

636575

REPORT NUMBER: 214-CAL-03-09

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

SAAB AUTOMOBILE AB
2003 SAAB 9-5
4-DOOR SEDAN

NHTSA NUMBER: C30514

VERIDIAN ENGINEERING TEST NUMBER: 8675-F214-09

VERIDIAN ENGINEERING
TRANSPORTATION SCIENCES CENTER
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May 13, 2003

FINAL REPORT

U. S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Safety Assurance
Office of Vehicle Safety Compliance
400 Seventh Street, SW
Room 6111 (NVS-220)
Washington, DC 20590

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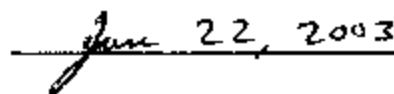
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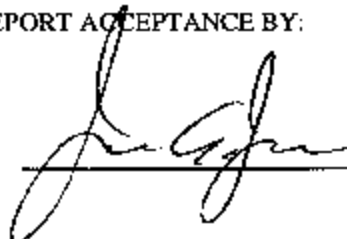

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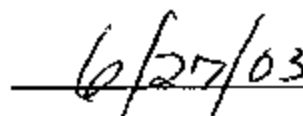

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16. Abstract A 55/28 kph 90° Side Impact (Moving Deformable Barrier) Inducant Test was conducted on the subject Saab 9-5 4-Door Sedan. This test was performed at the New Car Assessment Program (NCAP) target test velocity of 62.0 kph, which is 8 kph faster than the target velocity required by the Office of Vehicle Safety Compliance's Laboratory Test Procedure (TP-214D-06, dated July 26, 2001). This test was conducted at the Veridian Engineering Crash Test Facility in Buffalo, New York, on May 13, 2003. The impact velocity of the Moving Deformable Barrier (MDB) was 61.64 kph, and the ambient temperature at the struck (driver's) side of the target vehicle at the time of impact was 21.1°C. The target vehicle post-test maximum crush was 360 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 H3</u></th> <th></th> <th align="center"><u>Rear SID H3</u></th> <th></th> </tr> </thead> <tbody> <tr> <td>Left Upper Rib Acceleration:</td> <td align="center">53</td> <td align="center">g's</td> <td align="center">50</td> <td align="center">g's</td> </tr> <tr> <td>Left Lower Rib Acceleration:</td> <td align="center">41</td> <td align="center">g's</td> <td align="center">61</td> <td align="center">g's</td> </tr> <tr> <td>Lower Spine Acceleration:</td> <td align="center">59</td> <td align="center">g's</td> <td align="center">55</td> <td align="center">g's</td> </tr> <tr> <td>Thoracic Trauma Index (TTI):</td> <td align="center">56</td> <td align="center">g's</td> <td align="center">58</td> <td align="center">g's</td> </tr> <tr> <td>Pelvis Acceleration (PEV):</td> <td align="center">94</td> <td align="center">g's</td> <td align="center">61</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 H3</u>		<u>Rear SID H3</u>		Left Upper Rib Acceleration:	53	g's	50	g's	Left Lower Rib Acceleration:	41	g's	61	g's	Lower Spine Acceleration:	59	g's	55	g's	Thoracic Trauma Index (TTI):	56	g's	58	g's	Pelvis Acceleration (PEV):	94	g's	61	g's
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SECTION 1

PURPOSE AND TEST PROCEDURE

This side impact test is part of the FMVSS 214 Side Impact Protection Compliance Test Program sponsored by the National Highway Traffic Safety Administration (NHTSA) under Contract No. DTNH22-02-D-01114. The purpose of this indicant test was to evaluate side impact protection in a 2003 Saab 9-5 4-Door Sedan when tested at the New Car Assessment Program (NCAP) target test velocity of 62.0 kph, which is 8 kph faster than the target velocity required by the Office of Vehicle Safety Compliance's Laboratory Test Procedure (TP-214D-06, dated July 26, 2001).

SECTION 2

SUMMARY OF SIDE IMPACT TEST

This Side Impact Protection Indicant Test was performed at the New Car Assessment Program (NCAP) target test velocity of 62.0 kph, which is 8 kph faster than the target velocity required by the Office of Vehicle Safety Compliance's Laboratory Test Procedure (FP-21413-06, dated July 26, 2001).

A 2003 Saab 9-5 4-Door Sedan was impacted on the left or driver's side by a Moving Deformable Barrier (MDB) which was moving forward in a 27° crabbed position to the monorail at a velocity of 61.64 kph (38.3 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 May 13, 2003. Pre- and post-test photographs of the test vehicle, the moving deformable barrier (MDB), and the Side Impact Hybrid III Dummies (SID H3s) are included in Appendix A.

Two restrained Side Impact Hybrid III Dummies (SID H3s) 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 SID H3s 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)
5. Nine Axis Array Heads (NAAH)
6. Head triaxial accelerometers (X-, Y- and Z-direction)
7. Upper neck force and moment (X-, Y and Z-direction) load cells

A summary of the Side Impact Hybrid III Dummy (SID H3) configuration and verification test data can be found in Appendix C. A total of 72 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 H3	Rear SID H3
TTI (g)	56	58
PEV (g)	94	61

AIR BAG DEPLOYMENT STATUS

	DRIVER	FRONT PASSENGER	REAR PASSENGER
Front Air Bag	No	No	-
Knee Bolster Bag	-	-	-
Side Air Bag	Yes	No	-
Side Curtain Bag	-	-	-

SECTION 3

SUMMARY OF TEST RESULTS

DATA SHEET 1

GENERAL TEST AND VEHICLE PARAMETER DATA

TEST VEHICLE INFORMATION:

Year/Make/Model/Body Style: 2003 Saab 9-5 4-Door Sedan

Vehicle Body Color: Red VIN: YS3EB49E833013371

Vehicle NHTSA No.: C30514 Month & Year of Manufacture: 09/02

Engine Data: 4 Cylinders; - CID; 2.3 Liters; - cc

Engine Placement: - Longitudinal; or X Lateral

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

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

Odometer Reading 150 km

Supplemental Airbag Restraints:

Front Occupant: X Frontal; - Knee; X Side (Head/Torso); - Curtain

Rear Occupant: - Frontal; - Knee; - Side; - Curtain

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

DATA FROM TIRE PLACARD

Recommended Tire Size: P215/55R16 93V

* Recommended Cold Tire Pressure: 240 kPa FRONT; 220 kPa REAR

DATA FROM TIRE SIDEWALL:

Size of Tires on Test Vehicle: P215/55R16 93V; Manufacturer: Pirelli

Tire Pressure with Maximum Capacity Vehicle Load: Front: 350 kPa; Rear: 350 kPa

Treadwear: 400; Traction: A; Temperature: A

VEHICLE CAPACITY DATA:

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

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

Type of Rear Seats: - Bucket; - Bench; - Split Bench; X Contoured

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

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

Vehicle Max Capacity Loading = 421 kg (A)

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

Vehicle Cargo Capacity = 80.8 kg (A-B)

TEST VEHICLE DELIVERED WEIGHT WITH MAXIMUM FLUIDS:

Left Front =	<u>501.0</u> kg	Left Rear =	<u>308.0</u> kg
Right Front =	<u>487.0</u> kg	Right Rear =	<u>300.0</u> kg
TOTAL FRONT =	<u>988.0</u> kg	TOTAL REAR =	<u>608.0</u> kg
% of Total Weight =	<u>61.9%</u> %	% of Total Weight =	<u>38.1</u> %
TOTAL WEIGHT =	<u>1596.0</u> kg		

* Tire pressure used in test.

DATA SHEET 1 (continued)

GENERAL TEST VEHICLE PARAMETER DATA

Vehicle: 2003 Saab 9-5 4-Door Sedan

NHTSA No. C30514

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Test Vehicle Delivered Weight with Max. Fluids

= 1596.0 kg (A)

Maximum Cargo Carrying Capacity of Test Vehicle

= 80.8 kg (B)

Weight of instrumented SID H3 Dummies (2 X 81.2 kg)

= 162.4 kg (C)

TEST VEHICLE TARGET WEIGHT:

= 1839.2 kg (A+B+C)

FULLY LOADED TEST VEHICLE (UDVW + 1 or 2 SID H3(s) + CARGO):

Left Front = 546.0 kg

Left Rear = 422.0 kg

Right Front = 490.0 kg

Right Rear = 370.5 kg

TOTAL FRONT = 1036.0 kg

TOTAL REAR = 792.5 kg

% of Total Weight = 56.7% %

% of Total Weight = 43.3% %

TOTAL TEST WEIGHT = 1828.5 kg

AS TESTED WEIGHT OF TEST VEHICLE (1 OR 2 SID H3(s) + CARGO + EQUIPMENT & INSTRUMENTATION):

Left Front = 536.5 kg

Left Rear = 409.0 kg

Right Front = 510.5 kg

Right Rear = 376.0 kg

TOTAL FRONT = 1047.0 kg

TOTAL REAR = 785.0 kg

% of Total Weight = 57.2% %

% of Total Weight = 42.8% %

TOTAL TEST WEIGHT = 1832 kg

TEST VEHICLE ATTITUDE (all dimensions in millimeters):

AS DELIVERED:

Left Front 677

Right Front 678

Left Rear 689

Right Rear 694

FULLY LOADED:

Left Front 666

Right Front 676

Left Rear 642

Right Rear 658

READY FOR TEST:

Left Front 669

Right Front 676

Left Rear 643

Right Rear 658

Test Vehicle Wheelbase: 2706 millimeters

C.G. = 1159.5 millimeters rearward of front wheel centerline

TOTAL VEHICLE LENGTH:

Right Side = 4659 millimeters

Left Side = 4659 millimeters

Centerline = 4827 millimeters

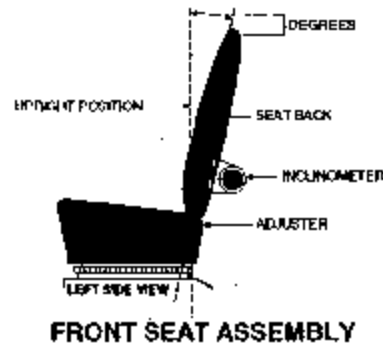
DATA SHEET 1 (continued)

GENERAL TEST VEHICLE PARAMETER DATA

Vehicle: 2003 Saab 9-5 4-Door Sedan

NHTSA No. C30514

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 was positioned in the full down, mid fore/aft position.

Total Length of Adjustment Travel: 203 millimeters

Total Number of Adjustment Positions or Detents: Infinite (power adjuster)

FRONT SEAT BACK ADJUSTMENT POSITION: Seat back was positioned so that the head restraint posts were vertical with the vehicle rocker level.

Seat Back Torso Angle: 18 degrees

SECOND POSITION SEAT:

Total Length of Fore/Aft Adjustment Travel: 0 millimeters

Seat Back Adjustment Position: Fixed

ADJUSTABLE STEERING COLUMN POSITION: Steering column was positioned in its mid-telescoping and mid-rake position.

WINDOW POSITIONS: Left Front: Closed Left Rear: Closed
Right Front: Open Right Rear: Open

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

AMOUNT OF STODDARD SOLVENT IN FUEL TANK:

70.0 liters (Fuel Tank Usable Capacity)

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

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

Wheelbase = 2706 millimeters

Impact Point is 413 millimeters rearward of front axle centerline
(which is 940 millimeters forward of the wheelbase midpoint)

Actual Impact Point is 411 millimeters rearward of front axle centerline

DATA SHEET 2

TEST VEHICLE SUMMARY OF RESULTS

VEHICLE IDENTIFICATION:

Vehicle Year/Make/Model: 2003 Saab 9-5

Body Style: 4-Door Sedan

VIN: YS3EB49E833013371

NHTSA No.: C30514

Test Date: May 13, 2003

Overall Length = 4827 millimeters; Overall Width = 1798 millimeters

VEHICLE TEST WEIGHT (Pre-Test):

Left Front = 536.5 kg Left Rear = 409.0 kg

Right Front = 510.5 kg Right Rear = 376.0 kg

TOTAL FRONT = 1047.0 kg TOTAL REAR = 785.0 kg

TOTAL VEHICLE WEIGHT 1832.0 kg

Wheelbase = 2706 millimeters

Longitudinal C.G. from Center of Front Axle = 1159.5 millimeters

Impact Angle with Respect to Impactor = 90 degrees

ACTUAL IMPACT POINT

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

Actual Impact Point is 6 mm below nominal impact point (Vertical)

MAXIMUM EXTERIOR STATIC CRUSH:

1. LEVEL 1 (220 mm above ground) = 113 millimeters

2. LEVEL 2 (482 mm above ground) = 360 millimeters

3. LEVEL 3 (600 mm above ground) = 315 millimeters

4. LEVEL 4 (828 mm above ground) = 289 millimeters

5. LEVEL 5 (1336 mm above ground) = 42 millimeters

Maximum Post-Test Intrusion = 360 millimeters

OCCUPANTS:

Front Passenger:

Rear Passenger:

Dummy Identification SID H3/015

SID H3/016

Restraints Used 3-point seat belt and side combination head/torso airbag

3-point seat belt

INSTRUMENTATION:

Number of Vehicle Data Channels: = 21

Number of Cameras: Onboard = 3

 Offboard = 7

 TOTAL = 10

DATA SHEET 3

MOVING DEFORMABLE BARRIER (MDB) SUMMARY

Vehicle: 2003 Saab 9-5 4-Door Sedan

NHTSA No. C30514

MDB FACE MANUFACTURER AND SERIAL NUMBER:

Plascore: 119B0303-3; 033A0303

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>61.64</u>	kph				

MAXIMUM STATIC CRUSH OF HONEYCOMB IMPACT FACE:

1. Row A at Center of Bumper Level	=	<u>195</u>	millimeters
2. Row B at Top of Bumper Level	=	<u>133</u>	millimeters
3. Row C at Mid Level	=	<u>150</u>	millimeters
4. Row D at Top of Stack Level	=	<u>190</u>	millimeters

INSTRUMENTATION:

Number of MDB Data Channels = 5

DATA SHEET 4

POST-TEST OBSERVATIONS

Vehicle: 2003 Saab 9-5 4-Door Sedan

NHTSA No. C30514

TEST DUMMY INFORMATION AND CONTACT POINTS:

DESCRIPTION	FRONT SEAT	REAR SEAT
ATD Type/Serial No.	SID H3/015	SID H3/016
Head Contact:	Side of head to side airbag, back of head to head restraint	Top of head to upper C-pillar trim
Upper Torso Contact:	Left arm to side airbag	Left arm to door trim rear section above arm rest
Lower Torso Contact:	Pelvis to door trim rear section	Pelvis to door trim rear section
Left Knee Contact:	Left knee to door trim front section	Left knee to door trim front section
Right Knee Contact:	Right knee to left knee	Right knee to left knee

POST TEST DOOR OPENING AND SEAT TRACK INFORMATION

DESCRIPTION	FRONT	REAR
Left Side Doors	Closed / Latched / Inoperable	Closed / Latched / Inoperable
Right Side Doors	Closed / Latched / Operable	Closed / Latched / Operable
Hatch/Other Door	-	-
Seat Movement (mm)	0	0
Seat Back Failure	None	None

POST TEST STRUCTURAL OBSERVATIONS

CRITICAL AREAS OF PERFORMANCE	
Pillar Performance	Seat was deformed inboard against center console
Sill Separation	Seat bolster was deformed slightly inboard
Windshield Damage	Windshield cracked at the upper left corner
Window Damage	Left side door windows shattered during the impact
Other Notable Effects	None

AIR BAG DEPLOYMENT STATUS:

	DRIVER	FRONT PASSENGER	REAR PASSENGER
Front Air Bag	No	No	-
Knee Bolster Bag	-	-	-
Side Air Bag	Yes	-	-
Side Curtain Bag	-	-	-

MDR LEFT EDGE IMPACT DATA

Measured Parameter	Units	Requirement	Value
Horizontal Offset	mm	± 50 mm	2 mm forward of target
Vertical Offset	mm	± 20 mm	6 mm below target

SECTION 4

OCCUPANT AND VEHICLE INFORMATION

DATA SHEET 5
SID H3 INSTRUMENTATION DATA

Vehicle: 2003 Saab 9-5 4-Door Sedan

NIITSA No. C30514

	Front Dummy ID# 015				Rear Dummy ID# 016				
	Pos. Direction		Neg. Direction		Pos. Direction		Neg. Direction		
	Max (g)	Time (msec)	Max (g)	Time (msec)	Max (g)	Time (msec)	Max (g)	Time (msec)	
HEAD ACCELERATIONS									
NAAH X Arm Y	13.3	68.1	-9.6	182.4	113.0	50.6	-8.1	186.1	
NAAH X Arm Z	43.6	49.0	-14.9	79.7	11.3	178.0	-30.2	57.4	
NAAH Y Arm X	4.9	35.5	-25.3	52.7	15.8	179.3	-19.6	42.7	
NAAH Y Arm Z	24.1	48.7	-6.7	75.6	8.1	180.3	-22.5	49.7	
NAAH Z Arm X	10.9	36.2	-43.9	82.2	20.2	179.0	-16.1	71.1	
NAAH Z Arm Y	17.8	43.5	-11.1	176.8	141.1	50.1	-25.2	60.3	
CG Longitudinal X	10.7	36.1	-29.1	85.0	15.3	181.6	-20.9	69.9	
CG Lateral Y	21.8	41.8	-6.8	165.8	103.6	50.4	-8.8	183.3	
CG Vertical Z	28.5	48.9	-3.5	79.8	9.9	46.2	-28.4	57.5	
CG Resultant R	35.2	49.0	-	-	104.1	50.4	-	-	
HIC	136				334				
NECK FORCES									
Longitudinal X	959.3	83.4	-118.0	186.1	653.7	56.2	-113.1	106.5	
Lateral Y	267.4	167.1	-293.2	53.5	116.7	141.6	-950.2	55.5	
Vertical Z	80.9	17.0	-1323.4	48.7	570.7	179.0	-1918.6	56.1	
Resultant R	1473.5	48.8	-	-	2236.4	56.1	-	-	
NECK MOMENTS									
X	29.1	38.4	-23.9	61.4	14.9	145.0	-55.2	60.9	
Y	39.2	51.2	-60.7	76.7	23.0	121.6	-17.9	68.0	
Z	13.8	182.6	-29.8	72.8	18.7	79.6	-14.9	199.9	
Resultant R	67.4	76.5	-	-	55.4	60.9	-	-	
UPPER RIB FORCES									
Upper Rib Lateral Y	53.2	38.1	-10.3	90.7	49.7	43.1	-3.8	156.3	
Upper Rib Lateral Y(R)	52.2	37.5	-10.3	91.2	48.5	42.5	-3.7	156.3	
Lower Rib Lateral Y	40.9	41.2	-9.1	66.8	61.5	41.3	-8.1	67.5	
Lower Rib Lateral Y(R)	41.6	11.9	-8.7	66.9	63.3	41.3	-7.8	67.5	
SPINE ACCELERATIONS									
Lower Lateral Y	59.2	28.7	-13.0	70.0	55.4	45.0	-12.0	71.9	
Lower Lateral Y(R)	58.5	28.8	-13.3	69.4	54.3	45.0	-11.8	71.9	
PELVIS ACCELERATIONS									
Lateral Y	94.1	25.6	-25.5	49.3	61.4	38.1	-7.0	63.8	
Lateral Y(R)	96.0	25.6	-25.8	49.3	60.1	38.1	-6.9	64.3	

REFERENCE: Positive Direction: Longitudinal (X) = forward; Lateral (Y) = to right; Vertical (Z) = down

Note: Rib, Spine and Pelvis data has been FIR filtered, Y(R) denotes redundant Y direction accelerometer.

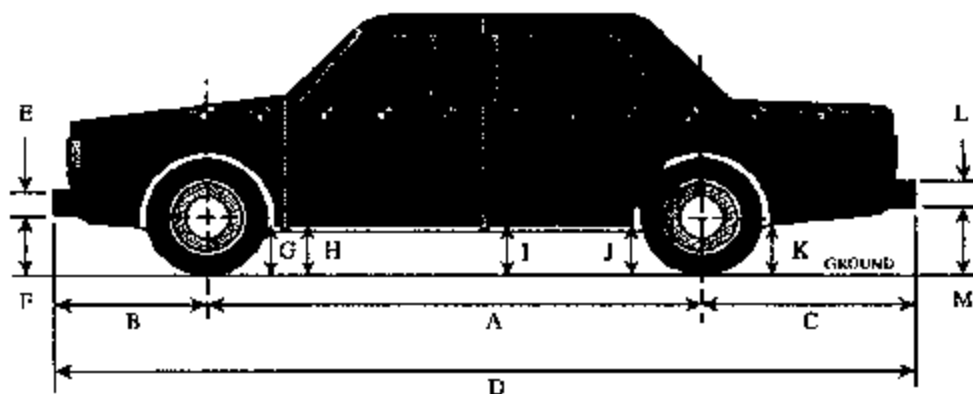
Head Accelerations and Neck Forces are filtered at SAE Class 1000, Neck Moments are filtered at SAE Class 600.

DATA SHEET 6

VEHICLE SIDE MEASUREMENTS

Vehicle: 2003 Saab 9-5 4-Door Sedan

NHTSA No. C30514



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	2702	2706	2667	-39
B	1020	-	1047	27
C	1105	-	1091	-14
D	4827	-	4805	-22
E	317	-	317	0
F	236	224	260	36
G	161	140	162	22
H	176	158	184	26
I	204	169	180	11
J1	215	175	182	7
J2	237	196	205	9
K	256	204	245	41
L	271	-	271	0
M	345	290	321	31
N	664	-	620	-44
O	809	-	756	-53
P	1148	-	1131	-17
Q	468	-	450	-18
R	4659	-	4659	0
S	4659	-	4615	-44
T	1798	-	1612	-186

D = Length at Centerline

E&L = Bumper Thickness

R = Right Side Length

S = Left Side Length

T = Width at B-Pillar

J1 = To Pinch Weld

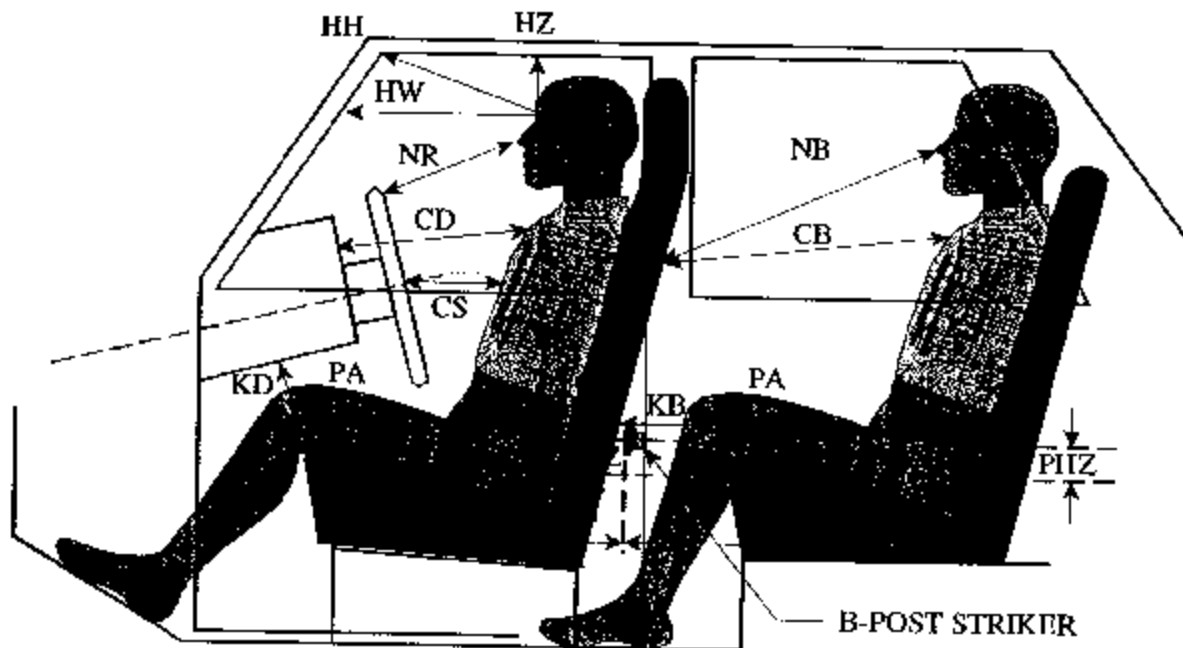
J2 = To Sill

DATA SHEET 7

STD H3 LONGITUDINAL CLEARANCE DIMENSIONS

Vehicle: 2003 Saab 9-5 4-Door Sedan

NHTSA No. C30514



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# 015	LEFT REAR PASS. ID# 016
HH	422	N/A
HW	648	N/A
HZ	155	139
NR/NB	467	639
CD/CB	564	578
CS	332	N/A
KDL(KDA°)/KBL(KBA°)	169 / (38 °)	225 / (20 °)
KDR(KBA°)/KBR(KBA°)	165 / (44 °)	232 / (20 °)
PA°	24.2°	24.1°
PHX	181	265
PHZ	103	282

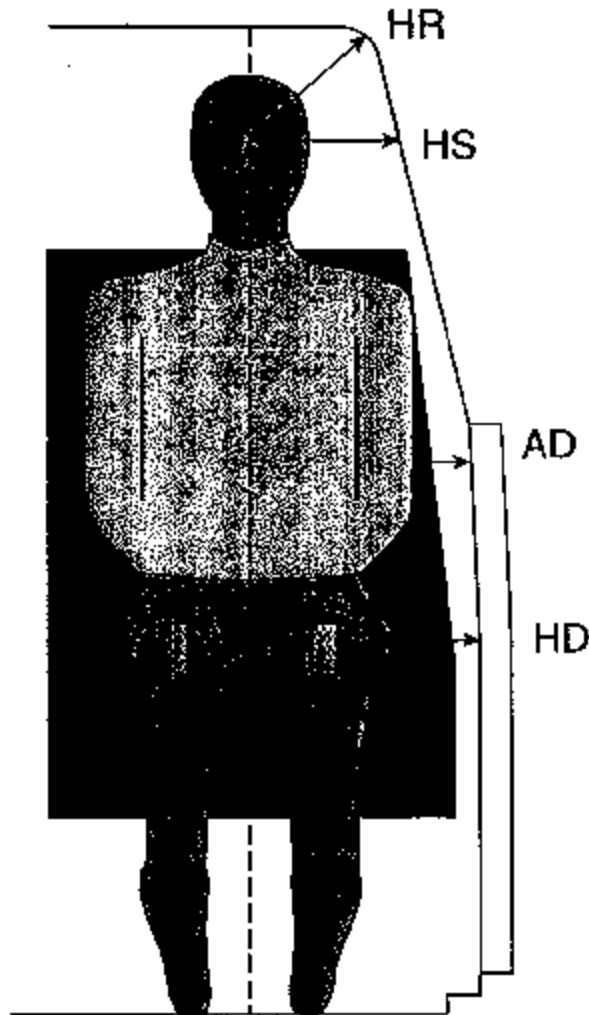
Note: 2-door vehicle shown. Rear dummy PHX & PHZ measurements for 4-door vehicle would use the C-post striker as a reference point.

DATA SHEET 8

SID H3 LATERAL CLEARANCE DIMENSIONS

Vehicle: 2003 Saab 9-5 4-Door Sedan

NHTSA No. C30514



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

	DRIVER ID # 015		LEFT REAR PASS. ID # 016	
HR	206		170	
HS	346		280	
AD*	LOWER: 135	UPPER: 112	LOWER: 135	UPPER: 100
HD	180		174	

* Lower measurement is taken laterally at the center of the lower rib accelerometer height from the SID H3 arm segment to the closest part of the vehicle side.

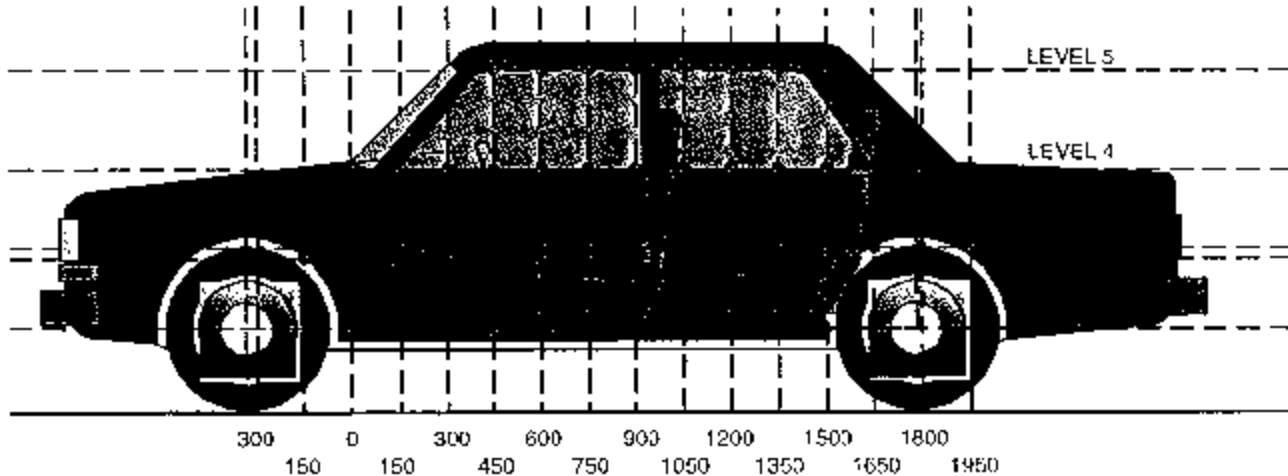
Upper measurement is taken laterally at the center of the upper rib accelerometer height from the SID H3 arm segment to the closest part of the vehicle side.

DATA SHEET 9

VEHICLE SIDE MEASUREMENTS

Vehicle: 2003 Saab 9-5 4-Door Sedan

NHTSA No. C30514



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:

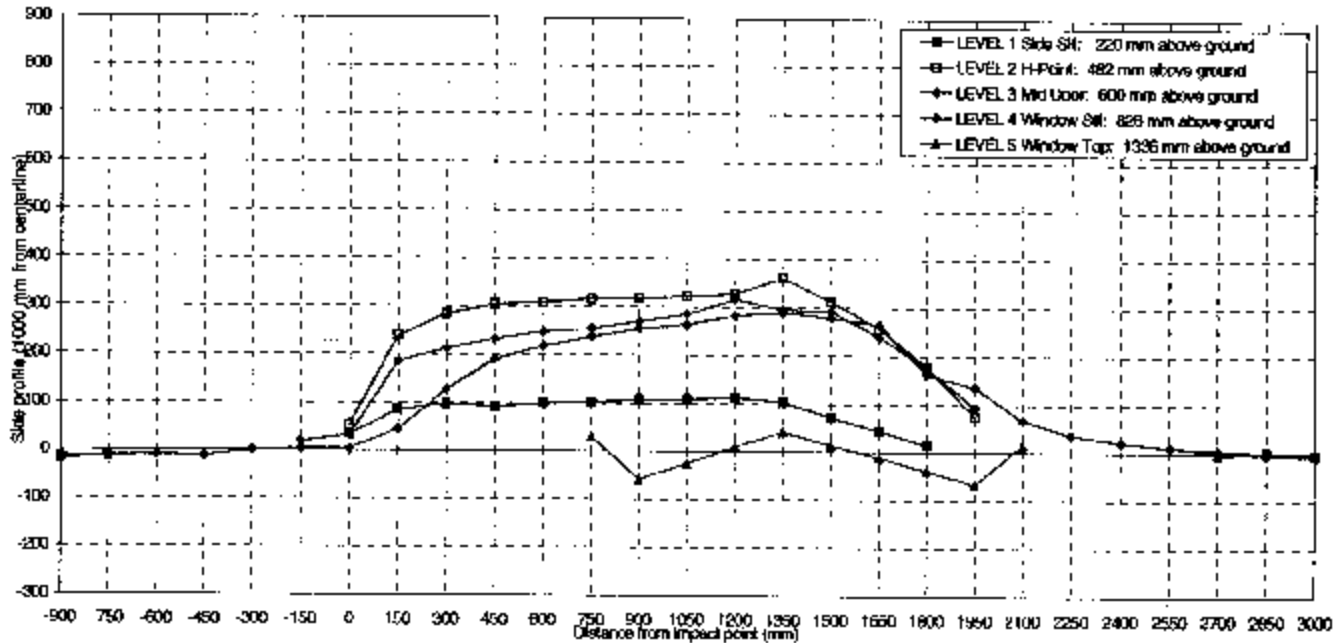
Level 5 @ Window Top	=	<u>1336</u>	millimeters
Level 4 @ Window Sill	=	<u>828</u>	millimeters
Level 3 @ Mid Door	=	<u>600</u>	millimeters
Level 2 @ Occupant H-Point	=	<u>482</u>	millimeters
Level 1 @ Axle Centerline Height (or Sill Top Height)	=	<u>220</u>	millimeters

DATA SHEET 10

VEHICLE EXTERIOR CRUSH PROFILES - ALL LEVELS

Vehicle: 2003 Saab 9-5 4-Door Sedan

NHTSA No. C30514



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

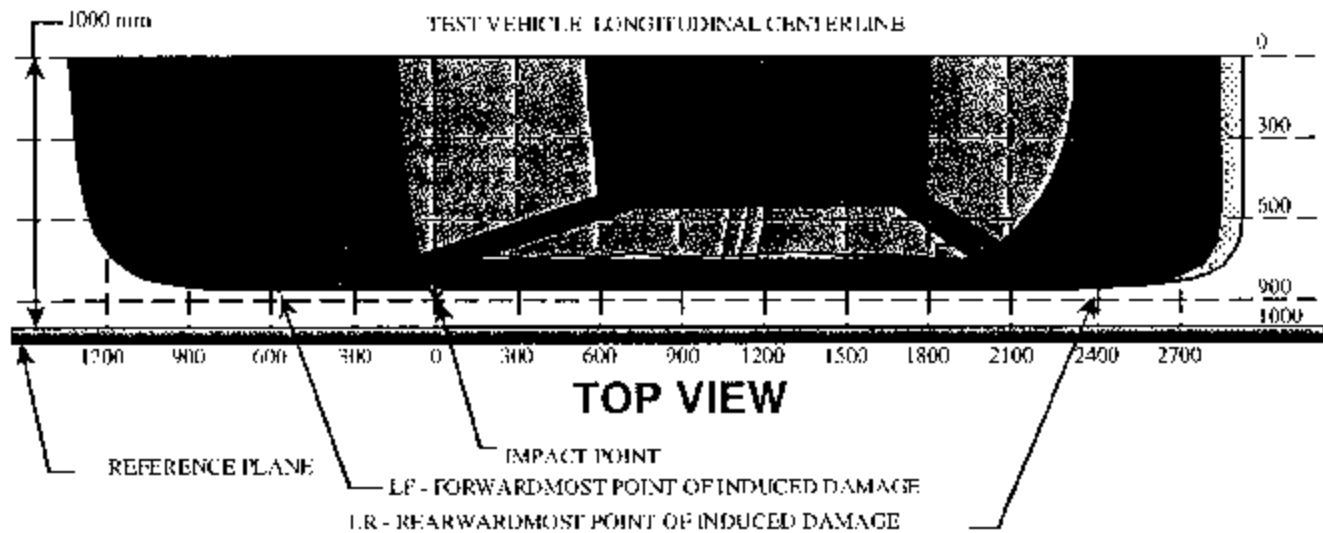
			DISTANCE IN MILLIMETERS (mm) FROM IMPACT POINT																											
LEVEL	HEIGHT (mm)		-900	-750	-600	-450	-300	-150	150	300	450	600	750	900	1050	1200	1350	1500	1650	1800	1950	2100	2250	2400	2550	2700	2850	3000		
LEVEL 1 SIDE SILL	220	PRE	-	-	-	-	-	-	189	208	215	218	221	223	222	223	220	220	205	191	-	-	-	-	-	-	-	-		
		POST	-	-	-	-	-	-	268	305	307	318	324	330	331	338	324	282	250	208	-	-	-	-	-	-	-	-		
		CRUSH	N/A	N/A	N/A	N/A	N/A	N/A	83	99	92	100	103	107	109	115	104	72	45	15	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A		
LEVEL 2 H POINT	482	PRE	187	157	-	-	-	-	120	118	112	114	116	115	114	122	119	118	121	120	127	-	-	-	-	182	198	223		
		POST	170	144	-	-	-	-	353	400	418	422	432	433	436	450	479	430	377	297	202	-	-	-	-	177	201	218		
		CRUSH	-17	-13	N/A	N/A	N/A	N/A	238	284	304	308	316	318	322	328	360	312	246	177	75	N/A	N/A	N/A	N/A	5	2	5		
LEVEL 3 MID DOOR	600	PRE	203	174	-	-	-	118	117	114	113	111	113	111	112	114	116	119	119	121	125	-	-	-	158	187	207	232		
		POST	191	180	-	-	-	105	302	326	345	358	367	360	357	425	411	411	368	298	219	-	-	-	172	187	203	225		
		CRUSH	-12	-14	N/A	N/A	N/A	19	185	212	232	247	254	269	285	315	295	292	249	175	94	N/A	N/A	N/A	13	0	-4	-7		
LEVEL 4 WINDOW SILL	828	PRE	-	417	200	226	200	184	167	158	150	146	143	137	119	141	143	147	148	193	163	166	175	186	200	214	231	251		
		POST	-	405	280	214	200	188	212	203	190	183	180	181	183	425	432	425	413	364	299	234	212	208	211	220	232	248		
		CRUSH	N/A	-12	-10	-12	0	4	45	127	180	217	237	254	261	282	289	278	264	161	136	68	37	22	11	6	1	-5		
LEVEL 5 WINDOW TOP	1336	PRE	-	-	-	-	-	-	-	-	-	-	328	334	333	333	387	369	402	410	424	480	-	-	-	-	-			
		POST	-	-	-	-	-	-	-	-	-	-	468	335	367	400	420	413	300	370	357	496	-	-	-	-	-			
		CRUSH	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	30	59	-36	10	42	14	-12	-40	-67	16	N/A	N/A	N/A	N/A	N/A	N/A		

DATA SHEET II

VEHICLE DAMAGE PROFILE DISTANCES

Vehicle: 2003 Saab 9-5 4-Door Sedan

NHTSA No. C30514



MEASUREMENT CONVENTIONS:

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

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

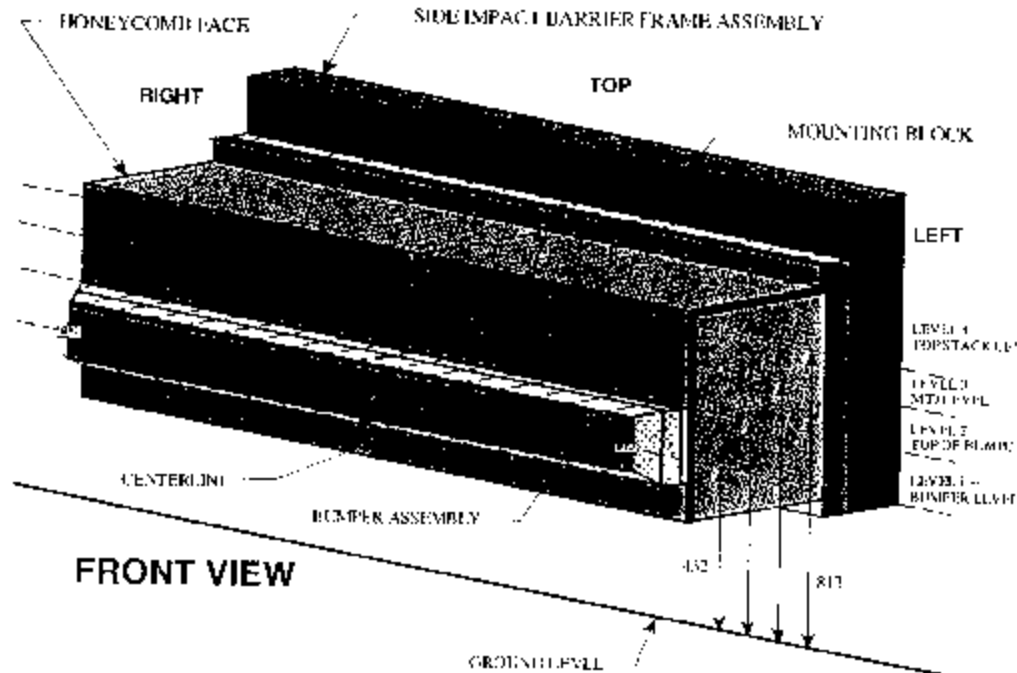
DPD MEASUREMENTS	POST TEST (mm)	PRE TEST (mm)	STATIC CRUSH (mm)
1 (LR = 2800 mm)	228	225	3
2	2180	171	51
3	1560	119	290
4	940	115	319
5	320	115	287
6 (LF = -300 mm)	200	200	0

DATA SHEET 12

EXTERIOR STATIC CRUSH FOR IMPACTOR FACE

Vehicle: 2003 Saab 9-5 4-Door Sedan

NHTSA No. C30514



NOTE: Dimensions are shown in millimeters, mm

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

			DISTANCE RIGHT OF CENTER (mm)									DISTANCE LEFT OF CENTER (mm)								
LEVEL	HEIGHT AT CL (mm)*		800	700	600	500	400	300	200	100		100	200	300	400	500	600	700	800	
LEVEL 4 TOP STACK	813	PRE	619	619	619	619	619	619	619	619		619	619	619	619	619	619	619	619	
		POST	685	636	621	612	605	515	532	635		624	630	638	648	657	701	754	809	
		CRUSH	66	17	2	-7	-11	4	13	18		3	11	19	29	78	82	135	190	
LEVEL 3 MID LEVEL	686	PRE	619	619	619	619	619	619	619	619		619	619	619	619	619	619	619	619	
		POST	705	667	641	621	621	624	632	629		627	624	632	638	644	662	701	769	
		CRUSH	86	48	23	2	2	5	13	8		8	10	15	19	25	43	82	150	
LEVEL 2 TOP BUMPER	533	PRE	619	619	619	619	619	619	619	619		619	619	619	619	619	619	619	619	
		POST	752	718	690	665	661	657	660	660		665	665	671	672	676	680	697	710	
		CRUSH	133	99	71	46	42	38	41	41		45	46	52	57	57	67	78	91	
LEVEL 1 MID BUMPER	432	PRE	518	519	518	518	518	518	518	518		518	518	518	518	518	518	519	518	
		POST	730	694	654	618	599	595	591	591		593	562	598	599	602	610	632	567	
		CRUSH	195	175	136	100	81	75	73	73		75	77	80	81	84	92	113	132	

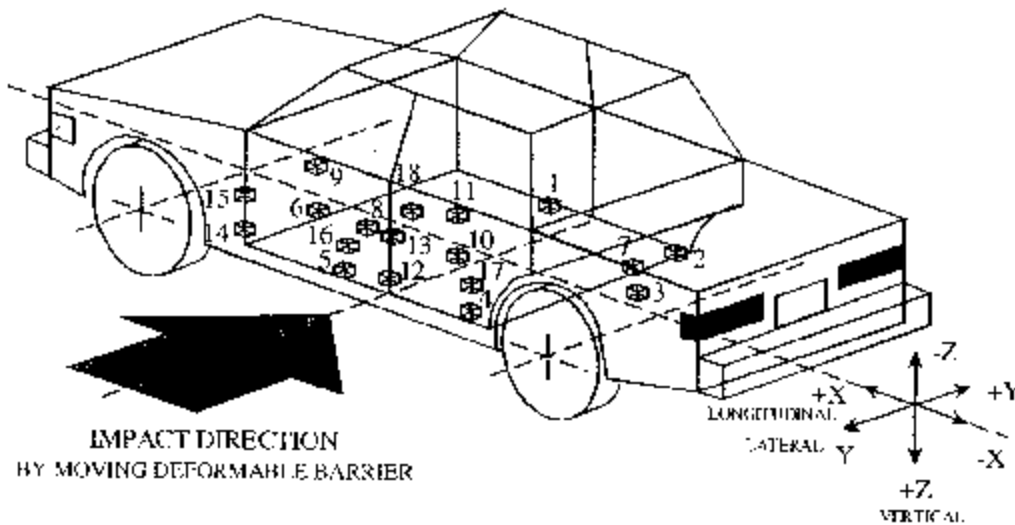
*Heights measured above ground level.

DATA SHEET 13

TEST VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

Vehicle: 2003 Saab 9-5 4-Door Sedan

NHTSA No. C30514



- 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: 2003 Saab 9-5 4-Door Sedan

NHTSA No. C30514

Accel. No	Location	Coordinates (mm) ±3 mm			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	2911	677	-262	pos. 3.0	59.8	24.3	6.7	2.6	69.2	24.8	6.8
2	Right Side Sill at Rear Seat	2061	644	-239	neg. -3.6	8.6	-2.8	145.6	-6.7	10.0	-	-
3	Rear Floorpan Above Axle	1195	25	-435	pos. 3.0	59.2	26.9	6.7	2.8	34.4	27.0	6.7
4	Left Side Sill at Rear Seat	2043	-670	-262	neg. -3.8	15.4	-1.9	147.2	-4.6	18.5	-	-
5	Left Side Sill at Front Seat	2894	-640	-292	pos. 1.9	104.3	23.5	6.5	6.3	9.2	24.1	6.4
6**	Left Front Door on Centerline	-	-	-	neg. -5.3	19.8	-2.5	106.4	-9.2	12.4	-	-
7	Right Rear Occupant Compartment	2036	250	-177	pos. -	-	62.1	9.1	-	-	-	-
8**	Midrear of Left Front Door	-	-	-	neg. -	-	-12.6	17.8	-	-	-	-
9**	Left Front Door Upper Centerline	-	-	-	pos. -	-	70.2	5.0	-	-	-	-
10**	Midrear of Left Rear Door	-	-	-	neg. -	-	-24.8	18.8	-	-	-	-
11**	Left Rear Door Upper Centerline	-	-	-	pos. -	-	-	-	-	-	-	-

*Reference: X - Rear Bumper (- Forward)

**Accelerometer was not requested by COTR. Y - Vehicle Centerline (+ To Right) Z - Ground Level (+ Down)

DATA SHEET 13 (continued)

VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

Vehicle: 2002 Saab 9-5 4-Door Sedan

NHTSA No. C305112

Accel. No.	Location	Coordinates (mm)±3			Long. (x)		Lat. (y)		Vert. (z)		Resultant	
		mm			Max (g)	Time (msec)	Max (g)	Time (msec)	Max (g)	Time (msec)	Max (g)	Time (msec)
		X*	Y*	Z*								
12	Left Lower B-Pillar	2195	-703	-421	pos.	-	237.8	3.4	-	-	-	-
					neg.	-	-192.3	11.3	-	-	-	-
13	Left Middle B-Pillar	2181	-699	-692	pos.	-	212.8	3.3	-	-	-	-
					neg.	-	-60.0	13.2	-	-	-	-
14	Left Lower A-Pillar	3276	-656	-452	pos.	-	187.7	5.7	-	-	-	-
					neg.	-	-59.6	10.9	-	-	-	-
15	Left Middle A-Pillar	3084	-649	-967	pos.	-	19.3	5.1	-	-	-	-
					neg.	-	-1.7	0.4	-	-	-	-
16	Front Seat Track	2361	-521	-273	pos.	-	43.2	16.0	-	-	-	-
					neg.	-	-13.0	28.0	-	-	-	-
17	Rear Seat Track	1267	-493	-576	pos.	-	23.6	7.0	-	-	-	-
					neg.	-	-1.5	106.6	-	-	-	-
18	Vehicle CG	2363	99	-497	pos.	22.6	136.4	16.7	37.5	20.4	138.6	16.7
					neg.	9.1	-30.0	21.1	-25.5	16.4	-	-

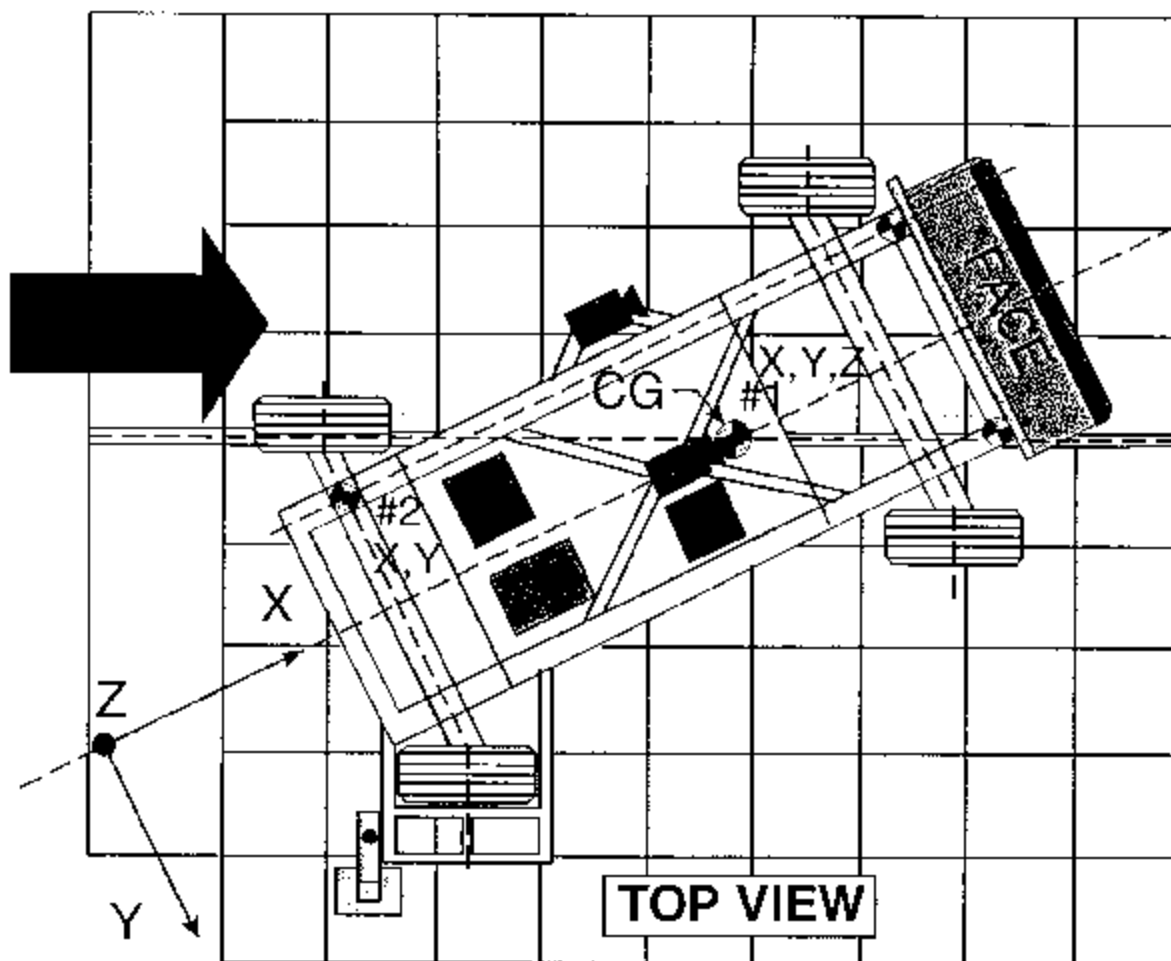
*Reference: X - Rear Bumper (+ Forward) Y - Vehicle Centerline (+ To Right) Z - Ground Level (+ Down)

DATA SHEET 14

MDB ACCELEROMETER LOCATIONS AND DATA SUMMARY

Vehicle: 2003 Saab 9-5 4-Door Sedan

NHTSA No. C30514



Accel. No.	Location	Coordinates (millimeters)			Pos. Direct.		Neg. Direct.	
					Max (g)	Time (msec)	Max (g)	Time (msec)
		X*	Y*	Z*				
1	MDB Center of Gravity							
	Longitudinal... X	1859	0	-330	1.5	96.4	-19.6	47.7
	Lateral..... Y				0.7	60.6	7.4	12.8
	Vertical..... Z				16.2	85.5	-18.0	79.6
	Resultant..... R				20.5	44.6	-	-
2	Rear Frame Member							
	Longitudinal... X	386	-660	-660	1.7	91.0	-21.2	33.8
	Lateral..... Y				3.4	16.5	-2.0	60.6

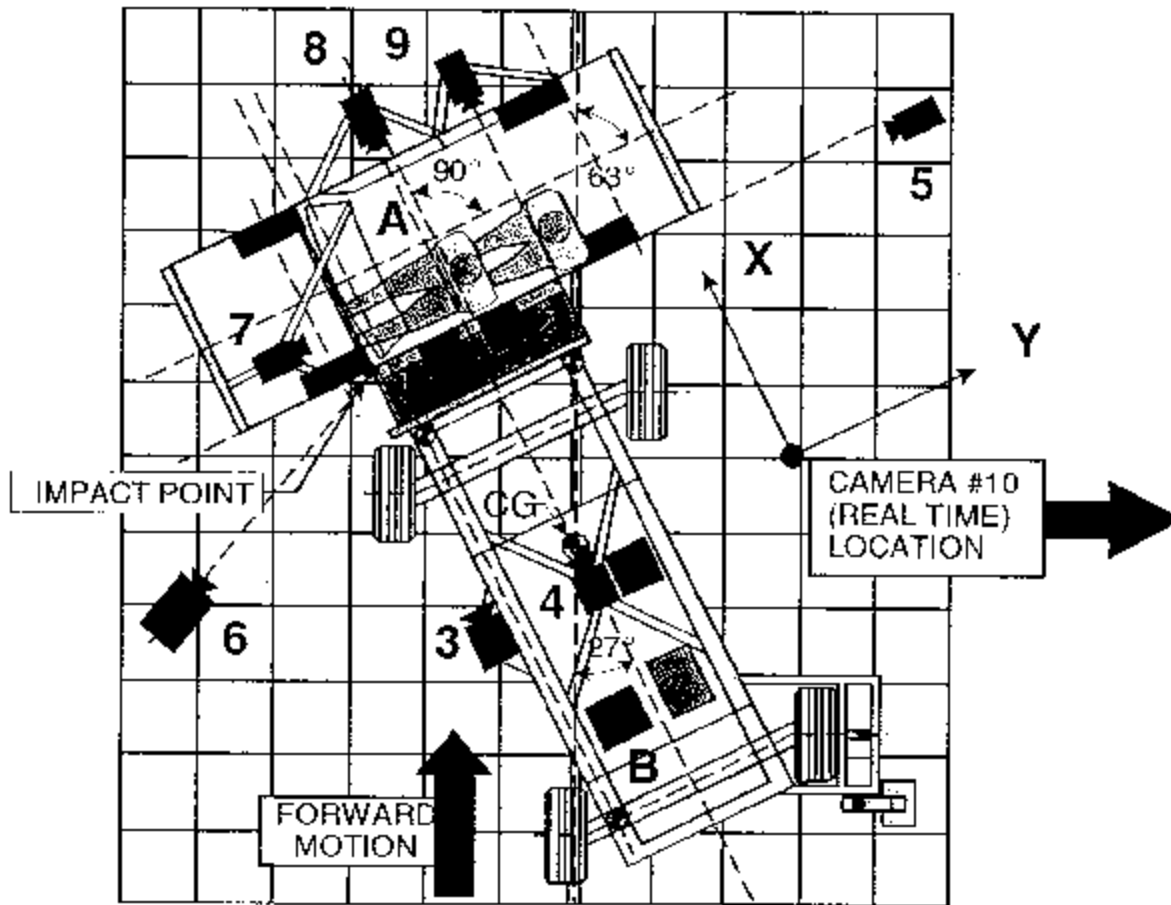
*Reference: X = Rear Bumper (1 Forward)
Y = Vehicle Centerline (+ To Right)
Z = Ground Level (+ Down)
All measurements accurate to within ± 3 mm.

DATA SHEET 15

HIGH SPEED CAMERA LOCATIONS AND DATA SUMMARY

Vehicle: 2003 Saab 9-5 4-Door Sedan

NHTSA No. C30514



Camera No.	View	Coordinates (millimeters)			Angle (deg.)	Lens (mm)	Film Speed (fps)
		X*	Y*	Z*			
1	Overhead view of test vehicle	101	823	-4880	-90	8	1005
2	Overhead closeup view of impact plane	226	873	-4880	-90	12.5	1010
3	MDR onboard closeup view of impact point	-1470	0	-847	0	13	1015
4	MDR onboard view of driver dummy	-1140	838	-1586	-17	7.5	1025
5	Right side ground level overall view	0	9200	-1082	-2	25	1000
6	Left side ground level overall view	1580	-1915	-1068	-6	13	1000
7	Test vehicle onboard driver front view	525	-265	-1250	-12	13	810
8	Test vehicle onboard driver side view	1740	742	-988	-7	8	1010
9	Test vehicle onboard passenger side view	1878	1643	-1050	-11	8	1005
10	Real time film coverage of test	-	-	-	-	-	24

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

X = (Impact Point) + Forward

Y = (Impact Point) + To Right

Z = (Ground Level) + Down

SECTION 5

FUEL SYSTEM INTEGRITY

DATA SHEET 16

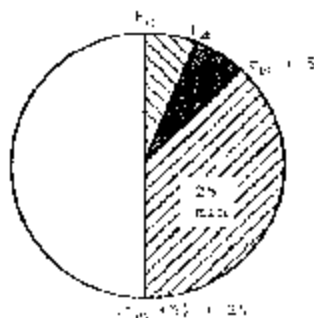
FMVSS 301 FUEL SYSTEM INTEGRITY DATA

NHTSA No.: C30514 TEST DATE: May 13, 2003
 Vehicle Mfr./Make/Model: Saab Automobile AB 2003 Saab 9-5 4-Door Sedan

TEST VEHICLE IMPACT TYPE:

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

FOUL 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:

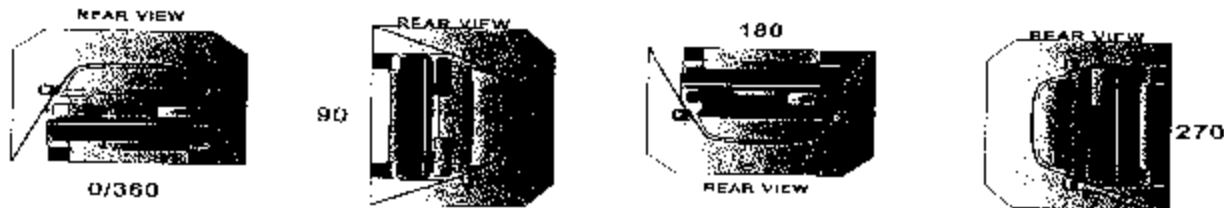
None

DATA SHEET 17

ROLLOVER DATA

Vehicle: 2003 Saab 9-5 4 Door Sedan

NHTSA No.: CM514



I. DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Stage	Rotation Time (spec. 1-3 min)				FMVSS 301 Hold Time		Total Time				Next Whole Minute Interval	
0° - 90°	1	minutes	10	seconds	5	minutes	6	minutes	10	seconds	7	minutes
90° - 180°	1	minutes	5	seconds	5	minutes	6	minutes	5	seconds	7	minutes
180° - 270°	1	minutes	4	seconds	5	minutes	6	minutes	4	seconds	7	minutes
270° - 360°	1	minutes	8	seconds	5	minutes	6	minutes	8	seconds	7	minutes

II. FMVSS 301 REQUIREMENTS: (Maximum allowable solvent spillage):

First 5 minutes from onset of rotation	6th min.	7th min.	8th min. (if required)
142 g	28 g	28 g	28 g

III. ACTUAL TEST VEHICLE SOLVENT SPILLAGE:

Rollover Stage	First 5 minutes from onset of rotation (g)	6th min. (g)	7th min. (g)	8th min. (if required) (g)
0° - 90°	0	0	0	N/A
90° - 180°	0	0	0	N/A
180° - 270°	0	0	0	N/A
270° - 360°	0	0	0	N/A

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

IV. SOLVENT SPILLAGE LOCATION(S):

Rollover Stage	Spillage Location
0° - 90°	None
90° - 180°	None
180° - 270°	None
270° - 360°	None

APPENDIX A
PHOTOGRAPHS

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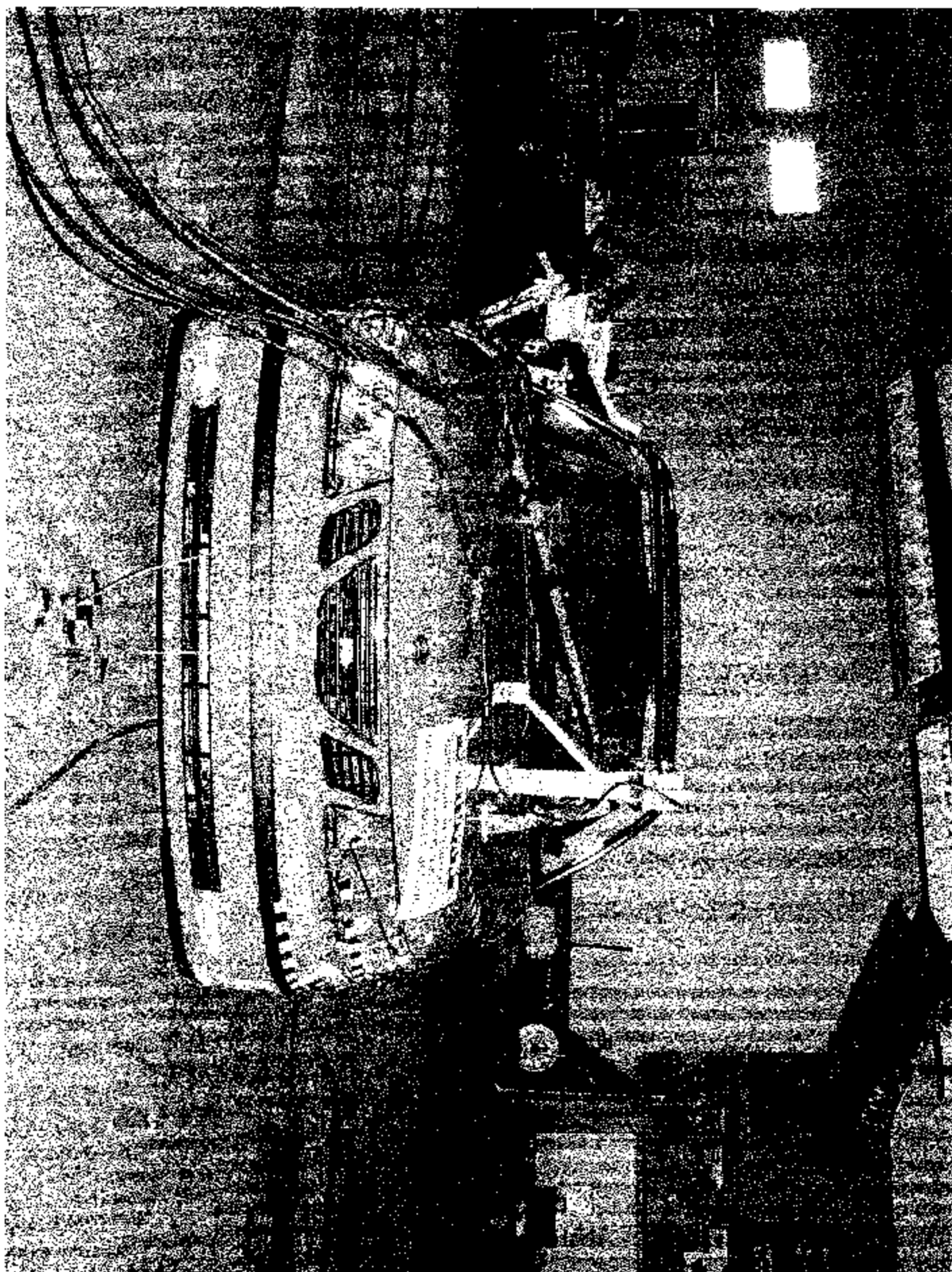


Figure A-1 PRE-TEST FRONTAL VIEW OF TEST VEHICLE

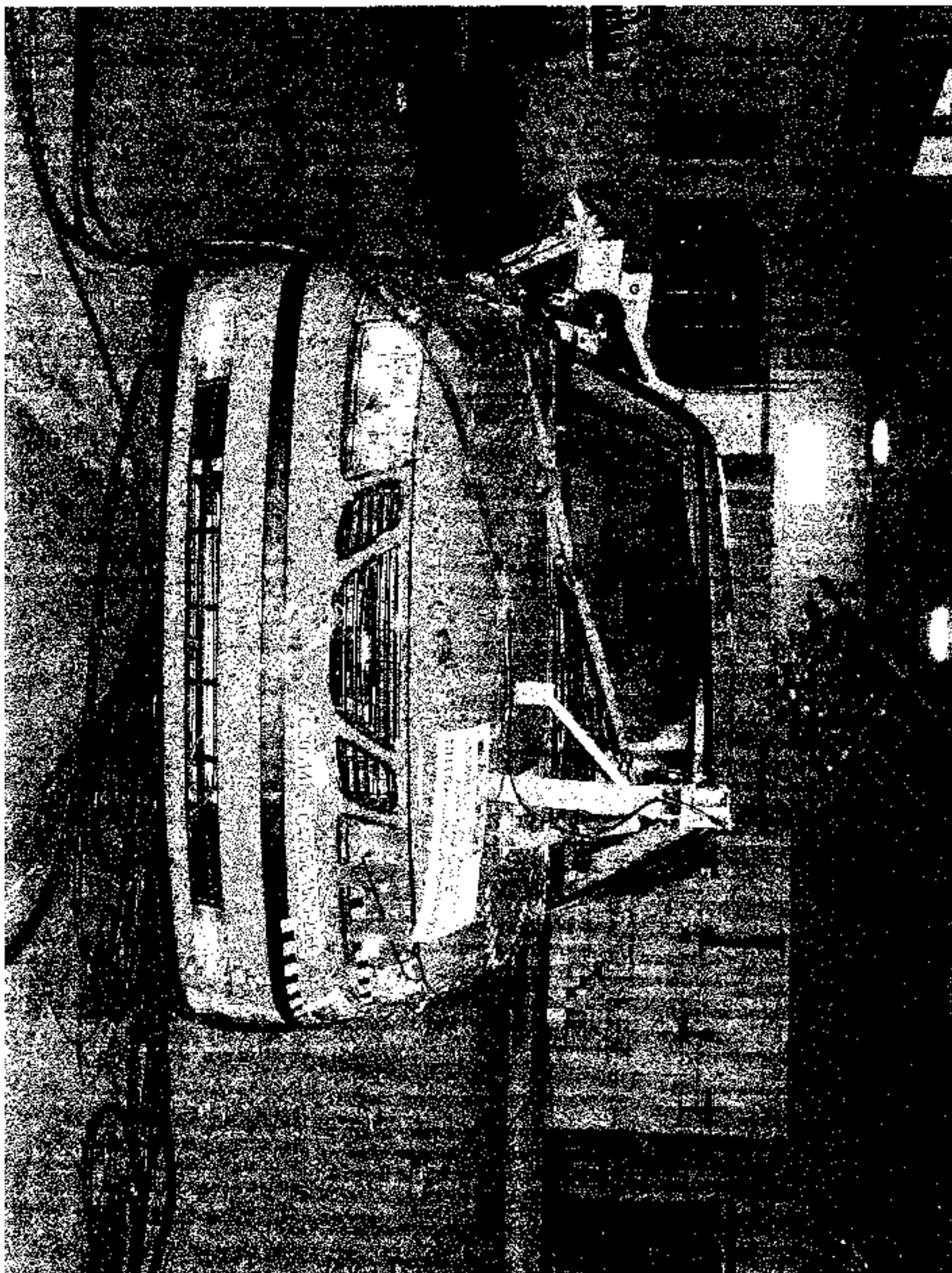


Figure A-2 POST-TEST FRONTAL VIEW OF TEST VEHICLE

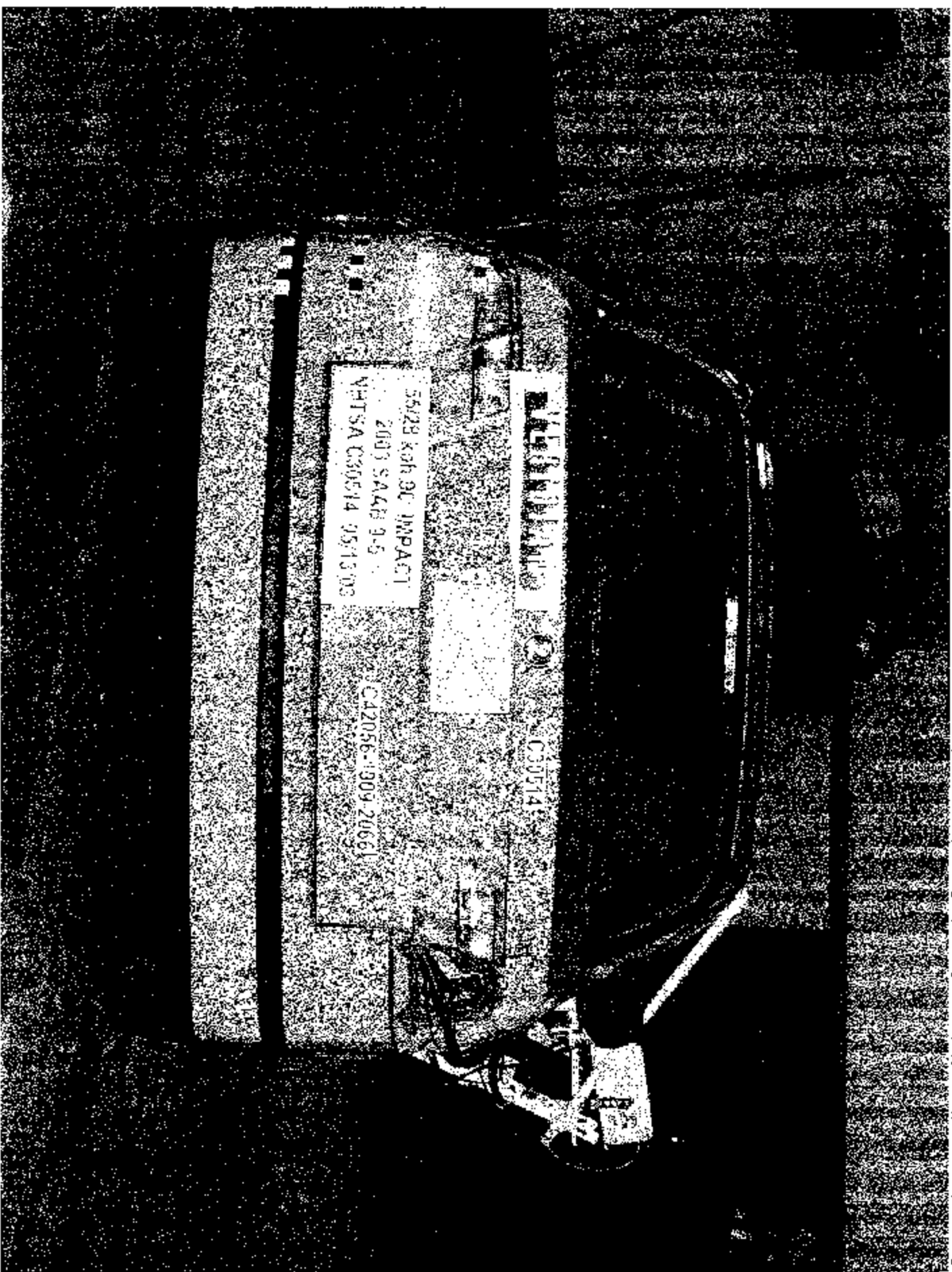


Figure A-3 PORT-TEST REAR VIEW OF TFSI VEHICLE

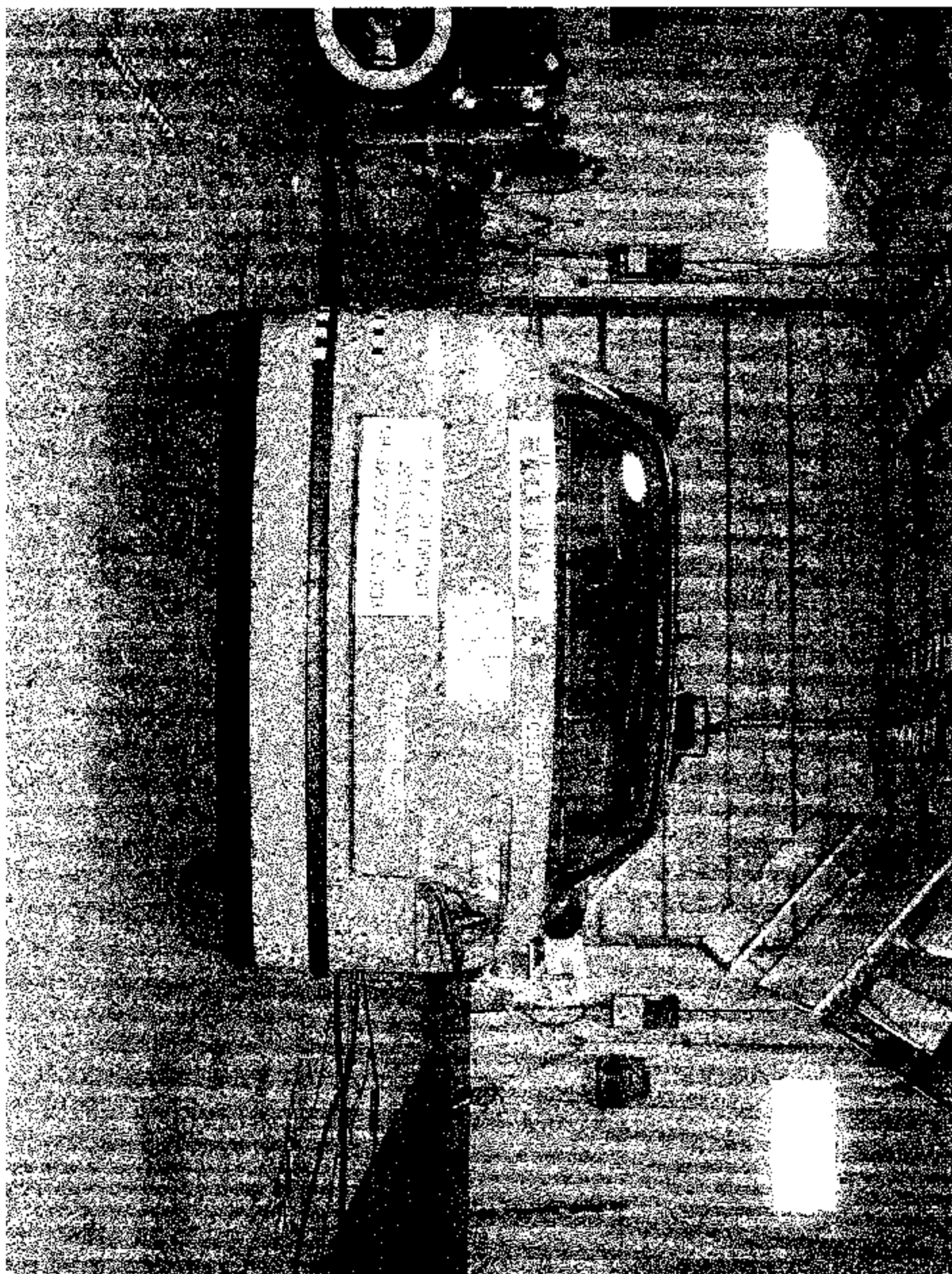


Figure A-2. POST TEST REAR VIEW OF TEST VEHICLE

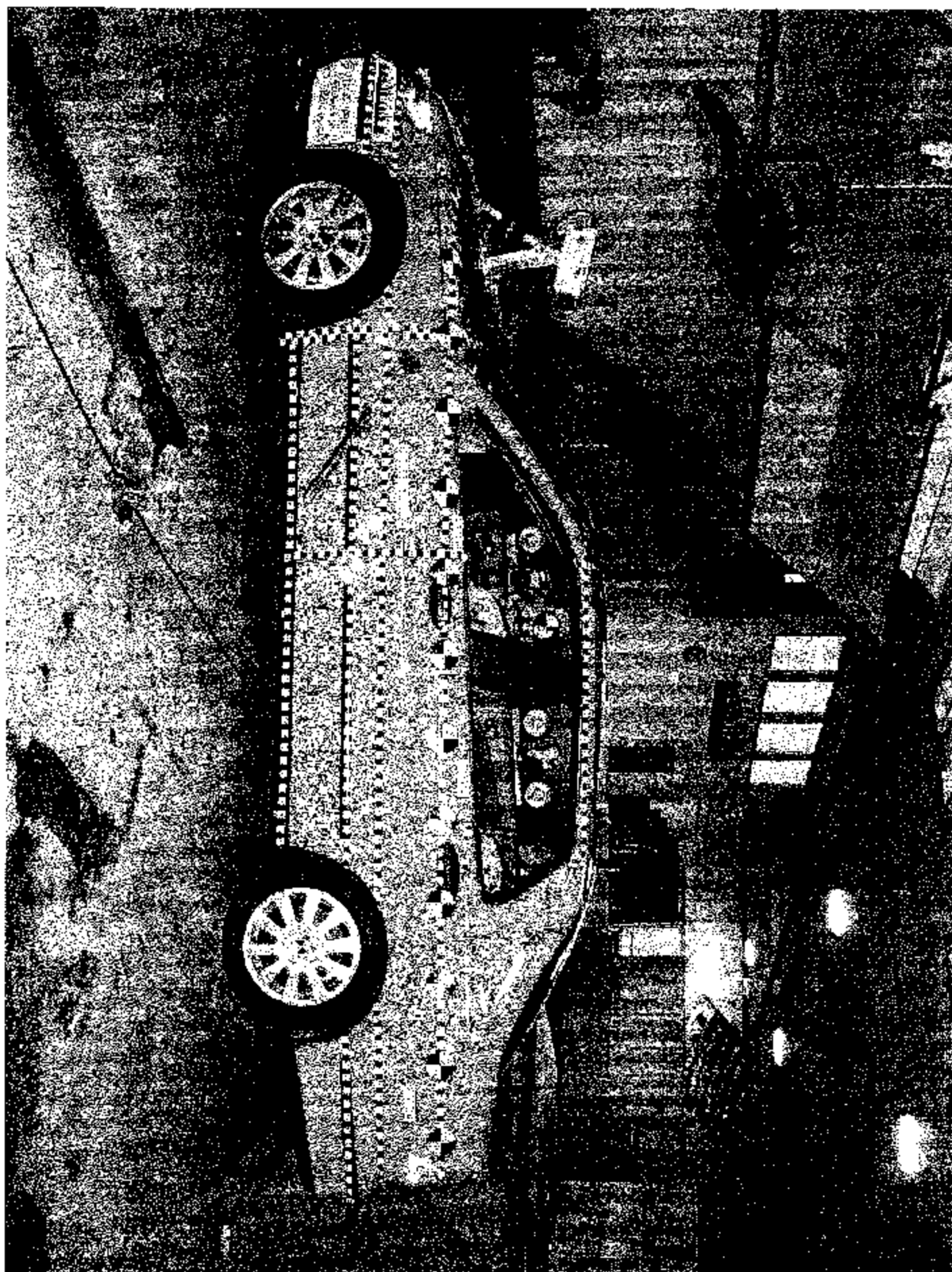


Figure A-5 PRE-TEST IMPACTED SIDE VIEW OF TEST VEHICLE

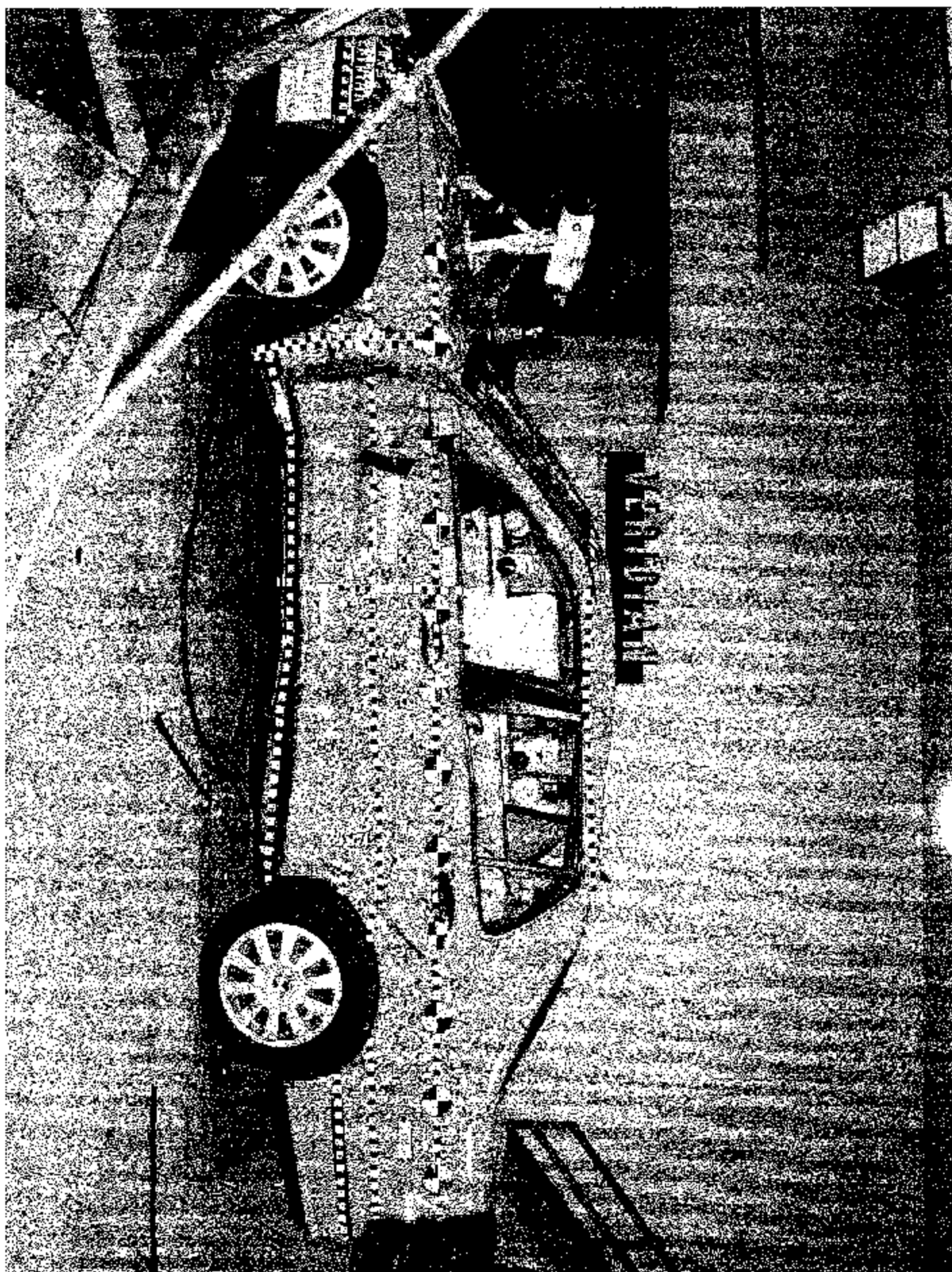


Figure A-6 Post-Test Impacted Side View of Test Vehicle

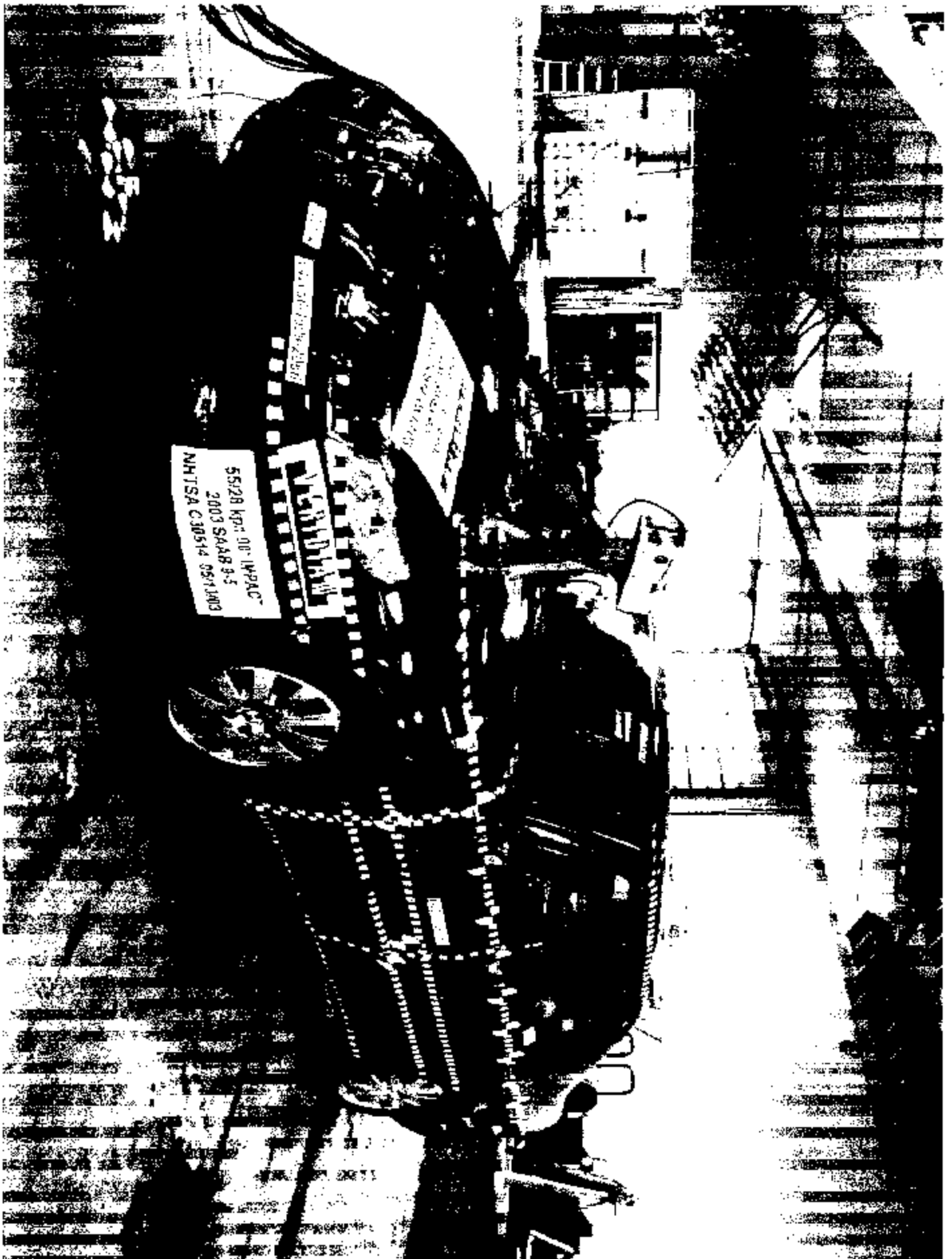


Figure A-7 PRE-TEST LEFT FRONT VIEW OF TEST VEHICLE

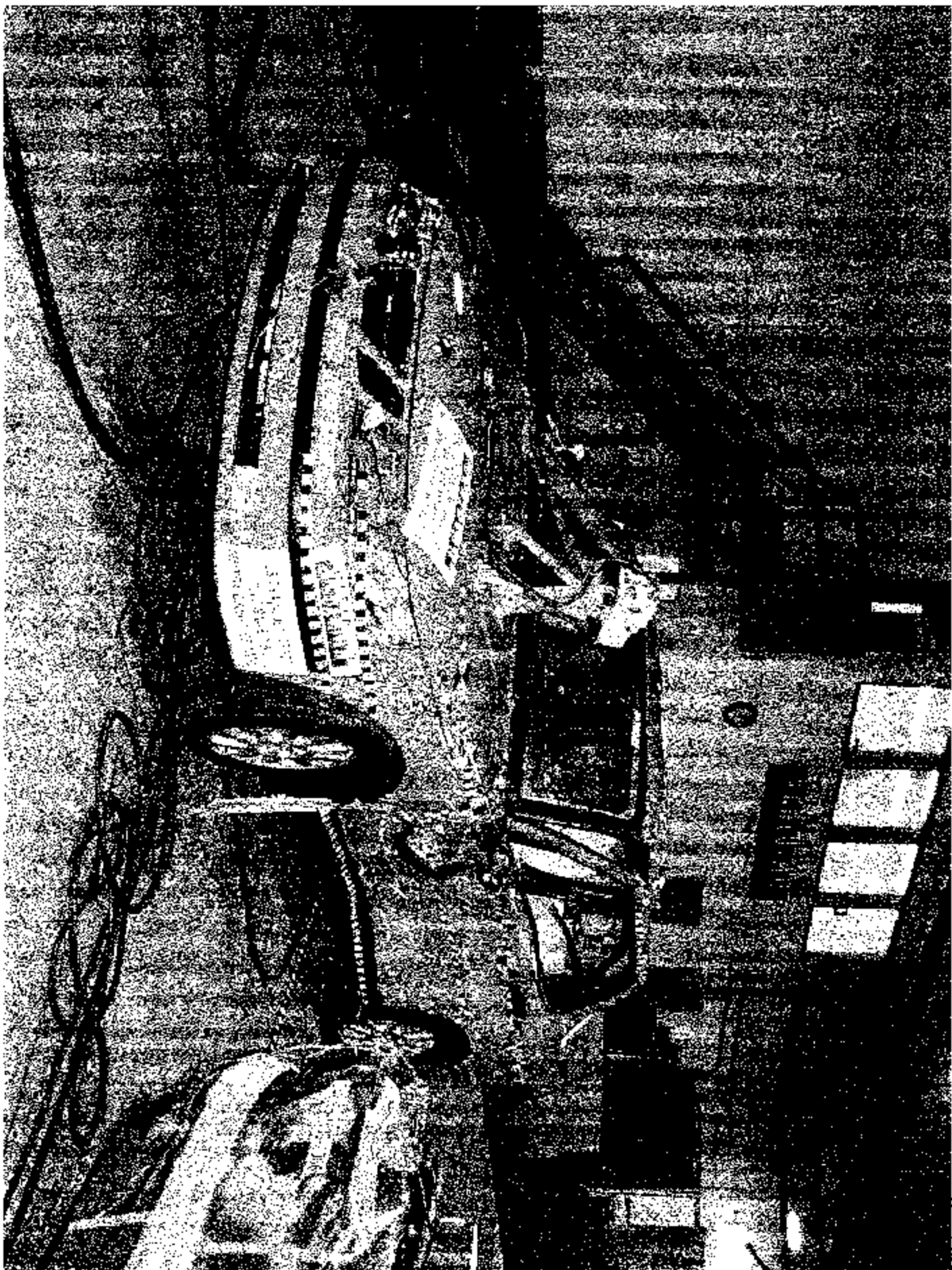


Figure A.8 POST TEST LEFT-FRONT VIEW OF TEST VEHICLE

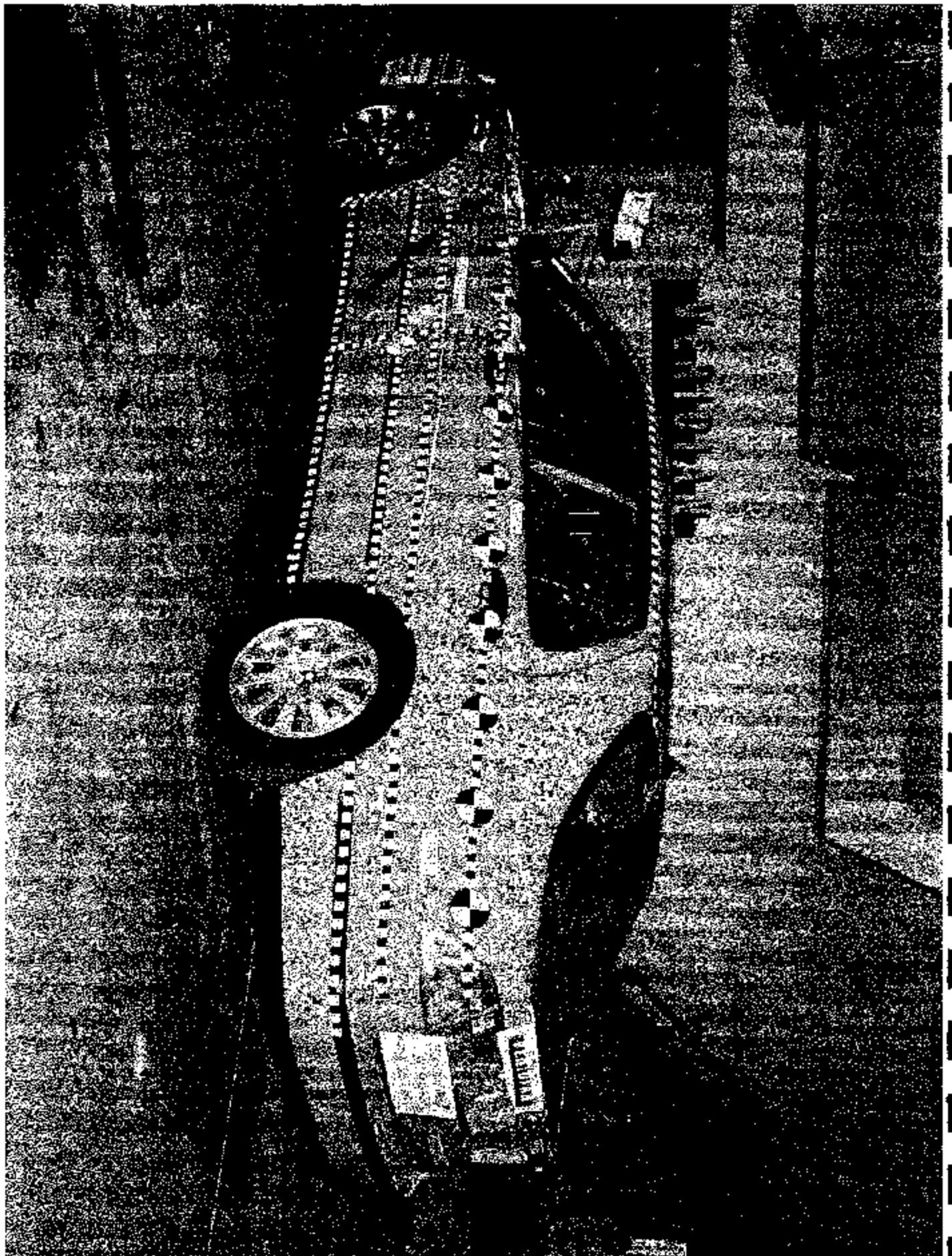


Figure A-9 PRI-1751 11' IN AIR VIEW OF TEST VEHICLE

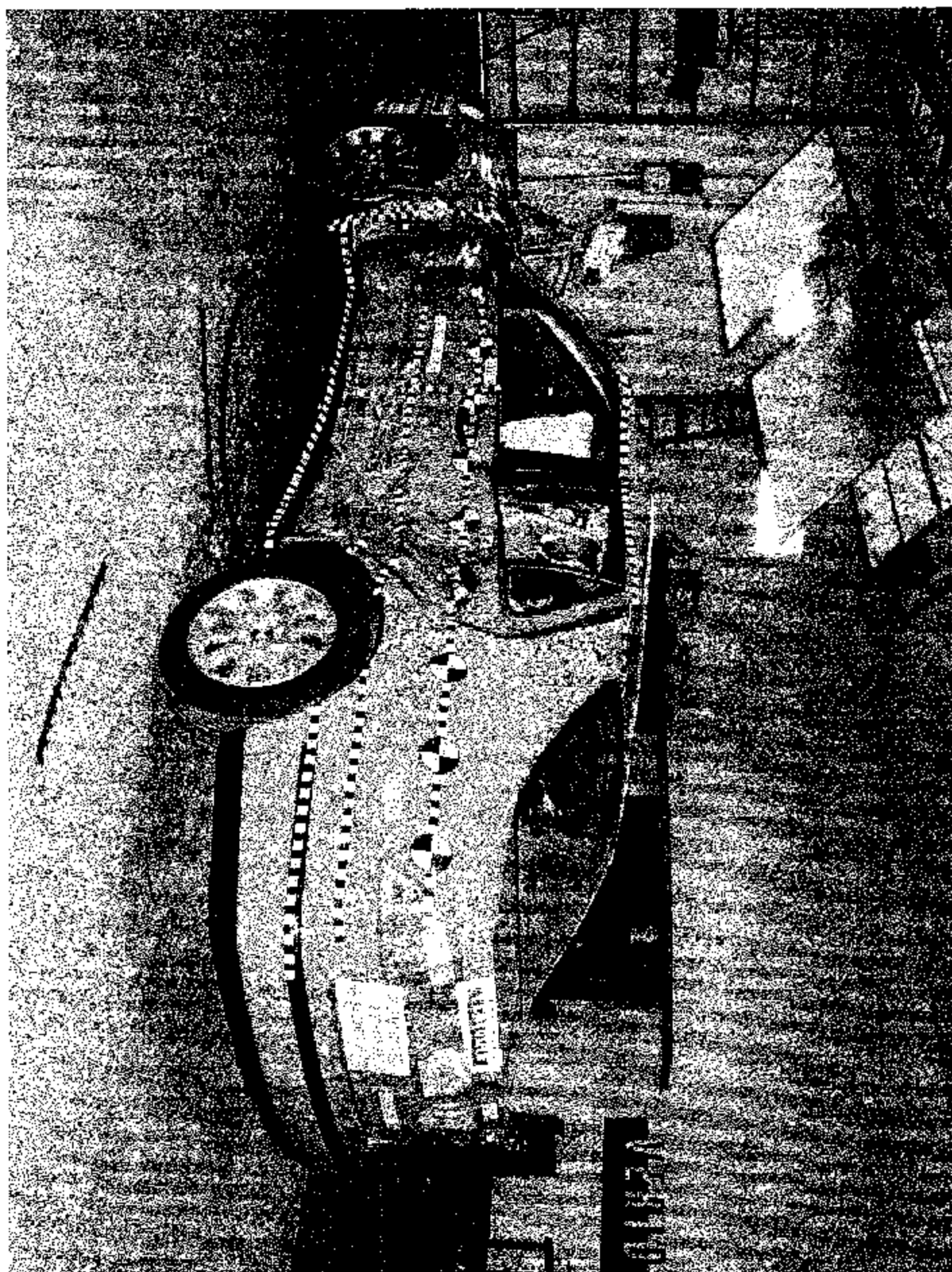


Figure A-10 POST-TEST LEFT REAR VIEW OF TEST VEHICLE

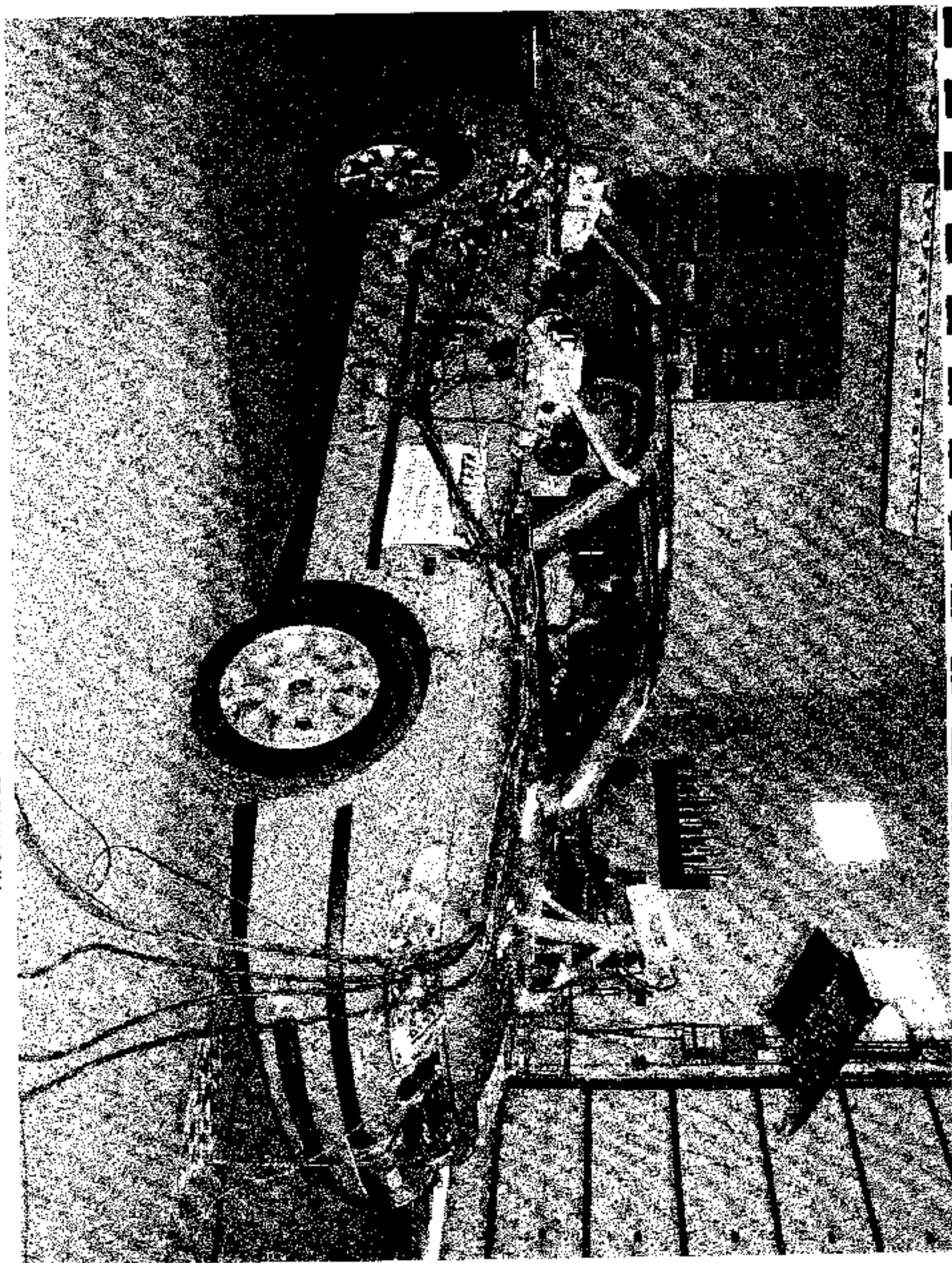


Figure A-17 PRE TEST RIGHT FRONT VIEW OF TEST VEHICLE

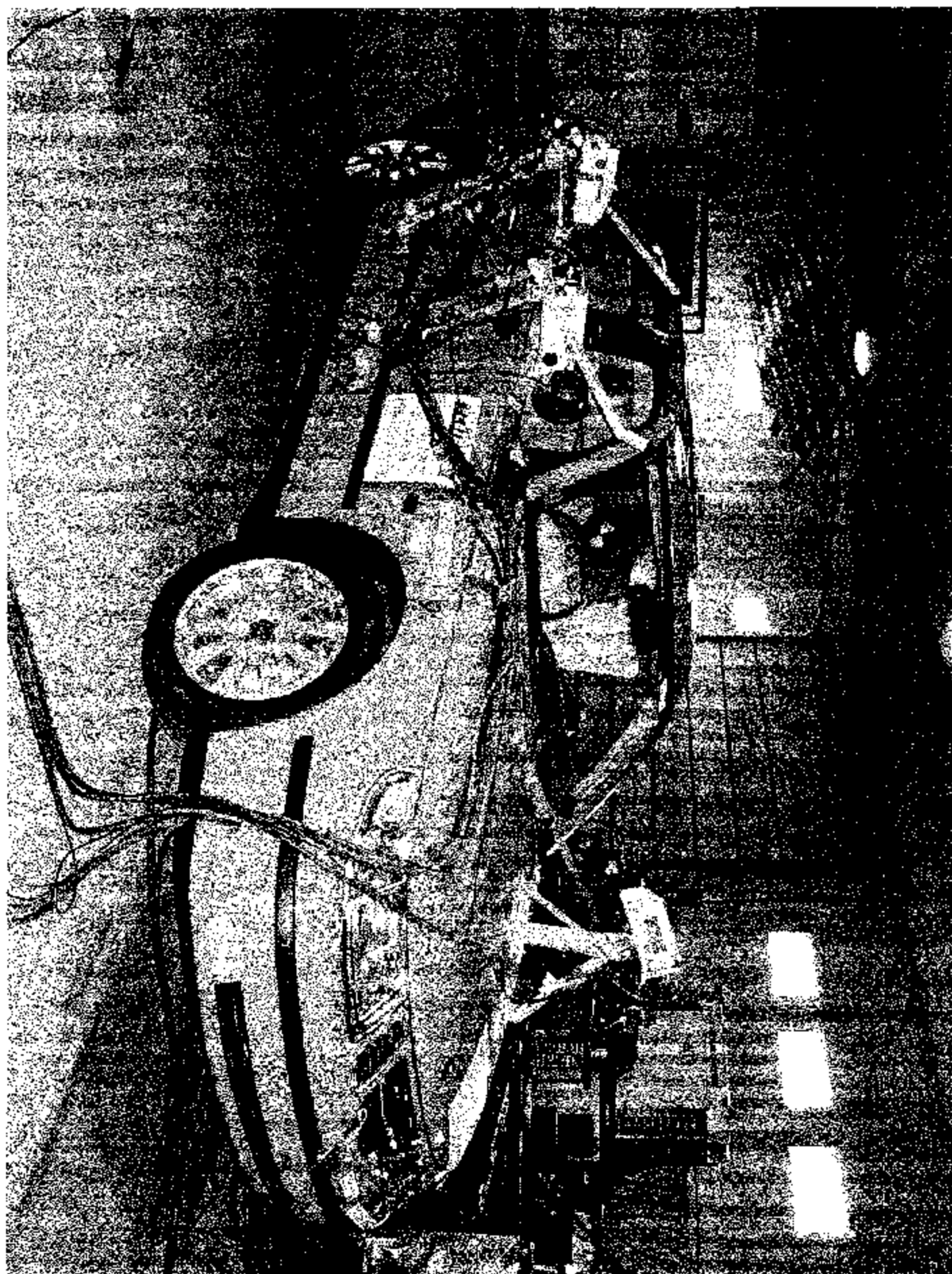


FIGURE A-12 POST-TEST RIGHT FRONT VIEW OF TEST VEHICLE



Figure A.13 PRE TEST RIGHT REAR VIEW OF TEST VEHICLE

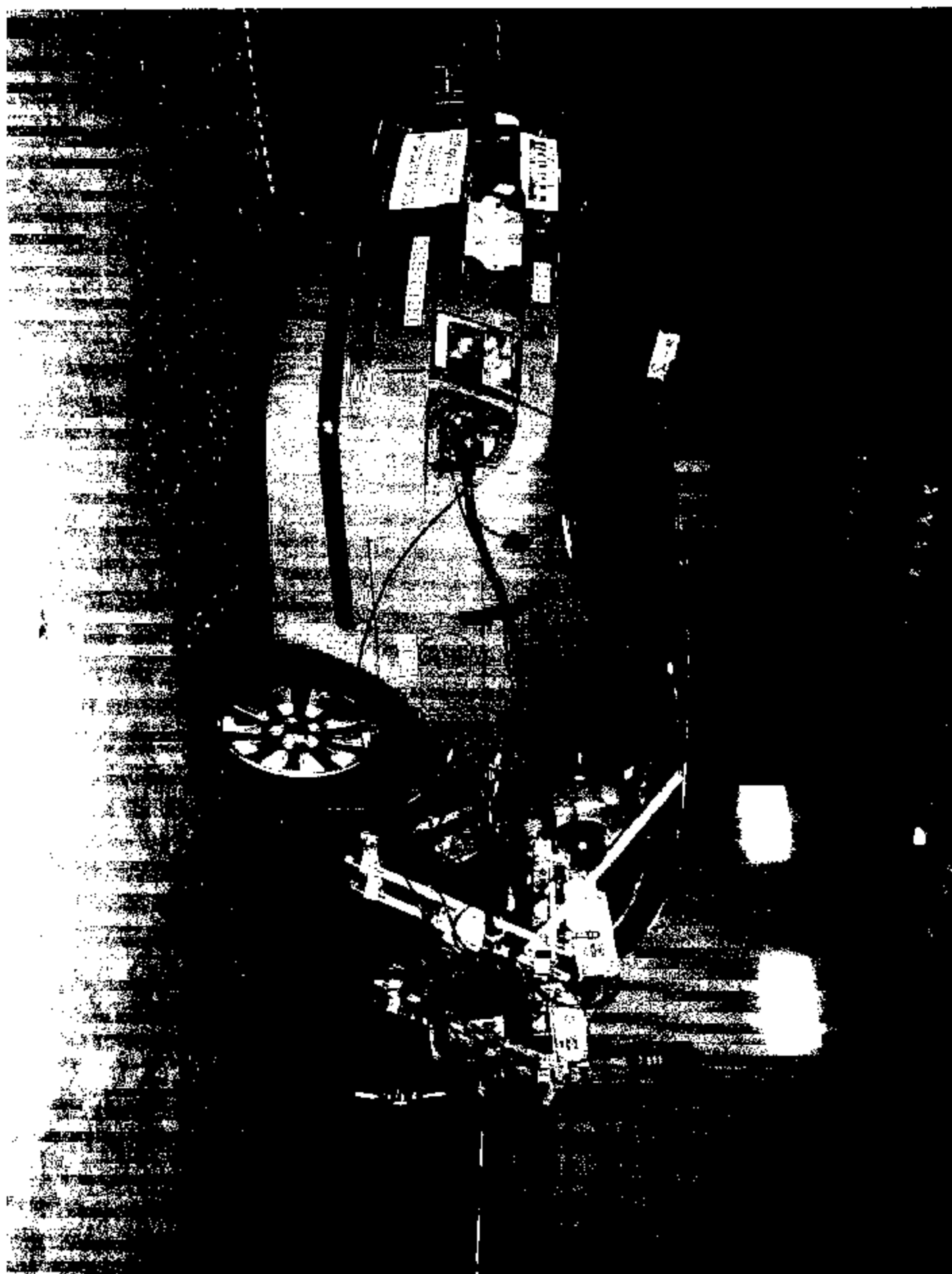


Figure A-14 POST-TEST RIGHT REAR VIEW OF TEST VEHICLE

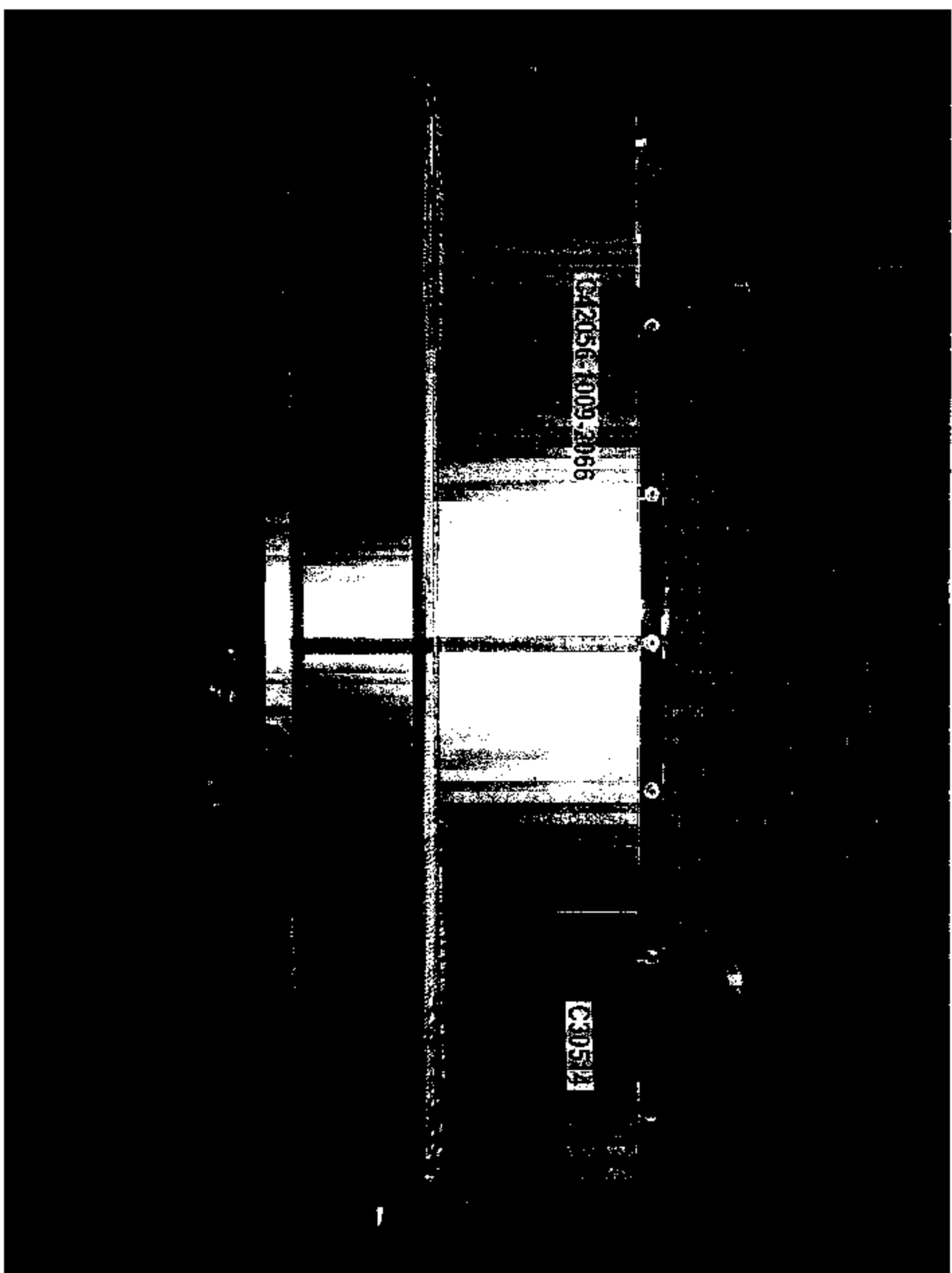


Figure A-15 PRE-TEST FRONTAL VIEW OF IMPACTOR FACE

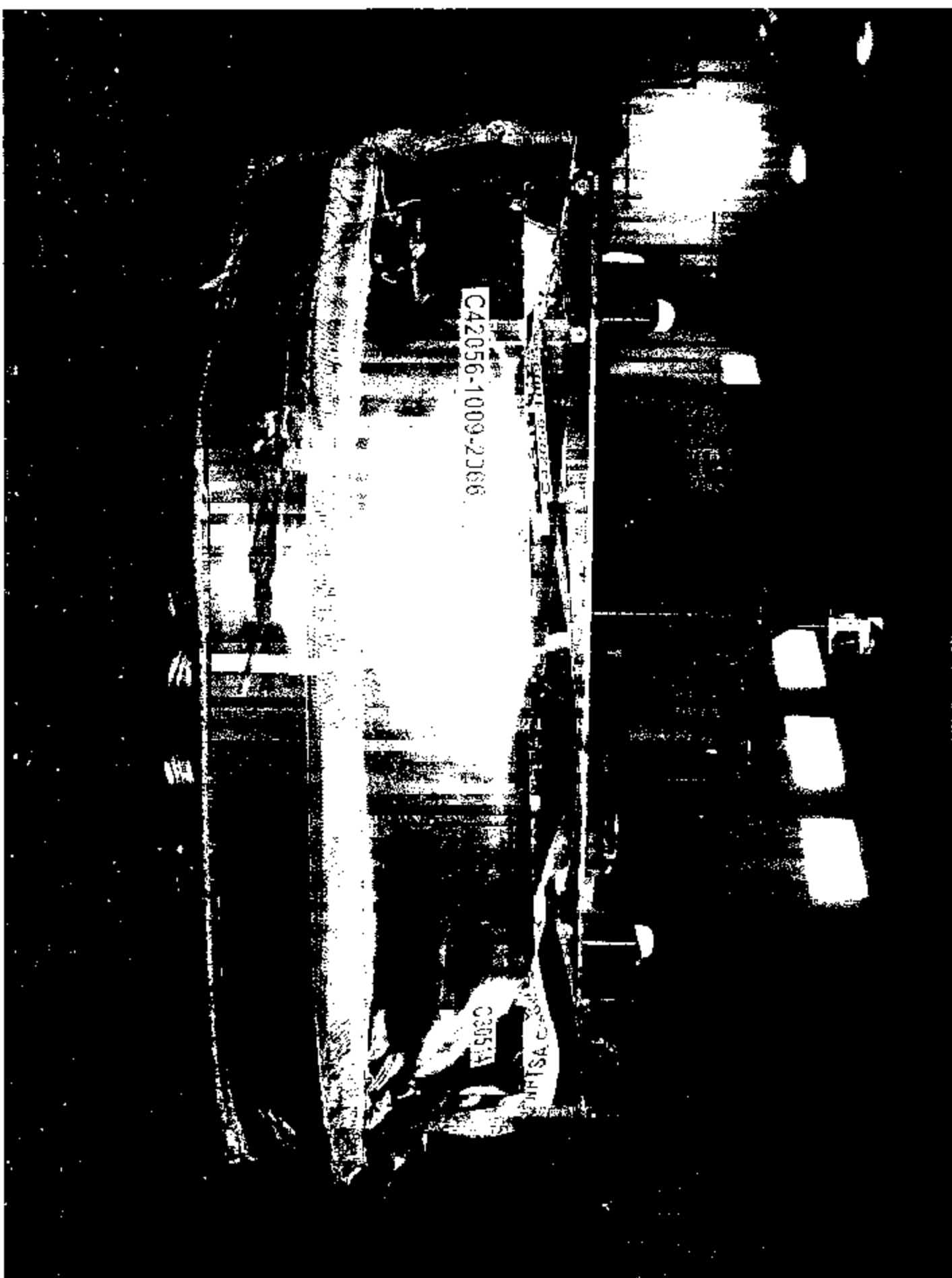


Figure A-16 POST-TEST FRONTAL VIEW OF IMPACTOR (AC)

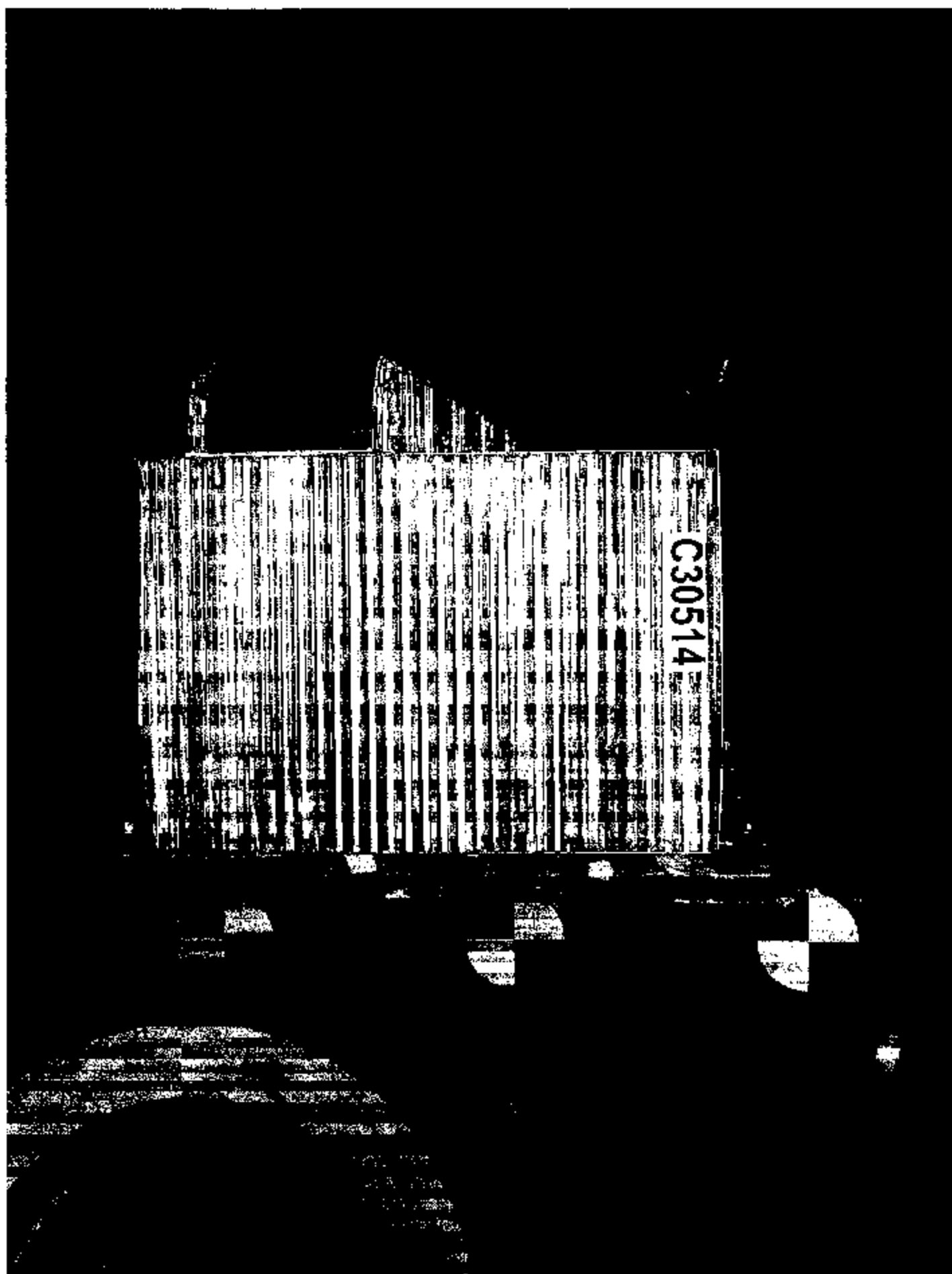


FIGURE A-17 PRE-TEST LEFT SIDE VIEW OF IMPACTOR FACE

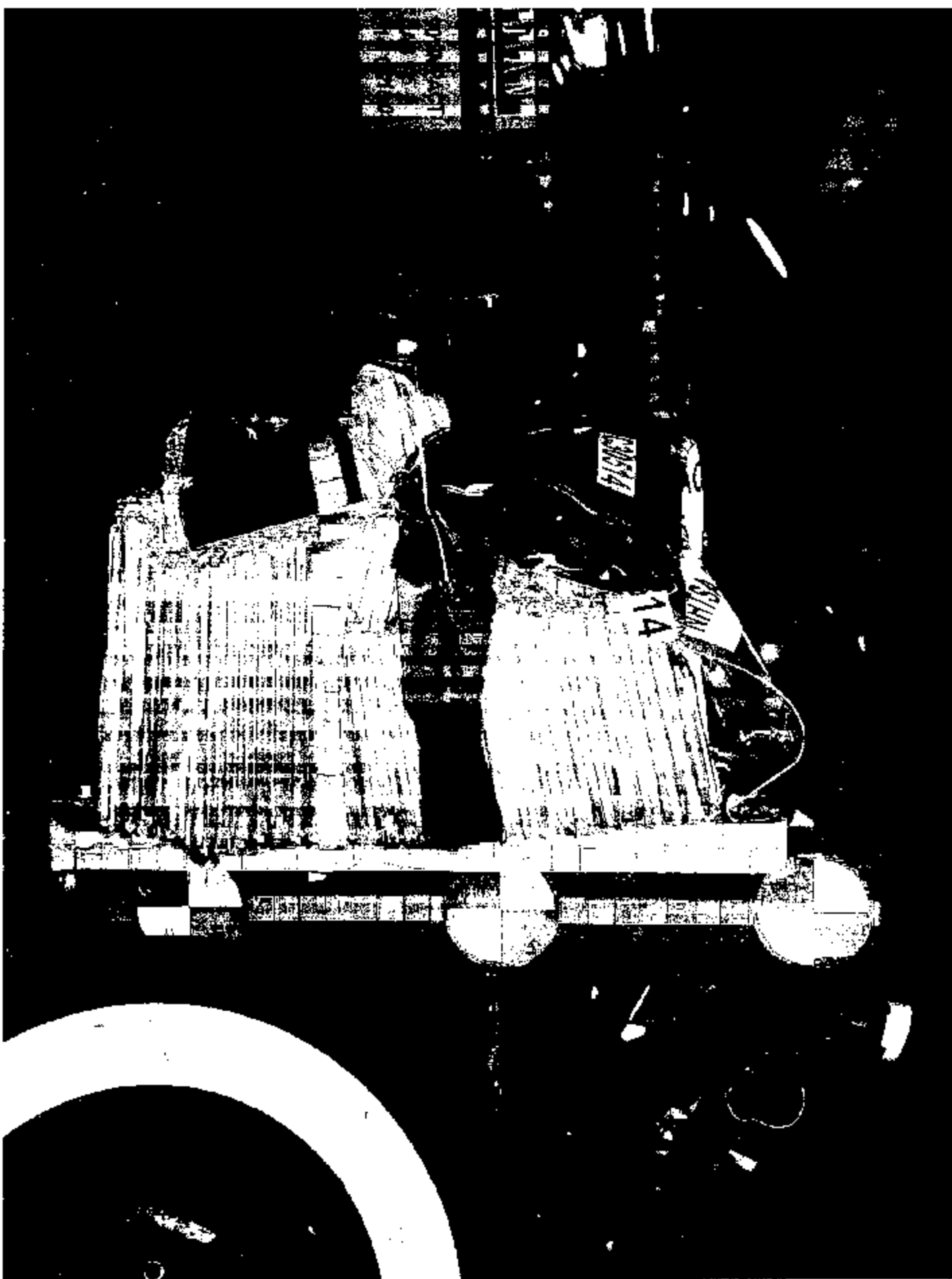


Figure A-18 POST-TEST LEFT SIDE VIEW OF IMPACTOR RACK

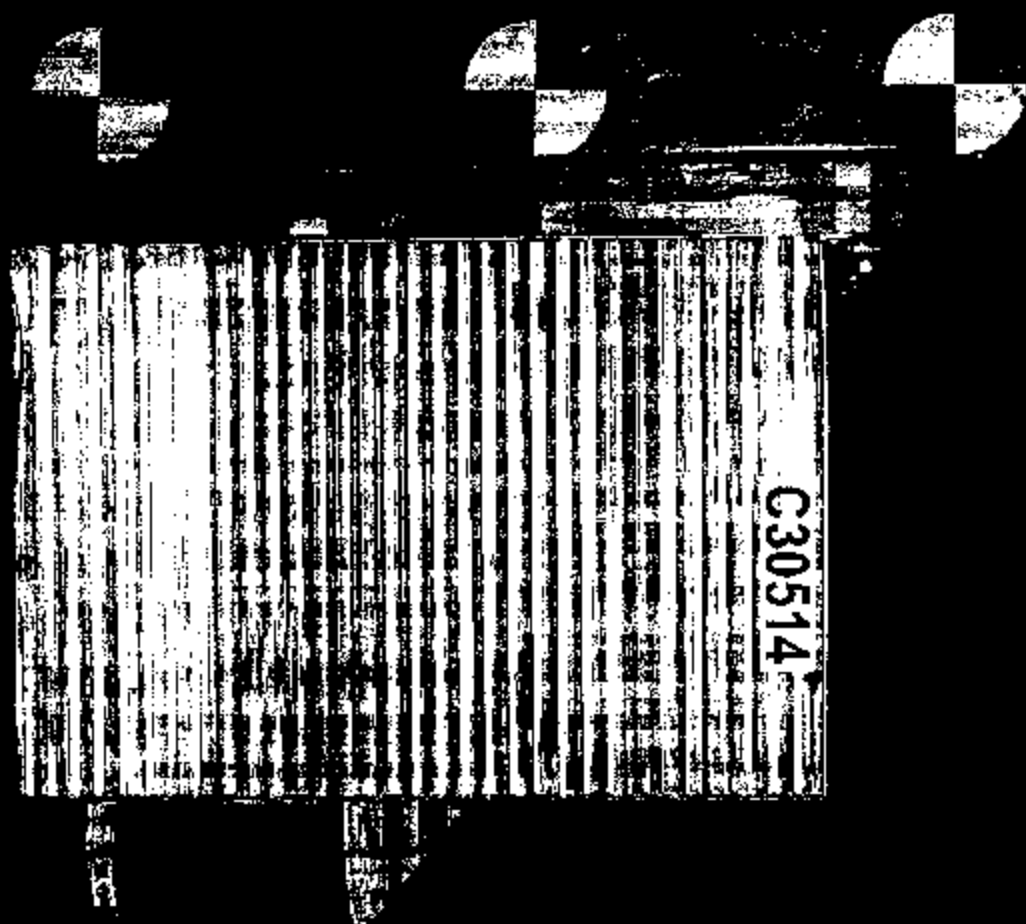


Figure A-19 PRE-TEST RIGHT SIDE VIEW OF IMPACTOR FACE



Figure A-20 POST-TEST RIGHT SIDE VIEW OF IMPACTOR FACE



Figure A-21 PRI-115T TOP VIEW OF IMPACTOR (ACL)

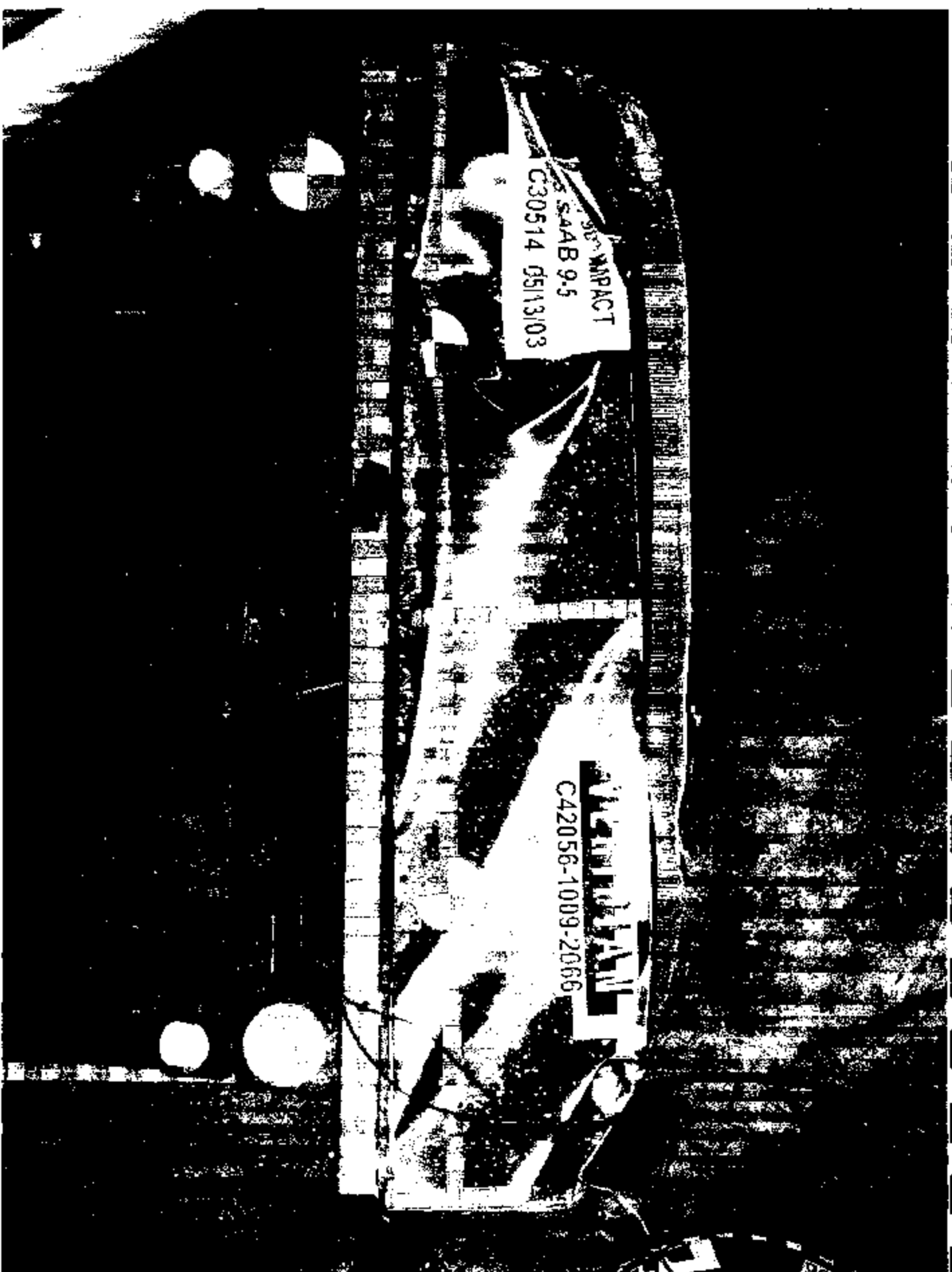
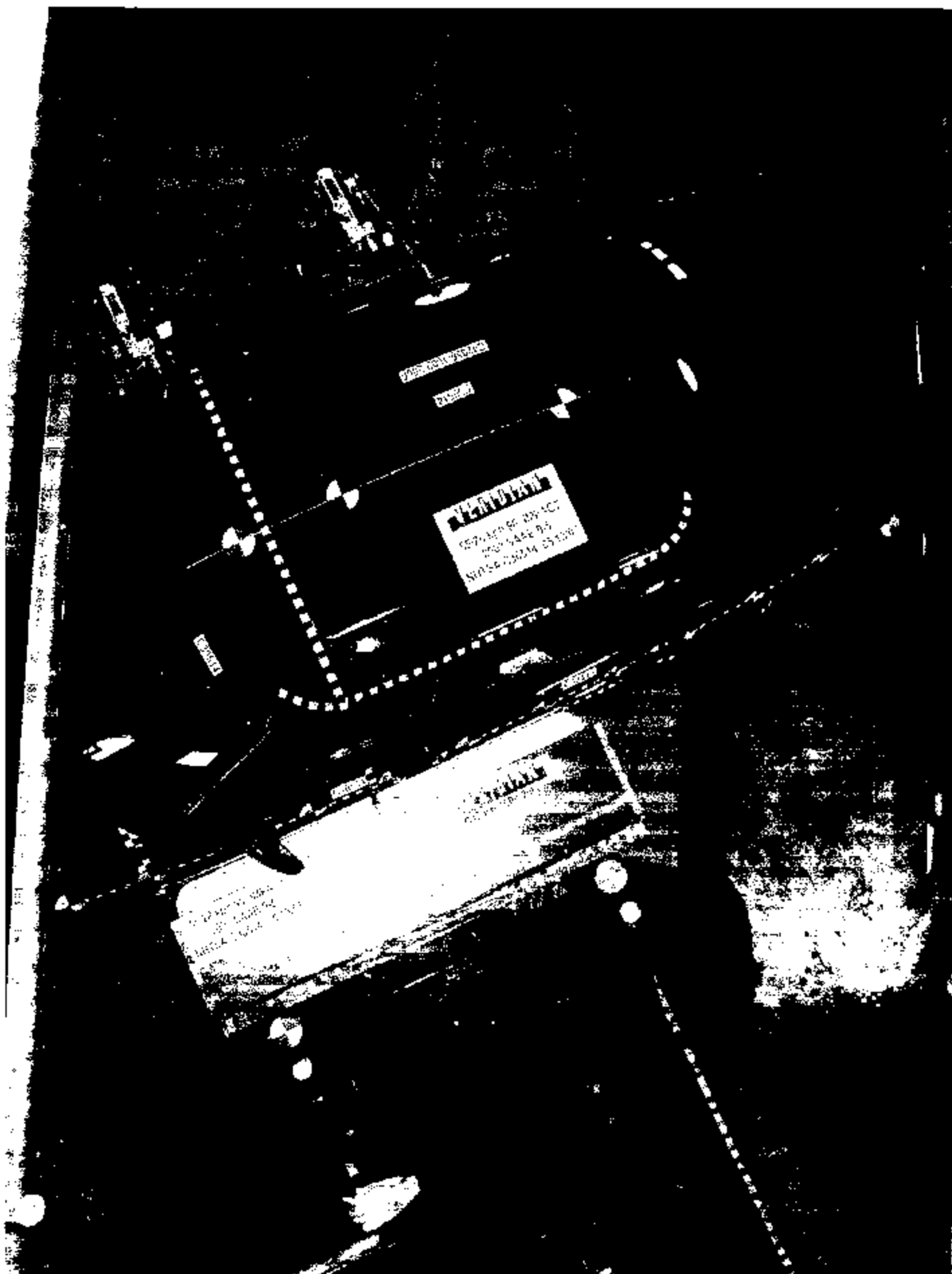


Figure A-22 POST-TEST TOP VIEW OF IMPACTOR FACE

Figure A-23 PRE-TEST OVERHEAD VIEW OF ALIGNED MDR AND VEHICLE



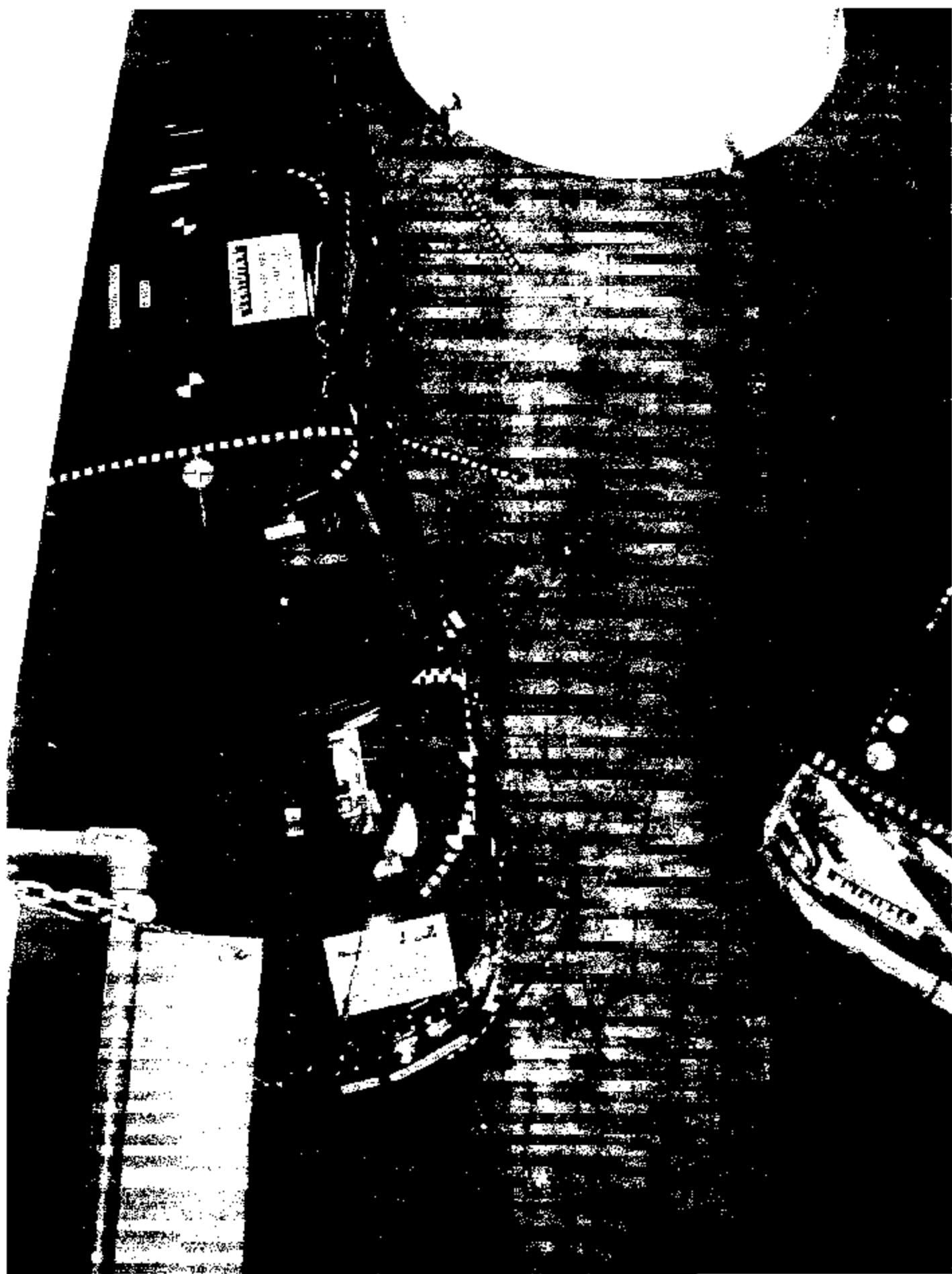


Figure A-24 POST-TEST OVERHEAD VIEW OF MDR AND VEHICLE



Figure A-25 PRE-TEST RIGHT OCCUPANT COMPARTMENT VIEW OF FRONT SID H3



Figure A-26 POST-TEST RIGHT OCCUPANT COMPARTMENT VIEW OF FRONT SID H3



Figure A-27 PRE-TEST RIGHT OCCUPANT COMPARTMENT VIEW OF REAR SID II3



Figure A-28 POST-TEST RIGHT OCCUPANT COMPARTMENT VIEW OF REAR SID II*

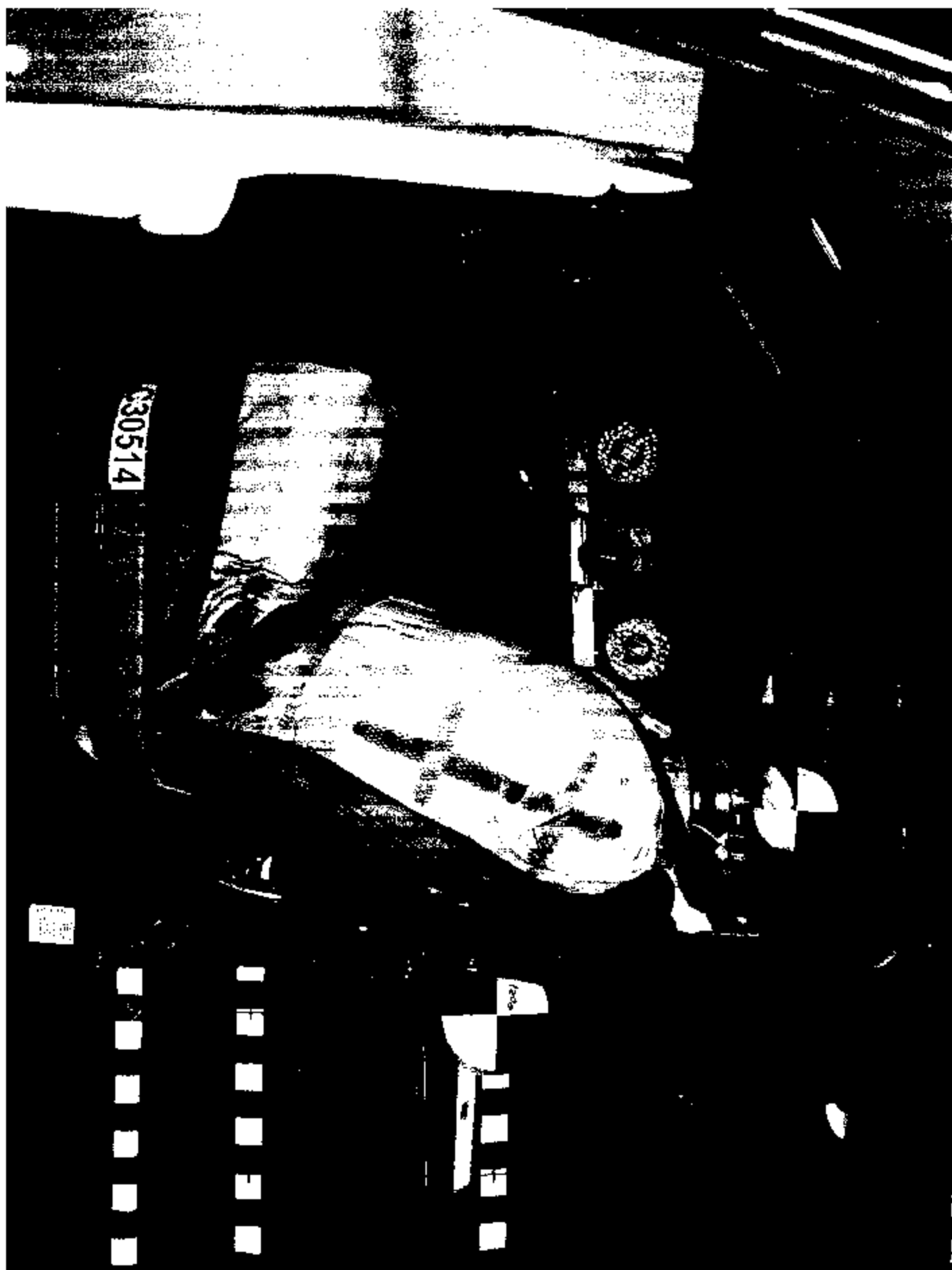


Figure A-29 PRE-TEST LEFT OCCUPANT COMPARTMENT VIEW OF FRONT SIDE H3

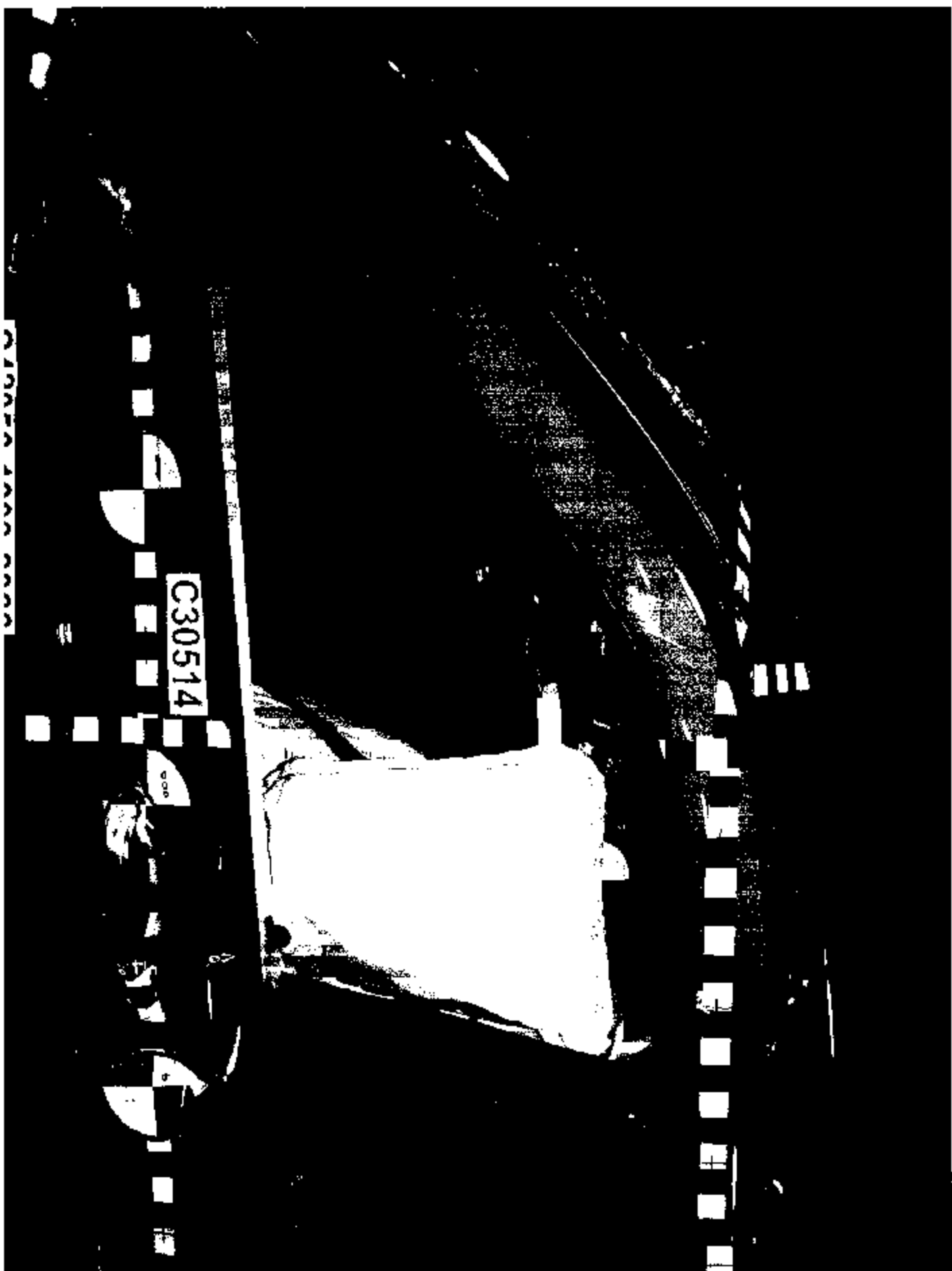


Figure A-30 POST-TEST LEFT OCCUPANT COMPARTMENT VIEW OF FRONT SID

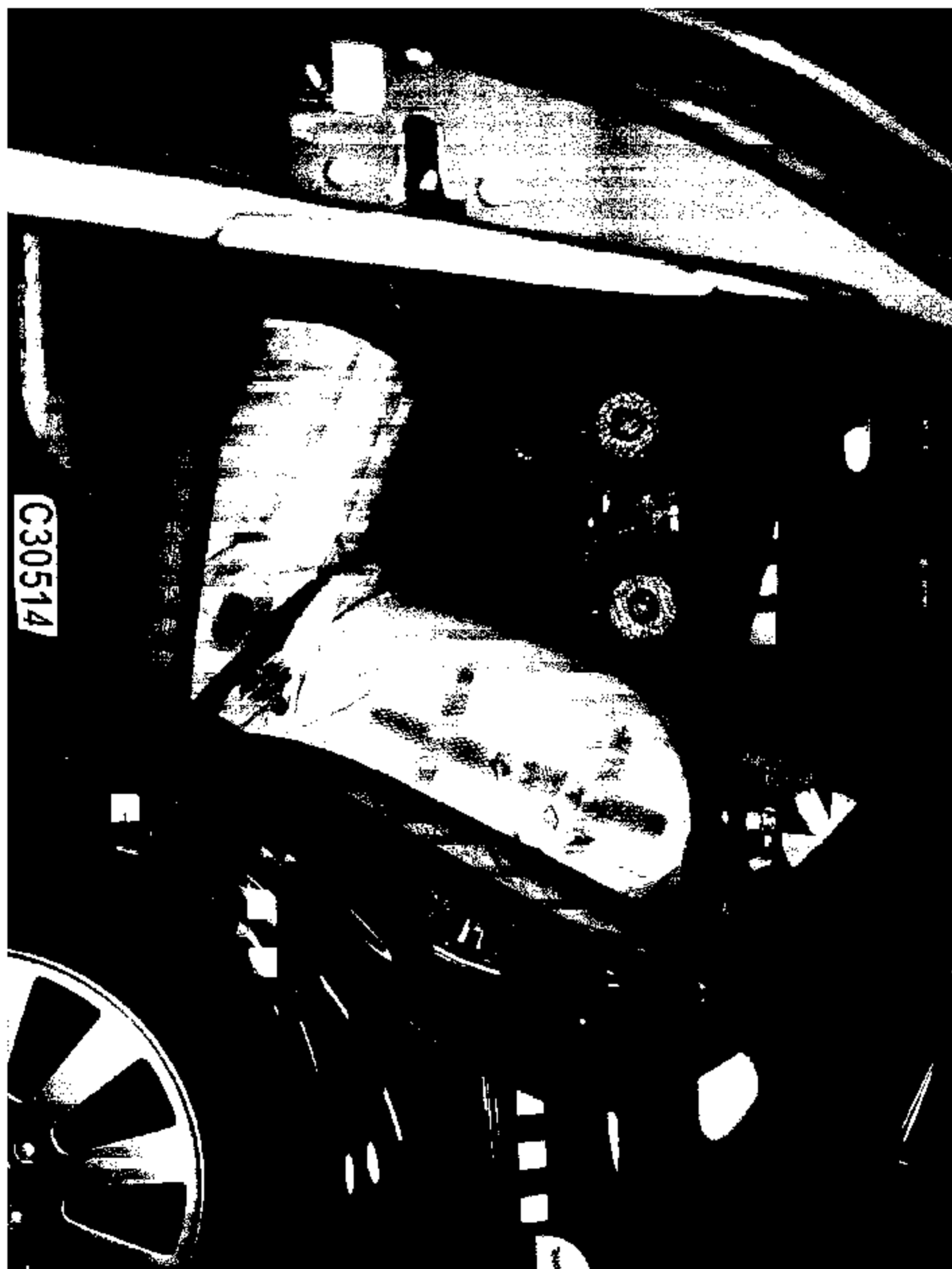


Figure A-31 PRIEST LEFT OCCUPANT COMPARTMENT VIEW OF REAR SEAT (13)

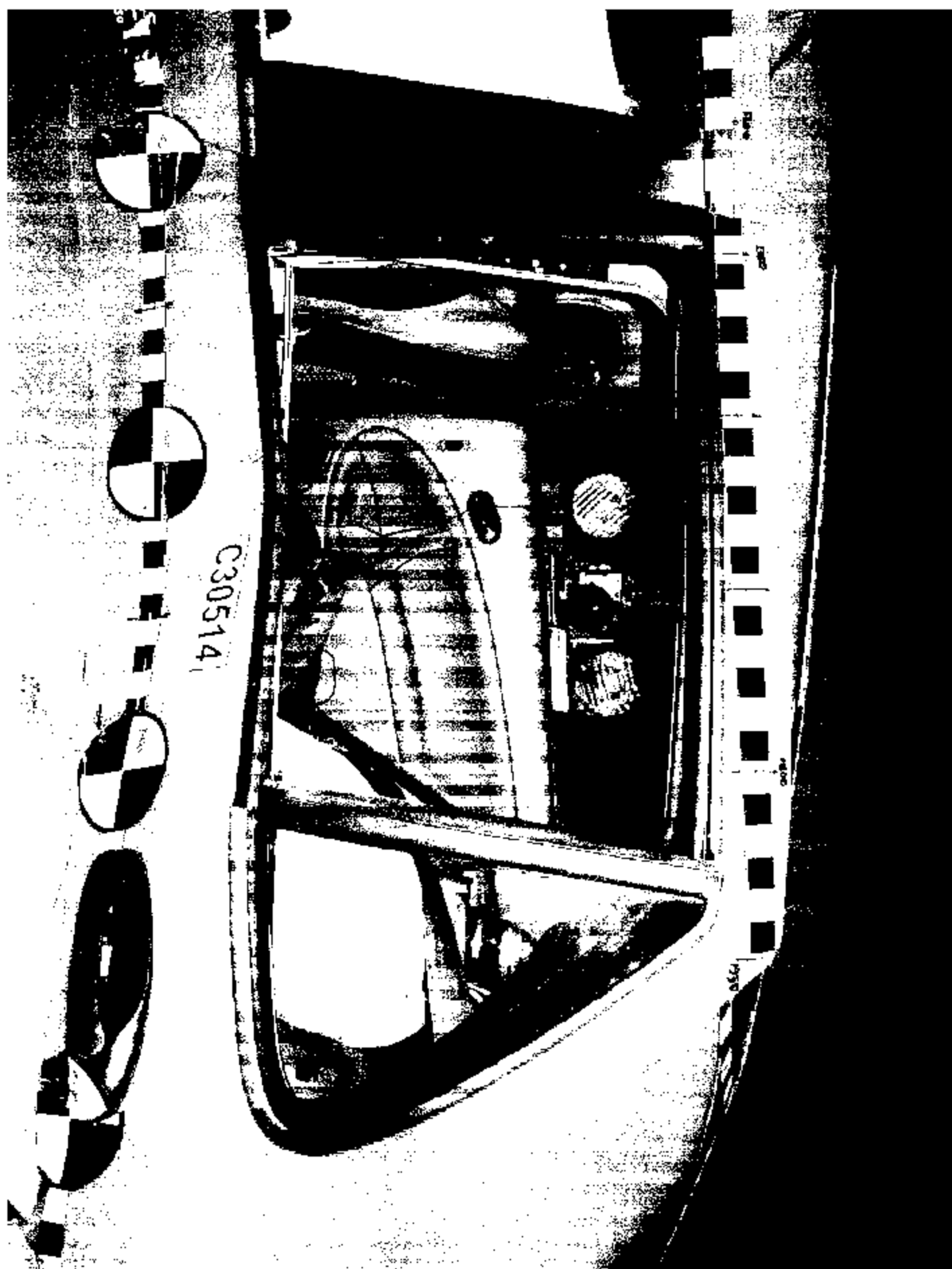


Figure A-32 POST-TEST LEFT OCCUPANT COMPARTMENT VIEW OF REAR SID H3

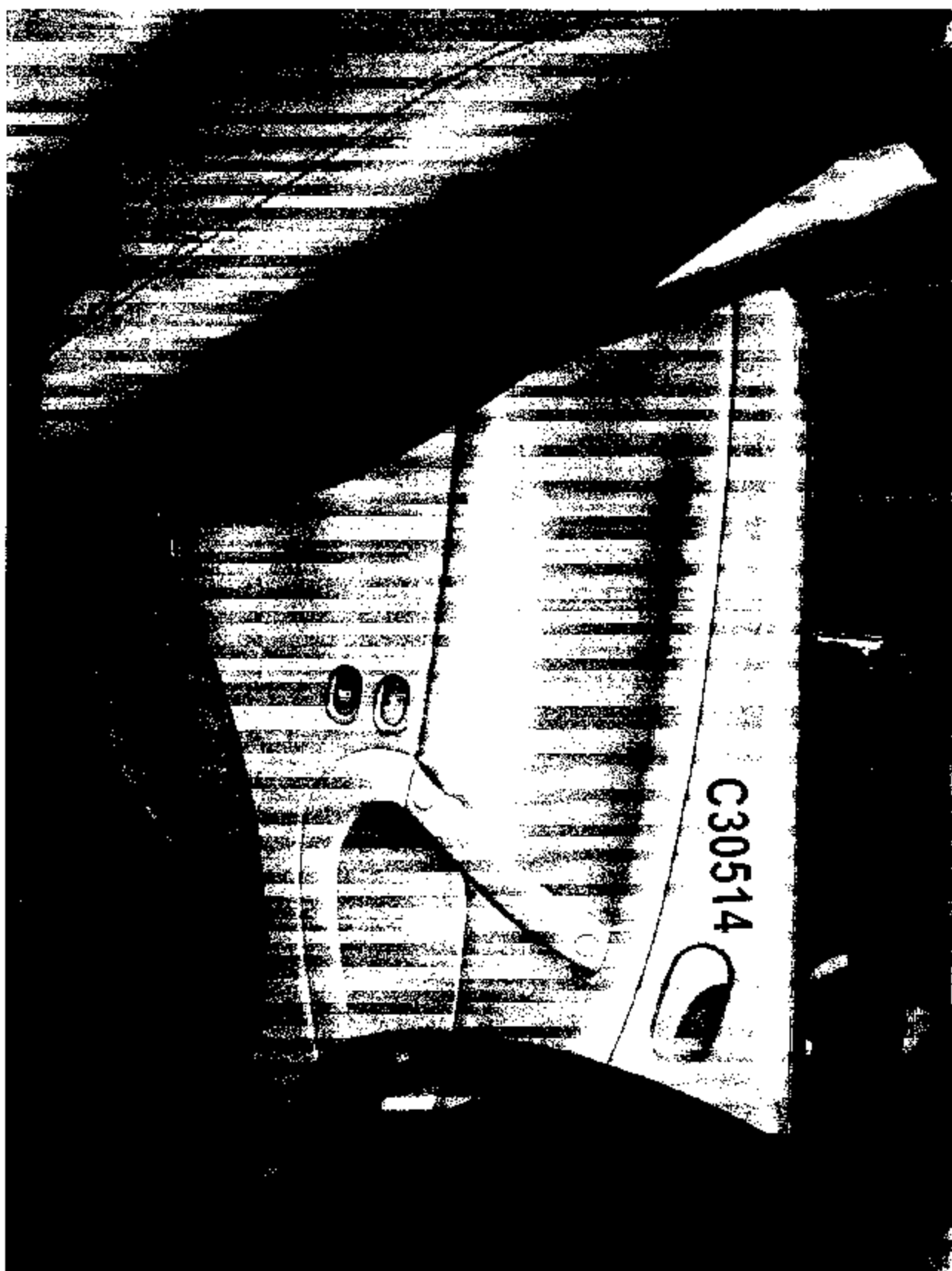


Figure A-35 PRE-TEST INTERIOR OF FRONT DOOR



Figure A-34 POST-TEST INTERIOR OF FRONT DOOR SHOWING SIDI113 IMPACT LOCATIONS

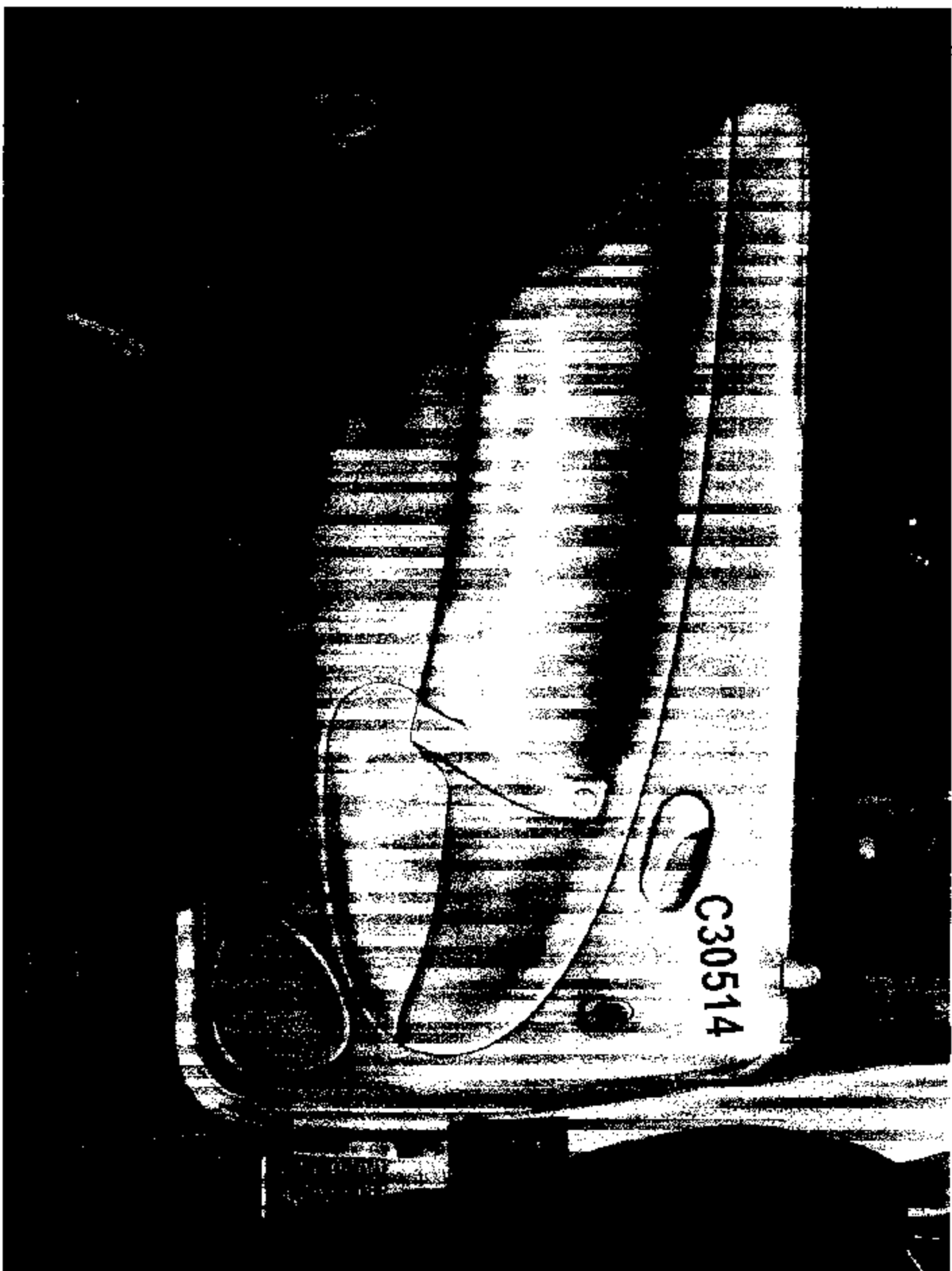


Figure A-35 PRJ-1187 INTERIOR OF REAR DOOR

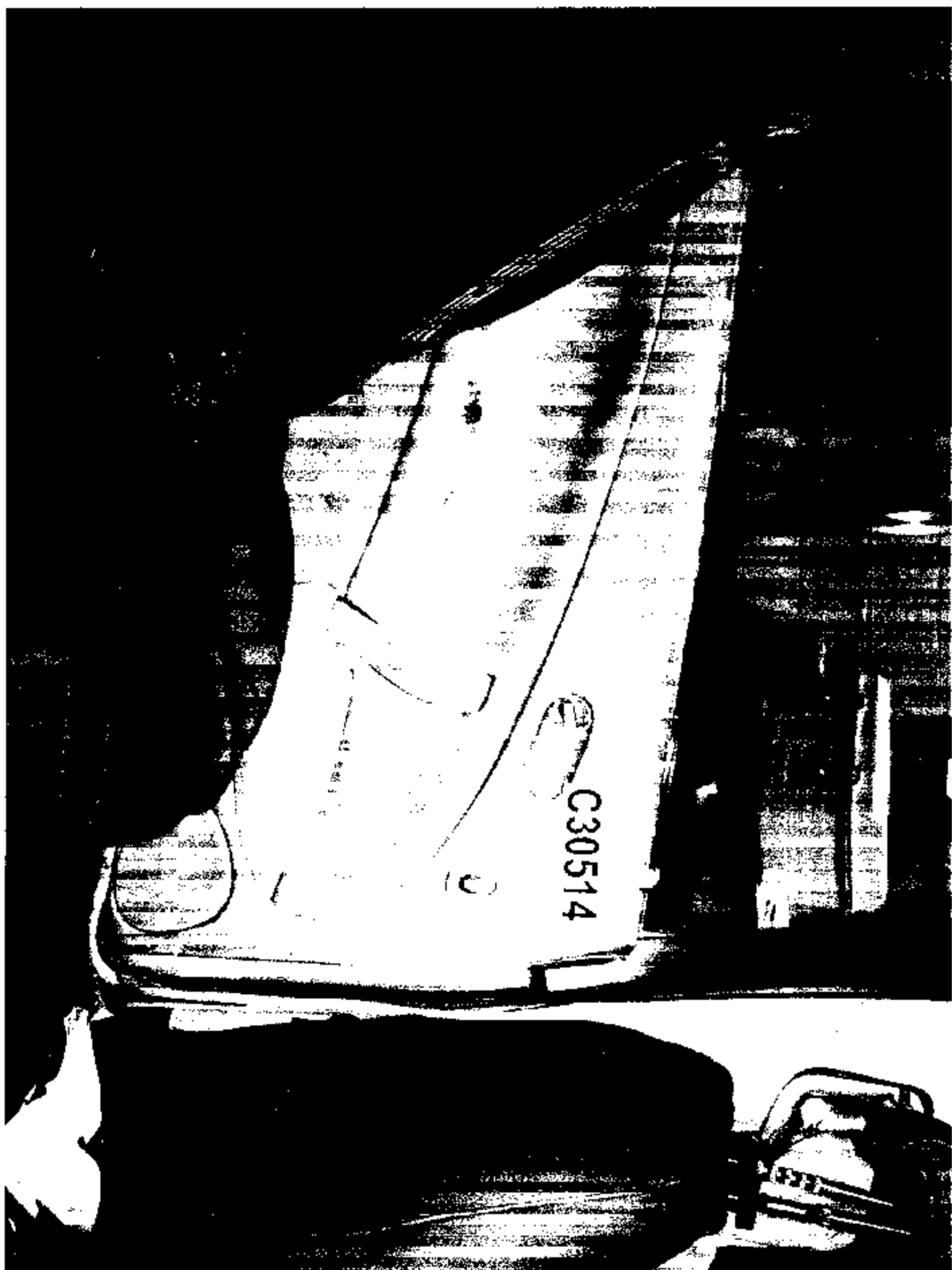


Figure A 36 POST TEST INTERIOR OF REAR DOOR SHOWING SUD ITS IMPACT LOCATIONS

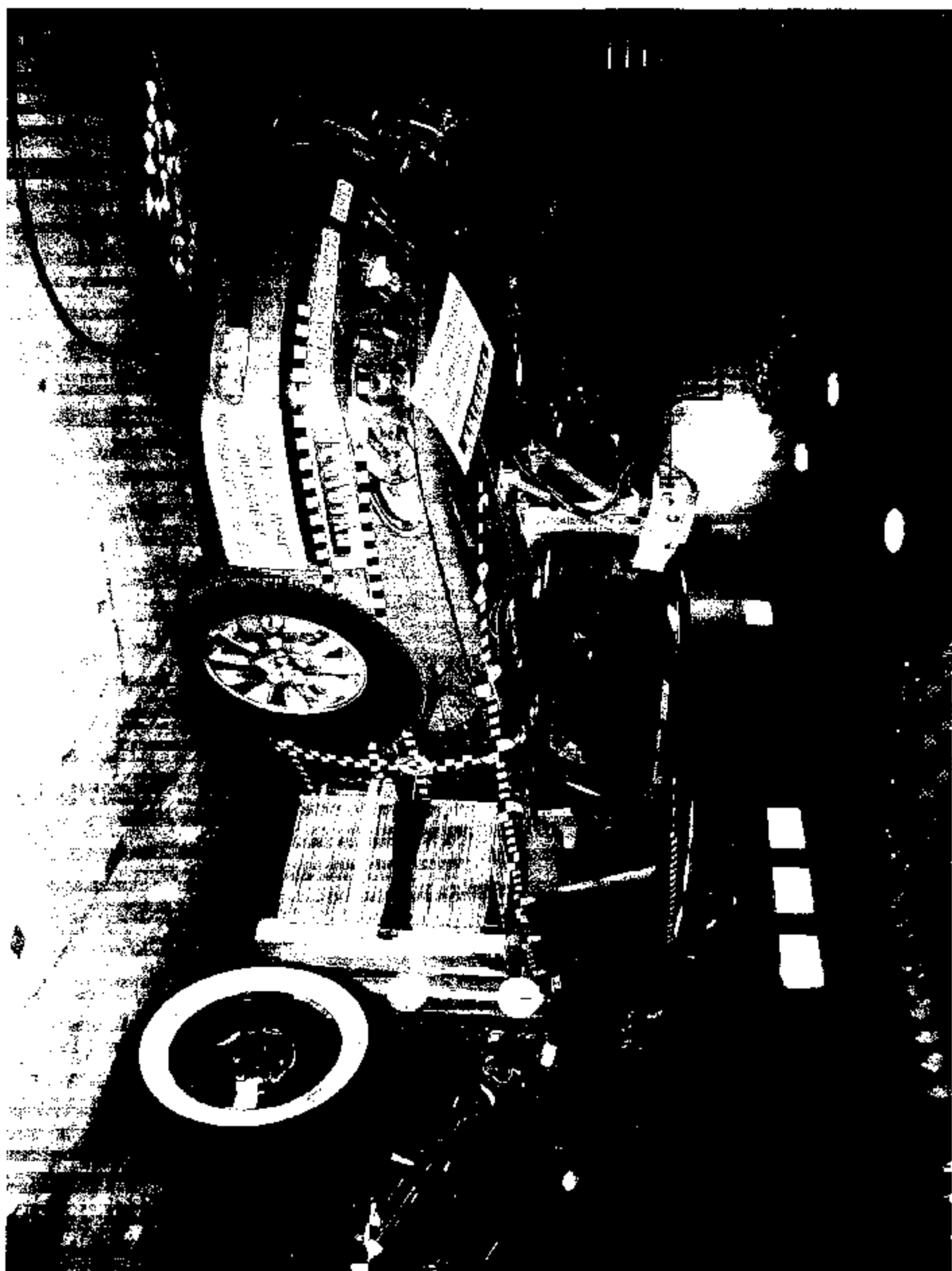


Figure A-17 (PRE-TEST) LEFT SIDE VIEW OF MDP WITH IMPACTOR FACE IN POSITION

Figure A-38 PRE-TEST RIGHT SIDE VIEW OF MDR WITH IMPACTOR FACE IN POSITION

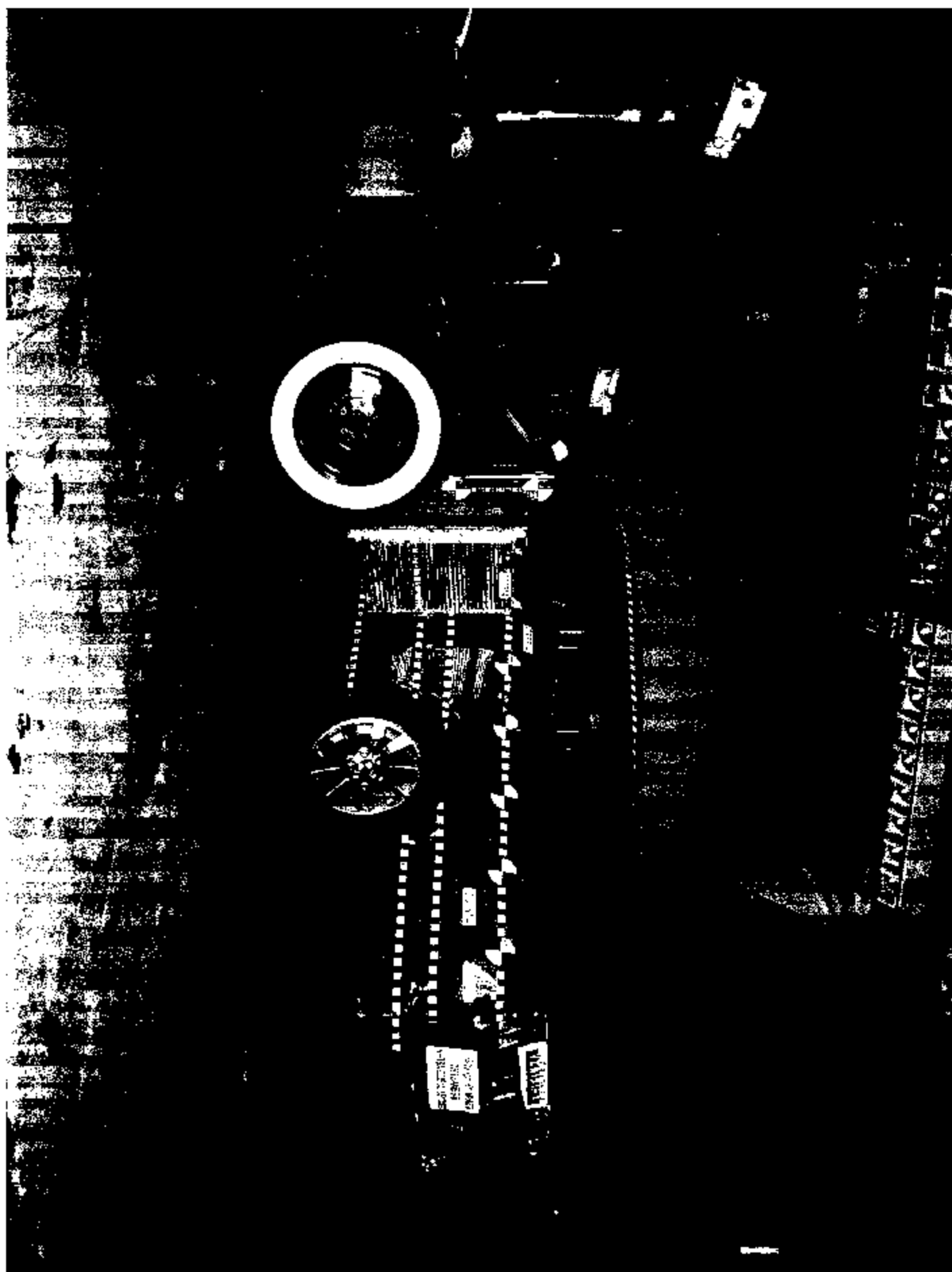




Figure A-39 POST-IMPACT CLOSE-UP VIEW OF IMPACT POINT TARGET

DATE: G.V.W.R. G.A.W.R. FRONT G.A.W.R. REAR
09/02 4490 LB 2590 LB 2310 LB
THIS VEHICLE CONFORMS TO ALL APPLICABLE
FEDERAL MOTOR VEHICLE SAFETY BUMPER AND
THEFT PREVENTION STANDARDS IN EFFECT ON
THE DATE OF MANUFACTURE SHOWN ABOVE.



8B33013371 PASS.CAR

AP 6321 906

Figure A-10 CLOSE-UP VIEW OF VEHICLE'S CERTIFICATION LABEL.

WFO OFFICE. FOR SALE AUTOMOBILE AS
53 26 111 55 32 122

13371 CAS NOY VOITURE N°
110 COULEUR DE GARANTURE
278 COULEUR DE GARANTURE
110 TUNE COULEUR
278 TUNE COULEUR

TIME SIZE 216/55HR10
MAX VEHICLE CAPACITY WEIGHT 421 kg - 928 lbs
TAIITE DA NEW 216/55HR10
CAPACITE DE CHARGE MAX 421 kg - 928 lbs

TEMPORARY USE SPACE TIME
PNEU DE SECOURS TEMPORAIRE
MAX 50000 / 50000
60 psi / 420 kPa / 4.2 bar

1-3	0-100 km/h	0-100 mph
3.8	2.4	2.4
3.2	2.2	2.2
3.1	2.2	2.2

544

78101



Figure A-42 IMPACT PHOTO

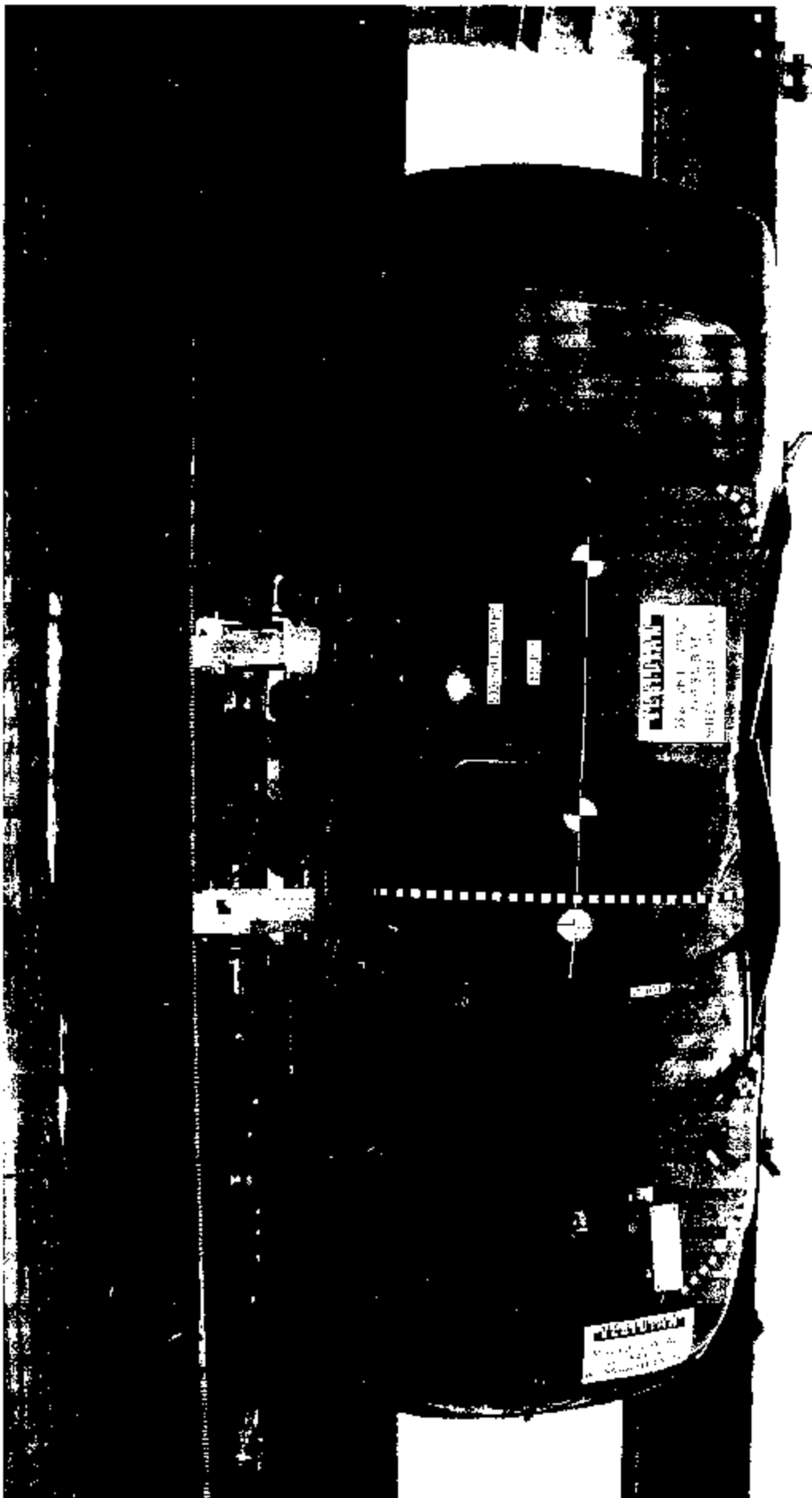


Figure A-13 ROLLOVER 90 DEGREES

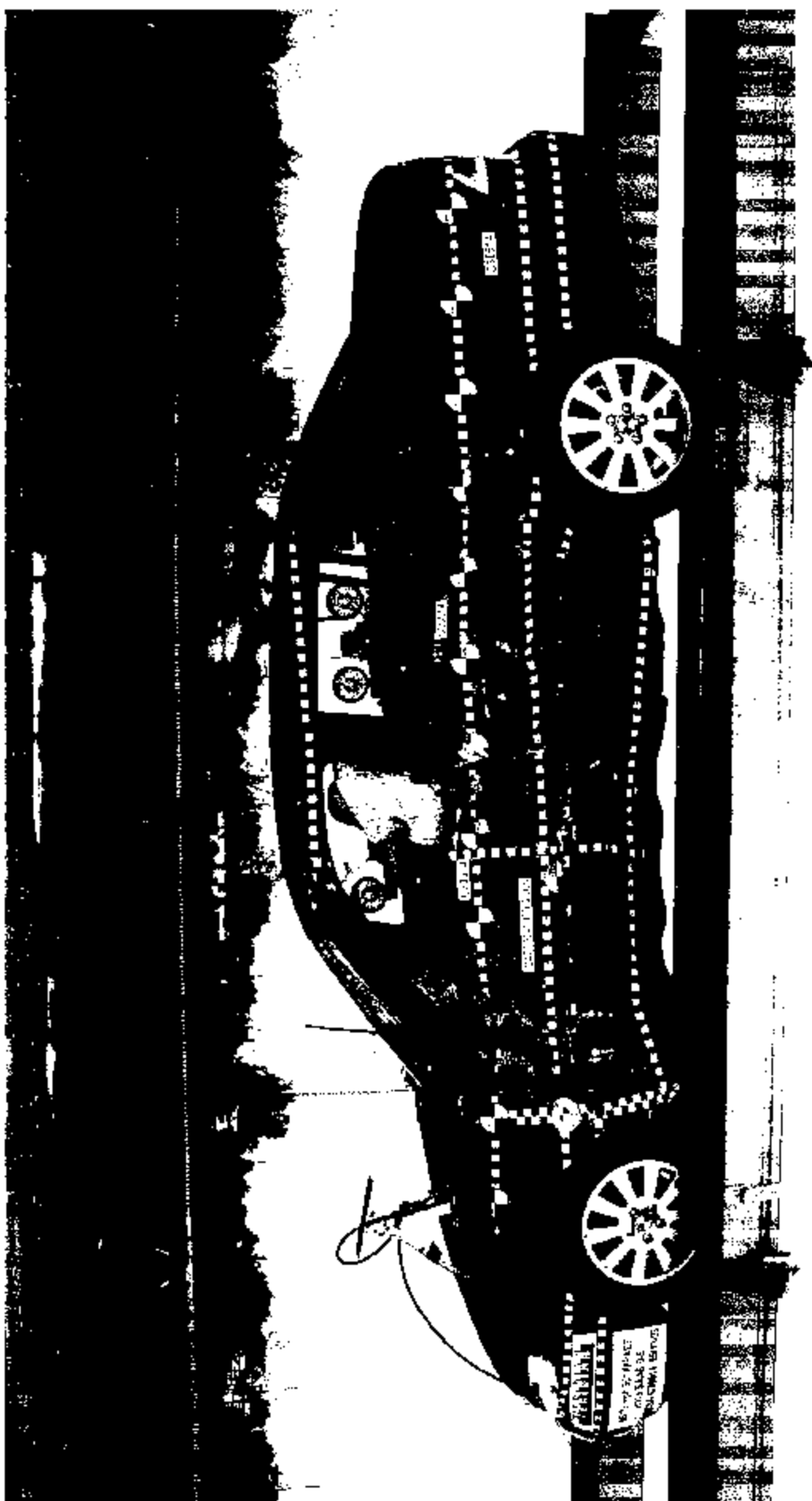


Figure A-14 ROLLOVER 180 DEGREES



Figure A-45 ROLL OVER 270 DEGREES

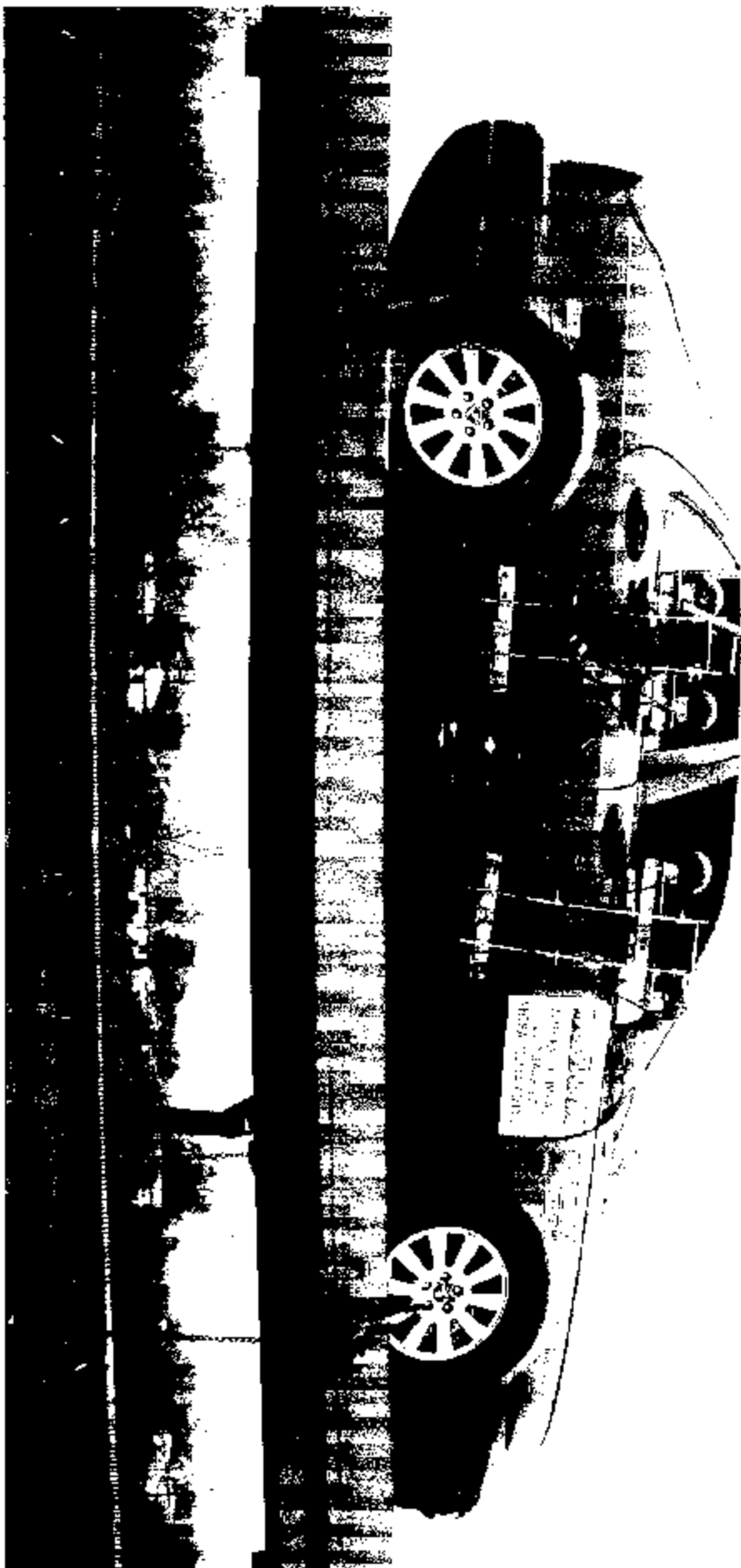


Figure A 46 ROLL OVER 360 DEGREES

APPENDIX B

VEHICLE, MDB AND SID HYBRID III RESPONSE DATA

TABLE OF DATA PLOTS

DRIVER AND PASSENGER DUMMY INSTRUMENTATION PLOTS ACCELERATION, FORCE AND MOMENT 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 HEAD 9 ARRAY X ARM (Y) ACCELERATION VS TIME	B- 7
2	DRIVER HEAD 9 ARRAY X ARM (Y) VELOCITY VS TIME	B- 8
3	DRIVER HEAD 9 ARRAY X ARM (Z) ACCELERATION VS TIME	B- 9
4	DRIVER HEAD 9 ARRAY X ARM (Z) VELOCITY VS TIME	B- 10
5	DRIVER HEAD 9 ARRAY Y ARM (X) ACCELERATION VS TIME	B- 11
6	DRIVER HEAD 9 ARRAY Y ARM (X) VELOCITY VS TIME	B- 12
7	DRIVER HEAD 9 ARRAY Y ARM (Z) ACCELERATION VS TIME	B- 13
8	DRIVER HEAD 9 ARRAY Y ARM (Z) VELOCITY VS TIME	B- 14
9	DRIVER HEAD 9 ARRAY Z ARM (X) ACCELERATION VS TIME	B- 15
10	DRIVER HEAD 9 ARRAY Z ARM (X) VELOCITY VS TIME	B- 16
11	DRIVER HEAD 9 ARRAY Z ARM (Y) ACCELERATION VS TIME	B- 17
12	DRIVER HEAD 9 ARRAY Z ARM (Y) VELOCITY VS TIME	B- 18
13	DRIVER HEAD (X) ACCELERATION VS TIME	B- 19
14	DRIVER HEAD (X) VELOCITY VS TIME	B- 20
15	DRIVER HEAD (Y) ACCELERATION VS TIME	B- 21
16	DRIVER HEAD (Y) VELOCITY VS TIME	B- 22
17	DRIVER HEAD (Z) ACCELERATION VS TIME	B- 23
18	DRIVER HEAD (Z) VELOCITY VS TIME	B- 24
19	DRIVER HEAD RESULTANT ACCELERATION VS TIME	B- 25
20	DRIVER UPPER NECK (X) FORCE VS TIME	B- 26
21	DRIVER UPPER NECK (Y) FORCE VS TIME	B- 27
22	DRIVER UPPER NECK (Z) FORCE VS TIME	B- 28
23	DRIVER UPPER NECK RESULTANT FORCE VS TIME	B- 29
24	DRIVER UPPER NECK (X) MOMENT VS TIME	B- 30
25	DRIVER UPPER NECK (Y) MOMENT VS TIME	B- 31
26	DRIVER UPPER NECK (Z) MOMENT VS TIME	B- 32
27	DRIVER UPPER NECK RESULTANT MOMENT VS TIME	B- 33
28	DRIVER UPPER RIB (Y) ACCELERATION VS TIME	B- 34
29	DRIVER UPPER RIB (Y) VELOCITY VS TIME	B- 35
30	DRIVER LOWER RIB (Y) ACCELERATION VS TIME	B- 36
31	DRIVER LOWER RIB (Y) VELOCITY VS TIME	B- 37
32	DRIVER LOWER SPINE (Y) ACCELERATION VS TIME	B- 38
33	DRIVER LOWER SPINE (Y) VELOCITY VS TIME	B- 39
34	DRIVER PELVIC (Y) ACCELERATION VS TIME	B- 40
35	DRIVER PELVIC (Y) VELOCITY VS TIME	B- 41

DRIVER AND PASSENGER DUMMY INSTRUMENTATION PLOTS
ACCELERATION, FORCE AND MOMENT 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>
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37	PASSENGER HEAD 9 ARRAY X ARM (Y) VELOCITY VS TIME	B- 43
38	PASSENGER HEAD 9 ARRAY X ARM (Z) ACCELERATION VS TIME	B- 44
39	PASSENGER HEAD 9 ARRAY X ARM (Z) VELOCITY VS TIME	B- 45
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41	PASSENGER HEAD 9 ARRAY Y ARM (X) VELOCITY VS TIME	B- 47
42	PASSENGER HEAD 9 ARRAY Y ARM (Z) ACCELERATION VS TIME	B- 48
43	PASSENGER HEAD 9 ARRAY Y ARM (Z) VELOCITY VS TIME	B- 49
44	PASSENGER HEAD 9 ARRAY Z ARM (X) ACCELERATION VS TIME	B- 50
45	PASSENGER HEAD 9 ARRAY Z ARM (X) VELOCITY VS TIME	B- 51
46	PASSENGER HEAD 9 ARRAY Z ARM (Y) ACCELERATION VS TIME	B- 52
47	PASSENGER HEAD 9 ARRAY Z ARM (Y) VELOCITY VS TIME	B- 53
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49	PASSENGER HEAD (X) VELOCITY VS TIME	B- 55
50	PASSENGER HEAD (Y) ACCELERATION VS TIME	B- 56
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53	PASSENGER HEAD (Z) VELOCITY VS TIME	B- 59
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55	DRIVER UPPER NECK (X) FORCE VS TIME	B- 61
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59	DRIVER UPPER NECK (X) MOMENT VS TIME	B- 65
60	DRIVER UPPER NECK (Y) MOMENT VS TIME	B- 66
61	DRIVER UPPER NECK (Z) MOMENT VS TIME	B- 67
62	DRIVER UPPER NECK RESULTANT MOMENT VS TIME	B- 68
63	PASSENGER UPPER RIB (Y) ACCELERATION VS TIME	B- 69
64	PASSENGER UPPER RIB (Y) VELOCITY VS TIME	B- 70
65	PASSENGER LOWER RIB (Y) ACCELERATION VS TIME	B- 71
66	PASSENGER LOWER RIB (X) VELOCITY VS TIME	B- 72
67	PASSENGER LOWER SPINE (Y) ACCELERATION VS TIME	B- 73
68	PASSENGER LOWER SPINE (Y) VELOCITY VS TIME	B- 74
69	PASSENGER PELVIC (Y) ACCELERATION VS TIME	B- 75
70	PASSENGER PELVIC (Y) VELOCITY VS TIME	B- 76

DRIVER & PASSENGER DUMMY INSTRUMENTATION PLOTS
ACCELERATION DATA - FIR FILTERED

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71	DRIVER UPPER RIB (Y) ACCELERATION VS TIME	B- 77
72	DRIVER LOWER RIB (Y) ACCELERATION VS TIME	B- 78
73	DRIVER LOWER SPINE (Y) ACCELERATION VS TIME	B- 79
74	DRIVER PELVIC (Y) ACCELERATION VS TIME	B- 80
75	PASSENGER UPPER RIB (Y) ACCELERATION VS TIME	B- 81
76	PASSENGER LOWER RIB (Y) ACCELERATION VS TIME	B- 82
77	PASSENGER LOWER SPINE (Y) ACCELERATION VS TIME	B- 83
78	PASSENGER PELVIC (Y) ACCELERATION VS TIME	B- 84

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>
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80	RIGHT SIDE SILL AT FRONT SEAT (X) VELOCITY VS TIME	B- 86
81	RIGHT SIDE SILL AT FRONT SEAT (Y) ACCELERATION VS TIME	B- 87
82	RIGHT SIDE SILL AT FRONT SEAT (Y) VELOCITY VS TIME	B- 88
83	RIGHT SIDE SILL AT FRONT SEAT (Z) ACCELERATION VS TIME	B- 89
84	RIGHT SIDE SILL AT FRONT SEAT (Z) VELOCITY VS TIME	B- 90
85	RIGHT SIDE SILL AT FRONT SEAT RESULTANT ACCELERATION VS TIME	B- 91
86	RIGHT SIDE SILL AT REAR SEAT (X) ACCELERATION VS TIME	B- 92
87	RIGHT SIDE SILL AT REAR SEAT (X) VELOCITY VS TIME	B- 93
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89	RIGHT SIDE SILL AT REAR SEAT (Y) VELOCITY VS TIME	B- 95
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92	RIGHT SIDE SILL AT REAR SEAT RESULTANT ACCELERATION VS TIME	B- 98
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95	REAR FLOORPAN ABOVE AXLE (Y) ACCELERATION VS TIME	B- 101
96	REAR FLOORPAN ABOVE AXLE (Y) VELOCITY VS TIME	B- 102
97	REAR FLOORPAN ABOVE AXLE (Z) ACCELERATION VS TIME	B- 103
98	REAR FLOORPAN ABOVE AXLE (Z) VELOCITY VS TIME	B- 104
99	REAR FLOORPAN ABOVE AXLE RESULTANT ACCELERATION VS TIME	B- 105
100	LEFT SIDE SILL AT REAR SEAT (Y) ACCELERATION VS TIME	B- 106
101	LEFT SIDE SILL AT REAR SEAT (Y) VELOCITY VS TIME	B- 107
102	LEFT SIDE SILL AT FRONT SEAT (Y) ACCELERATION VS TIME	B- 108
103	LEFT SIDE SILL AT FRONT SEAT (Y) VELOCITY VS TIME	B- 109
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105	RIGHT REAR OCCUPANT COMPARTMENT (Y) VELOCITY VS TIME	B- 111
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111	LOWER A-POST (Y) VELOCITY VS TIME	B- 117
112	UPPER A-POST (Y) ACCELERATION VS TIME	B- 118
113	UPPER A-POST (Y) VELOCITY VS TIME	B- 119
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117	REAR SEAT TRACK (Y) VELOCITY VS TIME	B- 123

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>
118	VEHICLE CENTER OF GRAVITY (X) ACCELERATION VS TIME	B- 124
119	VEHICLE CENTER OF GRAVITY (X) VELOCITY VS TIME	B- 125
120	VEHICLE CENTER OF GRAVITY (Y) ACCELERATION VS TIME	B- 126
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122	VEHICLE CENTER OF GRAVITY (Z) ACCELERATION VS TIME	B- 128
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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>
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126	MDB CENTER OF GRAVITY (X) VELOCITY VS TIME	B- 132
127	MDB CENTER OF GRAVITY (Y) ACCELERATION VS TIME	B- 133
128	MDB CENTER OF GRAVITY (Y) VELOCITY VS TIME	B- 134
129	MDB CENTER OF GRAVITY (Z) ACCELERATION VS TIME	B- 135
130	MDB CENTER OF GRAVITY (Z) VELOCITY VS TIME	B- 136
131	MDB CENTER OF GRAVITY RESULTANT ACCELERATION VS TIME	B- 137
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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>
136	DRIVER UPPER RIB (Y) ACCELERATION VS TIME	B- 142
137	DRIVER UPPER RIB (Y) VELOCITY VS TIME	B- 143
138	DRIVER LOWER RIB (Y) ACCELERATION VS TIME	B- 144
139	DRIVER LOWER RIB (Y) VELOCITY VS TIME	B- 145
140	DRIVER LOWER SPINE (Y) ACCELERATION VS TIME	B- 146
141	DRIVER LOWER SPINE (Y) VELOCITY VS TIME	B- 147
142	DRIVER PELVIC (Y) ACCELERATION VS TIME	B- 148
143	DRIVER PELVIC (Y) VELOCITY VS TIME	B- 149
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146	PASSENGER LOWER RIB (Y) ACCELERATION VS TIME	B- 152
147	PASSENGER LOWER RIB (Y) VELOCITY VS TIME	B- 153
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149	PASSENGER LOWER SPINE (Y) VELOCITY VS TIME	B- 155
150	PASSENGER PELVIC (Y) ACCELERATION VS TIME	B- 156
151	PASSENGER PELVIC (Y) VELOCITY VS TIME	B- 157

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

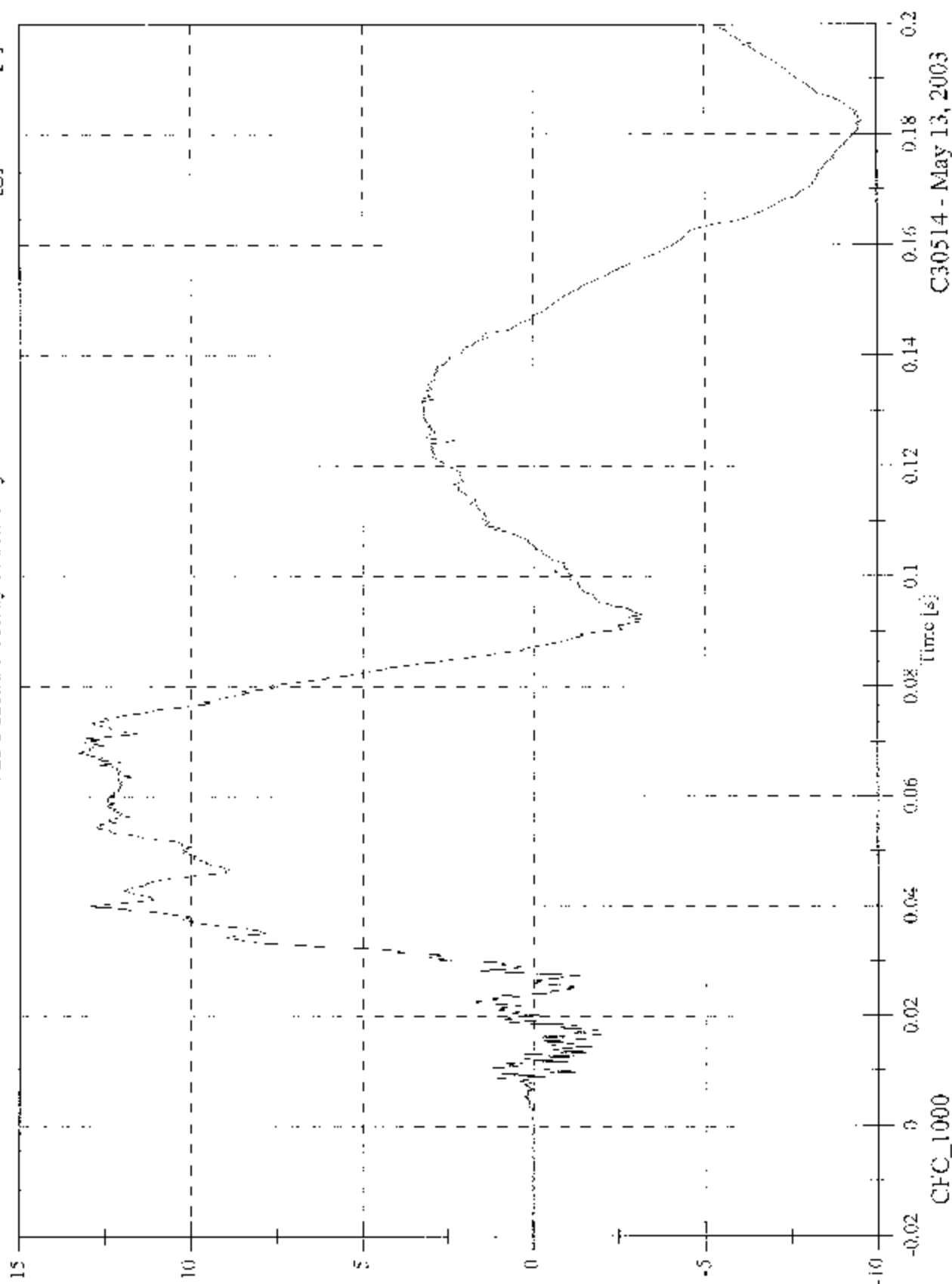
<u>Plot No.</u>	<u>Data Plot Title</u>	<u>Page</u>
152	DRIVER UPPER RIB (Y) ACCELERATION VS TIME	B- 158
153	DRIVER LOWER RIB (Y) ACCELERATION VS TIME	B- 159
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159	PASSENGER PELVIC (Y) ACCELERATION VS TIME	B- 165

FMVSS 214D Indicant - 2003 Saab 9-5

Max: 13.3 [g] at 0.068 [s]

Min: -9.6 [g] at 0.182 [s]

V2P1 Head 9 Array X Arm Δy



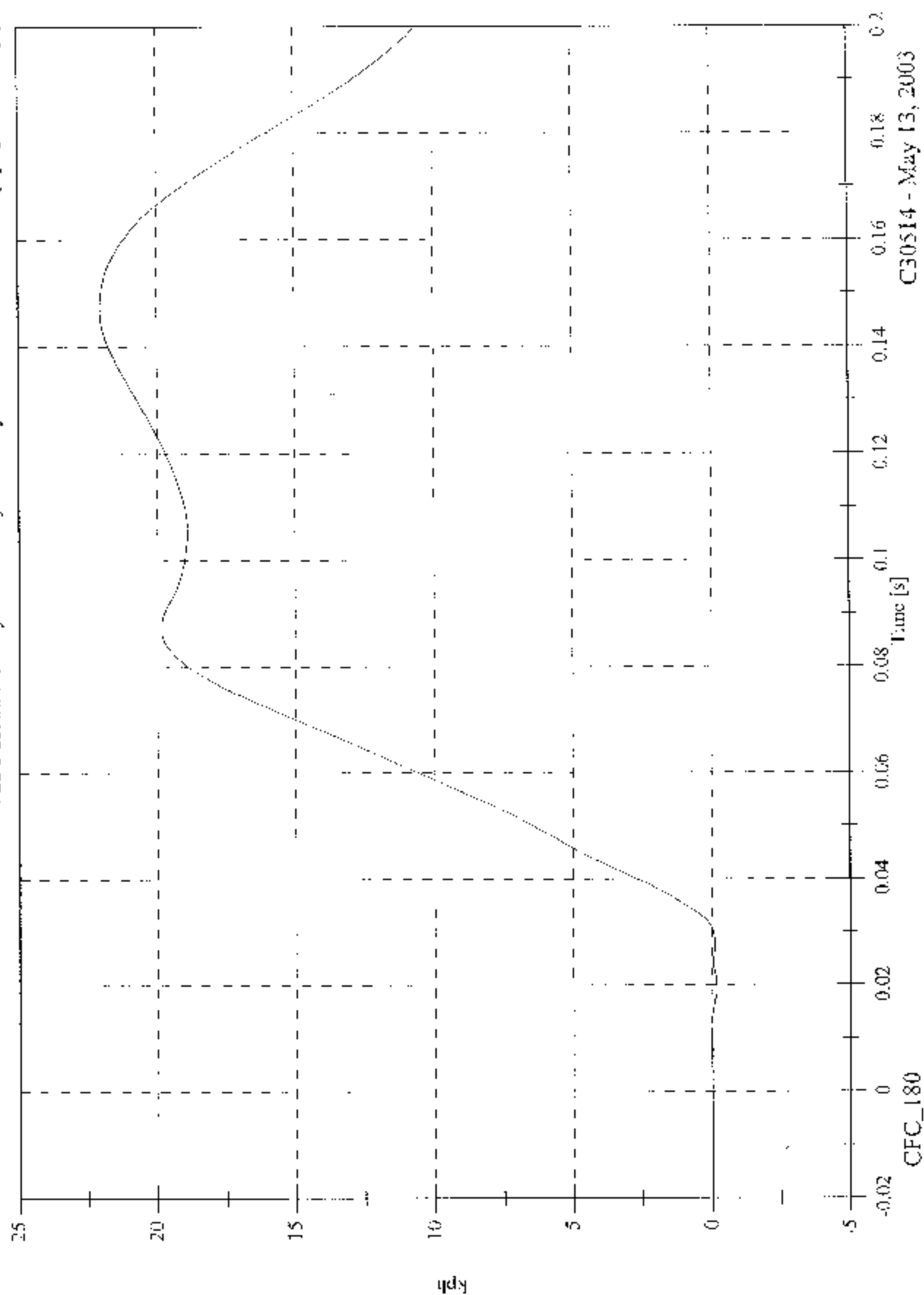
C30514 - May 13, 2003

FMVSS 214D Indicant - 2003 Saab 9-5

Max: 22.0 [kph] at 0.147 [s]

Min: -0.2 [kph] at 0.019 [s]

V2P1 Head 9 Array X Arm Ay Velocity



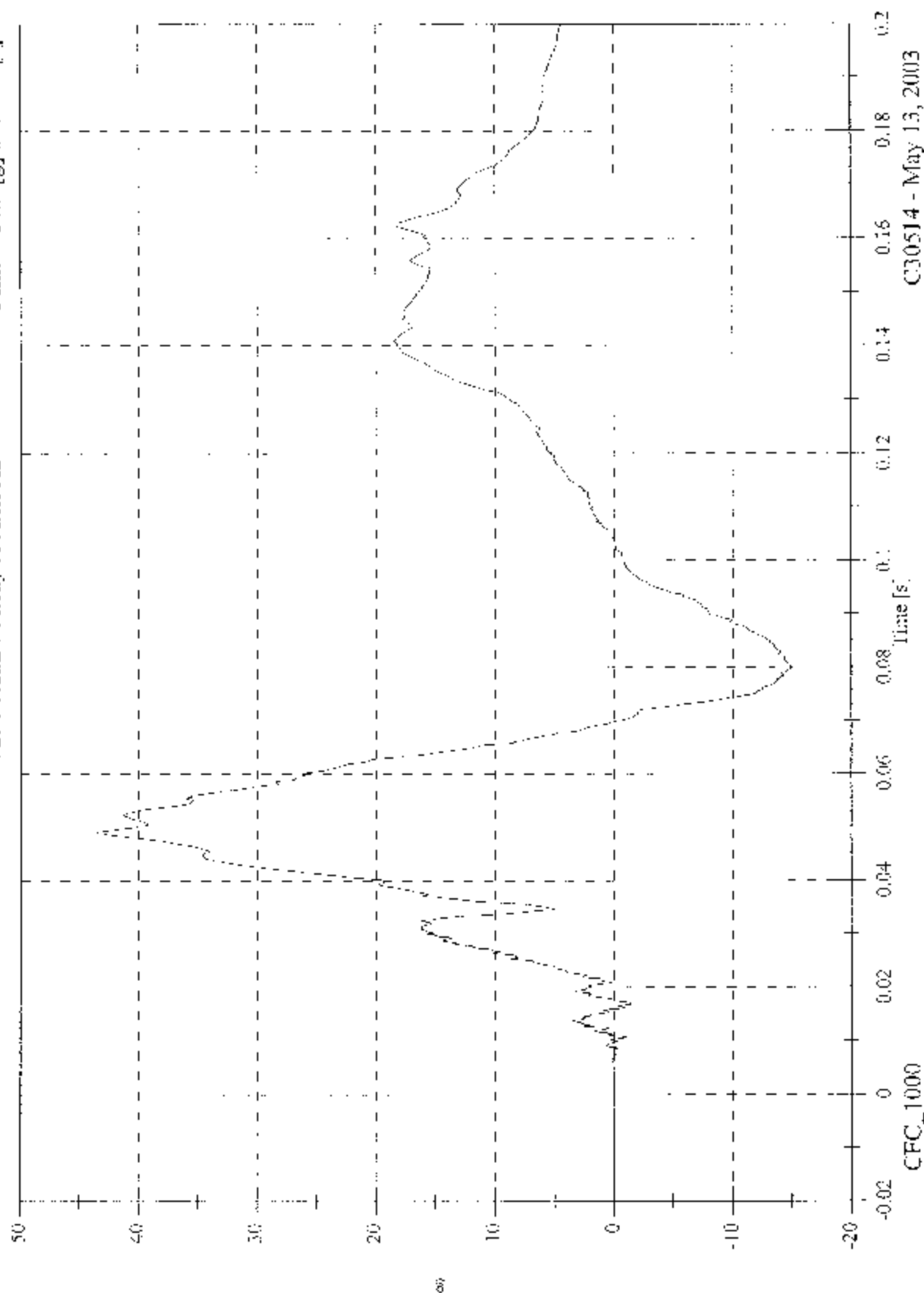
CFC_180

C30514 - May 13, 2003

FMVSS 214D Indicant - 2003 Saab 9-5

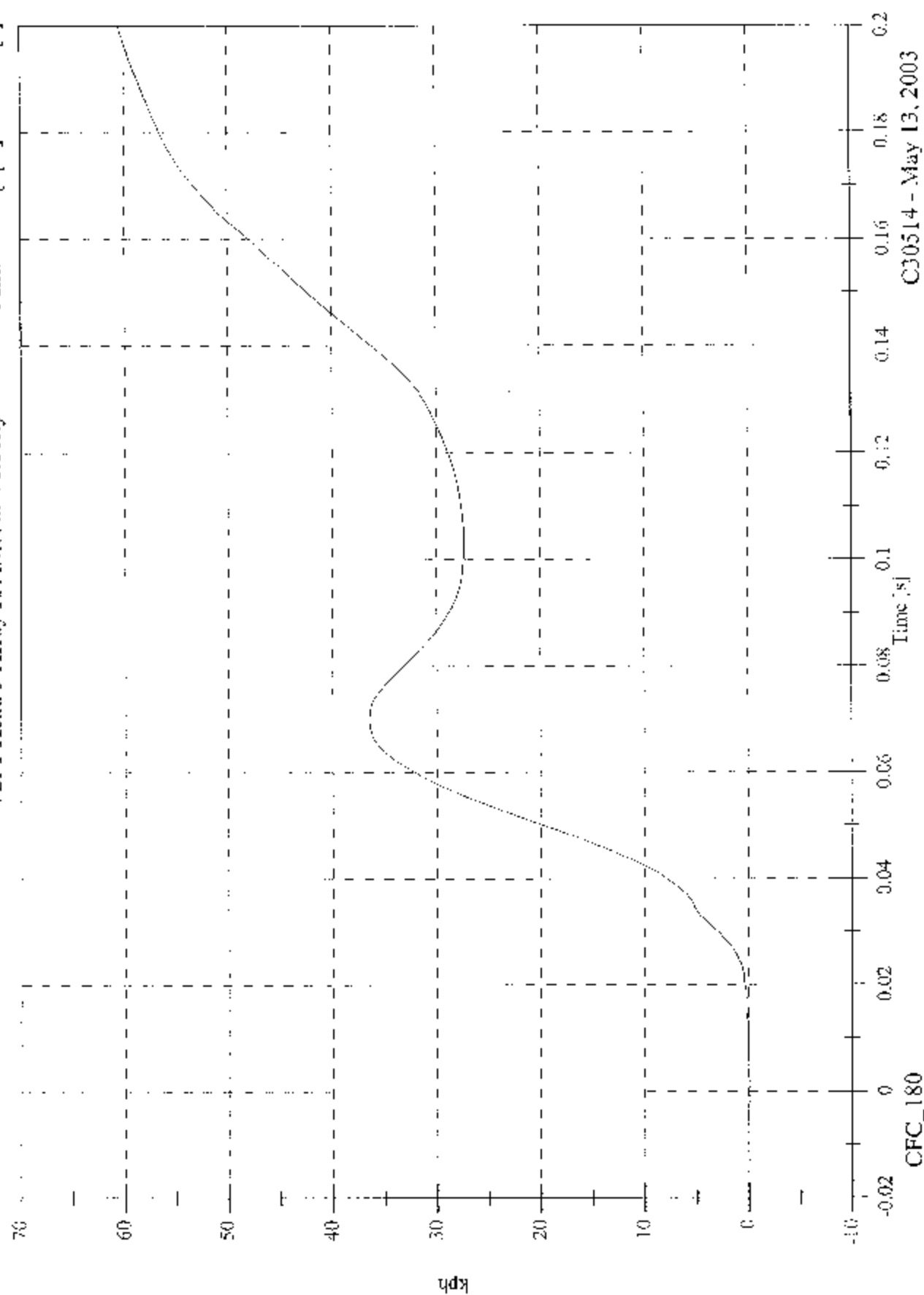
Max: 43.6 [g] at 0.049 [s]
Min: -14.9 [g] at 0.080 [s]

V2P1 Head 9 Array X Arm Az



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V2P1 Head 9 Array X Arm Az Velocity

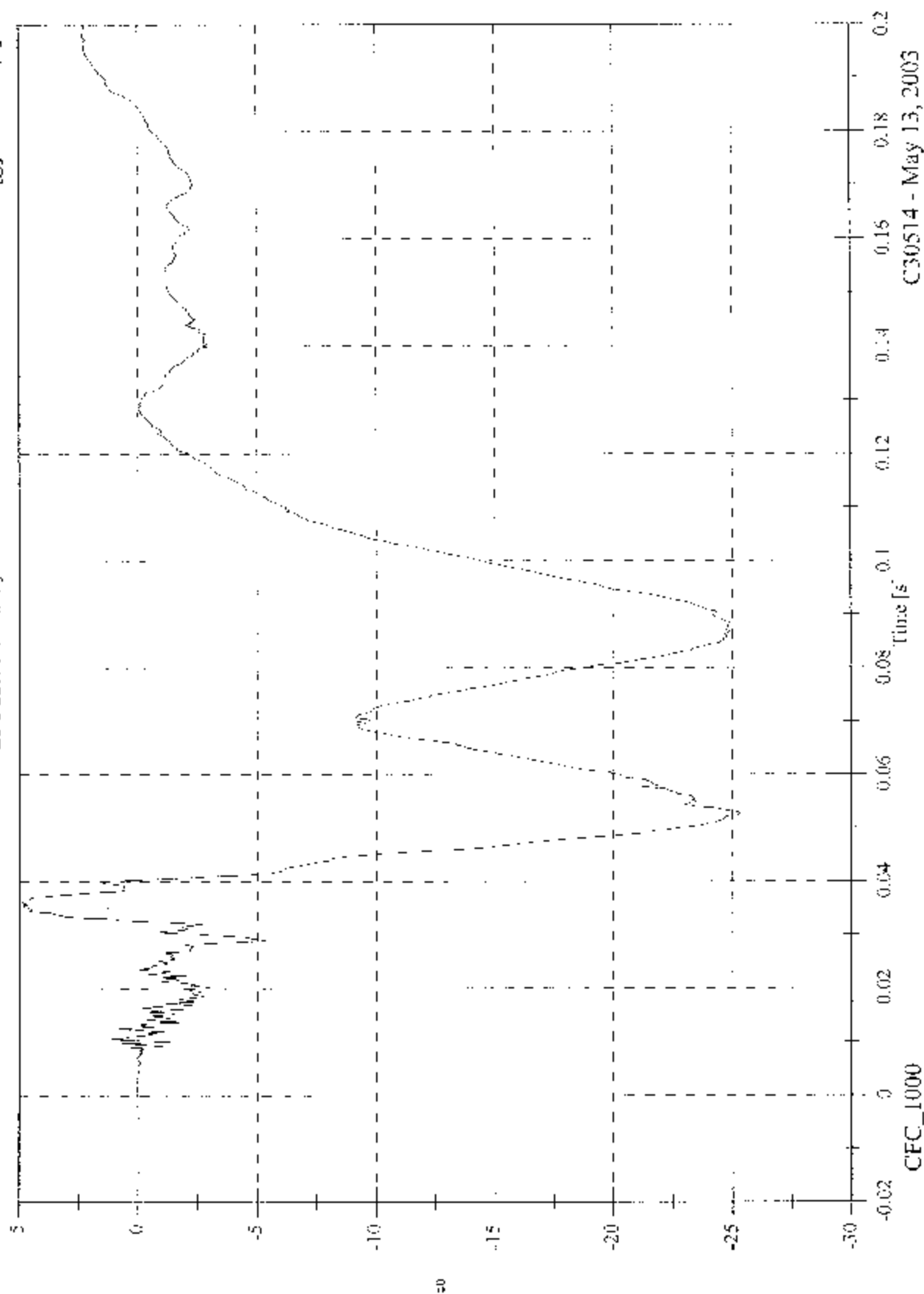


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FMVSS 214D Inducant - 2003 Saab 9-5

Max: 4.9 [g] at 0.035 [s]
Min: -25.3 [g] at 0.053 [s]

V2P1 Head 9 Array Y Arm Ax

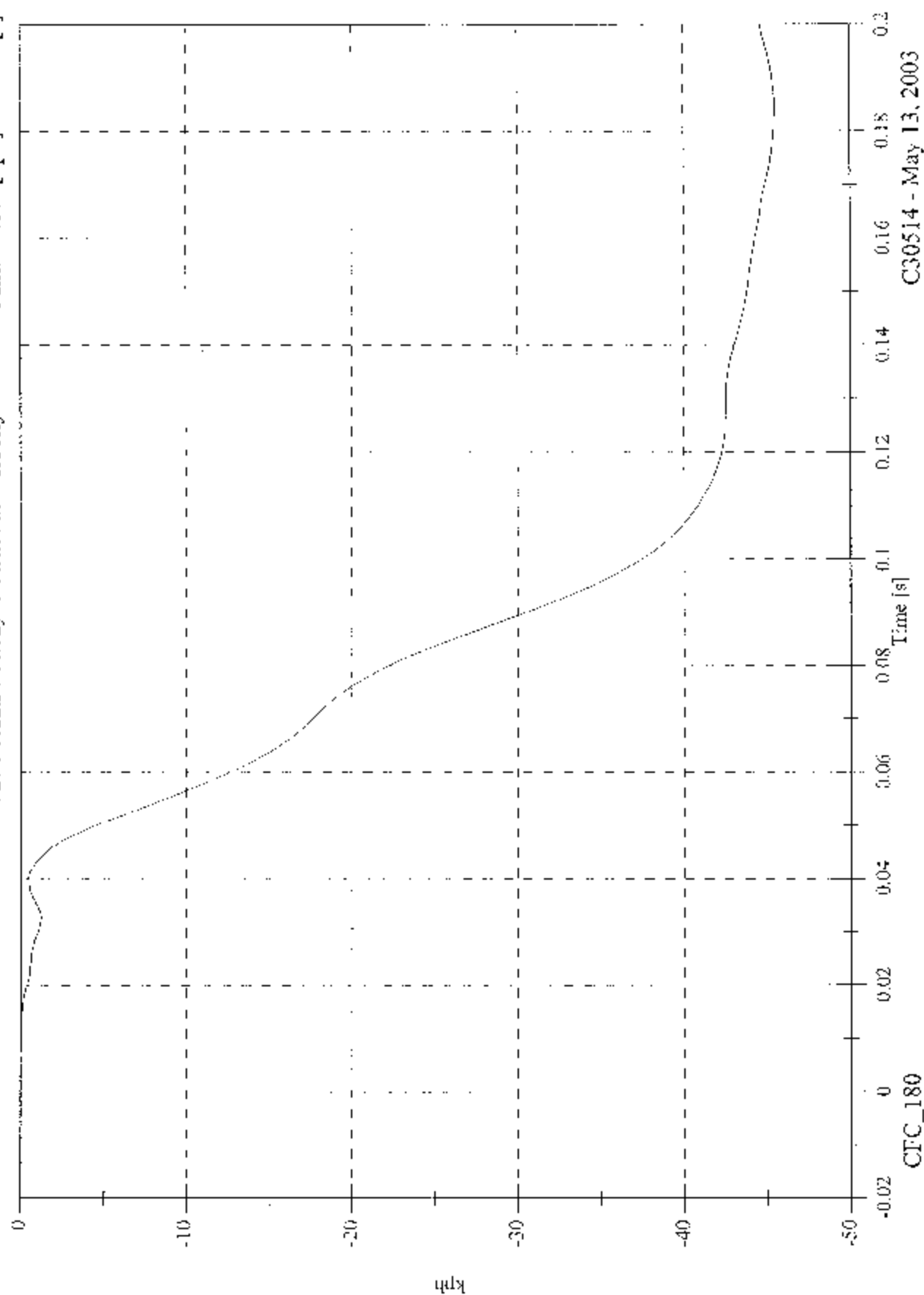


FMVSS 214D Inducant - 2003 Saab 9-5

V2P1 Head 9 Array Y Arm Ax Velocity

Max: 0.0 [kph] at 0.004 [s]

Min: -45.5 [kph] at 0.185 [s]



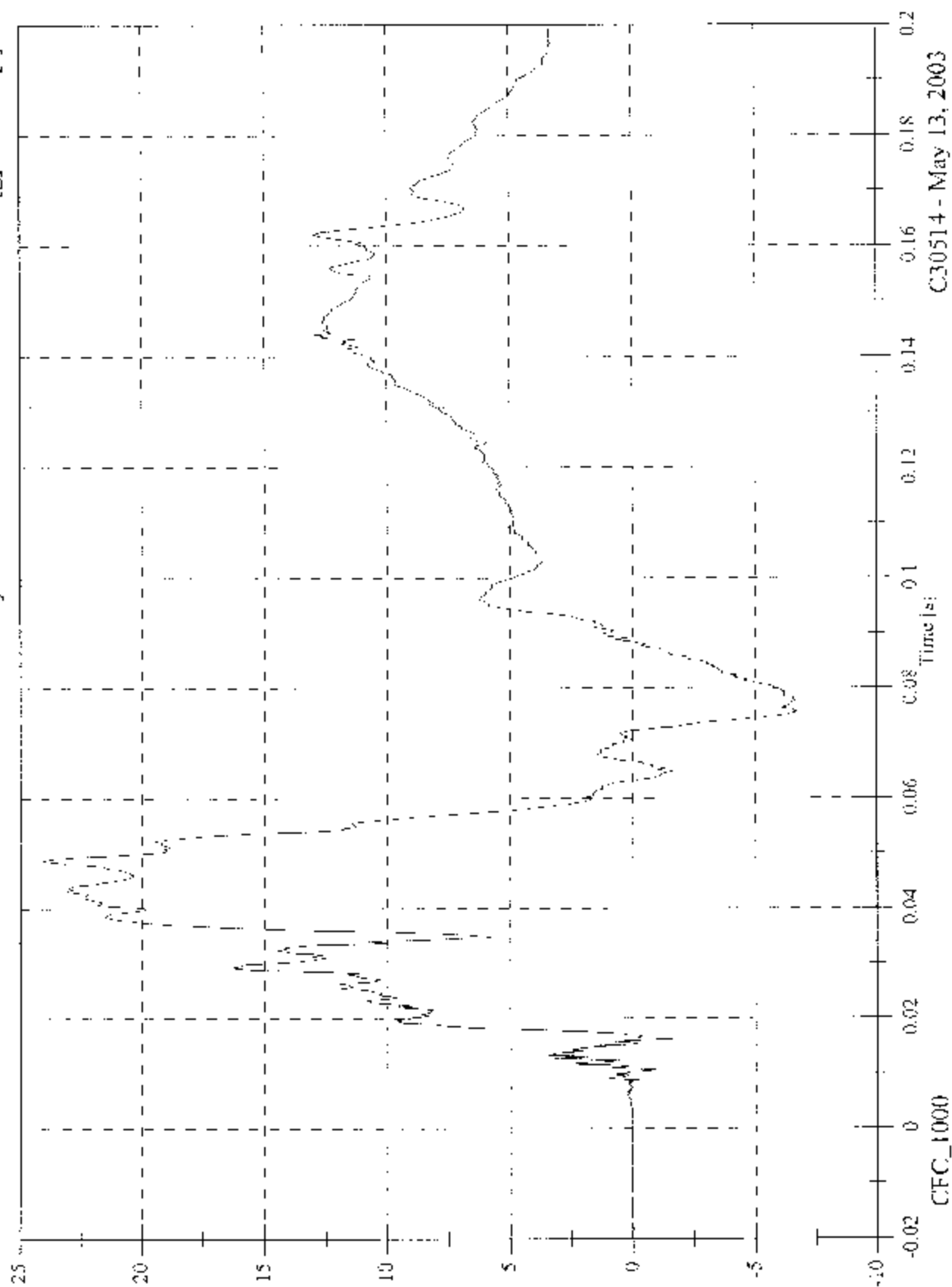
CFC_180

C30514 - May 13, 2003

PMVSS 214D Inducant - 2003 Saab 9-5

V2P1 Head 9 Array Y Arm Az

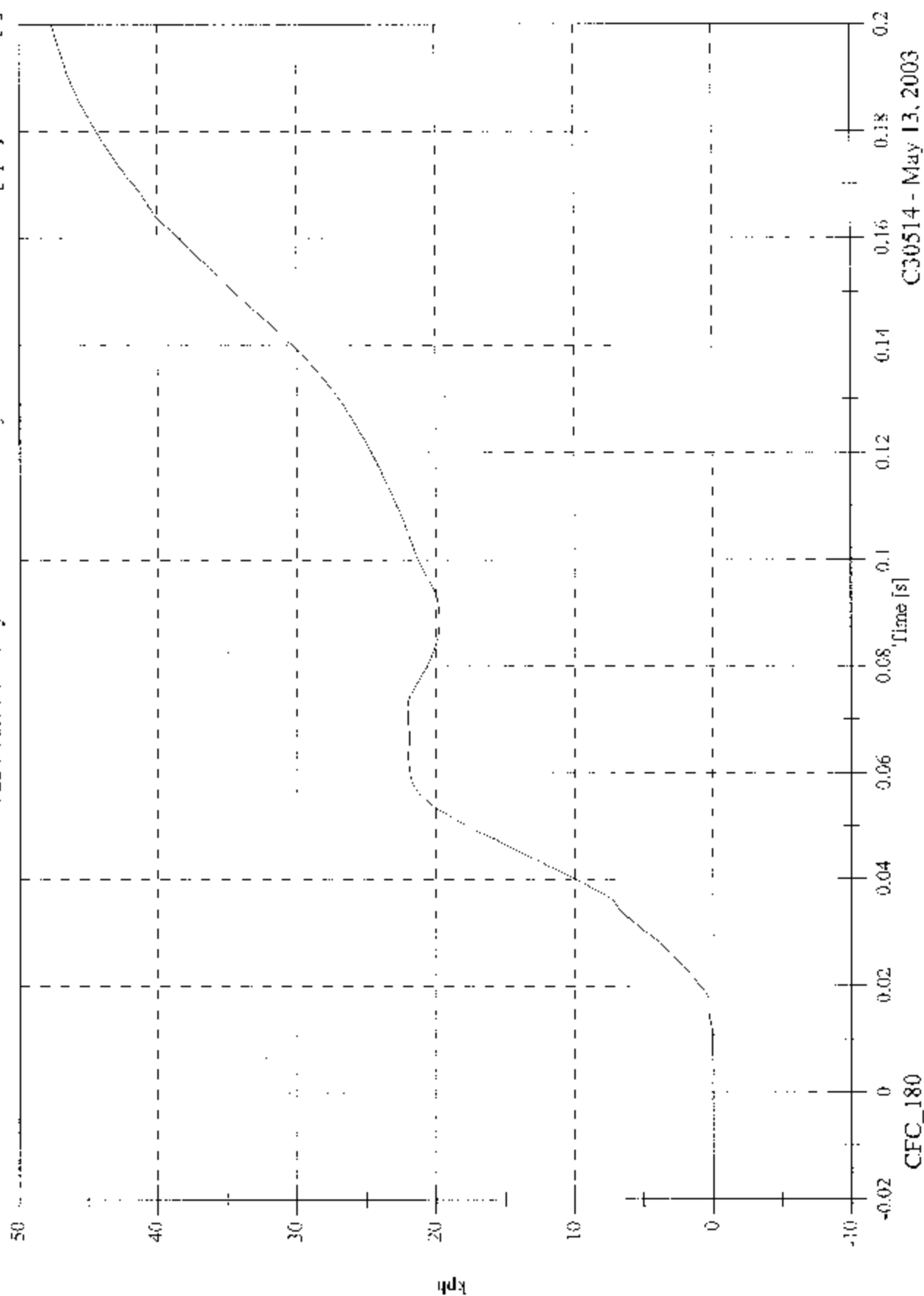
Max: 24.1 [g] at 0.049 [s]
Min: -6.7 [g] at 0.076 [s]



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V2P1 Head 9 Array Y Arm Az Velocity

Max: 47.7 [kph] at 0.200 [s]
Min: -0.0 [kph] at -0.020 [s]

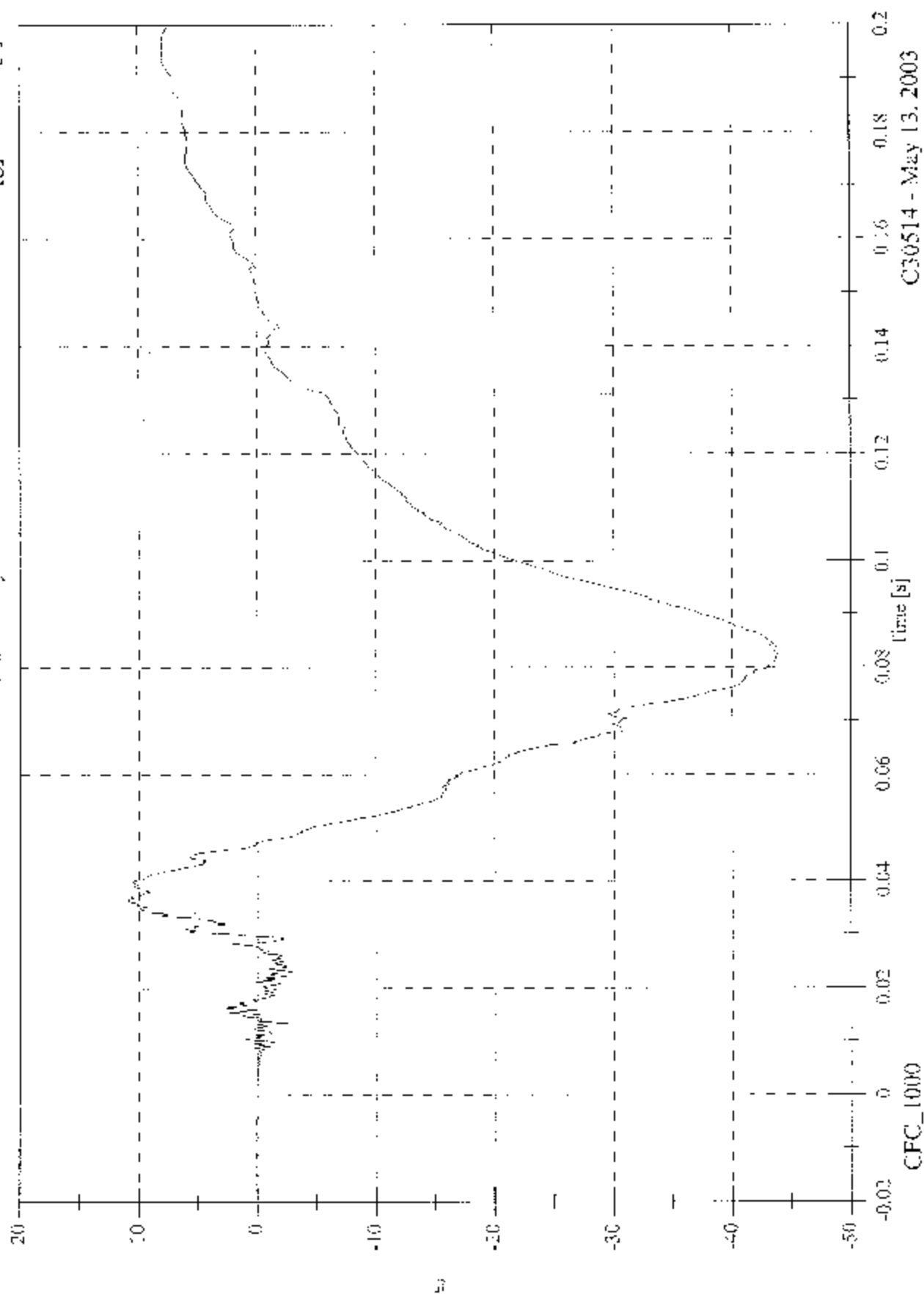


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FMVSS 214D Indicant - 2003 Saab 9-5

V2PI Head 9 Array Z Arm Ax

Max: 10.9 [g] at 0.036 [s]
Min: -43.9 [g] at 0.082 [s]



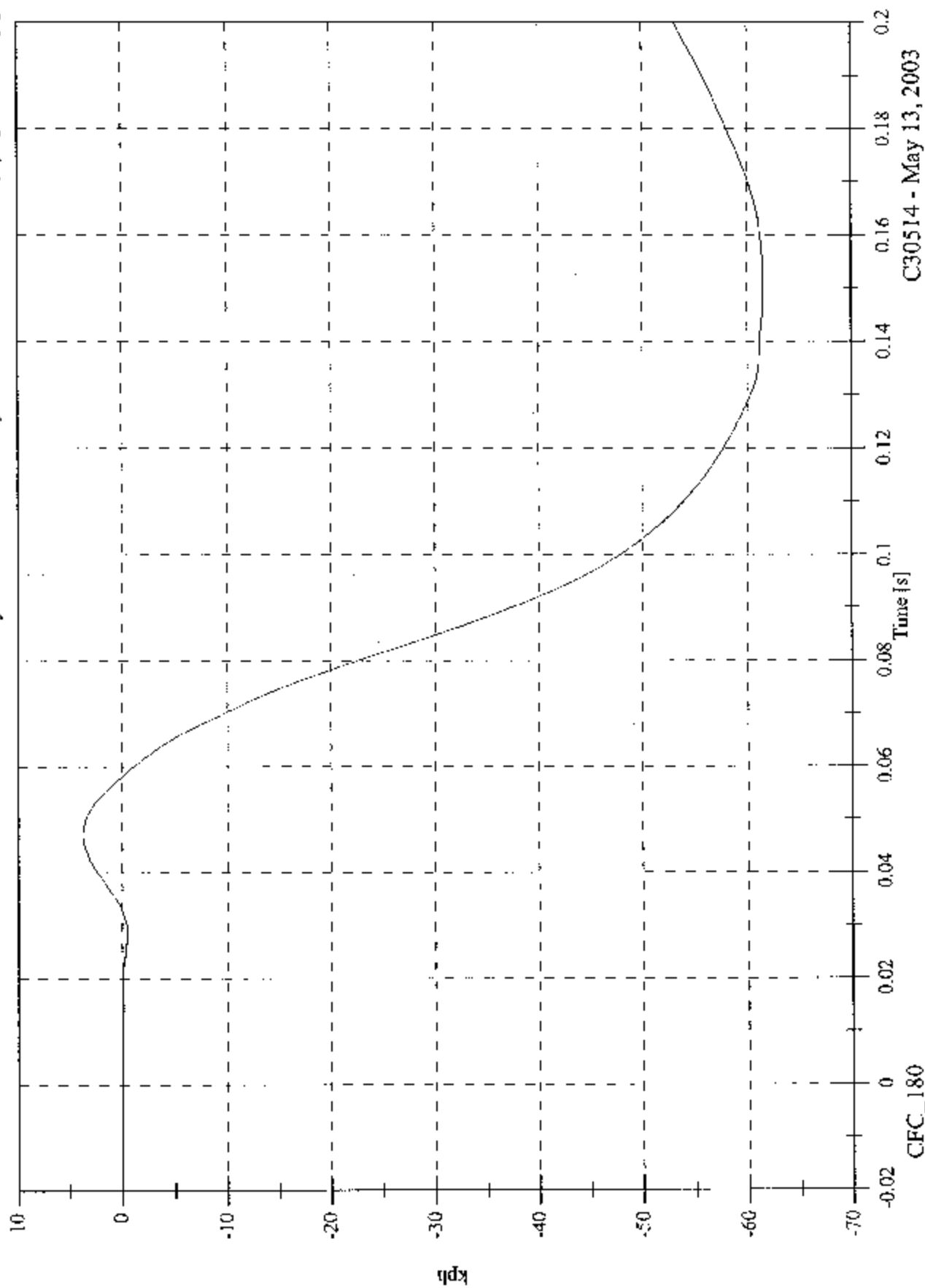
C30514 - May 13, 2003

FMVSS 214D Indicant - 2003 Saab 9-5

Max: 3.8 [kph] at 0.047 [s]

V2P1 Head 9 Array Z Arm Ax Velocity

Min: -61.5 [kph] at 0.151 [s]

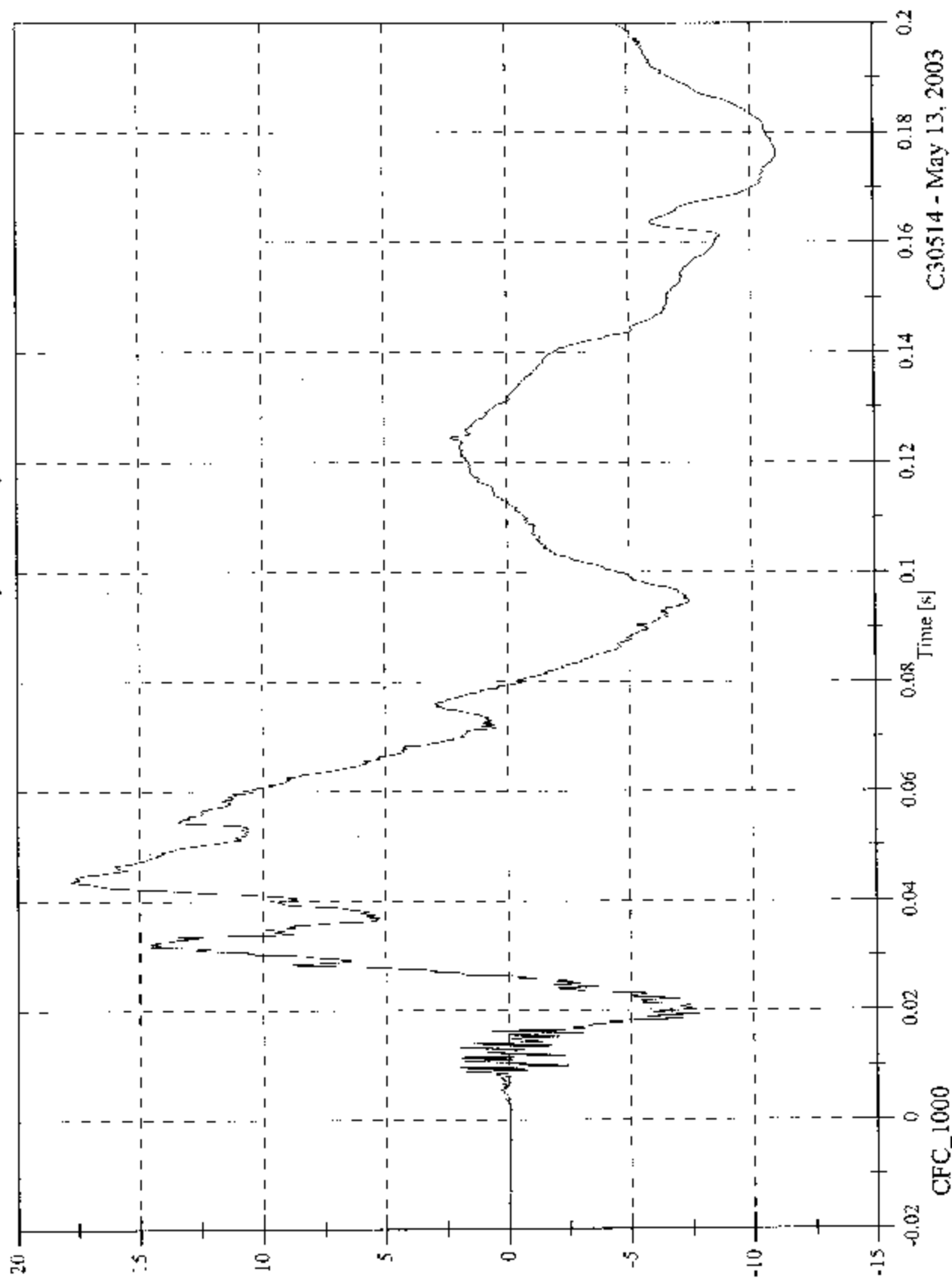


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FMVSS 214D Indicant - 2003 Saab 9-5

V2P1 Head 9 Array Z Arm Ay

Max: 17.8 [g] at 0.043 [s]
Min: -11.1 [g] at 0.177 [s]



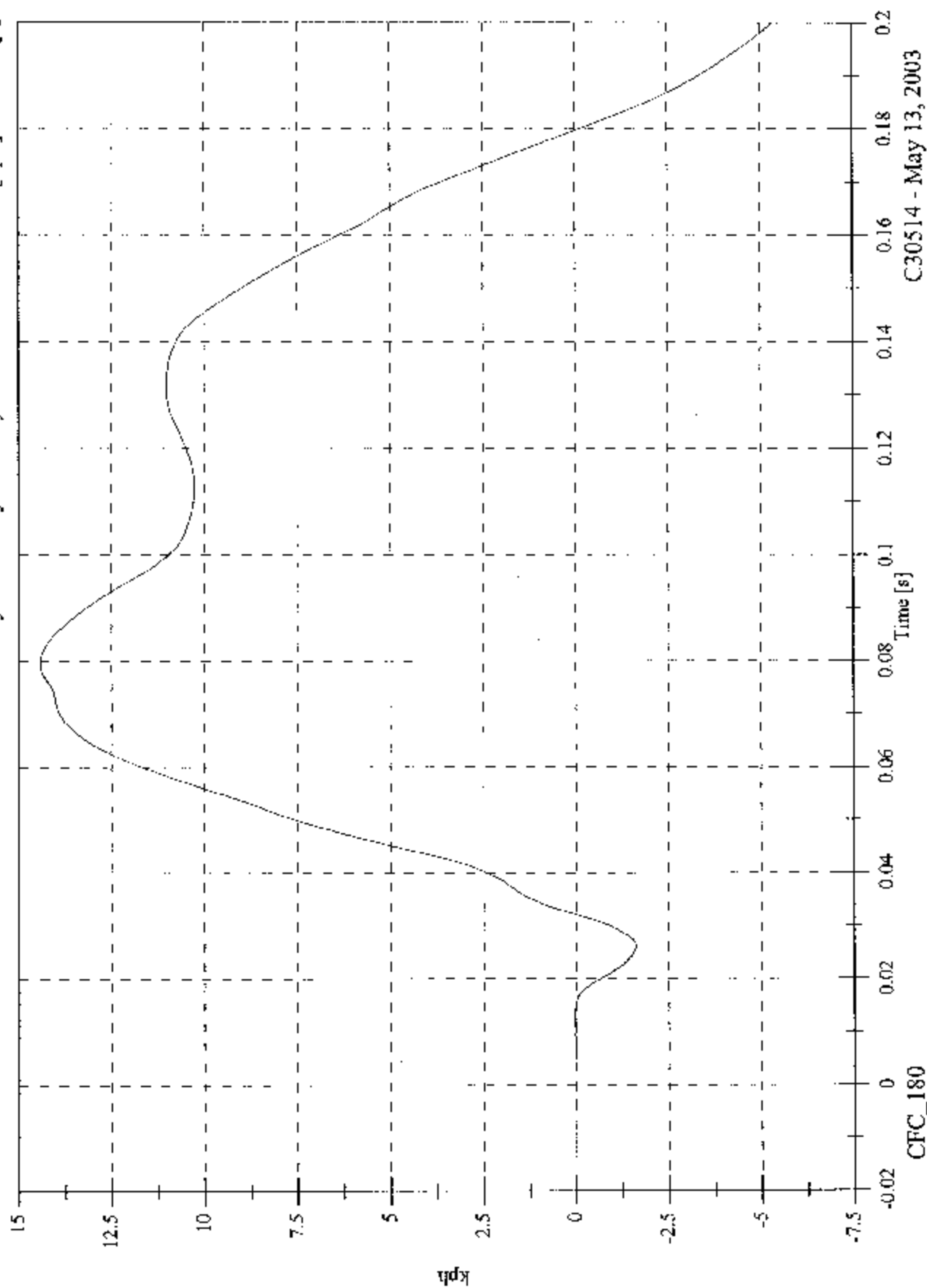
C30514 - May 13, 2003

FMVSS 214D Indicant - 2003 Saab 9-5

V2P1 Head 9 Array Z Arm Ay Velocity

Max: 14.4 [kph] at 0.079 [s]

Min: -5.3 [kph] at 0.200 [s]

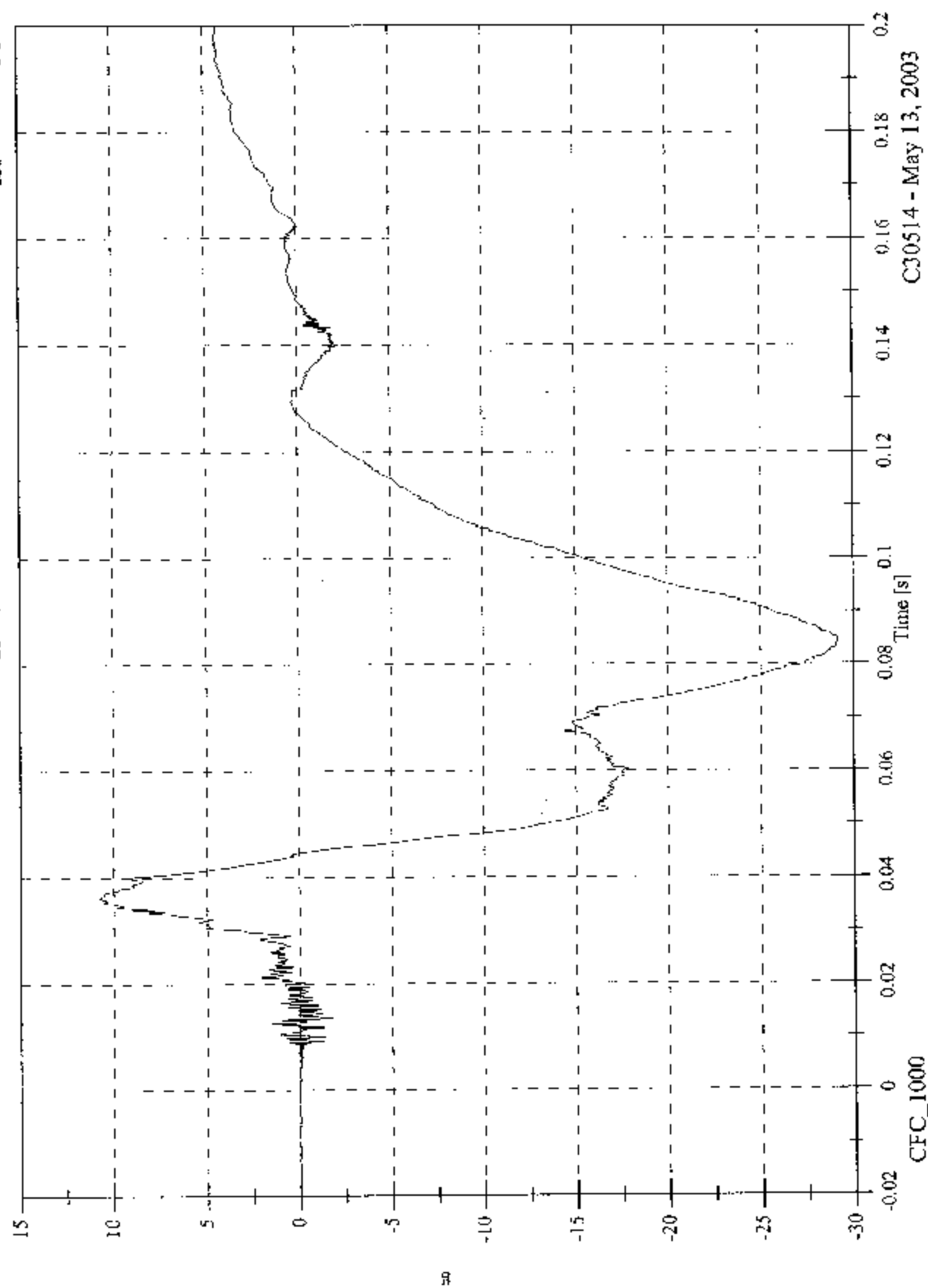


C30514 - May 13, 2003

FMVSS 214D Indicant - 2003 Saab 9-5

Max: 10.7 [g] at 0.036 [s]
Min: -29.1 [g] at 0.085 [s]

V2P1 Head x

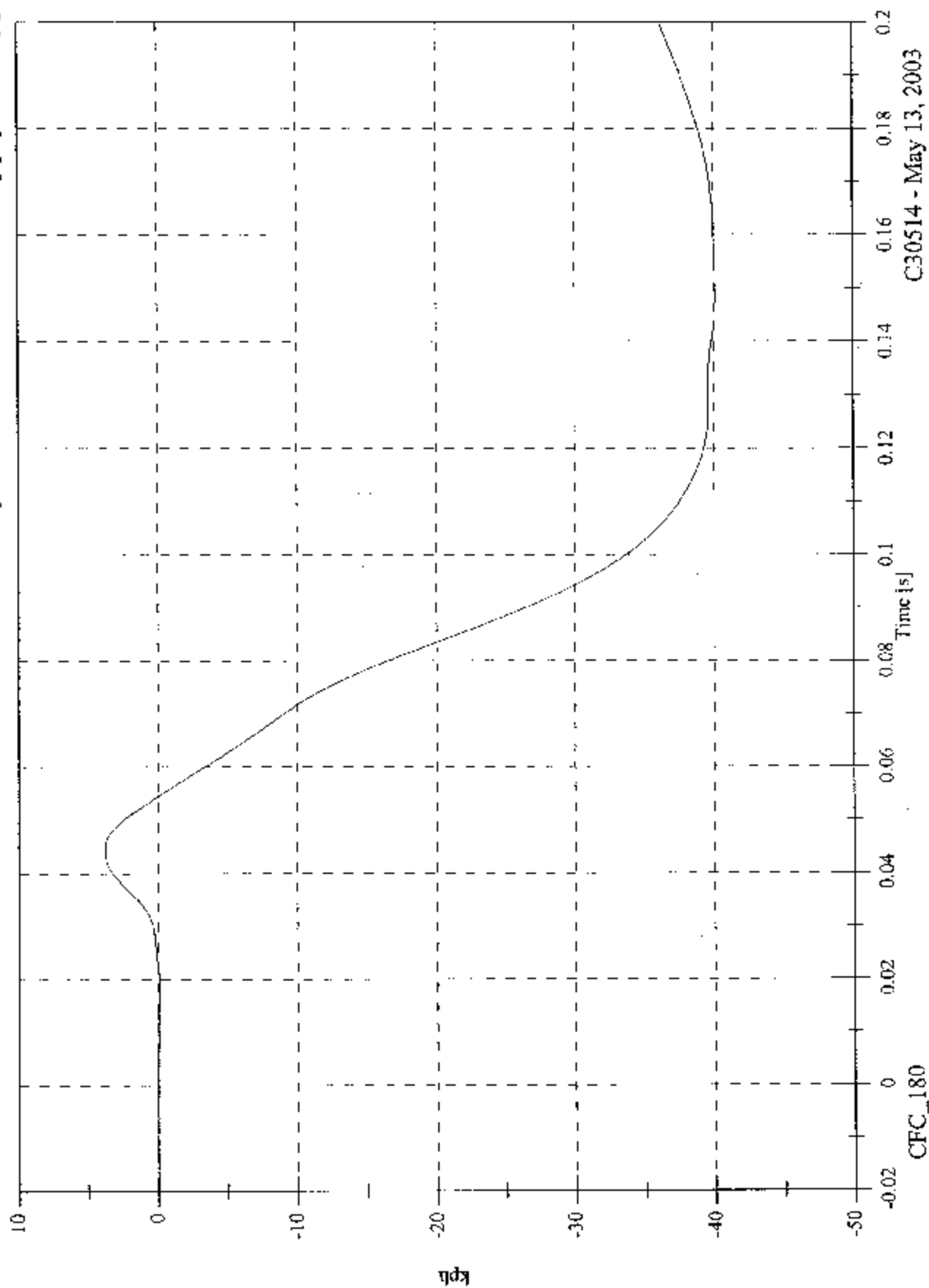


CJ0514 - May 13, 2003

FMVSS 214D Indicant - 2003 Saab 9-5

Max: 3.8 [kph] at 0.044 [s]
Min: -40.1 [kph] at 0.149 [s]

V2P1 Head x Velocity



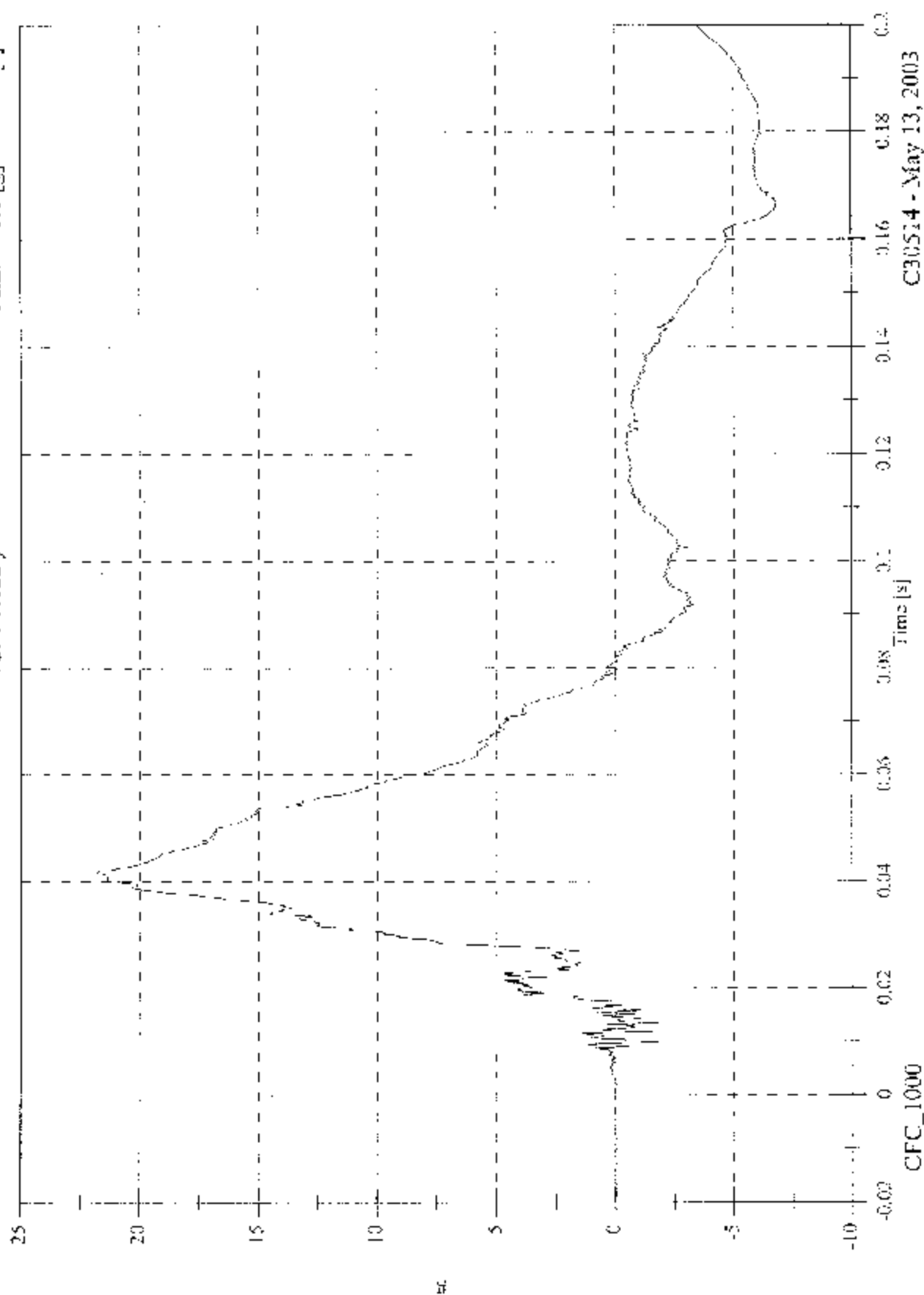
CFC_180

C30514 - May 13, 2003

FMVSS 214D Inducant - 2003 Saab 9-5

Max: 21.8 [g] at 0.042 [s]
Min: -6.8 [g] at 0.166 [s]

V2P: Head y



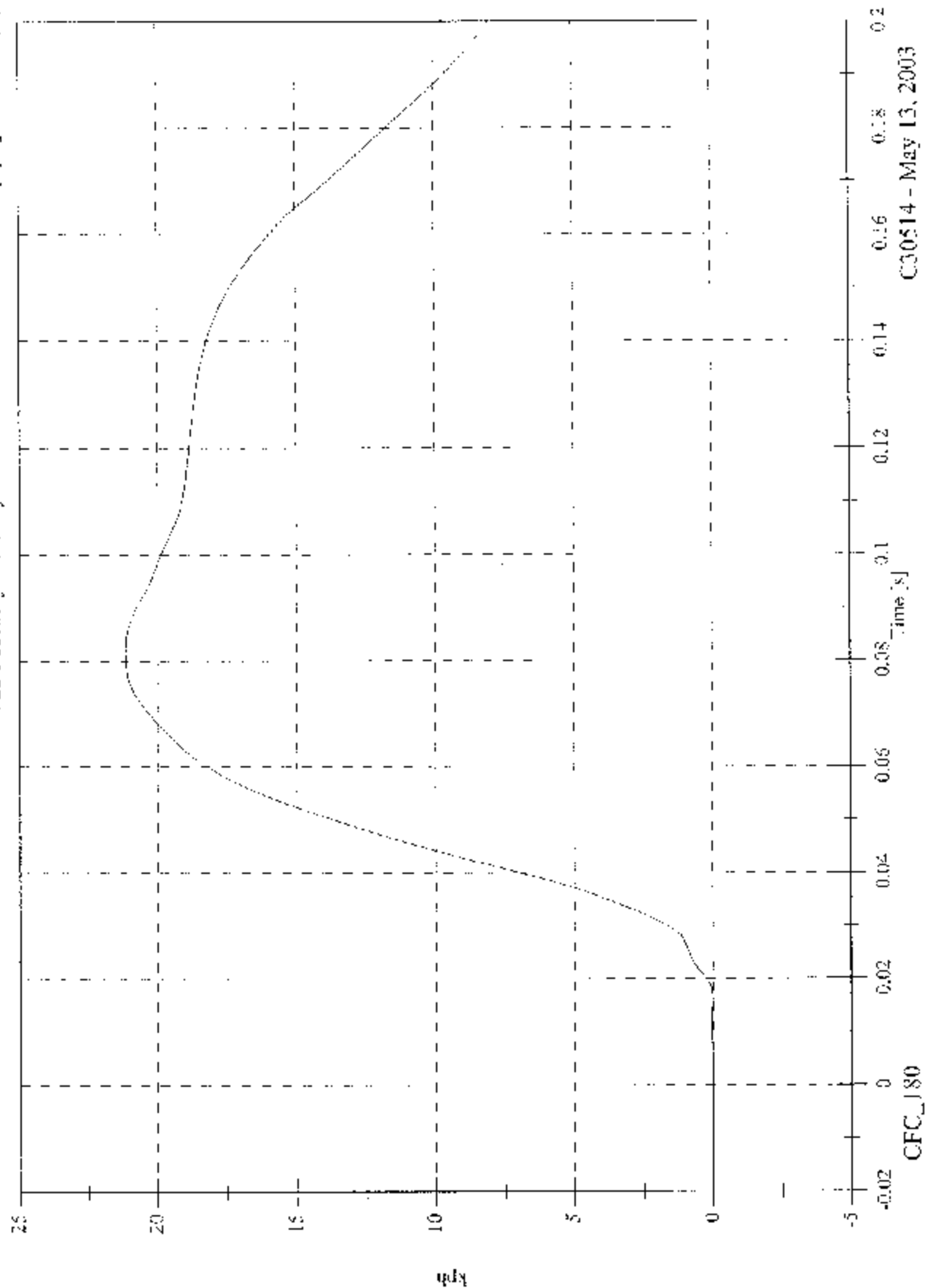
CFC_1000

C30514 - May 13, 2003

10MVSS 214D Inducant - 2003 Saab 9-5

Max: 21.2 [kph] at 0.082 [s]
Min: -0.0 [kph] at -0.020 [s]

V2P1 Head y Velocity

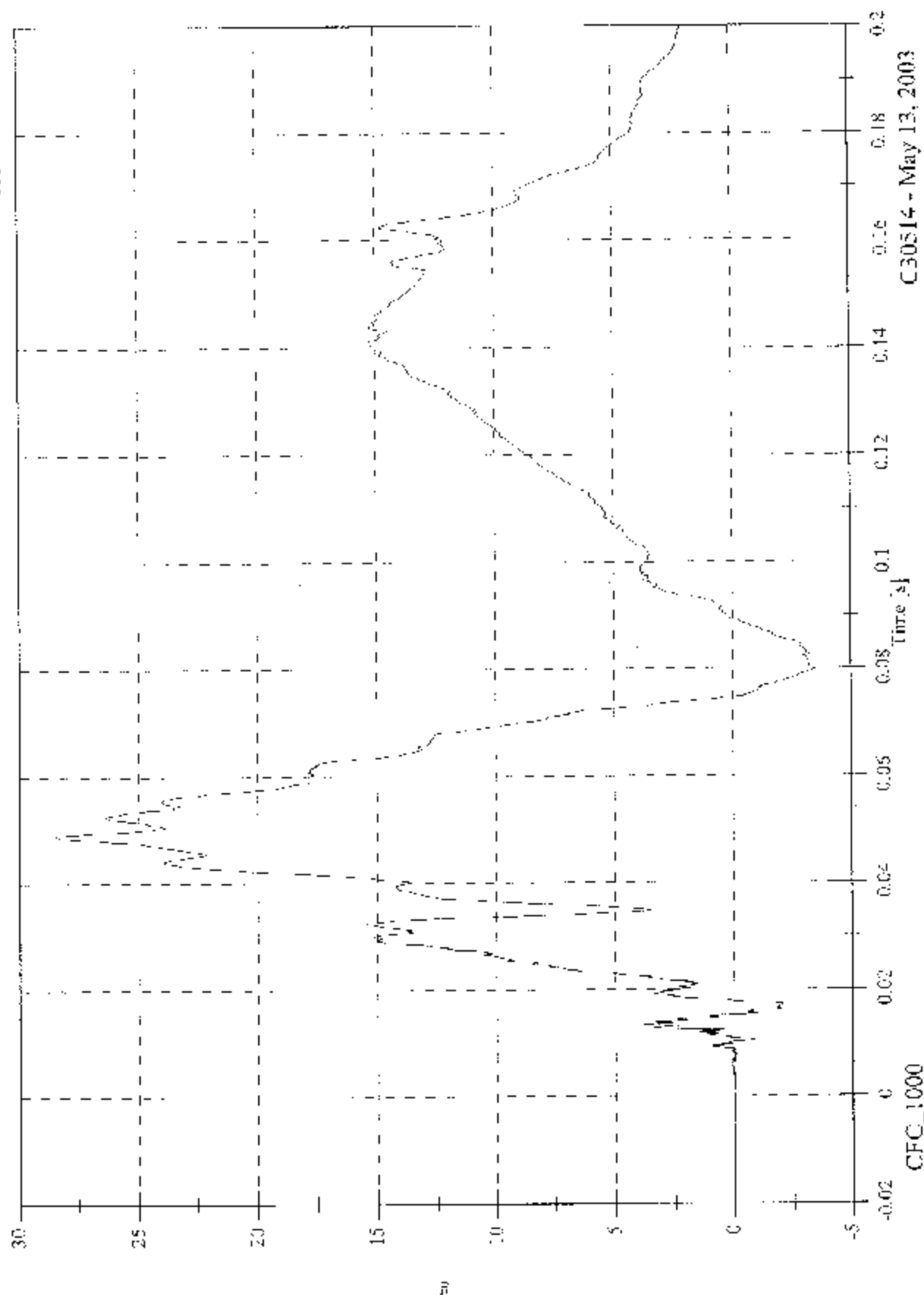


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FMVSS 214D Indicant - 2003 Saab 9-5

Max: 28.5 [g] at 0.049 [s]
Min: -3.5 [g] at 0.080 [s]

V2P1 Head z

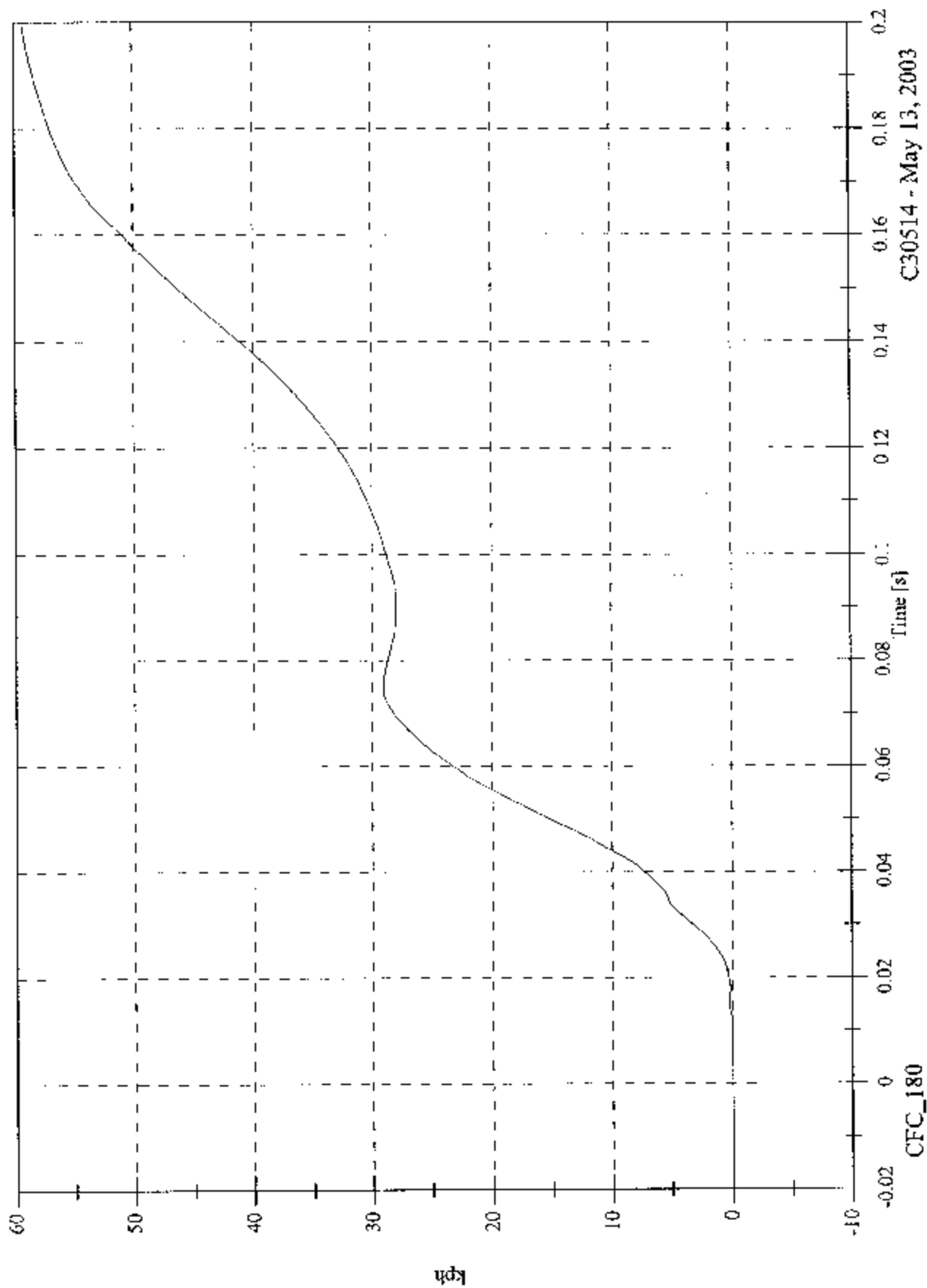


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FMVSS 214D Indictant - 2003 Saab 9-5

Max: 59.3 [kph] at 0.200 [s]
Min: -0.0 [kph] at 0.003 [s]

V2P1 Head z Velocity

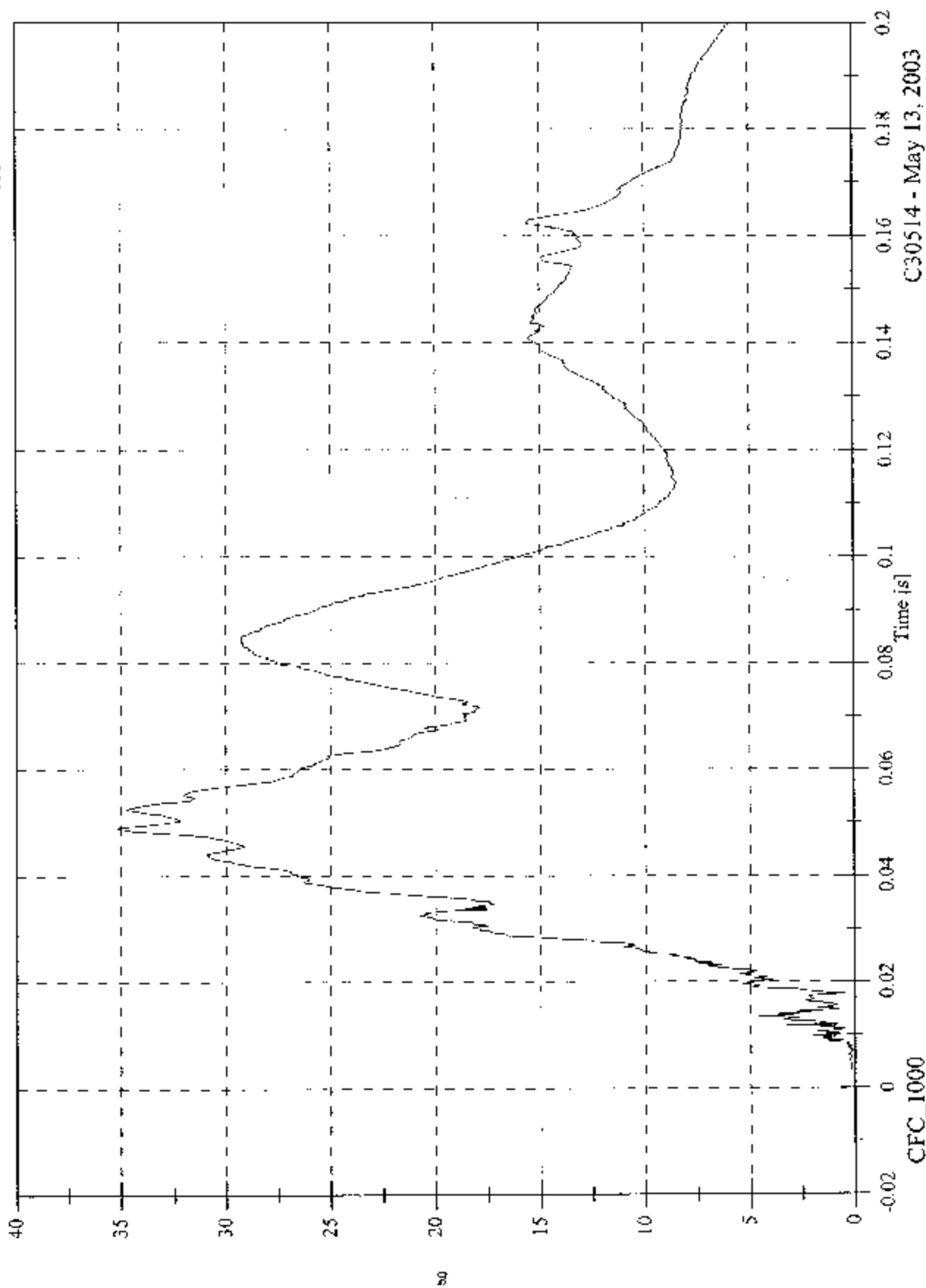


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FMVSS 214D Indicant - 2003 Saab 9-5

V2P1 Head Resultant

Max: 35.2 [g] at 0.049 [s]
Min: 0.0 [g] at -0.007 [s]

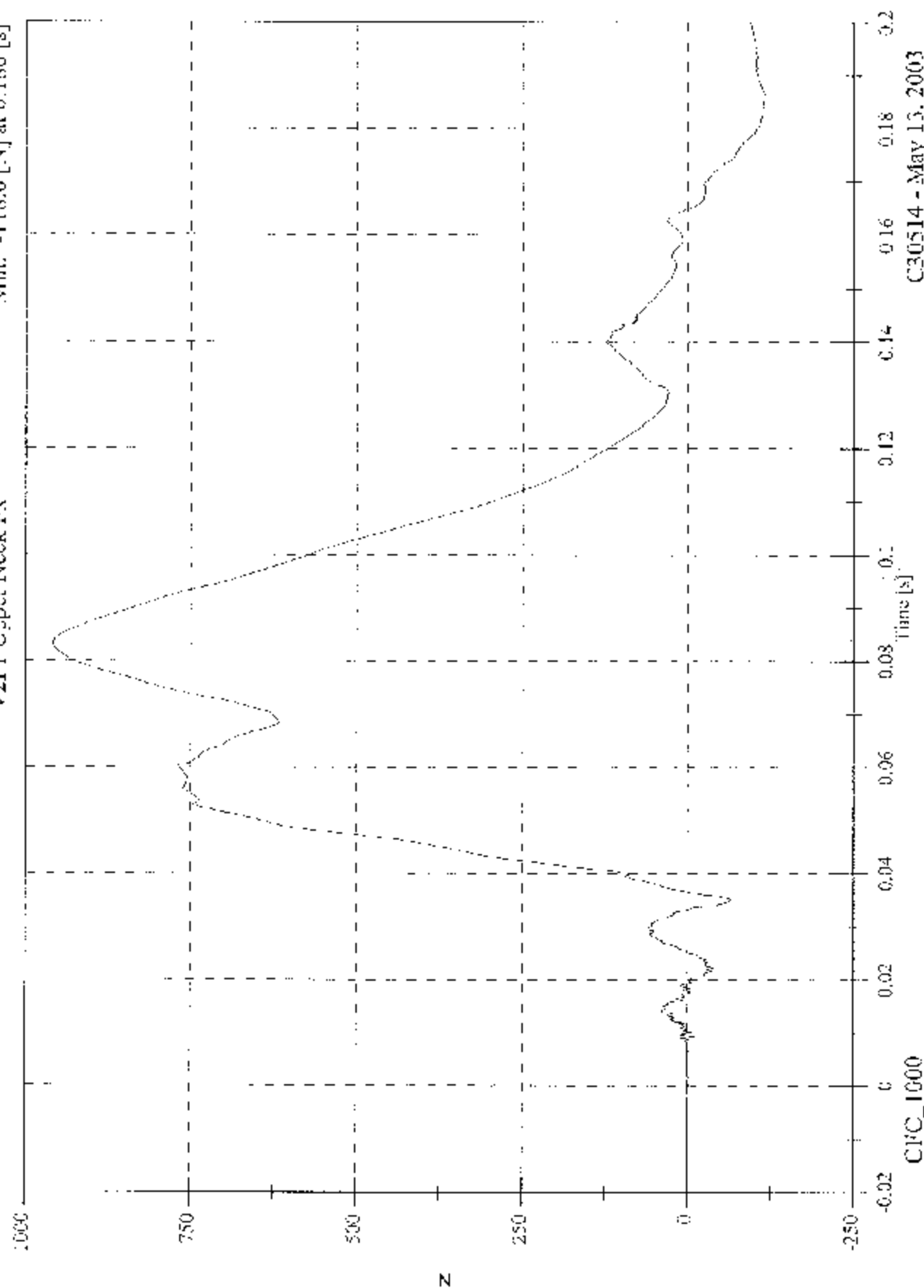


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FMVSS 214D Indicant - 2003 Saab 9-5

Max: 959.3 [N] at 0.083 [s]
Min: -118.0 [N] at 0.186 [s]

V2P1 Upper Neck Fix

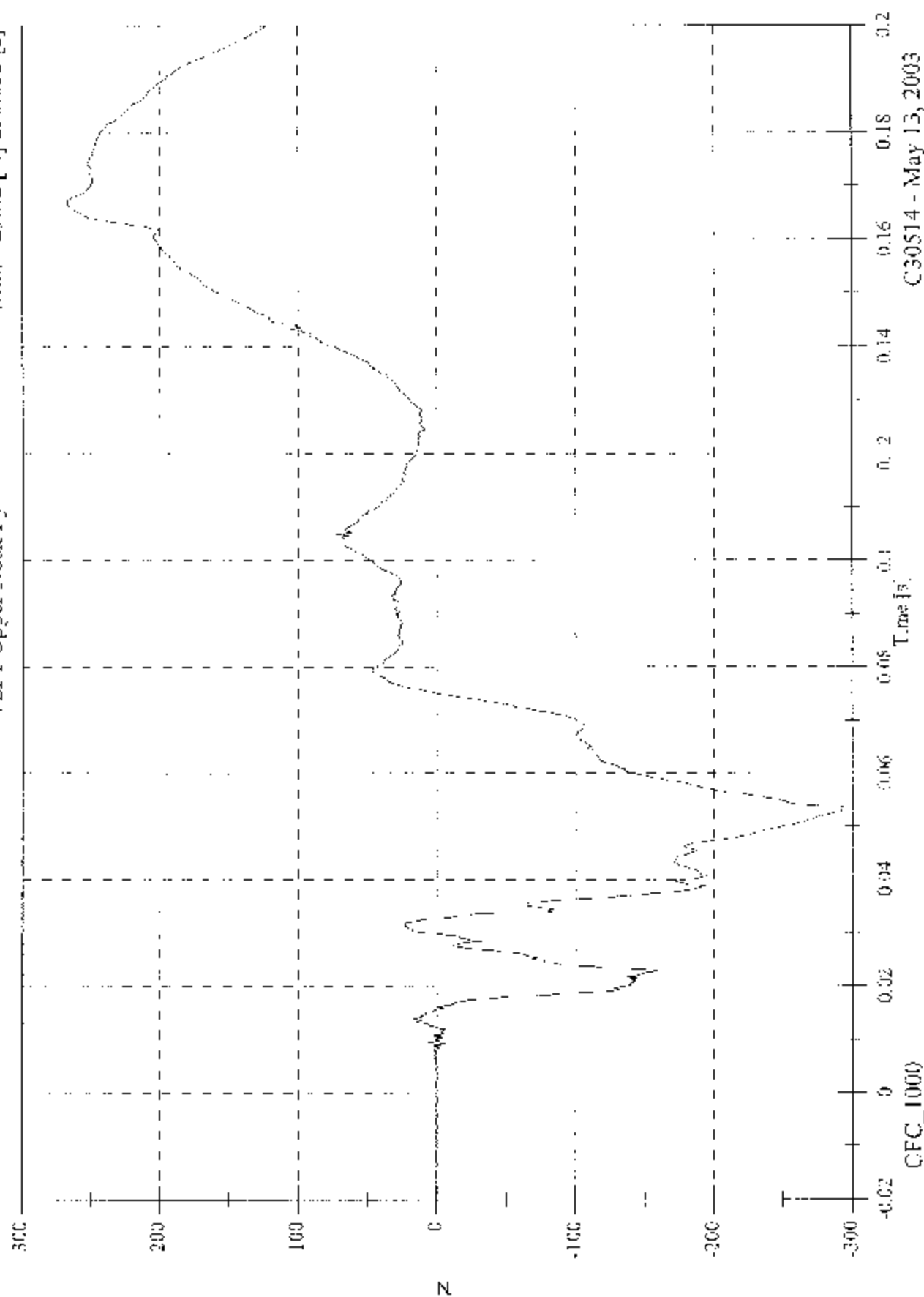


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FMVSS 214D Indicant - 2003 Saab 9-5

Max: 267.4 [N] at 0.167 [s]
Min: -293.2 [N] at 0.053 [s]

V2P1 Upper Neck Zy

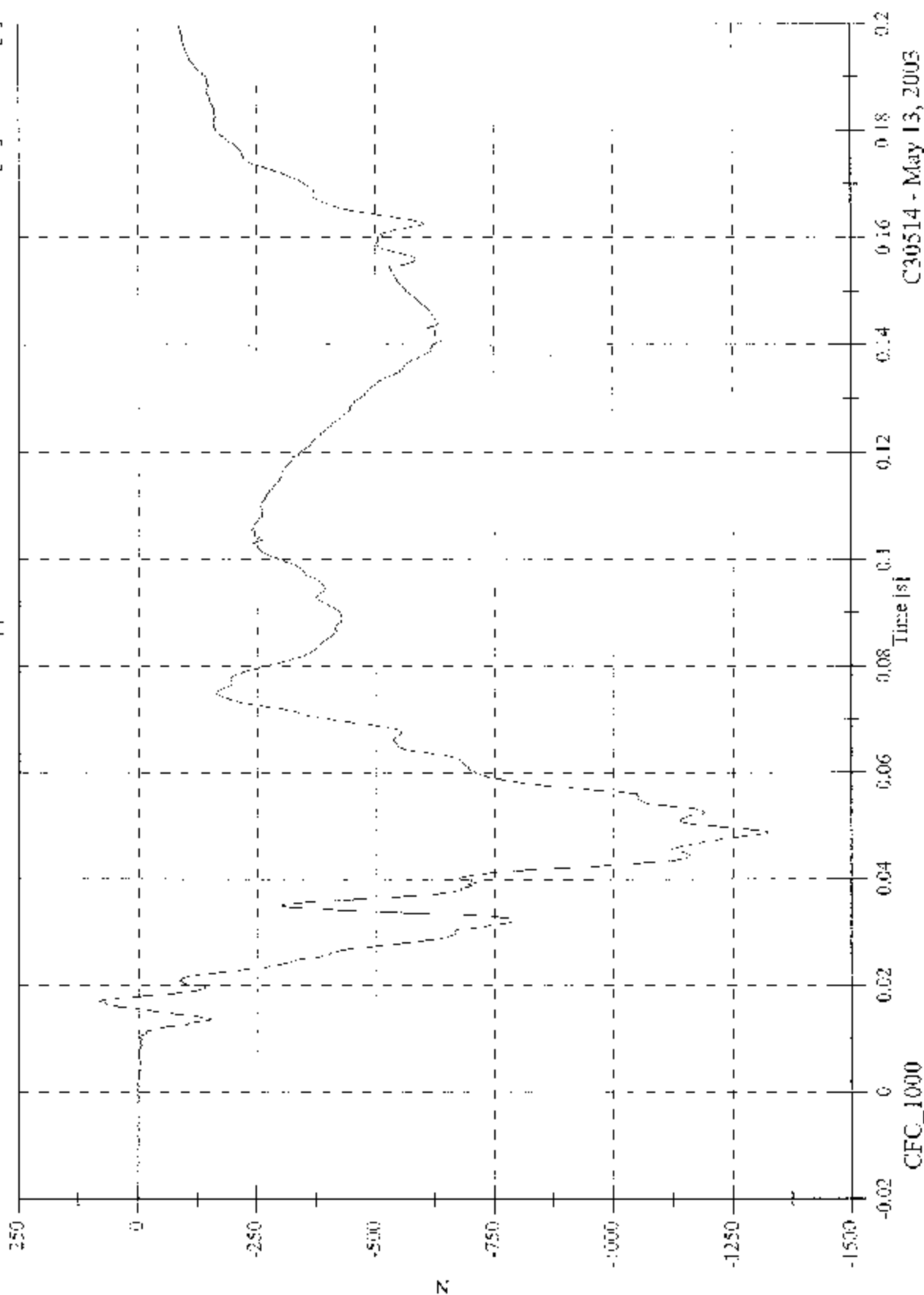


C30514 - May 13, 2003

FMVSS 214D Inducant - 2003 Saab 9-5

Max: 80.9 [N] at 0.017 [s]
Min: -1323.4 [N] at 0.049 [s]

VZP1 Upper Neck Fz

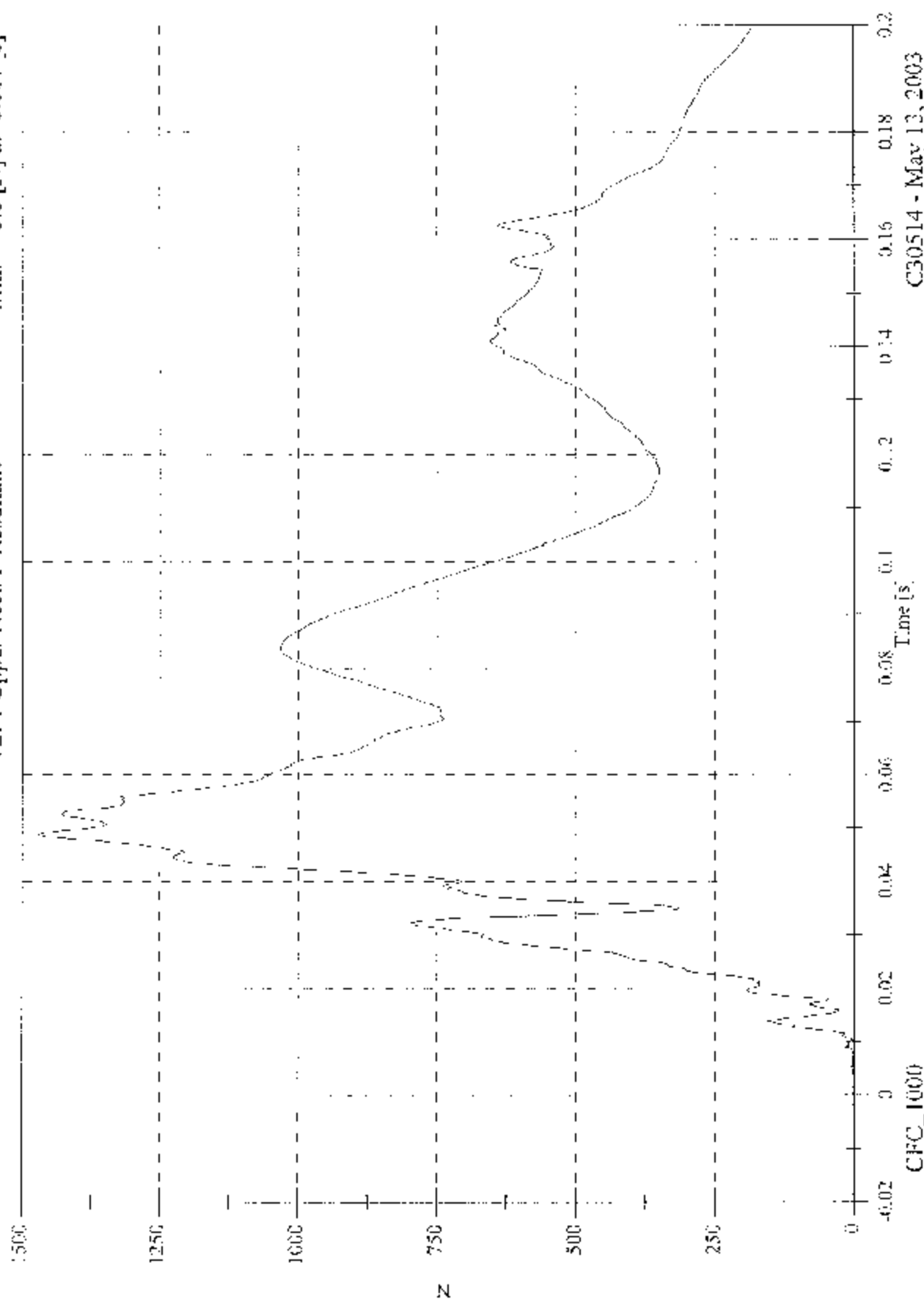


C30514 - May 13, 2003

FM/VSS 214D Indicaant - 2003 Saab 9-5

Max: 1473.5 [N] at 0.049 [s]
Min: 0.0 [N] at -0.007 [s]

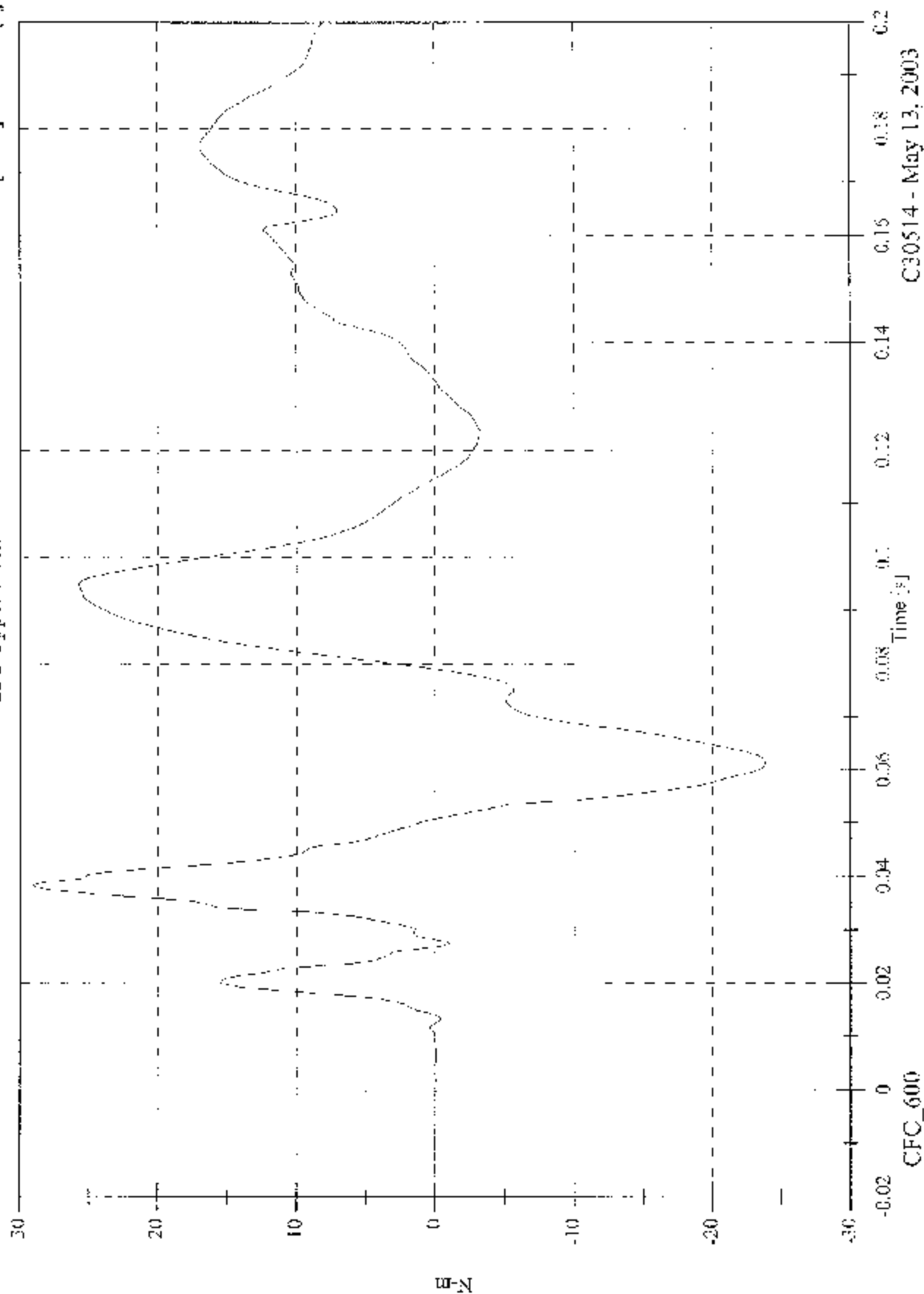
V2P1 Upper Neck F Resultant



C30514 - May 13, 2003

Max: 29.1 [N-m] at 0.038 [s]
Min: -23.9 [N-m] at 0.061 [s]

V2P1 Upper Neck Mx



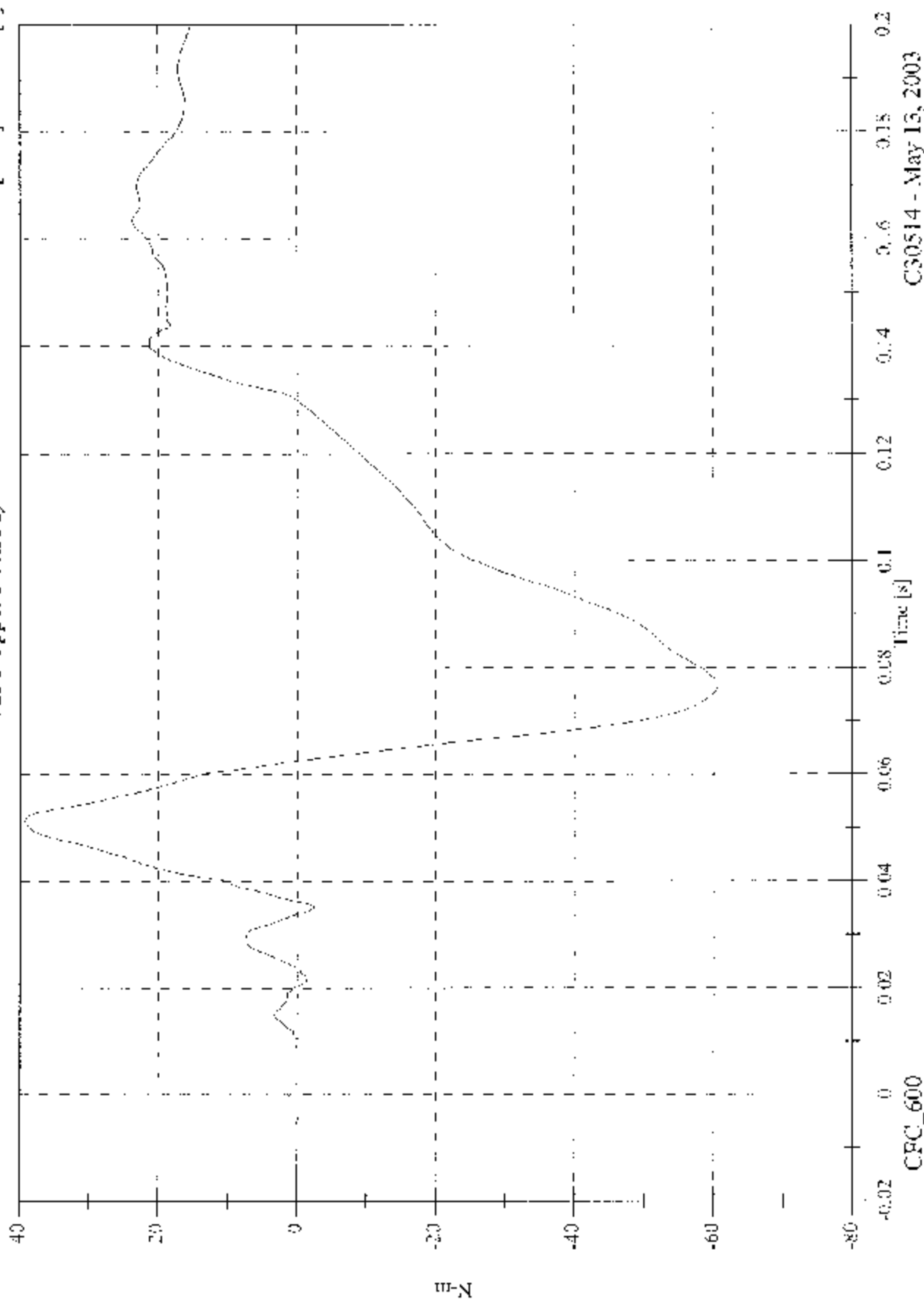
CFC_600

C30514 - May 13, 2003

FMVSS 214D Indicant - 2003 Saab 9-5

Max: 39.2 [N-m] at 0.051 [s]
Min: -60.7 [N-m] at 0.077 [s]

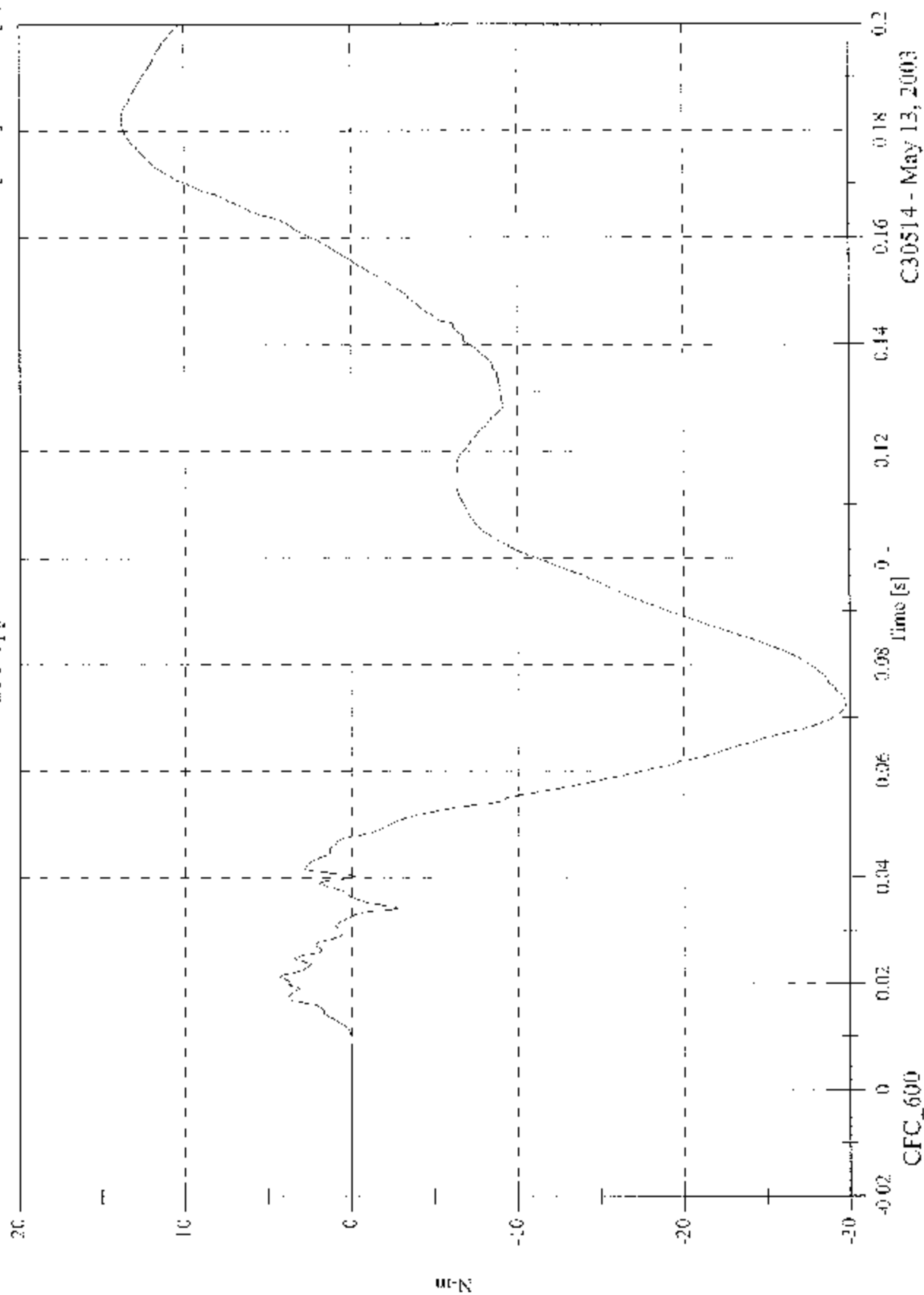
V2P1 Upper Neck My



C30514 - May 15, 2003

Max: 13.8 [N-m] at 0.183 [s]
Min: -29.8 [N-m] at 0.073 [s]

V2P1 Upper Neck Mz



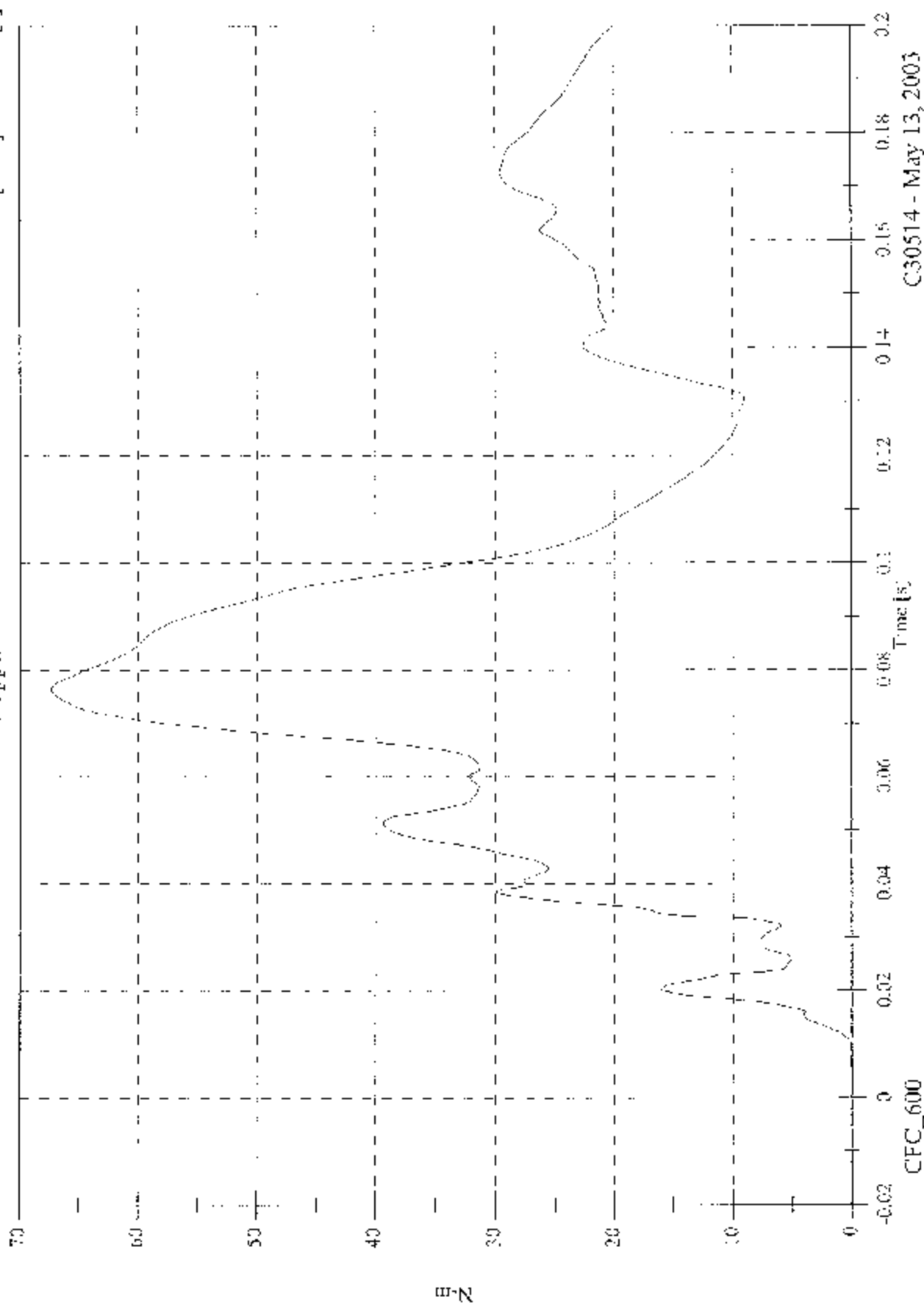
CFC_600

C30514 - May 13, 2003

FMVSS 214D Indictant - 2003 Saab 9-5

Max: 67.4 [N-m] at 0.076 [s]
Min: 0.0 [N-m] at -0.016 [s]

V2PI Upper Neck M Resultant

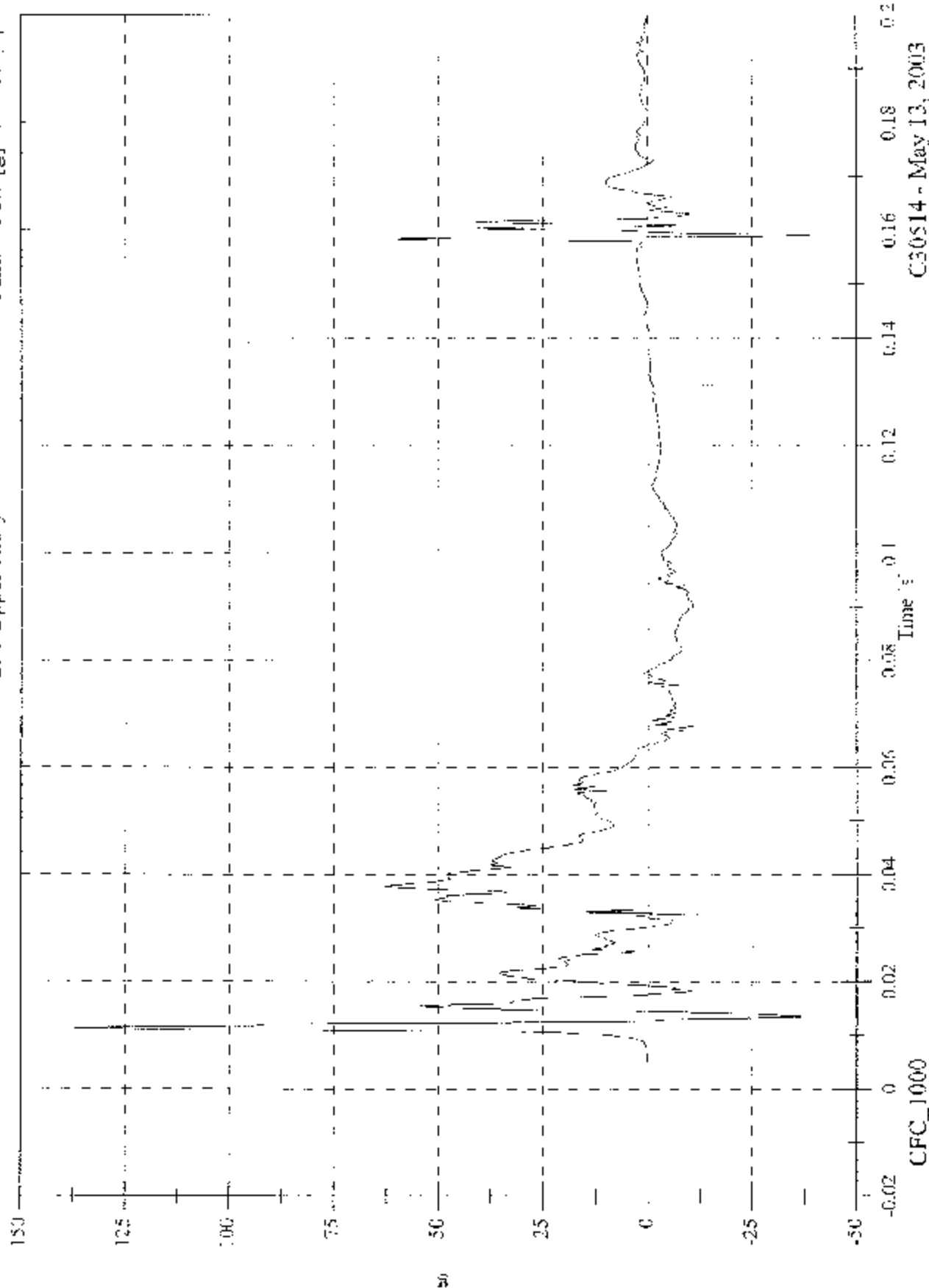


C30514 - May 13, 2003

FMVSS 214D Indicant - 2003 Saab 9-5

Max: 142.1 [g] at 0.011 [s]
Min: -38.7 [g] at 0.159 [s]

V2PI Upper Rib y



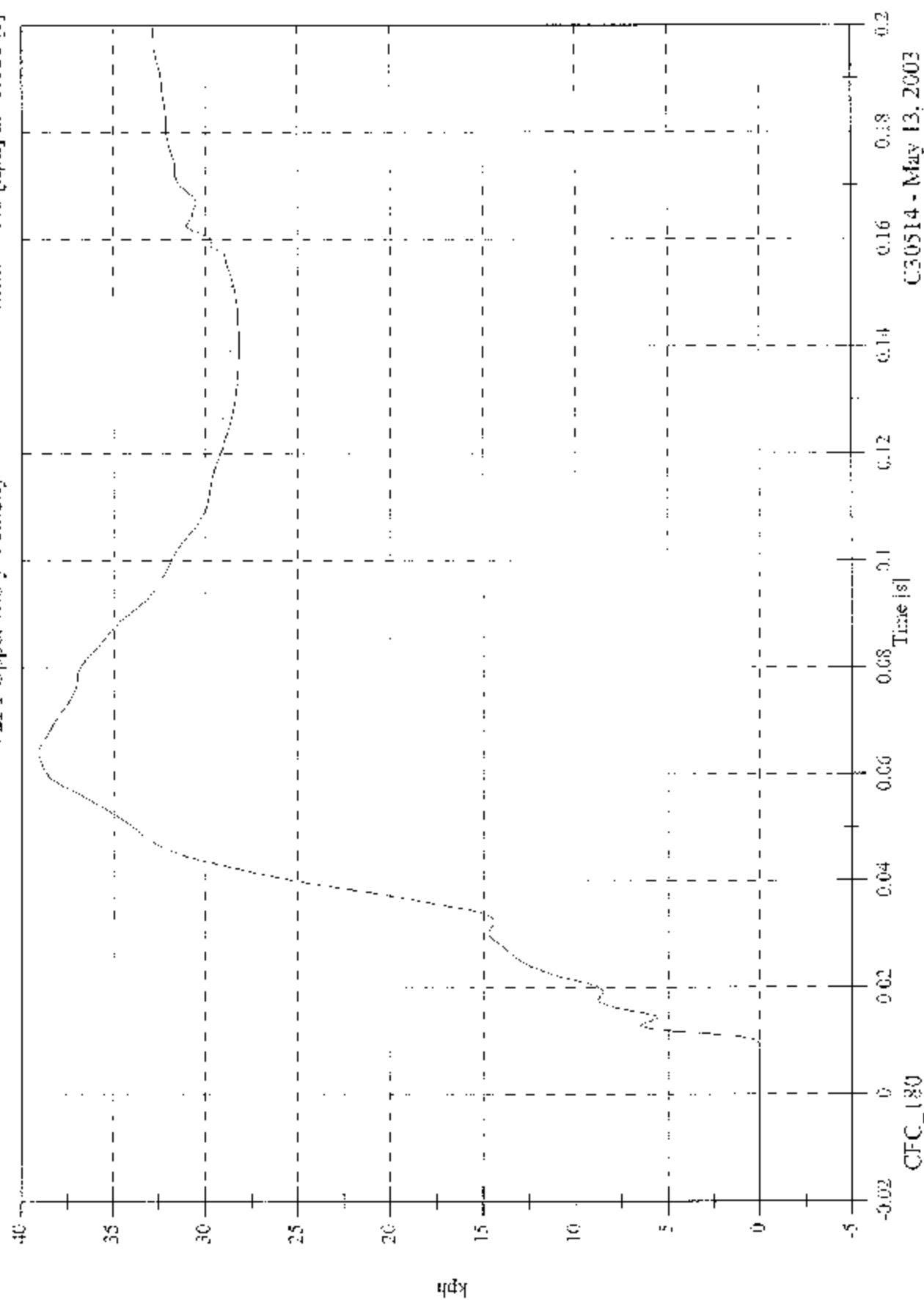
CFC_1000

C30514 - May 13, 2003

FMVSS 214D Indicant - 2003 Saab 9-5

Max: 39.1 [kph] at 0.064 [s]
Min: -0.0 [kph] at -0.011 [s]

V2P1 Upper Rib y Velocity

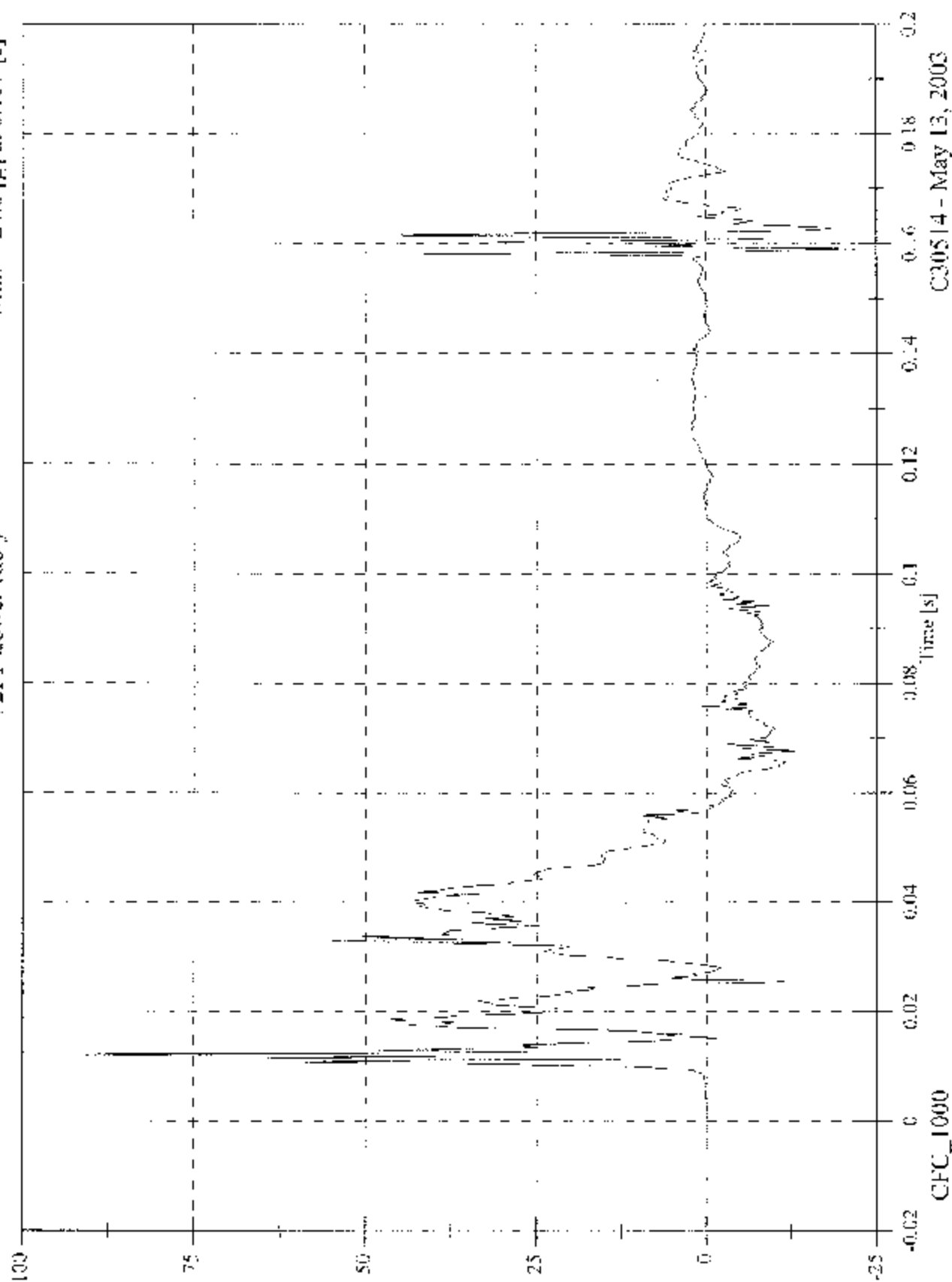


C30514 - May 13, 2003

FMVSS 214D Inducant - 2003 Saab 9-5

V2P1 Lower Rib y

Max: 90.7 [g] at 0.012 [s]
Min: -24.6 [g] at 0.159 [s]

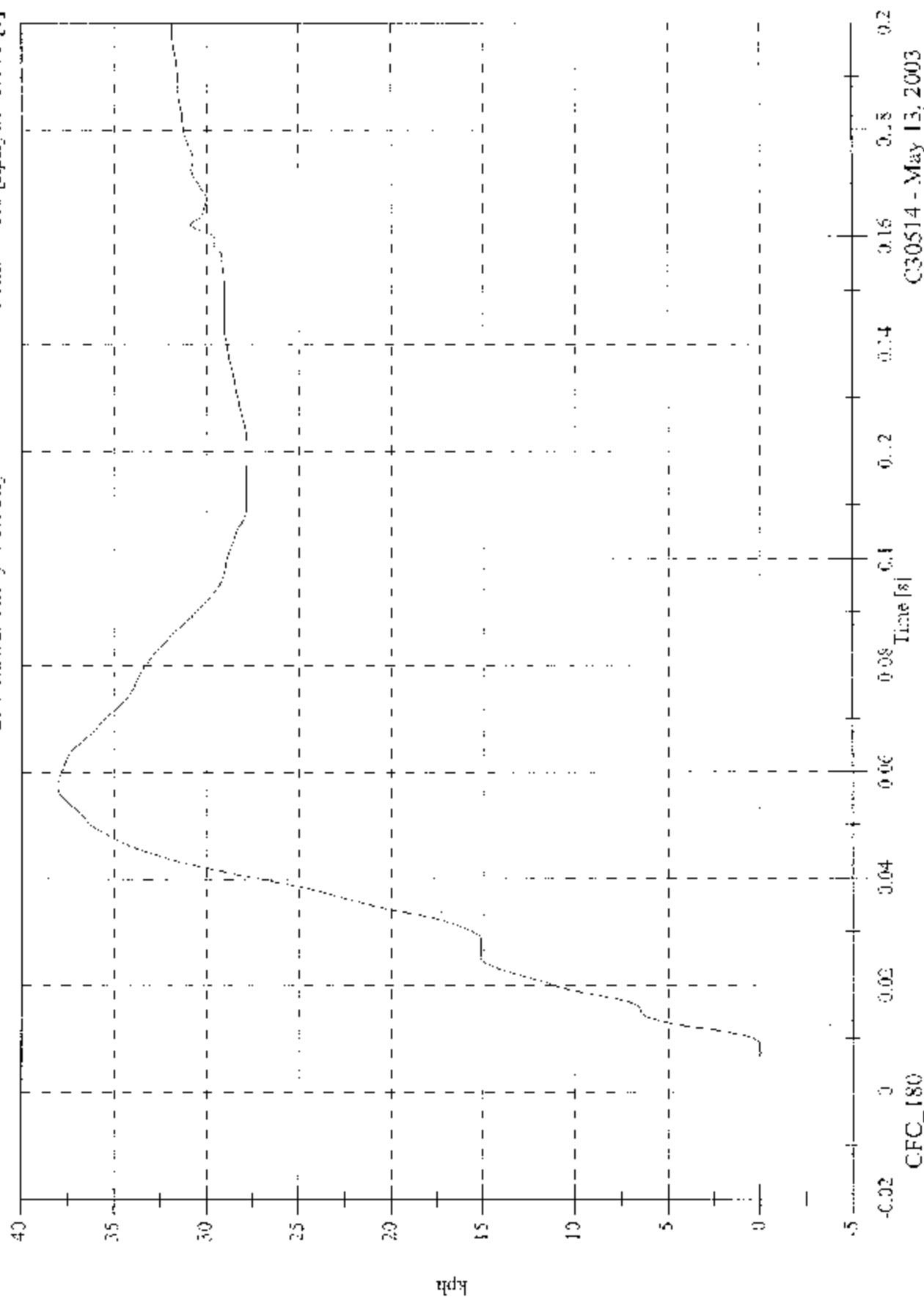


C30514 - May 13, 2003

EMVSS 214D Indicant - 2003 Saab 9-5

Max: 38.1 [kph] at 0.057 [s]
Min: -0.0 [kph] at -0.018 [s]

V2PI Lower Rib y Velocity



CFC_180

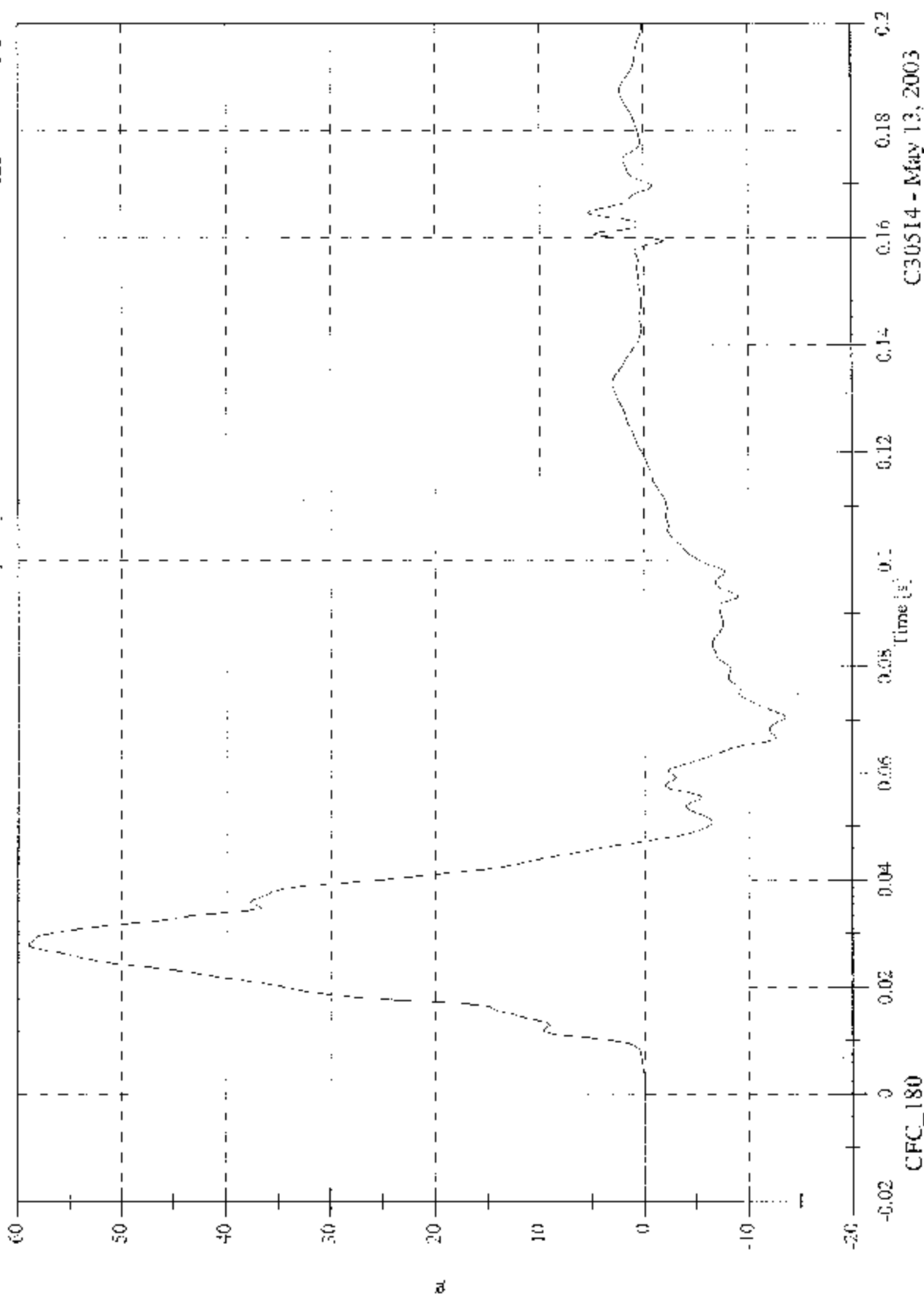
C30514 - May 13, 2003

FMVSS 214D Indicat - 2003 Saab 9-5

Max: 59.0 [g] at 0.028 [s]

Min: -13.5 [g] at 0.071 [s]

V2P1 Lower Spine y

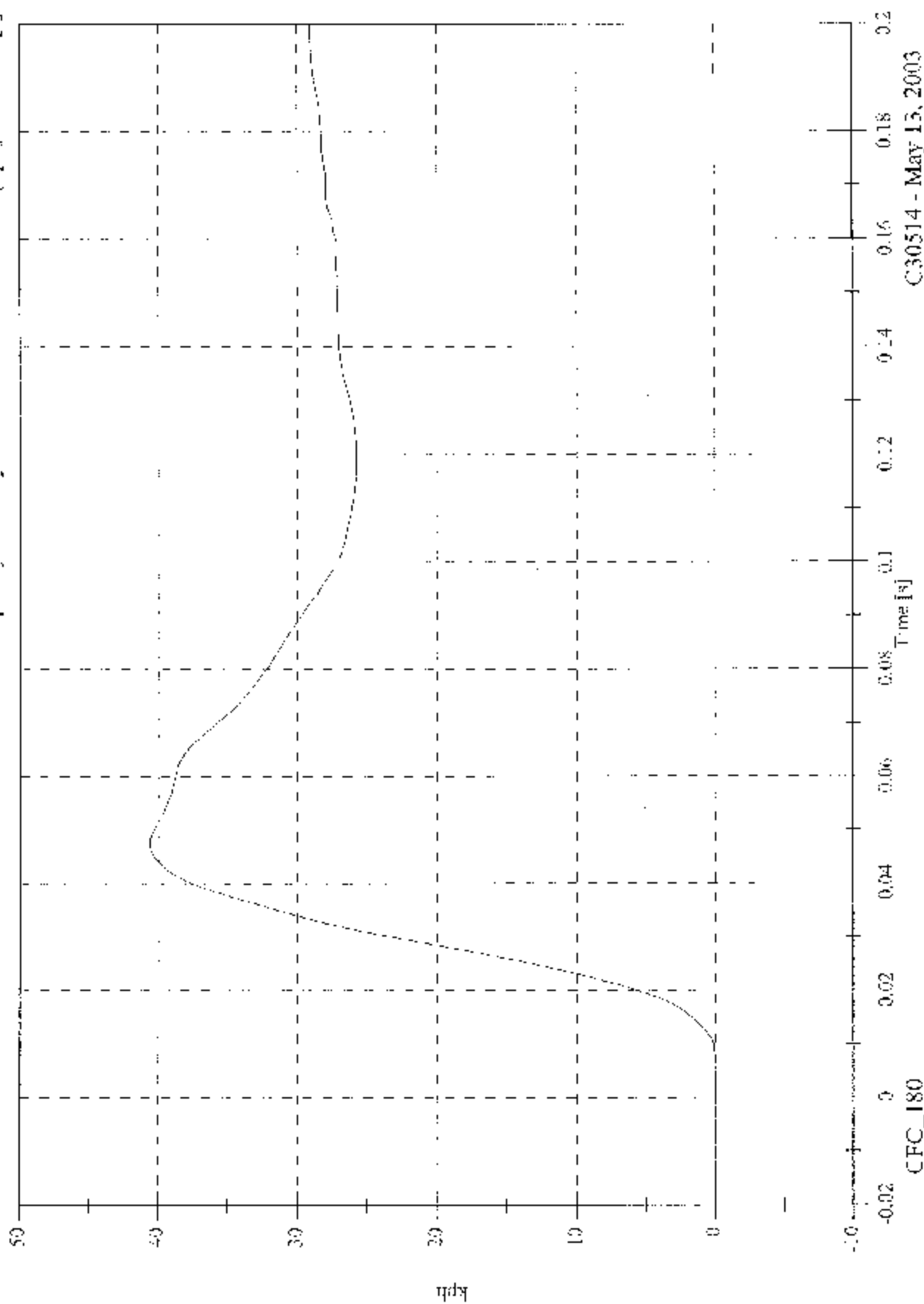


C30514 - May 13, 2003

FMVSS 214D Indicant - 2003 Saab 9-5

Max: 40.6 [kph] at 0.047 [s]
Min: -0.0 [kph] at -0.020 [s]

V2P1 Lower Spine y Velocity

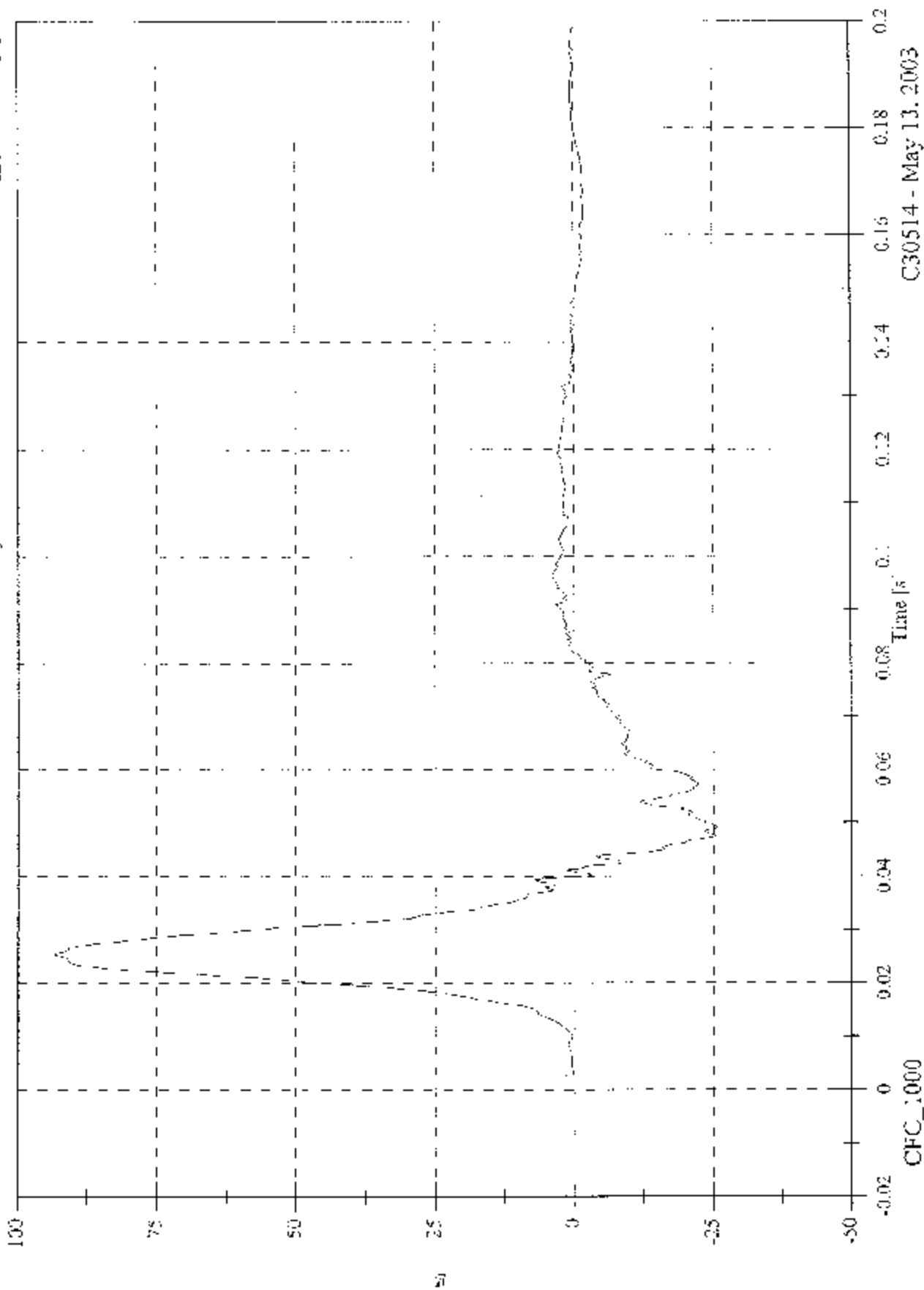


CFC_180

FMVSS 214D Indicant - 2003 Saab 9-5

Max: 93.3 [g] at 0.025 [s]
Min: -25.9 [g] at 0.049 [s]

V2P1 Pelvic y

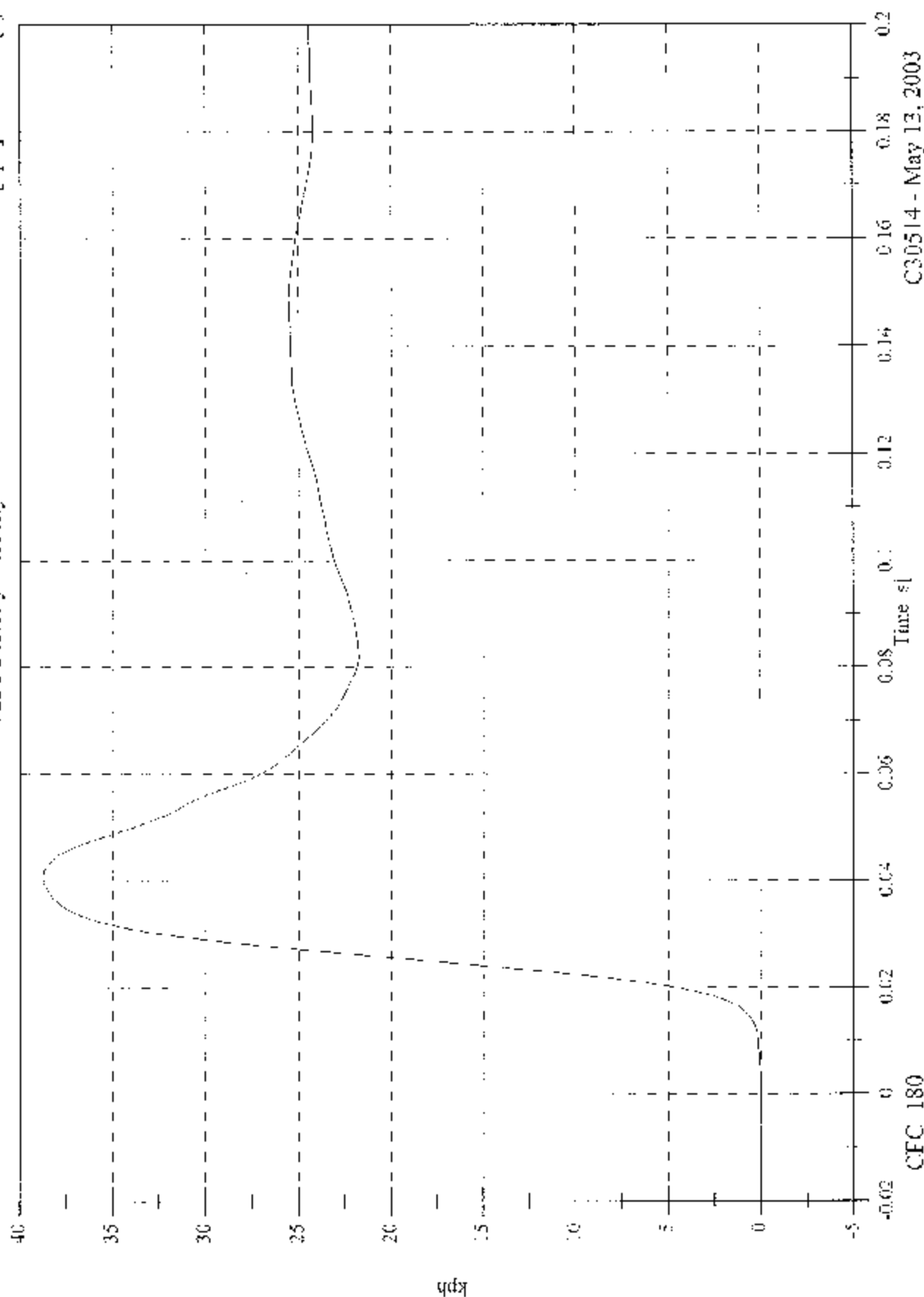


C30514 - May 13, 2003

FMVSS 214D Indicant - 2003 Seab 9-5

Max: 38.8 [kph] at 0.040 [s]
Min: -0.0 [kph] at -0.020 [s]

V2P1 Pelvic y Velocity



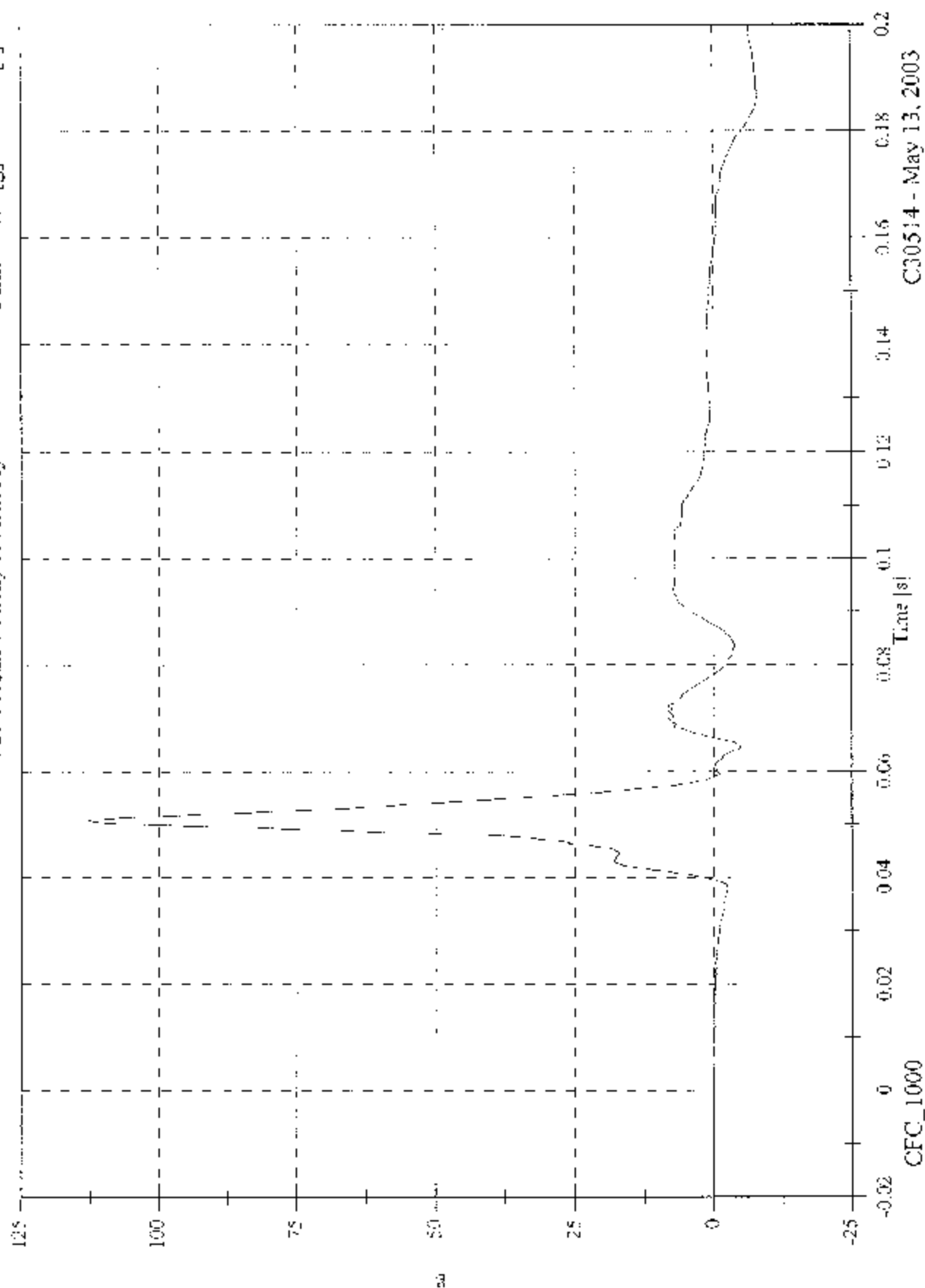
CFC_180

C30514 - May 13, 2003

FMVSS 214D Inducant - 2003 Szabo 9-5

Max: 113.0 [g] at 0.051 [s]
Min: -8.1 [g] at 0.186 [s]

V2P4 Head 9 Array X Arm Ay



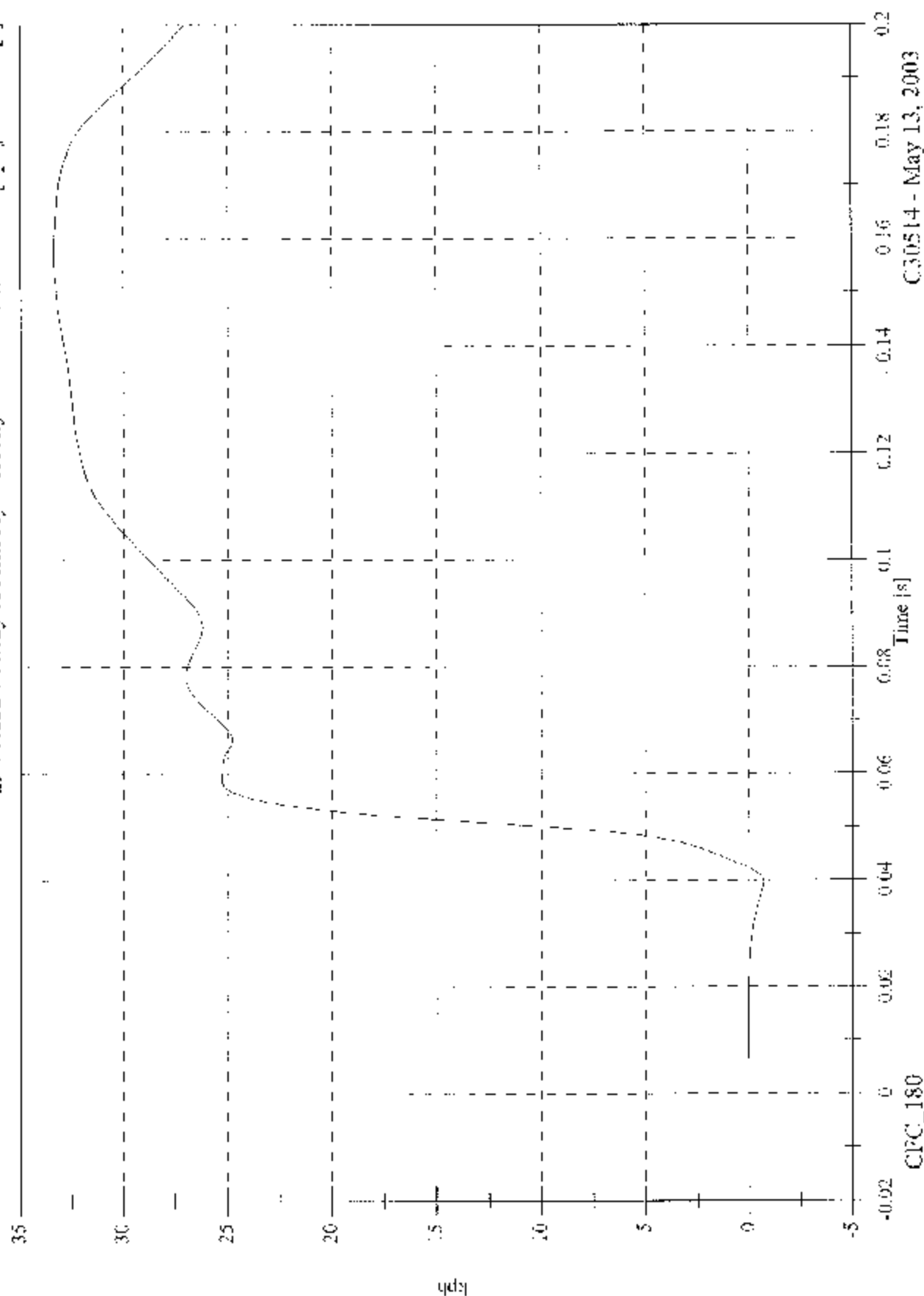
C30514 - May 13, 2003

FMVSS 214D Inducant - 2003 Saab 9-5

Max: 33.4 [kph] at 0.157 [s]

Min: -0.7 [kph] at 0.039 [s]

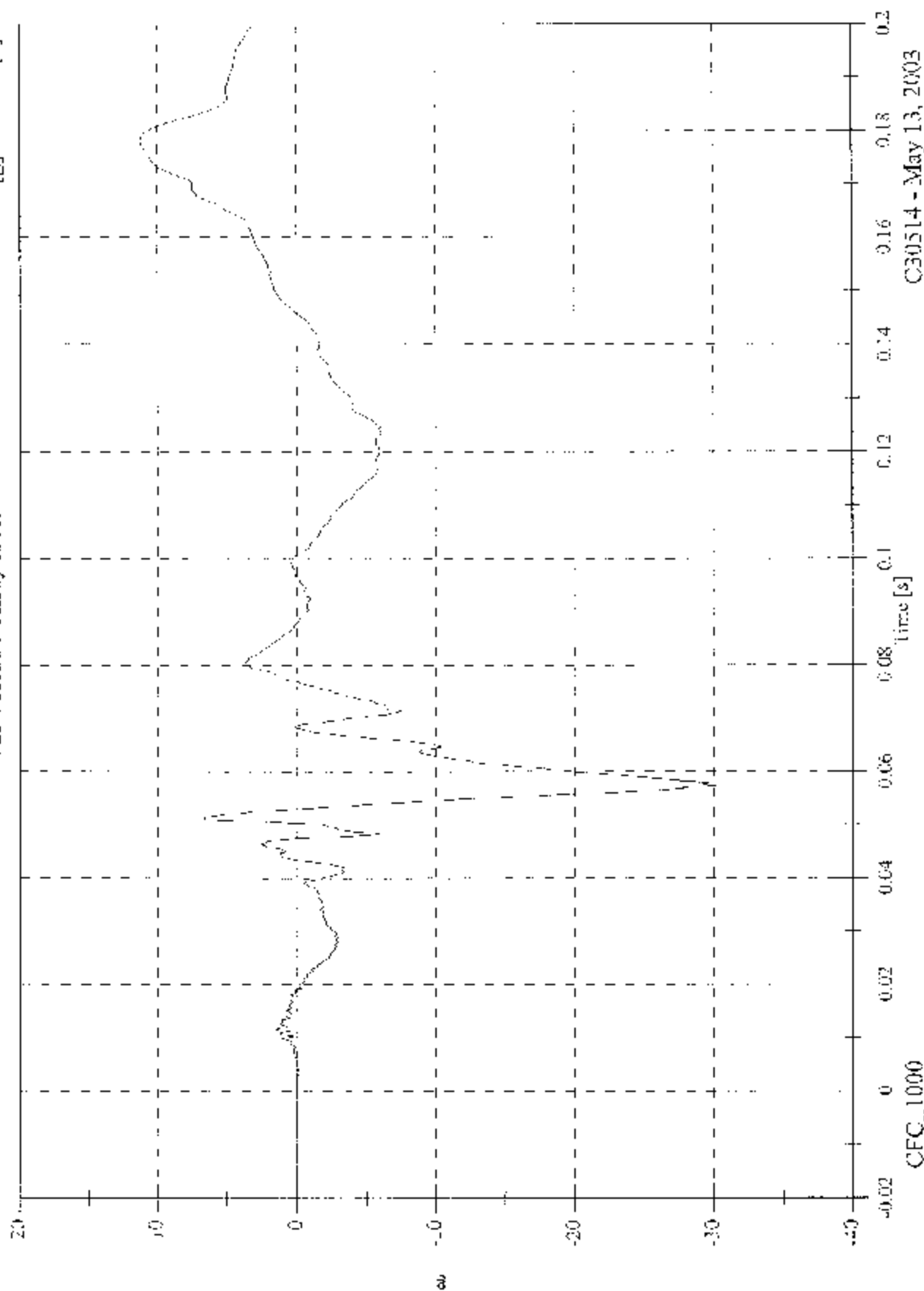
V2P4 Head 9 Array X Arm Ay Velocity



FMVSS 214D Indicant - 2003 Szabo 9-5

V2P4 Head 9 Array X Axis Az

Max: 11.3 [g] at 0.178 [s]
Min: -30.2 [g] at 0.057 [s]

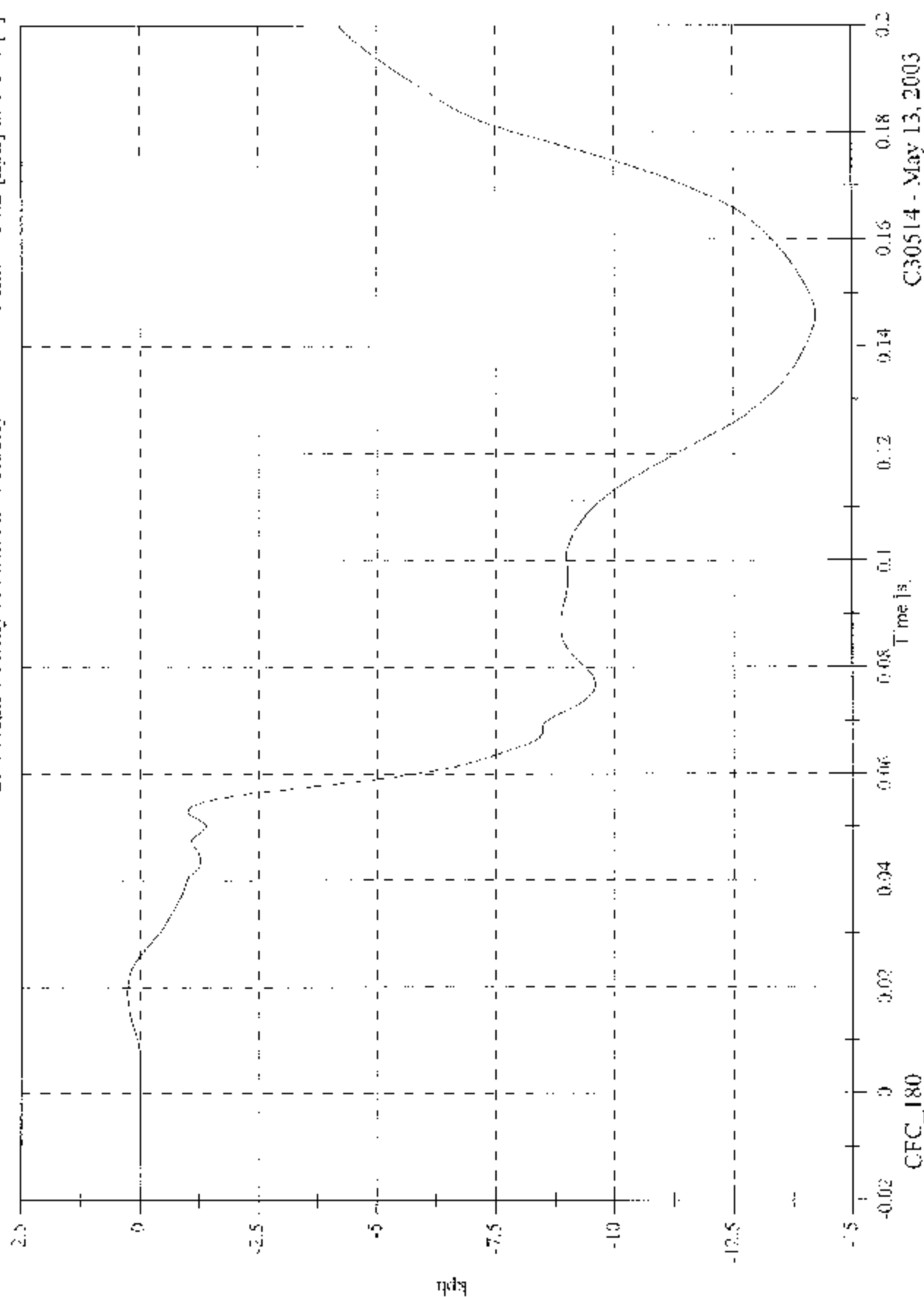


C30514 - May 13, 2003

FMVSS 214D Indident - 2003 Saab 9-5

V2P4 Head 9 Array X Ann Az Velocity

Max: 0.3 [kph] at 0.019 [s]
Min: -14.2 [kph] at 0.146 [s]



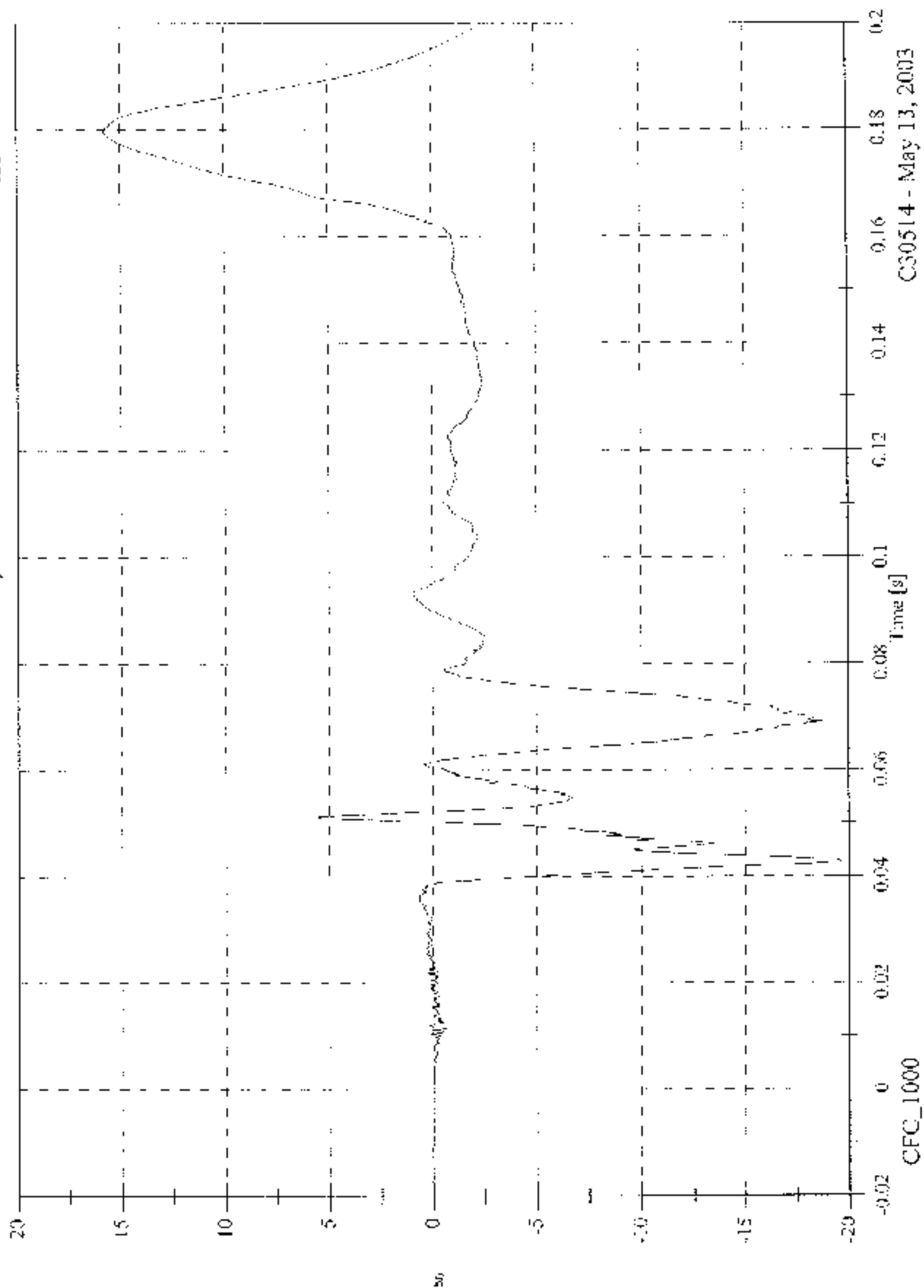
C30514 - May 13, 2003

FMVSS 214D Indicant - 2003 Saab 9-5

Max: 15.8 [g] at 0.179 [s]

Min: -19.6 [g] at 0.043 [s]

V2P4 Head 9 Array Y Arm Ax



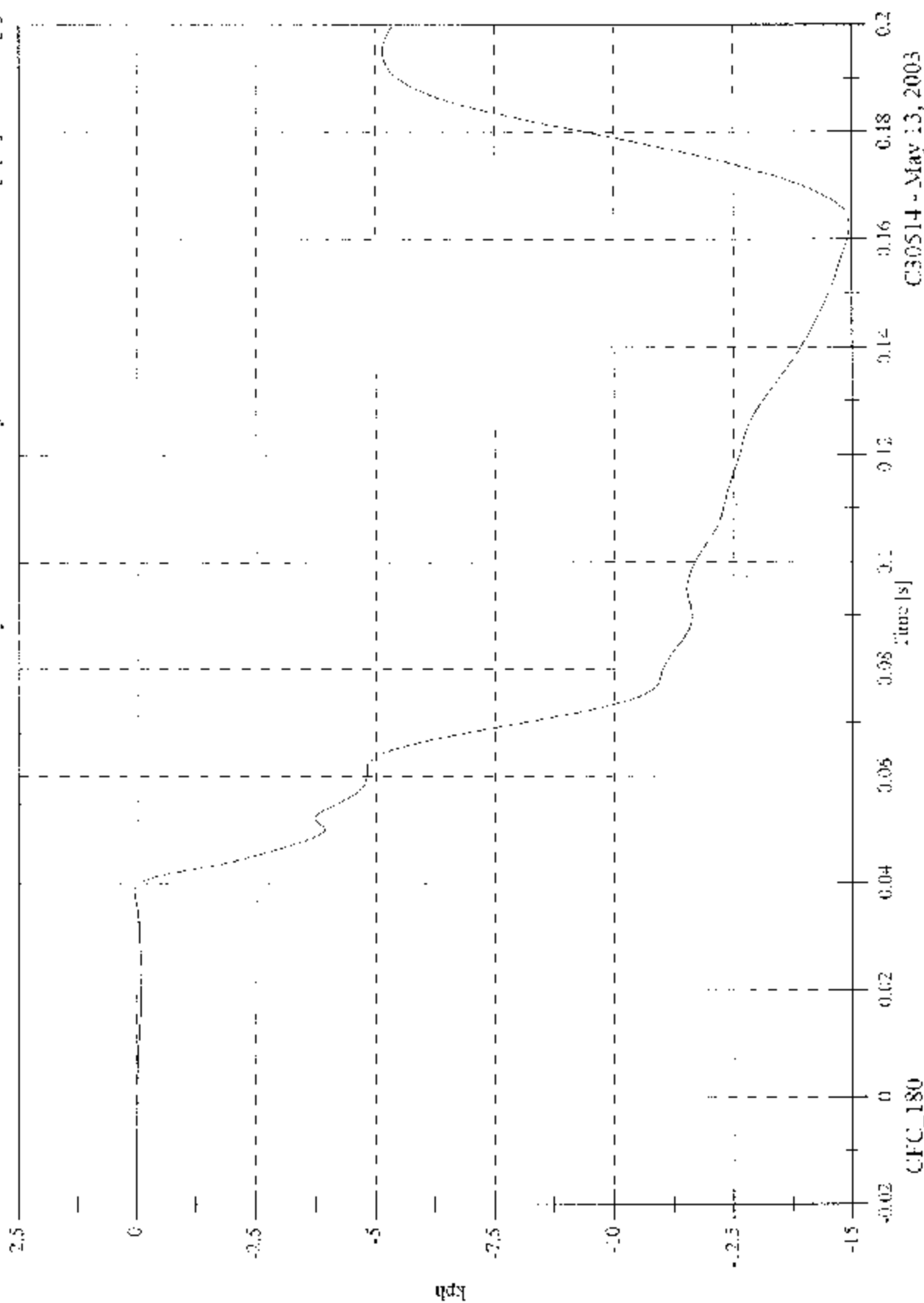
CFC_1000

C30514 - May 13, 2003

FMGVSS 214D Indicant - 2003 Ssnb 9-5

Max: 0.1 [kph] at 0.039 [s]
Min: -14.9 [kph] at 0.162 [s]

V2P4 Head 9 Array Y Arm Ax Velocity



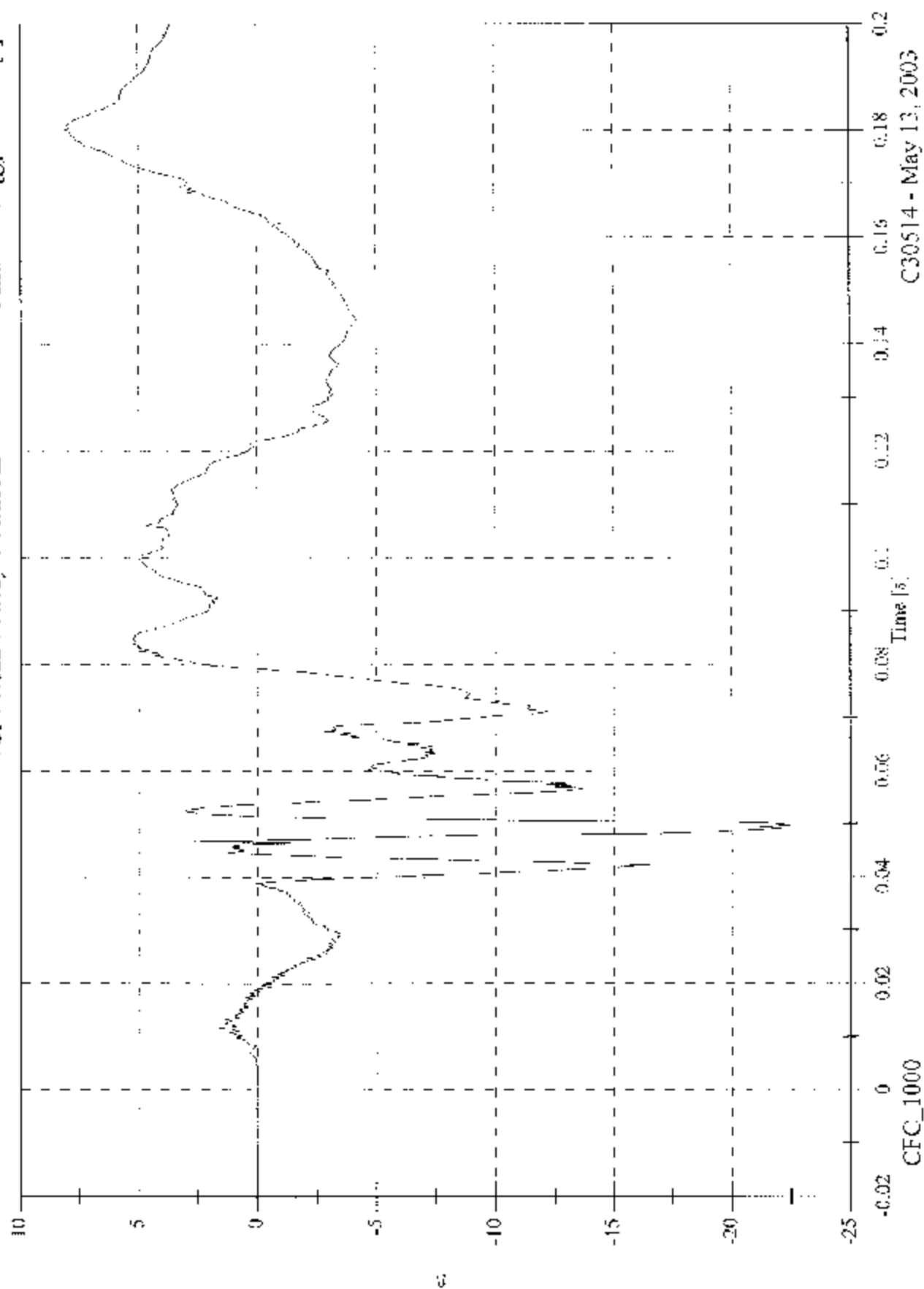
CFC_180

C30514 - May 13, 2003

FMVSS 214D Inducant - 2003 Saab 9-5

V2P4 Head 9 Array Y Arm Az

Max: 8.1 [g] at 0.180 [s]
Min: -22.5 [g] at 0.050 [s]



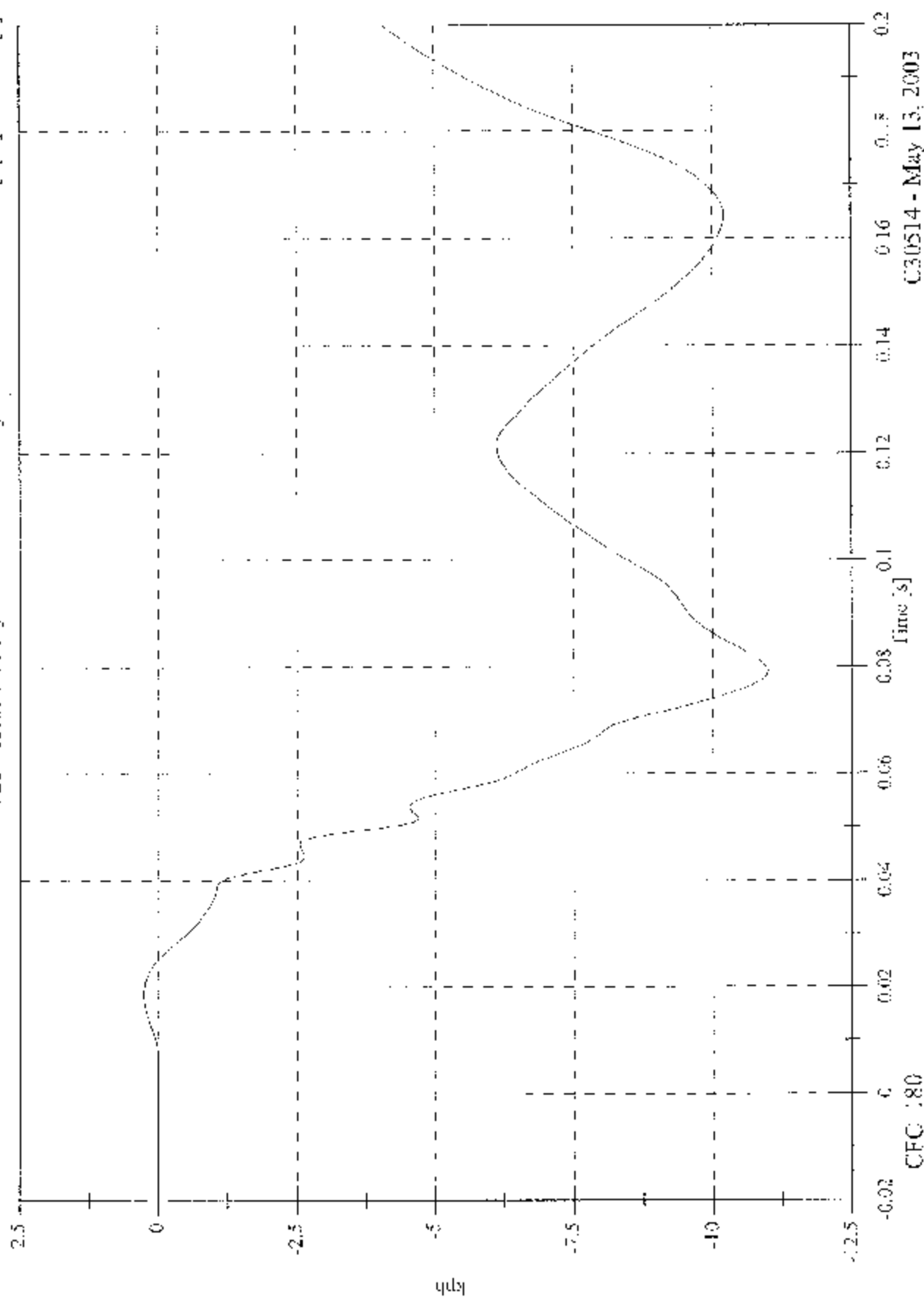
C30514 - May 13, 2003

FM/VSS 214D Indirect - 2003 Saab 9-5

Max: 0.3 [kph] at 0.019 [s]

V2P4 Head 9 Array Y Arm Az Velocity

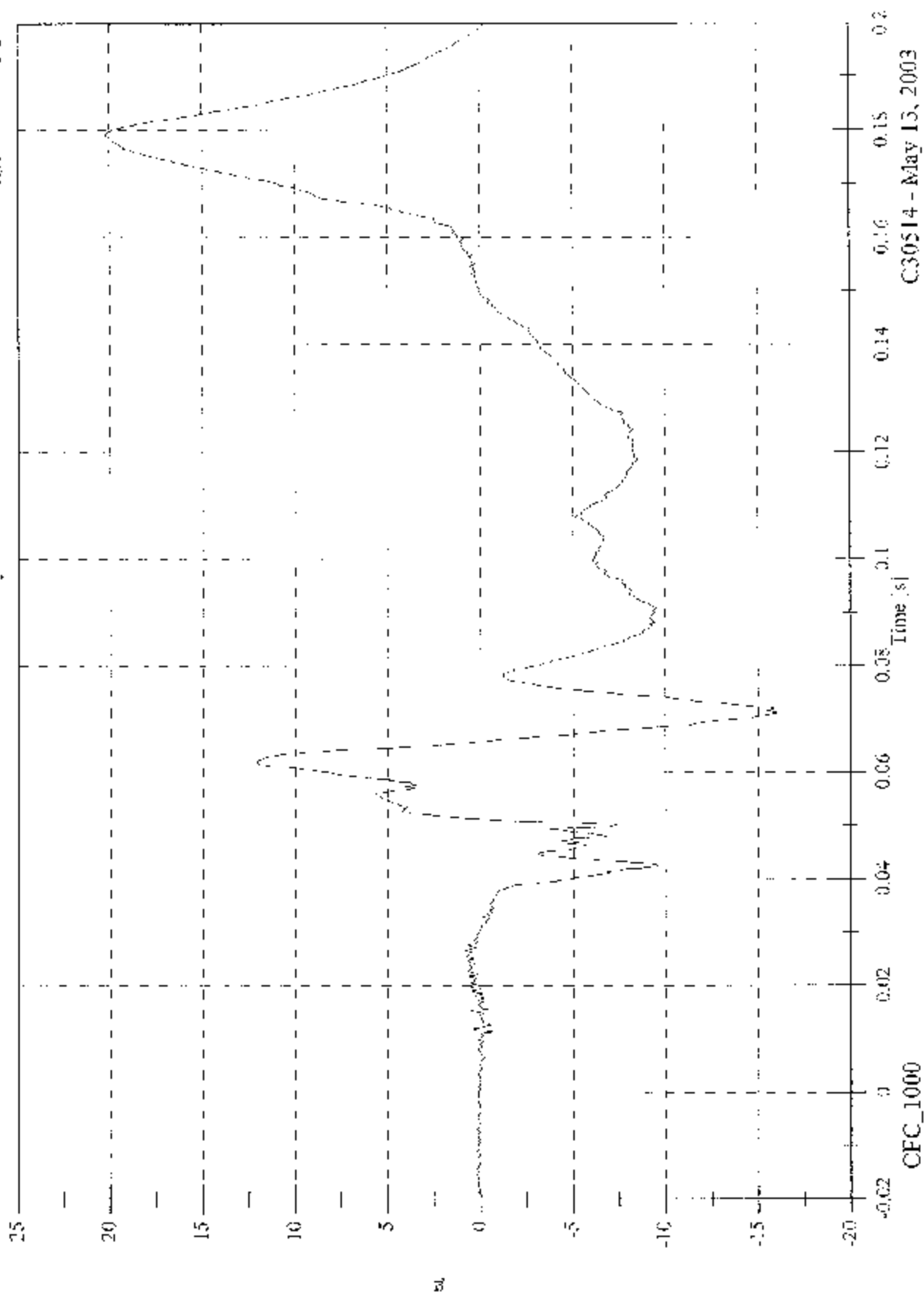
Min: -11.0 [kph] at 0.079 [s]



FMVSS 214D Indictant: 2003 Saab 9-5

V2P4 Head 9 Array Z Arm Ax

Max: 20.2 [g] at 0.179 [s]
Min: -16.1 [g] at 0.071 [s]



CFC_1000

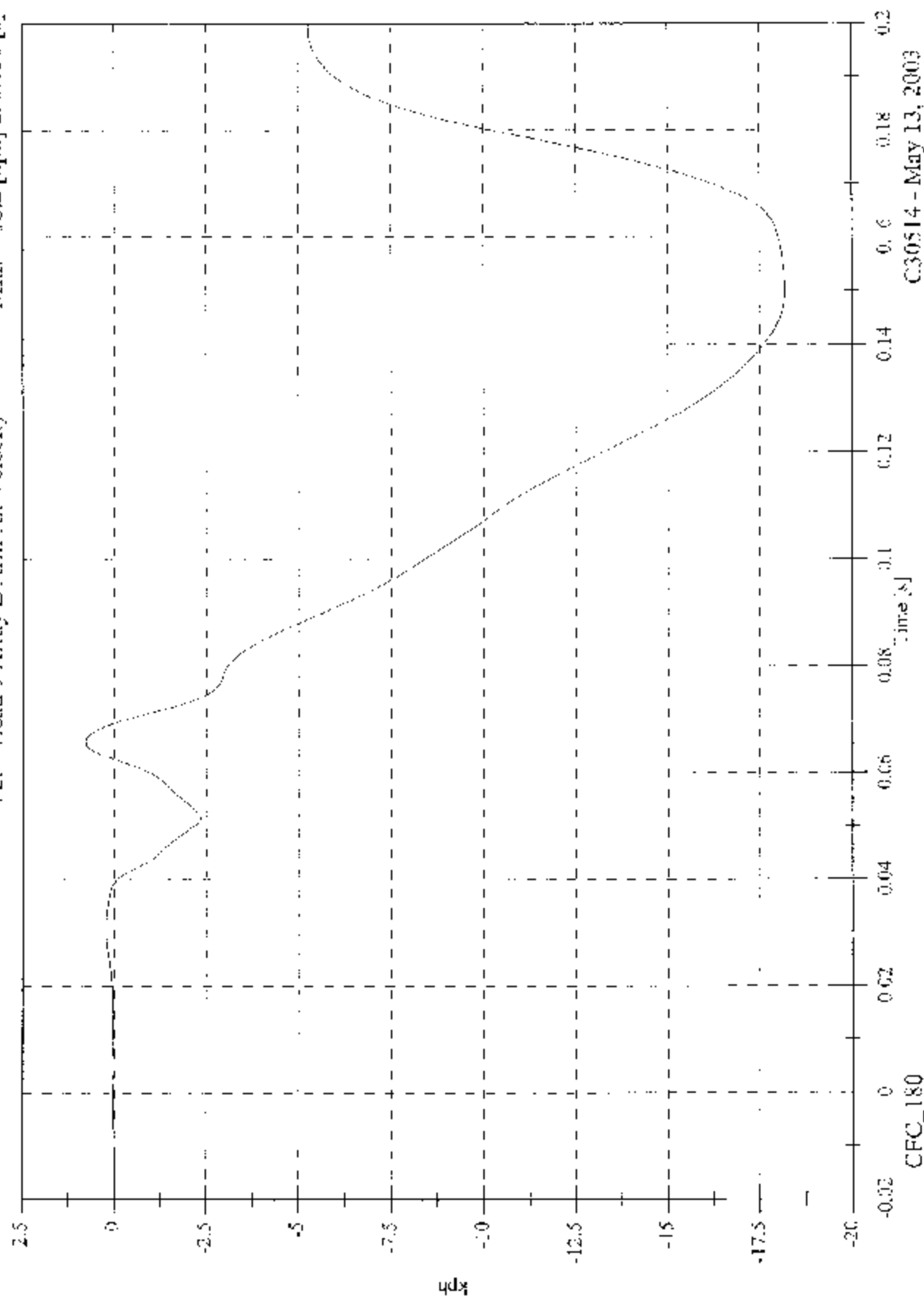
C30514 - May 15, 2003

FMVSS 214D Indicant - 2003 Saab 9-5

Max: 0.8 [kph] at 0.066 [s]

V2P4 Head 9 Array Z Arm Ax Velocity

Min: -8.2 [kph] at 0.150 [s]



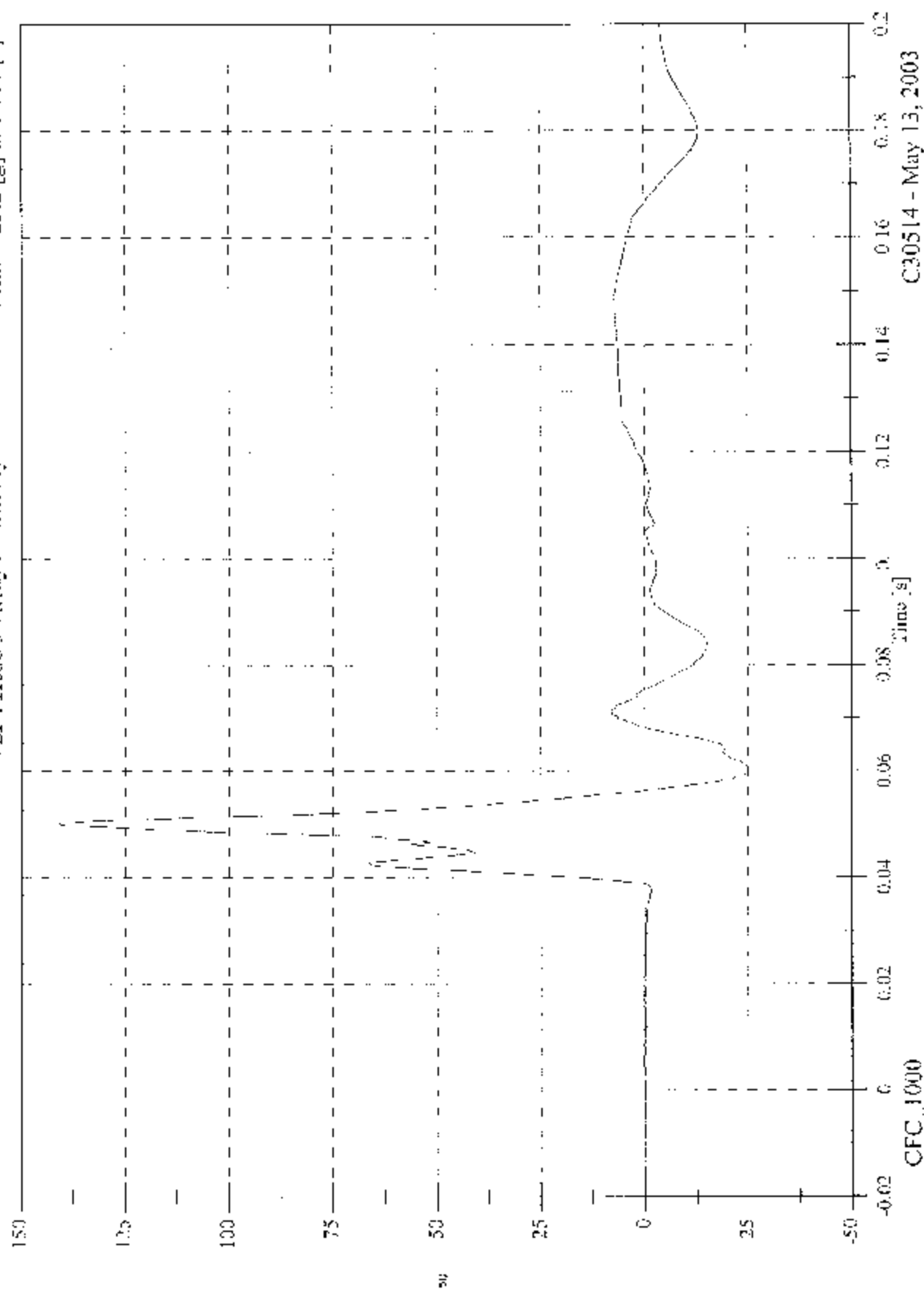
CFC_180

C30514 - May 13, 2003

HMVSS 214D Inducant - 2003 Saab 9-5

V2P4 Head 9 Array Z Arm Ay

Max: 141.1 [g] at 0.050 [s]
Min: -25.2 [g] at 0.060 [s]

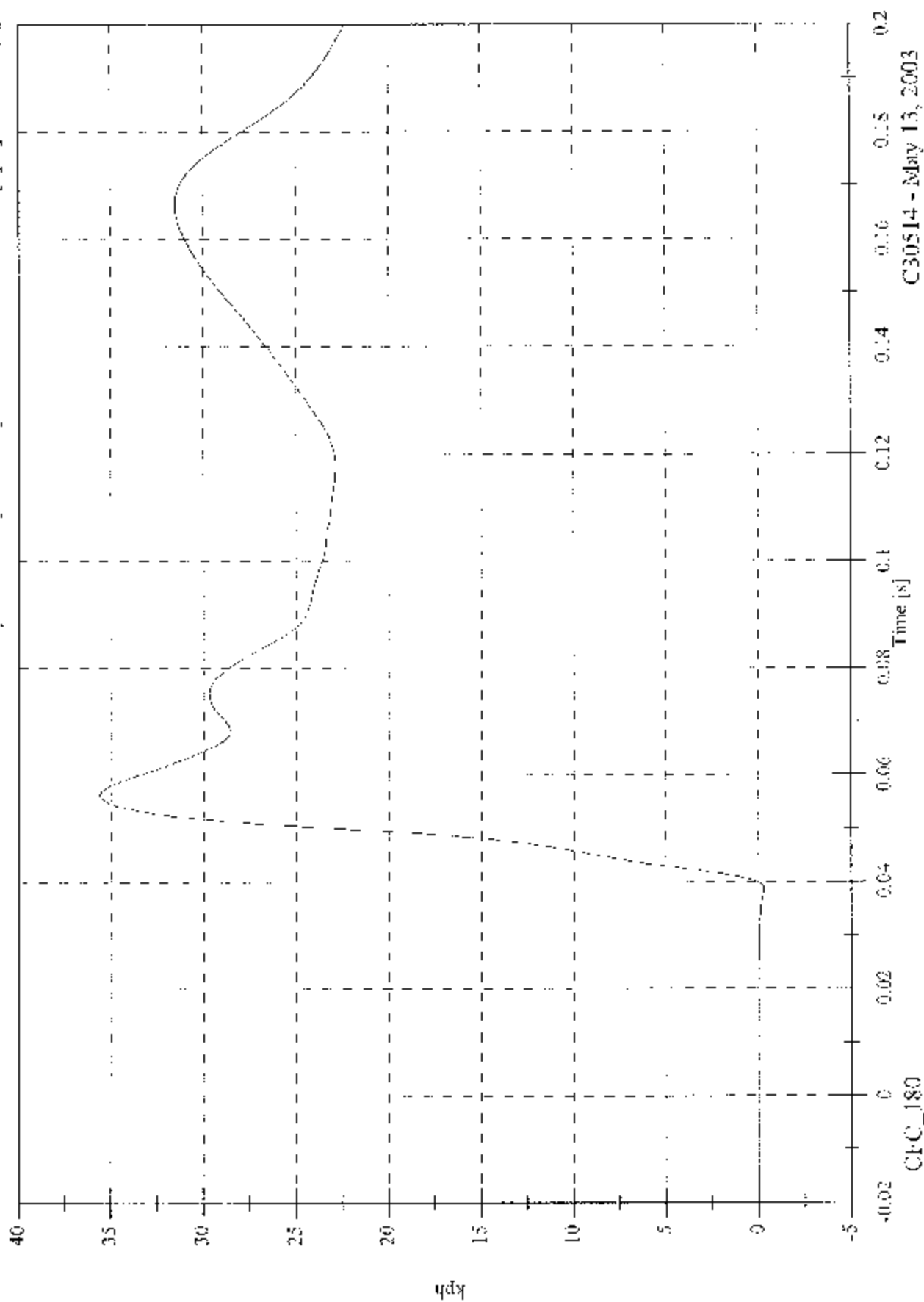


C30514 - May 13, 2003

FMVSS 214D Indicator - 2003 Saab 9-5

Max: 35.6 [kph] at 0.056 [s]
Min: -0.3 [kph] at 0.039 [s]

V2P4 Head 9 Array Z Ann Ay Velocity

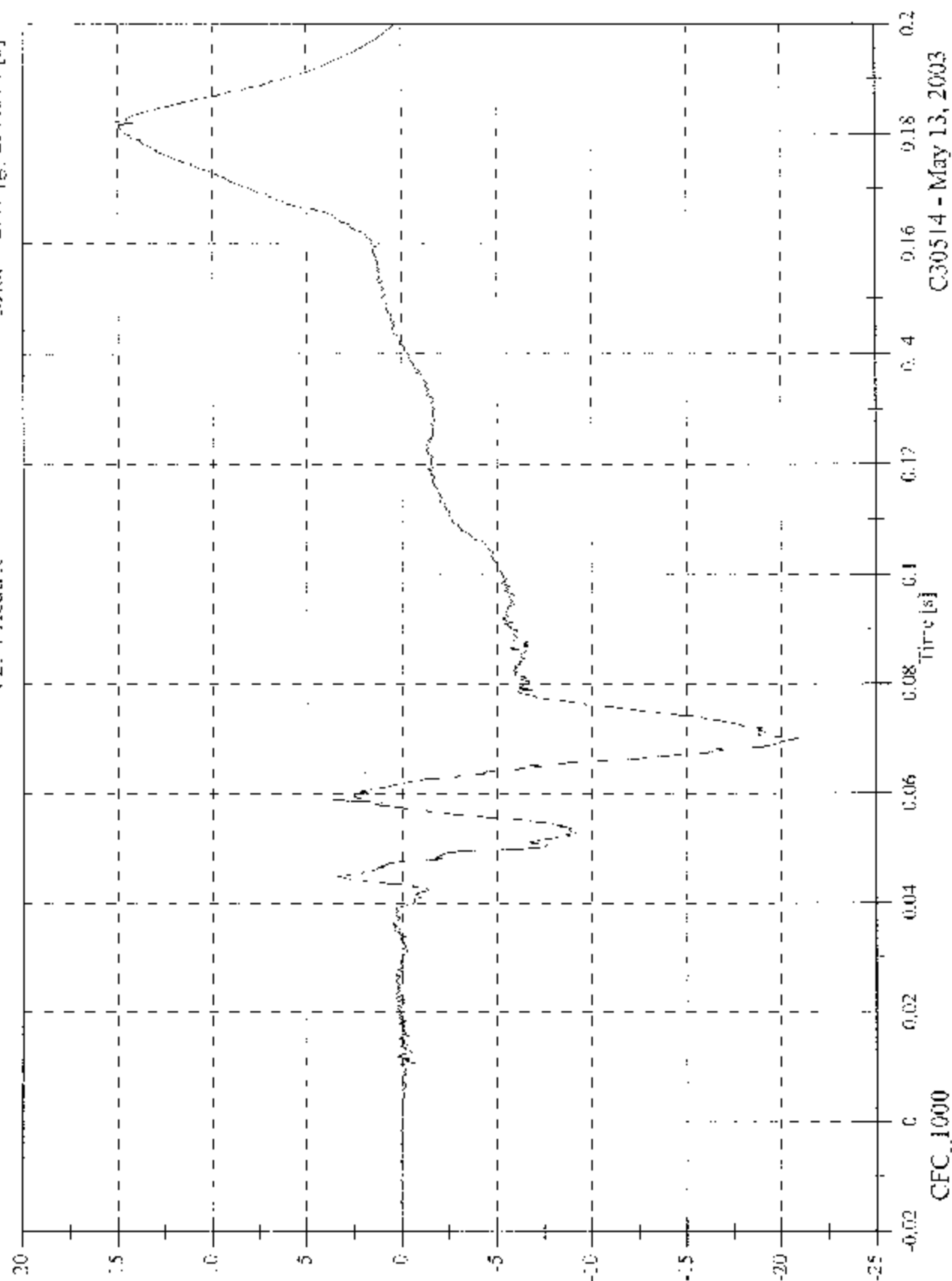


C30514 - May 13, 2003

FMVSS 214D Indicant - 2003 Saab 9-5

Max: 15.3 [g] at 0.182 [s]
Min: -20.9 [g] at 0.070 [s]

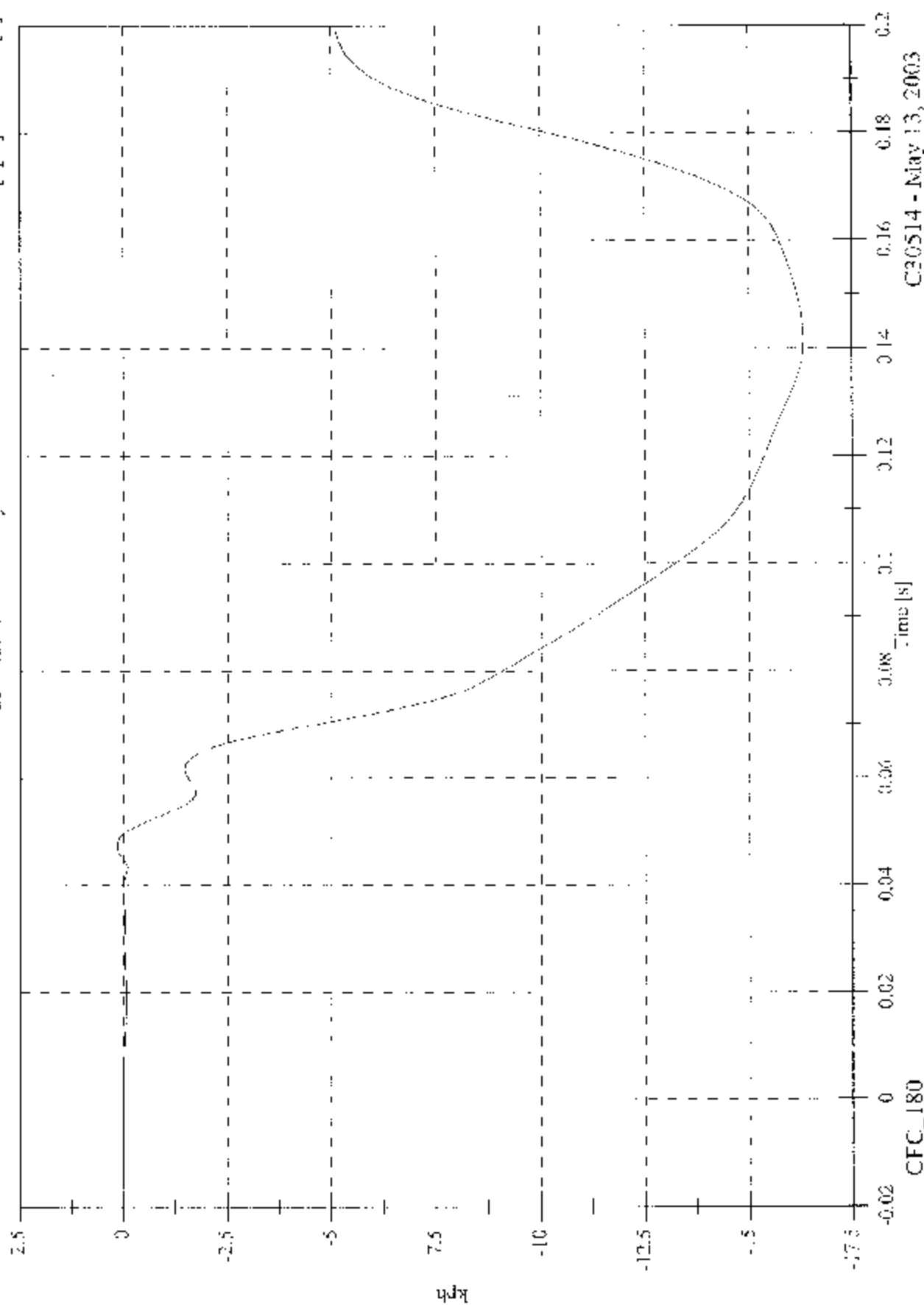
V2P4 Head x



C30514 - May 13, 2003

Max: 0.2 [kph] at 0.047 [s]
Min: -16.3 [kph] at 0.142 [s]

V2P4 Head x Velocity



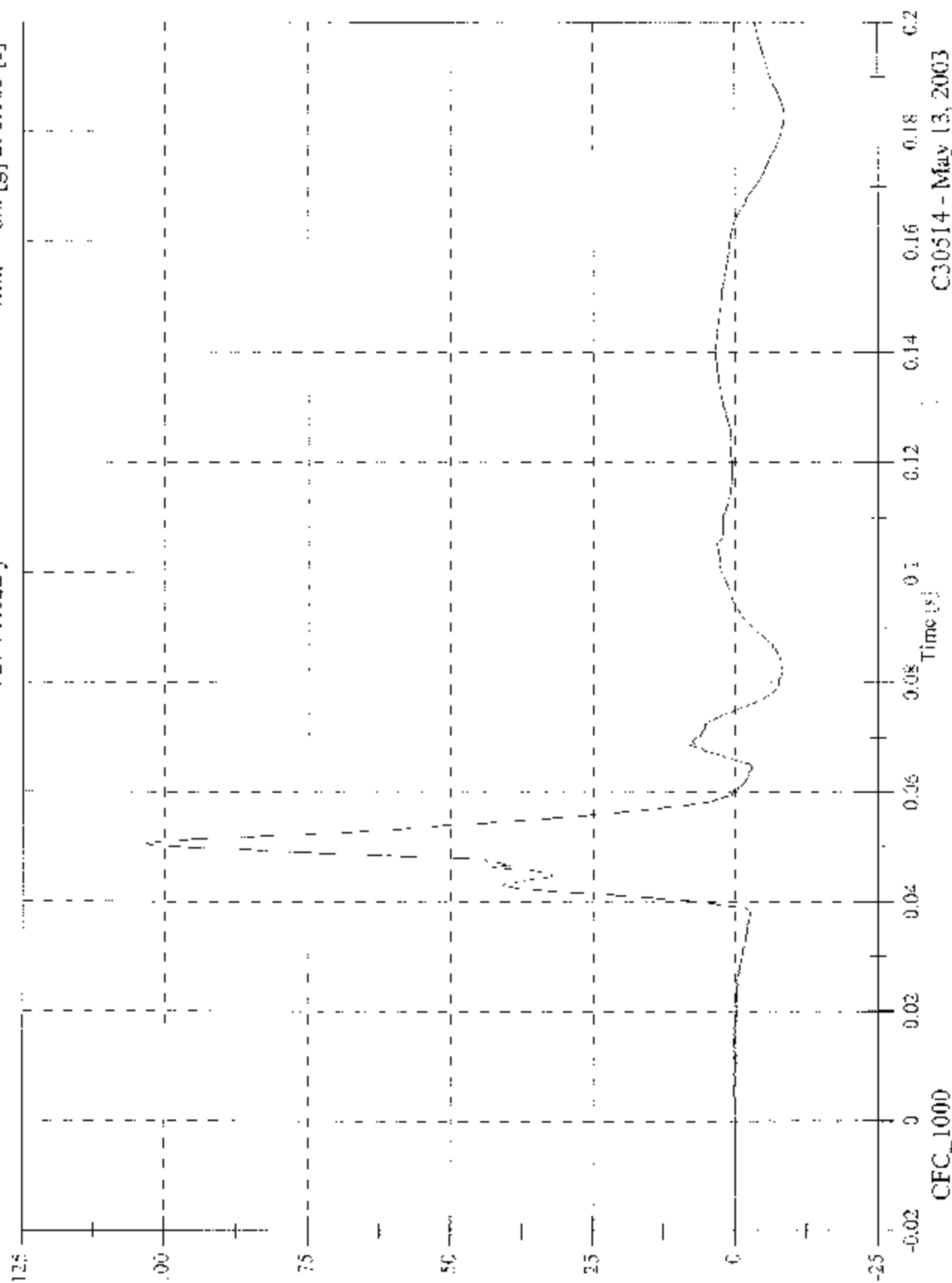
CFC_180

C30514 - May 13, 2003

FMVSS 214D Indicant - 2003 Saab 9-5

V2P4 Head y

Max: 103.6 [g] at 0.050 [s]
Min: -8.8 [g] at 0.183 [s]



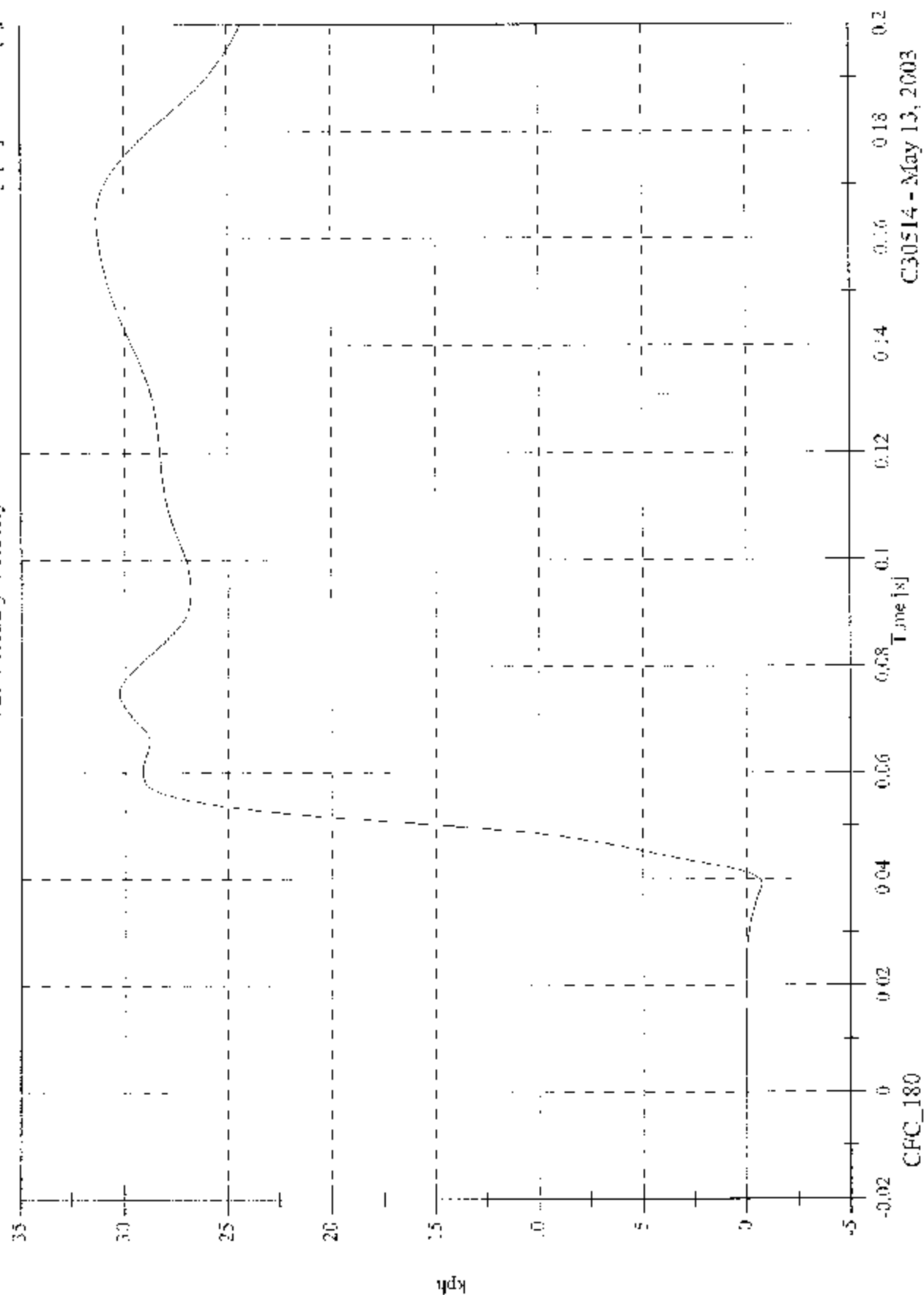
C30514 - May 13, 2003

FMVSS 214D Incident - 2003 Saab 9-5

Max: 31.3 [kph] at 0.164 [s]

Vmin: -0.7 [kph] at 0.039 [s]

V2P4 Head y Velocity

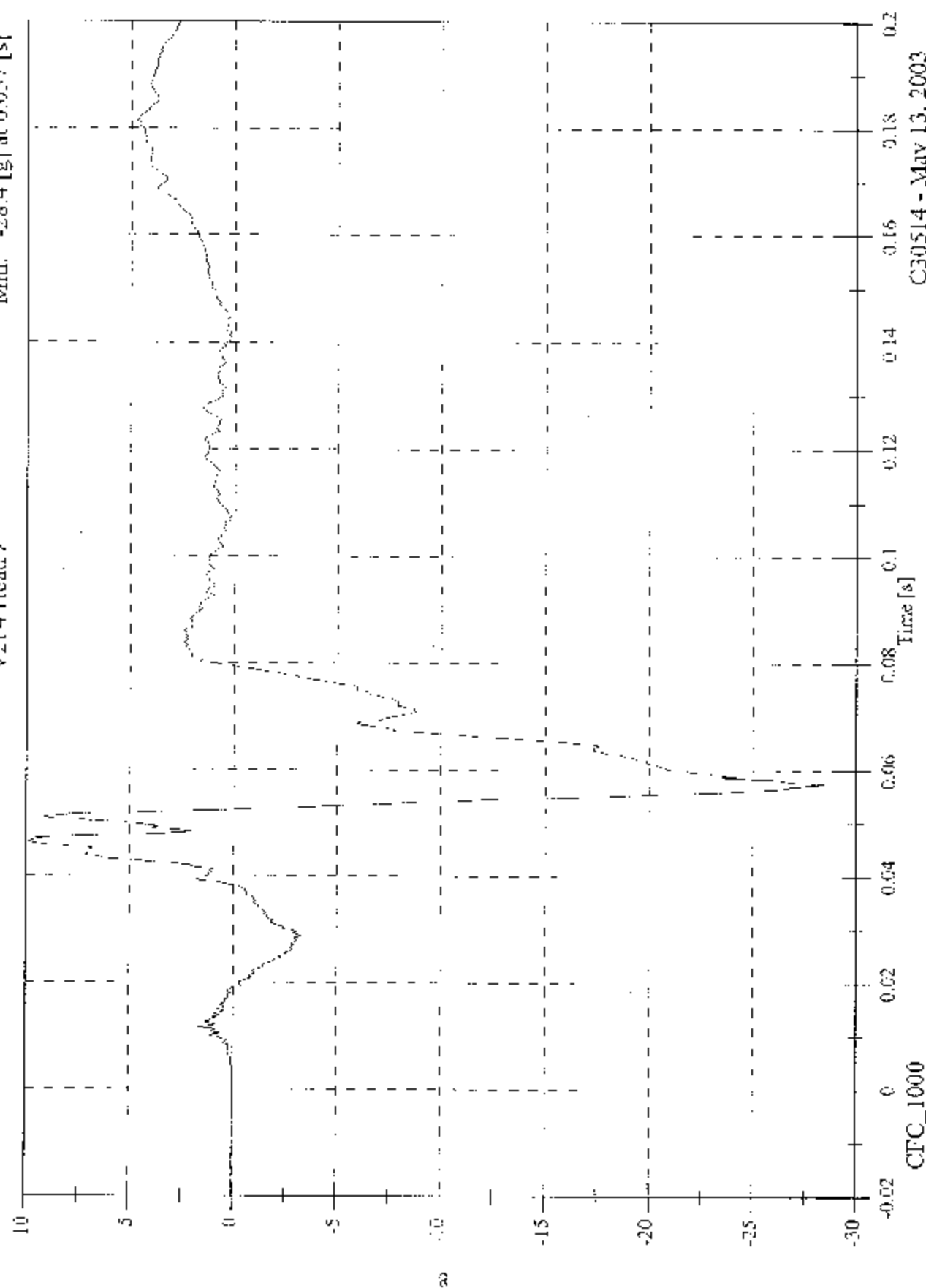


C30514 - May 13, 2003

FMVSS 214D Indicant - 2003 Saab 9-5

Max: 9.9 [g] at 0.046 [s]
Min: -28.4 [g] at 0.057 [s]

V2P4 Head z

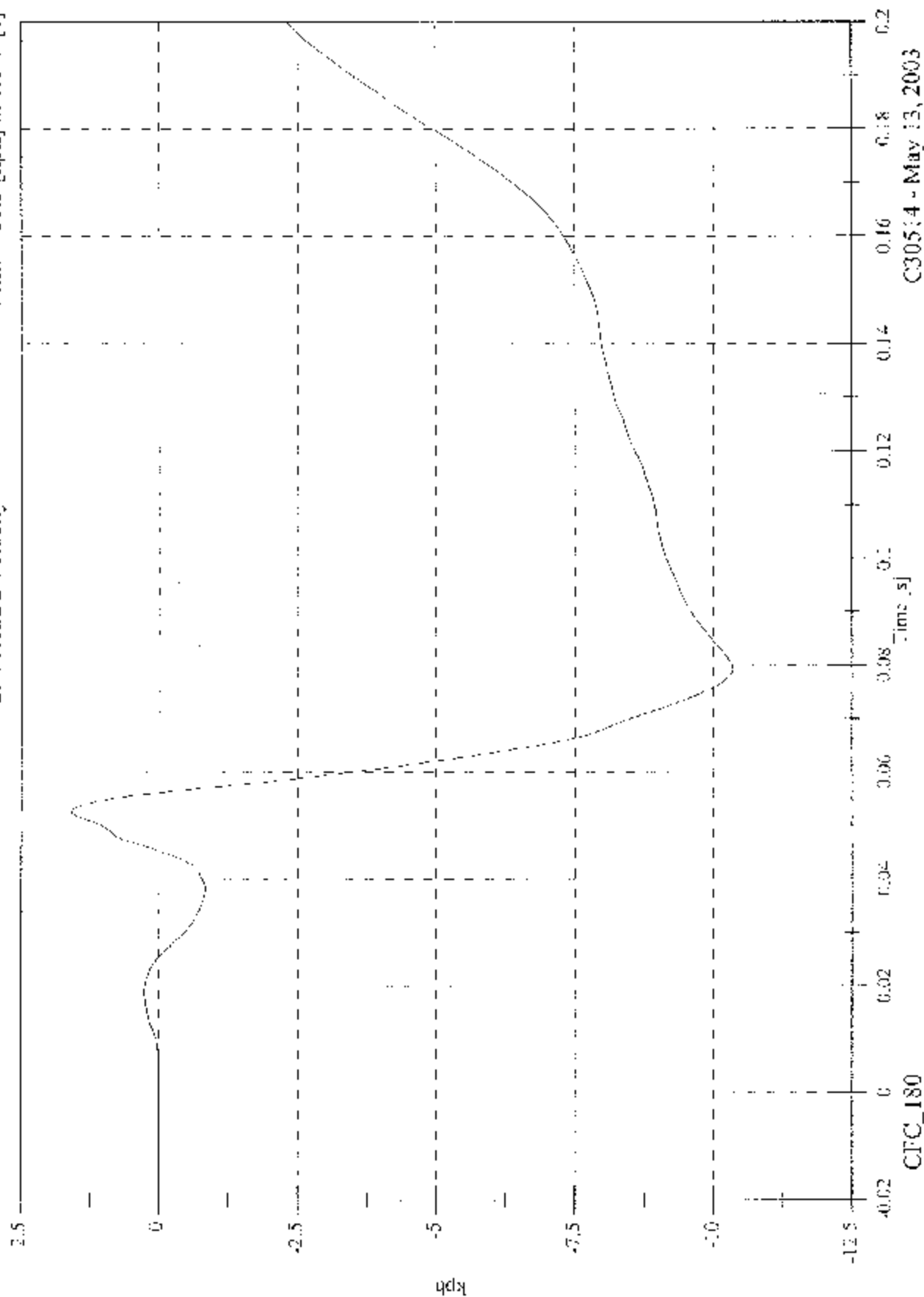


C30514 - May 13, 2003

FMVSS 214D Indicant - 2003 Saab 9-5

Max: 1.6 [kph] at 0.053 [s]
Min: -10.3 [kph] at 0.079 [s]

V2P4 Head z Velocity



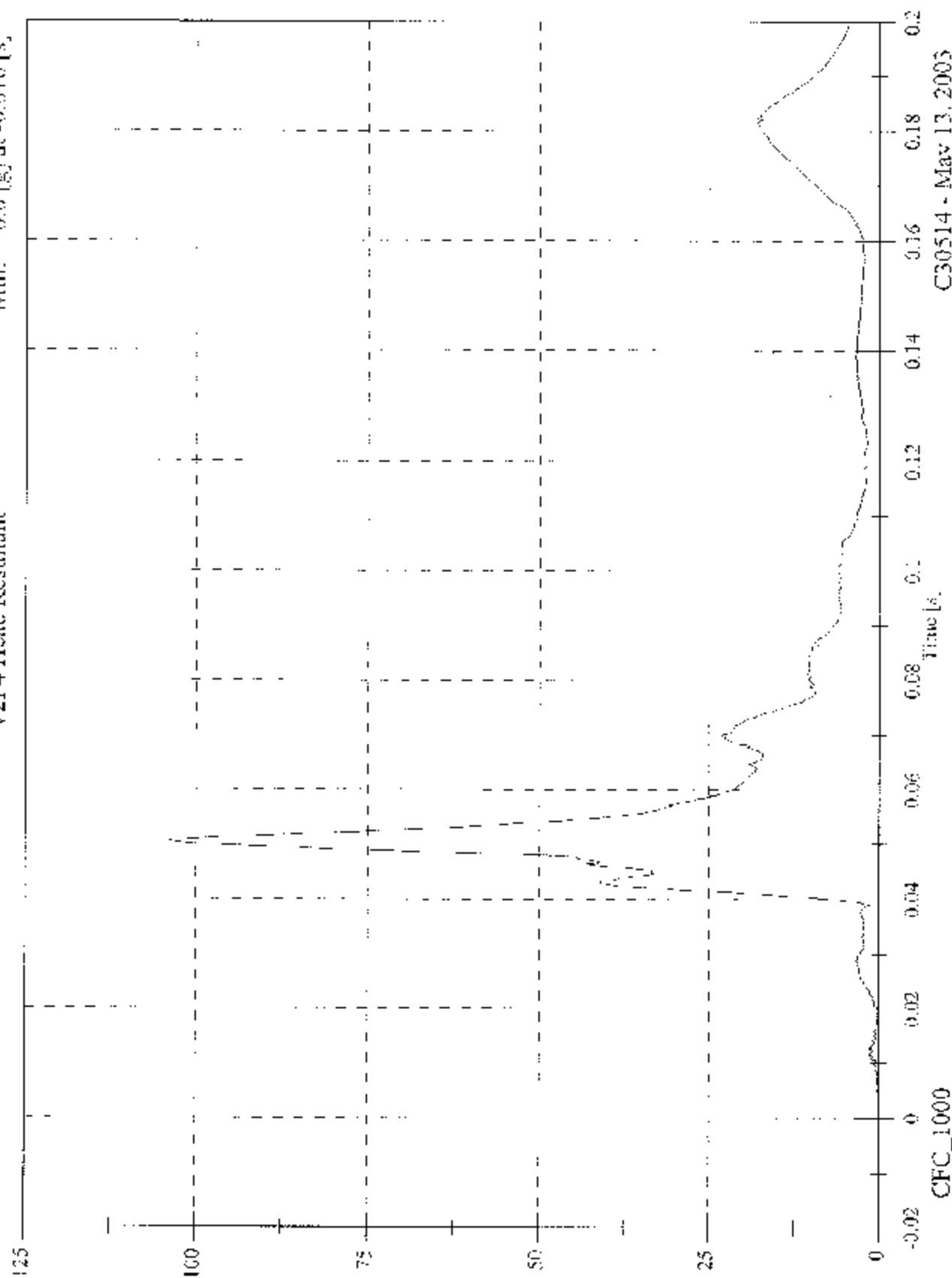
CFC_180

C30514 - May 13, 2003

F&MVSS 214D Indicant - 2003 Saab 9-5

V2P4 Hvac Resultant

Max: 104.1 [g] at 0.050 [s]
Min: 0.0 [g] at -0.010 [s]

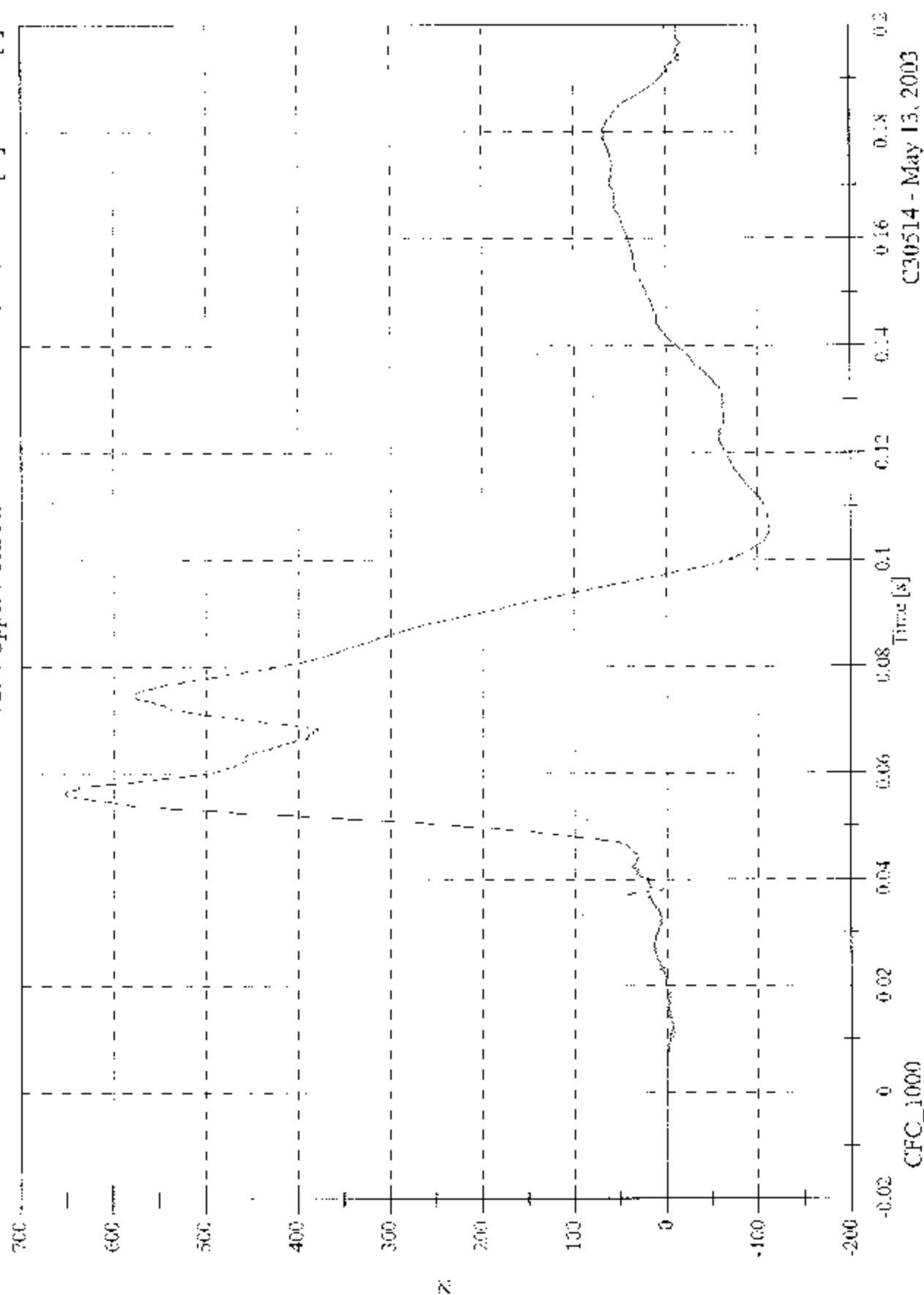


C30514 - May 13, 2003

FMVSS 214D Inducant - 2003 Scab 9-5

Max: 653.7 [N] at 0.056 [s]
Min: -113.1 [N] at 0.106 [s]

V2P4 Upper Neck Px

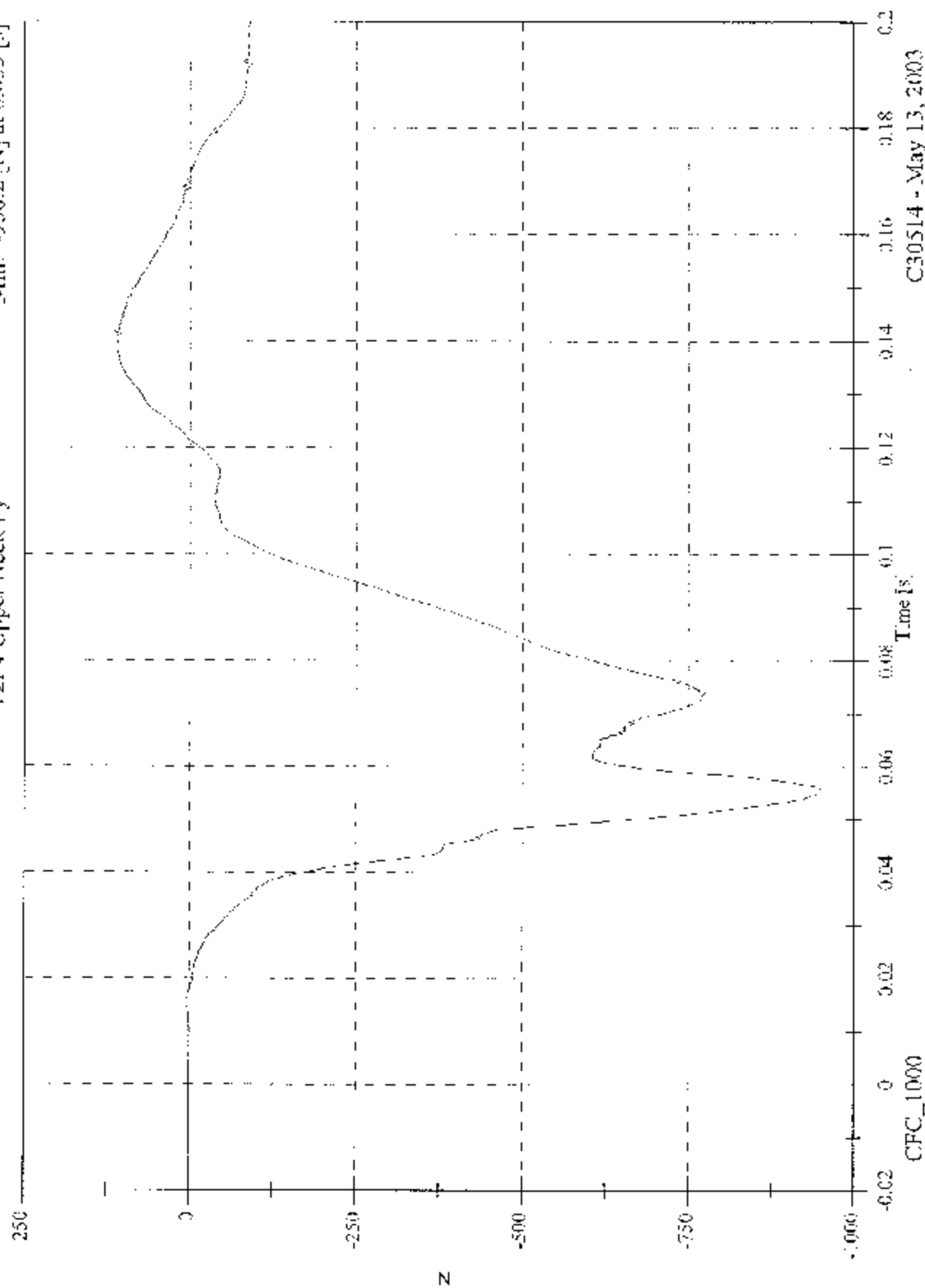


C30514 - May 13, 2003

FMVSS 214D Indicaant - 2003 Saab 9-5

Max: 116.7 [N] at 0.142 [s]
Min: -950.2 [N] at 0.055 [s]

V2P4 Upper Neck Fy

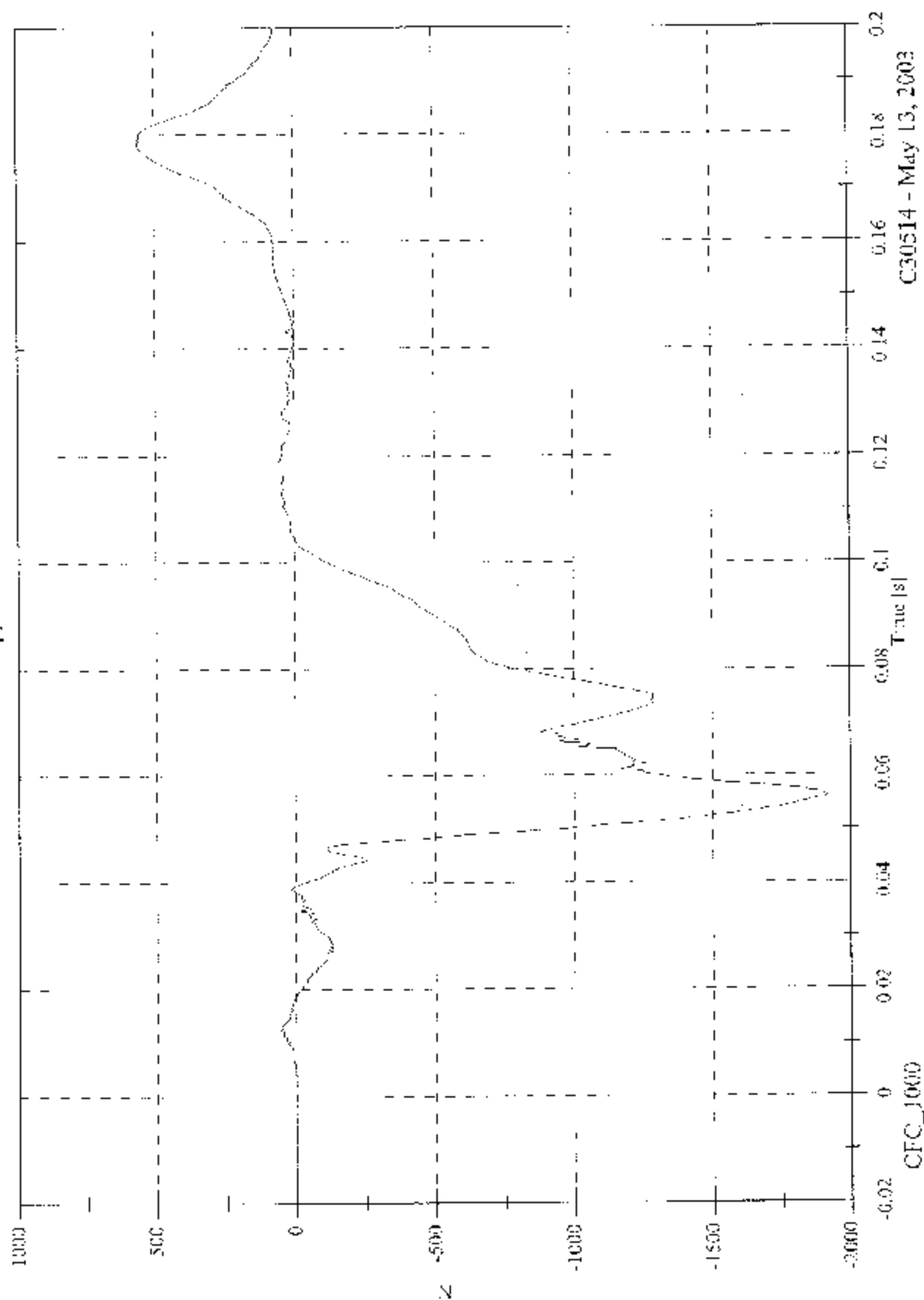


C30514 - May 13, 2003

FMVSS 214D Inducant - 2003 Saab 9-5

Max: 570.7 [N] at 0.179 [s]
Min: -1918.6 [N] at 0.056 [s]

V2P4 Upper Neck Fz

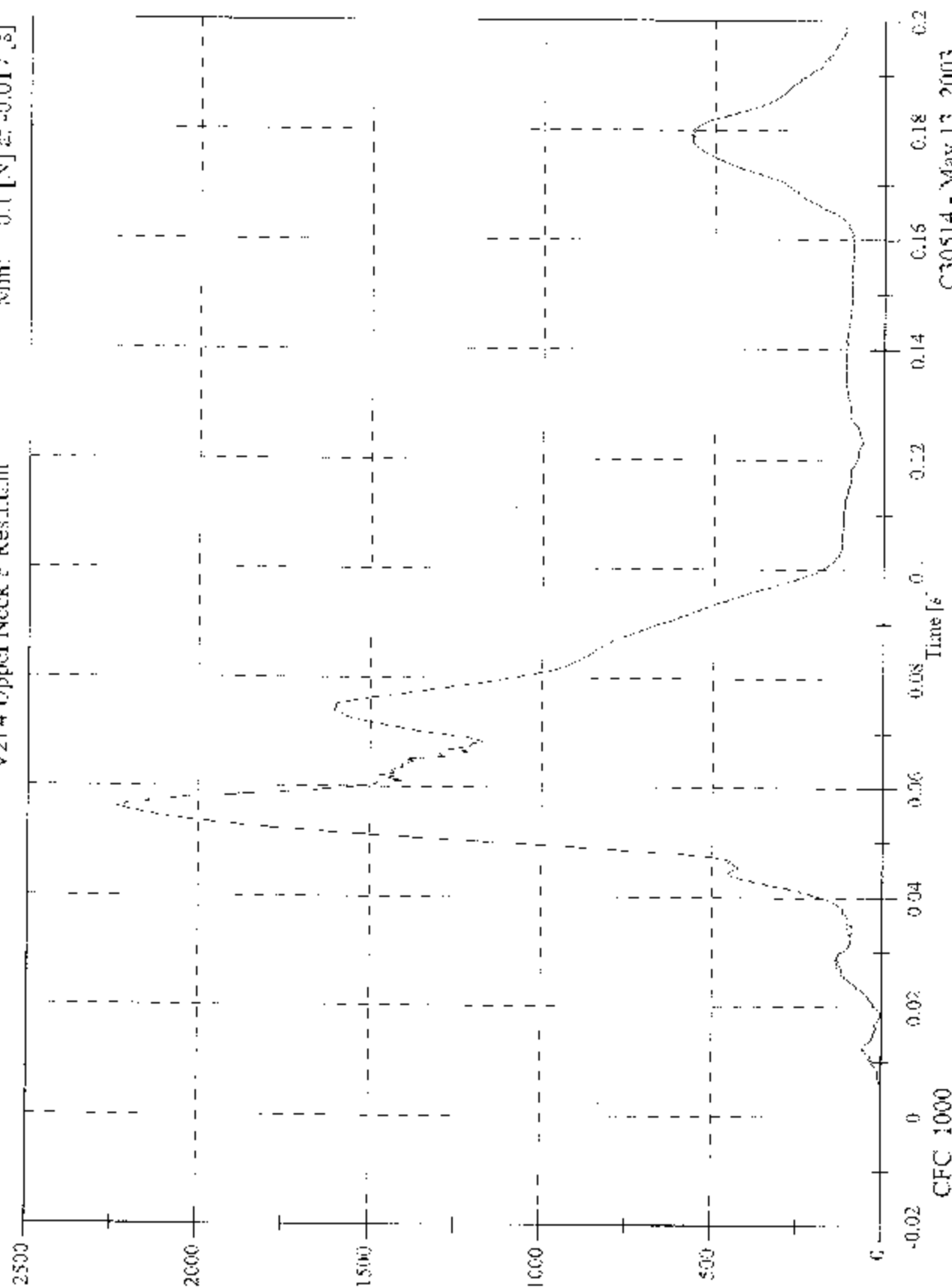


C30514 - May 13, 2003

FMVSS 214D Indicant - 2003 Saab 9-5

V2P4 Upper Neck $\bar{\epsilon}$ Resilient

Max: 2236.4 [N] at 0.056 [s]
Min: 0.1 [N] at -0.017 [s]

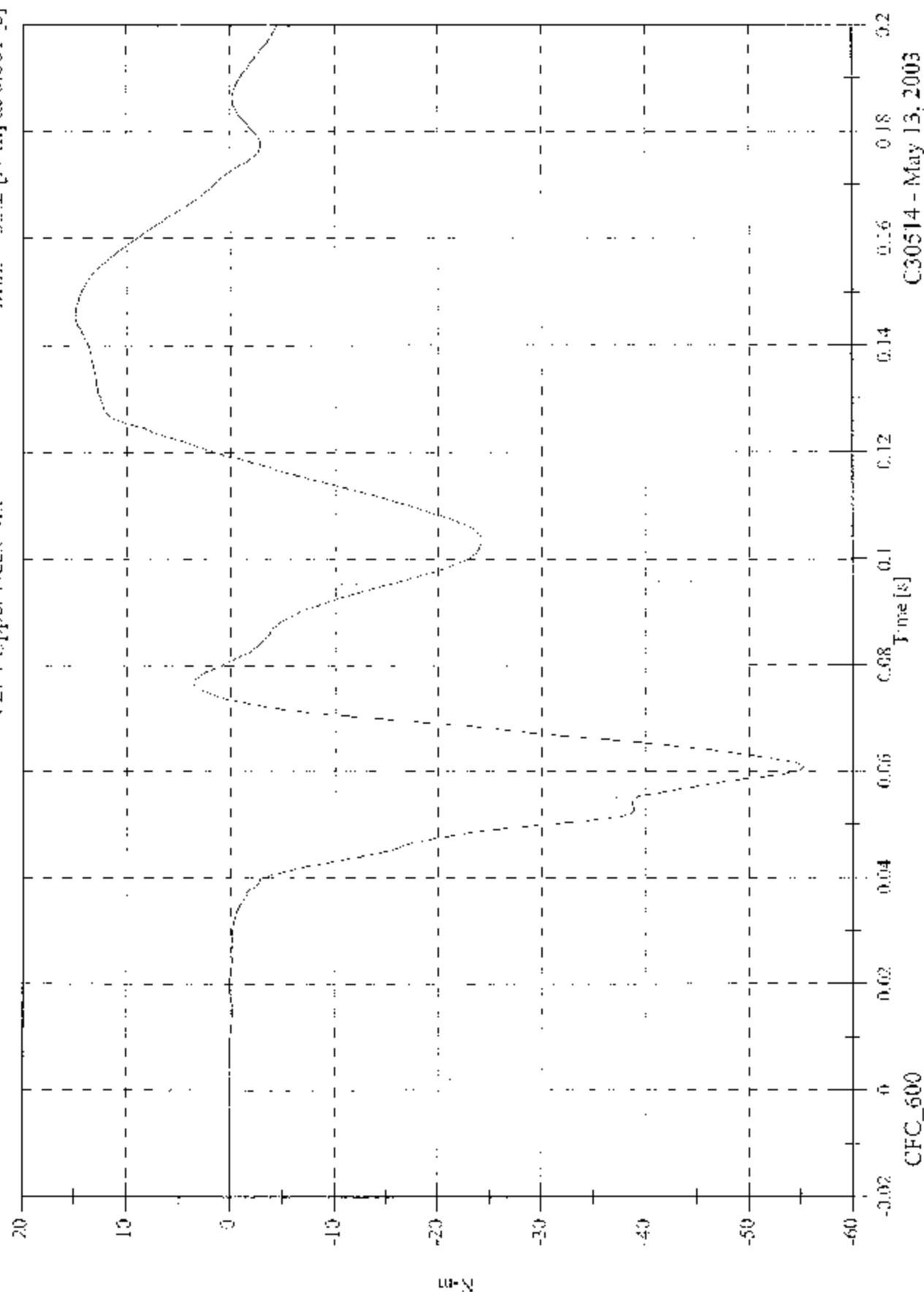


C30514 - May 13, 2003

FMVSS 214D Indicant - 2003 Saab 9-5

Max: 14.9 [N-m] at 0.145 [s]
Min: -55.2 [N-m] at 0.061 [s]

V2P4 Upper Neck Mfx

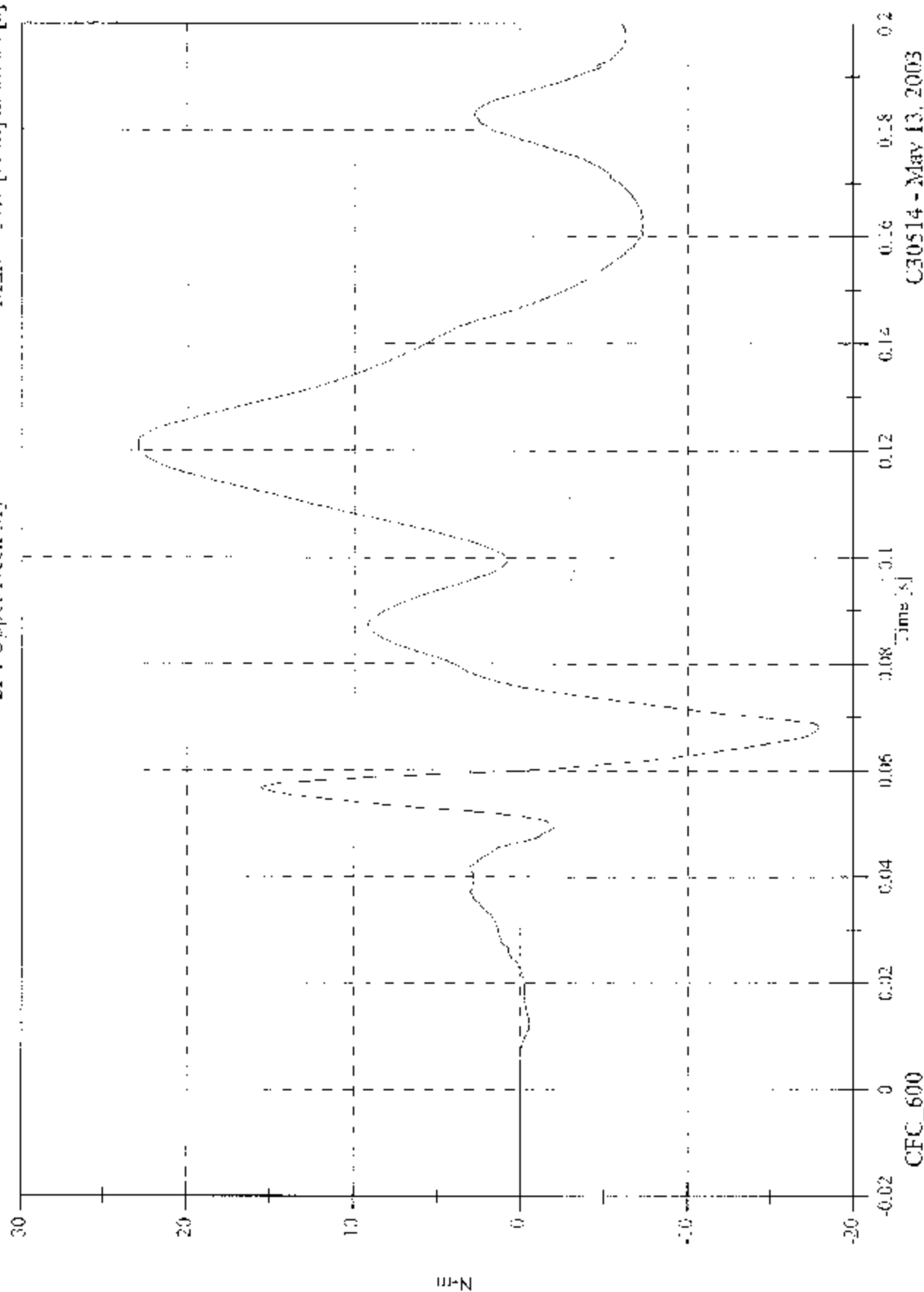


C30514 - May 13, 2003

TMVSS 214D Indicat - 2003 Saab 9-5

V2P4 Upper Neck My

Max: 23.0 [N-m] at 0.122 [s]
Min: -7.9 [N-m] at 0.068 [s]

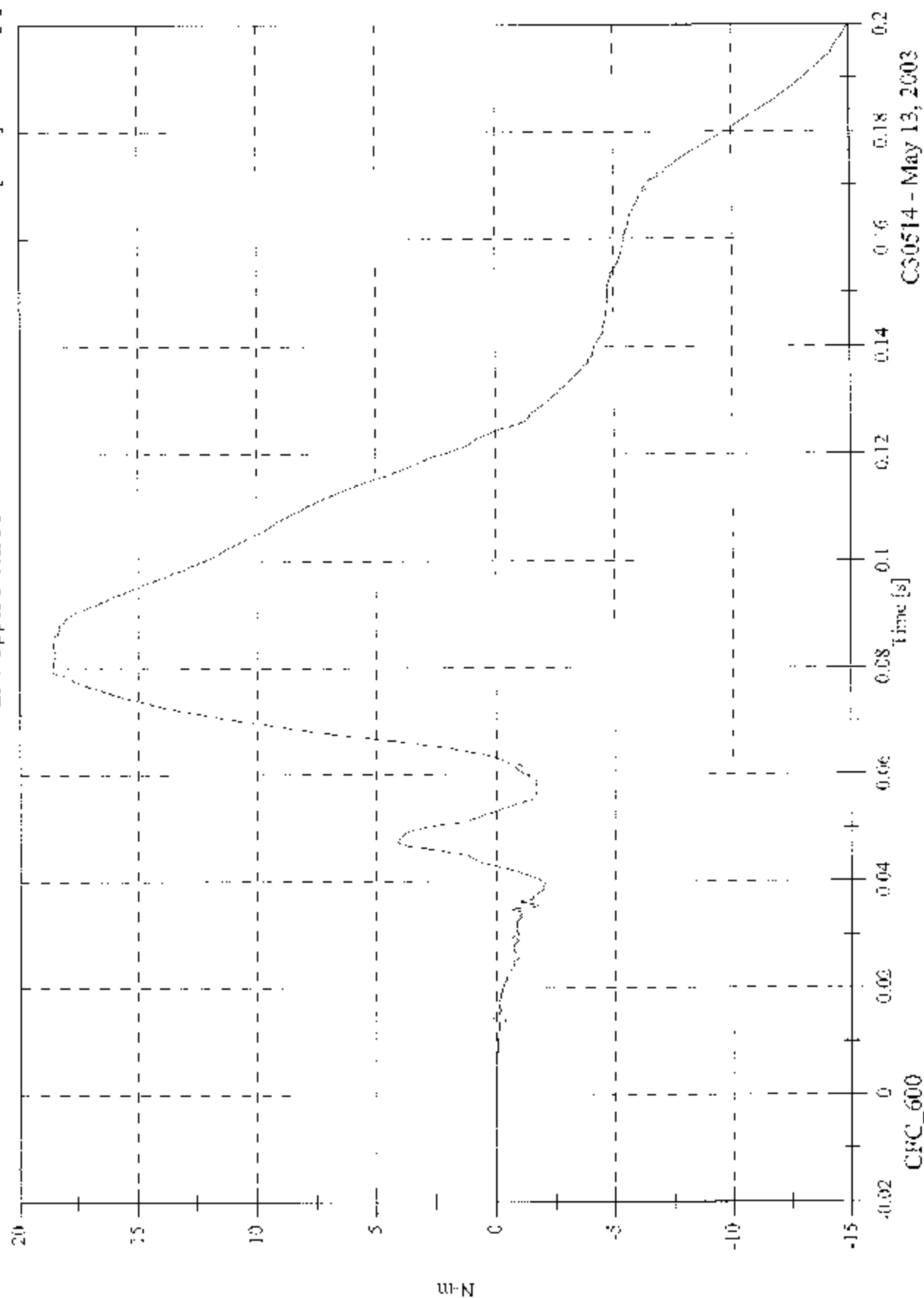


C30514 - May 13, 2003

FMVSS 214D Indicant - 2003 Saab 9-5

Max: 18.7 [N-m] at 0.080 [s]
Min: -14.9 [N-m] at 0.200 [s]

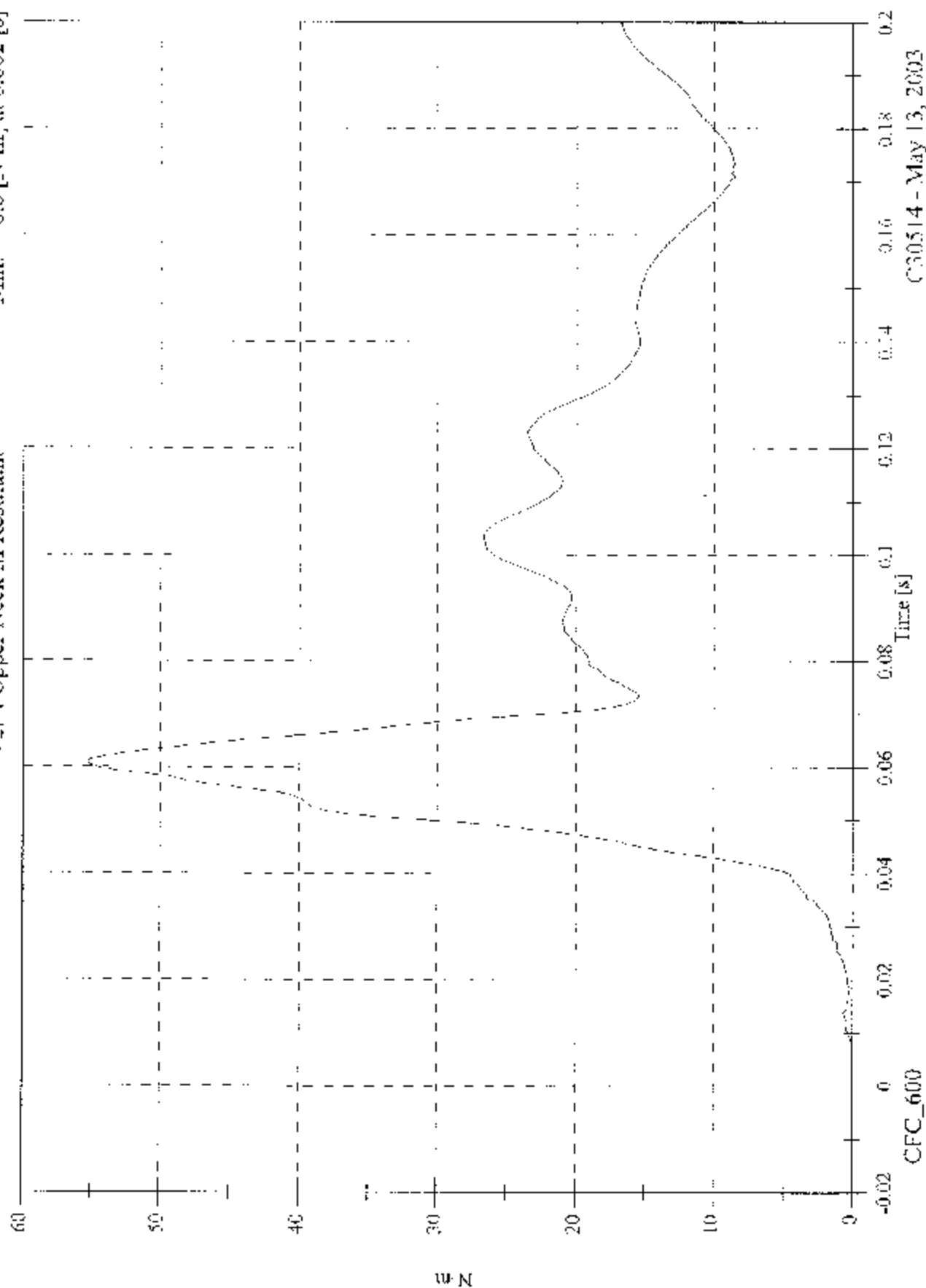
V2P4 Upper Neck Mz



C30514 - May 13, 2003

FMVSS 214D Indicant - 2003 Sub 9-5

V2P4 Upper Neck M Resistant



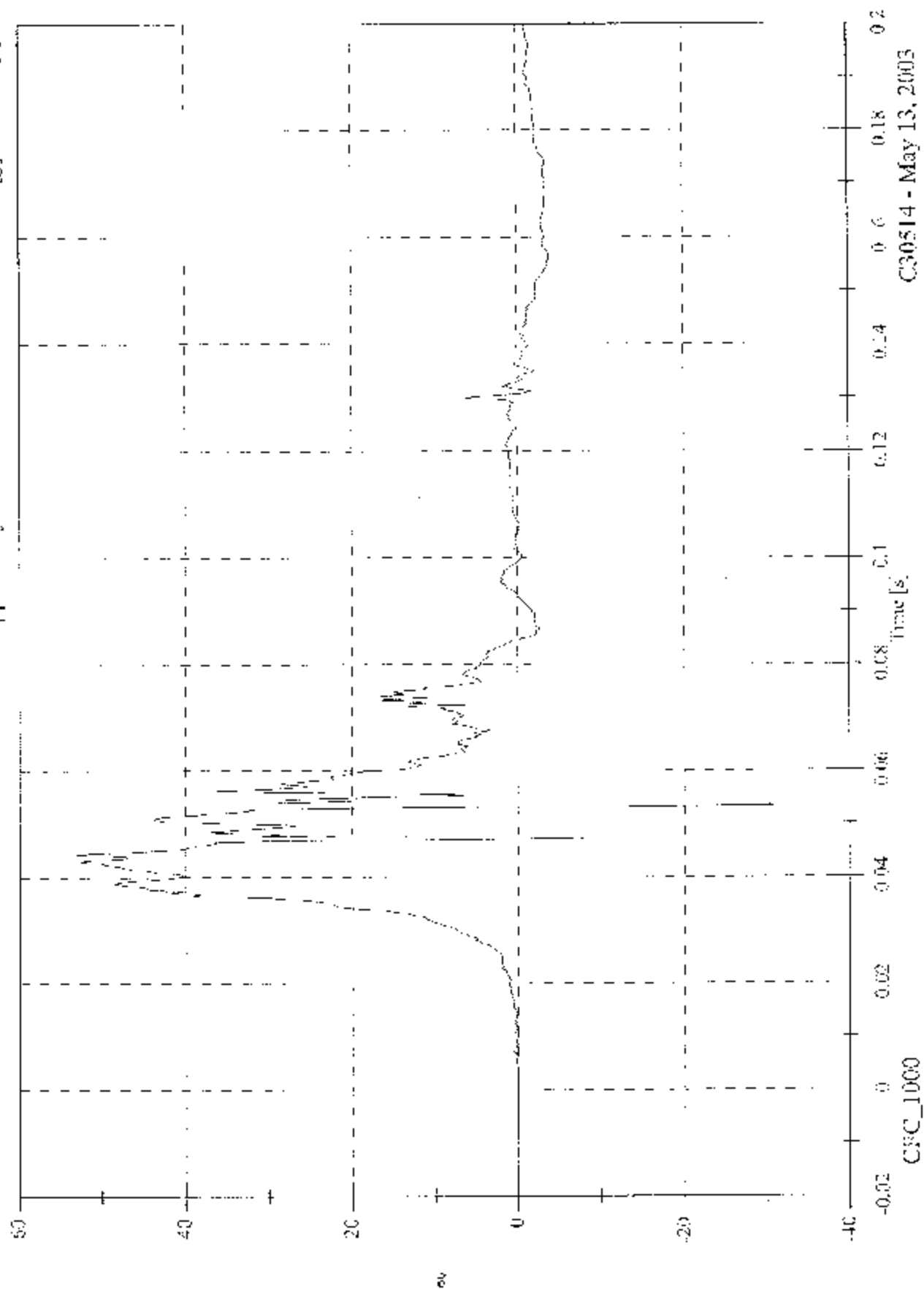
C30514 - May 13, 2003

FMVSS 214D Indicant - 2003 Saab 9-5

Max: 53.1 [g] at 0.044 [s]

Min: -37.0 [g] at 0.053 [s]

V2P4 Upper Rib y

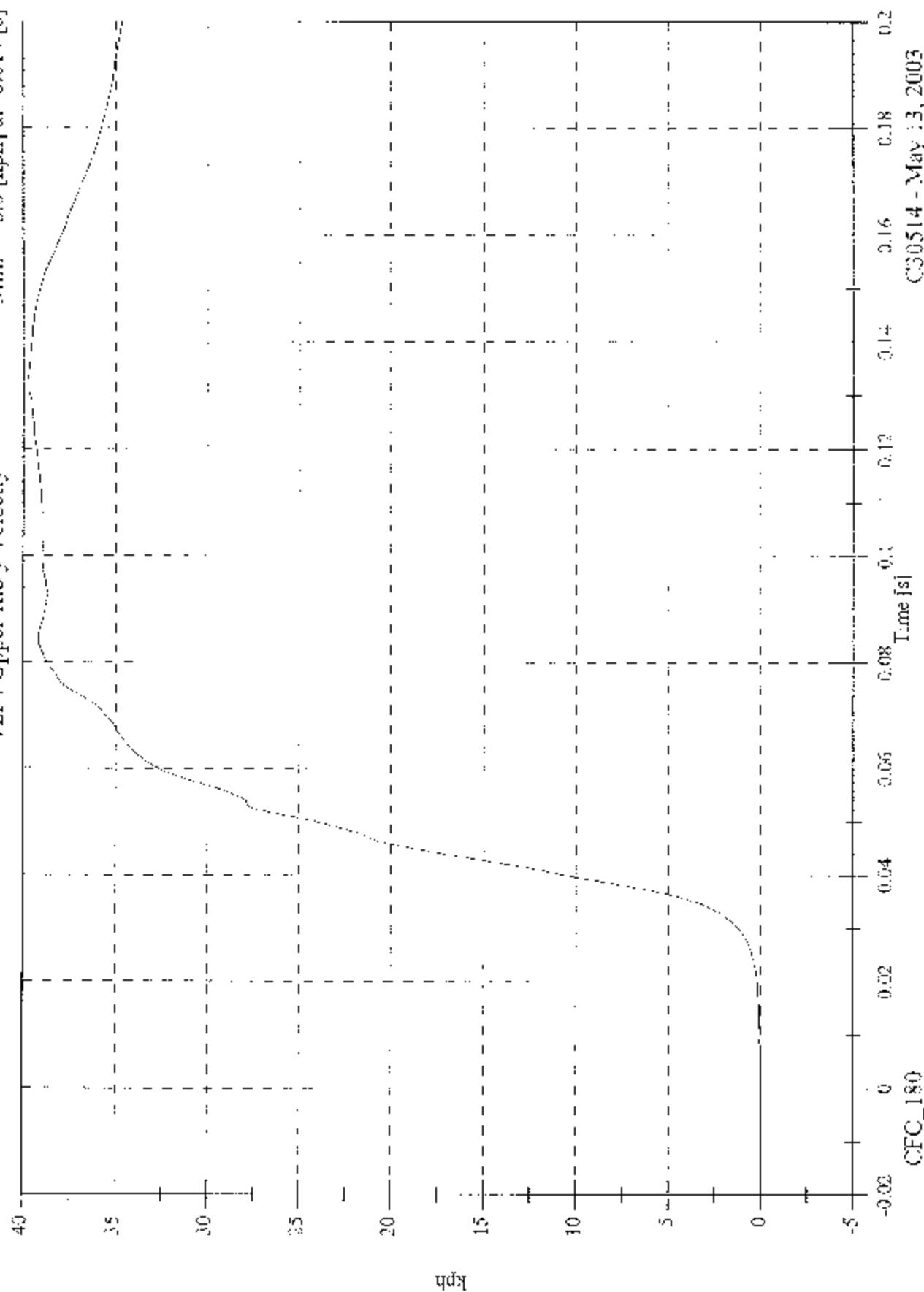


C30514 - May 13, 2003

FMVSS 214D Inducant - 2003 Saab 9-5

V2P4 Upper Rib y Velocity

Max: 39.7 [kph] at 0.133 [s]
Min: -0.0 [kph] at -0.014 [s]



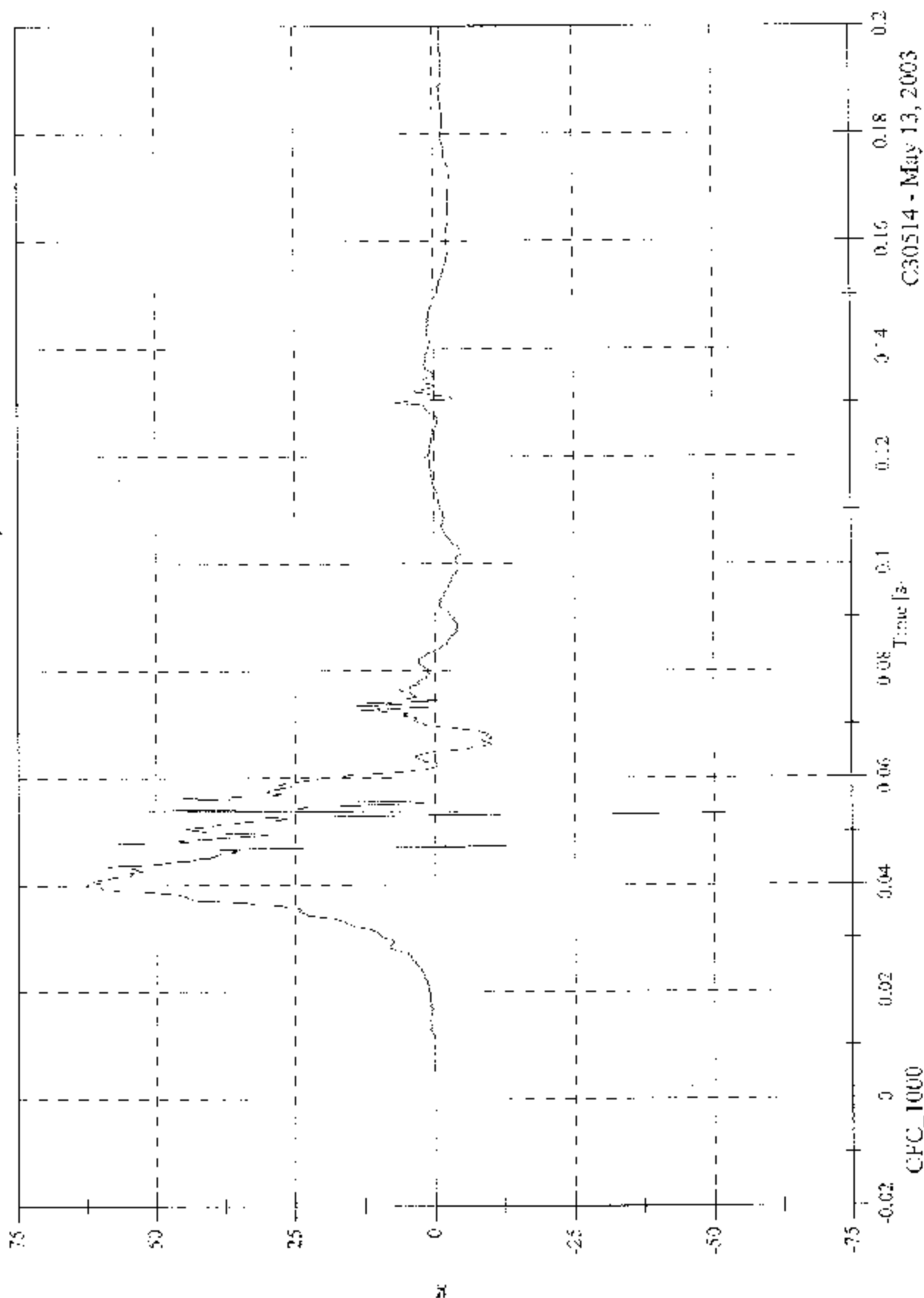
CFC_180

C30514 - May 13, 2003

FMVSS 214D Inducant - 2003 Saab 9-5

Max: 62.6 [g] at 0.040 [s]
Min: -56.5 [g] at 0.053 [s]

V2P4 Lower Rib y

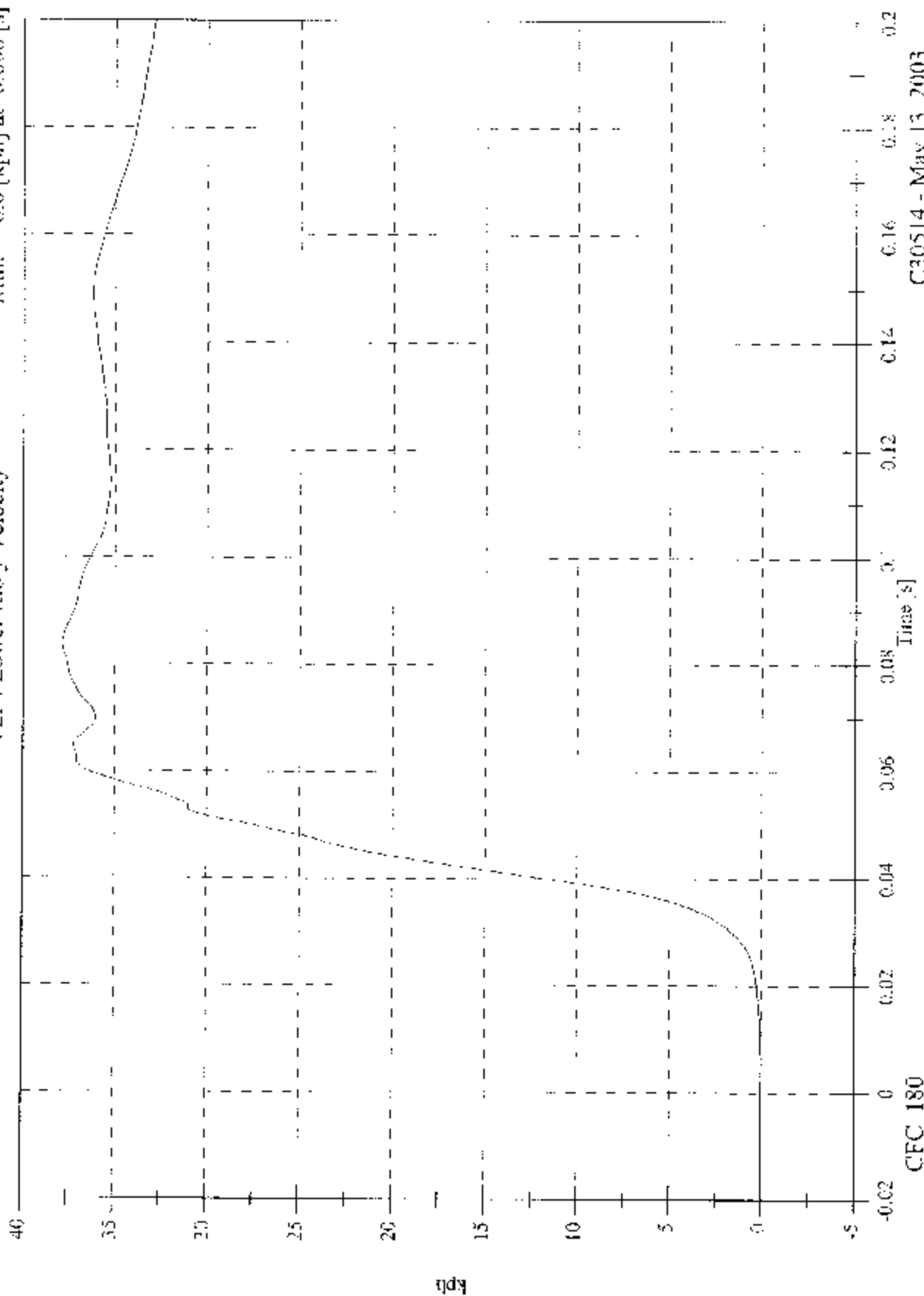


C30514 - May 13, 2003

FMVSS 214D Indicant - 2003 Saab 9-5

Max: 37.8 [kph] at 0.084 [s]
Min: -0.0 [kph] at -0.008 [s]

V2P4 Lower Rib y Velocity

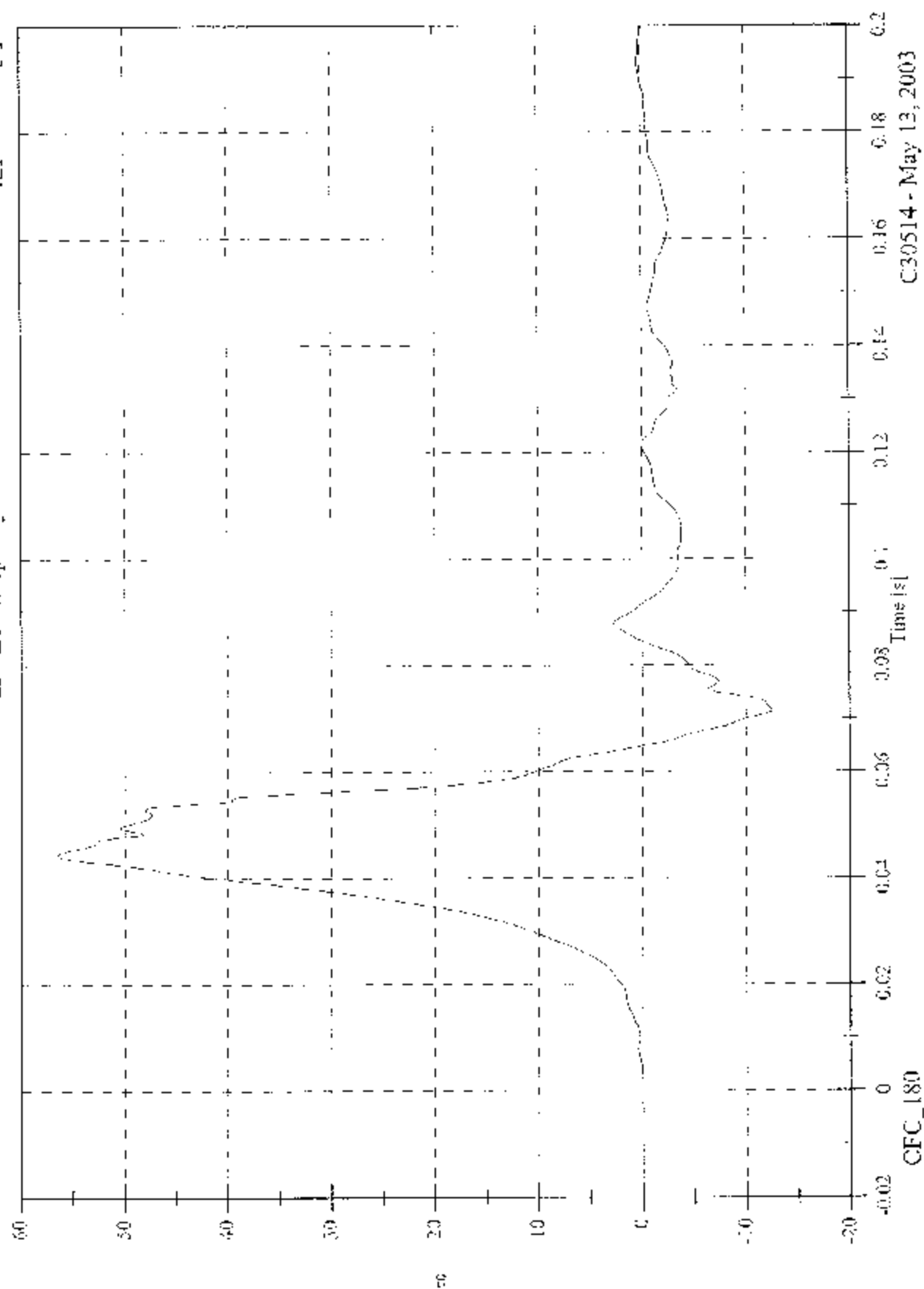


C30514 - May 13, 2003

FMVSS 214D Inducant - 2003 Saab 9-5

Max: 56.5 [g] at 0.044 [s]
Min: -12.6 [g] at 0.071 [s]

V2P4 Lower Spine y

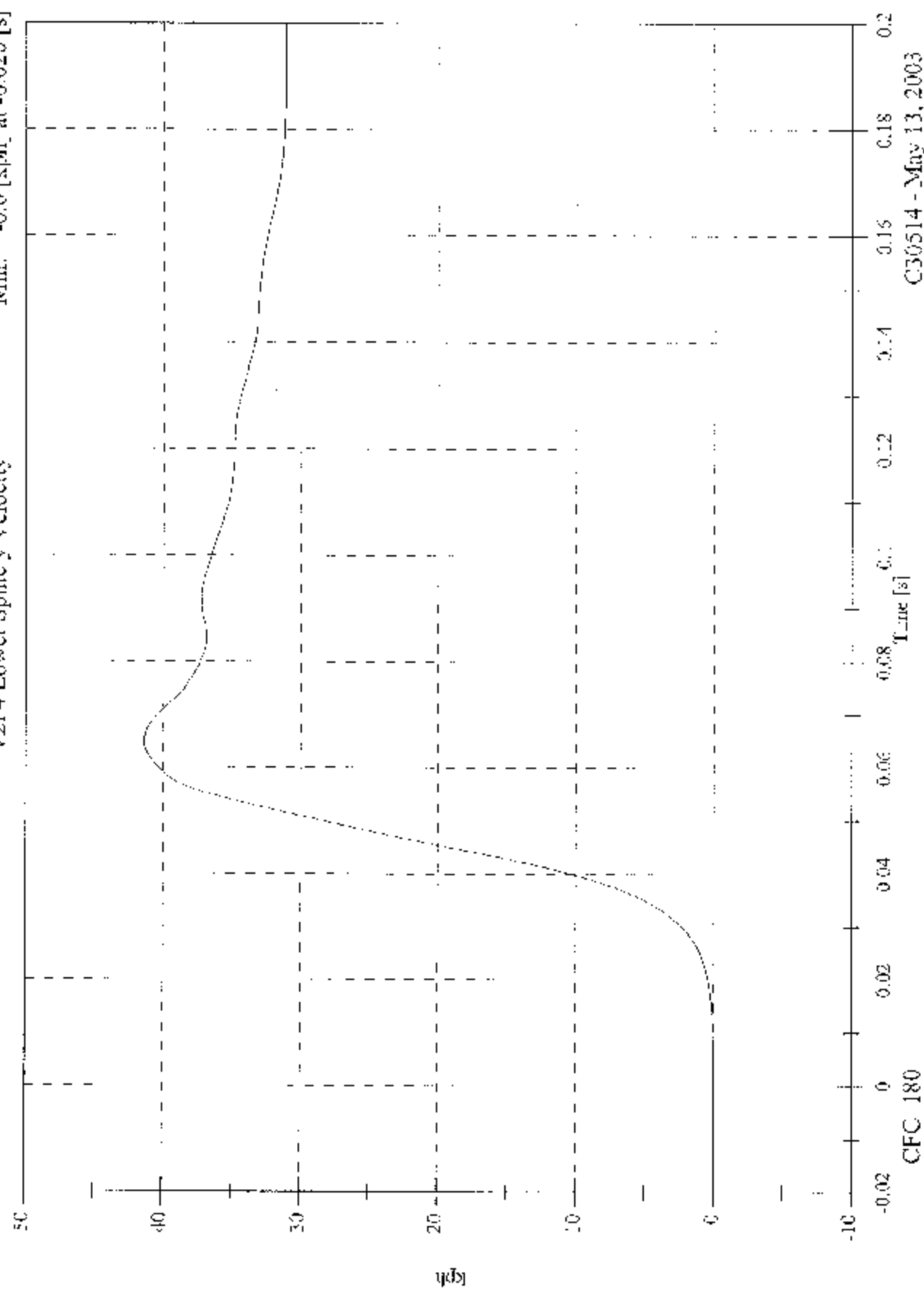


C30514 - May 13, 2003

FMVSS 214D Indicant - 2003 Saab 9-5

V2P4 Lower Spine y Velocity

Max: 41.4 [mph] at 0.065 [s]
Min: -0.0 [mph] at -0.020 [s]

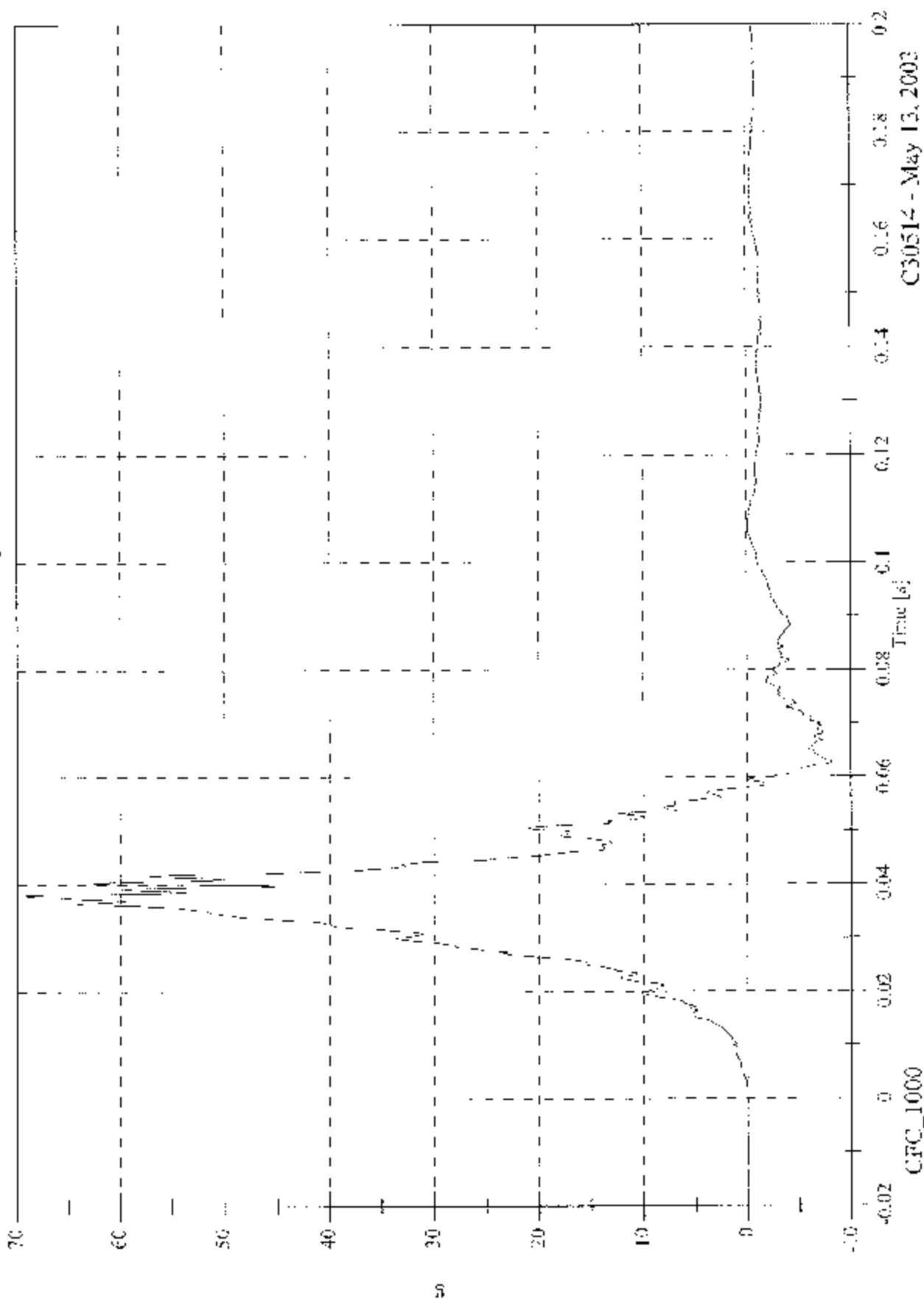


C30514 - May 13, 2003

FMVSS 214D Indicant - 2003 Saab 9-5

Max: 69.1 [g] at 0.038 [s]
Min: -8.1 [g] at 0.063 [s]

V2P4 Peivie y

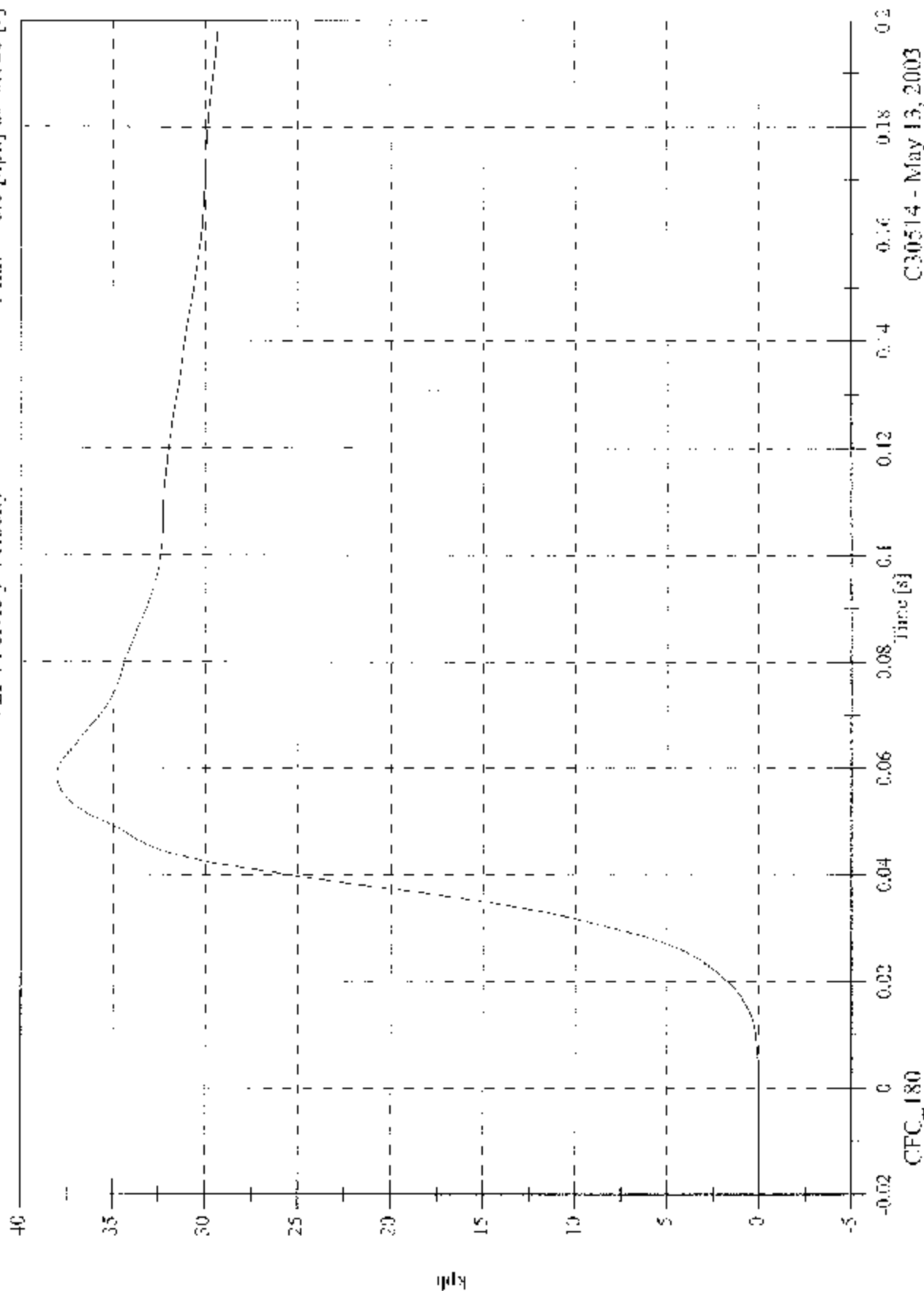


C30514 - May 13, 2003

FMVSS 214D Indictant - 2003 Saab 9-5

Max: 38.1 [kph] at 0.058 [s]
 Min: -0.0 [kph] at -0.020 [s]

V2P4 Pelvic y Velocity

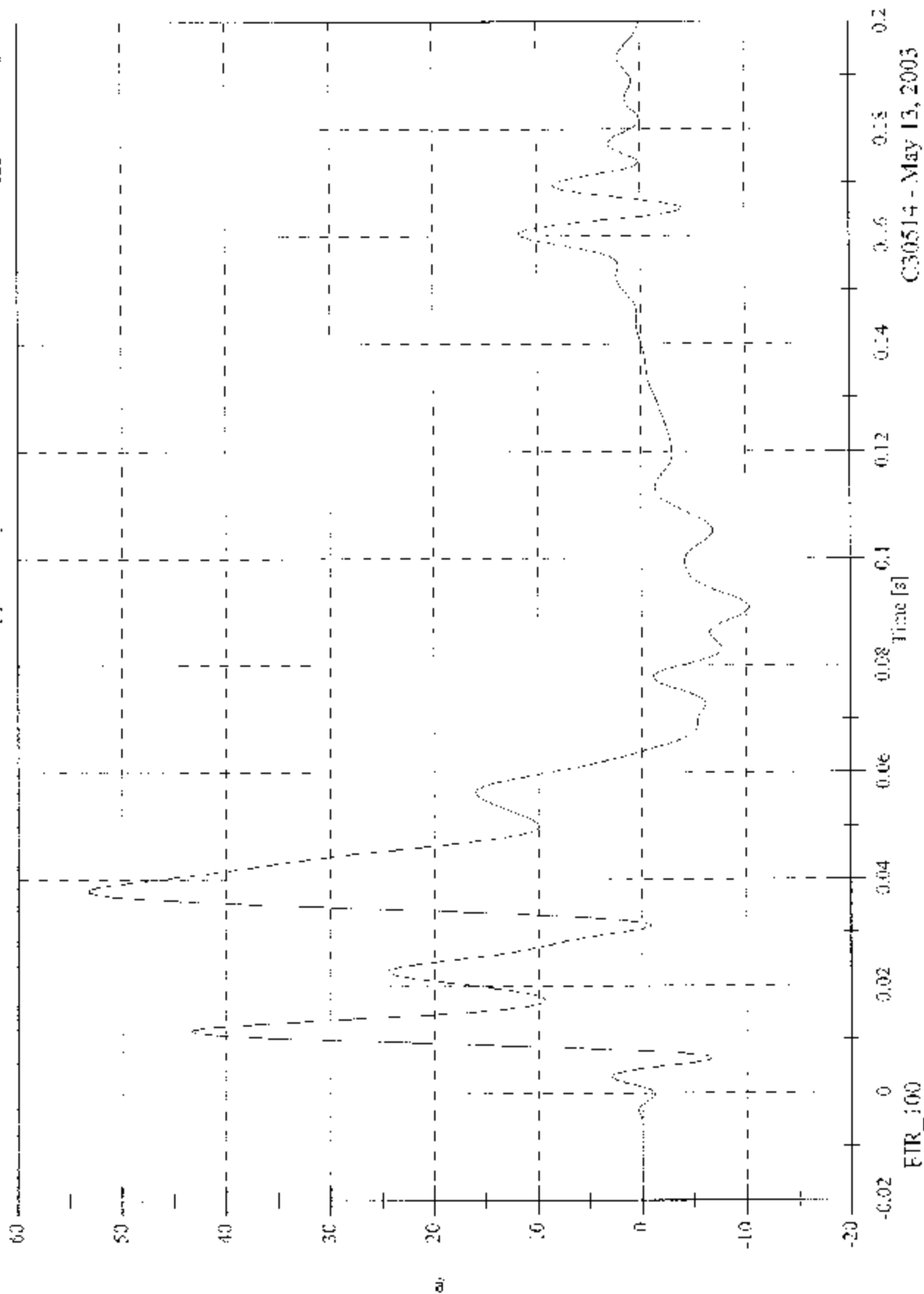


C30514 - May 13, 2003

FMVSS 214D Indican - 2003 Saab 9-5

Max: 53.2 [g] at 0.038 [s]
Min: -10.3 [g] at 0.091 [s]

V2Pt Upper Rib y

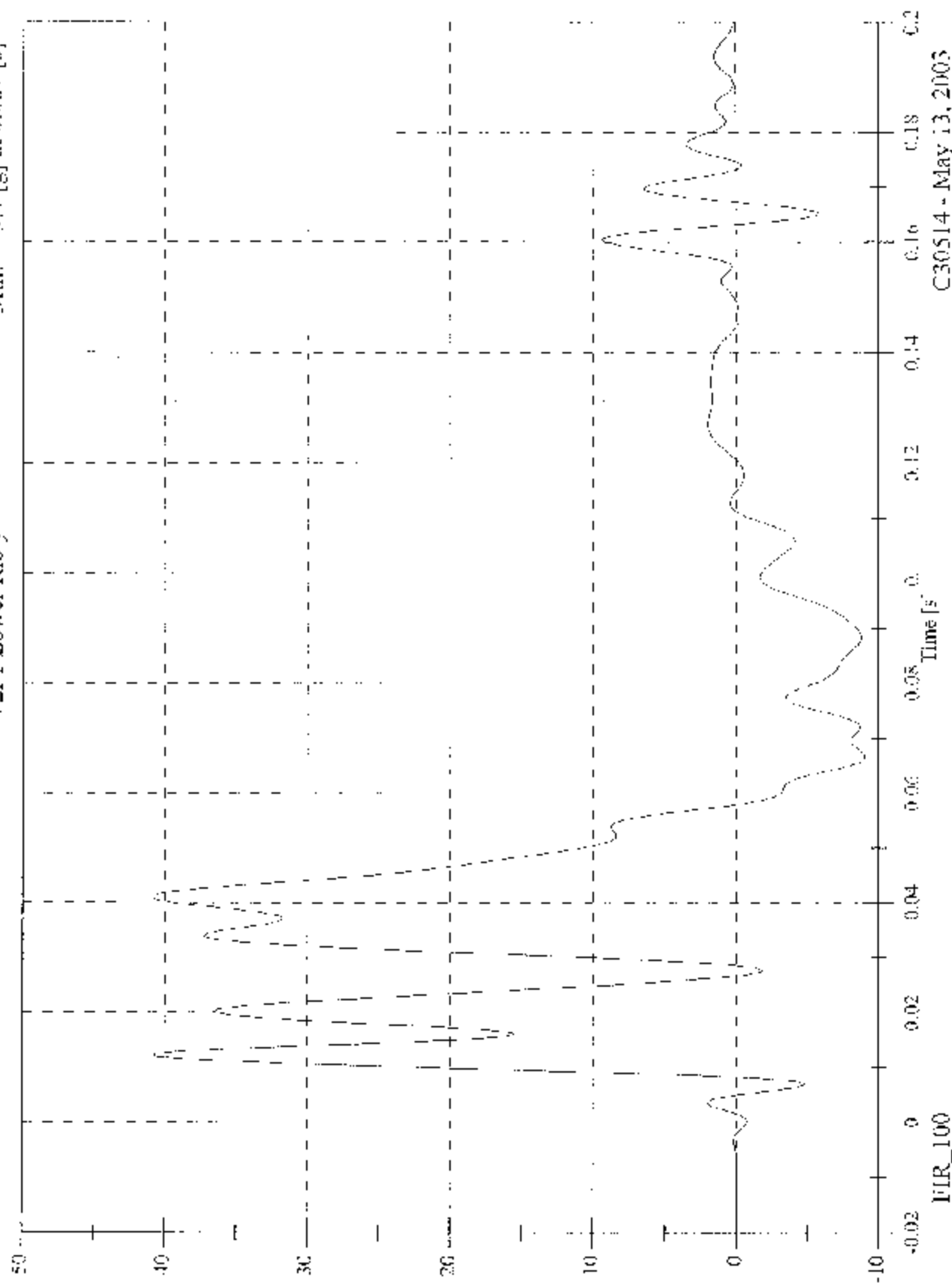


C30514 - May 13, 2003

TMVSS 2:4D Indicant - 2003 Saab 9-5

Max: 40.9 [g] at 0.041 [s]
Min: -9.1 [g] at 0.067 [s]

V2P: Lower Rib y



VIR_100

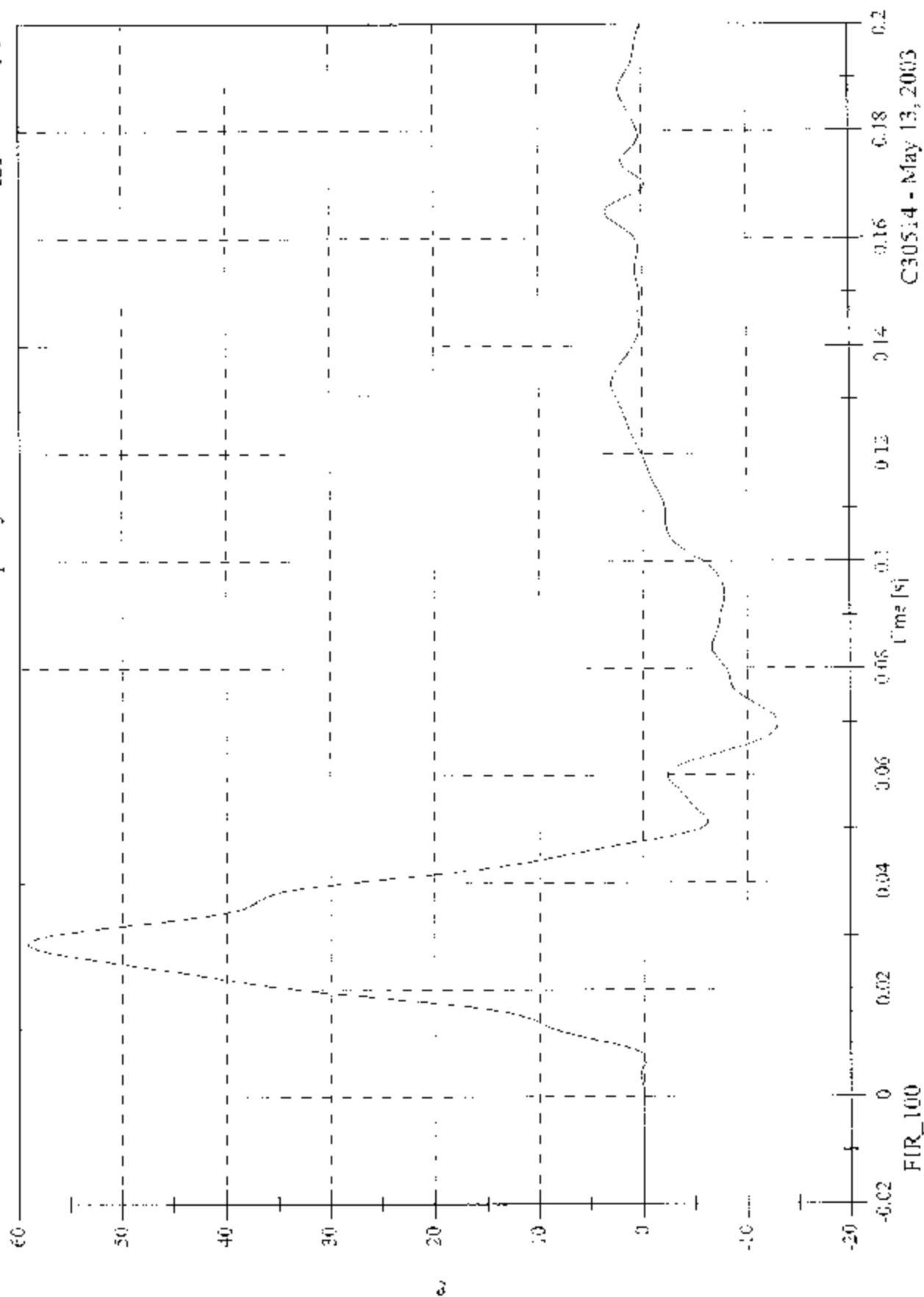
C30514 - May 13, 2003

FMVSS 214D Inducant - 2003 Saab 9-5

Max: 59.2 [g] at 0.029 [s]

Min: -13.0 [g] at 0.070 [s]

V2P1 Lower Spine y

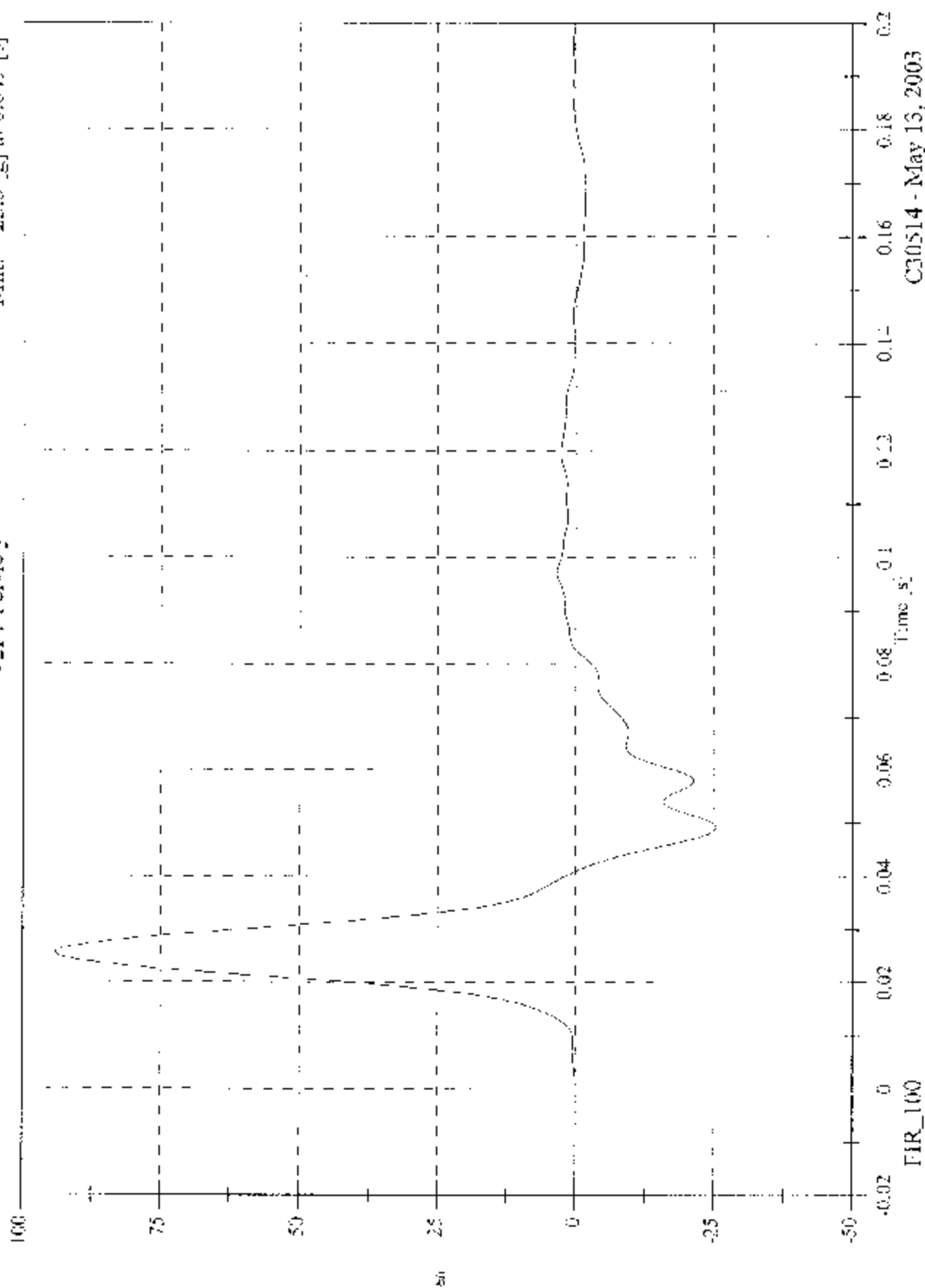


C30514 - May 13, 2003

FM(VSS 214D) Indicant - 2003 Saab 9-5

V2PI Pelvic y

Max: 94.1 [g] at 0.026 [s]
Min: -25.5 [g] at 0.049 [s]

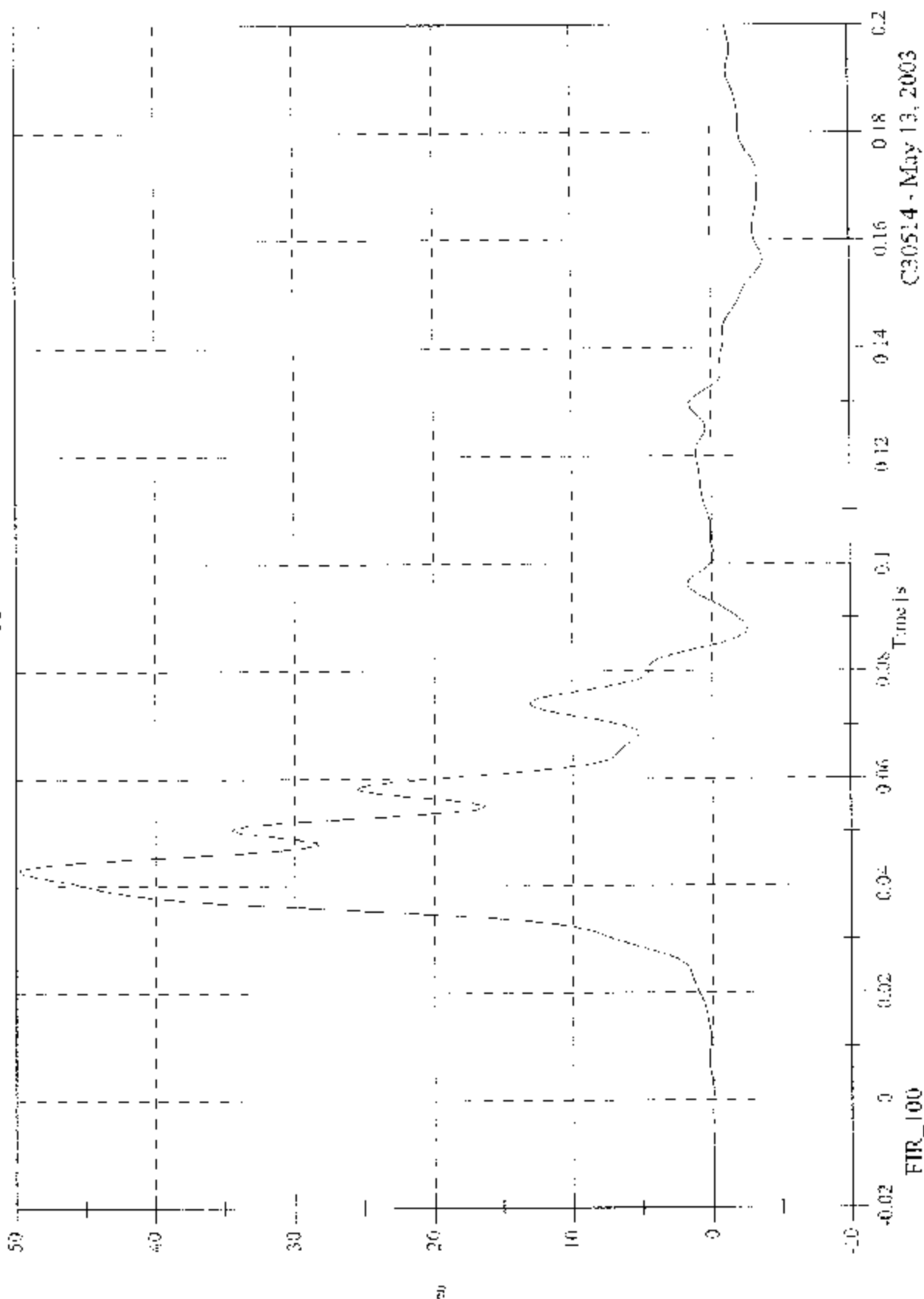


C30514 - May 13, 2003

FMVSS 214D Inducant - 2003 Sub 9-5

Max: 49.7 [g] at 0.045 [s]
Min: -3.8 [g] at 0.156 [s]

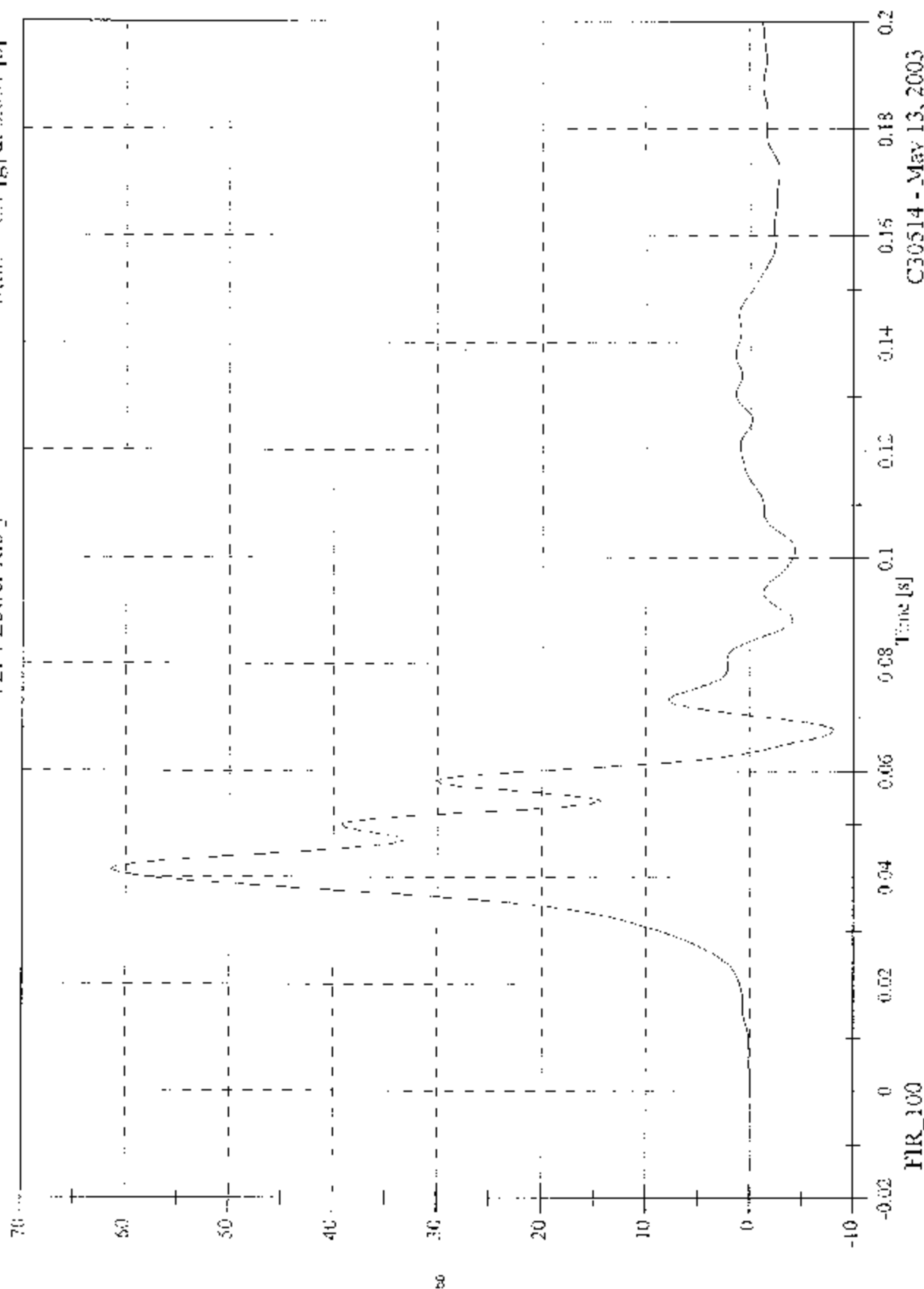
V2P4 Upper Rib y



C30514 - May 13, 2003

V2P4 Lower Rib y

Max: 61.5 [g] at 0.041 [s]
Min: -8.1 [g] at 0.067 [s]



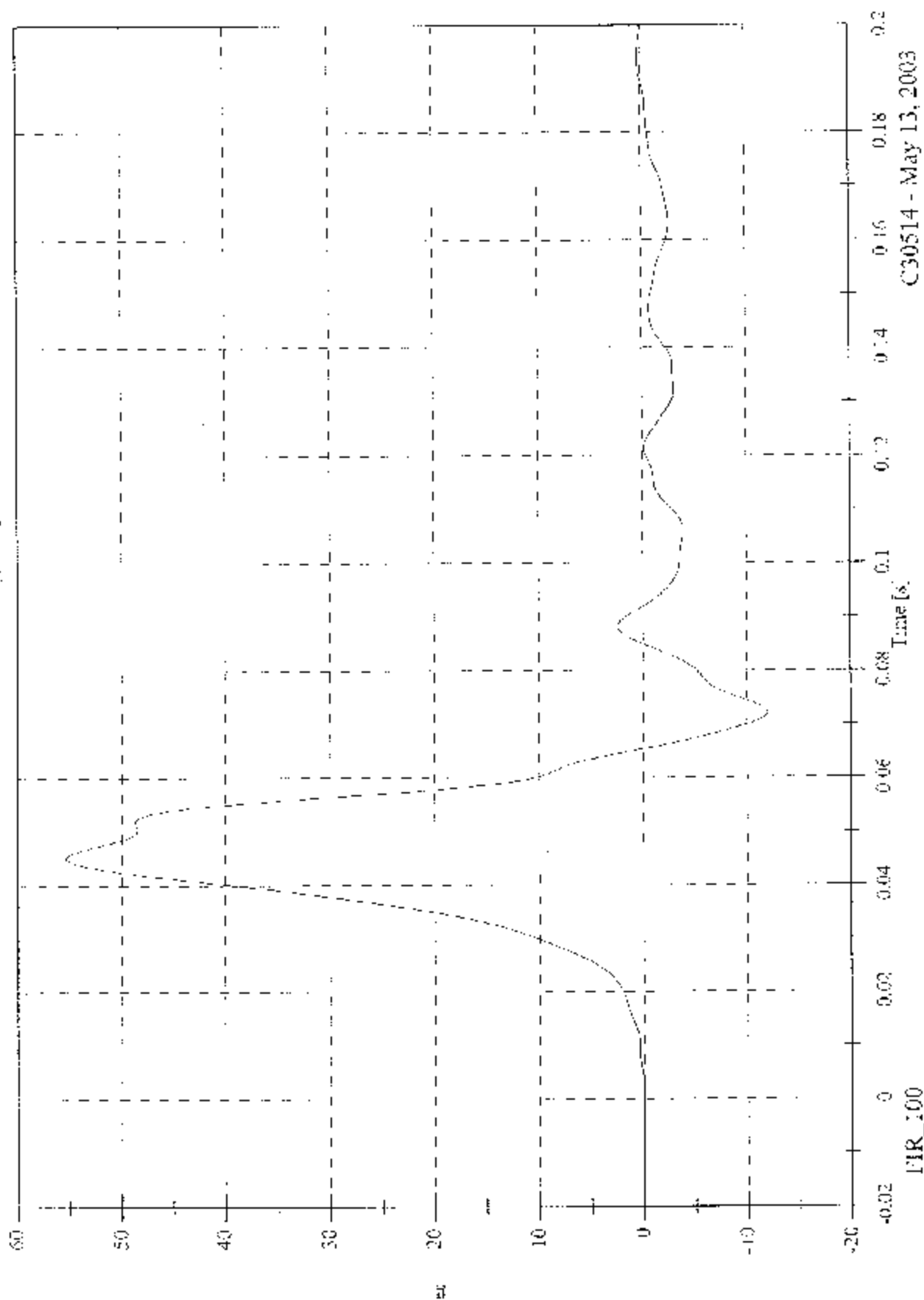
FIR_100

C30514 - May 13, 2003

FMVSS 214D Inducant - 2003 Saab 9-5

V2P4 Lower Spine y

Max: 55.4 [g] at 0.045 [s]
Min: -12.0 [g] at 0.072 [s]

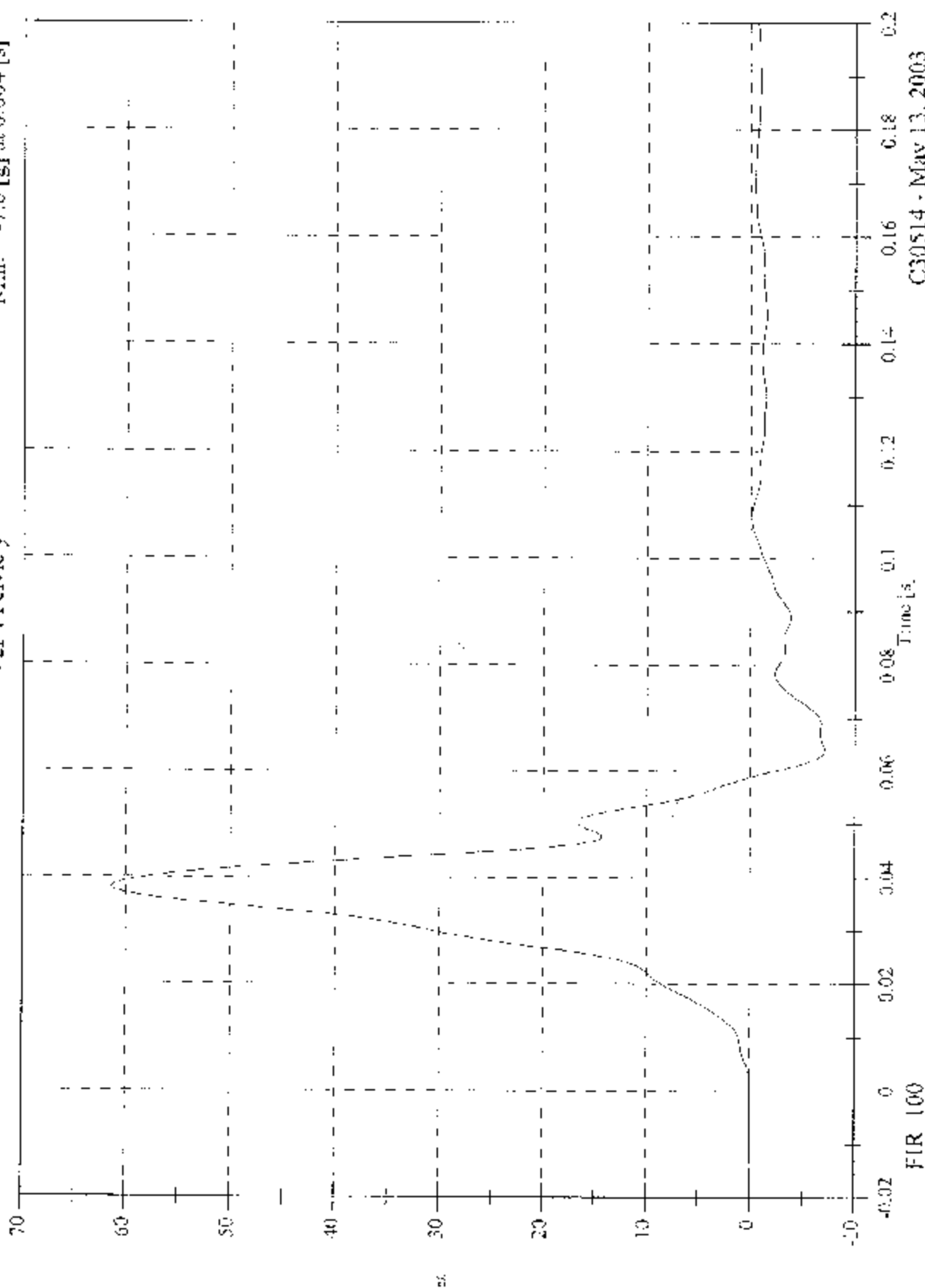


C30514 - May 13, 2003

FMVSS 214D Indicant - 2003 Saab 9-5

Max: 61.4 [g] at 0.038 [s]
Min: -7.0 [g] at 0.064 [s]

V2P4 Pelvic y

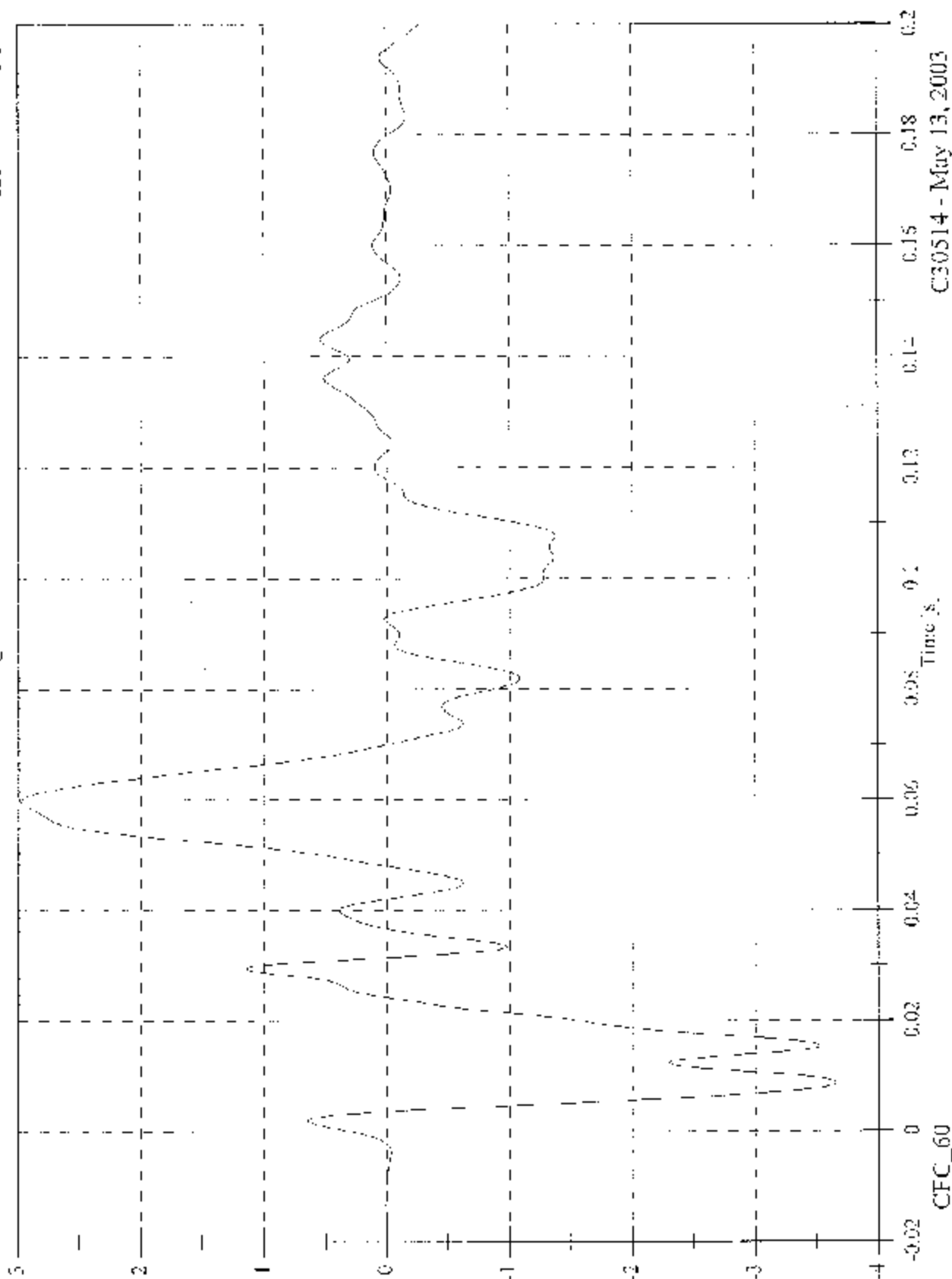


C30514 - May 13, 2003

FMVSS 214D Inducant - 2003 Saab 9-5

Max: 3.0 [g] at 0.060 [s]
Min: -3.6 [g] at 0.009 [s]

V2 A1 Right Front Sill x

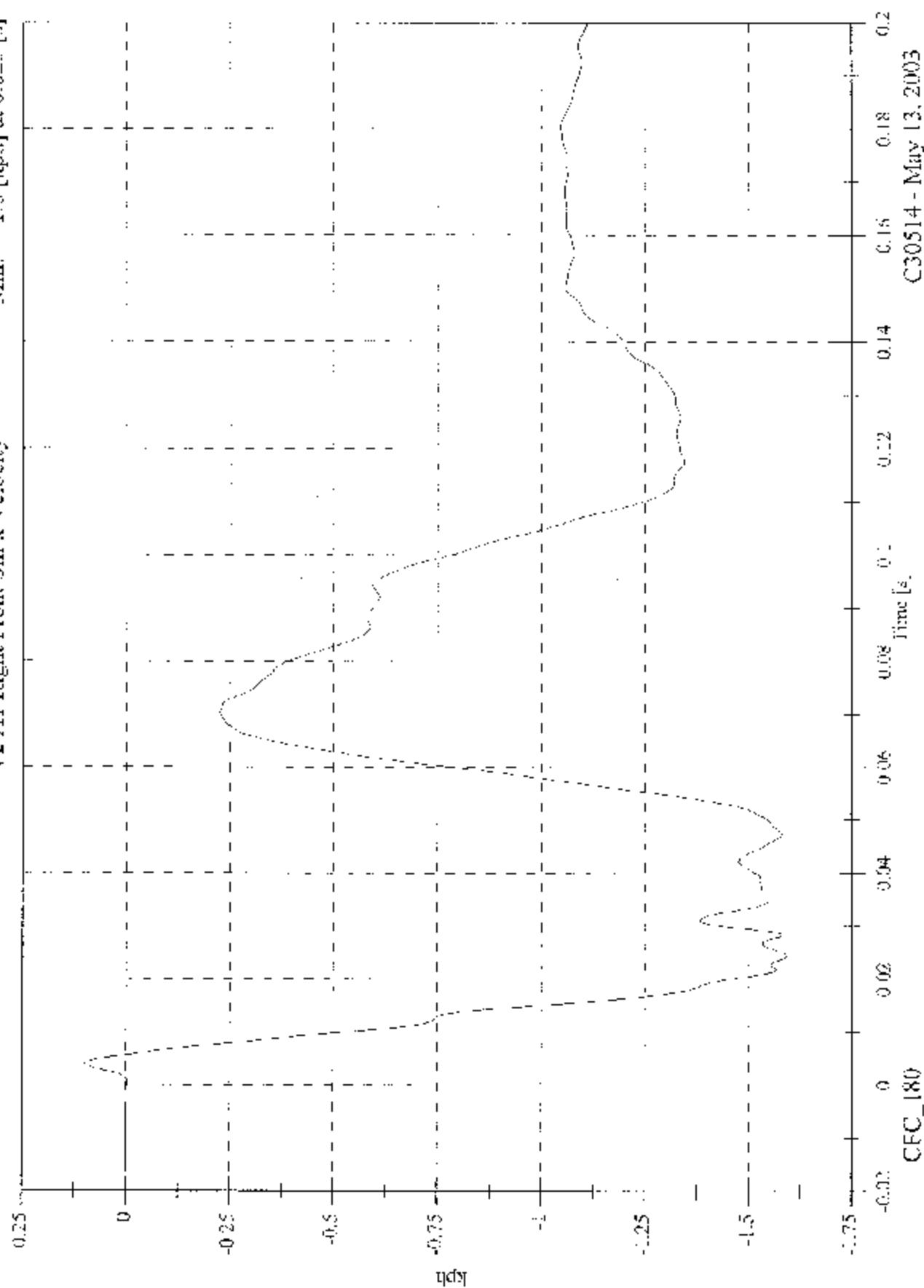


C30514 - May 13, 2003

Max: 0.1 [kph] at 0.004 [s]

Min: -1.6 [kph] at 0.025 [s]

V2 A1 Right Front Sill x Velocity

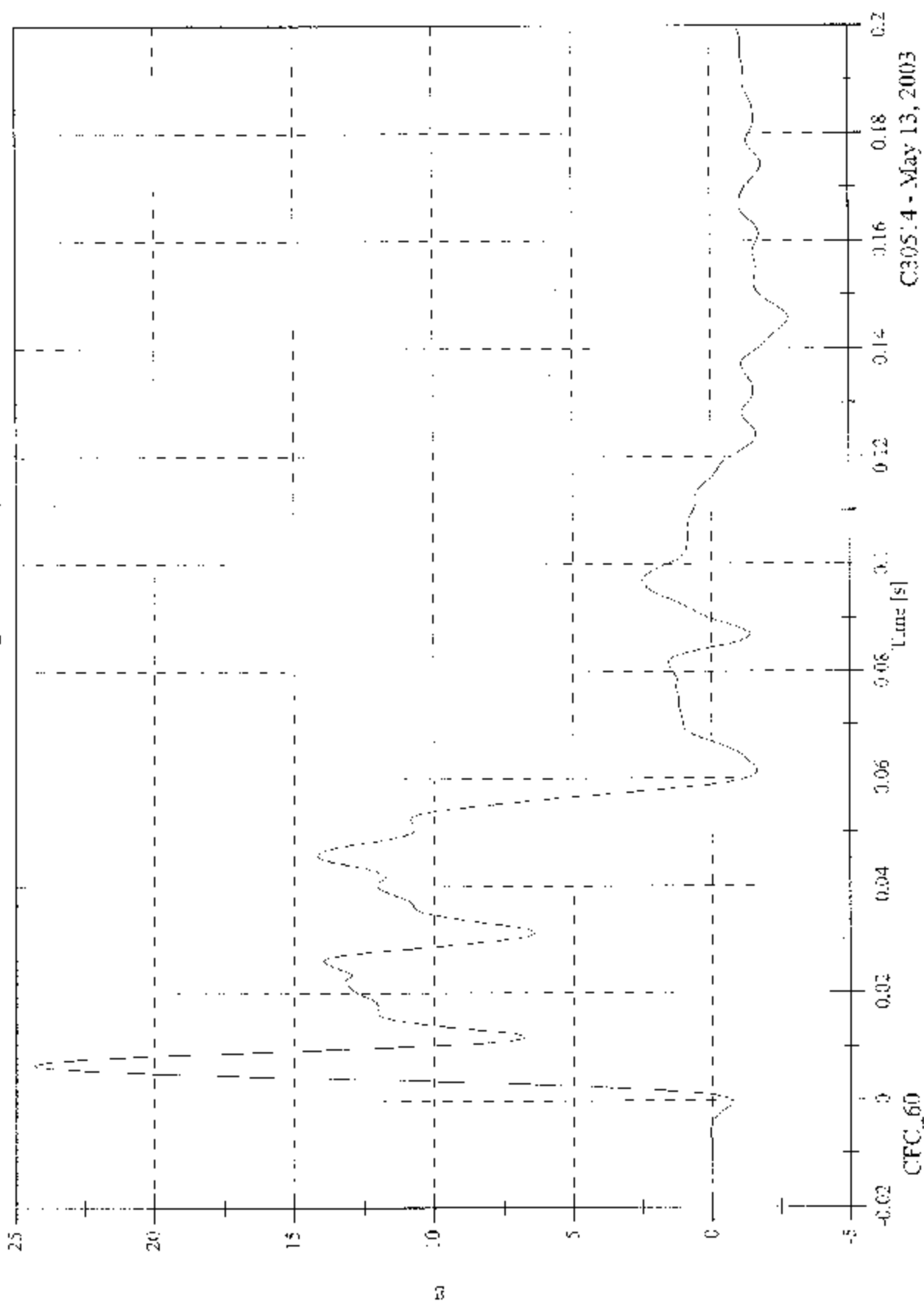


C30514 - May 13, 2003

FMVSS 214D Inducant - 2003 Saab 9-5

V2 AI Right Front Sill y

Max: 24.3 [g] at 0.007 [s]
Min: -2.8 [g] at 0.146 [s]



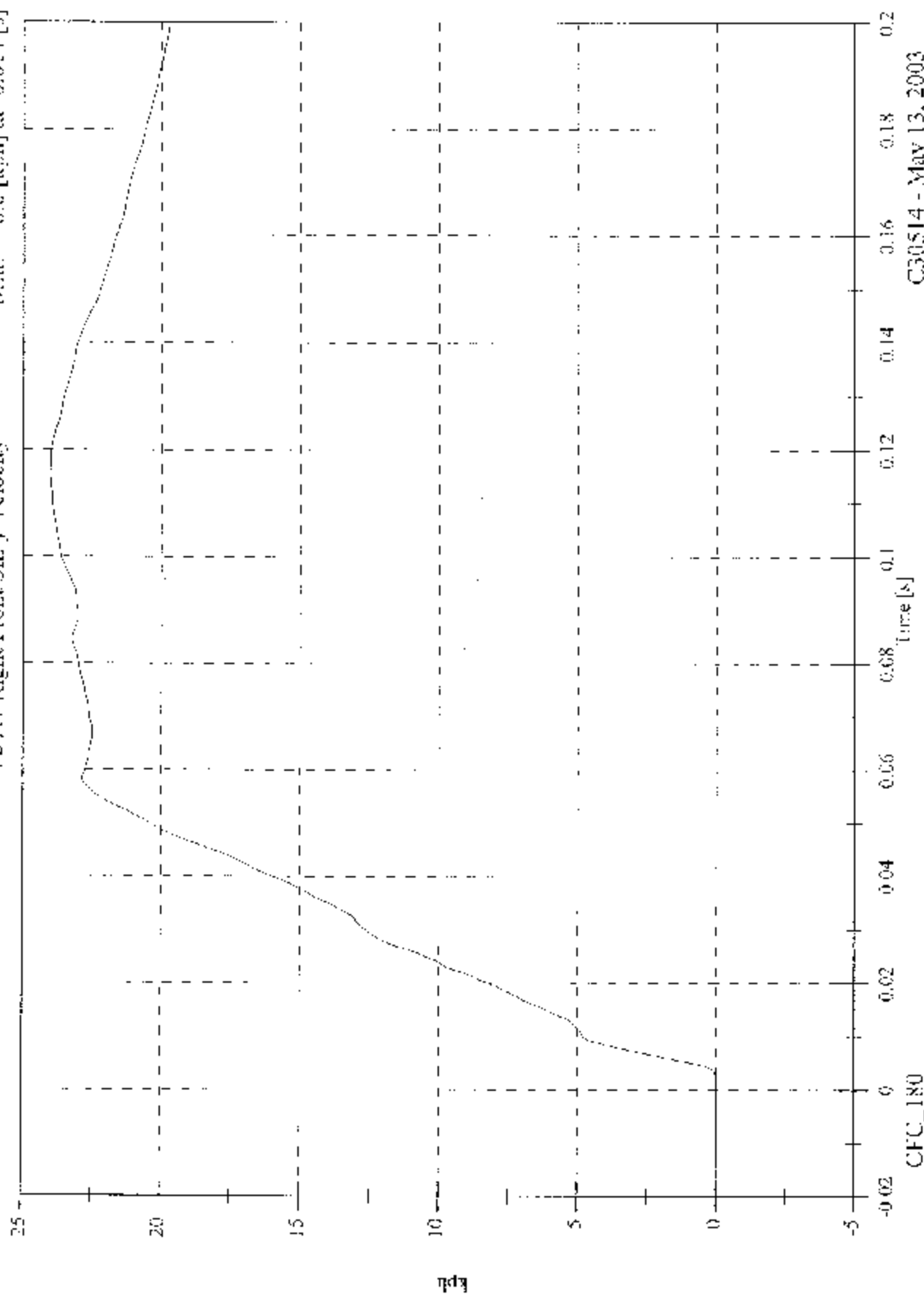
C30514 - May 13, 2003

FMVSS 214D Inducant - 2003 Saab 9-5

Max: 24.0 [kph] at 0.116 [s]

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

V2 A1 Right Front Side Velocity

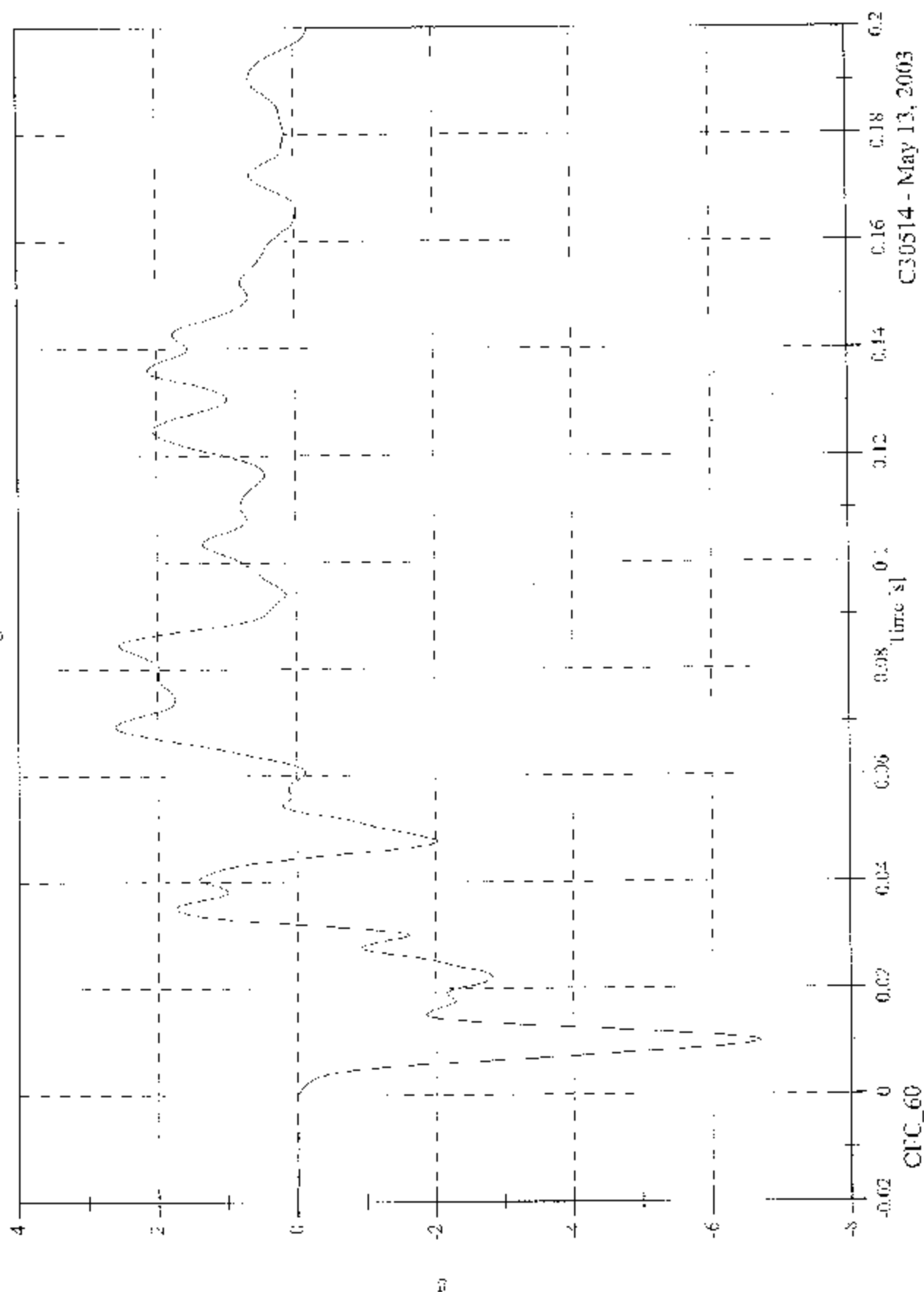


C30514 - May 13, 2003

FM/VSS 214D Indicant - 2003 Saab 9-5

Max: 2.6 [g] at 0.069 [s]
Min: -6.7 [g] at 0.010 [s]

V2 A1 Right Front Sill z

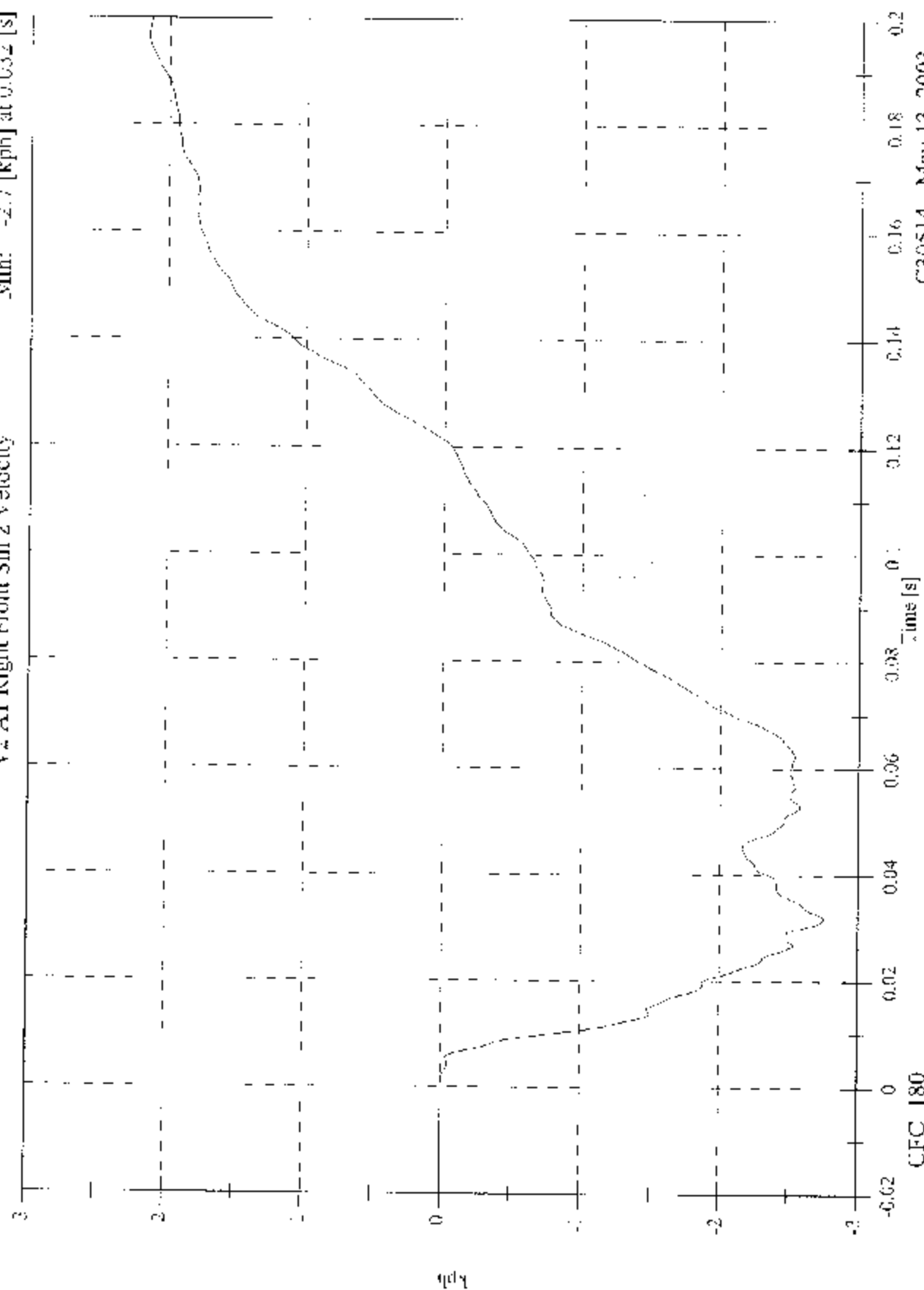


C30514 - May 13, 2003

FMVSS 214D Indicant - 2003 Saab 9-5

Max: 2.1 [kph] at 0.197 [s]
Min: -2.7 [kph] at 0.032 [s]

V2 A1 Right Front Sill z Velocity



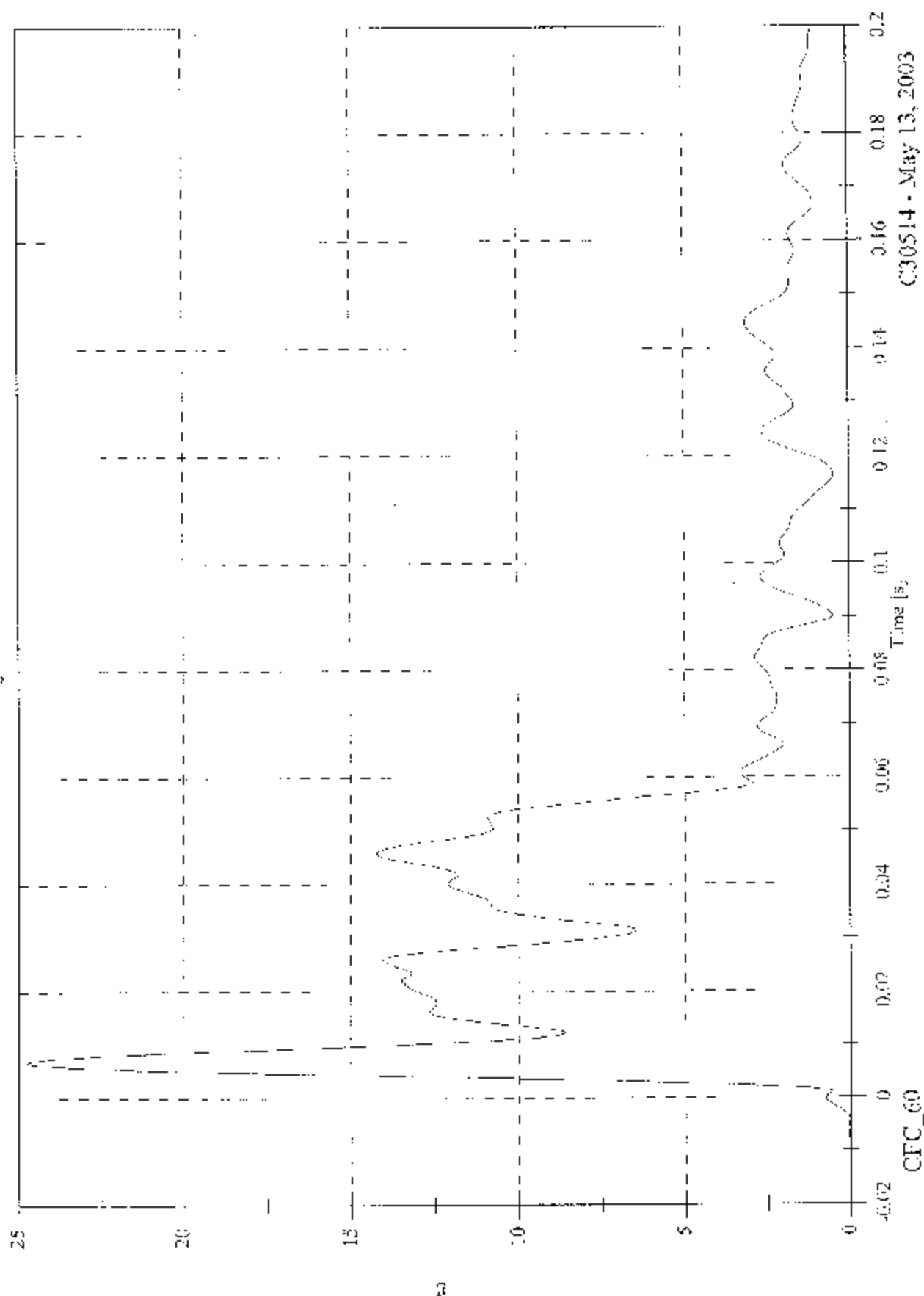
C30514 - May 13, 2003

FMVSS 214D Inducant - 2003 Saab 9-5

Max: 24.8 [g] at 0.007 [s]

V2 A1 Right Front Sill Resultant

Min: 0.0 [g] at -0.018 [s]

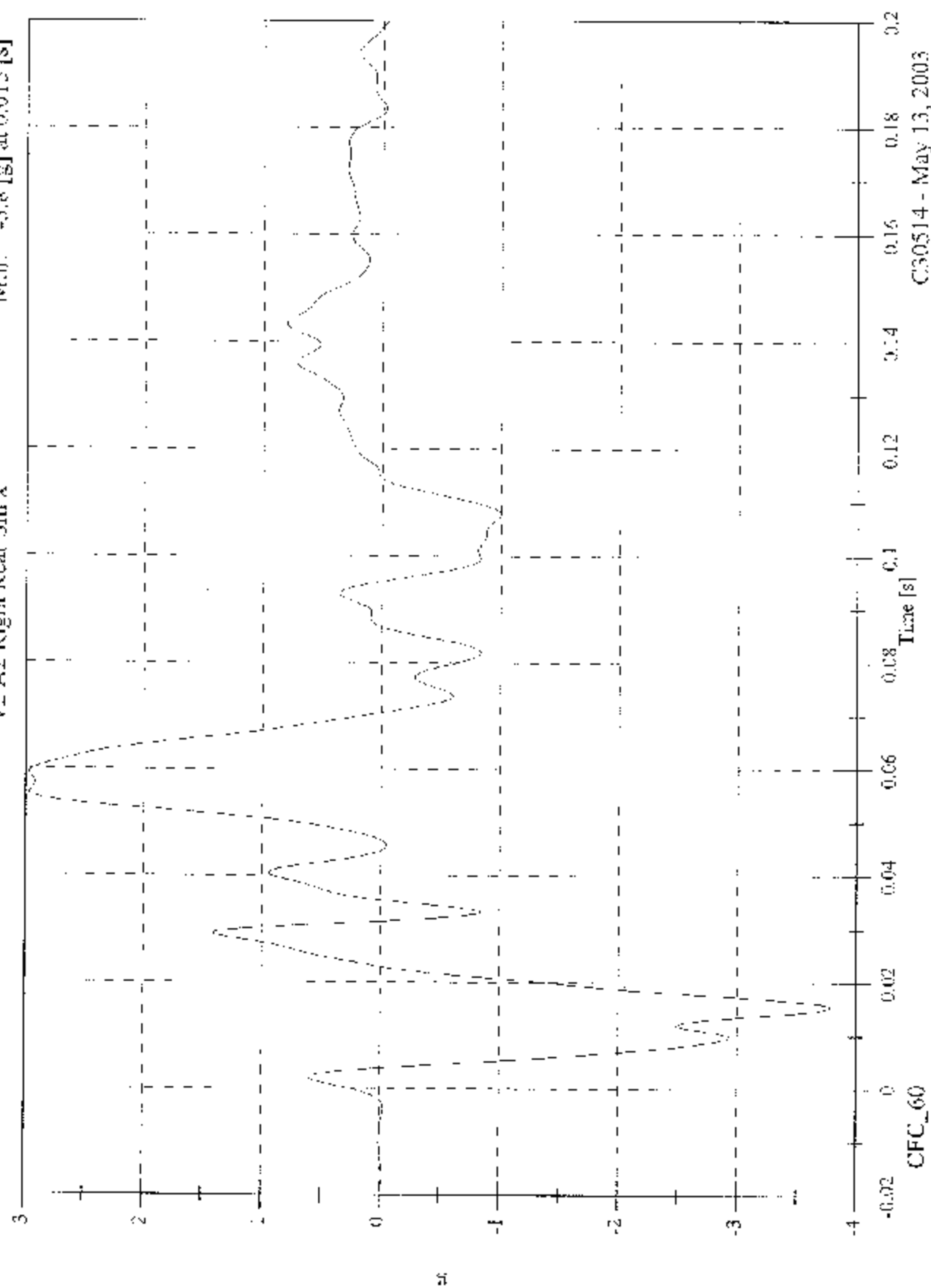


C30514 - May 13, 2003

FMVSS 214D Indicator - 2003 Saab 9-5

V2 A2 Right Rear Sill x

Max: 3.0 [g] at 0.059 [s]
Min: -3.8 [g] at 0.015 [s]



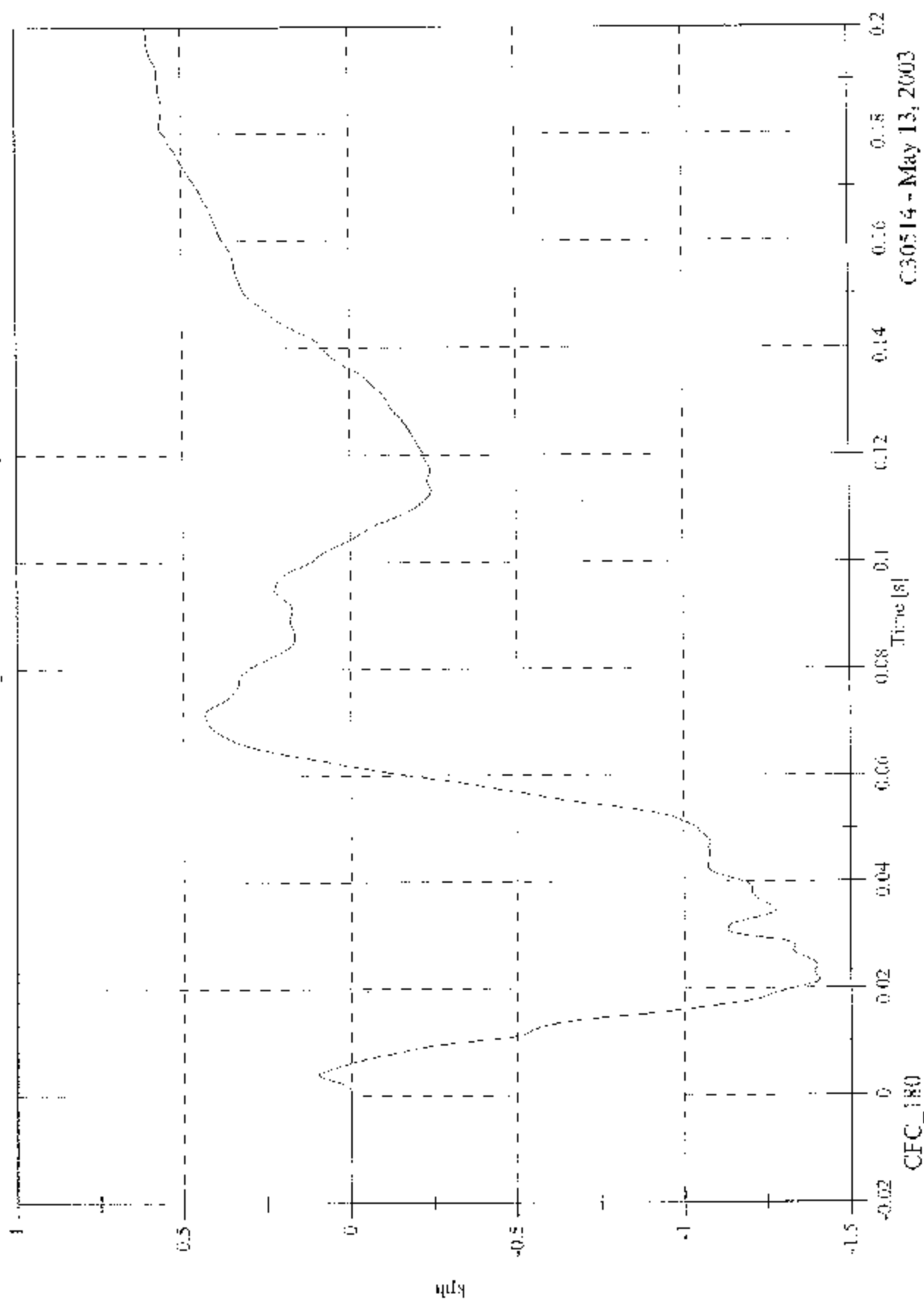
C30514 - May 13, 2003

PMVSS 214D Indictant - 2003 Saab 9-5

Max: 0.6 [kph] at 0.200 [s]

Min: -1.4 [kph] at 0.021 [s]

V2 A2 Right Rear Sill x Velocity

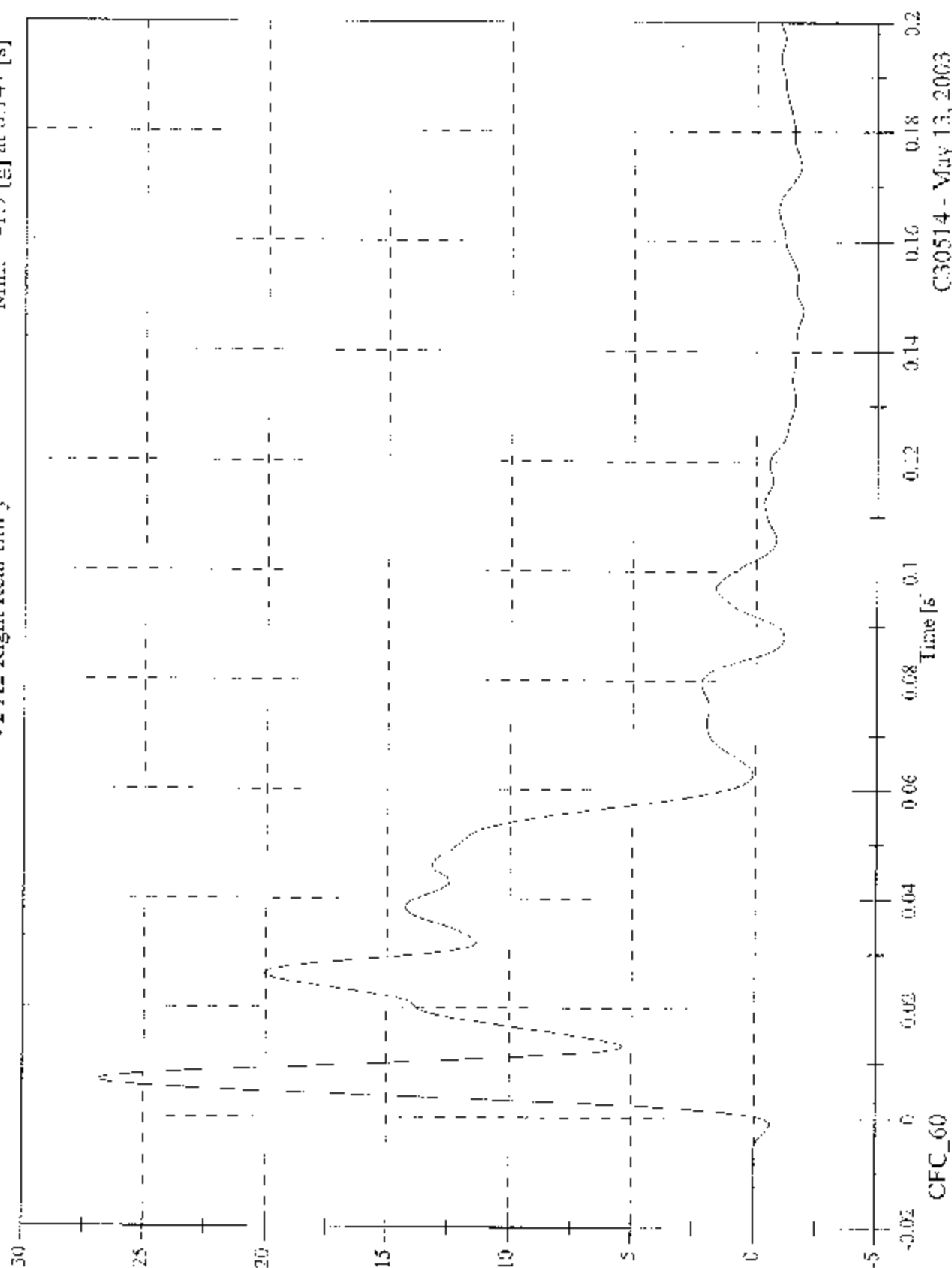


C30514 - May 13, 2003

FM/VSS 214D Indicant - 2003 Saab 9-5

V2 A2 Right Rear Sill y

Max: 26.9 [g] at 0.007 [s]
Min: -1.9 [g] at 0.147 [s]



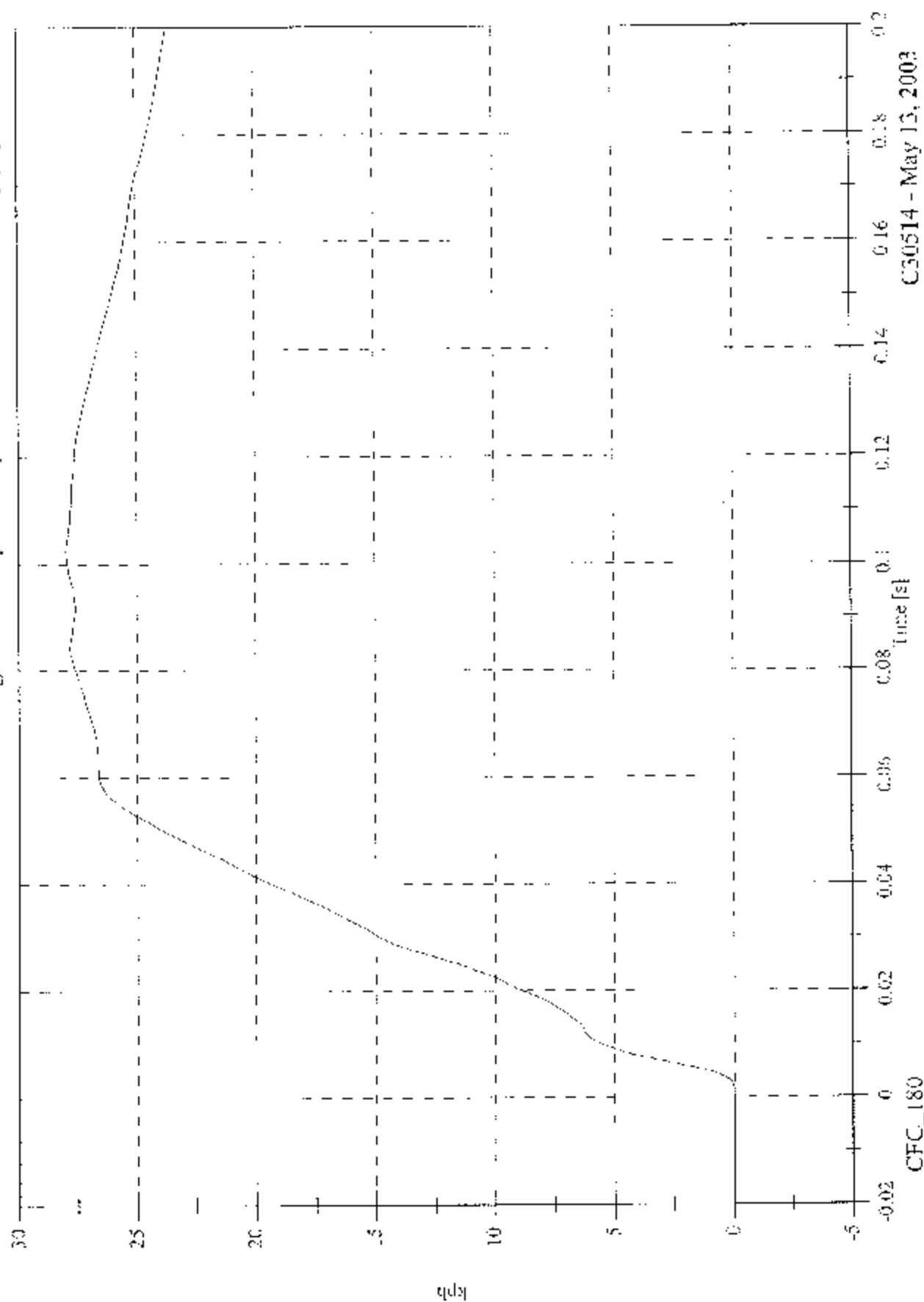
C30514 - May 13, 2003

FMVSS 214D Indicant - 2003 Saab 9-5

Max: 28.0 [kph] at 0.102 [s]

Min: -0.0 [kph] at -0.018 [s]

V2 A2 Right Rear Sill y Velocity

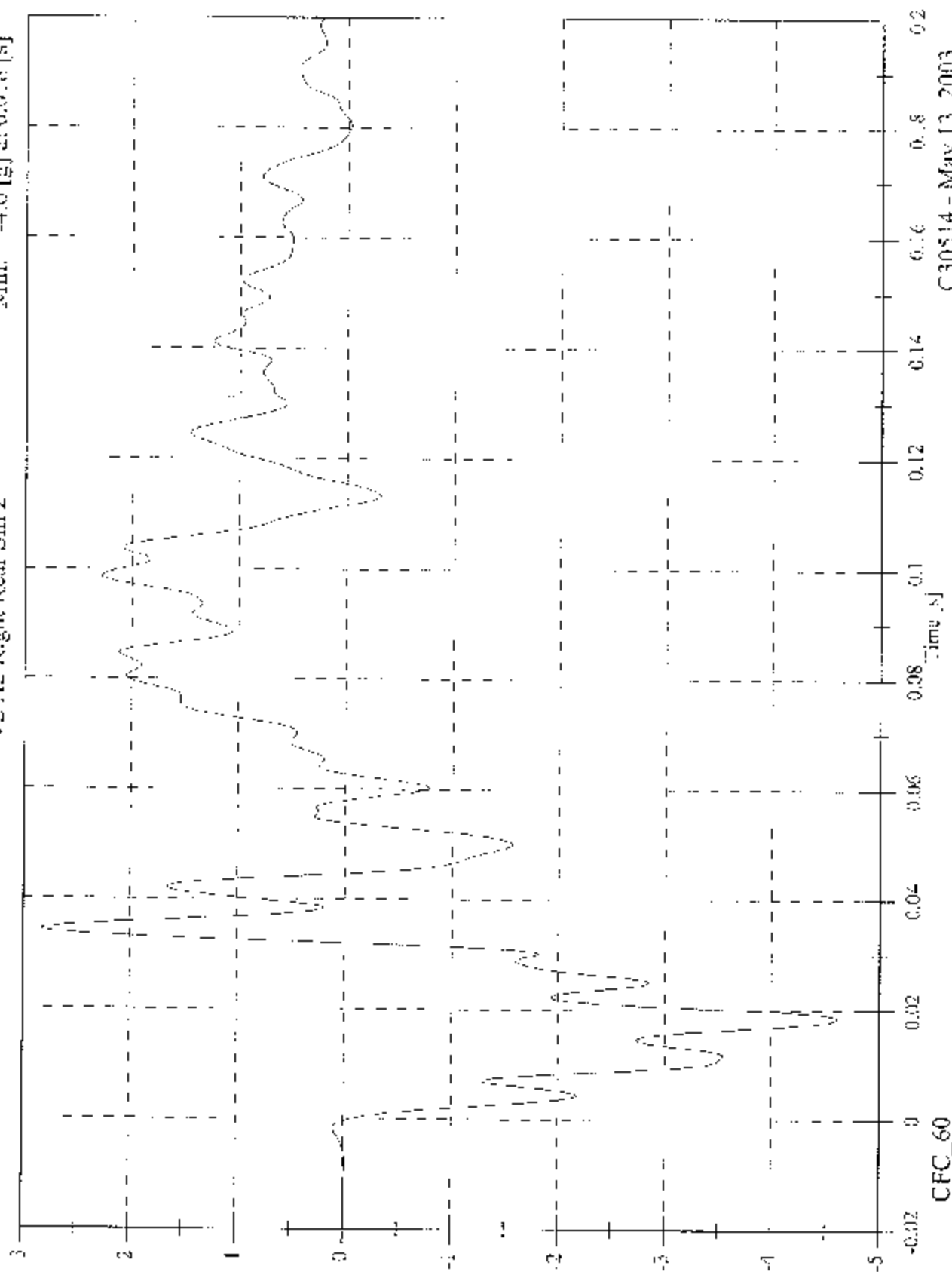


C30514 - May 13, 2003

FMVSS 214D Indicator - 2003 Saab 9-5

V2 A2 Right Rear Sill Z

Max: 2.8 [g] at 0.034 [s]
Min: -4.6 [g] at 0.018 [s]



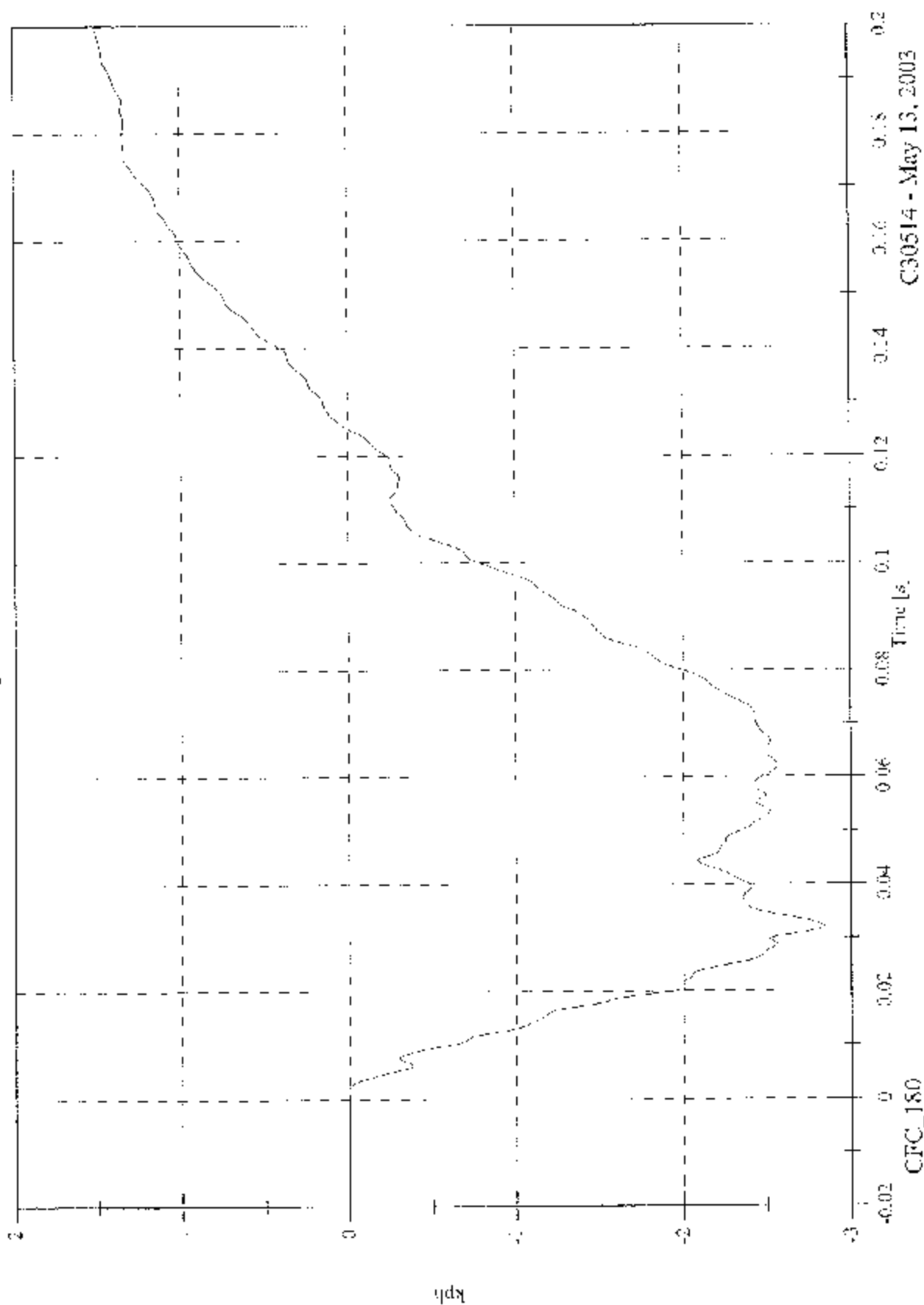
C30514 - May 13, 2003

FMVSS 214D Indicant - 2003 Saab 9-5

V2 A2 Right Rear Sill z Velocity

Max: 1.5 [kph] at 0.200 [s]

Min: -2.8 [kph] at 0.032 [s]

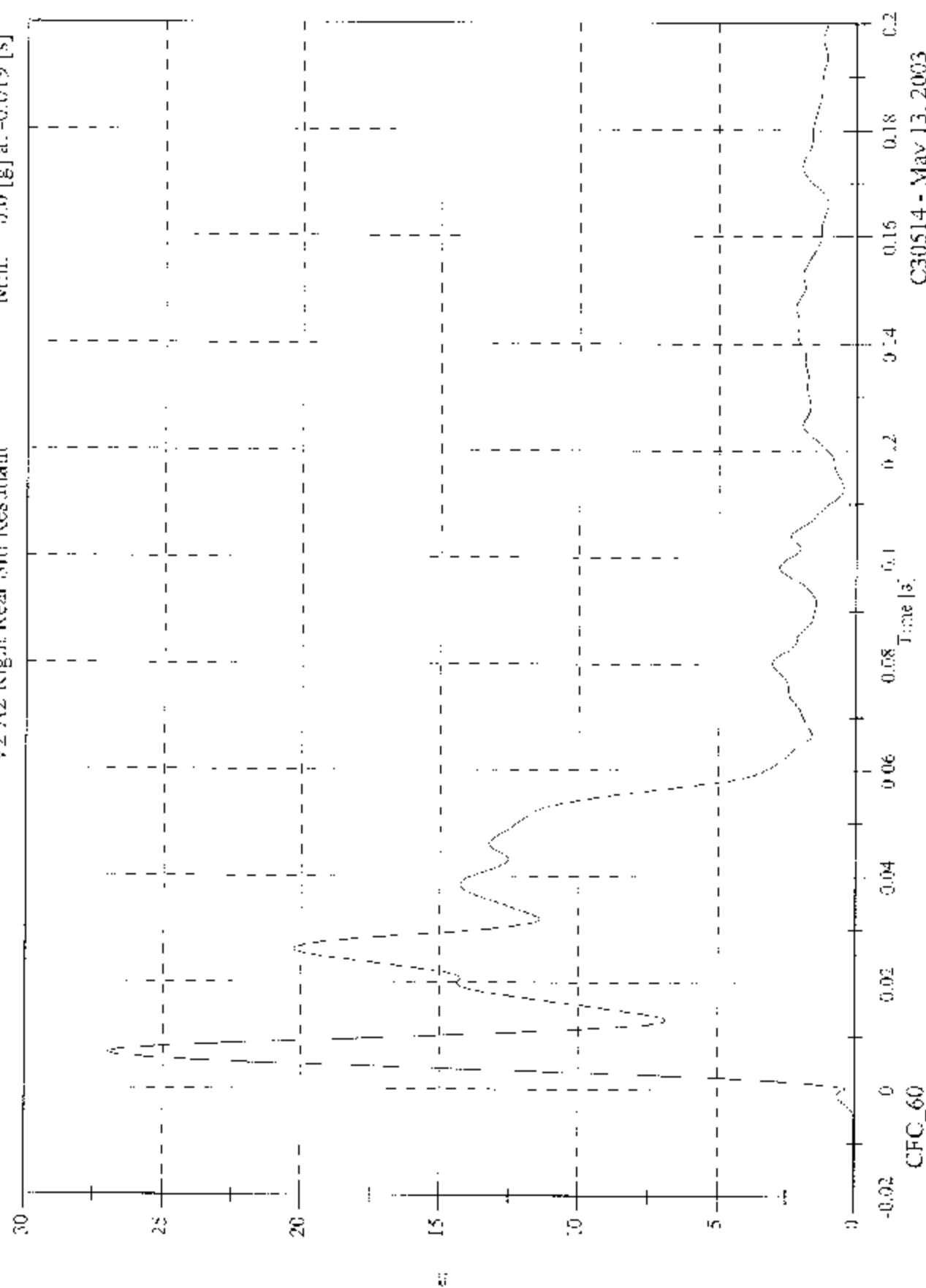


C30514 - May 13, 2003

FMVSS 214D Indicat - 2003 Saab 9-5

V2 A2 Right Rear Sill Resultant

Max: 27.0 [g] at 0.007 [s]
Min: 0.0 [g] at -0.019 [s]

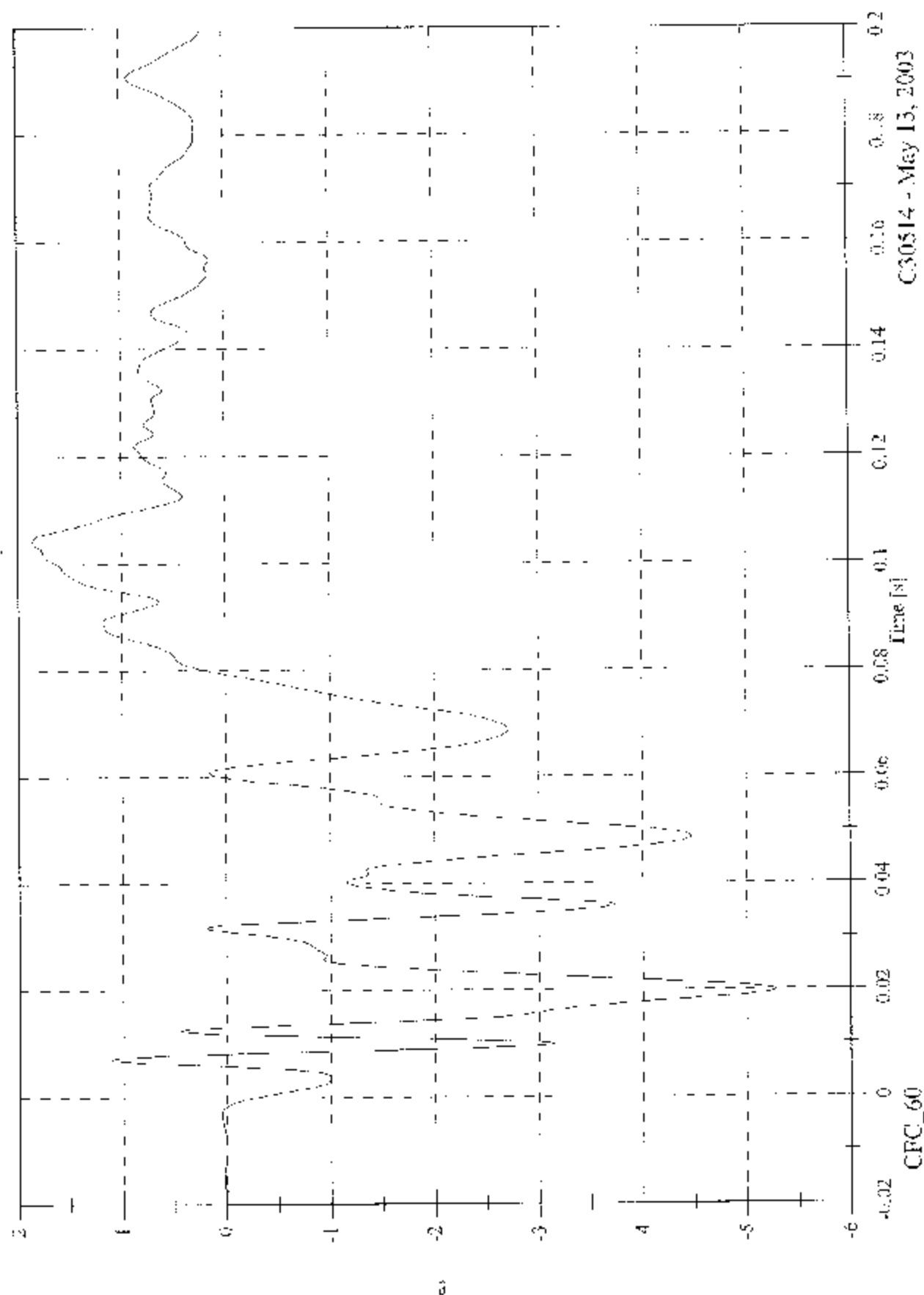


C30514 - May 13, 2003

FM/VSS 214D Indicator - 2003 Saab 9-5

Max: 1.9 [g] at 0.104 [s]
Min: -5.3 [g] at 0.020 [s]

V2 A3 Rear Floorpan x



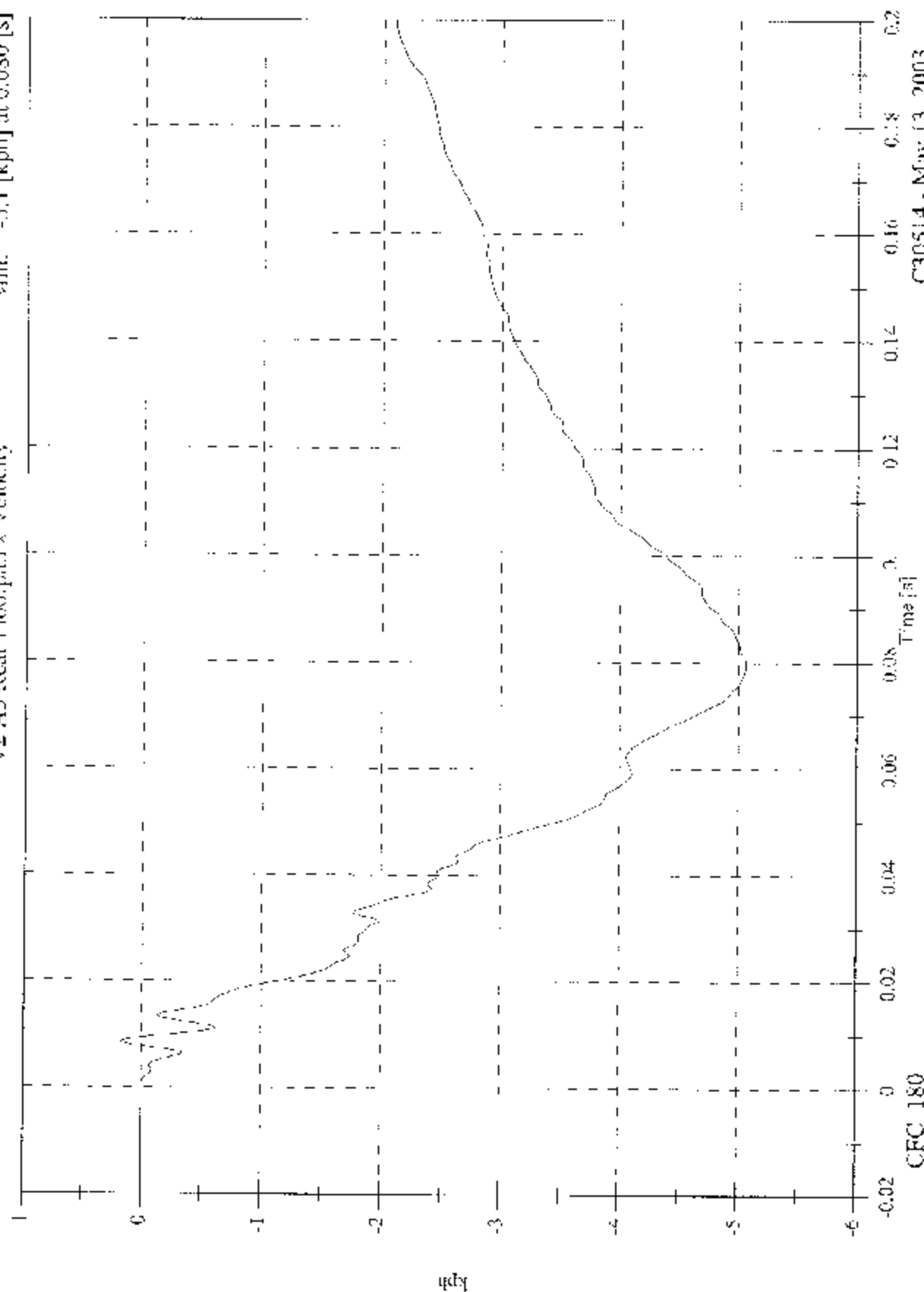
C30514 - May 13, 2003

CFC_60

JMVSS 214D Indicator - 2003 Saab 9-5

Max: 0.2 [kph] at 0.008 [s]
Min: -5.1 [kph] at 0.030 [s]

V2 A3 Rear Floorpan x Velocity

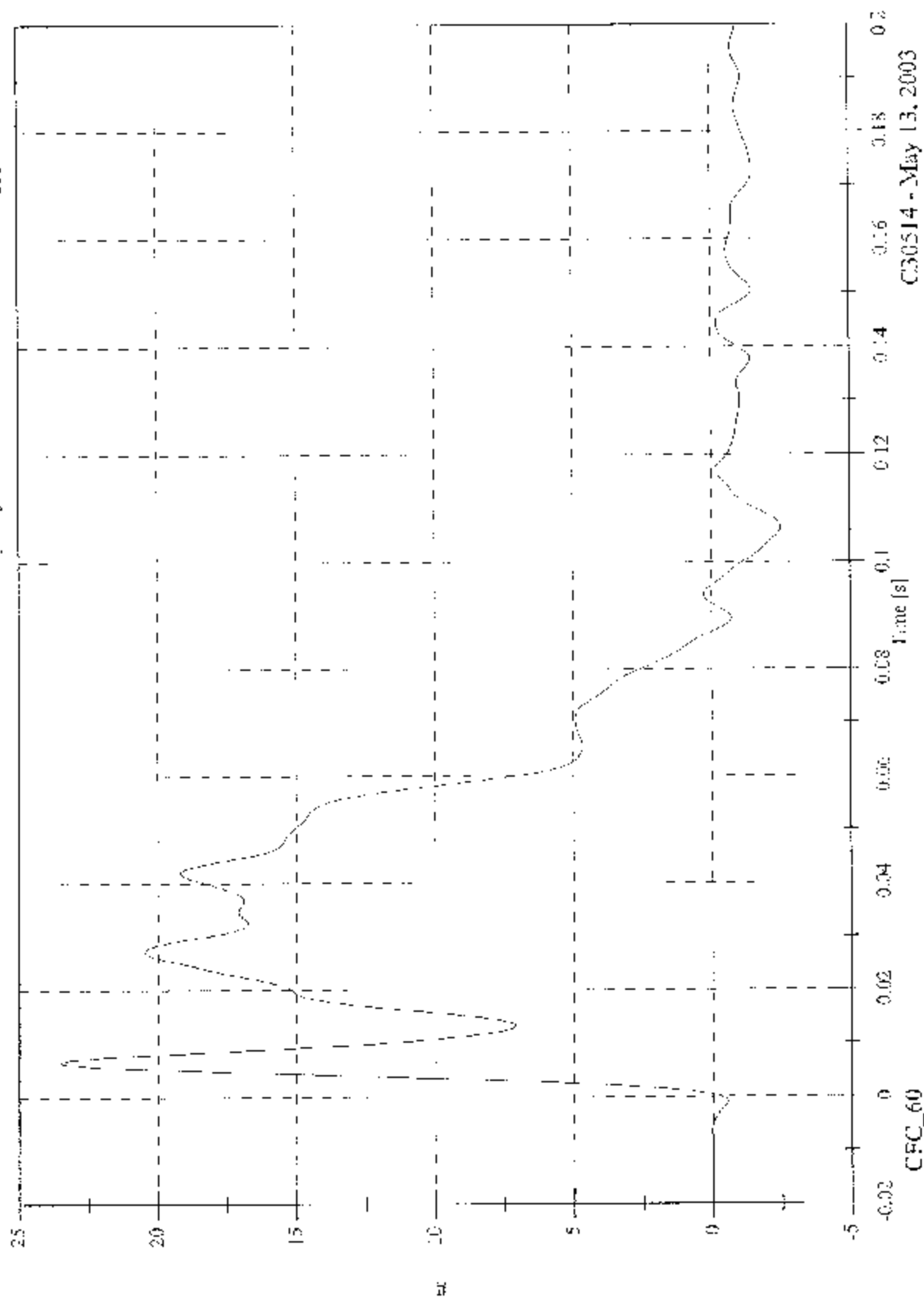


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Max: 23.5 [g] at 0.006 [s]
Min: -2.5 [g] at 0.106 [s]

V2 A3 Rear Floorpan y

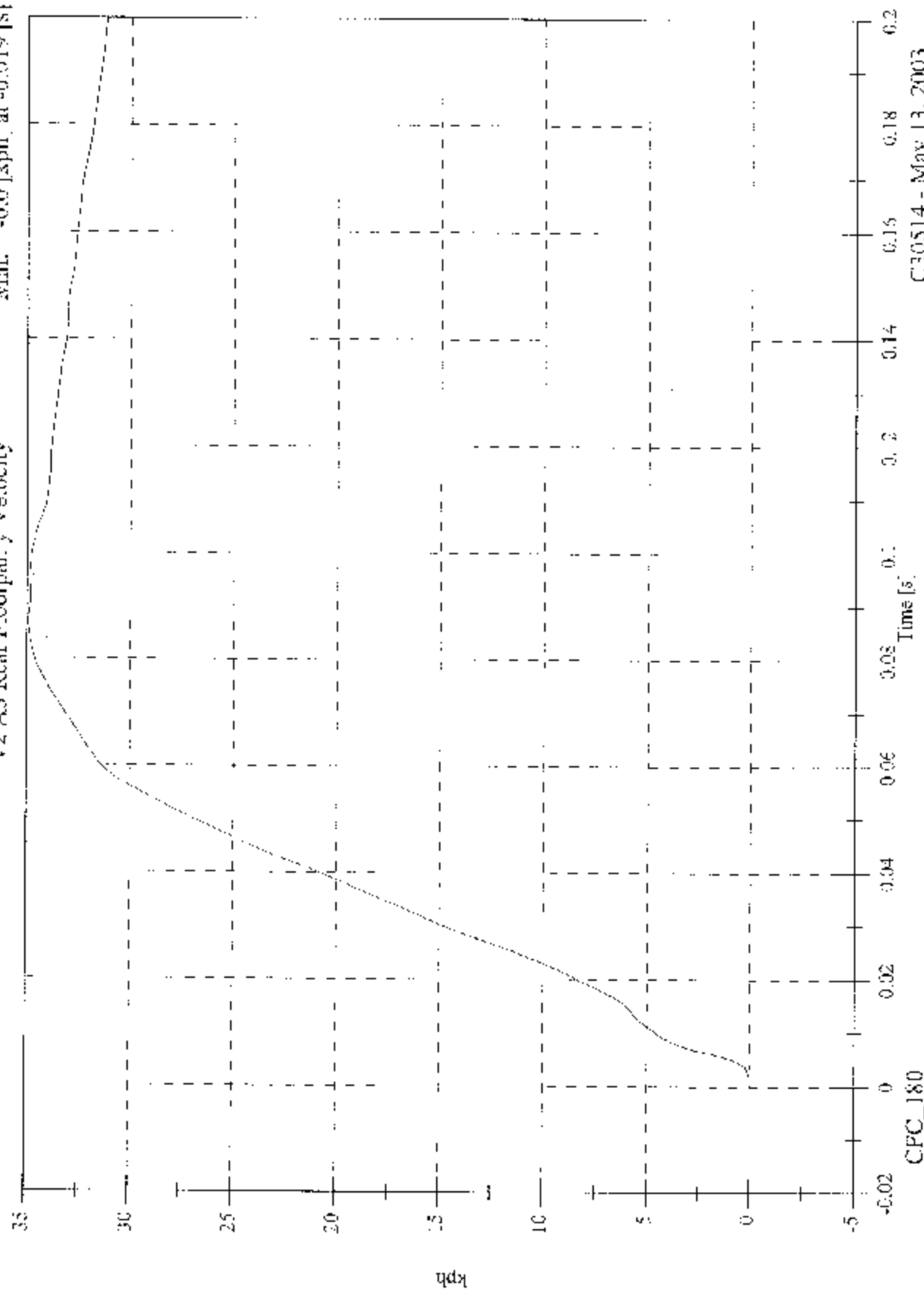


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Max: 34.9 [kph] at 0.087 [s]
Min: -0.0 [kph] at -0.019 [s]

V2 A3 Rear Floorpar.y Velocity

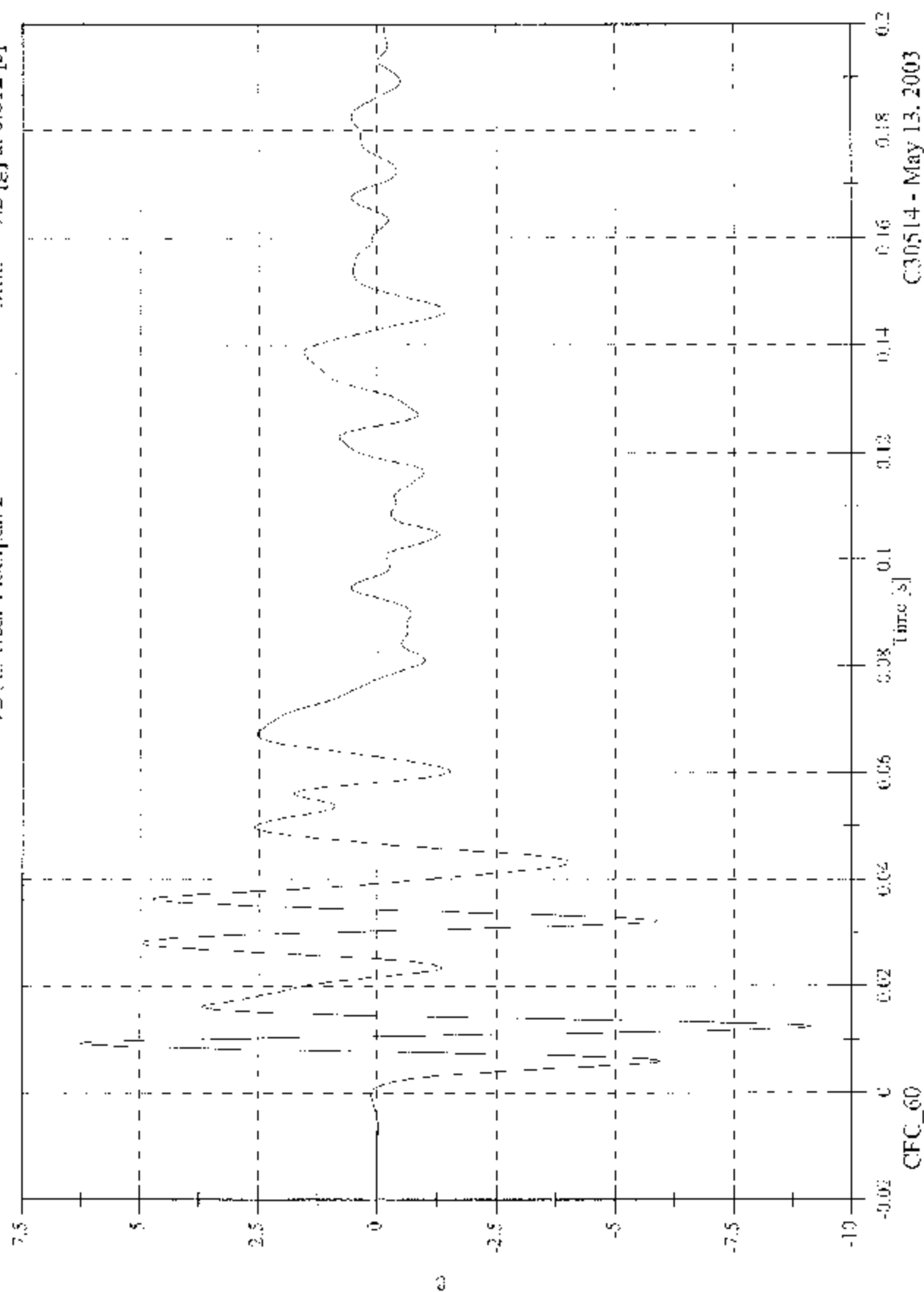


CPC_180

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V2 A3 Rear Floorpan z

Max: 6.3 [g] at 0.009 [s]
Min: -9.2 [g] at 0.012 [s]

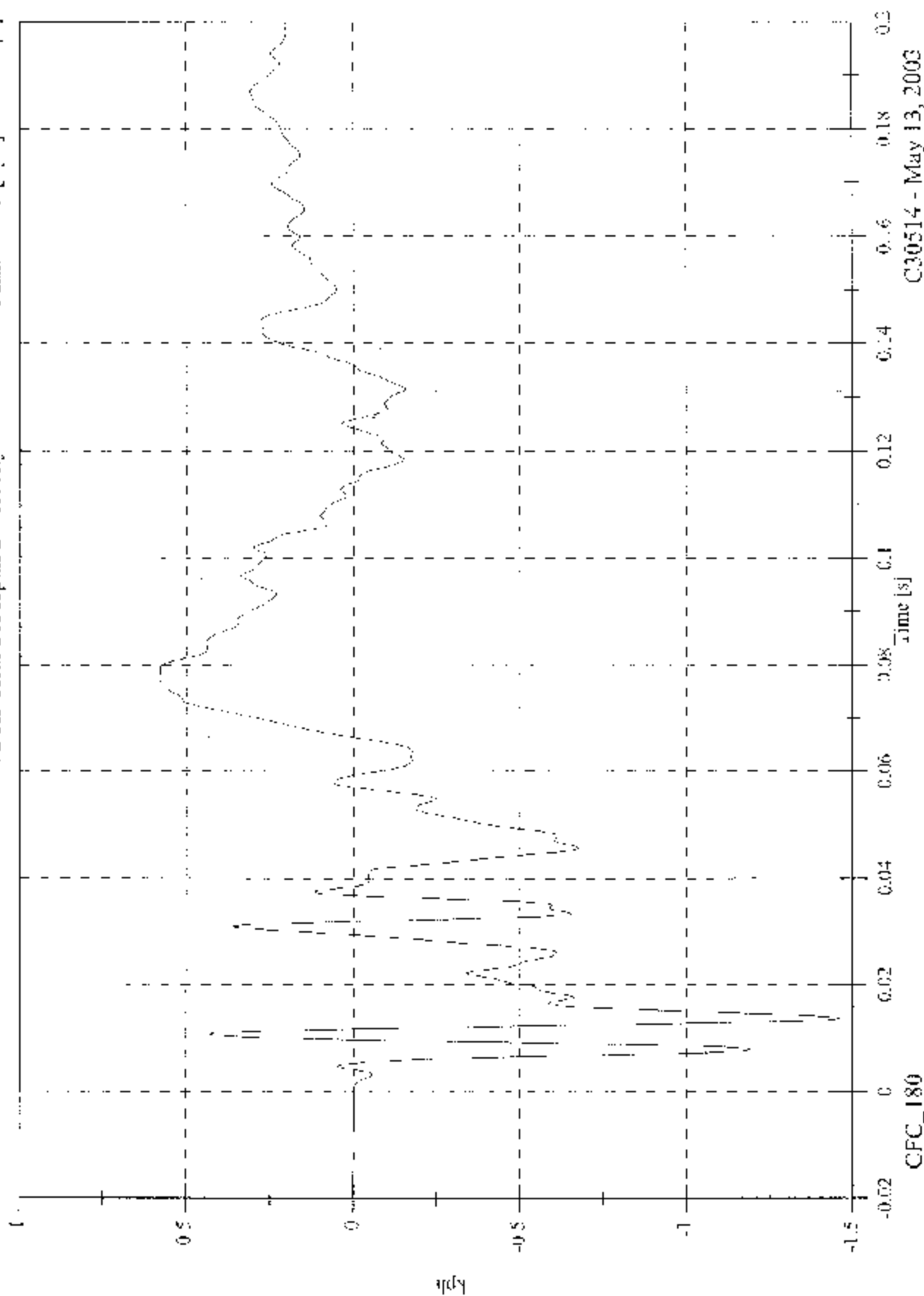


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V2 A3 Rear Floorpan z Velocity

Max: 0.6 [kph] at 0.077 [s]
Min: -1.5 [kph] at 0.014 [s]

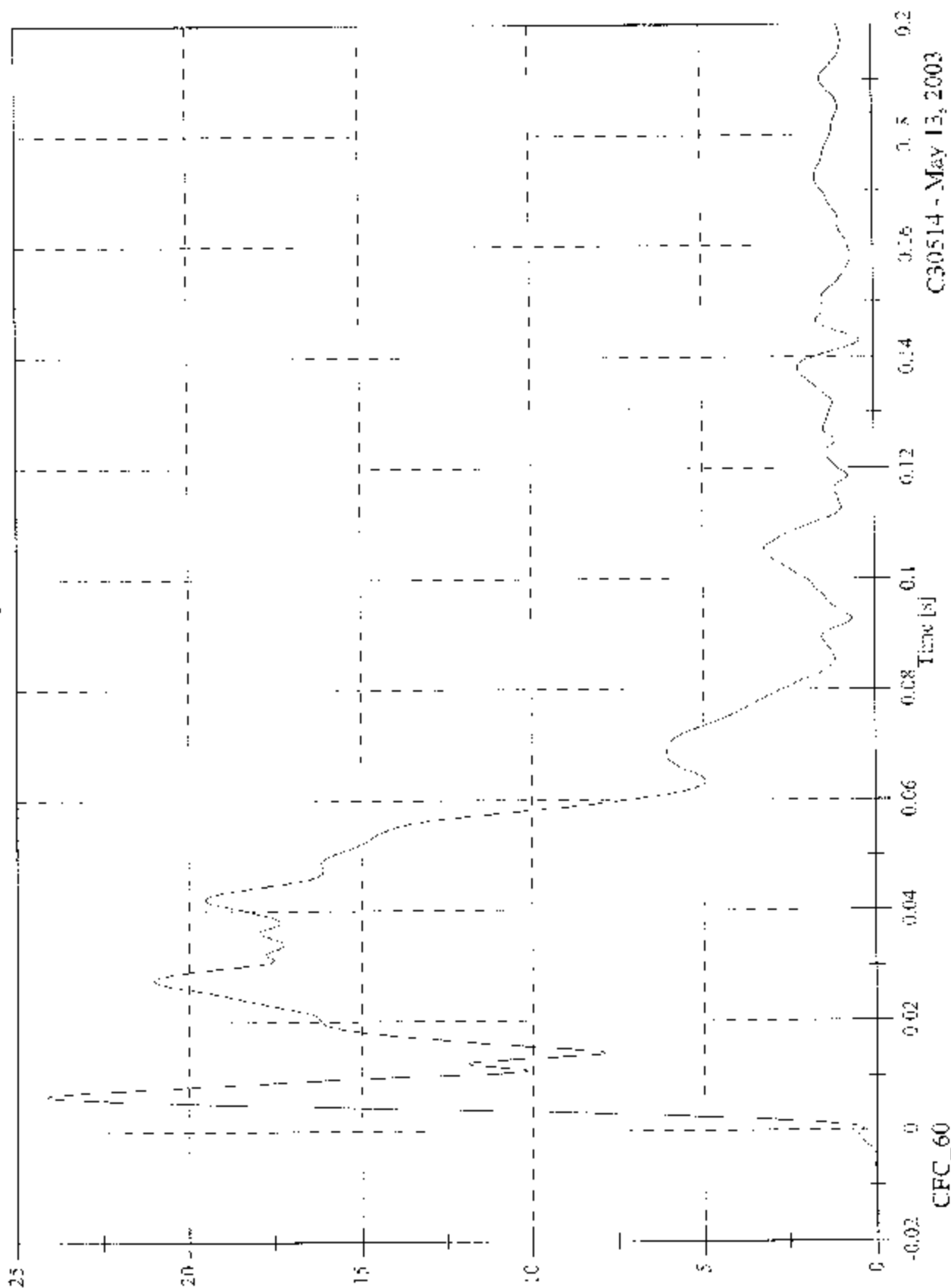


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FMVSS 214D Inducant - 2003 Saab 9-5

V2 A3 Rear Floorpan Resultant

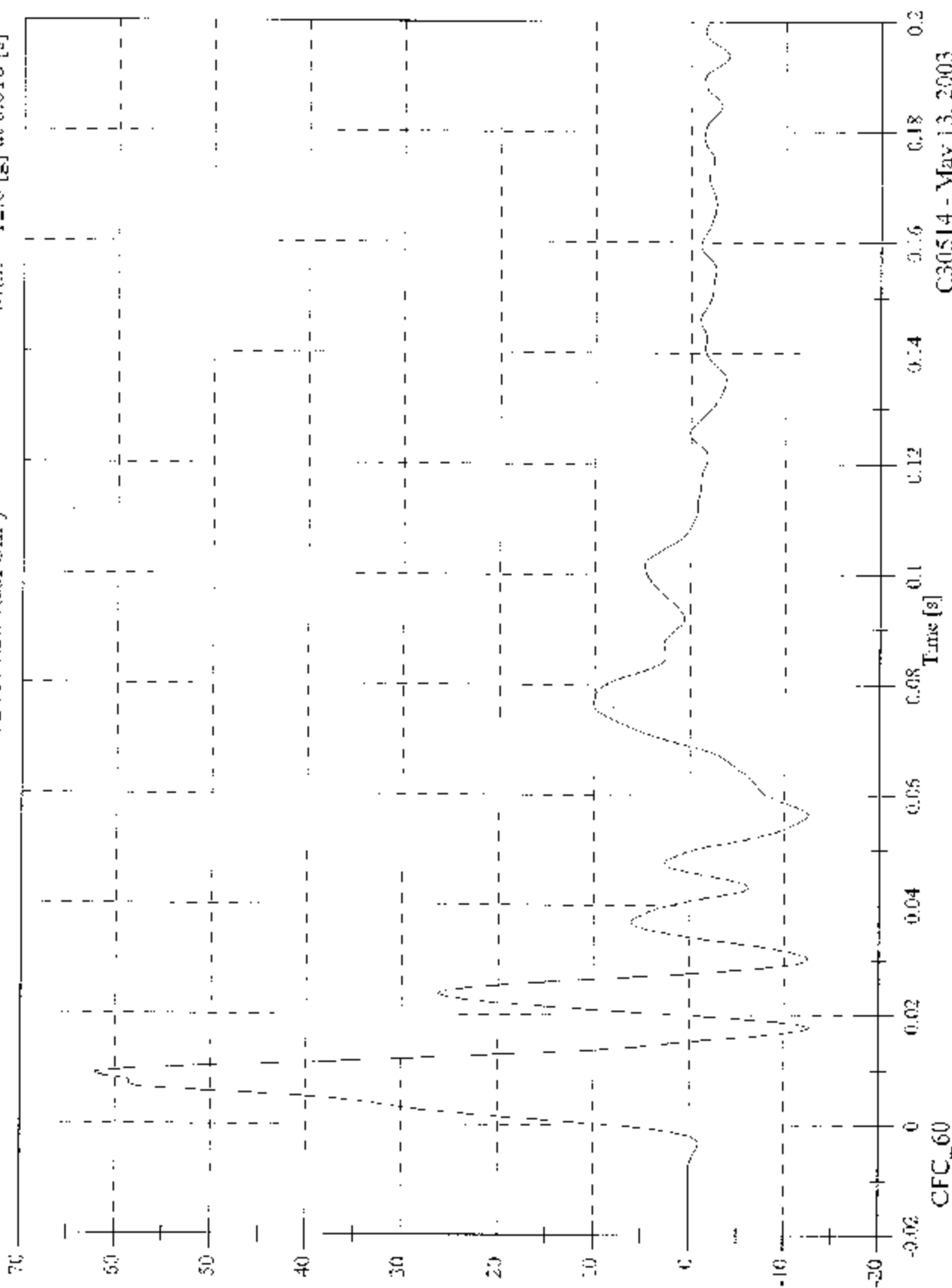
Max: 24.1 [g] at 0.006 [s]
Min: 0.0 [g] at -0.012 [s]



FMVSS 214D Intricant - 2003 Saab 9-5

V2 A4 Left Rear Sill y

Max: 62.1 [g] at 0.009 [s]
Min: -12.6 [g] at 0.018 [s]



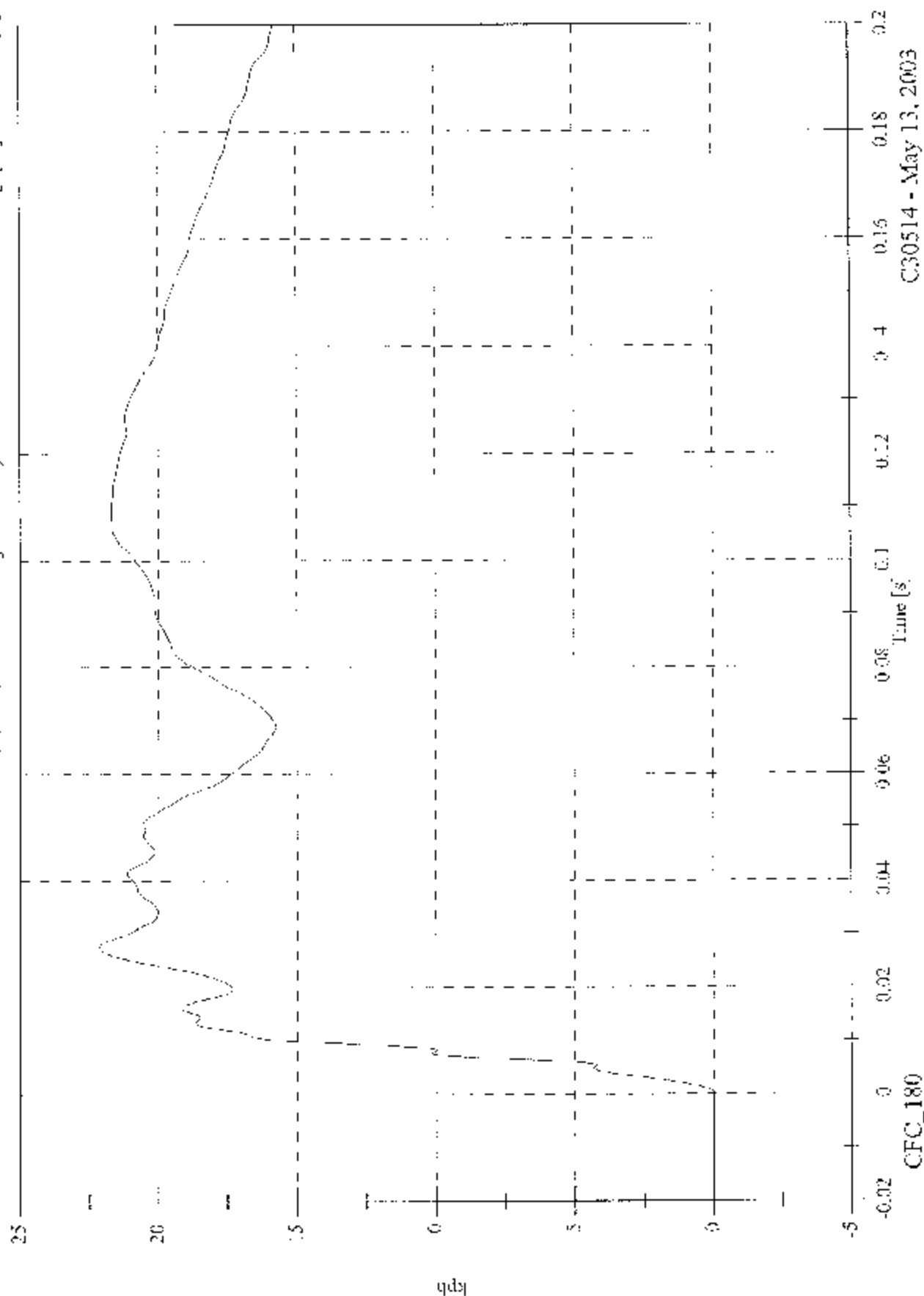
C30514 - May 13, 2003

FMVSS 214D Inducant - 2003 Saab 9-5

Max: 22.2 [kph] at 0.028 [s]

Min: -0.0 [kph] at -0.000 [s]

V2 A4 Left Rear Sill y Velocity

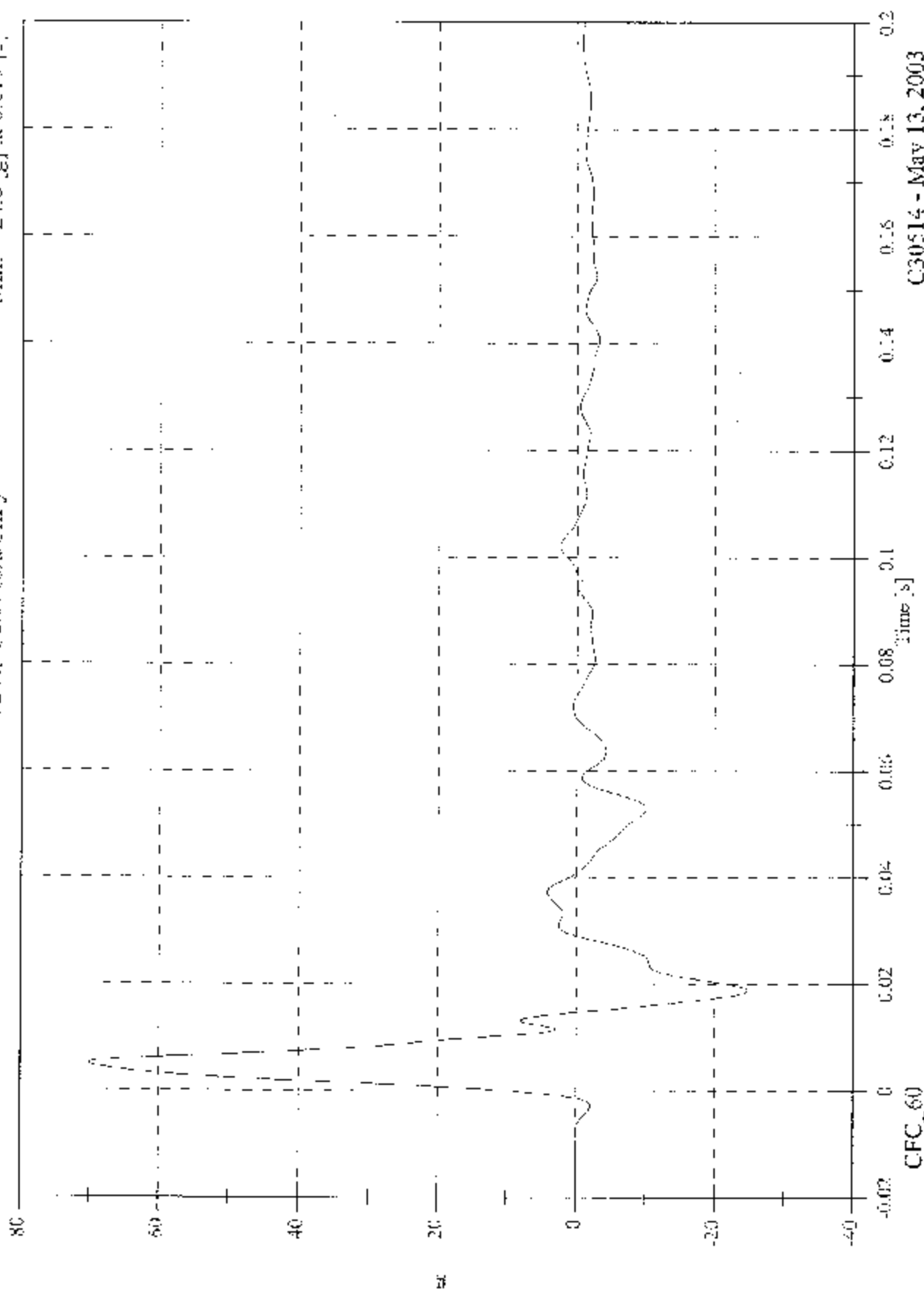


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FMVSS 214D Indicator - 2003 Saab 9-5

V2 A5 Left Front Sill y

Max: 70.2 [g] at 0.005 [s]
Min: -24.8 [g] at 0.019 [s]

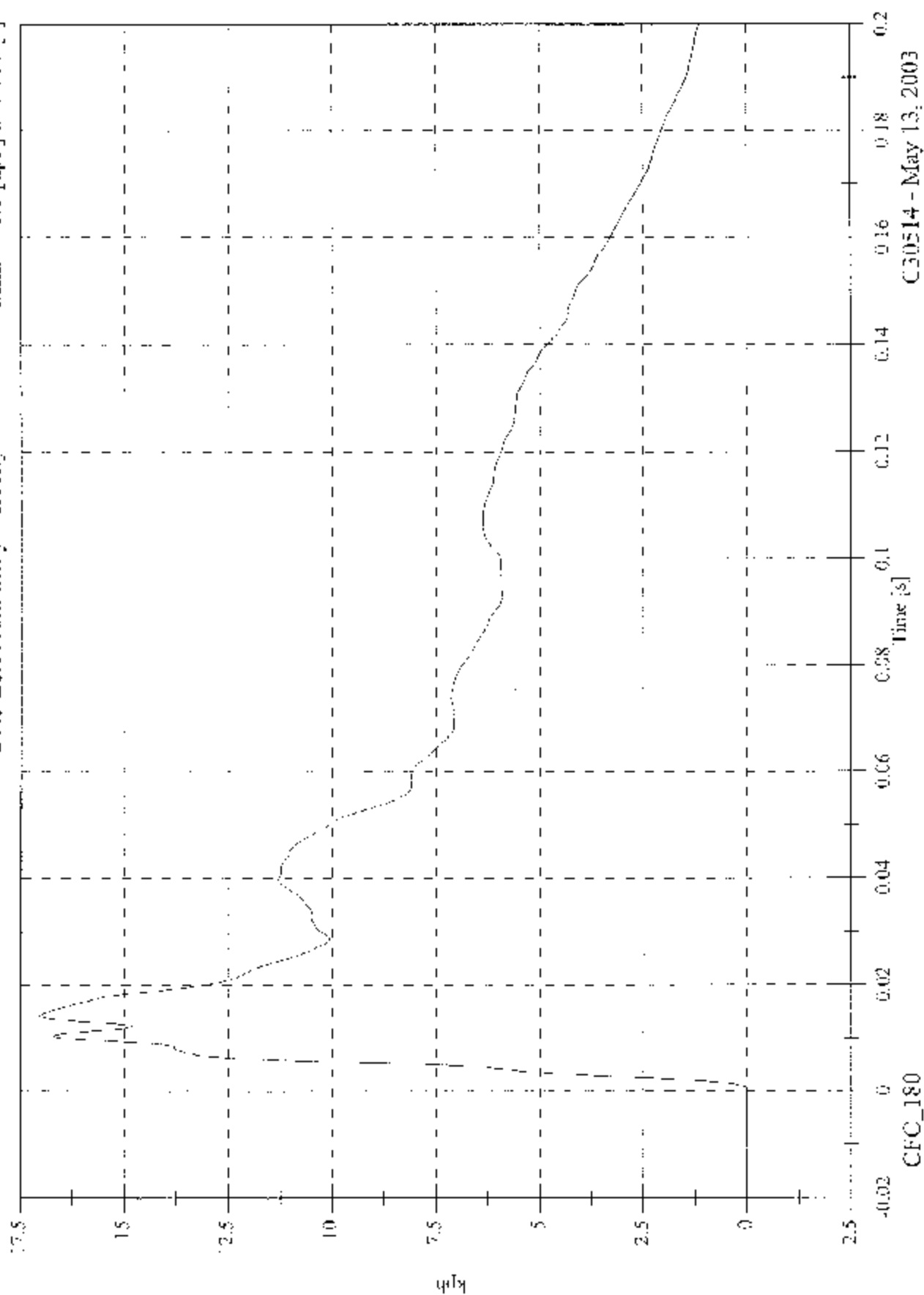


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FMVSS 214D Indicant - 2003 Saab 9-5

Max: 17.0 [kph] at 0.014 [s]
Min: -0.0 [kph] at 0.000 [s]

V2 A5 Left Front Sil. y Velocity

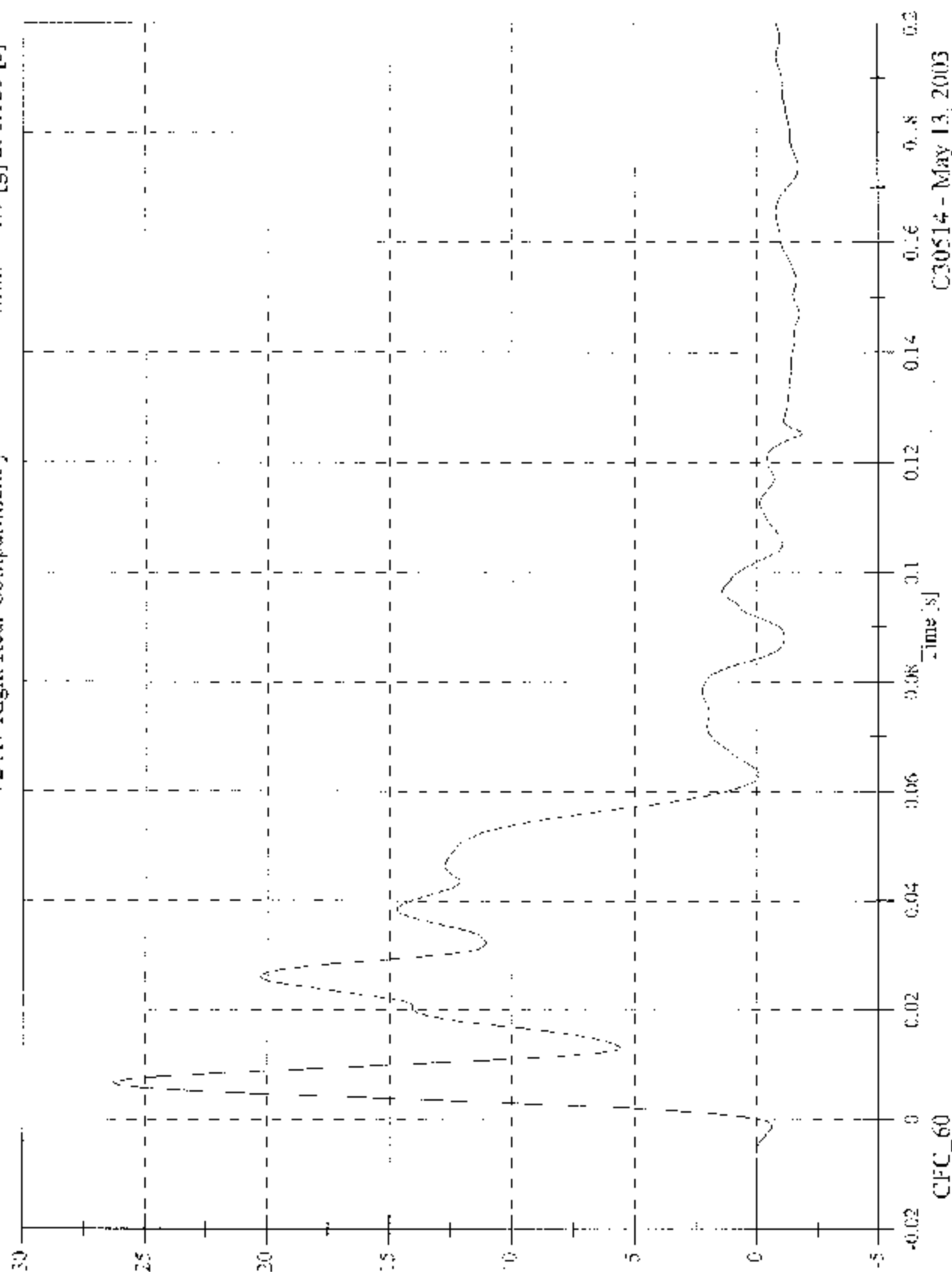


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FMVSS 214D Indicant - 2003 Saab 9-5

V2 A7 Right Rear Compartment y

Max: 26.3 [g] at 0.007 [s]
Min: -1.9 [g] at 0.125 [s]



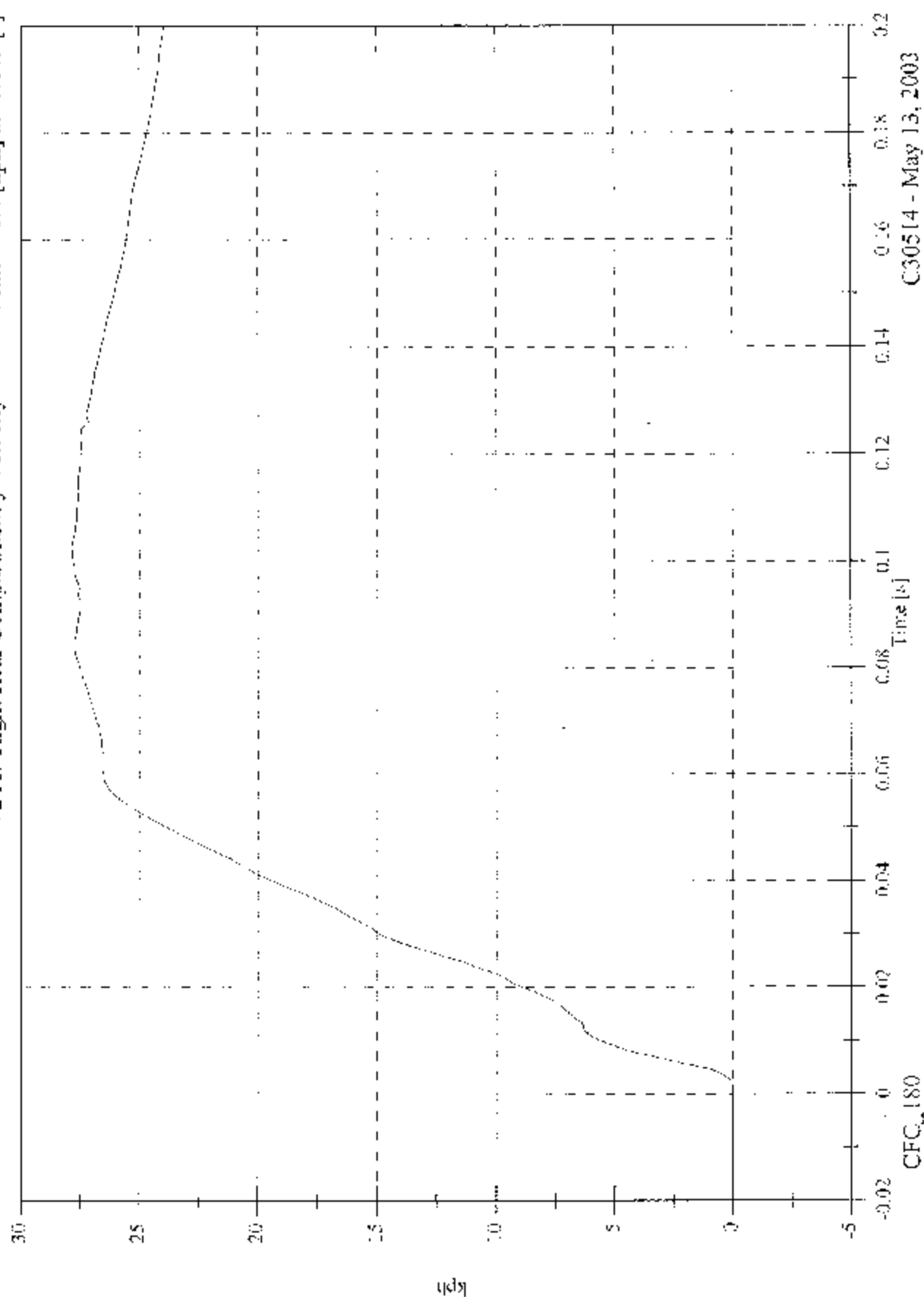
C30514 - May 13, 2003

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Max: 27.8 [kph] at 0.102 [s]

Mfn: -0.0 [kph] at -0.015 [s]

V2 A7 Right Rear Compartment y Velocity

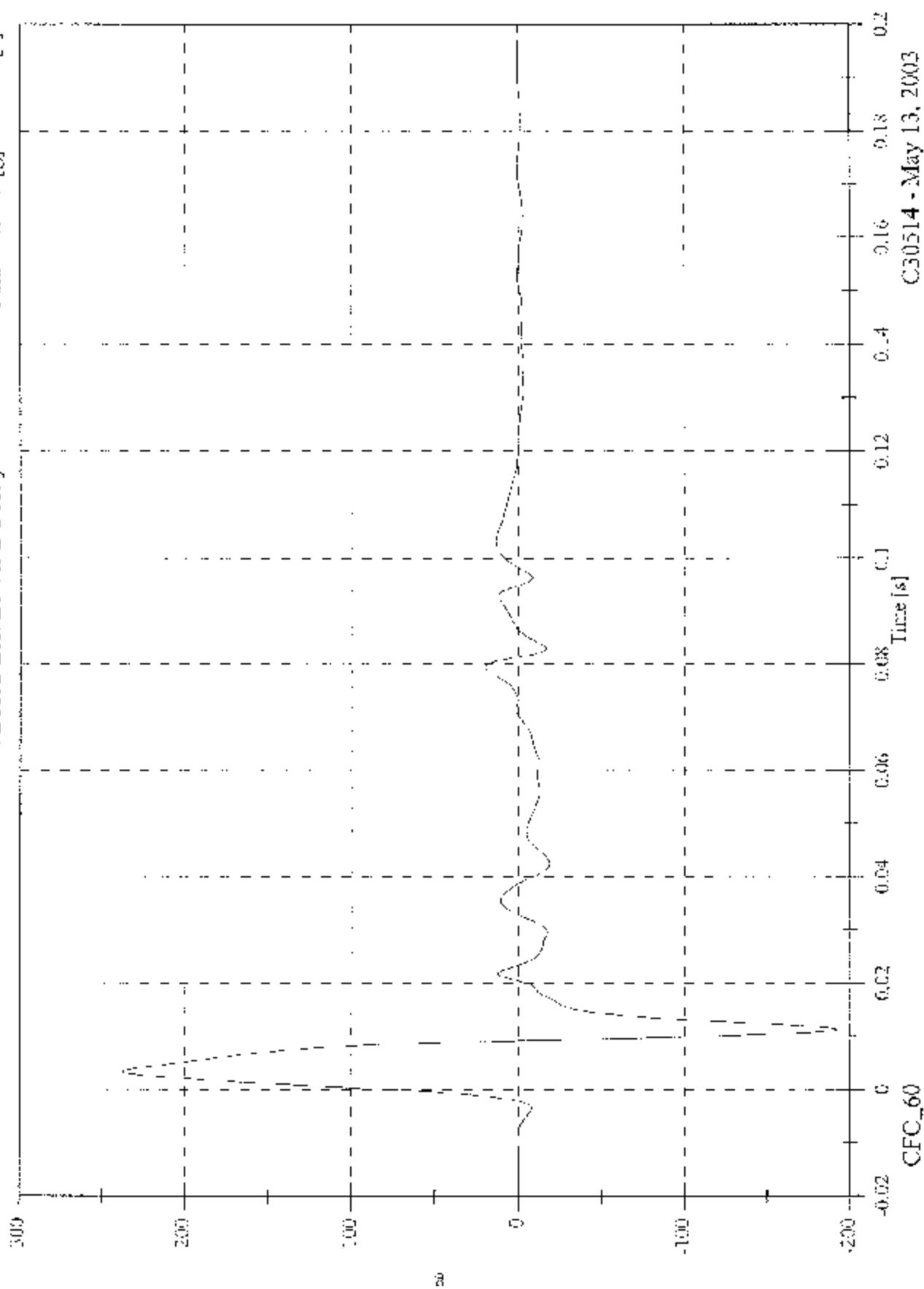


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FMVSS 214D Inducant - 2003 Saab 9-5

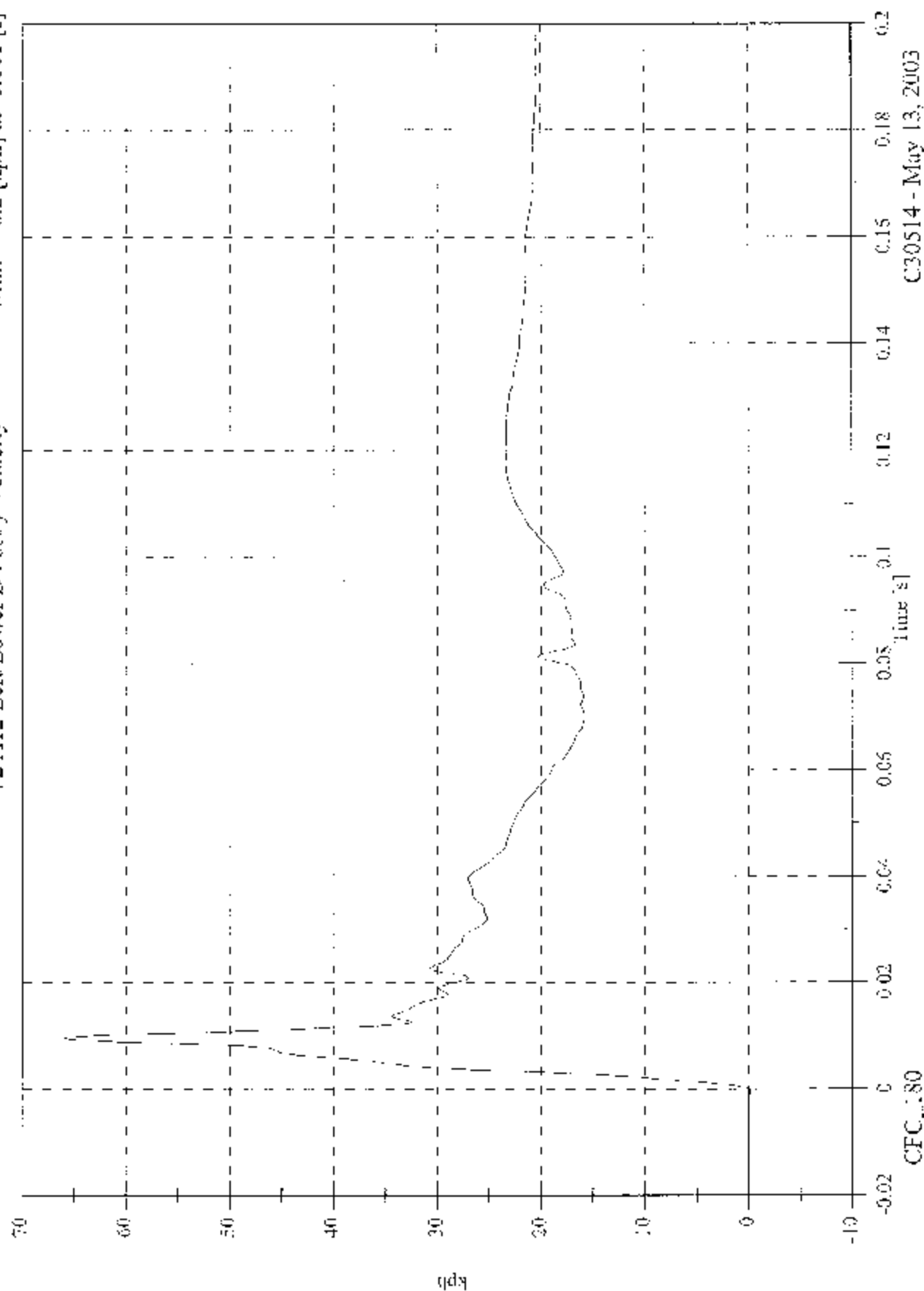
V2 A12 Left Lower B Post y

Max: 237.8 [g] at 0.003 [s]
Min: -192.3 [g] at 0.011 [s]



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V2 A.2 Left Lower B Post y Velocity

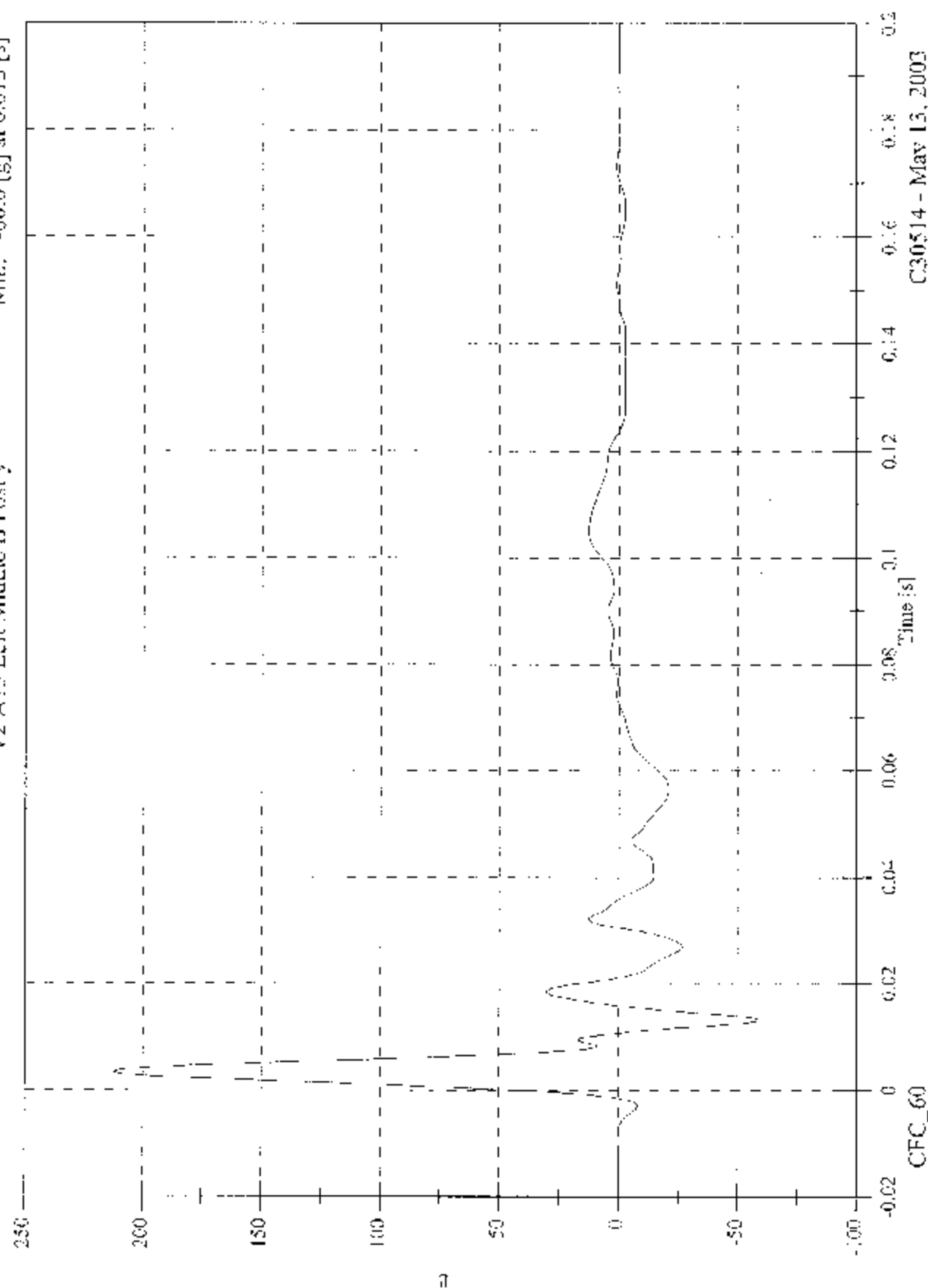


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FMVSS 214D Indicant - 2003 Saab 9-5

V2 A13 Left Middle B Post y

Max: 212.8 [g] at 0.003 [s]
Min: -60.0 [g] at 0.013 [s]

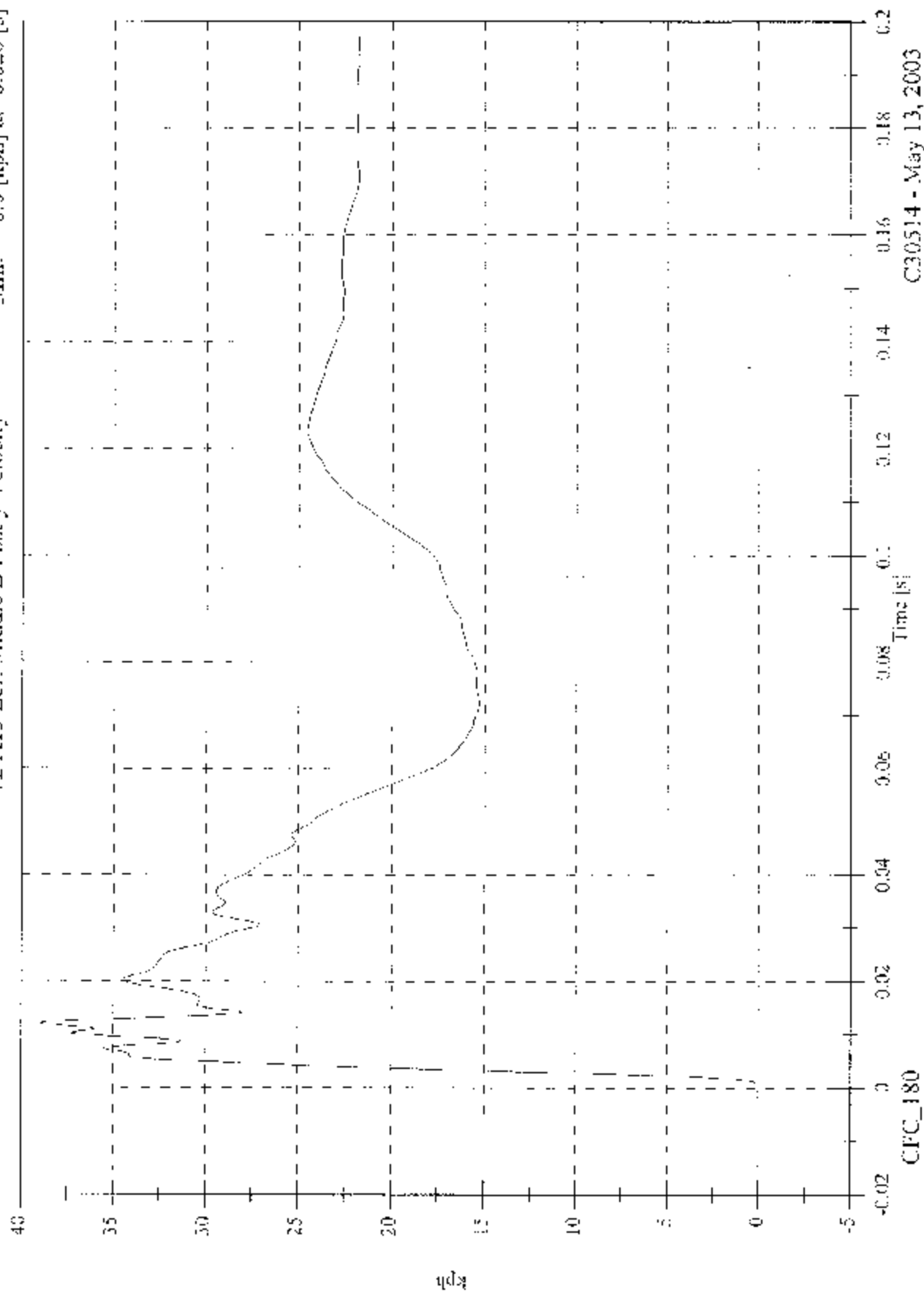


C30514 - May 13, 2003

FMVSS 214D Inducant - 2003 Saab 9-5

Max: 38.9 [kph] at 0.012 [s]
Min: -0.0 [kph] at -0.020 [s]

V2 A13 Left Middle B Post y Velocity



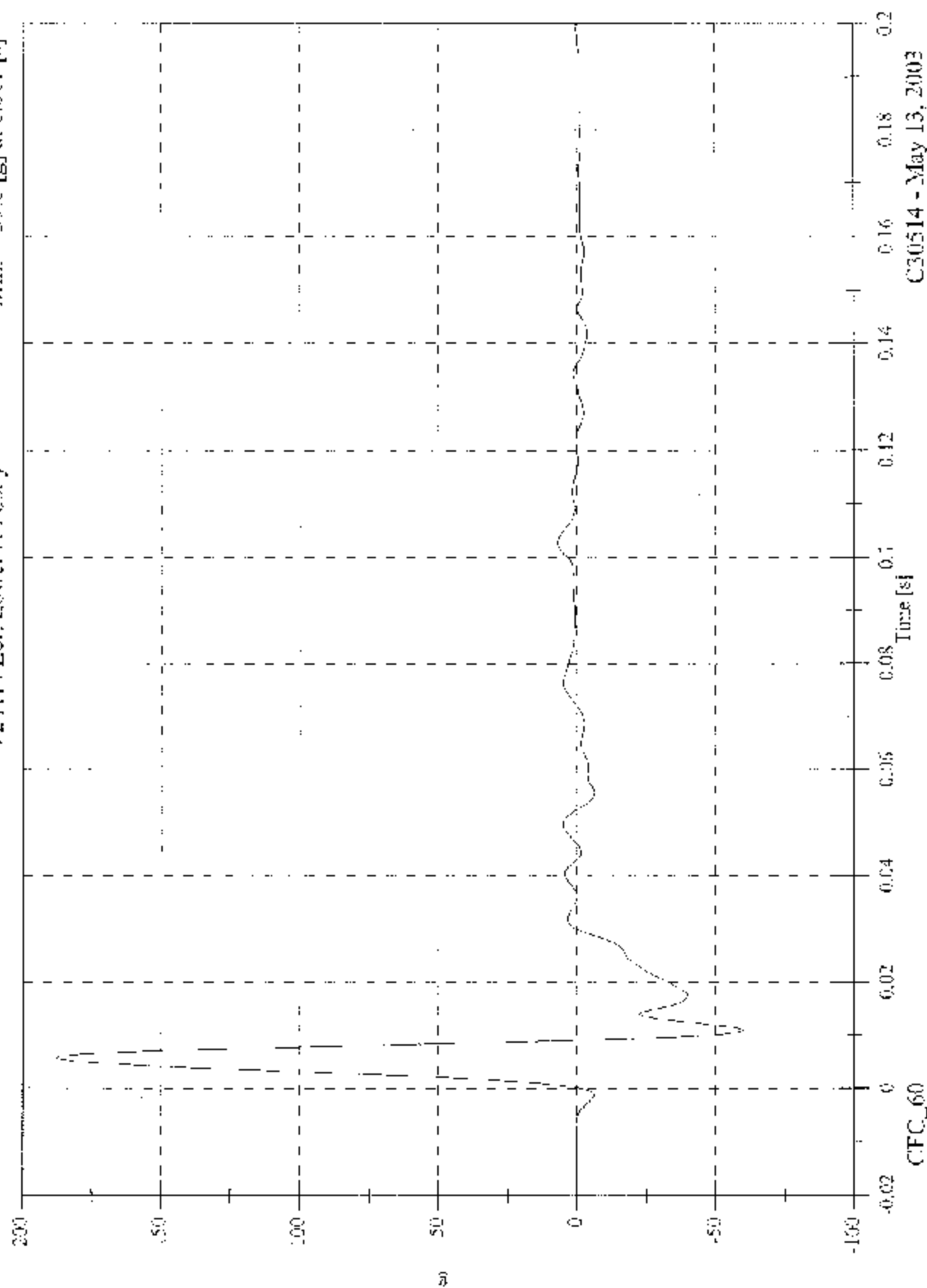
CFC_180

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V2 A14 Left Lower A Post y

Max: 187.7 [g] at 0.006 [s]
Min: -59.6 [g] at 0.011 [s]



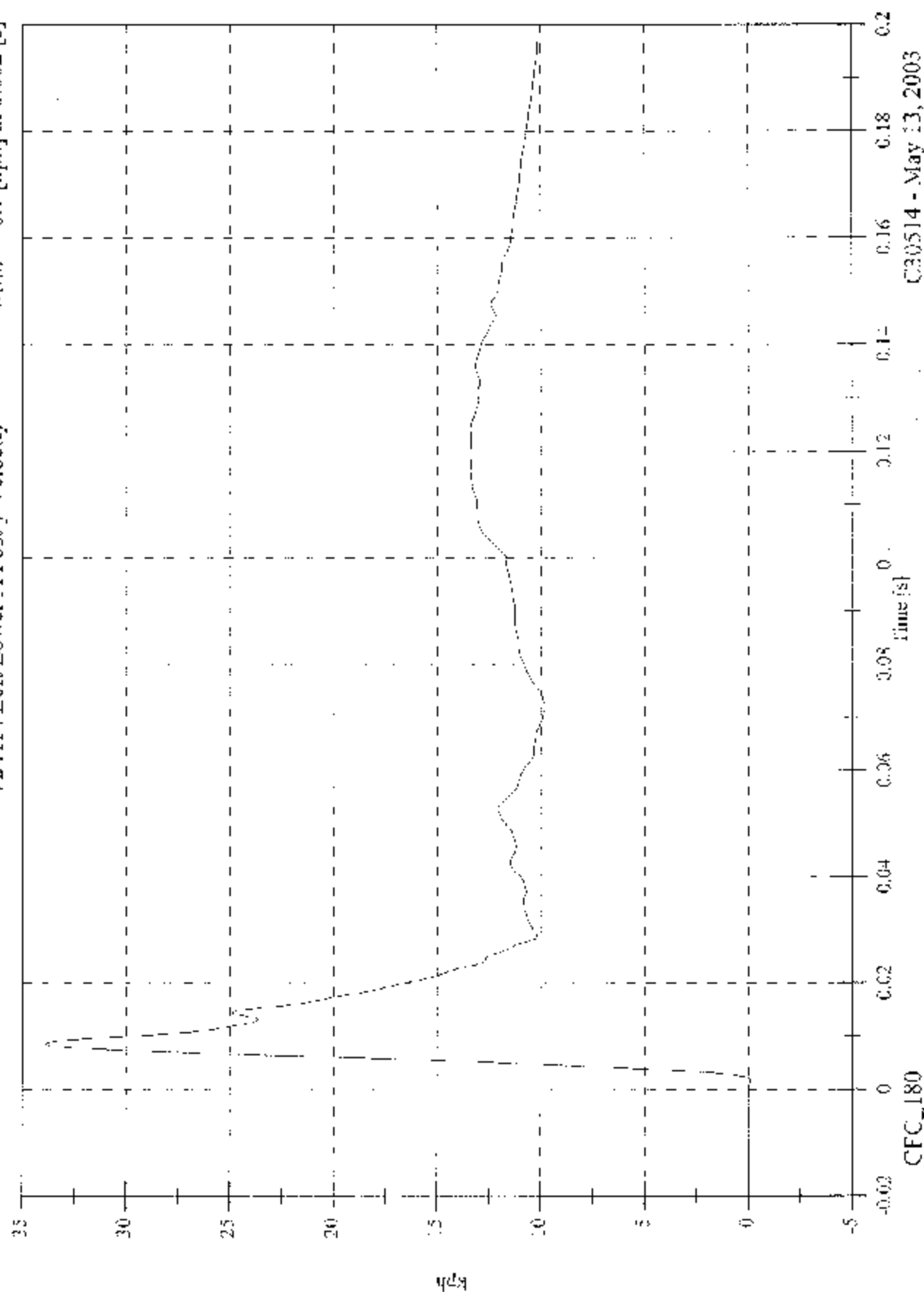
C30514 - May 13, 2003

FMVSS 214D Indictant - 2003 Saab 9-5

Max: 33.9 [kph] at 0.008 [s]

V2 A14 Left Lower A Post y Velocity

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



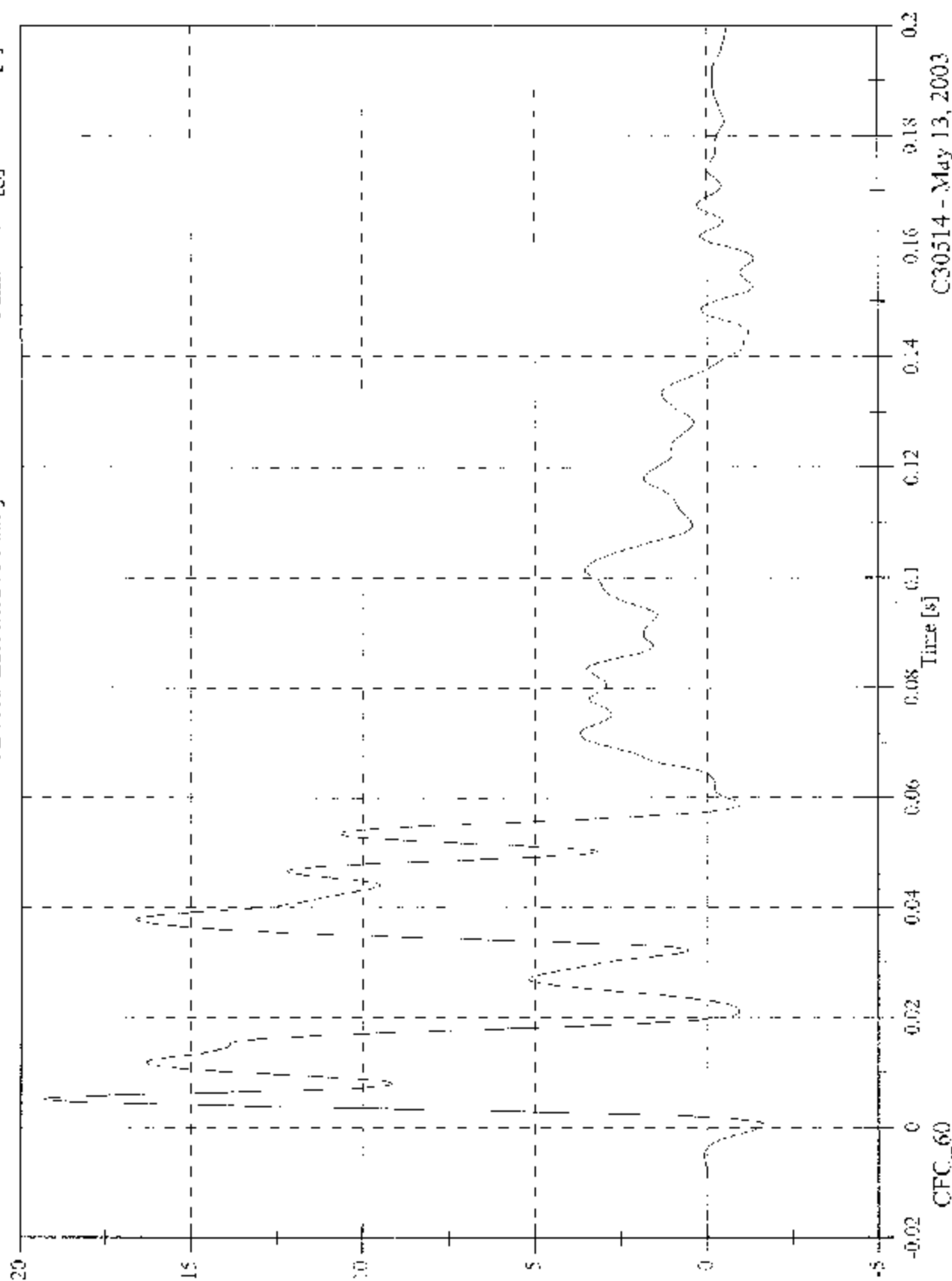
CFC_180

C30514 - May 13, 2003

FMVSS 214D Indicant - 2003 Saab 9-5

V2 A15 Left Mid A Post y

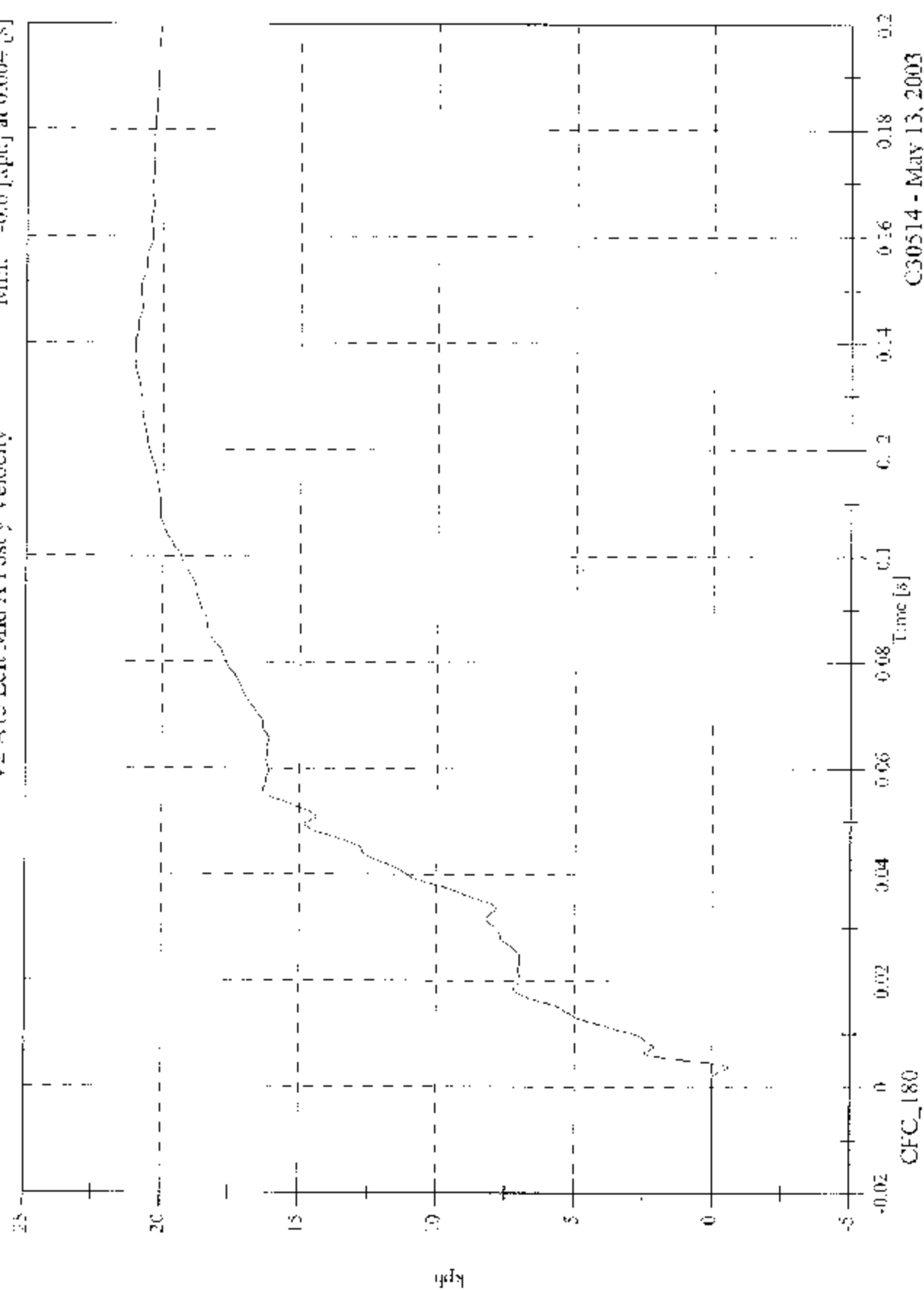
Max: 19.3 [g] at 0.005 [s]
Min: -1.7 [g] at 0.000 [s]



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V2 A15 Left Mid A Post y Velocity

Max: 21.1 [kph] at 0.137 [s]
Min: -0.6 [kph] at 0.004 [s]

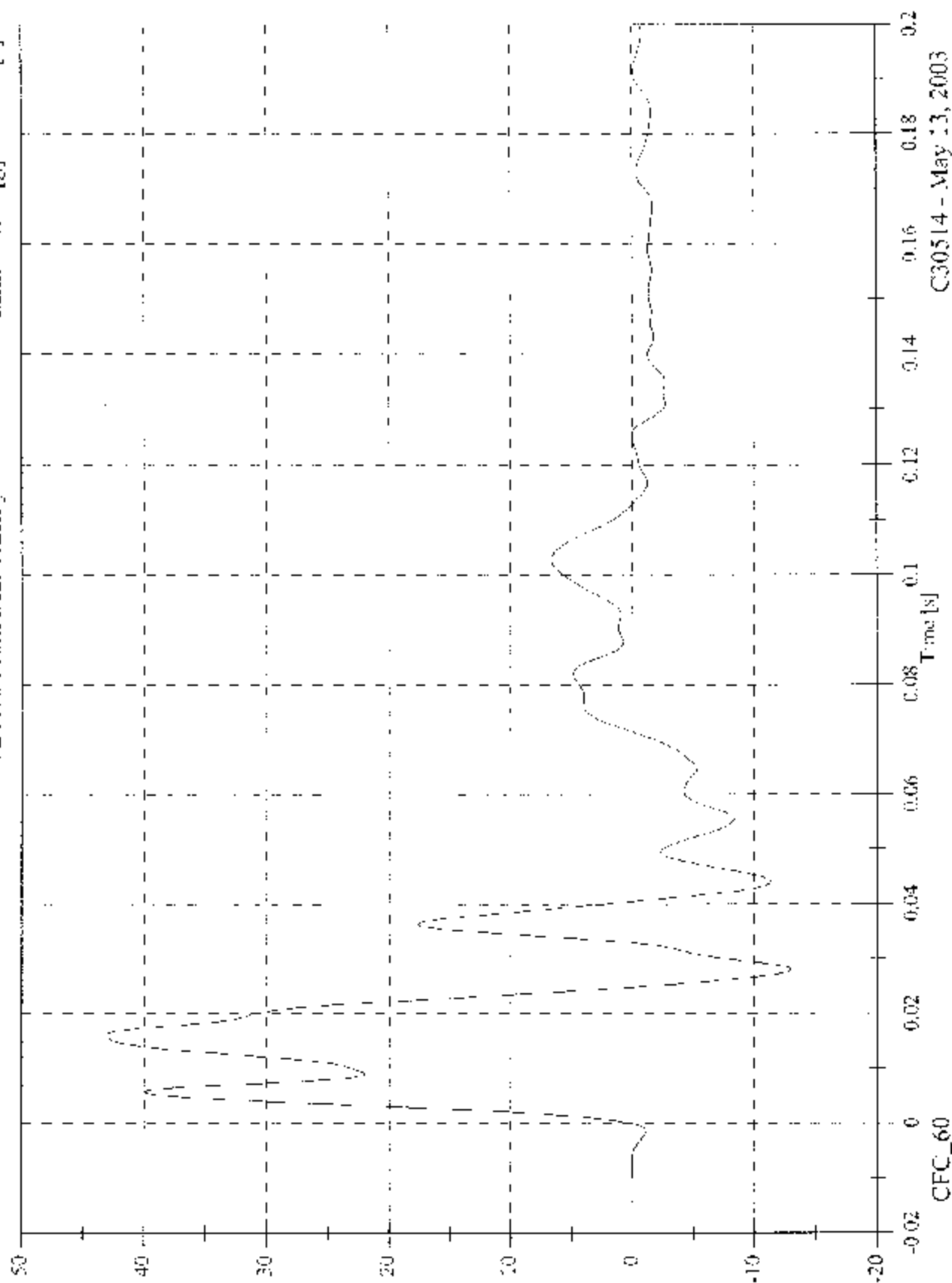


C30514 - May 13, 2003

FMVSS 214D Inducant - 2003 Saab 9-5

Max: 43.2 [g] at 0.016 [s]
Min: -13.0 [g] at 0.028 [s]

V2 A16 Front Seat Track y



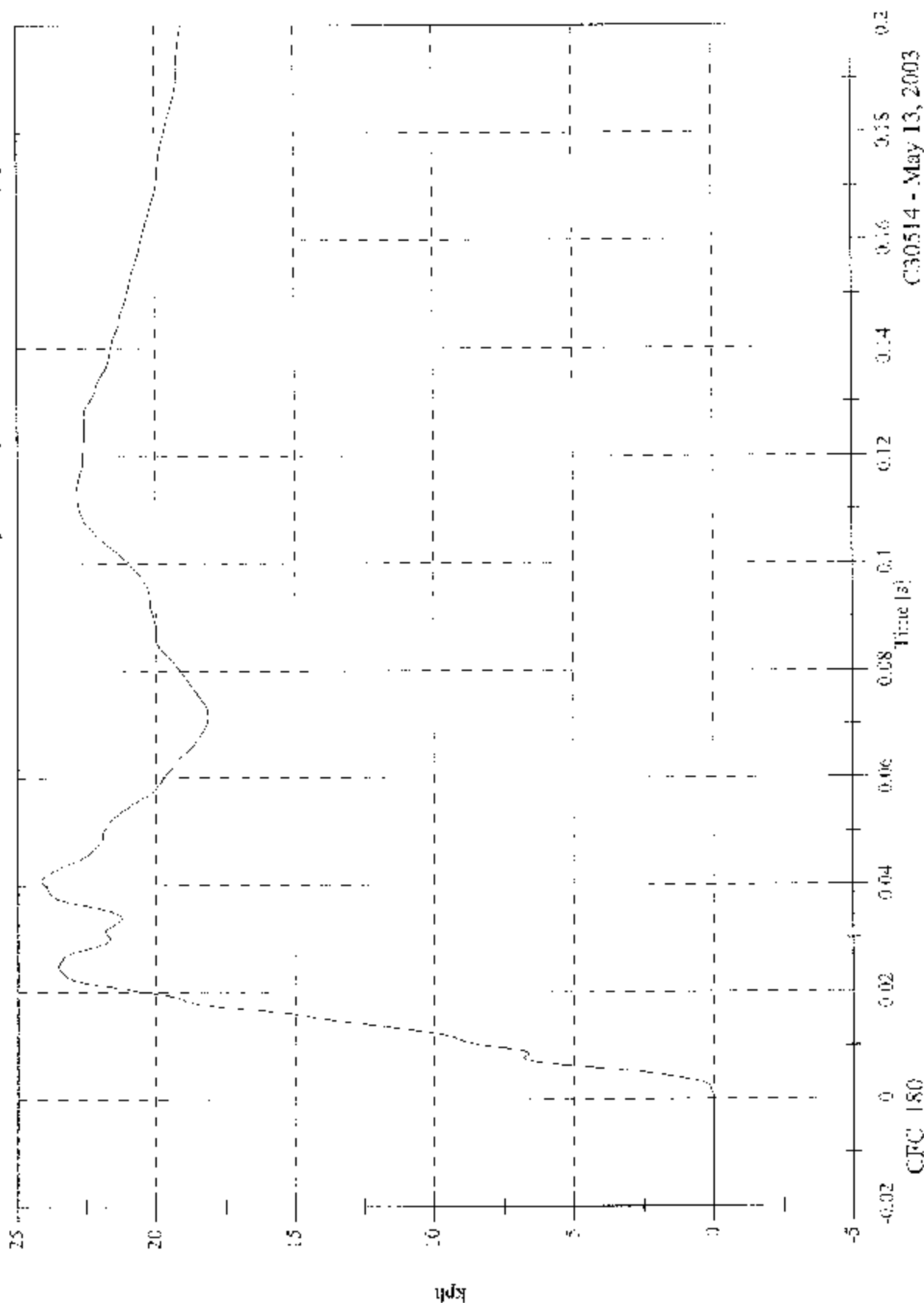
C30514 - May 13, 2003

FMVSS 214D Indicant - 2003 Saab 9-5

Max: 24.2 [kph] at 0.041 [s]

V2 A16 Front Seat Track y Velocity

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

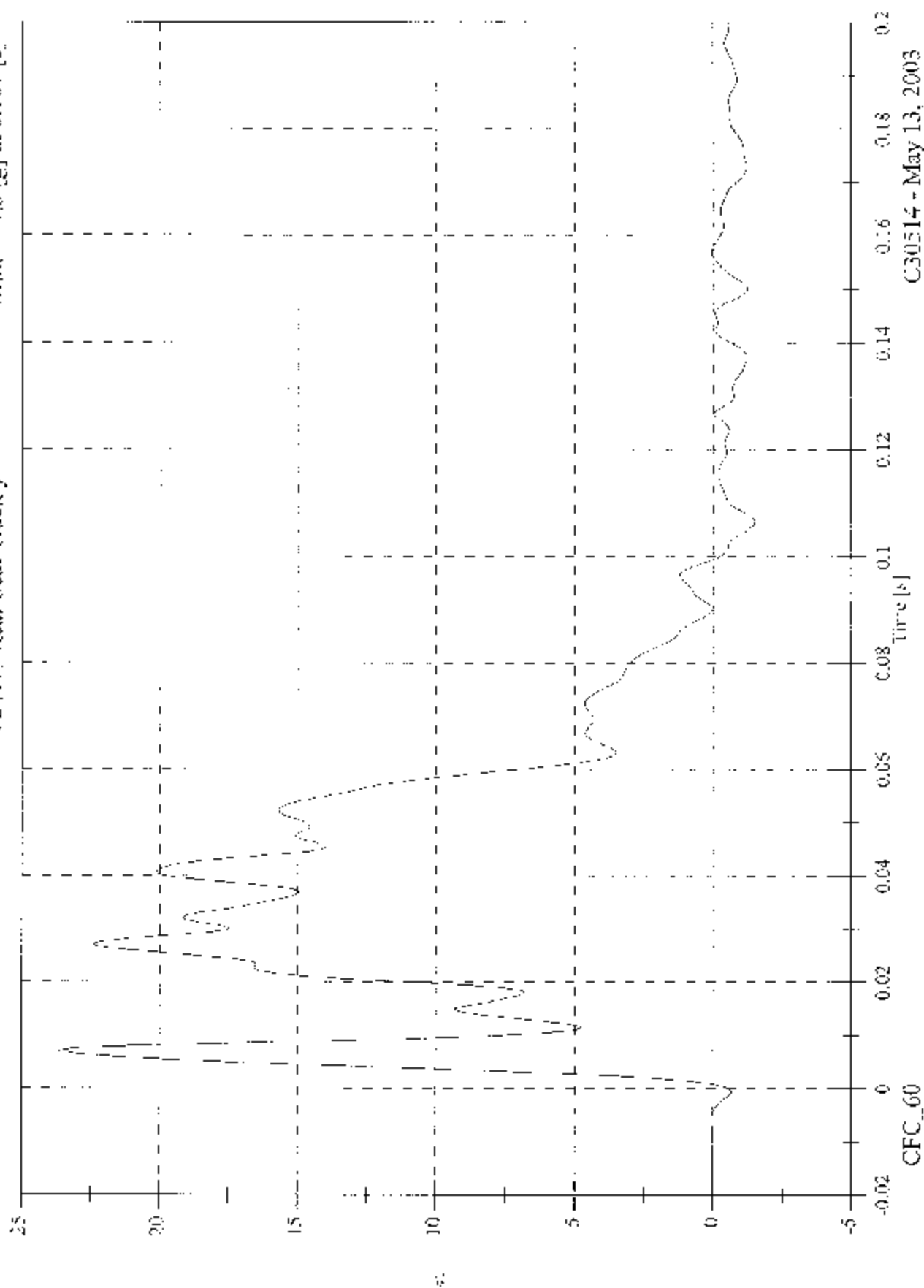


C30514 - May 13, 2003

FMVSS 214D Indicant - 2003 Saab 9-5

V2 A17 Rear Seat Track y

Max: 23.6 [g] at 0.007 [s]
Min: -1.5 [g] at 0.107 [s]

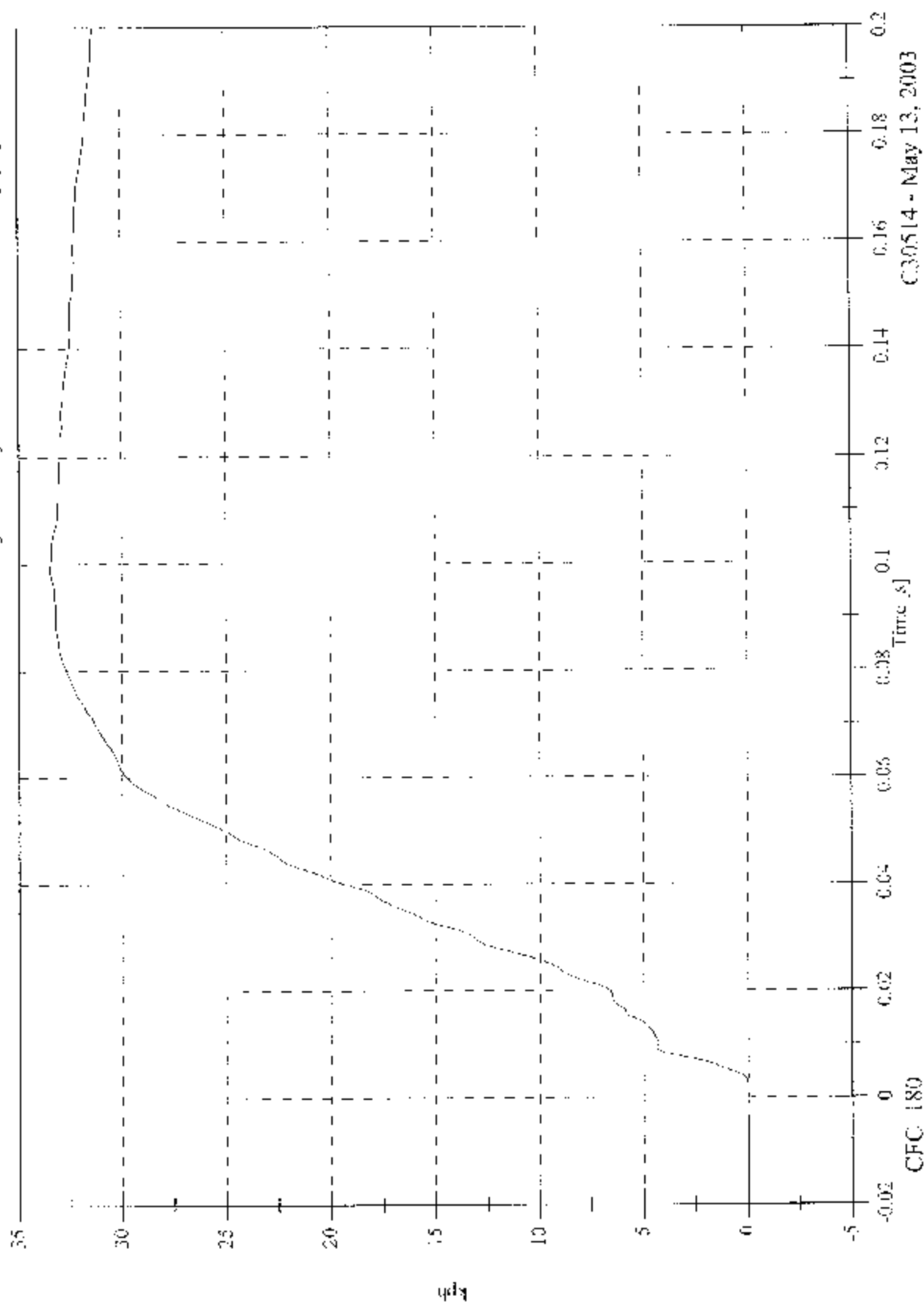


C30514 - May 13, 2003

RM/VSS 214D Indictant - 2003 Saab 9-5

Max: 33.5 [kph] at 0.099 [s]
Min: -0.0 [kph] at -0.019 [s]

V2 A17 Rear Seat Track y Velocity

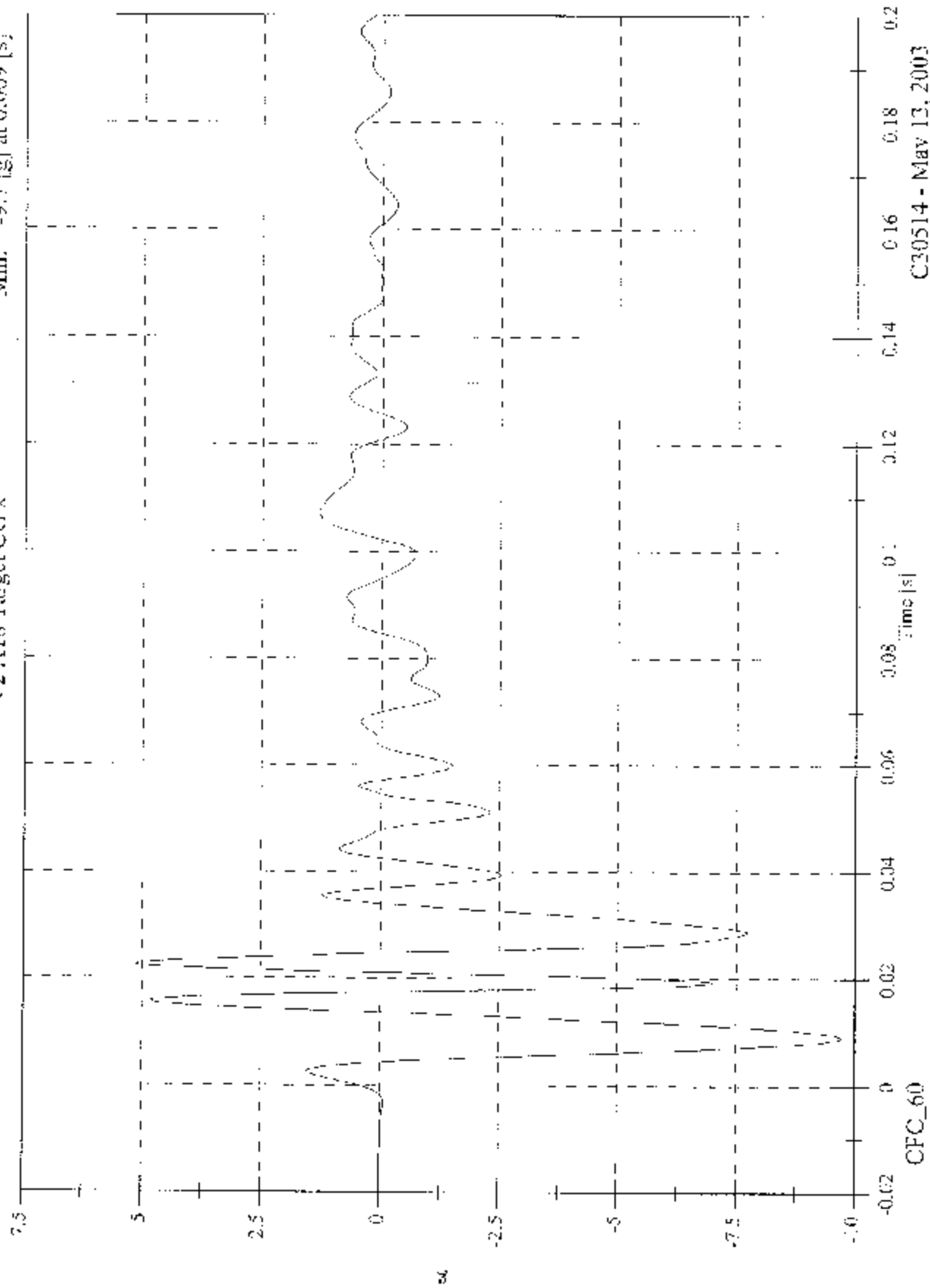


C30514 - May 13, 2003

FMVSS 214D Indicant - 2003 Saab 9-5

V2 A18 Target CG x

Max: 5.1 [g] at 0.023 [s]
Min: -9.7 [g] at 0.009 [s]

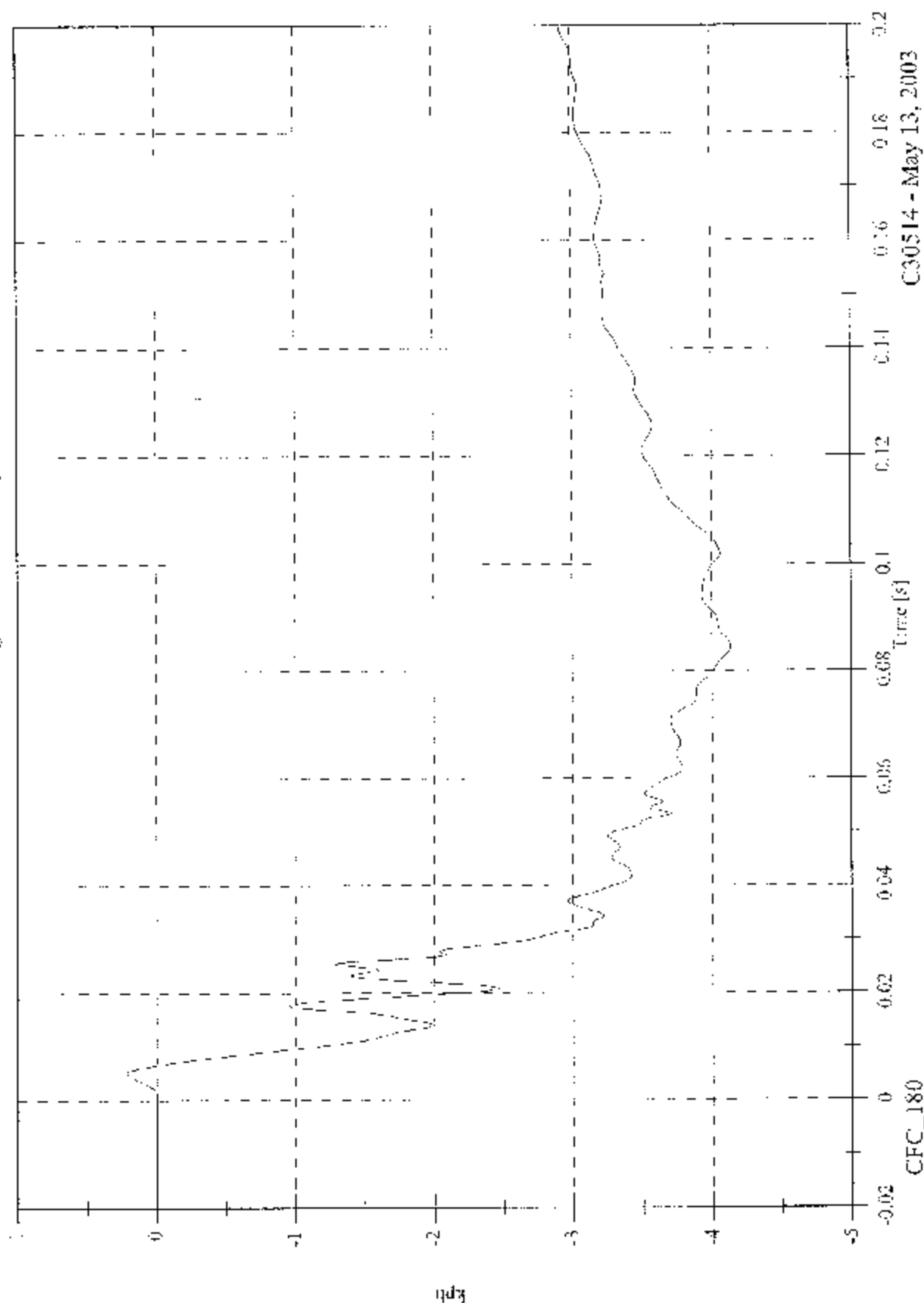


C30514 - May 13, 2003

FMVSS 214D Indicant - 2003 Saab 9-5

Max: 0.2 [kph] at 0.005 [s]
Min: -4.1 [kph] at 0.084 [s]

V2 A18 Target CG x Velocity

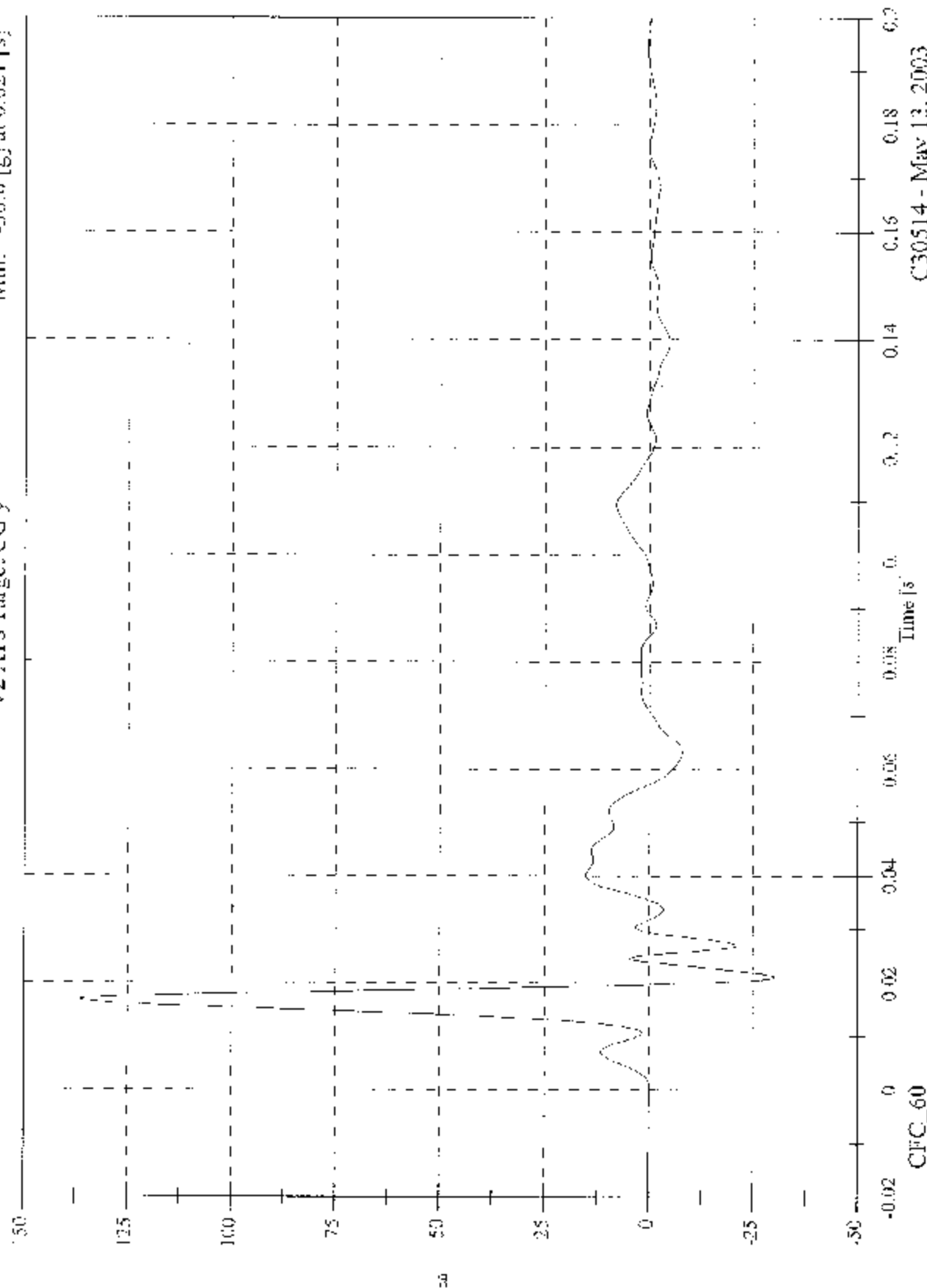


C30514 - May 13, 2003

PMVSS 214D Indicant - 2003 Saab 9-5

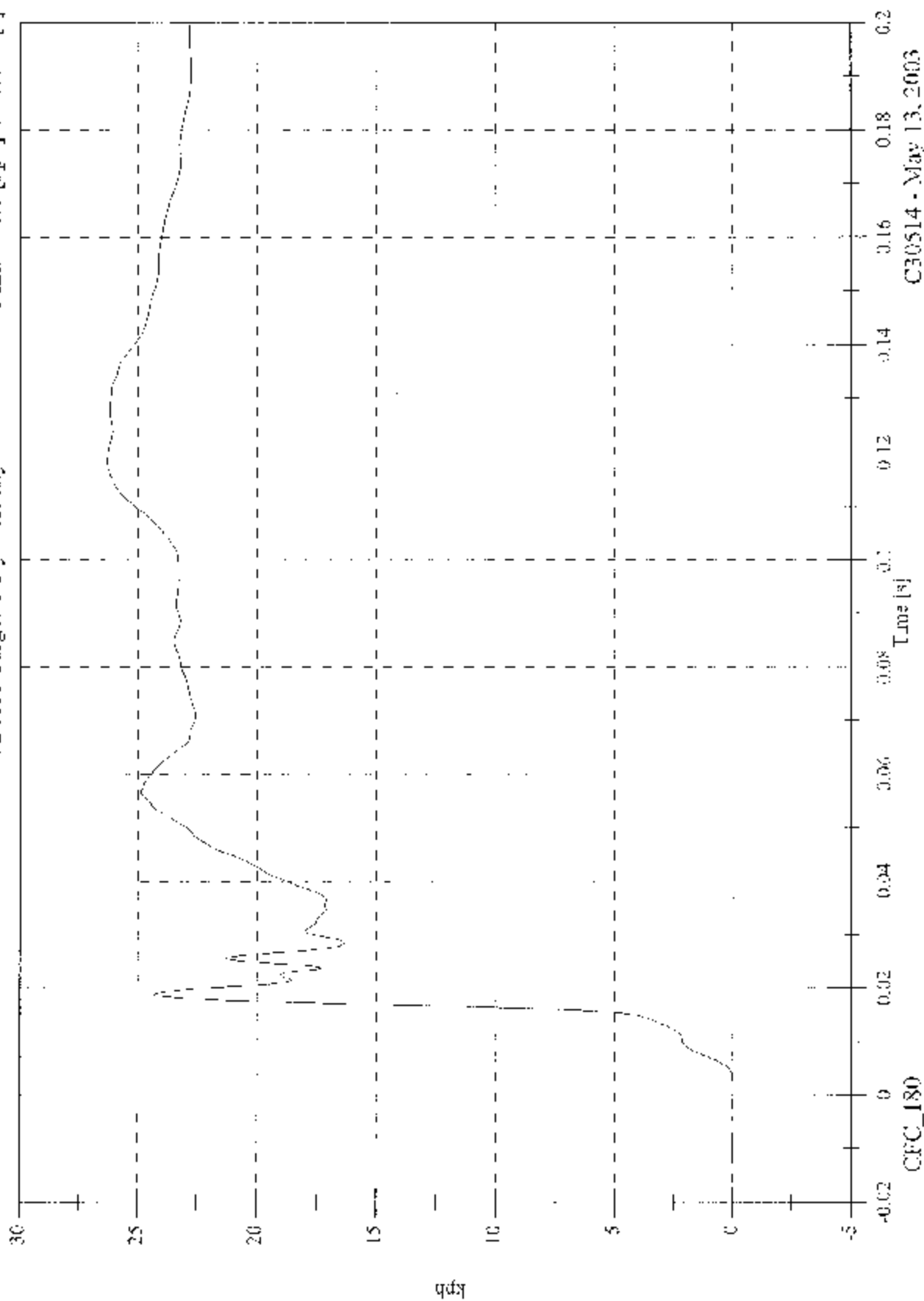
V2 A18 Target CG y

Max: 136.4 [g] at 0.017 [s]
Min: -30.0 [g] at 0.021 [s]



C30514 - May 13, 2003

V2 A18 Target CG y Velocity



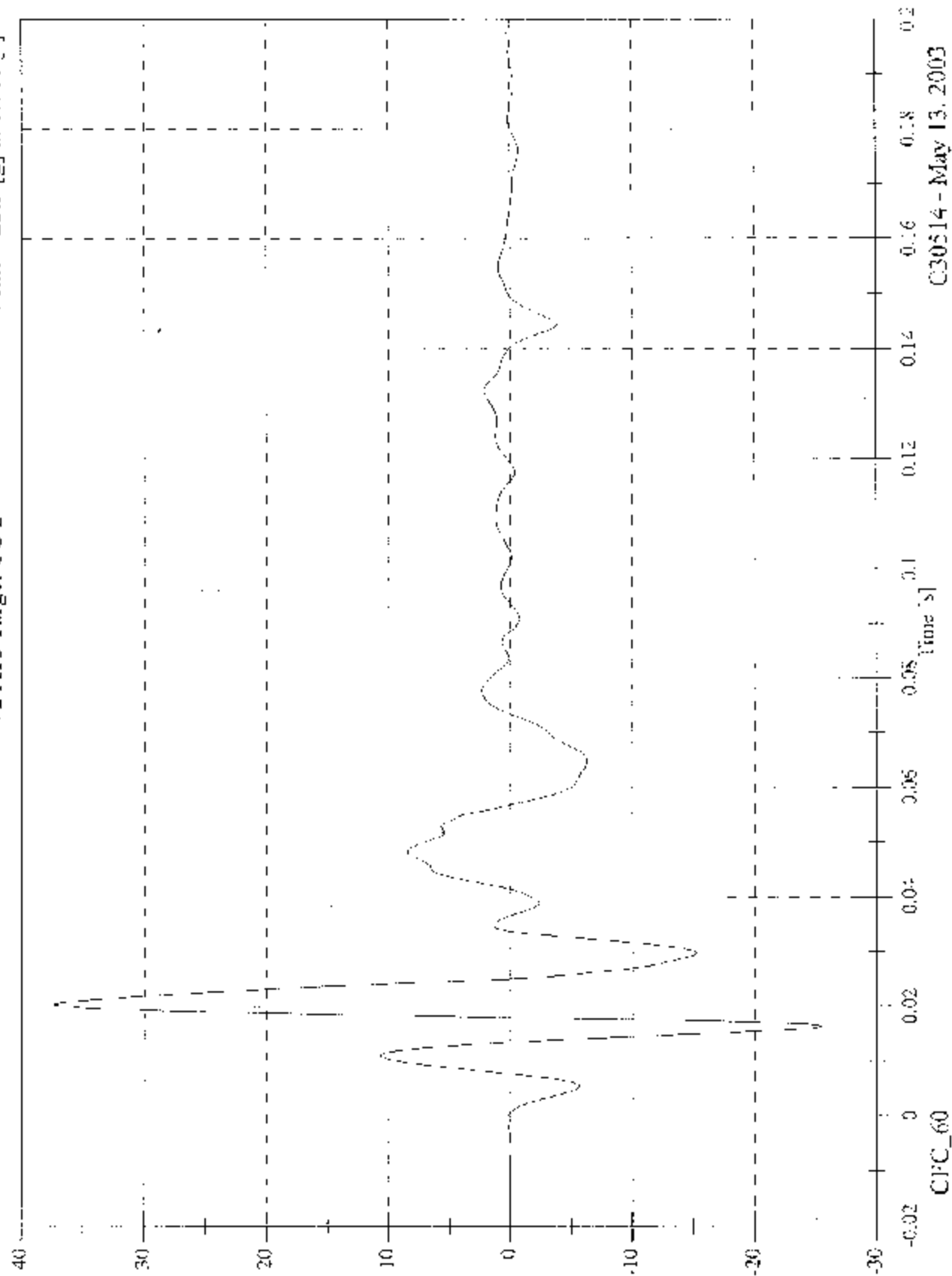
CFC_180

C30514 - May 13, 2003

FMVSS 214D Indicant - 2003 Saab 9-5

V2 A18 Target CG z

Max: 37.5 [g] at 0.020 [s]
Min: -25.5 [g] at 0.016 [s]



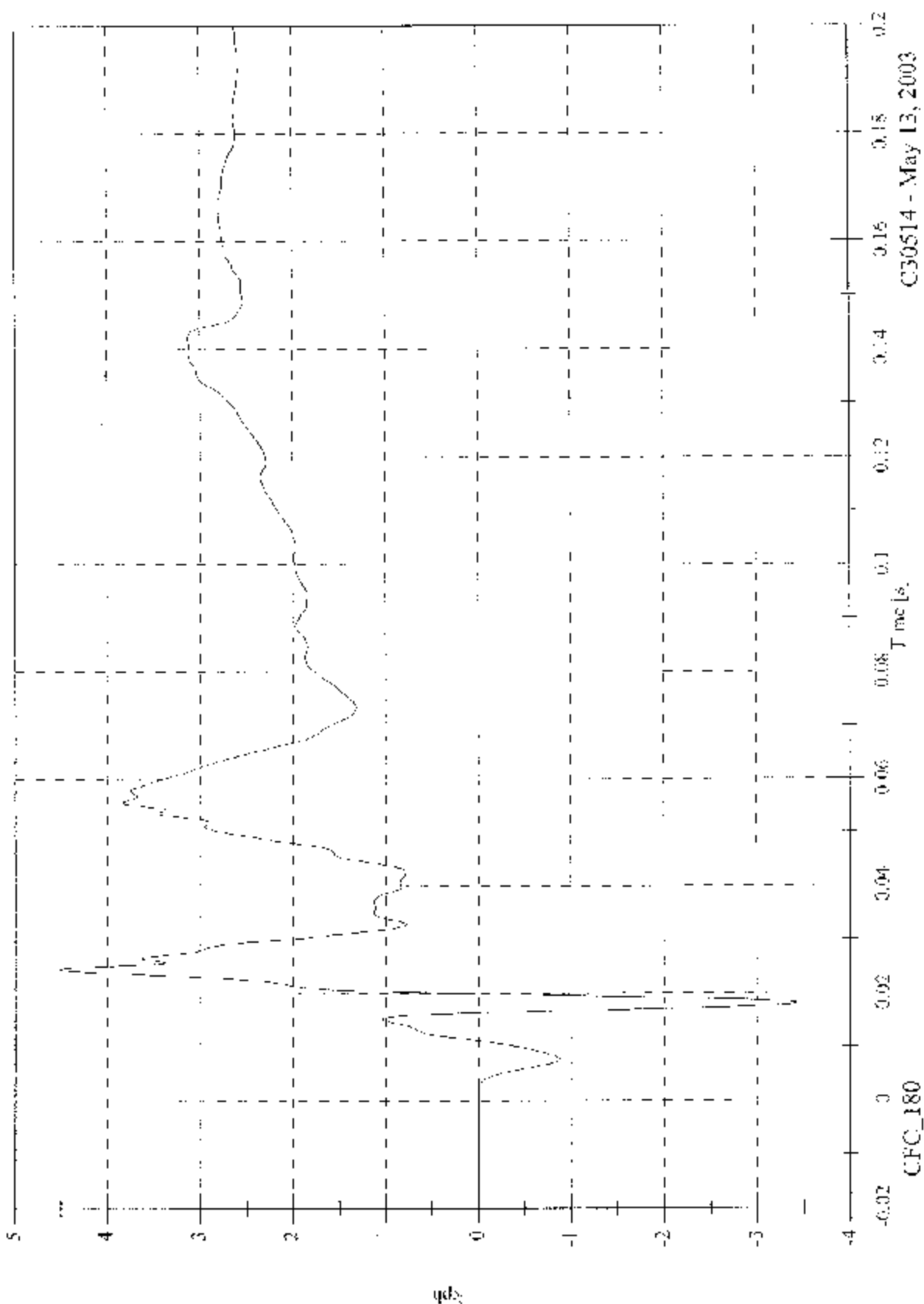
C30514 - May 13, 2003

FMVSS 214D Indicant - 2003 Saab 9-5

Max: 4.5 [kph] at 0.025 [s]

Min: -3.4 [kph] at 0.018 [s]

V2 A18 Target CG z Velocity

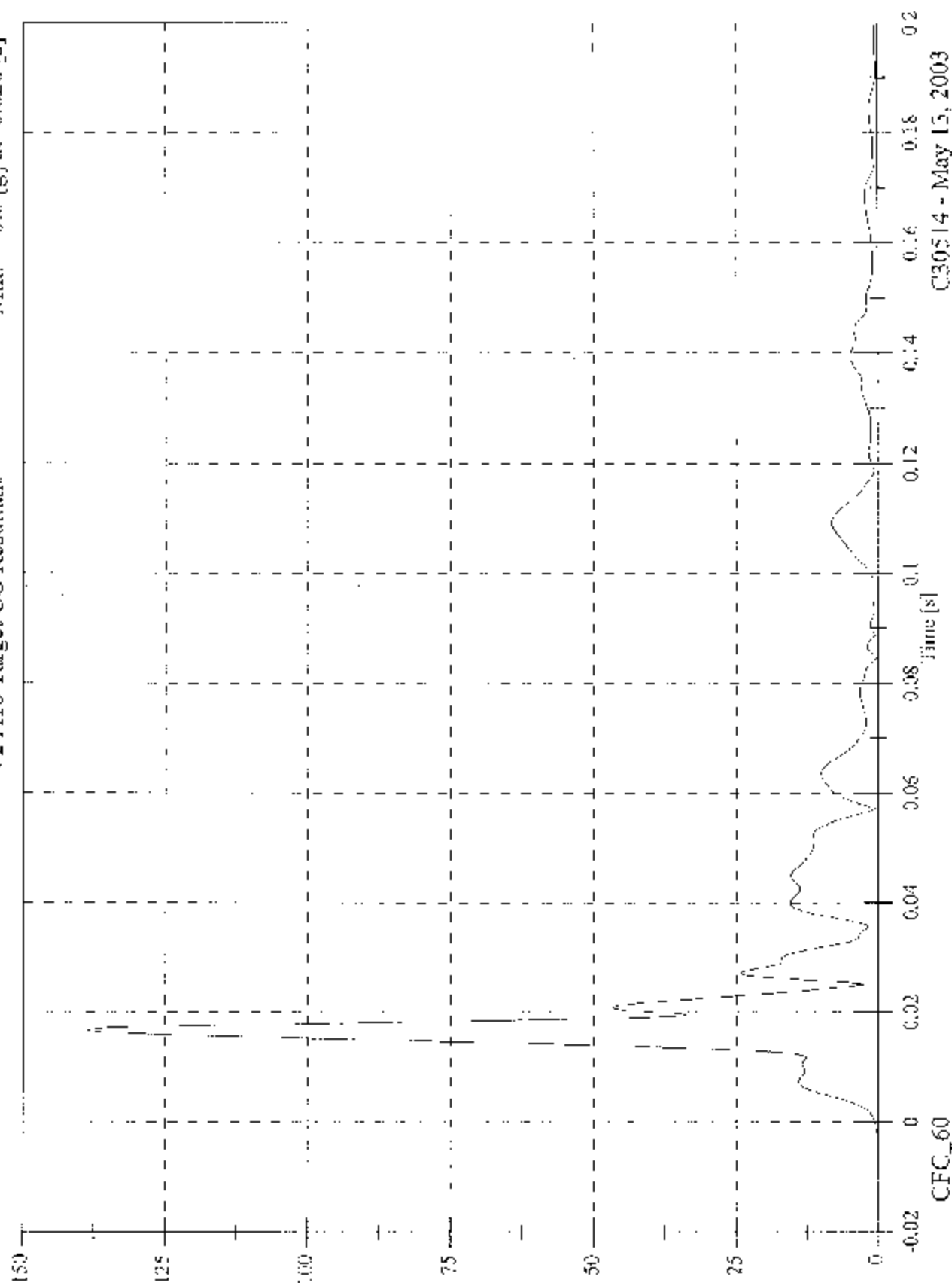


C30514 - May 13, 2003

FMVSS 214D Indictant - 2003 Saab 9-5

V2 A18 Target CG Resultant

Max: 138.6 [g] at 0.017 [s]
Min: 0.0 [g] at -0.020 [s]



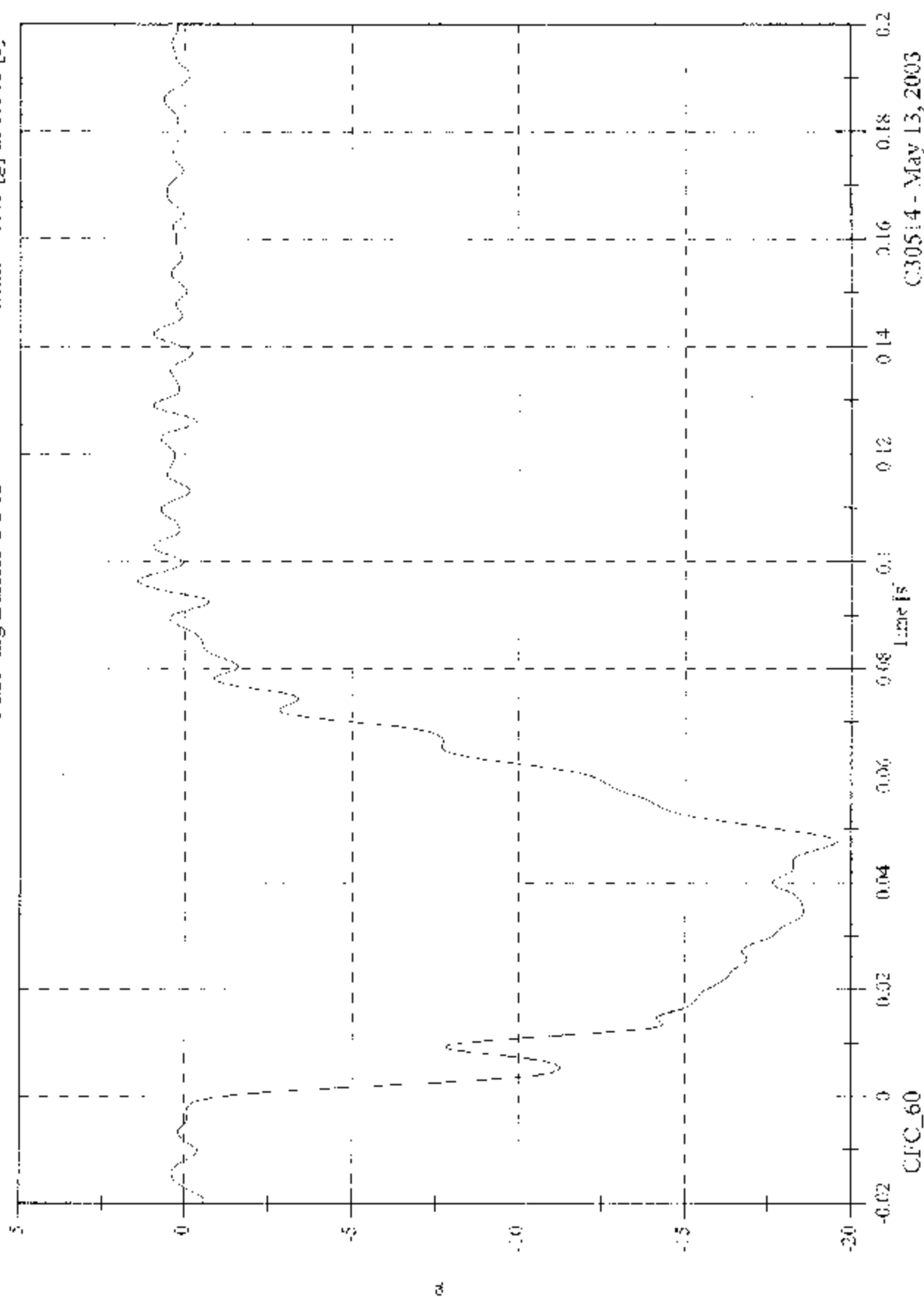
C30514 - May 15, 2003

FMVSS 214D Indicant - 2003 Saab 9-5

V1 Moving Barrier CG X

Max: 1.5 [g] at 0.096 [s]

Min: -19.6 [g] at 0.048 [s]

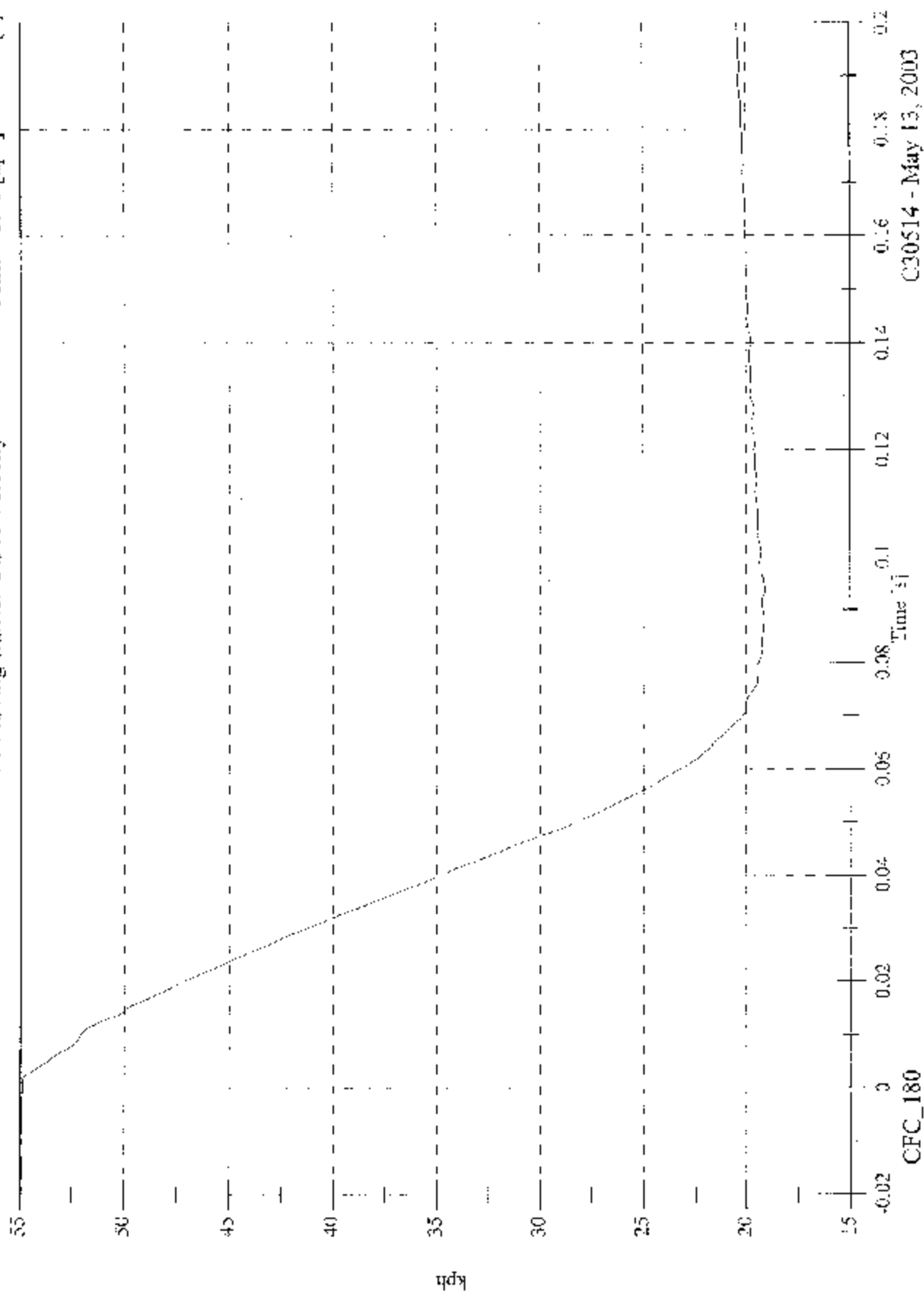


C30514 - May 13, 2003

FMVSS 214D Indicant - 2003 Saab 9-5

V1 Moving Barrier CG X Velocity

Max: 55.0 [kph] at -0.011 [s]
Min: 19.1 [kph] at 0.094 [s]



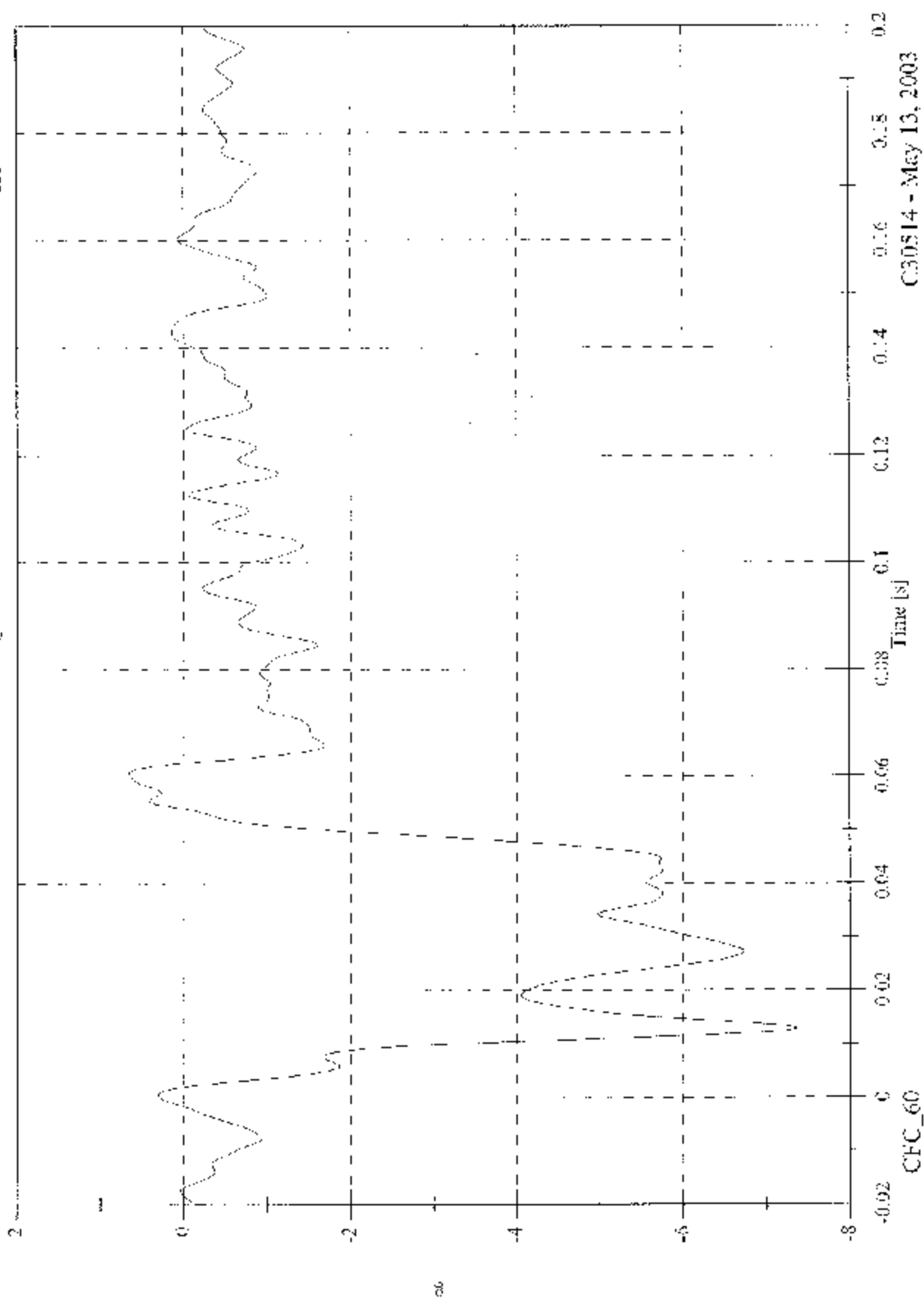
CFC_180

C30514 - May 13, 2003

FMVSS 214D Indicator - 2003 Saab 9-5

Max: 0.7 [g] at 0.061 [s]
Min: -7.4 [g] at 0.013 [s]

V1 Moving Barrier CG Y

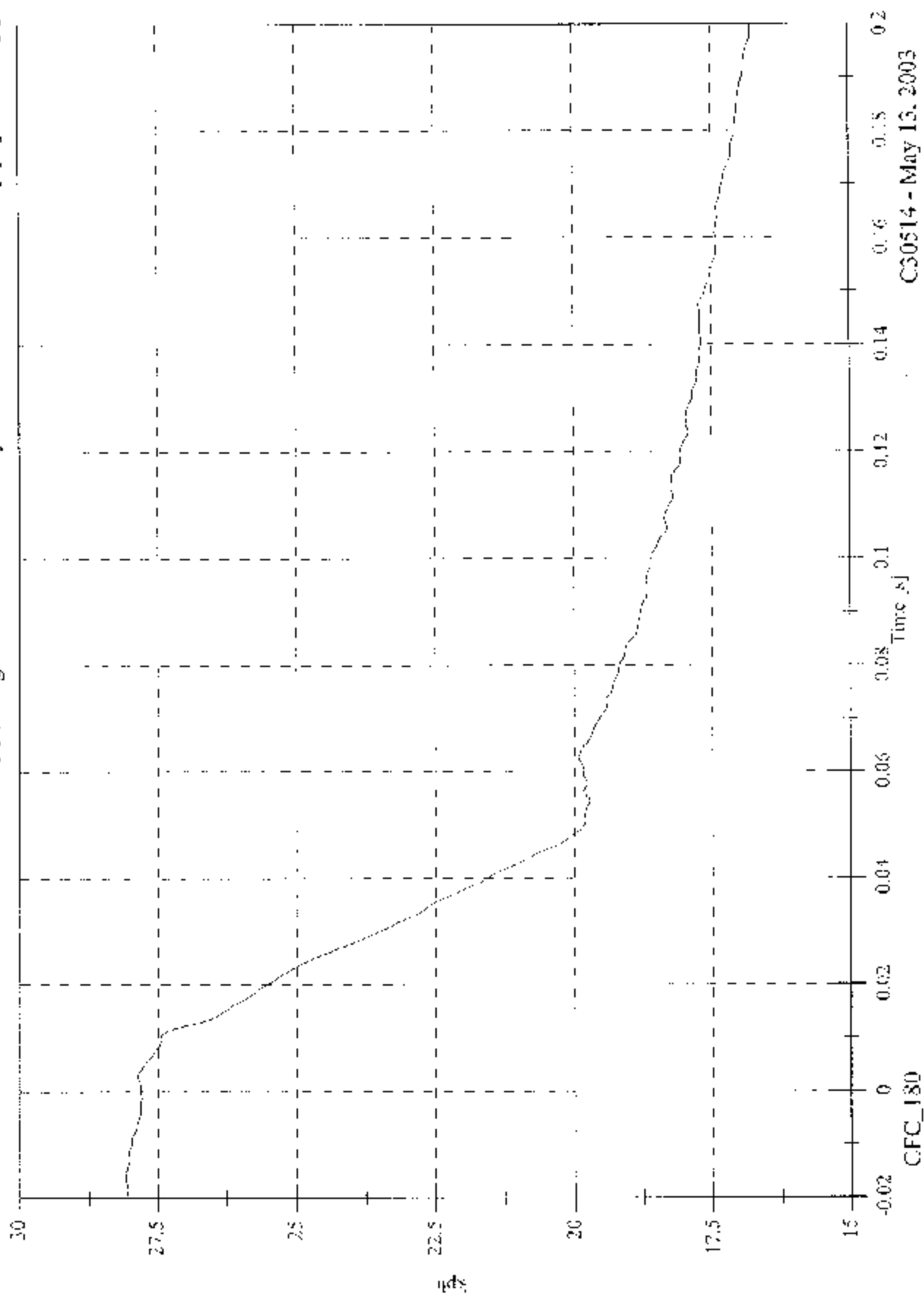


C30514 - May 13, 2003

FMVSS 214D Indicant - 2003 Saab 9-5

Max: 28.1 [kph] at -0.016 [s]
 Min: 16.8 [kph] at 0.200 [s]

V1 Moving Barrier CG Y Velocity



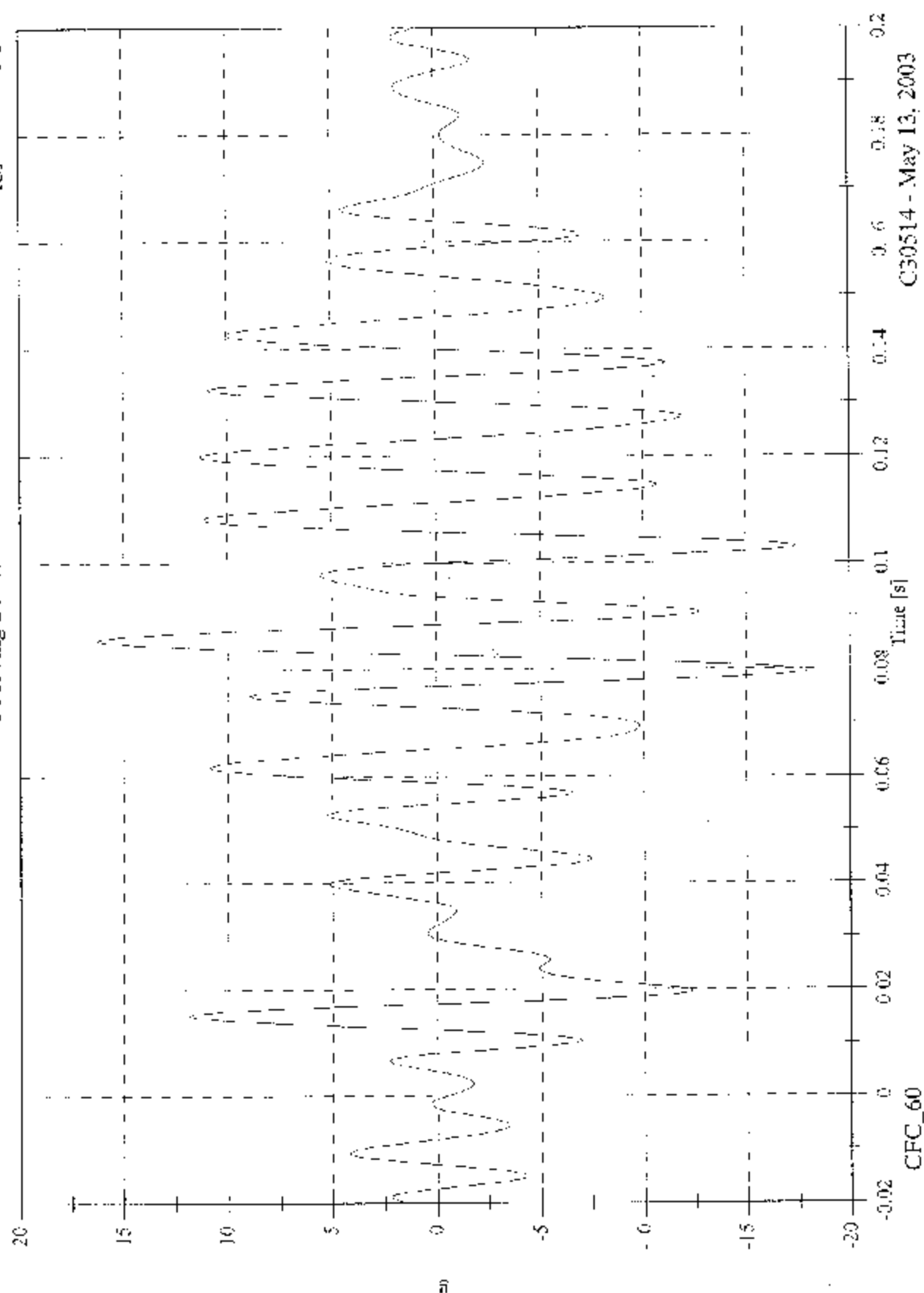
CFC_180

C50514 - May 13, 2003

FMVSS 214D Indicant - 2003 Saab 9-5

Max: 16.2 [g] at 0.086 [s]
Min: -18.0 [g] at 0.080 [s]

V1 Moving Barrier CG Z

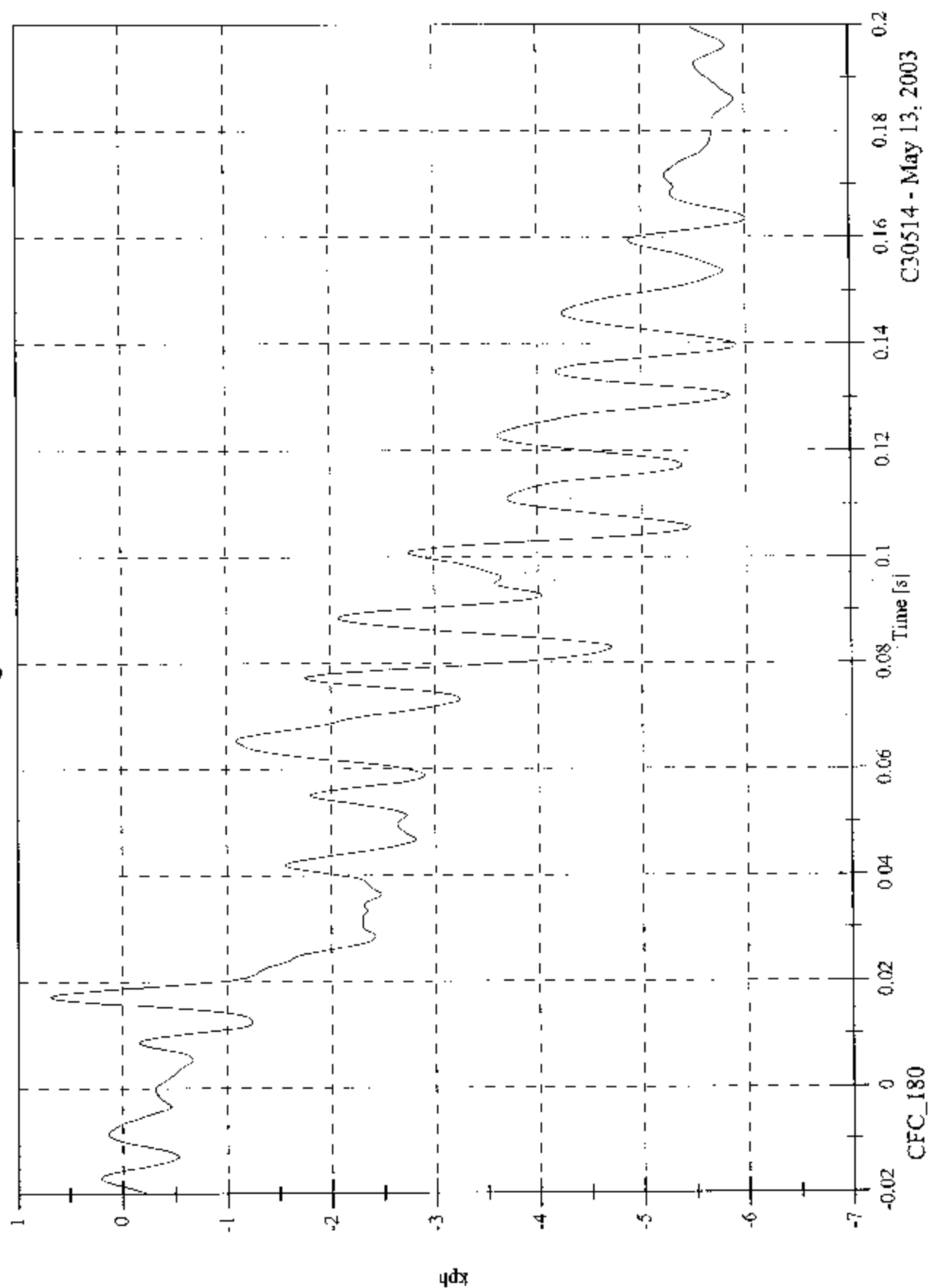


C30514 - May 13, 2003

FMVSS 214D Inducant - 2003 Saab 9-5

Max: 0.7 [kph] at 0.017 [s]
Min: -6.0 [kph] at 0.163 [s]

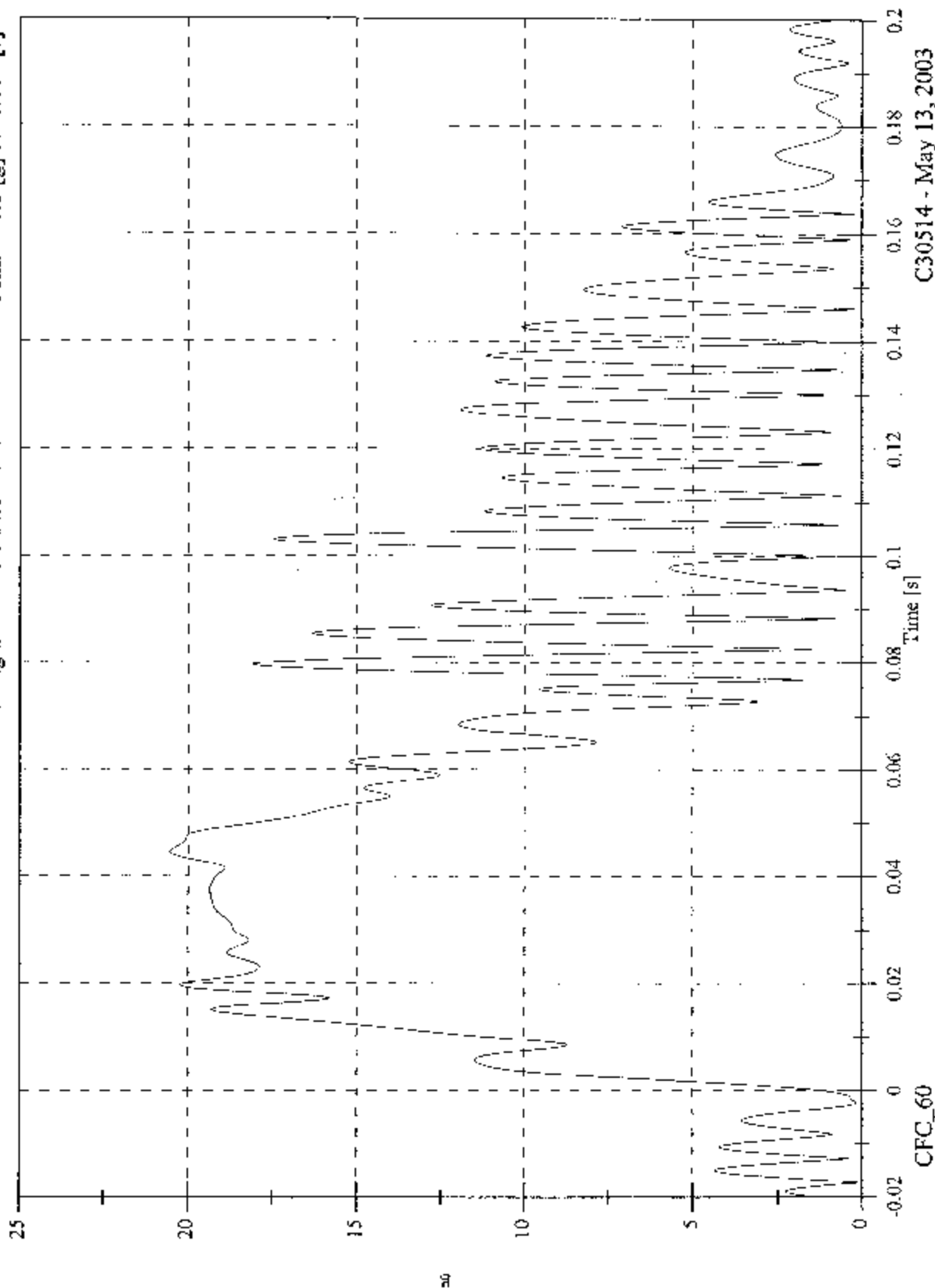
V1 Moving Barrier CG Z Velocity



FMVSS 214D Indicant - 2003 Saab 9-5

Max: 20.5 [g] at 0.045 [s]
Min: 0.1 [g] at -0.017 [s]

V1 Moving Barrier CG Resultant

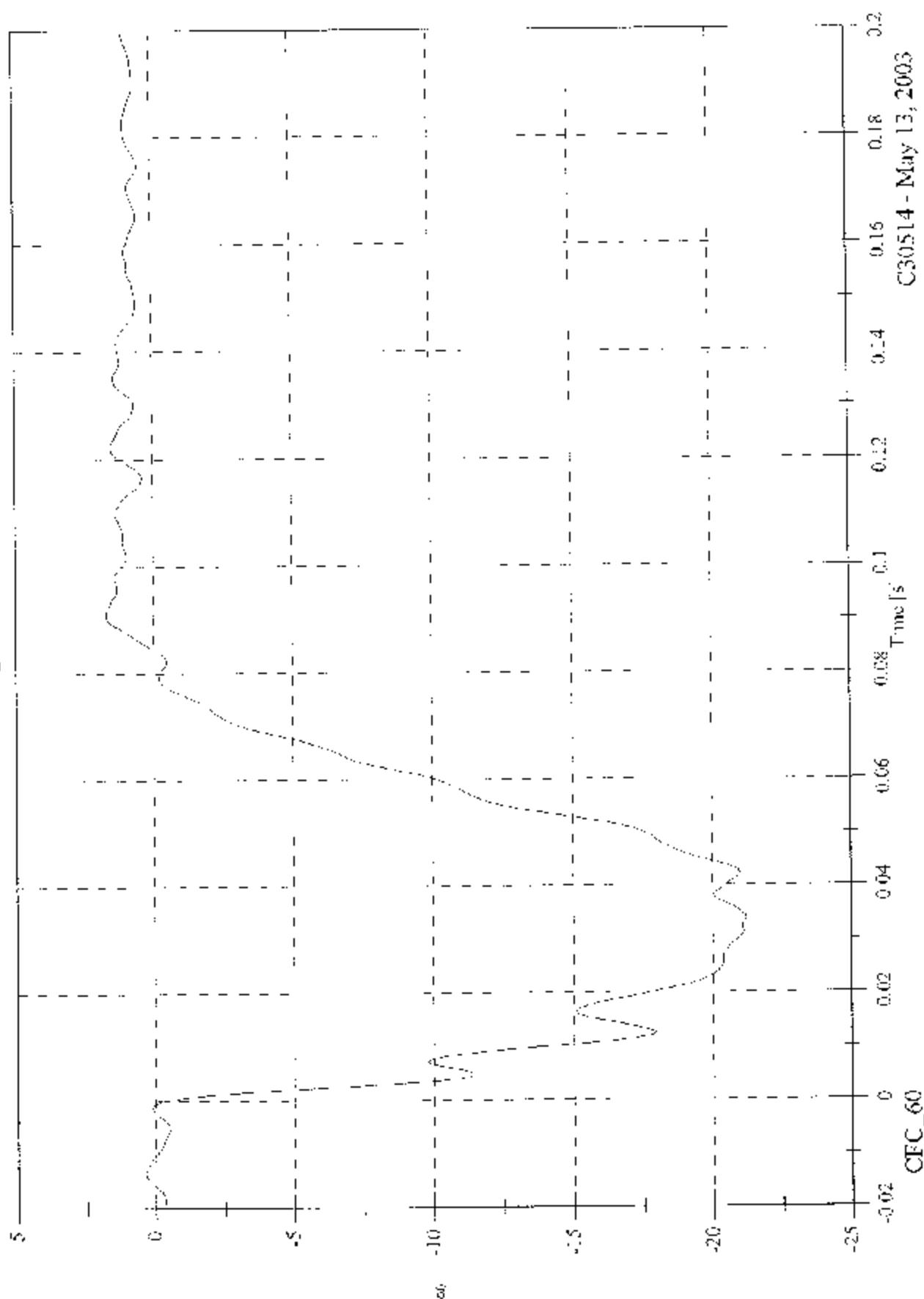


C30514 - May 13, 2003

FMVSS 214D Inducant - 2003 Snab 9-5

Max: 1.7 [g] at 0.091 [s]
Min: -2.2 [g] at 0.034 [s]

V1 Moving Barrier Left Rail X



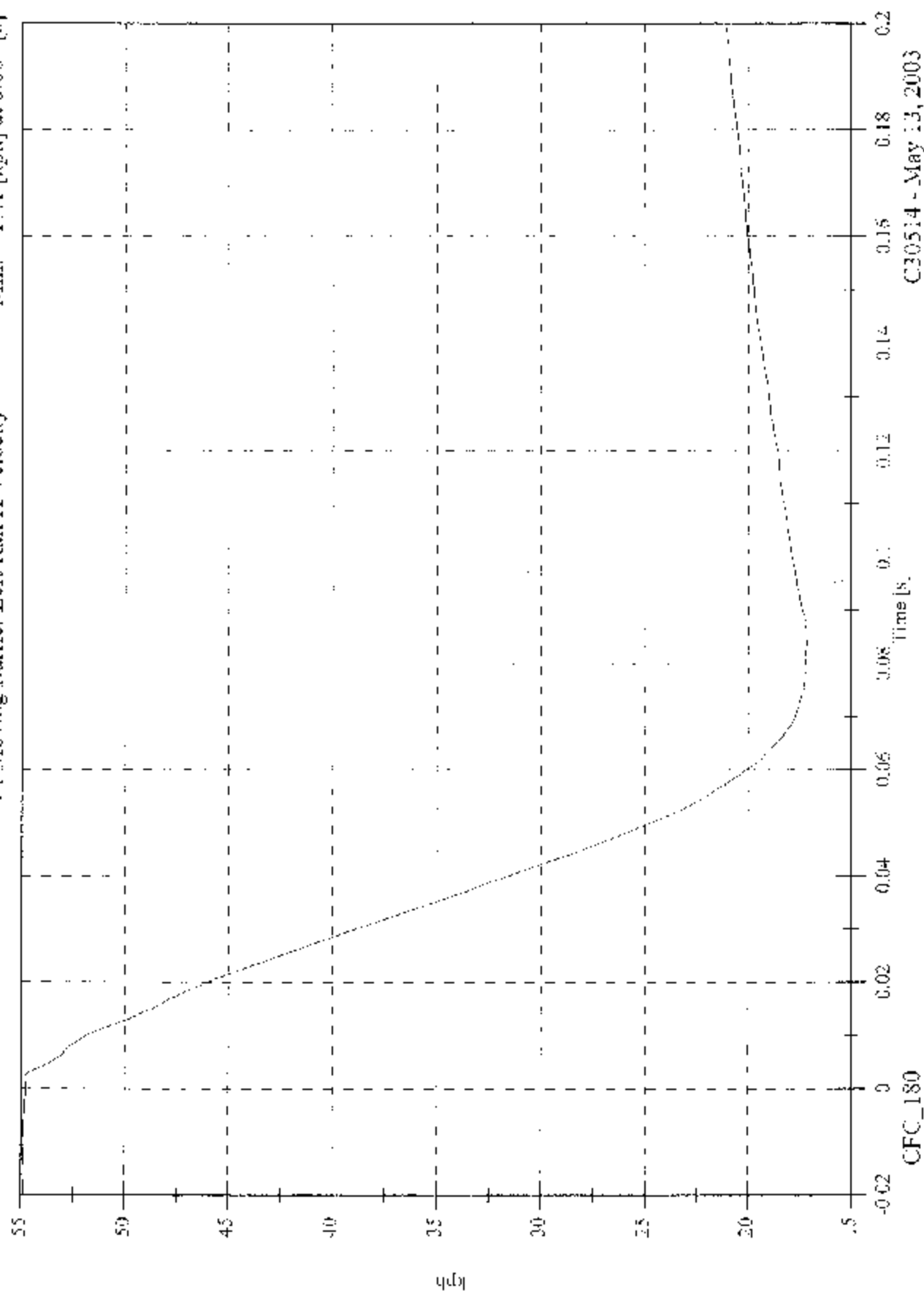
C30514 - May 13, 2003

FMVSS 214D Indicant - 2003 Saab 9-5

Max: 54.9 [kph] at -0.010 [s]

Min: 17.1 [kph] at 0.084 [s]

V1 Moving Barrier Left Rail X Velocity



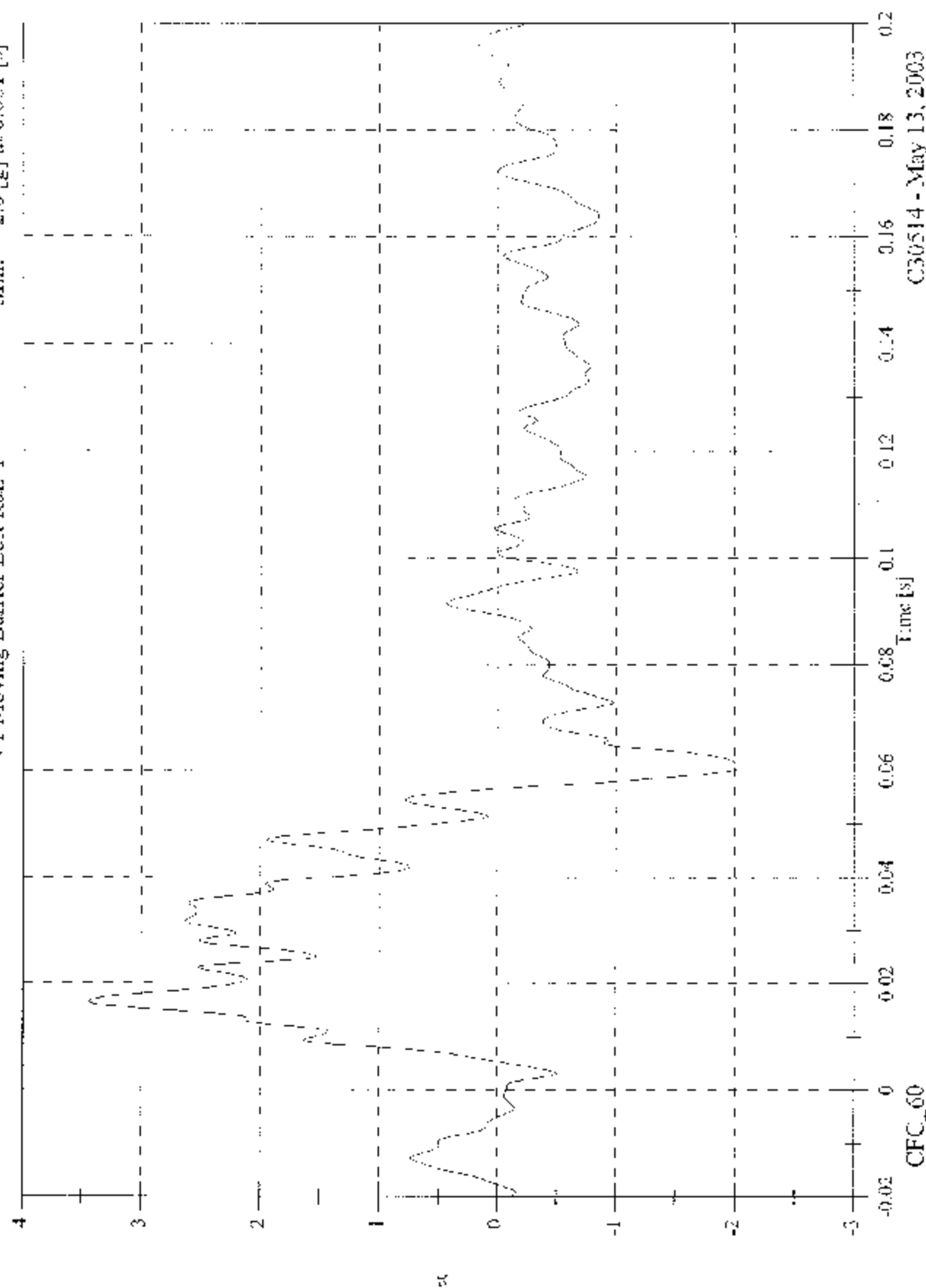
CFC_180

C30514 - May 13, 2003

I-MVSS 214D Indicant - 2003 Saab 9-5

V1 Moving Barrier Left Rail Y

Max: 3.4 [g] at 0.016 [s]
Min: -2.0 [g] at 0.061 [s]

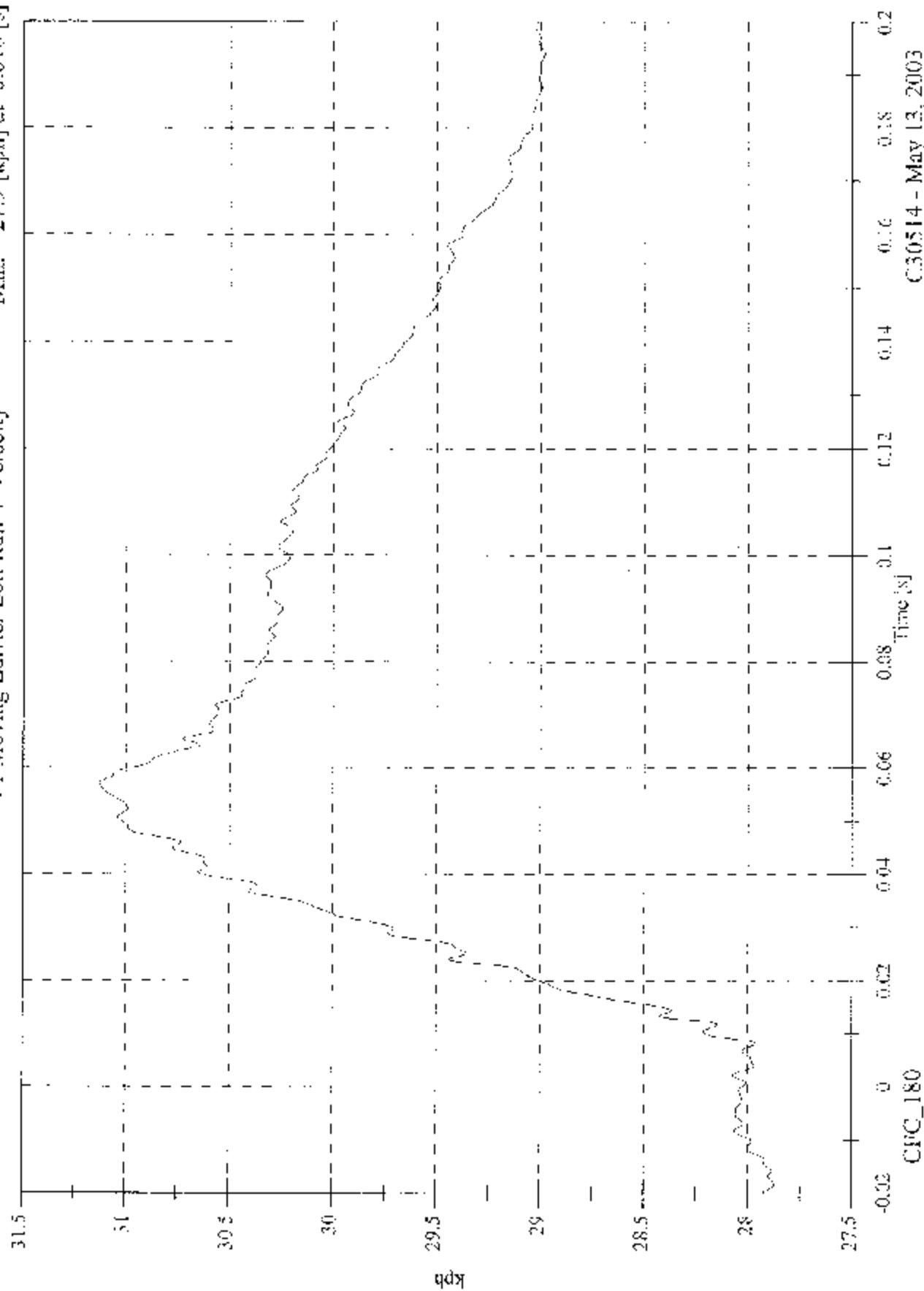


C30514 - May 13, 2003

FMVSS 214D Indicant - 2003 Saab 9-5

Max: 31.1 [kph] at 0.057 [s]
Min: 27.9 [kph] at -0.018 [s]

V1 Moving Barrier Left Rail Y Velocity

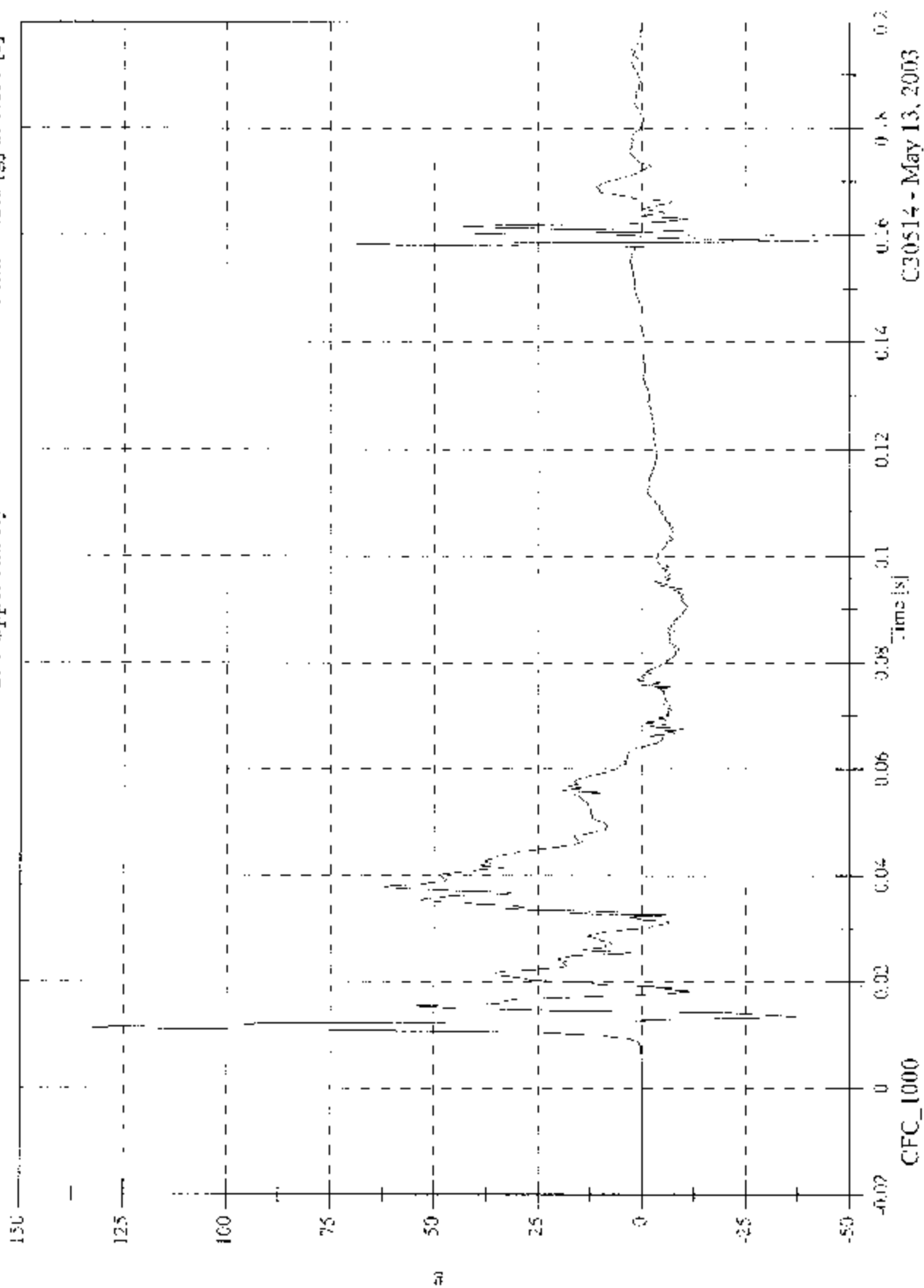


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FMVSS 214D Indicant - 2003 Saab 9-5

V2P1 Upper Rib Ry

Max: 132.4 [g] at 0.011 [s]
Min: -43.6 [g] at 0.159 [s]

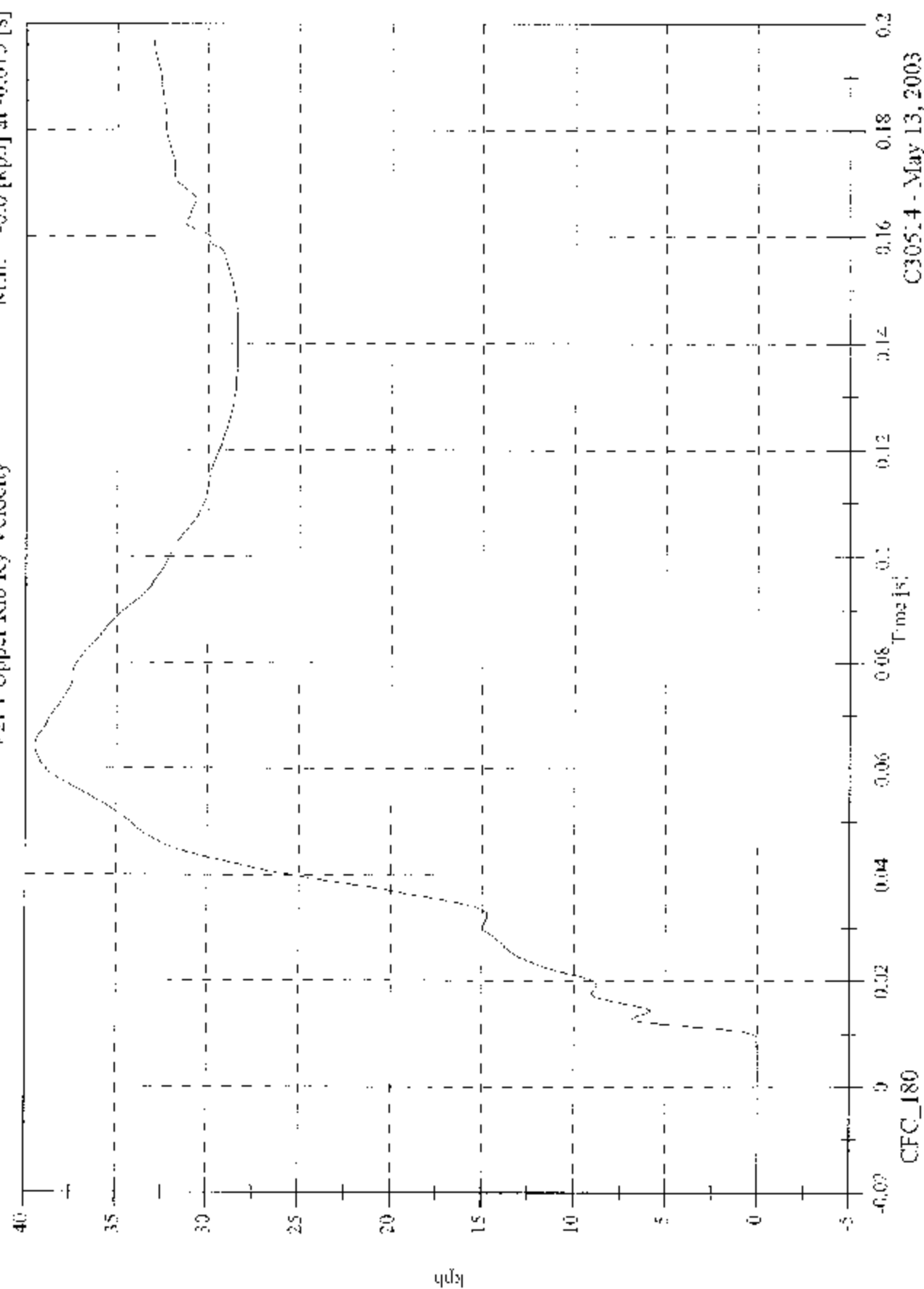


C30514 - May 13, 2003

FMVSS 214D Indicant - 2003 Saab 9-5

Max: 39.5 [kph] at 0.064 [s]
Min: -0.0 [kph] at -0.015 [s]

V2P1 Upper Rib Ry Velocity

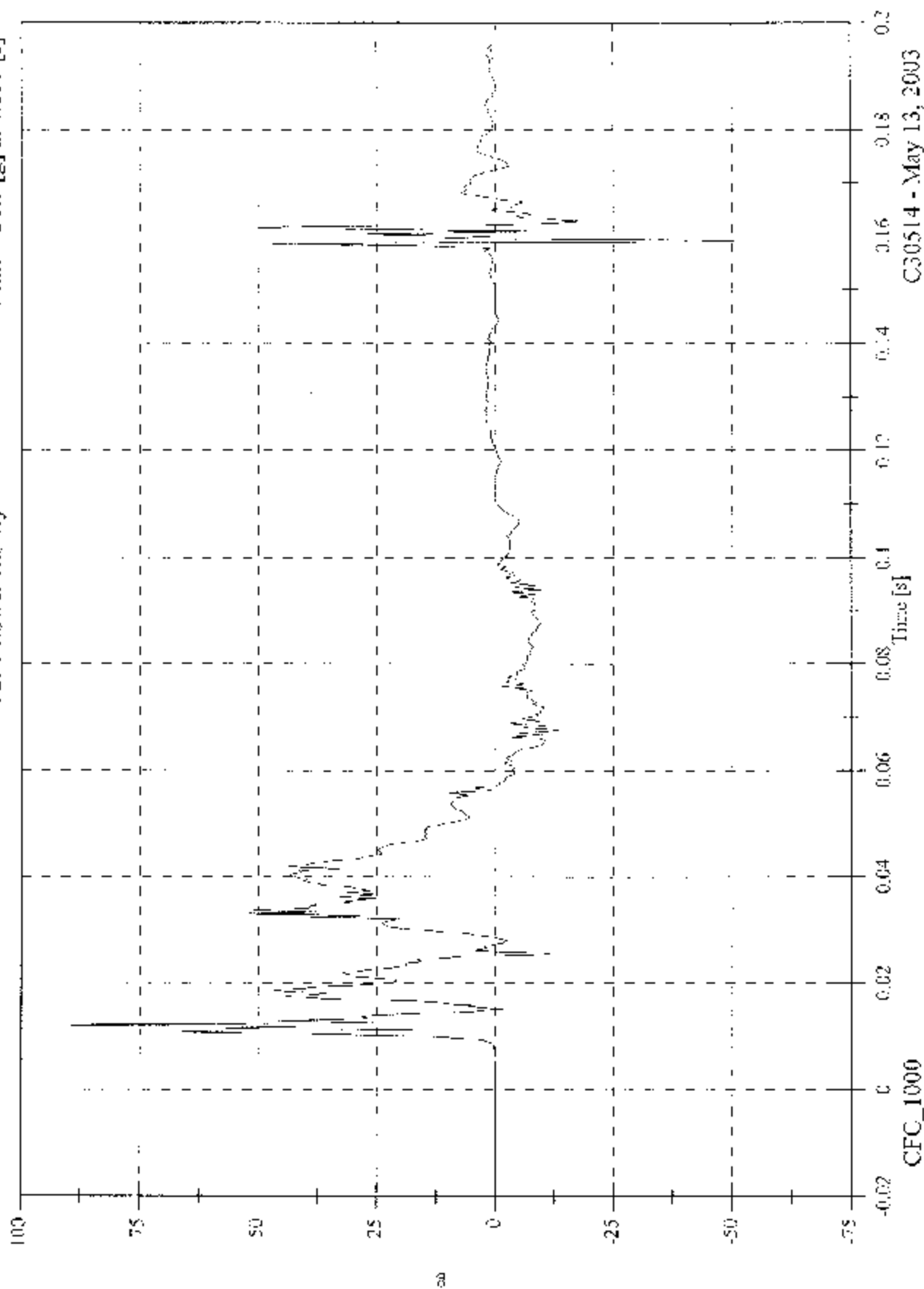


C30514 - May 13, 2003

PMVSS 214D Inducant - 2003 Saab 9-5

Max: 89.3 [g] at 0.012 [s]
Min: -51.9 [g] at 0.159 [s]

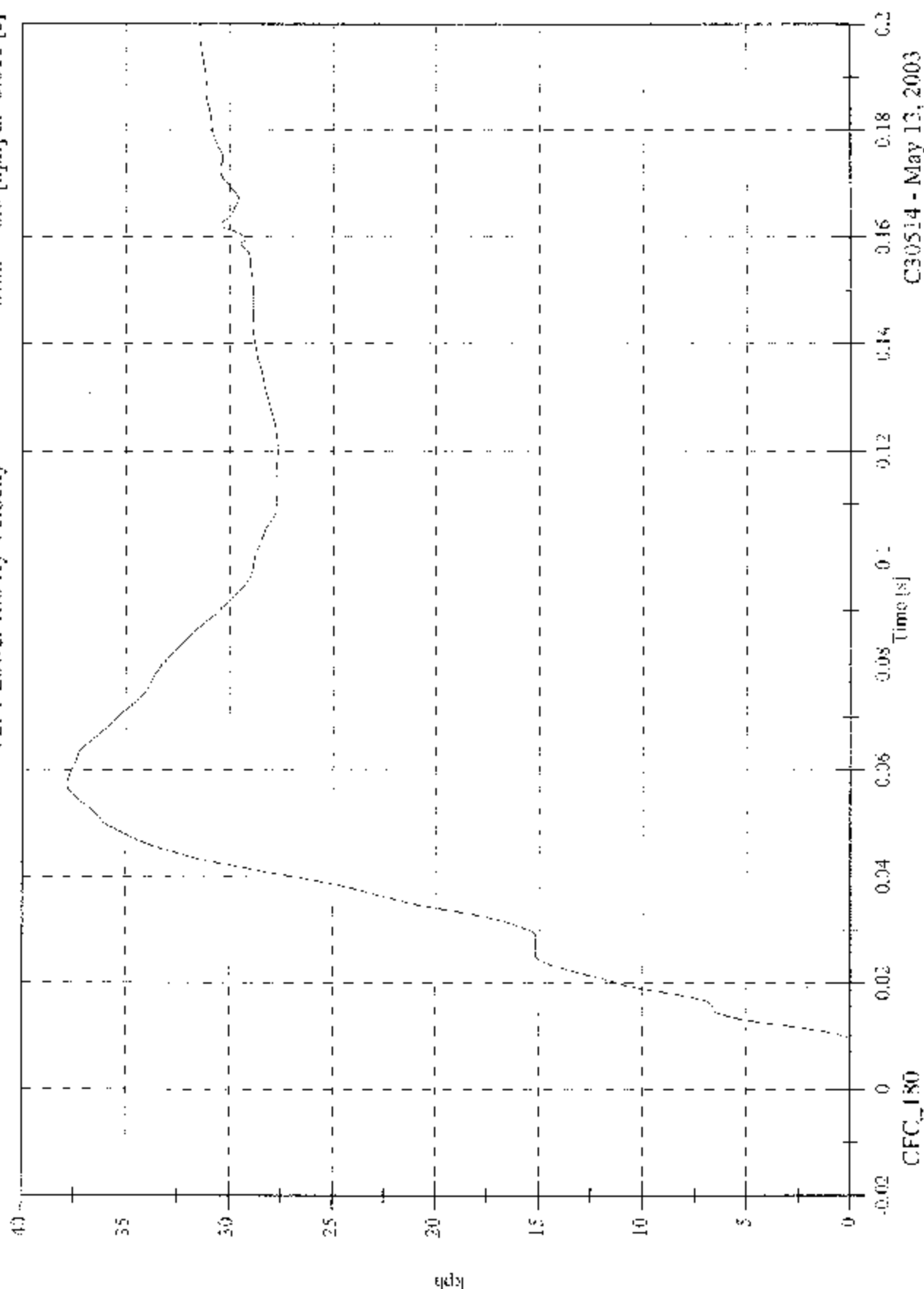
V2P1 Lower Rib Ry



C30514 - May 13, 2003

Max: 37.9 [kph] at 0.057 [s]
Min: 0.0 [kph] at -0.010 [s]

V2P1 Lower Rib Ry Velocity

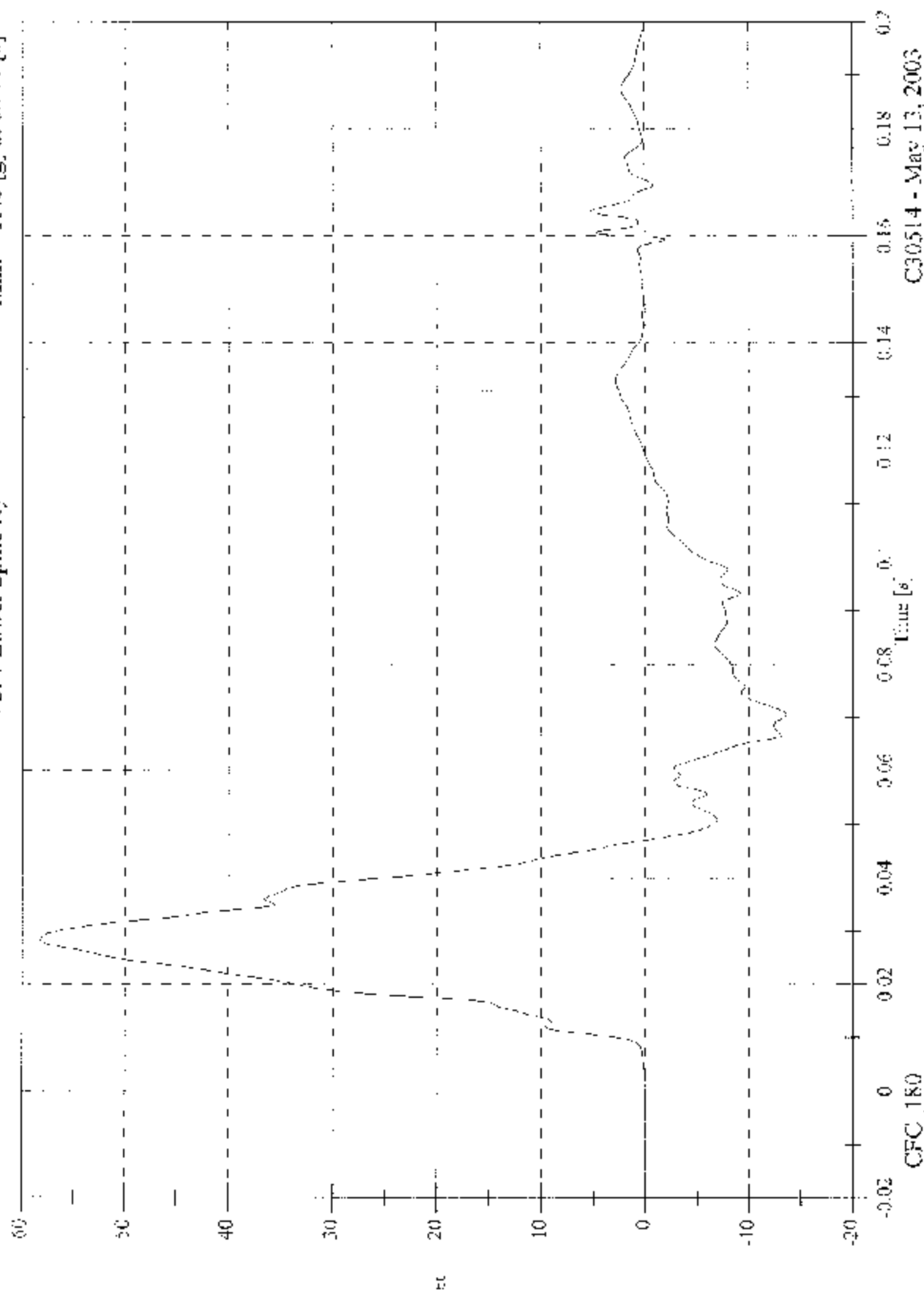


C30514 - May 13, 2003

FMVSS 214D Indicant - 2003 Saab 9-5

V2P1 Lower Spine Ry

Max: 58.3 [g] at 0.028 [s]
Min: -13.6 [g] at 0.071 [s]

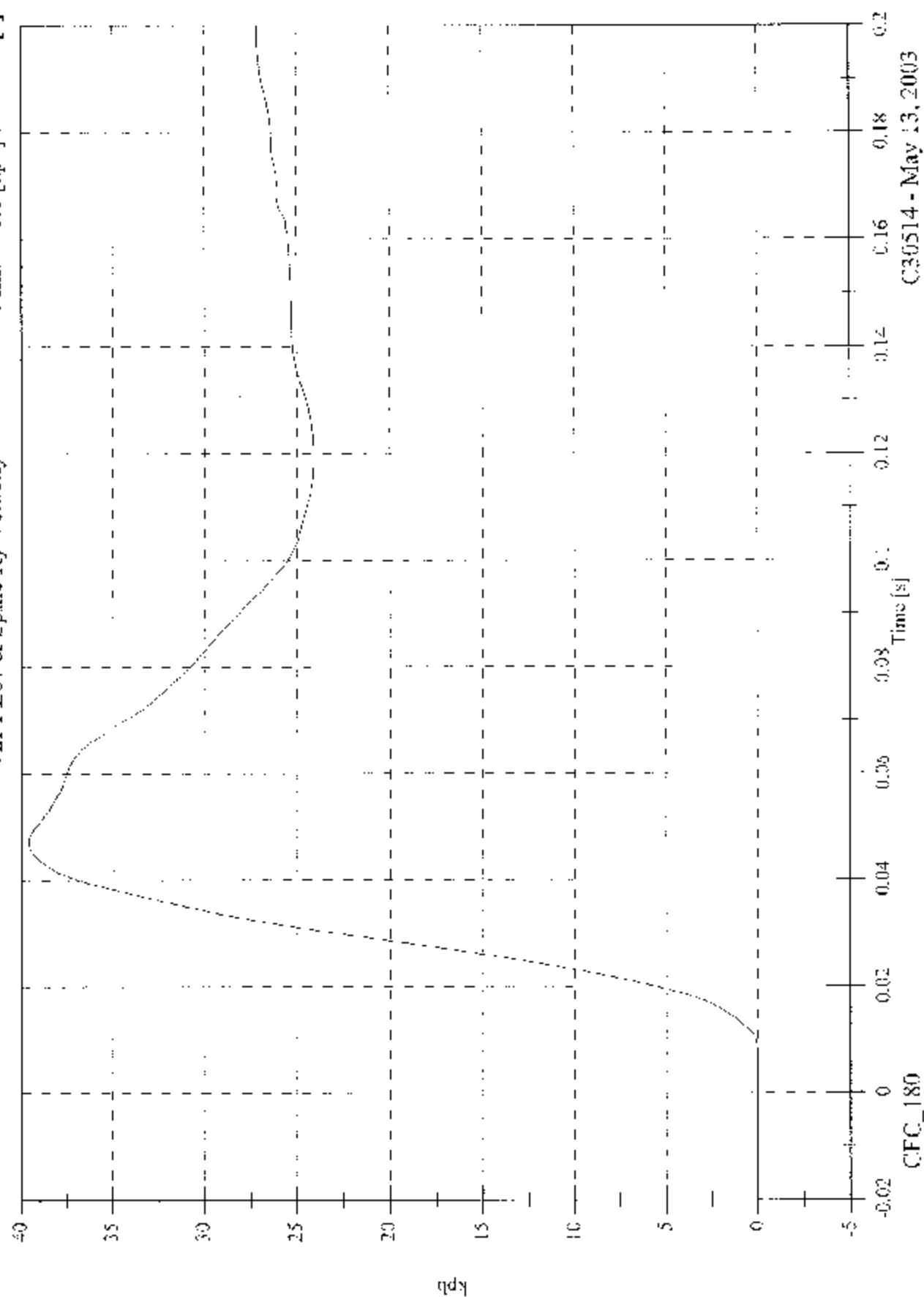


C30514 - May 13, 2003

RMVSS 214D Indictant - 2003 Saab 9-5

Max: 39.6 [kph] at 0.047 [s]
Min: -0.0 [kph] at -0.012 [s]

V2P1 Lower Spine Ry Velocity

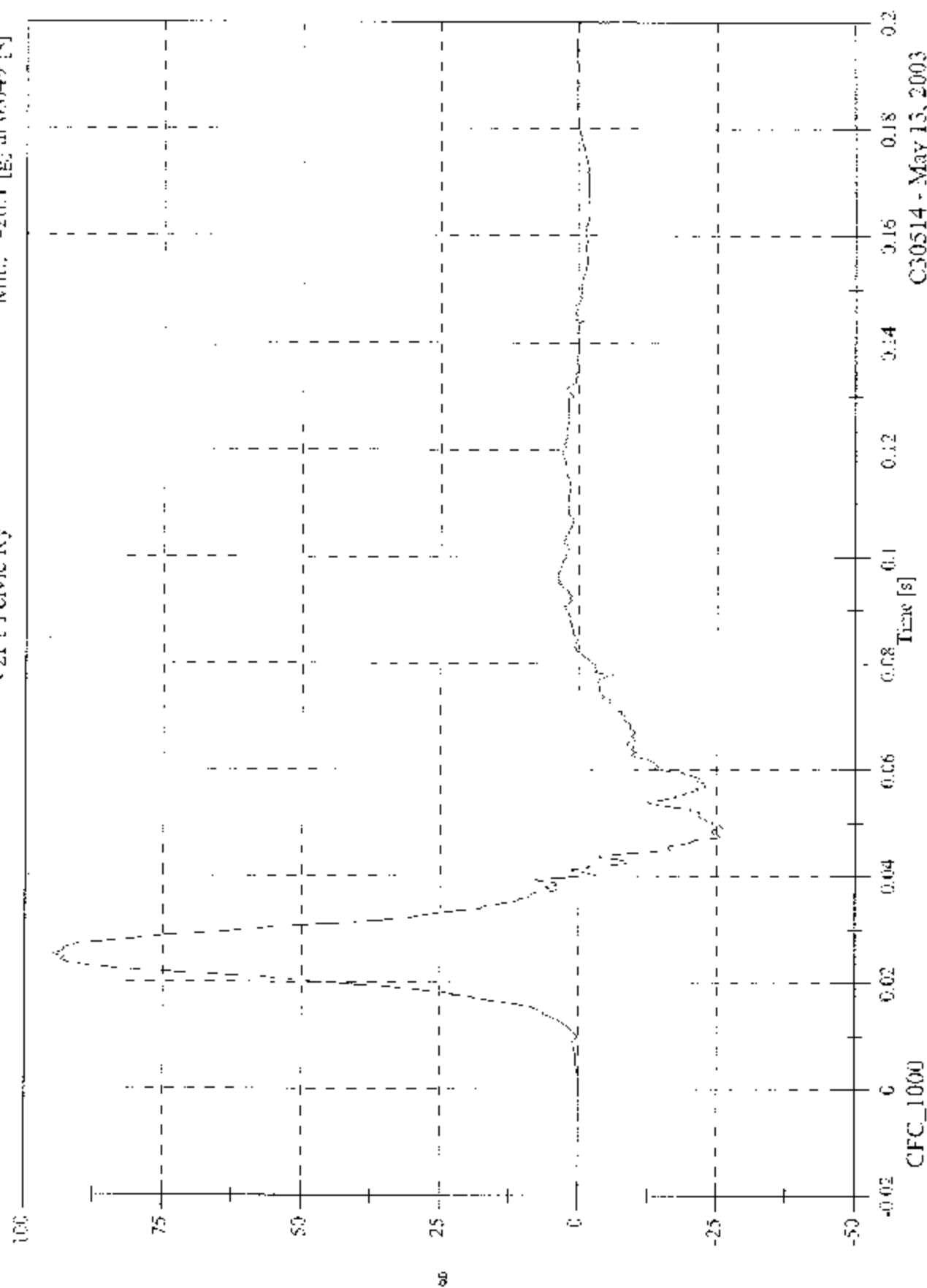


C30514 - May 13, 2003

FMVSS 214D Indicant - 2003 Saab 9-5

V2P: Pelvic Ry

Max: 94.9 [g] at 0.025 [s]
Min: -26.1 [g] at 0.049 [s]



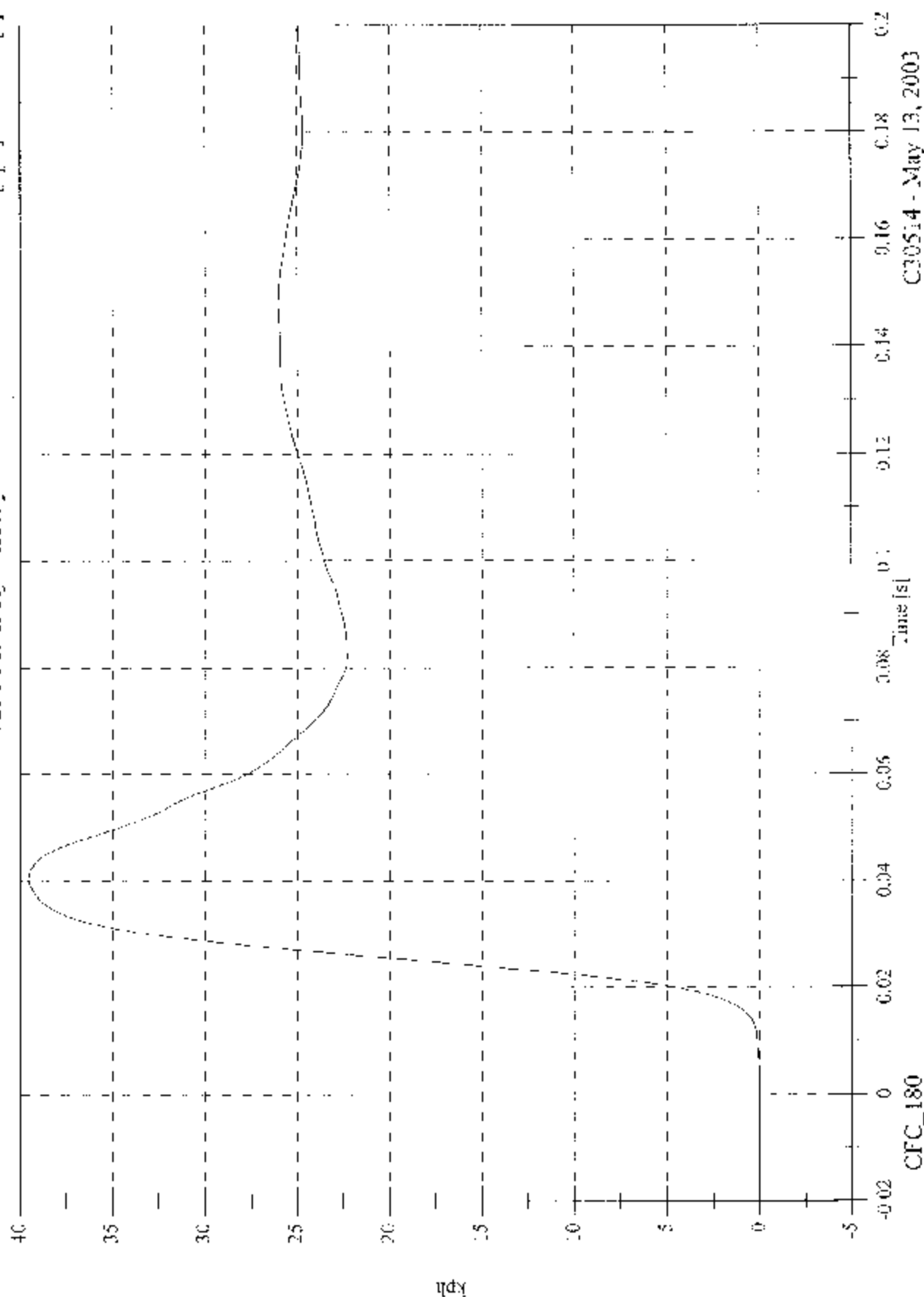
C30514 - May 13, 2003

FMVSS 214D Inducant - 2003 Saab 9-5

Max: 39.6 [kph] at 0.040 [s]

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

V2P1 Pelvic Ry Velocity



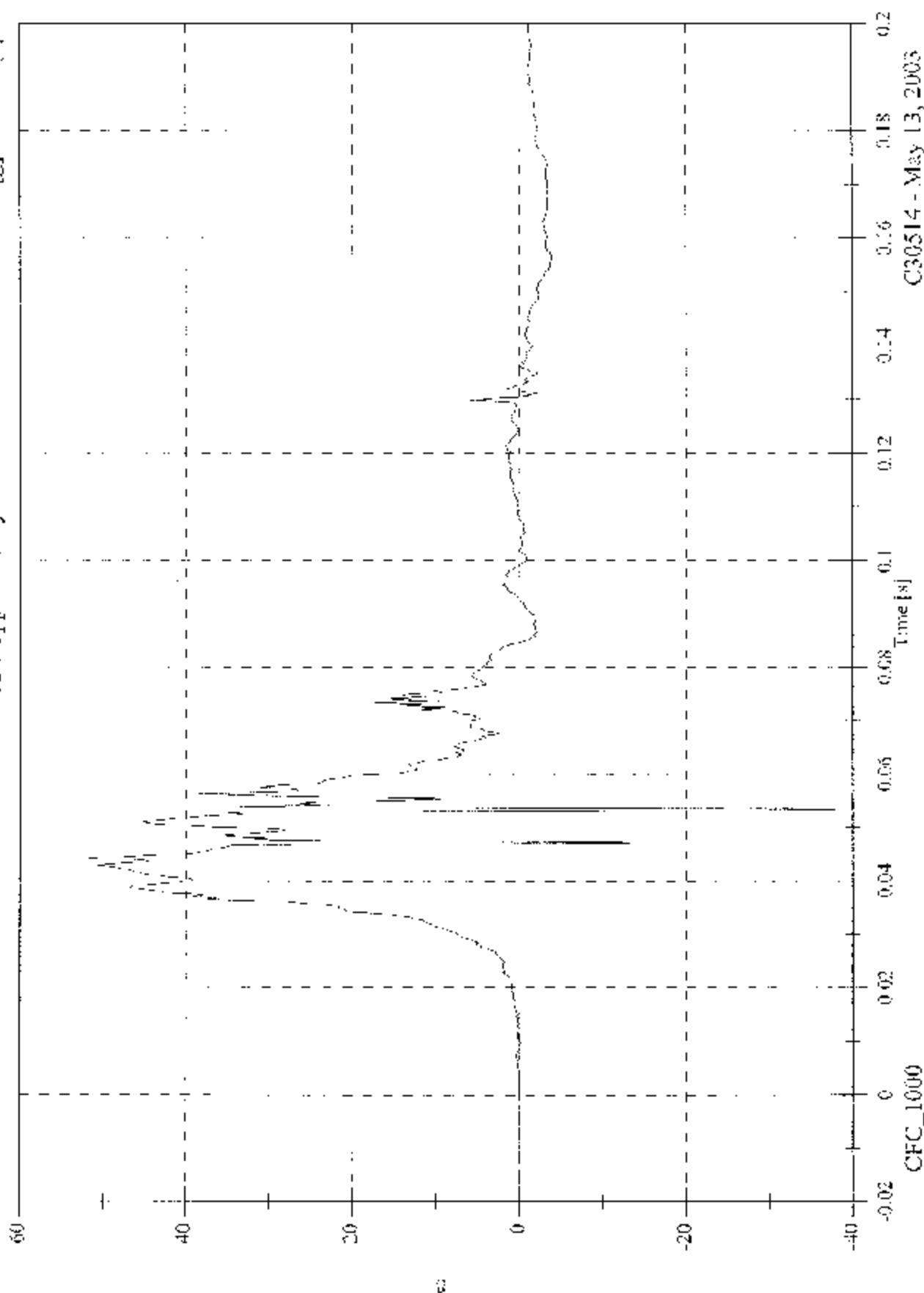
CFC_180

C30514 - May 13, 2003

FMVSS 214D Indicant - 2003 Saab 9-5

Max: 51.7 [g] at 0.044 [s]
Min: -37.9 [g] at 0.053 [s]

V2P4 Upper Rib Ry



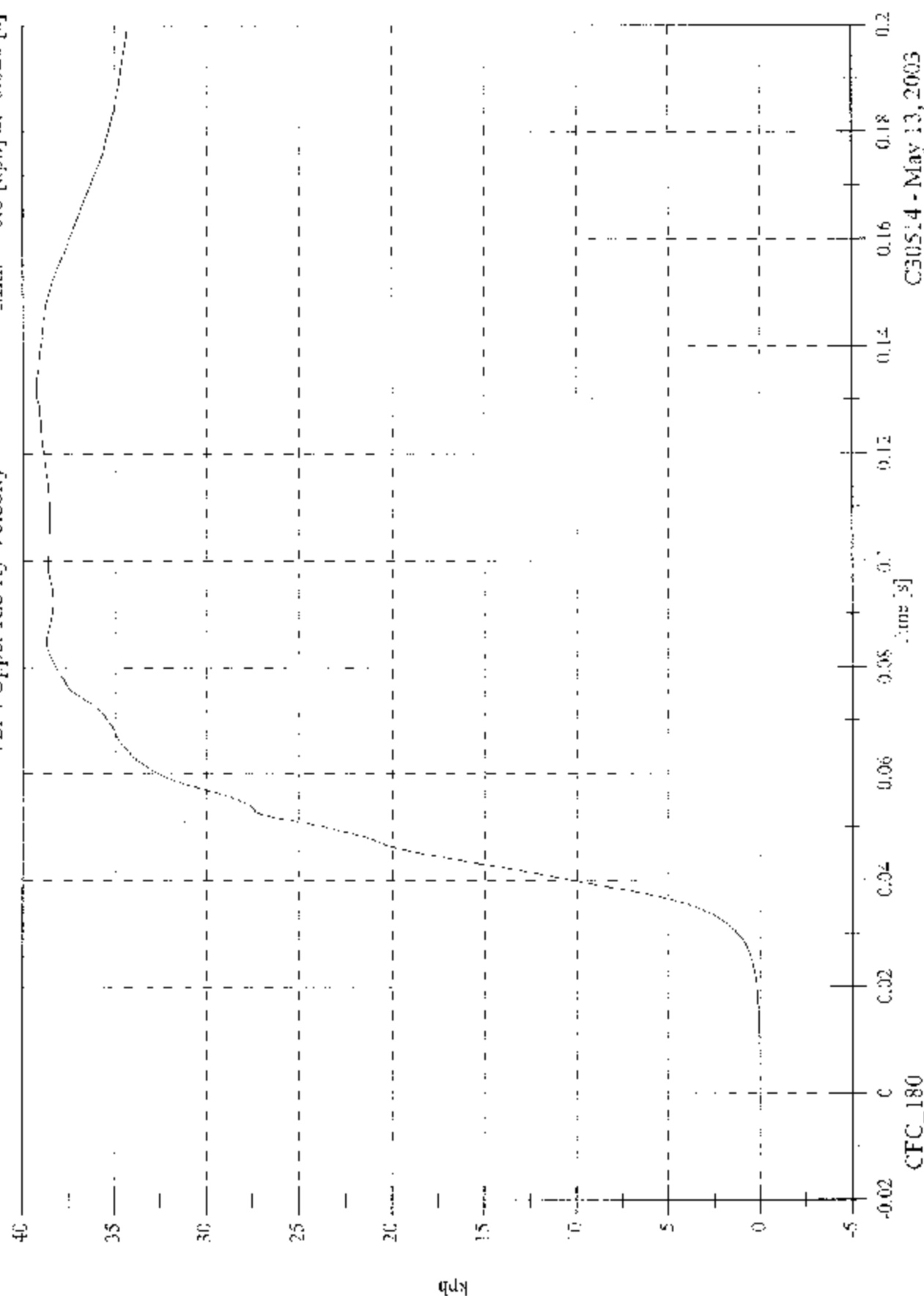
C30514 - May 13, 2003

FMVSS 214D Indicate - 2003 Saab 9-5

Max: 39.3 [kph] at 0.131 [s]

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

V2P4 Upper Rib Ry Velocity

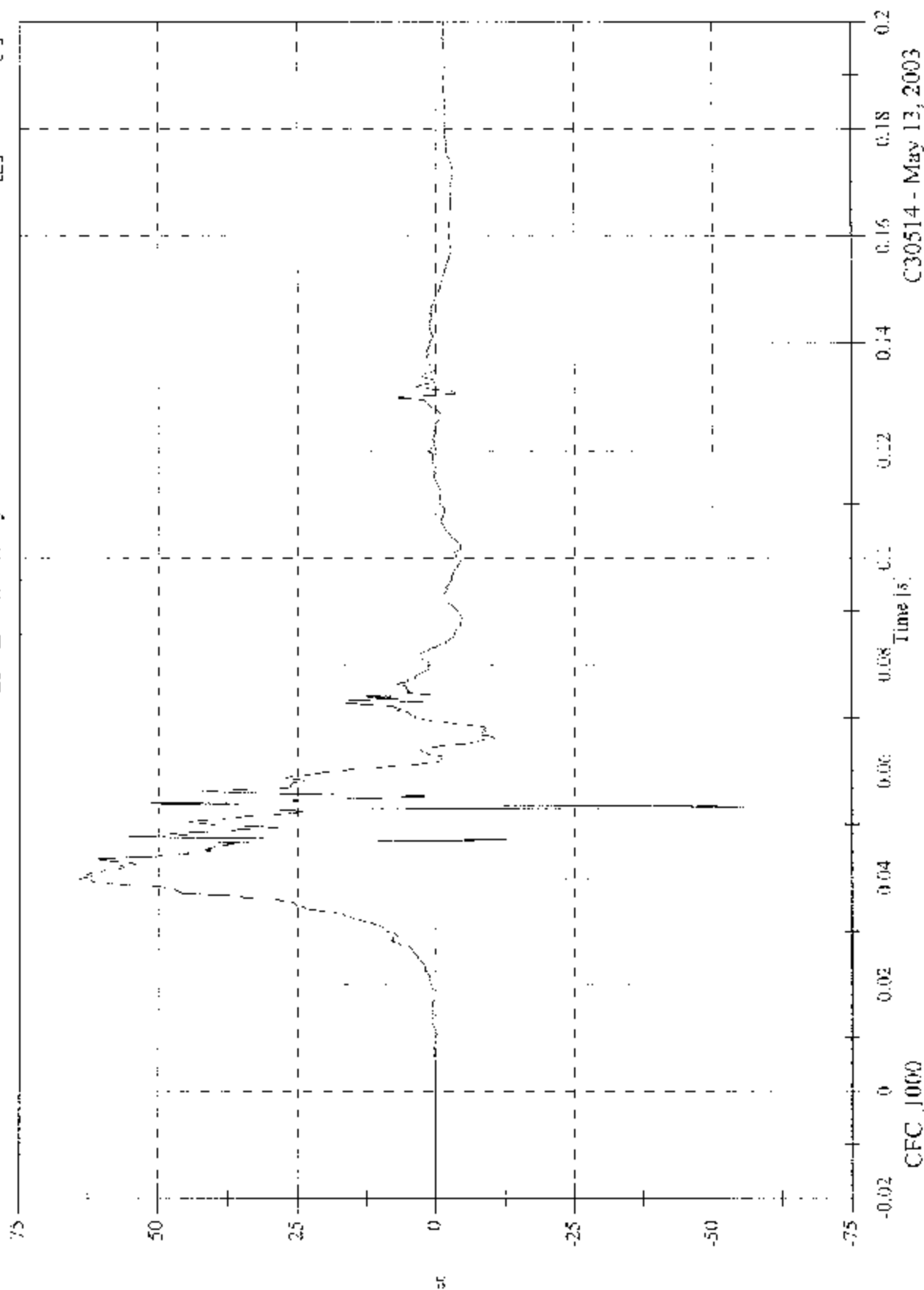


C30514 - May 13, 2003

FMVSS 214D Indicant - 2003 Saab 9-5

Max: 64.3 [g] at 0.040 [s]
Min: -55.9 [g] at 0.053 [s]

V2P4 Lower Rib Ry

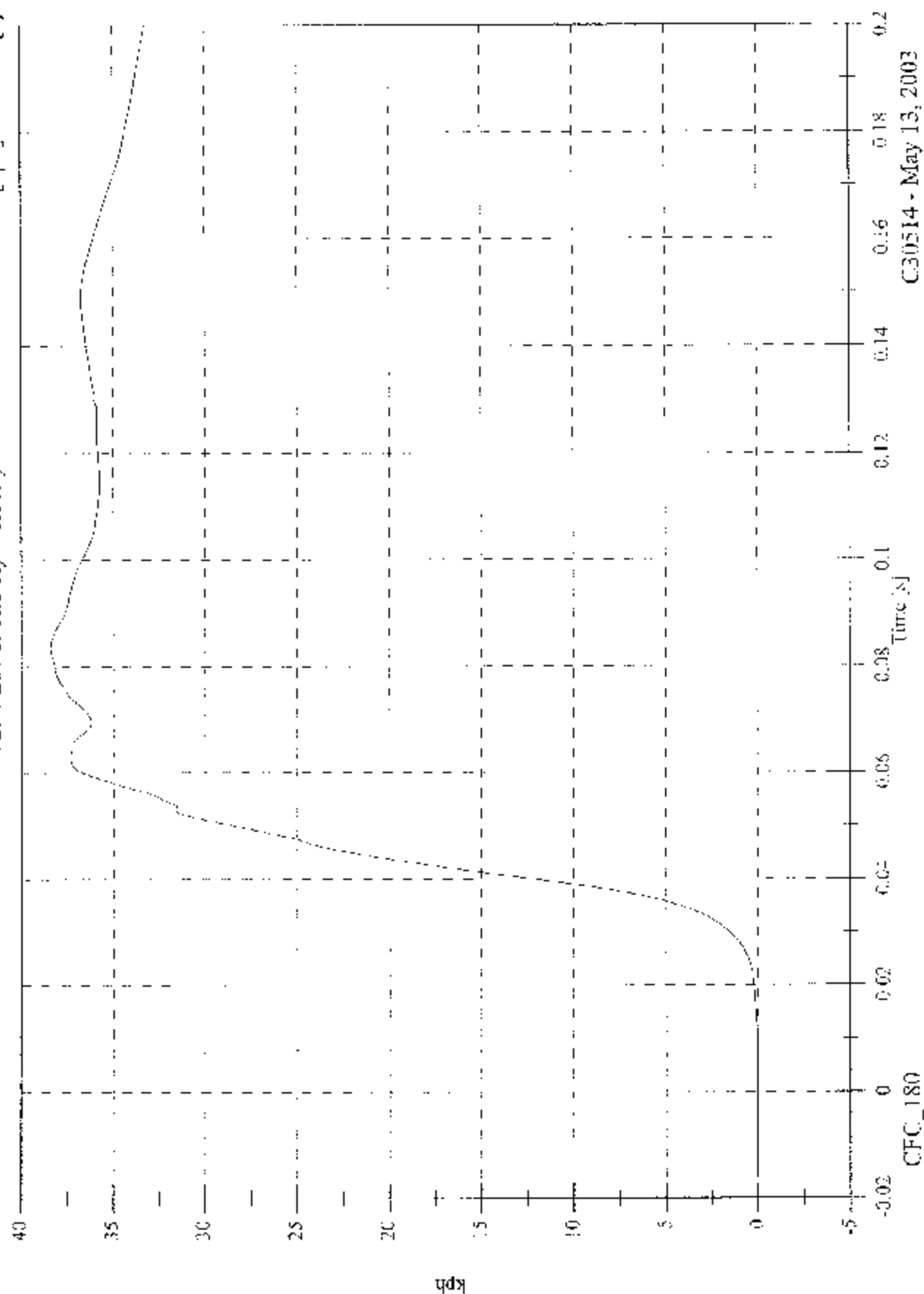


C30514 - May 13, 2003

FMVSS 214D Inducant - 2003 Saab 9-5

Max: 38.4 [kph] at 0.083 [s]
Min: -0.0 [kph] at -0.020 [s]

V2P4 Lower Rib Ry Velocity



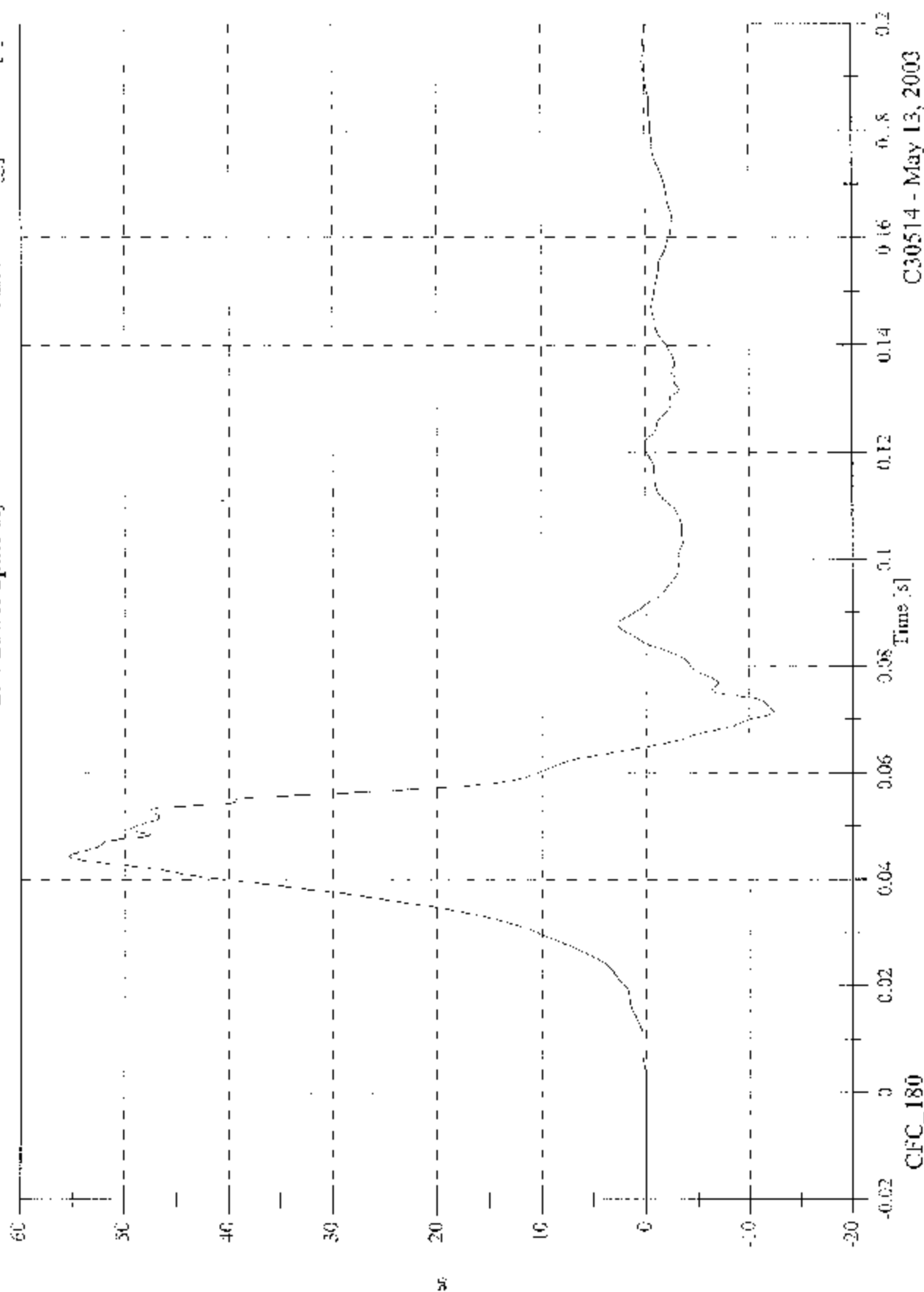
CFC_180

C30514 - May 13, 2003

FMVSS 214D Inducant - 2003 Saab 9-5

V2P4 Lower Spine Ry

Max: 55.3 [g] at 0.044 [s]
Min: -12.4 [g] at 0.071 [s]

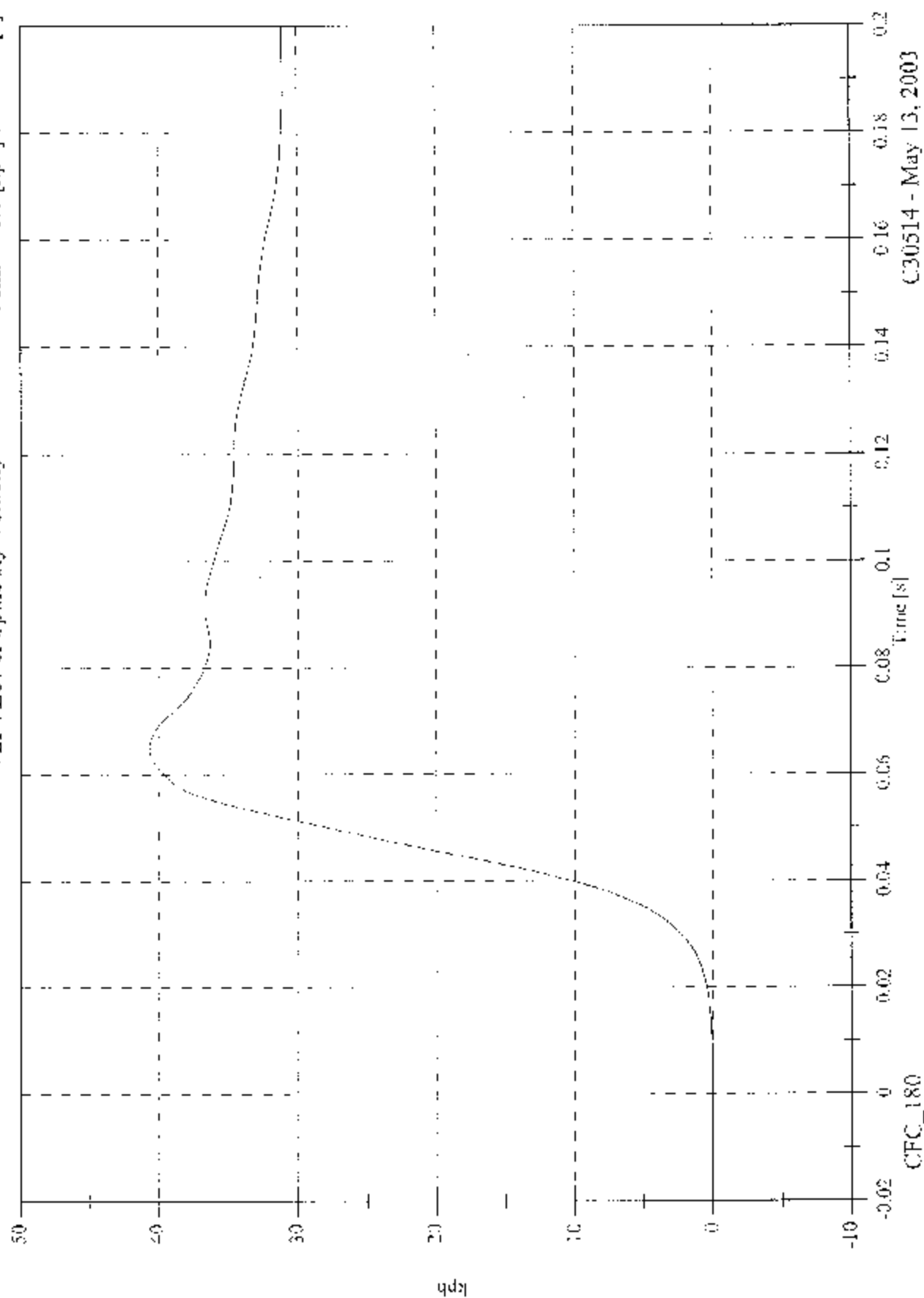


C30514 - May 13, 2003

FMVSS 214D Indicant - 2003 Saab 9-5

Max: 40.7 [kph] at 0.065 [s]
Min: -0.0 [kph] at -0.020 [s]

V2P4 Lower Spine Ry Velocity

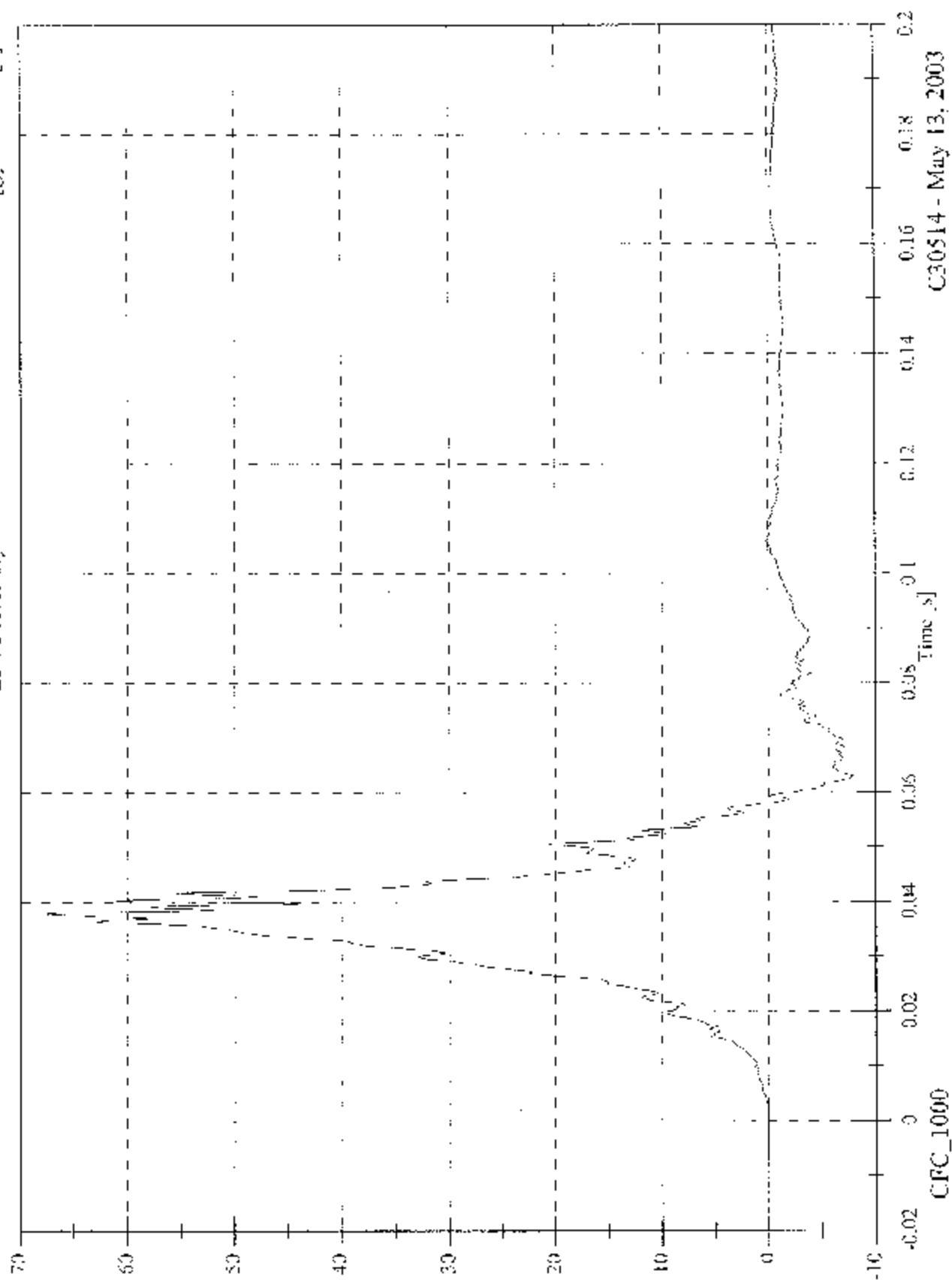


C30514 - May 13, 2003

FMVSS 214D Inducant - 2003 Saab 9-5

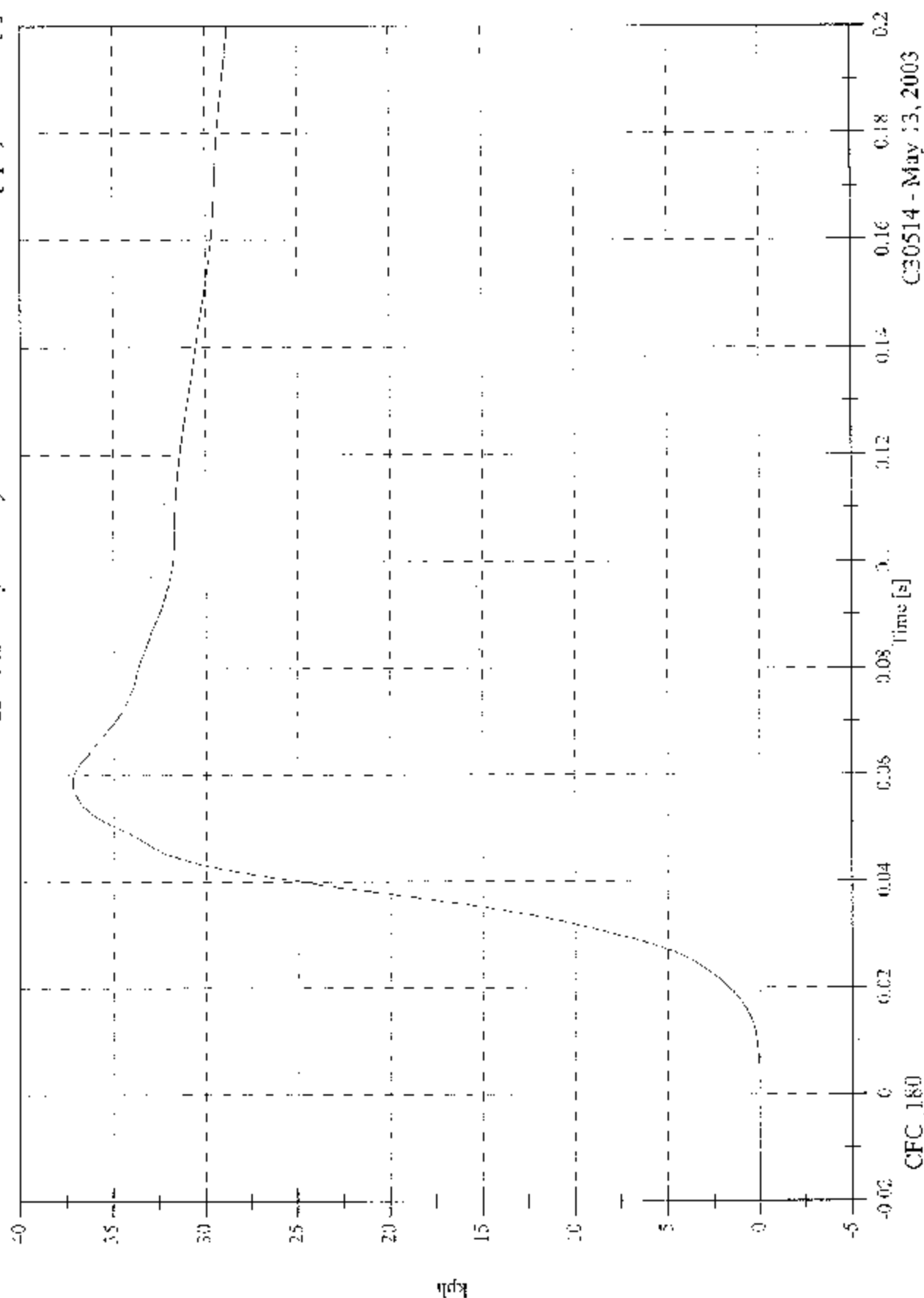
Max: 67.6 [g] at 0.038 [s]
Min: -8.1 [g] at 0.063 [s]

V2P4 Pelvic Ry

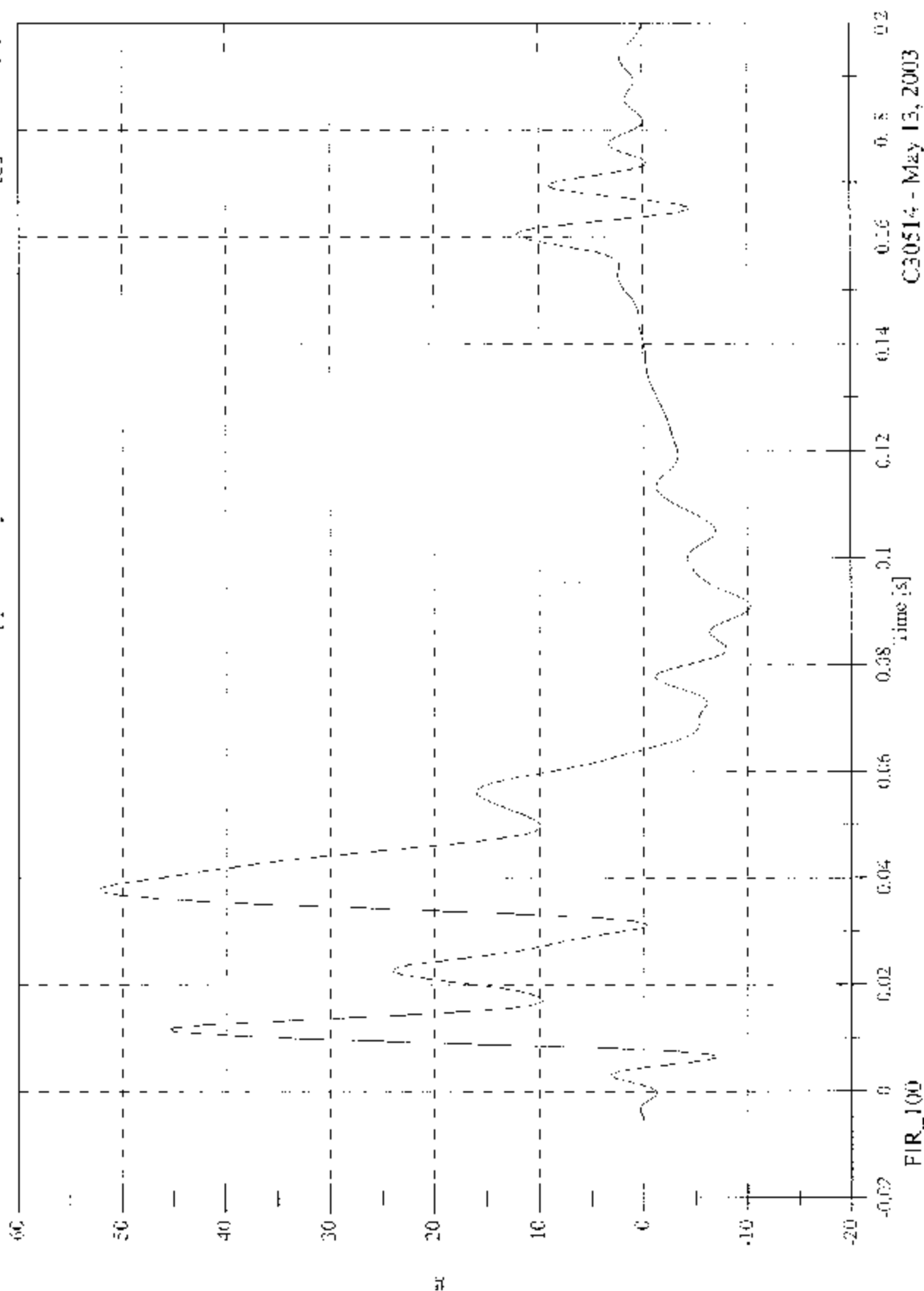


C30514 - May 13, 2003

V2P4 Pelvic Ry Velocity



C30514 - May 13, 2003



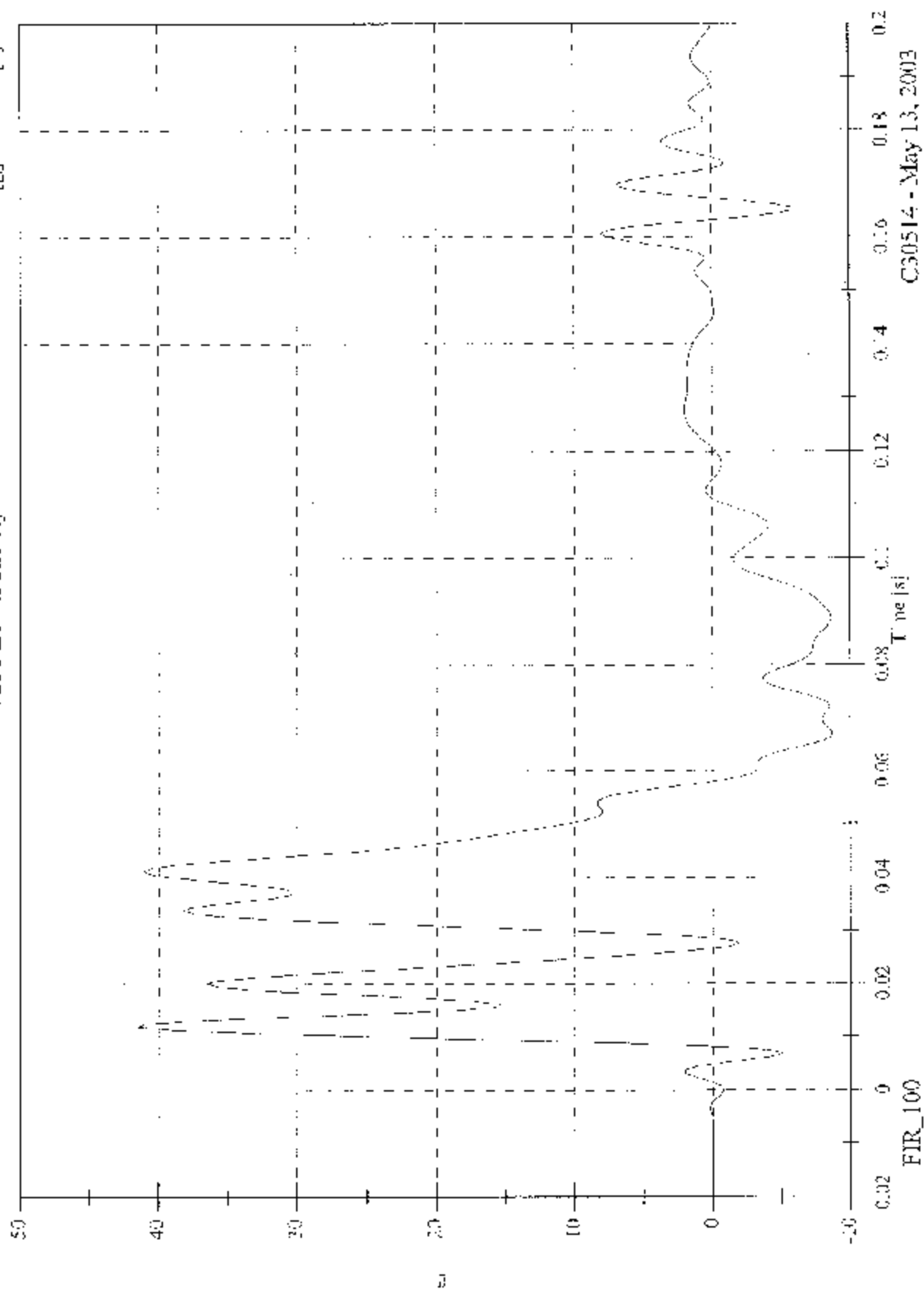
FIR_100

C30514 - May 13, 2003

FMVSS 214D Inducant - 2003 Saab 9-5

Max: 41.6 [g] at 0.012 [s]
Min: -8.7 [g] at 0.067 [s]

V2P1 Lower Rib Ry



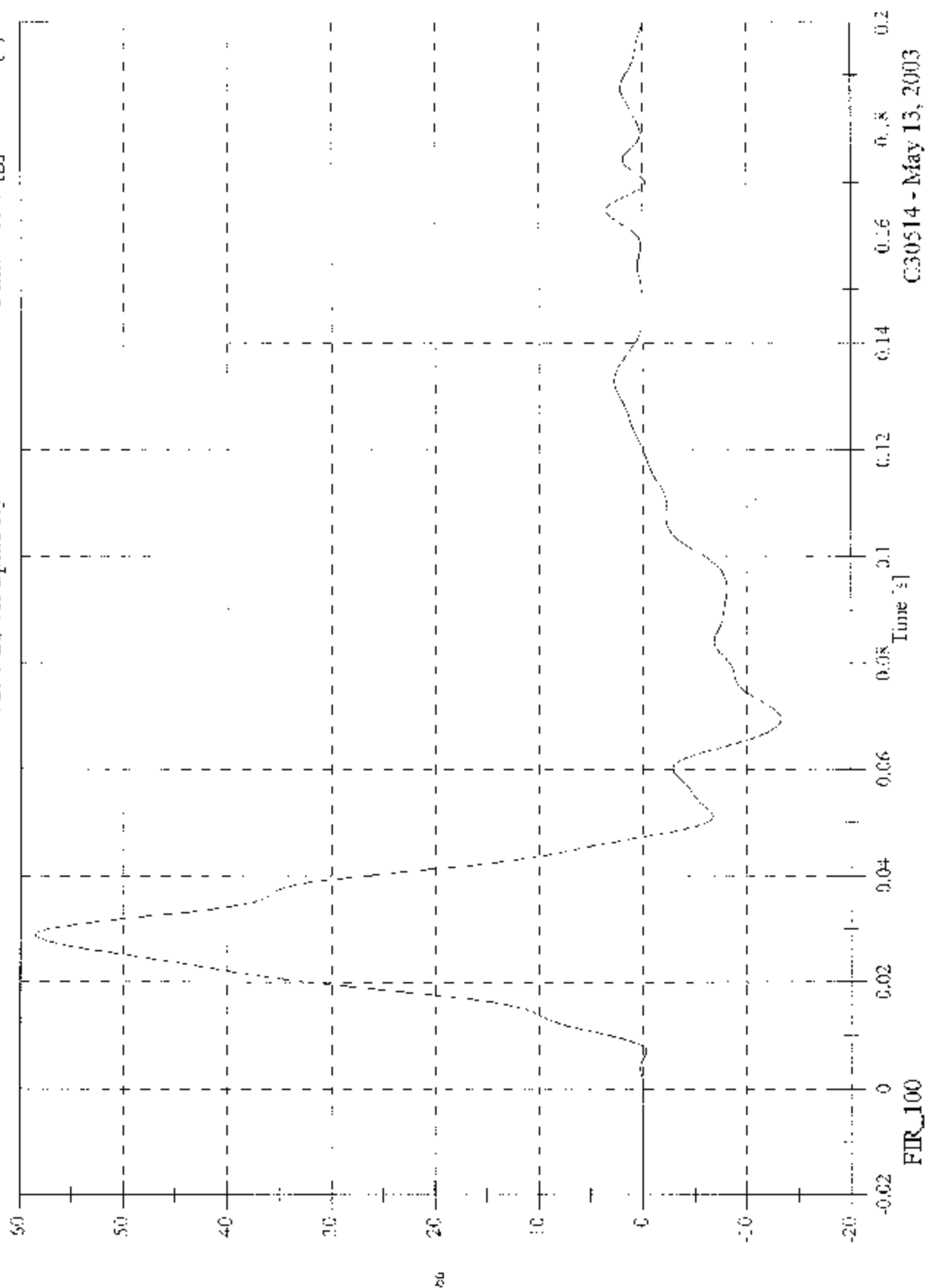
FIR_100

C30514 - May 13, 2003

F4VSS 214D Indiant - 2003 Saab 9-5

Max: 58.5 [g] at 0.029 [s]
Min: -13.3 [g] at 0.069 [s]

V2P1 Lower Spine Ry



FIR_100

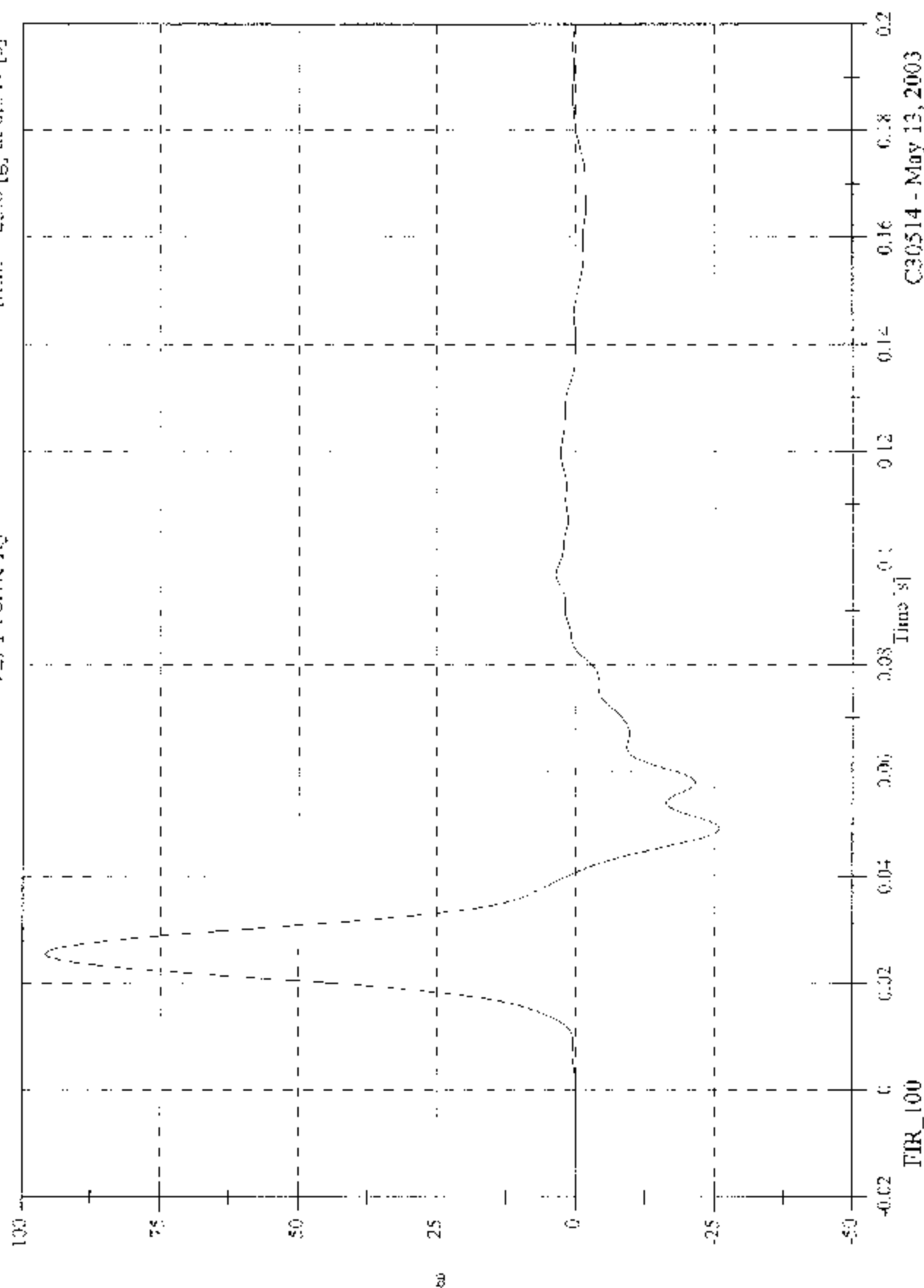
C30514 - May 13, 2003

FMVSS 2.4D Indicant - 2003 Saab 9-5

Max: 96.0 [g] at 0.026 [s]

Min: -25.8 [g] at 0.049 [s]

V2P1 Pelvic Ry

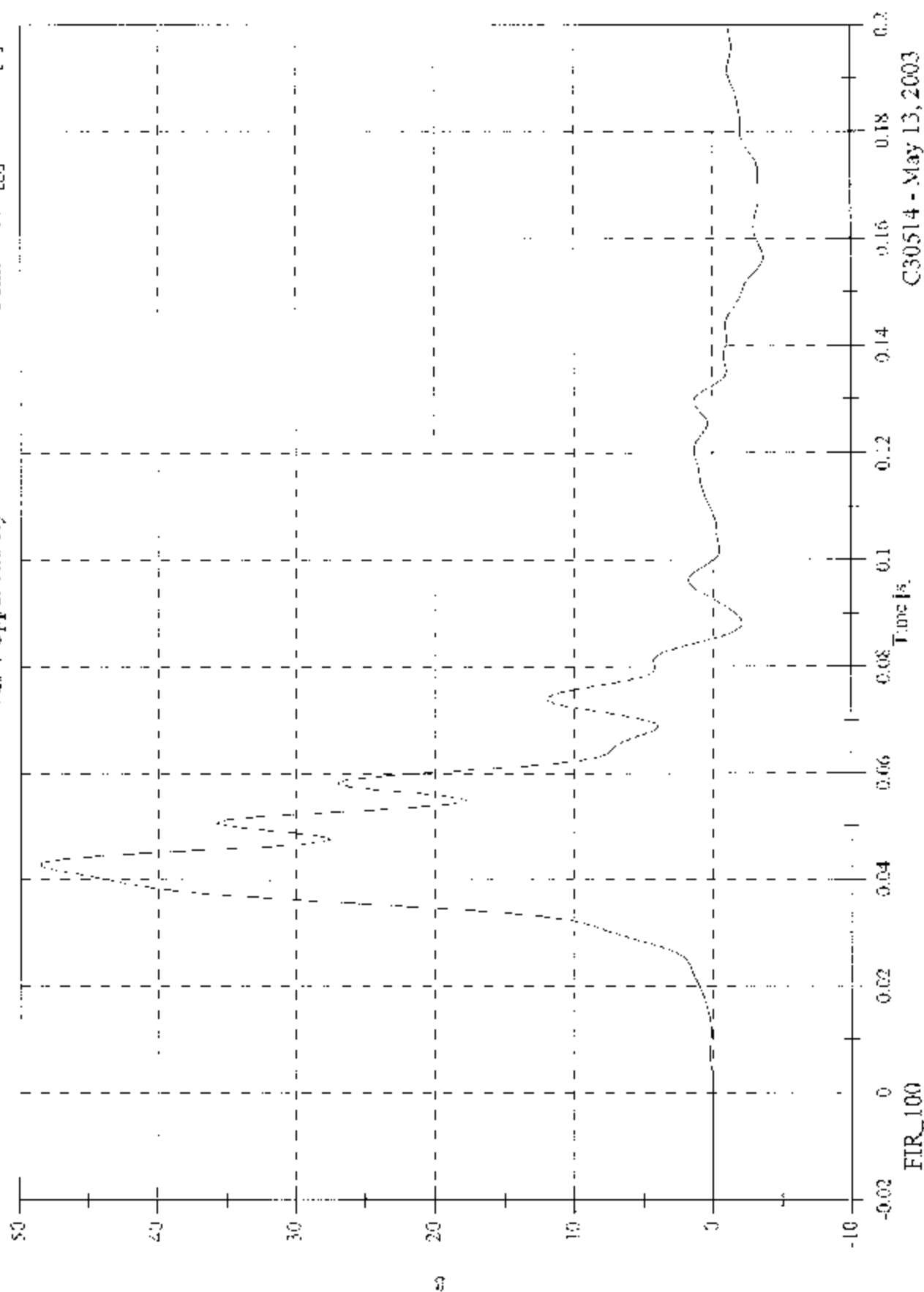


C30514 - May 13, 2003

FMVSS 214D Indicant - 2003 Saab 9-5

V2P4 Upper Rio Ry

Max: 48.5 [g] at 0.043 [s]
Min: -3.7 [g] at 0.156 [s]

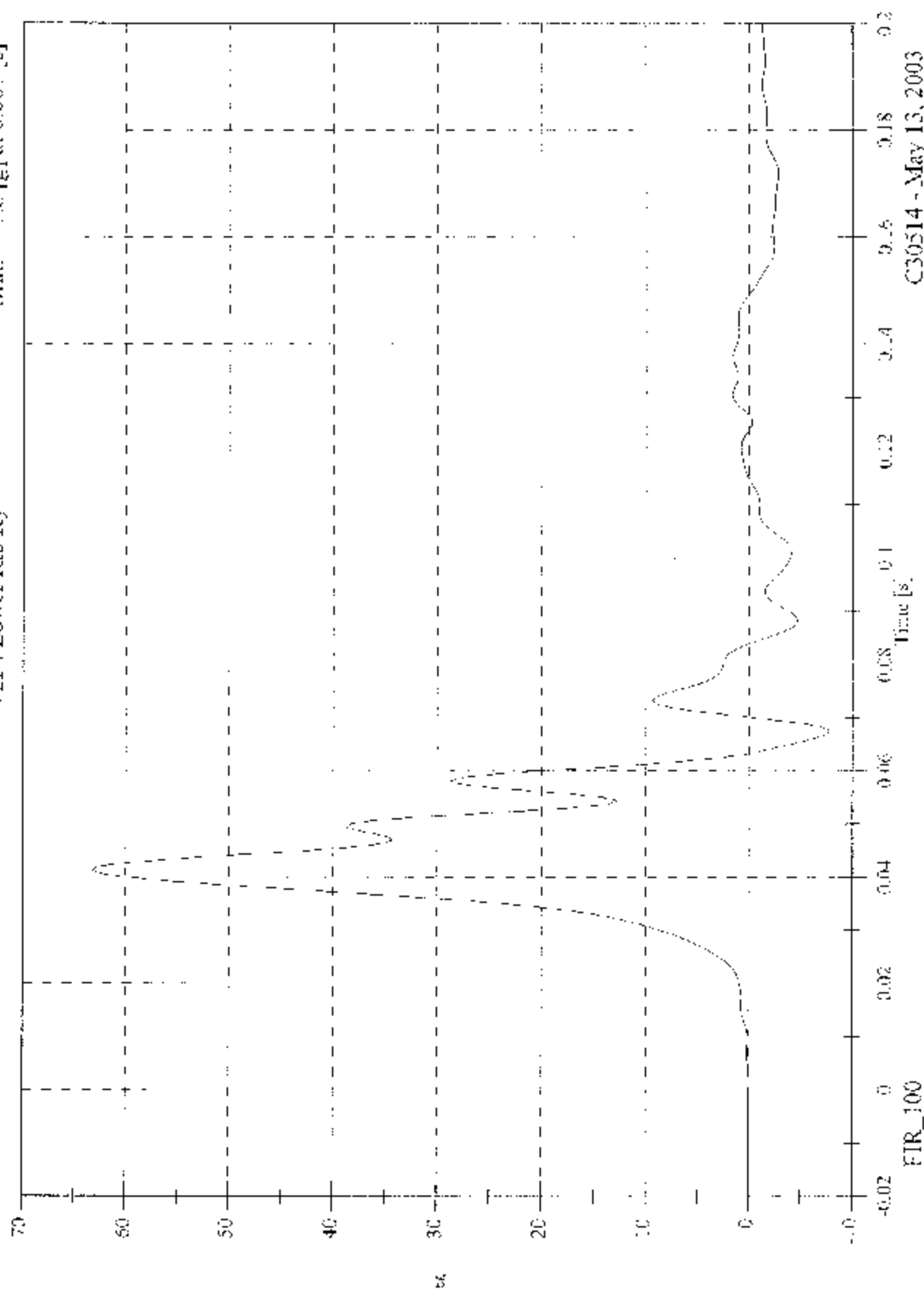


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FMVSS 214D Indicant - 2003 Saab 9-5

Max: 63.3 [g] at 0.041 [s]
Min: -7.8 [g] at 0.067 [s]

V2P4 Lower Rib Ry

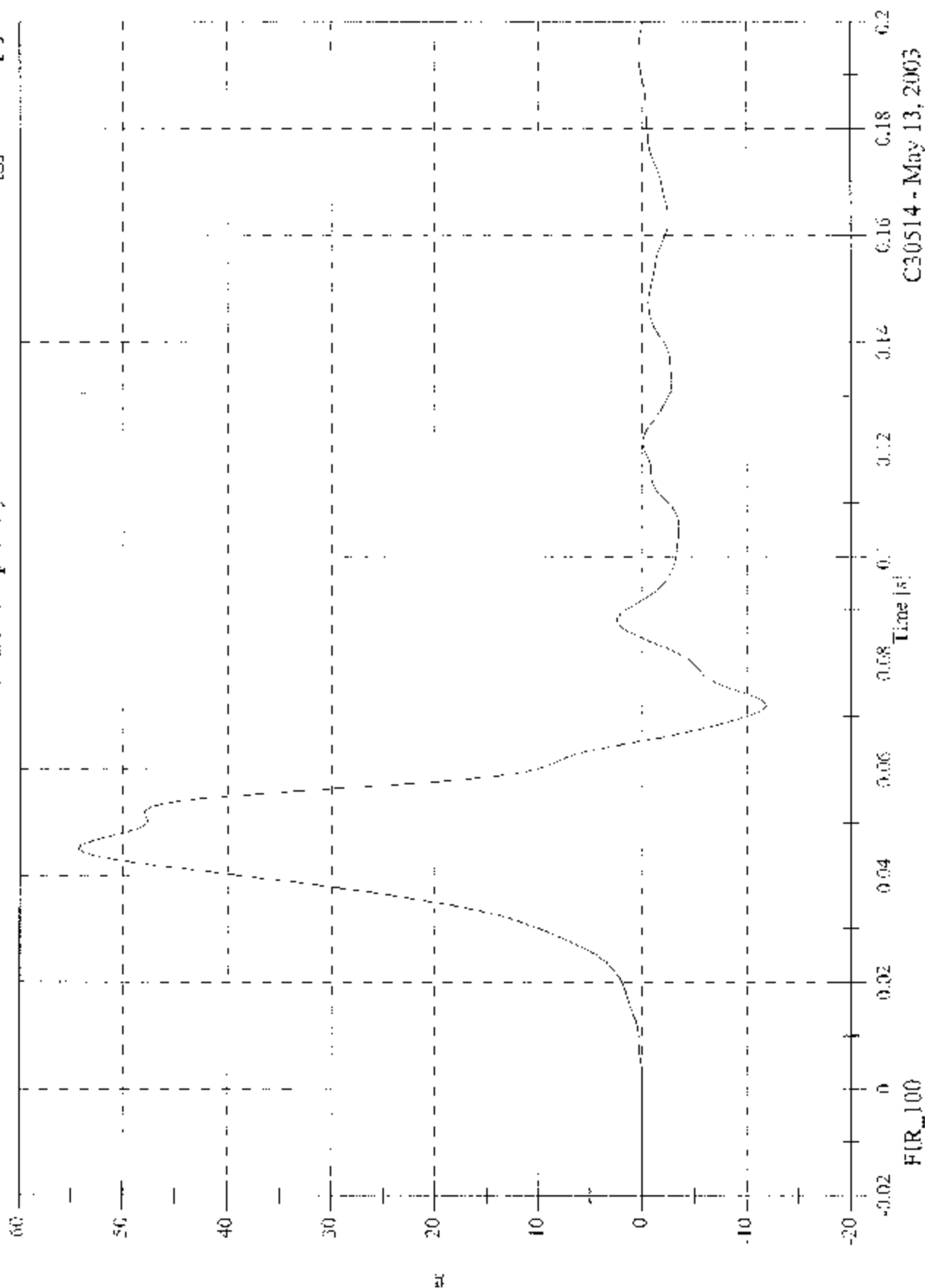


C30514 - May 13, 2003

FMVSS 214D Inducant - 2003 Saab 9-5

Max: 54.3 [g] at 0.045 [s]
Min: -11.8 [g] at 0.072 [s]

V2P4 Lower Spine Ry

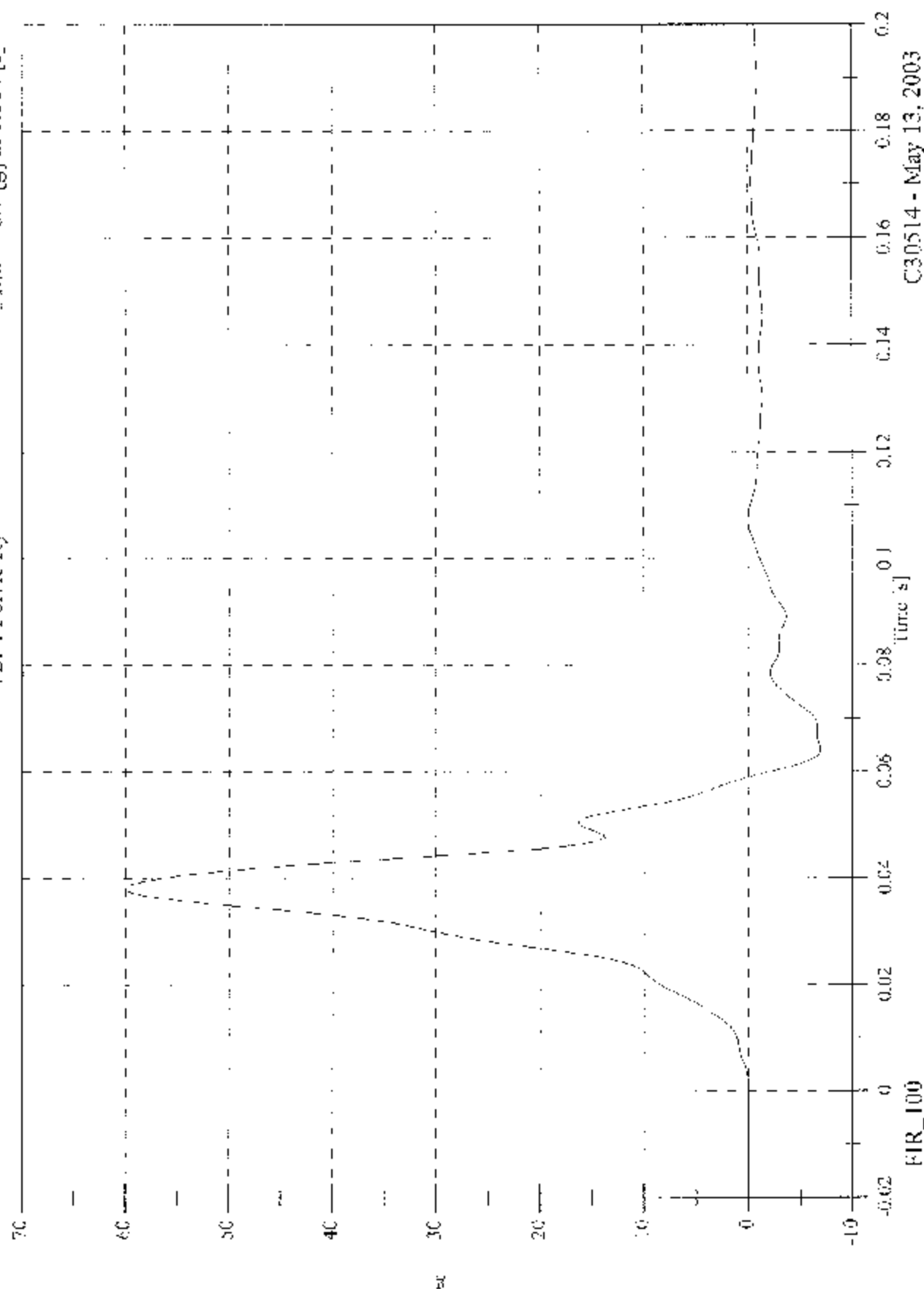


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FMVSS 214D Inducant - 2003 Saab 9-5

V2P4 Pelvic Ry

Max: 60.1 [g] at 0.038 [s]
Min: -6.9 [g] at 0.064 [s]



C30514 - May 13, 2003

APPENDIX C

SID HYBRID III CONFIGURATION AND PERFORMANCE VERIFICATION DATA

SUMMARY
SID H3 PRE & POST TEST CALIBRATION
CONFIGURED FOR LEFT SIDE IMPACT

Date: May 7, 2003; May 7, 2003

Sequential Test Number:

3:3

Laboratory Technician:

B. Swieczki

TEST PARAMETER	SPECIFICATION	SID H3 015		SID H3 016	
		PRE TEST	POST TEST	PRE TEST	POST TEST
SII- Seated Height (mm)	889 - 909	902	902	902	902
RH- Rib Height (mm)	501 - 521	511	511	513	513
HP- Hip Pivot Height (mm)	99 ref.	99	99	99	99
RD- Rib from Back Line (mm)	229 - 241	239	239	239	239
KV- Knee Pivot from Back Line (mm)	511 - 526	521	521	521	521
SW- Knee Pivot to Floor (mm)	490 - 505	495	495	495	495
HW- Hip Width (mm)	356 - 391	371	371	371	371
THORAX IMPACTS					
TEMPERATURE (°C)	18.9 - 25.5	21.1	21.1	21.1	21.1
RELATIVE HUMIDITY (%)	10 - 70	38	34	38	34
PROBE SPEED (m/s)	4.27 - 4.33	4.27	4.29	4.28	4.27
UPPER RIB (g's)	37 - 46	37.43	38.76	43.28	45.06
LOWER RIB (g's)	37 - 46	38.17	37.72	38.67	40.71
LOWER SPINE (g's)	15 - 22	18.55	18.94	21.2	21.67
PELVIS IMPACT					
TEMPERATURE (°C)	18.9 - 25.5	21.1	21.1	21.1	21.1
RELATIVE HUMIDITY (%)	10 - 70	38	34	38	34
PROBE SPEED (m/s)	4.27 - 4.33	4.28	4.27	4.27	4.28
PELVIS (g's)	40 - 60	43.89	43.23	42.12	42.13

REMARKS: None

CALIBRATION TEST RESULTS

PRE-TEST

SID H3 NO.: 015

CONFIGURED FOR LEFT SIDE IMPACT

**CALIBRATION TEST RESULTS SUMMARY
PRE-TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID H3 Serial No.: 015 Sequential Test Number: 3
Date: May 9, 2003 Laboratory Technician: B. Swiecicki

TEST	COMMENTS
EXTERNAL DIMENSIONS	Passed all requirements.
THORACIC SHOCK ABSORBER TEST	Passed all requirements.
LATERAL THORAX IMPACT TEST	Passed all requirements.
LATERAL PELVIS IMPACT TEST	Passed all requirements.
HEAD DROP TEST*	Passed all requirements.
LATERAL NECK BEND 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 113 Serial No.: 015 Sequential Test Number: 3
 Date: May 9, 2003 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
SII- Seated Height (mm)	889 - 909	902
RII- Rib Height (mm)	502 - 520	511
HPI- Hip Pivot Height (mm)	99 ref.	99
RID- Rib from Back Line (mm)	229 - 241	239
KII- Knee Pivot from Back Line (mm)	511 - 526	521
KV- Knee Pivot to Floor (mm)	490 - 505	495
HIW- Hip Width (mm)	356 - 391	371

REMARKS: none

**THORACIC SHOCK ABSORBER TESTS
PRE-TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID H3 Serial No.: 015 Sequential Test Number: 3
 Date: April 24, 2003 Laboratory Technician: B. Swiecicki

DAMPER IDENTIFICATION: 015

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)		18.9 - 25.5	21.1
RELATIVE HUMIDITY (%)		10 - 70	35.0
VELOCITY 3.05 m/s	FORCE (N)	836 - 1125	997.8
	DISPLACEMENT (mm)	30 - 35	32.2
VELOCITY 4.27 m/s	FORCE (N)	1730 - 2099	1909.7
	DISPLACEMENT (mm)	32 - 37	35.0
VELOCITY 6.10 m/s	FORCE (N)	3711 - 4448	4336.4
	DISPLACEMENT (mm)	33 - 40	37.9

DAMPER SETTING: 5

REMARKS: None

Shock Test - Low at 3.05 m/s

Low Part 572F Shock Absorber Impact

Calibration Date: 04-24-03

Serial No: 015

Work File: 015SJL 04-23-03

TEST RESULTS

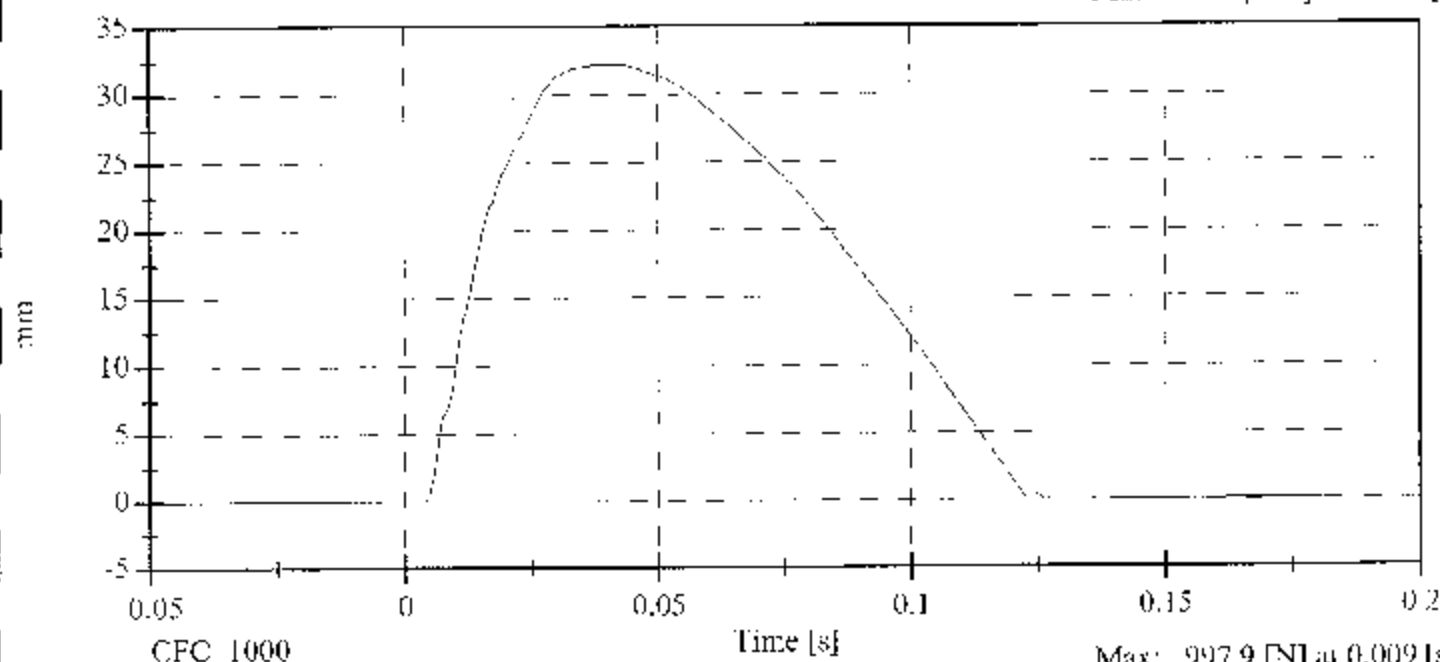
TEST CONDITION	PARAMETERS	RESULTS	STATUS
Lab Temperature:	18.9-25.5 C	21.1 C	Passed
Lab Humidity:	10-70 %	35.00 %	Passed
Displacement:	30.00-35.00 mm	32.18 mm	Passed
Maximum Force:	836.00 1125.00 N	997.85 N	Passed

Shock Test Low

Displacement vs. Time

Max: 32.2 [mm] at 0.041 [s]

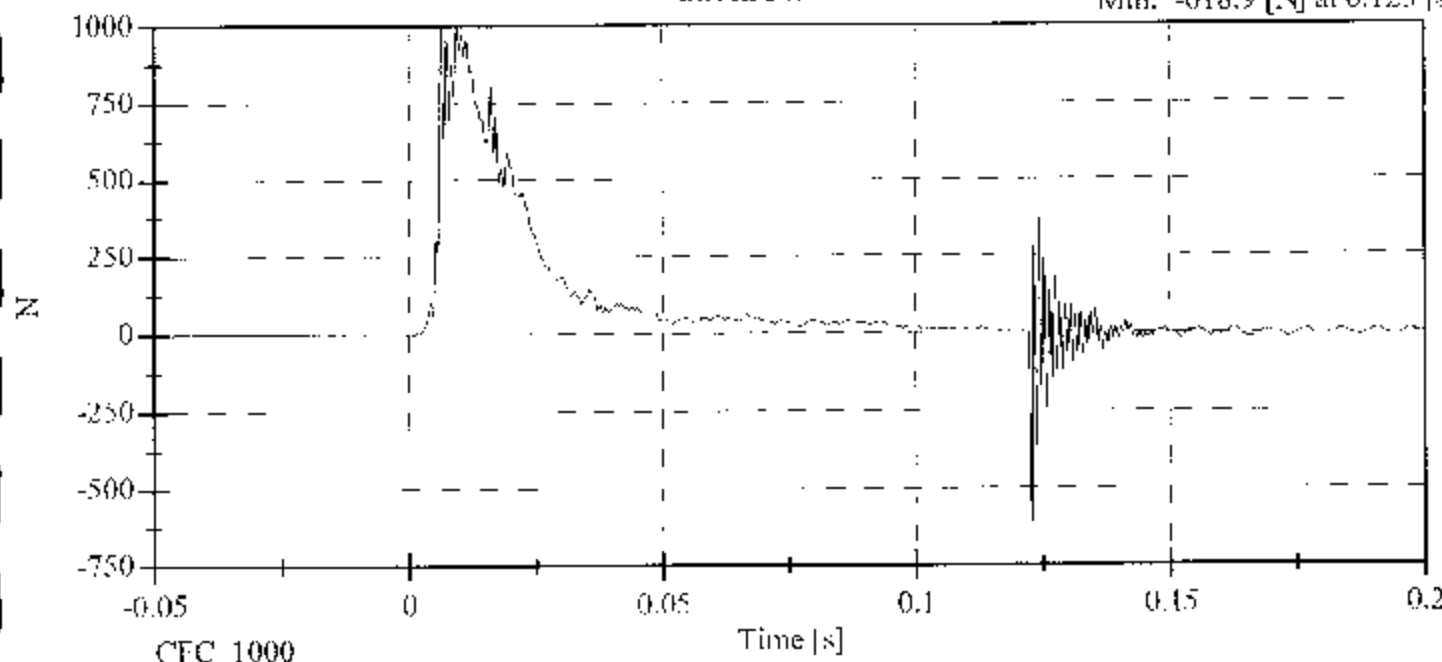
Min: -0.1 [mm] at 0.124 [s]



Shock Force vs. Time

Max: 997.9 [N] at 0.009 [s]

Min: -618.9 [N] at 0.123 [s]



Shock Test - Medium at 4.27 m/s

Medium Part 572F Shock Absorber Impact

Calibration Date: 04-24-03

Serial No: 015

Work File: 015SM 04-23-03

-----TEST RESULTS-----

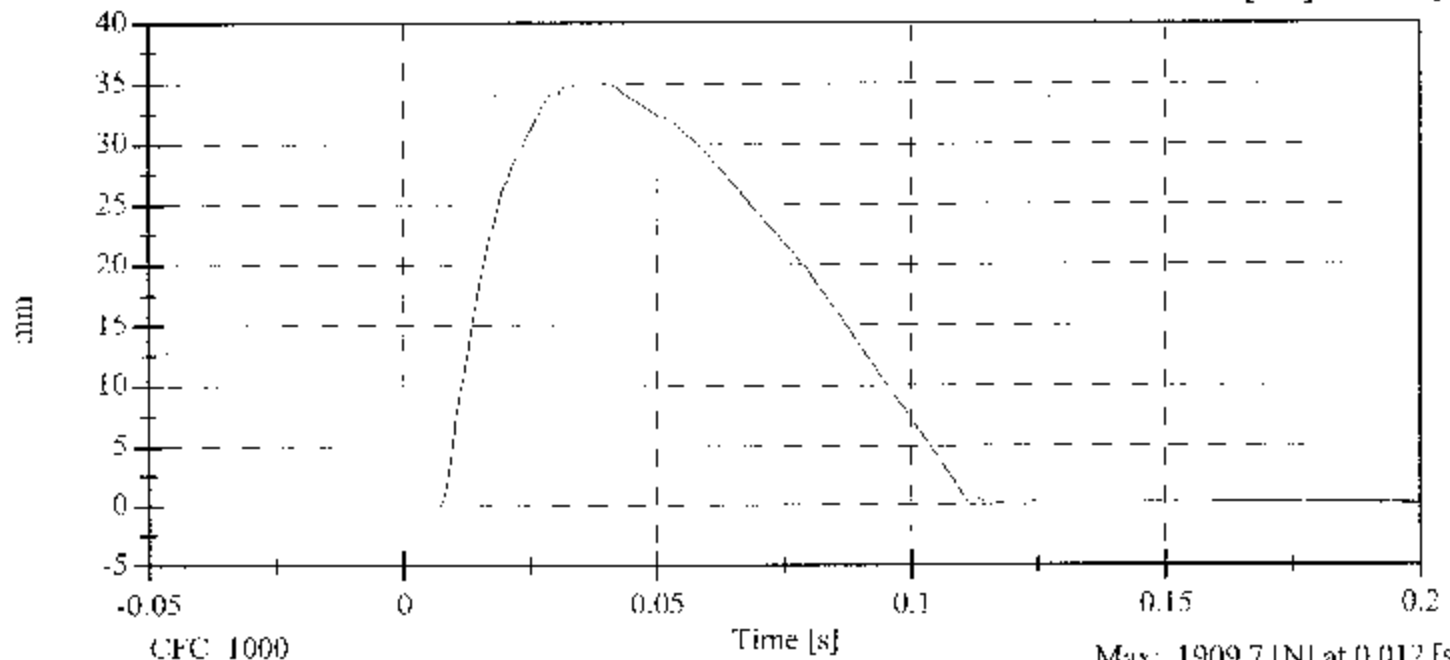
TEST CONDITION	PARAMETERS	RESULTS	STATUS
Lab Temperature:	18.9-25.5 C	21.1 C	Passed
Lab Humidity:	10-70 %	35.00 %	Passed
Displacement:	32.00-37.00 mm	35.02 mm	Passed
Maximum Force:	1730.00-2099.00 N	1909.74 N	Passed

Shock Test Medium

Displacement vs. Time

Max: 35.0 [mm] at 0.036 [s]

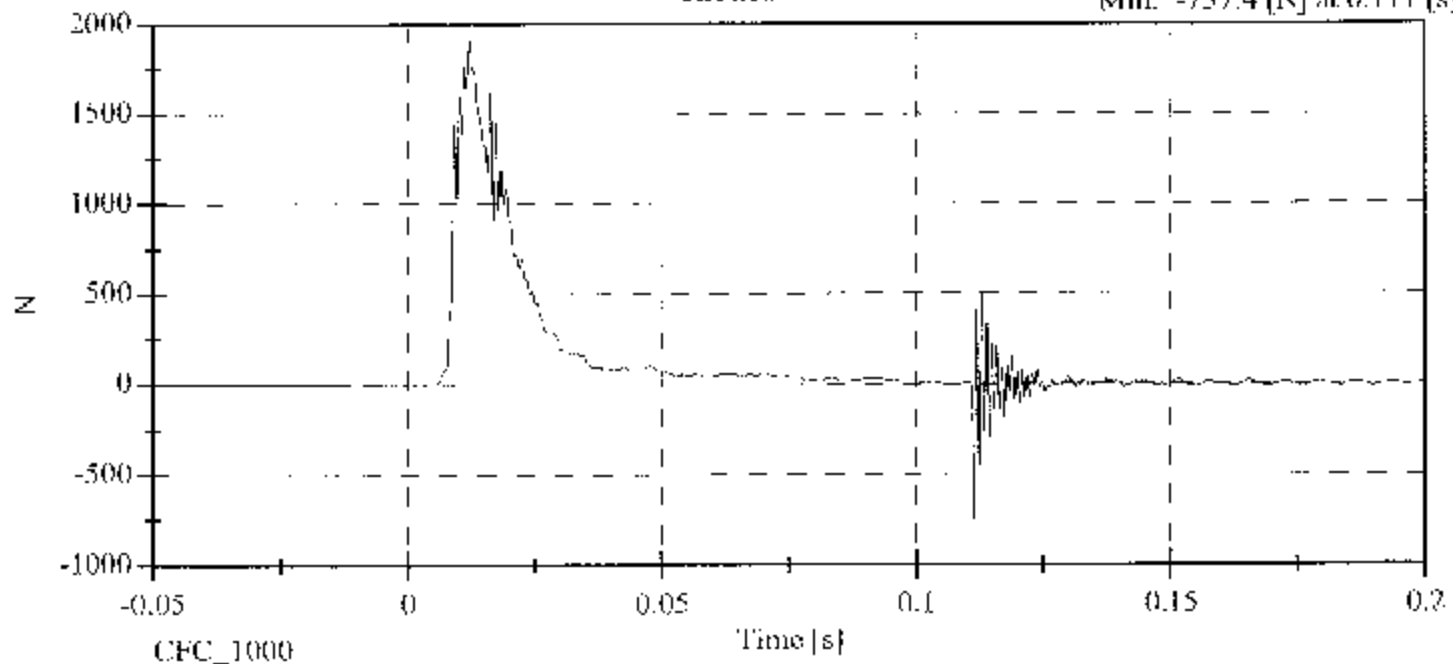
Min: -0.1 [mm] at 0.112 [s]



Shock Force vs. Time

Max: 1909.7 [N] at 0.012 [s]

Min: -757.4 [N] at 0.111 [s]



Shock - High at 6.10 m/s

High Part 572F Shock Absorber Impact

Calibration Date: 04-25-03

Serial No: 015

Work File: 015SH2 04-23-03

TEST RESULTS

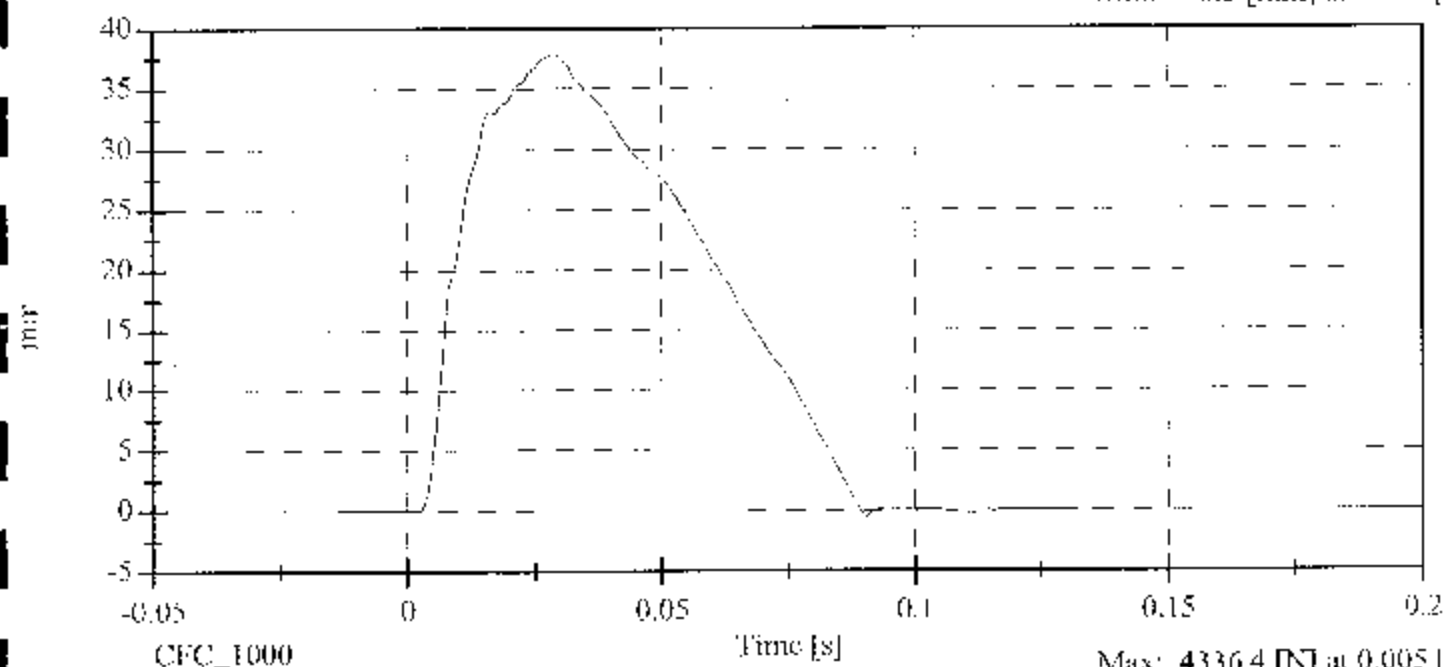
TEST CONDITION	PARAMETERS	RESULTS	STATUS
Lab Temperature:	18.9-25.5 C	21.1 C	Passed
Lab Humidity:	10-70 %	40.00 %	Passed
Displacement:	33.00-40.00 mm	37.86 mm	Passed
Maximum Force:	3741.00-4448.00 N	4336.39 N	Passed

Shock - High

Displacement vs. Time

Max: 37.9 [mm] at 0.029 [s]

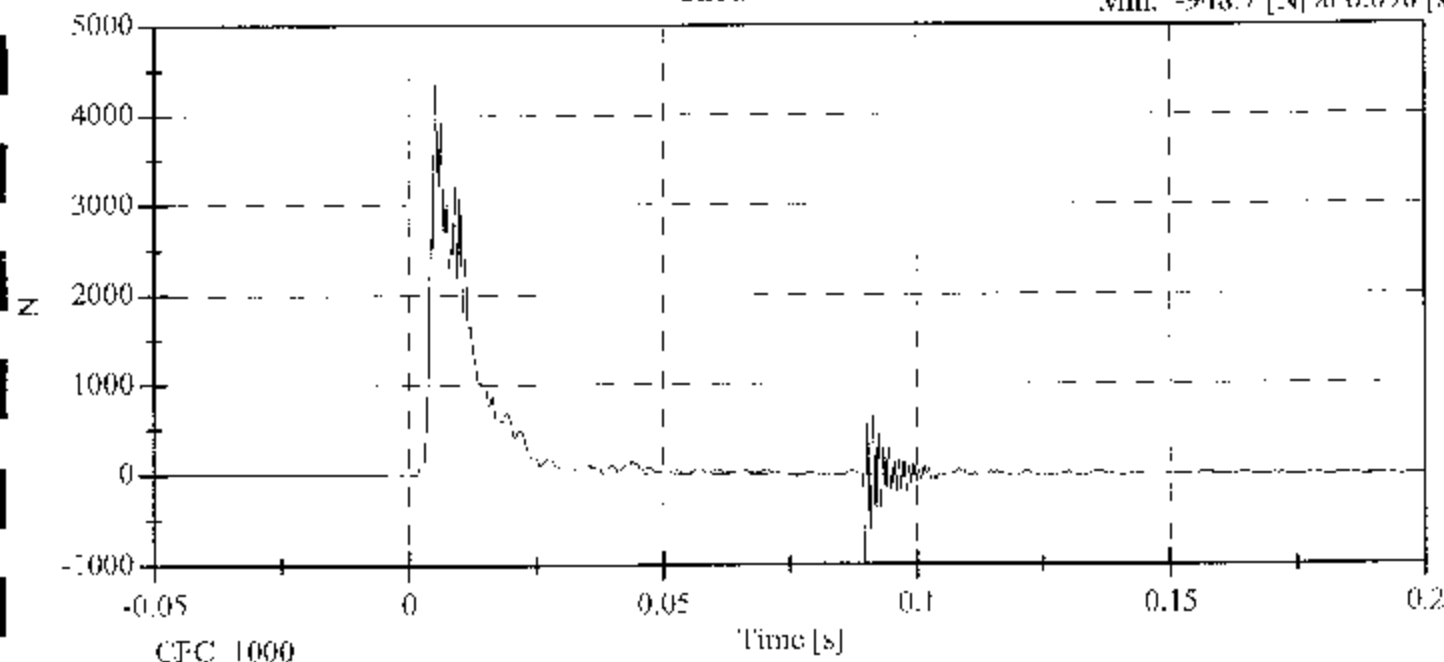
Min: -0.5 [mm] at 0.091 [s]



Shock Force vs. Time

Max: 4336.4 [N] at 0.005 [s]

Min: -948.7 [N] at 0.090 [s]



**LATERAL THORAX IMPACT TEST
PRE-TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID H3 Serial No.: 015 Sequential Test Number: 3
 Date: May 9, 2003 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.1
RELATIVE HUMIDITY (%)	10 - 70	38.00
PROBE SPEED (m/s)	4.27 - 4.33	4.27
UPPER RIB (g's)	37 - 46	37.43
LOWER RIB (g's)	37 - 46	38.17
LOWER SPINE (g's)	15 - 22	18.55

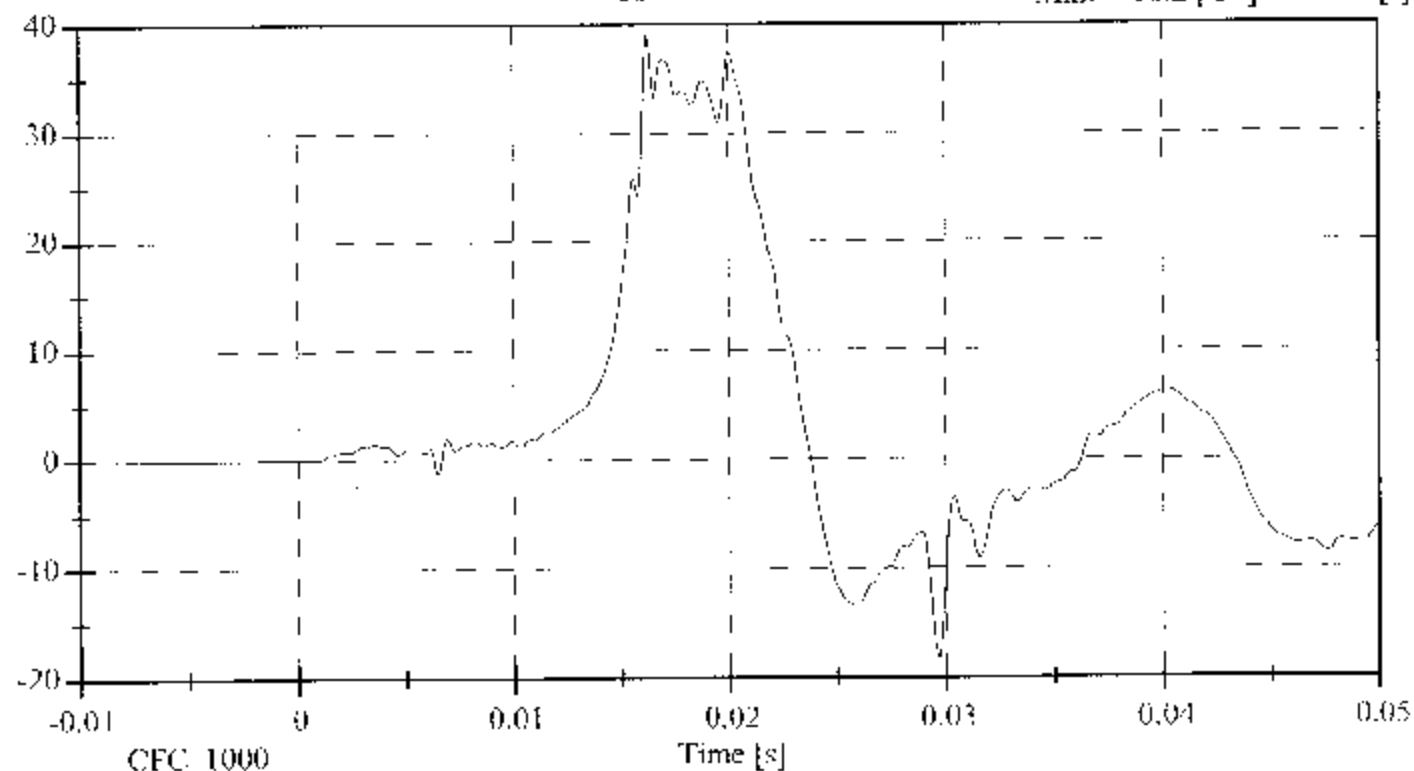
REMARKS: None

Thorax Impact

Max: 39.1 [G's] at 0.016 [s]

Min: -18.2 [G's] at 0.030 [s]

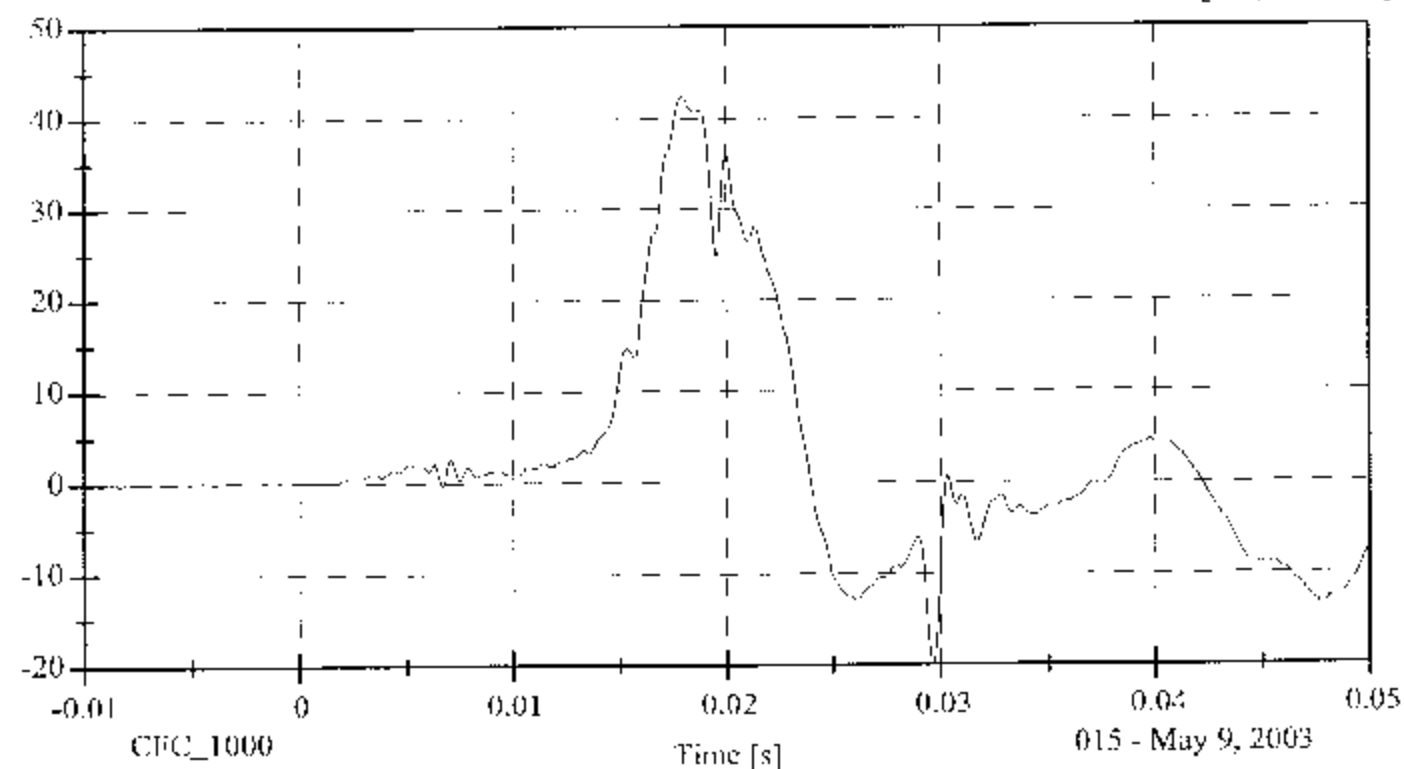
Upper Rib Y Acceleration



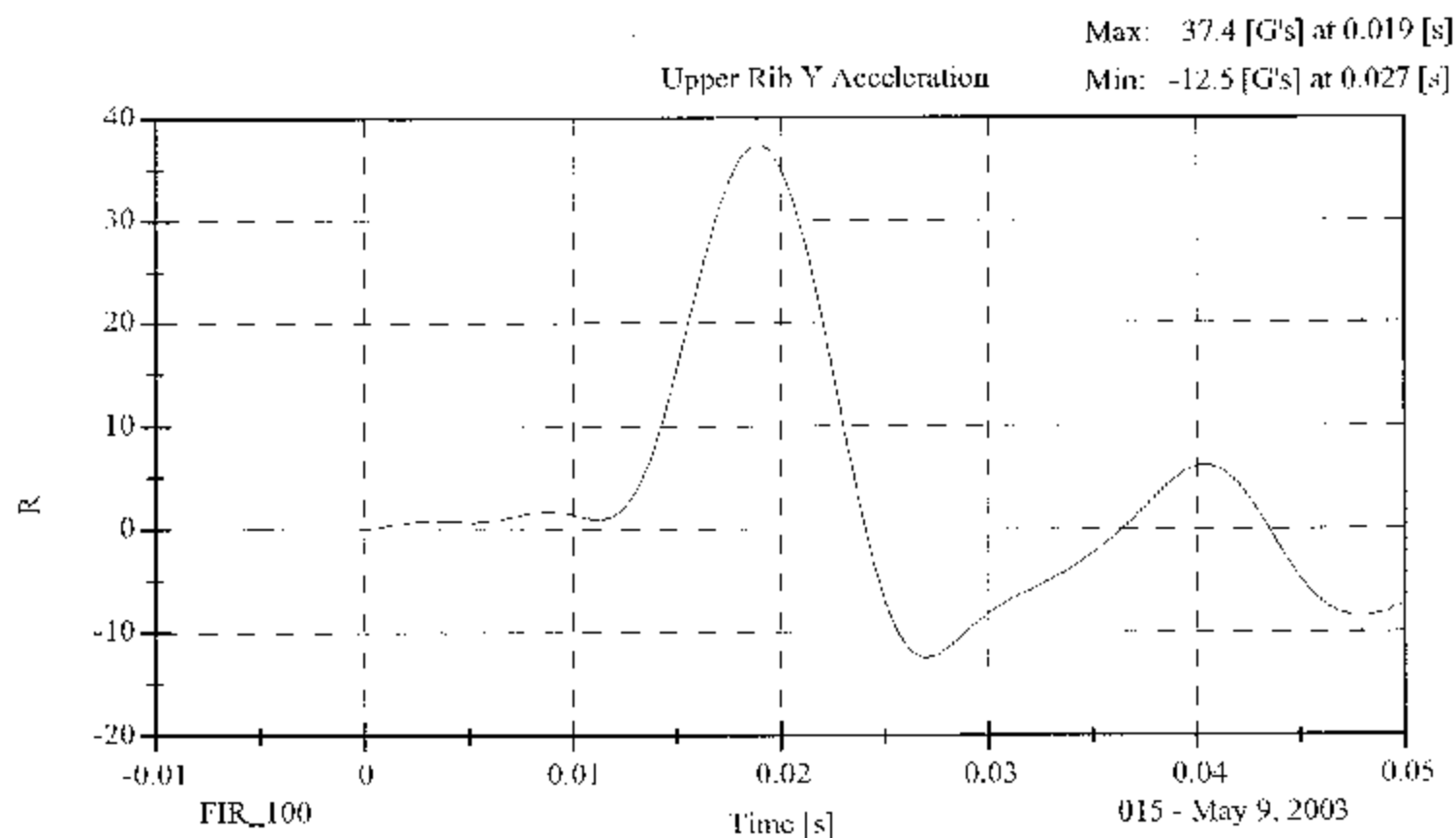
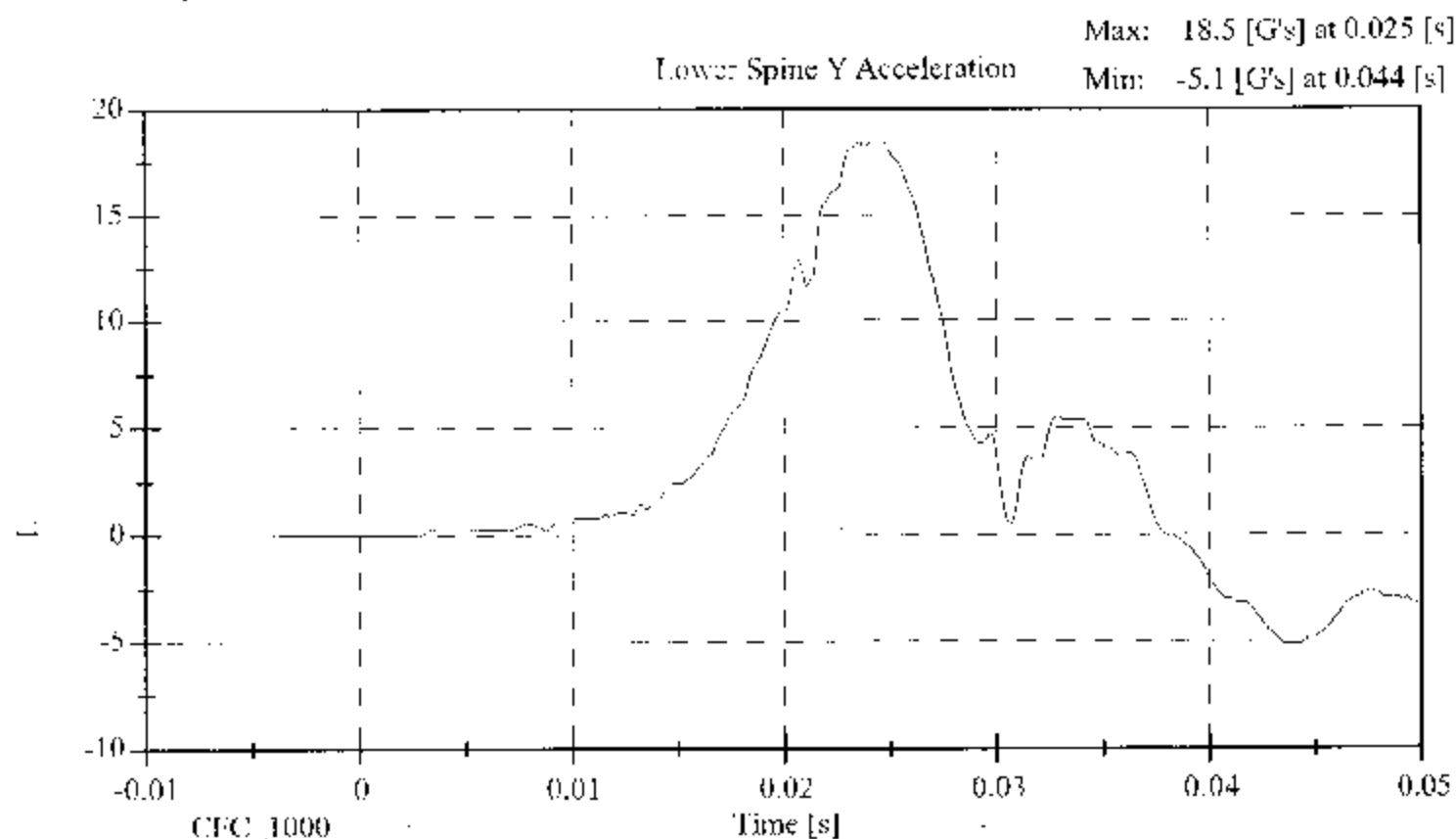
Max: 42.4 [G's] at 0.018 [s]

Min: -19.9 [G's] at 0.030 [s]

Lower Rib Y Acceleration



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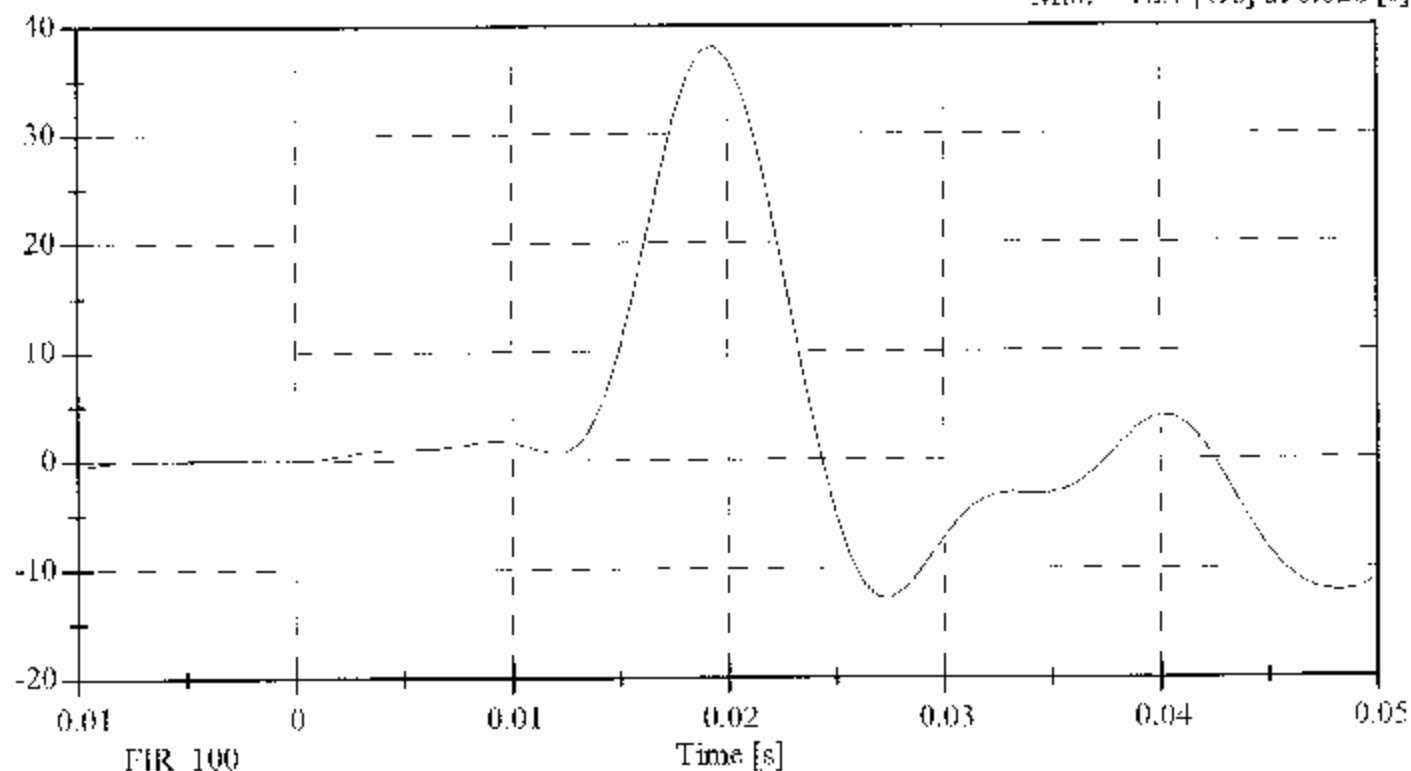
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Thorax Impact

Lower Rib Y Acceleration

Max: 38.2 [G's] at 0.019 [s]

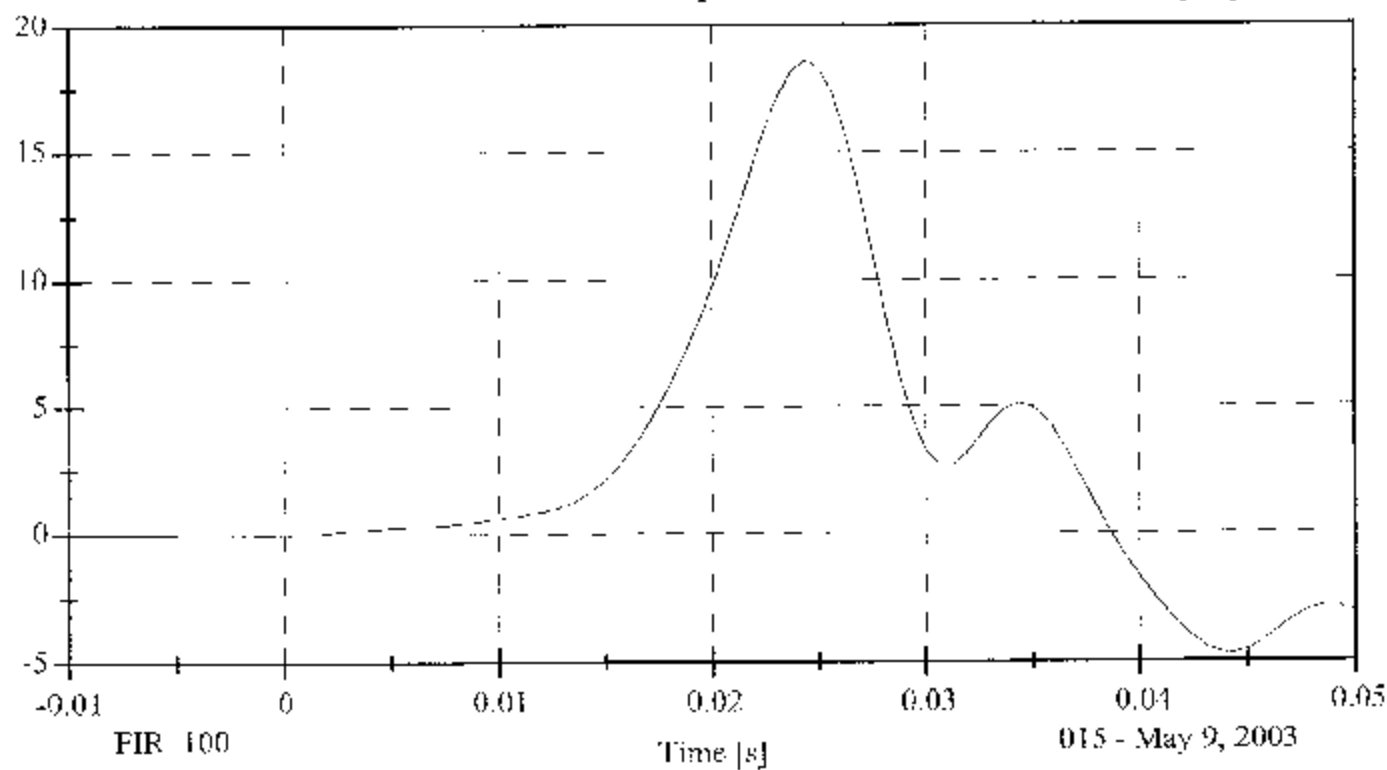
Min: -12.7 [G's] at 0.028 [s]



Lower Spine Y Acceleration

Max: 18.6 [G's] at 0.024 [s]

Min: -4.7 [G's] at 0.044 [s]



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LATERAL PELVIS IMPACT TEST
PRE-TEST

CONFIGURED FOR LEFT SIDE IMPACT

SID H3 Serial No.: 015 Sequential Test Number: 3
Date: May 9, 2003 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.1
RELATIVE HUMIDITY (%)	10 - 70	38.00
PROBE SPEED (m/s)	4.27 - 4.33	4.28
PELVIS ACCELERATION (g's)	40 - 60	43.89

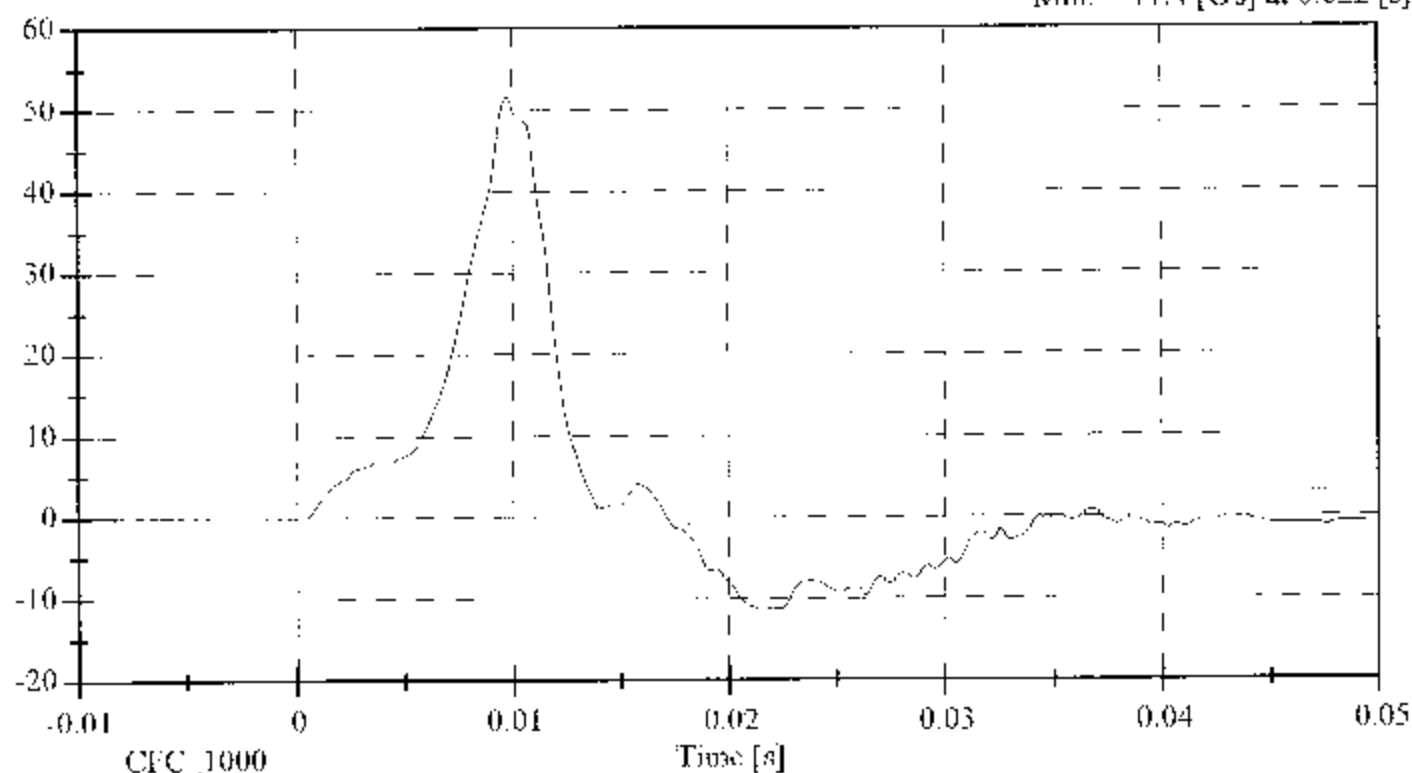
REMARKS: None

Pelvic Impact

Max: 51.6 [G's] at 0.010 [s]

Min: -11.4 [G's] at 0.022 [s]

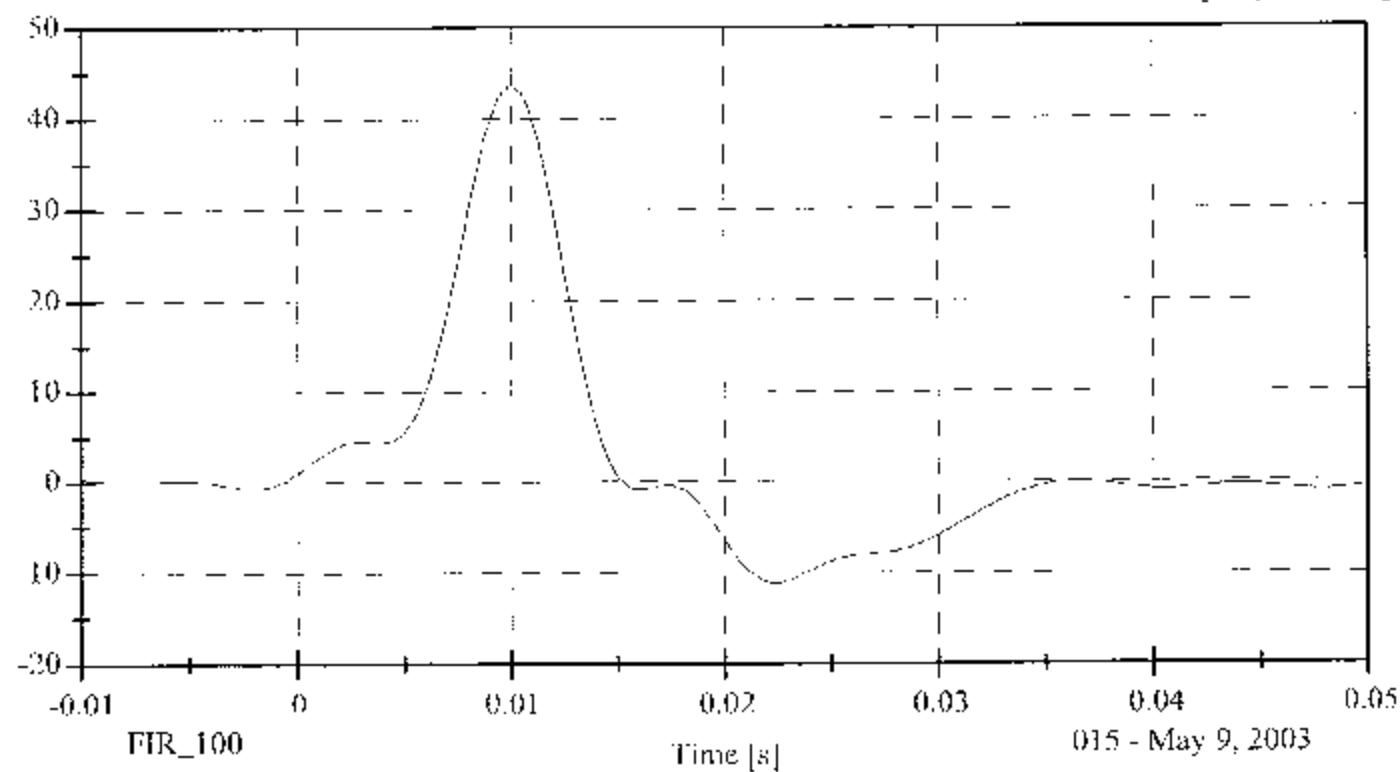
Pelvis Acceleration



Max: 43.9 [G's] at 0.010 [s]

Min: -11.2 [G's] at 0.023 [s]

Pelvis Y Acceleration



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

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No: 015 Sequential Test Number: 3
Date: May 7, 2003 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	20.6 – 22.2	21.1
RELATIVE HUMIDITY (%)	10 – 70	33.00
PEAK RESULTANT ACCELERATION (Gs)	120 – 150	120.13
PEAK LATERAL ACCELERATION (Gs)	Not to Exceed 15	10.92
CURVE PERCENT NONMODAL (%)	< 15	3.72

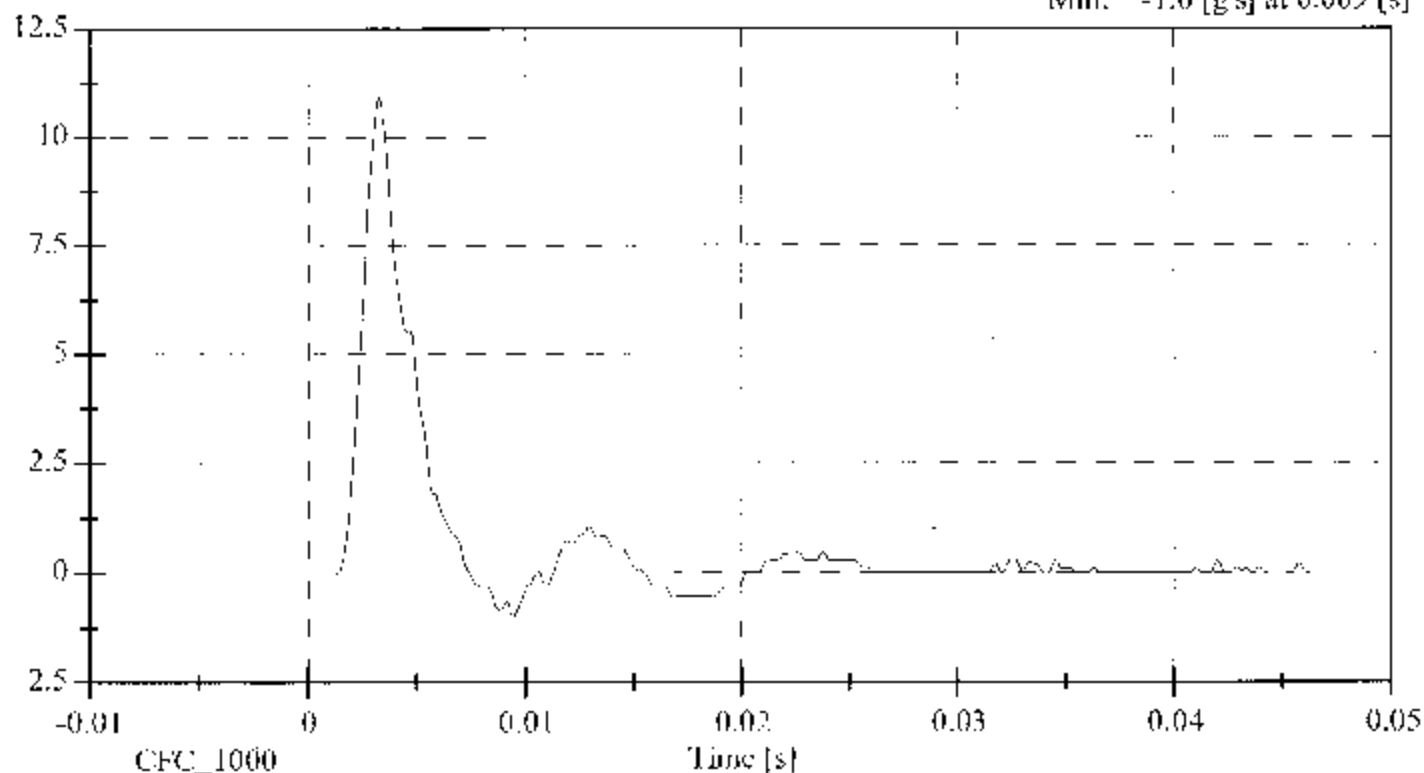
REMARKS: None

Head Drop

Head X Acceleration

Max: 10.9 [g's] at 0.003 [s]

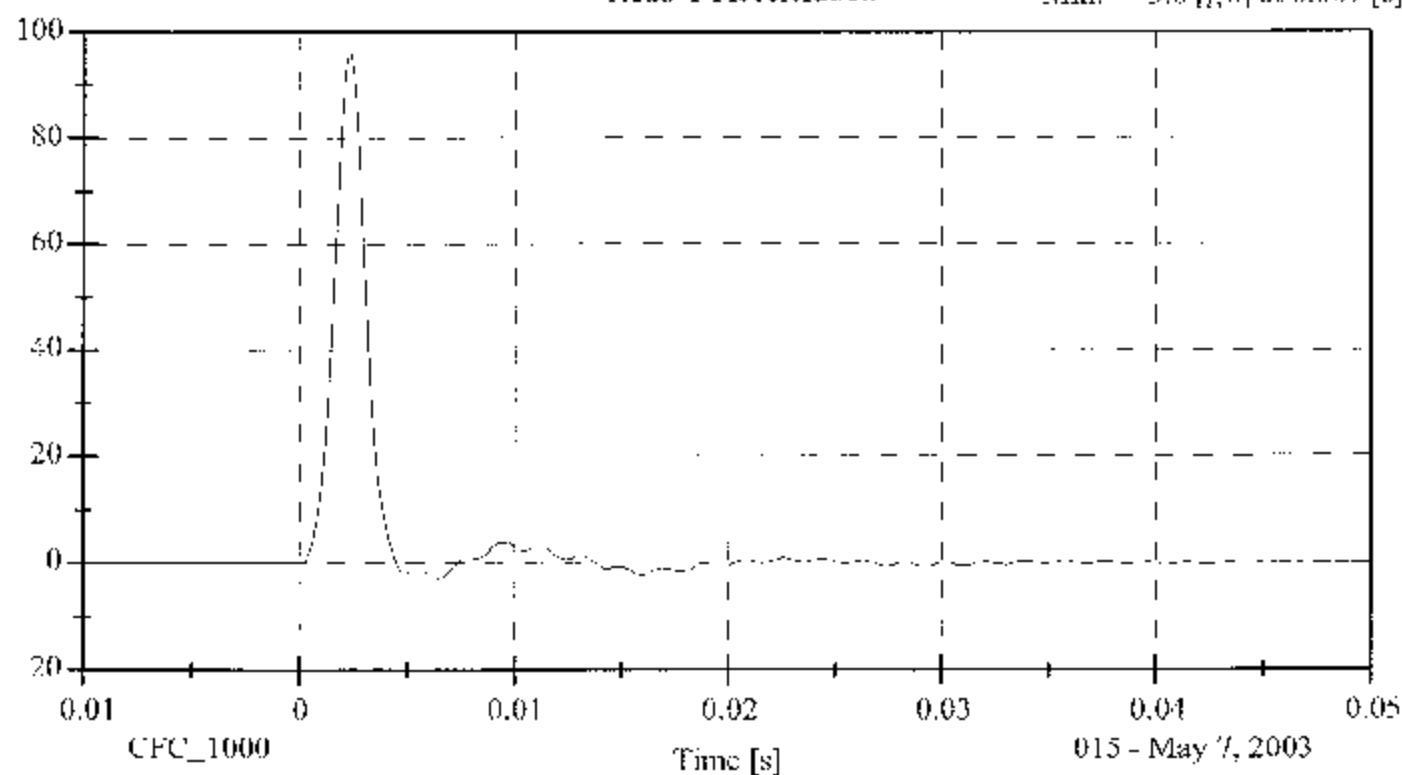
Min: -1.0 [g's] at 0.009 [s]



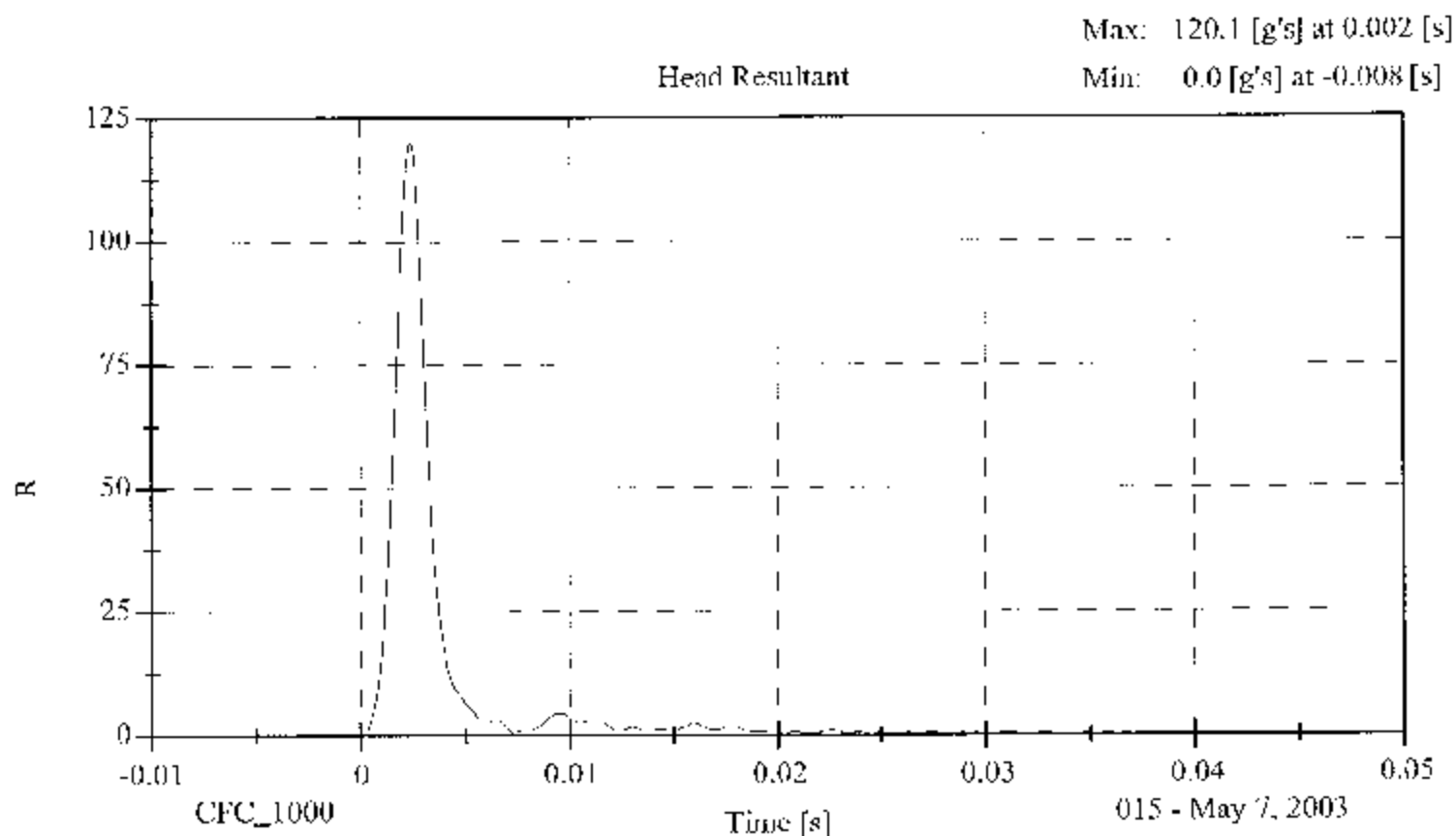
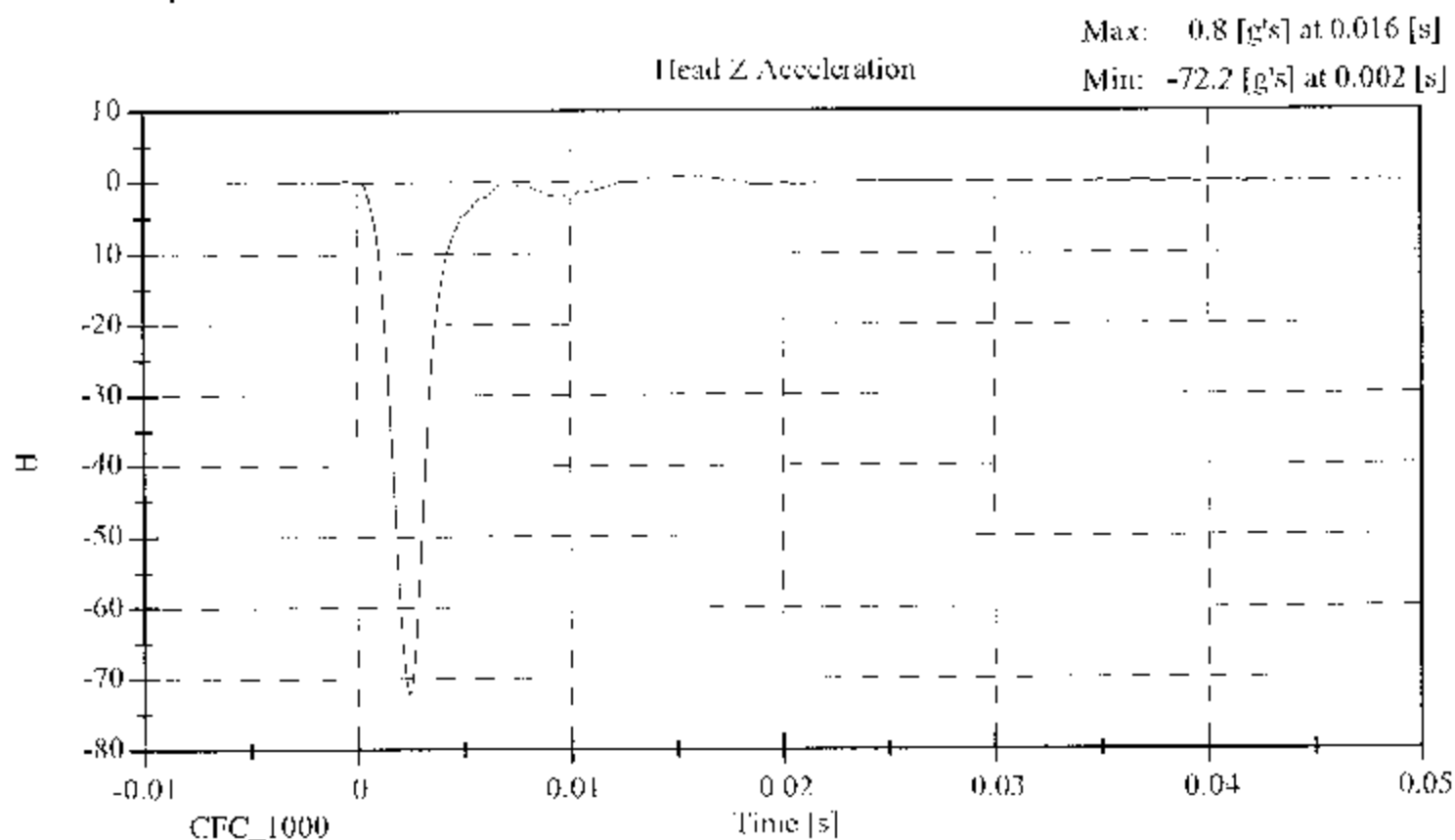
Head Y Acceleration

Max: 95.9 [g's] at 0.002 [s]

Min: -3.0 [g's] at 0.007 [s]



Head Drop



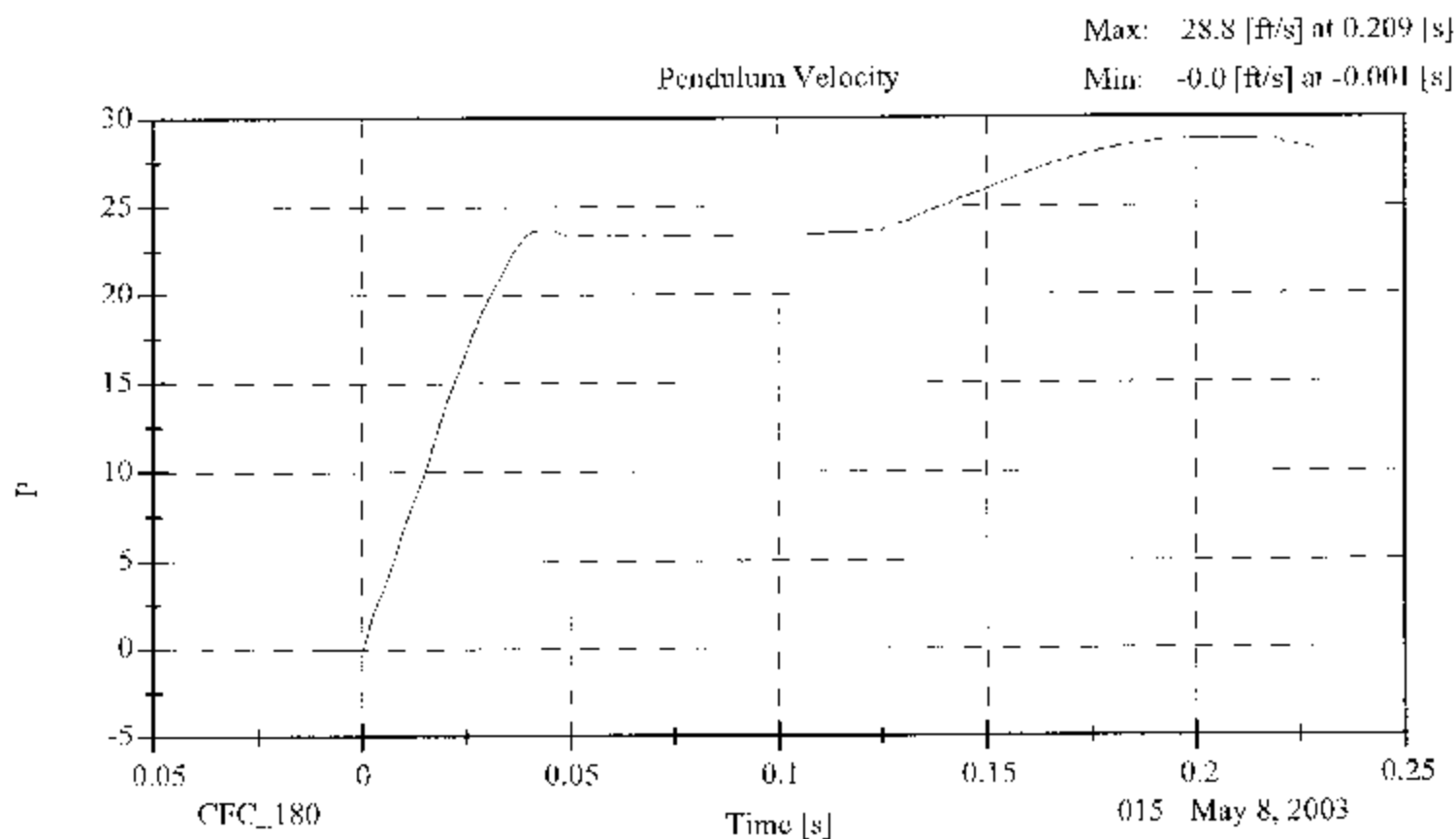
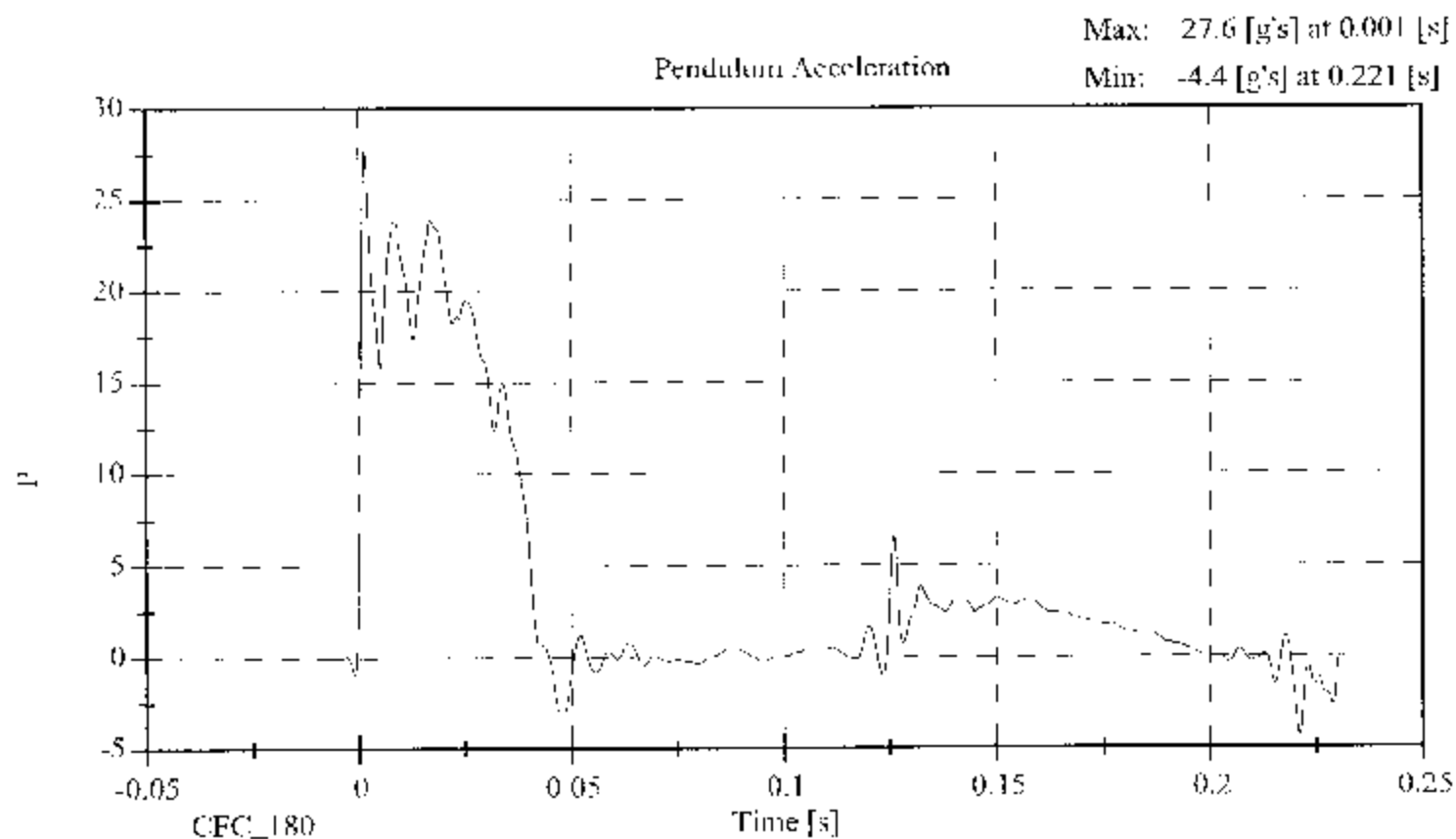
LATERAL NECK BENDING TEST
PRE-TEST
 (Test not required for SID certification)

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 015 Sequential Test Number: 3
 Date: May 8, 2003 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	20.6 - 22.2	21.1
RELATIVE HUMIDITY (%)	10 - 70	33.00
IMPACT VELOCITY (m/s)	6.89 - 7.13	6.92
PENDULUM DELTA V		
DELTA V @ 10 ms (m/s)	1.96 - 2.55	2.06
DELTA V @ 20 ms (m/s)	4.12 - 5.10	4.11
DELTA V @ 30 ms (m/s)	5.73 - 7.01	5.96
DELTA V @ 40-70 ms (m/s)	6.77 - 7.64	7.22
D PLANE ROTATION		
MAXIMUM ROTATION (deg)	64 - 78	71.93
ROT. ANGLE TIME to ZERO (ms)	50 - 70	60.10
MOMENT ABOUT THE OCCIPITAL CONDYLE		
MAX OCCIPITAL MOMENT (Nm)	88 - 108	90.93
OCCIPITAL MOMENT DECAY (ms)	40.0 - 60.0	19.30
HEAD ROTATION TIME WITH RESPECT TO THE OCCIPITAL CONDYLE MOMENT		
ROTATION wrt MOMENT (ms)	0 - 20	9.30

REMARKS: None

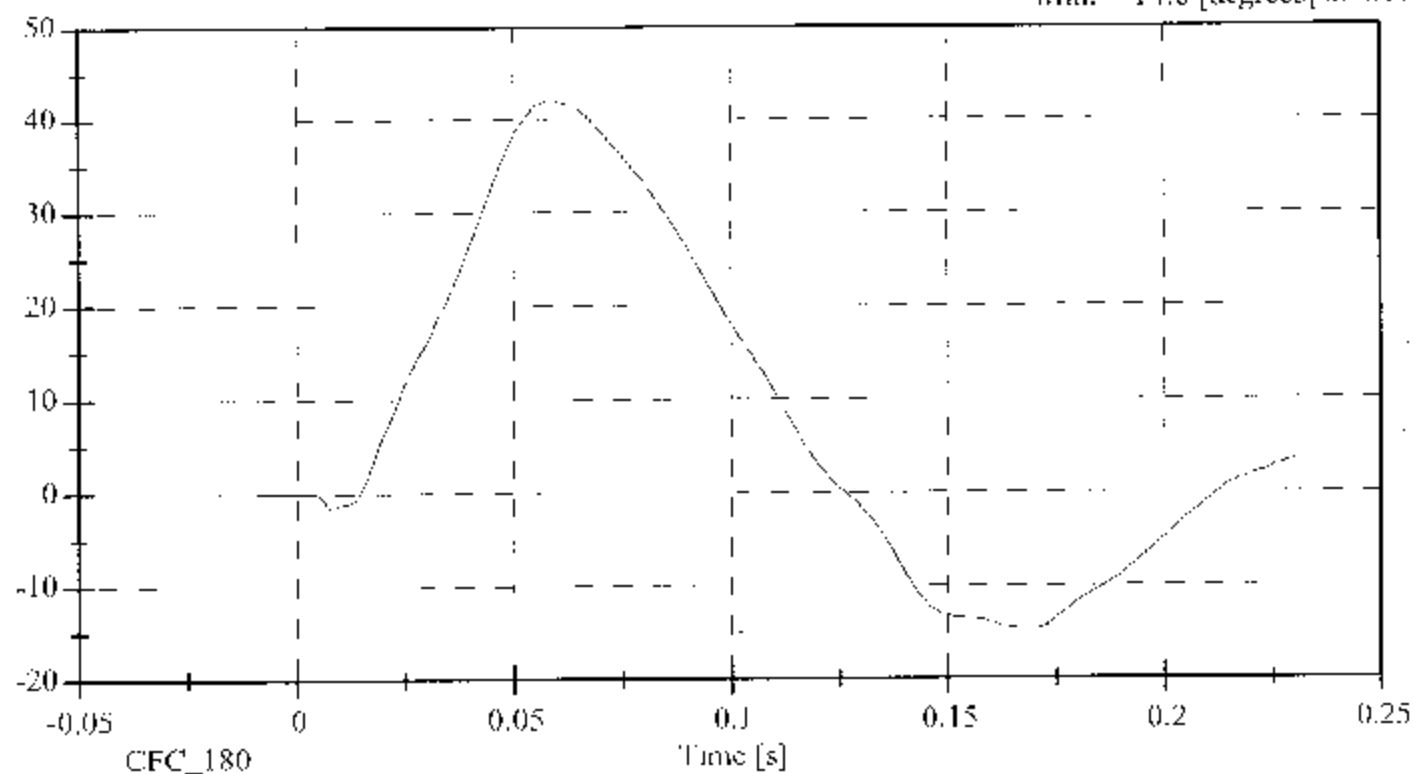


Neck Test

Head Rotation

Max: 42.0 [degrees] at 0.055

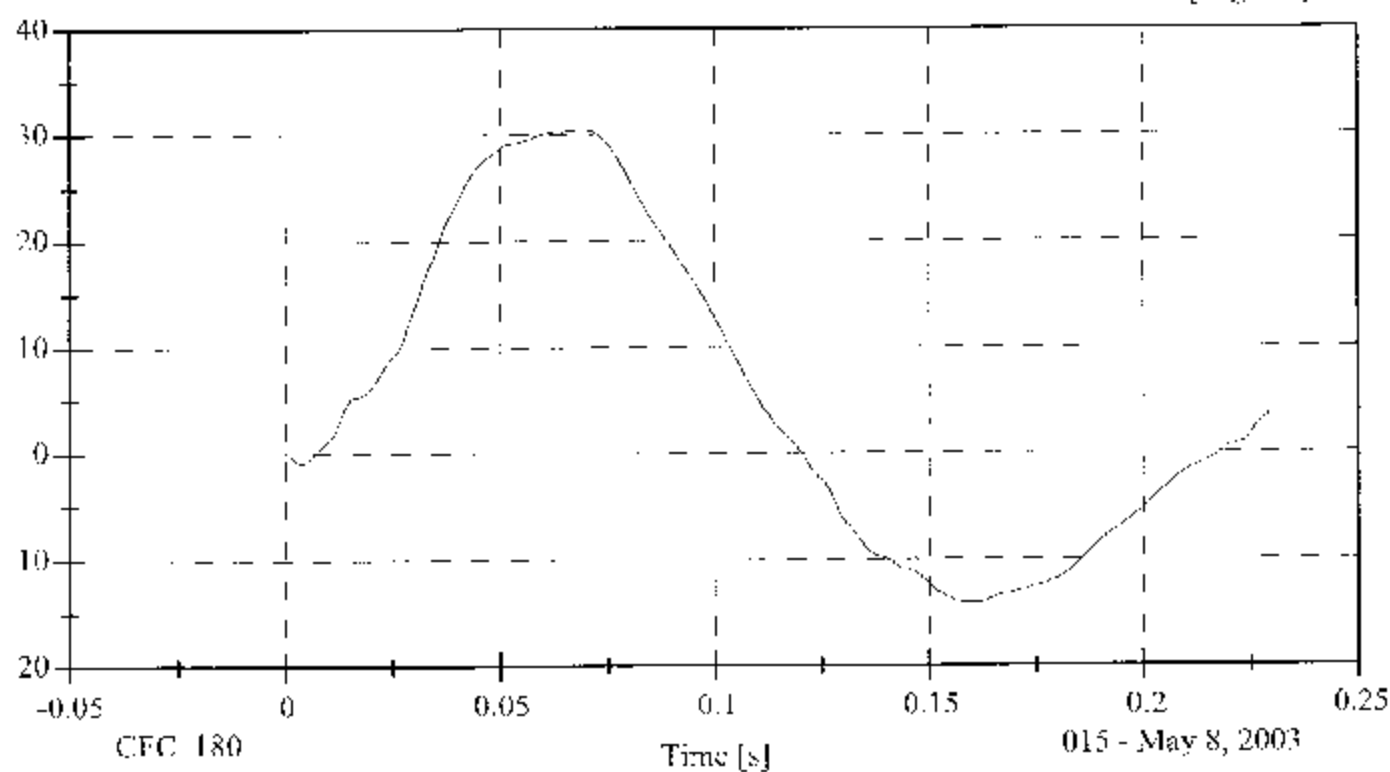
Min: -14.6 [degrees] at 0.170



Arm Rotation

Max: 30.4 [degrees] at 0.070

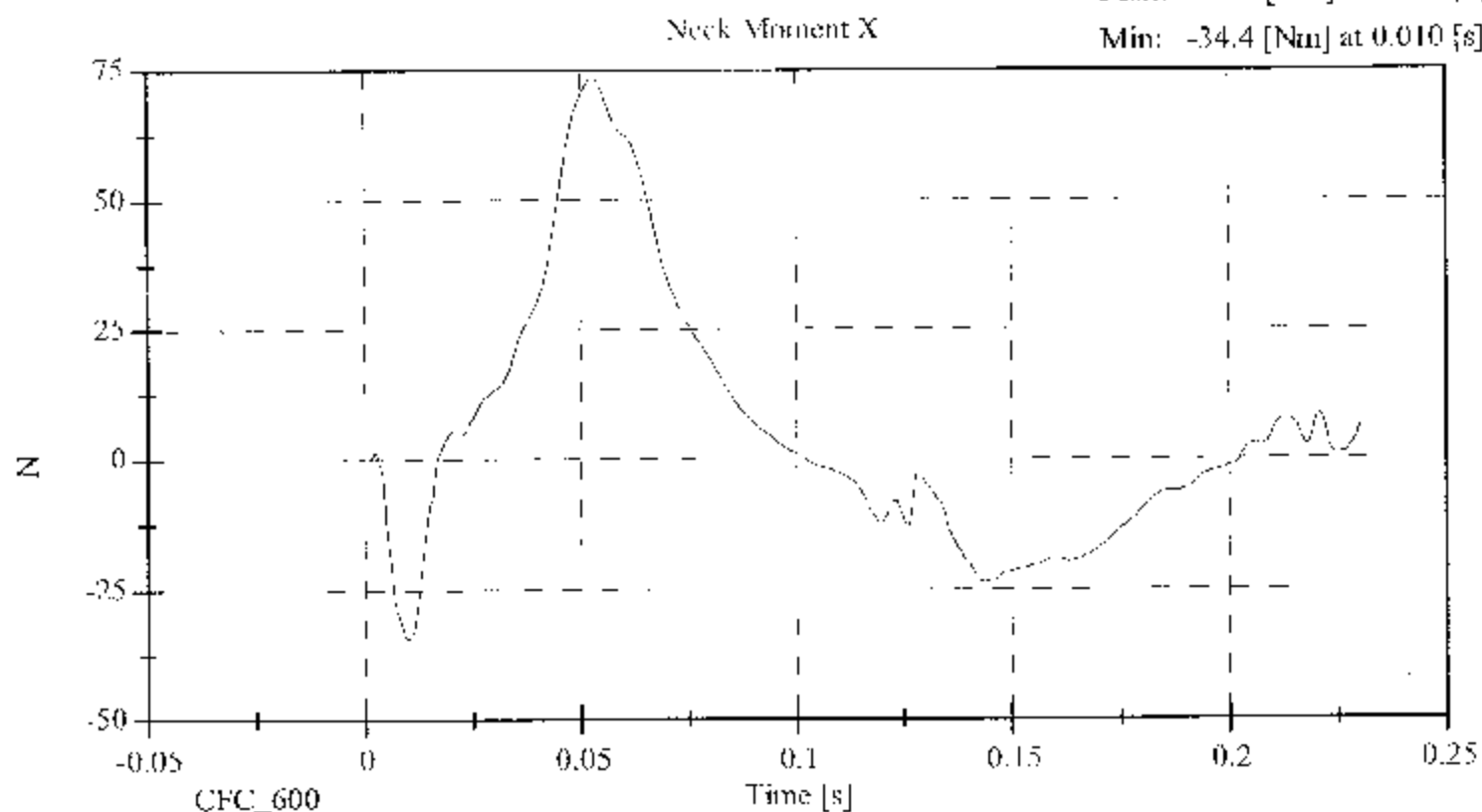
Min: -14.1 [degrees] at 0.160



Neck Test

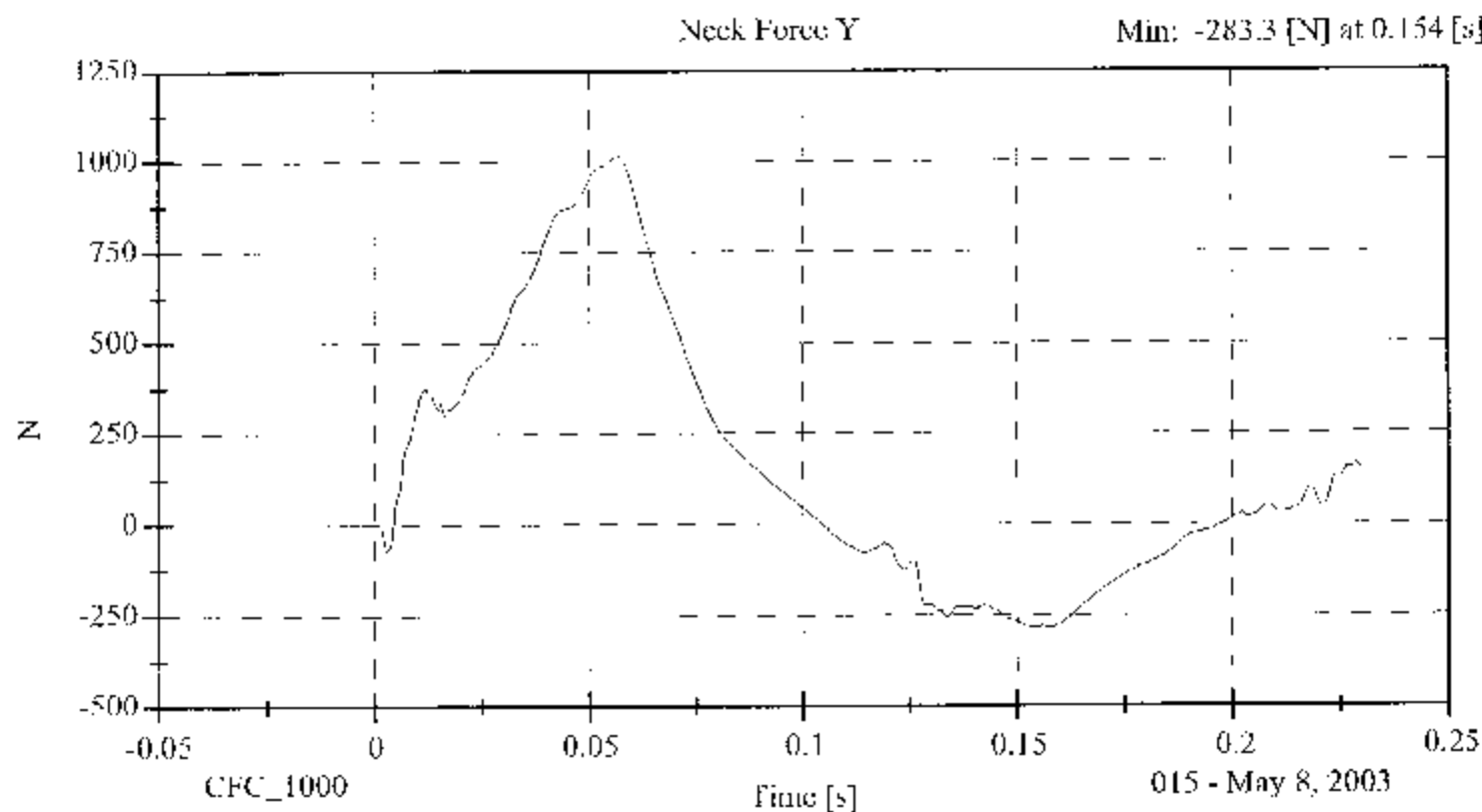
Max: 73.4 [Nm] at 0.053 [s]

Min: -34.4 [Nm] at 0.010 [s]



Max: 1013.4 [N] at 0.057 [s]

Min: -283.3 [N] at 0.154 [s]



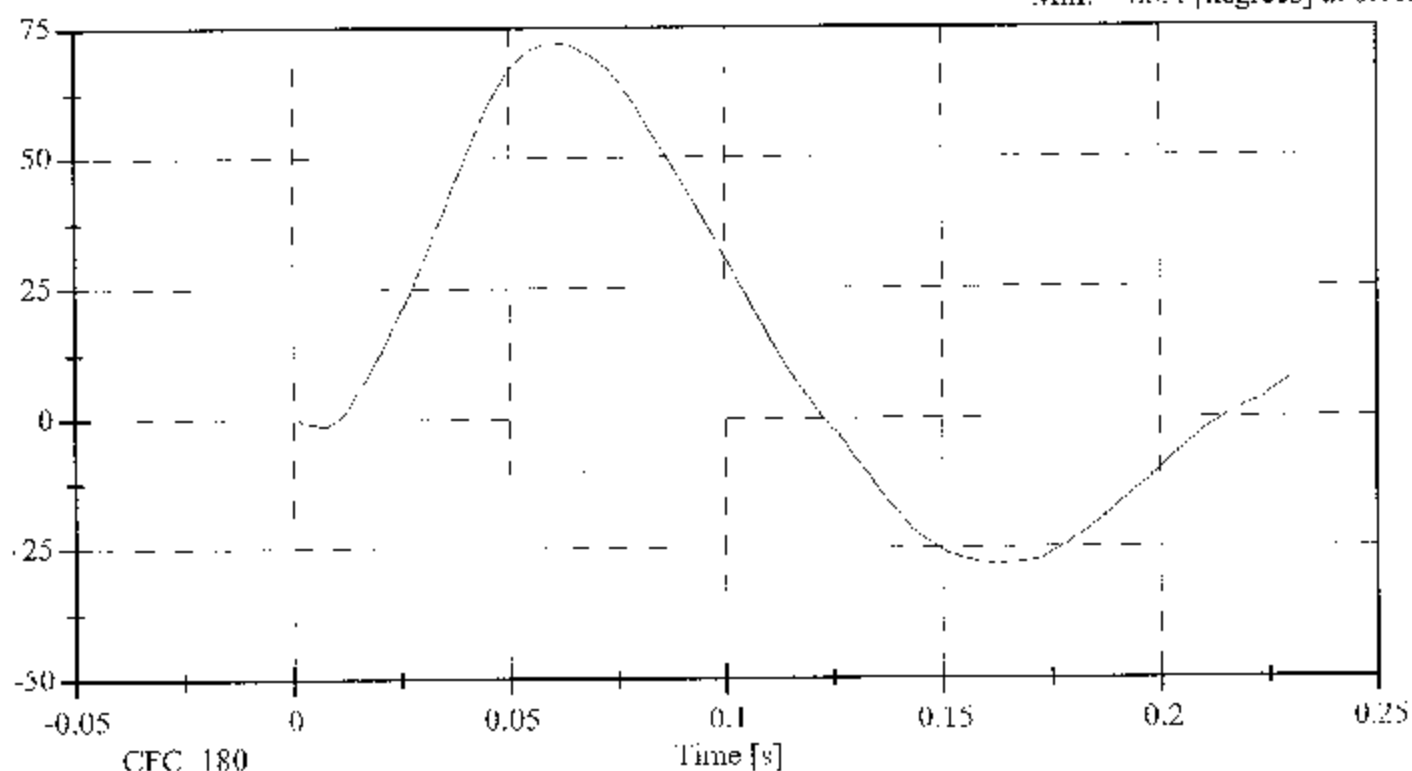
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Neck Test

Max: 71.9 [degrees] at 0.062

Min: -28.4 [degrees] at 0.163

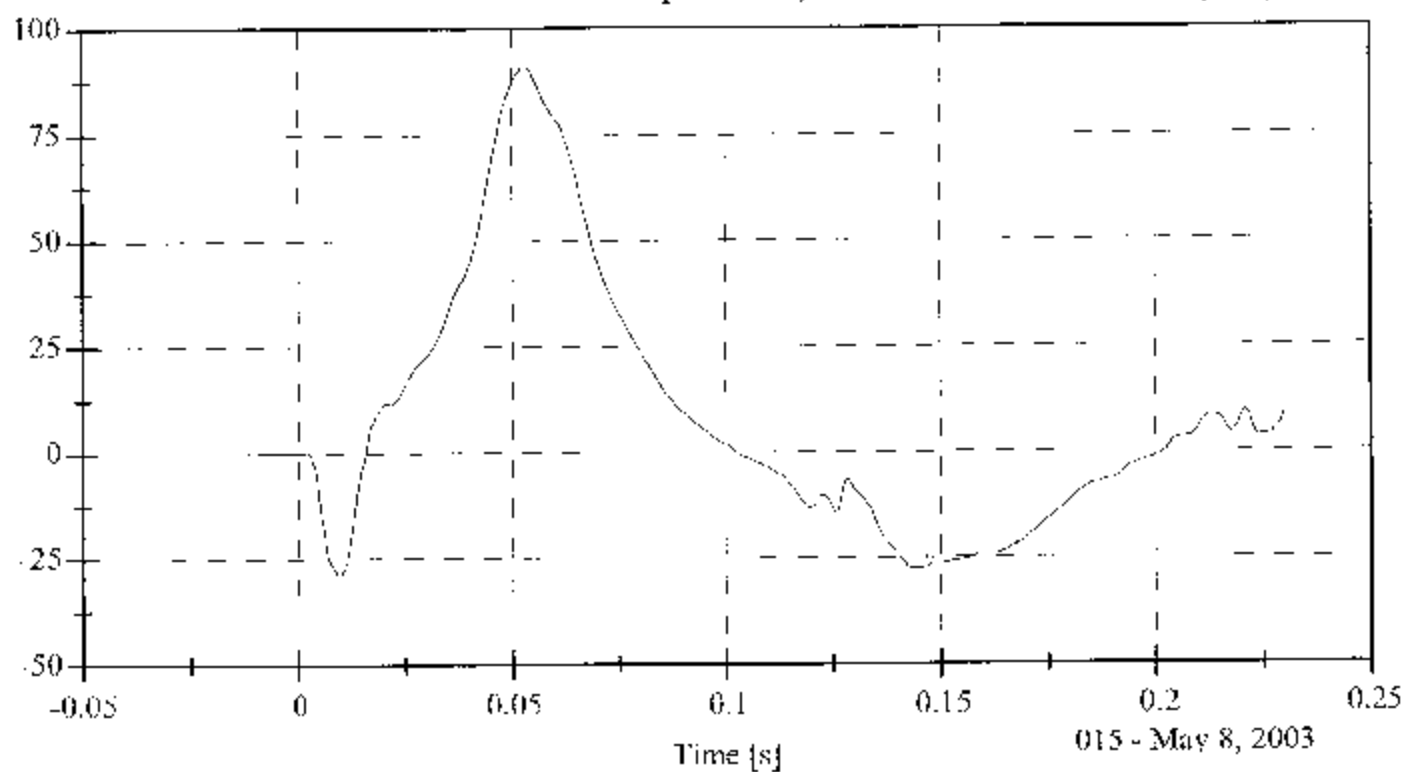
Total Rotation



Max: 90.9 [Nm] at 0.053 [s]

Min: -28.9 [Nm] at 0.010 [s]

Occipital Condyle Moment



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ABDOMINAL COMPRESSION TEST

PRE-TEST

(Test not required for SID certification)

CONFIGURED FOR LEFT SIDE IMPACT

SID 113 Serial No.: 015

Sequential Test Number:

3

Date: May 9, 2003

Laboratory Technician:

B. Swieticki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.1
RELATIVE HUMIDITY (%)	10 - 70	39.0
FORCE @ 13 mm (N)	101 - 162	113.4
FORCE @ 19 mm (N)	163 - 224	177.0
FORCE @ 25 mm (N)	222 - 280	258.9
FORCE @ 33 mm (N)	325 - 391	375.9

REMARKS: None

Dummy S/N 215

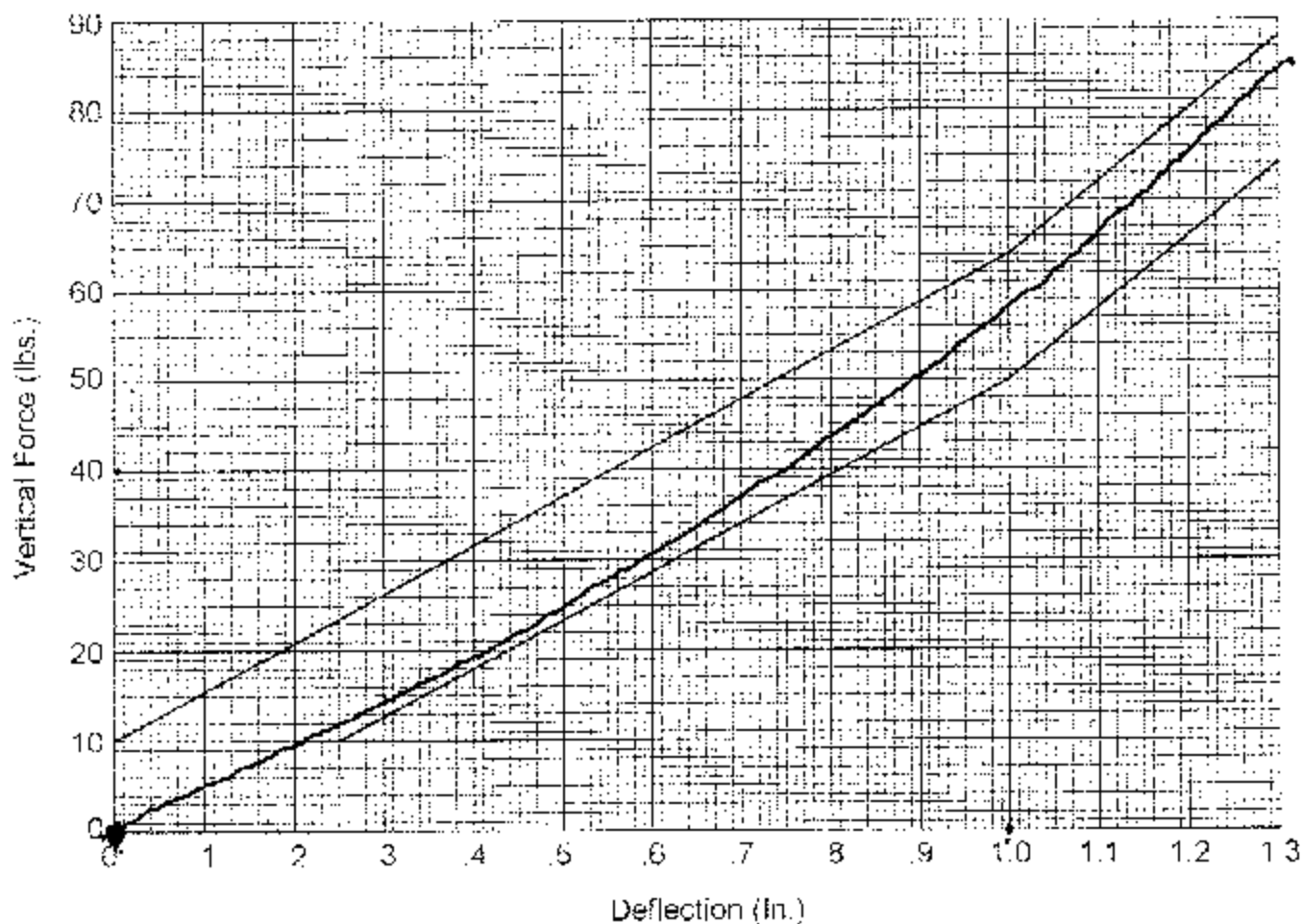
W/A _____

Date 5-7-68

Performed By [Signature]

Temp. 70°

Humidity 69%



Hybrid II
Abdomen Static Press

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

CONFIGURED FOR LEFT SIDE IMPACT

SID 113 Serial No.: 015 Sequential Test Number: 3
 Date: May 9, 2003 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.1
RELATIVE HUMIDITY (%)	10 - 70	39.0
FORCE @ 0° (N)	0 - 26.7	0
FORCE @ 20° (N)	91.8 - 151.2	111.2
FORCE @ 30° (N)	151.2 - 204.6	169.0
FORCE @ 40° (N)	204.6 - 258	218.0
RETURN ANGLE	12° max.	3.2°

REMARKS: None

Dummy S/N

015

W/A

Date

5-9-03

Performed By

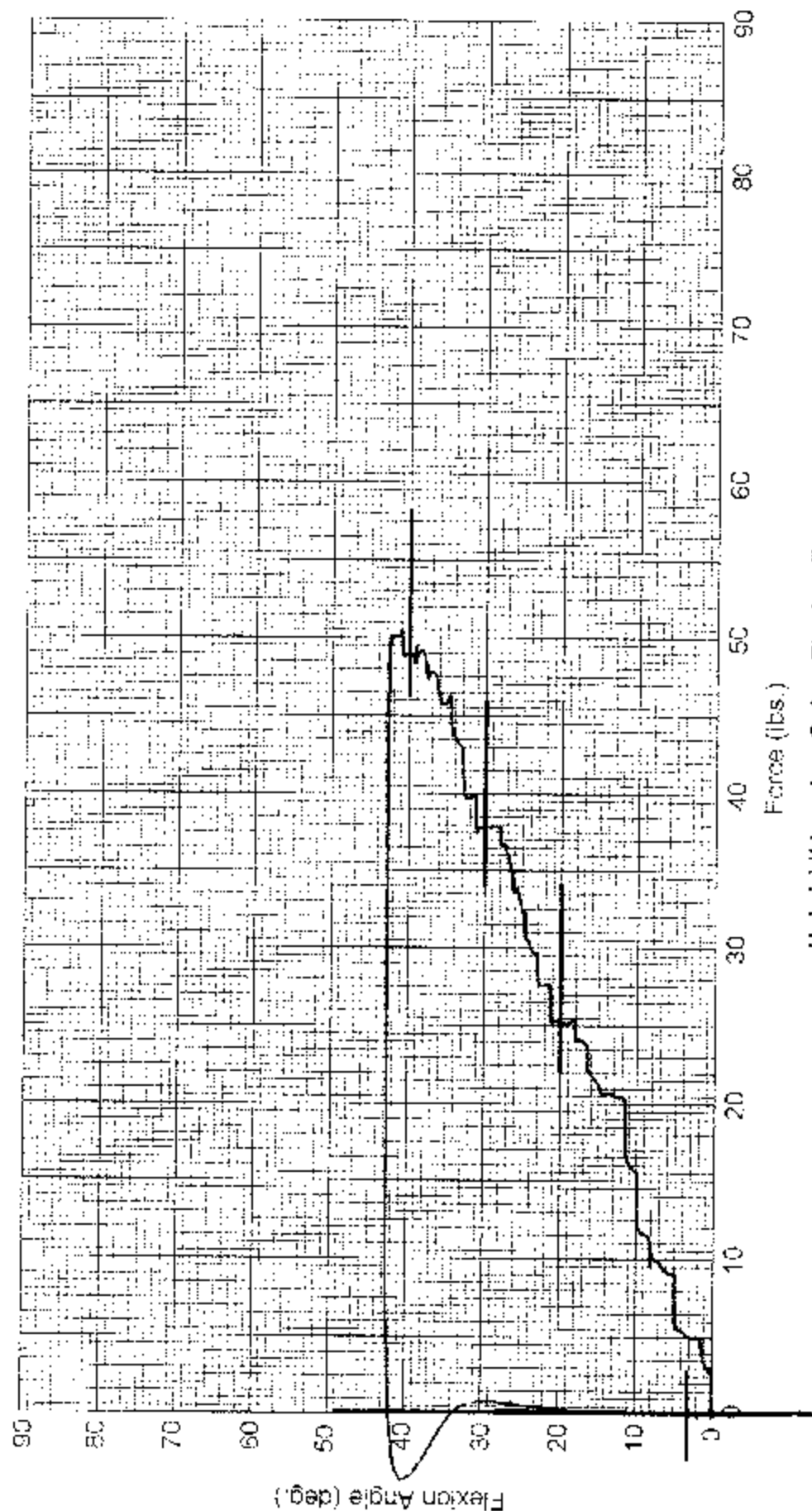
[Signature]

Temp.

70°

Humidity

54%



Hybrid II Lumbar Spine Flexion Test

PRE-TEST DUMMY INSPECTION LIST
CONFIGURED FOR LEFT SIDE IMPACT

S10 IT3 Serial No.: 015

Date: May 9, 2003

Sequential Test Number:

Laboratory Technician:

3

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
PILVIS	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 HD NO.: 016

CONFIGURED FOR LEFT SIDE IMPACT

**CALIBRATION TEST RESULTS SUMMARY
PRE-TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID H3 Serial No.: 016 Sequential Test Number: 3
 Date: May 9, 2003 Laboratory Technician: B. Swiecicki

TEST	COMMENTS
EXTERNAL DIMENSIONS	Passed all requirements.
THORACIC SHOCK ABSORBER TEST	Passed all requirements.
LATERAL THORAX IMPACT TEST	Passed all requirements.
LATERAL PELVIS IMPACT TEST	Passed all requirements.
HEAD DROP TEST*	Passed all requirements.
LATERAL NECK BEND 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 H3 Serial No.: 016 Sequential Test Number: 3
 Date: May 9, 2003 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
SH- Seated Height (mm)	889 - 909	902
RH- Rib Height (mm)	502 - 520	513
HP- Hip Pivot Height (mm)	99 ref.	99
RD- Rili from Back Line (mm)	229 - 241	239
KH- Knee Pivot from Back Line (mm)	511 - 526	521
KV- Knee Pivot to Floor (mm)	490 - 505	495
HW- Hip Width (mm)	356 - 391	371

REMARKS: None

**THORACIC SHOCK ABSORBER TESTS
PRE-TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID H3 Serial No.: 016 Sequential Test Number: 3
 Date: April 25, 2003 Laboratory Technician: B. Swiecicki

DAMPER IDENTIFICATION: 016

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)		18.9 - 25.5	21.1
RELATIVE HUMIDITY (%)		10 - 70	40.0
VELOCITY 3.05 m/s	FORCE (N)	836 - 1125	934.7
	DISPLACEMENT (mm)	30 - 35	31.7
VELOCITY 4.27 m/s	FORCE (N)	1730 - 2099	1867.3
	DISPLACEMENT (mm)	32 - 37	34.9
VELOCITY 6.10 m/s	FORCE (N)	3741 - 4448	4438.7
	DISPLACEMENT (mm)	33 - 40	37.6

DAMPER SETTING: 5

REMARKS: None

Shock Low at 3.05 m/s

Low Part 572F Shock Absorber Impact

Calibration Date: 04-25-03

Serial No: 016

Work File: 016SL1 04-25-03

TEST RESULTS

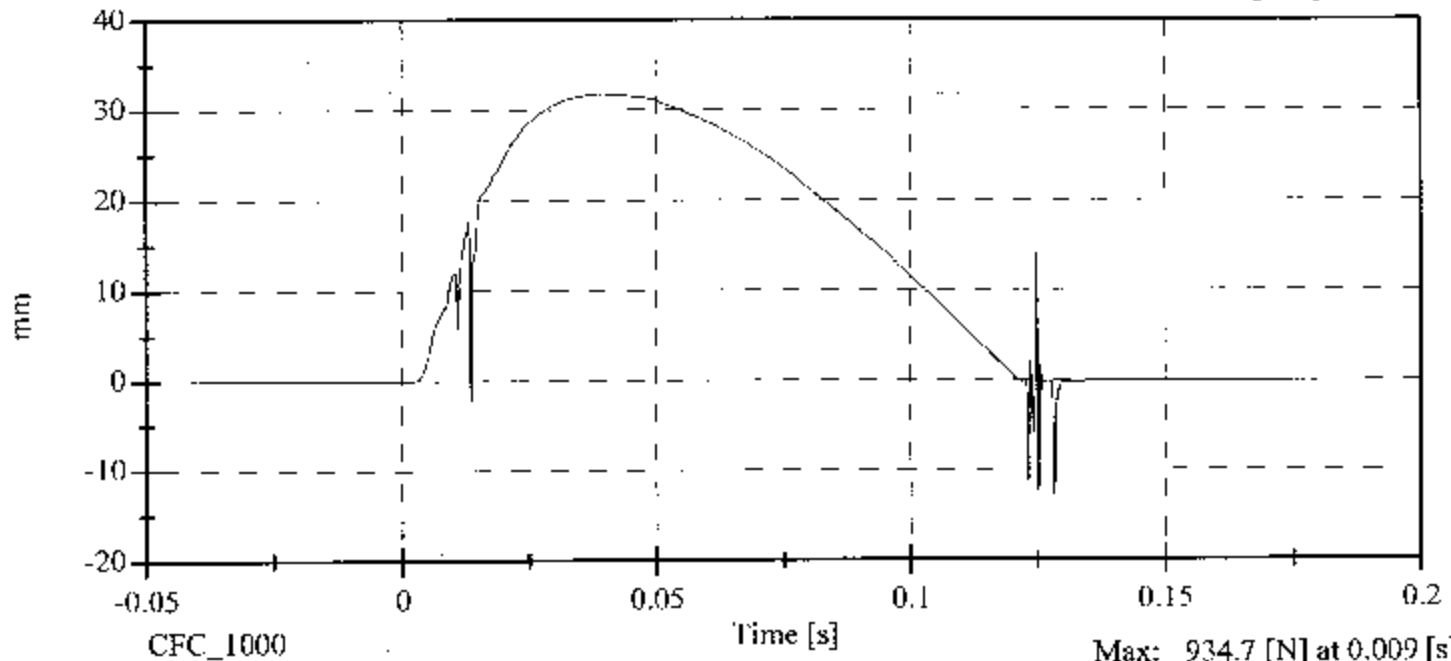
TEST CONDITION	PARAMETERS	RESULTS	STATUS
Lab Temperature:	18.9-25.5 C	21.1 C	Passed
Lab Humidity:	10-70 %	40.00 %	Passed
Displacement:	30.00-35.00 mm	31.65 mm	Passed
Maximum Force:	836.00-1125.00 N	934.69 N	Passed

Shock Low

Displacement vs. Time

Max: 31.6 [mm] at 0.037 [s]

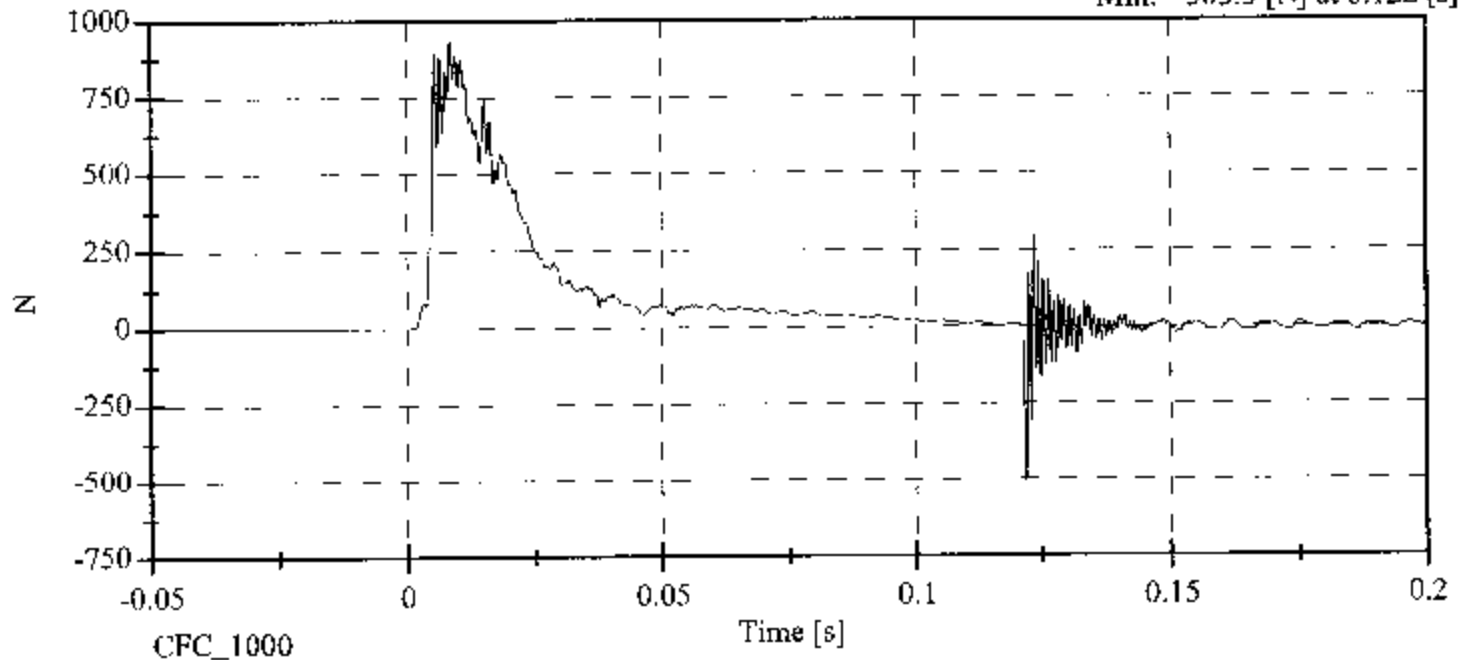
Min: -12.8 [mm] at 0.128 [s]



Shock Force vs. Time

Max: 934.7 [N] at 0.009 [s]

Min: -505.3 [N] at 0.122 [s]



Shock Med at 4.27 m/s

Medium Part 572F Shock Absorber Impact

Calibration Date: 04-25-03

Serial No: 016

Work File: 016SM 04-25-03

TEST RESULTS

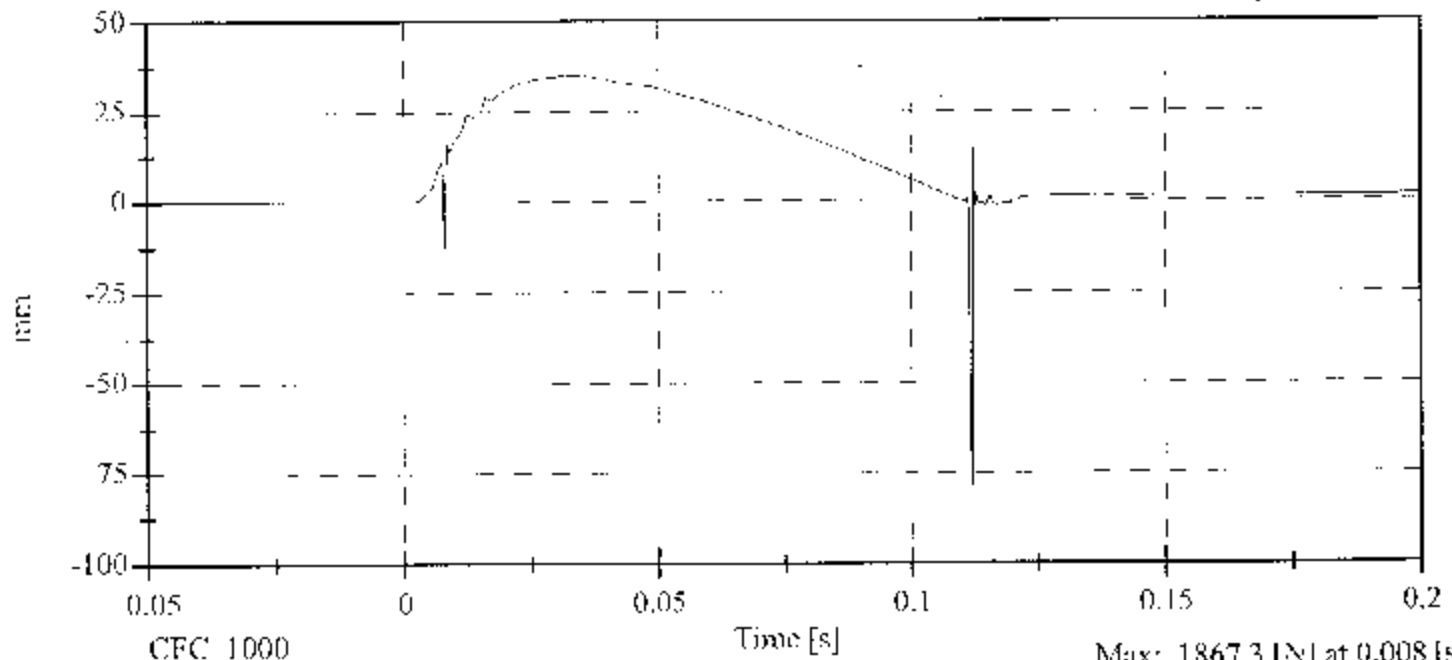
TEST CONDITION	PARAMETERS	RESULTS	STATUS
Lab Temperature:	18.9-25.5 C	21.1 C	Passed
Lab Humidity:	10-70 %	40.00 %	Passed
Displacement:	32.00-37.00 mm	34.91 mm	Passed
Maximum Force:	1730.00-2099.00 N	1867.29 N	Passed

Shock Med

Displacement vs. Time

Max: 34.9 [mm] at 0.033 [s]

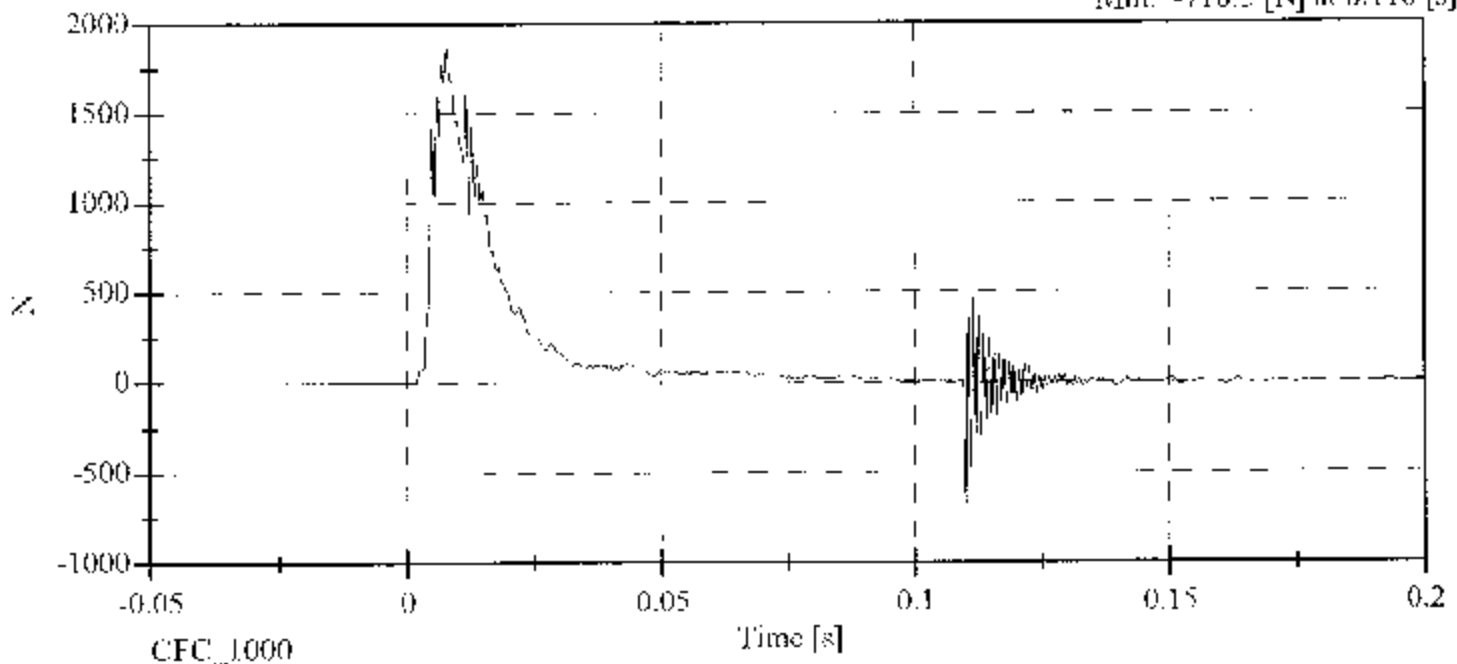
Min: -79.4 [mm] at 0.112 [s]



Shock Force vs. Time

Max: 1867.3 [N] at 0.008 [s]

Min: -710.5 [N] at 0.110 [s]



Shock High at 6.10 m/s

High Part 572F Shock Absorber Impact

Calibration Date: 04-25-03

Serial No: 016

Work File: 016SIJ2 04-25-03

TEST RESULTS

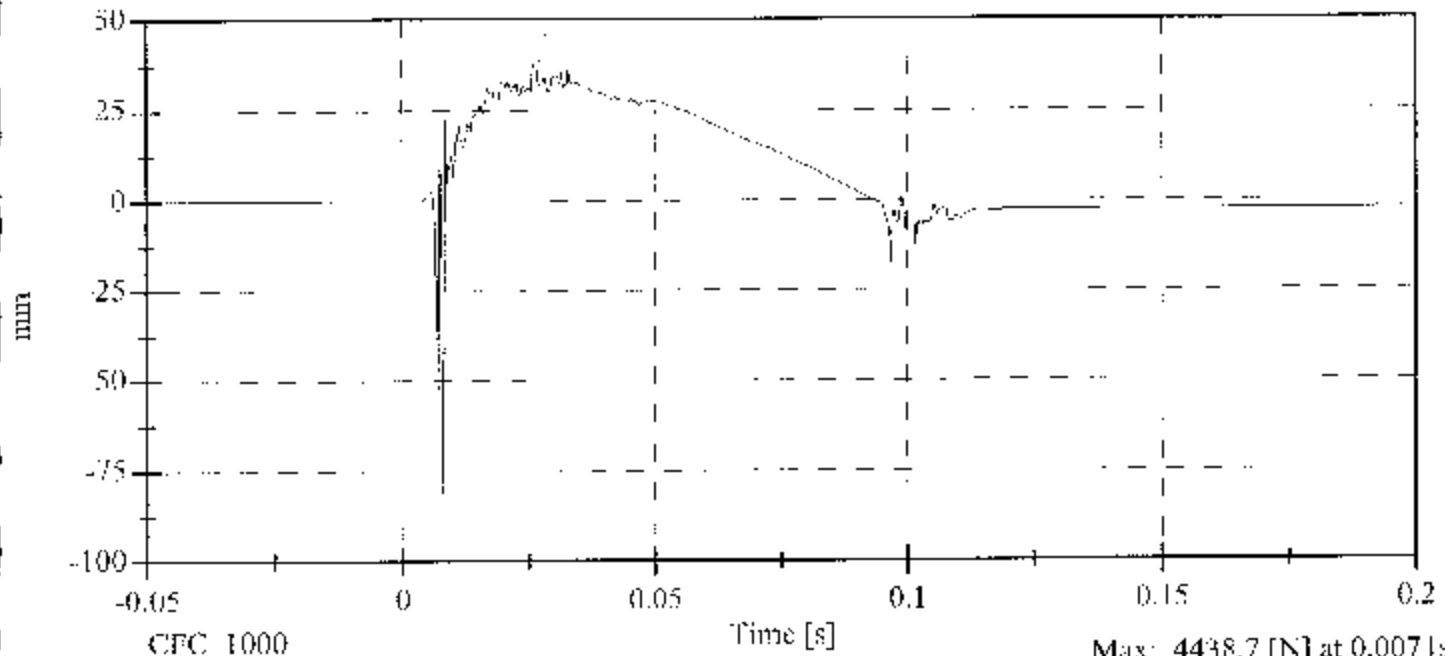
TEST CONDITION	PARAMETERS	RESULTS	STATUS
Lab Temperature:	18.9-25.5 C	21.1 C	Passed
Lab Humidity:	10-70 %	40.00 %	Passed
Displacement:	33.00-40.00 mm	37.56 mm	Passed
Maximum Force:	3741.00-4448.00 N	4438.69 N	Passed

Shock High

Displacement vs. Time

Max: 37.6 [mm] at 0.026 [s]

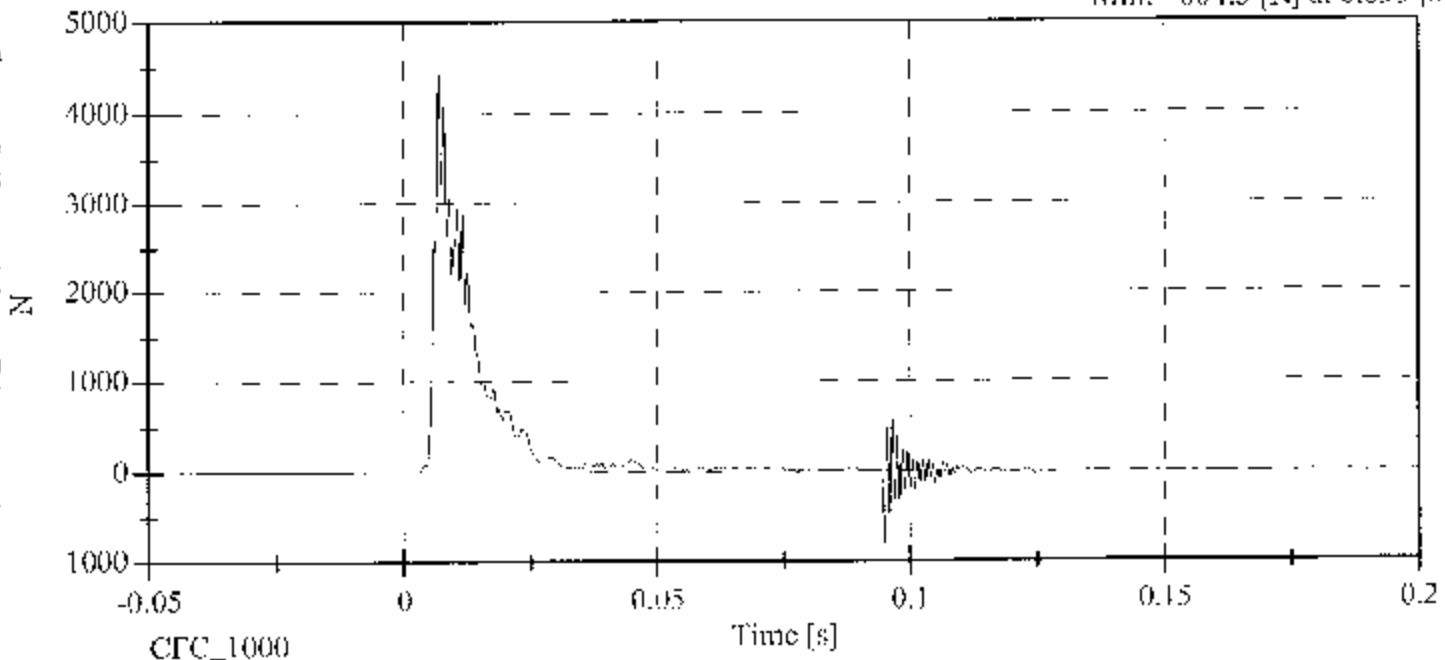
Min: -85.8 [mm] at 0.008 [s]



Shock Force vs. Time

Max: 4438.7 [N] at 0.007 [s]

Min: -804.5 [N] at 0.095 [s]



LATERAL THORAX IMPACT TEST PRE-TEST

CONFIGURED FOR LEFT SIDE IMPACT

SID II3 Serial No.: 016 Sequential Test Number: 3
Date: May 9, 2003 Laboratory Technician: B. Swiatkowski

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.1
RELATIVE HUMIDITY (%)	10 - 70	38.00
PROBE SPEED (m/s)	4.27 - 4.33	4.28
UPPER RIB (g's)	37 - 46	43.08
LOWER RIB (g's)	37 - 46	38.62
LOWER SPINE (g's)	15 - 22	21.20

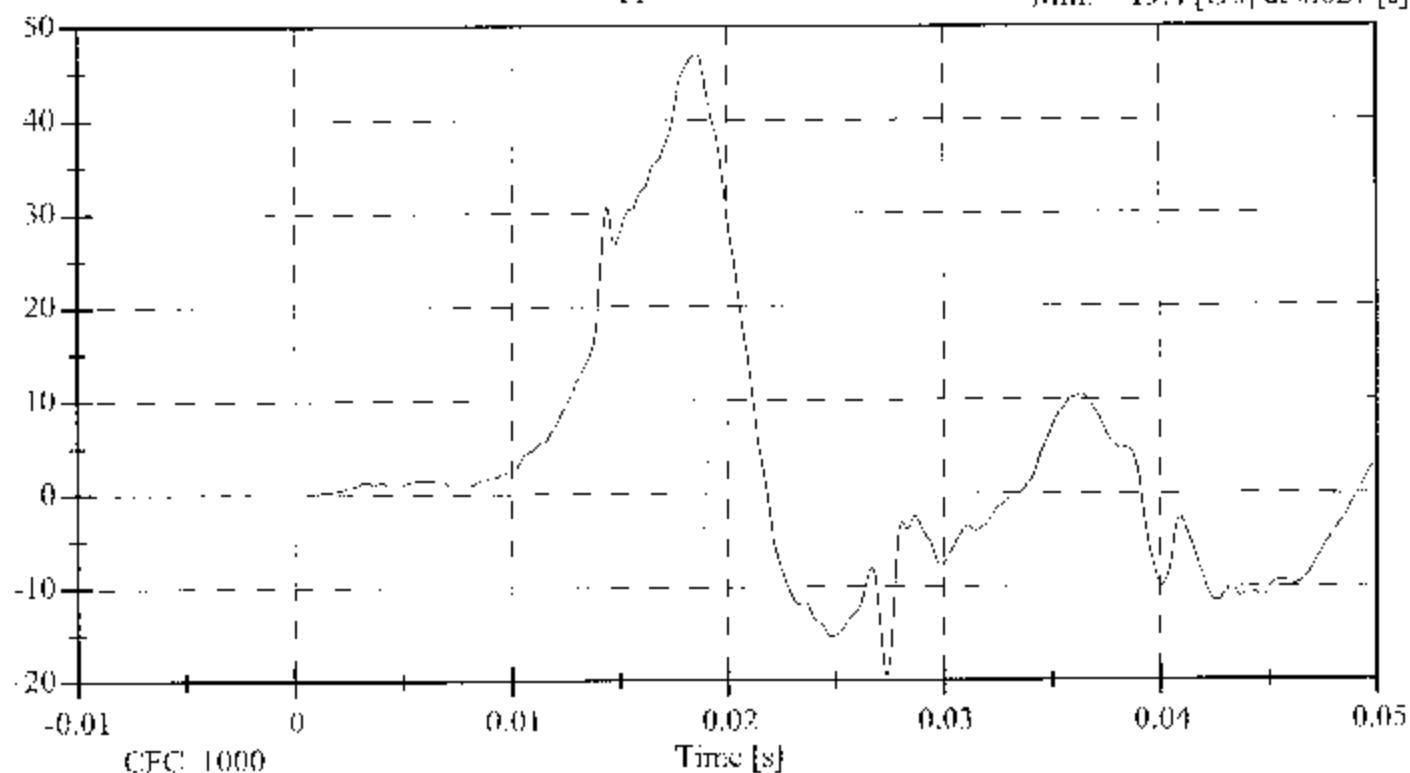
REMARKS: None

Thorax Impact

Upper Rib Y Acceleration

Max: 47.1 [G's] at 0.019 [s]

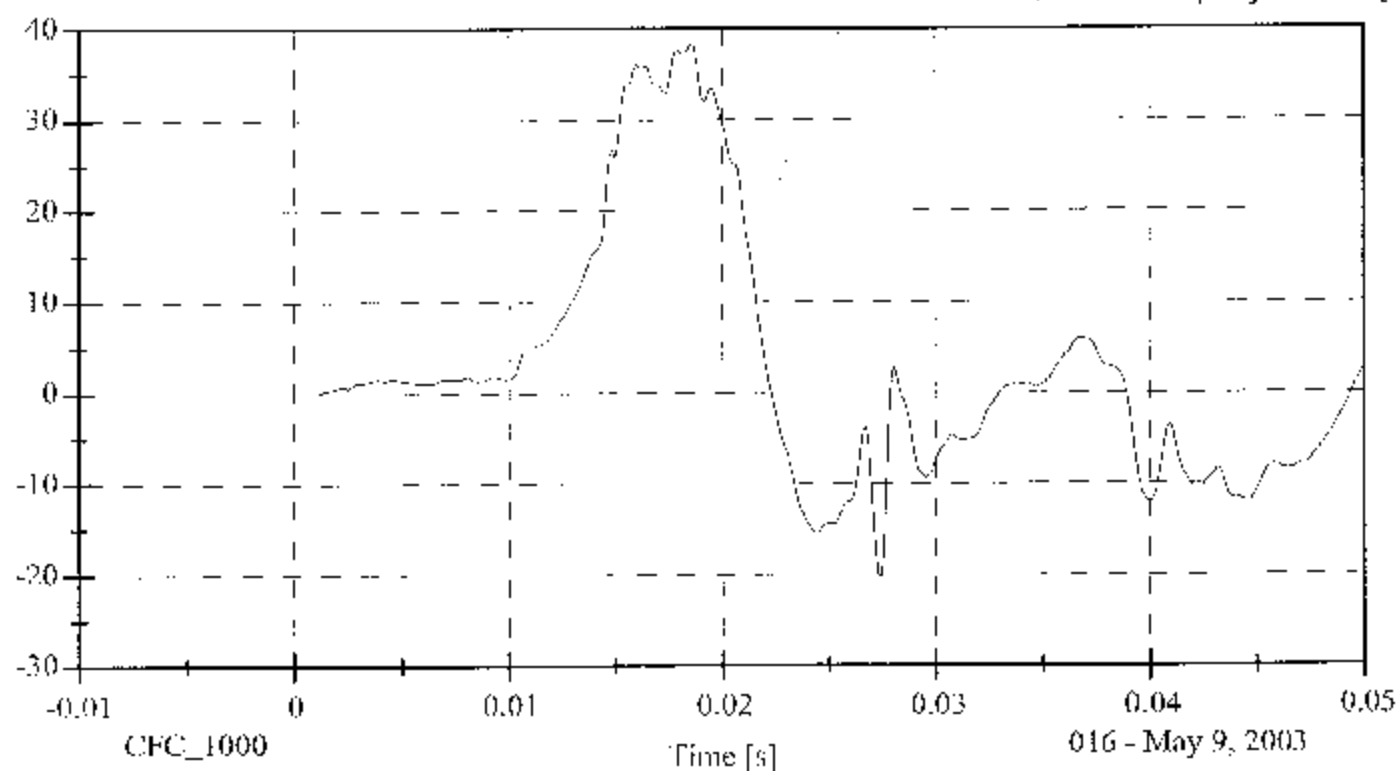
Min: -19.4 [G's] at 0.027 [s]



Lower Rib Y Acceleration

Max: 38.4 [G's] at 0.019 [s]

Min: -20.3 [G's] at 0.027 [s]

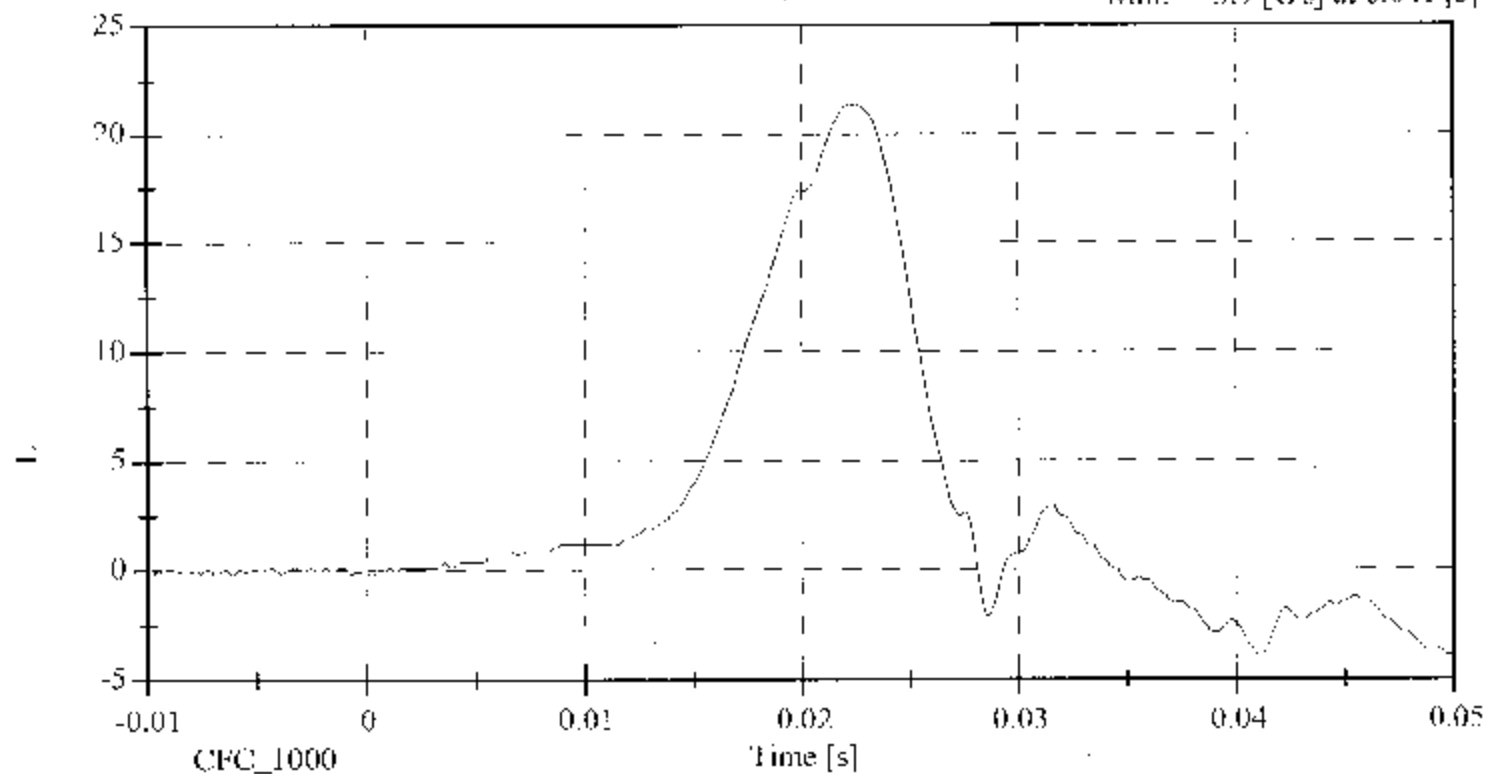


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Lower Spine Y Acceleration

Max: 21.4 [G's] at 0.023 [s]

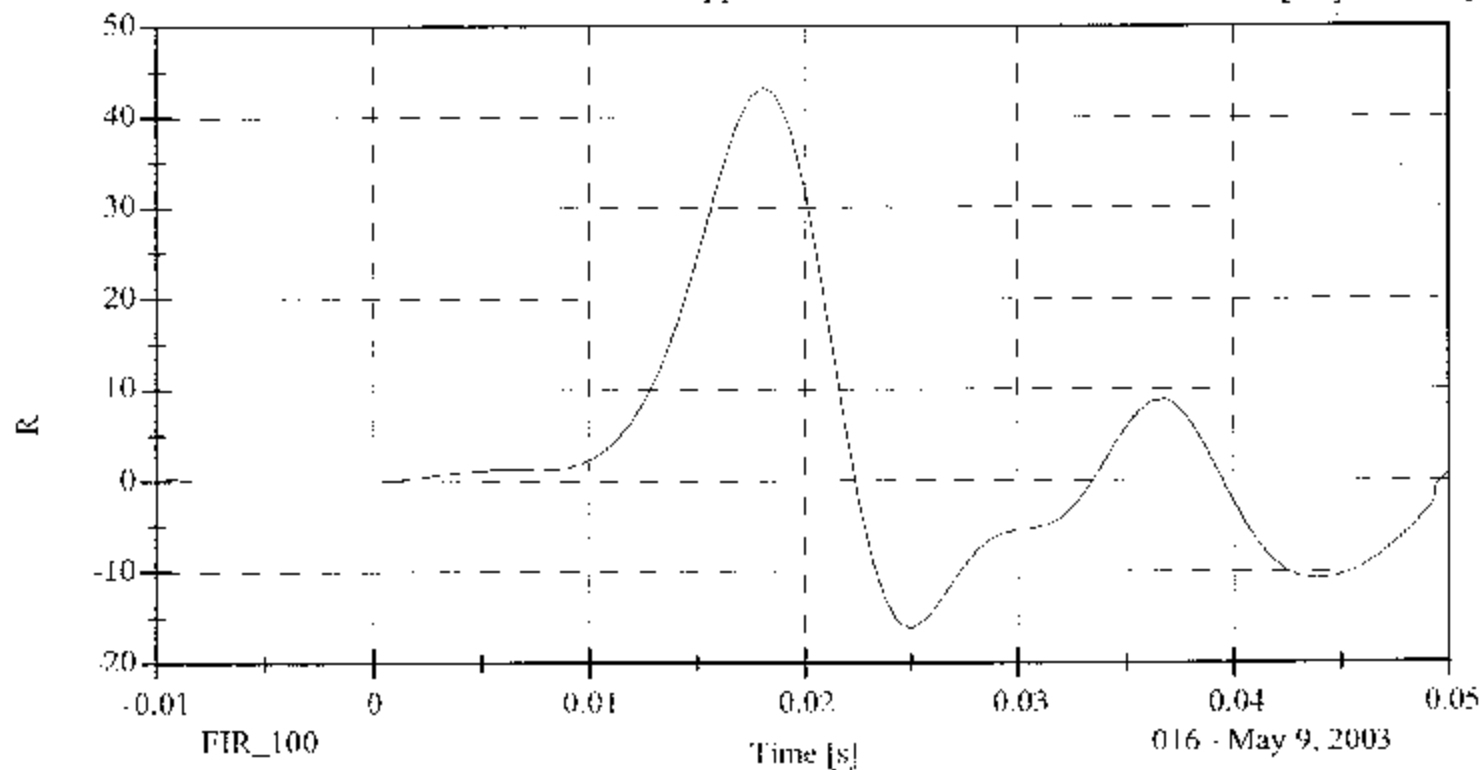
Min: -3.9 [G's] at 0.041 [s]



Upper Rib Y Acceleration

Max: 43.3 [G's] at 0.018 [s]

Min: -16.3 [G's] at 0.025 [s]

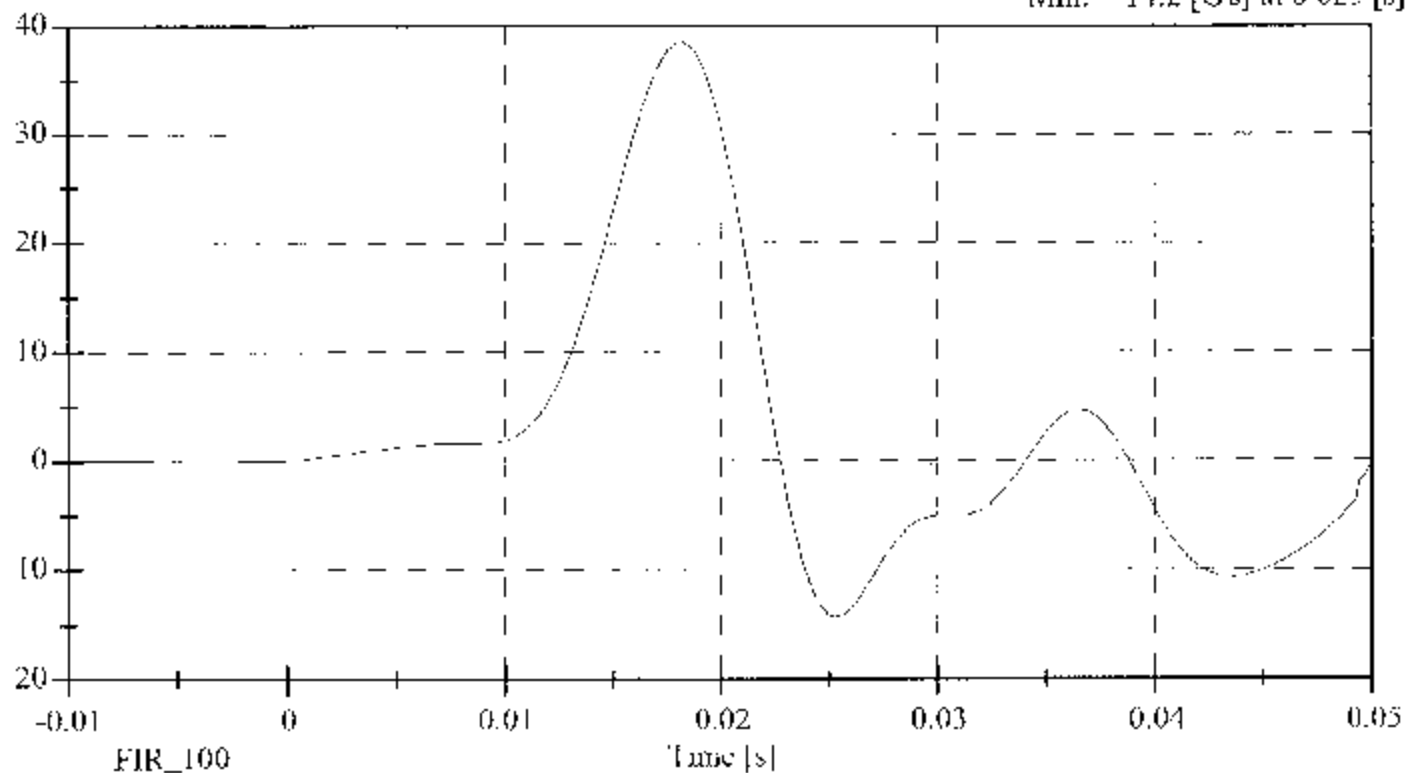


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Lower Rib Y Acceleration

Max: 38.6 [G's] at 0.018 [s]

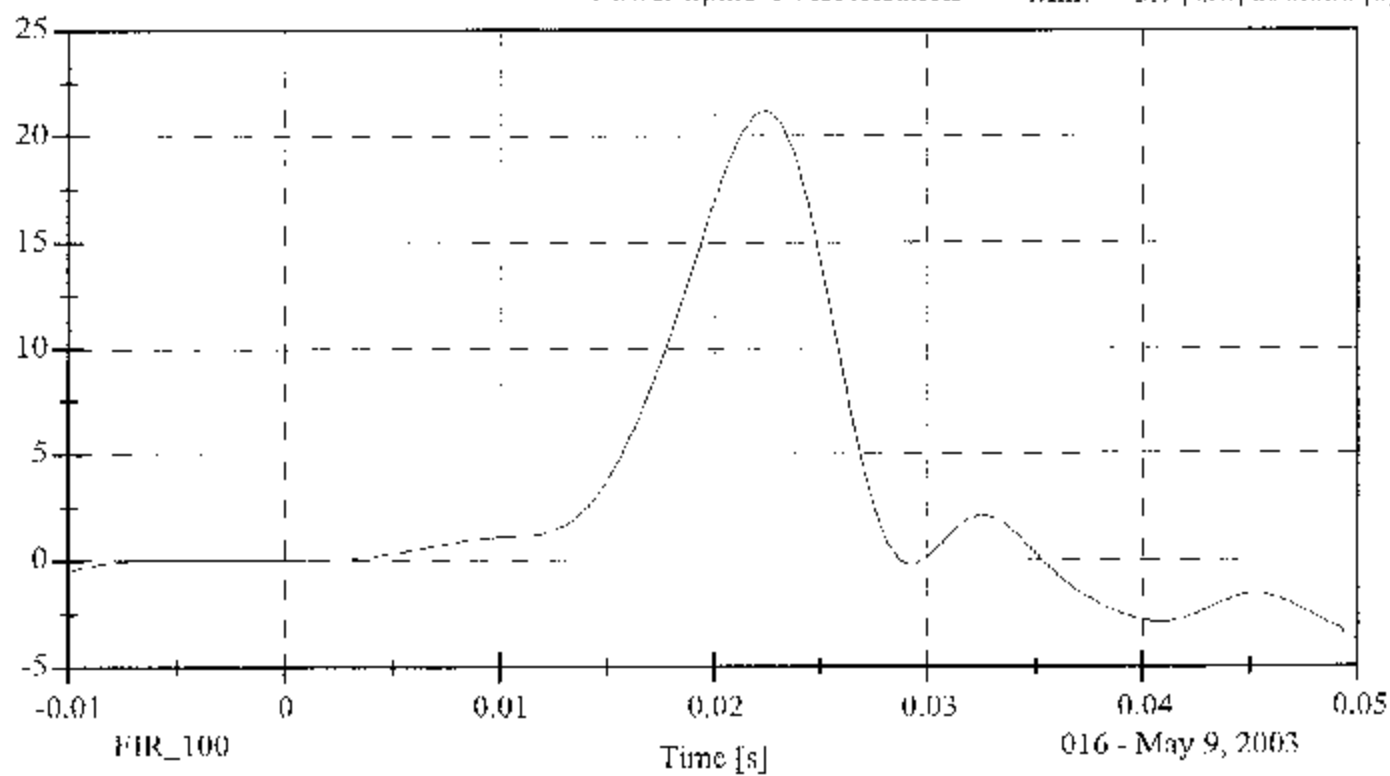
Min: -14.2 [G's] at 0.025 [s]



Lower Spine Y Acceleration

Max: 21.2 [G's] at 0.023 [s]

Min: -3.7 [G's] at 0.050 [s]



016 - May 9, 2003

LATERAL PELVIS IMPACT TEST
PRE-TEST

CONFIGURED FOR LEFT SIDE IMPACT

SID H3 Serial No.: 016 Sequential Test Number: 3
Date: May 9, 2003 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.1
RELATIVE HUMIDITY (%)	10 - 70	38.00
PROBE SPEED (m/s)	4.27 - 4.33	4.27
PELVIS ACCELERATION (g's)	40 - 60	42.12

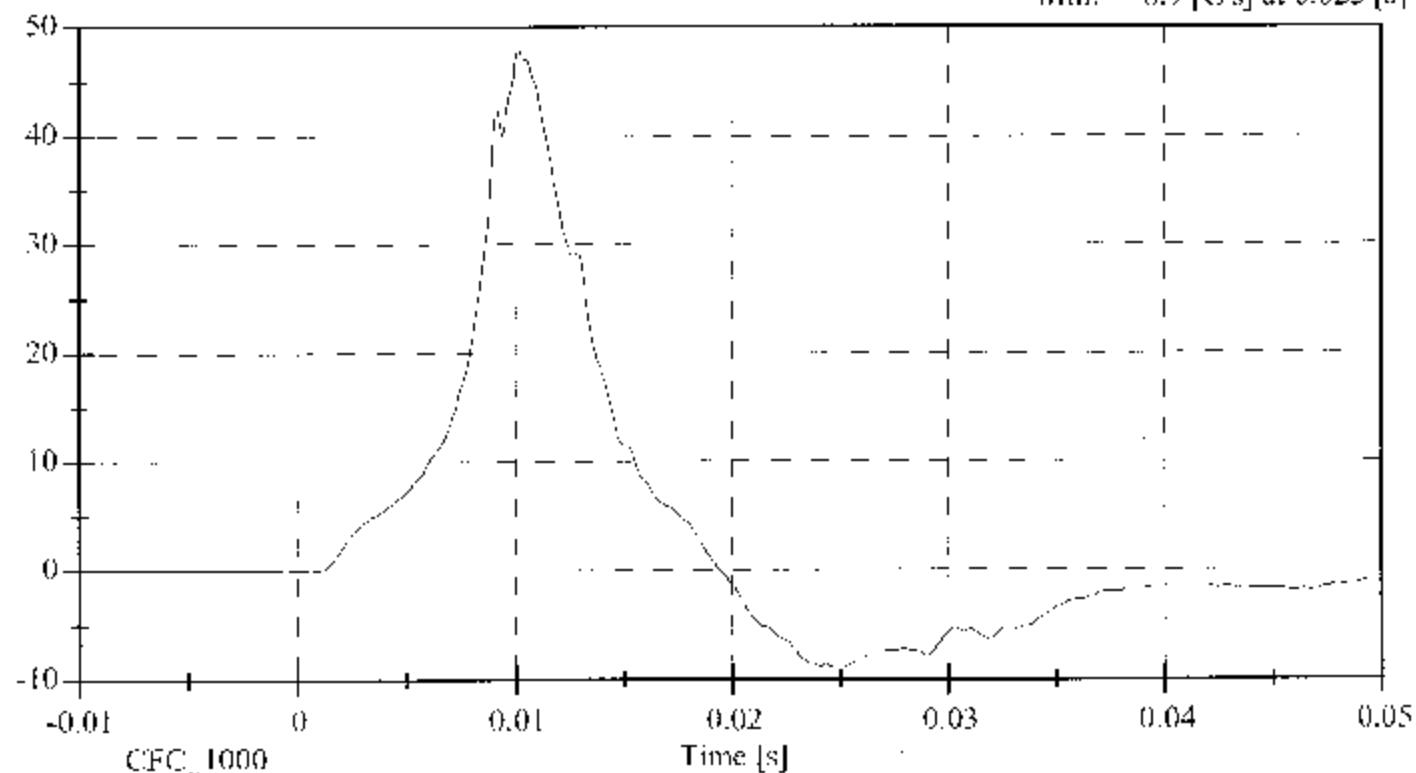
REMARKS: None

Pelvic Impact

Pelvis Acceleration

Max: 47.9 [G's] at 0.010 [s]

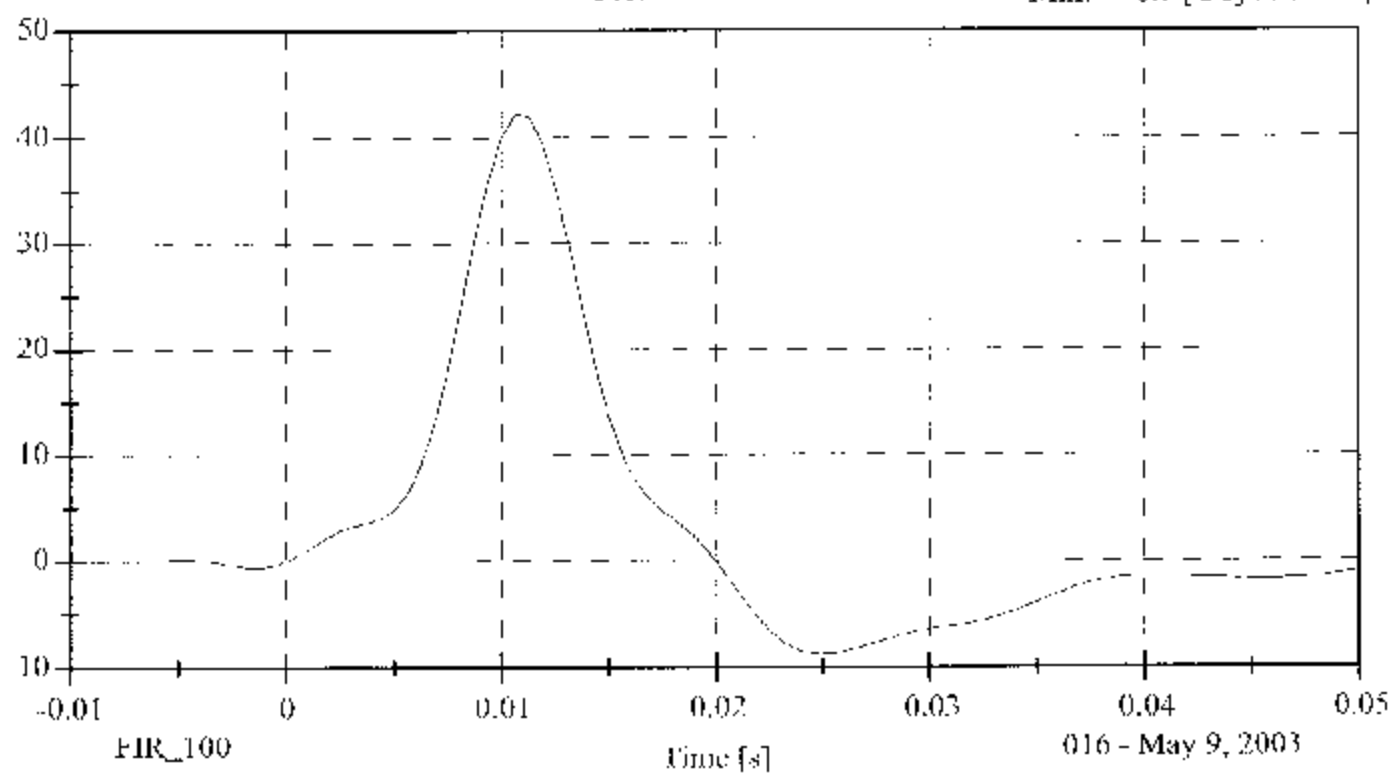
Min: -8.9 [G's] at 0.025 [s]



Pelvis Y Acceleration

Max: 42.1 [G's] at 0.011 [s]

Min: -8.8 [G's] at 0.025 [s]



016 - May 9, 2003

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

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 016 Sequential Test Number: 3
Date: May 7, 2003 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	20.6 – 22.2	21.1
RELATIVE HUMIDITY (%)	60 – 70	33.00
PEAK RESULTANT ACCELERATION (Gs)	120 – 150	131.66
PEAK LATERAL ACCELERATION (Gs)	Not to Exceed 15	11.27
CURVE PERCENT NONMODAL (%)	< 15	2.67

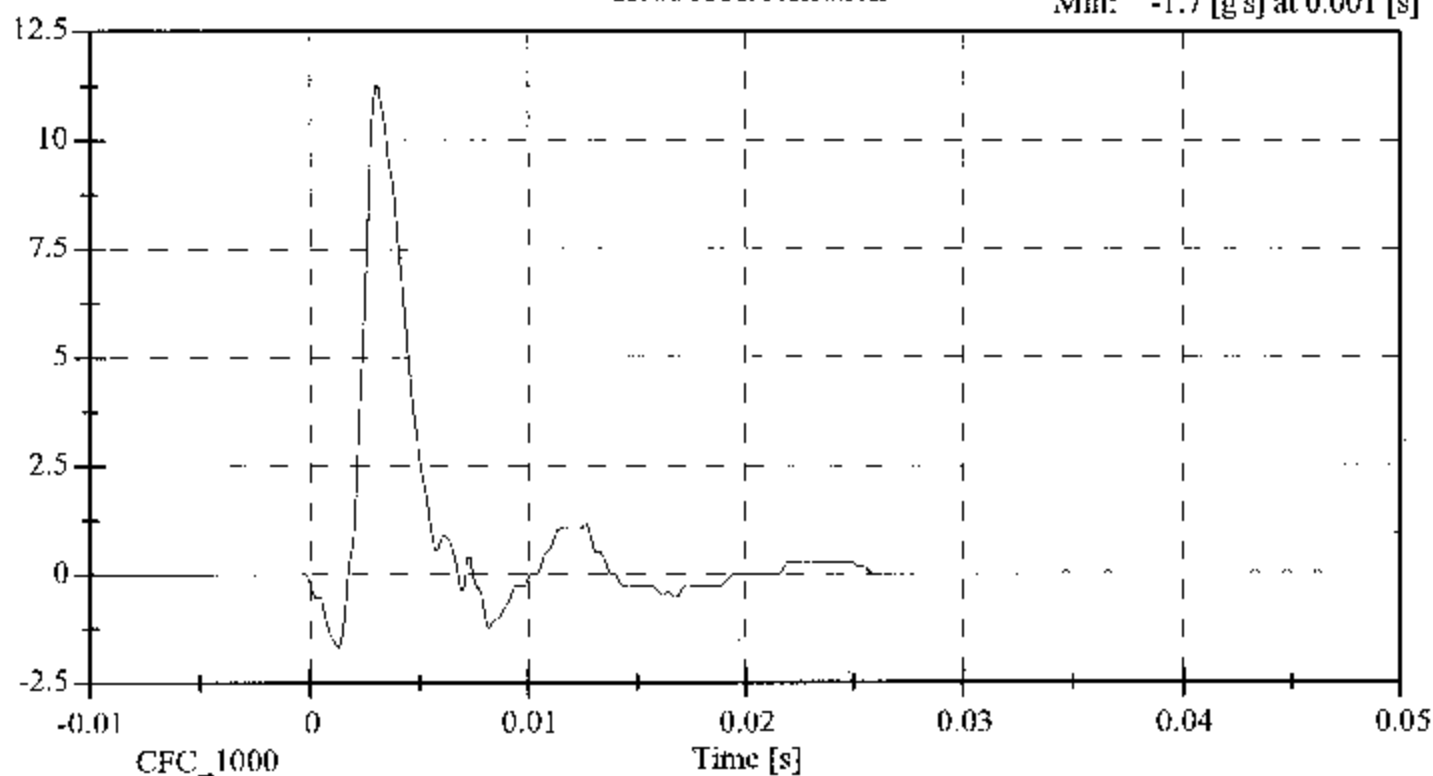
REMARKS: None

Head Drop

Head X Acceleration

Max: 11.3 [g's] at 0.003 [s]

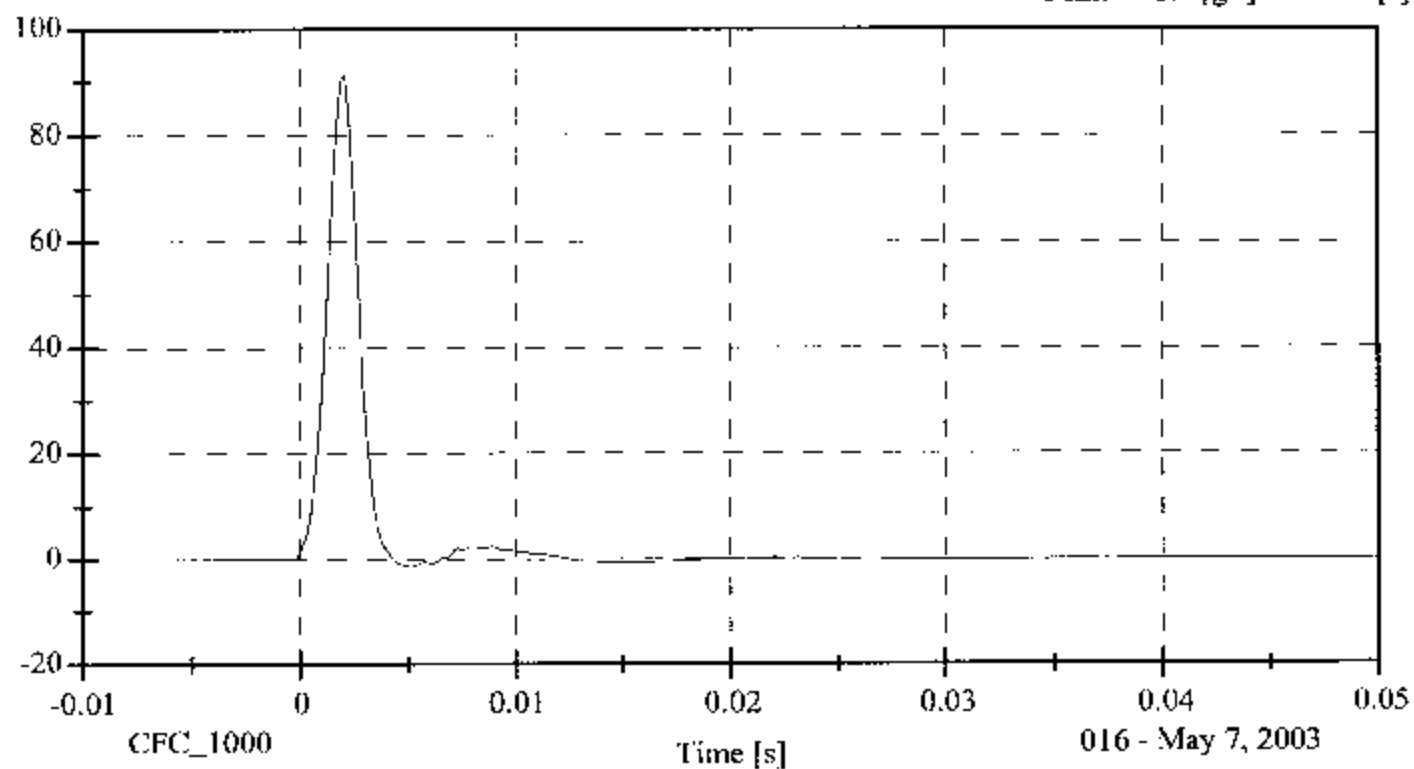
Min: -1.7 [g's] at 0.001 [s]



Head Y Acceleration

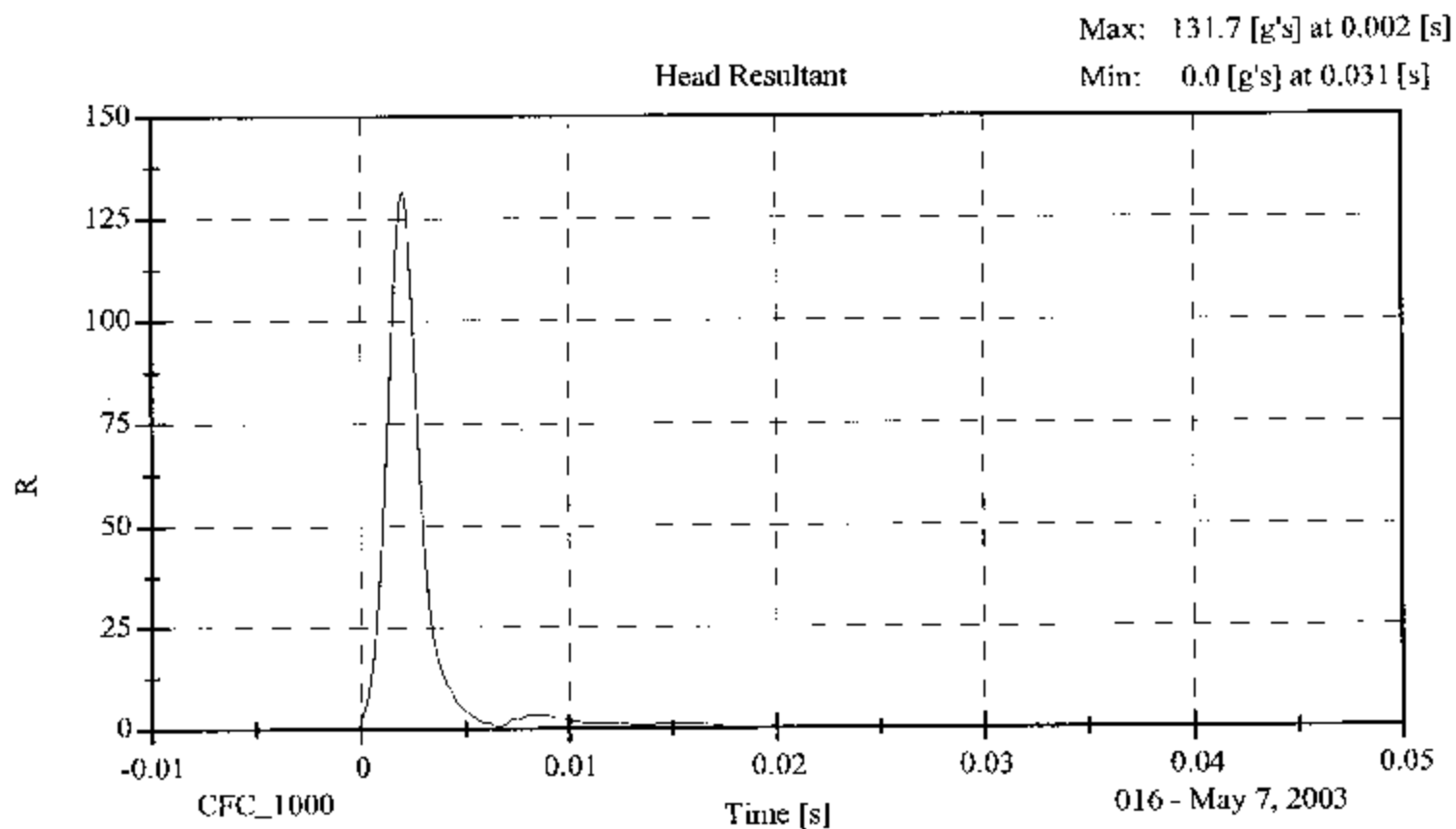
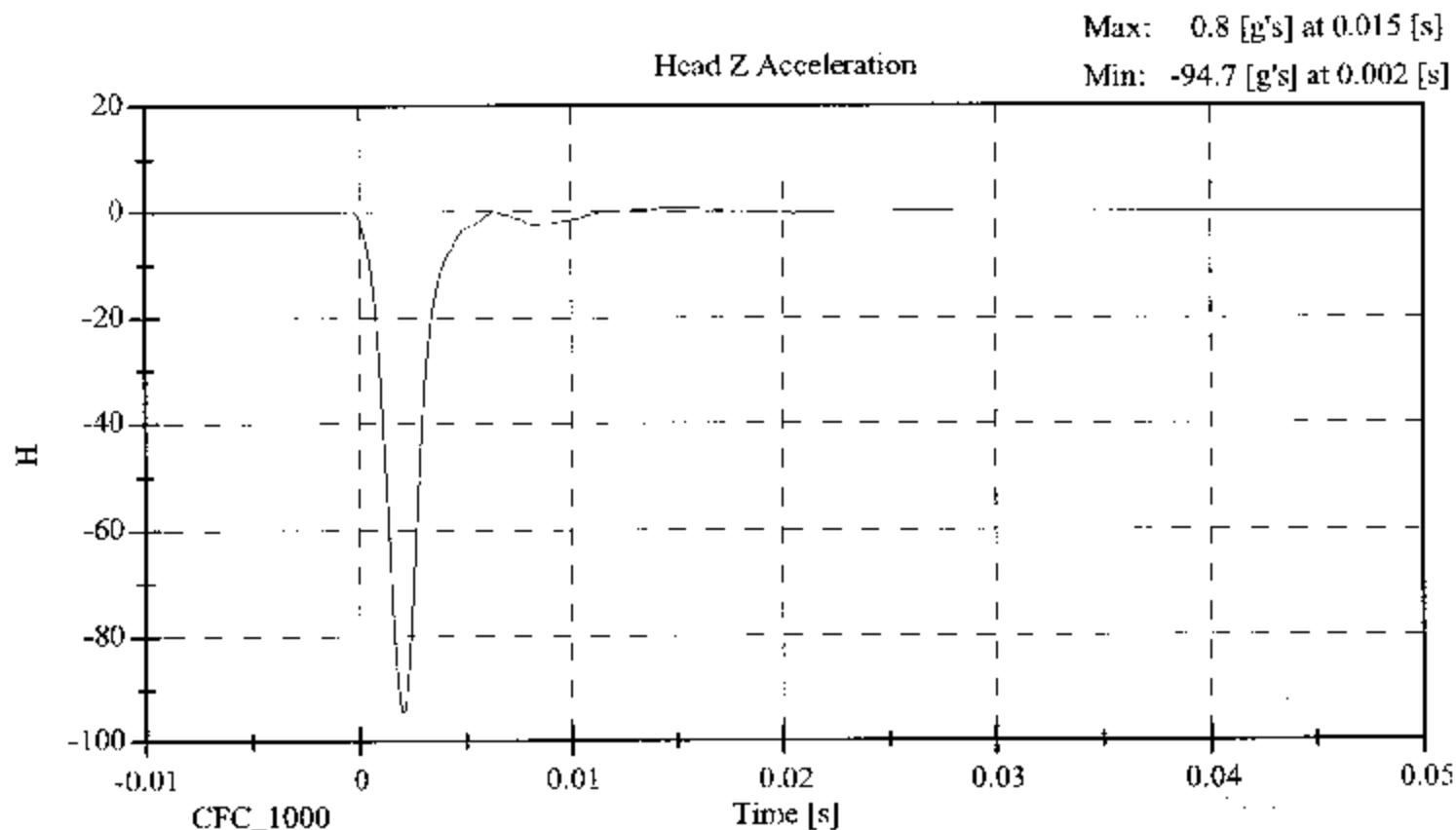
Max: 91.4 [g's] at 0.002 [s]

Min: -1.4 [g's] at 0.005 [s]



016 - May 7, 2003

Head Drop



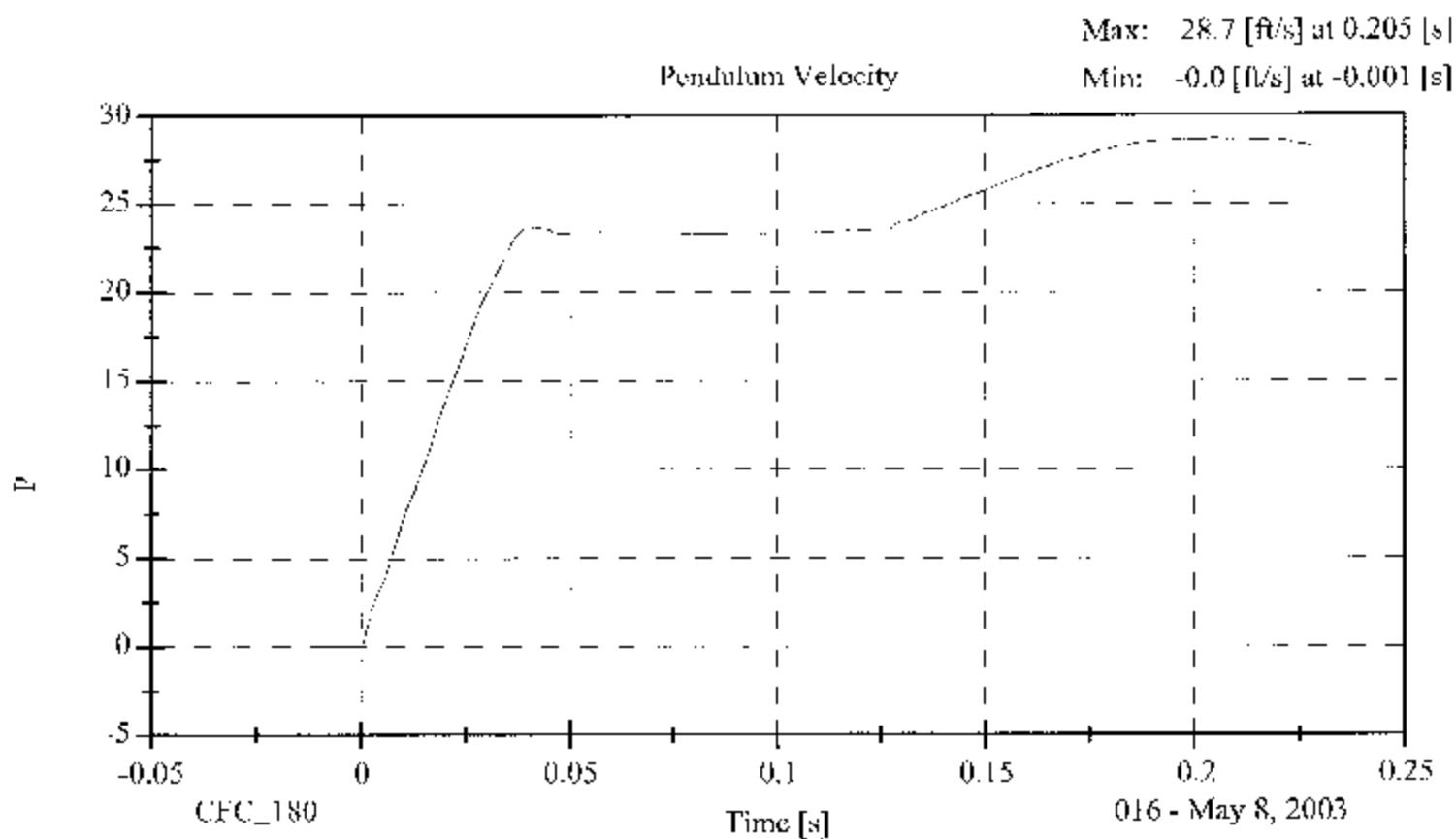
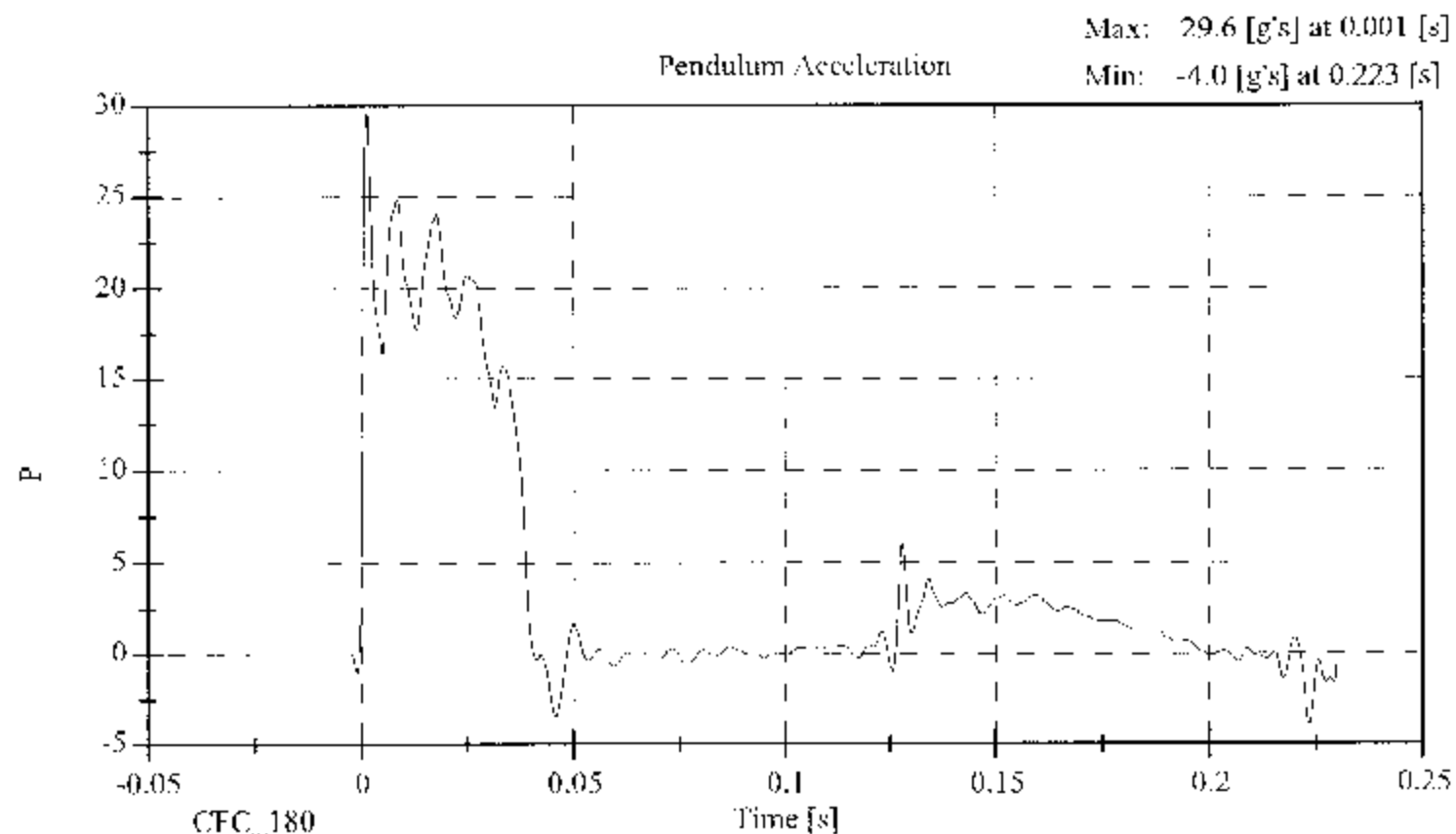
(Test not required for STD certification)

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 016	Sequential Test Number: 3
Date: May 8, 2003	Laboratory Technician: B. Swirecki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	20.6 - 22.2	21.1
RELATIVE HUMIDITY (%)	10 - 70	33.0
IMPACT VELOCITY (m/s)	6.89 - 7.13	6.90
PENDULUM DELTA V		
DELTA V @ 10 ms (m/s)	1.96 - 2.55	2.14
DELTA V @ 20 ms (m/s)	4.12 - 5.10	4.20
DELTA V @ 30 ms (m/s)	5.93 - 7.01	6.07
DELTA V @ 40-70 ms (m/s)	6.37 - 7.64	7.21
D PLANE ROTATION		
MAXIMUM ROTATION (deg)	61 - 78	73.66
ROT. ANGLE TIME to ZERO (ms)	50 - 70	61.50
MOMENT ABOUT THE OCCIPITAL CONDYLE		
MAX OCCIPITAL MOMENT (Nm)	88 - 108	88.11
OCCIPITAL MOMENT DECAY (ms)	40.0 - 60.0	52.10
HEAD ROTATION TIME WITH RESPECT TO THE OCCIPITAL CONDYLE MOMENT		
ROTATION wrt MOMENT (ms)	0 - 20	10.10

REMARKS: None

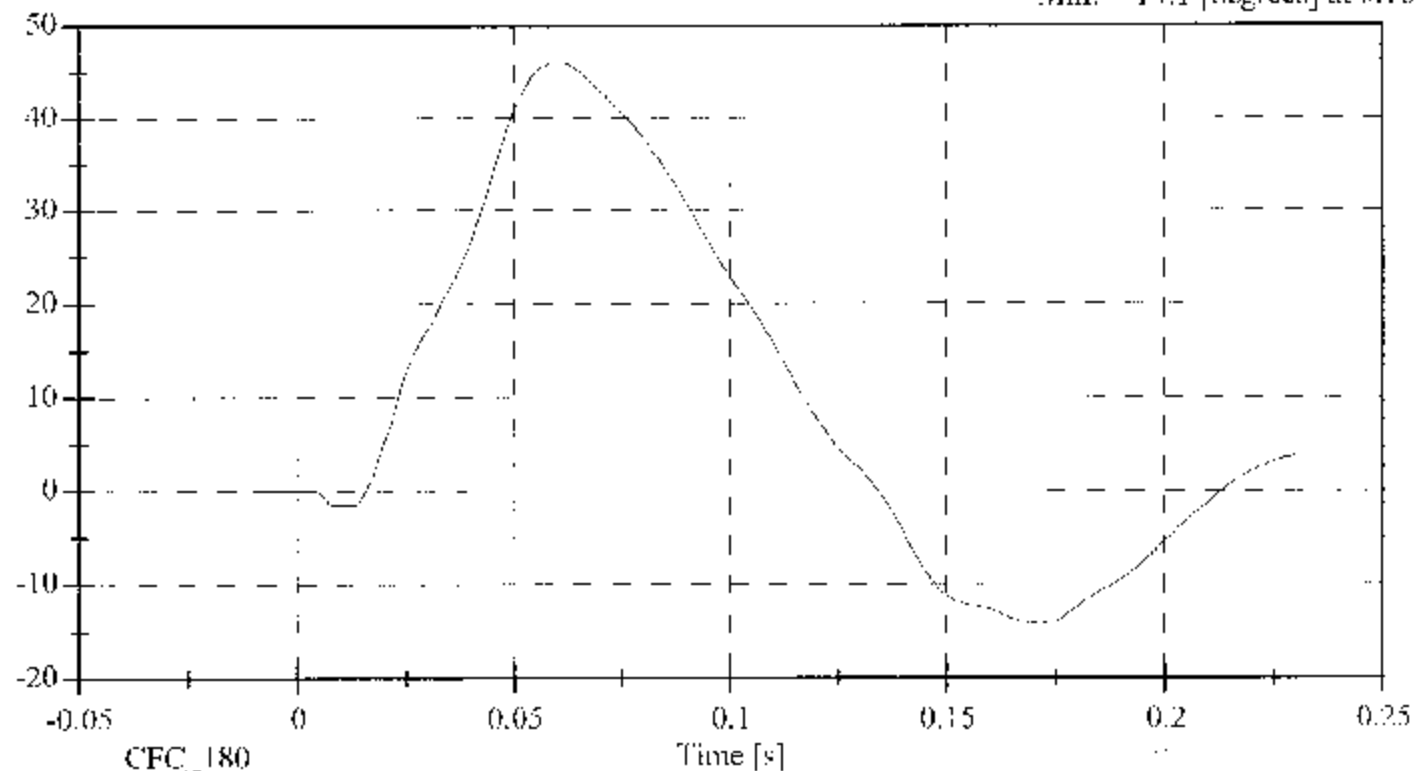


Neck Test

Head Rotation

Max: 46.0 [degrees] at 0.060

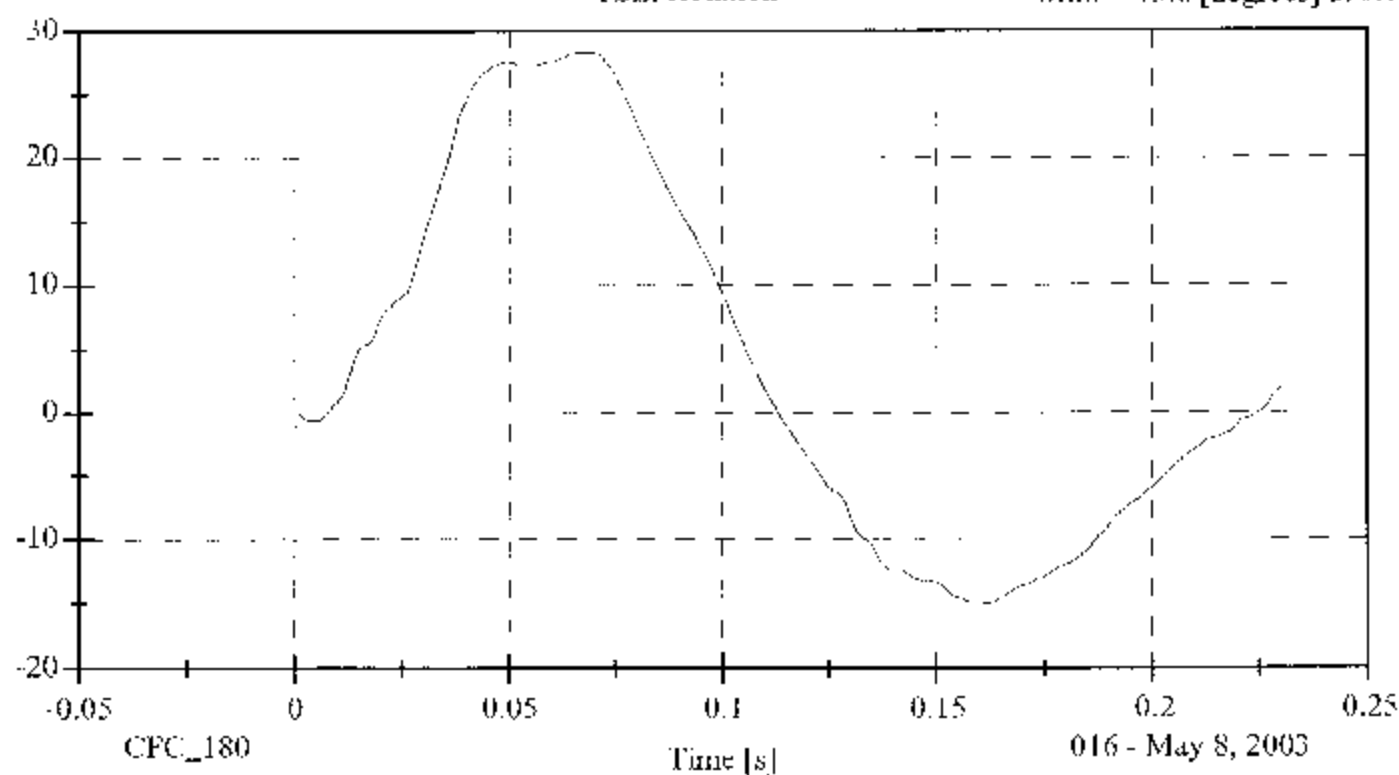
Min: -14.1 [degrees] at 0.169



Arm Rotation

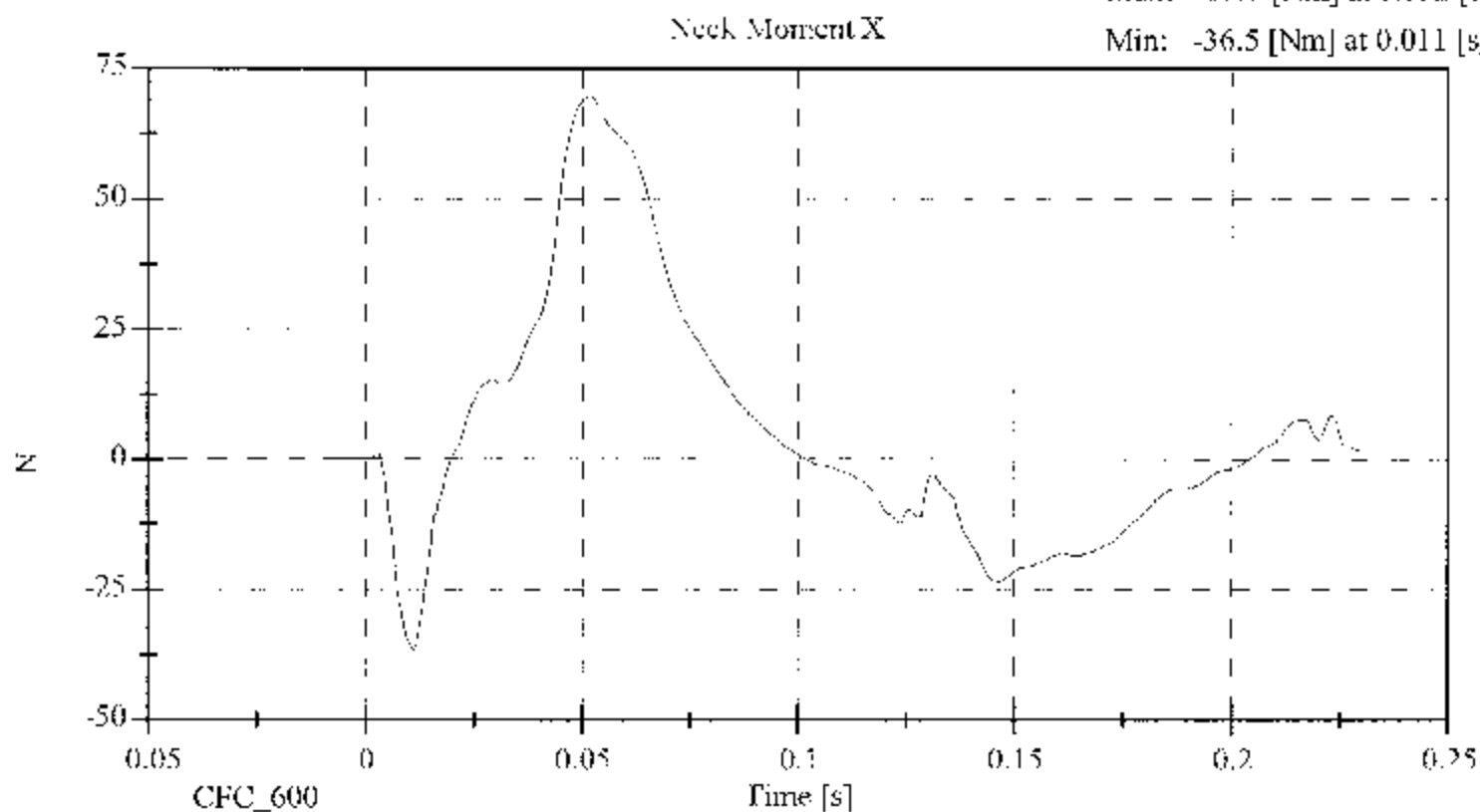
Max: 28.3 [degrees] at 0.067

Min: -15.0 [degrees] at 0.162



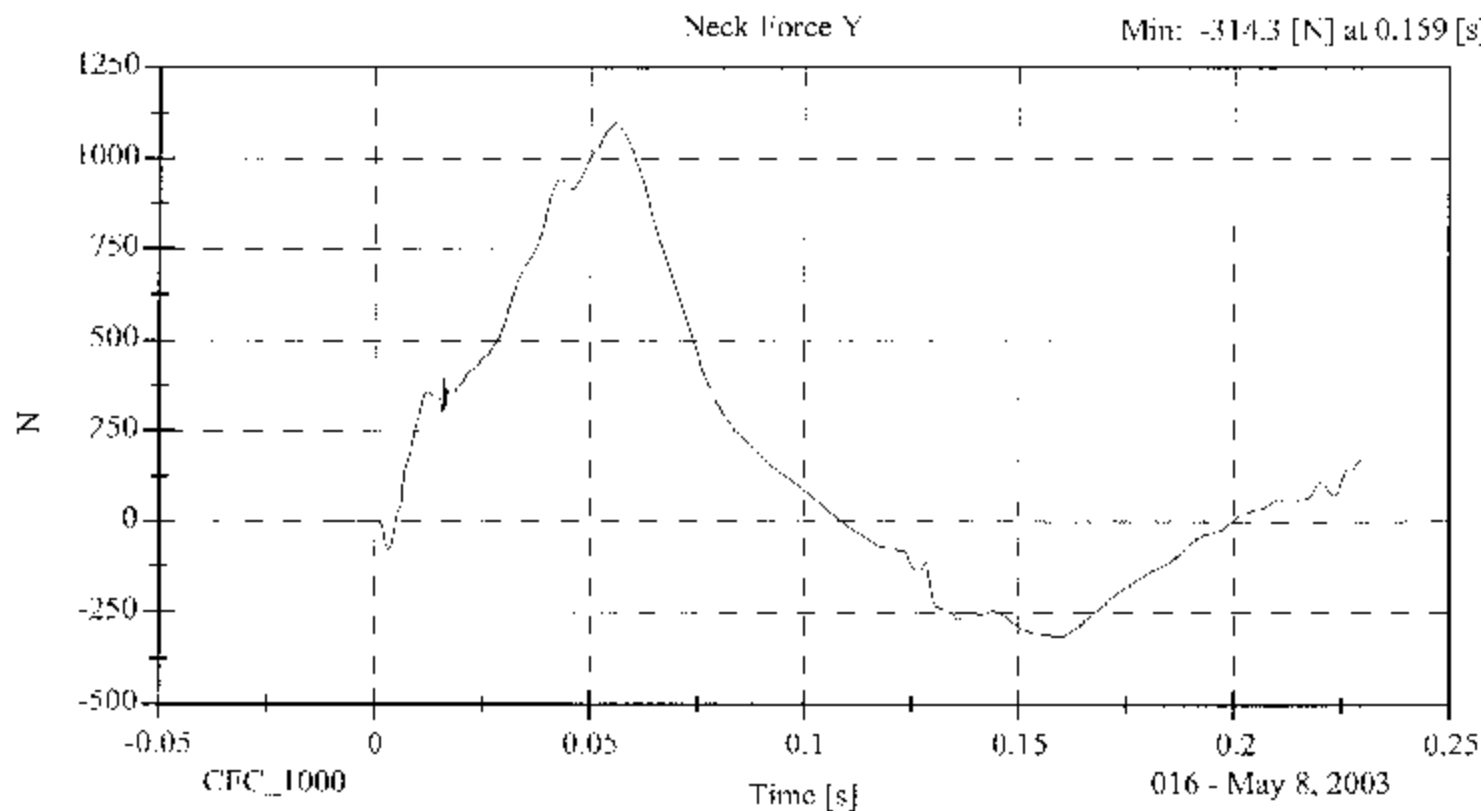
Max: 69.7 [Nm] at 0.052 [s]

Min: -36.5 [Nm] at 0.011 [s]



Max: 1097.7 [N] at 0.056 [s]

Min: -314.3 [N] at 0.159 [s]



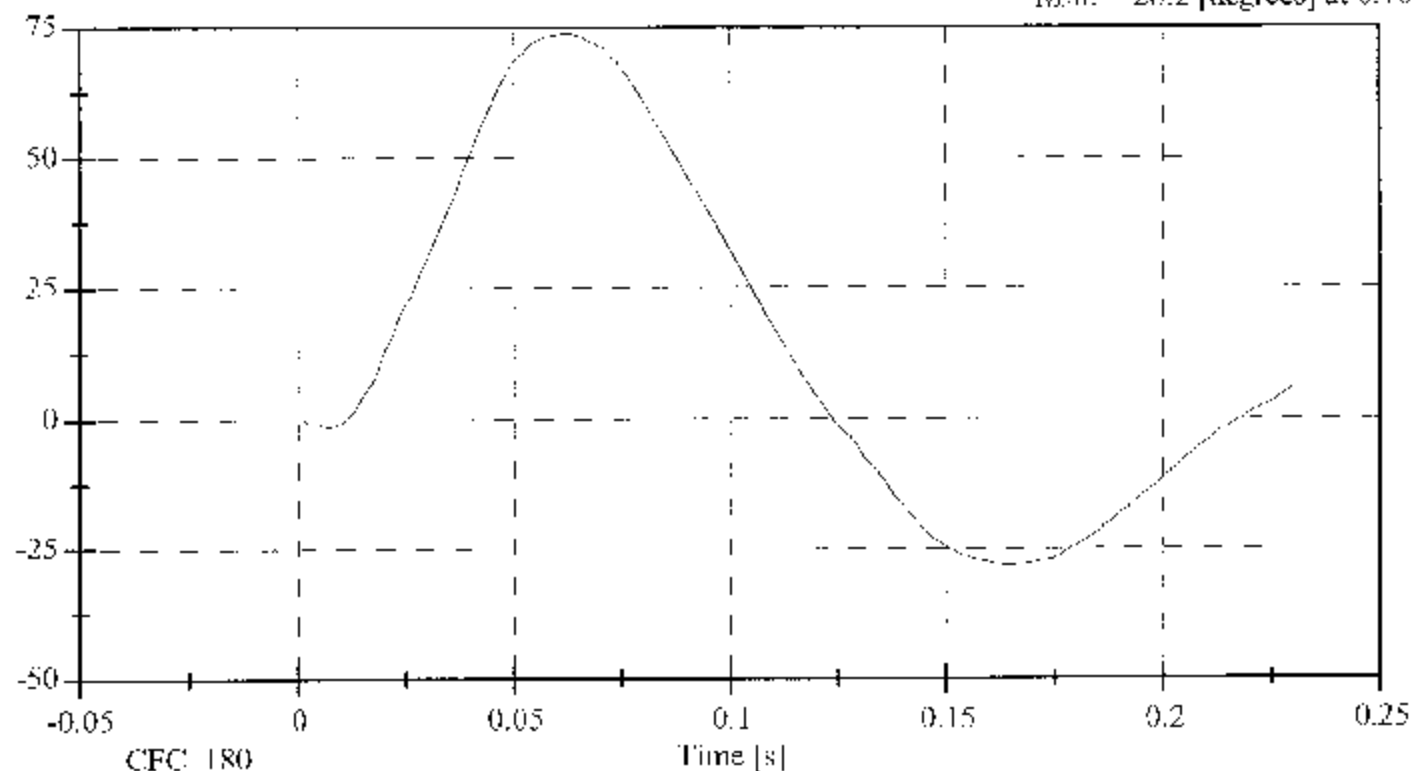
016 - May 8, 2003

Neck Test

Max: 73.7 [degrees] at 0.062

Min: -28.2 [degrees] at 0.164

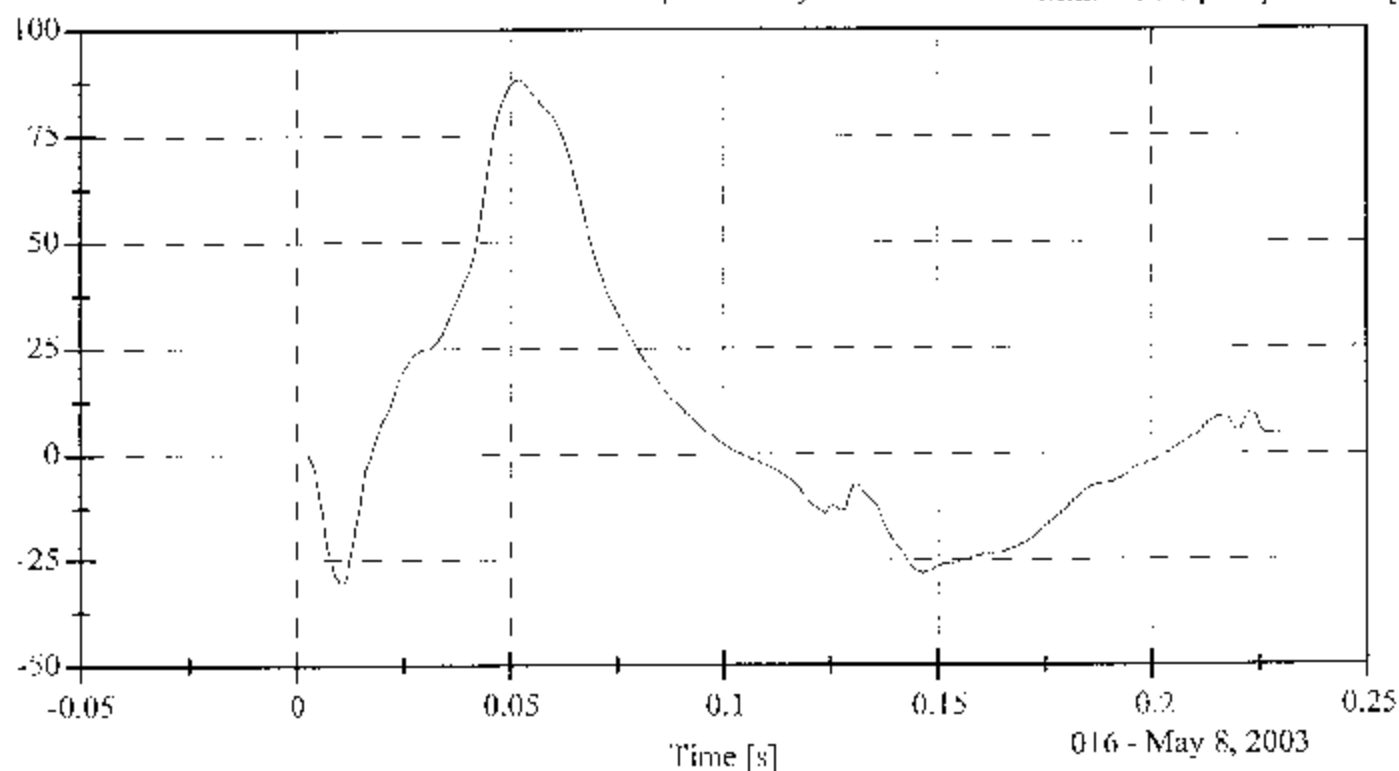
Total Rotation



Max: 88.1 [Nm] at 0.052 [s]

Min: -30.7 [Nm] at 0.011 [s]

Occipital Condyle Moment



016 - May 8, 2003

ABDOMINAL COMPRESSION TEST

PRE-TEST

(Test not required for SID certification)

CONFIGURED FOR LEFT SIDE IMPACT

SID H3 Serial No. 016

Sequential Test Number: 3

Date: May 9, 2003

Laboratory Technician: B. Swieczki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.1
RELATIVE HUMIDITY (%)	10 - 70	39.0
FORCE @ 13 mm (N)	101 - 162	111.2
FORCE @ 19 mm (N)	163 - 221	175.7
FORCE @ 25 mm (N)	222 - 280	258.0
FORCE @ 33 mm (N)	325 - 391	373.7

REMARKS: None

Dummy S/N . . . 016 . . .

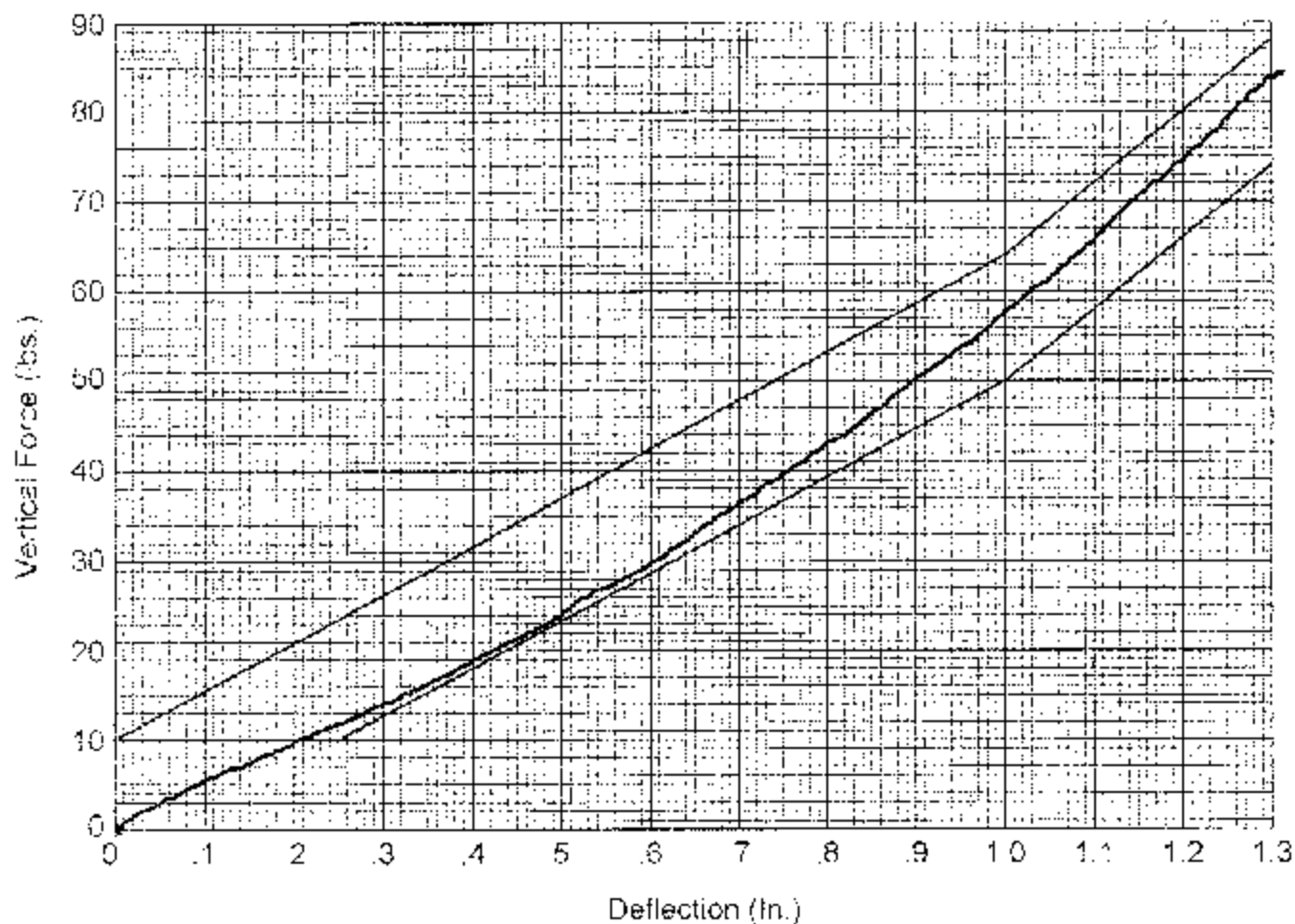
W/A

Date . . . 5-9-03 . . .

Performed By . . . *[Signature]* . . .

Temp. . . . 70° . . .

Humidity . . . 37% . . .



Hybrid II
Abdomen Static Press

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

CONFIGURED FOR LEFT SIDE IMPACT

SID J13 Serial No.: 016 Sequential Test Number: 3
 Date: May 9, 2003 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 23.5	21.1
RELATIVE HUMIDITY (%)	10 - 70	39.0
FORCE @ 0° (N)	0 - 26.7	0
FORCE @ 20° (N)	97.8 - 151.2	116.8
FORCE @ 30° (N)	151.2 - 204.6	166.8
FORCE @ 40° (N)	204.6 - 258	220.2
RETURN ANGLE	12° MAX.	3.5°

REMARKS: None

Dummy S/N

Q1%

WIA

Date

5-9-83

Performed By

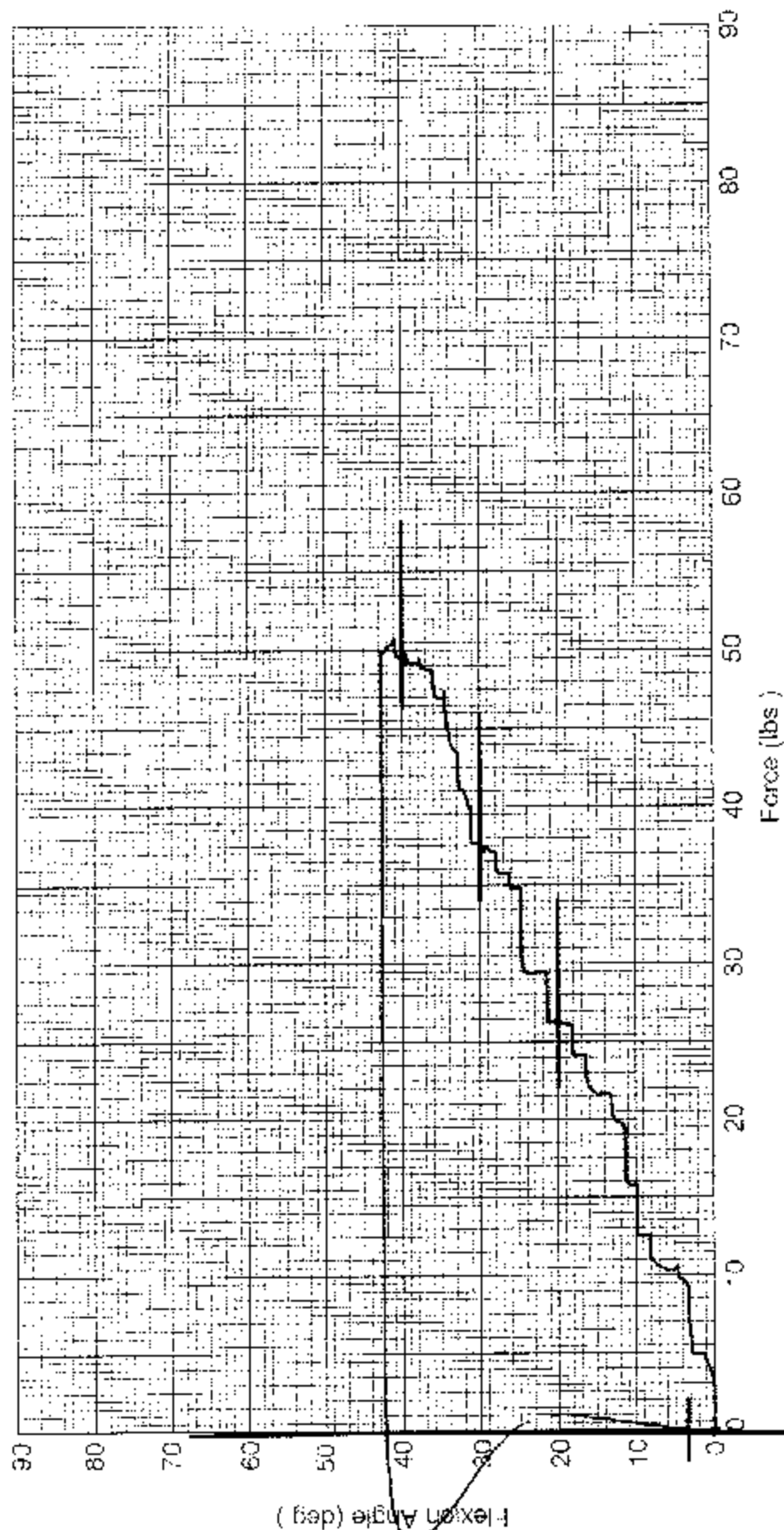
AK

Temp.

70°

Humidity

59%



Hybrid II Lumbar Spine Flexion Test

PRE-TEST DUMMY INSPECTION LIST
CONFIGURED FOR LEFT SIDE IMPACT

STD III Serial No.: 016

Sequential Test Number:

3

Date:

May 9, 2003

Laboratory Technician:

B. Swiecicki

PART	ITEMS CHECKED	COMMENTS
SKIN	VISUAL INSPECTION	OK
HEAD	VISUAL, BAL FAST, ACCELEROMETER MOUNT	OK
NECK	VISUAL, CABLE TORQUE	OK
SPINE BOX	VISUAL, BAL FAST, 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 H3 NO.: 015

CONFIGURED FOR LEFT SIDE IMPACT

**CALIBRATION TEST RESULTS SUMMARY
POST TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID H3 Serial No.: 015 Sequential Test Number: 4
Date: May 17, 2003 Laboratory Technician: B. Swiecicki

TEST	COMMENTS
EXTERNAL DIMENSIONS	Passed all requirements.
LATERAL THORAX IMPACT TEST	Passed all requirements.
LATERAL PELVIS IMPACT TEST	Passed all requirements.
HEAD DROP TEST*	Passed all requirements.
LATERAL NECK BEND 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

STD H3 Serial No.: 015 Sequential Test Number: 4
 Date: May 17, 2003 Laboratory Technician: B. Swieczicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
SH- Seated Height (mm)	889 - 909	902
RII- Rib Height (mm)	502 - 520	511
HP- Hip Pivot Height (mm)	99 ref	99
RD- Rib from Back Line (mm)	229 - 241	239
KH- Knee Pivot from Back Line (mm)	511 - 526	521
KV- Knee Pivot to Floor (mm)	490 - 505	495
ITW- Hip Width (mm)	356 - 391	371

REMARKS: None

LATERAL THORAX IMPACT TEST
POST TEST

CONFIGURED FOR LEFT SIDE IMPACT

SID 113 Serial No.: 015 Sequential Test Number: 4
Date: May 17, 2003 Laboratory Technician: B. Swiecicka

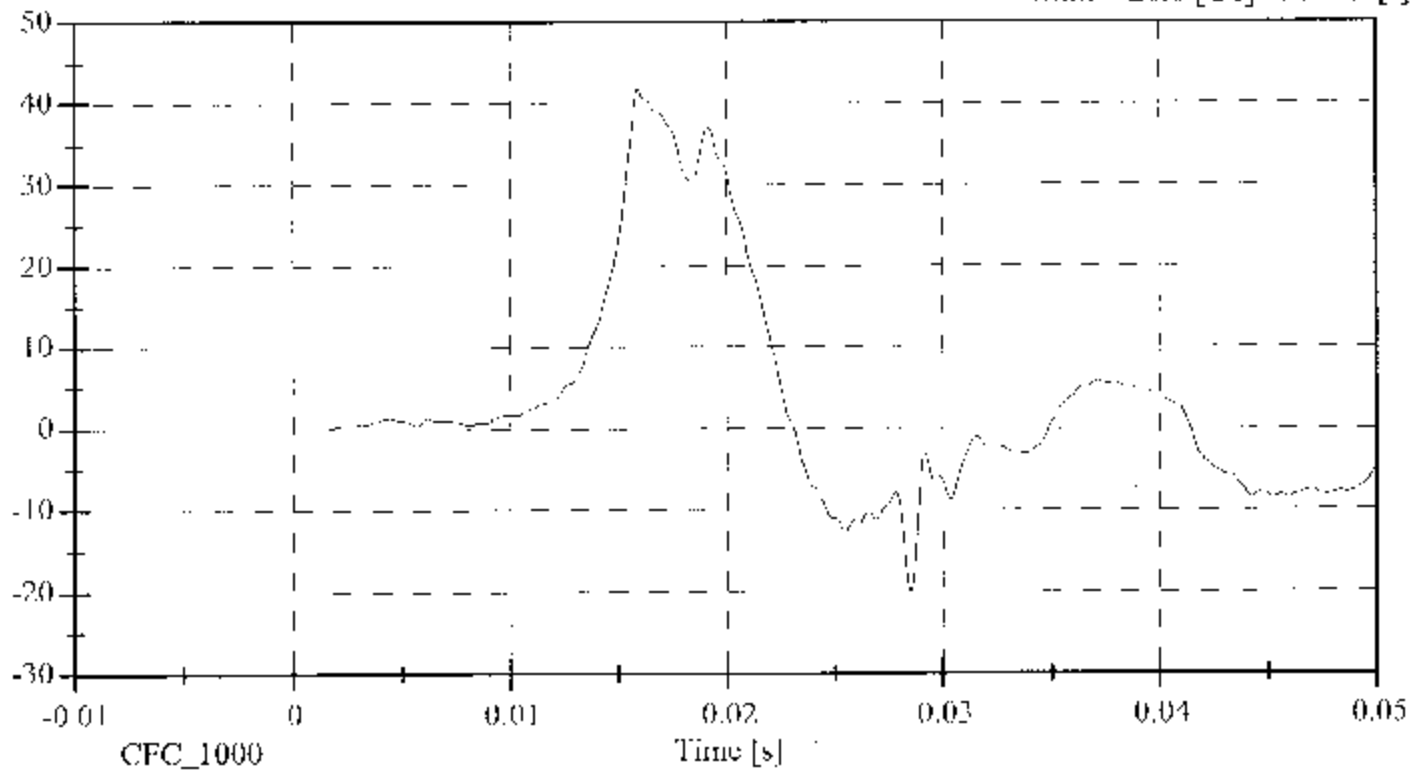
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.1
RELATIVE HUMIDITY (%)	10 - 70	34.00
PROBE SPEED (m/s)	4.27 - 4.33	4.29
UPPER RIB (g's)	37 - 46	38.76
LOWER RIB (g's)	37 - 46	37.72
LOWER SPINE (g's)	15 - 22	18.94

REMARKS: None

Upper Rib Y Acceleration

Max: 41.8 [G's] at 0.016 [s]

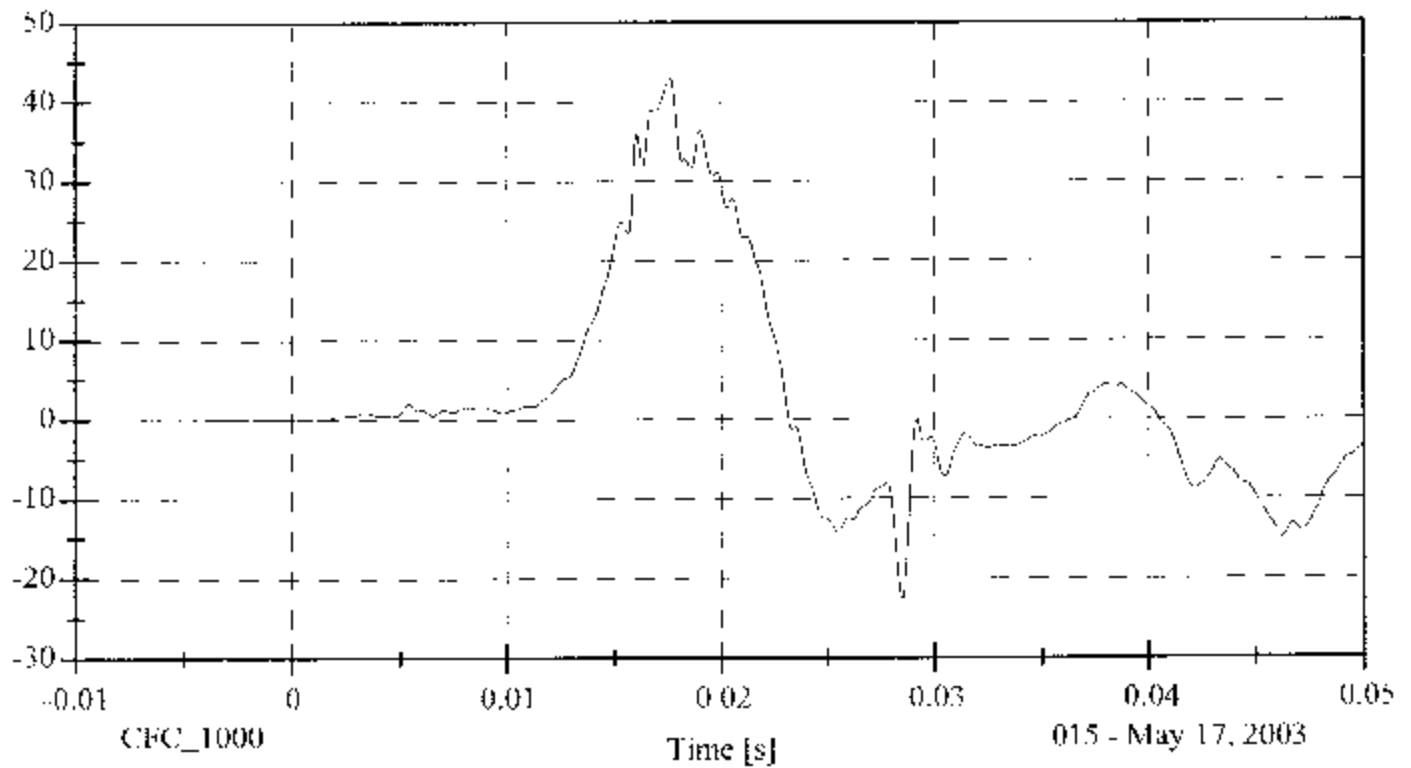
Min: -20.0 [G's] at 0.029 [s]



Lower Rib Y Acceleration

Max: 43.0 [G's] at 0.018 [s]

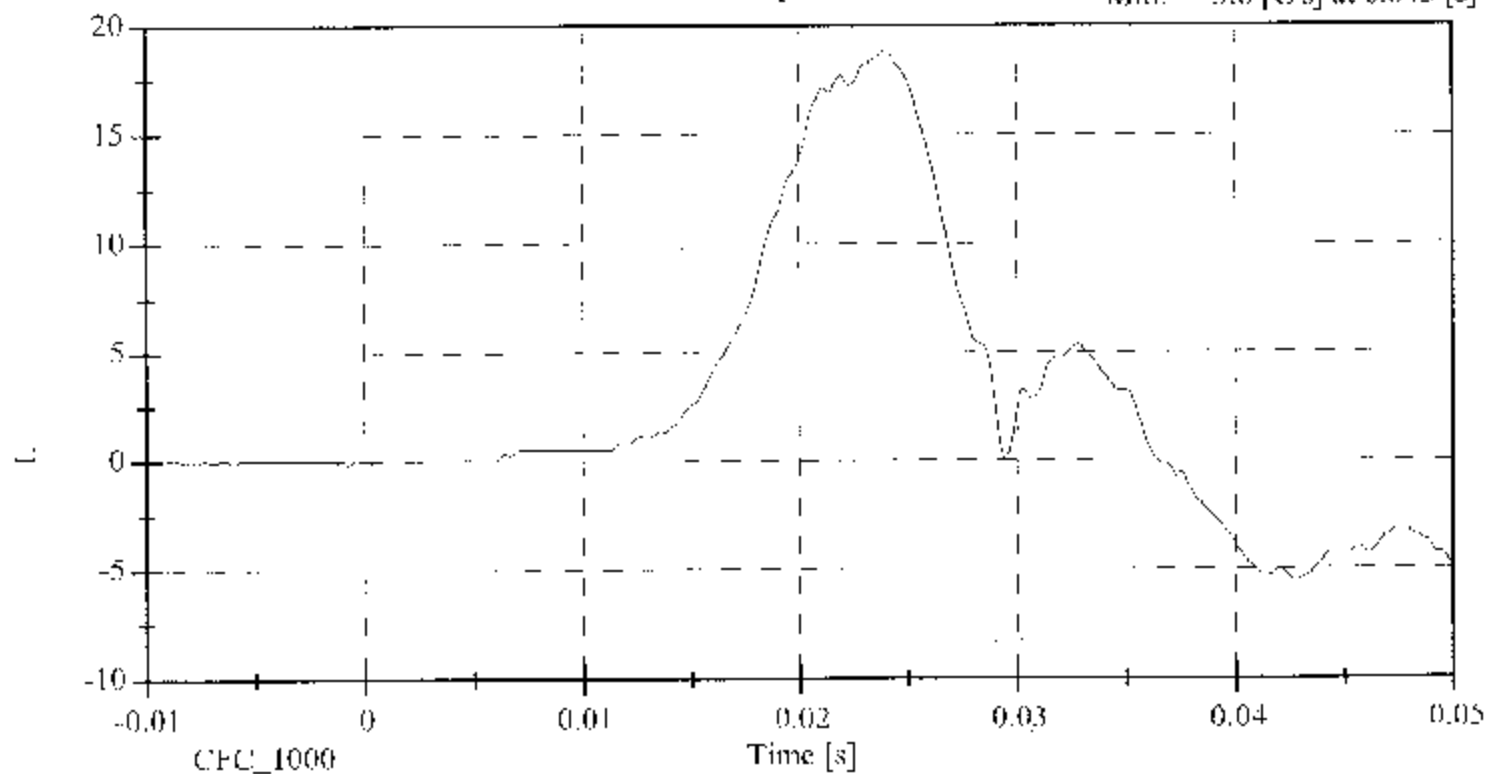
Min: -22.8 [G's] at 0.029 [s]



Lower Spine Y Acceleration

Max: 18.9 [G's] at 0.024 [s]

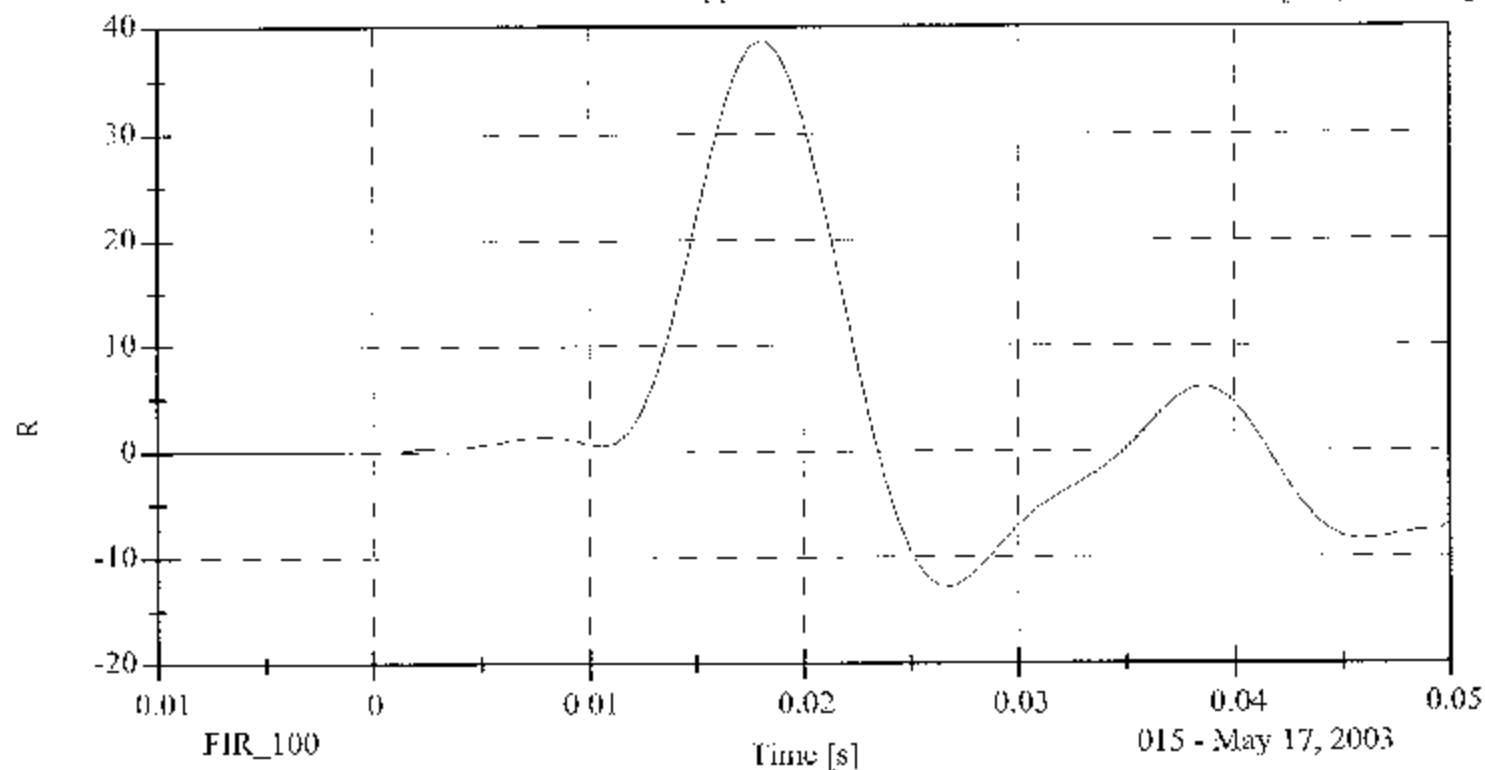
Min: -5.6 [G's] at 0.043 [s]



Upper Rib Y Acceleration

Max: 38.8 [G's] at 0.018 [s]

Min: -12.7 [G's] at 0.027 [s]

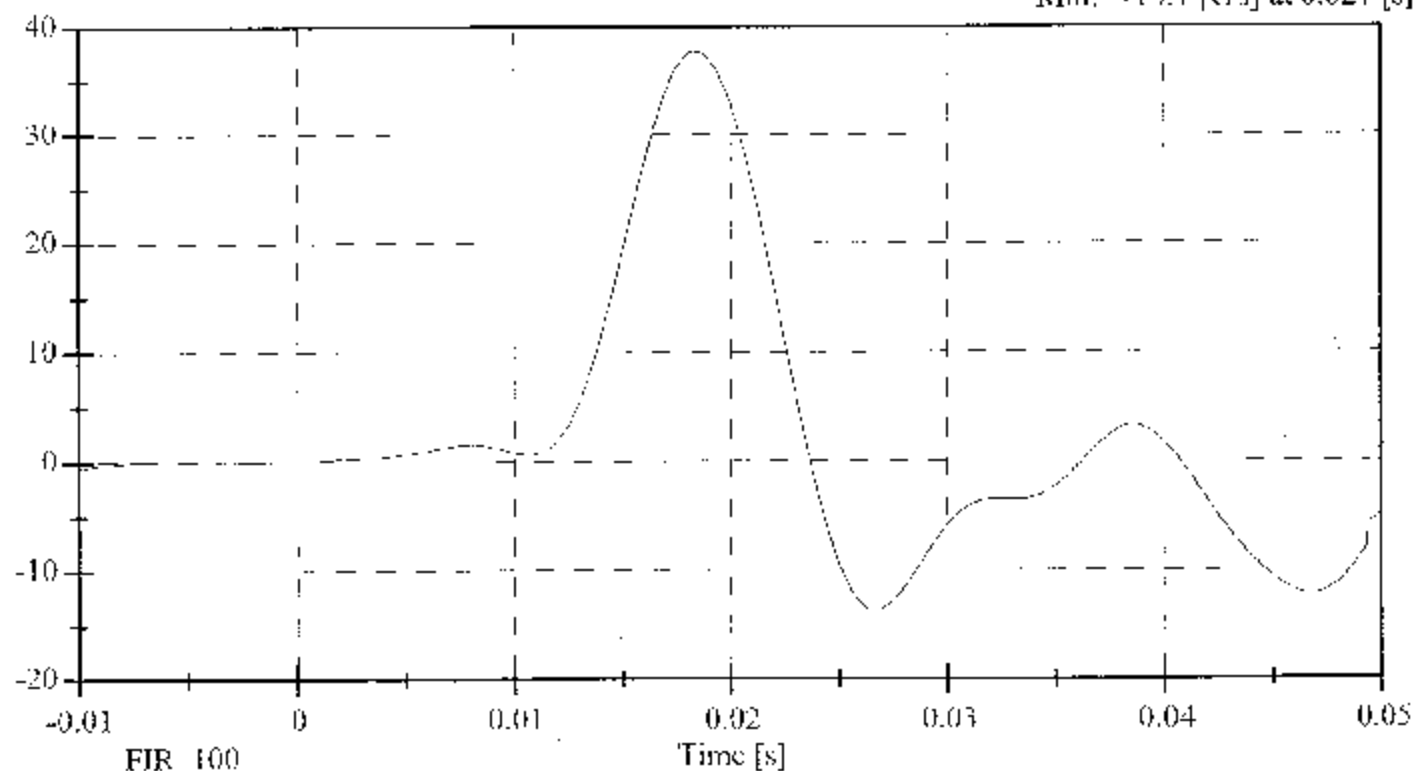


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Lower Rib Y Acceleration

Max: 37.7 [G's] at 0.018 [s]

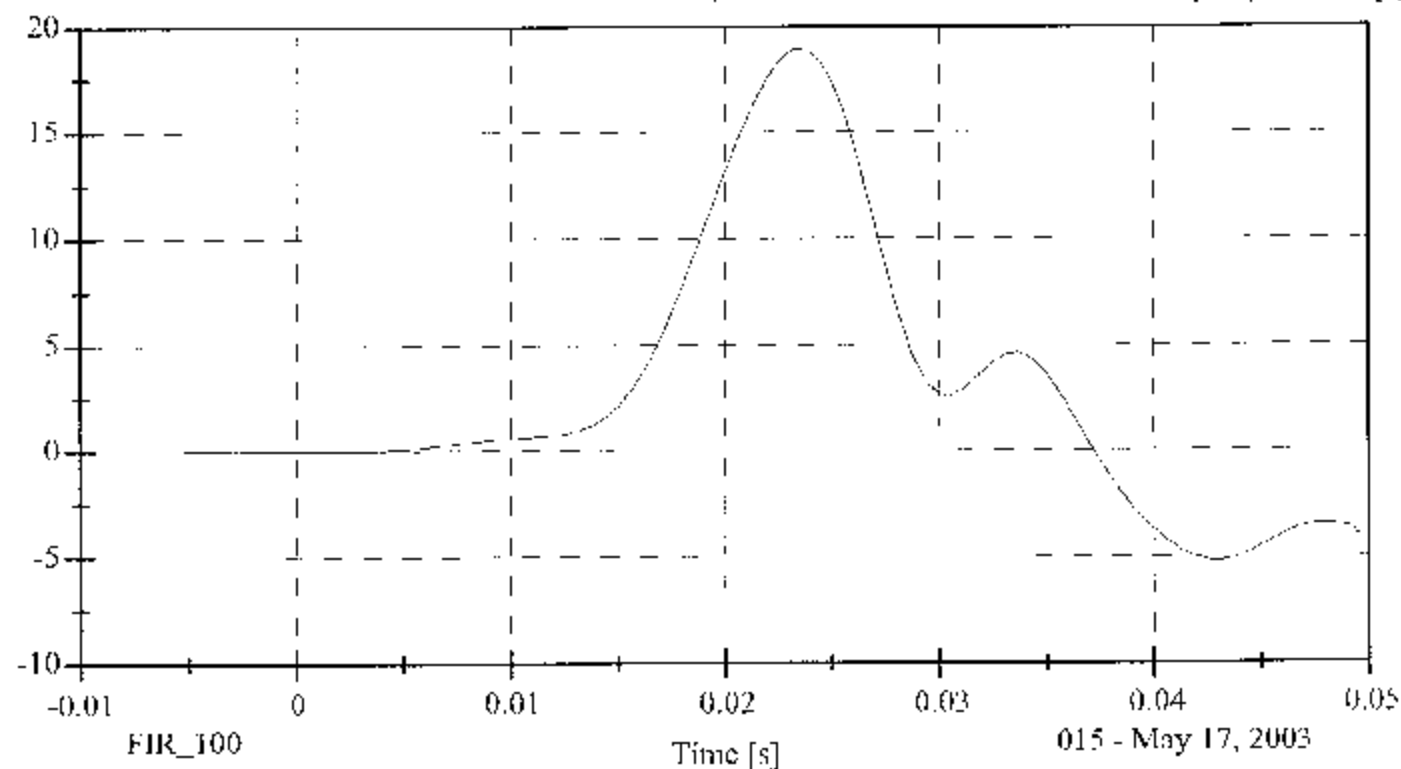
Min: -13.7 [G's] at 0.027 [s]



Lower Spine Y Acceleration

Max: 18.9 [G's] at 0.024 [s]

Min: -5.2 [G's] at 0.043 [s]



**LATERAL PELVIS IMPACT TEST
POST TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID 113 Serial No.: 015 Sequential Test Number: 4
 Date: May 17, 2003 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.1
RELATIVE HUMIDITY (%)	10 - 70	34.00
PROBE SPEED (m/s)	4.27 - 4.33	4.27
PELVIS ACCELERATION (g's)	40 - 60	43.23

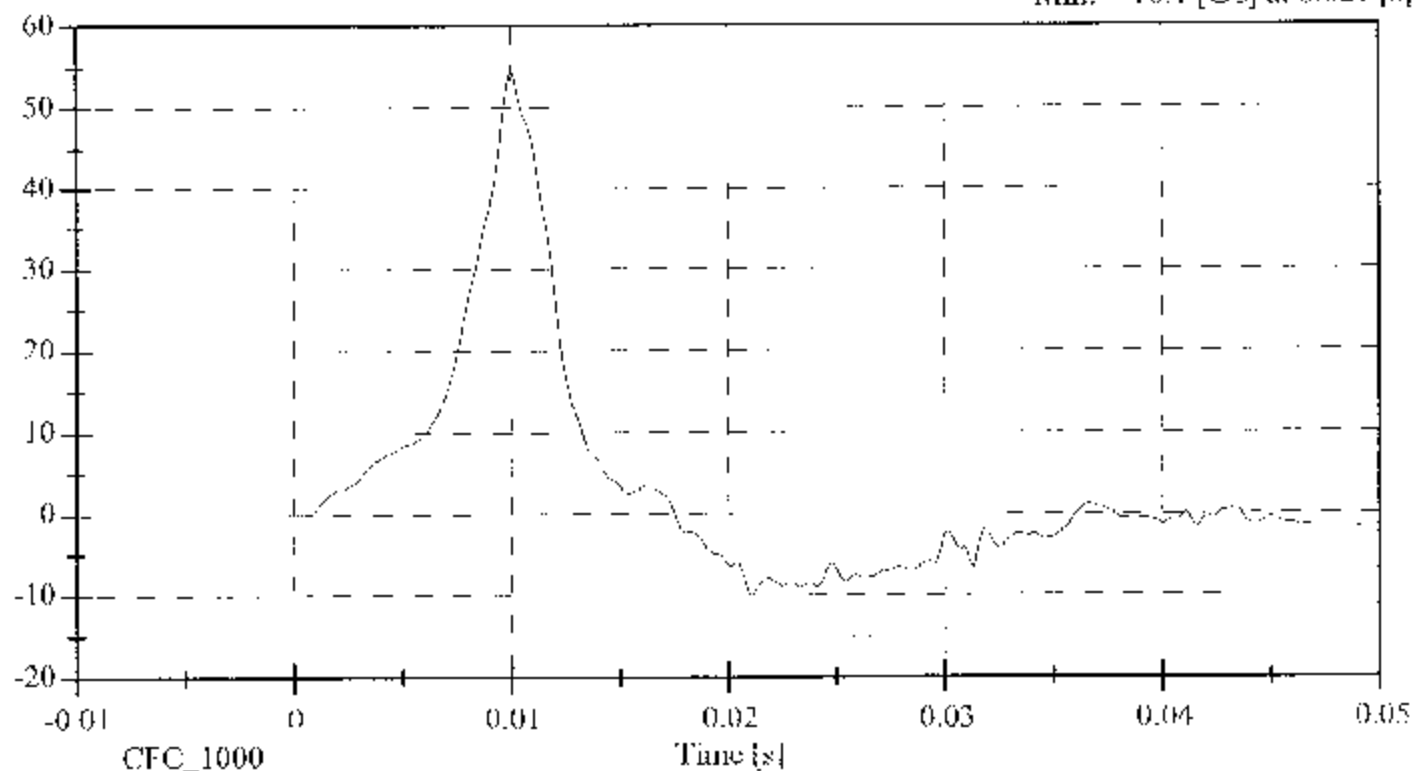
REMARKS: None

Pelvis Impact

Pelvis Acceleration

Max: 54.5 [G's] at 0.010 [s]

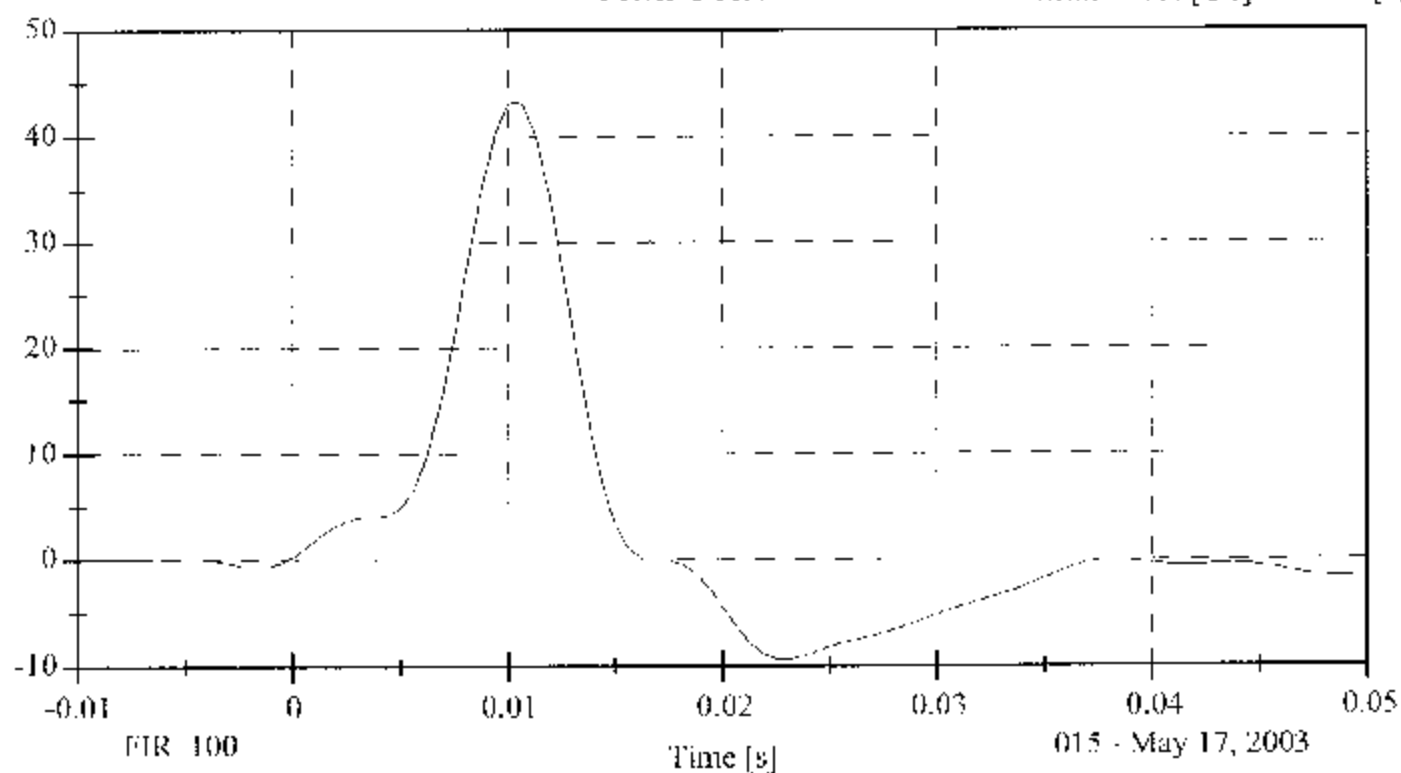
Min: -10.1 [G's] at 0.021 [s]



Pelvis Y Acceleration

Max: 43.2 [G's] at 0.011 [s]

Min: -9.4 [G's] at 0.023 [s]



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

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No: 015 Sequential Test Number: 4
Date: May 14, 2003 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	20.6 – 22.2	21.1
RELATIVE HUMIDITY (%)	10 – 70	41.00
PEAK RESULTANT ACCELERATION (Gs)	120 – 150	125.78
PEAK LATERAL ACCELERATION (Gs)	Not to Exceed 15	3.07
CURVE PERCENT NONMODAL (%)	< 15	3.50

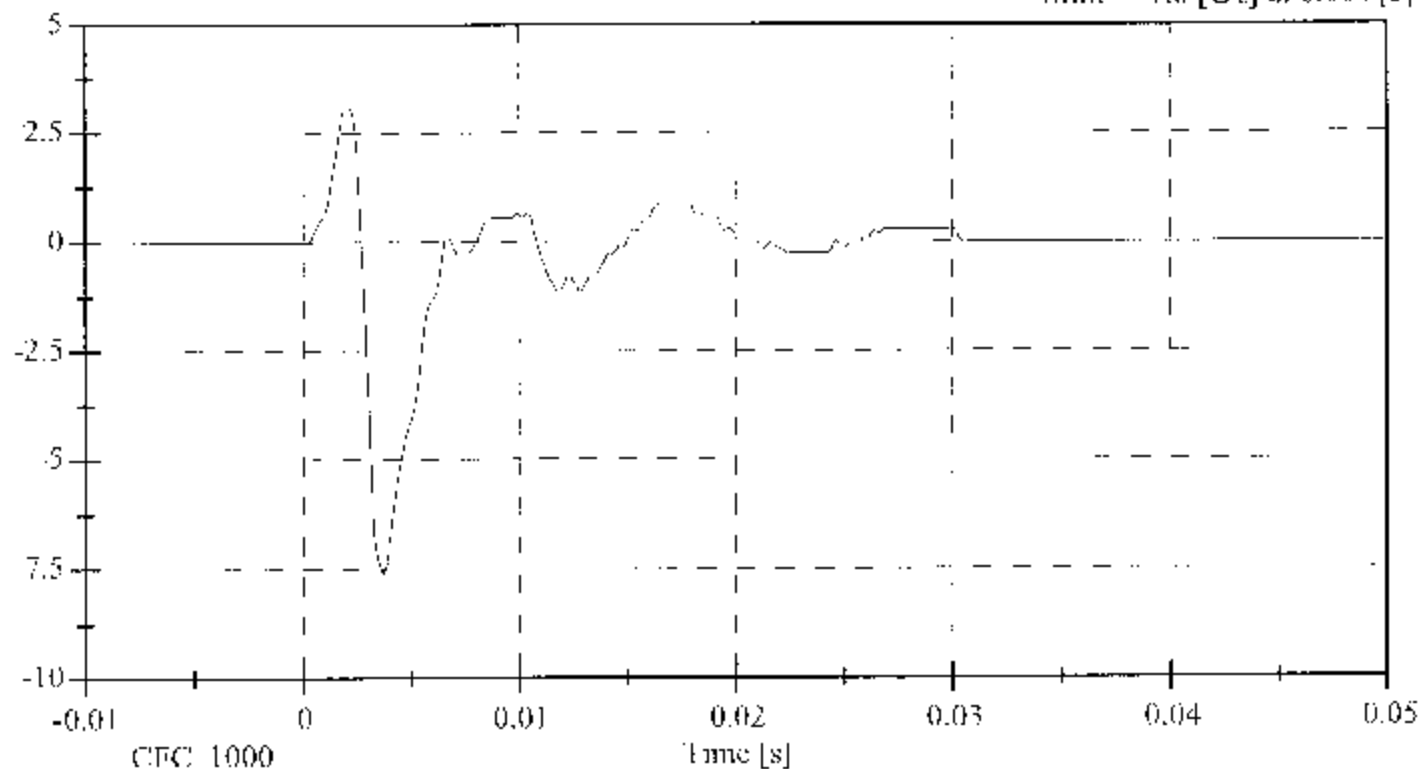
REMARKS: None

Head Drop

Head X Acceleration

Max: 3.1 [G's] at 0.002 [s]

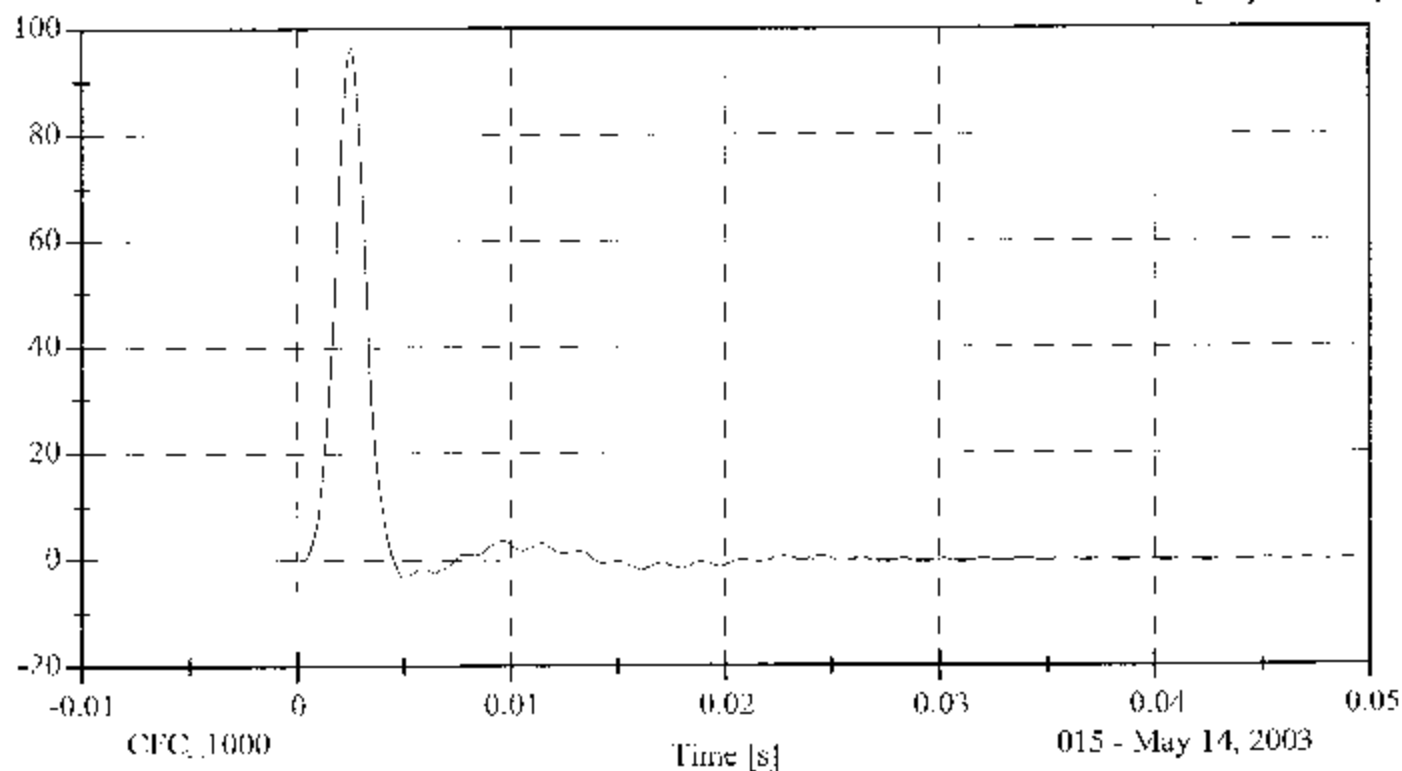
Min: -7.6 [G's] at 0.004 [s]



Head Y Acceleration

Max: 96.4 [G's] at 0.003 [s]

Min: -3.2 [G's] at 0.005 [s]



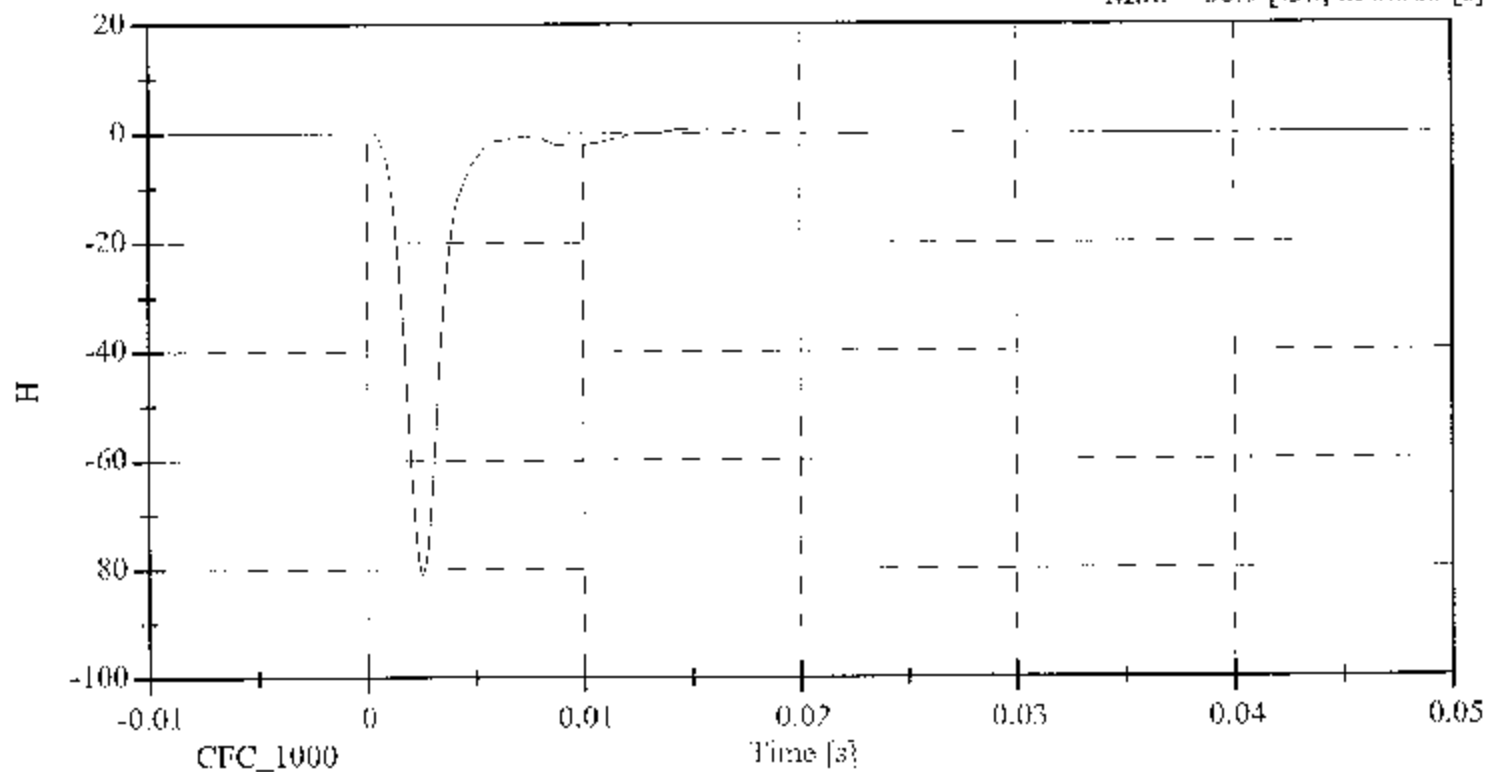
015 - May 14, 2003

Head Drop

Head Z Acceleration

Max: 0.8 [G's] at 0.016 [s]

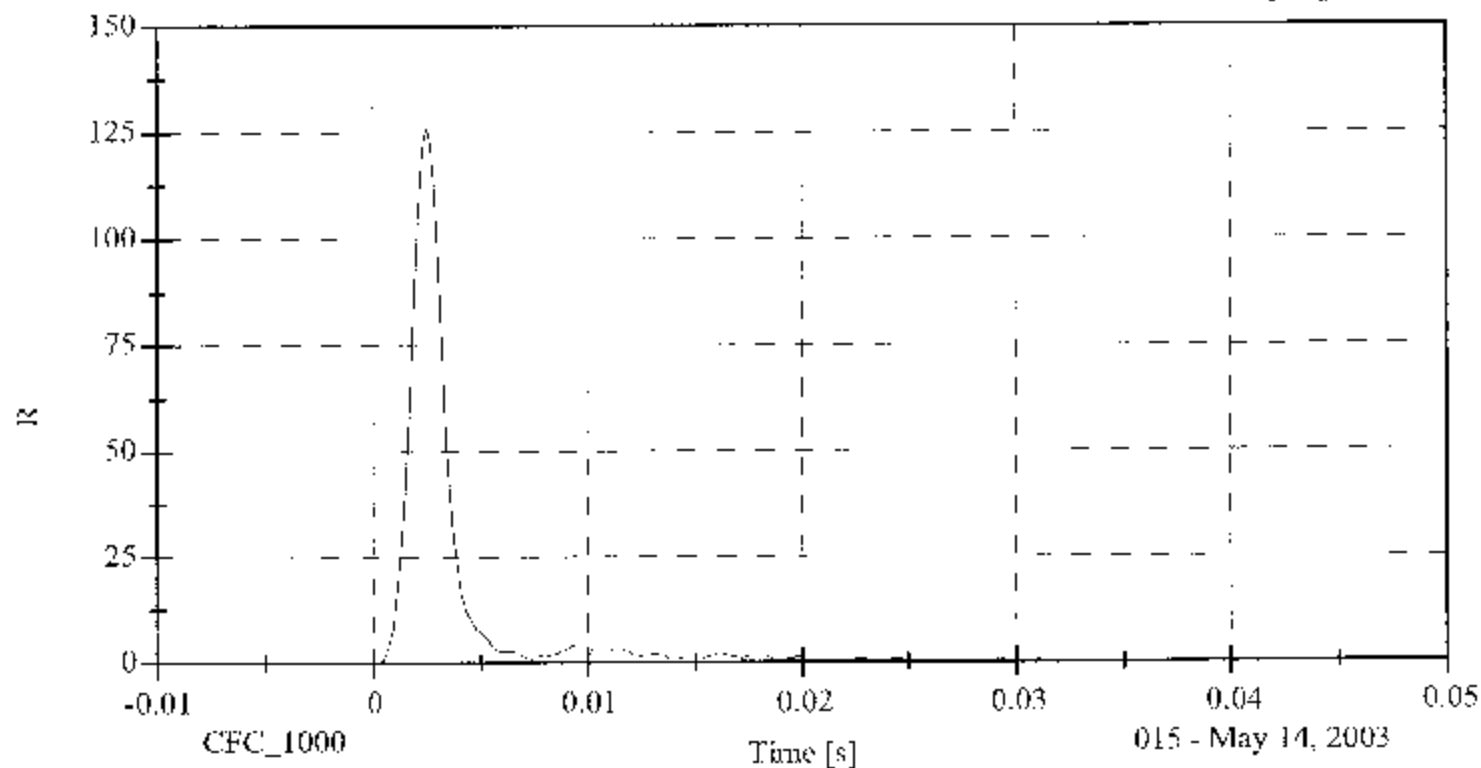
Min: -80.9 [G's] at 0.003 [s]



Head Resultant

Max: 125.8 [G's] at 0.003 [s]

Min: 0.0 [G's] at -0.002 [s]



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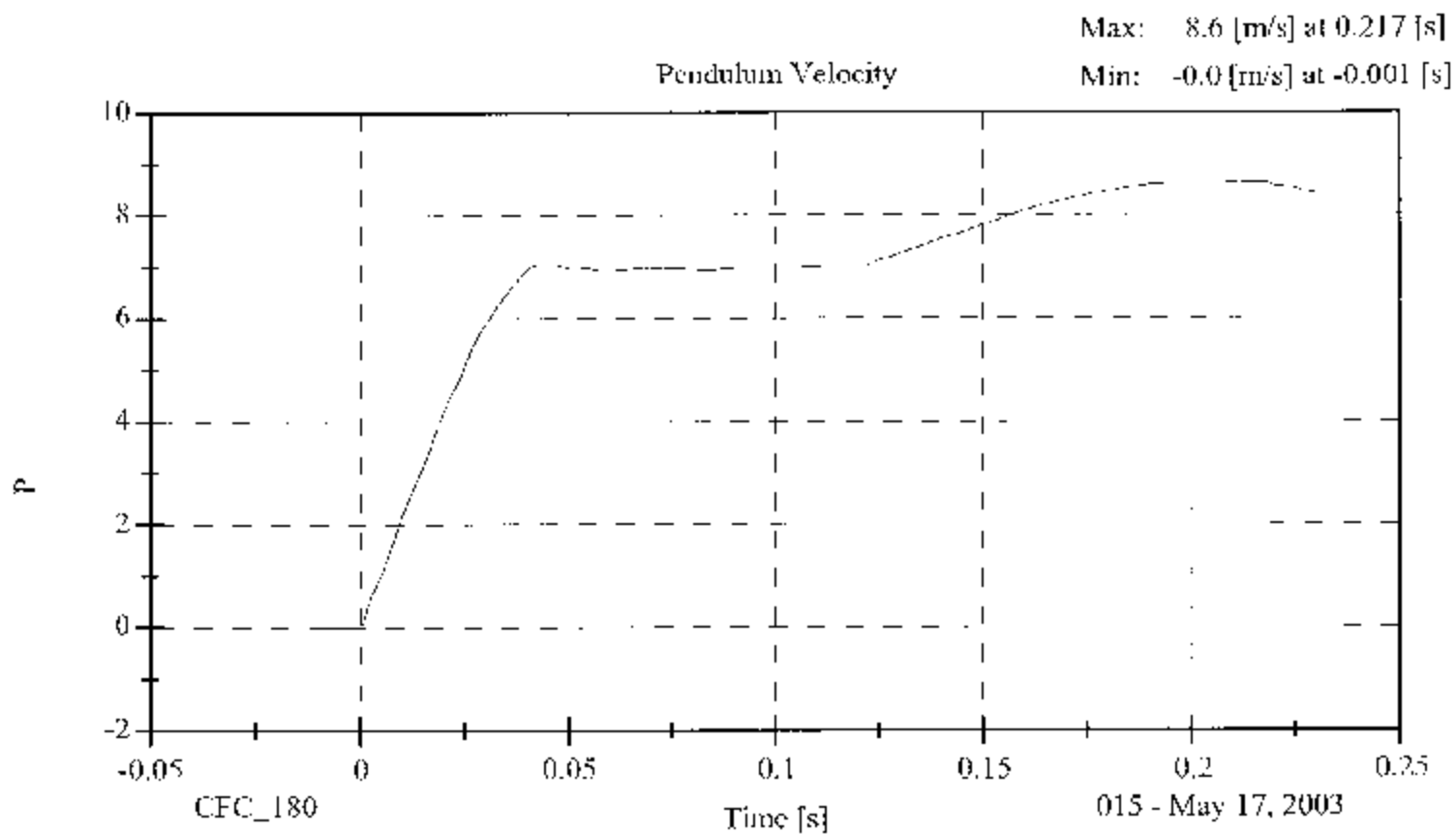
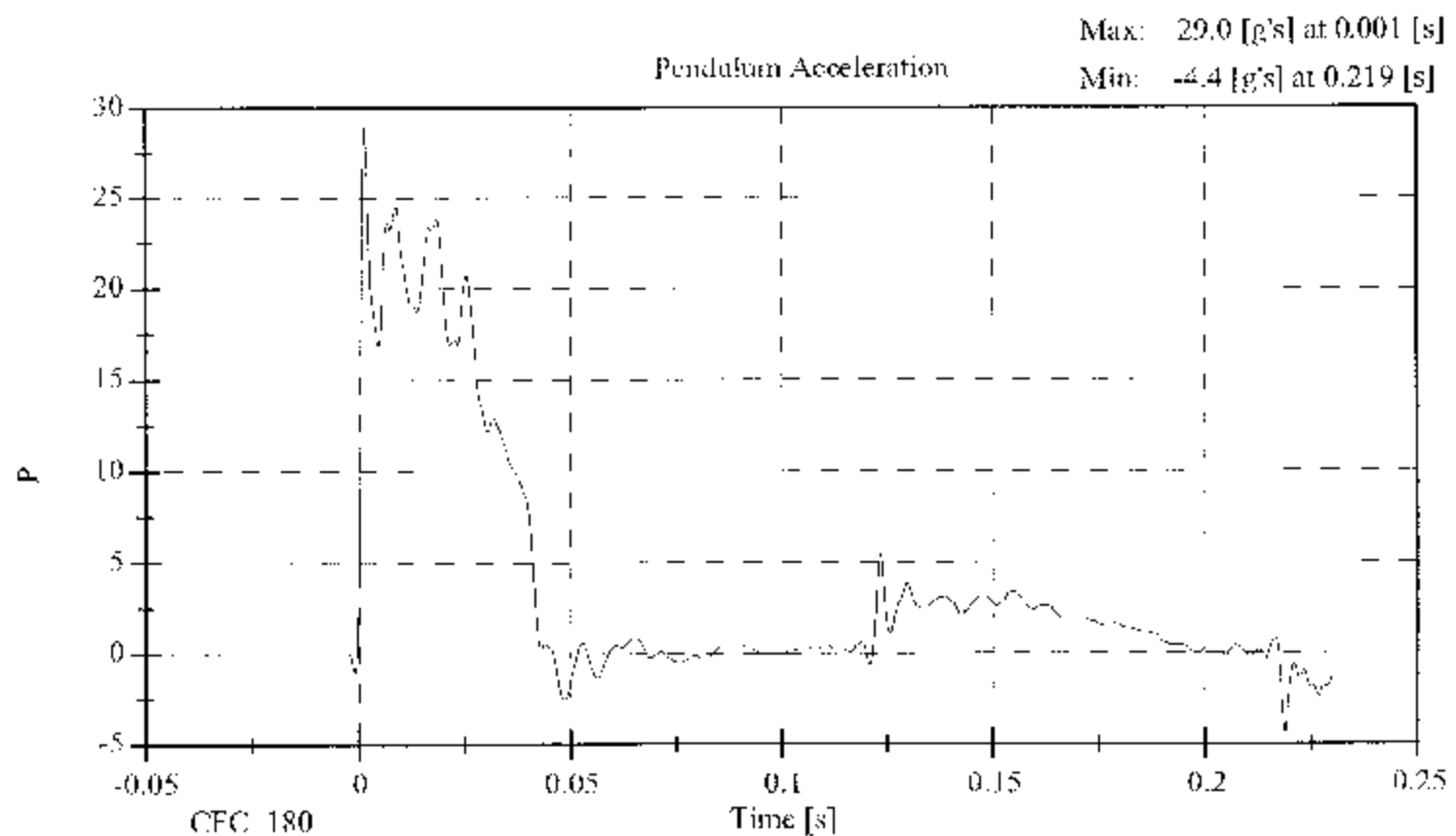
LATERAL NECK BENDING TEST
POST-TEST
 (Test not required for SID certification)

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No: 015 Sequential Test Number: 4
 Date: May 17, 2013 Laboratory Technician: B. Swieczki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	30.6 - 27.2	21.1
RELATIVE HUMIDITY (%)	40 - 70	33.00
IMPACT VELOCITY (m/s)	6.89 - 7.13	6.99
PENDULUM DELTA V		
DELTA V @ 10 ms (m/s)	1.96 - 2.55	2.12
DELTA V @ 20 ms (m/s)	4.12 - 5.10	4.19
DELTA V @ 30 ms (m/s)	5.73 - 7.01	5.87
DELTA V @ 40-70 ms (m/s)	6.27 - 7.64	7.04
D PLANE ROTATION		
MAXIMUM ROTATION (deg)	64 - 78	71.65
ROT. ANGLE TIME to ZERO (ms)	50 - 70	62.80
MOMENT ABOUT THE OCCIPITAL CONDYLE		
MAX OCCIPITAL MOMENT (Nm)	88 - 108	93.50
OCCIPITAL MOMENT DECAY (ms)	40.0 - 60.0	47.80
HEAD ROTATION TIME WITH RESPECT TO THE OCCIPITAL CONDYLE MOMENT		
ROTATION w/ MOMENT (ms)	0 - 70	5.50

REMARKS: None

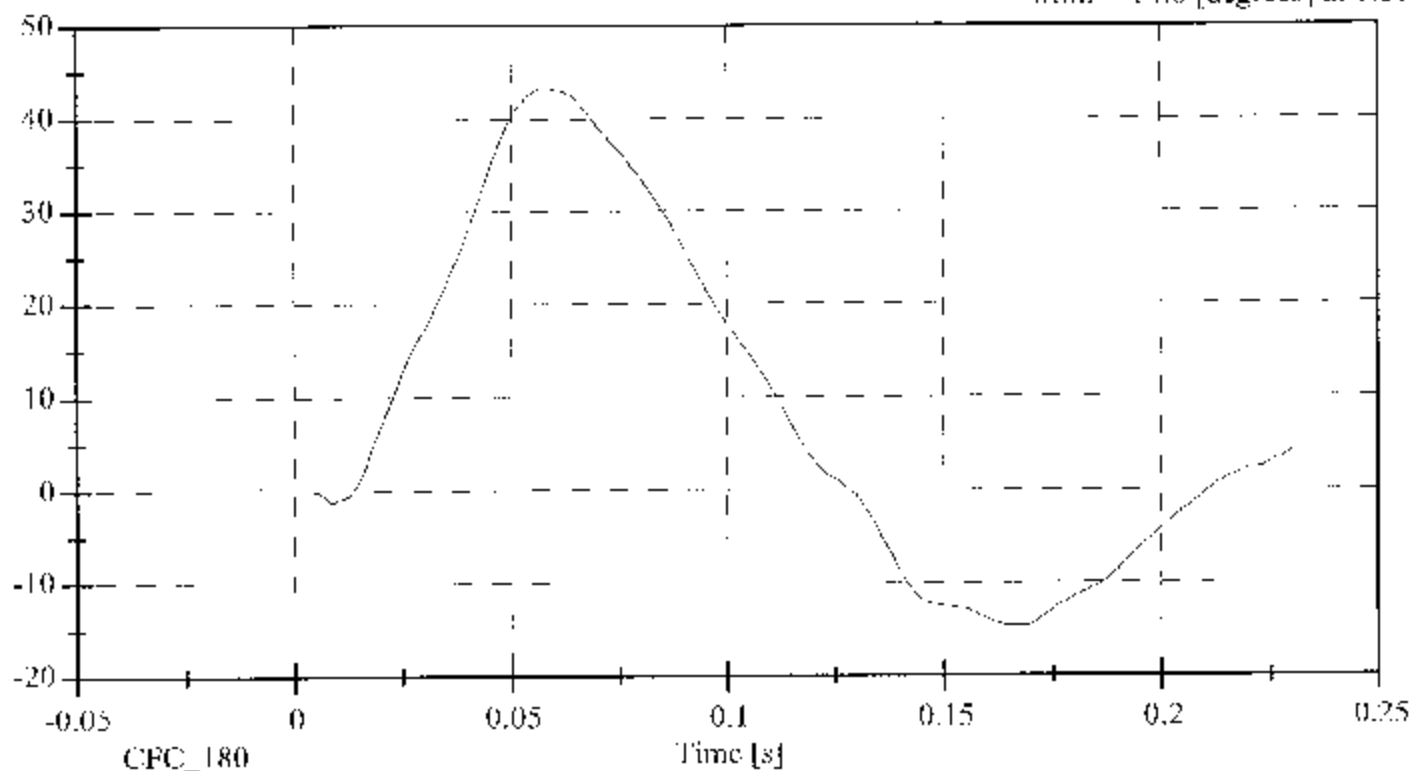


Neck Test

Head Rotation

Max: 43.3 [degrees] at 0.058

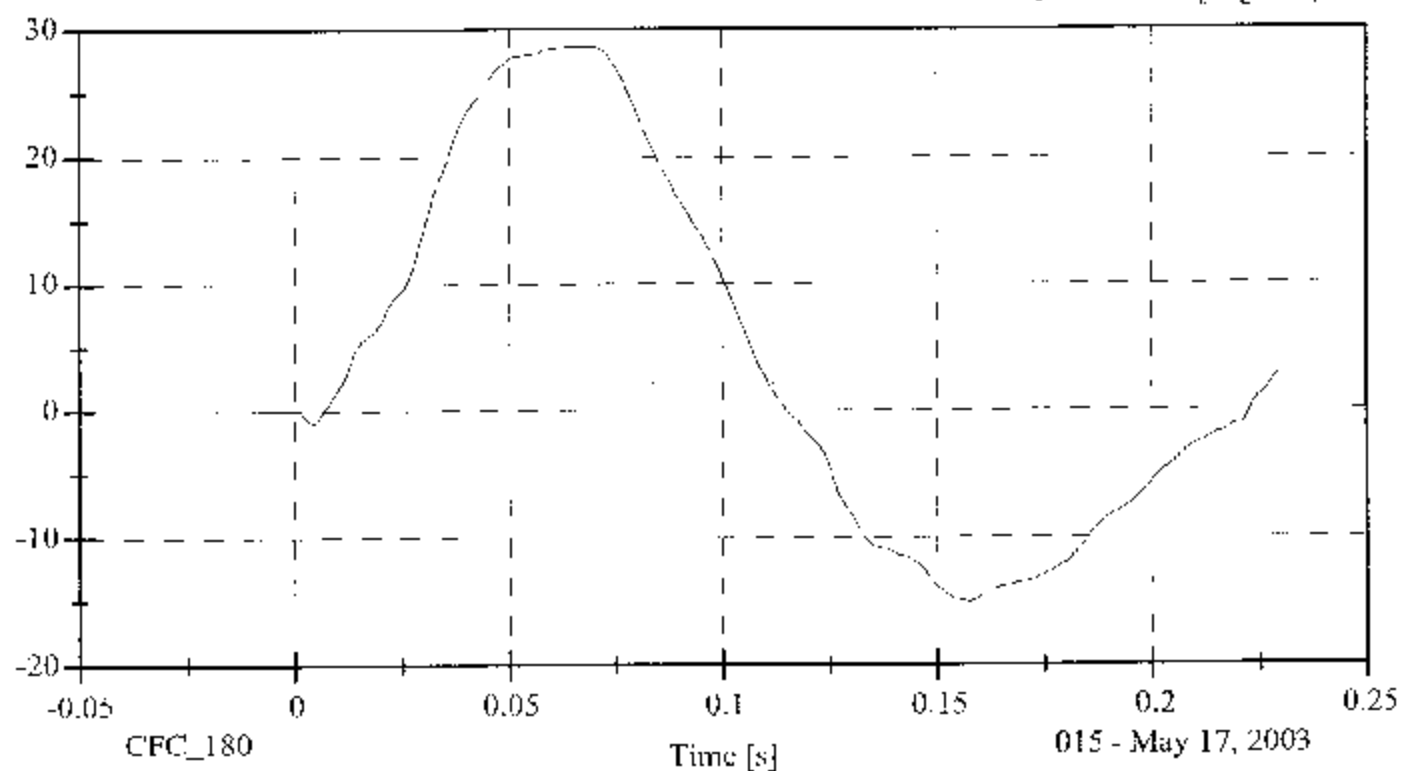
Min: -14.6 [degrees] at 0.166



Arm Rotation

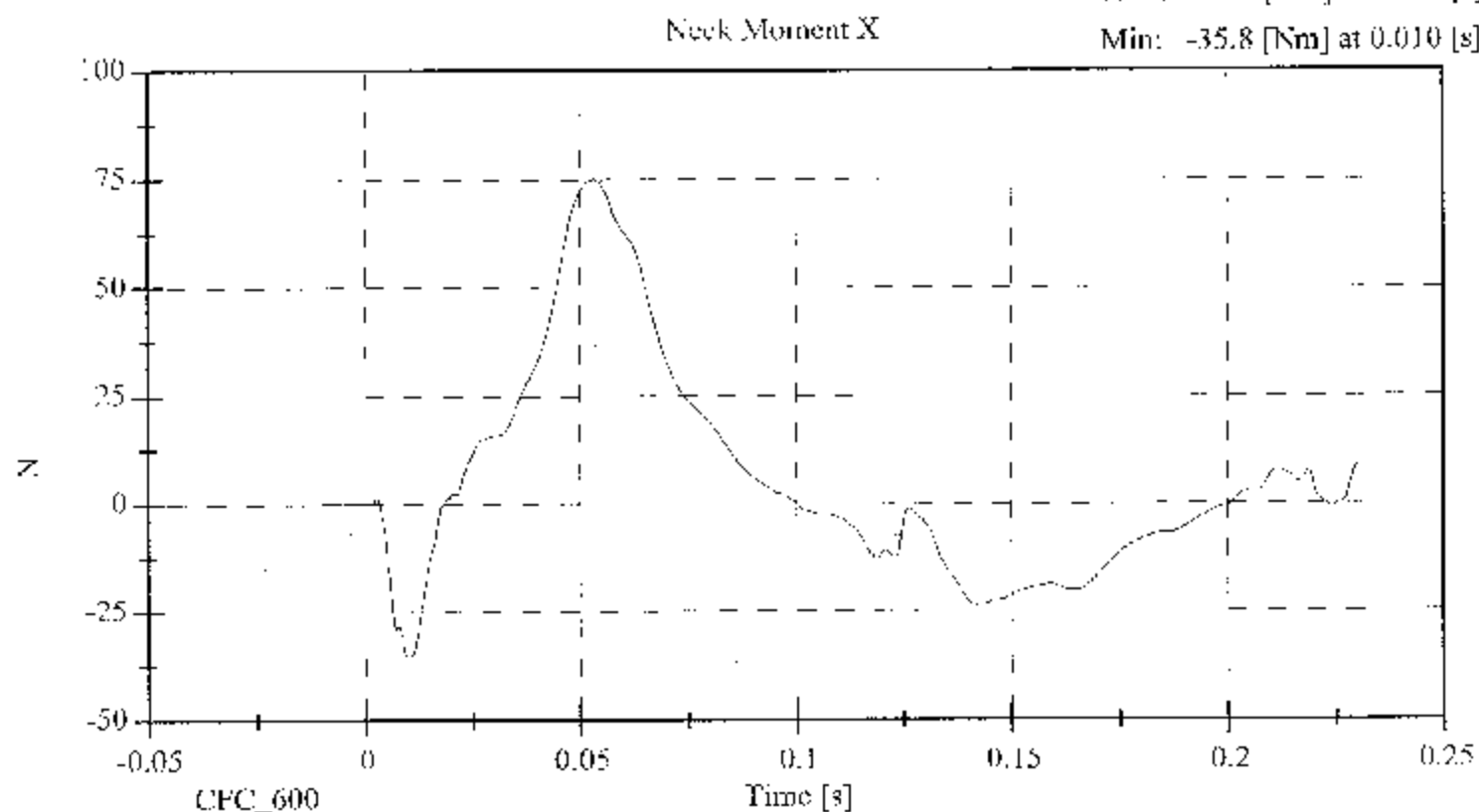
Max: 28.6 [degrees] at 0.070

Min: -15.1 [degrees] at 0.158



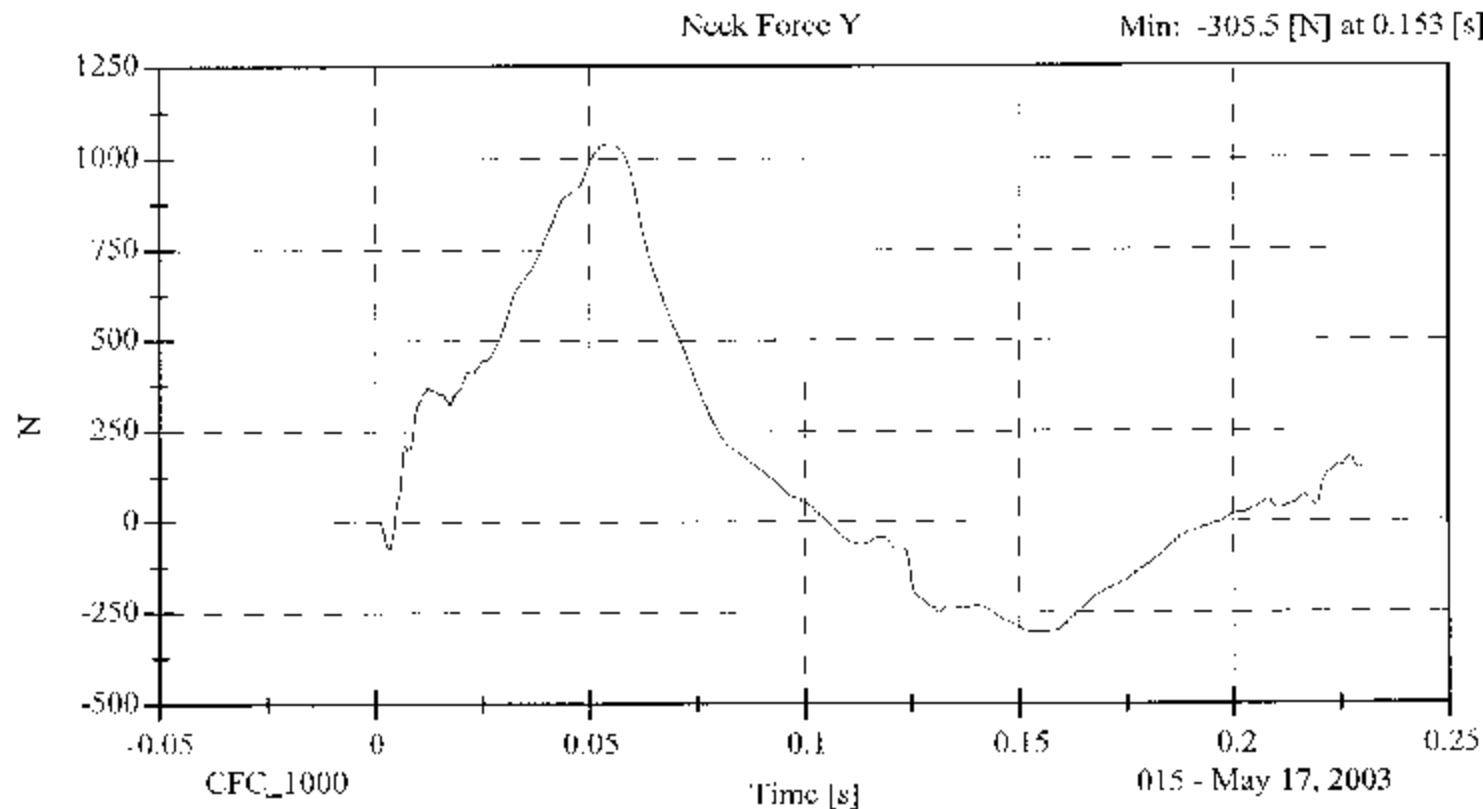
Max: 75.0 [Nm] at 0.053 [s]

Min: -35.8 [Nm] at 0.010 [s]



Max: 1038.2 [N] at 0.054 [s]

Min: -305.5 [N] at 0.153 [s]

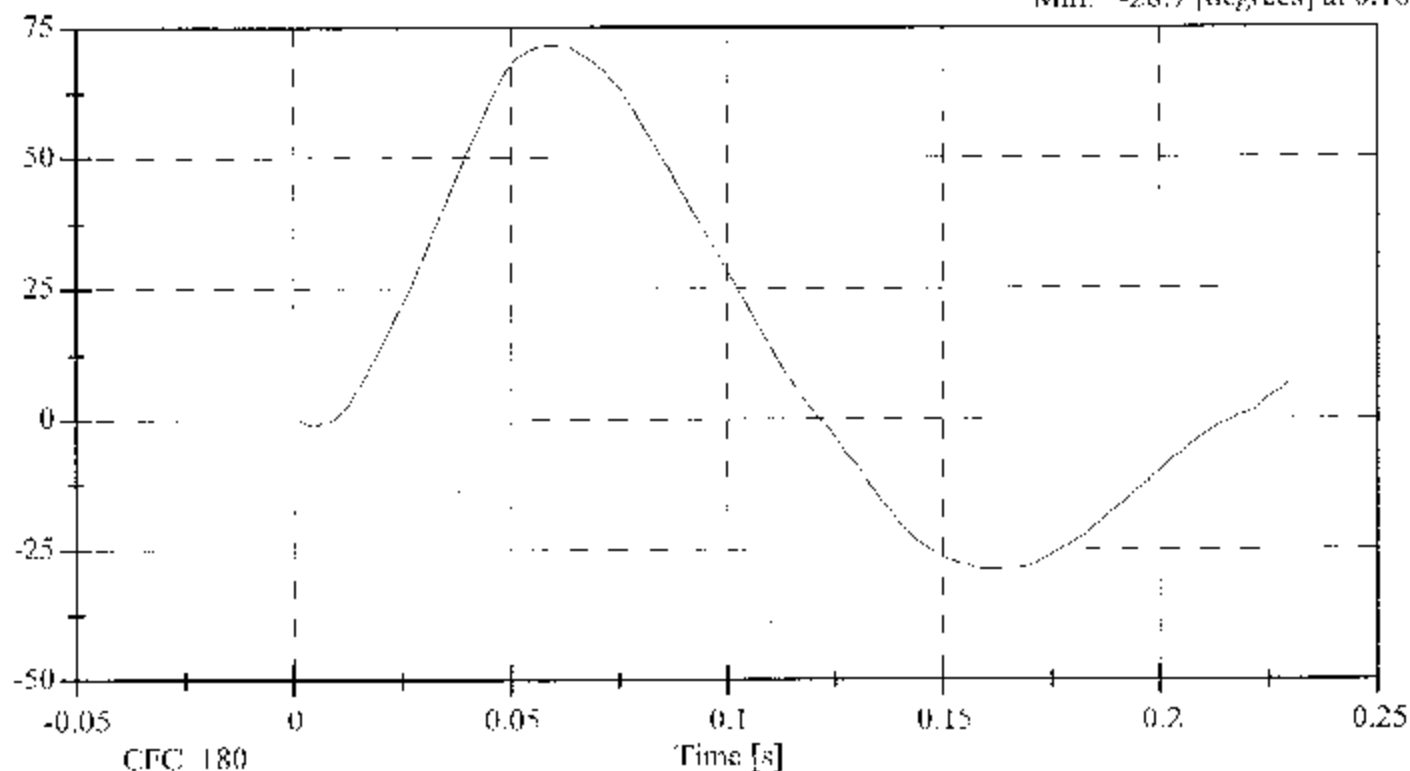


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Total Rotation

Max: 71.7 [degrees] at 0.059

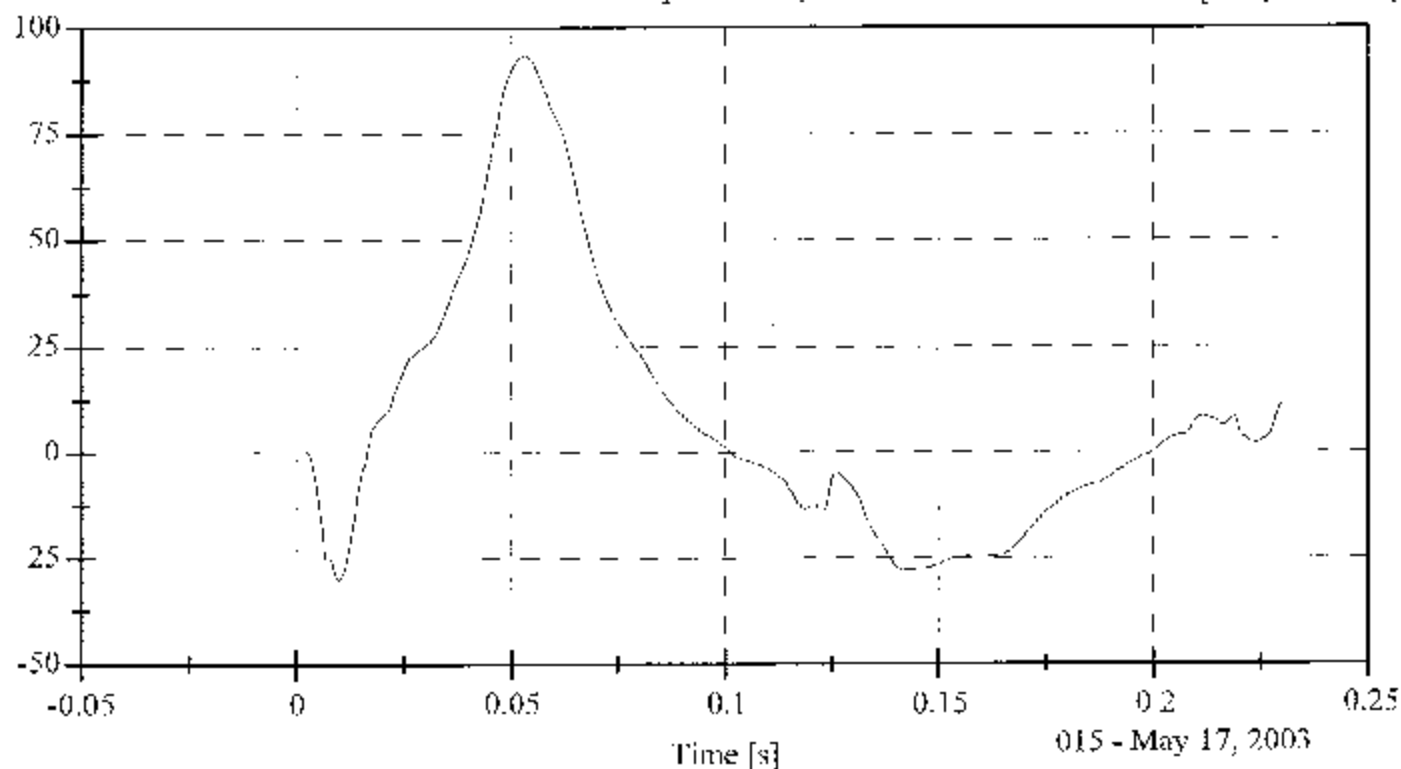
Min: -28.7 [degrees] at 0.161



Occipital Condyle Moment

Max: 93.5 [Nm] at 0.053 [s]

Min: -30.2 [Nm] at 0.010 [s]



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**ABDOMINAL COMPRESSION TEST
POST TEST**
(Test not required for SID certification)

CONFIGURED FOR LEFT SIDE IMPACT

SID H3 Serial No.: 015 Sequential Test Number: 4
 Date: May 17, 2003 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.7
RELATIVE HUMIDITY (%)	10 - 70	33.0
FORCE @ 13 mm (N)	104 - 162	115.7
FORCE @ 19 mm (N)	163 - 221	177.9
FORCE @ 25 mm (N)	222 - 280	258.0
FORCE @ 33 mm (N)	325 - 391	362.5

REMARKS: None

Dummy S/N . C15

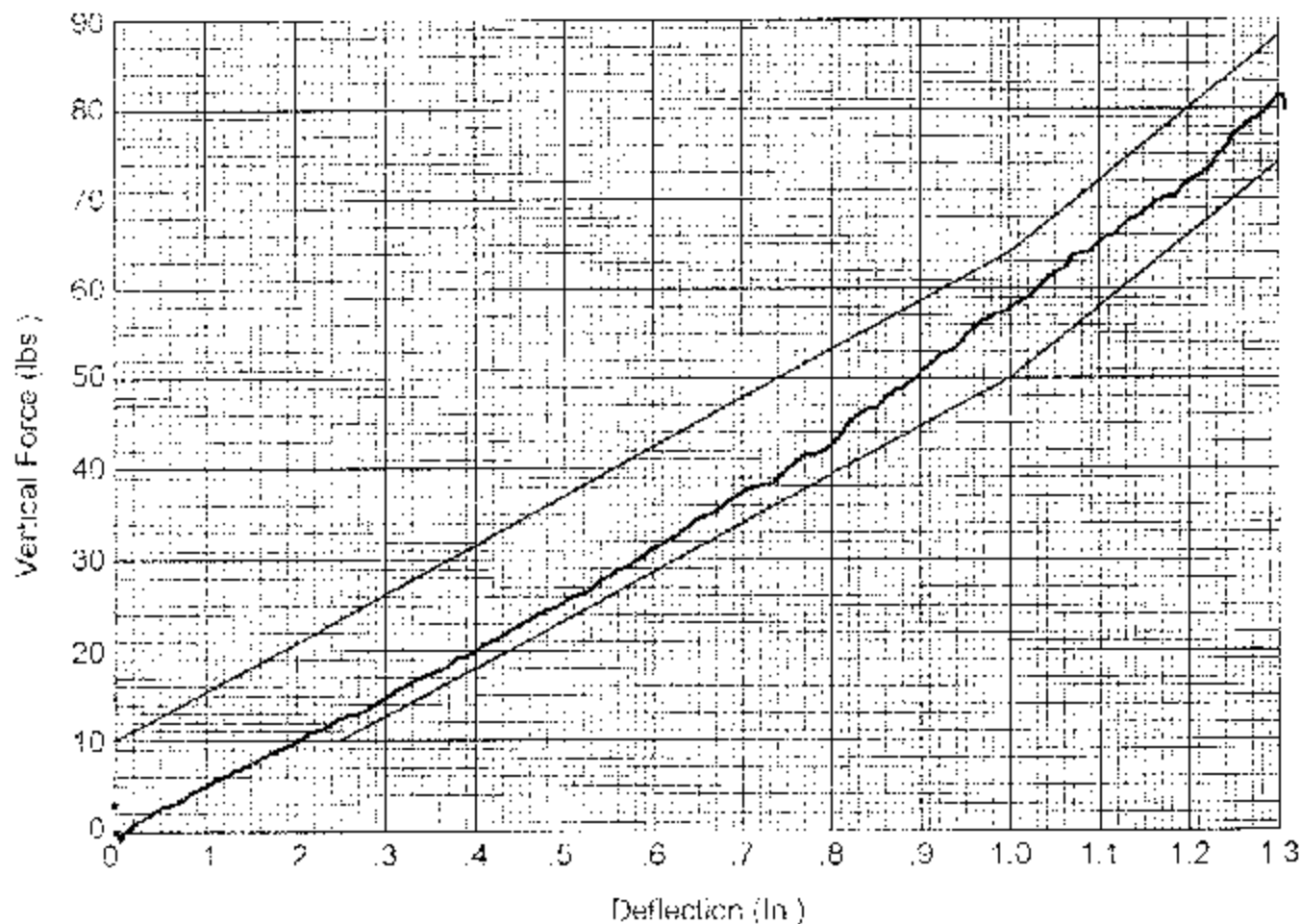
WIA

Date 5-12-63

Performed By [Signature]

Temp. 71

Humidity 25%



Hybrid II
Abdomen Static Press

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

CONFIGURED FOR LEFT SIDE IMPACT

SID H3 Serial No: 015 Sequential Test Number: 4
 Date: May 17, 2003 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.7
RELATIVE HUMIDITY (%)	10 - 70	33.00
FORCE @ 0° (N)	0 - 26.7	0.0
FORCE @ 20° (N)	97.8 - 151.2	117.9
FORCE @ 30° (N)	151.2 - 204.6	171.3
FORCE @ 40° (N)	204.6 - 258	218.0
RETURN ANGLE	12° max.	5.5°

REMARKS: None

015
Dummy S/N

W/A

Date

Performed By

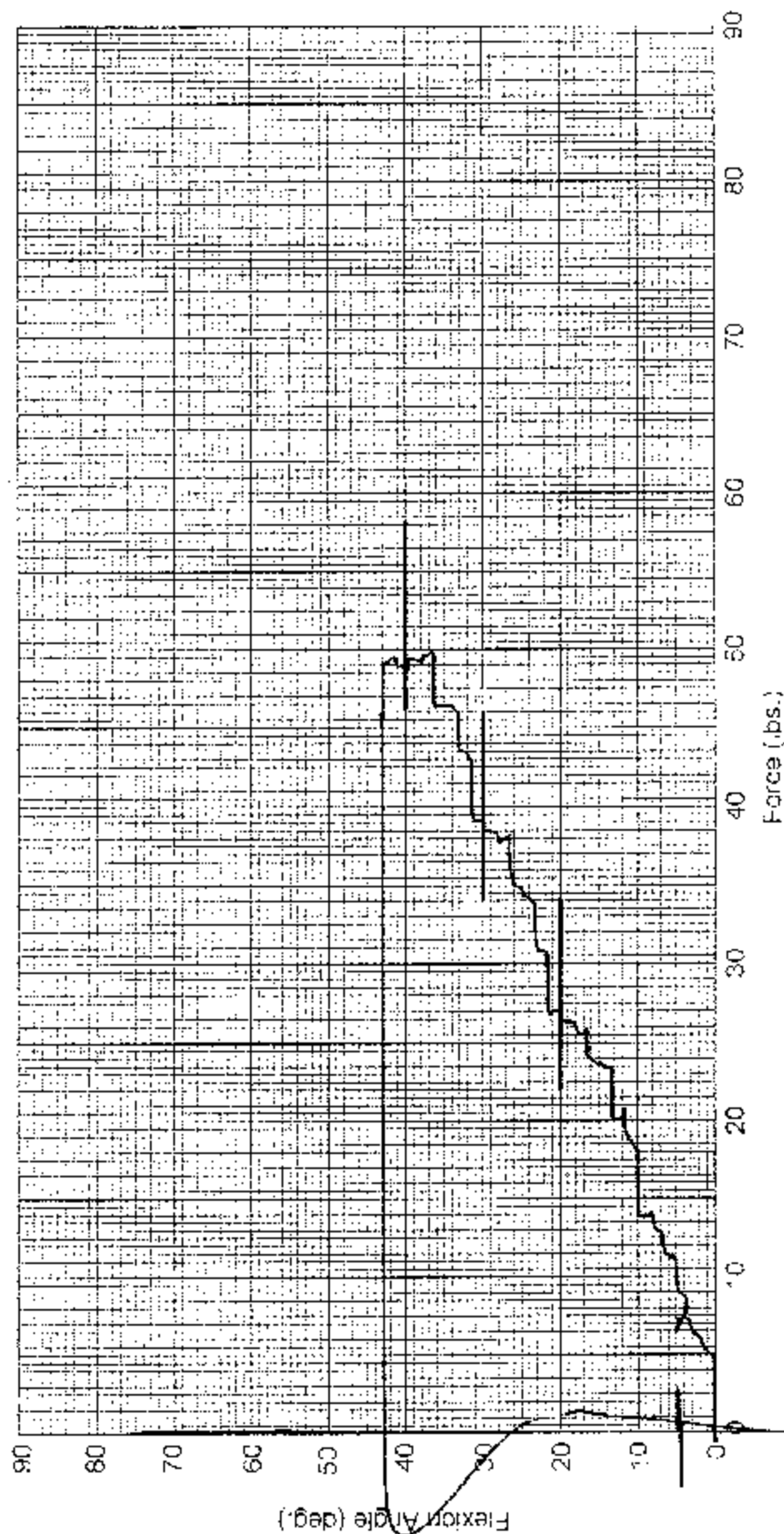
Temp.

Humidity

5-17-03

71°

33%



Hybrid II Lumbar Spine Flexion Test

POST TEST DUMMY INSPECTION LIST
CONFIGURED FOR LEFT SIDE IMPACT

SID H3 Serial No. 015 Sequential Test Number: 4
 Date: May 17, 2003 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 B3 NO.: 016

CONFIGURED FOR LEFT SIDE IMPACT

**CALIBRATION TEST RESULTS SUMMARY
POST TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID 113 Serial No.: 016 Sequential Test Number: 4
Date: May 17, 2003 Laboratory Technician: B. Swieciecki

TEST	COMMENTS
EXTERNAL DIMENSIONS	Passed all requirements.
LATERAL THORAX IMPACT TEST	Passed all requirements.
LATERAL PELVIS IMPACT TEST	Passed all requirements.
HEAD DROP TEST*	Passed all requirements.
LATERAL NECK BEND 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 H3 Serial No. 016

Sequential Test Number:

4

Date: May 17, 2003

Laboratory Technician:

B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
SH- Seated Height (mm)	889 - 909	902
RH- Rib Height (mm)	502 - 520	513
HP- Hip Pivot Height (mm)	99 ref	99
RD- Rib from Back Line (mm)	229 - 241	239
KH- Knee Pivot from Back Line (mm)	511 - 526	521
KV- Knee Pivot to Floor (mm)	490 - 505	495
HW- Hip Width (mm)	356 - 391	371

REMARKS: None

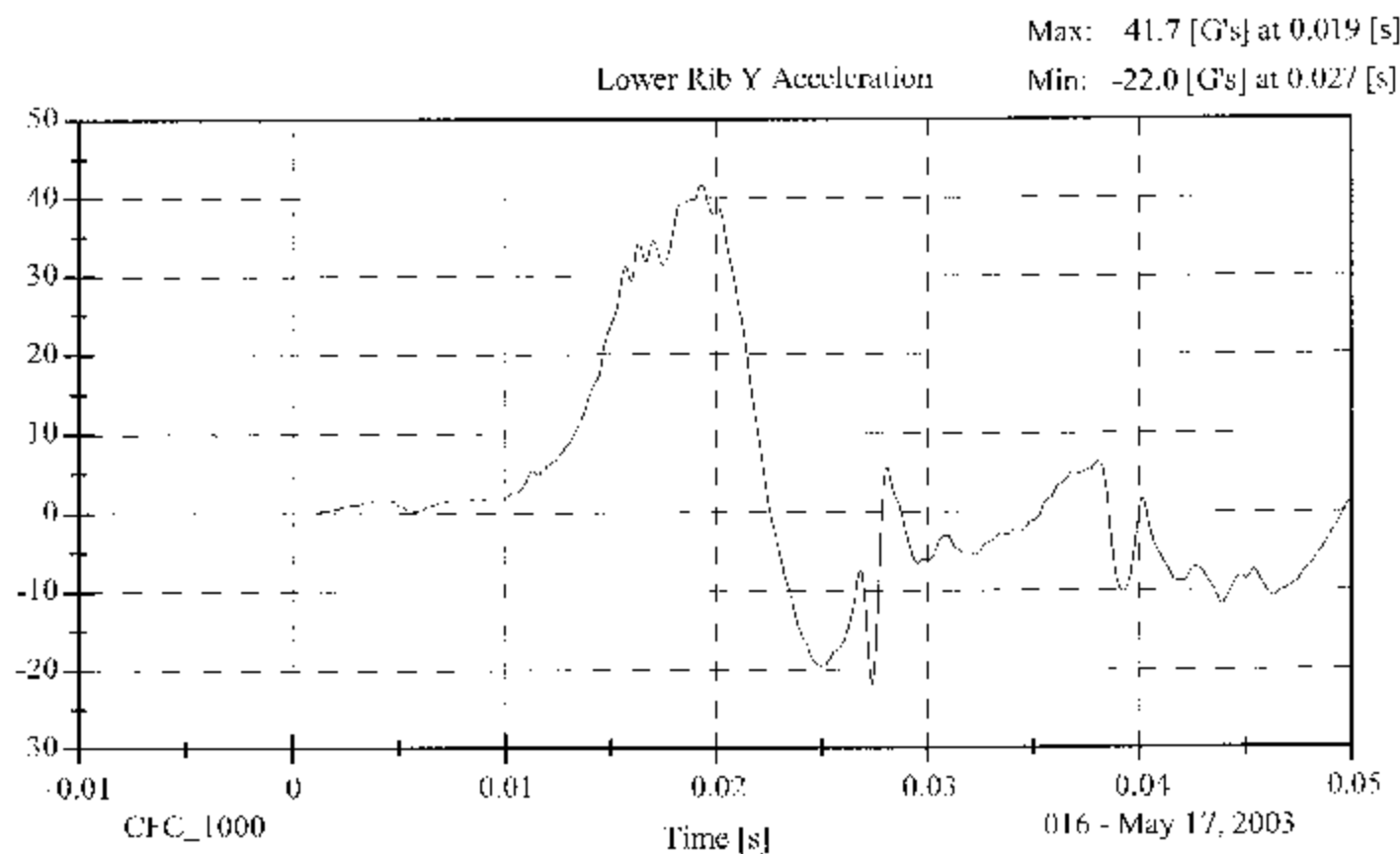
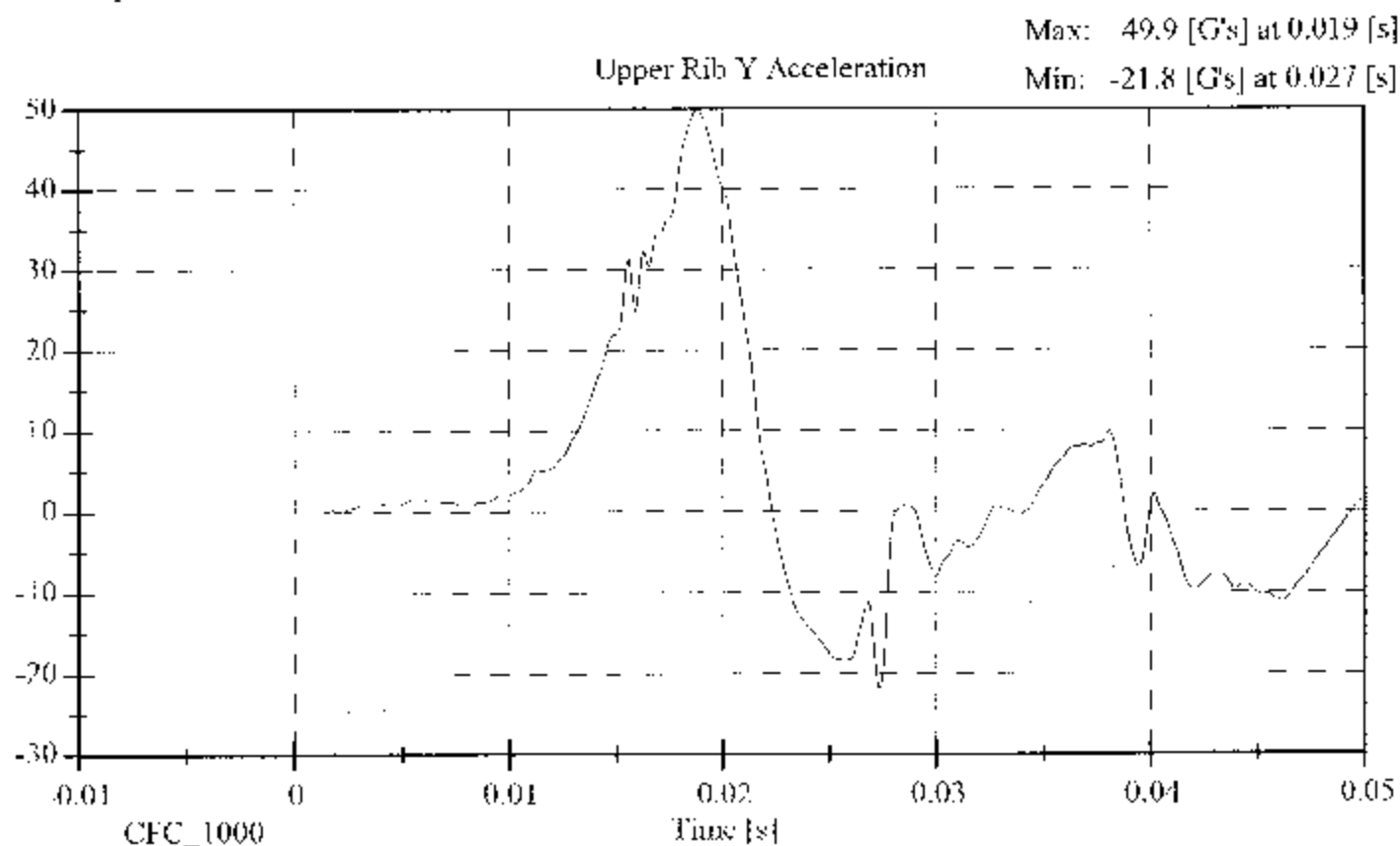
LATERAL THORAX IMPACT TEST POST TEST

CONFIGURED FOR LEFT SIDE IMPACT

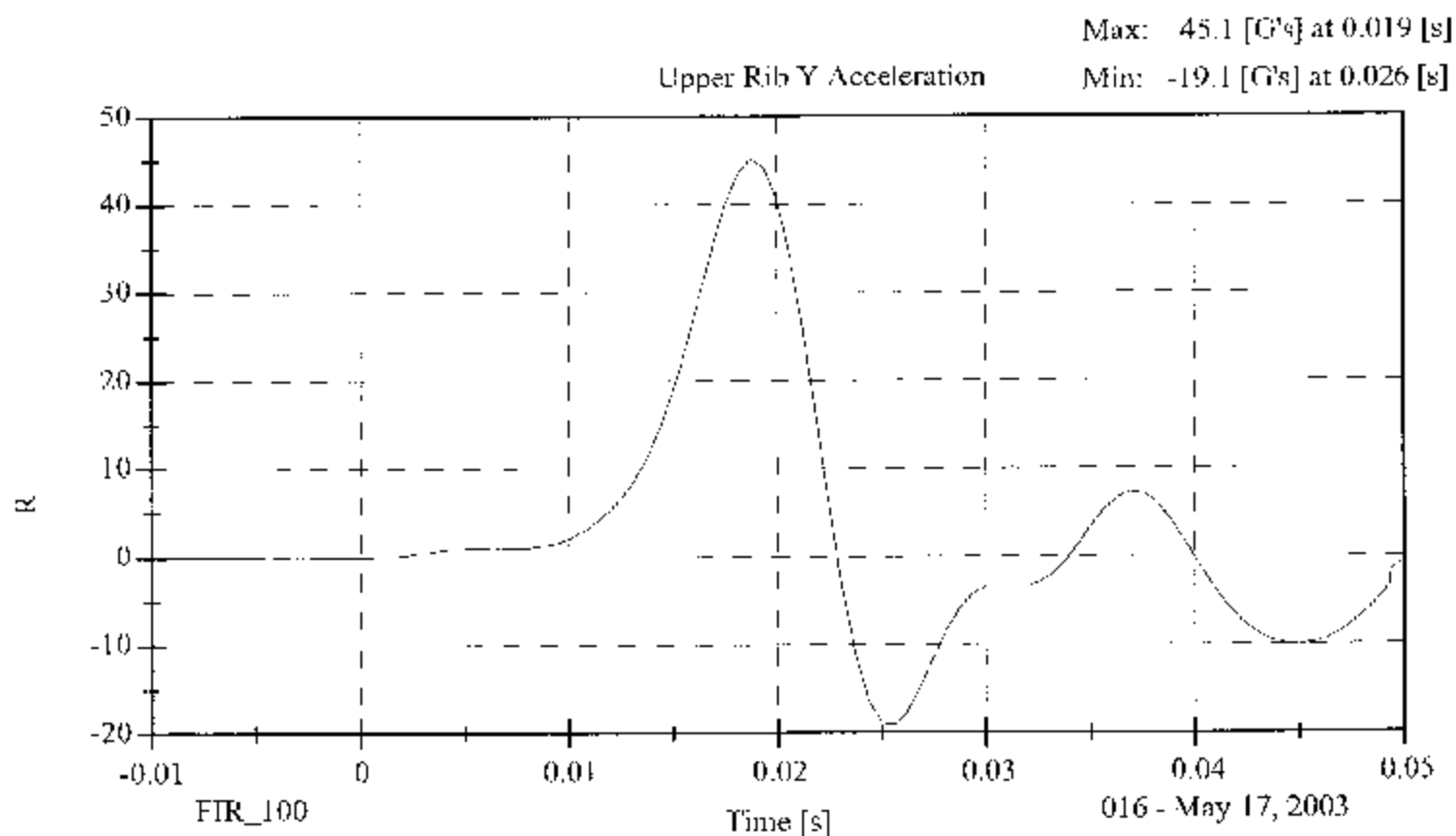
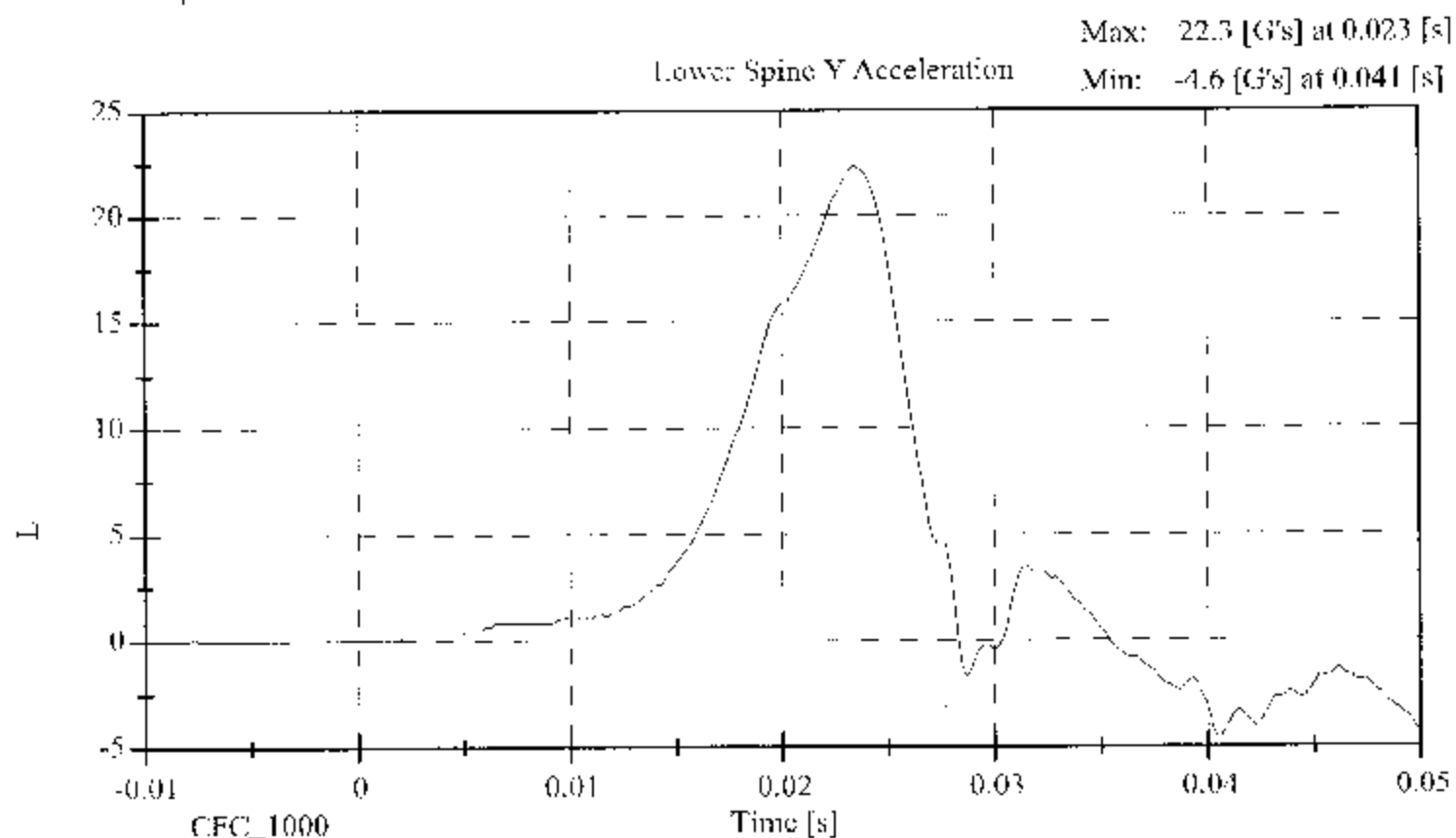
SID 113 Serial No.: 916 Sequential Test Number: 1
 Date: May 17, 2003 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.1
RELATIVE HUMIDITY (%)	10 - 70	34.00
PROBE SPEED (m/s)	4.27 - 4.33	4.27
UPPER RIB (g's)	37 - 46	45.06
LOWER RIB (g's)	37 - 46	40.71
LOWER SPINE (g's)	15 - 22	21.67

REMARKS: None



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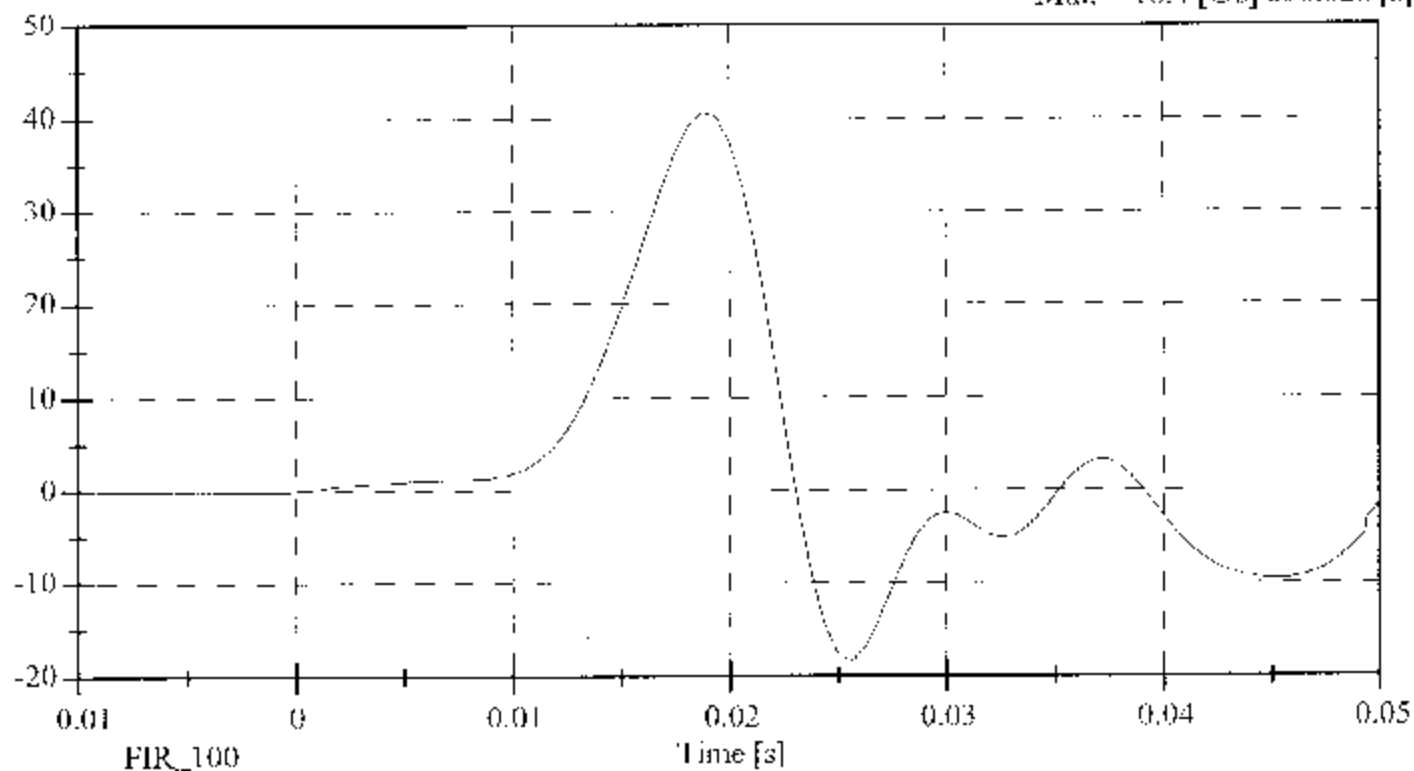


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Lower Rib Y Acceleration

Max: 40.7 [G's] at 0.019 [s]

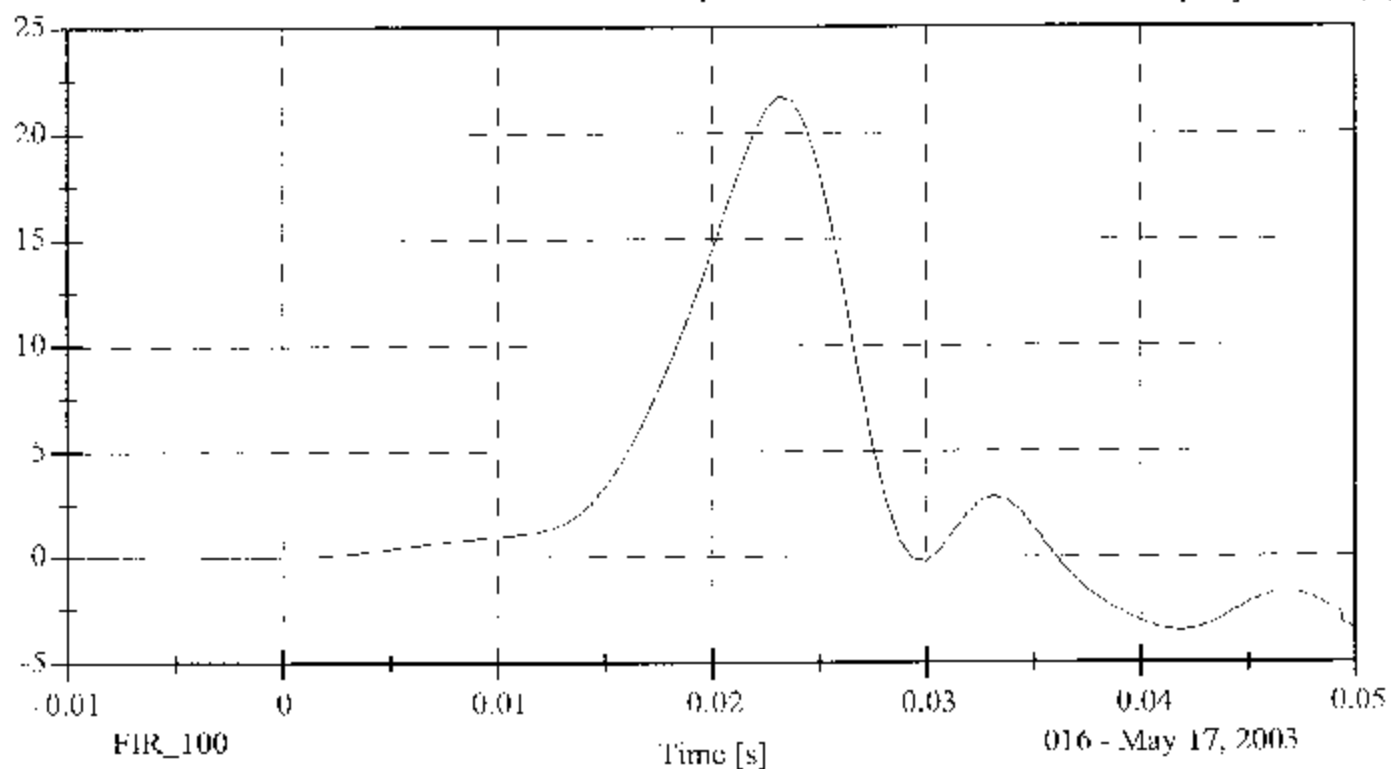
Min: -18.4 [G's] at 0.026 [s]



Lower Spine Y Acceleration

Max: 21.7 [G's] at 0.023 [s]

Min: -3.5 [G's] at 0.042 [s]



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LATERAL PELVIS IMPACT TEST
POST TEST

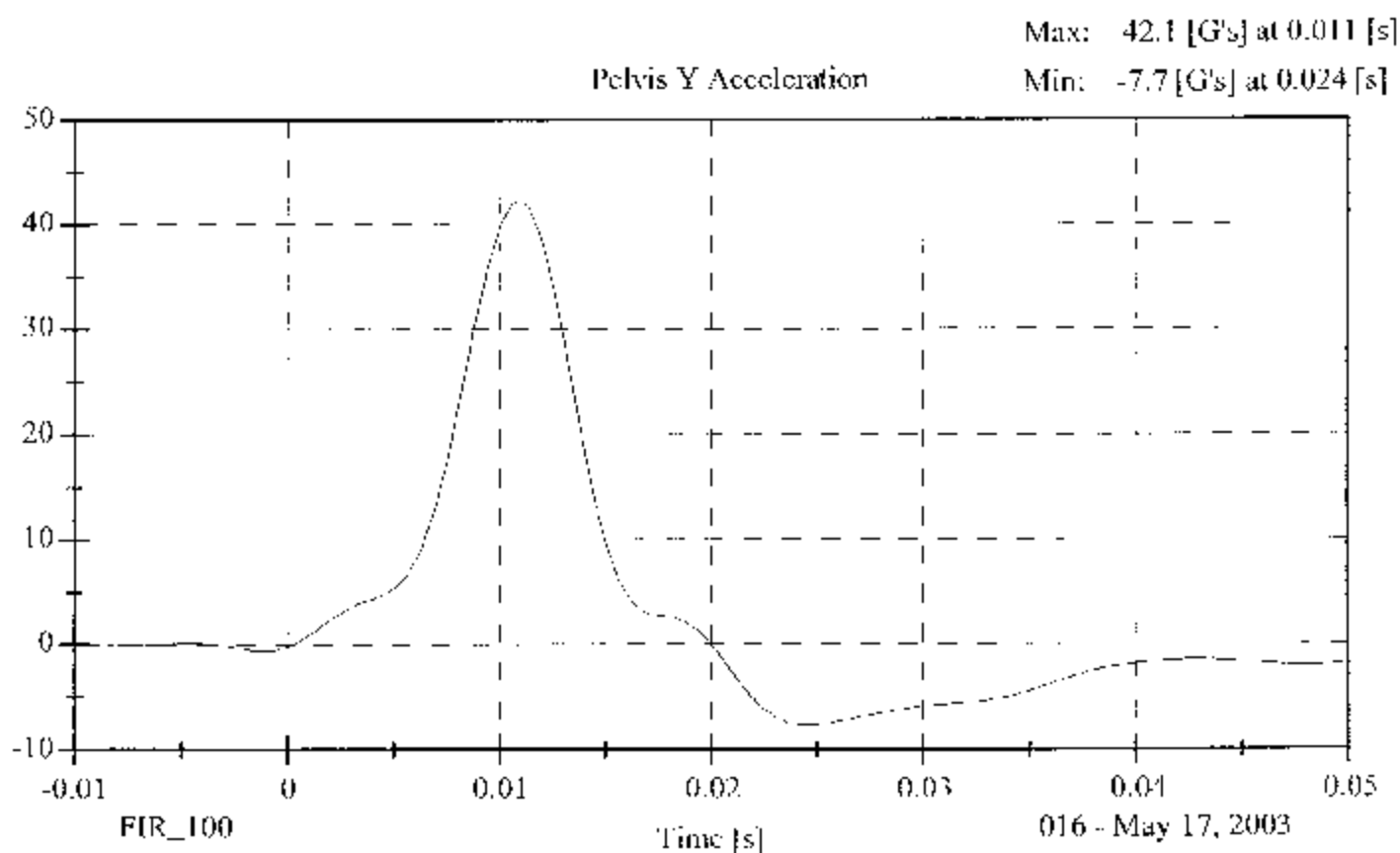
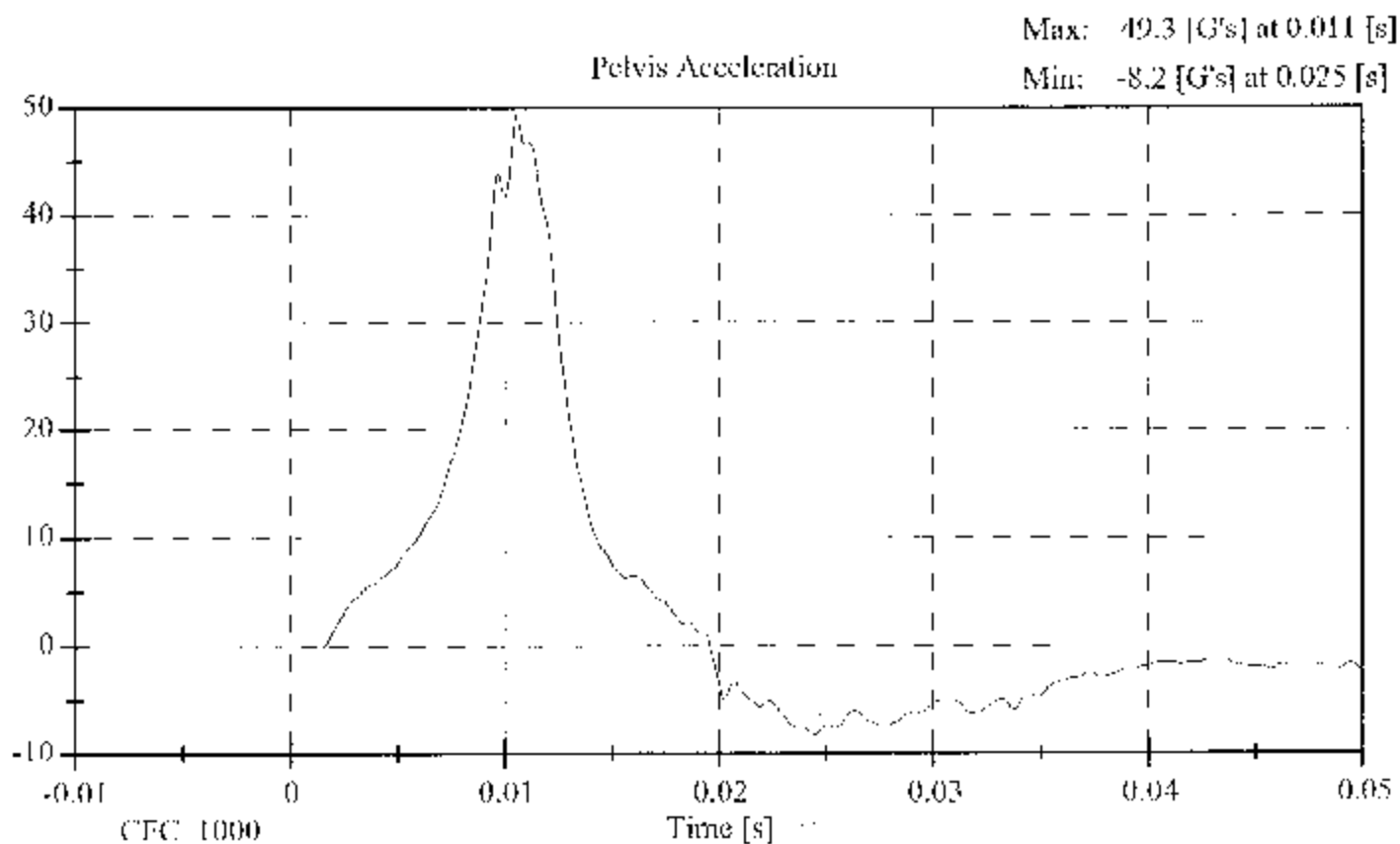
CONFIGURED FOR LEFT SIDE IMPACT

SID III Serial No: 016 Sequential Test Number: 4
Date: May 17, 2003 Laboratory Technician: B. Swieczki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.1
RELATIVE HUMIDITY (%)	10 - 70	34.00
PROBE SPEED (m/s)	4.27 - 4.33	4.28
PELVIS ACCELERATION (g's)	40 - 60	42.13

REMARKS: None

Pelvis Impact



CONFIGURED FOR LEFT SIDE IMPACT

1

13. Swieczki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	20.6 - 22.2	21.1
RELATIVE HUMIDITY (%)	10 - 70	40
PEAK RESULTANT ACCELERATION (Gs)	120 - 150	136.63
PEAK LATERAL ACCELERATION (Gs)	Not to Exceed 15	1.57
CURVE PERCENT NONMODAL (%)	< 15	2.97

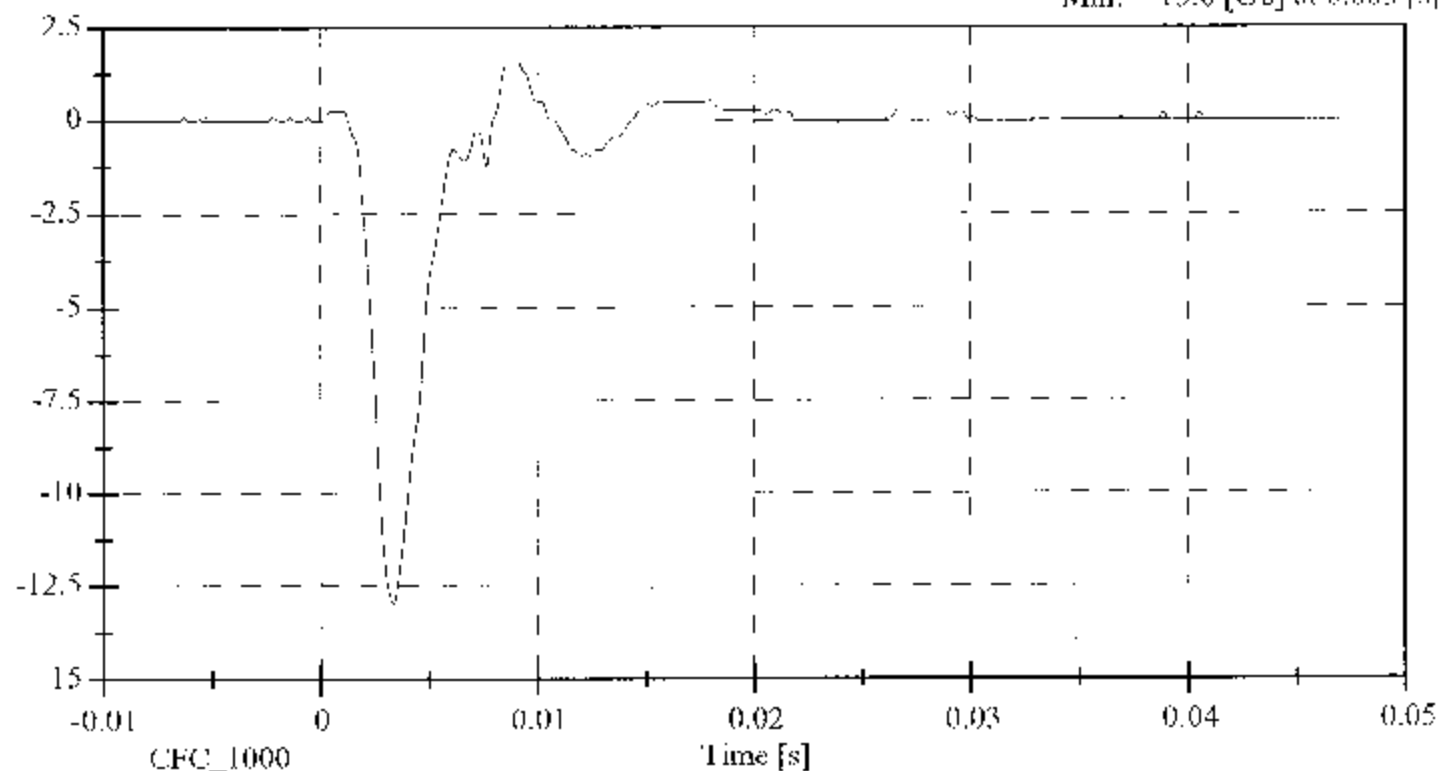
REMARKS: None

Head Drop

Head X Acceleration

Max: 1.6 [G's] at 0.009 [s]

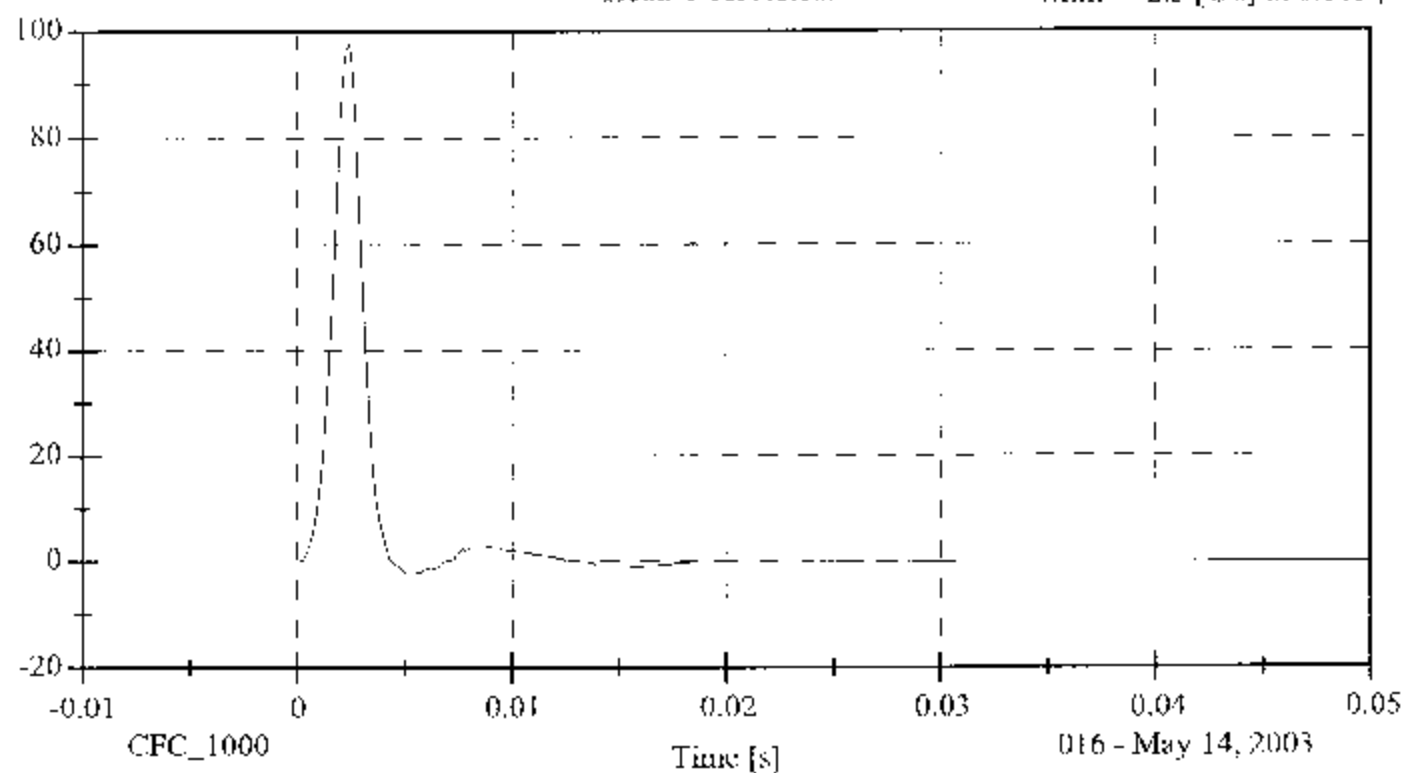
Min: -13.0 [G's] at 0.003 [s]



Head Y Acceleration

Max: 97.5 [G's] at 0.002 [s]

Min: -2.3 [G's] at 0.005 [s]



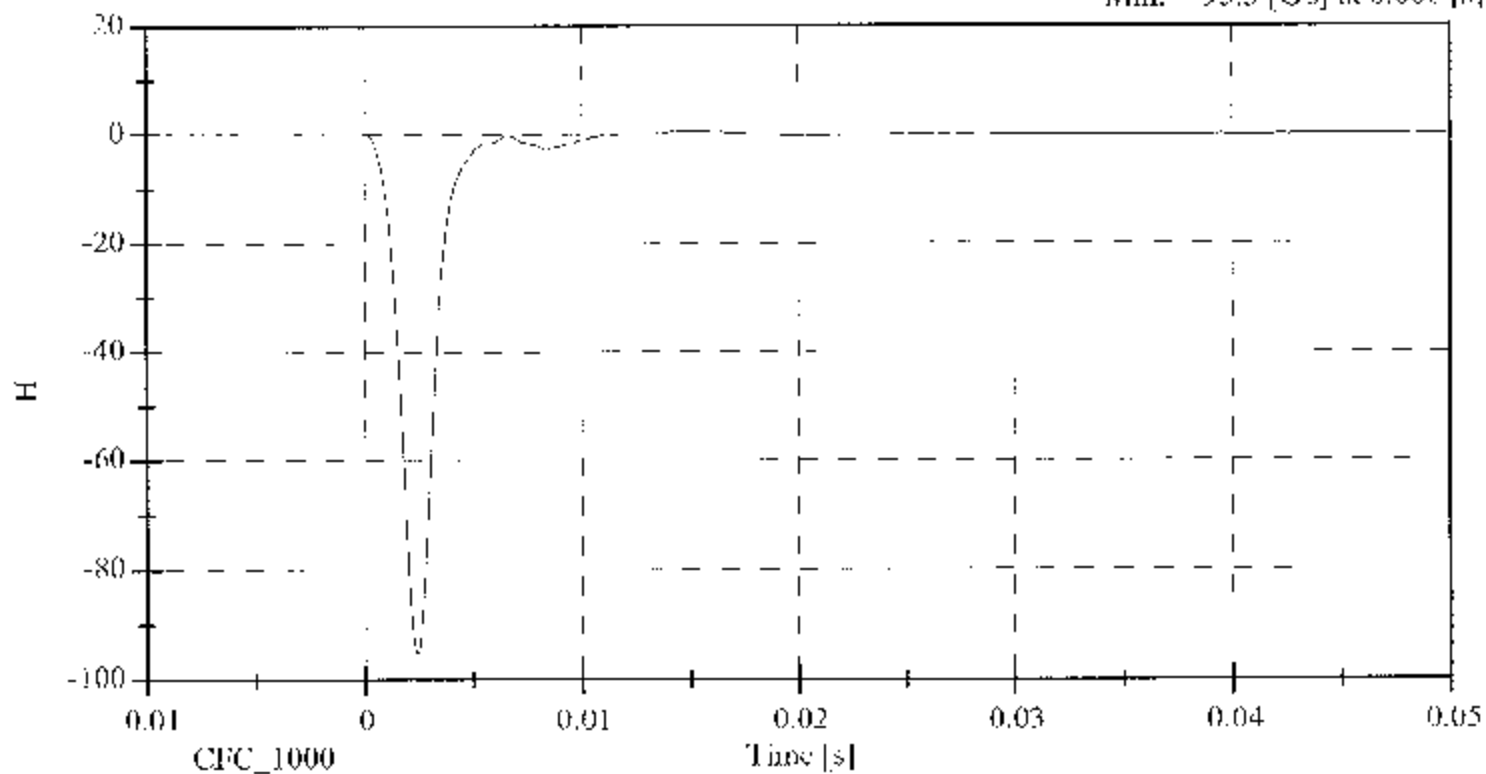
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Head Drop

Head Z Acceleration

Max: 0.5 [G's] at 0.016 [s]

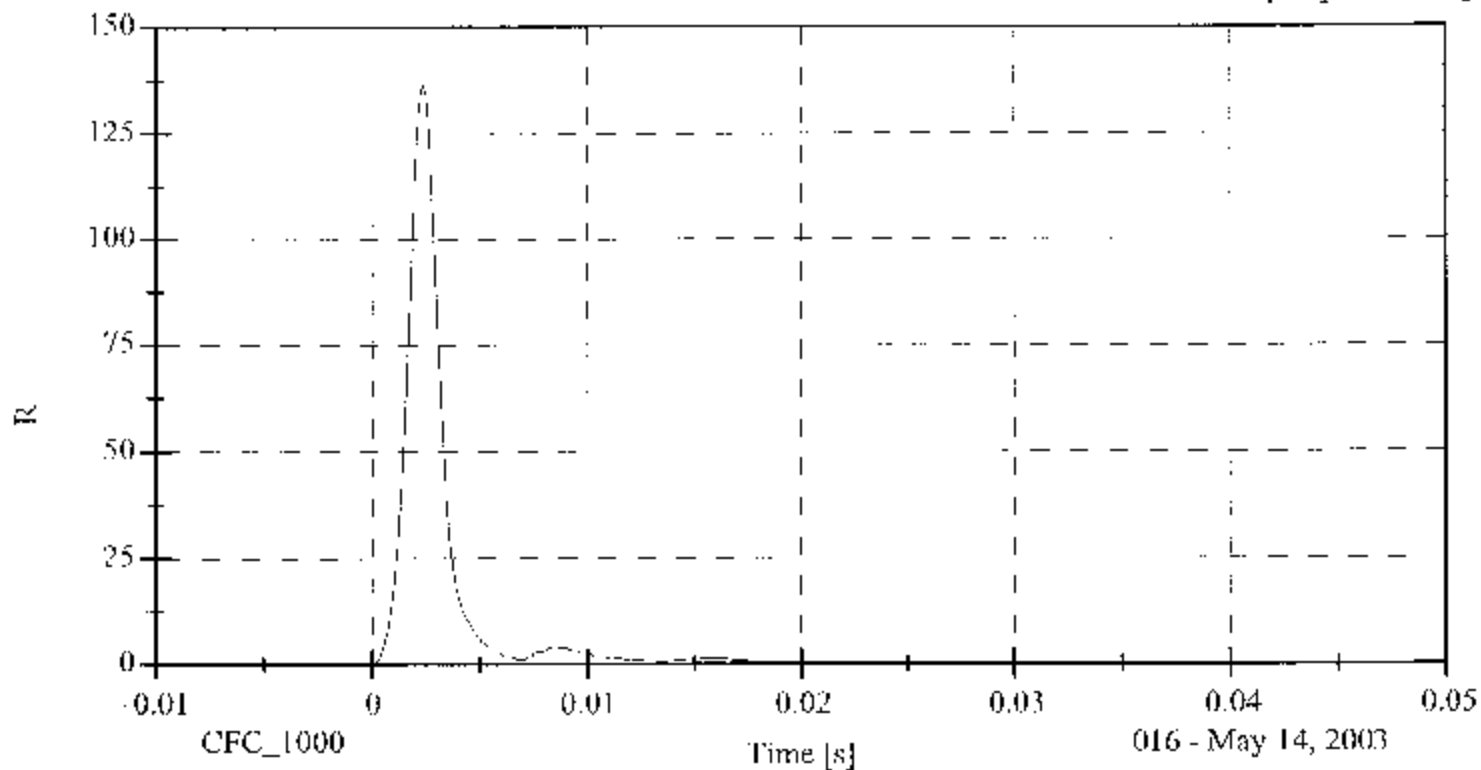
Min: -95.5 [G's] at 0.002 [s]



Head Resultant

Max: 136.6 [G's] at 0.002 [s]

Min: 0.0 [G's] at -0.002 [s]



016 - May 14, 2003

**LATERAL NECK BENDING TEST
POST-TEST**

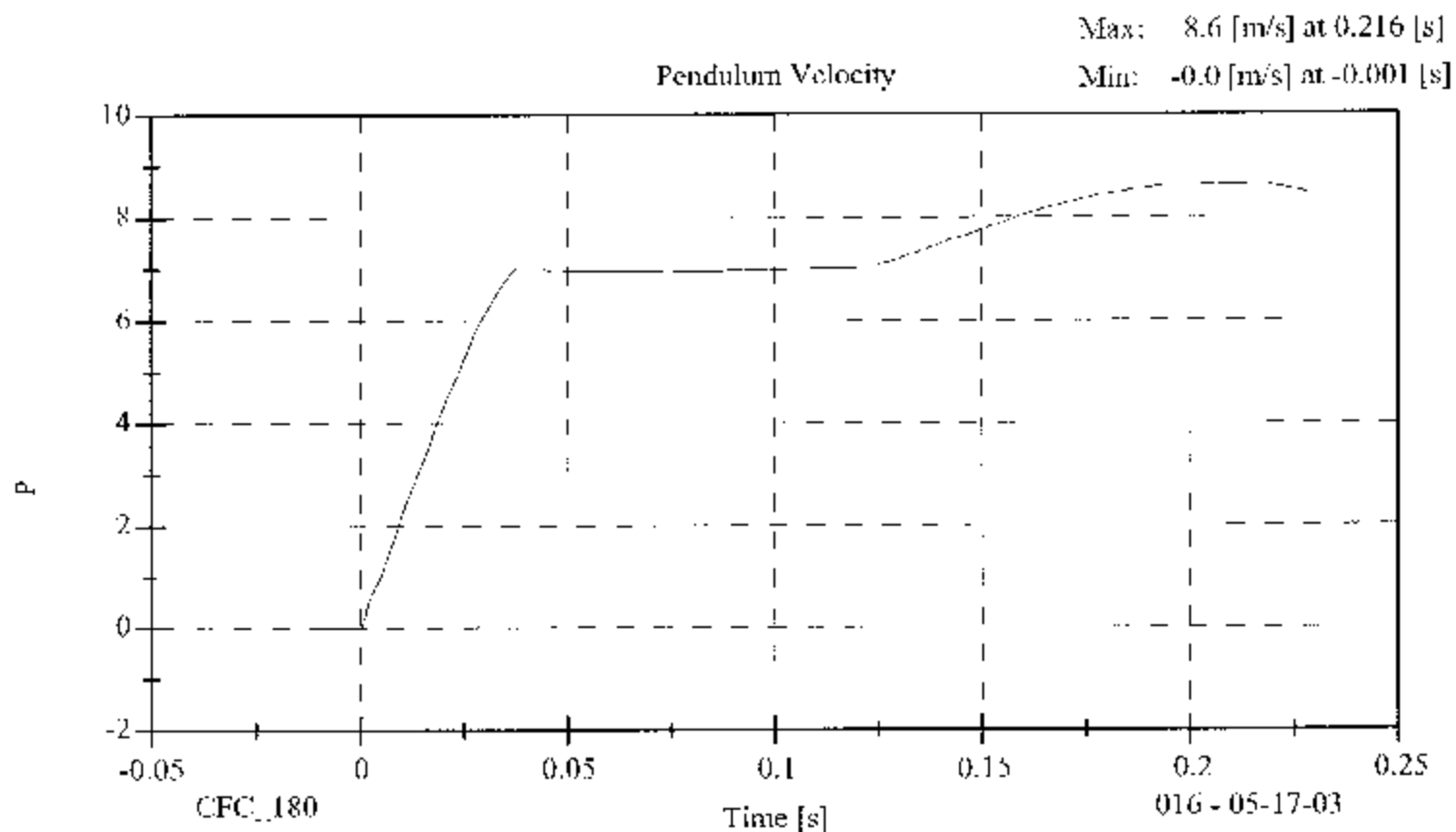
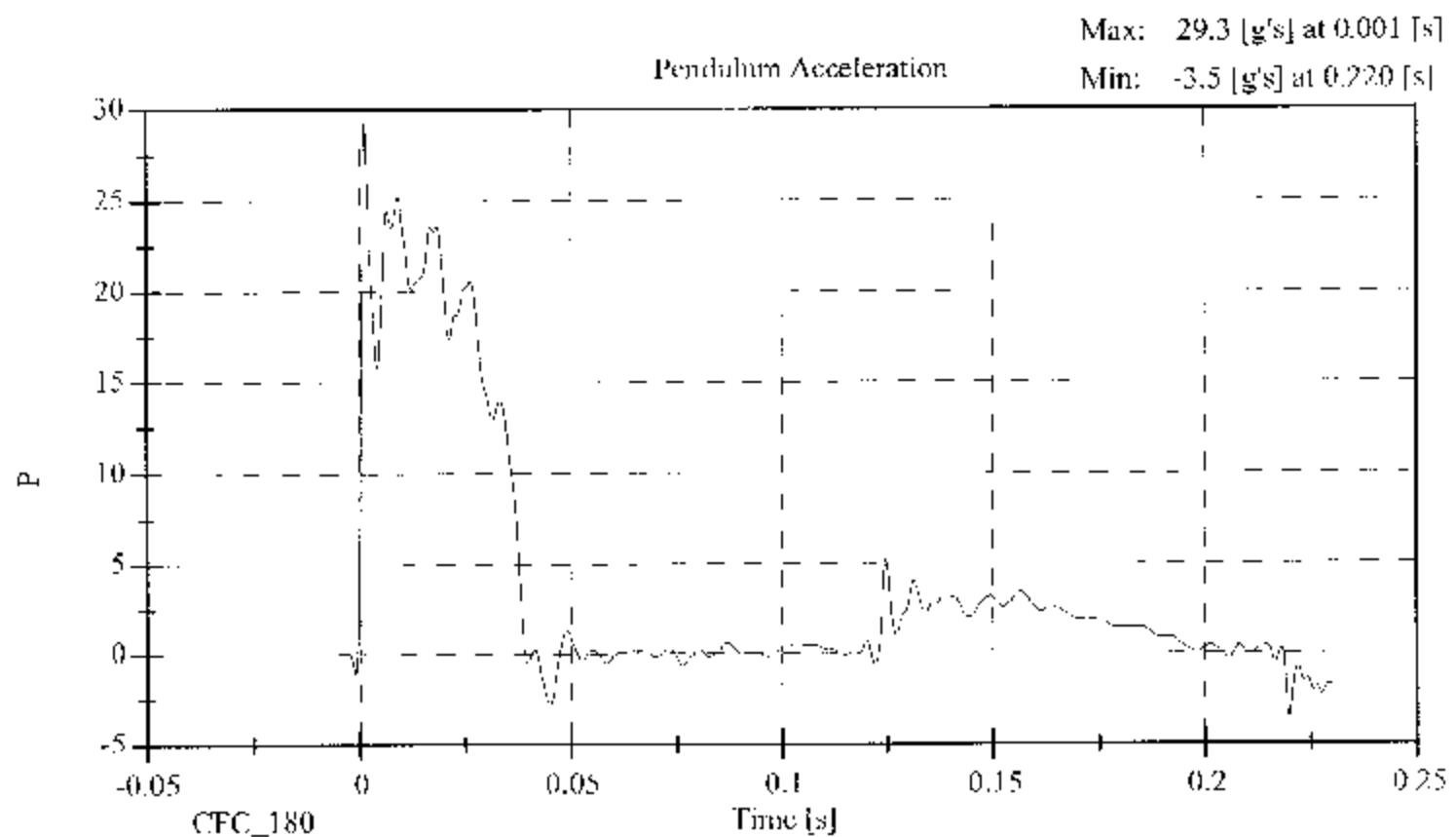
(Test not required for SID certification)

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 016 Sequential Test Number: 4
Date: May 17, 2000 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	20.6 - 22.2	21.1
RELATIVE HUMIDITY (%)	10 - 70	33.0
IMPACT VELOCITY (m/s)	6.89 - 7.13	6.88
PENDULUM DELTA V		
DELTA V @ 10 ms (m/s)	1.96 - 2.55	2.16
DELTA V @ 20 ms (m/s)	4.12 - 5.10	4.31
DELTA V @ 30 ms (m/s)	5.73 - 7.01	6.12
DELTA V @ 40-70 ms (m/s)	6.21 - 7.61	7.03
IN PLANE ROTATION		
MAXIMUM ROTATION (deg)	64 - 78	73.29
ROT. ANGLE TIME to ZERO (ms)	50 - 70	61.50
MOMENT ABOUT THE OCCIPITAL CONDYLE		
MAX OCCIPITAL MOMENT (Nm)	88 - 108	88.85
OCCIPITAL MOMENT DECAY (ms)	40.0 - 60.0	52.00
HEAD ROTATION TIME WITH RESPECT TO THE OCCIPITAL CONDYLE MOMENT		
ROTATION wrt MOMENT (ms)	0 - 20	11.10

REMARKS: None

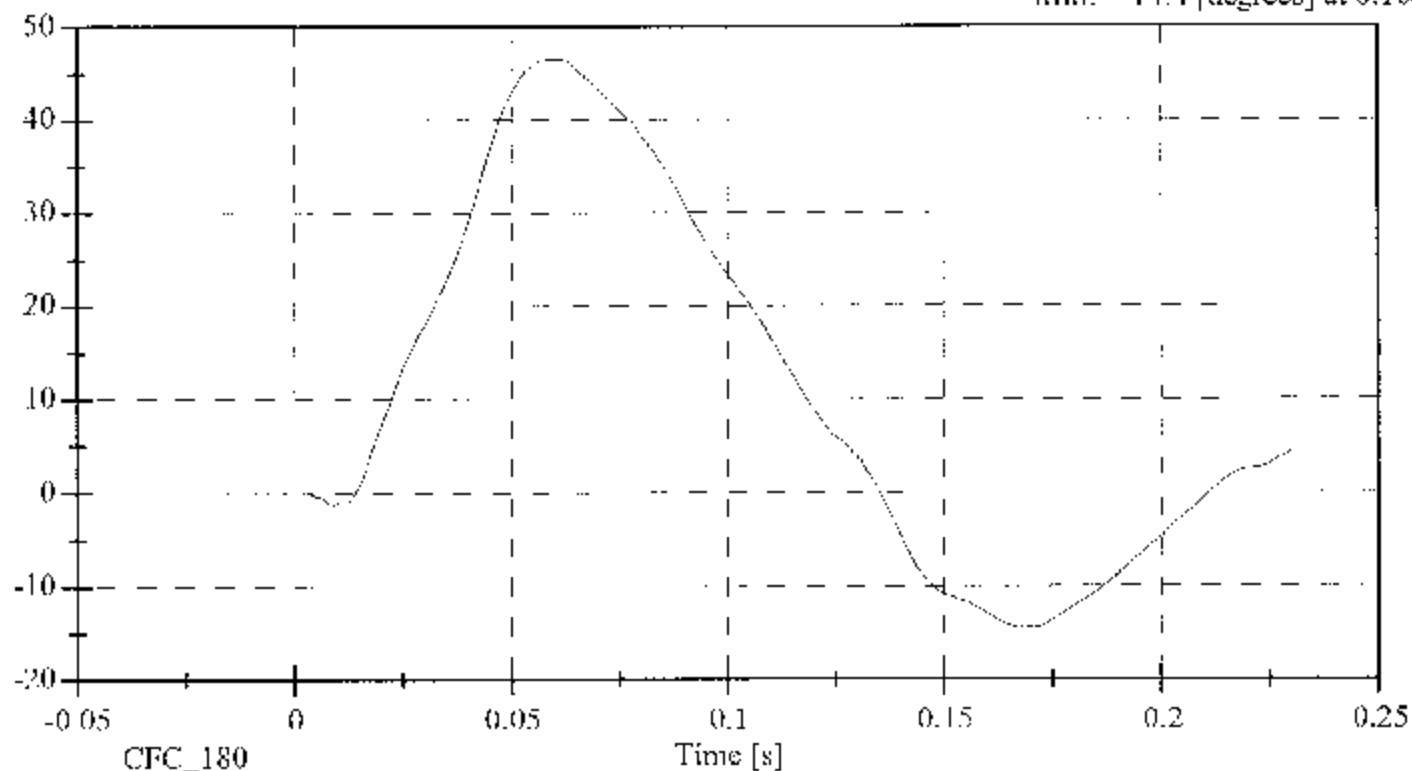


Neck Test

Head Rotation

Max: 46.6 [degrees] at 0.061

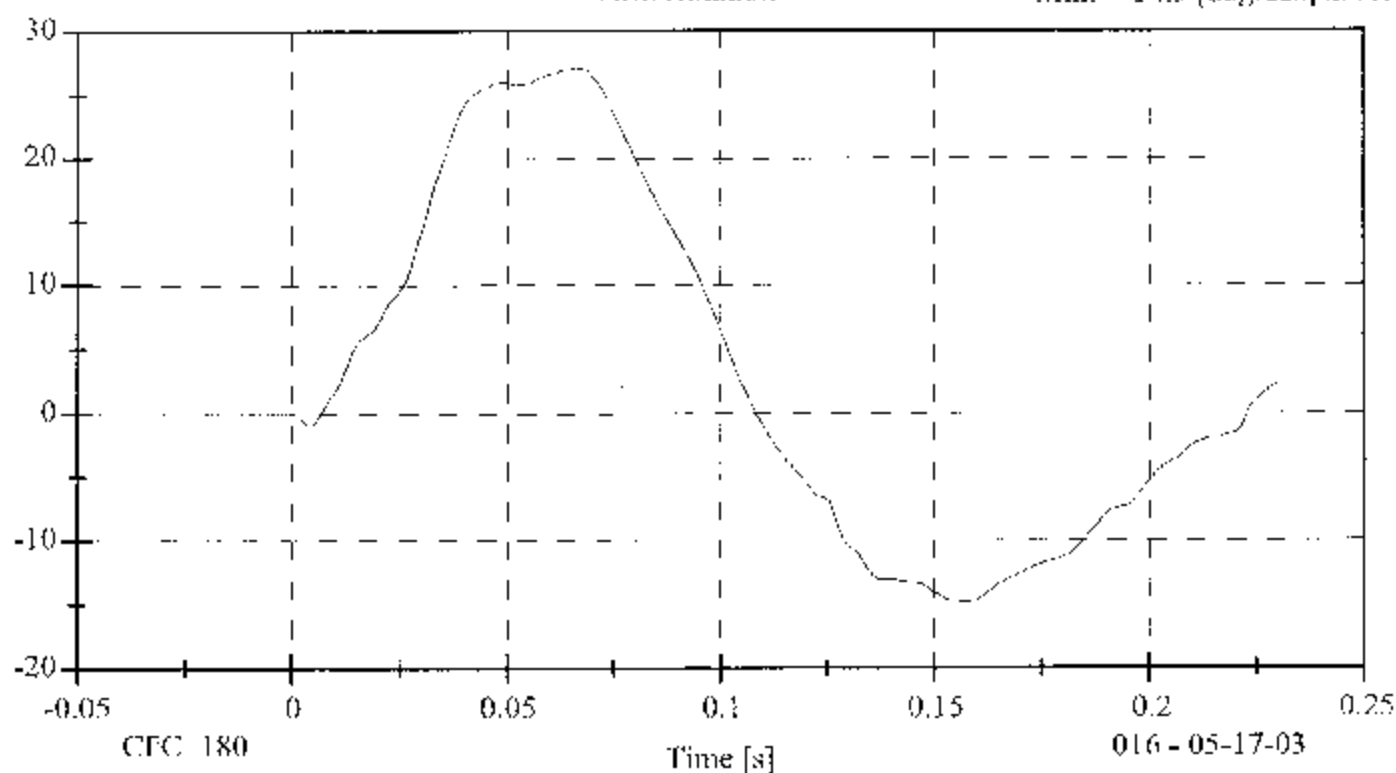
Min: -14.4 [degrees] at 0.168



Arm Rotation

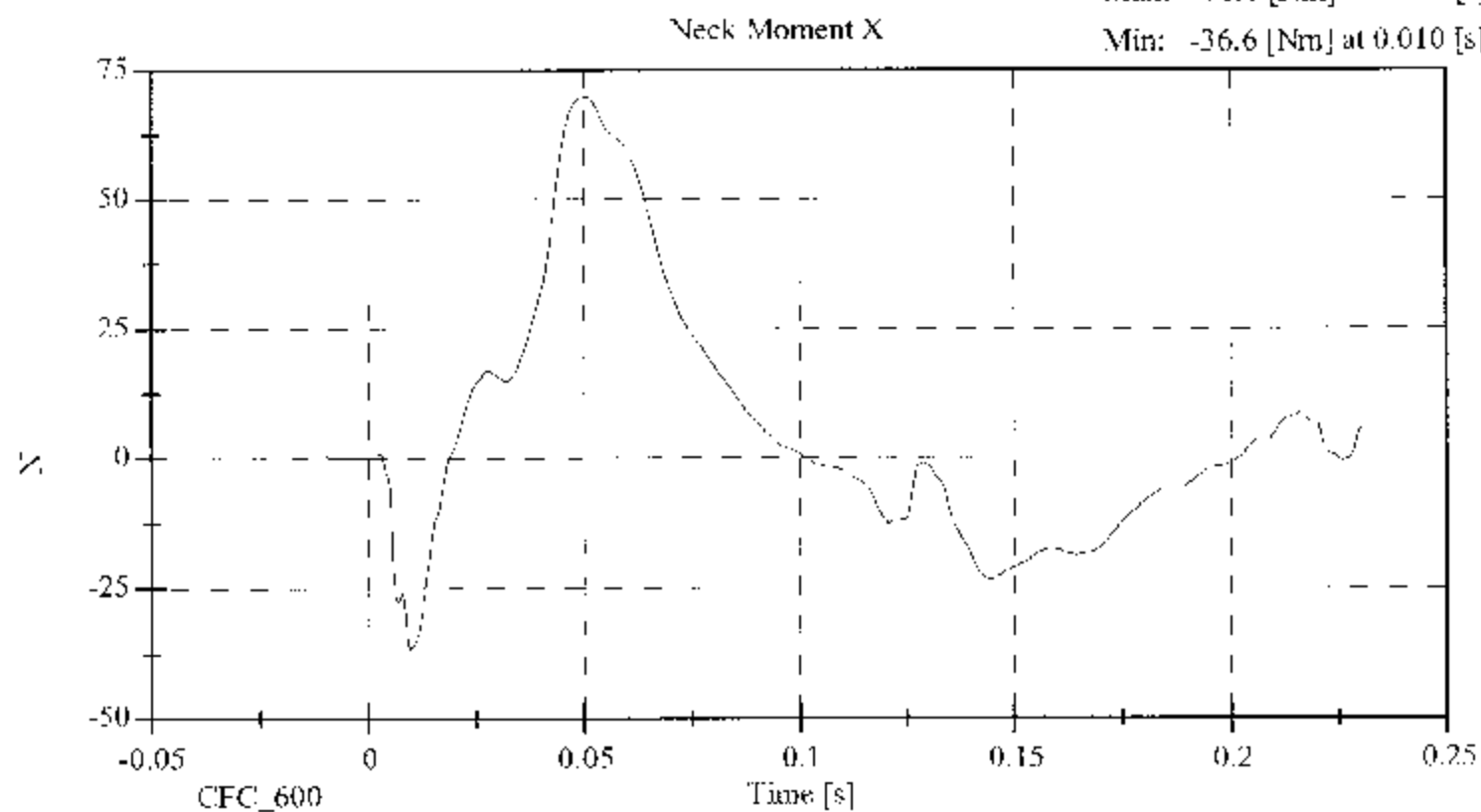
Max: 27.1 [degrees] at 0.066

Min: -14.9 [degrees] at 0.157



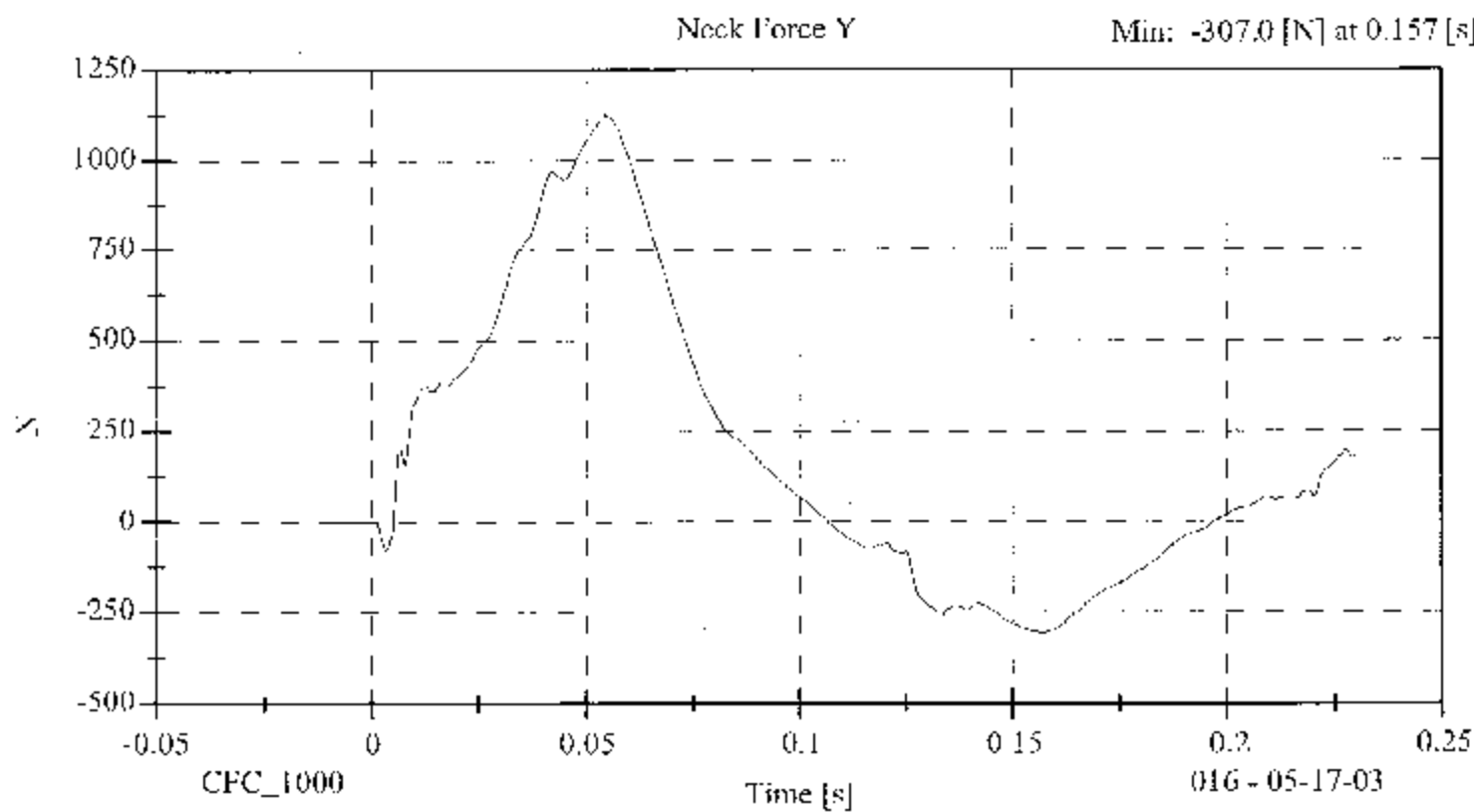
Max: 70.0 [Nm] at 0.051 [s]

Min: -36.6 [Nm] at 0.010 [s]



Max: 1127.8 [N] at 0.055 [s]

Min: -307.0 [N] at 0.157 [s]

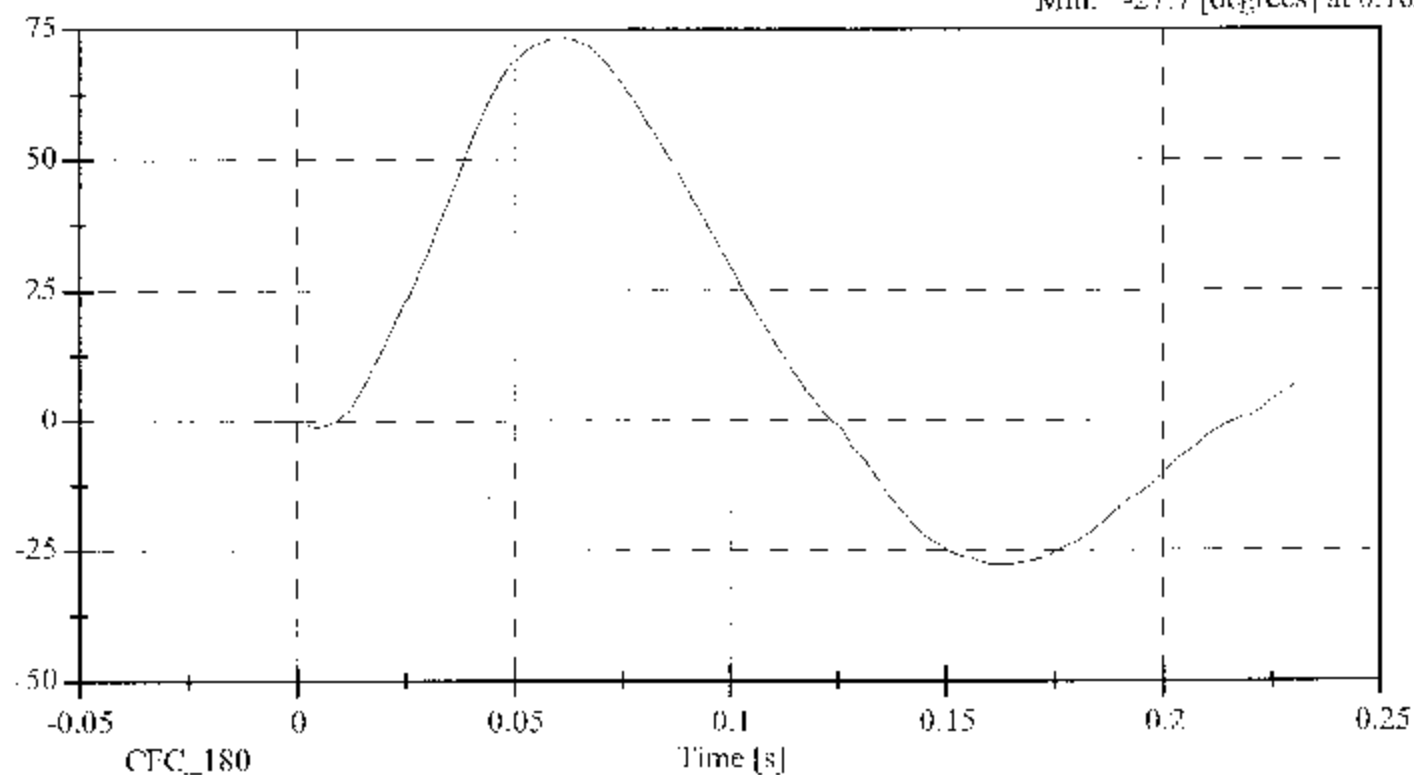


Neck Test

Max: 73.3 [degrees] at 0.067

Min: -27.7 [degrees] at 0.163

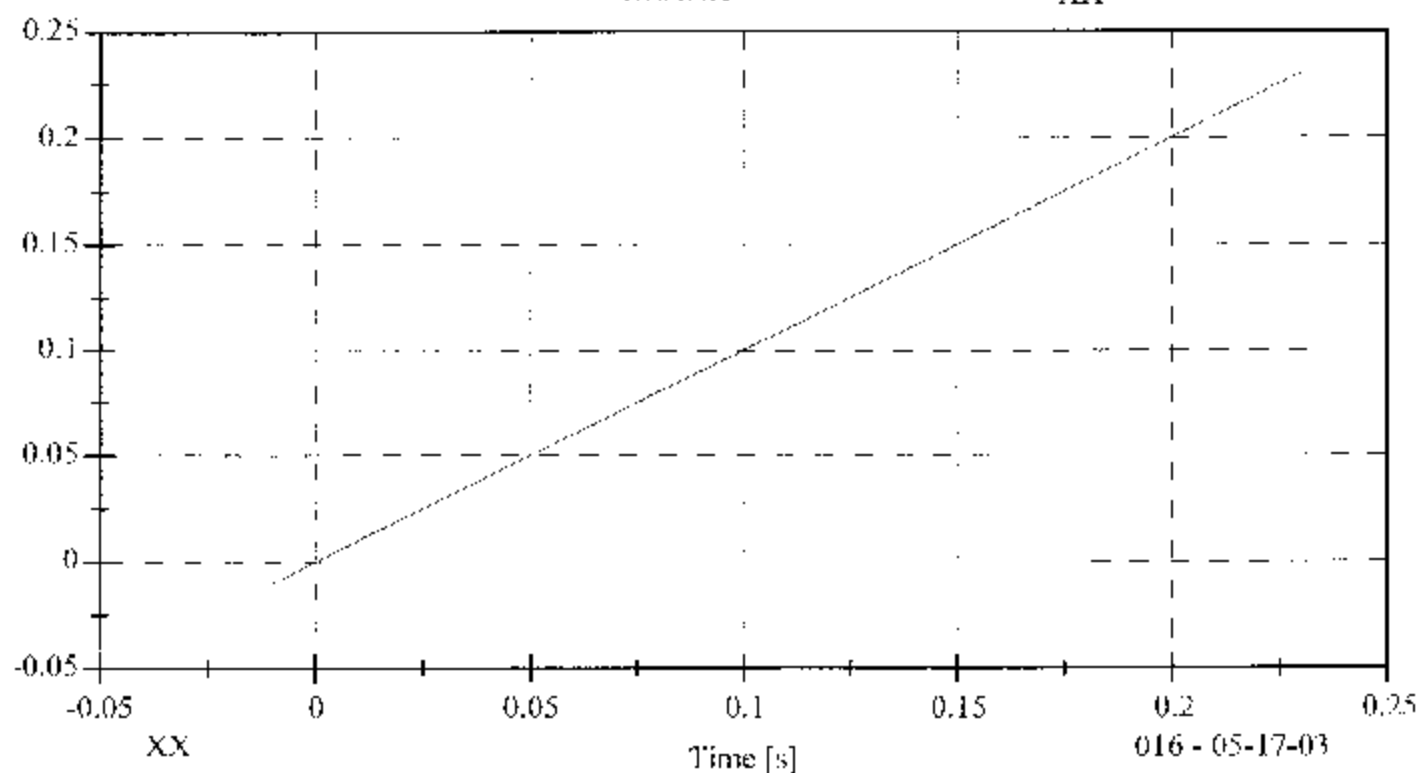
Total Rotation



BLANK

XX

XX



**ABDOMINAL COMPRESSION TEST
POST TEST**

(Test not required for SID certification)

CONFIGURED FOR LEFT SIDE IMPACT

SID H3 Serial No.: 016

Sequential Test Number:

4

Date:

May 17, 2003

Laboratory Technician:

B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.7
RELATIVE HUMIDITY (%)	10 - 70	33.00
FORCE @ 13 mm (N)	104 - 162	124.6
FORCE @ 19 mm (N)	163 - 221	191.3
FORCE @ 25 mm (N)	222 - 280	262.4
FORCE @ 33 mm (N)	325 - 391	371.4

REMARKS: None

Dummy S/N

016

W/A

Date

5-12-03

Performed By

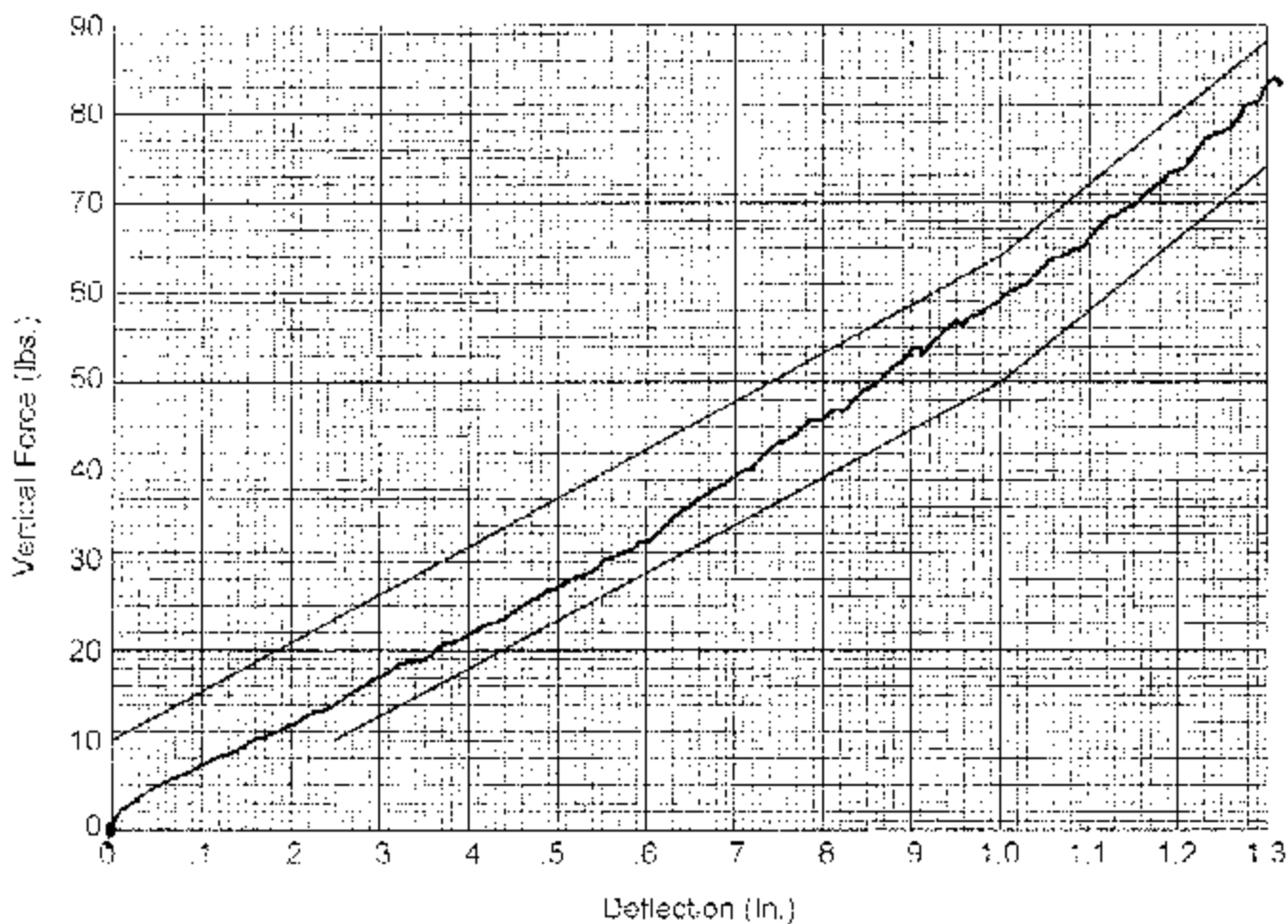
[Signature]

Temp.

71°

Humidity

33%



Hybrid II
Abdomen Static Press

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

CONFIGURED FOR LEFT SIDE IMPACT

SID H3 Serial No: 016 Sequential Test Number: 4
 Date: May 17, 2003 Laboratory Technician: B. Swislocki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (°C)	18.9 - 25.5	21.7
RELATIVE HUMIDITY (%)	10 - 70	83.00
FORCE @ 0° (N)	0 - 26.7	0.0
FORCE @ 20° (N)	97.8 - 151.2	111.2
FORCE @ 30° (N)	151.2 - 204.6	166.8
FORCE @ 40° (N)	204.6 - 258	220.2
RETURN ANGLE	12° max.	3°

REMARKS: None

Dummy SN

016

M/A

Date

5/17/03

Performed By

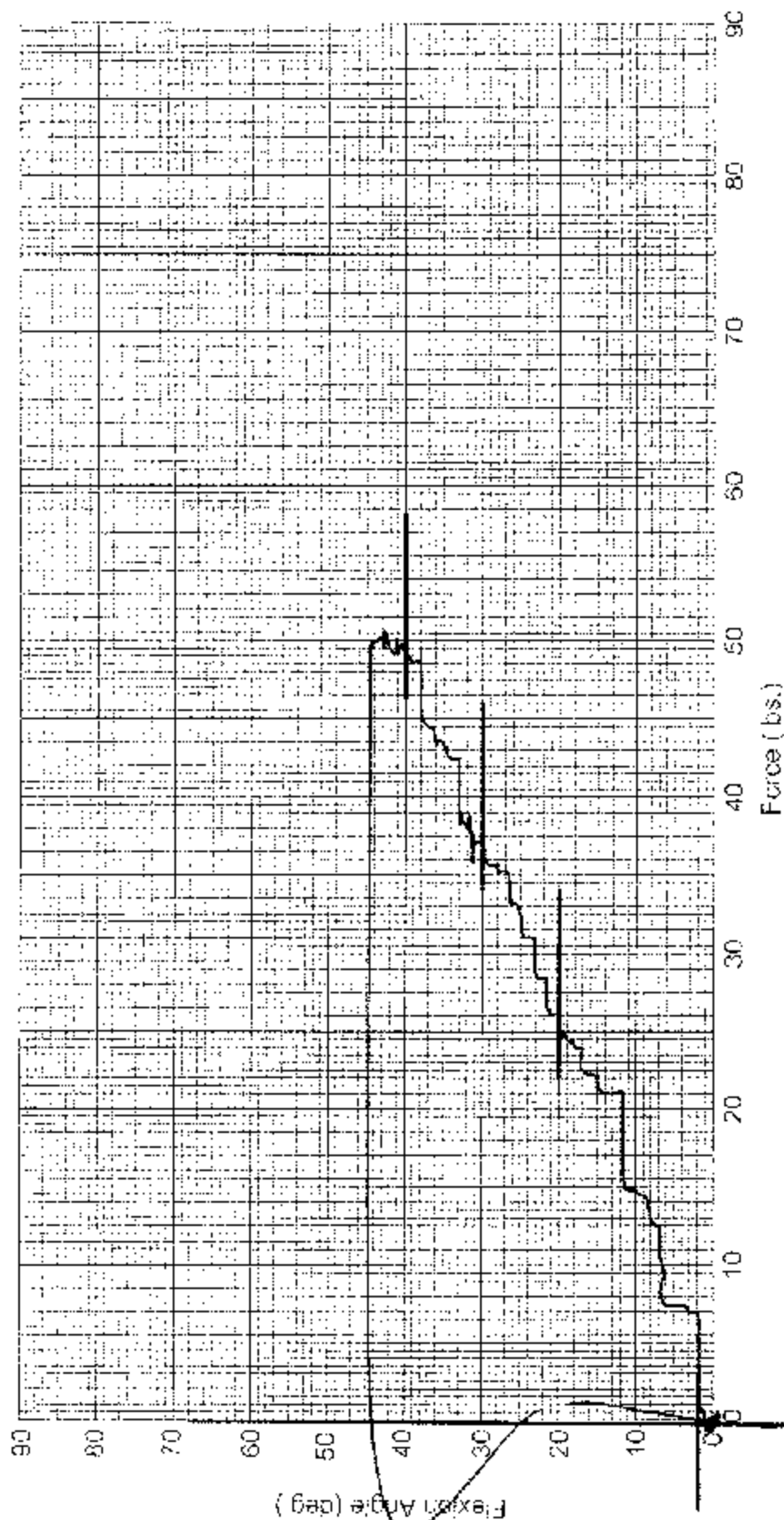
PAZ

Temp.

71.1

Humidity

23%



Hybrid II Lumbar Spine Flexion Test

FM-052-CEST-005-R00

FM-052-CEST-005-R00

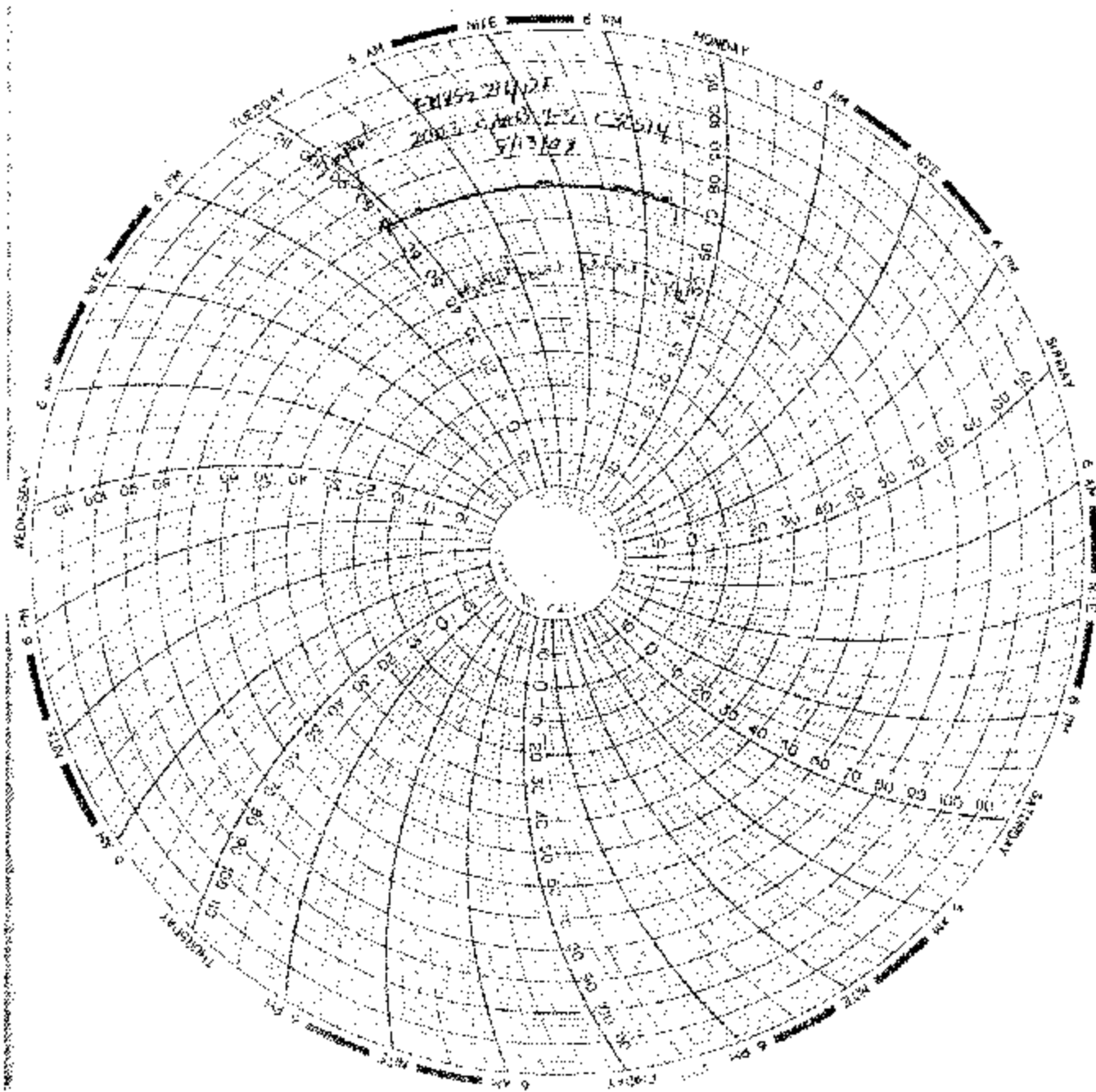
POST TEST DUMMY INSPECTION LIST
CONFIGURED FOR LEFT SIDE IMPACT

SID HV Serial No.: 016 Sequential Test Number: 4
 Date: May 17, 2003 Laboratory Technician: B. Swieczicki

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

REMARKS: None

TEMPERATURE TRACE



APPENDIX D

TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

TEST EQUIPMENT LIST AND CALIBRATION INFORMATION
SID INSTRUMENTATION

	FRONT SID NO. 015		
	SERIAL NUMBER	MANUFACTURER	CALIBRATION DATE
NAAH HEAD X ARM Y	AC-01G18-F06	ENTRAN	4/7/2003
NAAH HEAD X ARM Z	AC-01B00L13-F39	ENTRAN	4/7/2003
NAAH HEAD Y ARM X	AC-00L12-F14	ENTRAN	4/7/2003
NAAH HEAD Y ARM Z	AC-01G18-F16	ENTRAN	4/7/2003
NAAH HEAD Z ARM X	AC-01B00L13-F37	ENTRAN	4/7/2003
NAAH HEAD Z ARM Y	AC-01G18-F12	ENTRAN	4/7/2003
HEAD AX	AC-P23993	ENDEVCO	12/4/2002
HEAD AY	AC-P23939	ENDEVCO	12/4/2002
HEAD AZ	AC-P23999	ENDEVCO	12/4/2002
UPPER NECK FX	LC-260FX	DENTON	12/12/2002
UPPER NECK FY	LC-260FY	DENTON	12/12/2002
UPPER NECK FZ	LC-260FZ	DENTON	12/12/2002
UPPER NECK MX	LC-260MX	DENTON	12/12/2002
UPPER NECK MY	LC-260MY	DENTON	12/12/2002
UPPER NECK MZ	LC-260MZ	DENTON	12/12/2002
UPPER RIB	AC-P16862	ENDEVCO	2/18/2003
LOWER RIB	AC-P16656	ENDEVCO	2/18/2003
LOWER SPINE	AC-P16866	ENDEVCO	2/18/2003
PELVIS	AC-P16676	ENDEVCO	2/18/2003
UPPER RIB REDUNDANT	AC-P18523	ENDEVCO	2/17/2003
LOWER RIB REDUNDANT	AC-P18518	ENDEVCO	2/17/2003
LOWER SPINE REDUNDANT	AC-P18688	ENDEVCO	2/17/2003
PELVIS REDUNDANT	AC-P18531	ENDEVCO	2/17/2003

	REAR SID NO. 016		
	SERIAL NUMBER	MANUFACTURER	CALIBRATION DATE
NAAH HEAD X ARM Y	AC-01G18-F08	ENTRAN	4/1/2003
NAAH HEAD X ARM Z	AC-00L20-A13	ENTRAN	4/1/2003
NAAH HEAD Y ARM X	AC-00L20-A08	ENTRAN	3/28/2003
NAAH HEAD Y ARM Z	AC-01G18-F13	ENTRAN	3/28/2003
NAAH HEAD Z ARM X	AC-01J02-F18	ENTRAN	3/28/2003
NAAH HEAD Z ARM Y	AC-01G25-N11	ENTRAN	3/28/2003
HEAD AX	AC-P23960	ENDEVCO	12/10/2002
HEAD AY	AC-P23940	ENDEVCO	12/9/2002
HEAD AZ	AC-P23399	ENDEVCO	12/10/2002
UPPER NECK FX	LC-261FX	DENTON	12/12/2002
UPPER NECK FY	LC-261FY	DENTON	12/12/2002
UPPER NECK FZ	LC-261FZ	DENTON	12/12/2002
UPPER NECK MX	LC-261MX	DENTON	12/12/2002
UPPER NECK MY	LC-261MY	DENTON	12/12/2002
UPPER NECK MZ	LC-261MZ	DENTON	12/12/2002
UPPER RIB	AC-P18524	ENDEVCO	2/17/2003
LOWER RIB	AC-P18533	ENDEVCO	2/17/2003
LOWER SPINE	AC-P18514	ENDEVCO	2/17/2003
PELVIS	AC-P18519	ENDEVCO	2/17/2003
UPPER RIB REDUNDANT	AC-P18528	ENDEVCO	2/17/2003
LOWER RIB REDUNDANT	AC-P18518	ENDEVCO	2/17/2003
LOWER SPINE REDUNDANT	AC-P18688	ENDEVCO	2/17/2003
PELVIS REDUNDANT	AC-P18531	ENDEVCO	2/17/2003

REMARKS: None

TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

VEHICLE AND MDB INSTRUMENTATION

	VEHICLE AND MDB INSTRUMENTS		
	SERIAL NUMBER	MANUFACTURER	CALIBRATION DATE
RIGHT FRONT SILL (X)	AC-P23926	ENDEVCO	3/13/2003
RIGHT FRONT SILL (Y)	AC-P23854	ENDEVCO	3/13/2003
RIGHT FRONT SILL (Z)	AC-P23864	ENDEVCO	3/13/2003
RIGHT REAR SILL (X)	AC-J33376	ENDEVCO	4/16/2003
RIGHT REAR SILL (Y)	AC-J32832	ENDEVCO	4/16/2003
RIGHT REAR SILL (Z)	AC-J31095	ENDEVCO	4/14/2003
REAR FLOORPAN ABOVE AXLE (X)	AC-P23901	ENDEVCO	3/6/2003
REAR FLOORPAN ABOVE AXLE (Y)	AC-P24145	ENDEVCO	3/6/2003
REAR FLOORPAN ABOVE AXLE (Z)	AC-P23895	ENDEVCO	3/6/2003
LEFT REAR SILL (Y)	AC-8084-024	ICS	11/11/2002
LEFT FRONT SILL (Y)	AC-8083-037	ICS	11/21/2002
LEFT FRONT DOOR CENTERLINE (Y)	-	-	-
RIGHT REAR SEAT OCCUPANT COMP. (Y)	AC-P53	ICS	1/9/2003
MID REAR OF LEFT FRONT DOOR (Y)	-	-	-
LEFT FRONT DOOR UPPER C/L (Y)	-	-	-
MID REAR OF LEFT REAR DOOR (Y)	-	-	-
LEFT REAR DOOR UPPER C/L (Y)	-	-	-
LOWER LEFT B-PILLAR (Y)	AC-8084-010	ICS	12/8/2002
MIDDLE LEFT B-PILLAR (Y)	AC-8083-032	ICS	11/20/2002
LOWER LEFT A-PILLAR (Y)	AC-8084-015	ICS	11/20/2002
UPPER LEFT A-PILLAR (Y)	AC-J33198	ENDEVCO	4/16/2003
FRONT SEAT TRACK (Y)	AC-8081-058	ICS	11/11/2002
REAR SEAT TRACK (Y)	AC-P23802	ENDEVCO	3/25/2003
VEHICLE CG (X)	AC-J31091	ENDEVCO	4/14/2003
VEHICLE CG (Y)	AC-J31026	ENDEVCO	4/14/2003
VEHICLE CG (Z)	AC-J32831	ENDEVCO	4/14/2003
MDB CG (X)	AC-C16433	ENDEVCO	4/17/2003
MDB CG (Y)	AC-C16416	ENDEVCO	4/17/2003
MDB CG (Z)	AC-C16499	ENDEVCO	4/17/2003
MDB REAR FRAME MEMBER (X)	AC-C14918	ENDEVCO	4/17/2003
MDB REAR FRAME MEMBER (Y)	AC-C16680	ENDEVCO	4/15/2003

REMARKS: None