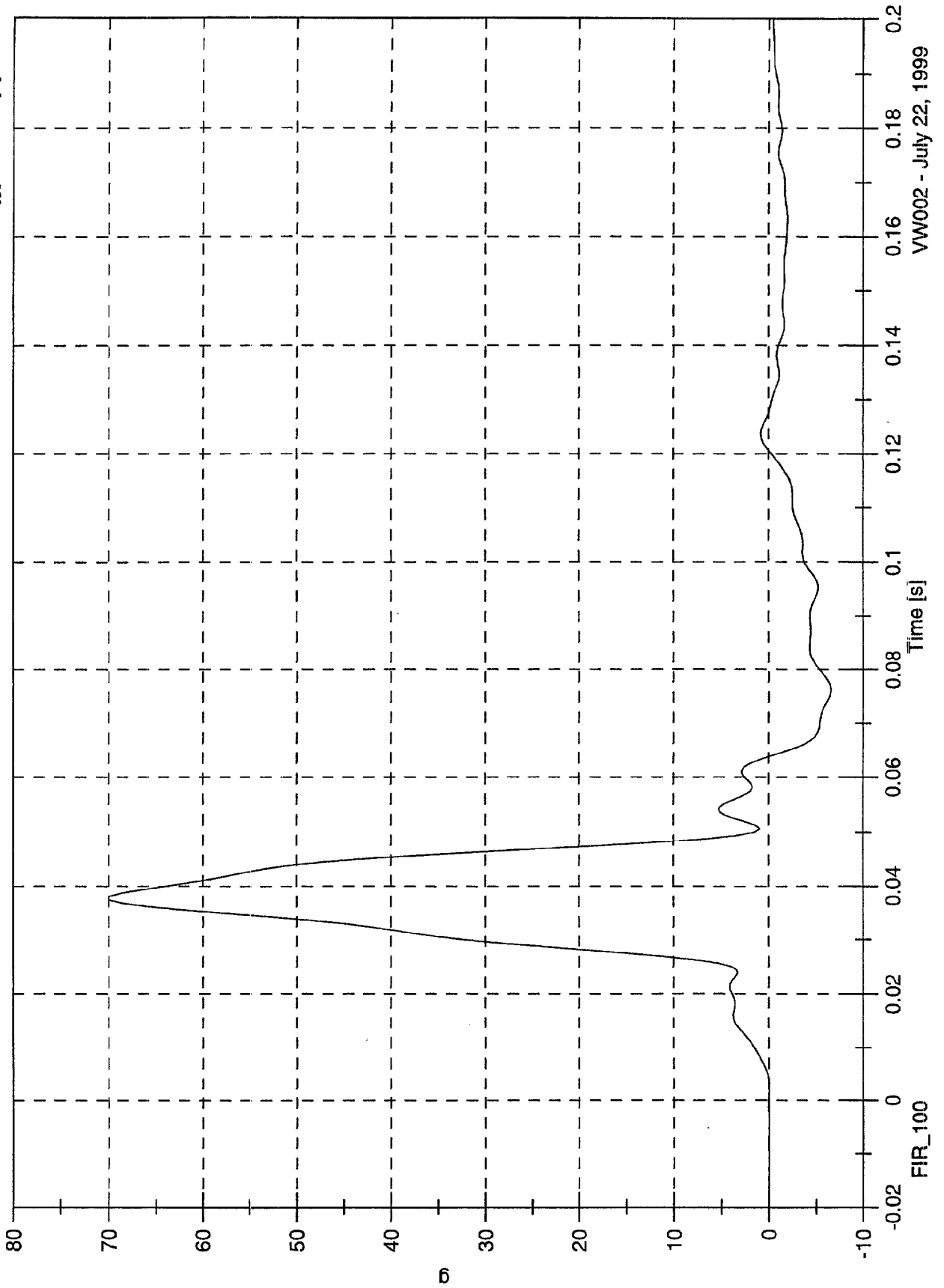
VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Max: 70.0 [g] at 0.038 [s]

Min: -6.6 [g] at 0.076 [s]

P4 Pelvic Y



FIR_100

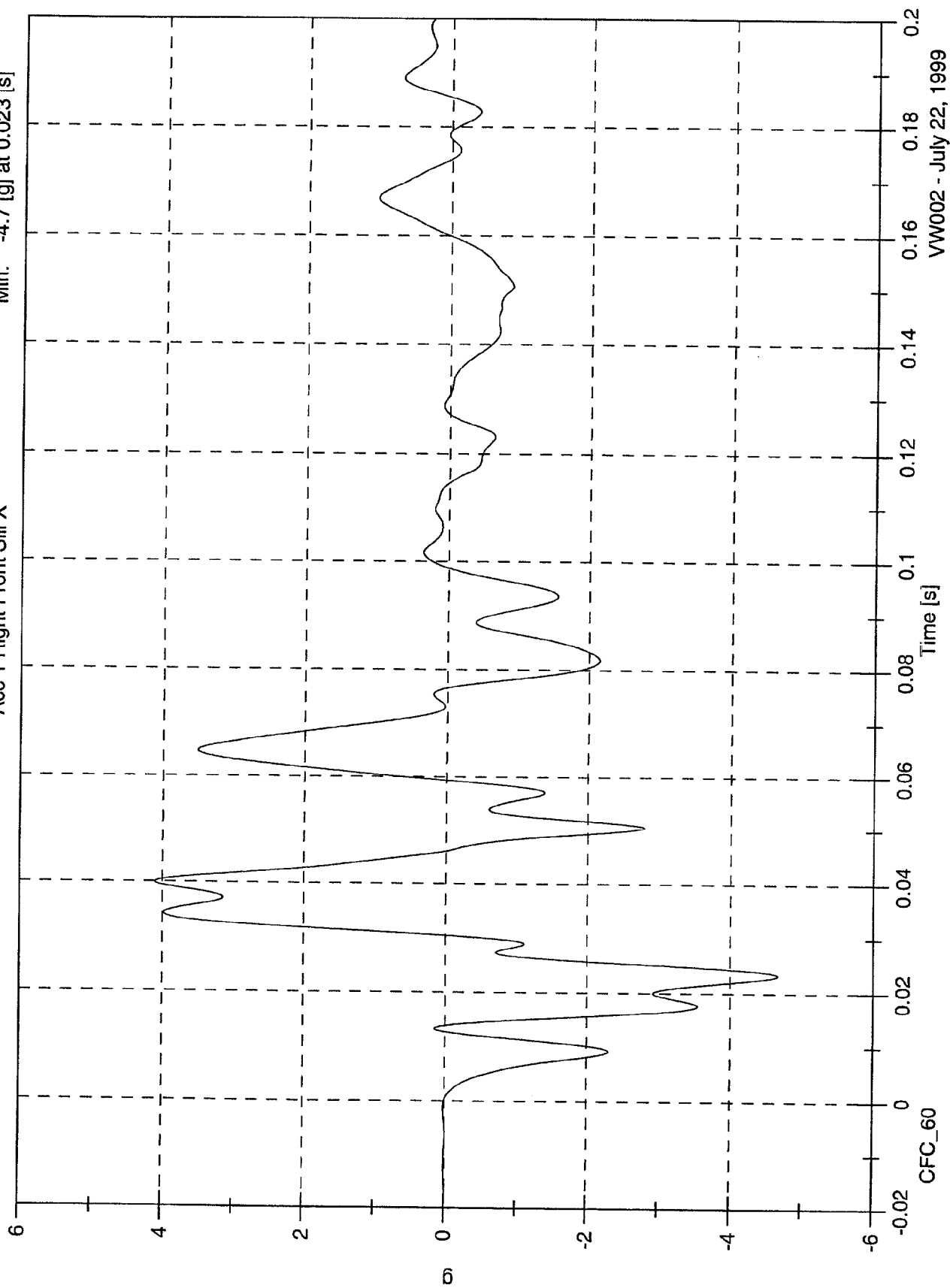
VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Acc 1 Right Front Sill X

Max: 4.1 [g] at 0.040 [s]

Min: -4.7 [g] at 0.023 [s]

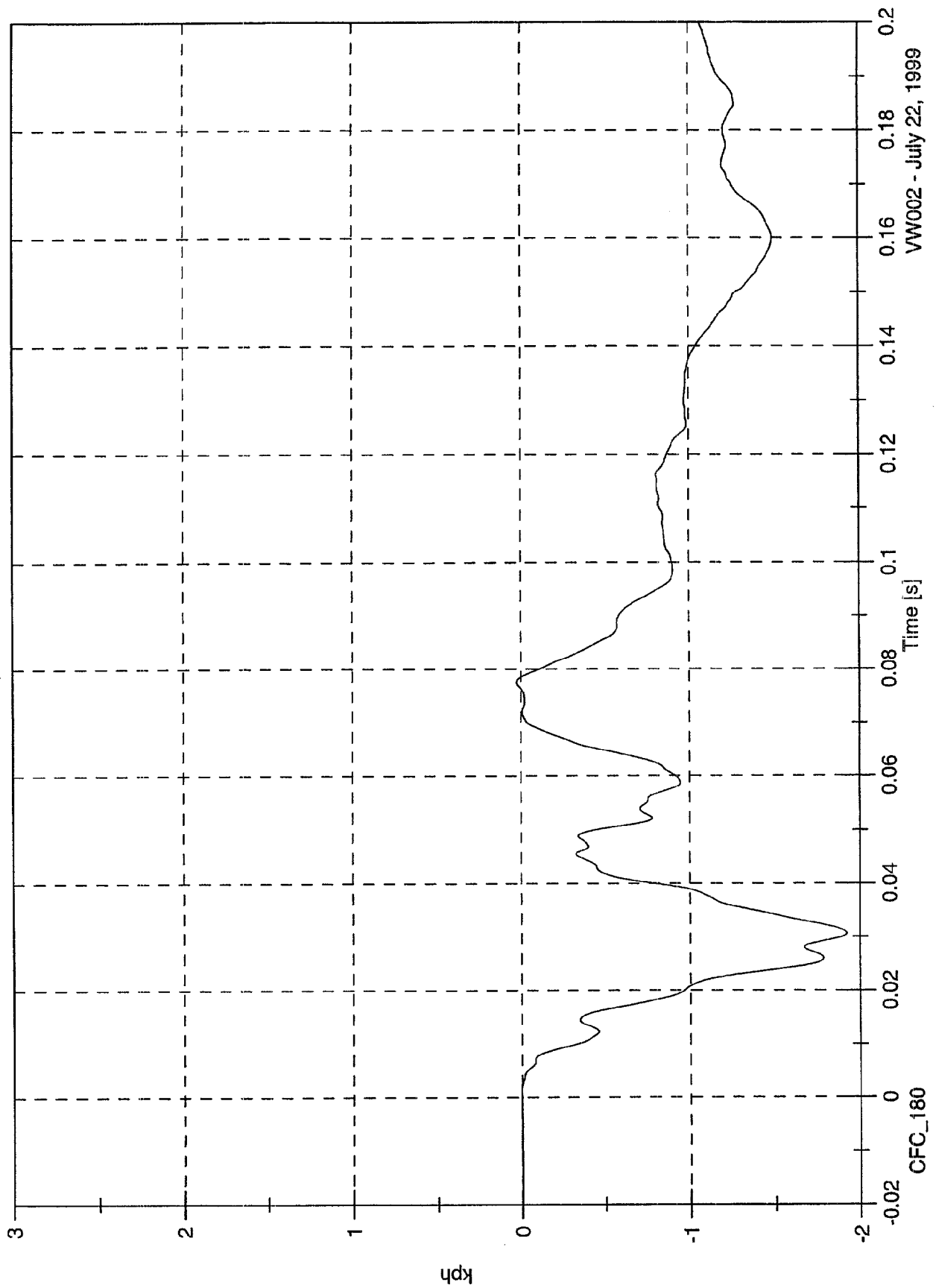


SNCAP Test#1 VW Beetle

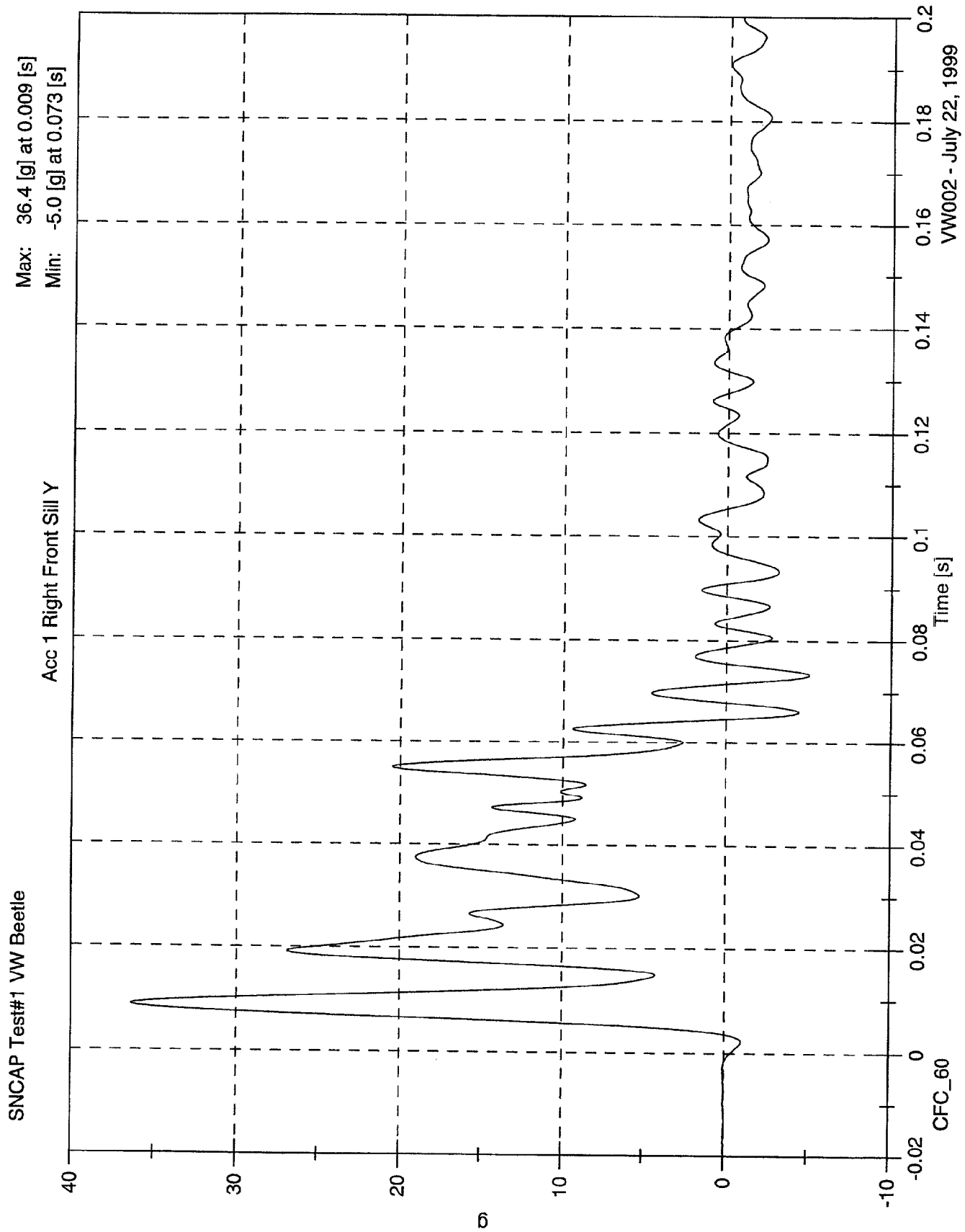
Max: 2.2 [kph] at 0.500 [s]

Min: -1.9 [kph] at 0.031 [s]

Acc 1 Right Front Sill X Velocity

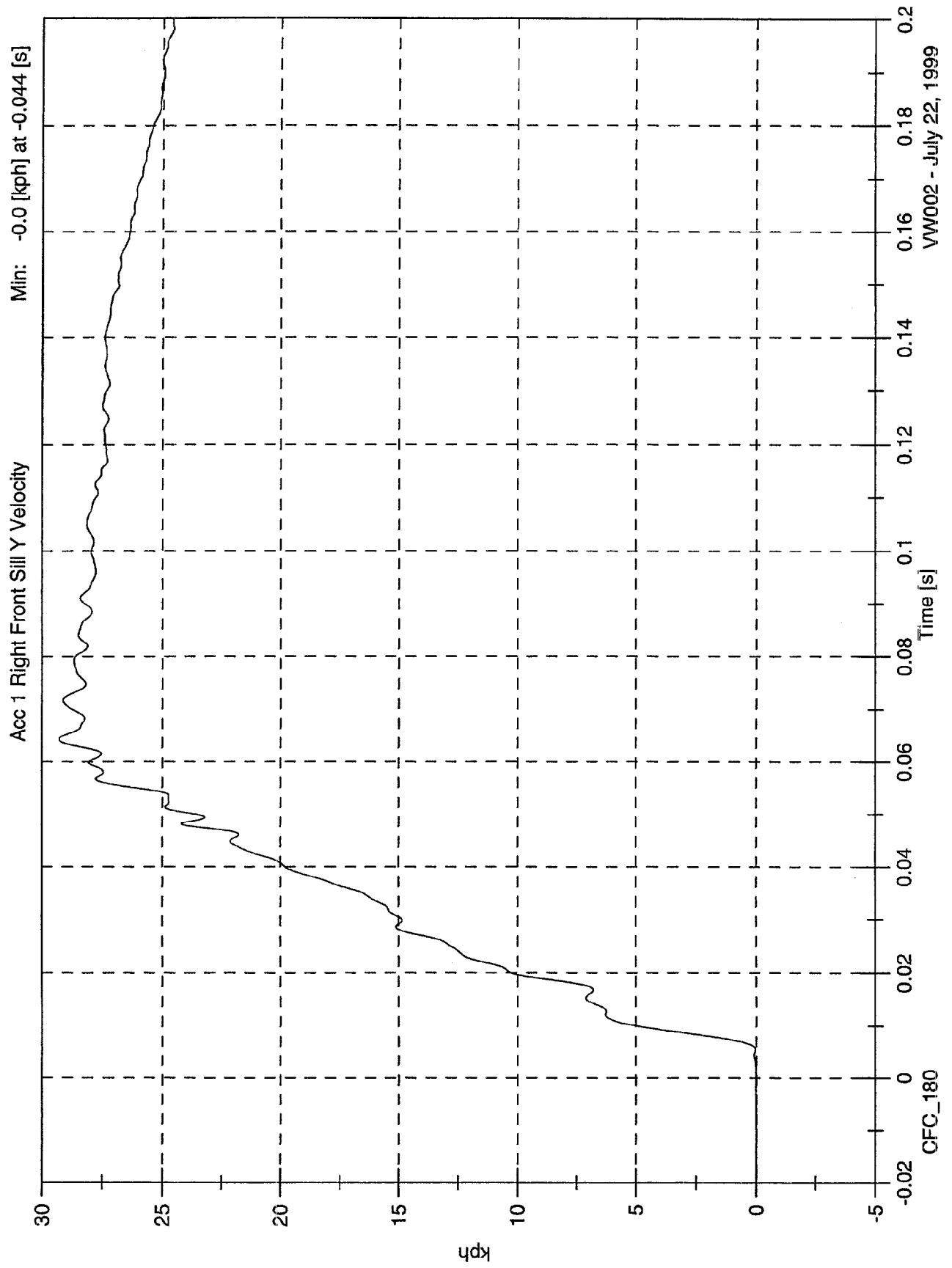


VW002 - July 22, 1999



SNCAP Test#1 VW Beetle

Max: 29.3 [kph] at 0.064 [s]
Min: -0.0 [kph] at -0.044 [s]

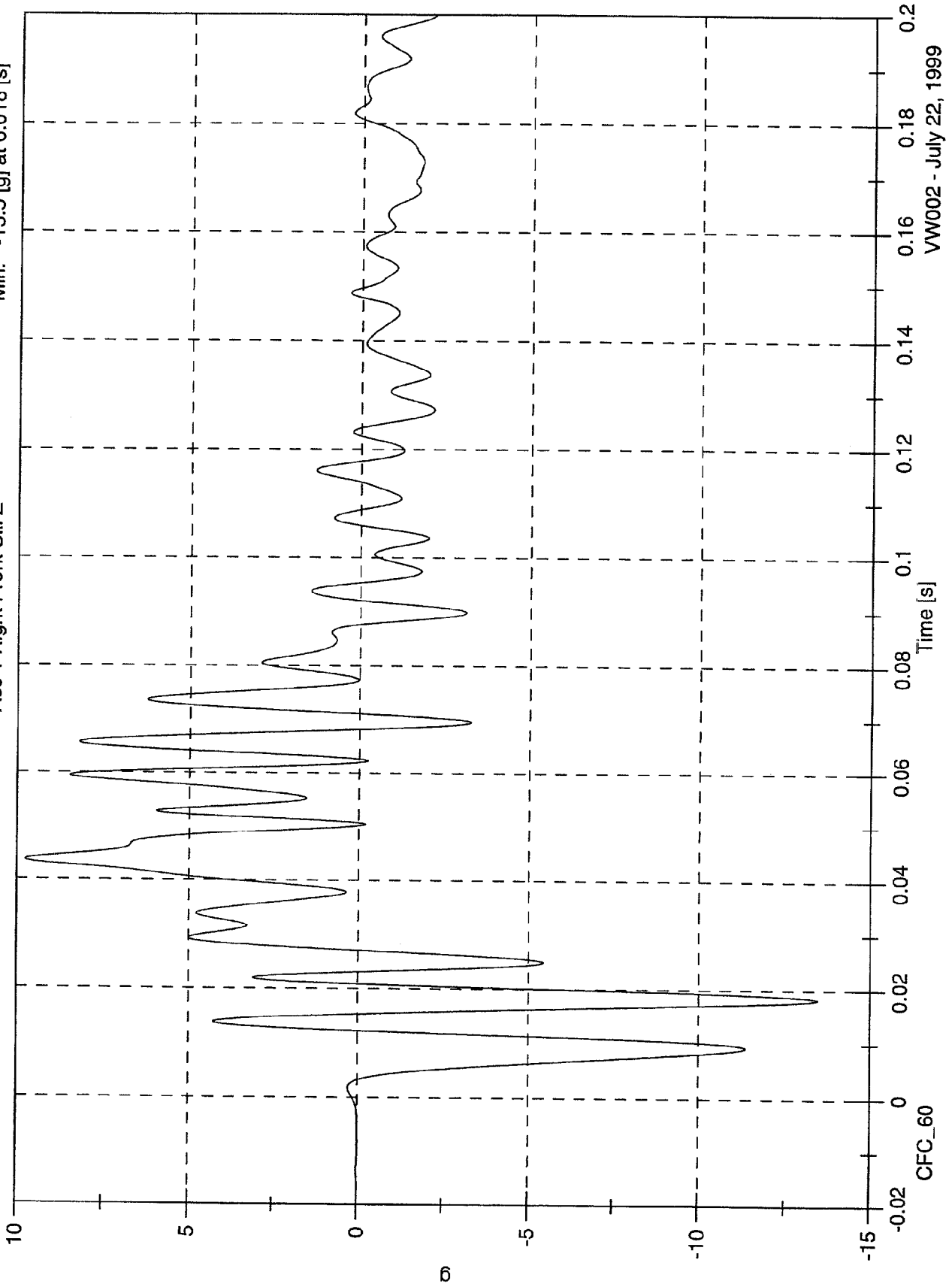


SNCAP Test#1 VW Beetle

Max: 9.8 [g] at 0.044 [s]

Min: -13.5 [g] at 0.018 [s]

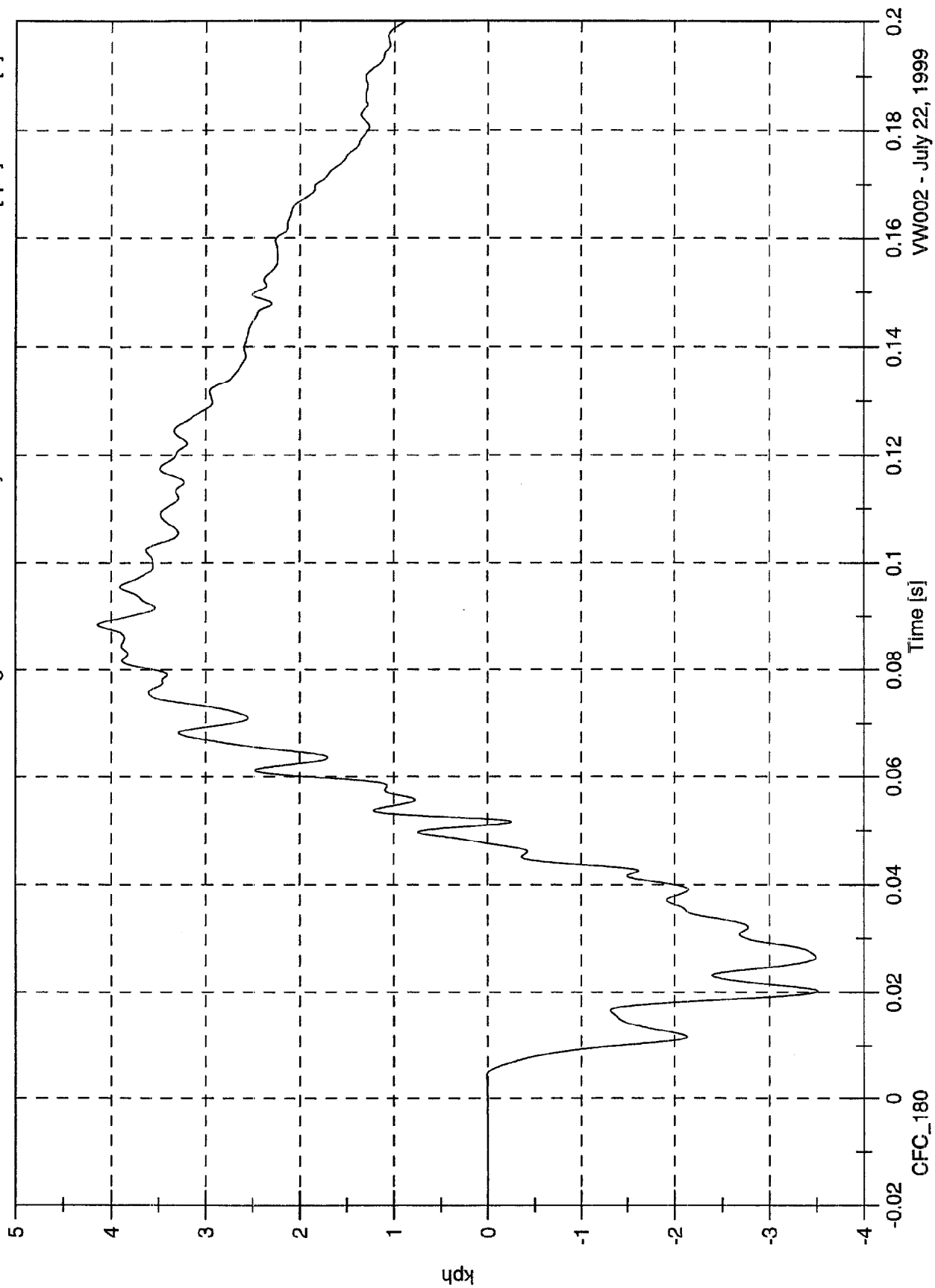
Acc 1 Right Front Sill Z



SNCAP Test#1 VW Beetle

Max: 4.1 [kph] at 0.088 [s]
Min: -3.5 [kph] at 0.020 [s]

Acc 1 Right Front Sill Z Velocity



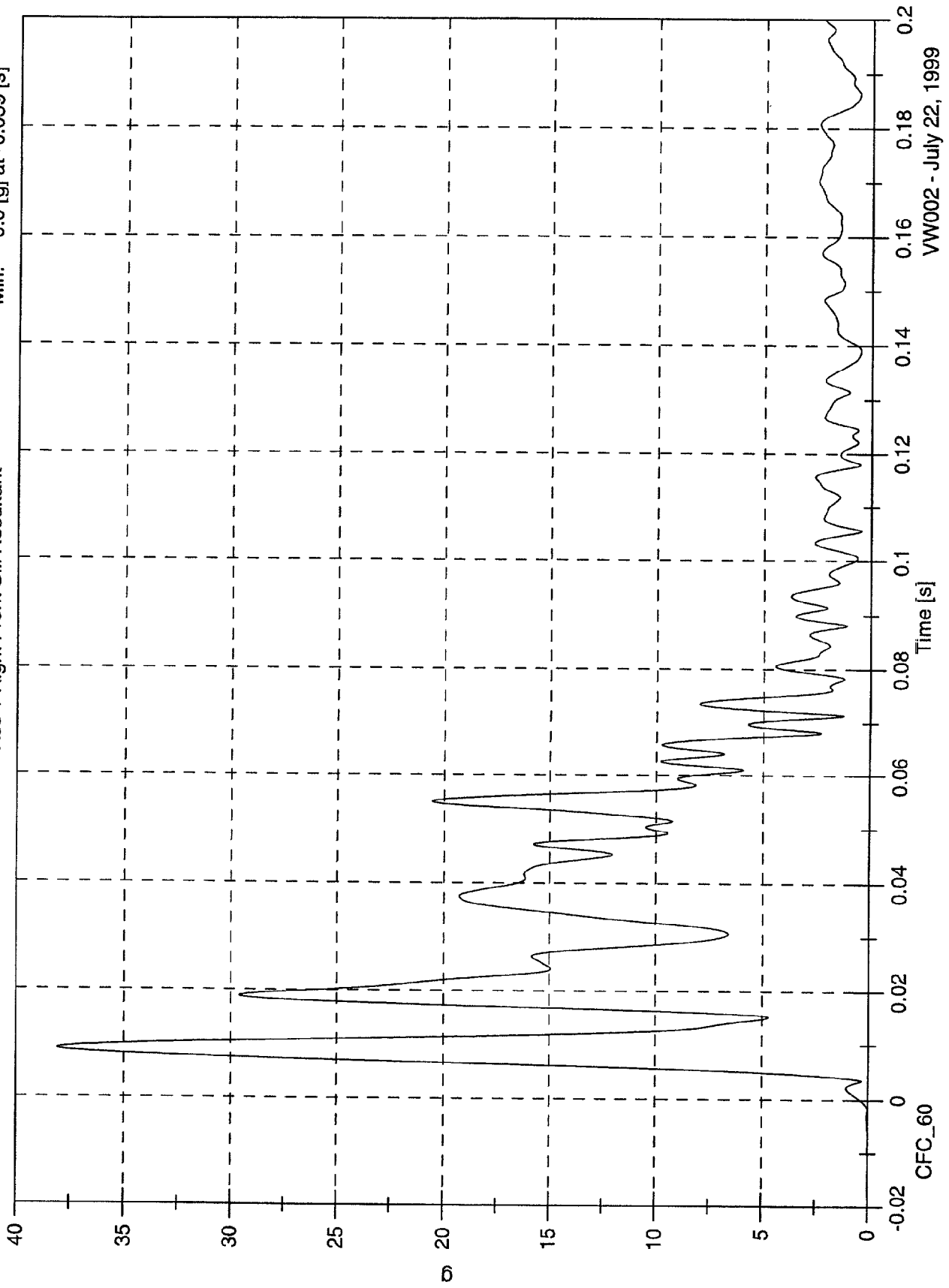
VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Acc 1 Right Front Sill Resultant

Max: 38.1 [g] at 0.009 [s]

Min: 0.0 [g] at -0.039 [s]



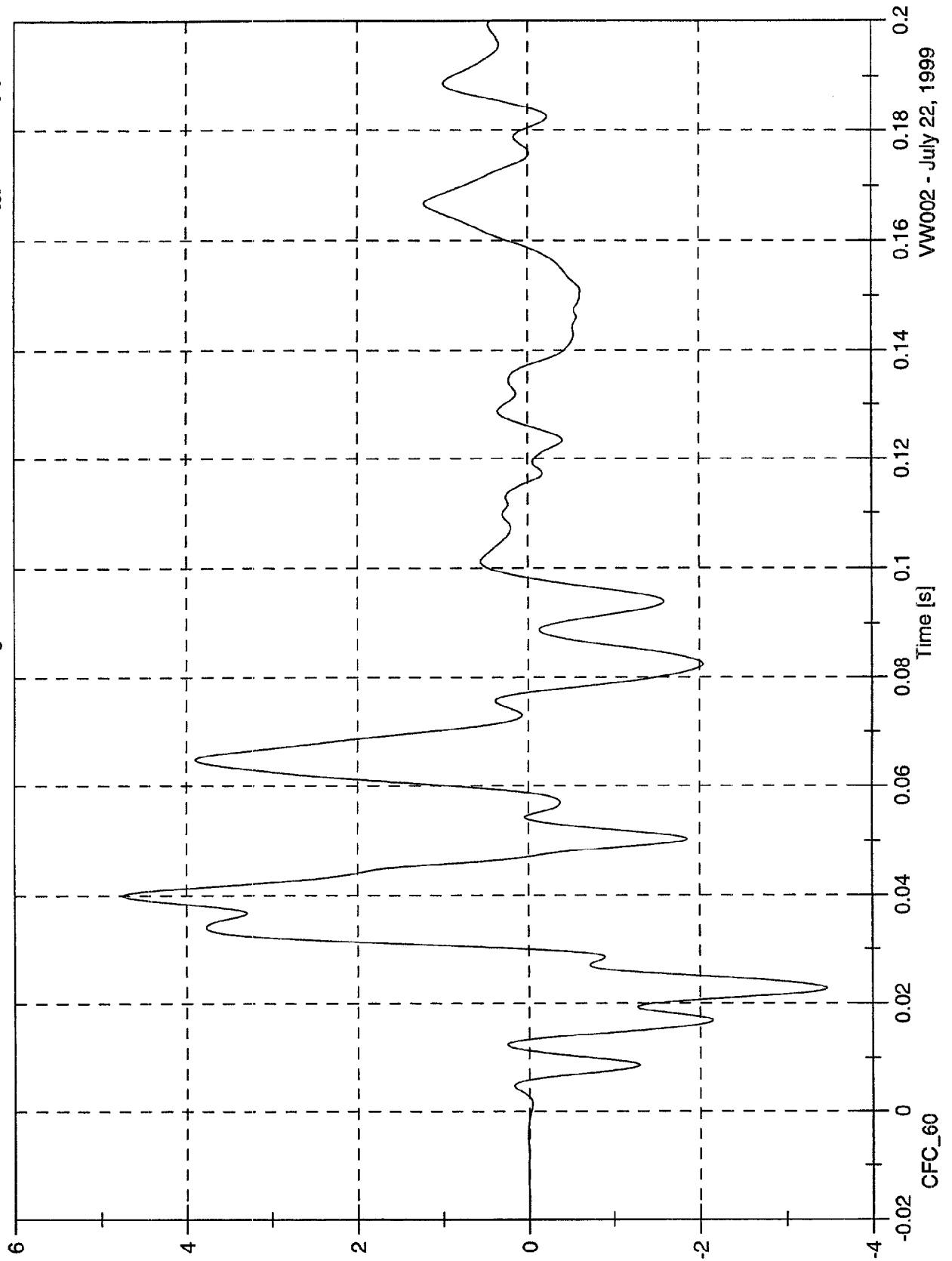
VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Max: 4.7 [g] at 0.040 [s]

Min: -3.5 [g] at 0.023 [s]

Acc 2 Right Rear Sill X

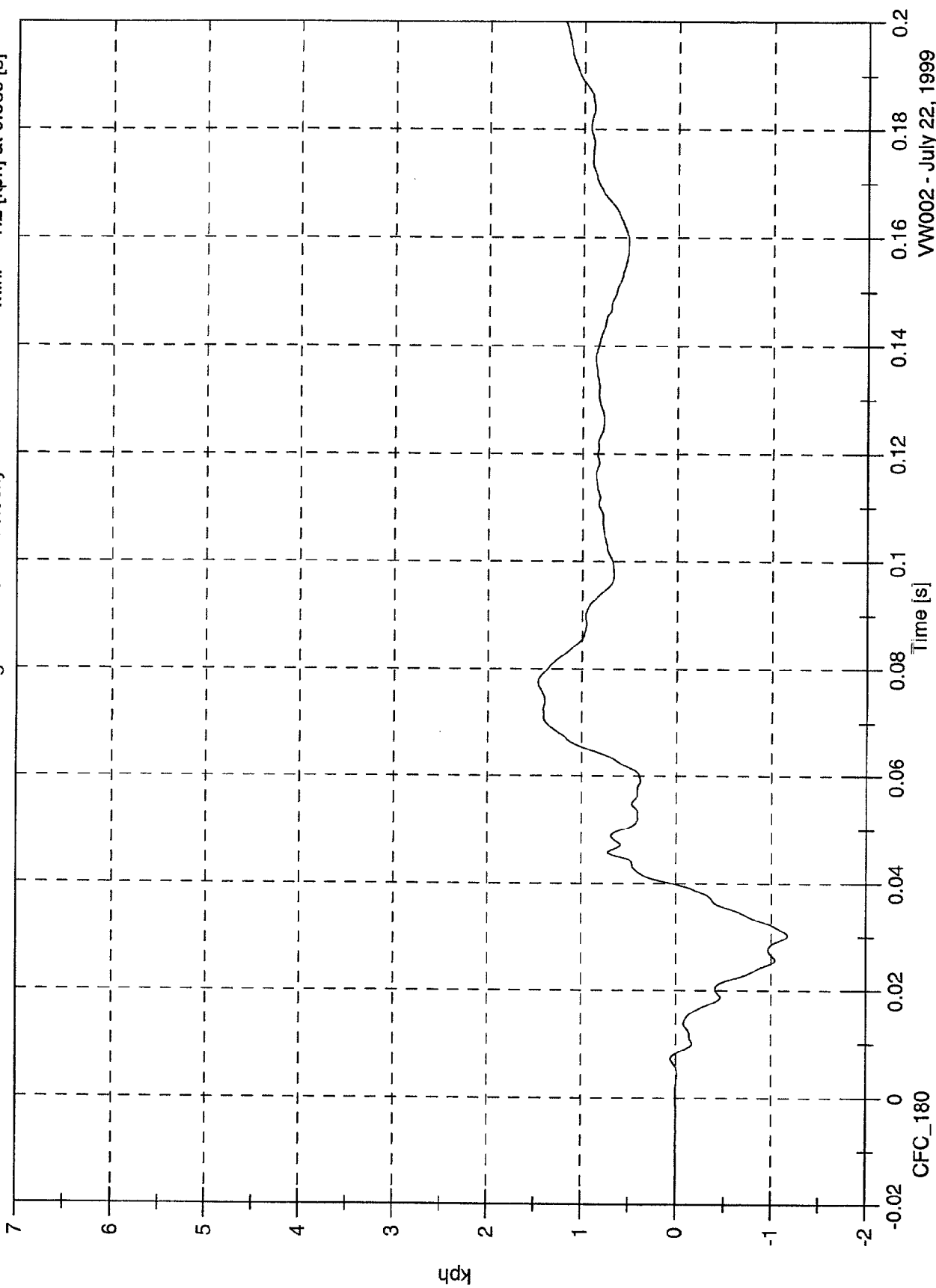


VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Max: 6.5 [kph] at 0.500 [s]
Min: -1.2 [kph] at 0.030 [s]

Acc 2 Right Rear Sill X Velocity



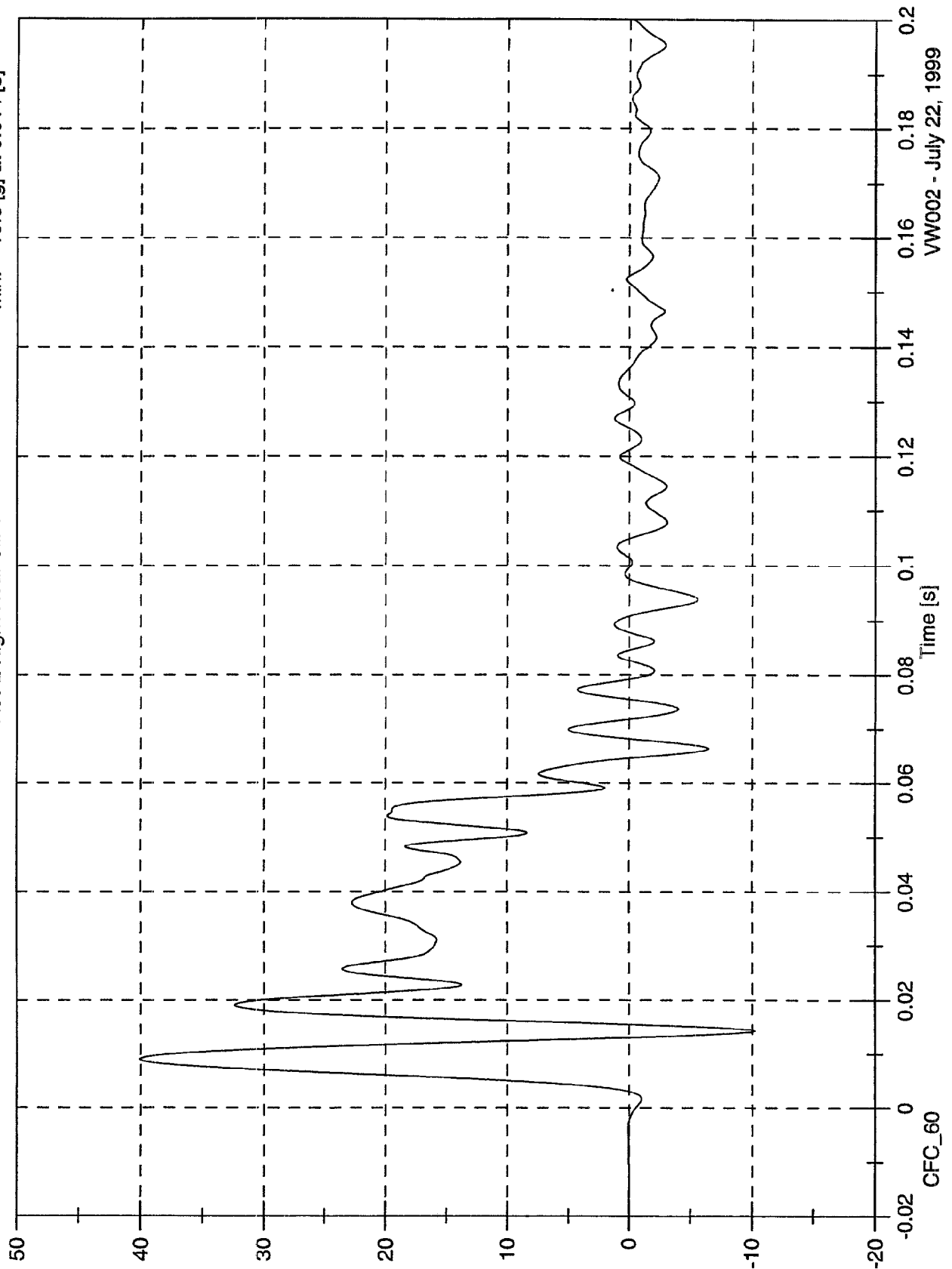
VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Acc 2 Right Rear Sill Y

Max: 40.1 [g] at 0.009 [s]

Min: -10.3 [g] at 0.014 [s]



CFC_60

Time [s]

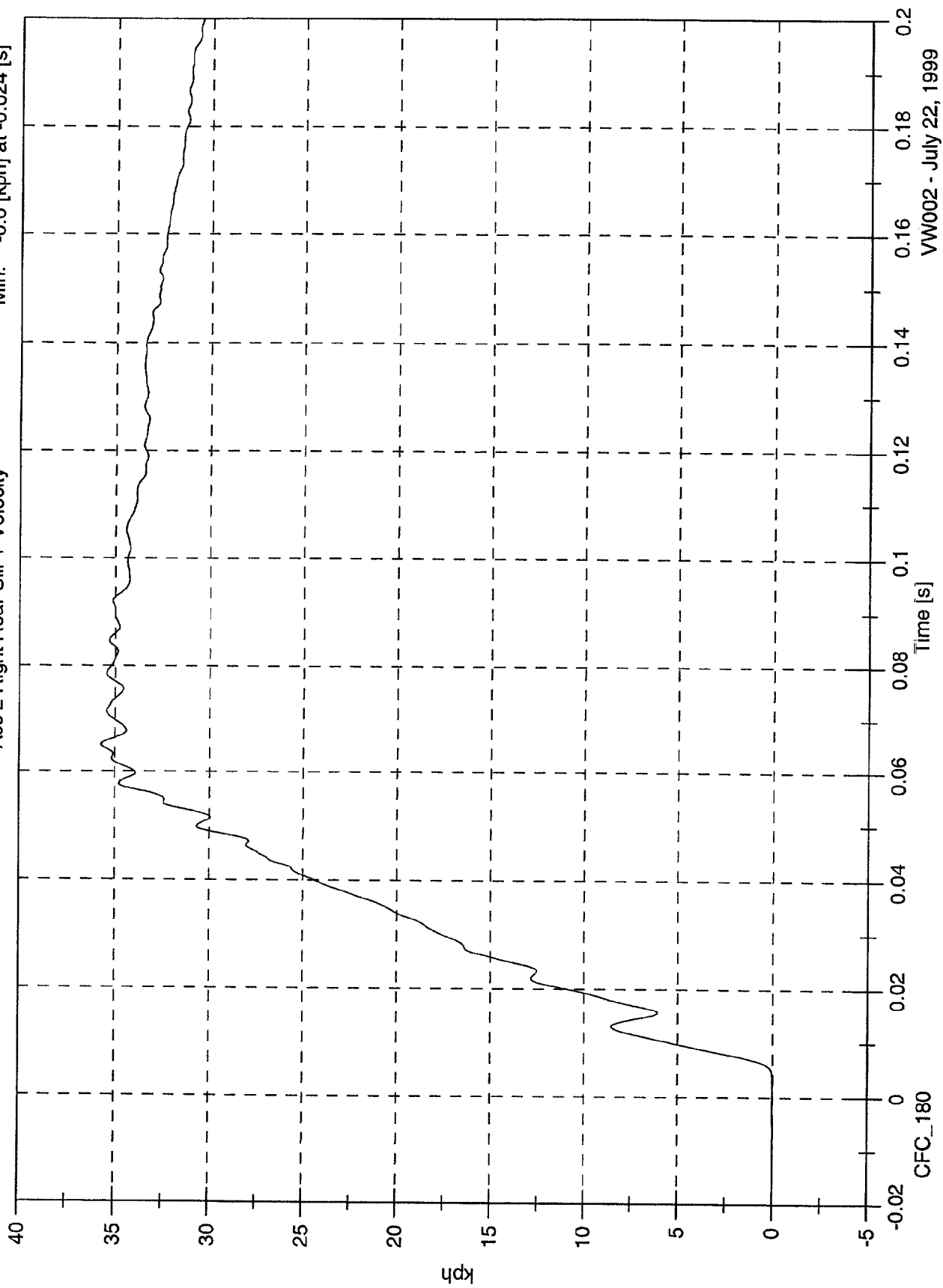
VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Max: 35.7 [kph] at 0.065 [s]

Min: -0.0 [kph] at -0.024 [s]

Acc 2 Right Rear Sill Y Velocity



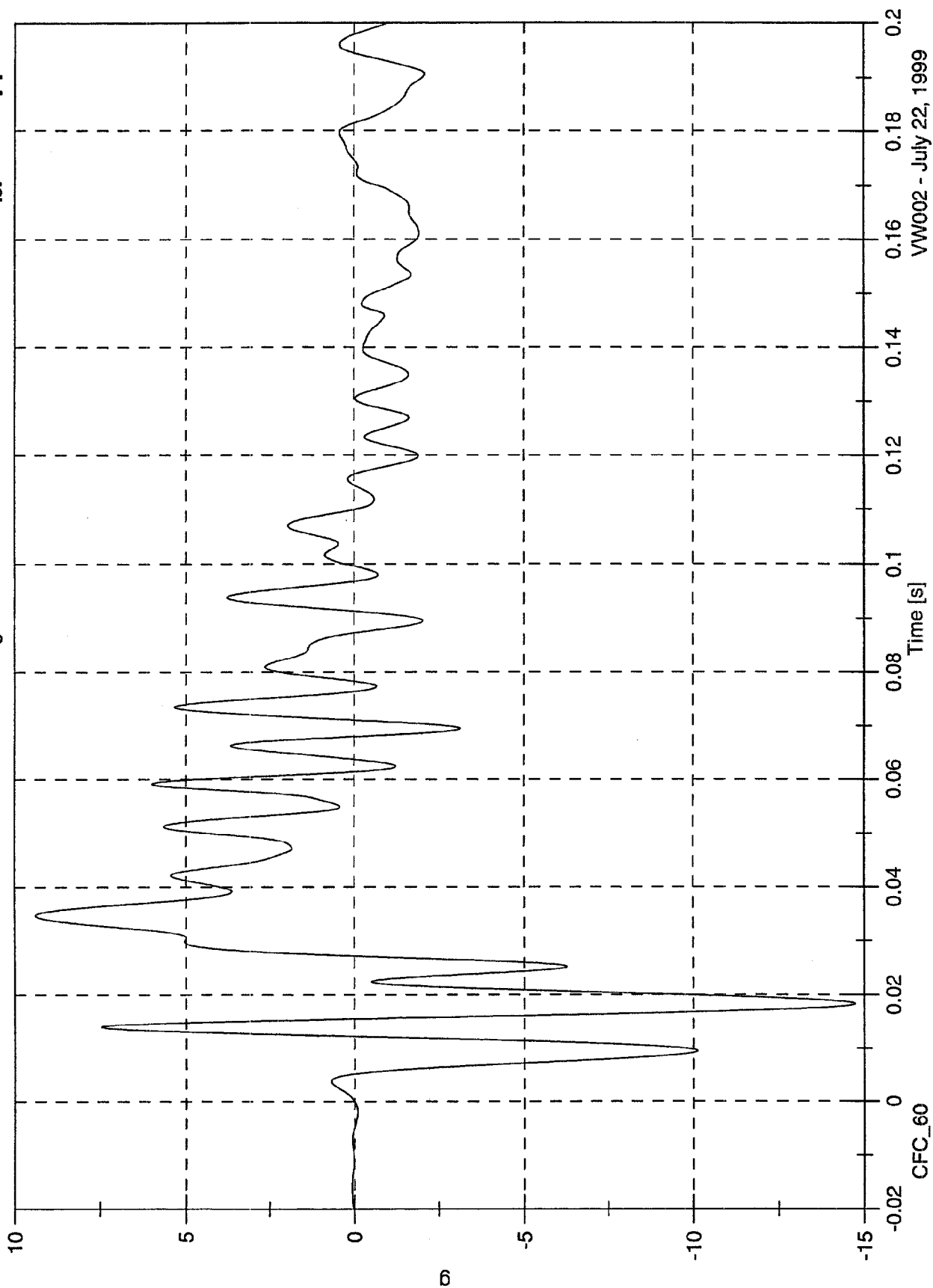
VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Max: 9.4 [g] at 0.035 [s]

Min: -14.7 [g] at 0.018 [s]

Acc 2 Right Rear Sill Z

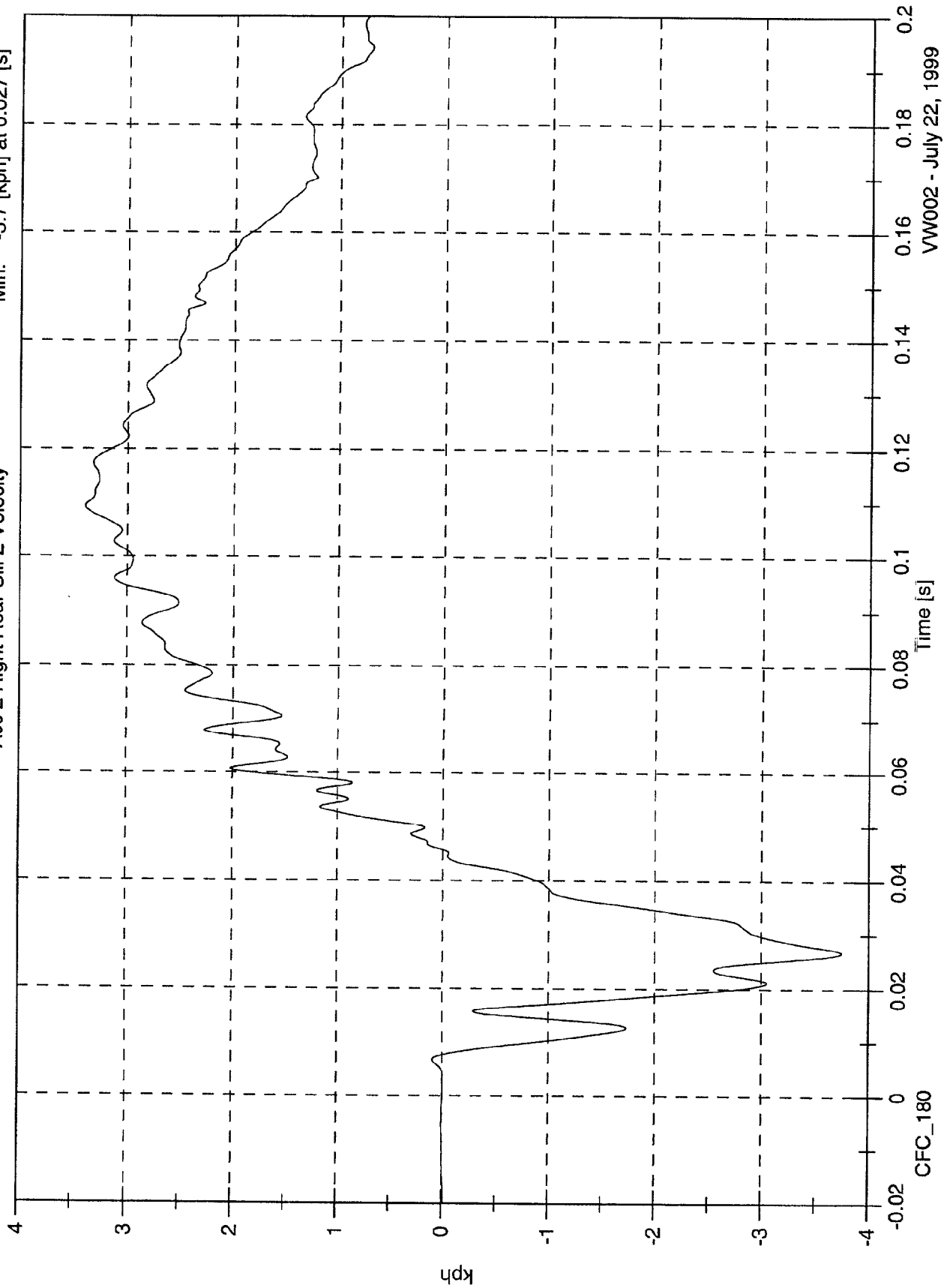


SNCAP Test#1 VW Beetle

Max: 3.4 [kph] at 0.109 [s]

Min: -3.7 [kph] at 0.027 [s]

Acc 2 Right Rear Sill Z Velocity



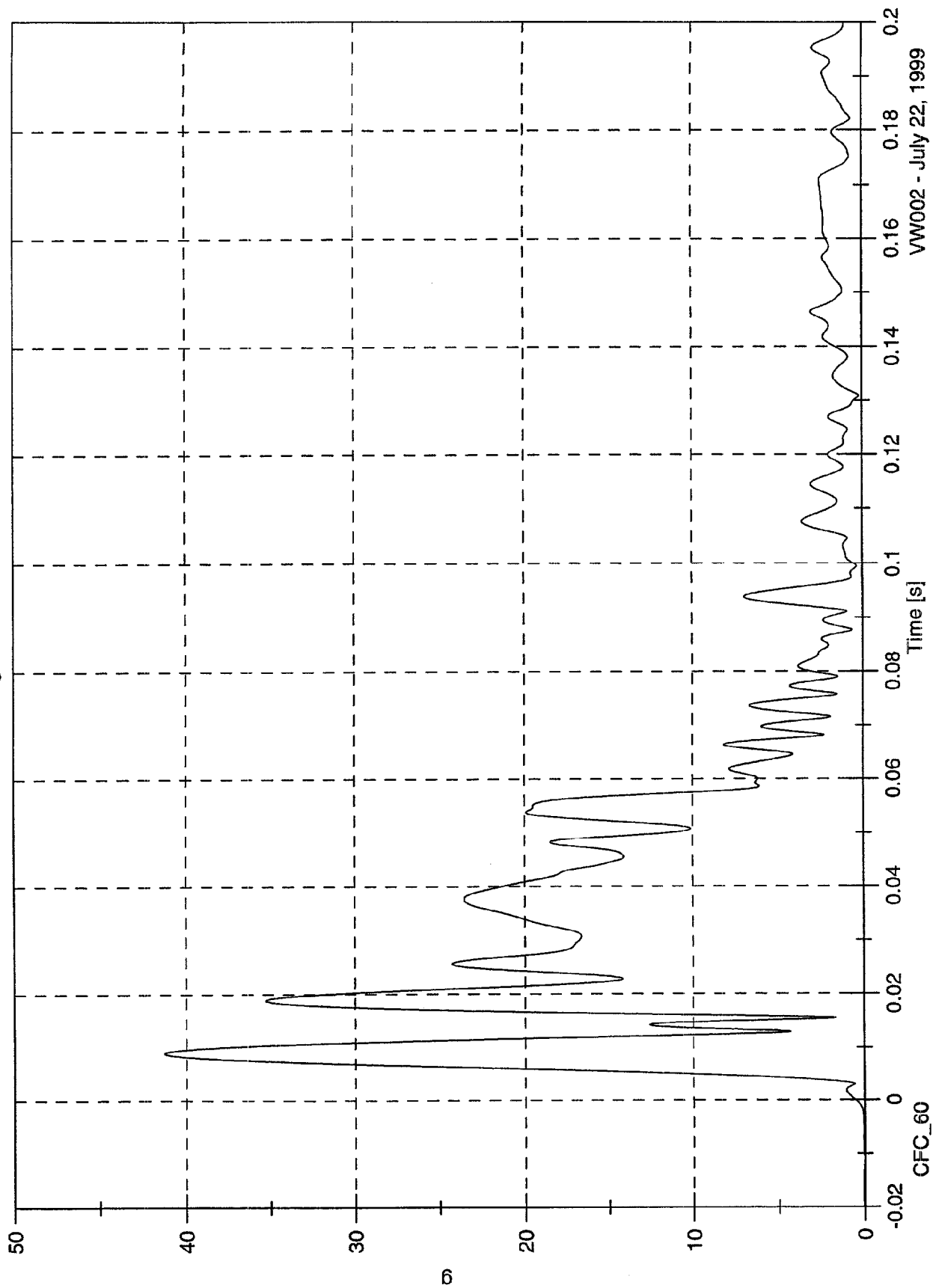
VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Max: 41.3 [g] at 0.009 [s]

Min: 0.0 [g] at -0.091 [s]

Acc 2 Right Rear Sill Resultant

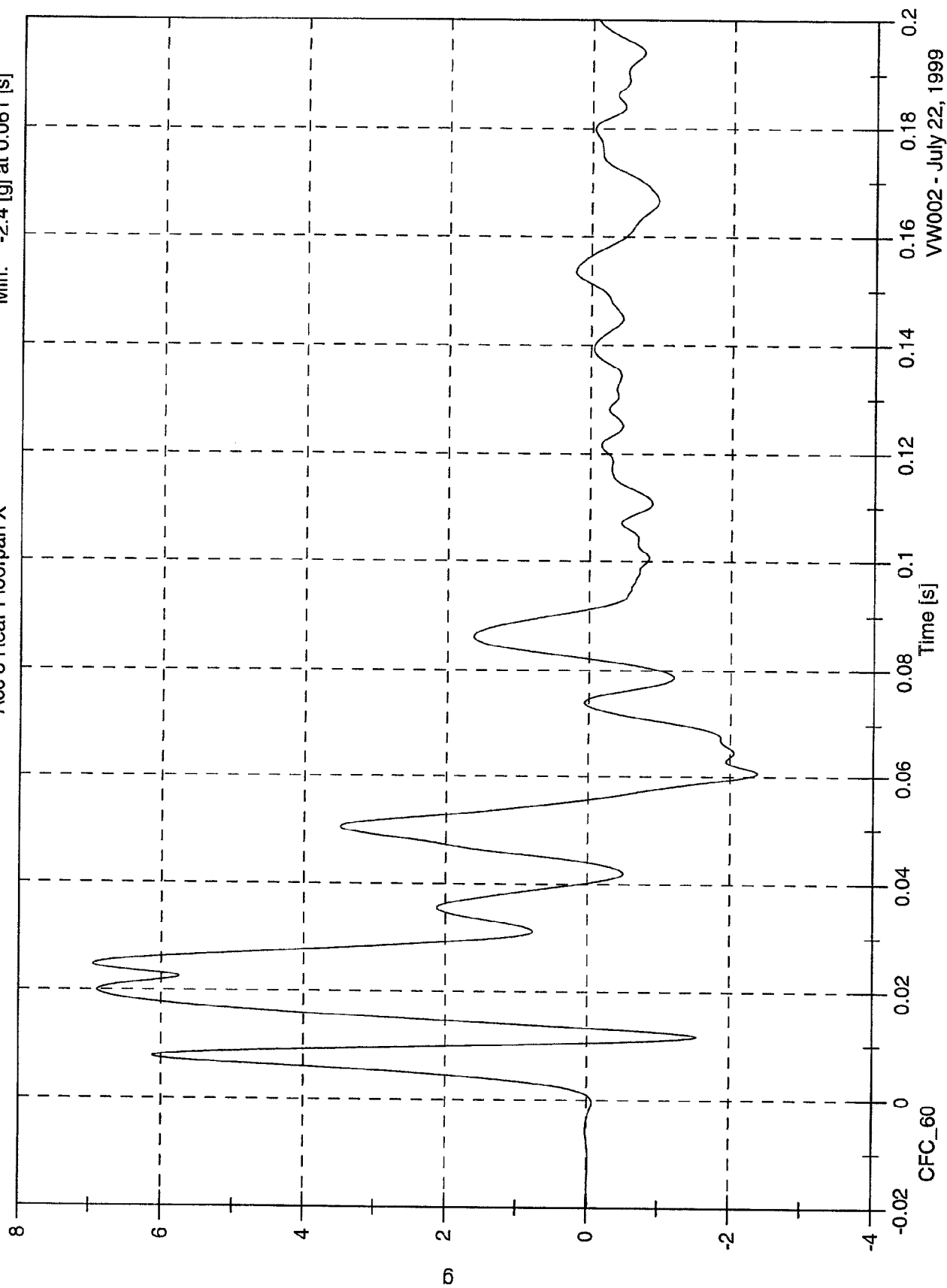


VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Acc 3 Rear Floorpan X

Max: 6.9 [g] at 0.025 [s]
Min: -2.4 [g] at 0.061 [s]

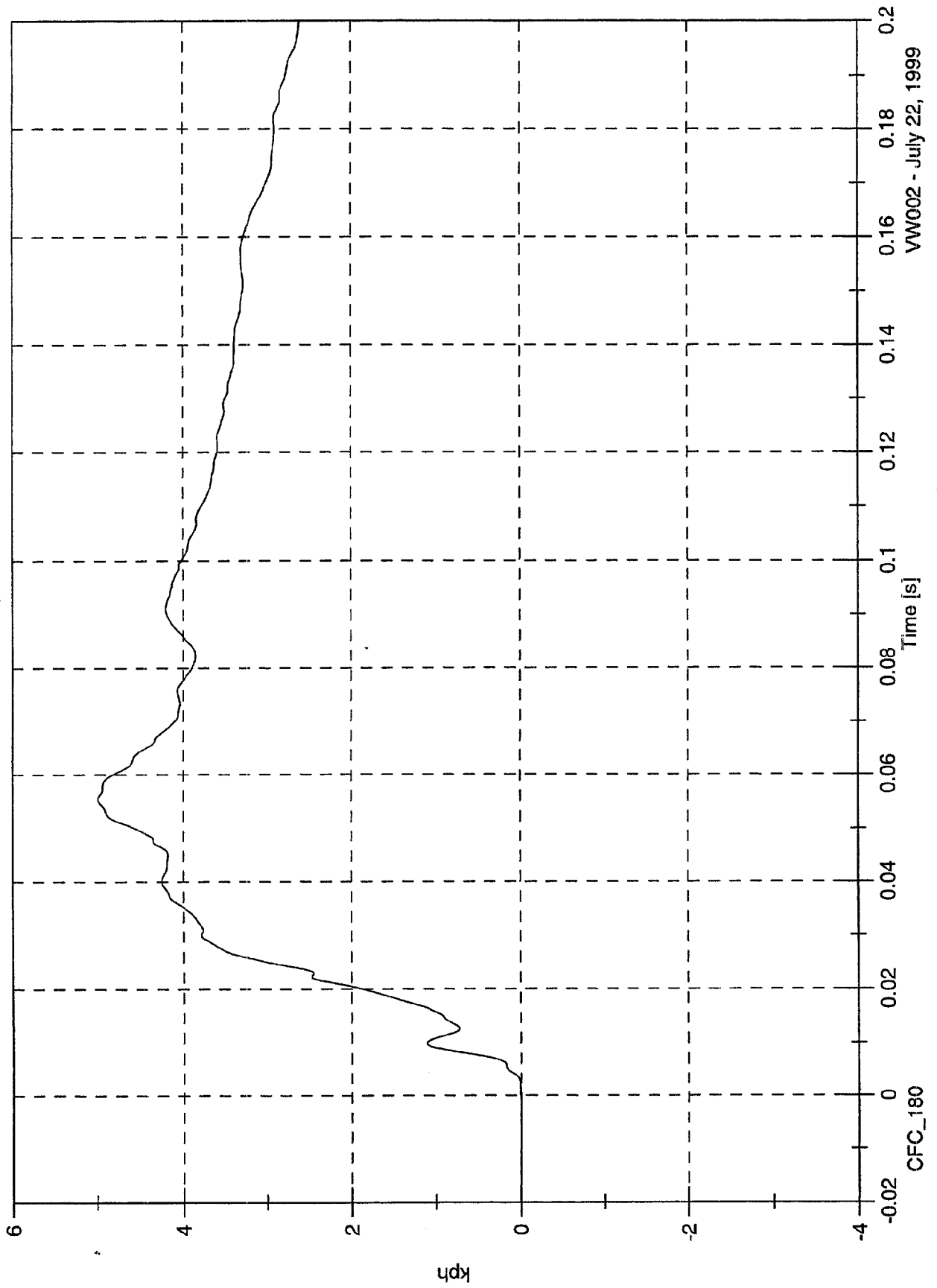


SNCAP Test#1 VW Beetle

Max: 5.0 [kph] at 0.055 [s]

Min: -3.5 [kph] at 0.500 [s]

Acc 3 Rear Floorpan X Velocity



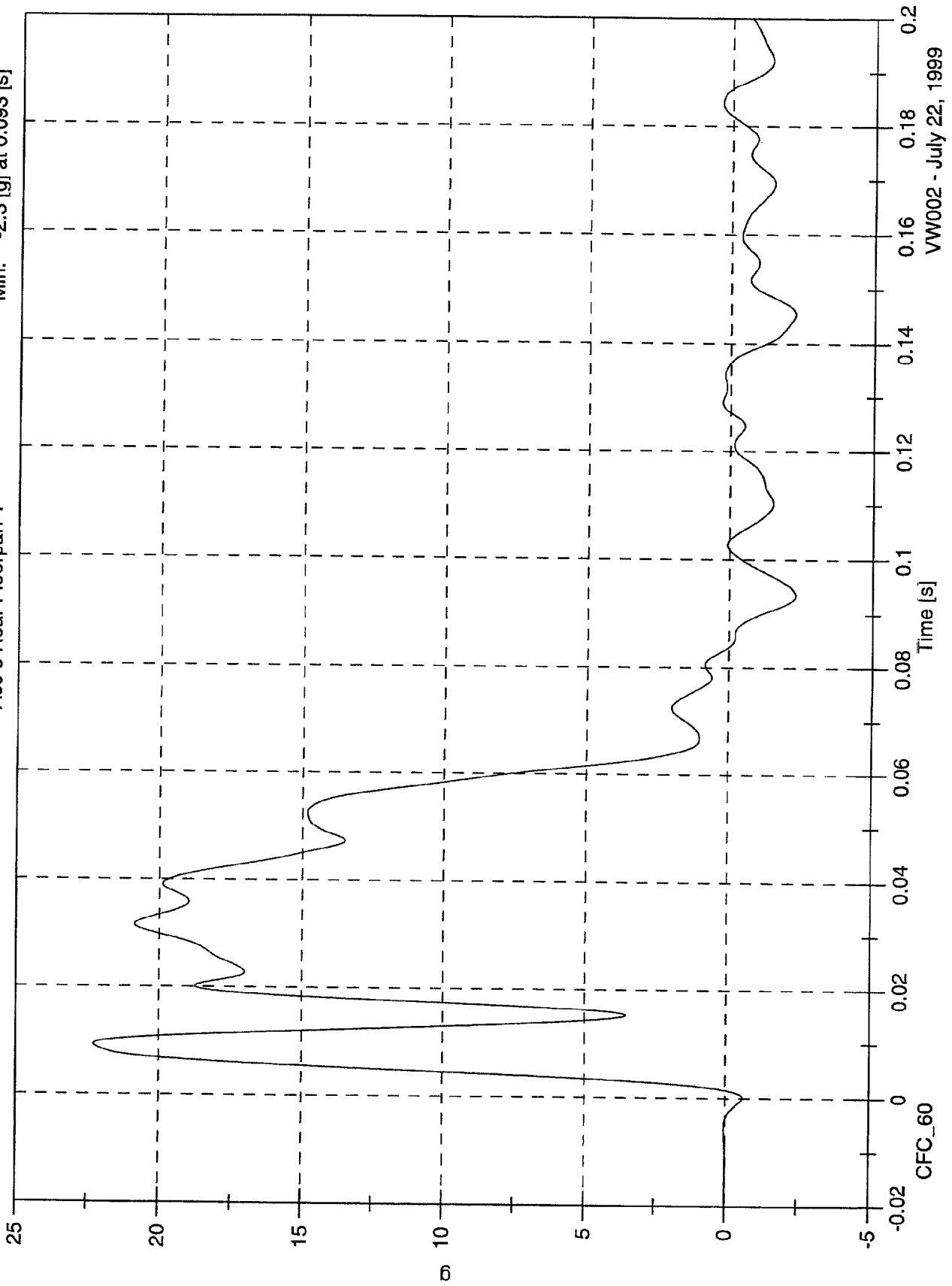
VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Max: 22.3 [g] at 0.009 [s]

Min: -2.3 [g] at 0.093 [s]

Acc 3 Rear Floorpan Y

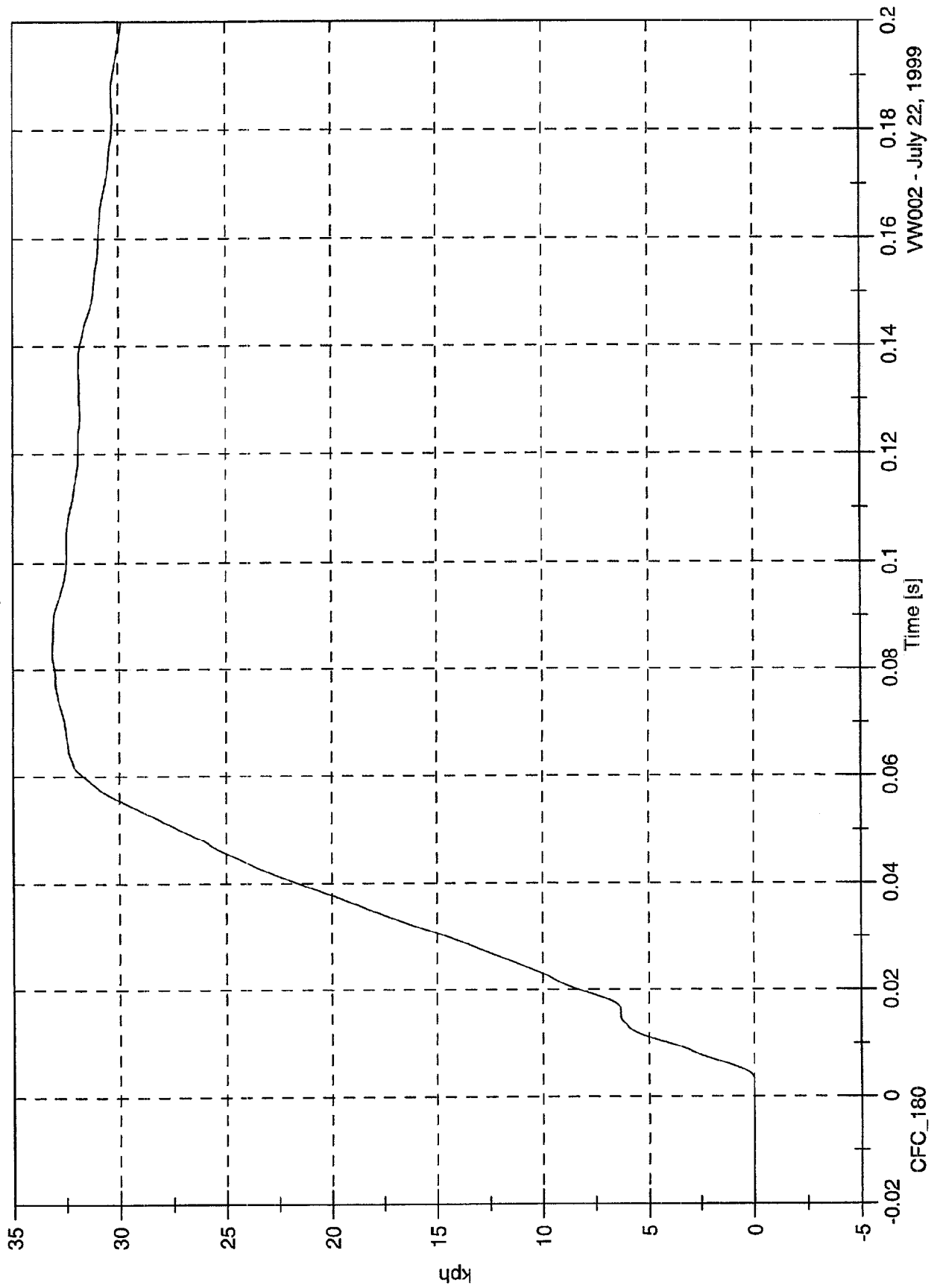


SNCAP Test#1 VW Beetle

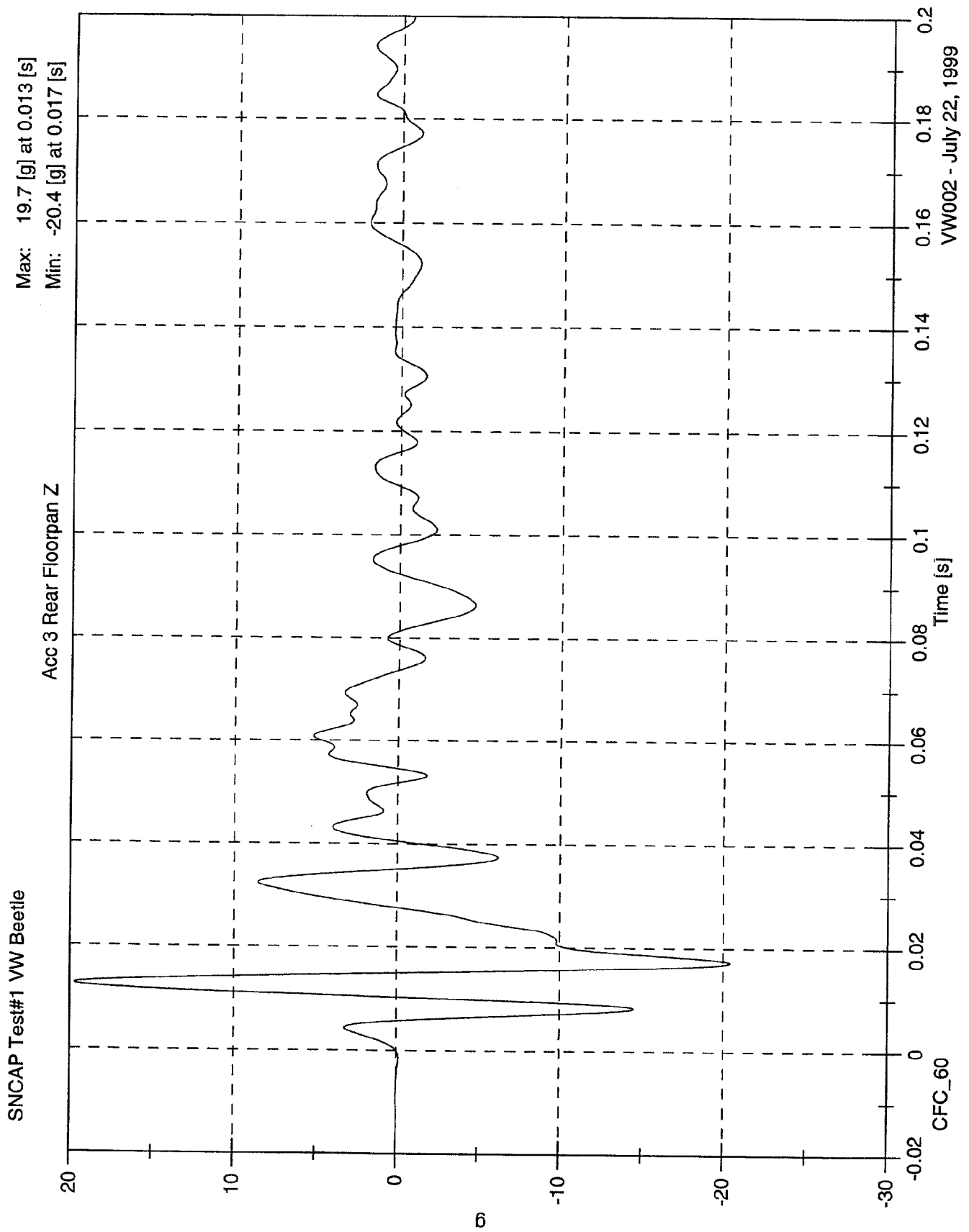
Max: 33.1 [kph] at 0.083 [s]

Min: -0.0 [kph] at -0.057 [s]

Acc 3 Rear Floorpan Y Velocity



VW002 - July 22, 1999

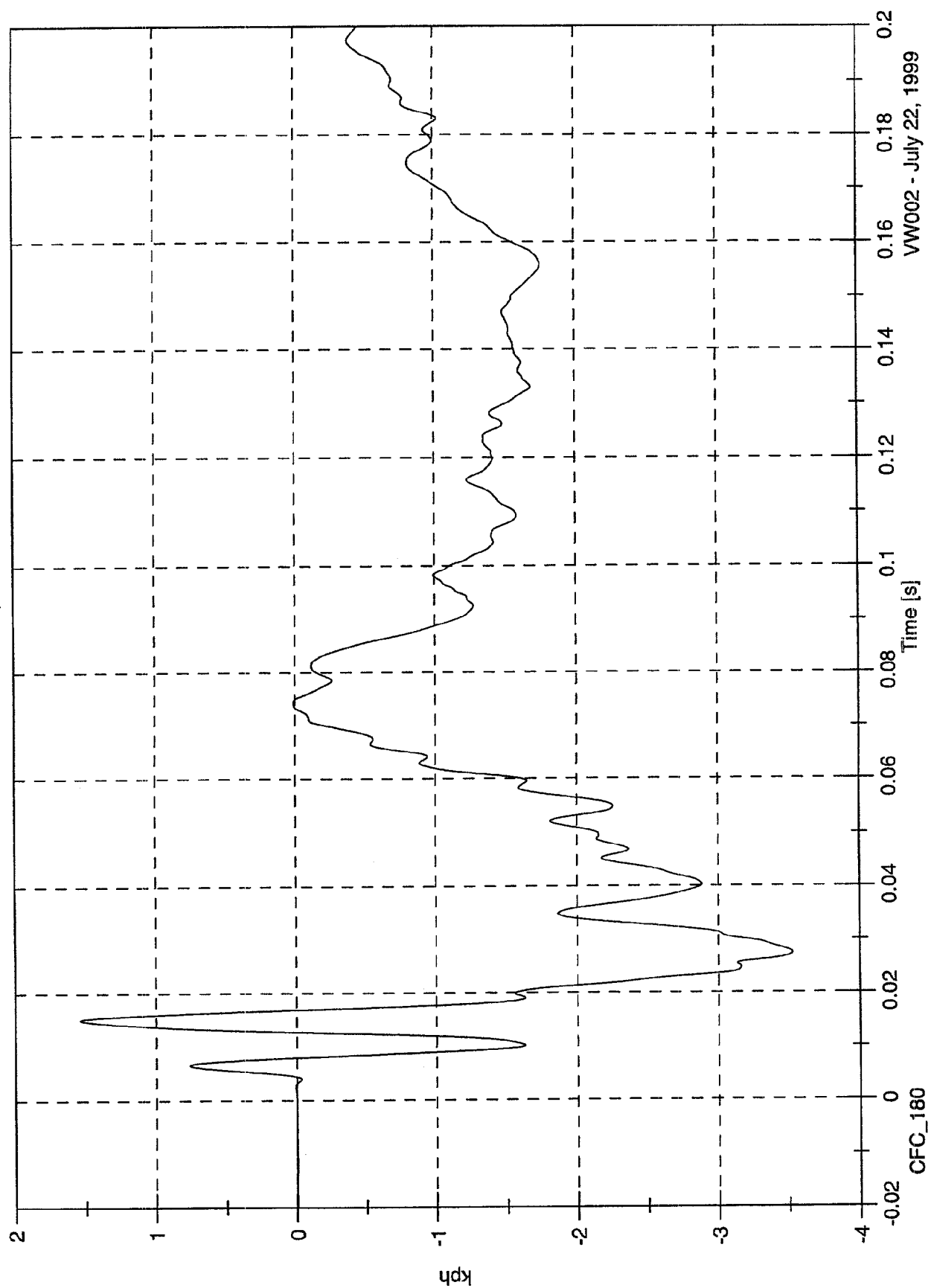


SNCAP Test#1 VW Beetle

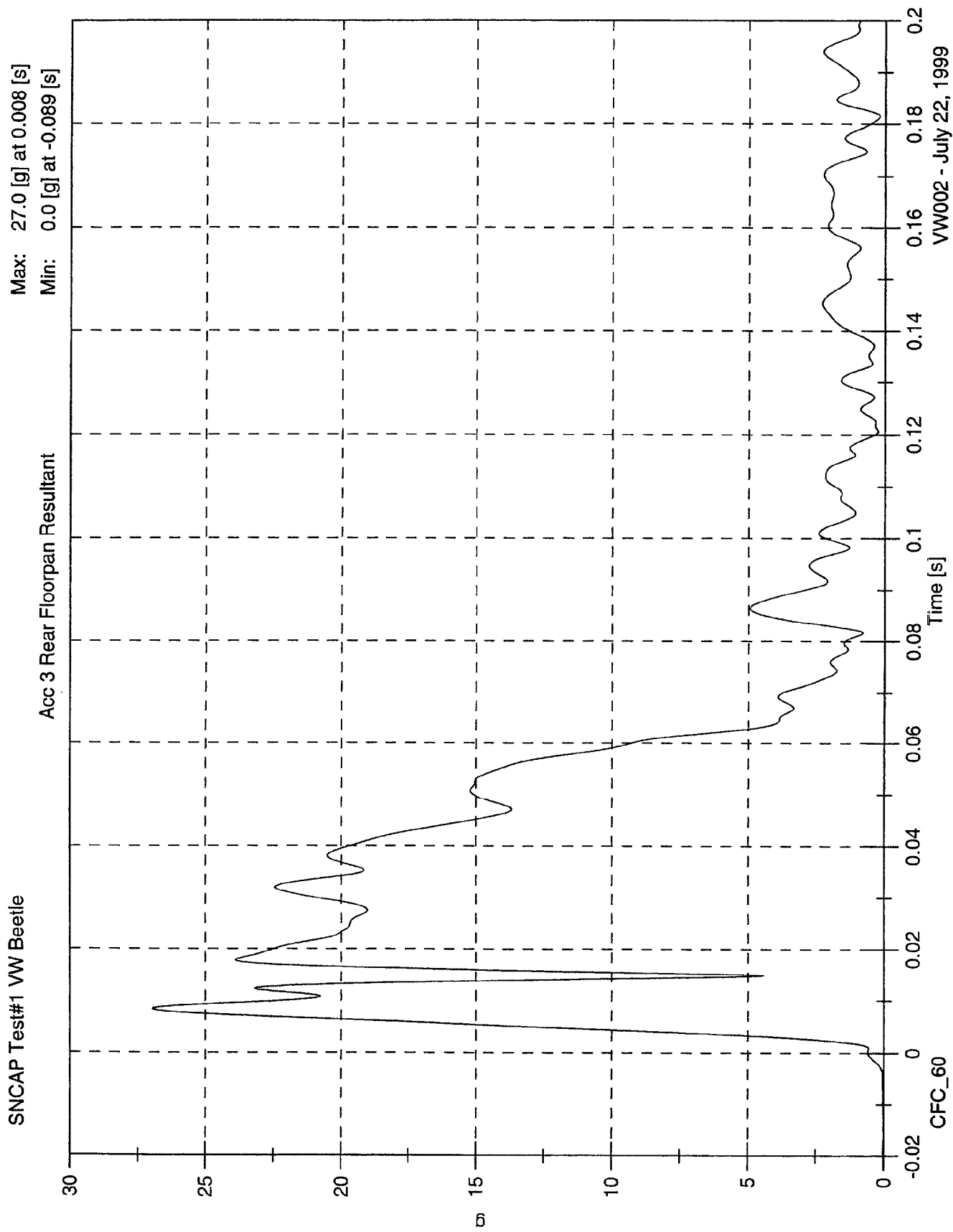
Max: 1.5 [kph] at 0.015 [s]

Min: -3.5 [kph] at 0.027 [s]

Acc 3 Rear Floorpan Z Velocity



VW002 - July 22, 1999

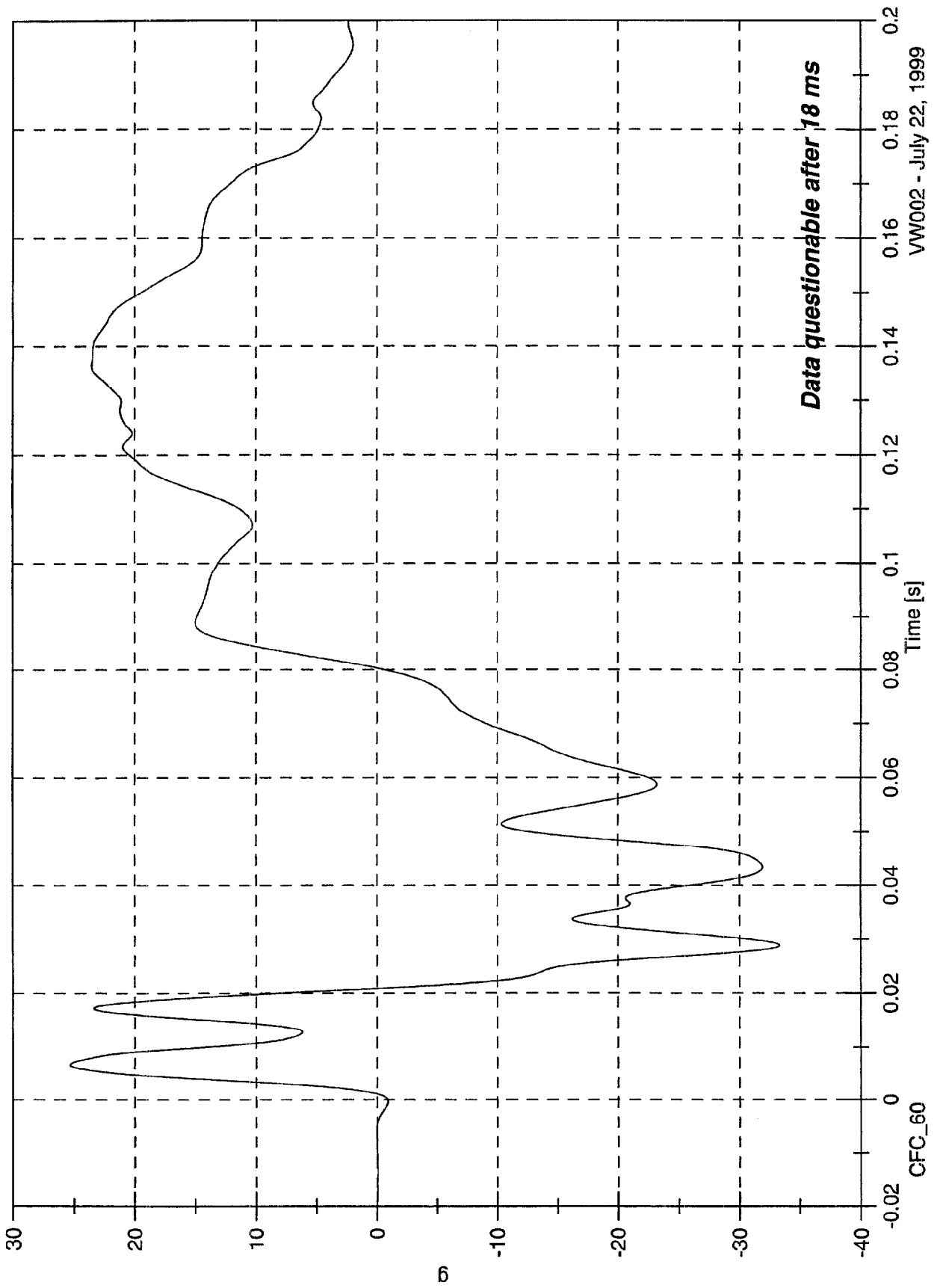


SNCAP Test#1 VW Beetle

Max: 25.3 [g] at 0.007 [s]

Min: -33.3 [g] at 0.029 [s]

Acc 4 Left Rear Sill Y



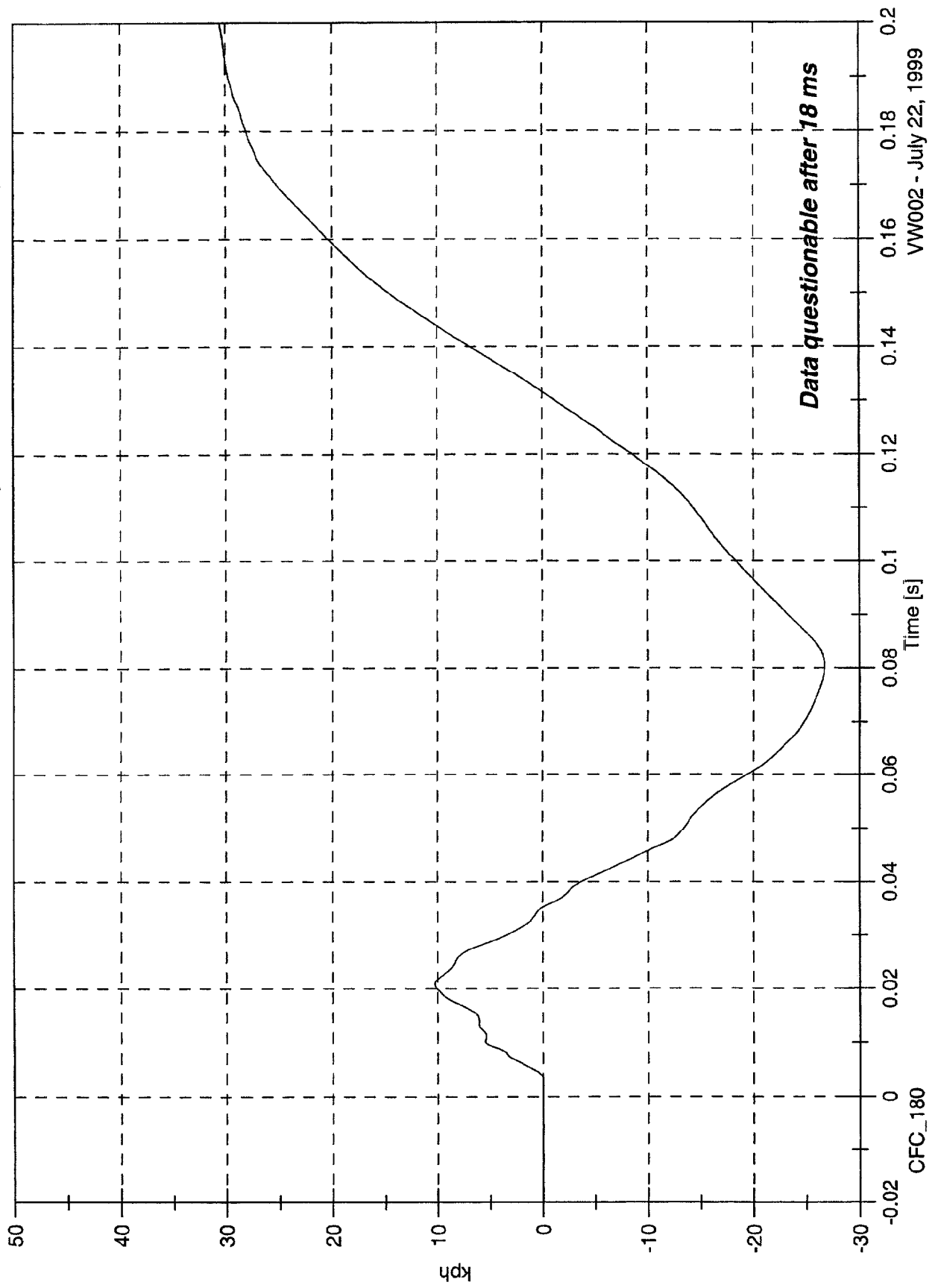
Data questionable after 18 ms

VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Max: 43.0 [kph] at 0.285 [s]
Min: -26.7 [kph] at 0.081 [s]

Acc 4 Left Rear Sill Y Velocity



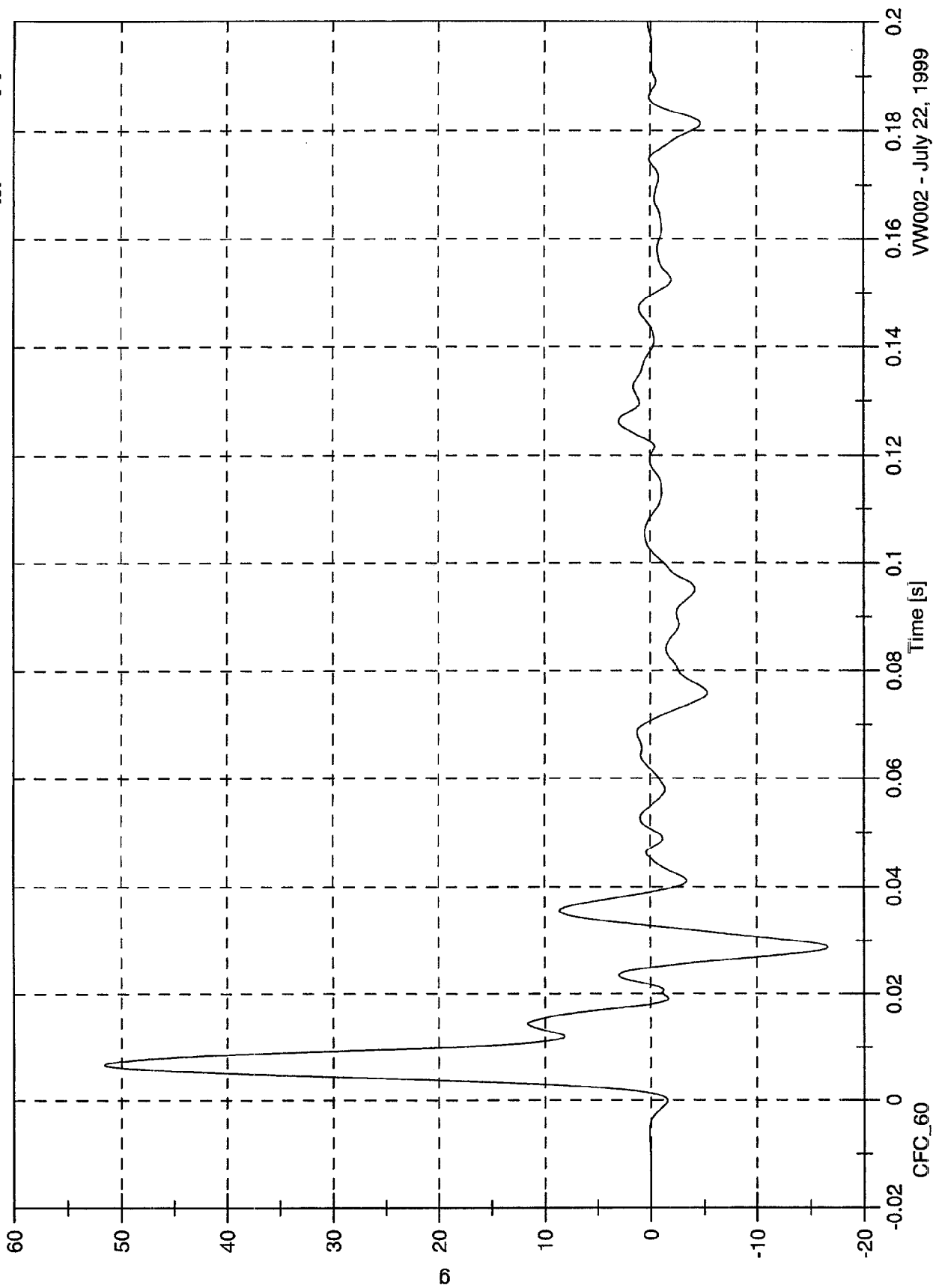
Data questionable after 18 ms

VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Max: 51.6 [g] at 0.007 [s]
 Min: -16.6 [g] at 0.029 [s]

Acc 5 Left Front Sill Y



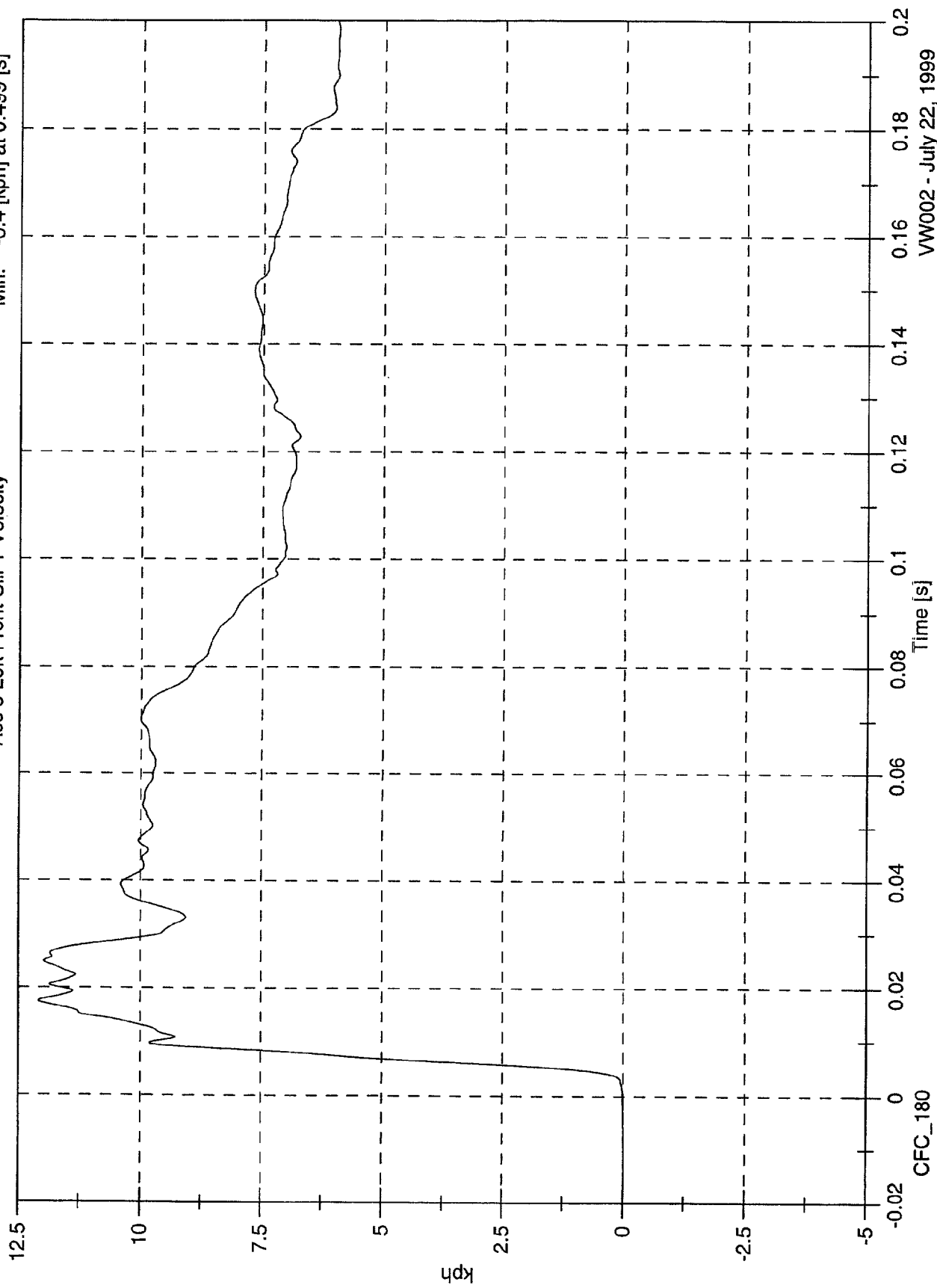
VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Max: 12.1 [kph] at 0.018 [s]

Min: -3.4 [kph] at 0.499 [s]

Acc 5 Left Front Sill Y Velocity

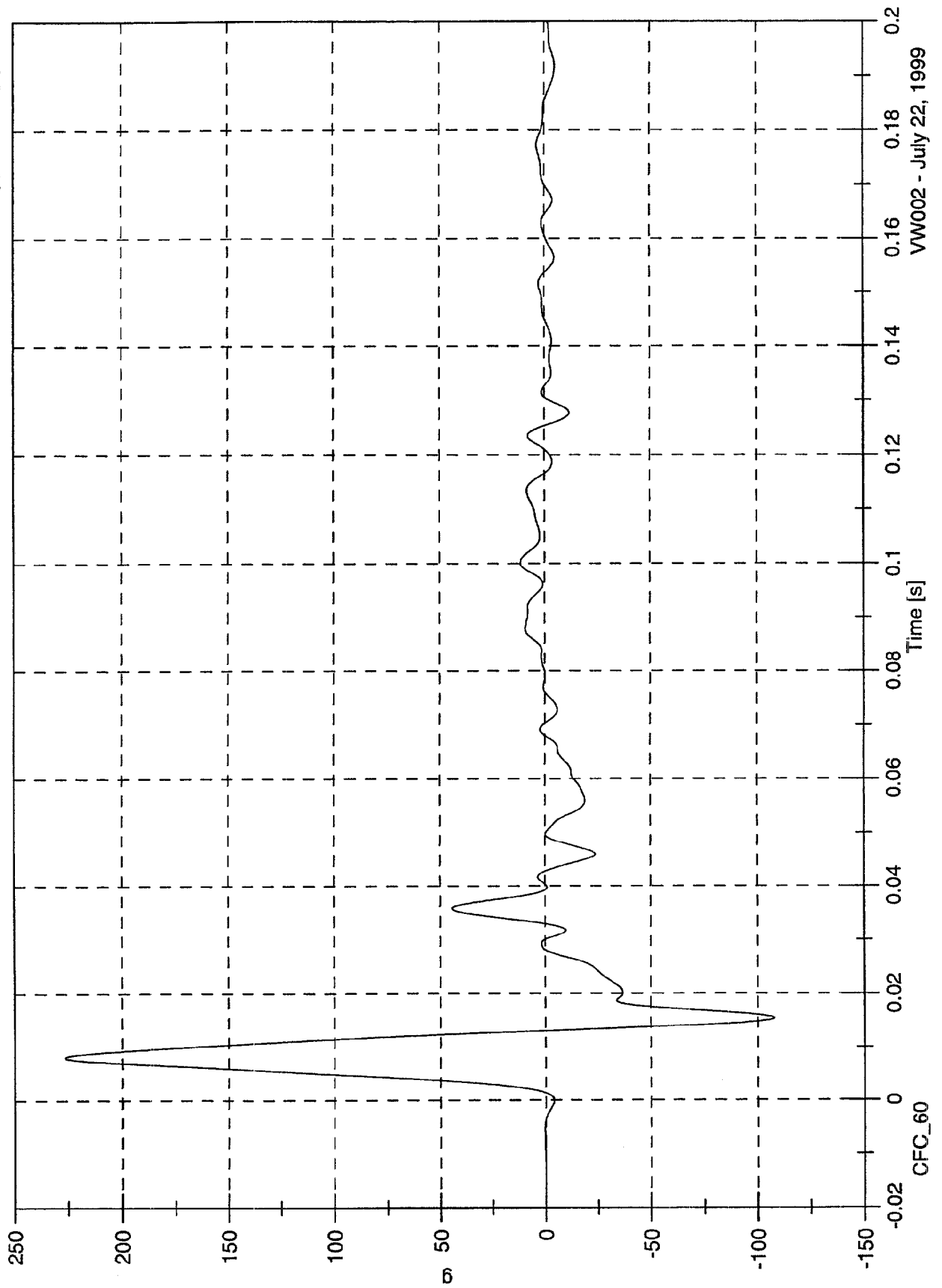


VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Max: 226.5 [g] at 0.008 [s]
Min: -107.8 [g] at 0.016 [s]

Acc 6 Left Front Door C/L Y



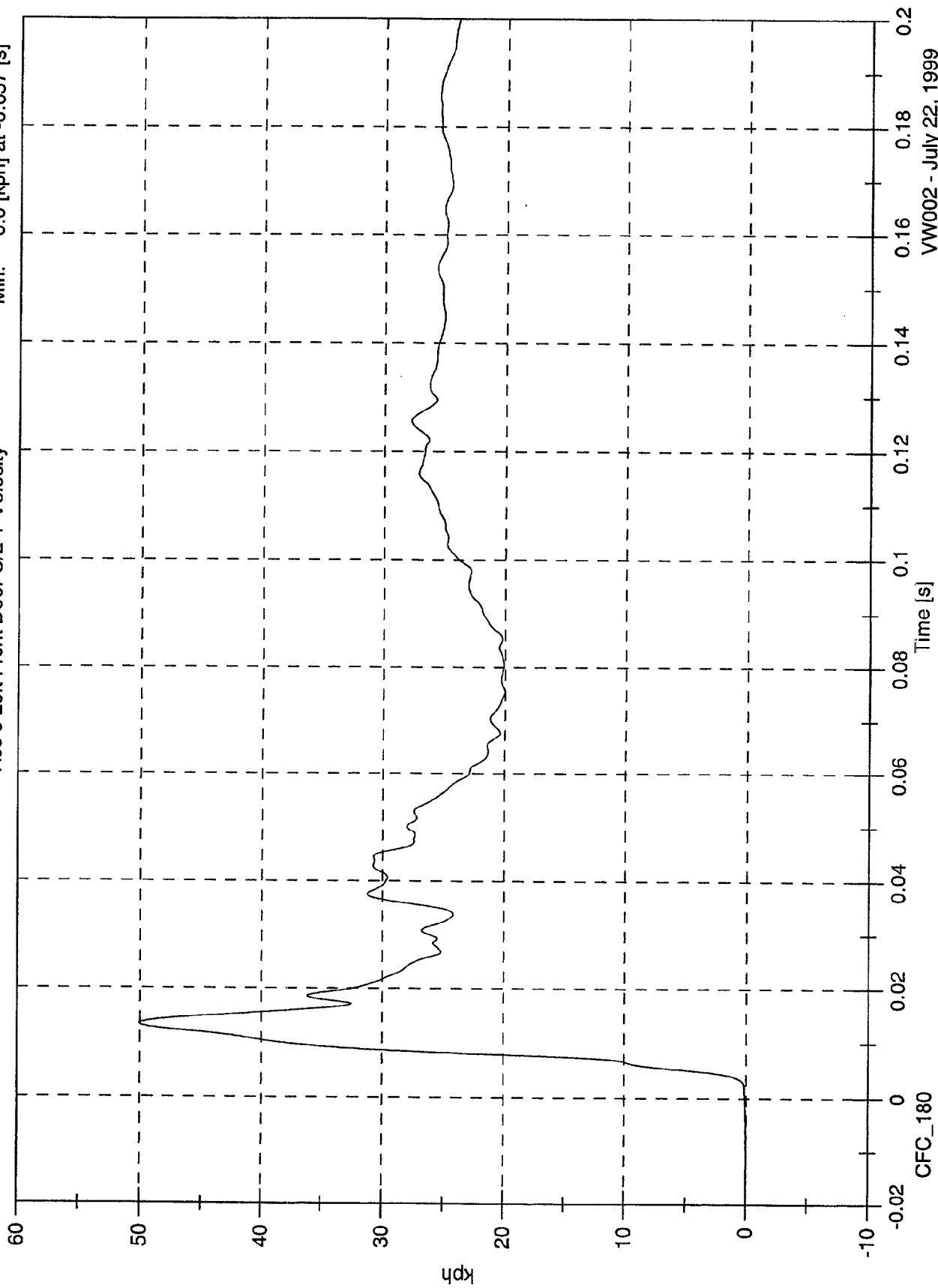
VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Max: 50.0 [kph] at 0.013 [s]

Min: -0.0 [kph] at -0.037 [s]

Acc 6 Left Front Door C/L Y Velocity



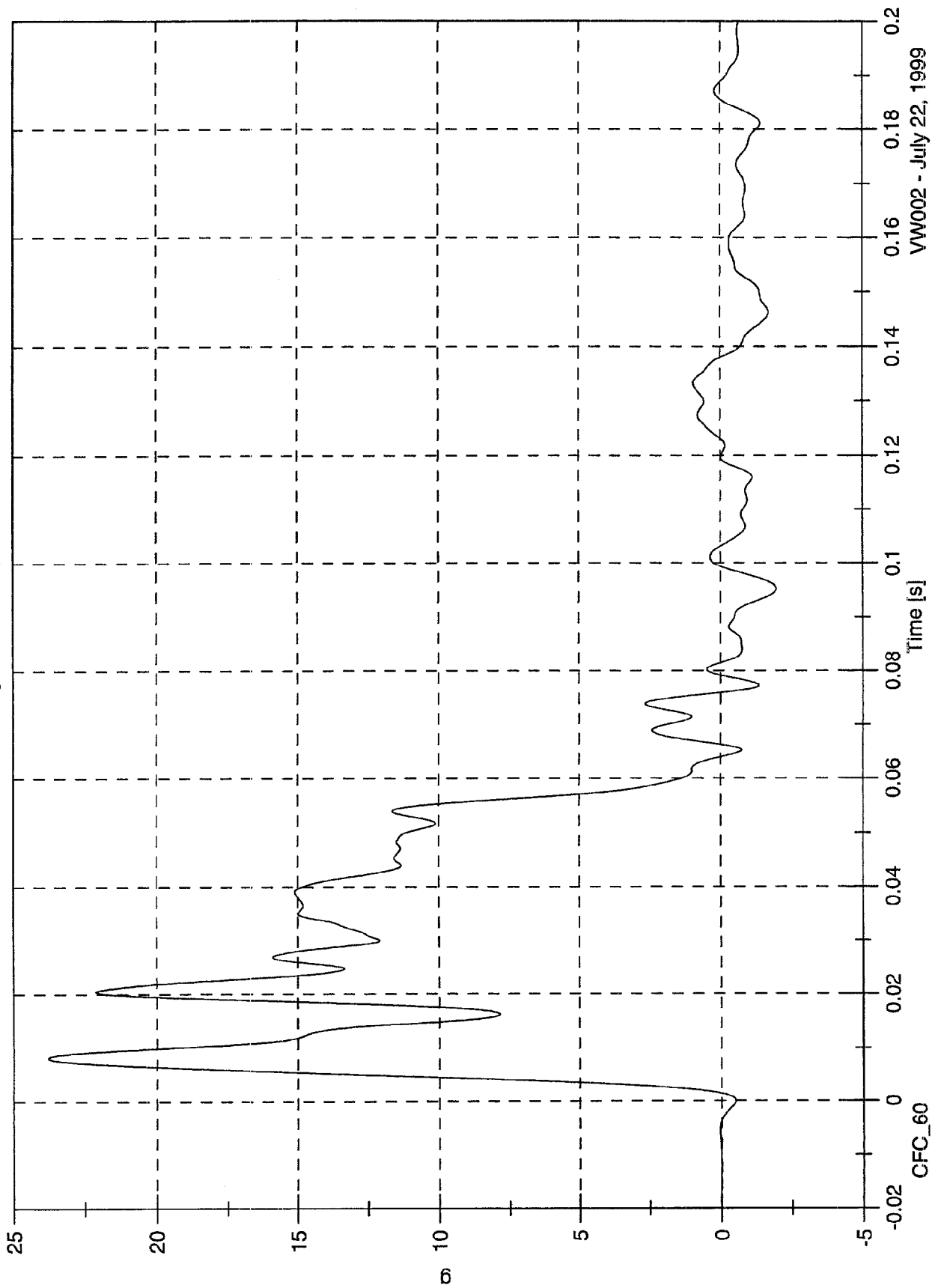
VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Max: 23.8 [g] at 0.008 [s]

Min: -2.0 [g] at 0.095 [s]

Acc 7 Right Rear Compartment Y



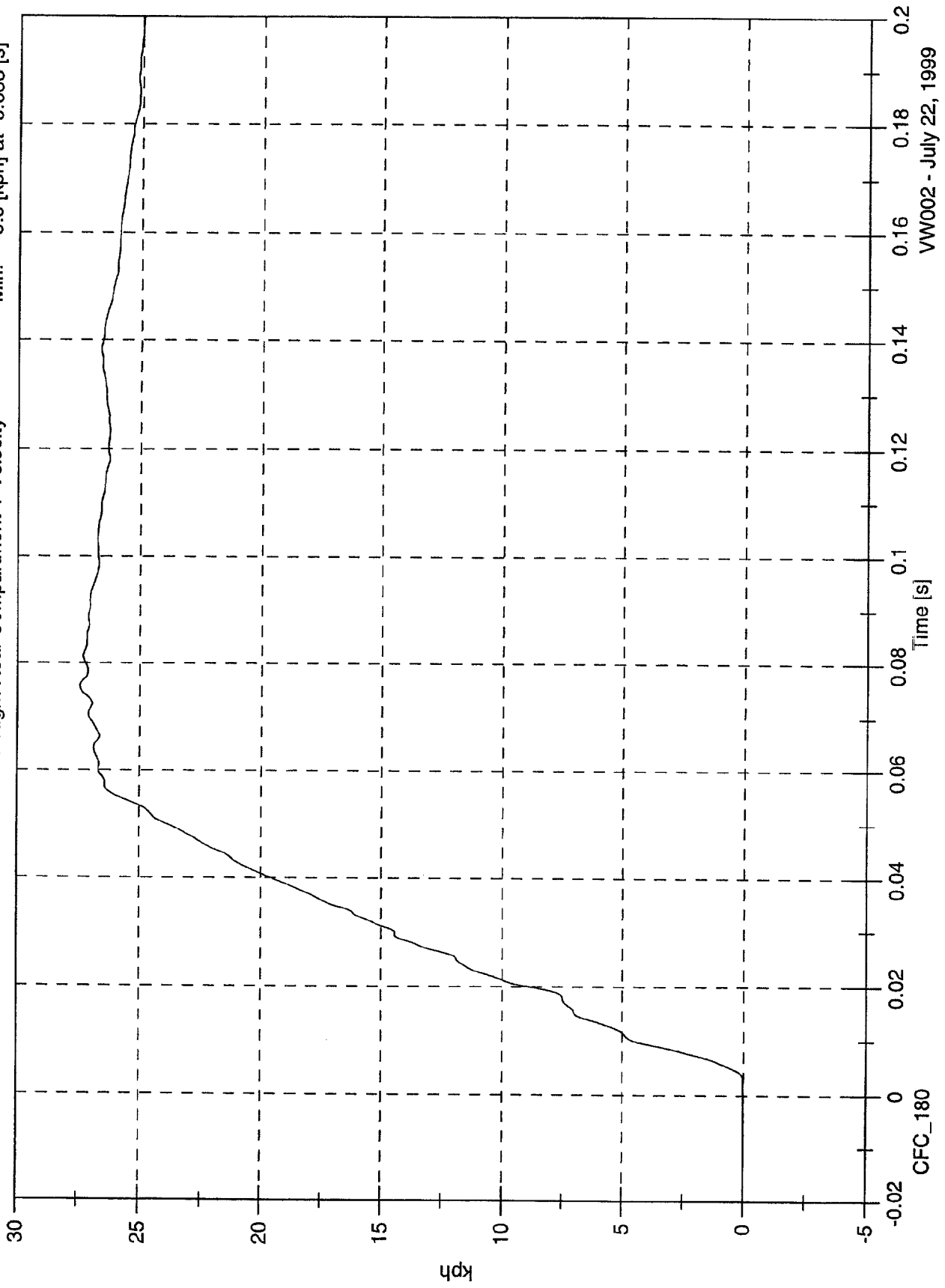
VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Max: 27.4 [kph] at 0.076 [s]

Min: -0.0 [kph] at -0.063 [s]

Acc 7 Right Rear Compartment Y Velocity



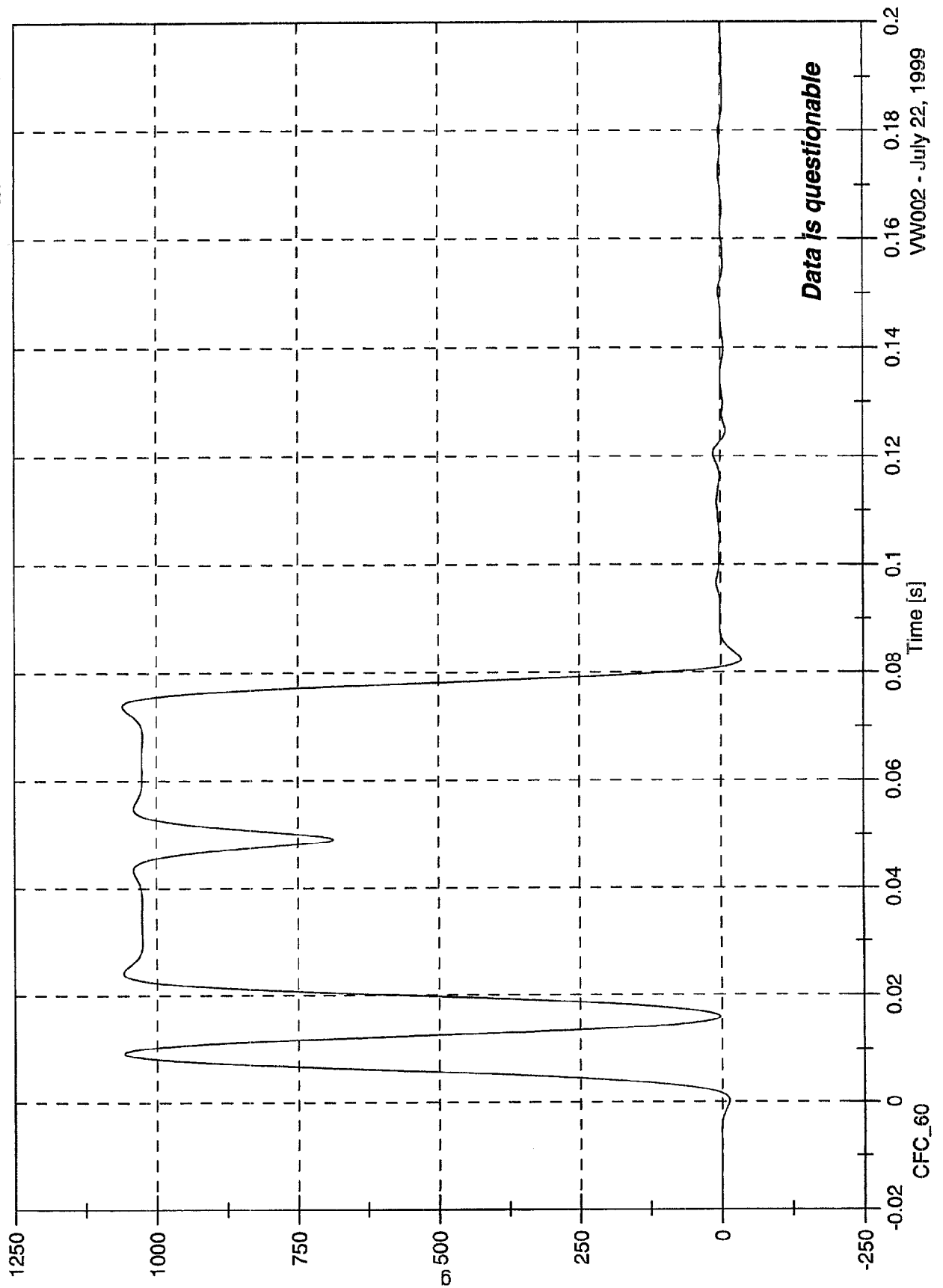
VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Acc 8 Left Front Door Midrear Y

Max: 1060.1 [g] at 0.074 [s]

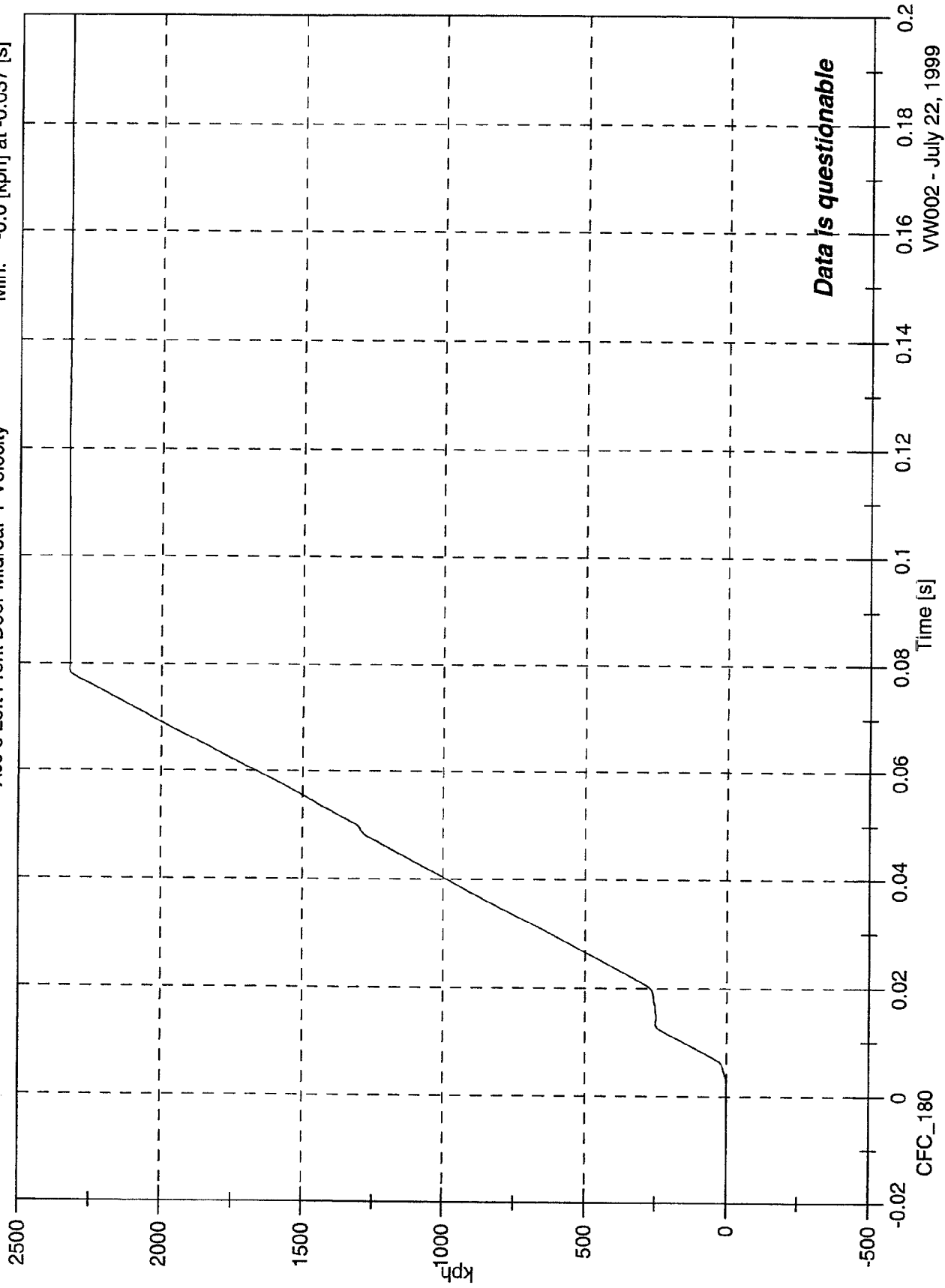
Min: -35.5 [g] at 0.082 [s]



SNCAP Test#1 VW Beetle

Max: 2328.8 [kph] at 0.123 [s]
Min: -0.0 [kph] at -0.037 [s]

Acc 8 Left Front Door Midrear Y Velocity

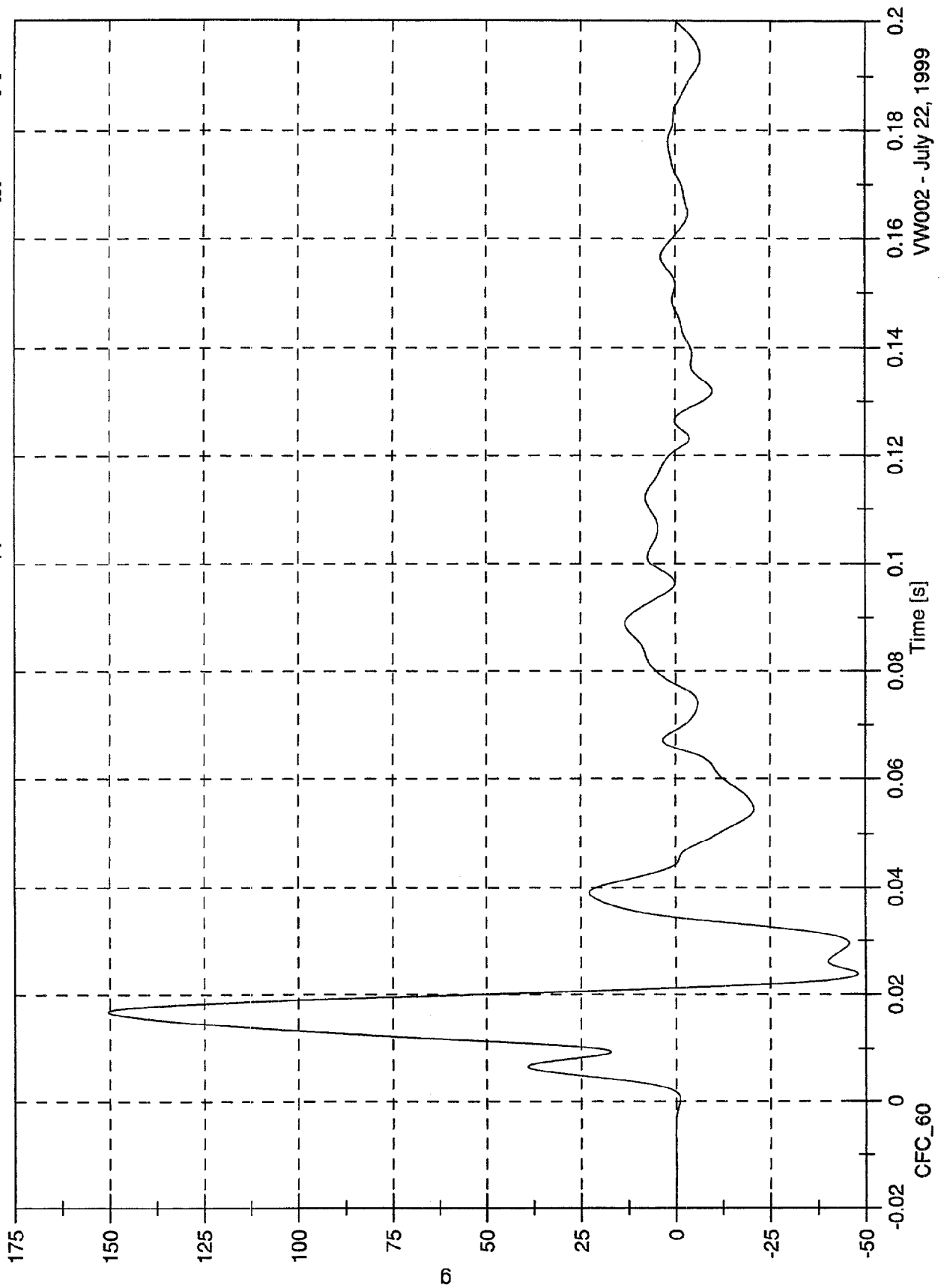


SNCAP Test#1 VW Beetle

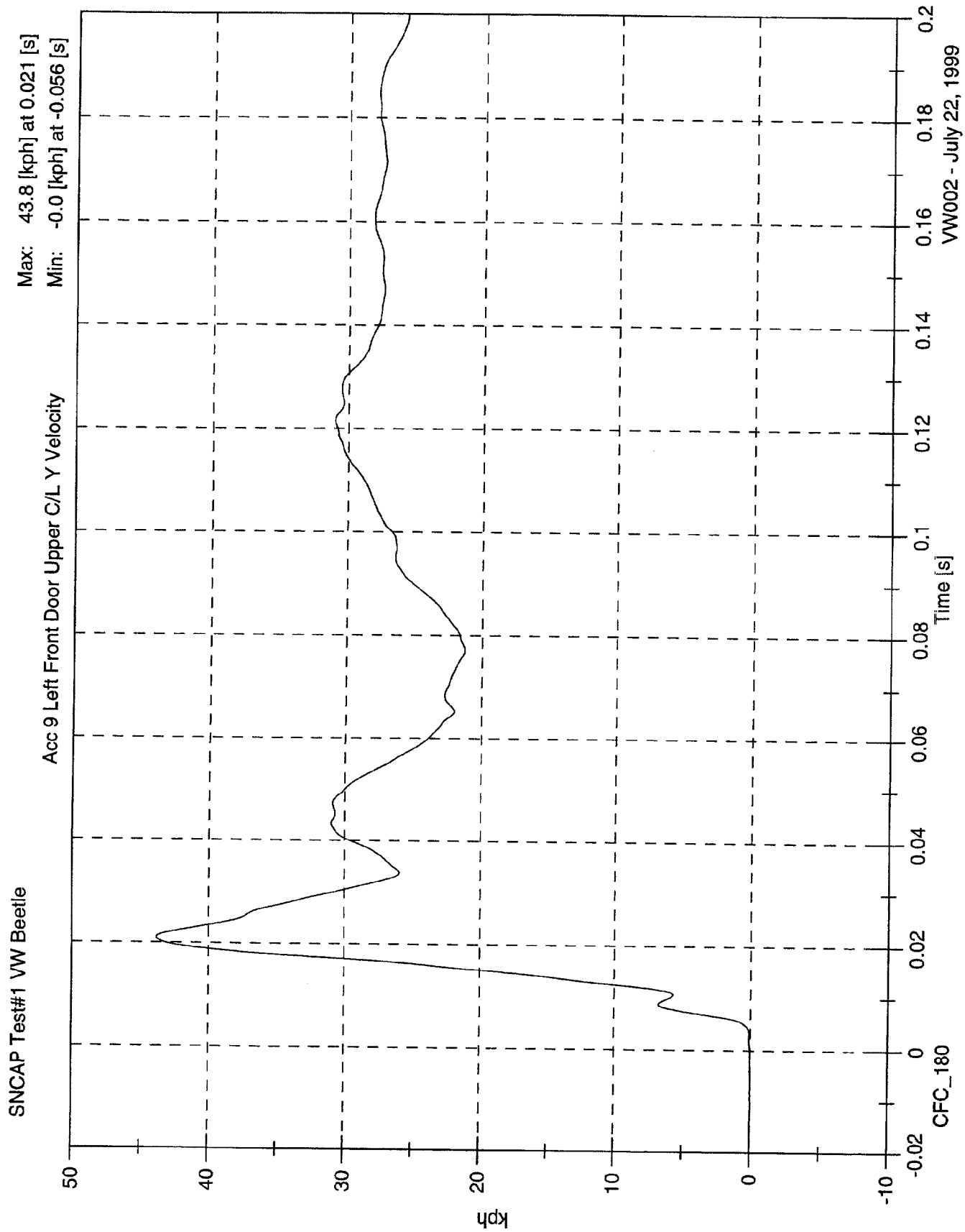
Max: 150.5 [g] at 0.017 [s]

Min: -47.8 [g] at 0.024 [s]

Acc 9 Left Front Door Upper C/L Y



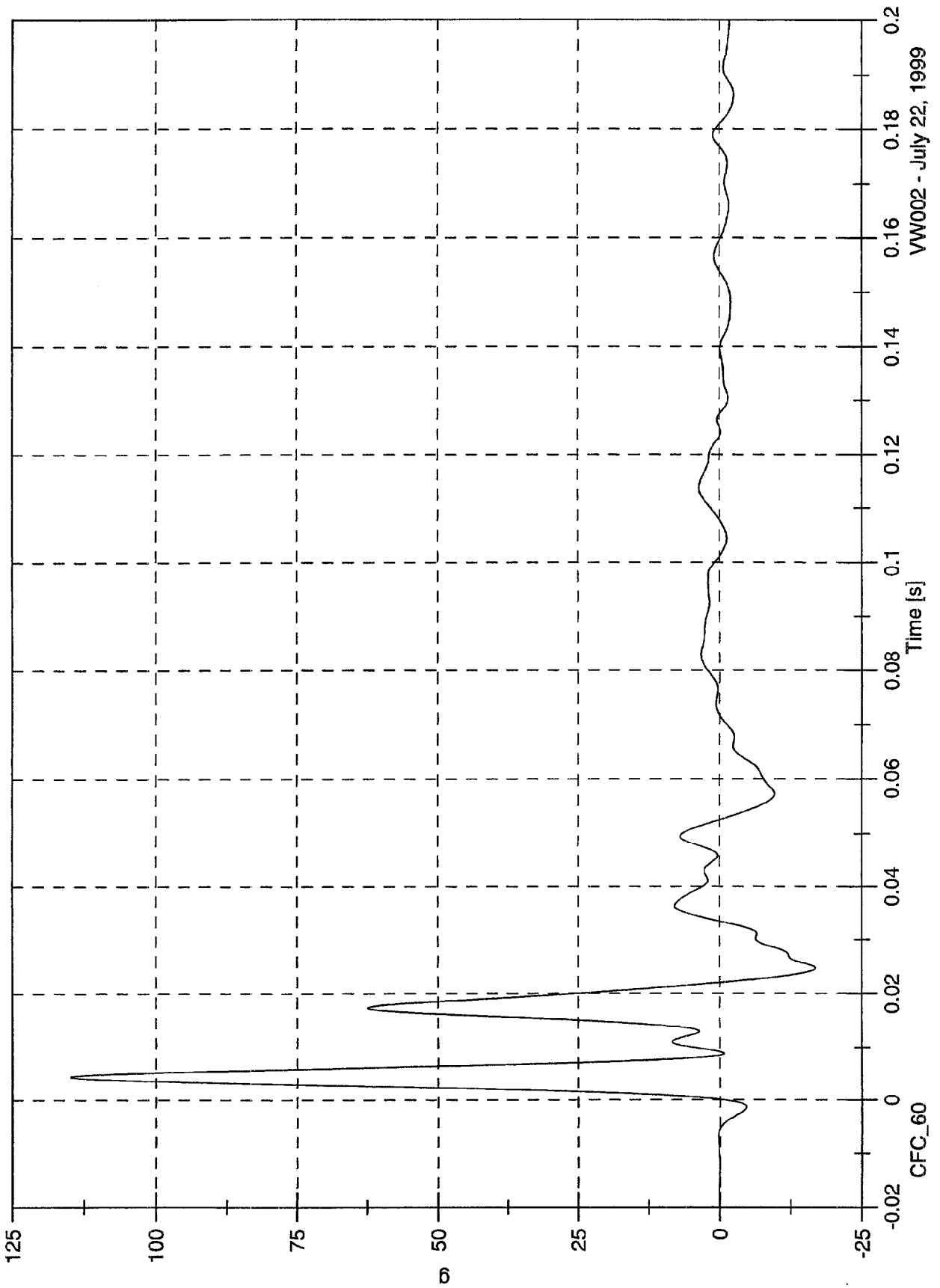
VW002 - July 22, 1999



SNCAP Test#1 VW Beetle

Max: 114.9 [g] at 0.005 [s]
Min: -16.9 [g] at 0.025 [s]

Acc 10 Left Rear Door Midrear Y

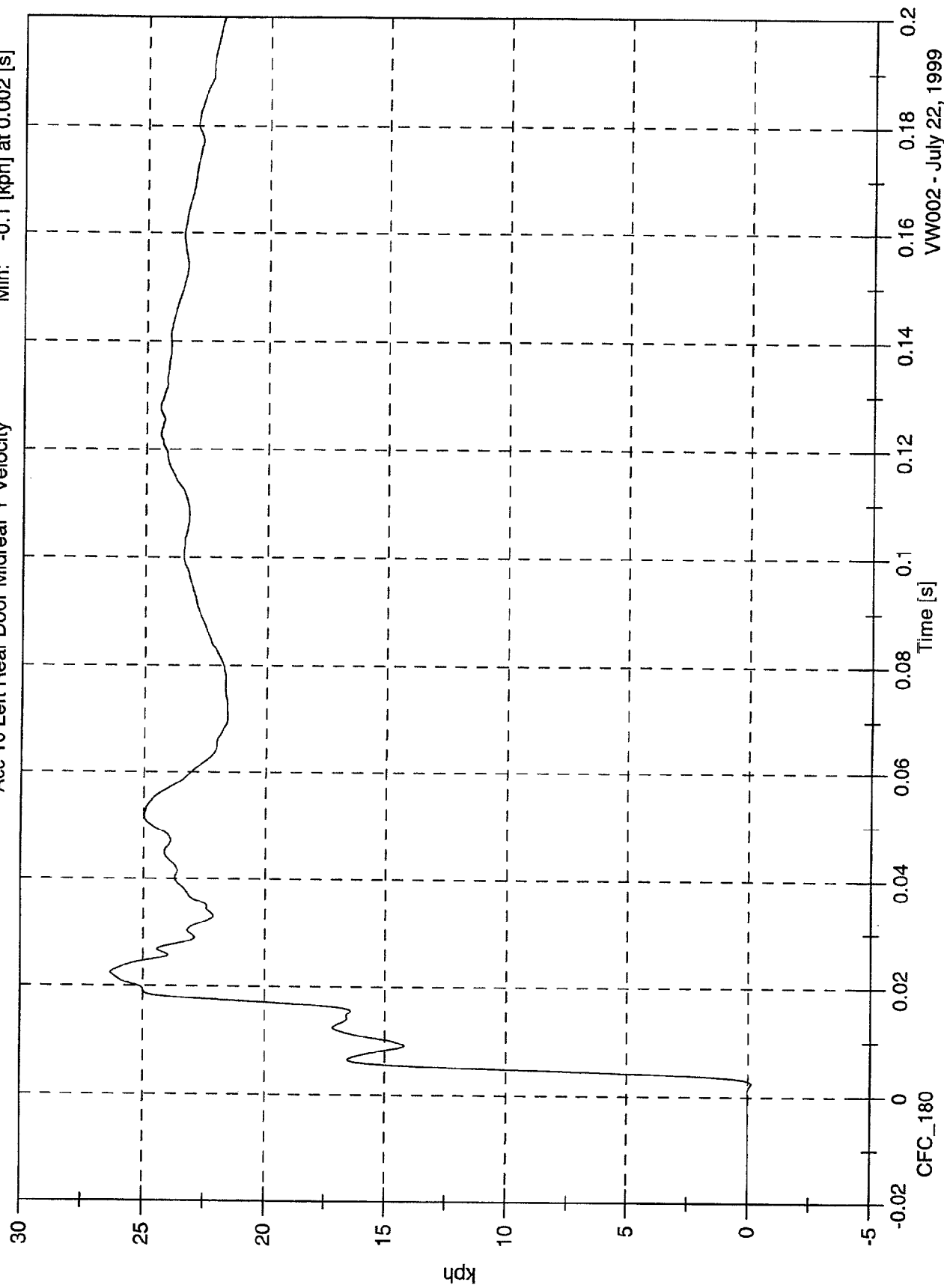


SNCAP Test#1 VW Beetle

Max: 26.3 [kph] at 0.022 [s]

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

Acc 10 Left Rear Door Midrear Y Velocity



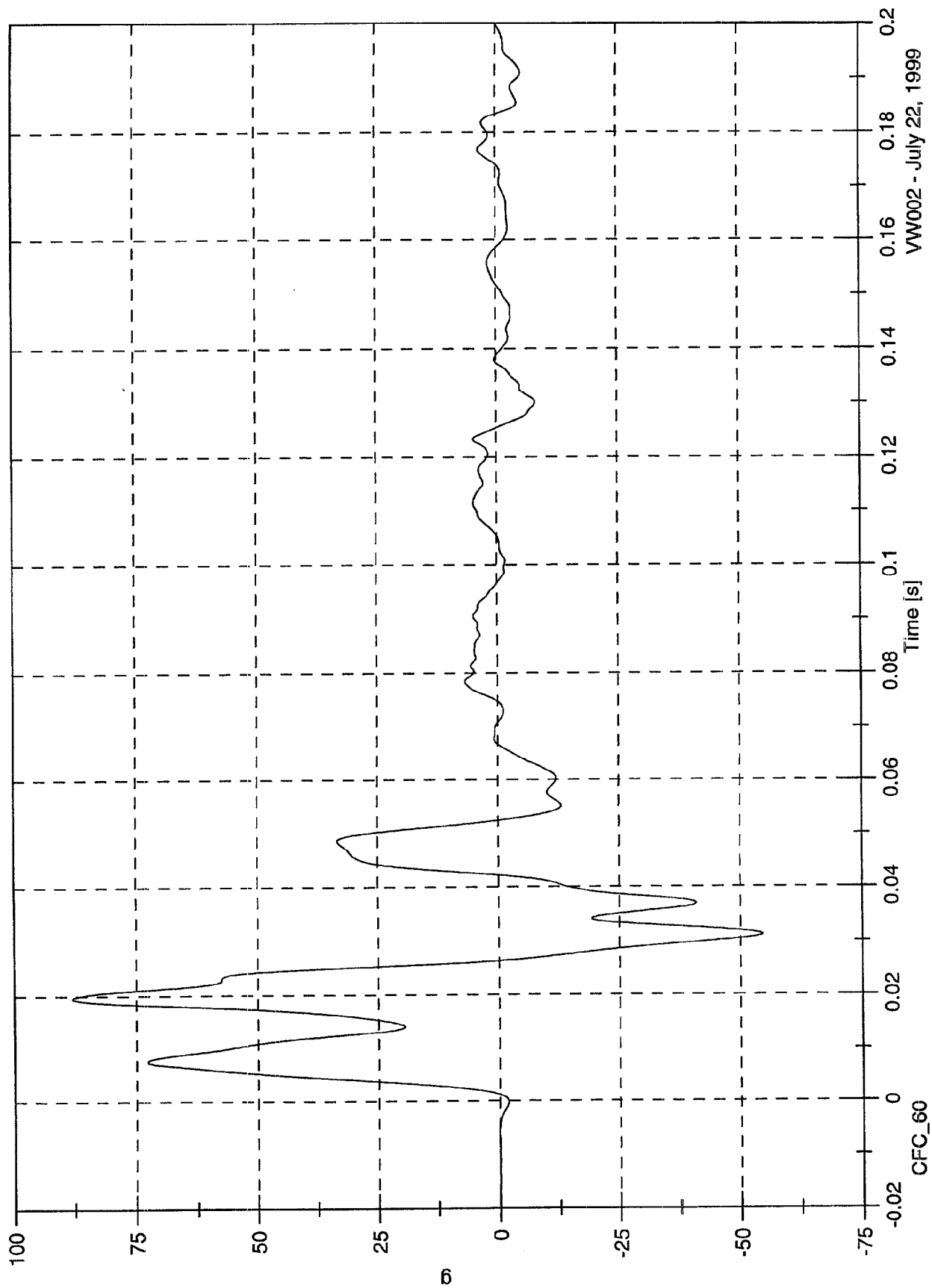
VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Max: 88.1 [g] at 0.020 [s]

Min: -54.6 [g] at 0.031 [s]

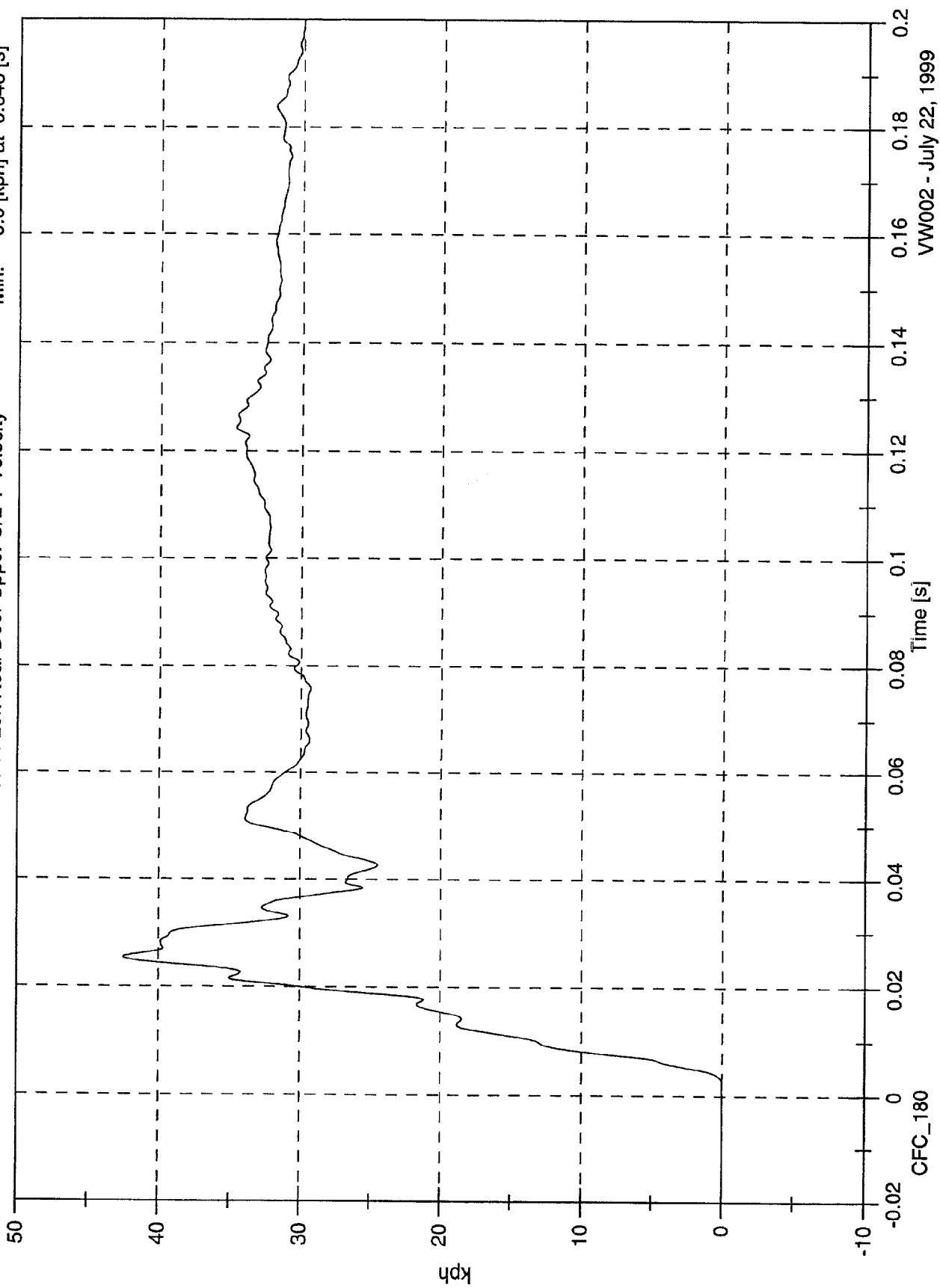
Acc 11 Left Rear Door Upper C/L Y



SNCAP Test#1 VW Beetle

Acc 11 Left Rear Door Upper C/L Y Velocity

Max: 42.5 [kph] at 0.025 [s]
Min: -0.0 [kph] at -0.046 [s]

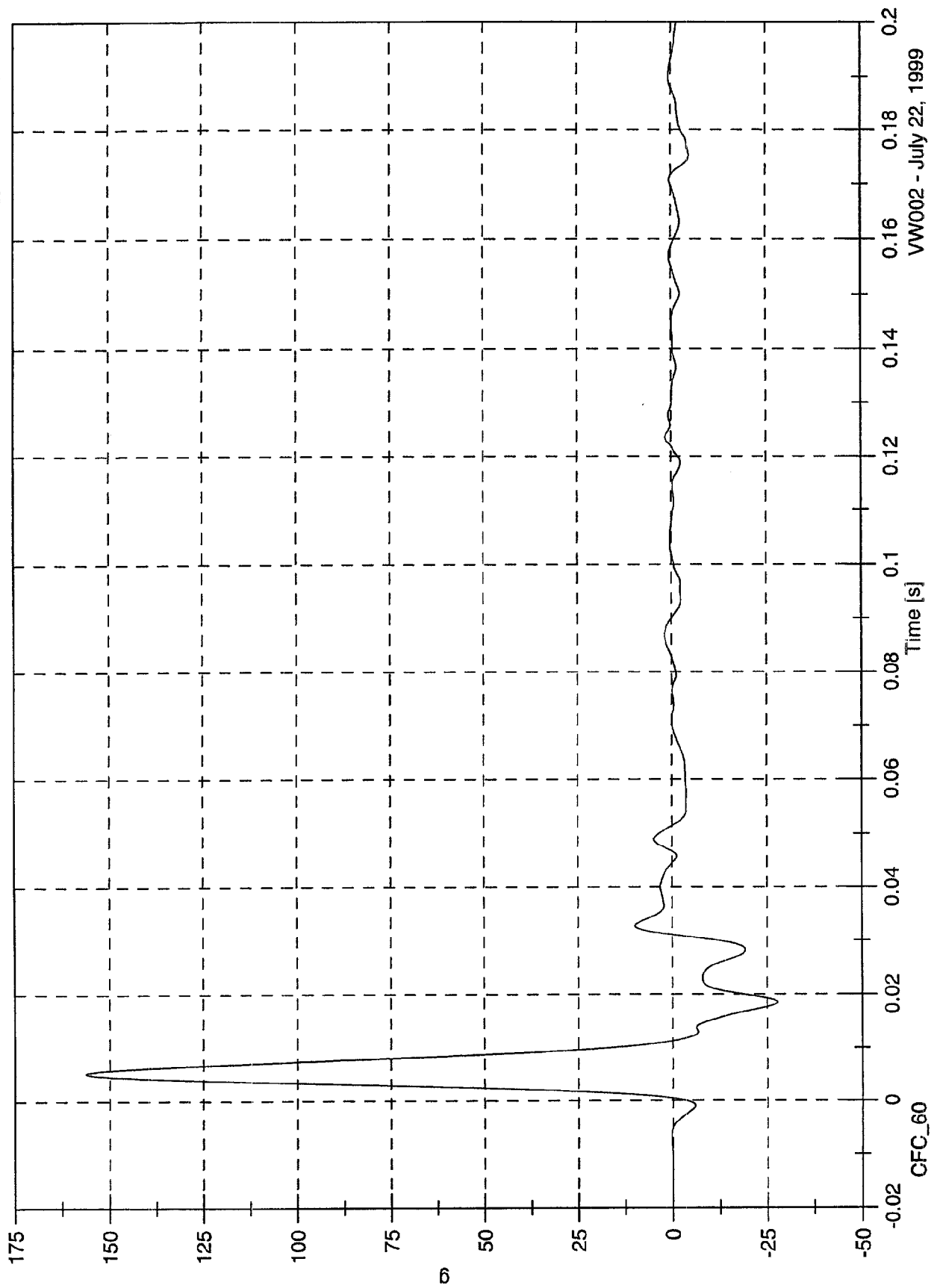


VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Max: 156.4 [g] at 0.005 [s]
Min: -27.7 [g] at 0.019 [s]

Acc 12 Left Lower B Post Y



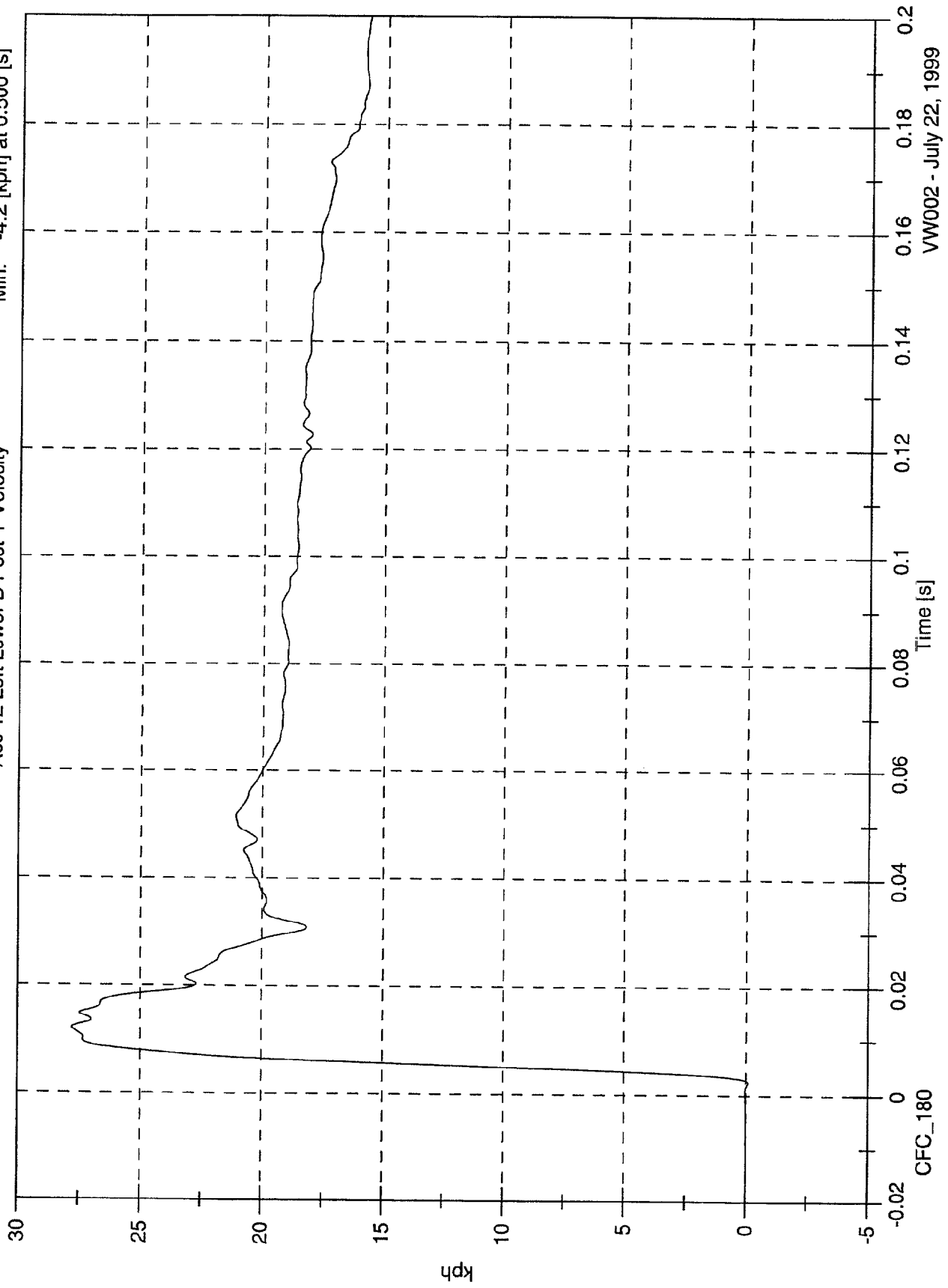
VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Acc 12 Left Lower B Post Y Velocity

Max: 27.8 [kph] at 0.012 [s]

Min: -4.2 [kph] at 0.500 [s]



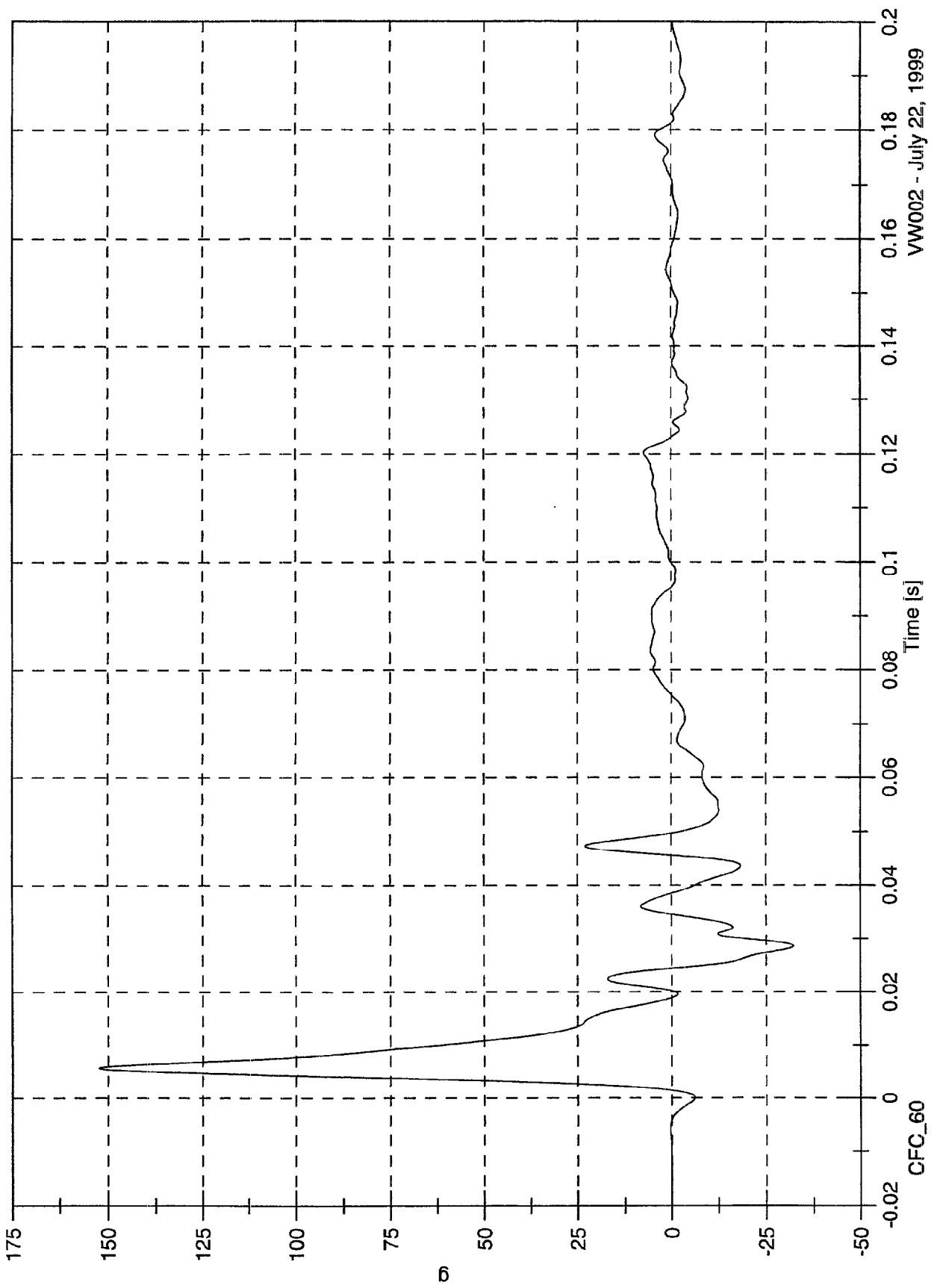
VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Max: 152.3 [g] at 0.006 [s]

Min: -32.2 [g] at 0.029 [s]

Acc 13 Left Mid B Post Y

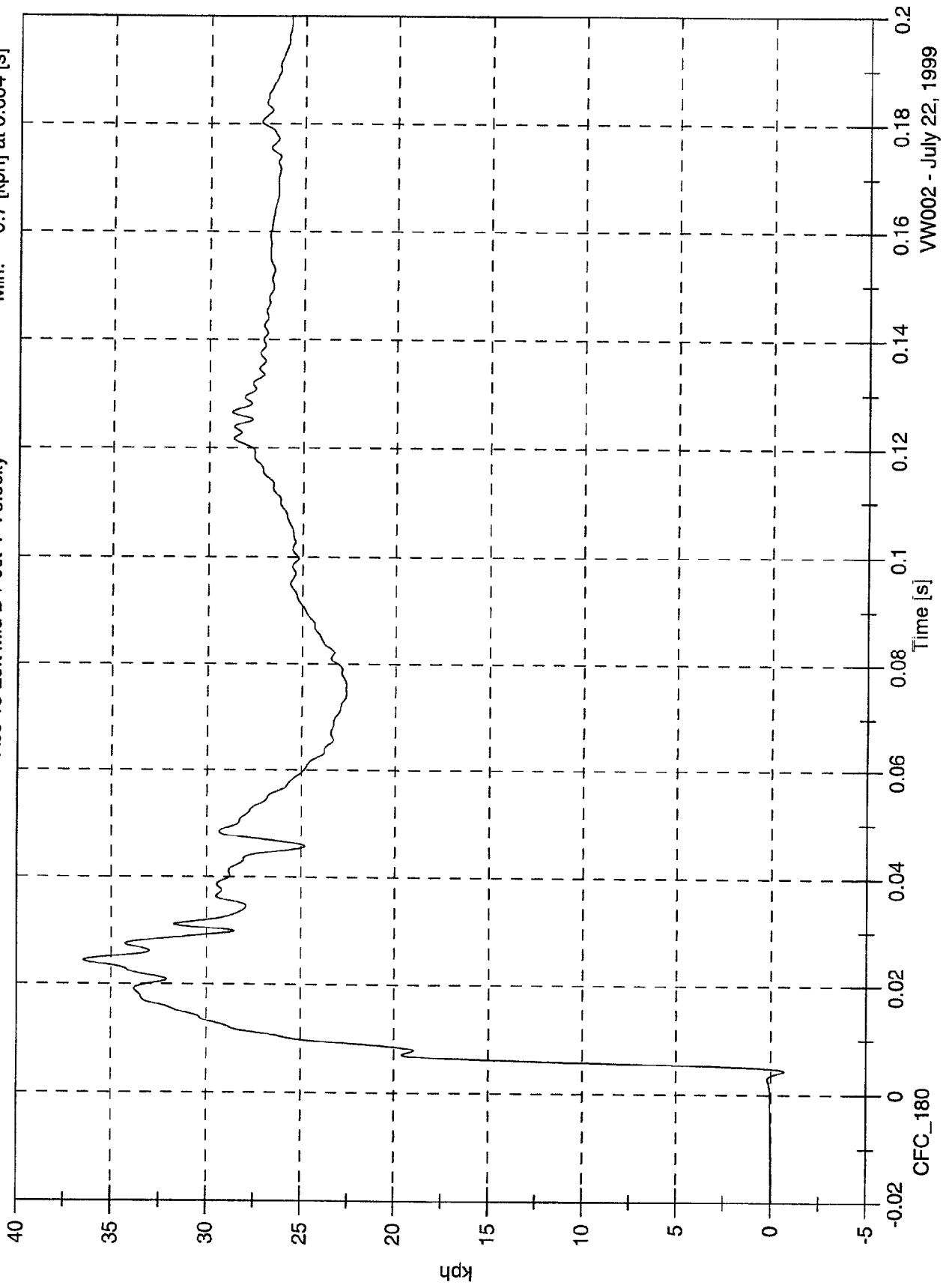


VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Acc 13 Left Mid B Post Y Velocity

Max: 37.8 [kph] at 0.500 [s]
Min: -0.7 [kph] at 0.004 [s]

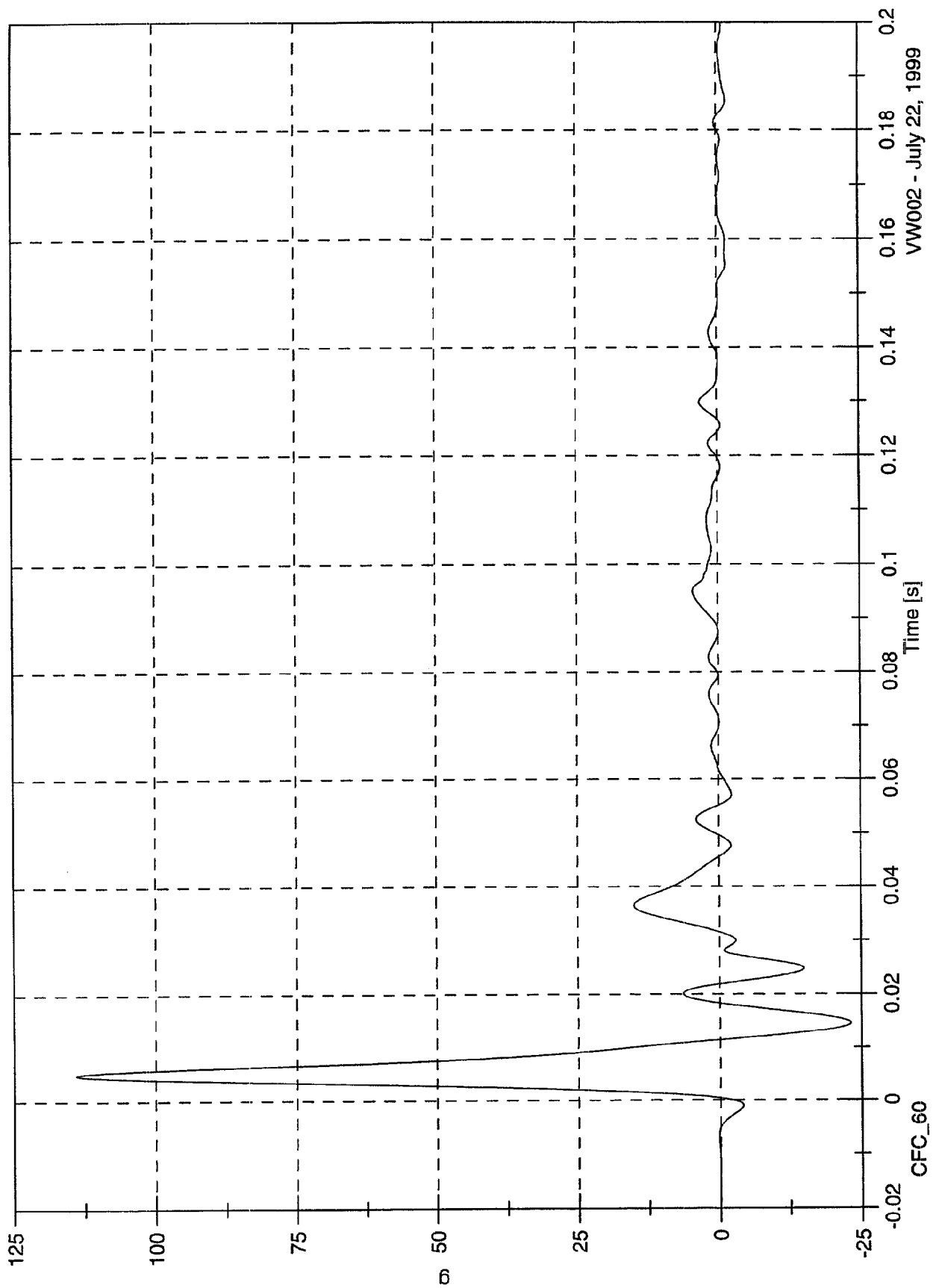


VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Max: 114.2 [g] at 0.005 [s]
Min: -23.0 [g] at 0.015 [s]

Acc 14 Left Lower A Post Y

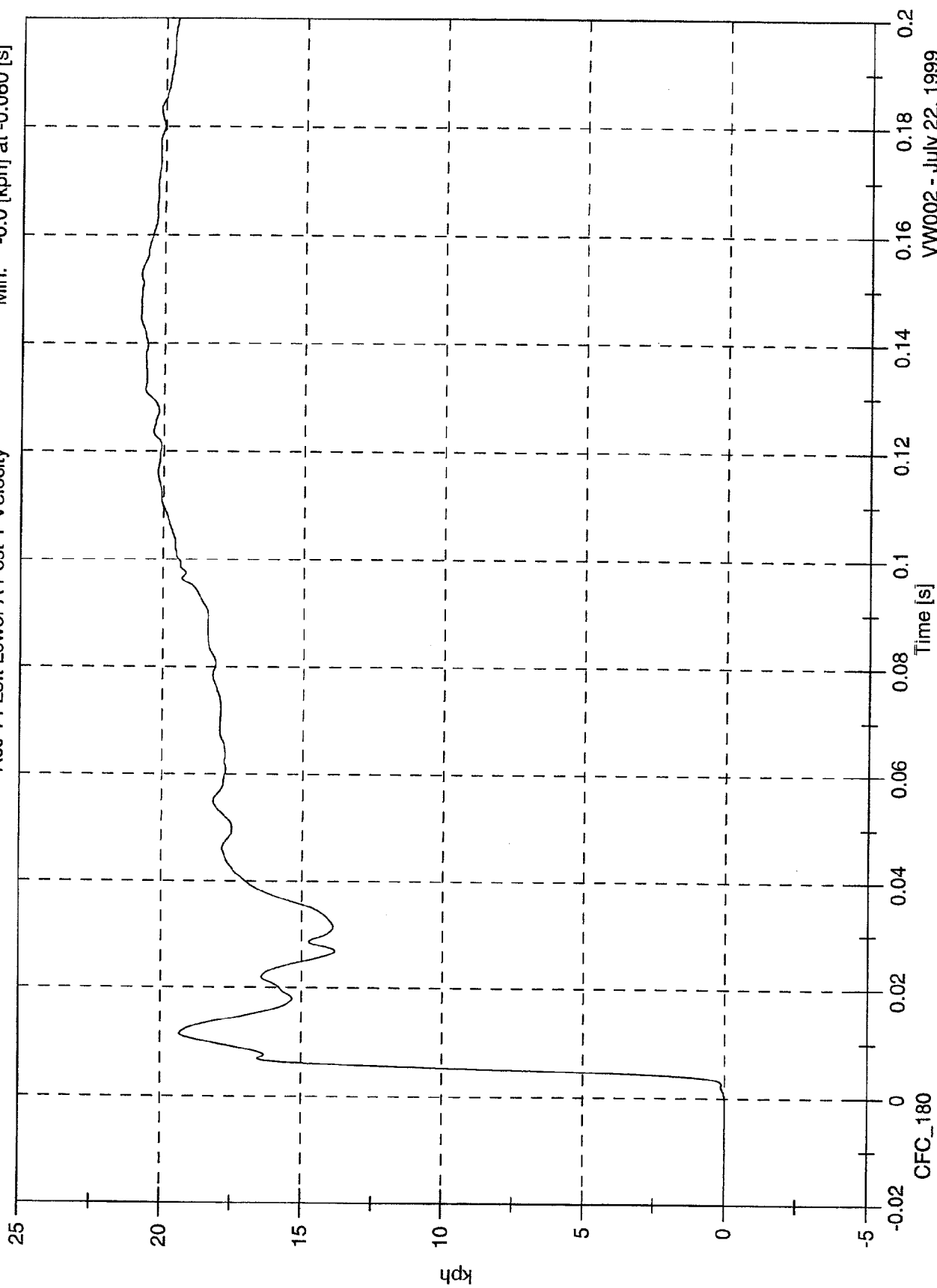


SNCAP Test#1 VW Beetle

Acc 14 Left Lower A Post Y Velocity

Max: 20.8 [kph] at 0.145 [s]

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

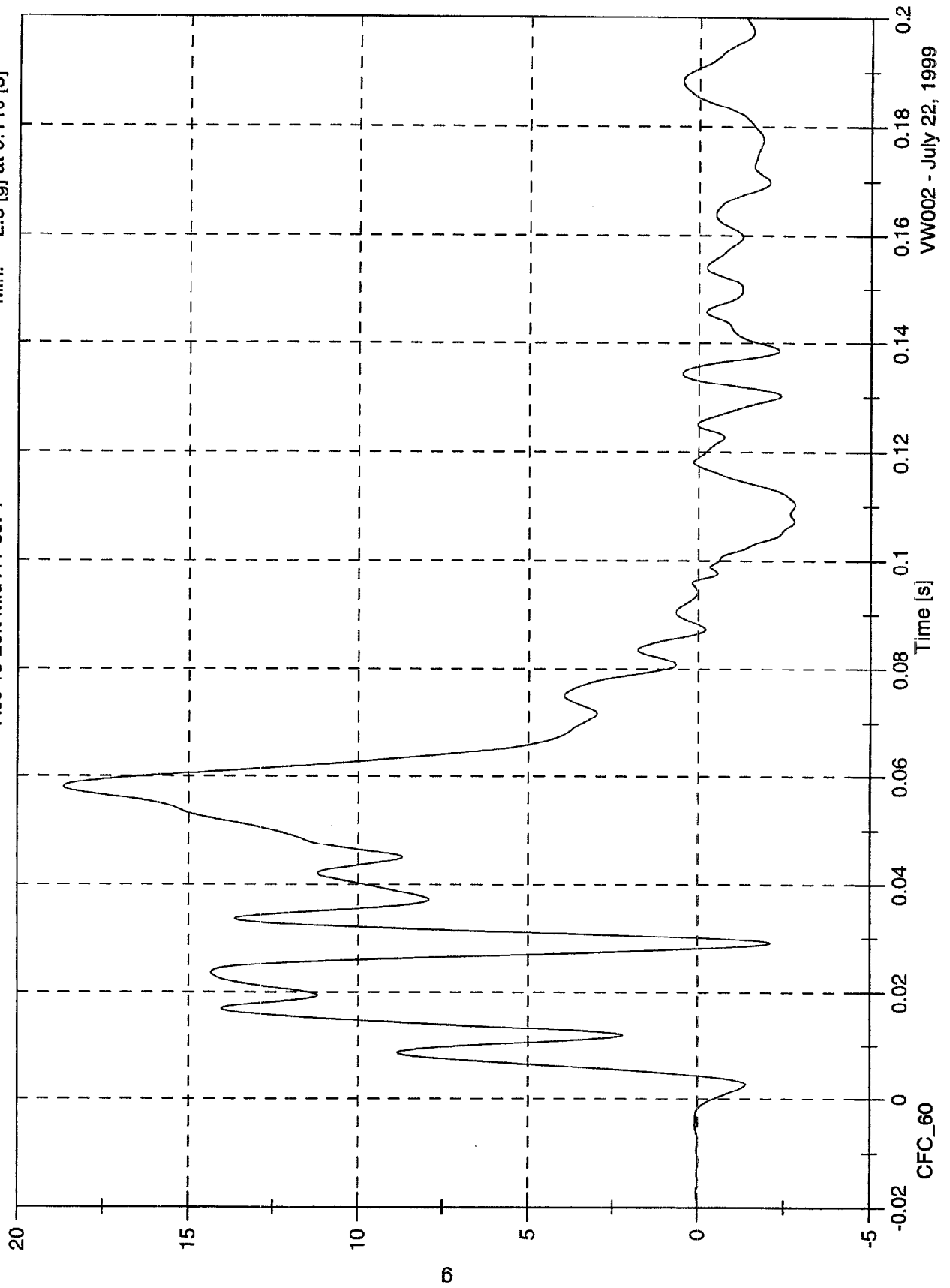


VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

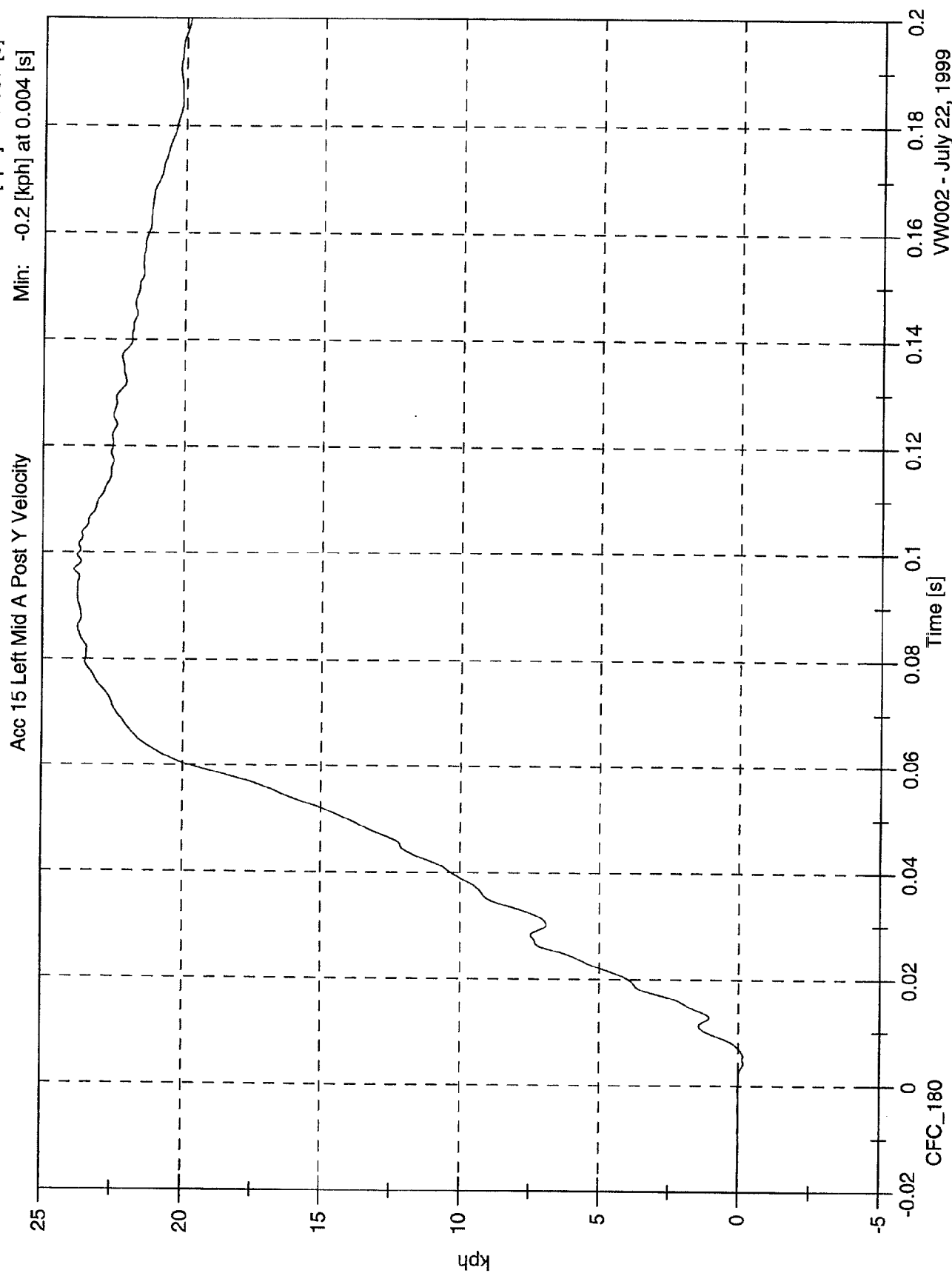
Max: 18.6 [g] at 0.058 [s]
Min: -2.8 [g] at 0.110 [s]

Acc 15 Left Mid A Post Y



SNCAP Test#1 VW Beetle

Max: 23.9 [kph] at 0.097 [s]
Min: -0.2 [kph] at 0.004 [s]

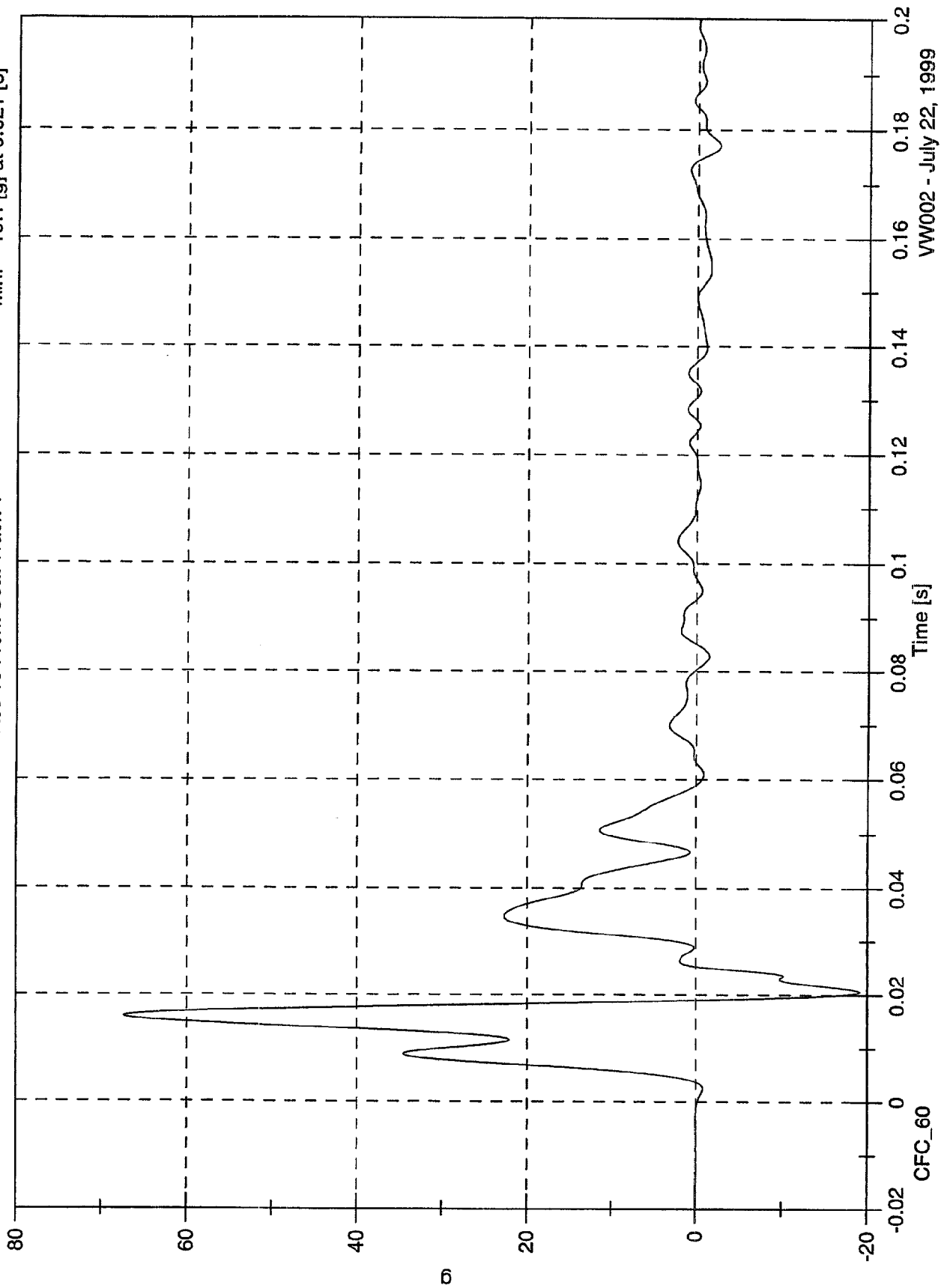


SNCAP Test#1 VW Beetle

Acc 16 Front Seat Track Y

Max: 67.4 [g] at 0.016 [s]

Min: -19.1 [g] at 0.021 [s]

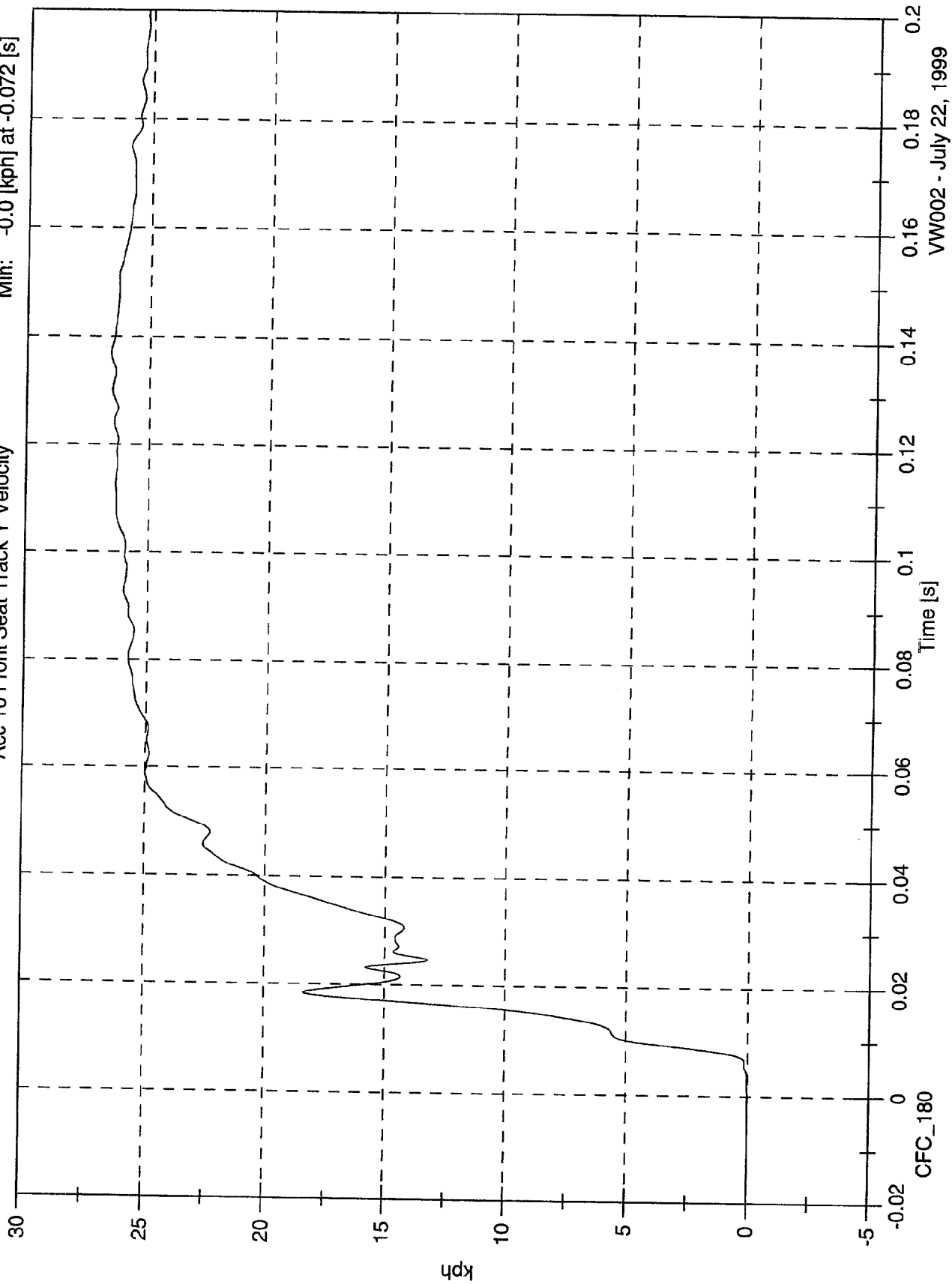


VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Max: 26.6 [kph] at 0.137 [s]
Min: -0.0 [kph] at -0.072 [s]

Acc 16 Front Seat Track Y Velocity

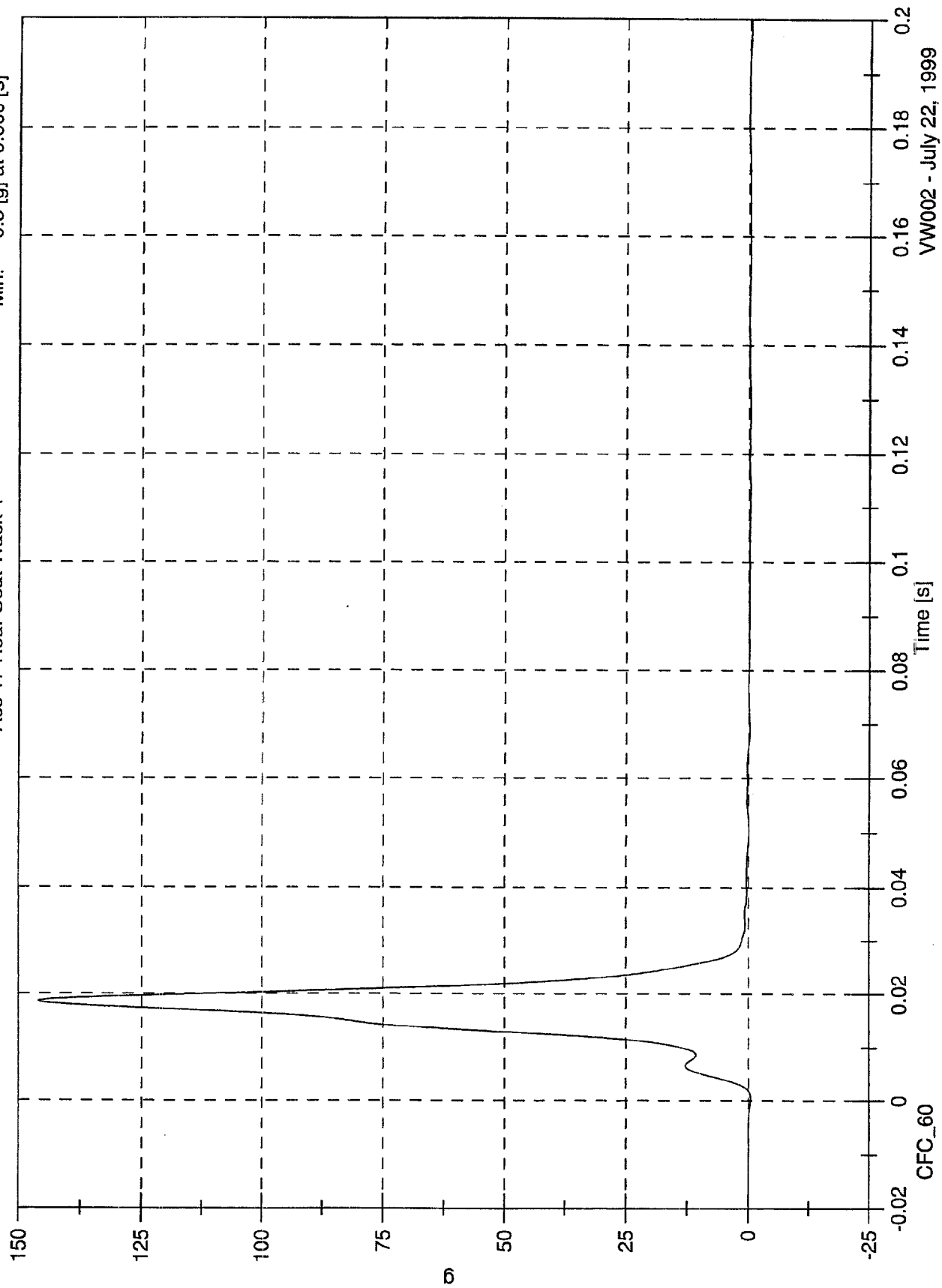


VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Max: 146.0 [g] at 0.019 [s]
Min: -0.5 [g] at 0.000 [s]

Acc 17 Rear Seat Track Y



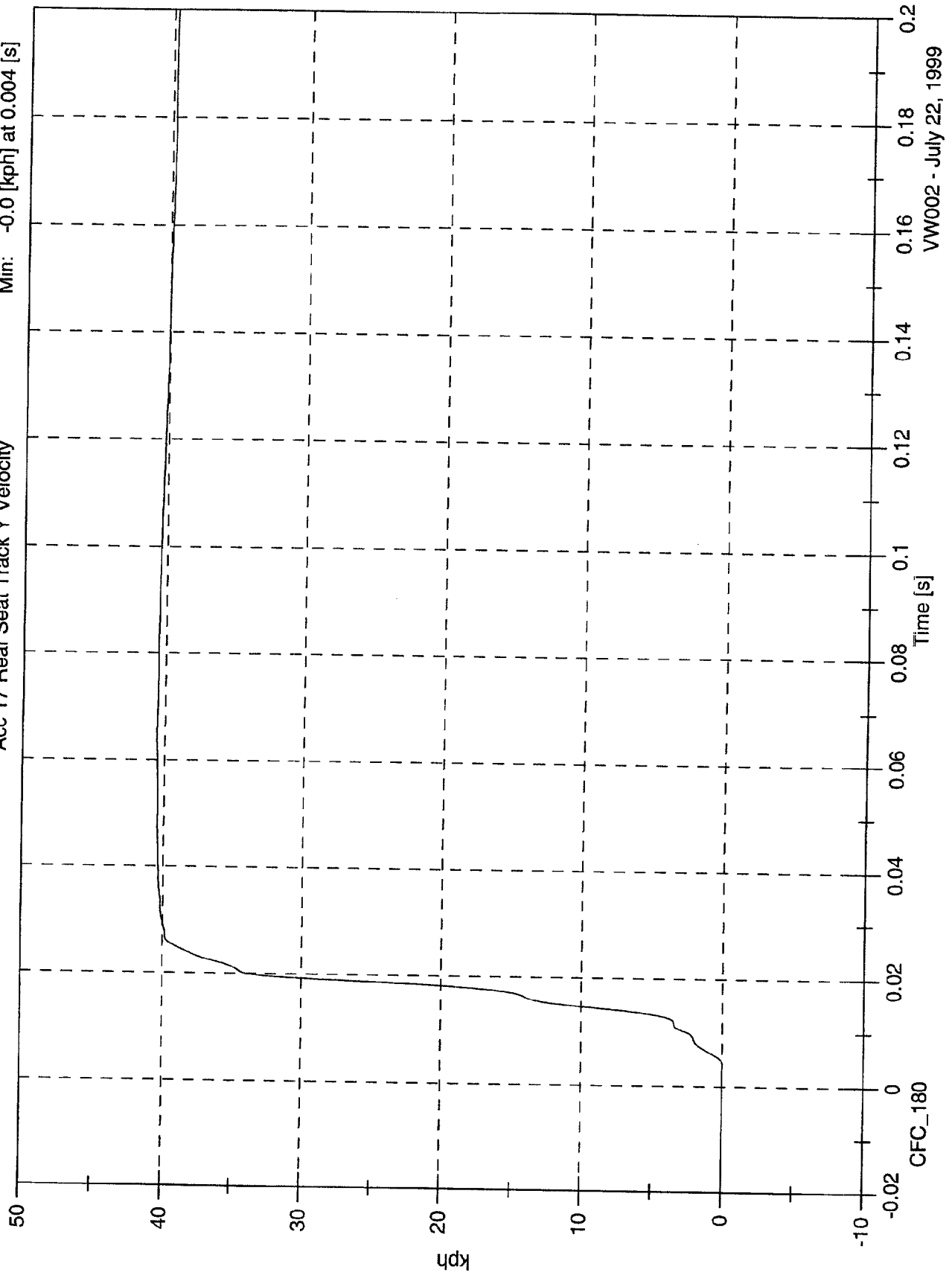
VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Max: 40.6 [kph] at 0.066 [s]

Min: -0.0 [kph] at 0.004 [s]

Acc 17 Rear Seat Track Y Velocity



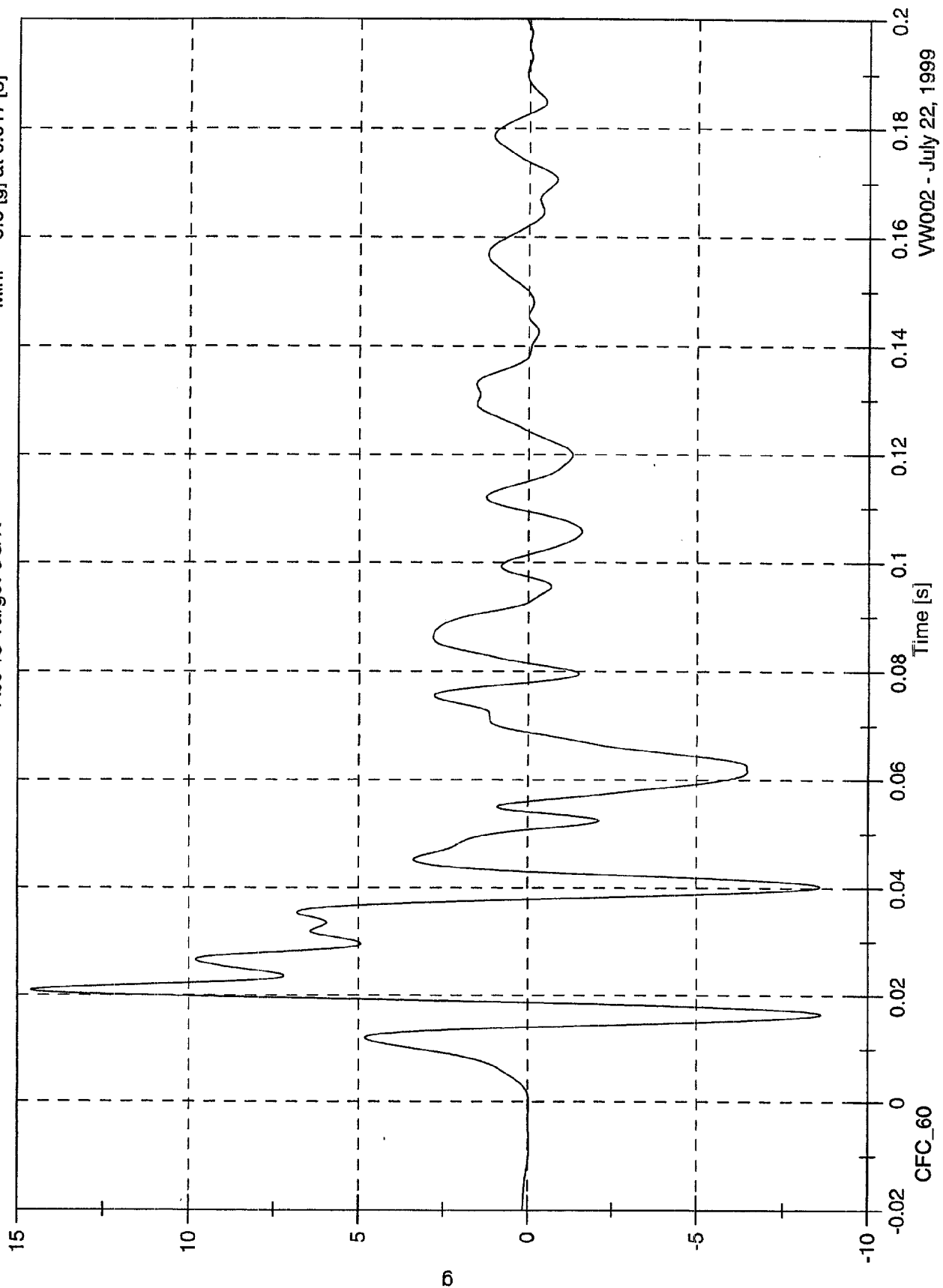
VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Max: 14.6 [g] at 0.021 [s]

Min: -8.6 [g] at 0.017 [s]

Acc 18 Target CG X

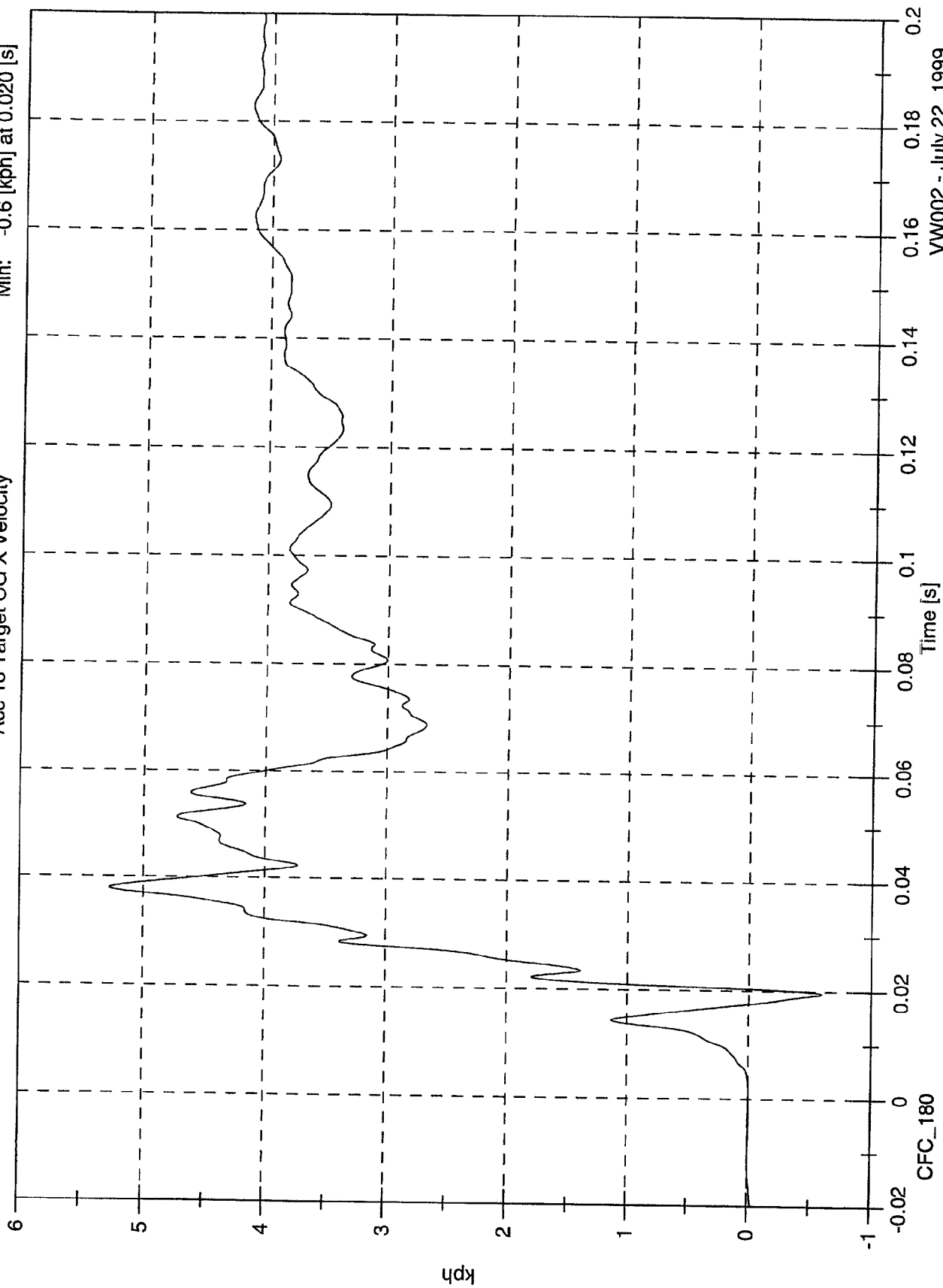


VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Max: 5.3 [kph] at 0.038 [s]
Min: -0.6 [kph] at 0.020 [s]

Acc 18 Target CG X Velocity



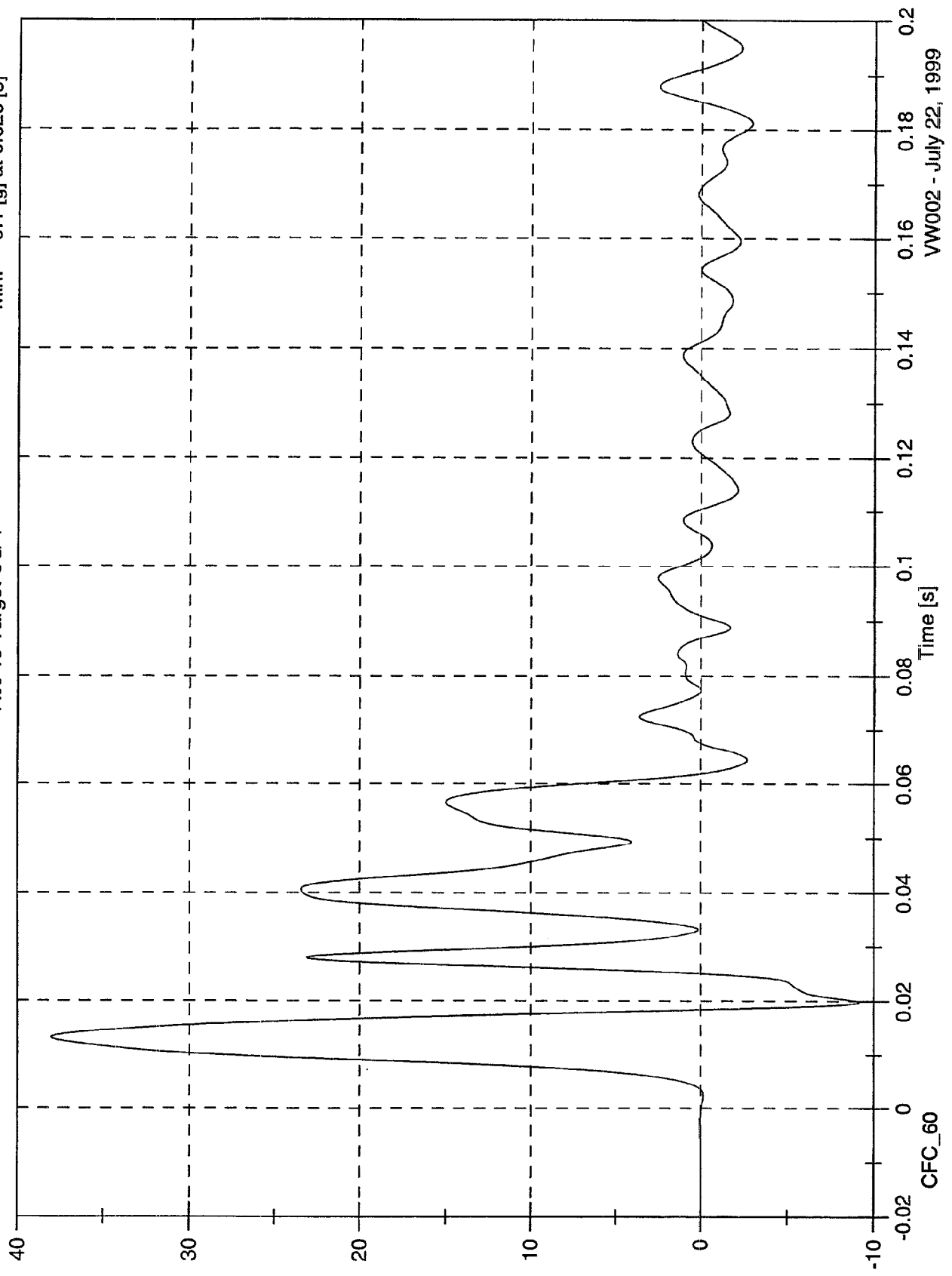
VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Max: 38.0 [g] at 0.013 [s]

Min: -9.1 [g] at 0.020 [s]

Acc 18 Target CG Y



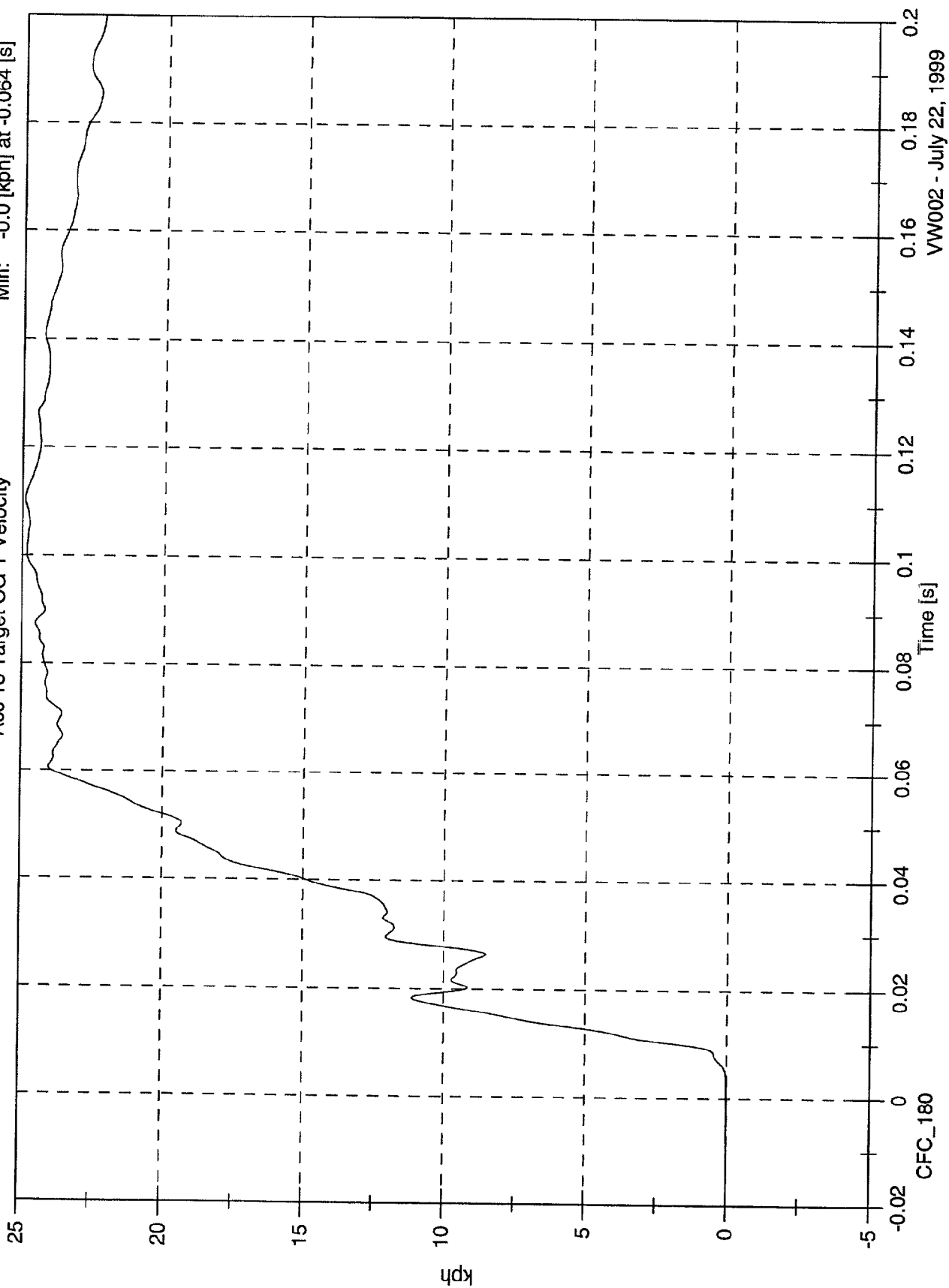
VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Max: 24.9 [kph] at 0.110 [s]

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

Acc 18 Target CG Y Velocity



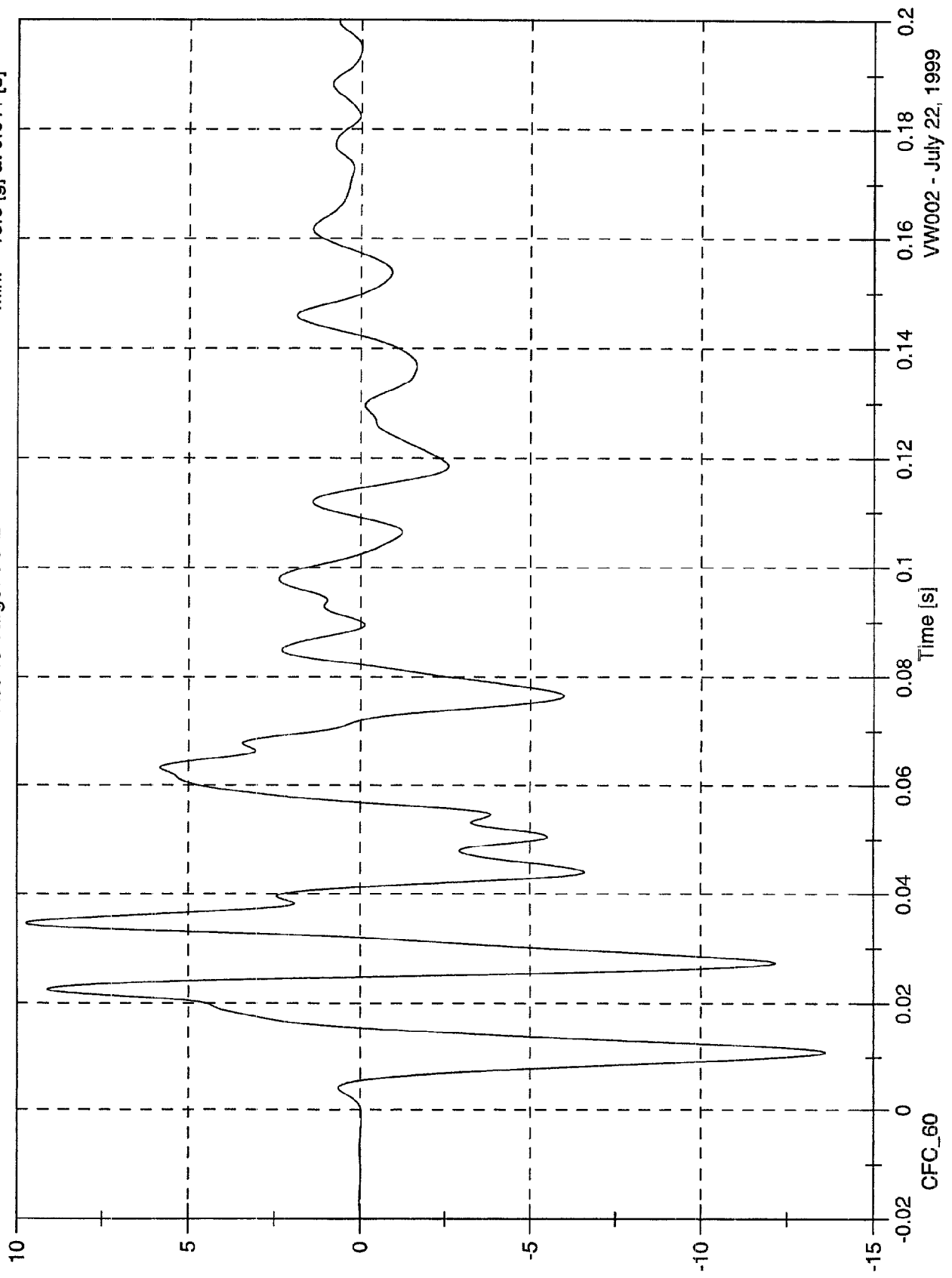
VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Max: 9.7 [g] at 0.035 [s]

Min: -13.6 [g] at 0.011 [s]

Acc 18 Target CG Z



CFC_60

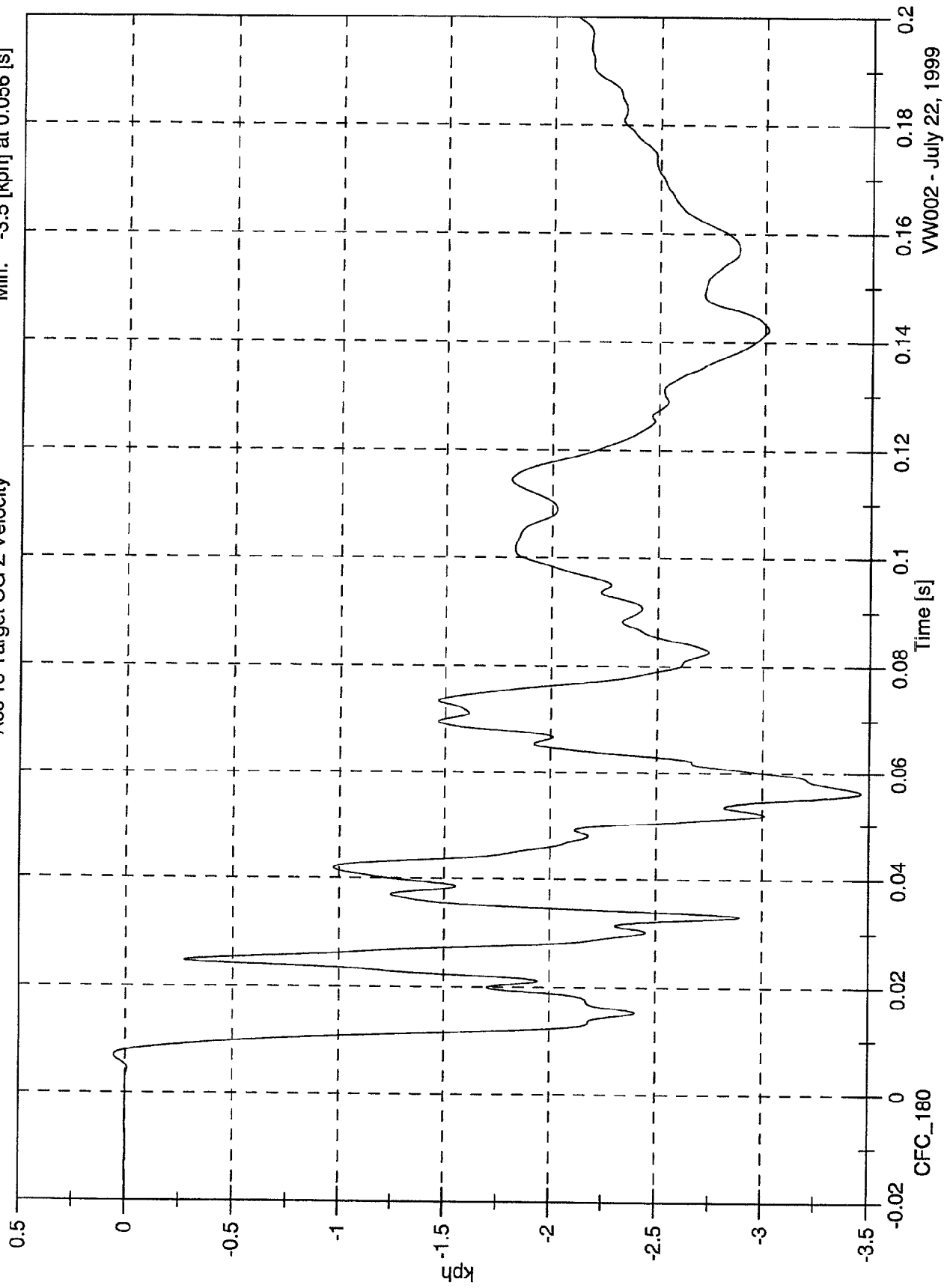
Time [s]

VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Max: 0.1 [kph] at 0.007 [s]
Min: -3.5 [kph] at 0.056 [s]

Acc 18 Target CG Z Velocity

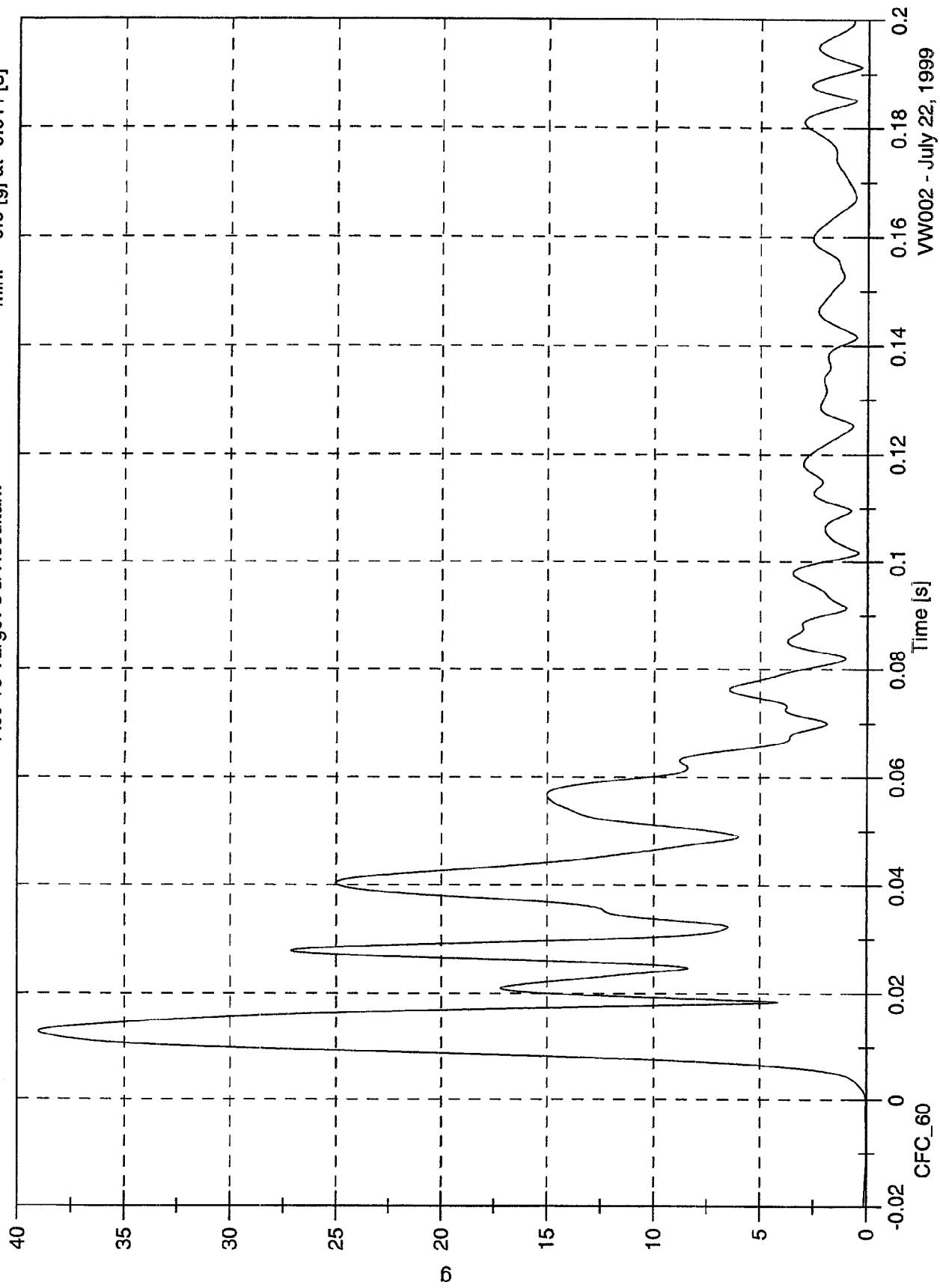


VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Max: 39.0 [g] at 0.013 [s]
Min: 0.0 [g] at -0.011 [s]

Acc 18 Target CG Resultant

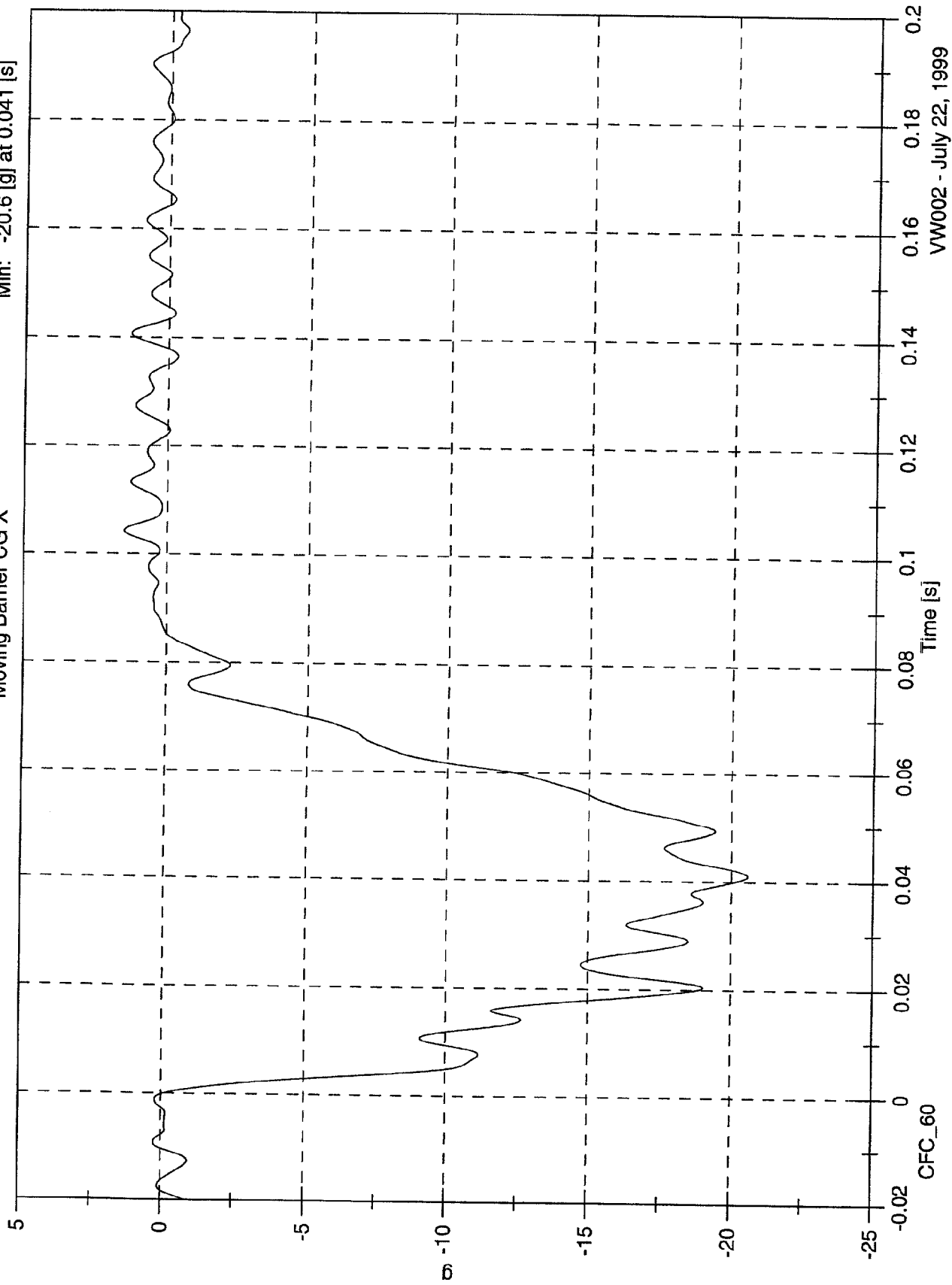


SNCAP Test#1 VW Beetle

Max: 2.3 [g] at 0.500 [s]

Min: -20.6 [g] at 0.041 [s]

Moving Barrier CG X

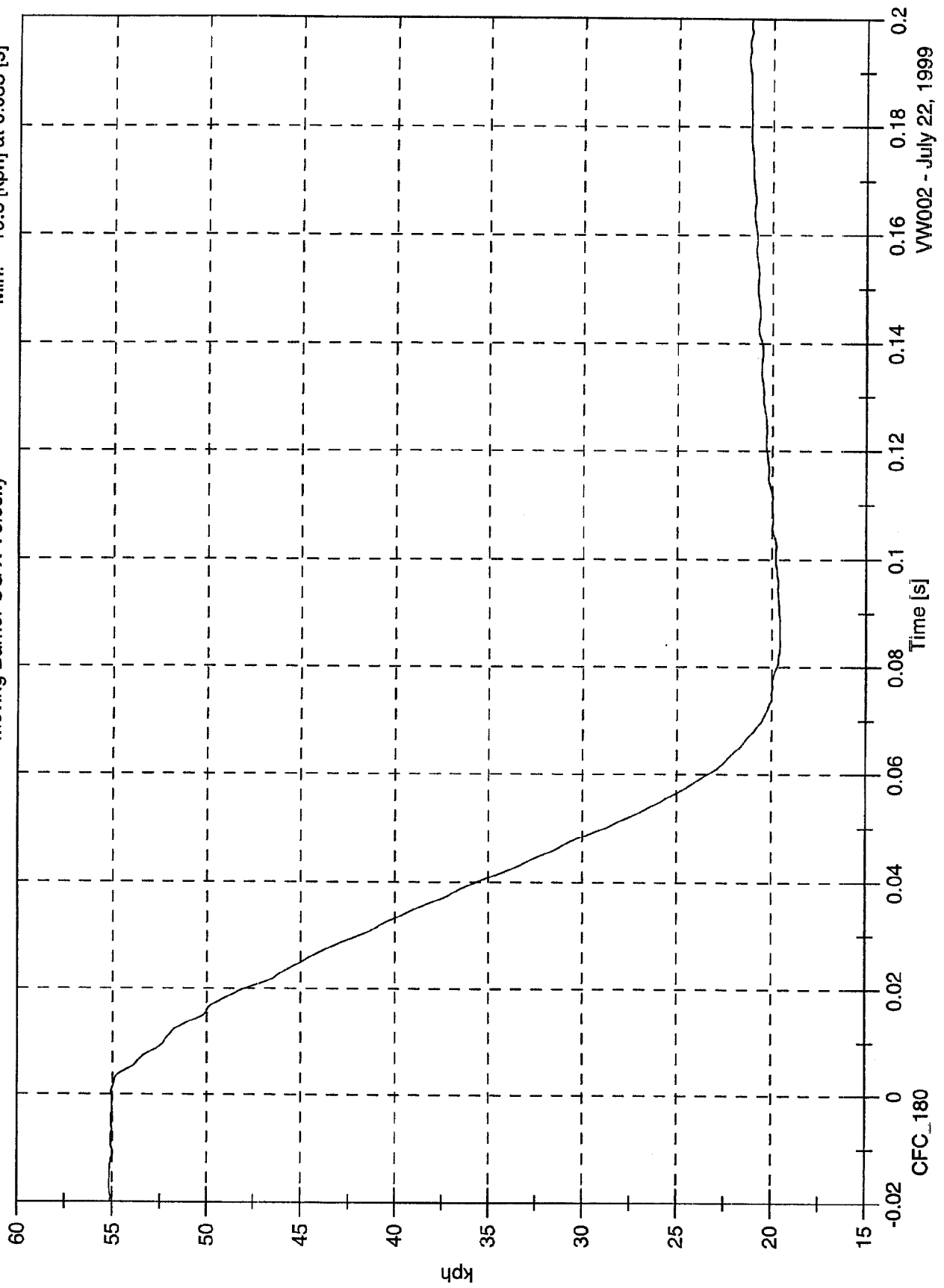


VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Max: 55.4 [kph] at -0.041 [s]
Min: 19.6 [kph] at 0.085 [s]

Moving Barrier CG X Velocity



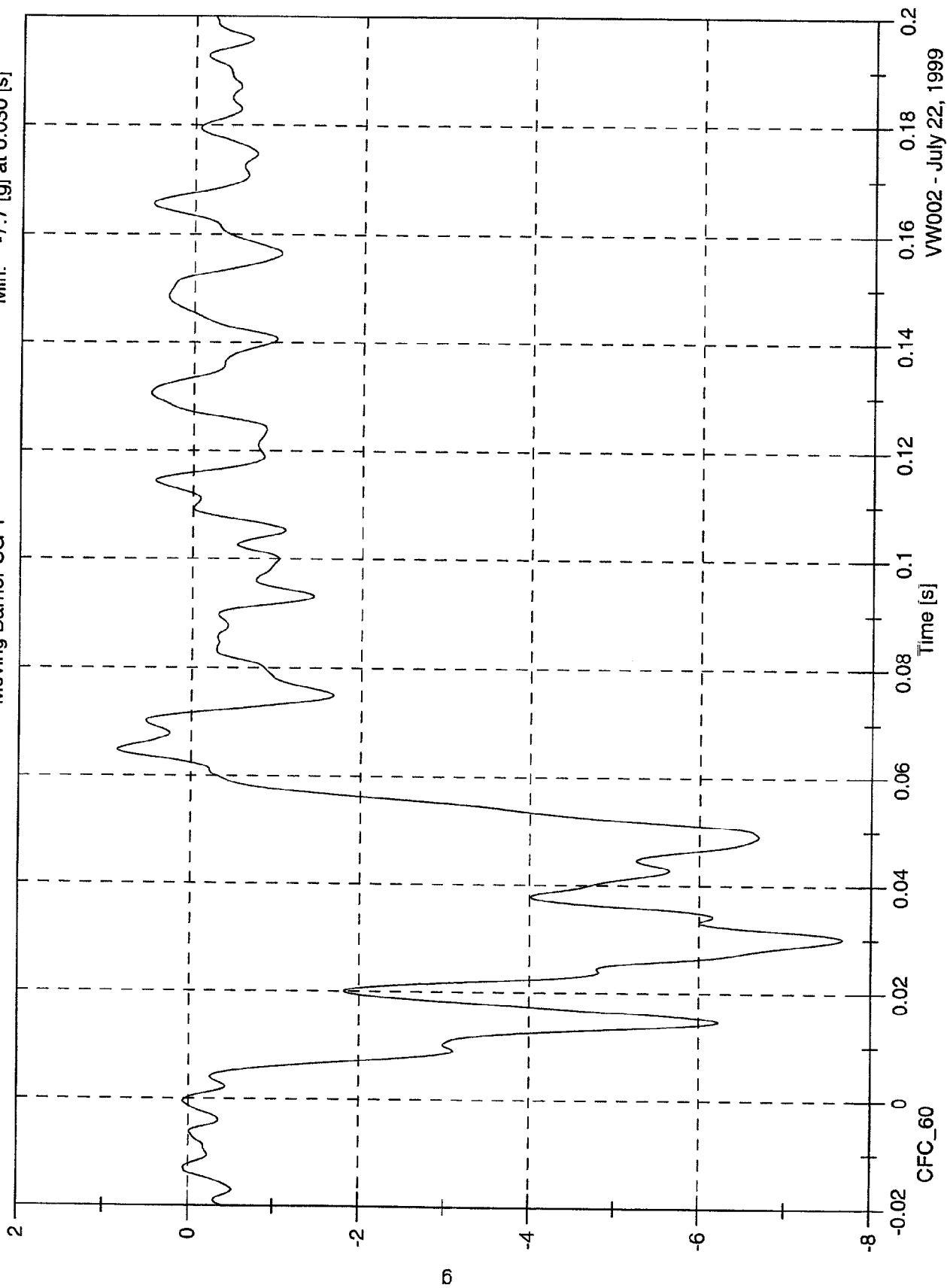
VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Max: 0.9 [g] at 0.065 [s]

Min: -7.7 [g] at 0.030 [s]

Moving Barrier CG Y

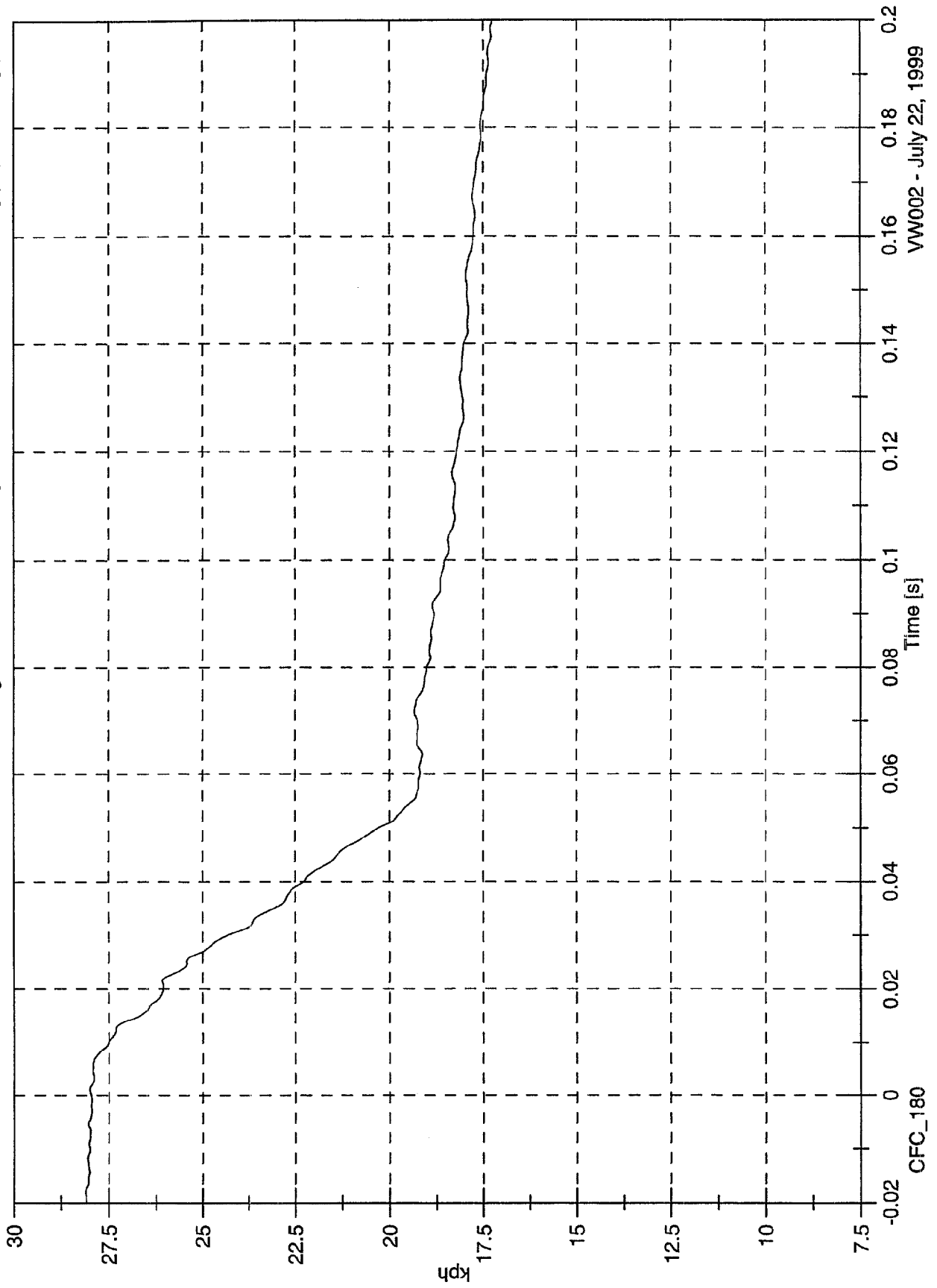


VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Max: 28.3 [kph] at -0.041 [s]
Min: 8.4 [kph] at 0.500 [s]

Moving Barrier CG Y Velocity

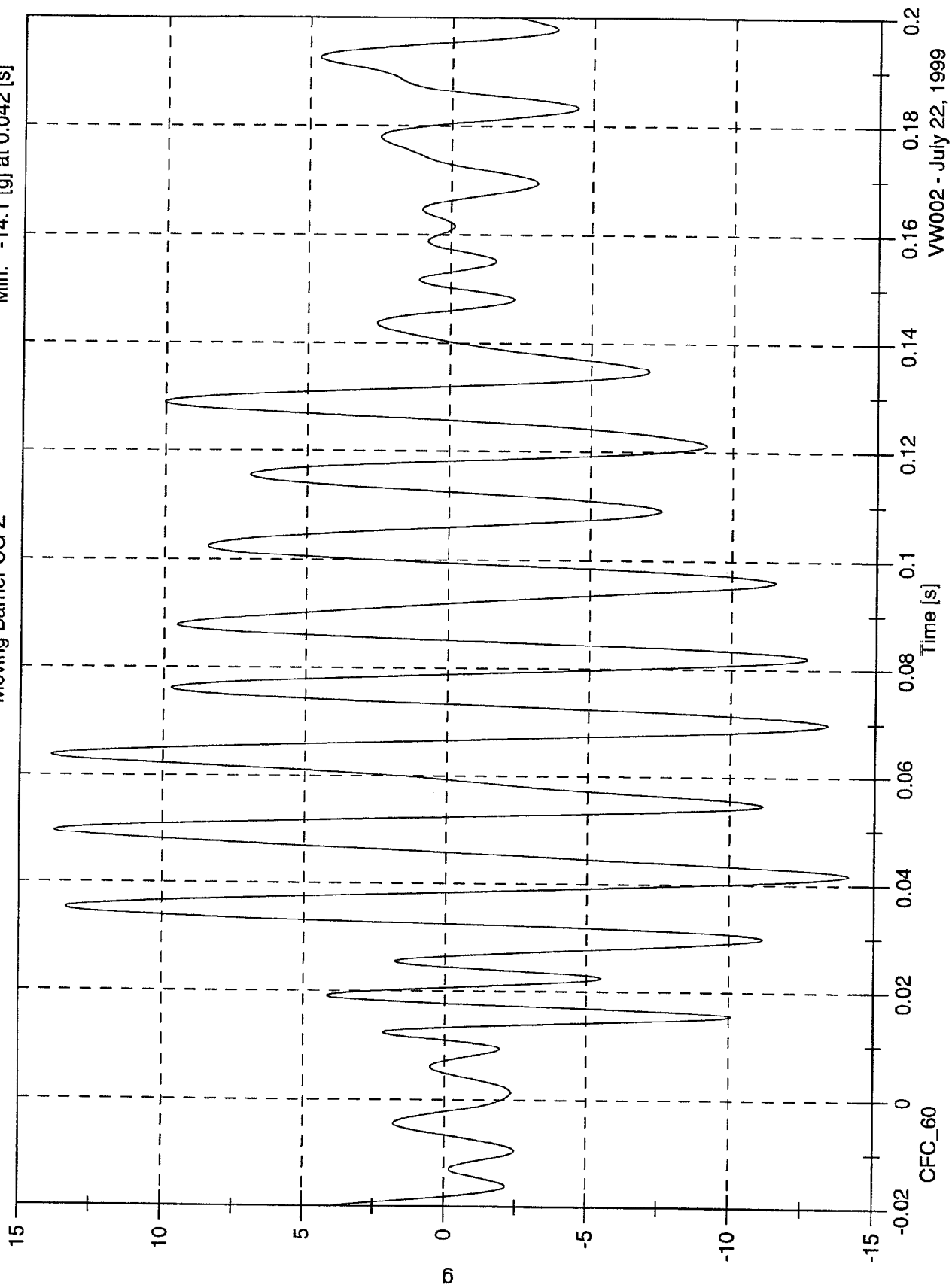


VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Max: 13.9 [g] at 0.064 [s]
Min: -14.1 [g] at 0.042 [s]

Moving Barrier CG Z

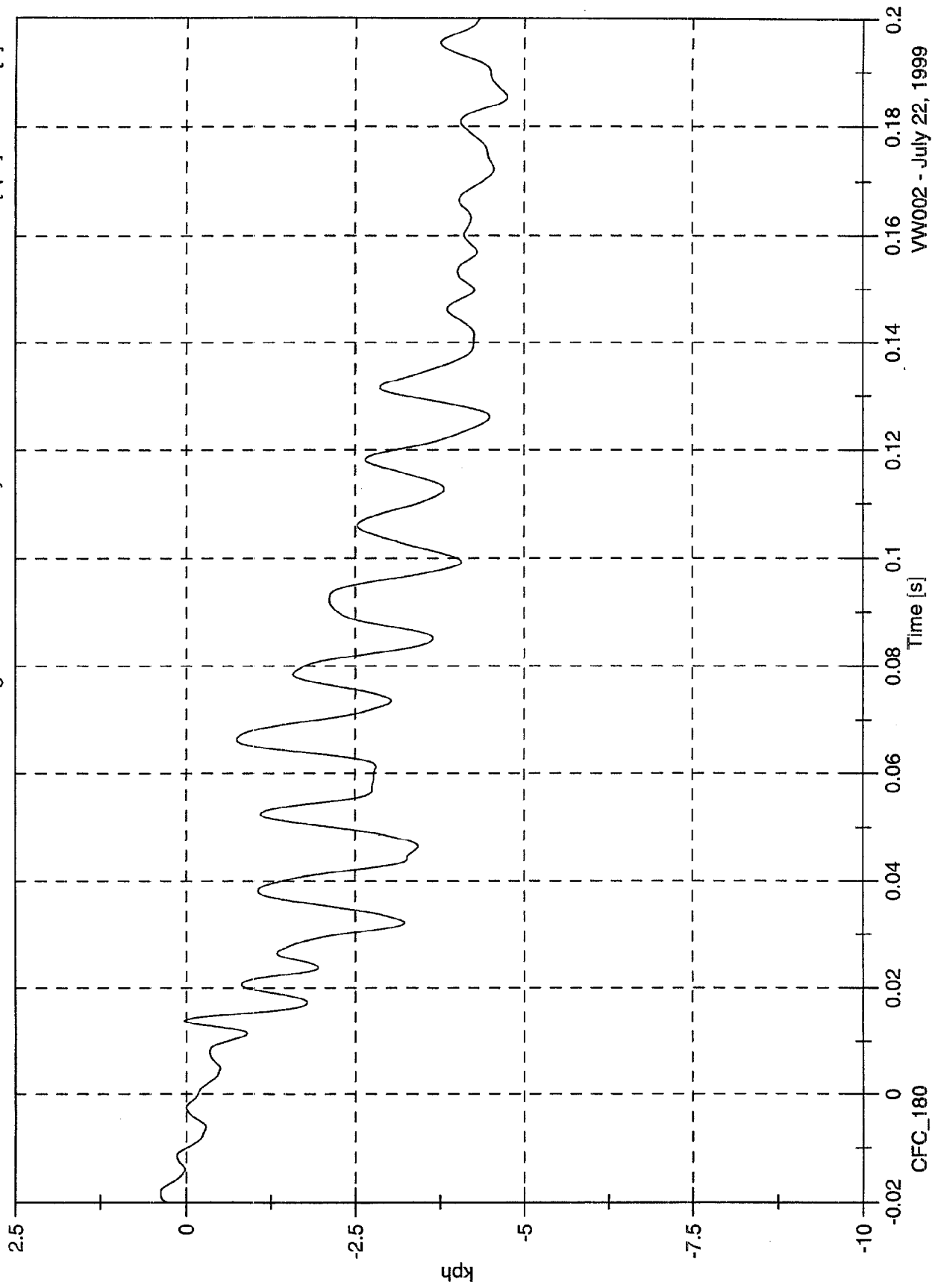


VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Max: 0.5 [kph] at -0.027 [s]
Min: -10.0 [kph] at 0.478 [s]

Moving Barrier CG Z Velocity



CFC_180

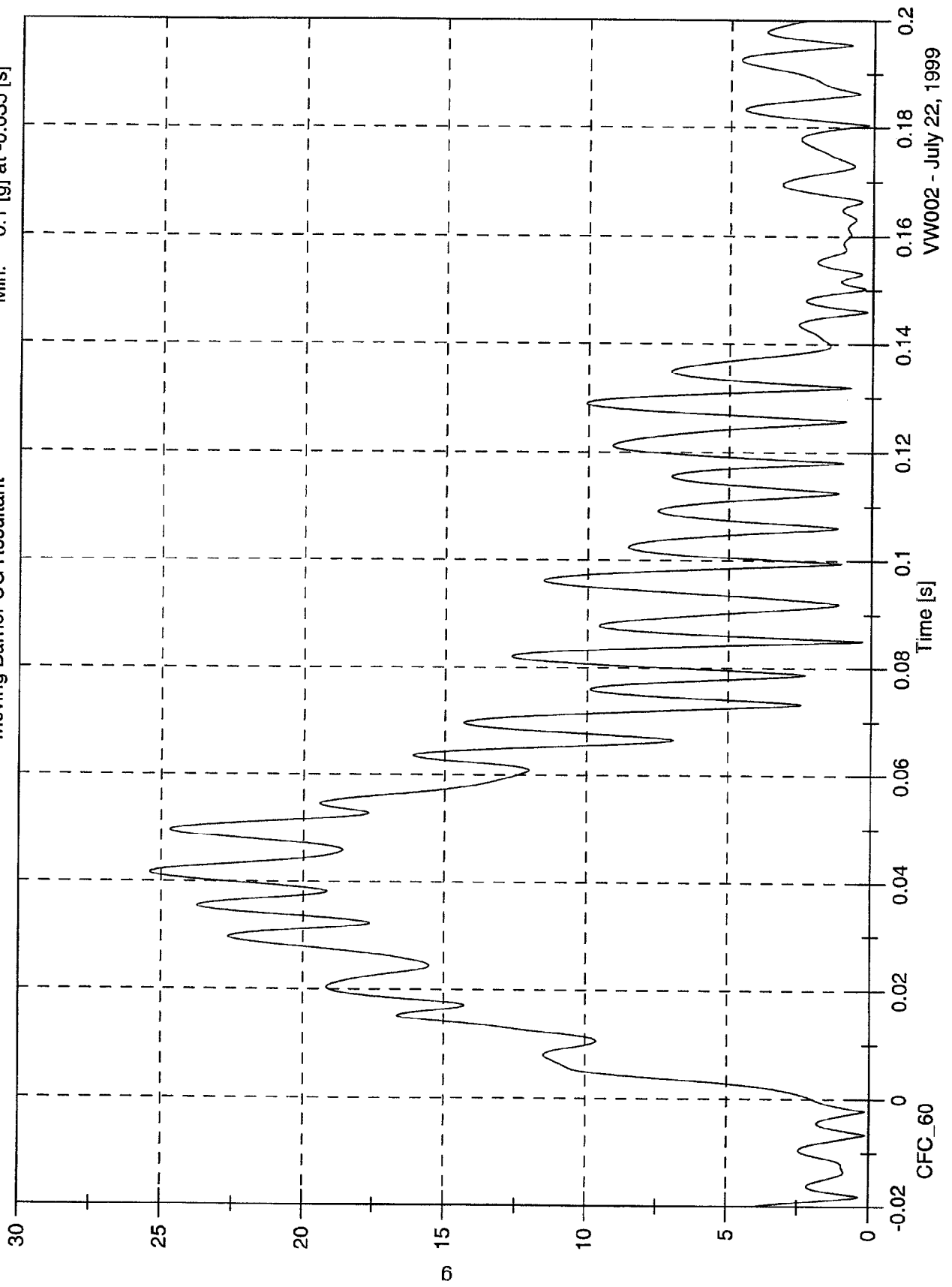
VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Max: 25.4 [g] at 0.042 [s]

Min: 0.1 [g] at -0.035 [s]

Moving Barrier CG Resultant

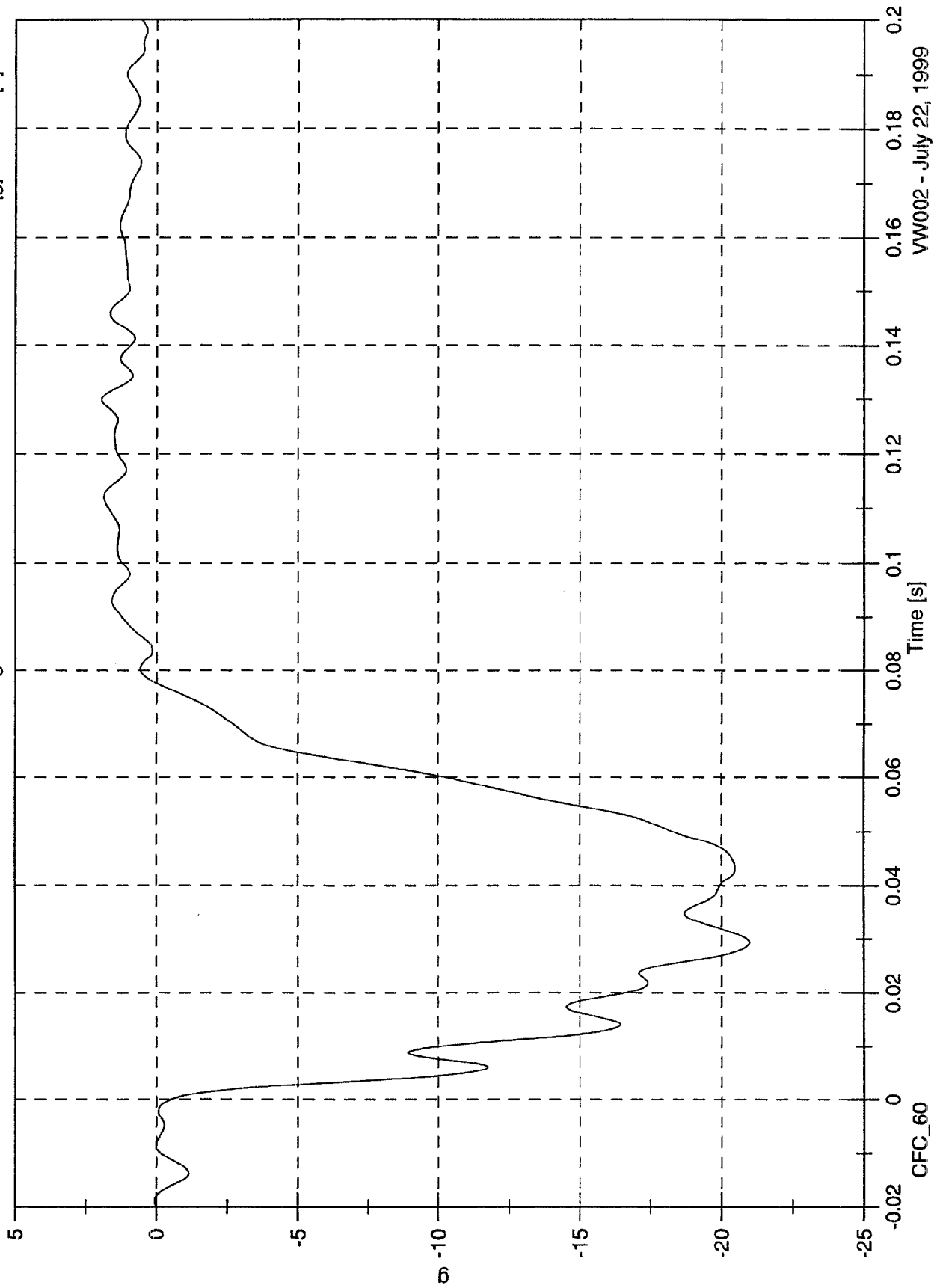


VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Max: 1.9 [g] at 0.130 [s]
Min: -21.0 [g] at 0.029 [s]

Moving Barrier Left Rail X

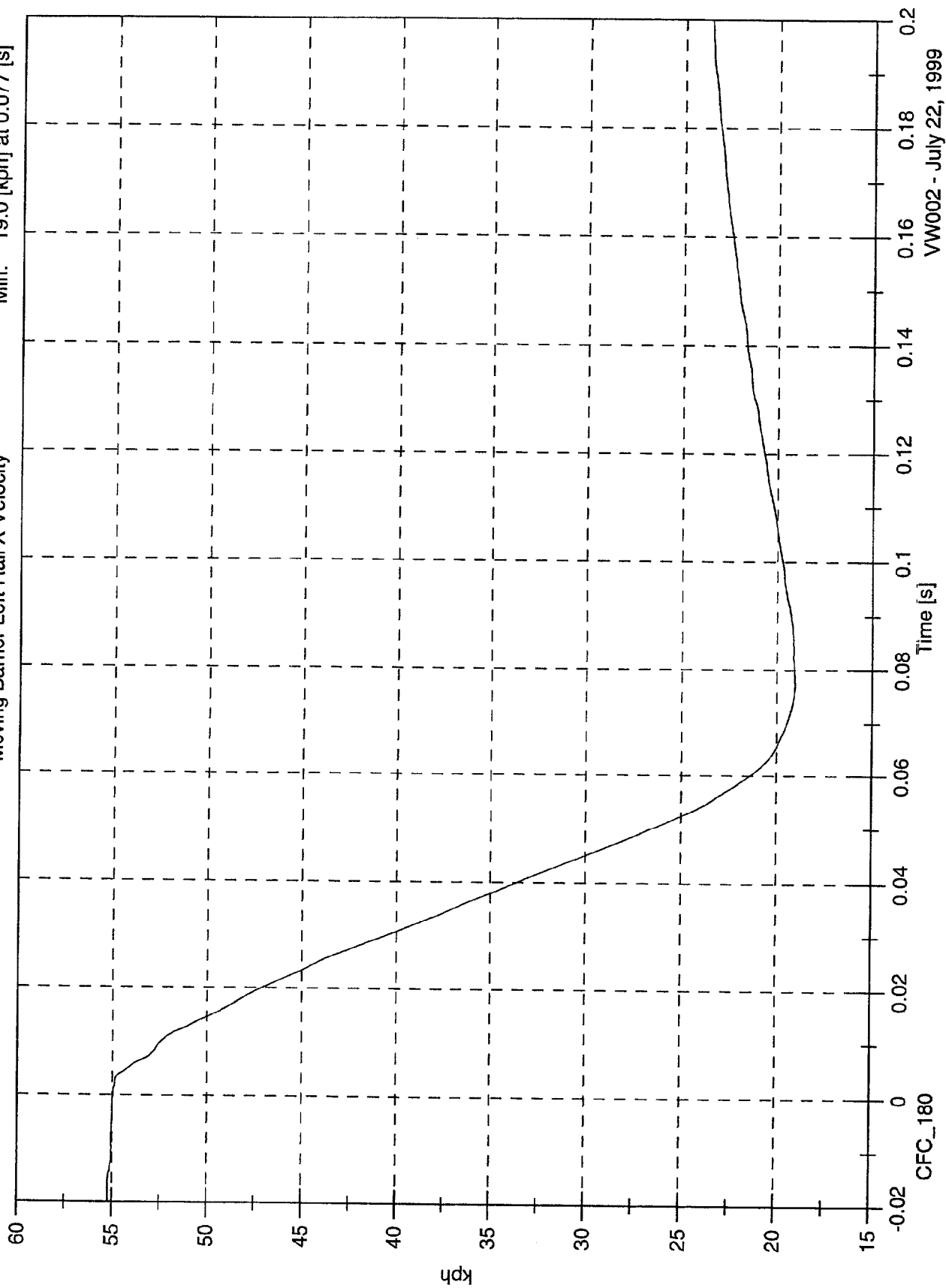


VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Max: 55.4 [kph] at -0.039 [s]
Min: 19.0 [kph] at 0.077 [s]

Moving Barrier Left Rail X Velocity

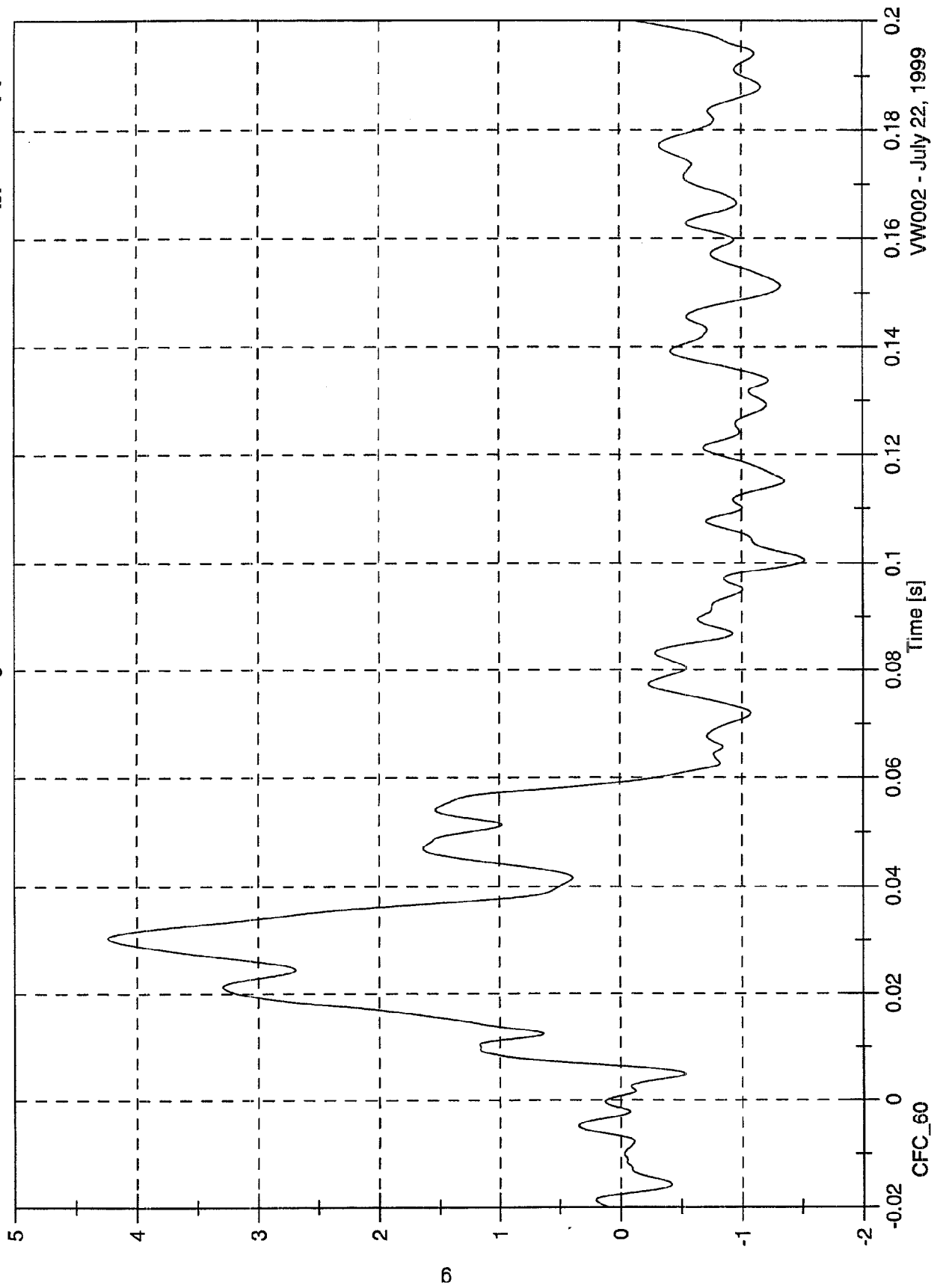


SNCAP Test#1 VW Beetle

Max: 4.2 [g] at 0.030 [s]

Min: -1.5 [g] at 0.101 [s]

Moving Barrier Left Rail Y

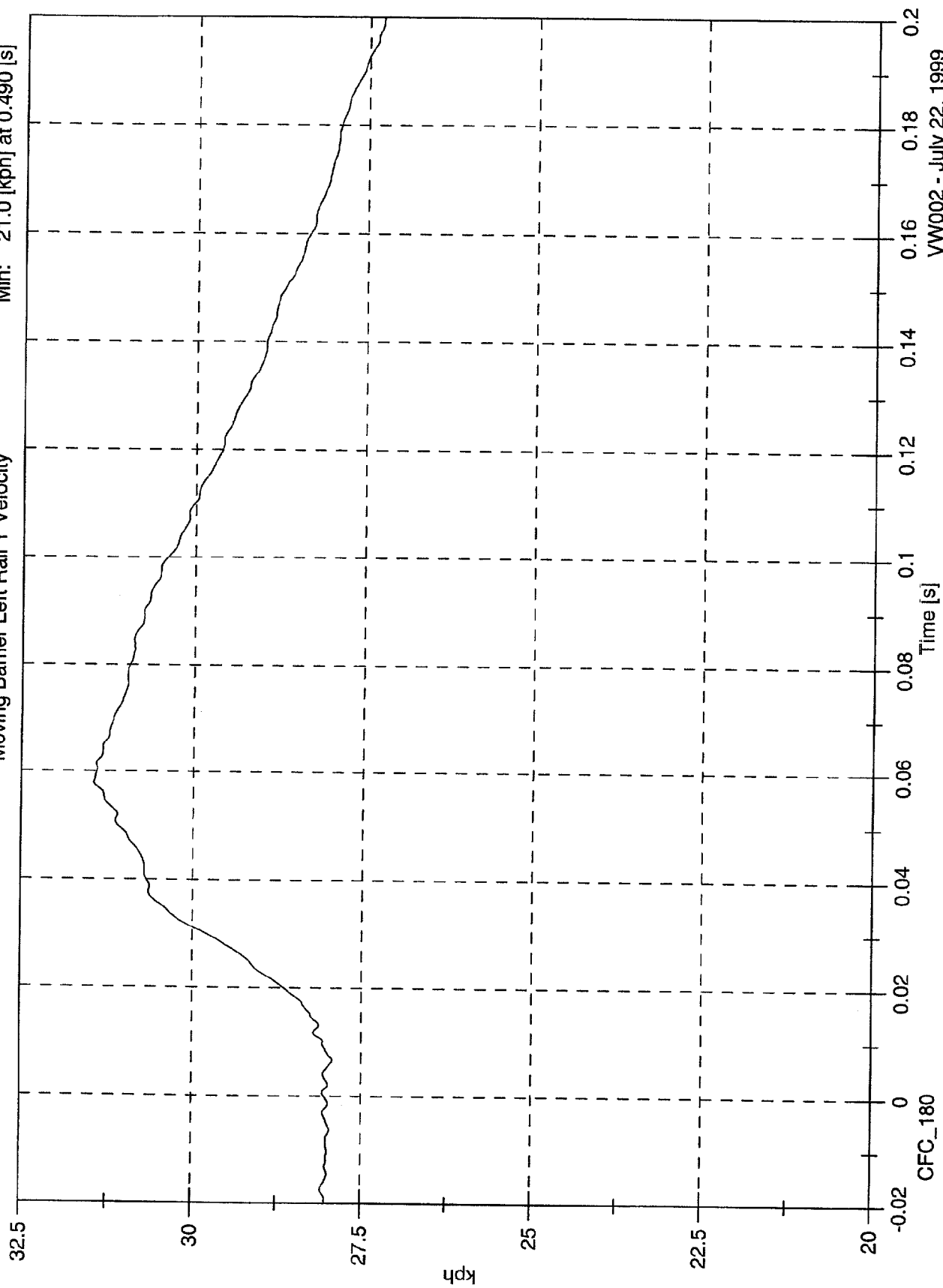


VW002 - July 22, 1999

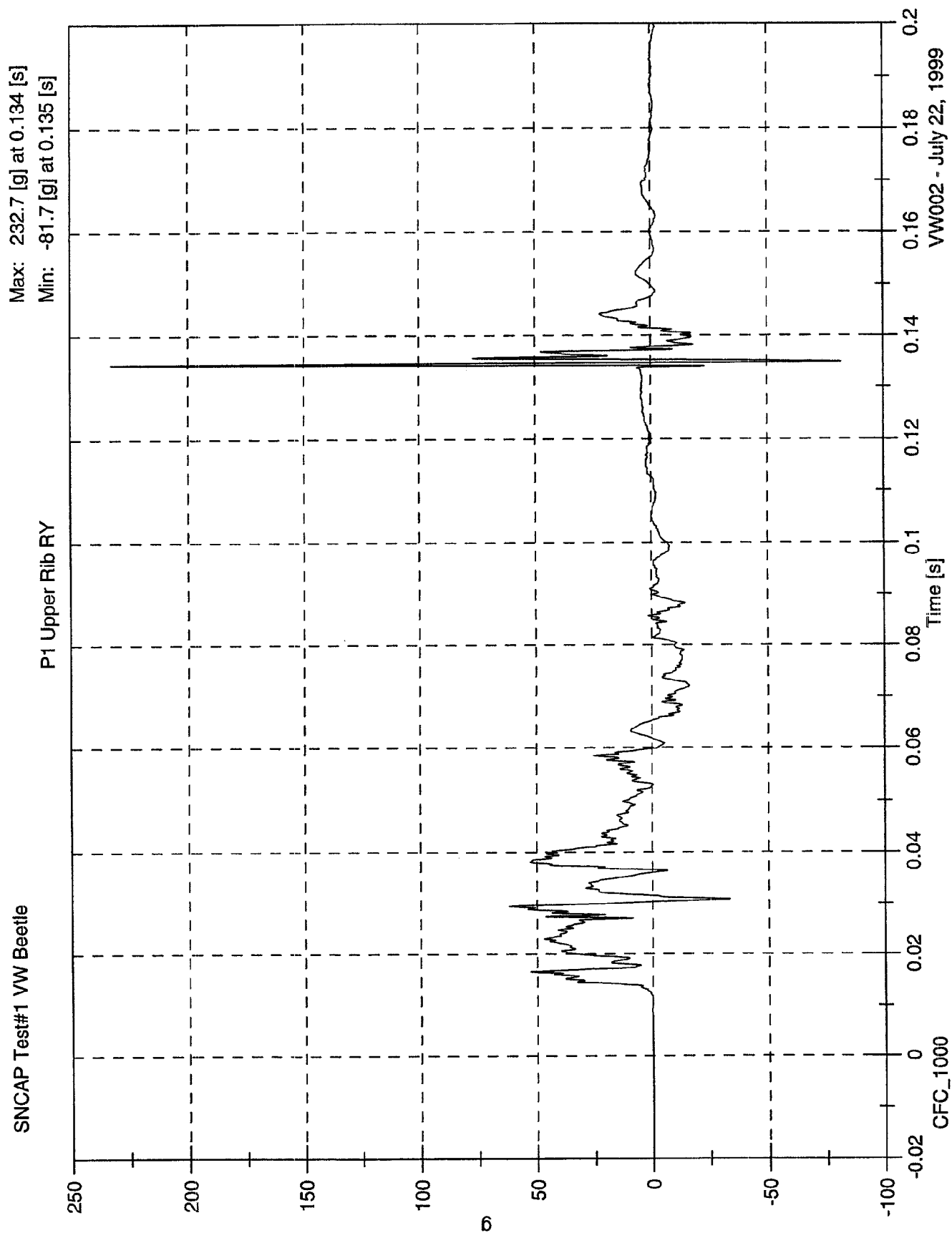
SNCAP Test#1 VW Beetle

Max: 31.4 [kph] at 0.058 [s]
Min: 21.0 [kph] at 0.490 [s]

Moving Barrier Left Rail Y Velocity



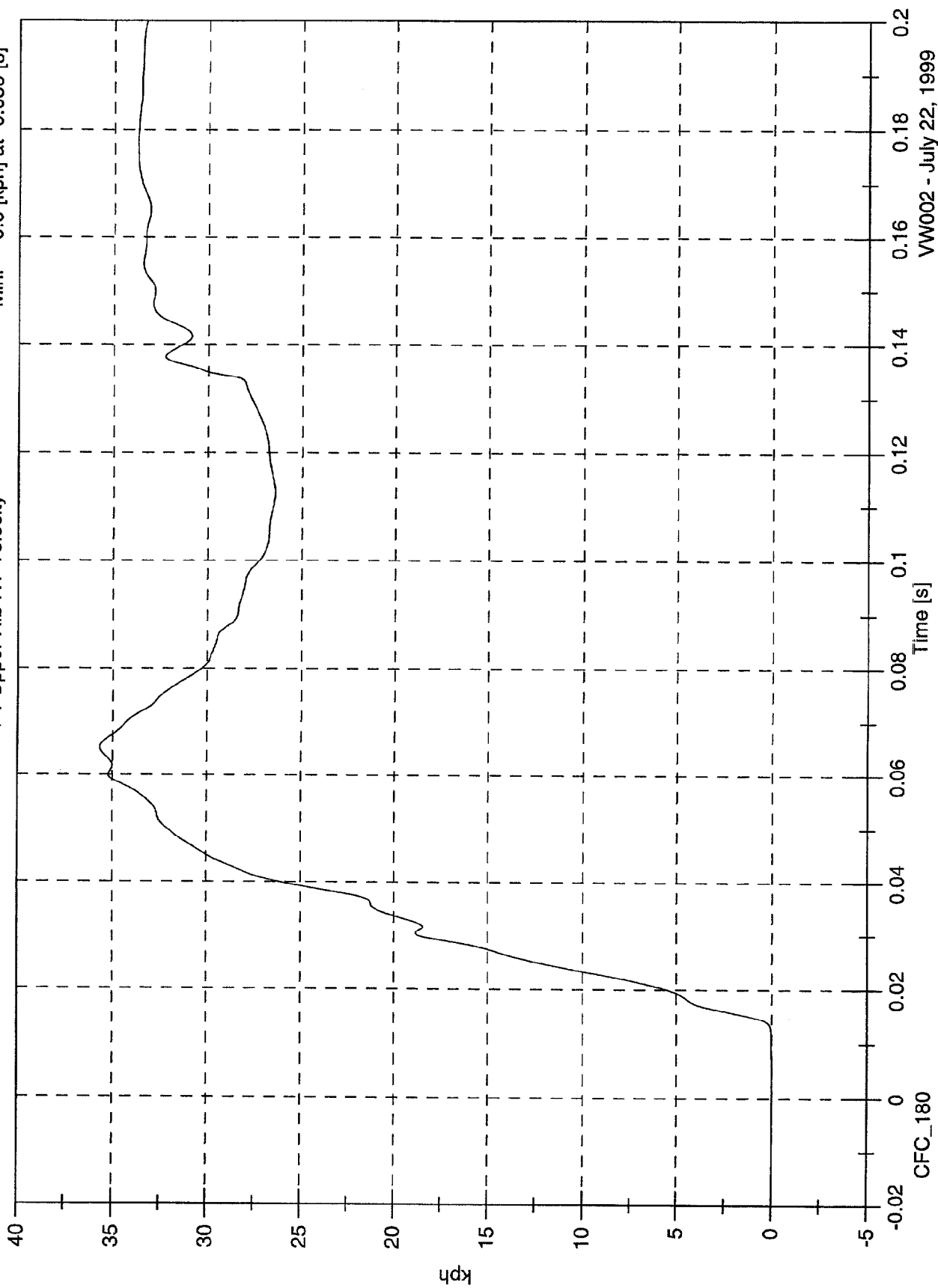
VW002 - July 22, 1999



SNCAP Test#1 VW Beetle

Max: 35.6 [kph] at 0.065 [s]
Min: -0.0 [kph] at -0.089 [s]

P1 Upper Rib RY Velocity

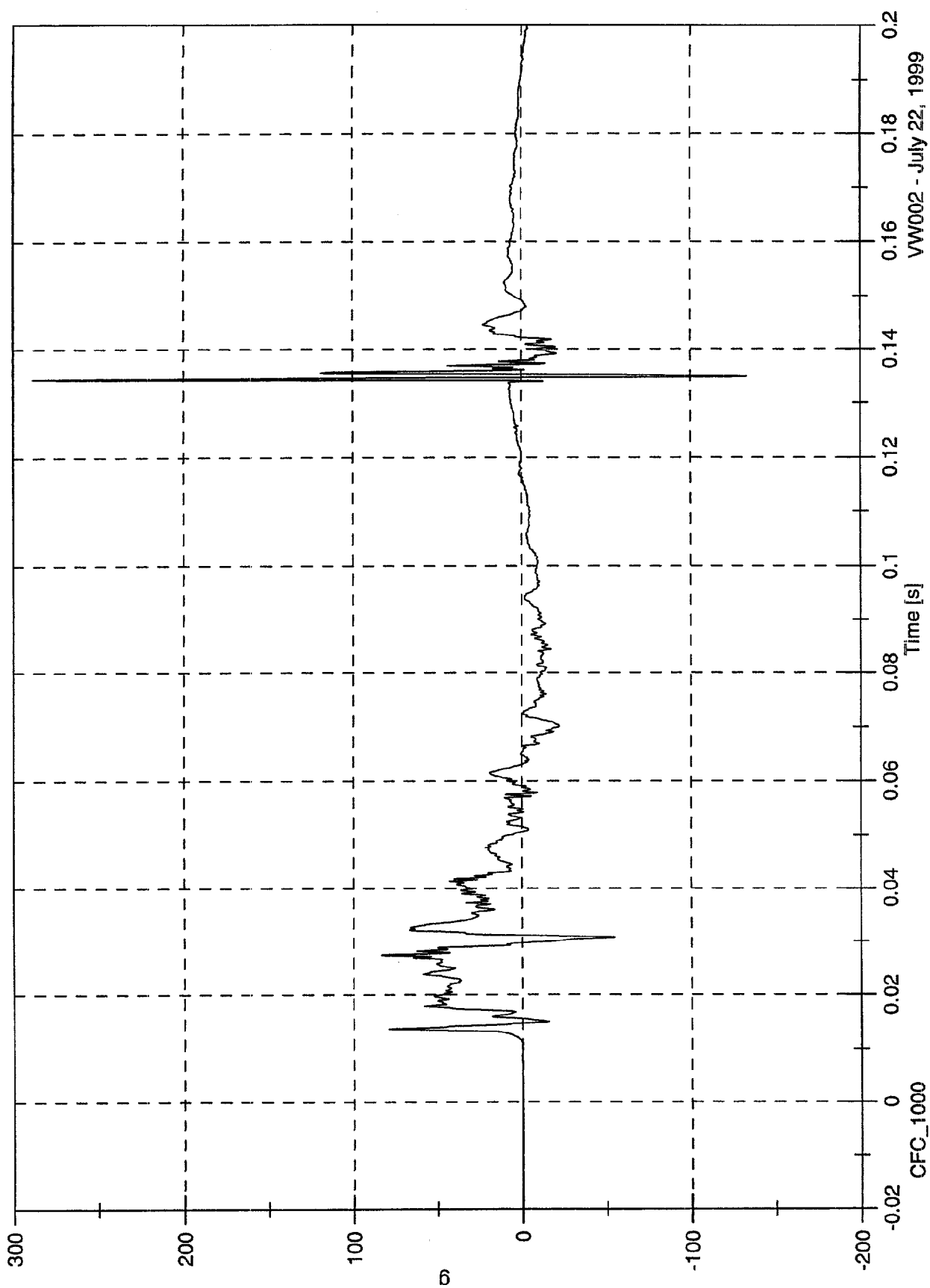


VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Max: 288.2 [g] at 0.134 [s]
Min: -133.2 [g] at 0.135 [s]

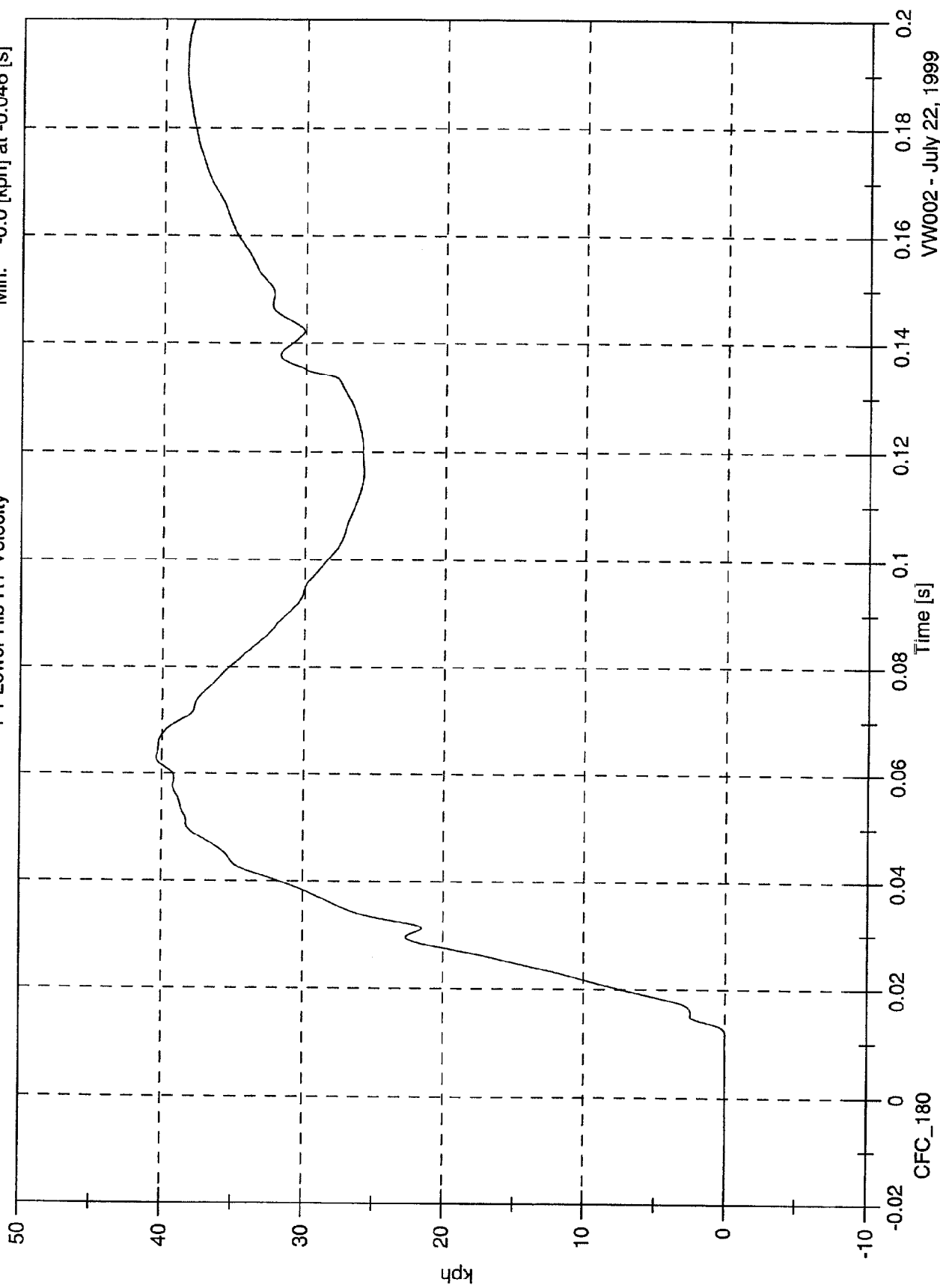
P1 Lower Rib RY



SNCAP Test#1 VW Beetle

Max: 40.4 [kph] at 0.063 [s]
Min: -0.0 [kph] at -0.046 [s]

P1 Lower Rib RY Velocity

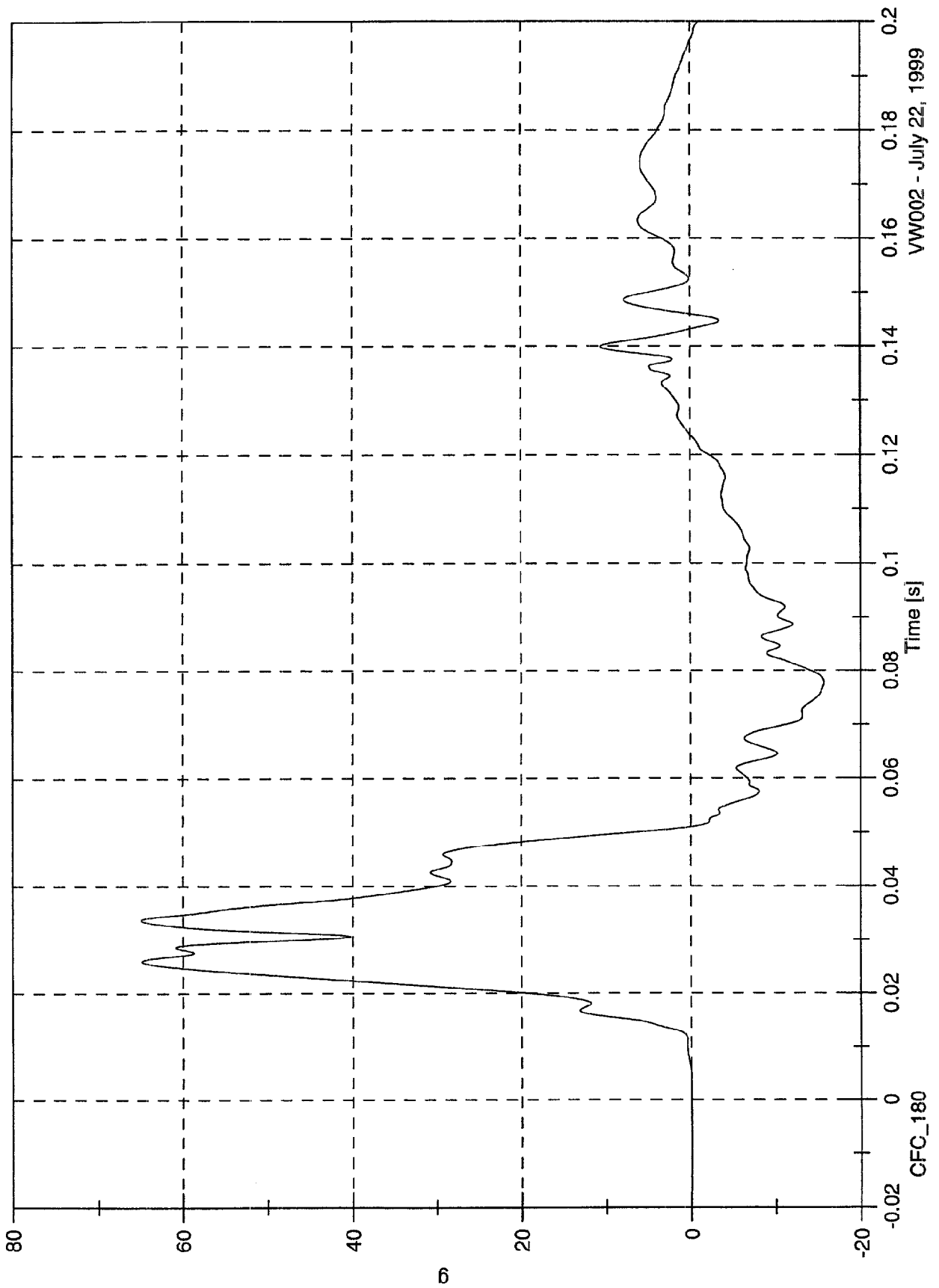


VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Max: 65.0 [g] at 0.034 [s]
Min: -15.7 [g] at 0.078 [s]

P1 Lower Spine RY

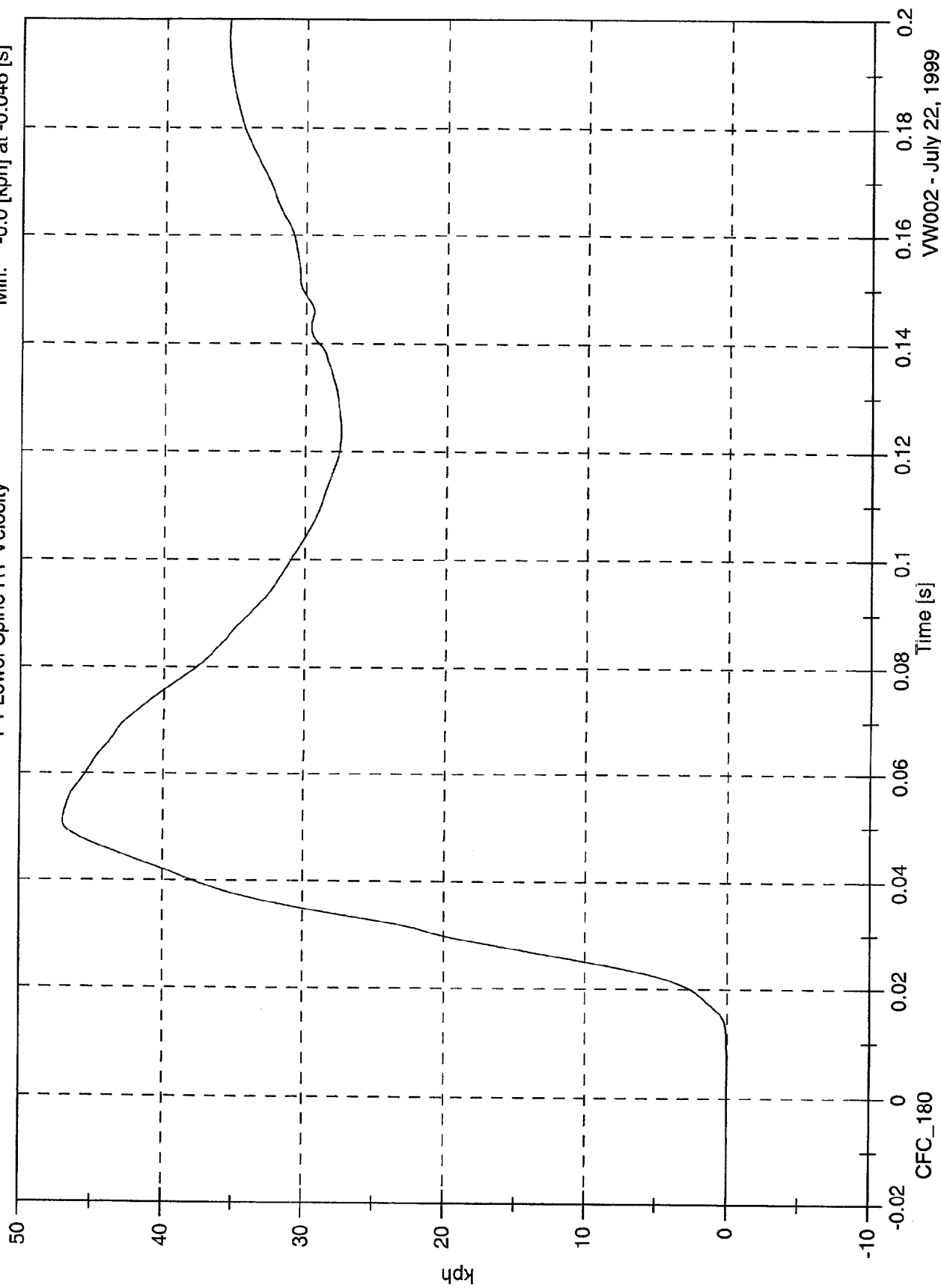


SNCAP Test#1 VW Beetle

Max: 47.0 [kph] at 0.051 [s]

Min: -0.0 [kph] at -0.046 [s]

P1 Lower Spine RY Velocity

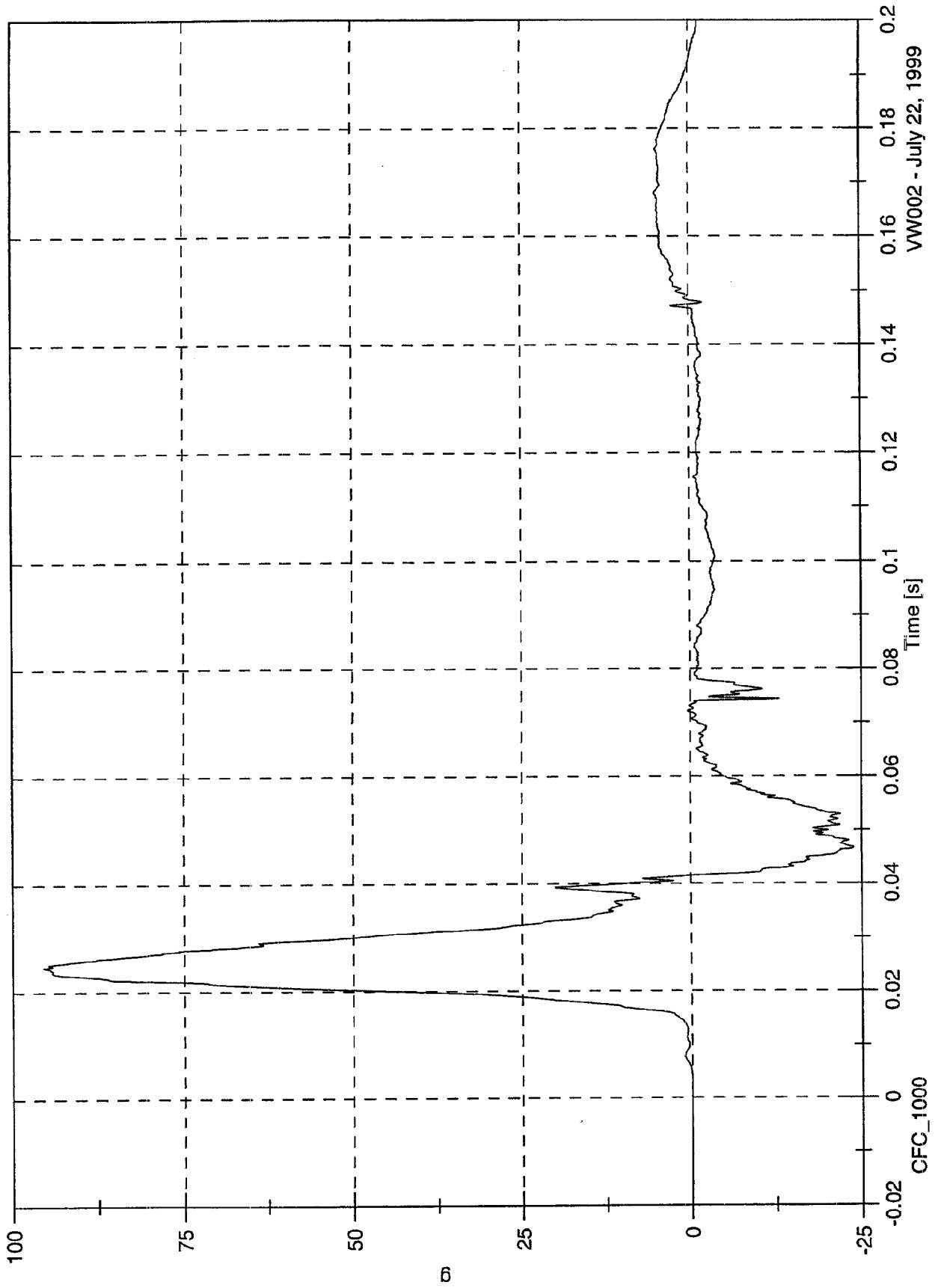


VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Max: 95.5 [g] at 0.025 [s]
Min: -23.8 [g] at 0.047 [s]

P1 Pelvic RY

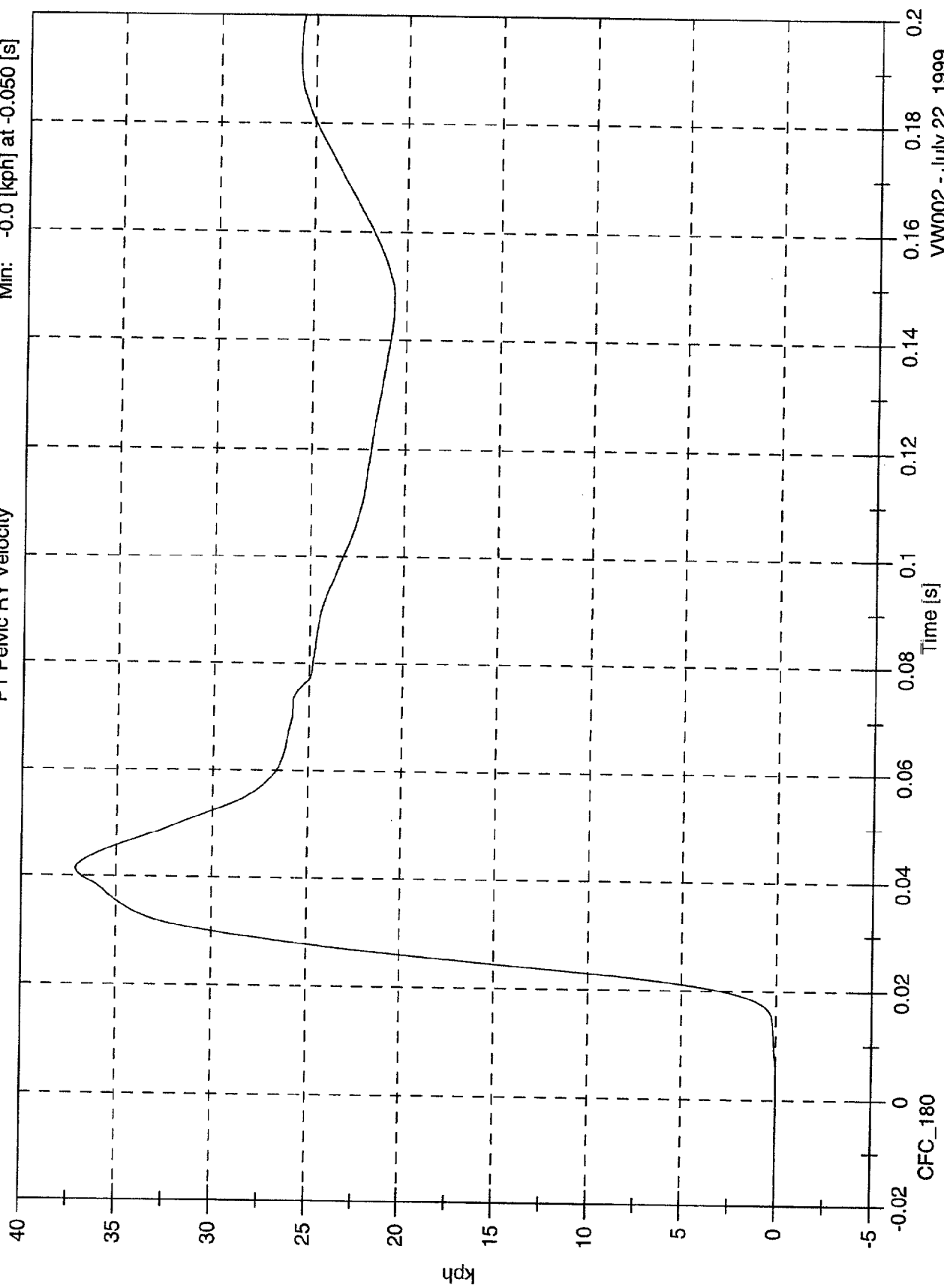


VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Max: 37.1 [kph] at 0.041 [s]
Min: -0.0 [kph] at -0.050 [s]

P1 Pelvic RY Velocity



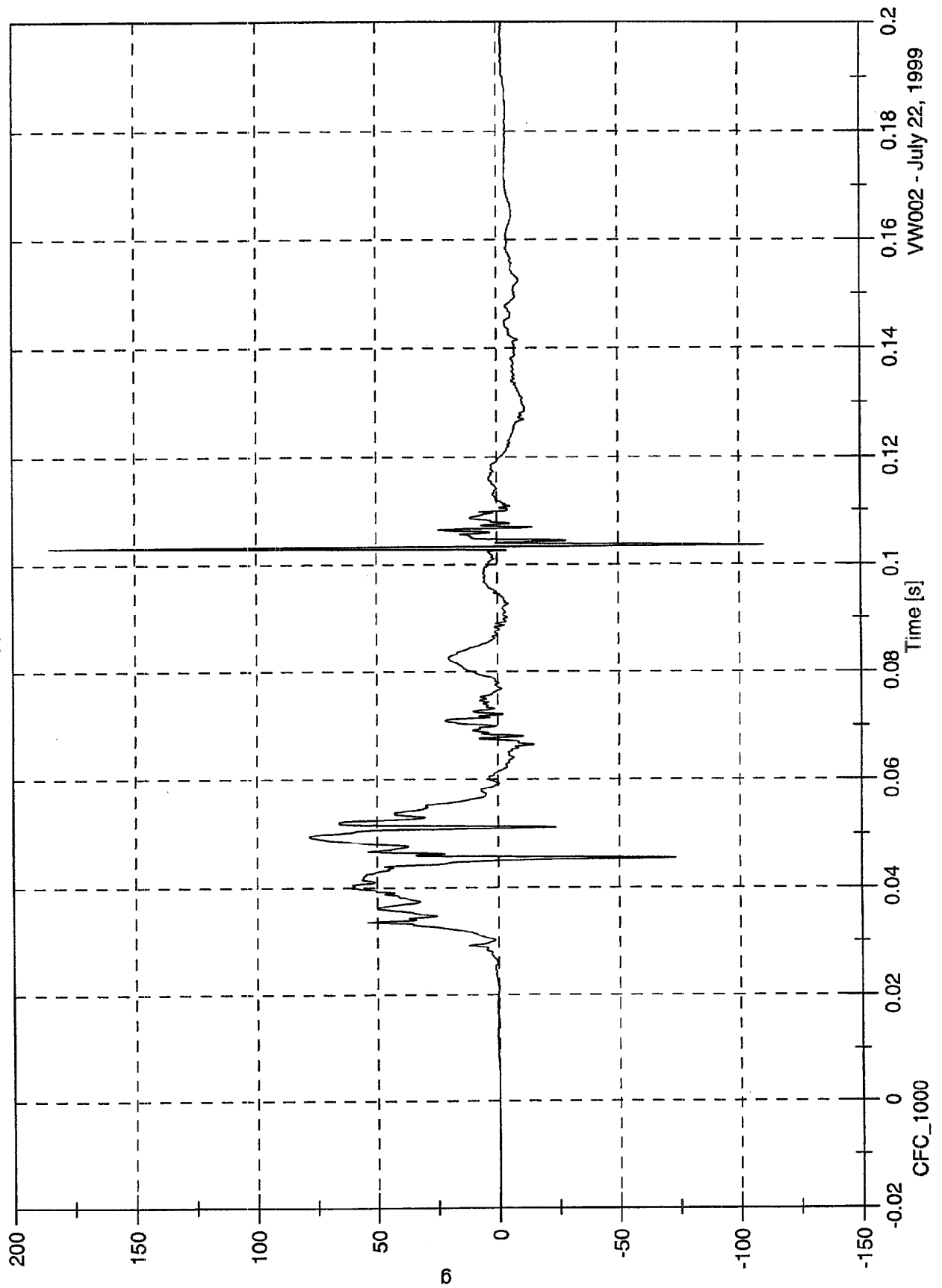
VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Max: 184.8 [g] at 0.103 [s]

Min: -110.2 [g] at 0.104 [s]

P4 Upper Rib RY



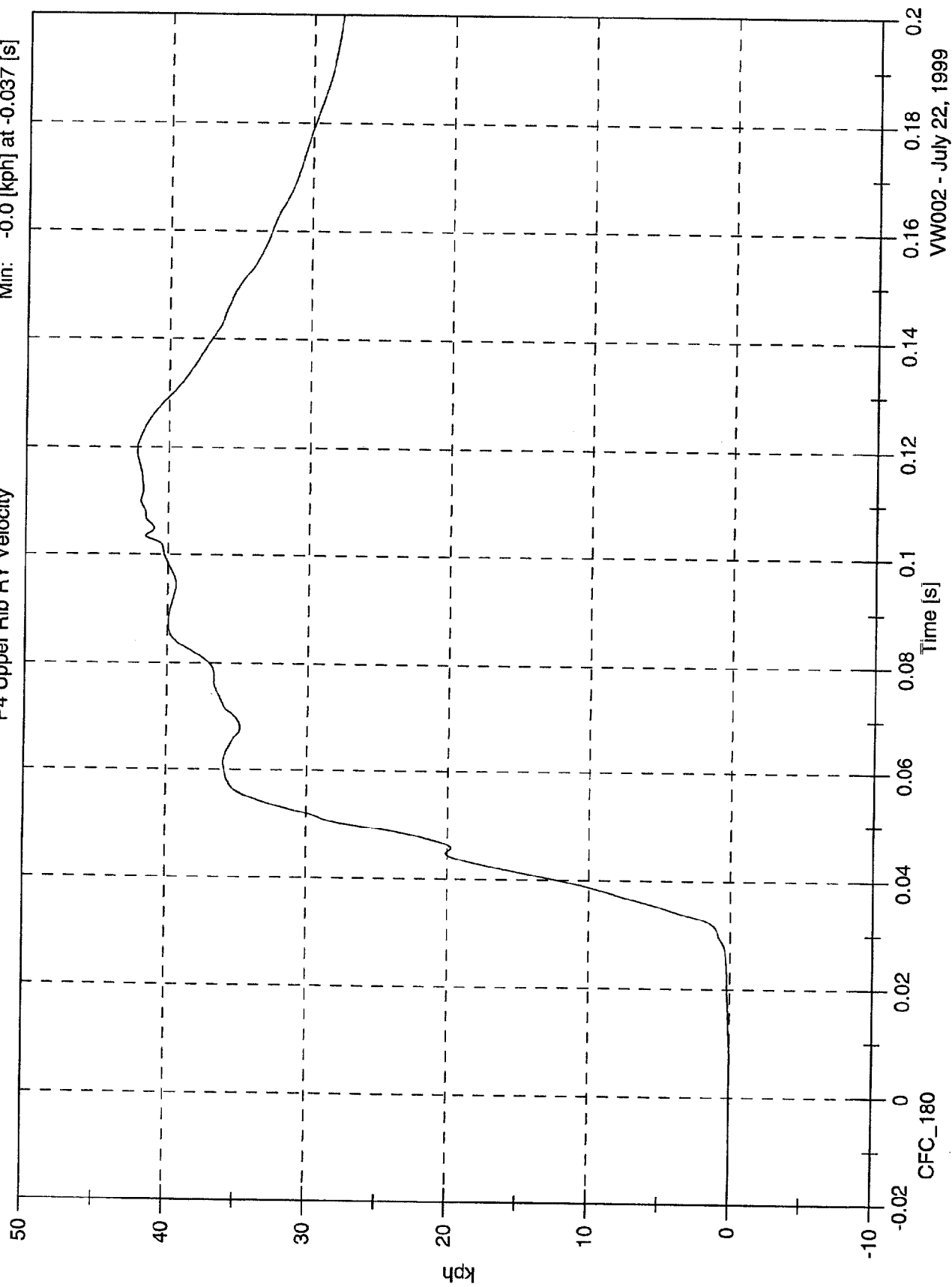
VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Max: 42.2 [kph] at 0.119 [s]

Min: -0.0 [kph] at -0.037 [s]

P4 Upper Rib RY Velocity

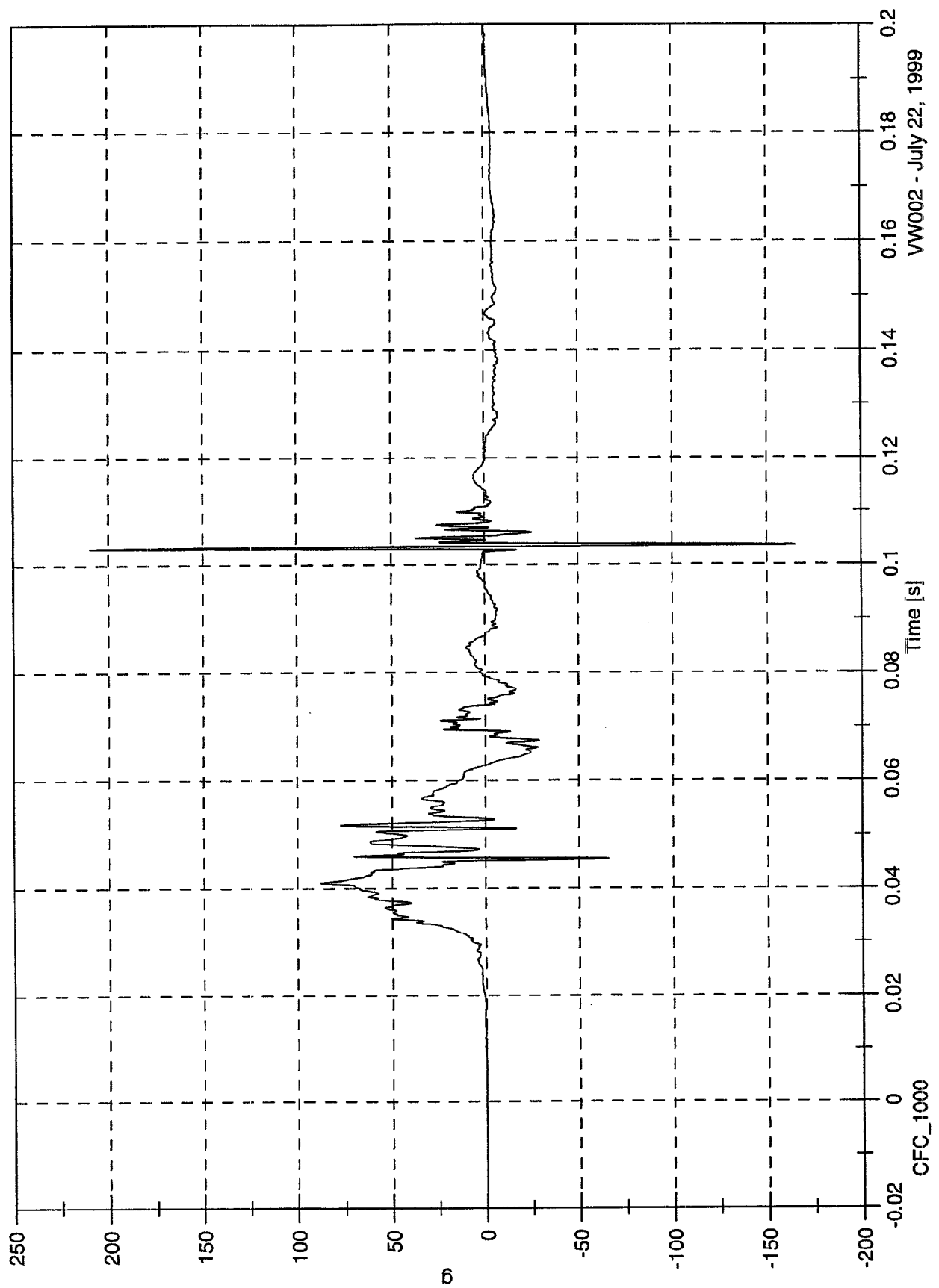


VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Max: 209.3 [g] at 0.103 [s]
Min: -164.9 [g] at 0.104 [s]

P4 Lower Rib RY

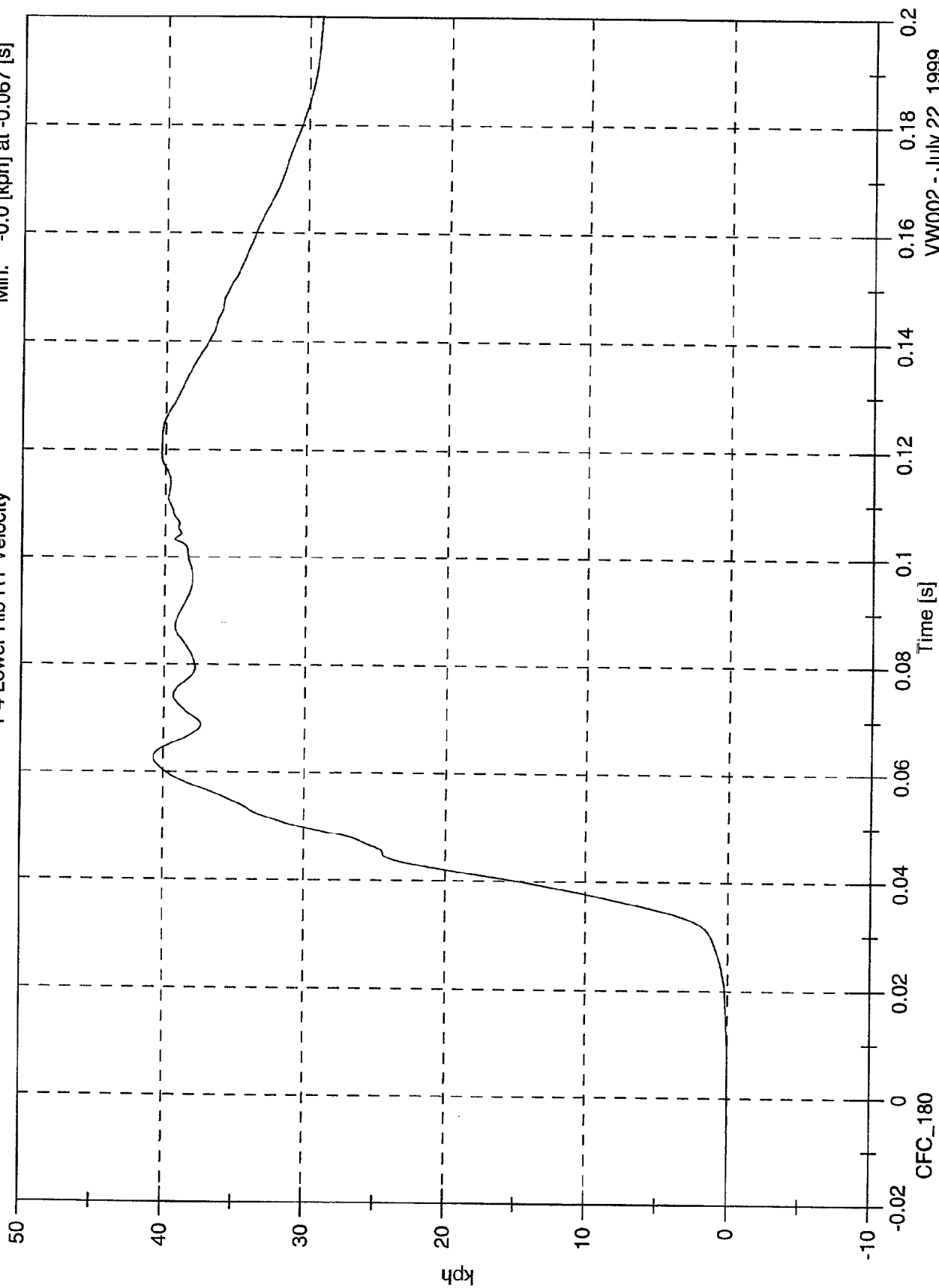


VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Max: 40.7 [kph] at 0.063 [s]
Min: -0.0 [kph] at -0.067 [s]

P4 Lower Rib RY Velocity

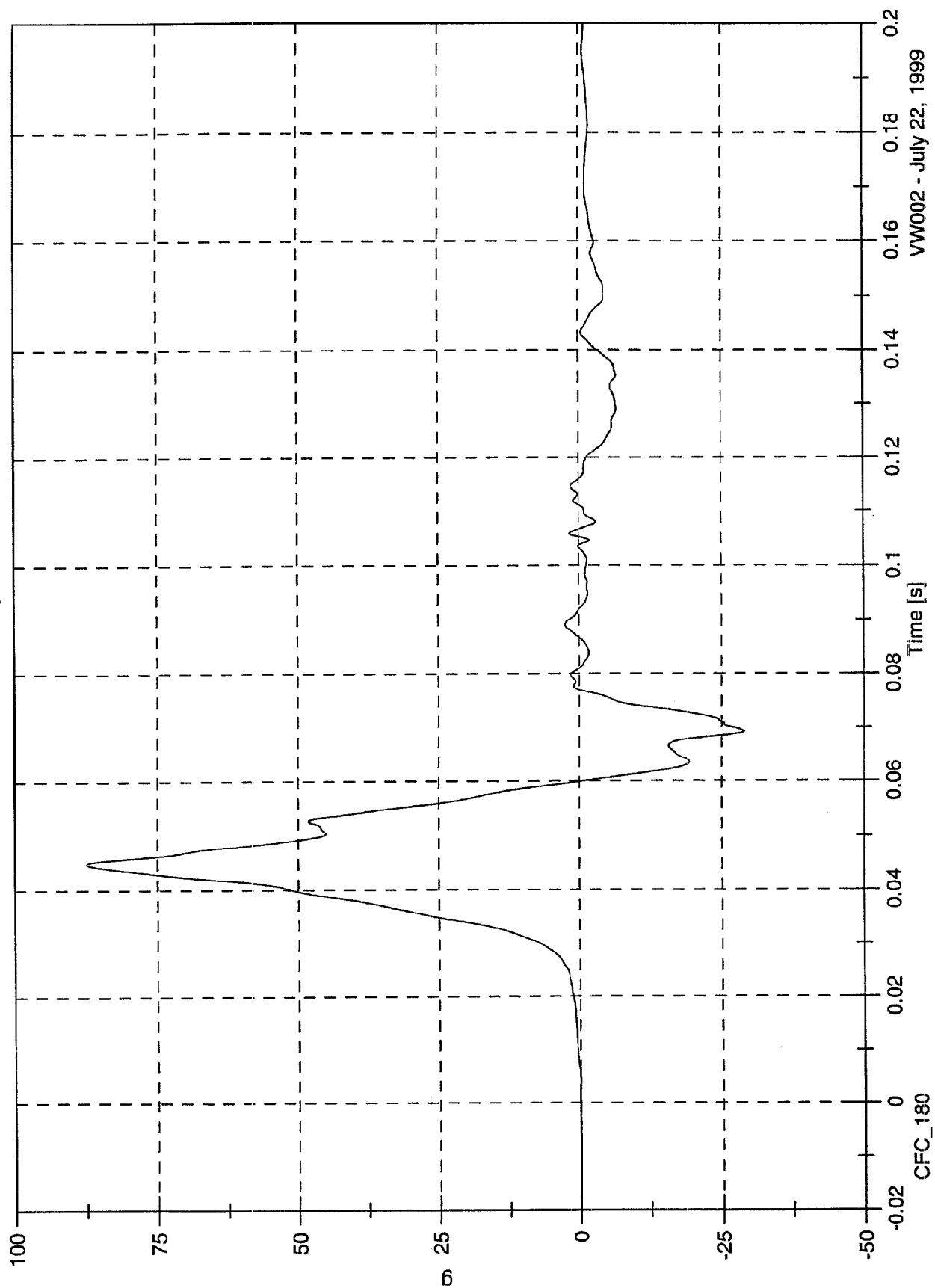


VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Max: 87.5 [g] at 0.045 [s]
Min: -29.1 [g] at 0.069 [s]

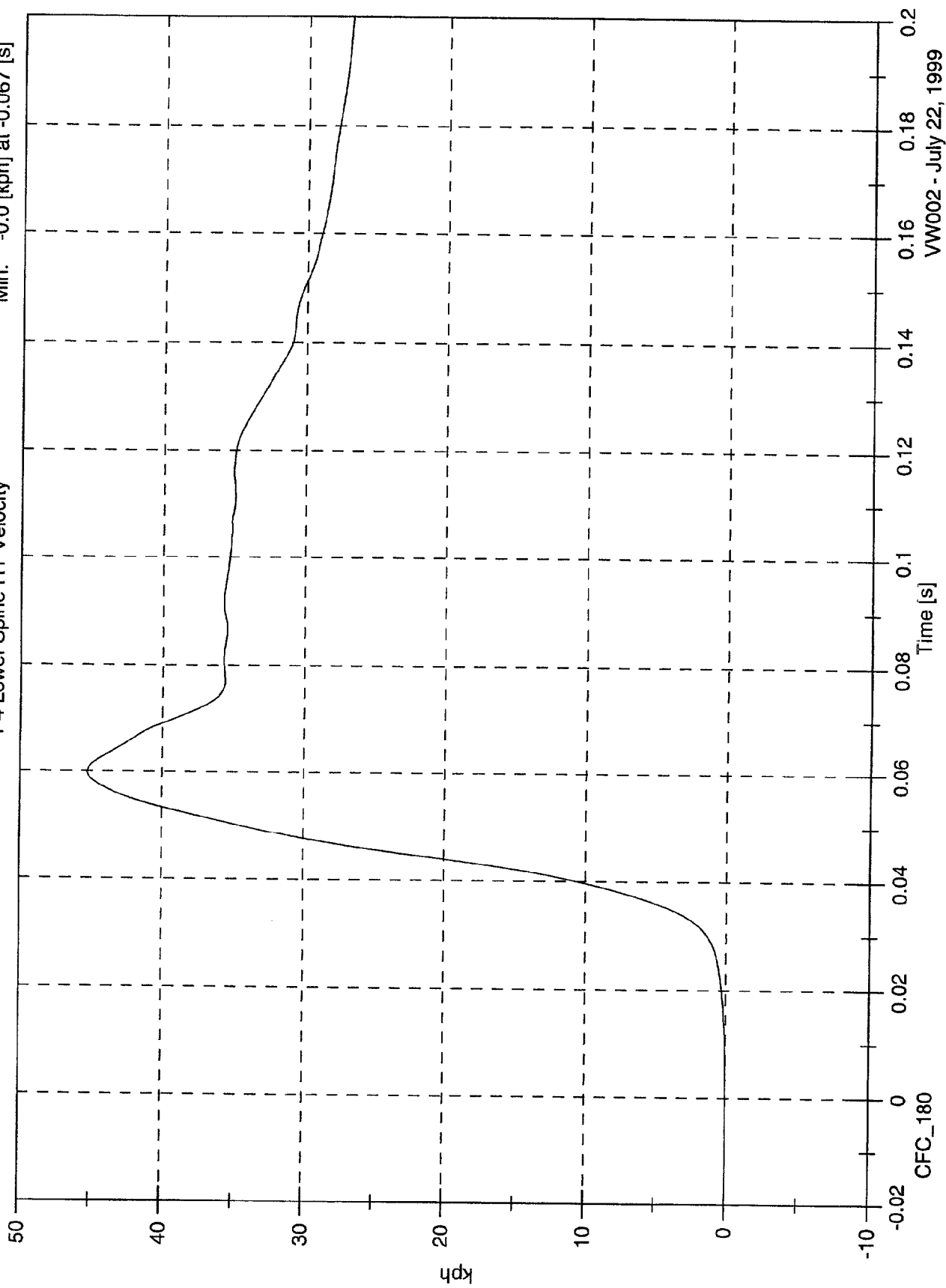
P4 Lower Spine RY



SNCAP Test#1 VW Beetle

Max: 45.3 [kph] at 0.060 [s]
Min: -0.0 [kph] at -0.067 [s]

P4 Lower Spine RY Velocity



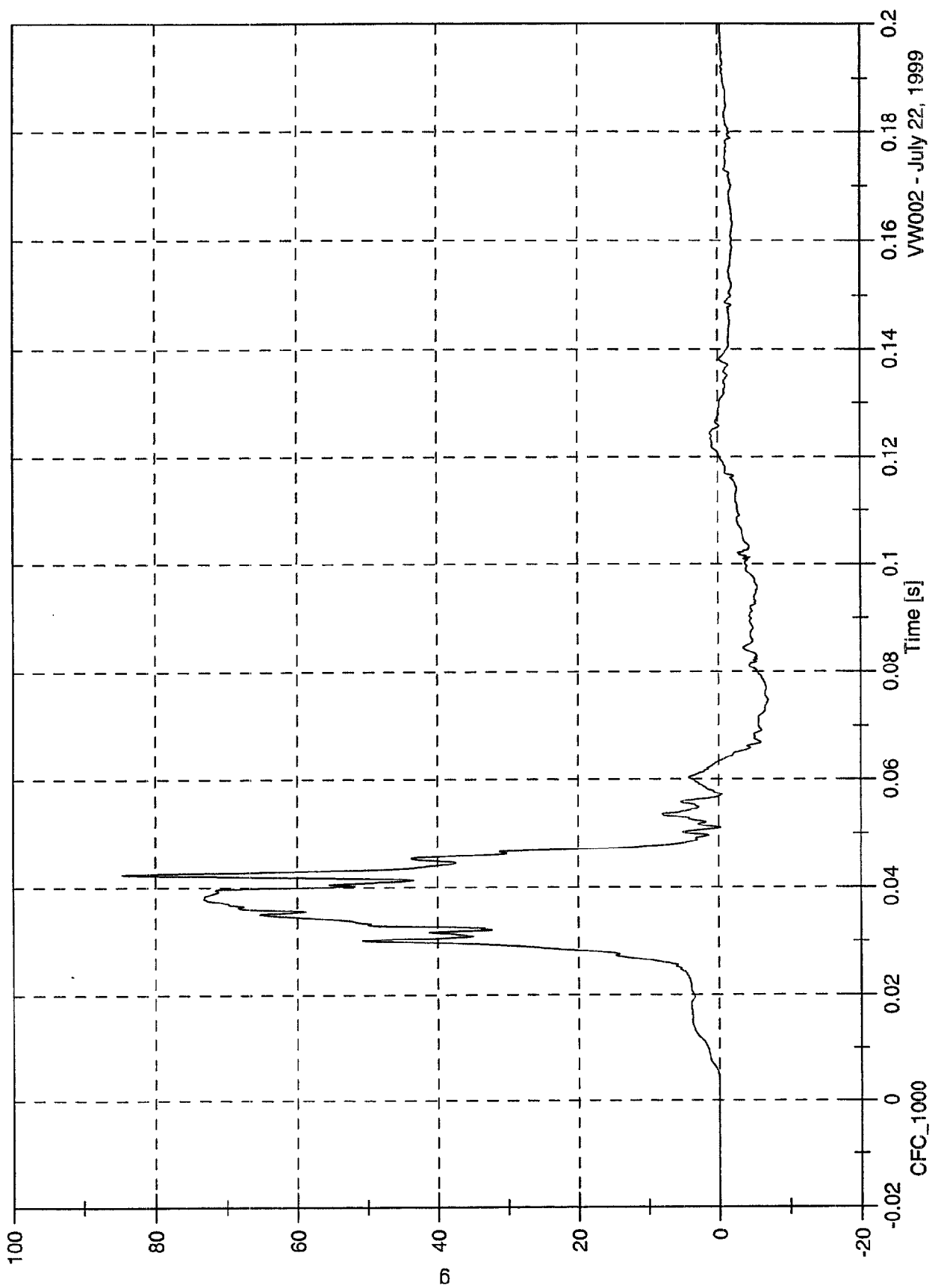
VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Max: 84.6 [g] at 0.042 [s]

Min: -7.0 [g] at 0.075 [s]

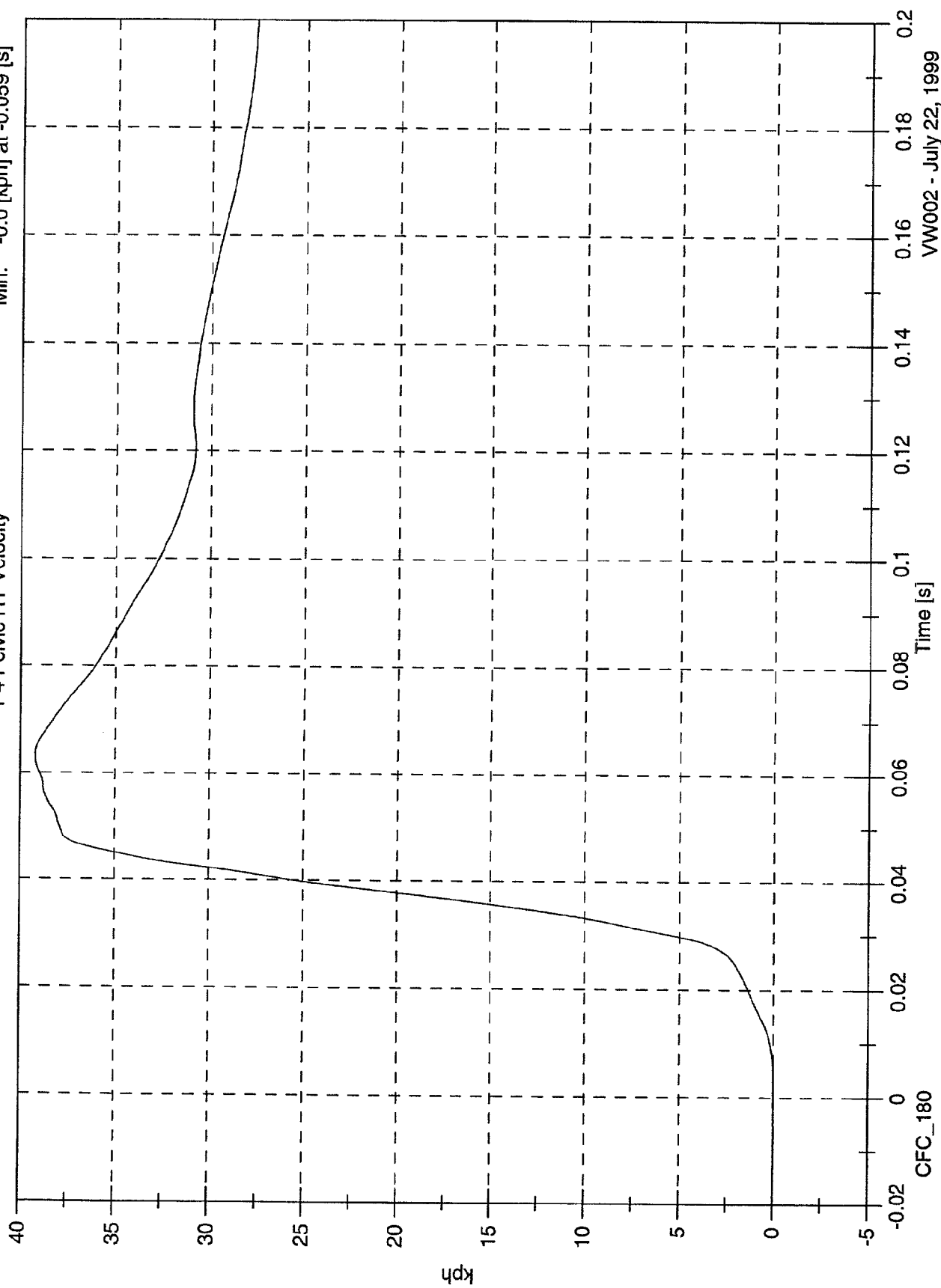
P4 Pelvic RY



SNCAP Test#1 VW Beetle

Max: 39.2 [kph] at 0.063 [s]
Min: -0.0 [kph] at -0.059 [s]

P4 Pelvic RY Velocity



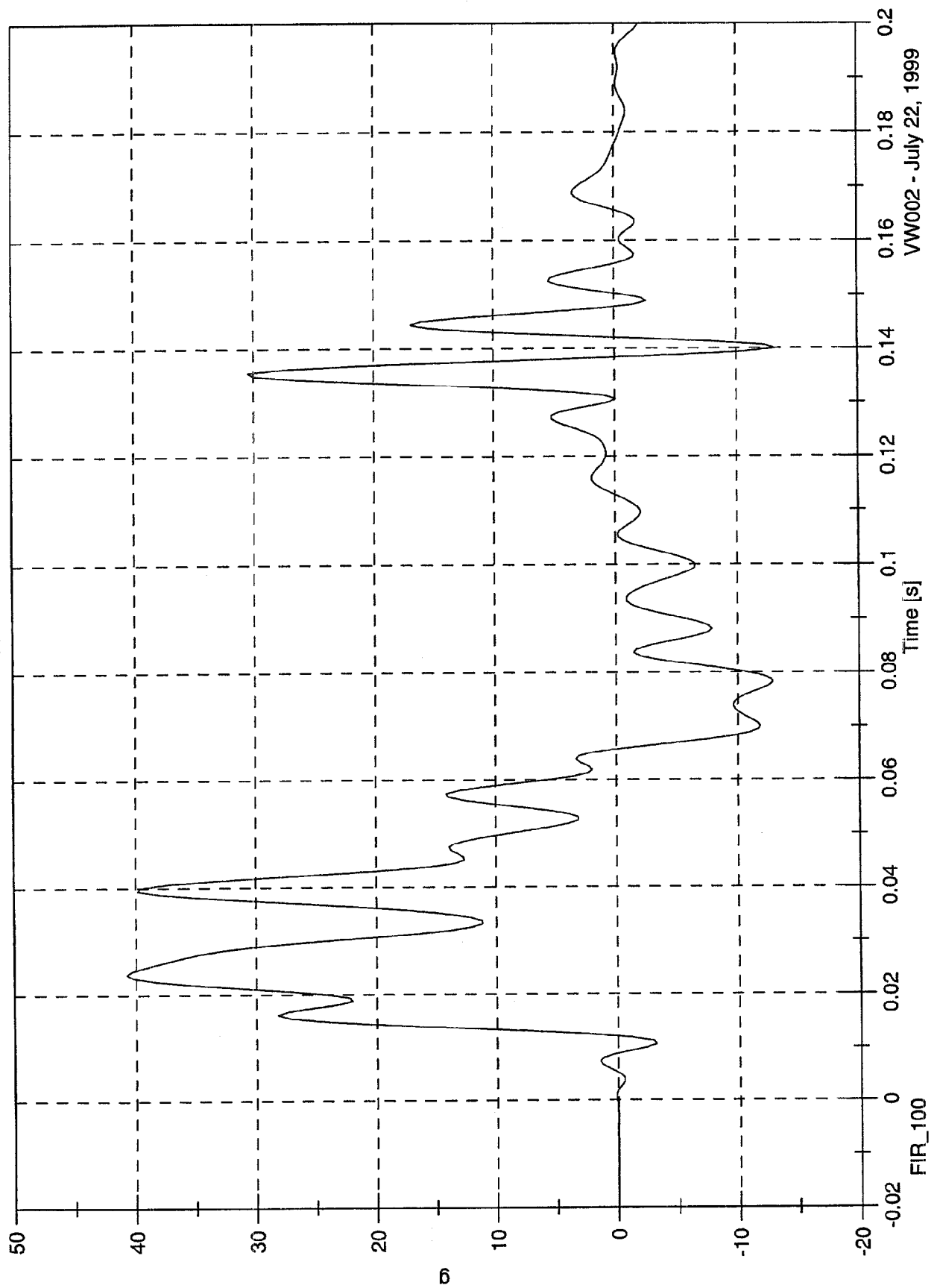
VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

P1 Upper Rib RY

Max: 40.7 [g] at 0.024 [s]

Min: -13.3 [g] at 0.140 [s]



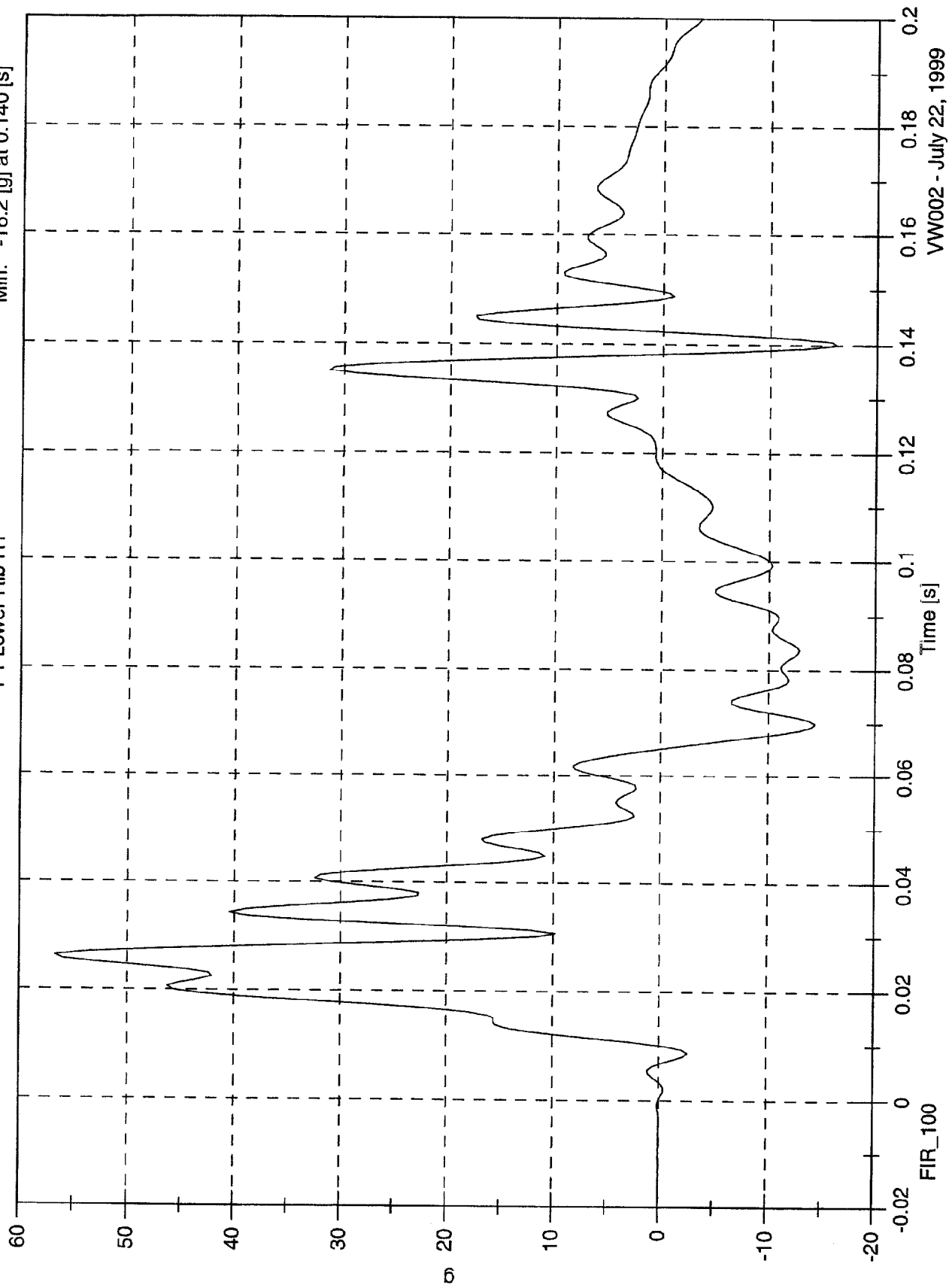
VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Max: 56.7 [g] at 0.026 [s]

Min: -16.2 [g] at 0.140 [s]

P1 Lower Rib RY

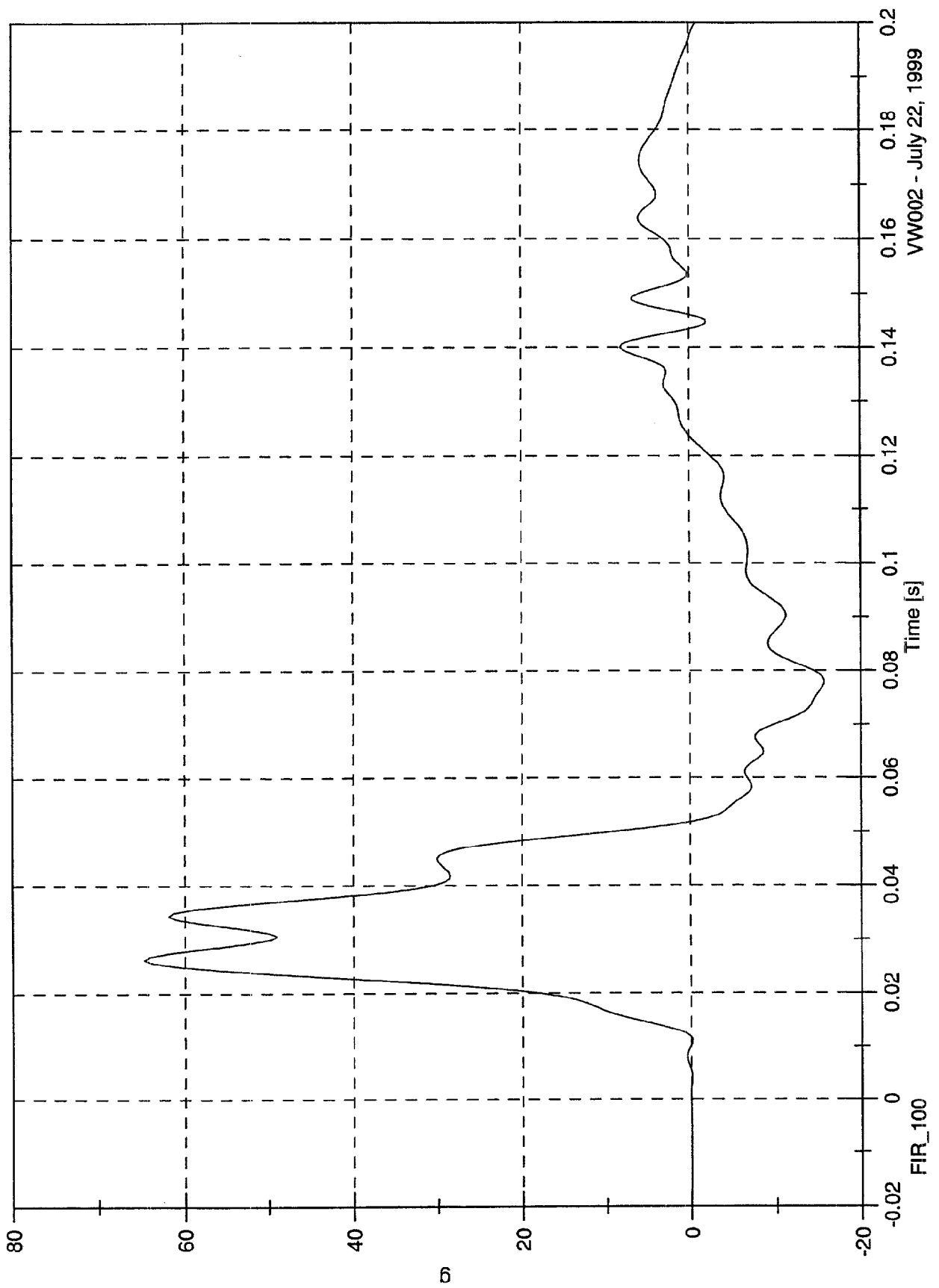


VW002 - July 22, 1999

SNCAP Test#1 VW Beetle

Max: 64.7 [g] at 0.026 [s]
Min: -15.7 [g] at 0.078 [s]

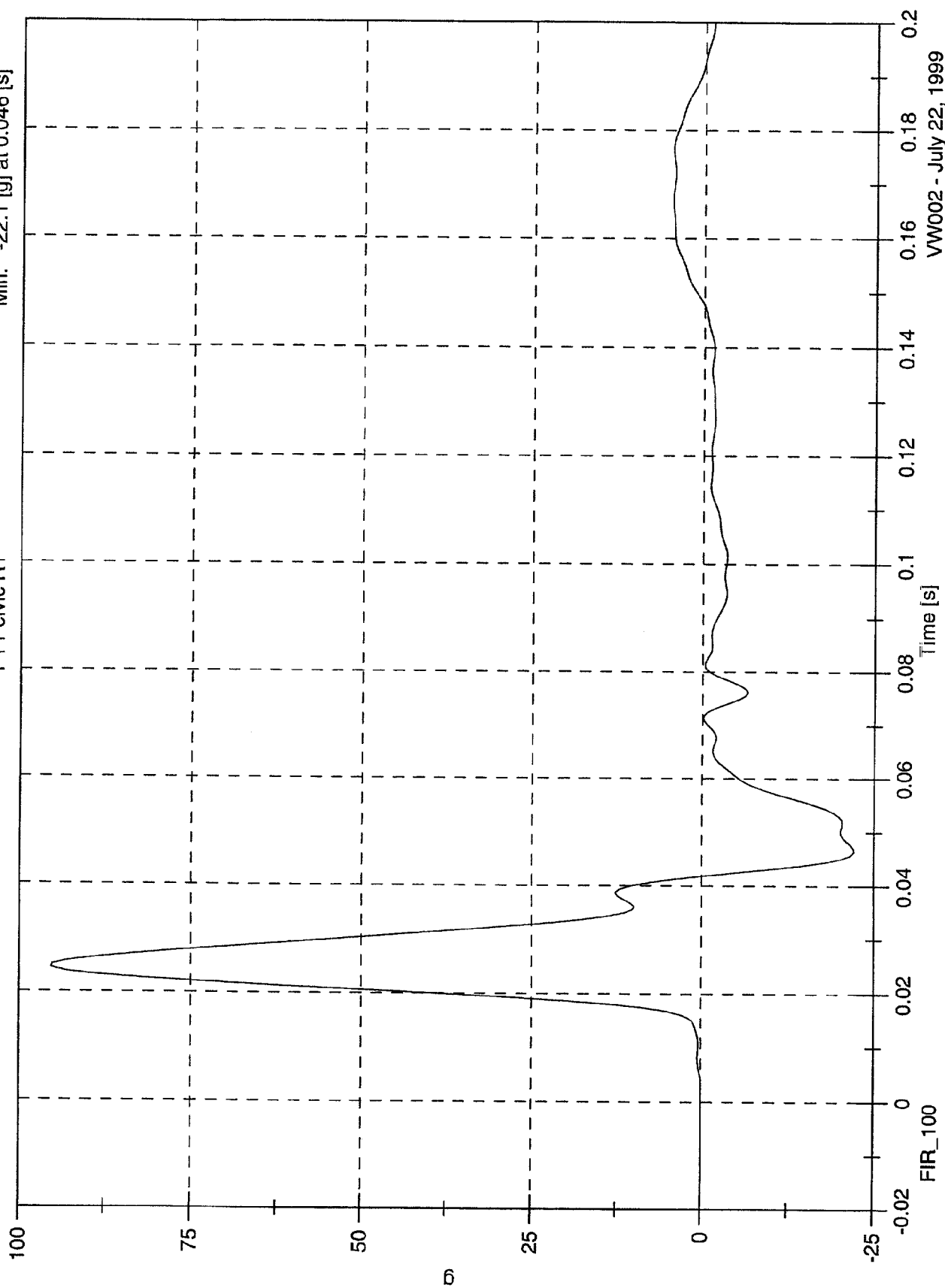
P1 Lower Spine RY



SNCAP Test#1 VW Beetle

Max: 95.3 [g] at 0.024 [s]
Min: -22.1 [g] at 0.046 [s]

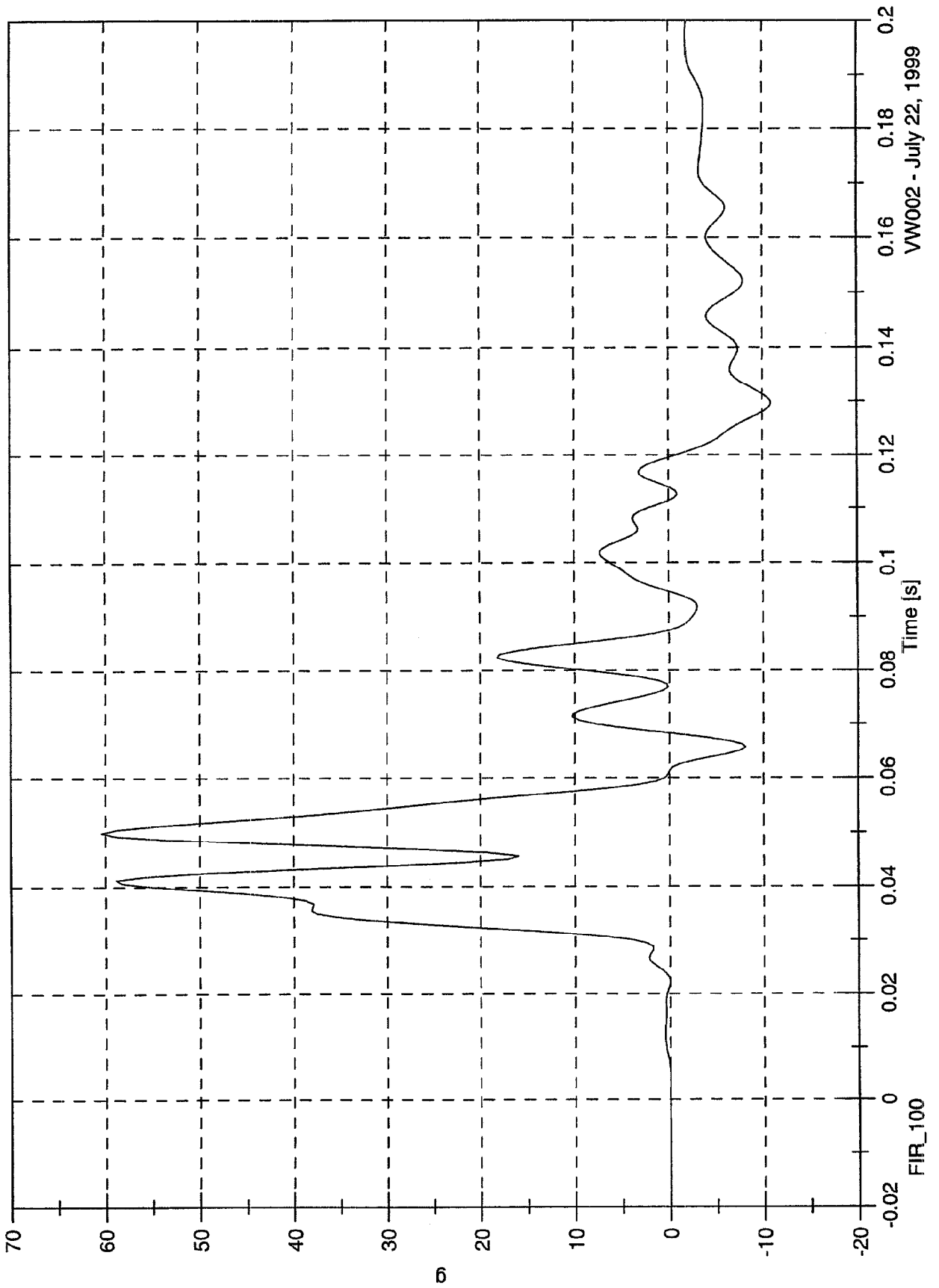
P1 Pelvic RY



SNCAP Test#1 VW Beetle

Max: 60.4 [g] at 0.050 [s]
Min: -10.9 [g] at 0.129 [s]

P4 Upper Rib RY



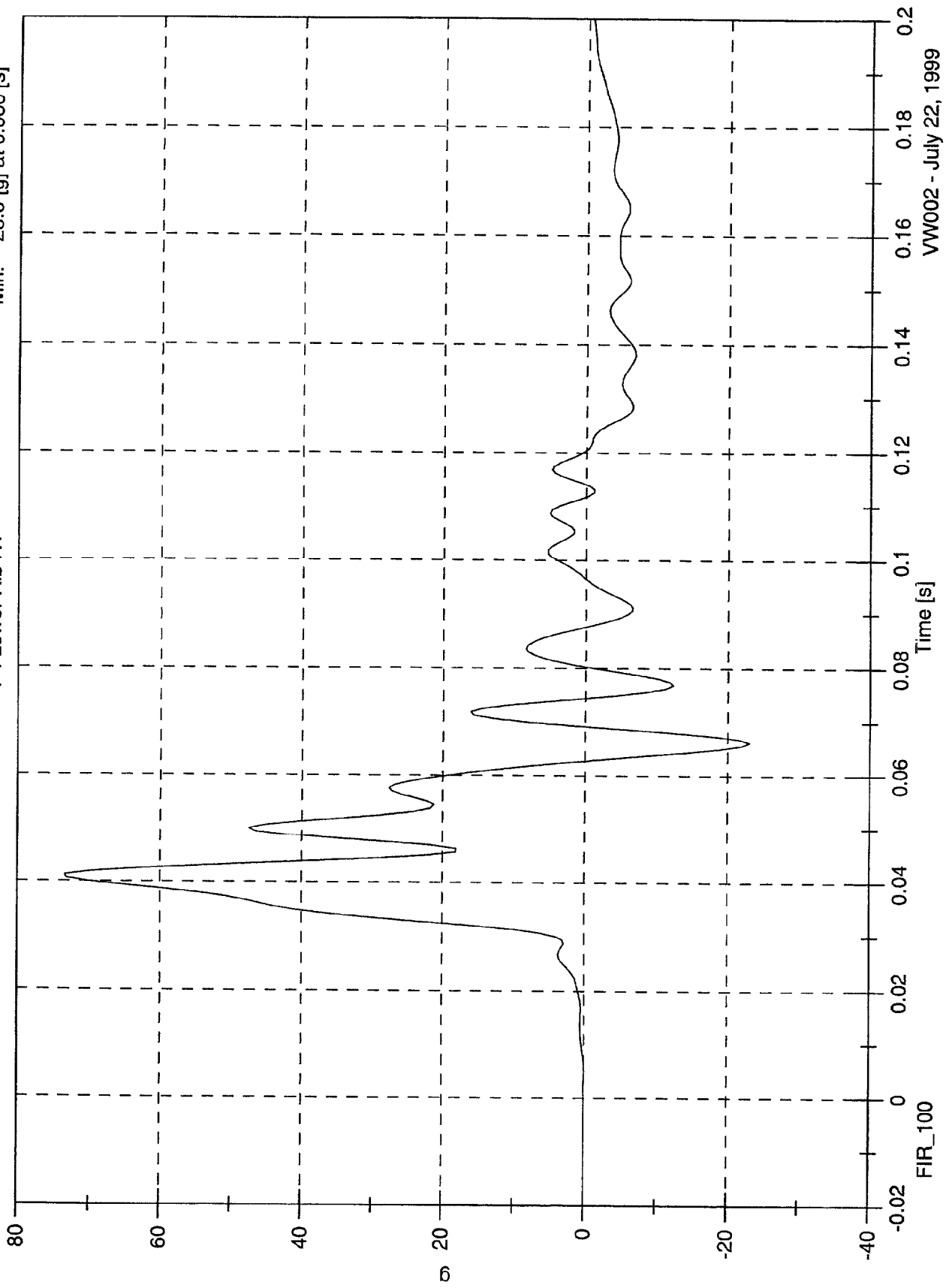
VW002 - July 22, 1999

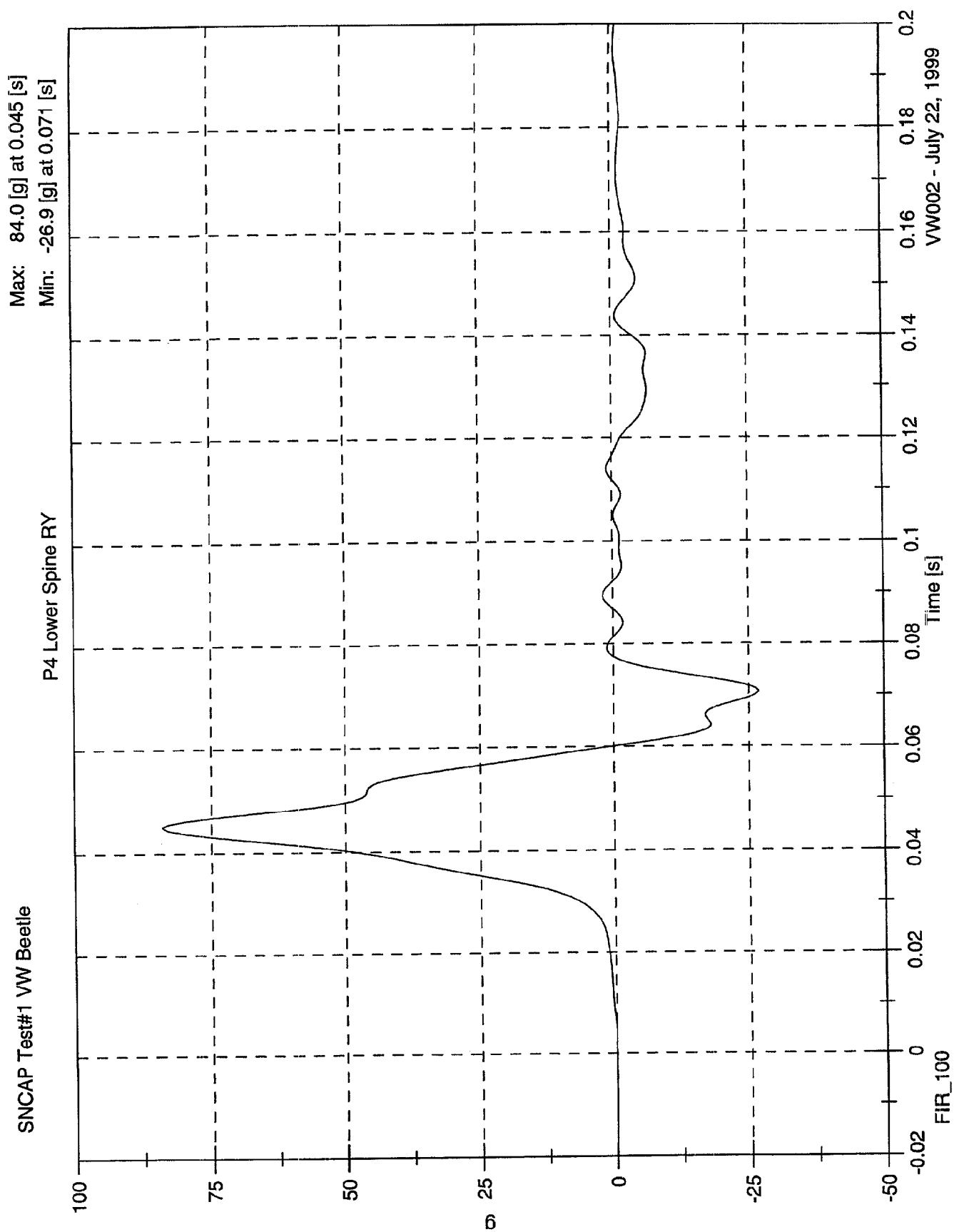
SNCAP Test#1 VW Beetle

Max: 73.3 [g] at 0.041 [s]

Min: -23.0 [g] at 0.066 [s]

P4 Lower Rib RY



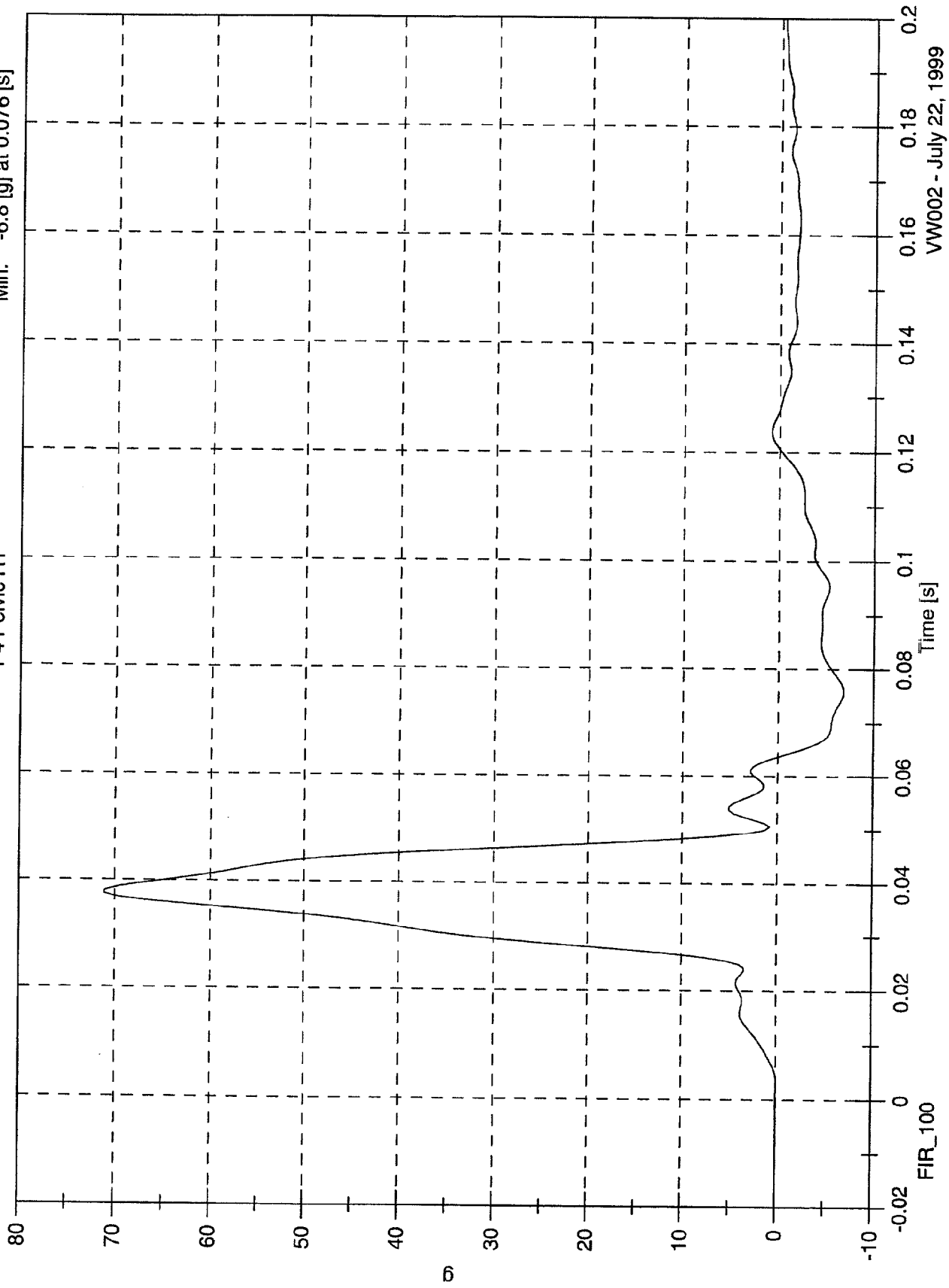


SNCAP Test#1 VW Beetle

Max: 71.1 [g] at 0.038 [s]

Min: -6.8 [g] at 0.076 [s]

P4 Pelvic RY



VW002 - July 22, 1999

APPENDIX C

SID CONFIGURATION AND PERFORMANCE VERIFICATION DATA

SUMMARY
SID PRE & POST TEST CALIBRATION

CONFIGURED FOR LEFT SIDE IMPACT

Date: June 30, 1999; July 30, 1999 Sequential Test Number: 1
Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	SID NO.: 016		SID NO.: 027	
		PRE TEST	POST TEST	PRE TEST	POST TEST
SH- Seated Height (mm)	889 - 909	902	902	909	908
RH- Rib Height (mm)	501 - 521	514	514	514	514
HP- Hip Pivot Height (mm)	99 ref.	99	99	99	99
RD- Rib from Back Line (mm)	229 - 241	239	239	236	236
KV- Knee Pivot from Back Line (mm)	511 - 526	526	526	516	516
SW- Knee Pivot to Floor (mm)	490 - 505	494	494	493	493
HW- Hip Width (mm)	356 - 391	361	362	367	368
THORAX IMPACTS					
TEMPERATURE (°C)	18.9 - 25.5	21.1	21.0	21.1	21.0
RELATIVE HUMIDITY (%)	10 - 70	32	31	32	31
PROBE SPEED (m/s)	4.27 - 4.33	4.27	4.28	4.29	4.28
UPPER RIB (g's)	37 - 46	39.5	44.2	40.4	41.7
LOWER RIB (g's)	37 - 46	39.1	44.7	37.9	44.3
LOWER SPINE (g's)	15 - 22	19.9	21.0	21.1	19.9
PELVIS IMPACT					
TEMPERATURE (°C)	18.9 - 25.5	21.1	21.0	21.1	21.0
RELATIVE HUMIDITY (%)	10 - 70	32	31	32	31
PROBE SPEED (m/s)	4.27 - 4.33	4.30	4.27	4.28	4.32
PELVIS (g's)	40 - 60	40.6	48.7	56.5	49.7

REMARKS: None

CALIBRATION TEST RESULTS

PRE-TEST

SID NO.: 016

CONFIGURED FOR LEFT SIDE IMPACT

**CALIBRATION TEST RESULTS SUMMARY
PRE-TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 016 Sequential Test Number: 1
Date: June 30, 1999 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.
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.: 016

Sequential Test Number:

1Date: June 30, 1999

Laboratory Technician:

B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
SH- Seated Height (mm)	889 - 909	902
RH- Rib Height (mm)	502 - 520	514
HP- Hip Pivot Height (mm)	99 ref.	99
RD- Rib from Back Line (mm)	229 - 241	239
KH- Knee Pivot from Back Line (mm)	511 - 526	526
KV- Knee Pivot to Floor (mm)	490 - 505	494
HW- Hip Width (mm)	356 - 391	361

REMARKS: None

THORACIC SHOCK ABSORBER TESTS
PRE-TEST

CONFIGURED FOR LEFT SIDE IMPACT

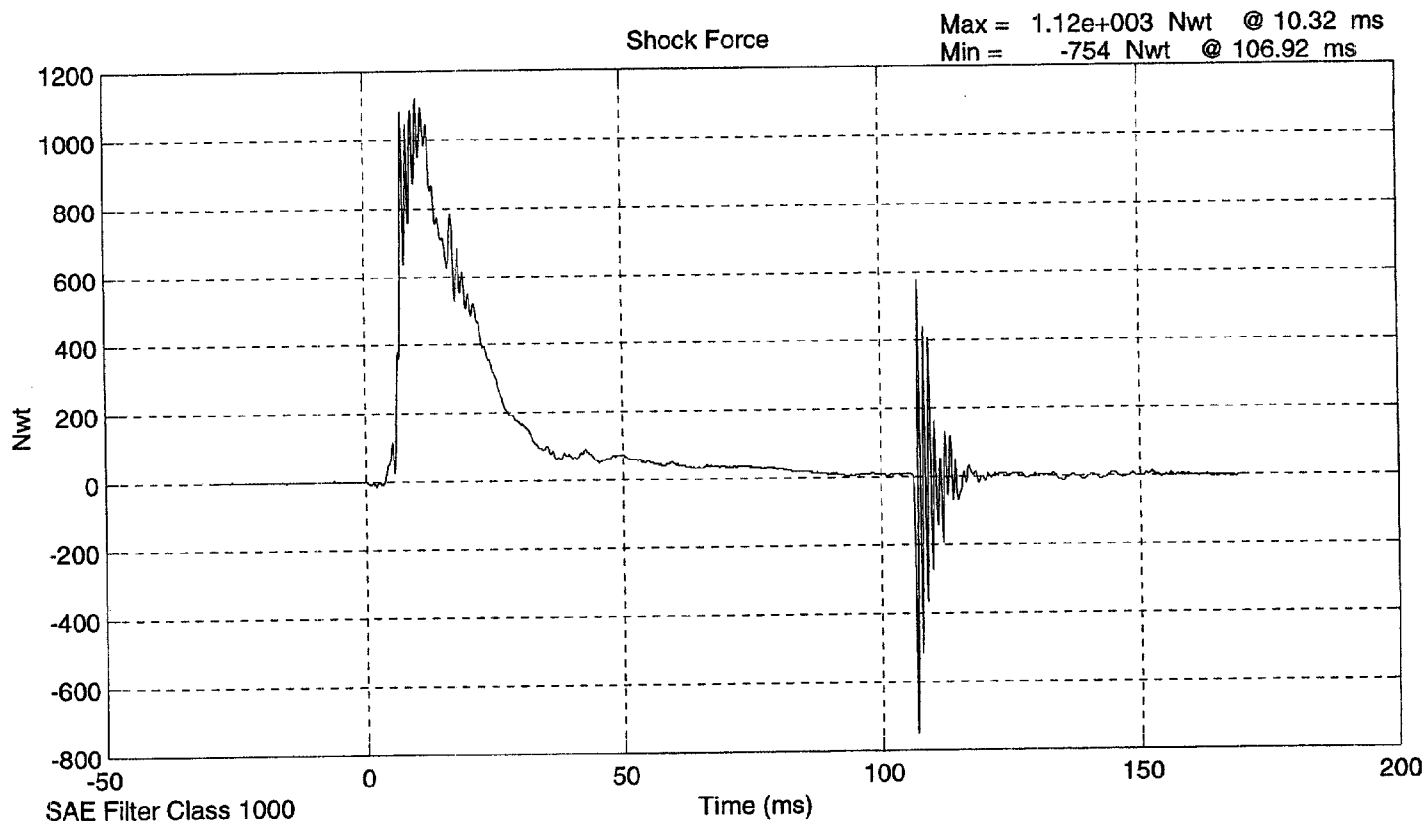
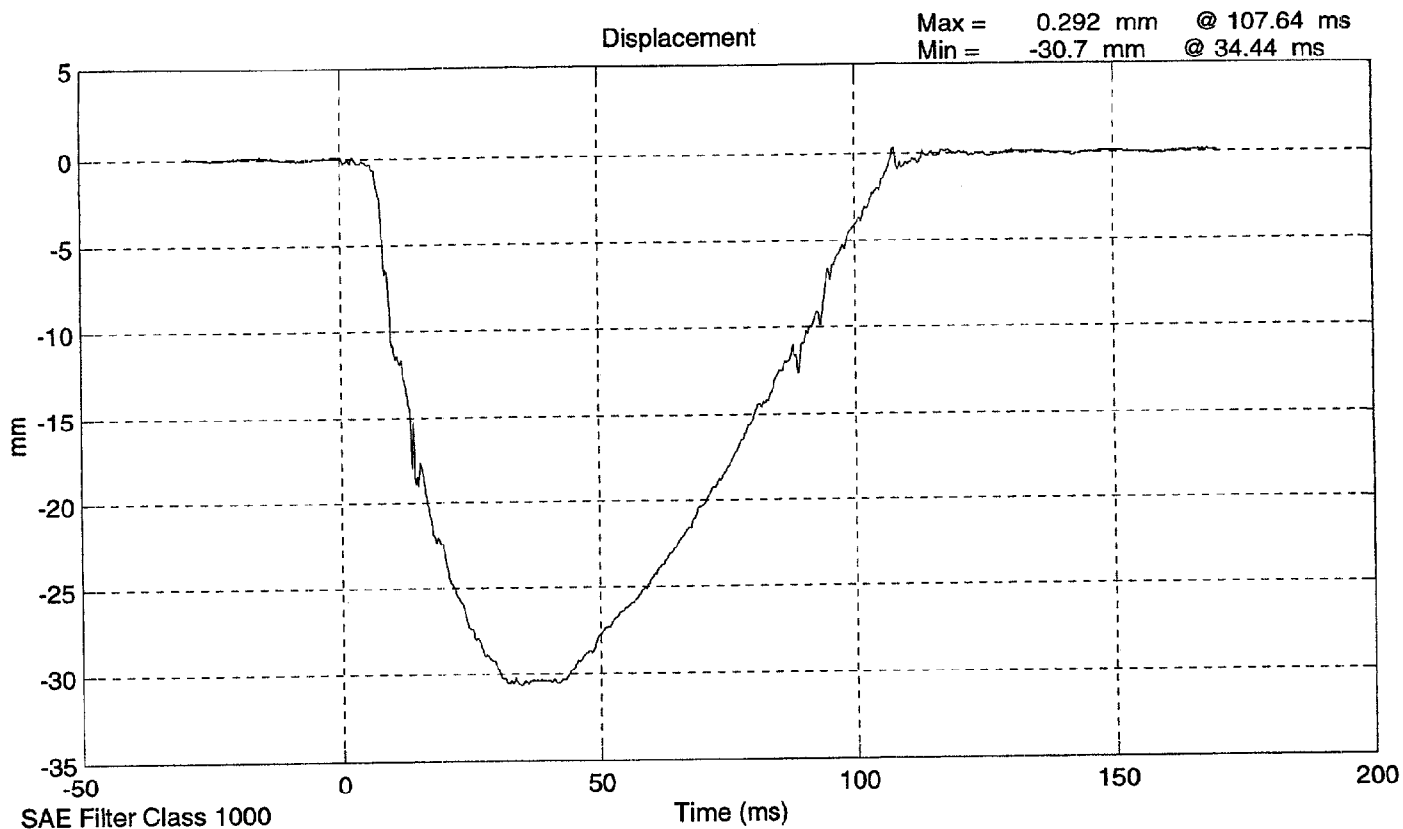
SID Serial No.: 016 Sequential Test Number: 1
Date: February 15, 1999 Laboratory Technician: B. Swiecicki

DAMPER IDENTIFICATION: 016

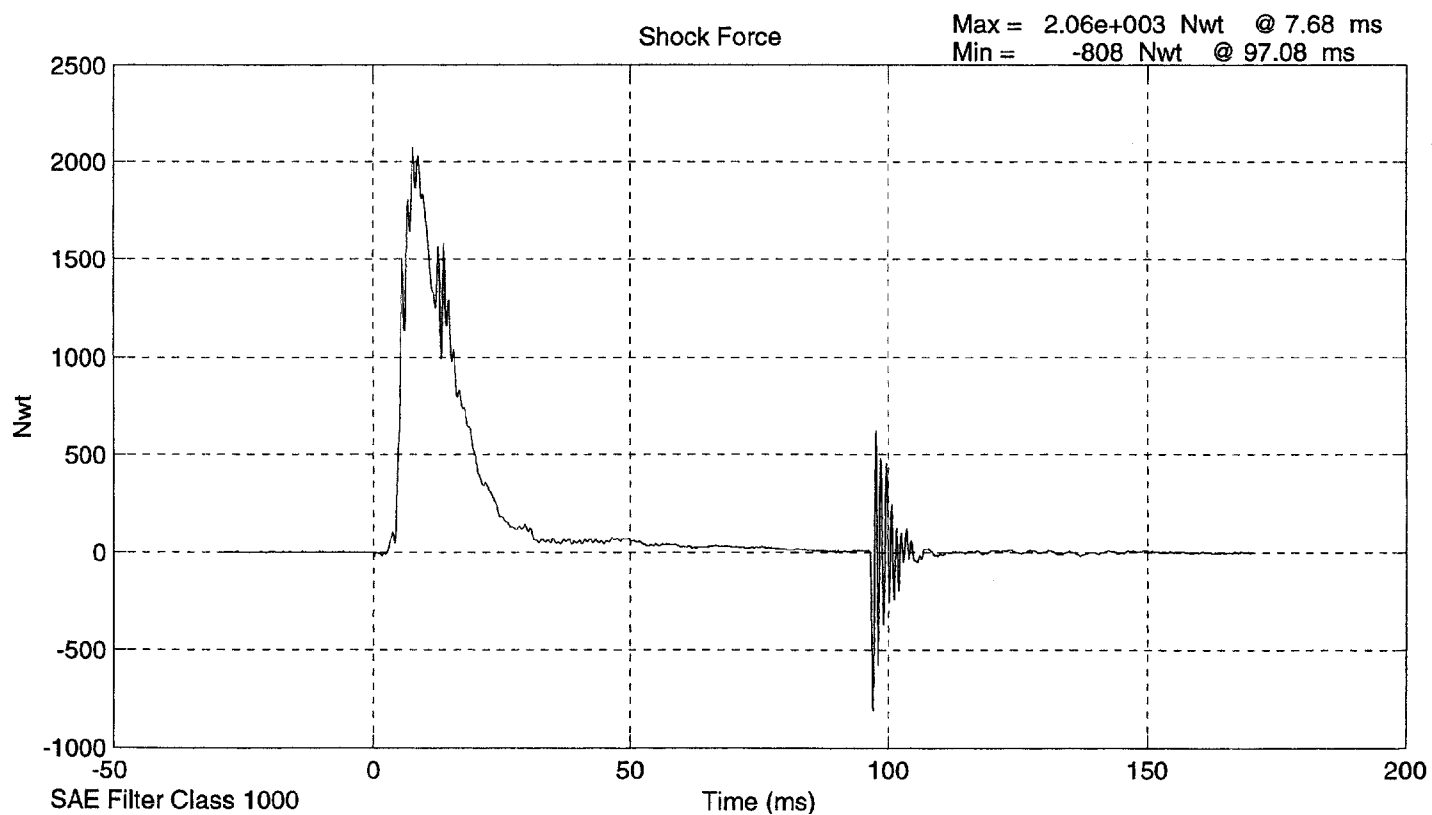
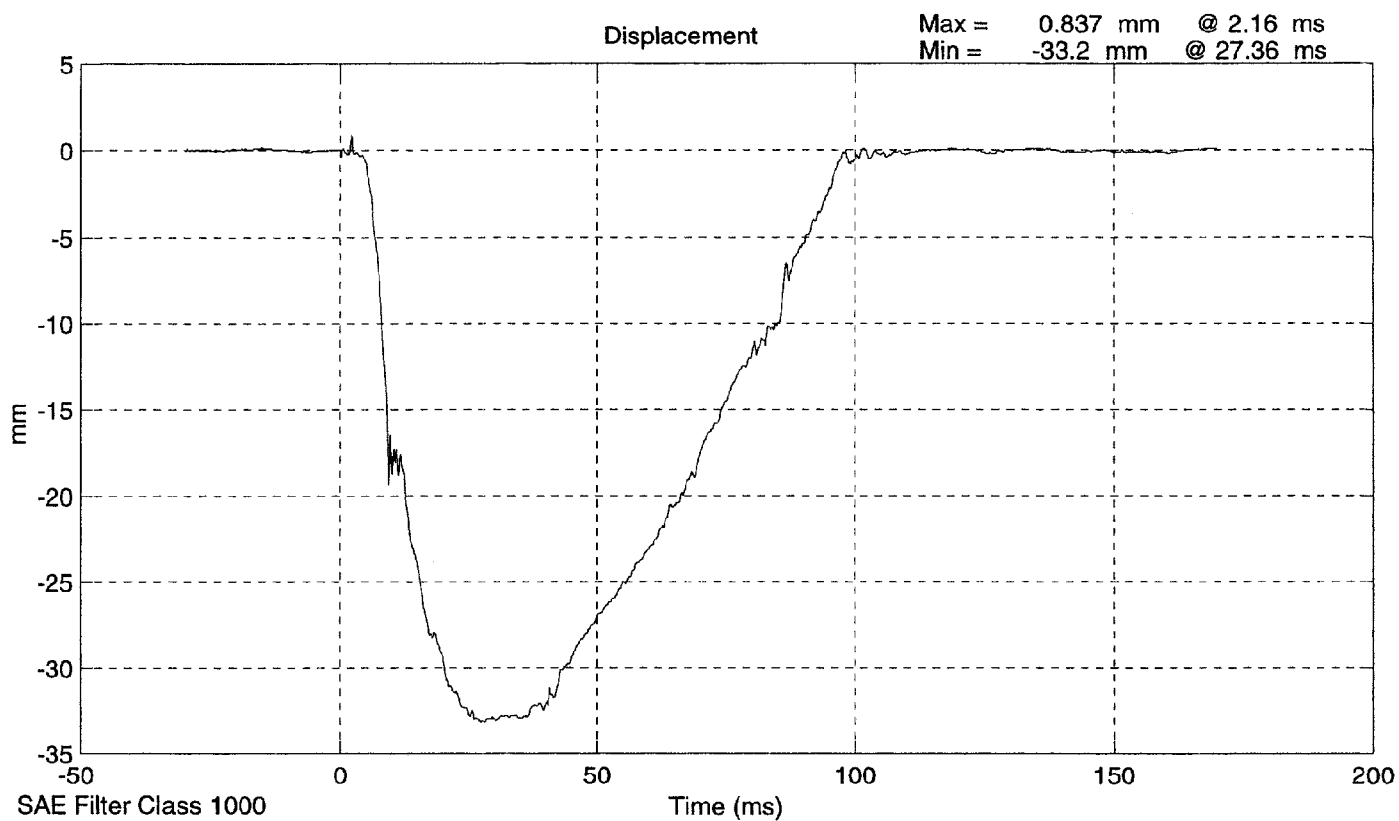
TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)		18.9 - 25.5	21.7
RELATIVE HUMIDITY (%)		10 - 70	15
VELOCITY 3.05 m/s	FORCE (N)	836 - 1125	1116.6
	DISPLACEMENT (mm)	30 - 35	30.7
VELOCITY 4.27 m/s	FORCE (N)	1730 - 2099	2065.0
	DISPLACEMENT (mm)	32 - 37	33.2
VELOCITY 6.10 m/s	FORCE (N)	3741 - 4448	3980.3
	DISPLACEMENT (mm)	33 - 40	35.0

DAMPER SETTING: 5

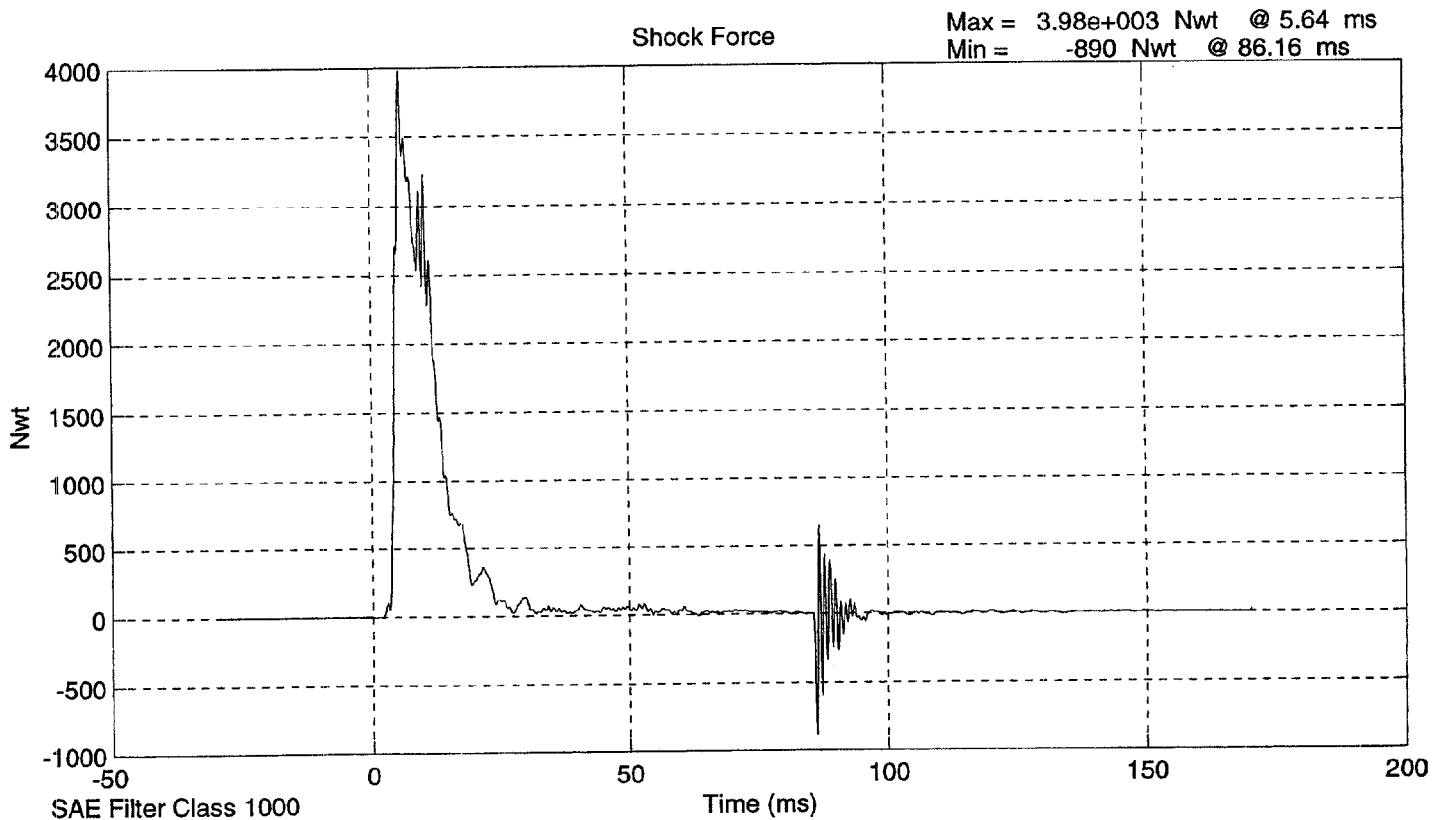
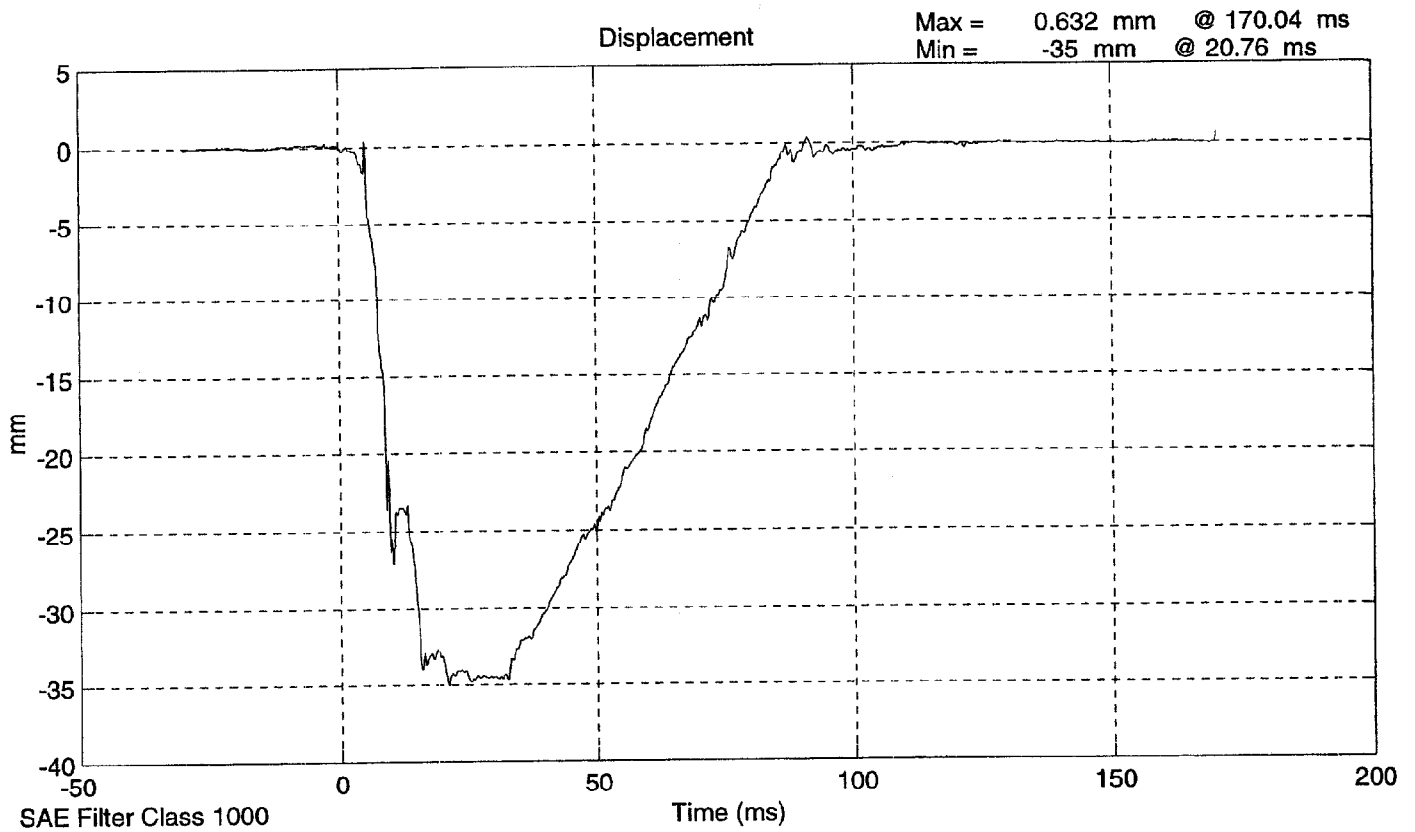
REMARKS: None



SID Shock Absorber Impact Test 016 @ 4.2855 m/s



SID Shock Absorber Impact Test 016 @ 6.1021 m/s



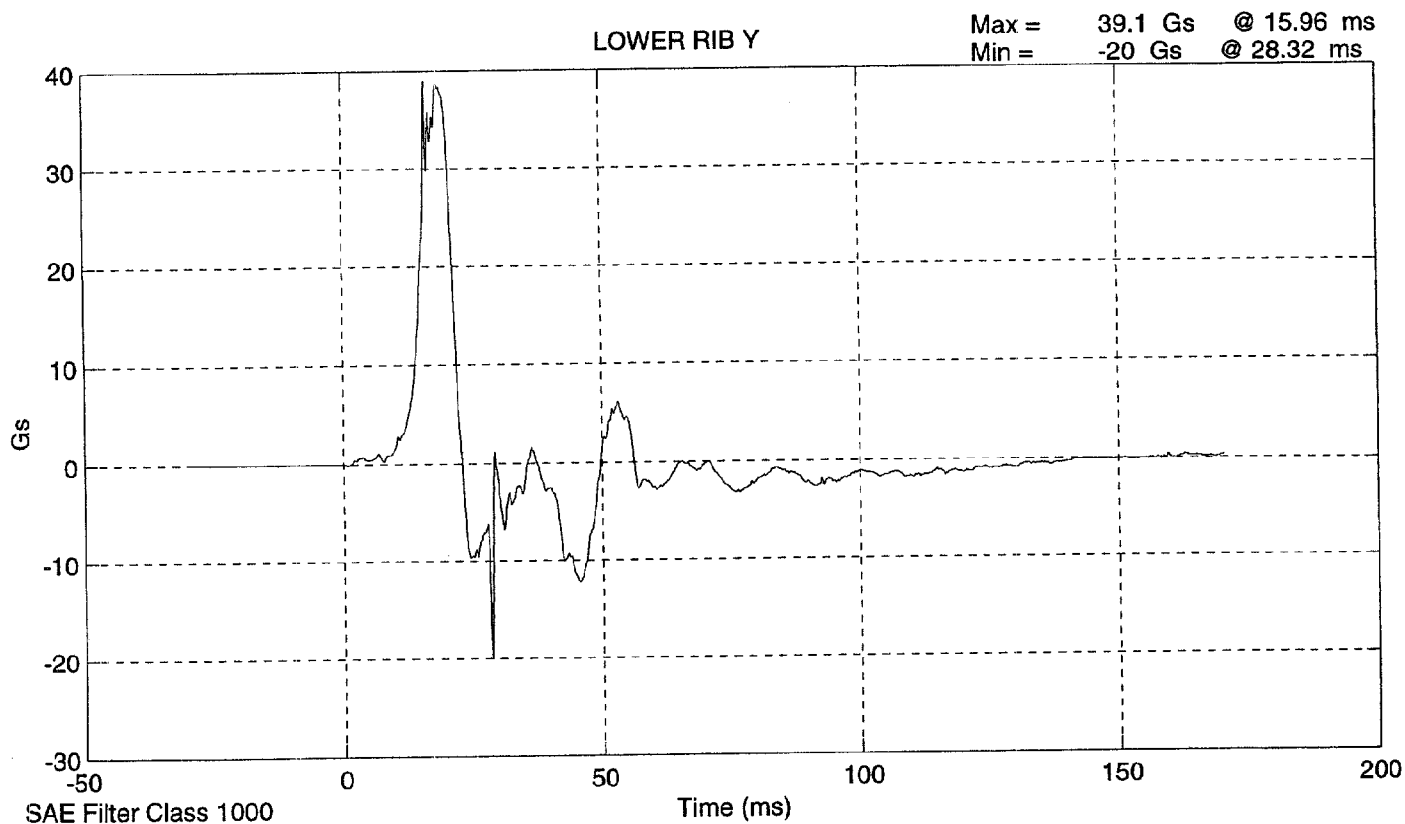
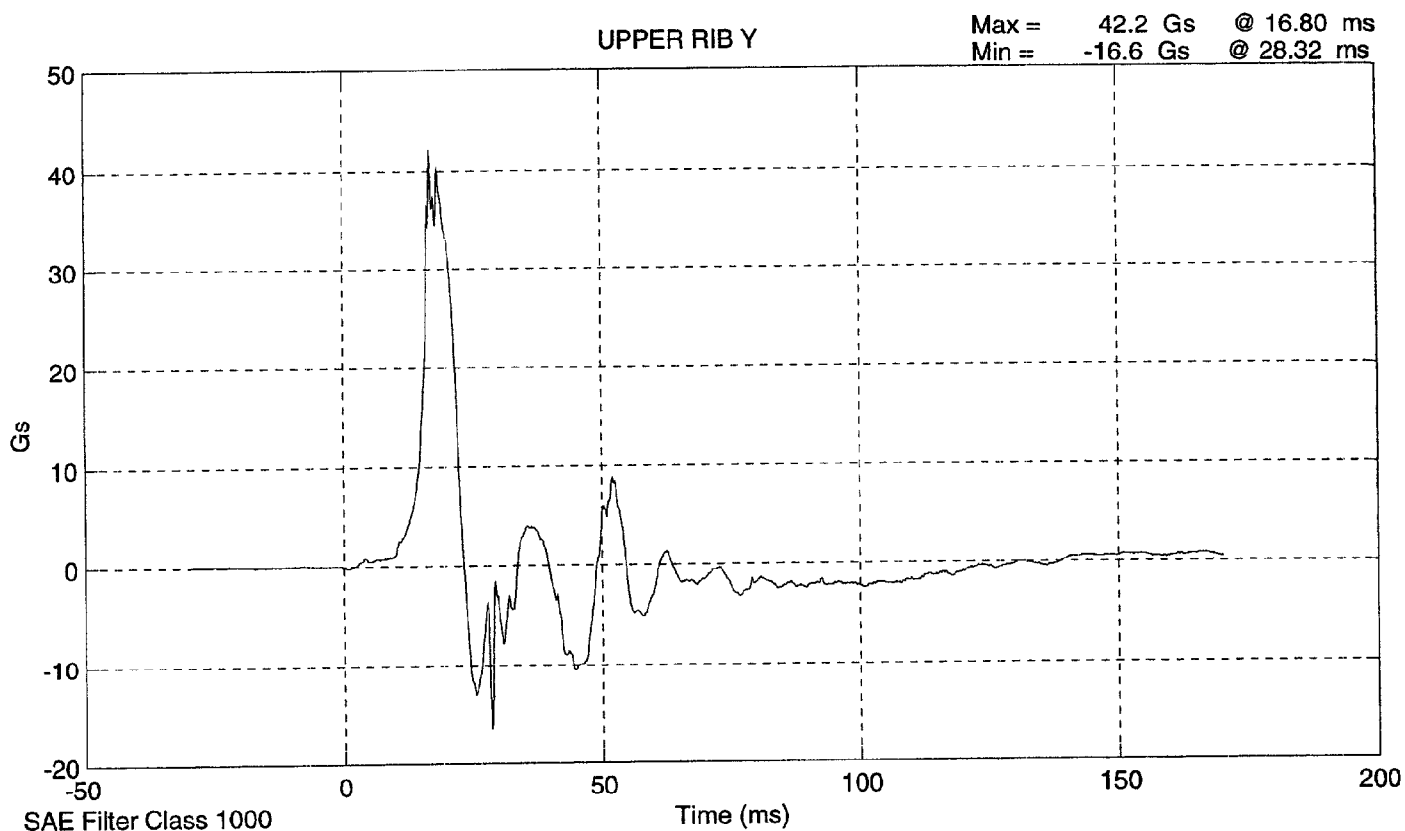
**LATERAL THORAX IMPACT TEST
PRE-TEST**

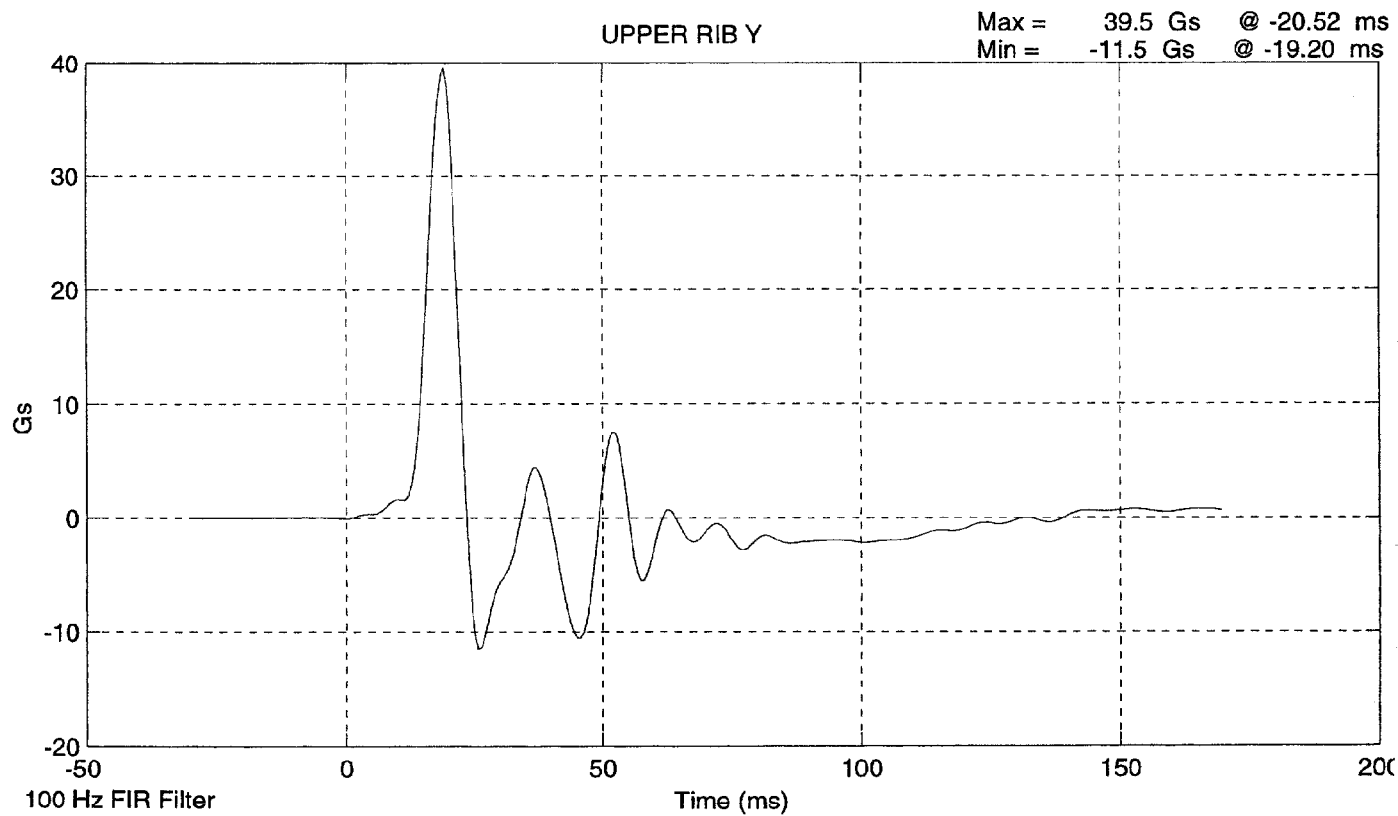
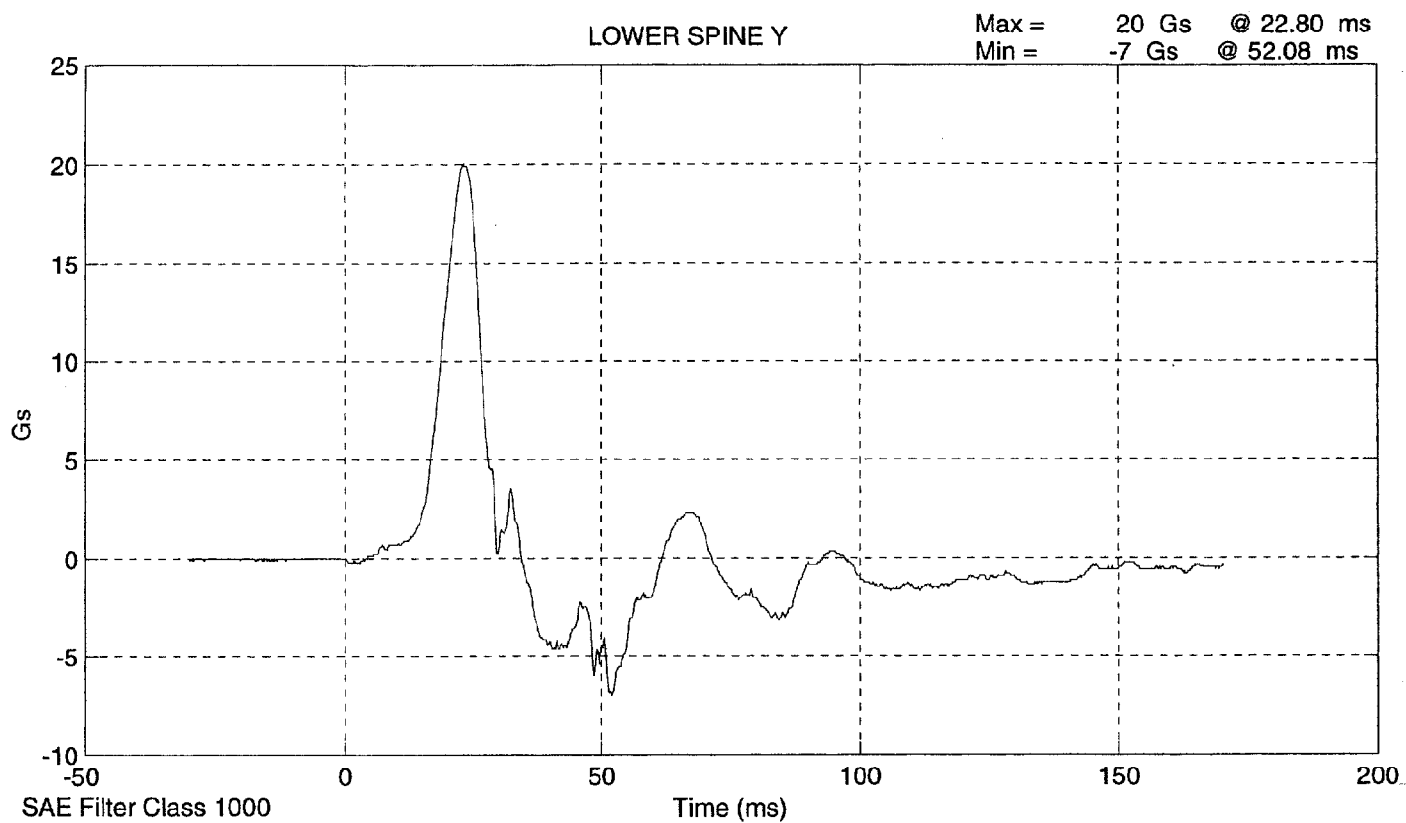
CONFIGURED FOR LEFT SIDE IMPACT

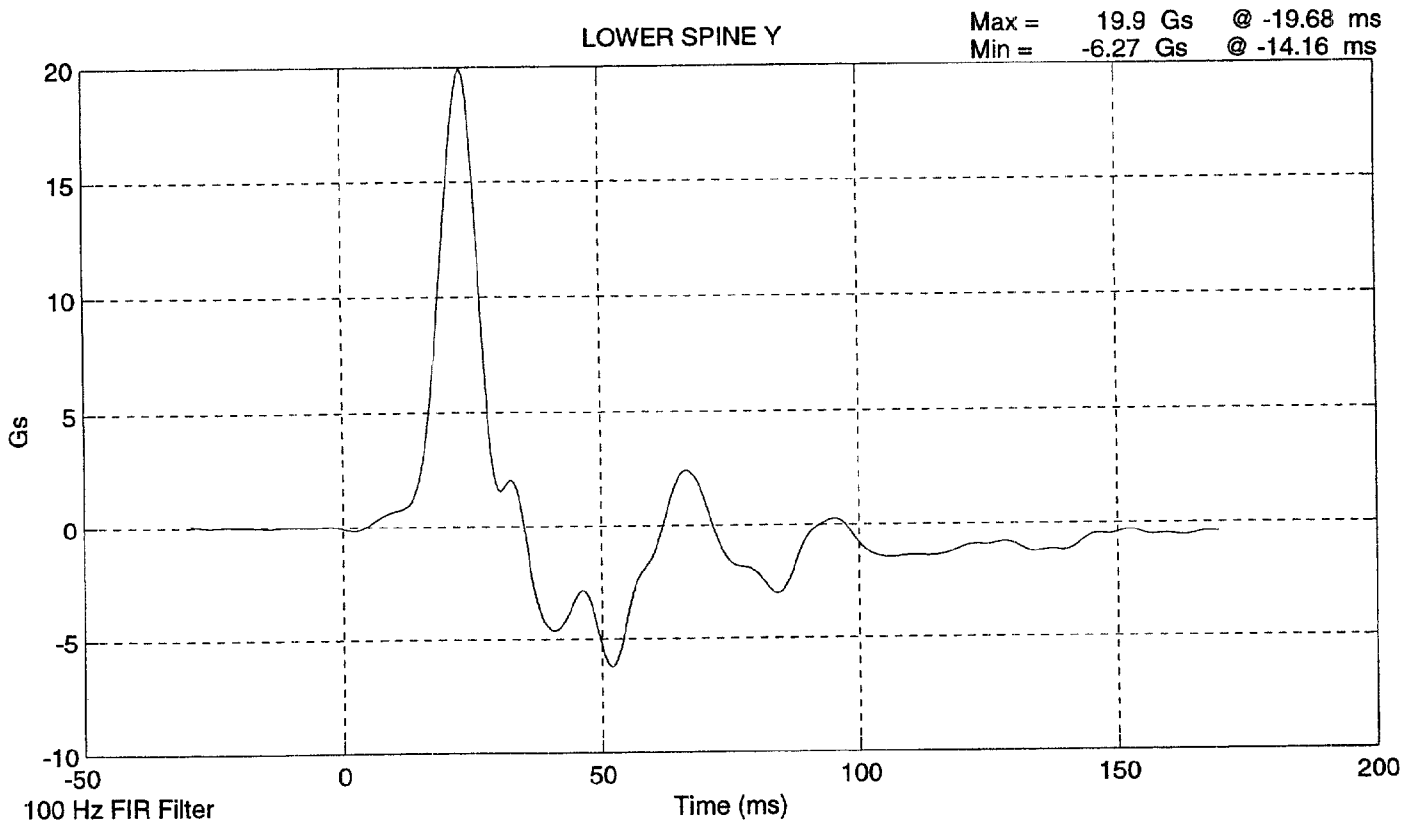
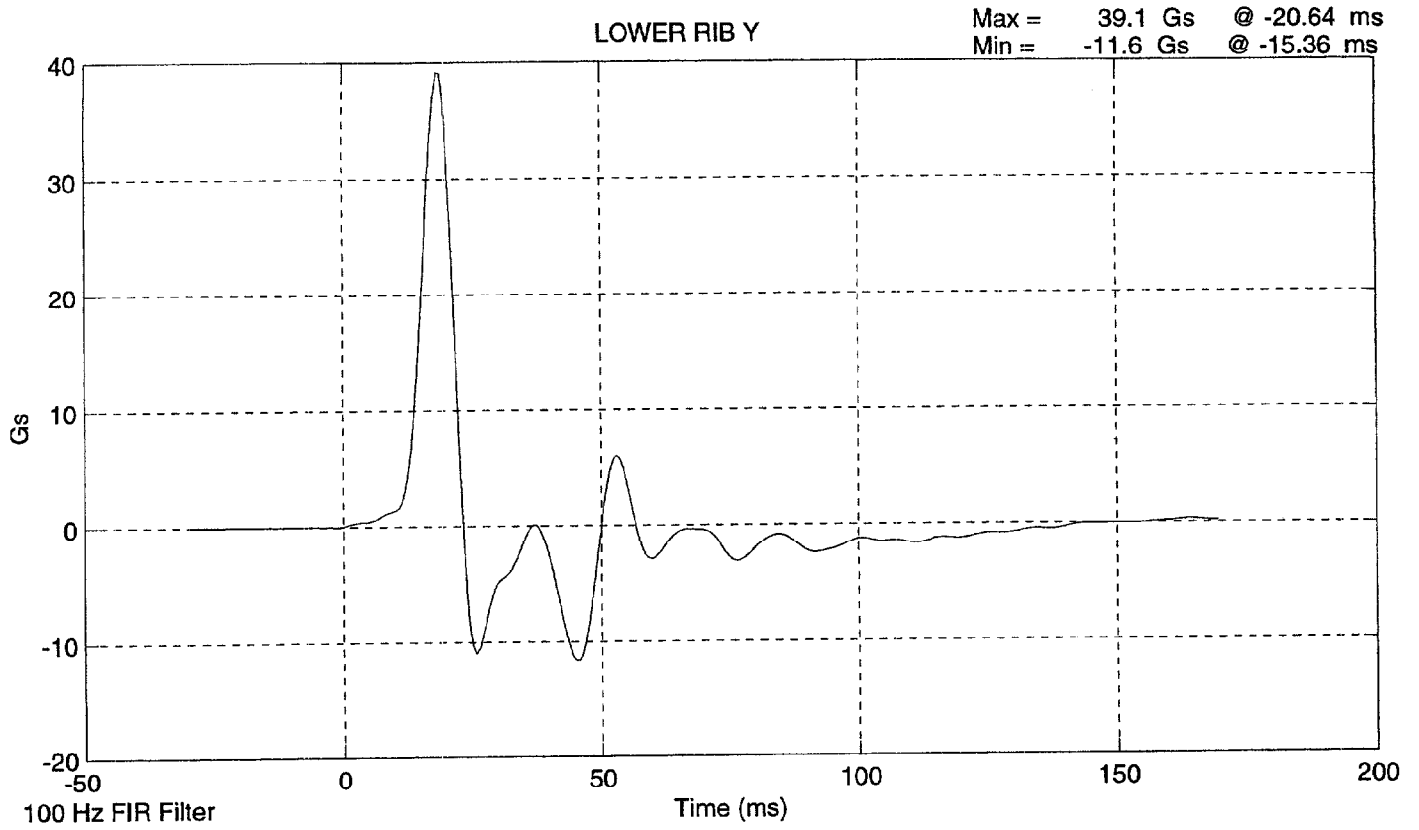
SID Serial No.: 016 Sequential Test Number: 1
Date: June 28, 1999 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.1
RELATIVE HUMIDITY (%)	10 - 70	32
PROBE SPEED (m/s)	4.27 - 4.33	4.27
UPPER RIB (g's)	37 - 46	39.5
LOWER RIB (g's)	37 - 46	39.1
LOWER SPINE (g's)	15 - 22	19.9

REMARKS: None







**LATERAL PELVIS IMPACT TEST
PRE-TEST**

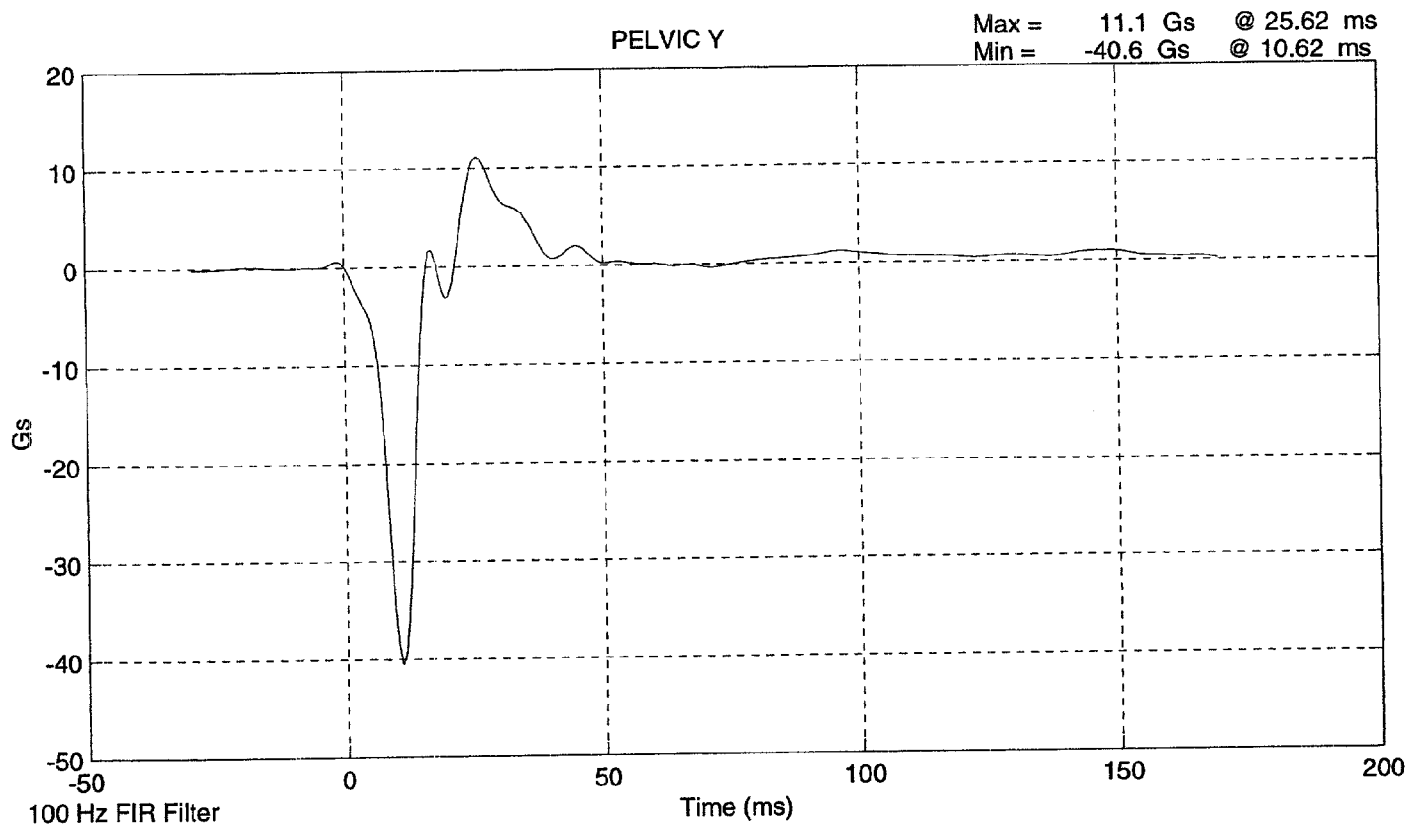
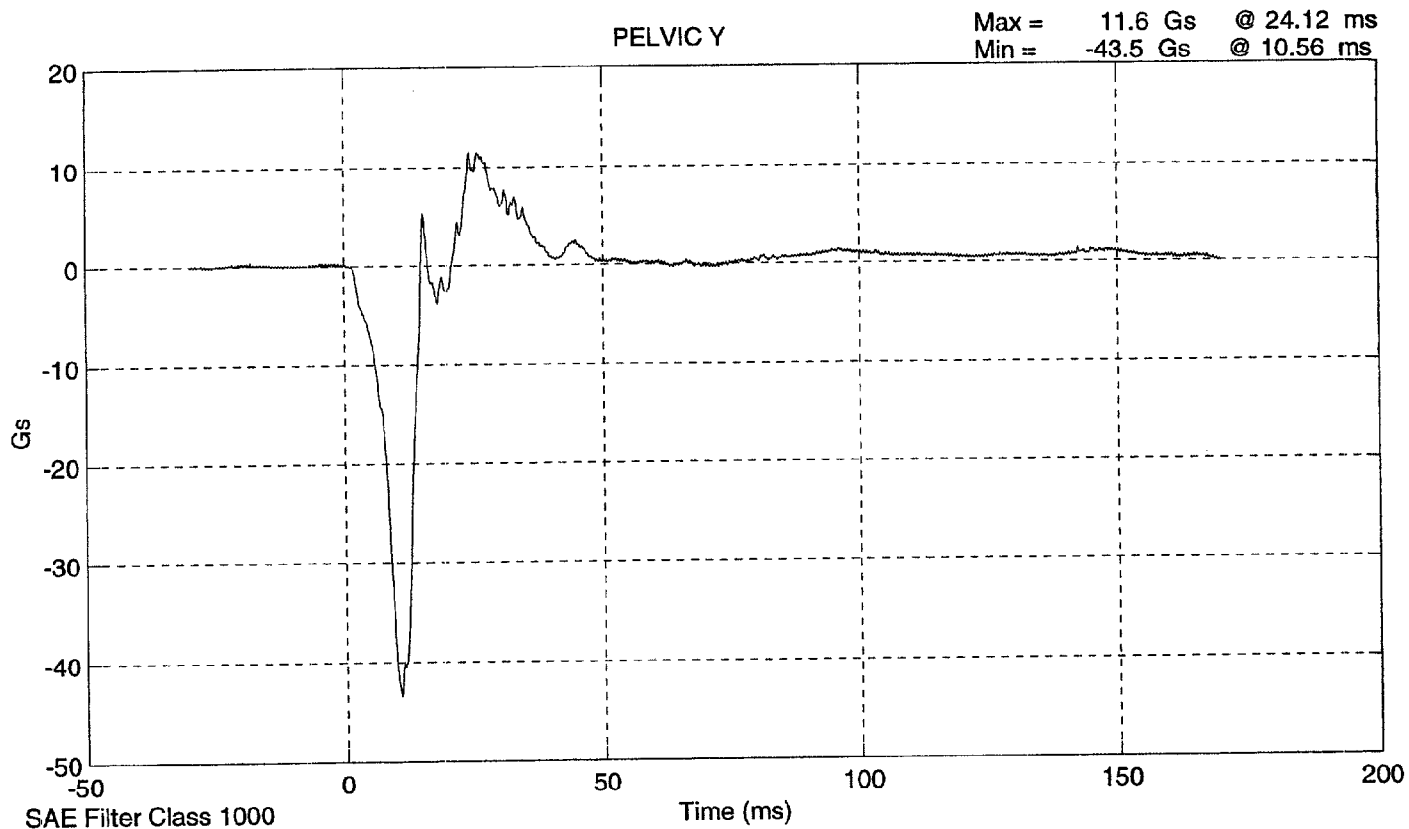
CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 016 Sequential Test Number: 1
Date: June 28, 1999 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.1
RELATIVE HUMIDITY (%)	10 - 70	32
PROBE SPEED (m/s)	4.27 - 4.33	4.30
PELVIS ACCELERATION (g's)	40 - 60	40.6

REMARKS: None

SID 016 PELVIC IMPACT TEST @ 4.3007 m/s



ABDOMINAL COMPRESSION TEST**PRE-TEST**

(Test not required for SID certification)

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 016 Sequential Test Number: 1
Date: June 30, 1999 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.1
RELATIVE HUMIDITY (%)	10 - 70	32
FORCE @ 13 mm (N)	104 - 162	111
FORCE @ 19 mm (N)	163 - 221	177
FORCE @ 25 mm (N)	222 - 280	256
FORCE @ 33 mm (N)	325 - 391	380

REMARKS: None

COPY

Dummy S/N 016

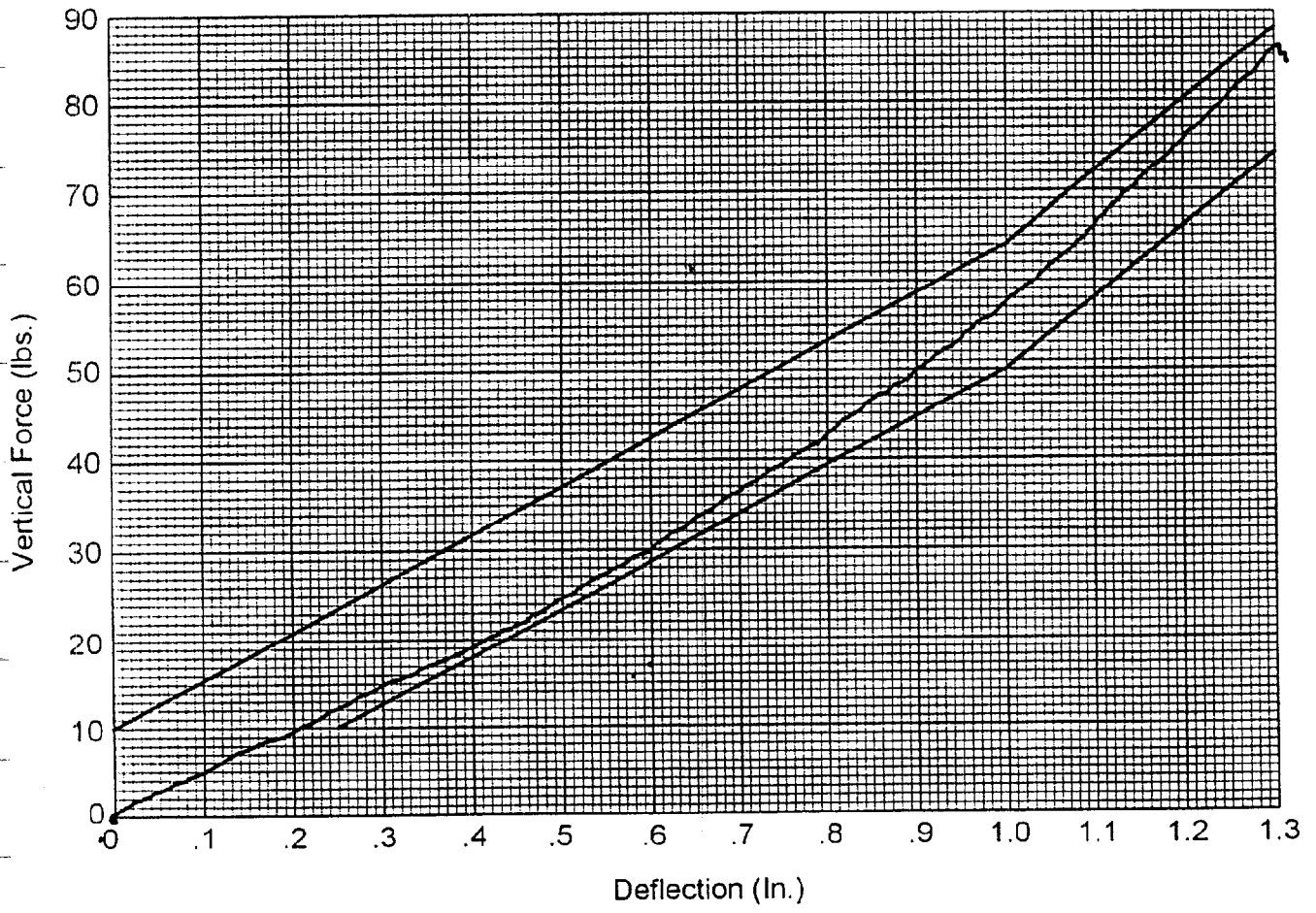
W/A _____

Date 6-30-99

Performed By BT

Temp. 70

Humidity 32



Hybrid II
Abdomen Static Press

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

CONFIGURED FOR LEFT SIDE IMPACT

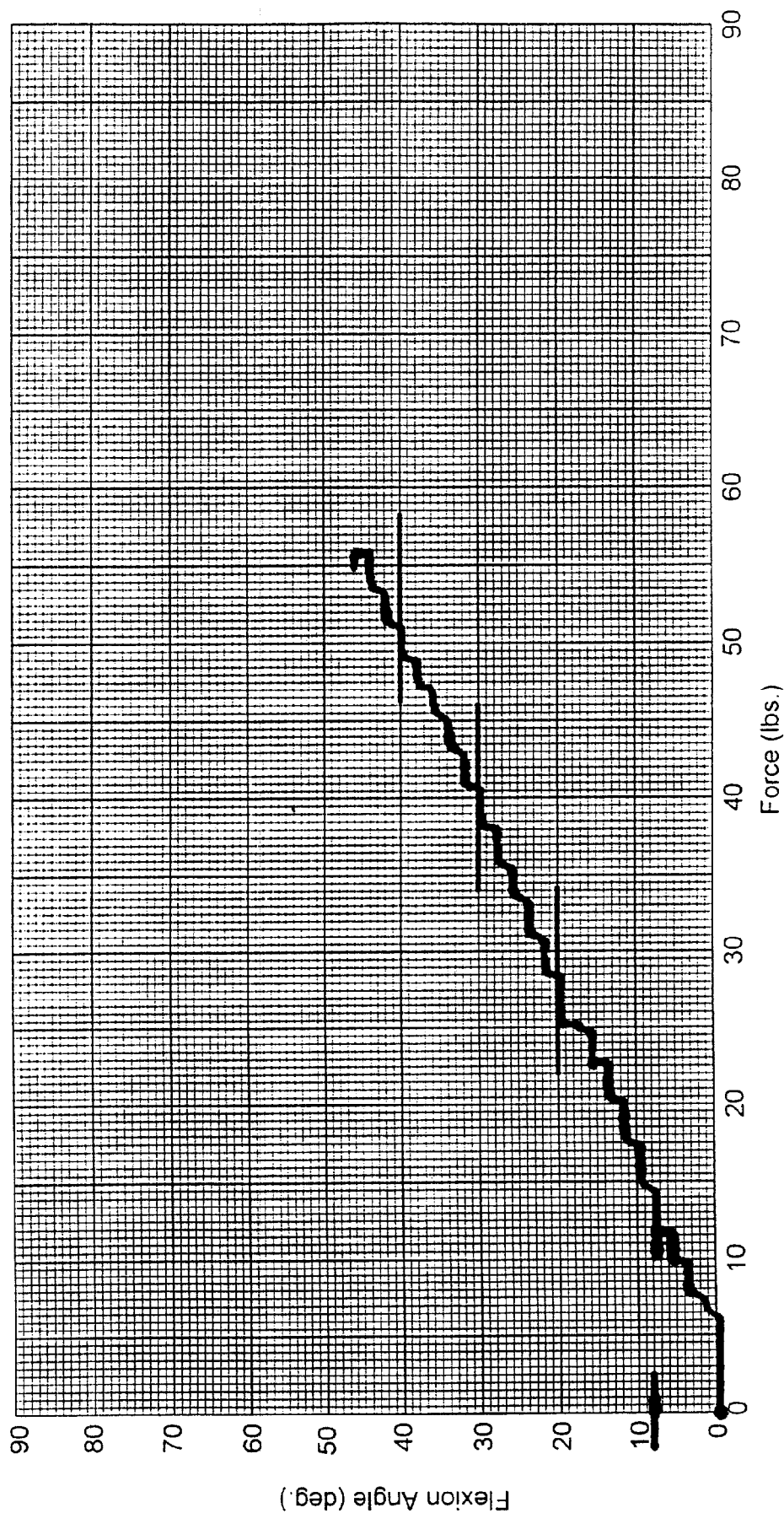
SID Serial No.: 016 Sequential Test Number: 1
Date: June 30, 1999 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.1
RELATIVE HUMIDITY (%)	10 - 70	32
FORCE @ 0° (N)	0 - 26.7	26.7
FORCE @ 20° (N)	97.8 - 151.2	126.8
FORCE @ 30° (N)	151.2 - 204.6	180.2
FORCE @ 40° (N)	204.6 - 258	226.9
RETURN ANGLE	12° max.	8

REMARKS: None

COPY

Dummy S/N 016
W/A
Date 6-30-99
Performed By [Signature]
Temp. 70
Humidity 32



Hybrid II Lumbar Spine Flexion Test

PRE-TEST DUMMY INSPECTION LIST

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 016 Sequential Test Number: 1
Date: June 30, 1999 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.: 027

CONFIGURED FOR LEFT SIDE IMPACT

CALIBRATION TEST RESULTS SUMMARY
PRE-TEST

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 027 Sequential Test Number: 1
Date: June 30, 1999 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.
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.: 027 Sequential Test Number: 1
Date: June 30, 1999 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
SH- Seated Height (mm)	889 - 909	909
RH- Rib Height (mm)	502 - 520	514
HP- Hip Pivot Height (mm)	99 ref.	99
RD- Rib from Back Line (mm)	229 - 241	236
KH- Knee Pivot from Back Line (mm)	511 - 526	516
KV- Knee Pivot to Floor (mm)	490 - 505	493
HW- Hip Width (mm)	356 - 391	367

REMARKS: None

THORACIC SHOCK ABSORBER TESTS
PRE-TEST

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 027 Sequential Test Number: 1
Date: February 15, 1999 Laboratory Technician: B. Swiecicki

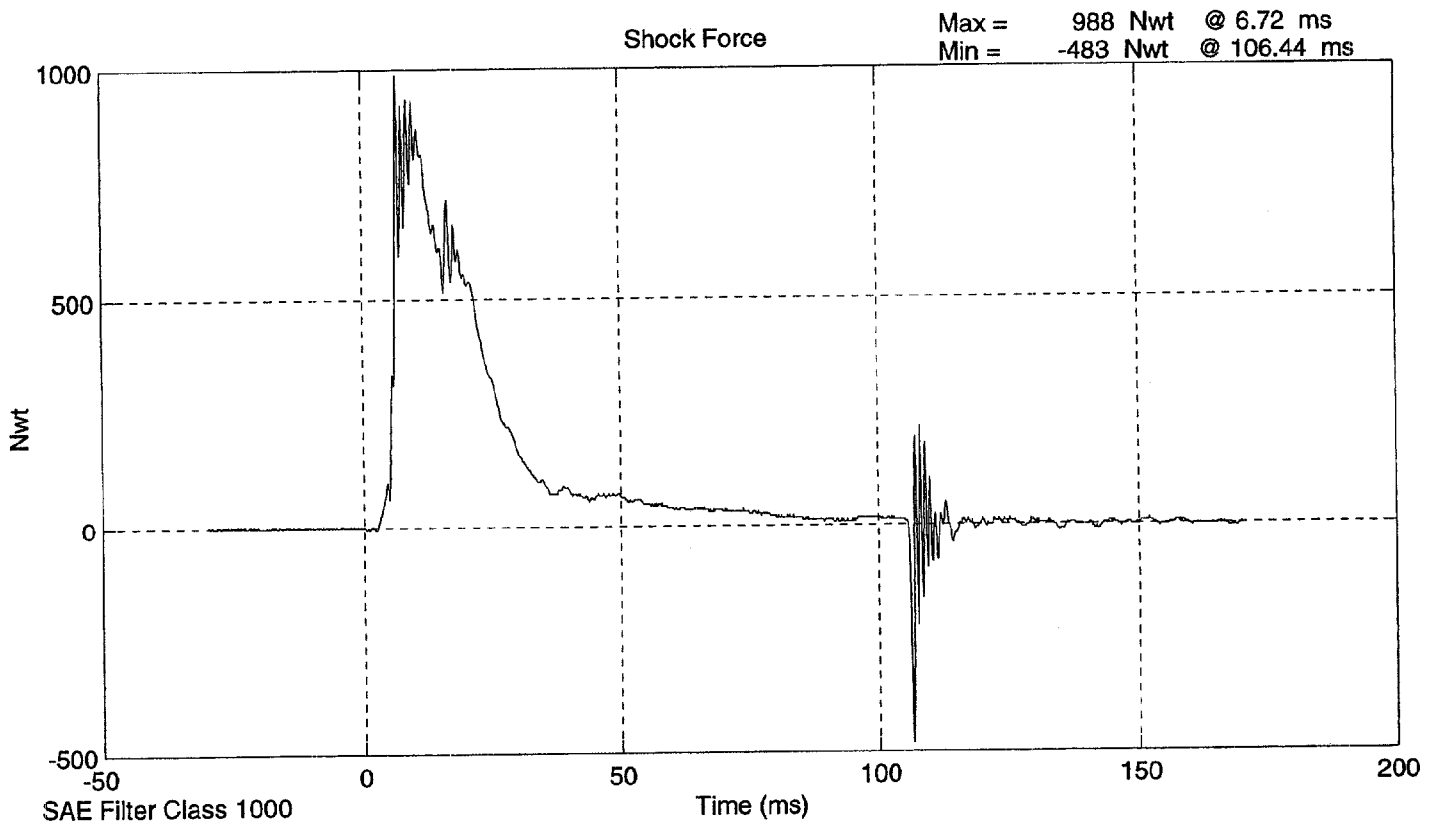
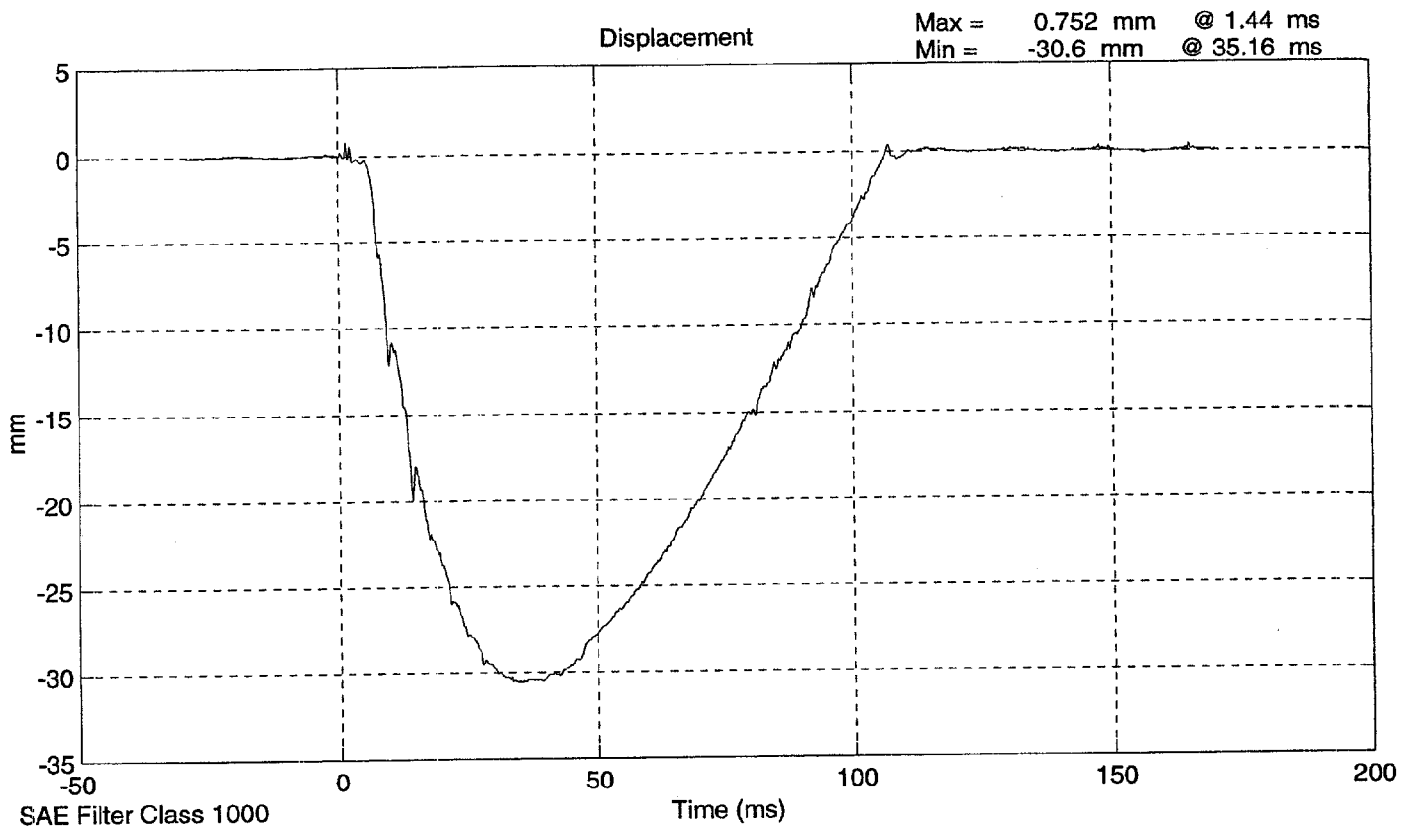
DAMPER IDENTIFICATION: 027

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)		18.9 - 25.5	21.7
RELATIVE HUMIDITY (%)		10 - 70	15
VELOCITY 3.05 m/s	FORCE (N)	836 - 1125	988.0
	DISPLACEMENT (mm)	30 - 35	30.6
VELOCITY 4.27 m/s	FORCE (N)	1730 - 2099	1736.9
	DISPLACEMENT (mm)	32 - 37	34.6
VELOCITY 6.10 m/s	FORCE (N)	3741 - 4448	3771.1
	DISPLACEMENT (mm)	33 - 40	36.4

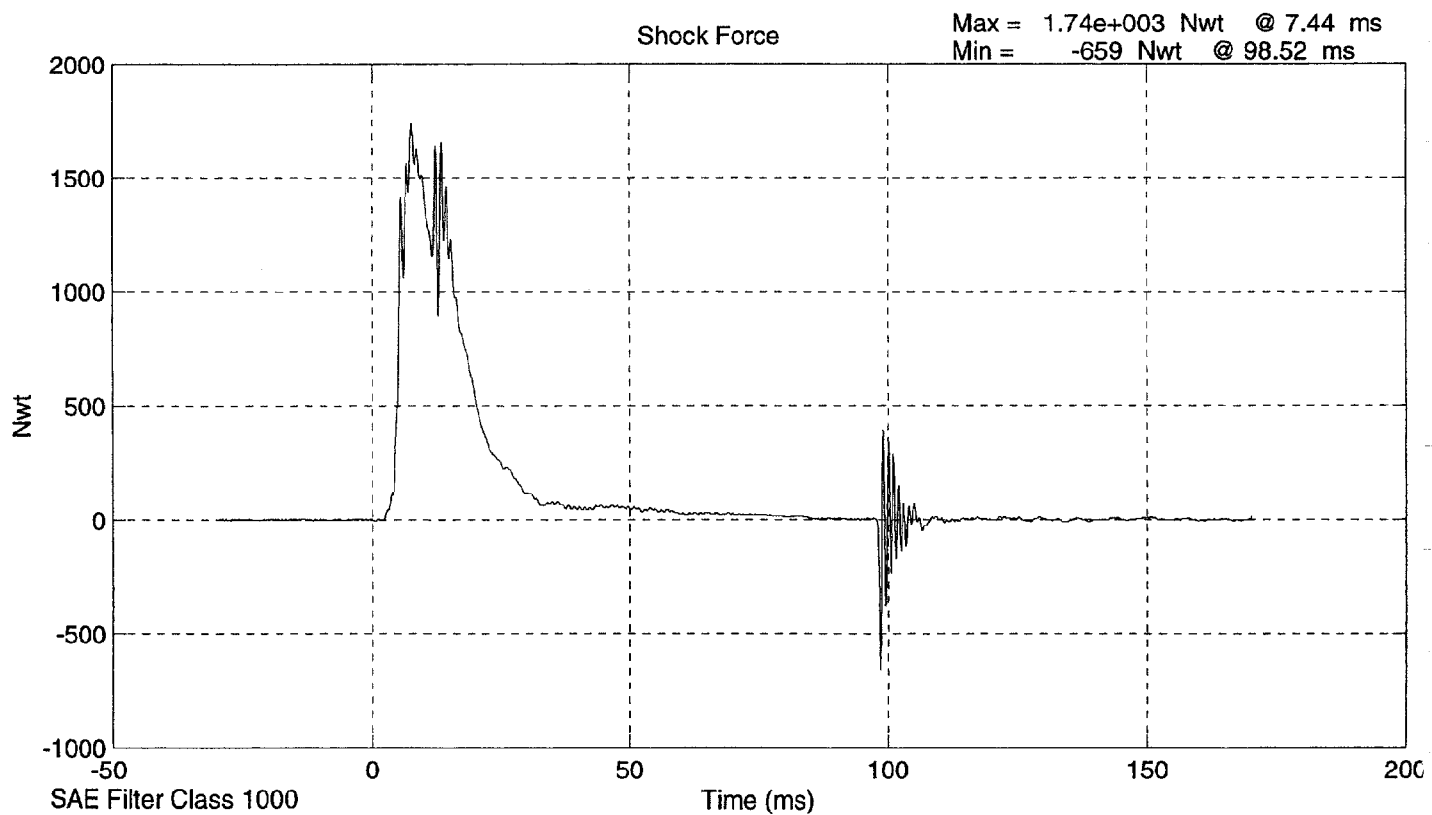
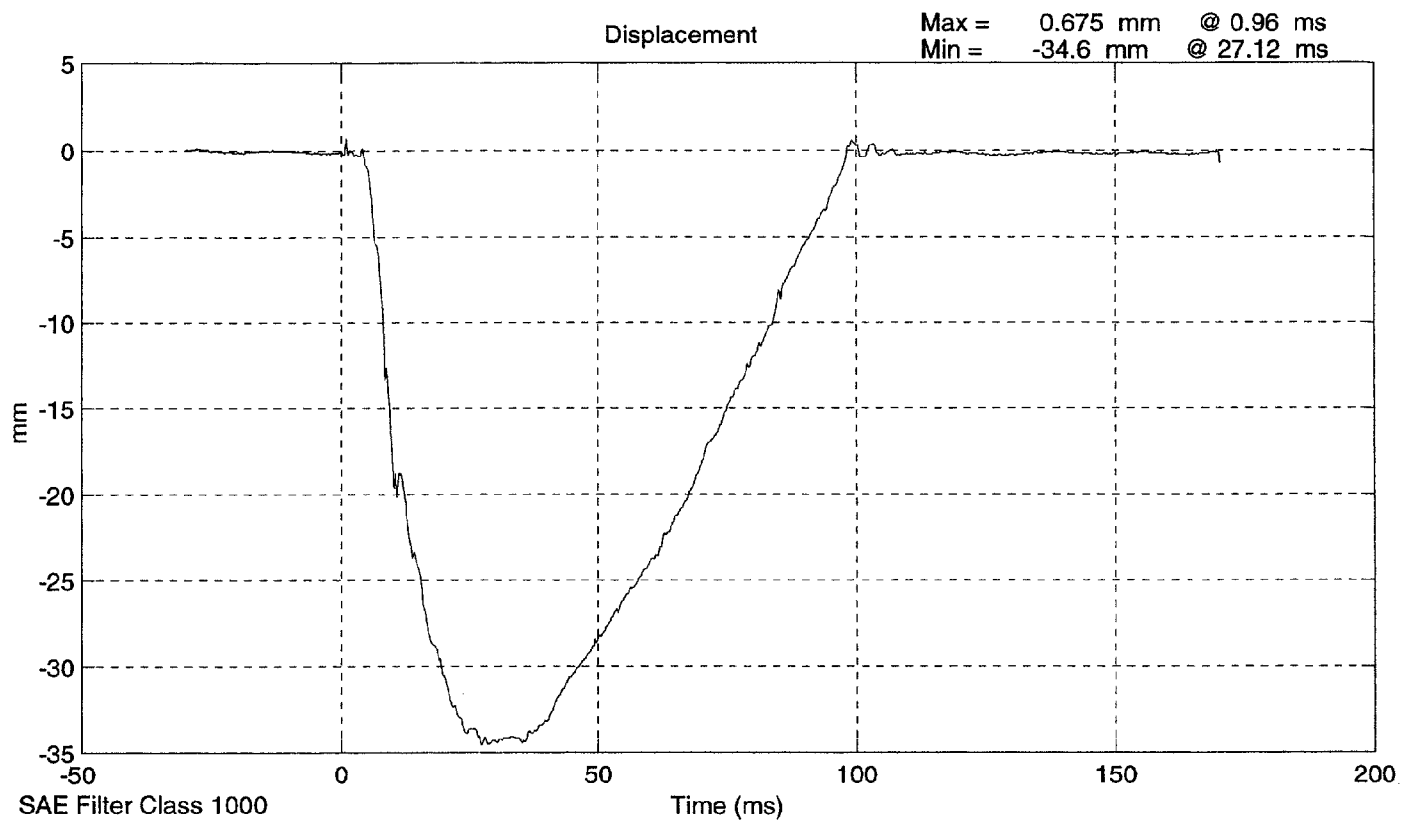
DAMPER SETTING: 5

REMARKS: None

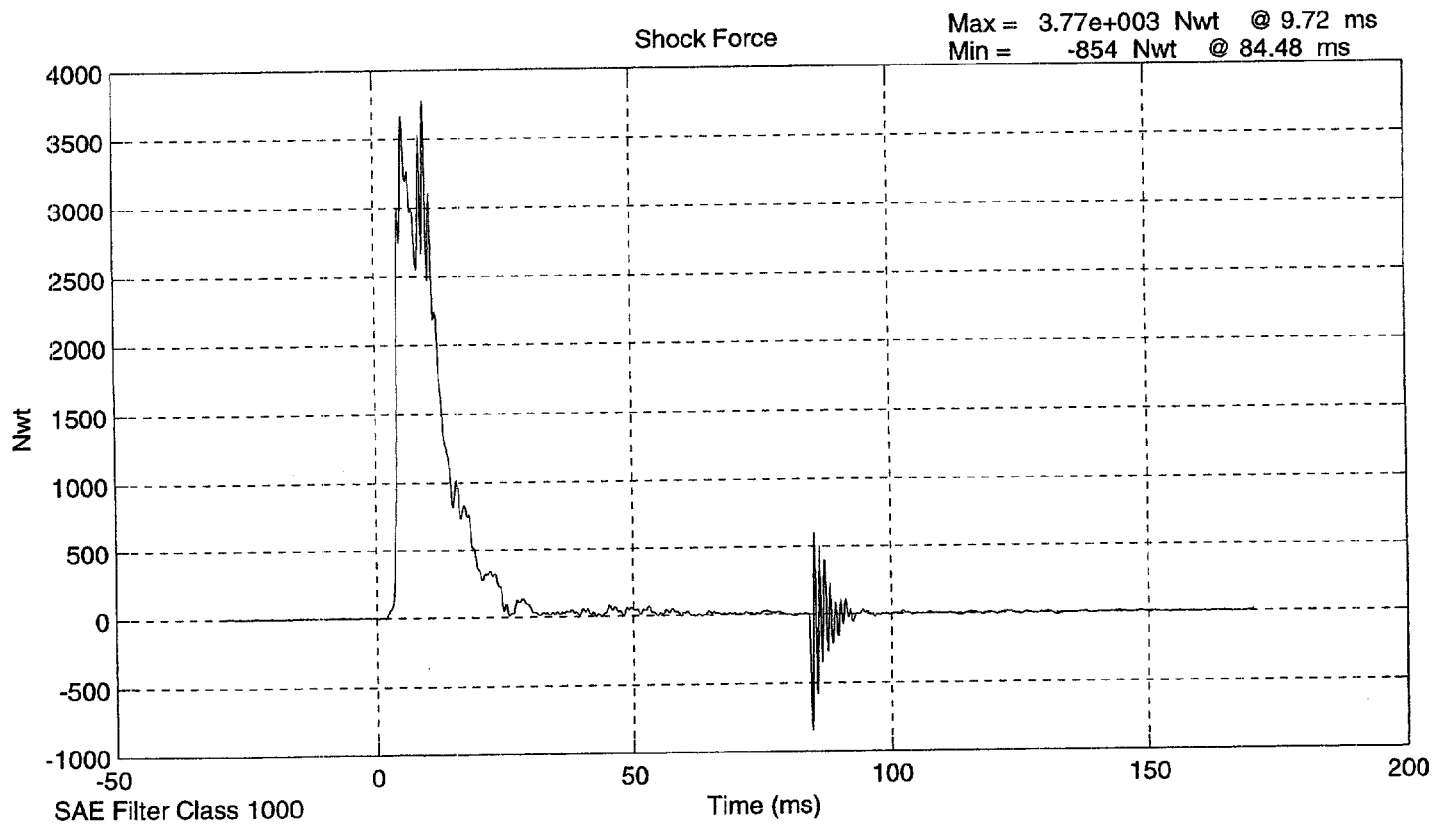
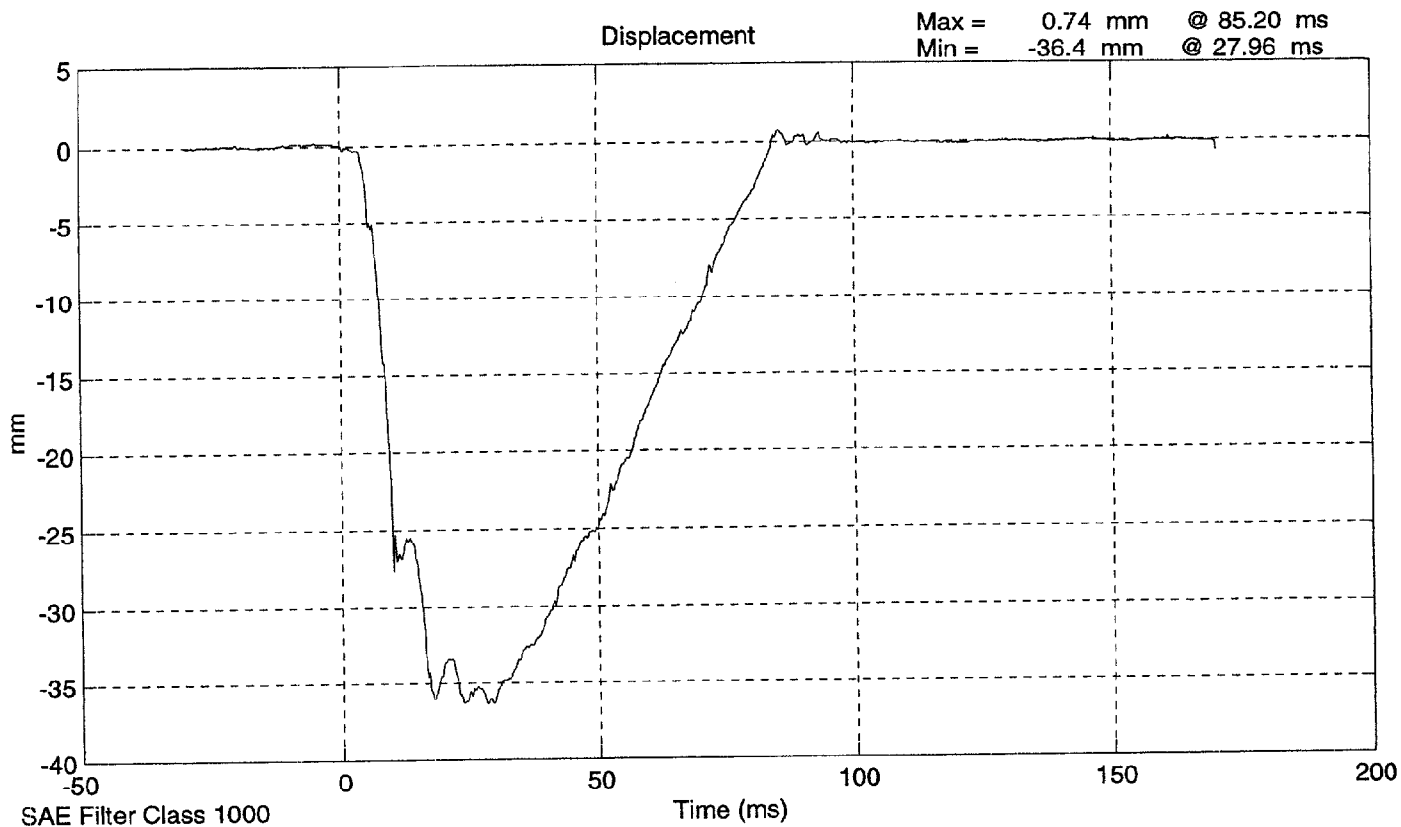
SID Shock Absorber Impact Test 027 @ 3.048 m/s



SID Shock Absorber Impact Test 027 @ 4.2824 m/s



SID Shock Absorber Impact Test 027 @ 6.1204 m/s



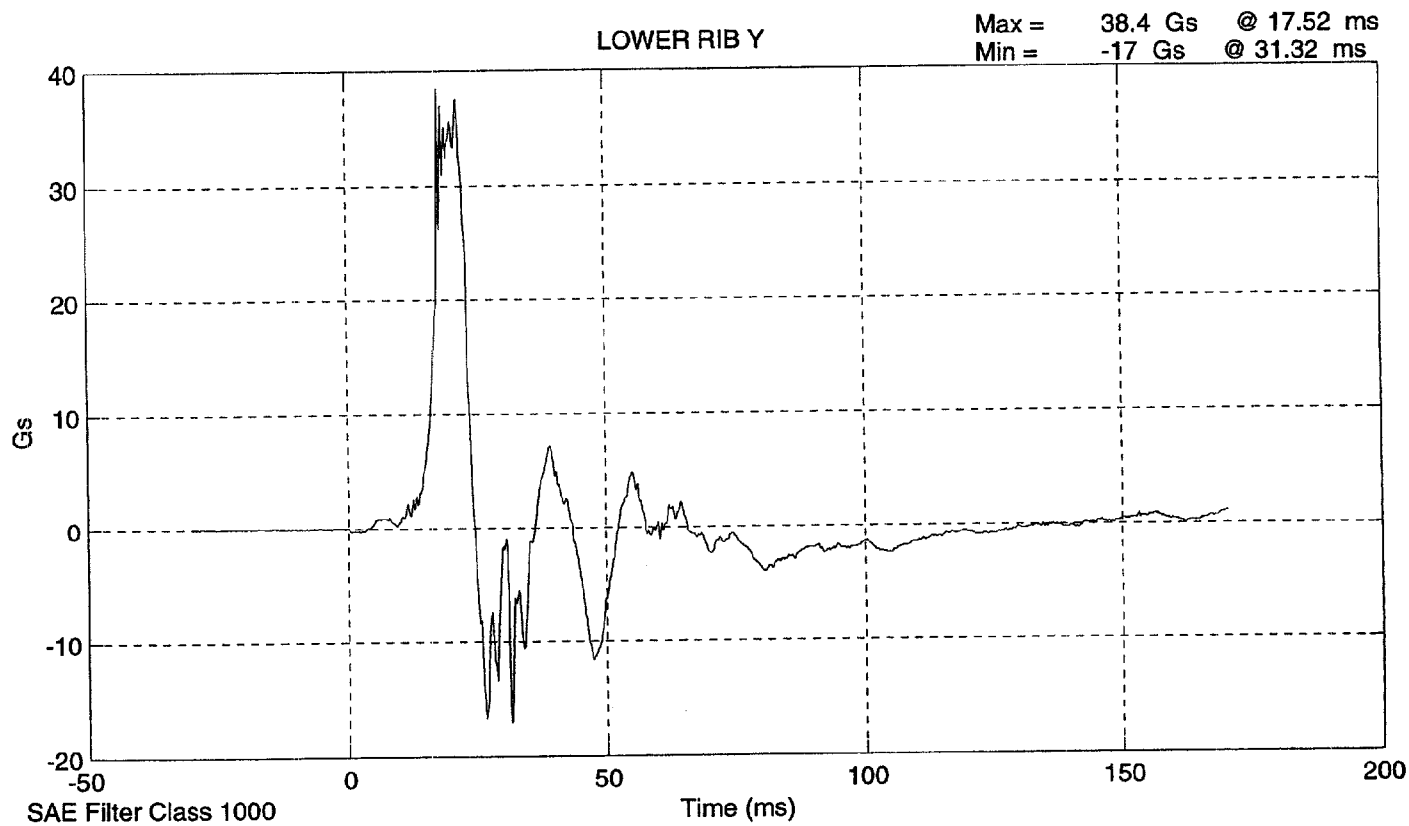
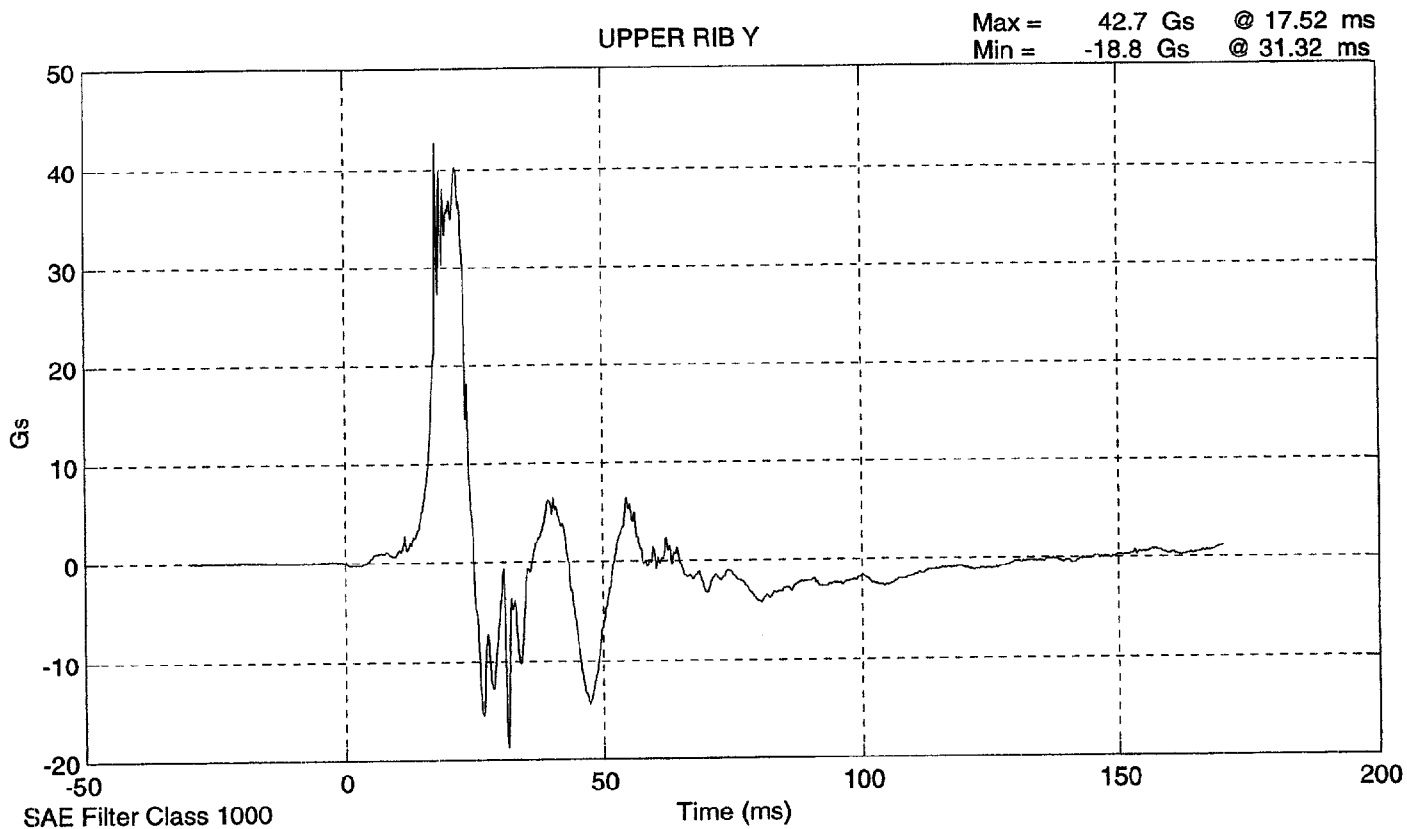
**LATERAL THORAX IMPACT TEST
PRE-TEST**

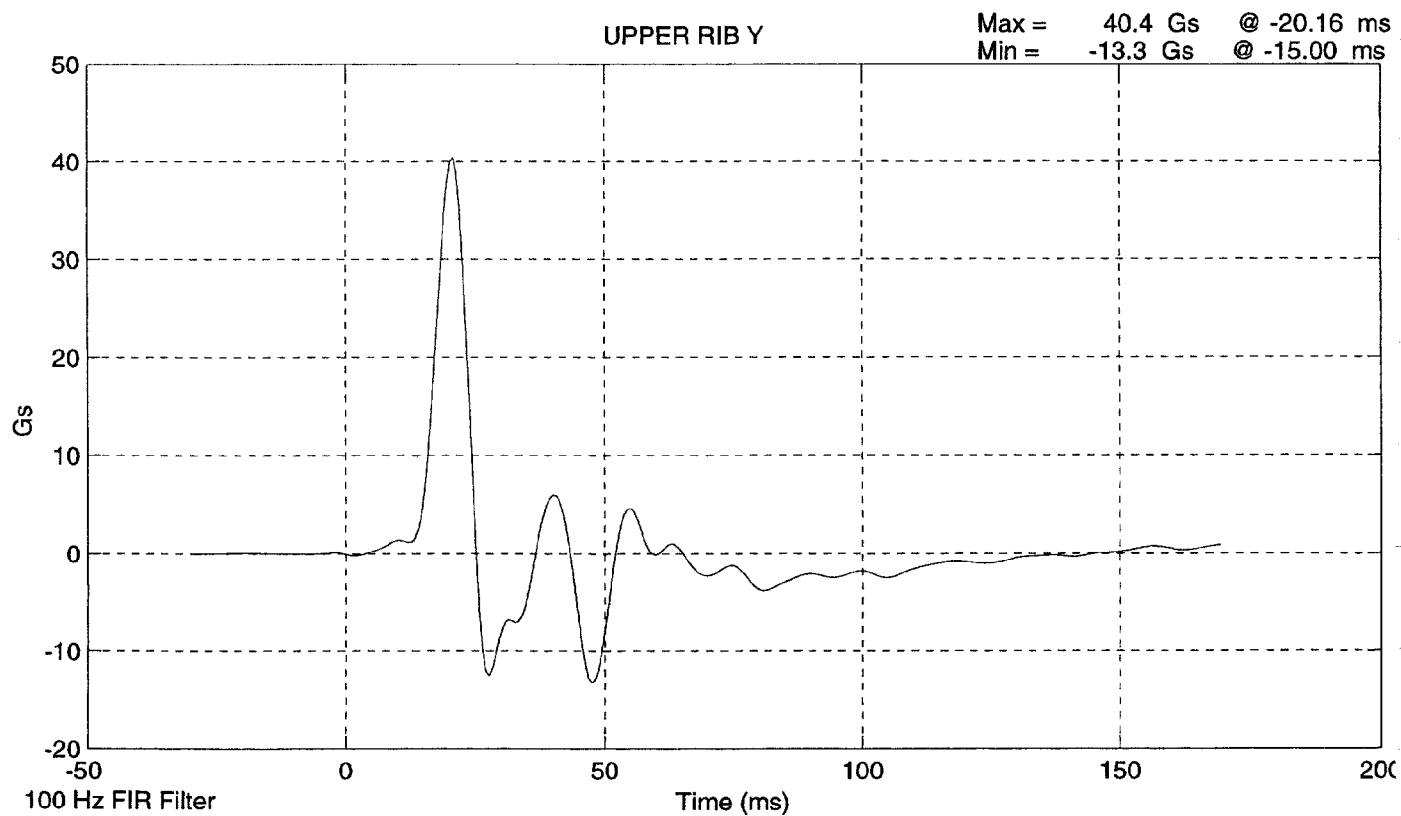
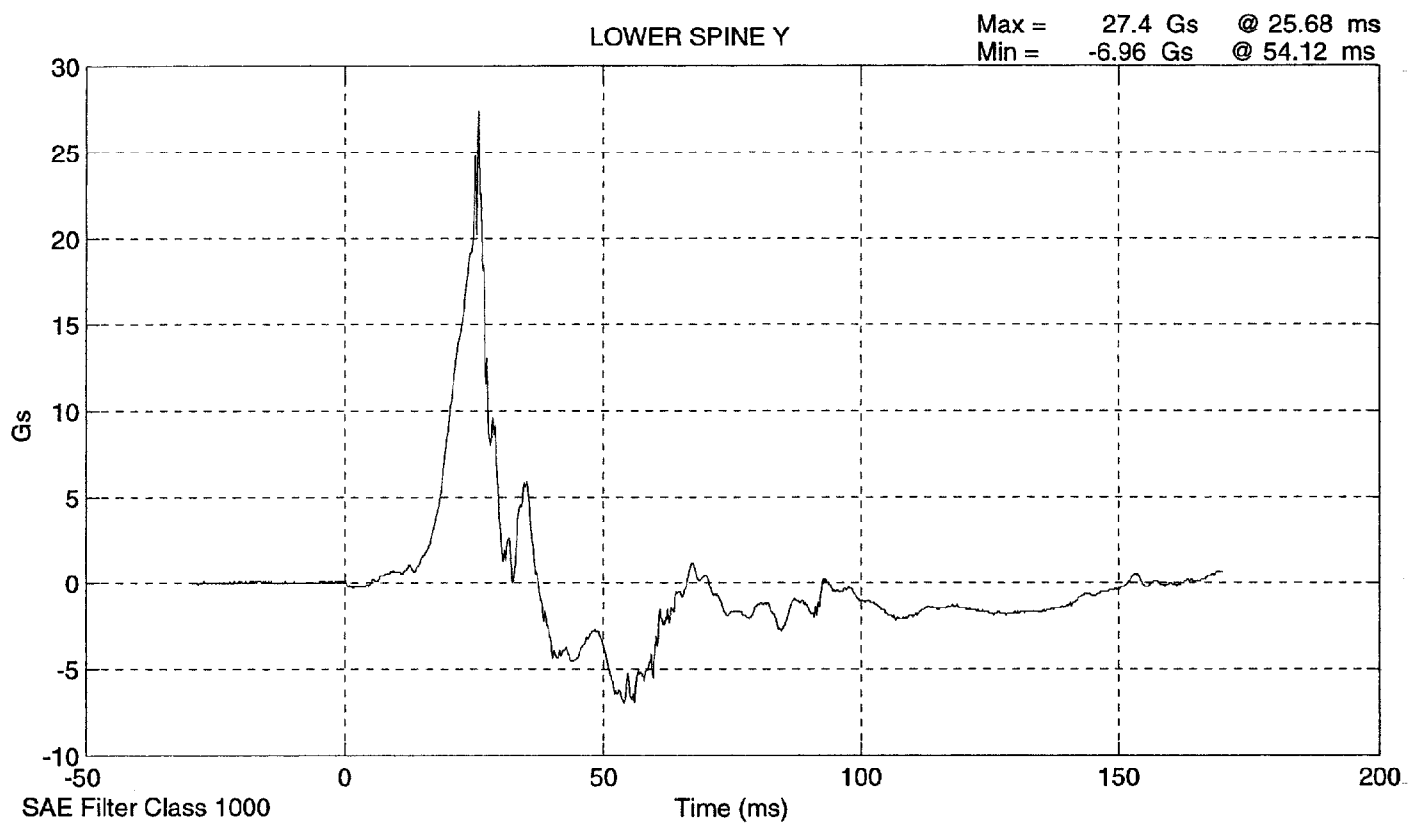
CONFIGURED FOR LEFT SIDE IMPACT

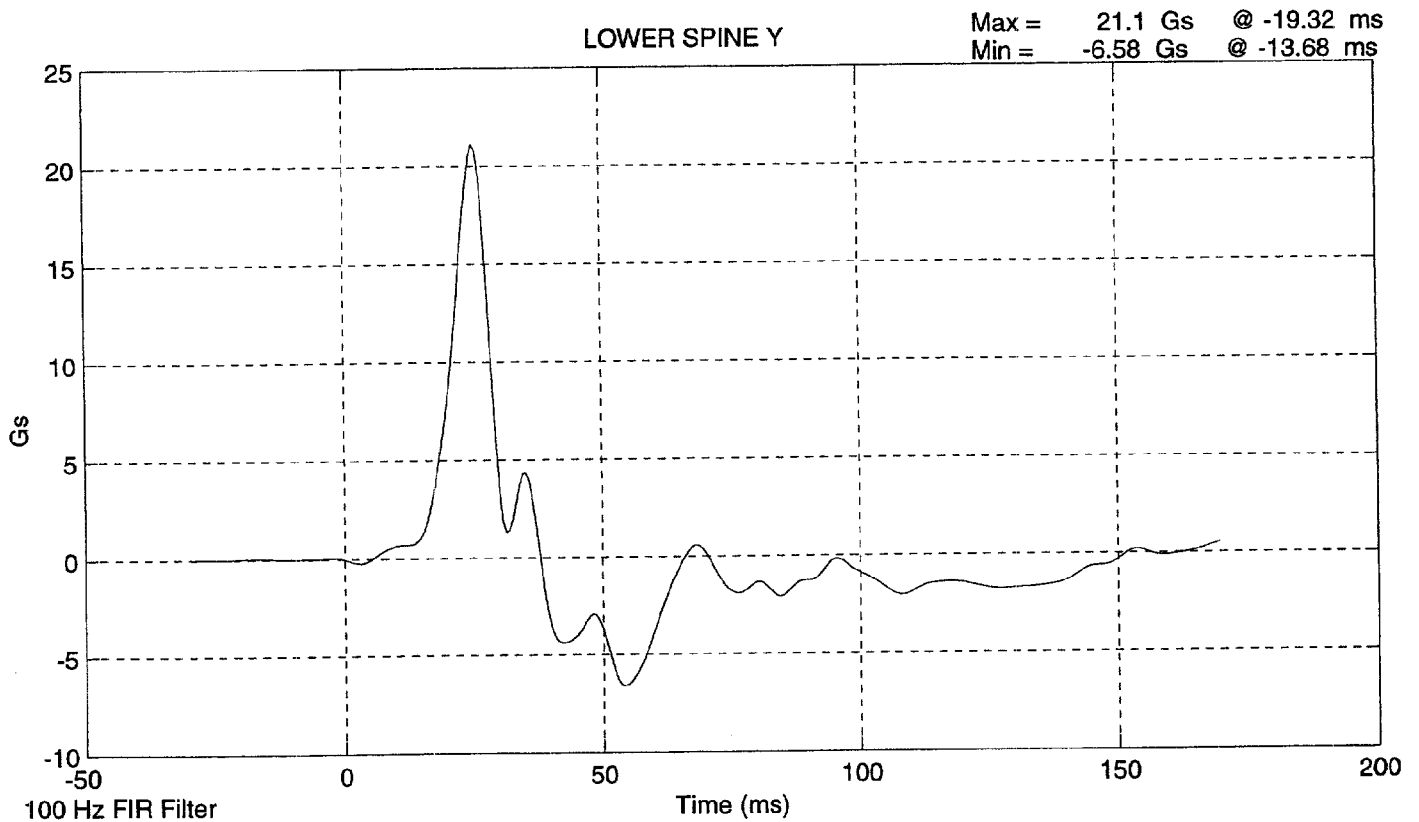
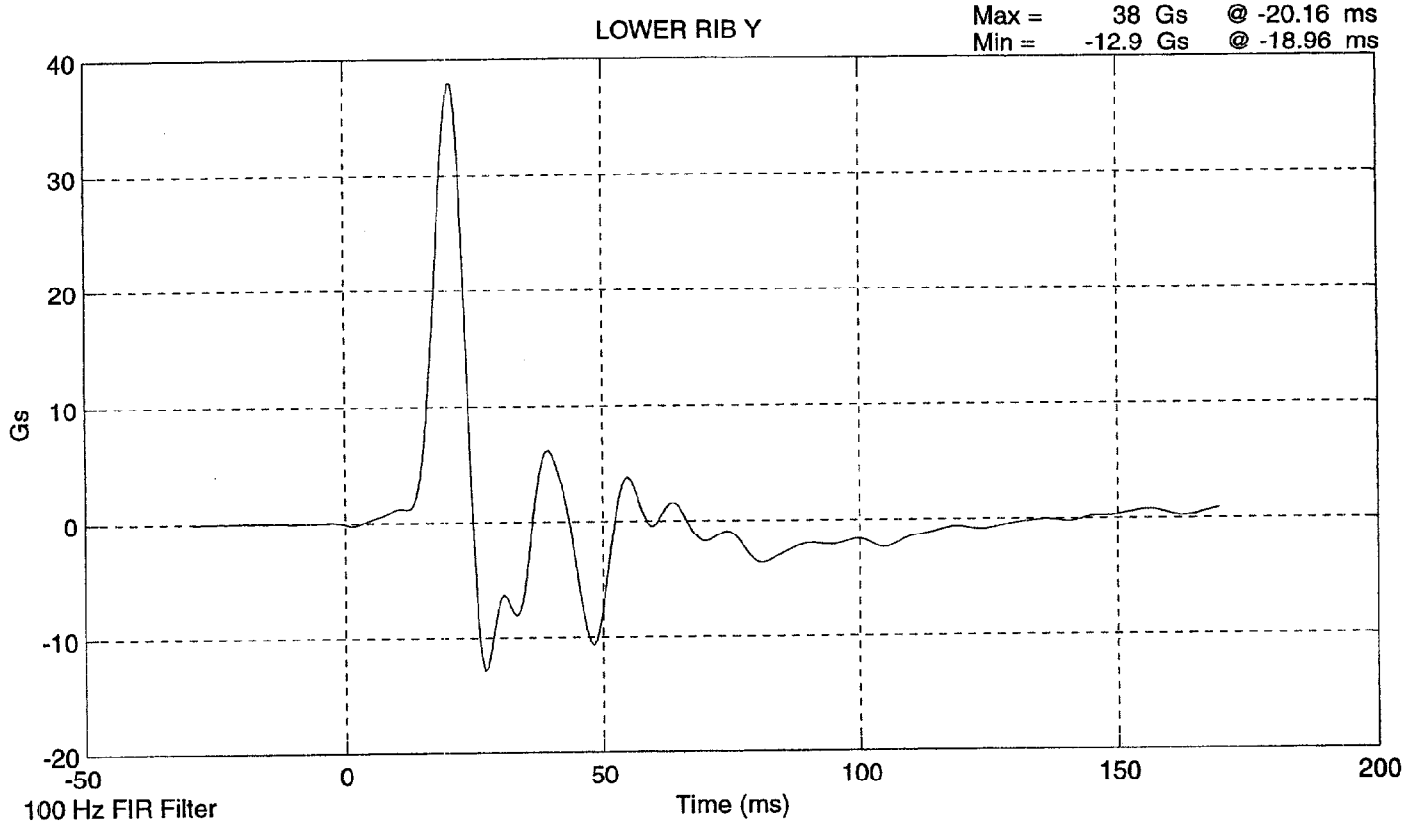
SID Serial No.: 027 Sequential Test Number: 1
Date: June 28, 1999 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.1
RELATIVE HUMIDITY (%)	10 - 70	32
PROBE SPEED (m/s)	4.27 - 4.33	4.29
UPPER RIB (g's)	37 - 46	40.4
LOWER RIB (g's)	37 - 46	37.9
LOWER SPINE (g's)	15 - 22	21.1

REMARKS: None







**LATERAL PELVIS IMPACT TEST
PRE-TEST**

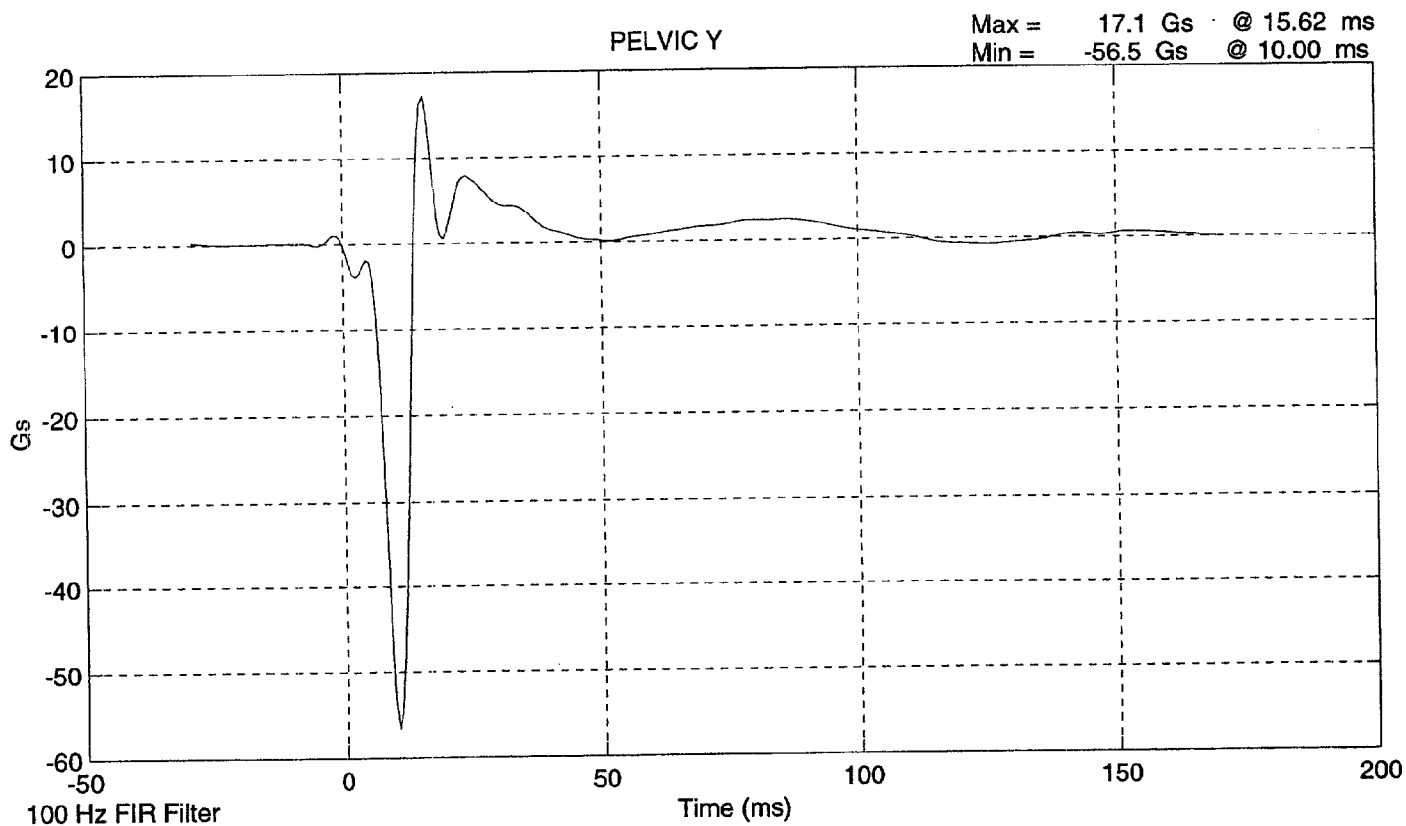
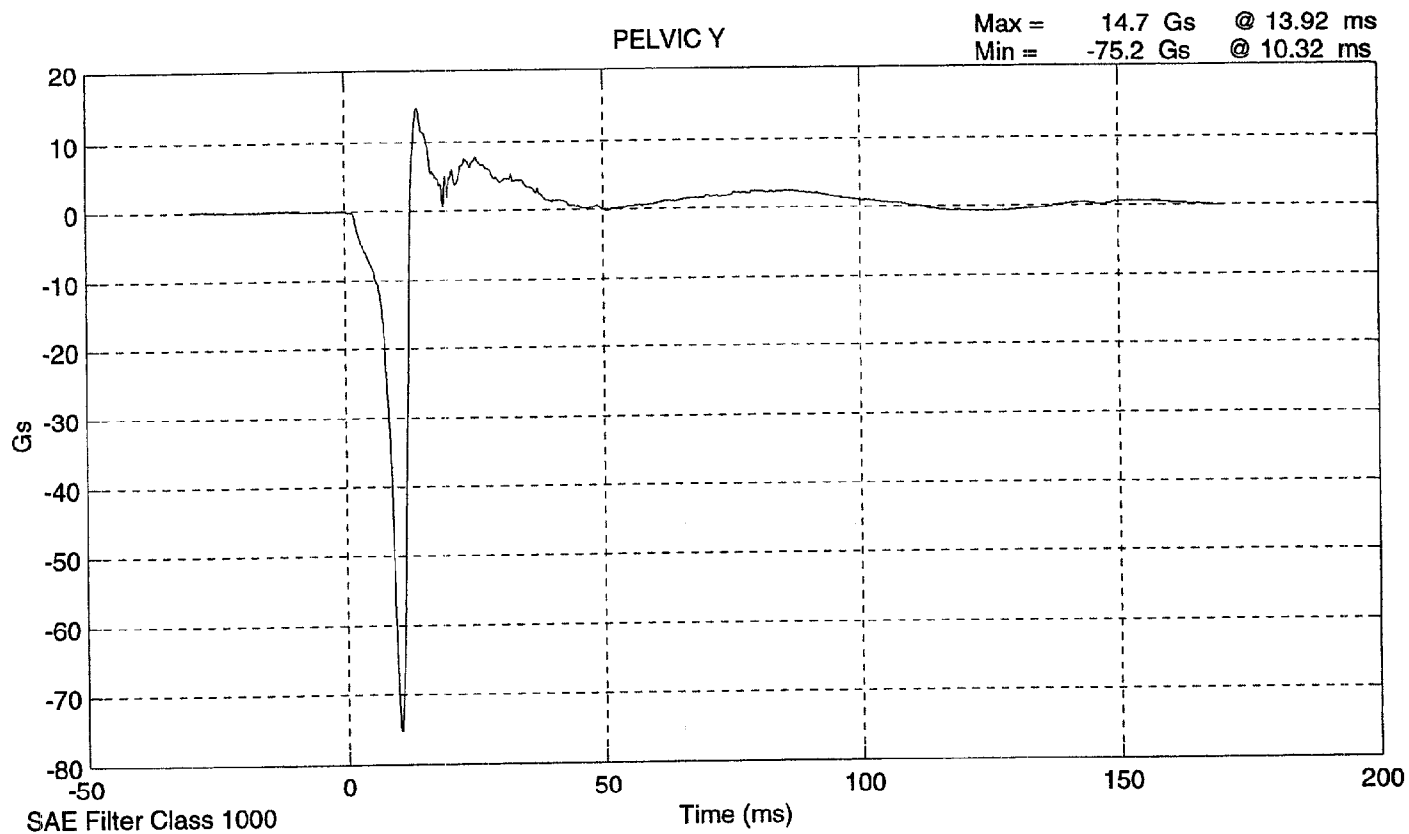
CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 027 Sequential Test Number: 1
Date: June 28, 1999 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.1
RELATIVE HUMIDITY (%)	10 - 70	32
PROBE SPEED (m/s)	4.27 - 4.33	4.28
PELVIS ACCELERATION (g's)	40 - 60	56.5

REMARKS: None

SID 027 PELVIC IMPACT TEST @ 4.2763 m/s



ABDOMINAL COMPRESSION TEST**PRE-TEST**

(Test not required for SID certification)

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 027 Sequential Test Number: 1
Date: June 30, 1999 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.1
RELATIVE HUMIDITY (%)	10 - 70	32
FORCE @ 13 mm (N)	104 - 162	116
FORCE @ 19 mm (N)	163 - 221	178
FORCE @ 25 mm (N)	222 - 280	258
FORCE @ 33 mm (N)	325 - 391	376

REMARKS: None

COPY

Dummy S/N 027

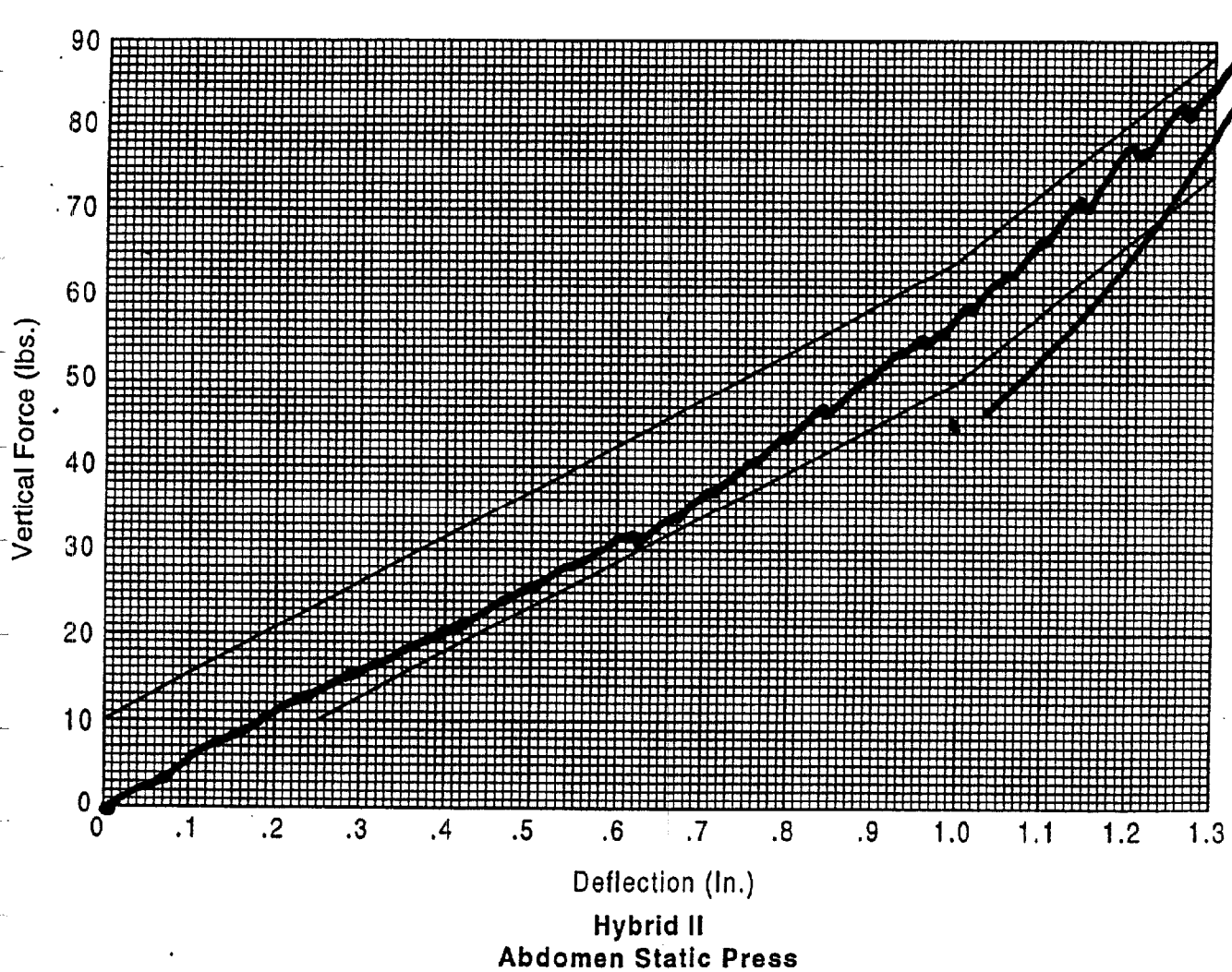
W/A _____

Date 6-30-99

Performed By BS

Temp. 70

Humidity 32



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

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 027 Sequential Test Number: 1
Date: June 30, 1999 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.1
RELATIVE HUMIDITY (%)	10 - 70	32
FORCE @ 0° (N)	0 - 26.7	0
FORCE @ 20° (N)	97.8 - 151.2	139.0
FORCE @ 30° (N)	151.2 - 204.6	195.7
FORCE @ 40° (N)	204.6 - 258	255.8
RETURN ANGLE	12° max.	6

REMARKS: None

COPY

Dummy S/N

027

W/A

Date

6-30-99

Performed By

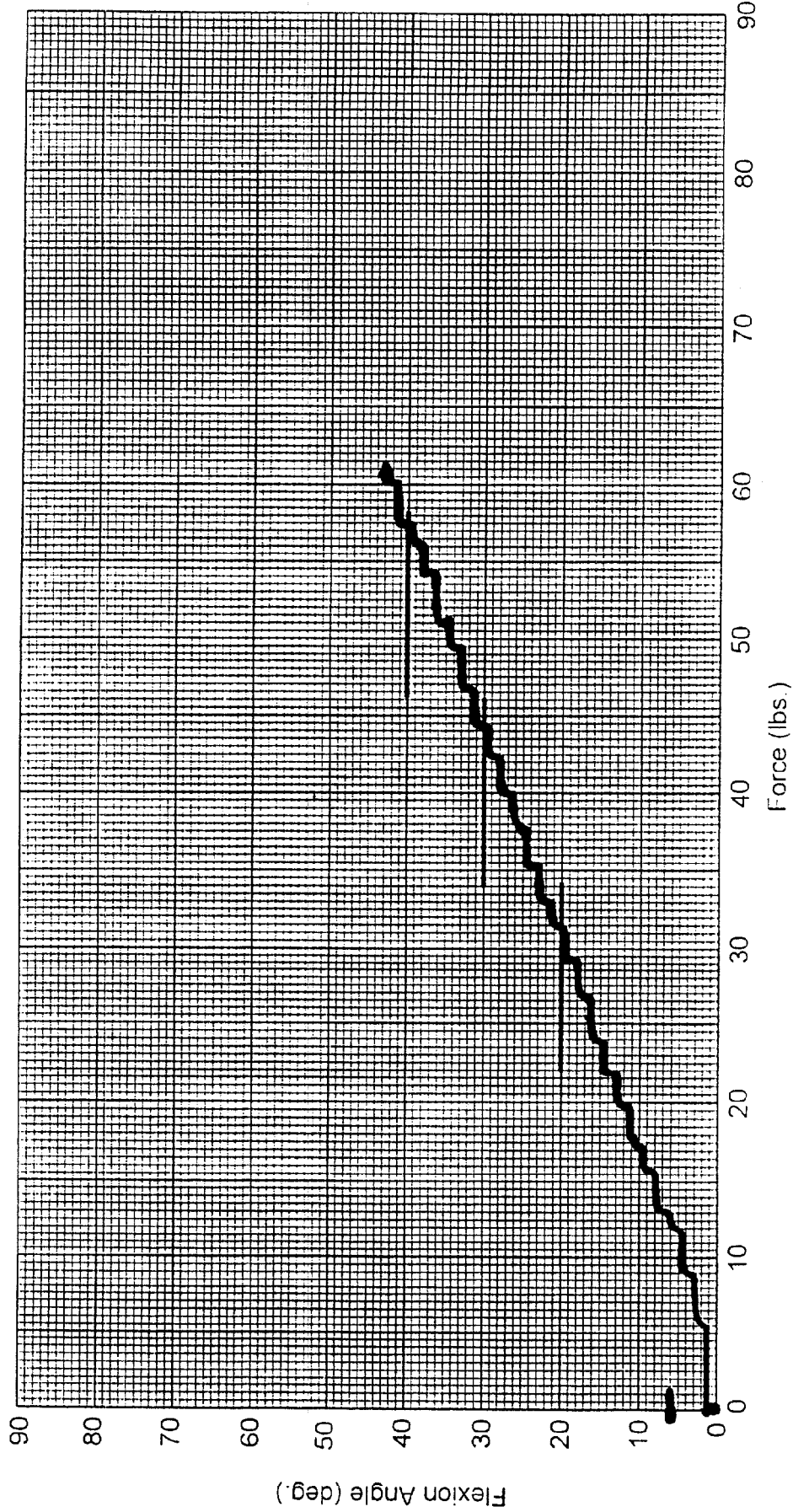
BR

Temp.

70

Humidity

32



Hybrid II Lumbar Spine Flexion Test

PRE-TEST DUMMY INSPECTION LIST

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 027 Sequential Test Number: 1
Date: June 30, 1999 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.: 016

CONFIGURED FOR LEFT SIDE IMPACT

**CALIBRATION TEST RESULTS SUMMARY
POST TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 016 Sequential Test Number: 1
Date: July 30, 1999 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.
ABDOMINAL COMPRESSION TEST*	Passed all requirements.
LUMBAR FLEXION TEST*	Passed all requirements.

* Test not required for SID certification.

REMARKS: None

**EXTERNAL DIMENSIONS
POST TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 016 Sequential Test Number: 1
Date: July 29, 1999 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
SH- Seated Height (mm)	889 - 909	902
RH- Rib Height (mm)	502 - 520	514
HP- Hip Pivot Height (mm)	99 ref.	99
RD- Rib from Back Line (mm)	229 - 241	239
KH- Knee Pivot from Back Line (mm)	511 - 526	526
KV- Knee Pivot to Floor (mm)	490 - 505	494
HW- Hip Width (mm)	356 - 391	362

REMARKS: None

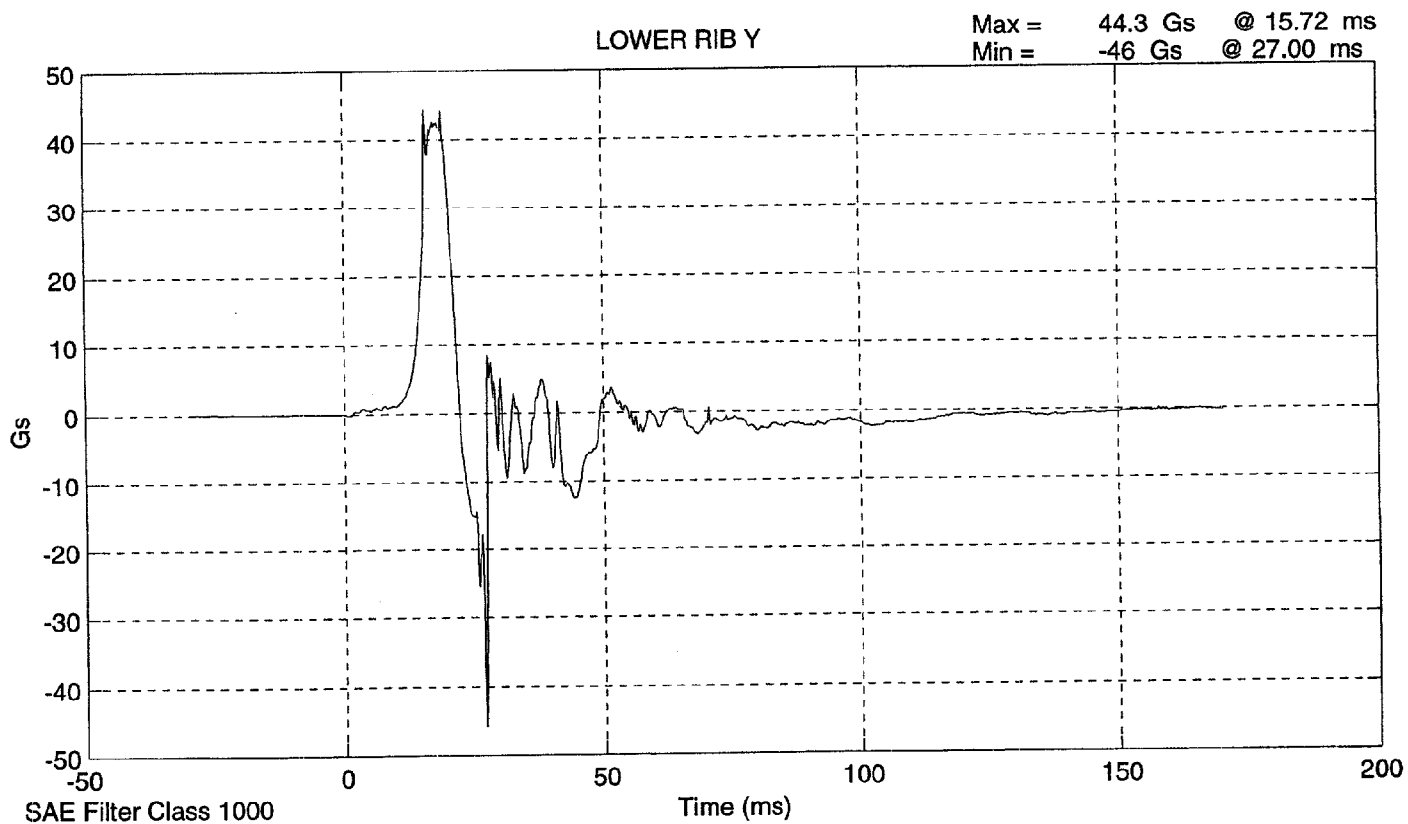
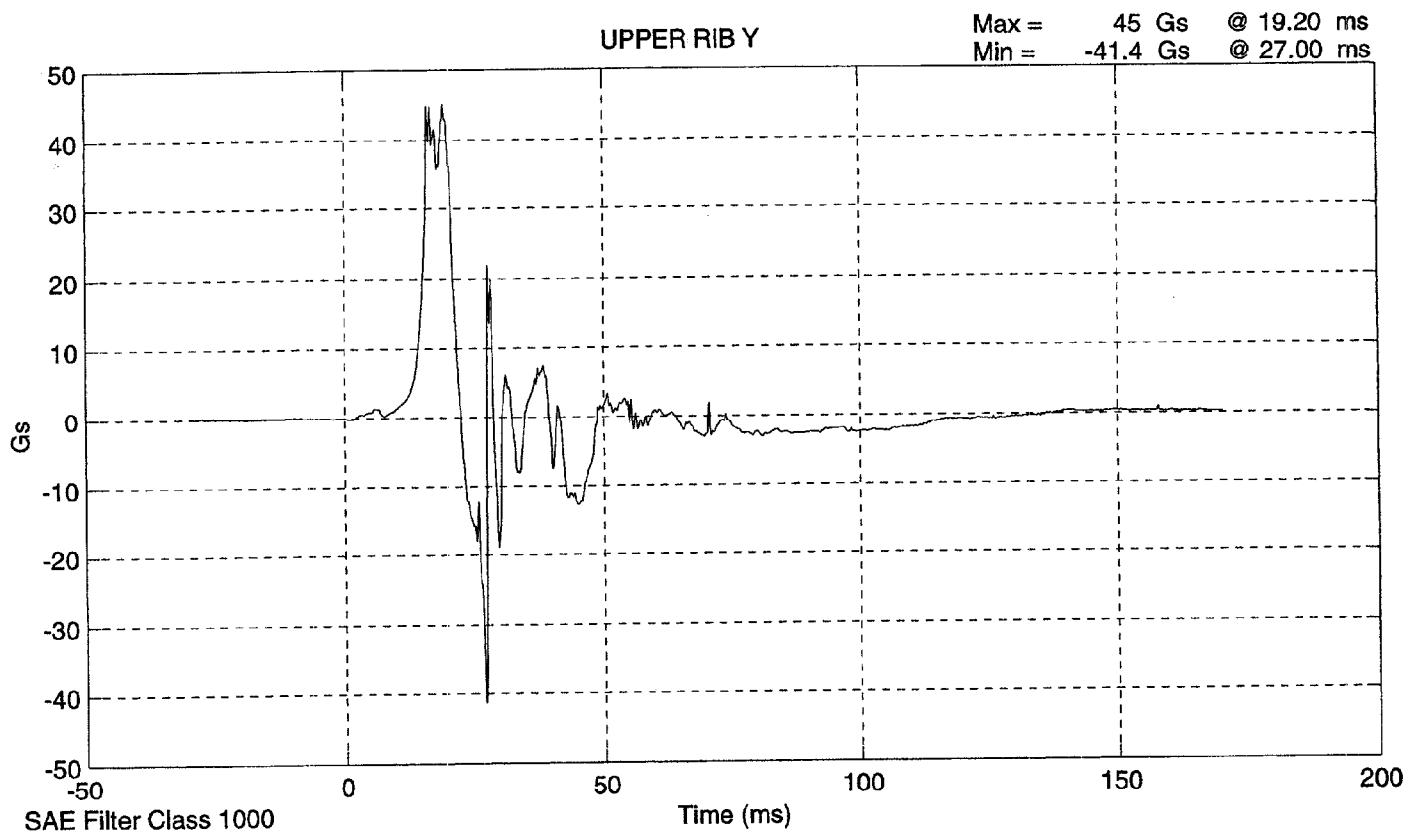
**LATERAL THORAX IMPACT TEST
POST TEST**

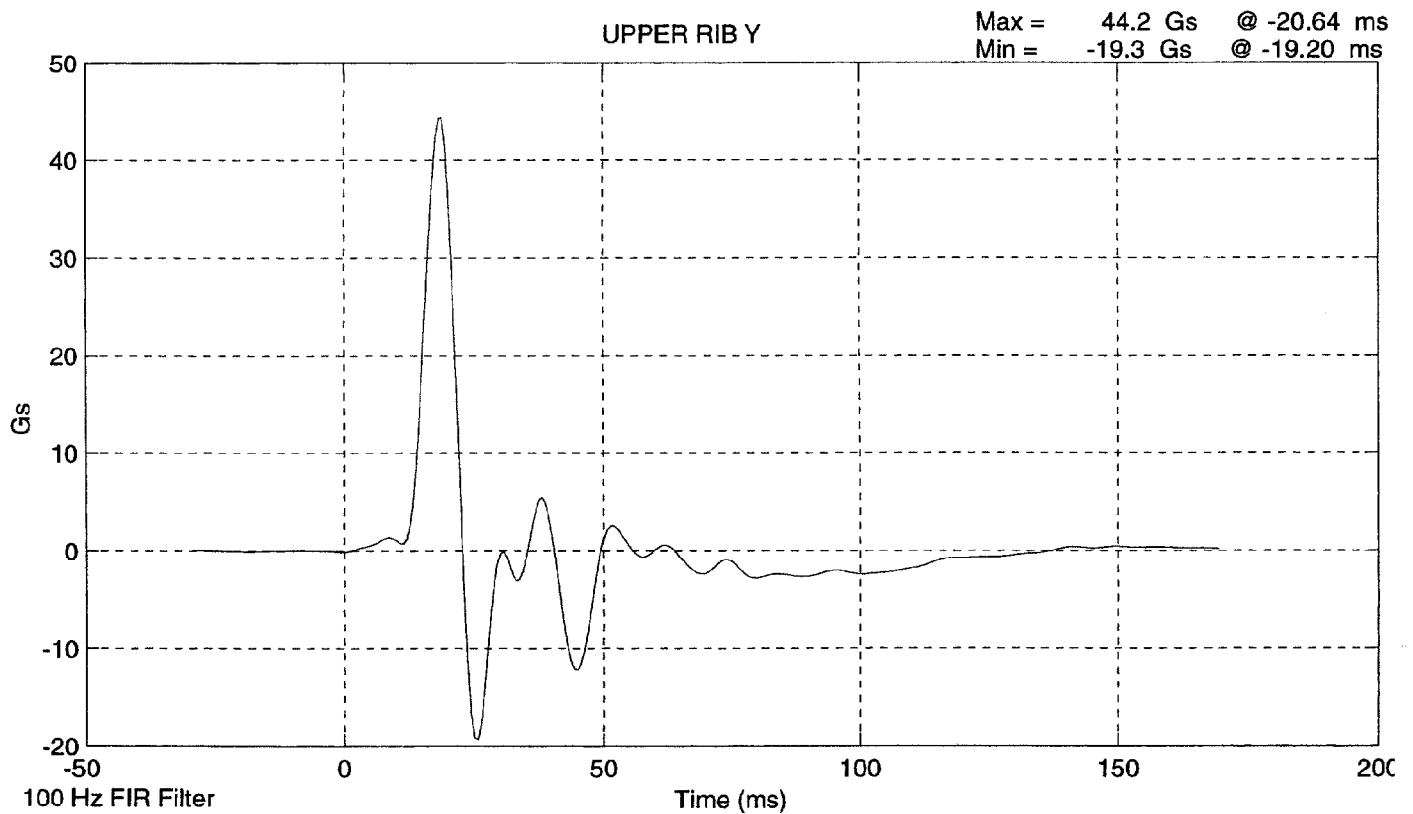
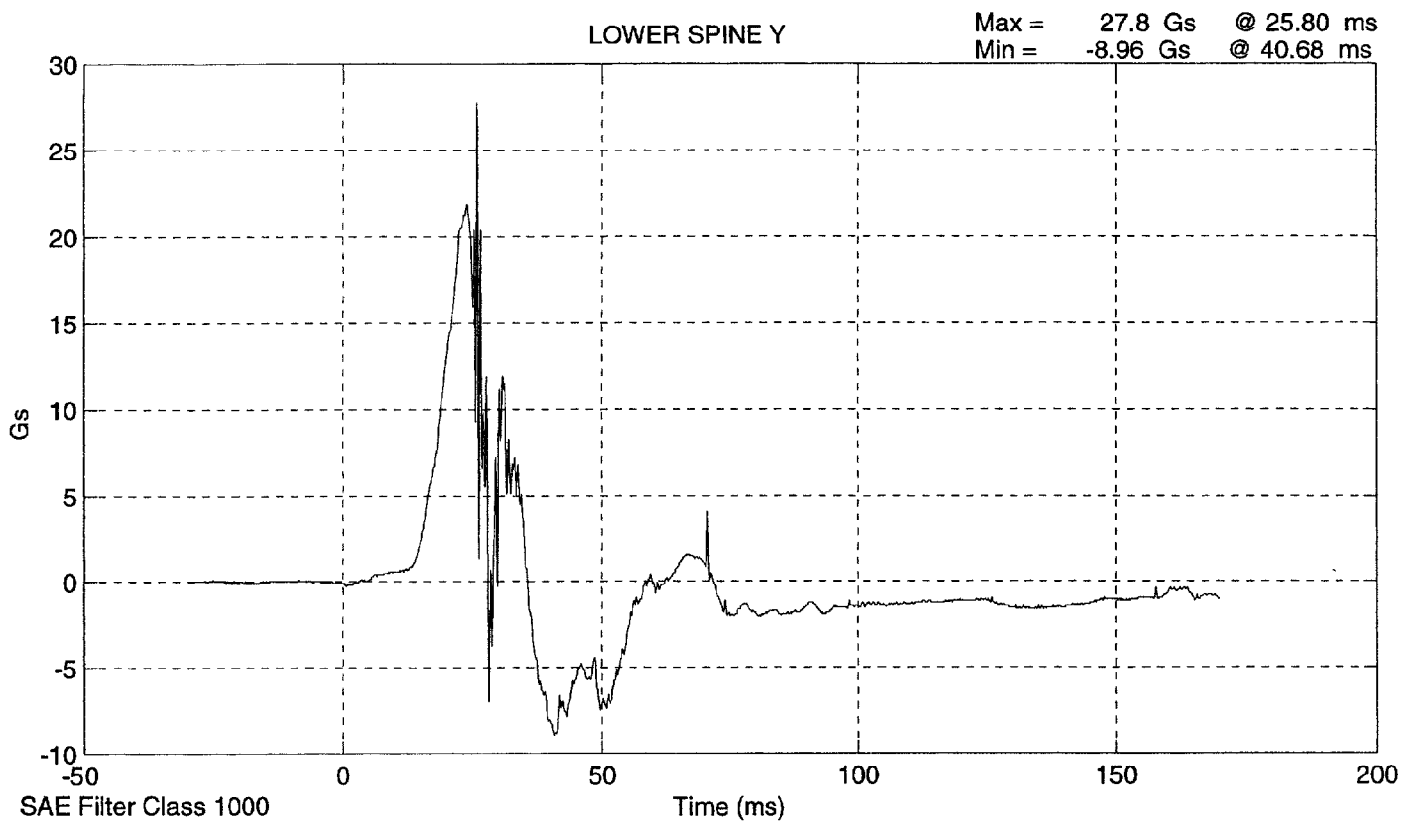
CONFIGURED FOR LEFT SIDE IMPACT

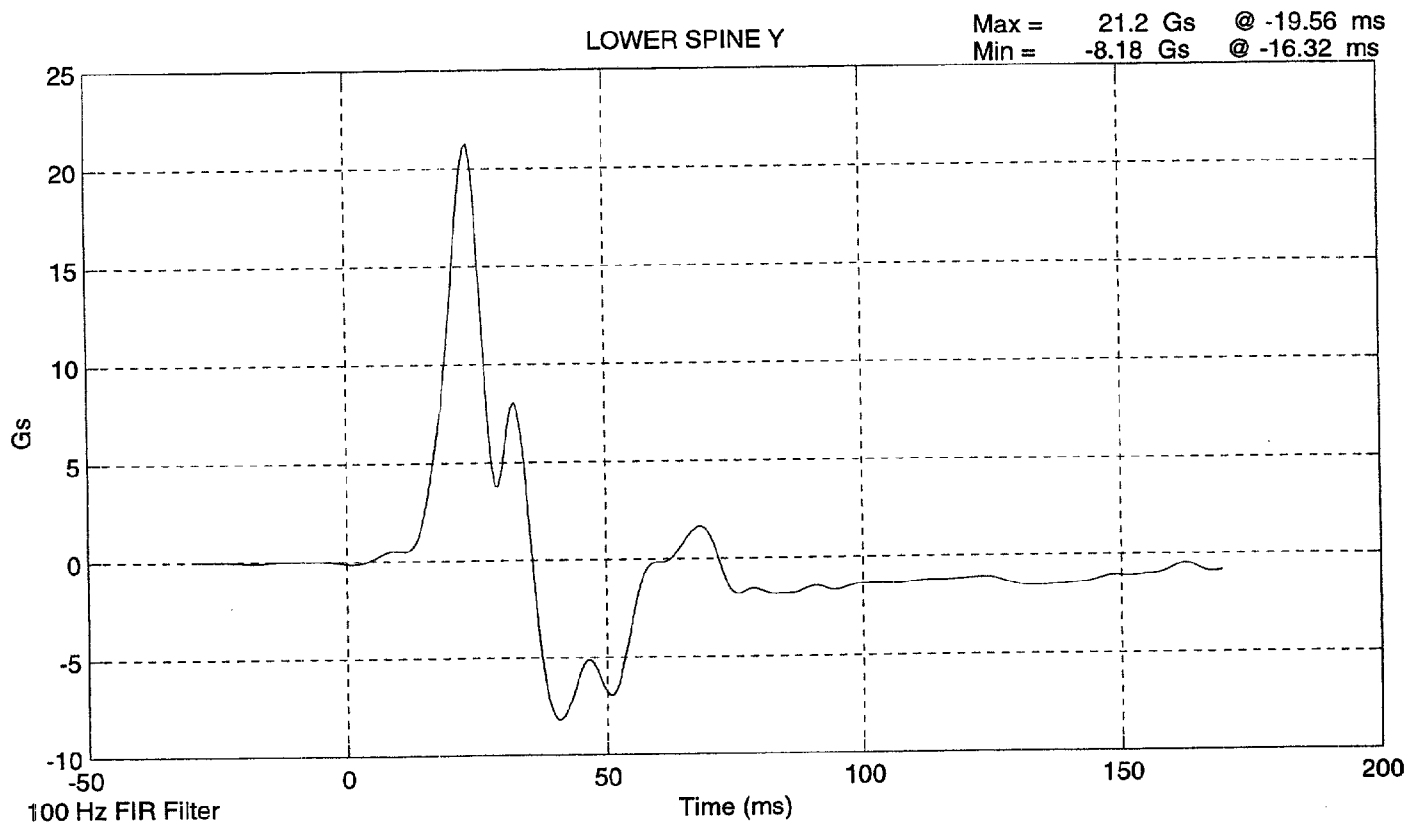
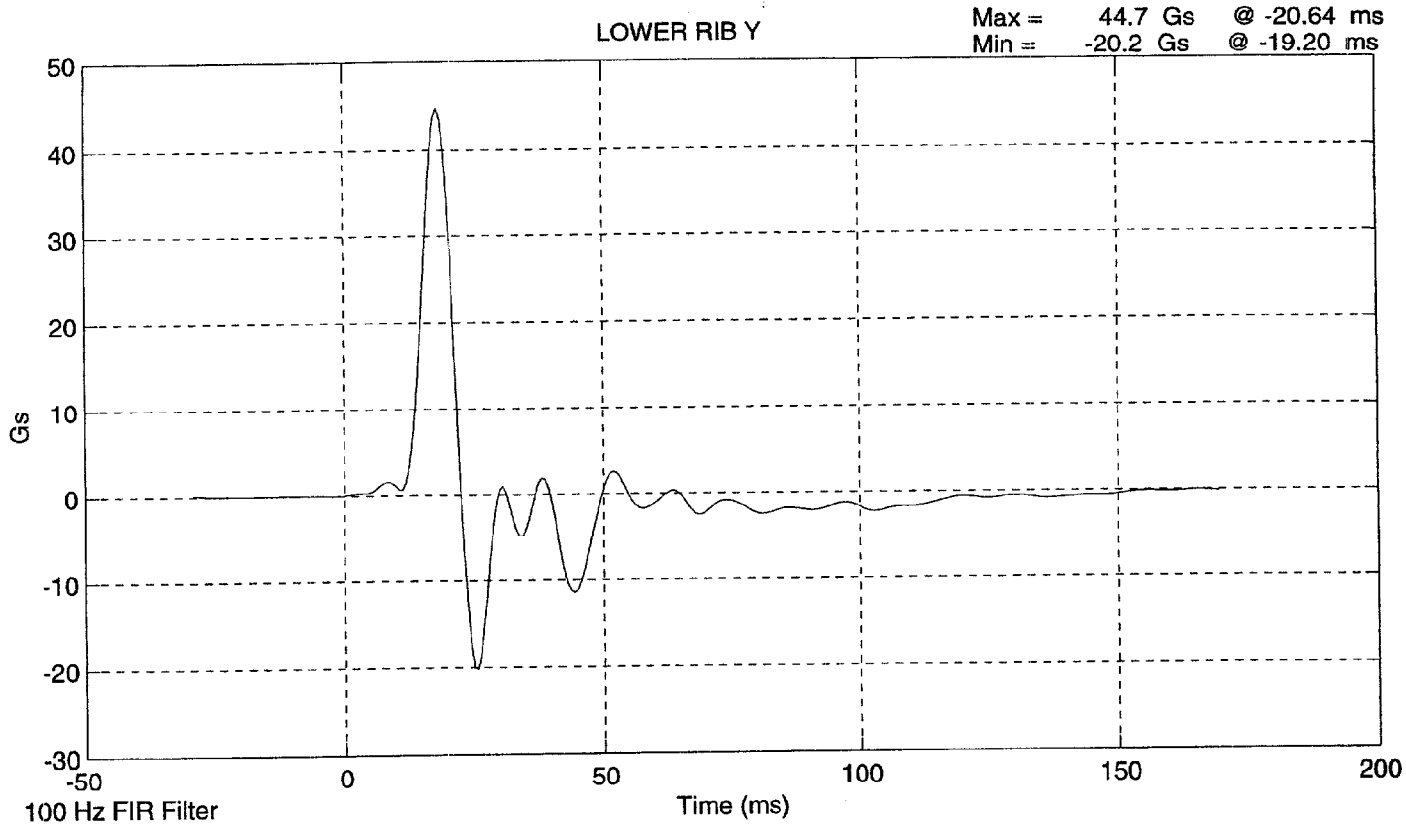
SID Serial No.: 016 Sequential Test Number: 1
Date: July 30, 1999 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21
RELATIVE HUMIDITY (%)	10 - 70	31
PROBE SPEED (m/s)	4.27 - 4.33	4.28
UPPER RIB (g's)	37 - 46	44.2
LOWER RIB (g's)	37 - 46	44.7
LOWER SPINE (g's)	15 - 22	21.2

REMARKS: None







**LATERAL PELVIS IMPACT TEST
POST TEST**

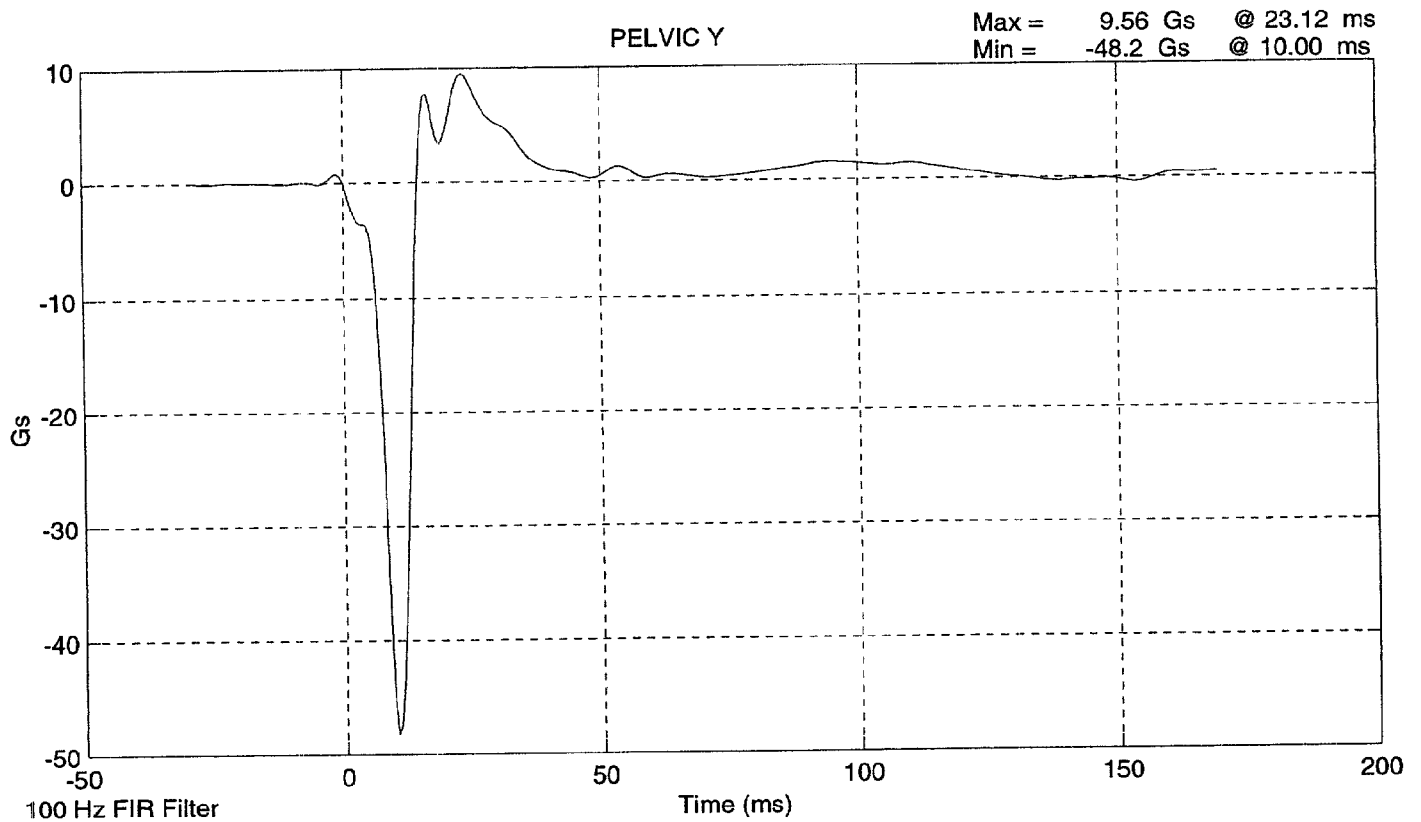
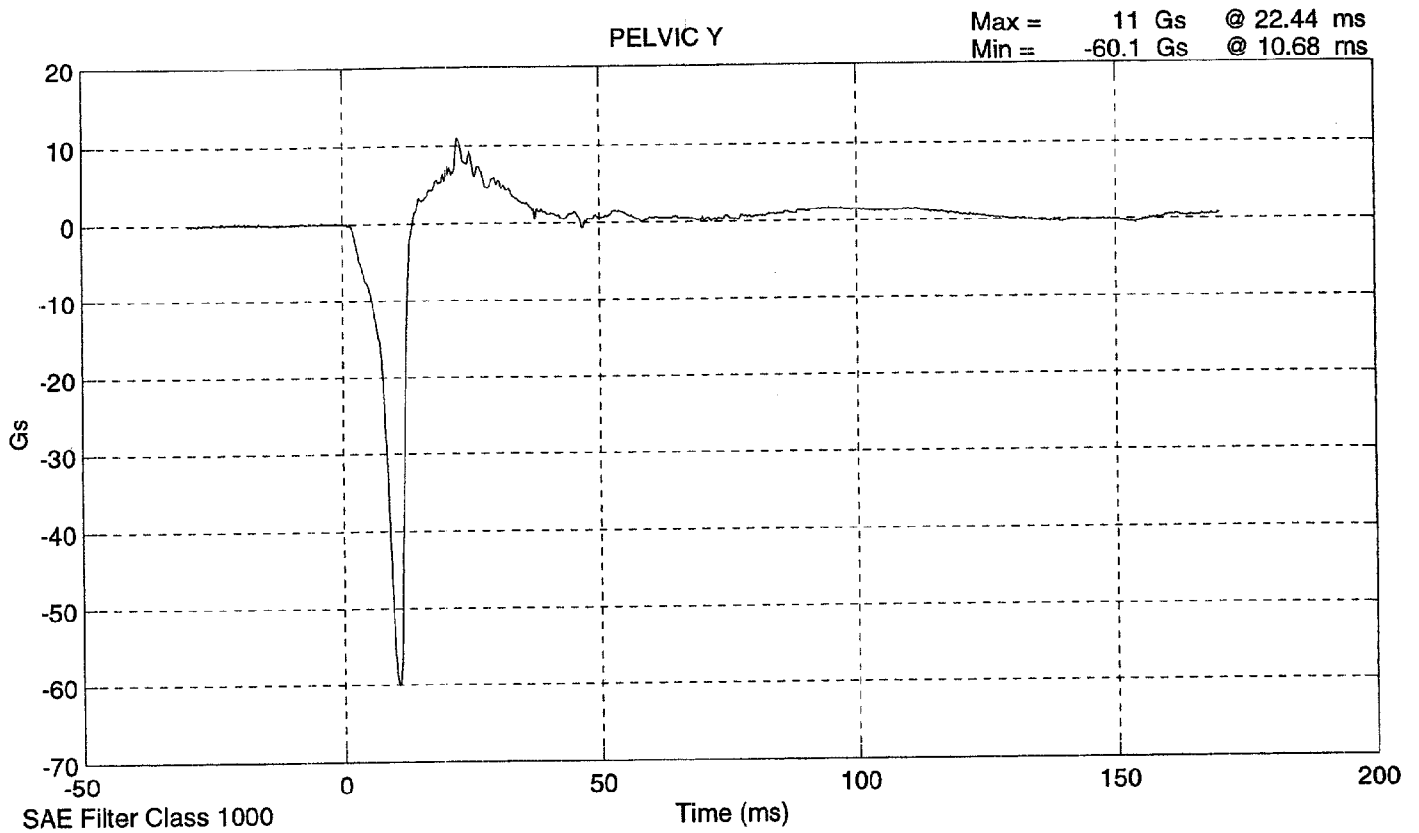
CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 016 Sequential Test Number: 1
Date: July 28, 1999 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21
RELATIVE HUMIDITY (%)	10 - 70	31
PROBE SPEED (m/s)	4.27 - 4.33	4.27
PELVIS ACCELERATION (g's)	40 - 60	48.2

REMARKS: None

SID 016 PELVIC IMPACT TEST @ 4.2733 m/s



ABDOMINAL COMPRESSION TEST**POST TEST**

(Test not required for SID certification)

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 016 Sequential Test Number: 1
Date: July 30, 1999 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21
RELATIVE HUMIDITY (%)	10 - 70	31
FORCE @ 13 mm (N)	104 - 162	116
FORCE @ 19 mm (N)	163 - 221	169
FORCE @ 25 mm (N)	222 - 280	245
FORCE @ 33 mm (N)	325 - 391	369

REMARKS: None

COPY

Dummy S/N 016

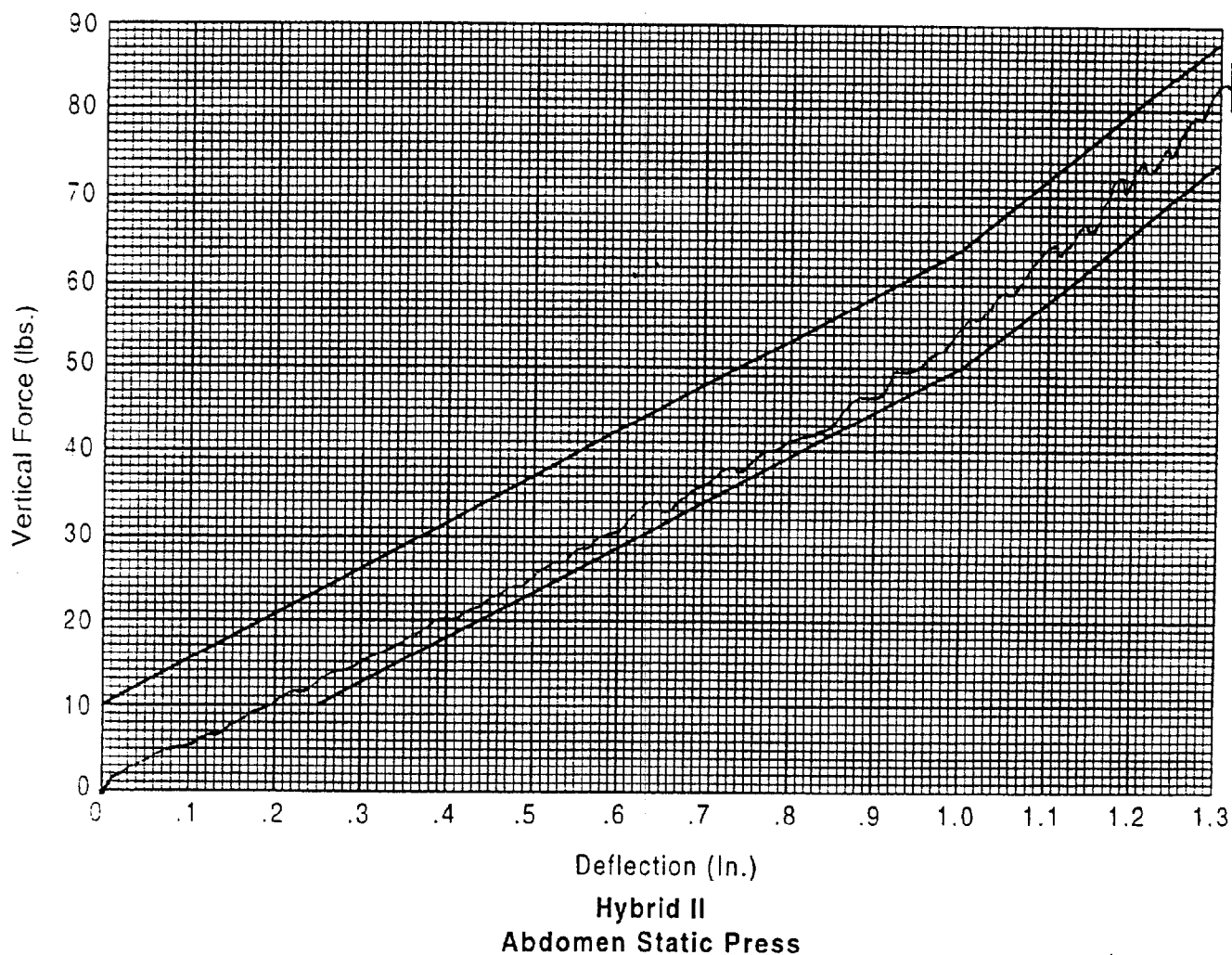
W/A _____

Date 7-30-99

Performed By BS

Temp. 70

Humidity 31



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

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 016 Sequential Test Number: 1
Date: July 29, 1999 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21
RELATIVE HUMIDITY (%)	10 - 70	31
FORCE @ 0° (N)	0 - 26.7	0
FORCE @ 20° (N)	97.8 - 151.2	122.3
FORCE @ 30° (N)	151.2 - 204.6	177.9
FORCE @ 40° (N)	204.6 - 258	222.4
RETURN ANGLE	12° max.	10

REMARKS: None

COPY

Dummy S/N

016

W/A

Date

7-29-99

Performed By

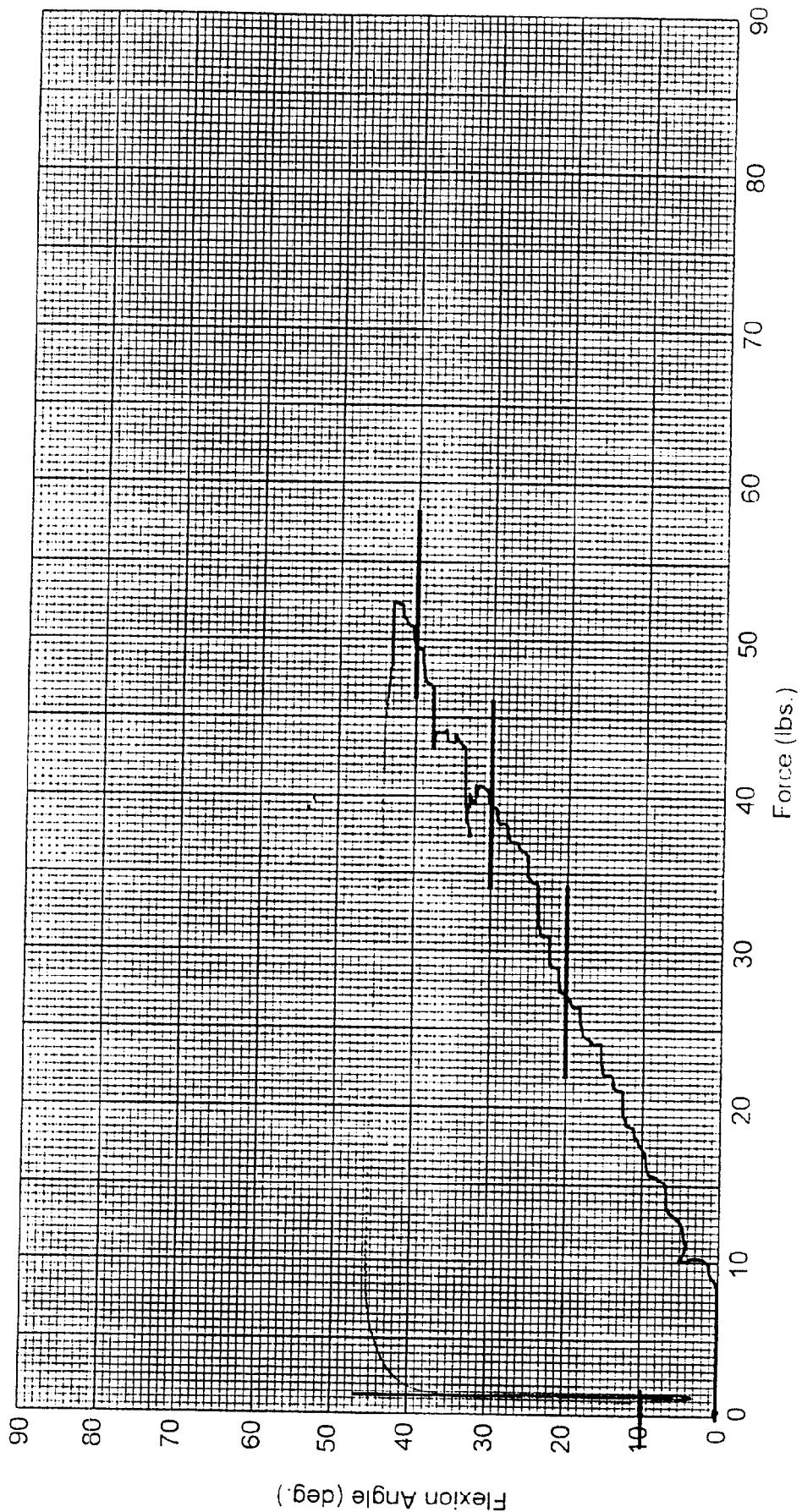
BL

Temp.

70

Humidity

31



Hybrid II Lumbar Spine Flexion Test

POST TEST DUMMY INSPECTION LIST

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 016

Sequential Test Number: 1

Date: July 29, 1999

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.: 027

CONFIGURED FOR LEFT SIDE IMPACT

**CALIBRATION TEST RESULTS SUMMARY
POST TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 027 Sequential Test Number: 1
Date: July 30, 1999 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.
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.: 027
Date: July 28, 1999

Sequential Test Number: 1
Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
SH- Seated Height (mm)	889 - 909	908
RH- Rib Height (mm)	502 - 520	514
HP- Hip Pivot Height (mm)	99 ref.	99
RD- Rib from Back Line (mm)	229 - 241	236
KH- Knee Pivot from Back Line (mm)	511 - 526	516
KV- Knee Pivot to Floor (mm)	490 - 505	493
HW- Hip Width (mm)	356 - 391	368

REMARKS: None

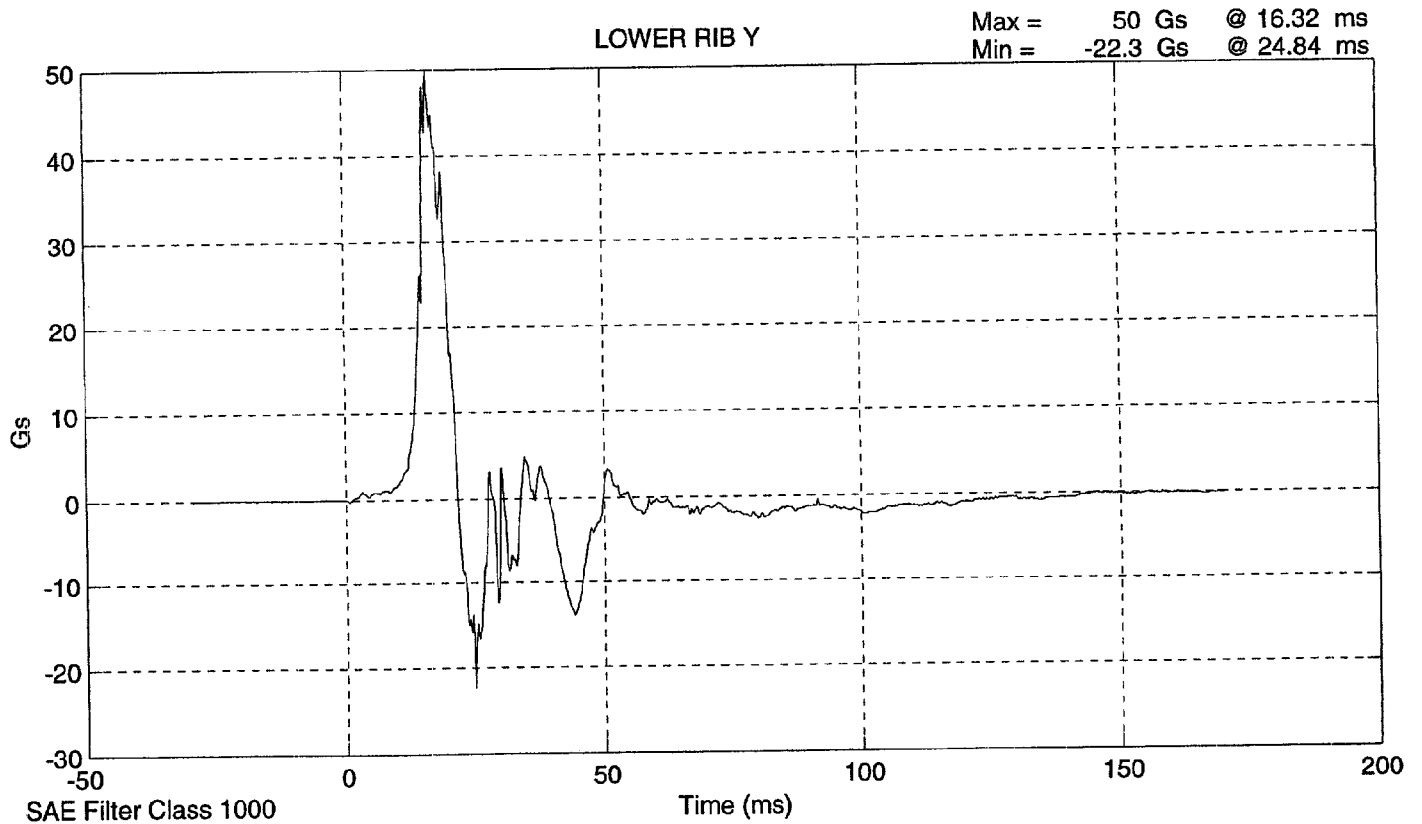
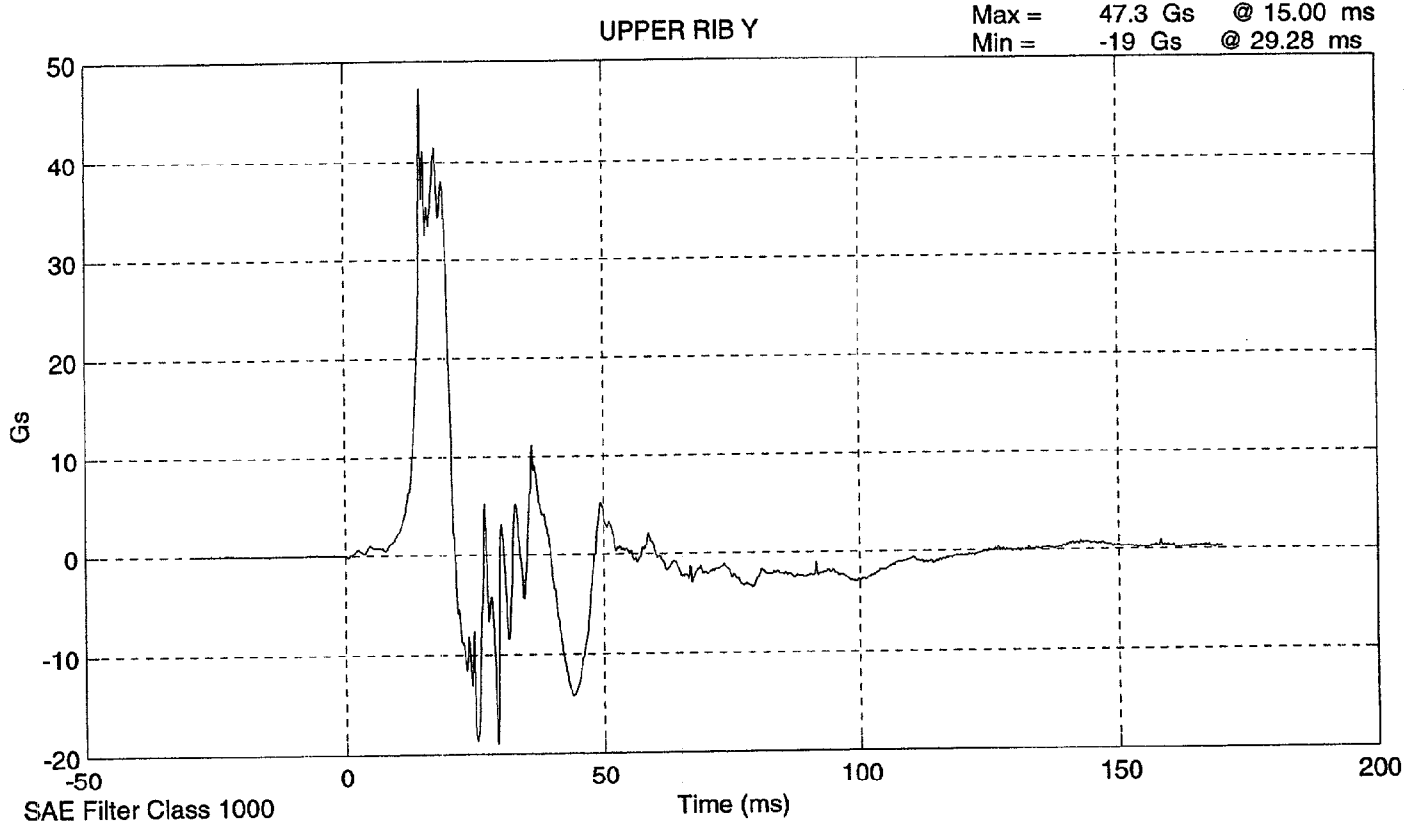
**LATERAL THORAX IMPACT TEST
POST TEST**

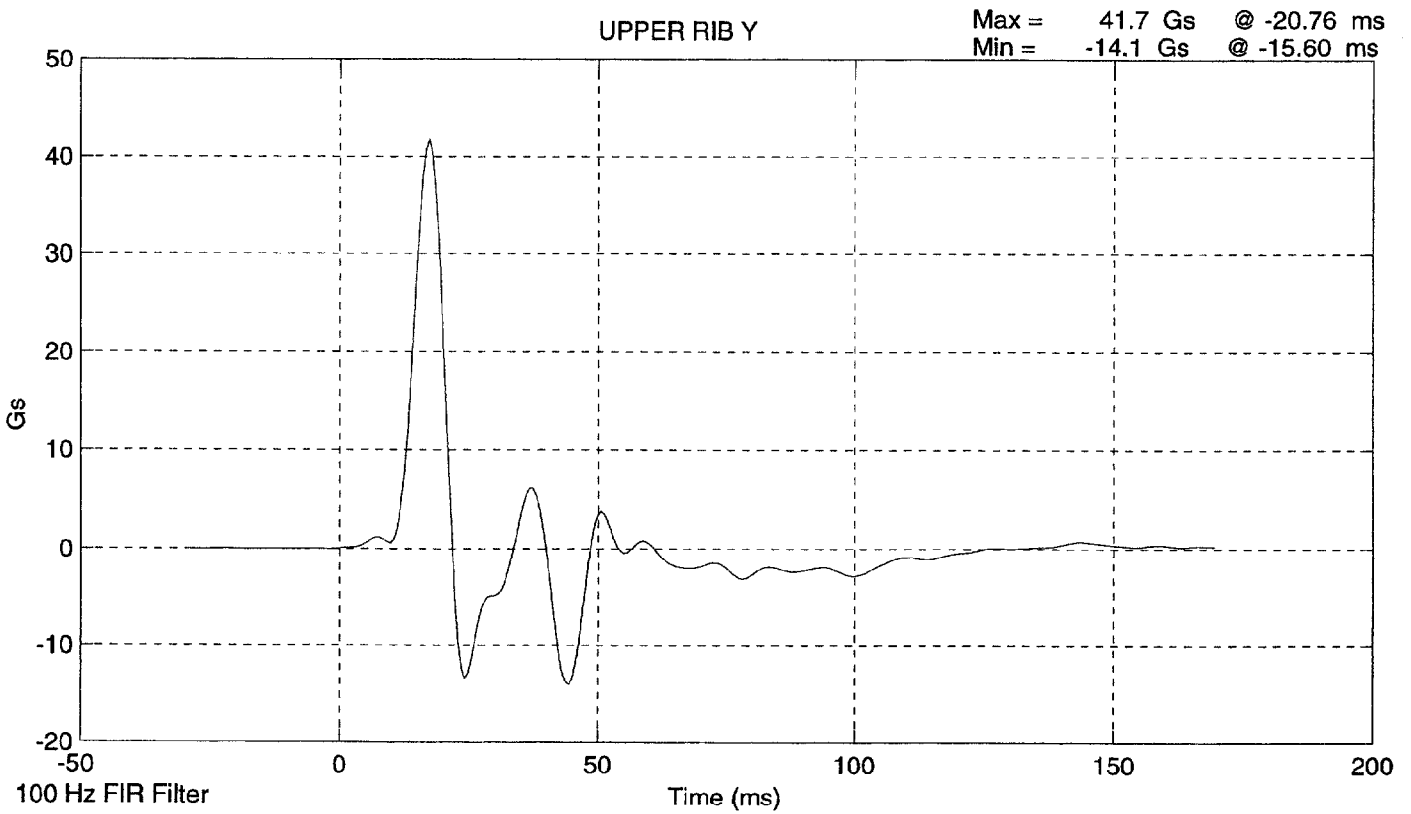
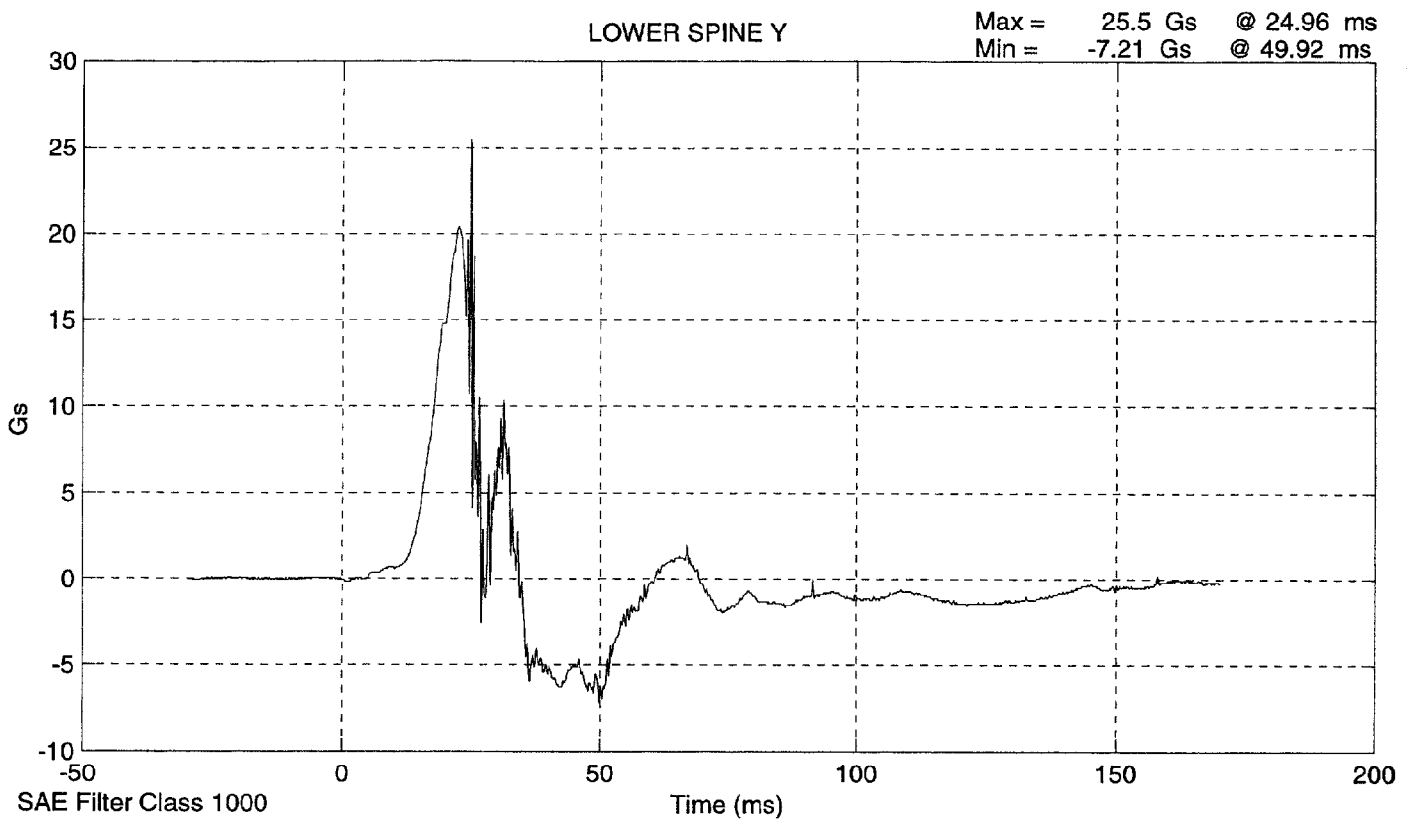
CONFIGURED FOR LEFT SIDE IMPACT

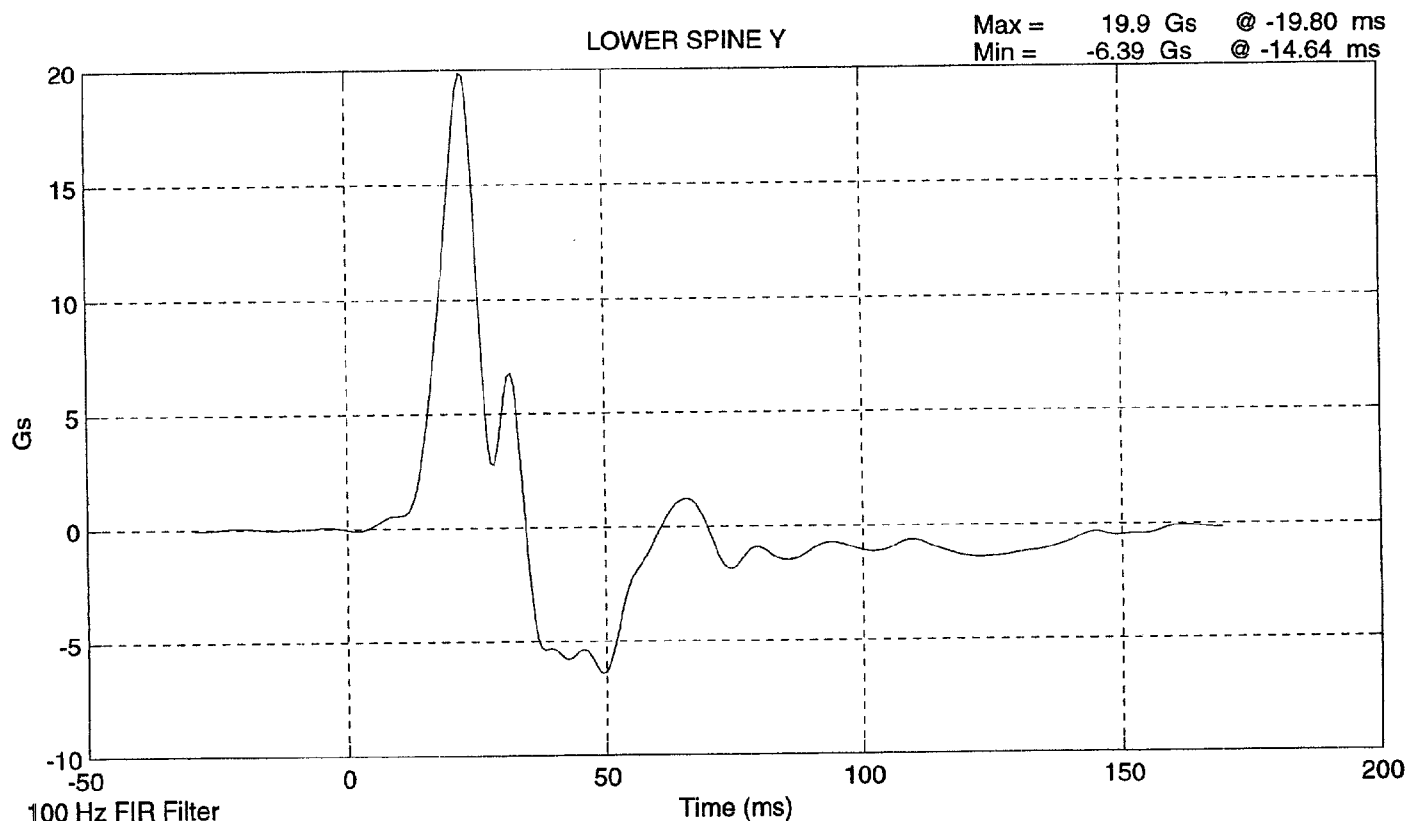
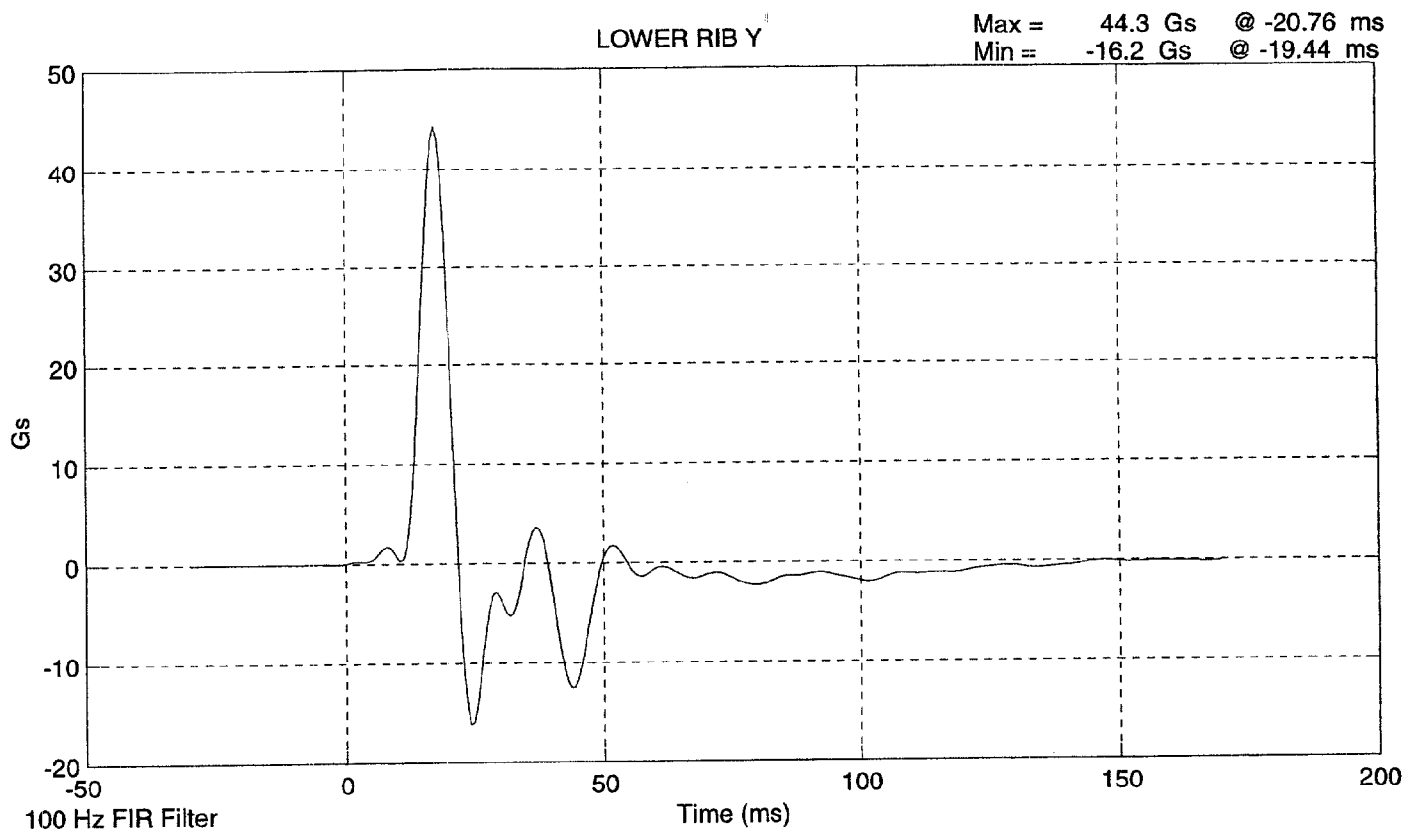
SID Serial No.: 027 Sequential Test Number: 1
Date: July 30, 1999 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21
RELATIVE HUMIDITY (%)	10 - 70	31
PROBE SPEED (m/s)	4.27 - 4.33	4.28
UPPER RIB (g's)	37 - 46	41.7
LOWER RIB (g's)	37 - 46	44.3
LOWER SPINE (g's)	15 - 22	19.9

REMARKS: None







**LATERAL PELVIS IMPACT TEST
POST TEST**

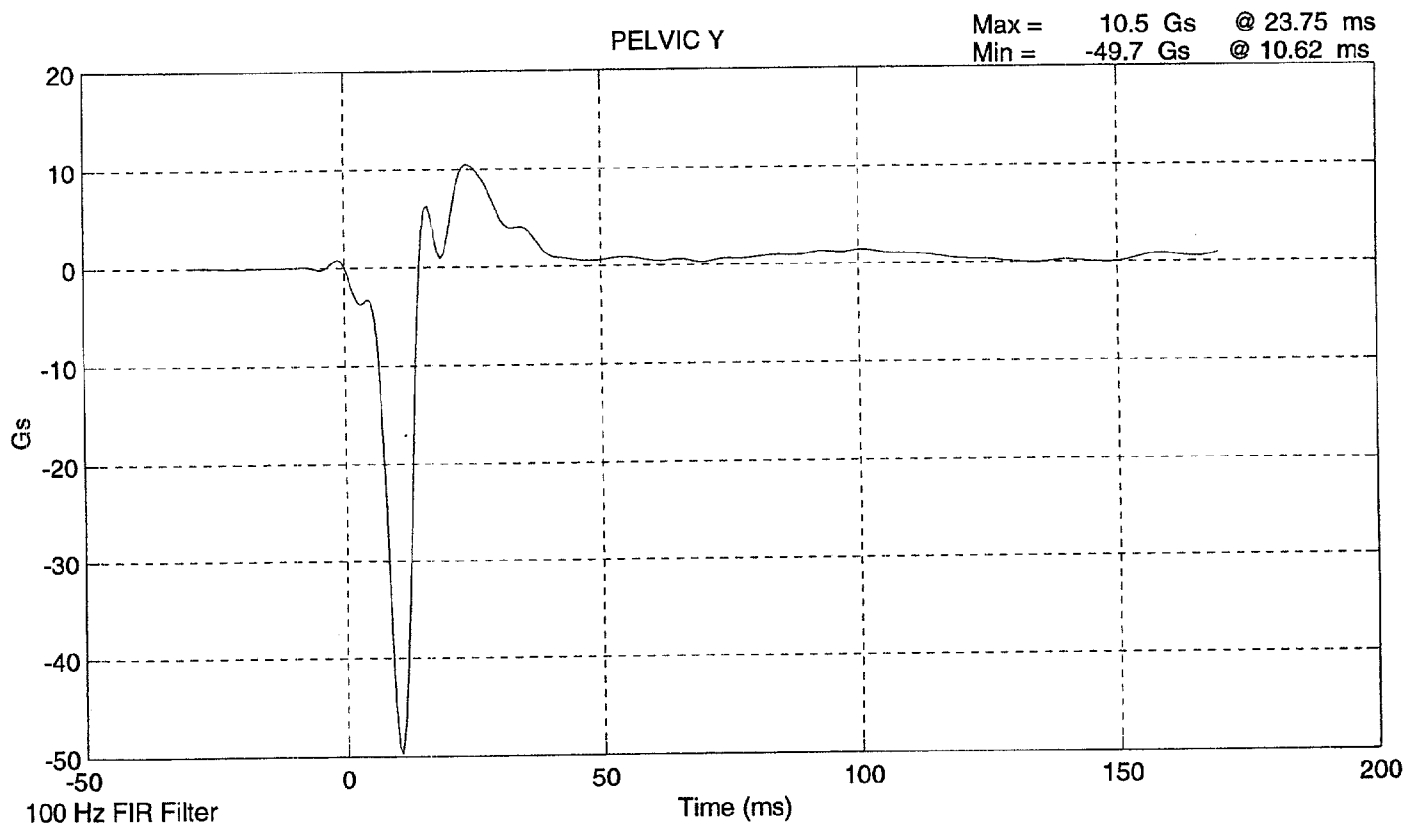
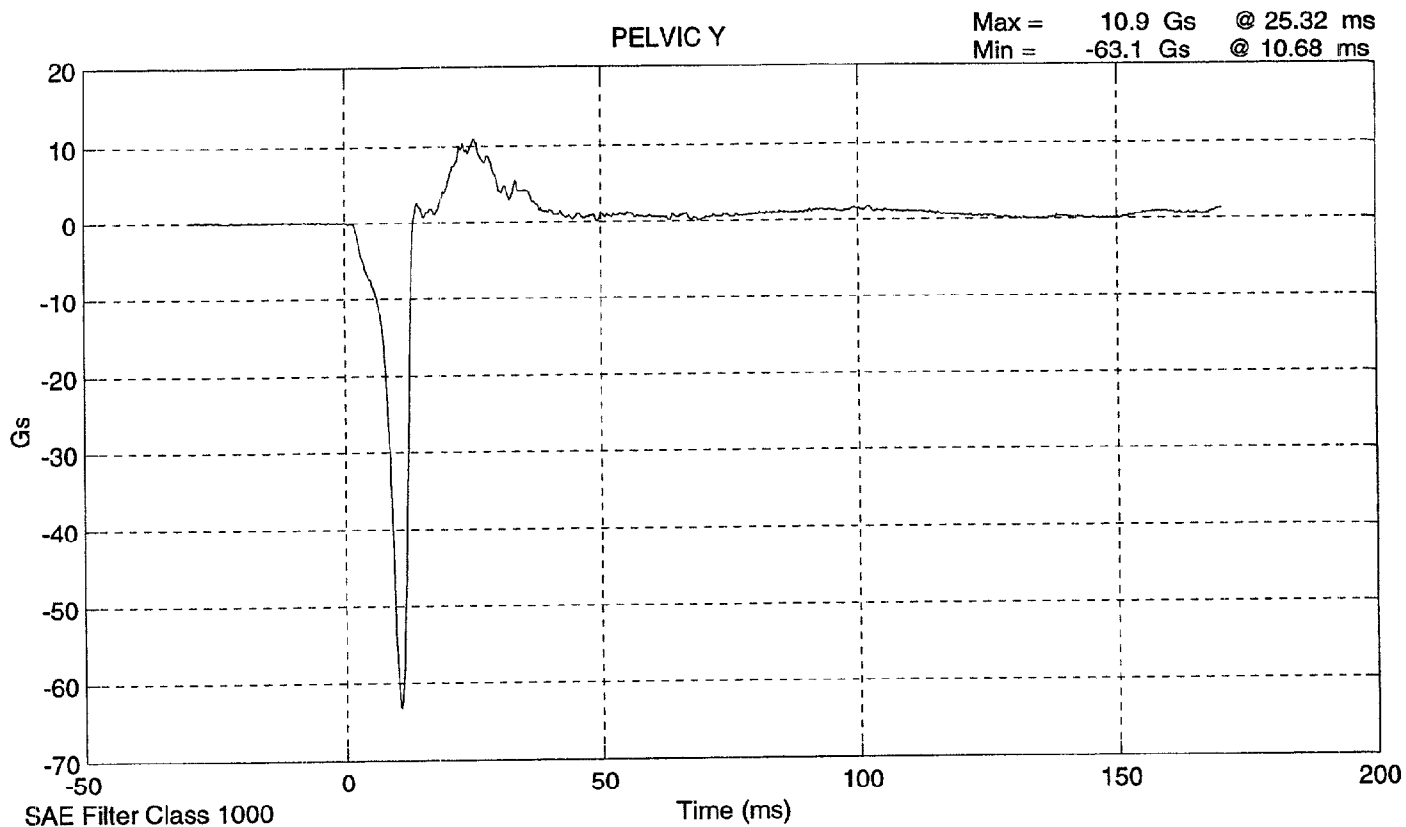
CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 027 Sequential Test Number: 1
Date: July 28, 1999 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21
RELATIVE HUMIDITY (%)	10 - 70	31
PROBE SPEED (m/s)	4.27 - 4.33	4.32
PELVIS ACCELERATION (g's)	40 - 60	49.7

REMARKS: None

SID 027 PELVIC IMPACT TEST @ 4.316 m/s



ABDOMINAL COMPRESSION TEST**POST TEST**

(Test not required for SID certification)

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 027 Sequential Test Number: 1
Date: July 29, 1999 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21
RELATIVE HUMIDITY (%)	10 - 70	31
FORCE @ 13 mm (N)	104 - 162	116
FORCE @ 19 mm (N)	163 - 221	178
FORCE @ 25 mm (N)	222 - 280	240
FORCE @ 33 mm (N)	325 - 391	365

REMARKS: None

COPY

Dummy S/N 027

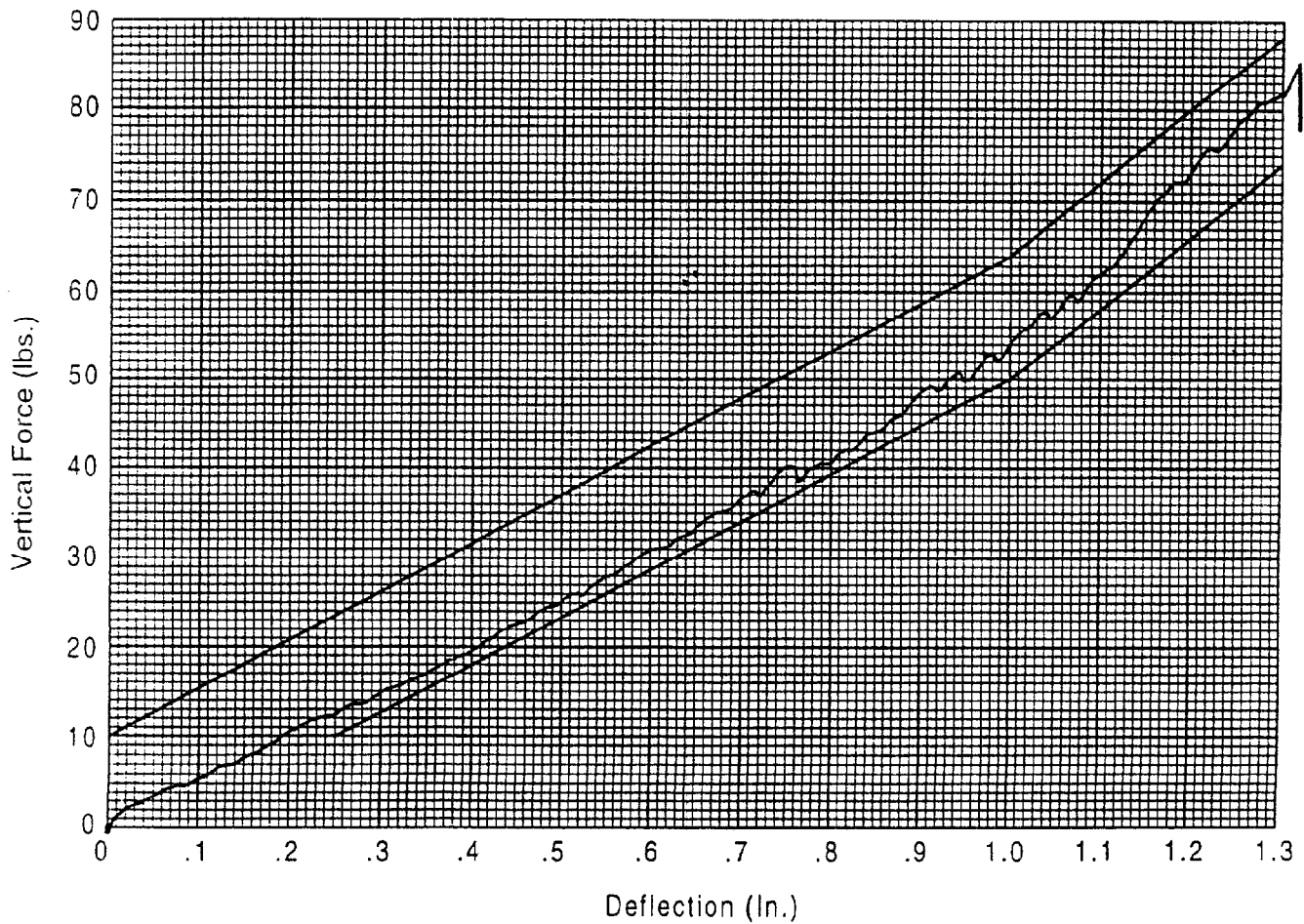
W/A _____

Date 7-30-99

Performed By BSZ

Temp. 70

Humidity 31



Hybrid II
Abdomen Static Press

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

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 027 Sequential Test Number: 1
Date: July 29, 1999 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21
RELATIVE HUMIDITY (%)	10 - 70	31
FORCE @ 0° (N)	0 - 26.7	0
FORCE @ 20° (N)	97.8 - 151.2	124.6
FORCE @ 30° (N)	151.2 - 204.6	173.5
FORCE @ 40° (N)	204.6 - 258	231.3
RETURN ANGLE	12° max.	10

REMARKS: None

COPY

Dummy S/N

W/A

Date

Performed By

Temp.

Humidity

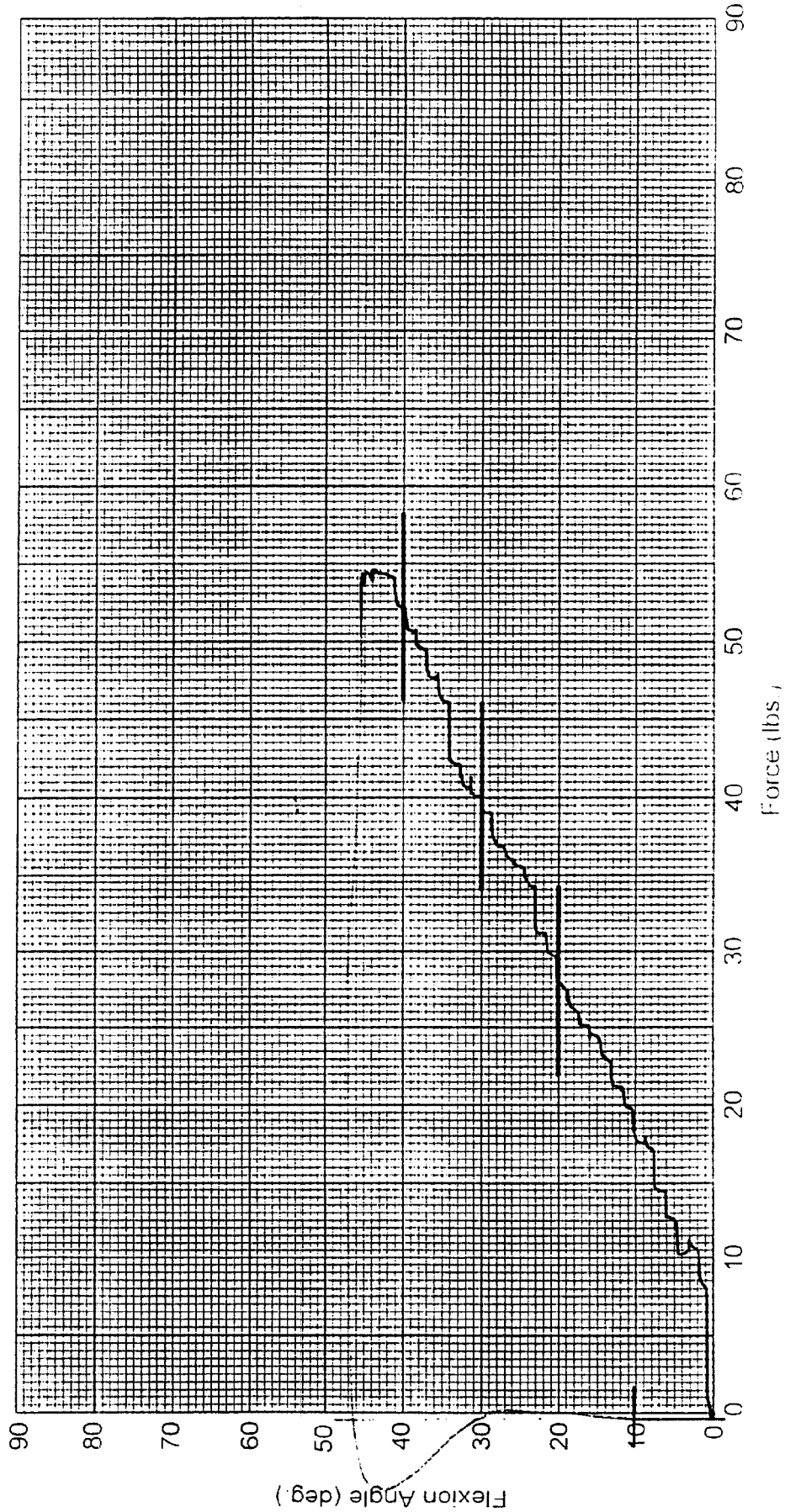
027

7-29-99

BB

70

31



Hybrid II Lumbar Spine Flexion Test

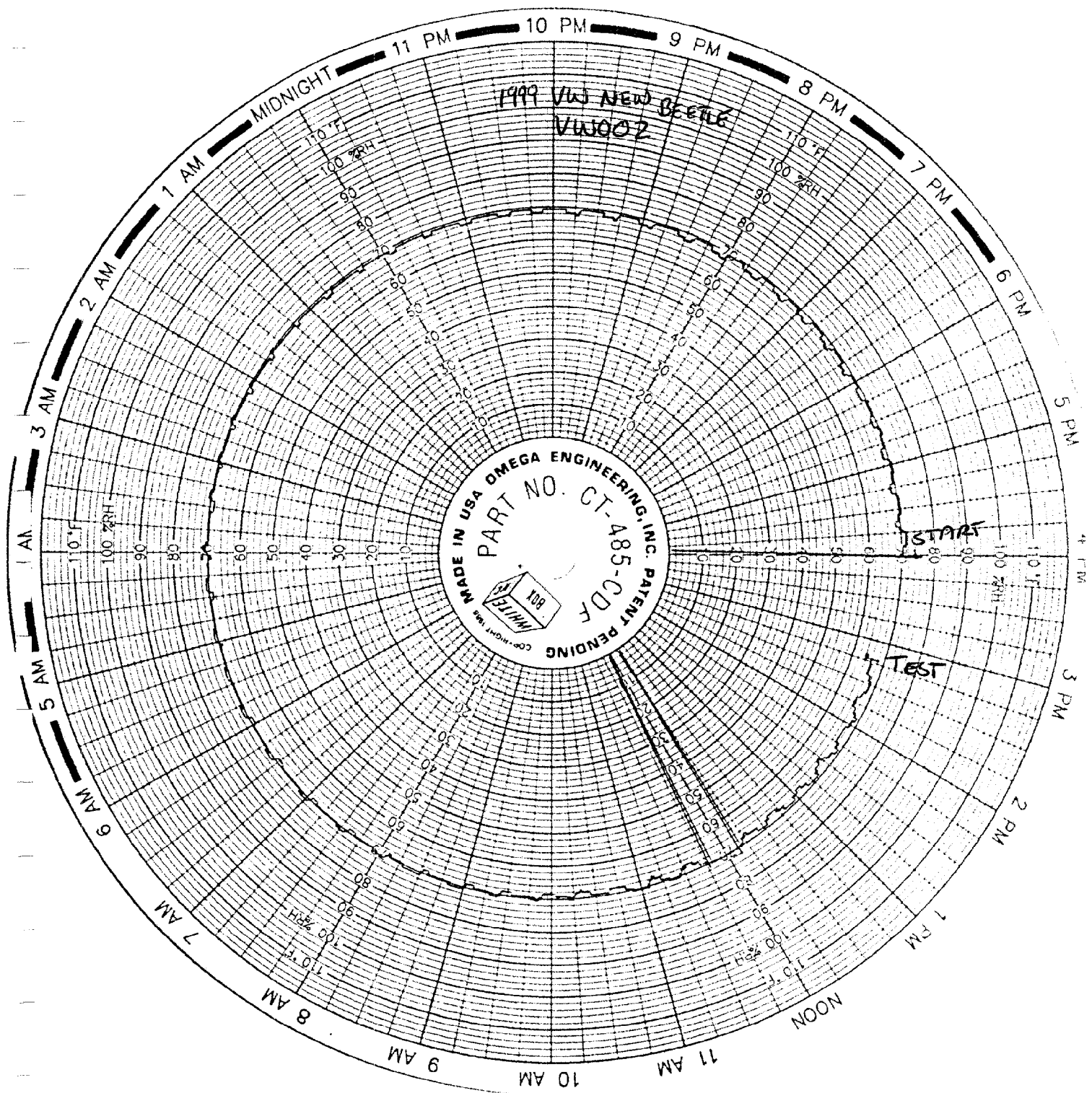
POST TEST DUMMY INSPECTION LIST

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 027 Sequential Test Number: 1
 Date: July 30, 1999 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



APPENDIX D

TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

SID INSTRUMENTATION

FRONT SID NO.: 016			
	SERIAL NUMBER	MANUFACTURER	CALIBRATION DATE
UPPER RIB	A14312	Endevco	6/16/99
LOWER RIB	A11544	Endevco	6/16/99
LOWER SPINE	A14372	Endevco	6/16/99
PELVIS	A13492	Endevco	6/16/99
UPPER RIB REDUNDANT	A13513	Endevco	6/16/99
LOWER RIB REDUNDANT	A14058	Endevco	6/16/99
LOWER SPINE REDUNDANT	A13506	Endevco	6/16/99
PELVIS REDUNDANT	A13498	Endevco	6/16/99

REAR SID NO.: 027			
	SERIAL NUMBER	MANUFACTURER	CALIBRATION DATE
UPPER RIB	A14342	Endevco	6/16/99
LOWER RIB	A14261	Endevco	6/16/99
LOWER SPINE	A14172	Endevco	6/16/99
PELVIS	A13565	Endevco	6/16/99
UPPER RIB REDUNDANT	A14246	Endevco	6/18/99
LOWER RIB REDUNDANT	A14358	Endevco	6/18/99
LOWER SPINE REDUNDANT	A13926	Endevco	6/18/99
PELVIS REDUNDANT	A12776	Endevco	6/18/99

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)	B11118	Endevco	6/17/99
RIGHT FRONT SILL (Y)	B10481	Endevco	3/24/99
RIGHT FRONT SILL (Z)	B11351	Endevco	3/24/99
RIGHT REAR SILL (X)	B11073	Endevco	4/14/99
RIGHT REAR SILL (Y)	B10954	Endevco	3/25/99
RIGHT REAR SILL (Z)	AP1A2	Endevco	5/3/99
REAR FLOORPAN ABOVE AXLE (X)	BB14	Endevco	1/27/99
REAR FLOORPAN ABOVE AXLE (Y)	AP064	Endevco	4/15/99
REAR FLOORPAN ABOVE AXLE (Z)	B10955	Endevco	4/14/99
LEFT REAR SILL (Y)	AF42	Endevco	5/19/99
LEFT FRONT SILL (Y)	AC7W8	Endevco	6/24/99
LEFT FRONT DOOR CENTERLINE (Y)	AN967	Endevco	4/1/99
RIGHT REAR SEAT OCCUPANT COMP. (Y)	X92	ICS	5/19/99
MID REAR OF LEFT FRONT DOOR (Y)	APBD9	Endevco	3/23/99
LEFT FRONT DOOR UPPER CL (Y)	APBD7	Endevco	4/9/99
MID REAR OF LEFT REAR DOOR (Y)	AY03	Endevco	5/19/99
LEFT REAR DOOR UPPER CL (Y)	J18570	Endevco	6/24/99
LOWER LEFT B- PILLAR (Y)	BB51	Endevco	5/3/99
MIDDLE LEFT B-PILLAR (Y)	BA80	Endevco	5/19/99
LOWER LEFT A-PILLAR (Y)	AC8F6	Endevco	6/24/99
UPPER LEFT A-PILLAR (Y)	AP1B7	Endevco	3/24/99
FRONT SEAT TRACK (Y)	J18408	Endevco	4/8/99
REAR SEAT TRACK (Y)	APBF4	Endevco	4/1/99
VEHICLE CG (X)	J18649	Endevco	4/1/99
VEHICLE CG (Y)	J18622	Endevco	4/8/99
VEHICLE CG (Z)	APBB6	Endevco	4/1/99
MDB CG (X)	CL60	Endevco	6/21/99
MDB CG (Y)	CJ54	Endevco	6/21/99
MDB CG (Z)	GK12	Endevco	6/21/99
MDB REAR FRAME MEMBER (X)	CX05	Endevco	7/21/99
MDB REAR FRAME MEMBER (Y)	A27F	Endevco	7/21/99

REMARKS: None