

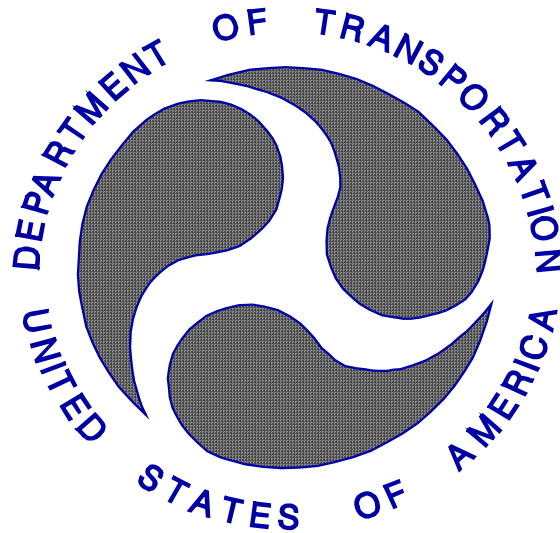
REPORT NO. MCW-DOT-03SN06

**NEW CAR ASSESSMENT PROGRAM
SIDE IMPACT TESTING**

FORD MOTOR COMPANY
2003 JAGUAR X-TYPE 4 DOOR SEDAN

NHTSA NUMBER: M3 0211

MEDICAL COLLEGE OF WISCONSIN
5000 WEST NATIONAL AVENUE
MILWAUKEE, WI 53295



20 FEBRUARY 2003

FINAL REPORT

U.S. DEPARTMENT OF TRANSPORTATION
NATIONAL HIGHWAY TRAFFIC SAFETY ADMINISTRATION
RULEMAKING
OFFICE OF CRASHWORTHINESS STANDARDS
ROOM 5307, NVS-111
400 SEVENTH STREET, SW
WASHINGTON, DC 20590

This Final Report was prepared for the U.S. Department of Transportation, National Highway Traffic Safety Administration, under Contract No. DTNH22-01-D-02003. 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 content or use thereof.

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16. Abstract A 55/28 km/h 90° Impact Moving Deformable Barrier NCAP Side Impact Test was conducted on the subject 2003 Jaguar X-Type 4 Door Sedan in accordance with the specifications of the Office of Crashworthiness Standards Test Procedure for generation of consumer information on vehicle side crash protection. This test was conducted at the Medical College of Wisconsin Vehicle Crashworthiness Lab in Milwaukee, Wisconsin, on 20 Feb 2003. The impact velocity of the Moving Deformable Barrier (MDB) was 62.0 (38.5 mi/h) km/h, and the ambient temperature at the struck side (driver's) of the target vehicle at the time of impact was 21° C. The target vehicle post-test maximum crush was 362 mm at Level 3. The test vehicle's performance follows: <table border="1"> <thead> <tr> <th></th><th><u>DRIVER</u></th><th><u>PASSENGER</u></th></tr> </thead> <tbody> <tr> <td>Left Upper Rib Acceleration G</td><td>50.2</td><td>56.3</td></tr> <tr> <td>Left Lower Rib Acceleration G</td><td>66.4</td><td>61.5</td></tr> <tr> <td>Lower Spine Acceleration G</td><td>64.8</td><td>57.4</td></tr> <tr> <td>Thoracic Trauma Index TTI</td><td>66</td><td>59</td></tr> <tr> <td>Pelvis Acceleration G</td><td>68</td><td>75</td></tr> </tbody> </table> The 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>DRIVER</u>	<u>PASSENGER</u>	Left Upper Rib Acceleration G	50.2	56.3	Left Lower Rib Acceleration G	66.4	61.5	Lower Spine Acceleration G	64.8	57.4	Thoracic Trauma Index TTI	66	59	Pelvis Acceleration G	68	75
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17. Key Words New Car Assessment Program (NCAP) Side Impact MDB Side Impact Dummy (SID H3) NHTSA No. M3 0211		18. Distribution Statement <u>Copies of this report are available from:</u> National Highway Traffic Safety Administration Rulemaking Office of Crashworthiness Standards Room 5307, NVS-111 400 Seventh Street, SW Washington, DC 20590																			
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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	SUMMARY OF TEST RESULTS	3-1
	Data Sheet 1 – General Vehicle Test Parameter Data	3-2
	Data Sheet 2 – Test Vehicle Summary	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 H3 Instrumentation Data	4-2
	Data Sheet 6 – Vehicle Pre- and Post-Measurements	4-4
	Data Sheet 7 – SID H3 Longitudinal Clearance Dimensions	4-5
	Data Sheet 8 – SID H3 Lateral Clearance Dimensions	4-6
	Data Sheet 9 – Vehicle Side Measurements	4-7
	Data Sheet 10 – Vehicle Exterior Crush Profiles – All Levels	4-13
	Data Sheet 11 – Vehicle Damage Profile Distances	4-14
	Data Sheet 12 – Static Crush of Impactor Face	4-16
	Data Sheet 13 – Test Vehicle Accelerometer and Data Summary	4-19
	Data Sheet 14 – MDB Accelerometer Locations and Data Summary	4-20
	Data Sheet 15 – High-Speed Camera Locations and Data	4-21
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 H3 RESPONSE DATA		B-1
APPENDIX C SID H3 CONFIGURATION AND VERIFICATION RESULTS		C-1
APPENDIX D TEST EQUIPMENT LIST AND CALIBRATION INFORMATION		D-1

SECTION 1

PURPOSE AND TEST PROCEDURE

This side impact test was part of the FY03 New Car Assessment Program Side Impact Test Program, sponsored by the National Highway Traffic Safety Administration (NHTSA), under Contract No. DTNH22-01-D-02003. The purpose of this test was to evaluate side impact protection of a 2003 Jaguar X-Type 4 Door Sedan. This side impact test was conducted in accordance with the Office of Crashworthiness Standard's Laboratory Test Procedure dated May 1999.

The Medical College of Wisconsin does not endorse or certify products. The manufacturer's name appears solely for identification purposes only.

SECTION 2

SUMMARY OF SIDE IMPACT TEST

A 2003 Jaguar X-Type 4 Door Sedan was impacted on the left or driver's side by a Moving Deformable Barrier (MDB) that was moving forward in a 27° crabbed position to the tow road guidance system at a velocity of 62.0 km/h (38.5 mph). The target vehicle was stationary and positioned at an angle of 63° to the line of forward motion. The side impact test was conducted by the Medical College of Wisconsin in Milwaukee, Wisconsin, on 20 Feb 2003.

Two restrained Side Impact Hybrid III Dummies (SID H3's) were placed in the driver and left rear designated seating positions, according to instructions specified in the OCWS Side Impact Laboratory Test Procedure, dated May 1999. The side impact event was documented by four high-speed film cameras, five high-speed videos, and one real-time camera. Camera locations and other pertinent camera information can be found in this report.

The SID H3s were instrumented with the following accelerometers.

1. Left Upper Rib (LUR) Primary and Redundant uniaxial accelerometer (Y-direction)
2. Left Lower Rib (LLR) Primary and Redundant uniaxial accelerometer (Y-direction)
3. Lower Thoracic Spine (T₁₂) Primary and Redundant uniaxial accelerometer (Y-direction)
4. Pelvic (PEV) Primary and Redundant section uniaxial accelerometer (Y-direction)
5. Head Center of Gravity triaxial accelerometers (X-, Y-, and Z-direction)
6. Upper Neck (NKU) six axis load cell (Fx, Fy, Fz, Mx, My, and Mz)

Pre- and post-test photographs of the test vehicle, the MDB, and the SID H3s are included in Appendix A. Note that in Appendix A NHTSA number was changed from M3 0111 (as pictured) to M3 0211. Appendix B contains the vehicle, MDB, and dummy response data traces. A summary of the SID H3 configuration and performance verification test data is shown in Appendix C. Dummy and vehicle calibration data can be found in Appendix D of this report.

The following table summarizes the results of this test.

Injury Criteria	Front SID H3	Rear SID H3
TTI (G)	66	59
PELVIS (G)	68	75
HIC36	305	226

The vehicle's airbag information is summarized in the following table

	Frontal	Side-Torso	Side-Torso/Head	Side-Head
Driver	Yes-Steering wheel	Yes- Seat	None	Yes- Curtain
Front Passenger	Yes- Dashboard	Yes- Seat	None	Yes- Curtain
Left Rear Passenger	None	None	None	Yes- Curtain

SECTION 3
SUMMARY OF TEST RESULTS

DATA SHEET NO. 1

GENERAL VEHICLE TEST PARAMETER DATA

TEST VEHICLE INFORMATION

Year/ Make/ Model/ Body Style				2003 Jaguar X-Type 4 Door Sedan			
Vehicle NHTSA NO.				M3 0211	VIN		SAJEB52D93XC90834
Vehicle Body Color				British Racing Green	Build Date		June 2002
Engine Data	6	Cylinders	CID	2.5	Liter	cc	
Placement	Longitudinal	X	Lateral				
Transmission	5	Speed	X	Manual		Automatic	X
						Four Wheel	Overdrive
Final Drive	Rear Wheel Drive	Front Wheel Drive		X	Drive		
Odometer Reading	44 miles	Date	13 Jan 03				
Options	X	A/C	X	Power Steering	X	Power Brakes	X
	X	Cruise Control	X	Tilt Wheel	X	Power Locks	

DATA FROM TIRE PLACARD:

Tire Pressure (at Capacity)	32	PSI Front
	32	PSI Rear
Recommended Tire Size	205/55R16	
Tires on Test Vehicle	205/55R16	Manufacturer Continental

TEST VEHICLE AIRBAG INFORMATION:

	<u>Frontal</u>	<u>Side-Torso</u>	<u>Side-Torso/Head</u>	<u>Side-Head</u>
Driver	Yes- Steering Wheel	Yes- Seat	None	Yes- Curtain
Front Passenger	Yes- Dashboard	Yes- Seat	None	Yes- Curtain
Left Rear Passenger	None	None	None	Yes- Curtain

VEHICLE CAPACITY DATA:

Number of Occupants:	2	Front	3	Rear	3 rd Seat	5	Total
Type of Front Seats	X	Bucket		Bench	Split Bench		
Type of Front Seat Back		Fixed	X	Adjustable w/	Lever		Knob
Vehicle Max Capacity Loading			400	kg	(A)		
No. of Occupants X 68.04 kg			340.2	kg	(B)		
Cargo Capacity (A) – (B)			59.8	kg			

TEST VEHICLE DELIVERED WEIGHT WITH MAXIMUM FLUIDS:

Left Front	=	469	kg	Left Rear	=	305.7	kg
Right Front	=	467.2	kg	Right Rear	=	317.1	kg
TOTAL FRONT	=	936.2	kg	TOTAL REAR	=	622.8	kg
% Total Weight	=	60.1	%	%Total Weight	=	39.9	%
TOTAL WEIGHT	=	1559	kg				

DATA SHEET 1 (continued)

GENERAL VEHICLE TEST PARAMETER DATA

Vehicle: 2003 Jaguar X-Type

NHTSA No. M3 0211

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Test Vehicle Delivered Weight with Max Fluids	=	<u>1559</u>	kg	(A)
Maximum Cargo Carrying Capacity of Test Vehicle	=	<u>59.8</u>	kg	(B)
Weight of (2) instrumented Side Impact Dummies	=	<u>161.5</u>	kg	(C)
TEST VEHICLE TARGET WEIGHT	=	<u>1780.3</u>	kg	(A+B+C)

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

Left Front	=	<u>501.1</u>	kg	Left Rear	=	<u>408.2</u>	kg
Right Front	=	<u>485.8</u>	kg	Right Rear	=	<u>385.1</u>	kg
TOTAL FRONT	=	<u>986.9</u>	kg	TOTAL REAR	=	<u>793.3</u>	kg
% Total Weight	=	<u>55.4</u>	%	%Total Weight	=	<u>44.6</u>	%
TOTAL WEIGHT	=	<u>1780.3</u>	kg				

AS TESTED WEIGHT OF TEST VEHICLE (UDVW+ SID H3(s)+CARGO+EQUIPMENT & INSTRUMENTATION)

Left Front	=	<u>499</u>	kg	Left Rear	=	<u>406.4</u>	kg
Right Front	=	<u>485.8</u>	kg	Right Rear	=	<u>383.7</u>	kg
TOTAL FRONT	=	<u>984.8</u>	kg	TOTAL REAR	=	<u>790.1</u>	kg
% Total Weight	=	<u>55.5</u>	%	%Total Weight	=	<u>44.5</u>	%
TOTAL WEIGHT	=	<u>1774.9</u>	kg				

TEST VEHICLE ATTITUDE (all dimensions in millimeters):

AS DELIVERED

Left Front	<u>693</u>	Right Front	<u>701</u>	Left Rear	<u>697</u>	Right Rear	<u>700</u>
------------	------------	-------------	------------	-----------	------------	------------	------------

FULLY LOADED

Left Front	<u>678</u>	Right Front	<u>685</u>	Left Rear	<u>658</u>	Right Rear	<u>668</u>
------------	------------	-------------	------------	-----------	------------	------------	------------

AS TESTED

Left Front	<u>678</u>	Right Front	<u>687</u>	Left Rear	<u>658</u>	Right Rear	<u>668</u>
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Test Vehicle Wheelbase 2702 mm

As Tested CG = 1202 mm rearward of front wheel centerline

TOTAL VEHICLE LENGTH:

Right Side	=	<u>4298</u>	mm
Left Side	=	<u>4298</u>	mm
Centerline	=	<u>4692</u>	mm

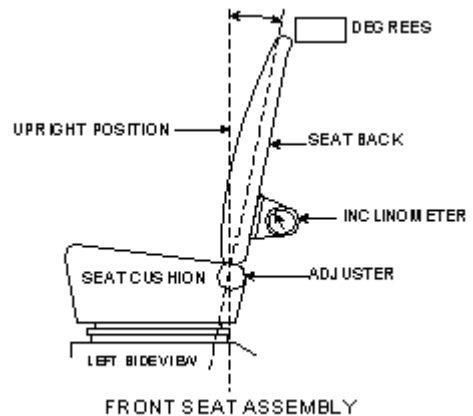
DATA SHEET 1 (continued)

GENERAL TEST VEHICLE PARAMETER DATA

Vehicle: 2003 Jaguar X-Type

NHTSA No.: M3 0211

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



FRONT SEAT CUSHION PLACEMENT:

Total Length of Adjustment Travel			<u>207 mm</u>
Total Number of Detents	<u>N/A</u>	Test Position	<u>Mid-position</u>

FRONT SEAT BACK ADJUSTMENT:

Seat Back Angle	<u>24° measured at back rest</u>
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REAR SEAT POSITION:

Total Length Fore/Aft Adjustment	<u>N/A</u>
Seat Back Adjustment Position	<u>N/A</u>

ADJUSTABLE STEERING COLUMN POSITION:

<u>Mid-position</u>

WINDOW POSITIONS:

Left Front	<u>Up</u>	Right Front	<u>Down</u>
Left Rear	<u>Up</u>	Right Rear	<u>Down</u>

AMOUNT OF STODDARD SOLVENT IN FUEL TANK:

Fuel System usable Capacity	<u>61.3 L</u>	
Test Volume	<u>57.0 L</u>	<u>93% usable capacity</u>

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

Wheelbase	<u>2702 mm</u>	
Impact Point is	<u>411 mm rearward</u>	of front axle centerline
Actual Impact Point is	<u>397 mm forward</u>	of front axle centerline

DATA SHEET 2
TEST VEHICLE SUMMARY

VEHICLE IDENTIFICATION:

Year/Make/Model/Body Style	2003 Jaguar X-Type 4 Door Sedan		
Body Color	British Racing Green	VIN	SAJEB52D93XC90834
NHTSA No.	M3 0211	Test Date	20 Feb 2003
Overall Length	4692 mm	Overall Width	1781 mm

VEHICLE TEST WEIGHT (Pre-Test):

Left Front	=	499	kg	Left Rear	=	406.4	kg
Right Front	=	485.8	kg	Right Rear	=	383.7	kg
TOTAL FRONT	=	984.8	kg	TOTAL REAR	=	790.1	kg
% Total Weight	=	55.5	%	%Total Weight	=	44.5	%
TOTAL WEIGHT	=	1774.9	kg				
Wheelbase				=		2702	mm
Longitudinal CG from Center of Front Axle				=		1202	mm
Impact Angle with Respect to Impactor				=		90°	

ACTUAL IMPACT POINT

Impact is 14 m m Forward and 5 mm Below impact point

MAXIMUM EXTERIOR STATIC CRUSH:

1. LEVEL 1	(238 mm above ground)	=	124	mm
2. LEVEL 2	(471 mm above ground)	=	358	mm
3. LEVEL 3	(577 mm above ground)	=	362	mm
4. LEVEL 4	(893 mm above ground)	=	280	mm
5. LEVEL 5	(1306 mm above ground)	=	71	mm

Maximum Post-Test intrusion at Level 3 is 362 mm

OCCUPANTS

	<u>Left Front Passenger</u>	<u>Left Rear Passenger</u>
Dummy Identification	SIDH3/058	SID H3/056
Restraints Used	3-Point Belt	3-Point Belt
	Torso Side Airbag	Head Curtain Airbag
	Head Curtain Airbag	

INSTRUMENTATION:

Number of Vehicle Data Channels		26
Number of Cameras	Onboard	3
	Off board	4
	MDB	2
	Real Time	1
	TOTAL	10

DATA SHEET NO. 3**MOVING DEFORMABLE BARRIER (MDB) SUMMARY**Vehicle: 2003 Jaguar X-TypeNHTSA No. M3 0211**MDB FACE MANUFACTURER AND SERIAL NUMBER:**Plascore Serial Number 089C1002-2 143A0802**POSITION OF IMPACT (MDB) ON TOW SYSTEM**Crabbed 27° to the left**MDB DETAILS:**

Overall Width of Framework Carriage	=	<u>1250 mm</u>
Overall Length of MDB (incl. honeycomb impact face)	=	<u>4116 mm</u>
Wheelbase of Framework Carriage	=	<u>2578 mm</u>
Tread of Framework Carriage (Front & Rear)	=	<u>1880 mm</u>
C.G. Location Rearward of Front Axle	=	<u>1109.3 mm</u>
C.G. Location From Center Line	=	<u>-1.9 mm</u>
C.G. Location Above Ground Level	=	<u>477.2 mm</u>

MDB WEIGHT:

Left Front	=	<u>495.2</u>	kg	Left Rear	=	<u>184.8</u>	kg
Right Front	=	<u>278</u>	kg	Right Rear	=	<u>399.2</u>	kg
TOTAL FRONT	=	<u>773.2</u>	kg	TOTAL REAR	=	<u>584</u>	kg
% Total Weight	=	<u>57.0</u>	%	%Total Weight	=	<u>43.0</u>	%
TOTAL WEIGHT	=	<u>1357.2</u>	kg				

MDB IMPACT:

Impact Angle (MDB C/L to Target Vehicle)		<u>270°</u>	
Impact Speed	Primary	<u>62.0 km/h</u>	<u>38.5 mph</u>
	Secondary	<u>62.0 km/h</u>	<u>38.5 mph</u>
	On-Board	<u>61.8 km/h</u>	<u>38.4 mph</u>

MAXIMUM STATIC CRUSH OF HONEYCOMB IMPACT FACE:

1. Row A Center of Bumper	=	<u>160</u>	mm
2. Row B Top of Bumper	=	<u>121</u>	mm
3. Row C Mid-Level	=	<u>127</u>	mm
4. Row D Top of Stack	=	<u>167</u>	mm

INSTRUMENTATION:

Number of MDB Data Channels	=	<u>5</u>
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DATA SHEET NO. 4**POST-TEST OBSERVATIONS**Vehicle: 2003 Jaguar X-TypeNHTSA No.: M3 0211VISIBLE DUMMY CONTACT POINTS:LEFT FRONT SID H3

Head	<u>To head curtain airbag</u>
Upper Torso	<u>To seat mounted side airbag</u>
Lower Torso	<u>To seat mounted side airbag</u>
Left Knee	<u>To left front door panel 145 mm below armrest</u>
Left Leg	<u>To left front door panel 155 mm below armrest</u>

LEFT REAR SID H3

Top of head to header, Side of head to curtain airbag
<u>To left rear door panel 80 mm below window sill</u>
<u>To left rear door panel at arm rest</u>
<u>To left rear door panel 160 mm below armrest</u>
<u>To left rear door panel 170 mm below armrest</u>

DOOR OPENING:LEFT DOOR

Front	<u>Inoperable/Closed/Latched</u>
Rear	<u>Inoperable/Closed/Latched</u>

RIGHT DOOR

<u>Operable/Closed/Latched</u>
<u>Operable/Closed/Latched</u>

MDB DISTANCE FROM TARGET IMPACT POINT:

Horizontal	<u>5 mm below</u>	Vertical	<u>14 mm forward</u>
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ARM REST LOCATIONS:

Front	<u>240 mm Below Window Sill</u>
Rear	<u>250 mm Below Window Sill</u>

SEAT MOVEMENT:

Front	<u>Cushion: ~60 mm; Seatback: ~105 mm</u>
Rear	<u>Cushion: ~125 mm; Seatback: ~60 mm</u>

GLAZING DAMAGE

Windshield	<u>Left upper corner to left lower corner cracked</u>
Window	<u>Left front and rear window shattered on impact</u>

PILLAR PERFORMANCE:

<u>None noted</u>

SILL SEPARATION

<u>None noted</u>

AIRBAG DEPLOYMENT STATUS:

	DRIVER	FRONT PASSENGER	REAR PASSENGER
FRONT	Did not deploy	Did not deploy	N/A
SIDE	Deployed	Did not deploy	Deployed

OTHER NOTABLE IMPACT EFFECTS:

<u>None</u>

SECTION 4
OCCUPANT AND VEHICLE INFORMATION

DATA SHEET 5

SID H3 INSTRUMENTATION DATA

Vehicle: 2003 Jaguar X-Type

NHTSA No.: M3 0211

	Front Dummy ID 056 Accelerations				Rear Dummy ID 058 Accelerations			
	Max		Min		Max		Min	
	G's	msec	G's	msec	G's	msec	G's	msec
HEAD ACCELERATIONS								
Longitudinal (X)	14.9	23.3	-10.8	57.8	12.0	131.0	-13.9	66.7
Lateral (Y)	55.3	42.5	-10.5	184.1	53.0	51.4	-13.3	134.2
Vertical (Z)	16.8	150.0	-15.6	23.2	16.4	36.7	-20.6	56.9
Resultant (R)	55.5	42.5			54.9	51.4		
HIC36	305				226			
RIB ACCELERATIONS								
Upper Rib Lateral (Y)	50.2	18.8	-5.7	106.2	56.3	33.1	-6.1	130
Upper Rib Lateral (Y _R)	52.1	18.8	-5.9	106.2	56.1	33.1	-6.0	130
Lower Rib Lateral (Y)	66.4	21.9	-6.4	71.9	61.5	41.2	-15.2	35.6
Lower Rib Lateral (Y _R)	67.3	21.2	-6.4	80.6	58.7	40.6	-15.4	35.6
SPINE ACCELERATIONS								
Lower Lateral (Y)	64.8	24.4	-14.2	80.0	57.4	45.6	-11.2	65.6
Lower Lateral (Y _R)	64.2	24.4	-15.1	80.6	57.3	45.6	-11.5	65.6
PELVIS ACCELERATIONS								
Lateral (Y)	68.0	27.5	-20.1	66.2	75.2	35.0	-16.6	67.5
Lateral (Y _R)	67.6	26.9	-19.4	66.2	74.0	35.0	-16.8	68.1

REFERENCE:

Positive Direction -	Anterior/Posterior	+(X) = anterior
	Lateral	+(Y)= right
	Superior/Inferior	+(Z)= inferior
Negative Direction	Anterior/Posterior	-(X) = posterior
	Lateral	-(Y)= left
	Superior/Inferior	-(Z)= superior

All the above data (except head accelerations) has been filtered using FIR (Version 1.0; July 16, 1990)

Head Accelerations have been filtered at SAE Class 1000

Y_R denotes redundant Y-direction accelerometer

DATA SHEET 5 (continued)

SID H3 INSTRUMENTATION DATA

Vehicle: 2003 Jaguar X-Type

NHTSA No. M3 0211

	Front Dummy ID 056 Accelerations				Rear Dummy ID 058 Accelerations			
	Max		Min		Max		Min	
	N	msec	N	msec	N	msec	N	msec
NECK FORCES								
Longitudinal (X)	453.5	23.3	-255.7	97.1	187.8	63.4	-494.6	23.3
Lateral (Y)	586.1	23.3	-414.9	181.0	455.8	23.3	-383.4	69.9
Vertical (Z)	700.8	150.2	-289.4	54.6	687.8	36.8	-1112.5	63.7
NECK MOMENTS								
	Nm	msec	Nm	msec	Nm	msec	Nm	msec
Lateral Bending (X)	16.8	94.4	-70	46.7	16.5	107.6	-104.4	51.4
Flexion/Extension (Y)	27.4	93.3	-26.9	171.3	34.8	100.6	-26.1	59.1
Rotation (Z)	14.3	66.5	-10.2	184	13.2	80.7	-28.1	155.8

REFERENCE:

Upper neck load cell polarity follows the dummy manipulation table A-1 in the NHTSA Test Reference Guide version 5

Force

- Fx positive response: Head rearward, chest forward
- Fy positive response: Head leftward, chest rightward
- Fz positive response: Head upward, chest downward

Moment

- Mx positive response: Left ear to left shoulder
- My positive response: Chin to sternum
- Mz positive response: Chin to left shoulder

Neck forces have been filtered at SAE Class 1000

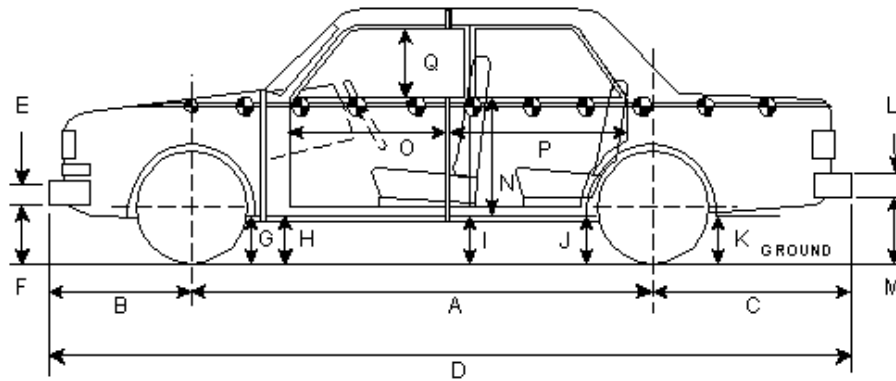
Neck moments have been filtered at SAE Class 600

DATA SHEET 6

VEHICLE PRE- AND POST- MEASUREMENTS

Vehicle: 2003 Jaguar X-Type

NHTSA No.: M3 0211



LEFT SIDE VIEW

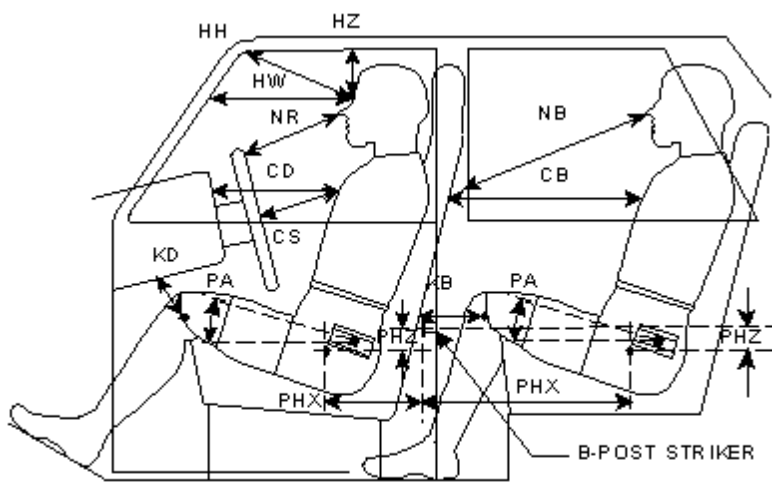
	PRE-TEST As delivered (mm)	PRE-TEST As Tested (mm)	POST-TEST (mm)	Δ CHANGE (mm)
A	2702	-	2667	-35
B	684	-	678	-6
C	912	-	906	-6
D	4692	-	4664	-28
E	260	-	260	0
F	268	260	267	7
G	303	280	279	-1
H	308	284	292	8
I	319	290	338	48
J1	212	173	188	15
J2	341	303	354	51
K	308	266	286	20
L	180	-	180	0
M	433	390	412	22
N	705	-	618	-87
O	1114	-	1096	-18
P	826	-	714	-112
Q	440	-	436	-4
R	4298	-	4305	7
S	4298	-	4251	-47
T	1781	-	1444	-337

DATA SHEET 7

SID H3 LONGITUDINAL CLEARANCE DIMENSIONS

Vehicle: 2003 Jaguar X-Type

NHTSA No.: M3 0211



LEFT SIDE VIEW

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

	DRIVER ID/ SID H3/058	LEFT REAR PASSENGER ID/ SID H3/056
HH	375	-
HW	635	-
HZ	149	167
NR/NB	458	560
CD/CB	550	510
CS	336	-
KDL(KDA°)/KBL(KDA°)	151/23	200/10
KDR(KDA°)/KBR(KDA°)	161/17	187/9.2
PA°	23.2	23.1
PHX	2430	1549
PHZ	107	111

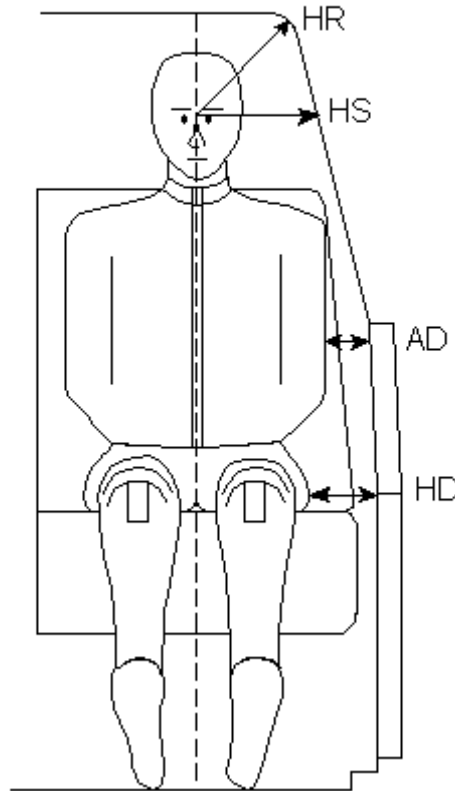
PHX and PHZ referenced from middle of test vehicle's rear bumper

DATASHEET 8

SID H3 LATERAL CLEARANCE DIMENSIONS

Vehicle: 2003 Jaguar X-Type

NHTSA No.: M3 0211



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

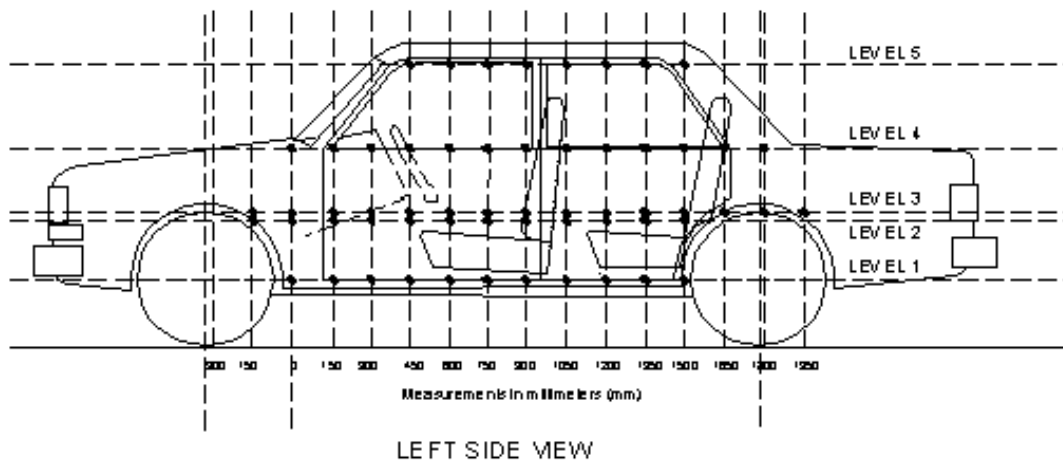
	DRIVER ID/ SID H3/058		LEFT REAR PASSENGER ID/ SID H3/056	
HR	190		203	
HS	311		308	
AD	Upper 127	Lower 81	Upper 97	Lower 110
HD	151		142	

DATA SHEET 9

VEHICLE SIDE MEASUREMENTS

Vehicle: 2003 Jaguar X-Type

NHTSA No.: M3 0211



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 as shown

Level 5 @ Window Top	1306 mm
Level 4 @ Window Sill	893 mm
Level 3 @ Mid-Door	577 mm
Level 2 @ Occupant H-Point	471 mm
Level 1 @ Axle Centerline or Sill Top Height	238 mm

DATA SHEET 10

VEHICLE EXTERIOR CRUSH PROFILES – ALL LEVELS

Vehicle: 2003 Jaguar X-Type

NHTSA No. M3 0211

Note: All Dimensions are in millimeters with a tolerance of ± 3 mm

			DISTANCE IN MILLIMETERS (mm) FROM IMPACT POINT																												
HEIGHT			-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	238	PRE							232	229	225	222	219	217	214	211	209	208	207	206	204										
		POST							277	291	304	313	322	328	333	335	333	319	305	288	270										
		CRUSH							45	62	79	91	103	111	119	124	124	111	98	82	66										
LEVEL 2	471	PRE	235	207					194	191	189	188	186	185	185	185	187	190	190	192	195	189						210	242	275	
		POST	246	224						260	398	468	485	499	507	511	531	541	542	548	544	475	303						231	255	285
		CRUSH	11	17						66	207	279	297	313	322	326	346	354	352	358	352	280	114						21	13	10
LEVEL 3	577	PRE	245	212				172	190	188	185	184	183	182	183	184	185	186	187	191	193	193	176	172	172	208	230	260	303		
		POST	256	227				220	255	394	442	448	447	461	476	481	529	548	545	543	509	380	262	239	220	237	250	274	311		
		CRUSH	11	15				48	65	206	257	264	264	279	293	297	344	362	358	352	316	187	86	67	48	29	20	14	8		
LEVEL 4	893	PRE	326	314	310	301	297	291	287	285	285	285	286	287	288	288	287	290	294	296	299	304	310	315	322	334	354	378	413		
		POST	333	322	323	321	323	325	323	354	367	417	444	473	502	529	545	570	569	530	472	405	353	354	356	359	369	392	421		
		CRUSH	7	8	13	20	26	34	36	69	82	132	158	186	214	241	258	280	275	234	173	101	43	39	34	25	15	14	8		
LEVEL 5	1306	PRE													493	515	525	533	533	534	532	526	517	503							
		POST													538	563	586	604	601	593	580	566	553	5310							
		CRUSH													45	48	61	71	68	59	48	40	36	28							

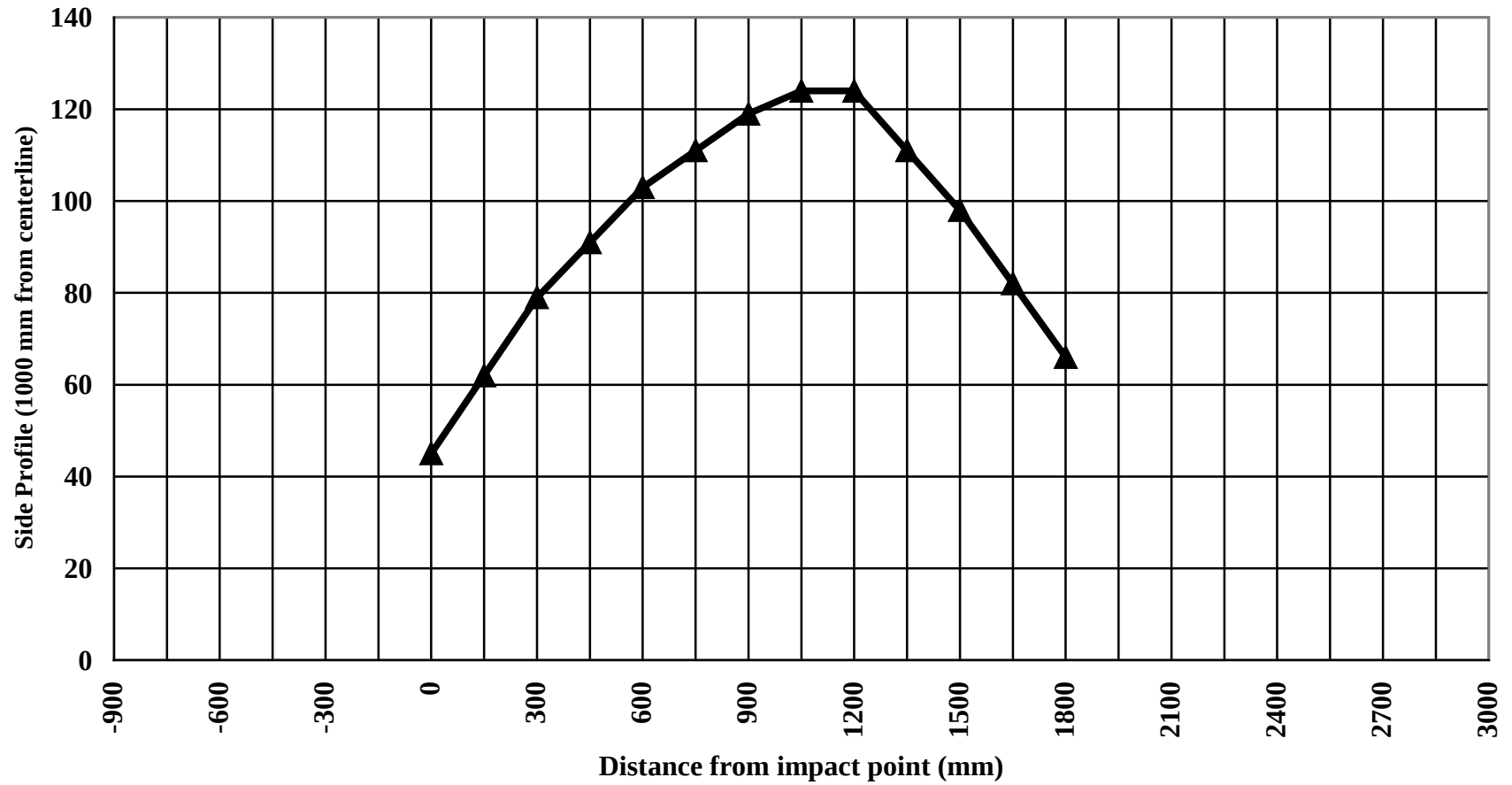
DATA SHEET 10 (continued)

VEHICLE EXTERIOR CRUSH PROFILES

Vehicle: 2003 Jaguar X-Type

NHTSA No.: M3 0211

SIDE PROFILE LEVEL 1 -238 mm above ground



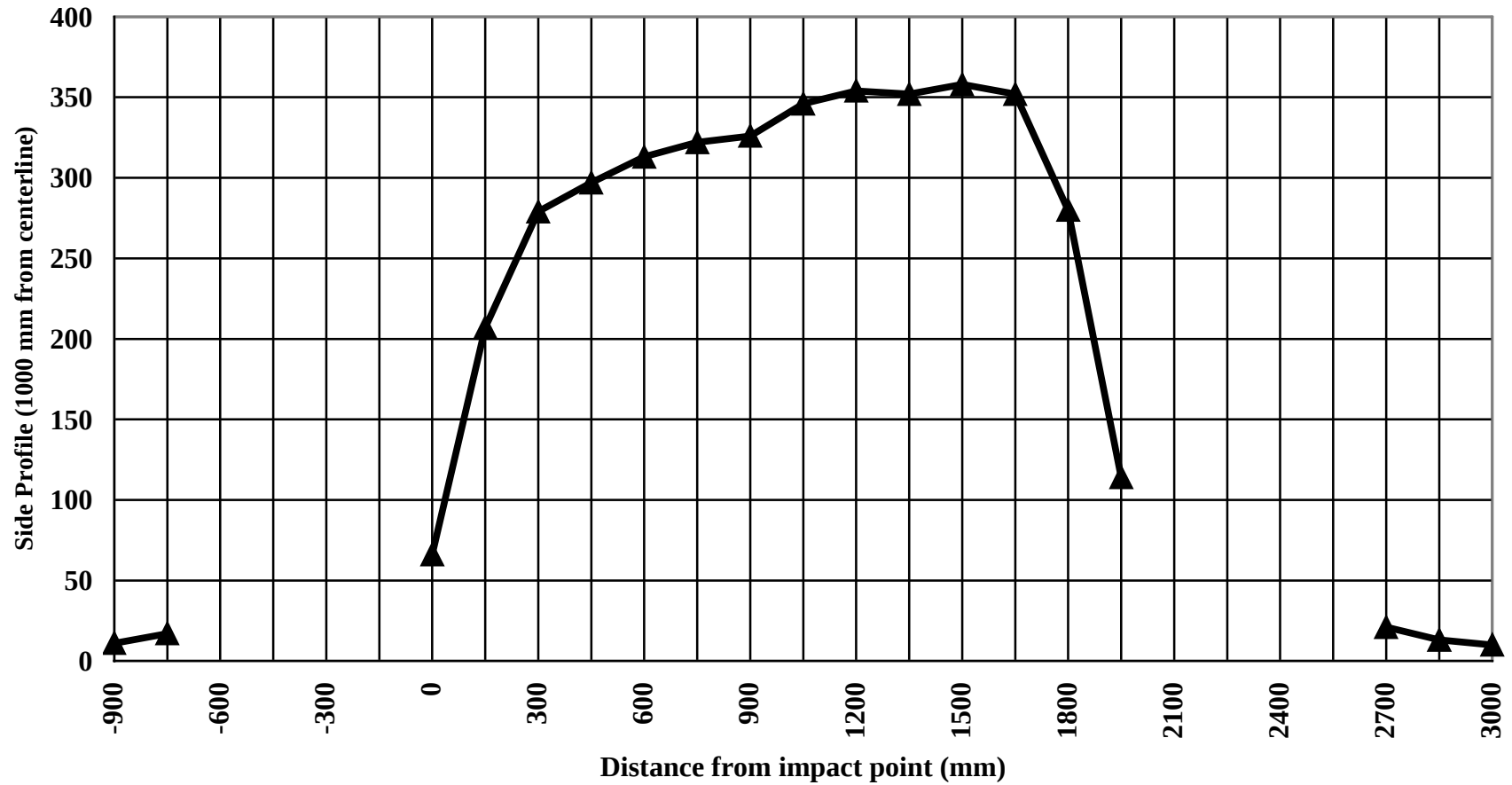
DATA SHEET 10 (continued)

VEHICLE EXTERIOR CRUSH PROFILES

Vehicle: 2003 Jaguar X-Type

NHTSA No.: M3 0211

SIDE PROFILE LEVEL 2 - 471 mm above ground



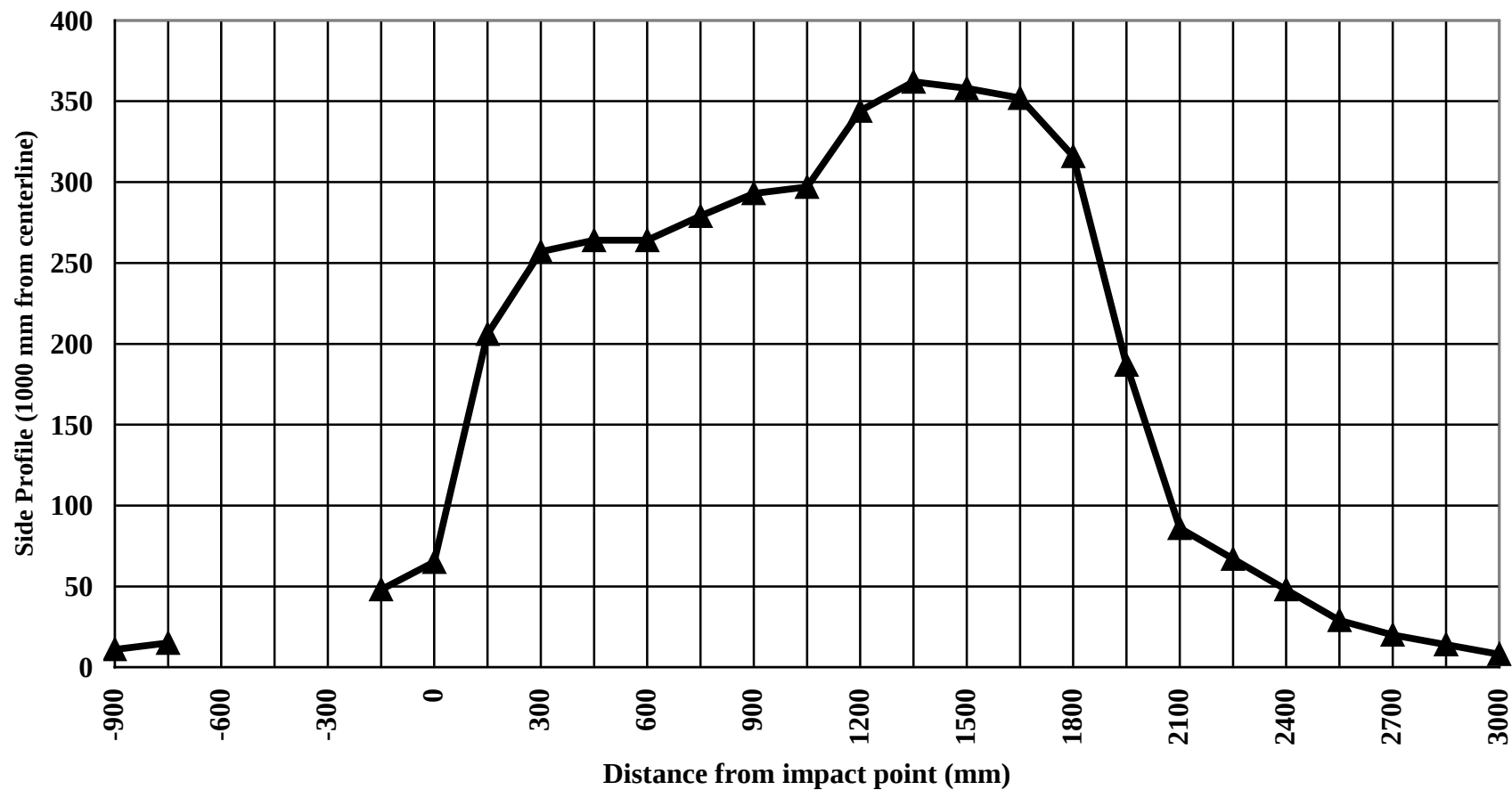
DATA SHEET 10 (continued)

VEHICLE EXTERIOR CRUSH PROFILES

Vehicle: 2003 Jaguar X-Type

NHTSA No.: M3 0211

SIDE PROFILE LEVEL 3 - 577 mm above ground



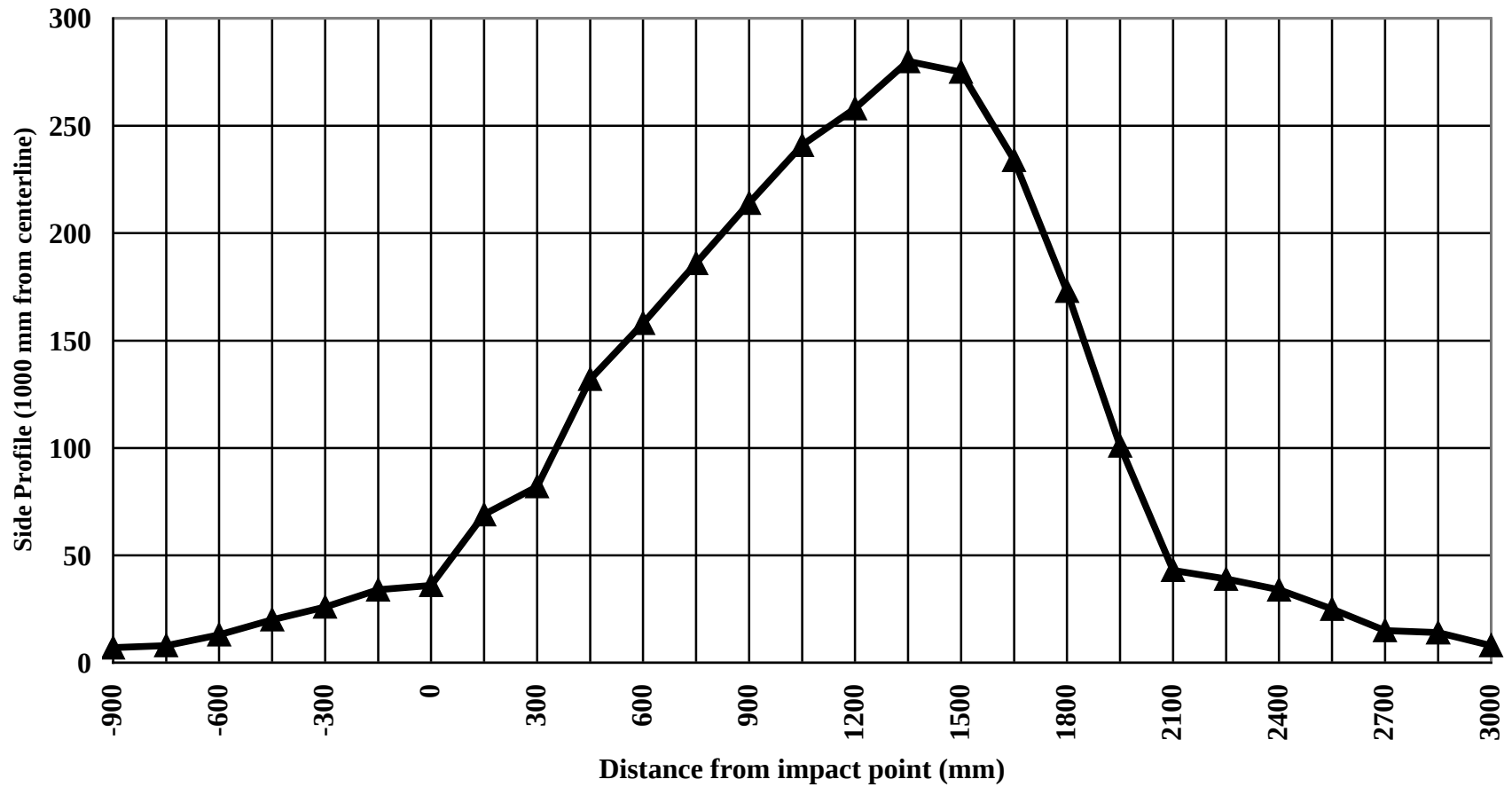
DATA SHEET 10 (continued)

VEHICLE EXTERIOR CRUSH PROFILES

Vehicle: 2003 Jaguar X-Type

NHTSA No. M3 0211

SIDE PROFILE LEVEL 4 - 930 mm above ground



DATA SHEET 10 (continued)

VEHICLE EXTERIOR CRUSH PROFILES

Vehicle: 2003 Jaguar X-Type

NHTSA No. M3 0211

SIDE PROFILE LEVEL 5 - 1933 mm above ground

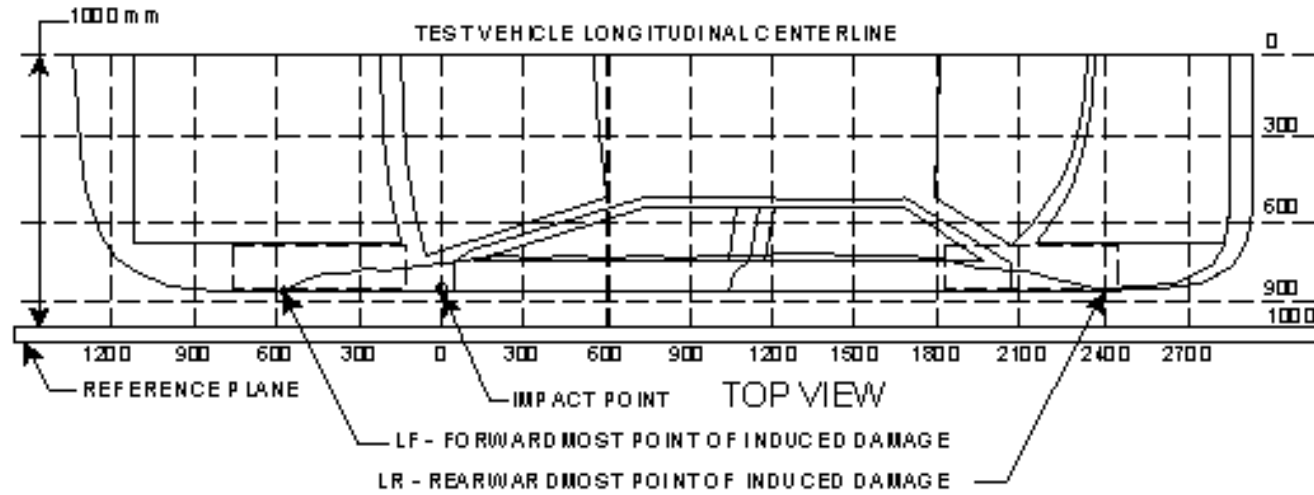


DATA SHEET 11

VEHICLE DAMAGE PROFILE DISTANCES

Vehicle: 2003 Jaguar X-Type

NHTSA No. M3 0211



DPD MEASUREMENTS (mm)		POST-TEST (mm)	PRE-TEST (mm)	STATIC CRUSH (mm)
1	-150	216	216	0
2	360	444	219	225
3	870	470	221	249
4	1380	540	223	317
5	1890	394	225	169
6	2400	226	226	0

DATA SHEET 12

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

Vehicle: 2003 Jaguar X-Type

NHTSA No. M3 0211

Note: All Dimensions are in millimeters with a tolerance of ± 3 mm

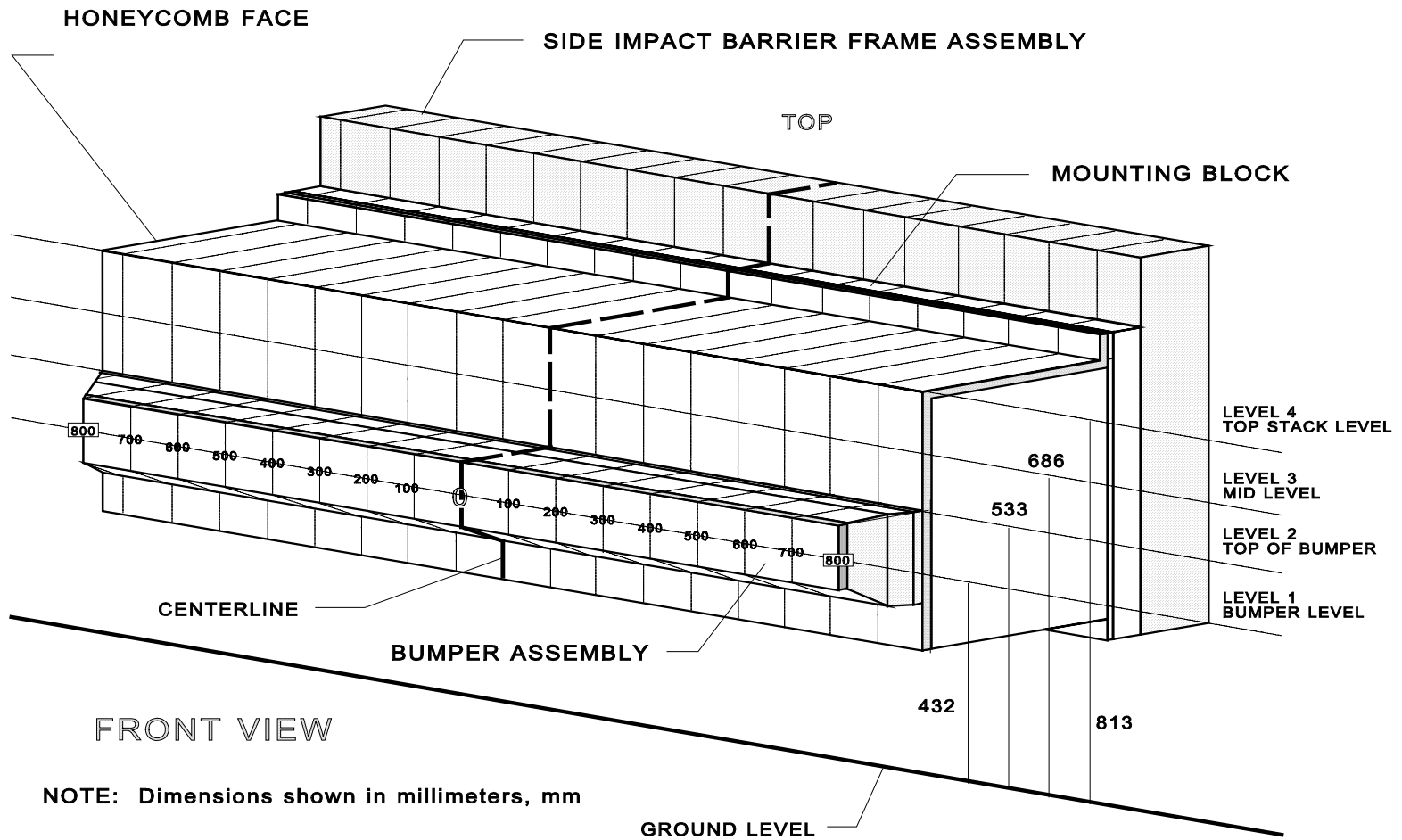
LEVEL	HEIGHT AT CL (mm)		DISTANCE LEFT OF CENTER								0	DISTANCE RIGHT OF CENTER							
			800	700	600	500	400	300	200	100		100	200	300	400	500	600	700	800
LEVEL 4 TOP STACK	810	PRE-	528	528	528	528	528	529	528	528	528	529	529	530	530	530	530	531	531
		POST-	565	544	544	538	543	561	559	558	555	555	560	568	577	590	610	640	698
		CRUSH	37	16	16	10	15	32	31	30	27	26	31	38	47	60	80	109	167
LEVEL 3 MID- LEVEL	685	PRE-	525	525	525	526	526	526	527	527	527	527	528	528	528	528	529	530	530
		POST-	536	526	532	541	545	555	558	548	547	549	549	554	560	567	581	614	657
		CRUSH	11	1	7	15	19	29	31	21	20	22	21	26	32	39	52	84	127
LEVEL 2 TOP BUMPER	560	PRE-	523	523	523	523	524	524	524	524	524	525	525	525	526	526	526	527	527
		POST-	586	584	580	576	570	570	570	583	586	589	590	588	595	600	610	620	648
		CRUSH	63	61	57	53	46	46	46	59	62	64	65	63	69	74	84	93	121
LEVEL 1 MID- BUMPER	432	PRE-	431	420	420	420	420	420	421	421	421	421	422	422	422	423	423	423	435
		POST-	550	516	503	495	494	493	493	495	497	501	504	507	511	515	526	550	595
		CRUSH	119	96	83	75	74	73	72	74	76	80	82	85	89	92	103	127	160

DATA SHEET 12 (continued)

STATIC CRUSH OF IMPACTOR FACE

Vehicle: 2003 Jaguar X-Type

NHTSA No. M3 0211

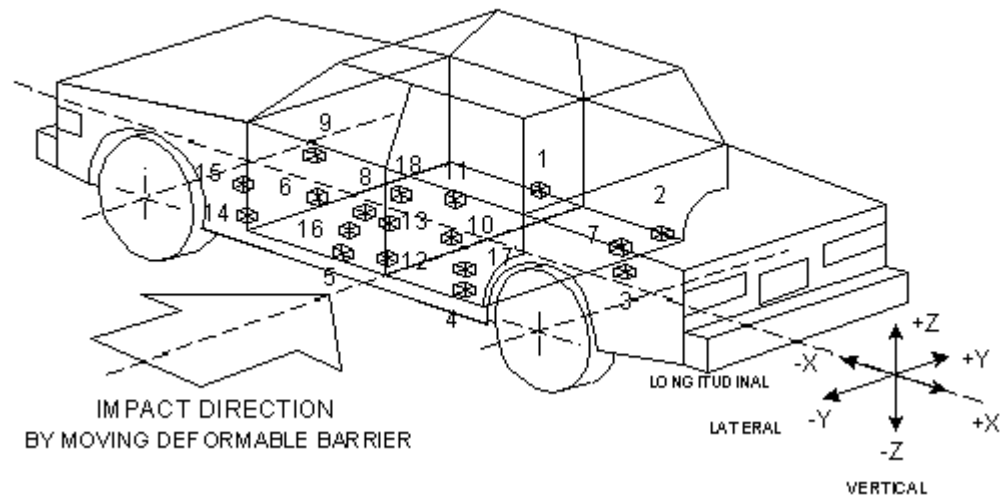


DATA SHEET 13

TEST VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

Vehicle: 2003 Jaguar X-Type

NHTSA No. M3 0211



1. Right Side Sill at Front Seat	10. Mid-rear of Left Rear Door
2. Right Side Sill at Rear Seat	11. Left Rear Door Upper Centerline
3. Rear Floorpan Above Axle	12. Left Lower B-Pillar
4. Left Side Sill at Rear Seat	13. Left Middle B-Pillar
5. Left Side Sill at Front Seat	14. Left Lower A-Pillar
6. Left Front Door on Centerline	15. Left Middle A-Pillar
7. Right Rear Occupant Compartment	16. Front Seat Track
8. Mid-rear of Left Front Door	17. Rear Seat Track
9. Left Front Door Upper Centerline	18. Vehicle CG

DATASHEET 13 (continued)

VEHICLE ACCELEROMETER LOCATIONS AND SUMMARY DATA

Vehicle: 2003 Jaguar X-Type

NHTSA No. M3 0211

Location		Coordinates			Longitudinal (X)				Lateral (Y)				Vertical (Z)				Resultant	
		X mm	Y mm	Z mm	Max		Min		Max		Min		Max		Min		Max	
					G's	msec	G's	msec	G's	msec	G's	msec	G's	msec	G's	msec	G's	msec
1	Right Side Sill at Front Seat	2711	616	415	2.8	49.8	-7.9	15.9	24.1	7.0	-13.3	29.4	4.2	33.9	-4.2	30.0	24.5	7.0
2	Right Side Sill at Rear Seat	1871	609	384	47.6	18.7	-46.3	14.0	21.5	7.0	-1.8	142.3	7.2	32.6	-4.7	21.4	50.8	18.7
3	Rear Floorpan Above Axle	918	-4	81	5.7	30.0	-10.1	26.6	19.7	20.9	-2	106.2	11.9	20.6	-15.7	26.7	23.7	20.6
4	Left Side Sill at Rear Seat	1857	-691	379					42.9	5.8	-15.9	11.4						
5	Left Side Sill at Front Seat	2714	-716	404					2.9	27.3	-9	15.7						
6	Left Front Door on Centerline	2658	-750	121					185.7	8.1	-94.4	14.3						
7	Right Rear Occupant Compartment	1920	307	307					21.5	17.4	-1.9	142.2						
8	Midrear of Left Front Door	2401	-751	187					234.5	4.8	-65.6	13.1						
9	Left Front Door Upper Centerline	2650	-760	-142					172.3	7.2	-153.2	22.3						
10	Midrear of Left Rear Door	1496	-746	-53					101.3	5.6	-128.5	21.4						

Axis Origin X – Point L
 Y – Point L
 Z – Point L

Axis Orientation

+(X) Forward where x axis is the vector from middle of rear bumper to mid front bumper
 +(Y) Right where y axis is parallel to ground reference plane
 +(Z) Down where z axis is cross product of +(X) and +(Y)

VEHICLE ACCELEROMETER LOCATIONS AND SUMMARY DATA

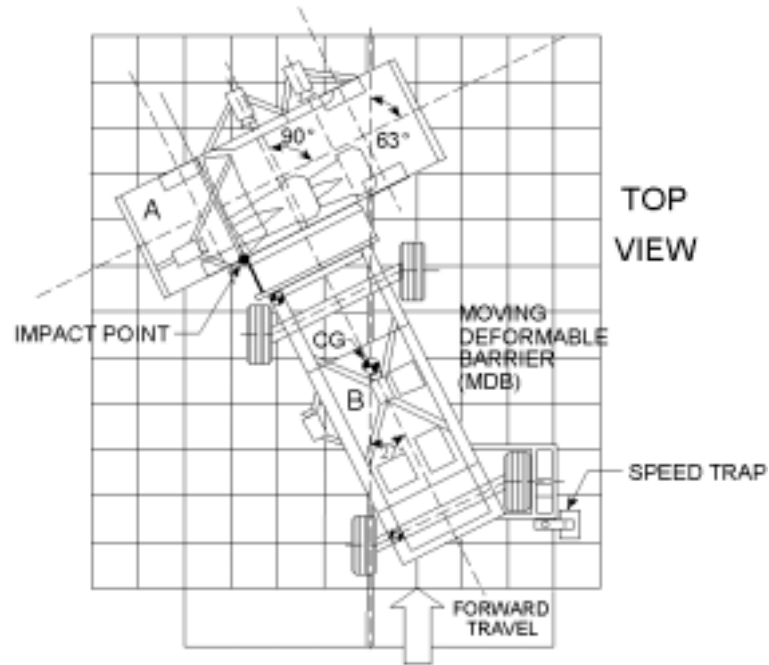
NHTSA No. M3 0211

Location		Coordinates			Longitudinal (X)				Lateral (Y)				Vertical (Z)				Resultant		
		X mm	Y mm	Z mm	Max		Min		Max		Min		Max		Min		Max		
					G's	msec	G's	msec	G's	msec	G's	msec	G's	msec	G's	msec	G's	msec	
11	Left Rear Door Upper Centerline	1779	-745	-39					224.6	6.8	-	225.6	18.9						
12	Left Lower B-Pillar	2116	-695	56					175.1	4.3	-68.4	21							
13	Left Middle B-Pillar	2104	-687	-213					121	3.9	-43.9	22.6							
14	Left Lower A-Pillar	3126	-718	-21					94.0 (†)	4.2(†)	-29.3 (†)	18.7 (†)							
15	Left Middle A-Pillar	3130	-717	-168					57.7(††)	4.48 (††)	-24.6 (††)	14.9 (††)							
16	Front Seat Track	2317	-597	357					31.0	5.0	-60.6	24.8							
17	Rear Seat Track	1917	-283	305					29.6	18.2	-4.5	70.4							
18	Vehicle CG	2649	35	188	6.2	49.2	-9.4	13.5	21.7	22.4	-2.1	156.4	9.0	9.3	-5.7	15.1	22.2	22.4	

† = Left lower A-pillar wire broken ~30 msec after impact
 †† = Left middle A-pillar wire broken ~15 msec after impact

DATA SHEET 14

MDB ACCELEROMETER LOCATIONS AND DATA SUMMARY



Location		Coordinates			Longitudinal (X)				Lateral (Y)				Vertical (Z)				Resultant	
		X mm	Y mm	Z mm	Max		Min		Max		Min		Max		Min		Max	
					G's	msec	G's	msec	G's	msec	G's	msec	G's	msec	G's	msec	G's	msec
1	MDB Center of Gravity	1113	-1	311	2.5	61.3	-6.7	25.1	5.5	58.6	-7.9	30.8	12.2	14.3	-9.1	19.8	13.3	14.3
2	MDB Rear Frame Member	2812	-614	585	2.2	95.4	-24.4	29.4	18.0	33.9	-1.3	88.1						

Axis Origin X – Rear Bumper
 Y – Vehicle Centerline
 Z – Middle of rear bumper

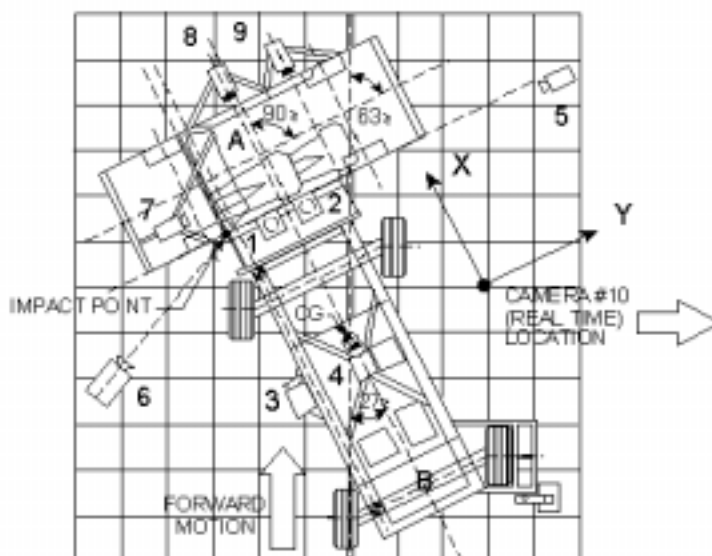
Axis Orientation +(X) Forward
 +(Y) Right
 +(Z) Down

DATA SHEET 15

HIGH-SPEED CAMERA LOCATIONS AND DATA SUMMARY

Vehicle: 2003 Jaguar X-Type

NHTSA No. M3 0211



Camera No.	View	Coordinates (mm)*			Angle wrt Horiz.	Lens (mm)	Film Speed (fps)
		X	Y	Z			
1	Overhead view of test vehicle	2154	-677	-3758	-90	12.5	1000
2	Overhead close-up view of impact plane	2839	-757	-3761	-90	25	1000
3	MDB onboard close-up view of impact point	3218	-3393	-212	0	35	1000
4	MDB onboard view of driver dummy	2305	-3348	-676	-5	13	1000
5	Right side ground level overall view	-9956	-1007	-175	0	50	1000
6	Left side ground level overall view	7104	-127	-70	0	12.5	500
7	Test vehicle onboard driver front view	3612	-433	-312	-15	10	1000
8	Test vehicle onboard driver side view	2492	787	-442	0	7.5	1000
9	Test vehicle onboard passenger side view	1649	771	-477	-5	7.5	1000
10	Real-time film coverage of test	-	-	-	-	-	24

* Reference: Middle of rear bumper on test vehicle (Point L)

+ (X) Forward where x axis is the vector from middle of rear bumper to mid front bumper

+ (Y) Right where y axis is parallel to ground reference plane

+ (Z) Down where z axis is cross product of + (X) and + (Y)

SECTION 5
FUEL SYSTEM INTEGRITY

DATA SHEET 16

FUEL SYSTEM INTEGRITY DATA

Vehicle: 2003 Jaguar X-Type

NHTSA No. M3 0211

TEST REQUIREMENTS:

Drain the test vehicle's fuel system and operate the engine until the fuel system is dry. Add Stoddard solvent, which has been dyed purple, until 92-94% of the stated usable capacity is reached. Operate the engine to assure the Stoddard solvent is present throughout the entire fuel system.

TEST VEHICLE IMPACT TYPE: Side impacting Moving Deformable Barrier contacting the driver side.

FUEL SPILLAGE MEASUREMENT:

POST IMPACT TEST	TEST RESULTS	MAXIMUM ALLOWABLE
1. From impact until vehicle motion ceases	0	1 oz.
2. For 5 minute period after vehicle motion ceases	0	5 oz.
3. For next 25 minutes	0	1 oz./minute

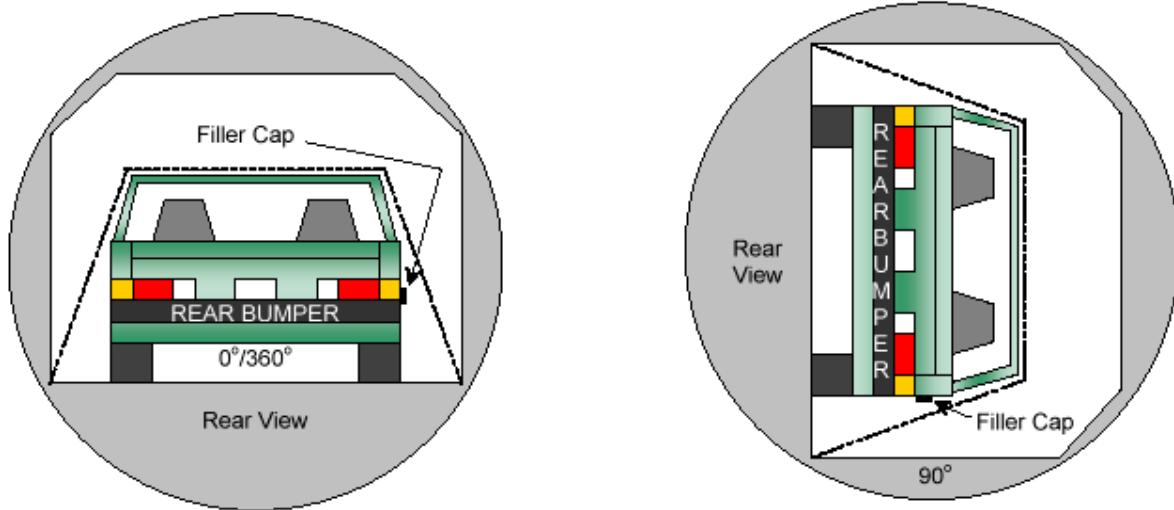
FUEL SPILLAGE LOCATION(S): None

DATA SHEET 17

ROLLOVER DATA

Vehicle: 2003 Jaguar X-Type

NHTSA No. M3 0211



0° TO 90°

DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time	1	minutes	04	seconds
(Spec Range = 1 to 3 minutes)				
FMVSS 301 Position Hold Time	5	minutes	0	seconds
TOTAL	6	minutes	04	seconds
Next whole minute interval	0	minutes		

FUEL SPILLAGE MEASUREMENT:

0° TO 90° ROTATION	TEST RESULTS	MAXIMUM ALLOWABLE
1. First 5 Minutes From Onset of Rotation	0	5 oz.
2. Sixth Minute From Onset of Rotation	0	1 oz.
3. Seventh Minute From Onset of Rotation	0	1 oz.
4. Eighth Minute if Required	-	1 oz.

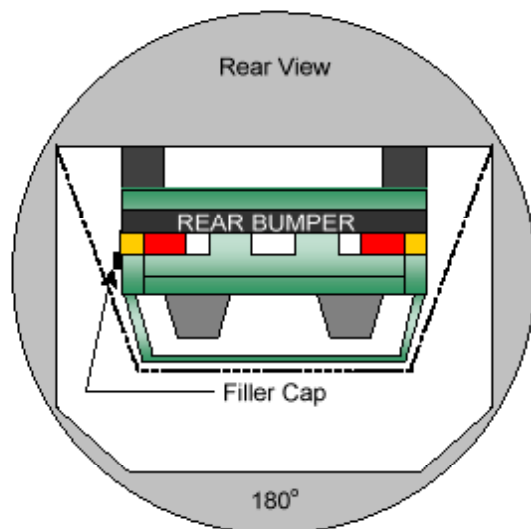
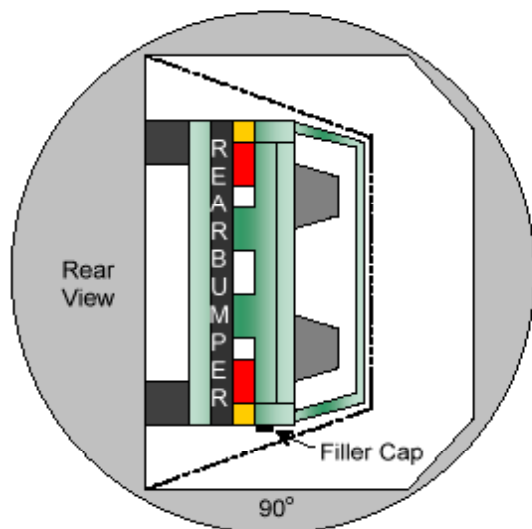
FUEL SPILLAGE LOCATION(S): None

DATA SHEET 17 (continued)

ROLLOVER VEHICLE

Vehicle: 2003 Jaguar X-Type

NHTSA No. M3 0211



90° TO 180°

DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time	<u>1</u>	minutes	<u>07</u>	seconds
(Spec Range =1 to 3 minutes)				
FMVSS 301 Position Hold Time	<u>5</u>	minutes	<u>0</u>	seconds
TOTAL	<u>6</u>	minutes	<u>07</u>	seconds
Next whole minute interval	<u>0</u>	minutes		

FUEL SPILLAGE MEASUREMENT:

90° TO 180° ROTATION	TEST RESULTS	MAXIMUM ALLOWABLE
1. First 5 Minutes From Onset of Rotation	0	5 oz.
2. Sixth Minute From Onset of Rotation	0	1 oz.
3. Seventh Minute From Onset of Rotation	0	1 oz.
4. Eighth Minute if Required	-	1 oz.

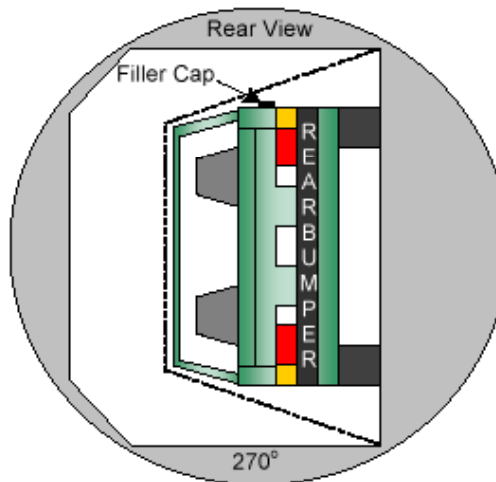
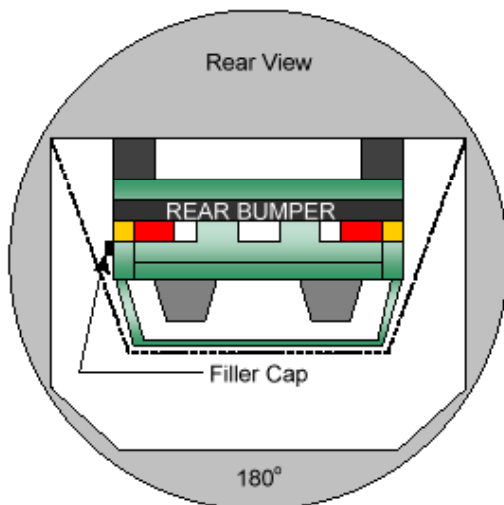
FUEL SPILLAGE LOCATION(S):

DATA SHEET 17 (continued)

ROLLOVER VEHICLE

Vehicle: 2003 Jaguar X-Type

NHTSA No. M3 0211



180° TO 270°

DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time	<u>1</u> minutes	<u>03</u> seconds
(Spec Range =1 to 3 minutes)		
FMVSS 301 Position Hold Time	<u>5</u> minutes	<u>0</u> seconds
TOTAL	<u>6</u> minutes	<u>03</u> seconds
Next whole minute interval	<u>0</u> minutes	

FUEL SPILLAGE MEASUREMENT:

180° TO 270° ROTATION	TEST RESULTS	MAXIMUM ALLOWABLE
1. First 5 Minutes From Onset of Rotation	0	5 oz.
2. Sixth Minute From Onset of Rotation	0	1 oz.
3. Seventh Minute From Onset of Rotation	0	1 oz.
4. Eighth Minute From Onset of Rotation	-	1 oz.

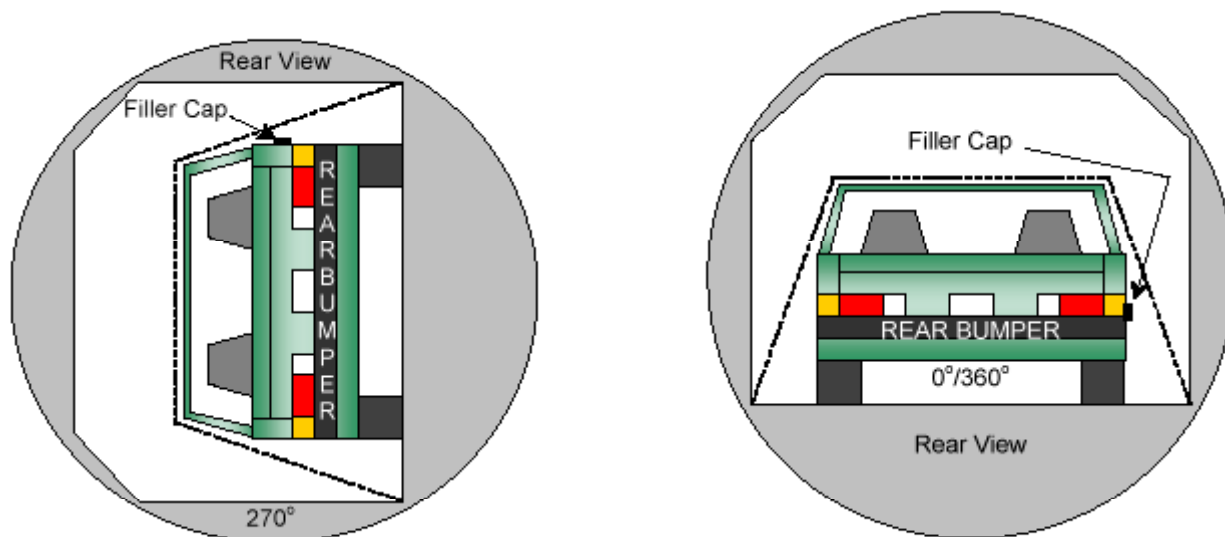
FUEL SPILLAGE LOCATION(S):

DATA SHEET 17 (continued)

ROLLOVER VEHICLE

Vehicle: 2003 Jaguar X-Type

NHTSA No. M3 0211



270° TO 360°

DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time	<u>1</u> minutes	<u>02</u> seconds
(Spec Range =1 to 3 minutes)		
FMVSS 301 Position Hold Time	<u>5</u> minutes	<u>0</u> seconds
TOTAL	<u>6</u> minutes	<u>02</u> seconds
Next whole minute interval	<u>0</u> minutes	

FUEL SPILLAGE MEASUREMENT:

270° TO 360° ROTATION	TEST RESULTS	MAXIMUM ALLOWABLE
1. First 5 Minutes From Onset of Rotation	0	5 oz.
2. Sixth Minute From Onset of Rotation	0	1 oz.
3. Seventh Minute From Onset of Rotation	0	1 oz.
4. Eighth Minute if Required	-	1 oz.

FUEL SPILLAGE LOCATION(S):

APPENDIX A
PHOTOGRAPHS

TABLE OF PHOTOGRAPHS

<u>Figure</u>	<u>Photograph Title</u>	<u>Page</u>
A-1	PRE-TEST FRONTAL VIEW OF TEST VEHICLE	A-3
A-2	POST-TEST FRONTAL VIEW OF TEST VEHICLE	A-4
A-3	PRE-TEST LEFT FRONT VIEW OF TEST VEHICLE	A-5
A-4	POST-TEST LEFT FRONT VIEW OF TEST VEHICLE	A-6
A-5	PRE-TEST LEFT (IMPACTED) SIDE VIEW OF TEST VEHICLE	A-7
A-6	POST-TEST LEFT (IMPACTED) SIDE VIEW OF TEST VEHICLE	A-8
A-7	PRE-TEST LEFT REAR VIEW OF TEST VEHICLE	A-9
A-8	POST-TEST LEFT REAR VIEW OF TEST VEHICLE	A-10
A-9	PRE-TEST REAR VIEW OF TEST VEHICLE	A-11
A-10	POST-TEST REAR VIEW OF TEST VEHICLE	A-12
A-11	PRE-TEST RIGHT REAR OF TEST VEHICLE	A-13
A-12	POST-TEST RIGHT REAR OF TEST VEHICLE	A-14
A-13	PRE-TEST RIGHT SIDE VIEW OF TEST VEHICLE	A-15
A-14	POST-TEST RIGHT SIDE VIEW OF TEST VEHICLE	A-16
A-15	PRE-TEST RIGHT FRONT VIEW OF TEST VEHICLE	A-17
A-16	POST-TEST RIGHT FRONT VIEW OF TEST VEHICLE	A-18
A-17	PRE-TEST RIGHT OCCUPANT COMPARTMENT VIEW OF FRONT SID	A-19
A-18	POST-TEST RIGHT OCCUPANT COMPARTMENT VIEW OF FRONT SID	A-20
A-19	PRE-TEST RIGHT OCCUPANT COMPARTMENT VIEW OF REAR SID	A-21
A-20	POST-TEST RIGHT OCCUPANT COMPARTMENT VIEW OF REAR SID	A-22
A-21	PRE-TEST LEFT OCCUPANT COMPARTMENT VIEW OF FRONT SID	A-23
A-22	POST-TEST LEFT OCCUPANT COMPARTMENT VIEW OF FRONT SID	A-24
A-23	PRE-TEST LEFT OCCUPANT COMPARTMENT VIEW OF REAR SID	A-25
A-24	POST-TEST LEFT OCCUPANT COMPARTMENT VIEW OF REAR SID	A-26
A-25	PRE-TEST INTERIOR OF FRONT DOOR	A-27
A-26	POST-TEST INTERIOR OF FRONT DOOR SHOWING SID IMPACT LOCATIONS	A-28
A-27	PRE-TEST INTERIOR OF REAR DOOR	A-29
A-28	POST-TEST INTERIOR OF REAR DOOR SHOWING SID IMPACT LOCATIONS	A-30
A-29	PRE-TEST LEFT SIDE VIEW OF MDB IN IMPACT POSITION	A-31
A-30	POST-TEST LEFT SIDE VIEW OF MDB	A-32
A-31	PRE-TEST RIGHT SIDE VIEW OF MDB IN IMPACT POSITION	A-33
A-32	POST-TEST RIGHT SIDE VIEW OF MDB	A-34
A-33	PRE-TEST OVERHEAD VIEW OF MDB IN IMPACT POSITION	A-35
A-34	POST-TEST OVERHEAD VIEW OF MDB	A-36
A-35	PRE-TEST CLOSE UP OF IMPACT POINT TARGET SHOWING WELDING ROD	A-37
A-36	POST-TEST CLOSE-UP OF IMPACT POINT TARGET	A-38
A-37	CLOSE-UP OF VEHICLE'S CERTIFICATION LABELS	A-39
A-38	VEHICLE TIRE PLACARD	A-40
A-39	IMPACT	A-41
A-40	ROLLOVER 0 DEGREES	A-42
A-41	ROLLOVER 90 DEGREES	A-43
A-42	ROLLOVER 180 DEGREES	A-44
A-43	ROLLOVER 270 DEGREES	A-45
A-44	ROLLOVER 360 DEGREES	A-46
A-45	PRE-TEST ALUMINUM BARRIER FRONT	A-47
A-46	POST-TEST ALUMINUM BARRIER FRONT	A-48
A-47	PRE-TEST ALUMINUM BARRIER LEFT SIDE	A-49
A-48	POST-TEST ALUMINUM BARRIER LEFT SIDE	A-50
A-49	PRE-TEST ALUMINUM BARRIER RIGHT SIDE	A-51
A-50	POST-TEST ALUMINUM BARRIER RIGHT SIDE	A-52
A-51	PRE-TEST ALUMINUM BARRIER OVERHEAD	A-53
A-52	POST-TEST ALUMINUM BARRIER OVERHEAD	A-54



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 LEFT FRONT VIEW OF TEST VEHICLE



Figure A-4: POST-TEST LEFT FRONT VIEW OF TEST VEHICLE



Figure A-5: PRE-TEST LEFT SIDE VIEW OF TEST VEHICLE



Figure A-6: POST-TEST LEFT SIDE VIEW OF TEST VEHICLE



Figure A-7: PRE-TEST LEFT REAR VIEW OF TEST VEHICLE



Figure A-8: POST-TEST LEFT REAR VIEW OF TEST VEHICLE



Figure A-9: PRE-TEST REAR VIEW OF TEST VEHICLE



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



Figure A-11 PRE-TEST RIGHT REAR VIEW OF TEST VEHICLE



Figure A-12 POST-TEST RIGHT REAR VIEW OF TEST VEHICLE



Figure A-13: PRE-TEST RIGHT SIDE VIEW OF TEST VEHICLE



Figure A-14: POST-TEST RIGHT SIDE VIEW OF TEST VEHICLE



Figure A-15: PRE-TEST FRONT RIGHT VIEW OF TEST VEHICLE



Figure A-16: POST-TEST FRONT RIGHT VIEW OF TEST VEHICLE



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



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



Figure A-19: PRE-TEST RIGHT OCCUPANT COMPARTMENT VIEW OF REAR SID H3



Figure A-20: POST-TEST RIGHT OCCUPANT COMPARTMENT VIEW OF REAR SID H3



Figure A-21: PRE-TEST LEFT OCCUPANT COMPARTMENT VIEW OF FRONT SID H3



Figure A-22: POST-TEST LEFT OCCUPANT COMPARTMENT VIEW OF FRONT SID H3



Figure A-23: PRE-TEST LEFT OCCUPANT COMPARTMENT VIEW OF REAR SID H3



Figure A-24: POST-TEST LEFT OCCUPANT COMPARTMENT VIEW OF REAR SID H3



Figure A-25: PRE-TEST INTERIOR OF FRONT DOOR



Figure A-26: POST-TEST INTERIOR OF FRONT DOOR SHOWING SID H3 IMPACT LOCATIONS



Figure A-27: PRE-TEST INTERIOR OF REAR DOOR



Figure A-28: POST-TEST INTERIOR OF REAR DOOR SHOWING SID H3 IMPACT LOCATIONS



Figure A-29: PRE-TEST LEFT SIDE VIEW OF MDB IN IMPACT POSITION

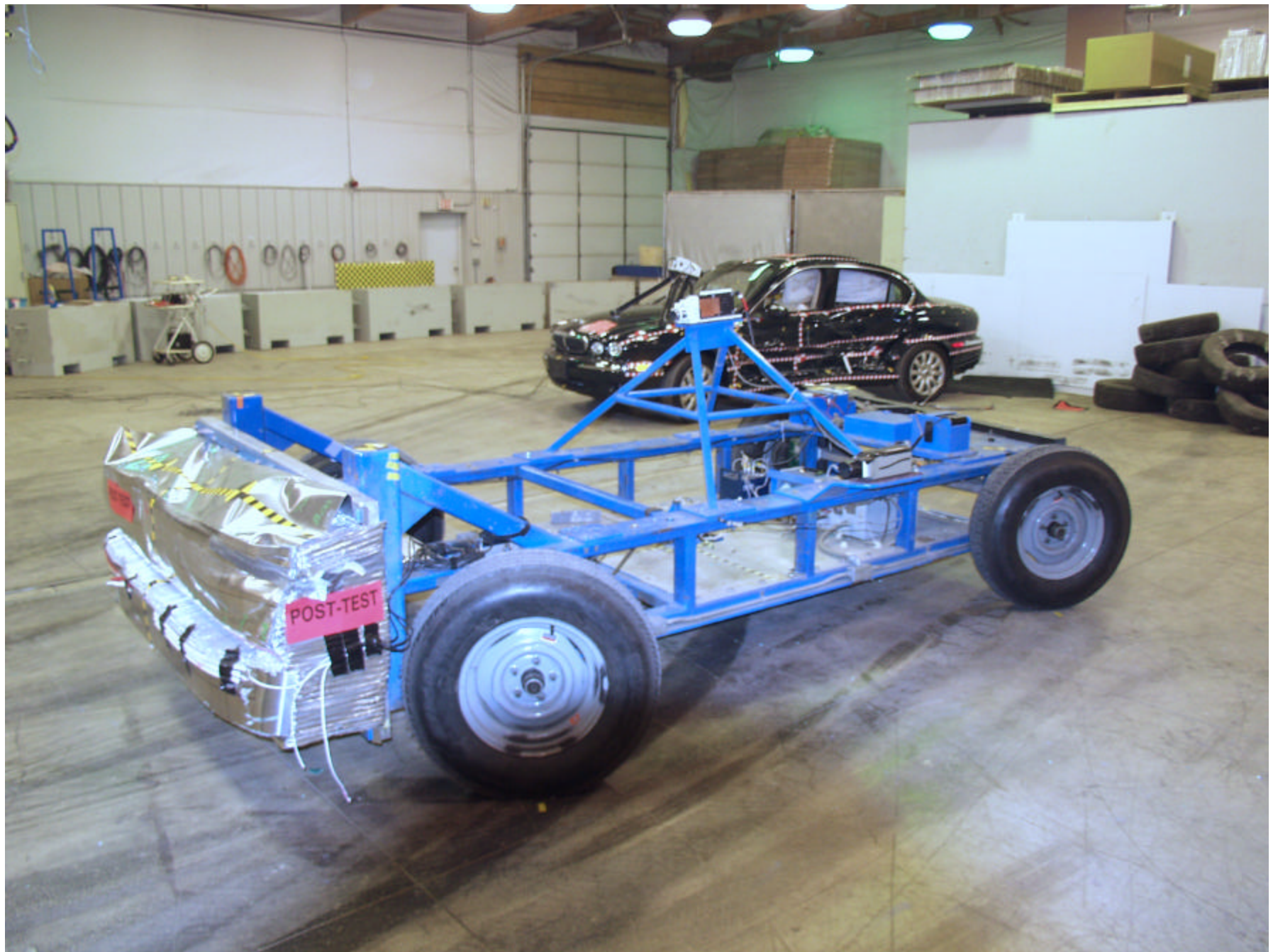


Figure A-30: POST-TEST LEFT SIDE VIEW OF MDB



Figure A-31: PRE-TEST RIGHT SIDE VIEW OF MDB IN IMPACT POSITION



Figure A-32: POST-TEST FRONT RIGHT VIEW OF MDB



Figure A-33: PRE-TEST OVERHEAD VIEW OF MDB IN IMPACT POSITION

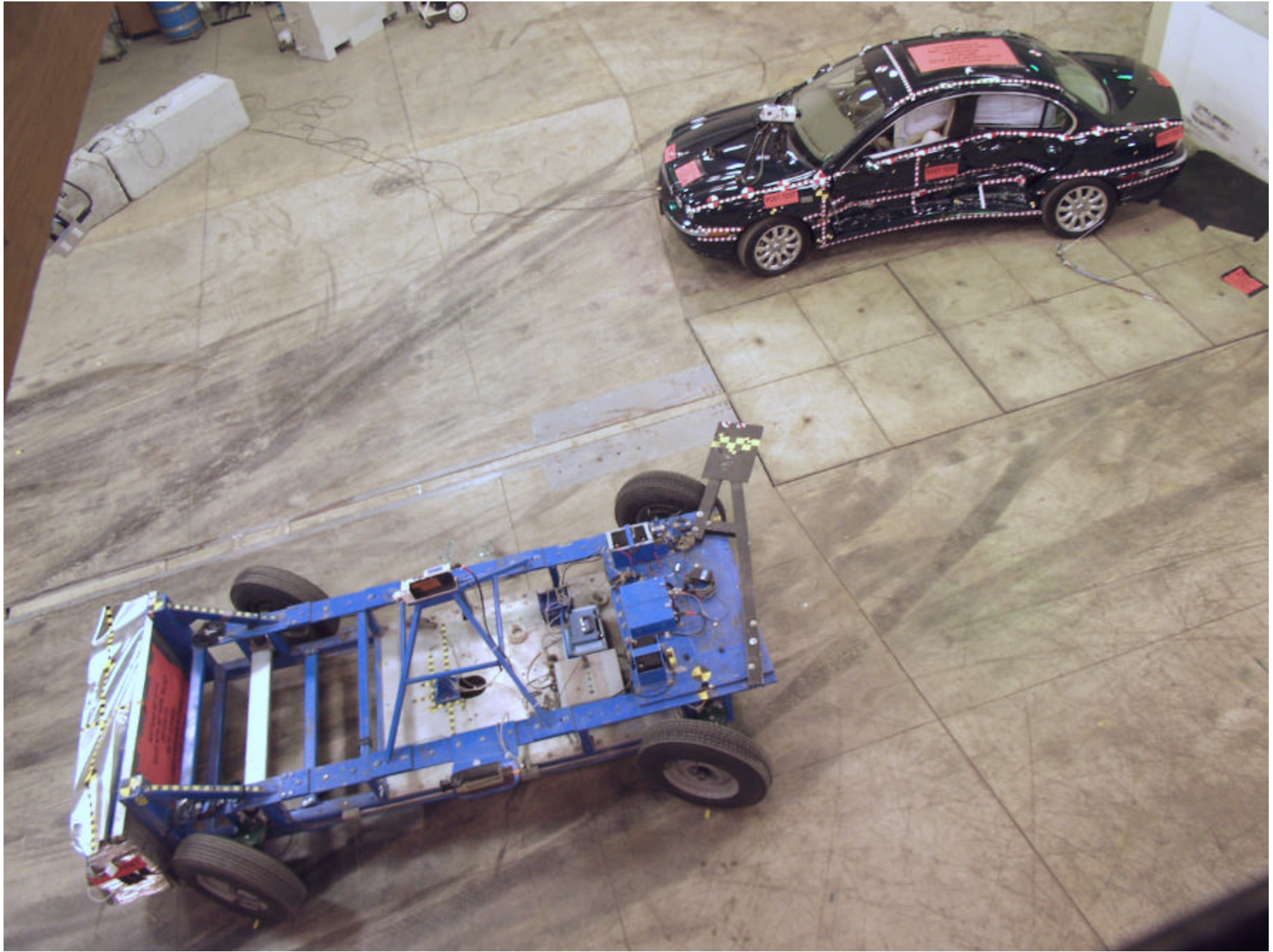


Figure A-34: POST-TEST OVERHEAD VIEW OF MDB



Figure A-35: PRE-TEST CLOSE-UP OF IMPACT POINT TARGET SHOWING WELDING ROD



Figure A-36: POST-TEST CLOSE-UP OF IMPACT POINT TARGET



Figure A-37: VEHICLE CERTIFICATION LABEL

PREMIUM UNLEADED FUEL ONLY

TIGHTEN FUEL CAP TO 3 CLICKS

JAGUAR



		0 - 100 kph 0 - 100 mph			100 kph + 100 mph +			0 - 100 kph 0 - 100 mph			100 kph + 100 mph +		
		bar	psi	kpa	bar	psi	kpa	bar	psi	kpa	bar	psi	kpa
205/55R16	6.5Jx16	2.2	32	220	2.6	38	260	2.2	32	220	2.4	35	240
225/45R17	7Jx17	2.1	30	210	2.6	38	260	2.1	30	210	2.4	35	240
T125/85R16	4Jx16	4.2 bar			60 psi			420 kpa					

Tyre max load rating at 44 lbs/in² (300kPa) 1356 lbs (615kg)
 VEHICLE SEATING CAPACITY 2 FRONT 3 REAR
 VEHICLE CAPACITY WEIGHT 882 LBS (400kg)

Charge nominale maximum des pneus à 300kPa: 615kg
 NOMBRE DE PLACES ASSISES DU VEHICULE
 2 A L'AVANT ET 3 A L'ARRIERE
 CAPACITE DE CHARGE DU VEHICULE 400kg

Important : do not mix tyre size or make on an axle.
 Important : Ne pas mettre des pneus de tailles et de
 marques differentes sur le même essieu

1X43 1532 CB

Figure A-38: VEHICLE TIRE PLACARD



Figure A-39: IMPACT



Figure A-40: ROLLOVER 0 DEGREES



Figure A-41: ROLLOVER 90 DEGREES

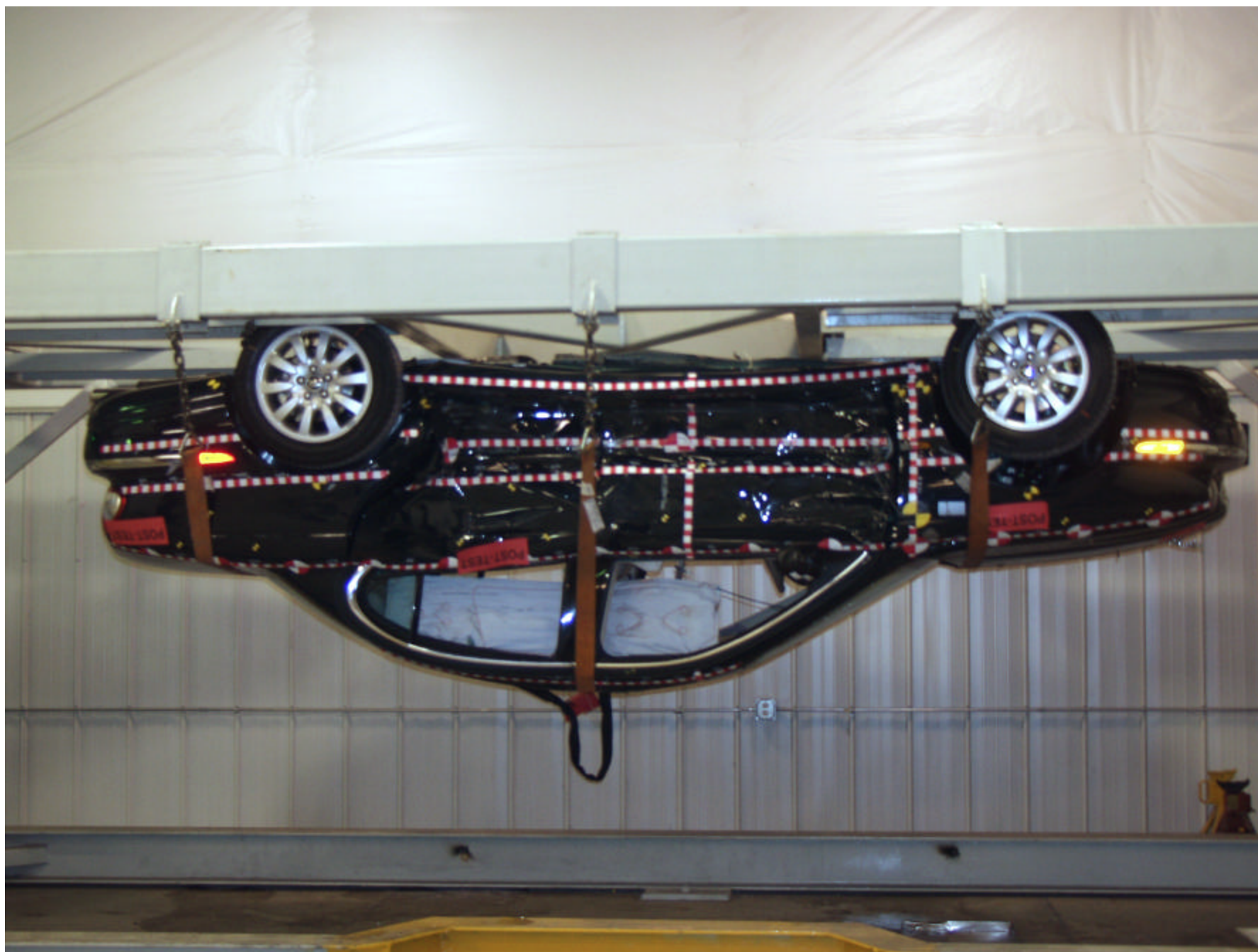


Figure A-42: ROLLOVER 180 DEGREES

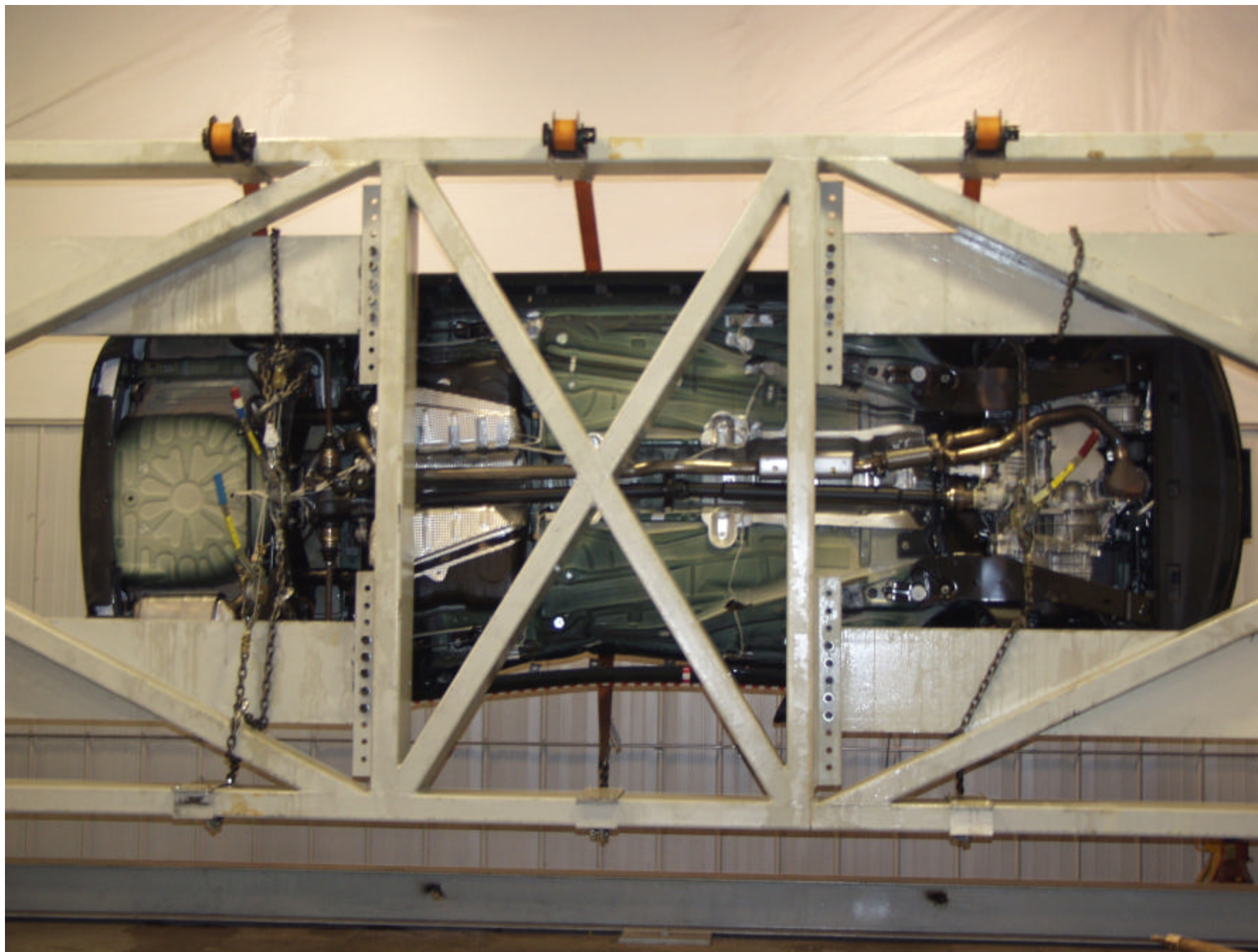


Figure A-43: ROLLOVER 270 DEGREES



Figure A-44: ROLLOVER 360 DEGREES



Figure A-45: PRE-TEST ALUMINUM BARRIER FRONT



Figure A-46: POST-TEST ALUMINUM BARRIER FRONT



Figure A-47: PRE-TEST ALUMINUM BARRIER LEFT SIDE



Figure A-48: POST-TEST ALUMINUM BARRIER LEFT SIDE



Figure A-49: PRE-TEST ALUMINUM BARRIER RIGHT SIDE



Figure A-50: POST-TEST ALUMINUM BARRIER RIGHT SIDE

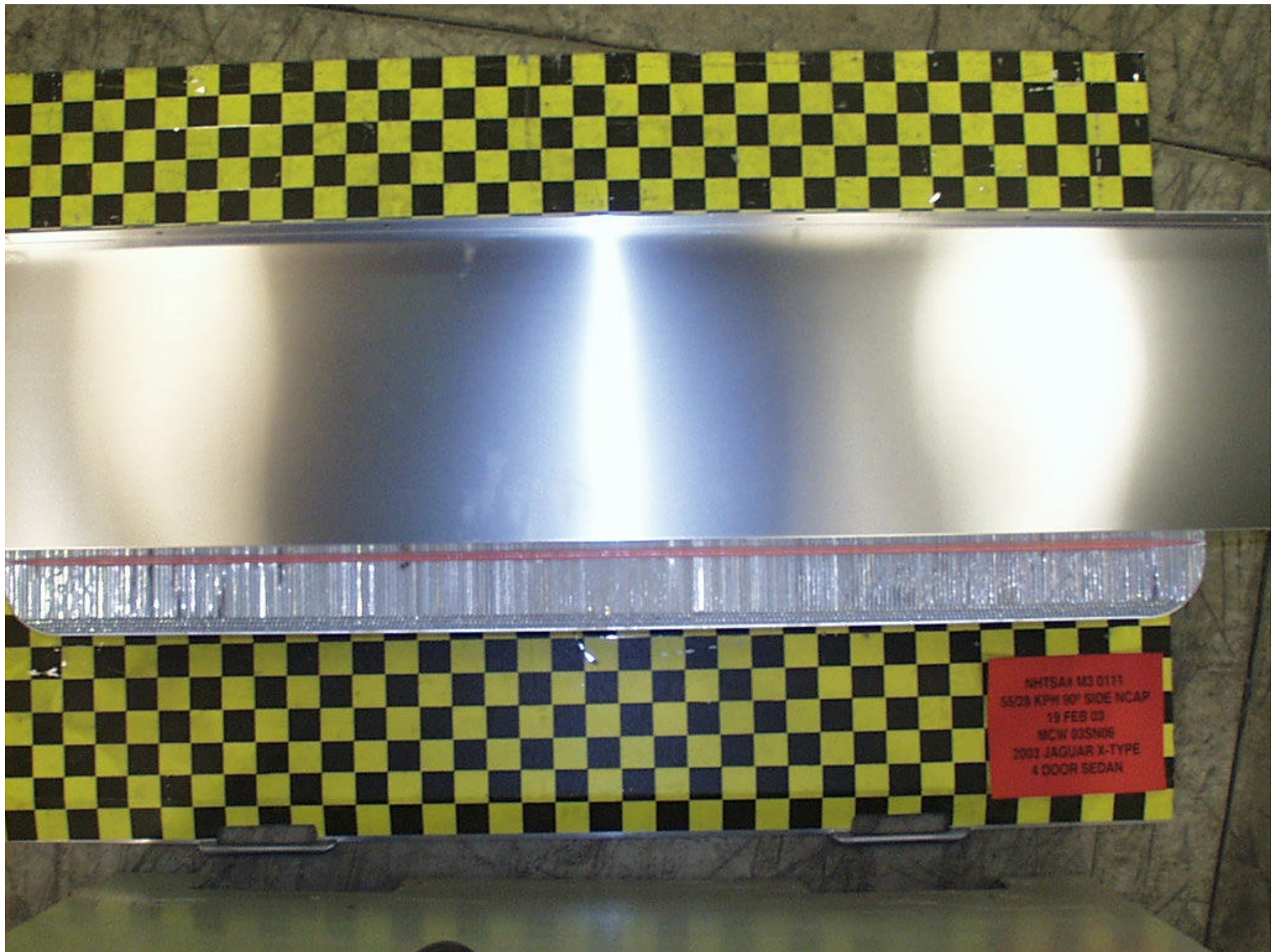


Figure A-51: PRE-TEST ALUMINUM BARRIER OVERHEAD

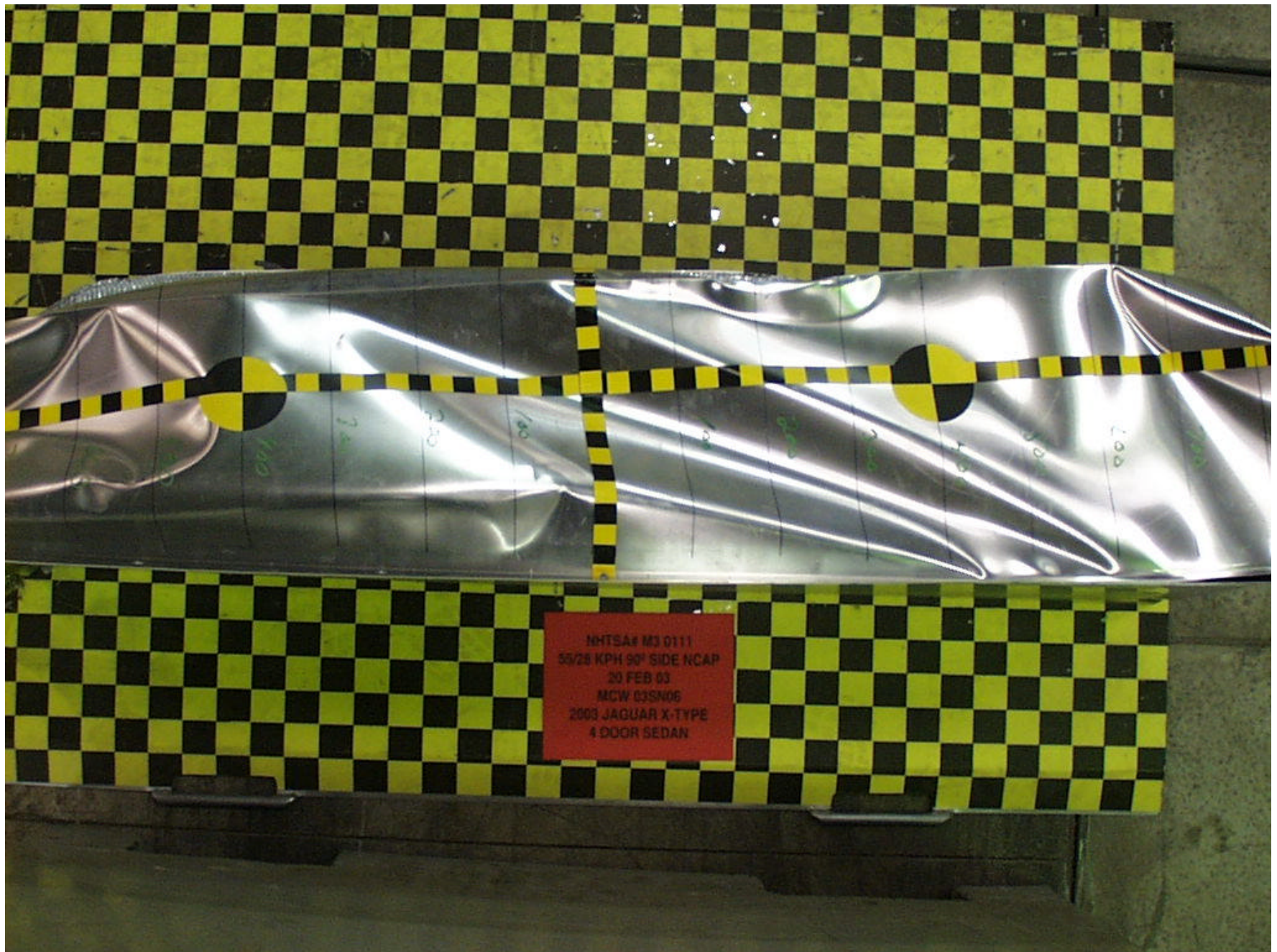


Figure A-52: POST-TEST ALUMINUM BARRIER OVERHEAD

APPENDIX B

VEHICLE, MDB, AND SID RESPONSE DATA

TABLE OF CONTENTS

DRIVER AND PASSENGER DUMMY INSTRUMENTATION PLOTS

ACCELERATION DATA – FILTER CLASS 1000, LOWER SPINE FILTER CLASS 180
UPPER NECK FORCES – FILTER CLASS 1000; UPPER NECK MOMENTS FILTER CLASS 600
INTEGRATION DATA FILTER CLASS 180

<u>Plot No.</u>	<u>Data Plot Title</u>	<u>Page</u>
1	DRIVER HEAD (X) ACCELERATION	B-6
2	DRIVER HEAD (X) VELOCITY	B-7
3	DRIVER HEAD (Y) ACCELERATION	B-8
4	DRIVER HEAD (Y) VELOCITY	B-9
5	DRIVER HEAD (Z) ACCELERATION	B-10
6	DRIVER HEAD (Z) VELOCITY	B-11
7	DRIVER HEAD RESULTANT ACCELERATION	B-12
8	DRIVER NECK (X) FORCE	B-13
9	DRIVER NECK (Y) FORCE	B-14
10	DRIVER NECK (Z) FORCE	B-15
11	DRIVER NECK (X) MOMENT	B-16
12	DRIVER NECK (Y) MOMENT	B-17
13	DRIVER NECK (Z) MOMENT	B-18
14	DRIVER UPPER RIB (Y) ACCELERATION	B-19
15	DRIVER UPPER RIB (Y) VELOCITY	B-20
16	DRIVER LOWER RIB (Y) ACCELERATION	B-21
17	DRIVER LOWER RIB (Y) VELOCITY	B-22
18	DRIVER LOWER SPINE (Y) ACCELERATION	B-23
19	DRIVER LOWER SPINE (Y) VELOCITY	B-24
20	DRIVER PELVIS (Y) ACCELERATION	B-25
21	DRIVER PELVIS (Y) VELOCITY	B-26
22	PASSENGER HEAD (X) ACCELERATION	B-27
23	PASSENGER HEAD (X) VELOCITY	B-28
24	PASSENGER HEAD (Y) ACCELERATION	B-29
25	PASSENGER HEAD (Y) VELOCITY	B-30
26	PASSENGER HEAD (Z) ACCELERATION	B-31
27	PASSENGER HEAD (Z) VELOCITY	B-32
28	PASSENGER HEAD RESULTANT ACCELERATION	B-33
29	PASSENGER NECK (X) FORCE	B-34
30	PASSENGER NECK (Y) FORCE	B-35
31	PASSENGER NECK (Z) FORCE	B-36
32	PASSENGER NECK (X) MOMENT	B-37
33	PASSENGER NECK (Y) MOMENT	B-38
34	PASSENGER NECK (Z) MOMENT	B-39
35	PASSENGER UPPER RIB (Y) ACCELERATION	B-40
36	PASSENGER UPPER RIB (Y) VELOCITY	B-41
37	PASSENGER LOWER RIB (Y) ACCELERATION	B-42
38	PASSENGER LOWER RIB (Y) VELOCITY	B-43
39	PASSENGER LOWER SPINE (Y) ACCELERATION	B-44
40	PASSENGER LOWER SPINE (Y) VELOCITY	B-45
41	PASSENGER PELVIS (Y) ACCELERATION	B-46
42	PASSENGER PELVIS (Y) VELOCITY	B-47

DRIVER AND PASSENGER DUMMY INSTRUMENTATION PLOTS

ACCELERATION DATA – FIR FILTERED

<u>Plot No.</u>	<u>Data Plot Title</u>	<u>Page</u>
43	DRIVER UPPER RIB (Y) ACCELERATION	B-48
44	DRIVER LOWER RIB (Y) ACCELERATION	B-49
45	DRIVER LOWER SPINE (Y) ACCELERATION	B-50
46	DRIVER PELVIS (Y) ACCELERATION	B-51
47	PASSENGER UPPER RIB (Y) ACCELERATION	B-52
48	PASSENGER LOWER RIB (Y) ACCELERATION	B-53
49	PASSENGER LOWER SPINE (Y) ACCELERATION	B-54
50	PASSENGER PELVIS (Y) ACCELERATION	B-55

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>
51	RIGHT SIDE SILL AT FRONT SEAT (X) ACCELERATION	B-56
52	RIGHT SIDE SILL AT FRONT SEAT (X) VELOCITY	B-57
53	RIGHT SIDE SILL AT FRONT SEAT (Y) ACCELERATION	B-58
54	RIGHT SIDE SILL AT FRONT SEAT (Y) VELOCITY	B-59
55	RIGHT SIDE SILL AT FRONT SEAT (Z) ACCELERATION	B-60
56	RIGHT SIDE SILL AT FRONT SEAT (Z) VELOCITY	B-61
57	RIGHT SIDE SILL AT FRONT SEAT RESULTANT ACCELERATION	B-62
58	RIGHT SIDE SILL AT REAR SEAT (X) ACCELERATION	B-63
59	RIGHT SIDE SILL AT REAR SEAT (X) VELOCITY	B-64
60	RIGHT SIDE SILL AT REAR SEAT (Y) ACCELERATION	B-65
61	RIGHT SIDE SILL AT REAR SEAT (Y) VELOCITY	B-66
62	RIGHT SIDE SILL AT REAR SEAT (Z) ACCELERATION	B-67
63	RIGHT SIDE SILL AT REAR SEAT (Z) VELOCITY	B-68
64	RIGHT SIDE SILL AT REAR SEAT RESULTANT ACCELERATION	B-69
65	REAR FLOORPAN ABOVE AXLE (X) ACCELERATION	B-70
66	REAR FLOORPAN ABOVE AXLE (X) VELOCITY	B-71
67	REAR FLOORPAN ABOVE AXLE (Y) ACCELERATION	B-72
68	REAR FLOORPAN ABOVE AXLE (Y) VELOCITY	B-73
69	REAR FLOORPAN ABOVE AXLE (Z) ACCELERATION	B-74
70	REAR FLOORPAN ABOVE AXLE (Z) VELOCITY	B-75
71	REAR FLOORPAN ABOVE AXLE (Z) RESULTANT ACCELERATION	B-76
72	LEFT SIDE SILL AT REAR SEAT (Y) ACCELERATION	B-77
73	LEFT SIDE SILL AT REAR SEAT (Y) VELOCITY	B-78
74	LEFT SIDE SILL AT FRONT SEAT (Y) ACCELERATION	B-79
75	LEFT SIDE SILL AT FRONT SEAT (Y) VELOCITY	B-80
76	LEFT FRONT DOOR ON CENTERLINE (Y) ACCELERATION	B-81
77	LEFT FRONT DOOR ON CENTERLINE (Y) VELOCITY	B-82
78	RIGHT REAR OCCUPANT COMPARTMENT (Y) ACCELERATION	B-83
79	RIGHT REAR OCCUPANT COMPARTMENT (Y) VELOCITY	B-84
80	MID-REAR OF LEFT FRONT DOOR (Y) ACCELERATION	B-85
81	MID-REAR OF LEFT FRONT DOOR (Y) VELOCITY	B-86
82	LEFT FRONT DOOR UPPER CENTERLINE (Y) ACCELERATION	B-87
83	LEFT FRONT DOOR UPPER CENTERLINE (Y) VELOCITY	B-88
84	MID-REAR OF LEFT REAR DOOR (Y) ACCELERATION	B-89
85	MID-REAR OF LEFT REAR DOOR (Y) VELOCITY	B-90
86	LEFT REAR DOOR UPPER CENTERLINE (Y) ACCELERATION	B-91
87	LEFT REAR DOOR UPPER CENTERLINE (Y) VELOCITY	B-92
88	LOWER B-PILLAR (Y) ACCELERATION	B-93
89	LOWER B-PILLAR (Y) VELOCITY	B-94
90	MIDDLE B-PILLAR (Y) ACCELERATION	B-95
91	MIDDLE B-PILLAR (Y) VELOCITY	B-96
92	LOWER A-PILLAR (Y) ACCELERATION	B-97
93	LOWER A-PILLAR (Y) VELOCITY	B-98
94	MIDDLE A-PILLAR (Y) ACCELERATION	B-99
95	MIDDLE A-PILLAR (Y) VELOCITY	B-100
96	FRONT SEAT TRACK (Y) ACCELERATION	B-101
97	FRONT SEAT TRACK (Y) VELOCITY	B-102
98	REAR SEAT TRACK (Y) ACCELERATION	B-103
99	REAR SEAT TRACK (Y) VELOCITY	B-104
100	VEHICLE CENTER OF GRAVITY (X) ACCELERATION	B-105
101	VEHICLE CENTER OF GRAVITY (X) VELOCITY	B-106
102	VEHICLE CENTER OF GRAVITY (Y) ACCELERATION	B-107
103	VEHICLE CENTER OF GRAVITY (Y) VELOCITY	B-108
104	VEHICLE CENTER OF GRAVITY (Z) ACCELERATION	B-109
105	VEHICLE CENTER OF GRAVITY (Z) VELOCITY	B-110
106	VEHICLE CENTER OF GRAVITY RESULTANT ACCELERATION	B-111

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>
107	MDB CENTER OF GRAVITY (X) ACCELERATION	B-112
108	MDB CENTER OF GRAVITY (X) VELOCITY	B-113
109	MDB CENTER OF GRAVITY (Y) ACCELERATION	B-114
110	MDB CENTER OF GRAVITY (Y) VELOCITY	B-115
111	MDB CENTER OF GRAVITY (Z) ACCELERATION	B-116
112	MDB CENTER OF GRAVITY (Z) VELOCITY	B-117
113	MDB CENTER OF GRAVITY RESULTANT ACCELERATION	B-118
114	MDB REAR (X) ACCELERATION	B-119
115	MDB REAR (X) VELOCITY	B-120
116	MDB REAR (X) ACCELERATION	B-121
117	MDB REAR (X) VELOCITY	B-122

DRIVER AND 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>
118	DRIVER UPPER RIB (Y) ACCELERATION-REDUNDANT	B-123
119	DRIVER UPPER RIB (Y) VELOCITY-REDUNDANT	B-124
120	DRIVER LOWER RIB (Y) ACCELERATION-REDUNDANT	B-125
121	DRIVER LOWER RIB (Y) VELOCITY-REDUNDANT	B-126
122	DRIVER LOWER SPINE (Y) ACCELERATION-REDUNDANT	B-127
123	DRIVER LOWER SPINE (Y) VELOCITY-REDUNDANT	B-128
124	DRIVER PELVIS (Y) ACCELERATION-REDUNDANT	B-129
125	DRIVER PELVIS (Y) VELOCITY-REDUNDANT	B-130
126	PASSENGER UPPER RIB (Y) ACCELERATION-REDUNDANT	B-131
127	PASSENGER UPPER RIB (Y) VELOCITY-REDUNDANT	B-132
128	PASSENGER LOWER RIB (Y) ACCELERATION-REDUNDANT	B-133
129	PASSENGER LOWER RIB (Y) VELOCITY-REDUNDANT	B-134
130	PASSENGER LOWER SPINE (Y) ACCELERATION-REDUNDANT	B-135
131	PASSENGER LOWER SPINE (Y) VELOCITY-REDUNDANT	B-136
132	PASSENGER PELVIS (Y) ACCELERATION-REDUNDANT	B-137
133	PASSENGER PELVIS (Y) VELOCITY-REDUNDANT	B-138

DRIVER AND PASSENGER DUMMY INSTRUMENTATION PLOT (REDUNDANT)
ACCELERATION DATA – FIR FILTERED

<u>Plot No.</u>	<u>Data Plot Title</u>	<u>Page</u>
134	DRIVER UPPER RIB (Y) ACCELERATION-REDUNDANT	B-139
135	DRIVER LOWER RIB (Y) ACCELERATION-REDUNDANT	B-140
136	DRIVER LOWER SPINE (Y) ACCELERATION-REDUNDANT	B-141
137	DRIVER PELVIS (Y) ACCELERATION-REDUNDANT	B-142
138	PASSENGER UPPER RIB (Y) ACCELERATION-REDUNDANT	B-143
139	PASSENGER LOWER RIB (Y) ACCELERATION-REDUNDANT	B-144
140	PASSENGER LOWER SPINE (Y) ACCELERATION-REDUNDANT	B-145
141	PASSENGER PELVIS (Y) ACCELERATION-REDUNDANT	B-146

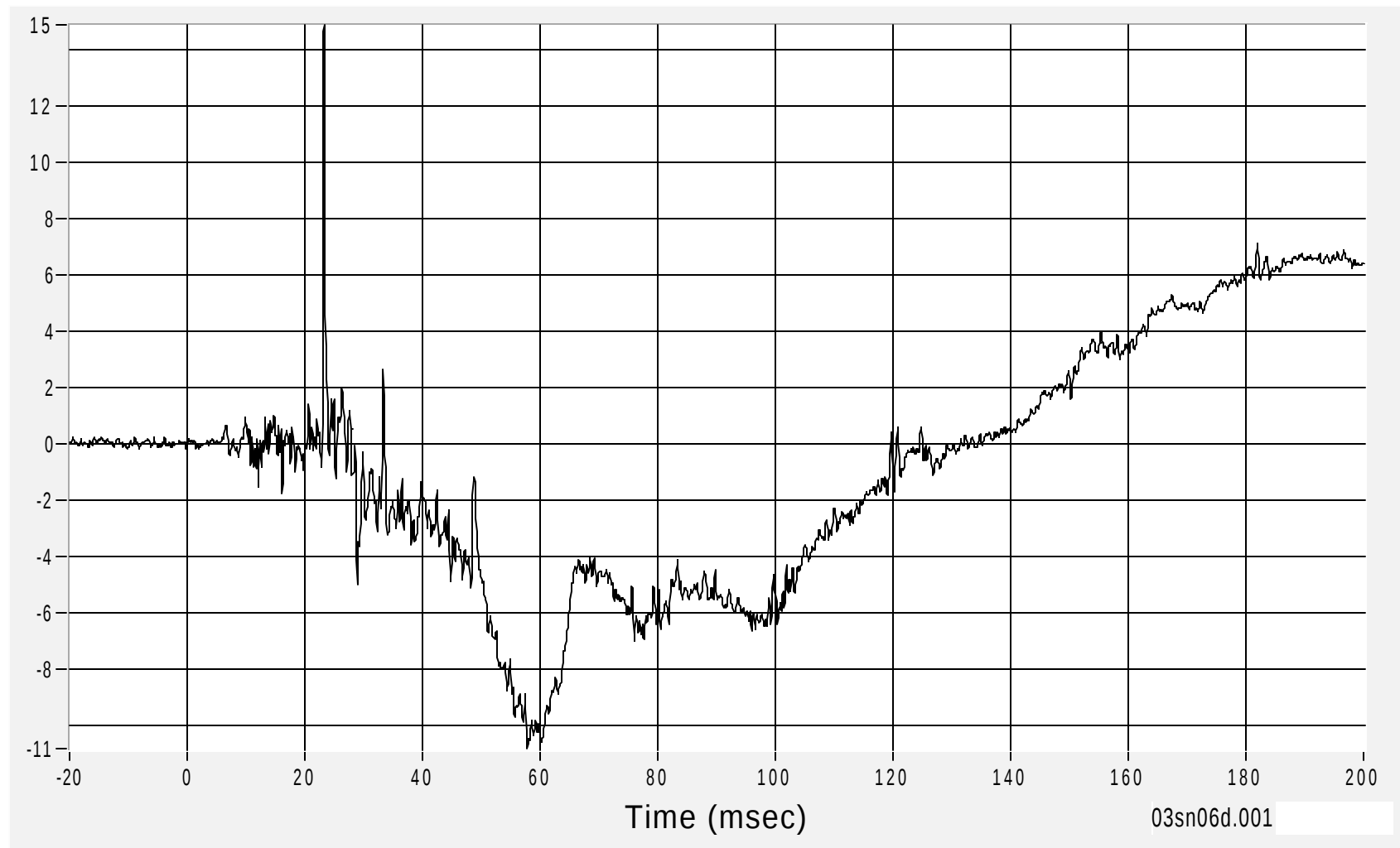
Driver Head CG (X) Acceleration

Acceleration (G's) CFC1000

Max 14.9 G's at 23.3 msec

Min -10.8 G's at 57.8 msec

B-6



03sn06 - 2003 JAGUAR X-TYPE 4 DOOR SEDAN

20 February 2003

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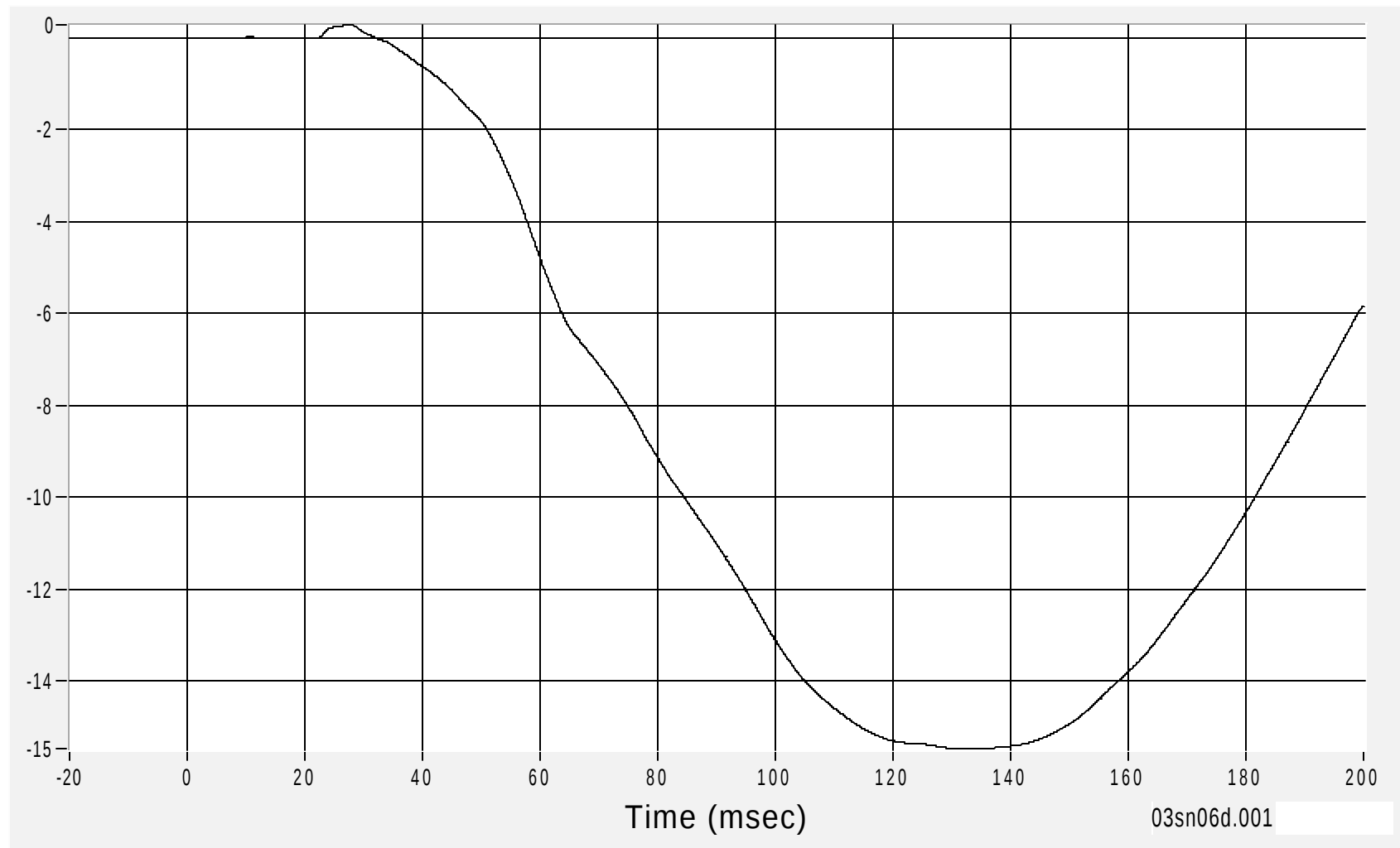
Driver Head CG (X) Velocity

Velocity (km/h) CFC180

Max 0.3 km/h at 27.5 msec

Min -15.5 km/h at 134.3 msec

B-7



03sn06 - 2003 JAGUAR X-TYPE 4 DOOR SEDAN

20 February 2003

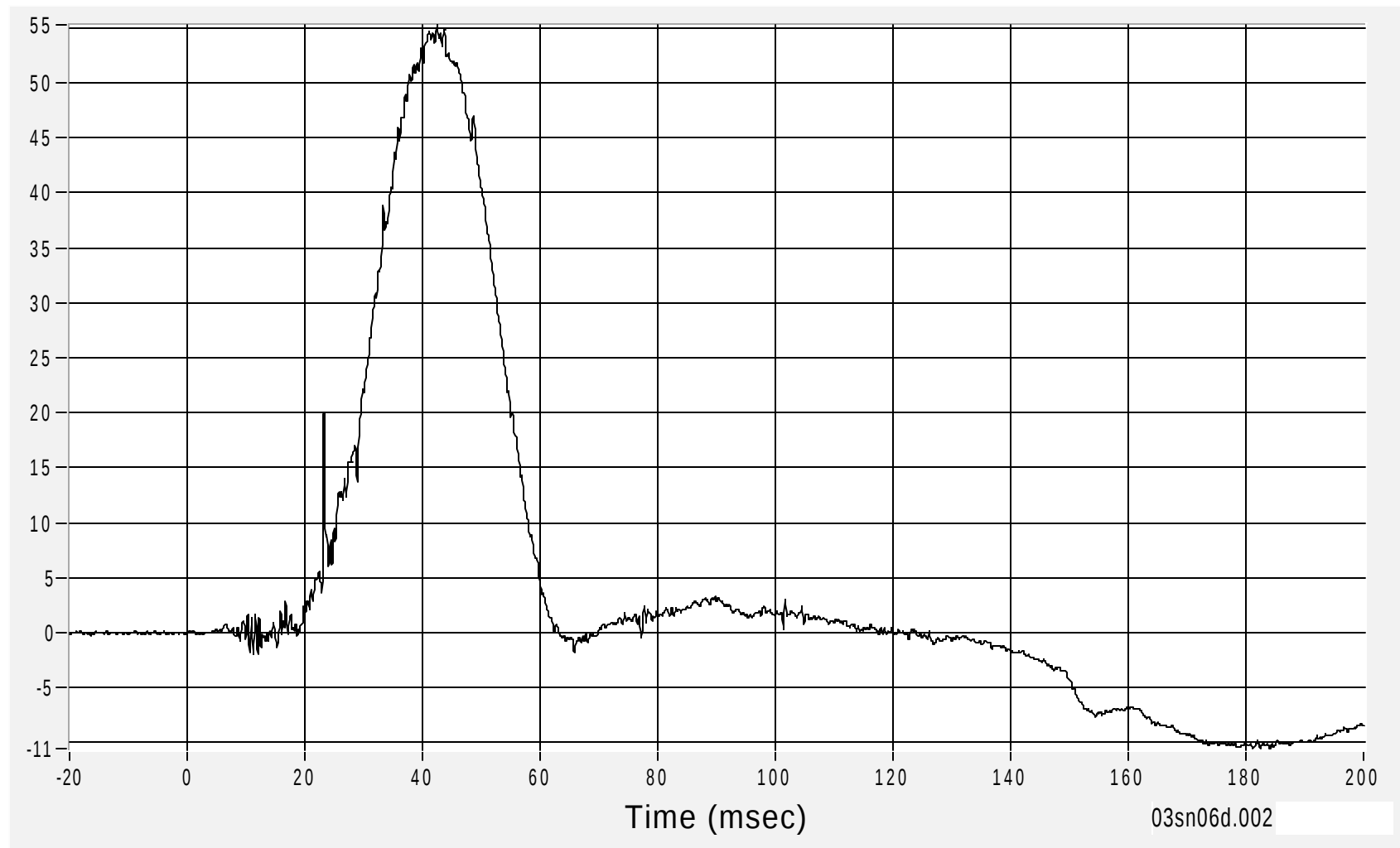
Medical College of Wisconsin
Vehicle Crashworthiness Lab

Driver Head CG (Y) Acceleration

Acceleration (G's) CFC1000

Max 55.3 G's at 42.5 msec
Min -10.5 G's at 184.1 msec

B-8



03sn06 - 2003 JAGUAR X-TYPE 4 DOOR SEDAN

20 February 2003

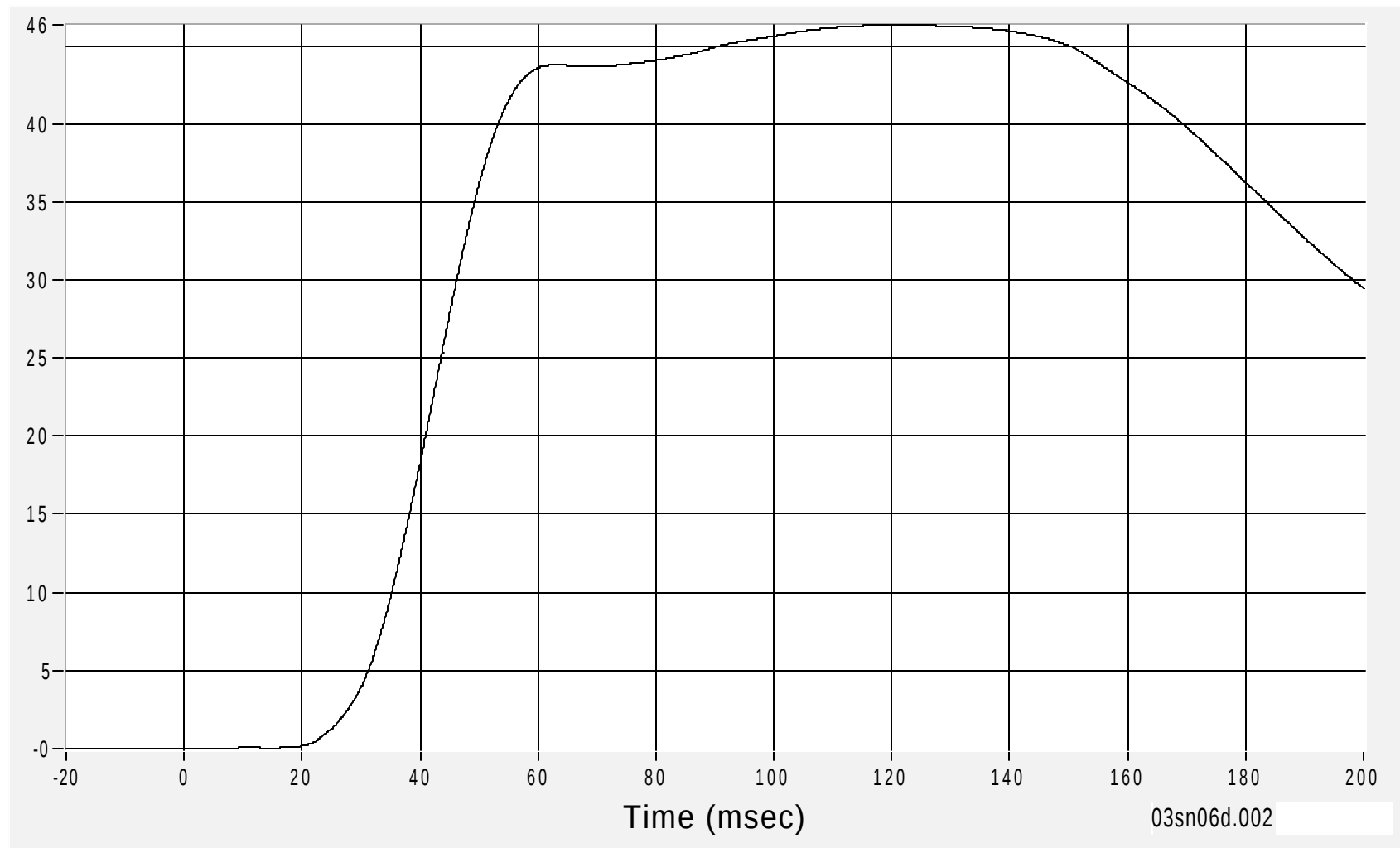
Medical College of Wisconsin
Vehicle Crashworthiness Lab

Driver Head CG (Y) Velocity

Velocity (km/h) CFC180

Max 46.3 km/h at 121.4 msec
Min 0.0 km/h at 0.0 msec

B-9



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20 February 2003

Medical College of Wisconsin
Vehicle Crashworthiness Lab

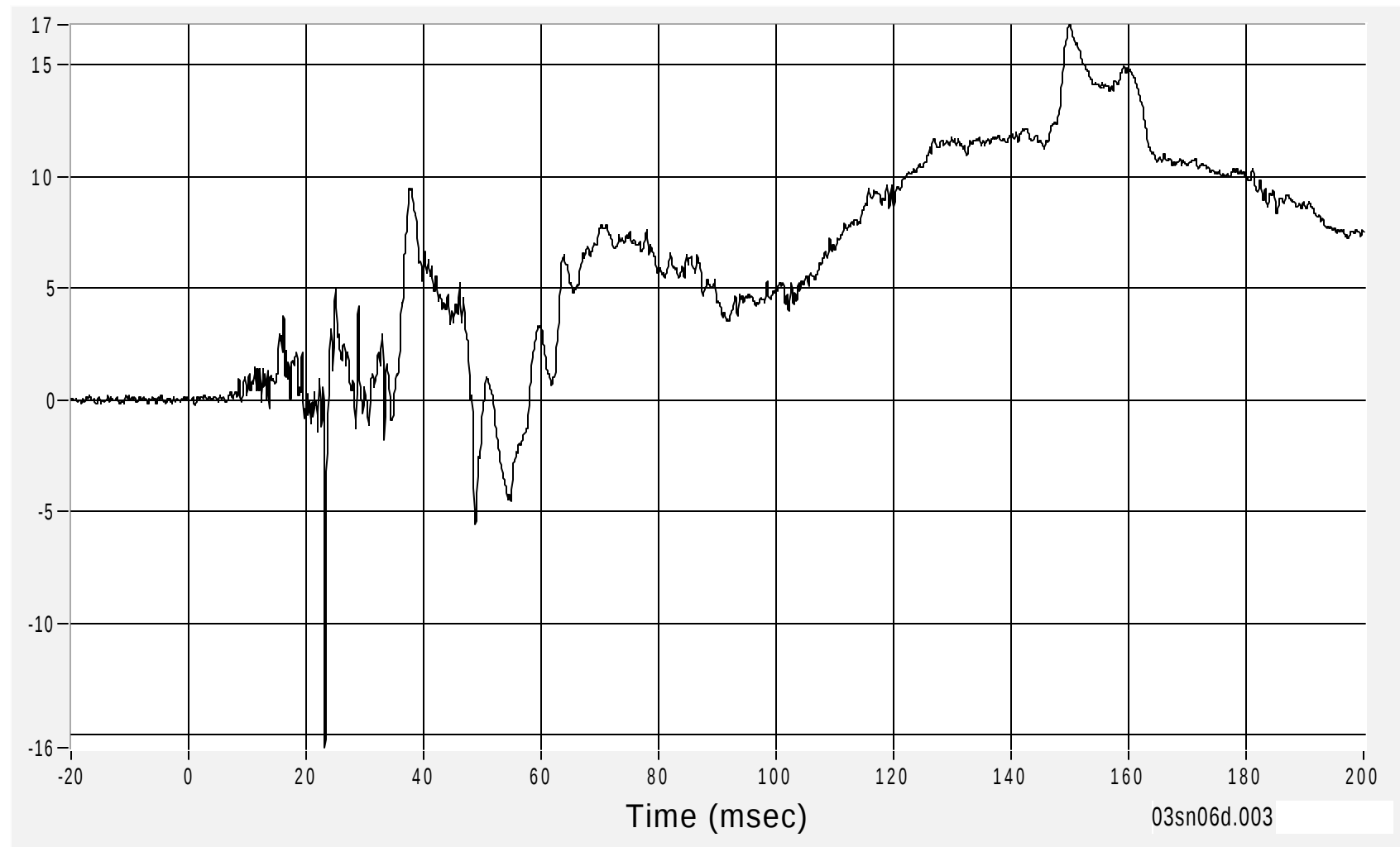
Driver Head CG (Z) Acceleration

Acceleration (G's) CFC1000

Max 16.8 G's at 150.0 msec

Min -15.6 G's at 23.2 msec

B-10



03sn06 - 2003 JAGUAR X-TYPE 4 DOOR SEDAN

20 February 2003

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Vehicle Crashworthiness Lab

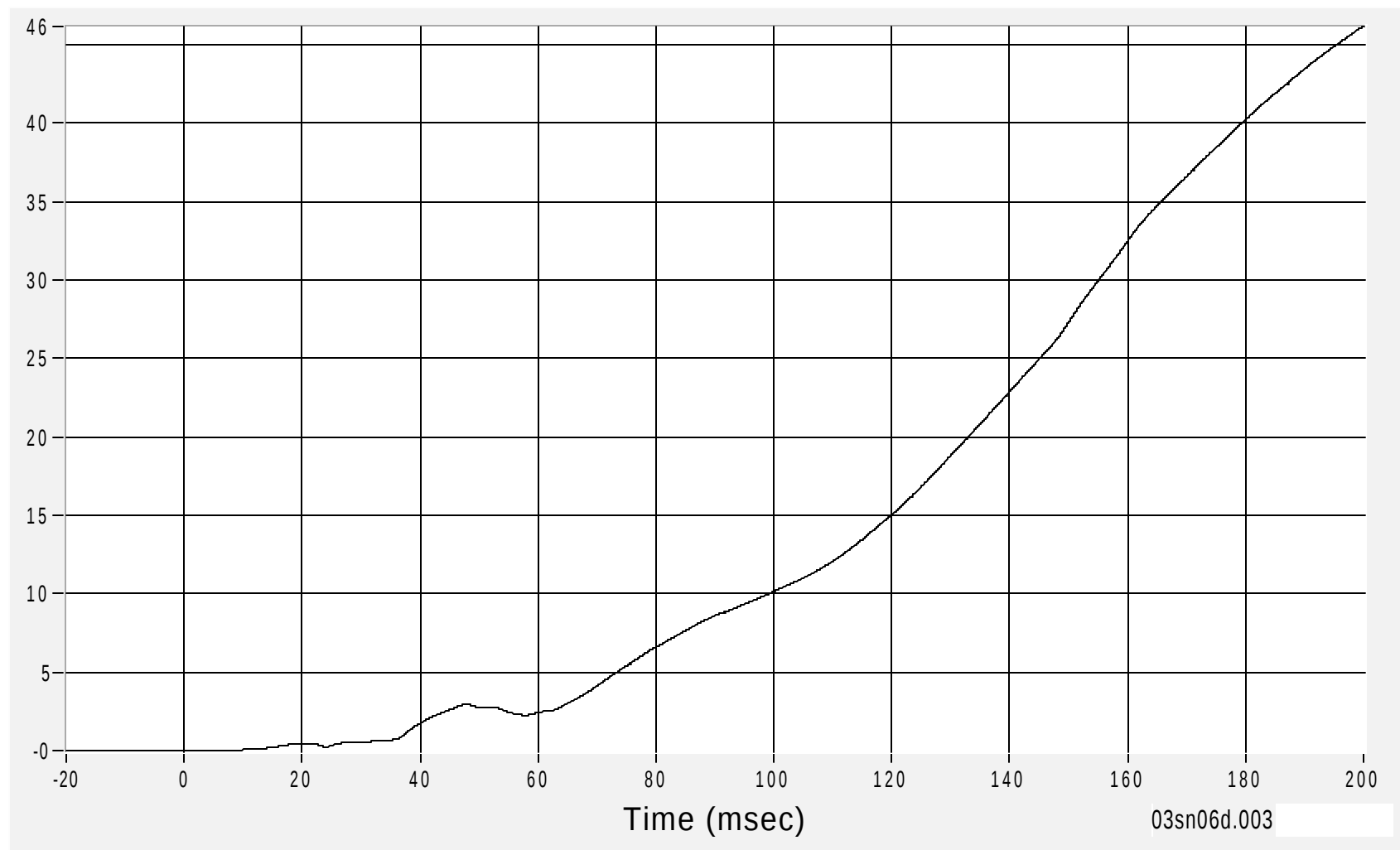
Driver Head CG (Z) Velocity

Velocity (km/h) CFC180

Max 46.2 km/h at 199.9 msec

Min 0.0 km/h at 1.4 msec

B-11



03sn06 - 2003 JAGUAR X-TYPE 4 DOOR SEDAN

20 February 2003

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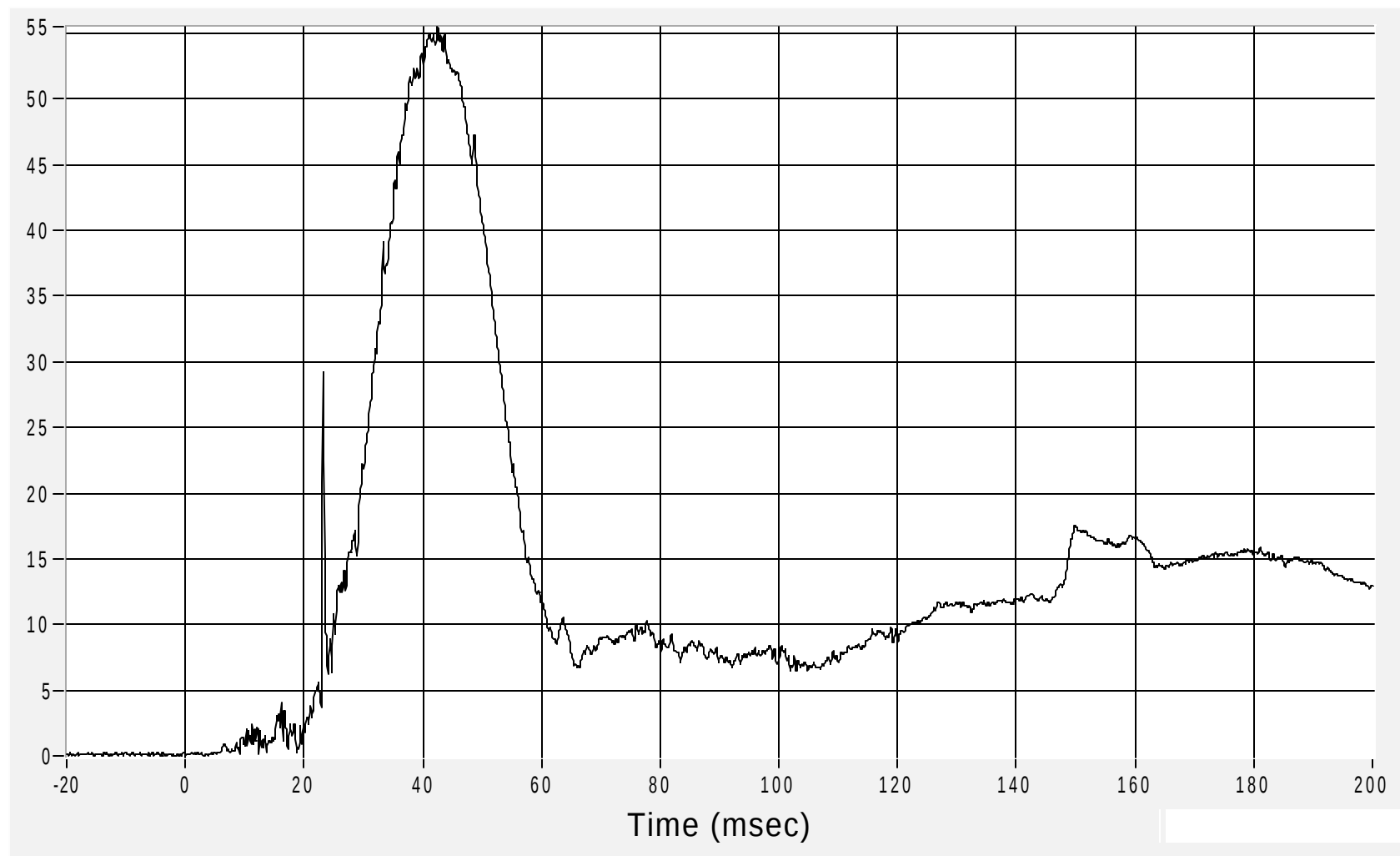
Driver Head Resultant Acceleration

Acceleration (G's) CFC1000

Max 55.5 G's at 42.5 msec

Min 0.0 G's at 3.0 msec

B-12



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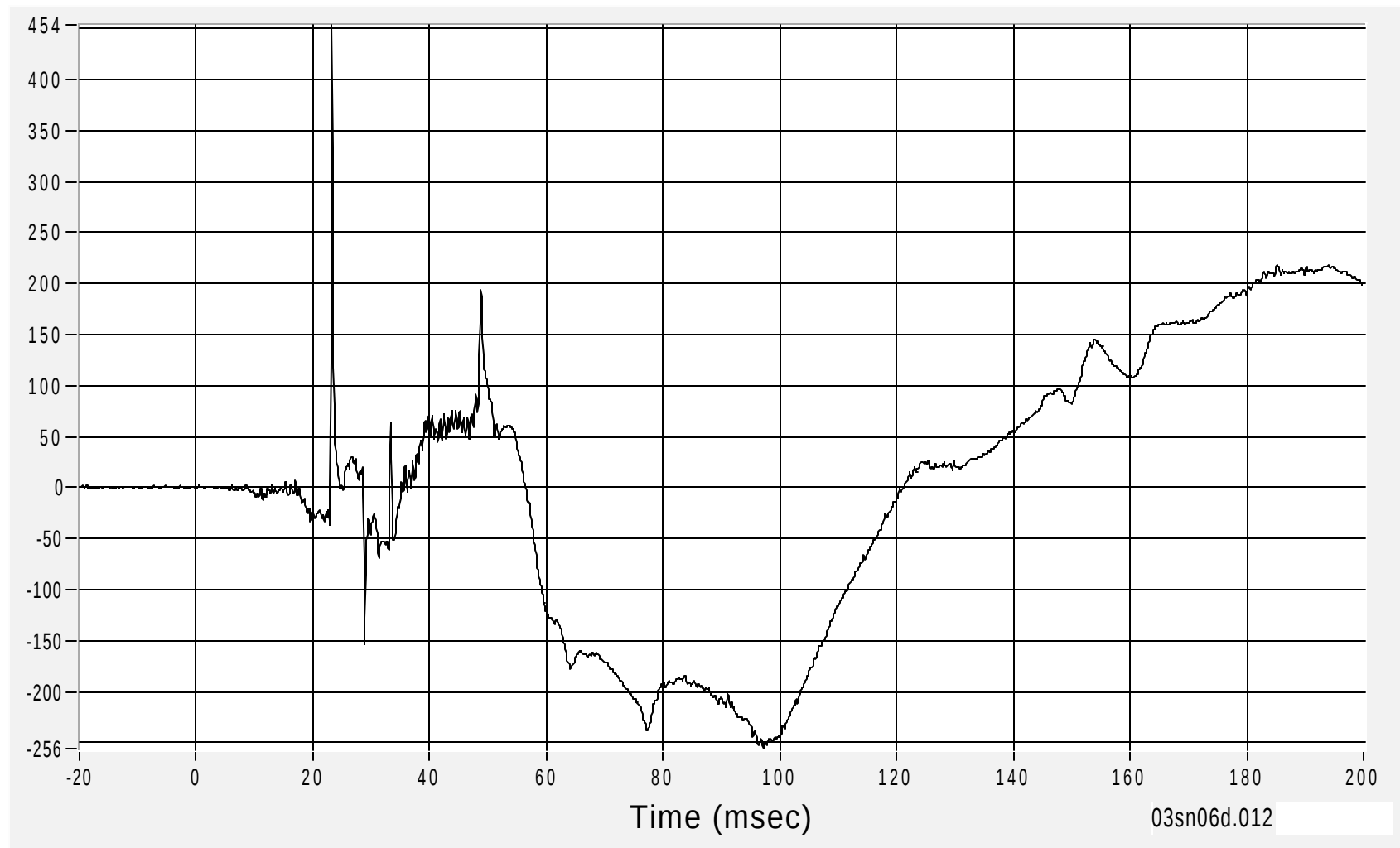
Driver Upper Neck (X) Force

Force (N) CFC1000

Max 453.5 N at 23.3 msec

Min -255.7 N at 97.1 msec

B-13



03sn06 - 2003 JAGUAR X-TYPE 4 DOOR SEDAN

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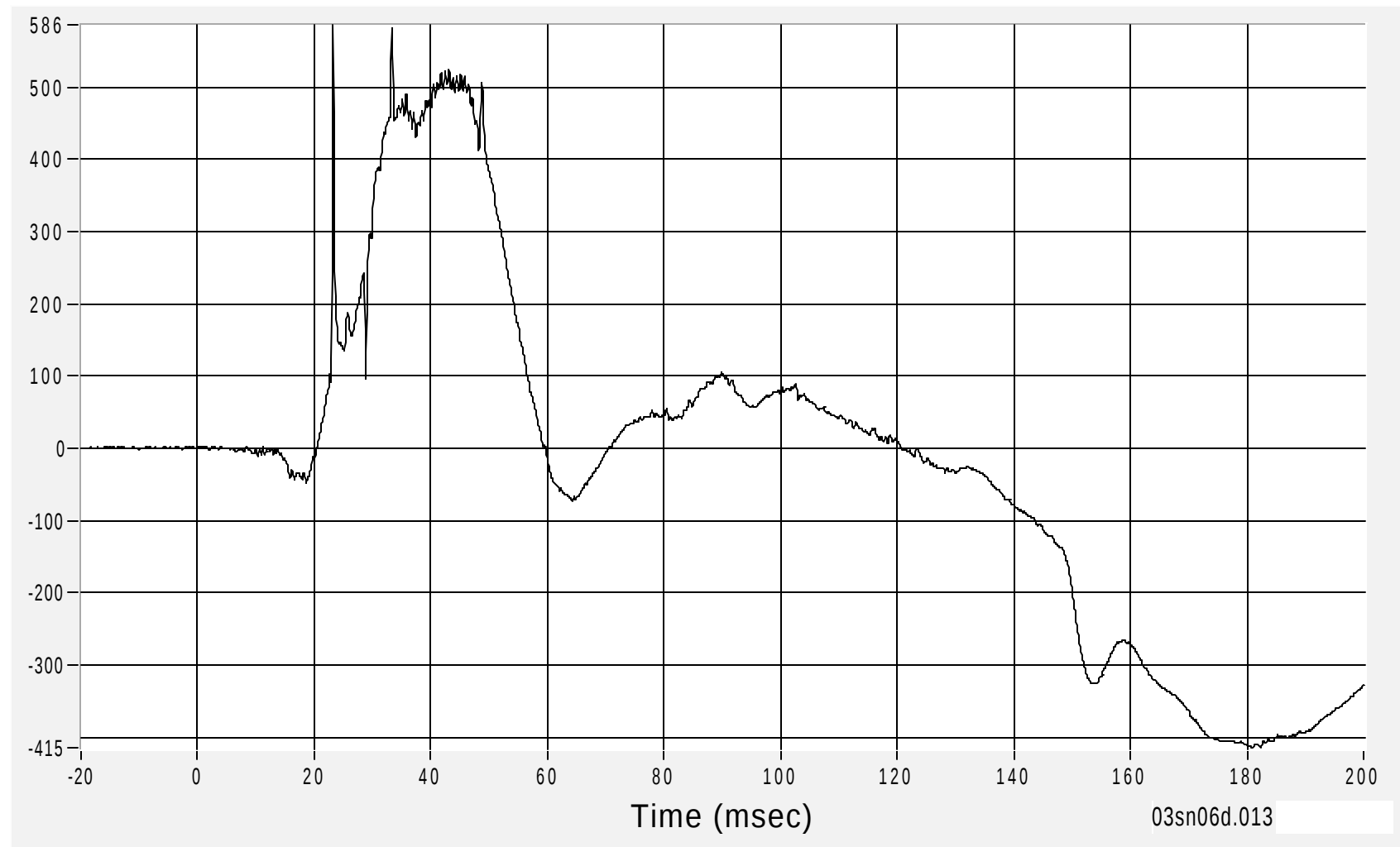
Driver Upper Neck (Y) Force

Force (N) CFC1000

Max 586.1 N at 23.3 msec

Min -414.9 N at 181.0 msec

B-14



03sn06 - 2003 JAGUAR X-TYPE 4 DOOR SEDAN

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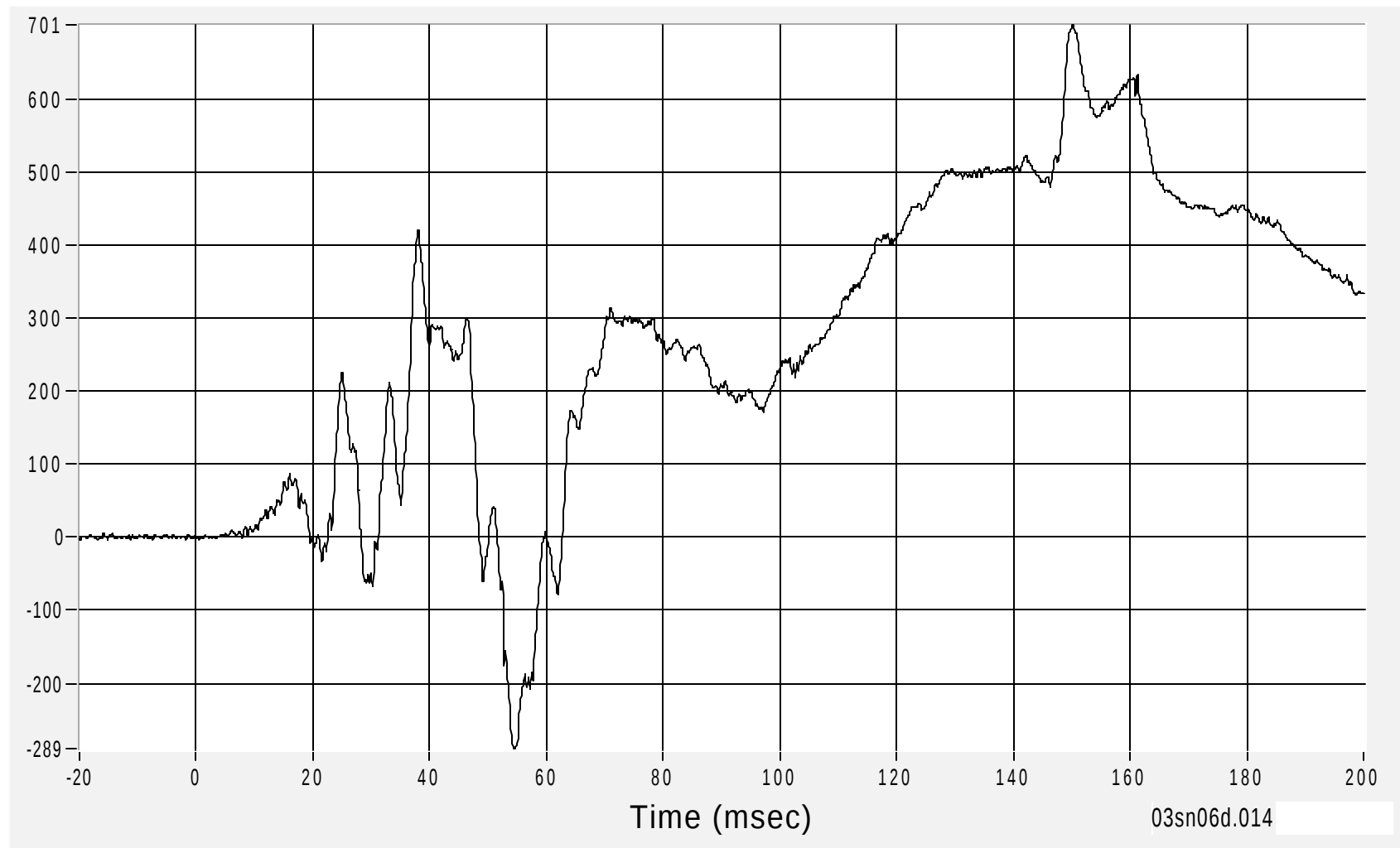
Driver Upper Neck (Z) Force

Force (N) CFC1000

Max 700.8 N at 150.2 msec

Min -289.4 N at 54.6 msec

B-15



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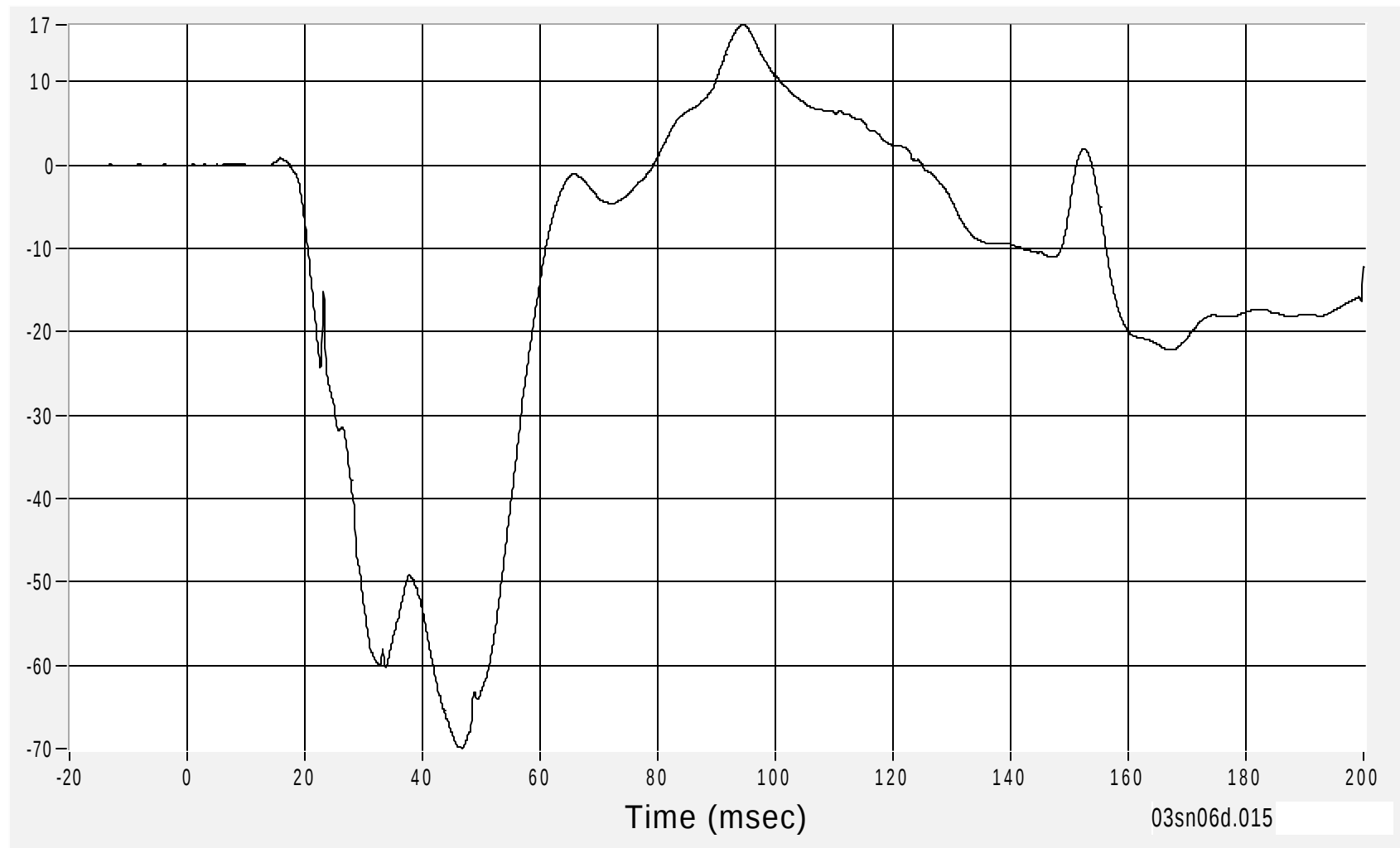
Driver Upper Neck (X) Moment

Moment (Nm) CFC600

Max 16.8 Nm at 94.4 msec

Min -70.0 Nm at 46.7 msec

B-16



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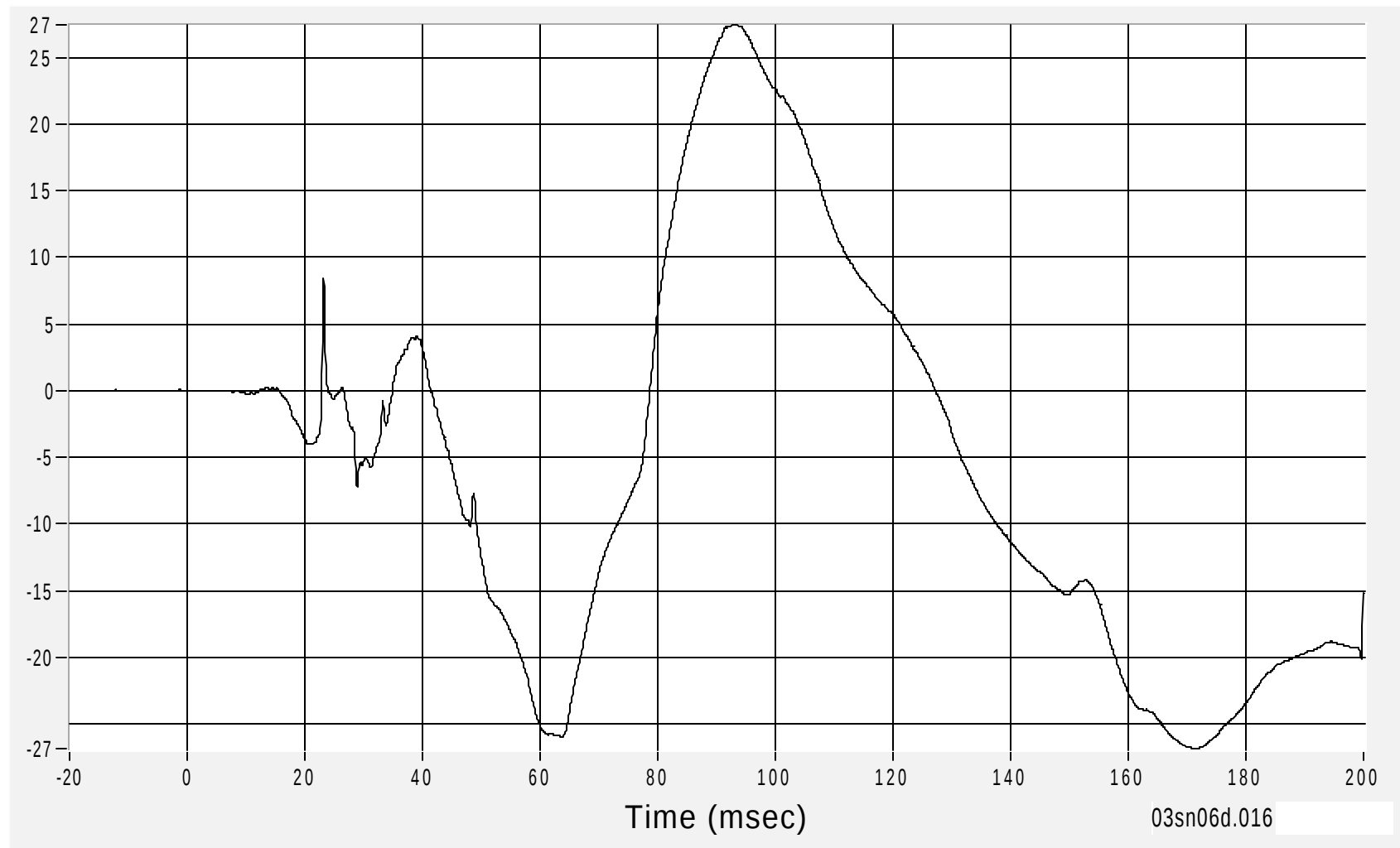
Driver Upper Neck (Y) Moment

Moment (Nm) CFC600

Max 27.4 Nm at 93.3 msec

Min -26.9 Nm at 171.3 msec

B-17



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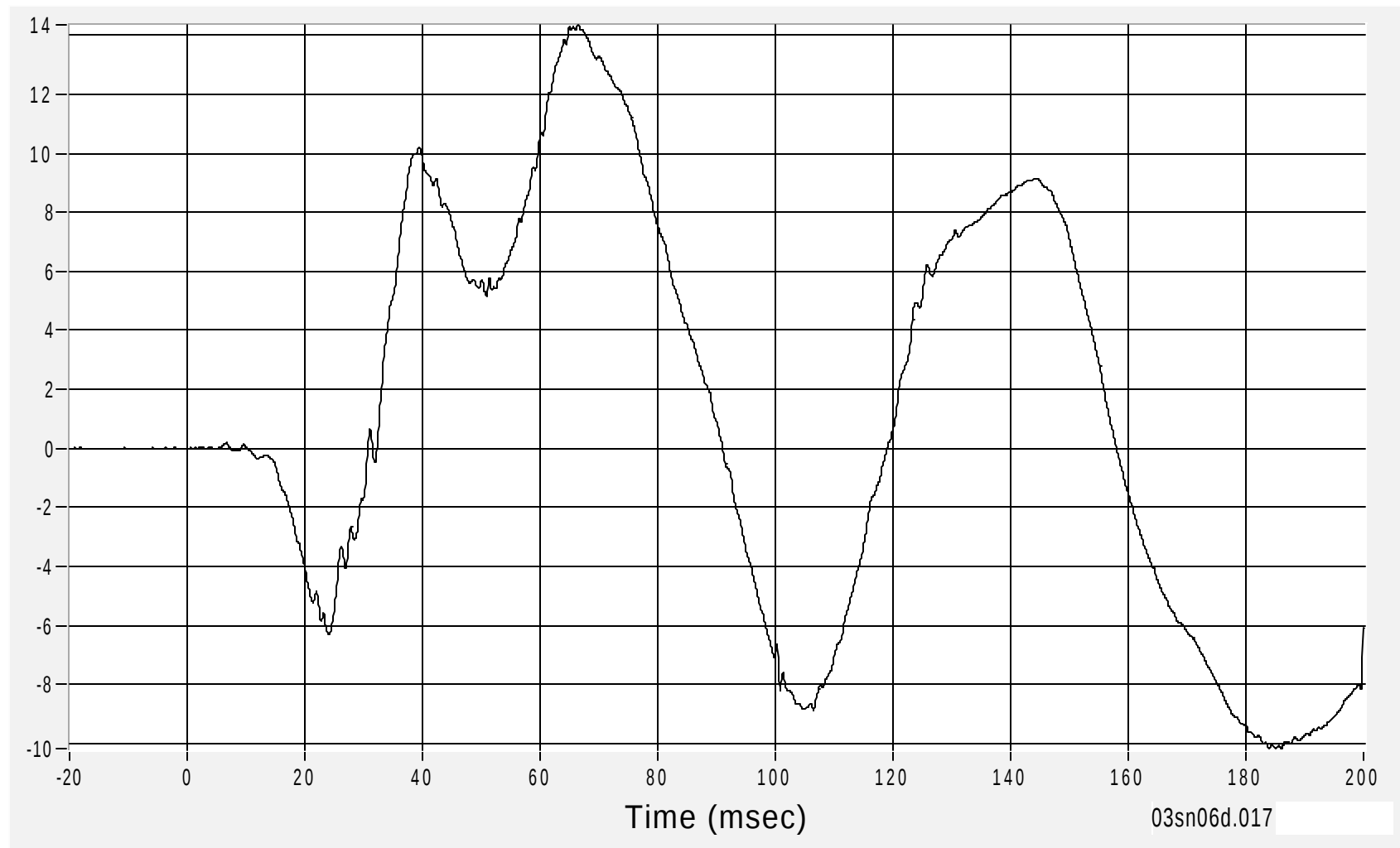
Driver Upper Neck (Z) Moment

Moment (Nm) CFC600

Max 14.3 Nm at 66.5 msec

Min -10.2 Nm at 184.0 msec

B-18



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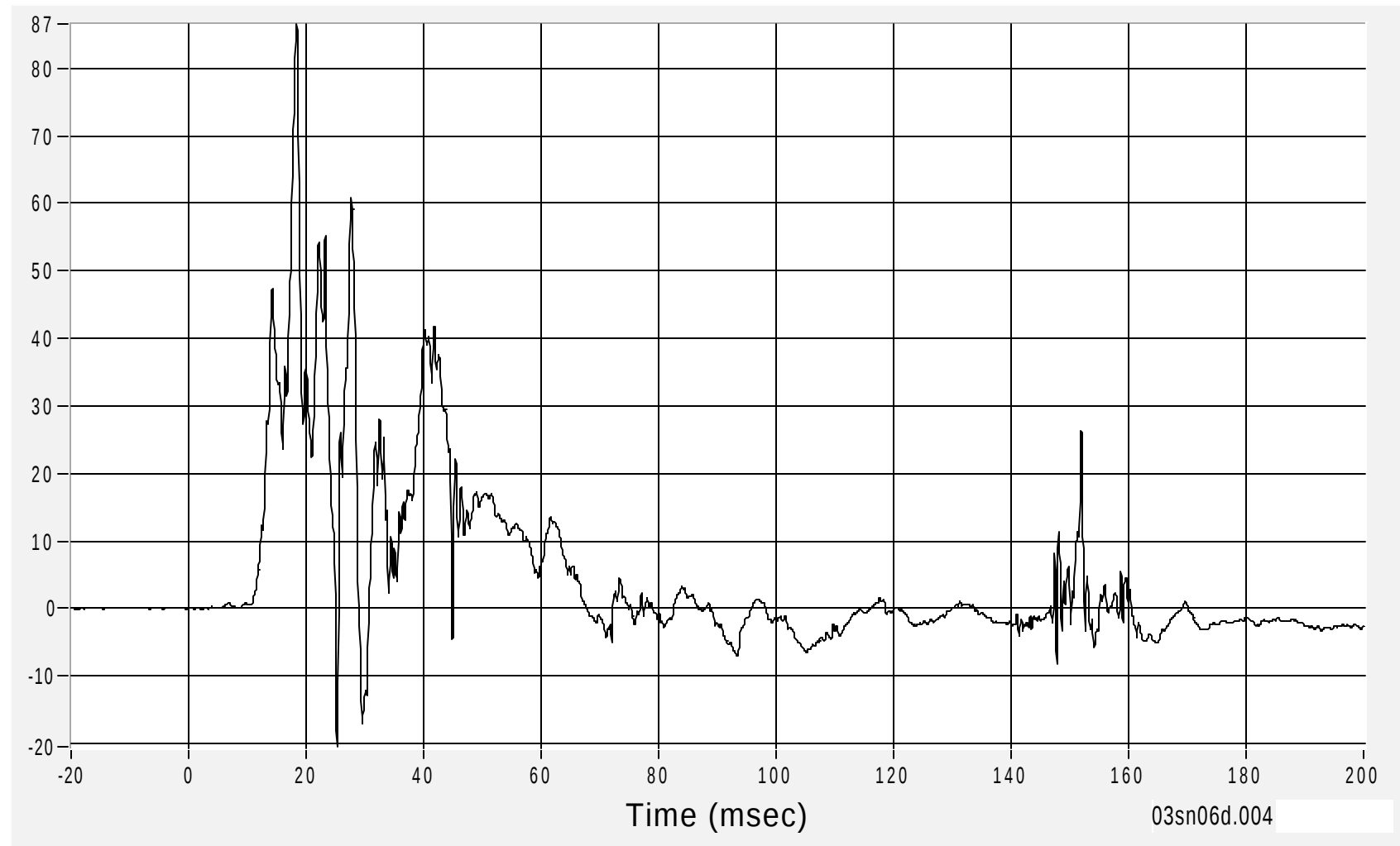
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Driver Upper Rib (Y) Acceleration

Acceleration (G's) CFC1000

Max 86.6 G's at 18.4 msec
Min -20.5 G's at 25.3 msec

B-19



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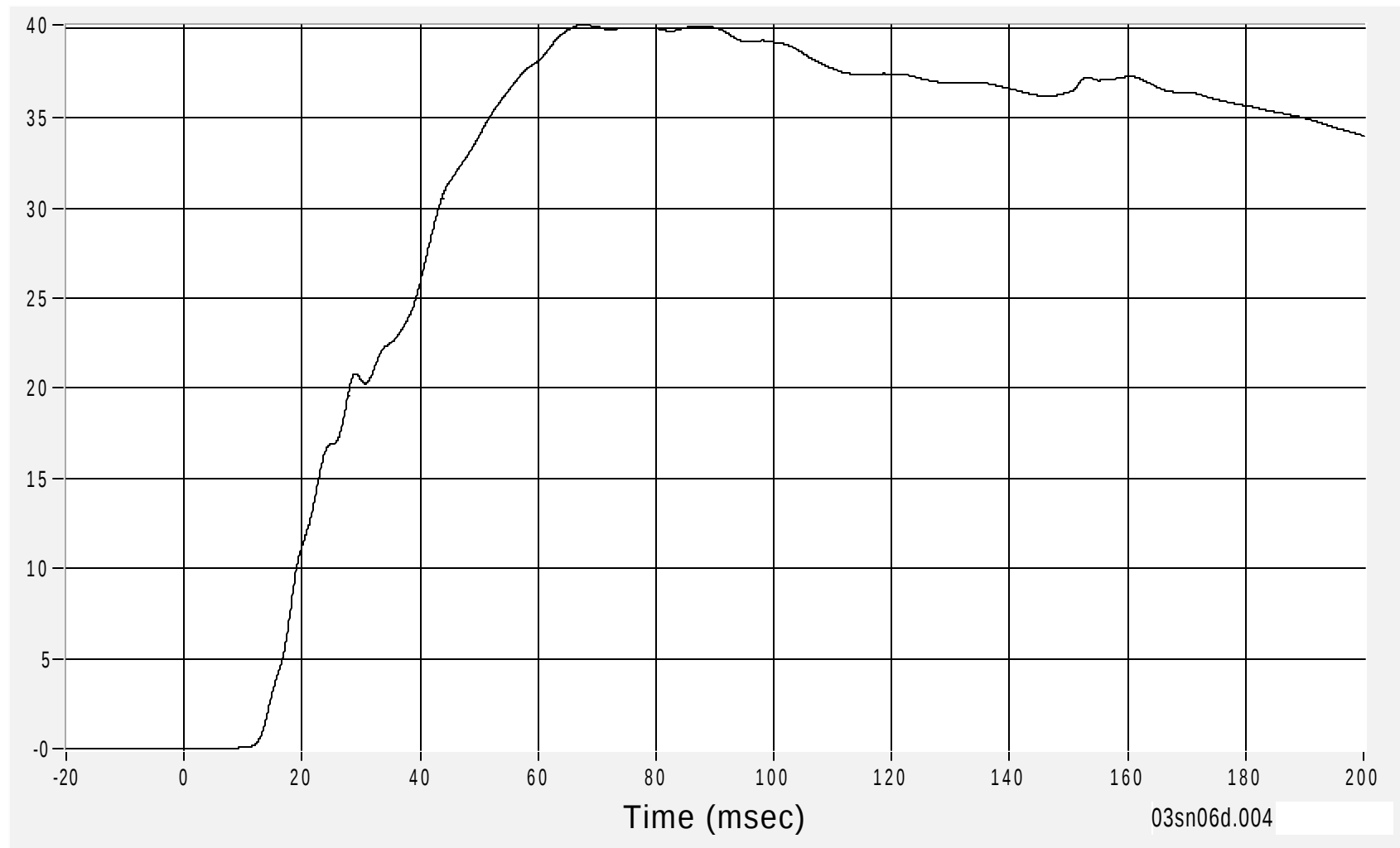
Medical College of Wisconsin
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Driver Upper Rib (Y) Velocity

Velocity (km/h) CFC180

Max 40.2 km/h at 67.6 msec
Min 0.0 km/h at 2.8 msec

B-20



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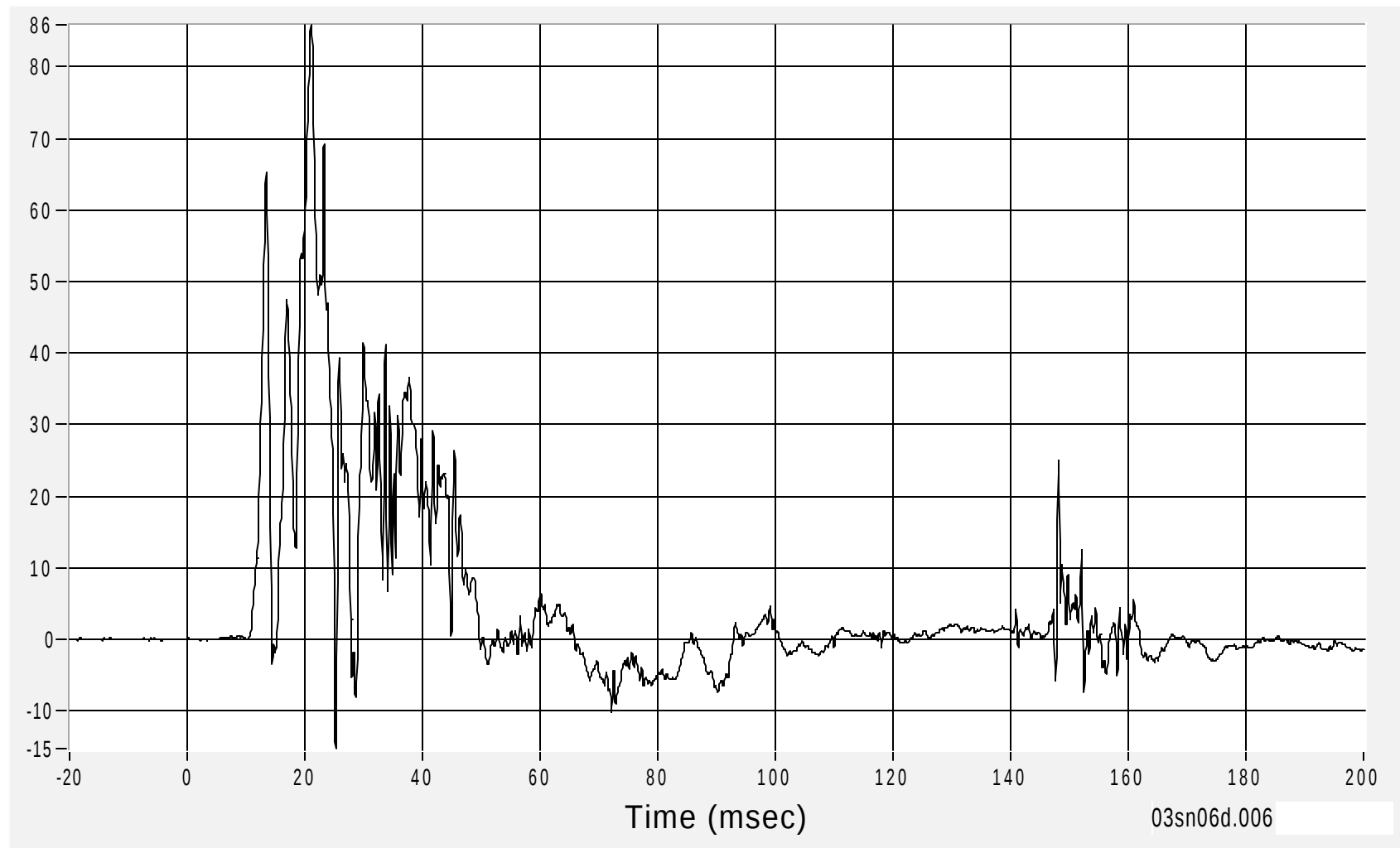
Medical College of Wisconsin
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Driver Lower Rib (Y) Acceleration

Acceleration (G's) CFC1000

Max 85.9 G's at 21.0 msec
Min -15.3 G's at 25.3 msec

B-21



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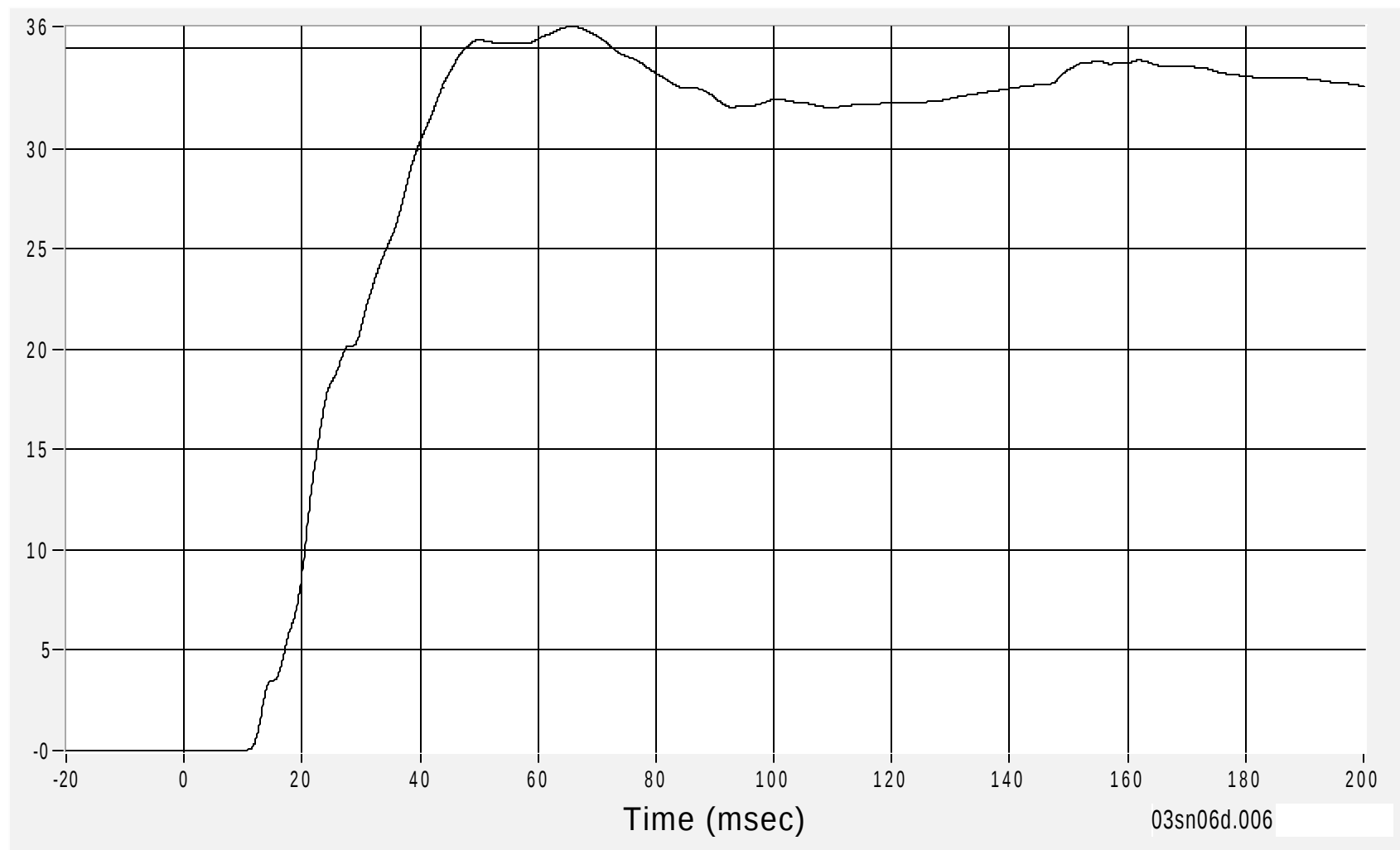
Medical College of Wisconsin
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Driver Lower Rib (Y) Velocity

Velocity (km/h) CFC180

Max 36.1 km/h at 65.8 msec

Min 0.0 km/h at 3.4 msec



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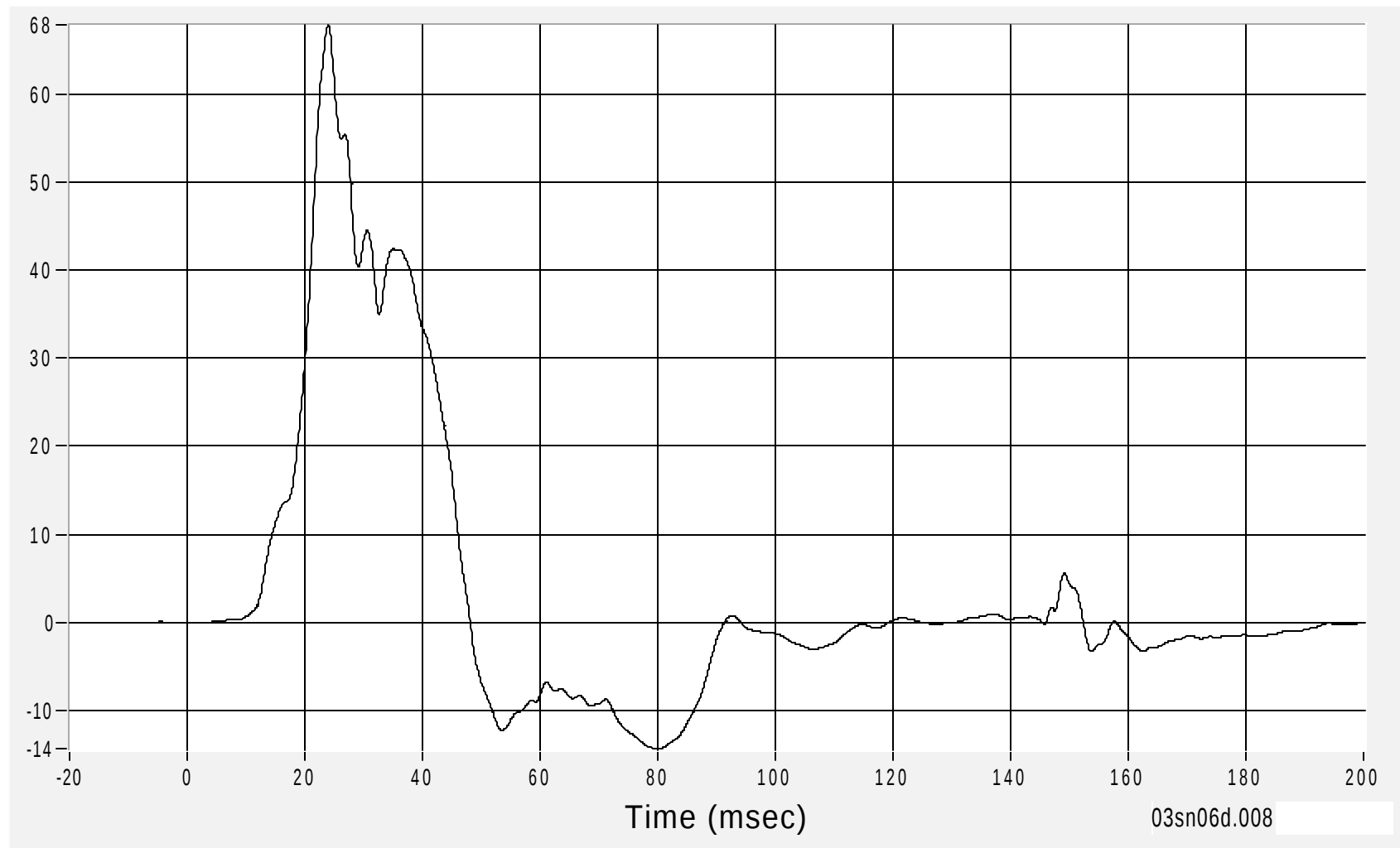
Driver Lower Spine (Y) Acceleration

Acceleration (G's) CFC180

Max 67.8 G's at 24.0 msec

Min -14.3 G's at 80.2 msec

B-23



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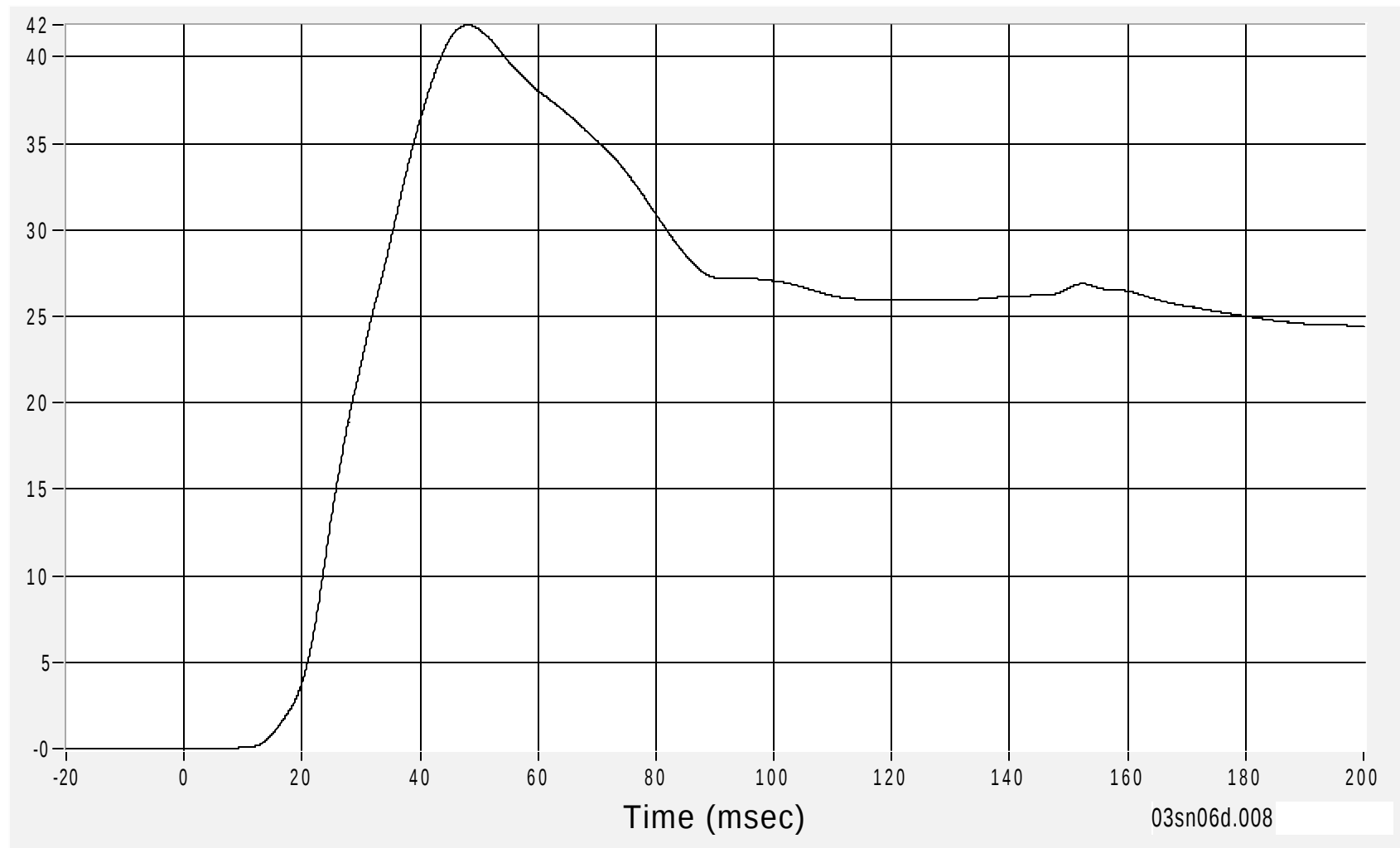
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Driver Lower Spine (Y) Velocity

Velocity (km/h) CFC180

Max 41.9 km/h at 48.1 msec
Min 0.0 km/h at 0.6 msec

B-24



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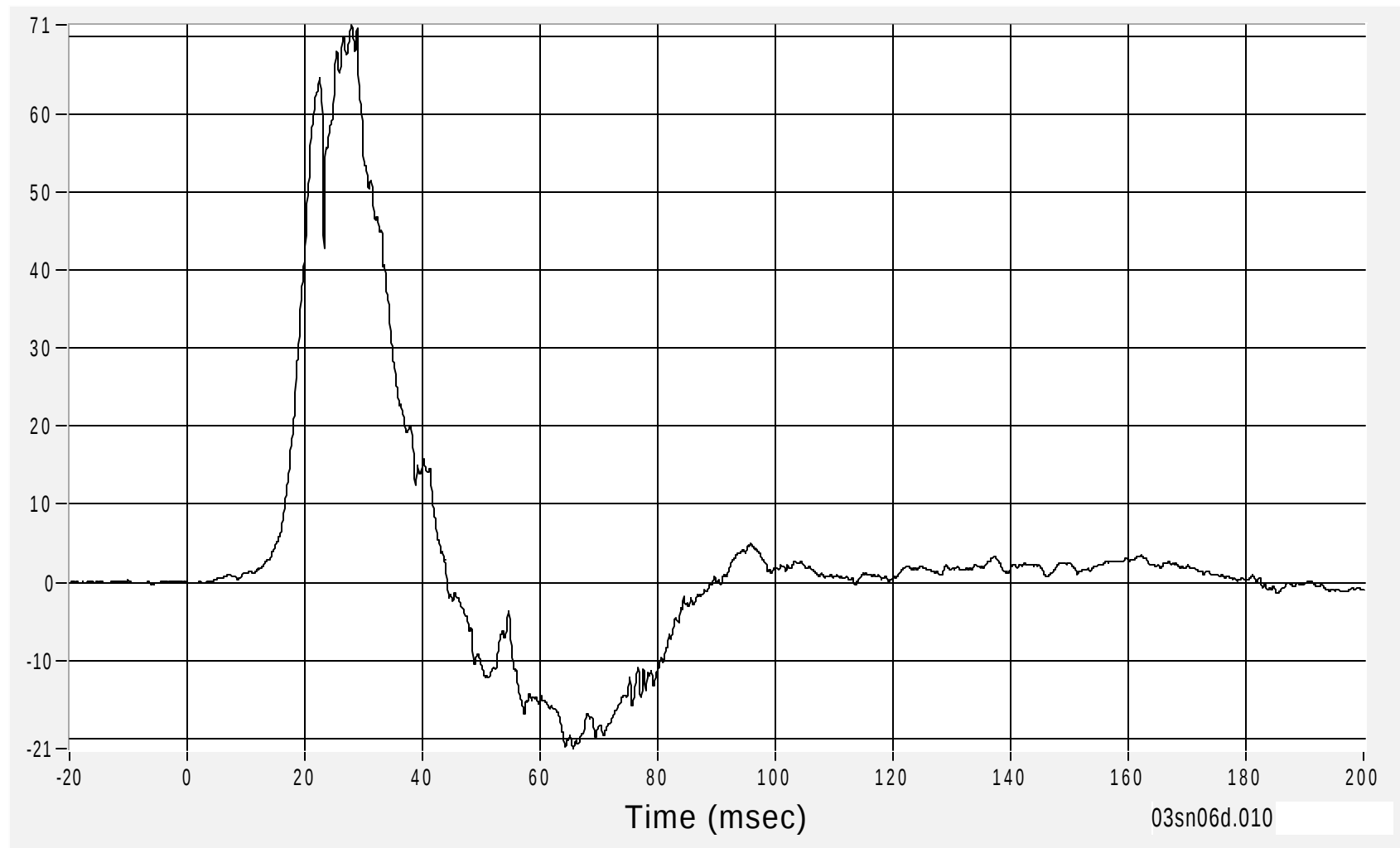
Driver Pelvic (Y) Acceleration

Acceleration (G's) CFC1000

Max 71.5 G's at 27.9 msec

Min -21.3 G's at 65.6 msec

B-25



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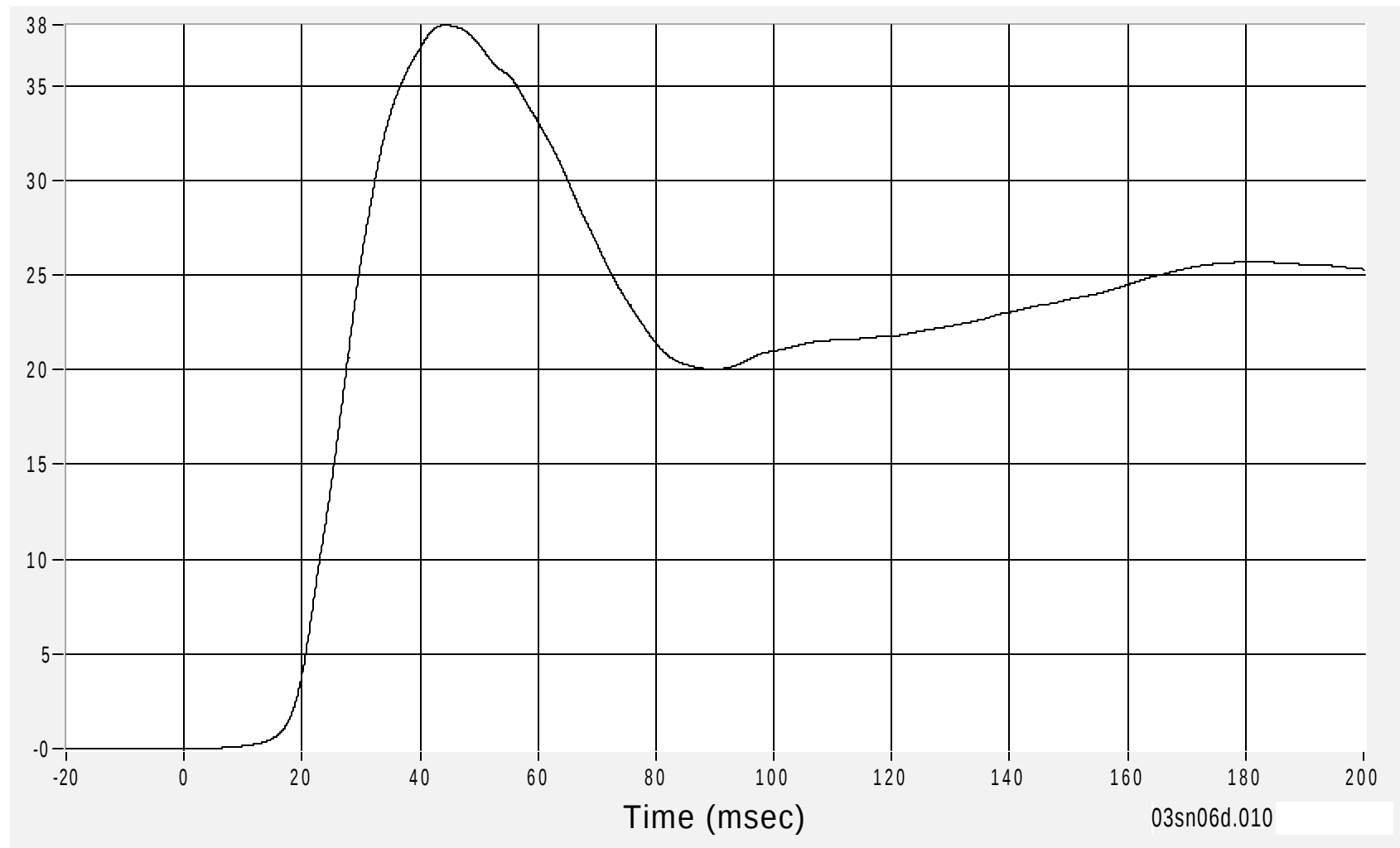
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Driver Pelvic (Y) Velocity

Velocity (km/h) CFC180

Max 38.2 km/h at 44.2 msec
Min 0.0 km/h at 3.2 msec

B-26



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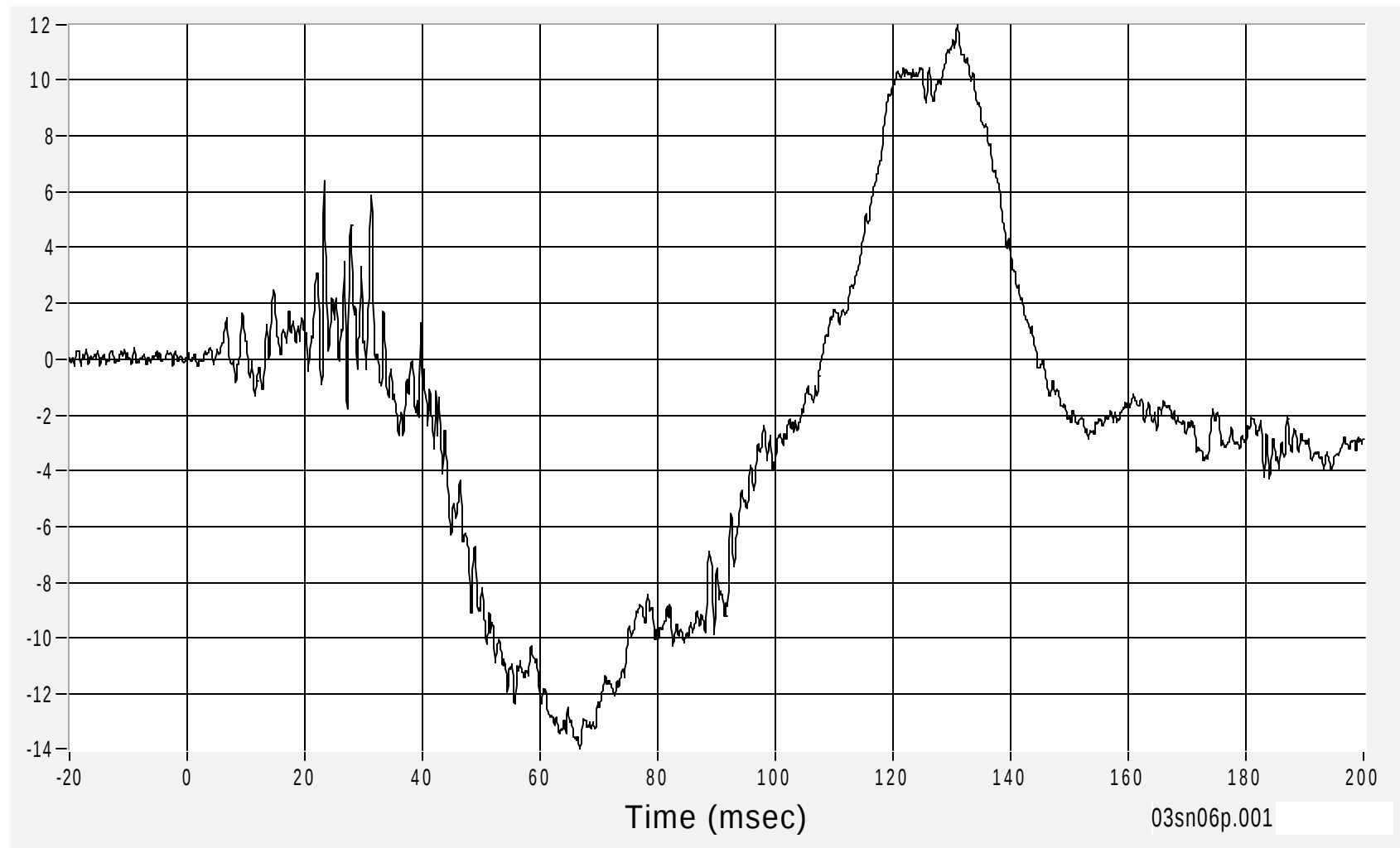
Passenger Head CG (X) Acceleration

Acceleration (G's) CFC1000

Max 12.0 G's at 131.0 msec

Min -13.9 G's at 66.7 msec

B-27



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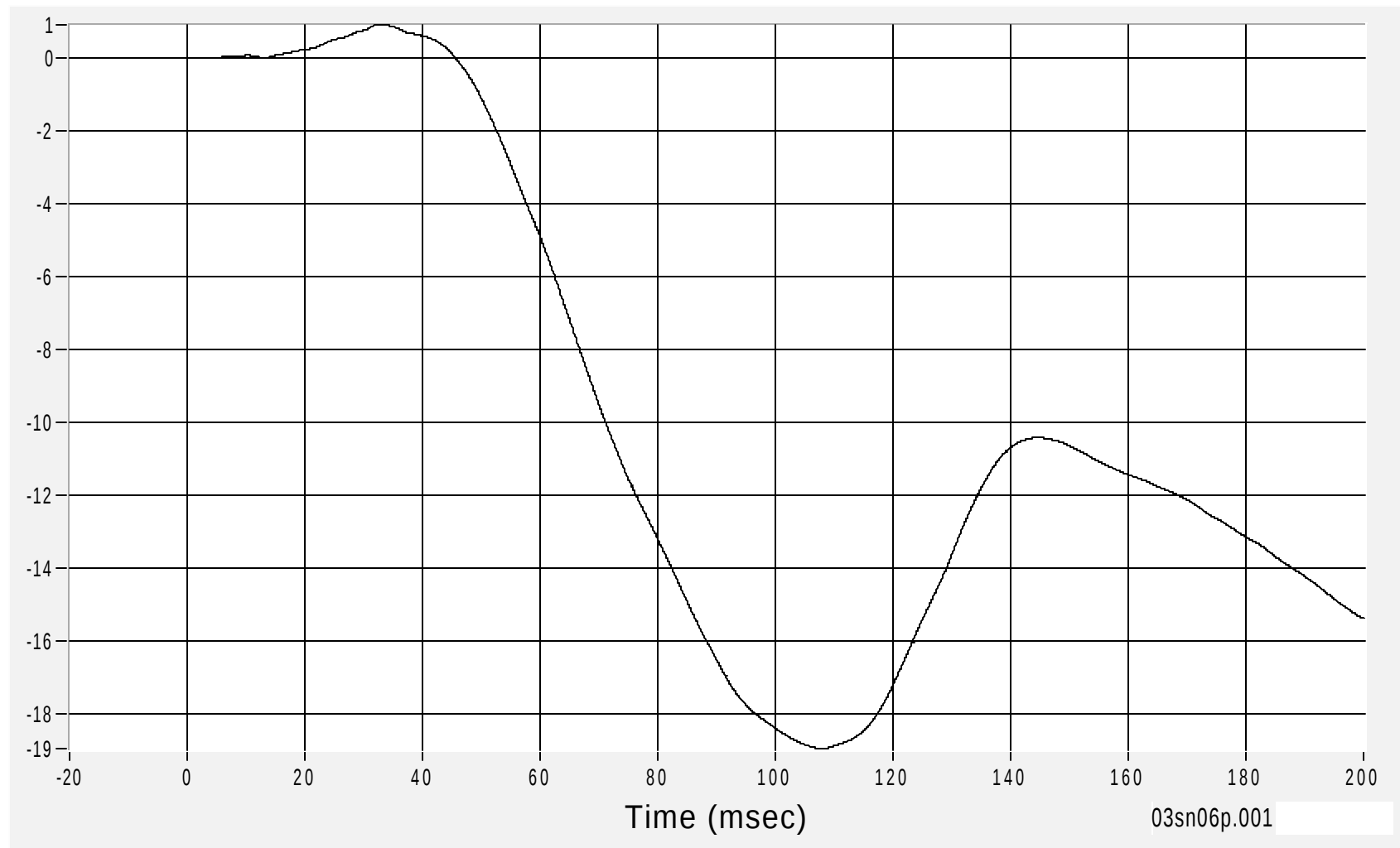
Passenger Head CG (X) Velocity

Velocity (km/h) CFC180

Max 0.9 km/h at 32.5 msec

Min -19.0 km/h at 107.8 msec

B-28



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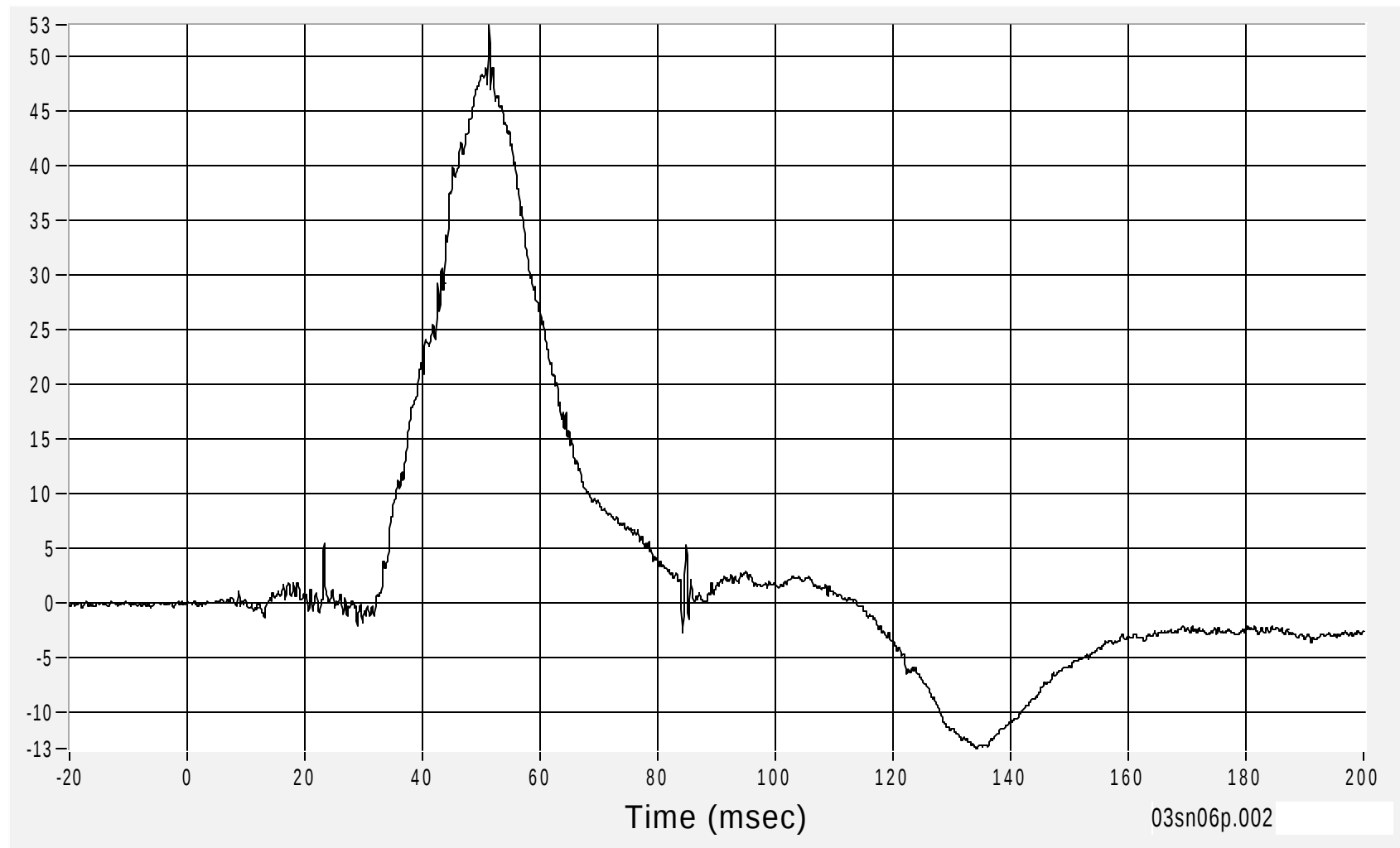
Passenger Head CG (Y) Acceleration

Acceleration (G's) CFC1000

Max 53.0 G's at 51.4 msec

Min -13.3 G's at 134.2 msec

B-29



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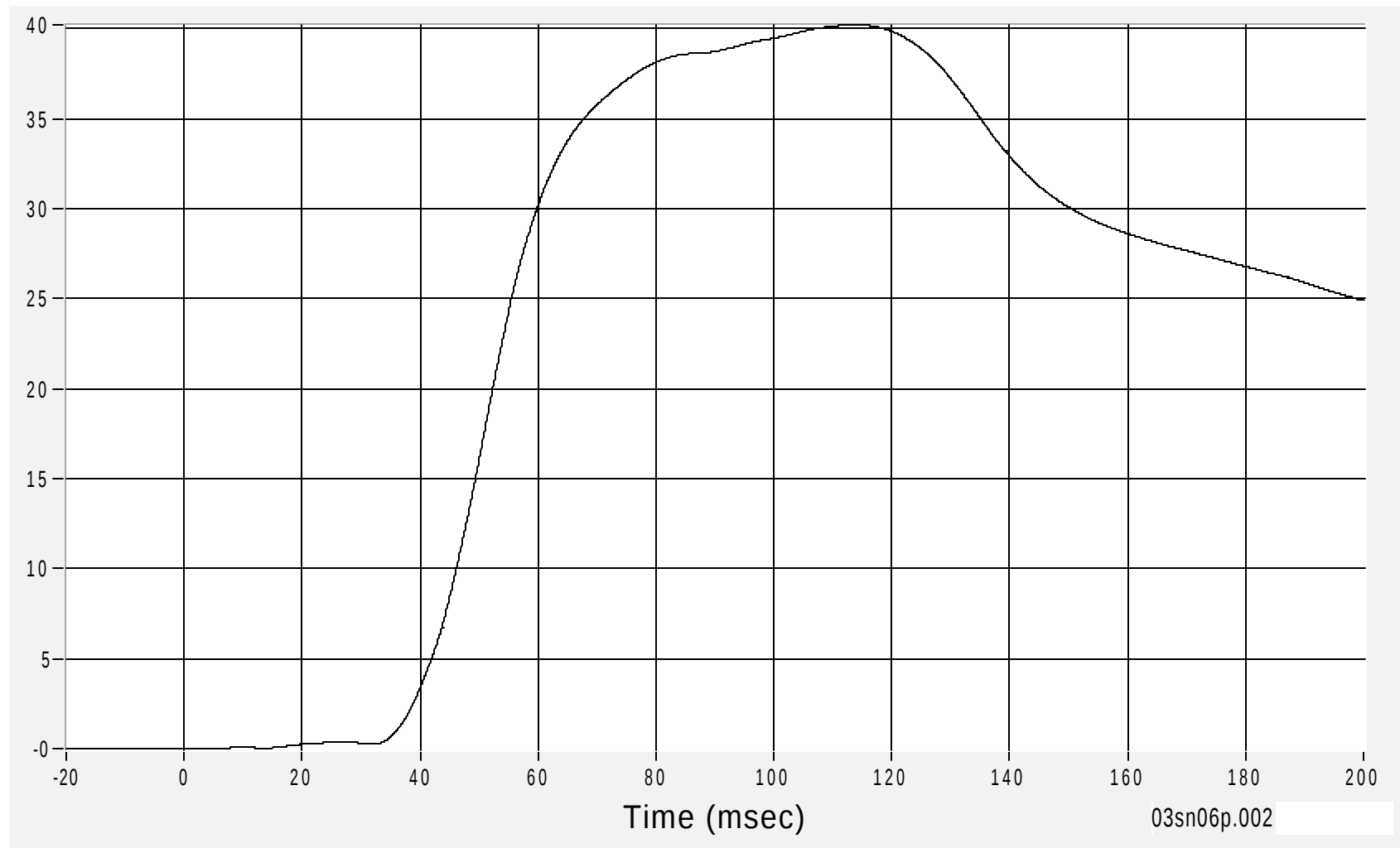
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Passenger Head CG (Y) Velocity

Velocity (km/h) CFC180

Max 40.2 km/h at 114.0 msec
Min 0.0 km/h at 0.0 msec

B-30



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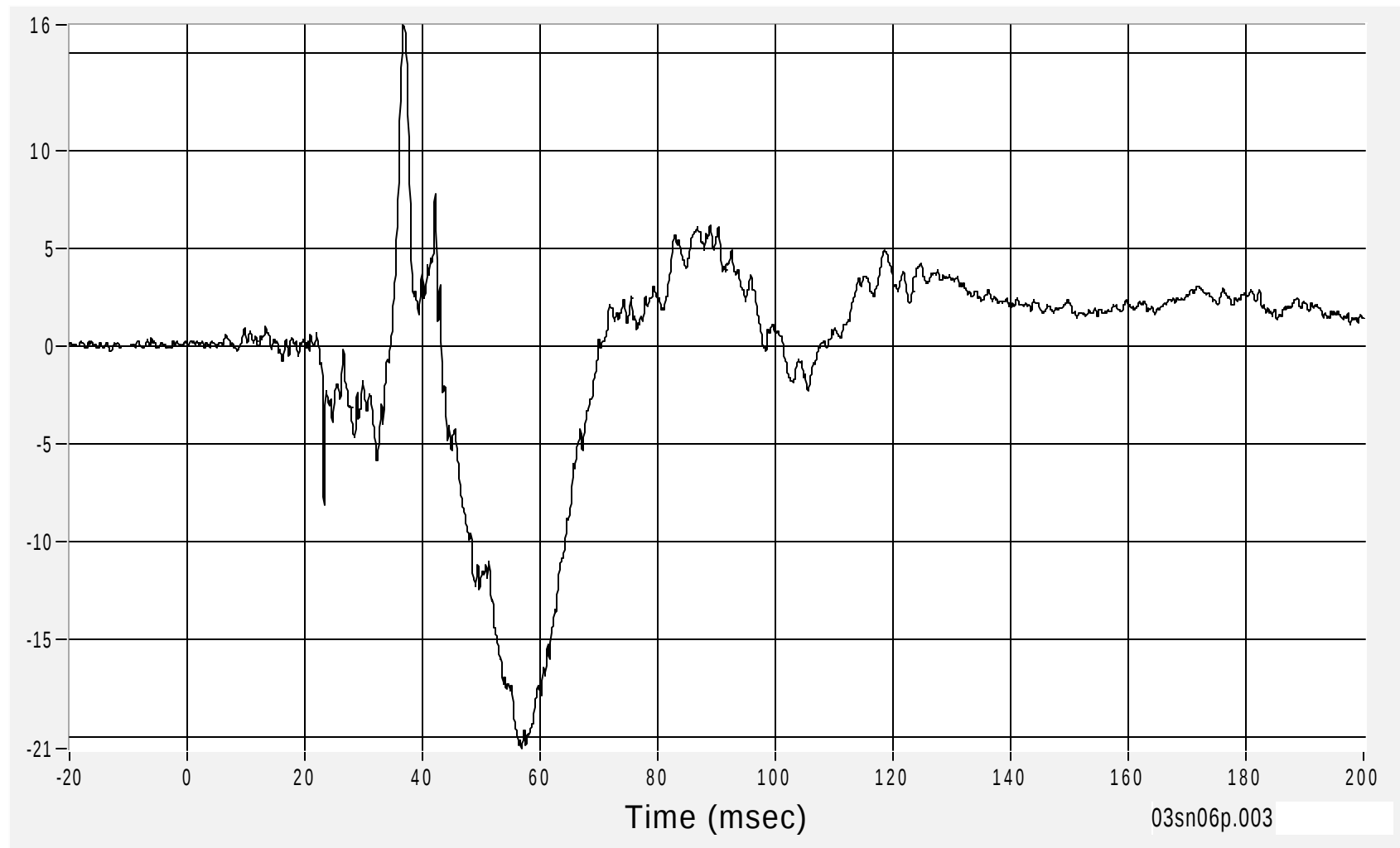
Passenger Head CG (Z) Acceleration

Acceleration (G's) CFC1000

Max 16.4 G's at 36.7 msec

Min -20.6 G's at 56.9 msec

B-31



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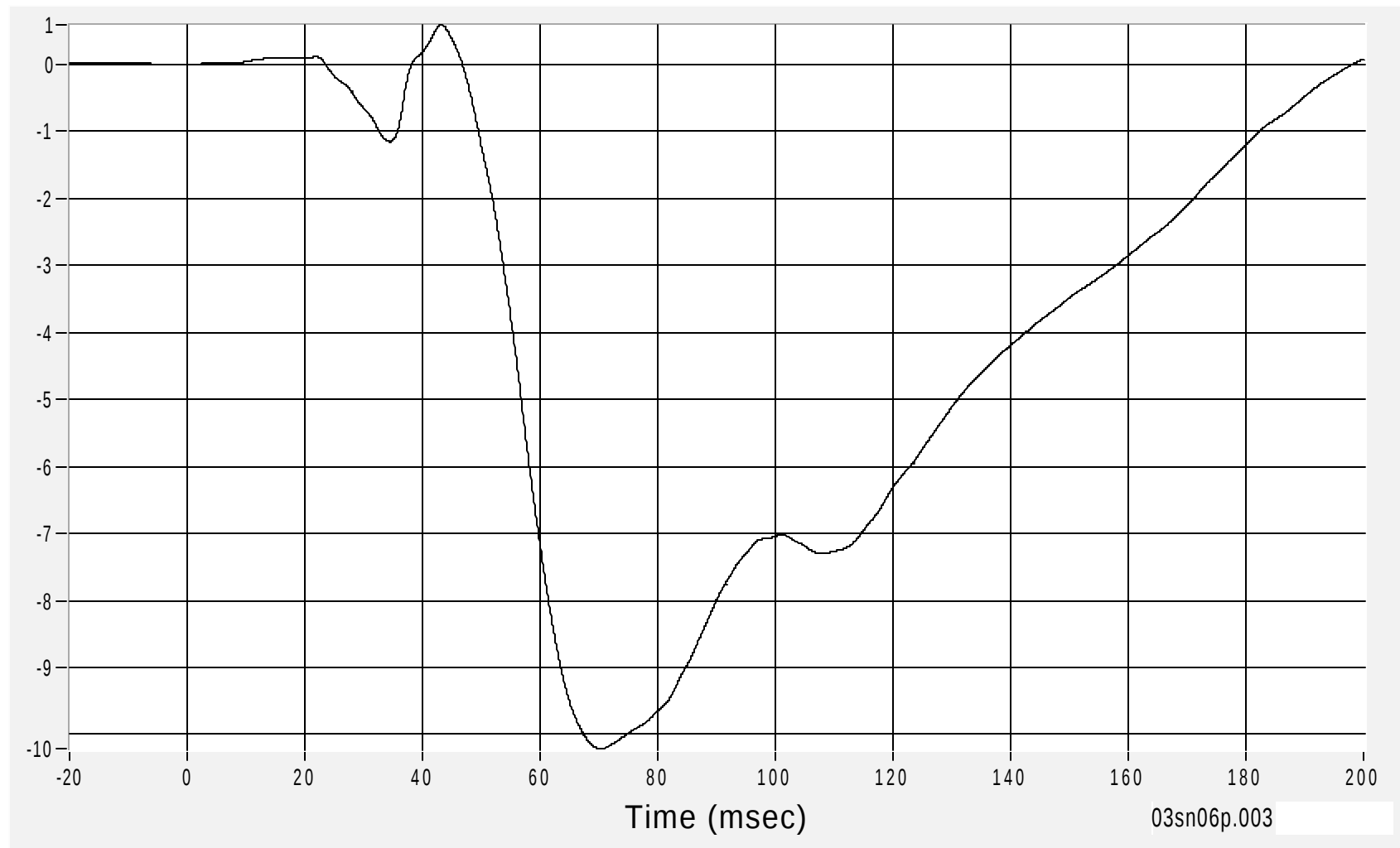
Passenger Head CG (Z) Velocity

Velocity (km/h) CFC180

Max 0.6 km/h at 43.2 msec

Min -10.2 km/h at 70.2 msec

B-32



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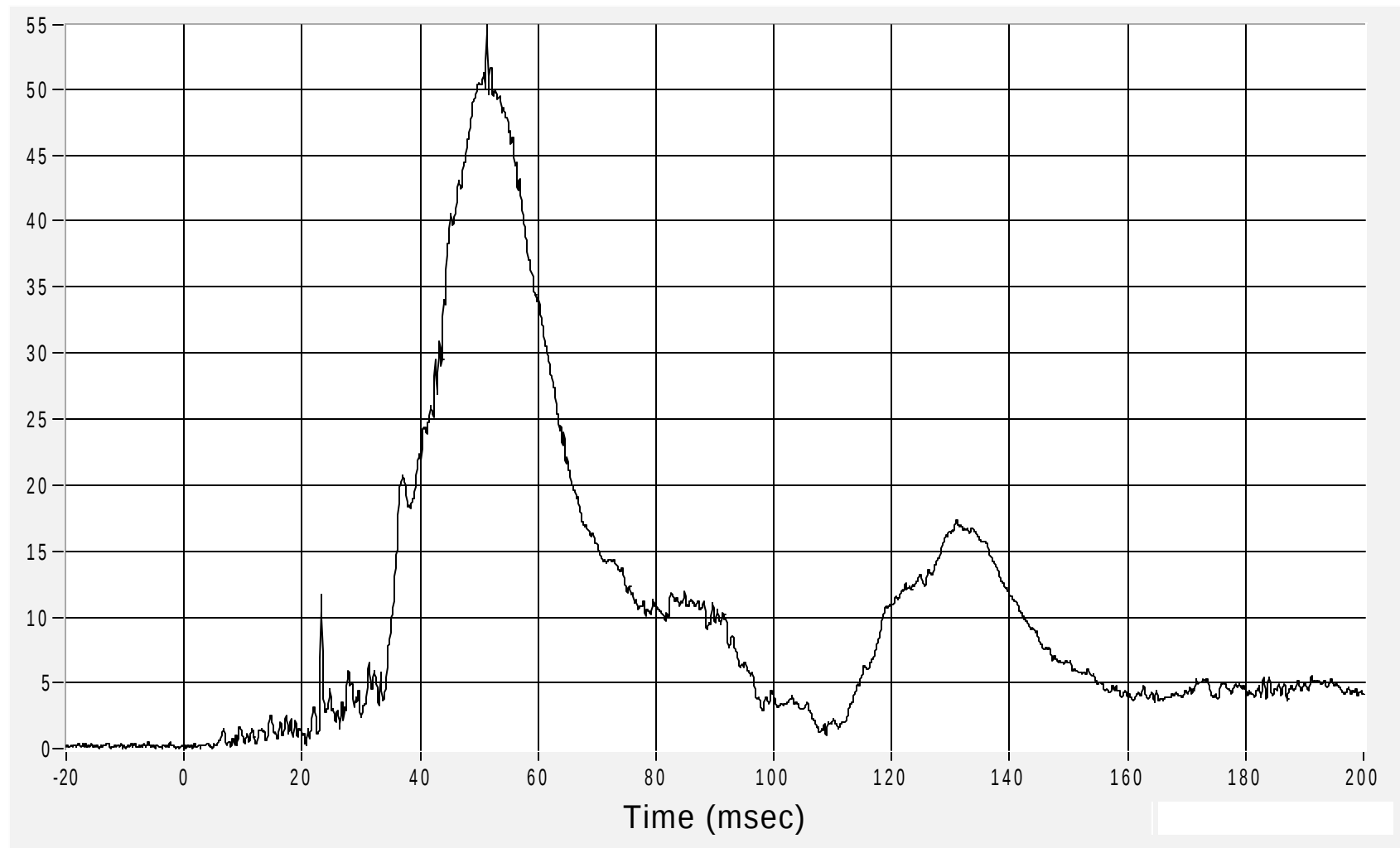
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Passenger Head Resultant Acceleration

Acceleration (G's) CFC1000

Max 54.9 G's at 51.4 msec
Min 0.1 G's at 1.4 msec

B-33



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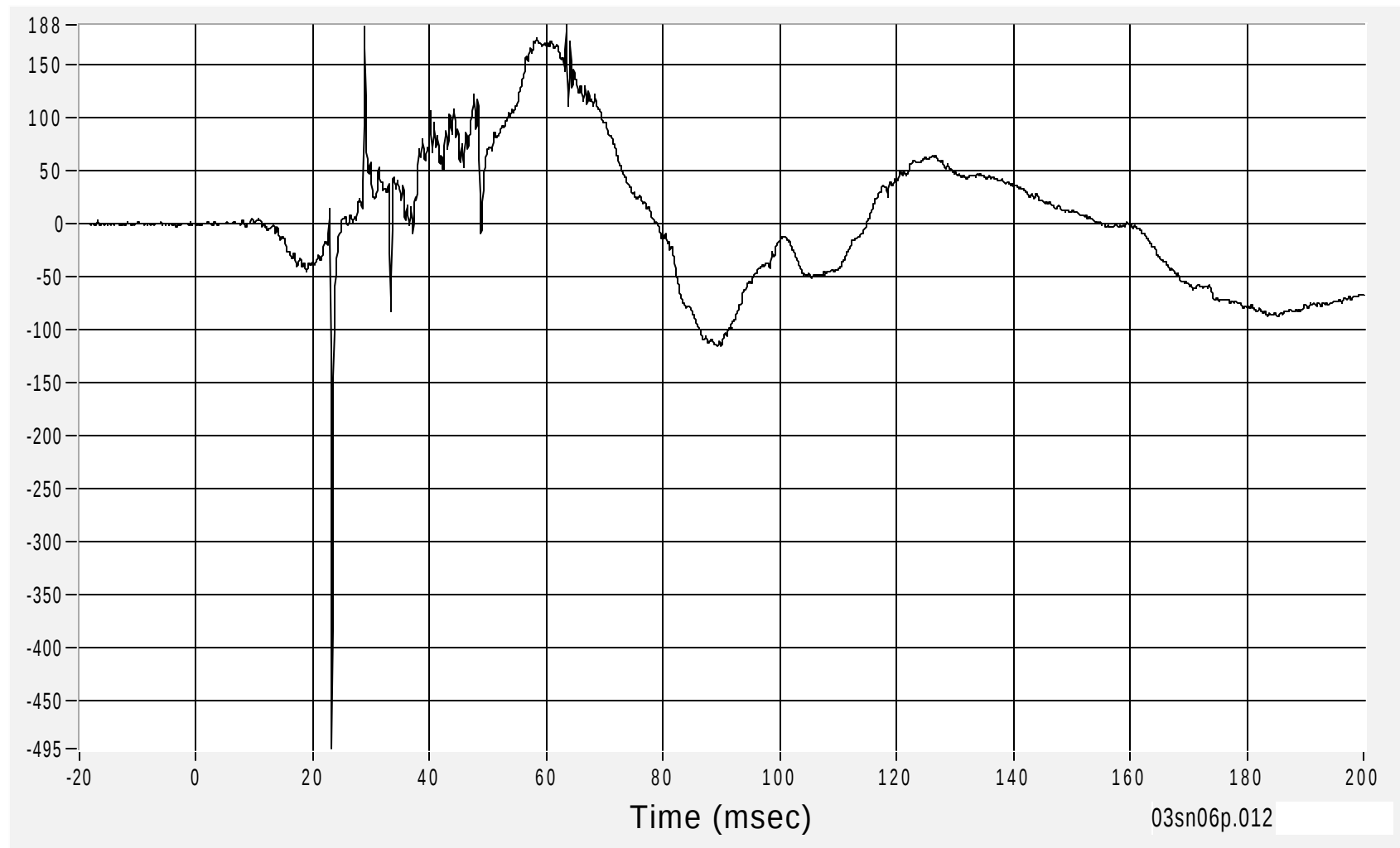
Passenger Upper Neck (X) Force

Force (N) CFC1000

Max 187.8 N at 63.4 msec

Min -494.6 N at 23.3 msec

B-34



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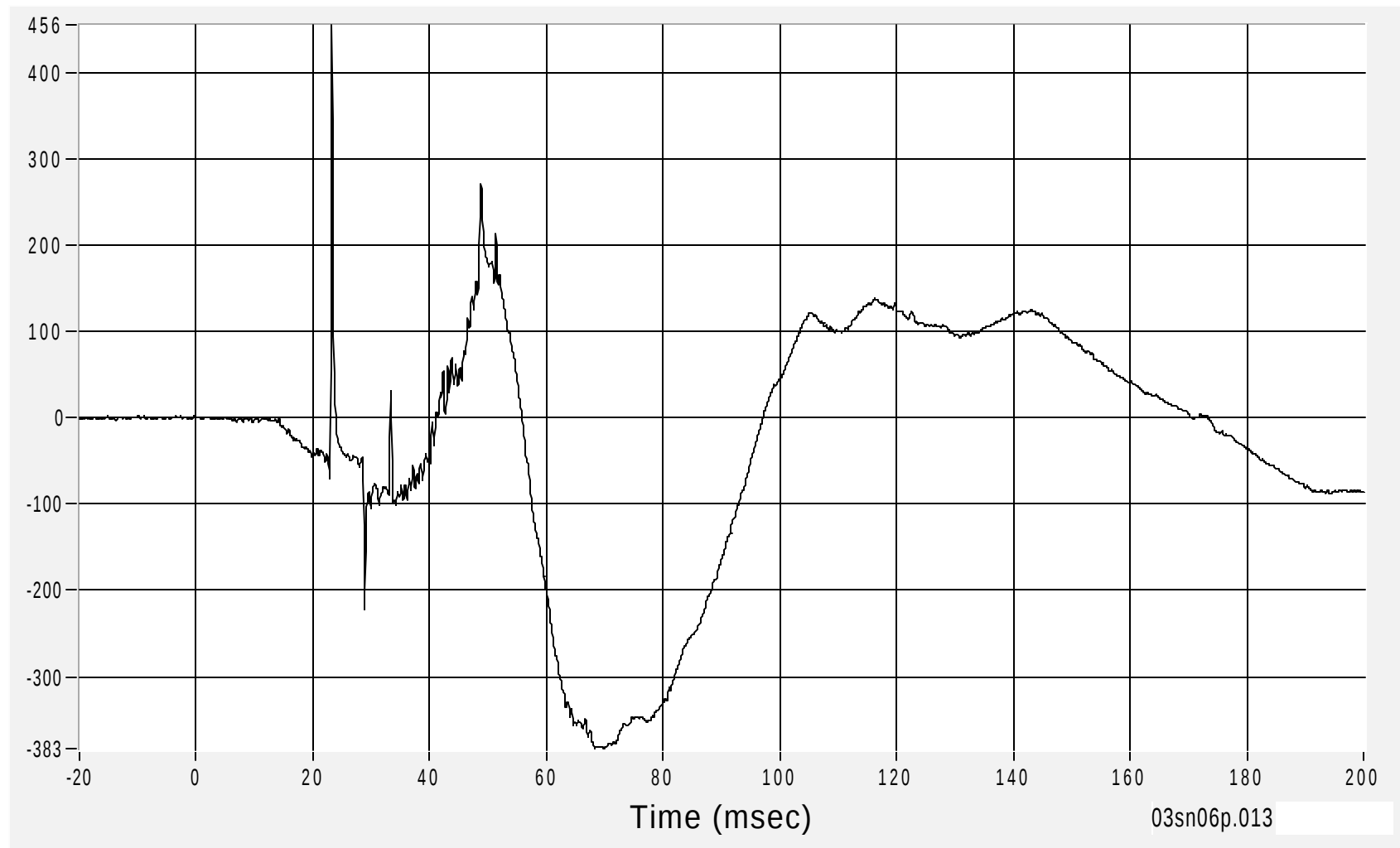
Passenger Upper Neck (Y) Force

Force (N) CFC1000

Max 455.8 N at 23.3 msec

Min -383.4 N at 69.9 msec

B-35



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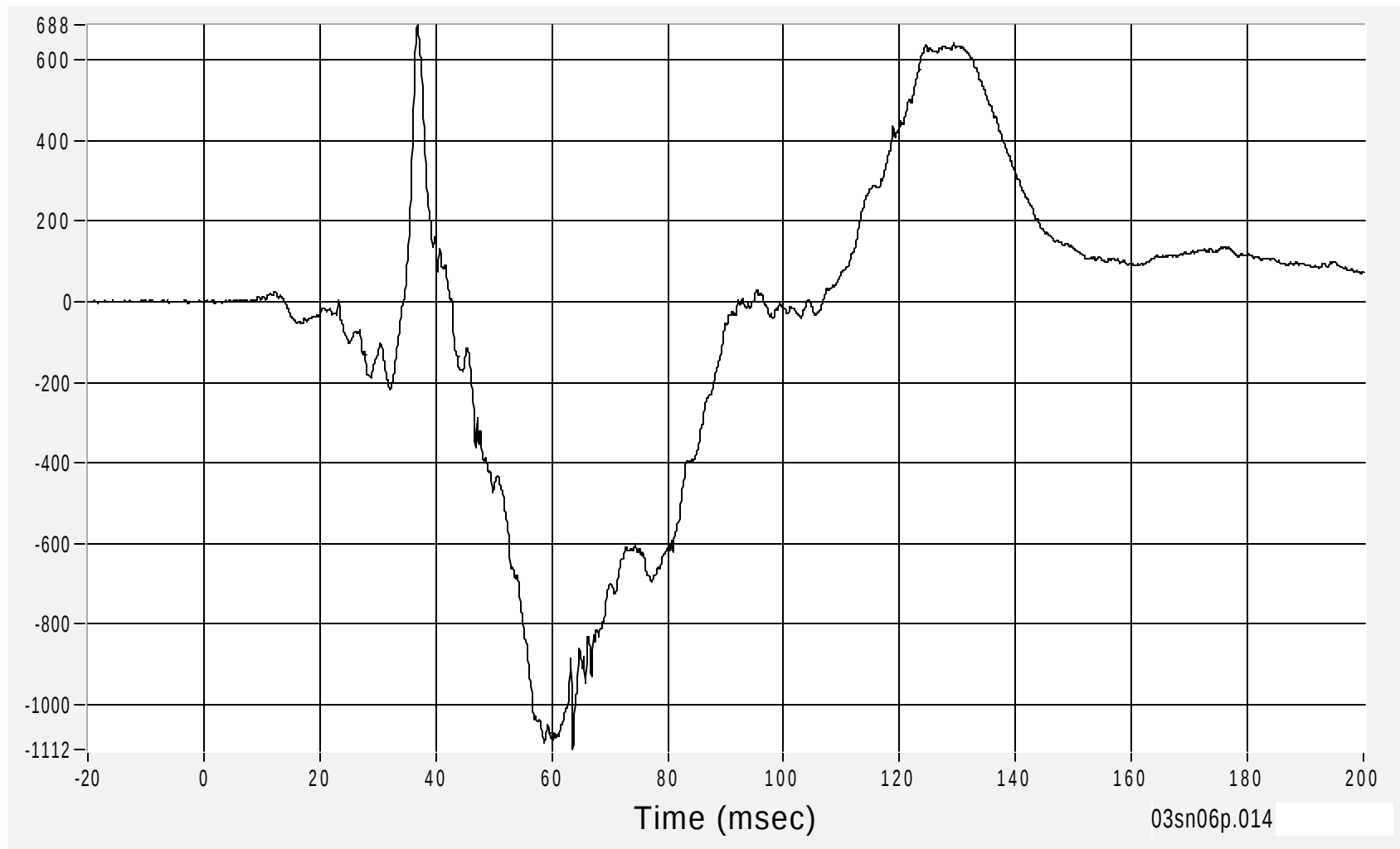
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Passenger Upper Neck (Z) Force

Force (N) CFC1000

Max 687.8 N at 36.8 msec

Min -1112.5 N at 63.7 msec



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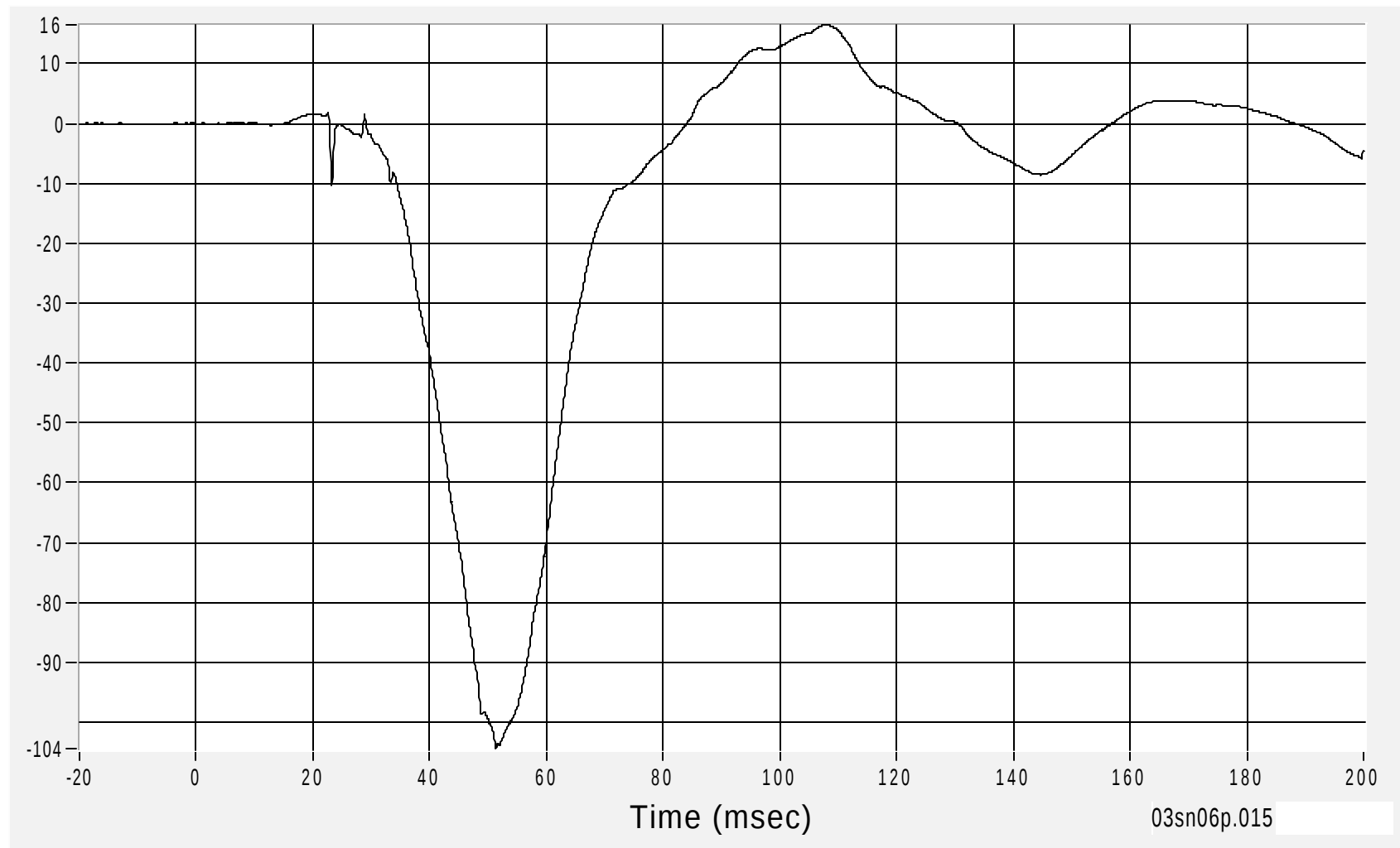
Passenger Upper Neck (X) Moment

Moment (Nm) CFC600

Max 16.5 Nm at 107.6 msec

Min -104.4 Nm at 51.4 msec

B-37



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Passenger Upper Neck (Y) Moment

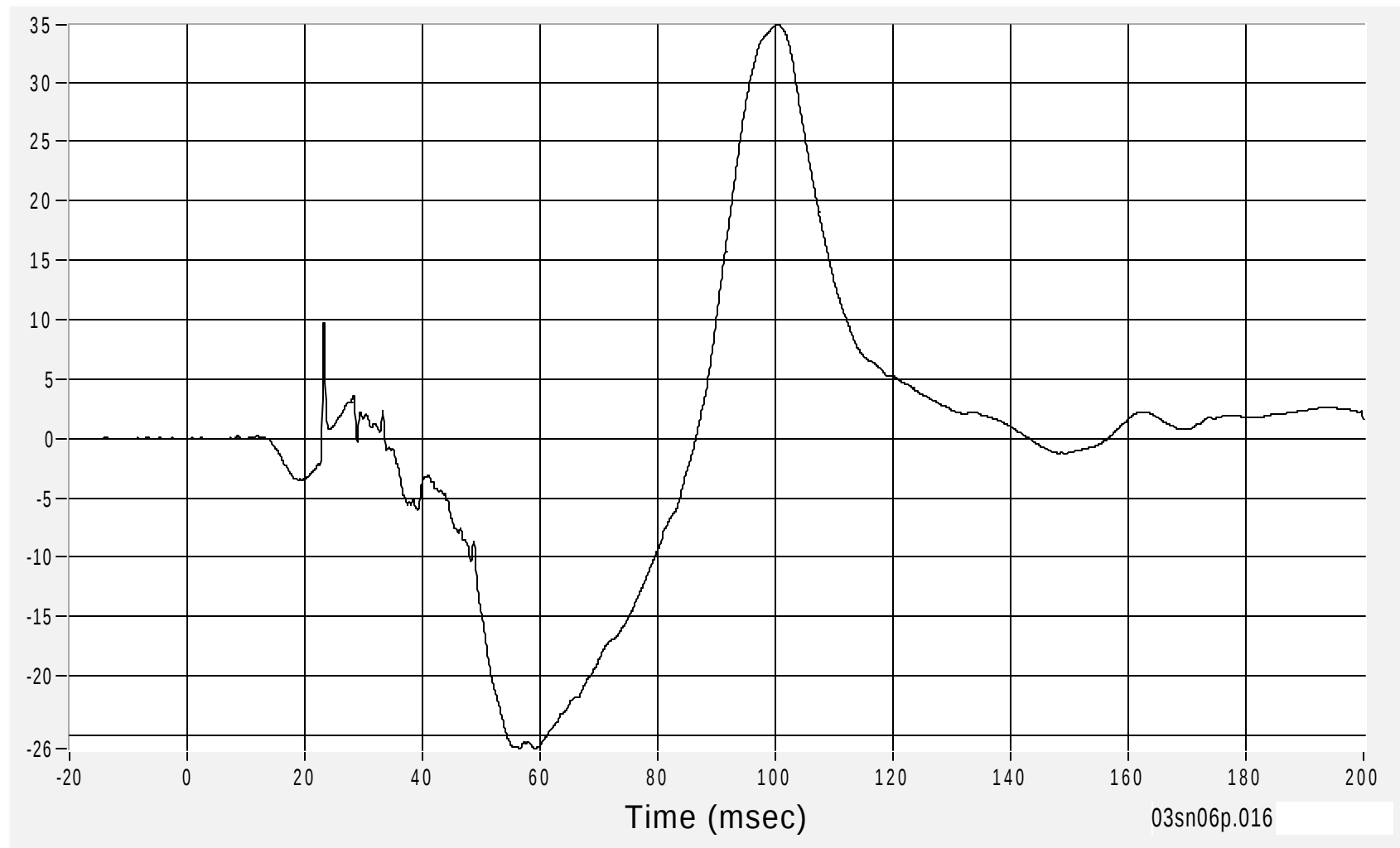
Moment (Nm)

CFC600

Max 34.8 Nm at 100.6 msec

Min -26.1 Nm at 59.1 msec

B-38



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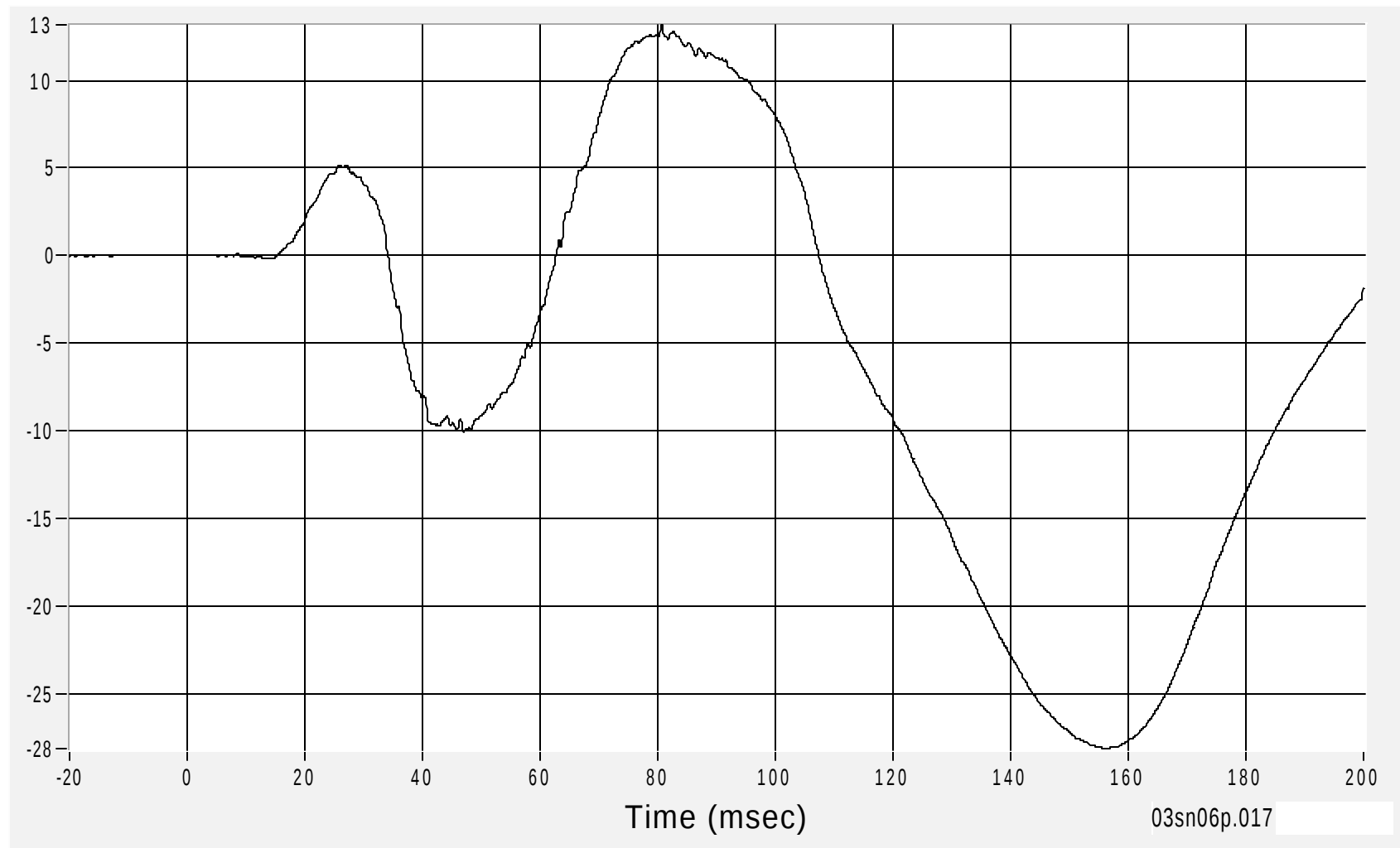
Passenger Upper Neck (Z) Moment

Moment (Nm) CFC600

Max 13.2 Nm at 80.7 msec

Min -28.1 Nm at 155.8 msec

B-39



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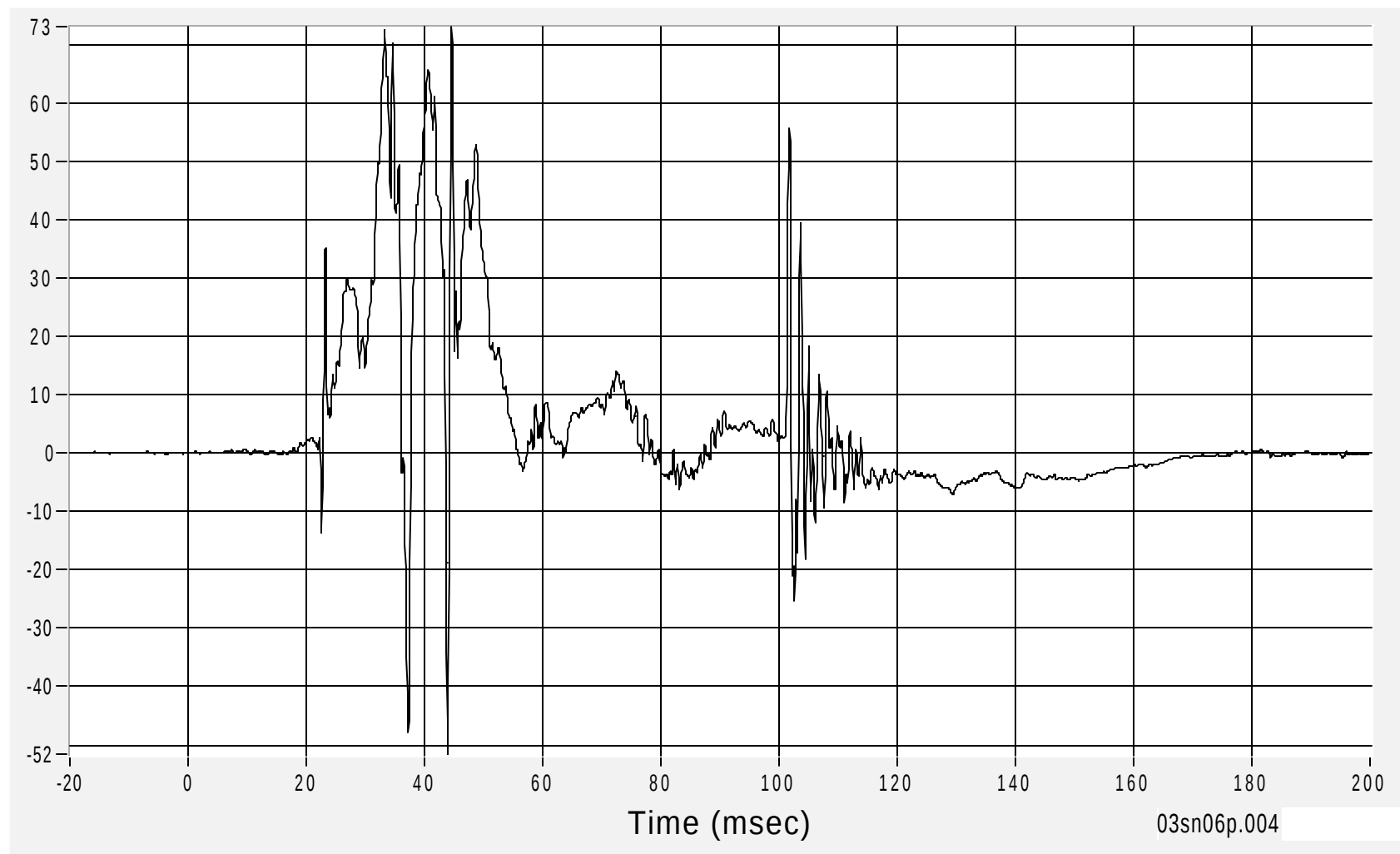
Passenger Upper Rib (Y) Acceleration

Acceleration (G's) CFC1000

Max 73.0 G's at 44.6 msec

Min -51.6 G's at 43.9 msec

B-40



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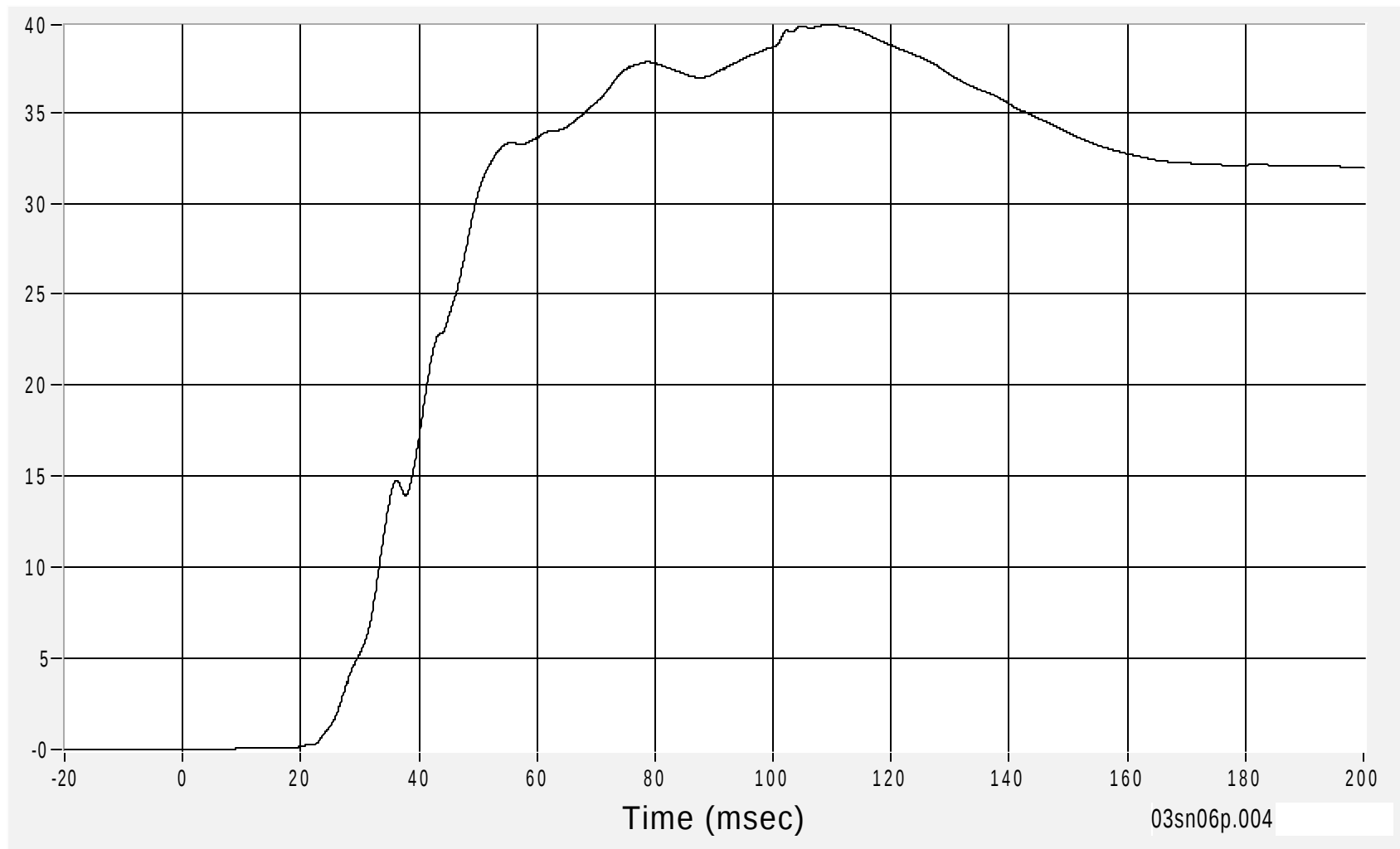
20 February 2003

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Passenger Upper Rib (Y) Velocity

Velocity (km/h) CFC180

Max 39.8 km/h at 109.0 msec
Min 0.0 km/h at 0.0 msec



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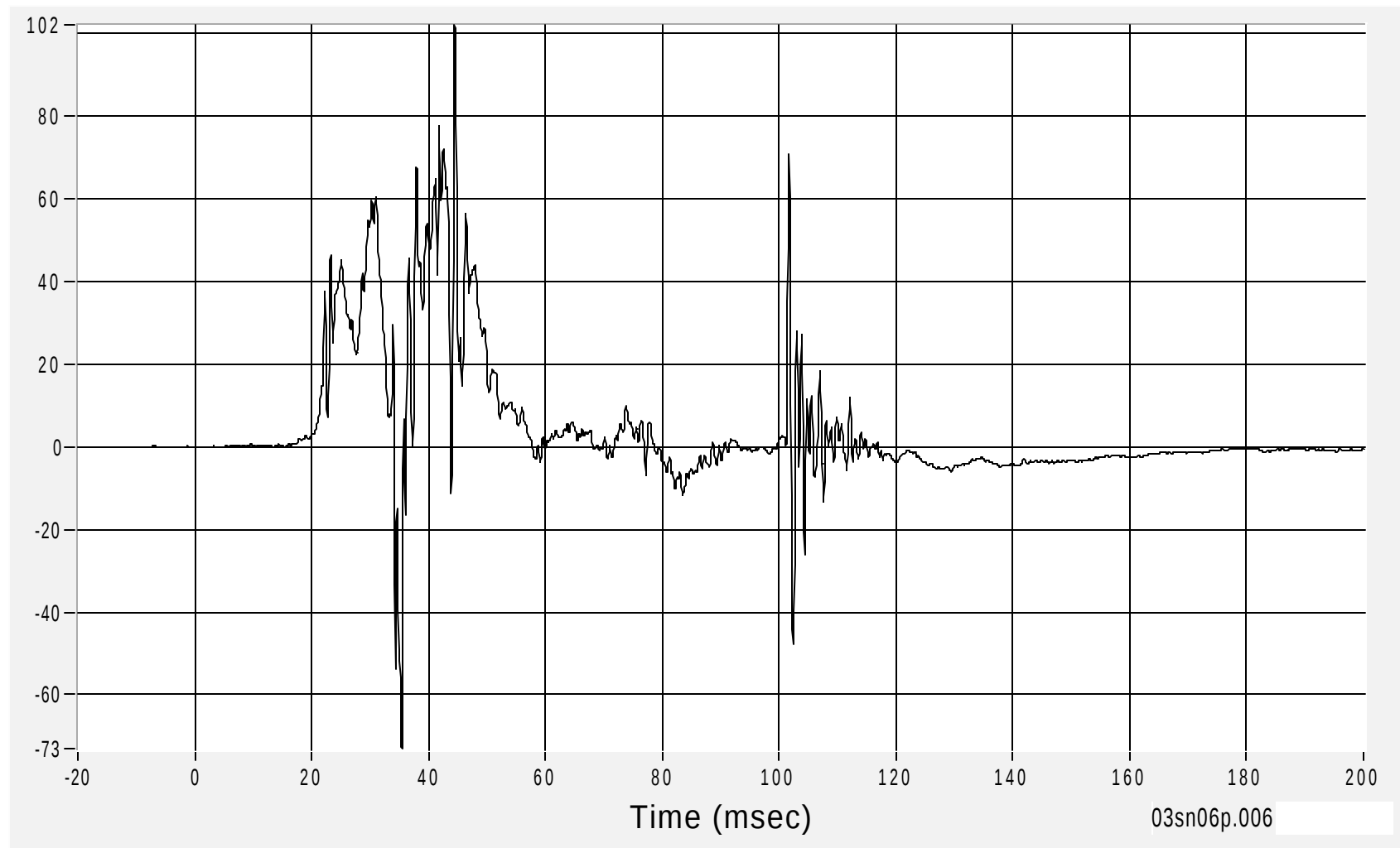
Passenger Lower Rib (Y) Acceleration

Acceleration (G's) CFC1000

Max 102.2 G's at 44.5 msec

Min -73.1 G's at 35.4 msec

B-42



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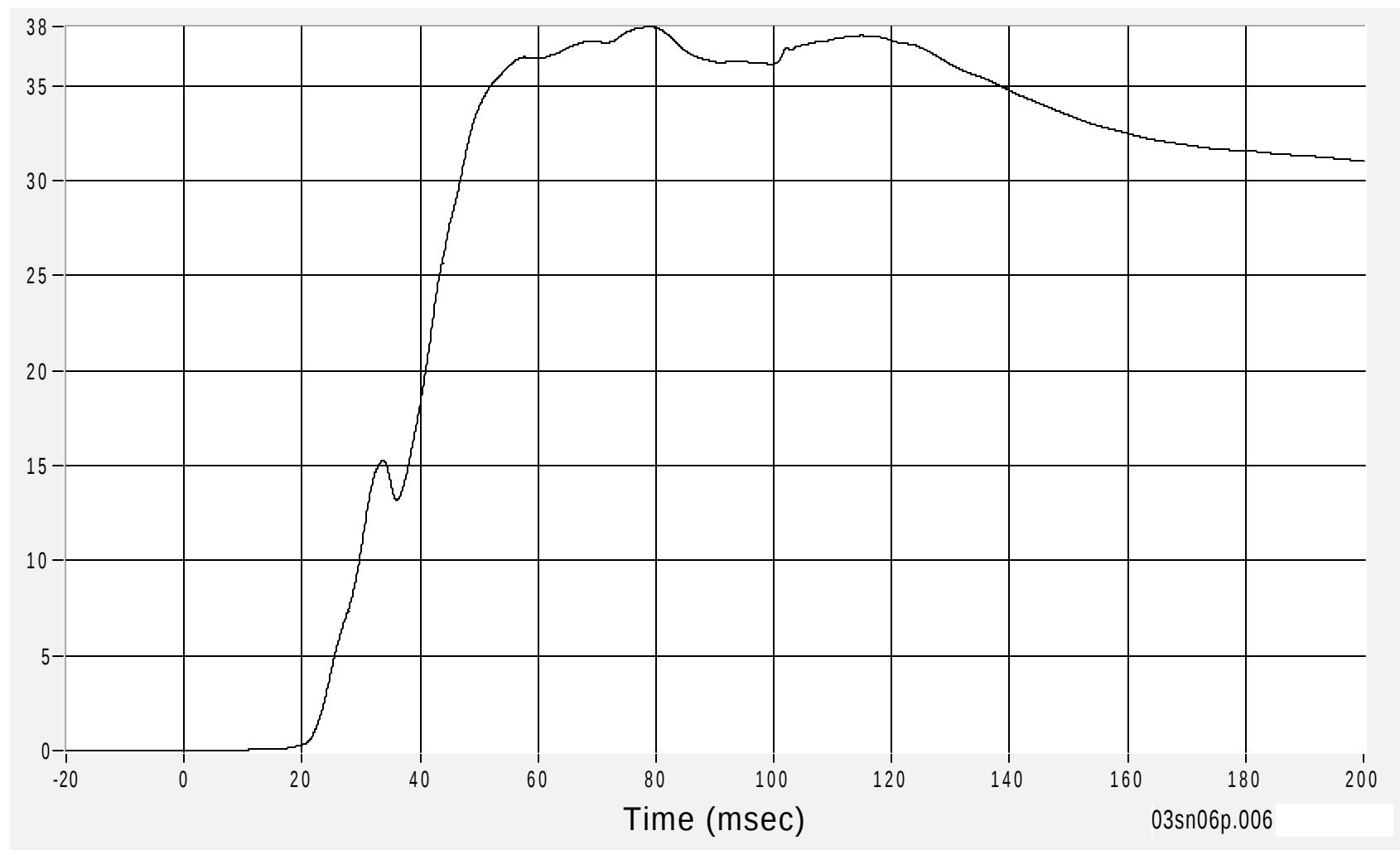
Medical College of Wisconsin
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Passenger Lower Rib (Y) Velocity

Velocity (km/h) CFC180

Max 38.1 km/h at 78.8 msec
Min 0.0 km/h at 0.0 msec

B-43



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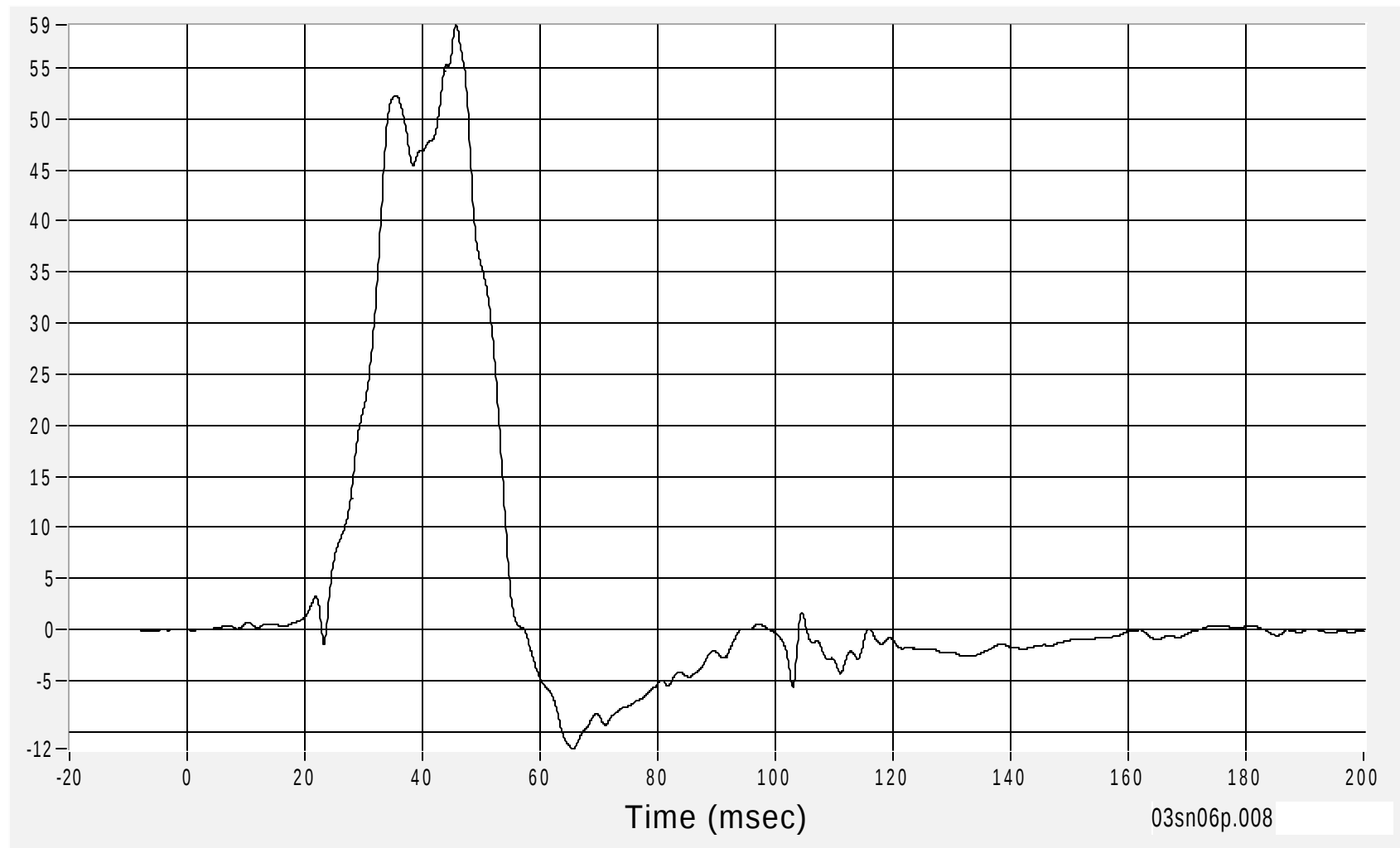
Medical College of Wisconsin
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Passenger Lower Spine (Y) Acceleration

Acceleration (G's) CFC180

Max 59.2 G's at 45.7 msec
Min -11.7 G's at 65.6 msec

B-44



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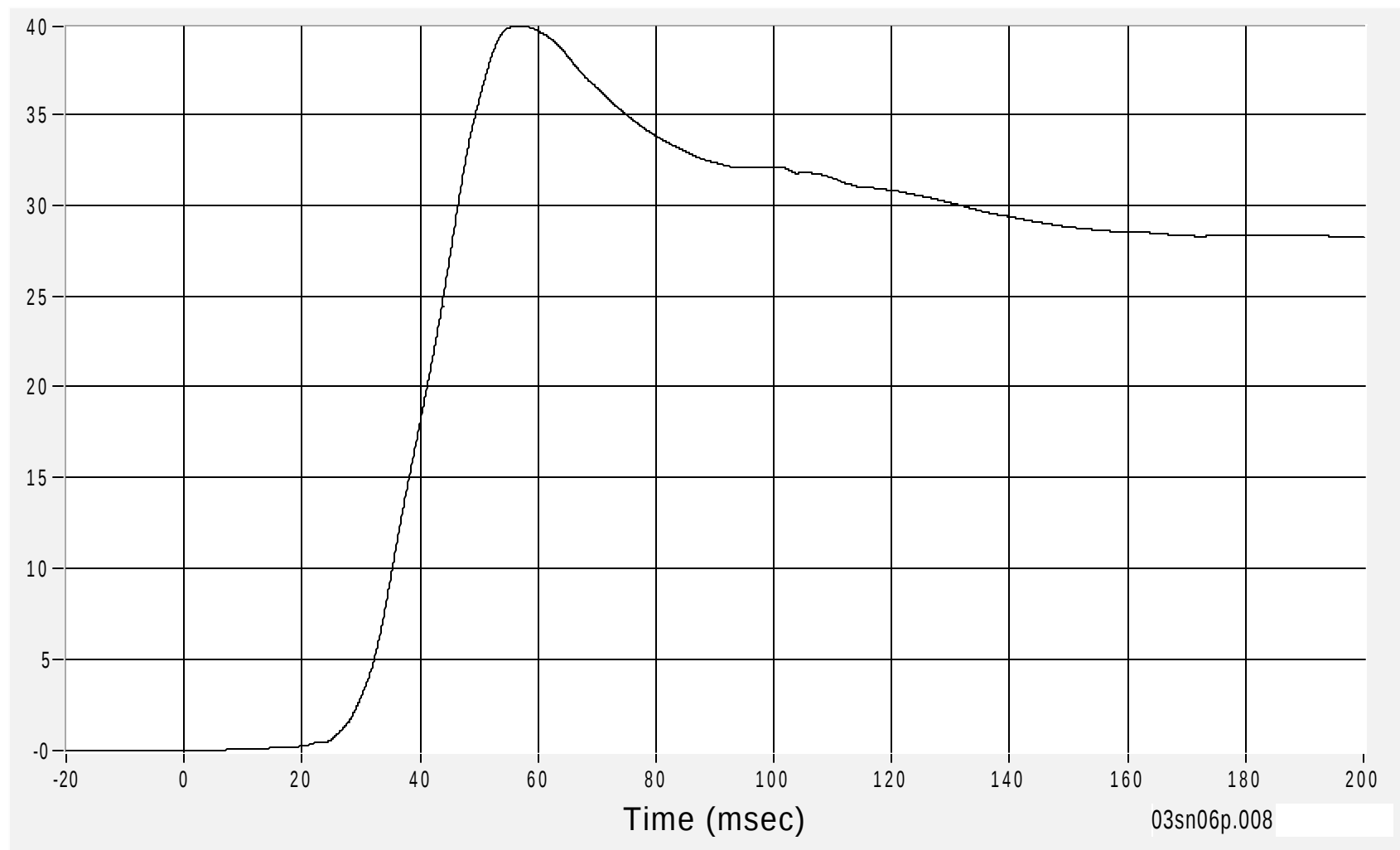
Passenger Lower Spine (Y) Velocity

Velocity (km/h) CFC180

Max 39.8 km/h at 57.3 msec

Min 0.0 km/h at 4.0 msec

B-45



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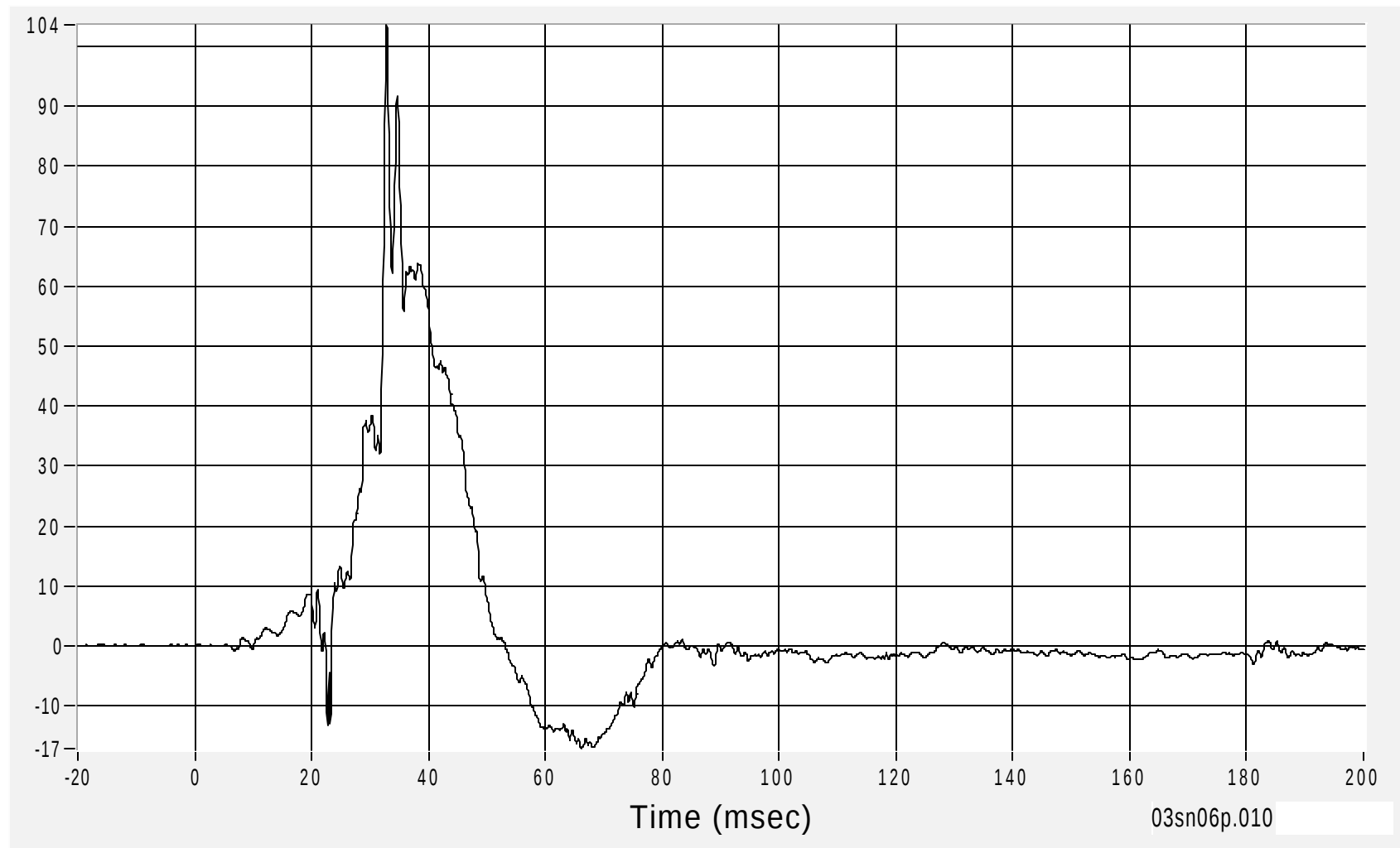
Medical College of Wisconsin
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Passenger Pelvic (Y) Acceleration

Acceleration (G's) CFC1000

Max 103.6 G's at 32.8 msec
Min -17.2 G's at 66.2 msec

B-46



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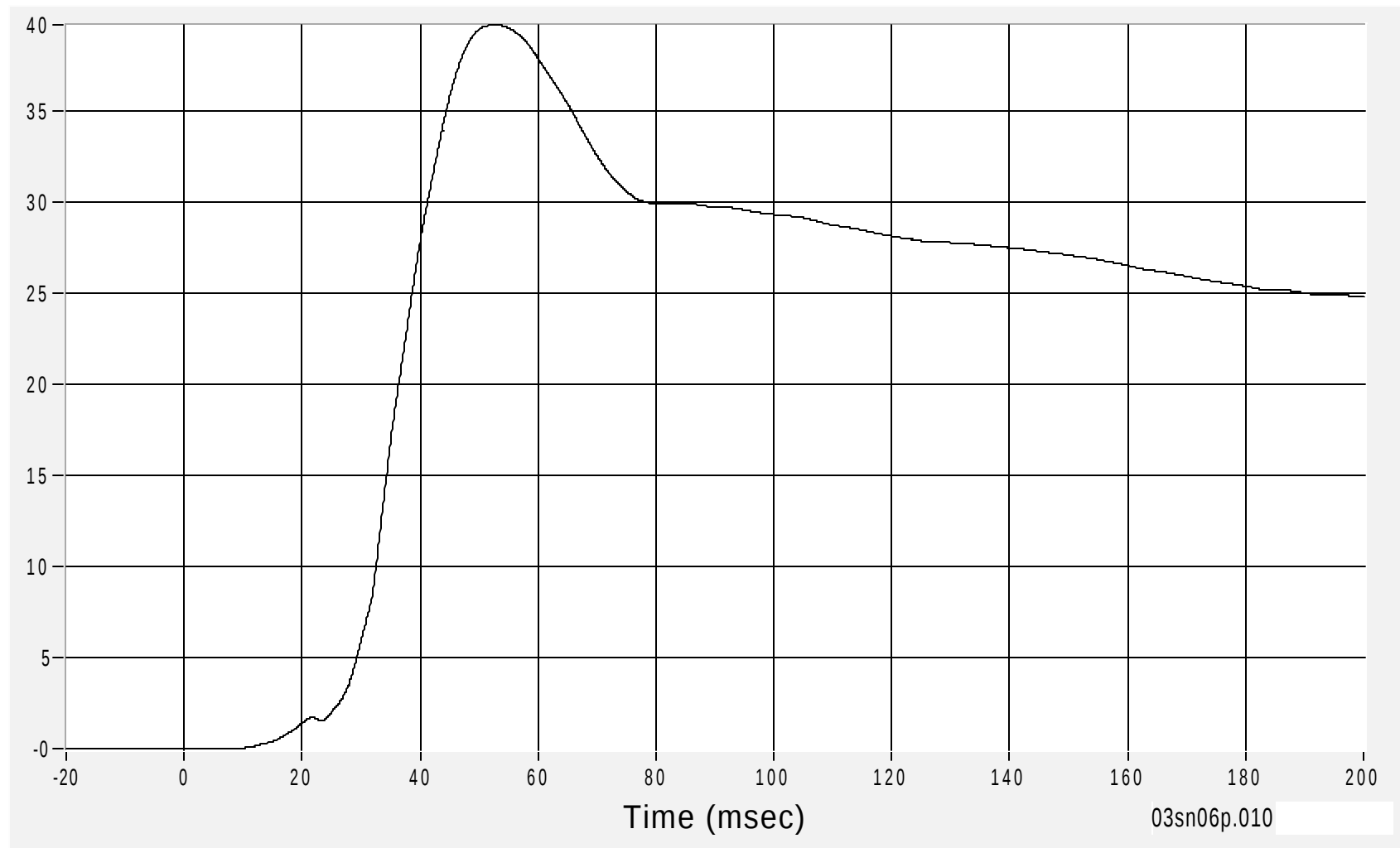
Passenger Pelvic (Y) Velocity

Velocity (km/h) CFC180

Max 39.7 km/h at 53.0 msec

Min 0.0 km/h at 7.4 msec

B-47



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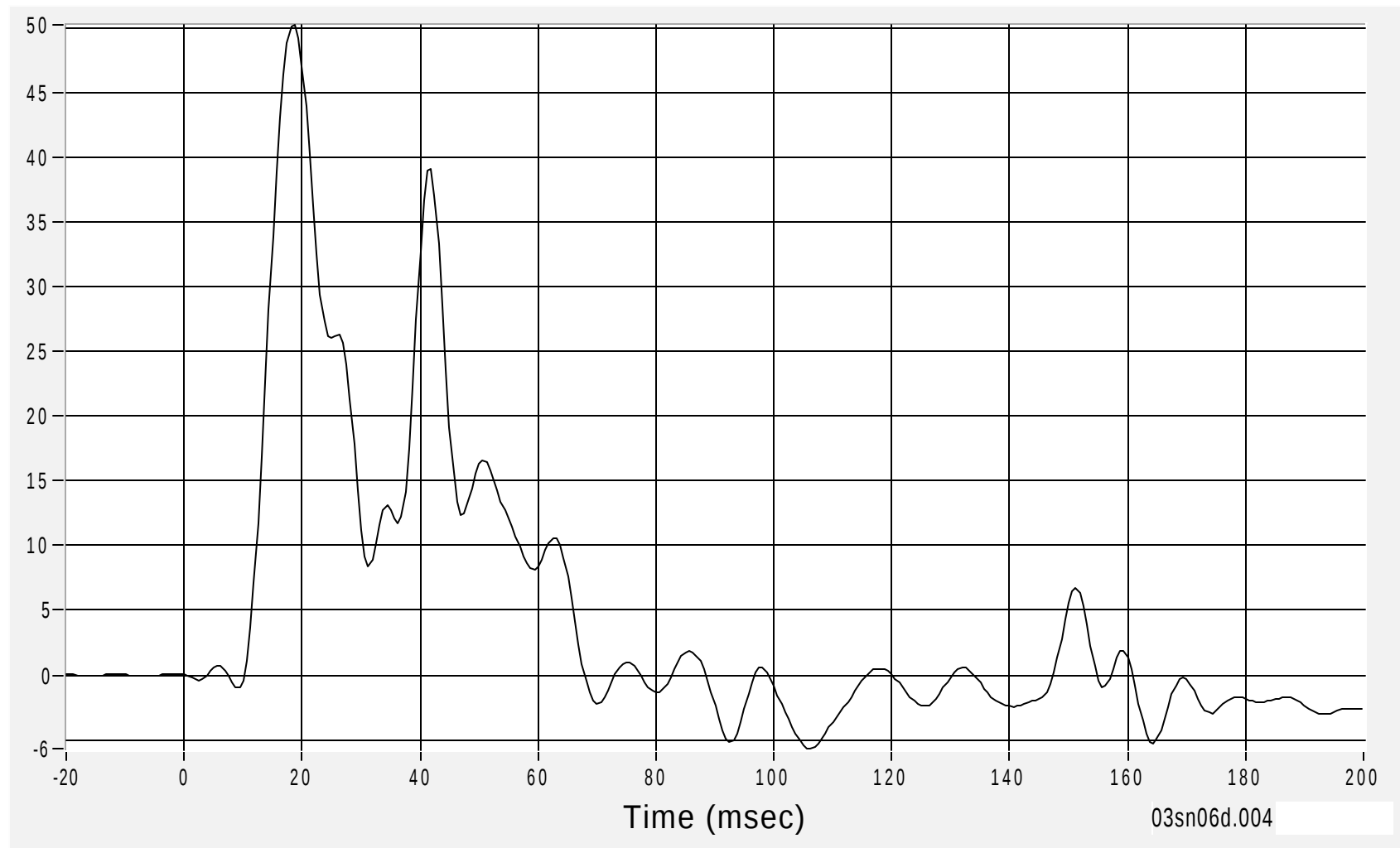
Driver Upper Rib (Y) Acceleration

Acceleration (G's) FIR100

Max 50.2 G's at 18.8 msec

Min -5.7 G's at 106.2 msec

B-48



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20 February 2003

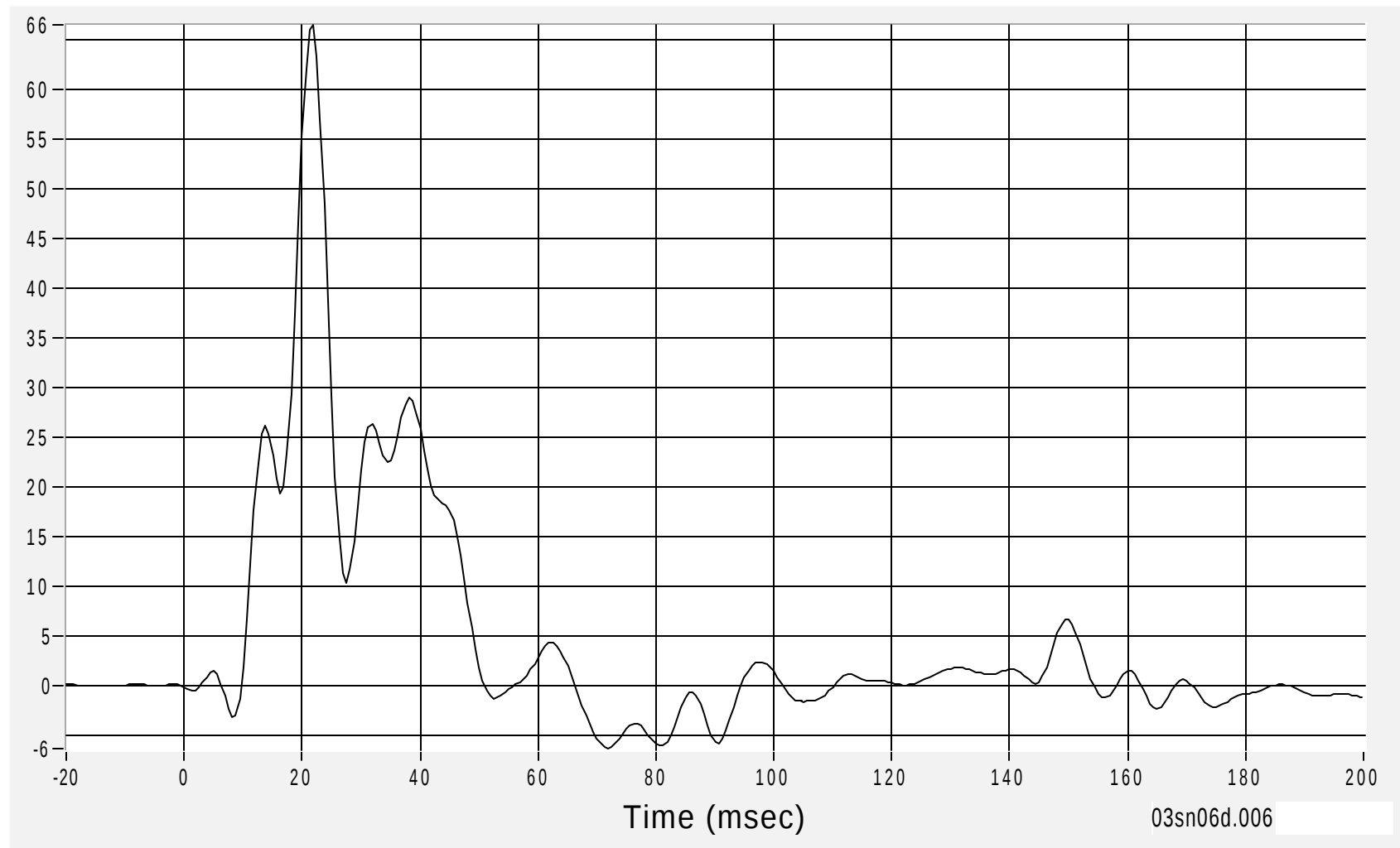
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Driver Lower Rib (Y) Acceleration

Acceleration (G's) FIR100

Max 66.4 G's at 21.9 msec
Min -6.4 G's at 71.9 msec

B-49



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20 February 2003

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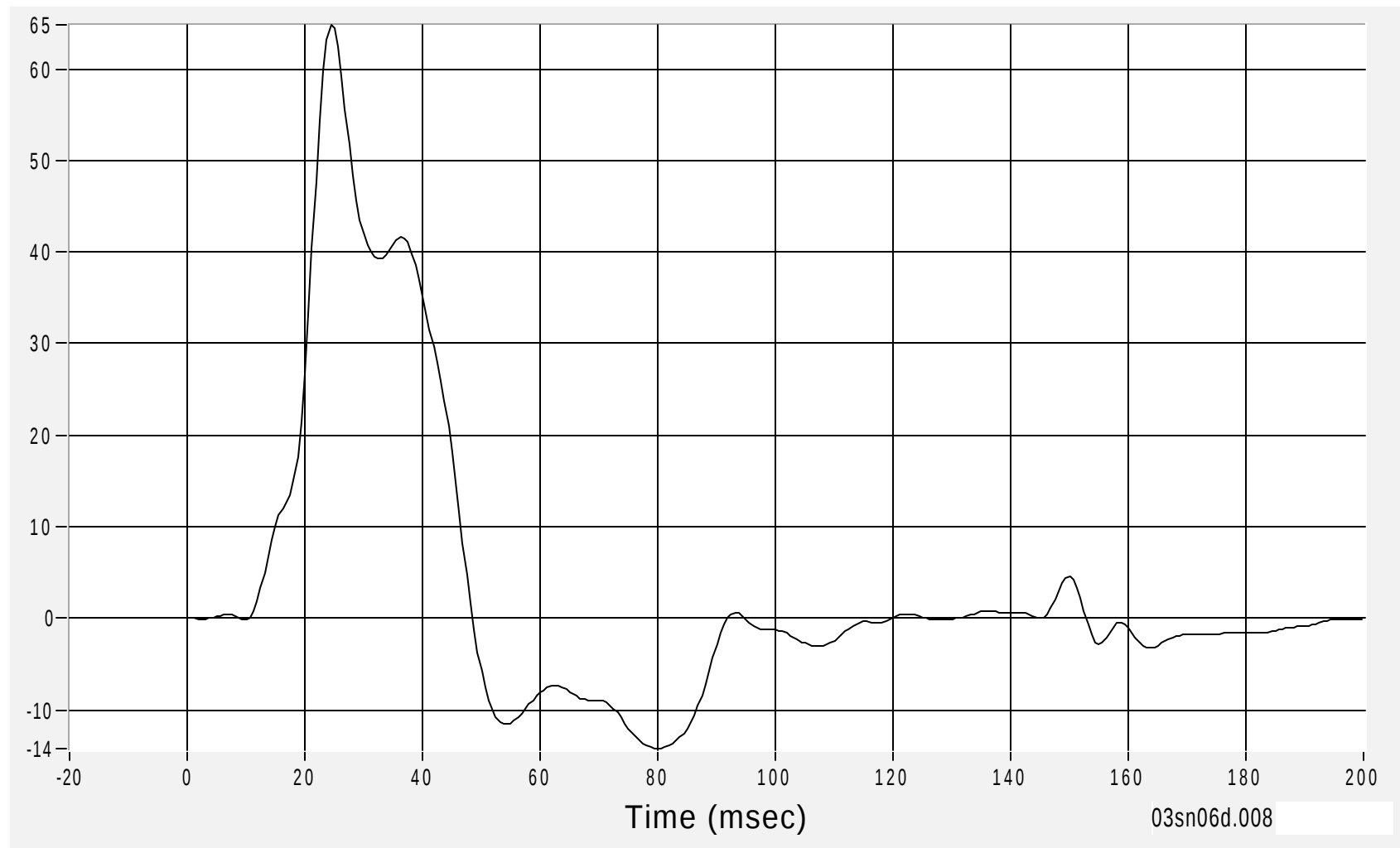
Driver Lower Spine (Y) Acceleration

Acceleration (G's) FIR100

Max 64.8 G's at 24.4 msec

Min -14.2 G's at 80.0 msec

B-50



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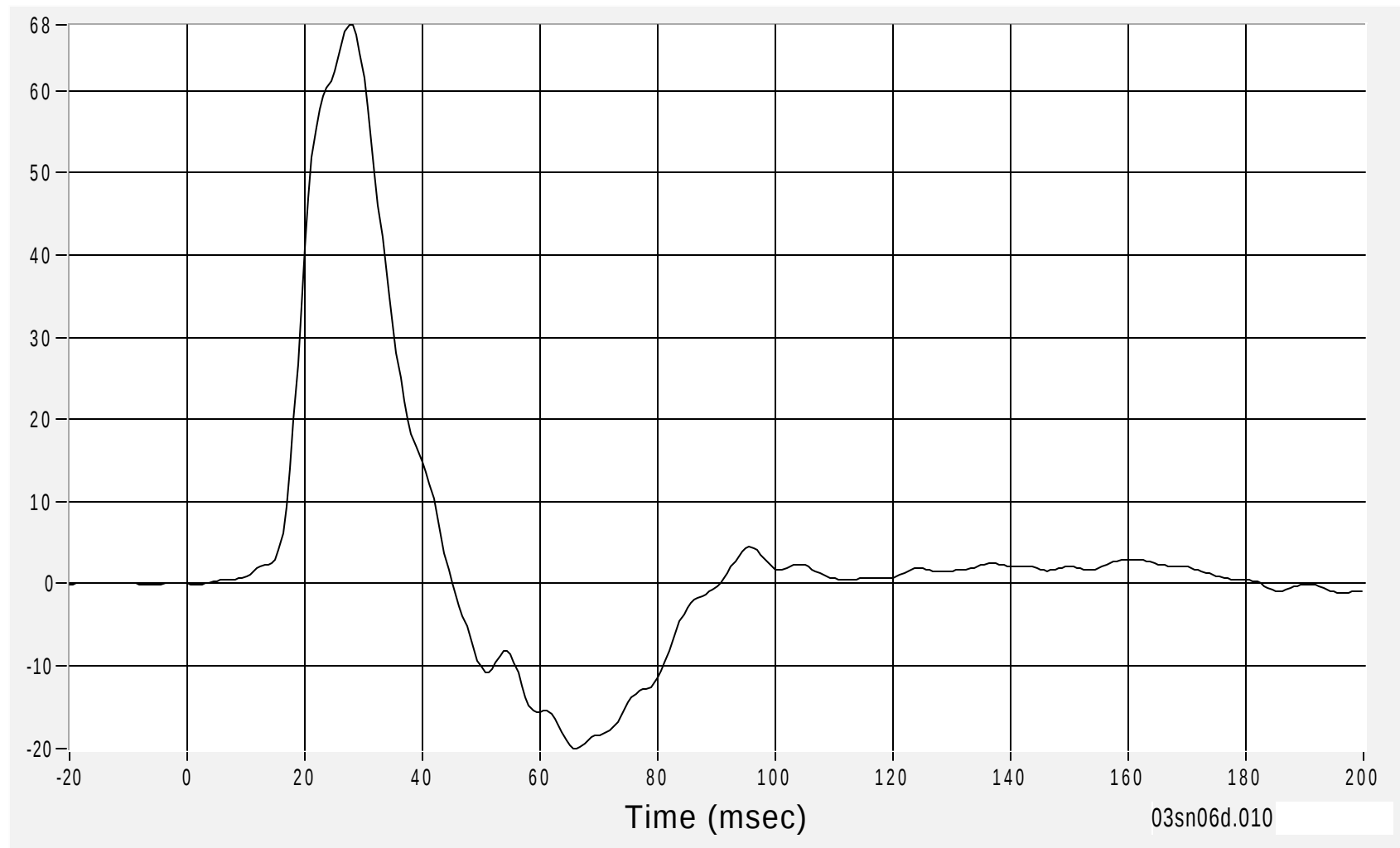
Driver Pelvic (Y) Acceleration

Acceleration (G's) FIR100

Max 68.0 G's at 27.5 msec

Min -20.1 G's at 66.2 msec

B-51



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20 February 2003

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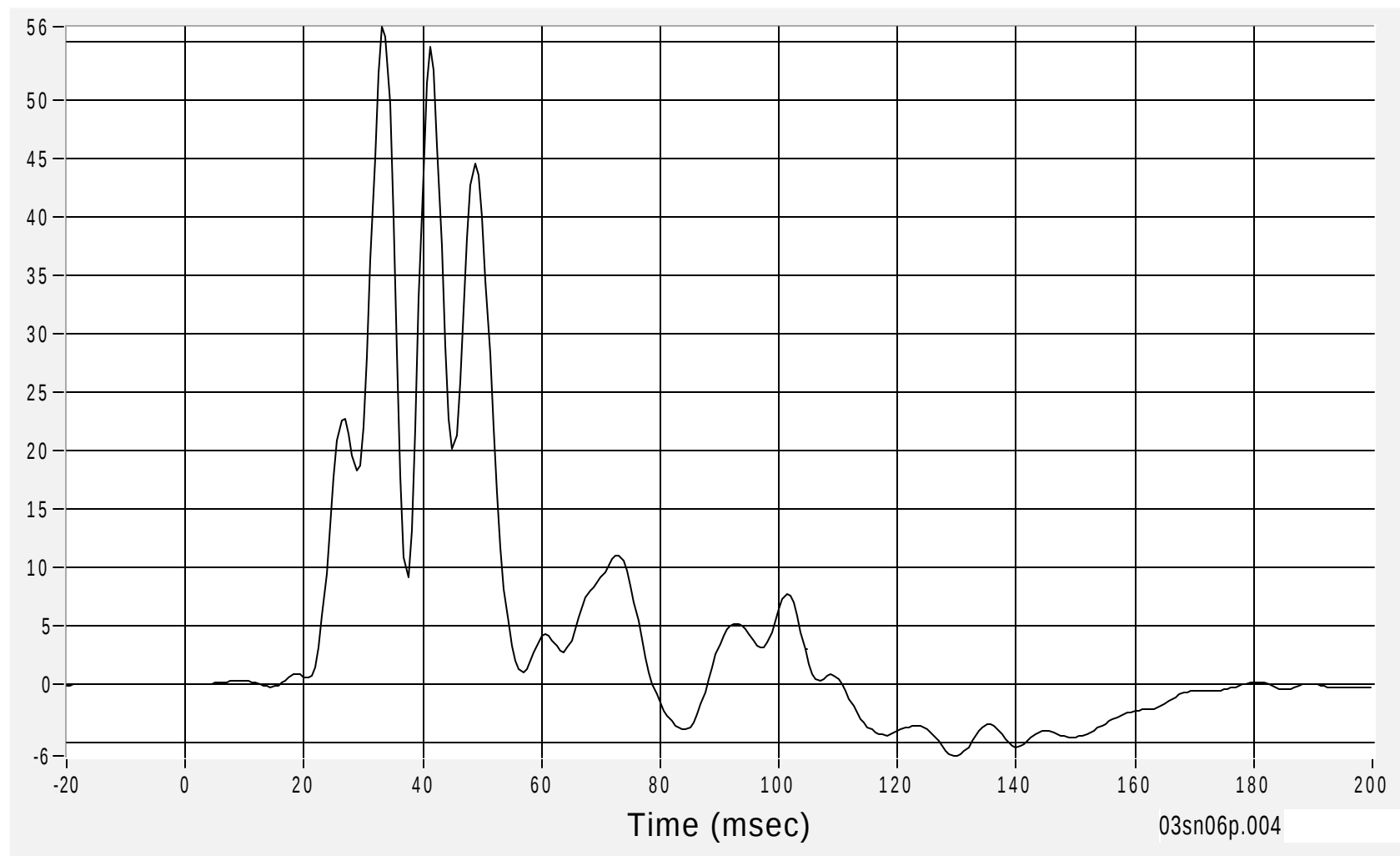
Passenger Upper Rib (Y) Acceleration

Acceleration (G's) FIR100

Max 56.3 G's at 33.1 msec

Min -6.1 G's at 130.0 msec

B-52



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20 February 2003

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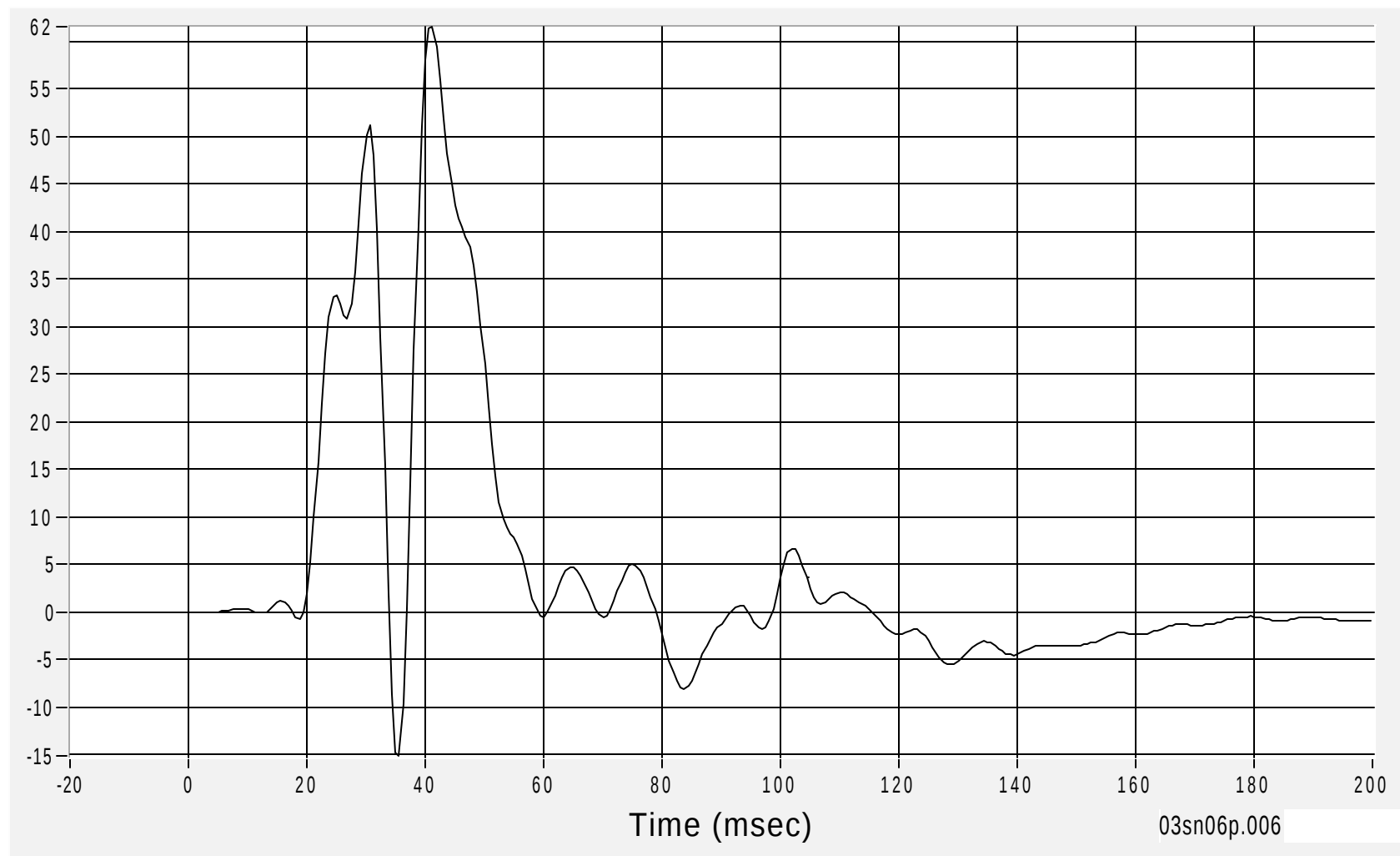
Passenger Lower Rib (Y) Acceleration

Acceleration (G's) FIR100

Max 61.5 G's at 41.2 msec

Min -15.2 G's at 35.6 msec

B-53



03sn06 - 2003 JAGUAR X-TYPE 4 DOOR SEDAN

20 February 2003

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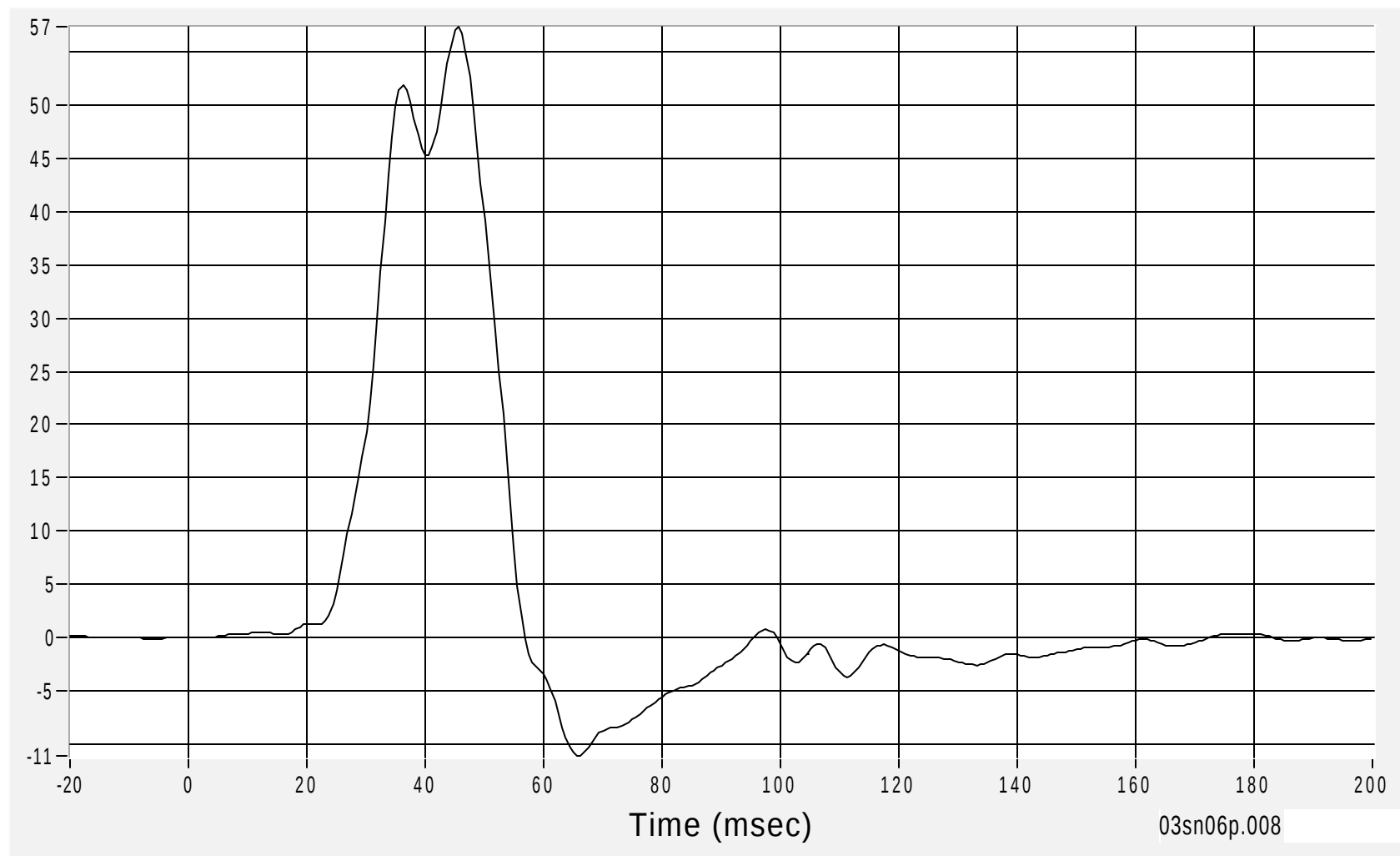
Passenger Lower Spine (Y) Acceleration

Acceleration (G's) FIR100

Max 57.4 G's at 45.6 msec

Min -11.2 G's at 65.6 msec

B-54



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20 February 2003

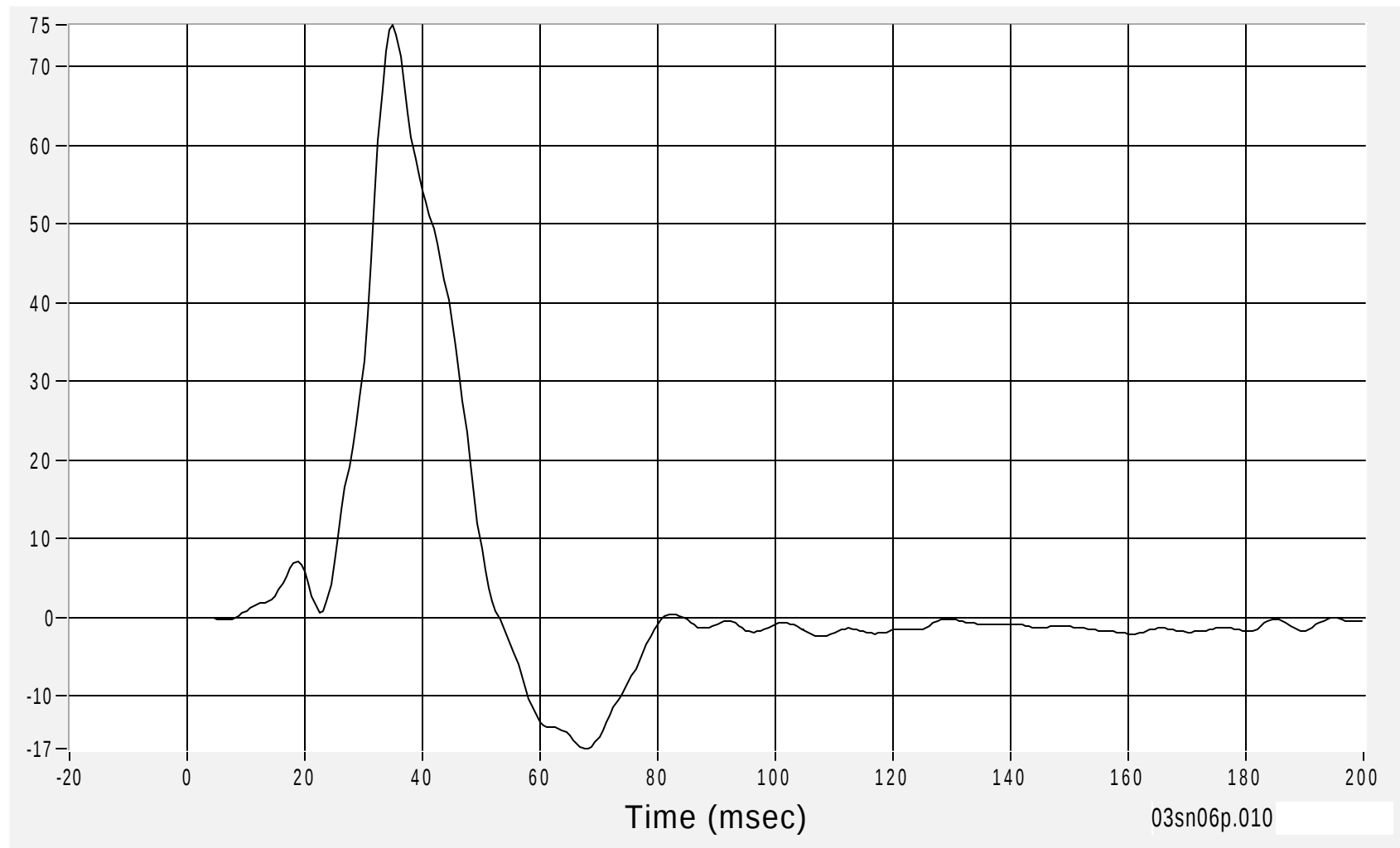
Medical College of Wisconsin
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Passenger Pelvic (Y) Acceleration

Acceleration (G's) FIR100

Max 75.2 G's at 35.0 msec
Min -16.6 G's at 67.5 msec

B-55



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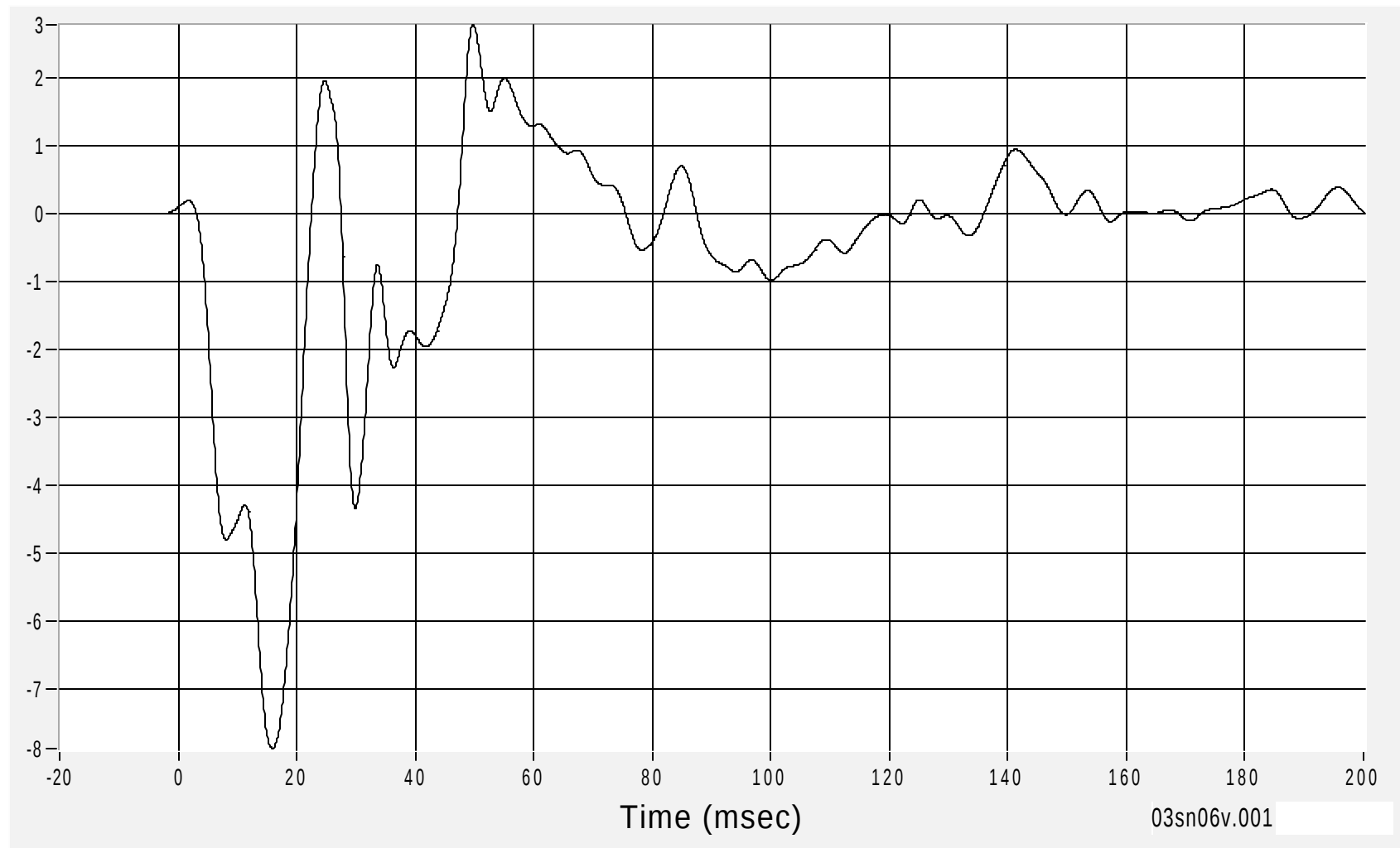
Medical College of Wisconsin
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Right Side Sill at Front Seat (X) Acceleration

Acceleration (G's) CFC60

Max 2.8 G's at 49.8 msec
Min -7.9 G's at 15.9 msec

B-56



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20 February 2003

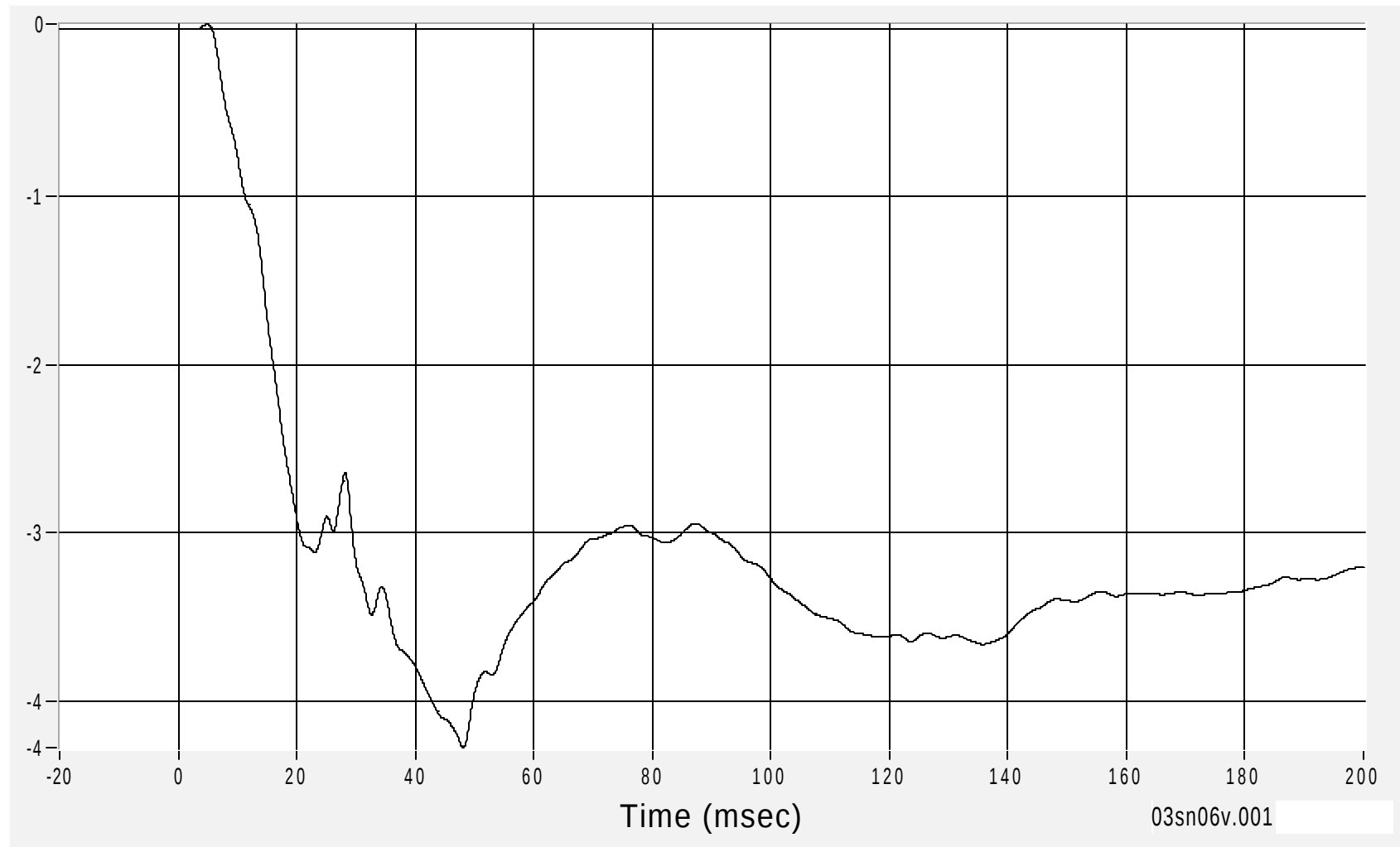
Medical College of Wisconsin
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Right Side Sill at Front Seat (X) Velocity

Velocity (km/h) CFC180

Max 0.0 km/h at 5.0 msec
Min -4.3 km/h at 48.1 msec

B-57



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20 February 2003

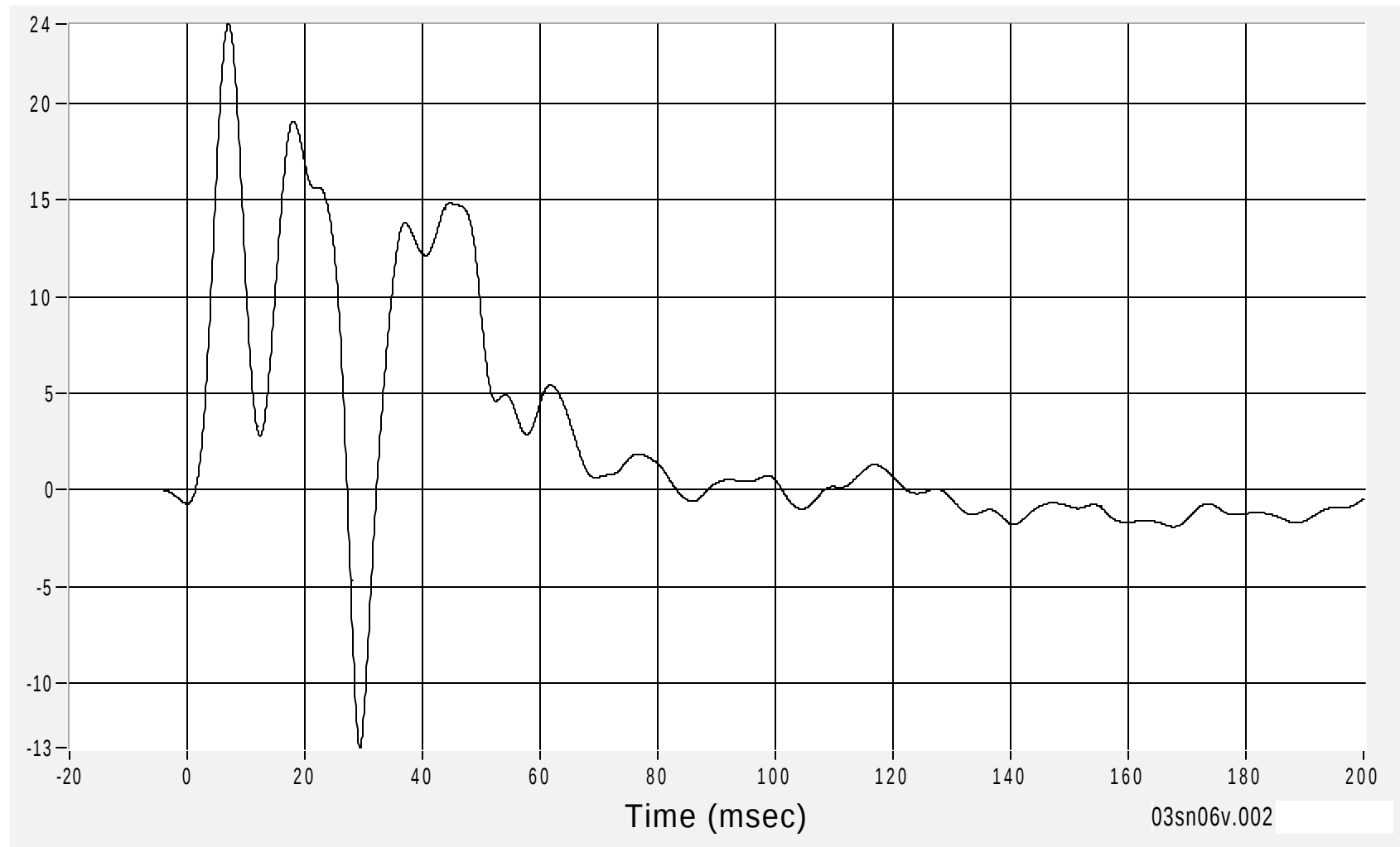
Medical College of Wisconsin
Vehicle Crashworthiness Lab

Right Side Sill at Front Seat (Y) Acceleration

Acceleration (G's) CFC60

Max 24.1 G's at 7.0 msec
Min -13.3 G's at 29.4 msec

B-58



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20 February 2003

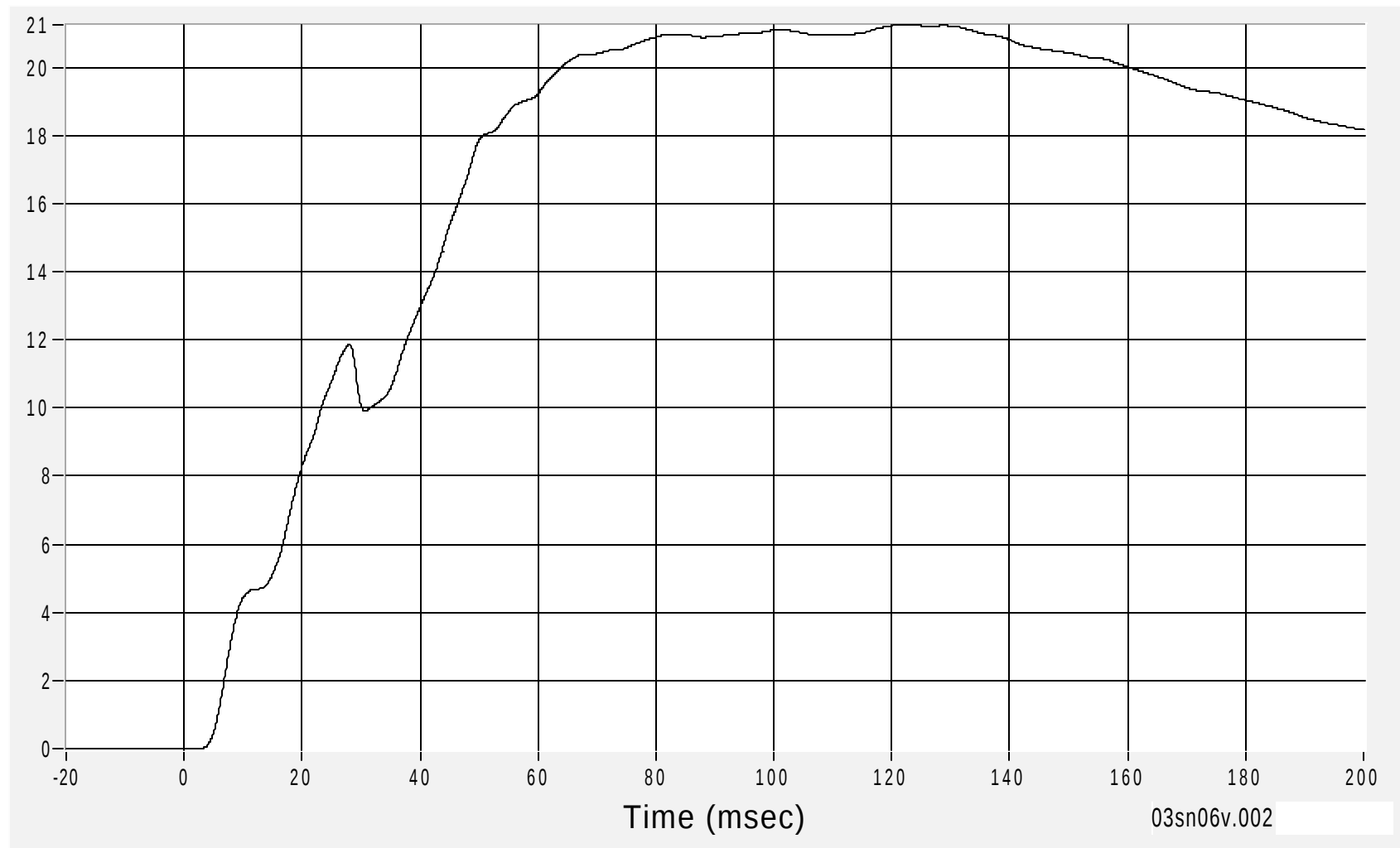
Medical College of Wisconsin
Vehicle Crashworthiness Lab

Right Side Sill at Front Seat (Y) Velocity

Velocity (km/h) CFC180

Max 21.2 km/h at 121.7 msec
Min 0.0 km/h at 0.0 msec

B-59



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20 February 2003

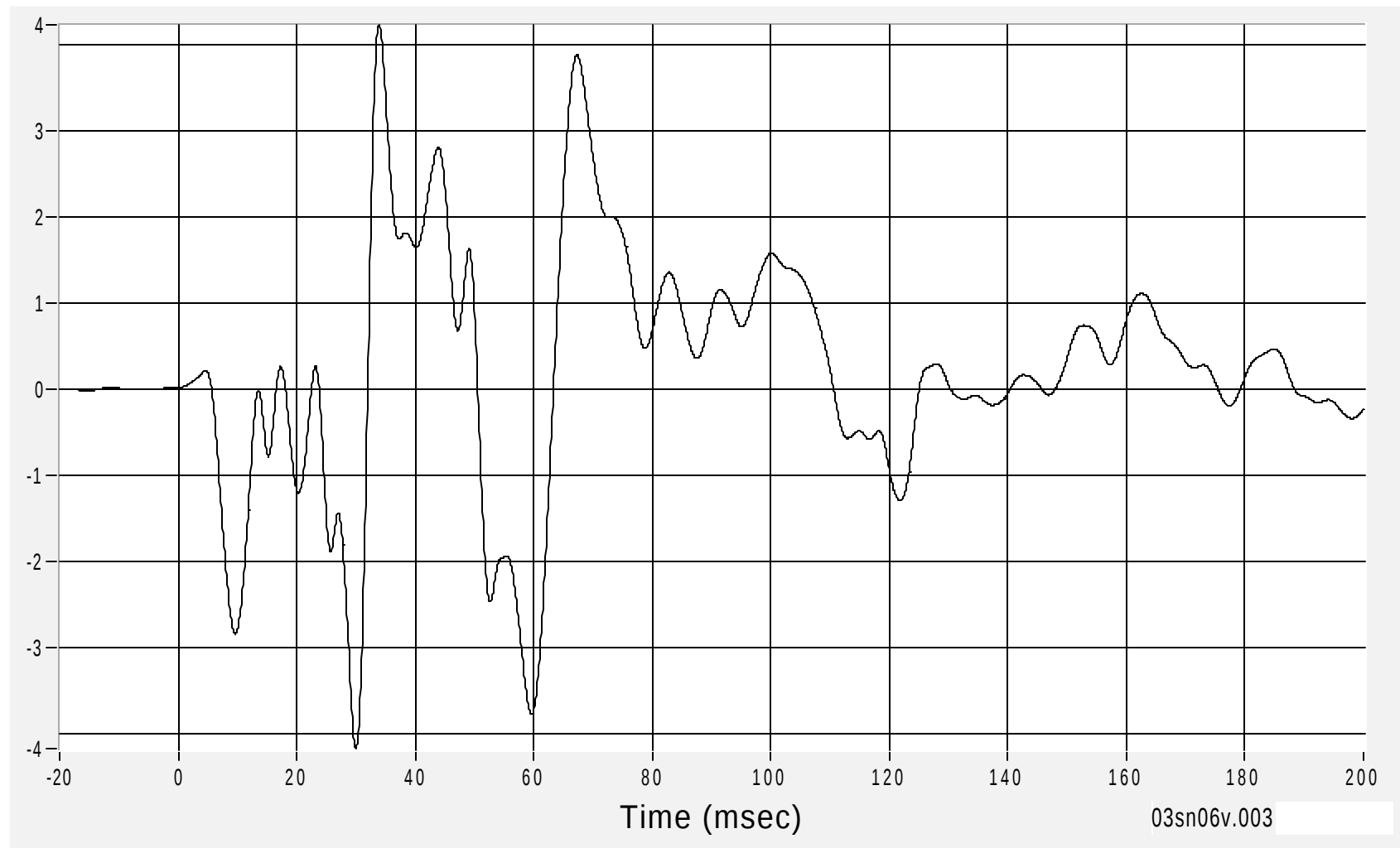
Medical College of Wisconsin
Vehicle Crashworthiness Lab

Right Side Sill at Front Seat (Z) Acceleration

Acceleration (G's) CFC60

Max 4.2 G's at 33.9 msec
Min -4.2 G's at 30.0 msec

B-60



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20 February 2003

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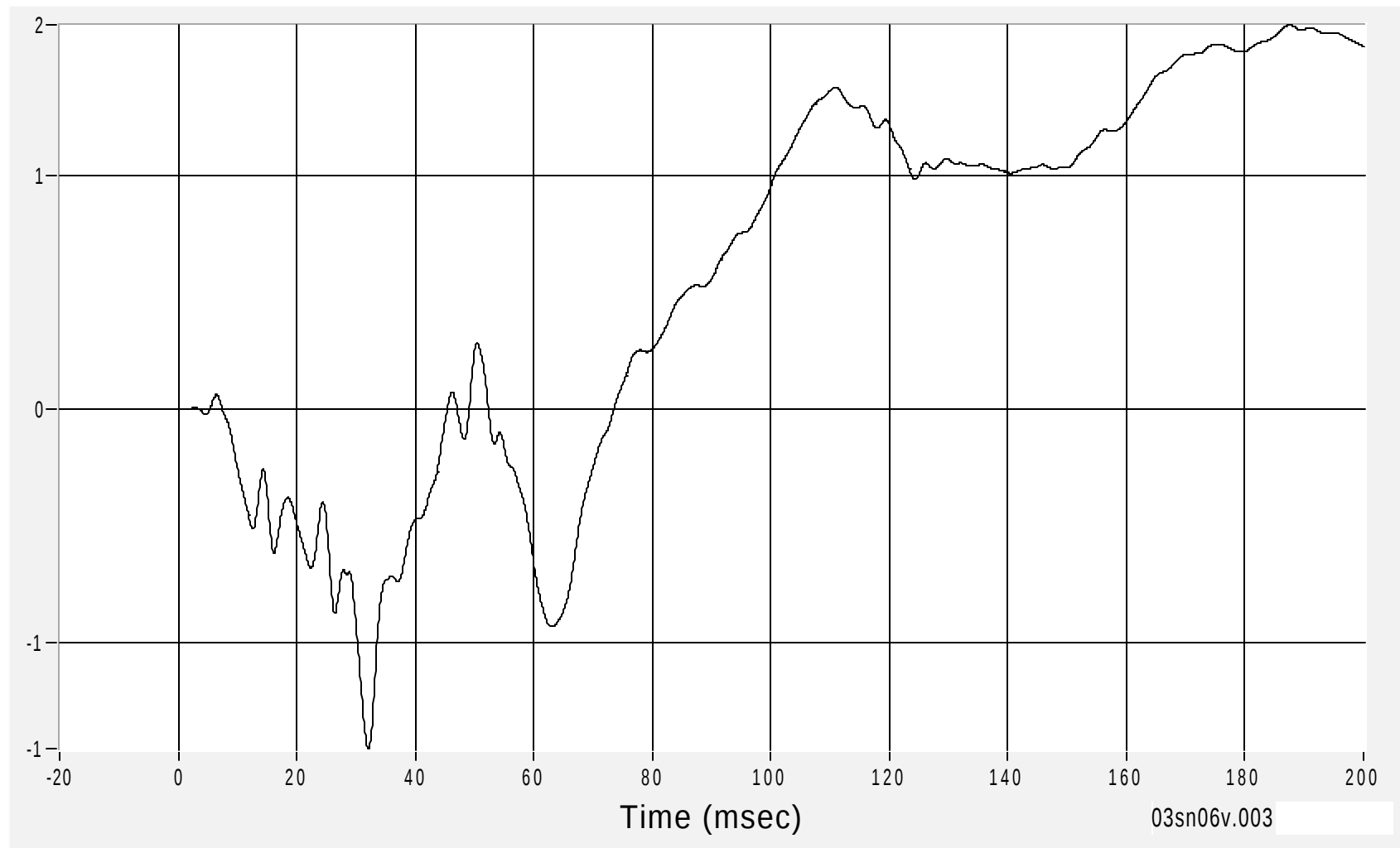
Right Side Sill at Front Seat (Z) Velocity

Velocity (km/h) CFC180

Max 1.6 km/h at 187.5 msec

Min -1.5 km/h at 32.1 msec

B-61



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20 February 2003

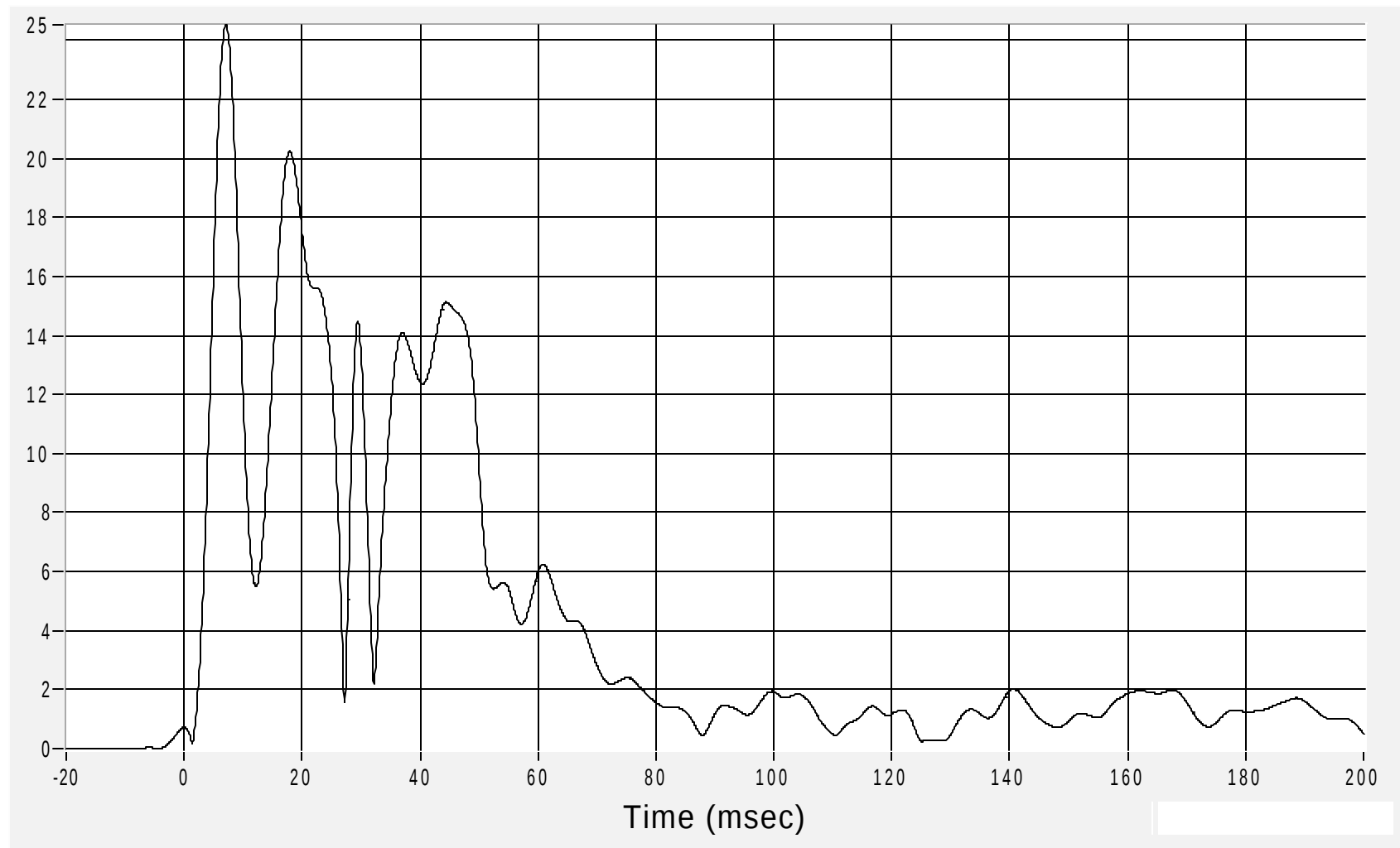
Medical College of Wisconsin
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Right Side Sill at Front Seat Resultant Acceleration

Acceleration (G's) CFC60

Max 24.5 G's at 7.0 msec
Min 0.2 G's at 1.4 msec

B-62



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20 February 2003

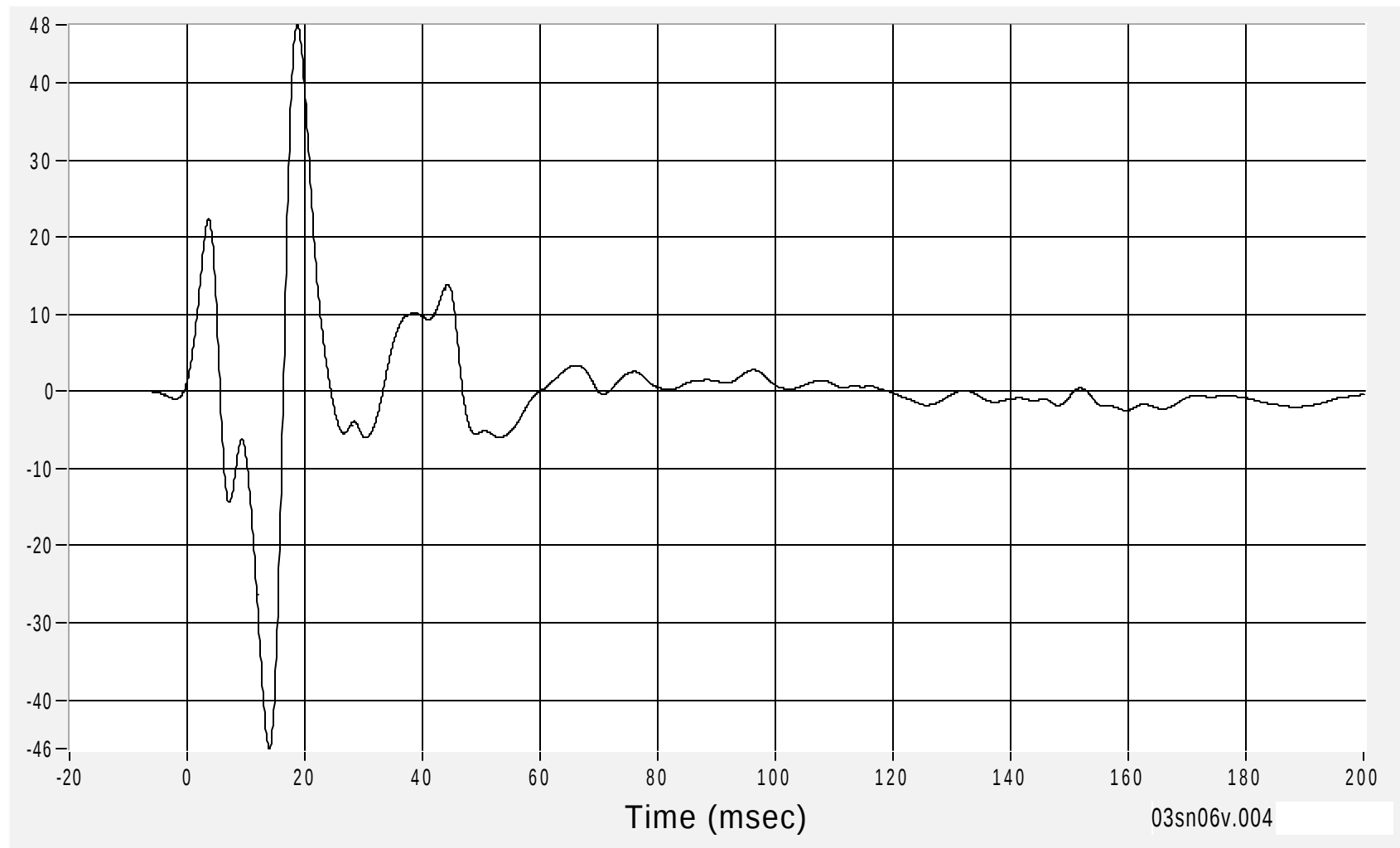
Medical College of Wisconsin
Vehicle Crashworthiness Lab

Right Side Sill at Rear Seat (X) Acceleration

Acceleration (G's) CFC60

Max 47.6 G's at 18.7 msec
Min -46.3 G's at 14.0 msec

B-63



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20 February 2003

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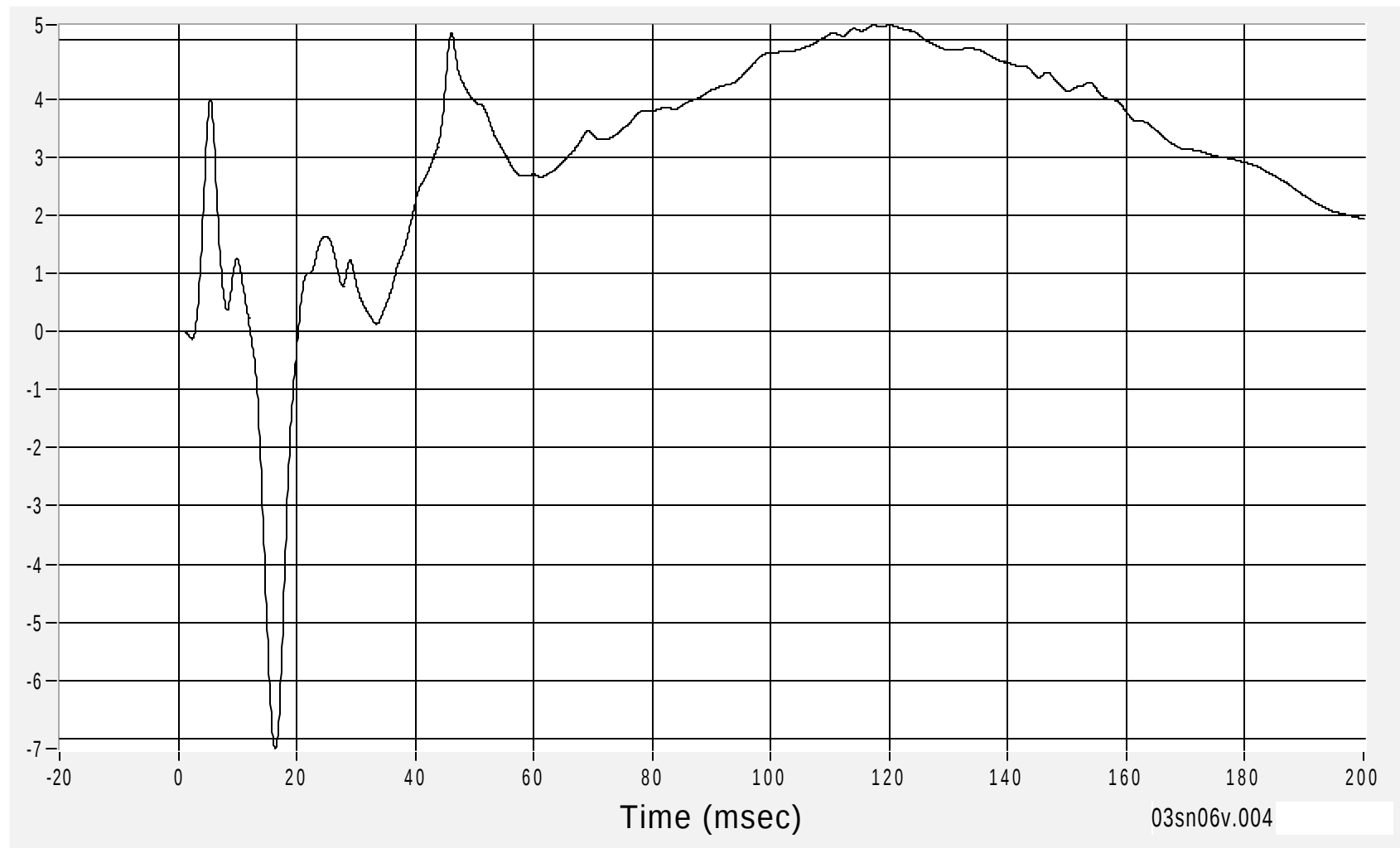
Right Side Sill at Rear Seat (X) Velocity

Velocity (km/h) CFC180

Max 5.3 km/h at 117.4 msec

Min -7.2 km/h at 16.4 msec

B-64



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20 February 2003

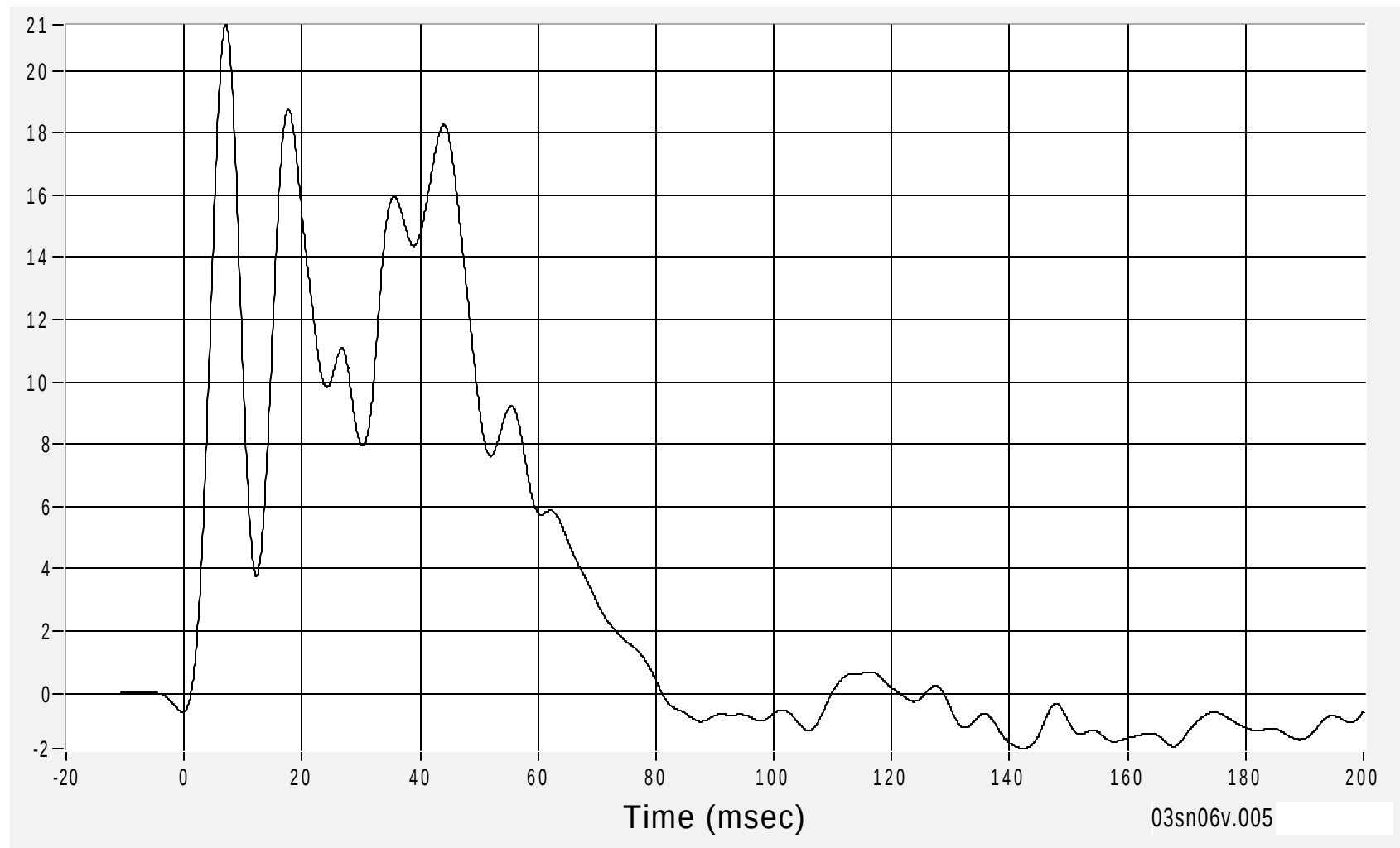
Medical College of Wisconsin
Vehicle Crashworthiness Lab

Right Side Sill at Rear Seat (Y) Acceleration

Acceleration (G's) CFC60

Max 21.5 G's at 7.0 msec
Min -1.8 G's at 142.3 msec

B-65



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20 February 2003

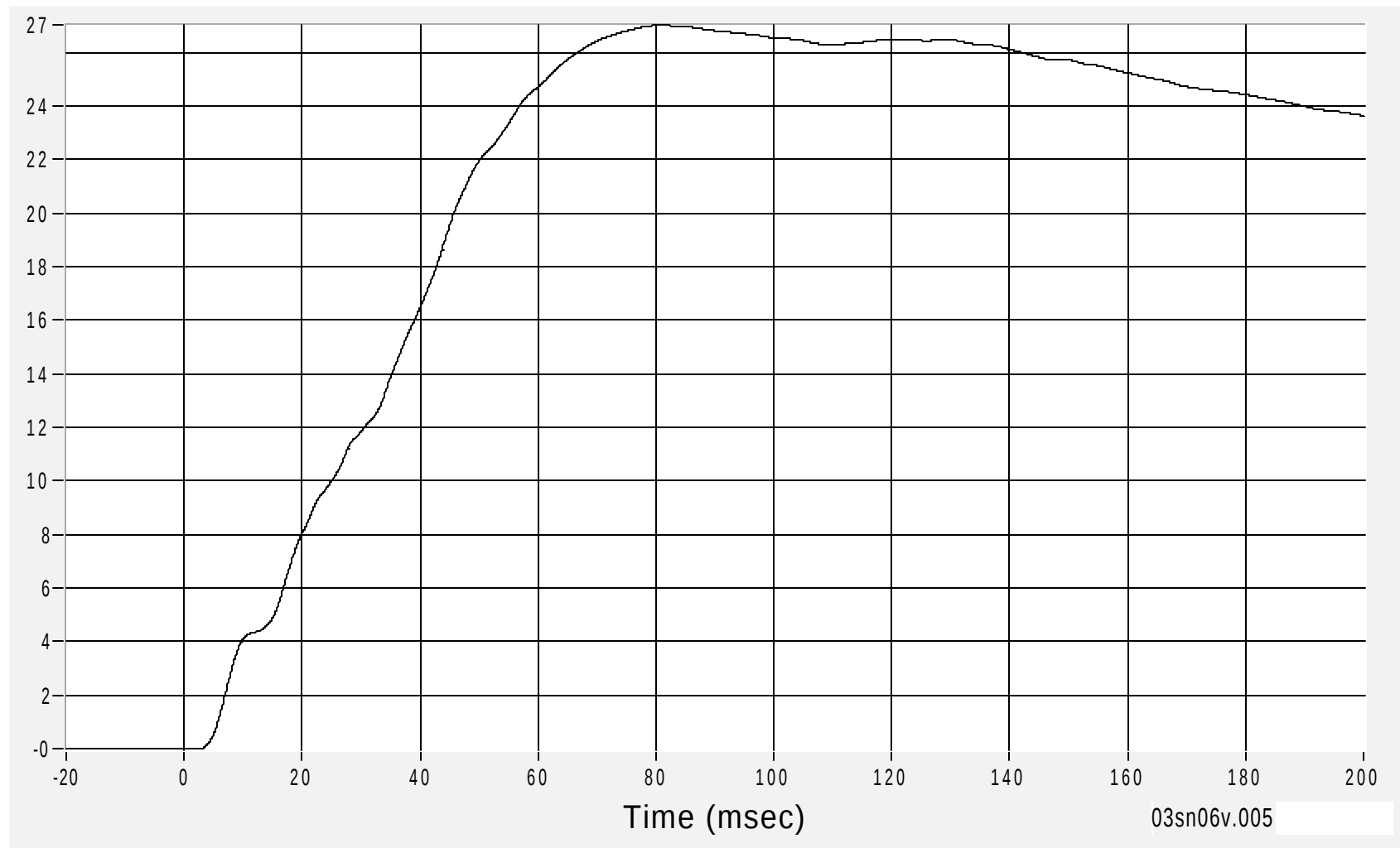
Medical College of Wisconsin
Vehicle Crashworthiness Lab

Right Side Sill at Rear Seat (Y) Velocity

Velocity (km/h) CFC180

Max 27.0 km/h at 80.9 msec
Min 0.0 km/h at 2.3 msec

B-66



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20 February 2003

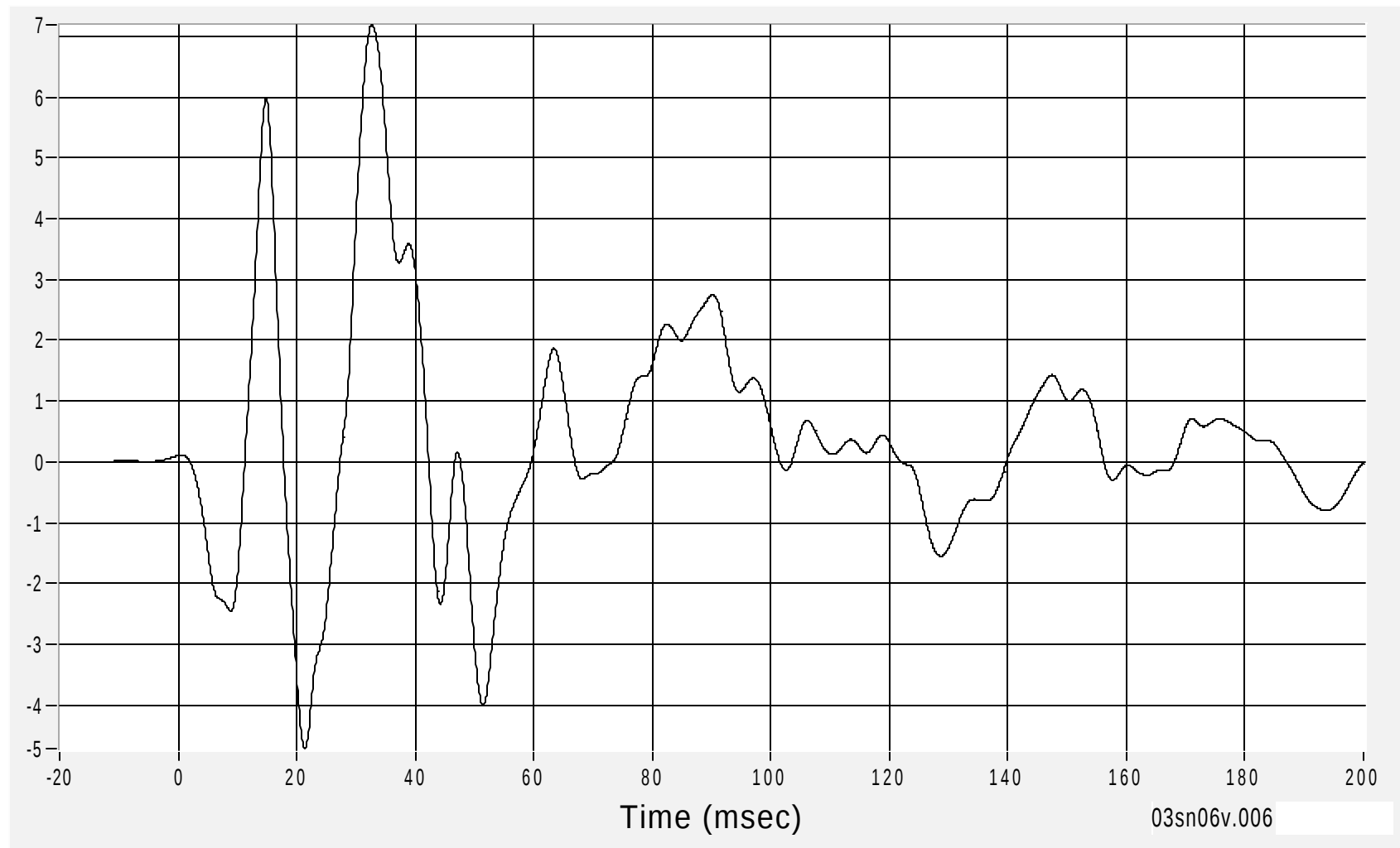
Medical College of Wisconsin
Vehicle Crashworthiness Lab

Right Side Sill at Rear Seat (Z) Acceleration

Acceleration (G's) CFC60

Max 7.2 G's at 32.6 msec
Min -4.7 G's at 21.4 msec

B-67



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20 February 2003

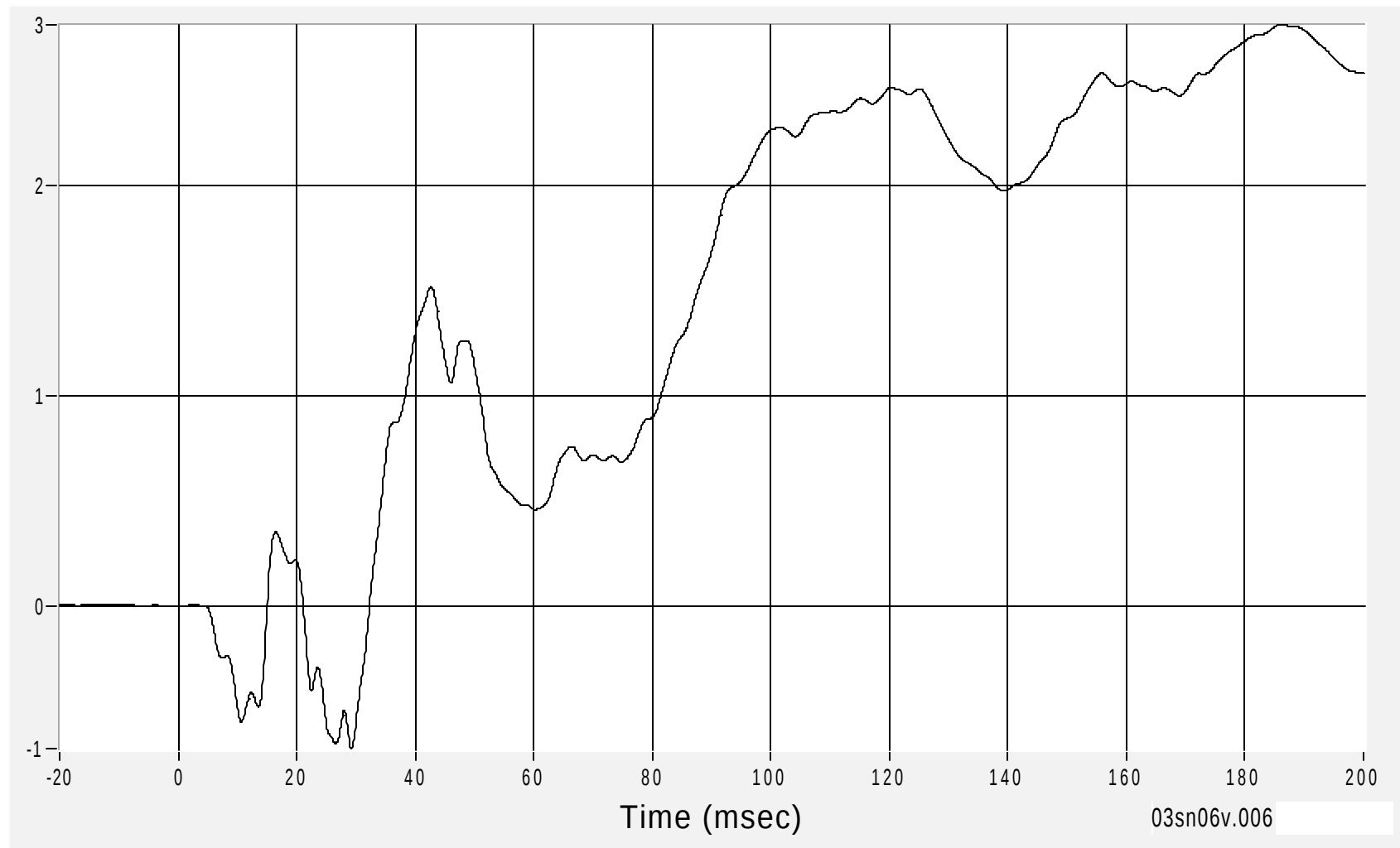
Medical College of Wisconsin
Vehicle Crashworthiness Lab

Right Side Sill at Rear Seat (Z) Velocity

Velocity (km/h) CFC180

Max 2.8 km/h at 185.9 msec
Min -0.7 km/h at 29.2 msec

B-68



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20 February 2003

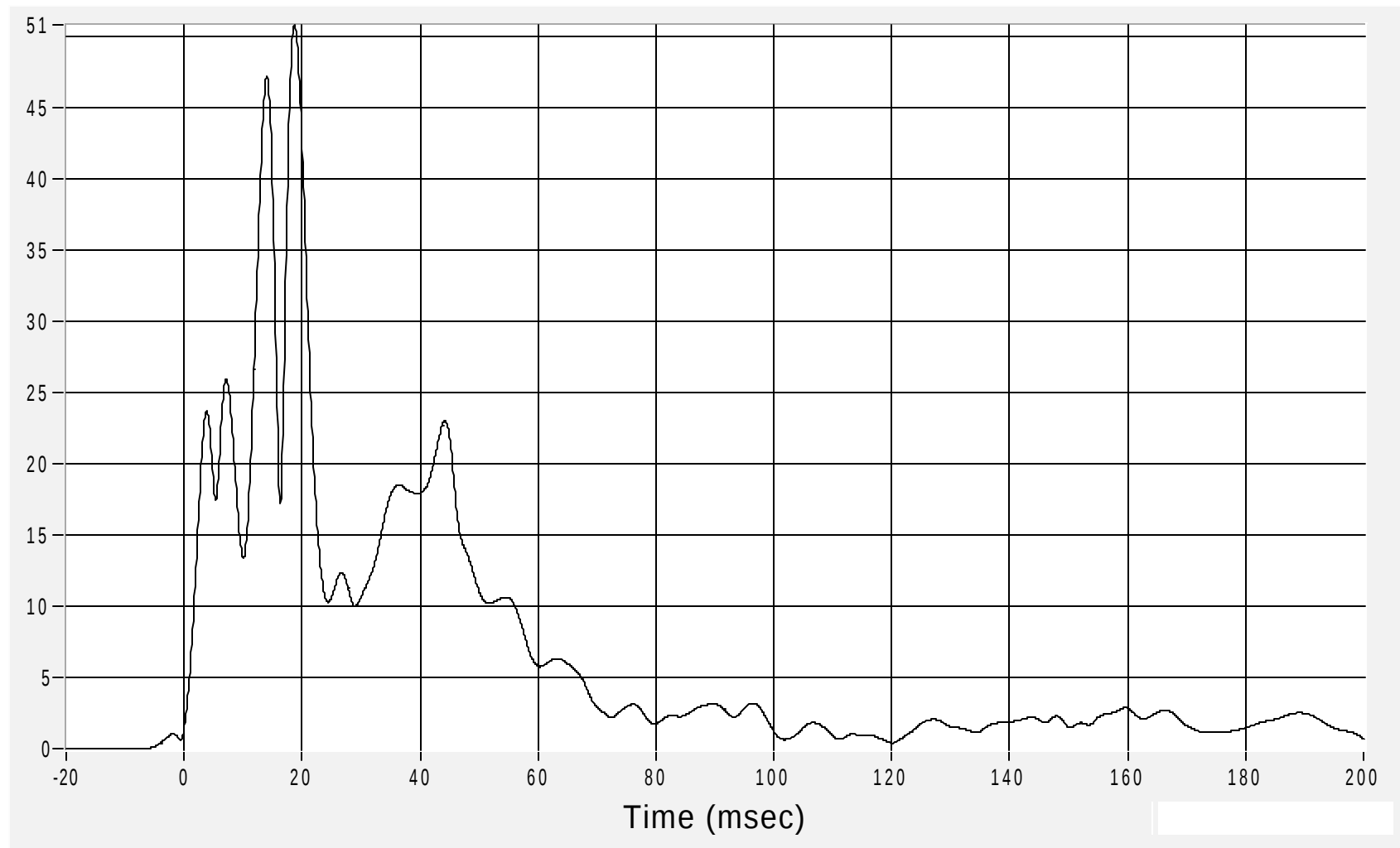
Medical College of Wisconsin
Vehicle Crashworthiness Lab

Right Side Sill at Rear Seat Resultant Acceleration

Acceleration (G's) CFC60

Max 50.8 G's at 18.7 msec
Min 0.4 G's at 120.1 msec

B-69



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20 February 2003

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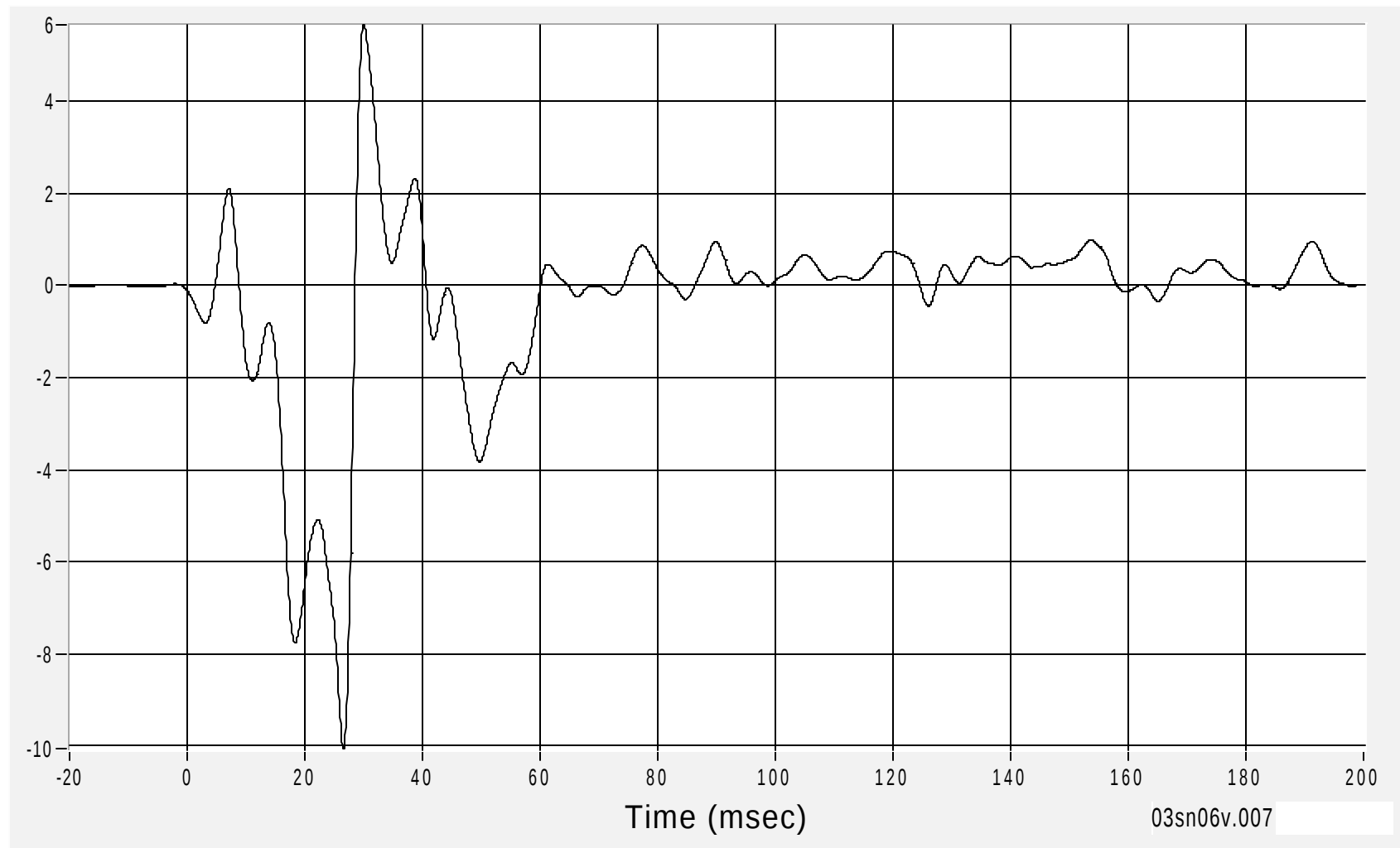
Rear Floorpan Above Axle (X) Acceleration

Acceleration (G's) CFC60

Max 5.7 G's at 30.0 msec

Min -10.1 G's at 26.6 msec

B-70



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20 February 2003

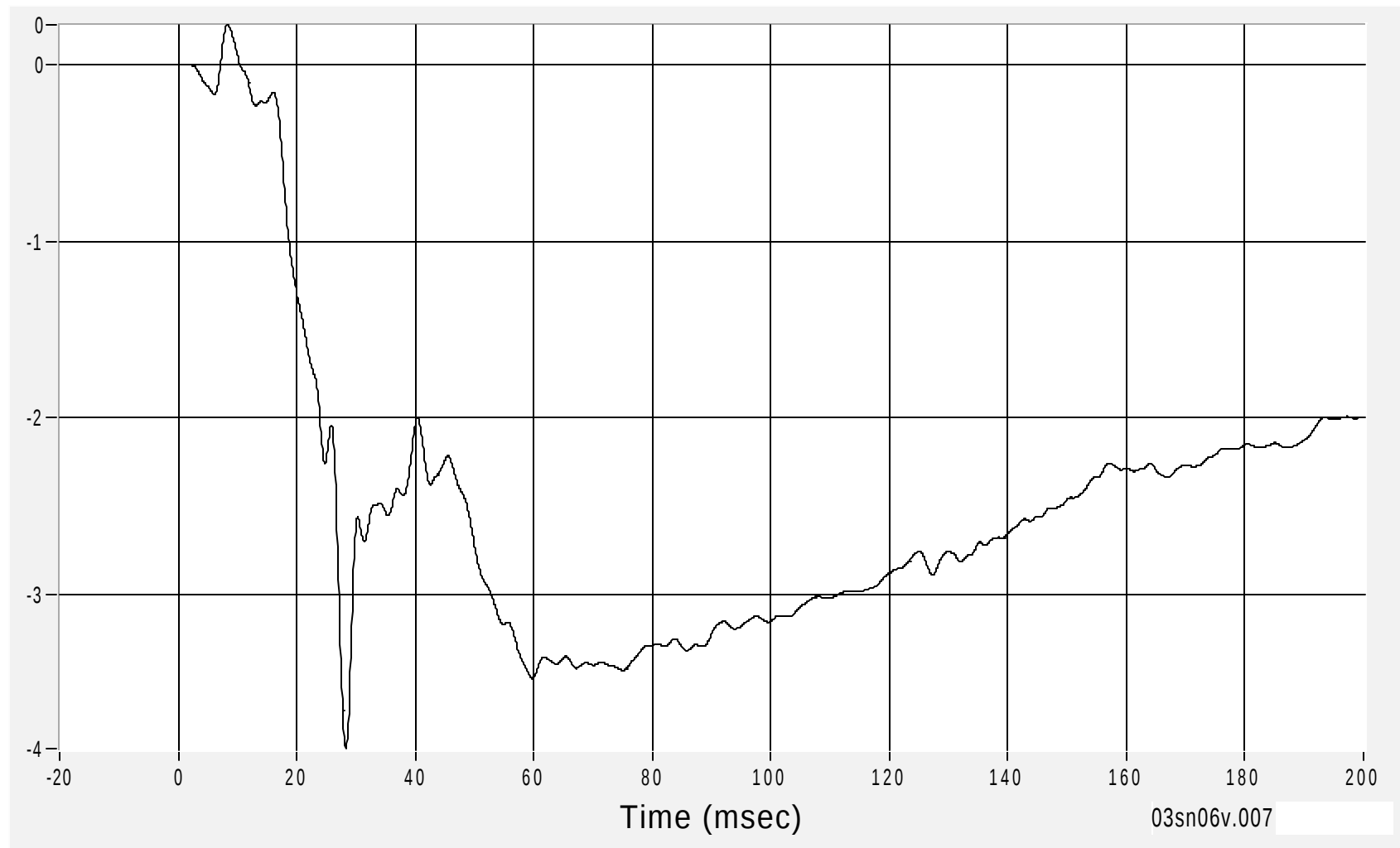
Medical College of Wisconsin
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Rear Floorpan Above Axle (X) Velocity

Velocity (km/h) CFC180

Max 0.2 km/h at 8.3 msec
Min -3.9 km/h at 28.3 msec

B-71



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20 February 2003

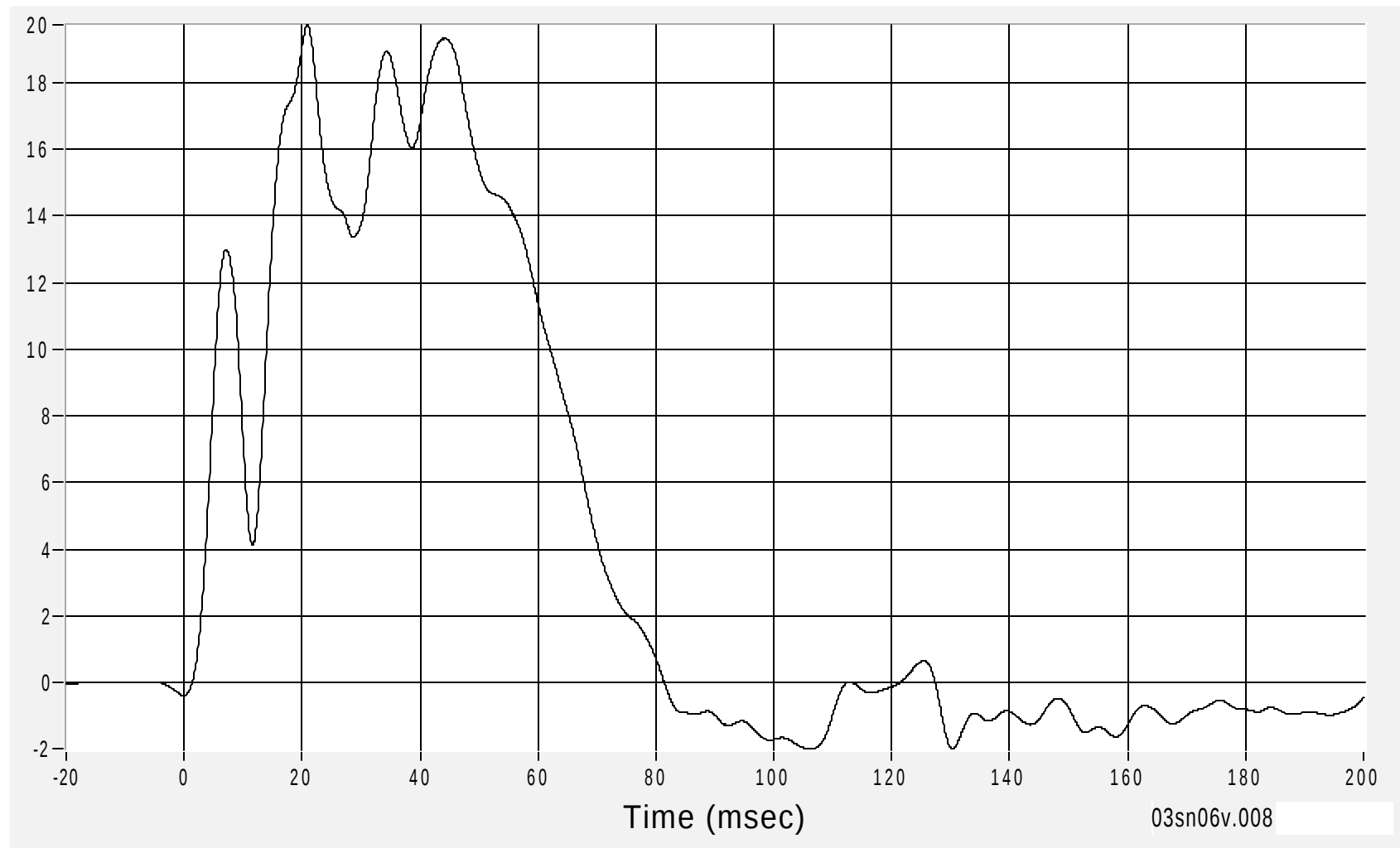
Medical College of Wisconsin
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Rear Floorpan Above Axle (Y) Acceleration

Acceleration (G's) CFC60

Max 19.7 G's at 20.9 msec
Min -2.0 G's at 106.2 msec

B-72



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20 February 2003

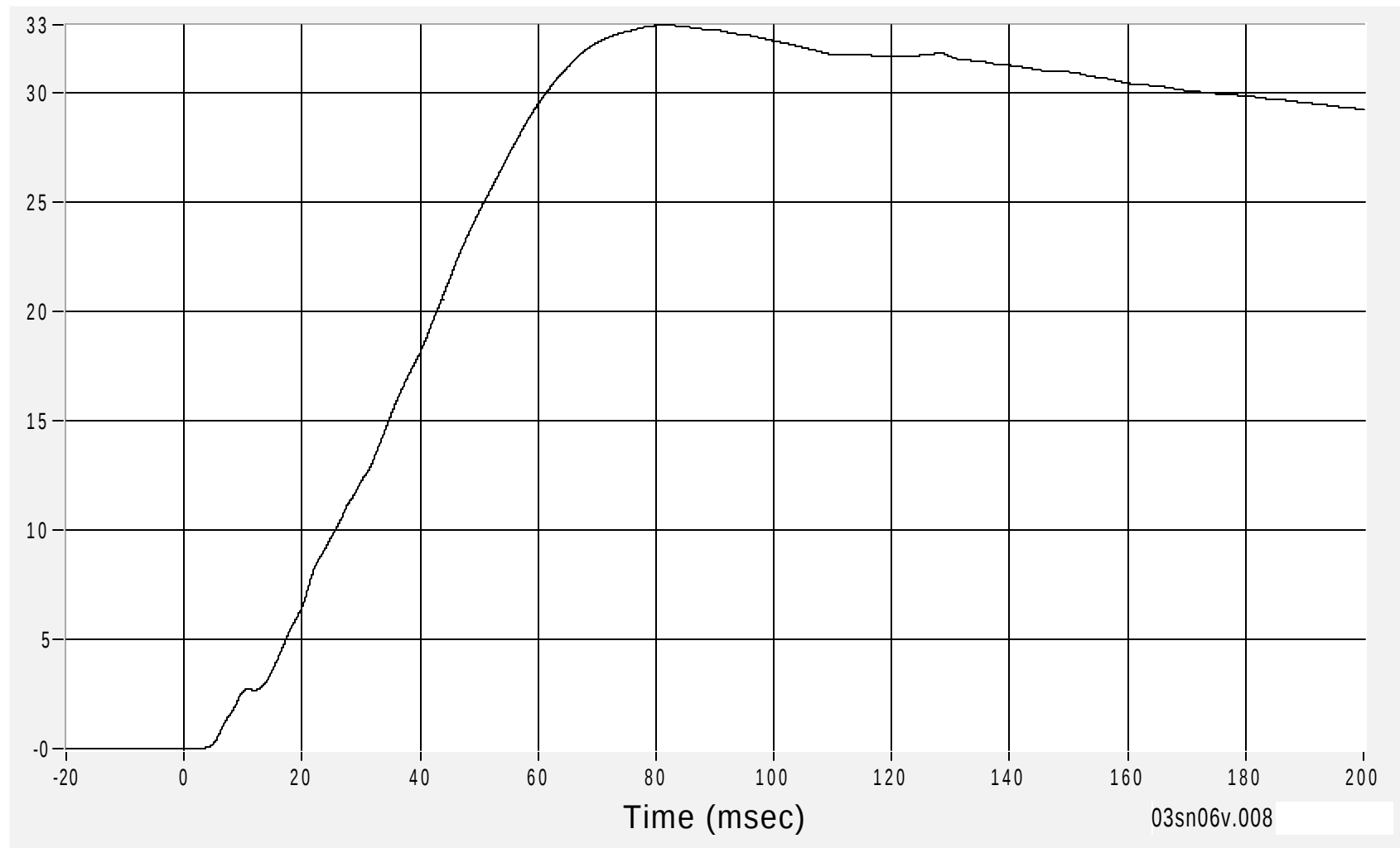
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Rear Floorpan Above Axle (Y) Velocity

Velocity (km/h) CFC180

Max 33.1 km/h at 81.5 msec
Min 0.0 km/h at 1.0 msec

B-73



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20 February 2003

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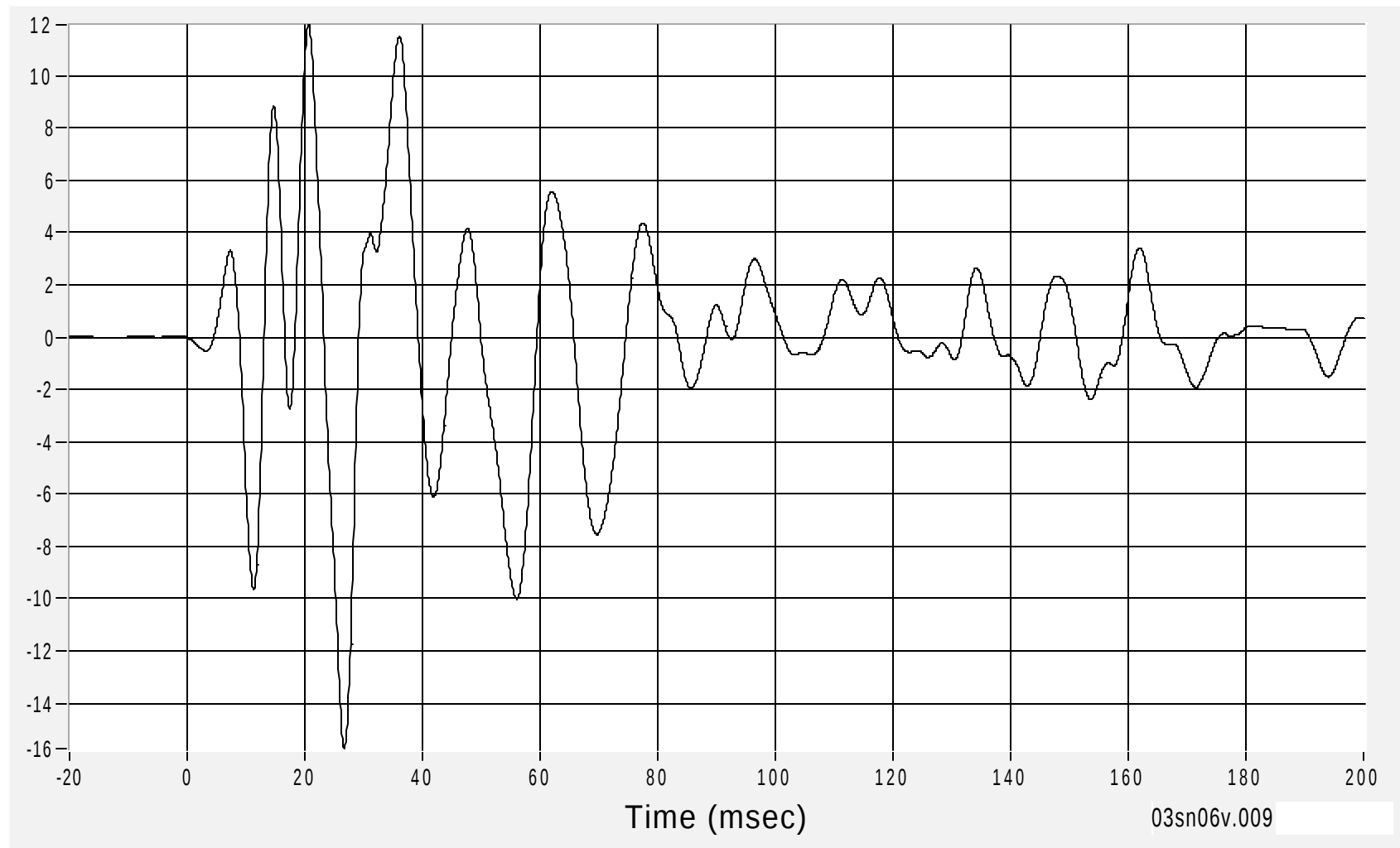
Rear Floorpan Above Axle (Z) Acceleration

Acceleration (G's) CFC60

Max 11.9 G's at 20.6 msec

Min -15.7 G's at 26.7 msec

B-74



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20 February 2003

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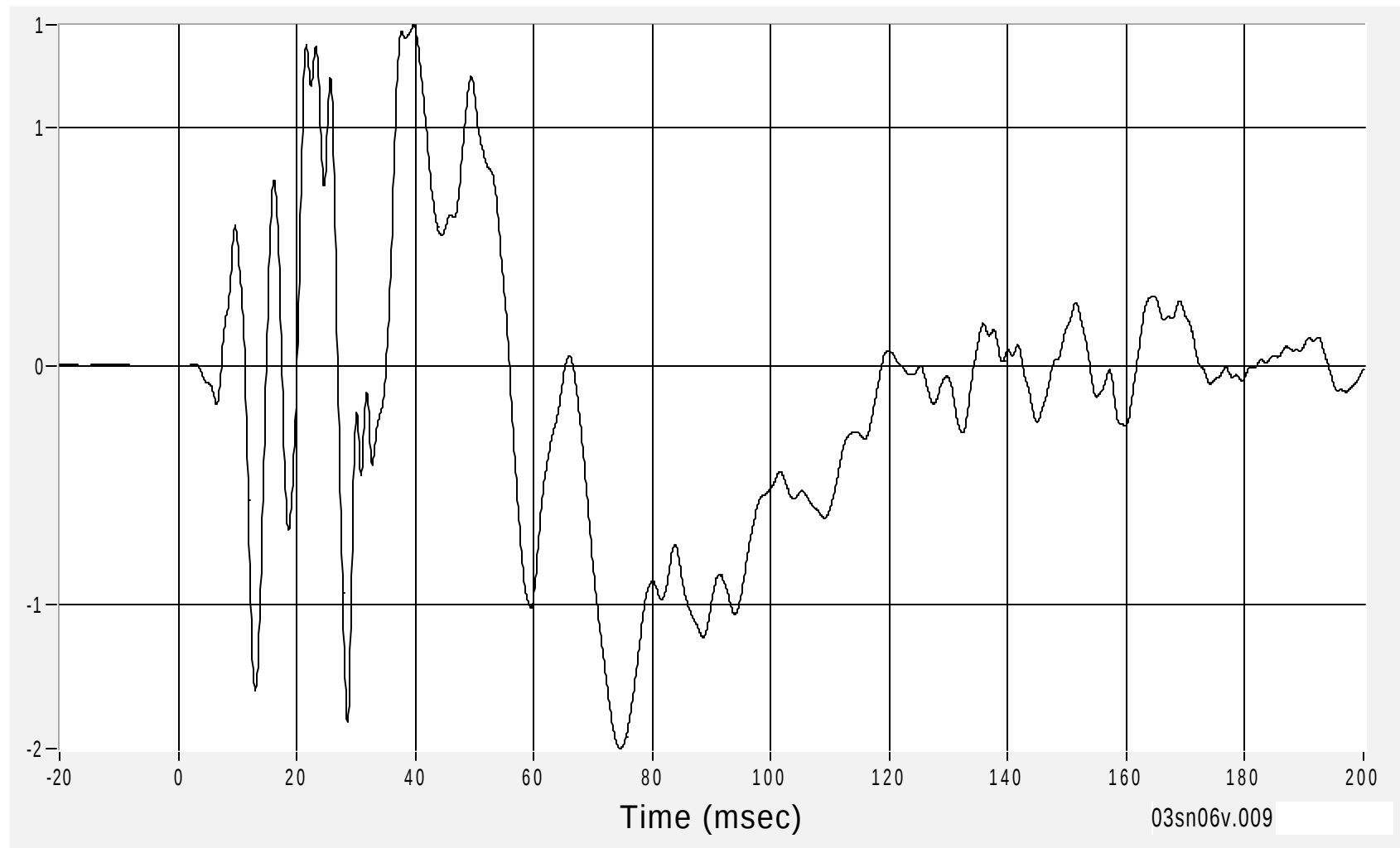
Rear Floorpan Above Axle (Z) Velocity

Velocity (km/h) CFC180

Max 1.4 km/h at 39.8 msec

Min -1.6 km/h at 74.6 msec

B-75



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20 February 2003

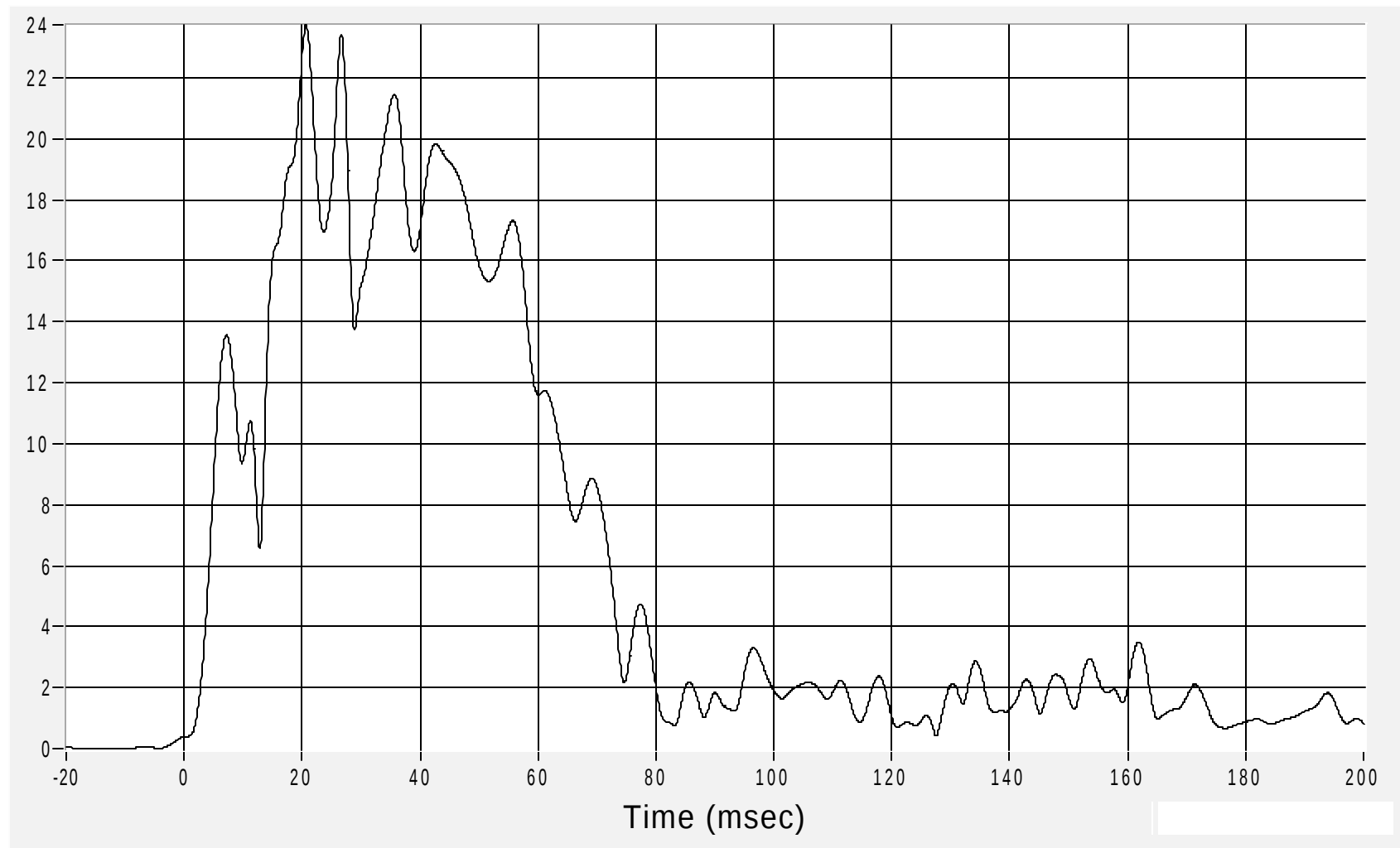
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Rear Floorpan Above Axle Resultant Acceleration

Acceleration (G's) CFC60

Max 23.7 G's at 20.6 msec
Min 0.4 G's at 0.0 msec

B-76



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20 February 2003

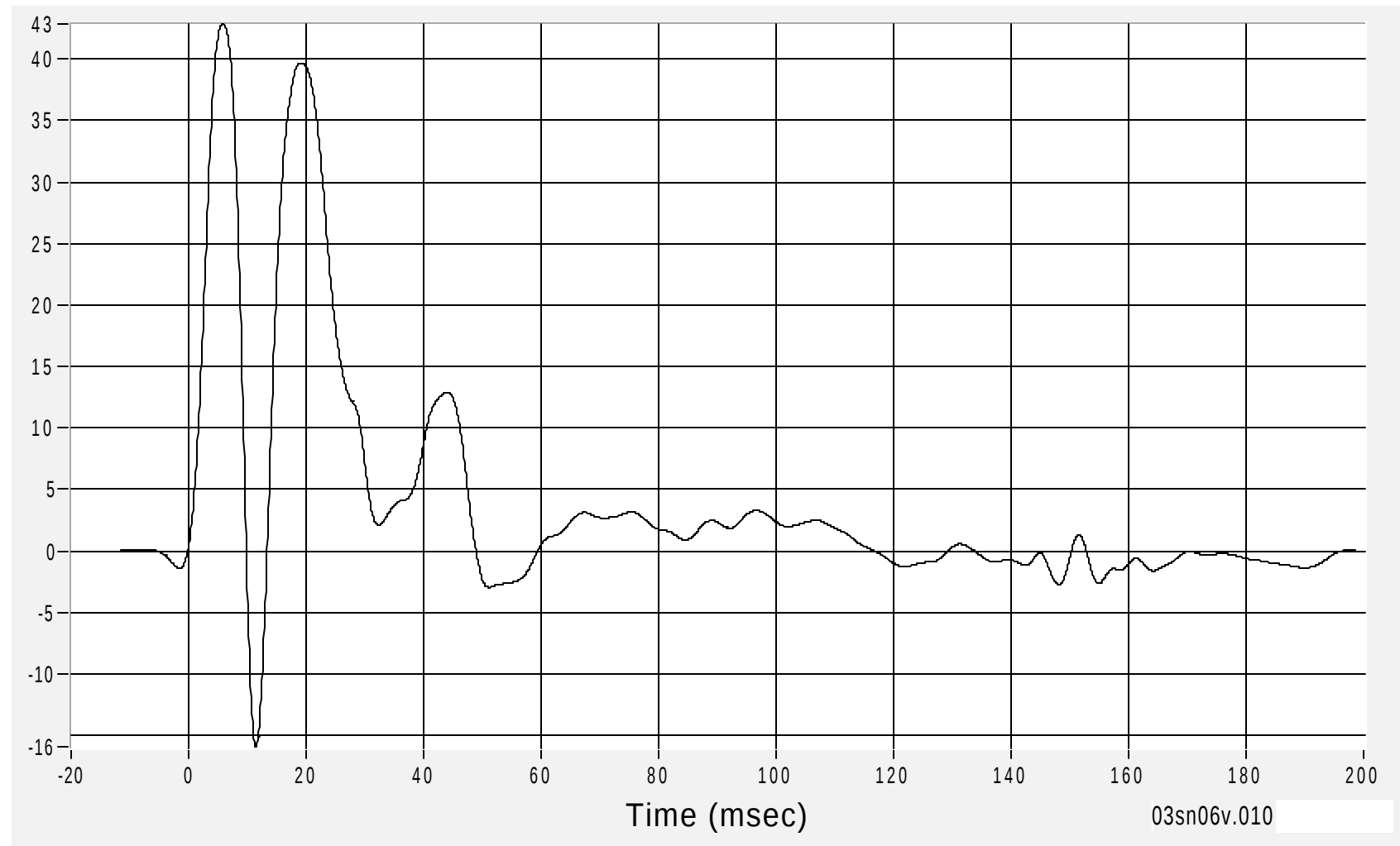
Medical College of Wisconsin
Vehicle Crashworthiness Lab

Left Side Sill at Rear Seat (Y) Acceleration

Acceleration (G's) CFC60

Max 42.9 G's at 5.8 msec
Min -15.9 G's at 11.4 msec

B-77



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20 February 2003

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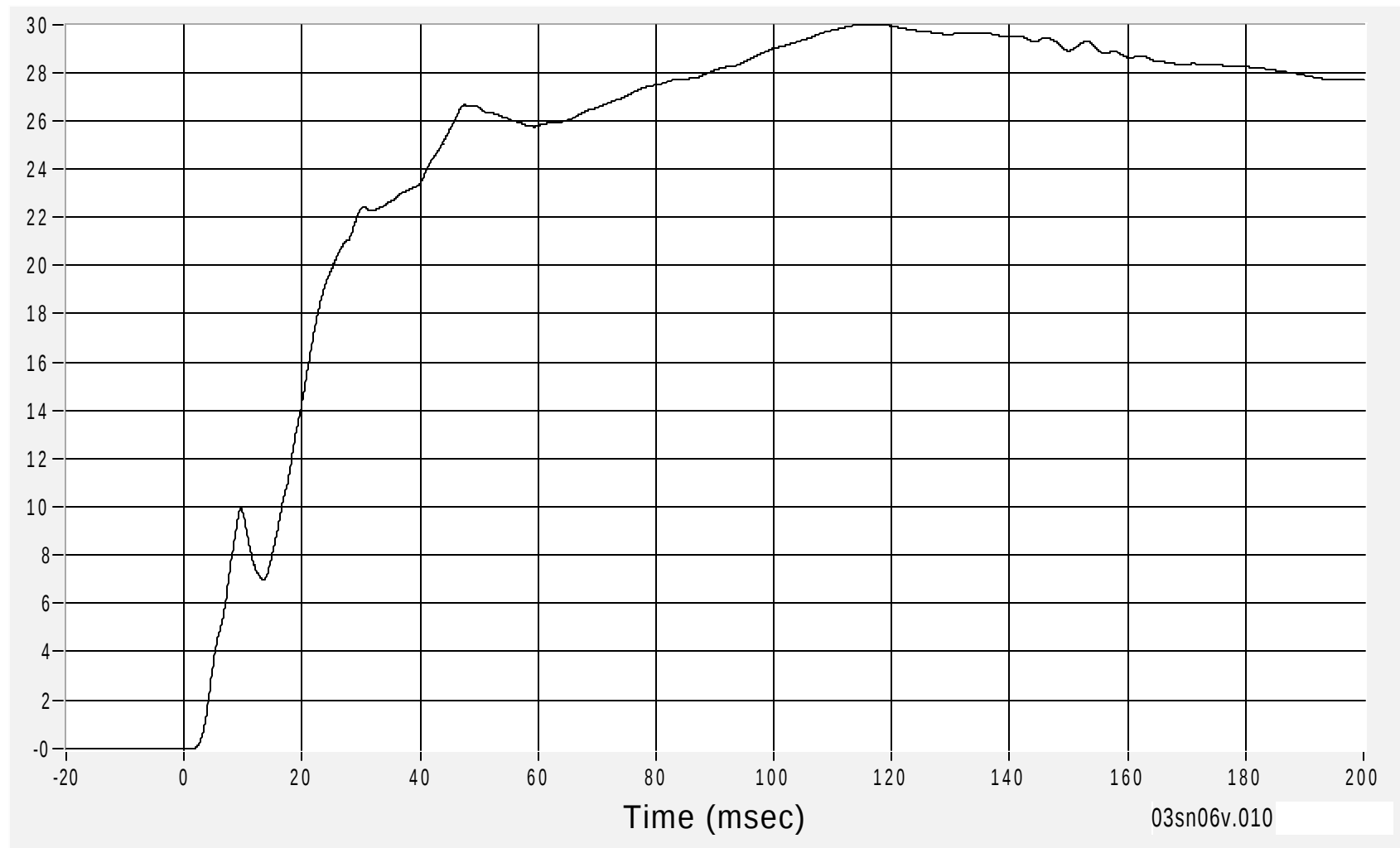
Left Side Sill at Rear Seat (Y) Velocity

Velocity (km/h) CFC180

Max 30.0 km/h at 116.9 msec

Min 0.0 km/h at 1.4 msec

B-78



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20 February 2003

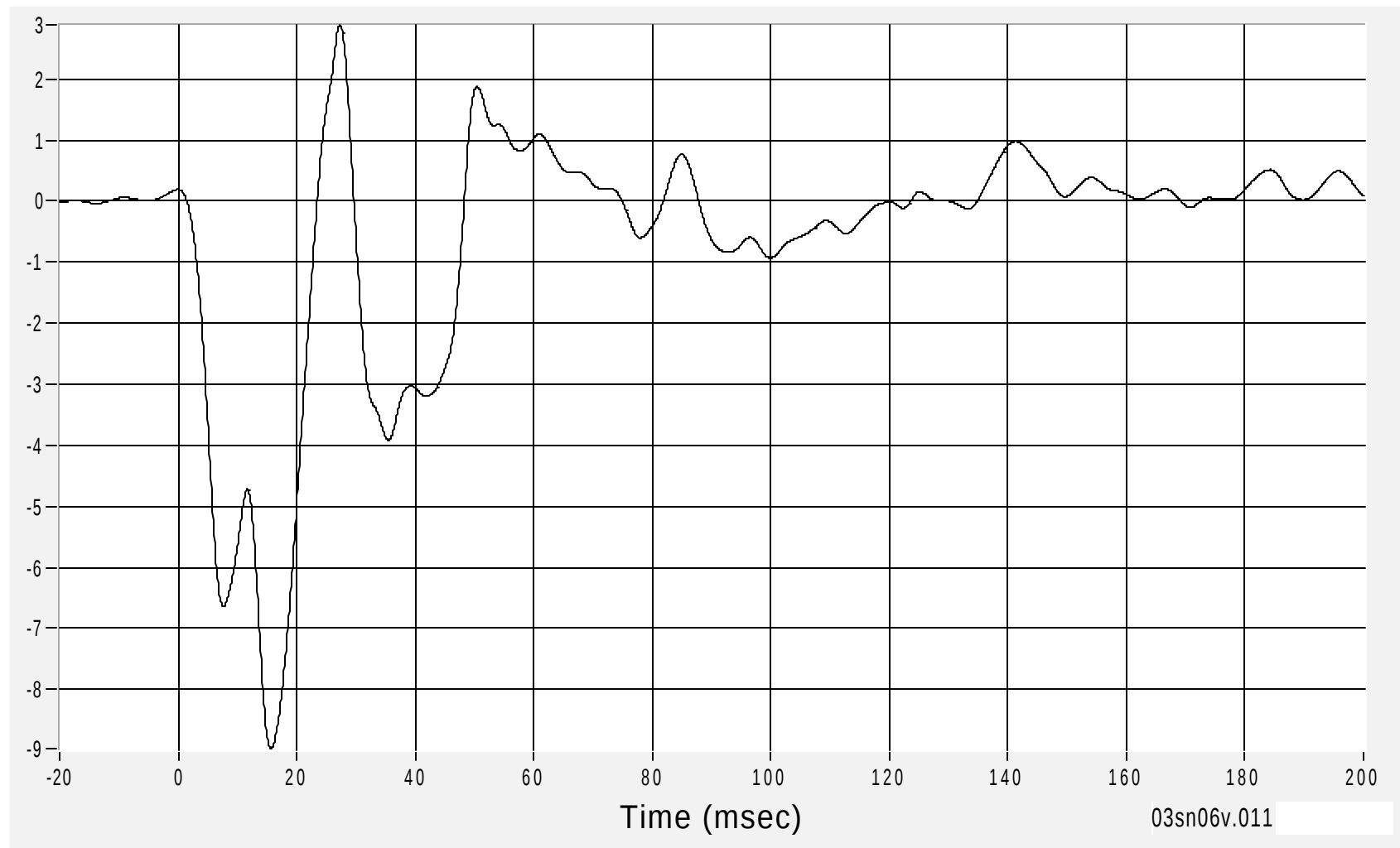
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Vehicle Crashworthiness Lab

Left Side Sill at Front Seat (Y) Acceleration

Acceleration (G's) CFC60

Max 2.9 G's at 27.3 msec
Min -9.0 G's at 15.7 msec

B-79



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20 February 2003

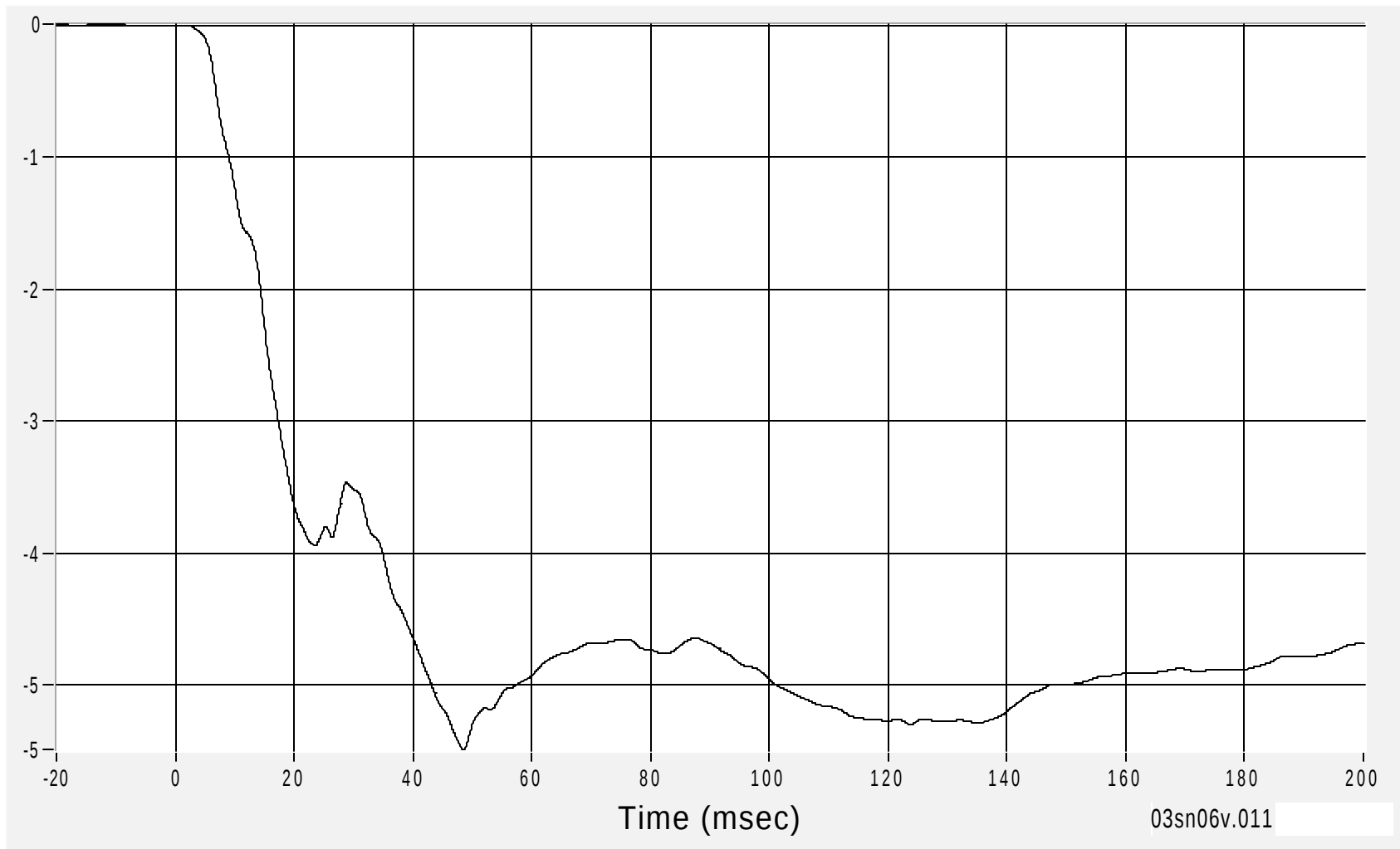
Medical College of Wisconsin
Vehicle Crashworthiness Lab

Left Side Sill at Front Seat (Y) Velocity

Velocity (km/h) CFC180

Max 0.0 km/h at 1.5 msec
Min -5.5 km/h at 48.5 msec

B-80



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20 February 2003

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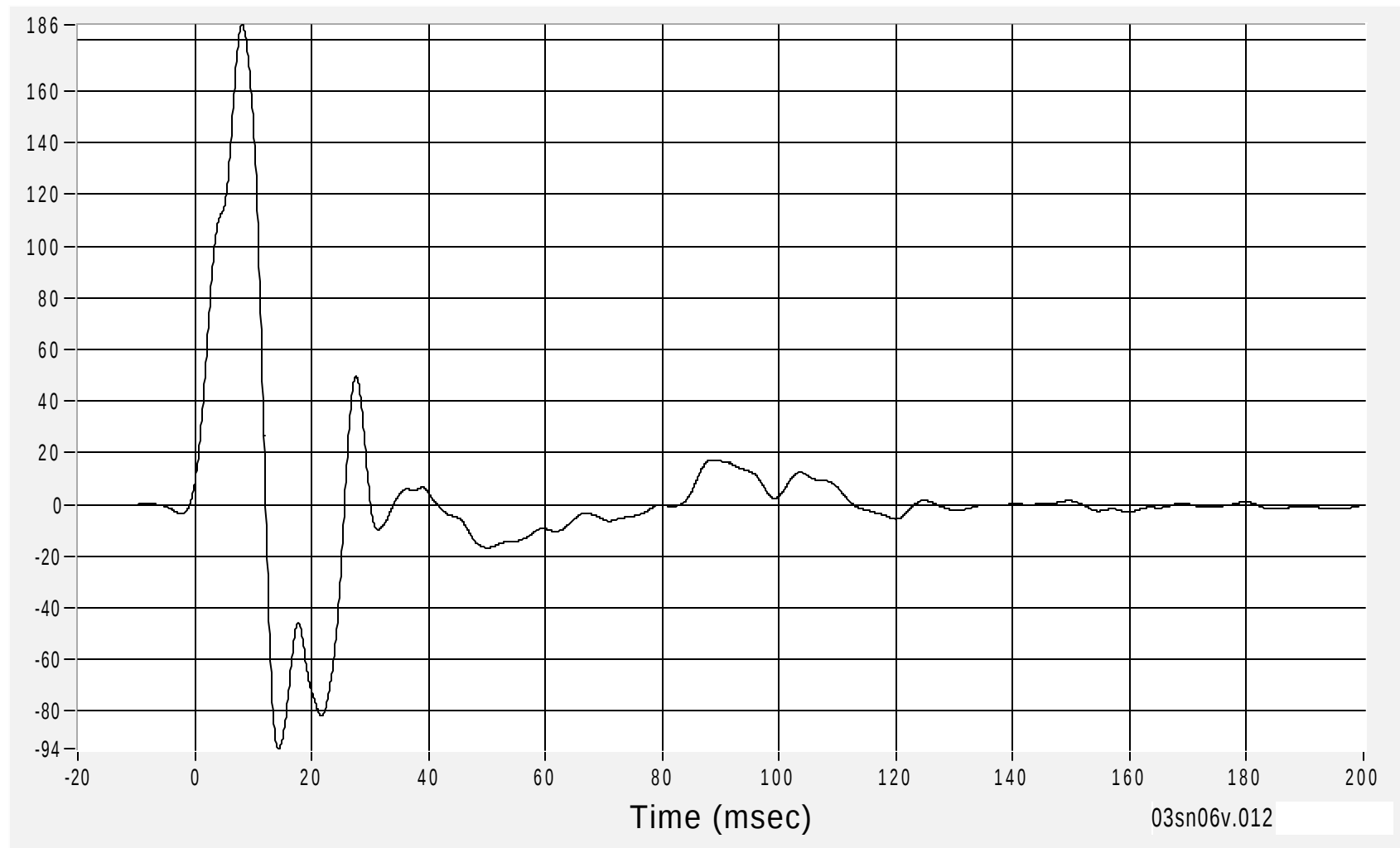
Left Front Door on Centerline (Y) Acceleration

Acceleration (G's) CFC60

Max 185.7 G's at 8.1 msec

Min -94.4 G's at 14.3 msec

B-81



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20 February 2003

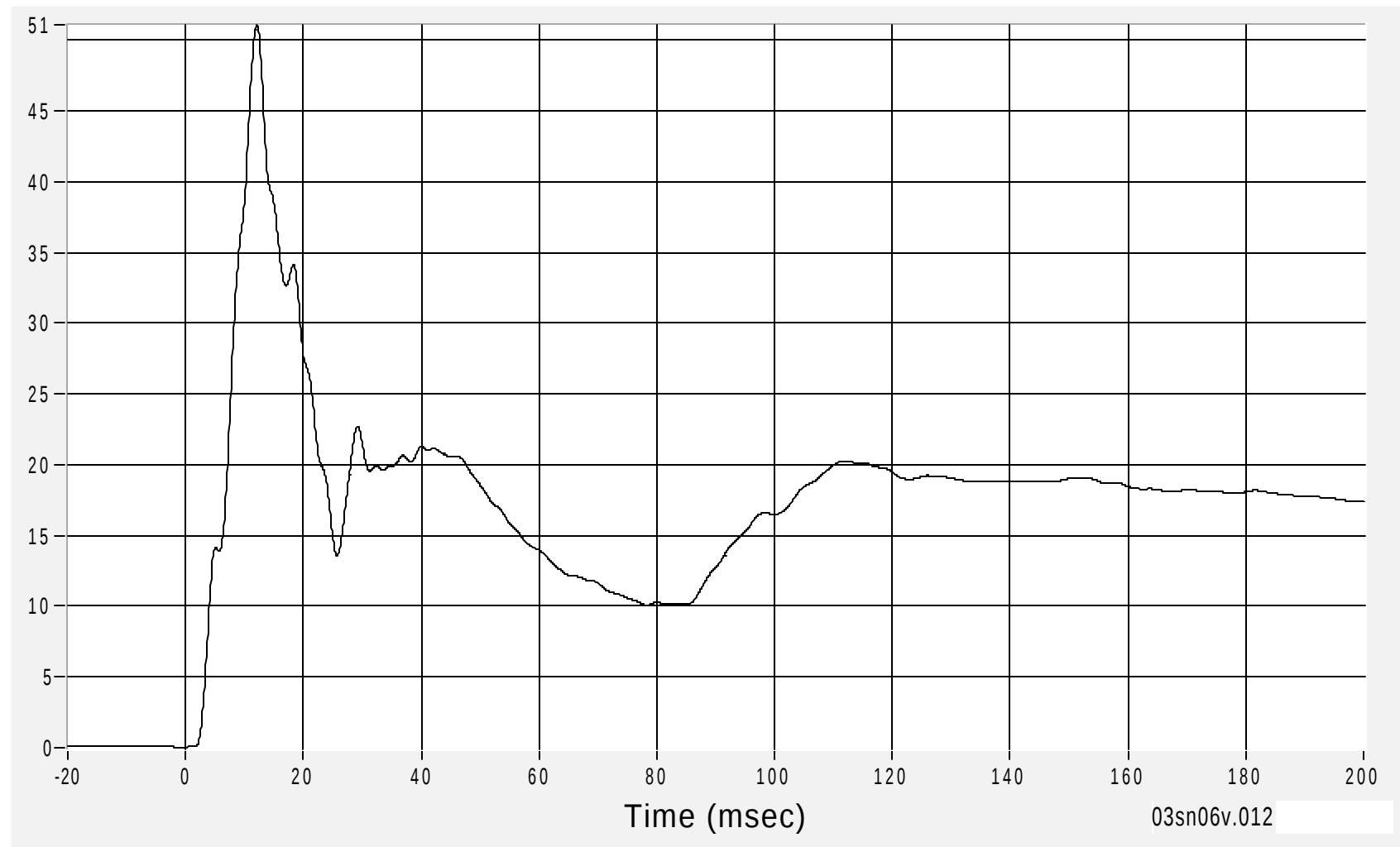
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Left Front Door on Centerline (Y) Velocity

Velocity (km/h) CFC180

Max 51.1 km/h at 12.1 msec
Min 0.0 km/h at 0.0 msec

B-82



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20 February 2003

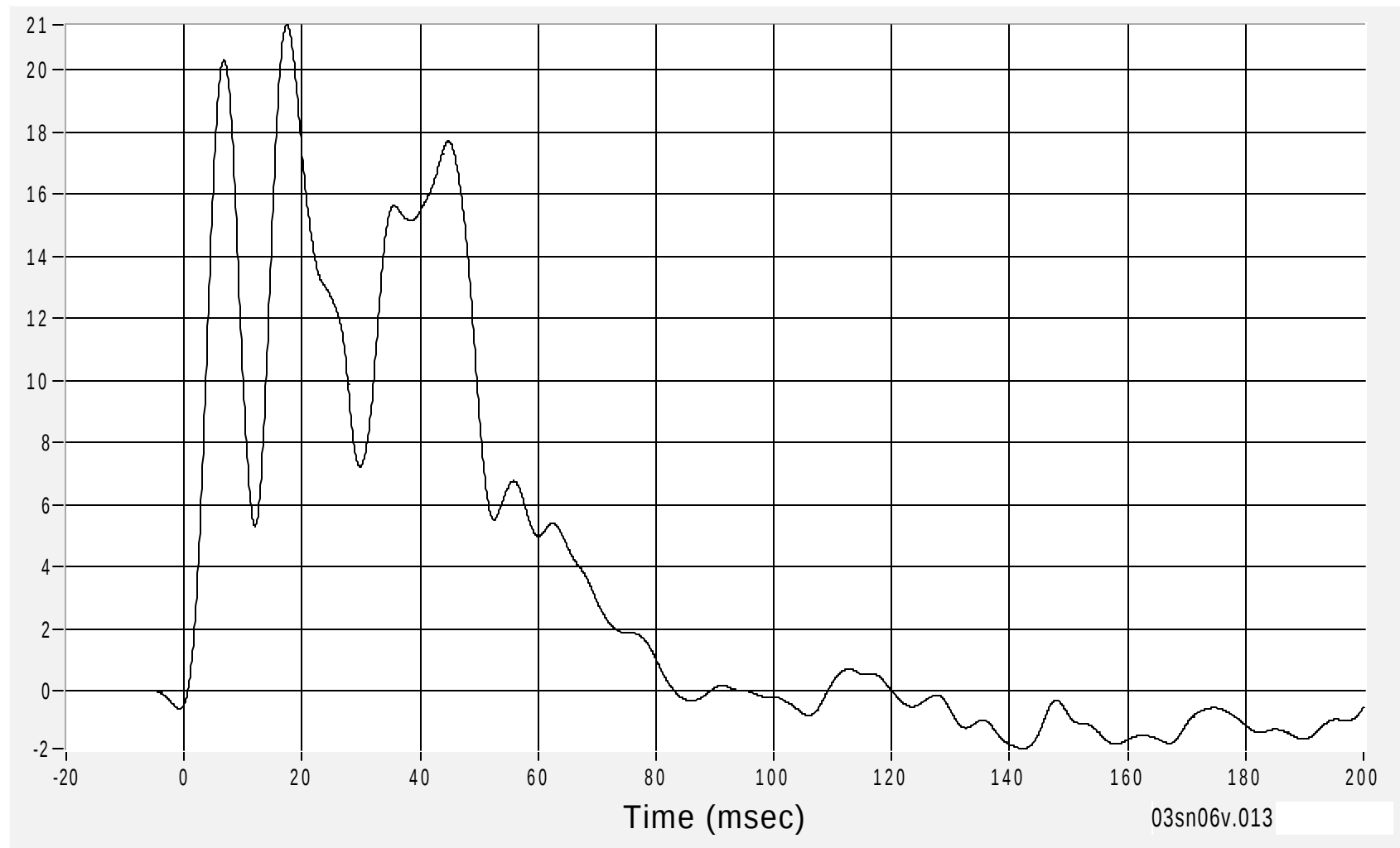
Medical College of Wisconsin
Vehicle Crashworthiness Lab

Right Rear Occupant Compartment (Y) Acceleration

Acceleration (G's) CFC60

Max 21.5 G's at 17.4 msec
Min -1.9 G's at 142.2 msec

B-83



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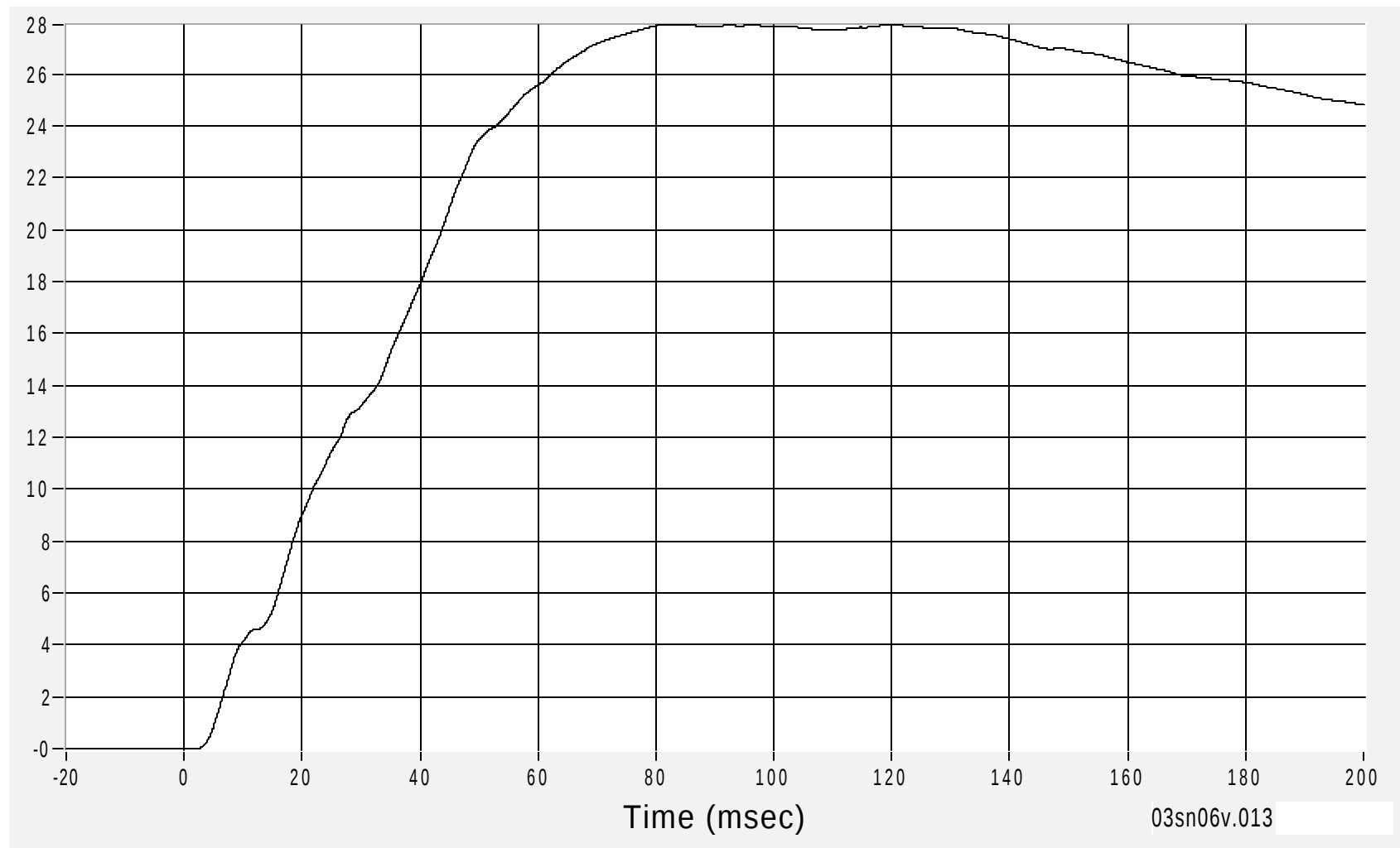
20 February 2003

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Right Rear Occupant Compartment (Y) Velocity

Velocity (km/h) CFC180

Max 27.9 km/h at 83.4 msec
Min 0.0 km/h at 1.9 msec



03sn06 - 2003 JAGUAR X-TYPE 4 DOOR SEDAN

20 February 2003

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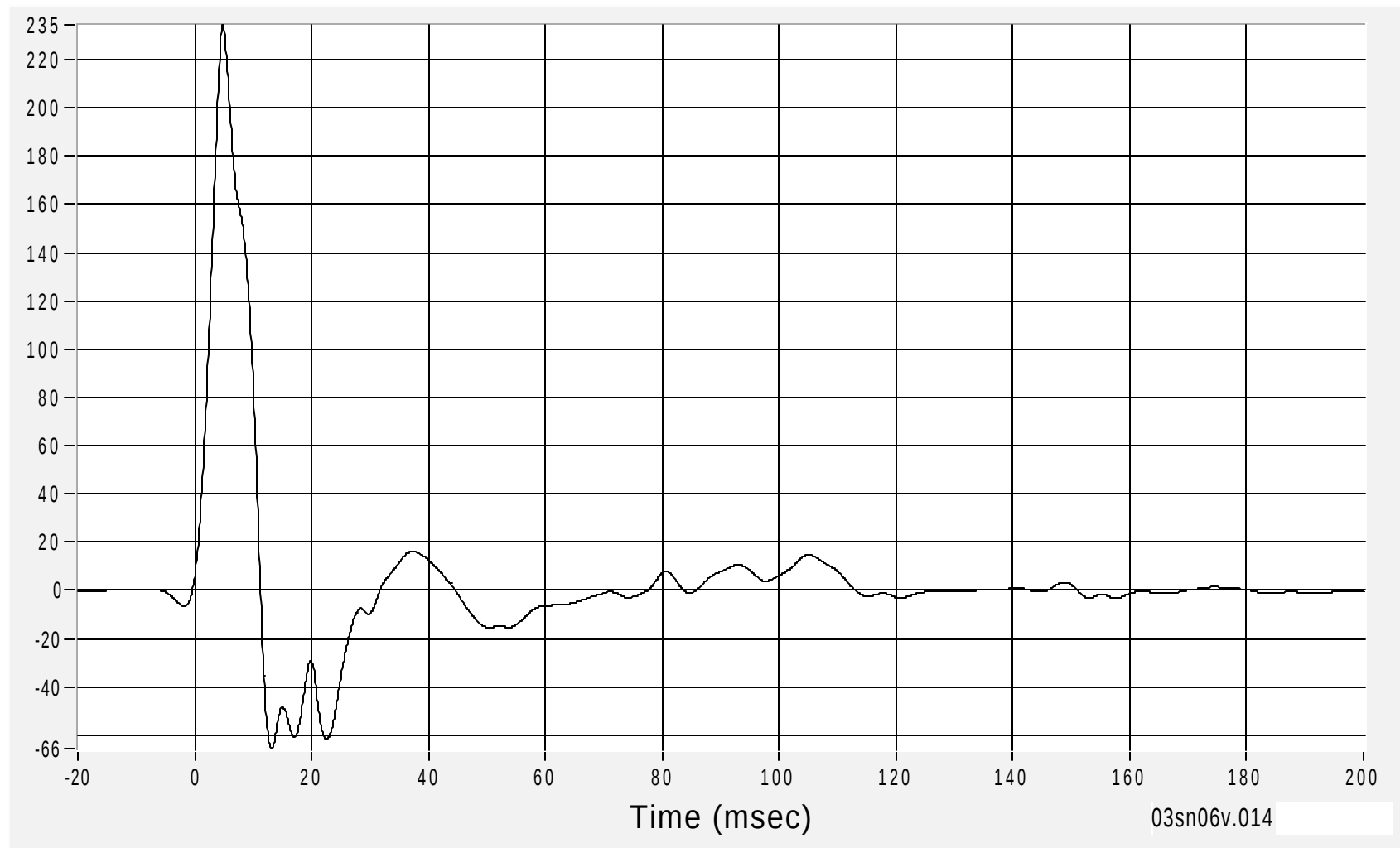
Mid-Rear of Left Front Door (Y) Acceleration

Acceleration (G's) CFC60

Max 234.5 G's at 4.8 msec

Min -65.6 G's at 13.1 msec

B-85



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20 February 2003

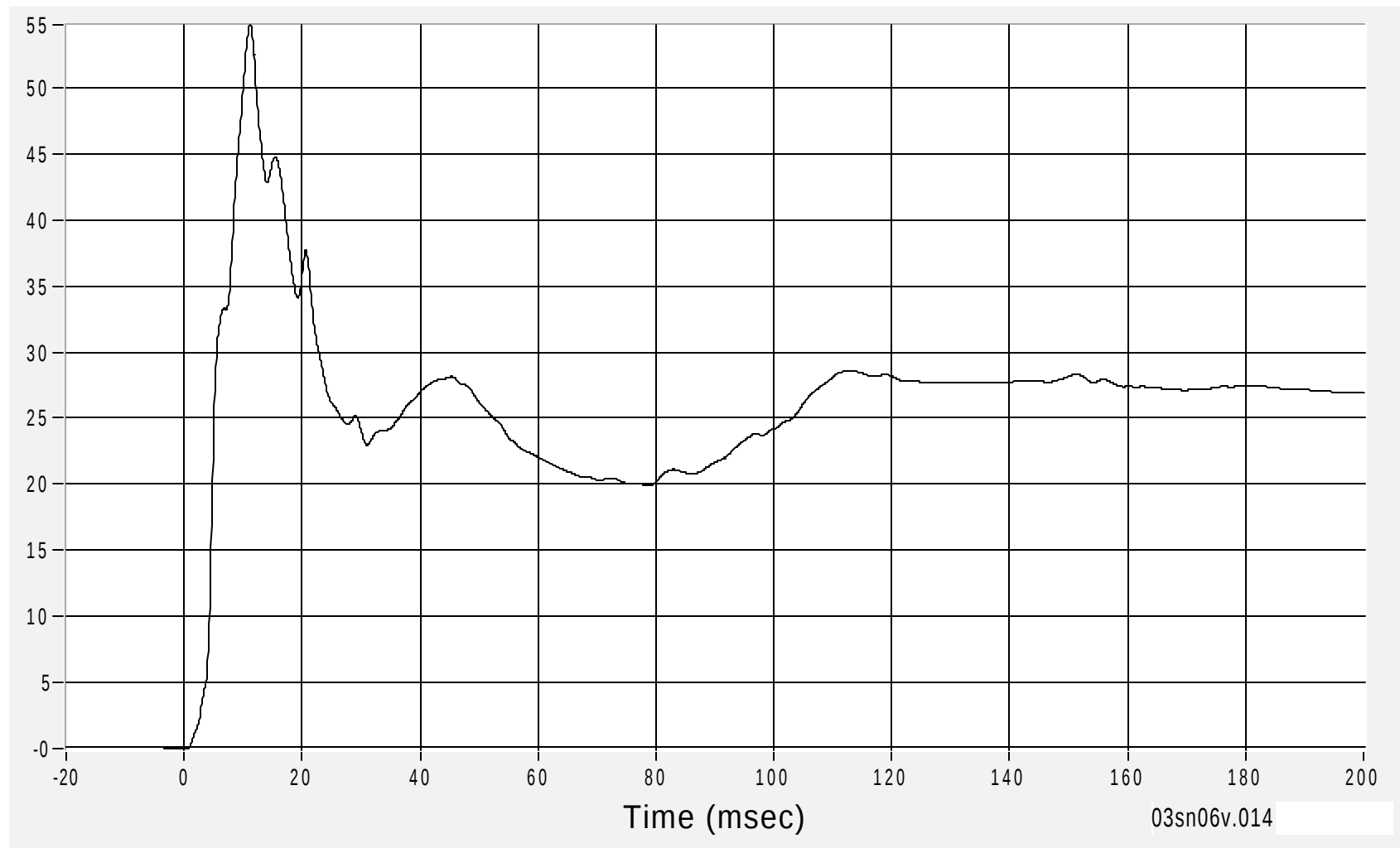
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Mid-Rear of Left Front Door (Y) Velocity

Velocity (km/h) CFC180

Max 54.8 km/h at 11.2 msec
Min 0.0 km/h at 0.5 msec

B-86



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20 February 2003

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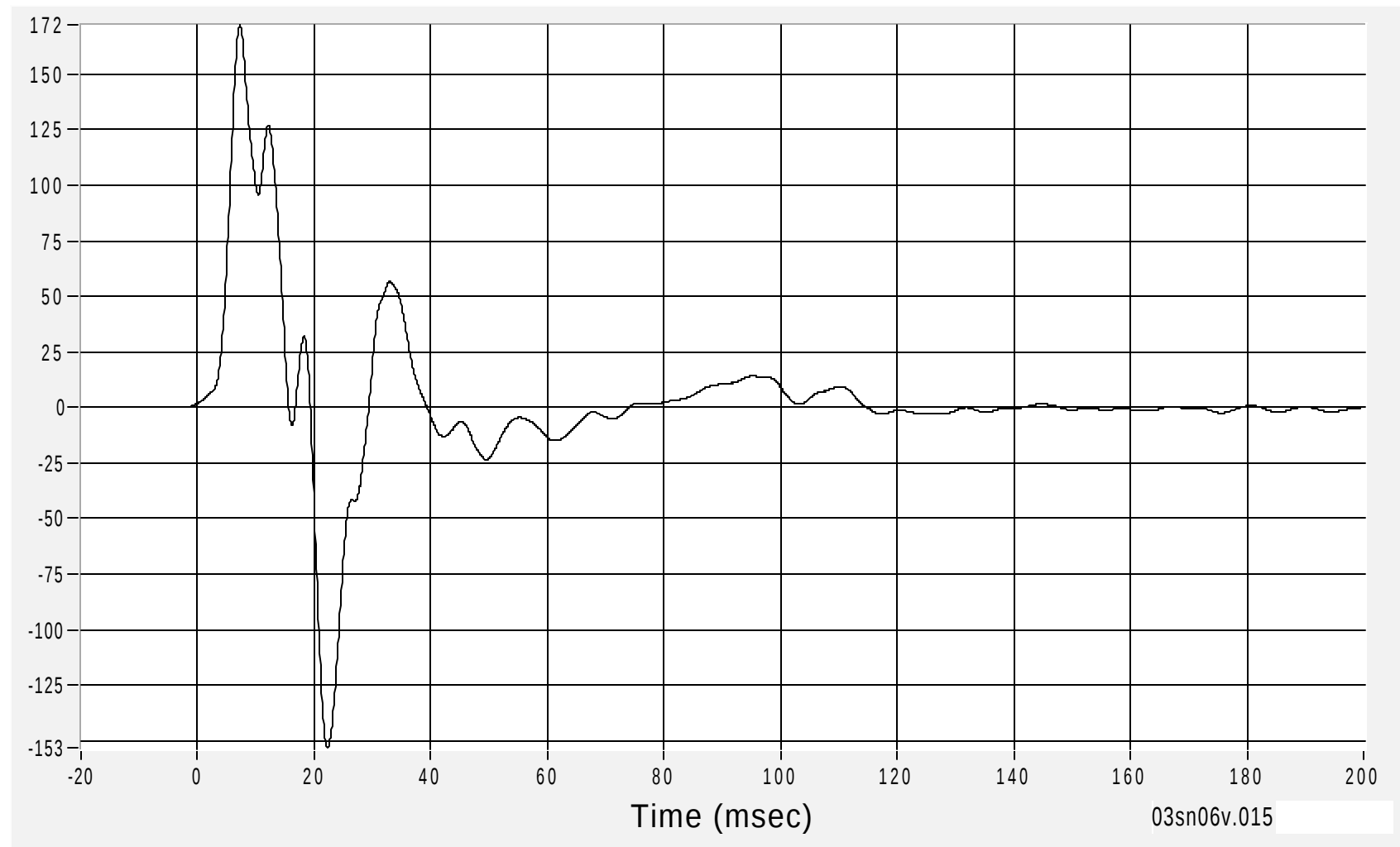
Left Front Door Upper Centerline (Y) Acceleration

Acceleration (G's) CFC60

Max 172.3 G's at 7.2 msec

Min -153.2 G's at 22.3 msec

B-87



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20 February 2003

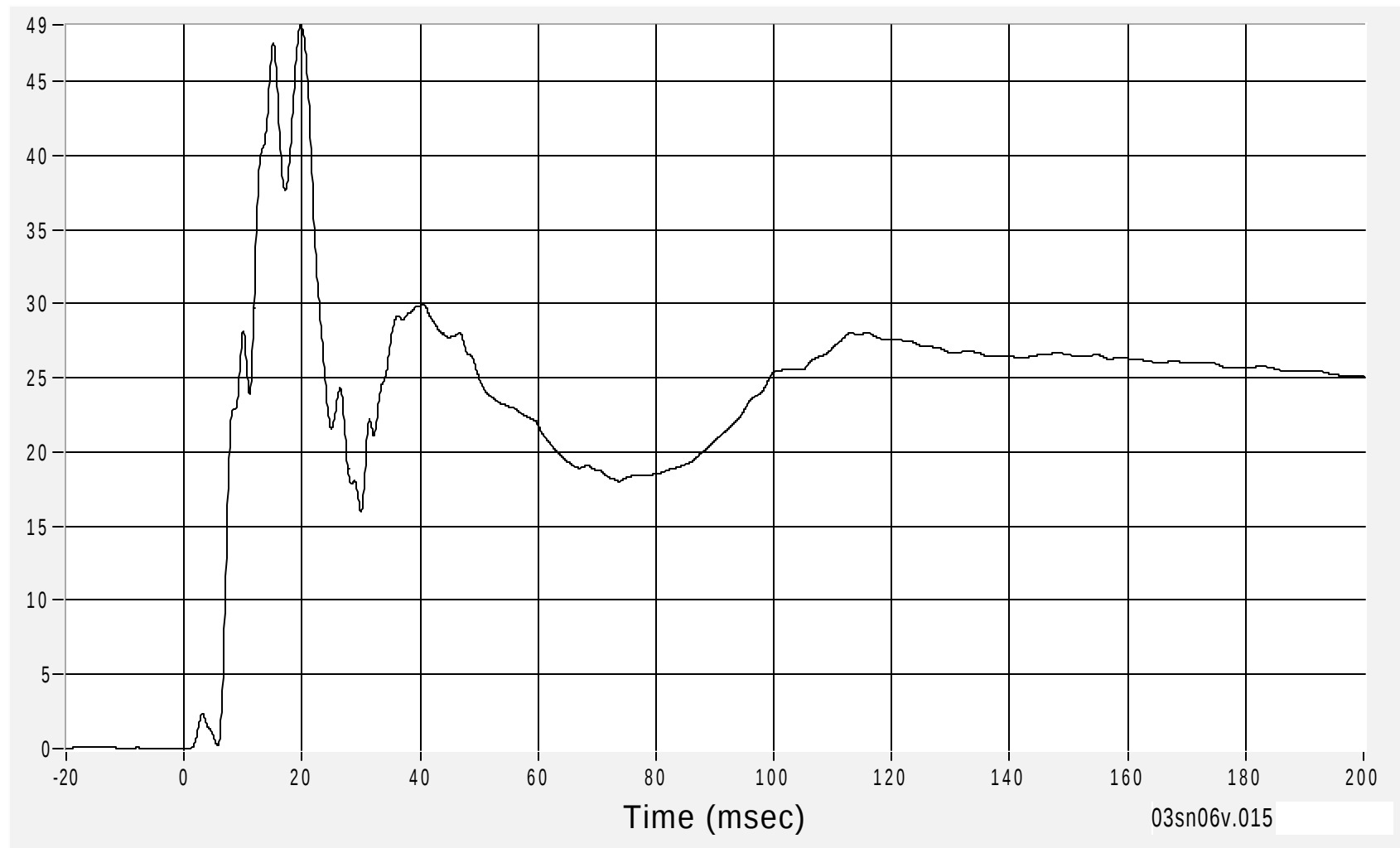
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Left Front Door Upper Centerline (Y) Velocity

Velocity (km/h) CFC180

Max 48.8 km/h at 19.8 msec
Min 0.0 km/h at 0.0 msec

B-88



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20 February 2003

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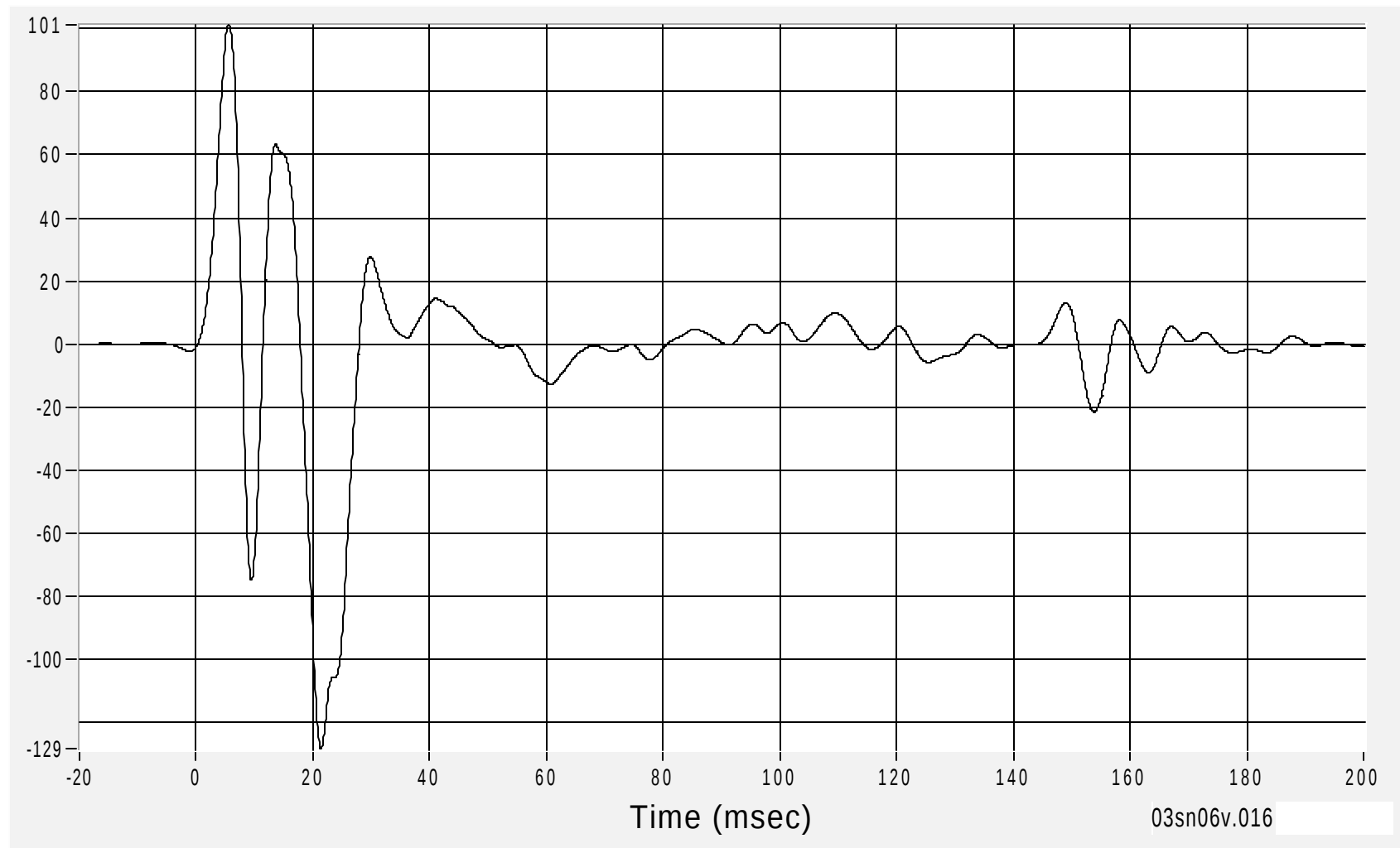
Mid-Rear of Left Rear Door (Y) Acceleration

Acceleration (G's) CFC60

Max 101.3 G's at 5.6 msec

Min -128.5 G's at 21.4 msec

B-89



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20 February 2003

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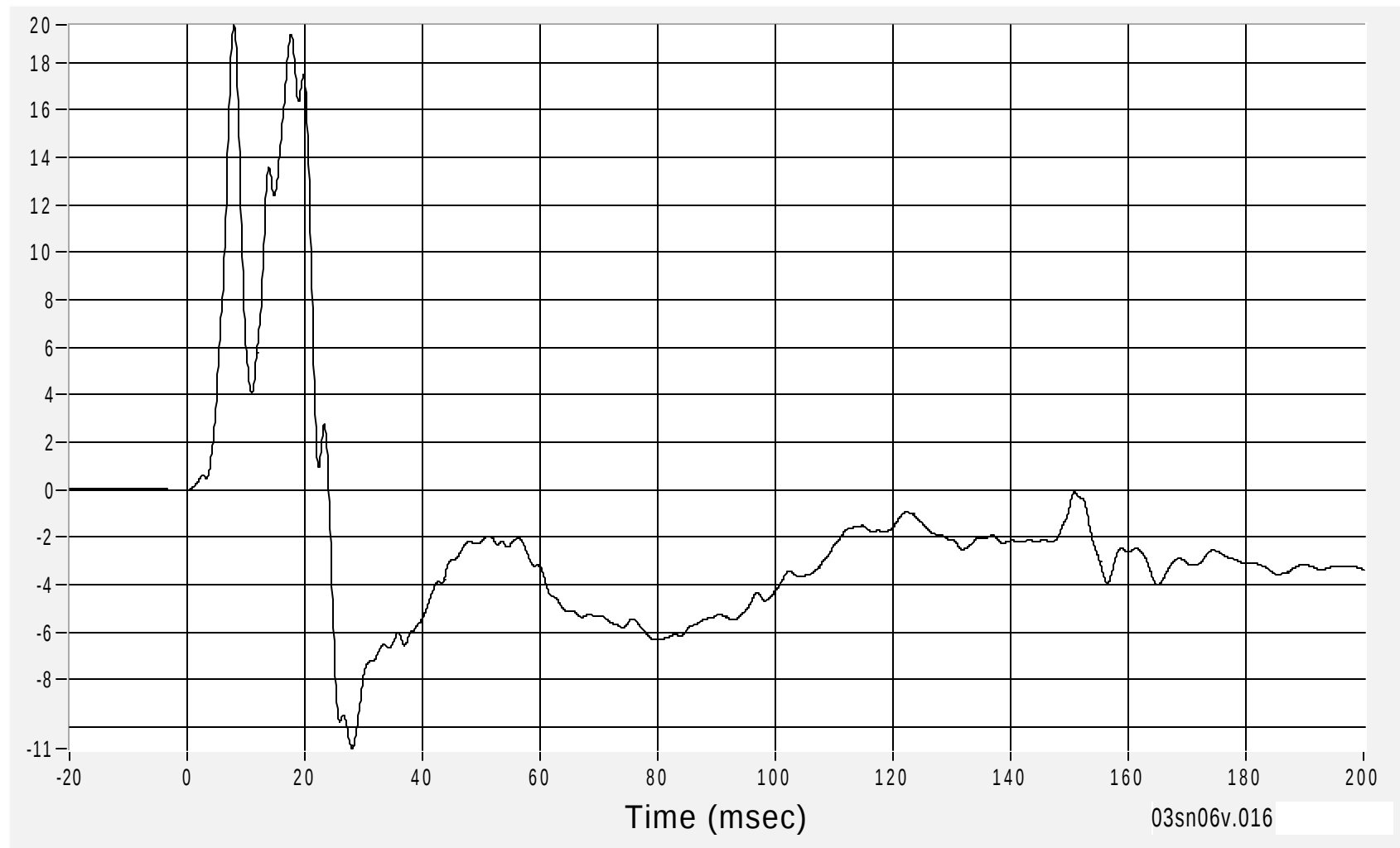
Mid-Rear of Left Rear Door (Y) Velocity

Velocity (km/h) CFC180

Max 19.6 km/h at 7.9 msec

Min -10.9 km/h at 28.0 msec

B-90



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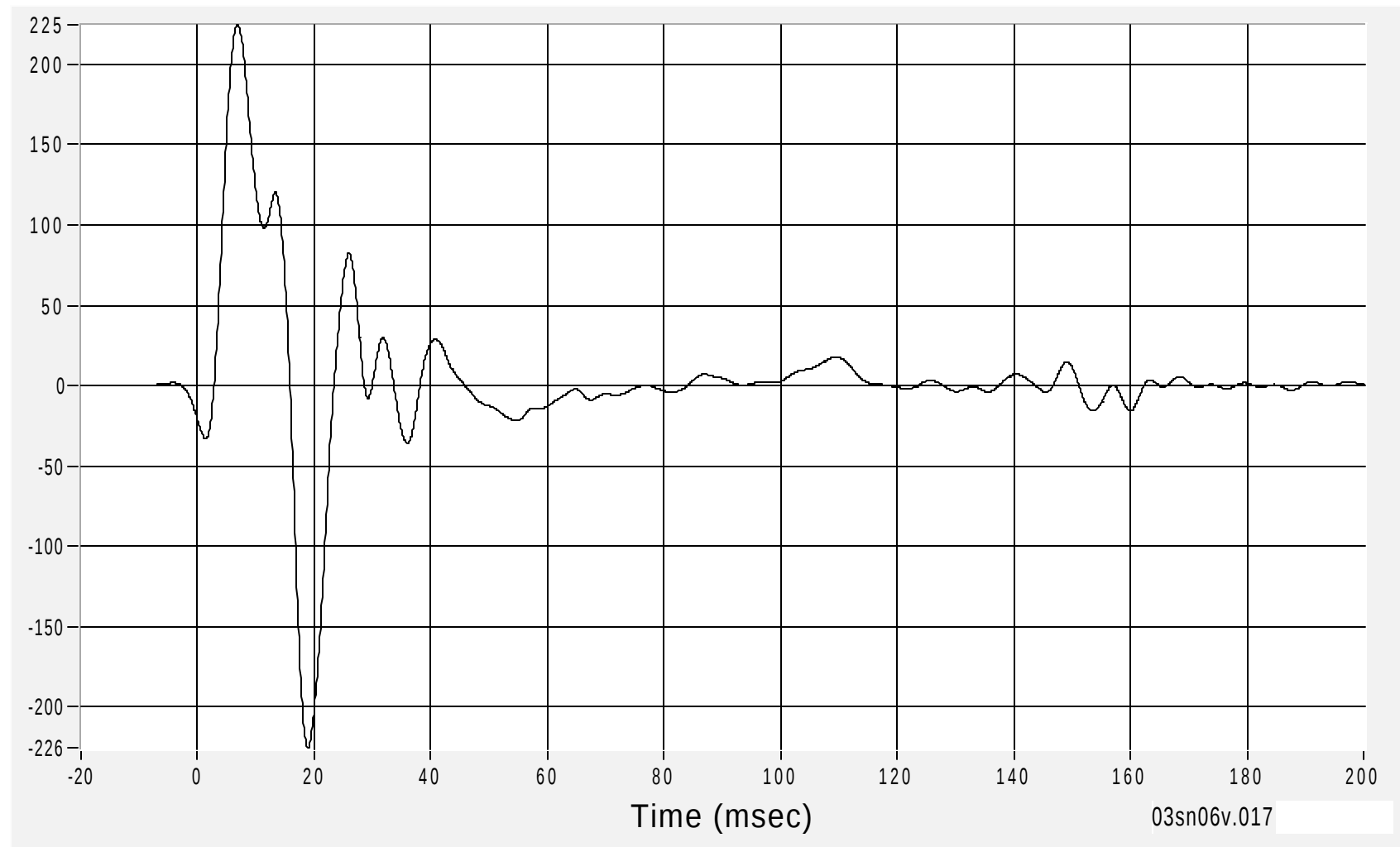
Left Rear Door Upper Centerline (Y) Acceleration

Acceleration (G's) CFC60

Max 224.6 G's at 6.8 msec

Min -225.6 G's at 18.9 msec

B-91



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20 February 2003

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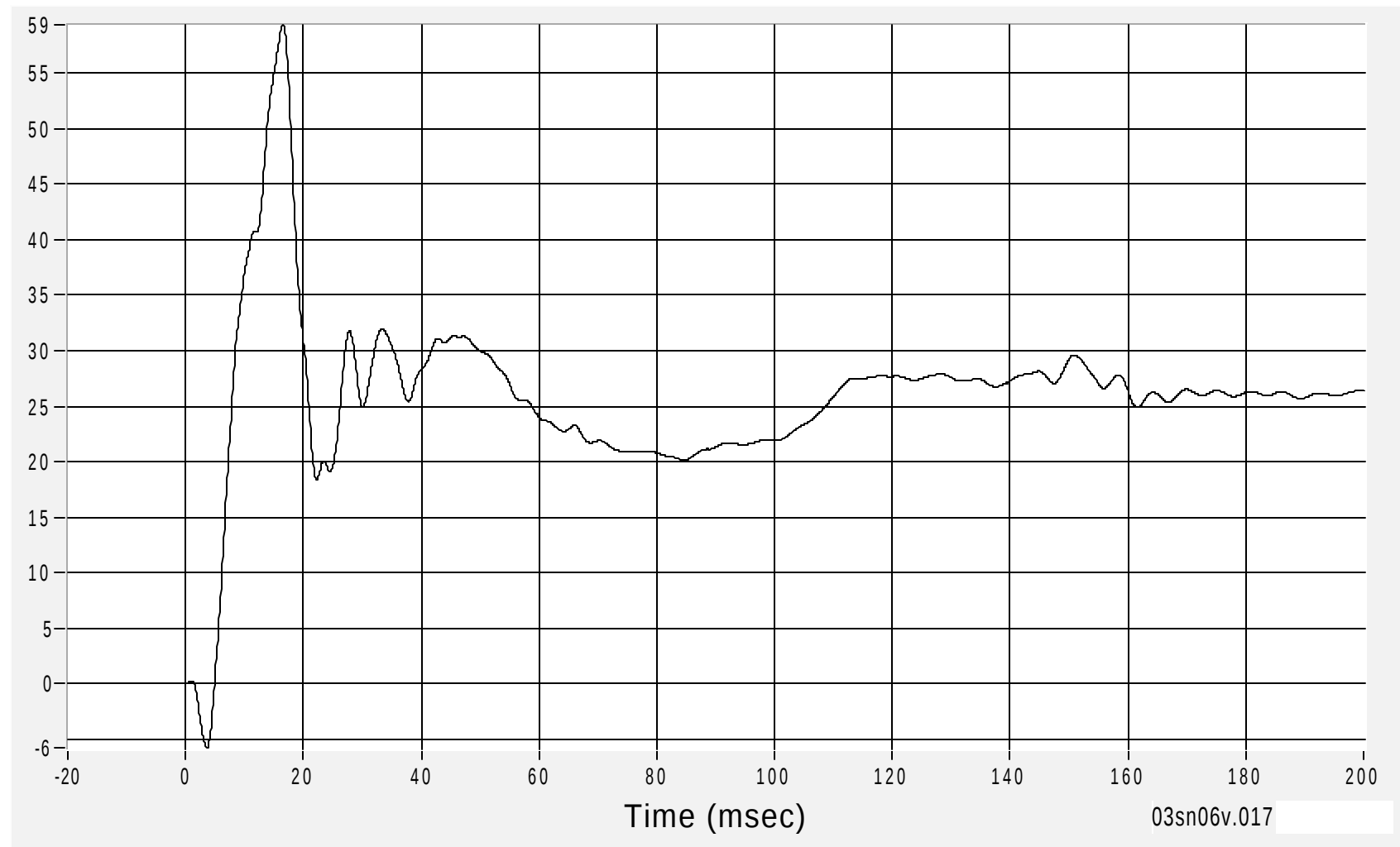
Left Rear Door Upper Centerline (Y) Velocity

Velocity (km/h) CFC180

Max 59.4 km/h at 16.5 msec

Min -5.8 km/h at 3.6 msec

B-92



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20 February 2003

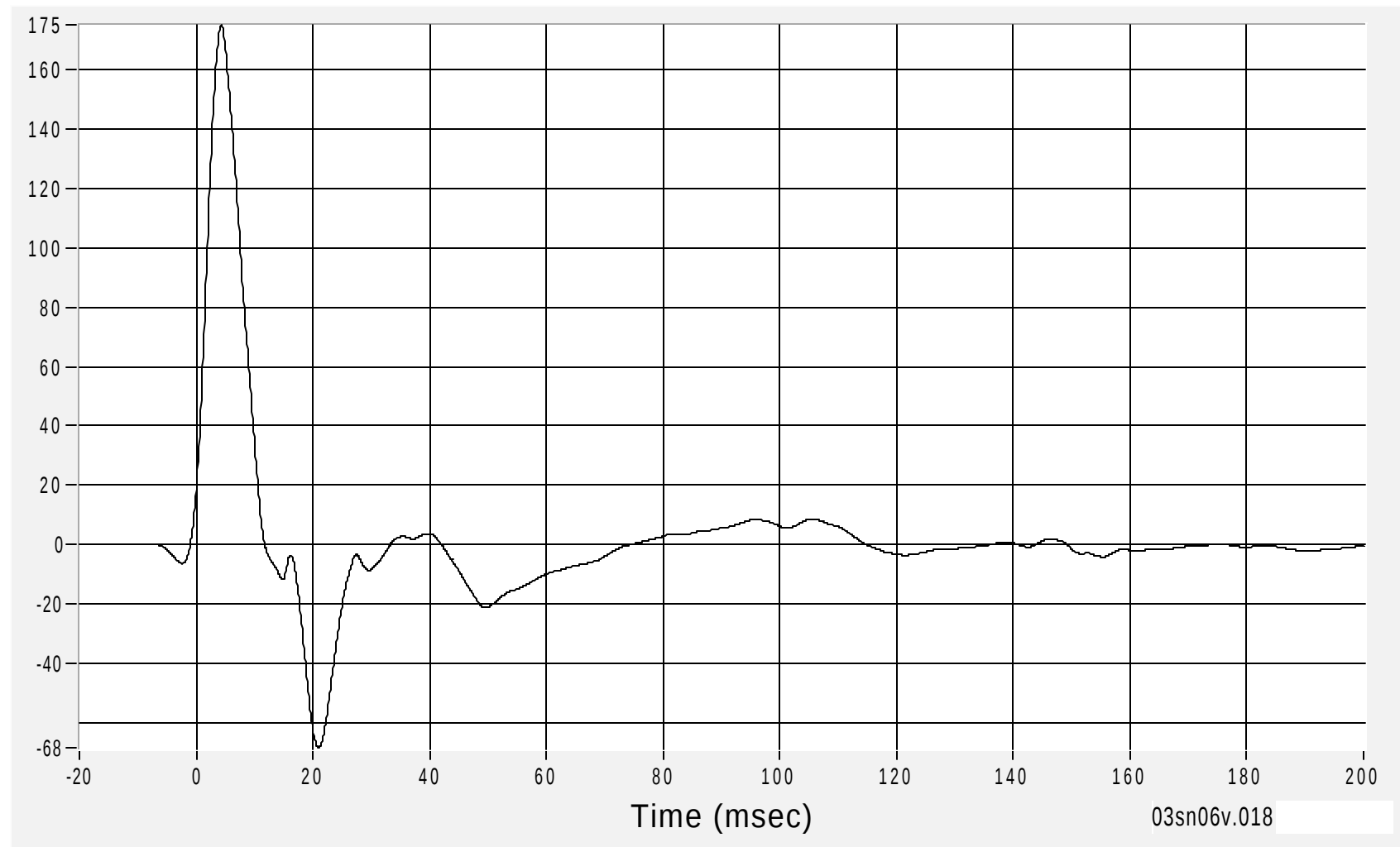
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Left Lower B-Pillar (Y) Acceleration

Acceleration (G's) CFC60

Max 175.1 G's at 4.3 msec
Min -68.4 G's at 21.0 msec

B-93



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20 February 2003

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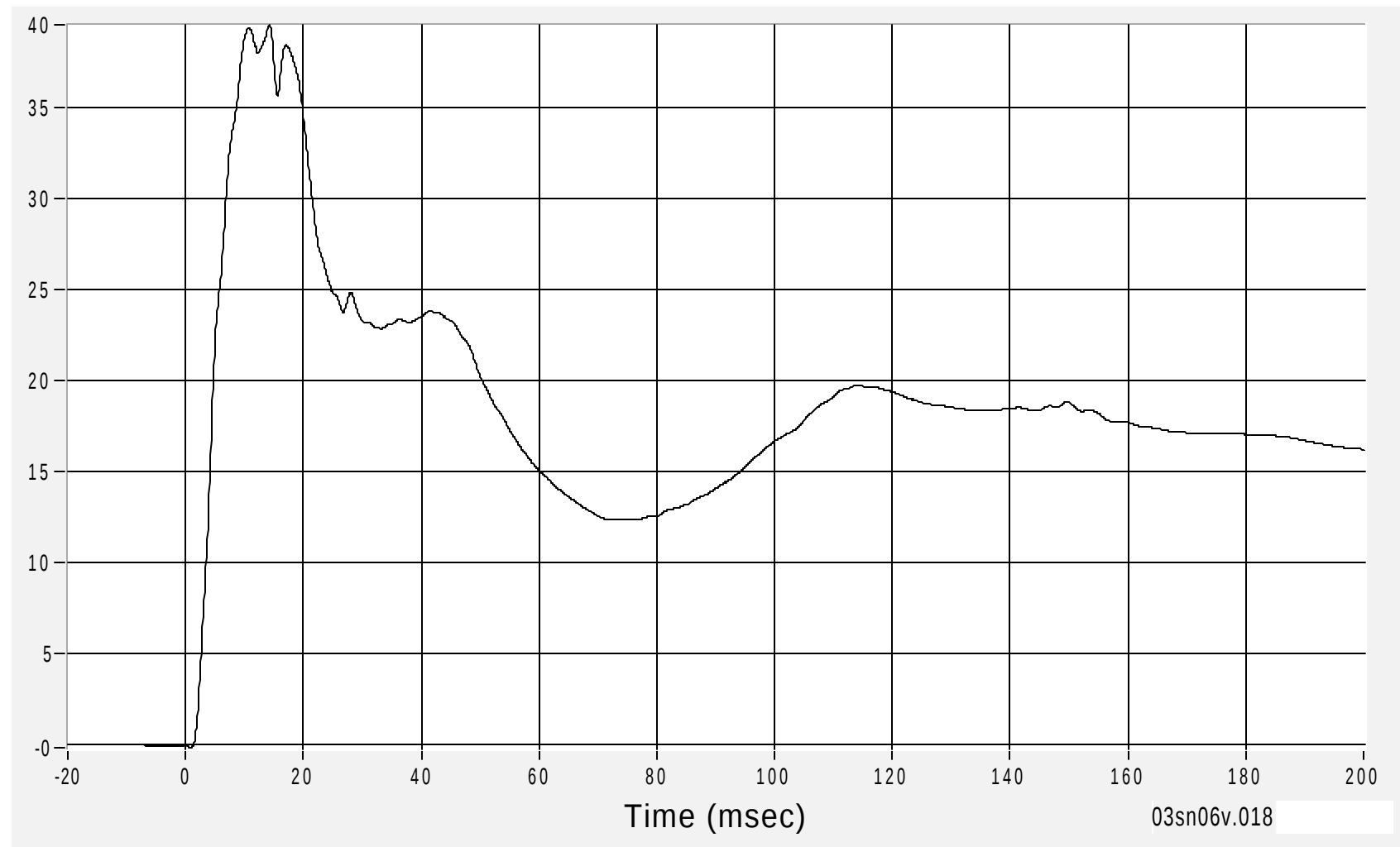
Left Lower B-Pillar (Y) Velocity

Velocity (km/h) CFC180

Max 39.6 km/h at 14.2 msec

Min -0.2 km/h at 1.0 msec

B-94



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20 February 2003

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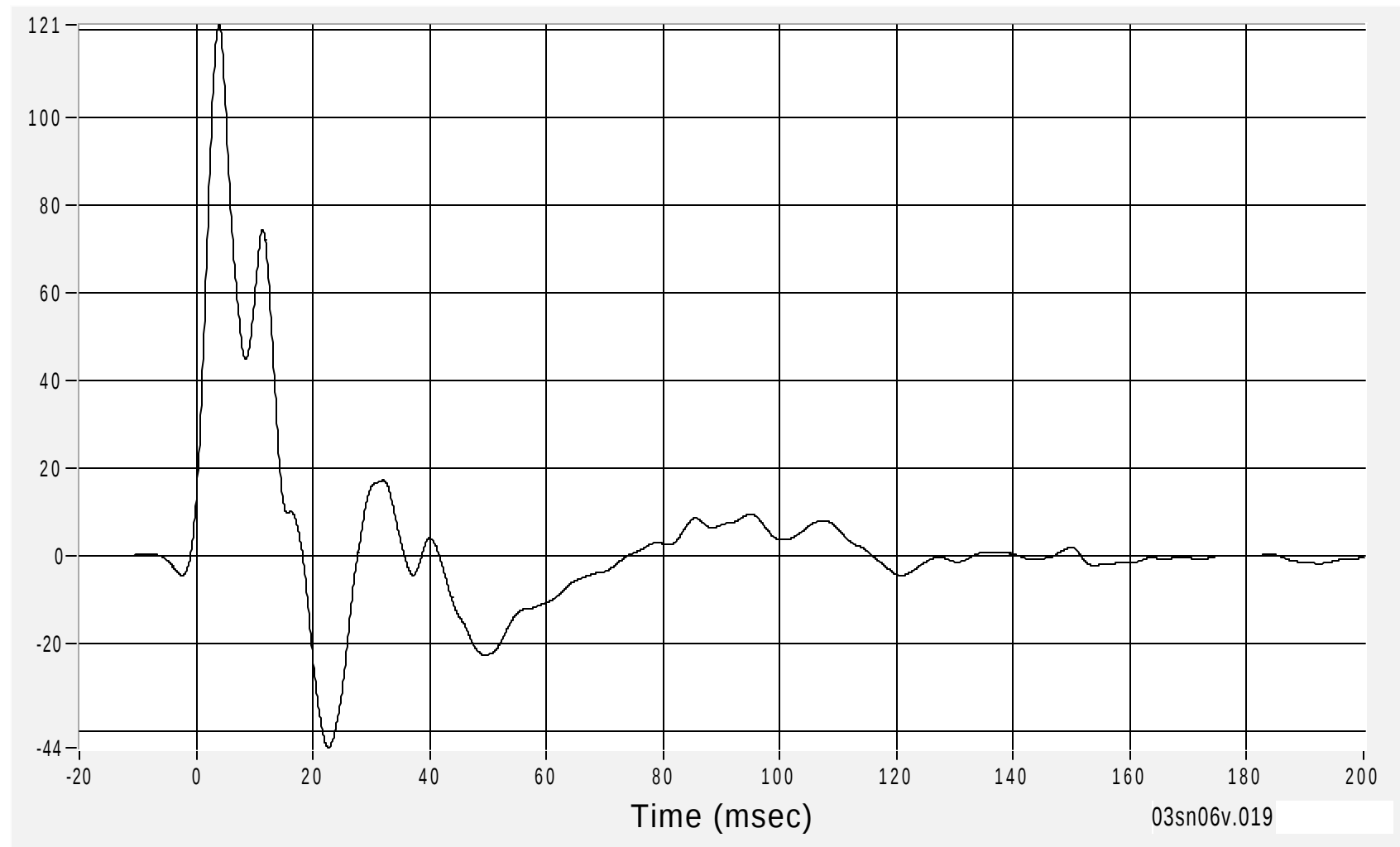
Left Middle B-Pillar (Y) Acceleration

Acceleration (G's) CFC60

Max 121.0 G's at 3.9 msec

Min -43.9 G's at 22.6 msec

B-95



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20 February 2003

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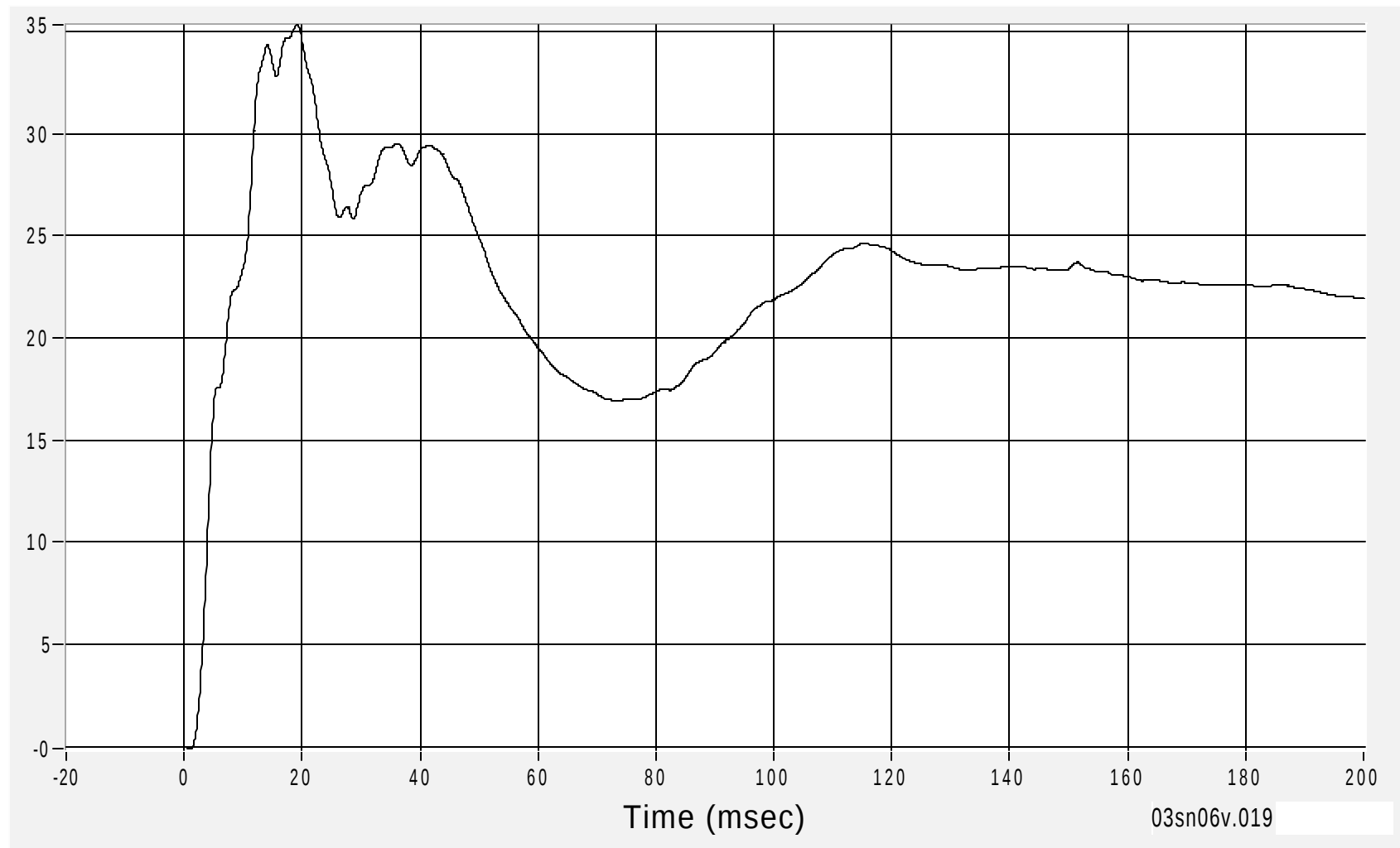
Left Middle B-Pillar (Y) Velocity

Velocity (km/h) CFC180

Max 35.3 km/h at 19.1 msec

Min 0.0 km/h at 1.0 msec

B-96



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20 February 2003

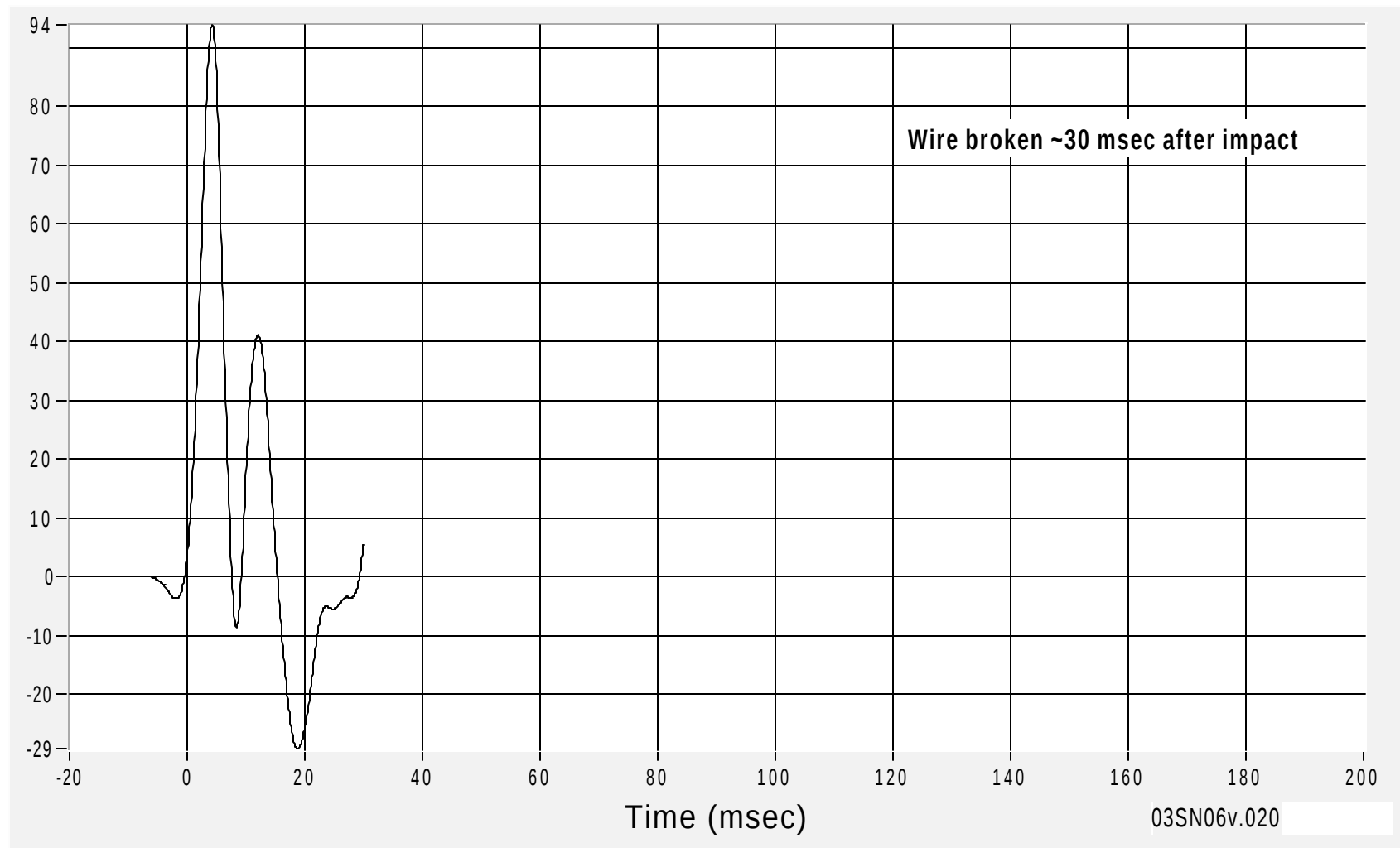
Medical College of Wisconsin
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Left Lower A-Pillar (Y) Acceleration

Acceleration (G's) CFC60

Max 94.0 G's at 4.2 msec

Min -29.3 G's at 18.7 msec



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20 February 2003

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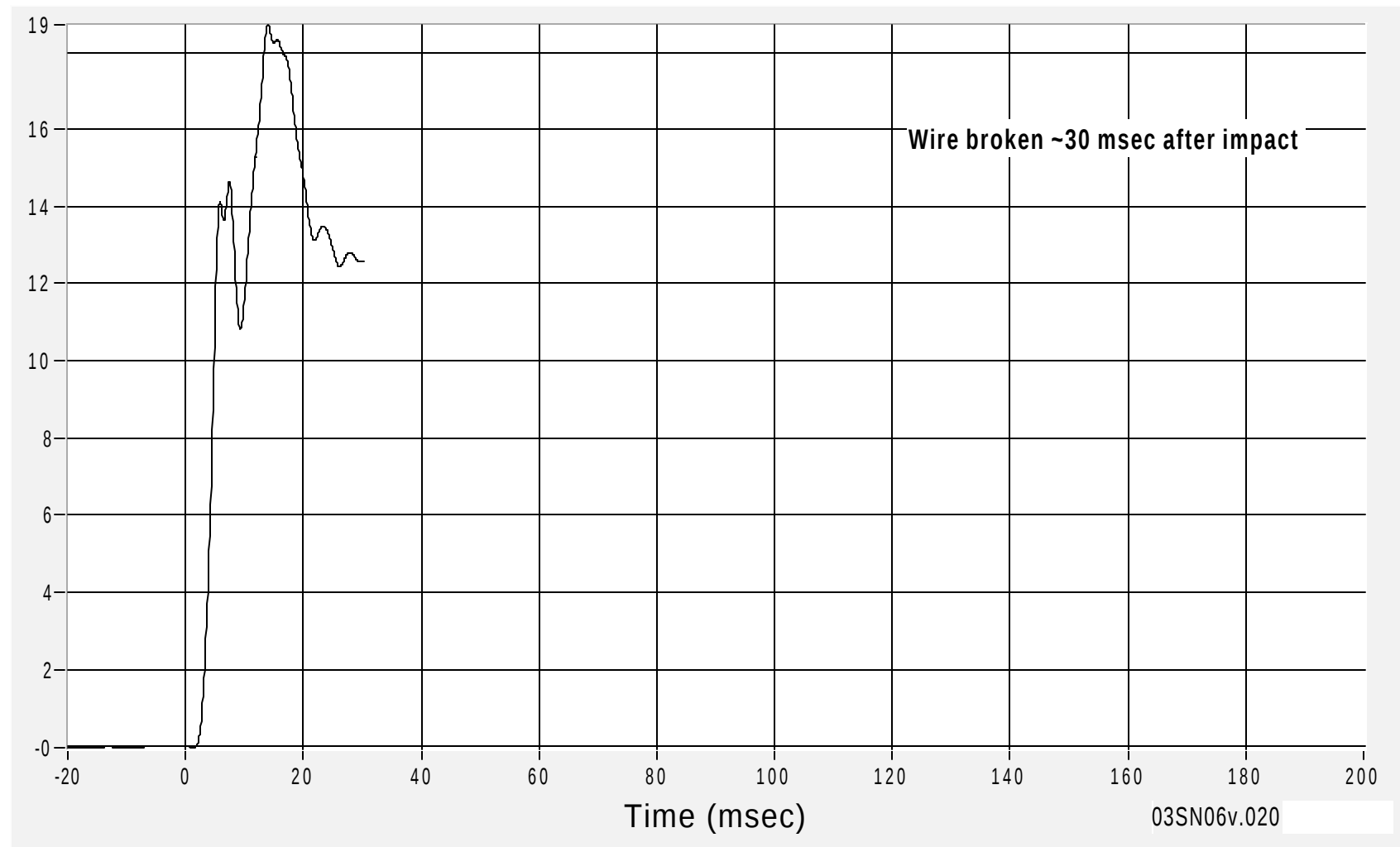
Left Lower A-Pillar (Y) Velocity

Velocity (km/h) CFC180

Max 18.7 km/h at 14.0 msec

Min 0.0 km/h at 1.4 msec

B-98



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20 February 2003

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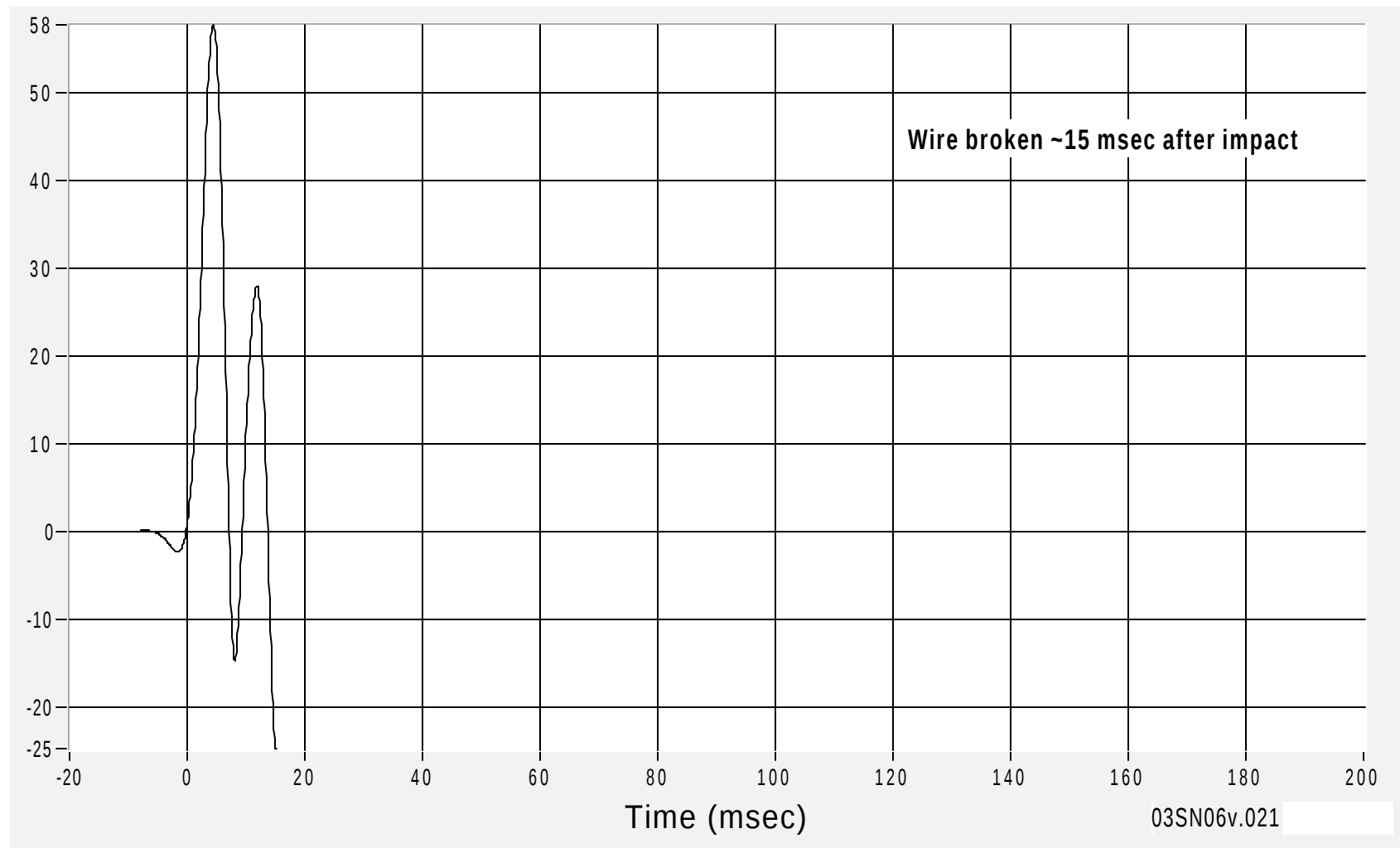
Left Middle A-Pillar (Y) Acceleration

Acceleration (G's) CFC60

Max 57.7 G's at 4.5 msec

Min -24.6 G's at 14.9 msec

B-99



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20 February 2003

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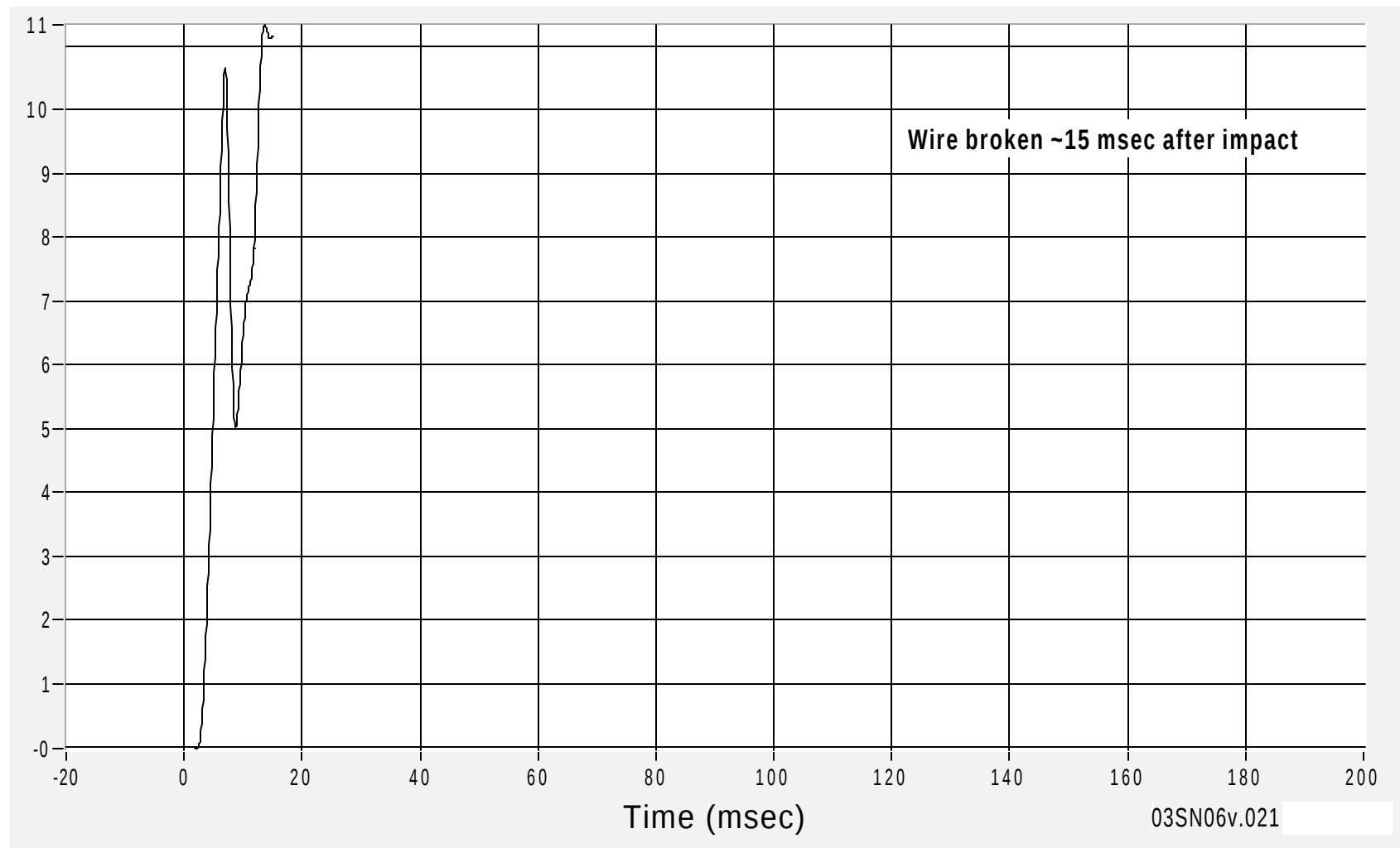
Left Middle A-Pillar (Y) Velocity

Velocity (km/h) CFC180

Max 11.3 km/h at 13.7 msec

Min 0.0 km/h at 2.2 msec

B-100



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20 February 2003

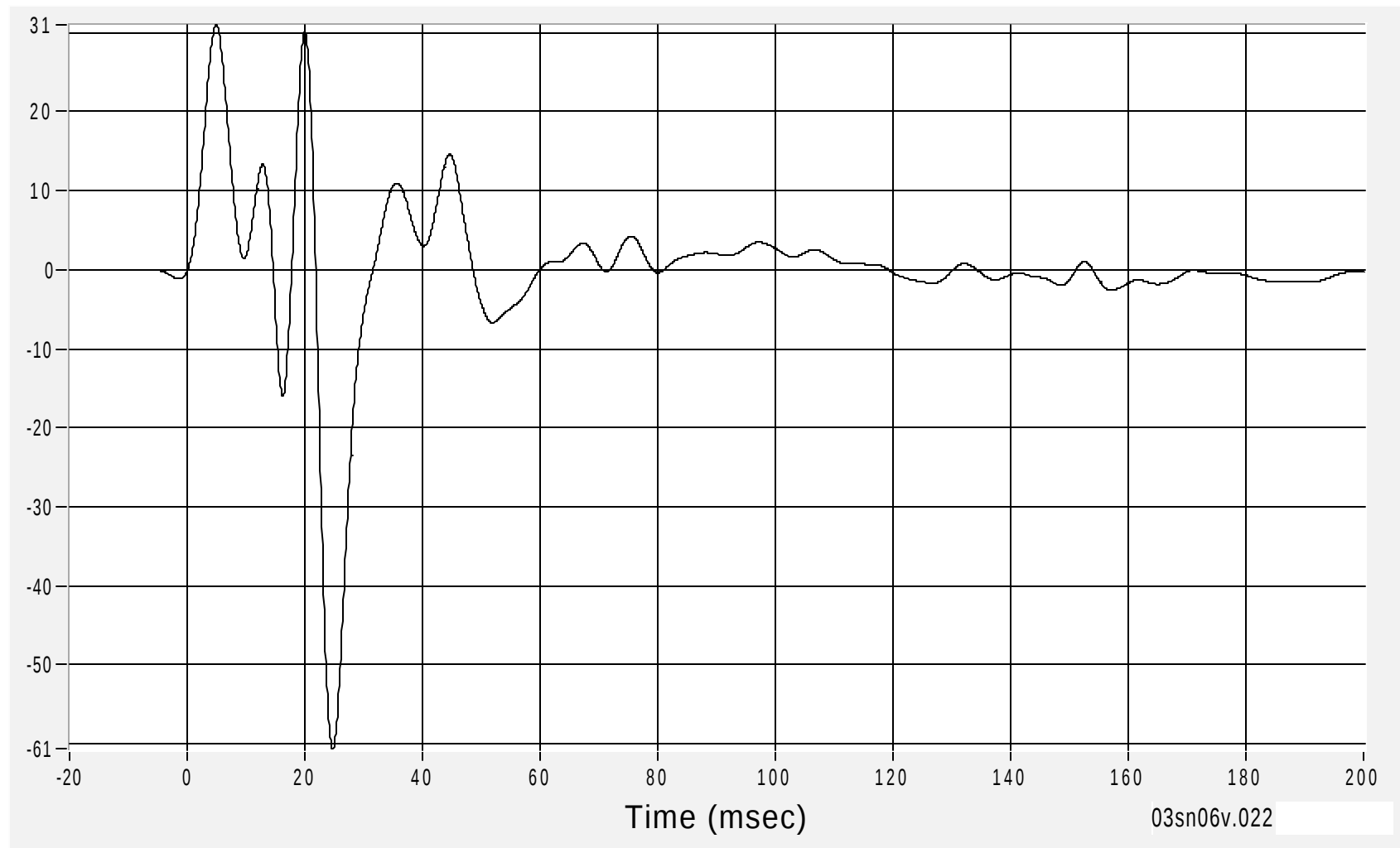
Medical College of Wisconsin
Vehicle Crashworthiness Lab

Front Seat Track (Y) Acceleration

Acceleration (G's) CFC60

Max 31.0 G's at 5.0 msec
Min -60.6 G's at 24.8 msec

B-101



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20 February 2003

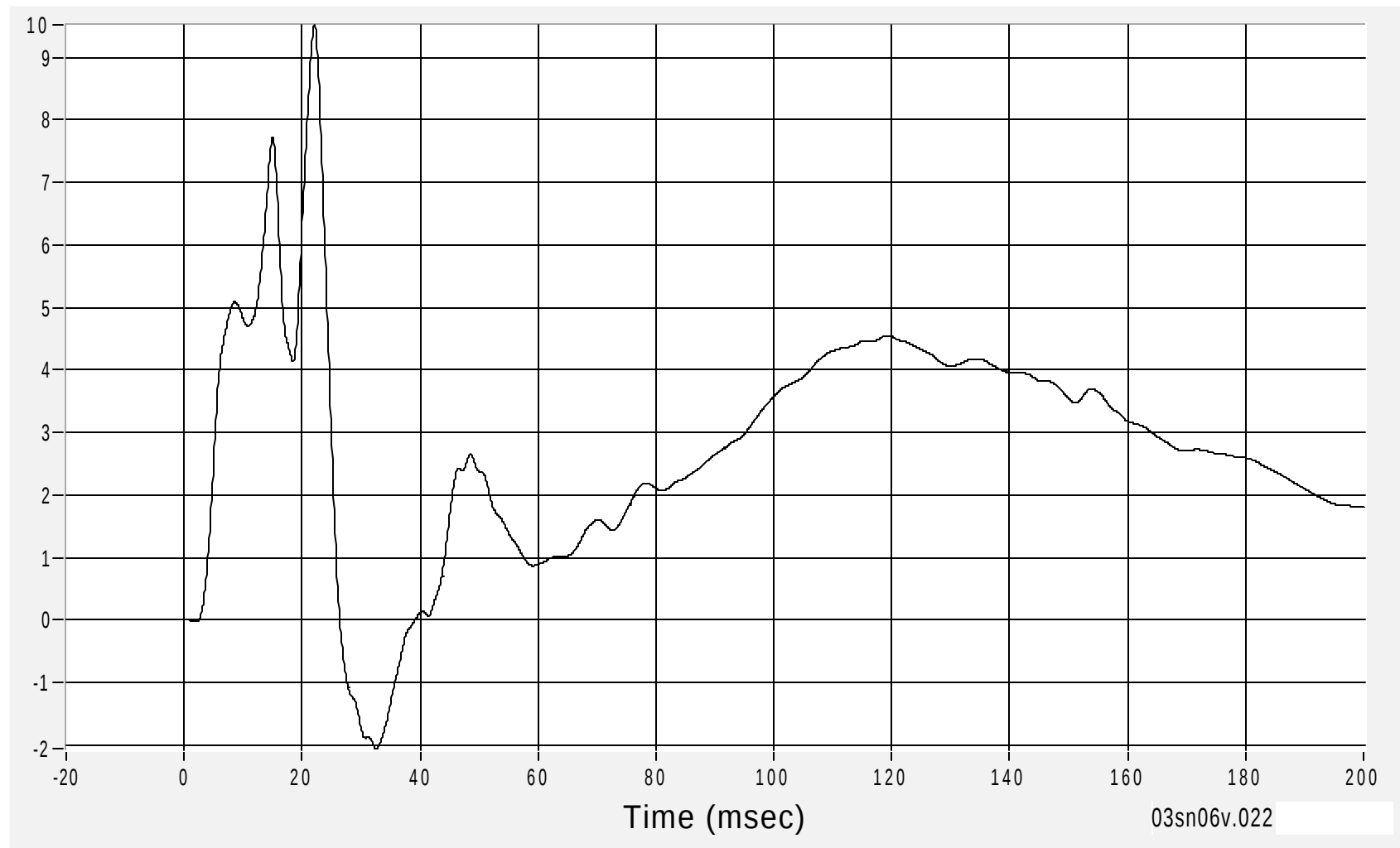
Medical College of Wisconsin
Vehicle Crashworthiness Lab

Front Seat Track (Y) Velocity

Velocity (km/h) CFC180

Max 9.5 km/h at 22.1 msec
Min -2.1 km/h at 32.6 msec

B-102



03sn06 - 2003 JAGUAR X-TYPE 4 DOOR SEDAN

20 February 2003

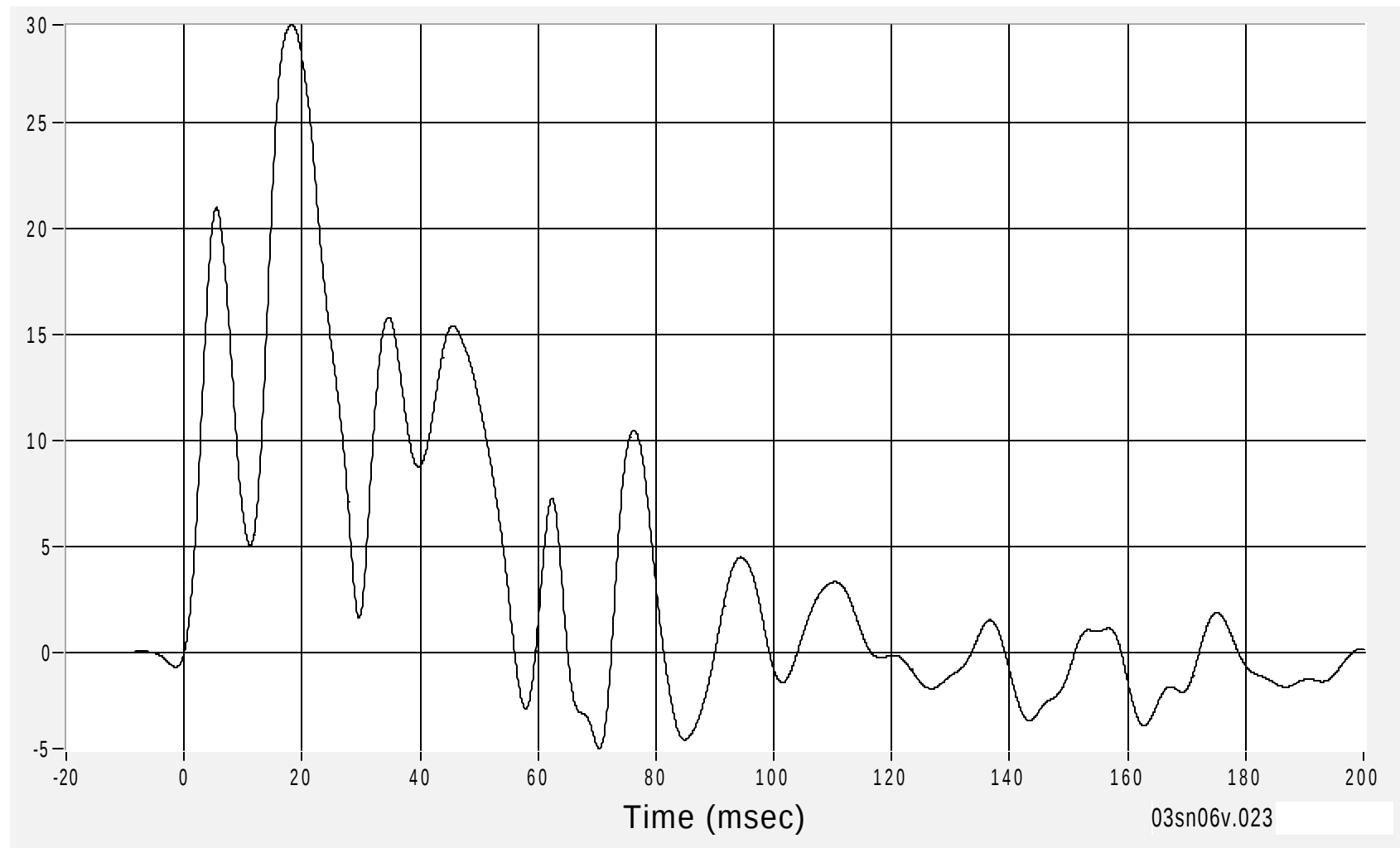
Medical College of Wisconsin
Vehicle Crashworthiness Lab

Rear Seat Track (Y) Acceleration

Acceleration (G's) CFC60

Max 29.6 G's at 18.2 msec
Min -4.5 G's at 70.4 msec

B-103



03sn06 - 2003 JAGUAR X-TYPE 4 DOOR SEDAN

20 February 2003

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Vehicle Crashworthiness Lab

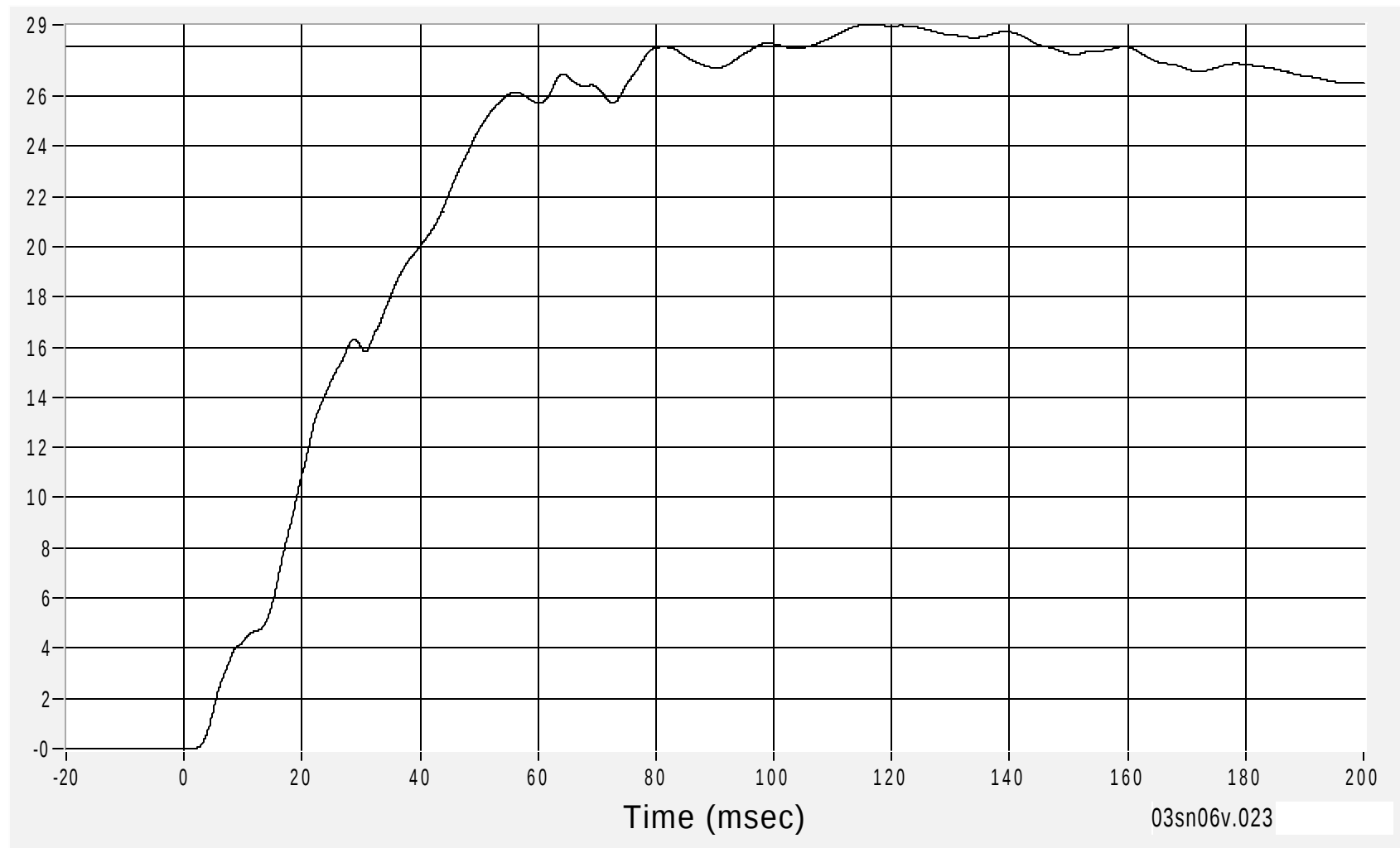
Rear Seat Track (Y) Velocity

Velocity (km/h) CFC180

Max 28.9 km/h at 115.7 msec

Min 0.0 km/h at 1.5 msec

B-104



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20 February 2003

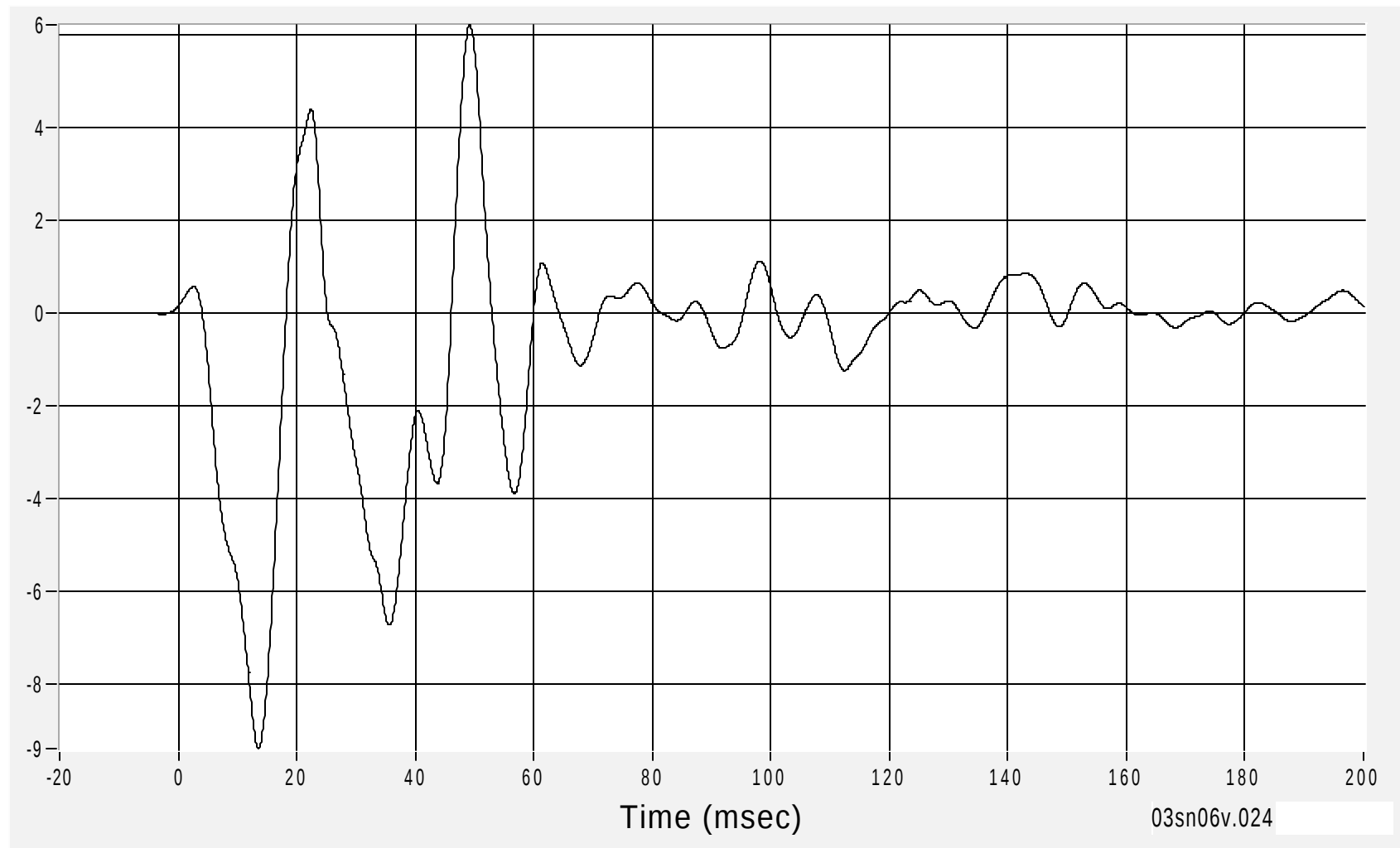
Medical College of Wisconsin
Vehicle Crashworthiness Lab

Vehicle Center of Gravity (X) Acceleration

Acceleration (G's) CFC60

Max 6.2 G's at 49.2 msec
Min -9.4 G's at 13.5 msec

B-105



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20 February 2003

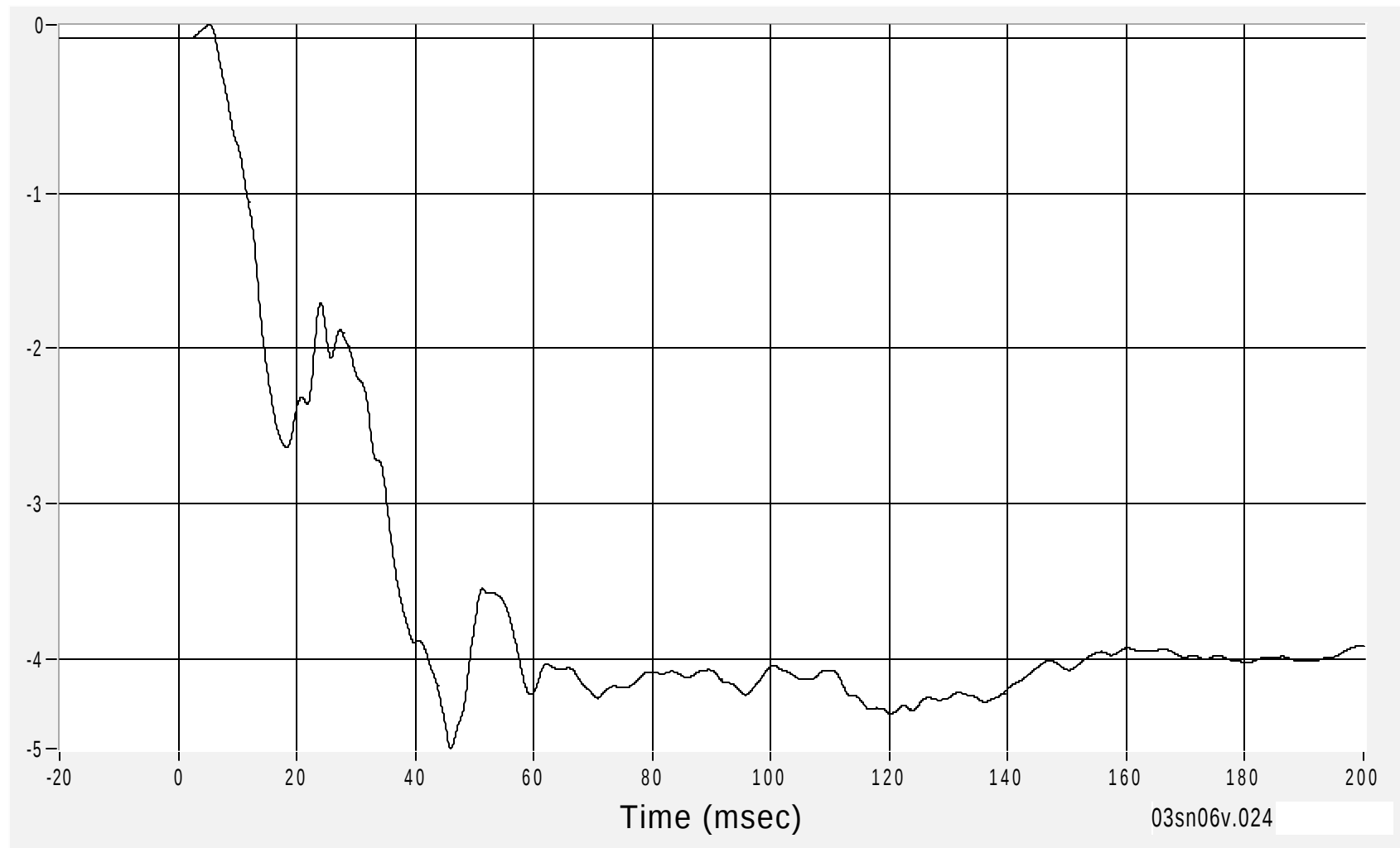
Medical College of Wisconsin
Vehicle Crashworthiness Lab

Vehicle Center of Gravity (X) Velocity

Velocity (km/h) CFC180

Max 0.1 km/h at 5.2 msec
Min -4.6 km/h at 46.0 msec

B-106



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20 February 2003

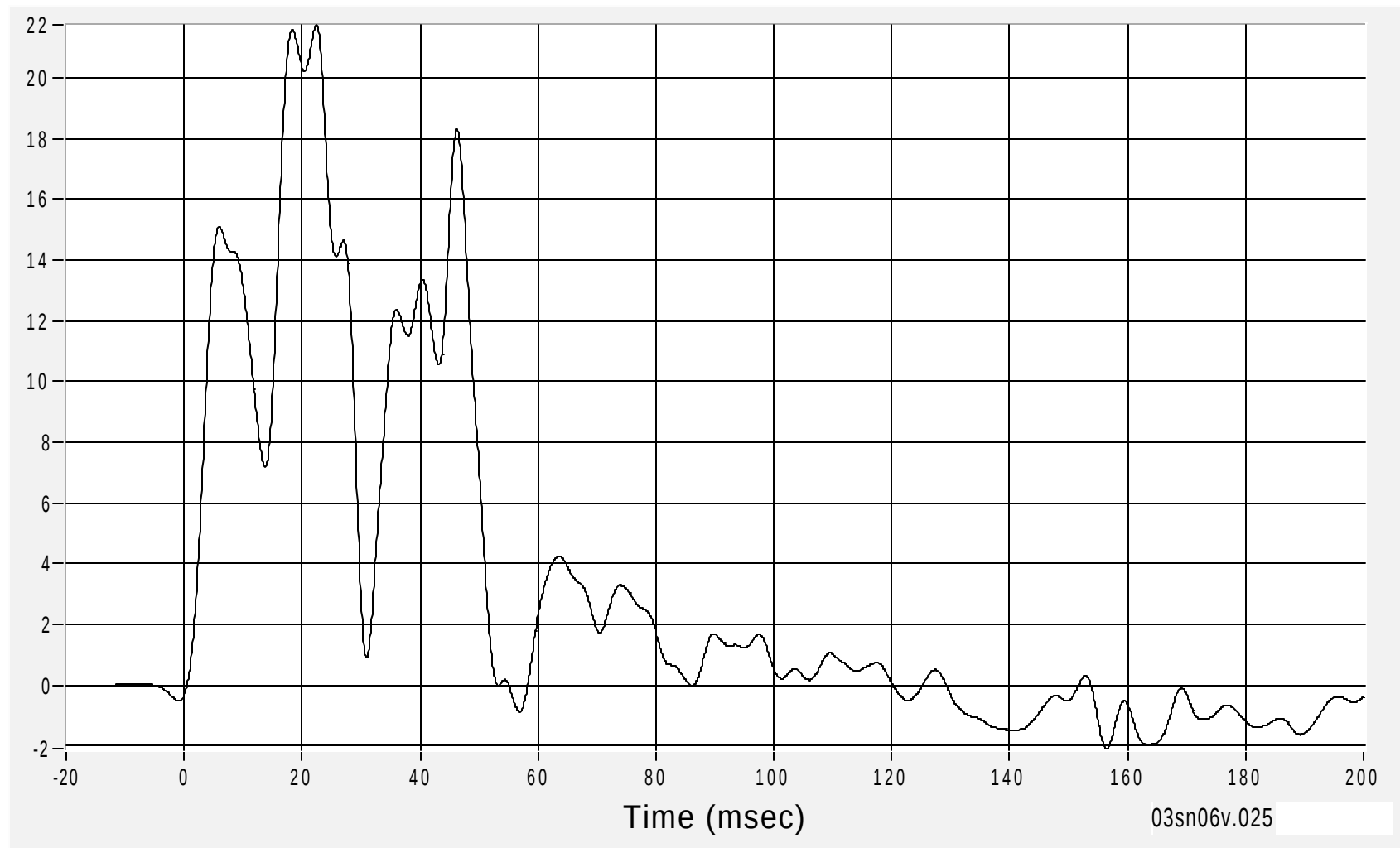
Medical College of Wisconsin
Vehicle Crashworthiness Lab

Vehicle Center of Gravity (Y) Acceleration

Acceleration (G's) CFC60

Max 21.7 G's at 22.4 msec
Min -2.1 G's at 156.4 msec

B-107



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20 February 2003

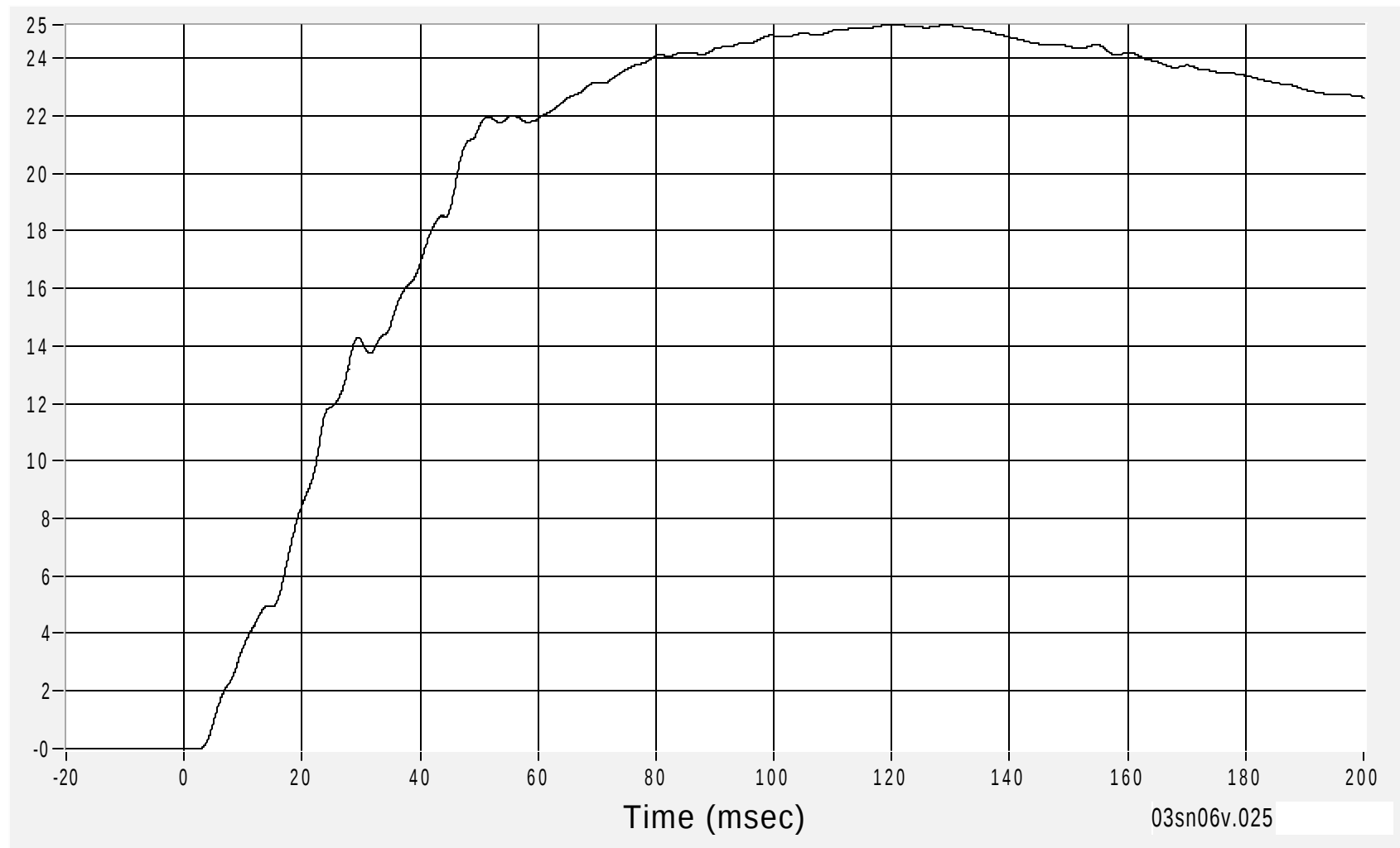
Medical College of Wisconsin
Vehicle Crashworthiness Lab

Vehicle Center of Gravity (Y) Velocity

Velocity (km/h) CFC180

Max 25.2 km/h at 119.4 msec
Min 0.0 km/h at 2.3 msec

B-108



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20 February 2003

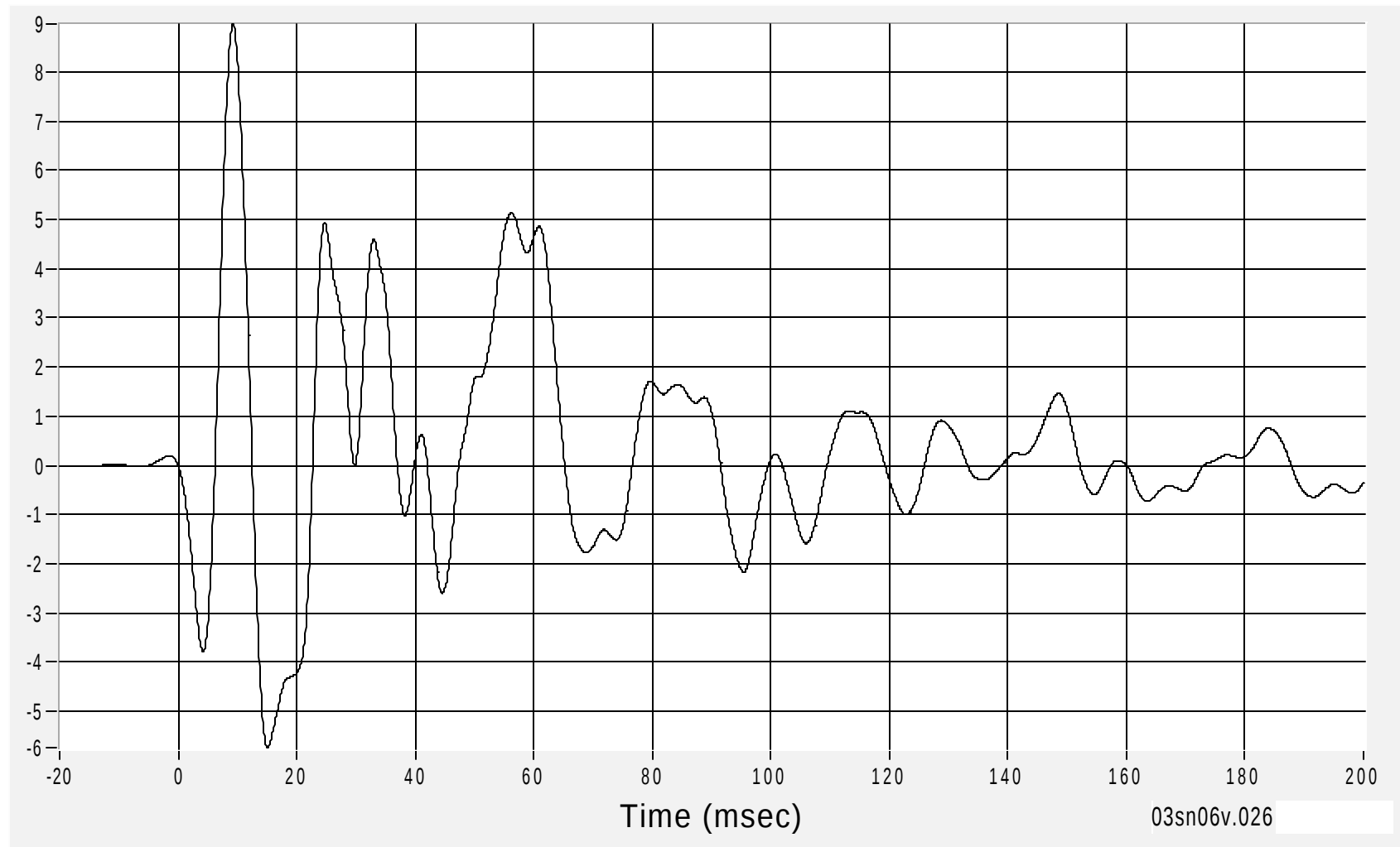
Medical College of Wisconsin
Vehicle Crashworthiness Lab

Vehicle Center of Gravity (Z) Acceleration

Acceleration (G's) CFC60

Max 9.0 G's at 9.3 msec
Min -5.7 G's at 15.1 msec

B-109



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20 February 2003

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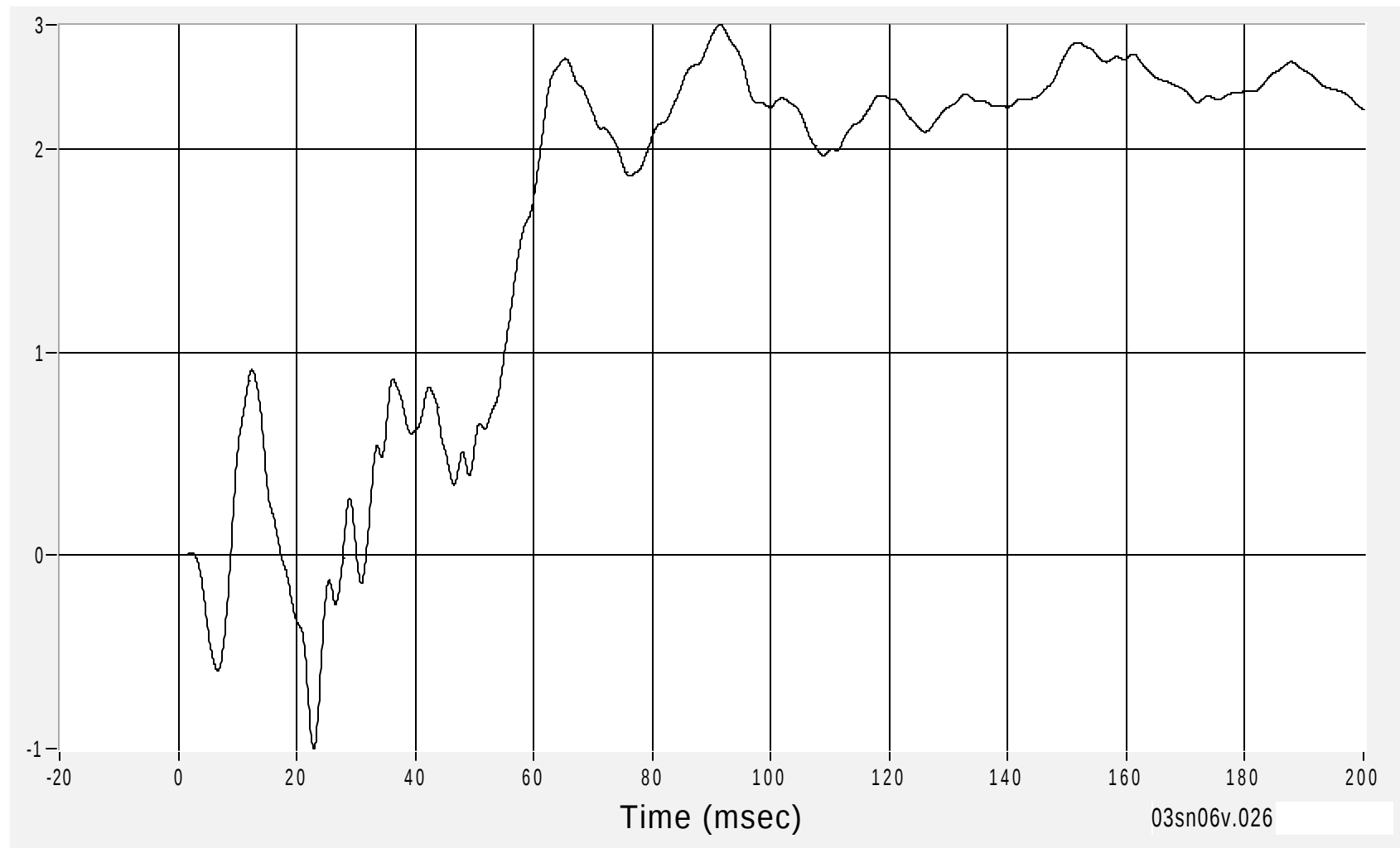
Vehicle Center of Gravity (Z) Velocity

Velocity (km/h) CFC180

Max 2.6 km/h at 91.4 msec

Min -1.0 km/h at 22.9 msec

B-110



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20 February 2003

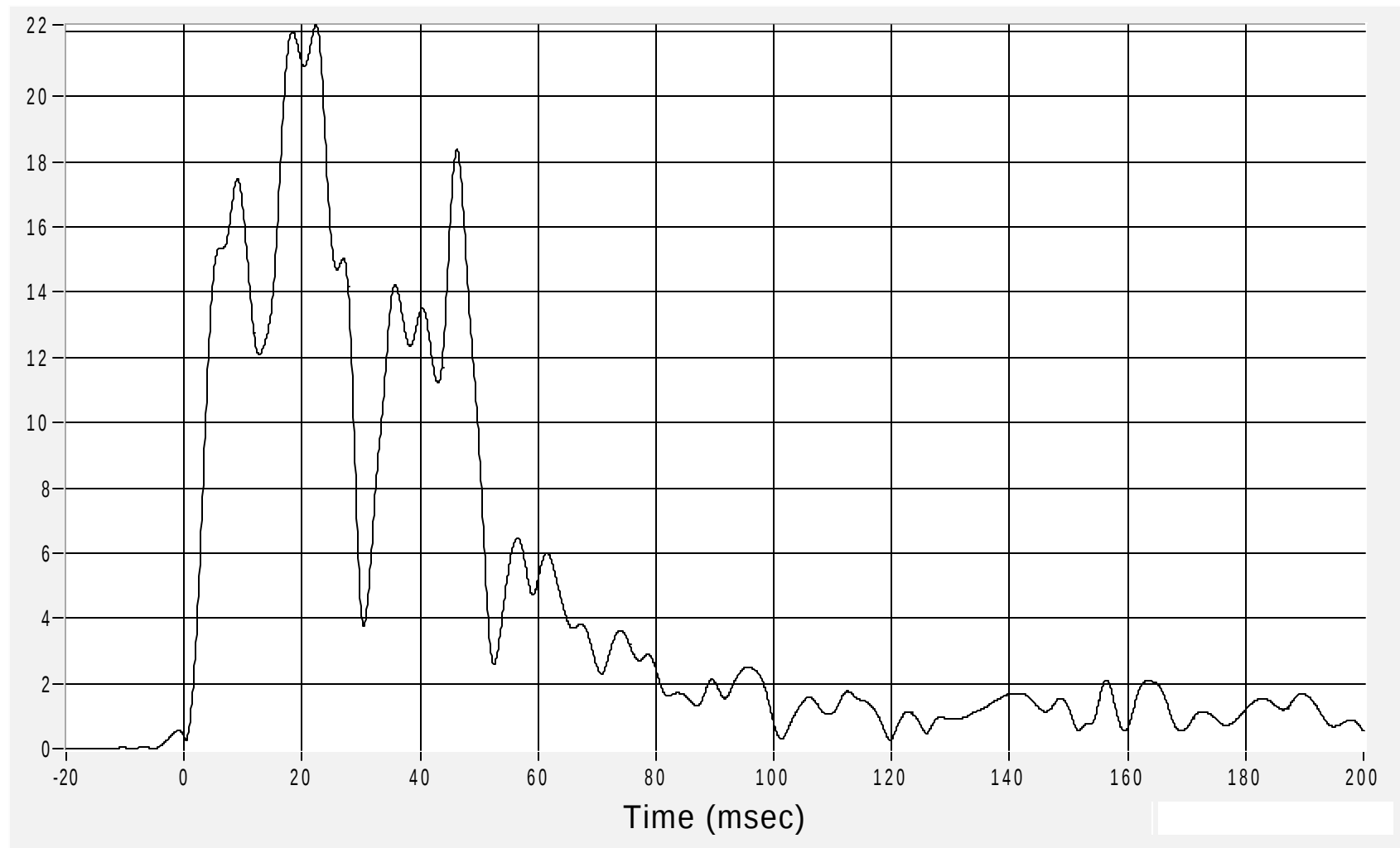
Medical College of Wisconsin
Vehicle Crashworthiness Lab

Vehicle Center of Gravity Resultant Acceleration

Acceleration (G's) CFC60

Max 22.2 G's at 22.4 msec
Min 0.3 G's at 119.7 msec

B-111



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20 February 2003

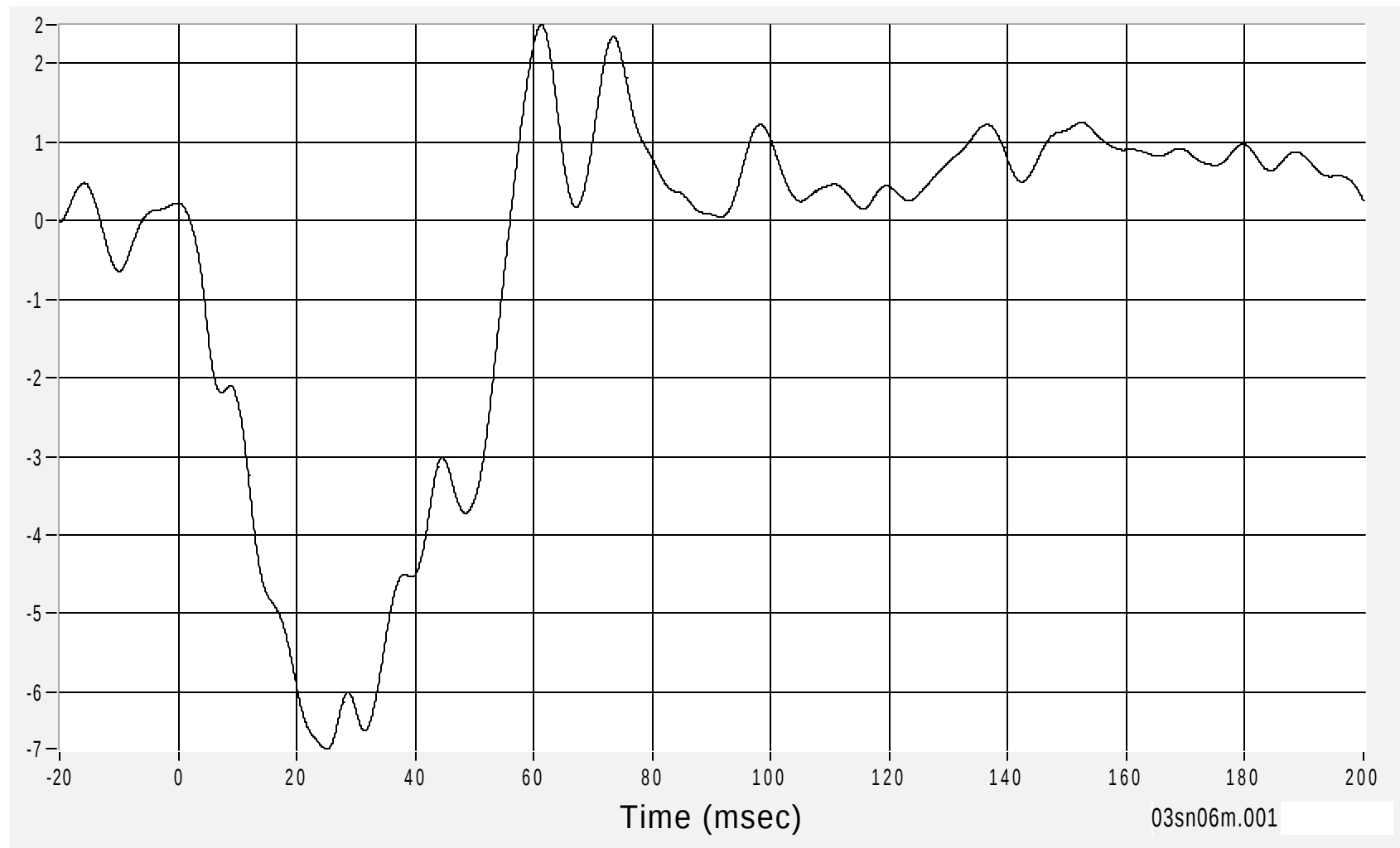
Medical College of Wisconsin
Vehicle Crashworthiness Lab

MDB Center of Gravity (X) Acceleration

Acceleration (G's) CFC60

Max 2.5 G's at 61.3 msec
Min -6.7 G's at 25.1 msec

B-112



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20 February 2003

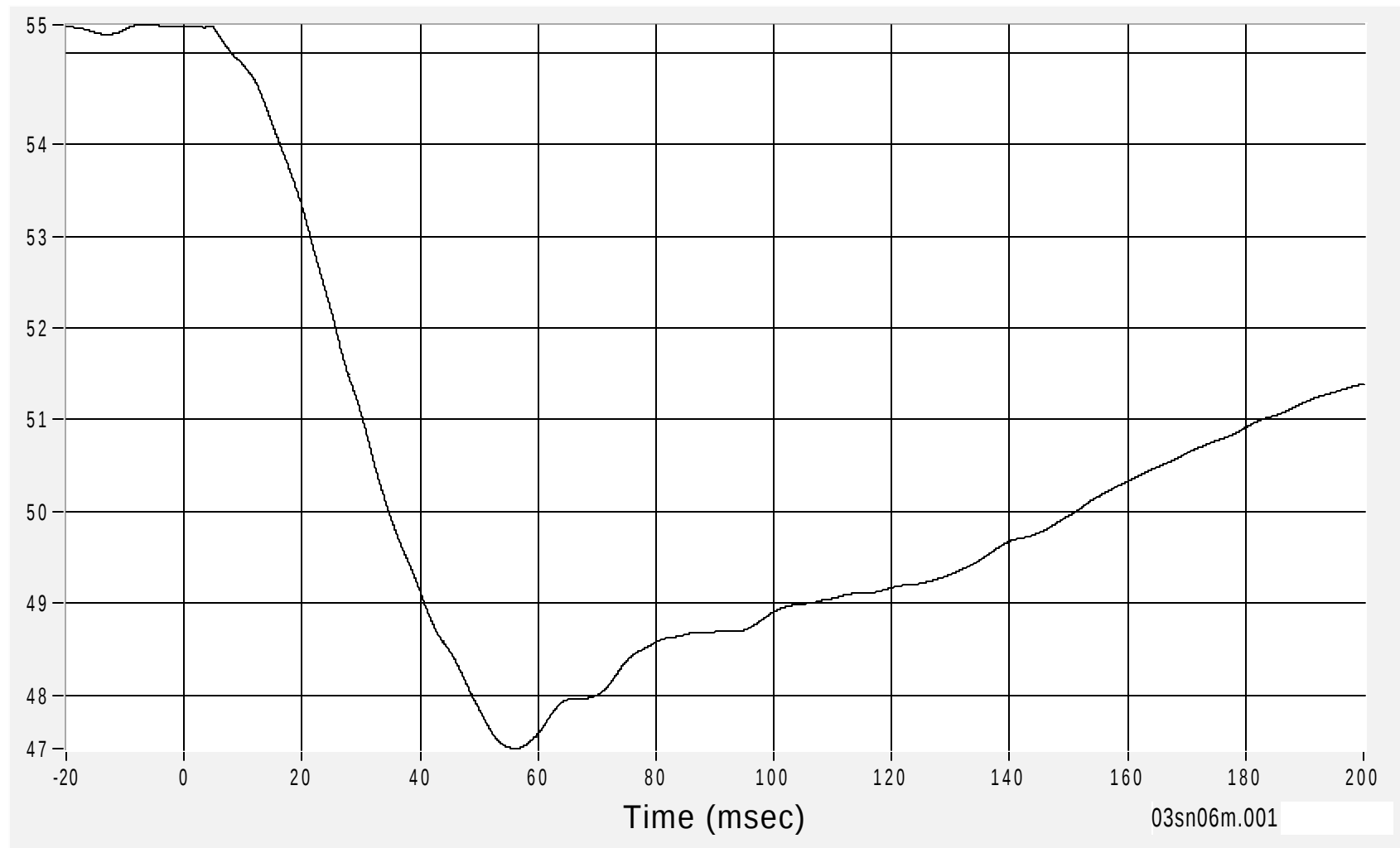
Medical College of Wisconsin
Vehicle Crashworthiness Lab

MDB Center of Gravity (X) Velocity

Velocity (km/h) CFC180

Max 55.3 km/h at 1.6 msec
Min 47.4 km/h at 56.3 msec

B-113



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20 February 2003

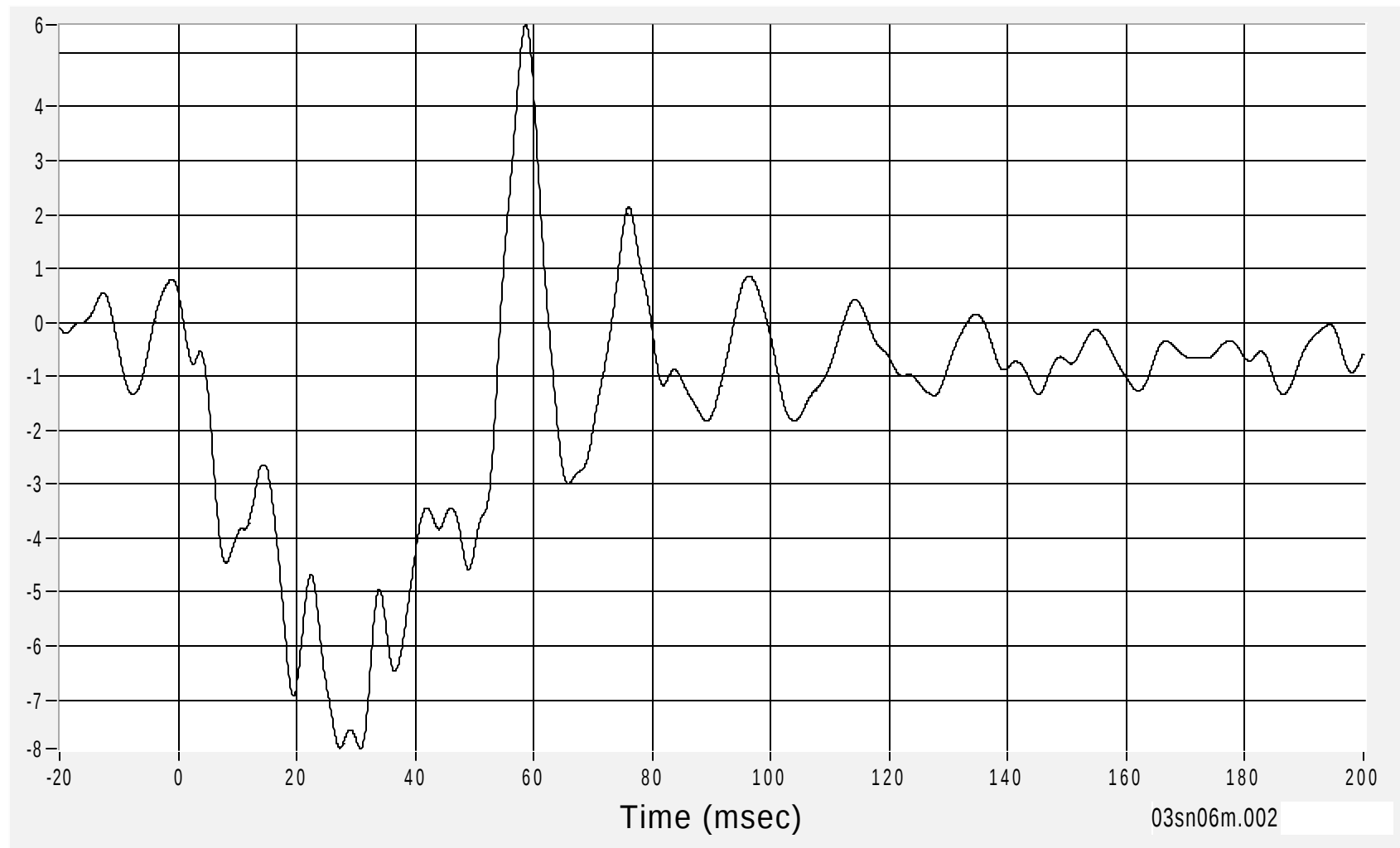
Medical College of Wisconsin
Vehicle Crashworthiness Lab

MDB Center of Gravity (Y) Acceleration

Acceleration (G's) CFC60

Max 5.5 G's at 58.6 msec
Min -7.9 G's at 30.8 msec

B-114



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20 February 2003

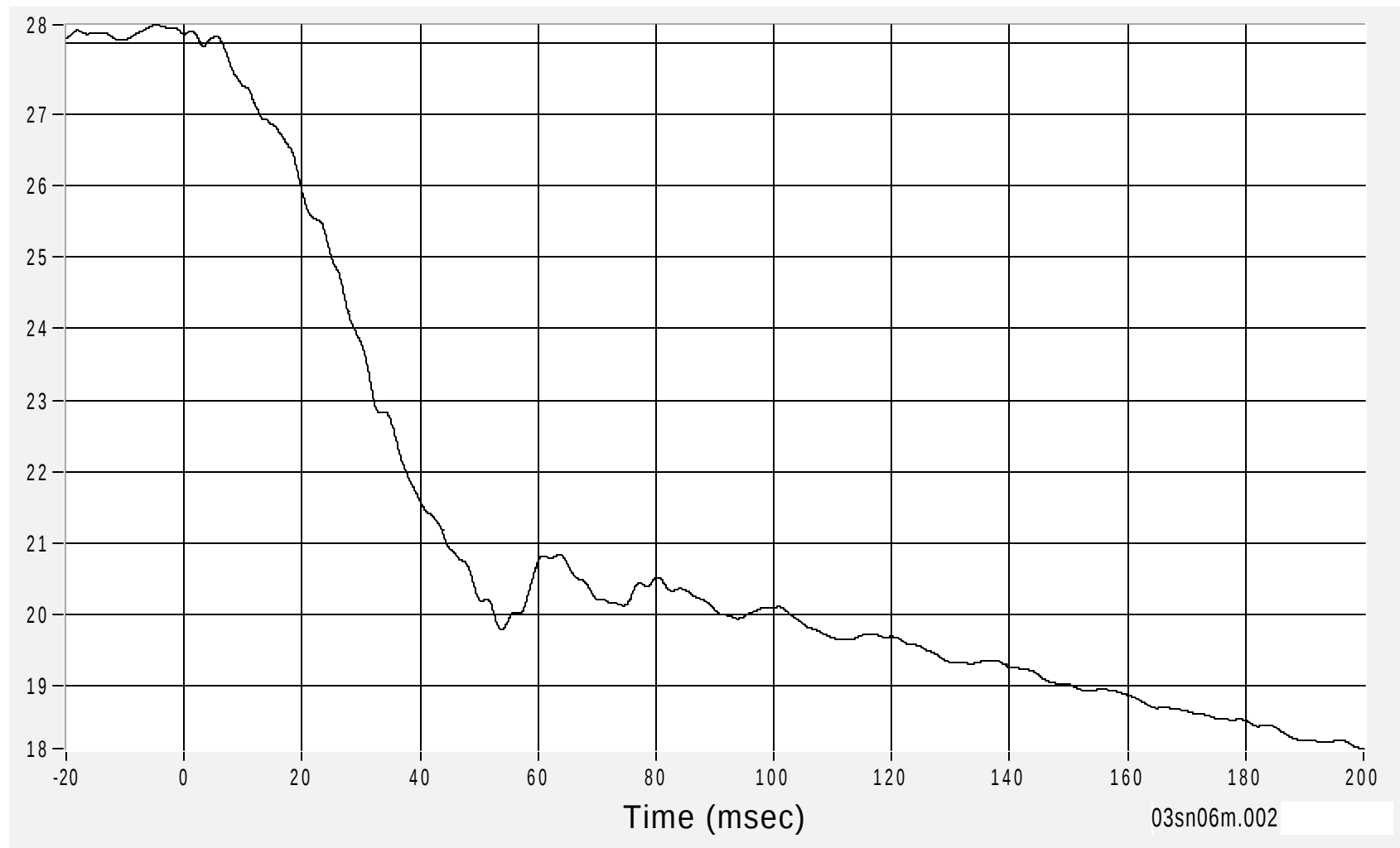
Medical College of Wisconsin
Vehicle Crashworthiness Lab

MDB Center of Gravity (Y) Velocity

Velocity (km/h) CFC180

Max 28.2 km/h at 1.2 msec
Min 18.1 km/h at 199.9 msec

B-115



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20 February 2003

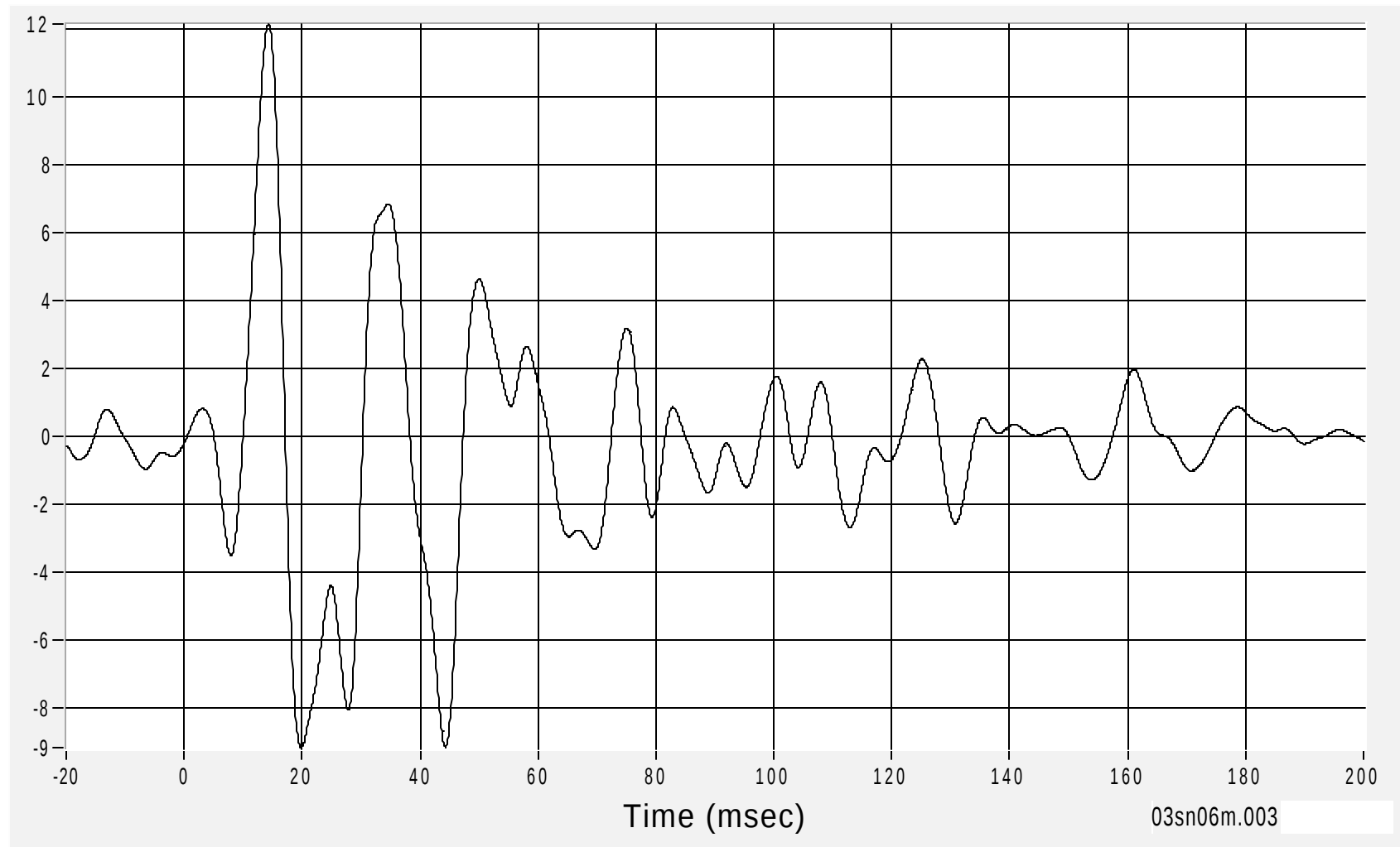
Medical College of Wisconsin
Vehicle Crashworthiness Lab

MDB Center of Gravity (Z) Acceleration

Acceleration (G's) CFC60

Max 12.2 G's at 14.3 msec
Min -9.1 G's at 19.8 msec

B-116



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20 February 2003

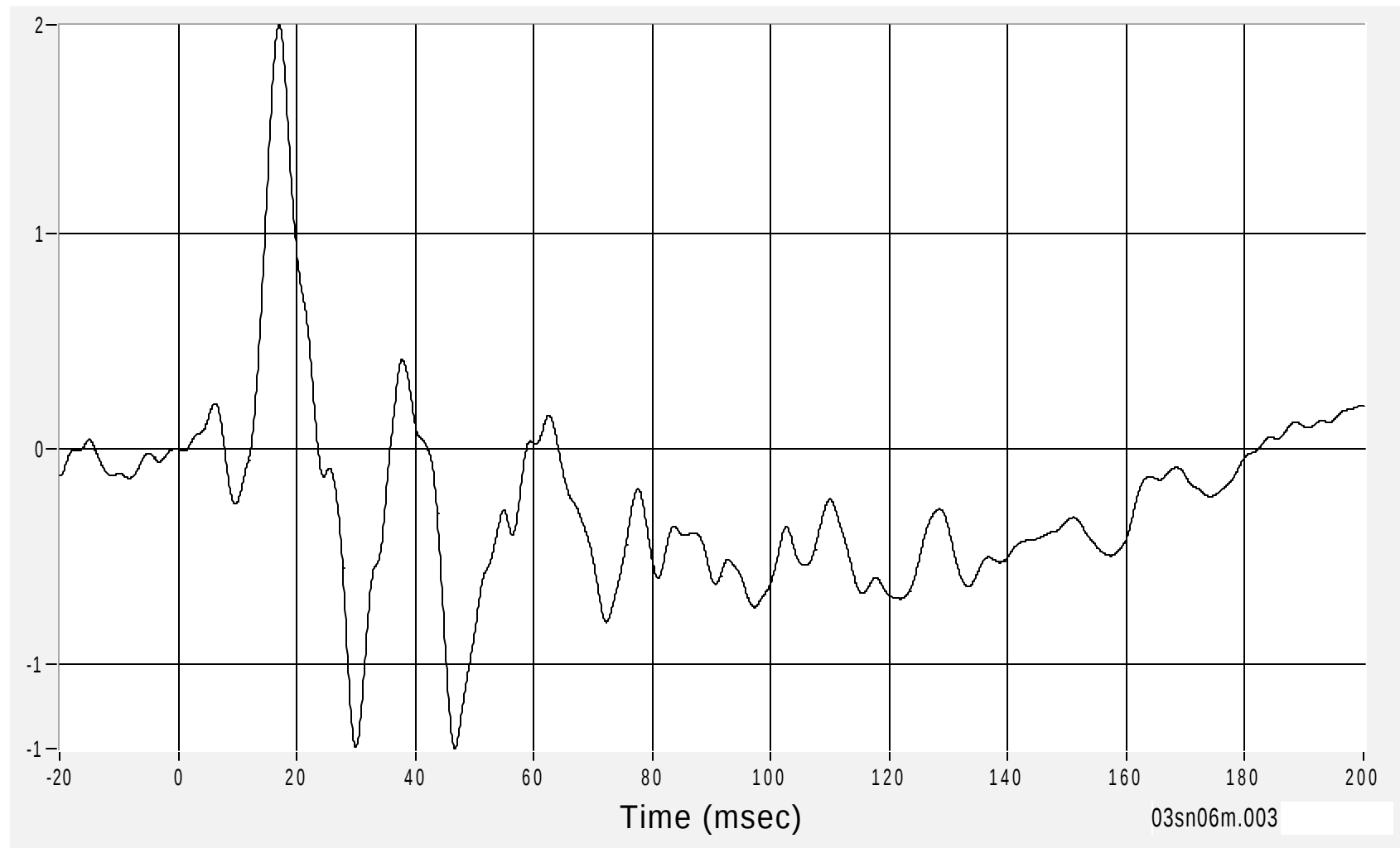
Medical College of Wisconsin
Vehicle Crashworthiness Lab

MDB Center of Gravity (Z) Velocity

Velocity (km/h) CFC180

Max 2.0 km/h at 17.0 msec
Min -1.4 km/h at 46.6 msec

B-117



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20 February 2003

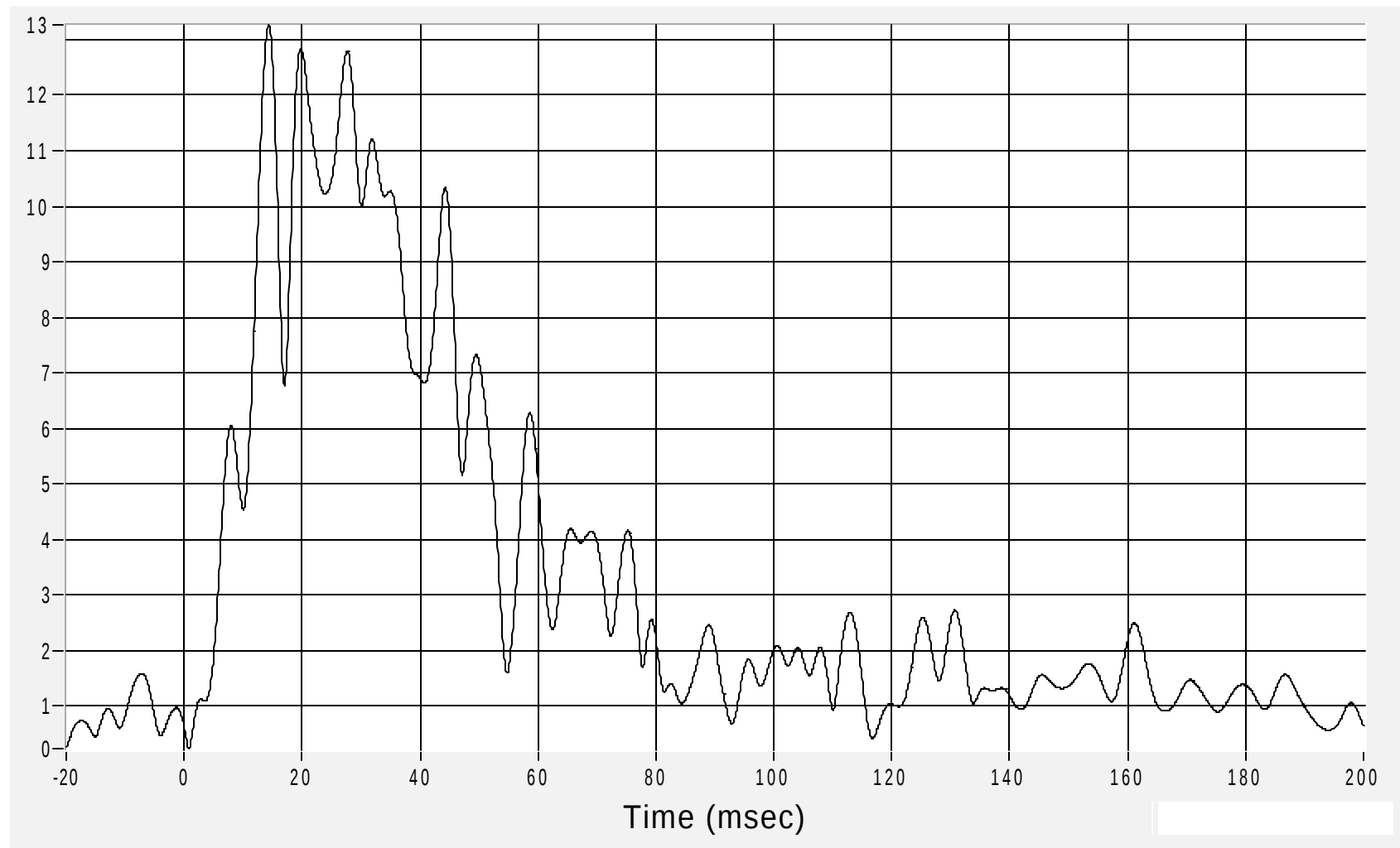
Medical College of Wisconsin
Vehicle Crashworthiness Lab

MDB Center of Gravity Resultant Acceleration

Acceleration (G's) CFC60

Max 13.3 G's at 14.3 msec
Min 0.2 G's at 0.8 msec

B-118



03sn06 - 2003 JAGUAR X-TYPE 4 DOOR SEDAN

20 February 2003

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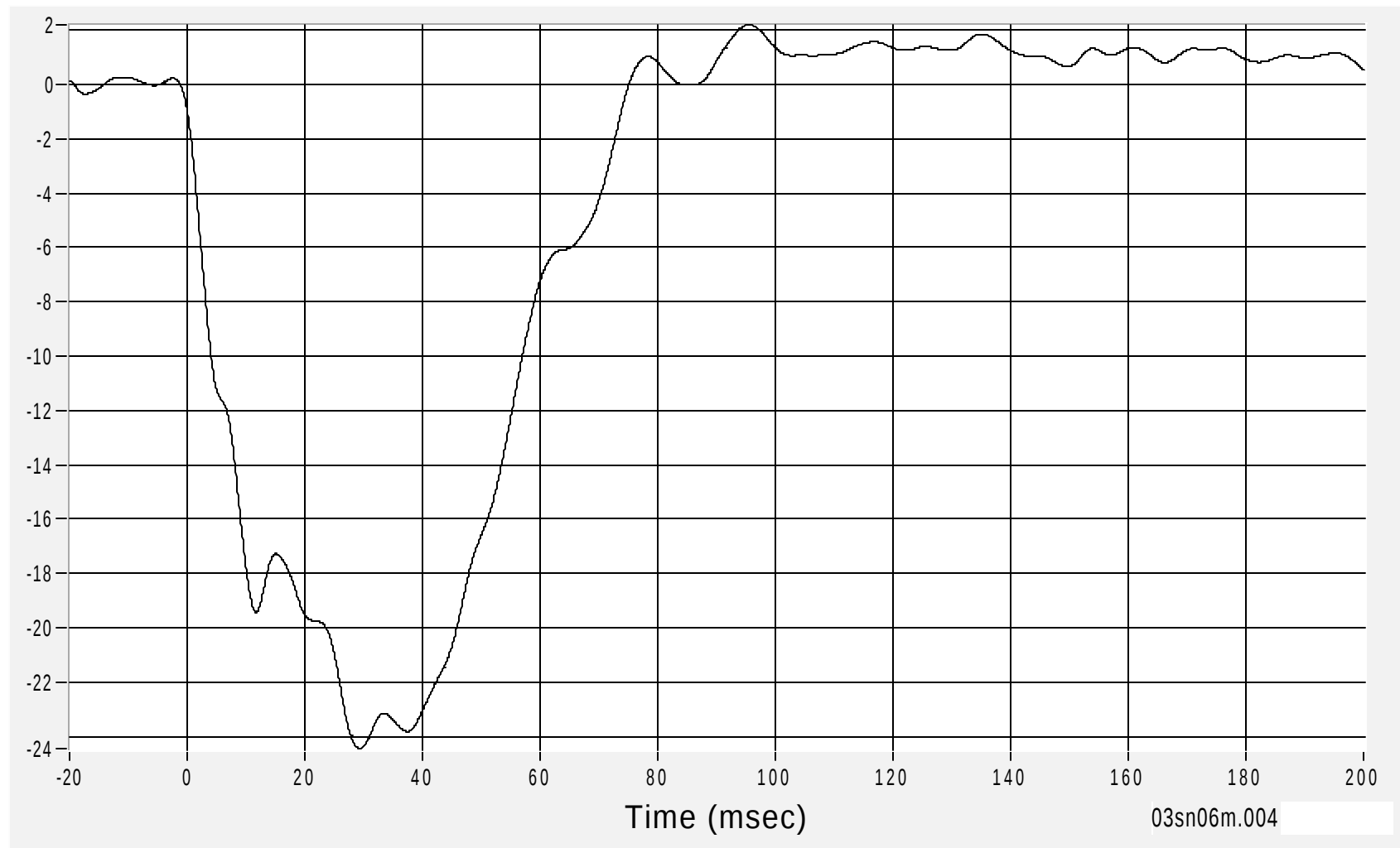
MDB Rear (X) Acceleration

Acceleration (G's) CFC60

Max 2.2 G's at 95.4 msec

Min -24.4 G's at 29.4 msec

B-119



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20 February 2003

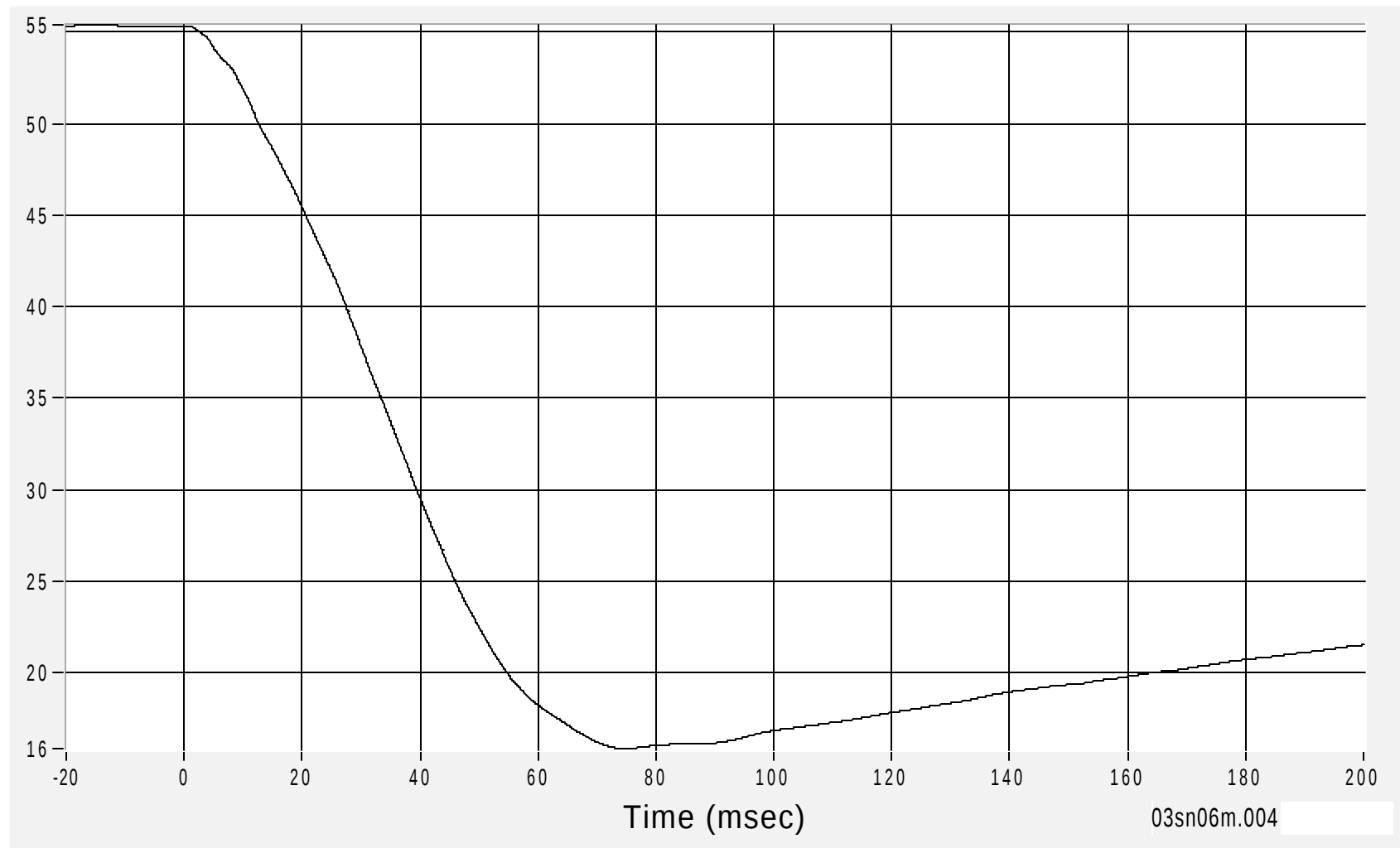
Medical College of Wisconsin
Vehicle Crashworthiness Lab

MDB Rear (X) Velocity

Velocity (km/h) CFC180

Max 55.3 km/h at 0.8 msec
Min 15.9 km/h at 74.5 msec

B-120



03sn06 - 2003 JAGUAR X-TYPE 4 DOOR SEDAN

20 February 2003

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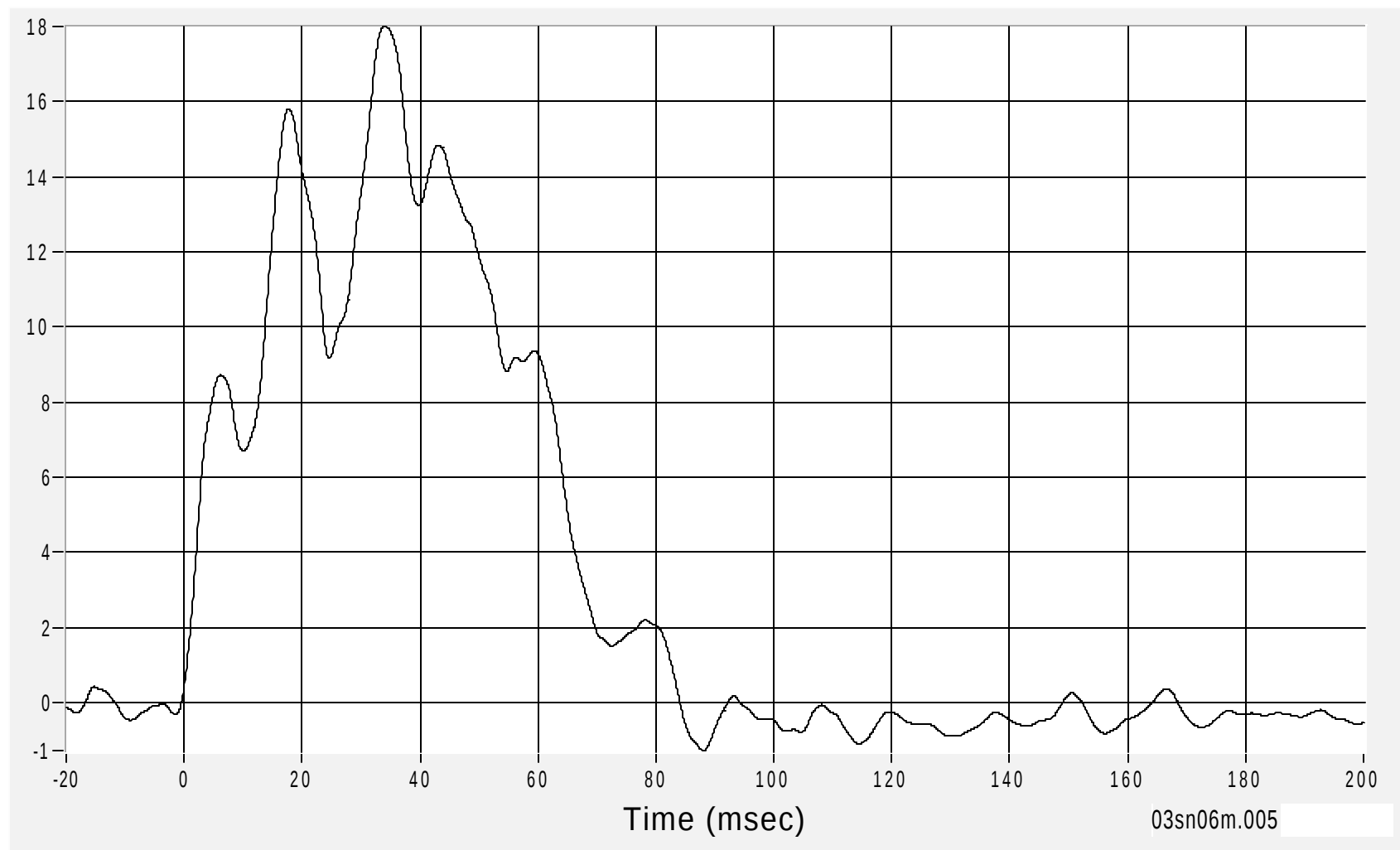
MDB Rear (Y) Acceleration

Acceleration (G's) CFC60

Max 18.0 G's at 33.9 msec

Min -1.3 G's at 88.1 msec

B-121



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20 February 2003

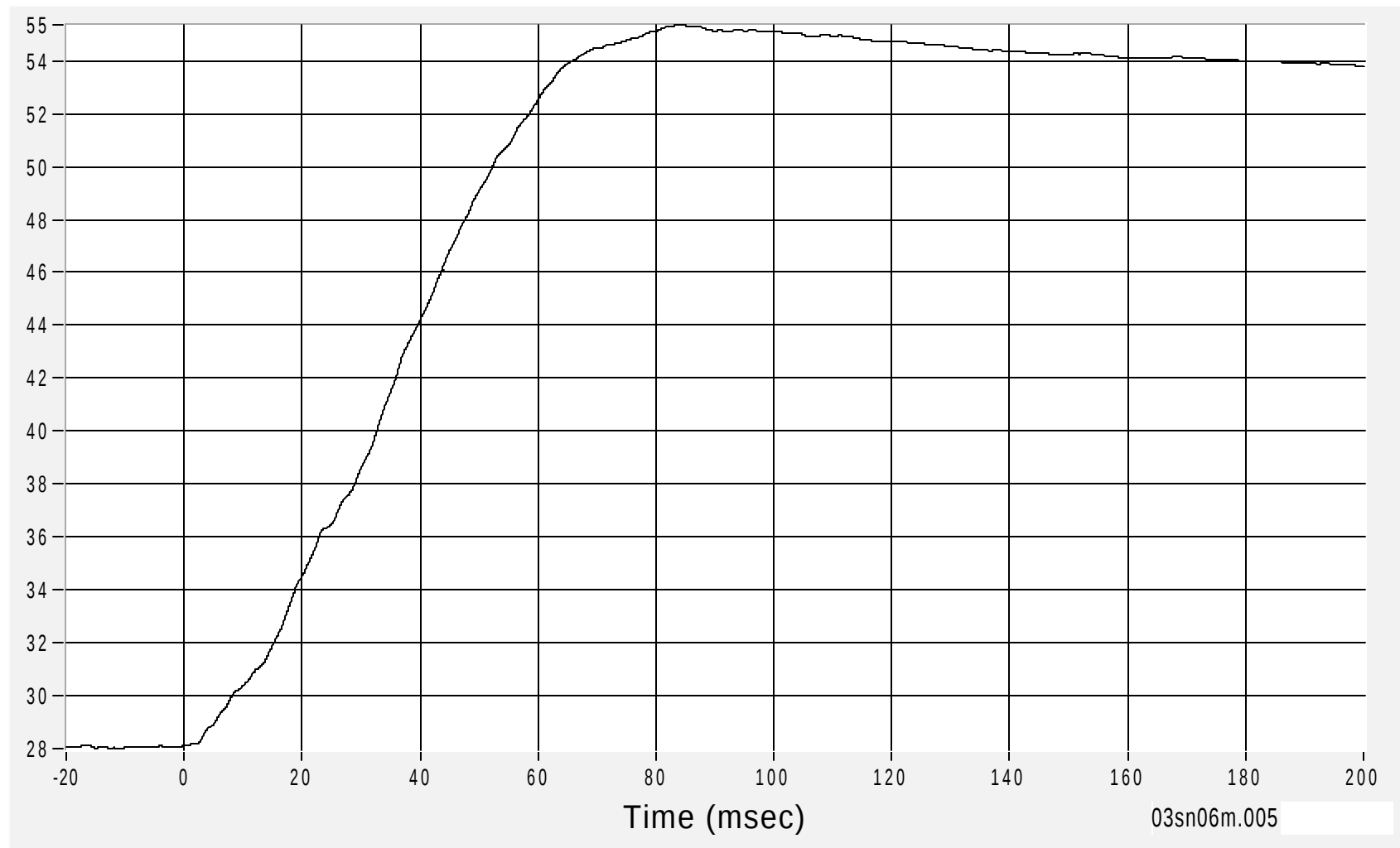
Medical College of Wisconsin
Vehicle Crashworthiness Lab

MDB Rear (Y) Velocity

Velocity (km/h) CFC180

Max 55.4 km/h at 83.8 msec

Min 28.1 km/h at 0.1 msec



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20 February 2003

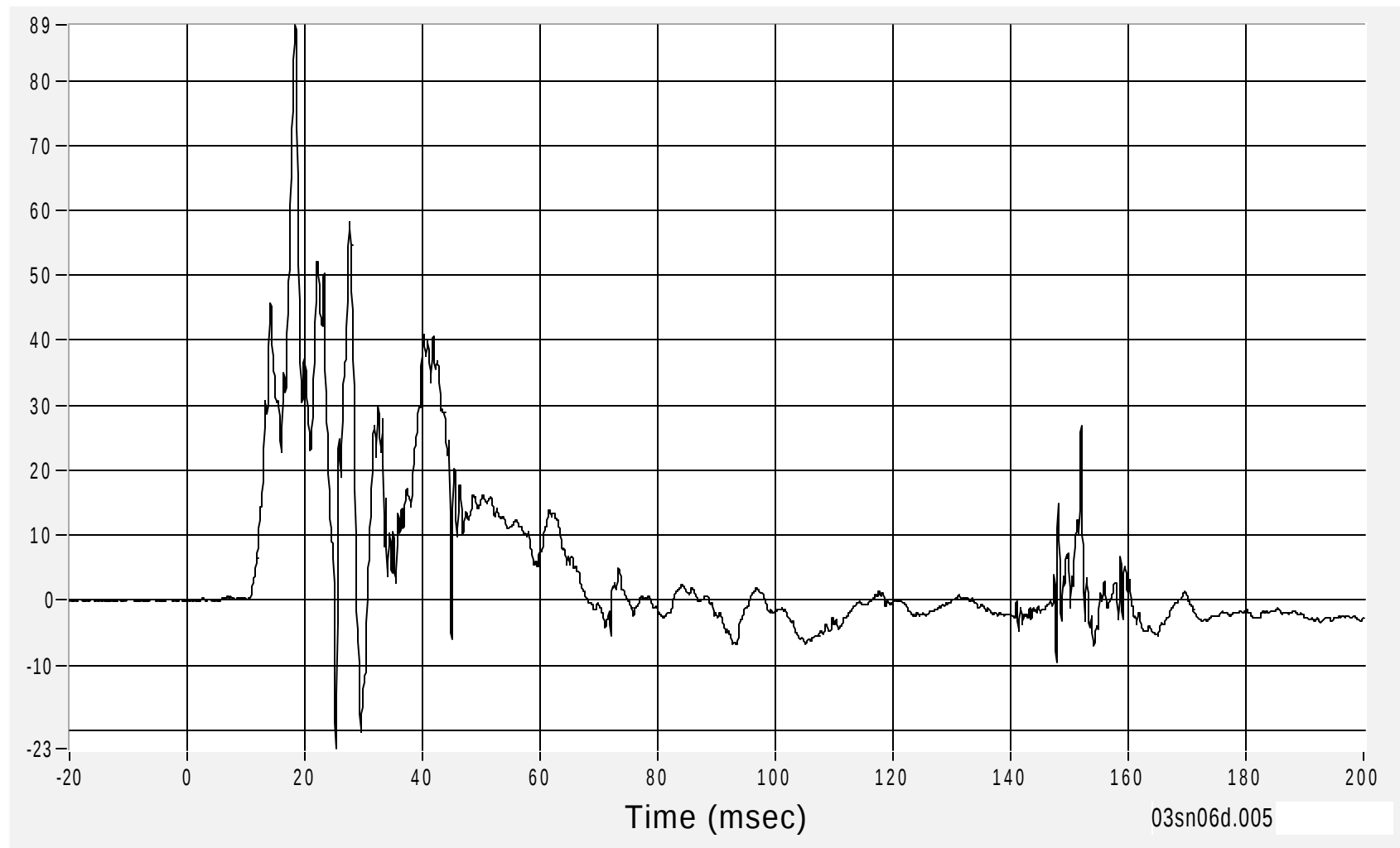
Medical College of Wisconsin
Vehicle Crashworthiness Lab

Driver Upper Rib (Y) Acceleration - Redundant

Acceleration (G's) CFC1000

Max 88.5 G's at 18.4 msec
Min -22.8 G's at 25.3 msec

B-123



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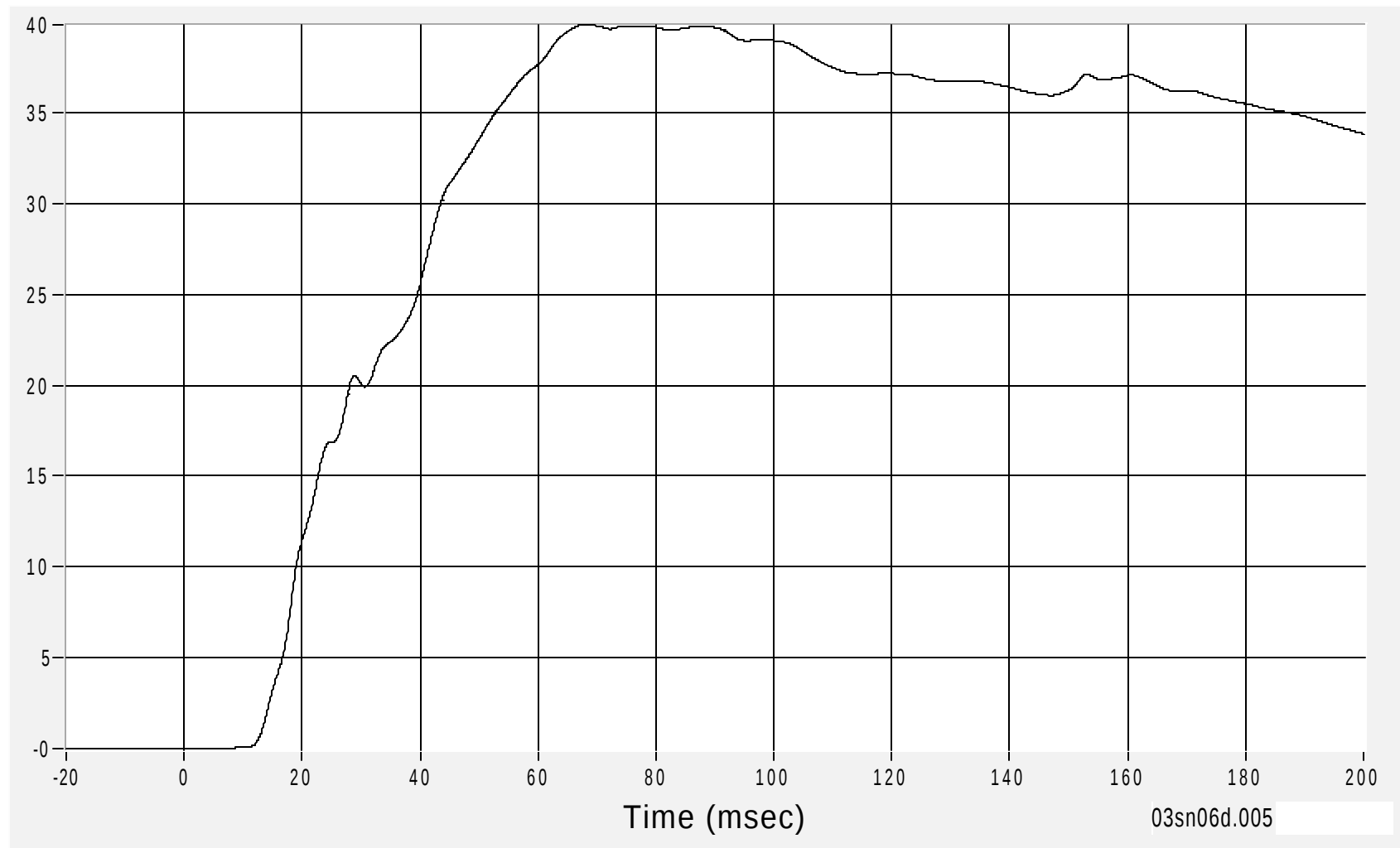
20 February 2003

Medical College of Wisconsin
Vehicle Crashworthiness Lab

Driver Upper Rib (Y) Velocity - Redundant

Velocity (km/h) CFC180

Max 39.8 km/h at 68.1 msec
Min 0.0 km/h at 2.0 msec



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20 February 2003

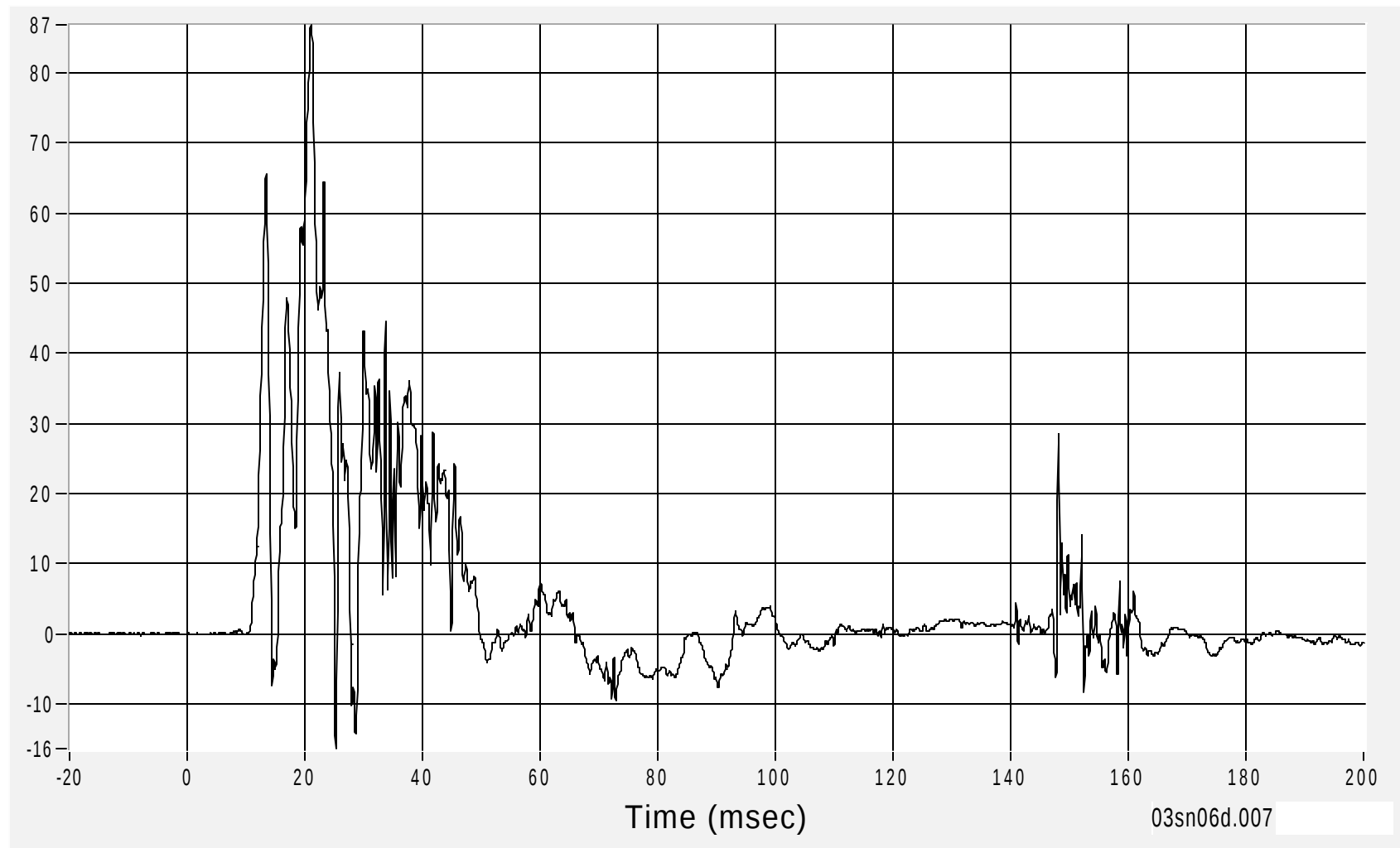
Medical College of Wisconsin
Vehicle Crashworthiness Lab

Driver Lower Rib (Y) Acceleration - Redundant

Acceleration (G's) CFC1000

Max 86.9 G's at 21.0 msec
Min -16.4 G's at 25.3 msec

B-125



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20 February 2003

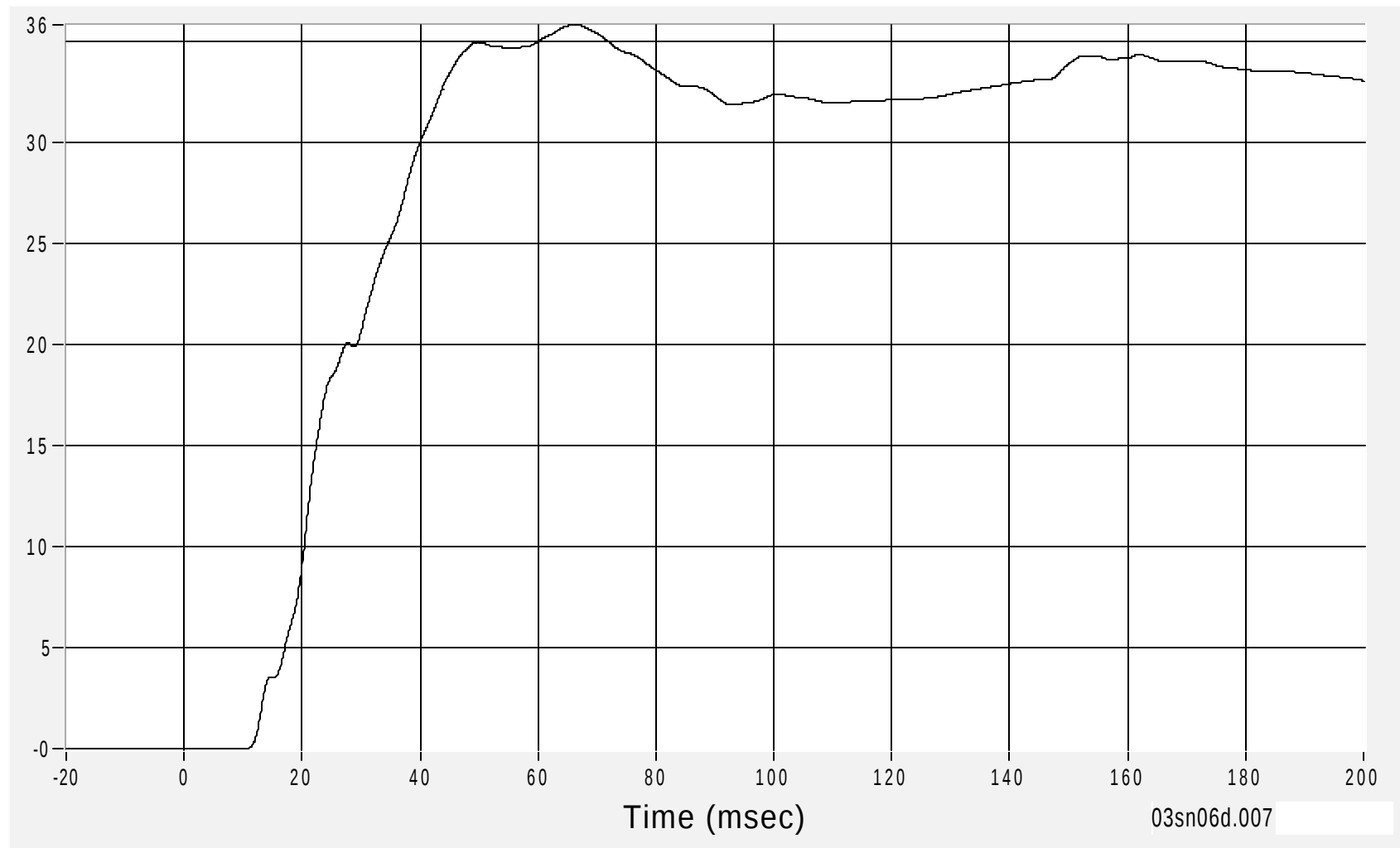
Medical College of Wisconsin
Vehicle Crashworthiness Lab

Driver Lower Rib (Y) Velocity - Redundant

Velocity (km/h) CFC180

Max 35.8 km/h at 66.2 msec

Min 0.0 km/h at 5.0 msec



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20 February 2003

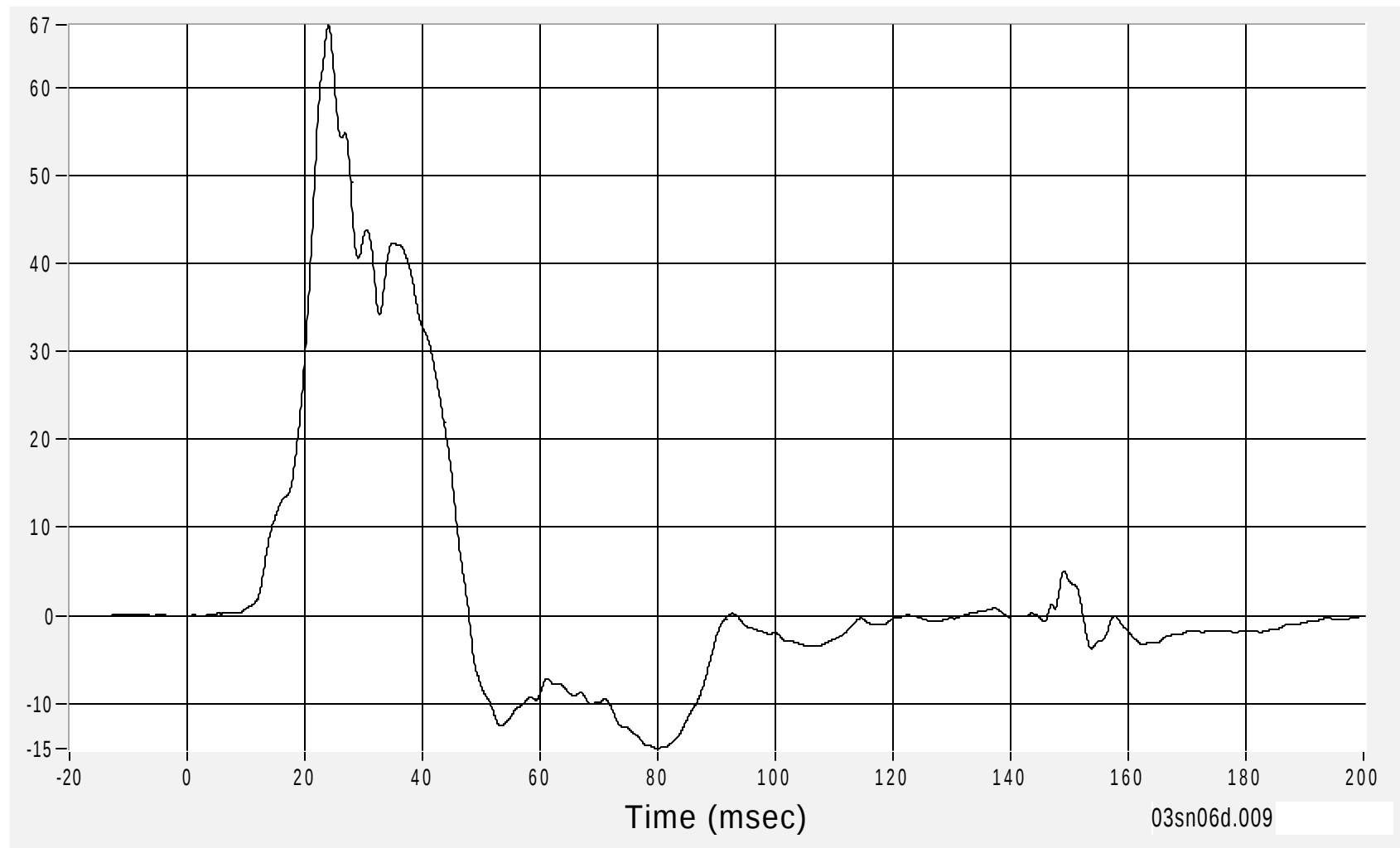
Medical College of Wisconsin
Vehicle Crashworthiness Lab

Driver Lower Spine (Y) Acceleration - Redundant

Acceleration (G's) CFC180

Max 67.1 G's at 24.0 msec
Min -15.2 G's at 79.8 msec

B-127



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20 February 2003

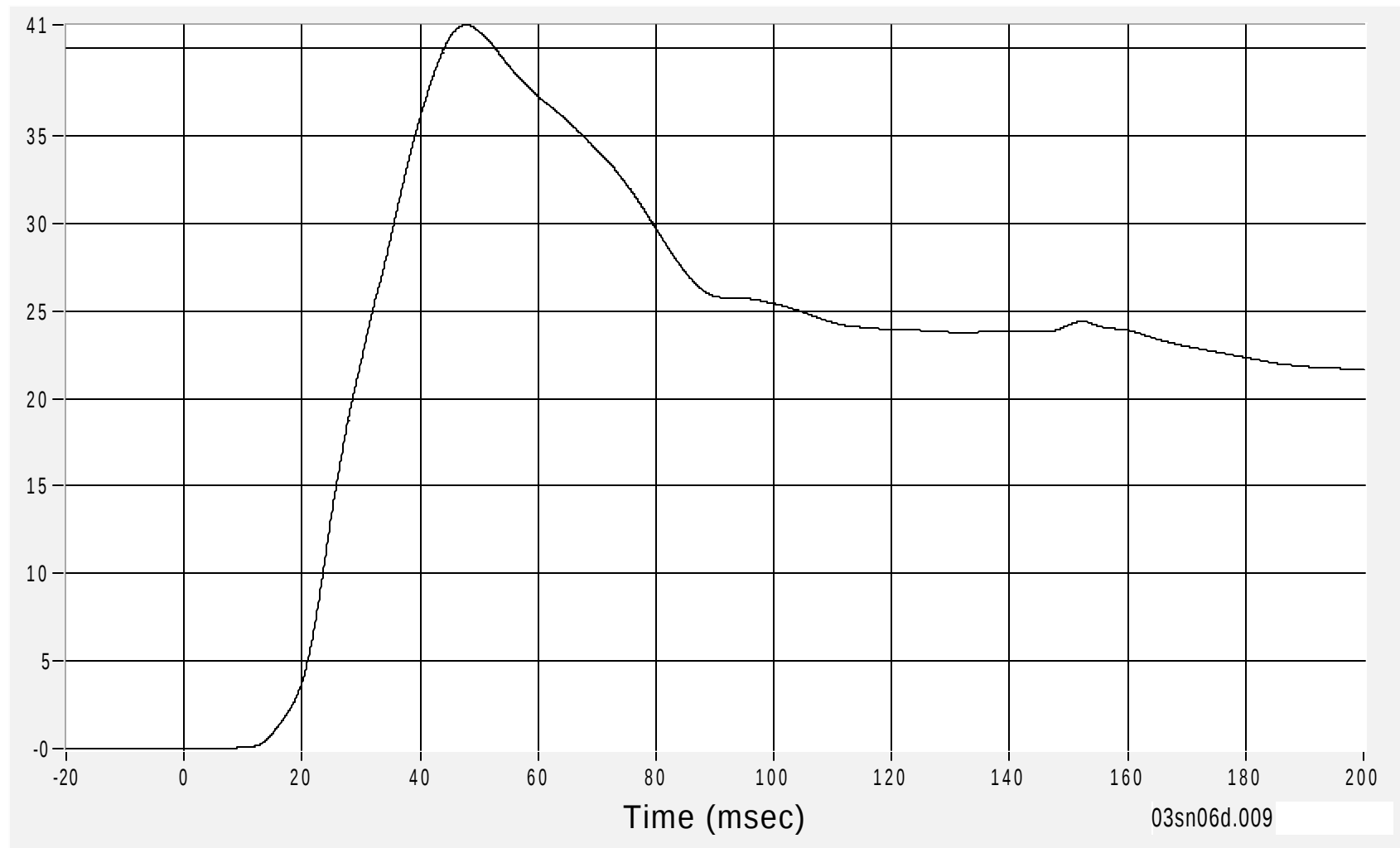
Medical College of Wisconsin
Vehicle Crashworthiness Lab

Driver Lower Spine (Y) Velocity - Redundant

Velocity (km/h) CFC180

Max 41.4 km/h at 47.9 msec
Min 0.0 km/h at 3.2 msec

B-128



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20 February 2003

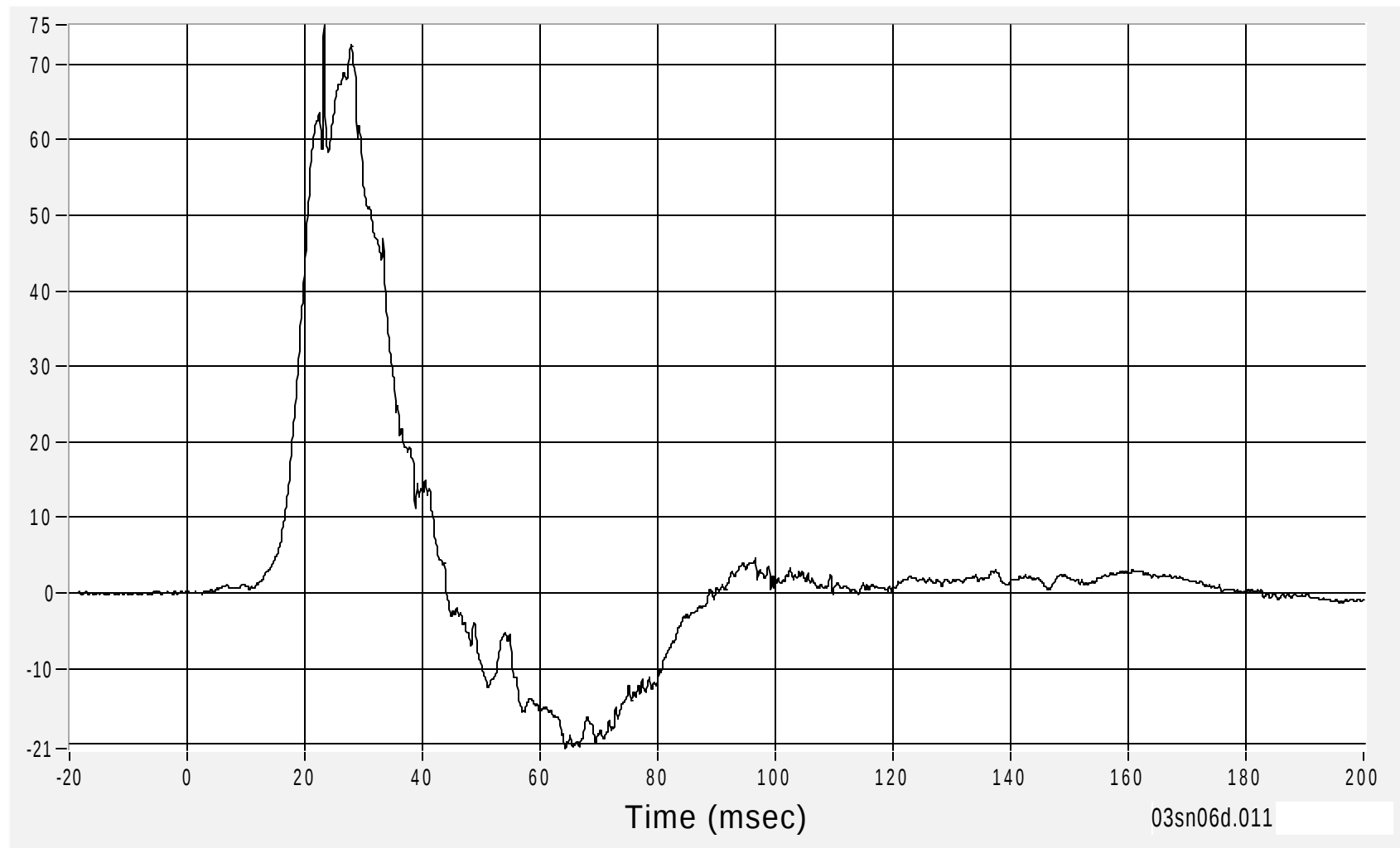
Medical College of Wisconsin
Vehicle Crashworthiness Lab

Driver Pelvic (Y) Acceleration - Redundant

Acceleration (G's) CFC1000

Max 75.2 G's at 23.3 msec
Min -20.6 G's at 64.3 msec

B-129



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20 February 2003

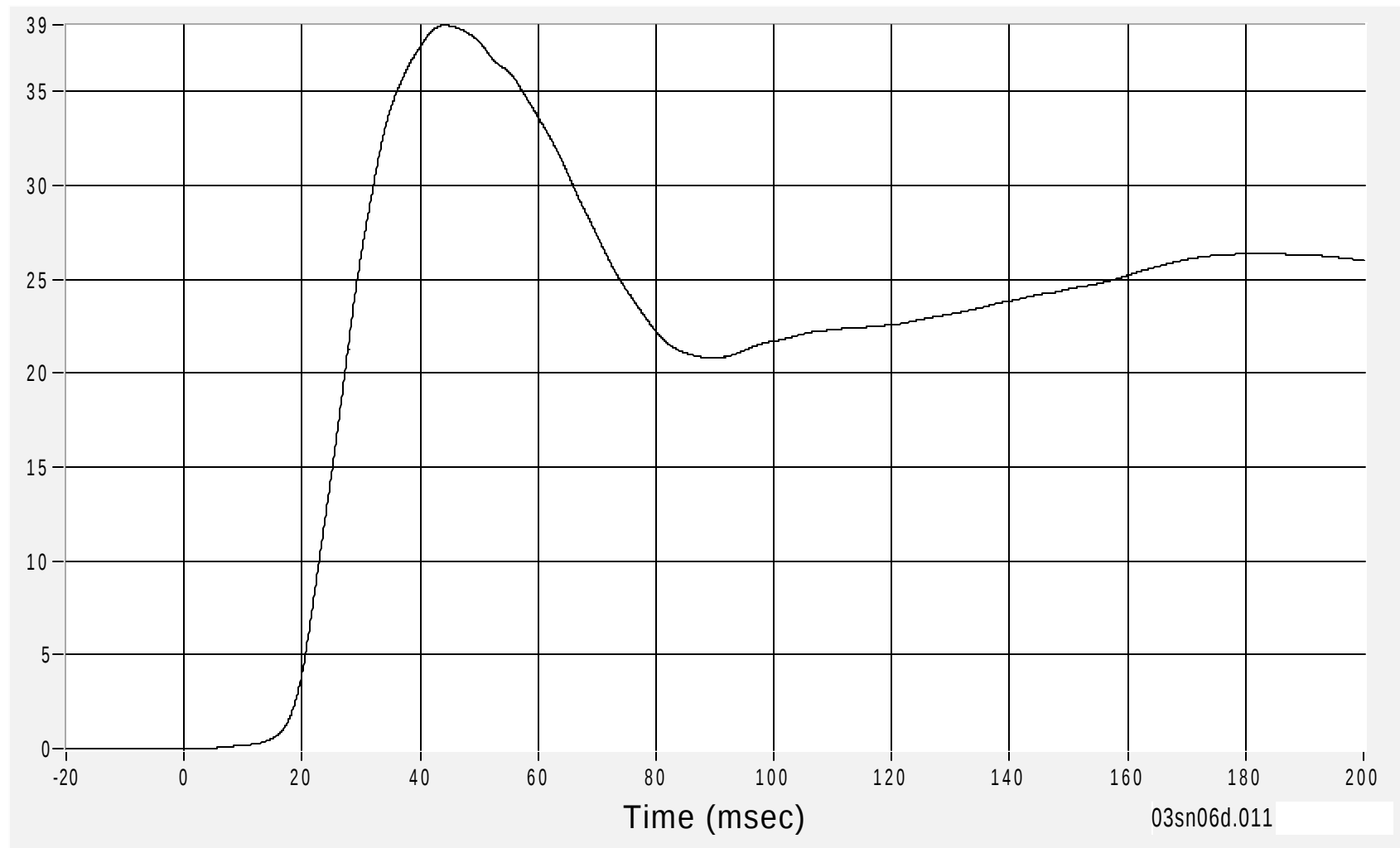
Medical College of Wisconsin
Vehicle Crashworthiness Lab

Driver Pelvic (Y) Velocity - Redundant

Velocity (km/h) CFC180

Max 38.6 km/h at 44.2 msec
Min 0.0 km/h at 0.0 msec

B-130



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20 February 2003

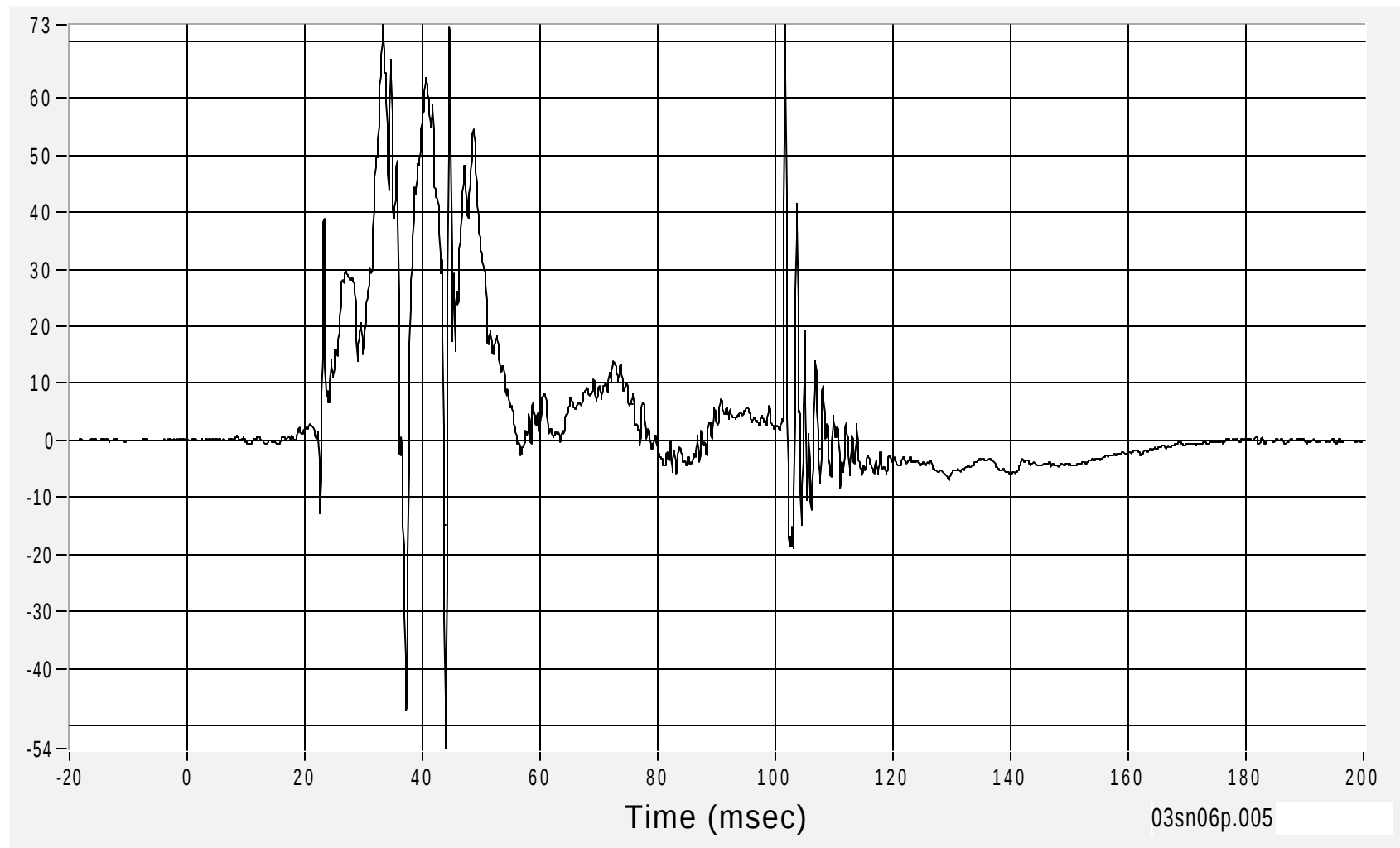
Medical College of Wisconsin
Vehicle Crashworthiness Lab

Passenger Upper Rib (Y) Acceleration - Redundant

Acceleration (G's) CFC1000

Max 72.9 G's at 33.3 msec
Min -54.1 G's at 44.0 msec

B-131



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20 February 2003

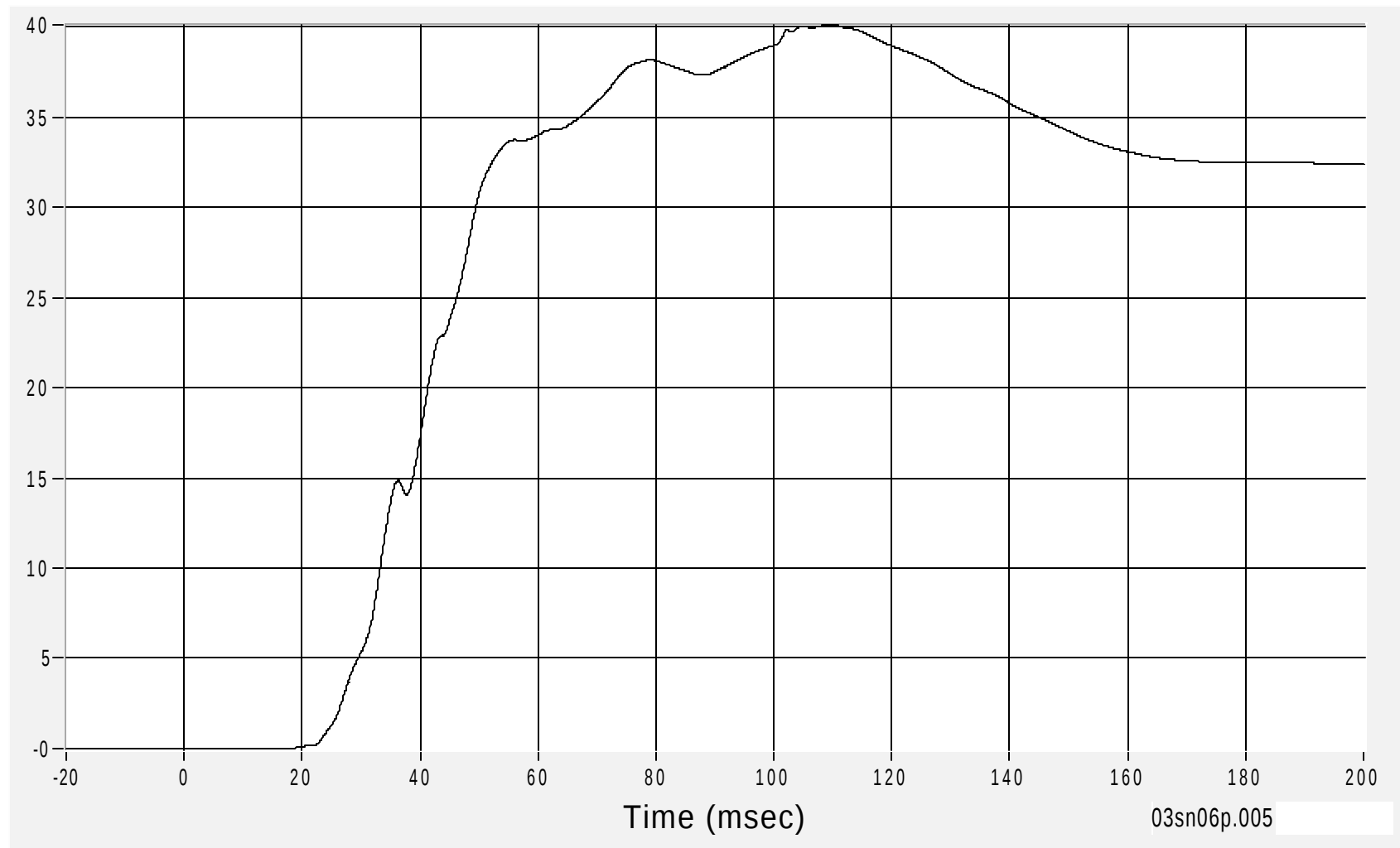
Medical College of Wisconsin
Vehicle Crashworthiness Lab

Passenger Upper Rib (Y) Velocity - Redundant

Velocity (km/h) CFC180

Max 40.1 km/h at 108.9 msec
Min 0.0 km/h at 16.0 msec

B-132



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20 February 2003

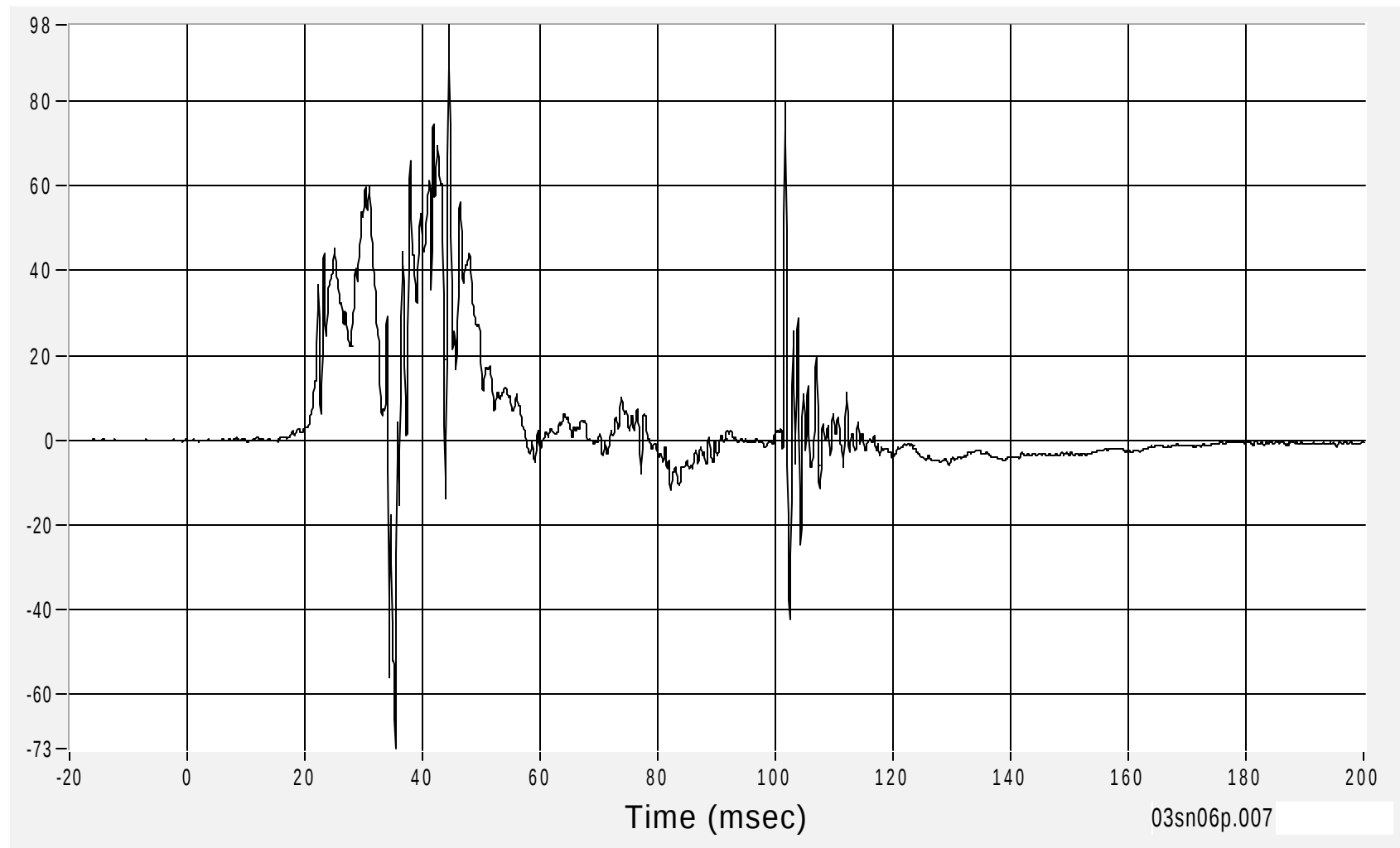
Medical College of Wisconsin
Vehicle Crashworthiness Lab

Passenger Lower Rib (Y) Acceleration - Redundant

Acceleration (G's) CFC1000

Max 98.1 G's at 44.5 msec
Min -72.9 G's at 35.4 msec

B-133



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20 February 2003

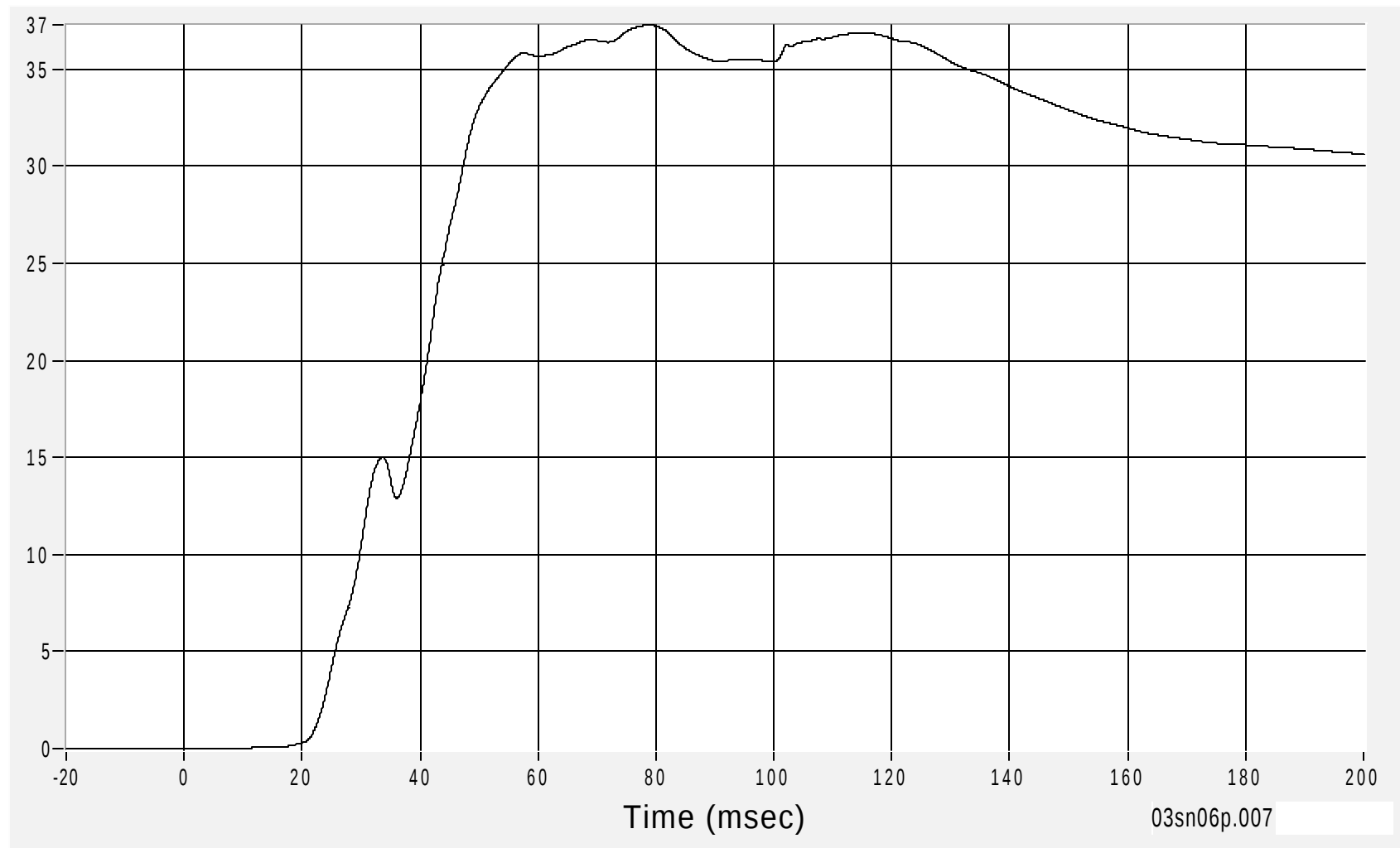
Medical College of Wisconsin
Vehicle Crashworthiness Lab

Passenger Lower Rib (Y) Velocity - Redundant

Velocity (km/h) CFC180

Max 37.3 km/h at 78.7 msec
Min 0.0 km/h at 0.0 msec

B-134



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20 February 2003

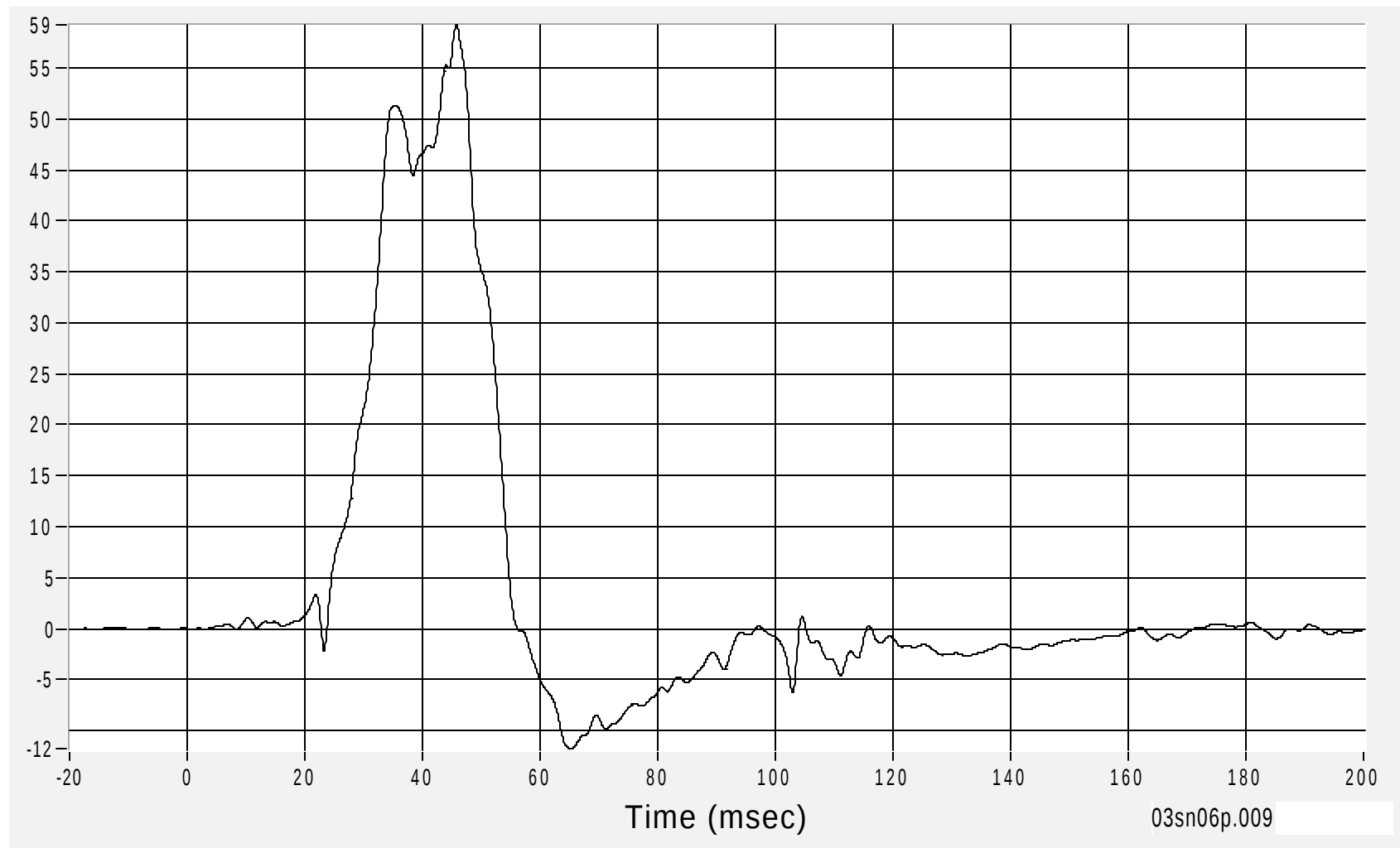
Medical College of Wisconsin
Vehicle Crashworthiness Lab

Passenger Lower Spine (Y) Acceleration - Redundant

Acceleration (G's) CFC180

Max 59.2 G's at 45.8 msec
Min -11.8 G's at 65.4 msec

B-135



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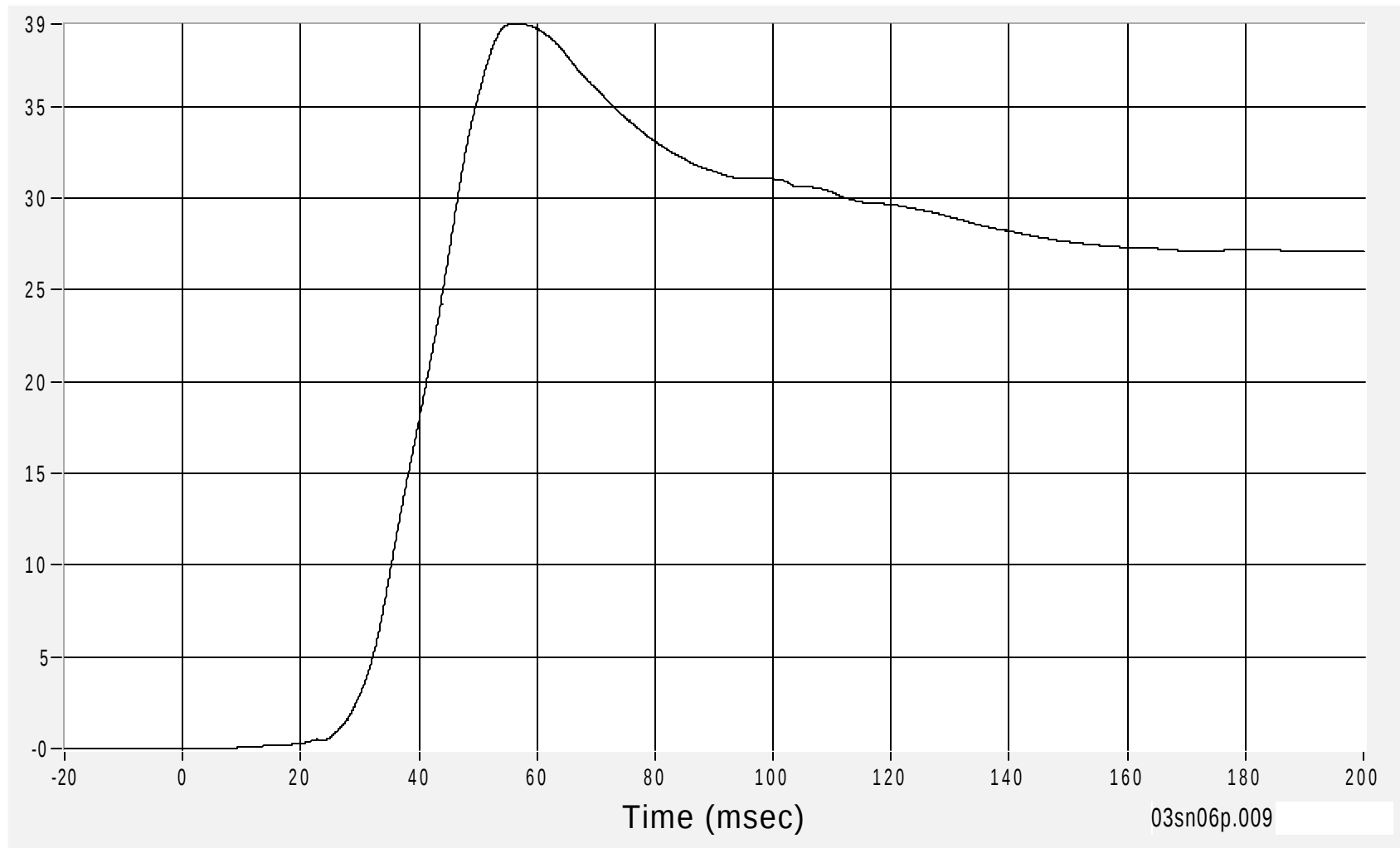
20 February 2003

Medical College of Wisconsin
Vehicle Crashworthiness Lab

Passenger Lower Spine (Y) Velocity - Redundant

Velocity (km/h) CFC180

Max	39.5	km/h	at	56.2	msec
Min	0.0	km/h	at	3.4	msec



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20 February 2003

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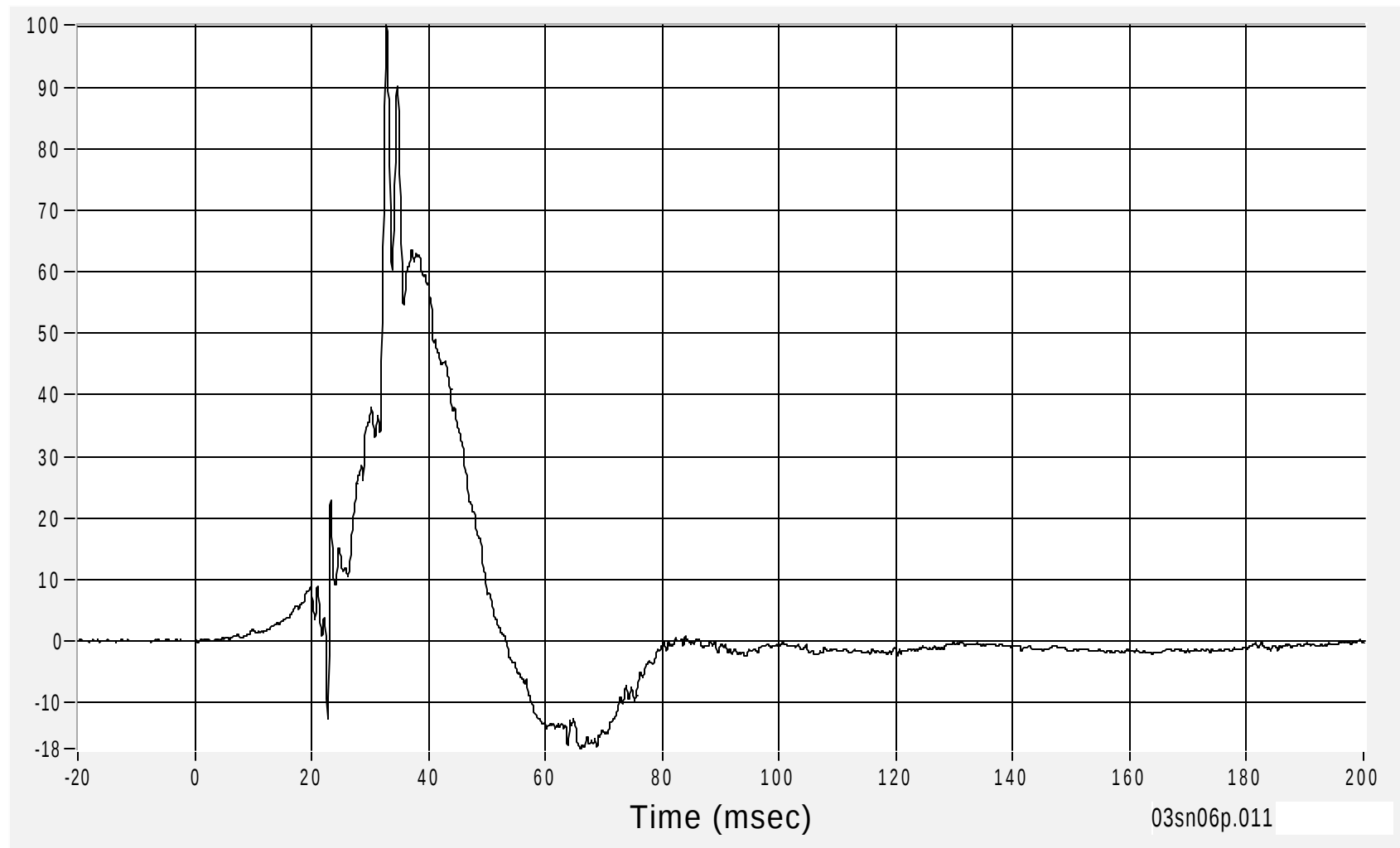
Passenger Pelvic (Y) Acceleration - Redundant

Acceleration (G's) CFC1000

Max 100.2 G's at 32.8 msec

Min -17.6 G's at 66.0 msec

B-137



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20 February 2003

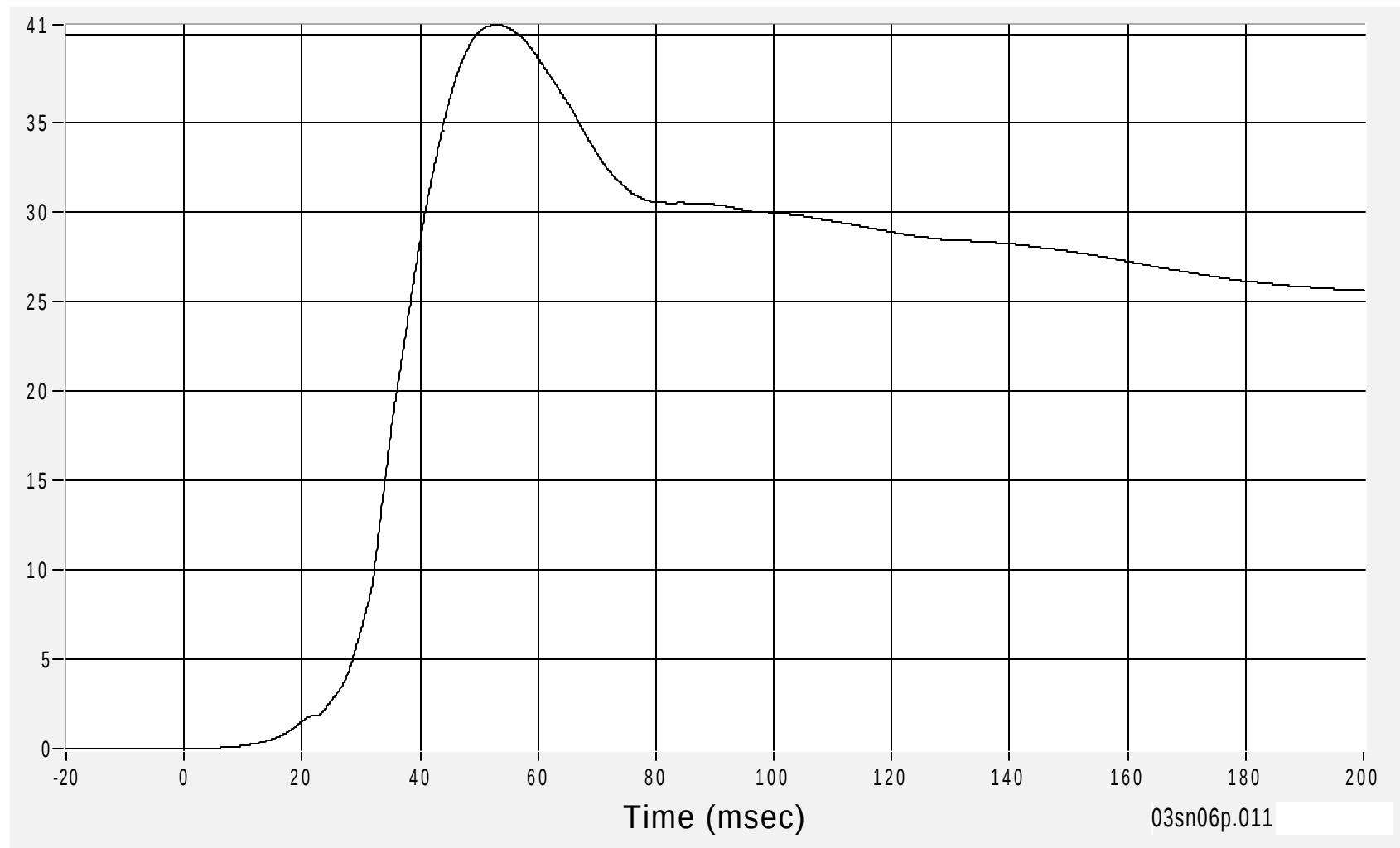
Medical College of Wisconsin
Vehicle Crashworthiness Lab

Passenger Pelvic (Y) Velocity - Redundant

Velocity (km/h) CFC180

Max 40.5 km/h at 53.0 msec
Min 0.0 km/h at 0.0 msec

B-138



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20 February 2003

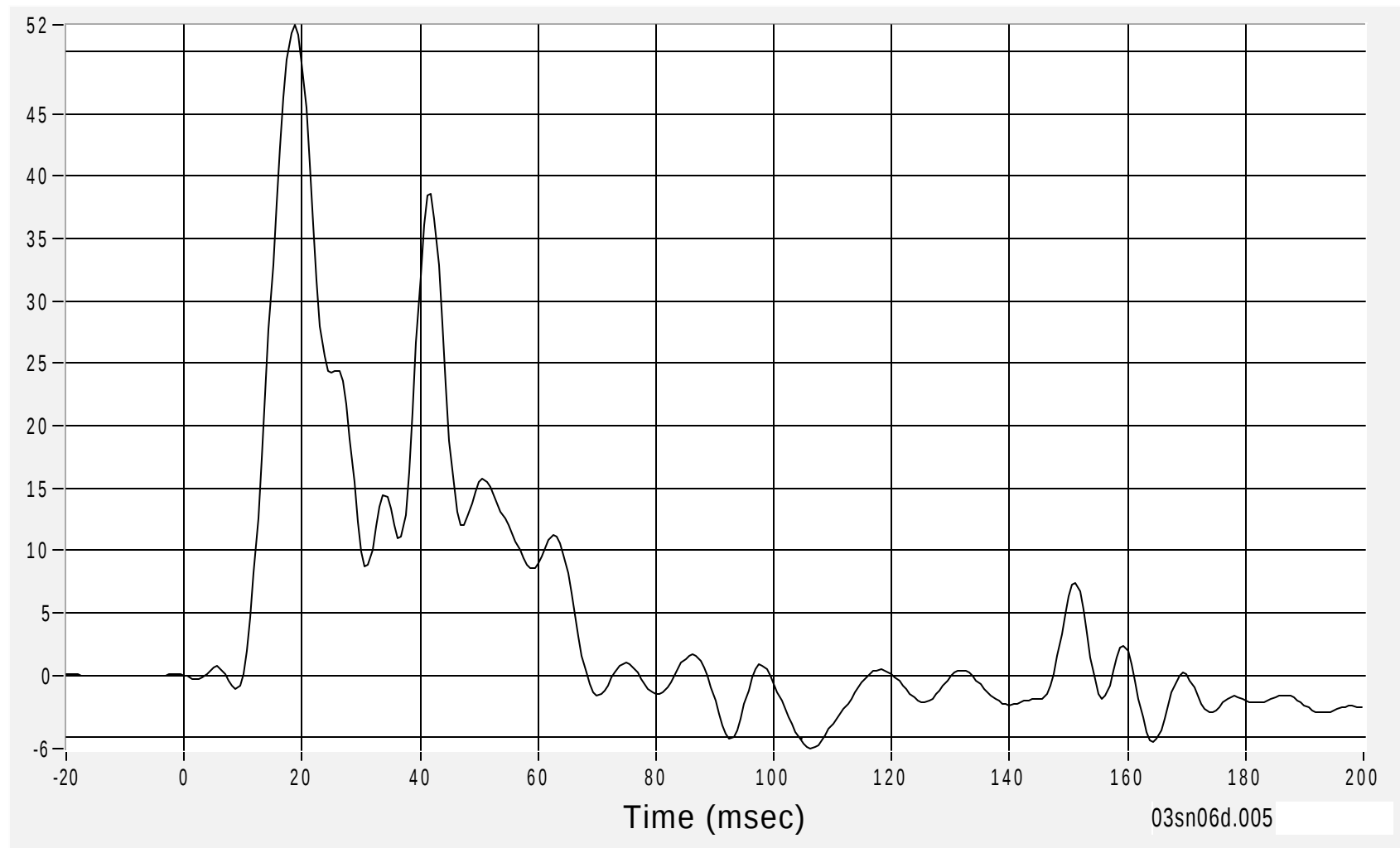
Medical College of Wisconsin
Vehicle Crashworthiness Lab

Driver Upper Rib (Y) Acceleration - Redundant

Acceleration (G's) FIR100

Max 52.1 G's at 18.8 msec
Min -5.9 G's at 106.2 msec

B-139



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20 February 2003

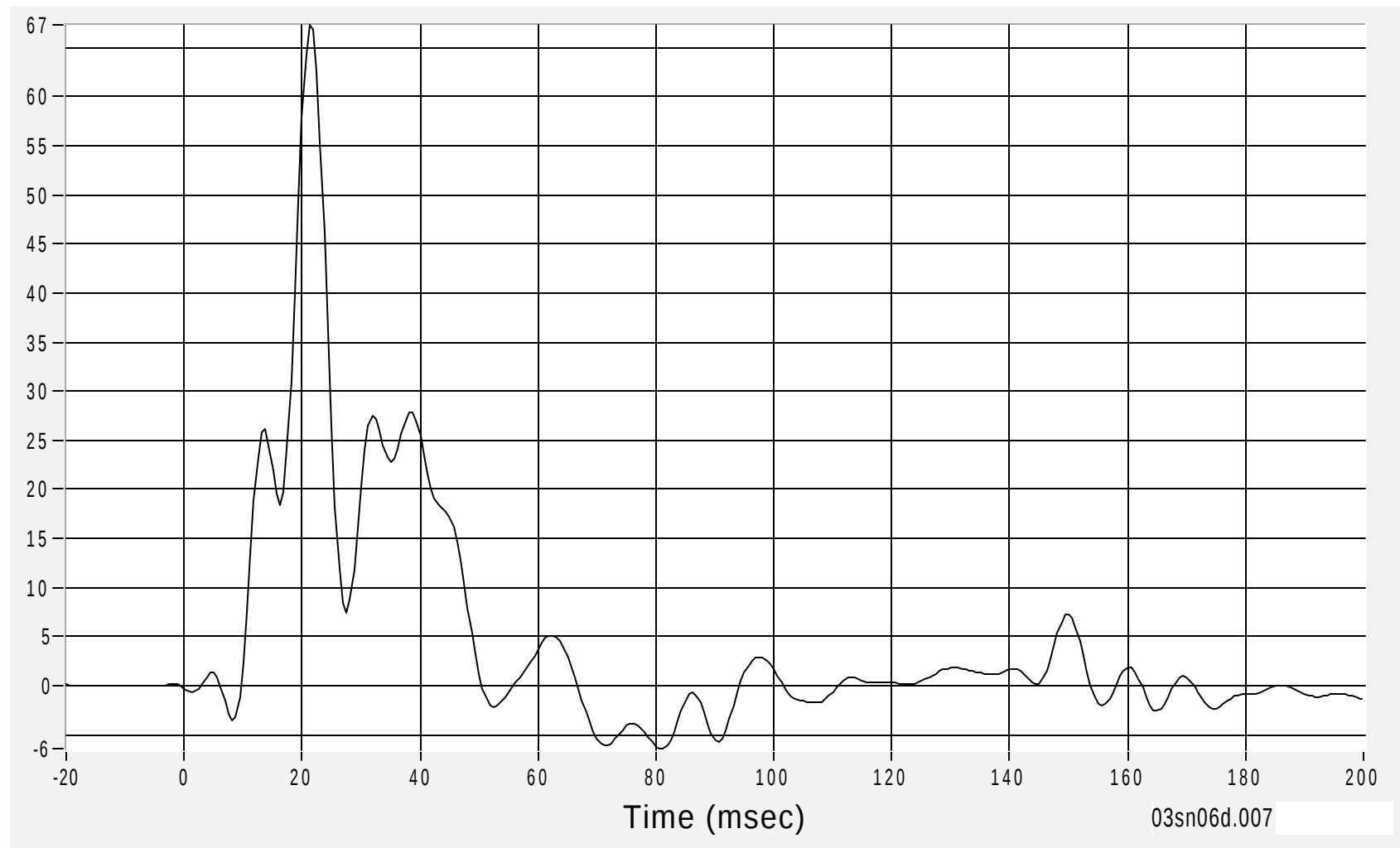
Medical College of Wisconsin
Vehicle Crashworthiness Lab

Driver Lower Rib (Y) Acceleration - Redundant

Acceleration (G's) FIR100

Max	67.3	G's	at	21.2	msec
Min	-6.4	G's	at	80.6	msec

B-140



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20 February 2003

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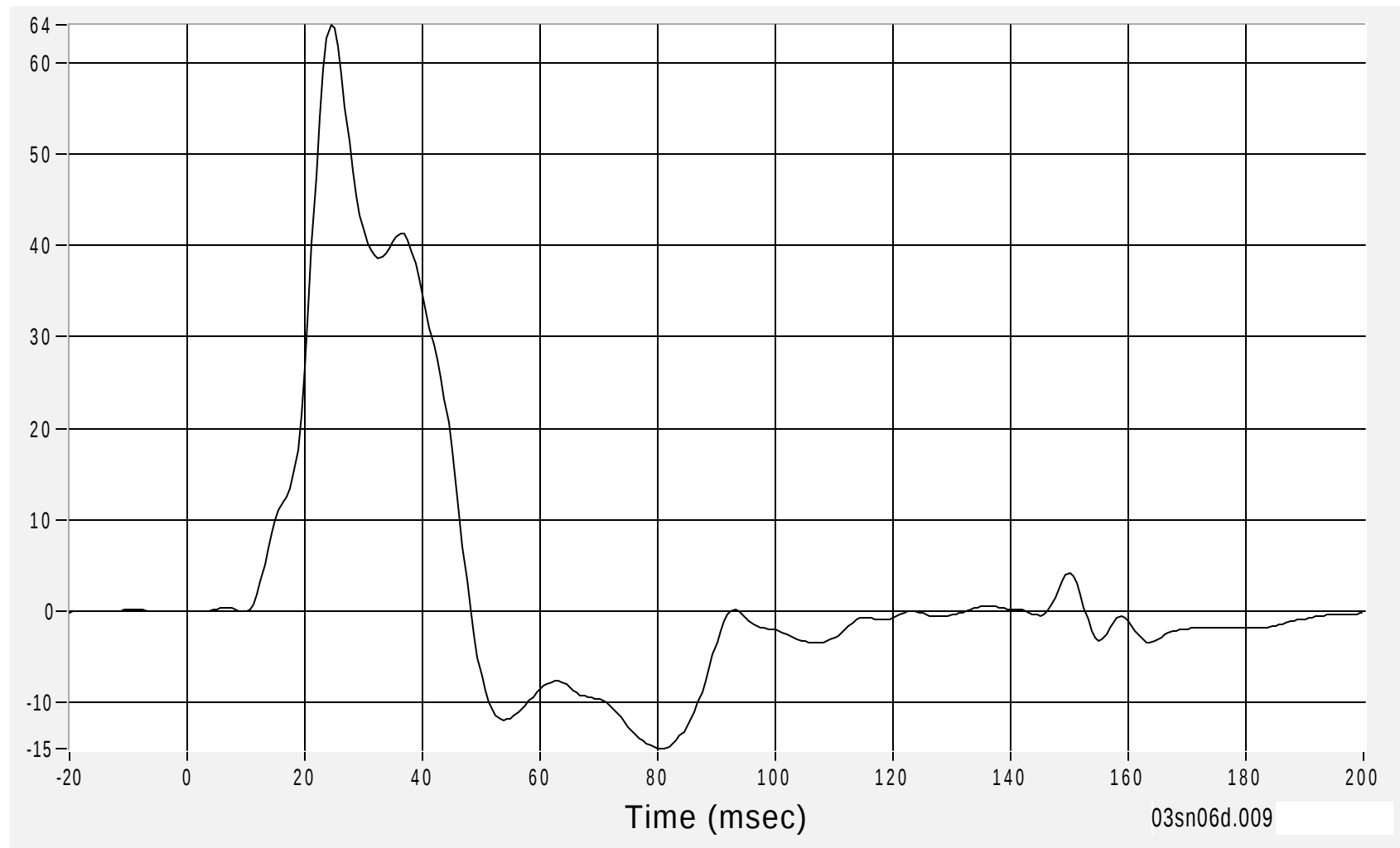
Driver Lower Spine (Y) Acceleration - Redundant

Acceleration (G's) FIR100

Max 64.2 G's at 24.4 msec

Min -15.1 G's at 80.6 msec

B-141



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20 February 2003

Medical College of Wisconsin
Vehicle Crashworthiness Lab

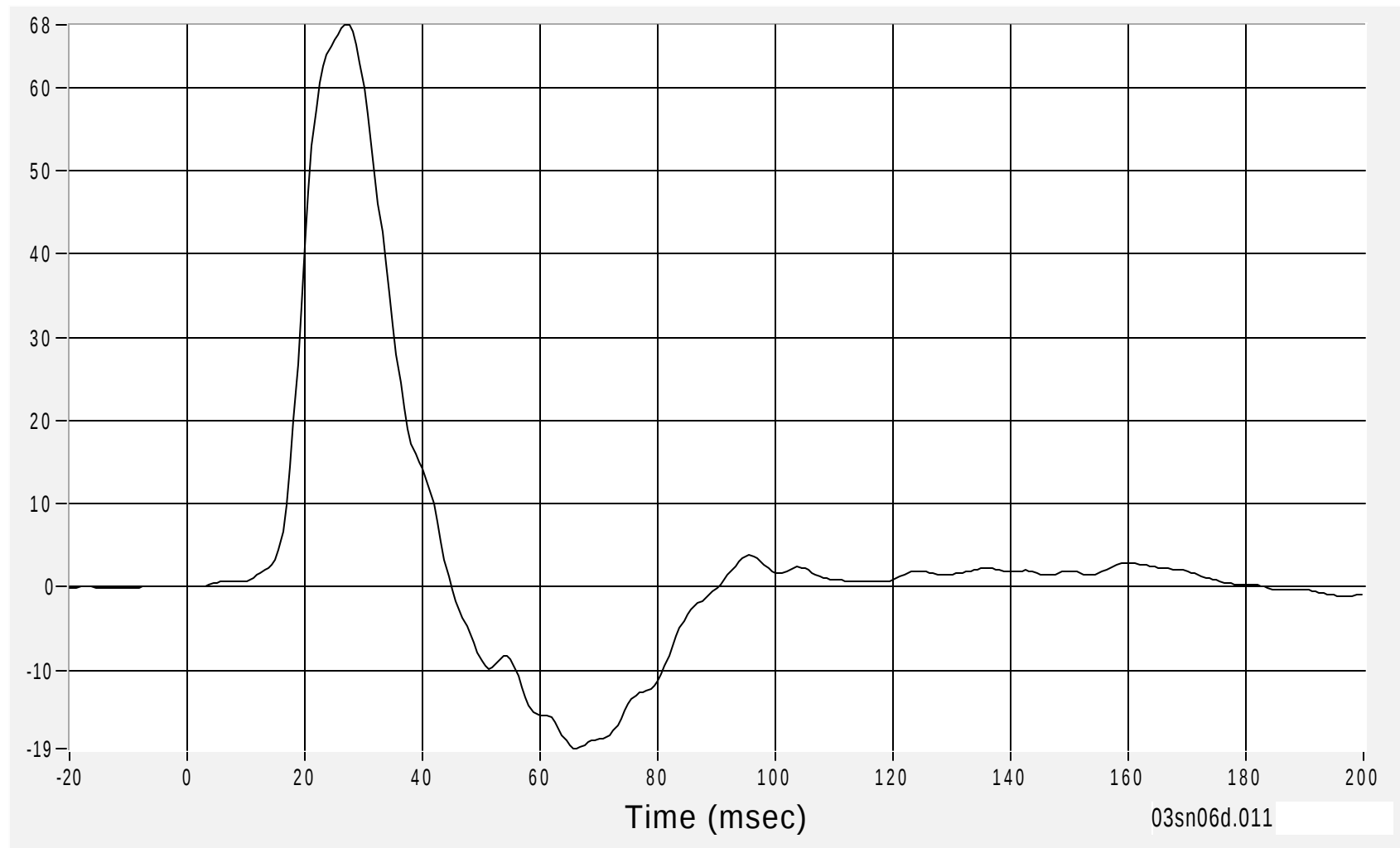
Driver Pelvic (Y) Acceleration - Redundant

Acceleration (G's) FIR100

Max 67.6 G's at 26.9 msec

Min -19.4 G's at 66.2 msec

B-142



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20 February 2003

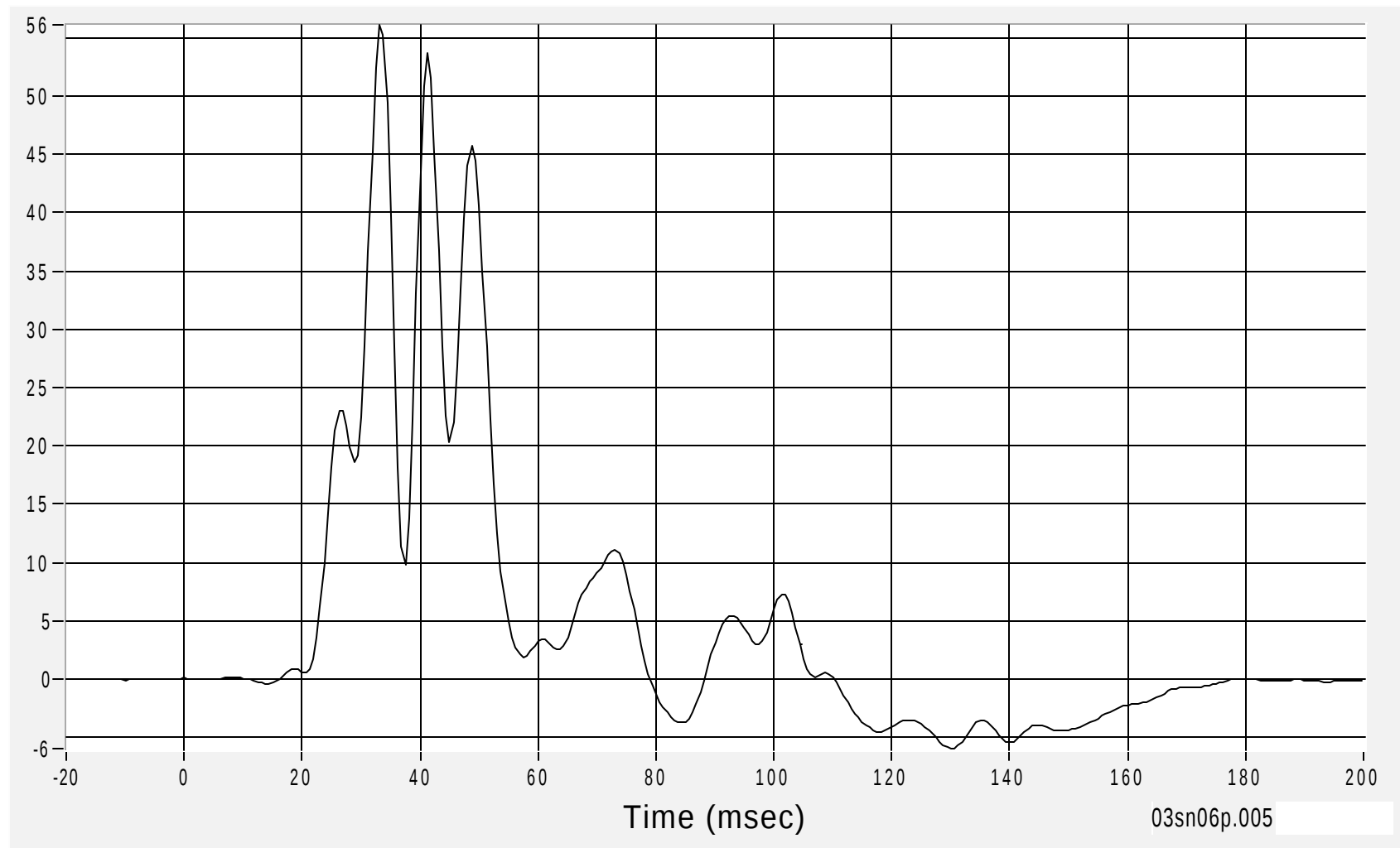
Medical College of Wisconsin
Vehicle Crashworthiness Lab

Passenger Upper Rib (Y) Acceleration - Redundant

Acceleration (G's) FIR100

Max 56.1 G's at 33.1 msec
Min -6.0 G's at 130.0 msec

B-143



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20 February 2003

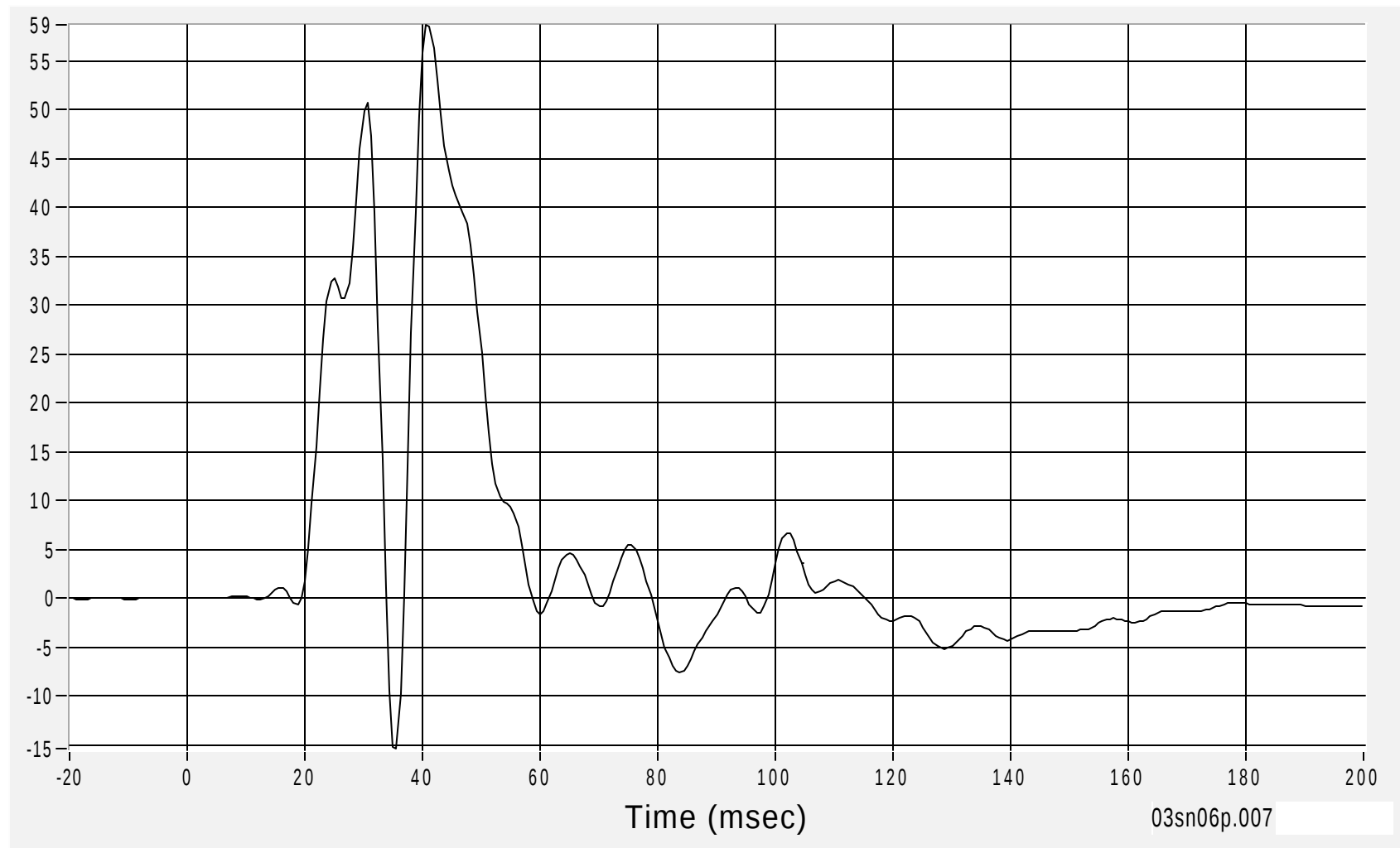
Medical College of Wisconsin
Vehicle Crashworthiness Lab

Passenger Lower Rib (Y) Acceleration - Redundant

Acceleration (G's) FIR100

Max 58.7 G's at 40.6 msec
Min -15.4 G's at 35.6 msec

B-144



03sn06 - 2003 JAGUAR X-TYPE 4 DOOR SEDAN

20 February 2003

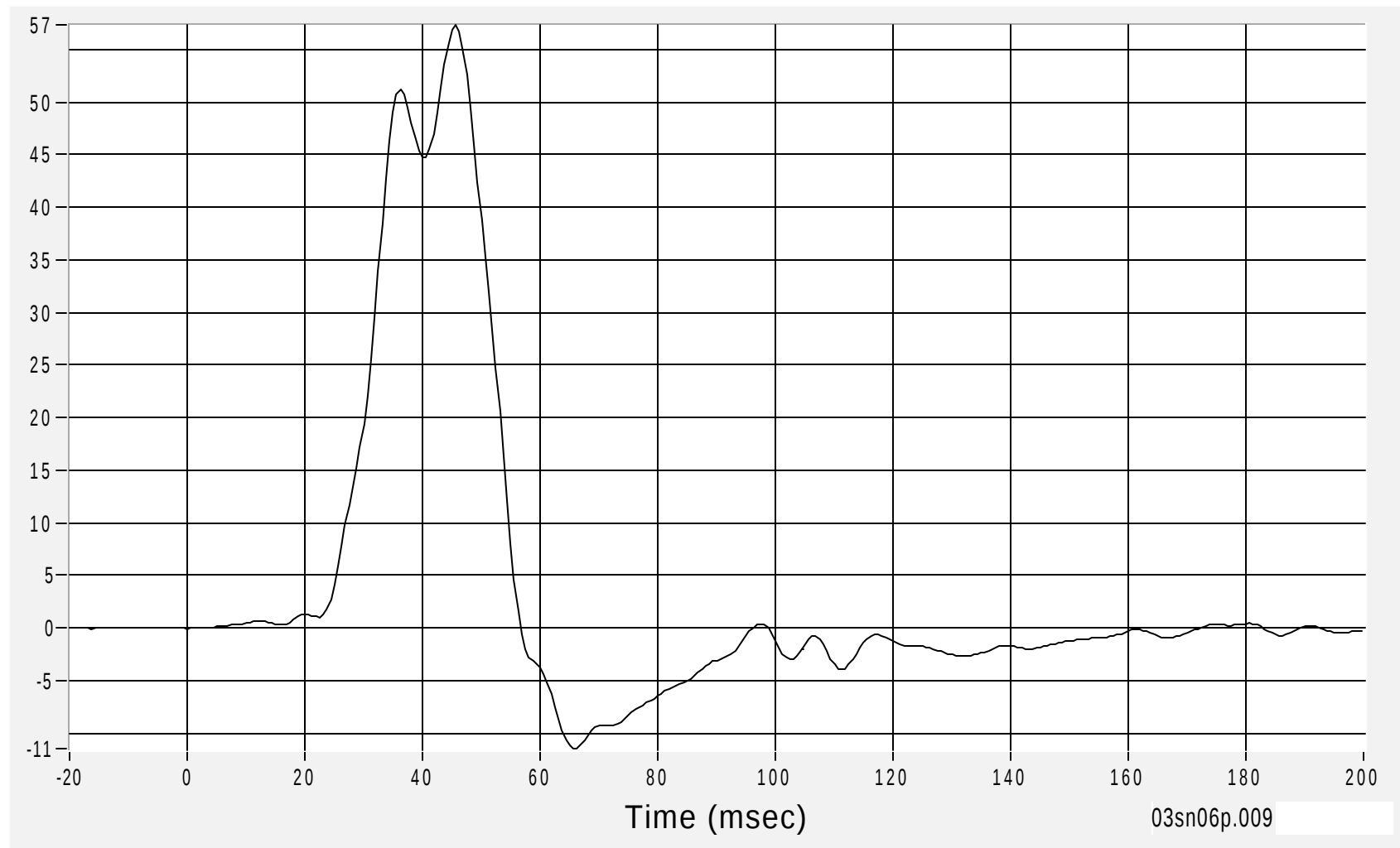
Medical College of Wisconsin
Vehicle Crashworthiness Lab

Passenger Lower Spine (Y) Acceleration - Redundant

Acceleration (G's) FIR100

Max 57.3 G's at 45.6 msec
Min -11.5 G's at 65.6 msec

B-145



03sn06 - 2003 JAGUAR X-TYPE 4 DOOR SEDAN

20 February 2003

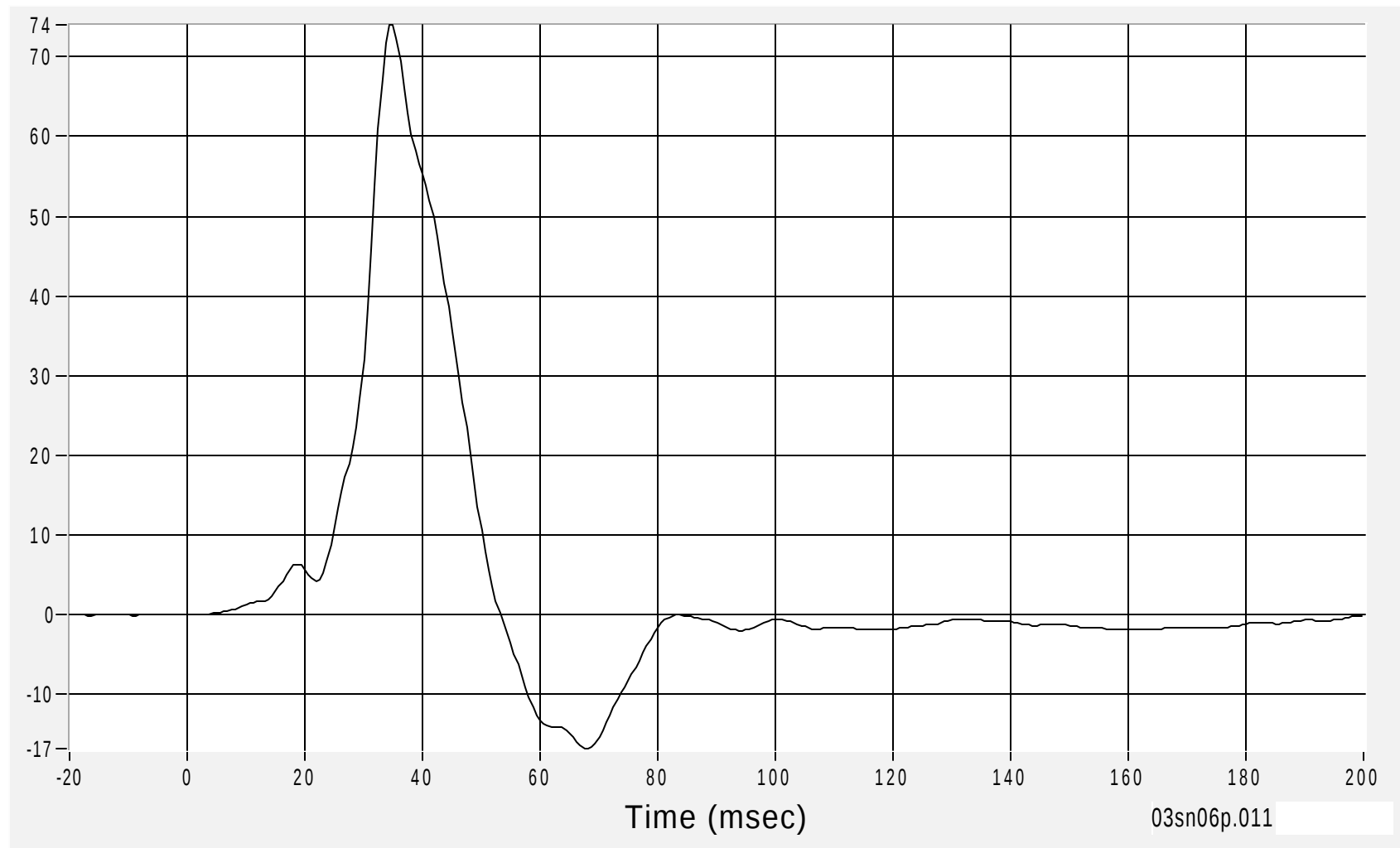
Medical College of Wisconsin
Vehicle Crashworthiness Lab

Passenger Pelvic (Y) Acceleration - Redundant

Acceleration (G's) FIR100

Max 74.0 G's at 35.0 msec
Min -16.8 G's at 68.1 msec

B-146



03sn06 - 2003 JAGUAR X-TYPE 4 DOOR SEDAN

20 February 2003

Medical College of Wisconsin
Vehicle Crashworthiness Lab

APPENDIX C

SID CONFIGURATION AND VERIFICATION RESULTS

TABLE OF CONTENTS

VERIFICATION TEST RESULTS SUMMARY PRE AND POST TEST	Page No.
SUMMARY SID PRE AND POST VERIFICATION	C-3
DUMMY INSPECTION LIST PRE AND POST TEST	C-4,5
	C-6

**VERIFICATION TEST RESULTS SUMMARY
PRE AND POST TEST**

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial Number SID H3 056 Test Sequences 05 and 06

TEST	PRE		POST	
	COMMENTS	BY	COMMENTS	BY
EXTERNAL DIMENSIONS	Pass all requirements	Mark Meyer	Pass all requirements	Mark Meyer
THORACIC SHOCK ABSORBER TEST	Pass all requirements	Mark Meyer	Pass all requirements	Mark Meyer
LATERAL THORAX IMPACT TEST	Pass all requirements	Mark Meyer	Pass all requirements	Mark Meyer
LATERAL PELVIS IMPACT TEST	Pass all requirements	Mark Meyer	Pass all requirements	Mark Meyer
ABDOMINAL COMPRESSION	Pass all requirements	Mark Meyer	Pass all requirements	Mark Meyer
LUMBAR FLEXION	Pass all requirements	Mark Meyer	Pass all requirements	Mark Meyer
HYBRID III LATERAL NECK TEST	Pass all requirements	Mark Meyer	Pass all requirements	Mark Meyer
HYBRID III LATERAL HEAD DROP	Pass all requirements	Mark Meyer	Pass all requirements	Mark Meyer

SID Serial Number SID H3 058 Test Sequences 06 and 07

TEST	PRE		POST	
	COMMENTS	BY	COMMENTS	BY
EXTERNAL DIMENSIONS	Pass all requirements	Mark Meyer	Pass all requirements	Mark Meyer
THORACIC SHOCK ABSORBER TEST	Pass all requirements	Mark Meyer	Pass all requirements	Mark Meyer
LATERAL THORAX IMPACT TEST	Pass all requirements	Mark Meyer	Pass all requirements	Mark Meyer
LATERAL PELVIS IMPACT TEST	Pass all requirements	Mark Meyer	Pass all requirements	Mark Meyer
ABDOMINAL COMPRESSION	Pass all requirements	Mark Meyer	Pass all requirements	Mark Meyer
LUMBAR FLEXION	Pass all requirements	Mark Meyer	Pass all requirements	Mark Meyer
HYBRID III LATERAL NECK TEST	Pass all requirements	Mark Meyer	Pass all requirements	Mark Meyer
HYBRID III LATERAL HEAD DROP	Pass all requirements	Mark Meyer	Pass all requirements	Mark Meyer

SUMMARY
SID PRE AND POST VERIFICATION

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial Number	SID H3 056 SID H3 058	Test Sequences	05 and 06 (056) 06and 07 (058)
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TEST PARAMETER	SPECIFICATION	SID H3 056		SID H3 058	
		PRE	POST	PRE	POST
MEASUREMENTS					
Date	-	18 Feb 03	26 Feb 03	18 Feb 03	26 Feb 03
Sequential Test Number	-	05	06	06	07
Temperature (°C)	18.9-25.5	23.5	22.4	23.0	20.8
Relative Humidity (%)	10-70	16.4	17.3	16.6	19.1
SH – Seated Height (mm)	889-909	903	907	909	909
RH – Rib Height (mm)	501-521	507	506	513	513
HP – Hip Pivot Height (mm)	99	99/99	99/99	99/99	99/99
RD – Rib From Back Line (mm)	229-241	229	229	233	233
KH – Knee Pivot from Back Line (mm)	511-526	525/518	522/520	524/520	524/522
KV – Knee Pivot to Floor (mm)	490-505	504/493	500/495	503/500	501/493
HW – Hip Width (mm)	356-391	366	364	356	356
THORAX IMPACTS					
Date	-	18 Feb 03	26 Feb 03	18 Feb 03	26 Feb 03
Sequential Test Number	-	05	06	06	07
Temperature (°C)	18.9-25.5	23.4	22.4	22.8	20.8
Relative Humidity (%)	10-70	16.4	17.3	16.5	19.1
Probe Speed (m/s)	4.21-4.33	4.23	4.27	4.31	4.30
Upper Rib Acceleration (G)	37-46	40.9	42.5	43.8	45.7
Lower Rib Acceleration (G)	37-46	40.7	43.0	43.1	42.9
Lower Spine Acceleration (G)	15-22	19.4	20.8	20.6	20.4
PELVIS IMPACTS					
Date	-	18 Feb 03	26 Feb 03	18 Feb 03	26 Feb 03
Sequential Test Number	-	05	06	06	07
Temperature (°C)	18.9-25.5	23.3	22.4	22.8	20.8
Relative Humidity (%)	10-70	16.3	17.3	16.6	19.1
Probe Speed (m/s)	4.21-4.33	4.22	4.27	4.23	4.28
Pelvis Acceleration (G)	40-60	50.1	53.4	42.2	47.8
THORACIC SHOCK ABSORBER					
Shock Absorber ID Number	-	406	-	03130164	-
Damper Setting	1-10	6.2	-	5	-
Date	-	14 Feb 03	-	14 Feb 03	-
Sequential Test Number	-	02	-	02	-
Temperature	18.9-25.5	19.2	-	21.0	-
Relative Humidity	10-70	16.5	-	17.7	-
Probe Speed (m/s) Low	3.05	3.05	-	3.02	-
Force (N)	836 – 1125	1016.4	-	888.9	-
Displacement (mm)	30 – 35	32.1	-	30.0	-
Probe Speed (m/s) Middle	4.27	4.27	-	4.27	-
Force (N)	1730 – 2099	1754.4	-	1788.3	-
Displacement (mm)	32 – 37	36.0	-	34.0	-
Probe Speed (m/s) High	6.10	6.10	-	6.13	-
Force (N)	3741 – 4448	3869.7	-	4132.0	-
Displacement (mm)	33 - 40	38.8	-	36.5	-

TEST PARAMETER	SPECIFICATION	SID H3 056		SID H3 058	
		PRE	POST	PRE	POST
ABDOMINAL COMPRESSION					
Date	-	17 Feb 03	-	17 Feb 03	-
Sequential Test Number	-	2	-	2	-
Temperature (°C)	18.9-25.5	23.7	-	22.4	-
Relative Humidity (%)	10-70	16.7	-	16.6	-
Force at 13 mm (N)	104-162	121.6	-	130.7	-
Force at 19 mm (N)	163-221	178.1	-	195.0	-
Force at 25 mm (N)	222-280	257.9	-	269.5	-
Force at 33 mm (N)	325-391	389.8	-	374.6	-
LUMBAR FLEXION					
Date	-	17 Feb 03	-	17 Feb 03	-
Sequential Test Number	-	2	-	2	-
Temperature (°C)	18.9-25.5	20.7	-	21.3	-
Relative Humidity (%)	10-70	17.9	-	18.2	-
Force at 0° (N)	0-26.7	0	-	22.5	-
Force at 0° (N)	97.8-151.2	108.7	-	134.2	-
Force at 0° (N)	151.2-204.6	158.5	-	166.6	-
Force at 0° (N)	204.6-258	212.7	-	207.9	-
Return Angle	12° Maximum	2.5	-	4.3	-
HYBRID III LATERAL NECK					
Date	-	11 Feb 03	25 Feb 03	11 Feb 03	25 Feb 03
Sequential Test Number	-	05	06	06	07
Temperature (°C)	18.9-25.5	20.1	20.8	20.3	21.7
Relative Humidity (%)	10-70	18.0	17.3	16.7	15.8
Pendulum Speed (m/s)	6.89-7.13	7.08	7.1	6.94	6.92
Pendulum Pulse 10ms (m/s)	1.96-2.55	1.98	2.24	2.18	2.12
Pendulum Pulse 20ms (m/s)	4.12-5.10	4.23	4.65	4.86	4.72
Pendulum Pulse 30ms (m/s)	5.73-7.01	6.25	6.56	6.95	6.74
Pendulum Pulse 40 –70 ms (m/s)	6.27-7.64	6.75	6.47	6.90	6.70
Max Head rotation (deg)	64-78	75.8	67.7	77.1	77.1
Head angle crosses zero (ms)	50-70	60.3	51.1	51.9	51.9
Peak Moment (Nm)	88-108	93.4	92.8	91.1	89.5
Moment crosses zero (ms)	40-60	51.2	49.4	48.6	48.6
Max rotation wrt peak moment (ms)	0-20	6.2	7.2	7.36	7.38
HYBRID III LATERAL HEAD DROP					
Date	-	10 Feb 03	24 Feb 03	7 Feb 03	24 Feb 03
Sequential Test Number	-	05	06	06	07
Temperature (°C)	18.9-25.5	19.9	21	19.4	21.1
Relative Humidity (%)	10-70	18.9	19	19.1	19.3
Resultant Max (G)	120-150	125.4	126.9	121.8	138.6
Longitudinal Max (G)	<15	5.3	14.7	8.4	7.2

DUMMY INSPECTION LIST**PRE AND POST TEST****CONFIGURED FOR LEFT SIDE IMPACT**

SID Serial Number

SID H3 056

SID H3 058

Test Sequences

05 and 06 (056)

06 and 07(058))

		SID H3 058		SID H3 056	
		PRE	POST	PRE	POST
	Date	18 Feb 03	27 Feb 03	18 Feb 03	27 Feb 03
	Performed By	Mark Meyer	Mark Meyer	Mark Meyer	Mark Meyer
PART	INSPECTION	Pass	Pass	Pass	Pass
Skin	Visual	Pass	Pass	Pass	Pass
Head	Visual, Ballast, Accelerometer Mount	Pass	Pass	Pass	Pass
Neck	Visual and Palpated, Cable Torque	Pass	Pass	Pass	Pass
Spine Box	Visual, Ballast, Weldment, Accelerometer Mount	Pass	Pass	Pass	Pass
Rib Cage	Visual, Palpated, Measured, Stiffness	Pass	Pass	Pass	Pass
Sternum	Visual	Pass	Pass	Pass	Pass
Lumbar Spine	Visual	Pass	Pass	Pass	Pass
Abdomen	Visual	Pass	Pass	Pass	Pass
Pelvis	Visual, Palpated, Accelerometer Mount	Pass	Pass	Pass	Pass
Upper Legs	Visual	Pass	Pass	Pass	Pass
Knees	Visual, Stops, Inserts	Pass	Pass	Pass	Pass
Lower Legs	Visual, Range of Motion	Pass	Pass	Pass	Pass
Ankles	Visual, Range of Motion	Pass	Pass	Pass	Pass
Feet	Visual, Range of Motion	Pass	Pass	Pass	Pass
Joints	1 to 2 G Range	Pass	Pass	Pass	Pass
Other		None	None	None	None

APPENDIX D

TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

TABLE OF CONTENTS

Section	Page No.
SID INSTRUMENTATION	D-3
VEHICLE INSTRUMENTATION	D-4
MDB INSTRUMENTATION	D-4

SID INSTRUMENTATION**FRONT SID H3 NO. 058**

	SERIAL NUMBER	MANUFACTURER	CALIBRATION DATE
HEAD X ACCELERATION	J35641	ENDEVCO	01Nov02
HEAD Y ACCELERATION	J19089	ENDEVCO	05Nov02
HEAD Z ACCELERATION	J34364	ENDEVCO	05Nov02
SIX AXIS UPPER NECK LOAD CELL (FX, FY, FZ, MX, MY, MZ)	0452	DENTON ATD	18Nov02
UPPER RIB ACCELERATION	J36031	ENDEVCO	04Nov02
LOWER RIB ACCELERATION	J35932	ENDEVCO	06Nov02
LOWER SPINE ACCELERATION	J21552	ENDEVCO	05Nov02
PELVIS ACCELERATION	J35937	ENDEVCO	04Nov02
UPPER RIB REDUNDANT ACCELERATION	J18553	ENDEVCO	01Nov02
LOWER RIB REDUNDANT ACCELERATION	J36616	ENDEVCO	05Nov02
LOWER SPINE REDUNDANT ACCELERATION	J35839	ENDEVCO	04Nov02
PELVIS REDUNDANT ACCELERATION	J32565	ENDEVCO	15Nov02

REAR SID H3 NO. 056

	SERIAL NUMBER	MANUFACTURER	CALIBRATION DATE
HEAD X ACCELERATION	P22321	ENDEVCO	13Dec02
HEAD Y ACCELERATION	P13819	ENDEVCO	14Nov02
HEAD Z ACCELERATION	J23579	ENDEVCO	14Nov02
SIX AXIS UPPER NECK LOAD CELL (FX, FY, FZ, MX, MY, MZ)	274	FTSS	12Nov02
UPPER RIB ACCELERATION	J21551	ENDEVCO	05Nov02
LOWER RIB ACCELERATION	J36614	ENDEVCO	05Nov02
LOWER SPINE ACCELERATION	J36603	ENDEVCO	01Nov02
PELVIS ACCELERATION	J36617	ENDEVCO	04Nov02
UPPER RIB REDUNDANT ACCELERATION	J32665	ENDEVCO	01Nov02
LOWER RIB REDUNDANT ACCELERATION	J22318	ENDEVCO	15Nov02
LOWER SPINE REDUNDANT ACCELERATION	J32662	ENDEVCO	04Nov02
PELVIS REDUNDANT ACCELERATION	J22189	ENDEVCO	14Nov02

VEHICLE INSTRUMENTATION

	SERIAL NUMBER	MANUFACTURER	CALIBRATION DATE
RIGHT FRONT SILL X	P13846	ENDEVCO	14Nov02
RIGHT FRONT SILL Y	P22230	ENDEVCO	15Nov02
RIGHT FRONT SILL Z	P13725	ENDEVCO	06Nov02
RIGHT REAR SILL X	P22993	ENDEVCO	15Nov02
RIGHT REAR SILL Y	P12825	ENDEVCO	14Nov02
RIGHT REAR SILL Z	P21820	ENDEVCO	14Nov02
REAR FLOORPAN ABOVE AXLE X	98G98D22-Z04	ENTRAN	15Nov02
REAR FLOORPAN ABOVE AXLE Y	98B98A26-D05	ENTRAN	15Nov02
REAR FLOORPAN ABOVE AXLE Z	98G98E11-K02	ENTRAN	15Nov02
LEFT REAR SILL Y	P13837	ENDEVCO	14Nov02
LEFT FRONT SILL Y	P22239	ENDEVCO	14Nov02
LEFT FRONT DOOR CENTERLINE Y	P23413	ENTRAN	14Nov02
RIGHT REAR OCCUPANT COMP Y	P23595	ENDEVCO	15Nov02
MID-REAR OF LEFT FRONT DOOR Y	98G98E11-K10	ENDEVCO	15Nov02
LEFT FRONT DOOR UPPER C/L Y	98F98C27-B04	ENDEVCO	15Nov02
MID-REAR OF LEFT REAR DOOR Y	P22323	ENDEVCO	12Dec2
LEFT REAR DOOR UPPER C/L Y	P21898	ENDEVCO	13Dec02
LEFT LOWER B-PILLAR Y	P19211	ENDEVCO	13Dec02
LEFT MIDDLE B-PILLAR Y	P23025	ENDEVCO	13Dec02
LEFT LOWER A-PILLAR Y	P23573	ENDEVCO	14Nov02
LEFT UPPER A-PILLAR	P22298	ENDEVCO	13Dec02
FRONT SEAT TRACK Y	P22965	ENDEVCO	13Dec02
REAR SEAT TRACK Y	P22312	ENDEVCO	13Dec02
VEHICLE CG X	P13598	ENDEVCO	14Nov02
VEHICLE CG Y	P13868	ENDEVCO	15Nov02
VEHICLE CG Z	P13869	ENDEVCO	14Nov02

MDB INSTRUMENTATION

MDB CG X	P22322	ENDEVCO	14Nov02
MDB CG Y	P21151	ENDEVCO	27Nov02
MDB CG Z	98B98A26-D10	ENTRAN	14Nov02
MDB REAR FRAME MEMBER X	P22350	ENDEVCO	27Nov02
MDB REAR FRAME MEMBER Y	P22978	ENDEVCO	27Nov02