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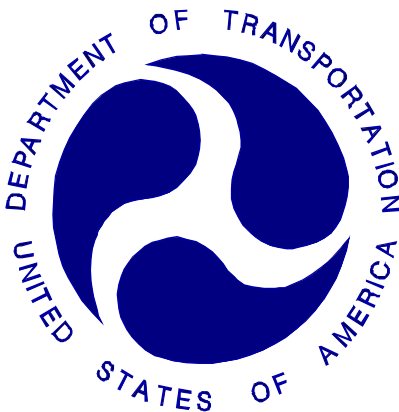
**NEW CAR ASSESSMENT PROGRAM
SIDE IMPACT TEST**

VOLVO GOTHENBERG SWEDEN
2001 VOLVO S60
4-DOOR SEDAN

NHTSA NUMBER: V15901

VERIDIAN ENGINEERING TEST NUMBER: 8629-2

VERIDIAN ENGINEERING
TRANSPORTATION SCIENCES CENTER
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September 12, 2001

FINAL REPORT

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

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

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16. Abstract A 55/28 kph 90° Impact Moving Deformable Barrier NCAP Side Impact Test was conducted on the subject 2001 Volvo S60 4-Door Sedan in accordance with the specifications of the Office of Crashworthiness Standards Test Procedure for the generation of consumer information on vehicle side crash protection. This test was conducted at the Veridian Engineering Crash Test Facility in Buffalo, New York, on September 12, 2001. The impact velocity of the Moving Deformable Barrier (MDB) was 61.6 kph, and the ambient temperature at the struck (driver's) side of the target vehicle at the time of impact was 21°C. The target vehicle post-test maximum crush was 354 mm at level 2. The test or target vehicle's performance is given below: <table border="0"> <thead> <tr> <th></th> <th align="center"><u>Front SID</u></th> <th></th> <th align="center"><u>Rear SID</u></th> <th></th> </tr> </thead> <tbody> <tr> <td>Left Upper Rib Acceleration:</td> <td align="center">32.5</td> <td align="center">g's</td> <td align="center">52.8</td> <td align="center">g's</td> </tr> <tr> <td>Left Lower Rib Acceleration:</td> <td align="center">37.4</td> <td align="center">g's</td> <td align="center">54.4</td> <td align="center">g's</td> </tr> <tr> <td>Lower Spine Acceleration:</td> <td align="center">60.9</td> <td align="center">g's</td> <td align="center">60.2</td> <td align="center">g's</td> </tr> <tr> <td>Thoracic Trauma Index (TTI):</td> <td align="center">49</td> <td align="center">g's</td> <td align="center">57</td> <td align="center">g's</td> </tr> <tr> <td>Pelvis Acceleration (PEV):</td> <td align="center">67</td> <td align="center">g's</td> <td align="center">73</td> <td align="center">g's</td> </tr> </tbody> </table> The two doors on the struck side of the vehicle did not separate from the body at the hinges or latches and the opposite doors did not open during the side impact event.							<u>Front SID</u>		<u>Rear SID</u>		Left Upper Rib Acceleration:	32.5	g's	52.8	g's	Left Lower Rib Acceleration:	37.4	g's	54.4	g's	Lower Spine Acceleration:	60.9	g's	60.2	g's	Thoracic Trauma Index (TTI):	49	g's	57	g's	Pelvis Acceleration (PEV):	67	g's	73	g's
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17. Key Words New Car Assessment Program (NCAP) Side Impact MDB Side Impact Dummy (SID)			18. Distribution Statement Copies of this report are available from: National Highway Traffic Safety Administration Technical Reference Division Room 5108 (NAD-52) 400 Seventh St., S.W. Washington, D.C. 20590 Telephone No. (202) 366-4946 ATTN: Robert Hornicle																																
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TABLE OF CONTENTS

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

SECTION 1

PURPOSE AND TEST PROCEDURE

This side impact test is part of the FY2001 New Car Assessment Program Side Impact Protection under Contract No. SO830. The purpose of this test was to generate comparative side impact performance in a 2001 Volvo S60 4-Door Sedan. The test was conducted in accordance with the Office of Crashworthiness Standards' Laboratory Test Procedure dated July 1997.

SECTION 2

SUMMARY OF SIDE IMPACT TEST

A 2001 Volvo S60 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 61.6 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 September 12, 2001. Pre- and post-test photographs of the test vehicle, the moving deformable barrier (MDB), and the side impact dummies (SIDs) are included in Appendix A.

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

The SIDs were instrumented with the following accelerometers:

1. Left Upper Rib (LUR) uniaxial and redundant accelerometer (Y-direction)
2. Left Lower Rib (LLR) uniaxial and redundant accelerometer (Y-direction)
3. Lower Thoracic Spine (T₁₂) uniaxial and redundant accelerometer (Y-direction)
4. Pelvic (PEV) section uniaxial and redundant accelerometer (Y-direction)
5. Head triaxial accelerometers (X-, Y- and Z-direction)

A summary of the side impact dummy (SID) configuration and verification test data can be found in Appendix C. A total of 54 channels of data were recorded. Appendix B contains the vehicle, MDB and dummy response data traces.

The following table summarizes the results of the test.

Injury Criteria	Front SID	Rear SID
TTI (g)	49	57
PEV (g)	67	73

SECTION 3

SUMMARY OF TEST RESULTS

DATA SHEET 1

GENERAL TEST AND VEHICLE PARAMETER DATA

TEST VEHICLE INFORMATION:

Year/Make/Model/Body Style: 2001 Volvo S60 4-Door Sedan

Vehicle Body Color: Gold VIN: YV1RS61R012081955

Vehicle NHTSA No.: V15901 Month & Year of Manufacture: 7/01

Engine Data: 5 Cylinders; - CID; 2.4 Liters; - cc

Engine Placement: - Longitudinal; or X Lateral

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

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

Odometer Reading 21 km

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

DATA FROM TIRE PLACARD

Tire Pressure* (at capacity); 262 kPa FRONT
262 kPa REAR

Recommended Tire Size: P195/65R15

Tires on Test Vehicle: P195/65R15 ; Manufacturer: Michelin

Vehicle Capacity Data:

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

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

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

Vehicle Max Capacity Loading = 403.7 kg (A)

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

Vehicle Cargo Capacity = 63.5 kg (A-B)

TEST VEHICLE DELIVERED WEIGHT WITH MAXIMUM FLUIDS:

Left Front =	<u>456.0</u> kg	Left Rear =	<u>436.0</u> kg
Right Front =	<u>318.5</u> kg	Right Rear =	<u>311.5</u> kg
TOTAL FRONT =	<u>774.5</u> kg	TOTAL REAR =	<u>747.5</u> kg
% of Total Weight =	<u>50.9%</u> %	% of Total Weight =	<u>49.11</u> %
TOTAL WEIGHT =	<u>1522.0</u> kg		

* Tire pressure used in test.

DATA SHEET 1 (continued)

GENERAL TEST VEHICLE PARAMETER DATA

Vehicle: 2001 Volvo S60 4-Door Sedan

NHTSA No. V15901

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Test Vehicle Delivered Weight with Max. Fluids	=	<u>1522.0</u>	kg (A)
Maximum Cargo Carrying Capacity of Test Vehicle	=	<u>63.5</u>	kg (B)
Weight of instrumented Side Impact Dummies (2 X 81.2 kg)	=	<u>162.4</u>	kg (C)
TEST VEHICLE TARGET WEIGHT:	=	<u>1747.9</u>	kg (A+B+C)

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

Left Front	=	<u>510.5</u>	kg	Left Rear	=	<u>416.0</u>	kg
Right Front	=	<u>442.5</u>	kg	Right Rear	=	<u>381.5</u>	kg
TOTAL FRONT	=	<u>953.0</u>	kg	TOTAL REAR	=	<u>797.5</u>	kg
% of Total Weight	=	<u>54.4%</u>	%	% of Total Weight	=	<u>45.6%</u>	%
TOTAL TEST WEIGHT =		<u>1750.5</u>	kg				

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

Left Front	=	<u>504.0</u>	kg	Left Rear	=	<u>411.5</u>	kg
Right Front	=	<u>447.5</u>	kg	Right Rear	=	<u>376.5</u>	kg
TOTAL FRONT	=	<u>951.5</u>	kg	TOTAL REAR	=	<u>788.0</u>	kg
% of Total Weight	=	<u>54.7%</u>	%	% of Total Weight	=	<u>45.3%</u>	%
TOTAL TEST WEIGHT =		<u>1739.5</u>	kg				

TEST VEHICLE ATTITUDE (all dimensions in millimeters):

AS DELIVERED:

Left Front	<u>680</u>	Right Front	<u>684</u>	Left Rear	<u>698</u>	Right Rear	<u>700</u>
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FULLY LOADED:

Left Front	<u>662</u>	Right Front	<u>675</u>	Left Rear	<u>654</u>	Right Rear	<u>666</u>
------------	------------	-------------	------------	-----------	------------	------------	------------

READY FOR TEST:

Left Front	<u>665</u>	Right Front	<u>676</u>	Left Rear	<u>658</u>	Right Rear	<u>670</u>
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Test Vehicle Wheelbase: 2716 millimeters

C.G. = 1230.36 millimeters rearward of front wheel centerline

TOTAL VEHICLE LENGTH:

Right Side =	<u>4500</u>	millimeters
Left Side =	<u>4500</u>	millimeters
Centerline =	<u>4580</u>	millimeters

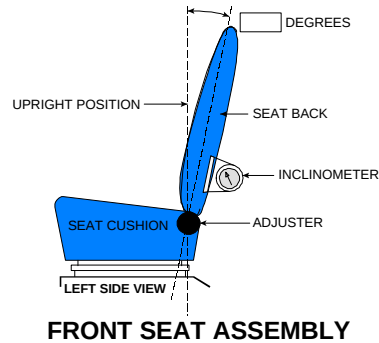
DATA SHEET 1 (continued)

GENERAL TEST VEHICLE PARAMETER DATA

Vehicle: 2001 Volvo S60 4-Door Sedan

NHTSA No. V15901

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: Place in Mid-Position (140 mm from full forward)

Total Length of Adjustment Travel: 280 millimeters

Total Number of Adjustment Positions or Detents: Electronic

FRONT SEAT BACK ADJUSTMENT POSITION: Adjust seat back so that it measures 19° from level sill

Seat Back Torso Angle: 19 degrees

SECOND POSITION SEAT:

Total Length of Fore/Aft Adjustment Travel: 0 millimeters

Seat Back Adjustment Position: N/A

ADJUSTABLE STEERING COLUMN POSITION: Place in mid height and mid telescope position.

WINDOW POSITIONS: Left Front: Closed Left Rear: Closed

Right Front: Removed Right Rear: Removed

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

AMOUNT OF STODDARD SOLVENT IN FUEL TANK:

70 liters (Fuel Tank Usable Capacity)

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

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

Wheelbase = 2716 millimeters

Impact Point is 418 millimeters rearward of front axle centerline
(which is 940 millimeters forward of the wheelbase midpoint)

Actual Impact Point is 378 millimeters rearward of front axle centerline

DATA SHEET 2

TEST VEHICLE SUMMARY OF RESULTS

VEHICLE IDENTIFICATION:

Vehicle Year/Make/Model: 2001 Volvo S60

Body Style: 4-Door Sedan

VIN: YV1RS61R012081955

NHTSA No.: V15901

Test Date: September 12, 2001

Overall Length = 4580 millimeters; Overall Width = 1795 millimeters

VEHICLE TEST WEIGHT (Pre-Test):

Left Front = 504.0 kg Left Rear = 411.5 kg

Right Front = 447.5 kg Right Rear = 376.5 kg

TOTAL FRONT = 951.5 kg TOTAL REAR = 788.0 kg

TOTAL VEHICLE WEIGHT 1739.5 kg

Wheelbase = 2716 millimeters

Longitudinal C.G. from Center of Front Axle = 1230.36 millimeters

Impact Angle with Respect to Impactor = 90 degrees

ACTUAL IMPACT POINT

Actual Impact Point is 40 mm Forward of nominal impact ref. line (Lateral)

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

MAXIMUM EXTERIOR STATIC CRUSH:

1. LEVEL 1 (270 mm above ground) = 253 millimeters

2. LEVEL 2 (464 mm above ground) = 354 millimeters

3. LEVEL 3 (618 mm above ground) = 330 millimeters

4. LEVEL 4 (849 mm above ground) = 302 millimeters

5. LEVEL 5 (1331 mm above ground) = 60 millimeters

Maximum Post-Test Intrusion = 354 millimeters

OCCUPANTS:

Front Passenger:

Rear Passenger:

Dummy Identification 013

027

Restraints Used Seatbelt, Side Seat Bolster
Airbag, Side Curtain Airbag

Seatbelt, Side Curtain Airbag

INSTRUMENTATION:

Number of Vehicle Data Channels: = 18

Number of Cameras: Onboard = 3

Offboard = 8

TOTAL = 11

DATA SHEET 3

MOVING DEFORMABLE BARRIER (MDB) SUMMARY

Vehicle: 2001 Volvo S60 4-Door Sedan

NHTSA No. V15901

MDB FACE MANUFACTURER AND SERIAL NUMBER:

Plascore, Inc. 093A1200-2 001B1200

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>61.6</u>	kph				

MAXIMUM STATIC CRUSH OF HONEYCOMB IMPACT FACE:

1. Row A at Center of Bumper Level	=	<u>178</u>	millimeters
2. Row B at Top of Bumper Level	=	<u>147</u>	millimeters
3. Row C at Mid Level	=	<u>117</u>	millimeters
4. Row D at Top of Stack Level	=	<u>148</u>	millimeters

INSTRUMENTATION:

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

POST-TEST OBSERVATIONS

Vehicle: 2001 Volvo S60 4-Door Sedan

NHTSA No. V15901

VISIBLE DUMMY CONTACT POINTS:

LEFT FRONT SID

Head: Side of the head to the Side Curtain Airbag
Upper Torso: Side Airbag
Lower Torso: Side Airbag
Left Knee: Door Trim
Right Knee: Left Knee

LEFT REAR SID

Side of the head to the Side Curtain Airbag
Door Trim
Door Trim
Door Trim
Left Knee

DOOR OPENING:

LEFT DOOR

Front: Closed/Inoperable
Rear: Closed/Inoperable

RIGHT DOOR

Closed/Operable
Closed/Operable

MDB DISTANCE FROM TARGET IMPACT POINT:

Vertical: 7 mm below
Horizontal: 40 mm forward

ARM REST LOCATIONS:

Front: Pushed inboard during event
Rear: Pushed inboard during event

SEAT MOVEMENT:

Front: Seat cushion pushed inboard
Rear: Seat cushion pushed inboard

GLAZING DAMAGE:

Windshield: Cracked along lower A-Pillar
Window: Side glass shattered upon impact

PILLAR PERFORMANCE:

A- and B- pillars were pushed inboard during the event with no visible tears or separations

SILL SEPARATION:

No visible tears or separations

AIR BAG DEPLOYMENT STATUS:

	DRIVER	FRONT PASSENGER	REAR PASSENGER
FRONT	No	No	N/A
SIDE	Yes	No	N/A

OTHER NOTABLE IMPACT EFFECTS:

Left side curtain airbag deployed properly during the event.

SECTION 4

OCCUPANT AND VEHICLE INFORMATION

DATA SHEET 5

SID INSTRUMENTATION DATA

Vehicle: 2001 Volvo S60 4-Door Sedan

NHTSA No. V15901

	Front Dummy ID# 013				Rear Dummy ID# 027			
	Pos. Direction		Neg. Direction		Pos. Direction		Neg. Direction	
	Max (g)	Time (msec)	Max (g)	Time (msec)	Max (g)	Time (msec)	Max (g)	Time (msec)
HEAD ACCELERATIONS:								
Longitudinal X	10.7	35.9	-20.3	59.4	10.1	116.0	-11.7	67.0
Lateral Y	36.3	52.6	-7.0	124.6	80.6	57.3	-15.9	170.3
Vertical Z	25.3	45.0	-10.8	31.5	15.2	48.4	-51.4	61.1
Resultant R	39.5	52.4	0.0	-7.6	91.1	57.5	0.0	-16.3
HIC	190.5				635.3			
RIB ACCELERATIONS:								
Upper Rib Lateral Y	32.5	27.3	-9.0	118.6	52.8	42.9	-8.4	158.6
Upper Rib Lateral Y(R)	32.7	26.7	-5.0	124.8	52.1	42.9	-8.4	158.6
Lower Rib Lateral Y	37.4	16.7	-6.5	124.8	54.4	40.4	-6.9	75.5
Lower Rib Lateral Y(R)	39.9	16.7	-7.0	124.8	52.9	40.4	-6.6	170.4
SPINE ACCELERATIONS:								
Lower Lateral Y	60.9	32.9	-10.3	64.8	60.2	43.6	-24.9	71.1
Lower Lateral Y(R)	60.2	32.9	-10.3	64.8	62.1	43.6	-25.2	71.1
PELVIC ACCELERATIONS:								
Lateral Y	67.4	24.8	-15.0	64.2	73.0	38.0	-7.0	84.2
Lateral Y(R)	67.3	24.8	-14.9	64.2	73.3	37.9	-6.7	64.2

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

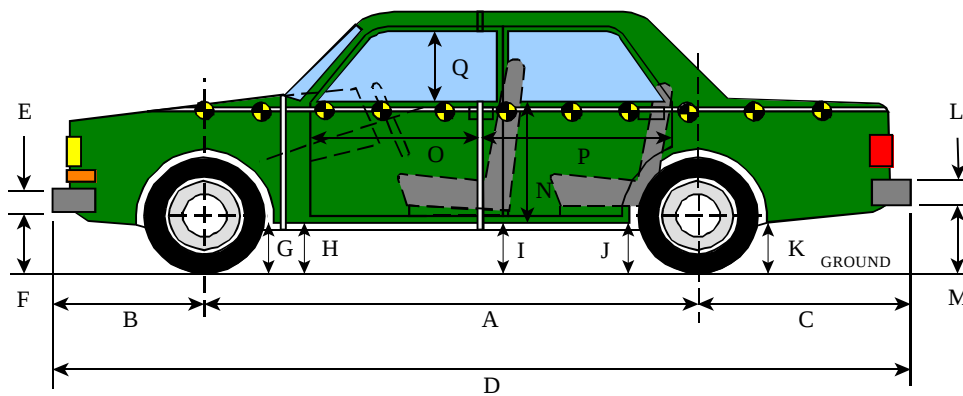
Note: Above data has been FIR filtered, Y(R) denotes redundant Y direction accelerometer.
 Head Accelerations are filtered at SAE Class 1000.

DATA SHEET 6

VEHICLE SIDE MEASUREMENTS

Vehicle: 2001 Volvo S60 4-Door Sedan

NHTSA No. V15901



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)	^a CHANGE
A	2716	2718	2669	49
B	904	-	943	-39
C	960	-	948	-948
D	4580	-	4560	20
E	163	-	163	0
F	354	351	357	-6
G	292	276	303	-27
H	255	242	313	-71
I	258	232	299	-67
J1	197	148	159	-11
J2	344	307	342	-35
K	251	223	252	-29
L	326	-	326	0
M	299	260	290	-30
N	686	-	606	80
O	729	-	724	5
P	1280	-	1143	137
Q	448	-	438	10
R	4500	-	4460	40
S	4500	-	4495	5
T	1795	-	1630	165

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

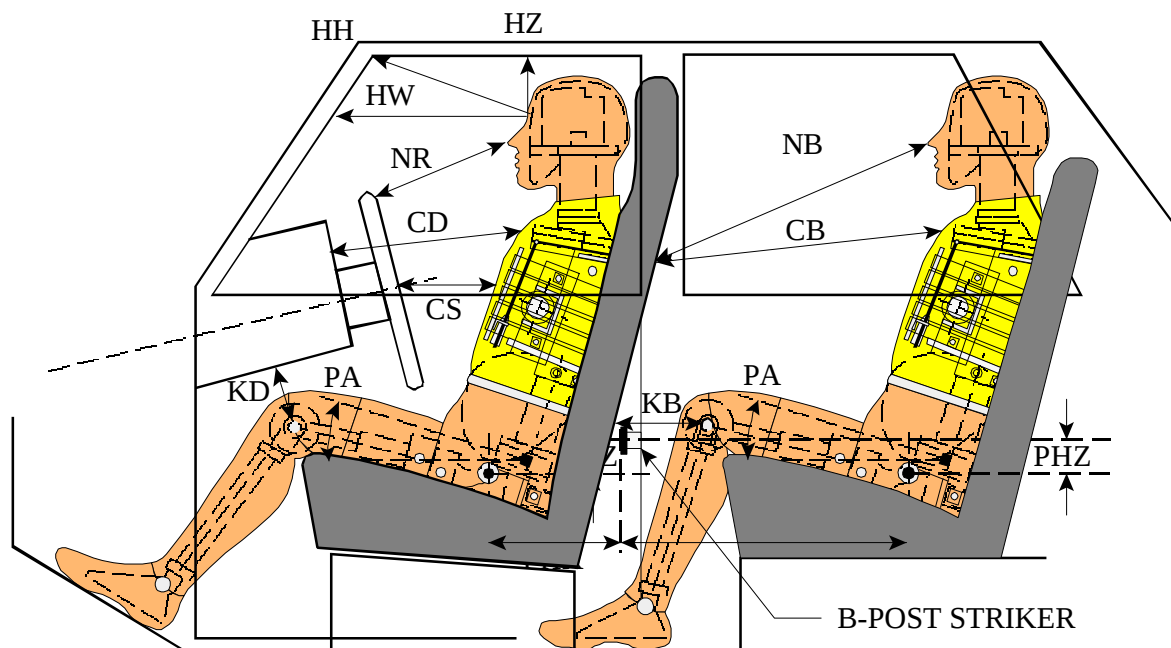
J2 = To Sill

DATA SHEET 7

SID LONGITUDINAL CLEARANCE DIMENSIONS

Vehicle: 2001 Volvo S60 4-Door Sedan

NHTSA No. V15901



LEFT SIDE VIEW

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

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

	DRIVER ID# 013	LEFT REAR PASS. ID# 027
HH	397	N/A
HW	702	N/A
HZ	199	174
NR/NB	427	576
CD/CB	546	513
CS	301	N/A
KDL(KDA°)/KBL(KDA°)	182 / (33 °)	223 / (25 °)
KDR(KBA°)/KBR(KBA°)	171 / (32 °)	205 / (24 °)
PA°	23.3 °	24.3 °
PHX	231	246
PHZ	206	255

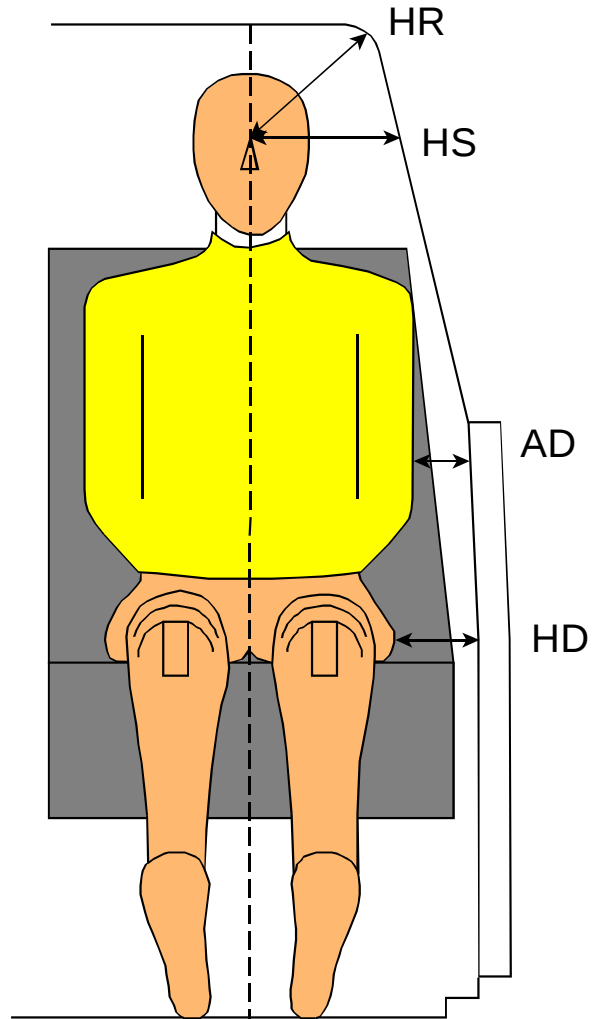
Note: 2-door vehicle shown. Rear dummy PHX & PHZ measurements for 4-door vehicle would use the C-post striker as a reference point.

DATA SHEET 8

SID LATERAL CLEARANCE DIMENSIONS

Vehicle: 2001 Volvo S60 4-Door Sedan

NHTSA No. V15901



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

	DRIVER ID # 013				LEFT REAR PASS. ID # 027			
HR	171				200			
HS	329				351			
AD*	LOWER:	100	UPPER:	90	LOWER:	122	UPPER:	132
HD	148				187			

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

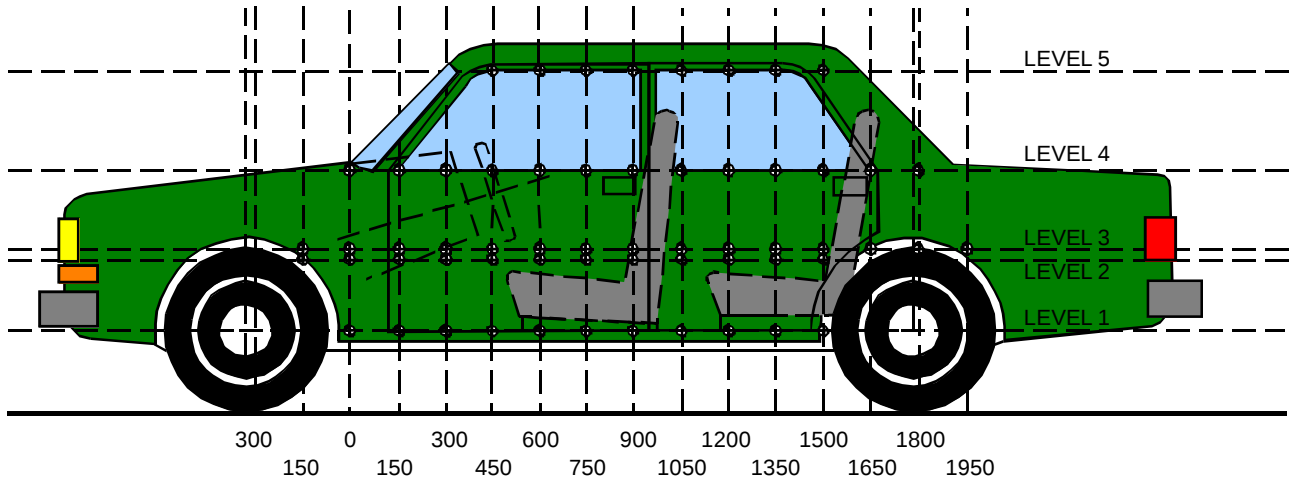
Upper measurement is taken laterally at the center of the upper rib accelerometer height from the SID arm segment to the closest part of the vehicle side.

DATA SHEET 9

VEHICLE SIDE MEASUREMENTS

Vehicle: 2001 Volvo S60 4-Door Sedan

NHTSA No. V15901



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:

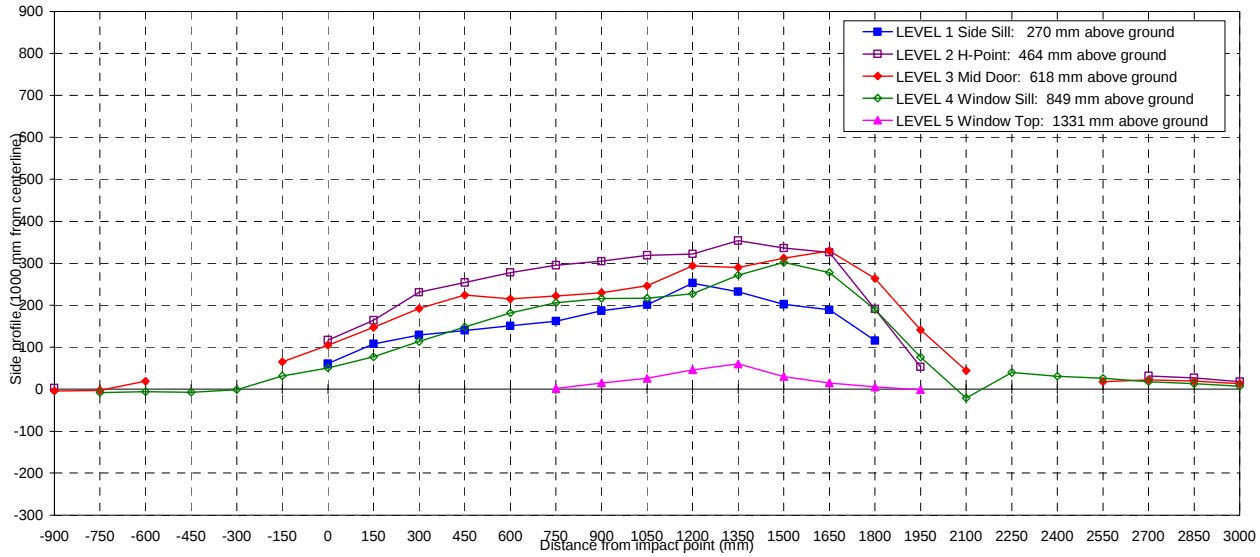
Level 5 @ Window Top	=	<u>253</u>	millimeters
Level 4 @ Window Sill	=	<u>354</u>	millimeters
Level 3 @ Mid Door	=	<u>330</u>	millimeters
Level 2 @ Occupant H-Point	=	<u>302</u>	millimeters
Level 1 @ Axle Centerline Height (or Sill Top Height)	=	<u>60</u>	millimeters

DATA SHEET 10

VEHICLE EXTERIOR CRUSH PROFILES - ALL LEVELS

Vehicle: 2001 Volvo S60 4-Door Sedan

NHTSA No. V15901



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

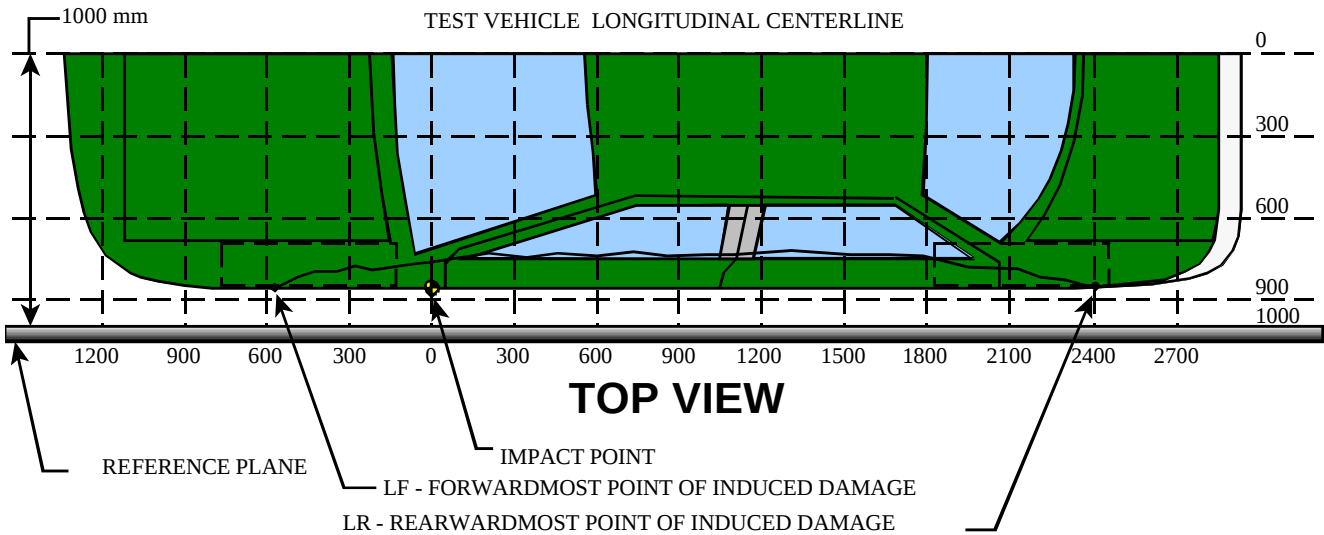
			DISTANCE IN MILLIMETERS (mm) FROM IMPACT POINT																											
LEVEL	HEIGHT (mm)		-900	-750	-600	-450	-300	-150	0	150	300	450	600	750	900	1050	1200	1350	1500	1650	1800	1950	2100	2250	2400	2550	2700	2850	3000	
LEVEL 1	270	PRE	--	--	--	--	--	--	133	133	137	136	140	139	141	139	136	139	140	139	138	--	--	--	--	--	--	--	--	--
SIDE		POST	--	--	--	--	--	--	194	241	266	276	291	301	328	340	389	371	342	328	254	--	--	--	--	--	--	--	--	
SILL		CRUSH	N/A	N/A	N/A	N/A	N/A	N/A	61	108	129	140	151	162	187	201	253	232	202	189	116	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
LEVEL 2	464	PRE	148	--	--	--	--	--	108	111	103	105	104	103	103	104	105	104	106	107	110	107	--	--	--	--	124	153	189	
H		POST	151	--	--	--	--	--	225	275	334	359	382	398	408	423	427	458	442	433	301	160	--	--	--	--	156	180	207	
POINT		CRUSH	3	N/A	N/A	N/A	N/A	N/A	117	164	231	254	278	295	305	319	322	354	336	326	191	53	N/A	N/A	N/A	N/A	N/A	32	27	18
LEVEL 3	618	PRE	163	134	105	--	--	100	98	101	105	107	107	106	108	111	111	112	111	110	106	102	96	--	--	112	129	155	184	
MID		POST	159	131	124	--	--	165	203	248	297	331	322	328	338	357	405	402	423	440	370	243	140	--	--	130	151	174	197	
DOOR		CRUSH	-4	-3	19	N/A	N/A	65	105	147	192	224	215	222	230	246	294	290	312	330	264	141	44	N/A	N/A	18	22	19	13	
LEVEL 4	849	PRE	--	524	338	279	238	199	162	139	123	116	110	108	104	104	105	105	107	108	112	115	121	125	137	149	168	194	222	
WINDOW		POST	--	516	332	272	237	231	213	216	237	264	292	314	320	321	332	377	409	386	302	191	100	165	168	175	186	207	229	
SILL		CRUSH	N/A	-8	-6	-7	-1	32	51	77	114	148	182	206	216	217	227	272	302	278	190	76	-21	40	31	26	18	13	7	
LEVEL 5	1331	PRE	--	--	--	--	--	--	--	--	--	--	--	--	514	426	402	394	389	389	393	417	557	--	--	--	--	--	--	
WINDOW		POST	--	--	--	--	--	--	--	--	--	--	--	--	516	441	428	440	449	419	408	422	556	--	--	--	--	--	--	
TOP		CRUSH	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	2	15	26	46	60	30	15	5	-1	N/A	N/A	N/A	N/A	N/A	N/A	N/A

DATA SHEET 11

VEHICLE DAMAGE PROFILE DISTANCES

Vehicle: 2001 Volvo S60 4-Door Sedan

NHTSA No. V15901



MEASUREMENT CONVENTIONS:
 Forward of the impact point (towards front of vehicle) is considered negative (—).
 Rearward of the impact point (toward rearend of vehicle) is considered positive (+).

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

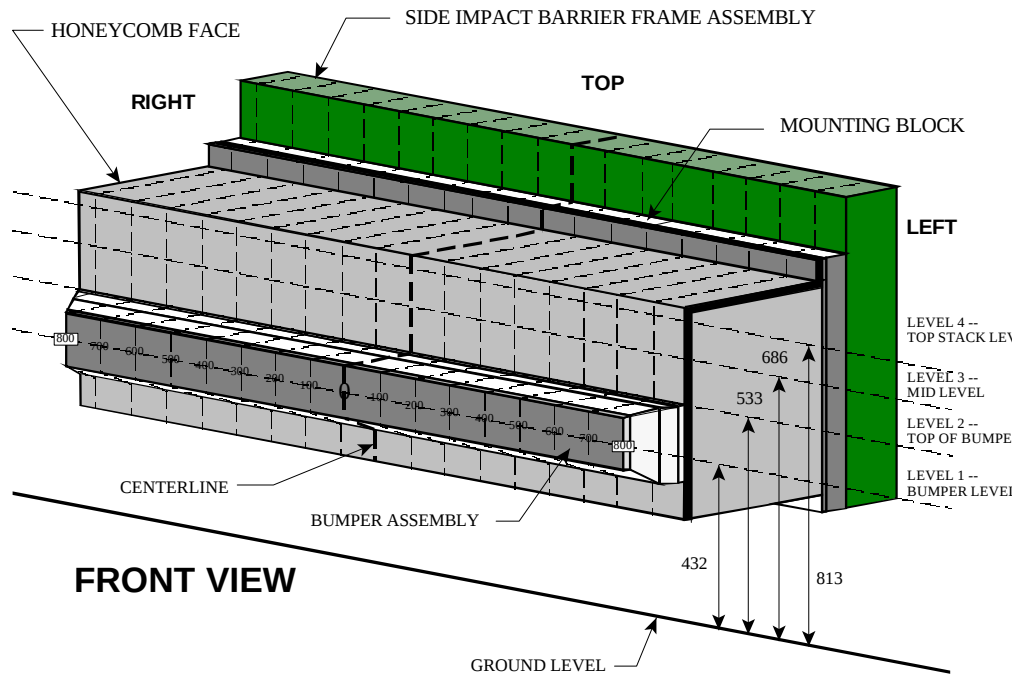
DPD MEASUREMENTS		POST TEST (mm)	PRETEST (mm)	STATIC CRUSH (mm)
1	(LR = <u>2150</u> mm)	122	122	0
2	1660	435	110	-325
3	1170	426	105	-321
4	680	391	103	-288
5	190	291	109	-182
6	(LF = <u>-300</u> mm)	237	238	1

DATA SHEET 12

EXTERIOR STATIC CRUSH FOR IMPACTOR FACE

Vehicle: 2001 Volvo S60 4-Door Sedan

NHTSA No. V15901



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	0	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	619		
		POST	637	610	611	622	652	658	651	648	645	647	654	665	678	695	716	752	767		
		CRUSH	18	-9	-8	3	33	39	32	29	26	28	35	46	59	76	97	133	148		
LEVEL 3 MID LEVEL	686	PRE	619	619	619	619	619	619	619	619	619	619	619	619	619	619	619	619	619		
		POST	618	617	621	630	639	647	637	632	638	648	662	672	679	689	705	736	735		
		CRUSH	-1	-2	2	11	20	28	18	13	19	29	43	53	60	70	86	117	116		
LEVEL 2 TOP BUMPER	533	PRE	619	619	619	619	619	619	619	619	619	619	619	619	619	619	619	619	619		
		POST	679	673	670	656	656	659	660	666	670	682	686	693	699	707	722	752	766		
		CRUSH	60	54	51	37	37	40	41	47	51	63	67	74	80	88	103	133	147		
LEVEL 1 MID BUMPER	432	PRE	535	519	518	518	518	518	518	518	518	518	518	518	518	518	518	519	535		
		POST	636	620	602	592	600	597	595	599	598	610	616	621	629	638	659	697	711		
		CRUSH	101	101	84	74	82	79	77	81	80	92	98	103	111	120	141	178	176		

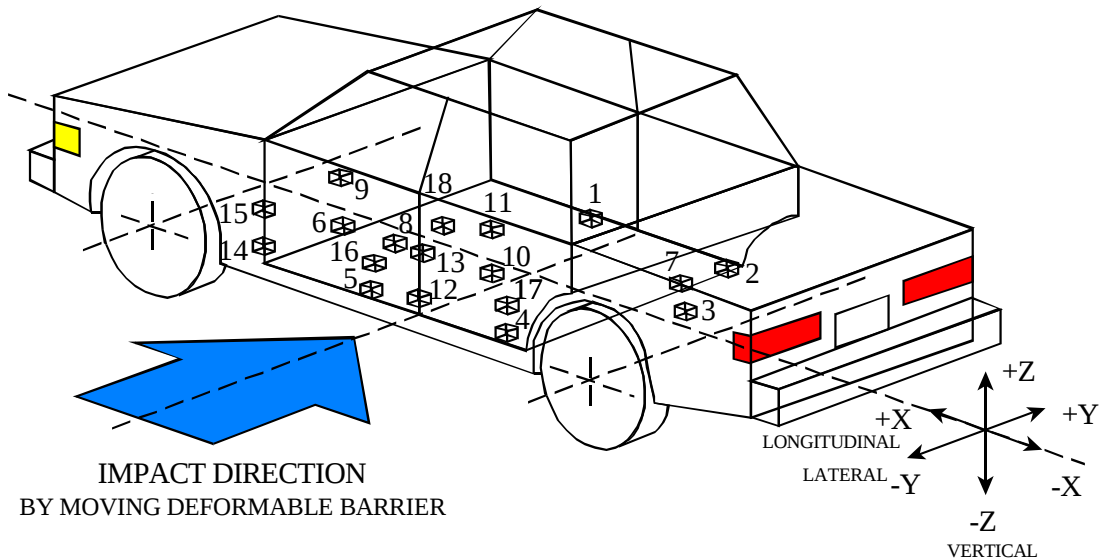
*Heights measured above ground level.

DATA SHEET 13

TEST VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

Vehicle: 2001 Volvo S60 4-Door Sedan

NHTSA No. V15901



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

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

DATA SHEET 13 (continued)

VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

Vehicle: 2001 Volvo S60 4-Door Sedan

NHTSA No. V15901

Accel. No.	Location	Coordinates (mm)±3 mm				Long. (x)		Lat. (y)		Vert. (z)		Resultant	
						Max (g)	Time (msec)	Max (g)	Time (msec)	Max (g)	Time (msec)	Max (g)	Time (msec)
		X*	Y*	Z*									
1	Right Side Sill at Front Seat	2989	685	-259	pos. neg.	4.3 -6.8	30 15	26.7 -3.2	6 56.8	5.5 -17	154.8 6.1	32.2 0	6 -16.9
2	Right Side Sill at Rear Seat	2130	713	-246	pos. neg.	5.1 -6.3	30 15	26.7 -3.8	6.1 11	3.3 -10.1	162.3 6.9	28.8 0	6.1 -10.6
3	Rear Floorpan Above Axle	1082	56	-461	pos. neg.	3.3 -9.4	32.7 8.1	21.6 -3.5	5.7 76.5	10.4 -4.8	36.2 32.1	22.3 0	5.9 -18
4	Left Side Sill at Rear Seat	1957	-671	-208	pos. neg.	- -	- -	54.5 -5.9	6.2 51.8	- -	- -	- -	- -
5	Left Side Sill at Front Seat	3037	-642	-275	pos. neg.	- -	- -	41.6 -4.3	3.6 50.4	- -	- -	- -	- -
6	Left Front Door on Centerline	2843	-711	-650	pos. neg.	- -	- -	113.5 -52.7	8.2 11.7	- -	- -	- -	- -
7	Right Rear Occupant Compartment	2022	374	-154	pos. neg.	- -	- -	24.7 -3.4	5.6 76.6	- -	- -	- -	- -
8	Midrear of Left Front Door	2354	-753	-722	pos. neg.	- -	- -	159.7 -58.8	11.3 7.4	- -	- -	- -	- -
9	Left Front Door Upper Centerline	2594	-731	-862	pos. neg.	- -	- -	207.9 -92.2	14.6 19.4	- -	- -	- -	- -
10	Midrear of Left Rear Door	1513	-744	-742	Pos. neg.	- -	- -	121.2 -76.8	18.6 28.2	- -	- -	- -	- -
11	Left Rear Door Upper Centerline	1696	-718	-894	pos. neg.	- -	- -	99.5 -75.5	14.4 29.5	- -	- -	- -	- -

*Reference: X - Rear Bumper (+ Forward)

Y - Vehicle Centerline (+ To Right) Z - Ground Level (+ Down)

**Accelerometer was not requested by COTR.

4-11

8629-2

DATA SHEET 13 (continued)

VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

Vehicle: 2001 Volvo S60 4-Door Sedan

NHTSA No. V15901

Accel. No.	Location	Coordinates (mm)±3 mm				Long. (x)		Lat. (y)		Vert. (z)		Resultant	
						Max (g)	Time (msec)	Max (g)	Time (msec)	Max (g)	Time (msec)	Max (g)	Time (msec)
		X*	Y*	Z*									
12	Left Lower B-Pillar	2120	-712	-244	pos.	-	-	73.3	6	-	-	-	-
					neg.	-	-	-18.9	10.8	-	-	-	-
13	Left Middle B-Pillar	2016	-688	-786	pos.	-	-	129.7	3.1	-	-	-	-
					neg.	-	-	-54.2	29.6	-	-	-	-
14	Left Lower A-Pillar	3144	-704	-361	pos.	-	-	70.4	3.1	-	-	-	-
					neg.	-	-	-17	16.2	-	-	-	-
15	Left Middle A-Pillar	3083	-681	-965	pos.	-	-	34.7	17	-	-	-	-
					neg.	-	-	-9.9	24.9	-	-	-	-
16	Front Seat Track	2220	-569	-223	pos.	-	-	44.8	3.4	-	-	-	-
					neg.	-	-	-16.1	52.6	-	-	-	-
17	Rear Seat Track	1090	-442	-607	pos.	-	-	29.9	21	-	-	-	-
					neg.	-	-	-2.5	106.1	-	-	-	-
18	Vehicle CG	2419	56	-501	pos.	*	*	102.1	23.2	44.1	25.7	*	*
					neg.	*	*	-53.6	29.6	-23.4	20.3	*	*

*Reference: X - Rear Bumper (+ Forward)

Y - Vehicle Centerline (+ To Right) Z - Ground Level (+ Down)

* Wire cut at 26 ms

4-12

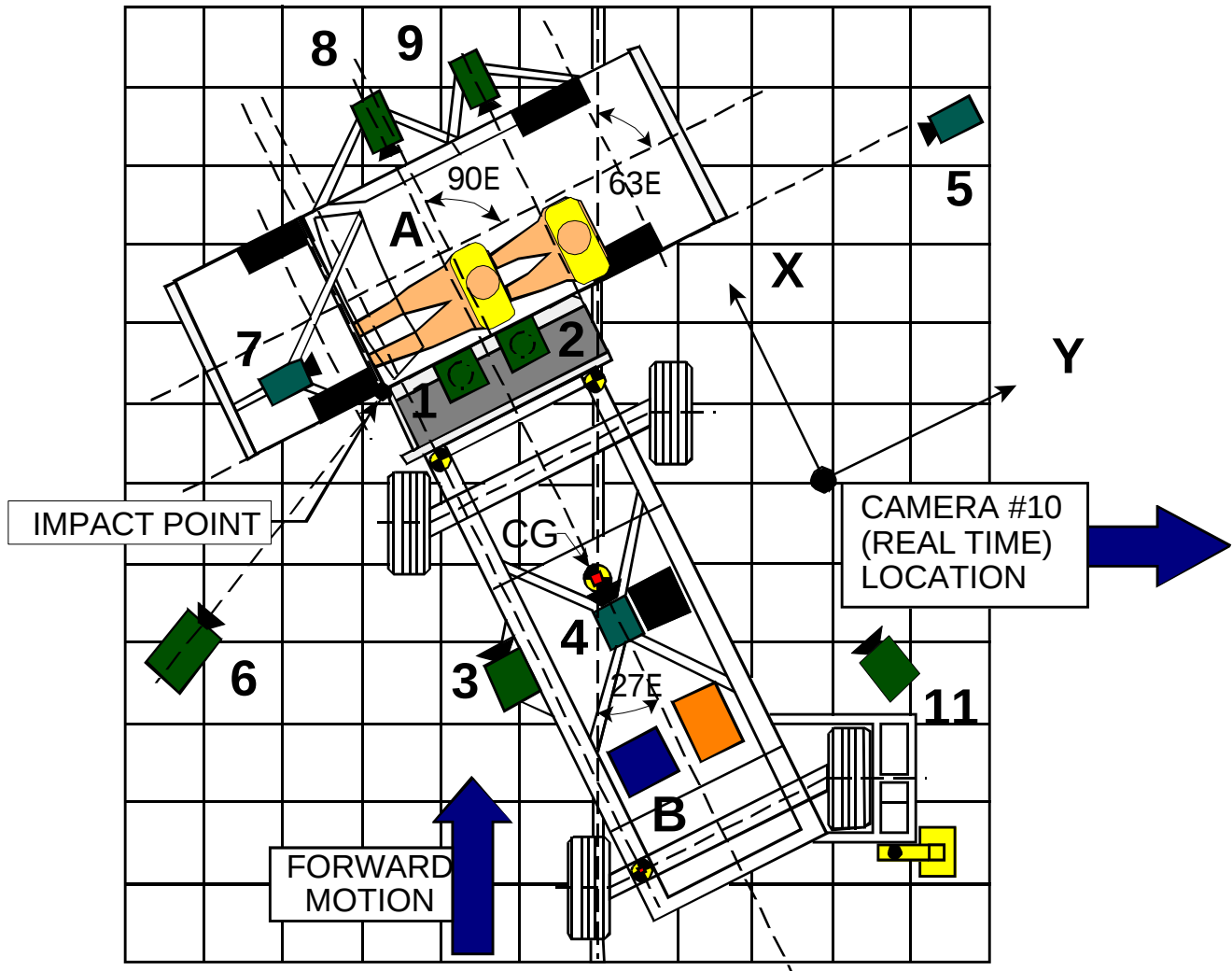
8629-2

DATA SHEET 14

MDB ACCELEROMETER LOCATIONS AND DATA SUMMARY

Vehicle: 2001 Volvo S60 4-Door Sedan

NHTSA No. V15901



Accel. No.	Location	Coordinates (millimeters)			Pos. Direct.		Neg. Direct.	
		X*	Y*	Z*	Max (g)	Time (msec)	Max (g)	Time (msec)
1	MDB Center of Gravity							
	Longitudinal... X	1859	0	-330	0.9	110.8	-20.4	44.5
	Lateral..... Y				0.4	149.6	-10.2	18.4
	Vertical..... Z				15.9	58.6	-17.4	26.1
	Resultant..... R				24.1	39.7	0.1	154.3
2	Rear Frame Member							
	Longitudinal... X	386	-660	-660	2.0	110.2	-22.8	38.7
	Lateral..... Y				5.7	23.1	-1.6	131.9

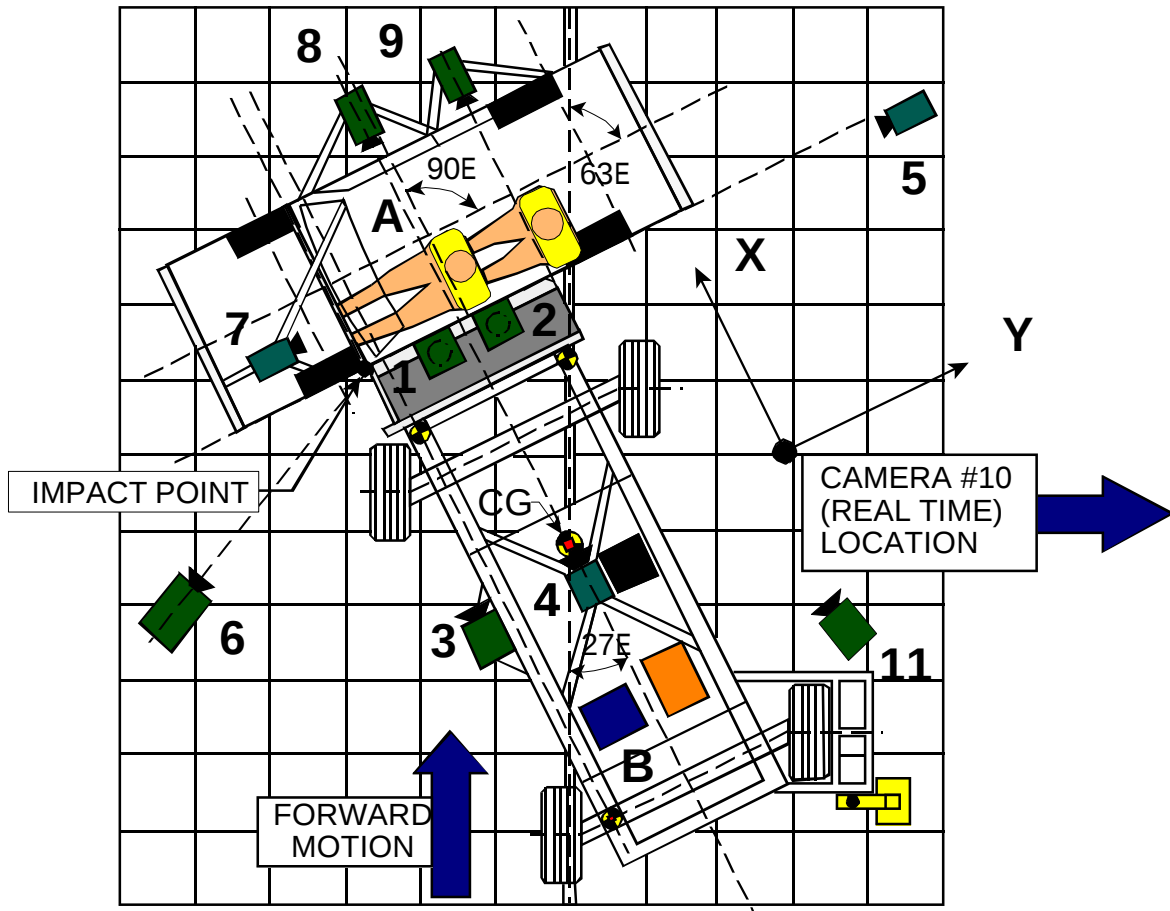
*Reference: X = Rear Bumper (+ Forward)
Y = Vehicle Centerline (+ To Right)
Z = Ground Level (+ Down)
All measurements accurate to within ± 3 mm.

DATA SHEET 15

HIGH SPEED CAMERA LOCATIONS AND DATA SUMMARY

Vehicle: 2001 Volvo S60 4-Door Sedan

NHTSA No. V15901



Camera No.	View	Coordinates (millimeters)			Angle (deg.)	Lens (mm)	Film Speed (fps)
		X*	Y*	Z*			
1	Overhead view of test vehicle	361	913	-4880	-90	8	1045
2	Overhead closeup view of impact plane	12	753	-4880	-90	12.5	1000
3	MDB onboard closeup view of impact point	-1470	0	-847	0	13	1000
4	MDB onboard view of driver dummy	-1140	838	-1586	-17	7.5	1000
5	Right side ground level overall view	9165	-100	1063	-5	25	1000
6	Left side ground level overall view	-1894	-1722	1075	-6	13	1000
7	Test vehicle onboard driver front view	1505	-536	1220	-8	13	875
8	Test vehicle onboard driver side view	1712	788	997	-7	8	1000
9	Test vehicle onboard passenger side view	1703	1618	1022	-8	8	1000
10	Real time film coverage of test	-	-	-	-	-	24
11	Secondary impact point view	-4040	3693	1066	-4	25	1000

* 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

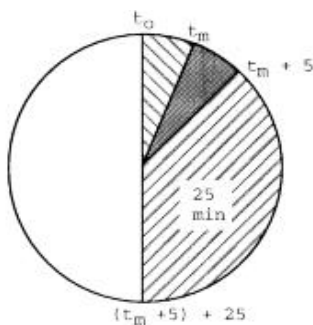
FMVSS 301 FUEL SYSTEM INTEGRITY DATA

NHTSA No.: V15901 TEST DATE: September 12, 2001
 Vehicle Mfgr./Make/Model: Volvo Gothenberg Sweden 2001 Volvo S60 4-Door Sedan

TEST VEHICLE IMPACT TYPE:

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

FUEL SPILLAGE MEASUREMENT:



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

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

SOLVENT SPILLAGE DETAILS:

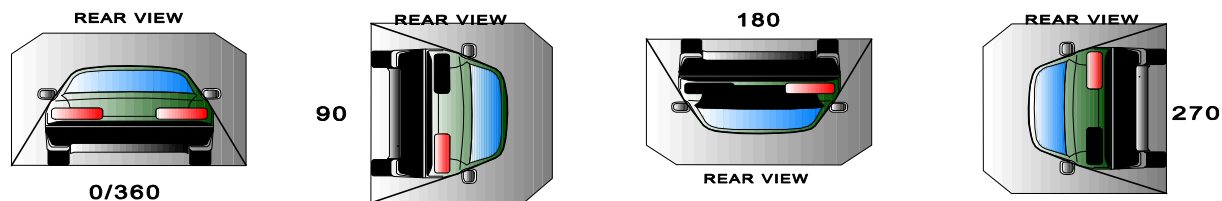
None

DATA SHEET 17

ROLLOVER DATA

Vehicle: 2001 Volvo S60 4-Door Sedan

NHTSA No.: V15901



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	12	seconds	5	minutes	6	minutes	12	seconds	7	minutes
90° - 180°	1	minutes	02	seconds	5	minutes	6	minutes	2	seconds	7	minutes
180°-270°	1	minutes	02	seconds	5	minutes	6	minutes	2	seconds	7	minutes
270°-360°	1	minutes	12	seconds	5	minutes	6	minutes	12	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

TABLE OF PHOTOGRAPHS

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



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



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

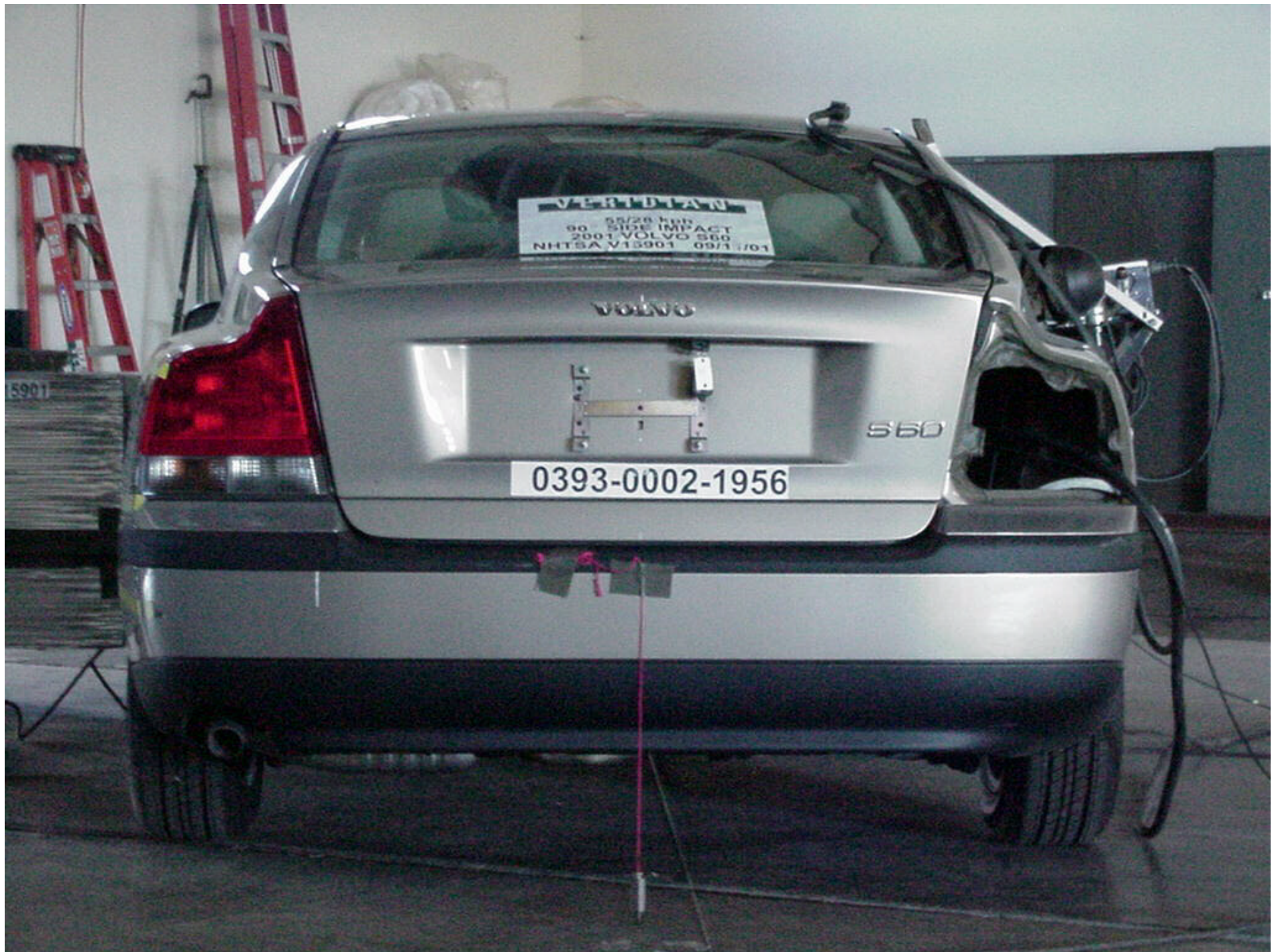


Figure A-3 PRE-TEST REAR VIEW OF TEST VEHICLE



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



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



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



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



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



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



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



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



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

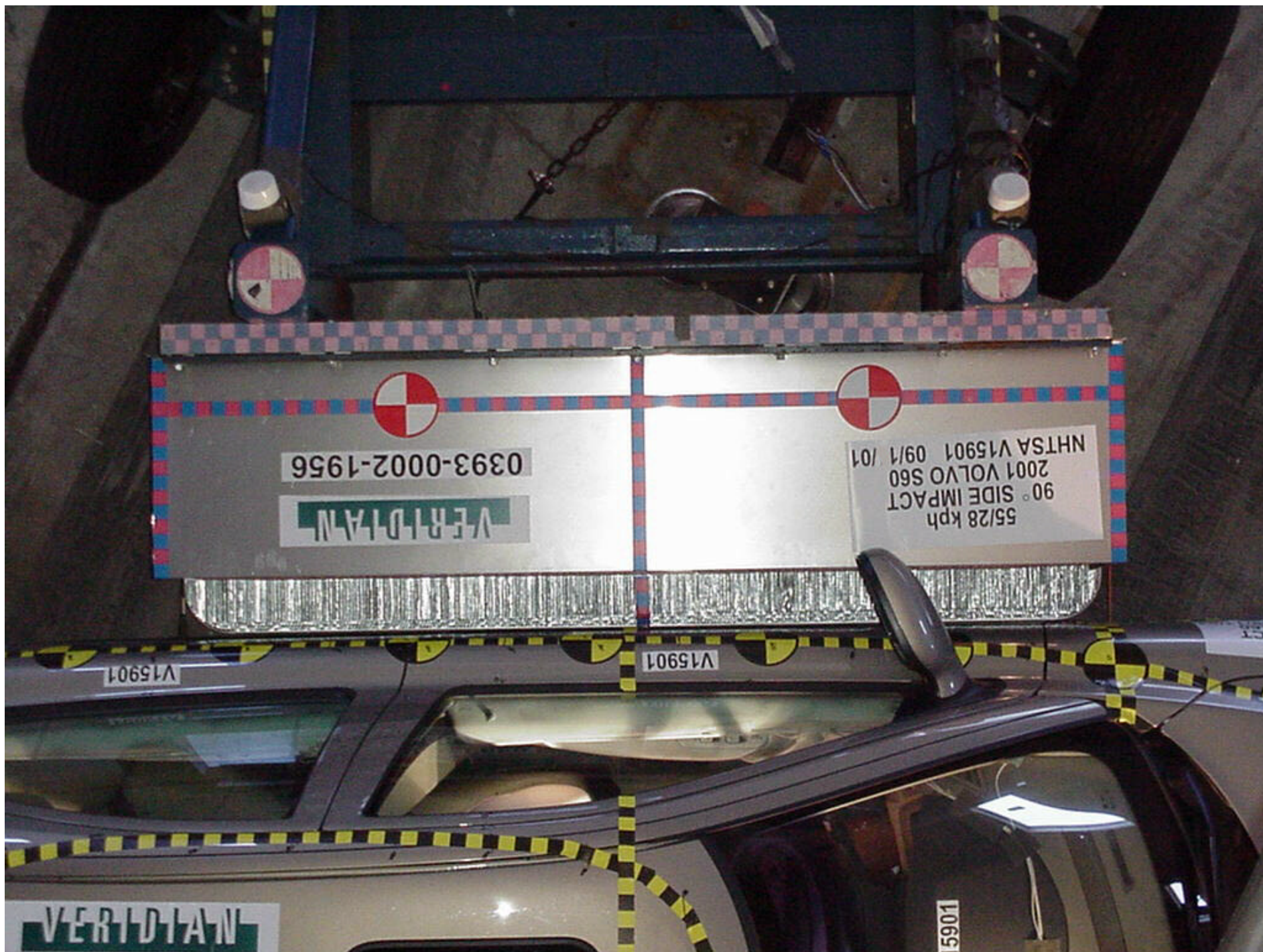


Figure A-13 PRE-TEST TOP VIEW OF IMPACTOR FACE

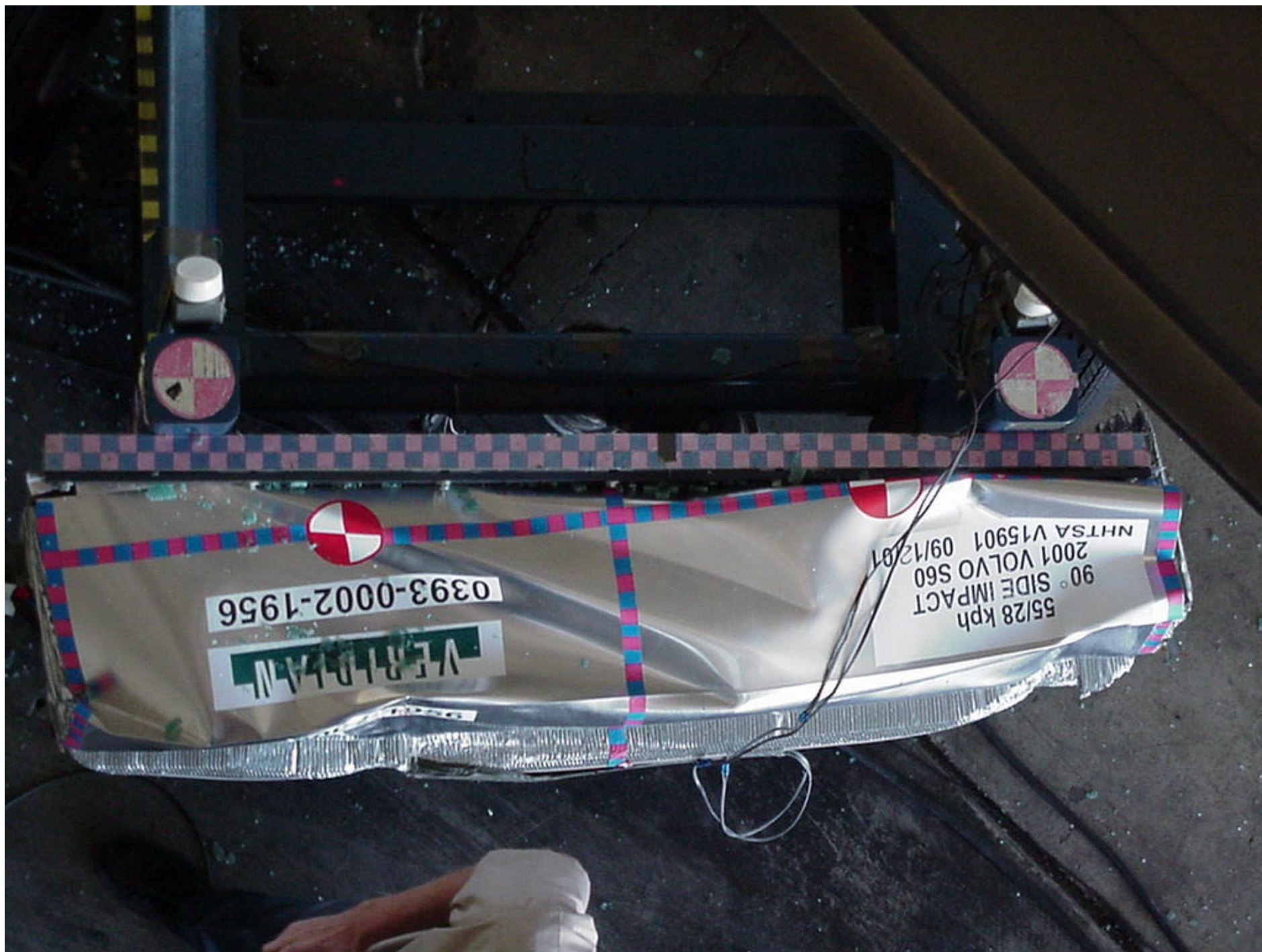


Figure A-14 POST-TEST TOP VIEW OF IMPACTOR FACE



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



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

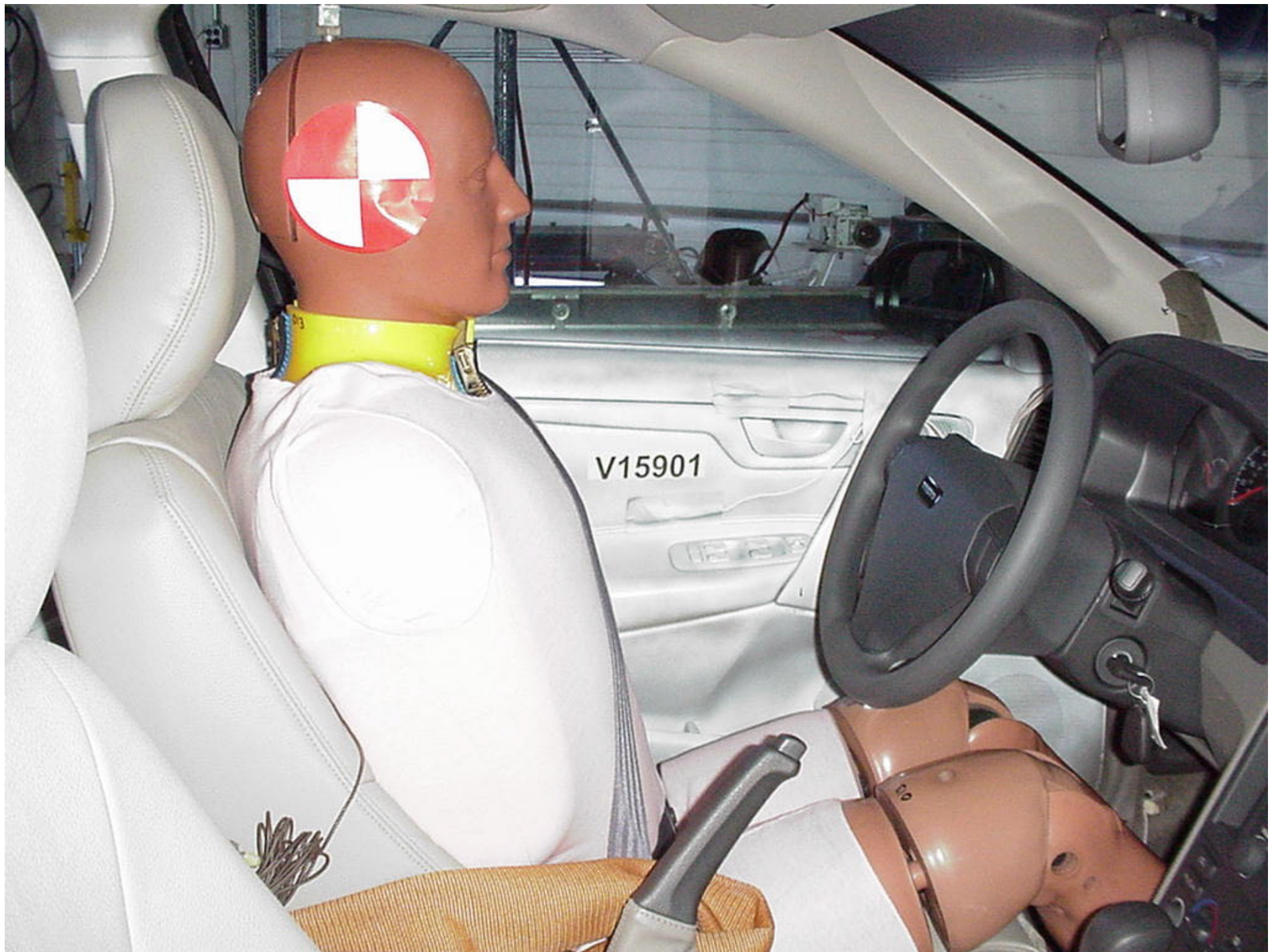
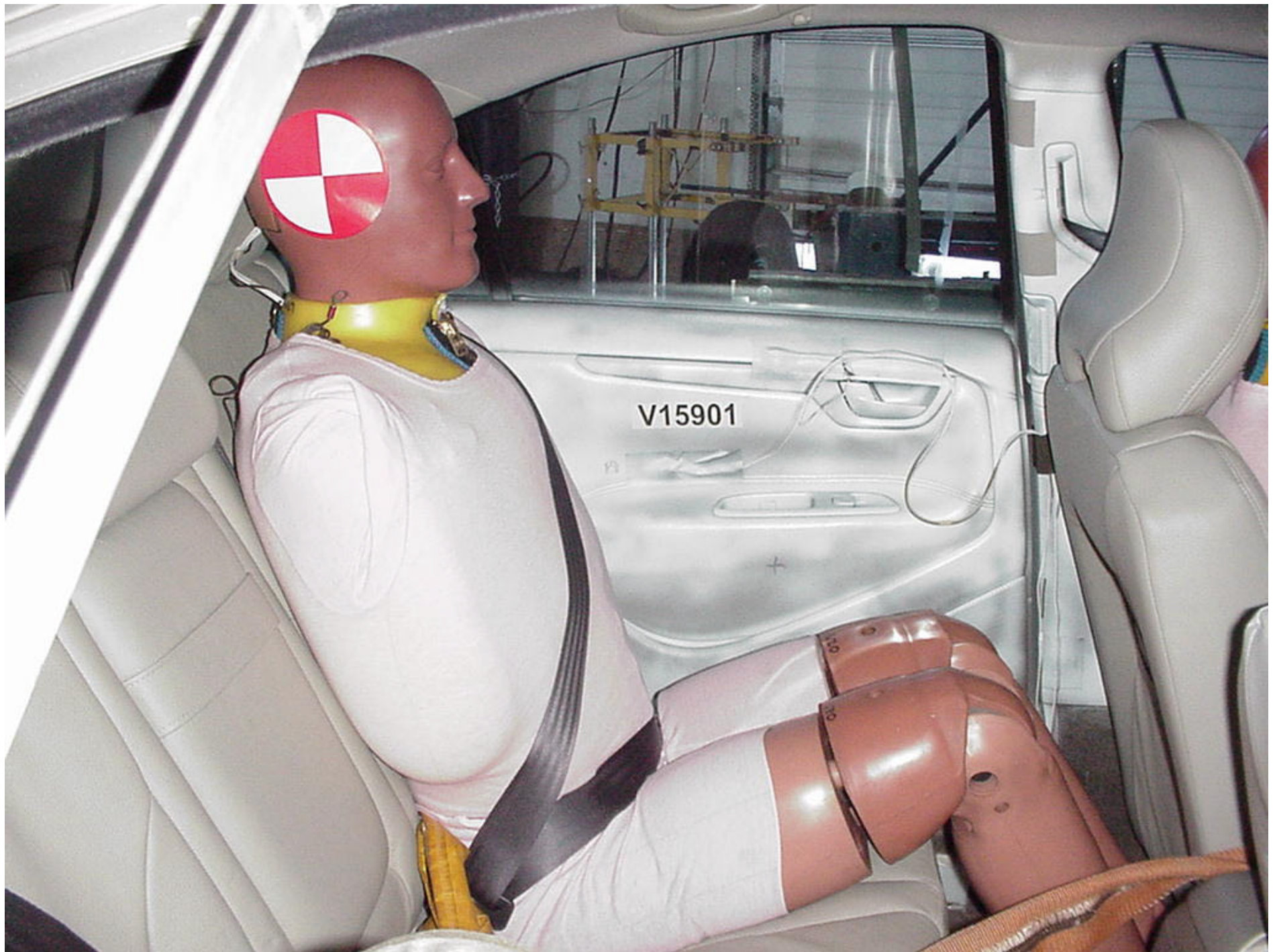


Figure A-17 PRE-TEST RIGHT OCCUPANT COMPARTMENT VIEW OF FRONT SID



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



A-21

8629-2

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

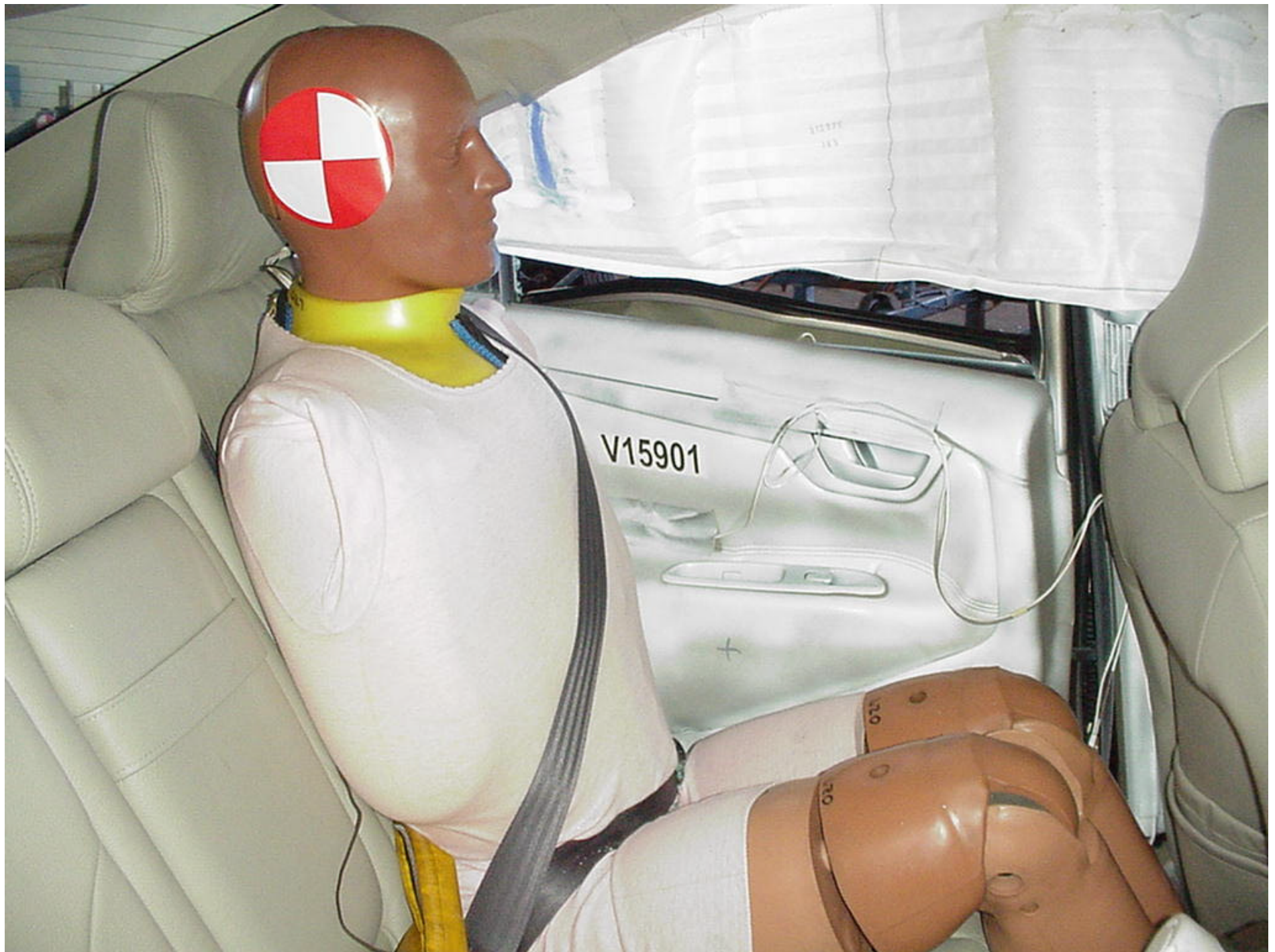


Figure A-20 POST-TEST RIGHT OCCUPANT COMPARTMENT VIEW OF REAR SID



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



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



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



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



Figure A-25 PRE-TEST INTERIOR OF FRONT DOOR



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

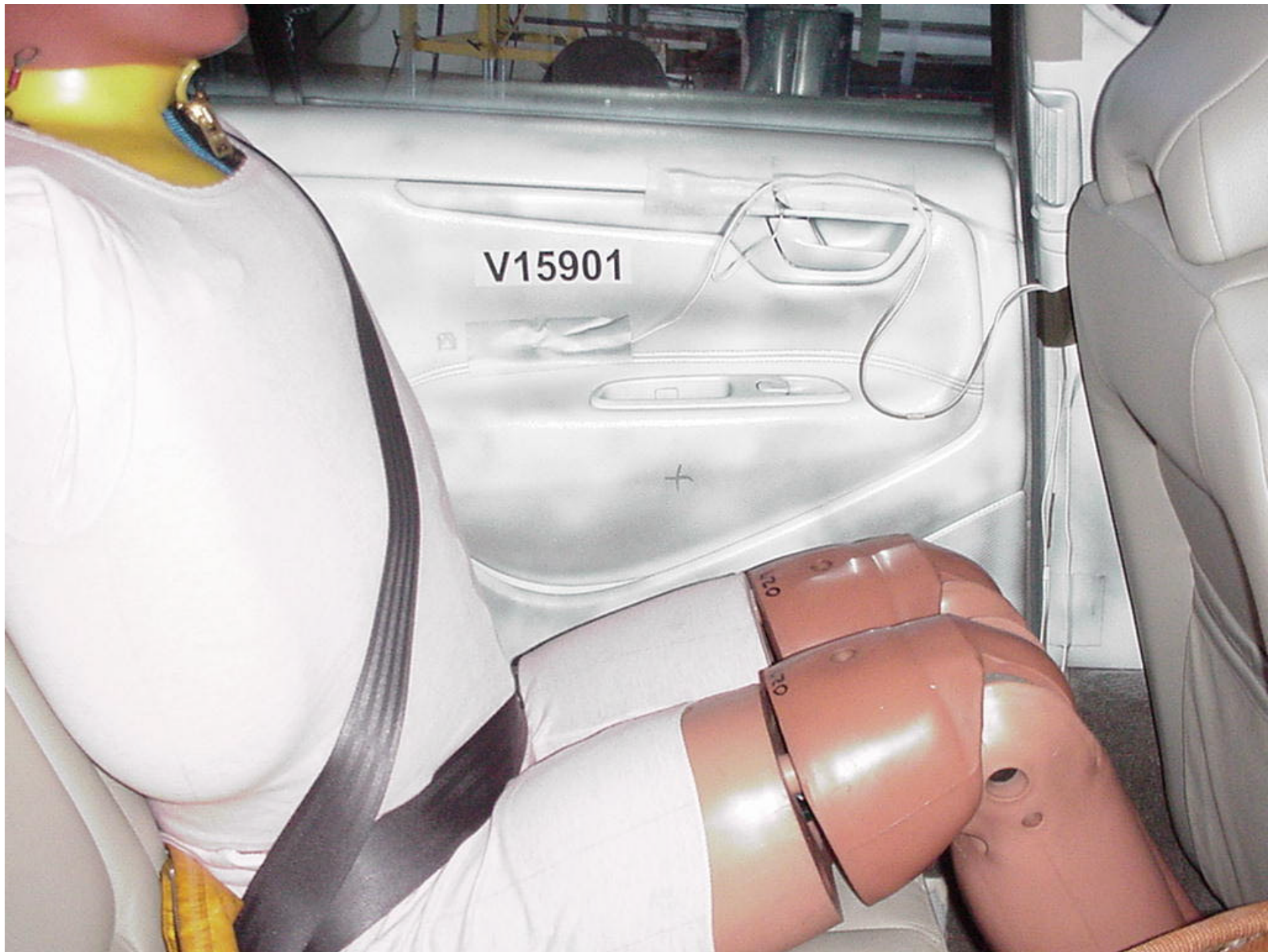


Figure A-27 PRE-TEST INTERIOR OF REAR DOOR



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



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



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



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

MFD. BY VOLVO GOTHENBURG SWEDEN

DATE:	GV.W.R	GA.W.R.FRONT	GA.W.R.REAR
07/01	4400	2330	2220 LB

THIS VEHICLE CONFORMS TO ALL APPLICABLE FEDERAL
MOTOR VEHICLE SAFETY, BUMPER AND THEFT PROTEC-
TION STANDARDS IN EFFECT ON THE DATE OF MANUFAC-
TURE SHOWN ABOVE.

VIN YV1RS61R012081955 PASS.CAR

0138311



T

VOLVO

3514635

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

VEHICLE CAPACITY		OCCUPANTS			COLD TIRE PRESSURE	
WEIGHT		FRT	RR	TOTAL	FRONT	REAR
MAX LOAD	890 LB	2	3	5	38	38 PSI
RECOMMENDED FOR FUEL ECONOMY						
OPTIONAL PRESSURE						
TIRE SIZE	195/65R15	2	1	3	29	29 PSI
IF TIRES ARE HOT FROM DRIVING ADD 4 PSI. (28kPa) TO THESE RECOMMENDED PRESSURES						
T125/80R17	SIZE	SPARE TIRE		INFLATION PRESSURE		60 PSI
SEE OWNERS MANUAL FOR ADDITIONAL INFORMATION.						
0138311		VOLVO			3514949	



IMPORTANT

STOP ENGINE BEFORE REFUELLING.
CLOSE CAP AFTER REFUELLING.

FAILURE TO FOLLOW THESE INSTRUCTIONS MAY CAUSE
ONBOARD DIAGNOSTIC SYSTEM TO MALFUNCTION AND
CHECK ENGINE LAMP TO ILLUMINATE.
SEE OWNER'S MANUAL.

VOLVO

9454010

SEE
OWNER'S
MANUAL

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



Figure A-34 IMPACT PHOTO



Figure A-35 ROLLOVER 90 DEGREES

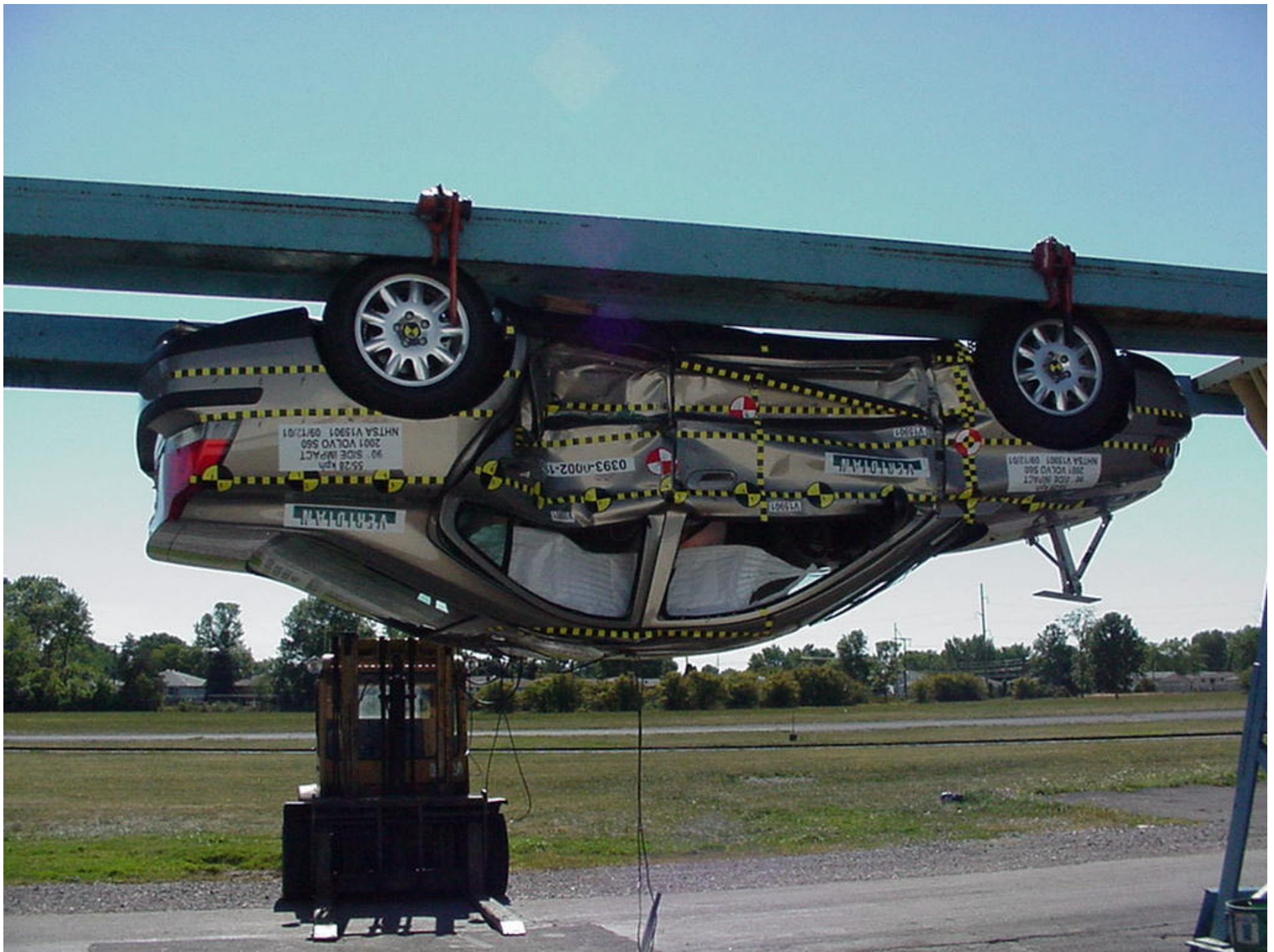


Figure A-36 ROLLOVER 180 DEGREES

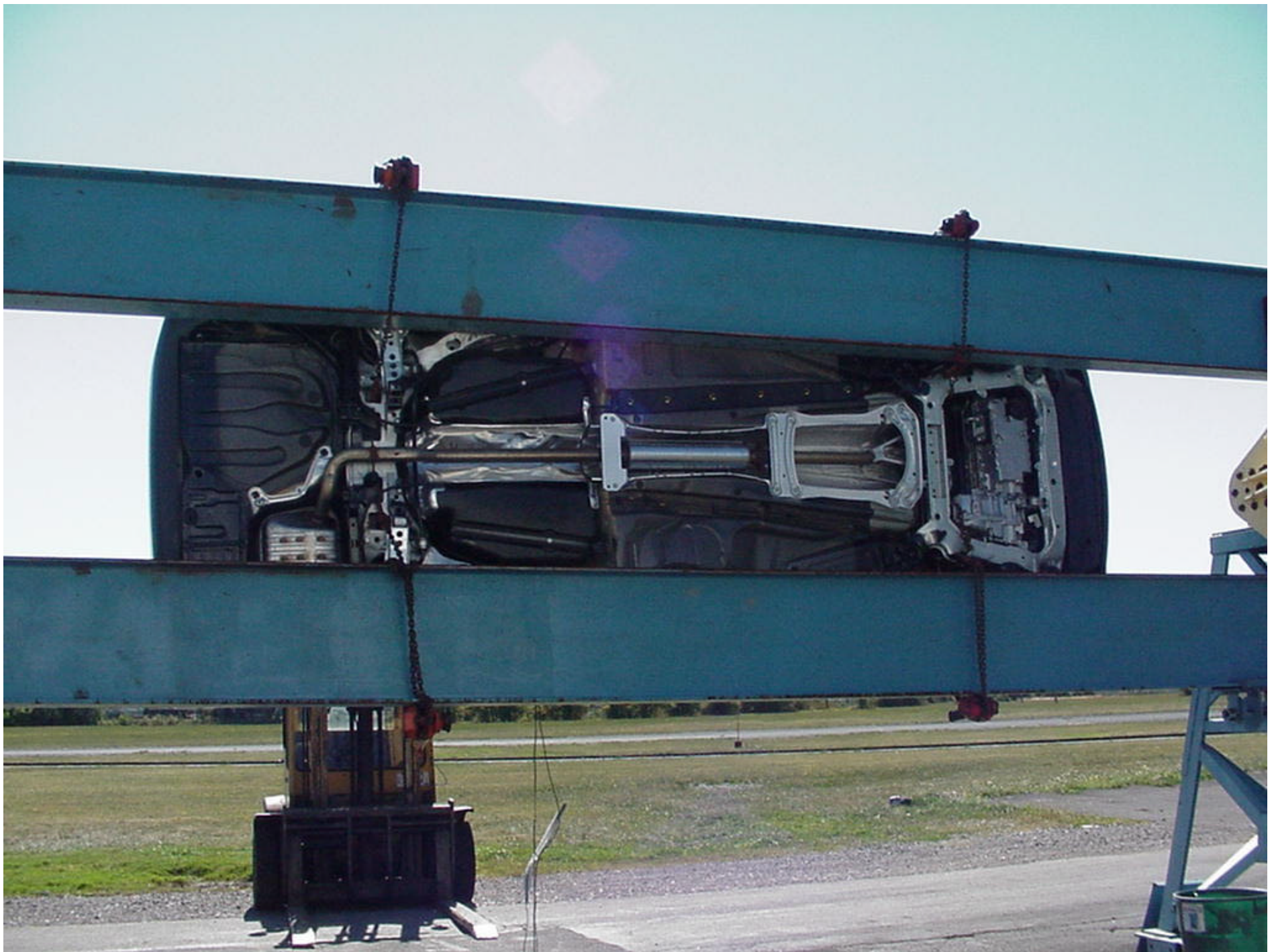


Figure A-37 ROLLOVER 270 DEGREES



Figure A-38 ROLLOVER 360 DEGREES

APPENDIX B

VEHICLE, MDB AND SID RESPONSE DATA

TABLE OF DATA PLOTS

DRIVER AND PASSENGER DUMMY INSTRUMENTATION PLOTS ACCELERATION DATA - FILTER CLASS 1000, 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 (X) ACCELERATION VS TIME	B- 6
2	DRIVER HEAD (X) VELOCITY VS TIME	B- 7
3	DRIVER HEAD (Y) ACCELERATION VS TIME	B- 8
4	DRIVER HEAD (Y) VELOCITY VS TIME	B- 9
5	DRIVER HEAD (Z) ACCELERATION VS TIME	B- 10
6	DRIVER HEAD (Z) VELOCITY VS TIME	B- 11
7	DRIVER HEAD RESULTANT ACCELERATION VS TIME	B- 12
8	DRIVER UPPER RIB (Y) ACCELERATION VS TIME	B- 13
9	DRIVER UPPER RIB (Y) VELOCITY VS TIME	B- 14
10	DRIVER LOWER RIB (Y) ACCELERATION VS TIME	B- 15
11	DRIVER LOWER RIB (Y) VELOCITY VS TIME	B- 16
12	DRIVER LOWER SPINE (Y) ACCELERATION VS TIME	B- 17
13	DRIVER LOWER SPINE (Y) VELOCITY VS TIME	B- 18
14	DRIVER PELVIC (Y) ACCELERATION VS TIME	B- 19
15	DRIVER PELVIC (Y) VELOCITY VS TIME	B- 20
16	PASSENGER HEAD (X) ACCELERATION VS TIME	B- 21
17	PASSENGER HEAD (X) VELOCITY VS TIME	B- 22
18	PASSENGER HEAD (Y) ACCELERATION VS TIME	B- 23
19	PASSENGER HEAD (Y) VELOCITY VS TIME	B- 24
20	PASSENGER HEAD (Z) ACCELERATION VS TIME	B- 25
21	PASSENGER HEAD (Z) VELOCITY VS TIME	B- 26
22	PASSENGER HEAD RESULTANT ACCELERATION VS TIME	B- 27
23	PASSENGER UPPER RIB (Y) ACCELERATION VS TIME	B- 28
24	PASSENGER UPPER RIB (Y) VELOCITY VS TIME	B- 29
25	PASSENGER LOWER RIB (Y) ACCELERATION VS TIME	B- 30
26	PASSENGER LOWER RIB (Y) VELOCITY VS TIME	B- 31
27	PASSENGER LOWER SPINE (Y) ACCELERATION VS TIME	B- 32
28	PASSENGER LOWER SPINE (Y) VELOCITY VS TIME	B- 33
29	PASSENGER PELVIC (Y) ACCELERATION VS TIME	B- 34
30	PASSENGER PELVIC (Y) VELOCITY VS TIME	B- 35

DRIVER & PASSENGER DUMMY INSTRUMENTATION PLOTS ACCELERATION DATA - FIR FILTERED

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

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

<u>Plot No.</u>	<u>Data Plot Title</u>	<u>Page</u>
39	RIGHT SIDE SILL AT FRONT SEAT (X) ACCELERATION VS TIME	B- 44
40	RIGHT SIDE SILL AT FRONT SEAT (X) VELOCITY VS TIME	B- 45
41	RIGHT SIDE SILL AT FRONT SEAT (Y) ACCELERATION VS TIME	B- 46
42	RIGHT SIDE SILL AT FRONT SEAT (Y) VELOCITY VS TIME	B- 47
43	RIGHT SIDE SILL AT FRONT SEAT (Z) ACCELERATION VS TIME	B- 48
44	RIGHT SIDE SILL AT FRONT SEAT (Z) VELOCITY VS TIME	B- 49
45	RIGHT SIDE SILL AT FRONT SEAT RESULTANT ACCELERATION VS TIME	B- 50
46	RIGHT SIDE SILL AT REAR SEAT (X) ACCELERATION VS TIME	B- 51
47	RIGHT SIDE SILL AT REAR SEAT (X) VELOCITY VS TIME	B- 52
48	RIGHT SIDE SILL AT REAR SEAT (Y) ACCELERATION VS TIME	B- 53
49	RIGHT SIDE SILL AT REAR SEAT (Y) VELOCITY VS TIME	B- 54
50	RIGHT SIDE SILL AT REAR SEAT (Z) ACCELERATION VS TIME	B- 55
51	RIGHT SIDE SILL AT REAR SEAT (Z) VELOCITY VS TIME	B- 56
52	RIGHT SIDE SILL AT REAR SEAT RESULTANT ACCELERATION VS TIME	B- 57
53	REAR FLOORPAN ABOVE AXLE (X) ACCELERATION VS TIME	B- 58
54	REAR FLOORPAN ABOVE AXLE (X) VELOCITY VS TIME	B- 59
55	REAR FLOORPAN ABOVE AXLE (Y) ACCELERATION VS TIME	B- 60
56	REAR FLOORPAN ABOVE AXLE (Y) VELOCITY VS TIME	B- 61
57	REAR FLOORPAN ABOVE AXLE (Z) ACCELERATION VS TIME	B- 62
58	REAR FLOORPAN ABOVE AXLE (Z) VELOCITY VS TIME	B- 63
59	REAR FLOORPAN ABOVE AXLE RESULTANT ACCELERATION VS TIME	B- 64
60	LEFT SIDE SILL AT REAR SEAT (Y) ACCELERATION VS TIME	B- 65
61	LEFT SIDE SILL AT REAR SEAT (Y) VELOCITY VS TIME	B- 66
62	LEFT SIDE SILL AT FRONT SEAT (Y) ACCELERATION VS TIME	B- 67
63	LEFT SIDE SILL AT FRONT SEAT (Y) VELOCITY VS TIME	B- 68
64	LEFT FRONT DOOR ON CENTERLINE (Y) ACCELERATION VS TIME	B- 69
65	LEFT FRONT DOOR ON CENTERLINE (Y) VELOCITY VS TIME	B- 70
66	RIGHT REAR OCCUPANT COMPARTMENT (Y) ACCELERATION VS TIME	B- 71
67	RIGHT REAR OCCUPANT COMPARTMENT (Y) VELOCITY VS TIME	B- 72
68	MID REAR OF LEFT FRONT DOOR (Y) ACCELERATION VS TIME	B- 73
69	MID REAR OF LEFT FRONT DOOR (Y) VELOCITY VS TIME	B- 74
70	LEFT FRONT DOOR UPPER CENTERLINE (Y) ACCELERATION VS TIME	B- 75
71	LEFT FRONT DOOR UPPER CENTERLINE (Y) VELOCITY VS TIME	B- 76
72	MID REAR OF LEFT REAR DOOR (Y) ACCELERATION VS TIME	B- 77
73	MID REAR OF LEFT REAR DOOR (Y) VELOCITY VS TIME	B- 78
74	LEFT REAR DOOR UPPER CENTERLINE (Y) ACCELERATION VS TIME	B- 79
75	LEFT REAR DOOR UPPER CENTERLINE (Y) VELOCITY VS TIME	B- 80
76	LOWER B-POST (Y) ACCELERATION VS TIME	B- 81
77	LOWER B-POST (Y) VELOCITY VS TIME	B- 82
78	UPPER B-POST (Y) ACCELERATION VS TIME	B- 83
79	UPPER B-POST (Y) VELOCITY VS TIME	B- 84
80	LOWER A-POST (Y) ACCELERATION VS TIME	B- 85

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>
81	LOWER A-POST (Y) VELOCITY VS TIME	B- 86
82	UPPER A-POST (Y) ACCELERATION VS TIME	B- 87
83	UPPER A-POST (Y) VELOCITY VS TIME	B- 88
84	FRONT SEAT TRACK (Y) ACCELERATION VS TIME	B- 89
85	FRONT SEAT TRACK (Y) VELOCITY VS TIME	B- 90
86	REAR SEAT TRACK (Y) ACCELERATION VS TIME	B- 91
87	REAR SEAT TRACK (Y) VELOCITY VS TIME	B- 92
88	VEHICLE CENTER OF GRAVITY (X) ACCELERATION VS TIME	B- 93
89	VEHICLE CENTER OF GRAVITY (X) VELOCITY VS TIME	B- 94
90	VEHICLE CENTER OF GRAVITY (Y) ACCELERATION VS TIME	B- 95
91	VEHICLE CENTER OF GRAVITY (Y) VELOCITY ACCELERATION VS TIME	B- 96
92	VEHICLE CENTER OF GRAVITY (Z) ACCELERATION VS TIME	B- 97
93	VEHICLE CENTER OF GRAVITY (Z) VELOCITY VS TIME	B- 98
94	VEHICLE CENTER OF GRAVITY RESULTANT ACCELERATION VS TIME	B- 99

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>
95	MDB CENTER OF GRAVITY (X) ACCELERATION VS TIME	B- 100
96	MDB CENTER OF GRAVITY (X) VELOCITY VS TIME	B- 101
97	MDB CENTER OF GRAVITY (Y) ACCELERATION VS TIME	B- 102
98	MDB CENTER OF GRAVITY (Y) VELOCITY VS TIME	B- 103
99	MDB CENTER OF GRAVITY (Z) ACCELERATION VS TIME	B- 104
100	MDB CENTER OF GRAVITY (Z) VELOCITY VS TIME	B- 105
101	MDB CENTER OF GRAVITY RESULTANT ACCELERATION VS TIME	B- 106
102	MDB REAR (X) ACCELERATION VS TIME	B- 107
103	MDB REAR (X) VELOCITY VS TIME	B- 108
104	MDB REAR (Y) ACCELERATION VS TIME	B- 109
105	MDB REAR (Y) VELOCITY VS TIME	B- 110

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>
106	DRIVER UPPER RIB (Y) ACCELERATION VS TIME	B- 111
107	DRIVER UPPER RIB (Y) VELOCITY VS TIME	B- 112
108	DRIVER LOWER RIB (Y) ACCELERATION VS TIME	B- 113
109	DRIVER LOWER RIB (Y) VELOCITY VS TIME	B- 114
110	DRIVER LOWER SPINE (Y) ACCELERATION VS TIME	B- 115
111	DRIVER LOWER SPINE (Y) VELOCITY VS TIME	B- 116
112	DRIVER PELVIC (Y) ACCELERATION VS TIME	B- 117
113	DRIVER PELVIC (Y) VELOCITY VS TIME	B- 118
114	PASSENGER UPPER RIB (Y) ACCELERATION VS TIME	B- 119
115	PASSENGER UPPER RIB (Y) VELOCITY VS TIME	B- 120
116	PASSENGER LOWER RIB (Y) ACCELERATION VS TIME	B- 121
117	PASSENGER LOWER RIB (Y) VELOCITY VS TIME	B- 122
118	PASSENGER LOWER SPINE (Y) ACCELERATION VS TIME	B- 123
119	PASSENGER LOWER SPINE (Y) VELOCITY VS TIME	B- 124
120	PASSENGER PELVIC (Y) ACCELERATION VS TIME	B- 125
121	PASSENGER PELVIC (Y) VELOCITY VS TIME	B- 126

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

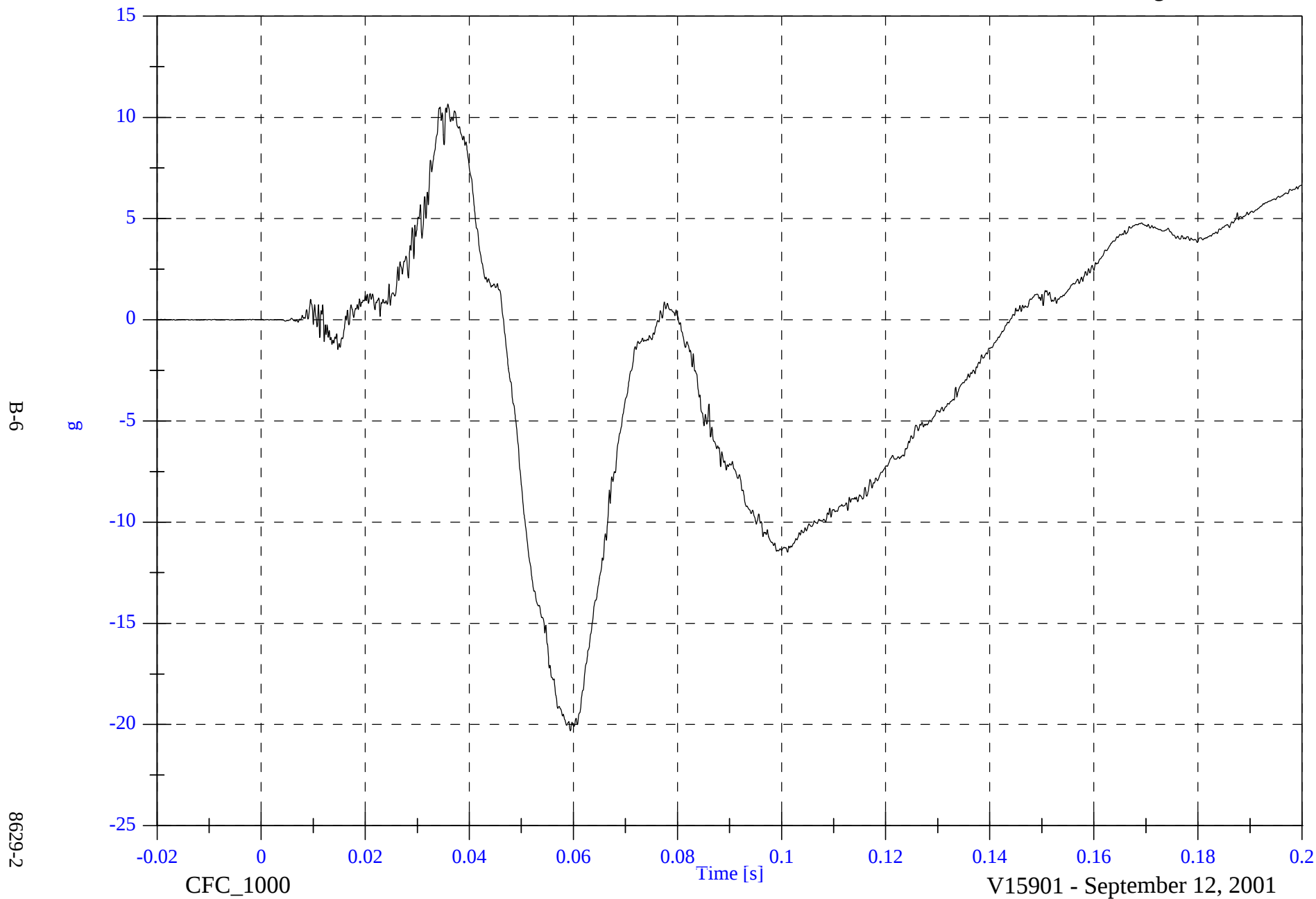
<u>Plot No.</u>	<u>Data Plot Title</u>	<u>Page</u>
122	DRIVER UPPER RIB (Y) ACCELERATION VS TIME	B- 127
123	DRIVER LOWER RIB (Y) ACCELERATION VS TIME	B- 128
124	DRIVER LOWER SPINE (Y) ACCELERATION VS TIME	B- 129
125	DRIVER PELVIC (Y) ACCELERATION VS TIME	B- 130
126	PASSENGER UPPER RIB (Y) ACCELERATION VS TIME	B- 131
127	PASSENGER LOWER RIB (Y) ACCELERATION VS TIME	B- 132
128	PASSENGER LOWER SPINE (Y) ACCELERATION VS TIME	B- 133
129	PASSENGER PELVIC (Y) ACCELERATION VS TIME	B- 134

Optional SNCAP 2001 Volvo S60

P1 Head x

Max: 10.7 [g] at 0.036 [s]

Min: -20.3 [g] at 0.059 [s]

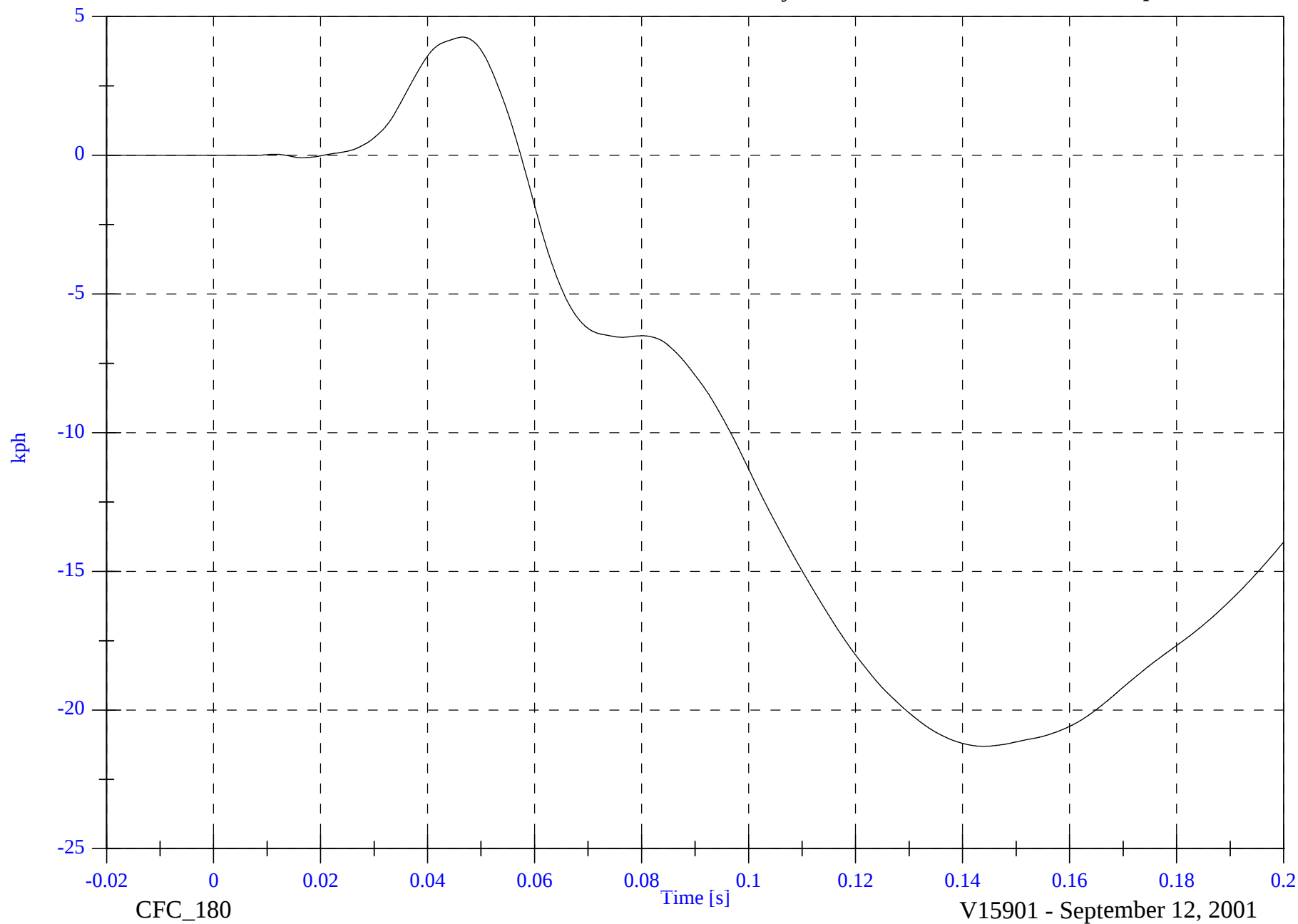


Optional SNCAP 2001 Volvo S60

P1 Head x Velocity

Max: 4.3 [kph] at 0.047 [s]

Min: -21.3 [kph] at 0.144 [s]



B-7

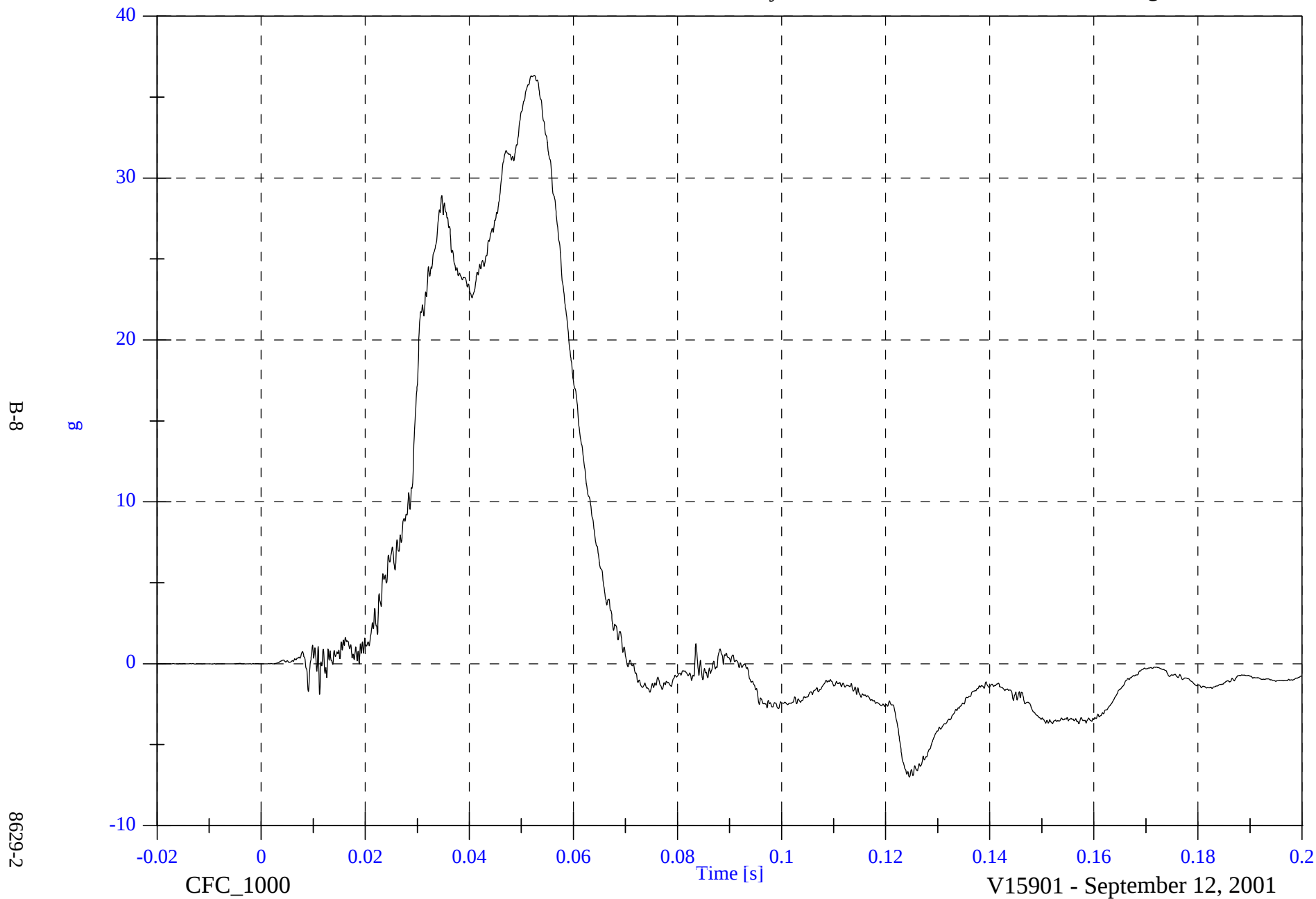
8629-2

Optional SNCAP 2001 Volvo S60

P1 Head y

Max: 36.3 [g] at 0.053 [s]

Min: -7.0 [g] at 0.125 [s]

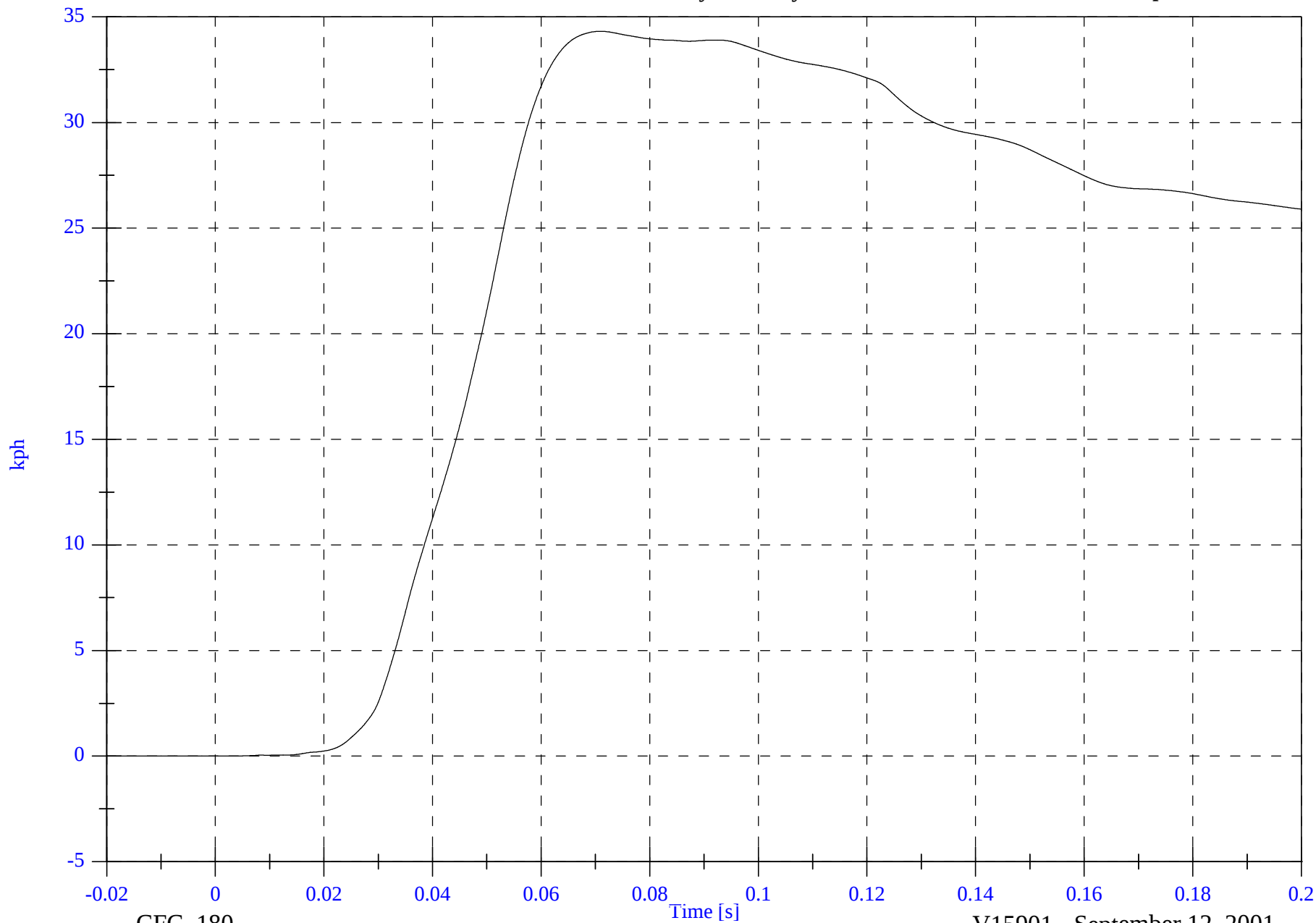


Optional SNCAP 2001 Volvo S60

Max: 34.3 [kph] at 0.071 [s]

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

P1 Head y Velocity



B-9

8629-2

CFC_180

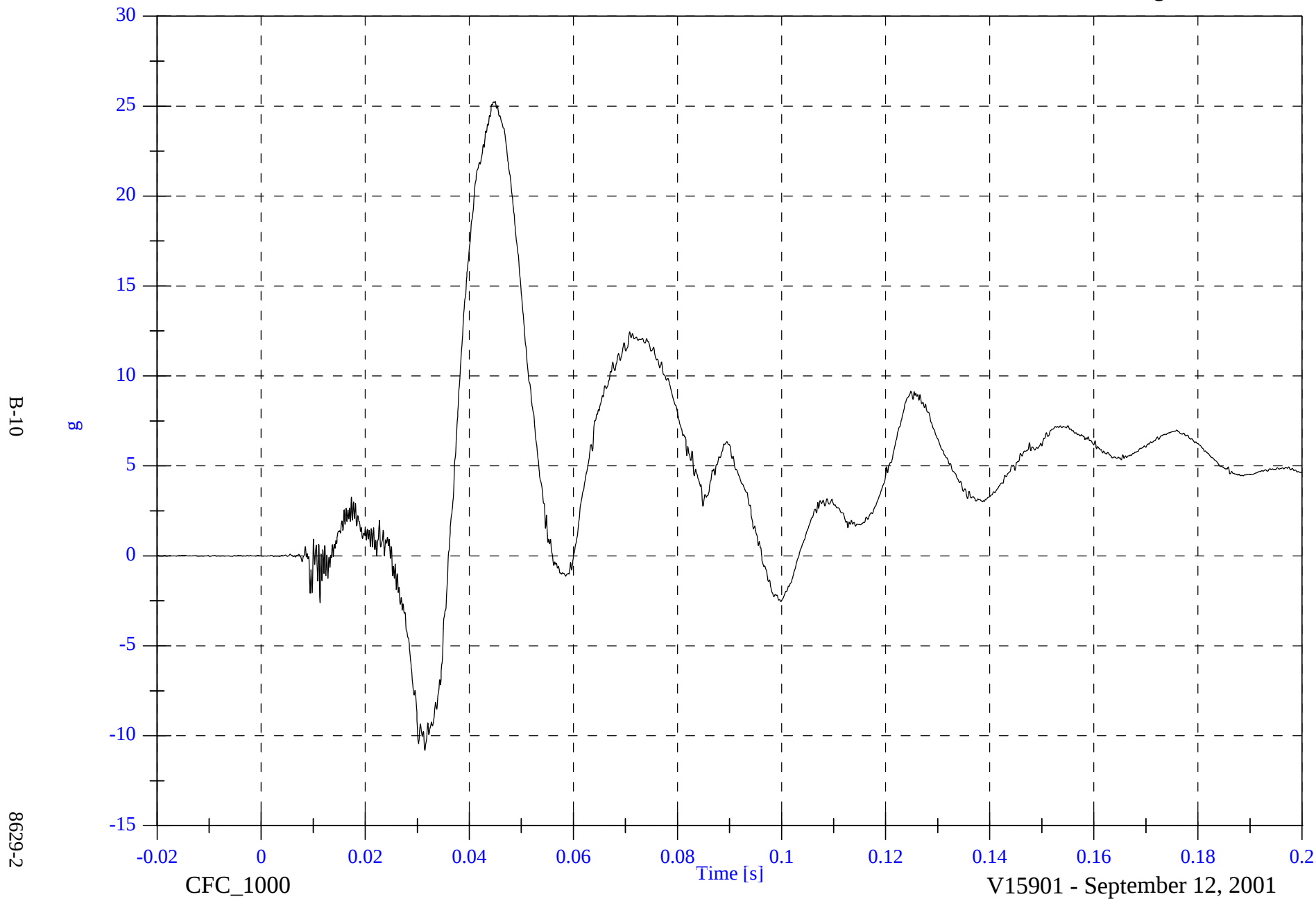
V15901 - September 12, 2001

Optional SNCAP 2001 Volvo S60

P1 Head z

Max: 25.3 [g] at 0.045 [s]

Min: -10.8 [g] at 0.031 [s]



Optional SNCAP 2001 Volvo S60

P1 Head z Velocity

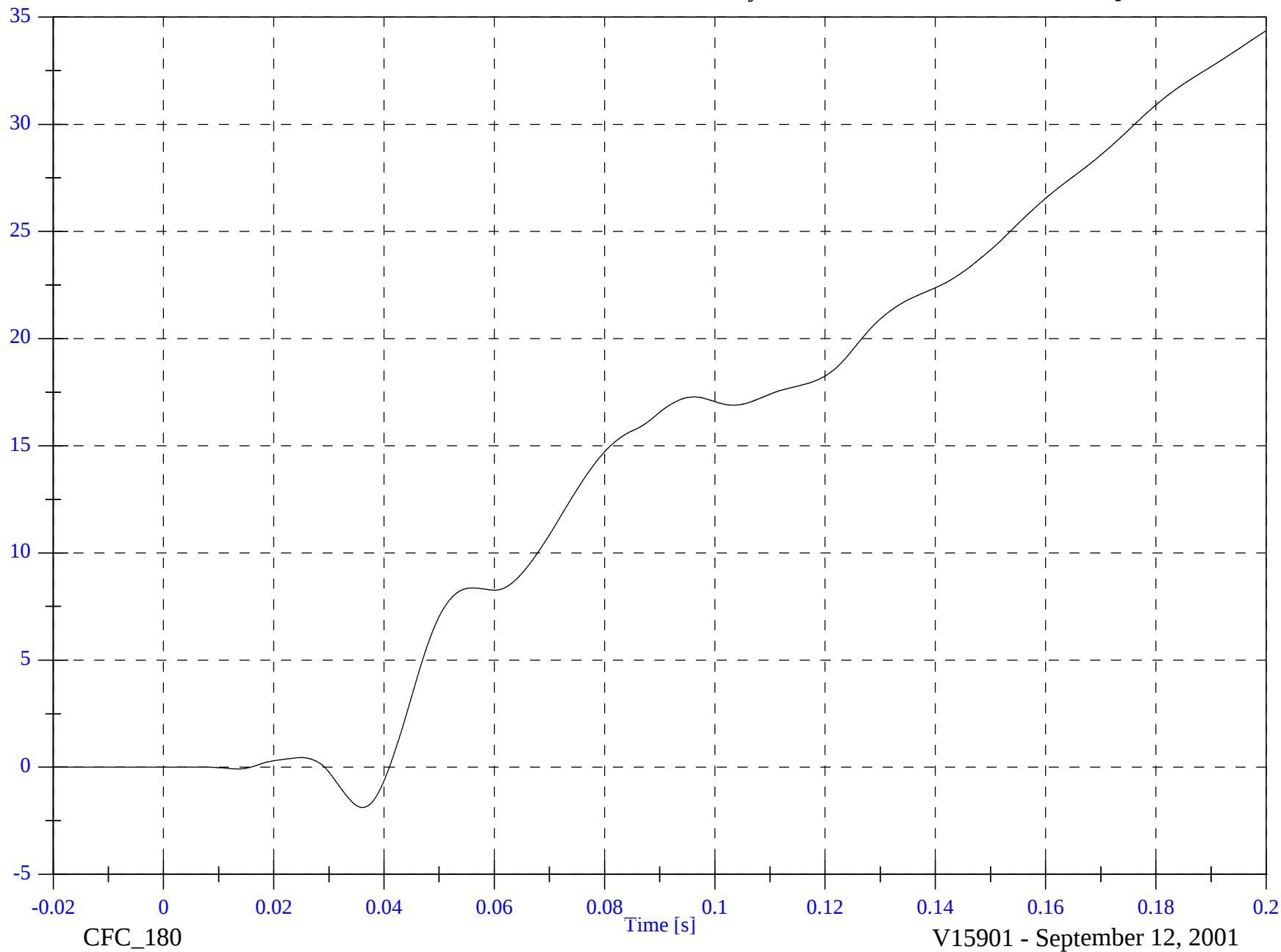
Max: 34.4 [kph] at 0.200 [s]

Min: -1.9 [kph] at 0.036 [s]

B-11

kph

8629-2

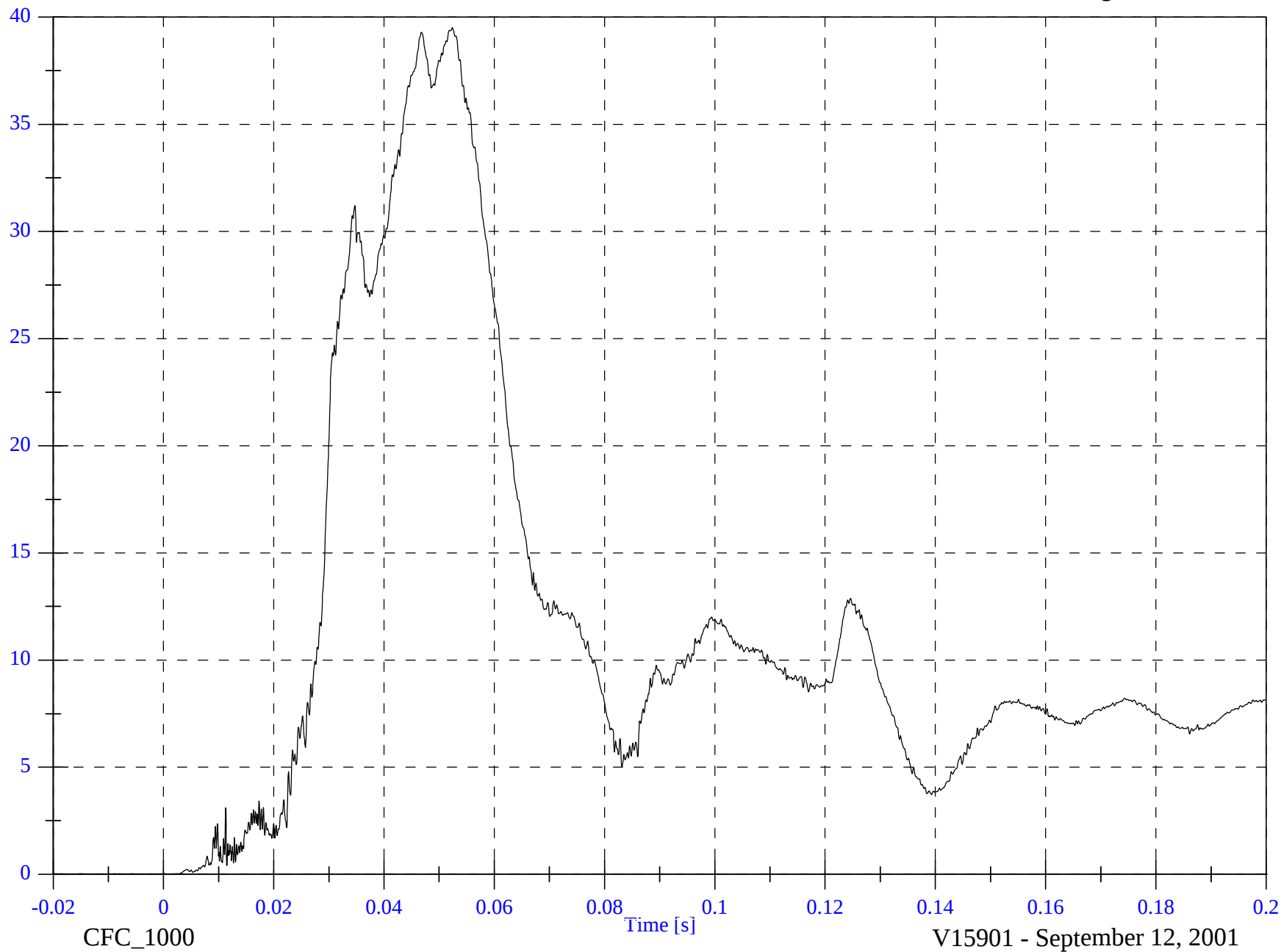


Optional SNCAP 2001 Volvo S60

P1 Head Resultant

Max: 39.5 [g] at 0.052 [s]

Min: 0.0 [g] at -0.008 [s]



B-12

8629-2

Optional SNCAP 2001 Volvo S60

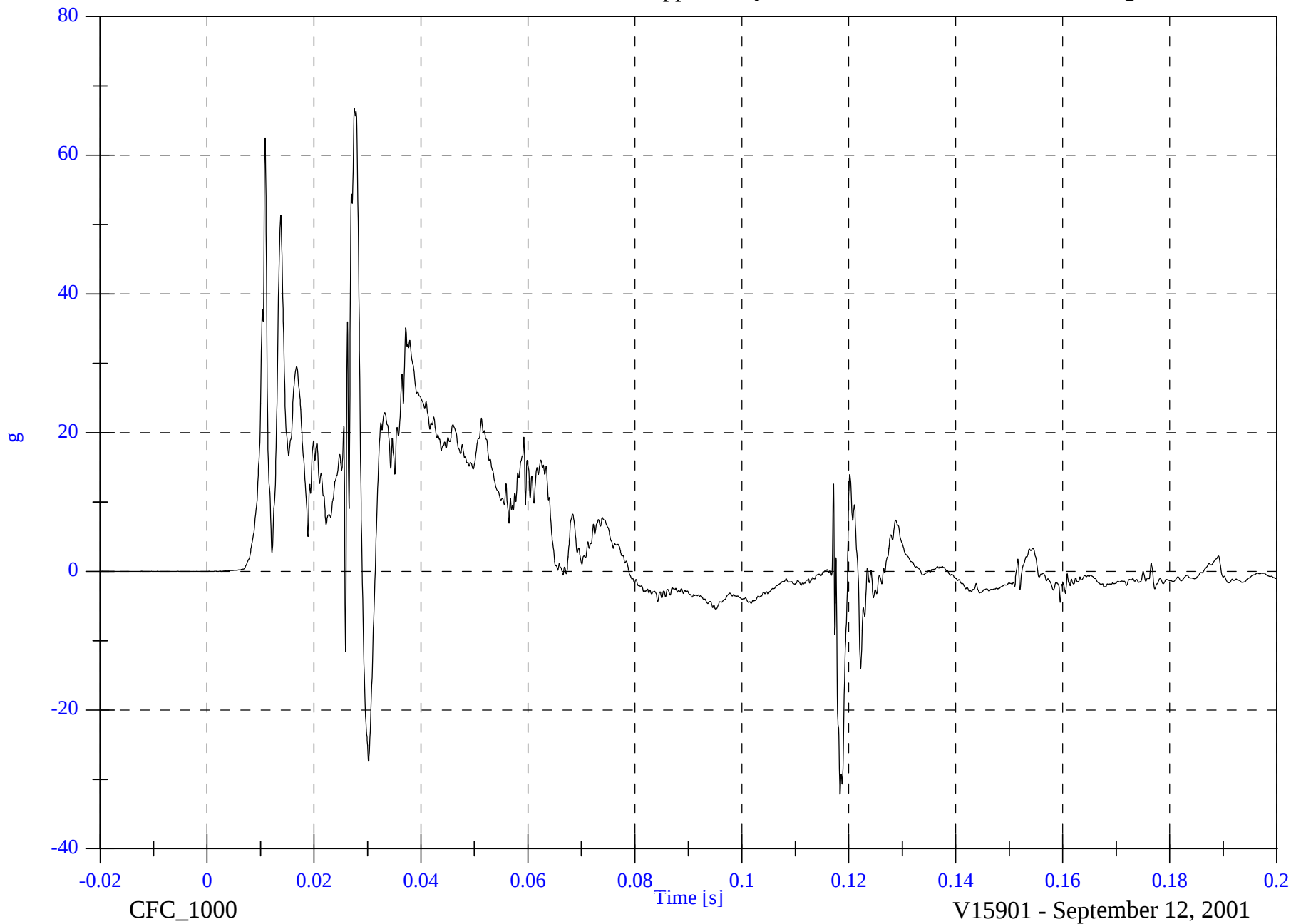
P1 Upper Rib y

Max: 66.7 [g] at 0.028 [s]

Min: -32.1 [g] at 0.118 [s]

B-13

8629-2

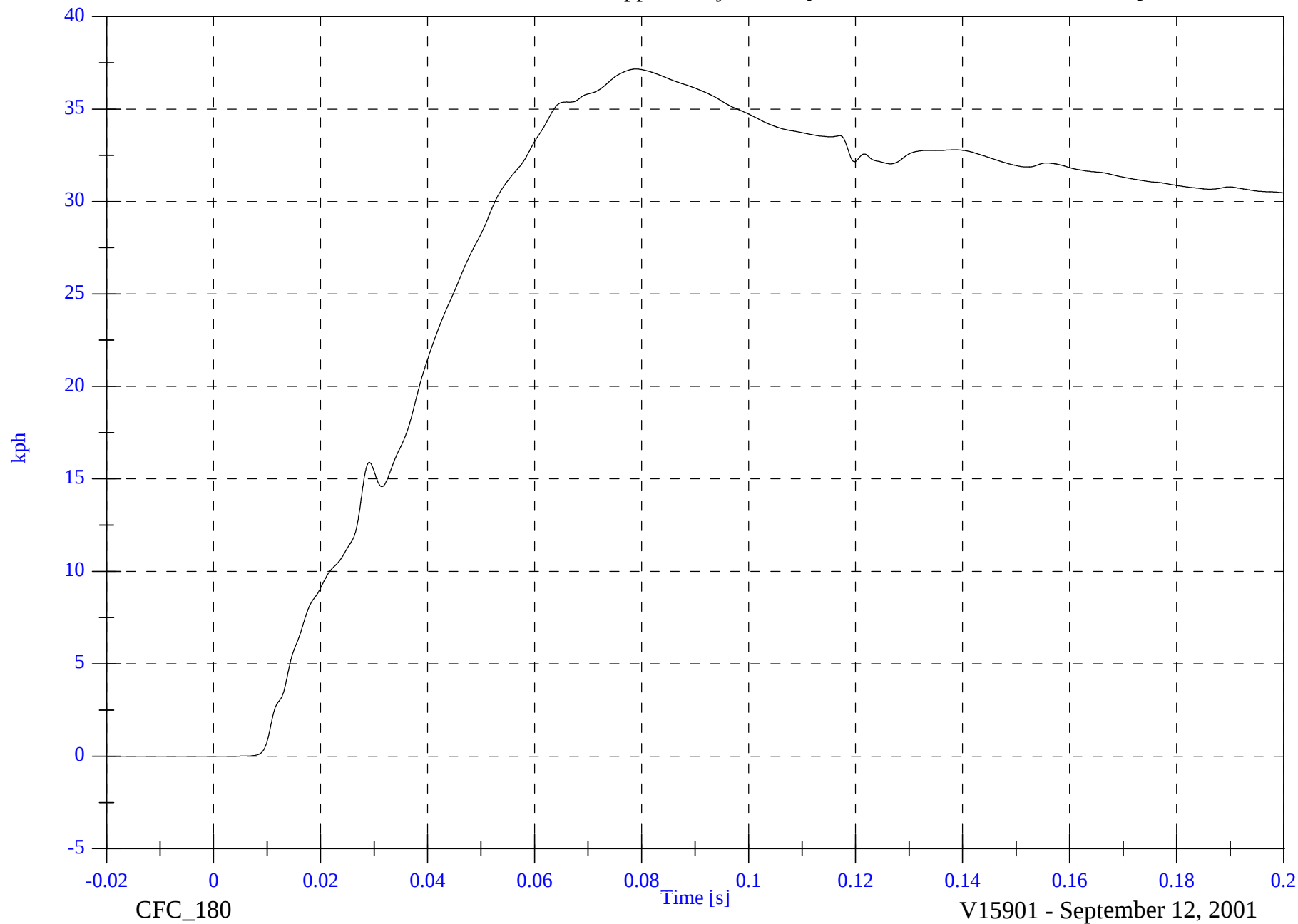


Optional SNCAP 2001 Volvo S60

P1 Upper Rib y Velocity

Max: 37.2 [kph] at 0.079 [s]

Min: -0.0 [kph] at -0.013 [s]



B-14

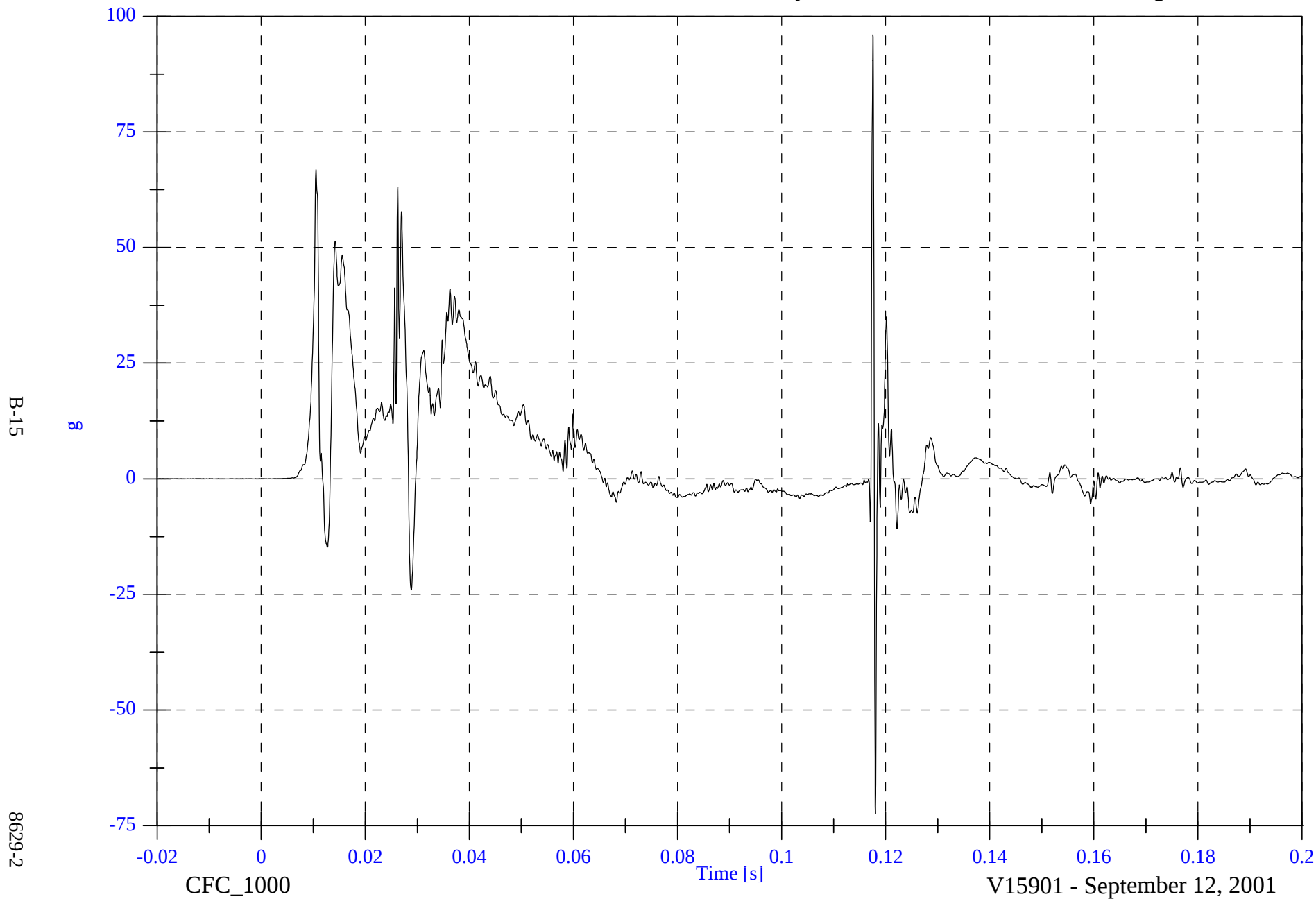
8629-2

Optional SNCAP 2001 Volvo S60

P1 Lower Rib y

Max: 96.0 [g] at 0.118 [s]

Min: -72.4 [g] at 0.118 [s]



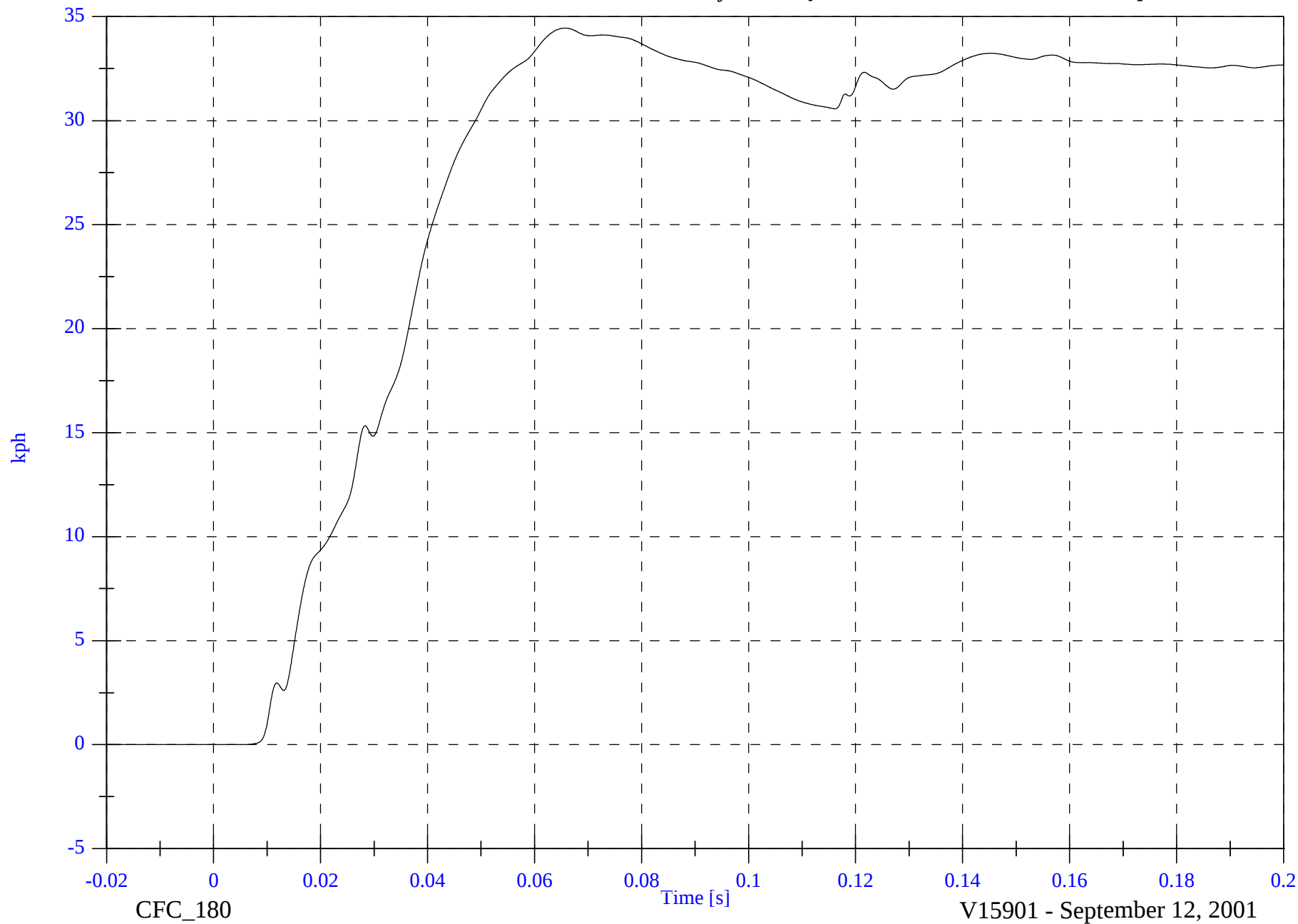
8629-2

Optional SNCAP 2001 Volvo S60

P1 Lower Rib y Velocity

Max: 34.5 [kph] at 0.066 [s]

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



B-16

8629-2

Optional SNCAP 2001 Volvo S60

P1 Lower Spine y

Max: 60.5 [g] at 0.031 [s]

Min: -11.0 [g] at 0.064 [s]



8629-2

Optional SNCAP 2001 Volvo S60

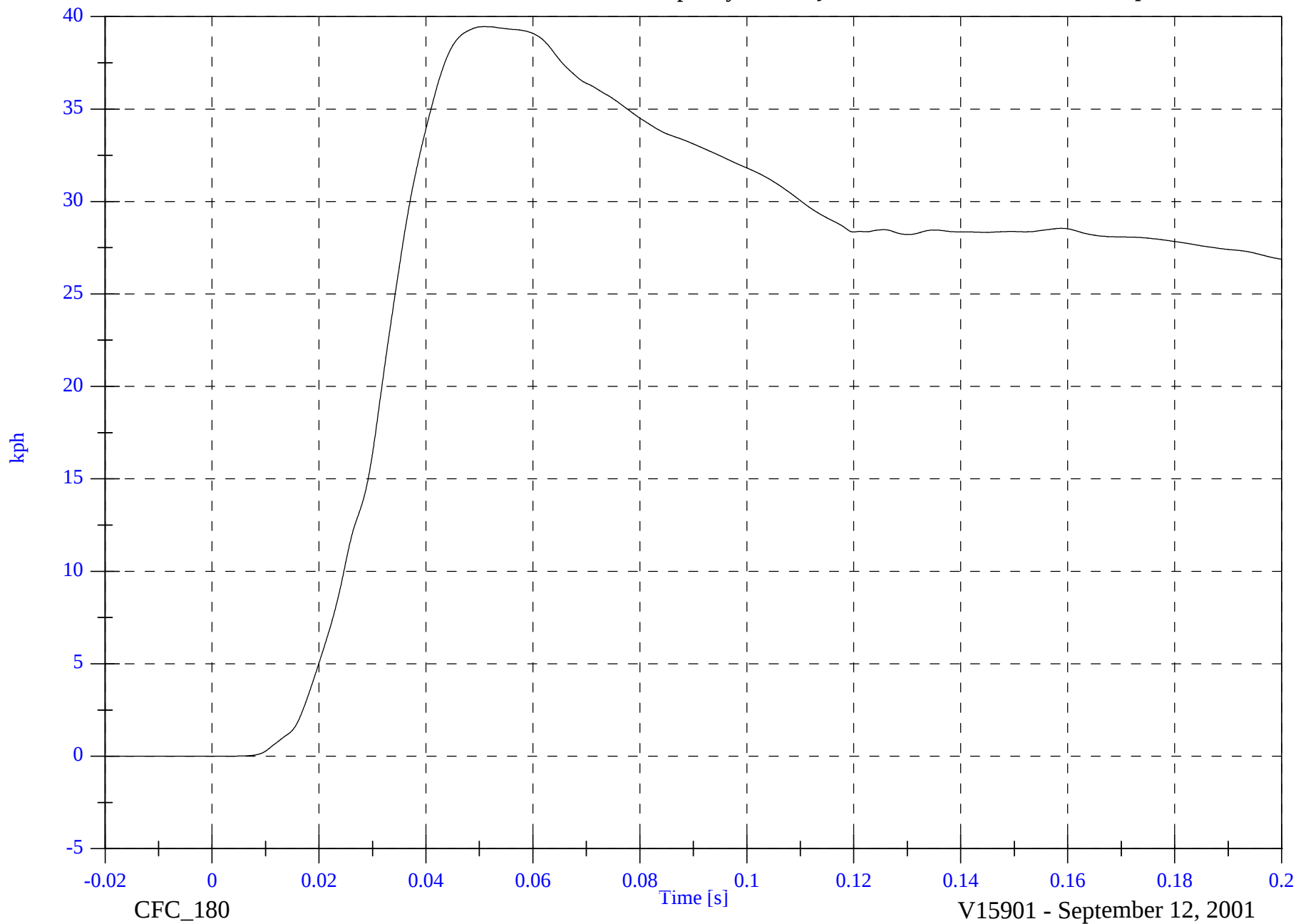
P1 Lower Spine y Velocity

Max: 39.5 [kph] at 0.051 [s]

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

B-18

8629-2

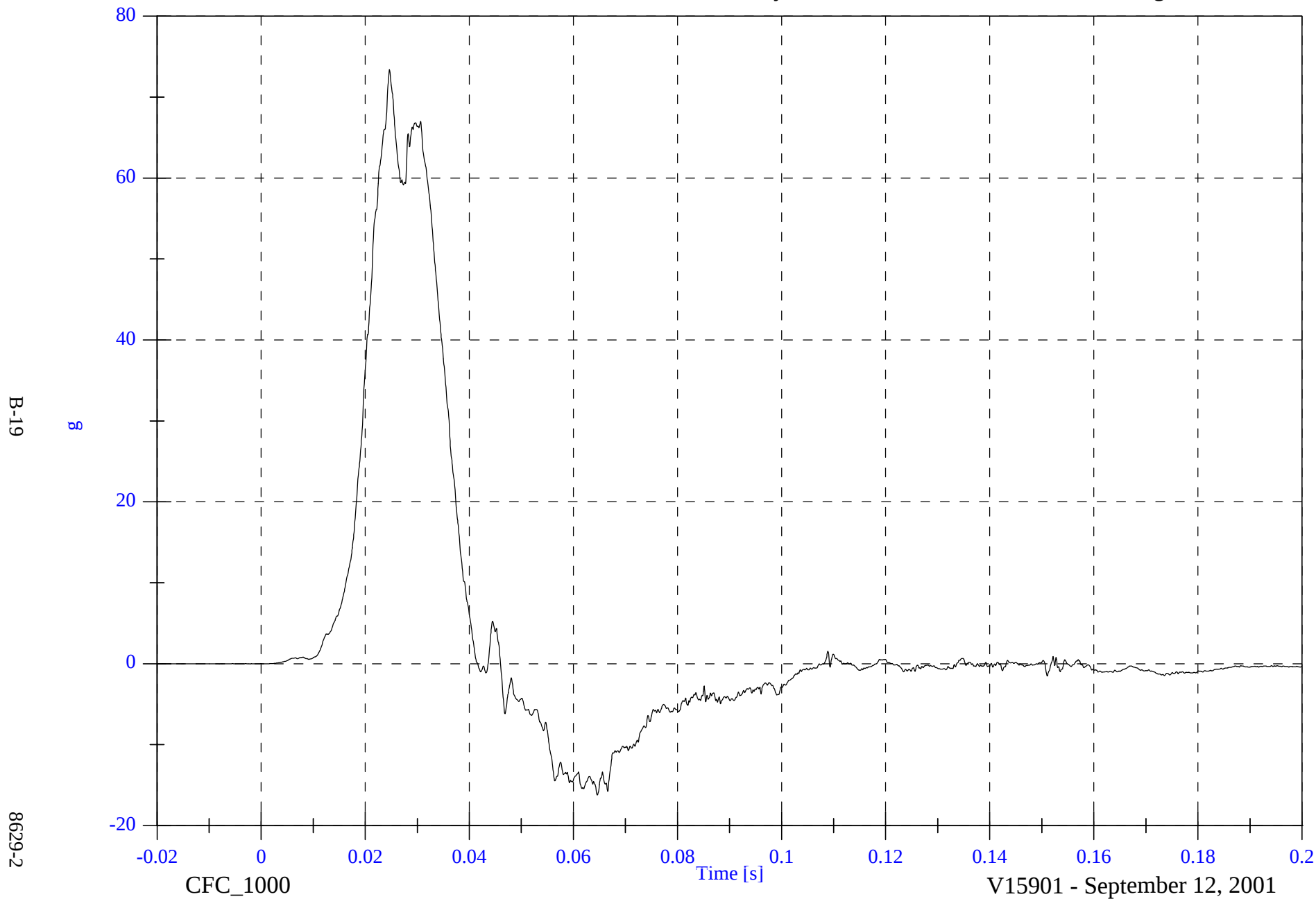


Optional SNCAP 2001 Volvo S60

P1 Pelvic y

Max: 73.4 [g] at 0.025 [s]

Min: -16.2 [g] at 0.065 [s]

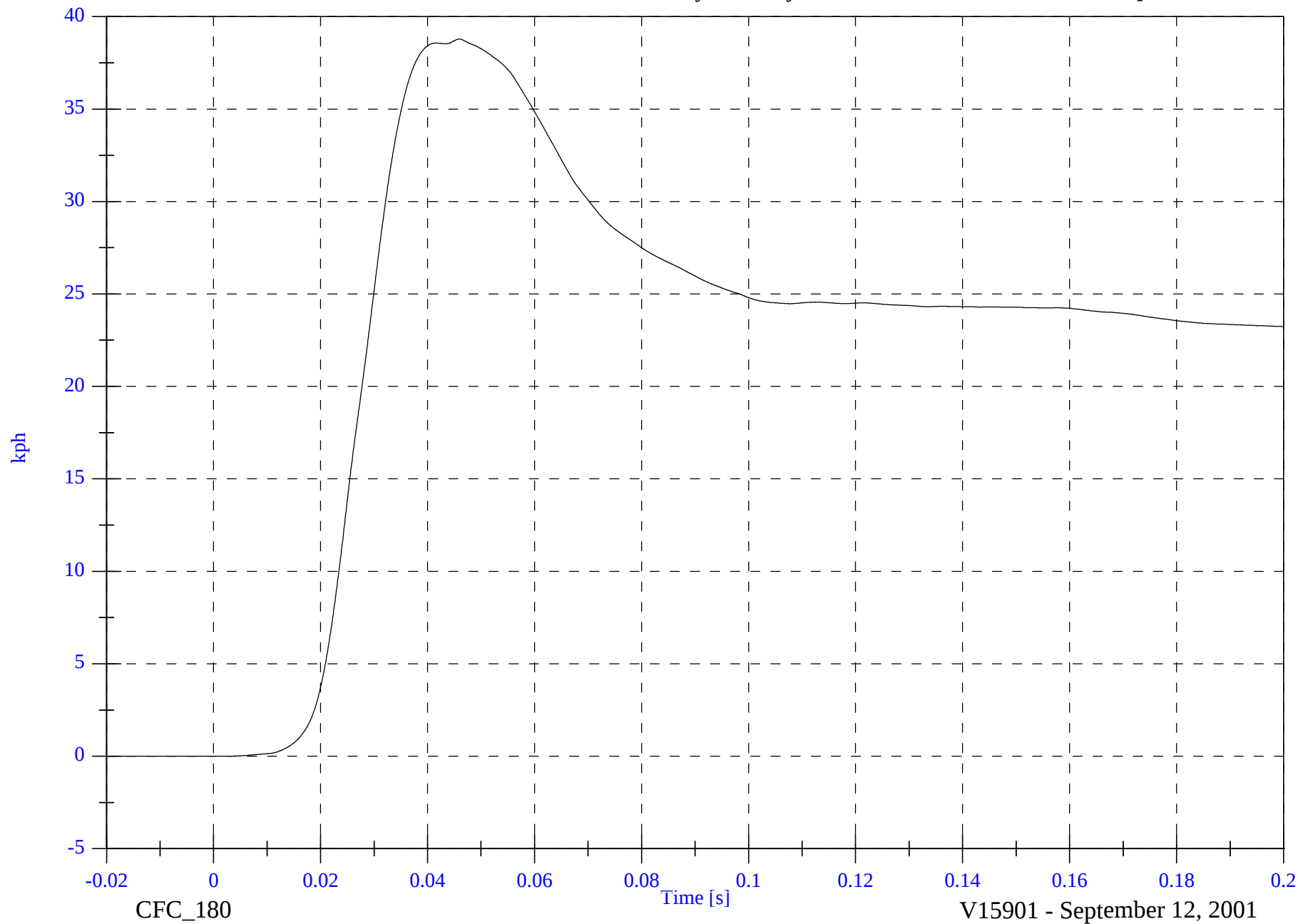


Optional SENCAP 2001 Volvo S60

P1 Pelvic y Velocity

Max: 38.8 [kph] at 0.046 [s]

Min: -0.0 [kph] at -0.007 [s]



B-20

8629-2

CFC_180

V15901 - September 12, 2001

Optional SNCAP 2001 Volvo S60

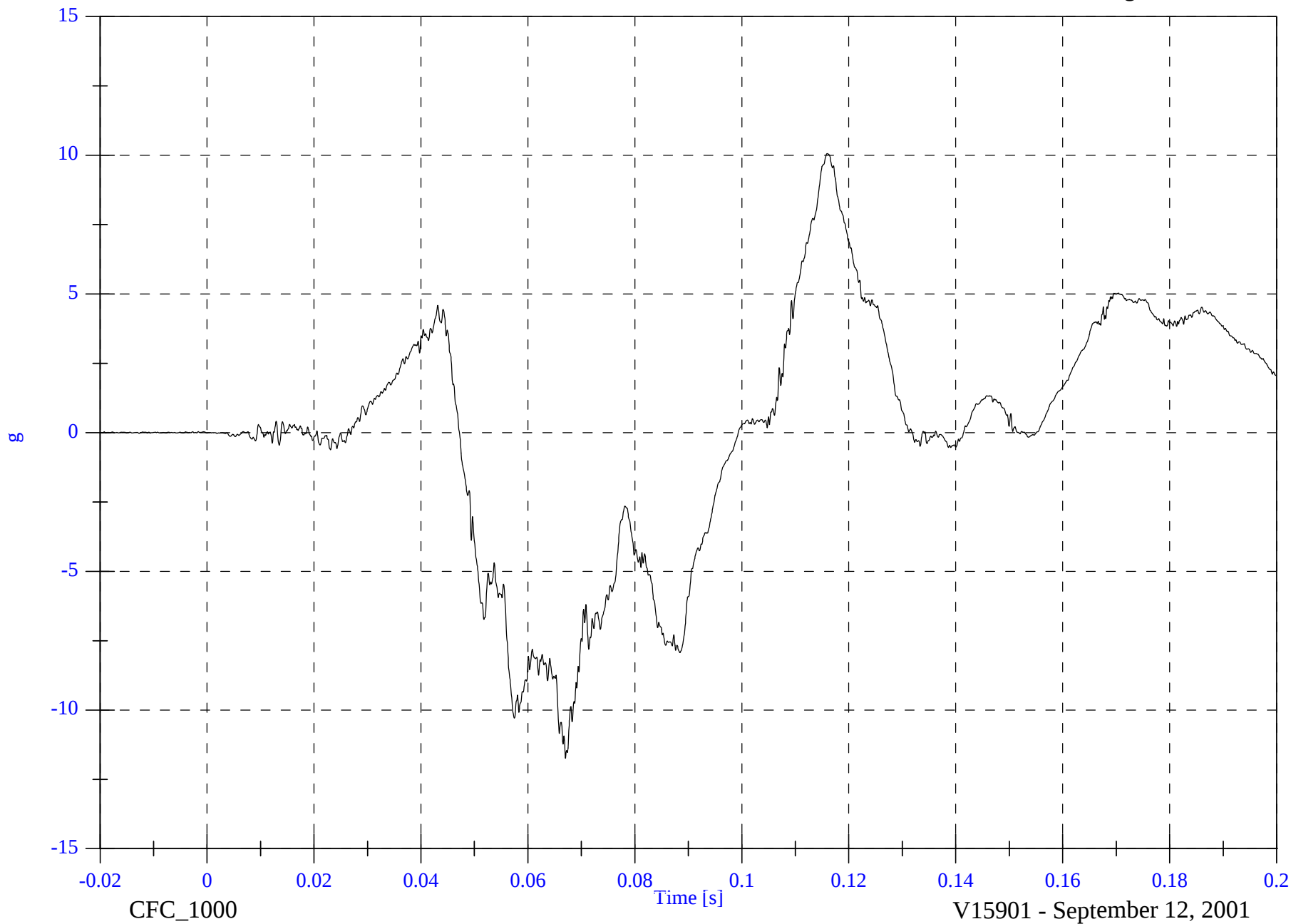
P4 Head x

Max: 10.1 [g] at 0.116 [s]

Min: -11.7 [g] at 0.067 [s]

B-21

8629-2

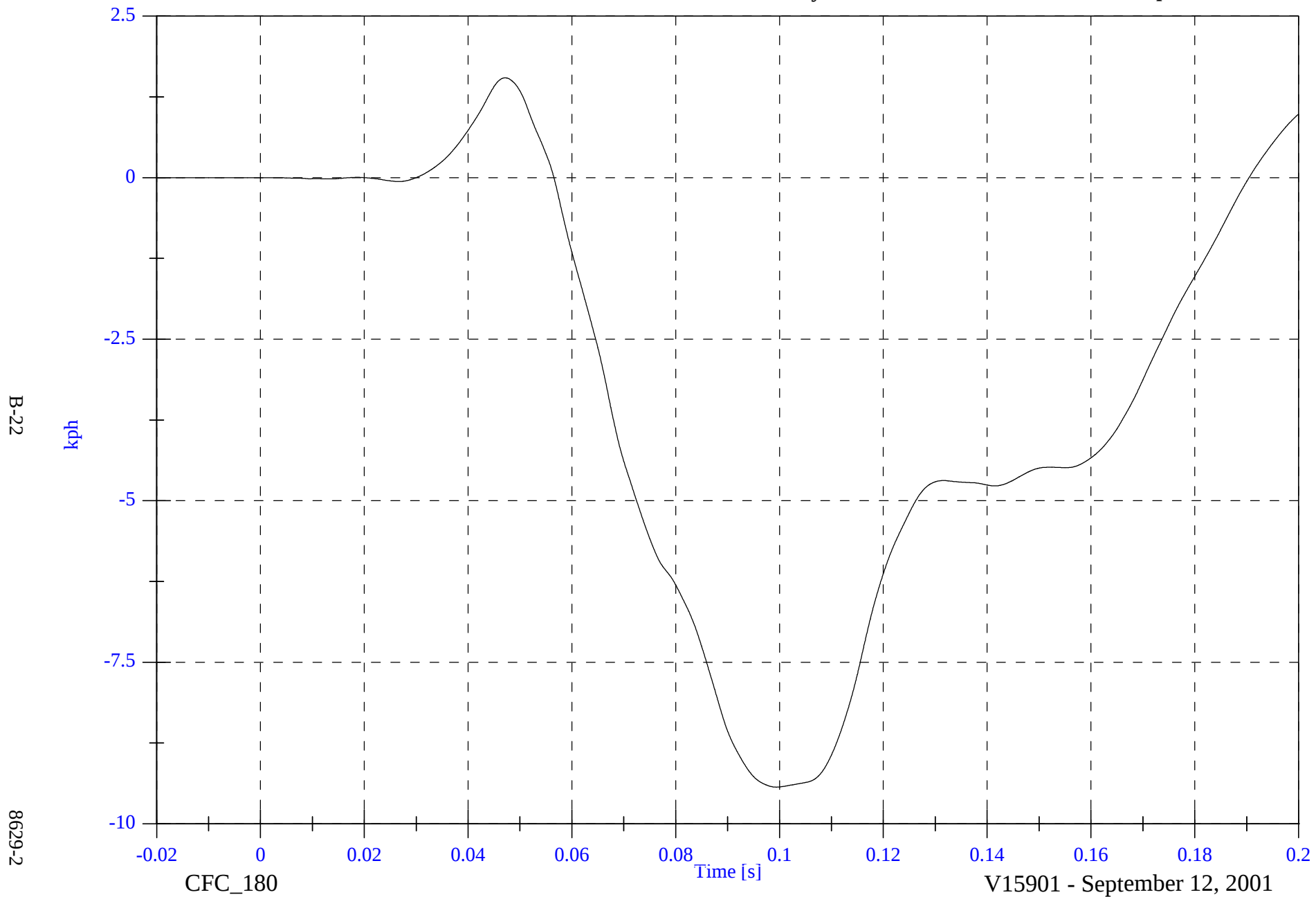


Optional SNCAP 2001 Volvo S60

P4 Head x Velocity

Max: 1.5 [kph] at 0.047 [s]

Min: -9.4 [kph] at 0.099 [s]



Optional SNCAP 2001 Volvo S60

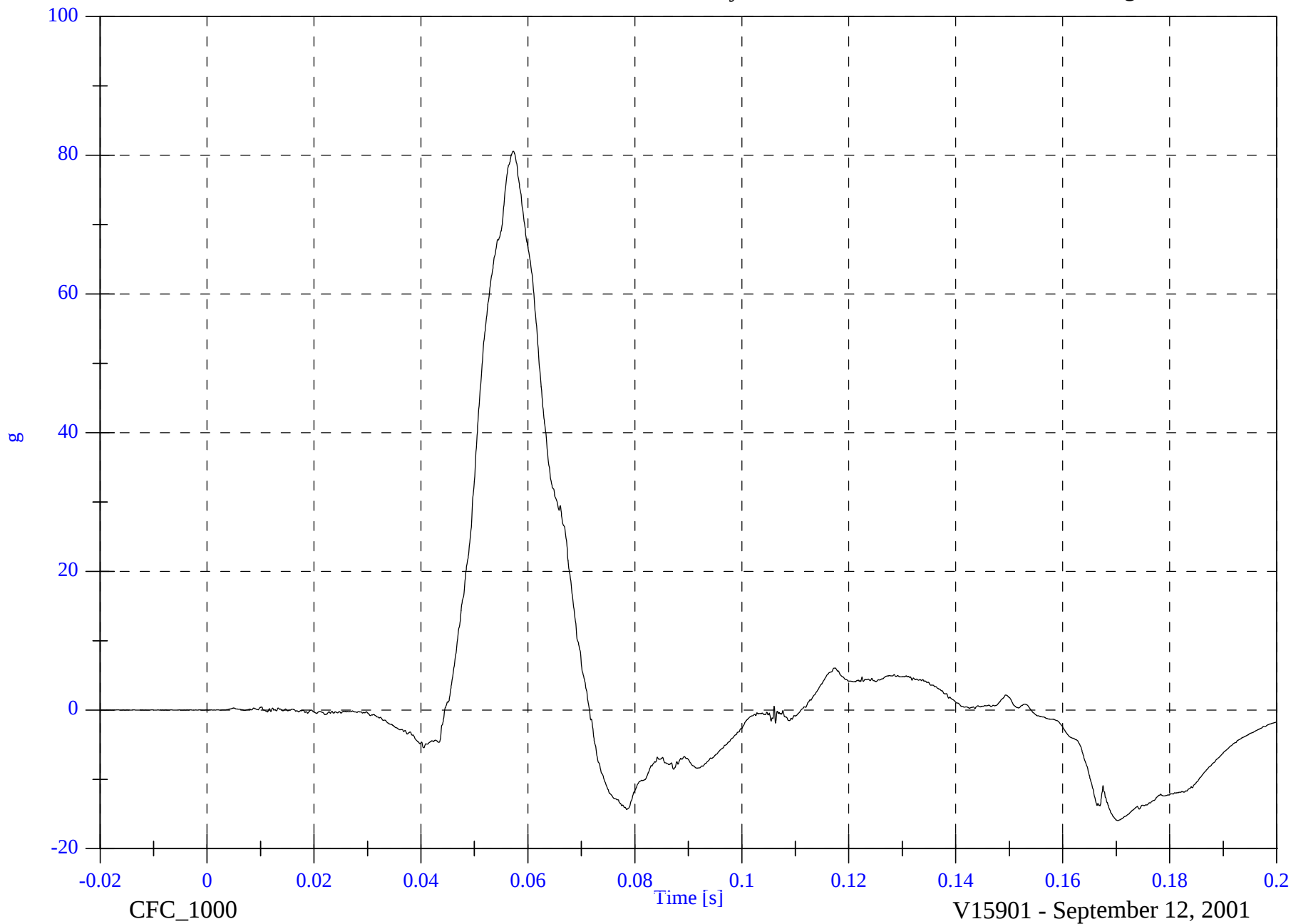
P4 Head y

Max: 80.6 [g] at 0.057 [s]

Min: -15.9 [g] at 0.170 [s]

B-23

8629-2

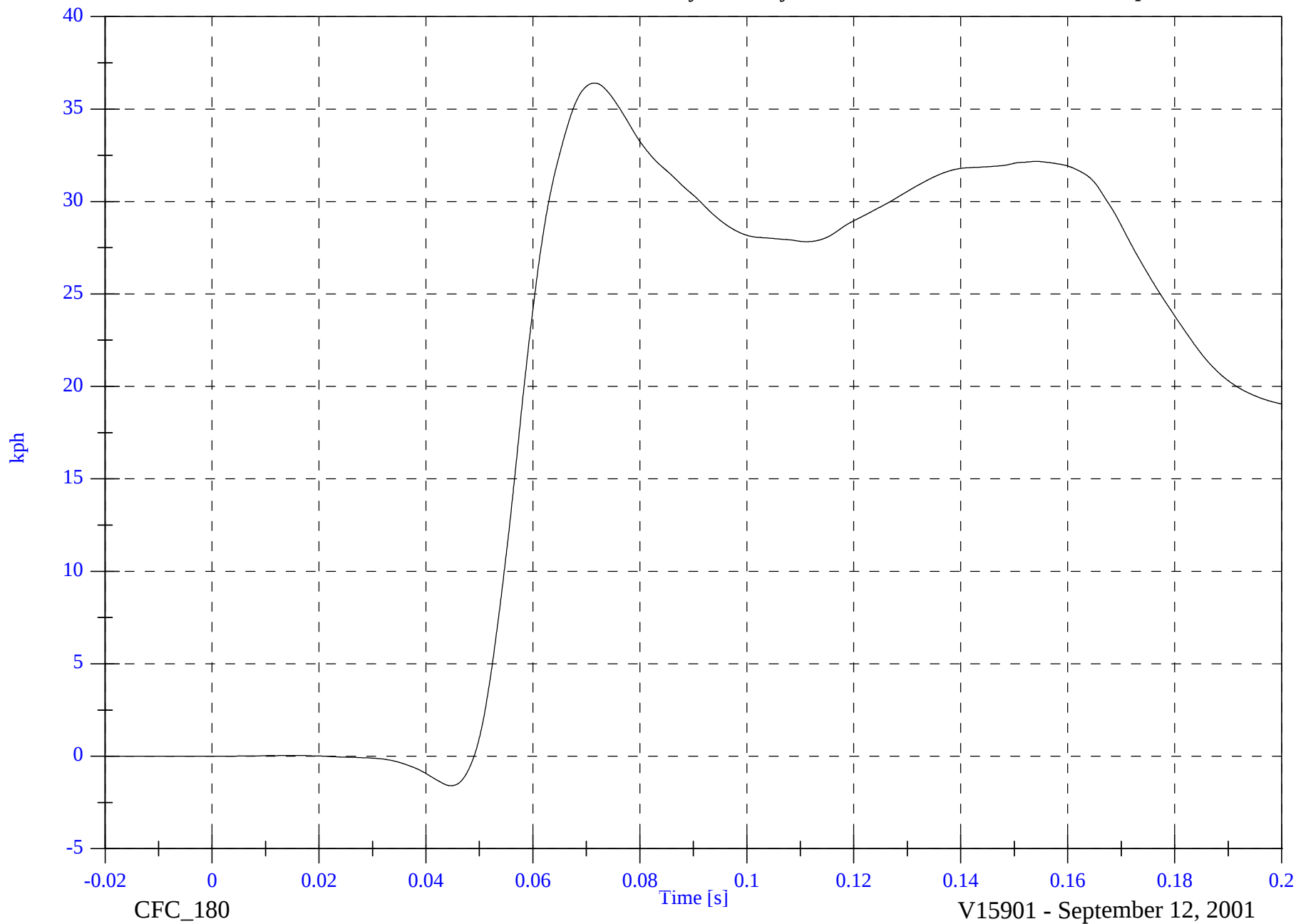


Optional SNCAP 2001 Volvo S60

P4 Head y Velocity

Max: 36.4 [kph] at 0.072 [s]

Min: -1.6 [kph] at 0.045 [s]



B-24

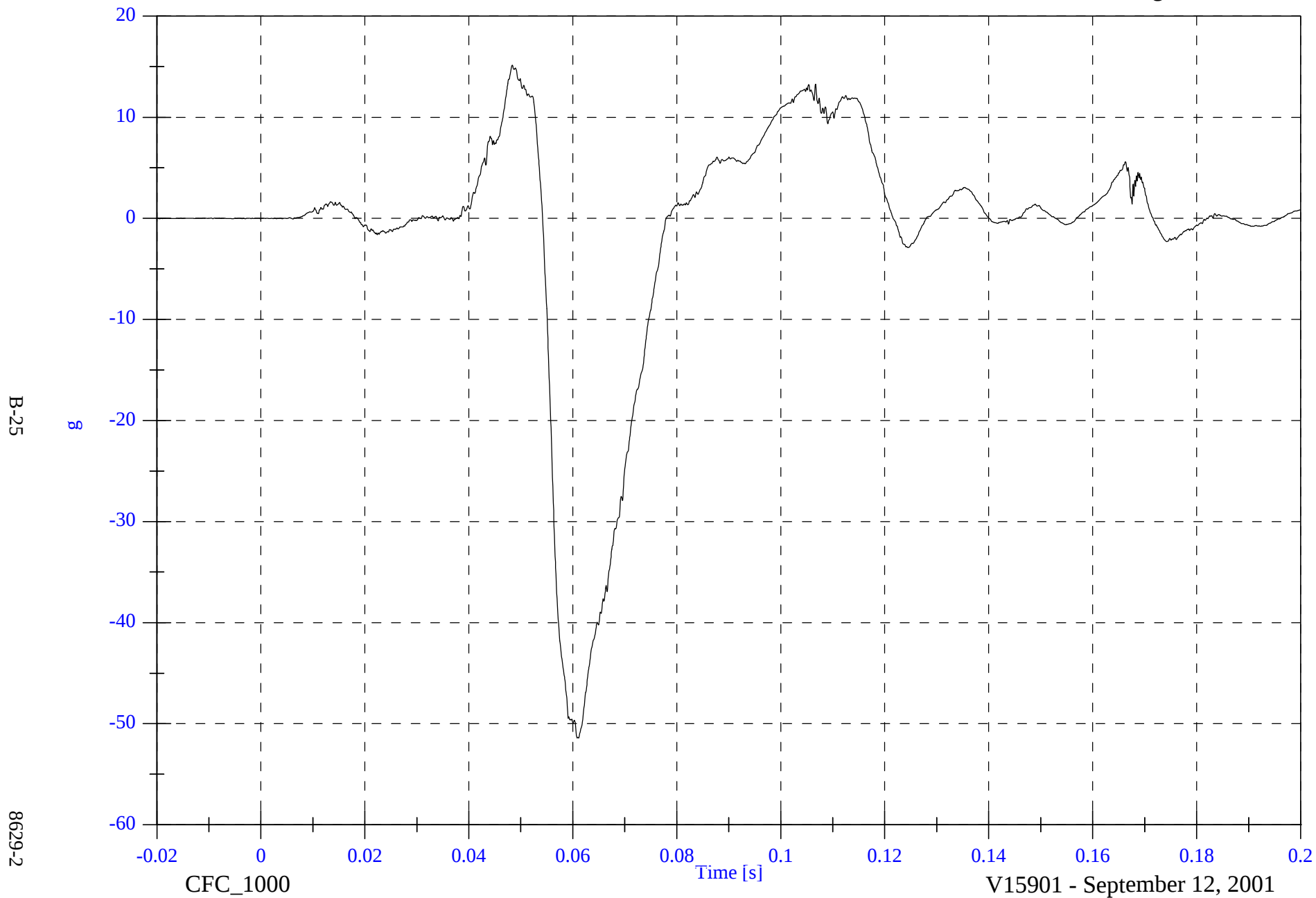
8629-2

Optional SNCAP 2001 Volvo S60

P4 Head z

Max: 15.2 [g] at 0.048 [s]

Min: -51.4 [g] at 0.061 [s]

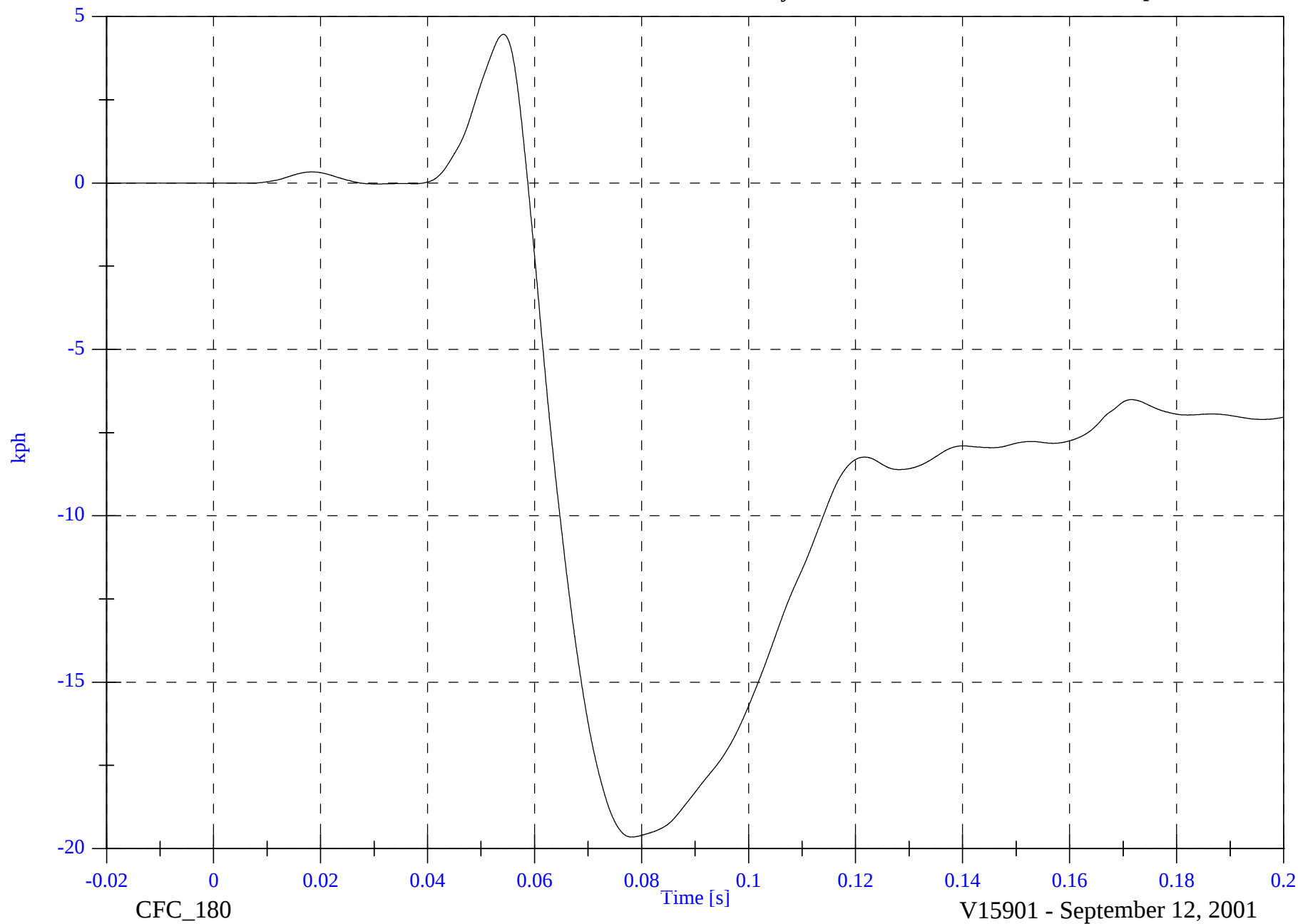


Optional SNCAP 2001 Volvo S60

P4 Head z Velocity

Max: 4.5 [kph] at 0.054 [s]

Min: -19.7 [kph] at 0.078 [s]



B-26

8629-2

CFC_180

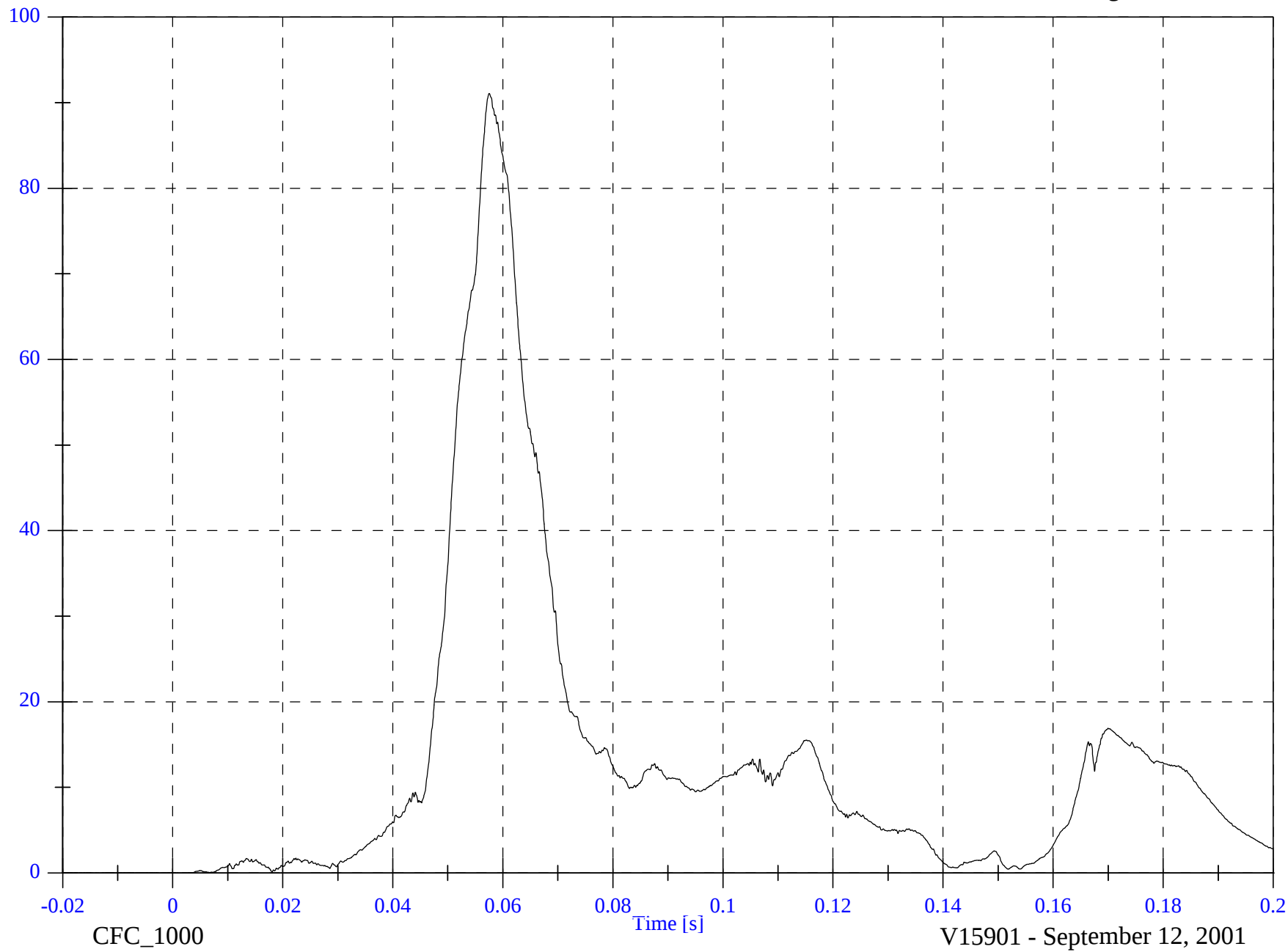
V15901 - September 12, 2001

Optional SNCAP 2001 Volvo S60

P4 Head Resultant

Max: 91.1 [g] at 0.058 [s]

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



B-27

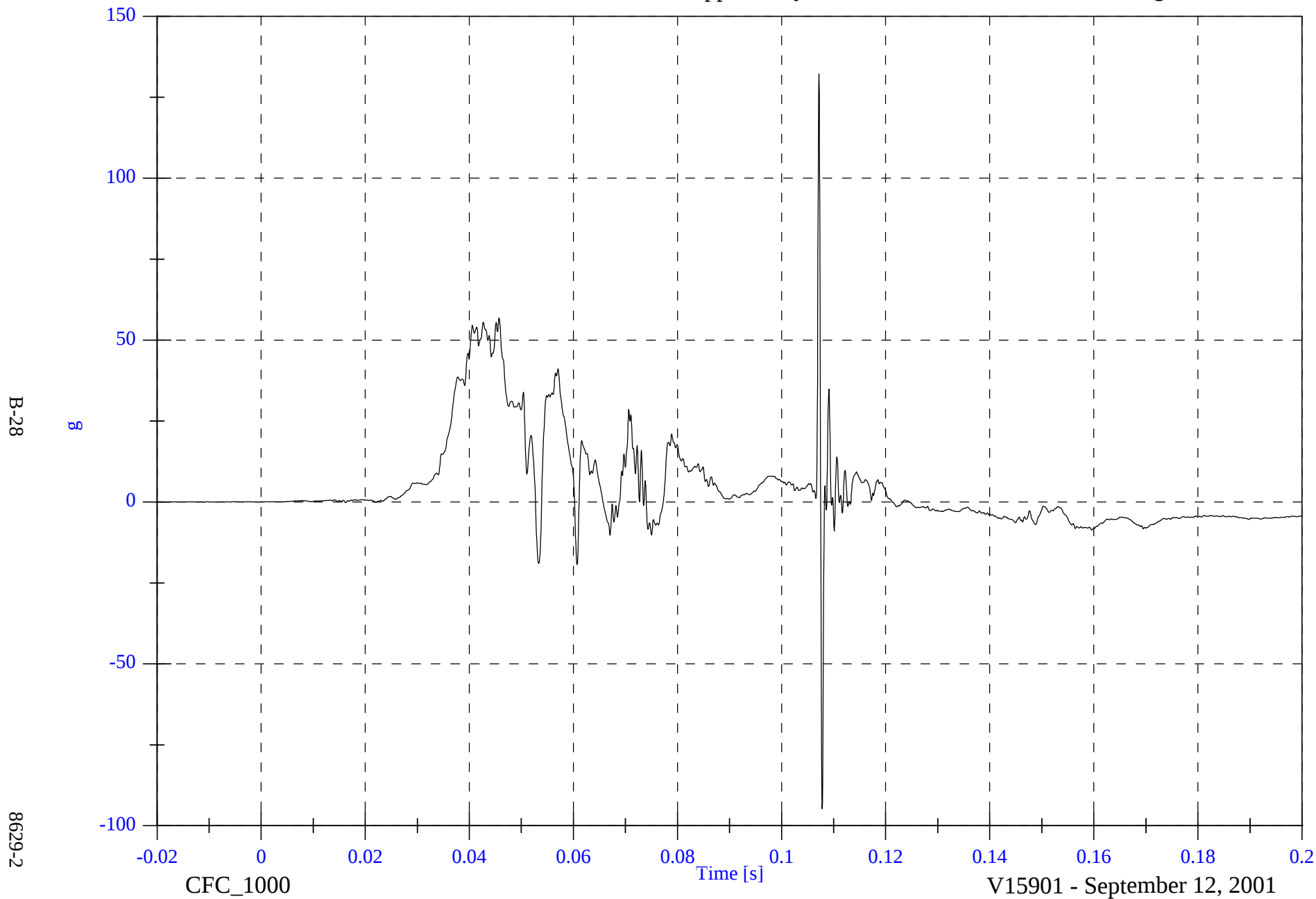
8629-2

Optional SNCAP 2001 Volvo S60

P4 Upper Rib y

Max: 132.1 [g] at 0.107 [s]

Min: -94.8 [g] at 0.108 [s]



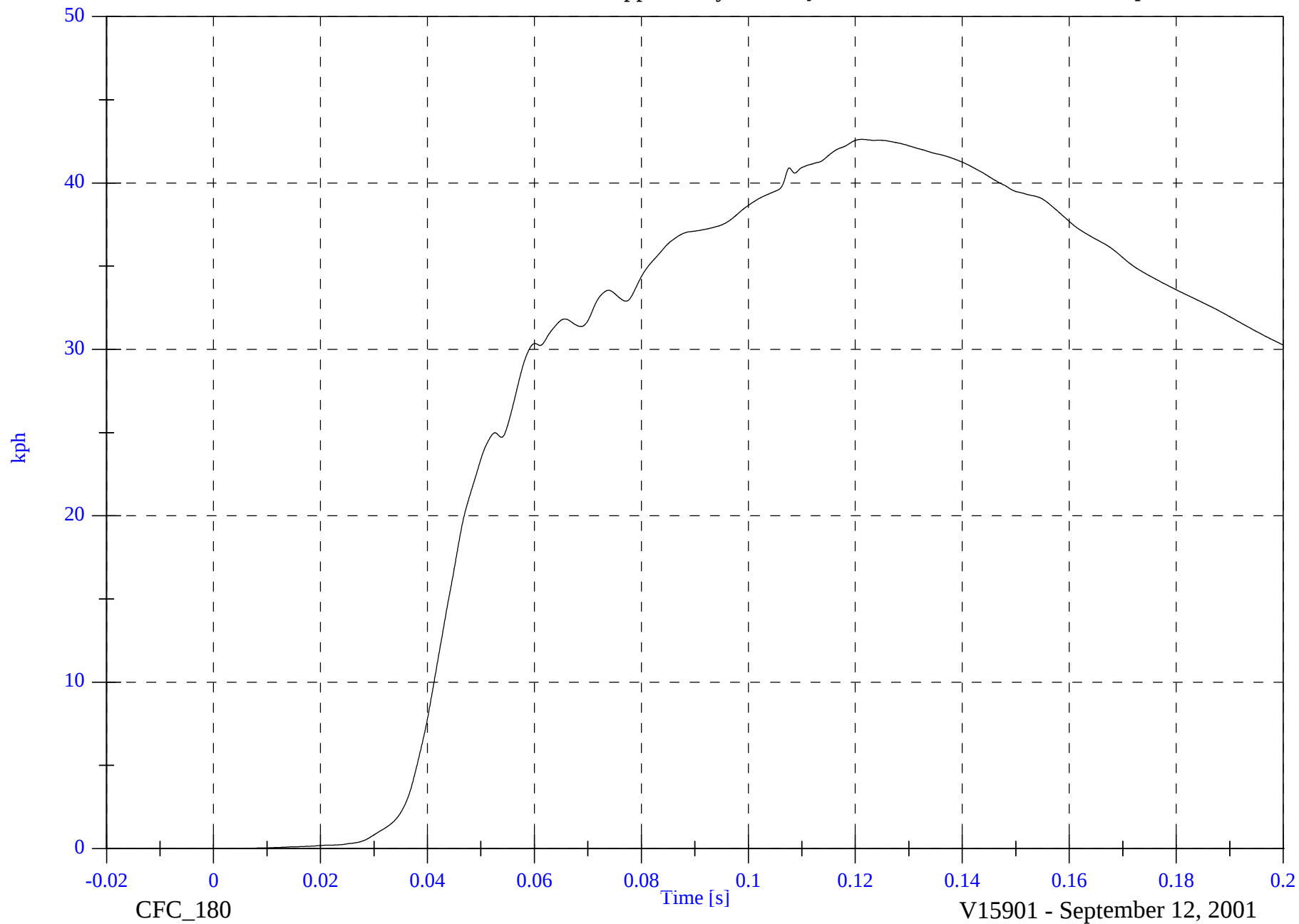
8629-2

Optional SNCAP 2001 Volvo S60

P4 Upper Rib y Velocity

Max: 42.6 [kph] at 0.121 [s]

Min: 0.0 [kph] at -0.006 [s]



B-29

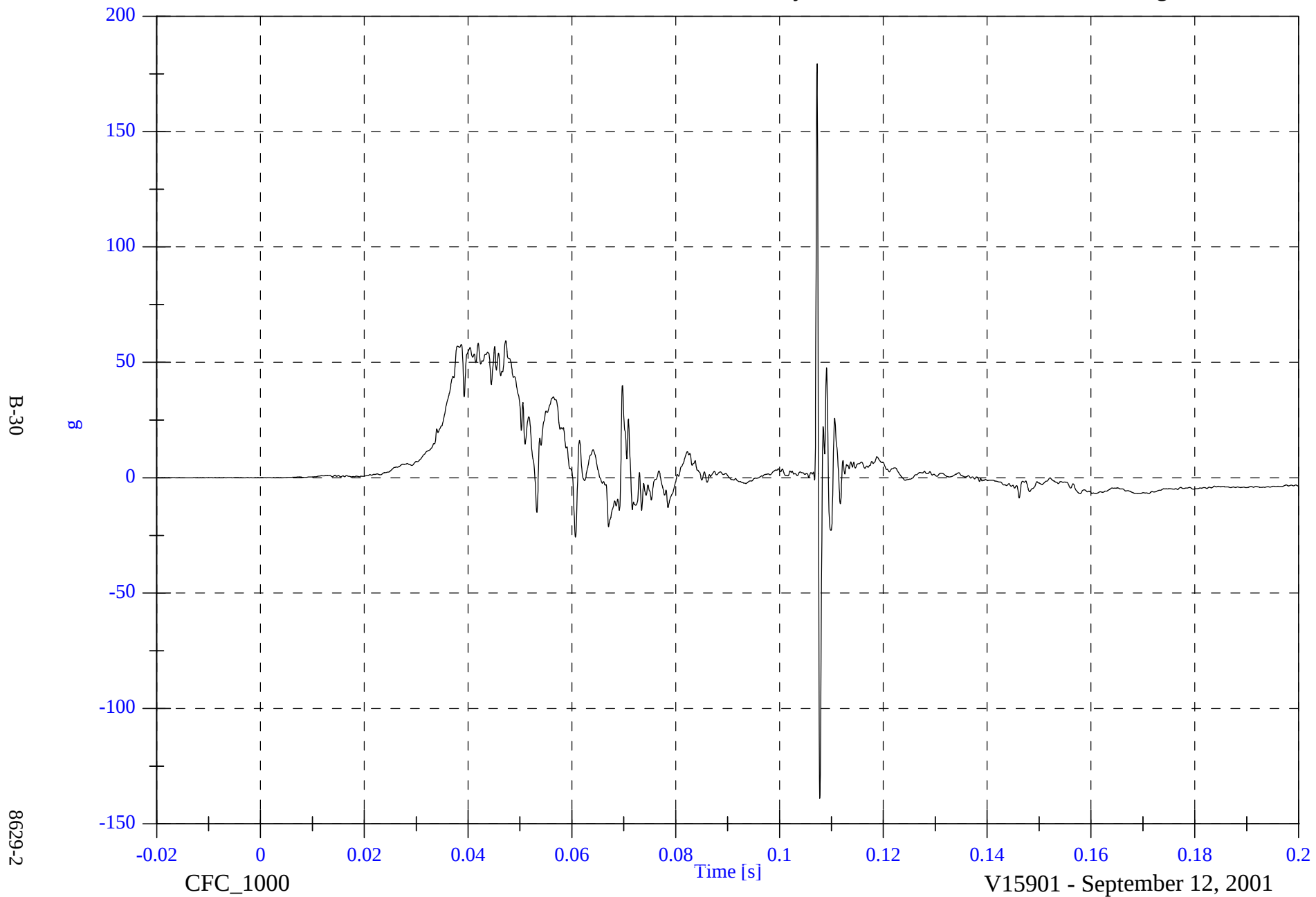
8629-2

Optional SNCAP 2001 Volvo S60

P4 Lower Rib y

Max: 179.5 [g] at 0.107 [s]

Min: -138.9 [g] at 0.108 [s]

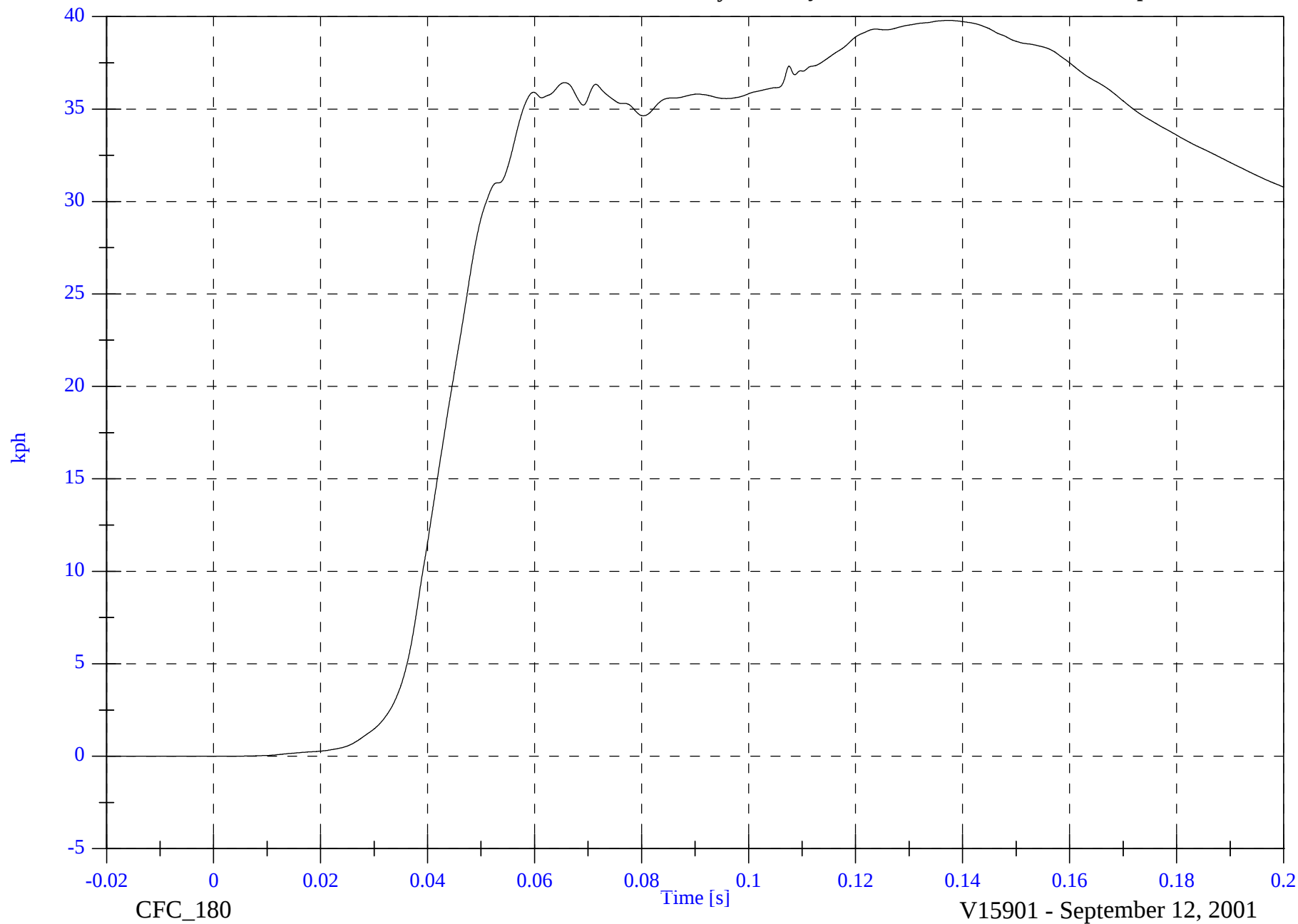


Optional SNCAP 2001 Volvo S60

P4 Lower Rib y Velocity

Max: 39.8 [kph] at 0.137 [s]

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



B-31

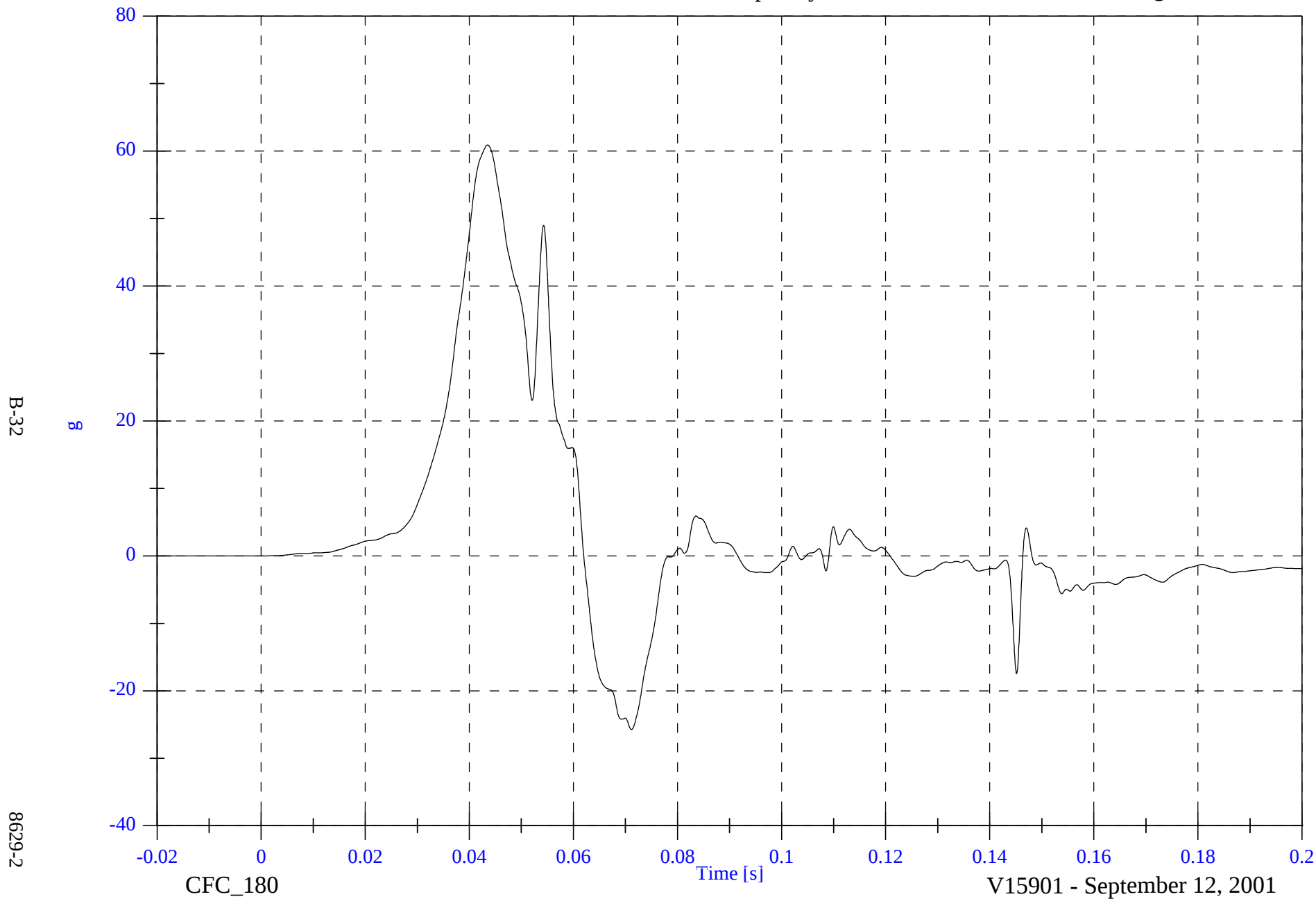
8629-2

Optional SNCAP 2001 Volvo S60

P4 Lower Spine y

Max: 60.9 [g] at 0.044 [s]

Min: -25.7 [g] at 0.071 [s]



8629-2

Optional SNCAP 2001 Volvo S60

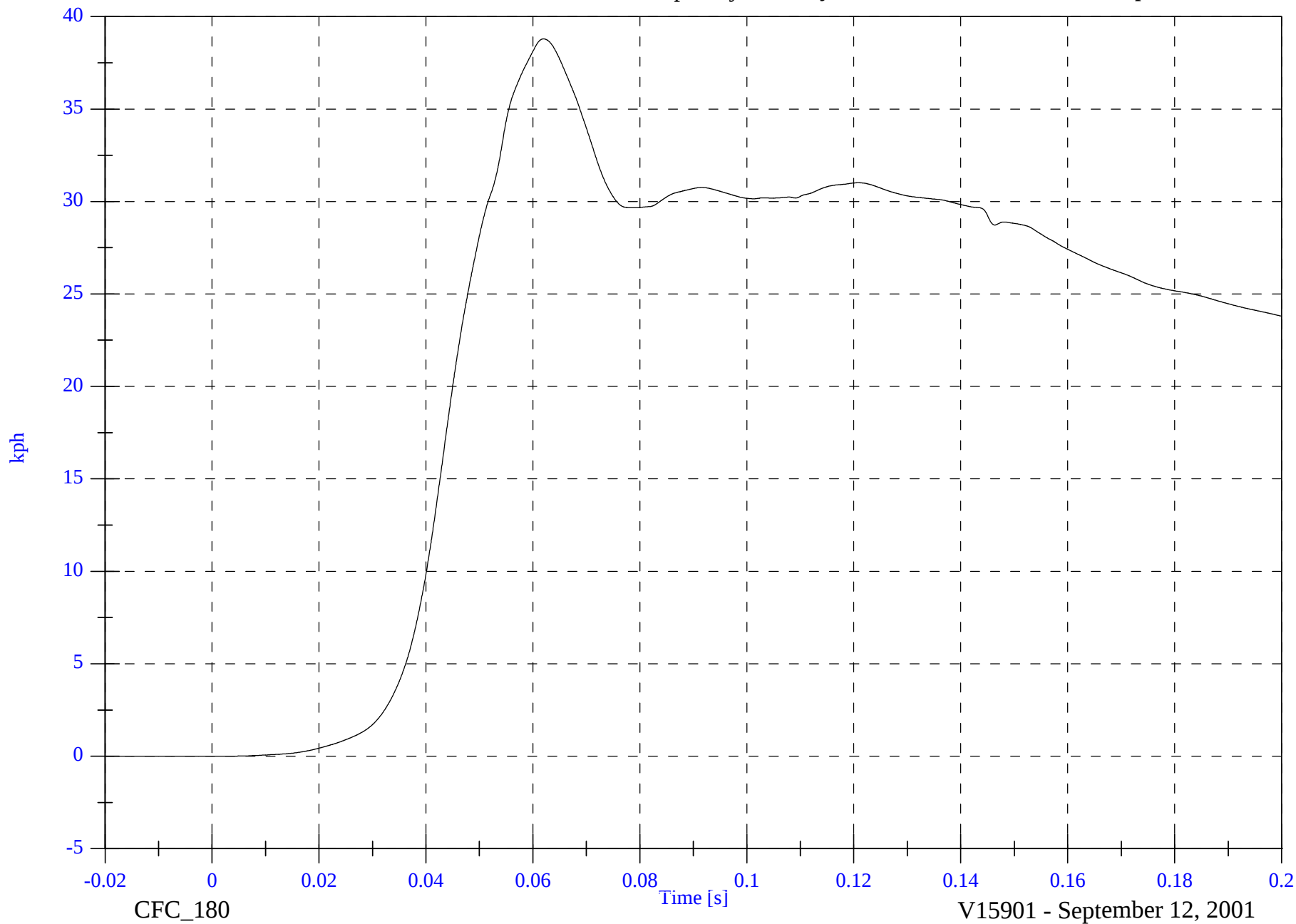
P4 Lower Spine y Velocity

Max: 38.8 [kph] at 0.062 [s]

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

B-33

8629-2



Optional SNCAP 2001 Volvo S60

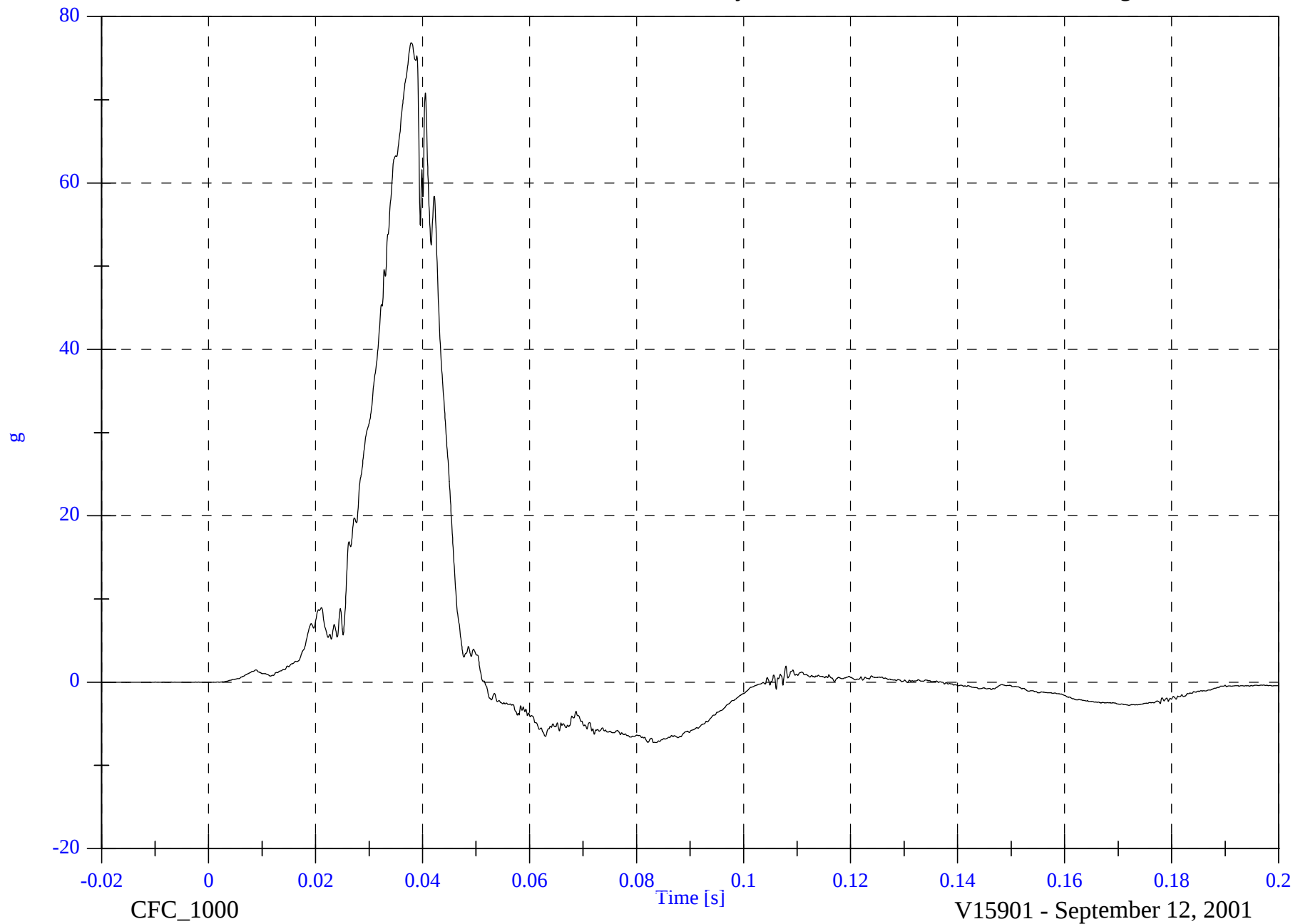
P4 Pelvic y

Max: 76.9 [g] at 0.038 [s]

Min: -7.3 [g] at 0.083 [s]

B-34

8629-2



Optional SMCAP 2001 Volvo S60

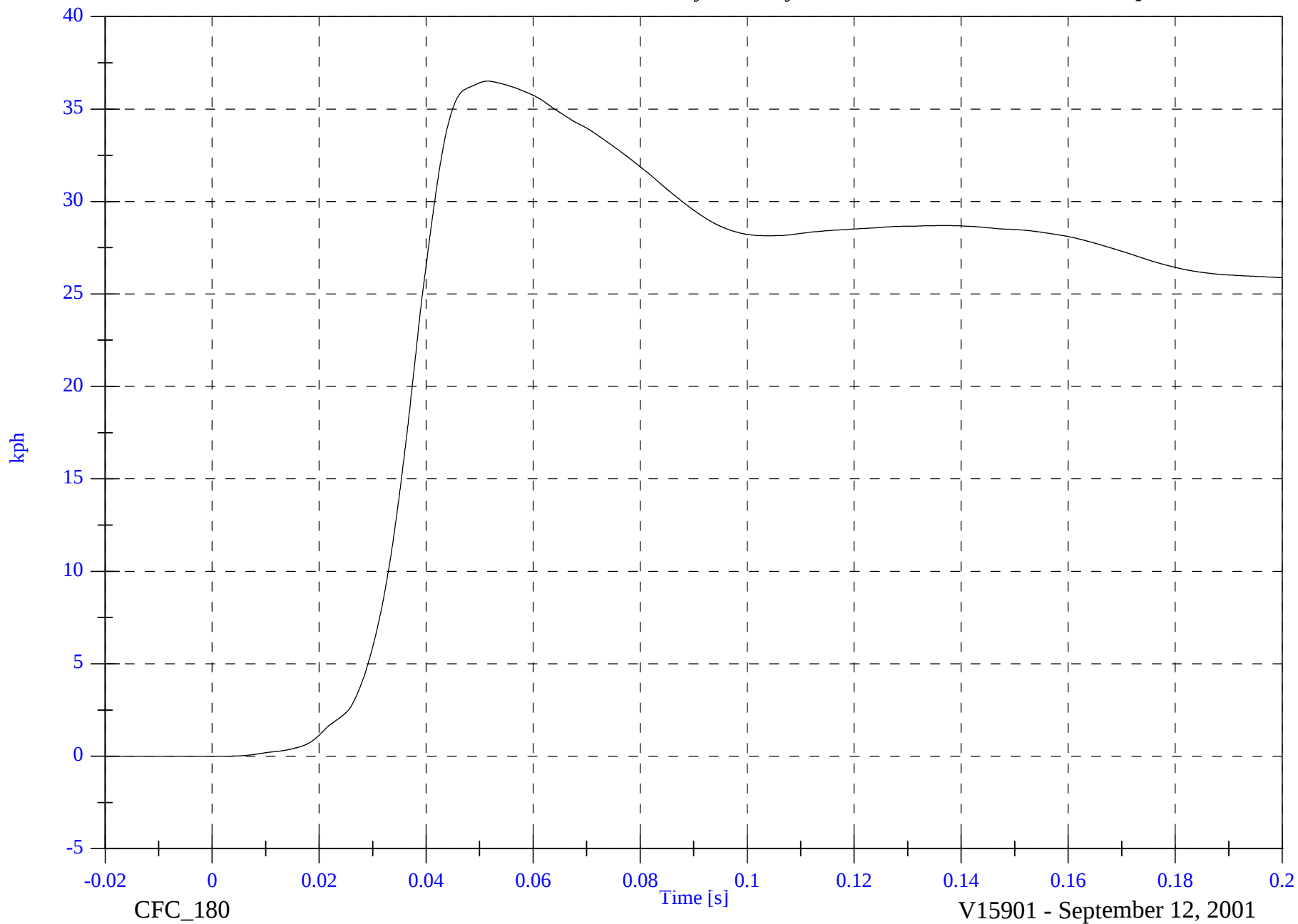
Max: 36.5 [kph] at 0.052 [s]

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

P4 Pelvic y Velocity

B-35

8629-2

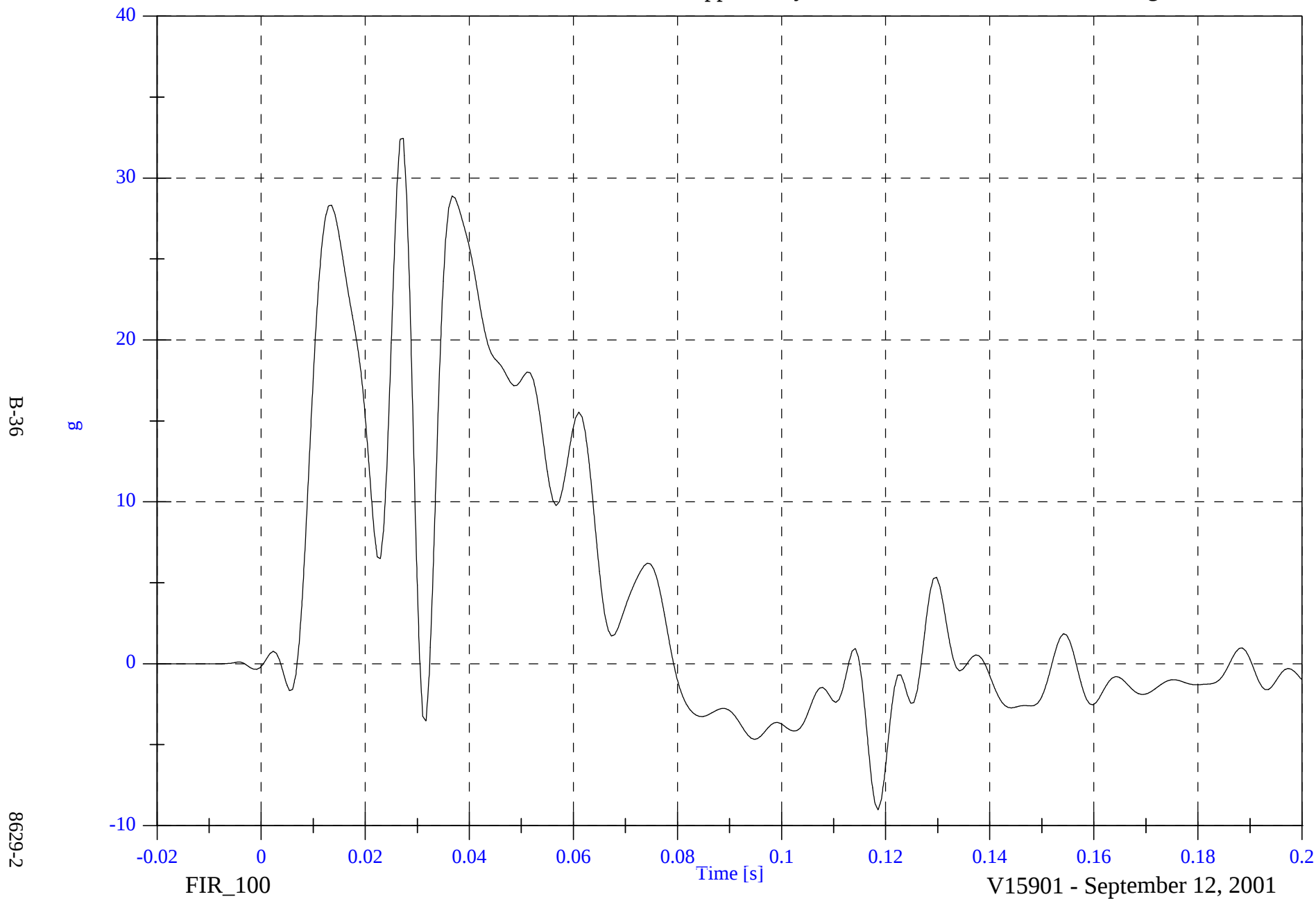


Optional SNCAP 2001 Volvo S60

P1 Upper Rib y

Max: 32.5 [g] at 0.027 [s]

Min: -9.0 [g] at 0.119 [s]

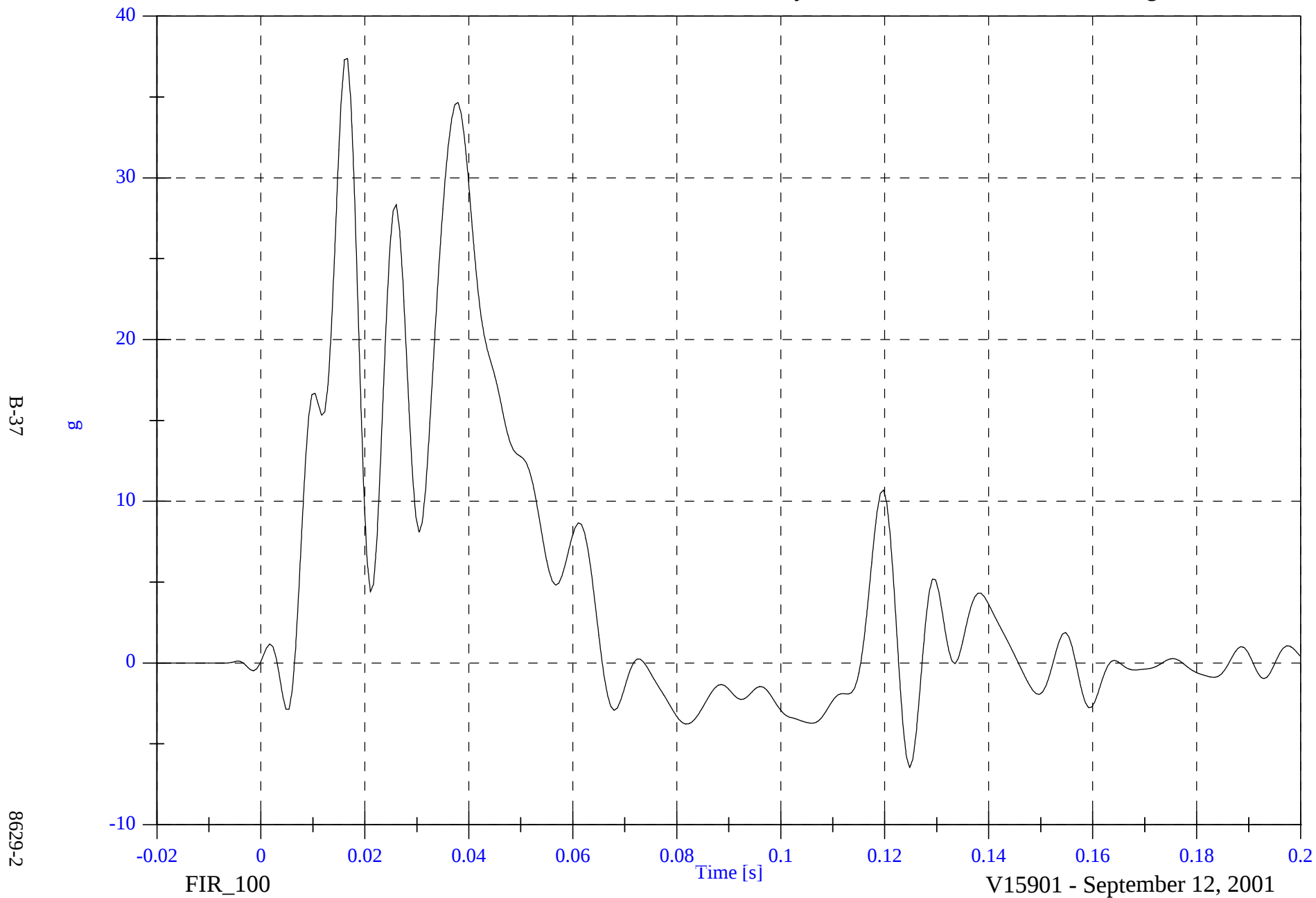


Optional SNCAP 2001 Volvo S60

P1 Lower Rib y

Max: 37.4 [g] at 0.017 [s]

Min: -6.5 [g] at 0.125 [s]



Optional SMCAP 2001 Volvo S60

P1 Lower Spine y

Max: 60.9 [g] at 0.033 [s]

Min: -10.3 [g] at 0.065 [s]

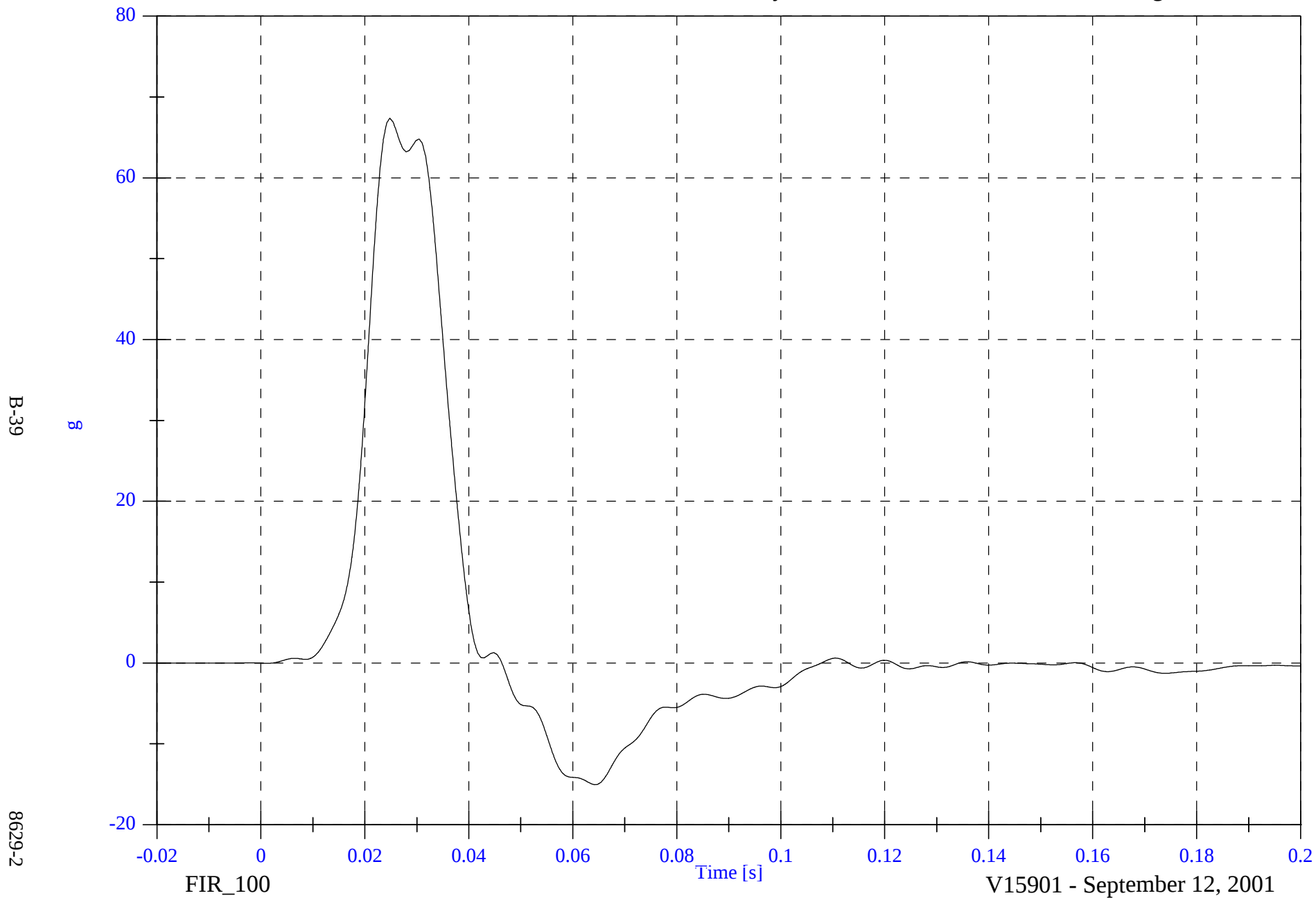


Optional SNCAP 2001 Volvo S60

P1 Pelvic y

Max: 67.4 [g] at 0.025 [s]

Min: -15.0 [g] at 0.064 [s]

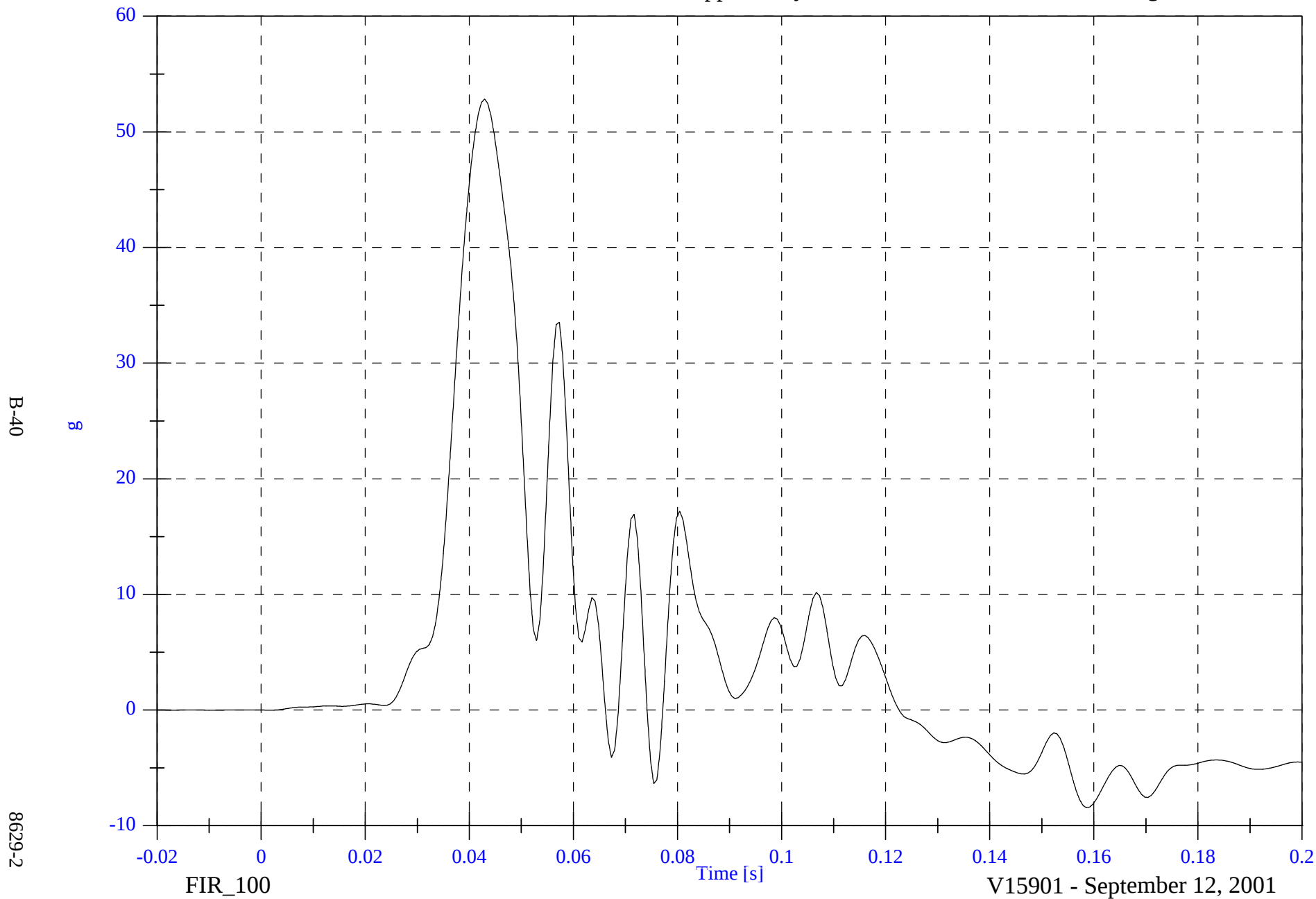


Optional SNCAP 2001 Volvo S60

P4 Upper Rib y

Max: 52.8 [g] at 0.043 [s]

Min: -8.4 [g] at 0.159 [s]



Optional SMCAP 2001 Volvo S60

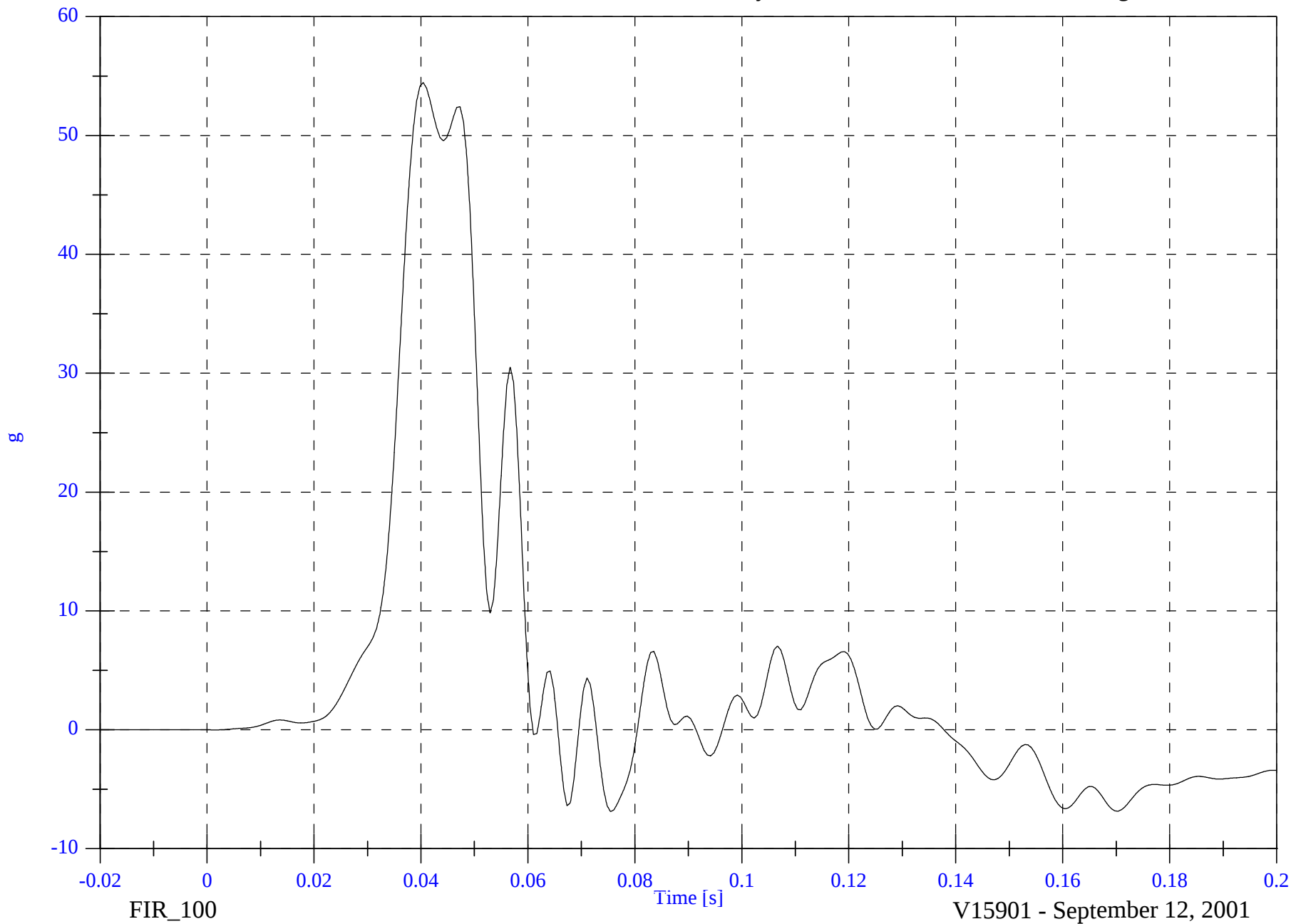
P4 Lower Rib y

Max: 54.4 [g] at 0.040 [s]

Min: -6.9 [g] at 0.075 [s]

B-41

8629-2

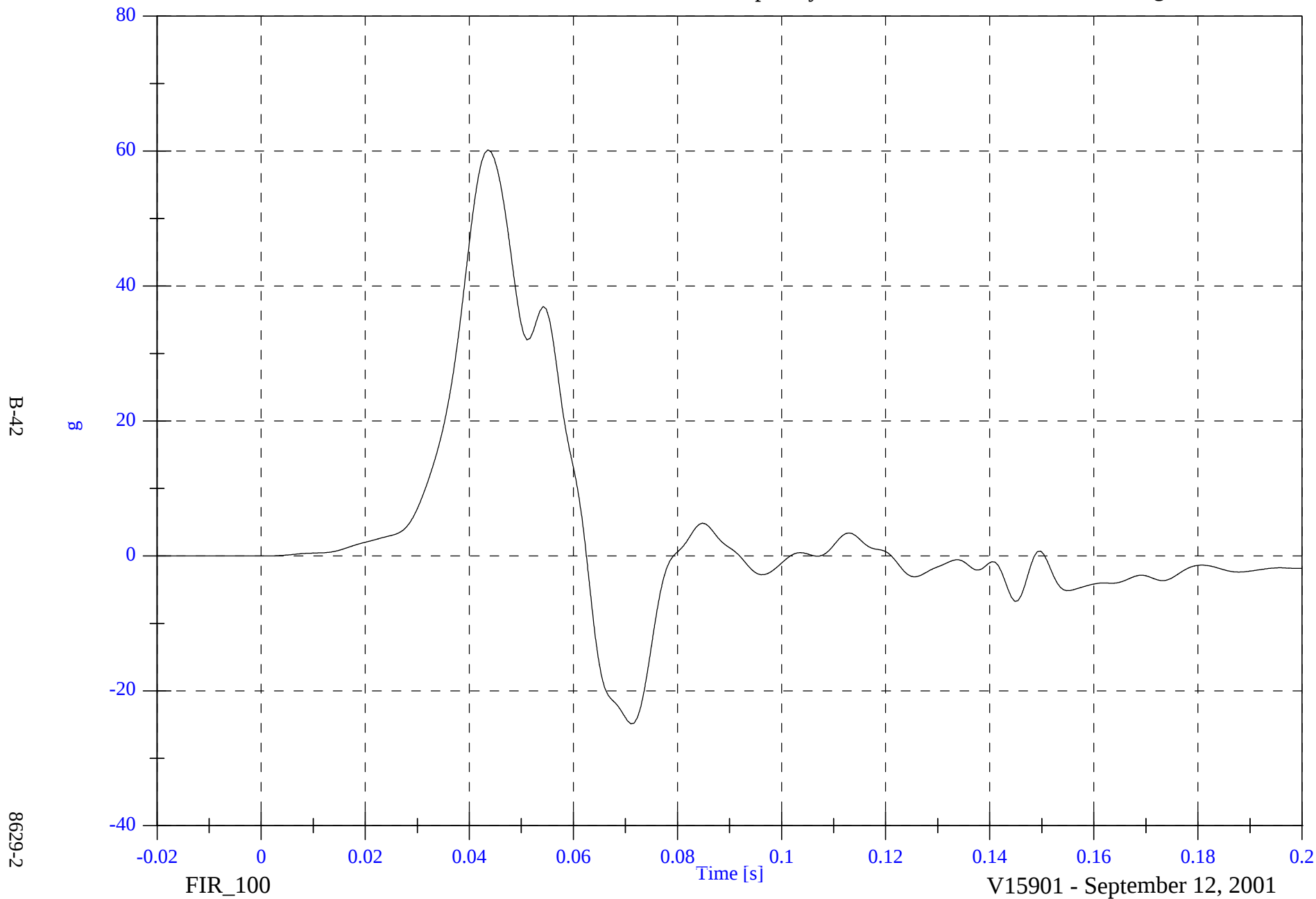


Optional SNCAP 2001 Volvo S60

P4 Lower Spine y

Max: 60.2 [g] at 0.044 [s]

Min: -24.9 [g] at 0.071 [s]



Optional SMCAP 2001 Volvo S60

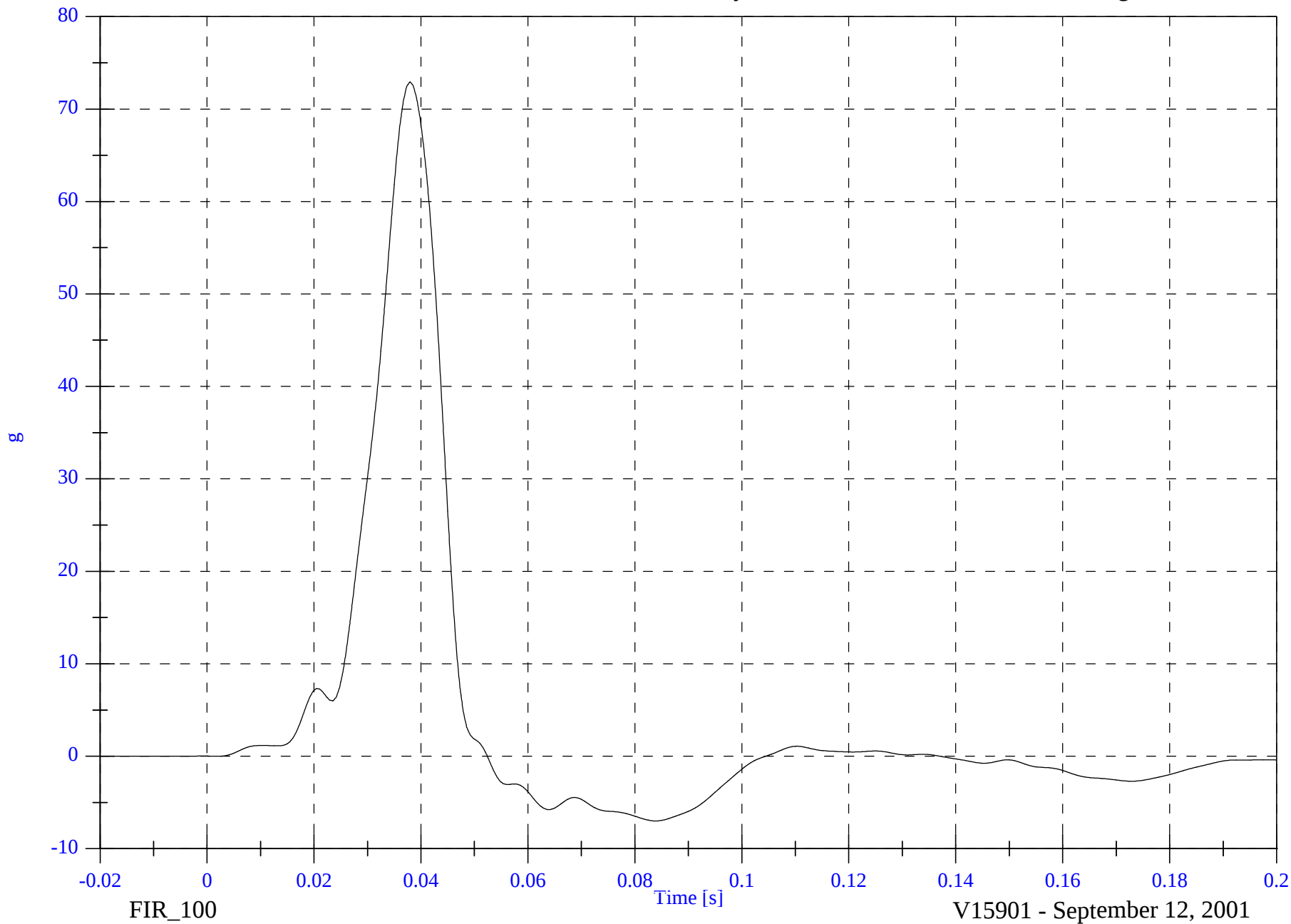
P4 Pelvic y

Max: 73.0 [g] at 0.038 [s]

Min: -7.0 [g] at 0.084 [s]

B-43

8629-2



Optional SNCAP 2001 Volvo S60

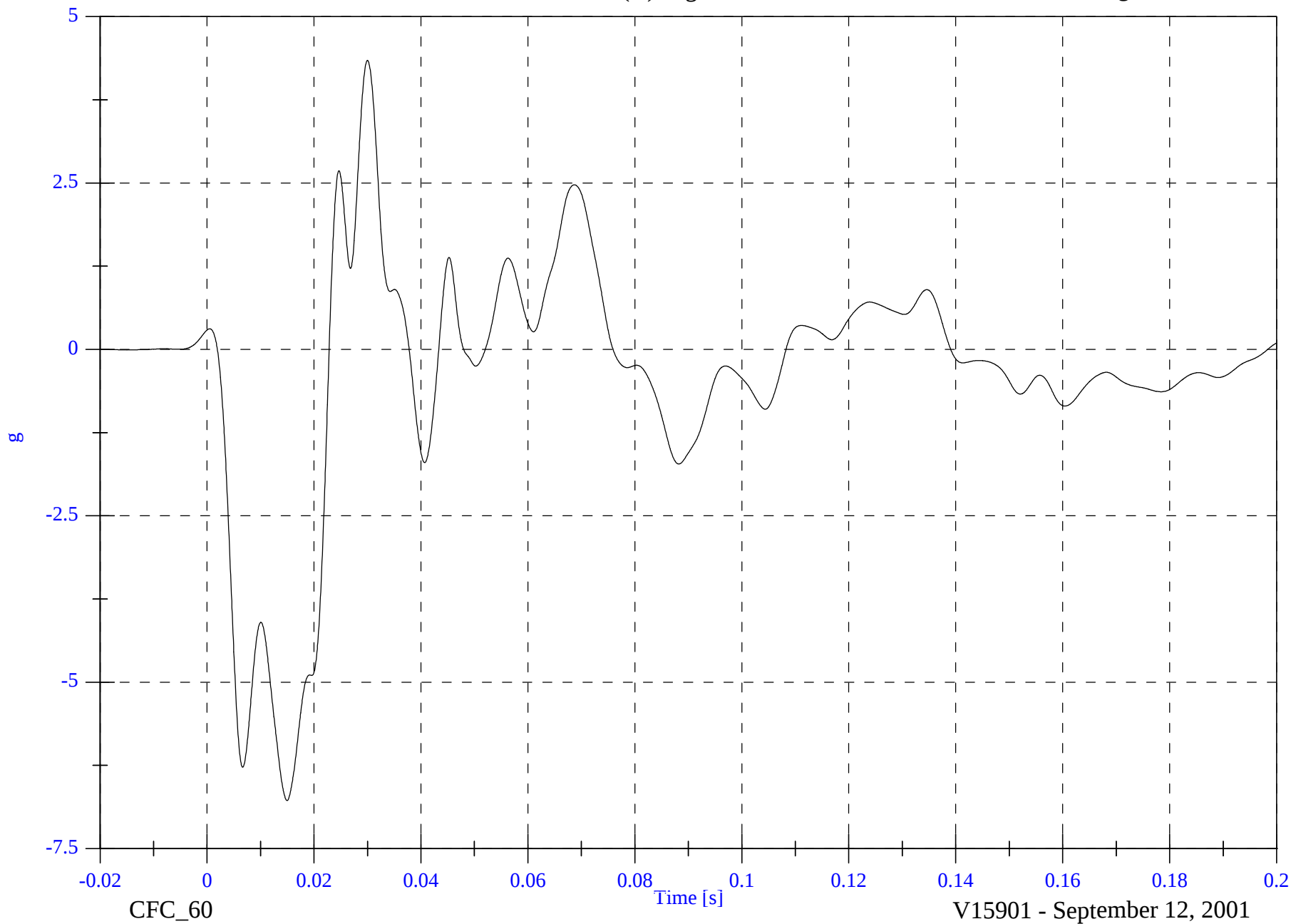
Acc 1(X) Right Front Sill

Max: 4.3 [g] at 0.030 [s]

Min: -6.8 [g] at 0.015 [s]

B-44

8629-2



Optional SNCAP 2001 Volvo S60

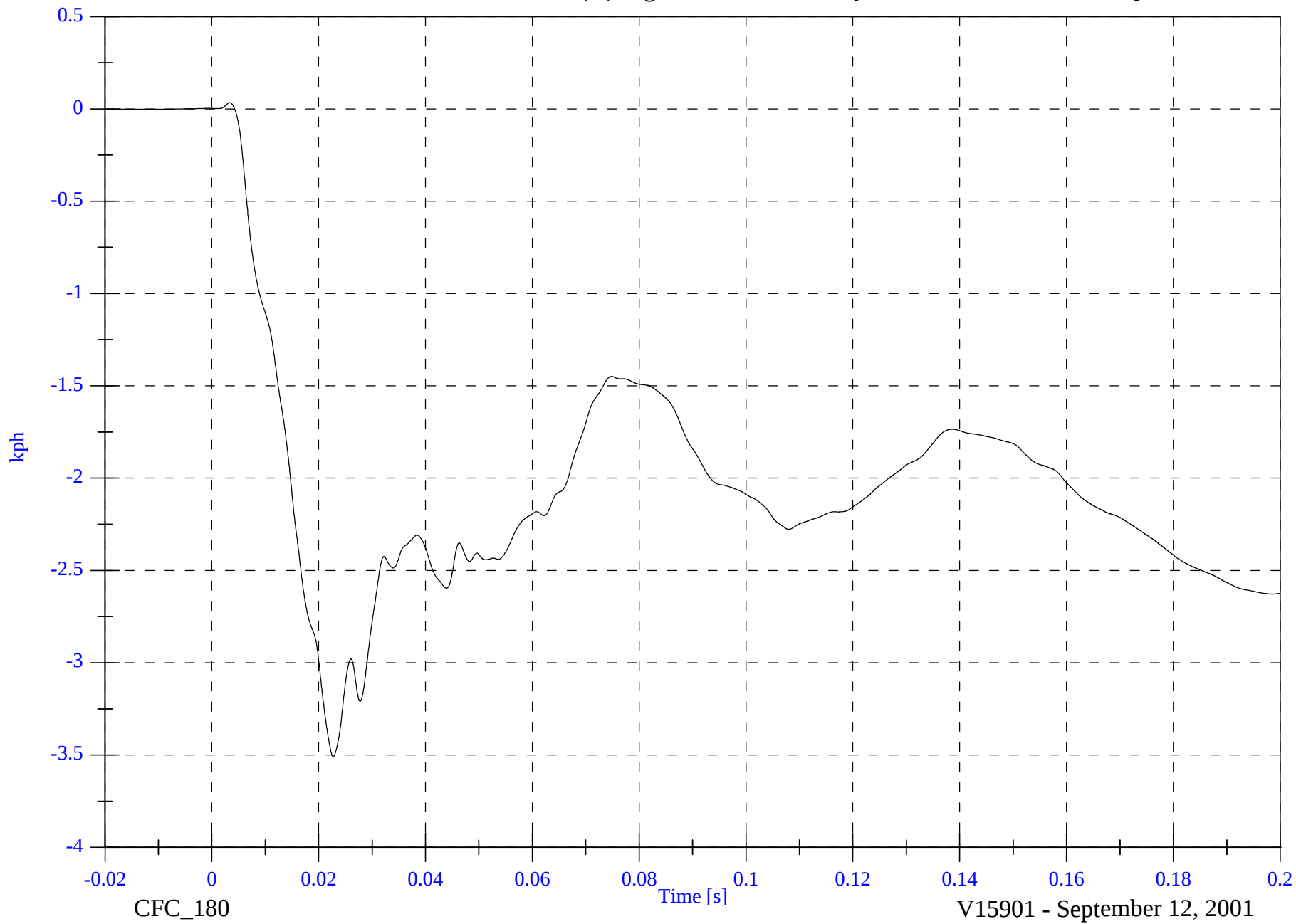
Acc 1(X) Right Front Sill Velocity

Max: 0.0 [kph] at 0.003 [s]

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

B-45

8629-2

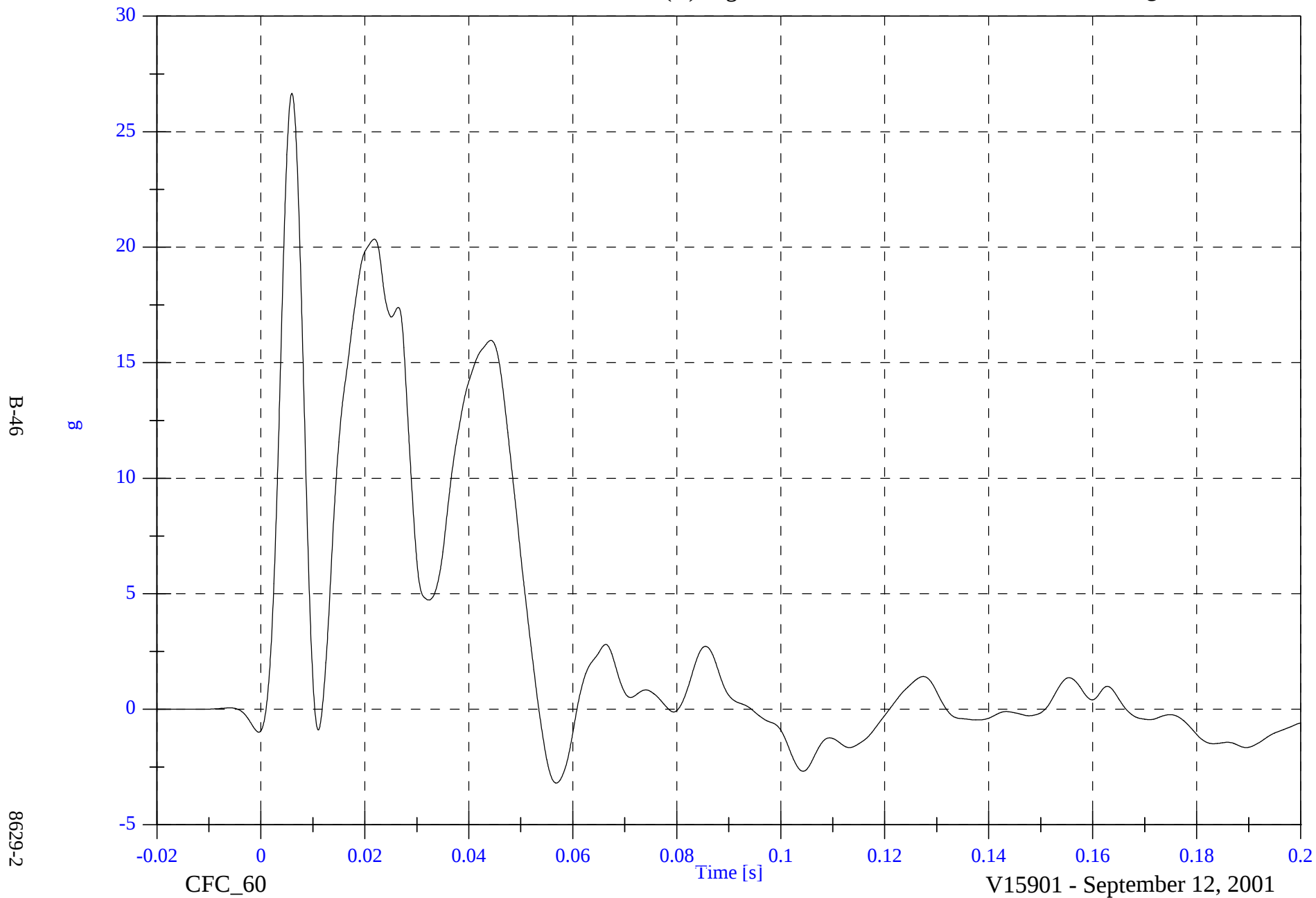


Optional SNCAP 2001 Volvo S60

Acc 1(Y) Right Front Sill

Max: 26.7 [g] at 0.006 [s]

Min: -3.2 [g] at 0.057 [s]

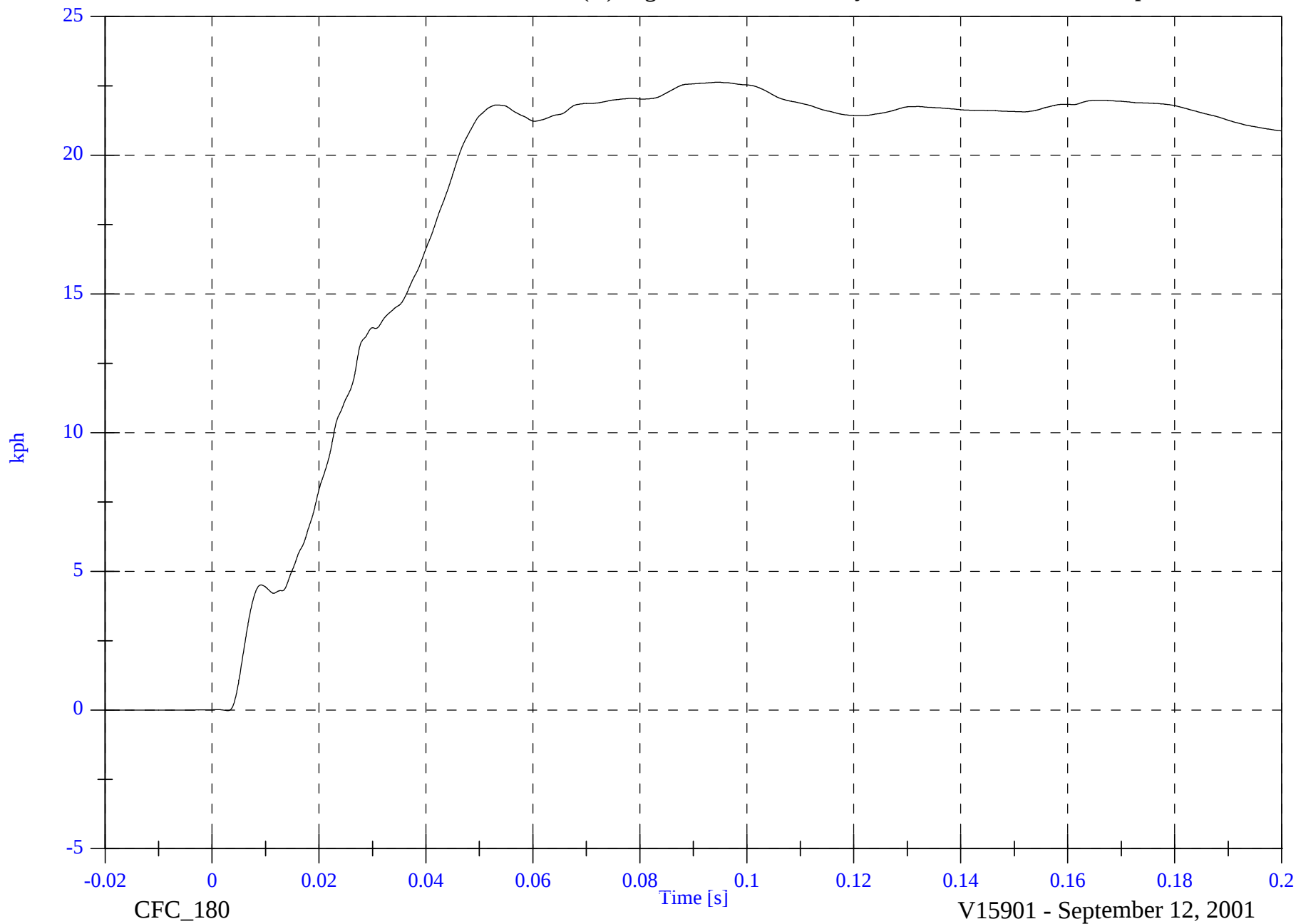


Optional SNCAP 2001 Volvo S60

Acc 1(Y) Right Front Sill Velocity

Max: 22.6 [kph] at 0.095 [s]

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



B-47

8629-2

Optional SNCAP 2001 Volvo S60

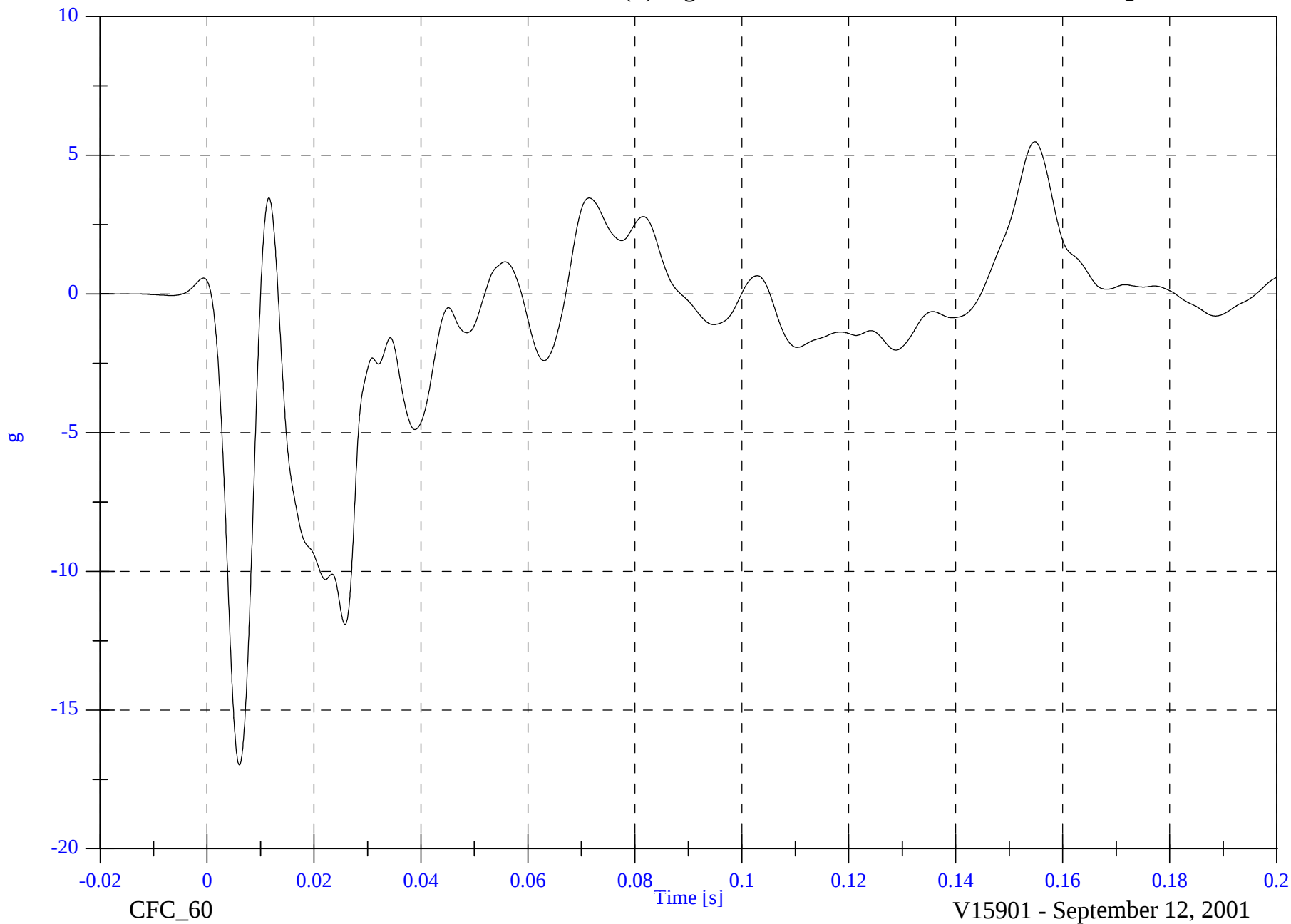
Acc 1(Z) Right Front Sill

Max: 5.5 [g] at 0.155 [s]

Min: -17.0 [g] at 0.006 [s]

B-48

8629-2

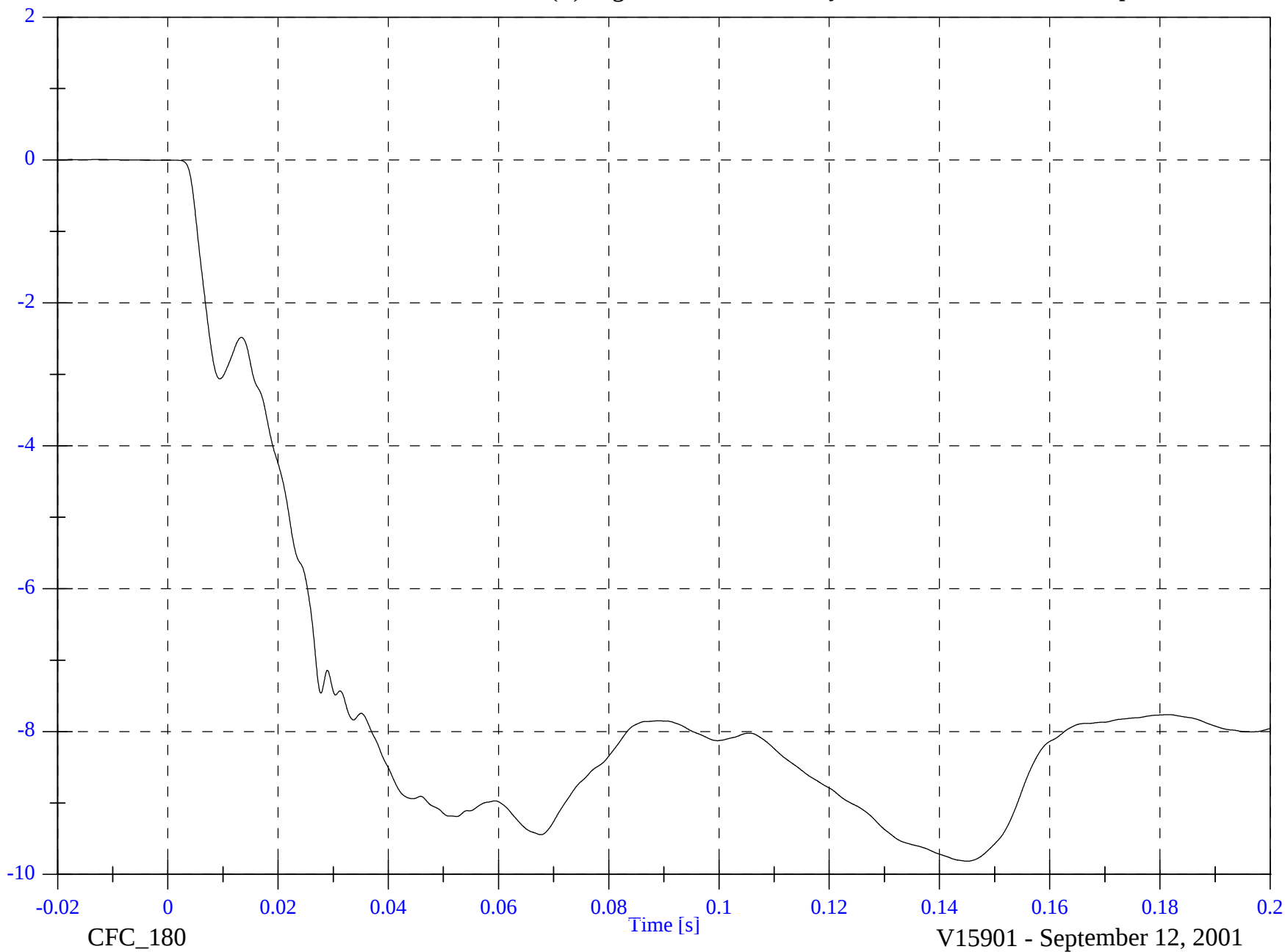


Optional SNCAP 2001 Volvo S60

Acc 1(Z) Right Front Sill Velocity

Max: 0.0 [kph] at -0.012 [s]

Min: -9.8 [kph] at 0.145 [s]



B-49

8629-2

Optional SNCAP 2001 Volvo S60

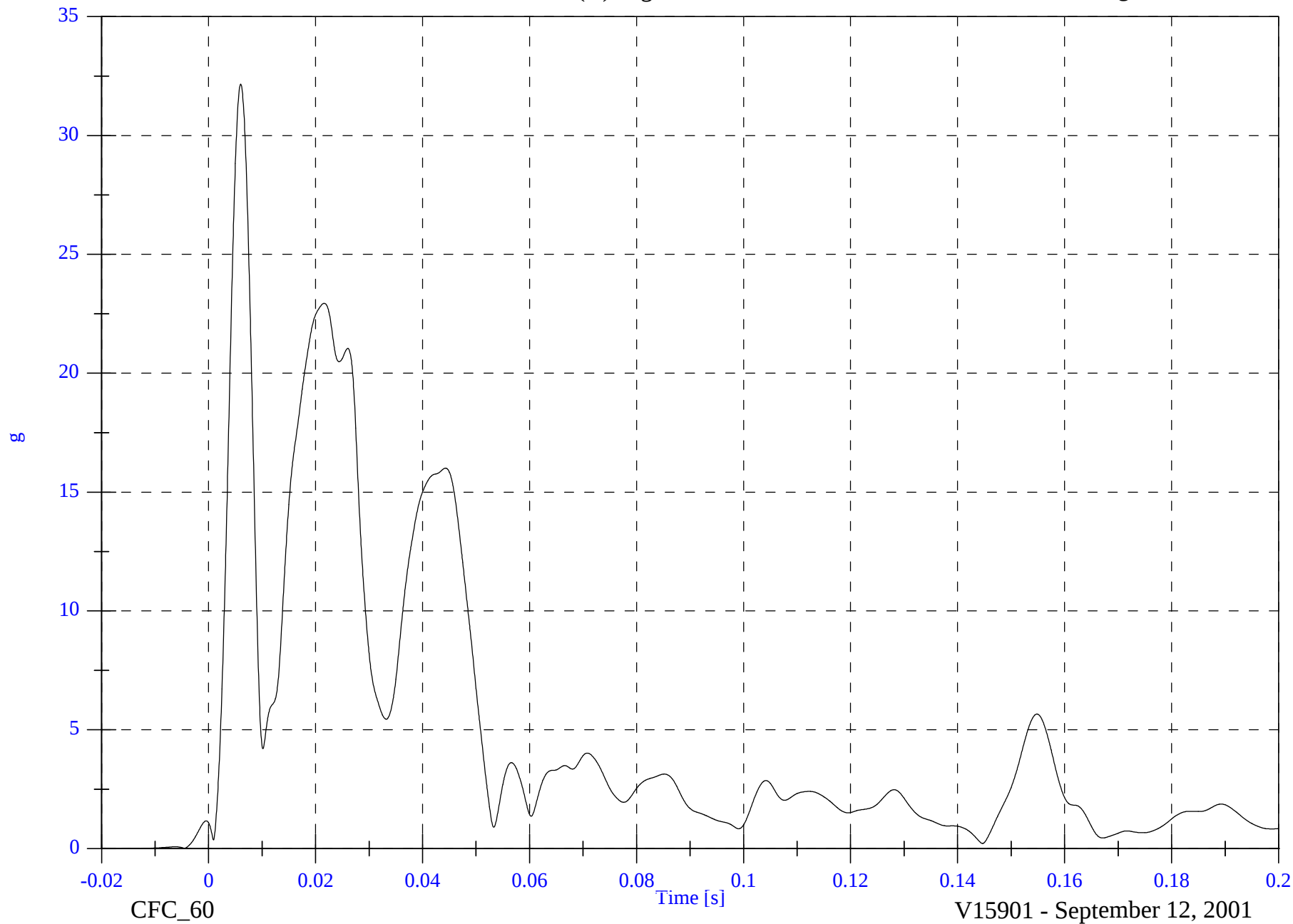
Acc 1(X) Right Front Sill Resultant

Max: 32.2 [g] at 0.006 [s]

Min: 0.0 [g] at -0.017 [s]

B-50

8629-2



Optional SNCAP 2001 Volvo S60

Acc 2(X) Right Rear Sill

Max: 5.1 [g] at 0.030 [s]

Min: -6.3 [g] at 0.015 [s]

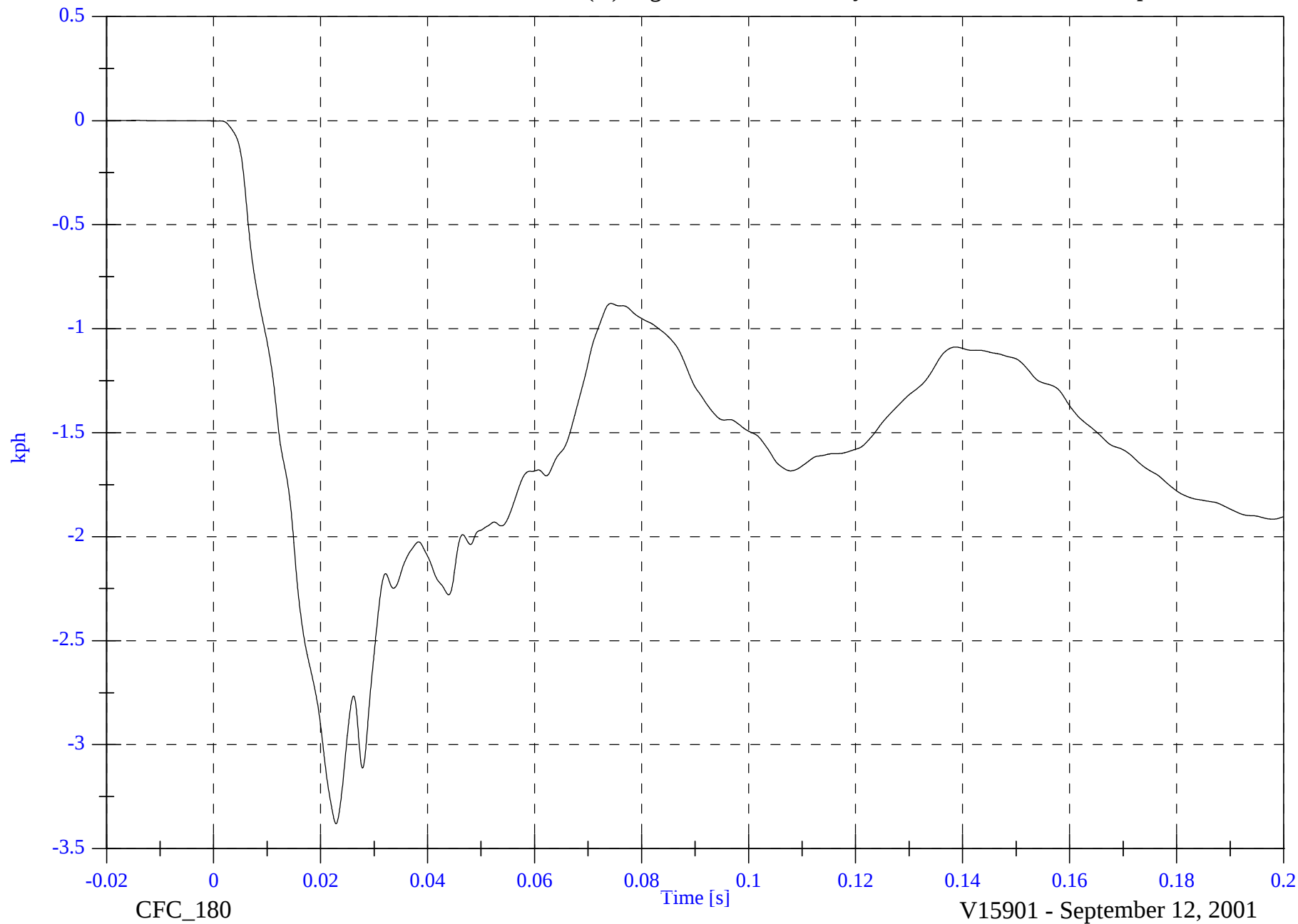


Optional SNCAP 2001 Volvo S60

Acc 2(X) Right Rear Sill Velocity

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

Min: -3.4 [kph] at 0.023 [s]



B-52

8629-2

Optional SNCAP 2001 Volvo S60

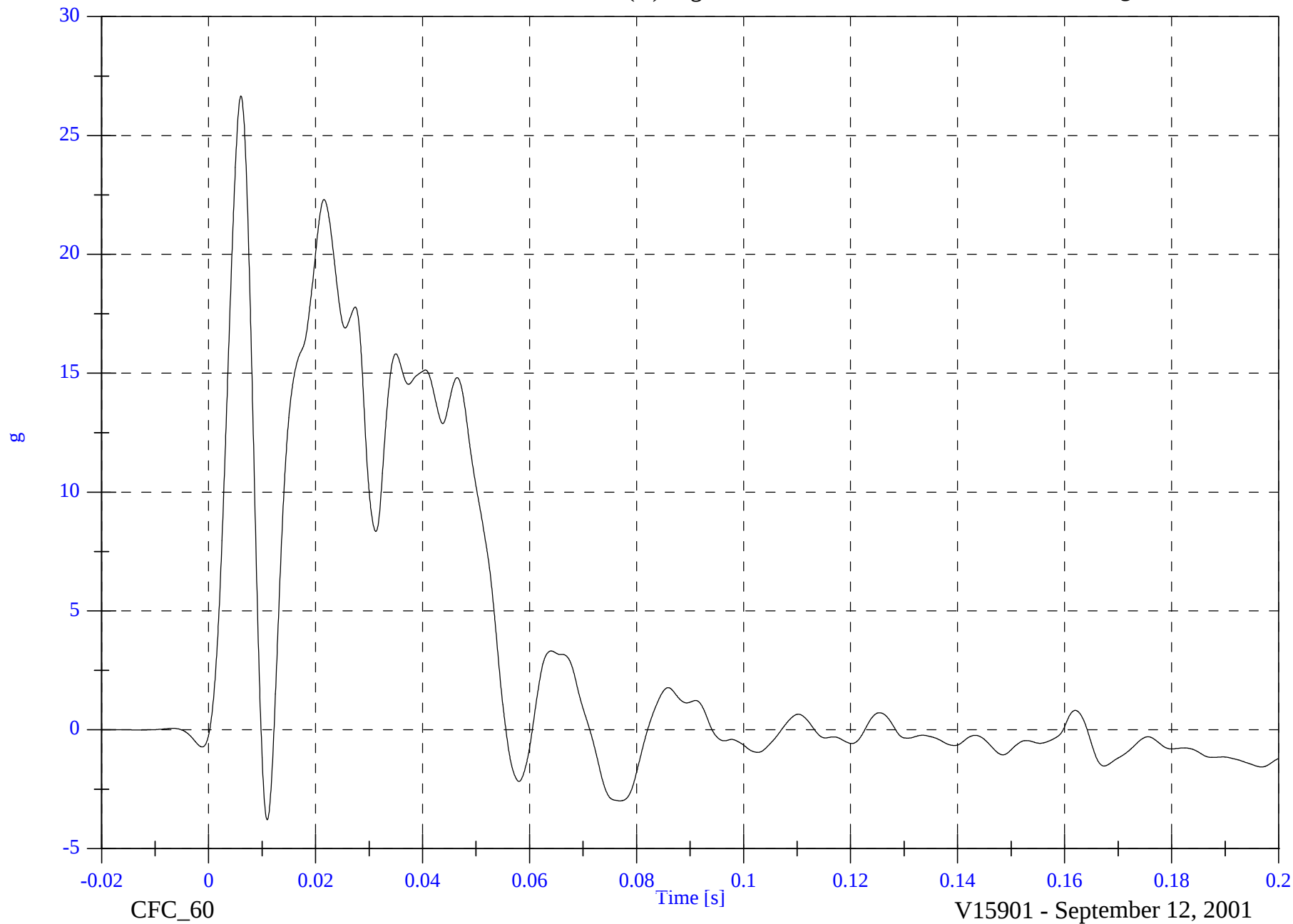
Acc 2(Y) Right Rear Sill

Max: 26.7 [g] at 0.006 [s]

Min: -3.8 [g] at 0.011 [s]

B-53

8629-2



Optional SNCAP 2001 Volvo S60

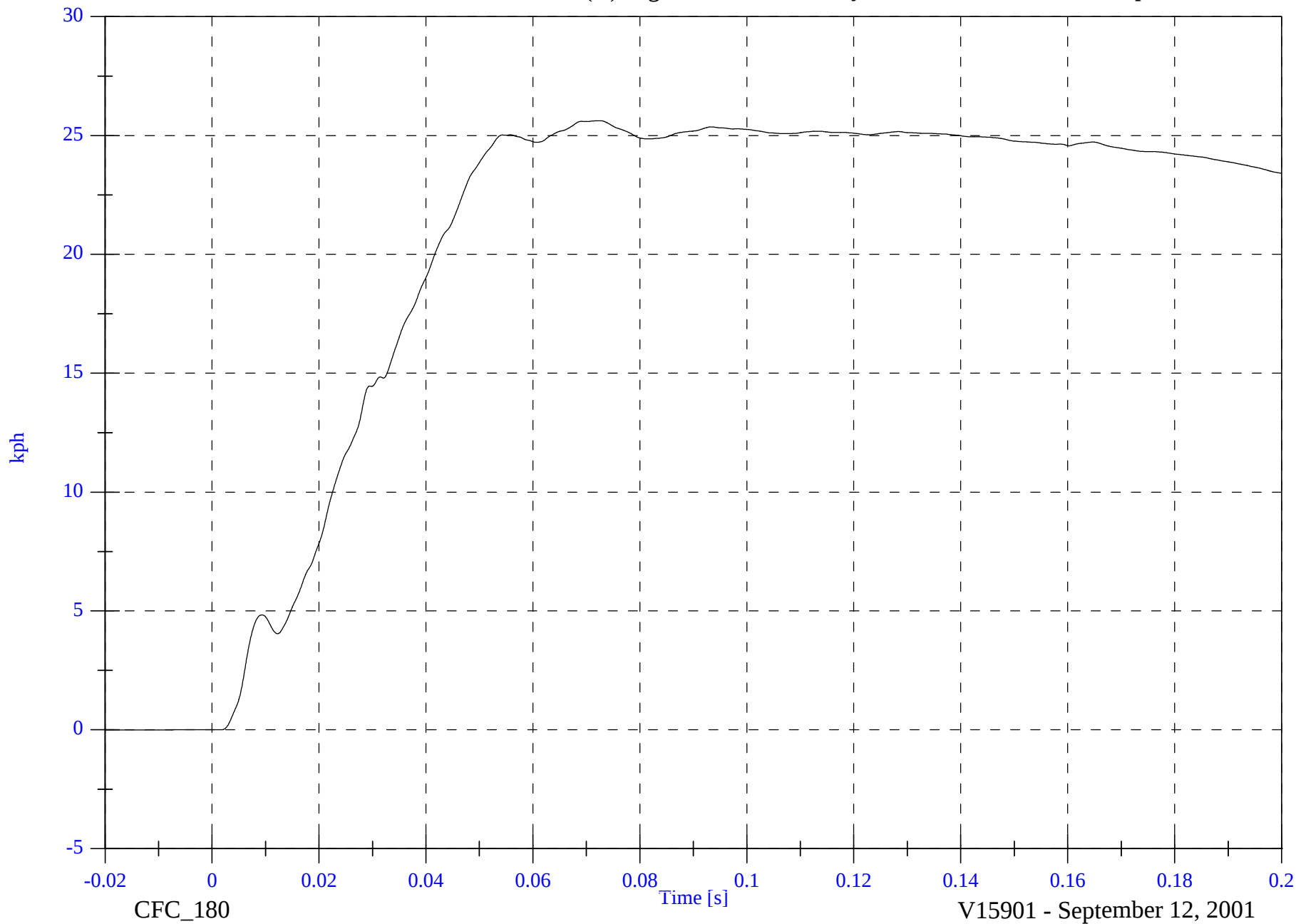
Acc 2(Y) Right Rear Sill Velocity

Max: 25.6 [kph] at 0.072 [s]

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

B-54

8629-2

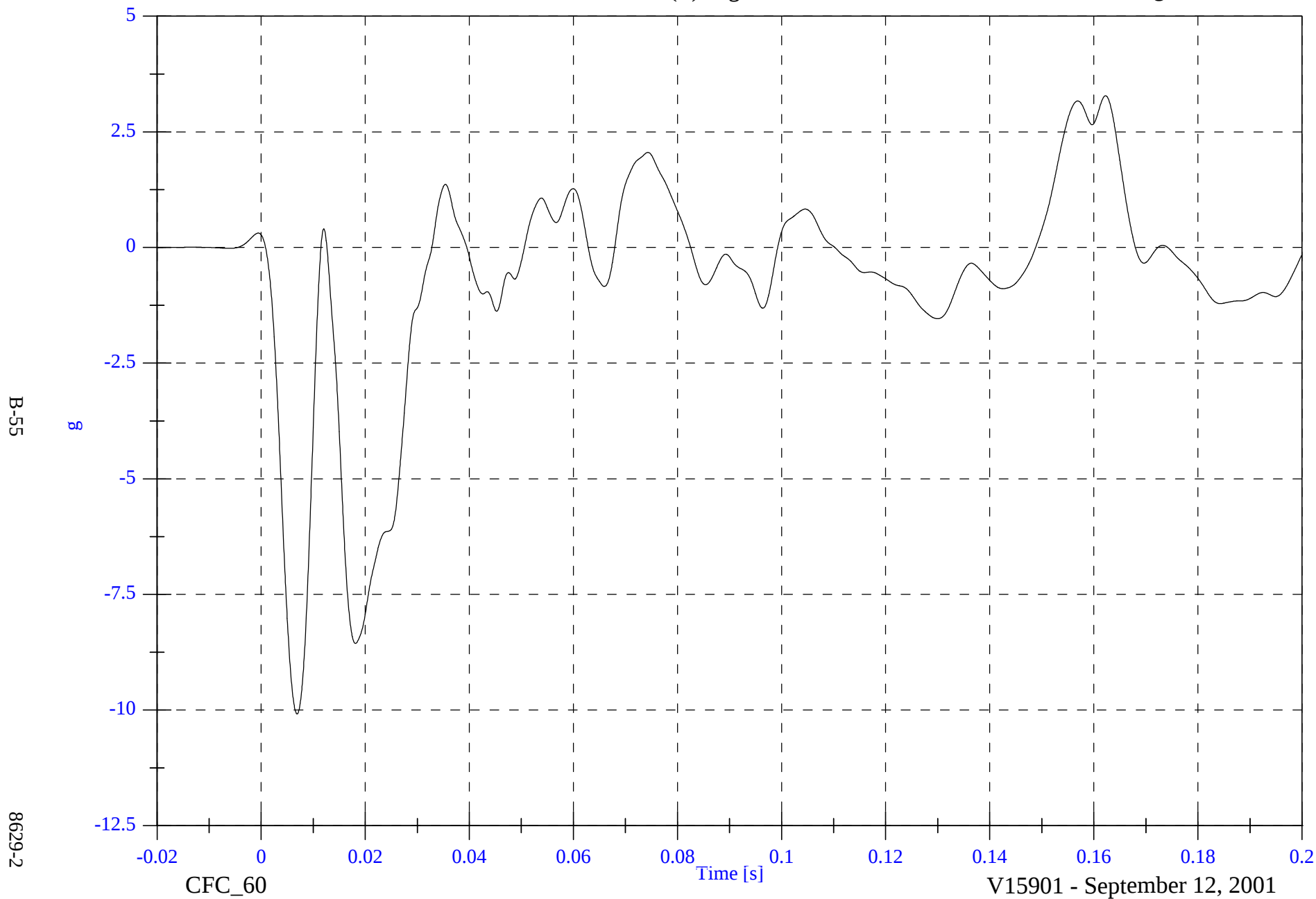


Optional SNCAP 2001 Volvo S60

Acc 2(Z) Right Rear Sill

Max: 3.3 [g] at 0.162 [s]

Min: -10.1 [g] at 0.007 [s]



Optional SNCAP 2001 Volvo S60

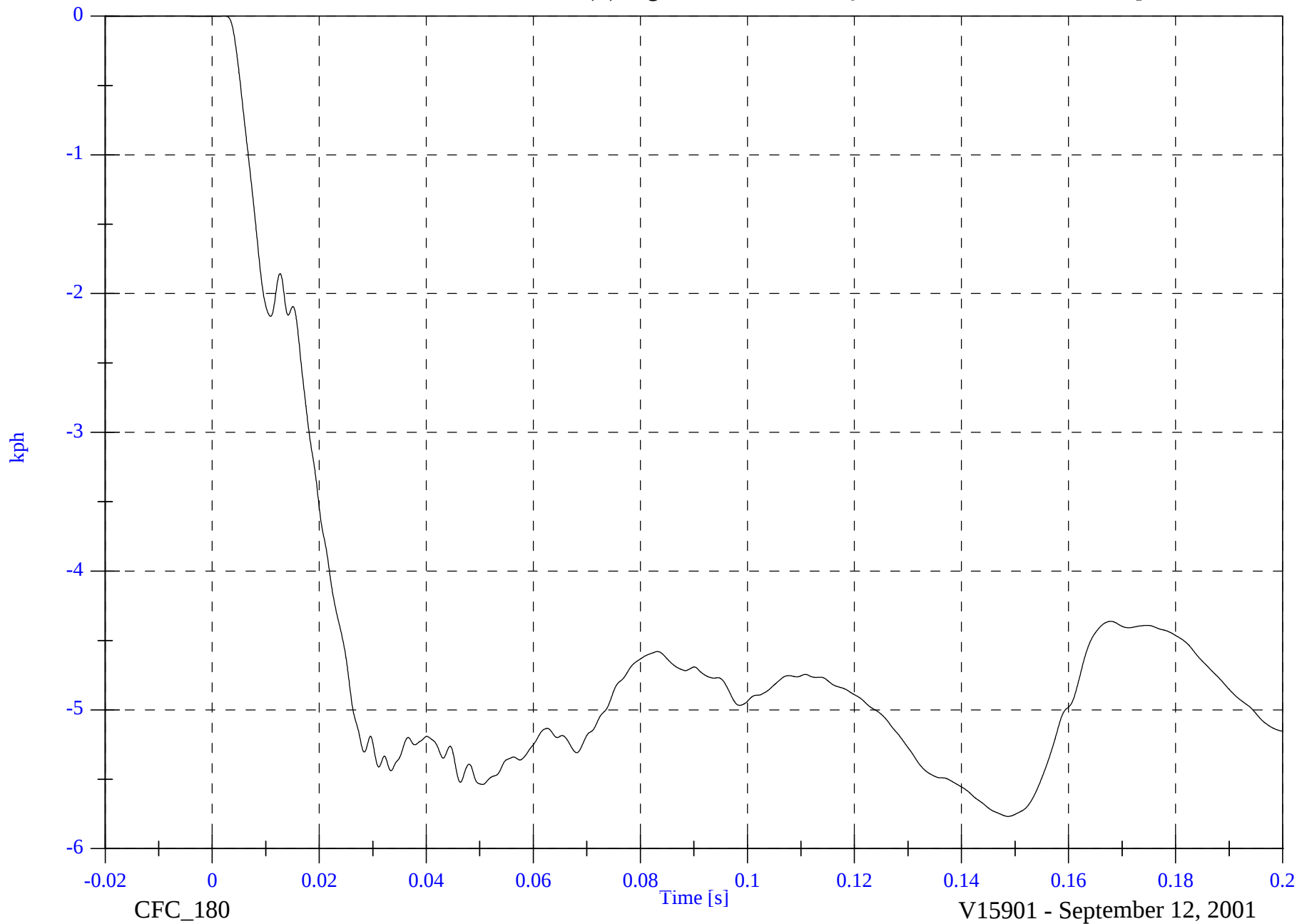
Acc 2(Z) Right Rear Sill Velocity

Max: 0.0 [kph] at 0.002 [s]

Min: -5.8 [kph] at 0.149 [s]

B-56

8629-2



Optional SNCAP 2001 Volvo S60

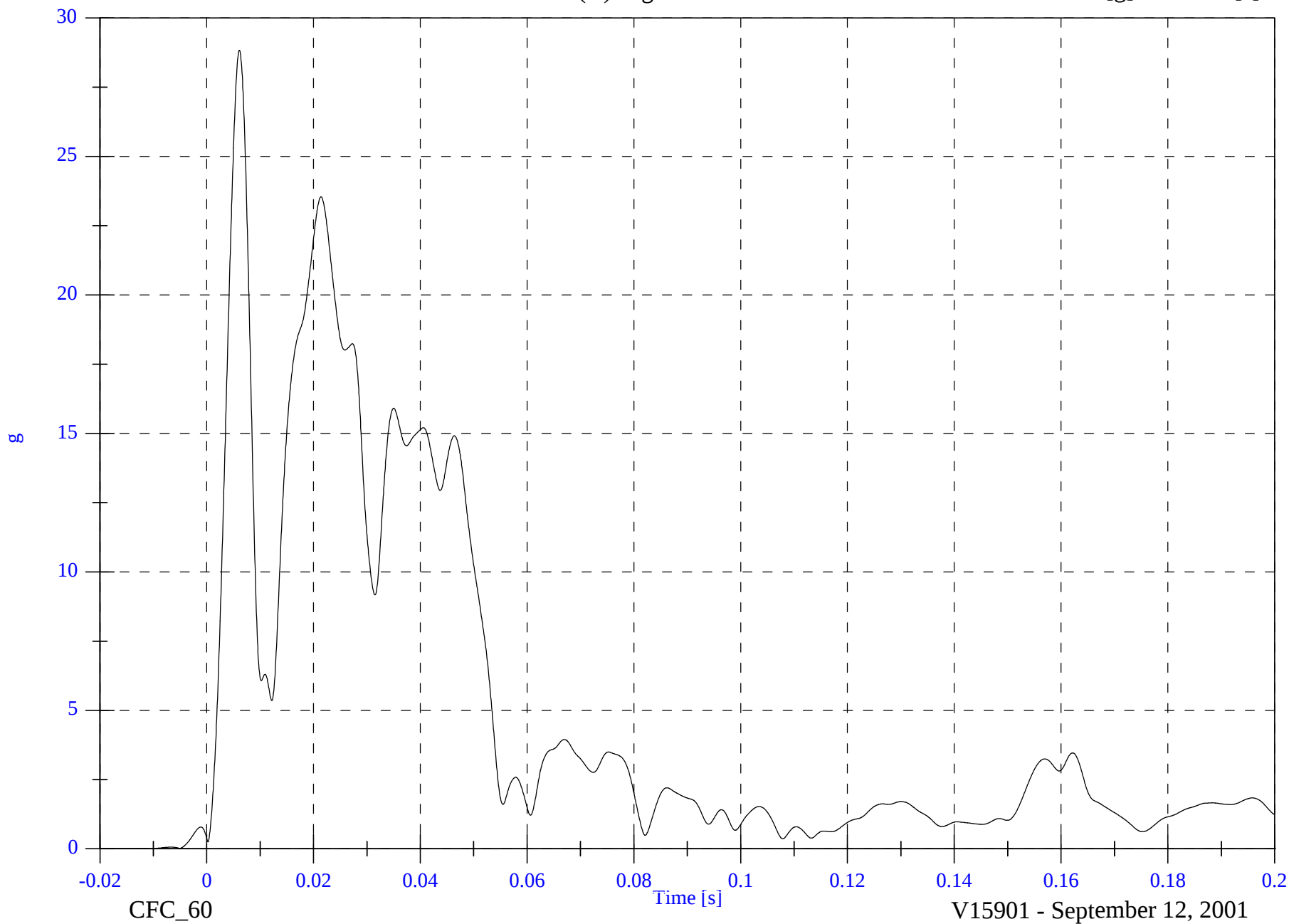
Acc 2(X) Right Rear Sill Resultant

Max: 28.8 [g] at 0.006 [s]

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

B-57

8629-2

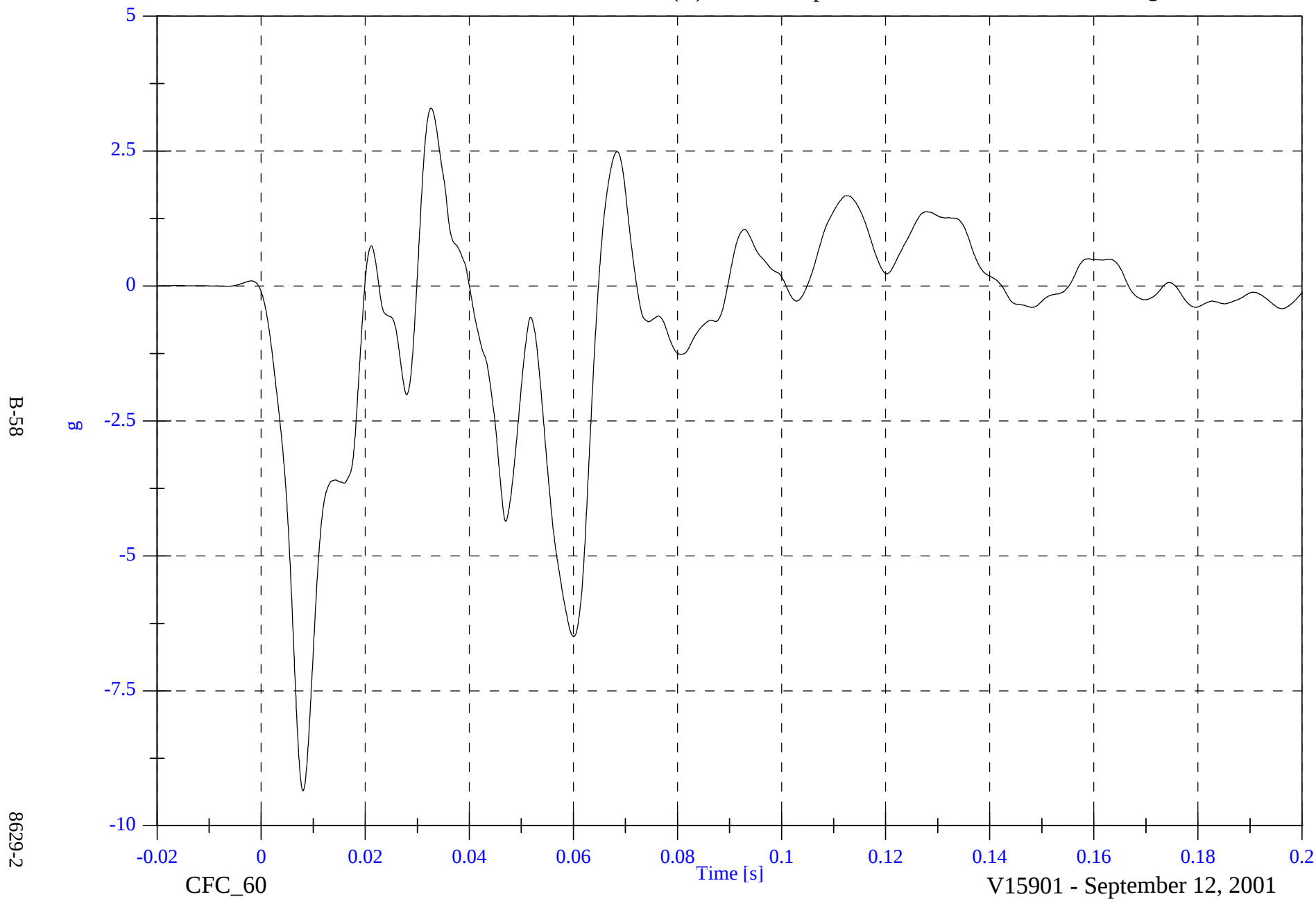


Optional SNCAP 2001 Volvo S60

Acc 3(X) Rear Floorpan

Max: 3.3 [g] at 0.033 [s]

Min: -9.4 [g] at 0.008 [s]



Optional SNCAP 2001 Volvo S60

Acc 3(X) Rear Floorpan Velocity

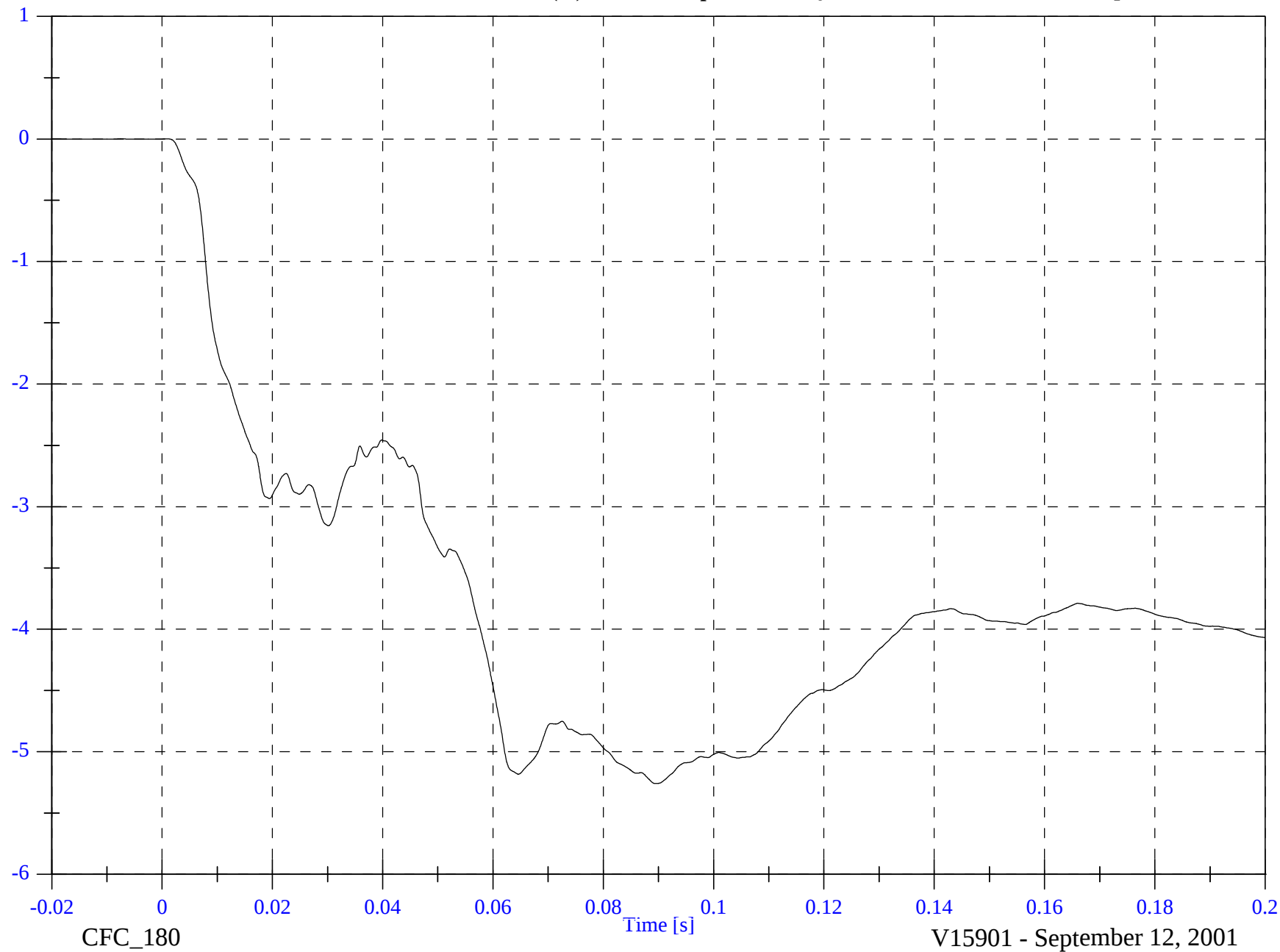
Max: 0.0 [kph] at 0.001 [s]

Min: -5.3 [kph] at 0.089 [s]

B-59

kph

8629-2

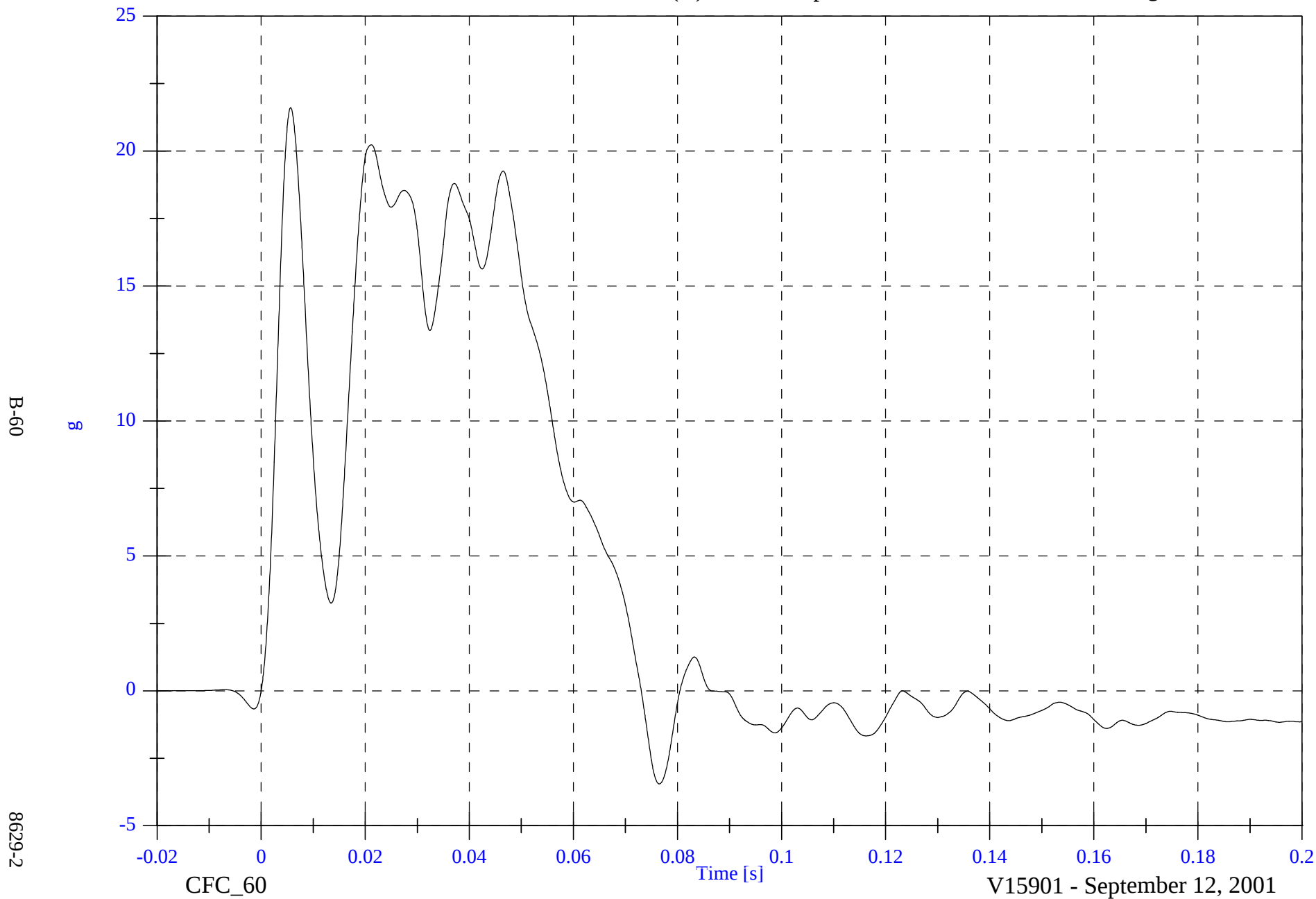


Optional SNCAP 2001 Volvo S60

Acc 3(Y) Rear Floorpan

Max: 21.6 [g] at 0.006 [s]

Min: -3.5 [g] at 0.077 [s]

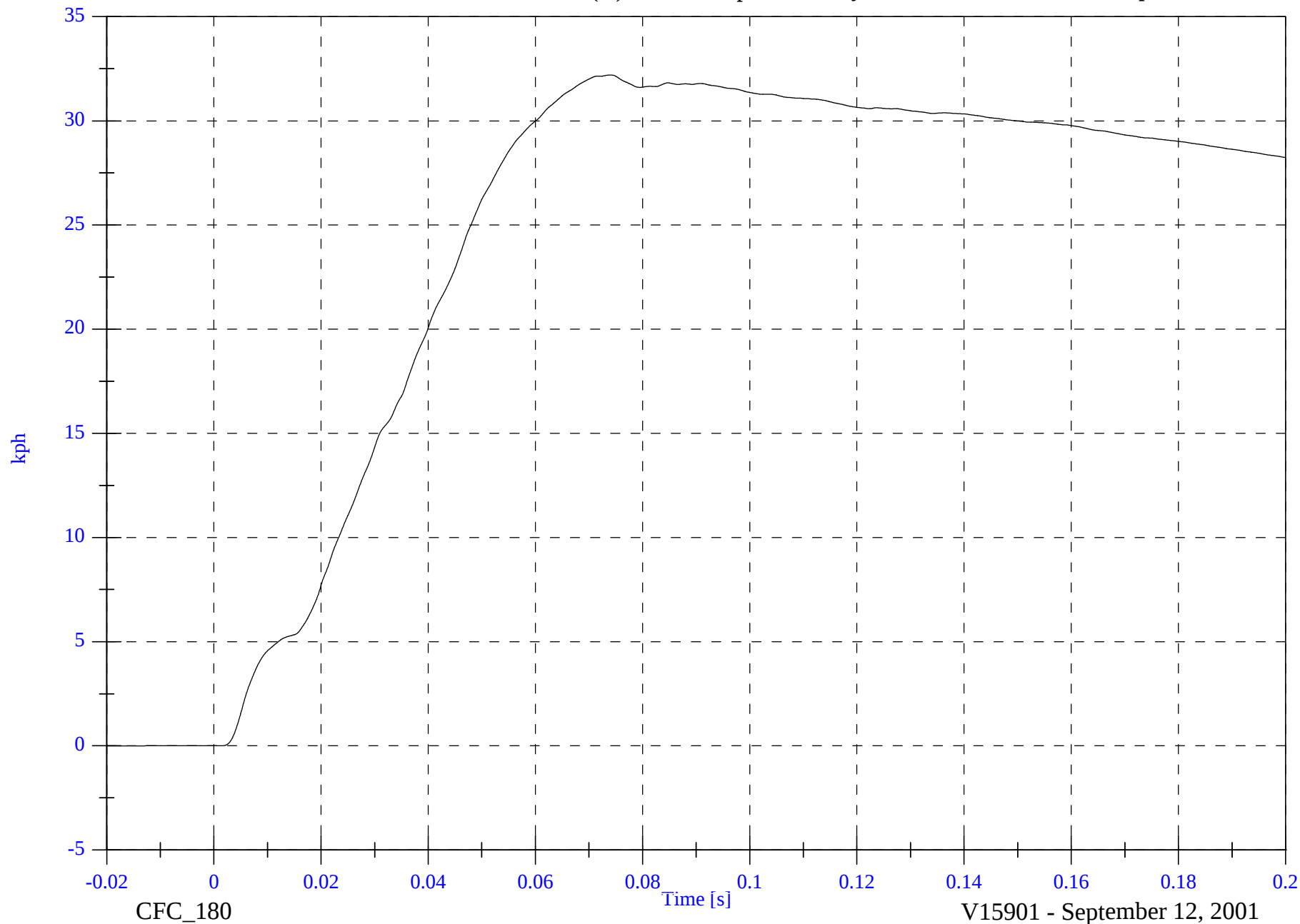


Optional SMCAP 2001 Volvo S60

Acc 3(Y) Rear Floorpan Velocity

Max: 32.2 [kph] at 0.074 [s]

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



B-61

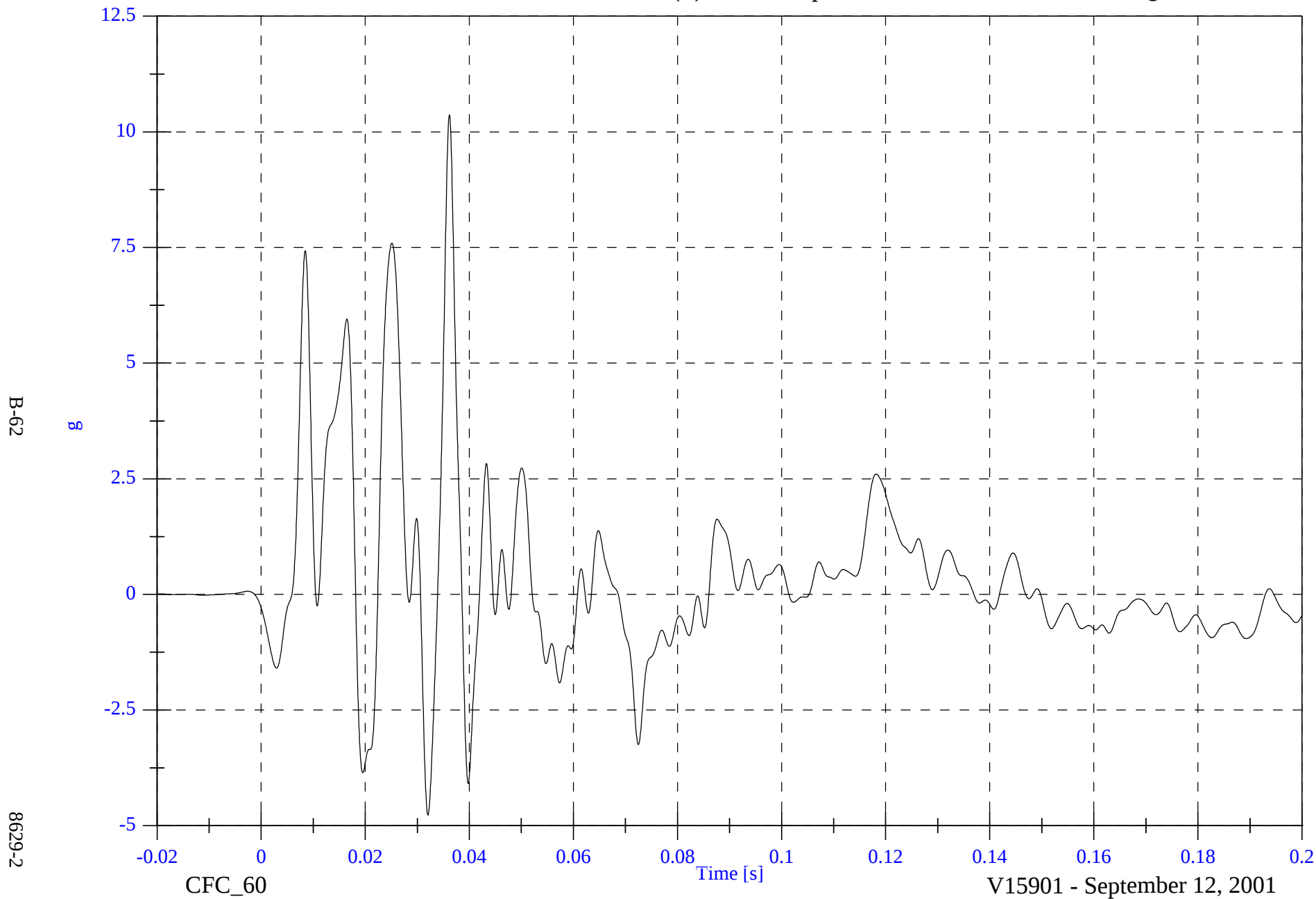
8629-2

Optional SNCAP 2001 Volvo S60

Acc 3(Z) Rear Floorpan

Max: 10.4 [g] at 0.036 [s]

Min: -4.8 [g] at 0.032 [s]



Optional SNCAP 2001 Volvo S60

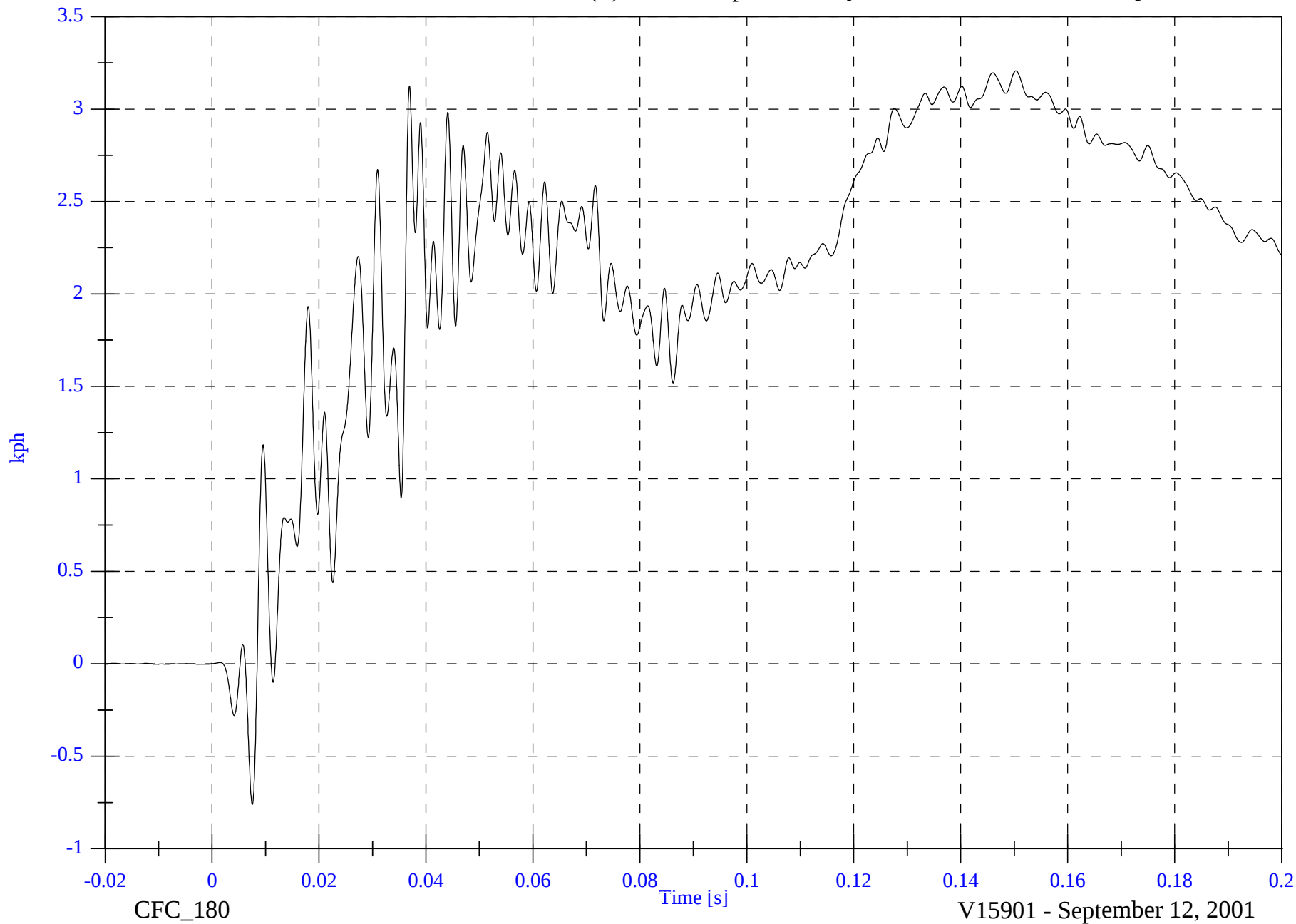
Acc 3(Z) Rear Floorpan Velocity

Max: 3.2 [kph] at 0.150 [s]

Min: -0.8 [kph] at 0.008 [s]

B-63

8629-2



Optional SNCAP 2001 Volvo S60

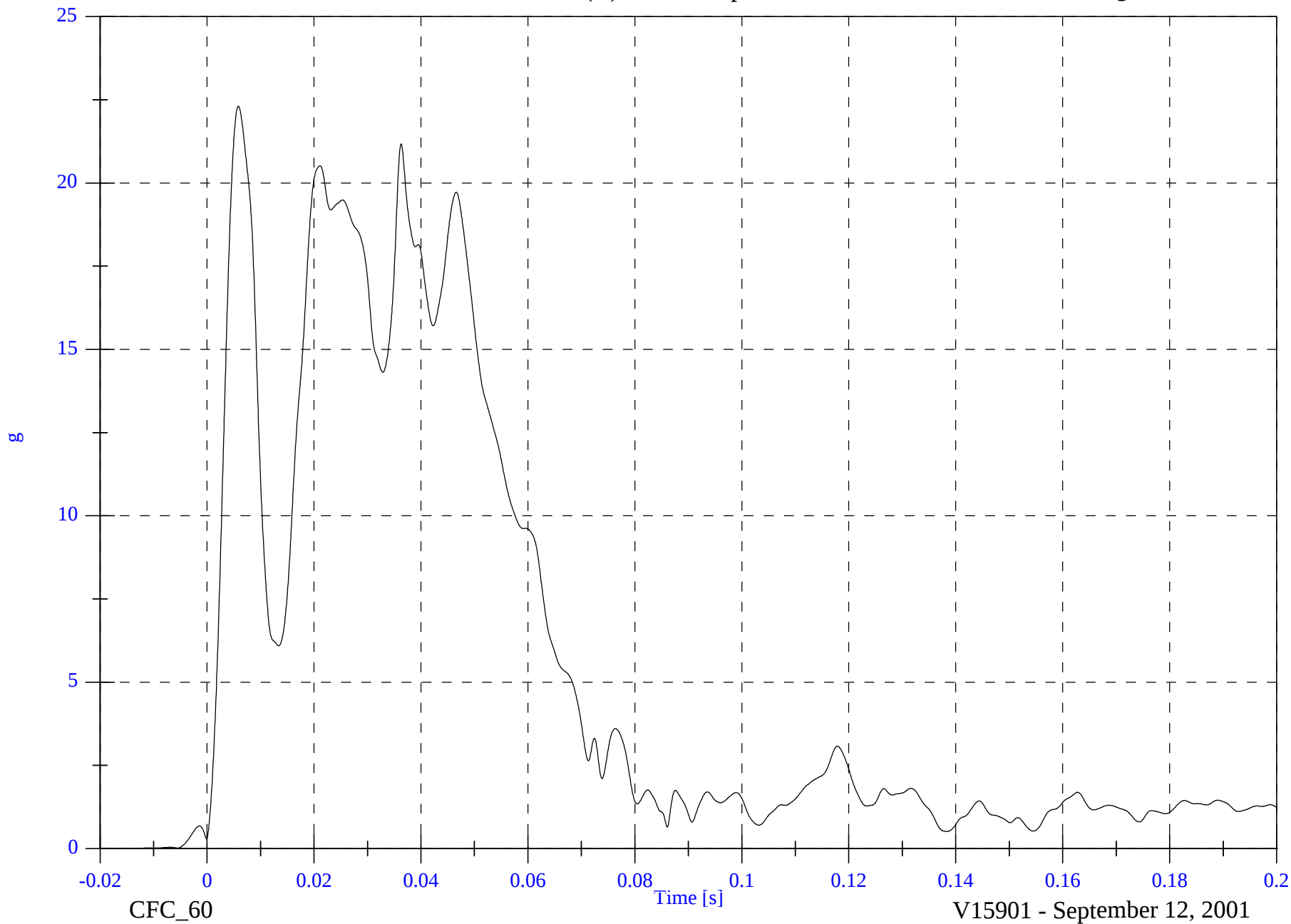
Acc 3(X) Rear Floorpan Resultant

Max: 22.3 [g] at 0.006 [s]

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

B-64

8629-2

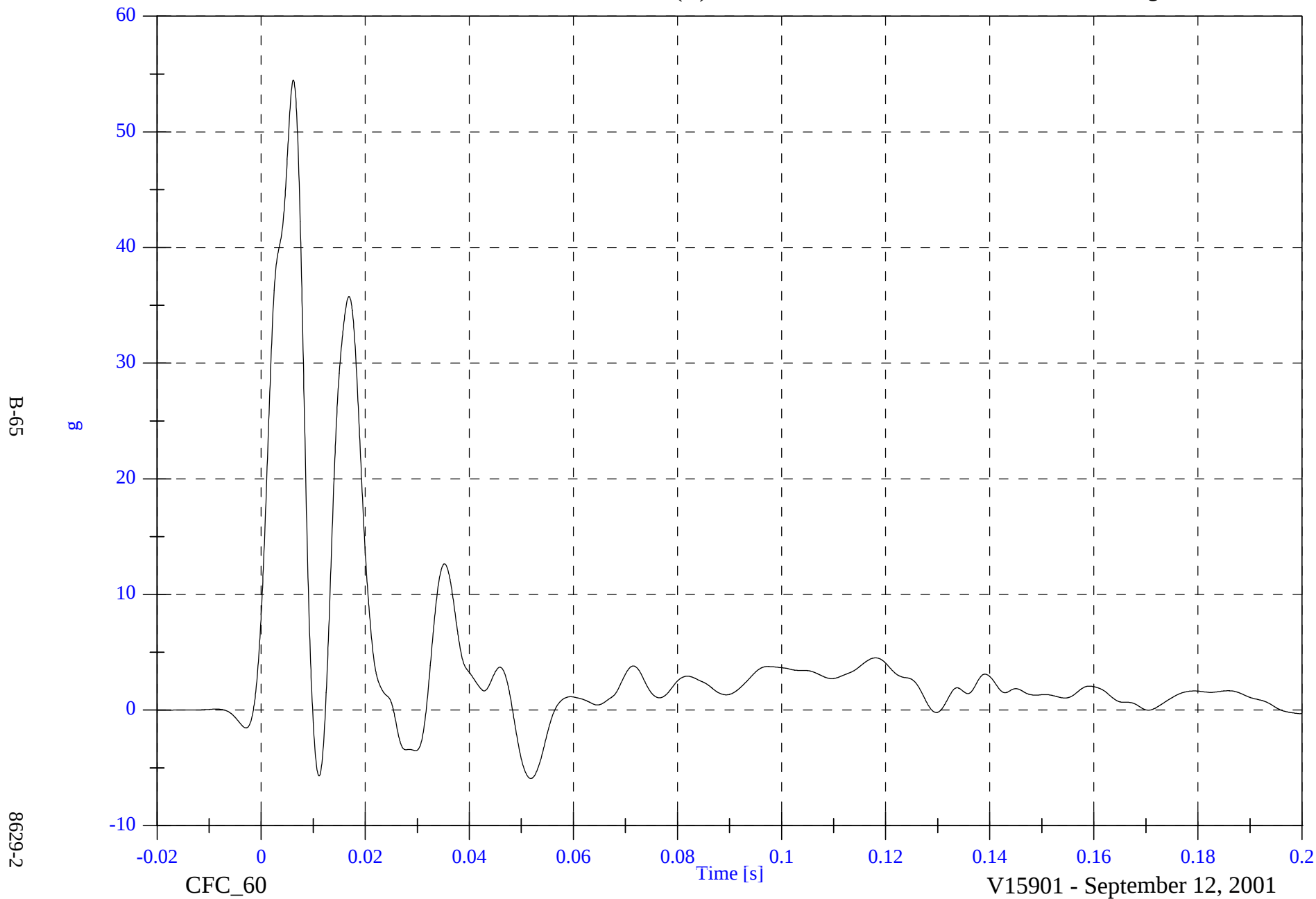


Optional SNCAP 2001 Volvo S60

Acc 4(Y) Left Rear Sill

Max: 54.5 [g] at 0.006 [s]

Min: -5.9 [g] at 0.052 [s]



Optional SNCAP 2001 Volvo S60

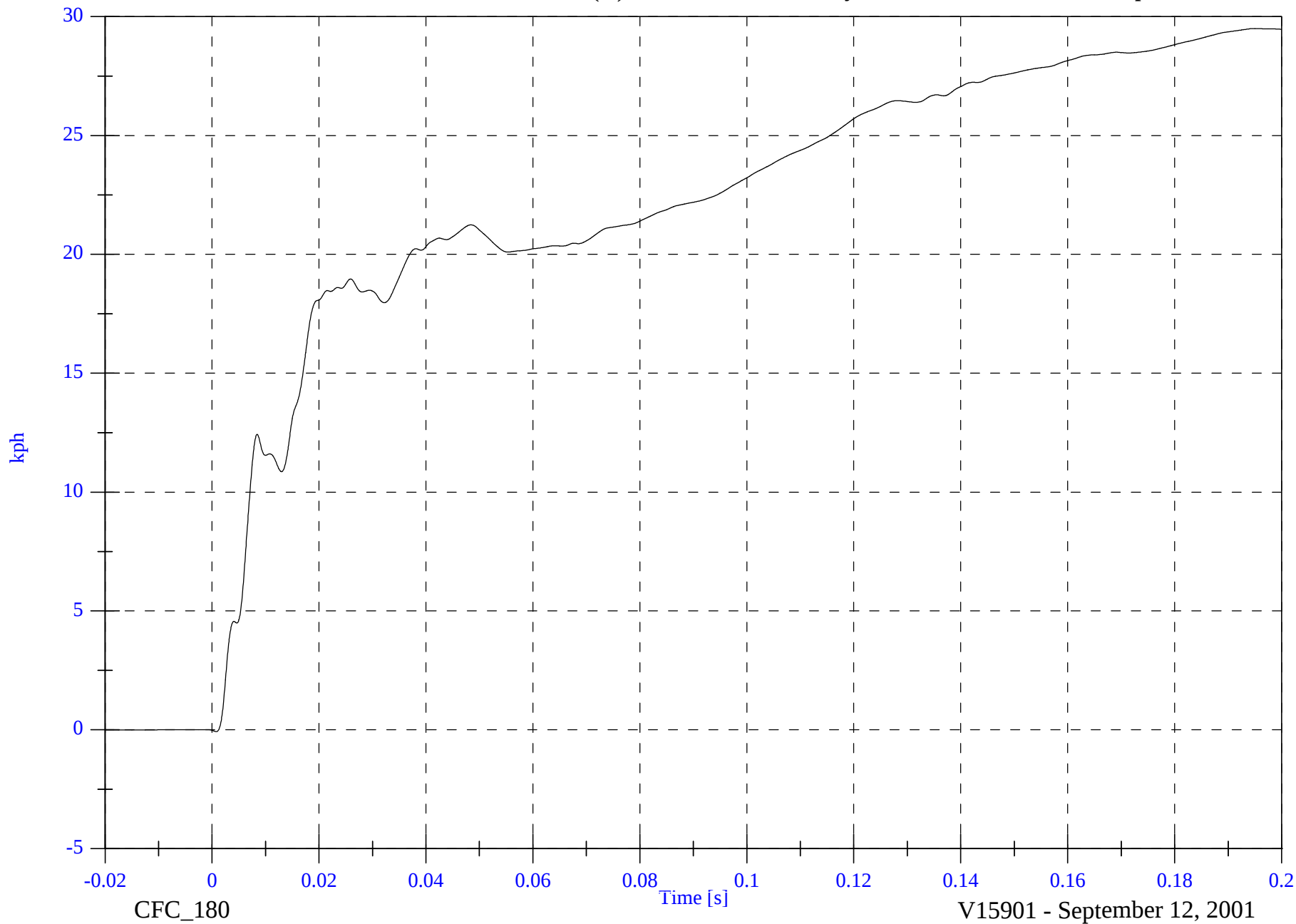
Acc 4(Y) Left Rear Sill Velocity

Max: 29.5 [kph] at 0.195 [s]

Min: -0.1 [kph] at 0.001 [s]

B-66

8629-2

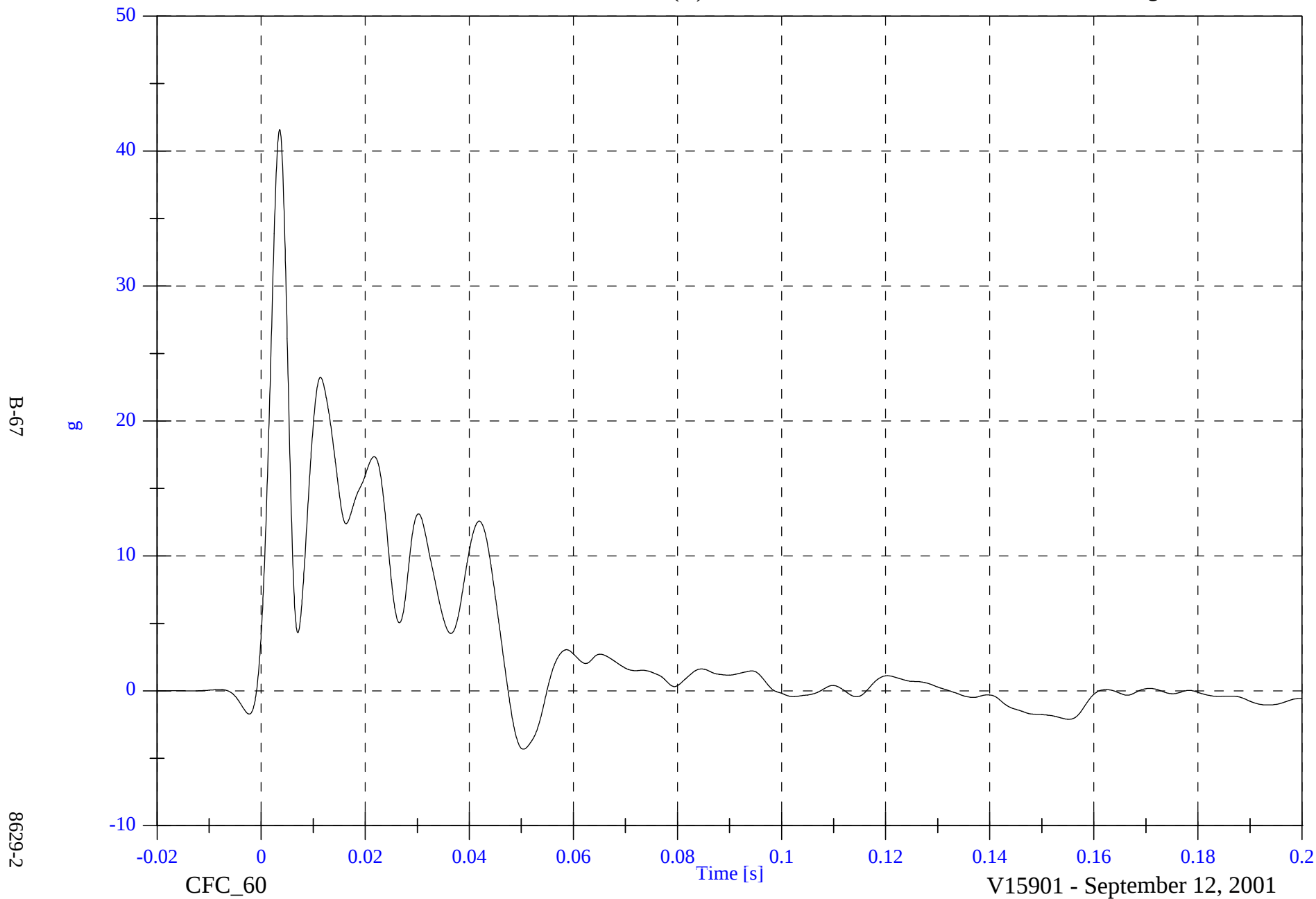


Optional SNCAP 2001 Volvo S60

Acc 5(Y) Left Front Sill

Max: 41.6 [g] at 0.004 [s]

Min: -4.3 [g] at 0.050 [s]



Optional SNCAP 2001 Volvo S60

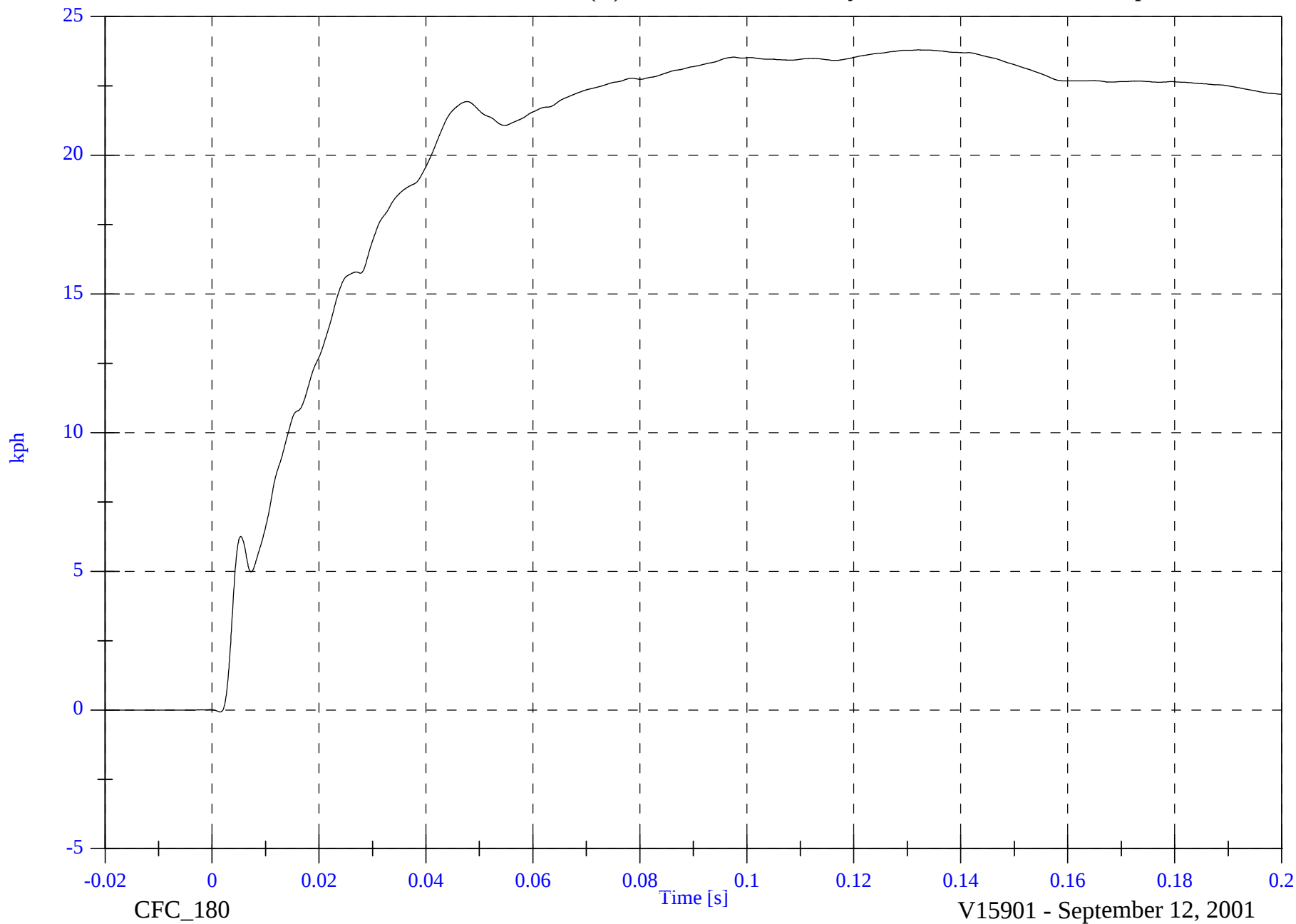
Acc 5(Y) Left Front Sill Velocity

Max: 23.8 [kph] at 0.132 [s]

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

B-68

8629-2

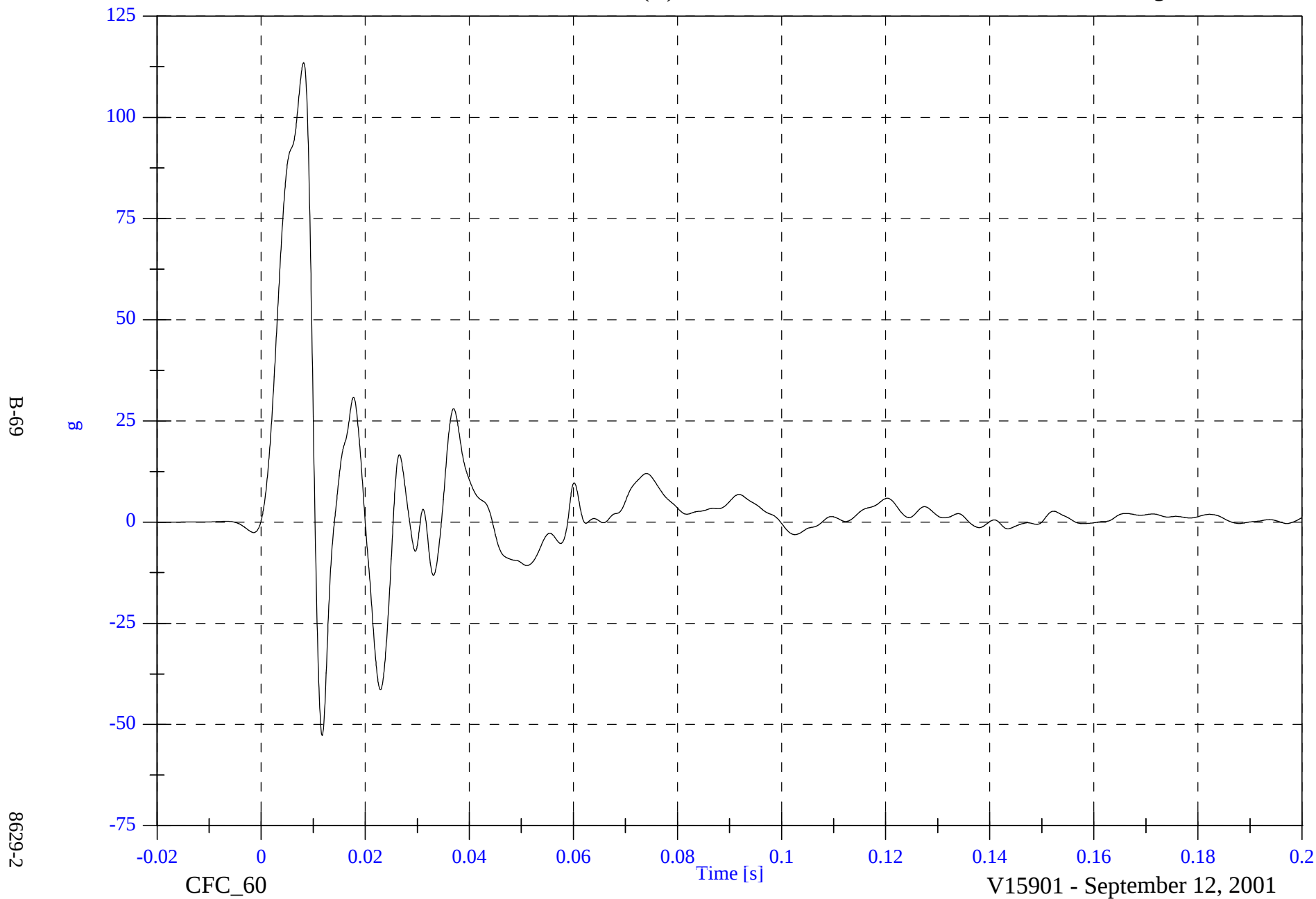


Optional SNCAP 2001 Volvo S60

Acc 6(Y) Left Front Door C/L

Max: 113.5 [g] at 0.008 [s]

Min: -52.7 [g] at 0.012 [s]



8629-2

Optional SNCAP 2001 Volvo S60

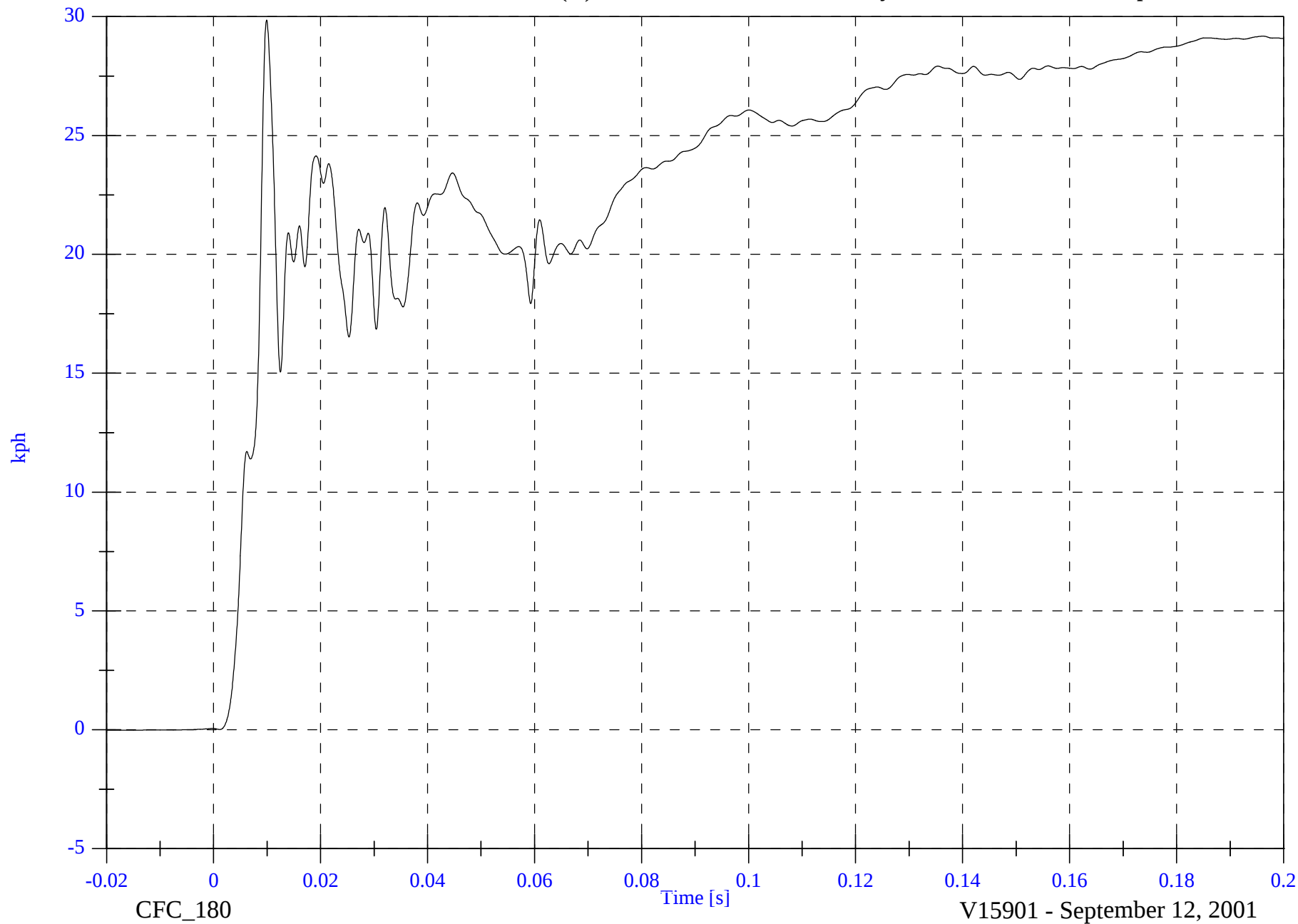
Acc 6(Y) Left Front Door C/L Velocity

Max: 29.9 [kph] at 0.010 [s]

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

B-70

8629-2

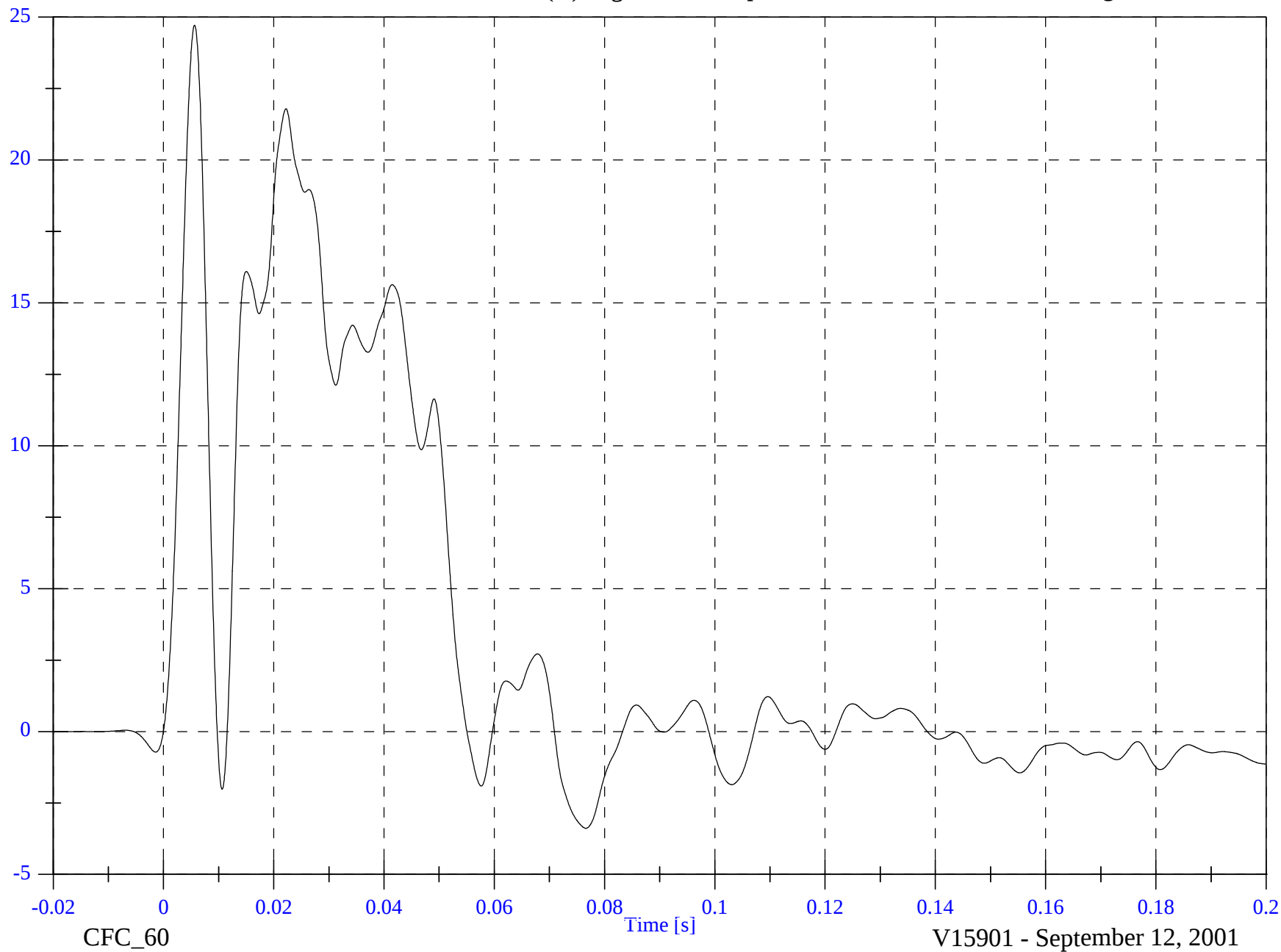


Optional SNCAP 2001 Volvo S60

Acc 7(Y) RightRear Compartment

Max: 24.7 [g] at 0.006 [s]

Min: -3.4 [g] at 0.077 [s]



B-71

8629-2

Optional SNCAP 2001 Volvo S60

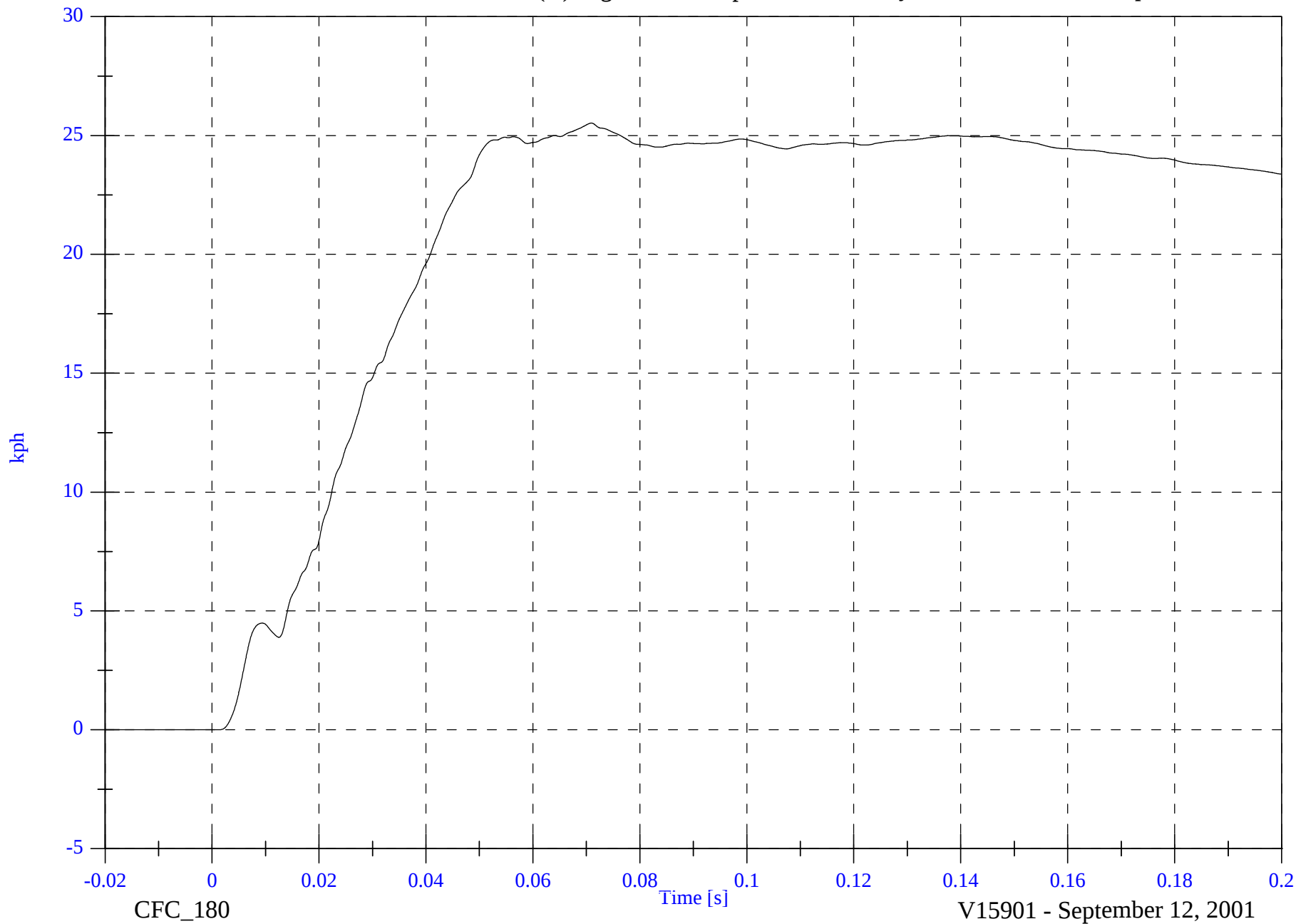
Acc 7(Y) RightRear Compartment Velocity

Max: 25.5 [kph] at 0.071 [s]

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

B-72

8629-2

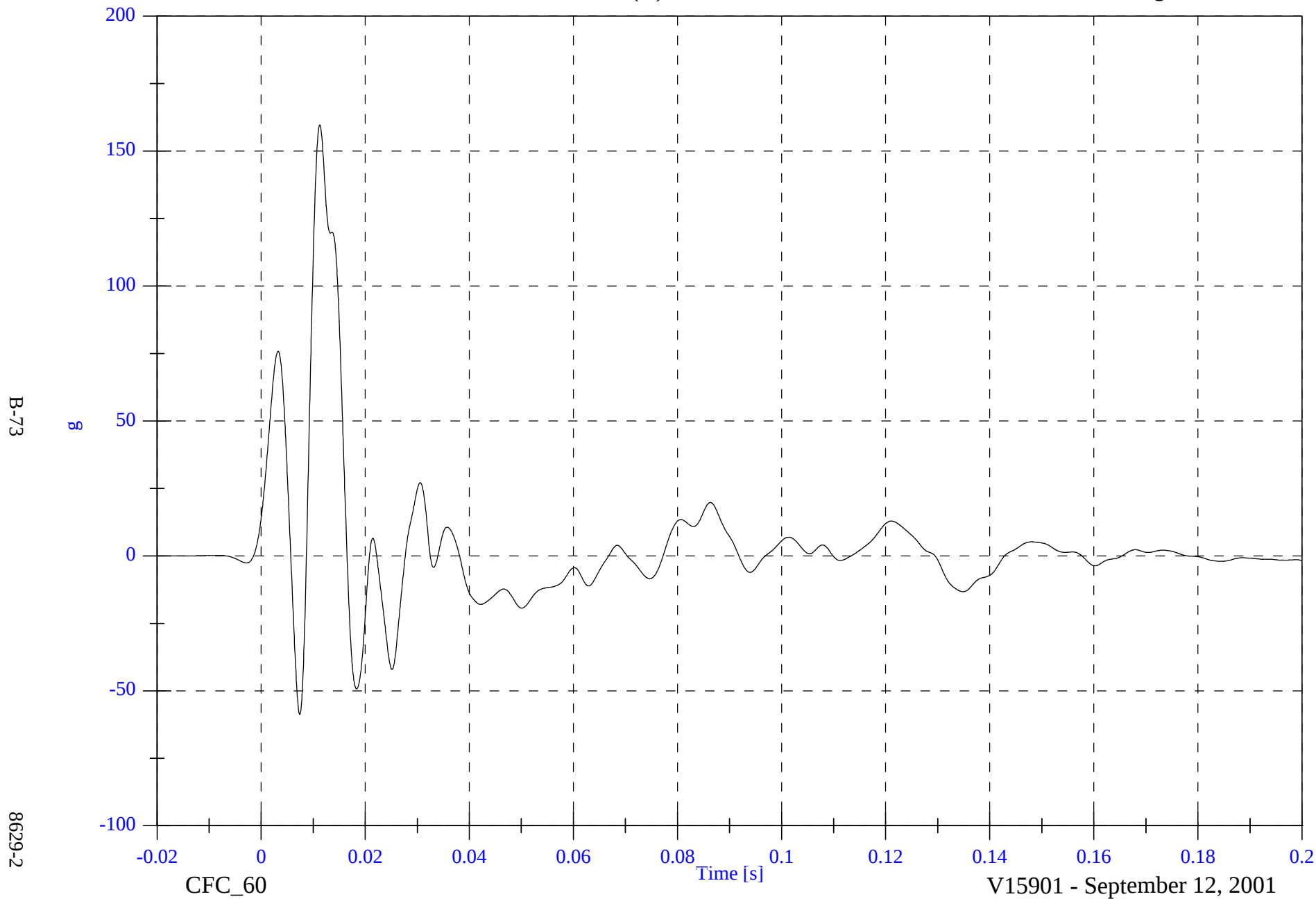


Optional SNCAP 2001 Volvo S60

Acc 8(Y) Left Front Door Midrear

Max: 159.7 [g] at 0.011 [s]

Min: -58.8 [g] at 0.007 [s]

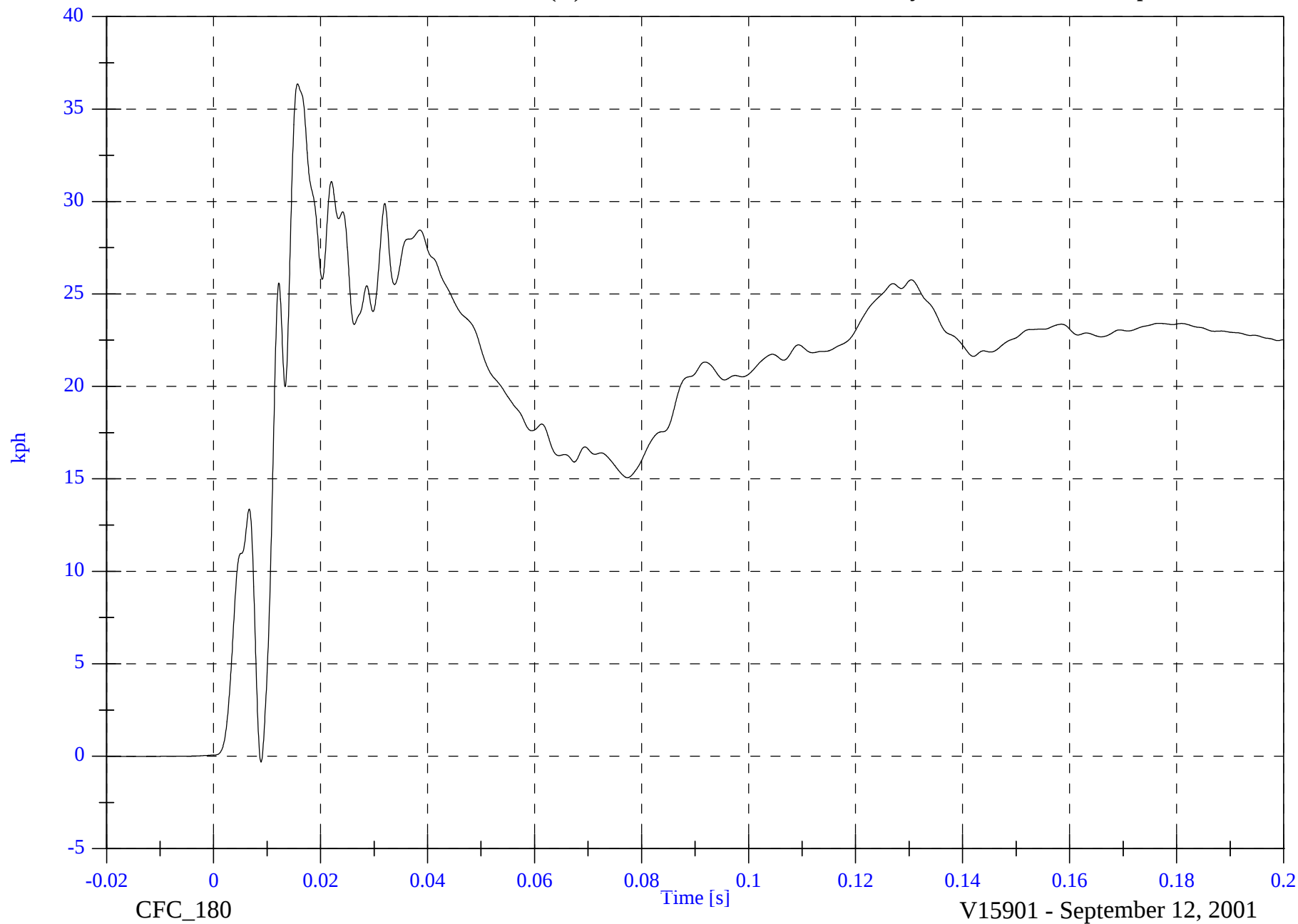


Optional SNCAP 2001 Volvo S60

Acc 8(Y) Left Front Door Midrear Velocity

Max: 36.4 [kph] at 0.016 [s]

Min: -0.3 [kph] at 0.009 [s]



B-74

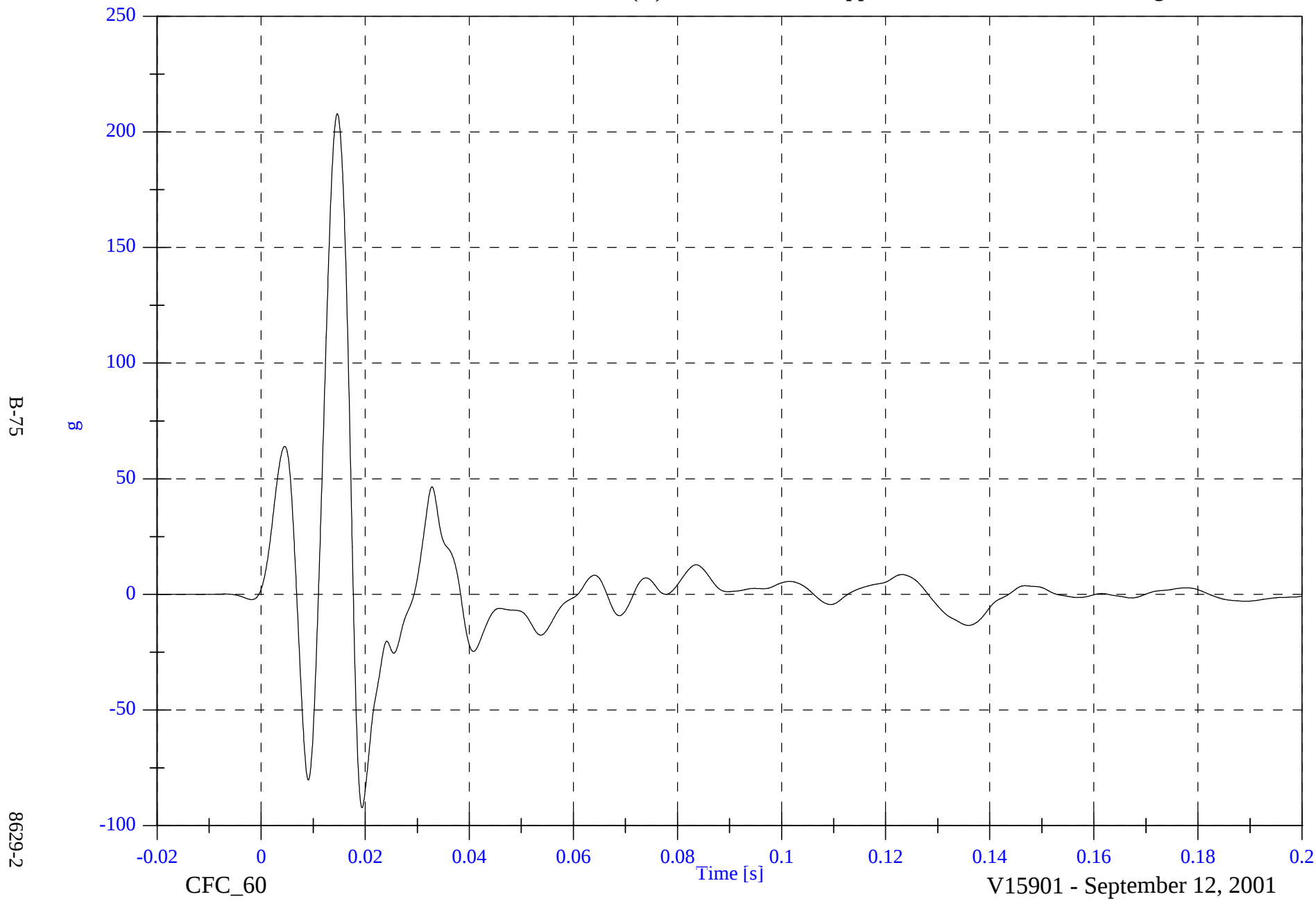
8629-2

Optional SNCAP 2001 Volvo S60

Acc 9(Y) Left Front Door Upper

Max: 207.9 [g] at 0.015 [s]

Min: -92.2 [g] at 0.019 [s]



Optional SNCAP 2001 Volvo S60

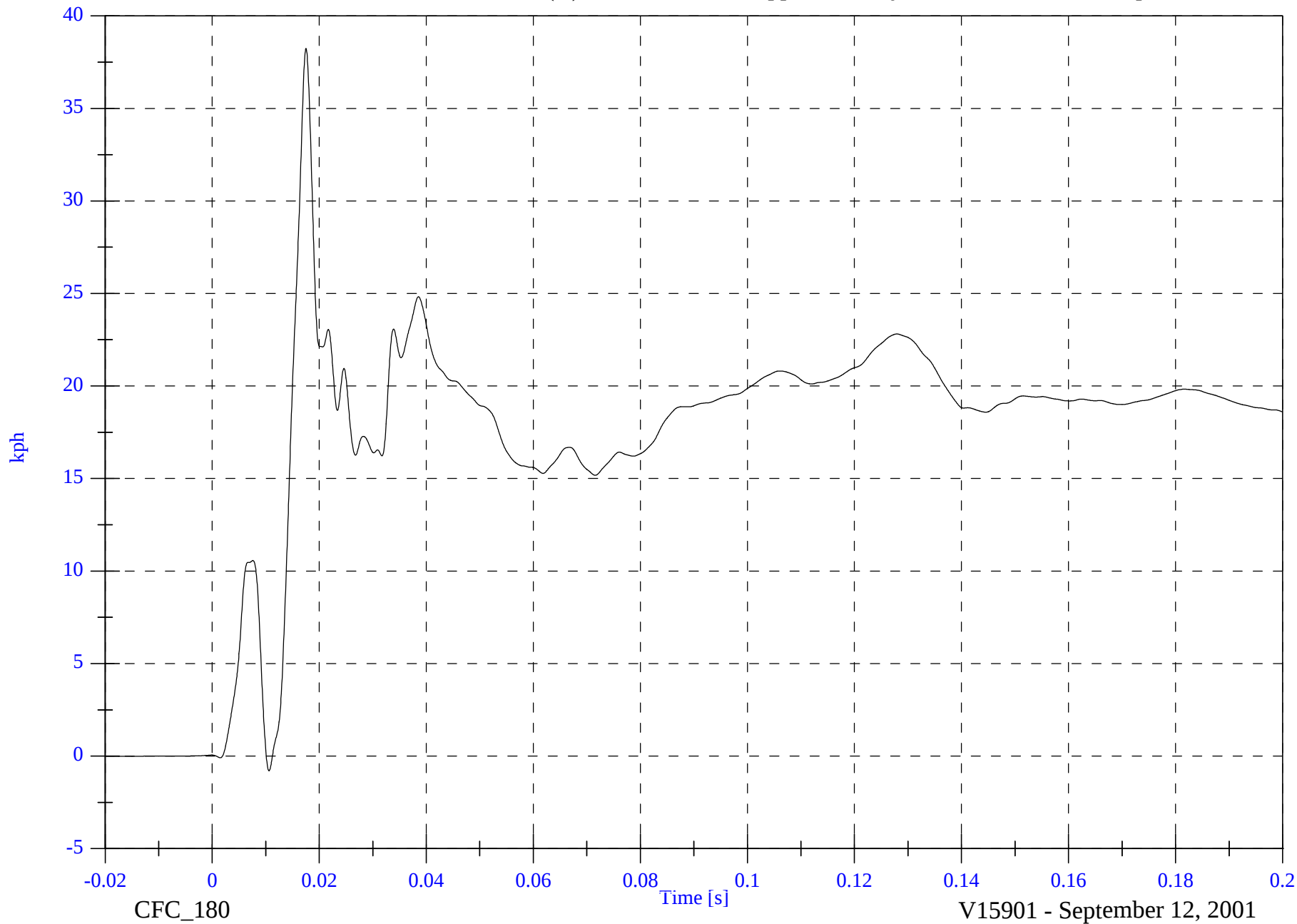
Acc 9(Y) Left Front Door Upper Velocity

Max: 38.2 [kph] at 0.018 [s]

Min: -0.8 [kph] at 0.011 [s]

B-76

8629-2

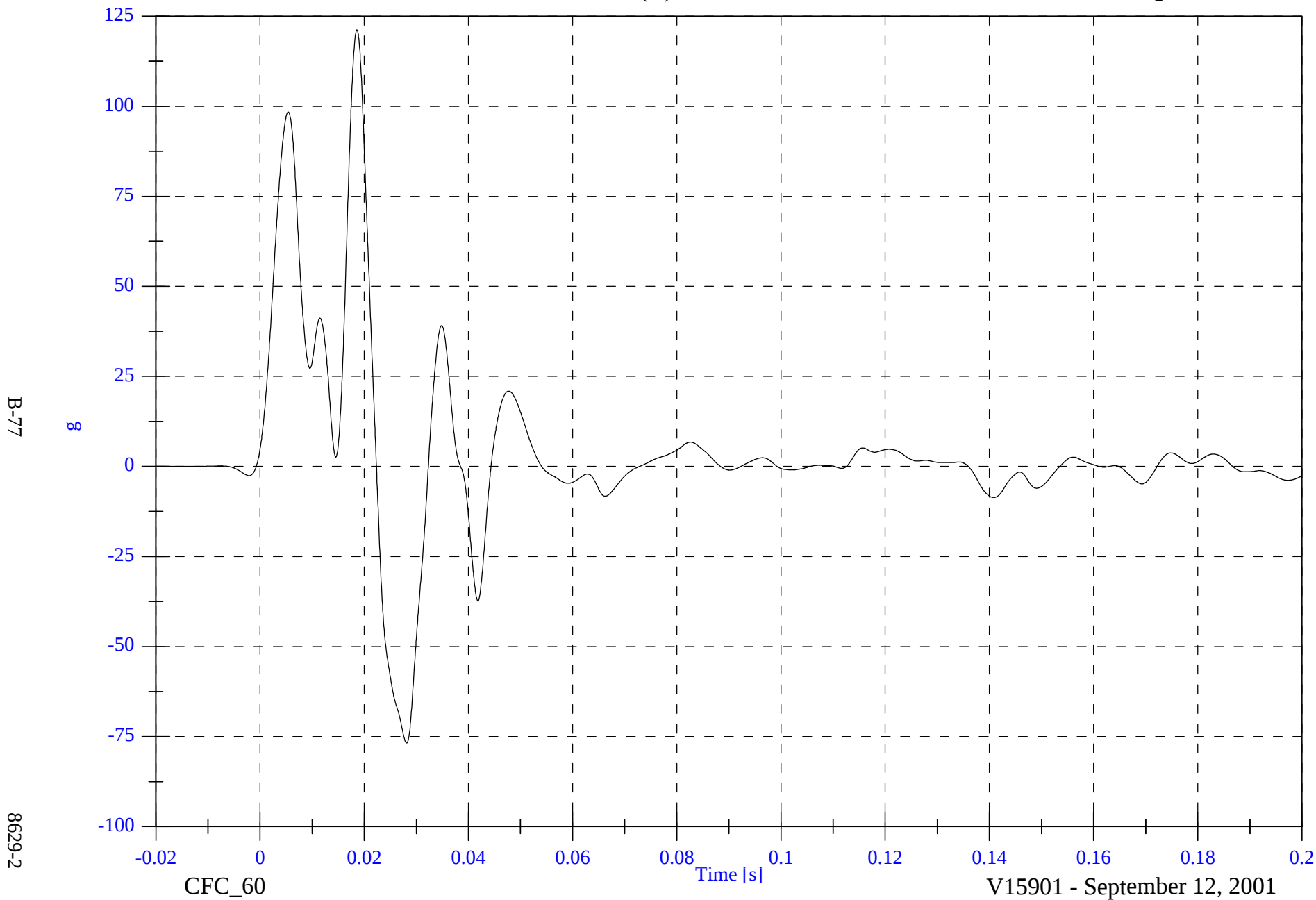


Optional SNCAP 2001 Volvo S60

Acc 10(Y) Left Rear Door Midrear

Max: 121.2 [g] at 0.019 [s]

Min: -76.8 [g] at 0.028 [s]



Optional SNCAP 2001 Volvo S60

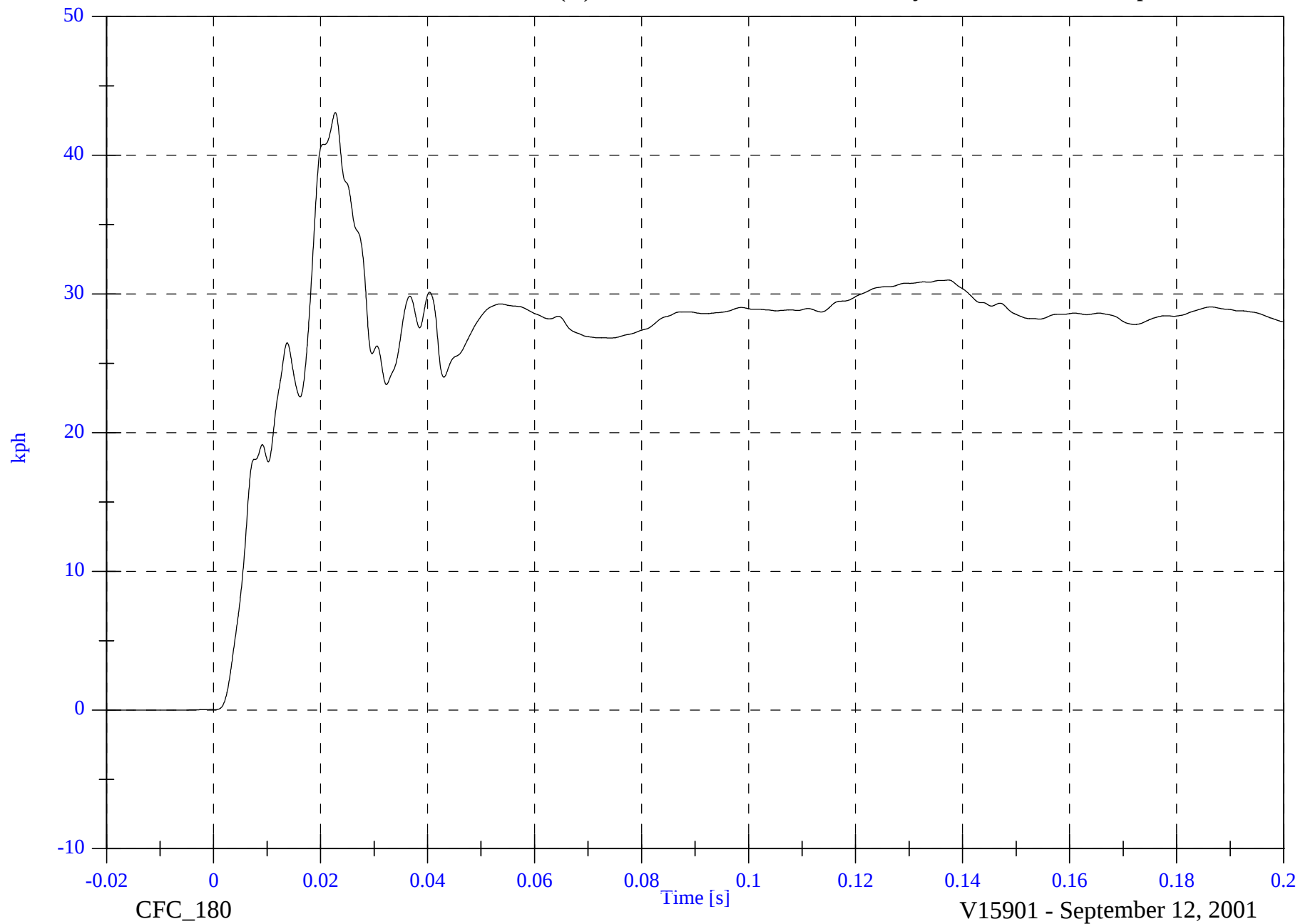
Acc 10(Y) Left Rear Door Midrear Velocity

Max: 43.1 [kph] at 0.023 [s]

Min: -0.0 [kph] at -0.017 [s]

B-78

8629-2

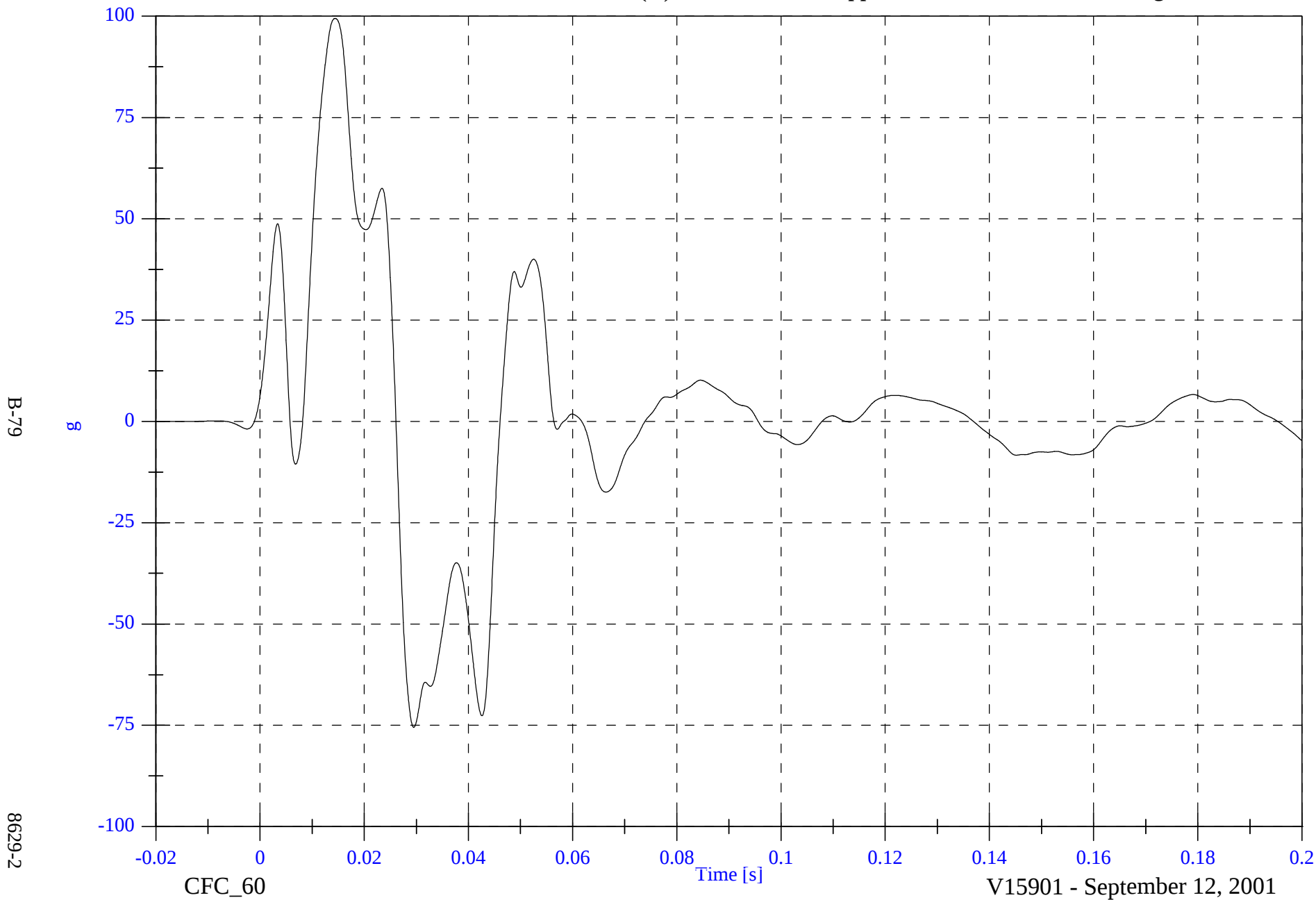


Optional SMCAP 2001 Volvo S60

Acc 11(Y) Left Rear Door Upper

Max: 99.5 [g] at 0.014 [s]

Min: -75.5 [g] at 0.030 [s]



8629-2

Optional SNCAP 2001 Volvo S60

Acc 11(Y) Left Rear Door Upper Velocity

Max: 44.6 [kph] at 0.026 [s]

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

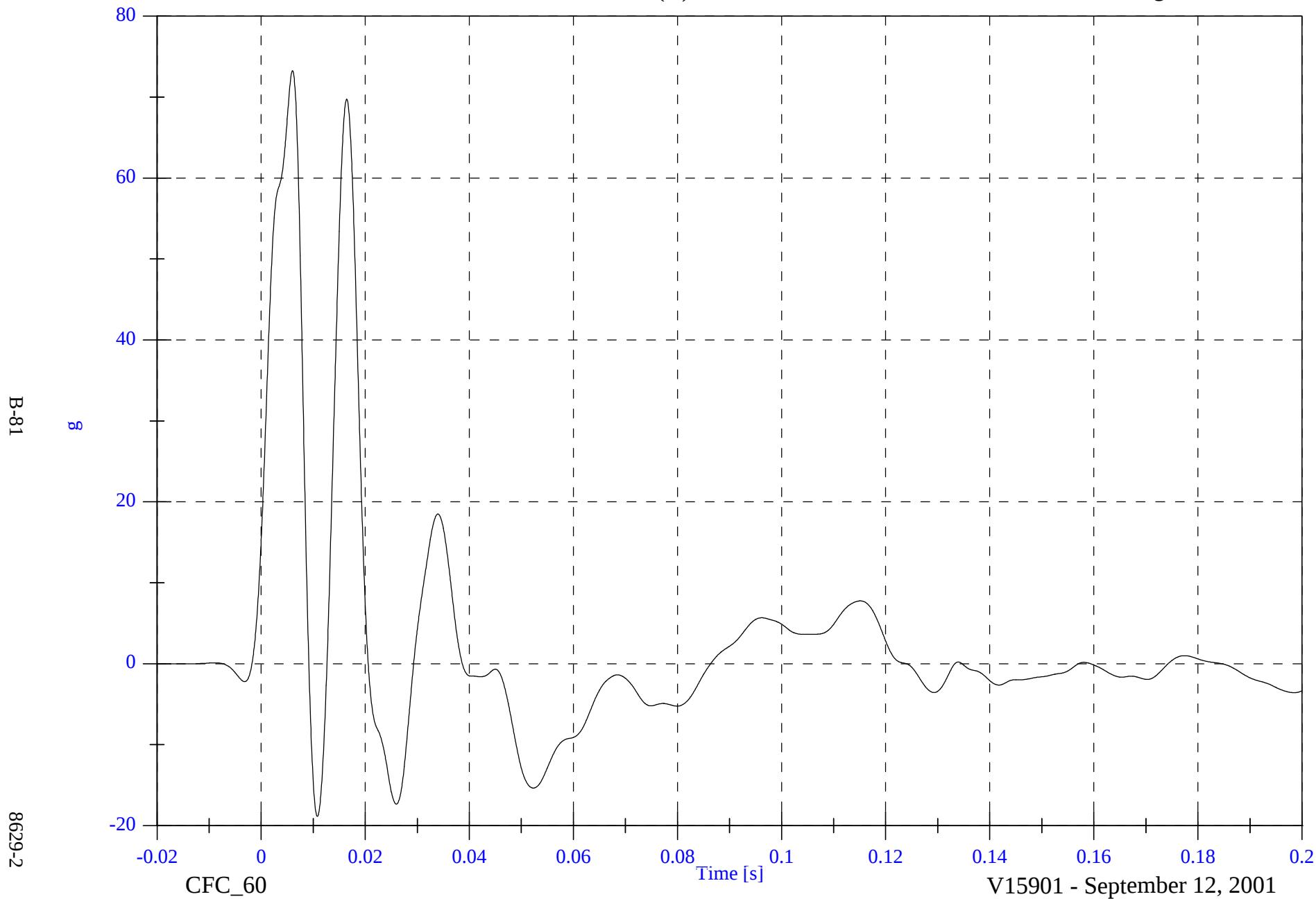


Optional SNCAP 2001 Volvo S60

Acc 12(Y) Left Lower B Post

Max: 73.3 [g] at 0.006 [s]

Min: -18.9 [g] at 0.011 [s]



Optional SNCAP 2001 Volvo S60

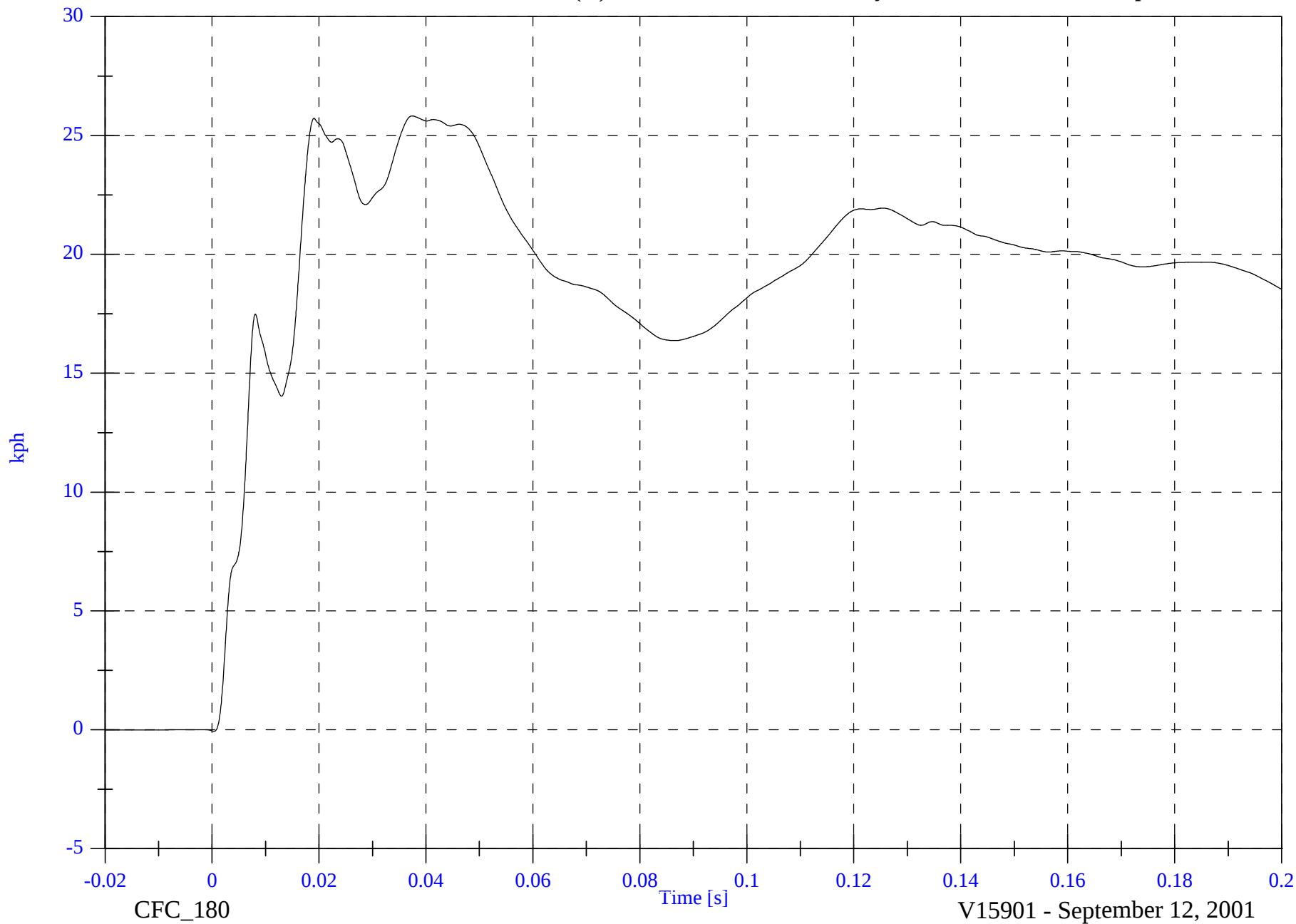
Acc 12(Y) Left Lower B Post Velocity

Max: 25.8 [kph] at 0.037 [s]

Min: -0.1 [kph] at 0.000 [s]

B-82

8629-2

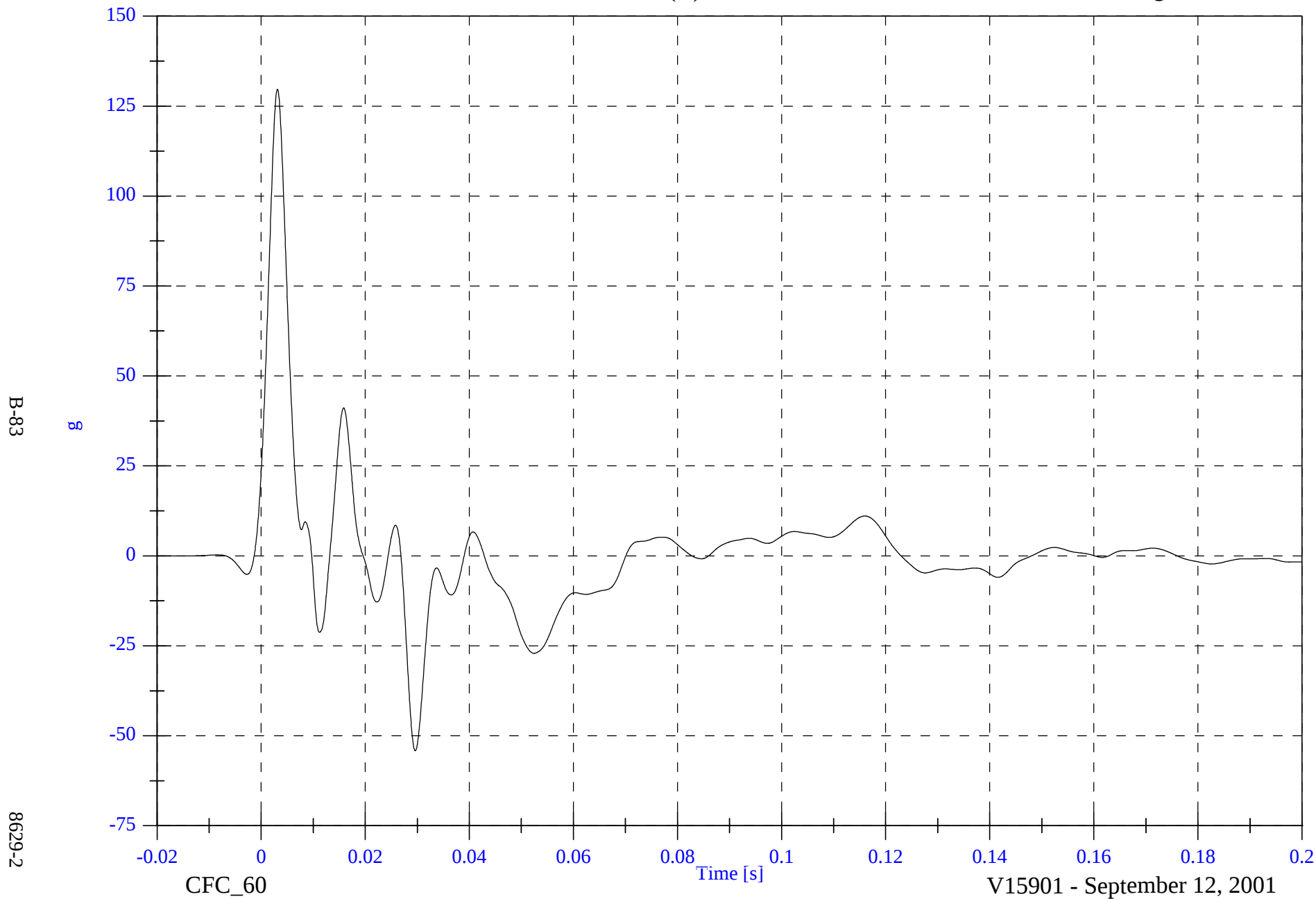


Optional SNCAP 2001 Volvo S60

Acc 13(Y) Left Mid B Post

Max: 129.7 [g] at 0.003 [s]

Min: -54.2 [g] at 0.030 [s]



Optional SNCAP 2001 Volvo S60

Acc 13(Y) Left Mid B Post Velocity

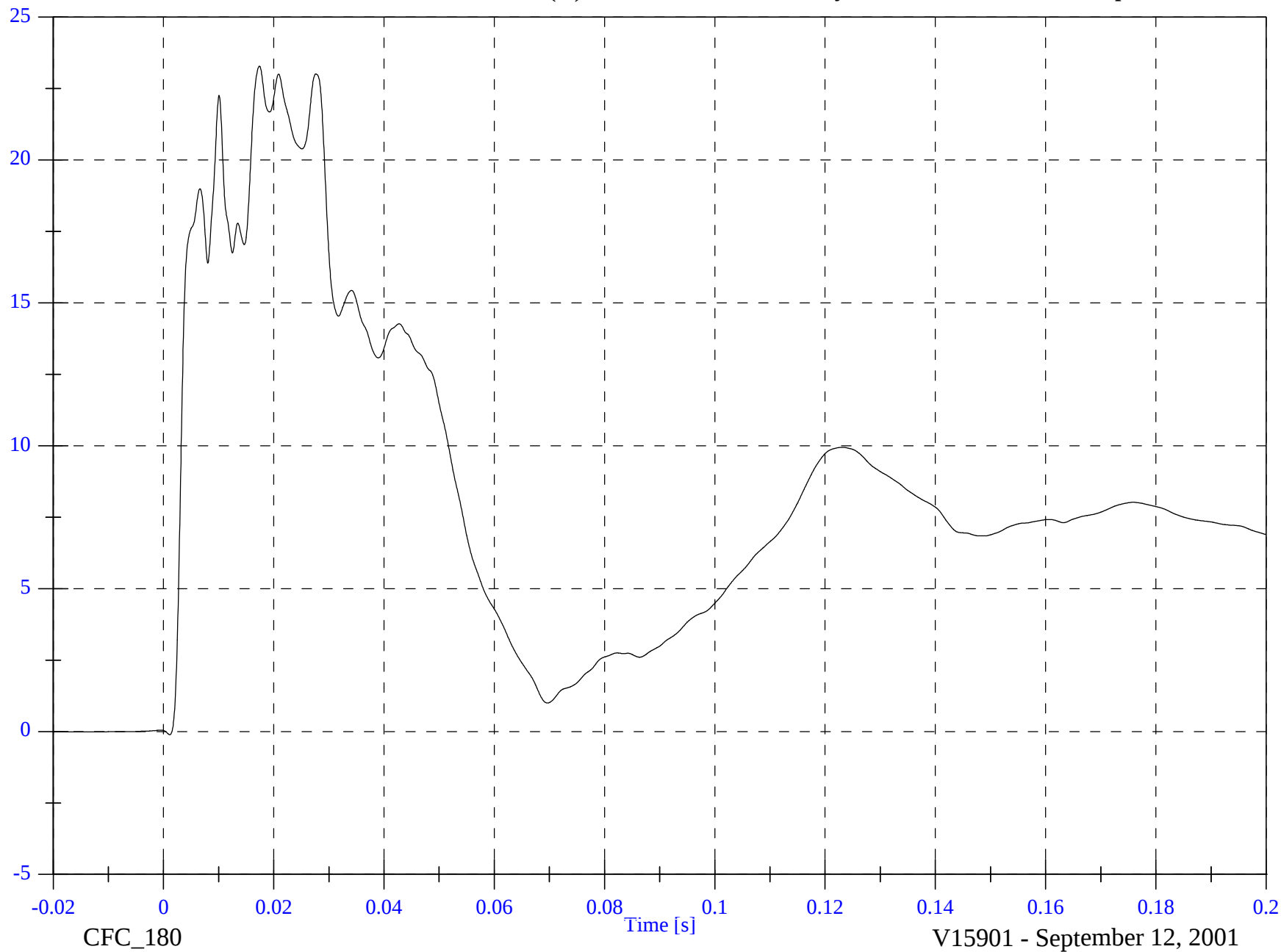
Max: 23.3 [kph] at 0.017 [s]

Min: -0.1 [kph] at 0.001 [s]

B-84

kph

8629-2



Optional SNCAP 2001 Volvo S60

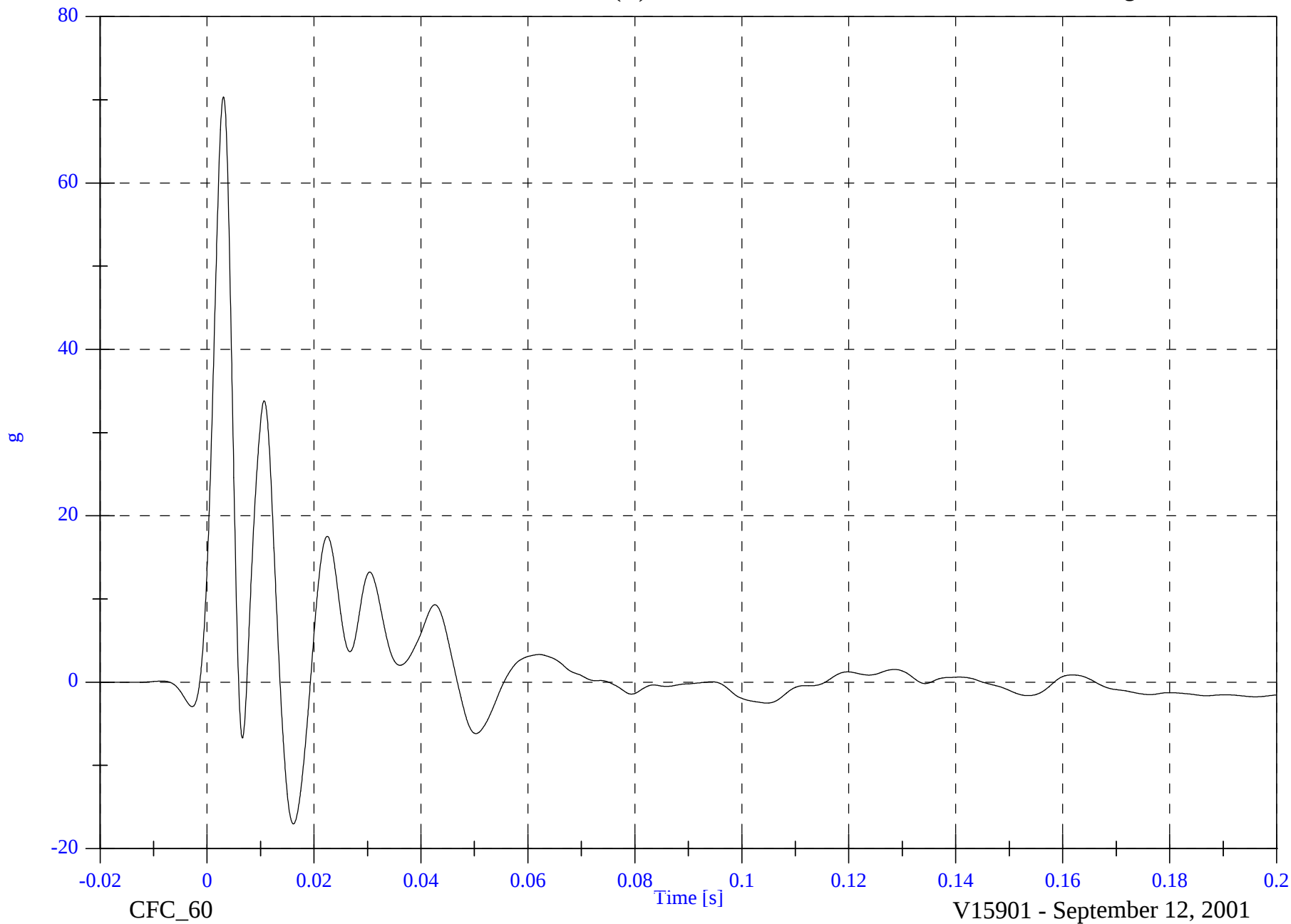
Acc 14(Y) Left Lower A Post

Max: 70.4 [g] at 0.003 [s]

Min: -17.0 [g] at 0.016 [s]

B-85

8629-2

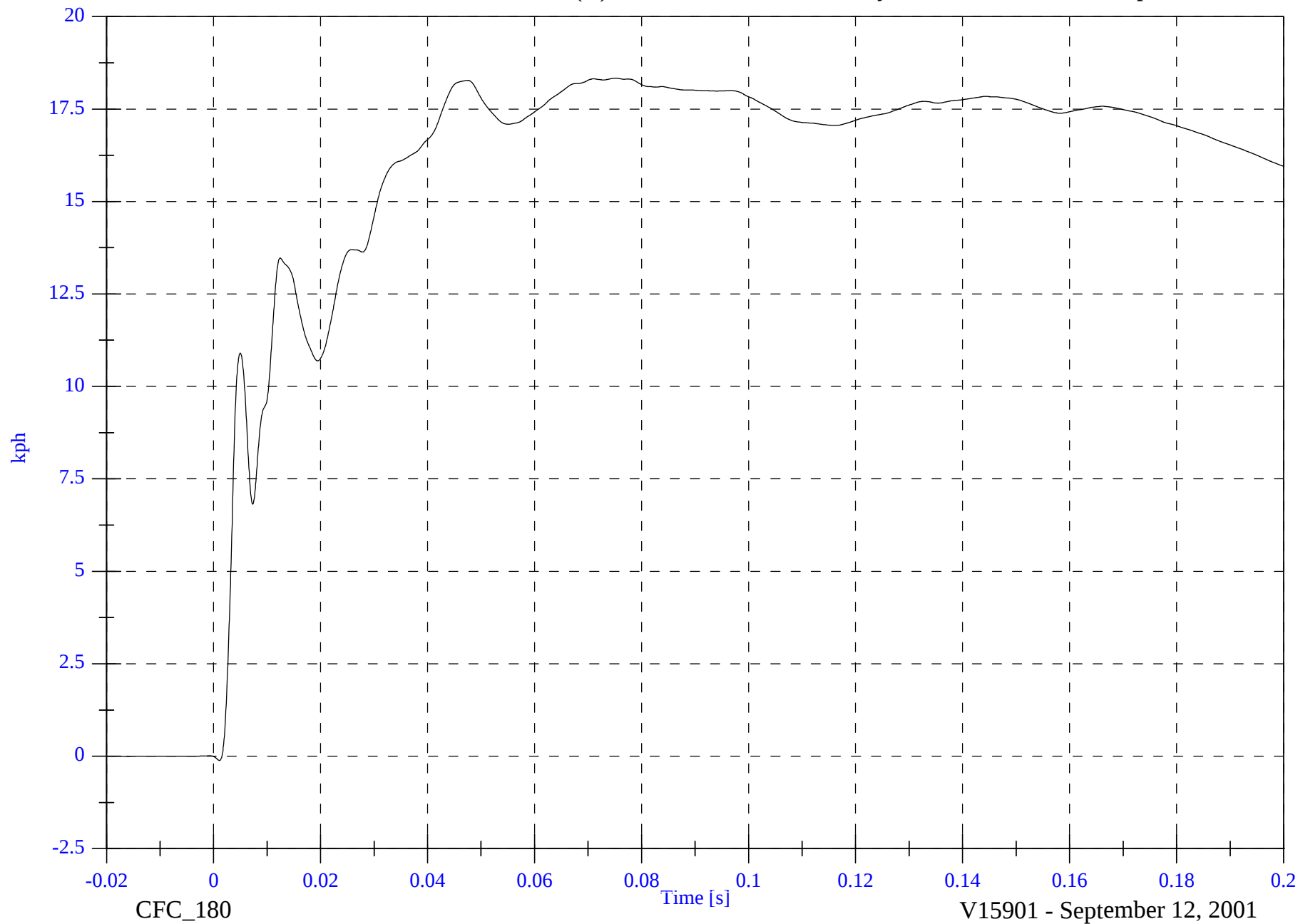


Optional SNCAP 2001 Volvo S60

Acc 14(Y) Left Lower A Post Velocity

Max: 18.3 [kph] at 0.075 [s]

Min: -0.1 [kph] at 0.001 [s]



B-86

8629-2

CFC_180

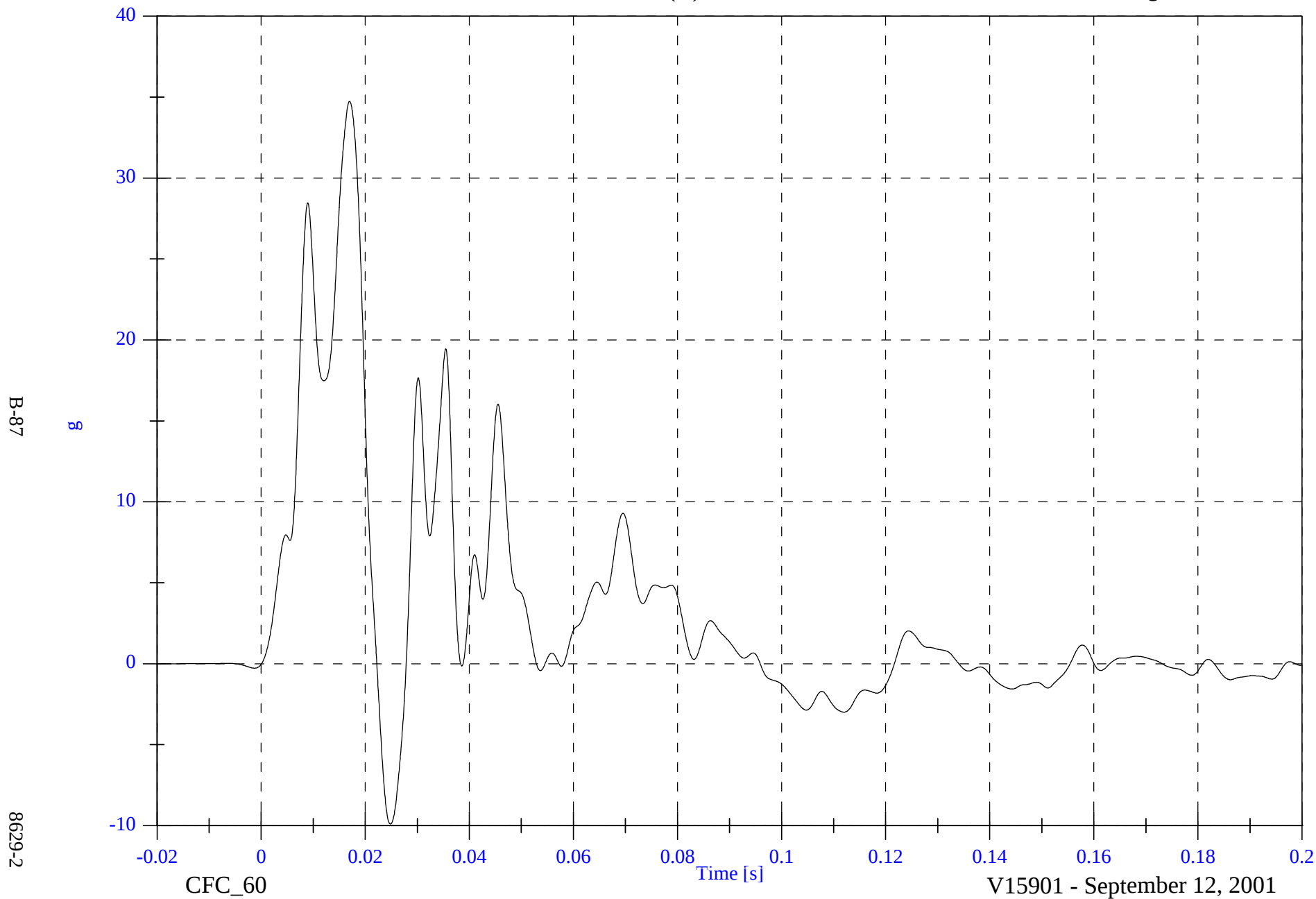
V15901 - September 12, 2001

Optional SNCAP 2001 Volvo S60

Acc 15(Y) Left Mid A Post

Max: 34.7 [g] at 0.017 [s]

Min: -9.9 [g] at 0.025 [s]



Optional SNCAP 2001 Volvo S60

Acc 15(Y) Left Mid A Post Velocity

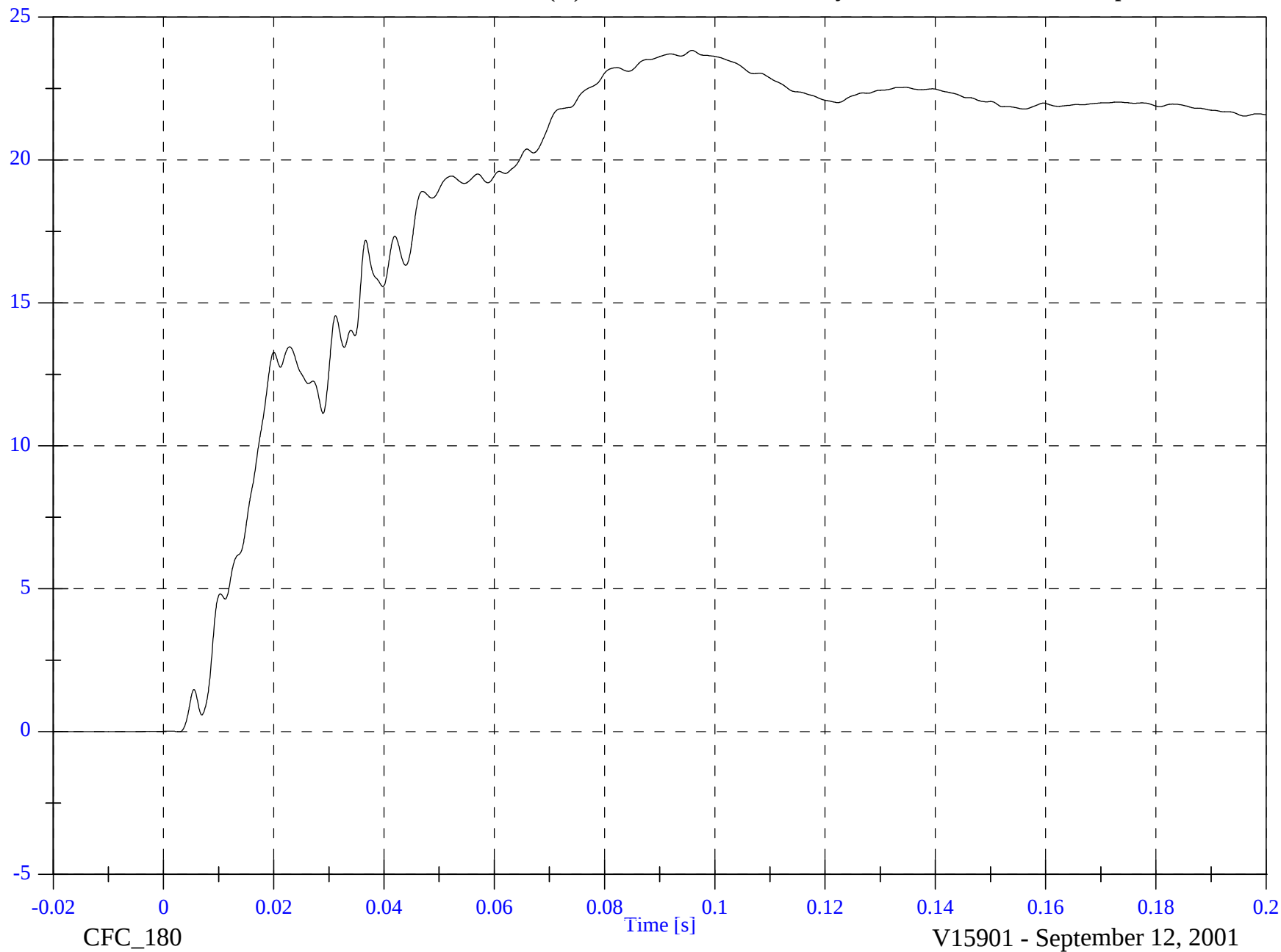
Max: 23.8 [kph] at 0.096 [s]

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

B-88

kph

8629-2

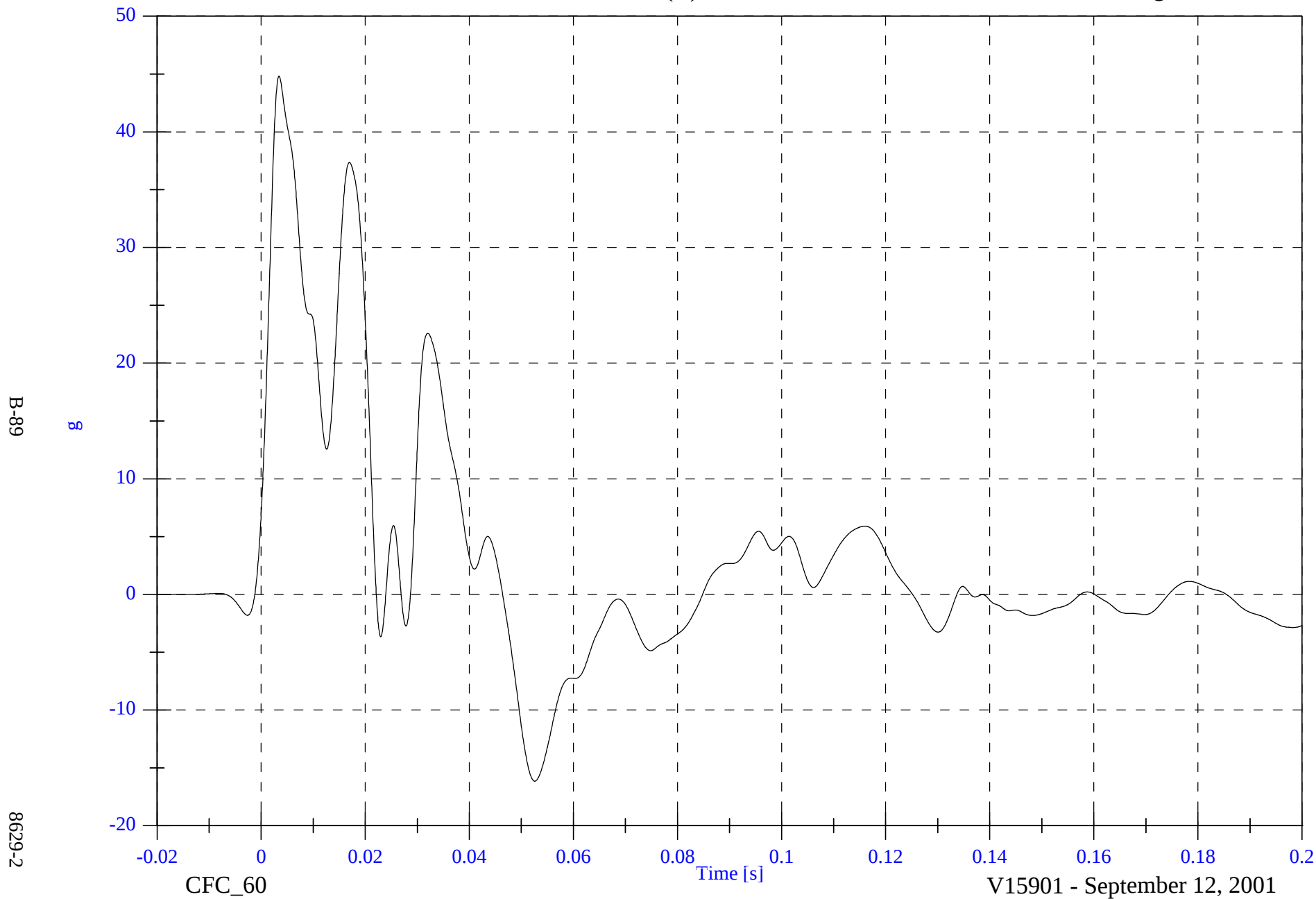


Optional SNCAP 2001 Volvo S60

Acc 16(Y) Front Seat Track

Max: 44.8 [g] at 0.003 [s]

Min: -16.1 [g] at 0.053 [s]



Optional SNCAP 2001 Volvo S60

Acc 16(Y) Front Seat Track Velocity

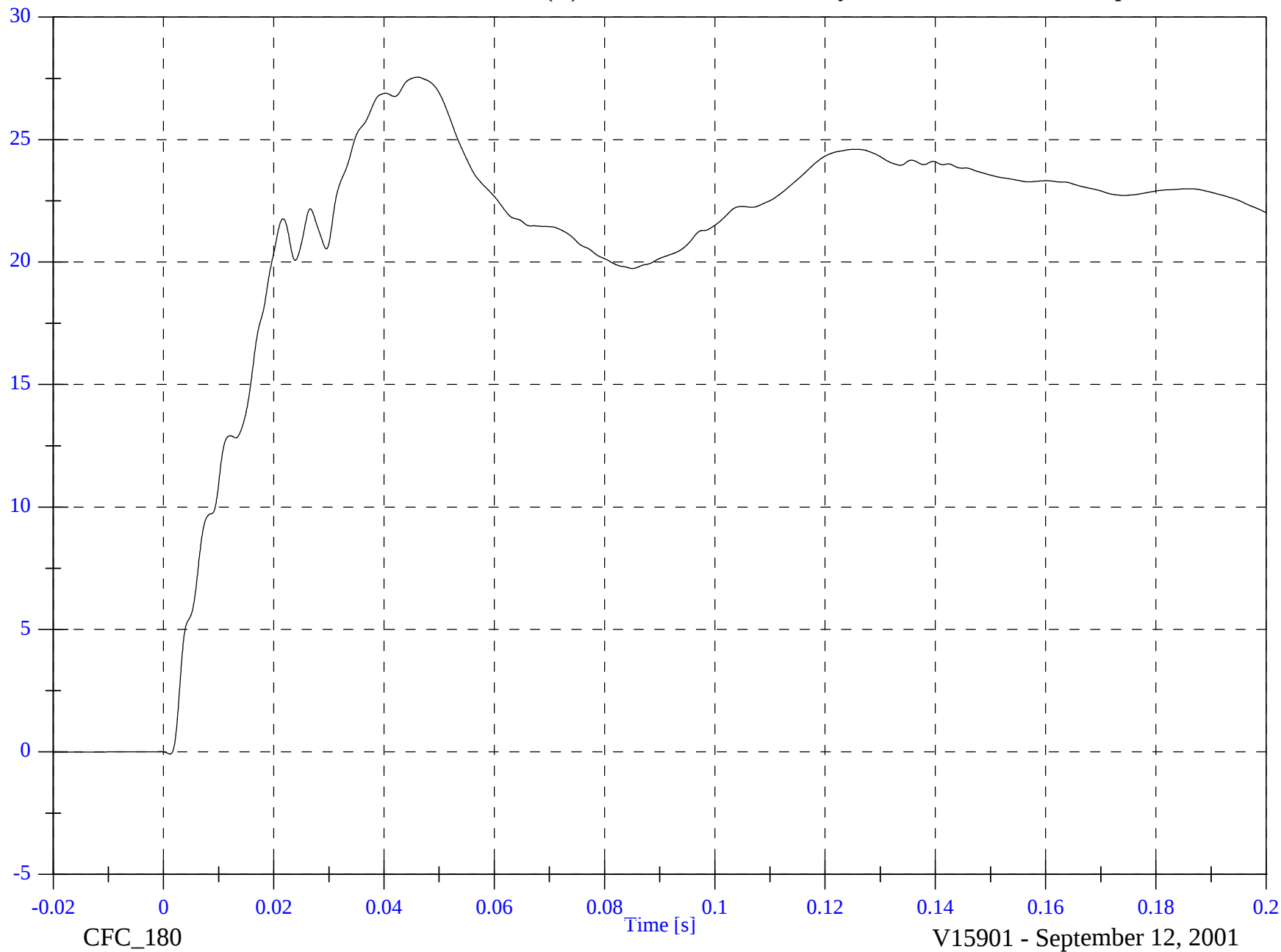
Max: 27.6 [kph] at 0.046 [s]

Min: -0.1 [kph] at 0.001 [s]

B-90

kph

8629-2



CFC_180

Time [s]

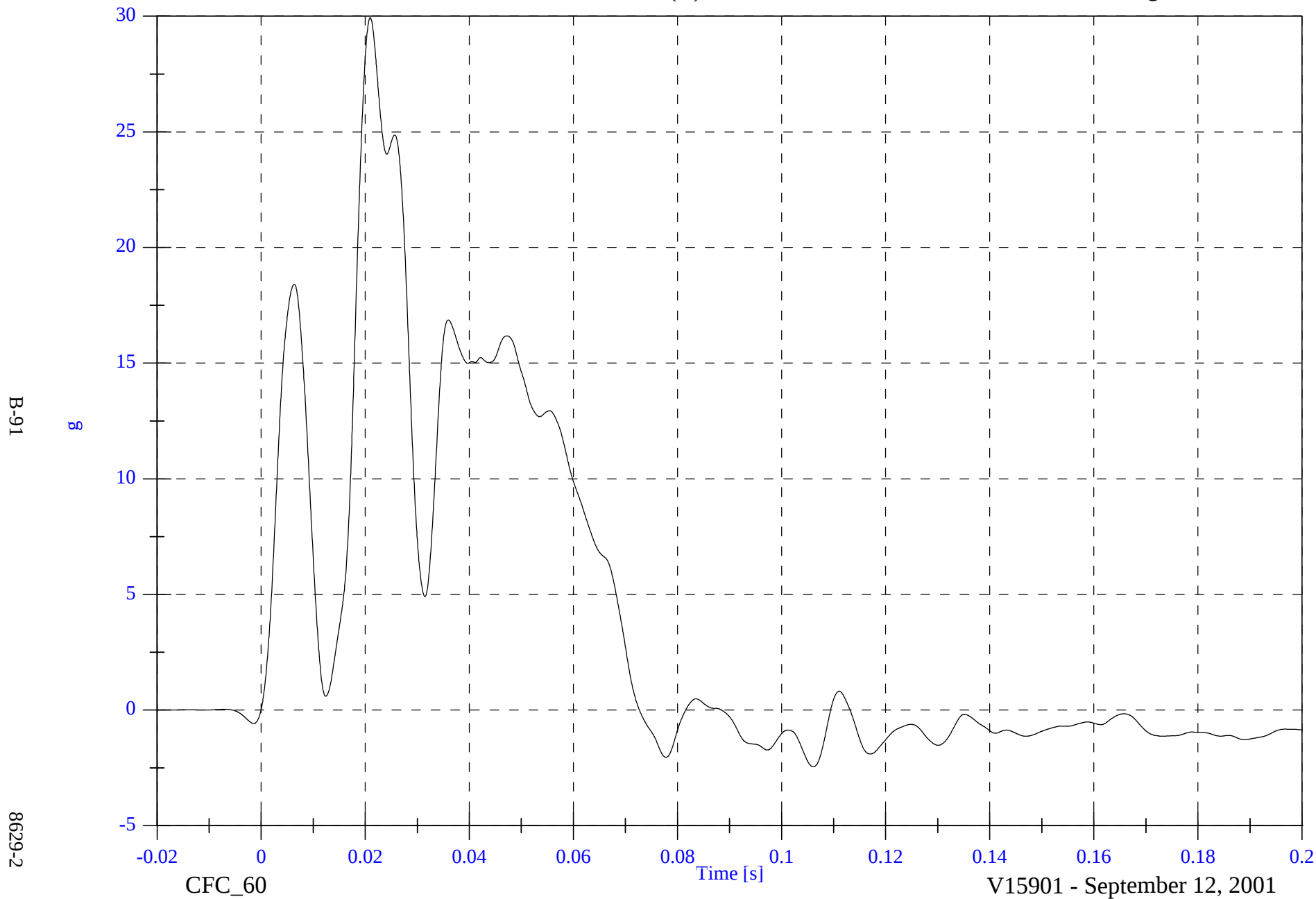
V15901 - September 12, 2001

Optional SNCAP 2001 Volvo S60

Acc 17(Y) Rear Seat Track

Max: 29.9 [g] at 0.021 [s]

Min: -2.5 [g] at 0.106 [s]

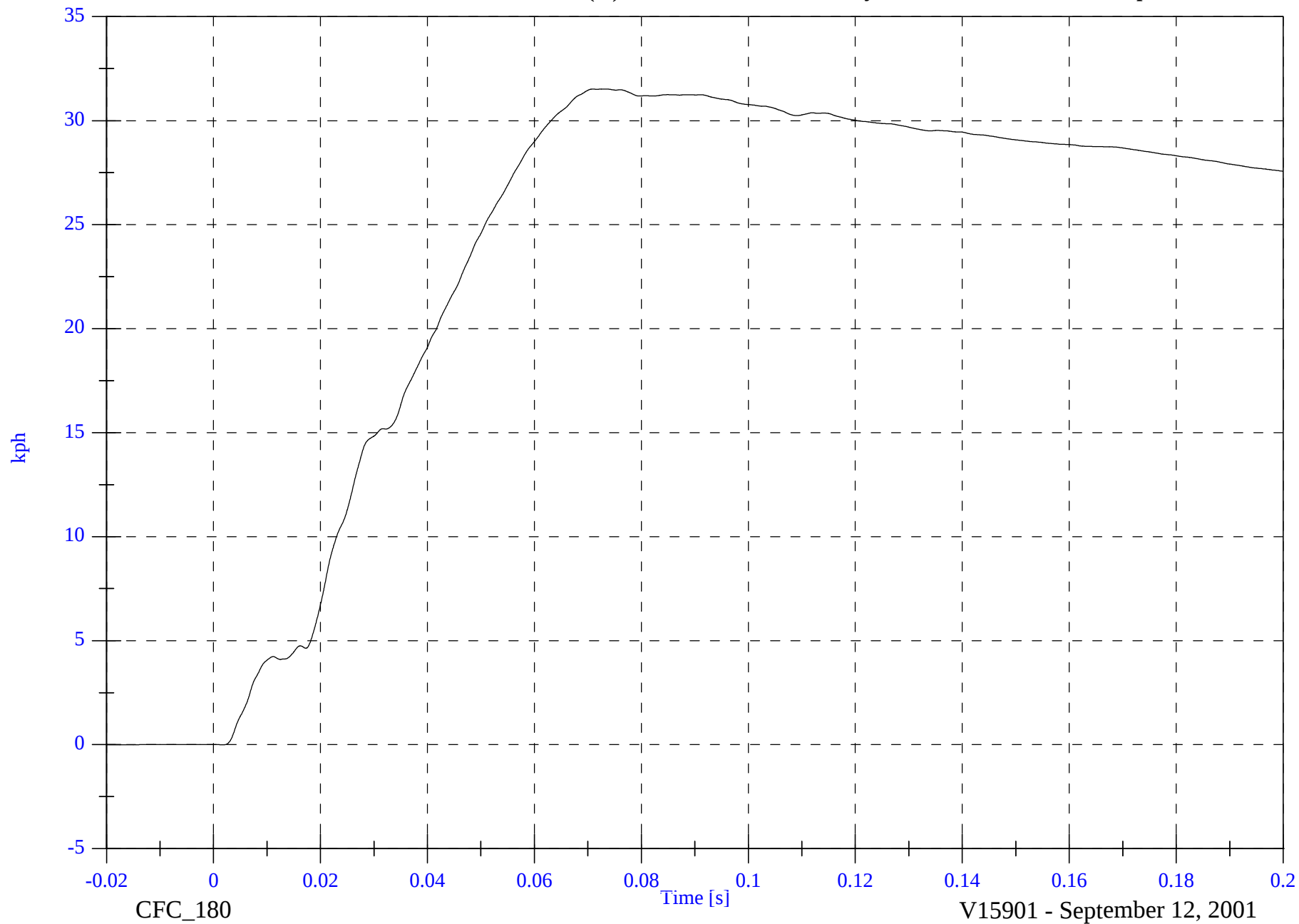


Optional SNCAP 2001 Volvo S60

Acc 17(Y) Rear Seat Track Velocity

Max: 31.5 [kph] at 0.073 [s]

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



B-92

8629-2

Optional SNCAP 2001 Volvo S60

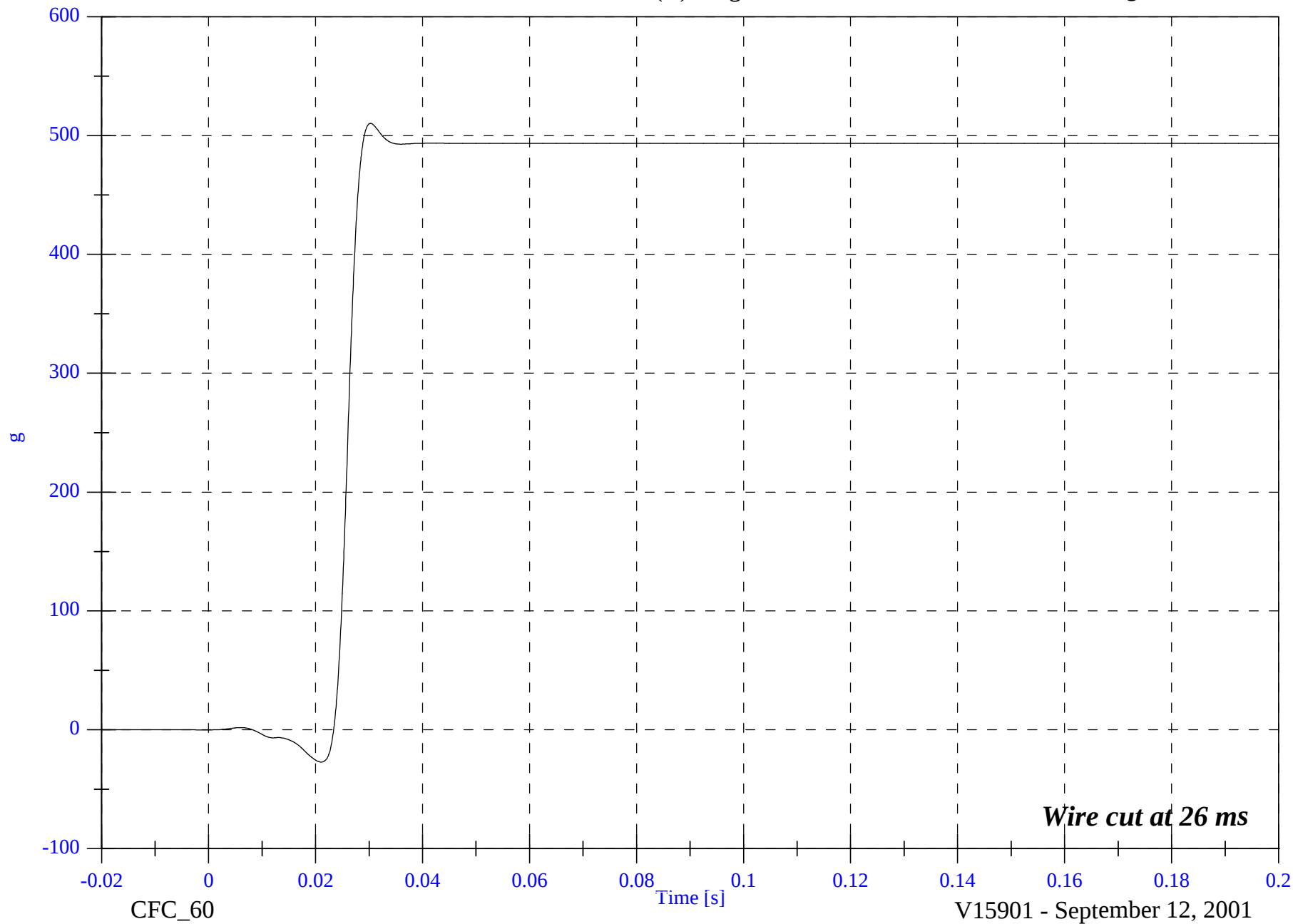
Acc 18(X) Target CG

Max: 510.2 [g] at 0.030 [s]

Min: -27.2 [g] at 0.021 [s]

B-93

8629-2



Wire cut at 26 ms

CFC_60

V15901 - September 12, 2001

Optional SNCAP 2001 Volvo S60

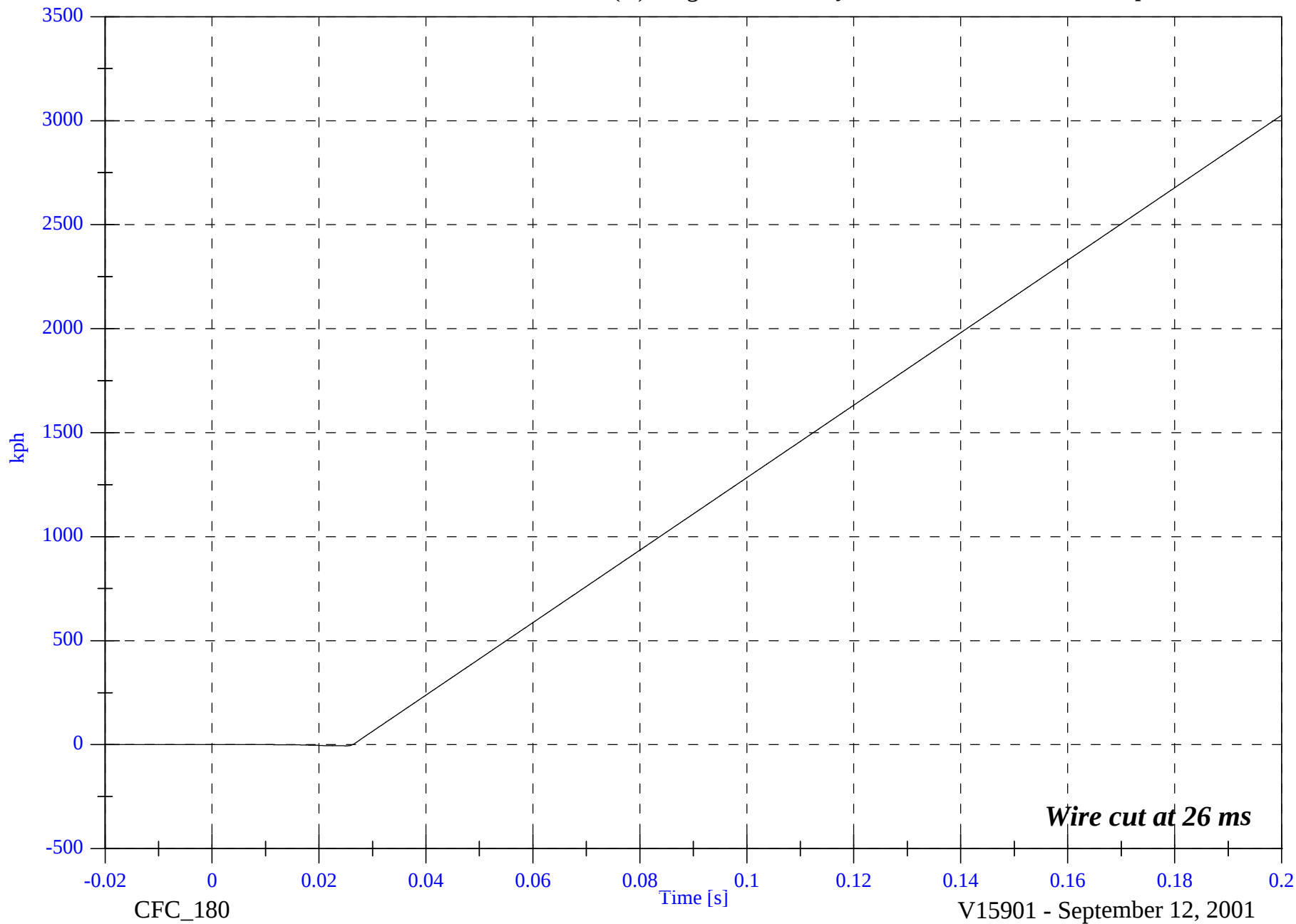
Acc 18(X) Target CG Velocity

Max: 3024.9 [kph] at 0.200 [s]

Min: -5.9 [kph] at 0.025 [s]

B-94

8629-2



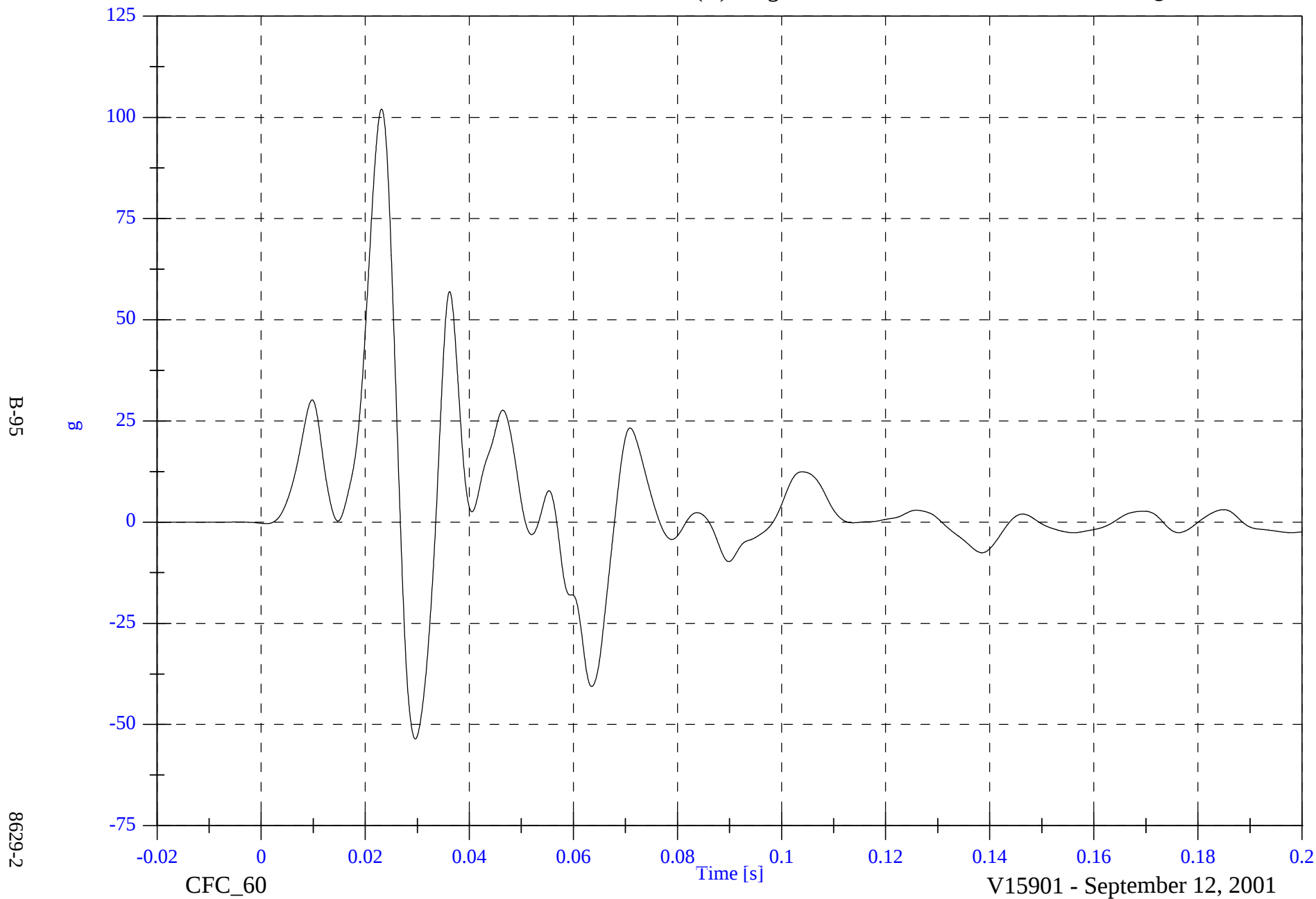
Wire cut at 26 ms

Optional SNCAP 2001 Volvo S60

Acc 18(Y) Target CG

Max: 102.1 [g] at 0.023 [s]

Min: -53.6 [g] at 0.030 [s]



Optional SNCAP 2001 Volvo S60

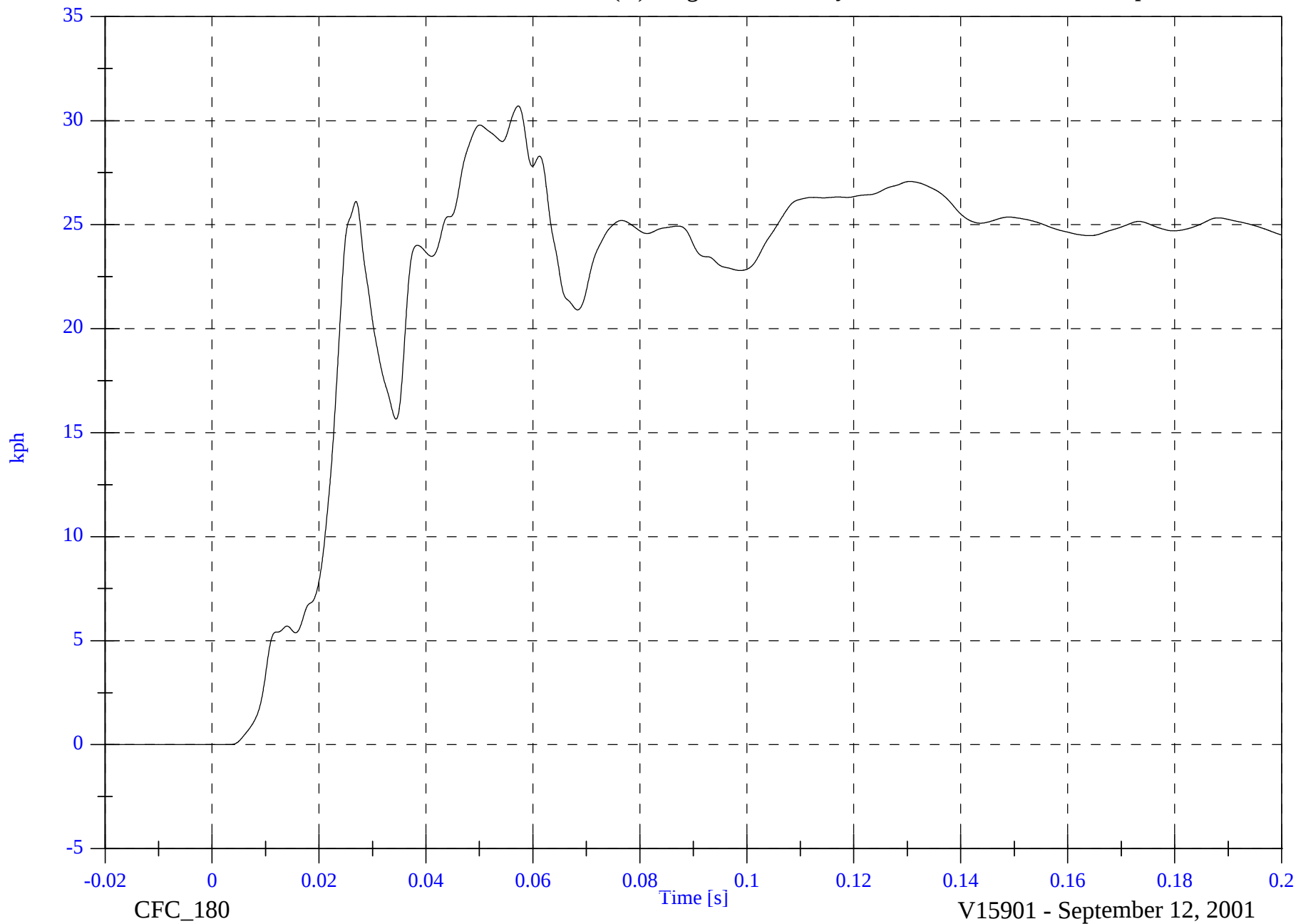
Acc 18(Y) Target CG Velocity

Max: 30.7 [kph] at 0.057 [s]

Min: -0.0 [kph] at -0.005 [s]

B-96

8629-2

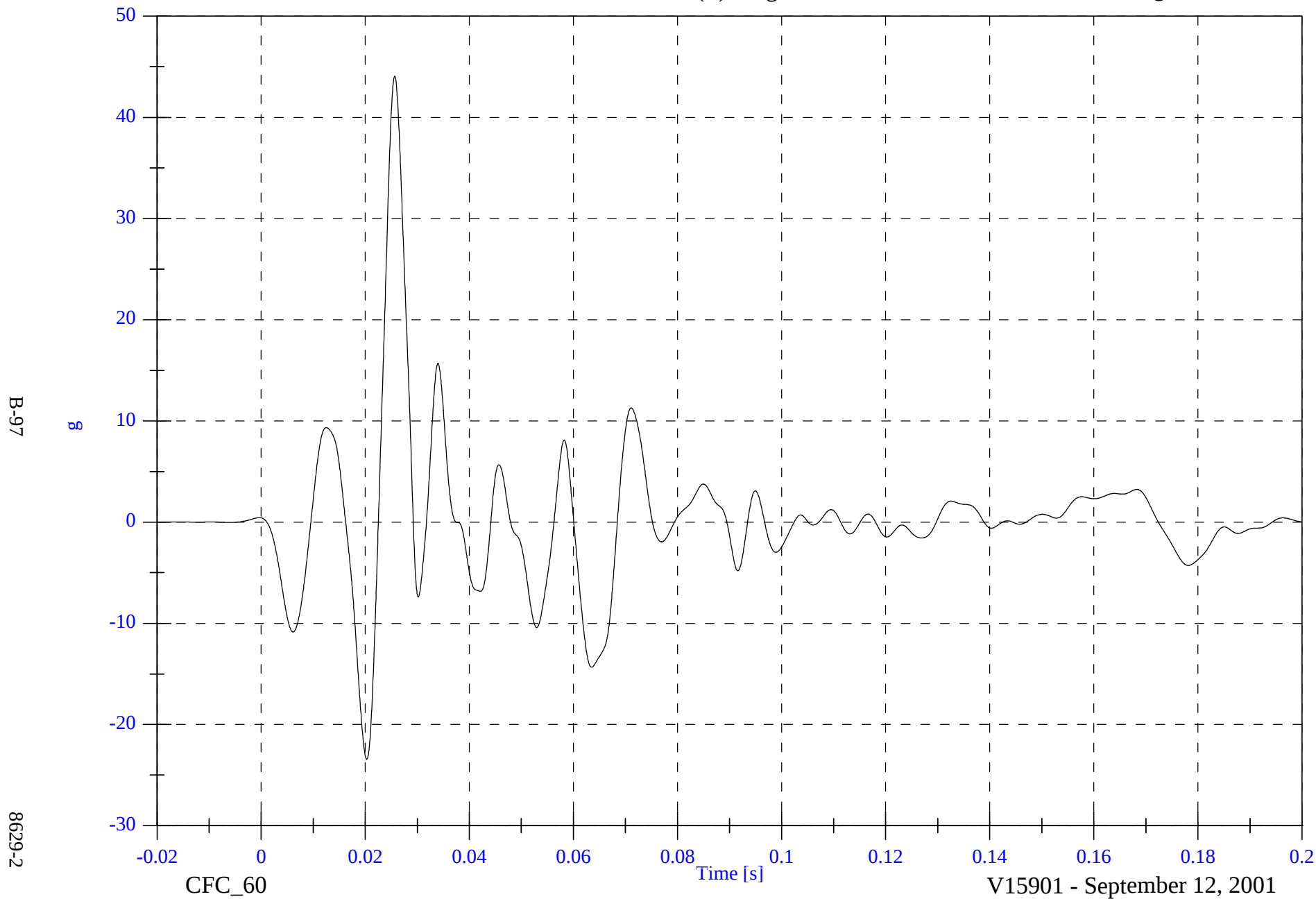


Optional SNCAP 2001 Volvo S60

Acc 18(Z) Target CG

Max: 44.1 [g] at 0.026 [s]

Min: -23.4 [g] at 0.020 [s]



Optional SNCAP 2001 Volvo S60

Acc 18(Z) Target CG Velocity

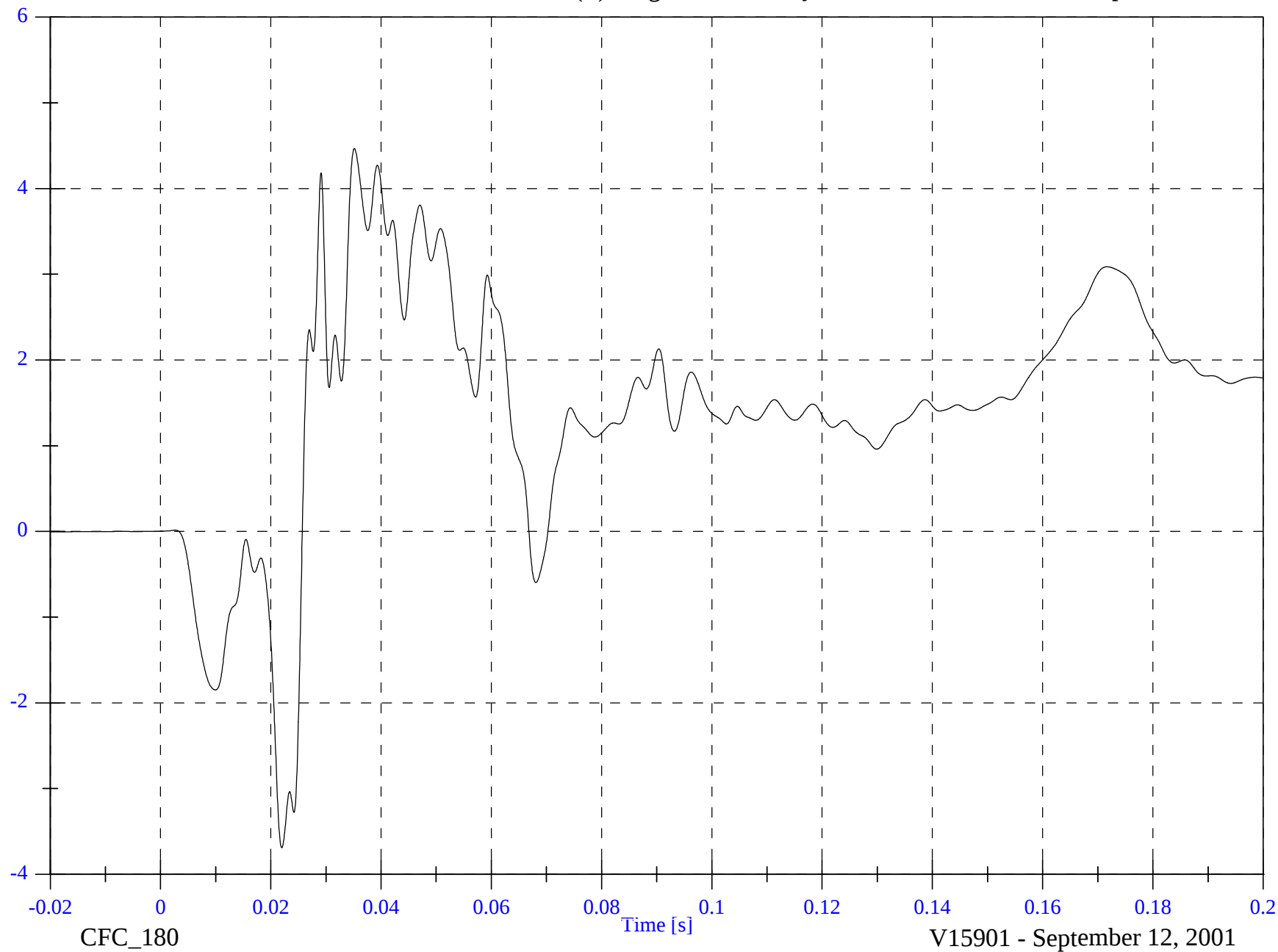
Max: 4.5 [kph] at 0.035 [s]

Min: -3.7 [kph] at 0.022 [s]

B-98

kph

8629-2



Optional SNCAP 2001 Volvo S60

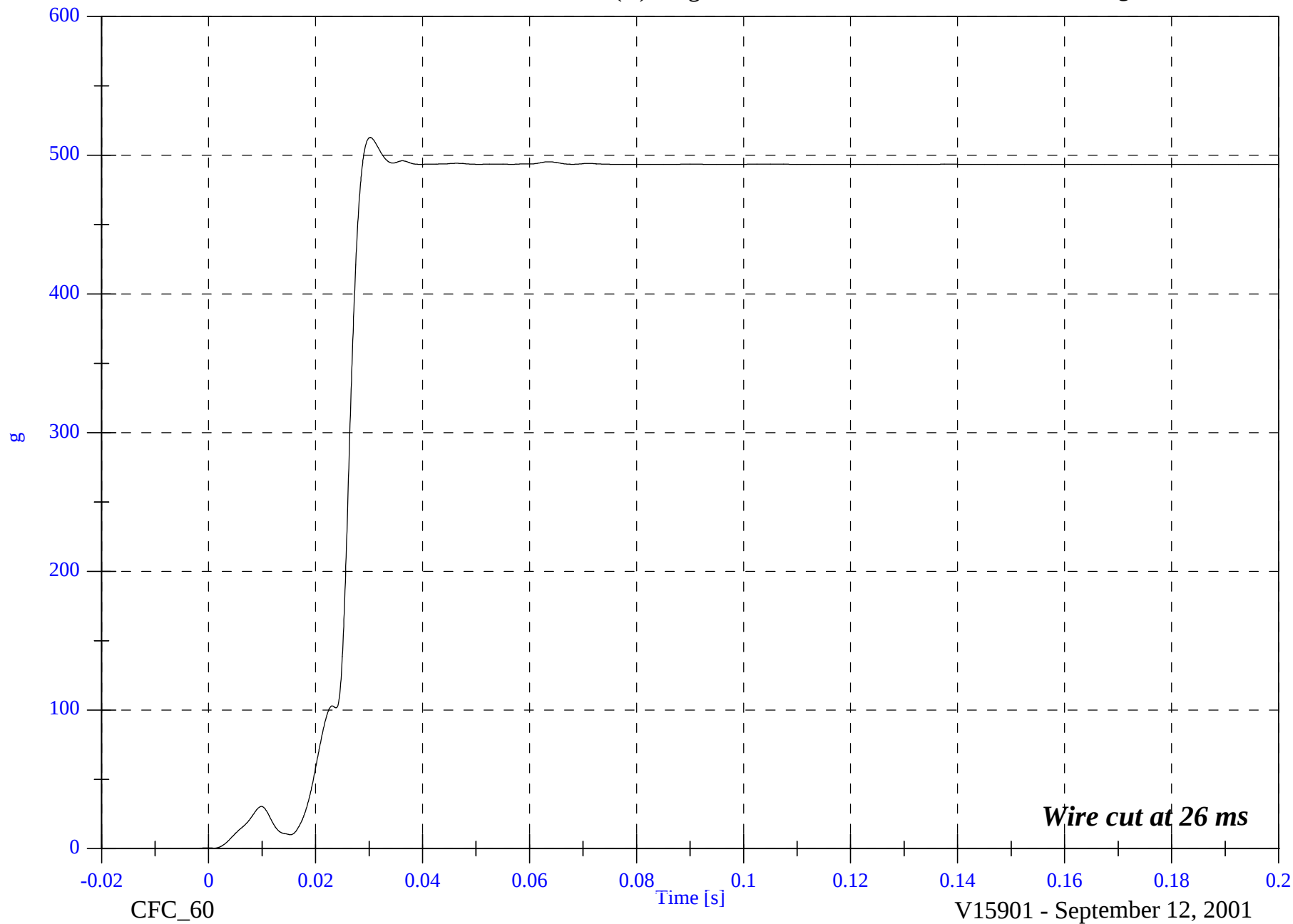
Acc 18(X) Target C Resultant

Max: 512.9 [g] at 0.030 [s]

Min: 0.0 [g] at -0.008 [s]

B-99

8629-2



Optional SNCAP 2001 Volvo S60

Moving Barrier CG X

Max: 0.9 [g] at 0.111 [s]

Min: -20.4 [g] at 0.044 [s]

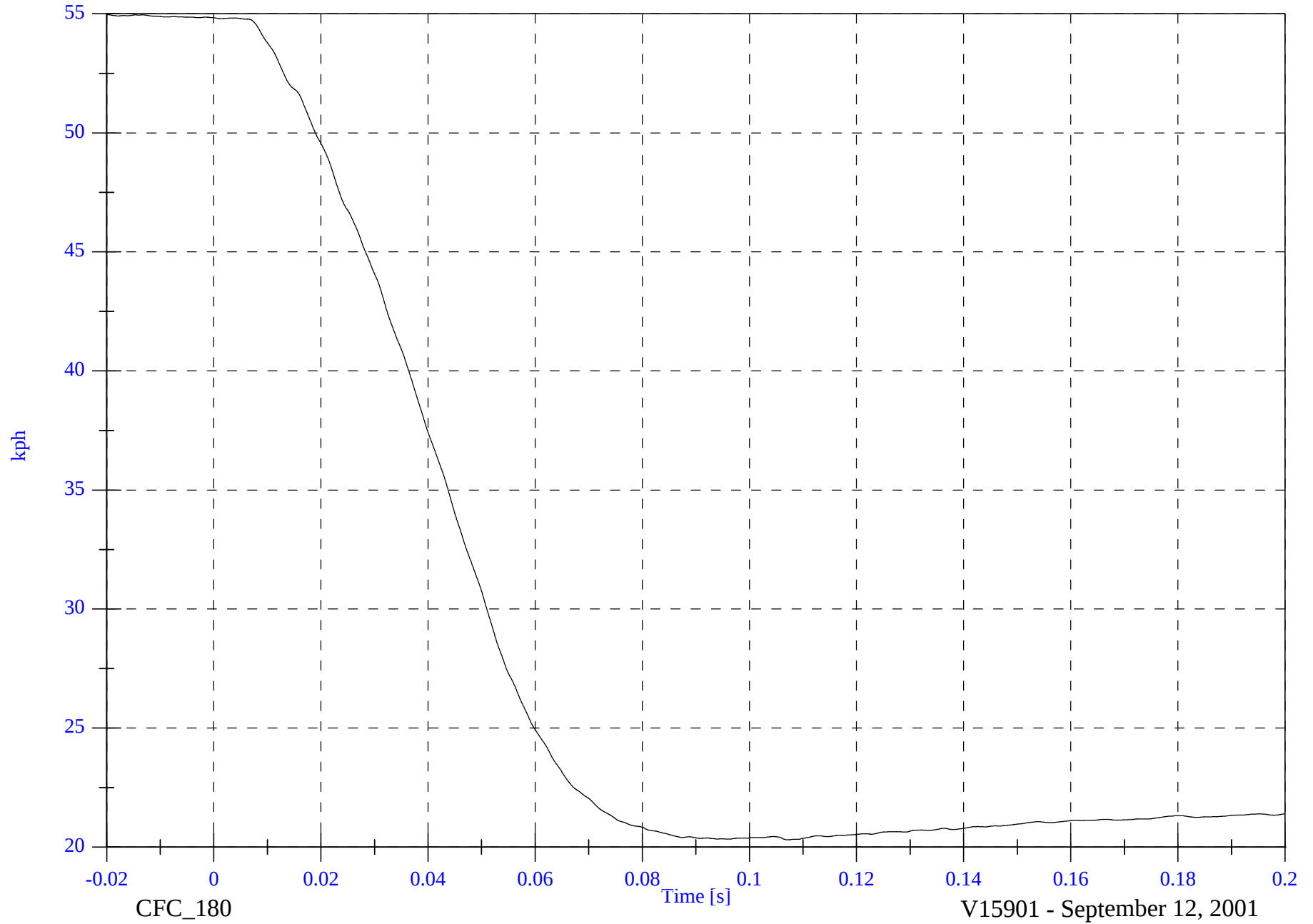


Optional SNCAP 2001 Volvo S60

Moving Barrier CG X Velocity

Max: 55.0 [kph] at -0.020 [s]

Min: 20.3 [kph] at 0.107 [s]



B-101

8629-2

CFC_180

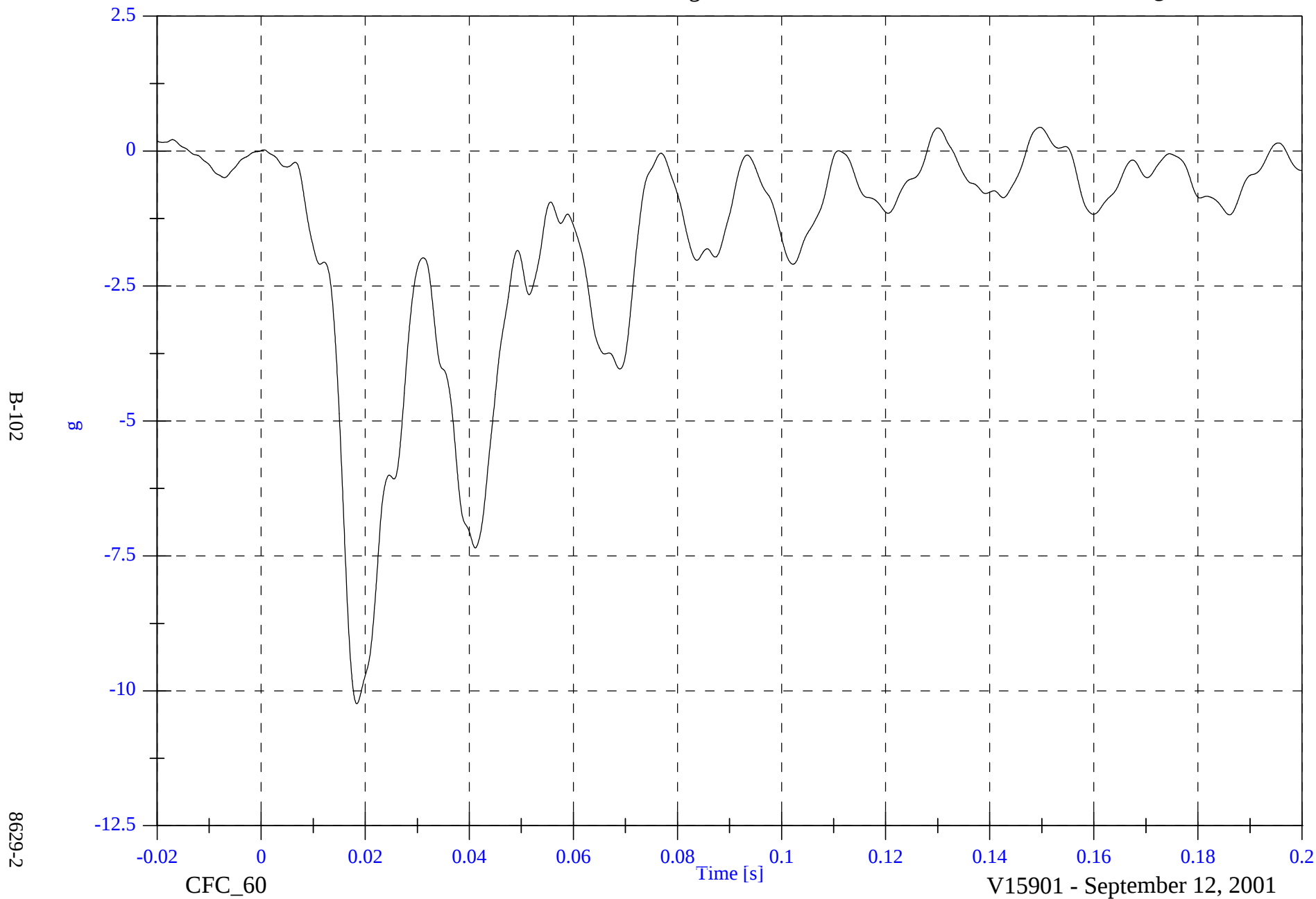
V15901 - September 12, 2001

Optional SNCAP 2001 Volvo S60

Moving Barrier CG Y

Max: 0.4 [g] at 0.150 [s]

Min: -10.2 [g] at 0.018 [s]



Optional SNCAP 2001 Volvo S60

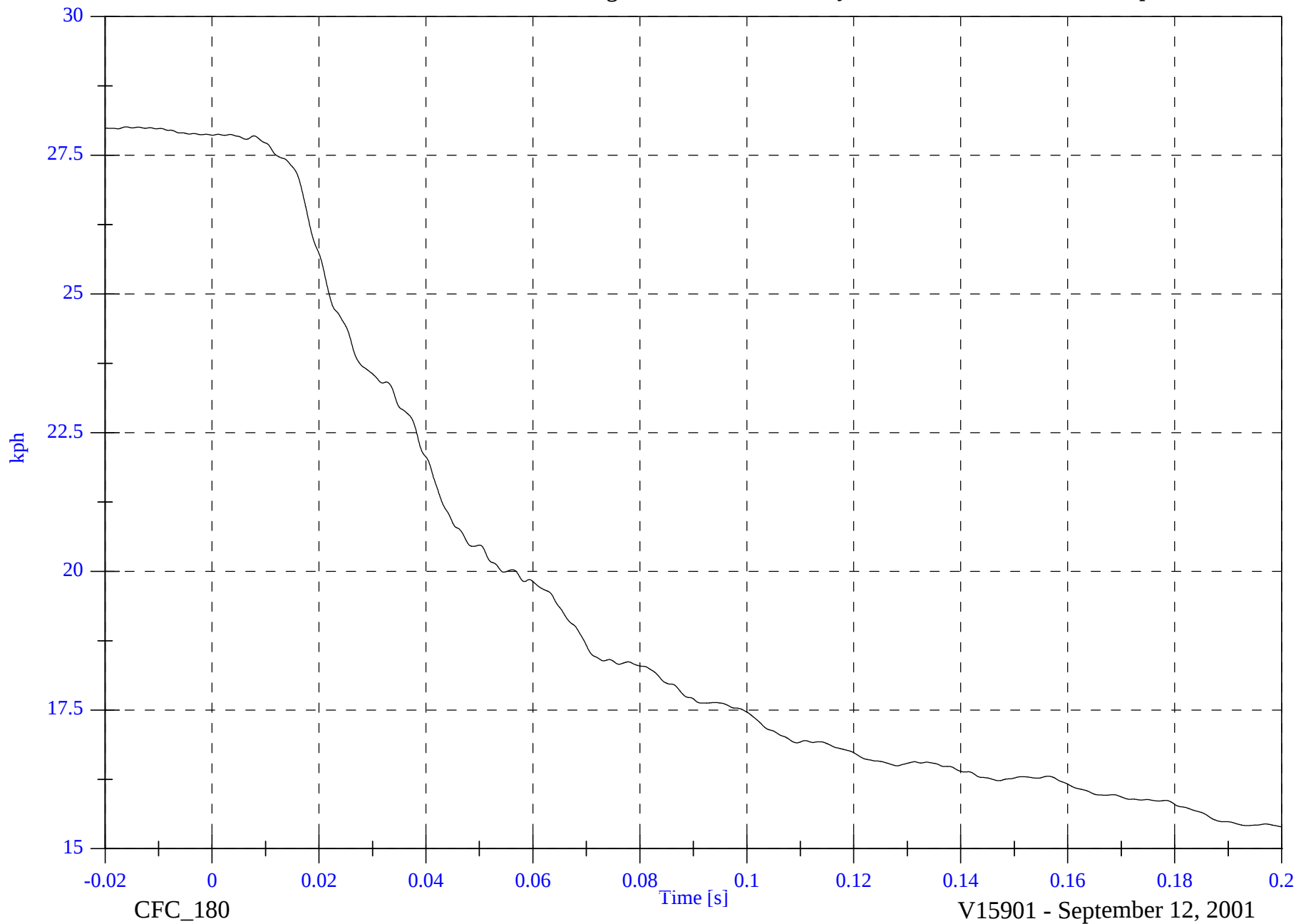
Moving Barrier CG Y Velocity

Max: 28.0 [kph] at -0.016 [s]

Min: 15.4 [kph] at 0.200 [s]

B-103

8629-2

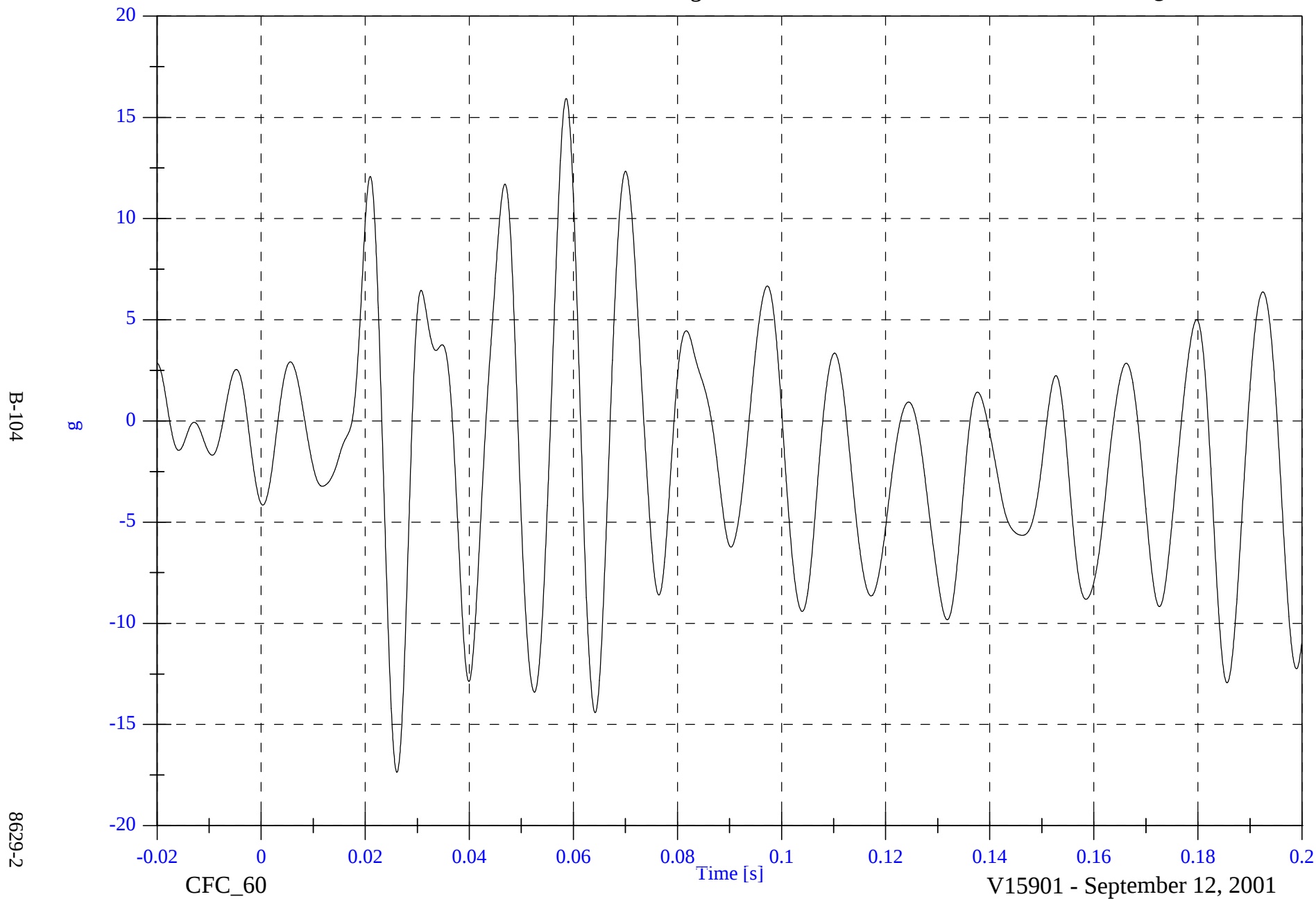


Optional SNCAP 2001 Volvo S60

Moving Barrier CG Z

Max: 15.9 [g] at 0.059 [s]

Min: -17.4 [g] at 0.026 [s]

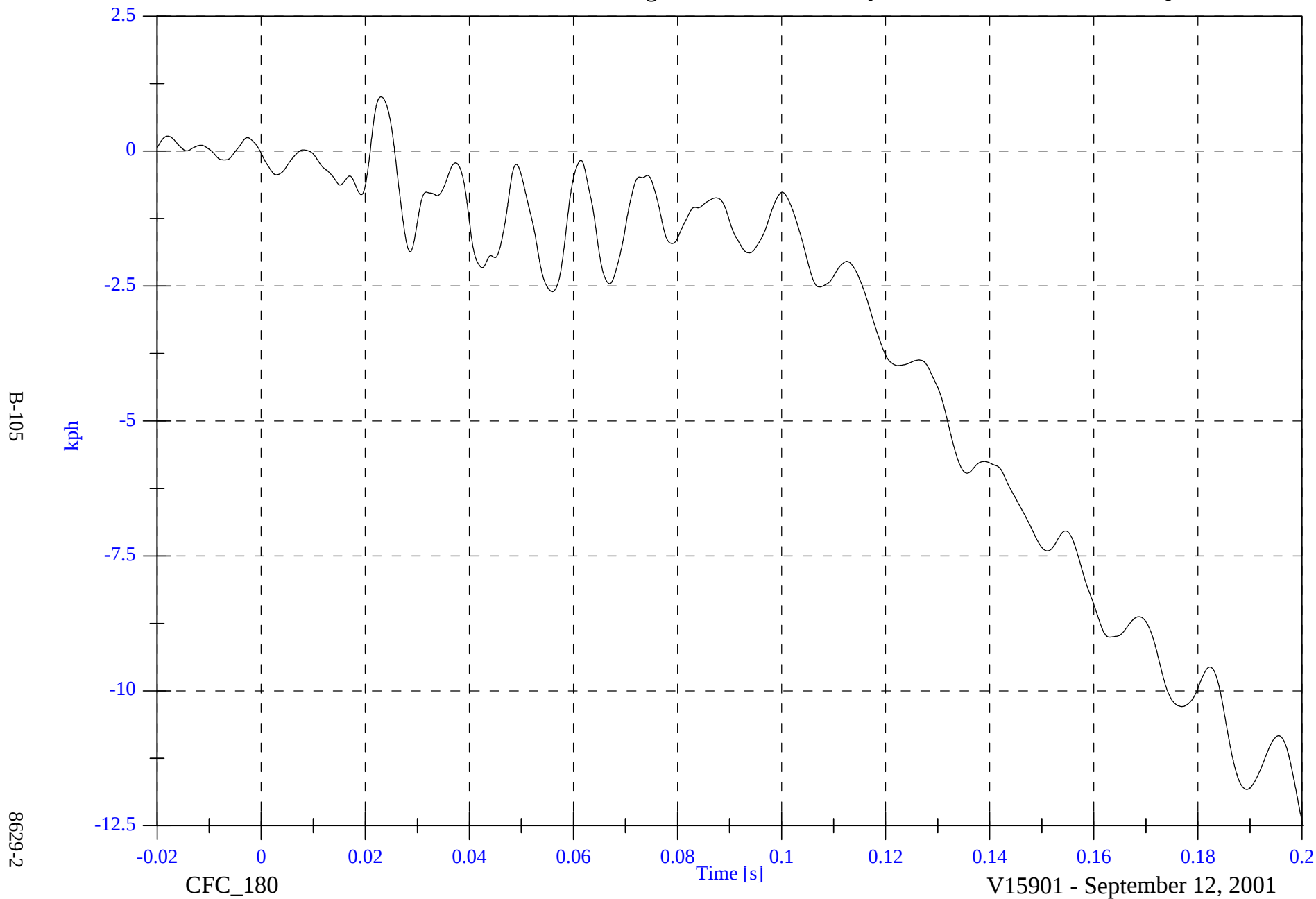


Optional SNCAP 2001 Volvo S60

Moving Barrier CG Z Velocity

Max: 1.0 [kph] at 0.023 [s]

Min: -12.4 [kph] at 0.200 [s]



Optional SNCAP 2001 Volvo S60

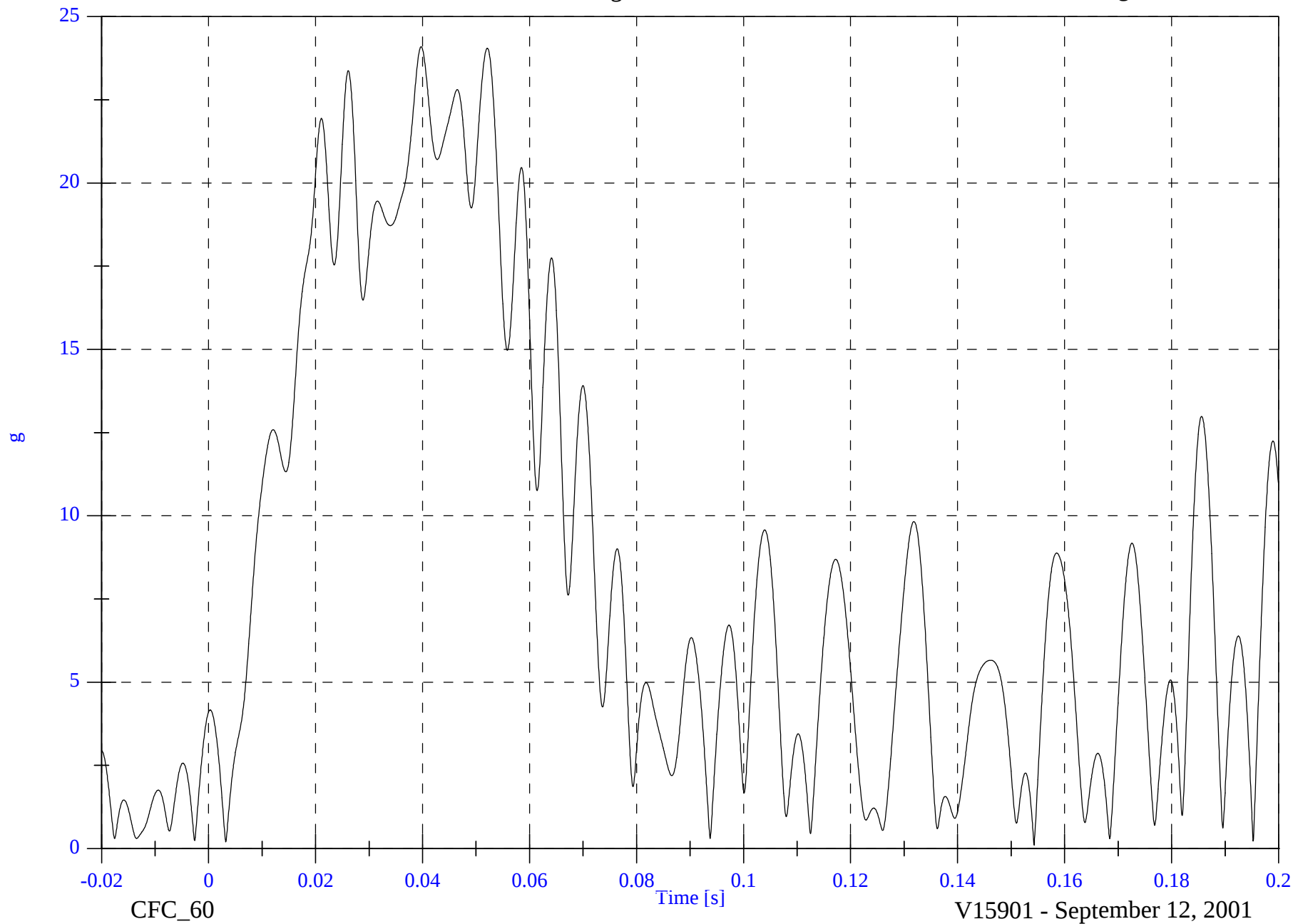
Moving Barrier CG Resultant

Max: 24.1 [g] at 0.040 [s]

Min: 0.1 [g] at 0.154 [s]

B-106

8629-2

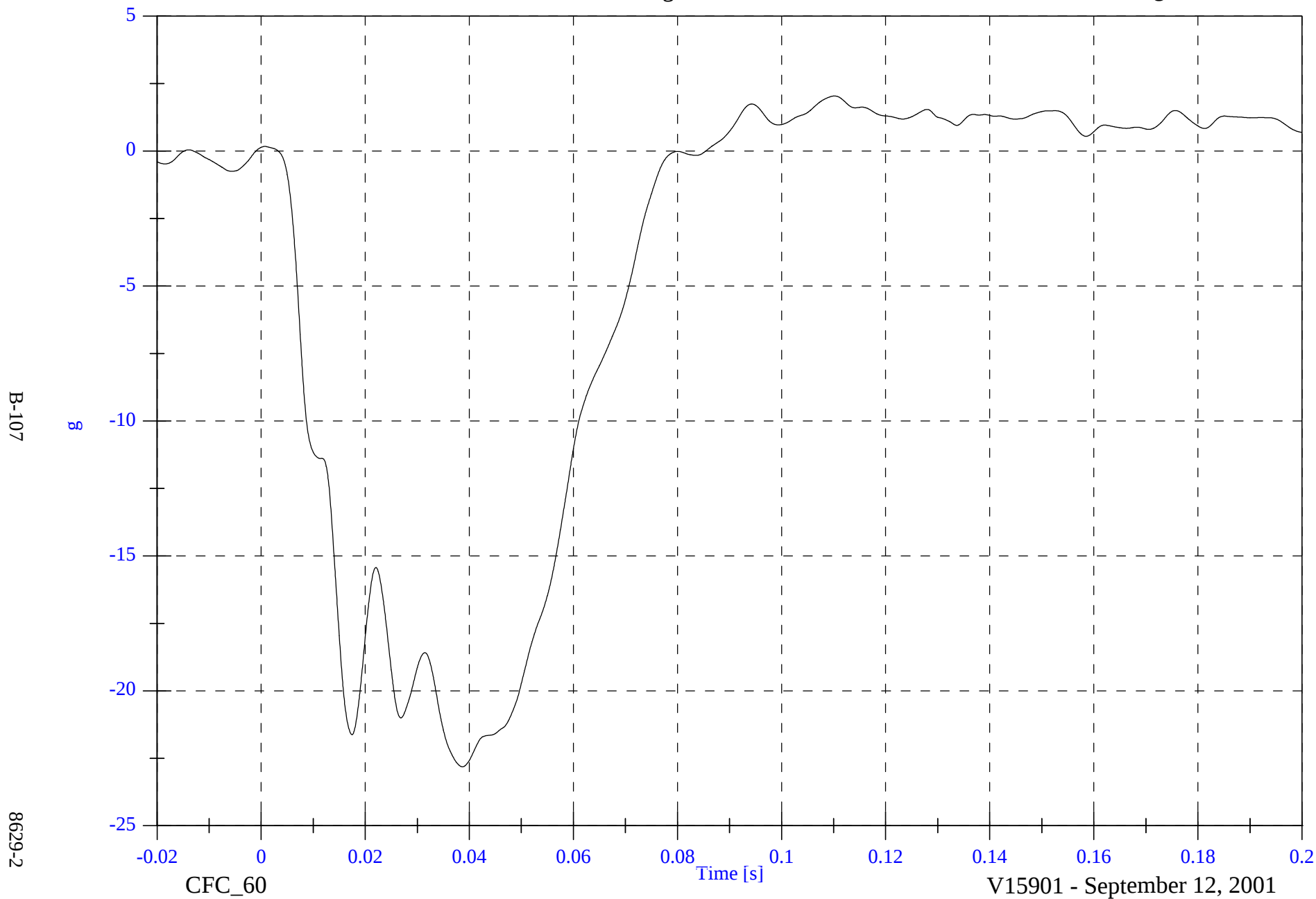


Optional SNCAP 2001 Volvo S60

Moving Barrier Left Rail X

Max: 2.0 [g] at 0.110 [s]

Min: -22.8 [g] at 0.039 [s]

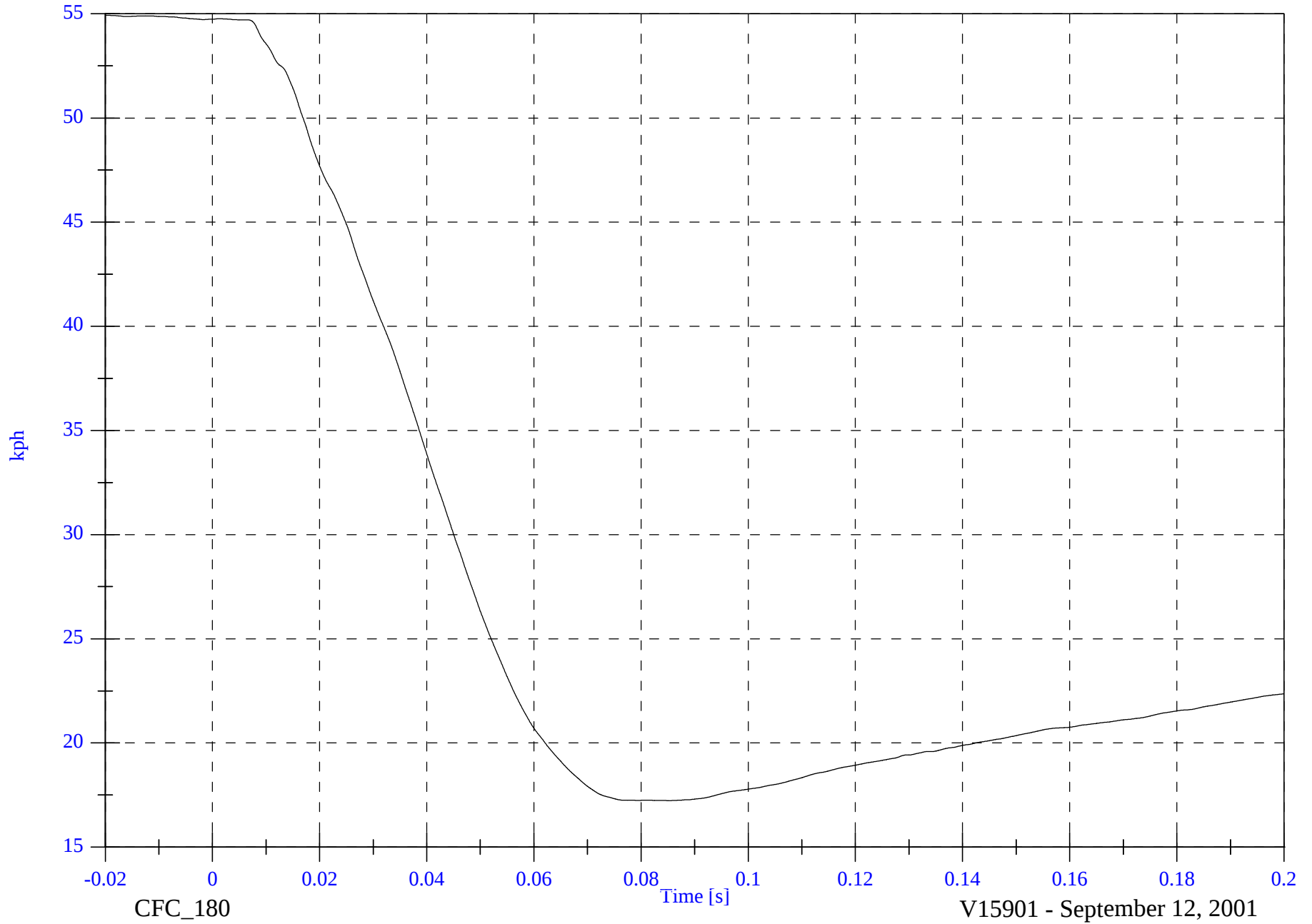


Optional SNCAP 2001 Volvo S60

Moving Barrier Left Rail X Velocity

Max: 54.9 [kph] at -0.020 [s]

Min: 17.2 [kph] at 0.085 [s]



B-108

8629-2

CFC_180

V15901 - September 12, 2001

Optional SNCAP 2001 Volvo S60

Moving Barrier Left Rail Y

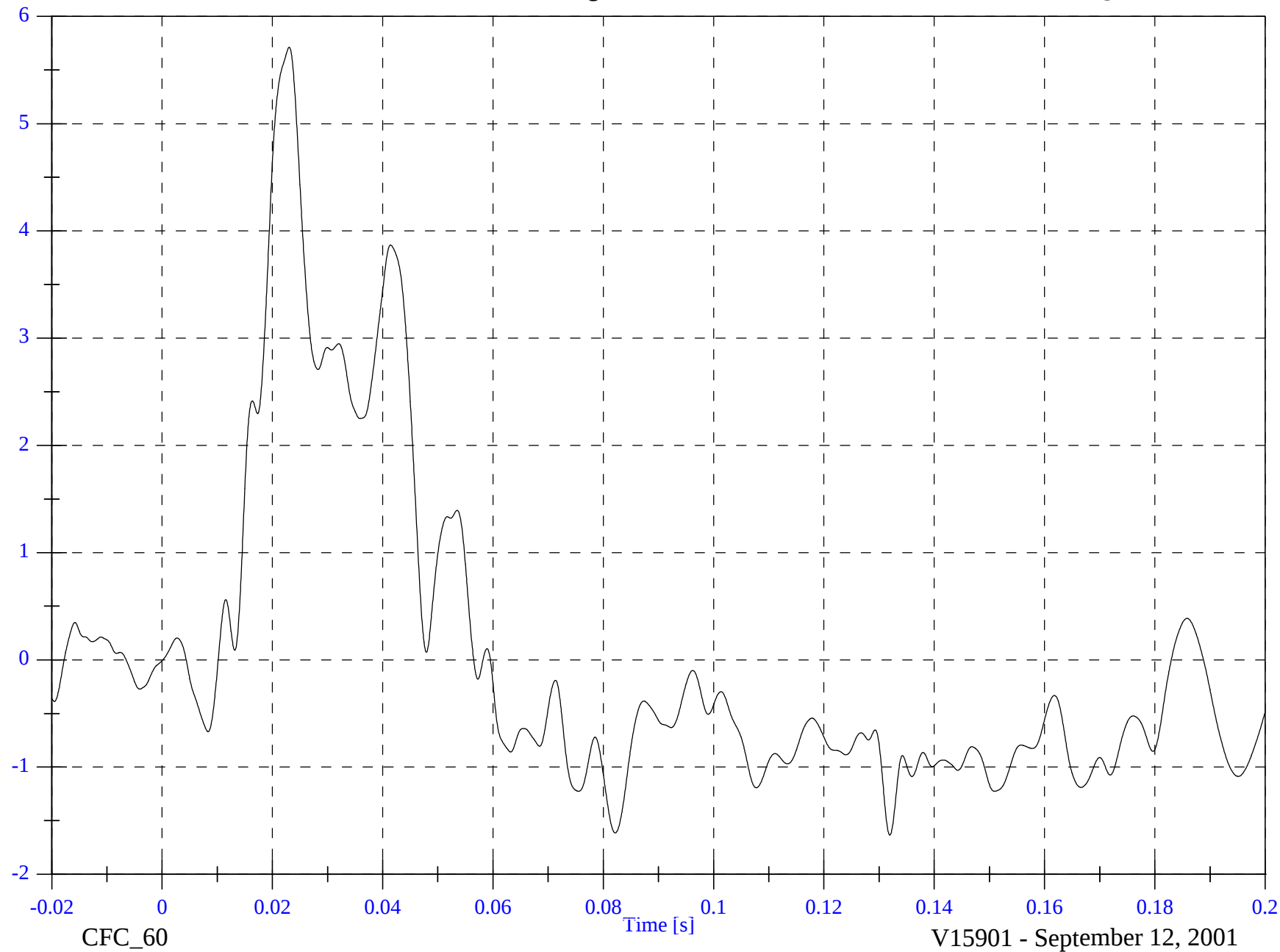
Max: 5.7 [g] at 0.023 [s]

Min: -1.6 [g] at 0.132 [s]

B-109

8629-2

g



Optional SNCAP 2001 Volvo S60

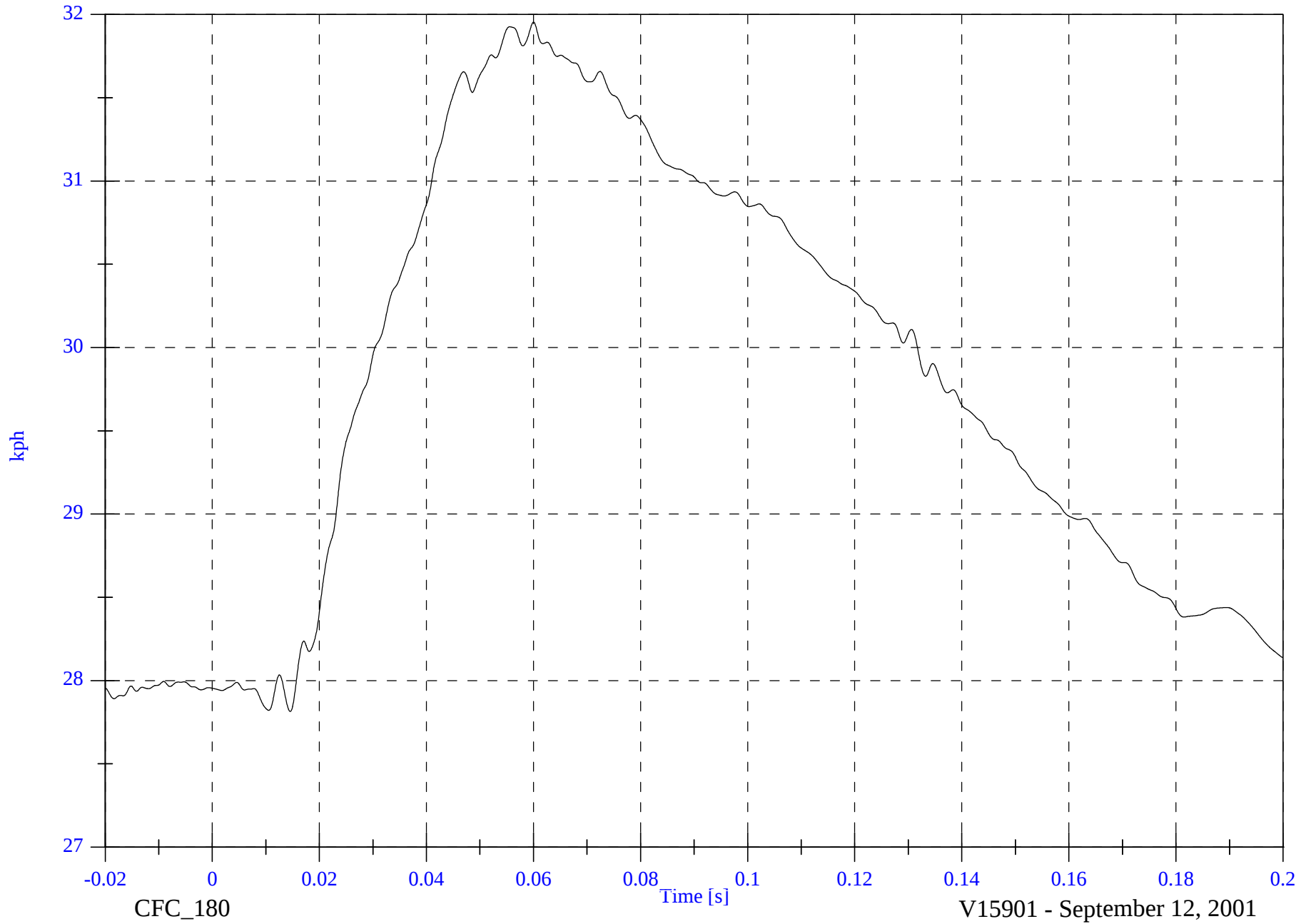
Moving Barrier Left Rail Y Velocity

Max: 32.0 [kph] at 0.060 [s]

Min: 27.8 [kph] at 0.015 [s]

B-110

8629-2



Optional SNCAP 2001 Volvo S60

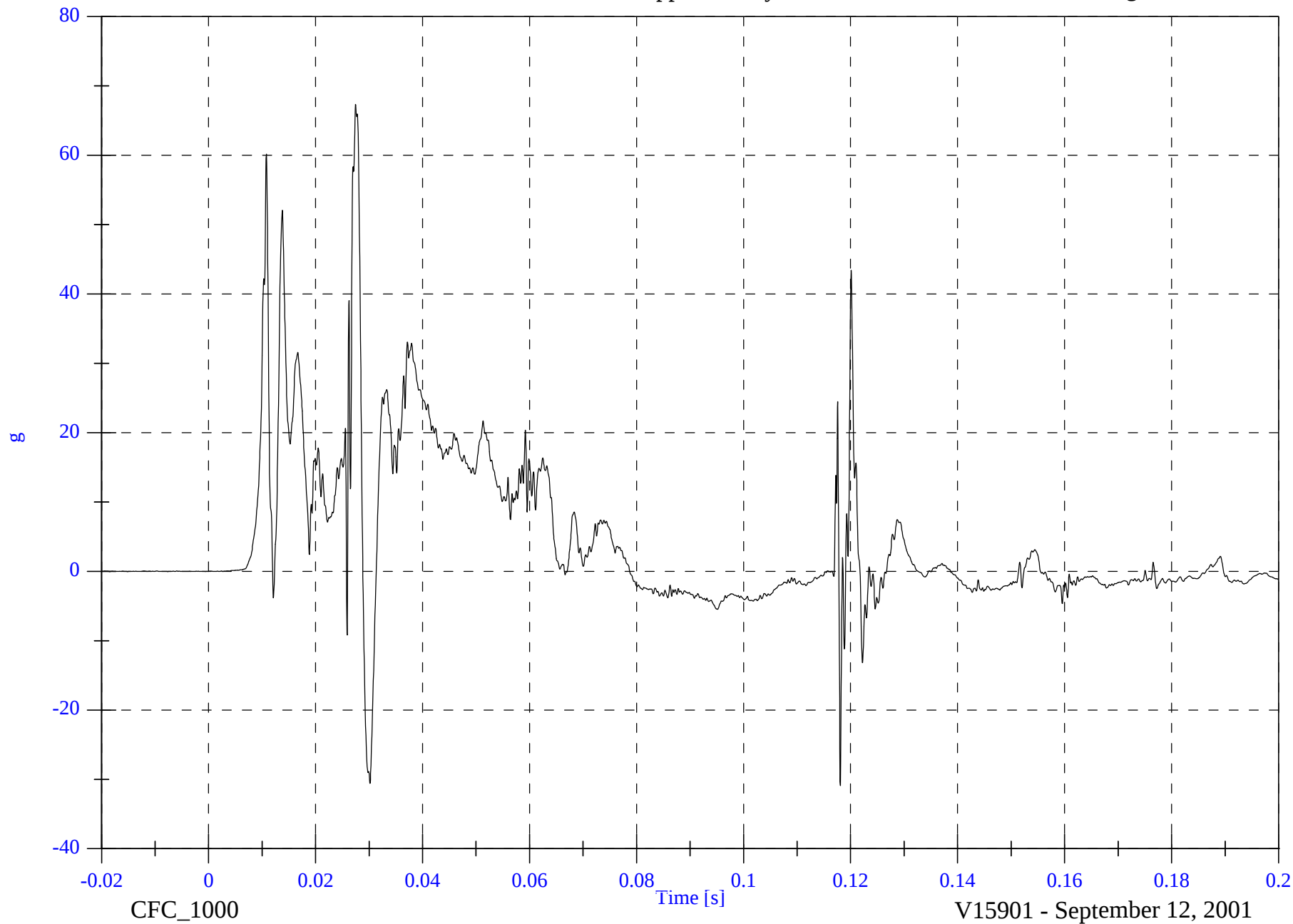
P1 Upper Rib Ry

Max: 67.4 [g] at 0.027 [s]

Min: -30.9 [g] at 0.118 [s]

B-111

8629-2

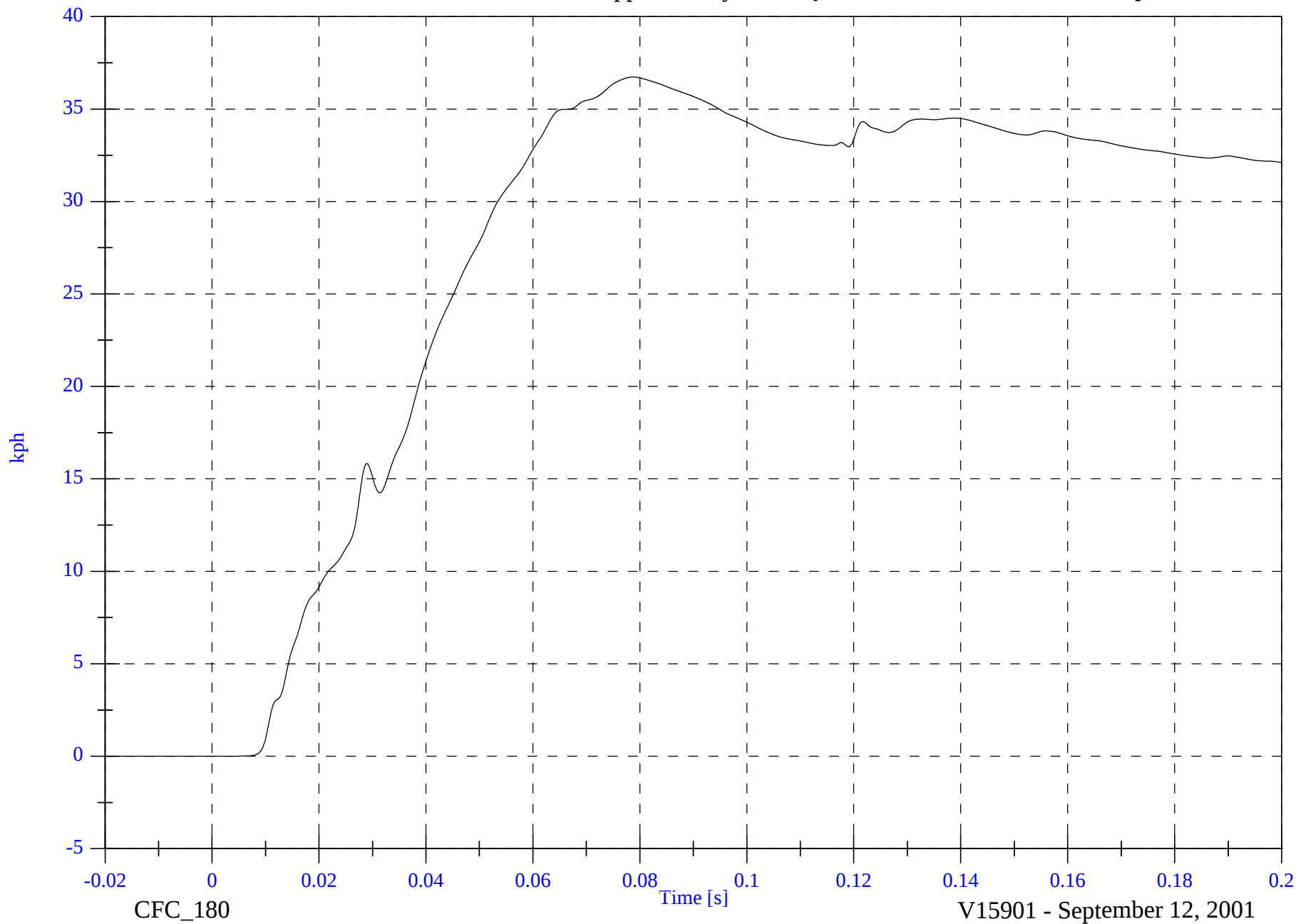


Optional SNCAP 2001 Volvo S60

P1 Upper Rib Ry Velocity

Max: 36.7 [kph] at 0.079 [s]

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



B-112

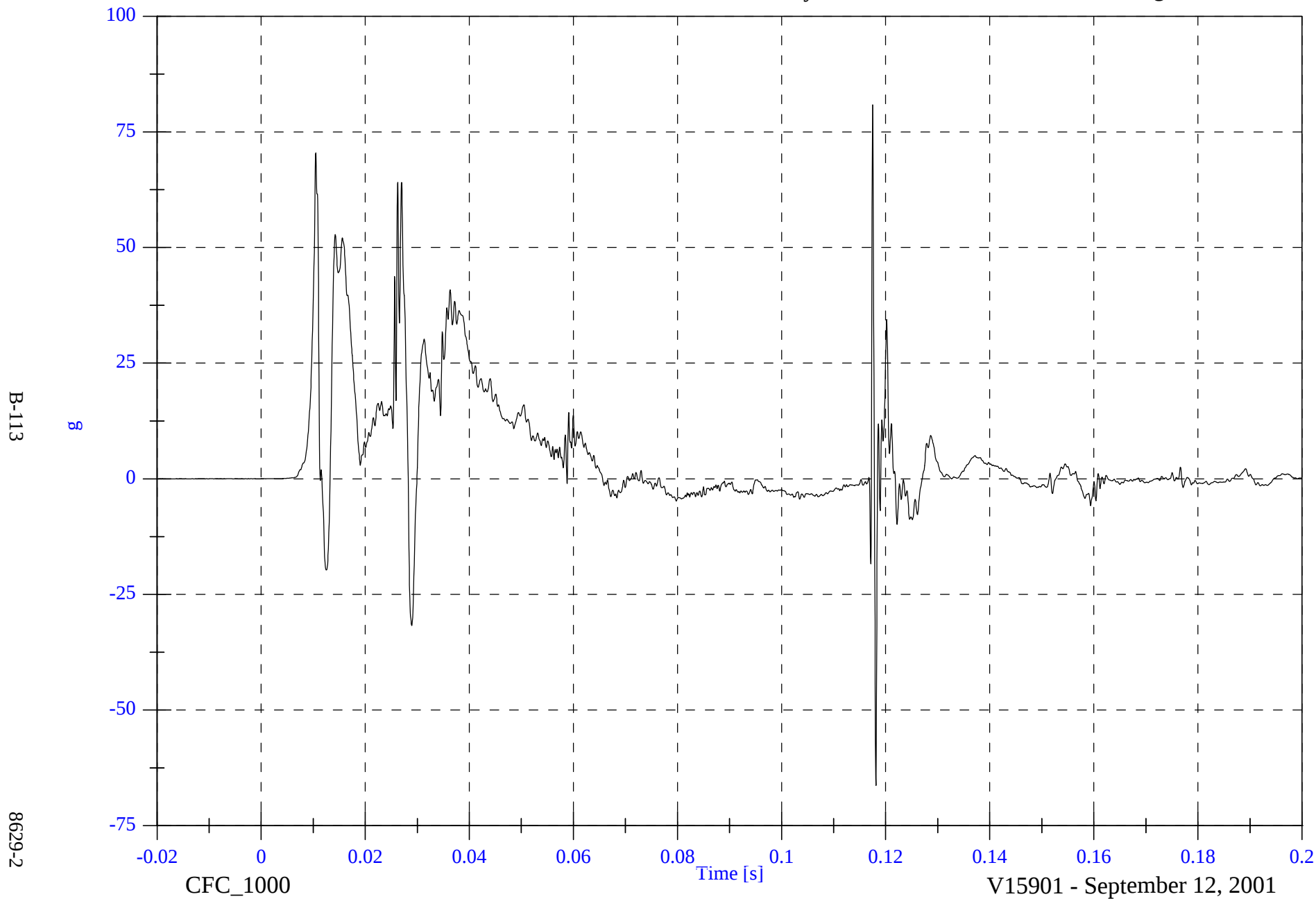
8629-2

Optional SNCAP 2001 Volvo S60

P1 Lower Rib Ry

Max: 80.8 [g] at 0.118 [s]

Min: -66.3 [g] at 0.118 [s]

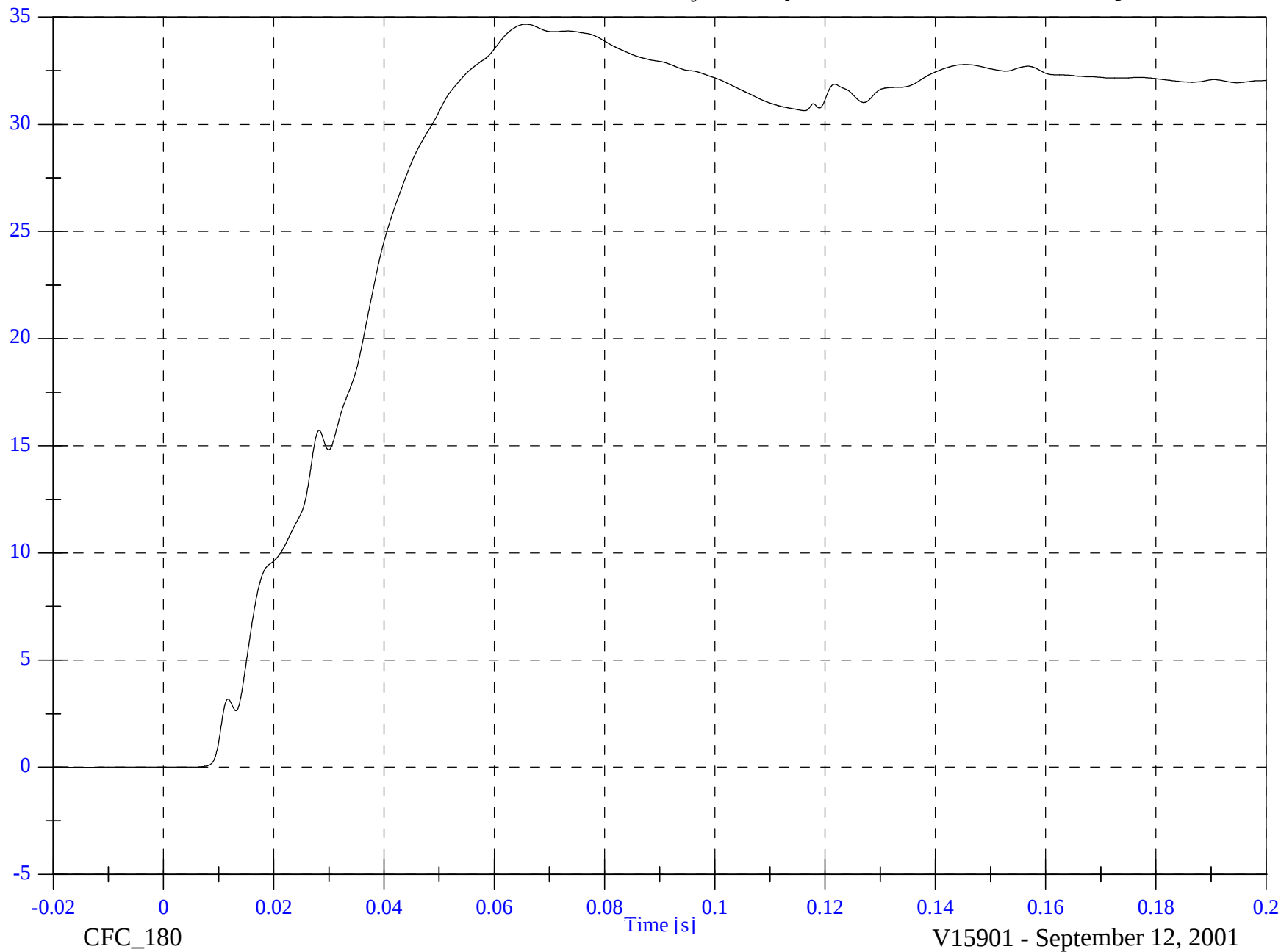


Optional SNCAP 2001 Volvo S60

P1 Lower Rib Ry Velocity

Max: 34.7 [kph] at 0.066 [s]

Min: -0.0 [kph] at -0.013 [s]



B-114

8629-2

Optional SNCAP 2001 Volvo S60

P1 Lower Spine Ry

Max: 60.0 [g] at 0.031 [s]

Min: -11.0 [g] at 0.064 [s]

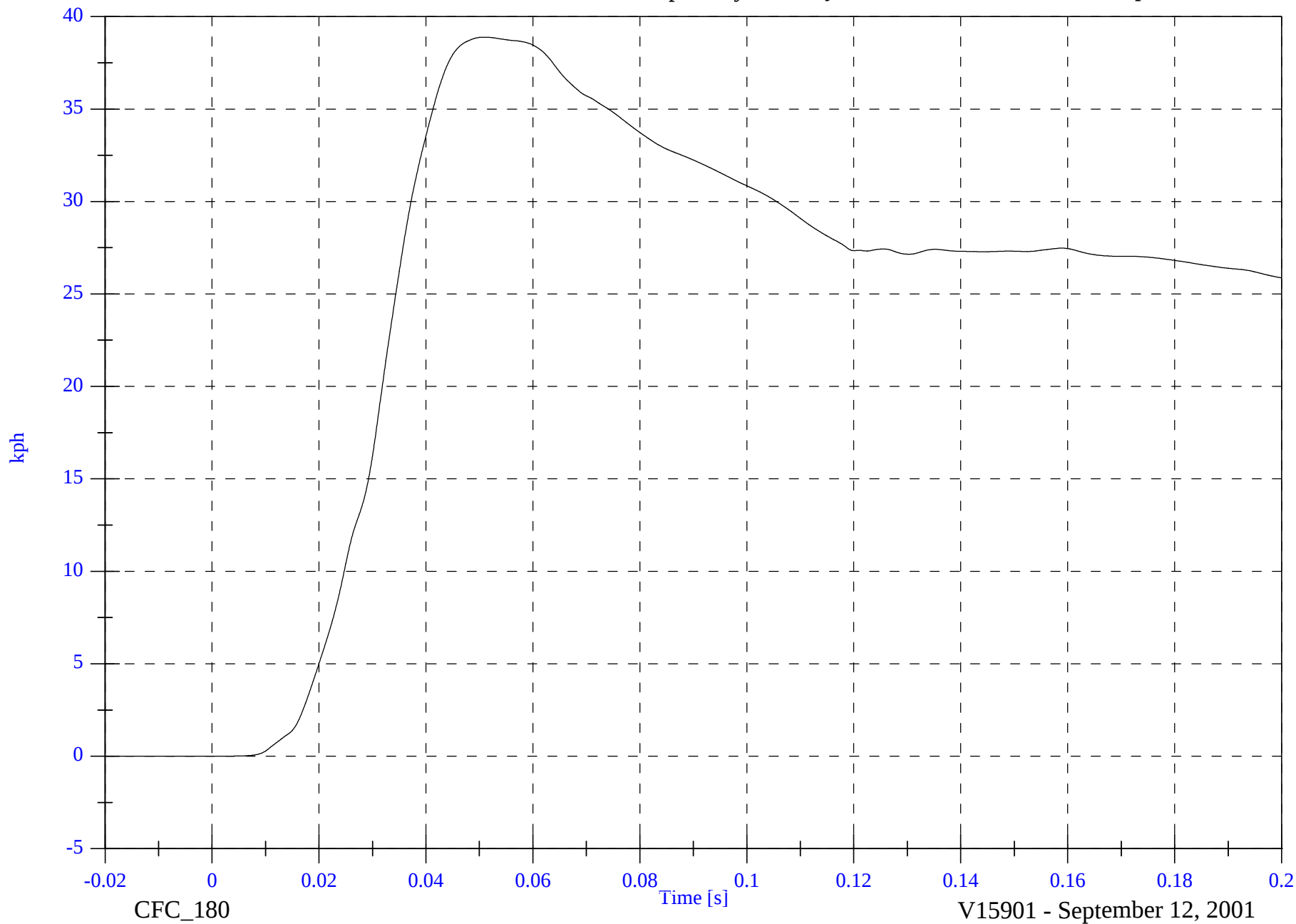


Optional SNCAP 2001 Volvo S60

P1 Lower Spine Ry Velocity

Max: 38.9 [kph] at 0.051 [s]

Min: -0.0 [kph] at -0.007 [s]



B-116

8629-2

Optional SMCAP 2001 Volvo S60

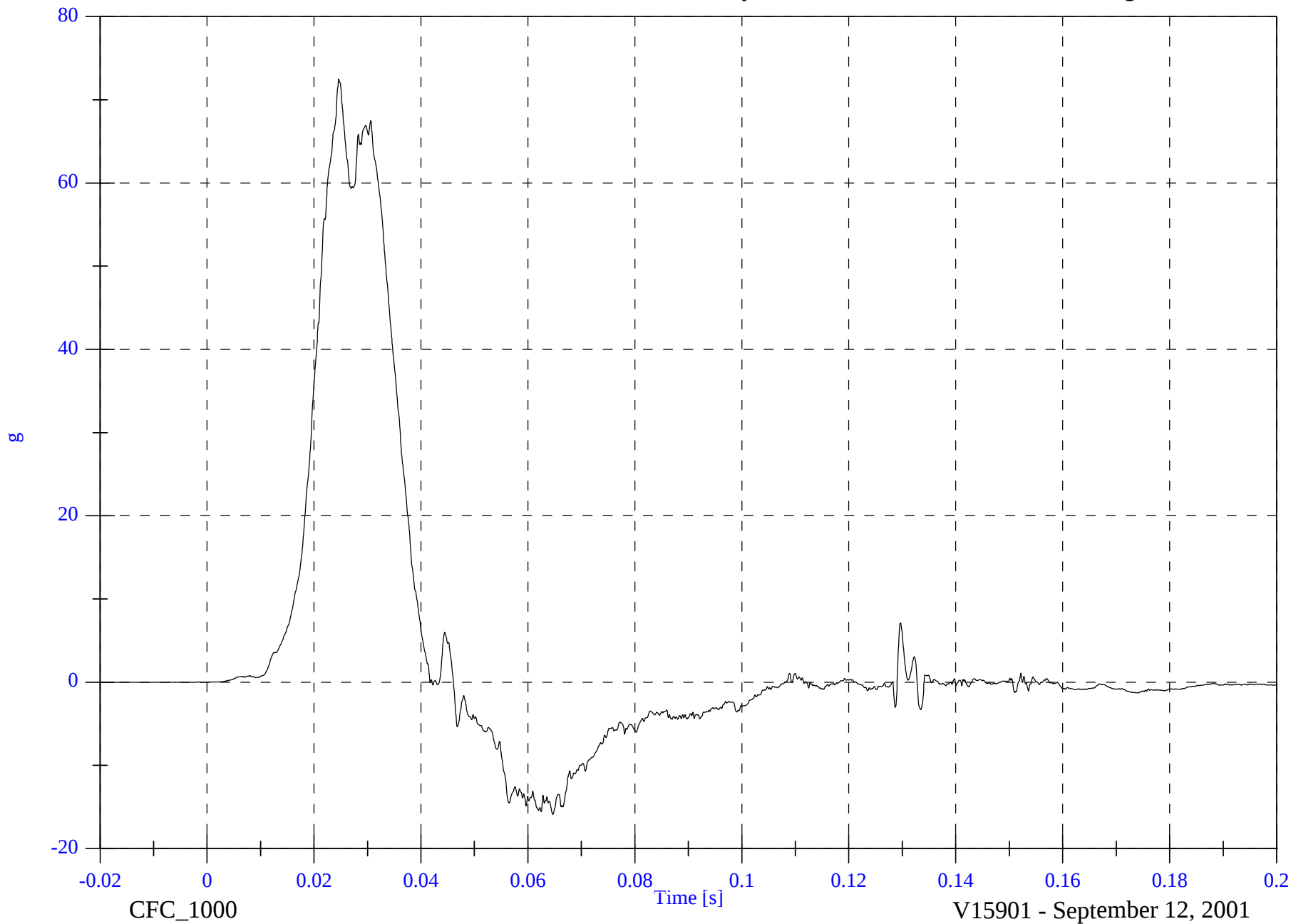
P1 Pelvic Ry

Max: 72.5 [g] at 0.025 [s]

Min: -15.9 [g] at 0.065 [s]

B-117

8629-2

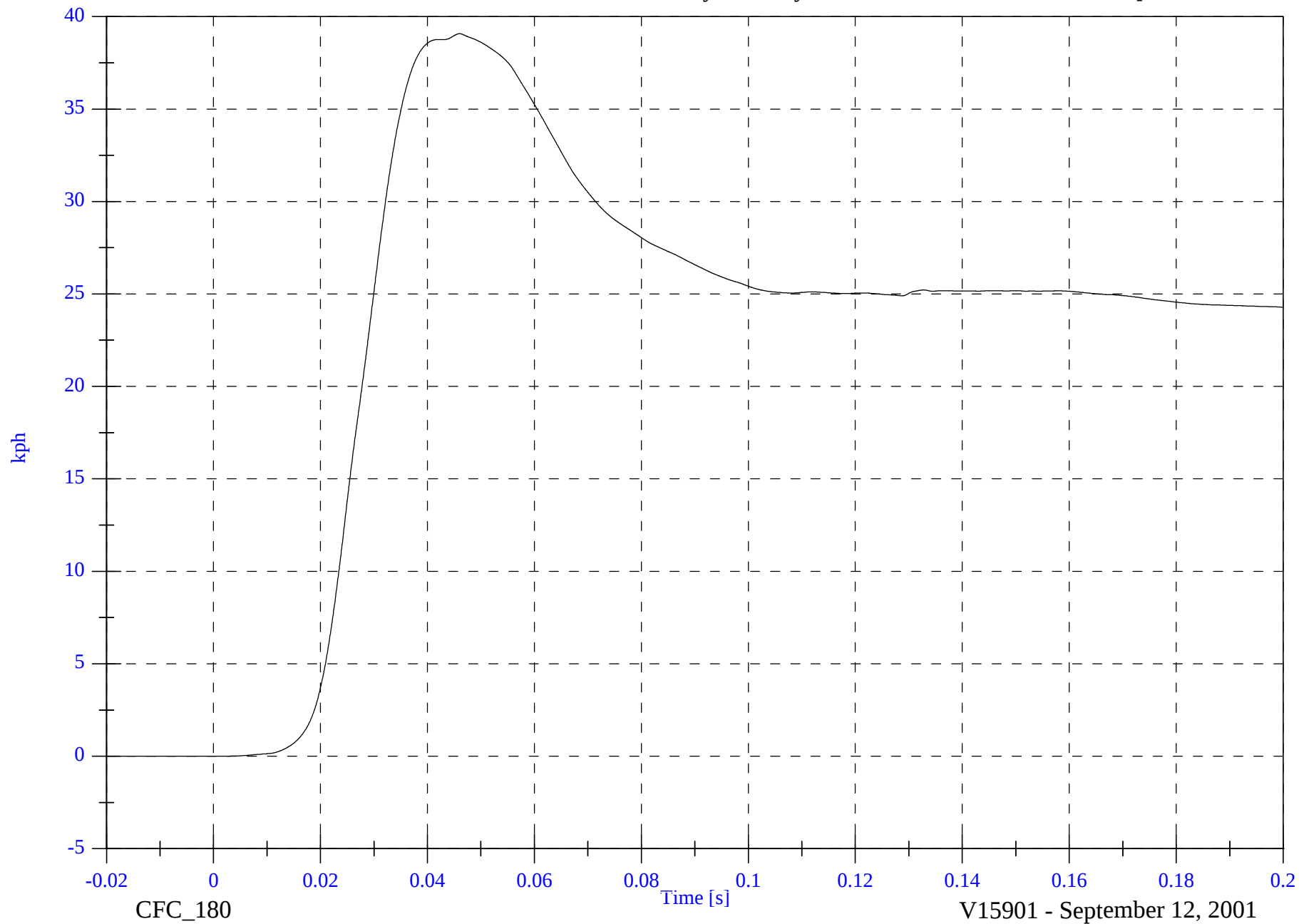


Optional SNCAP 2001 Volvo S60

P1 Pelvic Ry Velocity

Max: 39.1 [kph] at 0.046 [s]

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



B-118

8629-2

Optional SNCAP 2001 Volvo S60

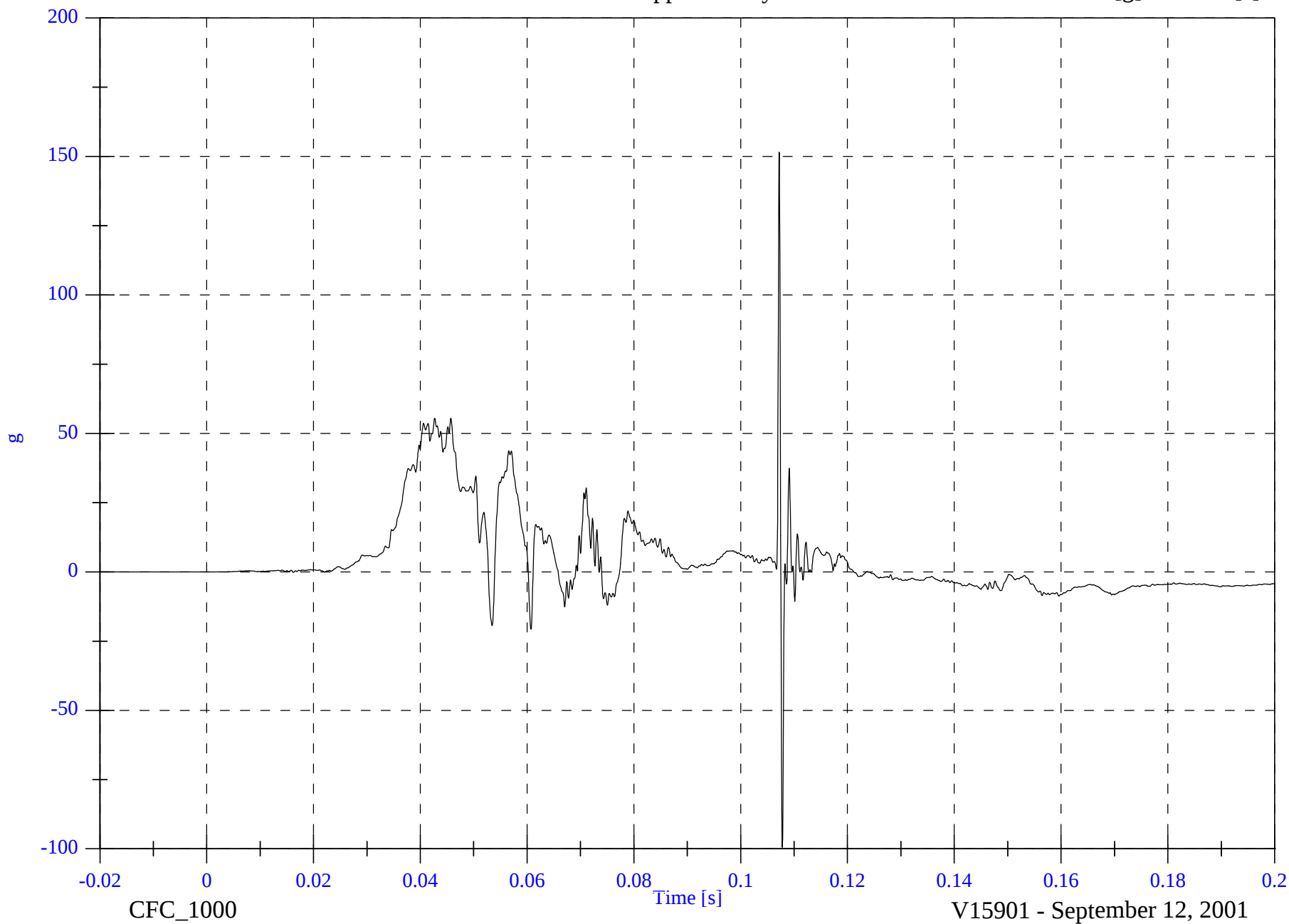
P4 Upper Rib Ry

Max: 151.6 [g] at 0.107 [s]

Min: -99.5 [g] at 0.108 [s]

B-119

8629-2



Optional SNCAP 2001 Volvo S60

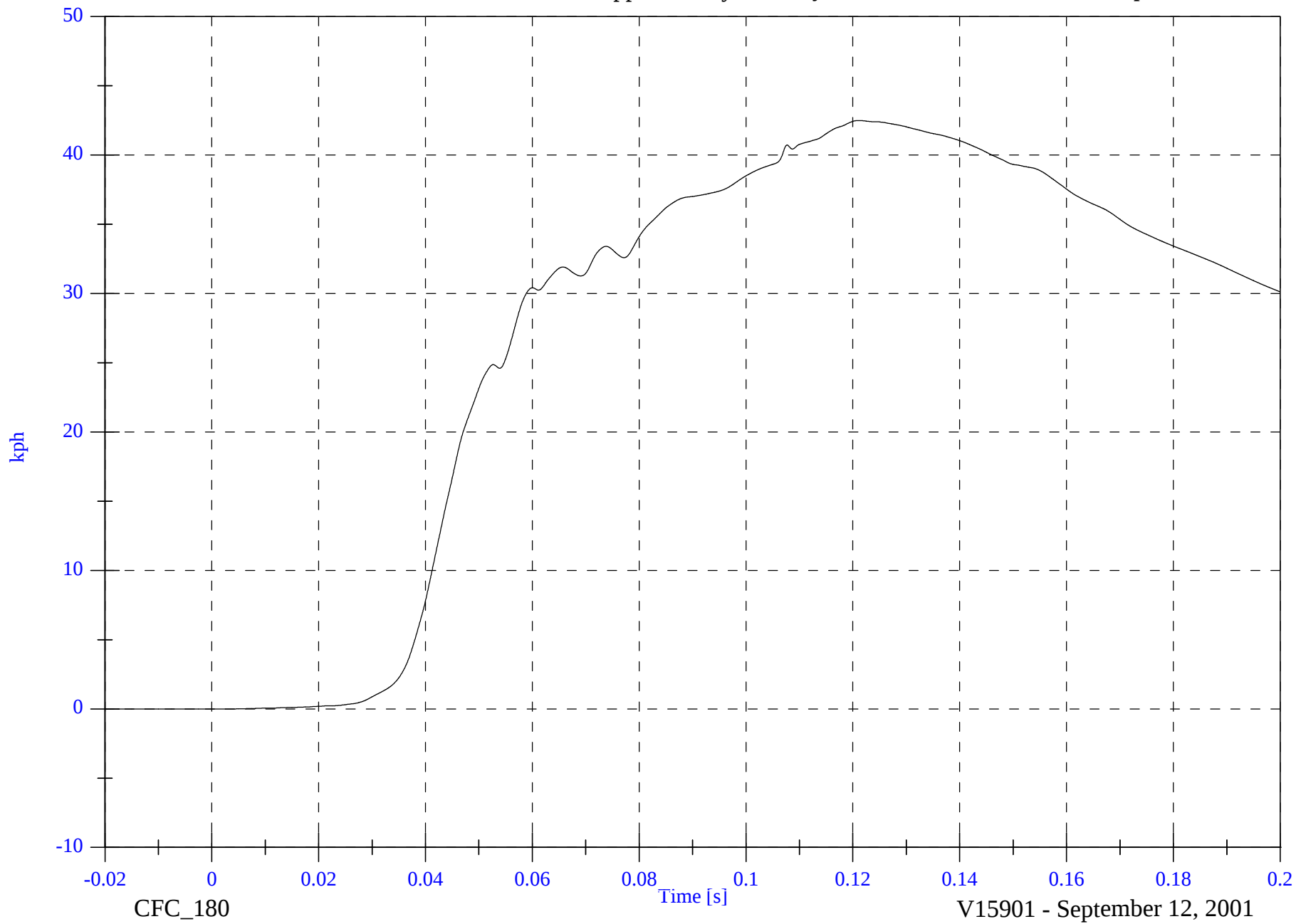
P4 Upper Rib Ry Velocity

Max: 42.5 [kph] at 0.121 [s]

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

B-120

8629-2

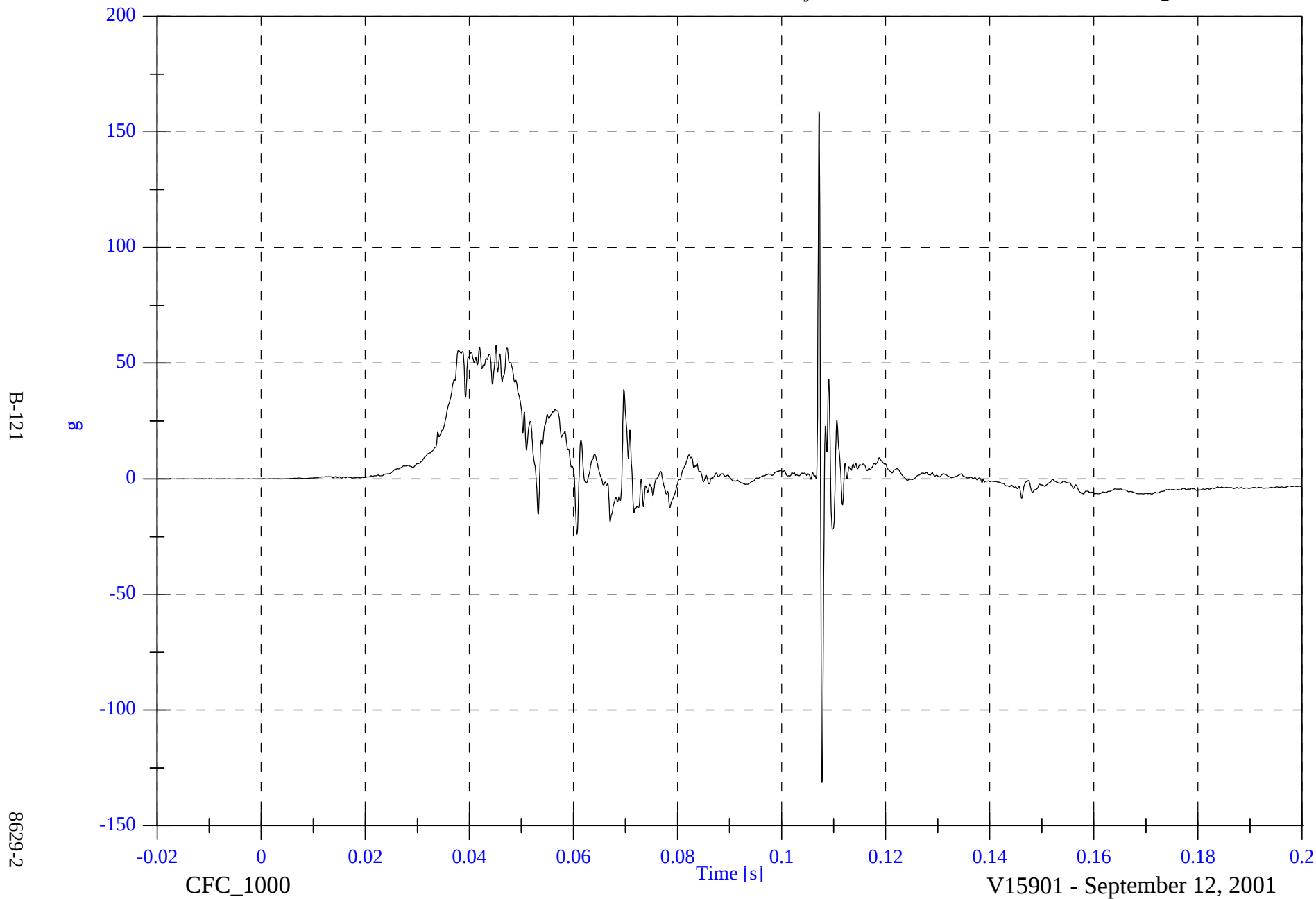


Optional SNCAP 2001 Volvo S60

P4 Lower Rib Ry

Max: 158.9 [g] at 0.107 [s]

Min: -131.3 [g] at 0.108 [s]

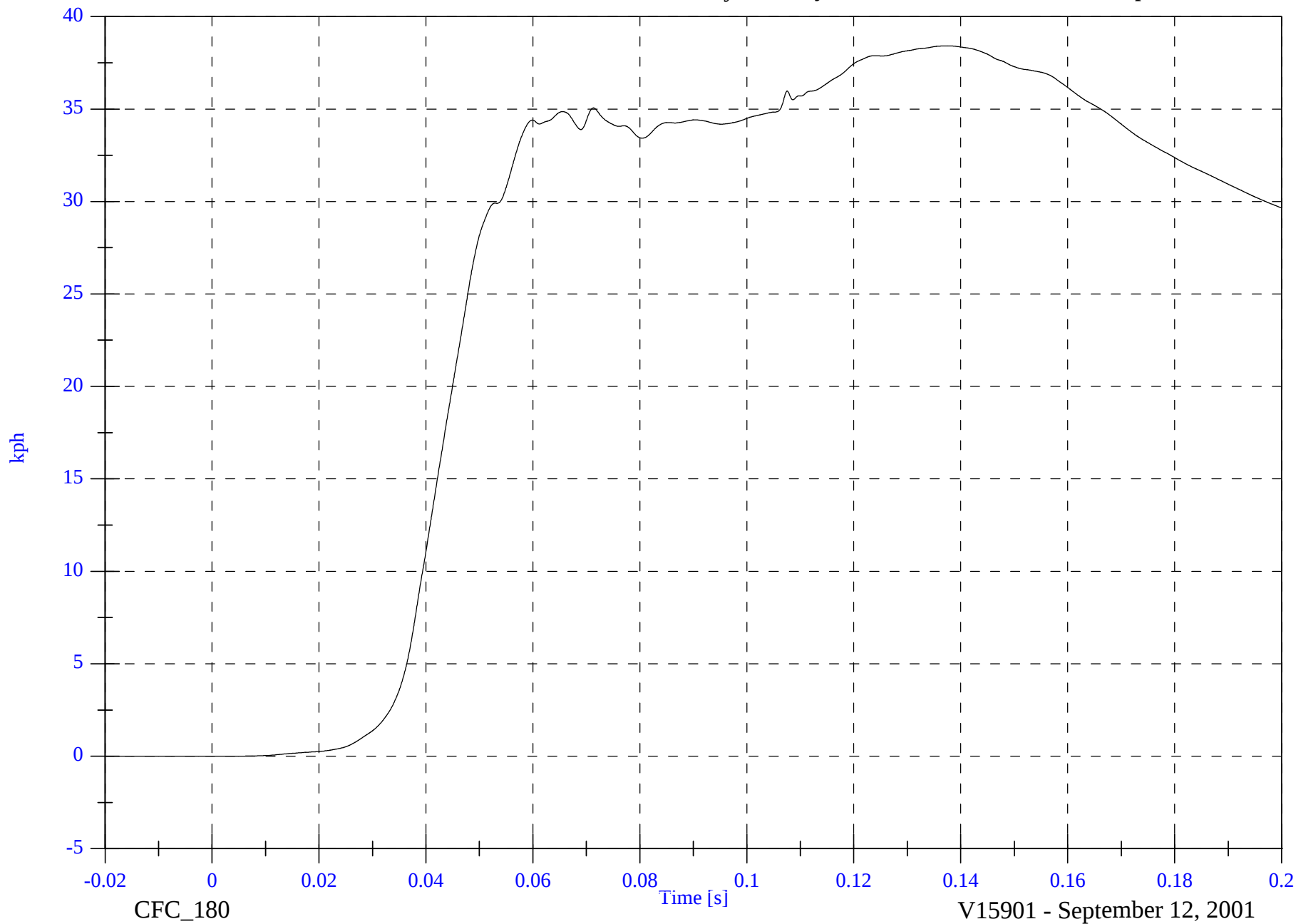


Optional SNCAP 2001 Volvo S60

P4 Lower Rib Ry Velocity

Max: 38.4 [kph] at 0.138 [s]

Min: -0.0 [kph] at -0.013 [s]



B-122

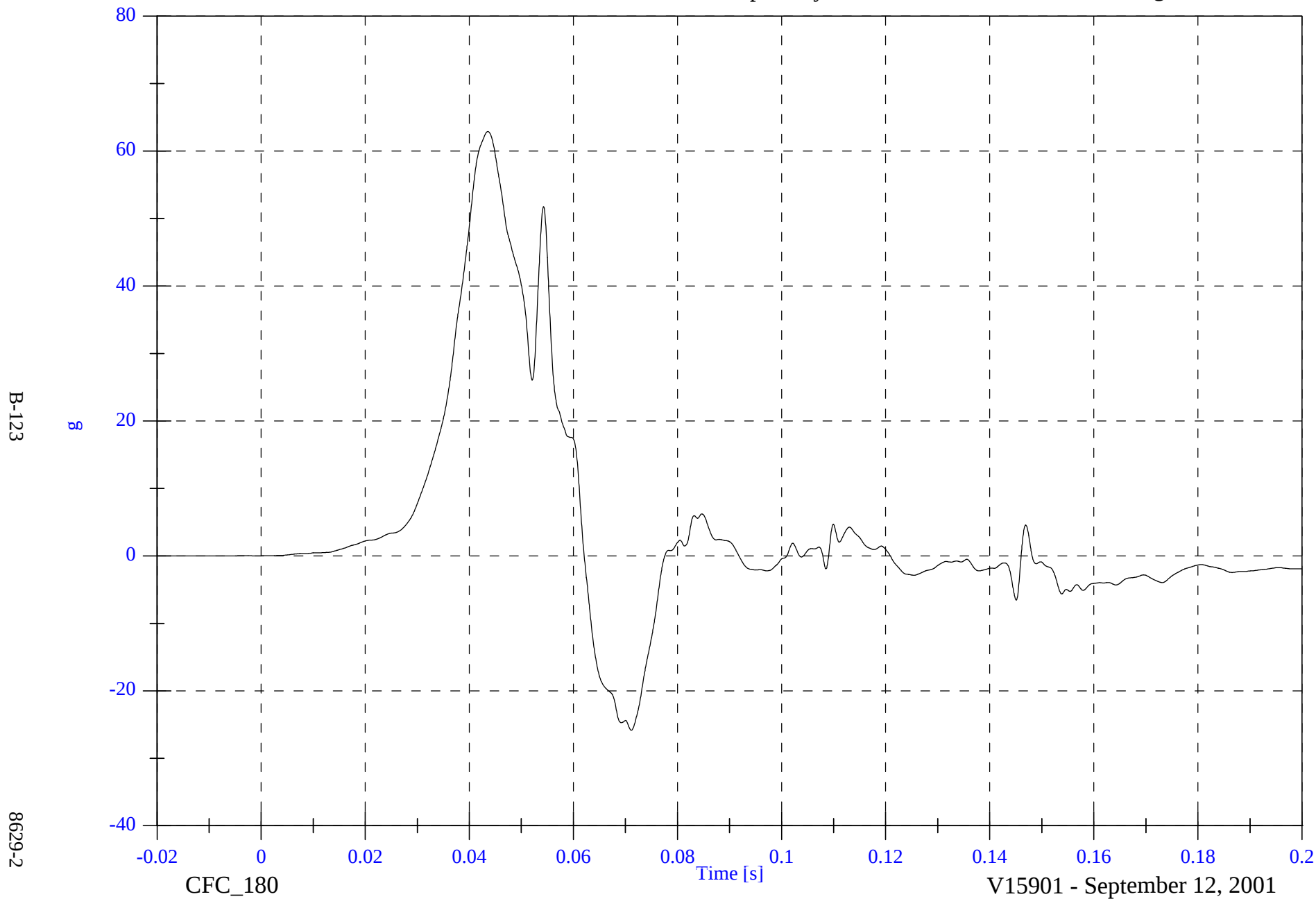
8629-2

Optional SNCAP 2001 Volvo S60

P4 Lower Spine Ry

Max: 62.9 [g] at 0.044 [s]

Min: -25.8 [g] at 0.071 [s]



Optional SNCAP 2001 Volvo S60

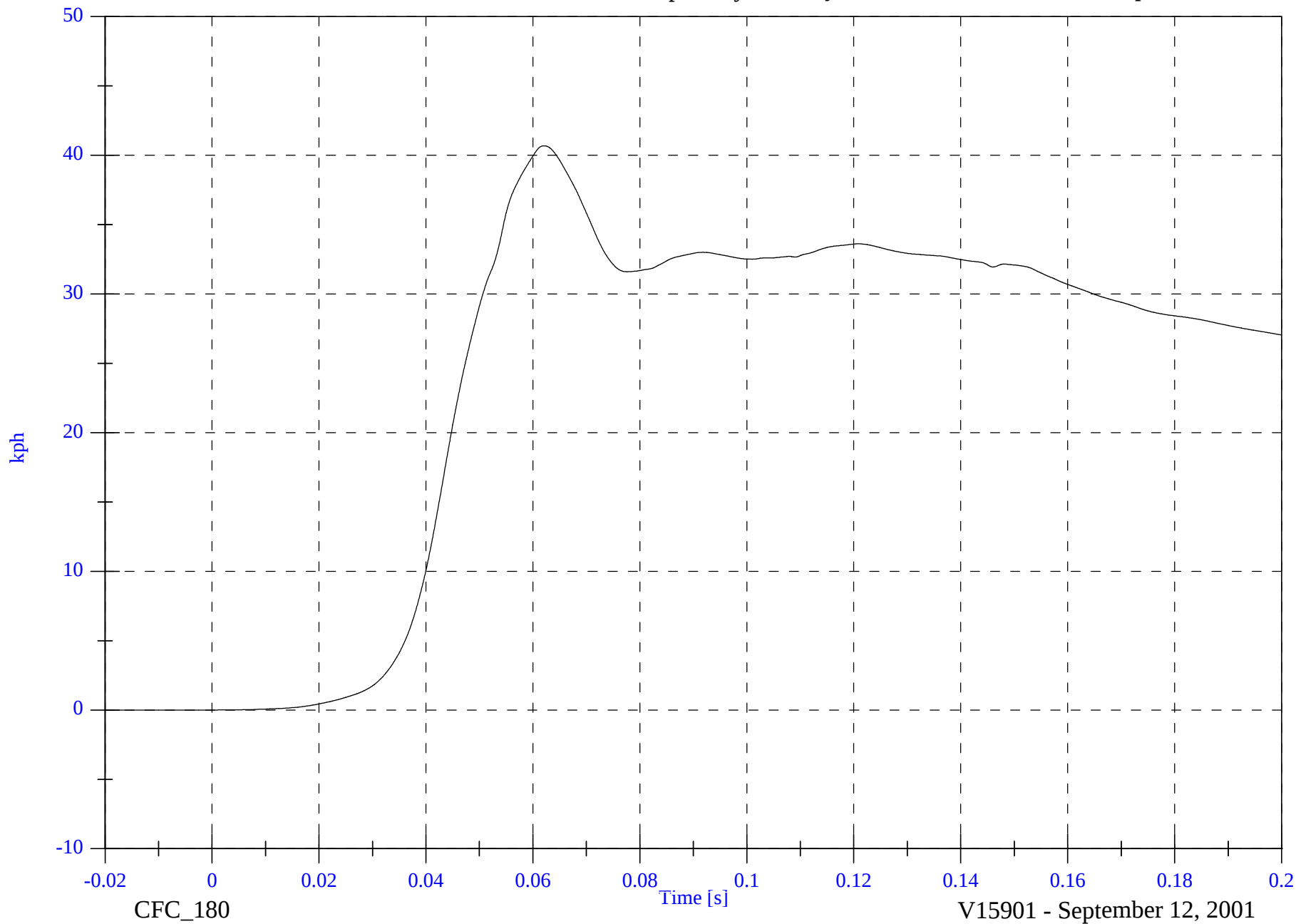
P4 Lower Spine Ry Velocity

Max: 40.7 [kph] at 0.062 [s]

Min: -0.0 [kph] at -0.009 [s]

B-124

8629-2



Optional SNCAP 2001 Volvo S60

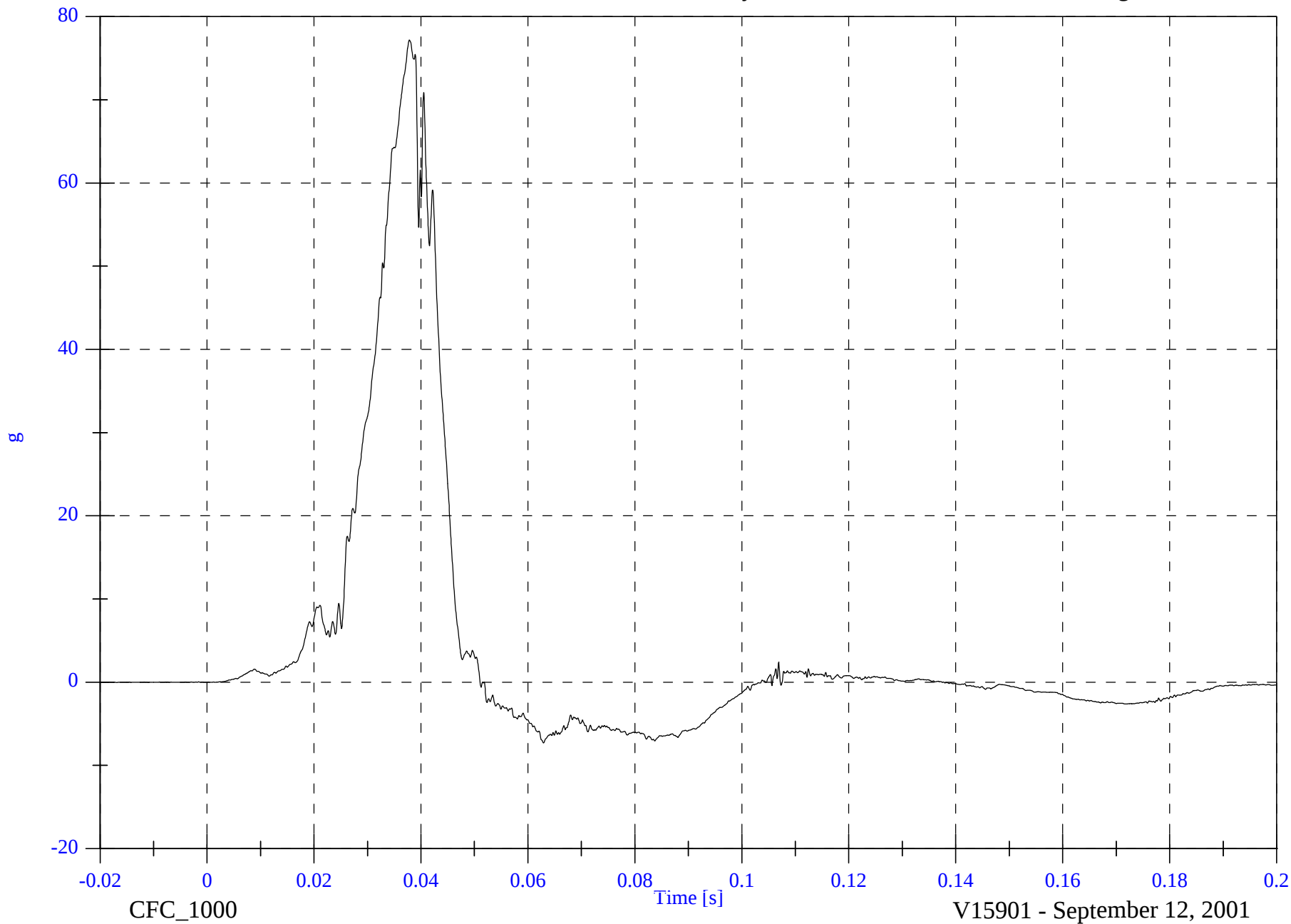
P4 Pelvic Ry

Max: 77.2 [g] at 0.038 [s]

Min: -7.3 [g] at 0.063 [s]

B-125

8629-2

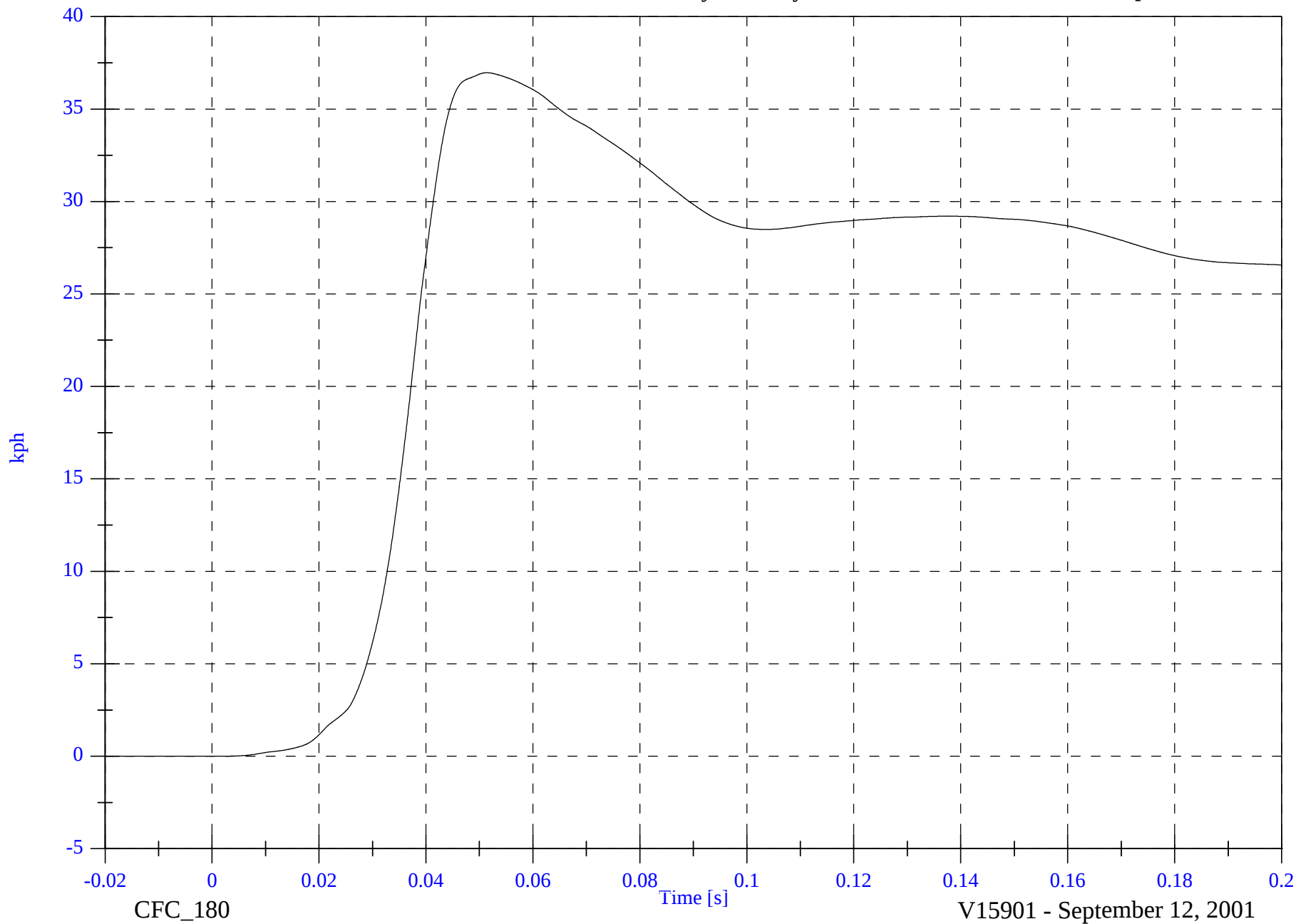


Optional SNCAP 2001 Volvo S60

P4 Pelvic Ry Velocity

Max: 37.0 [kph] at 0.051 [s]

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



B-126

8629-2

Optional SNCAP 2001 Volvo S60

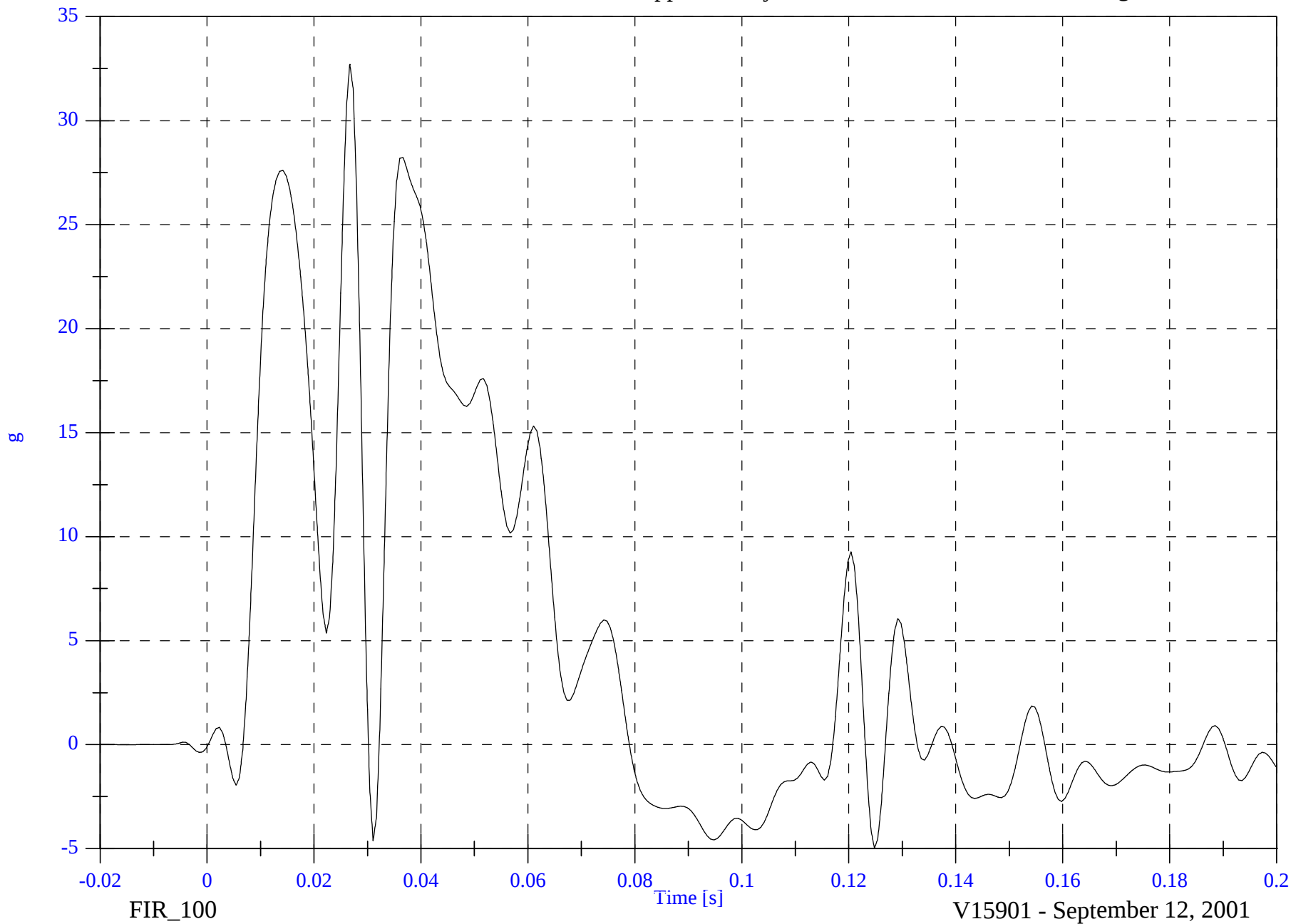
P1 Upper Rib Ry

Max: 32.7 [g] at 0.027 [s]

Min: -5.0 [g] at 0.125 [s]

B-127

8629-2



Optional SNCAP 2001 Volvo S60

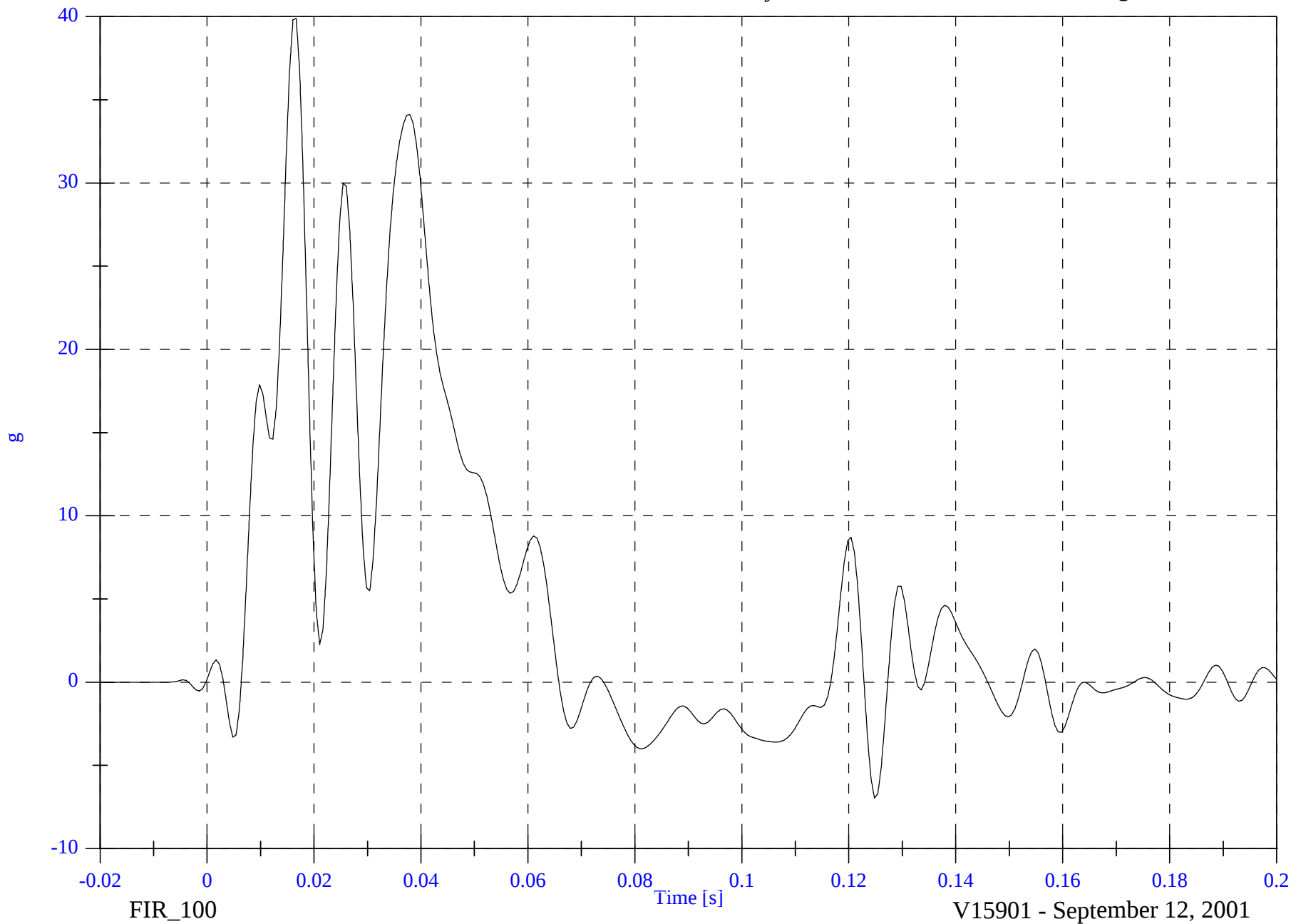
P1 Lower Rib Ry

Max: 39.9 [g] at 0.017 [s]

Min: -7.0 [g] at 0.125 [s]

B-128

8629-2

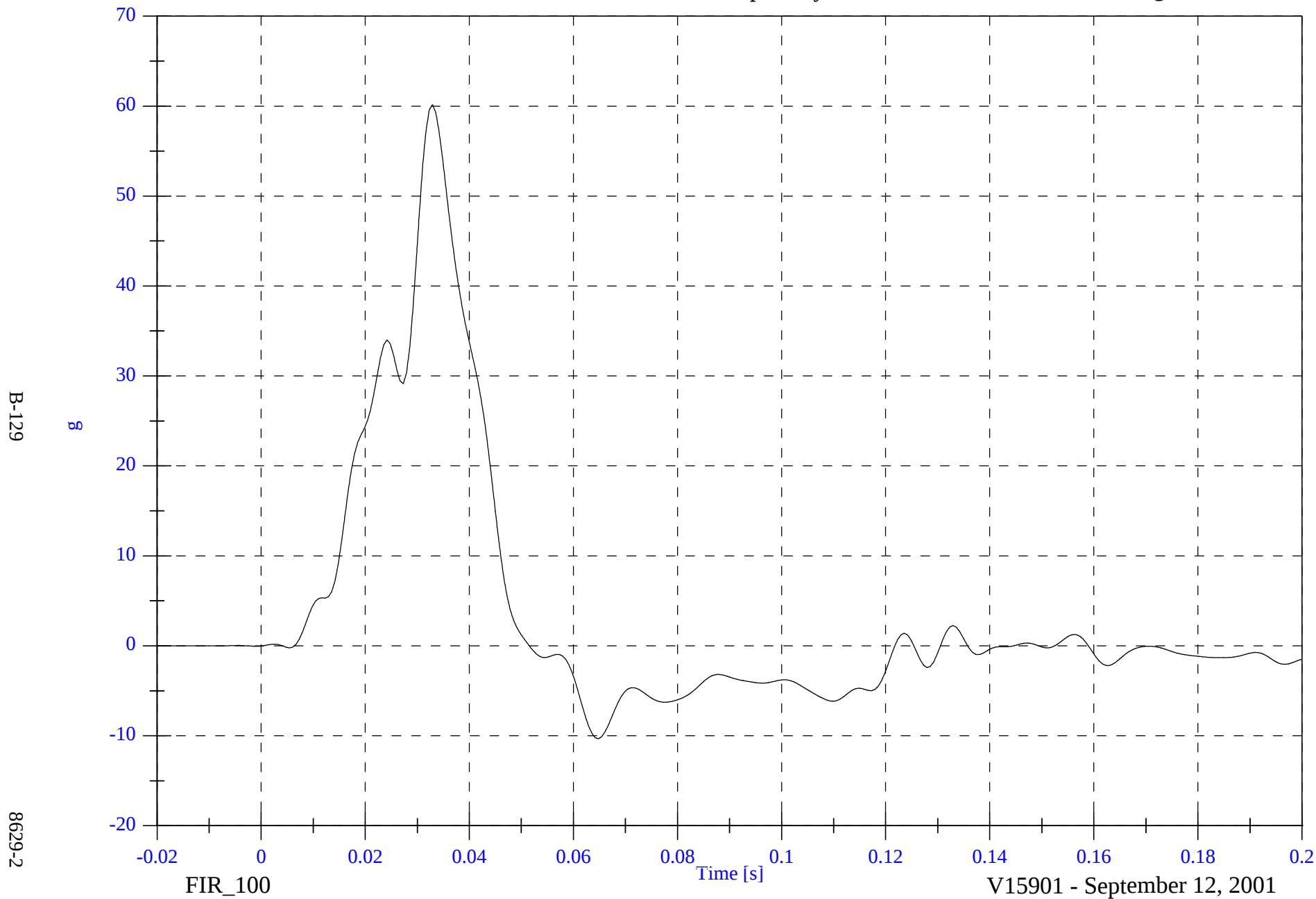


Optional SNCAP 2001 Volvo S60

P1 Lower Spine Ry

Max: 60.2 [g] at 0.033 [s]

Min: -10.3 [g] at 0.065 [s]

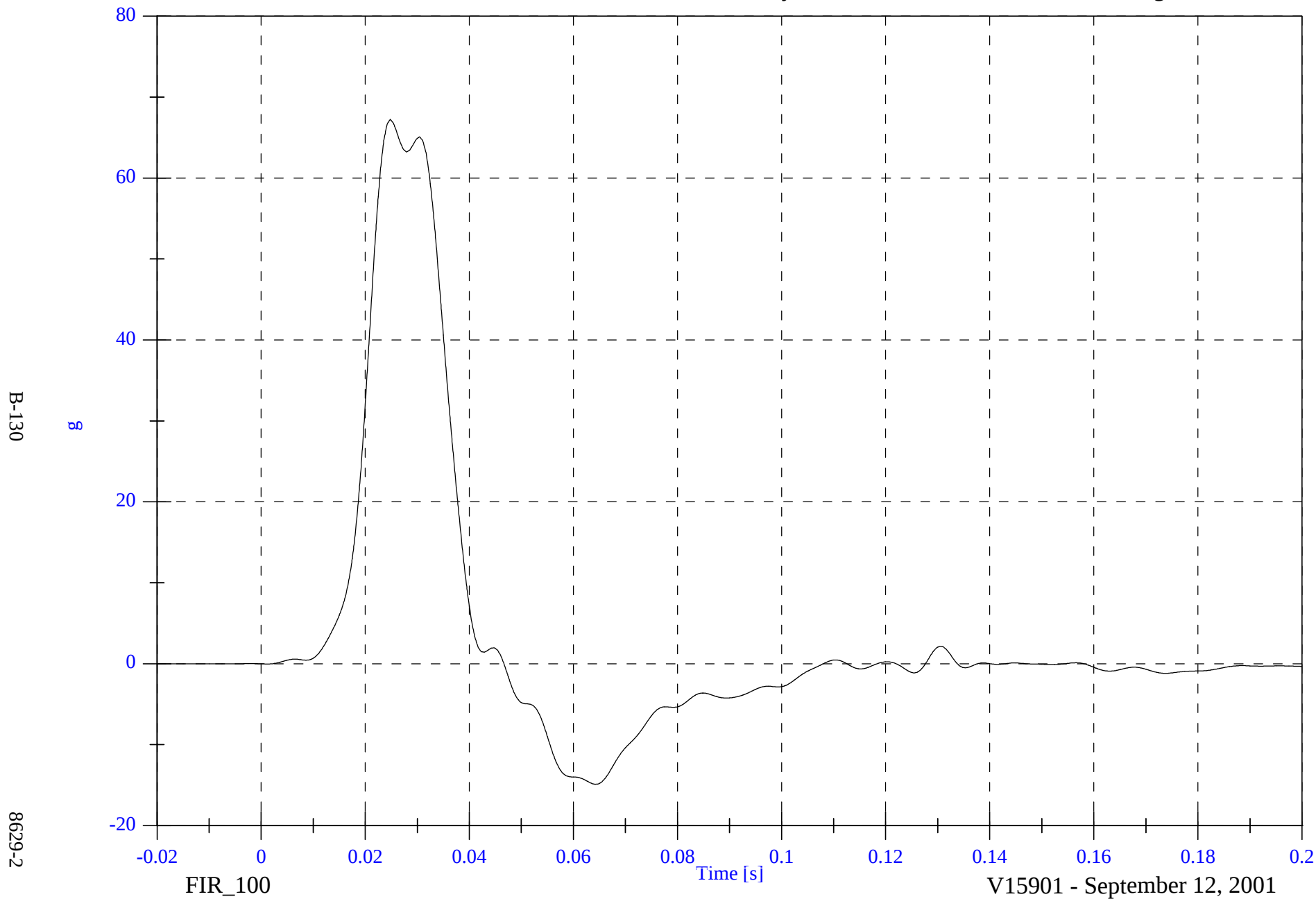


Optional SNCAP 2001 Volvo S60

P1 Pelvic Ry

Max: 67.3 [g] at 0.025 [s]

Min: -14.9 [g] at 0.064 [s]

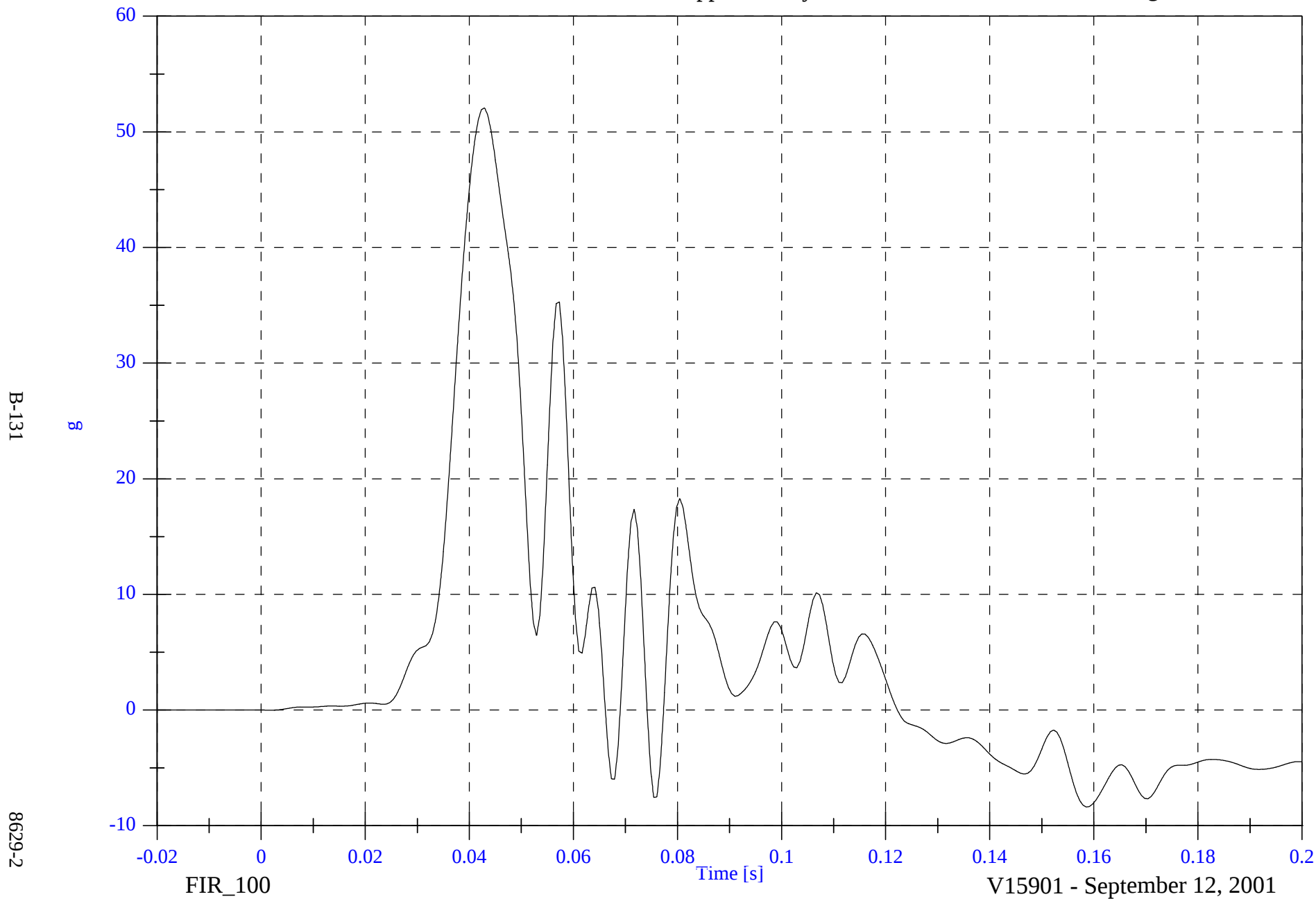


Optional SNCAP 2001 Volvo S60

P4 Upper Rib Ry

Max: 52.1 [g] at 0.043 [s]

Min: -8.4 [g] at 0.159 [s]

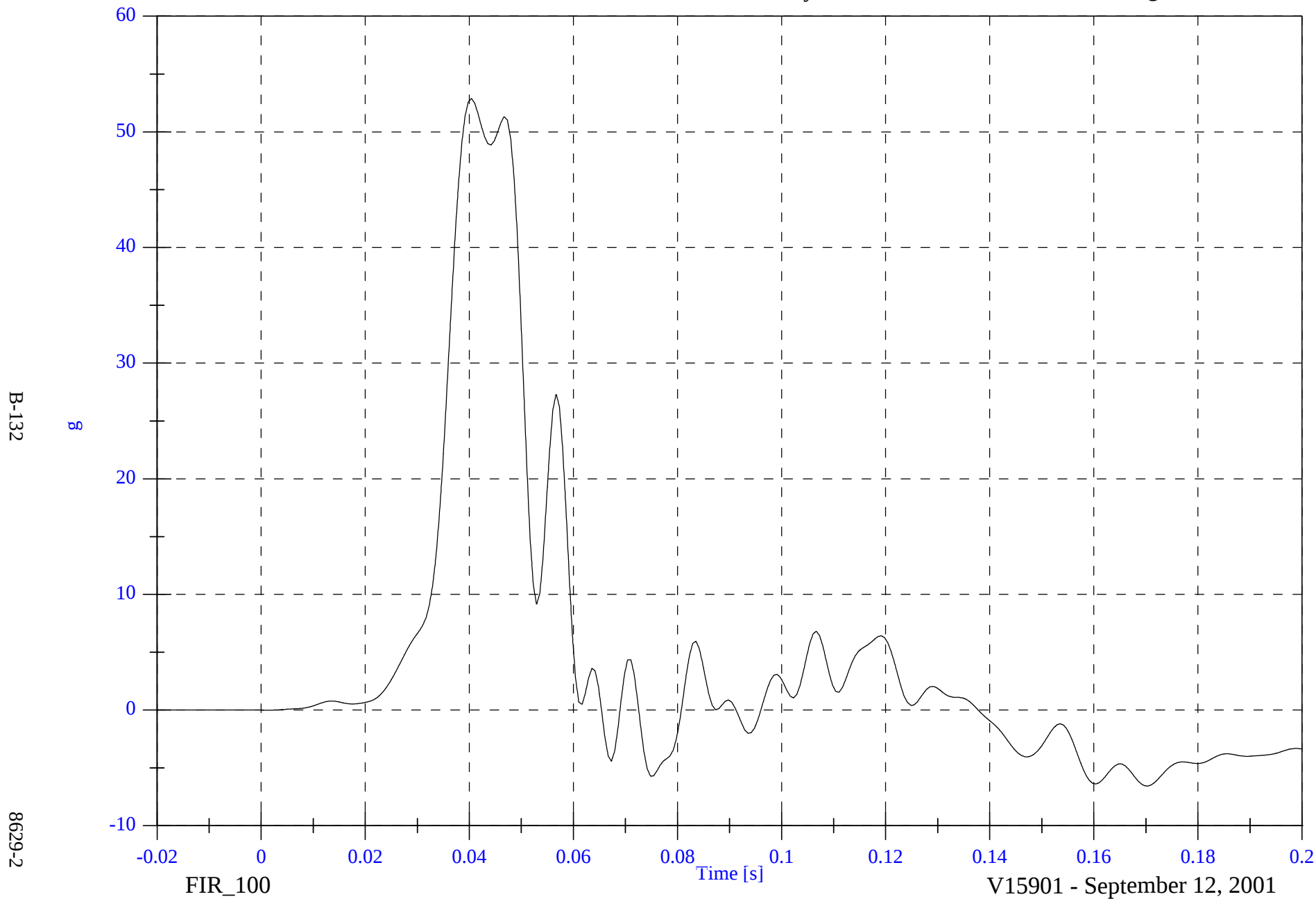


Optional SNCAP 2001 Volvo S60

P4 Lower Rib Ry

Max: 52.9 [g] at 0.040 [s]

Min: -6.6 [g] at 0.170 [s]

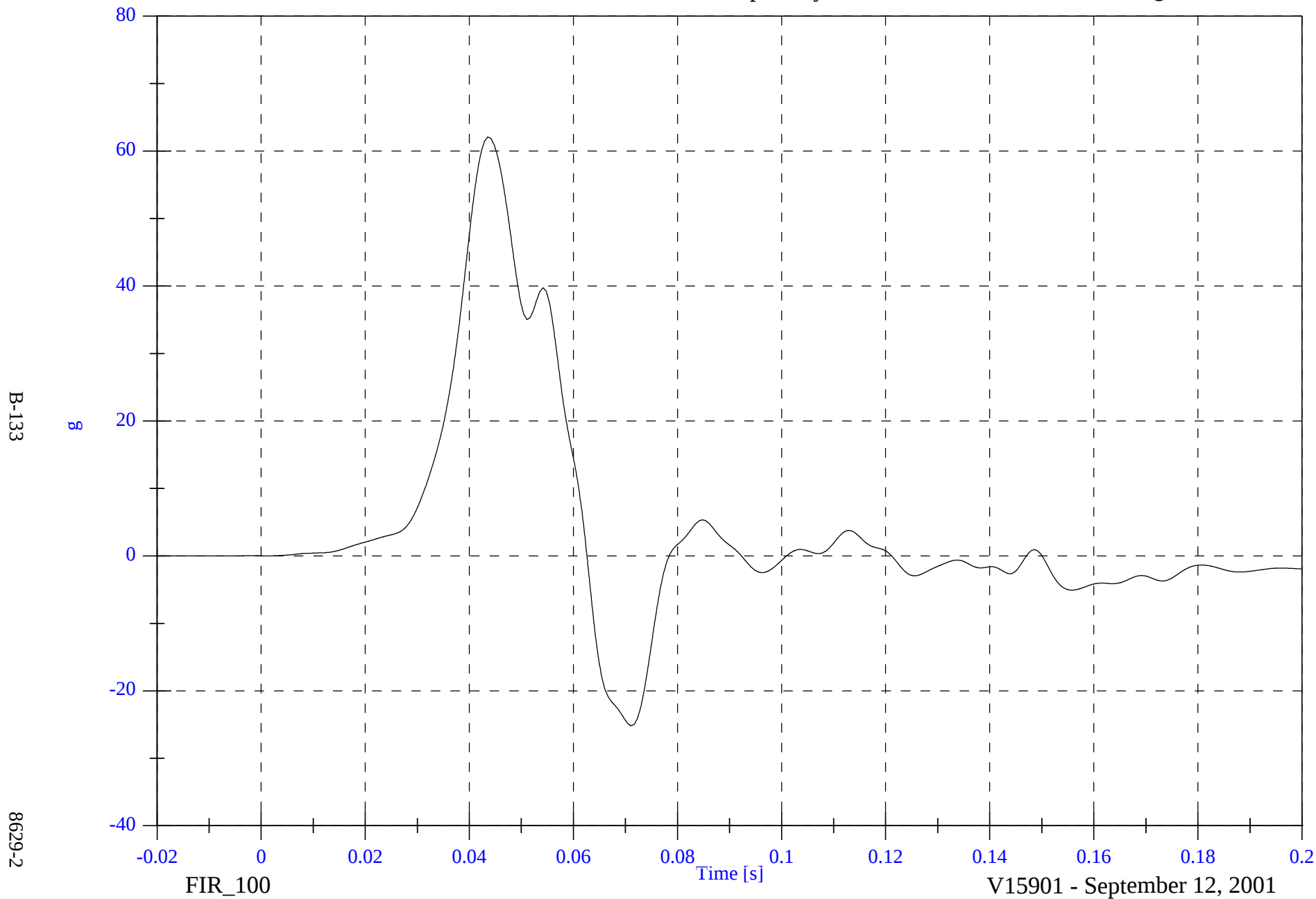


Optional SNCAP 2001 Volvo S60

P4 Lower Spine Ry

Max: 62.1 [g] at 0.044 [s]

Min: -25.2 [g] at 0.071 [s]



Optional SNCAP 2001 Volvo S60

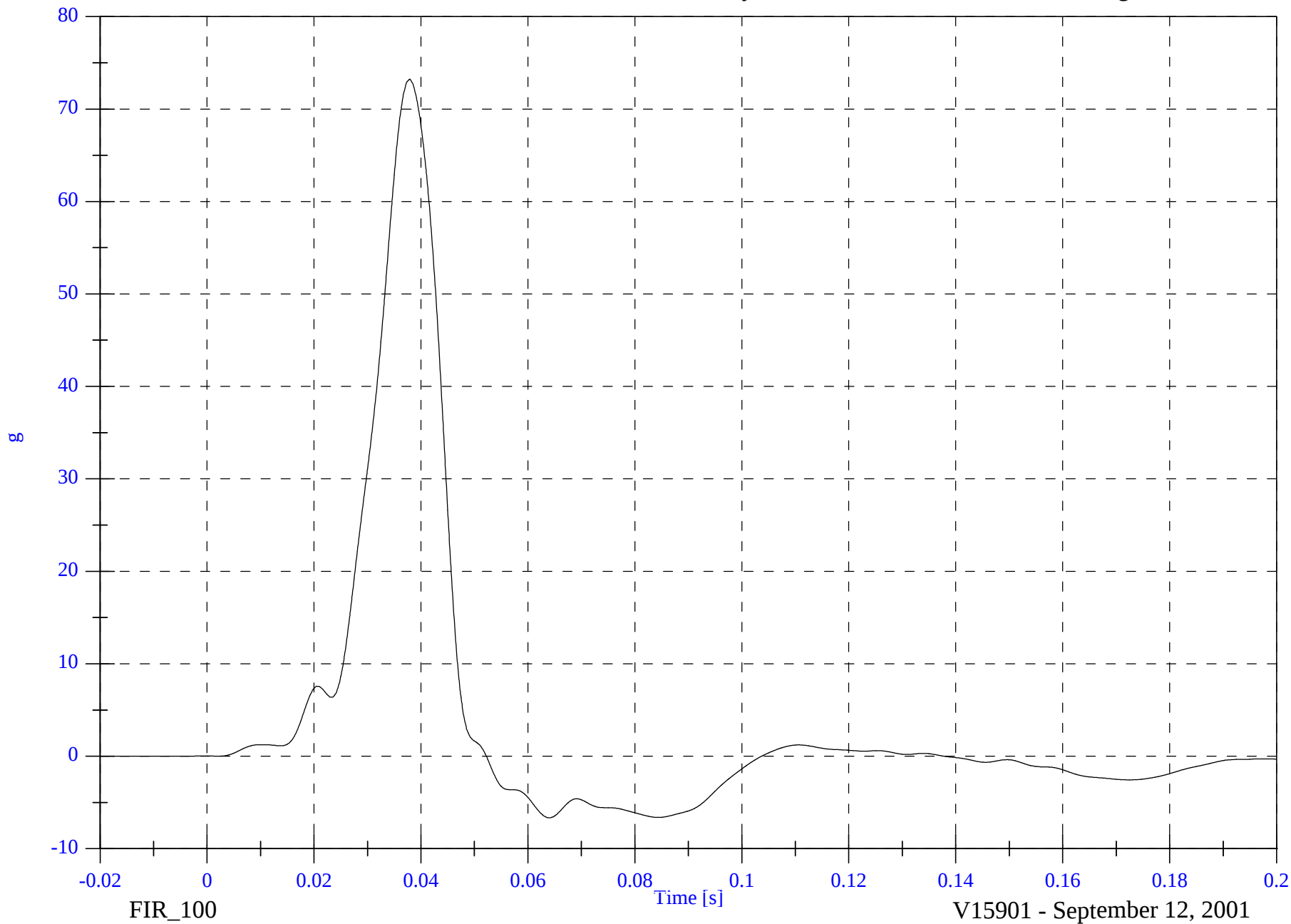
P4 Pelvic Ry

Max: 73.3 [g] at 0.038 [s]

Min: -6.7 [g] at 0.064 [s]

B-134

8629-2



APPENDIX C

SID CONFIGURATION AND PERFORMANCE VERIFICATION DATA

SUMMARY
SID PRE & POST TEST CALIBRATION

CONFIGURED FOR LEFT SIDE IMPACT

Date: September 7, 2001; October 3, 2001 Sequential Test Number: 1,1; 2, 2
Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	SID NO.: 013		SID NO.: 027	
		PRE TEST	POST TEST	PRE TEST	POST TEST
SH- Seated Height (mm)	889 - 909	902	902	907	904
RH- Rib Height (mm)	501 - 521	513	509	518	518
HP- Hip Pivot Height (mm)	99 ref.	99	99	99	99
RD- Rib from Back Line (mm)	229 - 241	236	236	236	236
KV- Knee Pivot from Back Line (mm)	511 - 526	518	518	518	518
SW- Knee Pivot to Floor (mm)	490 - 505	493	493	493	493
HW- Hip Width (mm)	356 - 391	378	376	368	371
THORAX IMPACTS					
TEMPERATURE (EC)	18.9 - 25.5	21.7	21	20.1	21
RELATIVE HUMIDITY (%)	10 -70	31	30	31	30
PROBE SPEED (m/s)	4.27 - 4.33	4.32	4.27	4.30	4.32
UPPER RIB (g's)	37 - 46	41.3	38.5	38.6	42.06
LOWER RIB (g's)	37 - 46	42.8	41.8	38.2	40.89
LOWER SPINE (g's)	15 -22	18.5	19.1	17.9	15.15
TEMPERATURE (EC)	18.9 - 25.5	21.7	20.7	20.1	21
RELATIVE HUMIDITY (%)	10 - 70	31	31	31	30
PROBE SPEED (m/s)	4.27 - 4.33	4.27	4.29	4.31	4.28
PELVIS (g's)	40 -60	45.4	43.3	54.6	48.06

REMARKS: None

CALIBRATION TEST RESULTS

PRE-TEST

SID NO.: 013

CONFIGURED FOR LEFT SIDE IMPACT

**CALIBRATION TEST RESULTS SUMMARY
PRE-TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 013 Sequential Test Number: 1
Date: September 7, 2001 Laboratory Technician: B. Swiecicki

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

* Test not required for SID certification.

REMARKS: None

**EXTERNAL DIMENSIONS
PRE-TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 013 Sequential Test Number: 1
Date: September 6, 2001 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	236
KH- Knee Pivot from Back Line (mm)	511 – 526	518
KV- Knee Pivot to Floor (mm)	490 – 505	493
HW- Hip Width (mm)	356 - 391	378

REMARKS: None

**THORACIC SHOCK ABSORBER TESTS
PRE-TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 013 Sequential Test Number: 1.1
 Date: August 29, 2001 Laboratory Technician: B. Swiecicki

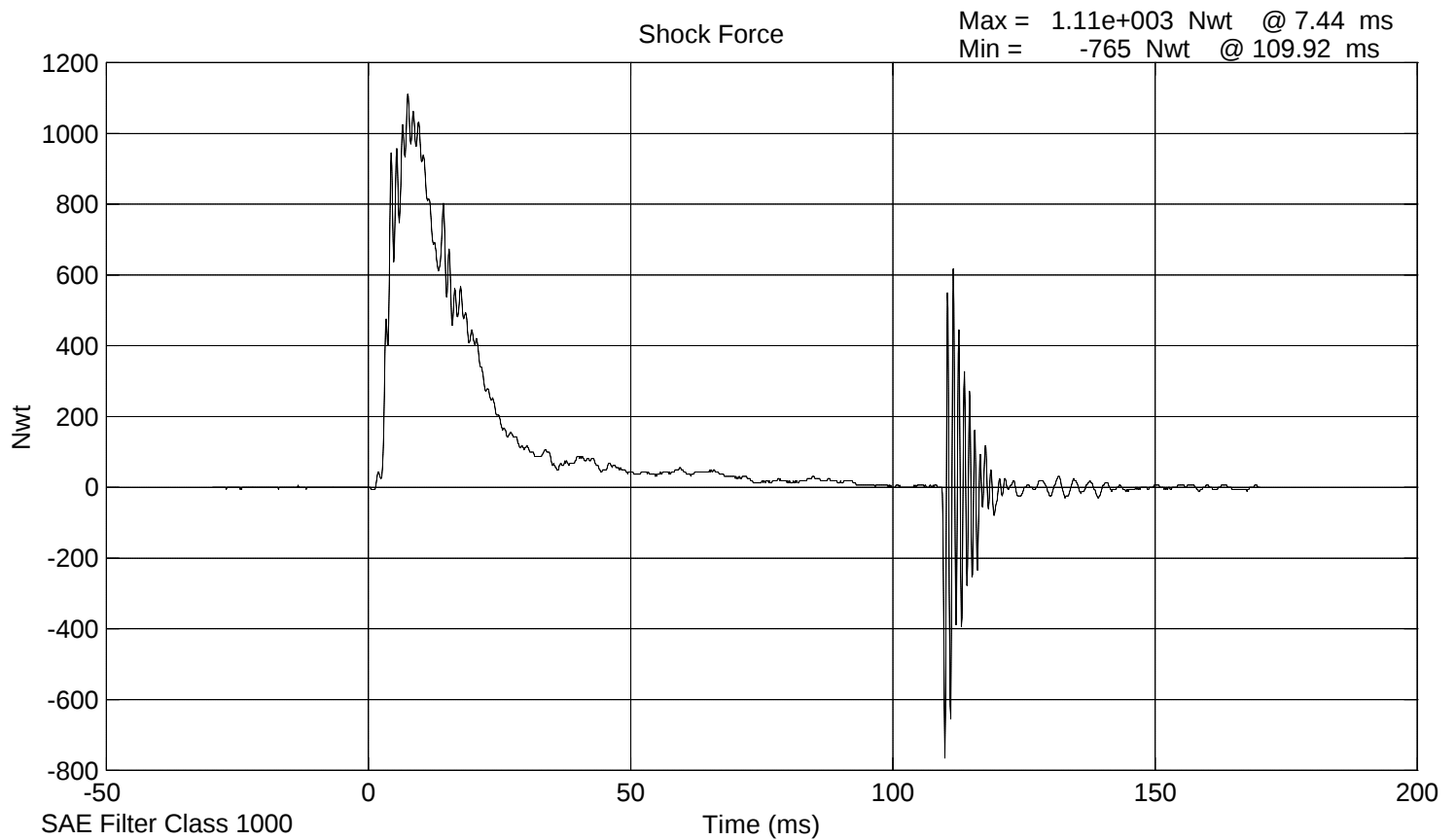
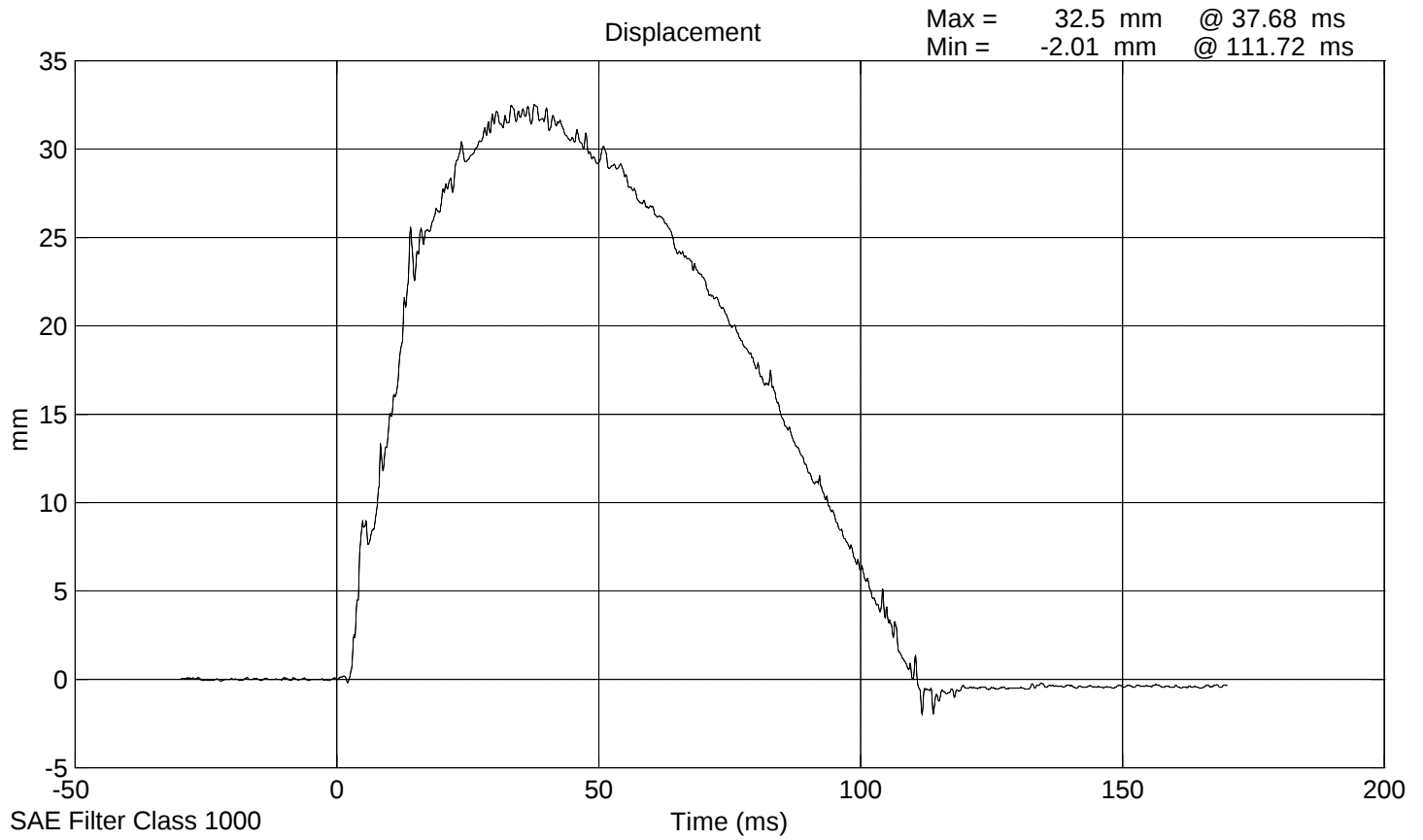
DAMPER IDENTIFICATION: _____

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE (EC)		18.9 - 25.5	20.1
RELATIVE HUMIDITY (%)		10 - 70	30
VELOCITY 3.05 m/s	FORCE (N)	836 - 1125	1111.4
	DISPLACEMENT (mm)	30 - 35	32.5
VELOCITY 4.27 m/s	FORCE (N)	1730 - 2099	2047.4
	DISPLACEMENT (mm)	32 - 37	35.0
VELOCITY 6.10 m/s	FORCE (N)	3741 - 4448	4100.5
	DISPLACEMENT (mm)	33 - 40	36.5

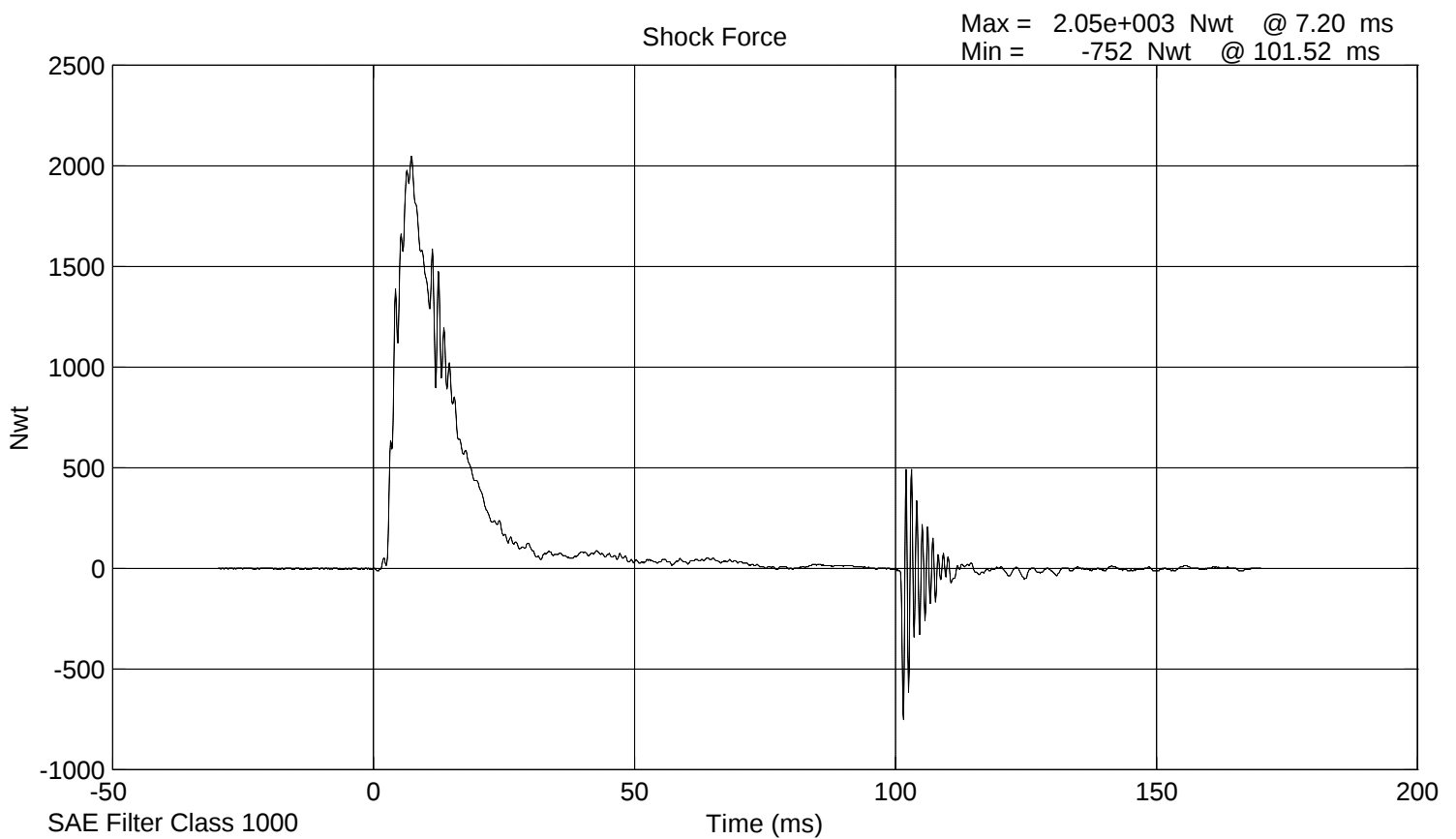
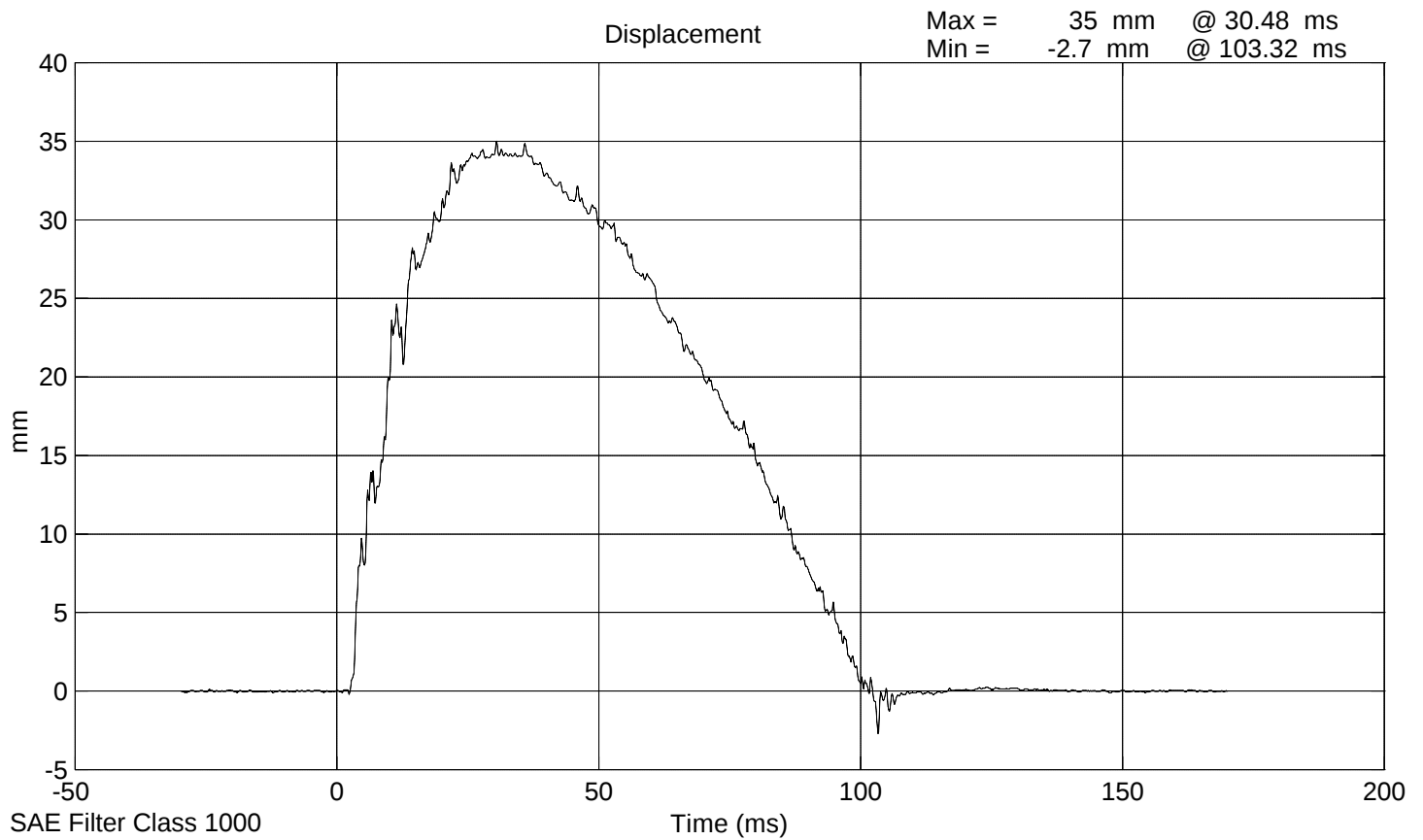
DAMPER SETTING: 5

REMARKS: None

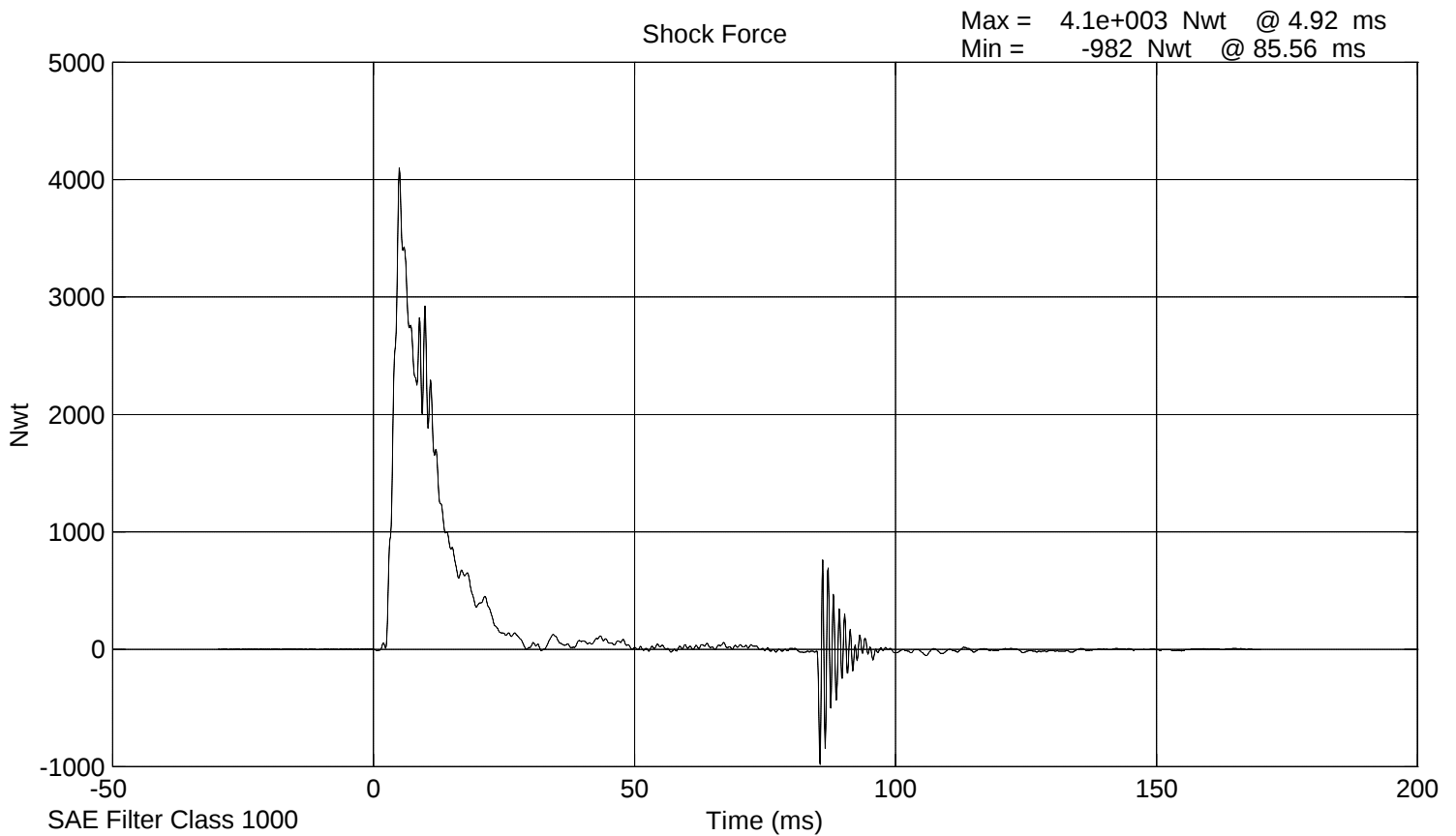
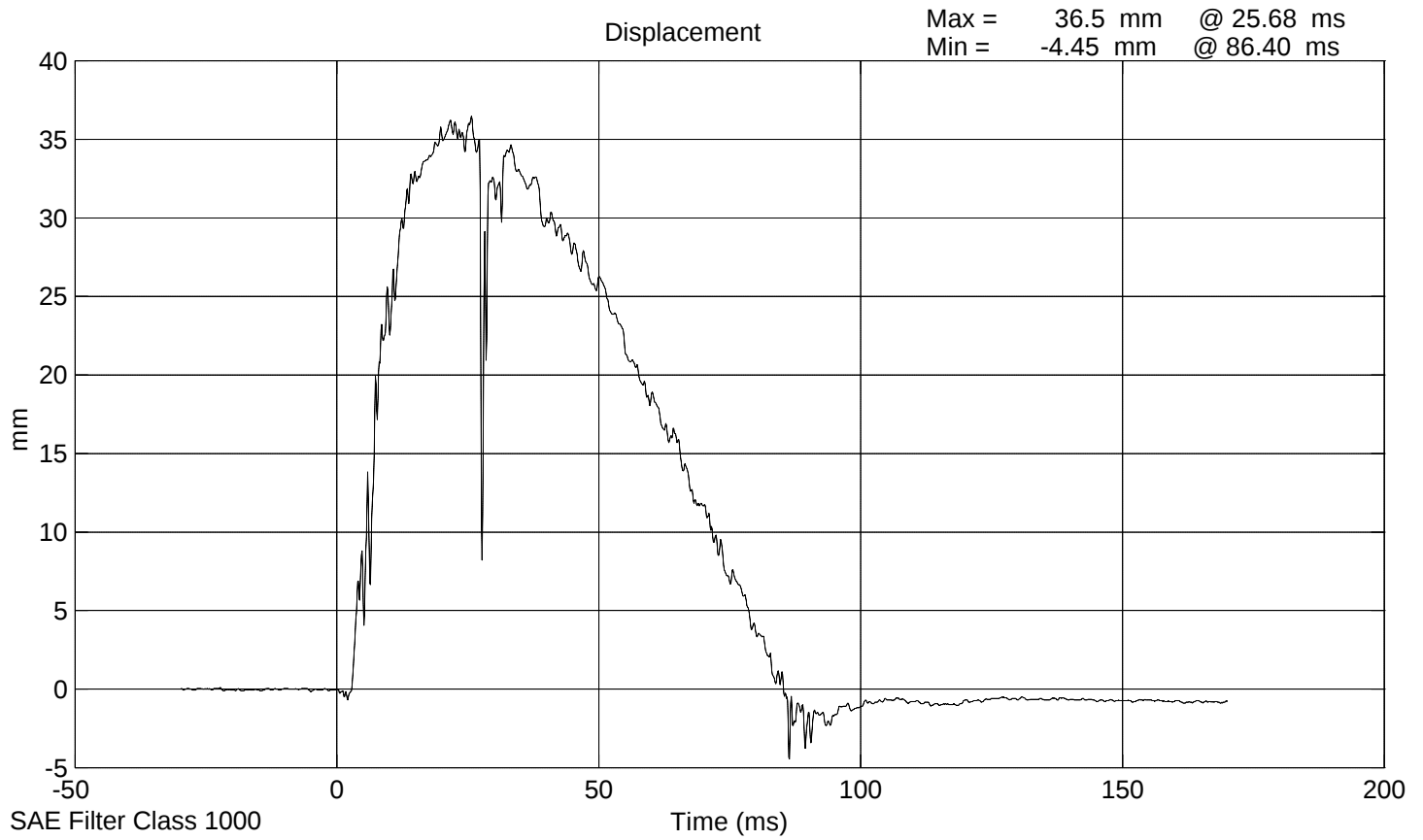
SID 013 Shock Absorber Impact Test @ 3.048 m/s



SID 013 Shock Absorber Impact Test @ 4.2672 m/s



SID 013 Shock Absorber Impact Test @ 6.096 m/s



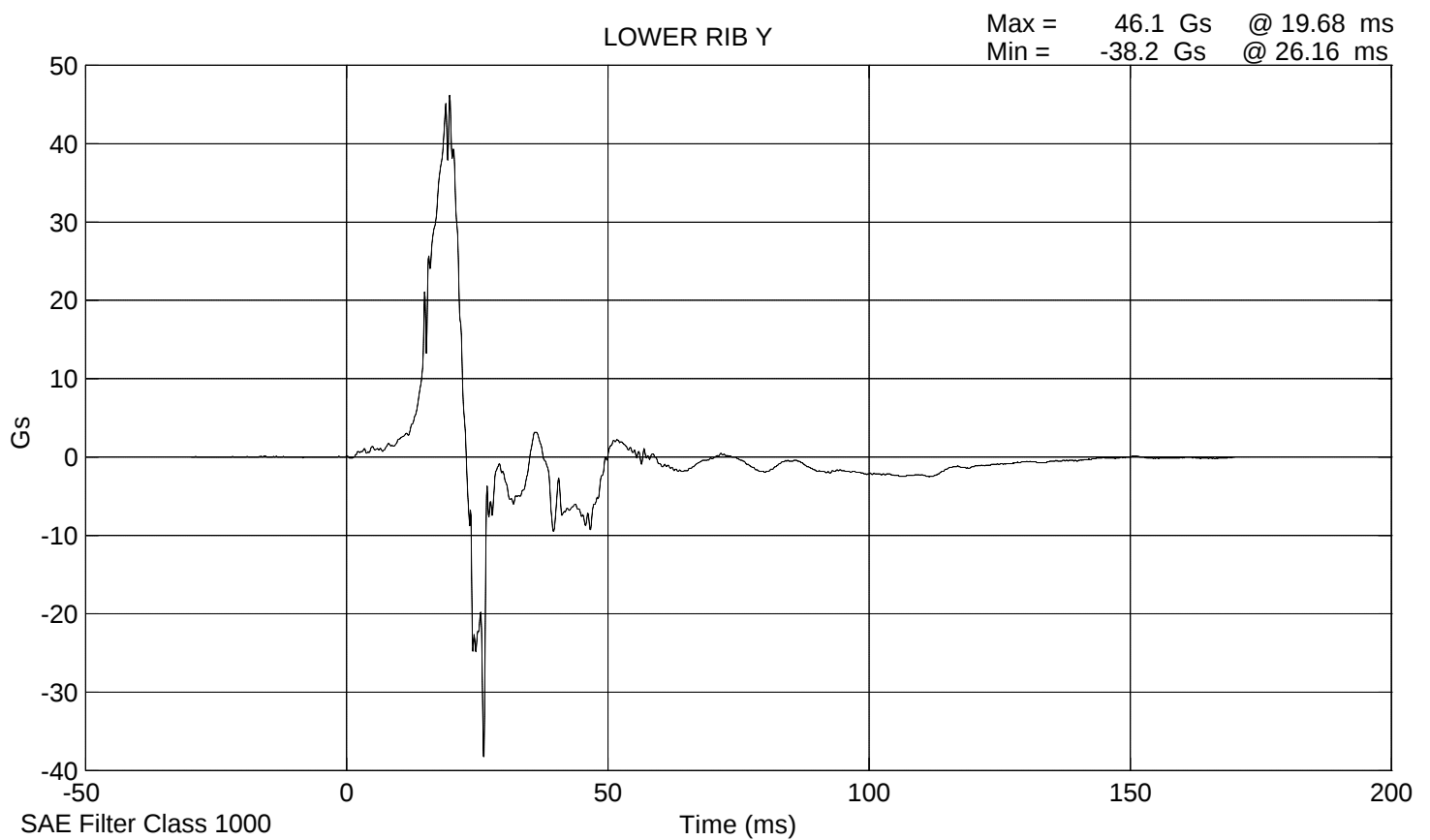
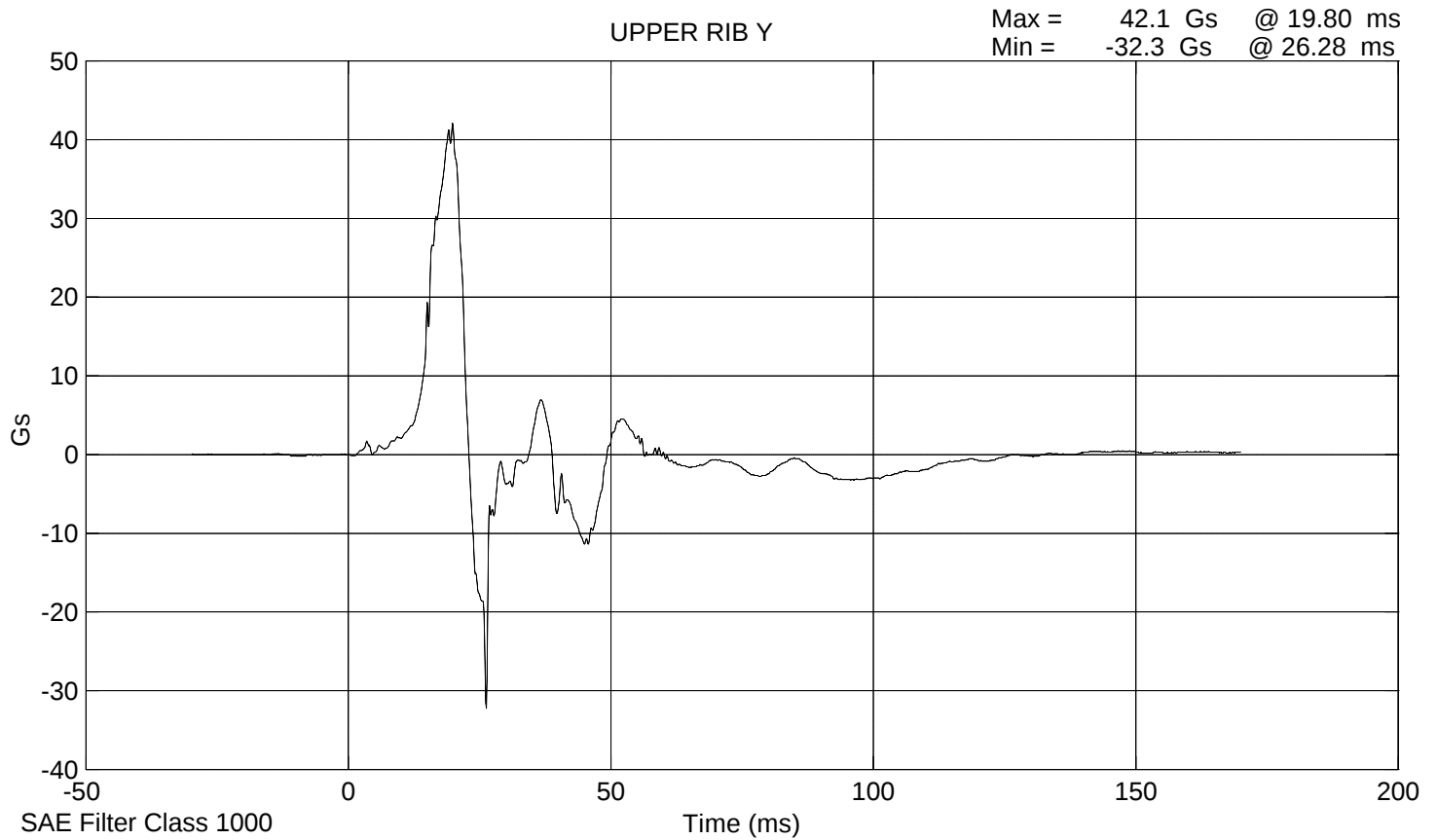
**LATERAL THORAX IMPACT TEST
PRE-TEST**

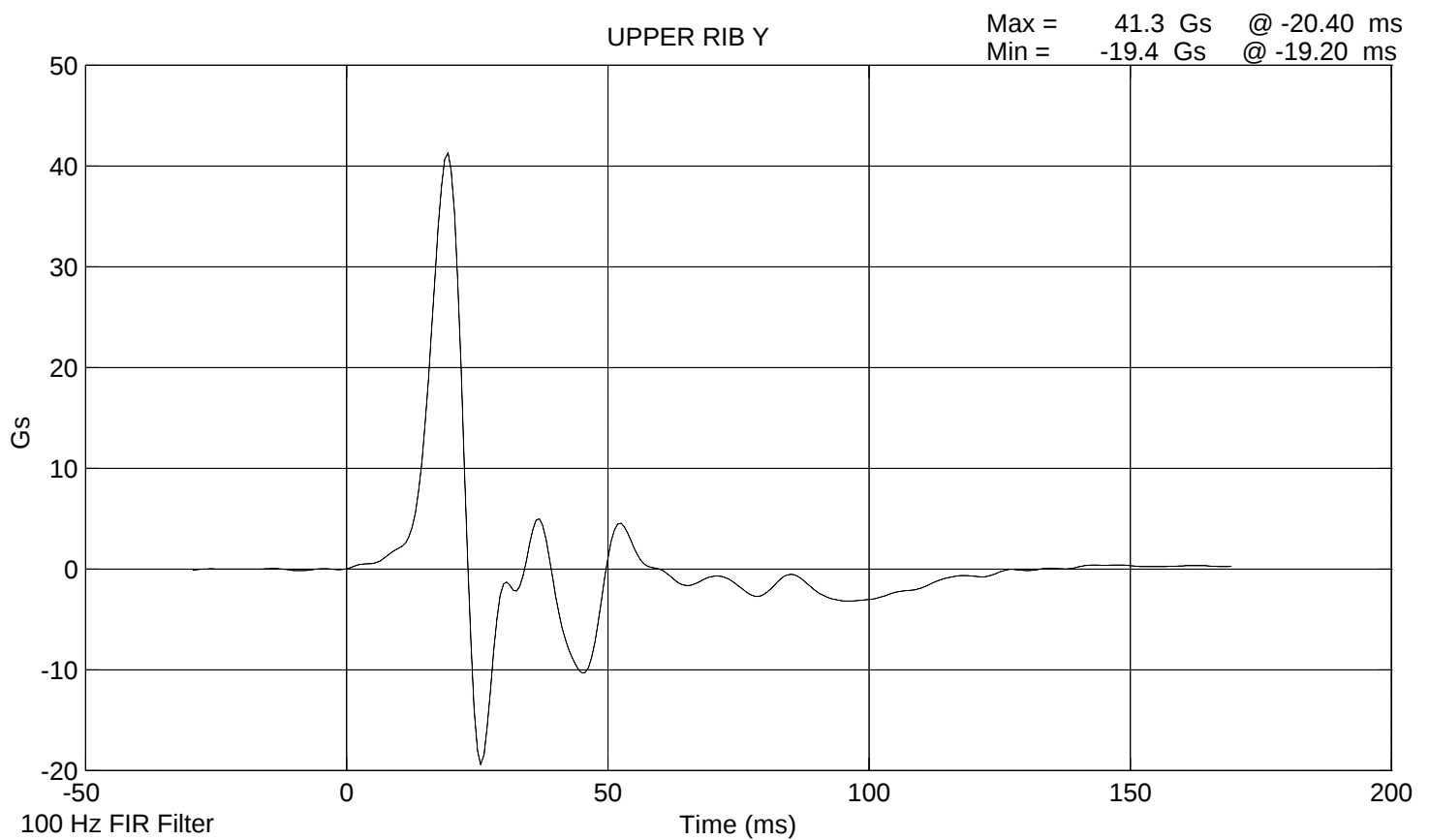
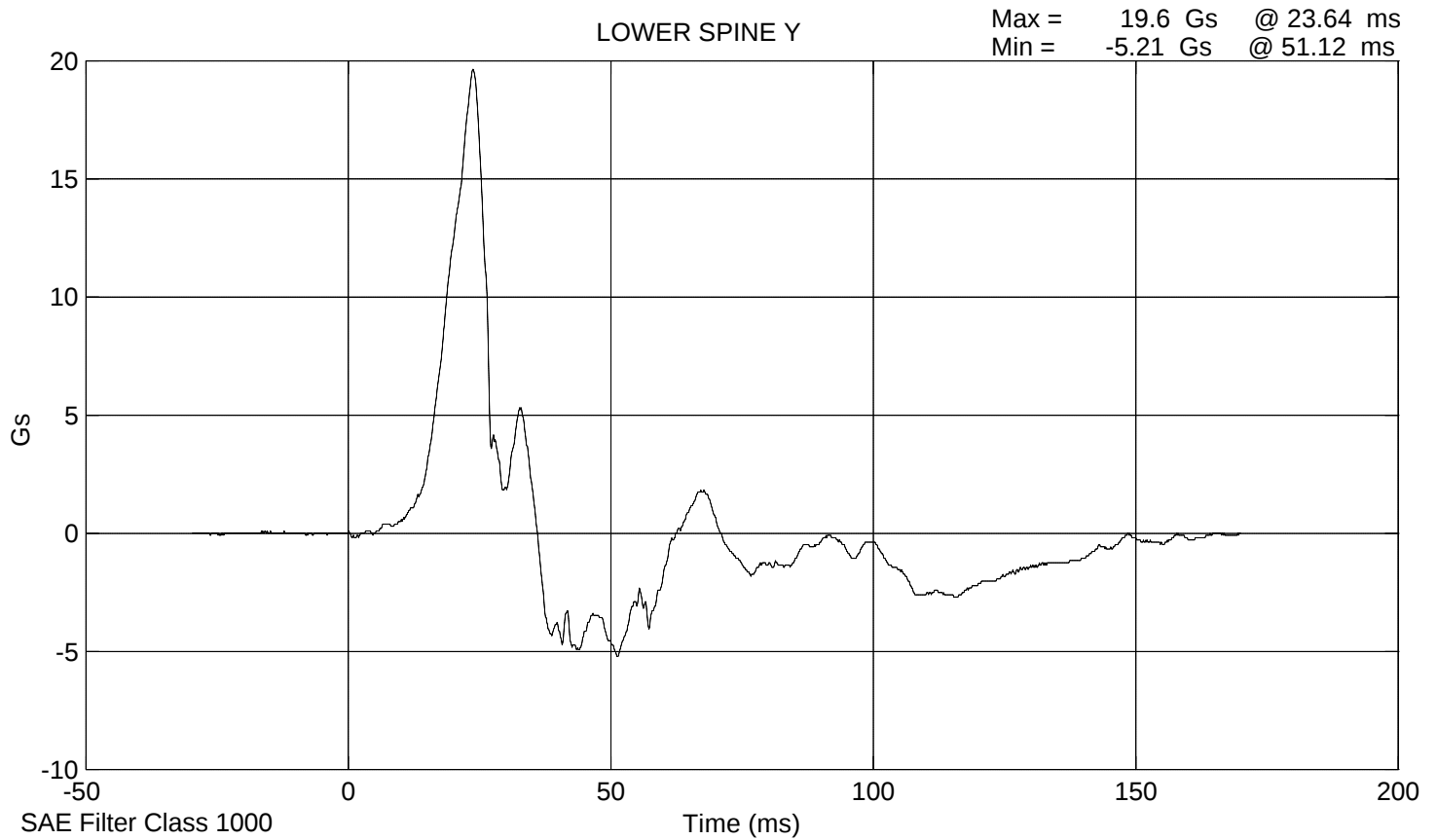
CONFIGURED FOR LEFT SIDE IMPACT

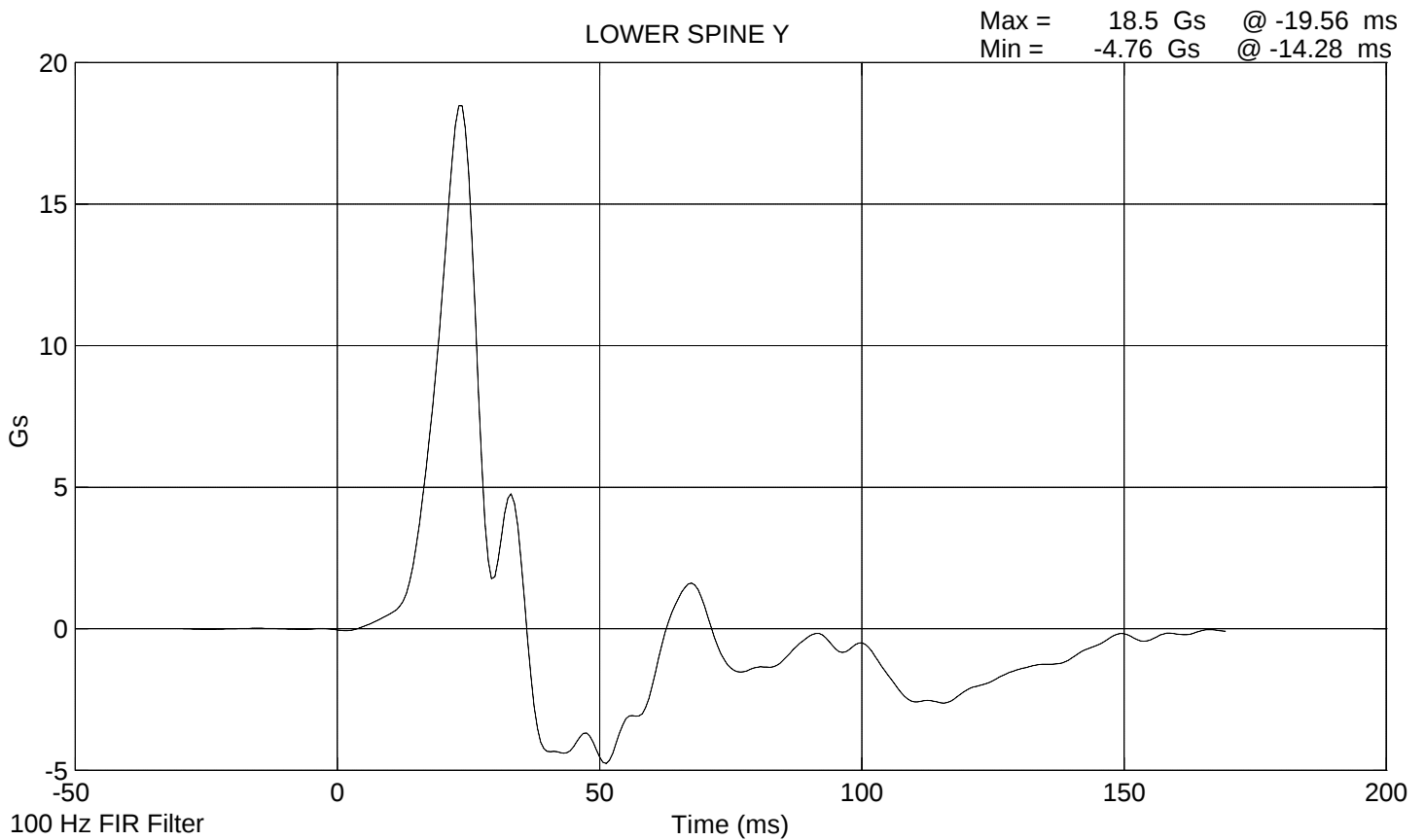
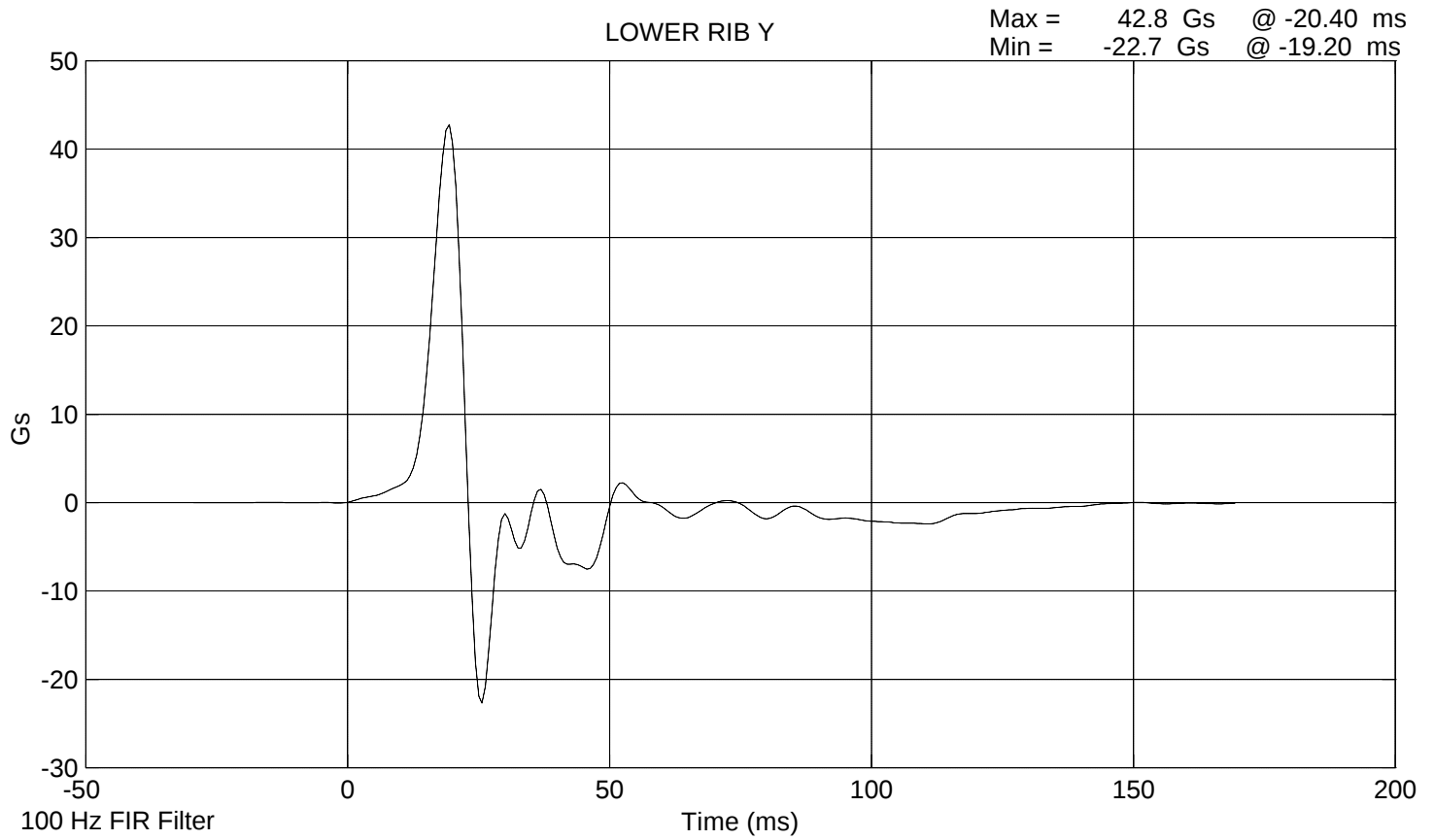
SID Serial No.: 013 Sequential Test Number: 1
Date: September 5, 2001 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (EC)	18.9 - 25.5	21.7
RELATIVE HUMIDITY (%)	10 - 70	31
PROBE SPEED (m/s)	4.27 - 4.33	4.32
UPPER RIB (g's)	37 - 46	41.3
LOWER RIB (g's)	37 - 46	42.8
LOWER SPINE (g's)	15 - 22	18.5

REMARKS: None







**LATERAL PELVIS IMPACT TEST
PRE-TEST**

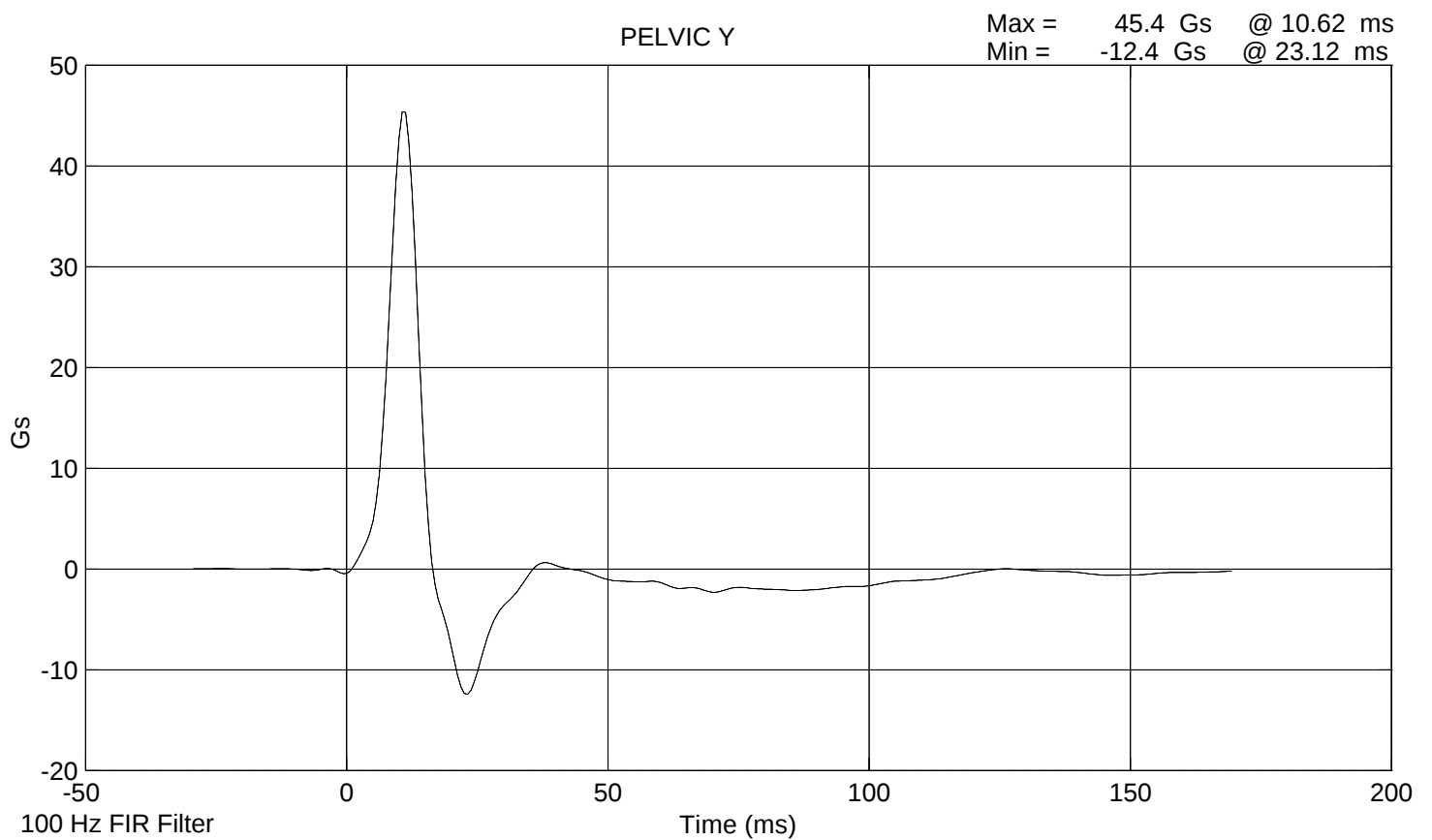
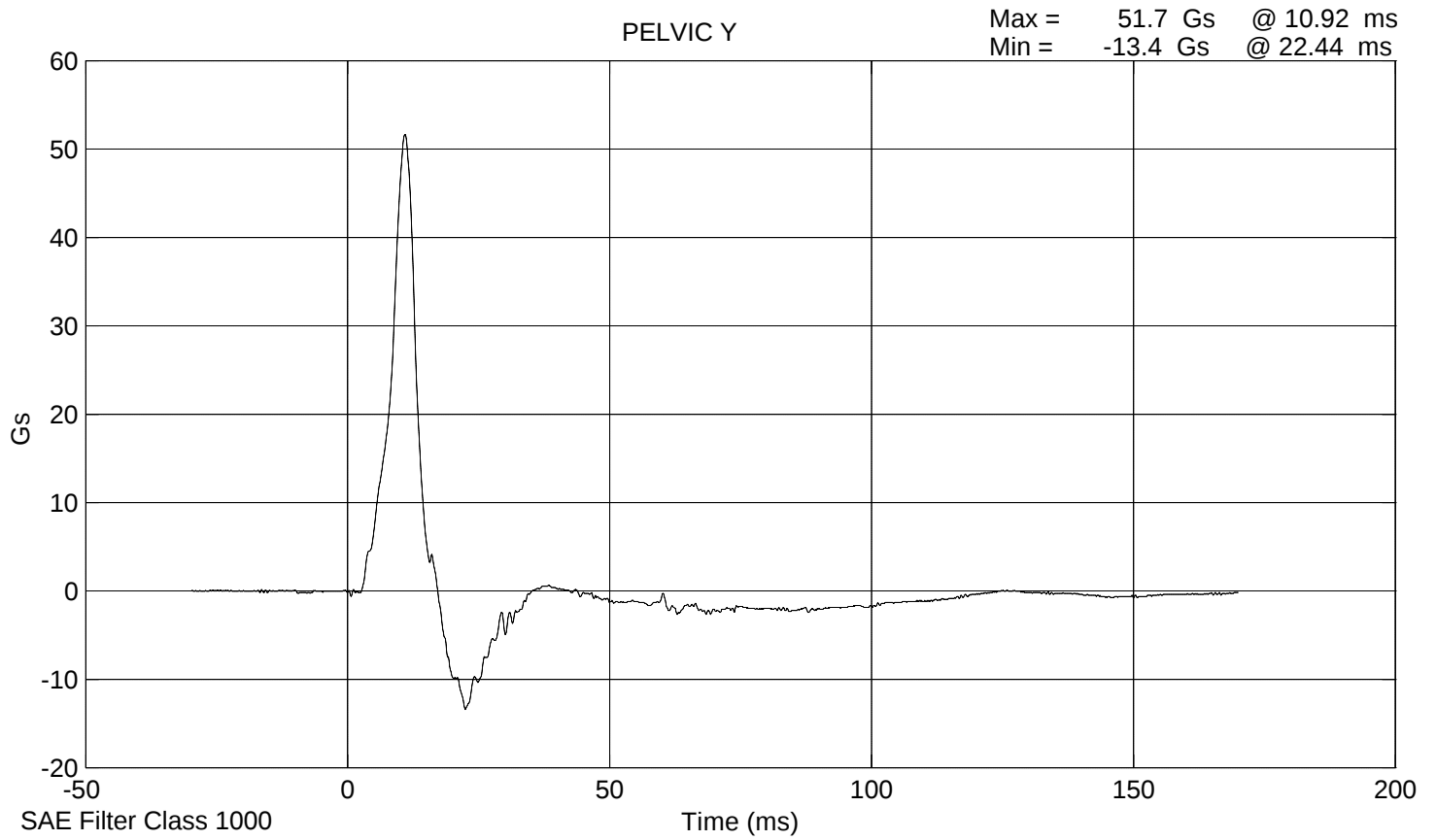
CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 013	Sequential Test Number: 1
Date: September 5, 2001	Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (EC)	18.9 - 25.5	21.7
RELATIVE HUMIDITY (%)	10 - 70	31
PROBE SPEED (m/s)	4.27 - 4.33	4.27
PELVIS ACCELERATION (g's)	40 - 60	45.4

REMARKS: None

SID 013 Pelvic Impact Test @ 4.2702 m/s



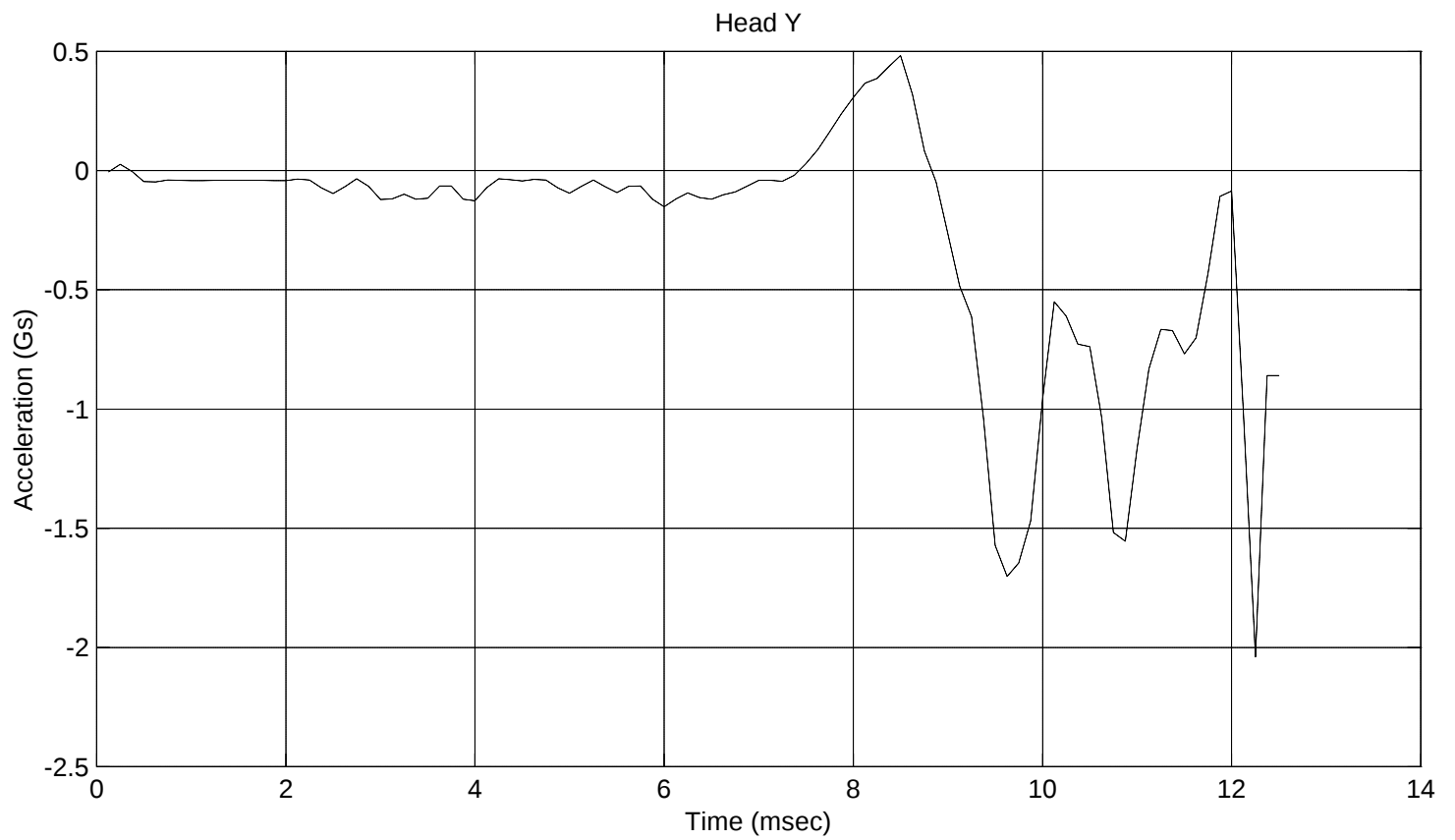
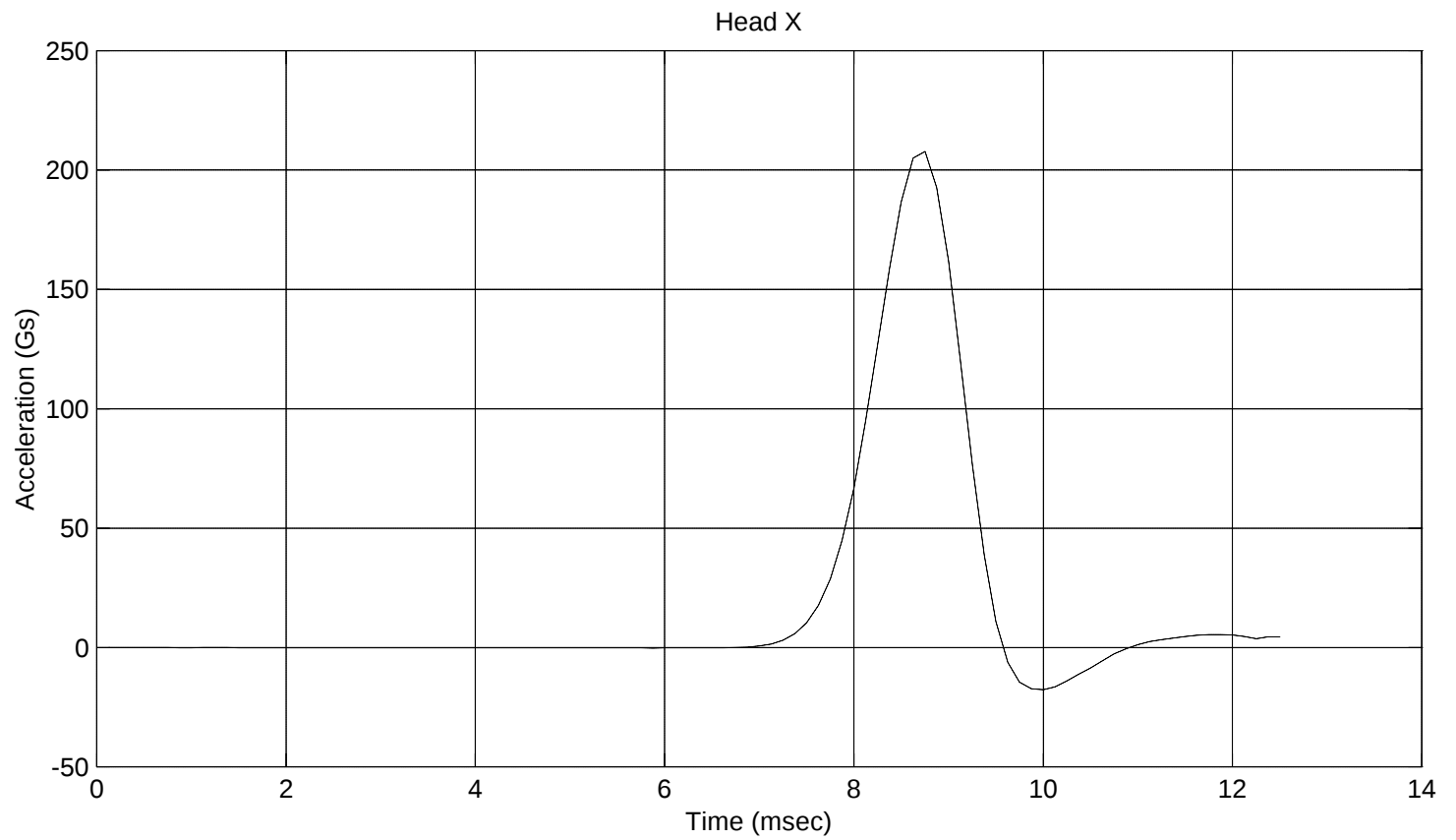
**HEAD DROP TEST
PRE-TEST**
(Test not required for SID certification)

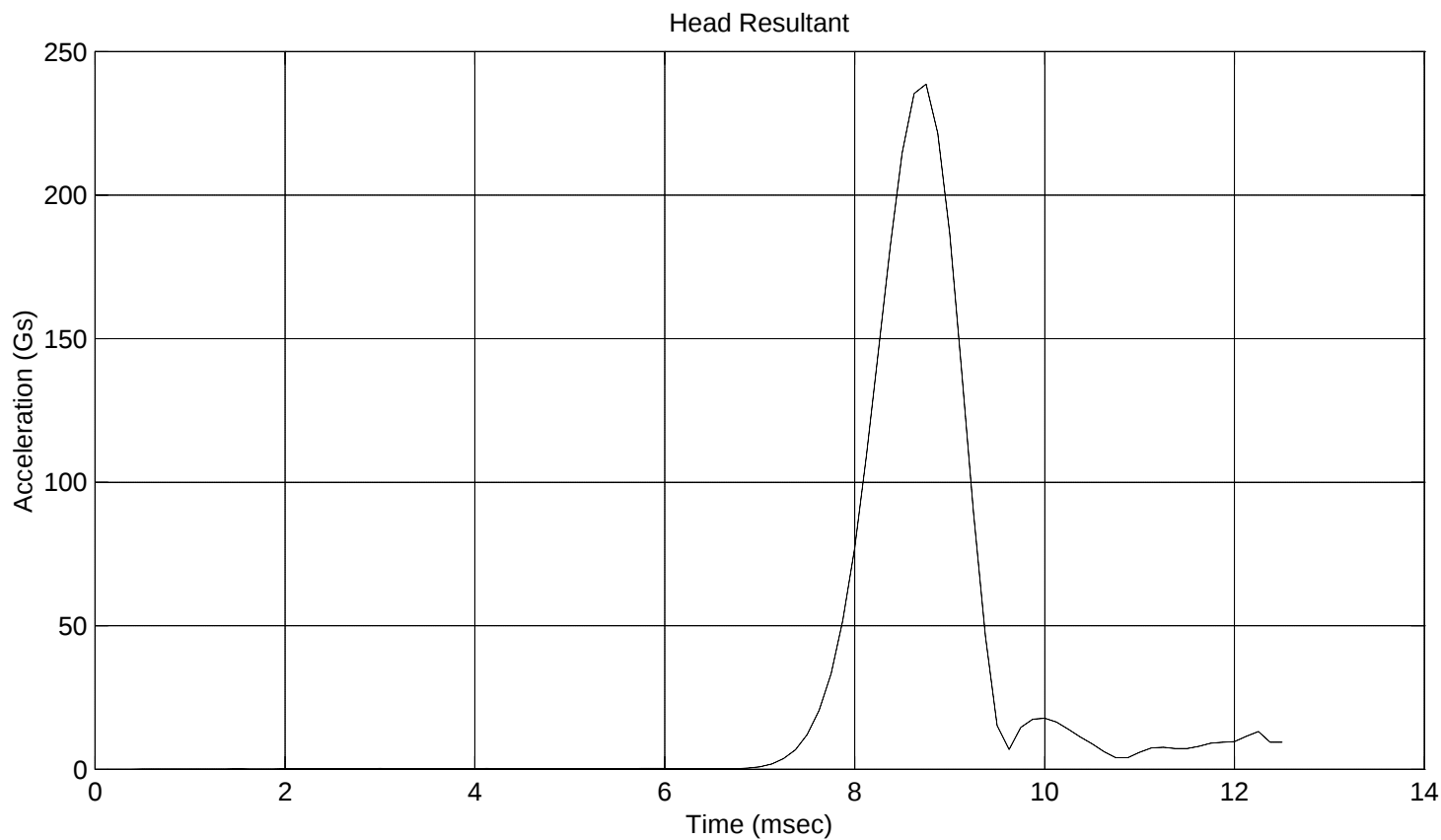
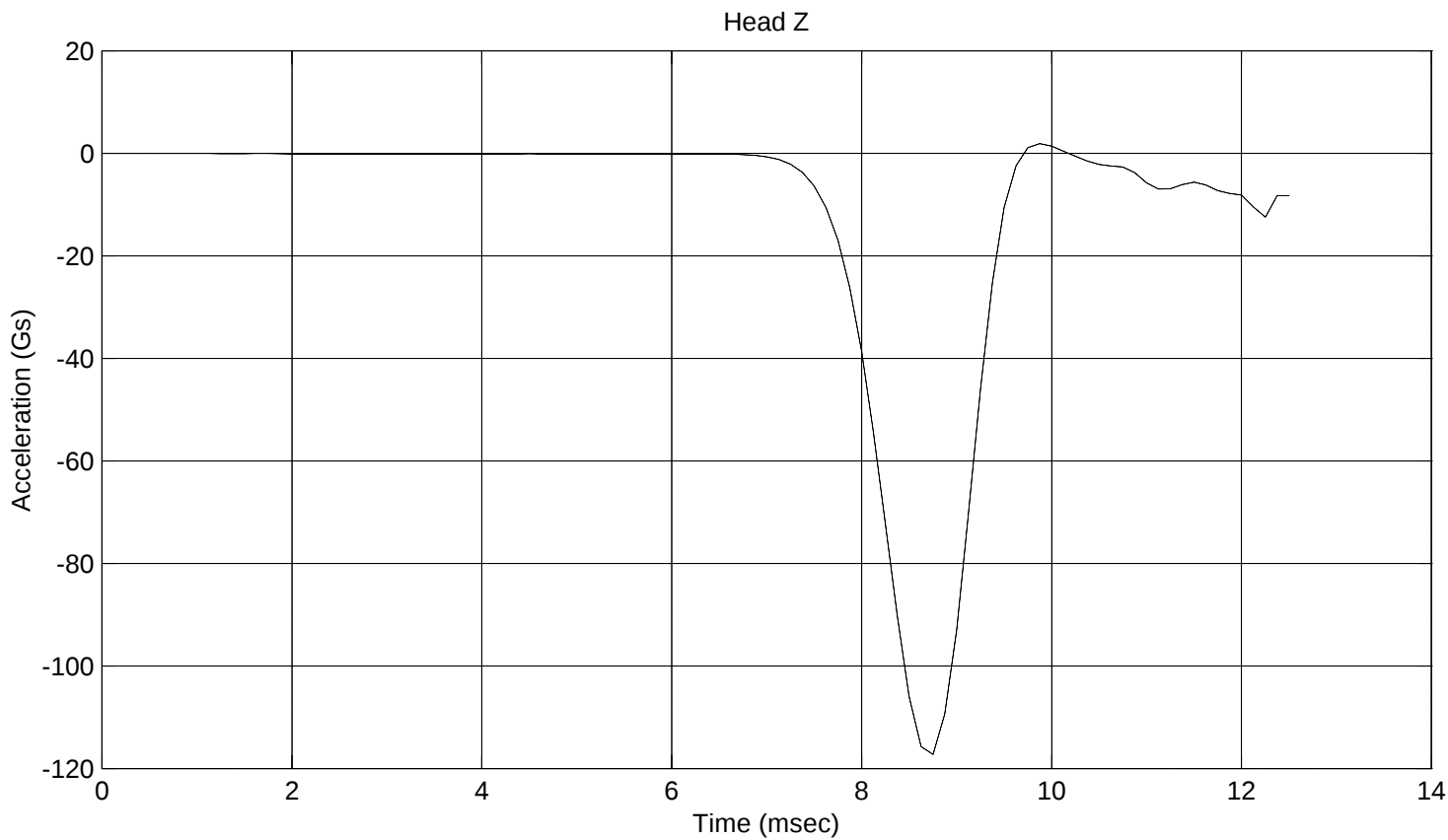
CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 013 Sequential Test Number: 1
Date: August 28, 2001 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (EC)	18.9 - 25.5	20.7
RELATIVE HUMIDITY (%)	10 - 70	30.0
PEAK RESULTANT ACCELERATION (Gs)	210 - 260	238.63
PEAK LATERAL ACCELERATION (Gs)	Not to Exceed 10	2.04
UNIMODAL CRITERIA ABOVE 100 Gs (ms)	0.9 - 1.5	1.12

REMARKS: None





**ABDOMINAL COMPRESSION TEST
PRE-TEST**

(Test not required for SID certification)

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: <u>013</u>	Sequential Test Number: <u>1</u>
Date: <u>September 7, 2001</u>	Laboratory Technician: <u>B. Swiecicki</u>

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (EC)	18.9 - 25.5	21.7
RELATIVE HUMIDITY (%)	10 - 70	30
FORCE @ 13 mm (N)	104 - 162	111.2
FORCE @ 19 mm (N)	163 - 221	181.0
FORCE @ 25 mm (N)	222 - 280	254.4
FORCE @ 33 mm (N)	325 - 391	360.3

REMARKS: None

ORIGINAL

Dummy S/N 013

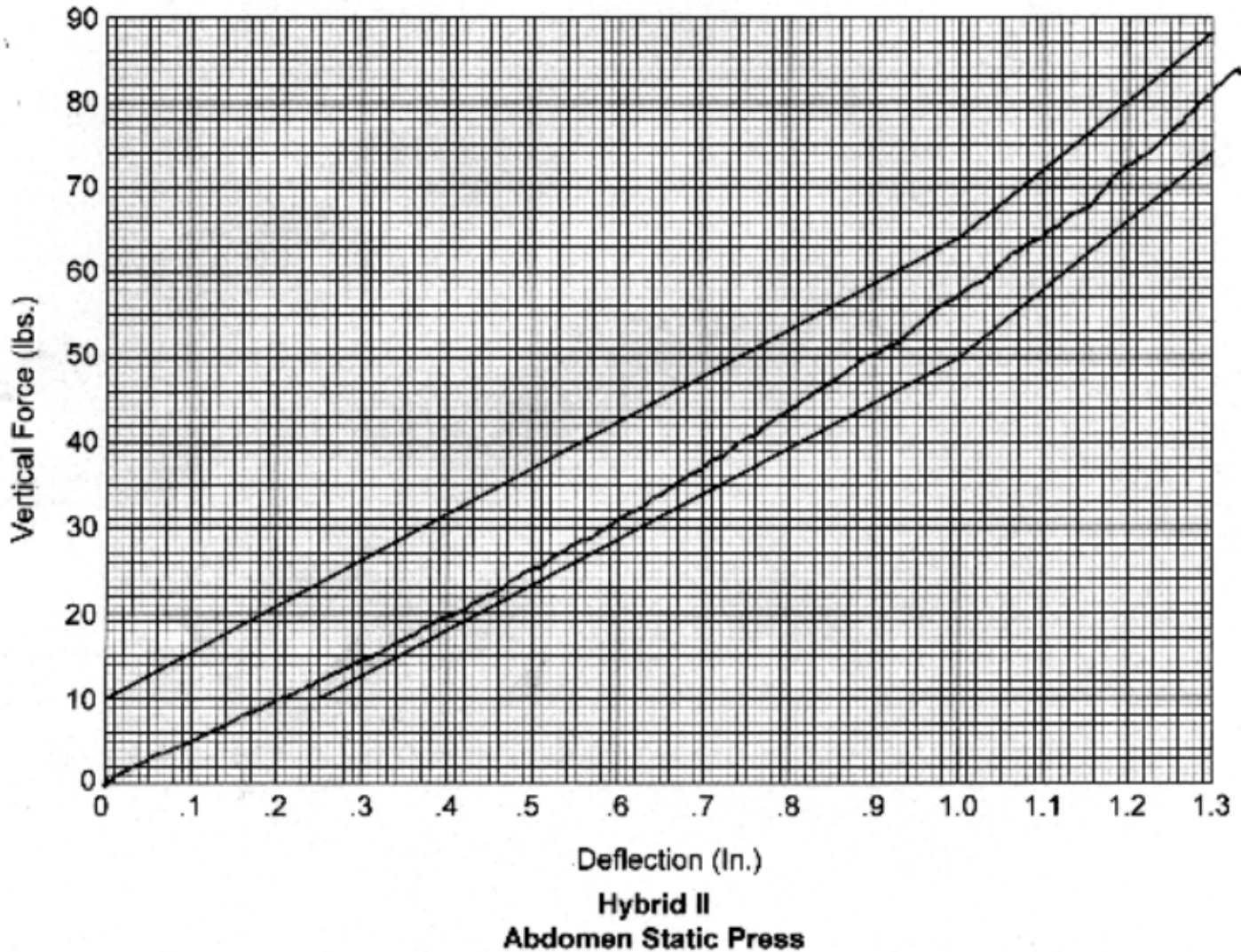
W/A _____

Date 9-7-2001

Performed By [Signature]

Temp. 71°

Humidity 30%



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

CONFIGURED FOR LEFT SIDE IMPACT

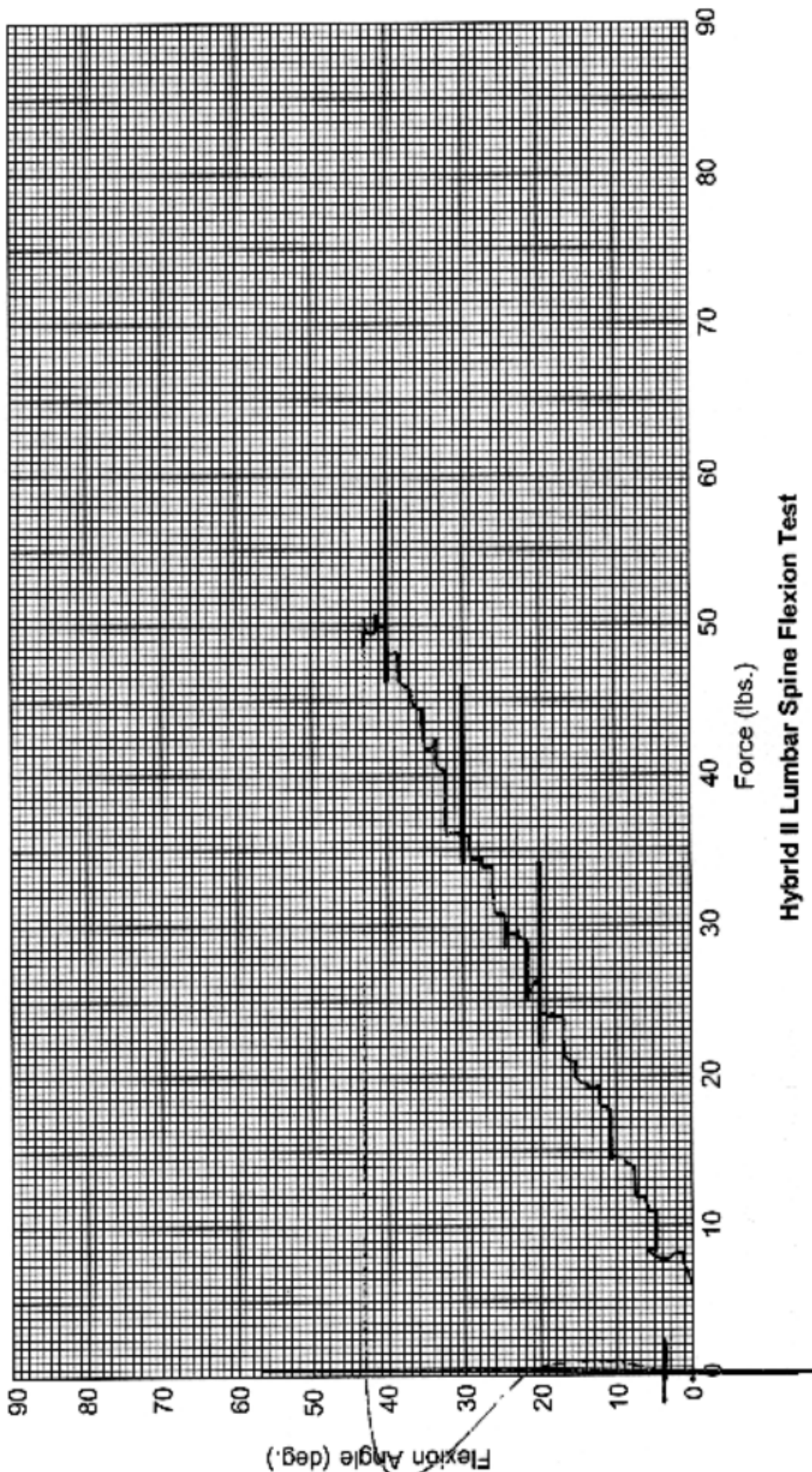
SID Serial No.: 013 Sequential Test Number: 1
Date: September 6, 2001 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (EC)	18.9 - 25.5	20.1
RELATIVE HUMIDITY (%)	10 - 70	31
FORCE @ 0E (N)	0 - 26.7	0
FORCE @ 20E (N)	97.8 - 151.2	106.8
FORCE @ 30E (N)	151.2 - 204.6	160.1
FORCE @ 40E (N)	204.6 - 258	213.5
RETURN ANGLE	12E max.	3.8

REMARKS: None

ORIGINAL

Dummy S/N 013
W/A _____
Date 9-6-2001
Performed By [Signature]
Temp. 70°
Humidity 31%



Hybrid II Lumbar Spine Flexion Test

PRE-TEST DUMMY INSPECTION LIST

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 013 Sequential Test Number: 1
Date: September 7, 2001 Laboratory Technician: B. Swiecicki

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

REMARKS: None

CALIBRATION TEST RESULTS

PRE-TEST

SID NO.: 027

CONFIGURED FOR LEFT SIDE IMPACT

**CALIBRATION TEST RESULTS SUMMARY
PRE-TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 027 Sequential Test Number: 1
Date: September 7, 2001 Laboratory Technician: B. Swiecicki

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

* Test not required for SID certification.

REMARKS: None

**EXTERNAL DIMENSIONS
PRE-TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 027 Sequential Test Number: 1
Date: September 6, 2001 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
SH- Seated Height (mm)	889 - 909	907
RH- Rib Height (mm)	502 - 520	518
HP- Hip Pivot Height (mm)	99 ref.	99
RD- Rib from Back Line (mm)	229 - 241	236
KH- Knee Pivot from Back Line (mm)	511 - 526	518
KV- Knee Pivot to Floor (mm)	490 - 505	493
HW- Hip Width (mm)	356 - 391	368

REMARKS: None

**THORACIC SHOCK ABSORBER TESTS
PRE-TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 027 Sequential Test Number: 1
Date: August 30, 2001 Laboratory Technician: B. Swiecicki

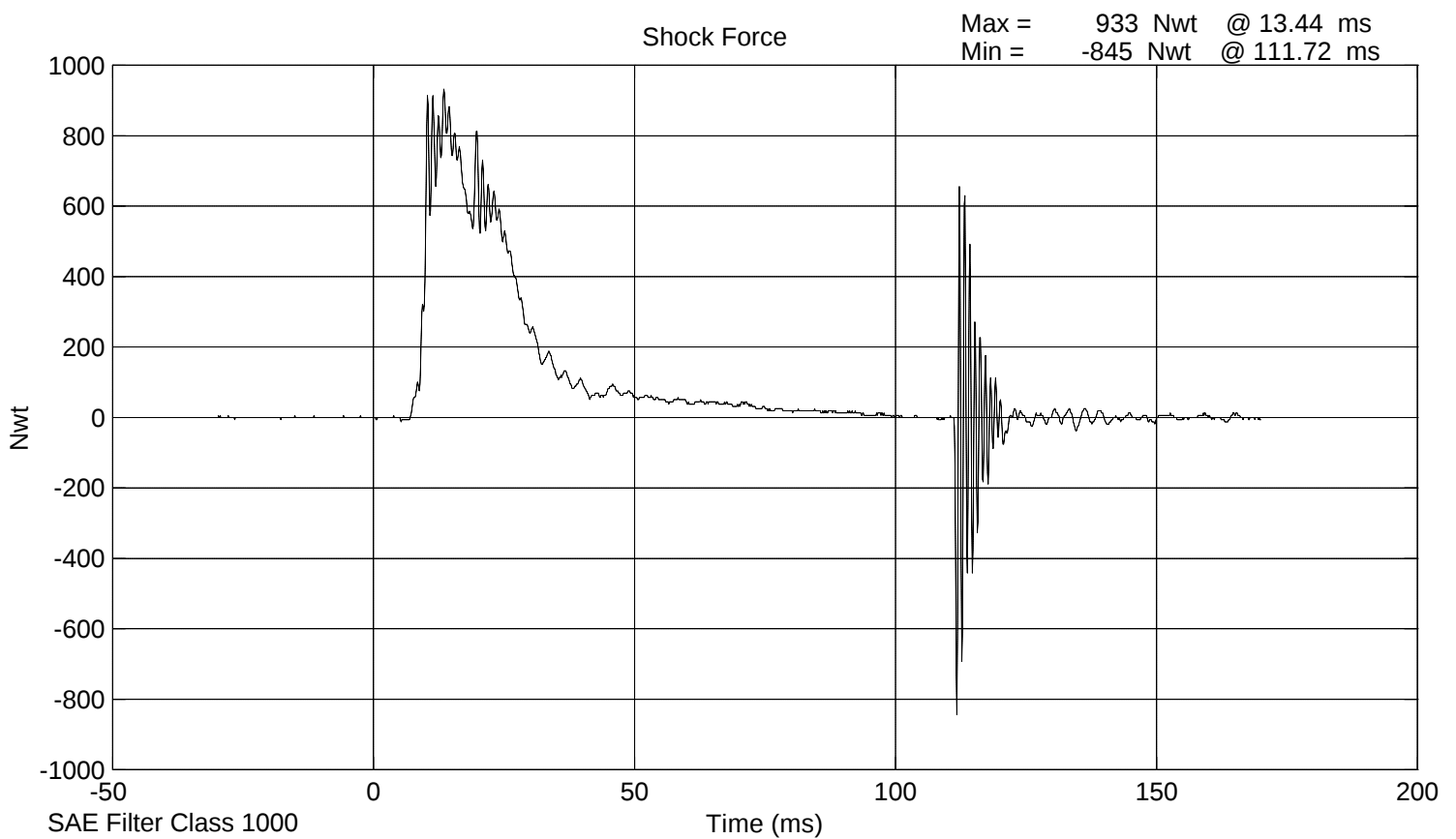
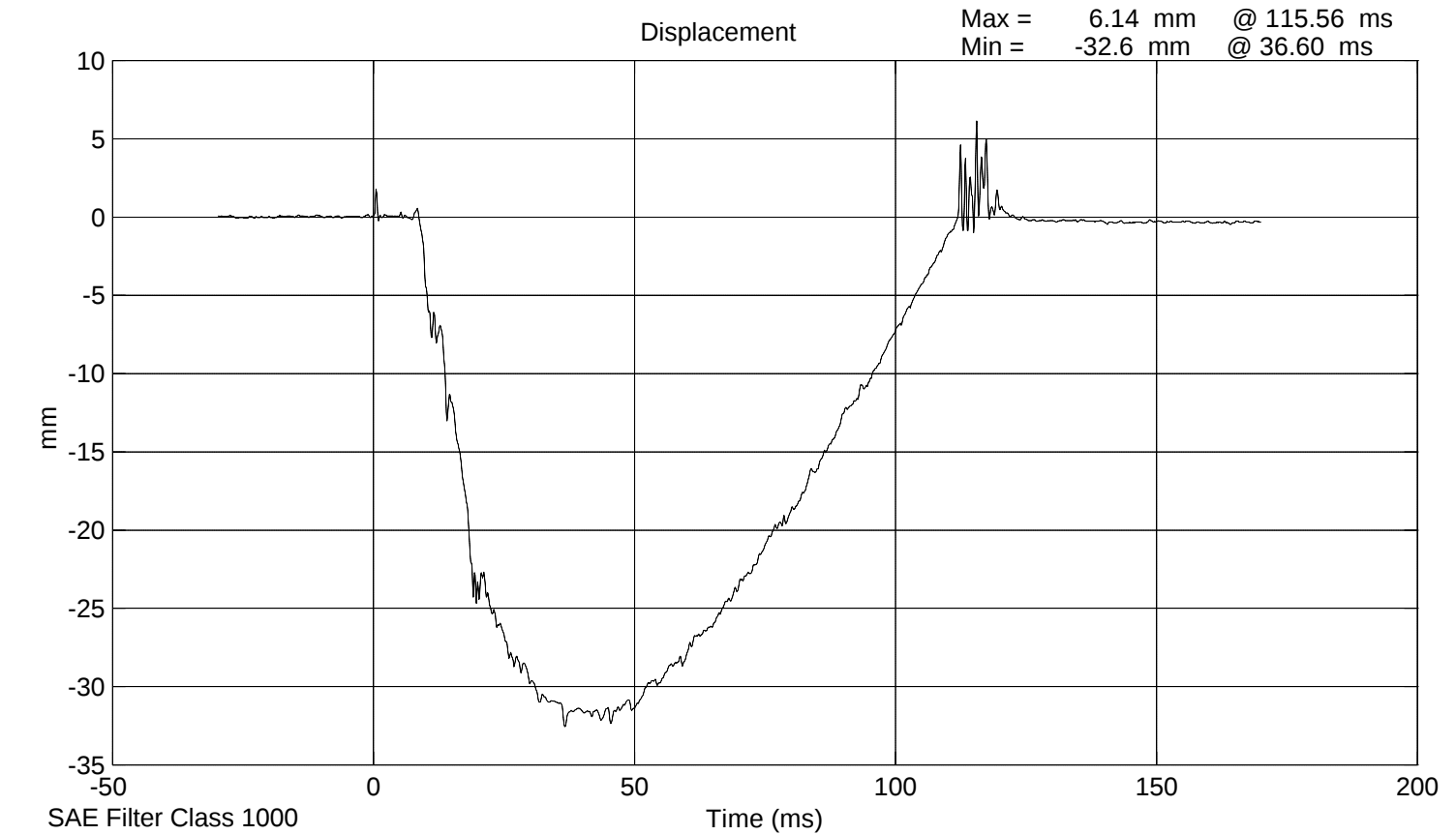
DAMPER IDENTIFICATION: _____

TEST PARAMETER		SPECIFICATION	TEST RESULTS
TEMPERATURE (EC)		18.9 - 25.5	20.7
RELATIVE HUMIDITY (%)		10 - 70	31
VELOCITY 3.05 m/s	FORCE (N)	836 - 1125	932.6
	DISPLACEMENT (mm)	30 - 35	32.5
VELOCITY 4.27 m/s	FORCE (N)	1730 - 2099	1804.4
	DISPLACEMENT (mm)	32 - 37	36.1
VELOCITY 6.10 m/s	FORCE (N)	3741 - 4448	3983.6
	DISPLACEMENT (mm)	33 - 40	35.9

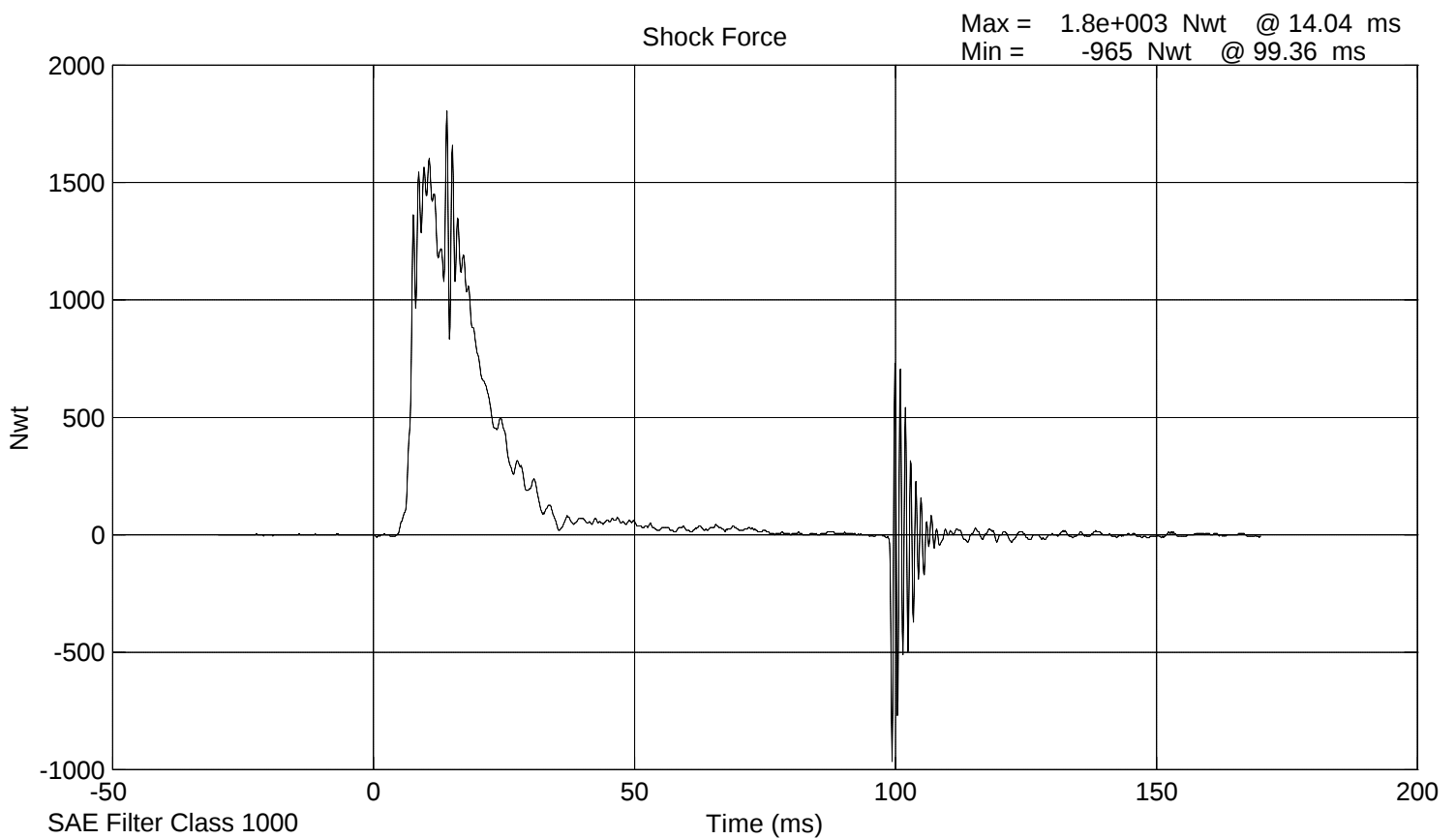
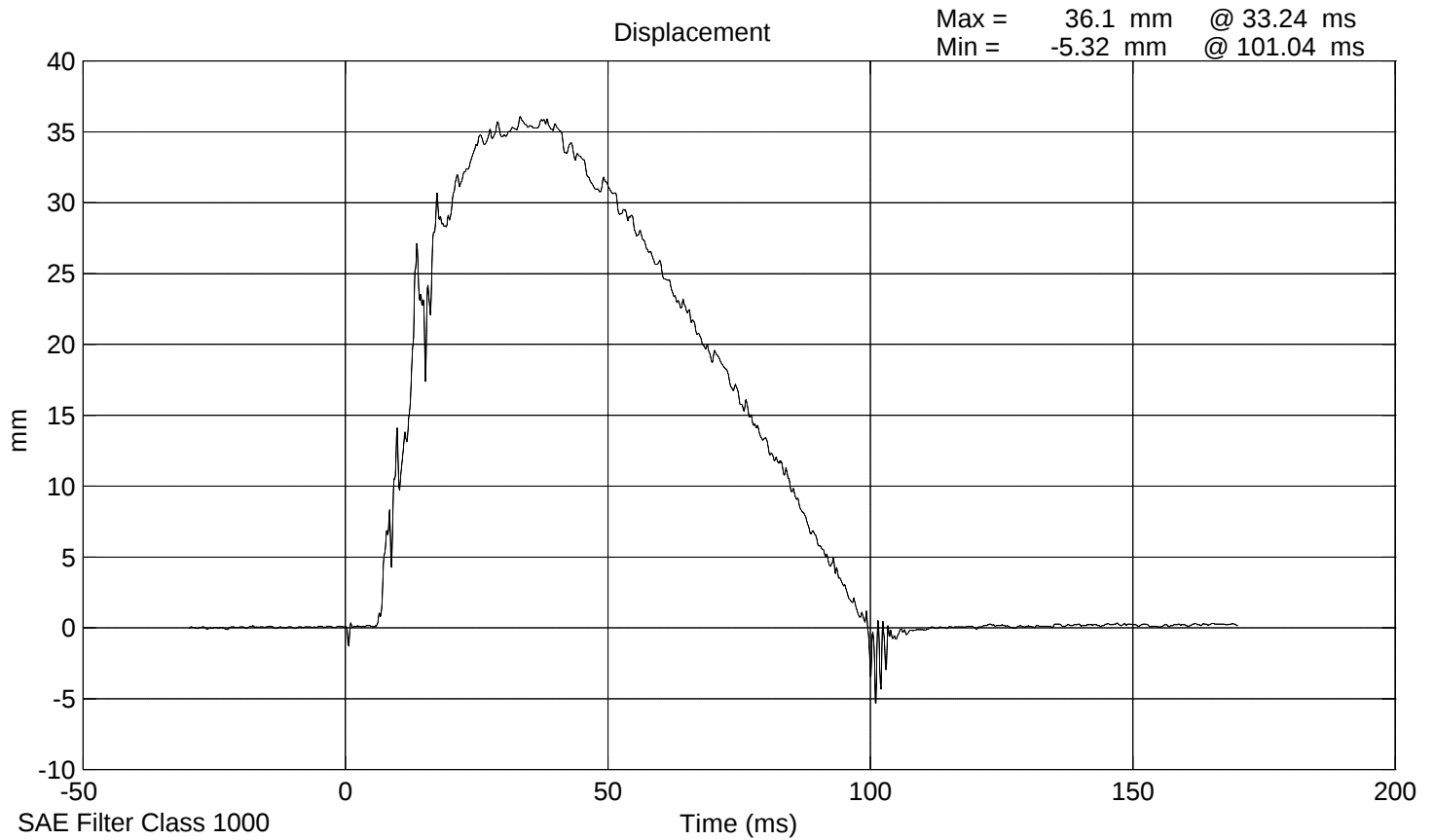
DAMPER SETTING: 5

REMARKS: None

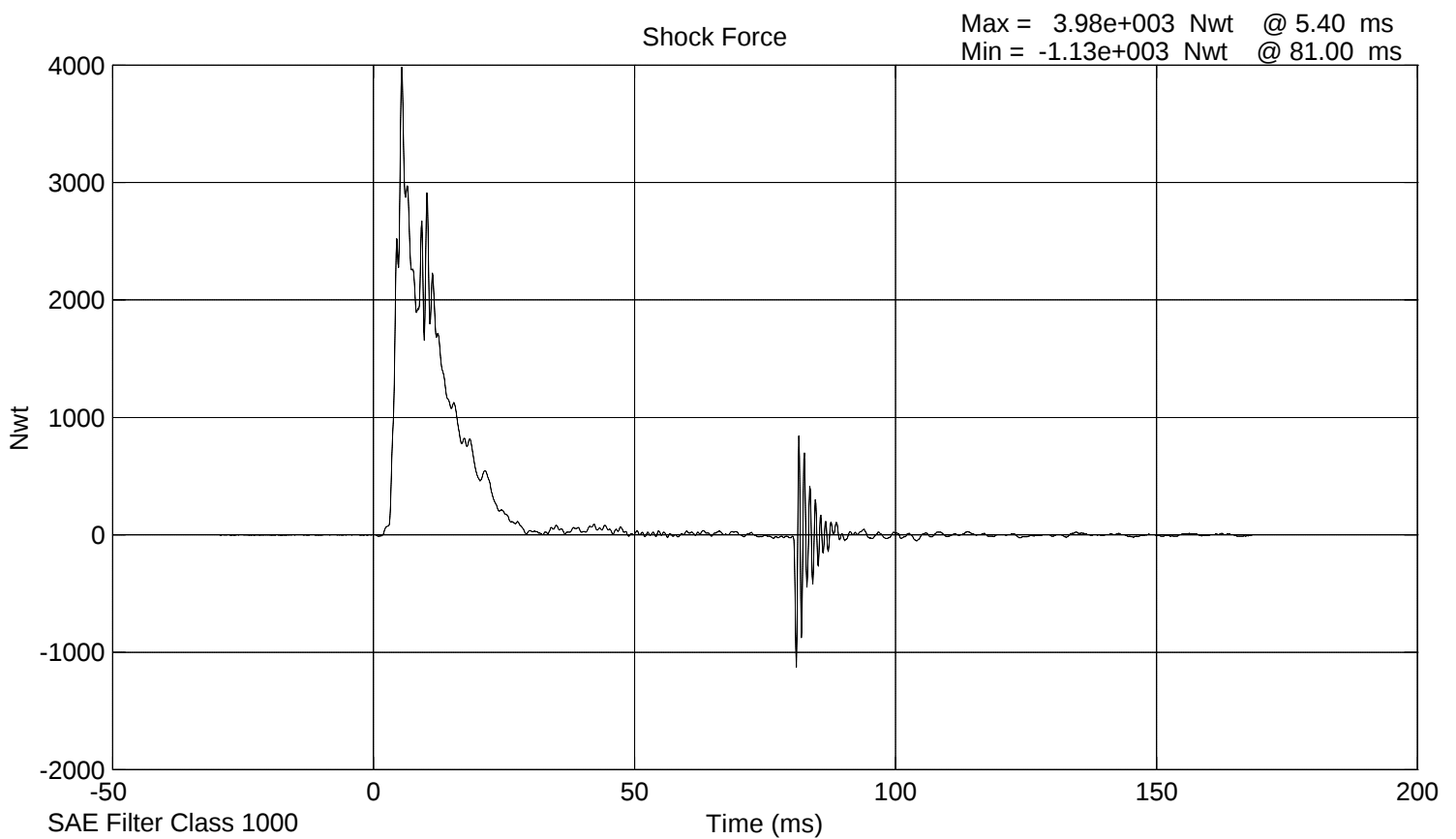
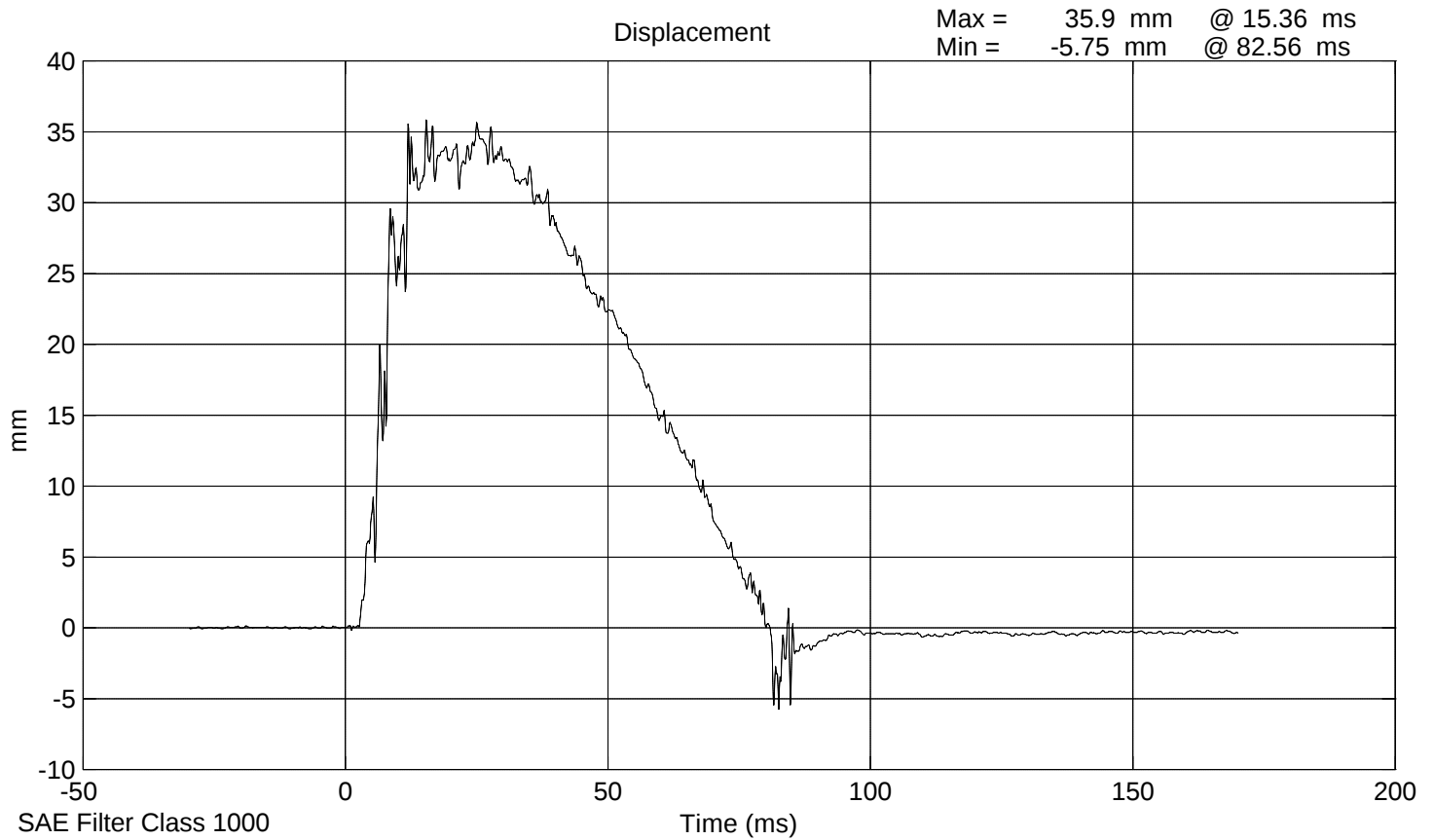
SID 027 Shock Absorber Impact Test @ 3.048 m/s



SID 027 Shock Absorber Impact Test @ 4.2672 m/s



SID 027 Shock Absorber Impact Test @ 6.096 m/s



**LATERAL THORAX IMPACT TEST
PRE-TEST**

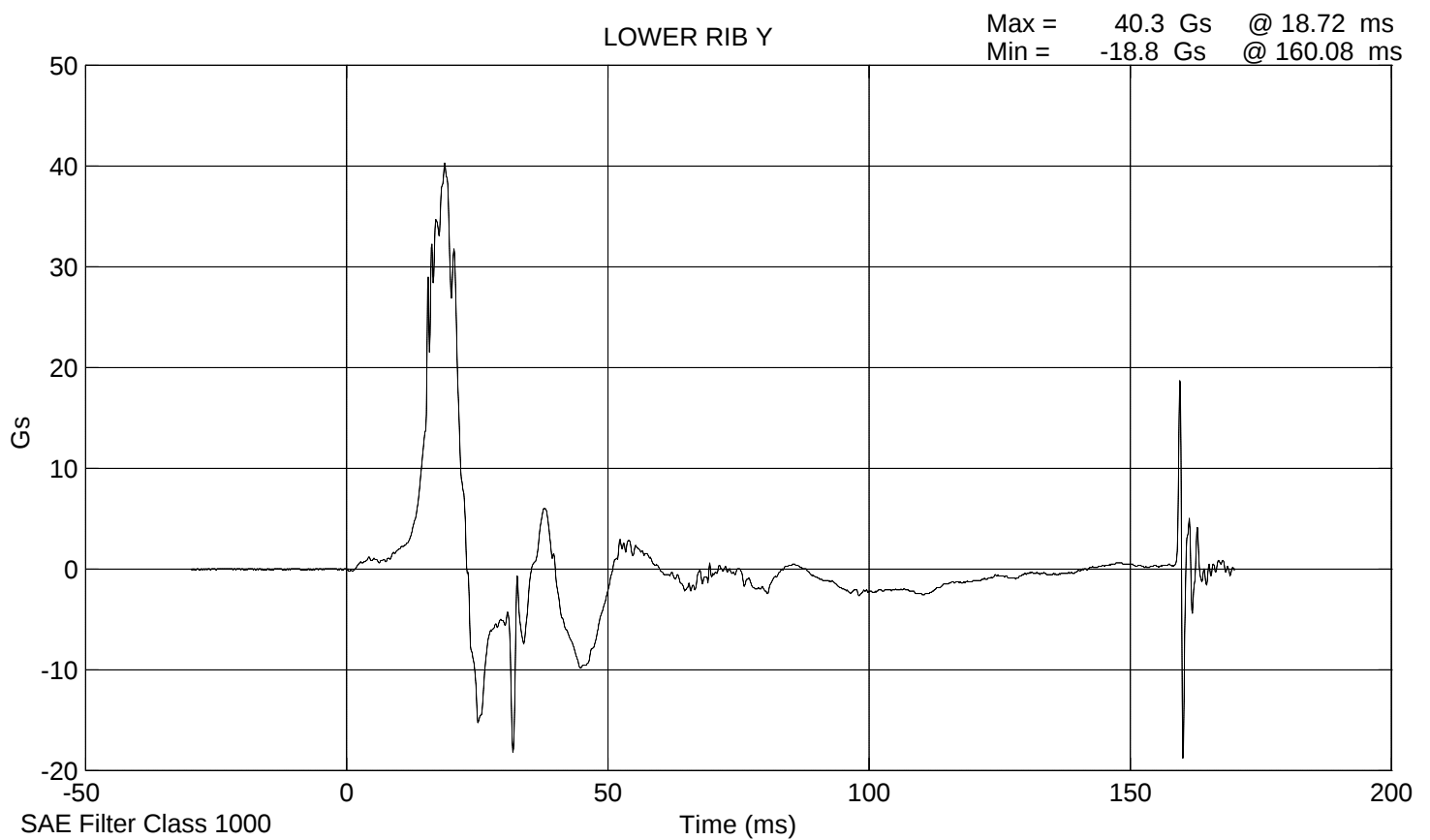
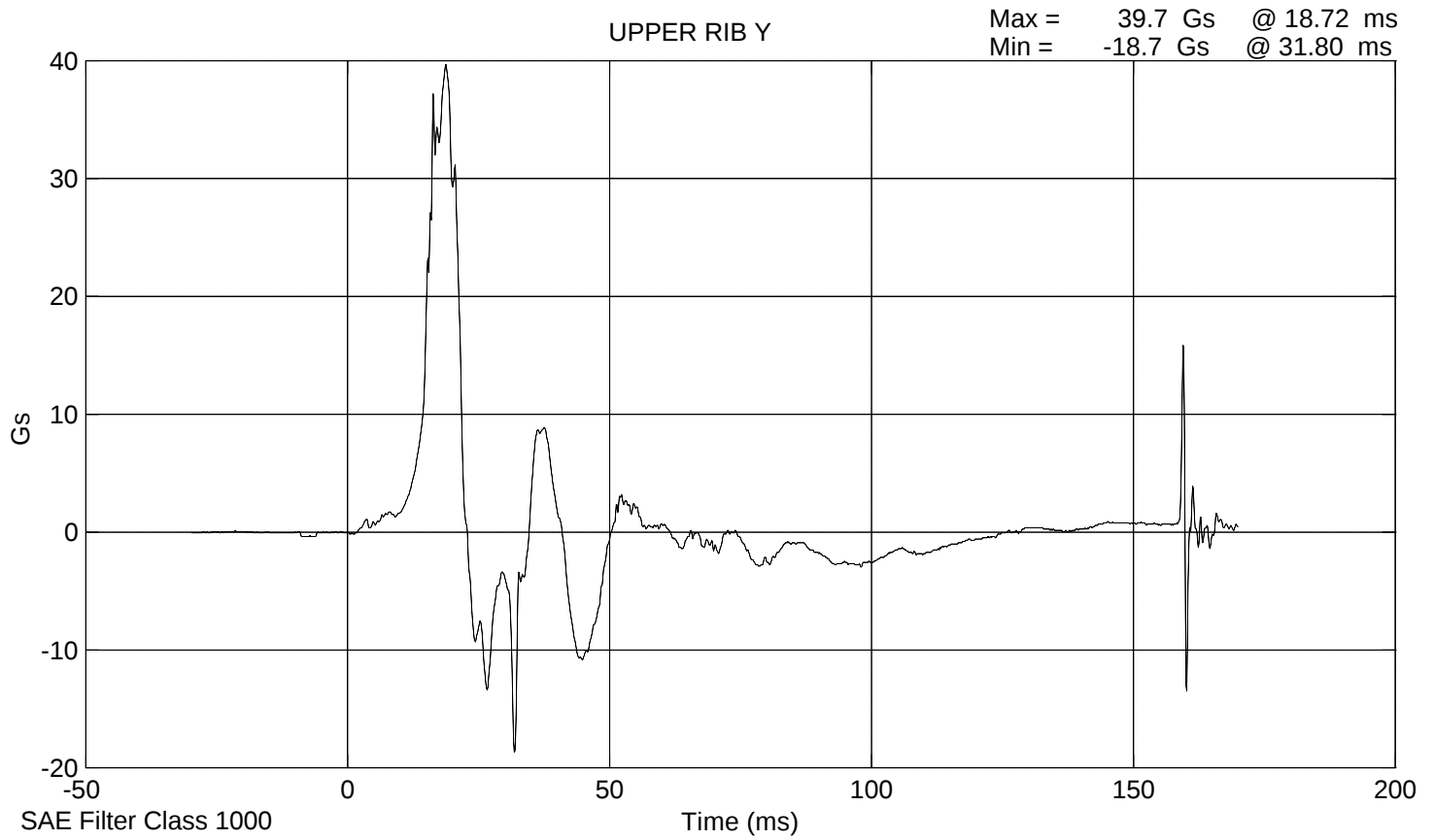
CONFIGURED FOR LEFT SIDE IMPACT

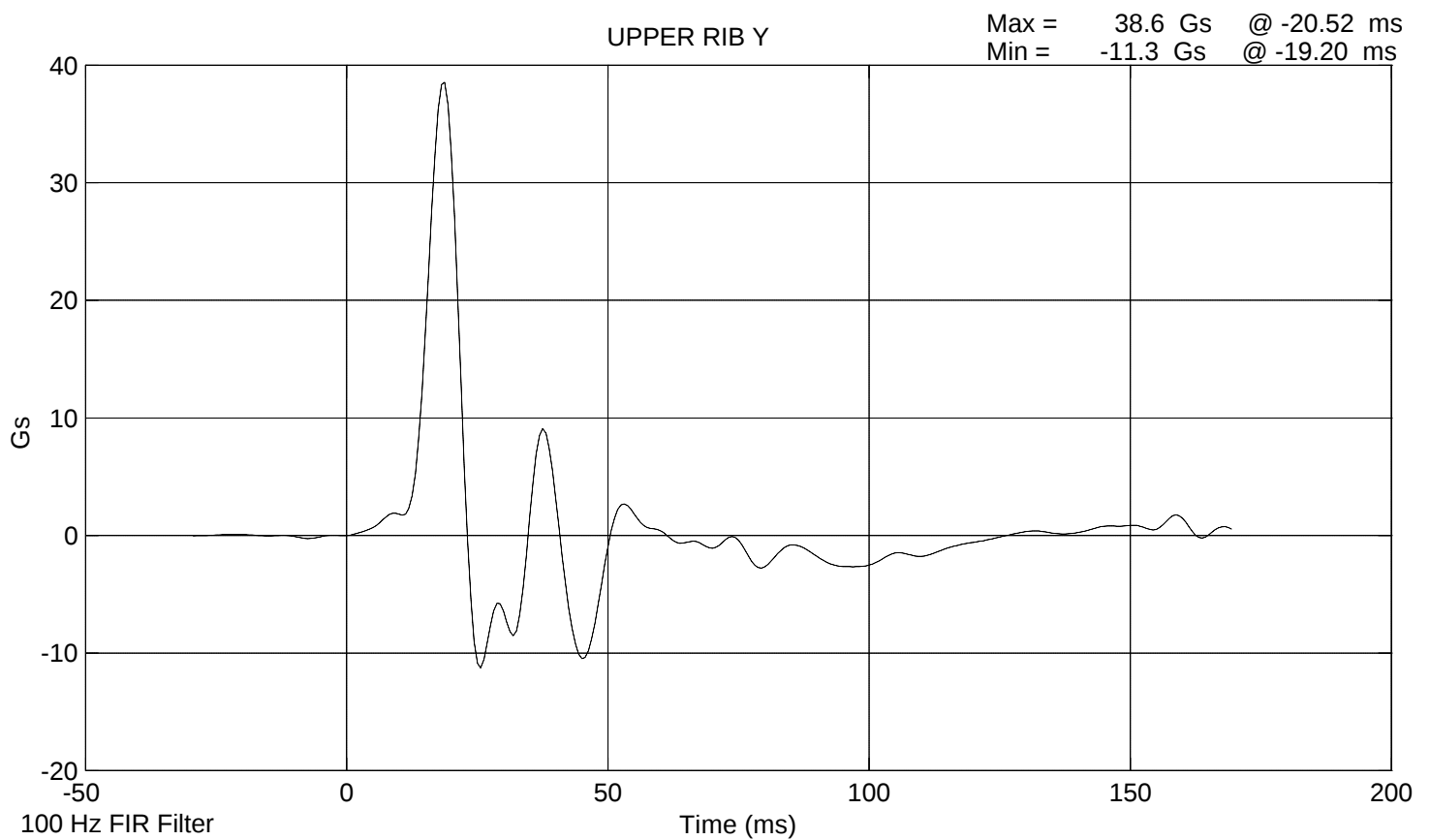
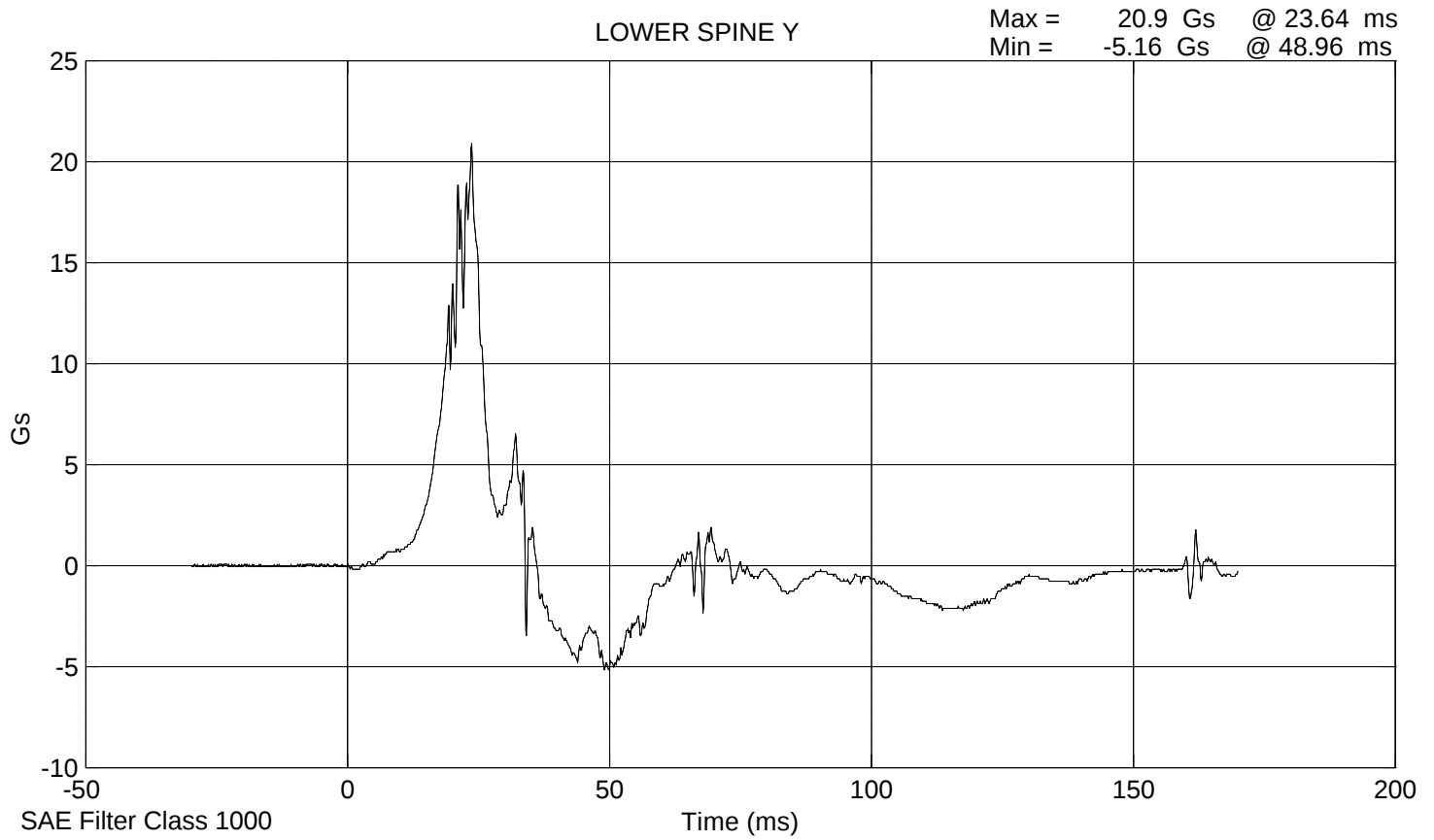
SID Serial No.: 027 Sequential Test Number: 1
Date: September 6, 2001 Laboratory Technician: B. Swiecicki

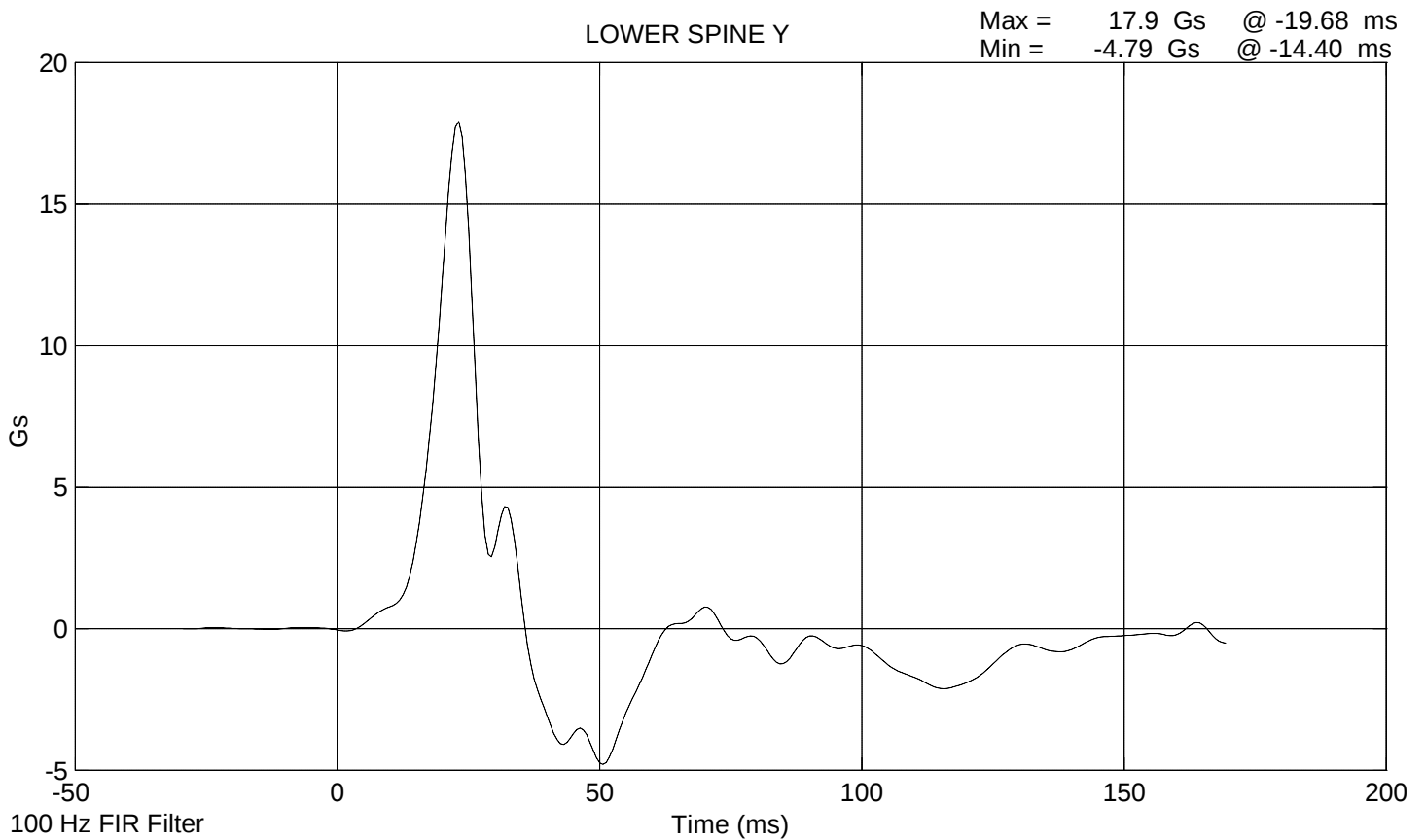
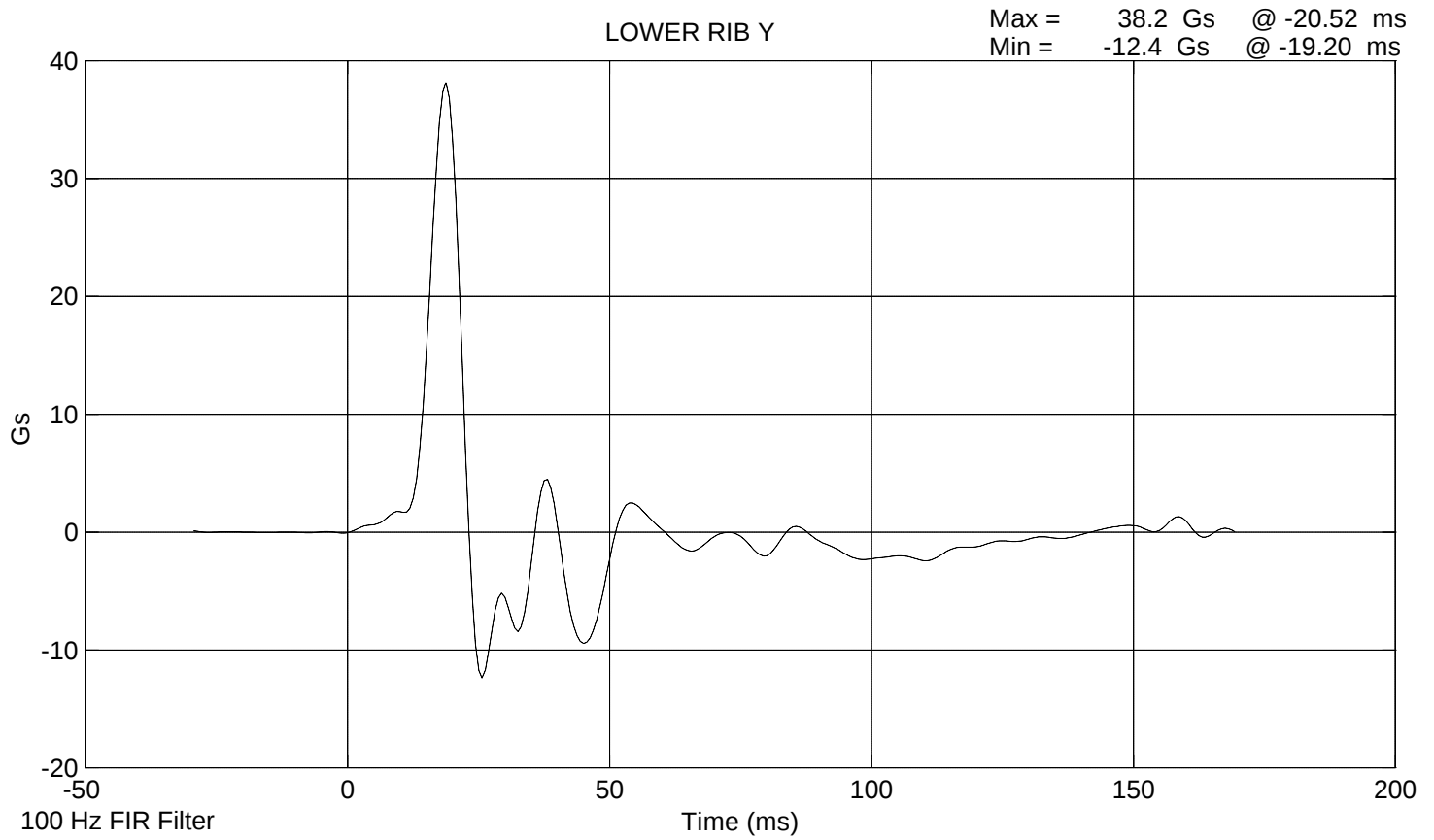
TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (EC)	18.9 - 25.5	20.1
RELATIVE HUMIDITY (%)	10 - 70	31
PROBE SPEED (m/s)	4.27 - 4.33	4.30
UPPER RIB (g's)	37 - 46	38.6
LOWER RIB (g's)	37 - 46	38.2
LOWER SPINE (g's)	15 - 22	17.9

REMARKS: None

SID 027 Throat Impact Test @ 4.3007 m/s







**LATERAL PELVIS IMPACT TEST
PRE-TEST**

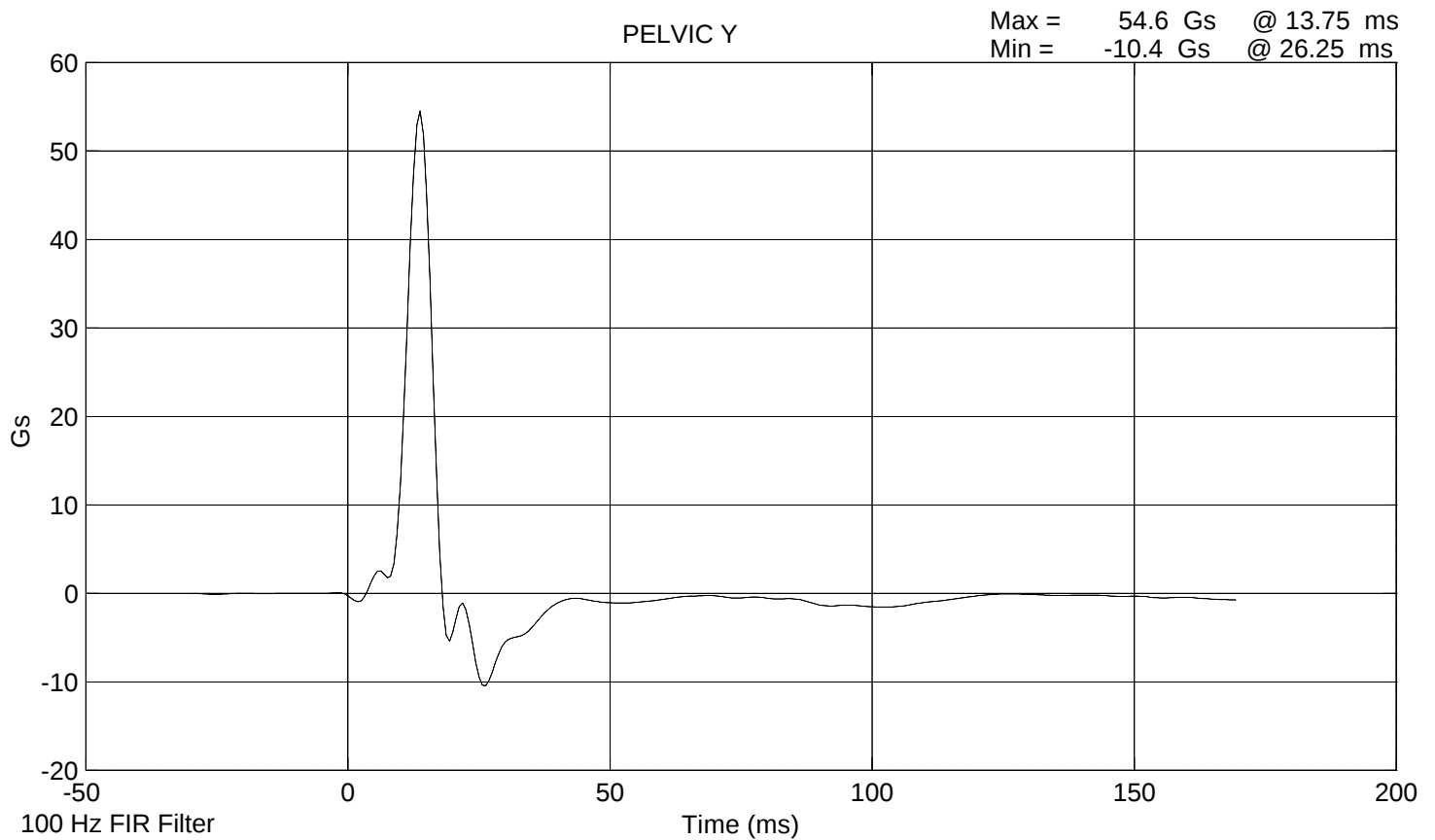
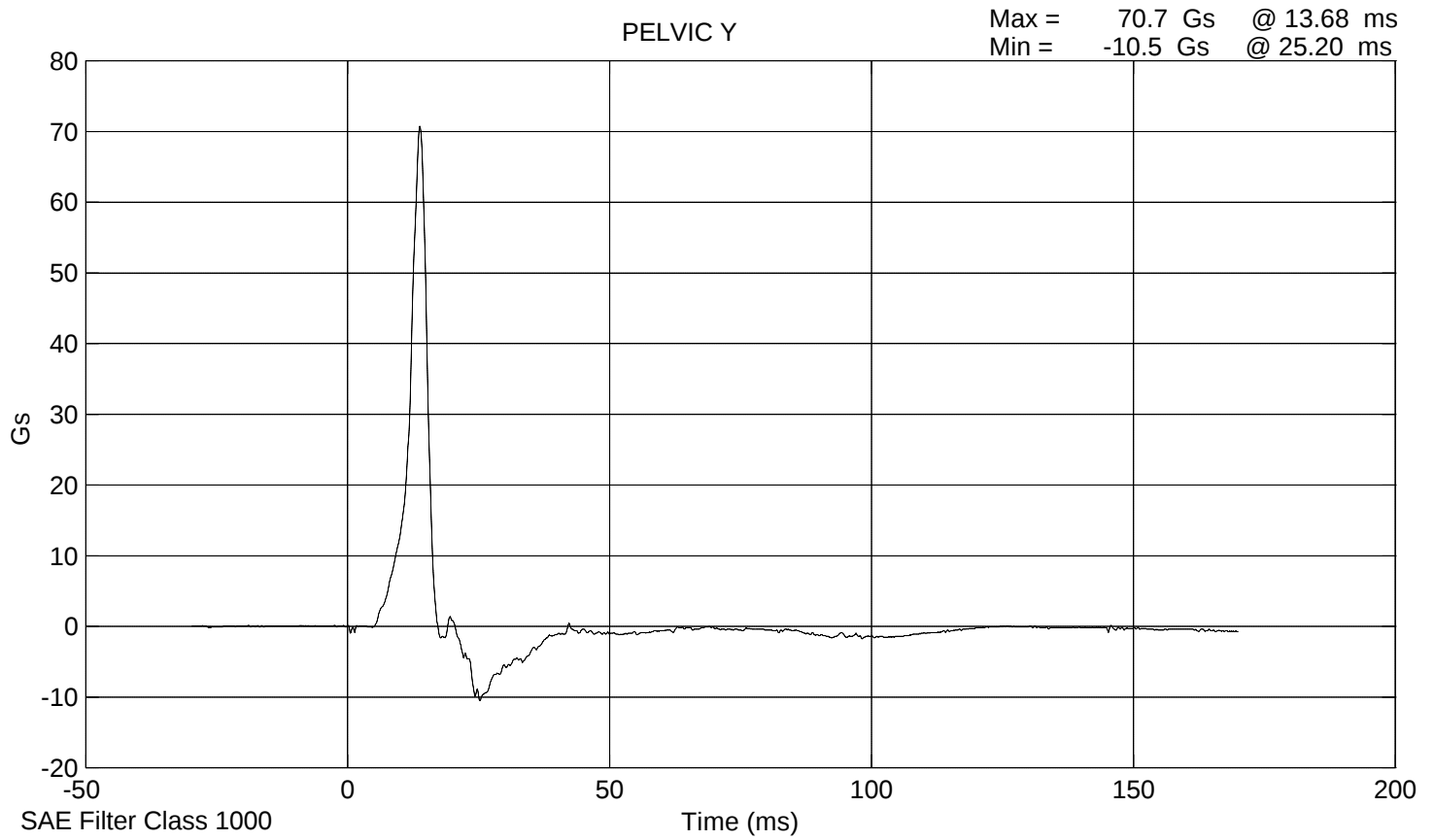
CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.:	<u>027</u>	Sequential Test Number:	<u>1</u>
Date:	<u>September 5, 2001</u>	Laboratory Technician:	<u>B. Swiecicki</u>

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (EC)	18.9 - 25.5	20.1
RELATIVE HUMIDITY (%)	10 - 70	31
PROBE SPEED (m/s)	4.27 - 4.33	4.31
PELVIS ACCELERATION (g's)	40 - 60	54.6

REMARKS: None

SID 027 Pelvic Impact Test @ 4.3068 m/s



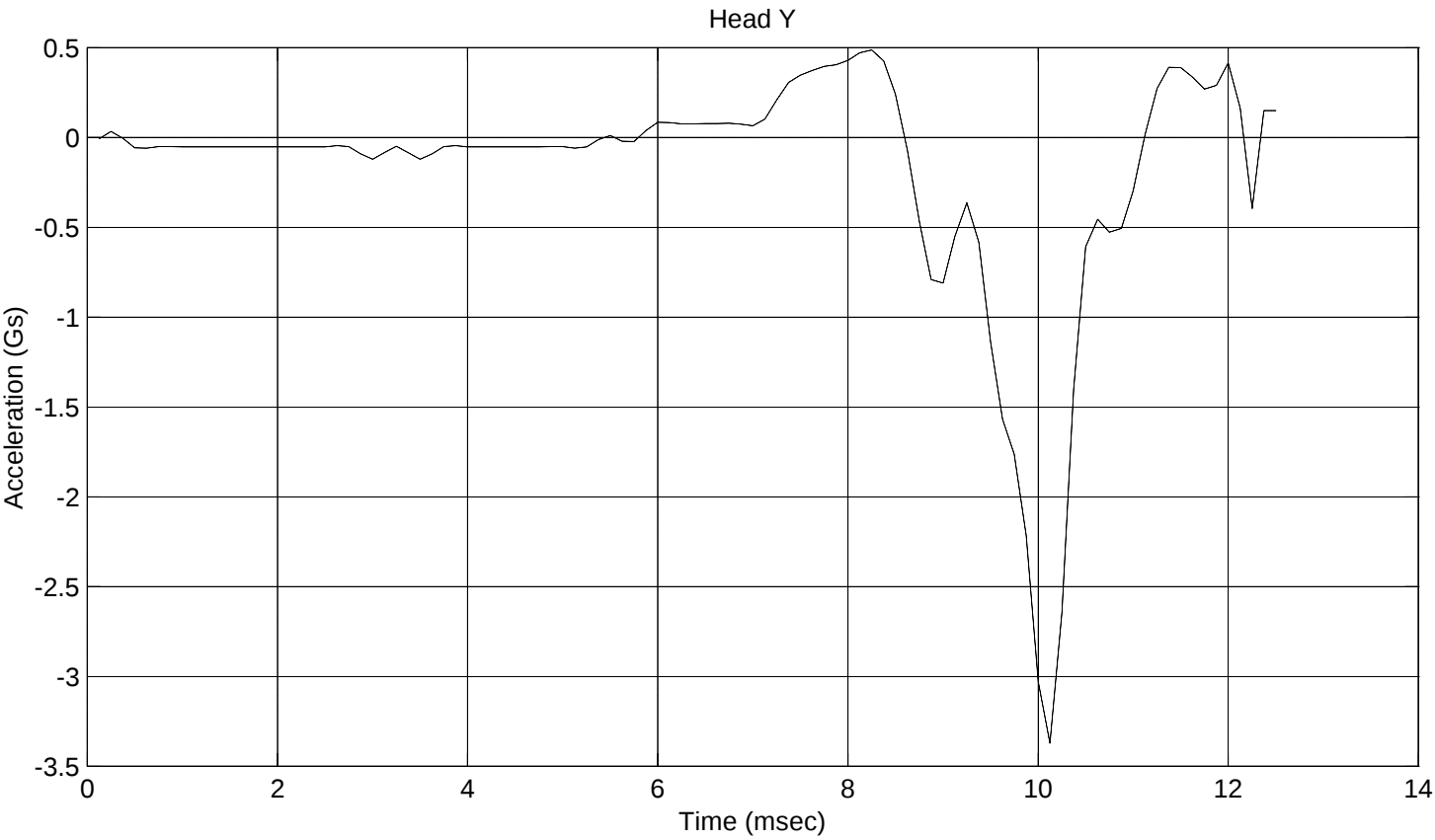
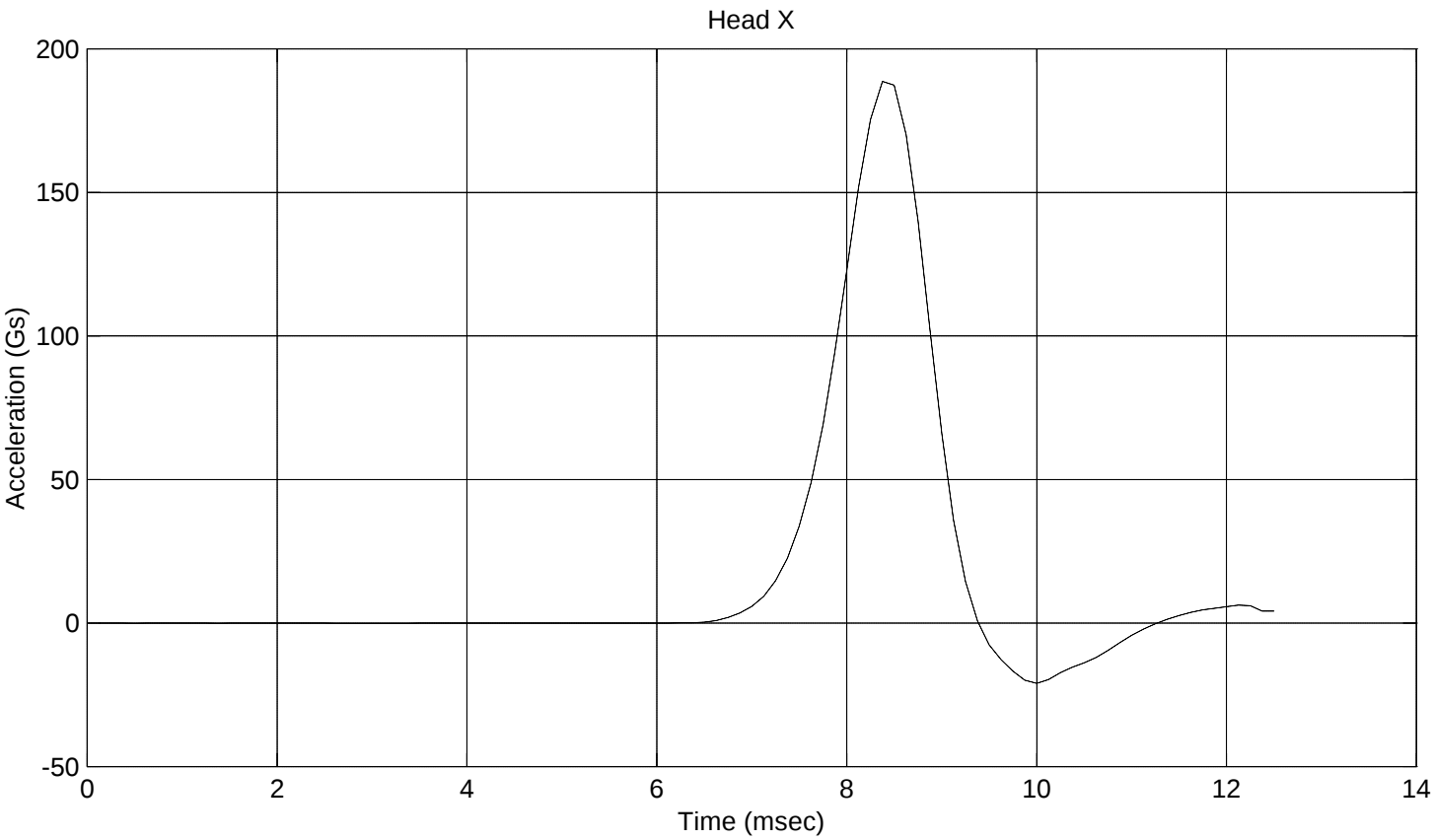
HEAD DROP TEST
PRE-TEST
(Test not required for SID certification)

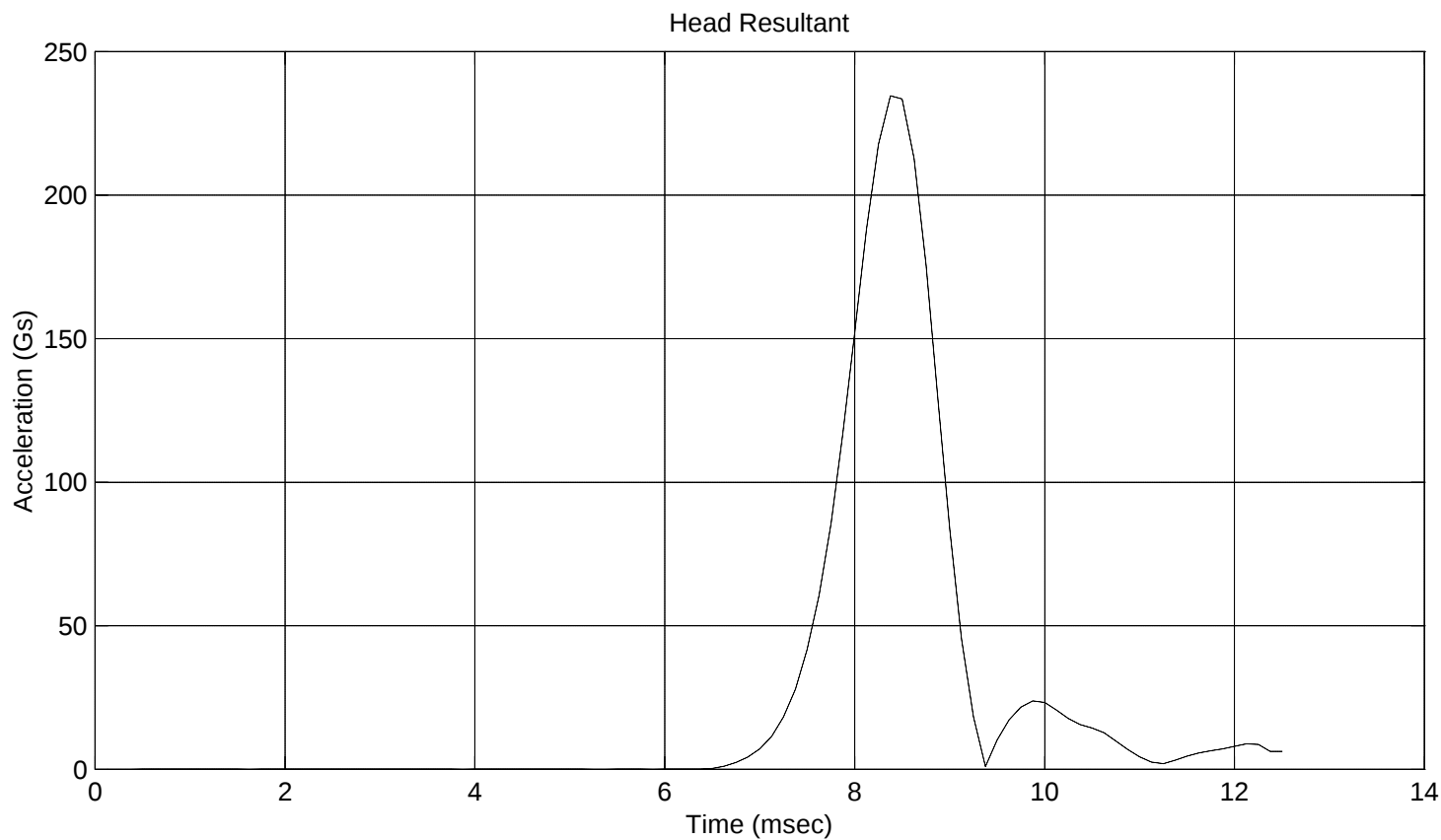
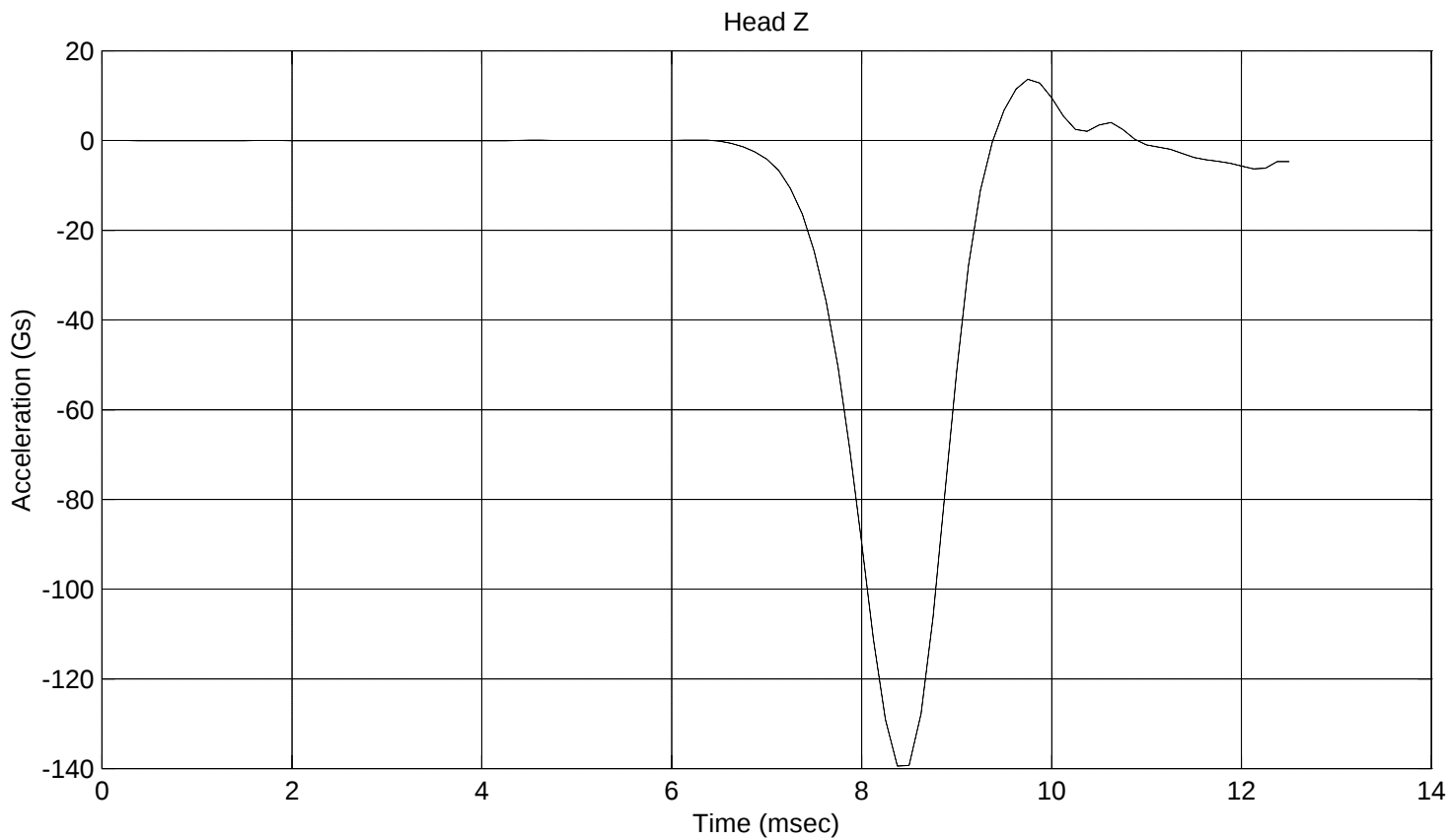
CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 027 Sequential Test Number: 1
Date: August 28, 2001 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (EC)	18.9 - 25.5	20.1
RELATIVE HUMIDITY (%)	10 - 70	30
PEAK RESULTANT ACCELERATION (Gs)	210 - 260	234.58
PEAK LATERAL ACCELERATION (Gs)	Not to Exceed 10	3.37
UNIMODAL CRITERIA ABOVE 100 Gs (ms)	0.9 - 1.5	1.25

REMARKS: None





**ABDOMINAL COMPRESSION TEST
PRE-TEST**

(Test not required for SID certification)

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 027 Sequential Test Number: 1
Date: September 7, 2001 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (EC)	18.9 - 25.5	21.7
RELATIVE HUMIDITY (%)	10 - 70	30
FORCE @ 13 mm (N)	104 - 162	123.7
FORCE @ 19 mm (N)	163 - 221	186.8
FORCE @ 25 mm (N)	222 - 280	264.7
FORCE @ 33 mm (N)	325 - 391	360.3

REMARKS: None

ORIGINAL

Dummy S/N 027

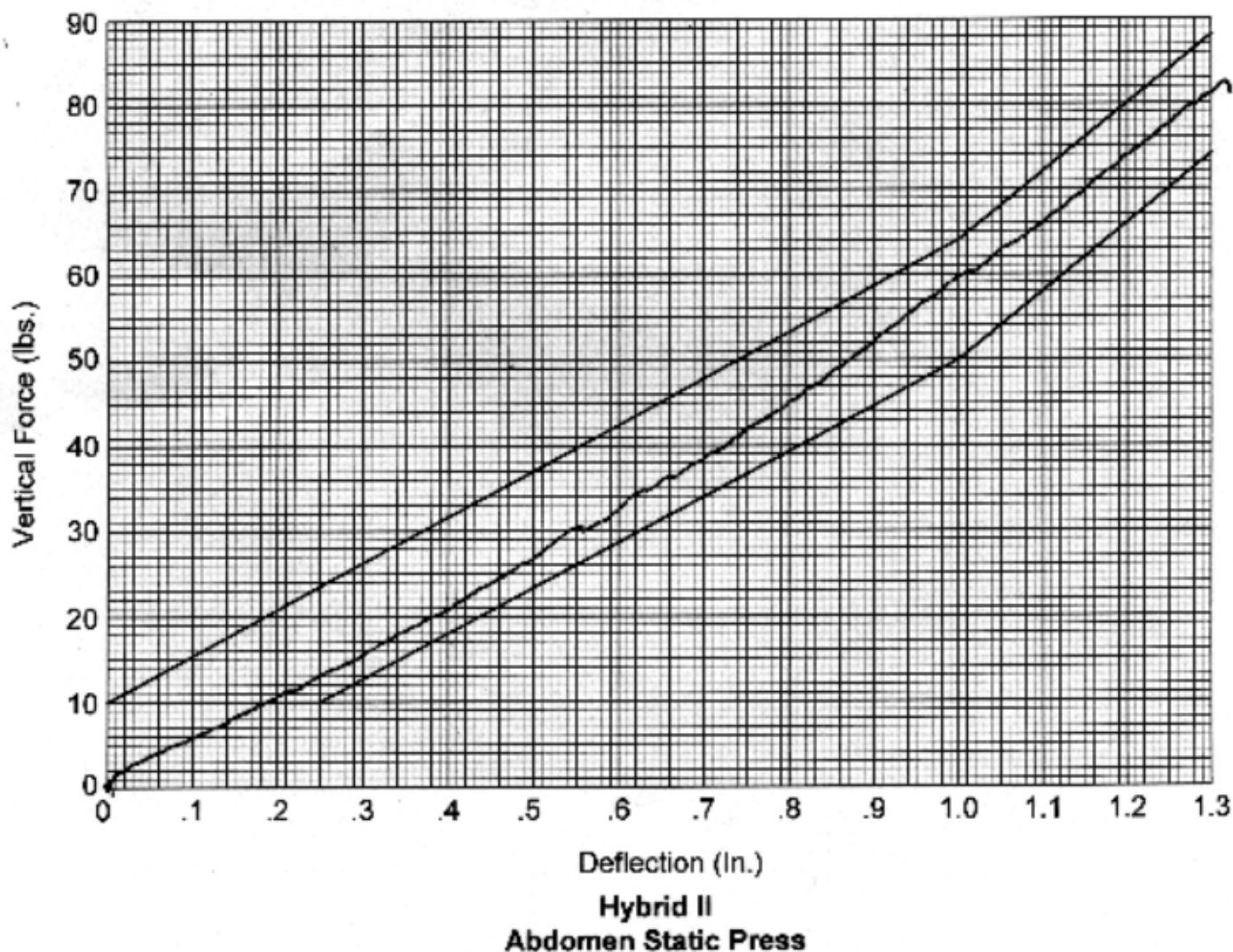
W/A _____

Date 9-7-2001

Performed By [Signature]

Temp. 71°

Humidity 30%



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

CONFIGURED FOR LEFT SIDE IMPACT

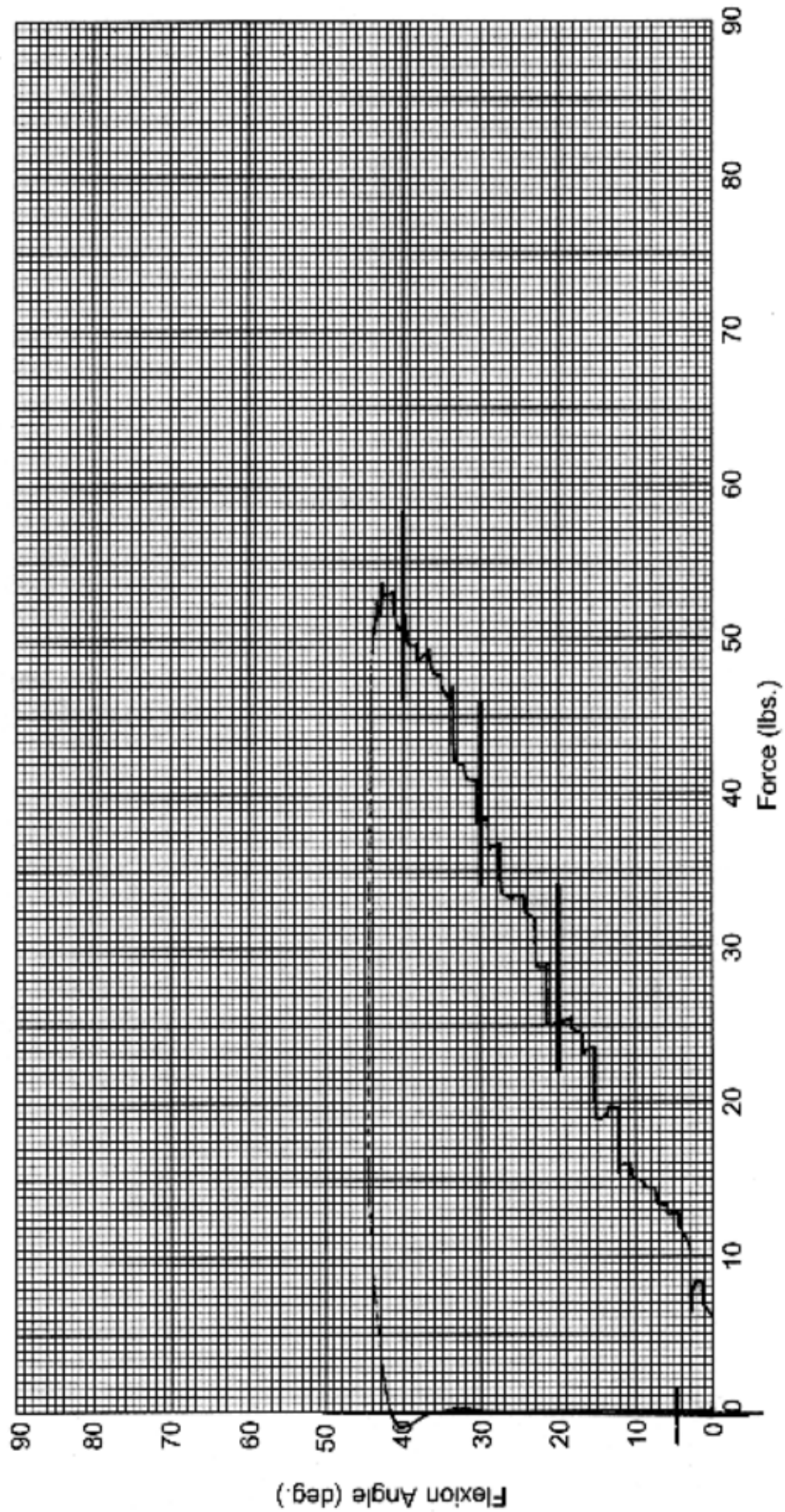
SID Serial No.: 027 Sequential Test Number: 1
Date: September 6, 2001 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (EC)	18.9 - 25.5	20.1
RELATIVE HUMIDITY (%)	10 - 70	31
FORCE @ 0E (N)	0 - 26.7	0
FORCE @ 20E (N)	97.8 - 151.2	112.1
FORCE @ 30E (N)	151.2 - 204.6	170.8
FORCE @ 40E (N)	204.6 - 258	224.6
RETURN ANGLE	12E max.	4.8

REMARKS: None

ORIGINAL

Dummy S/N 027
W/A _____
Date 9-6-2001
Performed By [Signature]
Temp. 70°
Humidity 31%



Hybrid II Lumbar Spine Flexion Test

PRE-TEST DUMMY INSPECTION LIST
CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 027 Sequential Test Number: 1
Date: September 5, 2001 Laboratory Technician: B. Swiecicki

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

REMARKS: None

CALIBRATION TEST RESULTS

POST TEST

SID NO.: 013

CONFIGURED FOR LEFT SIDE IMPACT

**CALIBRATION TEST RESULTS SUMMARY
POST TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 013 Sequential Test Number: 2
Date: October 3, 2001 Laboratory Technician: B. Swiecicki

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

* Test not required for SID certification.

REMARKS: None

**EXTERNAL DIMENSIONS
POST TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 013 Sequential Test Number: 2
Date: October 3, 2001 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
SH- Seated Height (mm)	889 - 909	902
RH- Rib Height (mm)	502 - 520	509
HP- Hip Pivot Height (mm)	99 ref.	99
RD- Rib from Back Line (mm)	229 - 241	236
KH- Knee Pivot from Back Line (mm)	511 - 526	518
KV- Knee Pivot to Floor (mm)	490 - 505	493
HW- Hip Width (mm)	356 - 391	376

REMARKS: None

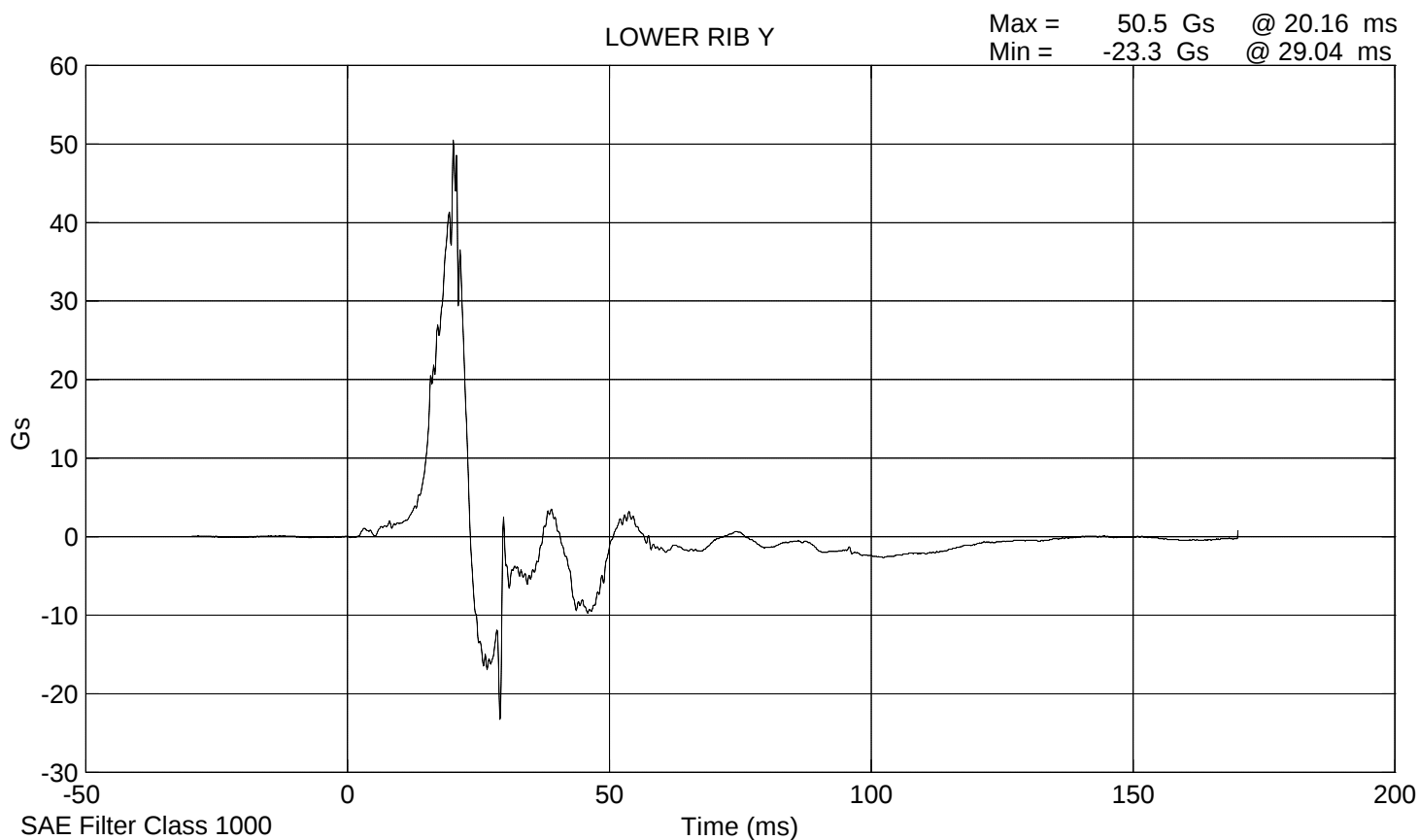
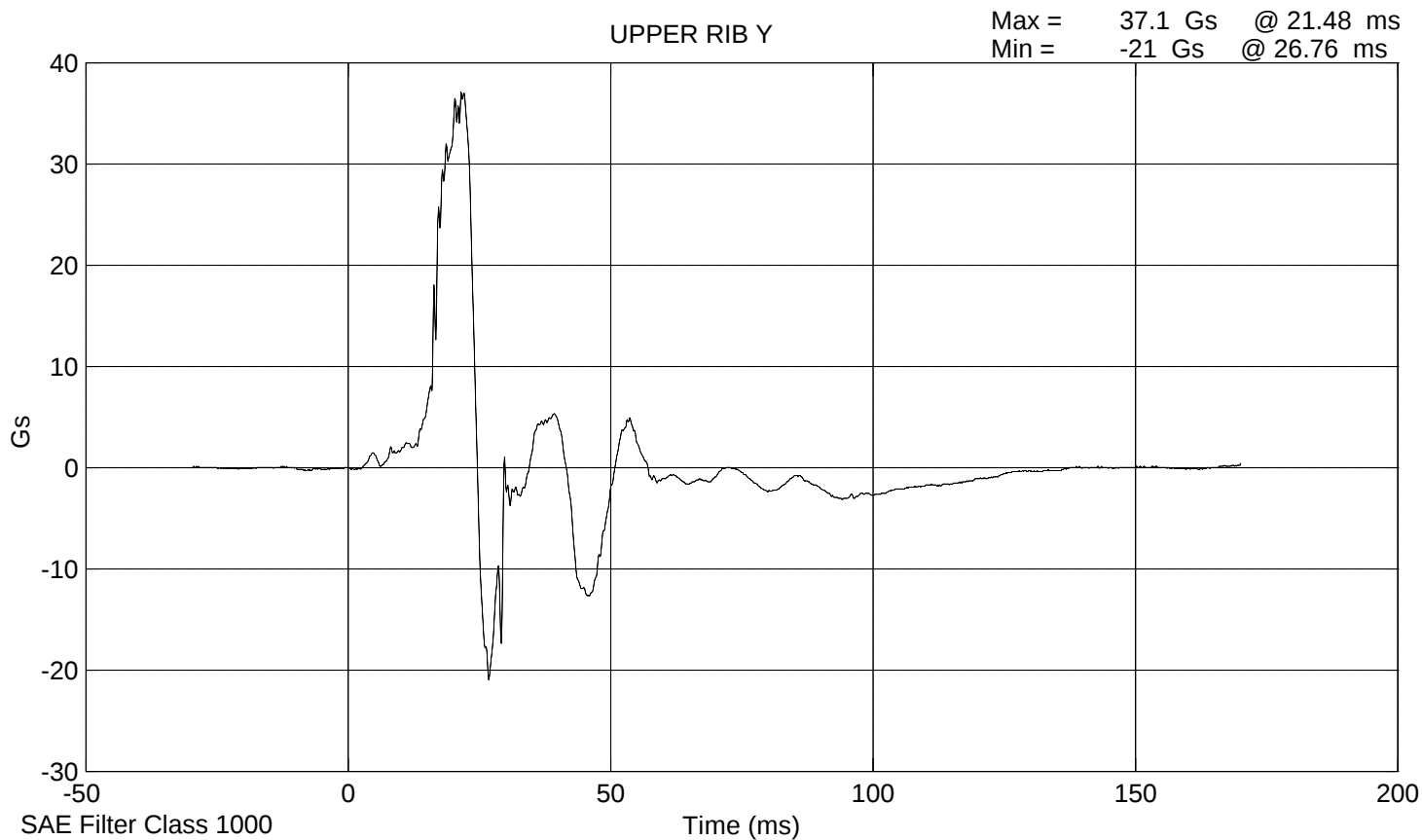
**LATERAL THORAX IMPACT TEST
POST TEST**

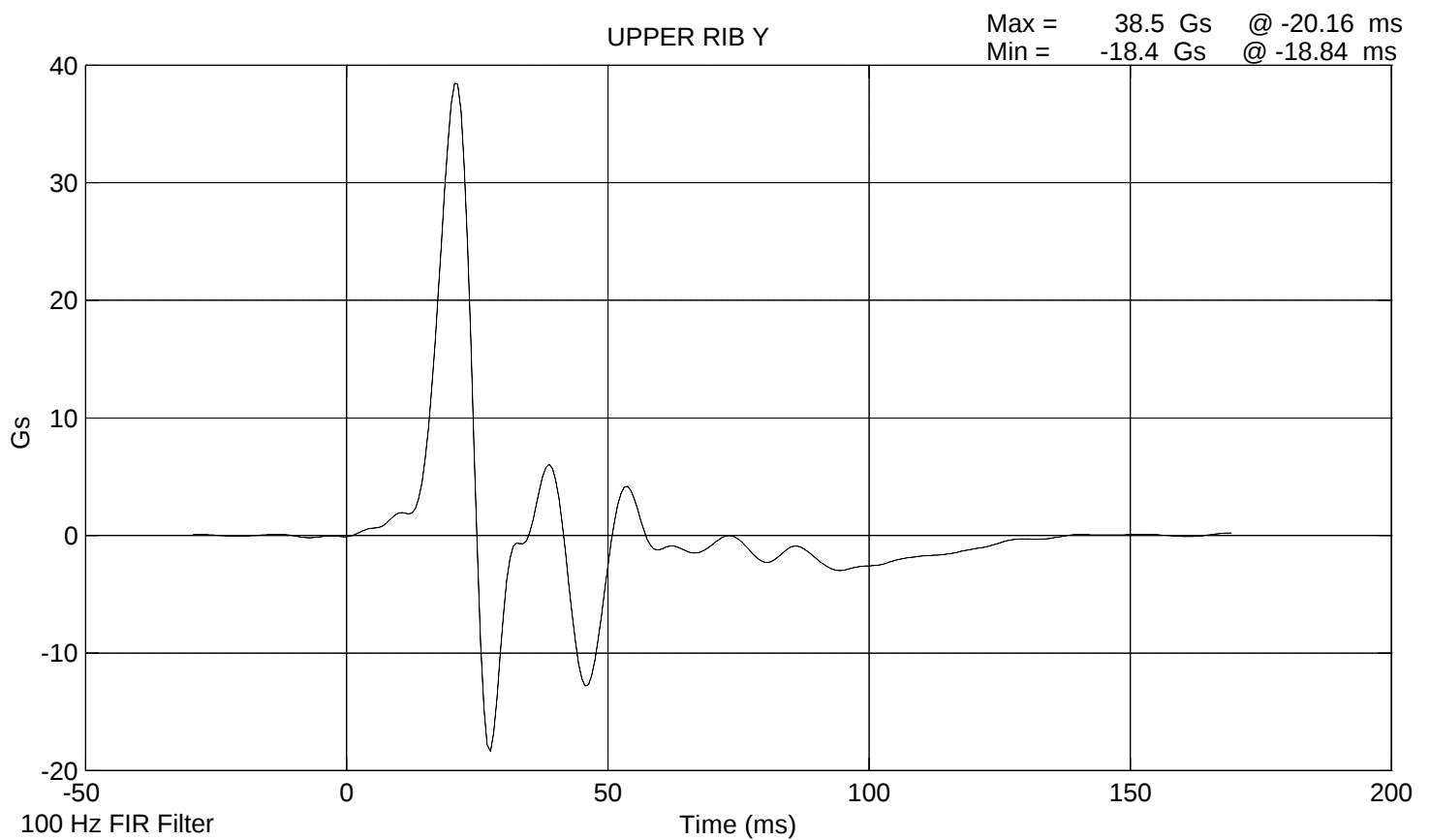
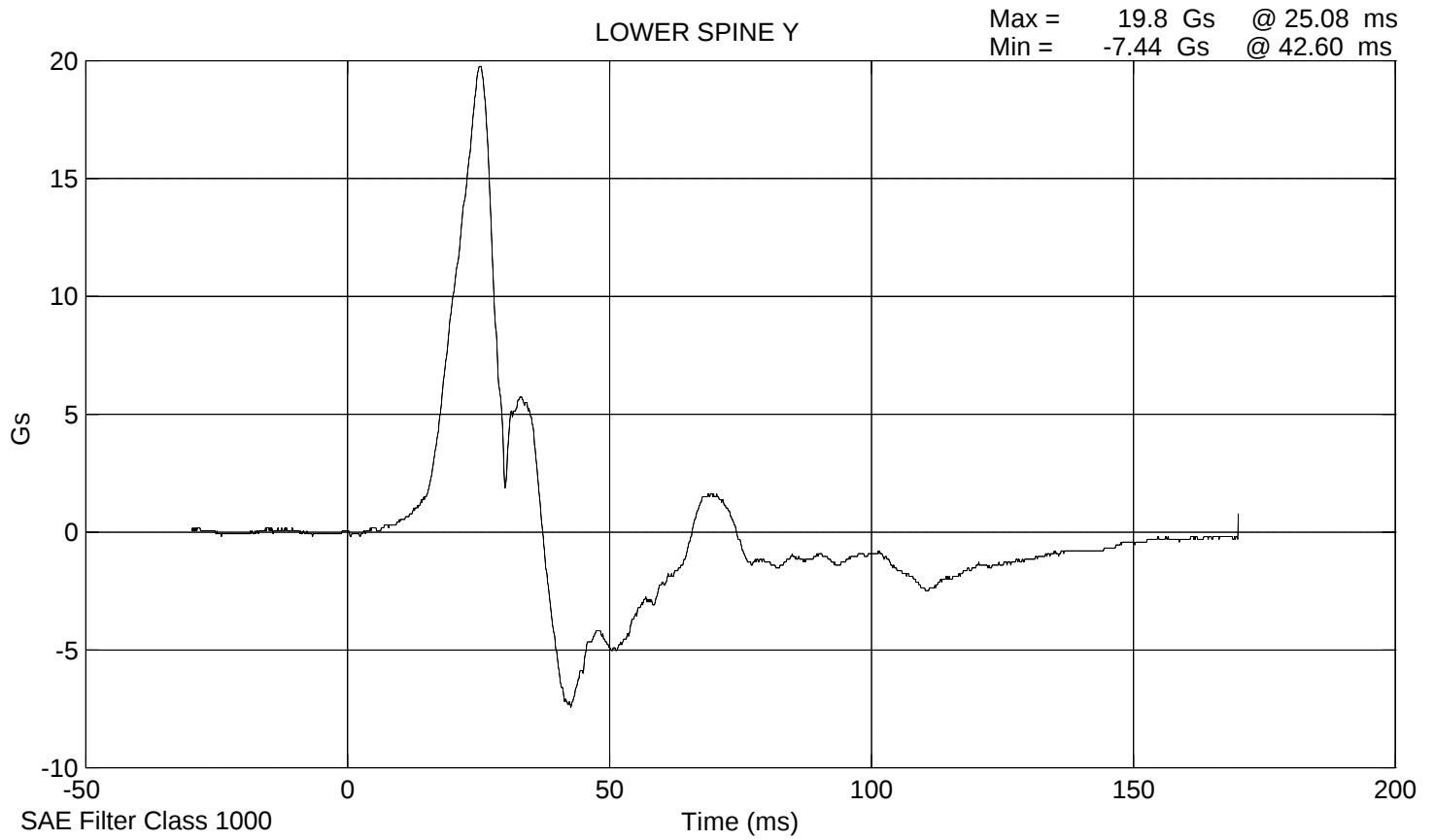
CONFIGURED FOR LEFT SIDE IMPACT

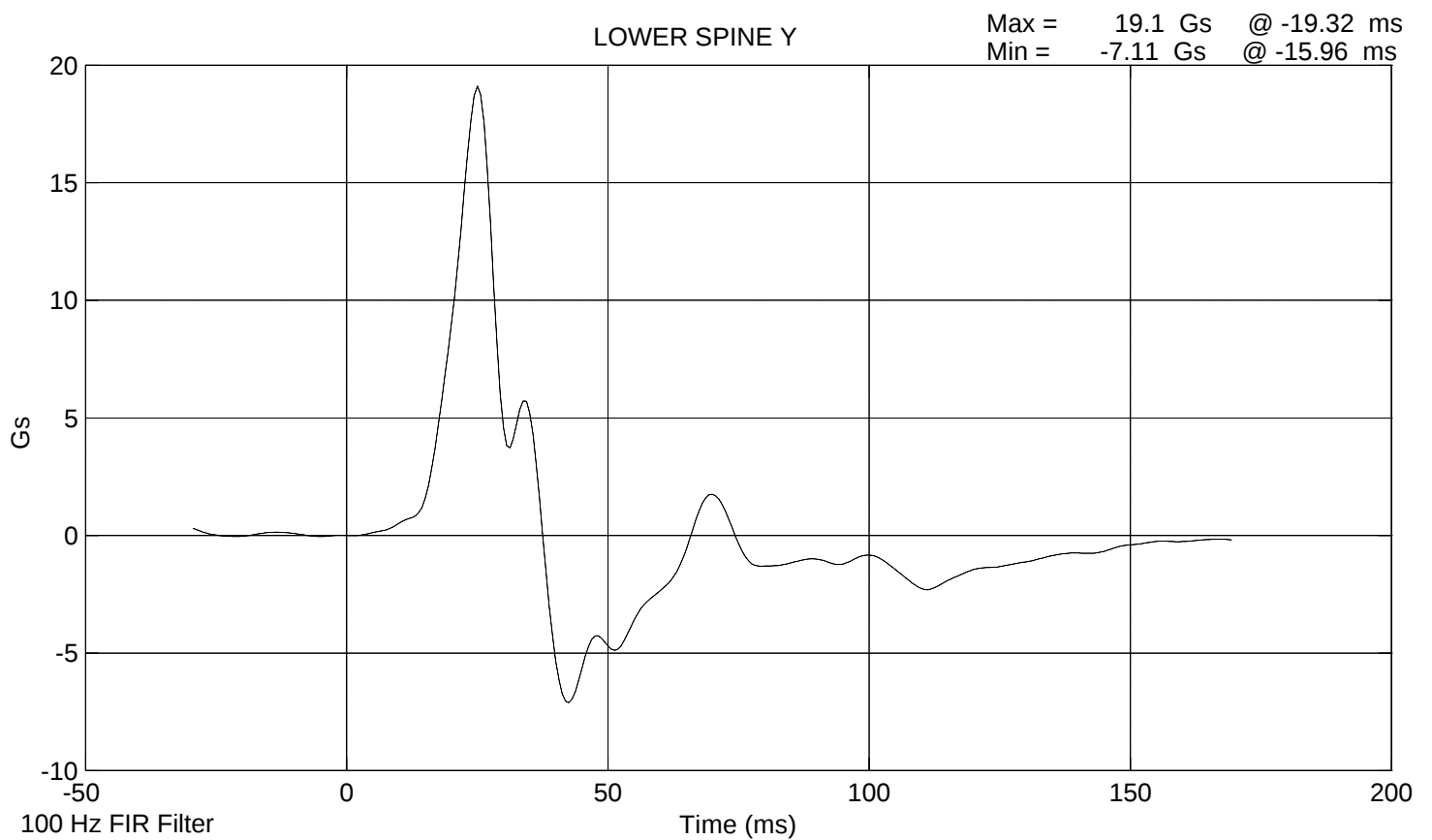
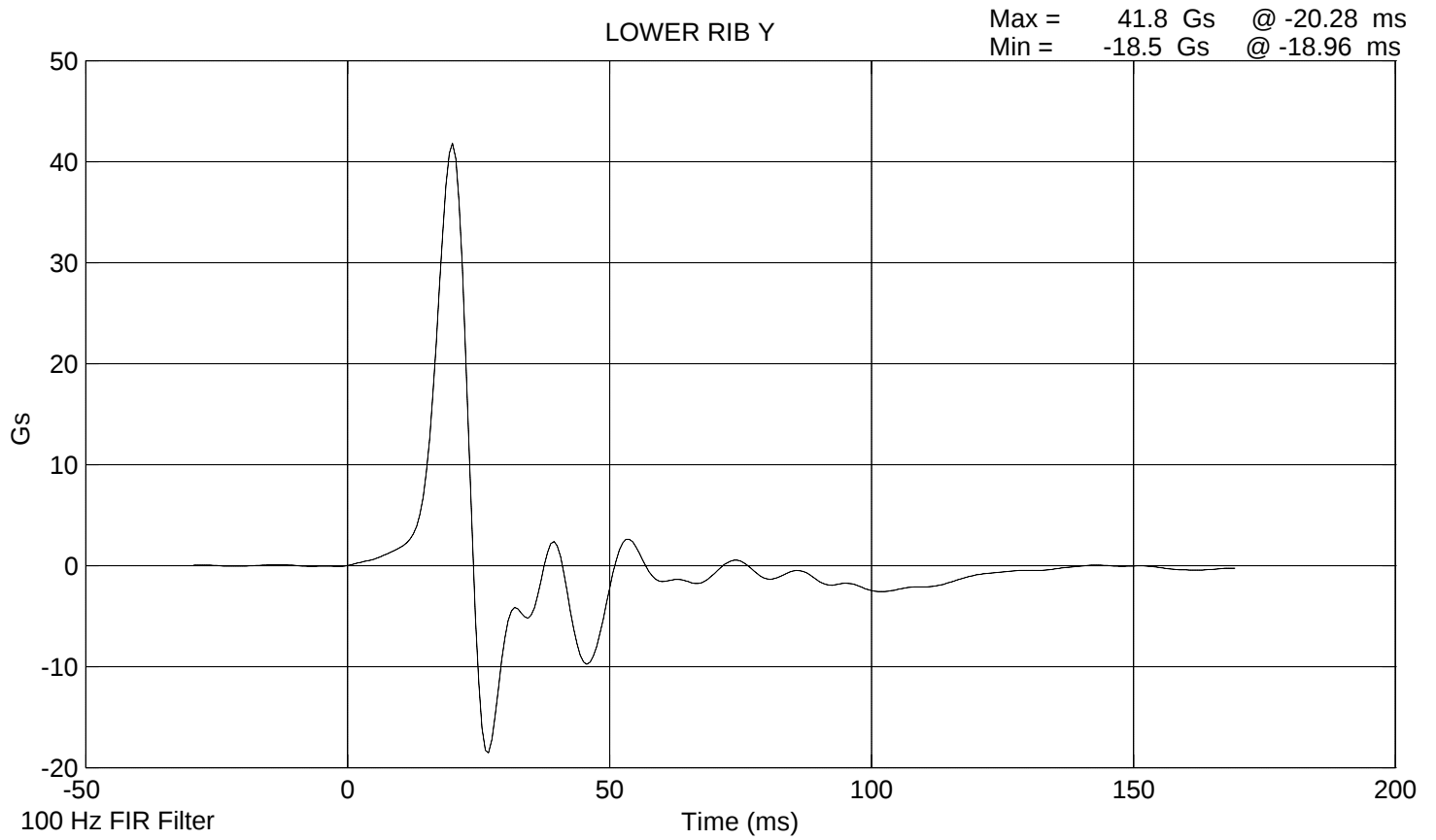
SID Serial No.: 013 Sequential Test Number: 2
Date: September 29, 2001 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (EC)	18.9 - 25.5	21
RELATIVE HUMIDITY (%)	10 - 70	30
PROBE SPEED (m/s)	4.27 - 4.33	4.27
UPPER RIB (g's)	37 - 46	38.5
LOWER RIB (g's)	37 - 46	41.8
LOWER SPINE (g's)	15 - 22	19.1

REMARKS: None







**LATERAL PELVIS IMPACT TEST
POST TEST**

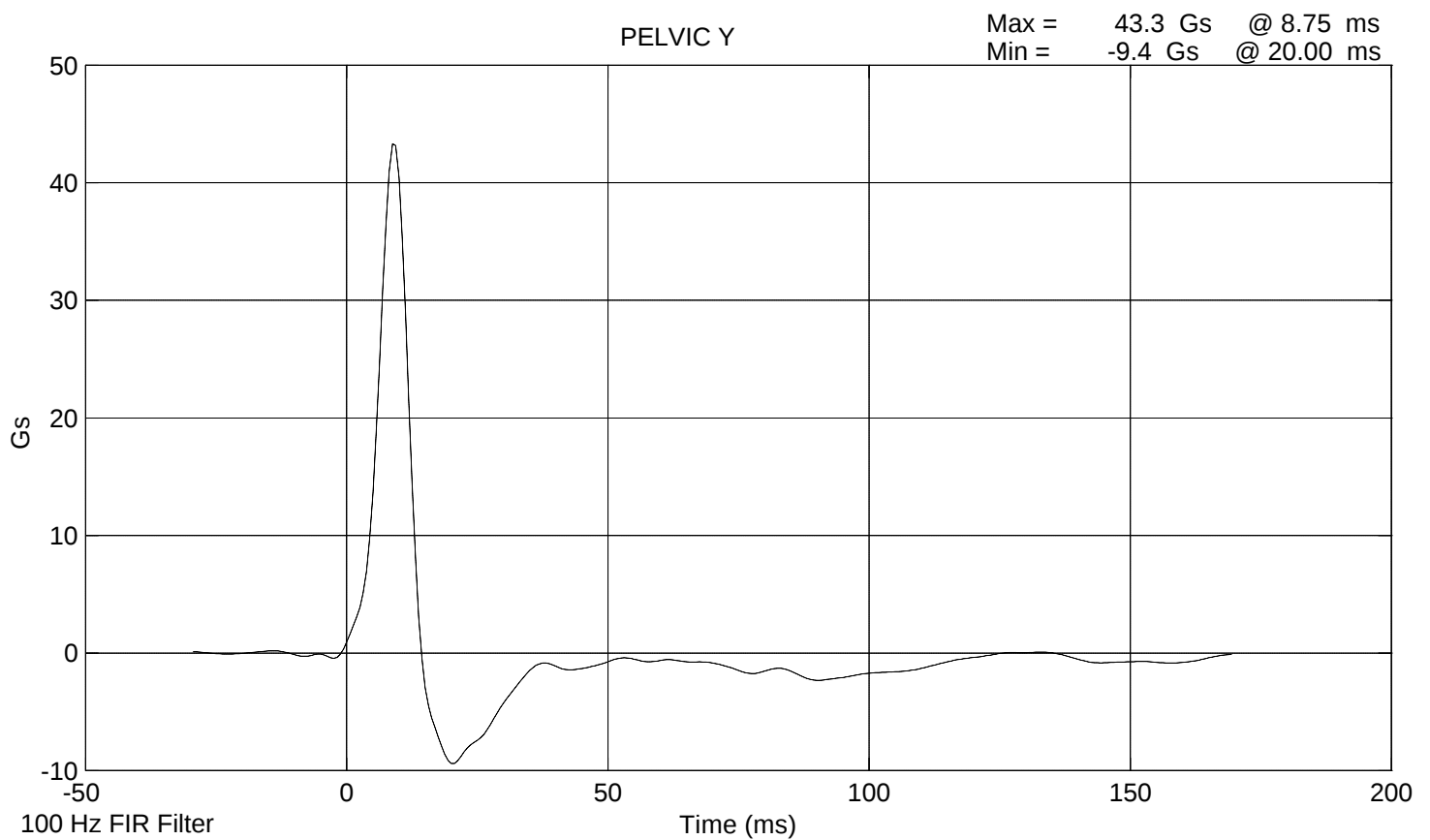
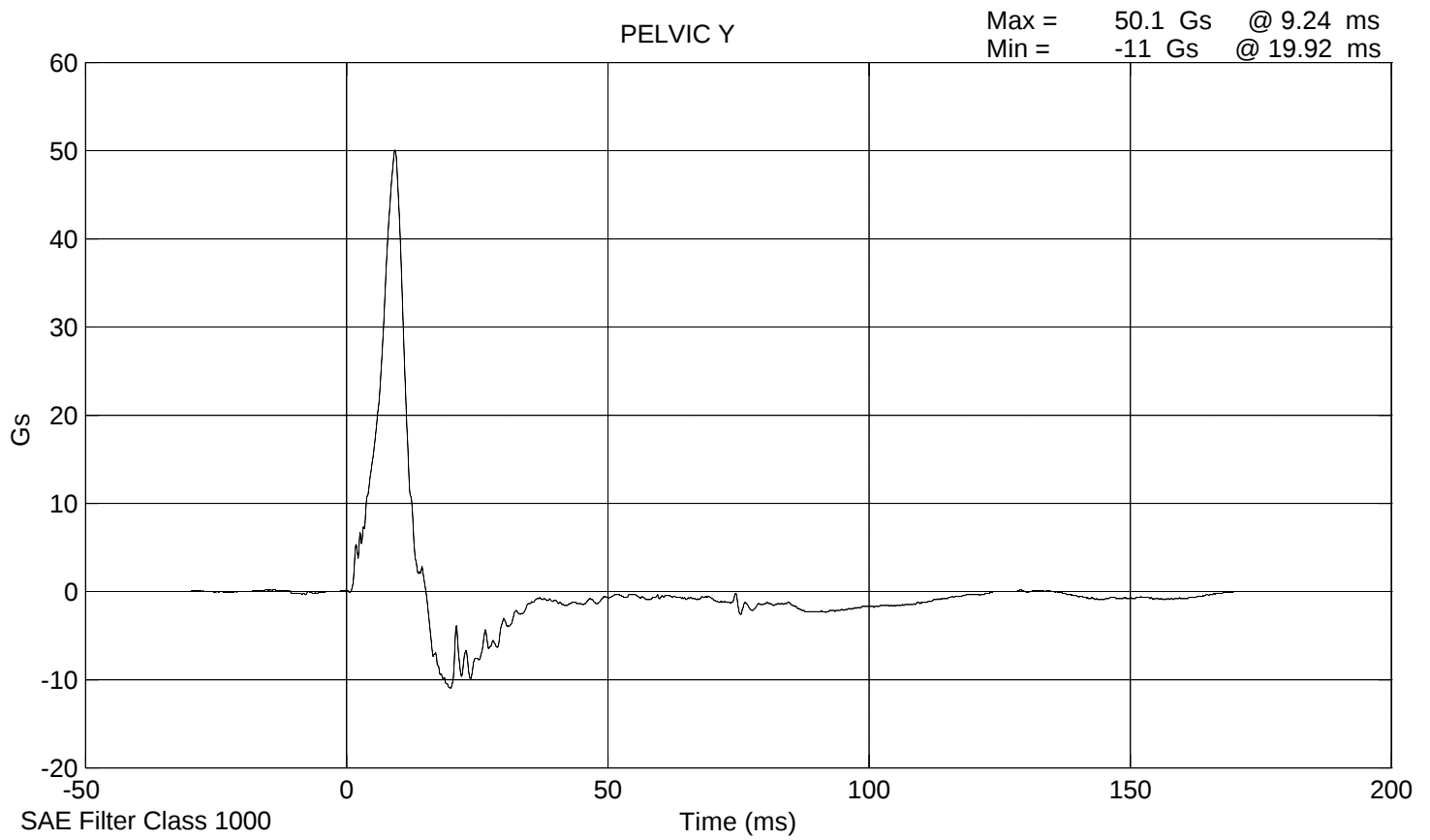
CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 013 Sequential Test Number: 2
Date: September 30, 2001 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (EC)	18.9 - 25.5	20.7
RELATIVE HUMIDITY (%)	10 - 70	31
PROBE SPEED (m/s)	4.27 - 4.33	4.29
PELVIS ACCELERATION (g's)	40 - 60	43.3

REMARKS: None

SID 013 Pelvic Impact Test @ 4.2916 m/s



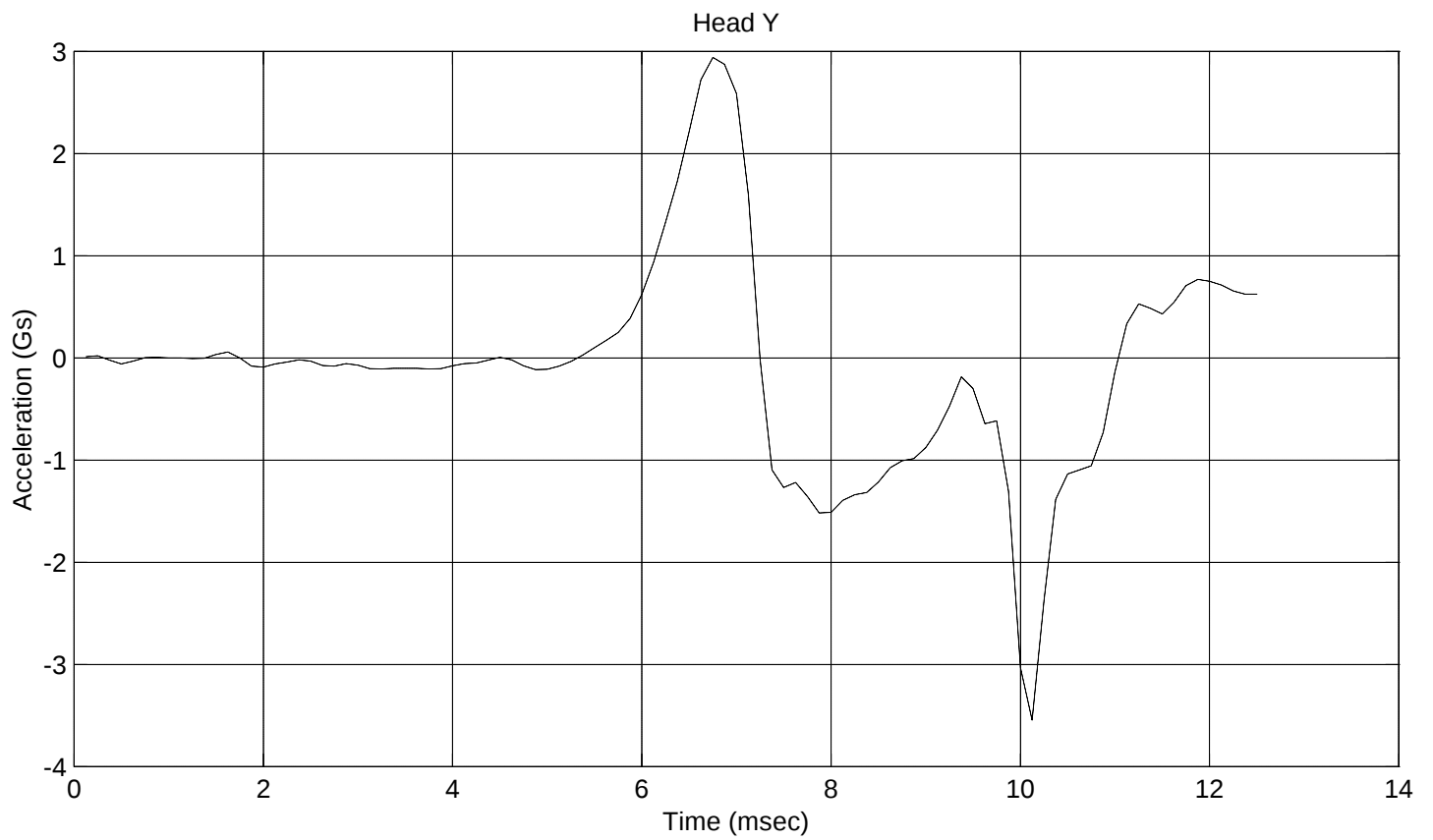
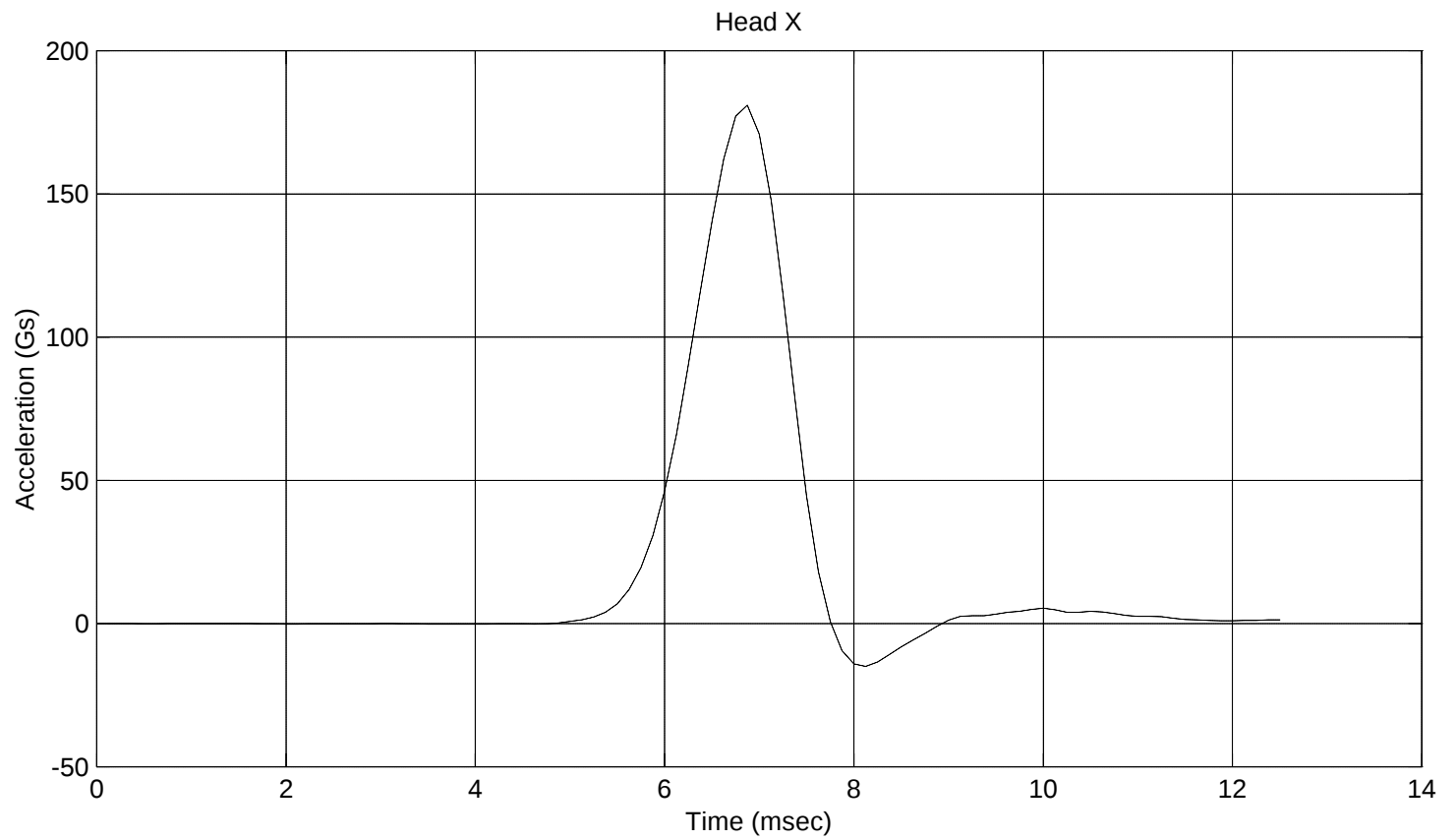
**HEAD DROP TEST
POST-TEST**
(Test not required for SID certification)

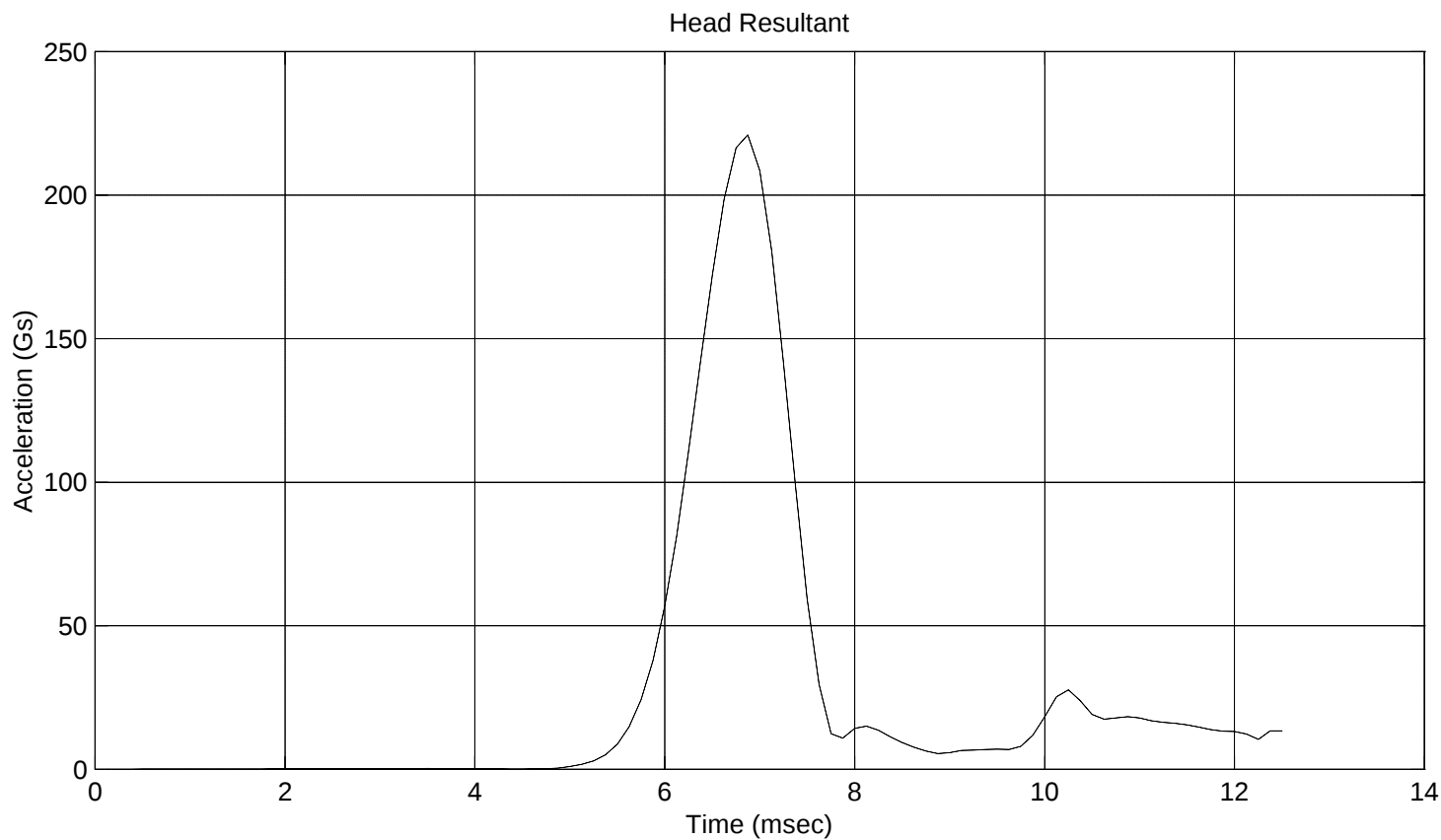
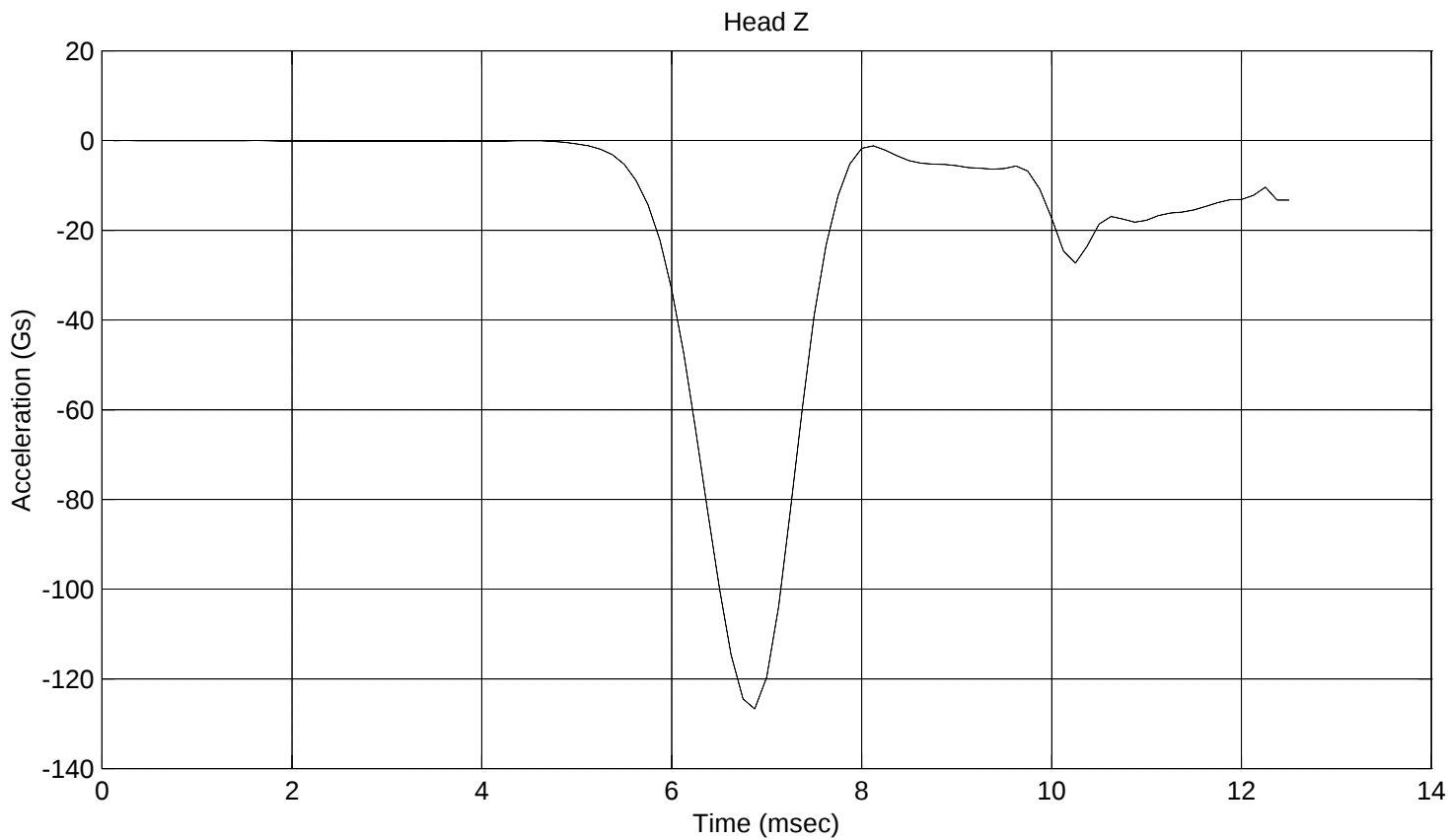
CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 013 Sequential Test Number: 2
Date: September 28, 2001 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (EC)	18.9 - 25.5	21.7
RELATIVE HUMIDITY (%)	10 - 70	31
PEAK RESULTANT ACCELERATION (Gs)	210 - 260	220.97
PEAK LATERAL ACCELERATION (Gs)	Not to Exceed 10	3.54
UNIMODAL CRITERIA ABOVE 100 Gs (ms)	0.9 - 1.5	1.12

REMARKS: None





**ABDOMINAL COMPRESSION TEST
POST TEST**

(Test not required for SID certification)

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 013 Sequential Test Number: 2
Date: October 3, 2001 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (EC)	18.9 - 25.5	21.7
RELATIVE HUMIDITY (%)	10 - 70	31
FORCE @ 13 mm (N)	104 - 162	115.7
FORCE @ 19 mm (N)	163 - 221	177.9
FORCE @ 25 mm (N)	222 - 280	255.8
FORCE @ 33 mm (N)	325 - 391	358.1

REMARKS: None

Dummy S/N 013

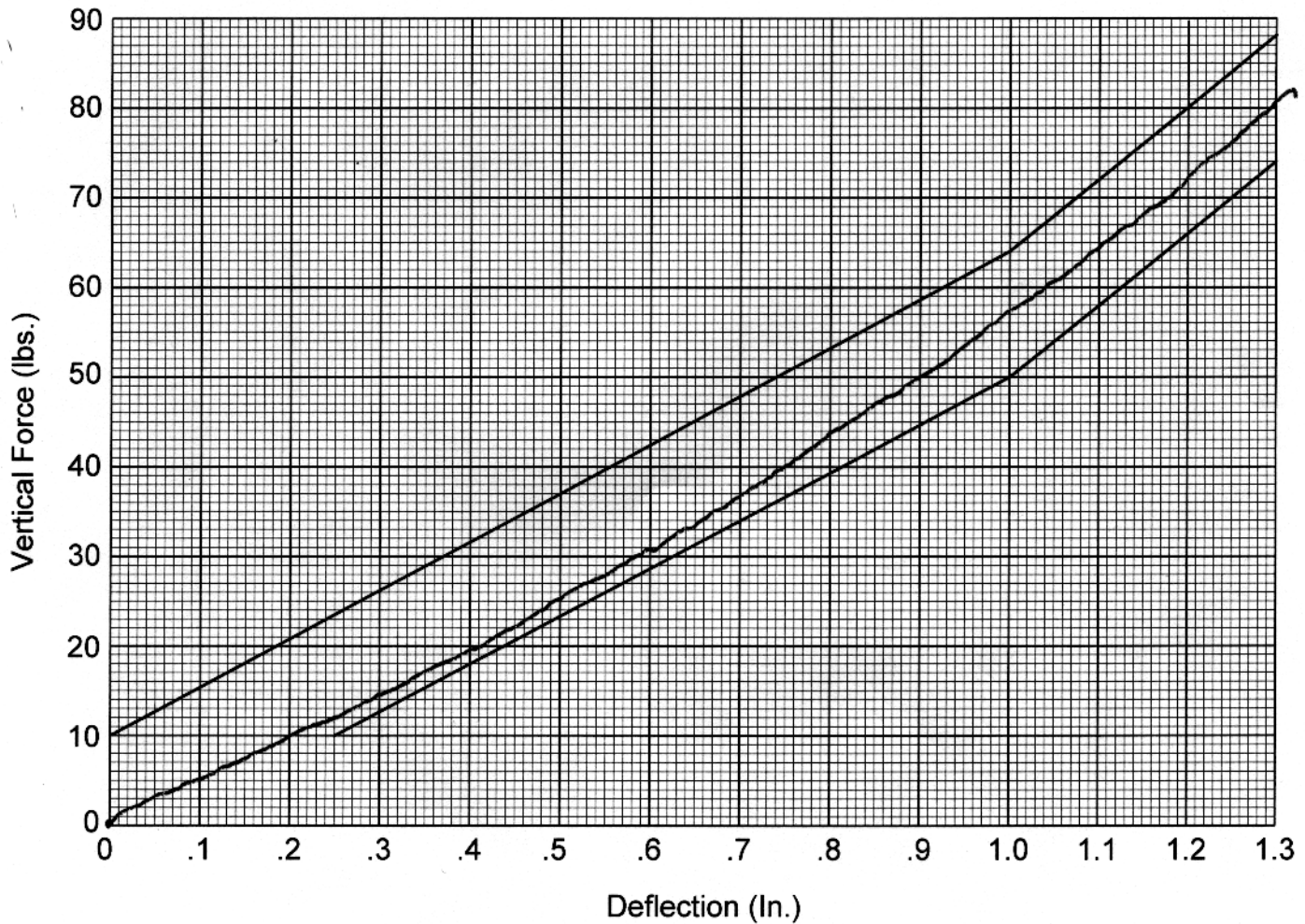
W/A _____

Date 10-3-2001

Performed By BS

Temp. 71°

Humidity 31%



Hybrid II
Abdomen Static Press

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

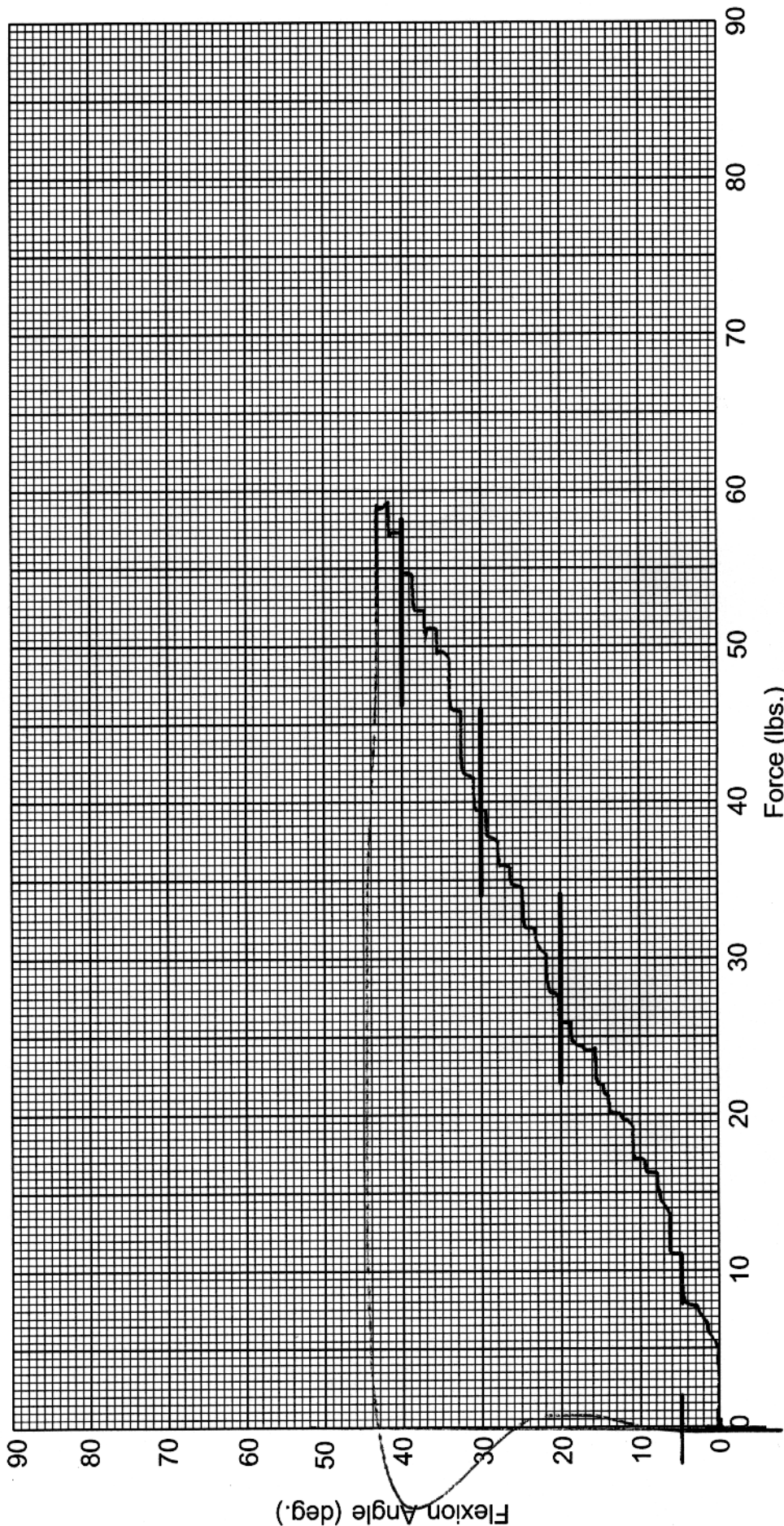
CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 013 Sequential Test Number: 2
Date: October 2, 2001 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (EC)	18.9 - 25.5	21.1
RELATIVE HUMIDITY (%)	10 - 70	32
FORCE @ 0E (N)	0 - 26.7	0
FORCE @ 20E (N)	97.8 - 151.2	115.7
FORCE @ 30E (N)	151.2 - 204.6	175.7
FORCE @ 40E (N)	204.6 - 258	242.4
RETURN ANGLE	12E max.	5°

REMARKS: None

Dummy S/N 013
 W/A _____
 Date 10-2-2001
 Performed By [Signature]
 Temp. 50°
 Humidity 32%



Hybrid II Lumbar Spine Flexion Test

POST TEST DUMMY INSPECTION LIST
CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 013 Sequential Test Number: 2
Date: October 3, 2001 Laboratory Technician: B. Swiecicki

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

REMARKS: None

CALIBRATION TEST RESULTS

POST TEST

SID NO.: 027

CONFIGURED FOR LEFT SIDE IMPACT

**CALIBRATION TEST RESULTS SUMMARY
POST TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 027 Sequential Test Number: 2
Date: October 3, 2001 Laboratory Technician: B. Swiecicki

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

* Test not required for SID certification.

REMARKS: None

**EXTERNAL DIMENSIONS
POST TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 027 Sequential Test Number: 2
Date: October 3, 2001 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
SH- Seated Height (mm)	889 - 909	904
RH- Rib Height (mm)	502 - 520	518
HP- Hip Pivot Height (mm)	99 ref.	99
RD- Rib from Back Line (mm)	229 - 241	236
KH- Knee Pivot from Back Line (mm)	511 - 526	518
KV- Knee Pivot to Floor (mm)	490 - 505	493
HW- Hip Width (mm)	356 - 391	371

REMARKS: None

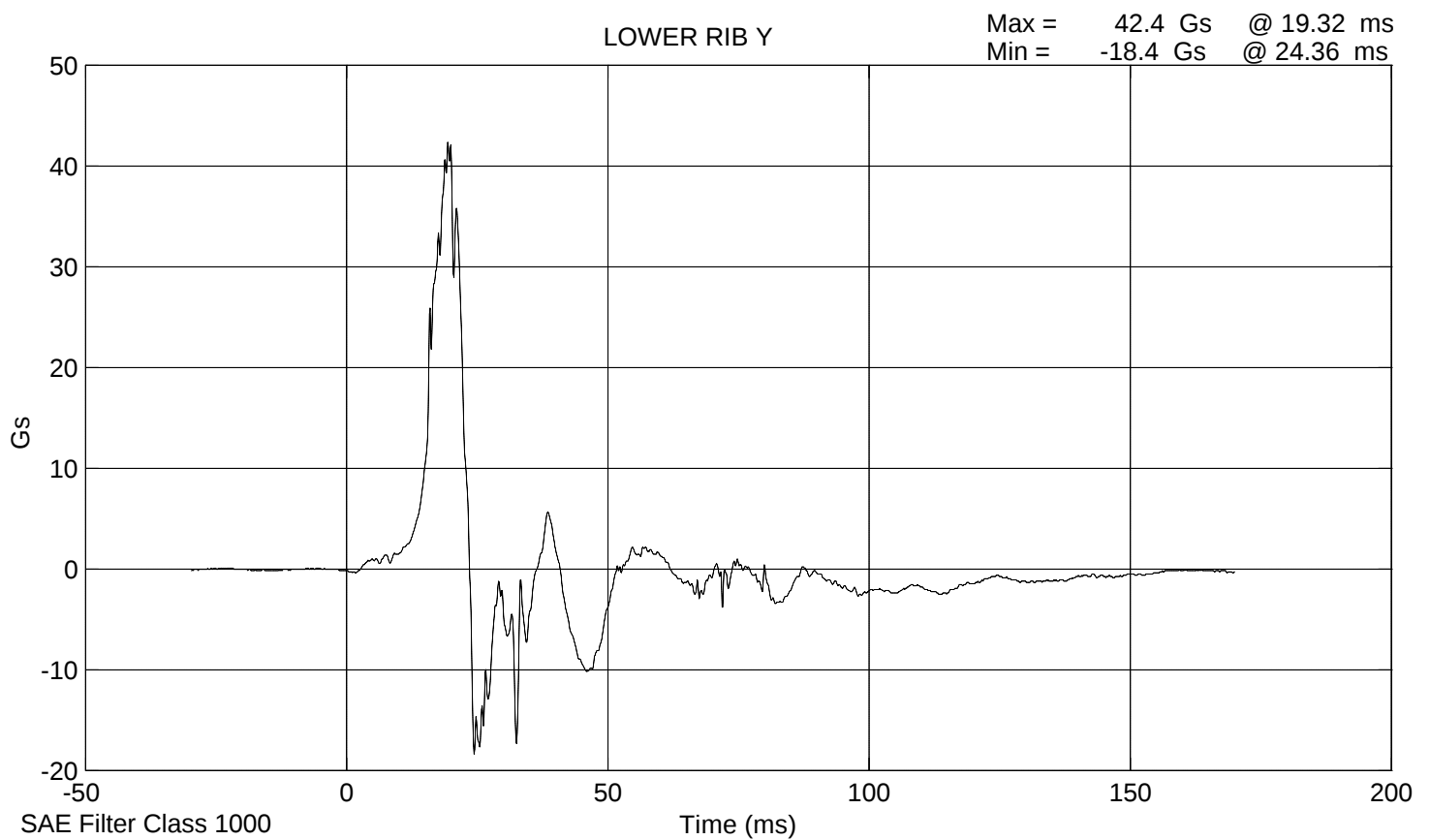
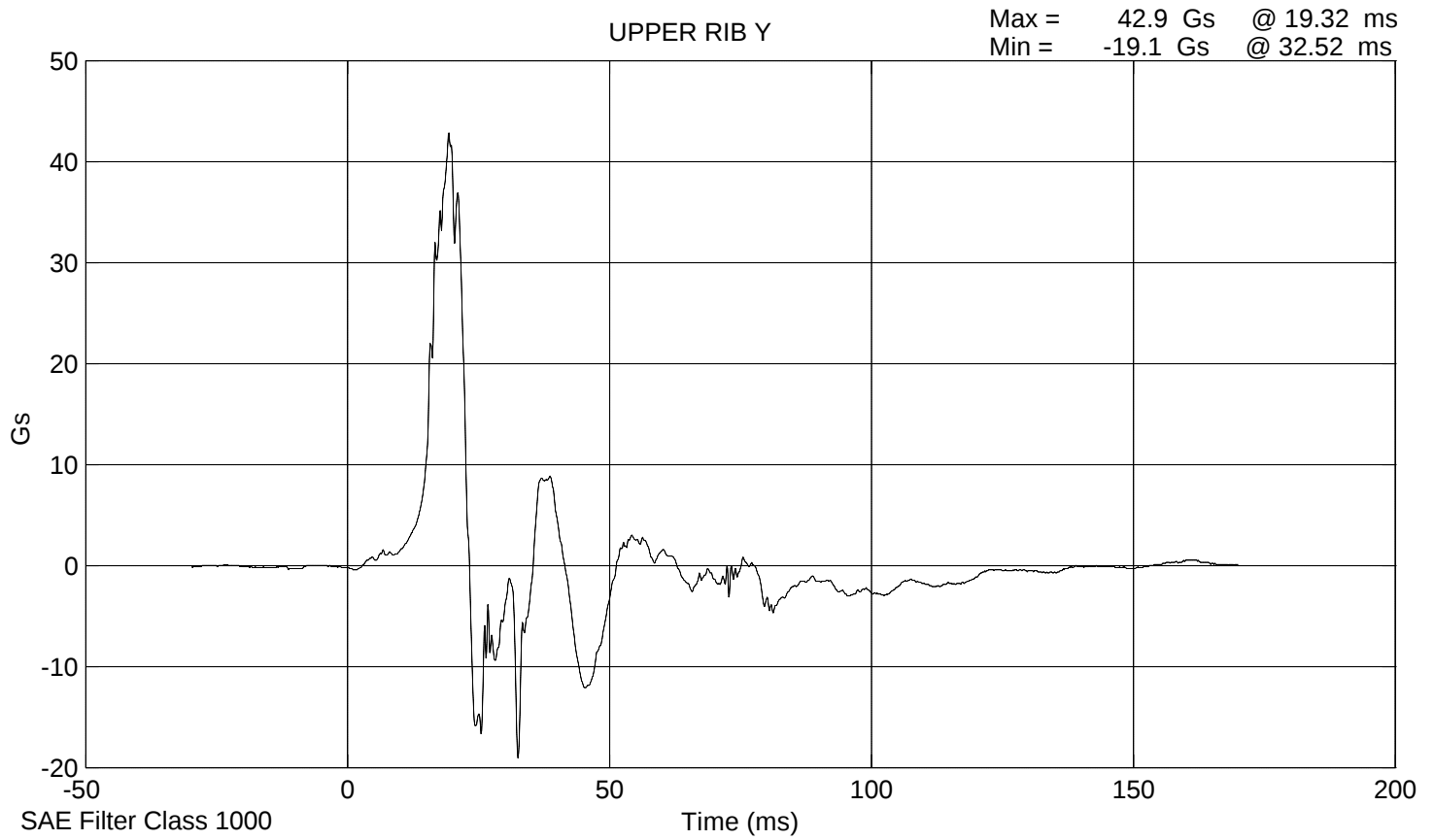
**LATERAL THORAX IMPACT TEST
POST TEST**

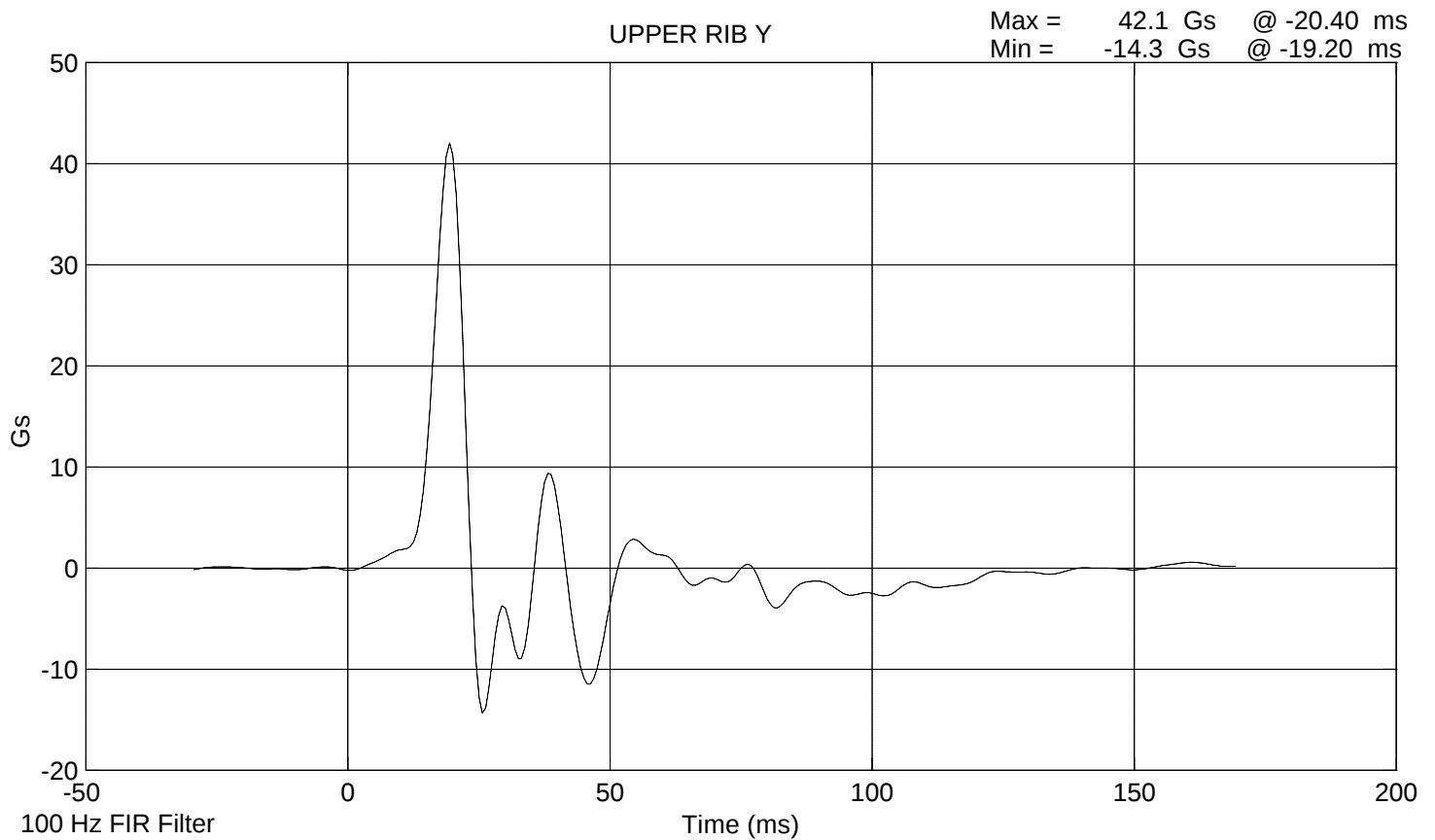
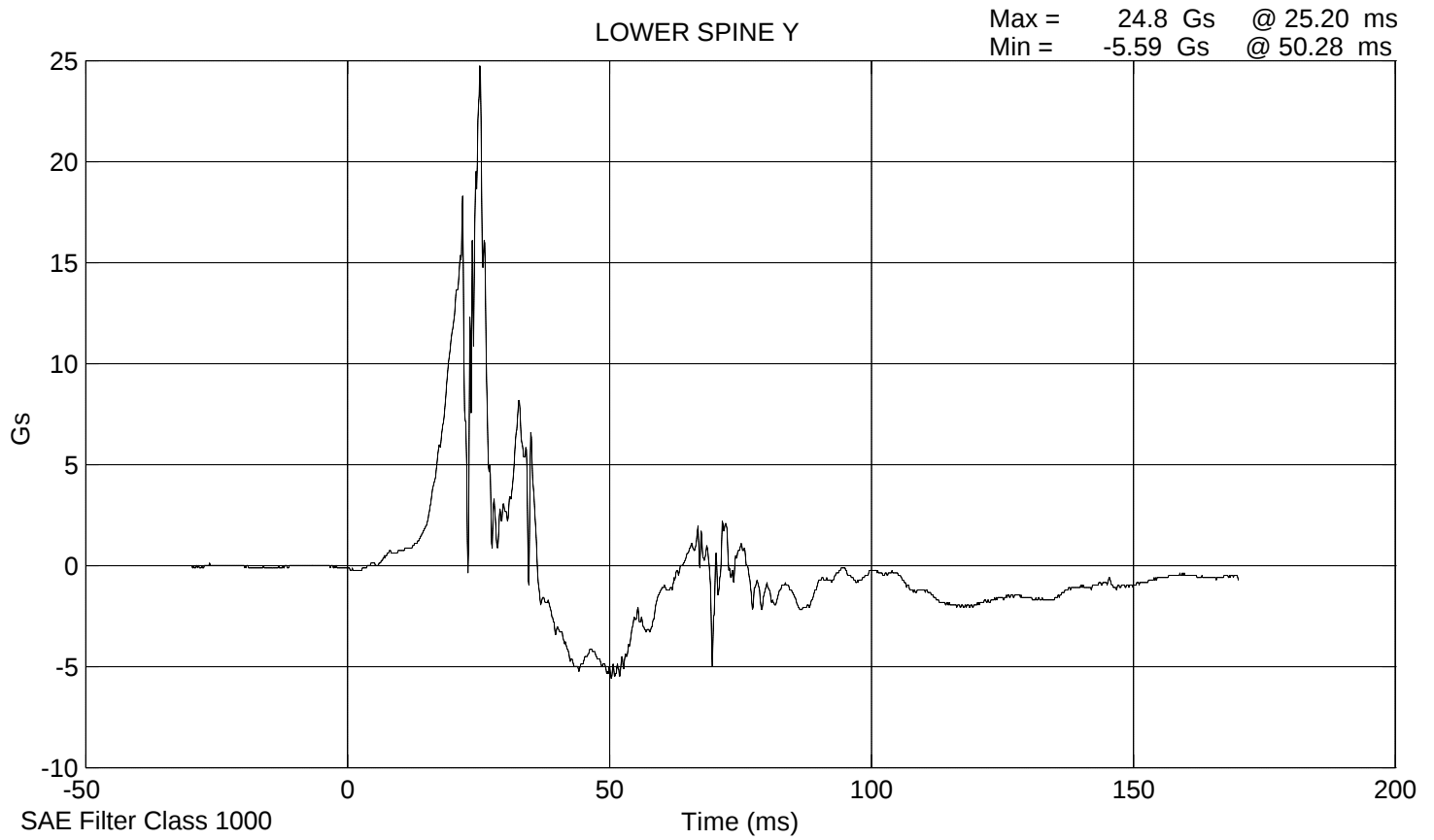
CONFIGURED FOR LEFT SIDE IMPACT

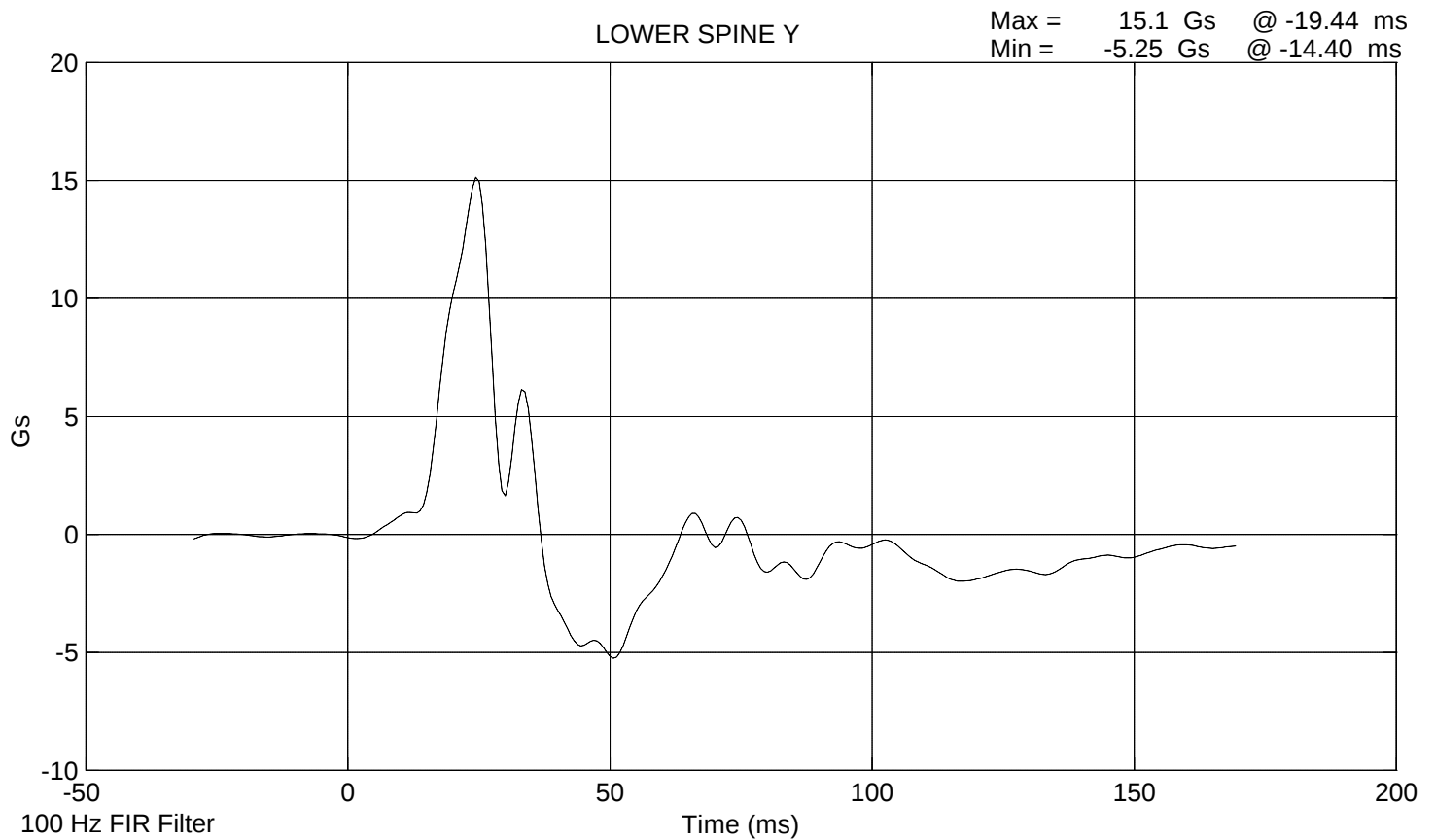
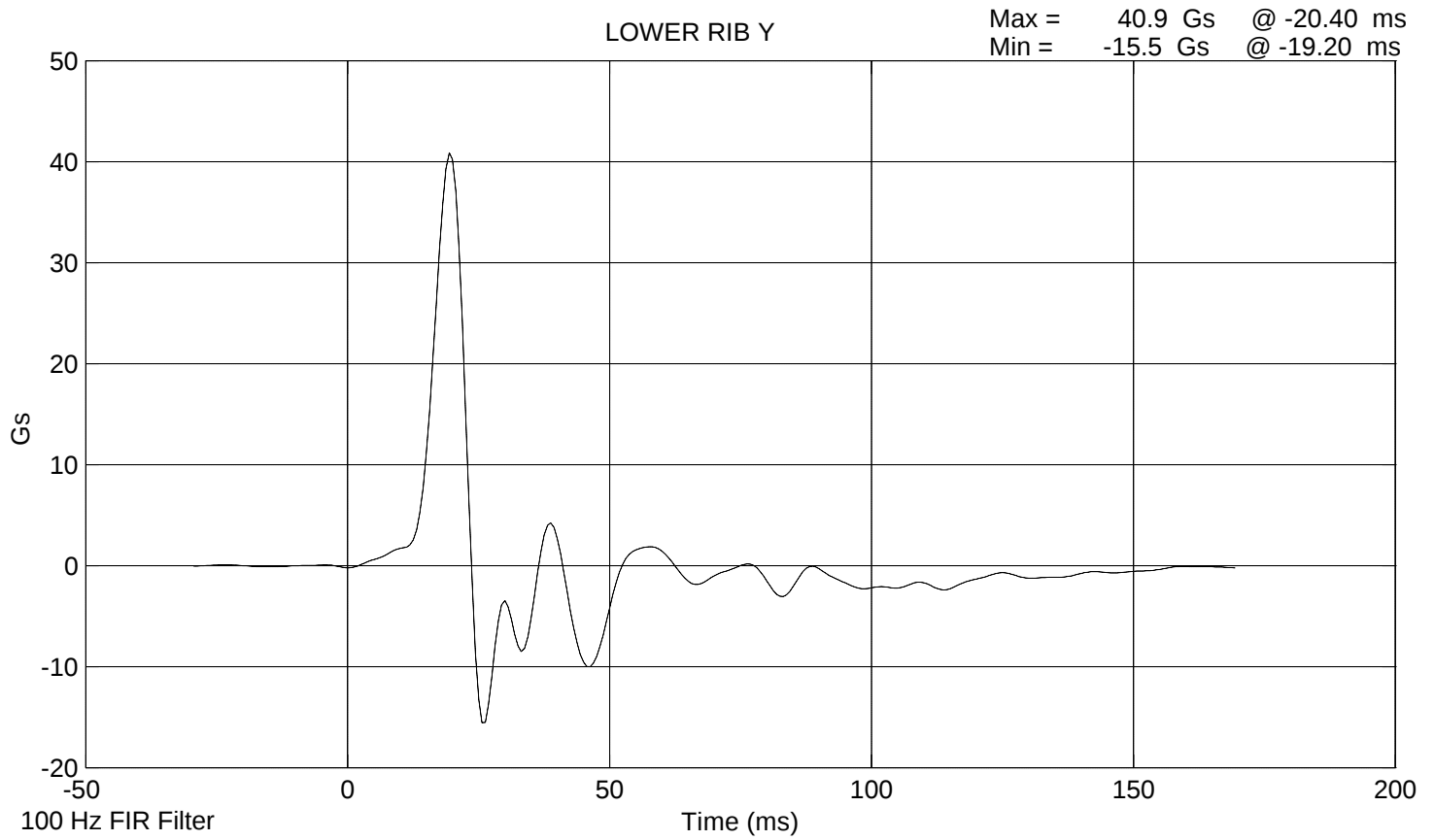
SID Serial No.: 027 Sequential Test Number: 2
Date: September 29, 2001 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (EC)	18.9 - 25.5	21
RELATIVE HUMIDITY (%)	10 - 70	30
PROBE SPEED (m/s)	4.27 - 4.33	4.32
UPPER RIB (g's)	37 - 46	42.06
LOWER RIB (g's)	37 - 46	40.89
LOWER SPINE (g's)	15 - 22	15.15

REMARKS: None







**LATERAL PELVIS IMPACT TEST
POST TEST**

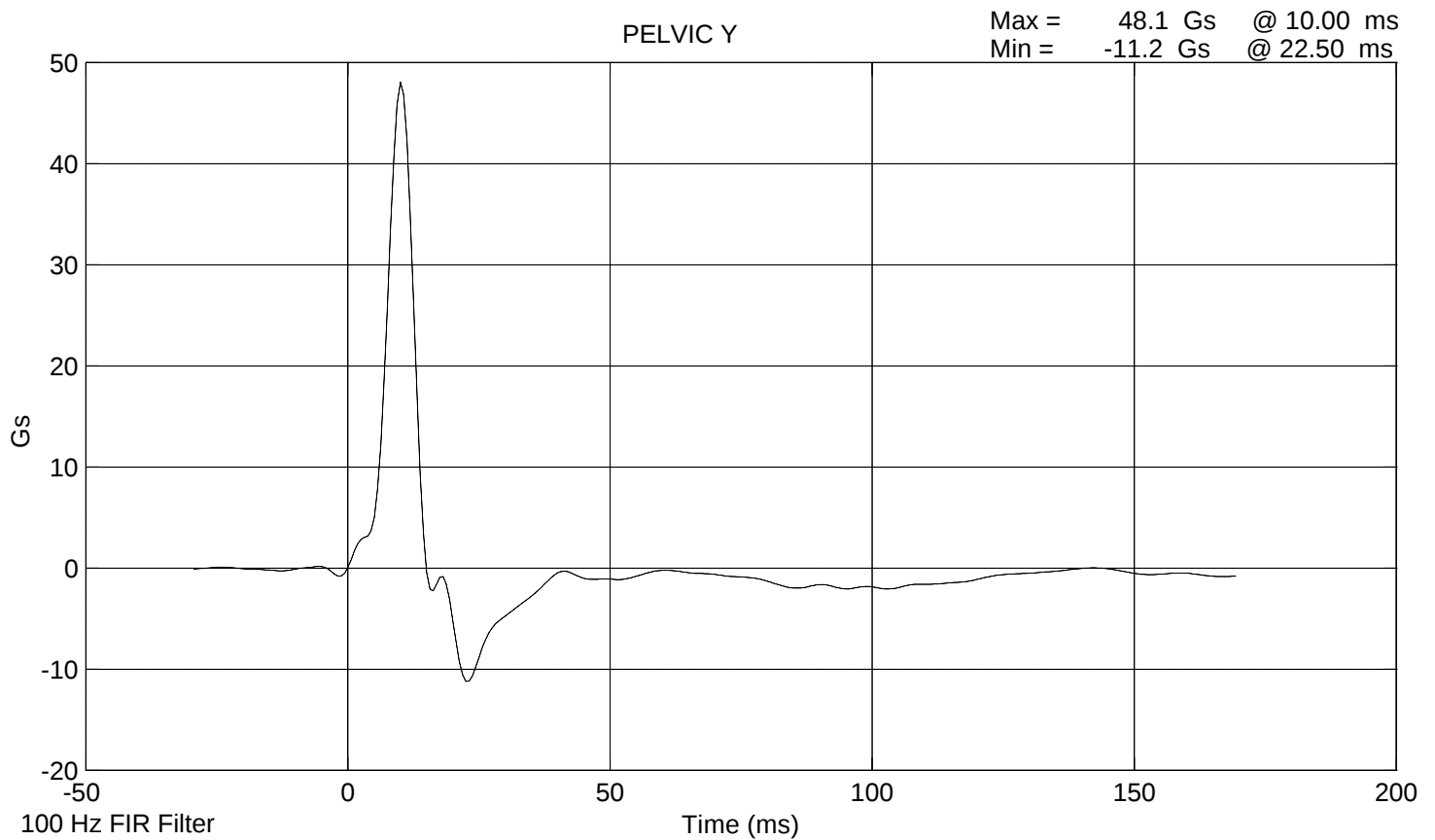
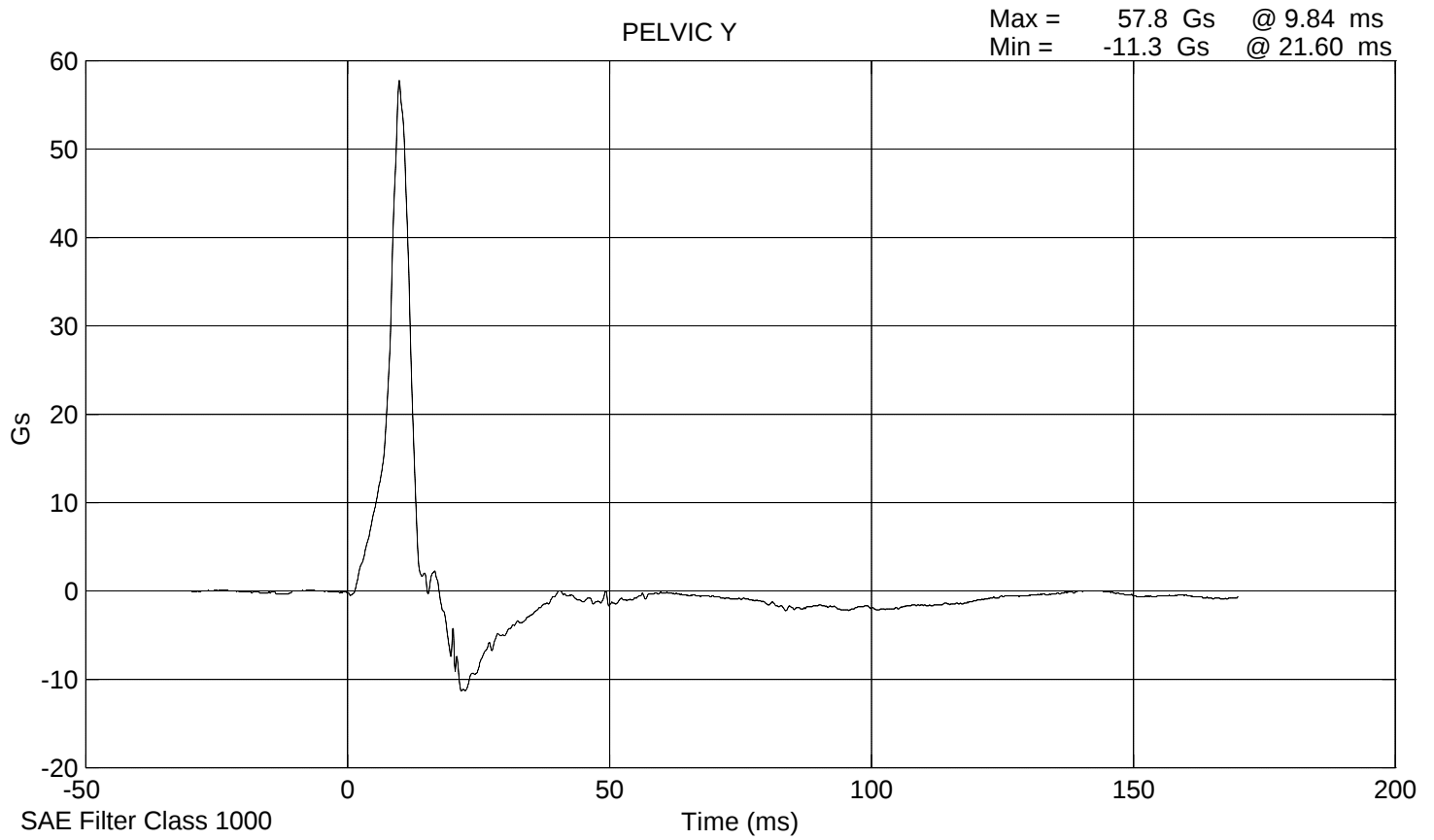
CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 027 Sequential Test Number: 2
Date: September 30, 2001 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (EC)	18.9 - 25.5	21
RELATIVE HUMIDITY (%)	10 - 70	30
PROBE SPEED (m/s)	4.27 - 4.33	4.28
PELVIS ACCELERATION (g's)	40 - 60	48.06

REMARKS: None

SID 027 Pelvic Impact Test @ 4.2824 m/s



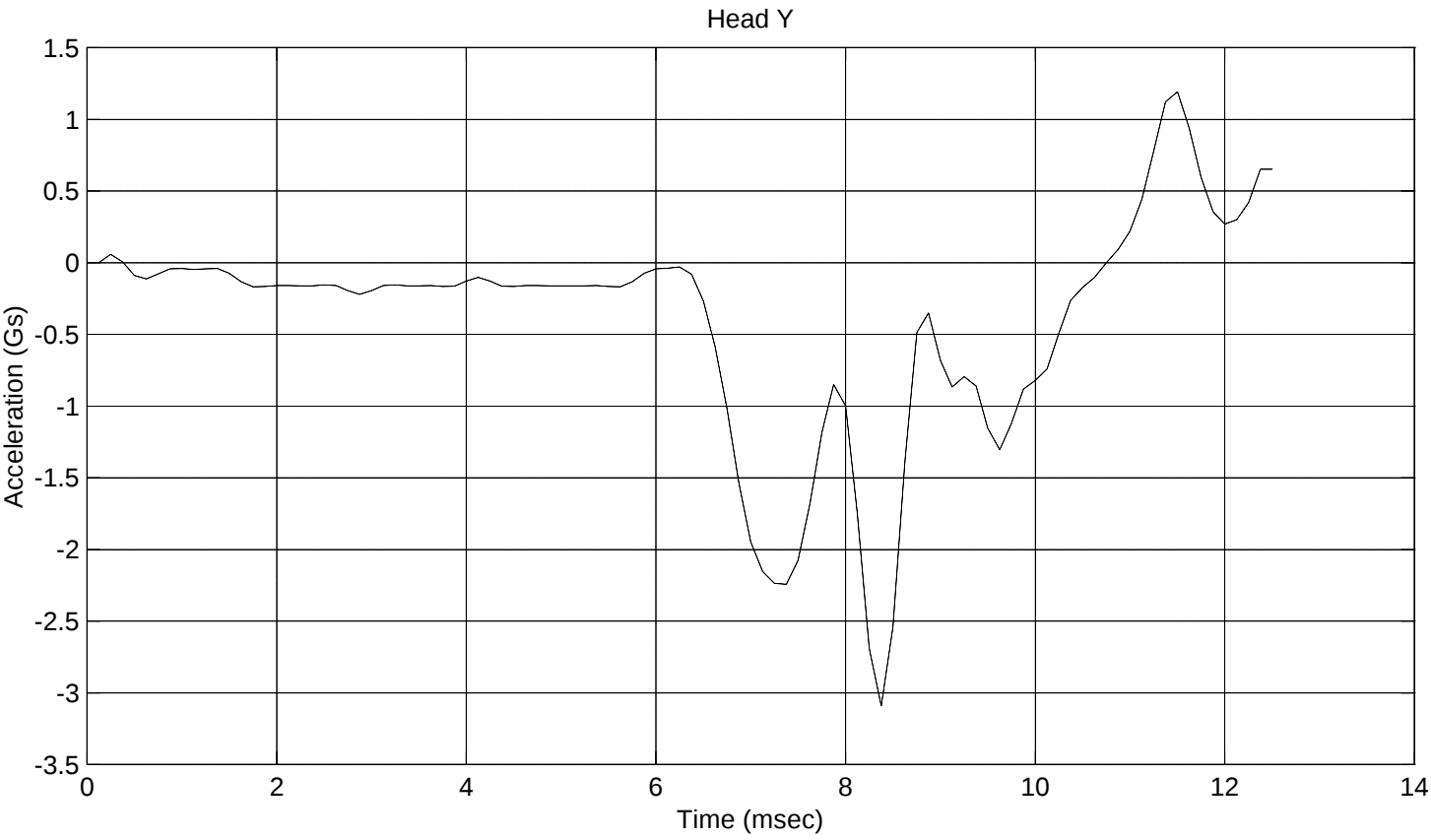
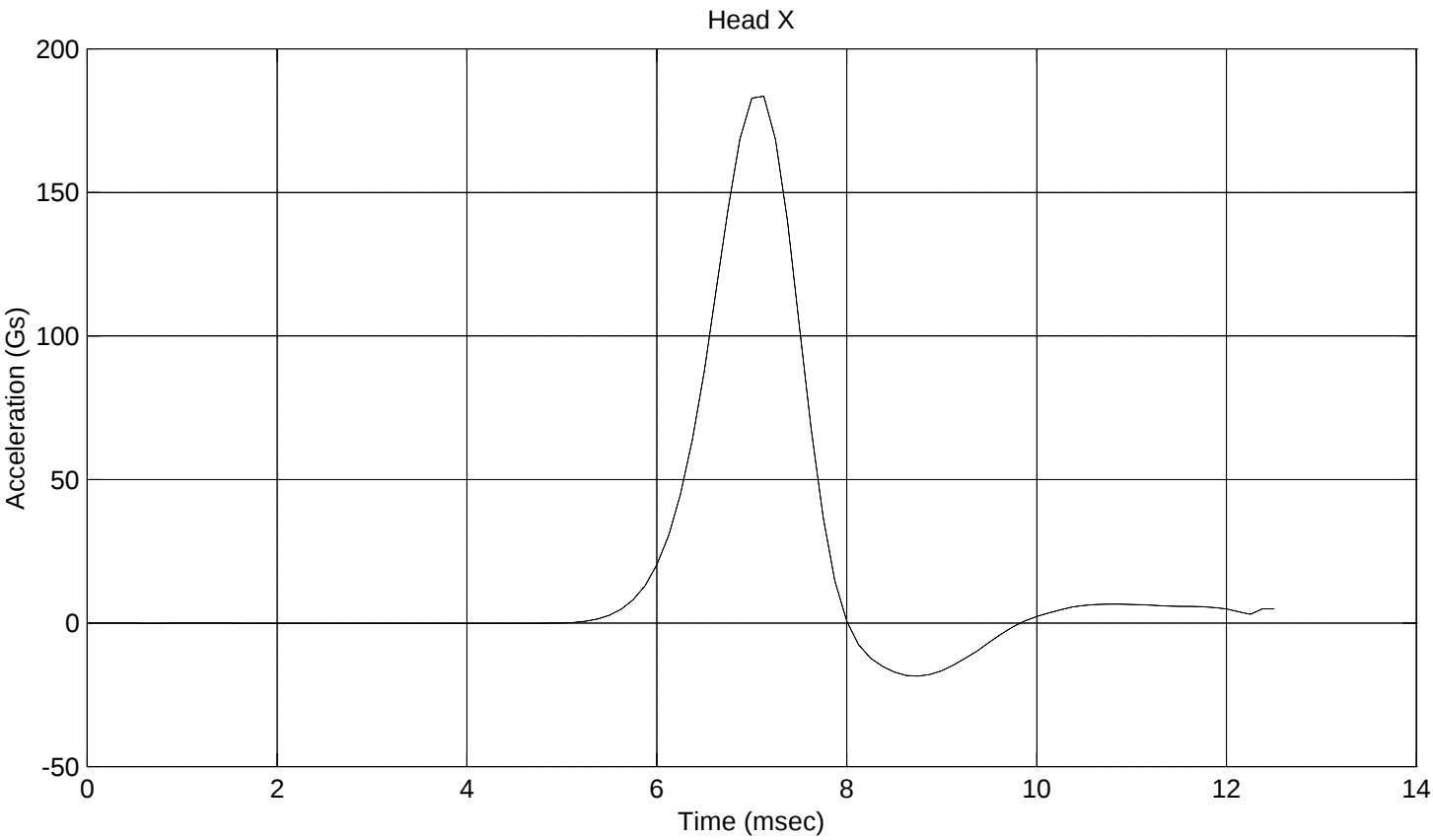
**HEAD DROP TEST
POST-TEST**
(Test not required for SID certification)

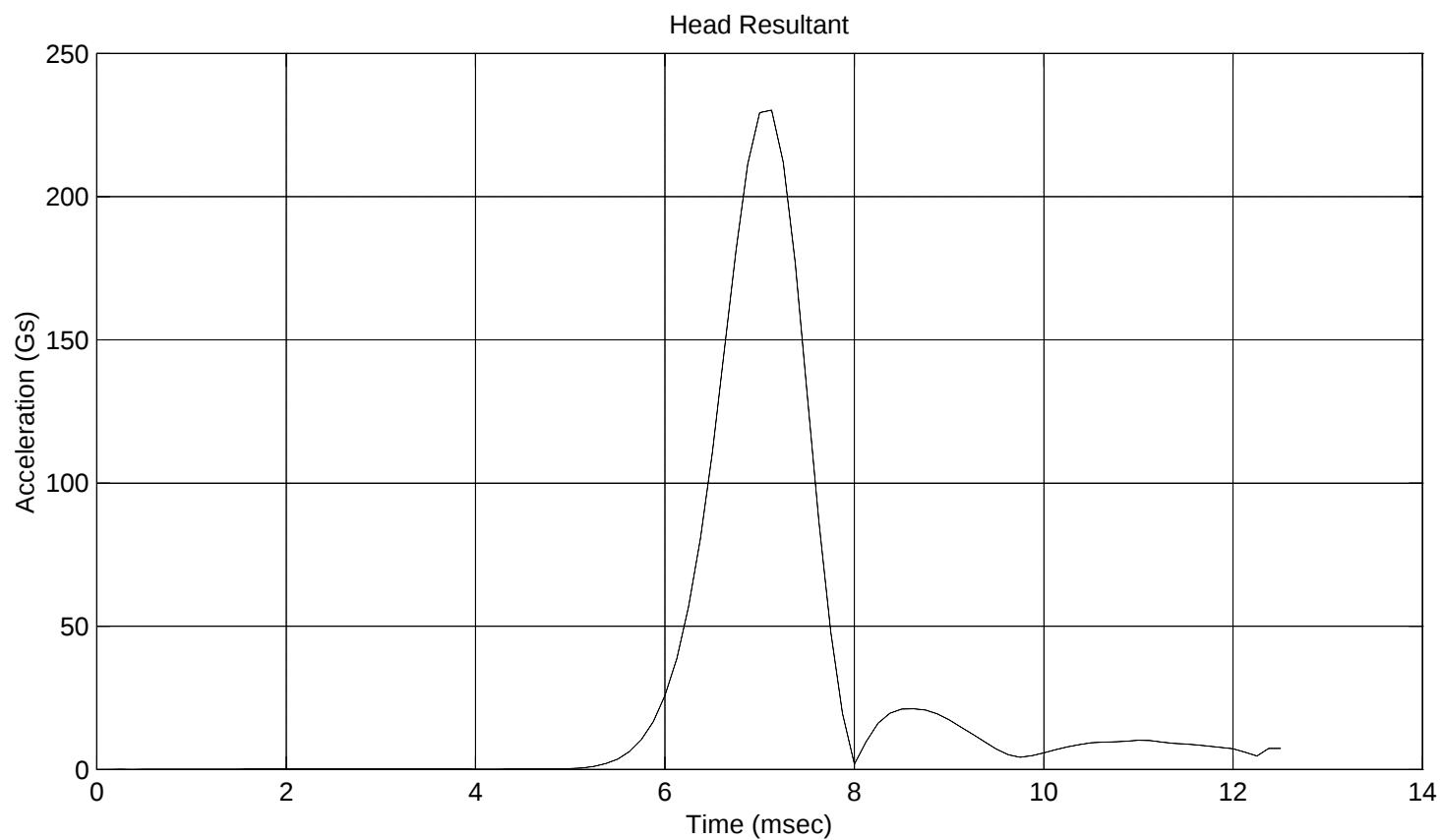
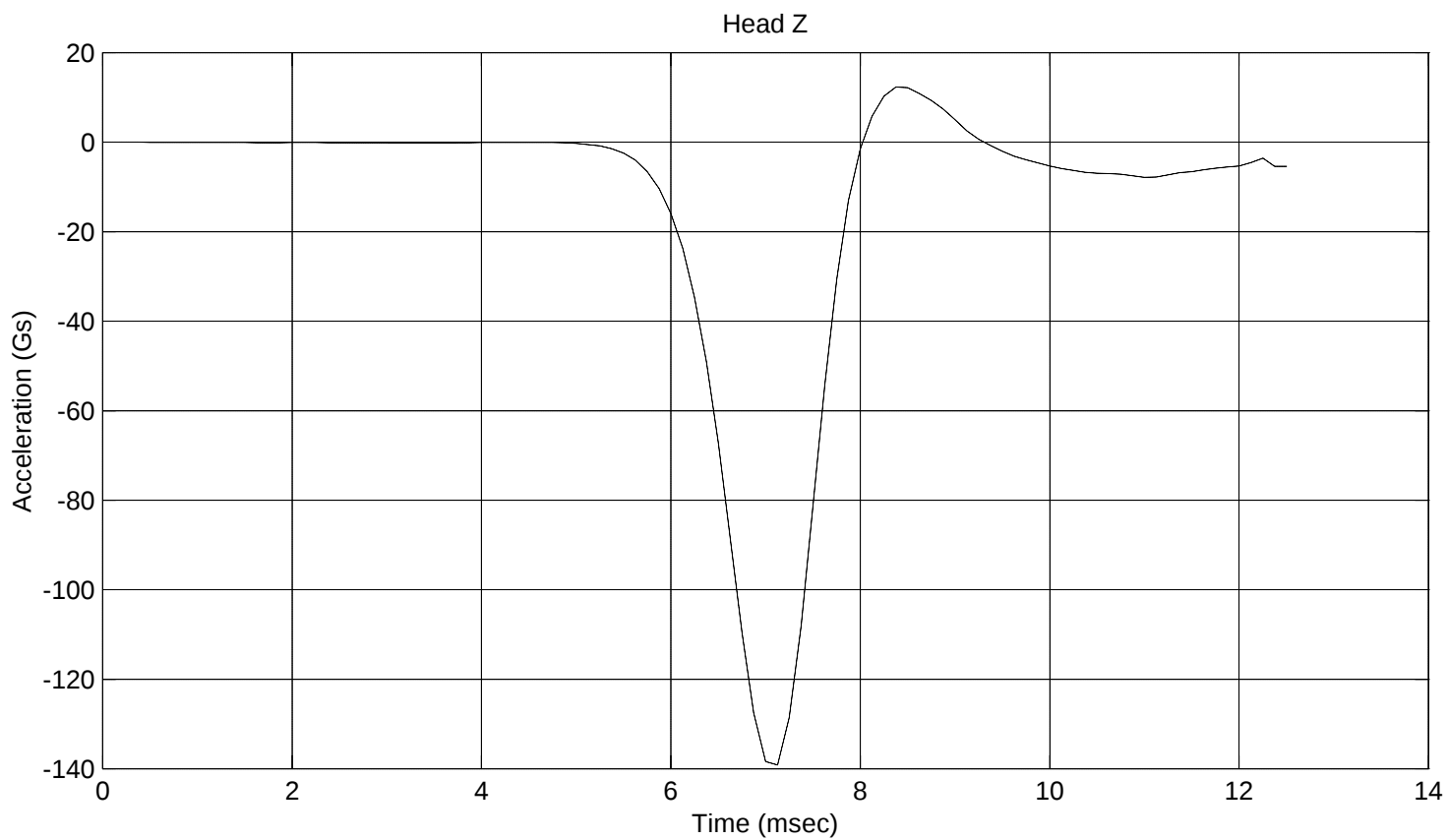
CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 027 Sequential Test Number: 2
Date: September 28, 2001 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (EC)	18.9 - 25.5	21.7
RELATIVE HUMIDITY (%)	10 - 70	31
PEAK RESULTANT ACCELERATION (Gs)	210 - 260	230.27
PEAK LATERAL ACCELERATION (Gs)	Not to Exceed 10	3.09
UNIMODAL CRITERIA ABOVE 100 Gs (ms)	0.9 - 1.5	1.12

REMARKS: None





**ABDOMINAL COMPRESSION TEST
POST TEST**

(Test not required for SID certification)

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 027 Sequential Test Number: 2
Date: October 2, 2001 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (EC)	18.9 - 25.5	21.1
RELATIVE HUMIDITY (%)	10 - 70	32
FORCE @ 13 mm (N)	104 - 162	115.7
FORCE @ 19 mm (N)	163 - 221	182.4
FORCE @ 25 mm (N)	222 - 280	260.2
FORCE @ 33 mm (N)	325 - 391	375.9

REMARKS: None

Dummy S/N 027

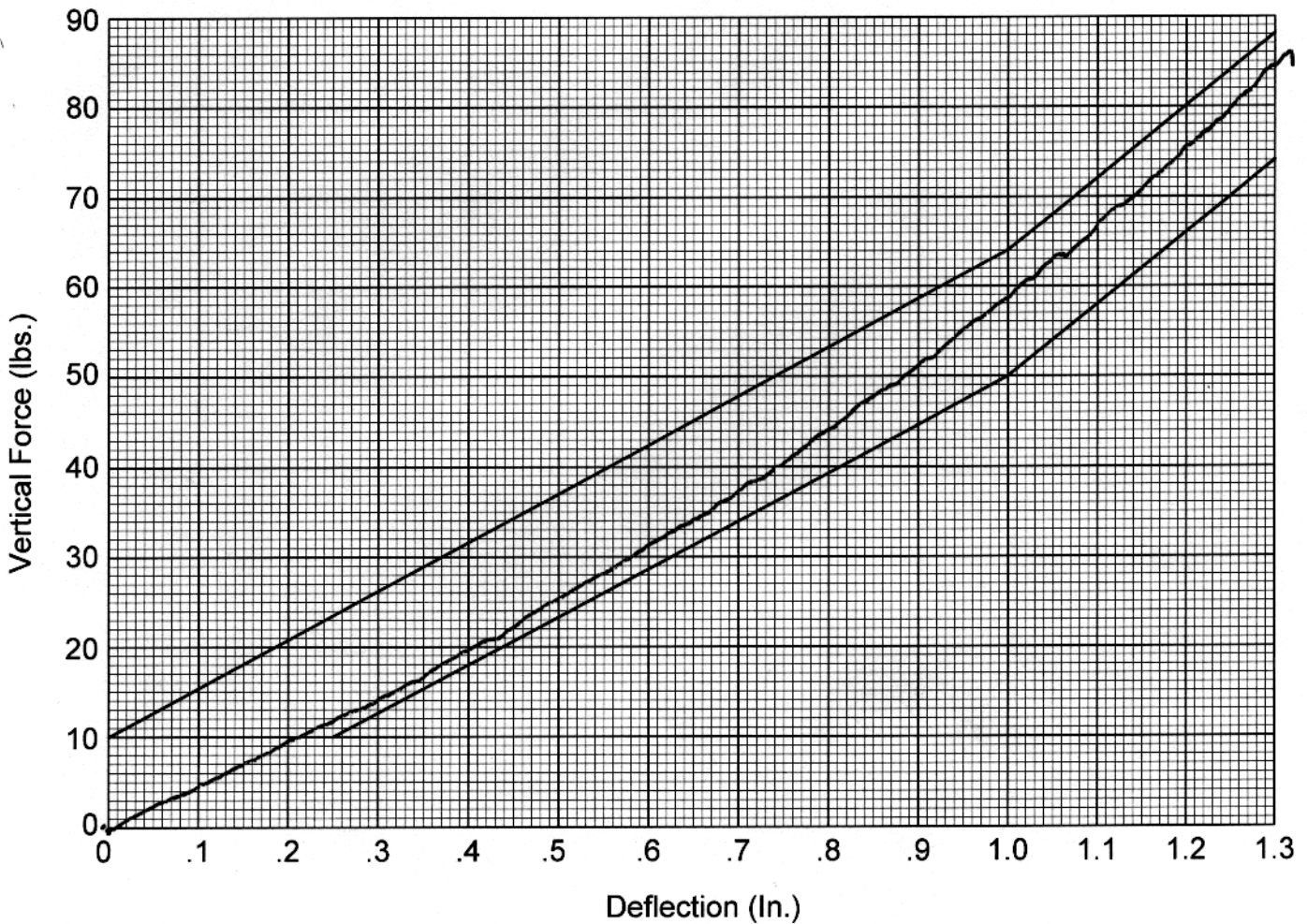
W/A _____

Date 10-2-2001

Performed By [Signature]

Temp. 70°

Humidity 32%



**Hybrid II
Abdomen Static Press**

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

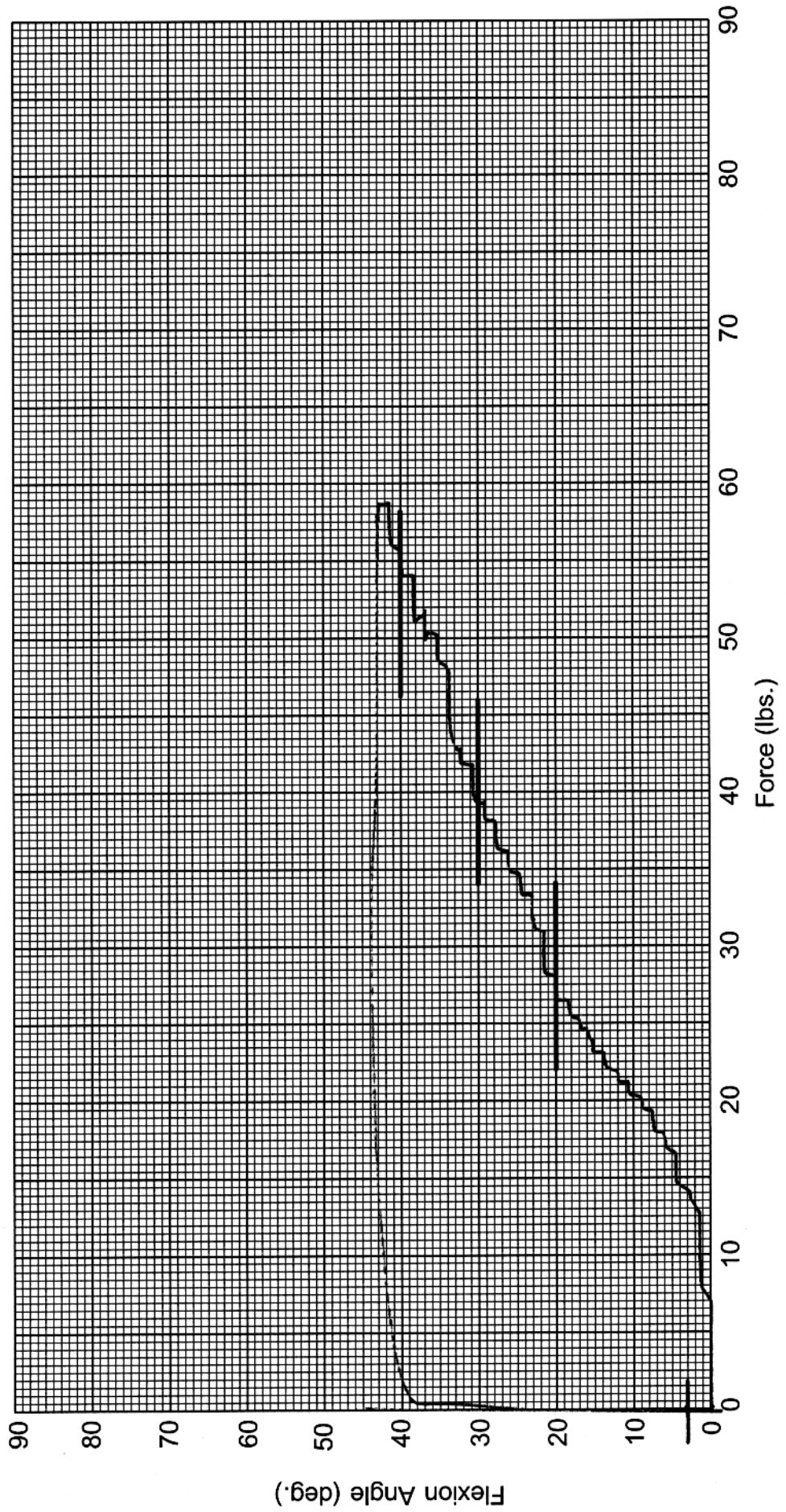
CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 027 Sequential Test Number: _____
Date: October 2, 2001 Laboratory Technician: B. Swiecicki

TEST PARAMETER	SPECIFICATION	TEST RESULTS
TEMPERATURE (EC)	18.9 - 25.5	21.1
RELATIVE HUMIDITY (%)	10 - 70	32
FORCE @ 0E (N)	0 - 26.7	0
FORCE @ 20E (N)	97.8 - 151.2	117.9
FORCE @ 30E (N)	151.2 - 204.6	175.7
FORCE @ 40E (N)	204.6 - 258	240.2
RETURN ANGLE	12E max.	3°

REMARKS: None

Dummy S/N 027
 W/A _____
 Date 10-2-2001
 Performed By [Signature]
 Temp. 70°
 Humidity 35%



Hybrid II Lumbar Spine Flexion Test

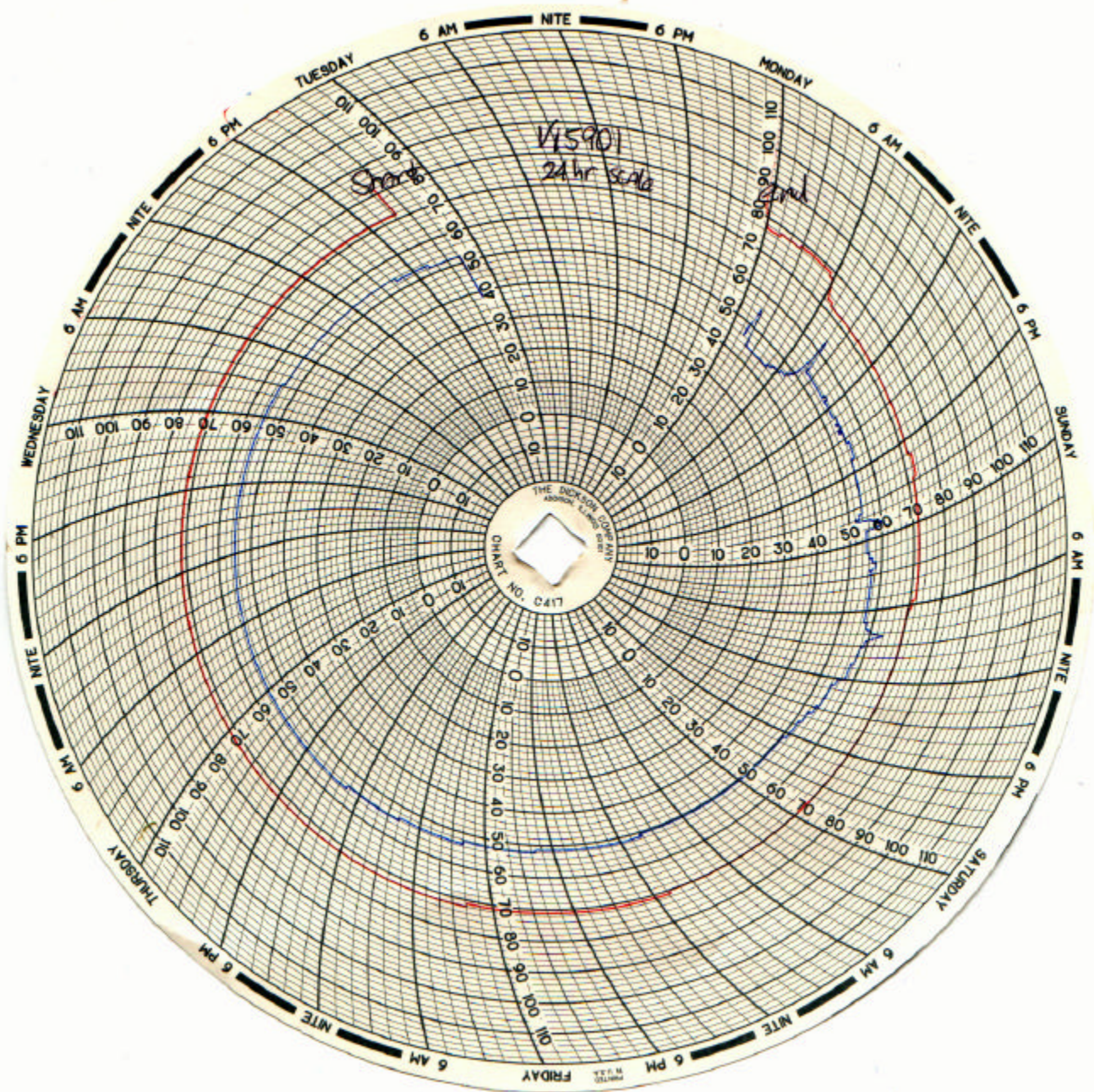
POST TEST DUMMY INSPECTION LIST
CONFIGURED FOR LEFT SIDE IMPACT

SID Serial No.: 027 Sequential Test Number: 2
Date: October 3, 2001 Laboratory Technician: B. Swiecicki

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

REMARKS: None

TEMPERATURE TRACE



APPENDIX D

TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

SID INSTRUMENTATION

	FRONT SID NO.: 013		
	SERIAL NUMBER	MANUFACTURER	CALIBRATION DATE
HEAD AX	ENDEVCO	AC-P16813	20-Aug-01
HEAD AY	ENDEVCO	AC-P17255	20-Aug-01
HEAD AZ	ENDEVCO	AC-P17145	20-Aug-01
UPPER RIB	ENDEVCO	AC-P16761	20-Aug-01
LOWER RIB	ENDEVCO	AC-P17131	20-Aug-01
LOWER SPINE	ENDEVCO	AC-P15736	20-Aug-01
PELVIS	ENDEVCO	AC-P16628	20-Aug-01
UPPER RIB REDUNDANT	ENDEVCO	AC-P17247	20-Aug-01
LOWER RIB REDUNDANT	ENDEVCO	AC-P16616	20-Aug-01
LOWER SPINE REDUNDANT	ENDEVCO	AC-P16289	04-Sep-01
PELVIS REDUNDANT	ENDEVCO	AC-P16575	20-Aug-01

	REAR SID NO.: 027		
	SERIAL NUMBER	MANUFACTURER	CALIBRATION DATE
HEAD AX	ENDEVCO	AC-P17237	21-Aug-01
HEAD AY	ENDEVCO	AC-P15747	21-Aug-01
HEAD AZ	ENDEVCO	AC-P14438	21-Aug-01
UPPER RIB	ENDEVCO	AC-P18545	16-Aug-01
LOWER RIB	ENDEVCO	AC-P18532	16-Aug-01
LOWER SPINE	ENDEVCO	AC-P18525	16-Aug-01
PELVIS	ENDEVCO	AC-P18531	16-Aug-01
UPPER RIB REDUNDANT	ENDEVCO	AC-P18536	16-Aug-01
LOWER RIB REDUNDANT	ENDEVCO	AC-P18792	16-Aug-01
LOWER SPINE REDUNDANT	ENDEVCO	AC-P18682	16-Aug-01
PELVIS REDUNDANT	ENDEVCO	AC-P18519	16-Aug-01

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)	ENDEVCO	AC-AP064	29-Aug-01
RIGHT FRONT SILL (Y)	ENDEVCO	AC-B10955	29-Aug-01
RIGHT FRONT SILL (Z)	ENDEVCO	AC-BB14	29-Aug-01
RIGHT REAR SILL (X)	ENDEVCO	AC-J32174	30-Apr-01
RIGHT REAR SILL (Y)	ENDEVCO	AC-J32838	30-Apr-01
RIGHT REAR SILL (Z)	ENDEVCO	AC-J32143	30-Apr-01
REAR FLOORPAN ABOVE AXLE (X)	ENDEVCO	AC-B10827	29-Aug-01
REAR FLOORPAN ABOVE AXLE (Y)	ENDEVCO	AC-B11407	29-Aug-01
REAR FLOORPAN ABOVE AXLE (Z)	ENDEVCO	AC-B11408	29-Aug-01
LEFT REAR SILL (Y)	ENDEVCO	AC-P18731	04-Sep-01
LEFT FRONT SILL (Y)	ENDEVCO	AC-P18639	04-Sep-01
LEFT FRONT DOOR CENTERLINE (Y)	ENDEVCO	AC-P17152	30-Aug-01
RIGHT REAR SEAT OCCUPANT COMP. (Y)	ICS	AC-X92	02-Apr-01
MID REAR OF LEFT FRONT DOOR (Y)	ENDEVCO	AC-P16975	30-Aug-01
LEFT FRONT DOOR UPPER C/L (Y)	ENDEVCO	AC-P16951	30-Aug-01
MID REAR OF LEFT REAR DOOR (Y)	ENDEVCO	AC-P16597	29-Aug-01
LEFT REAR DOOR UPPER C/L (Y)	ENDEVCO	AC-A13513	29-Aug-01
LOWER LEFT B- PILLAR (Y)	ENDEVCO	AC-P16662	04-Sep-01
MIDDLE LEFT B-PILLAR (Y)	ENDEVCO	AC-P19219	04-Sep-01
LOWER LEFT A-PILLAR (Y)	ENDEVCO	AC-P18663	04-Sep-01
UPPER LEFT A-PILLAR (Y)	ENDEVCO	AC-P19222	04-Sep-01
FRONT SEAT TRACK (Y)	ENDEVCO	AC-P17299	04-Sep-01
REAR SEAT TRACK (Y)	ENDEVCO	AC-P19216	04-Sep-01
VEHICLE CG (X)	ENDEVCO	AC-J33021	16-Jul-01
VEHICLE CG (Y)	ENDEVCO	AC-J33030	16-Jul-01
VEHICLE CG (Z)	ENDEVCO	AC-J27941	16-Jul-01
MDB CG (X)	ENDEVCO	AC-C16682	06-Sep-01
MDB CG (Y)	ENDEVCO	AC-CJ54	06-Sep-01
MDB CG (Z)	ENDEVCO	AC-GK12	06-Sep-01
MDB REAR FRAME MEMBER (X)	ENDEVCO	AC-CX05	06-Sep-01
MDB REAR FRAME MEMBER (Y)	ENDEVCO	AC-C16685	06-Sep-01

REMARKS: None