

REPORT NO. MCW-DOT-02SN04

**NEW CAR ASSESSMENT PROGRAM
SIDE IMPACT TESTING**

SUZUKI MOTOR CORPORATION
2002 SUZUKI VITARA 4 DOOR MPV

NHTSA NUMBER: M2 0514

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



27 MARCH 2002

FINAL REPORT

U.S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Safety Performance Standards
Office of Crashworthiness Standards
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Washington, DC 20590

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Acceptance Date:

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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 2002 Suzuki Vitara 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 27 March 2002. The impact velocity of the Moving Deformable Barrier (MDB) was 62.0 km/h, and the ambient temperature at the struck side (driver's) of the target vehicle at the time of impact was 20.2° C. The target vehicle post-test maximum crush was 401 mm at Level 2. 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>53.3</td><td>29.0</td></tr> <tr> <td>Left Lower Rib Acceleration G</td><td>47.2</td><td>31.9</td></tr> <tr> <td>Lower Spine Acceleration G</td><td>72.1</td><td>24.3</td></tr> <tr> <td>Thoracic Trauma Index TTI</td><td>63</td><td>28</td></tr> <tr> <td>Pelvis Acceleration G</td><td>94</td><td>29</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	53.3	29.0	Left Lower Rib Acceleration G	47.2	31.9	Lower Spine Acceleration G	72.1	24.3	Thoracic Trauma Index TTI	63	28	Pelvis Acceleration G	94	29
	<u>DRIVER</u>	<u>PASSENGER</u>																			
Left Upper Rib Acceleration G	53.3	29.0																			
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Pelvis Acceleration G	94	29																			
17. Key Words New Car Assessment Program (NCAP) Side Impact MDB Side Impact Dummy (SID) NHTSA No. M2 0514		18. Distribution Statement <u>Copies of this report are available from:</u> National Highway Traffic Safety Administration Technical Reference Division, Room 5108(NAD-52) 400 Seventh Street, S.W. Washington, D.C. 20590																			
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SECTION 1

PURPOSE AND TEST PROCEDURE

This side impact test was part of the FY02 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 2002 Suzuki Vitara 4 Door MPV. 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 2002 Suzuki Vitara 4 Door Multipurpose Vehicle 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 27 March 2002.

Two restrained Side Impact Dummies (SIDs) 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 nine high-speed cameras, one real-time camera, and one high-speed video. Camera locations and other pertinent camera information can be found in this report.

The SIDs were instrumented with the following accelerometers.

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

Pre- and post-test photographs of the test vehicle, the MDB, and the side impact dummies (SIDs) are included in Appendix A. Appendix B contains the vehicle, MDB, and dummy response data traces. A summary of the side impact dummy (SID) 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	Rear SID
TTI (G)	63	28
PELVIS (G)	94	29
HIC36	131	992

SECTION 3
SUMMARY OF TEST RESULTS

DATA SHEET NO. 1

GENERAL VEHICLE TEST PARAMETER DATA

TEST VEHICLE INFORMATION

Year/ Make/ Model/ Body Style		<u>2002 Suzuki Vitara 4 door MPV</u>			
Vehicle NHTSA NO.		<u>M2 0514</u>	VIN	<u>2S3TD52V726103001</u>	
Vehicle Body Color		<u>Platinum metallic</u>	Build Date	<u>November 2001</u>	
Engine Data	<u>4</u> Cylinders	<u>CID</u>	<u>2</u> Liter	<u>cc</u>	
Placement	<u>X</u> Longitudinal	<u>Lateral</u>			
Transmission	<u>5</u> Speed	<u>X</u> Manual	<u>Automatic</u>	<u>X</u> Overdrive	
Final Drive	<u>Rear Wheel Drive</u>	<u>Front Wheel Drive</u>	<u>X</u> Four Wheel Drive		
Odometer Reading	<u>23</u>	Date	<u>12-Mar-2002</u>		
Options	<u>X</u> A/C	<u>X</u> Power Steering	<u>X</u> Power Brakes	<u>X</u> Power Windows	
	<u>X</u> Cruise Control	<u>X</u> Tilt Wheel	<u>X</u> Power Locks		

DATA FROM TIRE PLACARD:

Tire Pressure (at Capacity)	<u>26</u> PSI Front
	<u>26</u> PSI Rear
Recommended Tire Size	<u>P215/65 R16</u>
Tires on Test Vehicle	<u>P215/65 R16</u> Manufacturer <u>Uniroyal</u>

TEST VEHICLE AIRBAG INFORMATION:

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

VEHICLE CAPACITY DATA:

Number of Occupants:	<u>2</u> Front	<u>3</u> Rear	<u>3rd Seat</u>	<u>5</u> Total
Type of Front Seats	<u>X</u> Bucket	<u>Bench</u>	<u>Split Bench</u>	
Type of Front Seat Back	<u>Fixed</u>	<u>X</u> Adjustable w/	<u>X</u> Lever	<u>Knob</u>
Vehicle Max Capacity Loading	<u>410</u> kg		(A)	
No. of Occupants X 68.04 kg	<u>340.2</u> kg		(B)	
Cargo Capacity (A) – (B)	<u>69.8</u> kg			

TEST VEHICLE DELIVERED WEIGHT WITH MAXIMUM FLUIDS:

Left Front	=	<u>347.9</u> kg	Left Rear	=	<u>331.1</u> kg
Right Front	=	<u>363.9</u> kg	Right Rear	=	<u>327.0</u> kg
TOTAL FRONT	=	<u>711.8</u> kg	TOTAL REAR	=	<u>658.1</u> kg
% Total Weight	=	<u>52.0</u> %	%Total Weight	=	<u>48.0</u> %
TOTAL WEIGHT	=	<u>1369.8</u> kg			

DATA SHEET 1 (continued)**GENERAL VEHICLE TEST PARAMETER DATA**Vehicle: 2002 Suzuki Vitara 4 door MPVNHTSA No. M2 0514**CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:**

Total Test Vehicle Delivered Weight with Max Fluids	=	<u>1369.8</u>	kg	(A)
Maximum Cargo Carrying Capacity of Test Vehicle	=	<u>69.8</u>	kg	(B)
Weight of (2) instrumented Side Impact Dummies	=	<u>161.3</u>	kg	(C)
TEST VEHICLE TARGET WEIGHT	=	<u>1600.9</u>	kg	(A+B+C)

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

Left Front	=	<u>367.4</u>	kg	Left Rear	=	<u>425.9</u>	kg
Right Front	=	<u>385.3</u>	kg	Right Rear	=	<u>422.3</u>	kg
TOTAL FRONT	=	<u>752.7</u>	kg	TOTAL REAR	=	<u>848.2</u>	kg
% Total Weight	=	<u>47.0</u>	%	%Total Weight	=	<u>53.0</u>	%
TOTAL WEIGHT	=	<u>1600.9</u>	kg				

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

Left Front	=	<u>362.8</u>	kg	Left Rear	=	<u>422.7</u>	kg
Right Front	=	<u>385.1</u>	kg	Right Rear	=	<u>421.4</u>	kg
TOTAL FRONT	=	<u>747.9</u>	kg	TOTAL REAR	=	<u>844.1</u>	kg
% Total Weight	=	<u>47.0</u>	%	%Total Weight	=	<u>53.0</u>	%
TOTAL WEIGHT	=	<u>1592.0</u>	kg				

TEST VEHICLE ATTITUDE (all dimensions in millimeters):**AS DELIVERED**

Left Front	<u>794</u>	Right Front	<u>798</u>	Left Rear	<u>810</u>	Right Rear	<u>813</u>
------------	------------	-------------	------------	-----------	------------	------------	------------

FULLY LOADED

Left Front	<u>787</u>	Right Front	<u>785</u>	Left Rear	<u>769</u>	Right Rear	<u>770</u>
------------	------------	-------------	------------	-----------	------------	------------	------------

AS TESTED

Left Front	<u>791</u>	Right Front	<u>787</u>	Left Rear	<u>773</u>	Right Rear	<u>773</u>
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Test Vehicle Wheelbase 2480 mmAs Tested CG = 1314 mm rearward of front wheel centerline**TOTAL VEHICLE LENGTH:**

Right Side	=	<u>3852</u>	mm
Left Side	=	<u>3852</u>	mm
Centerline	=	<u>4041</u>	mm

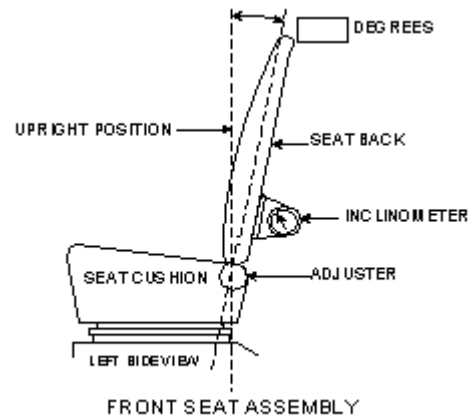
DATA SHEET 1 (continued)

GENERAL TEST VEHICLE PARAMETER DATA

Vehicle: 2002 Suzuki Vitara 4 door MPV

NHTSA No. M2 0514

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>300 mm</u>	
Total Number of Detents	<u>14</u>	Test Position	<u>8</u>

FRONT SEAT BACK ADJUSTMENT:

Seat Back Angle	<u>Seat back in sixth notched position; measured at 22 degrees</u>
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REAR SEAT POSITION:

Total Length Fore/Aft Adjustment	<u>N/a</u>
Seat Back Adjustment Position	<u>Seat back in 5th notched position; measured at 20 degrees</u>

ADJUSTABLE STEERING COLUMN POSITION:

<u>Mid-position, 4th detent from top</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>64.0 L</u>	
Test Volume	<u>59.4 L</u>	<u>92.8% usable capacity</u>

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

Wheelbase	<u>2480</u>	mm
Impact Point is	<u>305 mm rearward</u>	of front axle centerline
Actual Impact Point is	<u>295 mm rearward</u>	of front axle centerline

DATA SHEET 2
TEST VEHICLE SUMMARY

VEHICLE IDENTIFICATION:

Year/Make/Model/Body Style	2002 Suzuki Vitara 4 Door MPV		
Body Color	Platinum	VIN	2S3TD52V726103001
NHTSA No.	M2 0514	Test Date	27-Mar-2002
Overall Length	4041 mm	Overall Width	1713 mm

VEHICLE TEST WEIGHT (Pre-Test):

Left Front	=	362.8	kg	Left Rear	=	422.7	kg
Right Front	=	385.1	kg	Right Rear	=	421.4	kg
TOTAL FRONT	=	747.9	kg	TOTAL REAR	=	844.1	kg
% Total Weight	=	47.0	%	%Total Weight	=	53.0	%
TOTAL WEIGHT	=	1592.0	kg				
Wheelbase	=				=	2480	mm
Longitudinal CG from Center of Front Axle	=				=	1314	mm
Impact Angle with Respect to Impactor	=				=	90	degrees

ACTUAL IMPACT POINT

Actual Impact Point is 10 mm forward of nominal impact reference line (lateral)

Actual Impact Point is 5 mm below nominal impact line (vertical)

MAXIMUM EXTERIOR STATIC CRUSH:

1. LEVEL 1	(366 mm above ground)	=	395	mm
2. LEVEL 2	(680 mm above ground)	=	401	mm
3. LEVEL 3	(707 mm above ground)	=	395	mm
4. LEVEL 4	(1050 mm above ground)	=	271	mm
5. LEVEL 5	(1540 mm above ground)	=	72	mm

Maximum Post-Test intrusion at Level 2 is 401 mm

<u>OCCUPANTS</u>	<u>Left Front Passenger</u>	<u>Left Rear Passenger</u>
Dummy Identification	SID/056	SID/058
Restraints Used	3-Point Belt	3-Point Belt

INSTRUMENTATION:

Number of Vehicle Data Channels		48
Number of Cameras	Onboard	3
	Off board	5
	MDB	2
	TOTAL	10

DATA SHEET NO. 3

MOVING DEFORMABLE BARRIER (MDB) SUMMARY

Vehicle: 2002 Suzuki Vitara 4 door MPV

NHTSA No. M2 0514

MDB FACE MANUFACTURER AND SERIAL NUMBER:

Plascore Serial Number 081C1001-3 020C1001

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>90°</u>	
Impact Speed	Primary	<u>62.0 km/h</u>	<u>38.5 mph</u>
	Secondary	<u>61.7 km/h</u>	<u>38.4 mph</u>
	Radar	<u>No valid data collected</u>	<u>No valid data collected</u>
	On-Board	<u>62.1 km/h</u>	<u>38.6 mph</u>

MAXIMUM STATIC CRUSH OF HONEYCOMB IMPACT FACE:

1. Row A Center of Bumper	=	<u>92</u>	mm
2. Row B Top of Bumper	=	<u>88</u>	mm
3. Row C Mid-Level	=	<u>71</u>	mm
4. Row D Top of Stack	=	<u>145</u>	mm

INSTRUMENTATION:

Number of MDB Data Channels = 5

DATA SHEET NO. 4

POST-TEST OBSERVATIONS

Vehicle: 2002 Suzuki Vitara 4 door MPV:

NHTSA No. M2 0514

VISIBLE DUMMY CONTACT POINTS:

LEFT FRONT SID

Head	Back of head to upper seat belt anchor
Upper Torso	To left front door panel in front of B-Pillar under window sill
Lower Torso	To left front door panel in front of B-Pillar at arm rest
Left Leg	To left front door panel below arm rest
Left Knee	To left front door panel about 10 cm rearward of dashboard

LEFT REAR SID

Top of head to upper C-Pillar; Face to upper C-Pillar
To left rear door at window sill
To left rear door at arm rest
To left rear door panel below arm rest
To left rear door panel slightly rearward of B-Pillar

DOOR OPENING:

LEFT DOOR

Front	Closed/Inoperable/Latched to Door
Rear	Closed/Inoperable/Latched to Door

RIGHT DOOR

Closed/Operable/Latched to Door
Closed/Inoperable/Latched to Door

MDB DISTANCE FROM TARGET IMPACT POINT:

Horizontal	10 mm forward	Vertical	5 mm below
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ARM REST LOCATIONS:

Front	214 mm below window sill
Rear	191 mm below window sill

SEAT MOVEMENT:

Front	Seat rotated CCW about positive vehicle x-axis about 25 degrees; seat protruded slightly over center console
Rear	Seat pushed slightly forward and over centerline of vehicle

GLAZING DAMAGE

Windshield	Left 3/4 of windshield cracked
Window	Left side driver and passenger windows shattered on impact

PILLAR PERFORMANCE:

None noted

SILL SEPARATION

None noted

AIRBAG DEPLOYMENT STATUS:

	DRIVER	FRONT PASSENGER	REAR PASSENGER
FRONT	Did not deploy	Did not deploy	N/a
SIDE	N/a	N/a	N/a

OTHER NOTABLE IMPACT EFFECTS:

None noted

SECTION 4
OCCUPANT AND VEHICLE INFORMATION

DATA SHEET 5

SID INSTRUMENTATION DATA

Vehicle: 2002 Suzuki Vitara 4 door MPV

NHTSA No. M2 0514

	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)	22.2	34.4	-18.1	108.2	6.3	45.9	-29.3	83.0
Lateral (Y)	57.2	33.7	-3.4	64.6	150.9	64.7	-22.1	74.5
Vertical (Z)	20.8	79.8	-19.2	48.6	14.9	66.7	-19.9	73.7
Resultant (R)	60.9	33.7			151.3	64.7		
HIC36	130.9				992.0			
RIB ACCELERATIONS								
Upper Rib Lateral (Y)	53.3	43.1	-9.7	38.1	29.0	64.4	-2.2	163.8
Upper Rib Lateral (Y _R)	51.7	43.1	-10.8	38.1	28.4	64.4	-2.0	163.8
Lower Rib Lateral (Y)	47.2	43.8	-12.6	68.8	31.9	43.1	-2.0	164.4
Lower Rib Lateral (Y _R)	46.1	43.1	-12.7	68.8	30.8	43.1	-2.0	164.4
SPINE ACCELERATIONS								
Lower Lateral (Y)	72.1	42.5	-19.9	65.0	24.3	47.5	-5.0	89.4
Lower Lateral (Y _R)	70.9	41.9	-20.5	65.0	24.1	47.5	-5.1	89.4
PELVIS ACCELERATIONS								
Lateral (Y)	94.3	35.0	-22.0	61.2	29.5	38.1	-14.6	76.2
Lateral (Y _R)	95.7	35.0	-22.8	61.2	46.7	43.1	-14.3	76.2

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

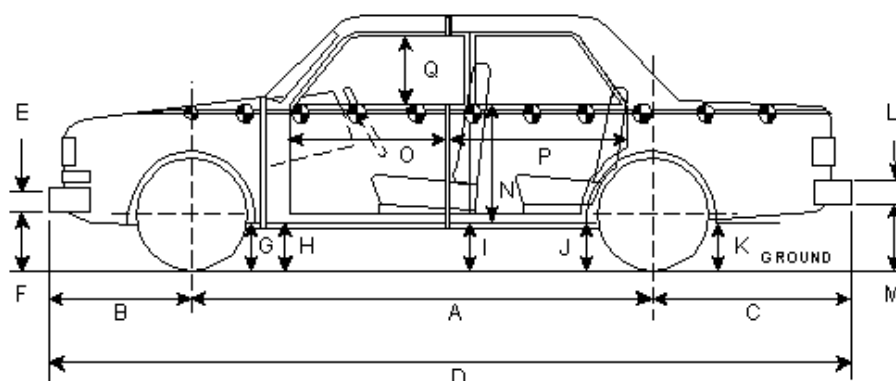
Y_R denotes redundant Y-direction accelerometer

DATA SHEET 6

VEHICLE PRE- AND POST- MEASUREMENTS

Vehicle: 2002 Suzuki Vitara 4 door MPV

NHTSA No. M2 0514



LEFT SIDE VIEW

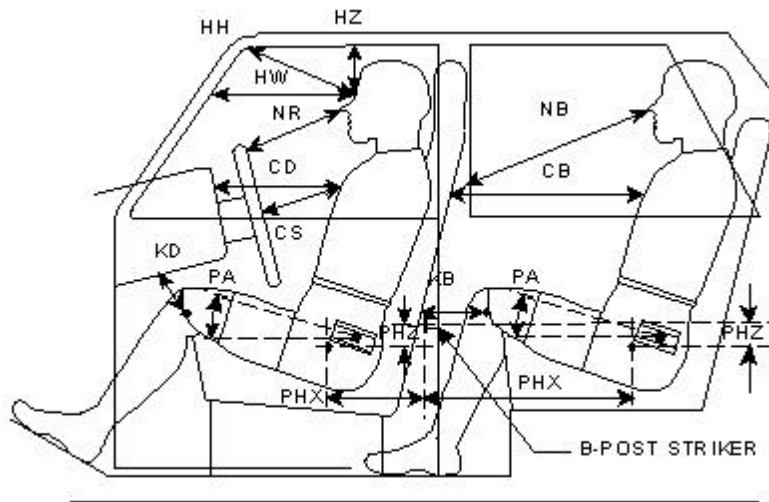
	PRE-TEST As delivered (mm)	PRE-TEST As Tested (mm)	POST-TEST (mm)	Δ CHANGE (mm)
A	2480	-	2440	-40
B	624	-	619	-5
C	748	-	713	-35
D	4041	-	4007	-34
E	280	-	286	6
F	329	330	356	26
G	310	299	314	15
H	314	302	320	18
I	330	309	326	17
J1	296	266	312	46
J2	340	309	363	54
K	413	372	393	21
L	136	-	134	-2
M	452	401	407	6
N	742	-	710	-32
O	1050	-	1038	-12
P	840	-	792	-48
Q	523	-	576	53
R	3852	-	3876	24
S	3852	-	3772	-80
T	1713	-	1373	-340

DATA SHEET 7

SID LONGITUDINAL CLEARANCE DIMENSIONS

Vehicle: 2002 Suzuki Vitara 4 door MPV

NHTSA No. M2 0514



LEFT SIDE VIEW

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

	DRIVER ID# 056	LEFT REAR PASSENGER ID# 058
HH	491	N/a
HW	654	N/a
HZ	237	N/a
NR/NB	489	588
CD/CB	596	441
CS	381	N/a
KDL(KDA?)/KBL(KDA?)	129/14	96/11.8
KDR(KDA?)/KBR(KDA?)	131/12	102/10.5
PA?	23	23
PHX	179 forward	219 forward
PHZ	61 below	179 below

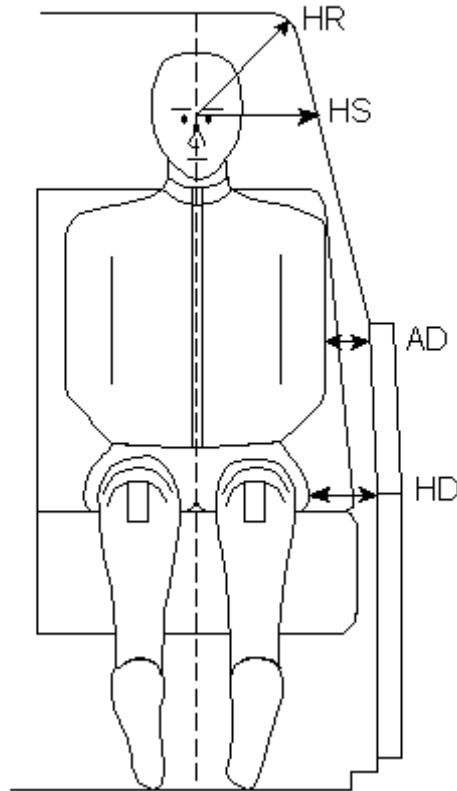
Note: 2-door vehicle shown. Rear dummy PHX & PHZ measurements for 4-door vehicle would use the C-Pillar striker as a reference point

DATASHEET 8

SID LATERAL CLEARANCE DIMENSIONS

Vehicle: 2002 Suzuki Vitara 4 door MPV

NHTSA No. M2 0514



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

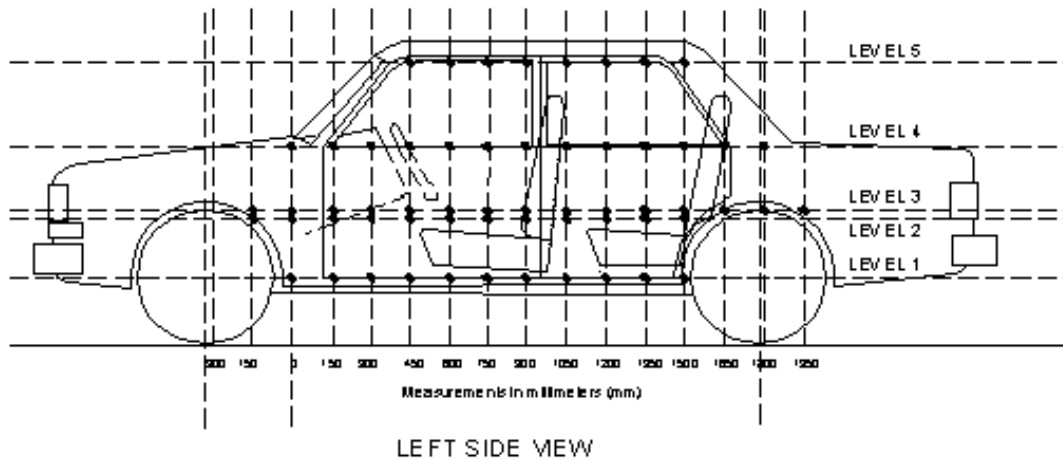
	DRIVER ID# 056	LEFT REAR PASSENGER ID# 058
HR	219	245
HS	279	324
AD	Upper 68 Lower 50	Upper 137 Lower 112
HD	111	175

DATA SHEET 9

VEHICLE SIDE MEASUREMENTS

Vehicle: 2002 Suzuki Vitara 4 door MPV

NHTSA No. M2 0514



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	1540 mm
Level 4 @ Window Sill	1050 mm
Level 3 @ Mid-Door	707 mm
Level 2 @ Occupant H-Point	680 mm
Level 1 @ Axle Centerline or Sill Top Height	366 mm

DATA SHEET 10

VEHICLE EXTERIOR CRUSH PROFILES – ALL LEVELS

Vehicle: 2002 Suzuki Vitara 4 door MPV

NHTSA No. M2 0514

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	366	PRE								248	252	256	255	254	254	255	256	257	255	250										
		POST								542	575	596	608	620	632	644	650	652	637	612										
		CRUSH								294	323	340	353	366	378	389	394	395	382	362										
LEVEL 2	680	PRE								224	225	224	224	224	224	224	226	227	230	230	224	219				220	231	246		
		POST								511	554	567	575	578	587	597	607	628	615	579	490	389				250	263	260		
		CRUSH								287	329	343	351	354	363	373	381	401	385	349	266	170				30	32	14		
LEVEL 3	707	PRE							220	225	228	230	230	230	230	232	234	235	237	231	224	220	218	218	222	233	247			
		POST							462	505	550	571	579	586	594	606	616	630	613	573	486	381	335	280	268	264	262			
		CRUSH							242	280	322	341	349	356	364	374	382	395	376	342	262	161	117	62	46	31	15			
LEVEL 4	1050	PRE			338	321	306	300	295	293	290	305	311	313	317	316	316	319	320	322	323	323	326	326	332	340	351			
		POST			370	365	364	367	371	395	423	437	445	451	470	498	525	590	537	480	434	392	355	387	375	366	365			
		CRUSH			32	44	58	67	76	102	133	132	134	138	153	182	209	271	217	158	111	69	29	61	43	26	14			
LEVEL 5	1540	PRE												495	502	506	507	508	510	507	504	502	505	506	508	515				
		POST												561	570	575	579	574	568	562	555	545	5410	534	532	533				
		CRUSH												66	68	69	72	66	58	55	51	43	36	28	24	18				

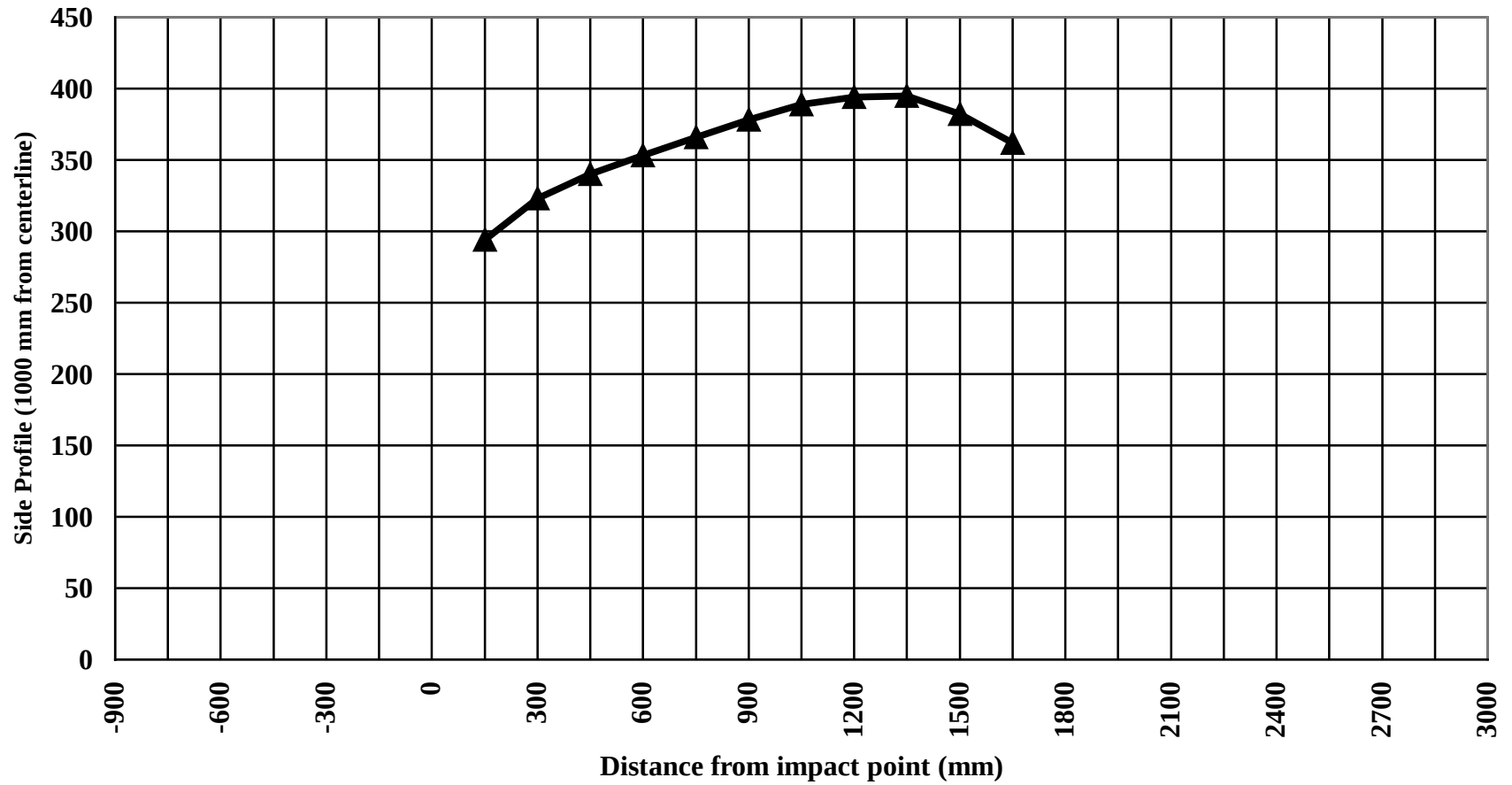
DATA SHEET 10 (continued)

VEHICLE EXTERIOR CRUSH PROFILES

Vehicle: 2002 Suzuki Vitara 4 door MPV

NHTSA No. M2 0514

SIDE PROFILE LEVEL 1 -366 mm above ground



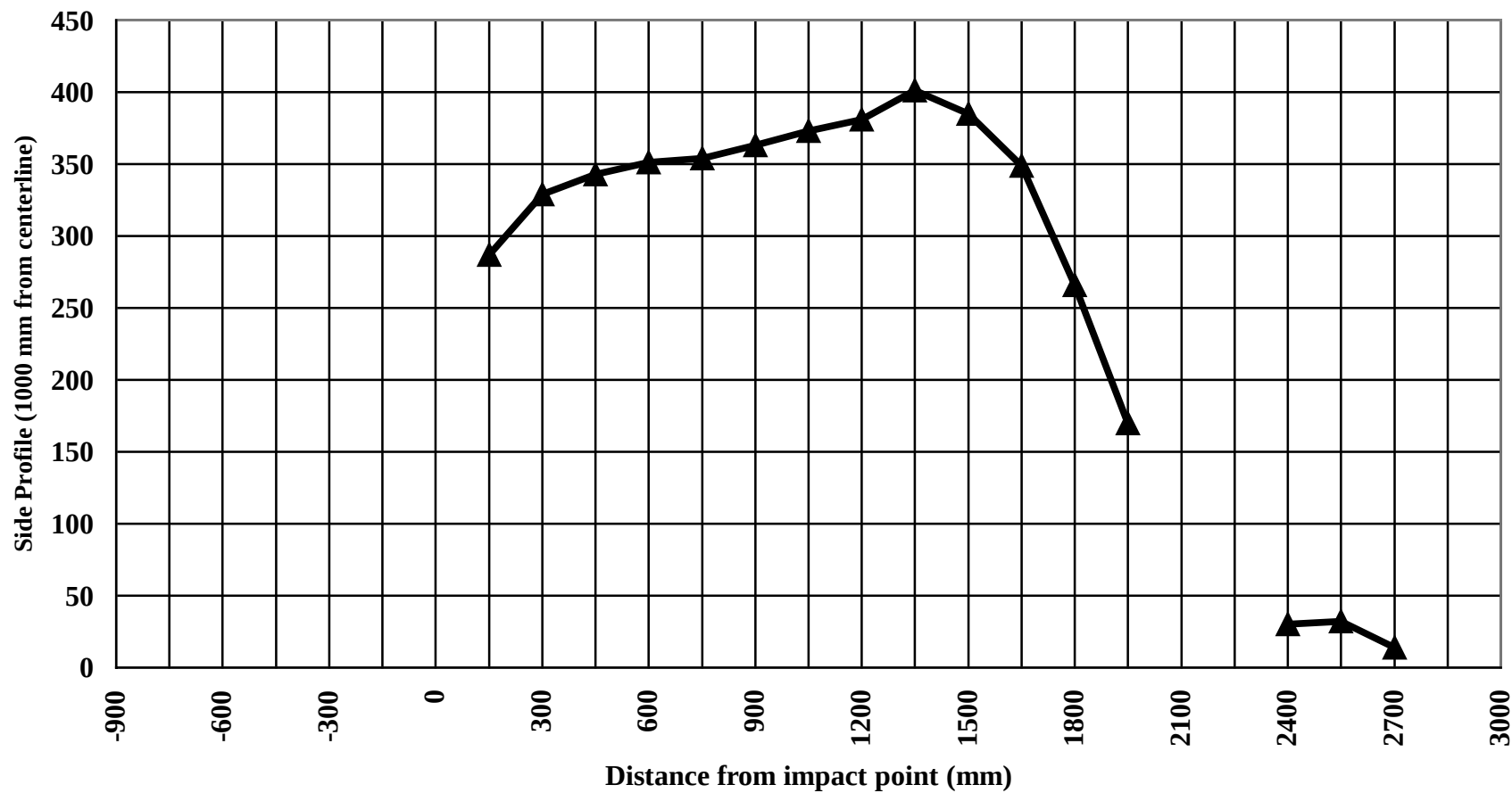
DATA SHEET 10 (continued)

VEHICLE EXTERIOR CRUSH PROFILES

Vehicle: 2002 Suzuki Vitara 4 door MPV

NHTSA No. M2 0514

SIDE PROFILE LEVEL 2 - 680 mm above ground



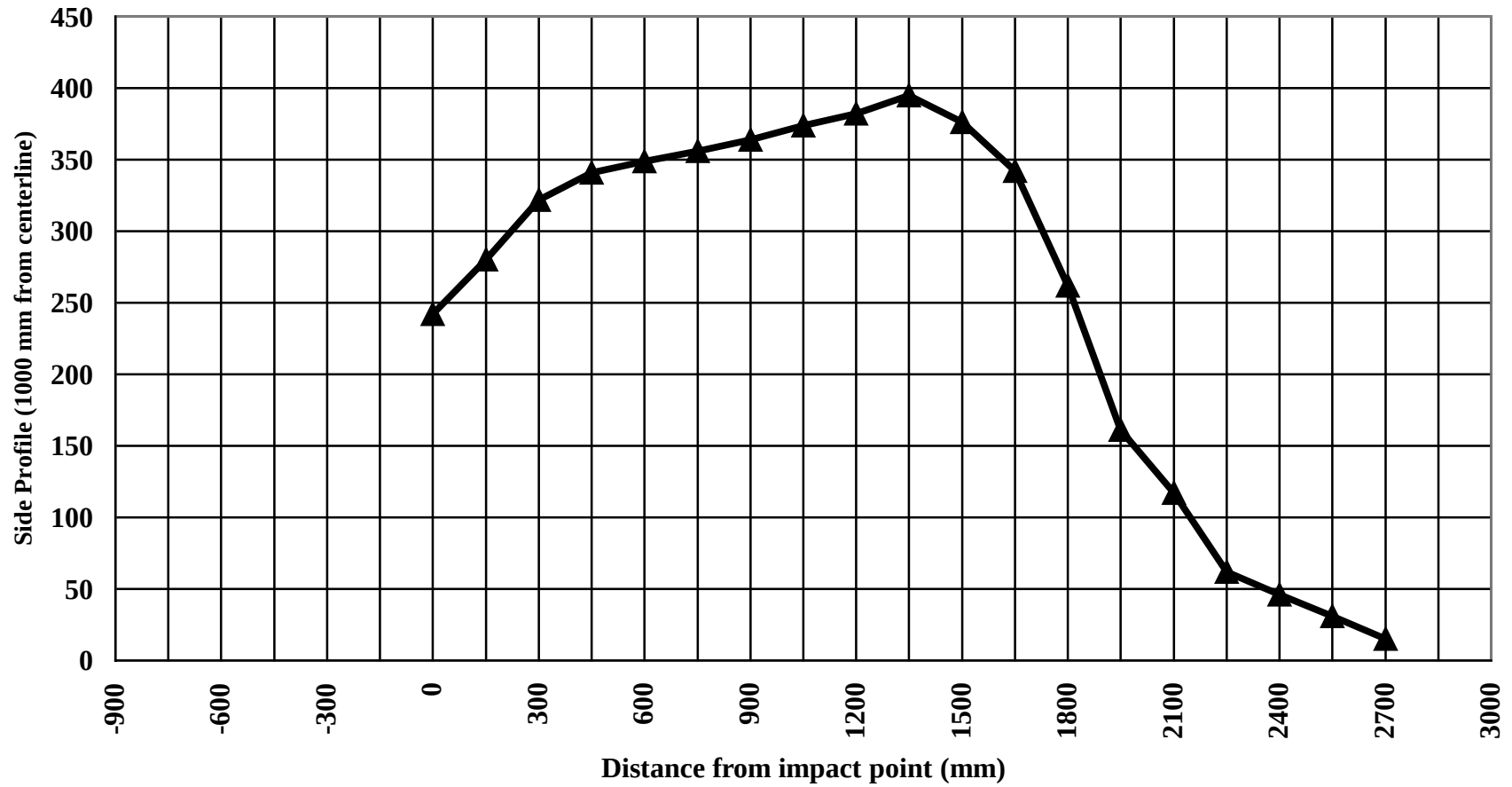
DATA SHEET 10 (continued)

VEHICLE EXTERIOR CRUSH PROFILES

Vehicle: 2002 Suzuki Vitara 4 door MPV

NHTSA No. M2 0514

SIDE PROFILE LEVEL 3 - 707 mm above ground



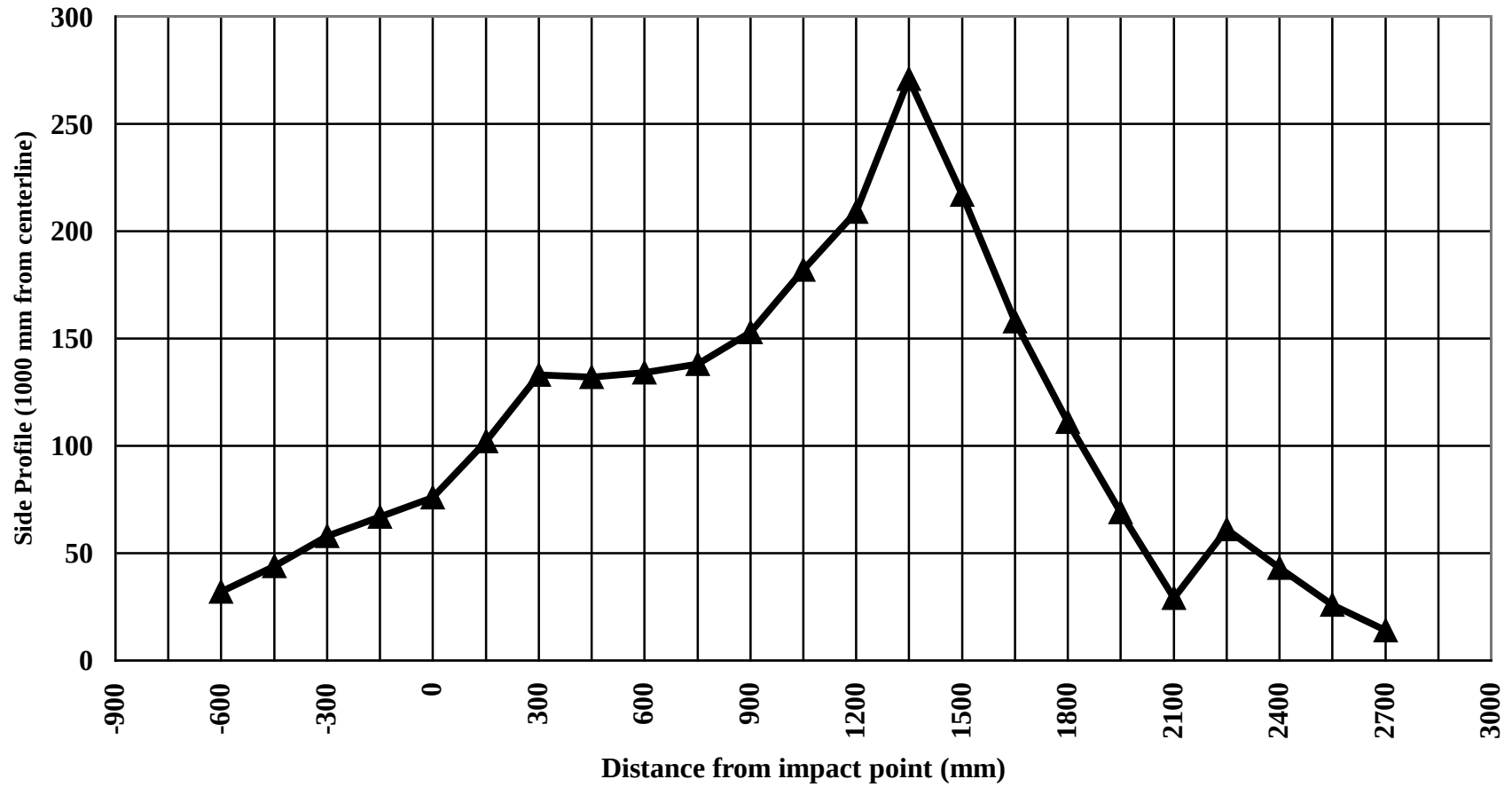
DATA SHEET 10 (continued)

VEHICLE EXTERIOR CRUSH PROFILES

Vehicle: 2002 Suzuki Vitara 4 door MPV

NHTSA No. M2 0514.

SIDE PROFILE LEVEL 4 - 930 mm above ground



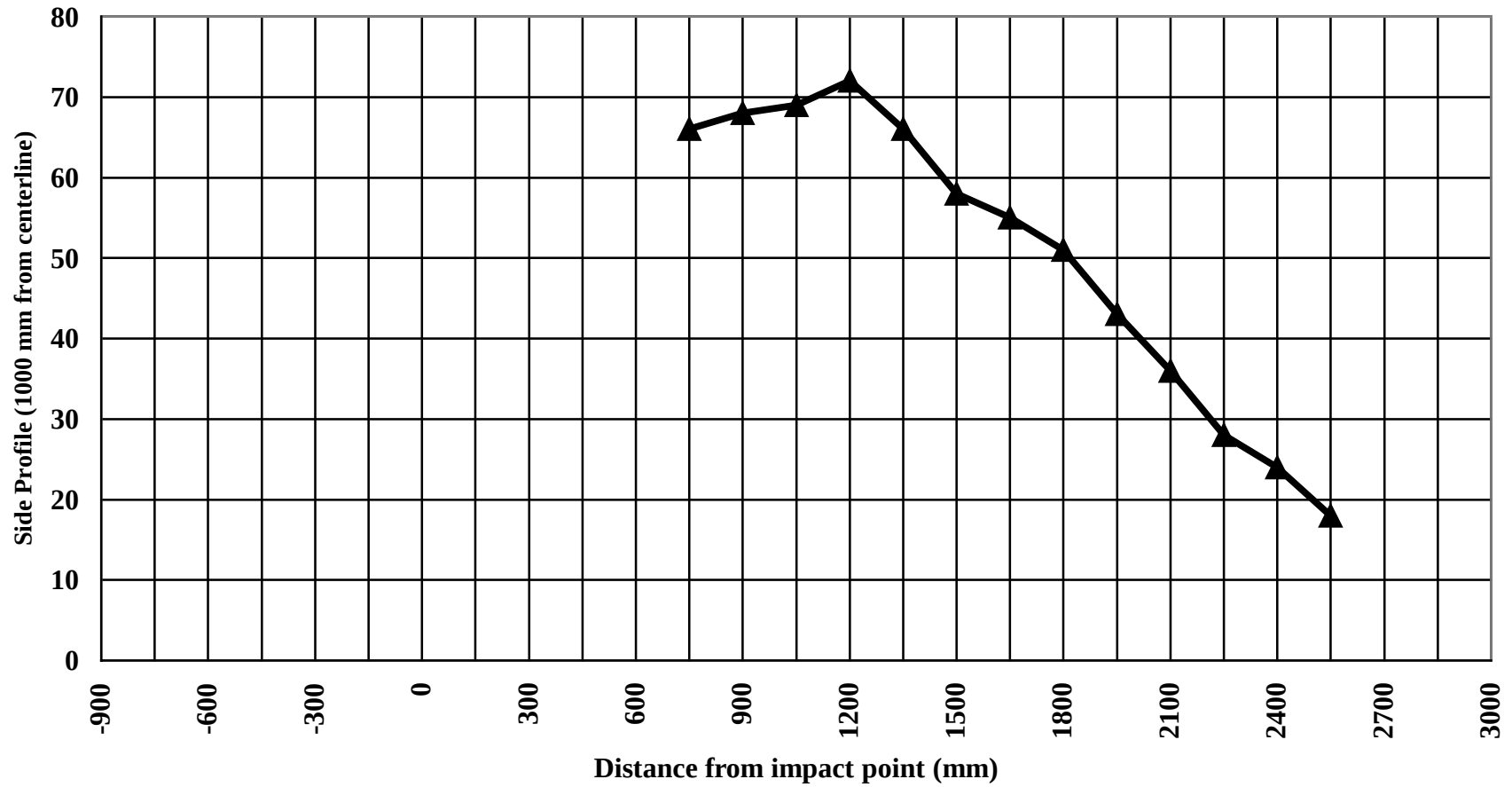
DATA SHEET 10 (continued)

VEHICLE EXTERIOR CRUSH PROFILES

Vehicle: 2002 Suzuki Vitara 4 door MPV

NHTSA No. M2 0514

SIDE PROFILE LEVEL 5 - 1933 mm above ground

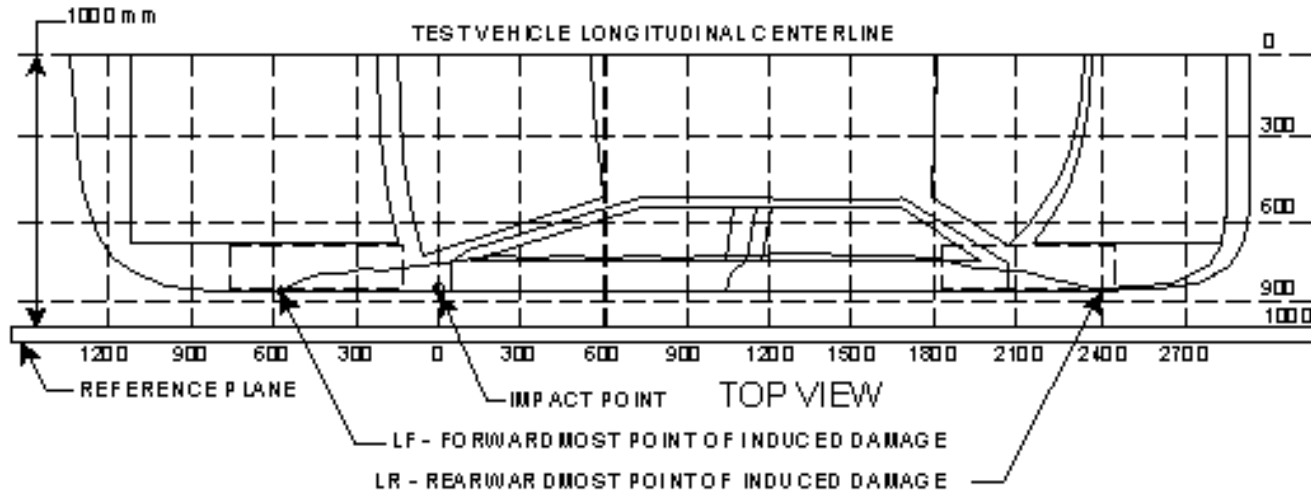


DATA SHEET 11

VEHICLE DAMAGE PROFILE DISTANCES

Vehicle: 2002 Suzuki Vitara 4 door MPV

NHTSA No. M2 0514



DPD MEASUREMENTS (mm)		POST-TEST (mm)	PRE-TEST (mm)	STATIC CRUSH (mm)
1	1	232	232	0
2	2	438	633	195
3	3	574	901	327
4	4	606	958	352
5	5	405	553	148
6	6	262	262	0

DATA SHEET 12

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

Vehicle: 2002 Suzuki Vitara 4 door MPV

NHTSA No. M2 0514

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

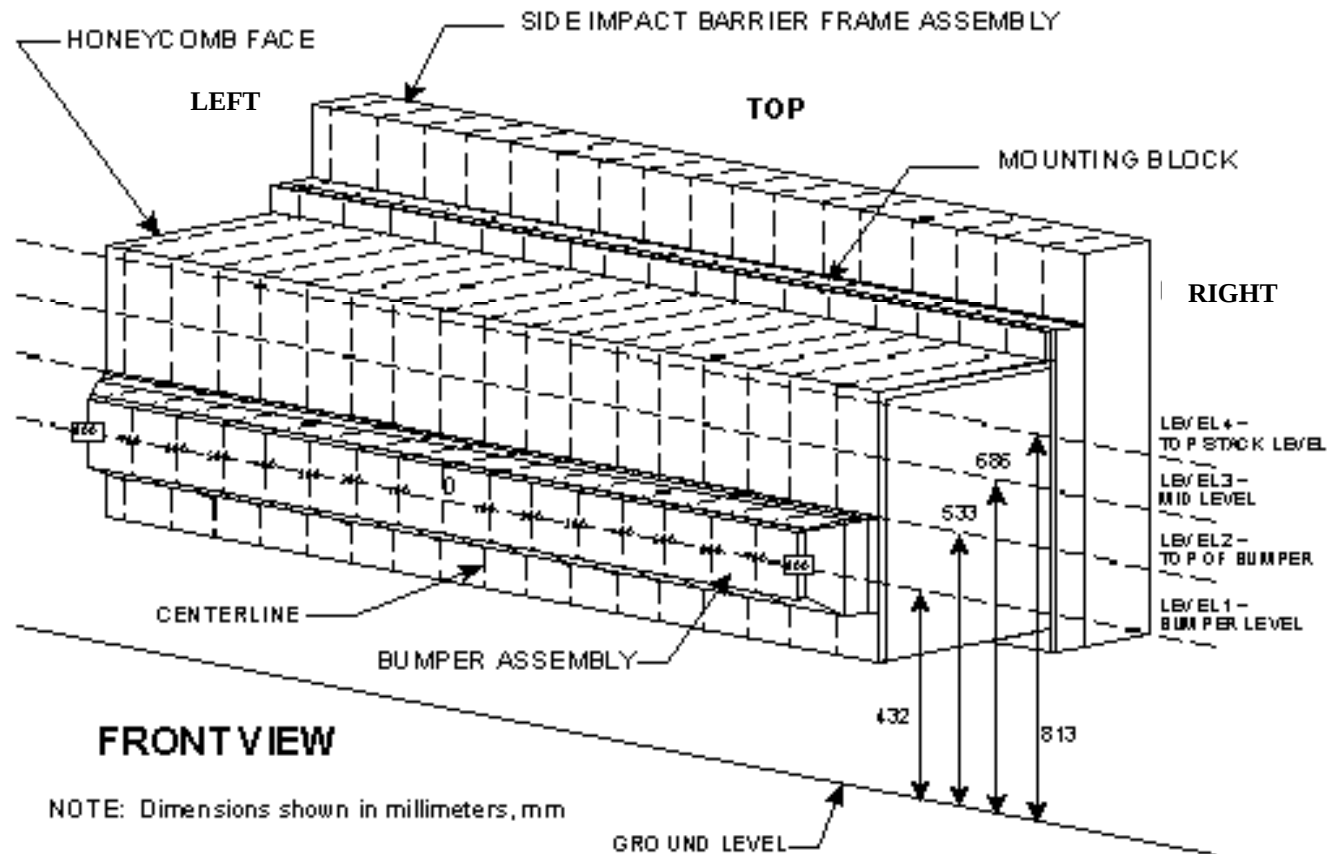
LEVEL	HEIGHT AT CL (mm)		DISTANCE LEFT OF CENTER								0	DISTANCE RIGHT OF CENTER							
			800	700	600	500	400	300	200	100		100	200	300	400	500	600	700	800
LEVEL 4 TOP STACK	810	PRE-	583	582	582	582	581	581	581	581	580	581	581	580	580	580	580	580	581
		POST-	710	660	627	603	602	603	598	600	603	608	614	624	632	653	695	722	726
		CRUSH	127	78	45	21	21	22	17	19	23	27	33	44	52	73	115	142	145
LEVEL 3 MID- LEVEL	685	PRE-	583	582	582	581	581	580	580	580	580	580	580	580	580	580	579	580	580
		POST-	648	615	590	581	583	585	583	585	588	588	590	592	595	600	613	644	651
		CRUSH	65	33	8	0	2	5	3	5	8	8	10	12	45	20	34	64	71
LEVEL 2 TOP BUMPER	560	PRE-	579	579	579	579	579	578	578	578	578	578	578	578	578	577	578	578	578
		POST-	667	620	605	595	592	591	594	596	594	601	601	605	608	611	621	640	637
		CRUSH	88	41	26	16	13	13	16	18	16	23	23	27	30	34	43	62	59
LEVEL 1 MID- BUMPER	432	PRE-	490	476	475	475	475	475	474	474	474	474	474	474	474	474	474	474	485
		POST-	582	552	530	515	508	508	508	511	513	515	518	520	524	530	543	553	572
		CRUSH	92	82	55	40	33	33	34	37	39	41	44	46	50	56	69	79	87

DATA SHEET 12 (continued)

STATIC CRUSH OF IMPACTOR FACE

Vehicle: 2002 Suzuki Vitara 4 door MPV

NHTSA No. M2 0514

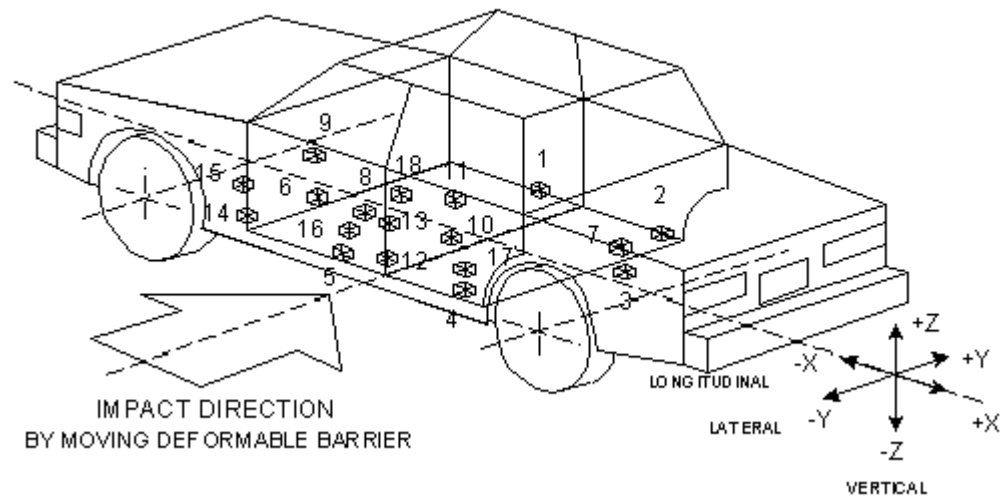


DATA SHEET 13

TEST VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

Vehicle: 2002 Suzuki Vitara 4 door MPV

NHTSA No. M2 0514



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

VEHICLE ACCELEROMETER LOCATIONS AND SUMMARY DATA

Vehicle: 2002 Suzuki Vitara 4 door MPV

NHTSA No. M2 0514

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	2155	675	240	7.5	42.1	-10.0	6.6	43.7	35.8	-2.1	53.8	10.8	33.0	-12.5	37.8	44.1	35.8
2	Right Side Sill at Rear Seat	1387	650	213	5.3	36.6	-9.8	6.6	30.3	37.2	-2.7	123.2	4.4	125.4	-12.0	11.4	31.2	37.2
3	Rear Floorpan Above Axle	849	25	-55	4.9	42.3	-11.4	18.7	31.2	7.0	-2.1	124.2	9.5	38.5	-8.0	46.6	31.4	6.9
4	Left Side Sill at Rear Seat	1390	-729	268					251.0 *	7.3 *	-64.5 *	12.5 *						
5	Left Side Sill at Front Seat	2160	-745	327					274.0 *	6.2 *	-79.9 *	39.9 *						
6	Left Front Door on Centerline	Accelerometer not requested																
7	Right Rear Occupant Compartment	1240	318	-240					37.50	5.9	-2.2	19.1						
8	Midrear of Left Front Door	Accelerometer not requested																
9	Left Front Door Upper Centerline	Accelerometer not requested																
10	Midrear of Left Rear Door	Accelerometer not requested																

Axis Origin X – Rear Bumper Axis Orientation +(X) Forward
 Y – Vehicle Centerline +(Y) Right
 Z – Middle of rear bumper +(Z) Down

* Accelerometer wire broken approximately 40 msec after impact

DATASHEET 13 (continued)

VEHICLE ACCELEROMETER LOCATIONS AND SUMMARY DATA

Vehicle: 2002 Suzuki Vitara 4 door MPV

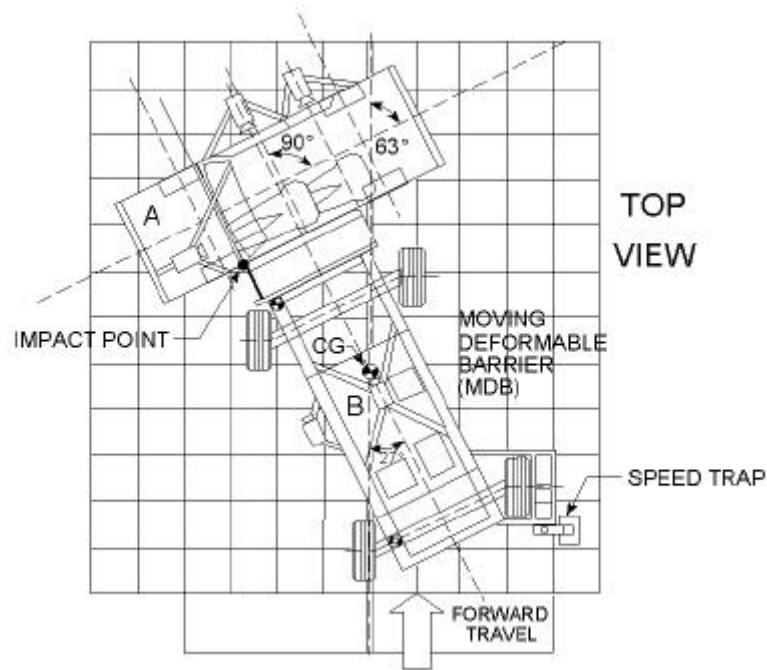
NHTSA No. M2 0514

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	Accelerometer not requested																	
12	Left Lower B-Pillar	1750	-645	-66					255.7	4.2	-50.1	10.2							
13	Left Middle B-Pillar	1743	-640	-349					153.0	4.7	-31.3	32.5							
14	Left Lower A-Pillar	2768	-670	51					195.0	3.2	-44.6	22.0							
15	Left Middle A-Pillar	2768	-670	-296					64.1	16.3	-29.9	37.7							
16	Front Seat Track	1940	-550	184					61.6	4.6	-84.3	15.2							
17	Rear Seat Track	1438	411	-32					58.1	12.1	-79.7	38.3							
18	Vehicle CG	1970	50	34	17.2	19.8	-40.2	9.8	29.9	35.3	-5.3	50.9	51.3	23.7	-34.0	8.5	56.1	23.3	

Axis Origin	X – Rear Bumper	Axis Orientation	+(X) Forward
	Y – Vehicle Centerline		+(Y) Right
	Z – Middle of rear bumper		+(Z) Down

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	1855	-2	134	2.0	112.0	-19.6	31.0	1.6	33.3	-8.7	25.8	6.5	51.0	-5.3	67.5	20.3	31.0
2	MDB Rear Frame Member	380	-632	55	1.4	107.1	-20.7	38.6	5.7	23.5	-1.9	70.8						

Axis Origin X –Rear Plate
 Y – Vehicle Centerline
 Z – Top of Rear Plate

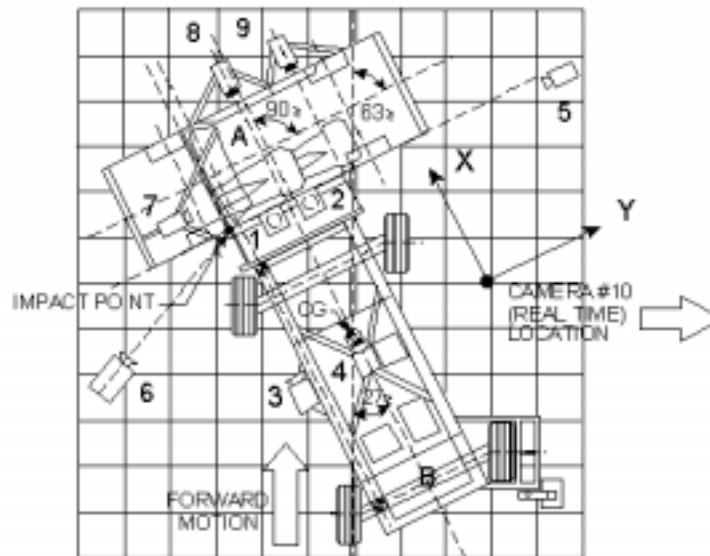
Axis Orientation +(X) Forward
 +(Y) Right
 +(Z) Down

DATA SHEET 15

HIGH-SPEED CAMERA LOCATIONS AND DATA SUMMARY

Vehicle: 2002 Suzuki Vitara 4 door MPV

NHTSA No. M2 0514



Camera No.	View	Coordinates (mm)*			Angle wrt Horiz.	Lens (mm)	Film Speed (fps)
		X	Y	Z			
1	Overhead view of test vehicle	110	990	4623	-90	7	1000
2	Overhead close-up view of impact plane	30	305	4629	-90	12	1000
3	MDB onboard close-up view of impact point	-2333	-60	-32	0.4	13	1000
4	MDB onboard view of driver dummy	-2262	840	468	-3.9	13	1000
5	Right side ground level overall view	3900	13577	620	-4.2	45	1000
6	Left side ground level overall view	-401	-4447	820	-13.1	8	1000
7	Test vehicle onboard driver front view	540	470	570	-5	13	1000
8	Test vehicle onboard driver side view	1680	840	410	-5	7.5	1000
9	Test vehicle onboard passenger side view	1715	1430	415	-5	7.5	1000
10	Real-time film coverage of test	-	-	-	-	-	-

* Reference: (from point of impact)
 + X = Forward
 + Y = Right
 + Z = Upward

SECTION 5
FUEL SYSTEM INTEGRITY

DATA SHEET 16

FUEL SYSTEM INTEGRITY DATA

Vehicle: 2002 Suzuki Vitara 4 door MPV

NHTSA No. M2 0514

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	29.6 ml
2. For 5 minute period after vehicle motion ceases	0	147.9 ml
3. For next 25 minutes	0	29.6 ml / 1 min.

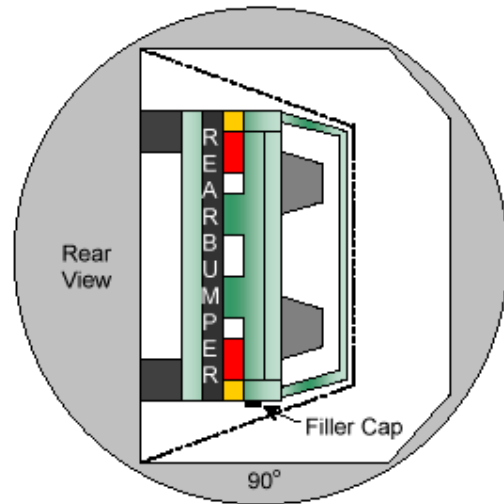
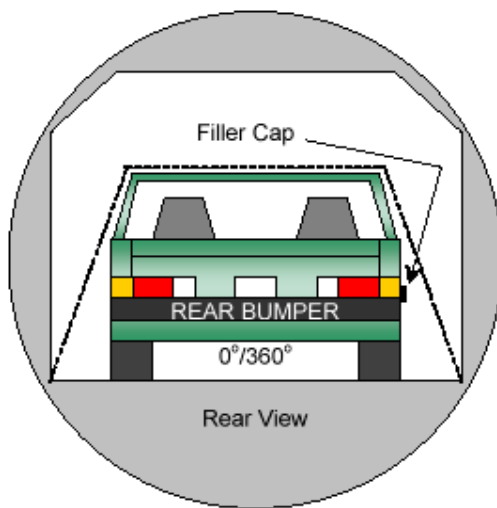
FUEL SPILLAGE LOCATION(S): None

DATA SHEET 17

ROLLOVER DATA

Vehicle: 2002 Suzuki Vitara 4 door MPV

NHTSA No. M2 0514



0° TO 90°

DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time	1	minutes	7	seconds
(Spec Range =1 to 3 minutes)				
FMVSS 301 Position Hold Time	5	minutes	0	seconds
TOTAL	6	minutes	7	seconds
Next whole minute interval	7	minutes		

FUEL SPILLAGE MEASUREMENT:

0° TO 90° ROTATION	TEST RESULTS	MAXIMUM ALLOWABLE
1. First 5 Minutes From Onset of Rotation	0	147.9 ml.
2. Sixth Minute From Onset of Rotation	0	29.6 ml.
3. Seventh Minute From Onset of Rotation	0	29.6 ml
4. Eighth Minute if Required	-	29.6 ml

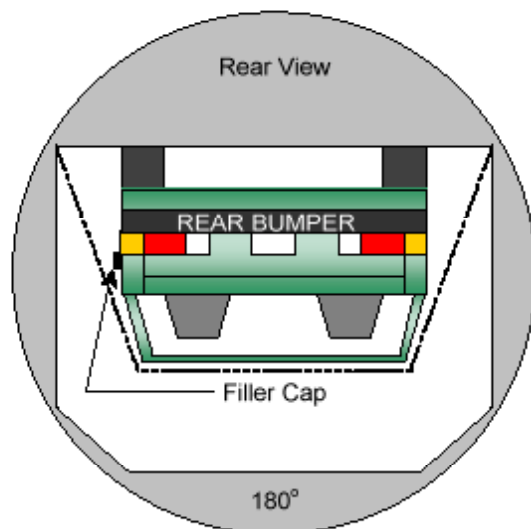
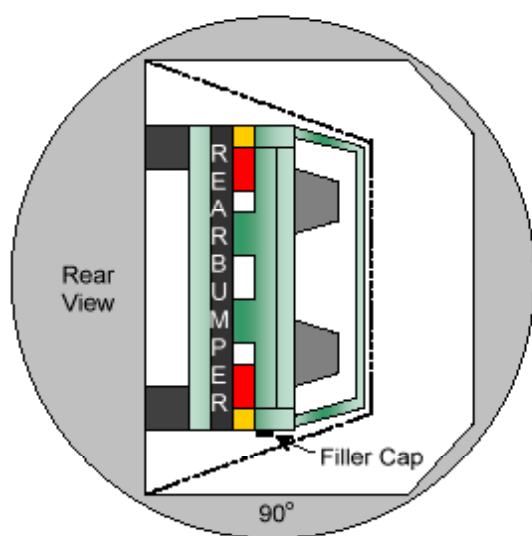
FUEL SPILLAGE LOCATION(S): None

DATA SHEET 17 (continued)

ROLLOVER VEHICLE

Vehicle: 2002 Suzuki Vitara 4 door MPV

NHTSA No. M2 0514



90° TO 180°

DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time	<u>1</u> minutes	<u>6</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>6</u> seconds
Next whole minute interval	<u>7</u> minutes	

FUEL SPILLAGE MEASUREMENT:

90° TO 180° ROTATION	TEST RESULTS	MAXIMUM ALLOWABLE
1. First 5 Minutes From Onset of Rotation	0	147.9 ml.
2. Sixth Minute From Onset of Rotation	0	29.6 ml.
3. Seventh Minute From Onset of Rotation	0	29.6 ml
4. Eighth Minute if Required	-	29.6 ml

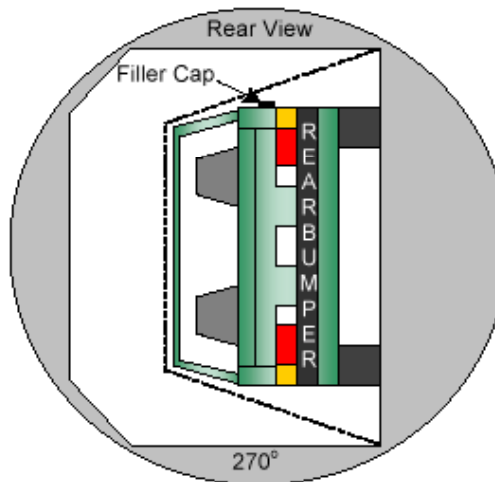
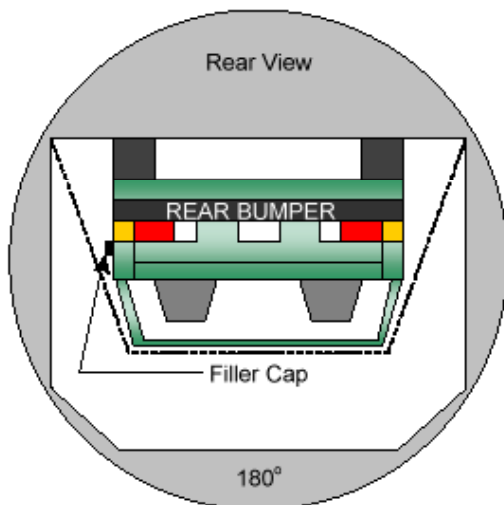
FUEL SPILLAGE LOCATION(S): None

DATA SHEET 17 (continued)

ROLLOVER VEHICLE

Vehicle: 2002 Suzuki Vitara 4 door MPV

NHTSA No. M2 0514



180° TO 270°

DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

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

FUEL SPILLAGE MEASUREMENT:

180° TO 270° ROTATION	TEST RESULTS	MAXIMUM ALLOWABLE
1. First 5 Minutes From Onset of Rotation	0	147.9 ml.
2. Sixth Minute From Onset of Rotation	0	29.6 ml.
3. Seventh Minute From Onset of Rotation	0	29.6 ml
4. Eighth Minute From Onset of Rotation	-	29.6 ml

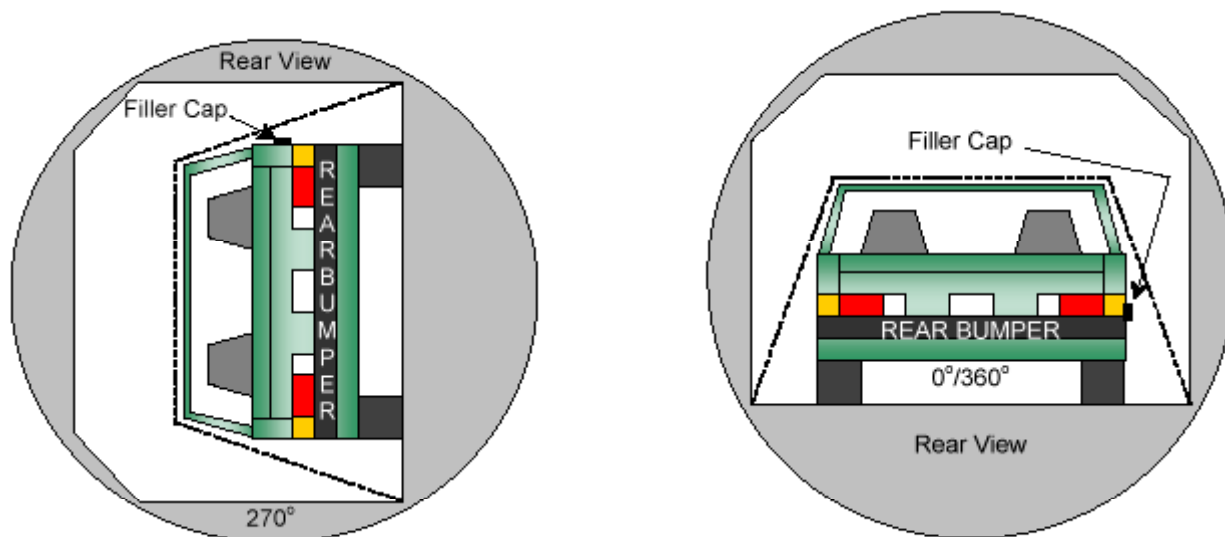
FUEL SPILLAGE LOCATION(S): None

DATA SHEET 17 (continued)

ROLLOVER VEHICLE

Vehicle: 2002 Suzuki Vitara 4 door MPV

NHTSA No. M2 0514



270° TO 360°

DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time	<u>1</u> minutes	<u>6</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>6</u> seconds
Next whole minute interval	<u>7</u> minutes	

FUEL SPILLAGE MEASUREMENT:

270° TO 360° ROTATION	TEST RESULTS	MAXIMUM ALLOWABLE
1. First 5 Minutes From Onset of Rotation	0	147.9 ml.
2. Sixth Minute From Onset of Rotation	0	29.6 ml.
3. Seventh Minute From Onset of Rotation	0	29.6 ml
4. Eighth Minute if Required	-	29.6 ml

FUEL SPILLAGE LOCATION(S): None

APPENDIX A
PHOTOGRAPHS

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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



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



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



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



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



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



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



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



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



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



Figure A-29: PRE-TEST LEFT SIDE VIEW OF MDB 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: CLOSE-UP OF VEHICLE'S CERTIFICATION LABELS

TIRE INFORMATION

GVWR:SEE CERTIFICATION LABEL

GAWR FRONT:

2WD 800 KG(1,764 LB)/4WD 840 KG(1,852 LB)

WITH P215/65R16 TIRES. 16X6 1/2J OR
16X6 1/2JJ RIMS. AT 180 KPA(26 PSI) COLD

GAWR REAR :

2WD 1,000 KG(2,205 LB)/4WD 1,010 KG(2,227 LB)

WITH P215/65R16 TIRES. 16X6 1/2J OR
16X6 1/2JJ RIMS. AT 180 KPA(26 PSI) COLD

VEHICLE CAPACITY WEIGHT	410 KG(904 LB)		
SEATING CAPACITY	FRONT	REAR	TOTAL
	2	3	5

67D0*

Figure A-38: CLOSE-UP OF VEHICLE'S TIRE PLACARD LABELS



Figure A-39: IMPACT



Figure A-40: ROLLOVER 0 DEGREES

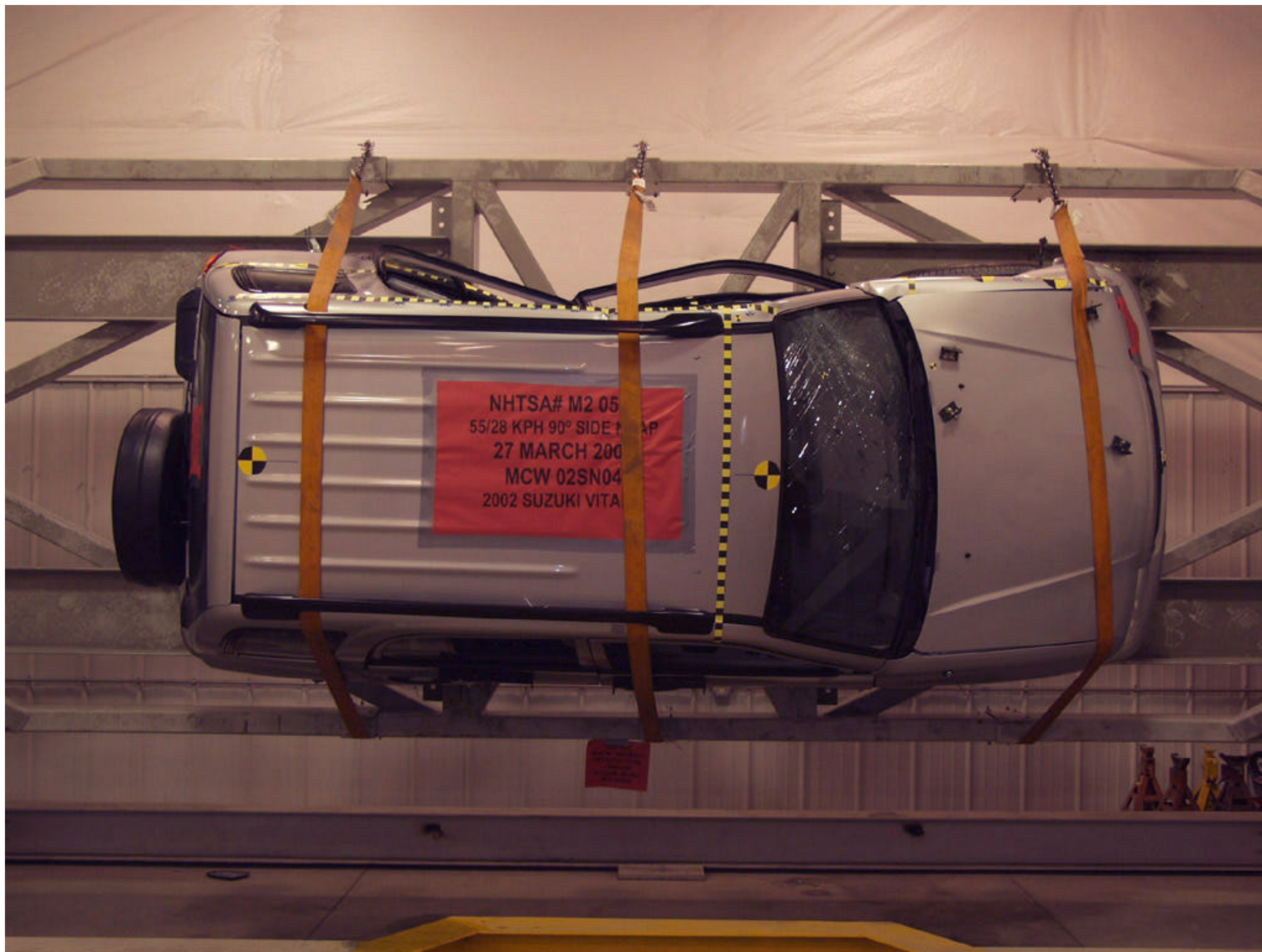


Figure A-41: ROLLOVER 90 DEGREES

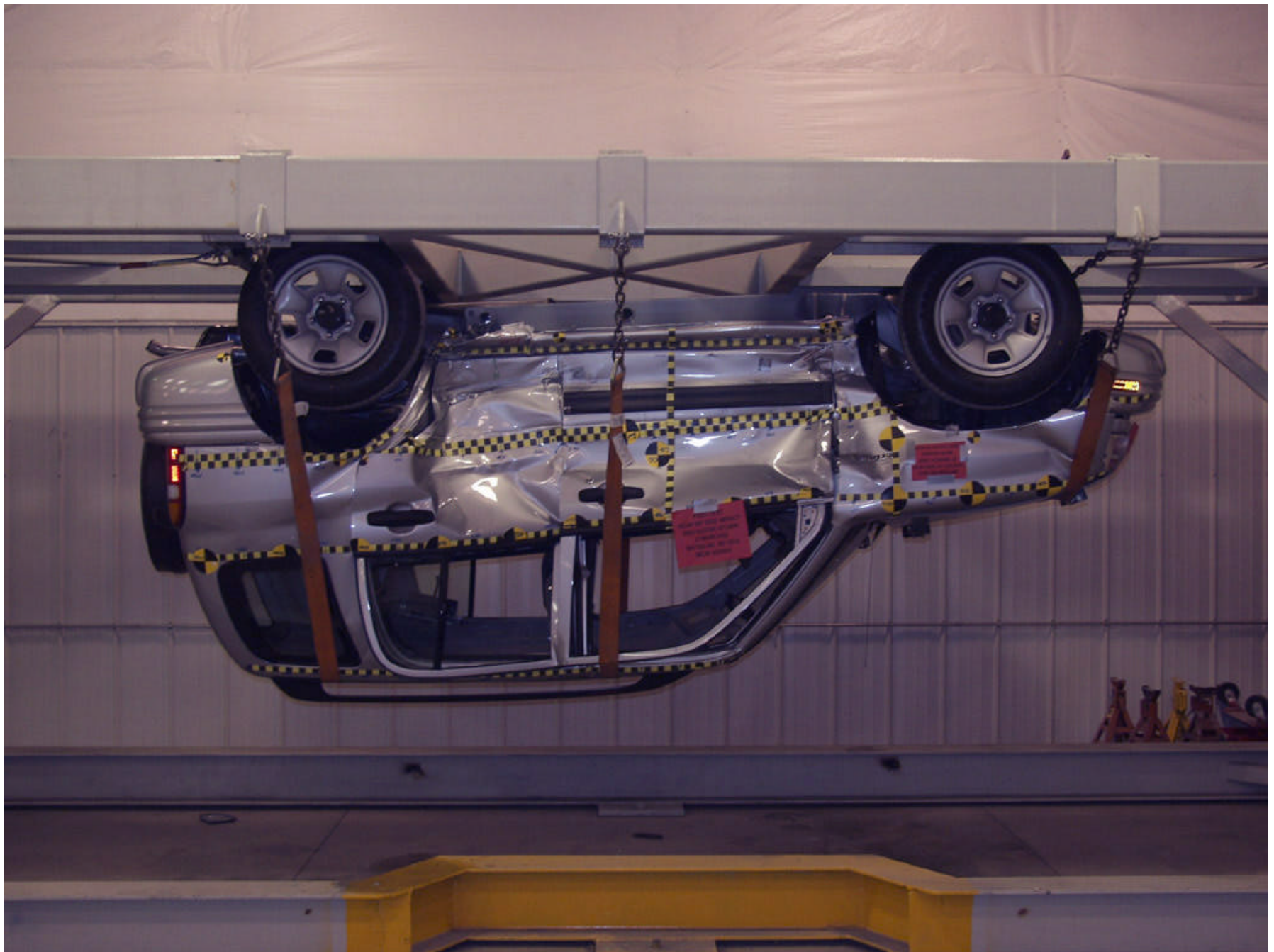


Figure A-42: ROLLOVER 180 DEGREES

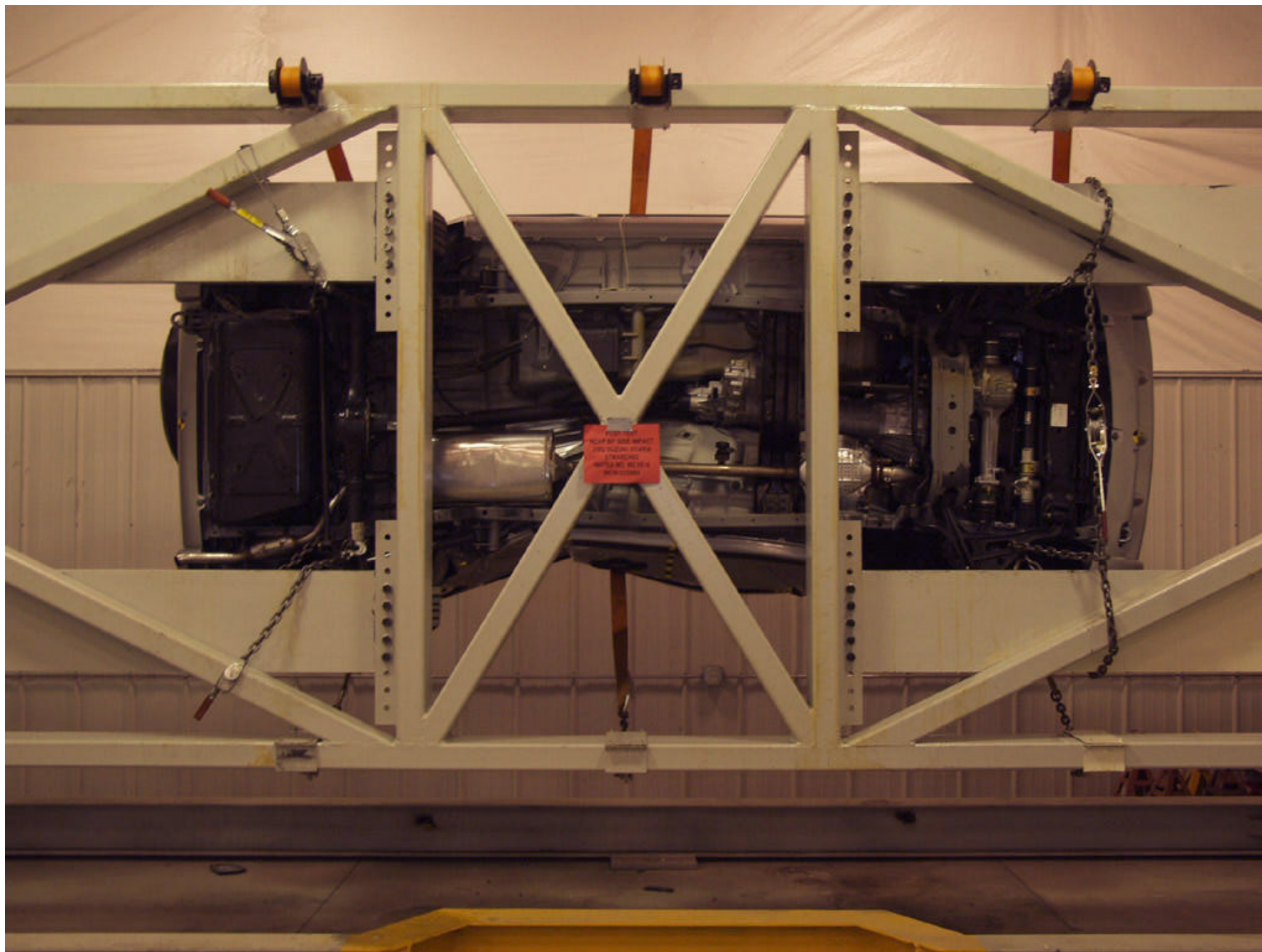


Figure A-43: ROLLOVER 270 DEGREES

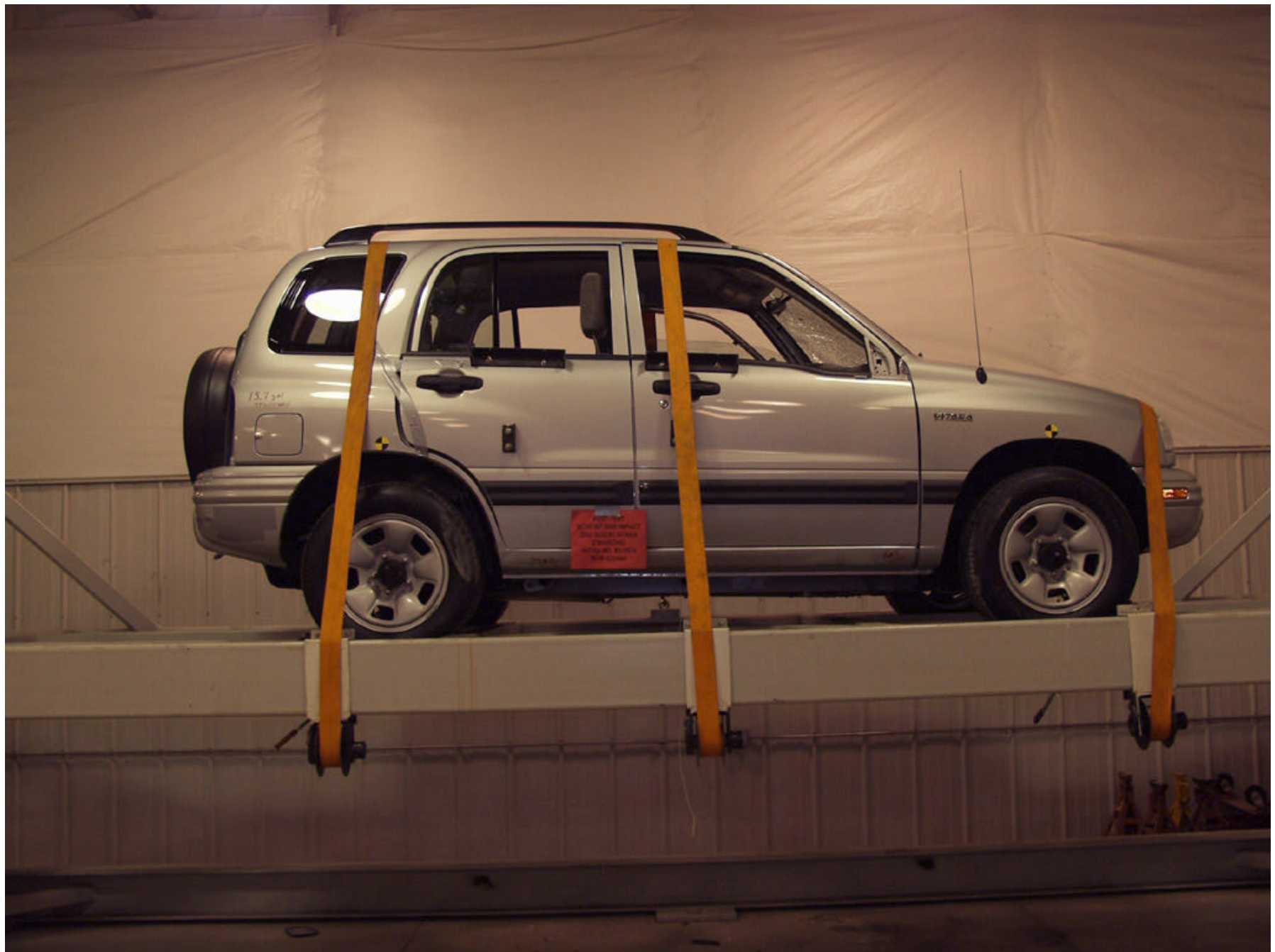


Figure A-44: ROLLOVER 360 DEGREES



Figure A-45: PRE-TEST ALUMINUM BARRIER FRONT

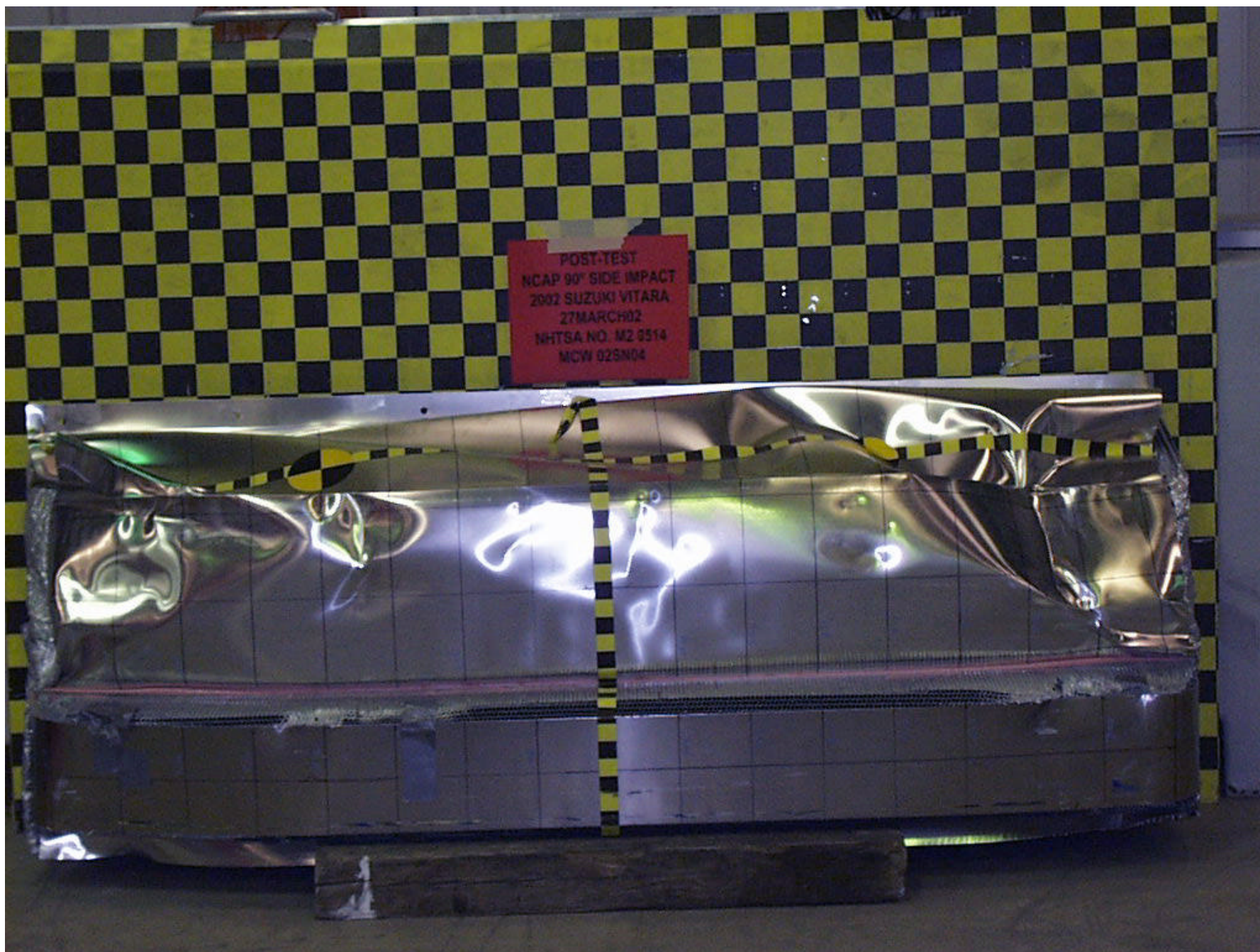


Figure A-46: POST-TEST ALUMINUM BARRIER FRONT



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

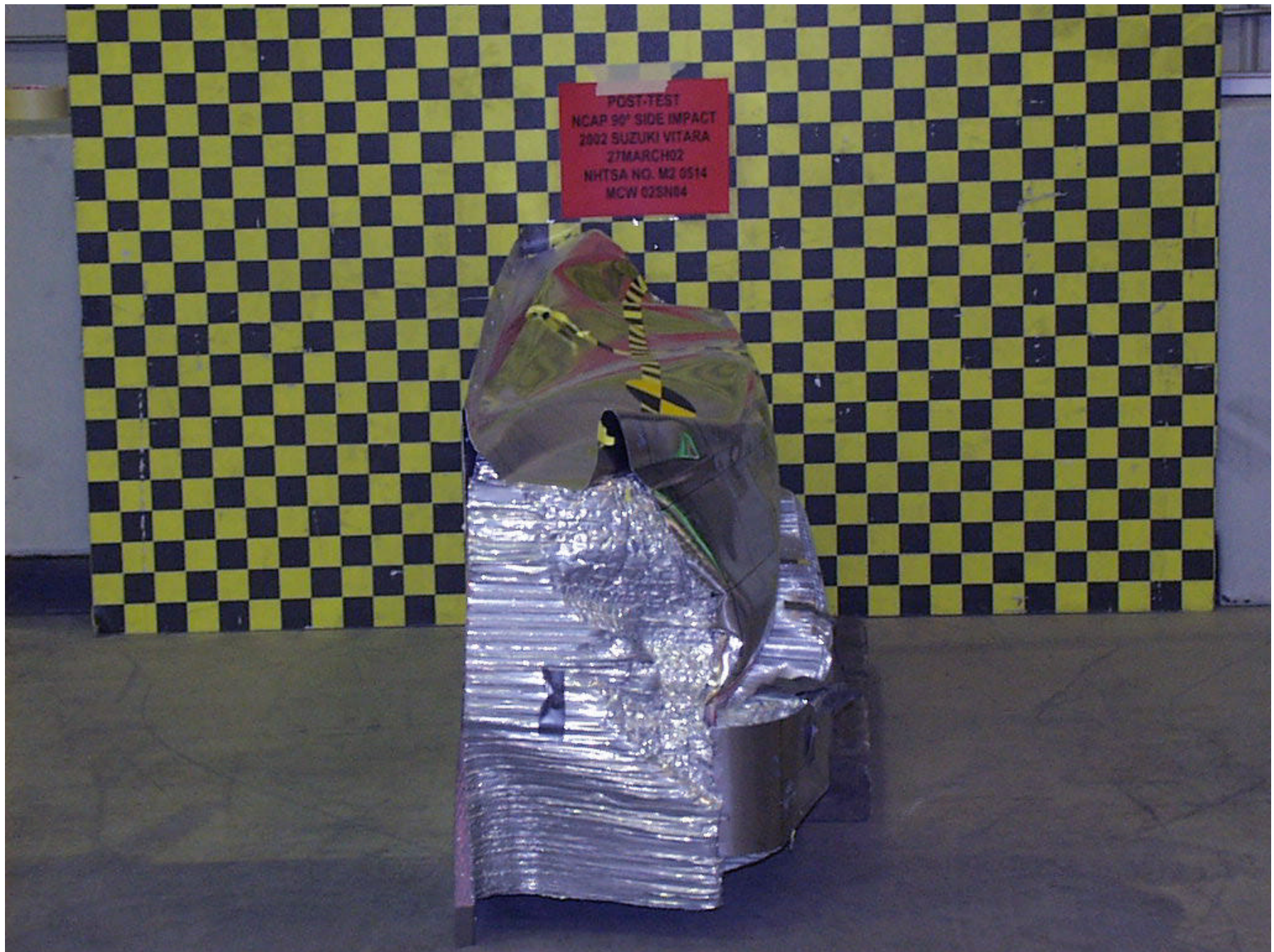


Figure A-50: POST-TEST ALUMINUM BARRIER RIGHT SIDE



Figure A-51: PRE-TEST ALUMINUM BARRIER OVERHEAD

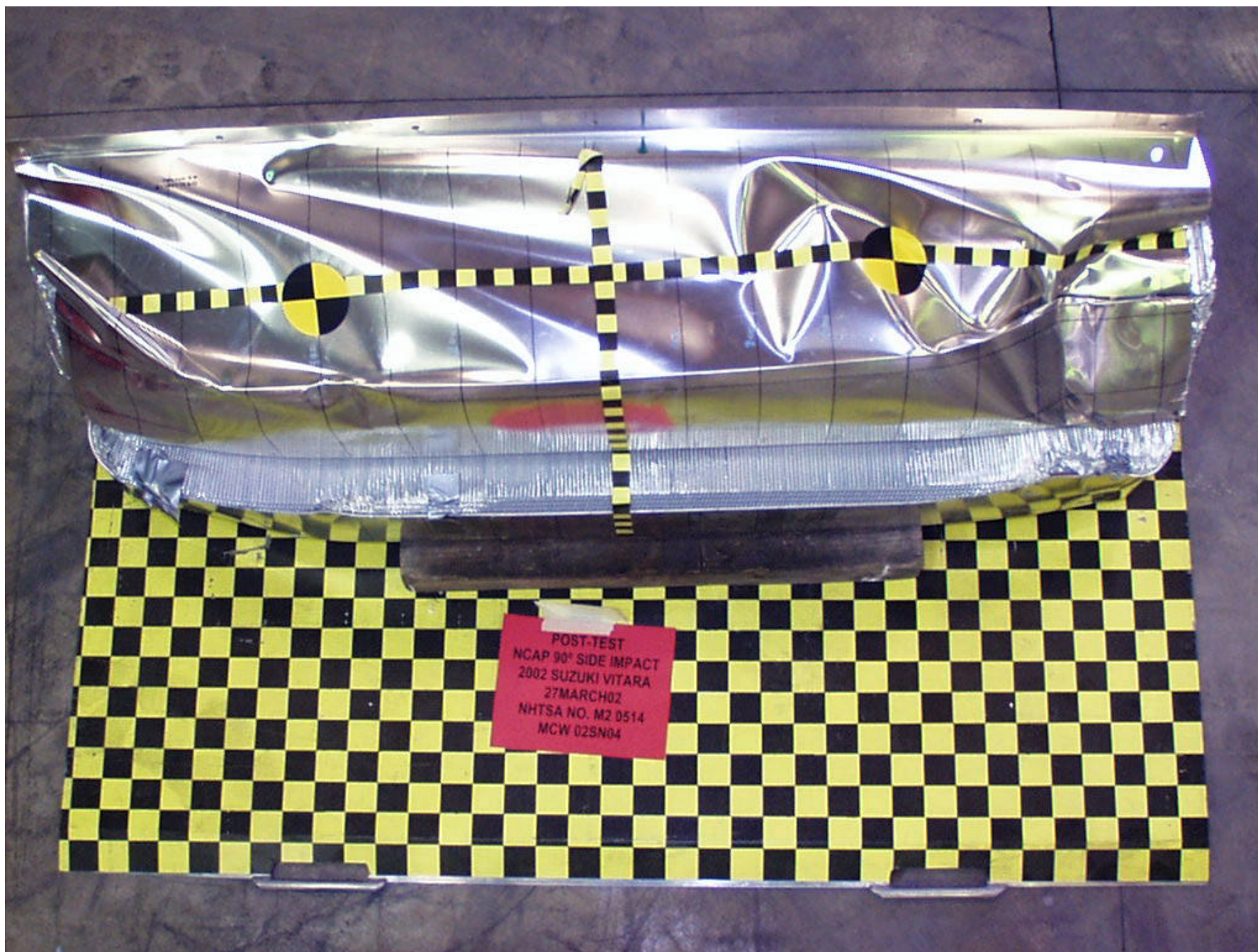


Figure A-52: POST-TEST ALUMINUM BARRIER OVERHEAD

APPENDIX B

VEHICLE, MDB, AND SID RESPONSE DATA

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

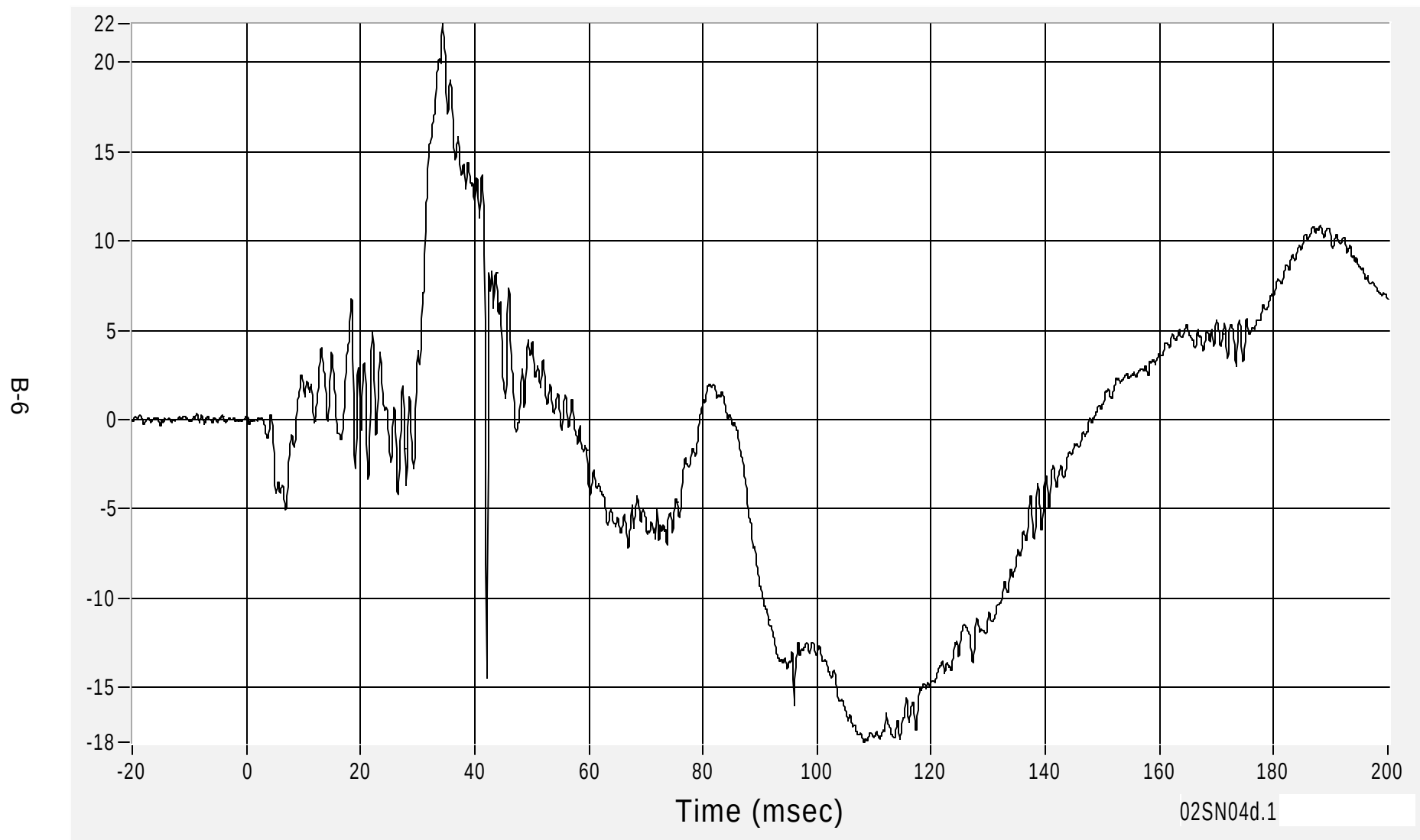
<u>Plot No.</u>	<u>Data Plot Title</u>	<u>Page</u>
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Driver Head CG (X) Acceleration

Max 22.2 G's at 34.4 msec

Acceleration (G's) CFC1000

Min -18.1 G's at 108.2 msec



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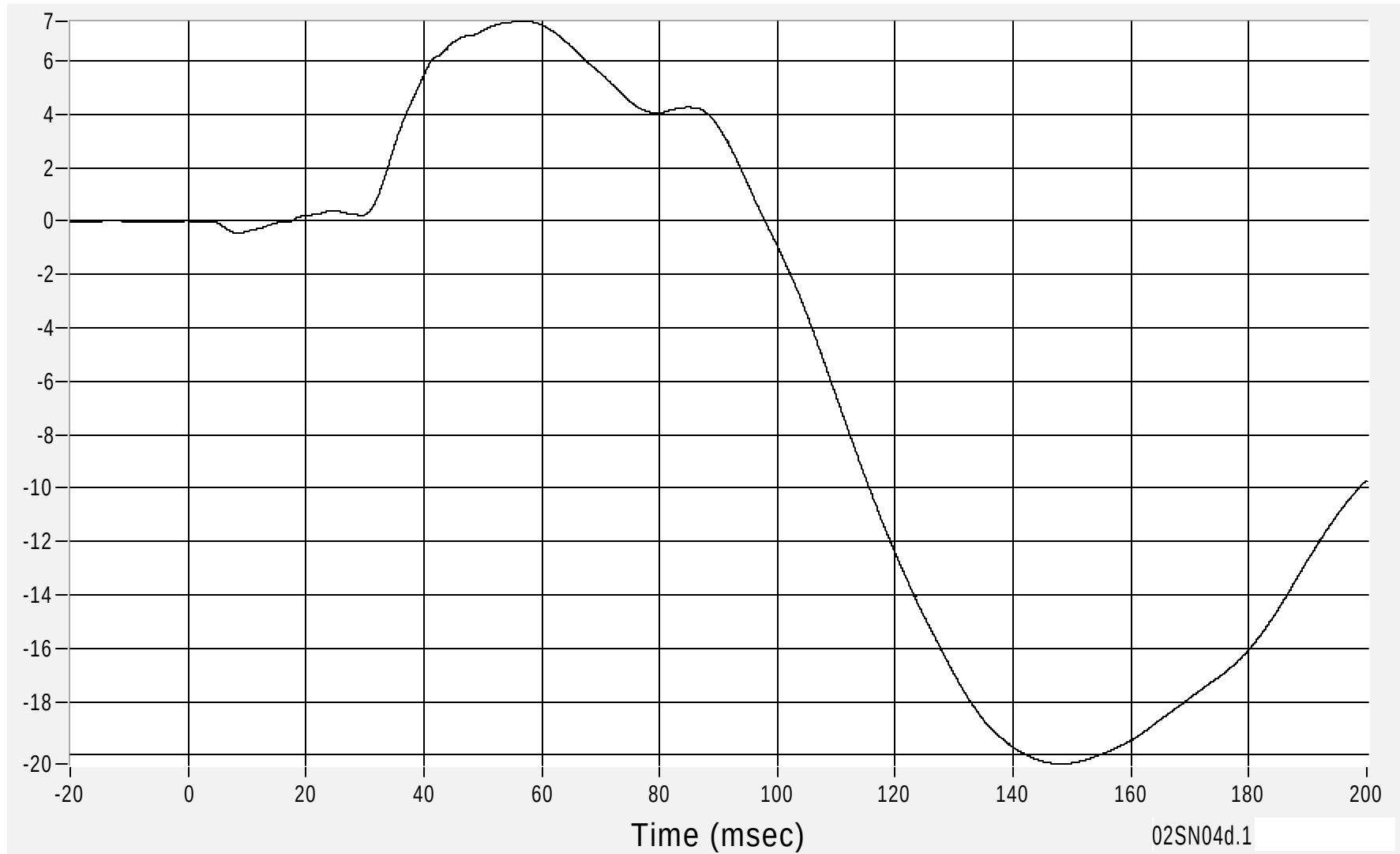
Driver Head CG (X) Velocity

Max 7.5 km/h at 57.2 msec

Velocity (km/h) CFC180

Min -20.3 km/h at 148.2 msec

B-7



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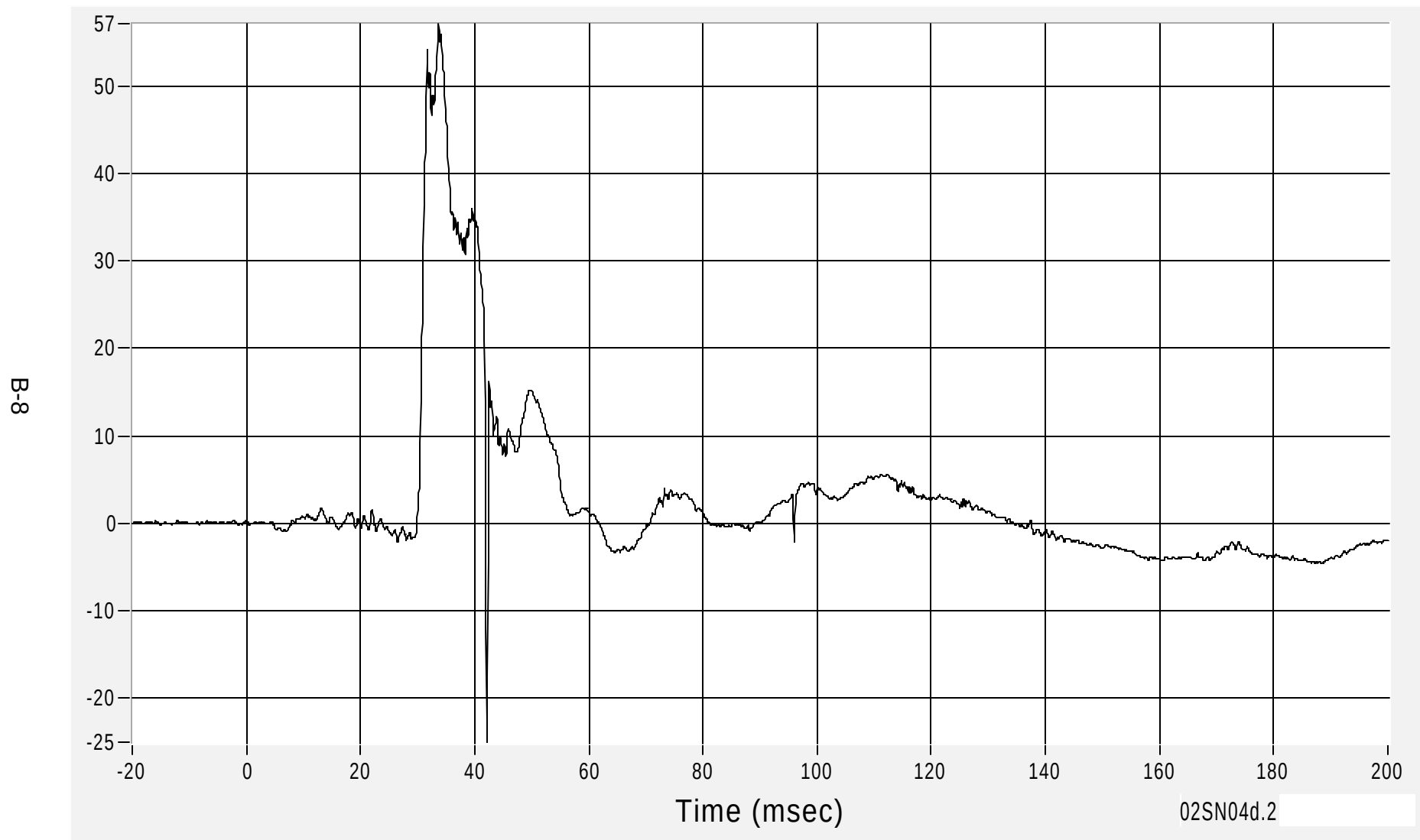
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Driver Head CG (Y) Acceleration

Max 57.2 G's at 33.7 msec

Acceleration (G's) CFC1000

Min -25.1 G's at 42.2 msec



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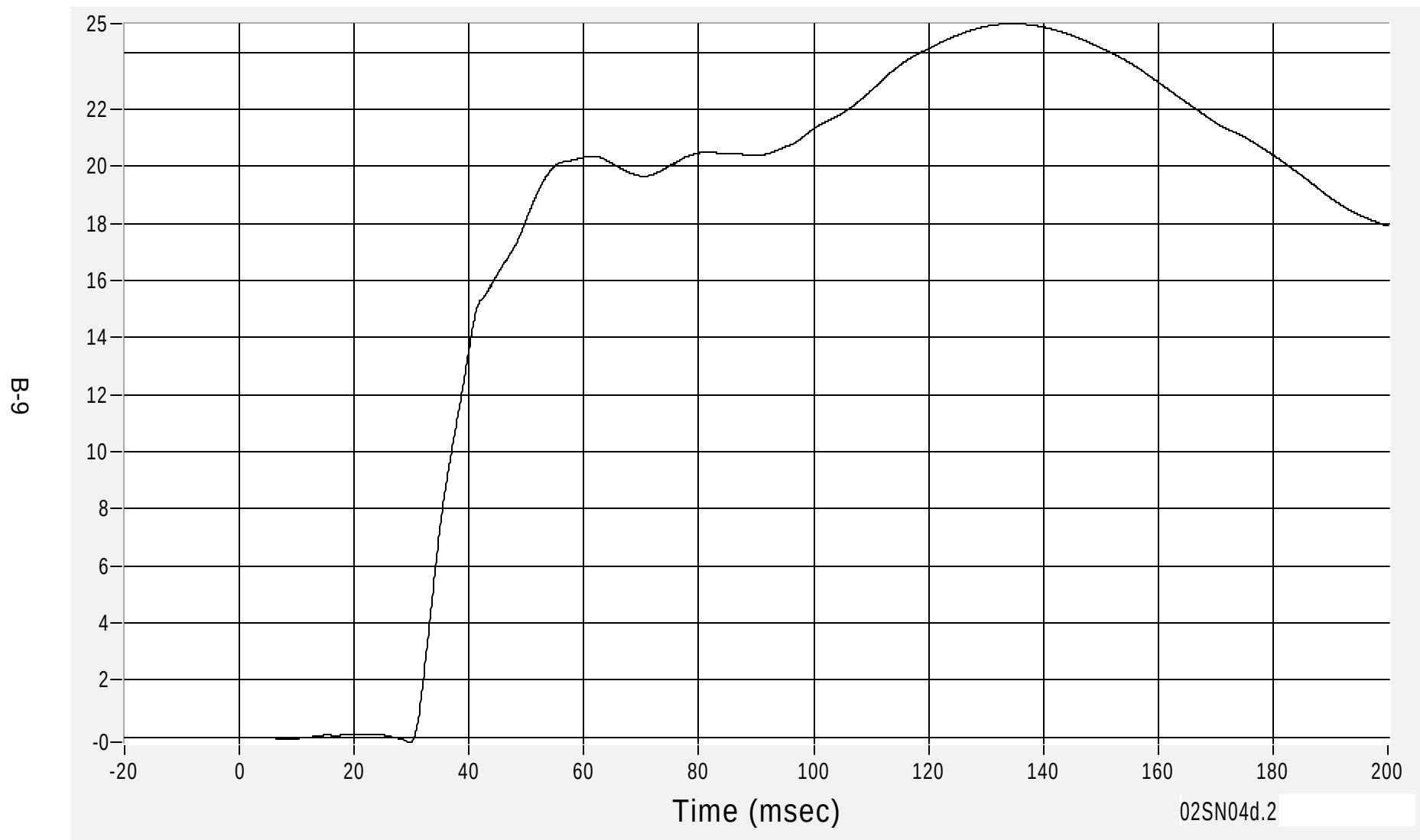
Medical College of Wisconsin
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Driver Head CG (Y) Velocity

Max 25.0 km/h at 134.4 msec

Velocity (km/h) CFC180

Min -0.2 km/h at 29.7 msec



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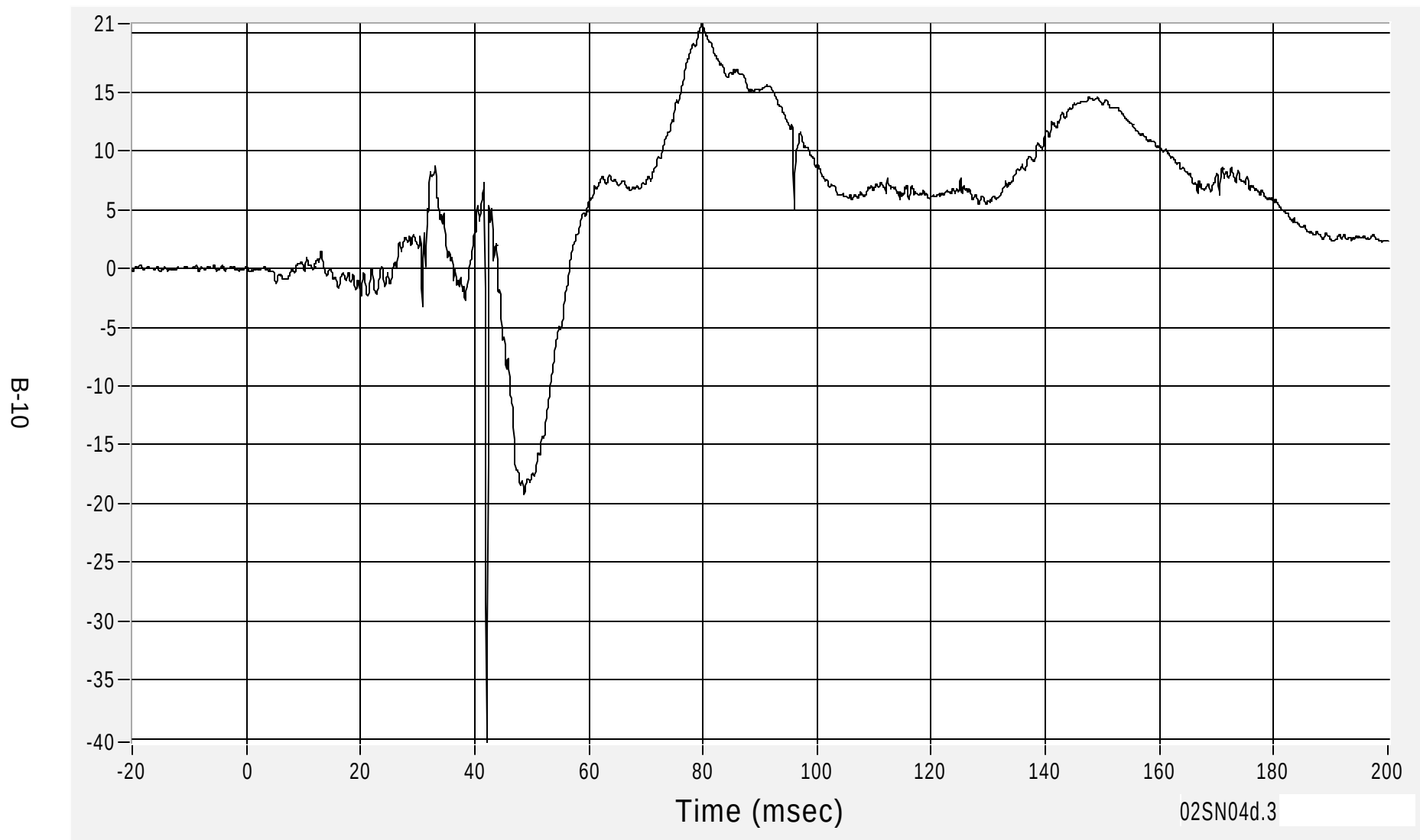
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Driver Head CG (Z) Acceleration

Max 20.8 G's at 79.8 msec

Acceleration (G's) CFC1000

Min -40.3 G's at 42.2 msec



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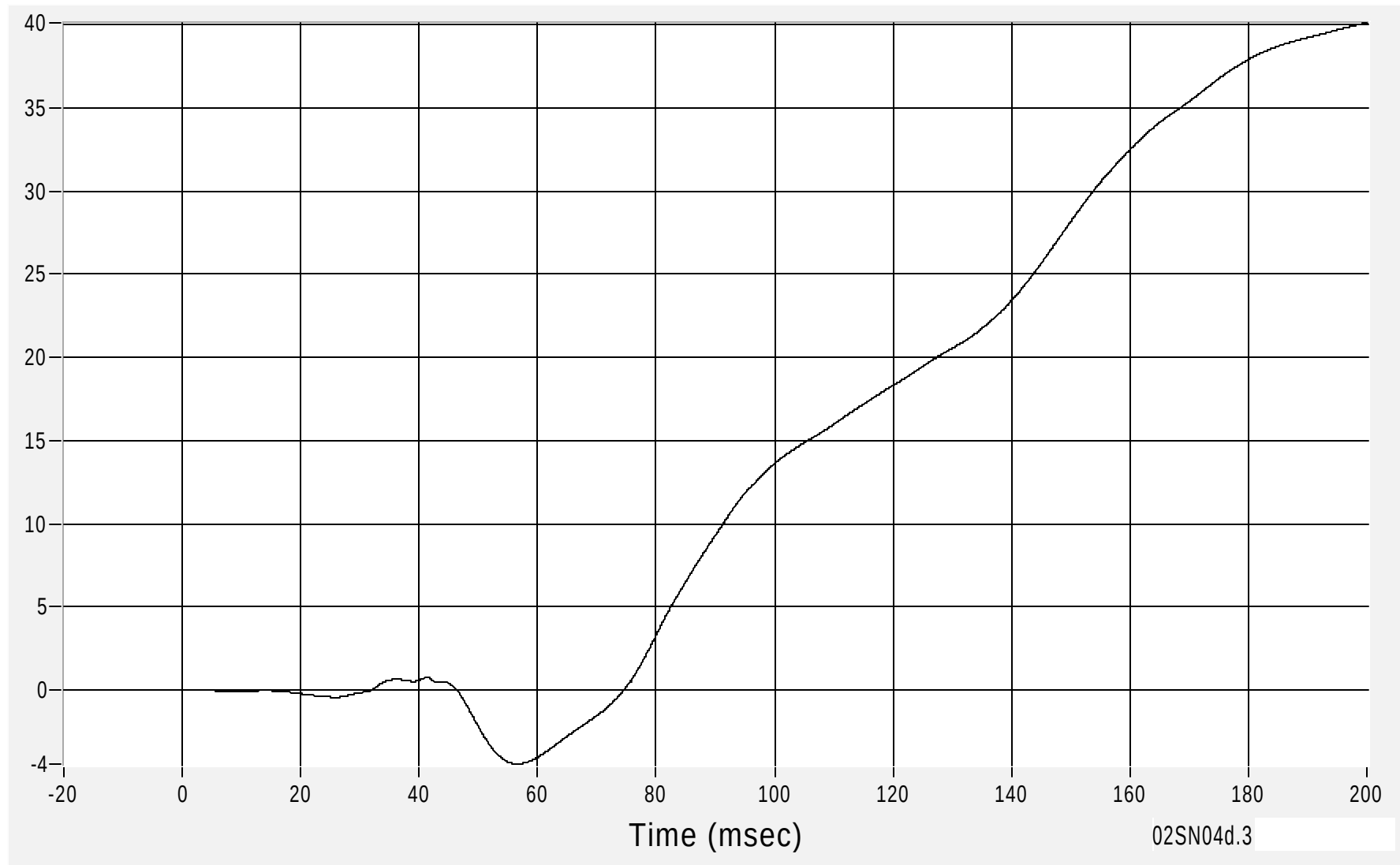
Driver Head CG (Z) Velocity

Max 40.1 km/h at 199.9 msec

Velocity (km/h) CFC180

Min -4.5 km/h at 56.6 msec

B-11



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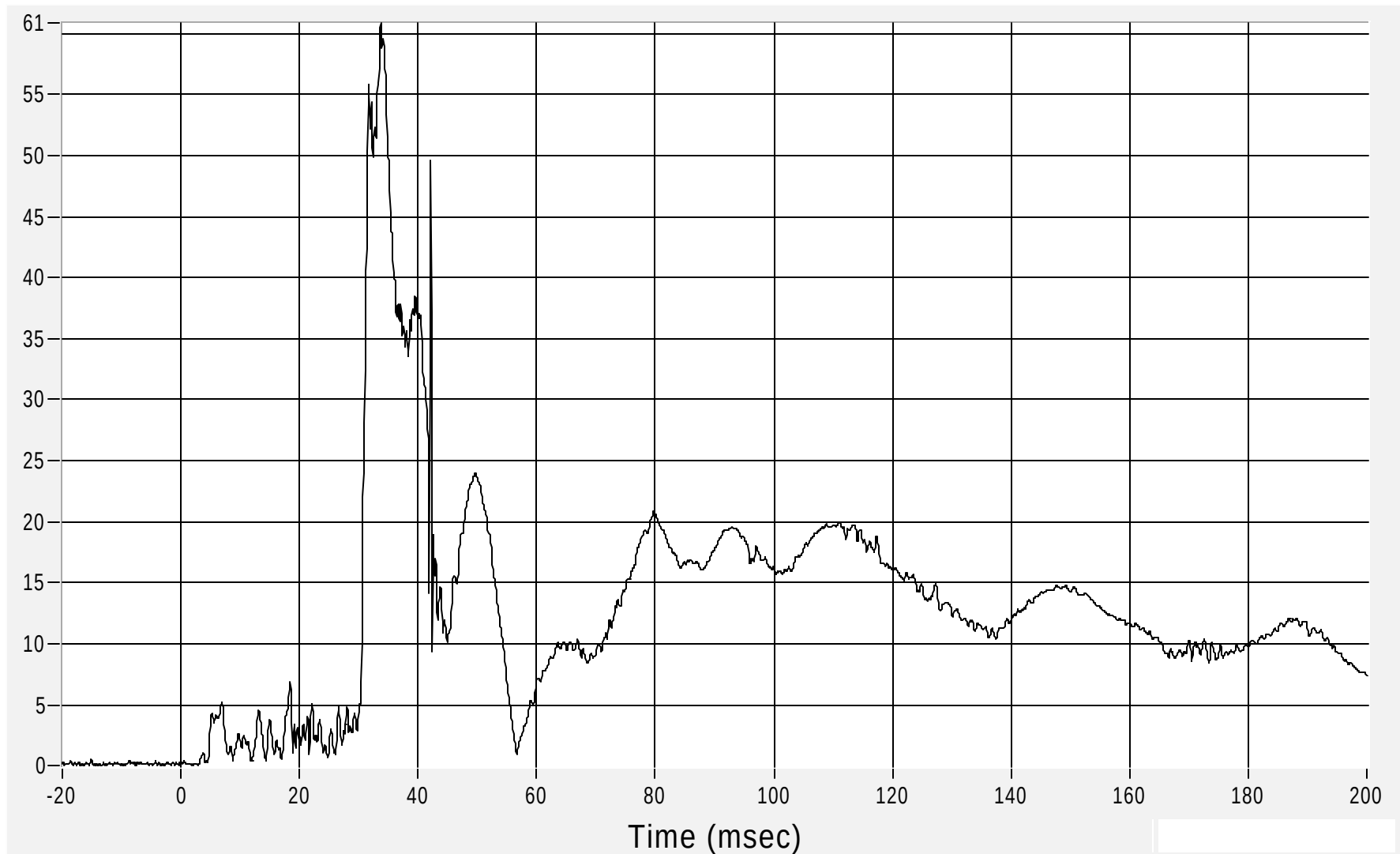
Driver Head Resultant Acceleration

Max 60.9 G's at 33.7 msec

Acceleration (G's) CFC1000

Min 0.0 G's at 2.9 msec

B-12



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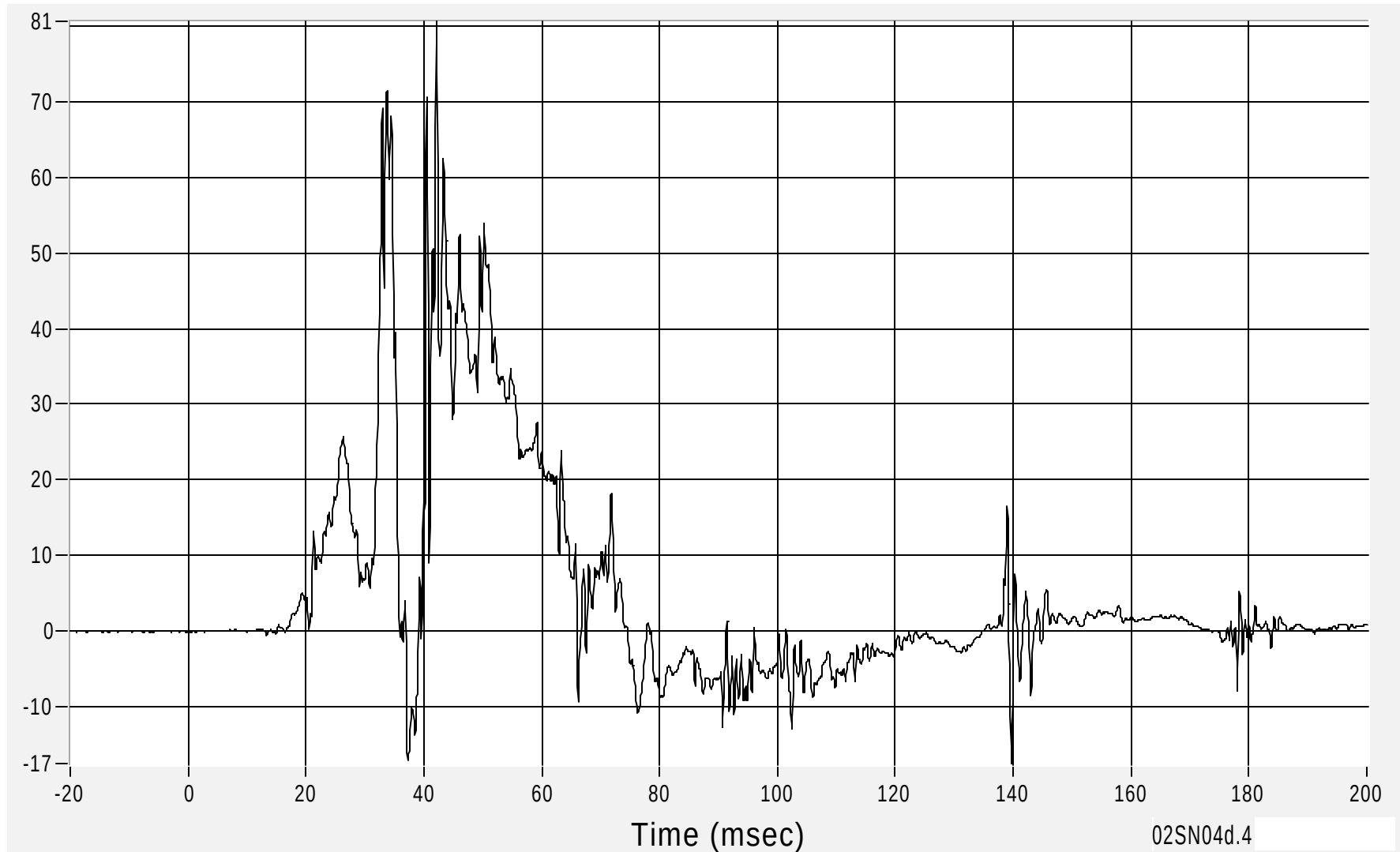
Driver Upper Rib (Y) Acceleration

Max 80.6 G's at 42.2 msec

Acceleration (G's) CFC1000

Min -17.4 G's at 139.7 msec

B-13



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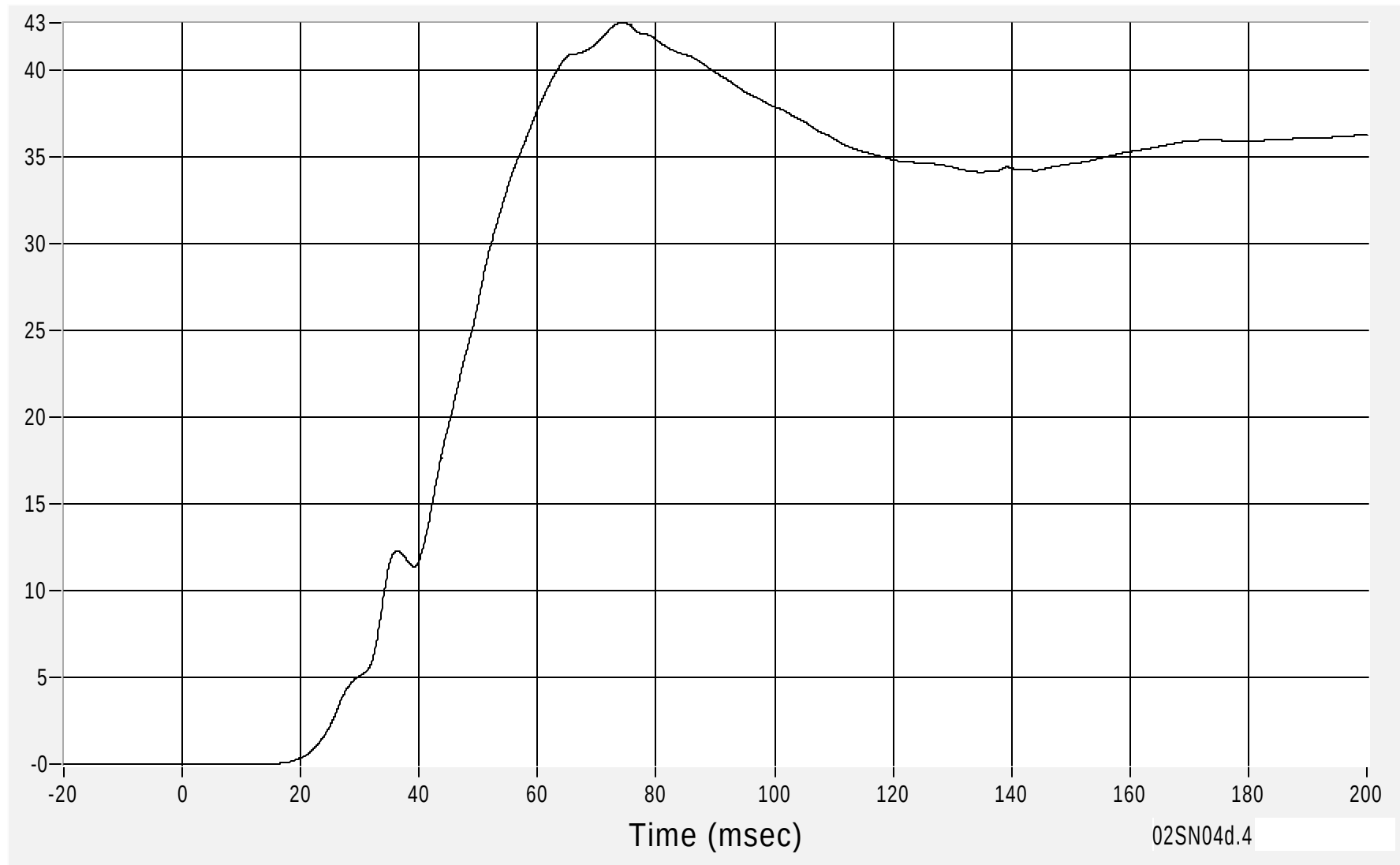
Driver Upper Rib (Y) Velocity

Max 42.8 km/h at 74.3 msec

Velocity (km/h) CFC180

Min 0.0 km/h at 1.7 msec

B-14



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27 March 2002

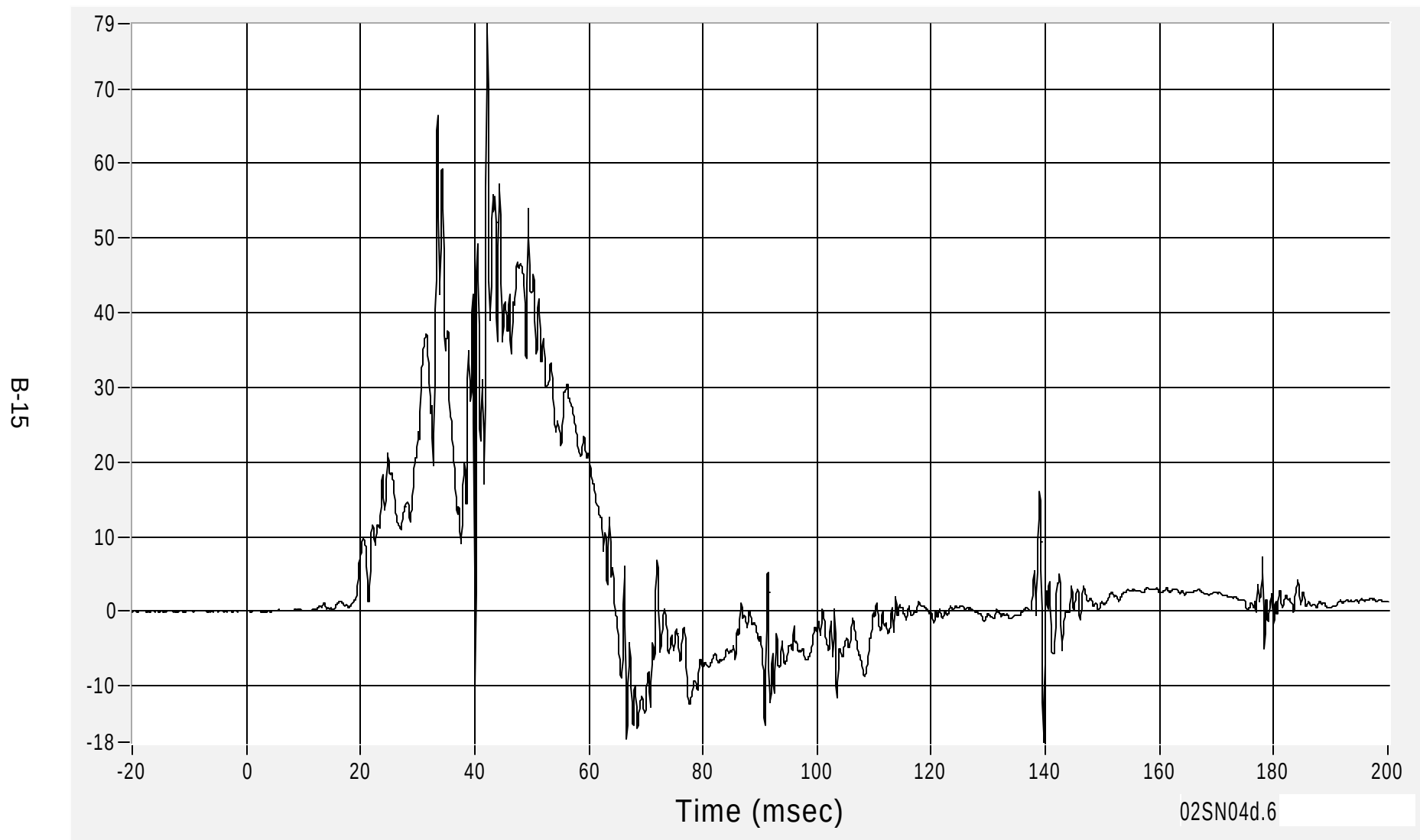
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Driver Lower Rib (Y) Acceleration

Max 78.7 G's at 42.2 msec

Acceleration (G's) CFC1000

Min -17.5 G's at 139.7 msec



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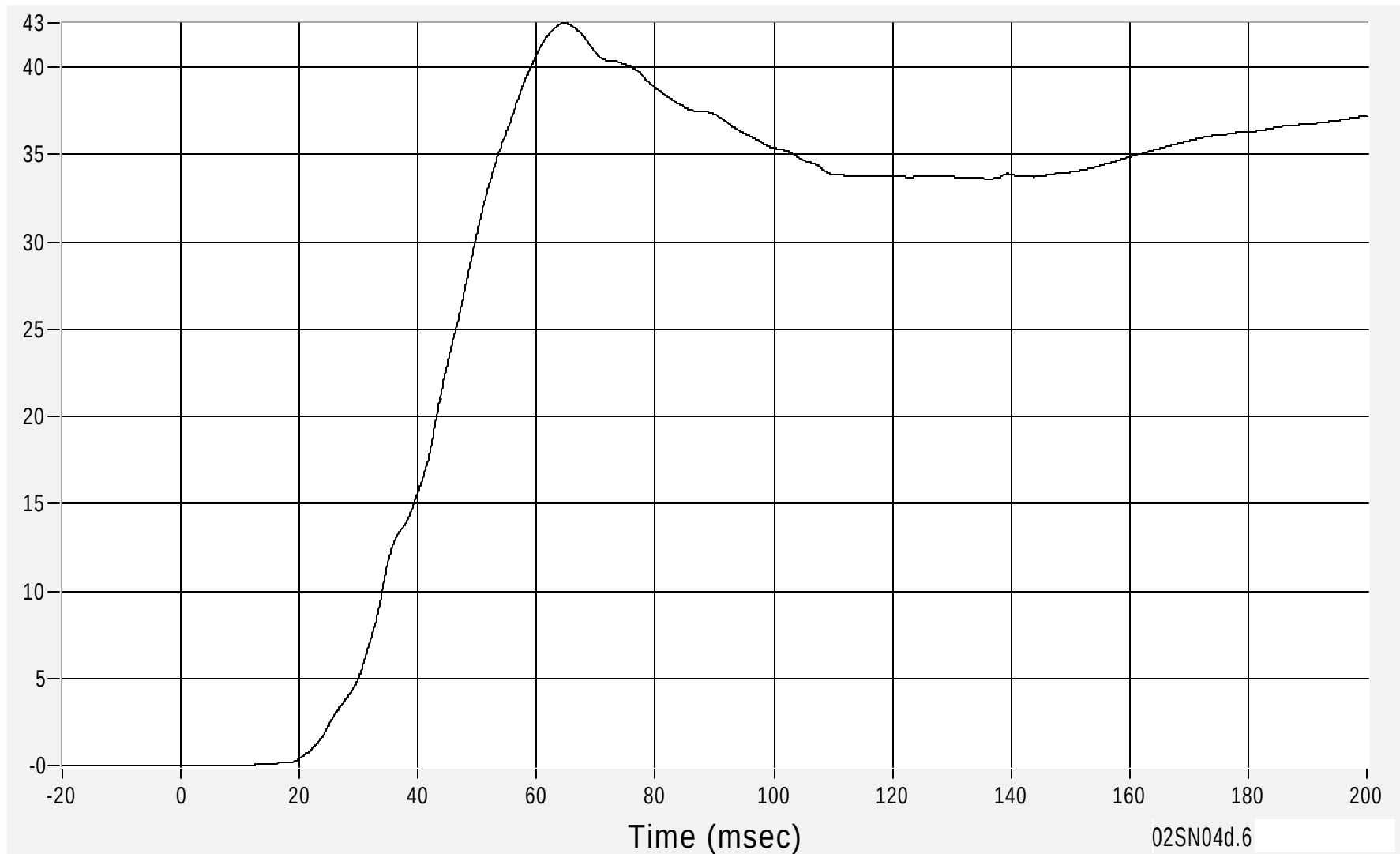
Driver Lower Rib (Y) Velocity

Max 42.5 km/h at 64.6 msec

Velocity (km/h) CFC180

Min 0.0 km/h at 4.1 msec

B-16



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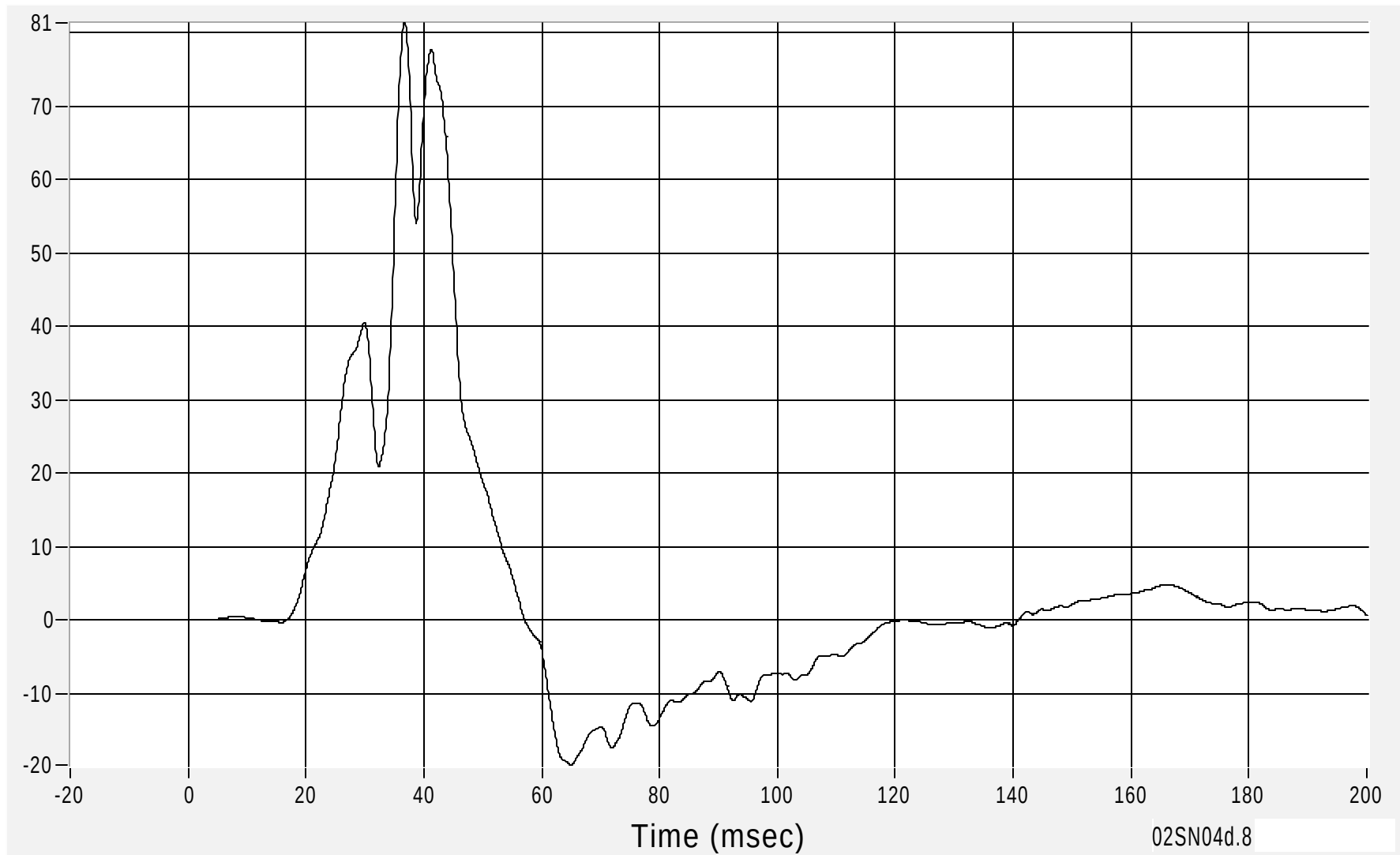
Driver Lower Spine (Y) Acceleration

Max 81.4 G's at 36.7 msec

Acceleration (G's) CFC180

Min -19.7 G's at 65.0 msec

B-17



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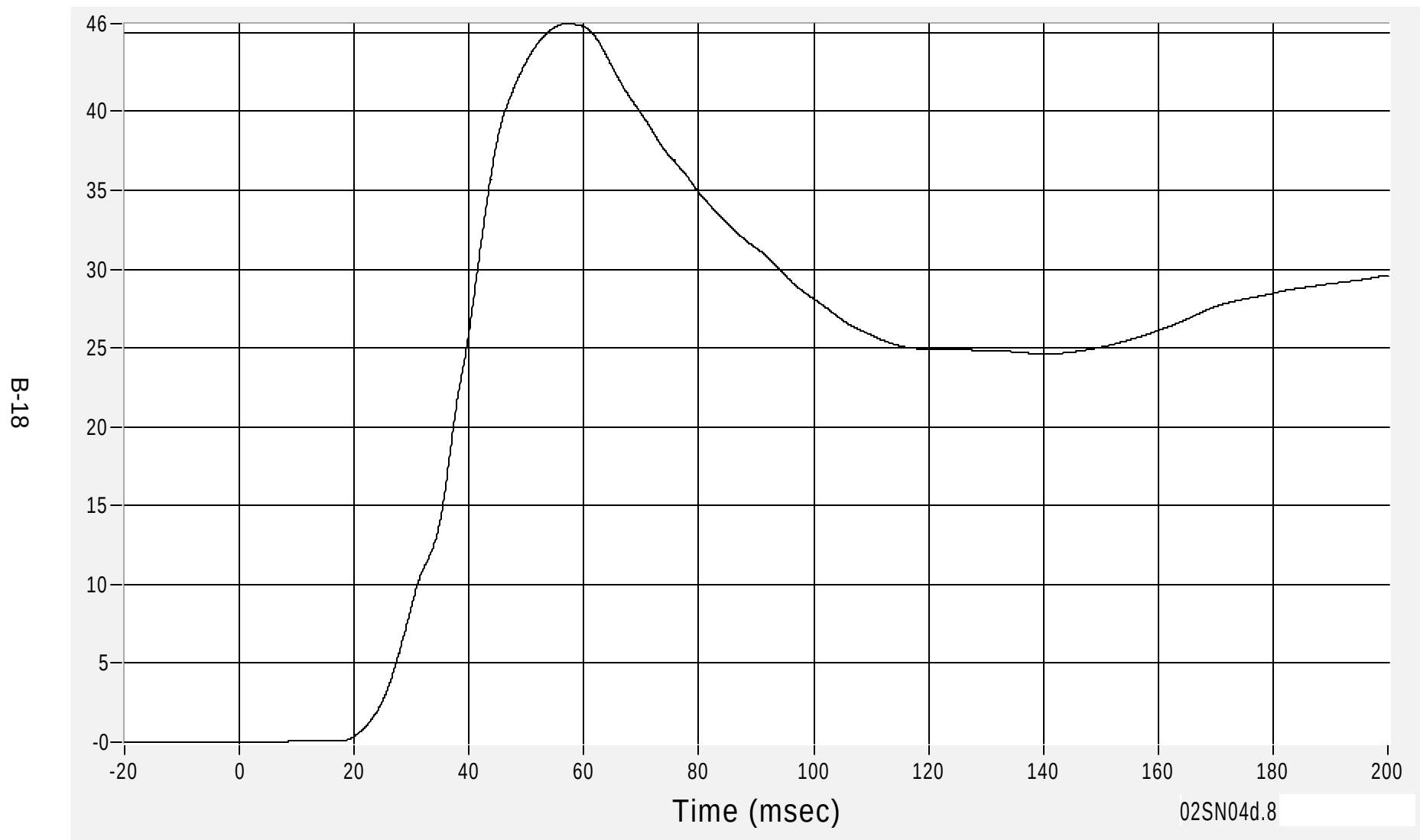
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Driver Lower Spine (Y) Velocity

Max 45.6 km/h at 57.1 msec

Velocity (km/h) CFC180

Min 0.0 km/h at 2.3 msec



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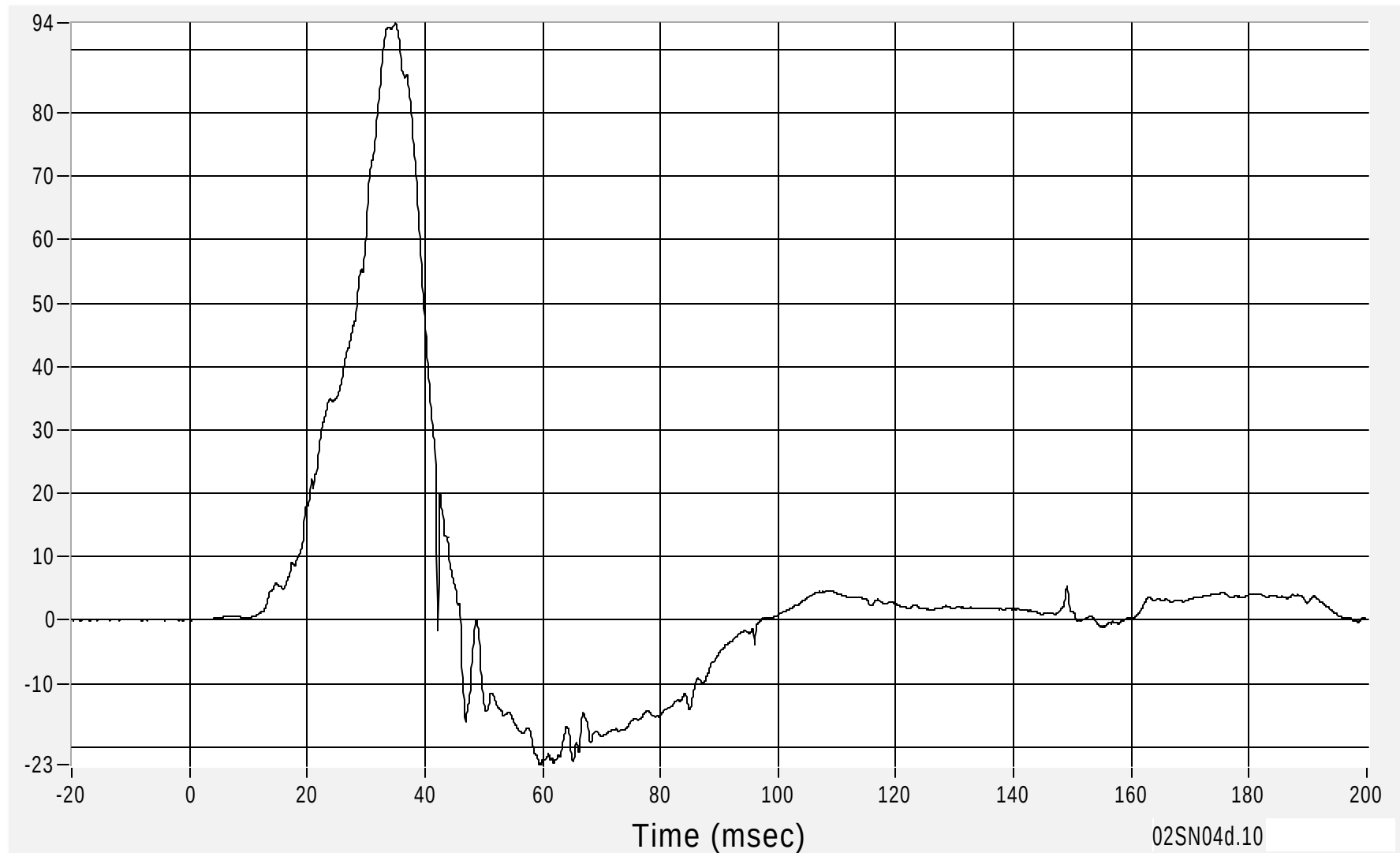
Driver Pelvic (Y) Acceleration

Max 94.2 G's at 35.0 msec

Acceleration (G's) CFC1000

Min -22.8 G's at 59.5 msec

B-19



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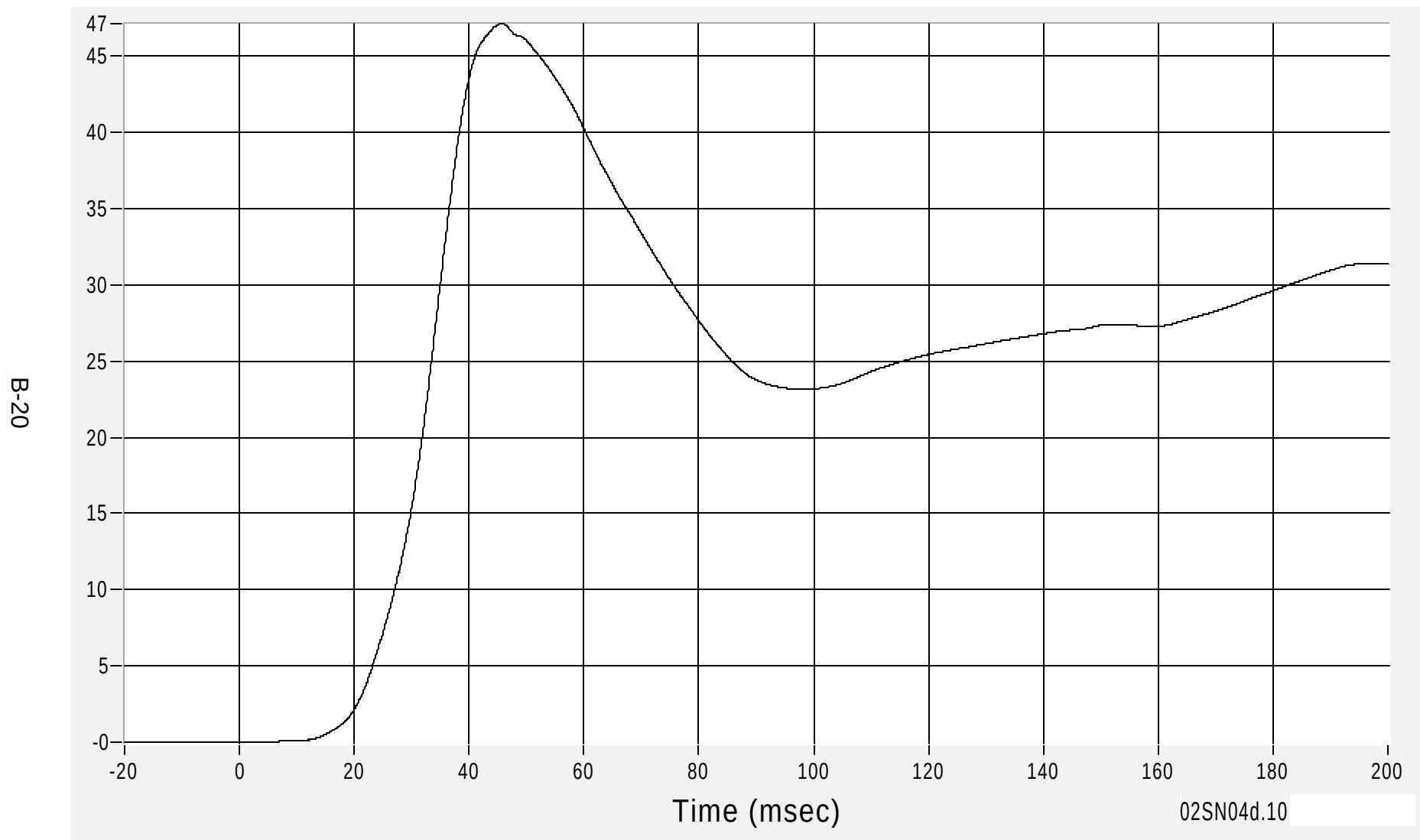
Medical College of Wisconsin
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Driver Pelvic (Y) Velocity

Max 47.1 km/h at 45.7 msec

Velocity (km/h) CFC180

Min 0.0 km/h at 0.0 msec



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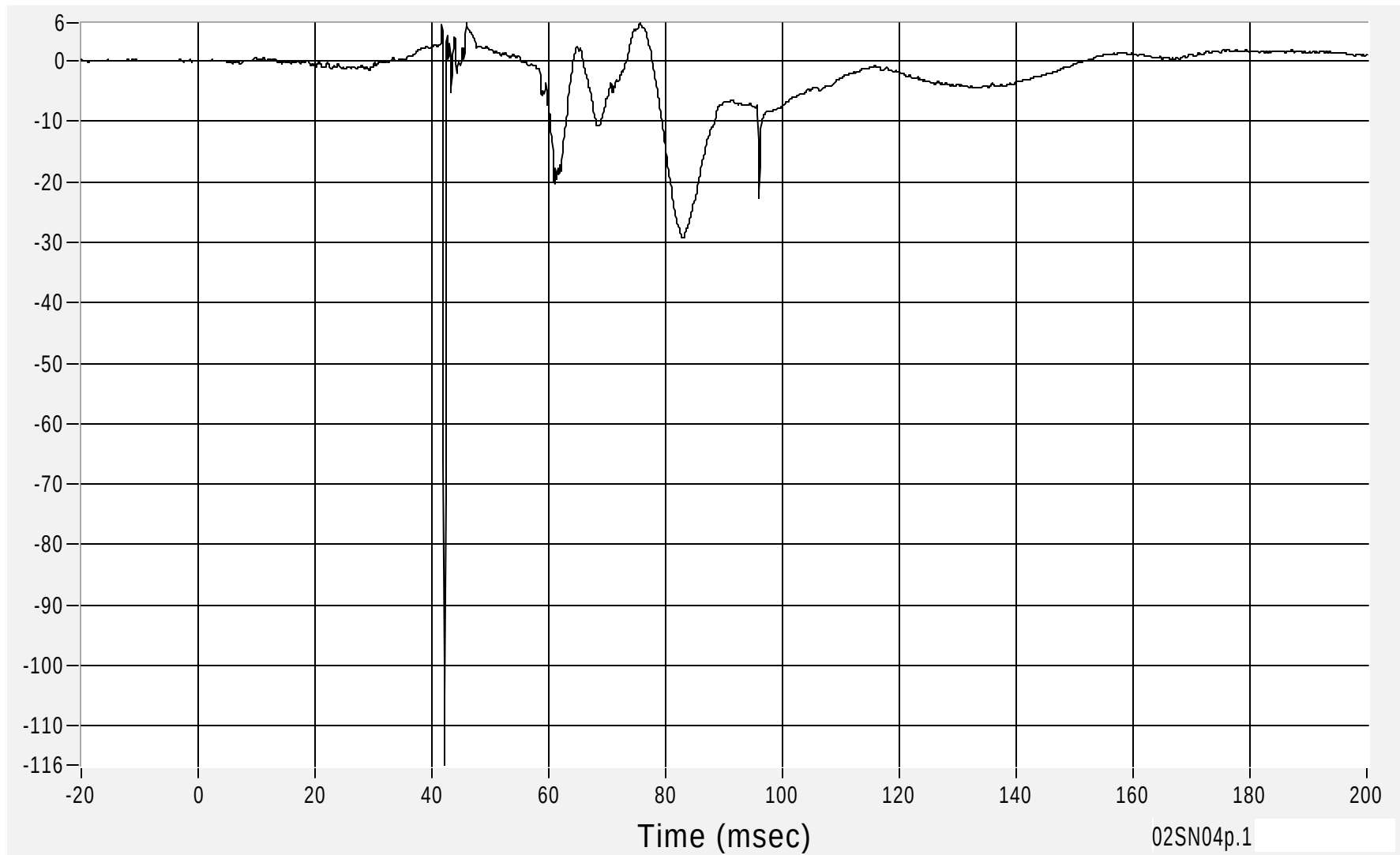
Passenger Head CG (X) Acceleration

Max 6.3 G's at 45.9 msec

Acceleration (G's) CFC1000

Min -116.4 G's at 42.2 msec

B-21



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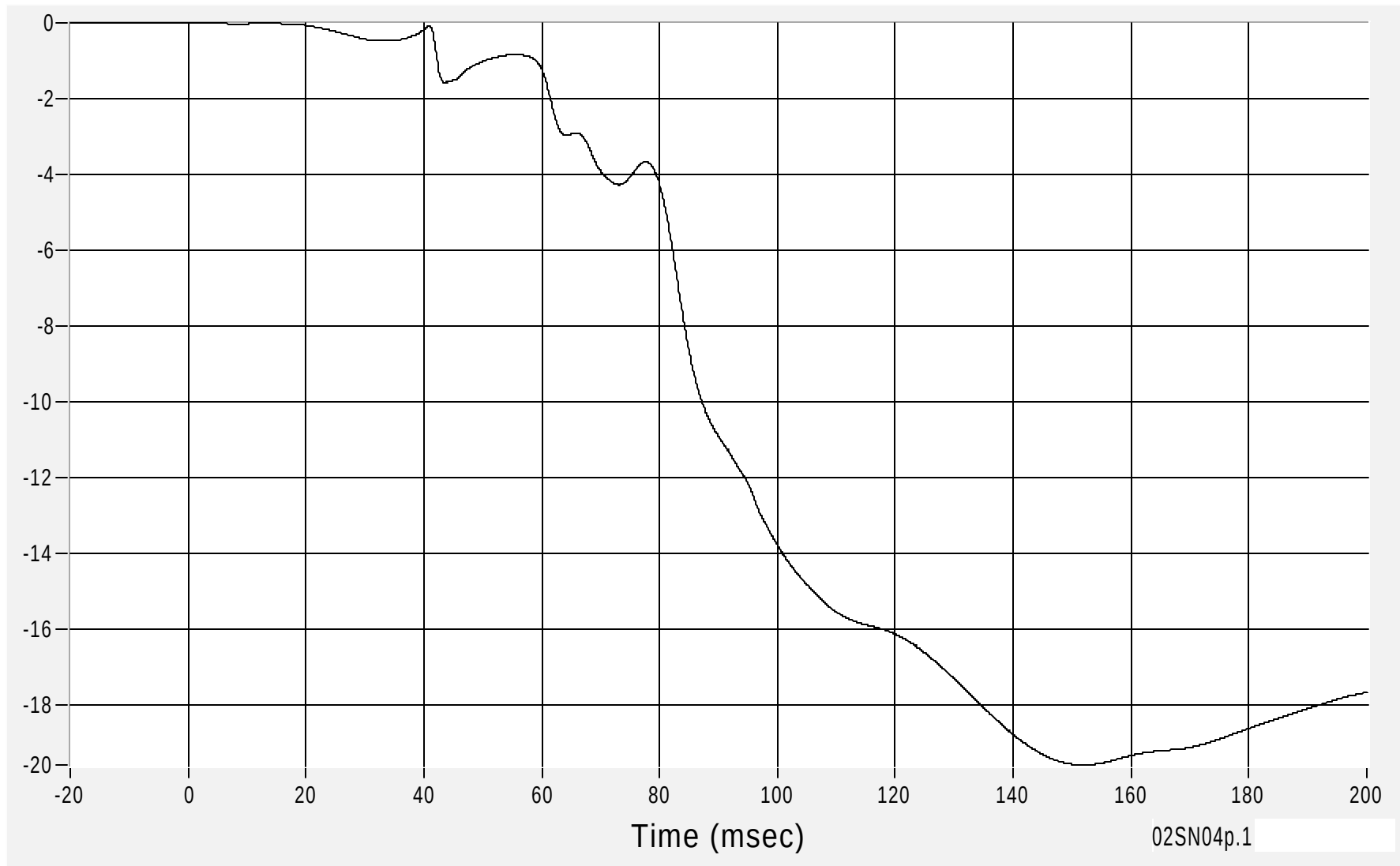
Passenger Head CG (X) Velocity

Max 0.0 km/h at 2.7 msec

Velocity (km/h) CFC180

Min -19.6 km/h at 151.9 msec

B-22



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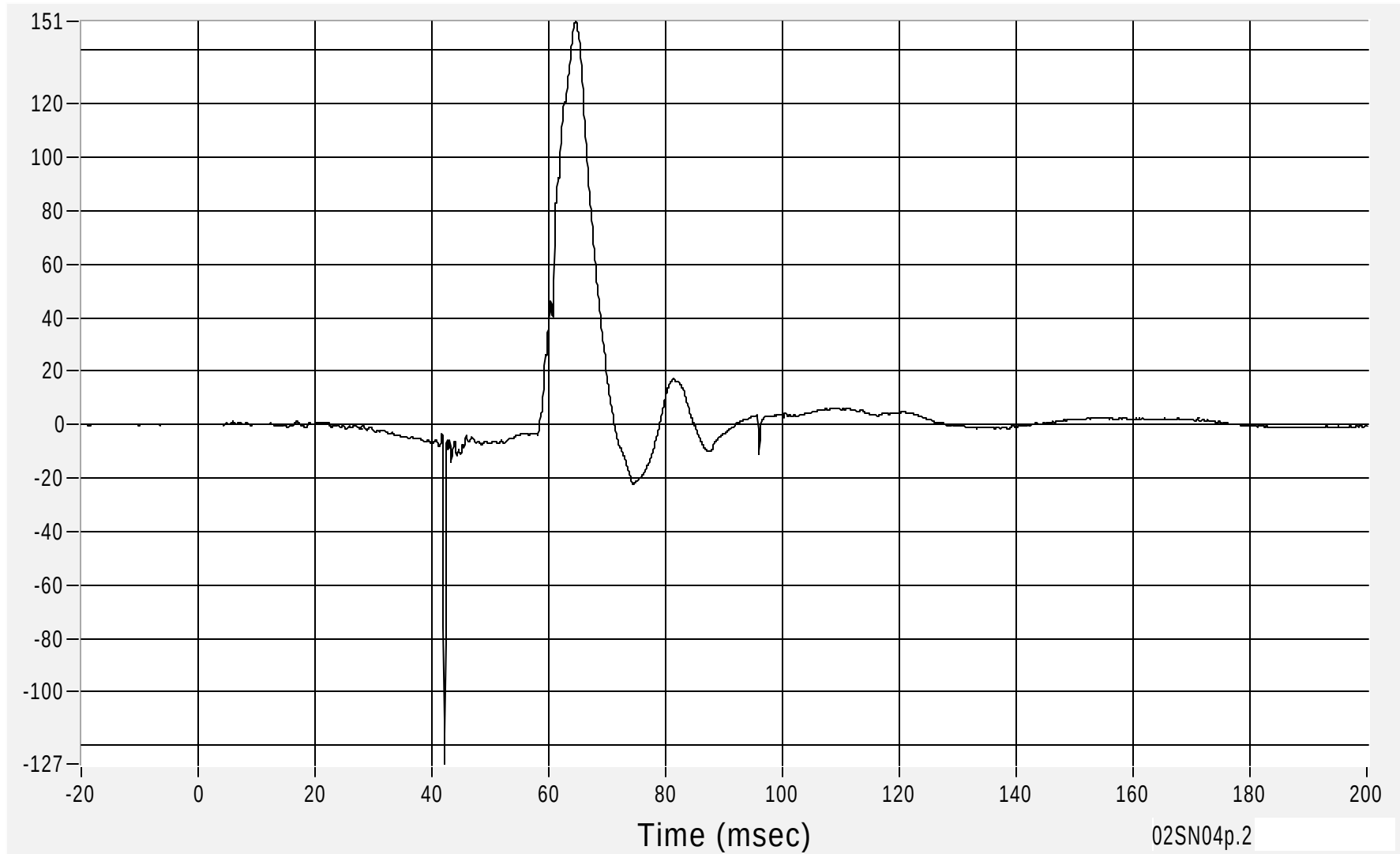
Passenger Head CG (Y) Acceleration

Max 150.9 G's at 64.7 msec

Acceleration (G's) CFC1000

Min -126.9 G's at 42.2 msec

B-23



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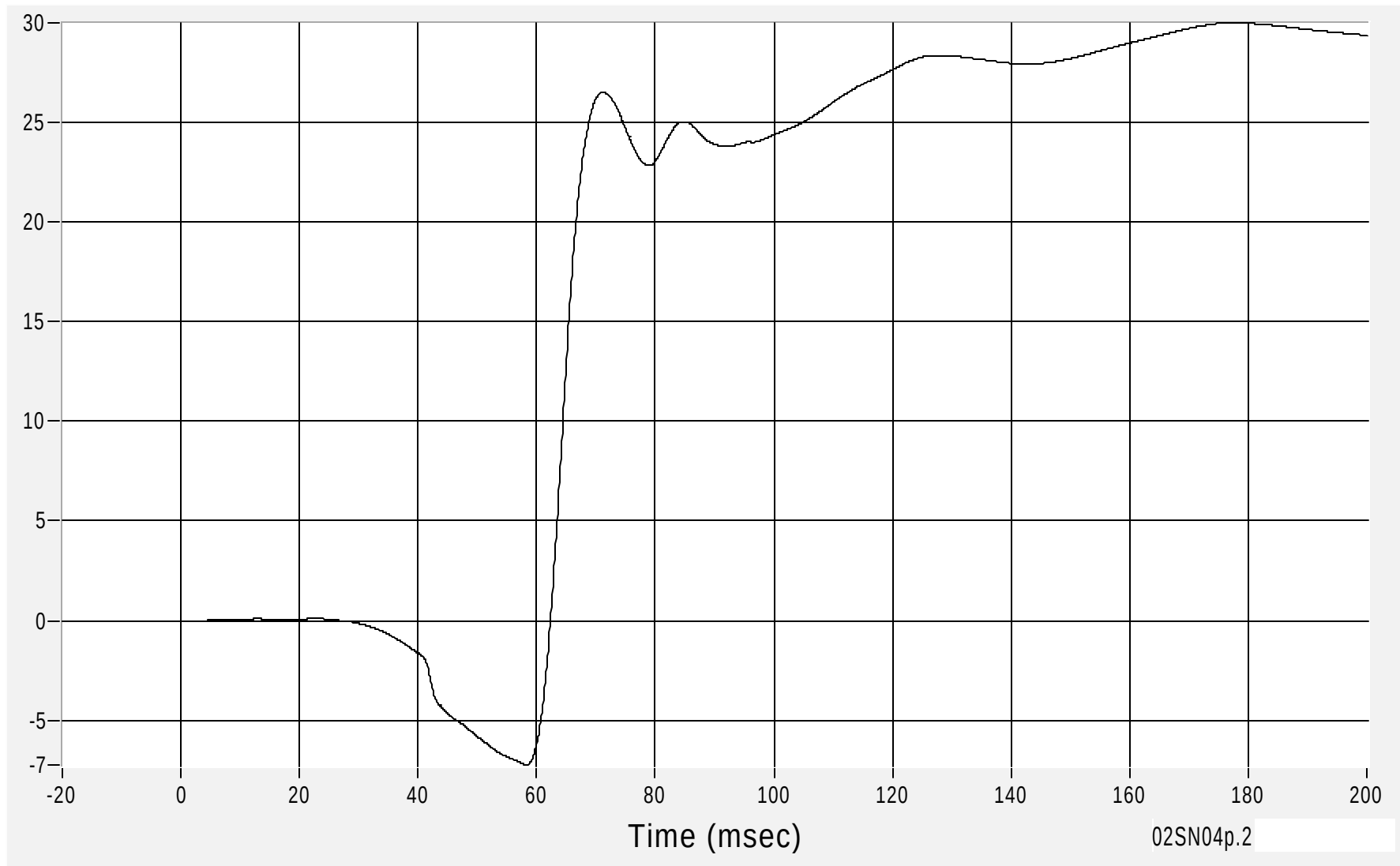
Passenger Head CG (Y) Velocity

Max 30.0 km/h at 177.7 msec

Velocity (km/h) CFC180

Min -7.2 km/h at 58.2 msec

B-24



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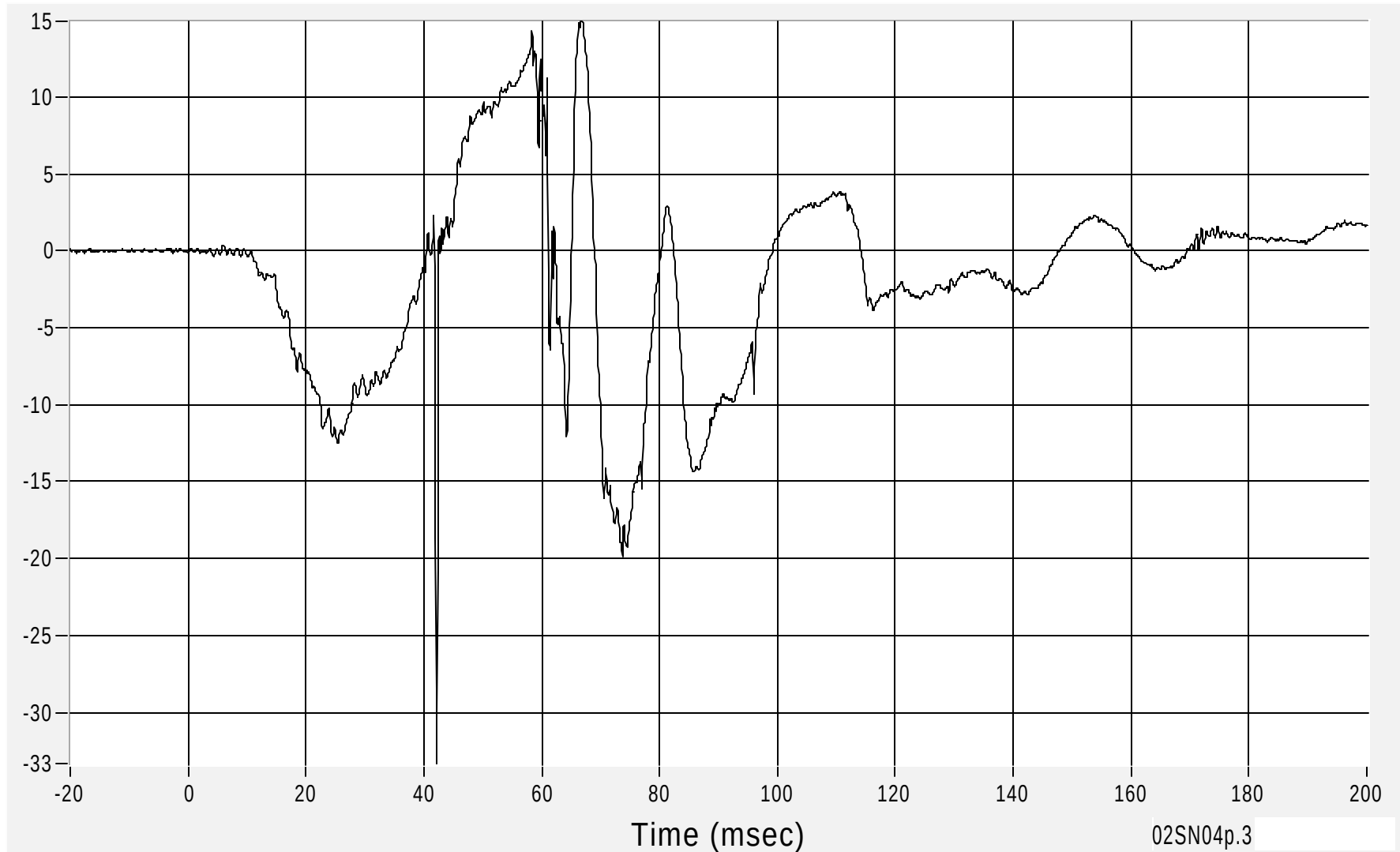
Passenger Head CG (Z) Acceleration

Max 14.9 G's at 66.7 msec

Acceleration (G's) CFC1000

Min -33.3 G's at 42.2 msec

B-25



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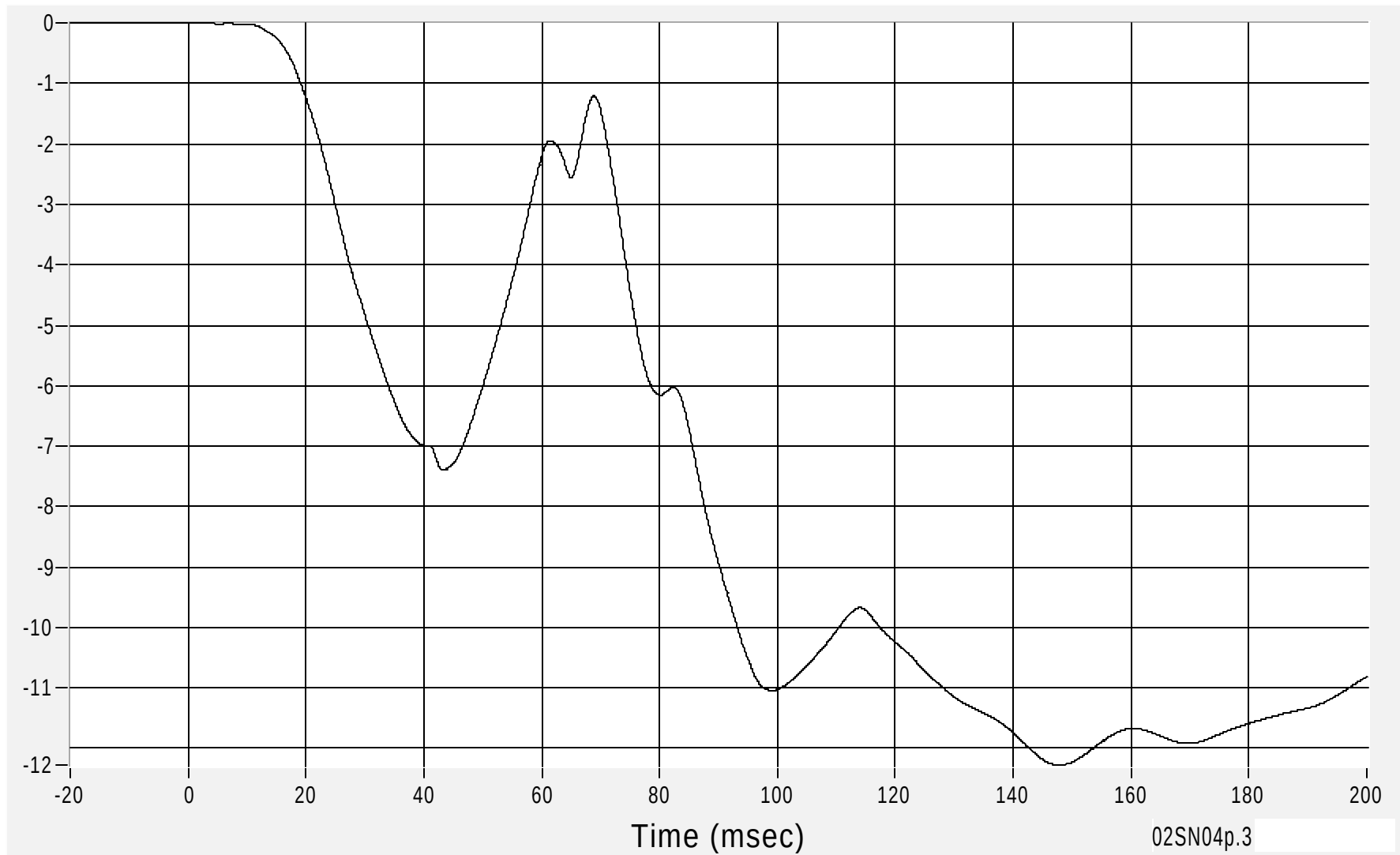
Passenger Head CG (Z) Velocity

Max 0.0 km/h at 1.3 msec

Velocity (km/h) CFC180

Min -12.3 km/h at 147.7 msec

B-26



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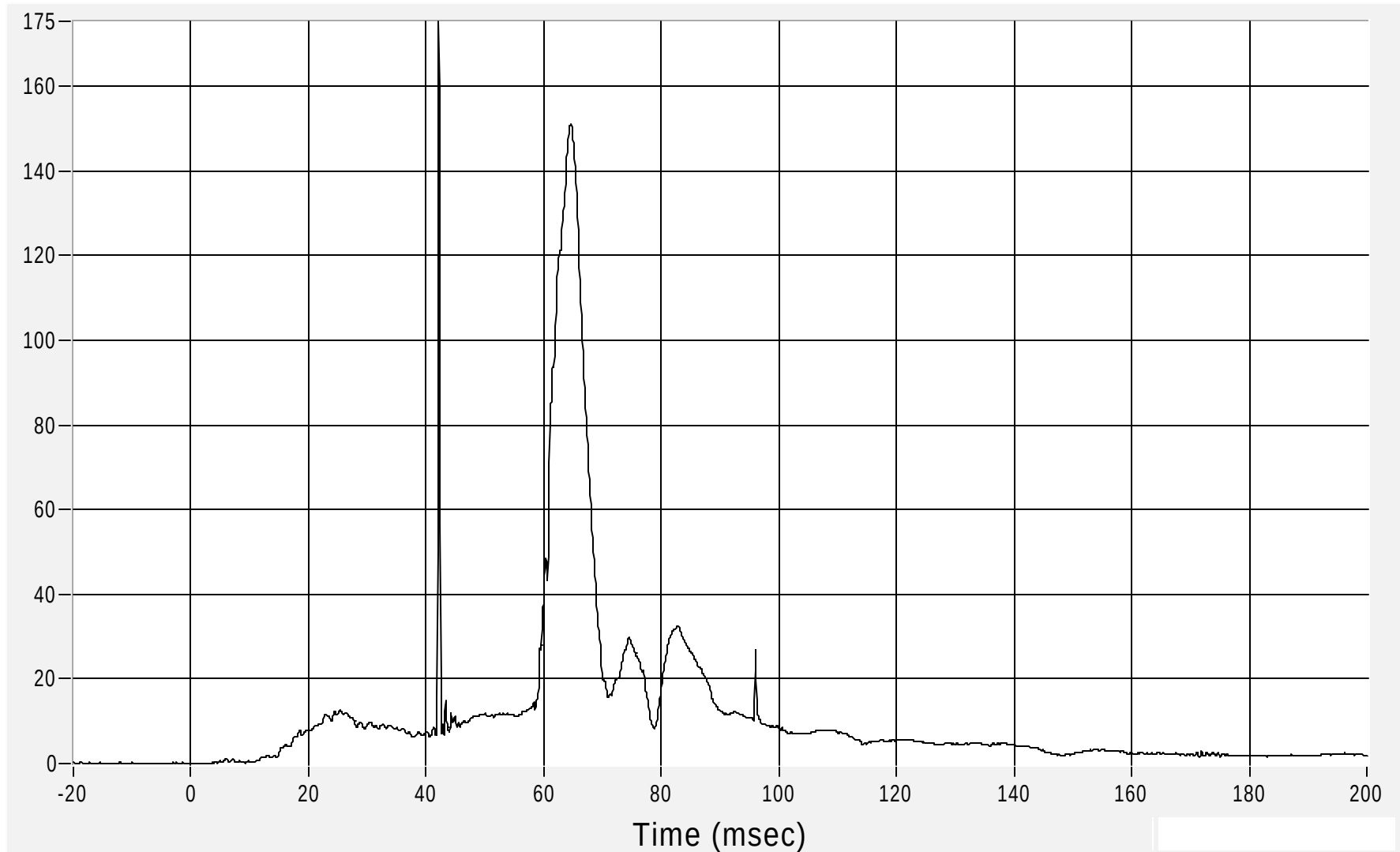
Passenger Head Resultant Acceleration

Max 175.4 G's at 42.2 msec

Acceleration (G's) CFC1000

Min 0.0 G's at 1.0 msec

B-27



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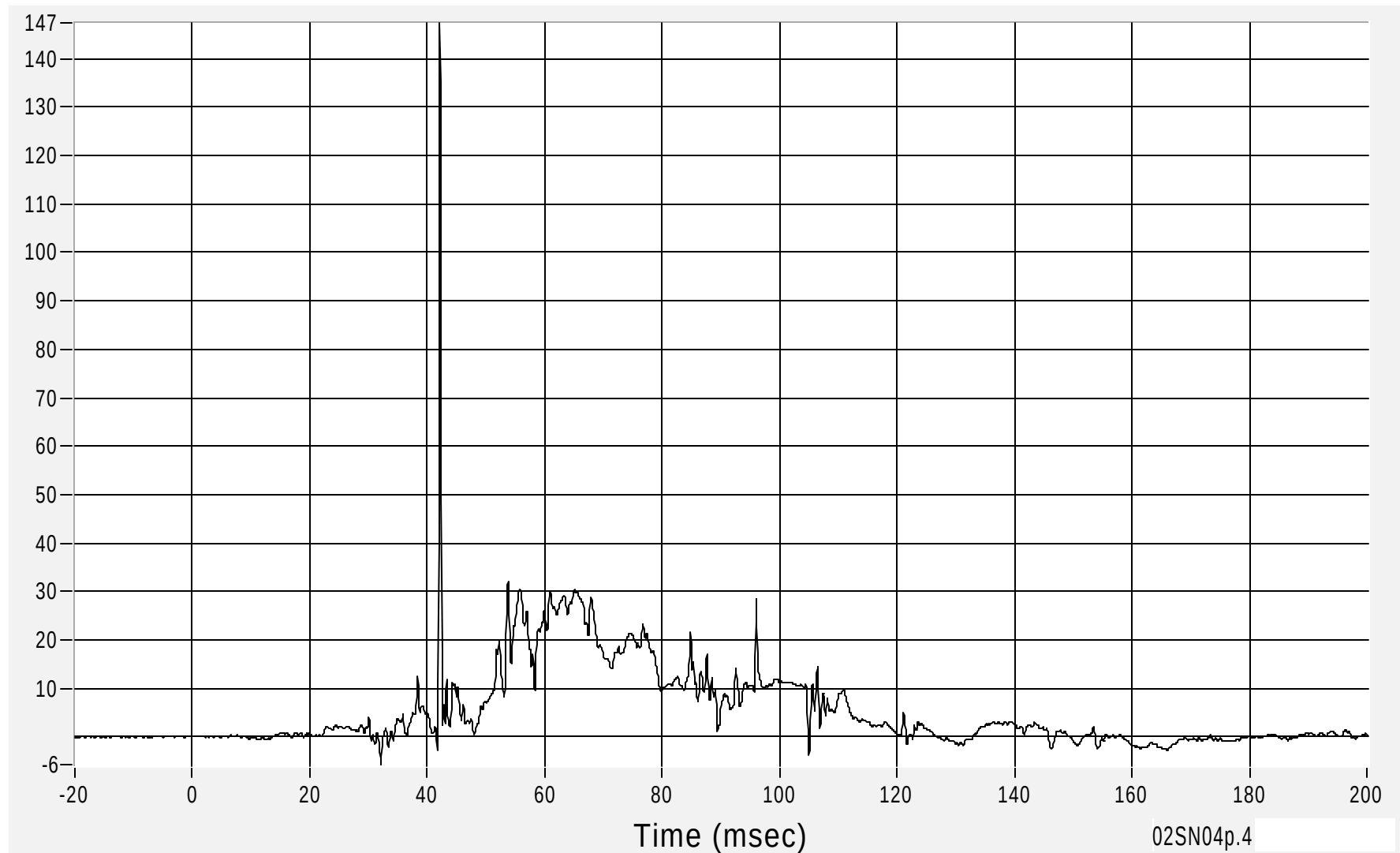
Passenger Upper Rib (Y) Acceleration

Max 147.4 G's at 42.2 msec

Acceleration (G's) CFC1000

Min -5.7 G's at 32.2 msec

B-28



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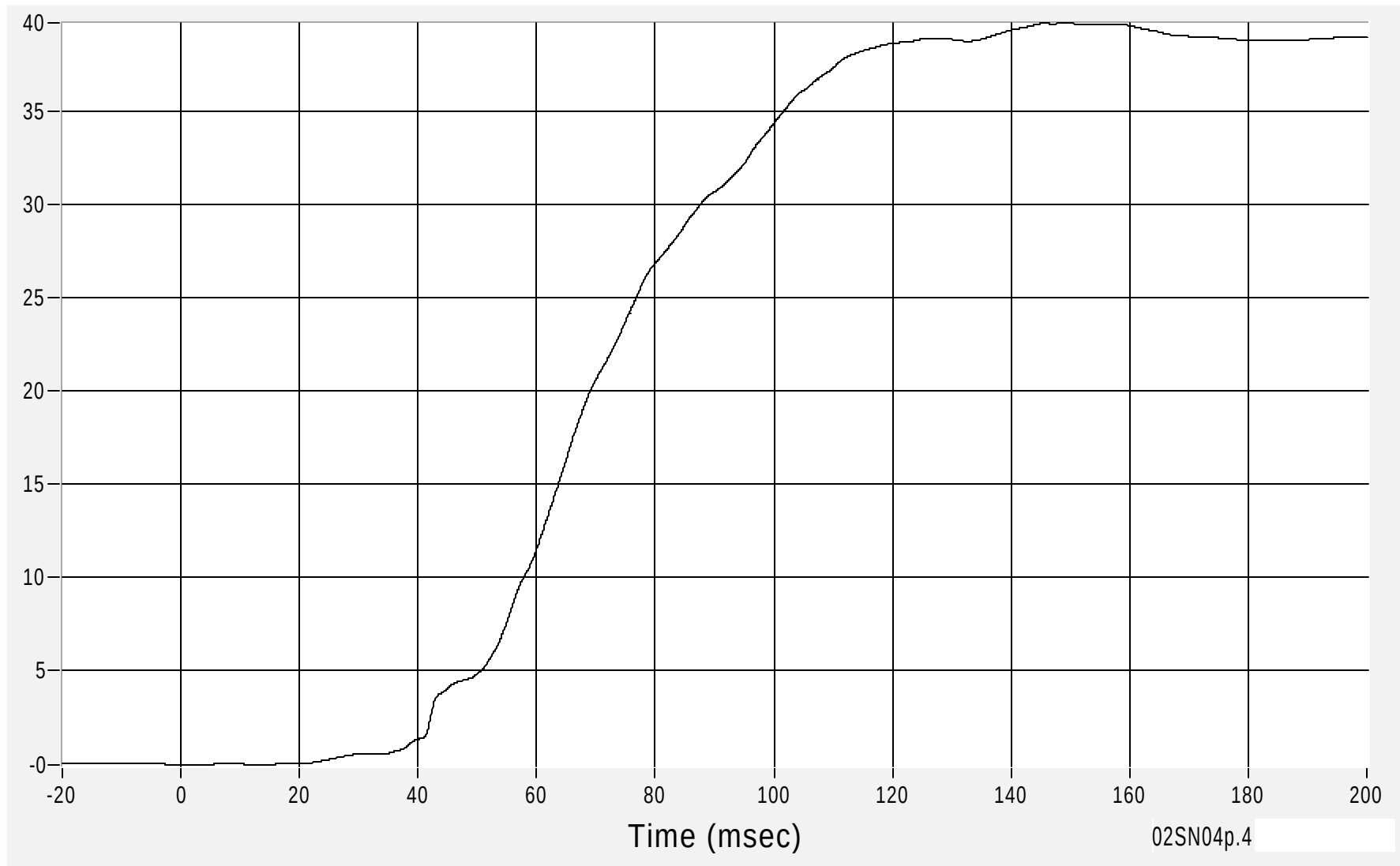
Passenger Upper Rib (Y) Velocity

Max 39.7 km/h at 149.3 msec

Velocity (km/h) CFC180

Min 0.0 km/h at 13.6 msec

B-29



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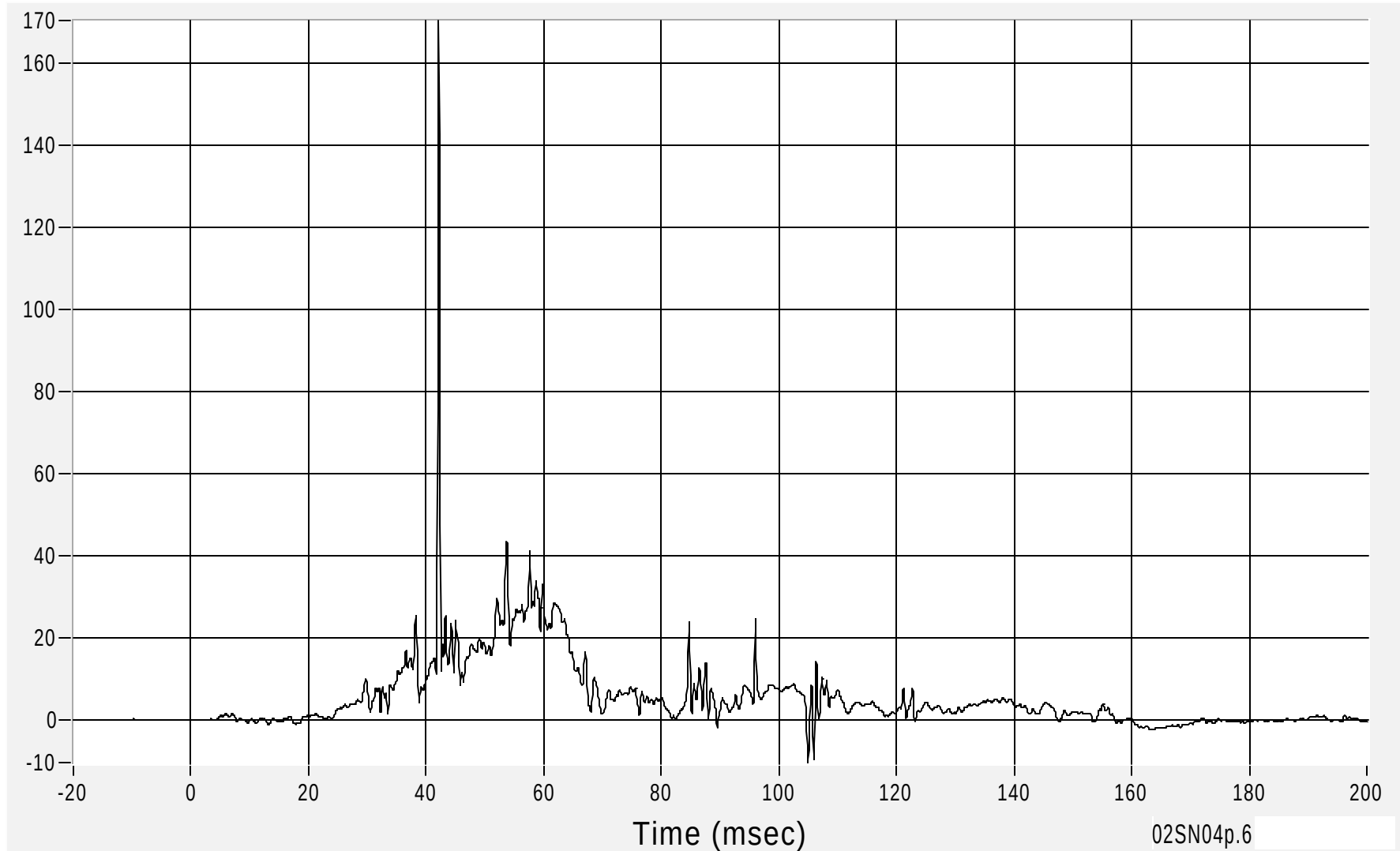
Passenger Lower Rib (Y) Acceleration

Max 170.5 G's at 42.2 msec

Acceleration (G's) CFC1000

Min -10.4 G's at 105.0 msec

B-30



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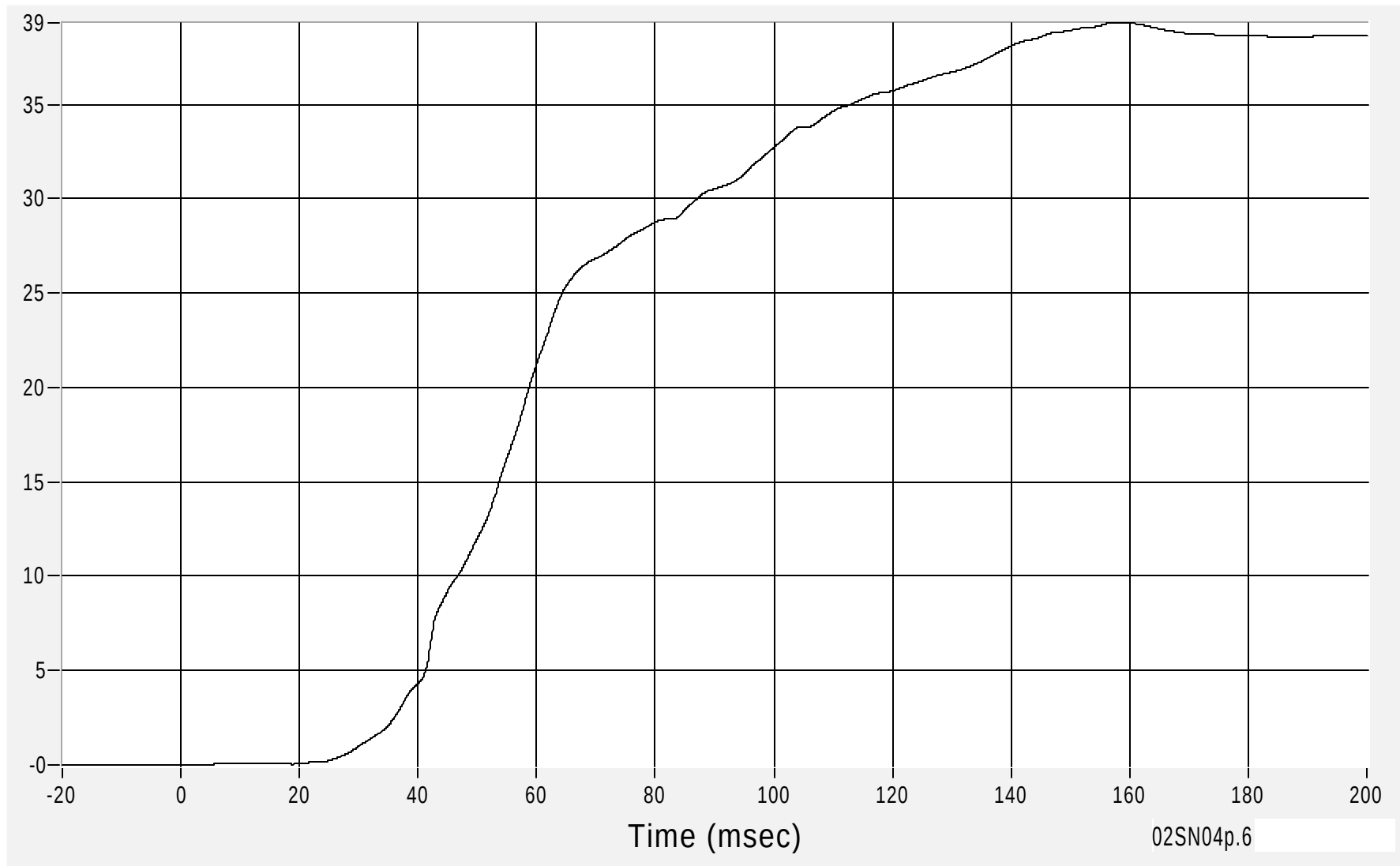
Passenger Lower Rib (Y) Velocity

Max 39.3 km/h at 157.2 msec

Velocity (km/h) CFC180

Min 0.0 km/h at 2.8 msec

B-31



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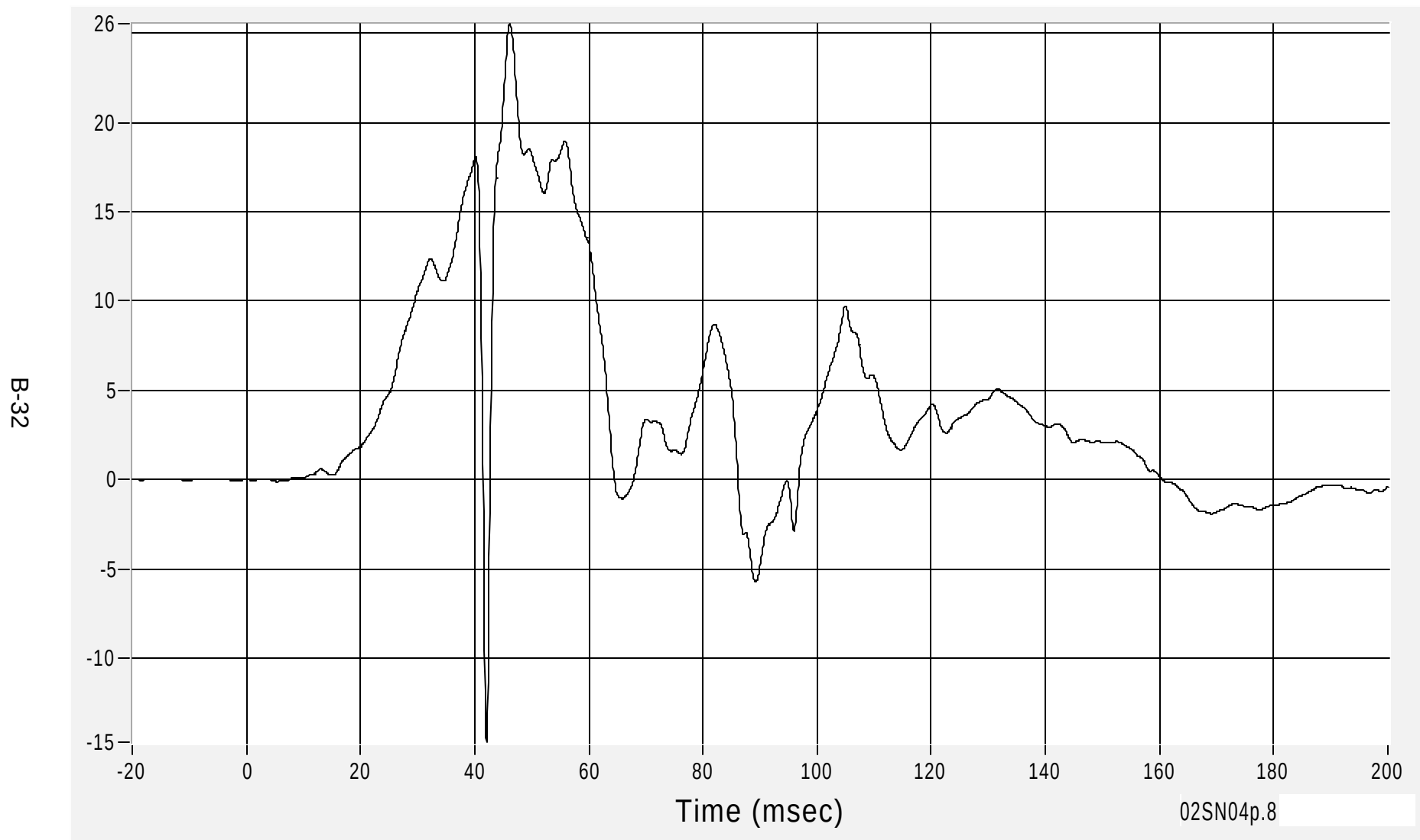
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Passenger Lower Spine (Y) Acceleration

Max 25.5 G's at 46.2 msec

Acceleration (G's) CFC180

Min -14.7 G's at 42.1 msec



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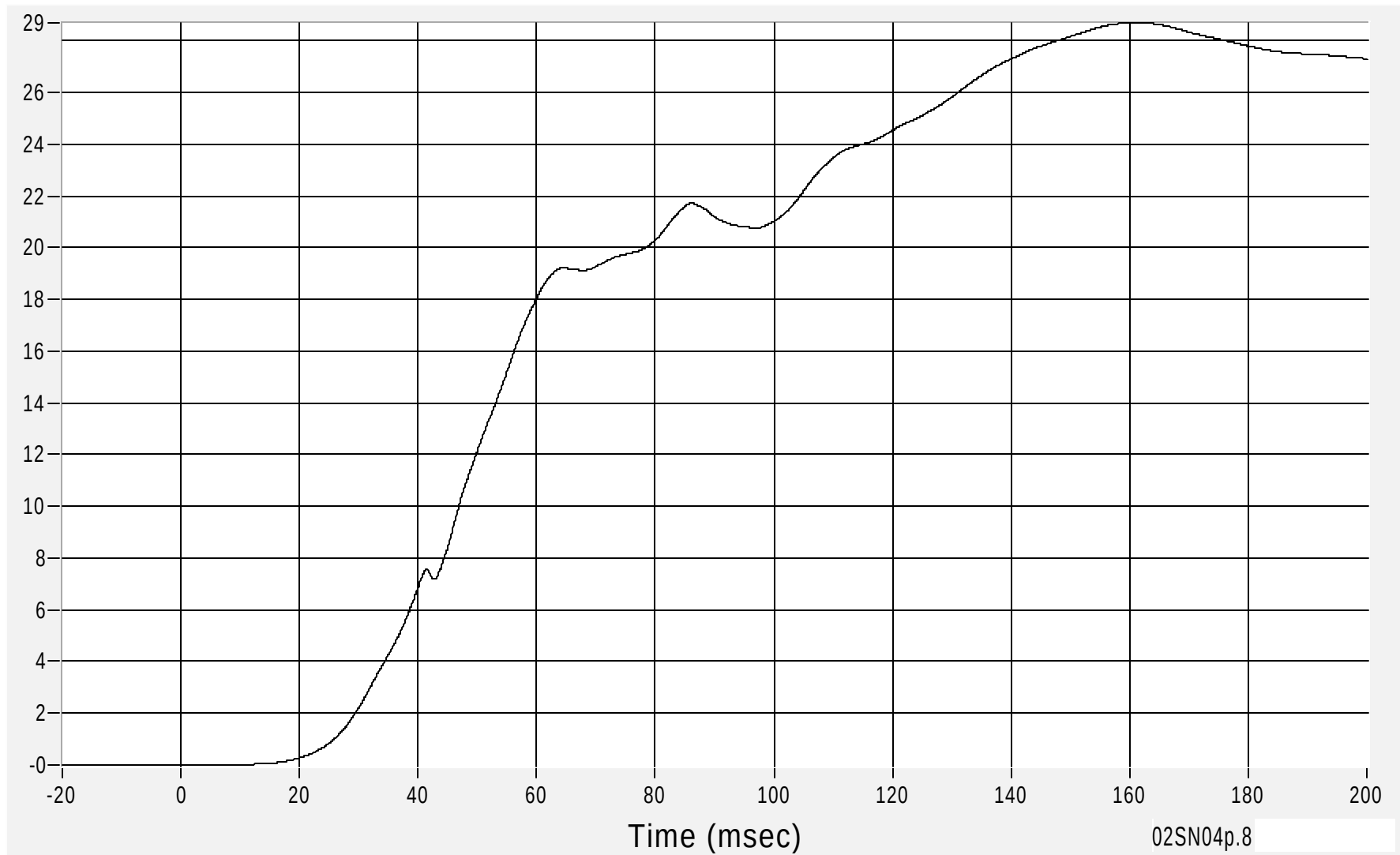
Passenger Lower Spine (Y) Velocity

Max 28.7 km/h at 160.4 msec

Min 0.0 km/h at 7.6 msec

Velocity (km/h) CFC180

B-33



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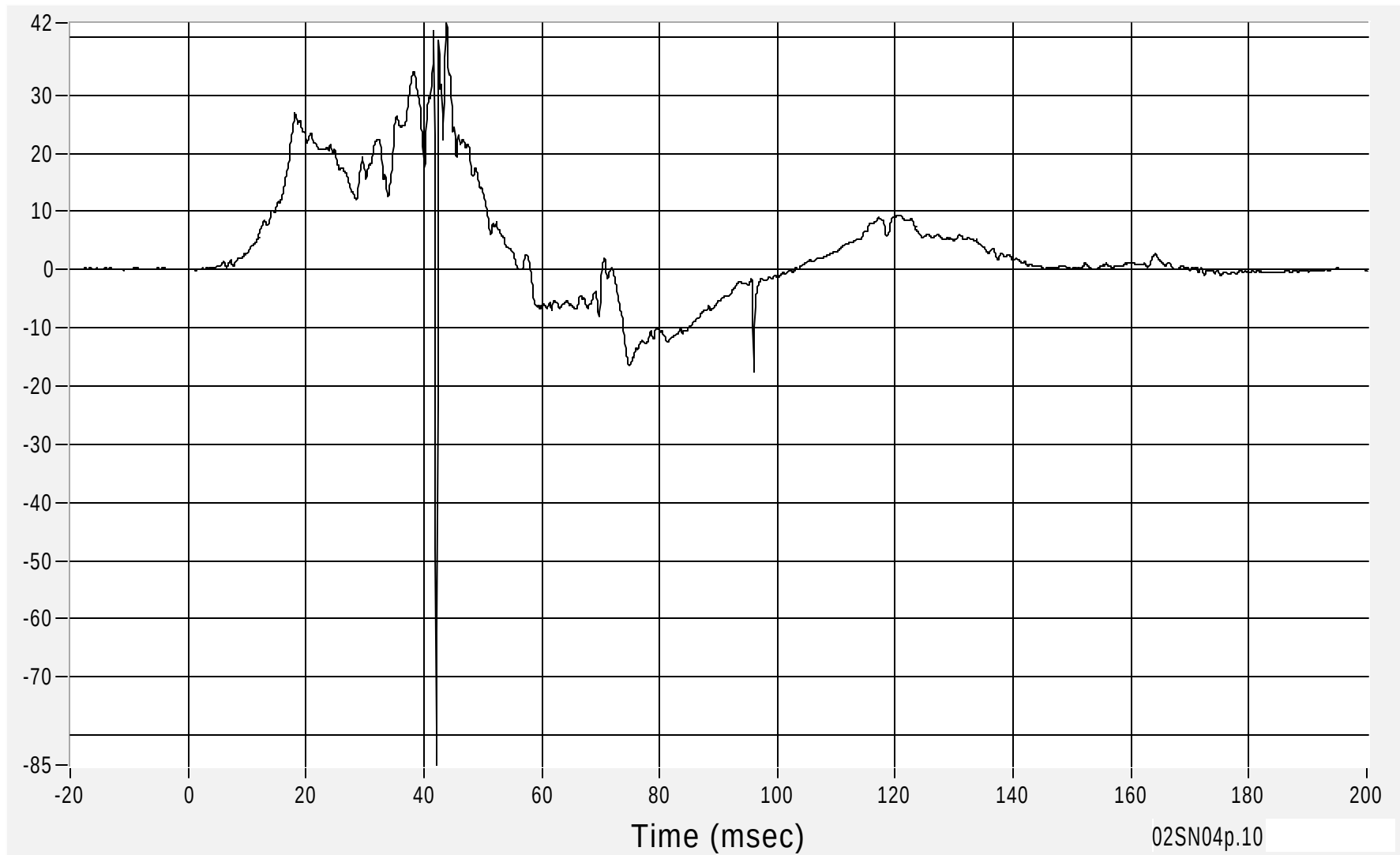
Passenger Pelvic (Y) Acceleration

Max 42.4 G's at 43.8 msec

Acceleration (G's) CFC1000

Min -85.1 G's at 42.2 msec

B-34



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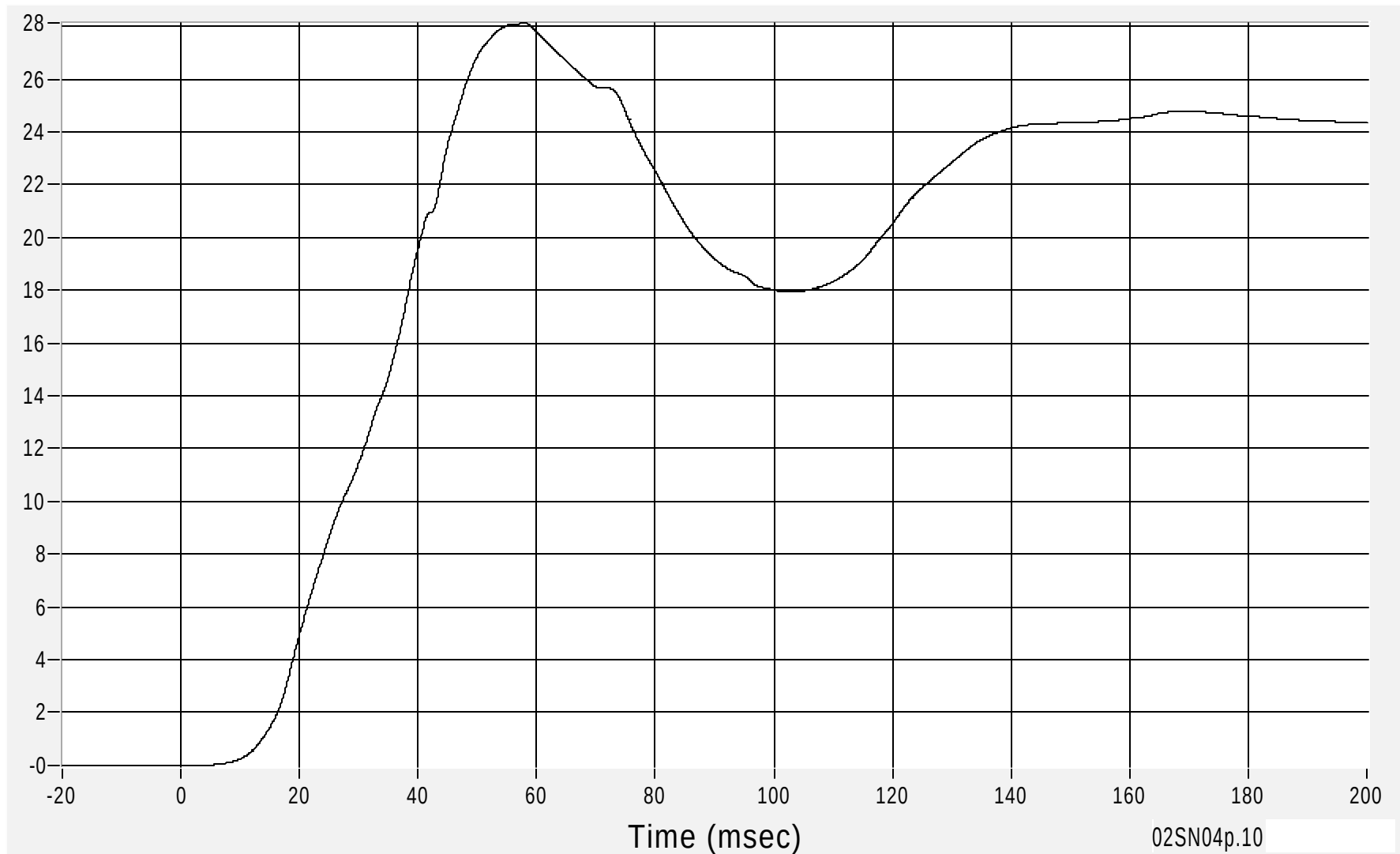
Passenger Pelvic (Y) Velocity

Max 28.1 km/h at 57.8 msec

Velocity (km/h) CFC180

Min 0.0 km/h at 2.2 msec

B-35



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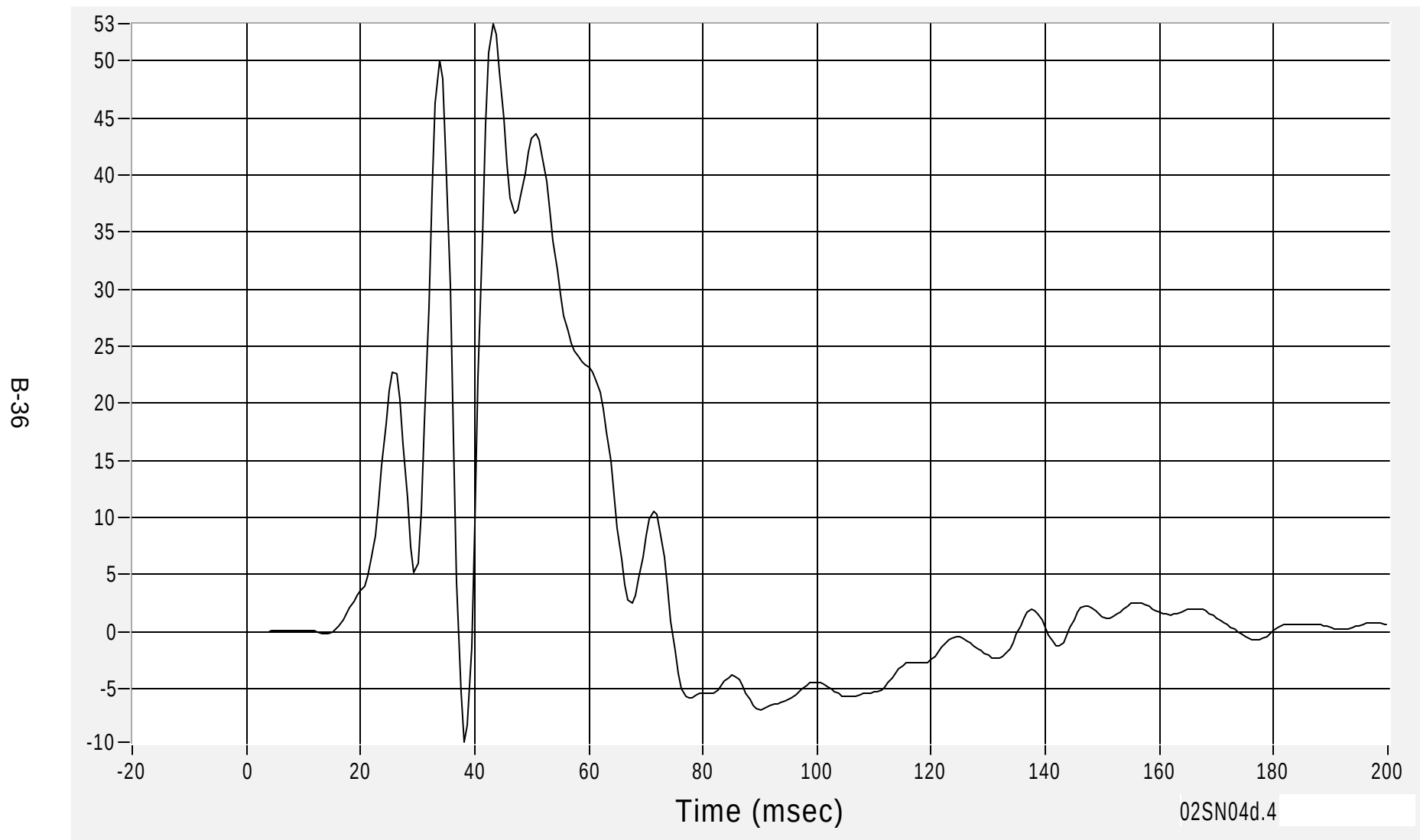
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Driver Upper Rib (Y) Acceleration

Max 53.3 G's at 43.1 msec

Acceleration (G's) FIR100

Min -9.7 G's at 38.1 msec



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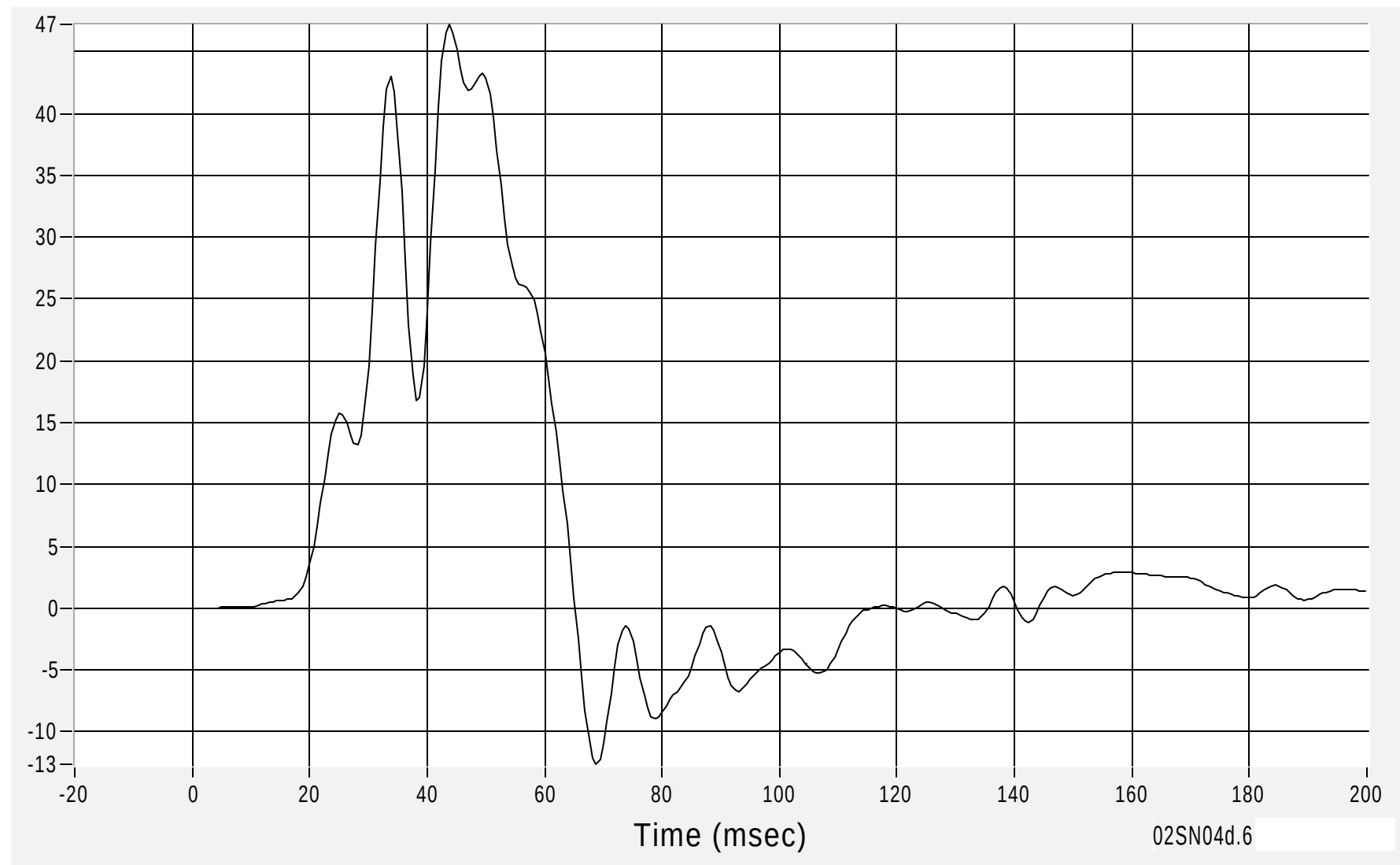
Driver Lower Rib (Y) Acceleration

Max 47.2 G's at 43.8 msec

Acceleration (G's) FIR100

Min -12.6 G's at 68.8 msec

B-37



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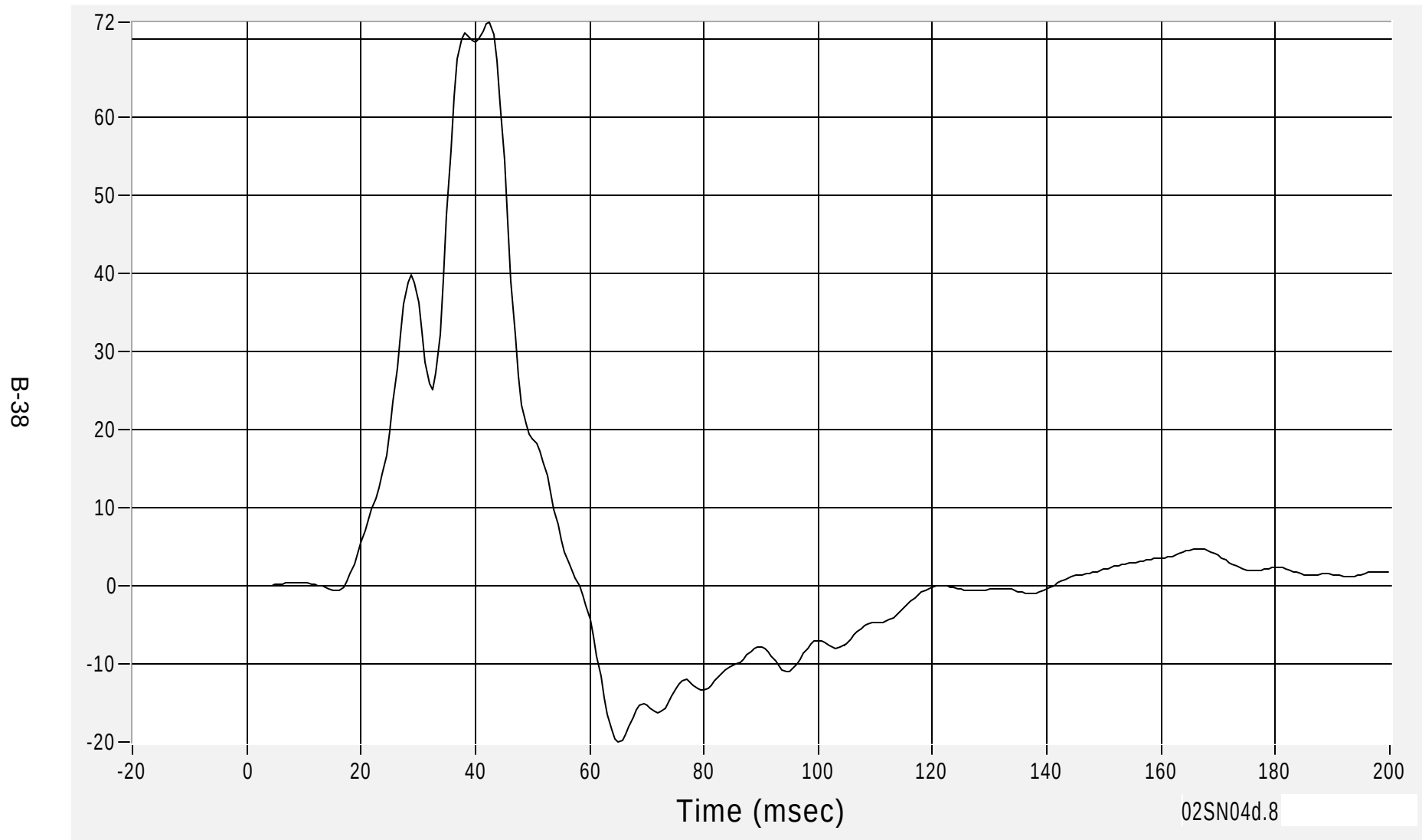
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Driver Lower Spine (Y) Acceleration

Max 72.1 G's at 42.5 msec

Acceleration (G's) FIR100

Min -19.9 G's at 65.0 msec



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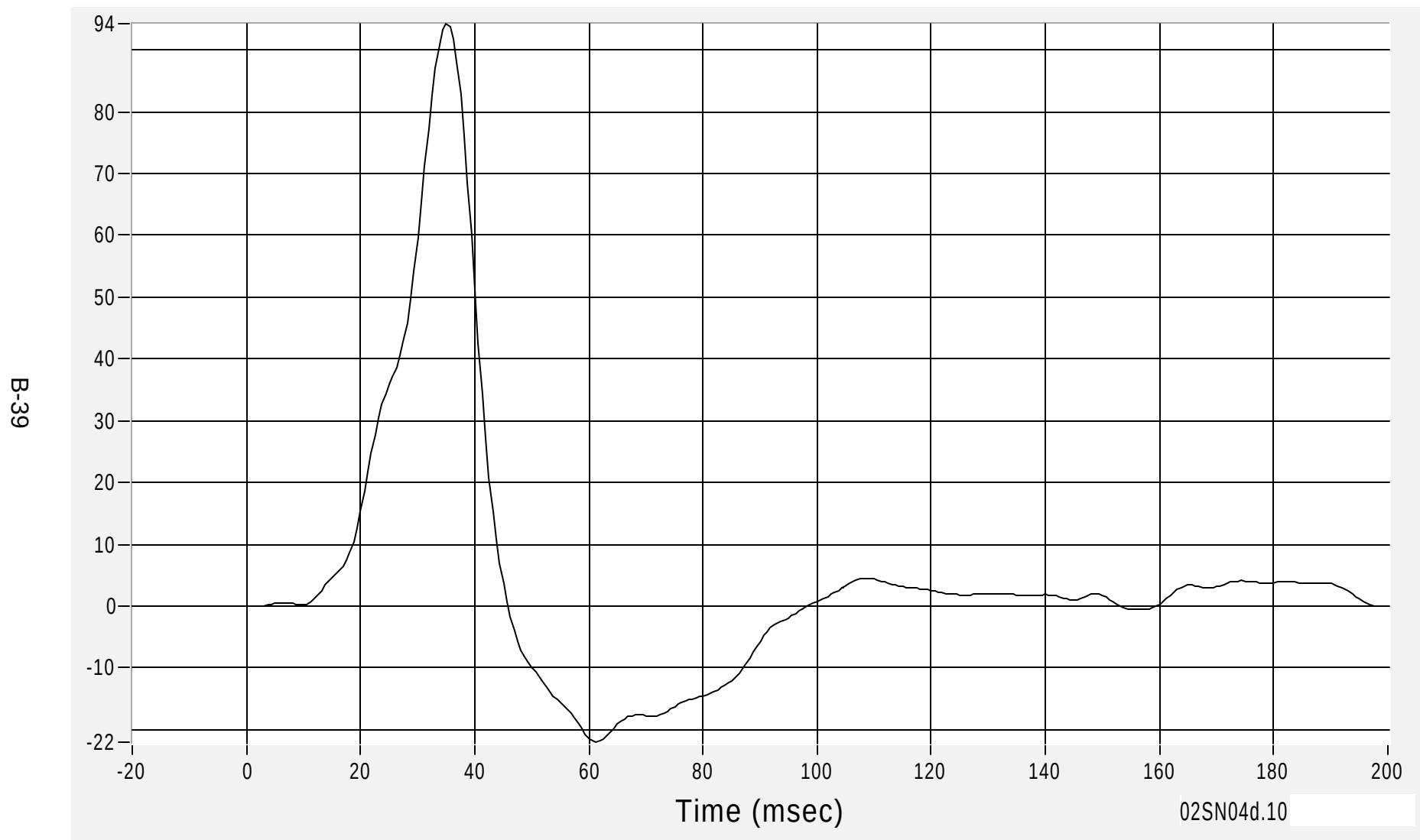
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Driver Pelvic (Y) Acceleration

Max 94.3 G's at 35.0 msec

Acceleration (G's) FIR100

Min -22.0 G's at 61.2 msec



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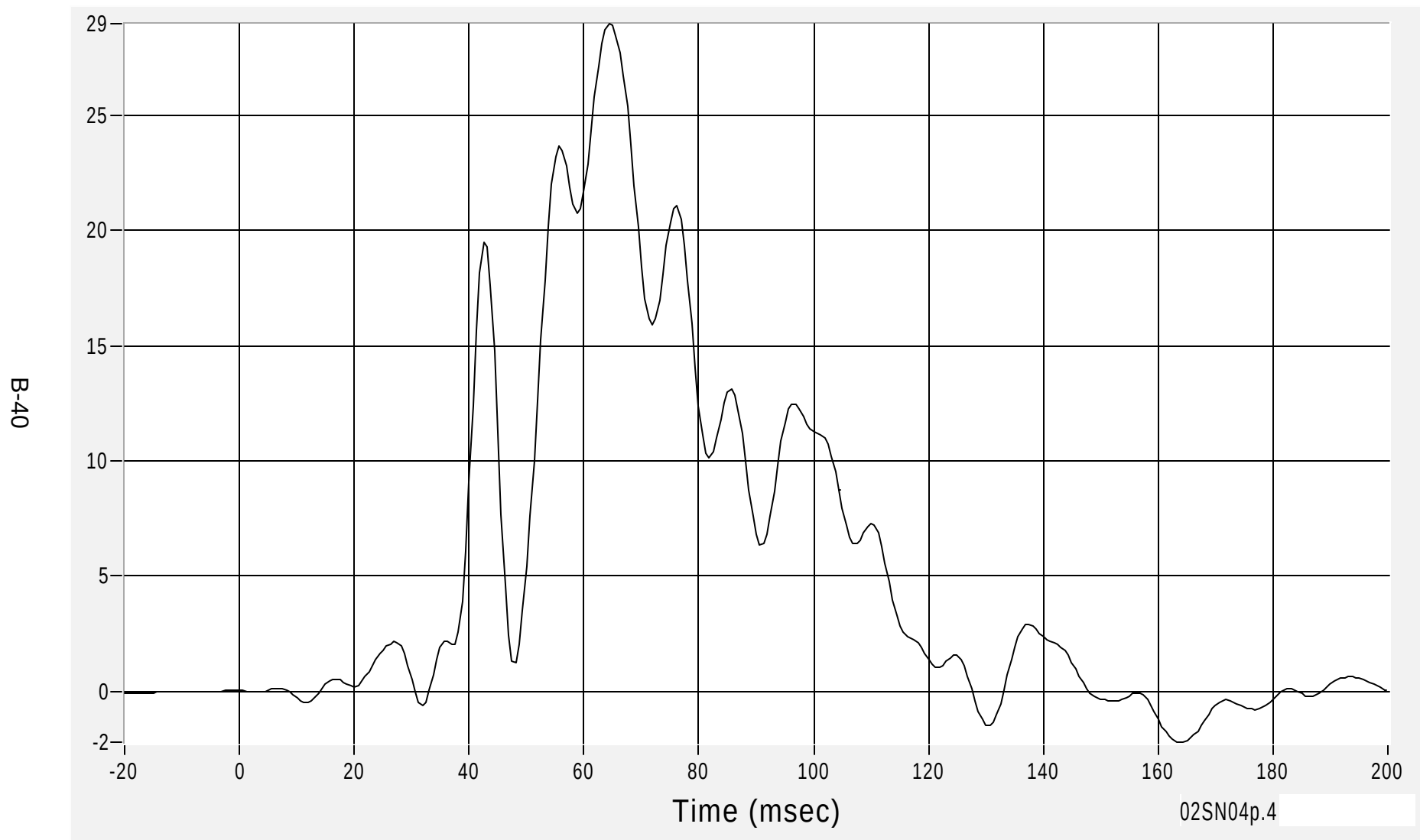
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Passenger Upper Rib (Y) Acceleration

Max 29.0 G's at 64.4 msec

Acceleration (G's) FIR100

Min -2.2 G's at 163.8 msec



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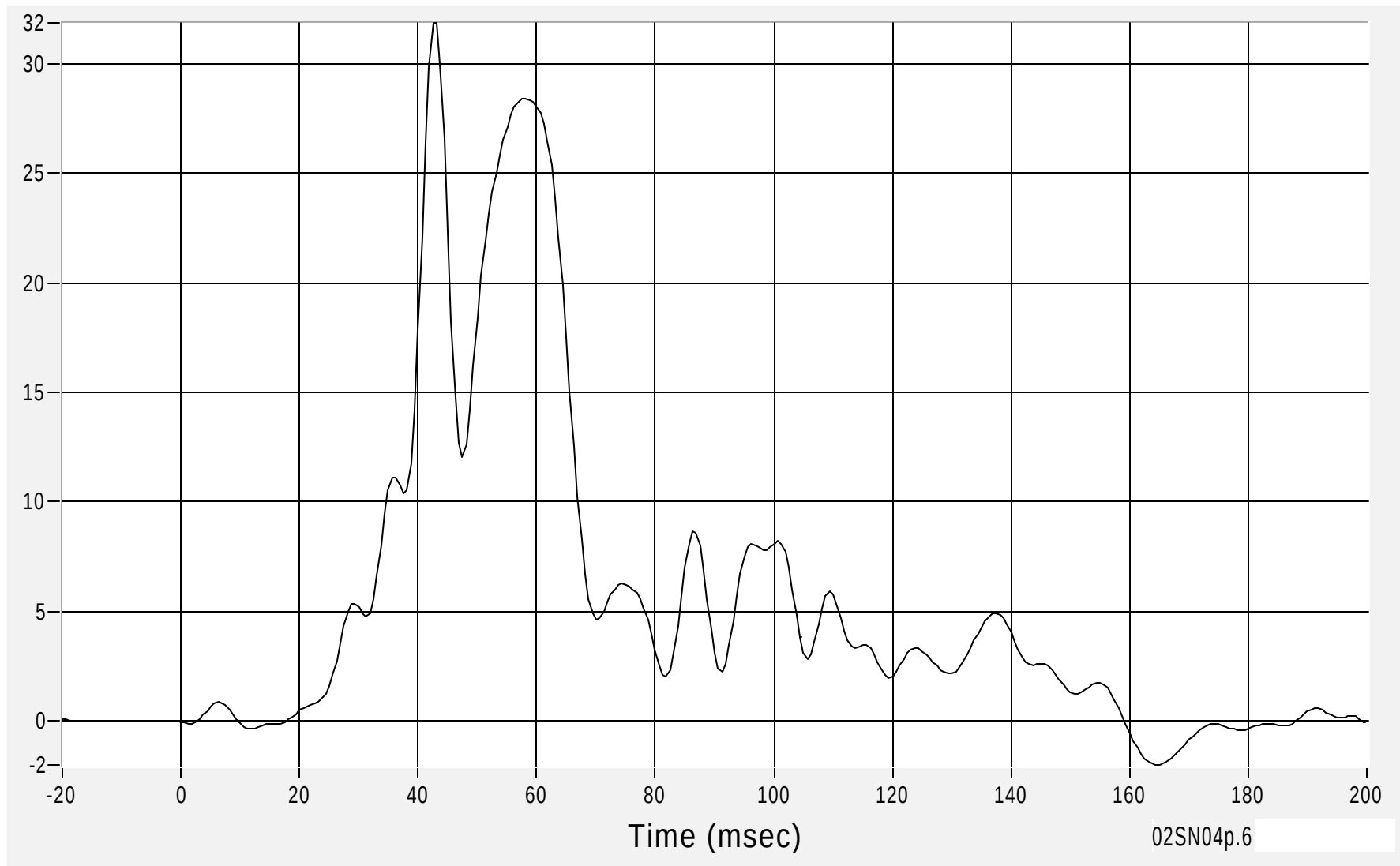
Passenger Lower Rib (Y) Acceleration

Max 31.9 G's at 43.1 msec

Acceleration (G's) FIR100

Min -2.0 G's at 164.4 msec

B-41



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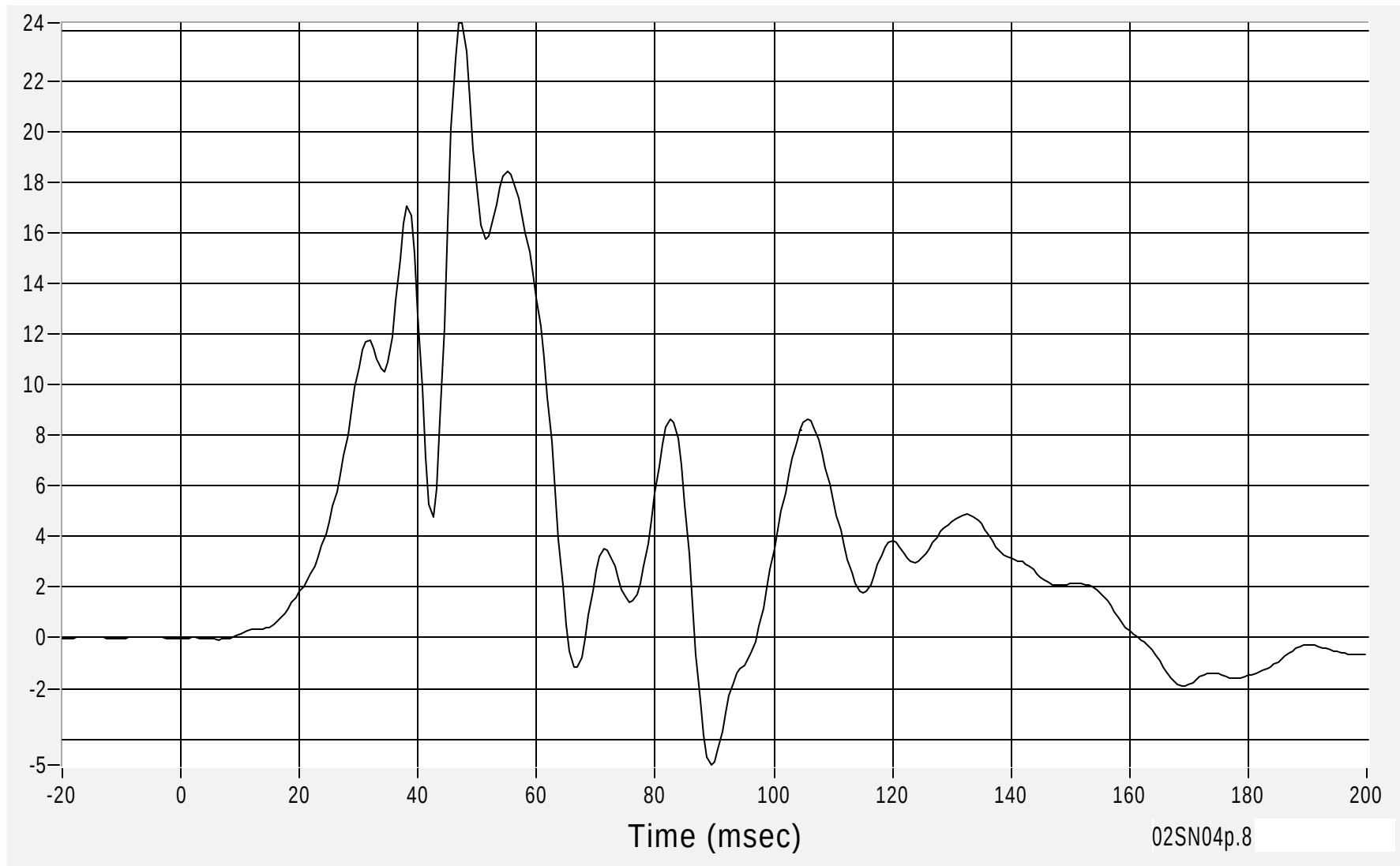
Passenger Lower Spine (Y) Acceleration

Max 24.3 G's at 47.5 msec

Acceleration (G's) FIR100

Min -5.0 G's at 89.4 msec

B-42



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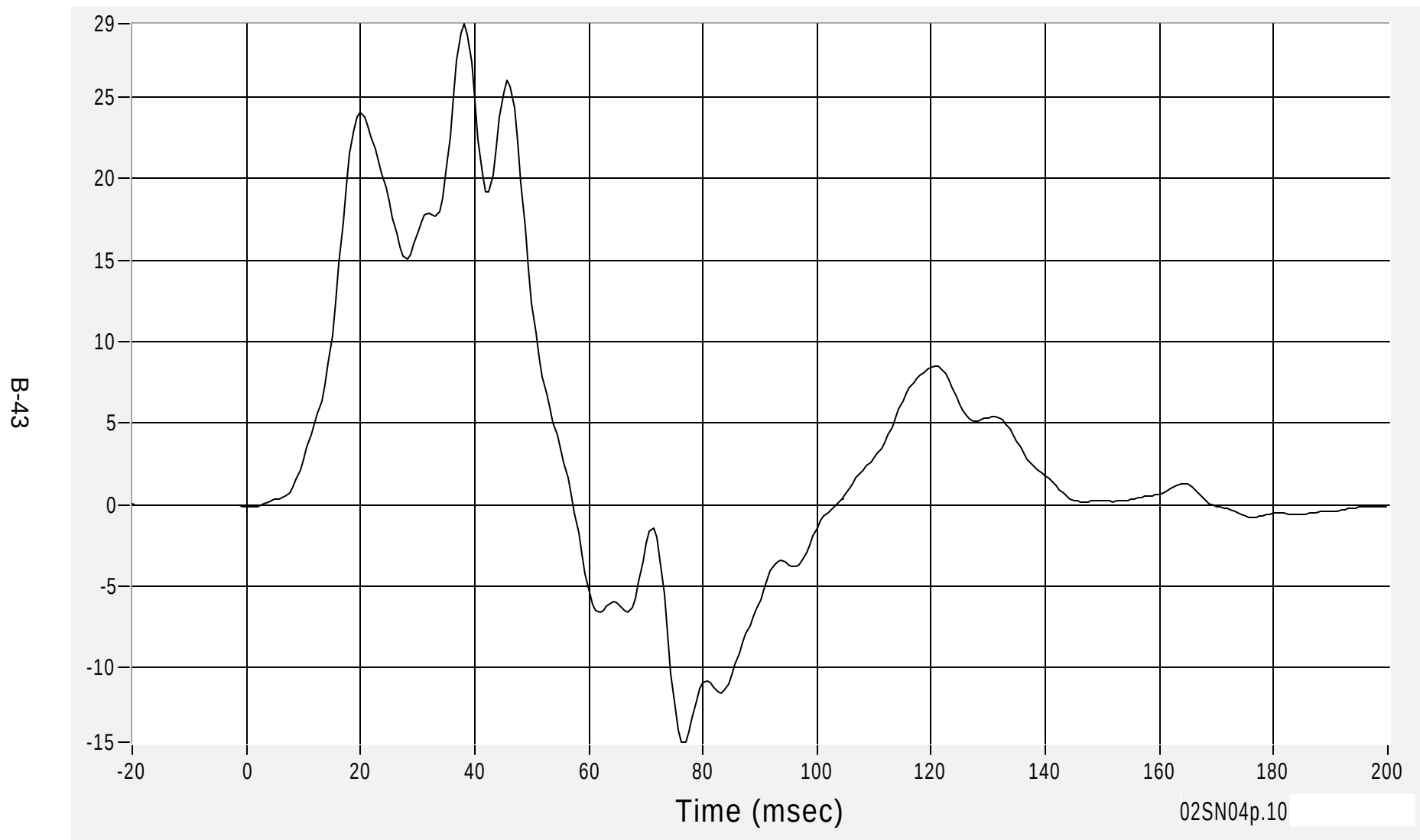
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Passenger Pelvic (Y) Acceleration

Max 29.5 G's at 38.1 msec

Acceleration (G's) FIR100

Min -14.6 G's at 76.2 msec



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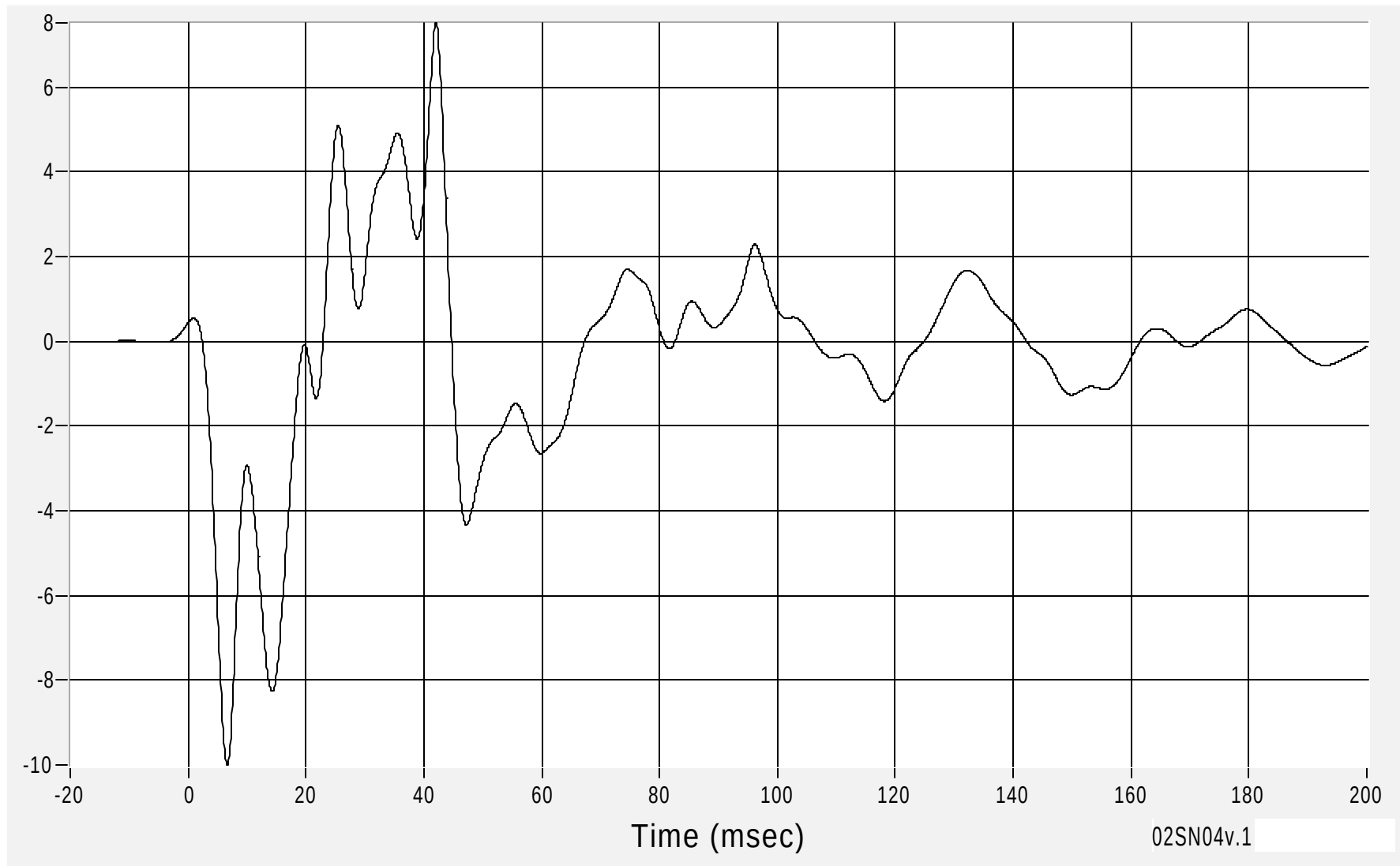
Right Side Sill at Front Seat (X) Acceleration

Max 7.5 G's at 42.1 msec

Acceleration (G's) CFC60

Min -10.0 G's at 6.6 msec

B-44



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27 March 2002

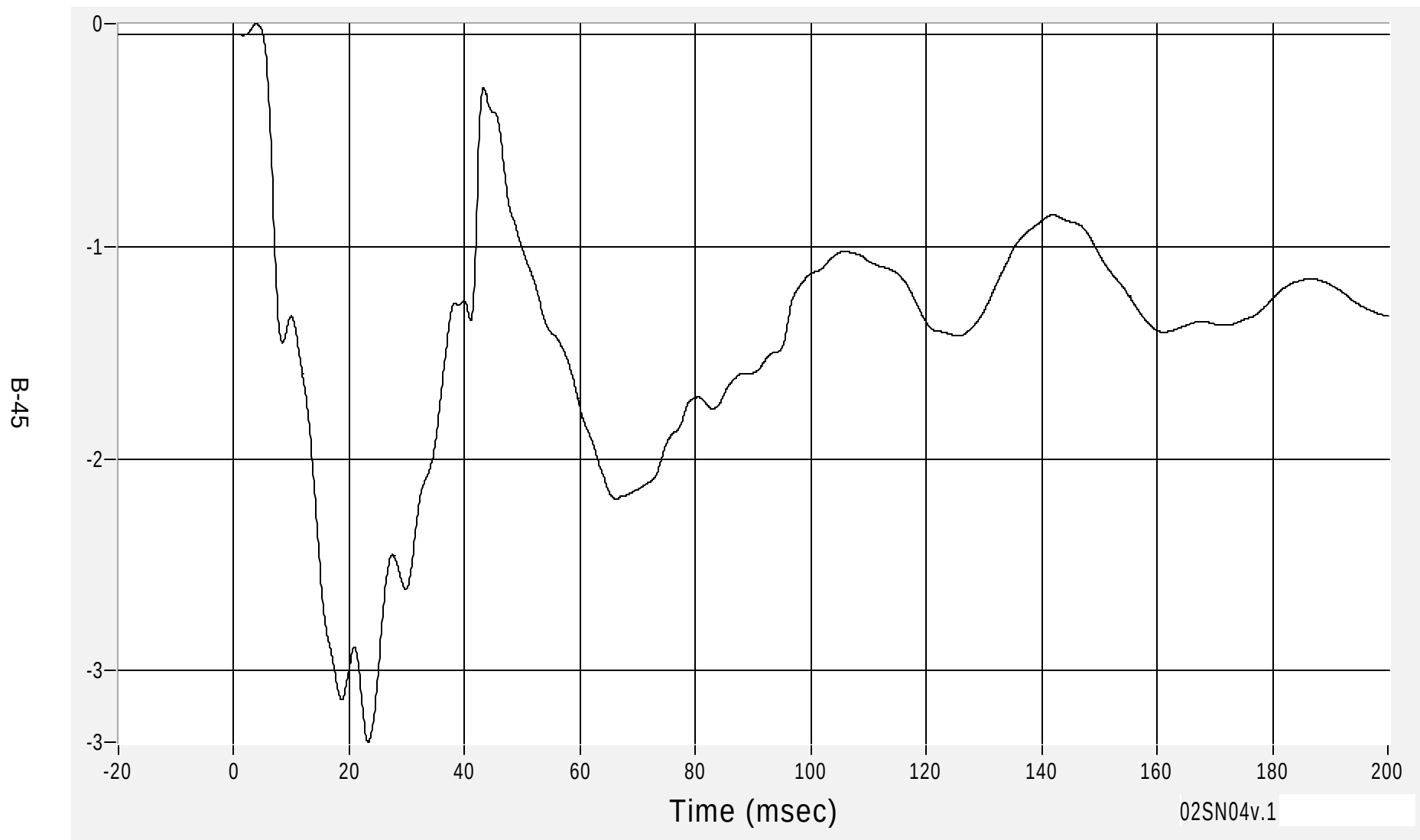
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Right Side Sill at Front Seat (X) Velocity

Max 0.1 km/h at 3.9 msec

Min -3.3 km/h at 23.3 msec

Velocity (km/h) CFC180



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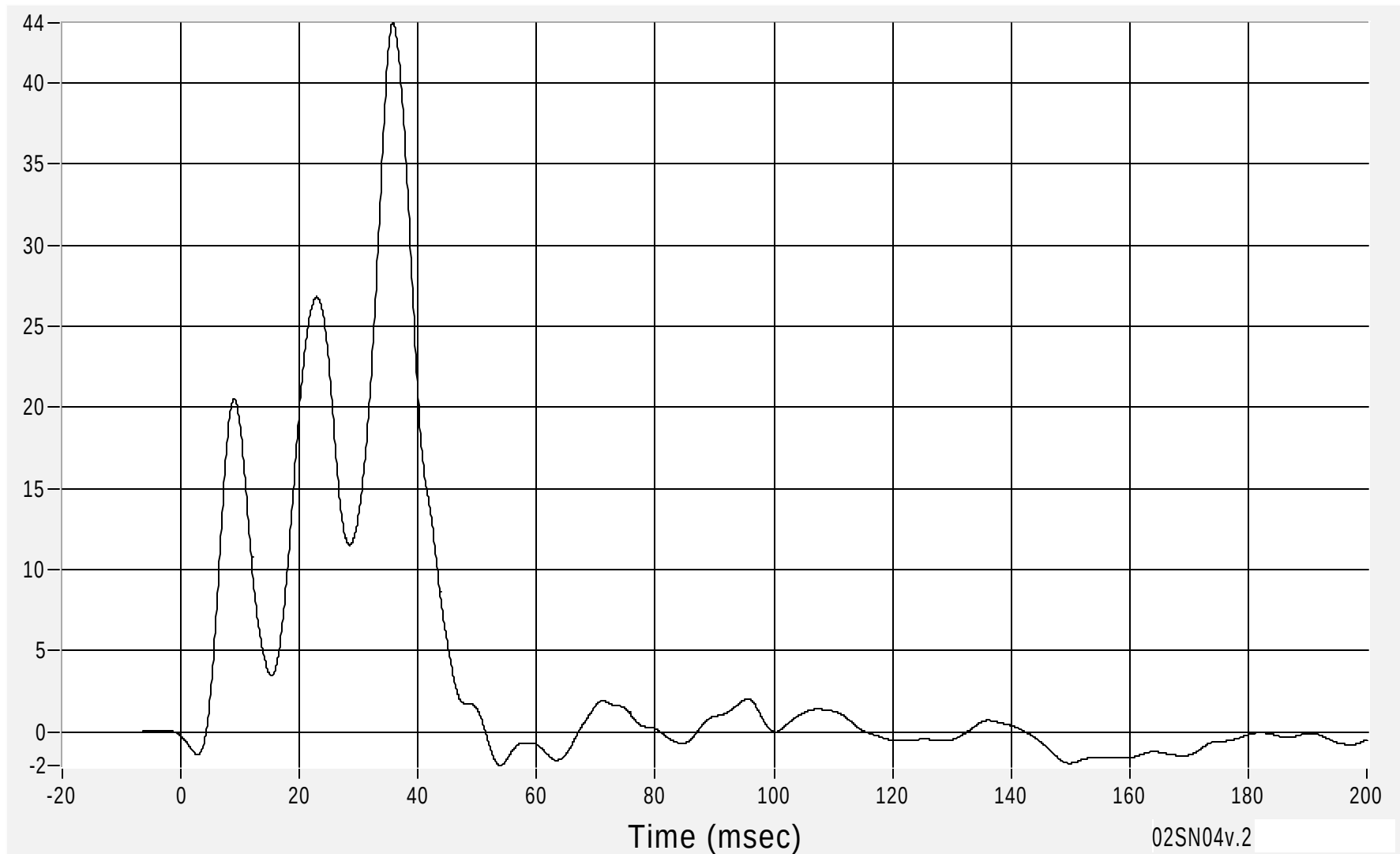
Right Side Sill at Front Seat (Y) Acceleration

Max 43.7 G's at 35.8 msec

Acceleration (G's) CFC60

Min -2.1 G's at 53.8 msec

B-46



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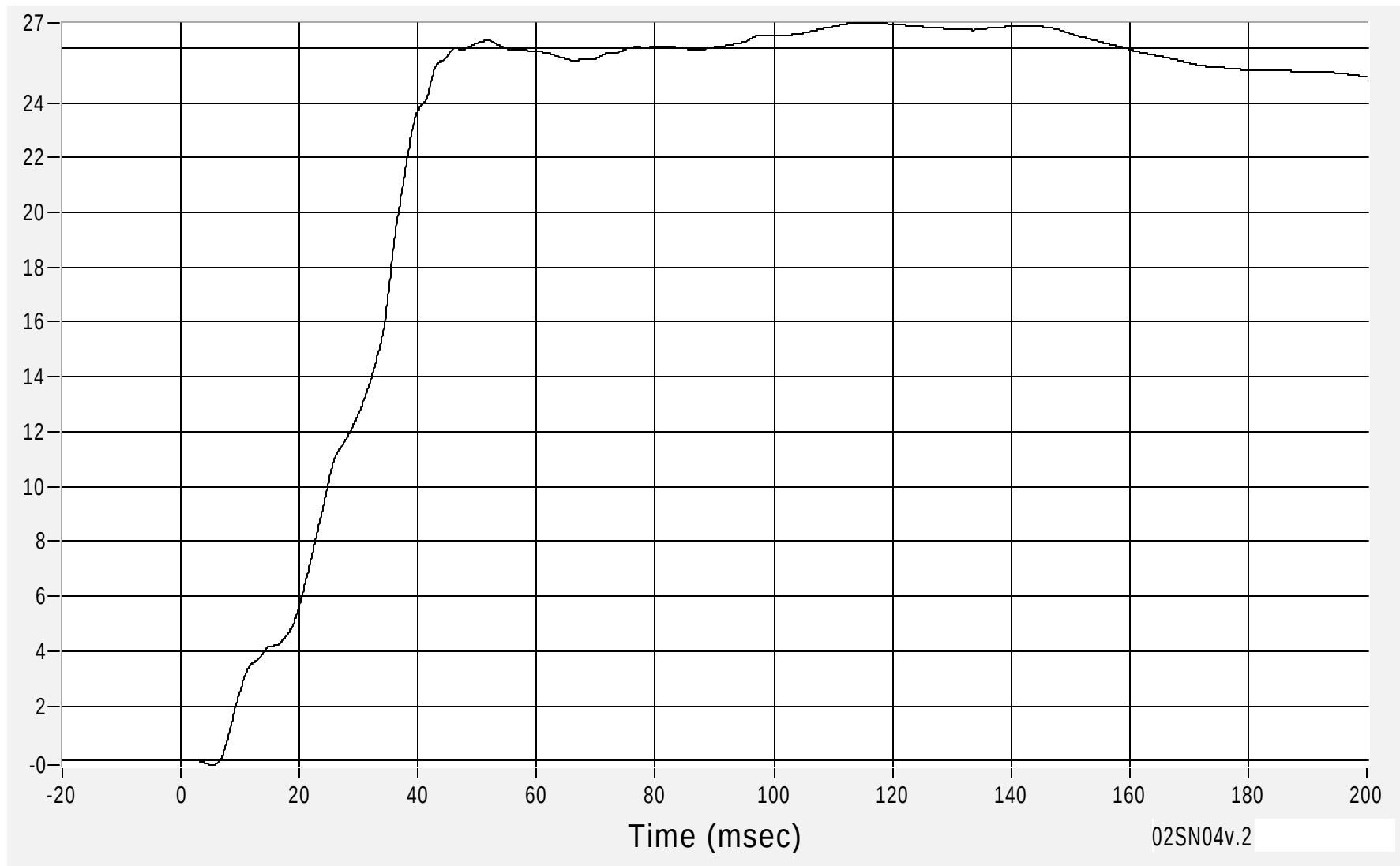
Right Side Sill at Front Seat (Y) Velocity

Velocity (km/h) CFC180

Max 26.9 km/h at 114.4 msec

Min -0.2 km/h at 5.3 msec

B-47



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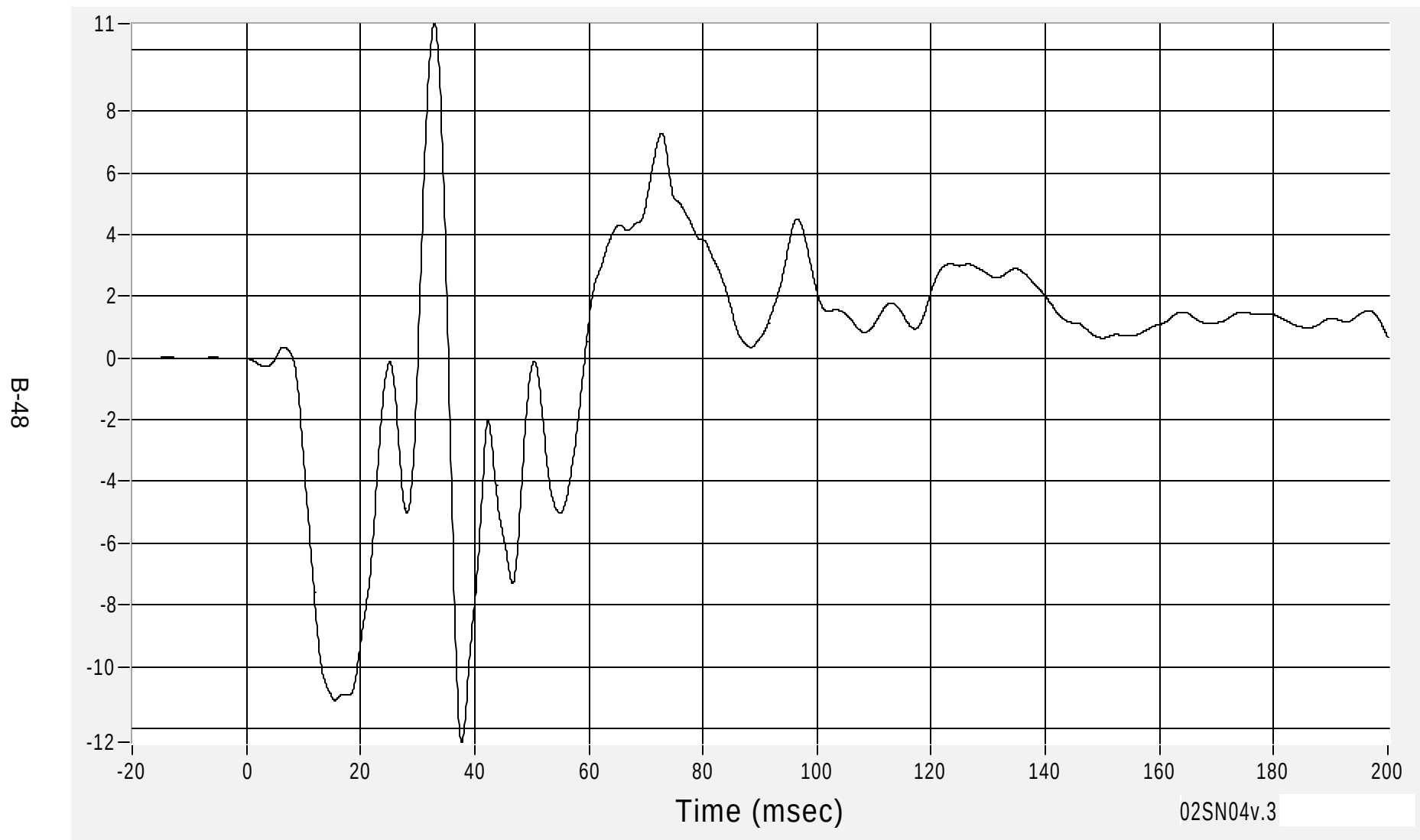
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Right Side Sill at Front Seat (Z) Acceleration

Max 10.8 G's at 33.0 msec

Min -12.5 G's at 37.8 msec

Acceleration (G's) CFC60



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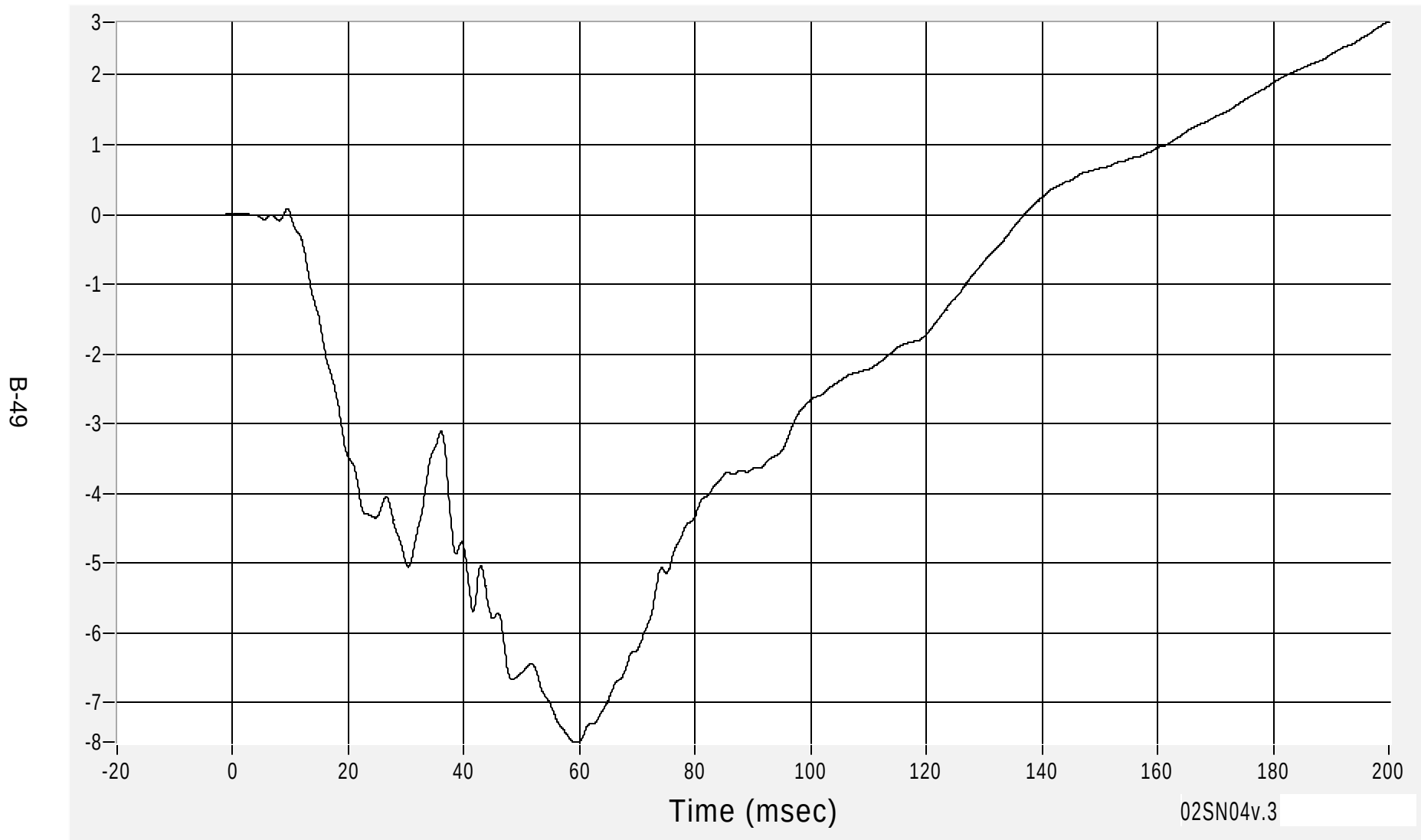
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Right Side Sill at Front Seat (Z) Velocity

Max 2.8 km/h at 199.9 msec

Min -7.6 km/h at 59.3 msec

Velocity (km/h) CFC180



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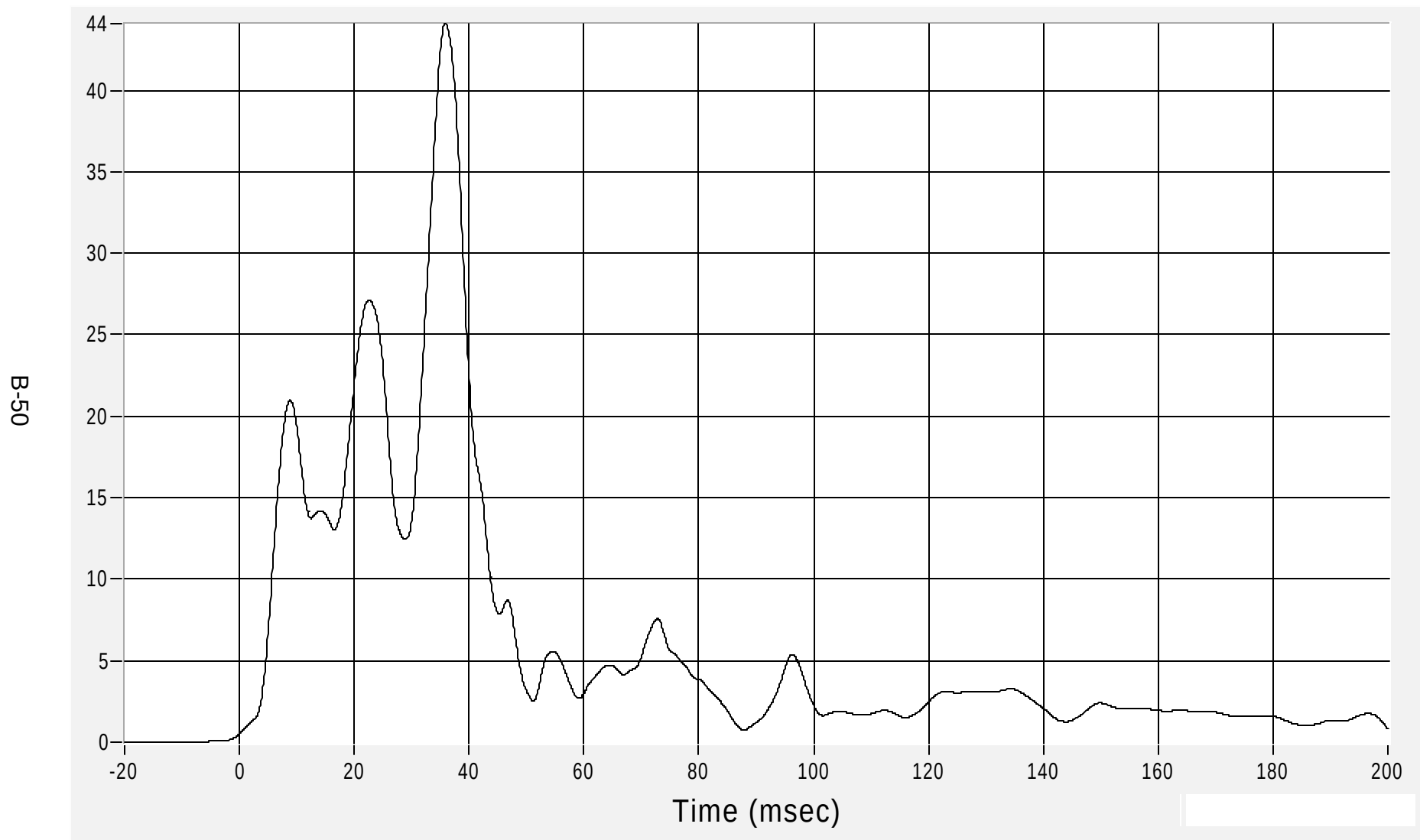
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Right Side Sill at Front Seat Resultant Acceleration

Max 44.1 G's at 35.8 msec

Acceleration (G's) CFC60

Min 0.5 G's at 0.0 msec



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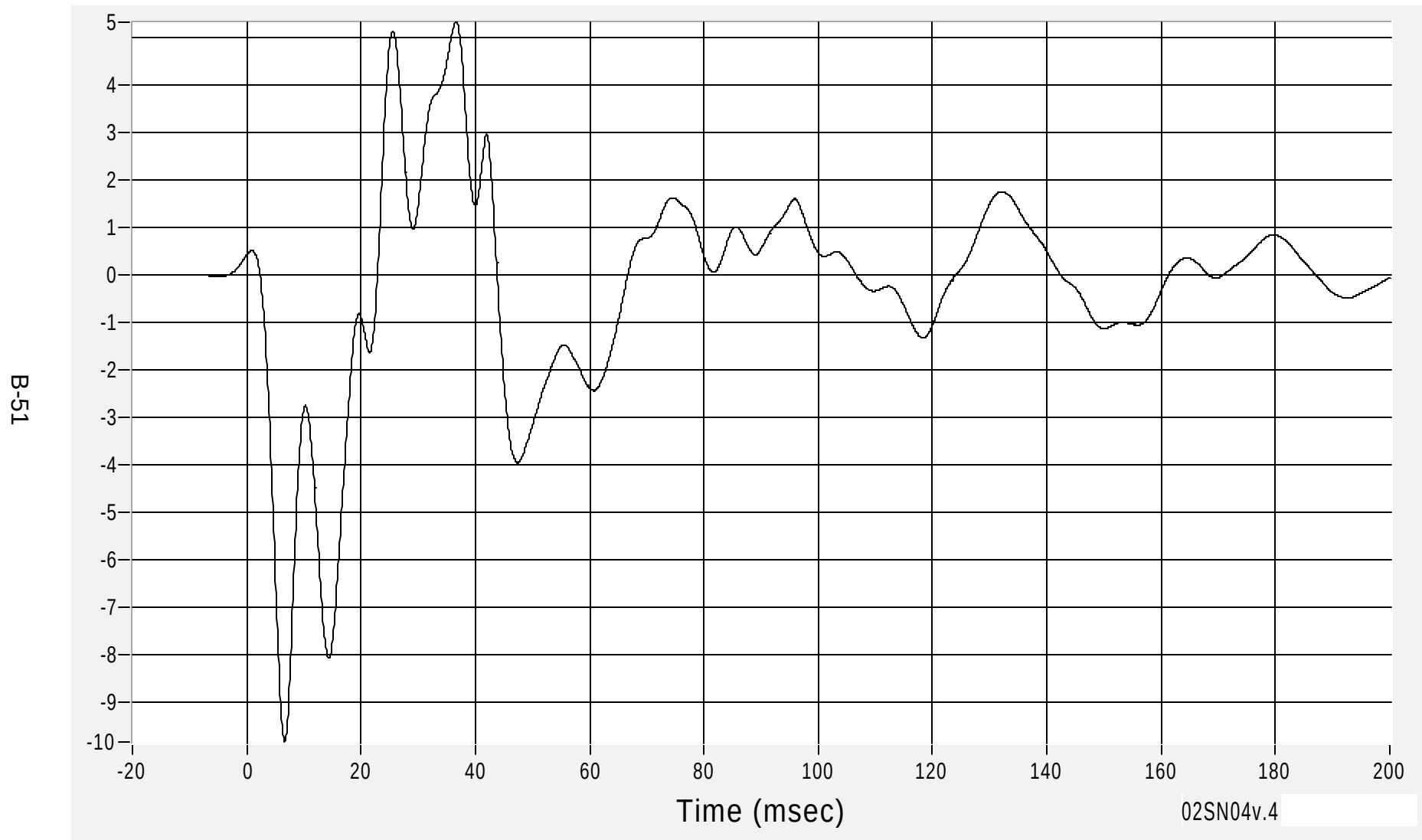
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Right Side Sill at Rear Seat (X) Acceleration

Max 5.3 G's at 36.6 msec

Min -9.8 G's at 6.6 msec

Acceleration (G's) CFC60



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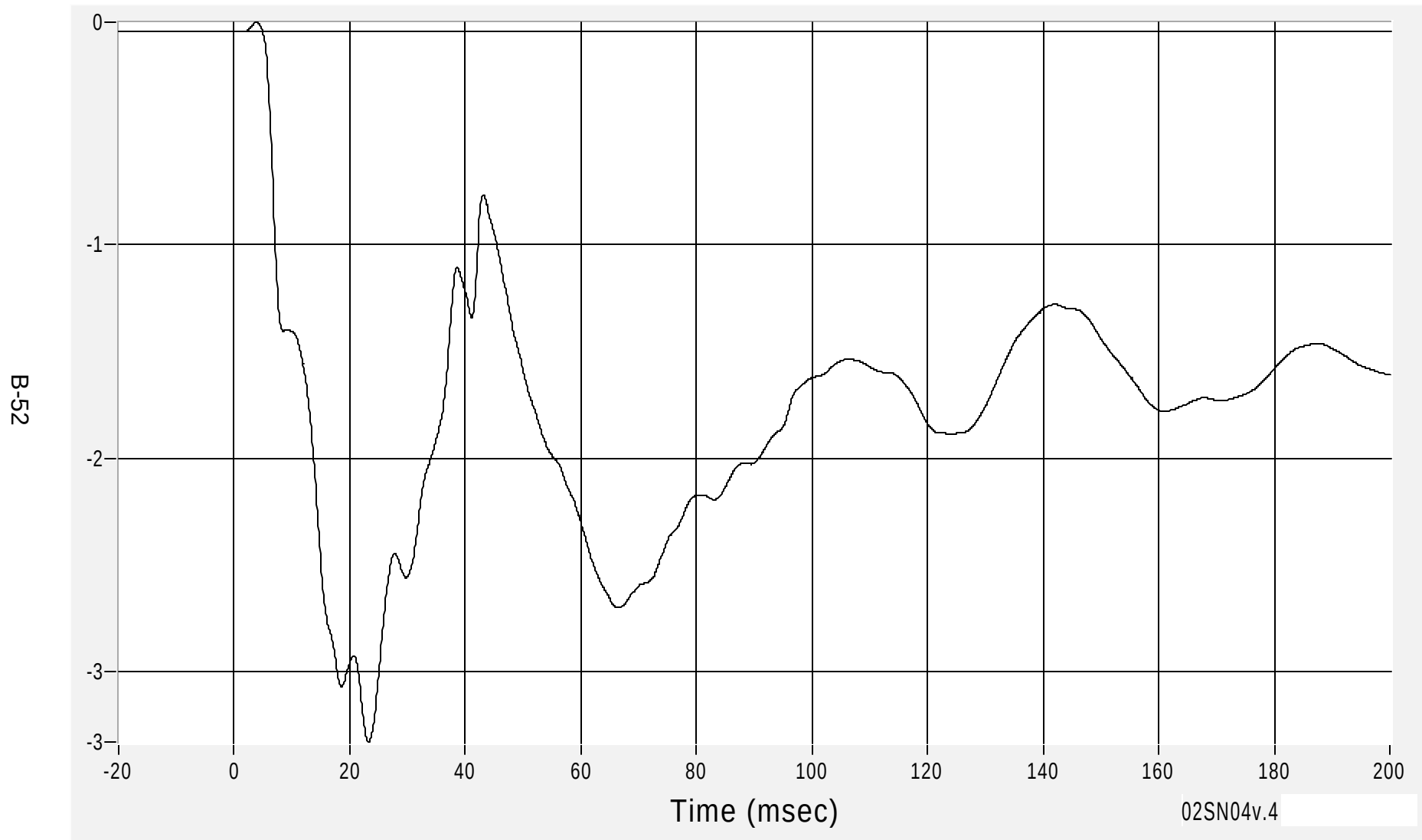
Medical College of Wisconsin
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Right Side Sill at Rear Seat (X) Velocity

Max 0.0 km/h at 3.8 msec

Min -3.3 km/h at 23.3 msec

Velocity (km/h) CFC180



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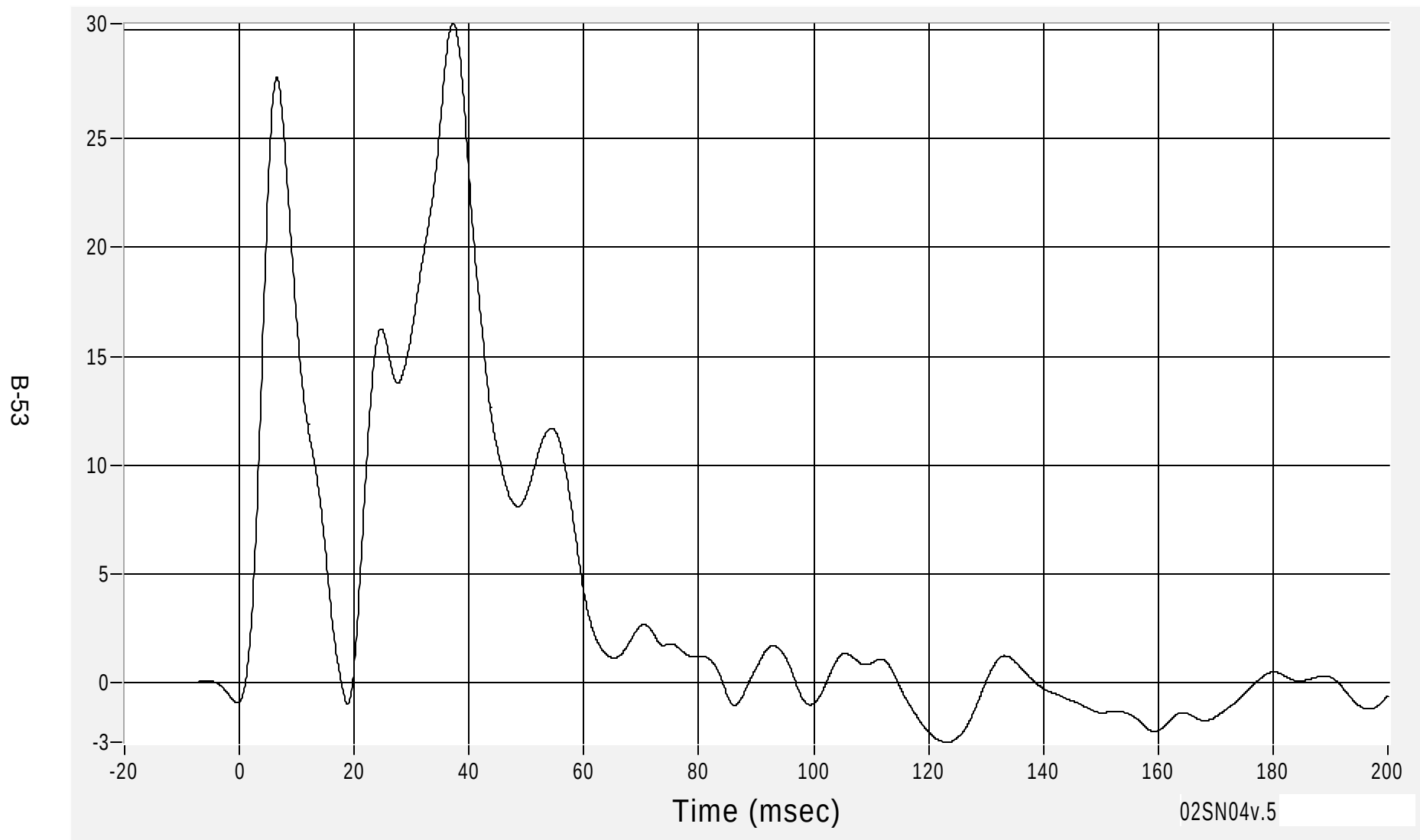
Medical College of Wisconsin
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Right Side Sill at Rear Seat (Y) Acceleration

Max 30.3 G's at 37.2 msec

Acceleration (G's) CFC60

Min -2.7 G's at 123.2 msec



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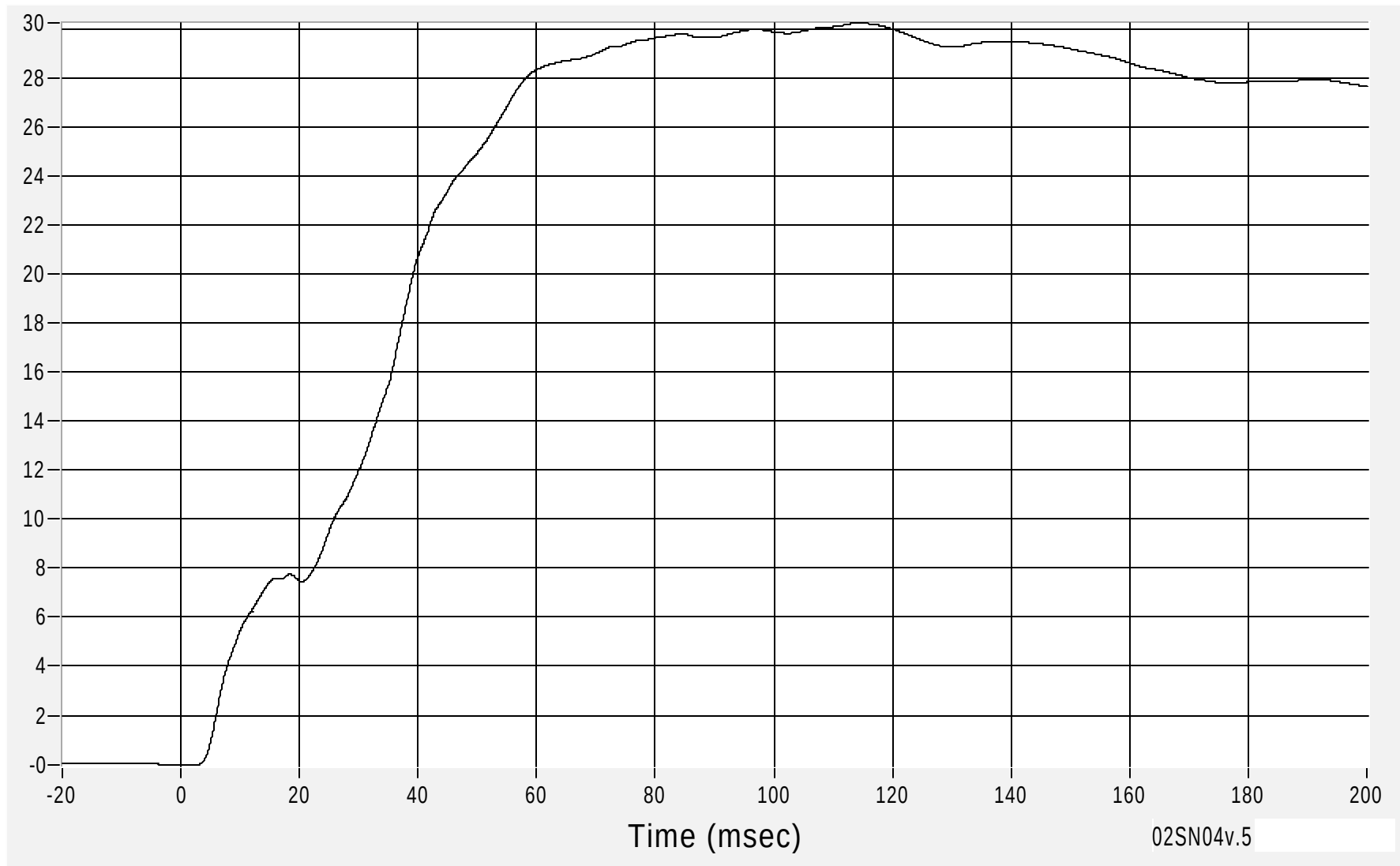
Right Side Sill at Rear Seat (Y) Velocity

Velocity (km/h) CFC180

Max 30.2 km/h at 114.3 msec

Min 0.0 km/h at 2.6 msec

B-54



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27 March 2002

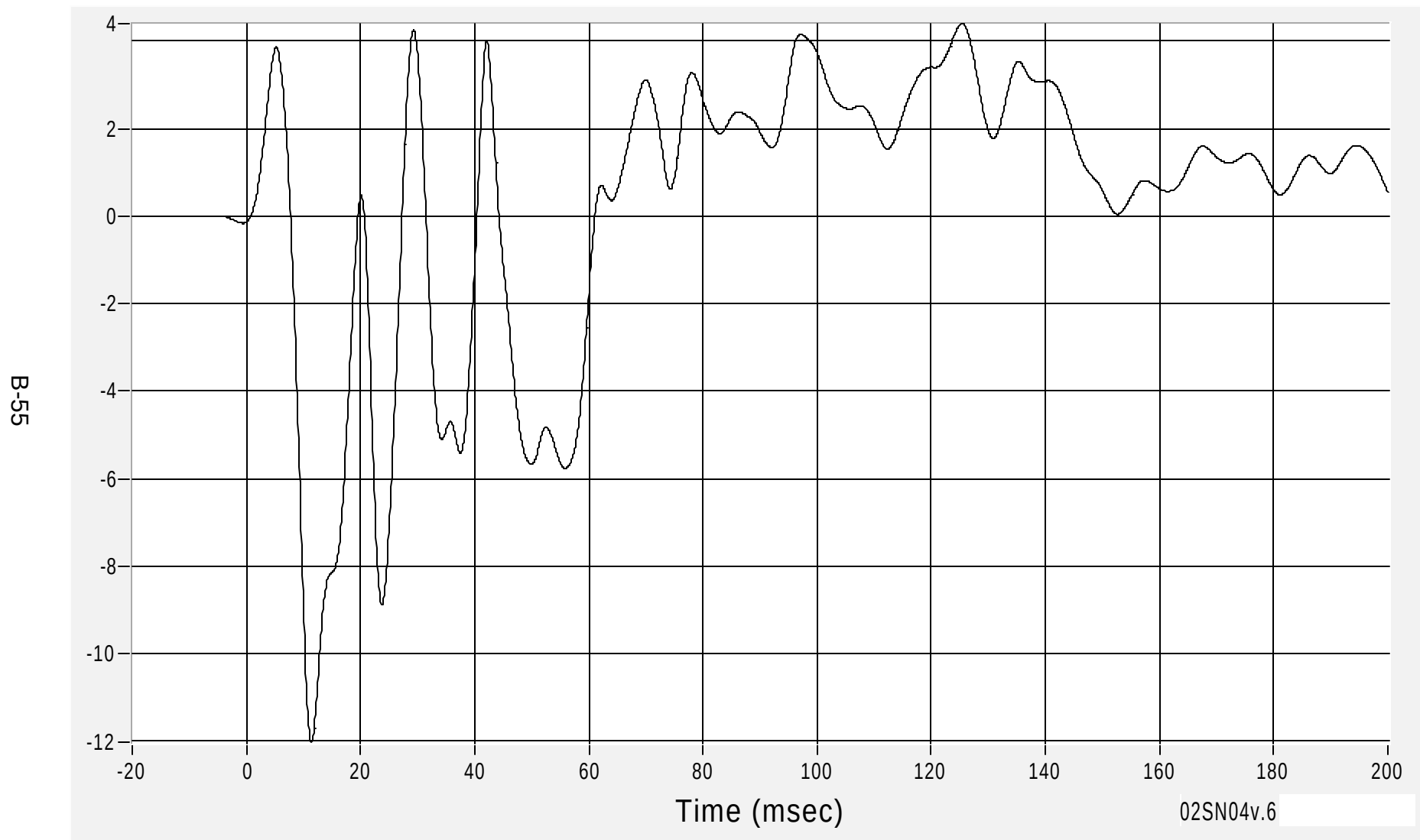
Medical College of Wisconsin
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Right Side Sill at Rear Seat (Z) Acceleration

Max 4.4 G's at 125.4 msec

Acceleration (G's) CFC60

Min -12.0 G's at 11.4 msec



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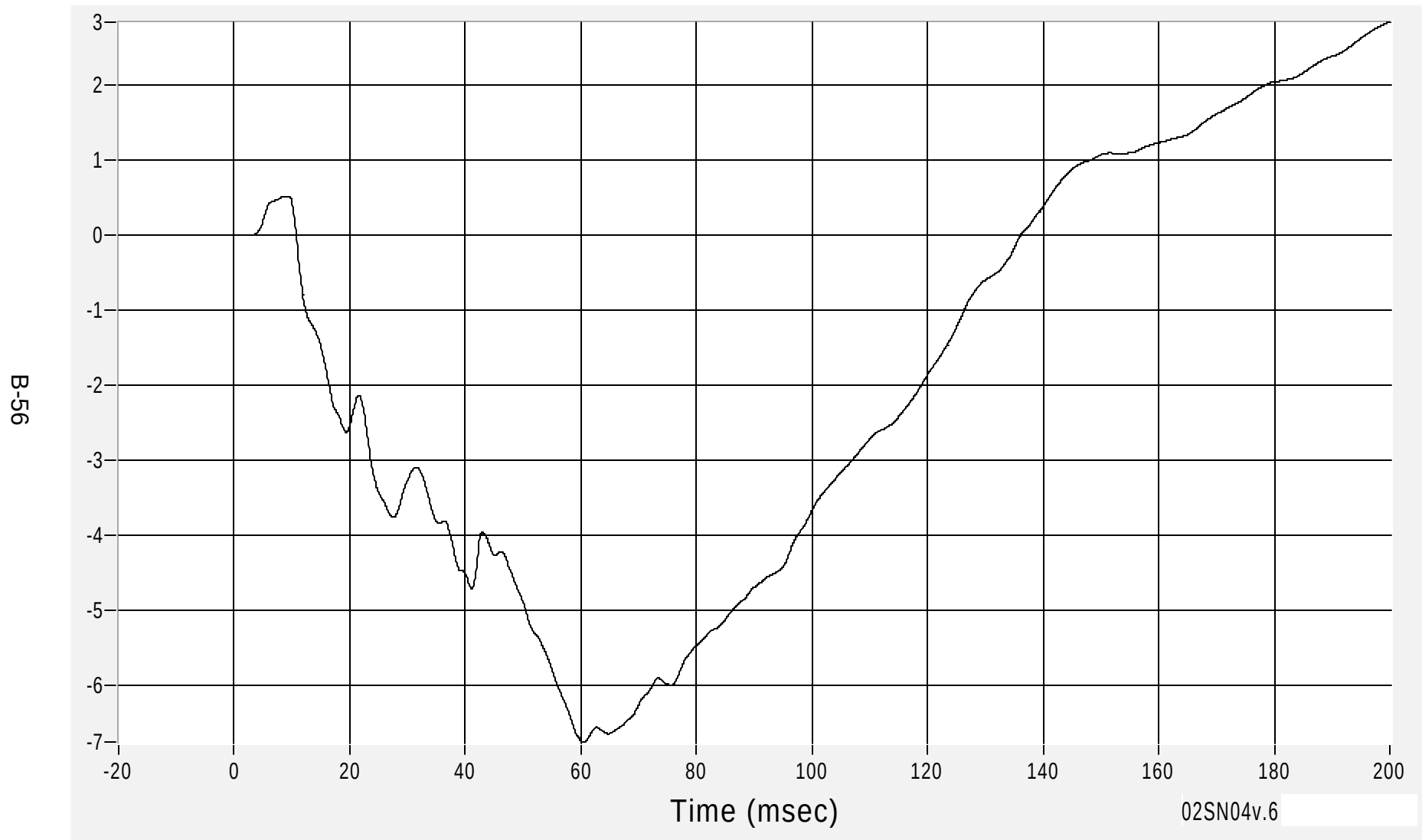
Medical College of Wisconsin
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Right Side Sill at Rear Seat (Z) Velocity

Max 2.8 km/h at 199.9 msec

Velocity (km/h) CFC180

Min -6.8 km/h at 60.5 msec



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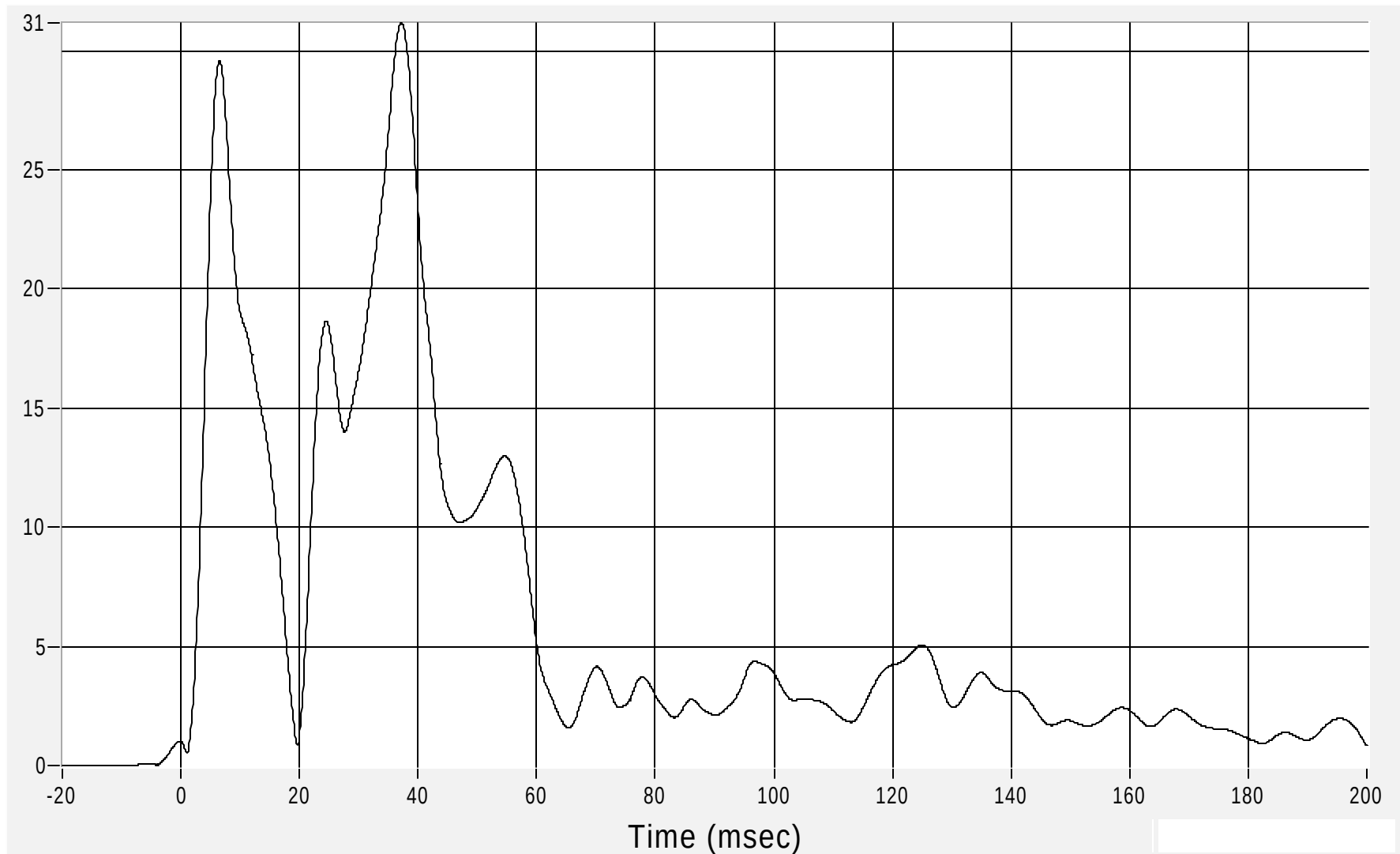
Right Side Sill at Rear Seat Resultant Acceleration

Max 31.2 G's at 37.2 msec

Acceleration (G's) CFC60

Min 0.5 G's at 1.0 msec

B-57



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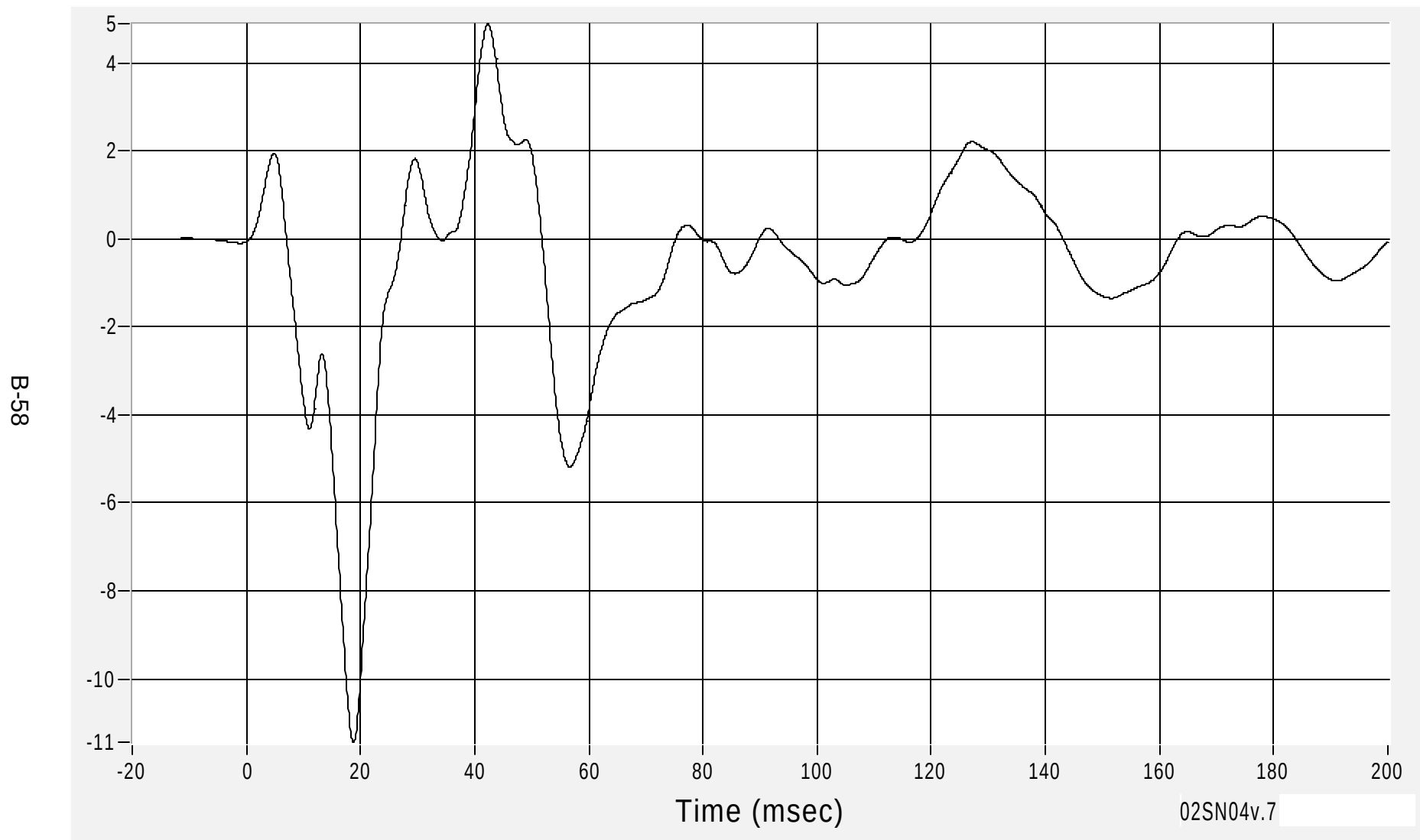
Medical College of Wisconsin
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Rear Floorpan Above Axle (X) Acceleration

Max 4.9 G's at 42.3 msec

Acceleration (G's) CFC60

Min -11.4 G's at 18.7 msec



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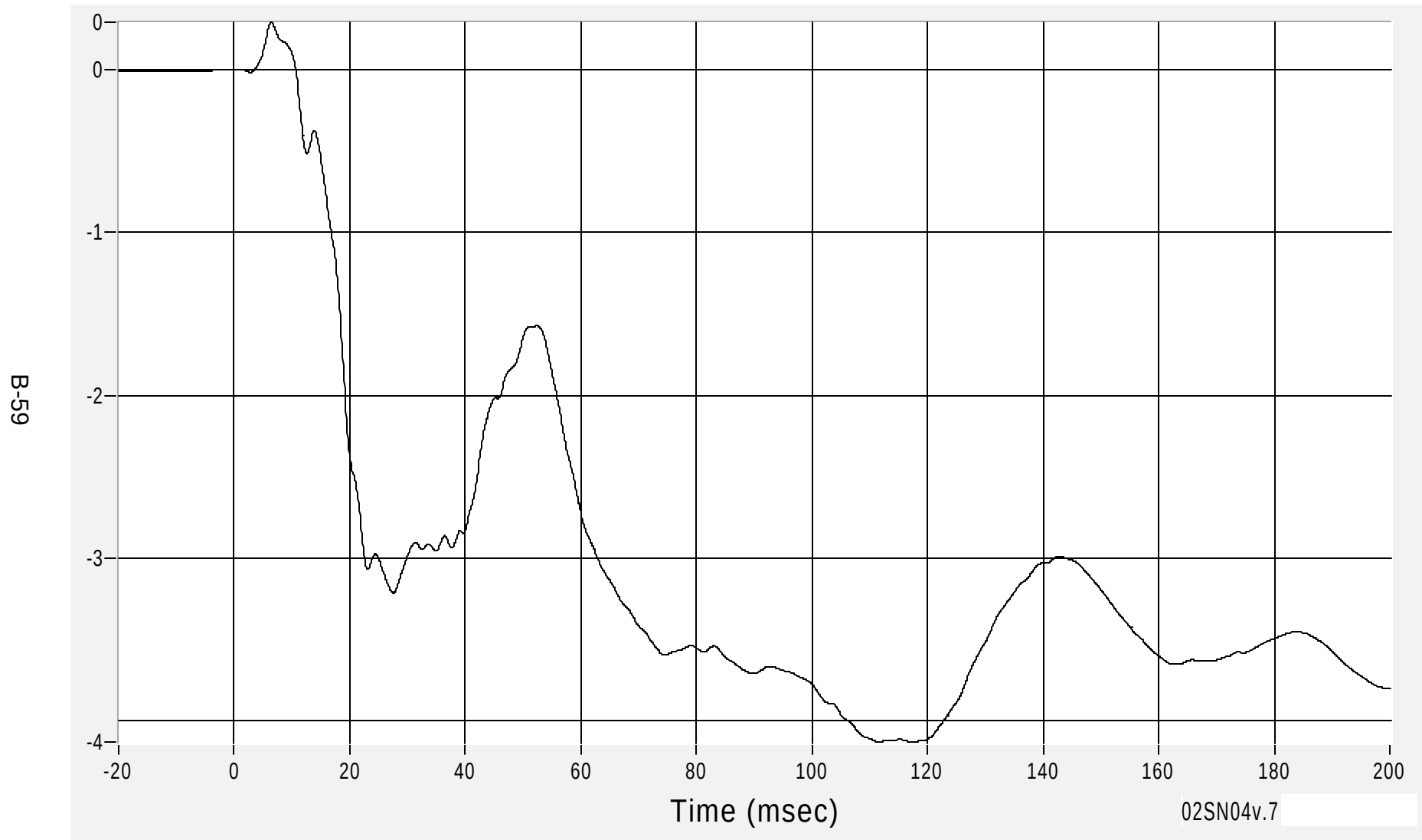
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Rear Floorpan Above Axle (X) Velocity

Max 0.3 km/h at 6.4 msec

Min -4.1 km/h at 117.6 msec

Velocity (km/h) CFC180



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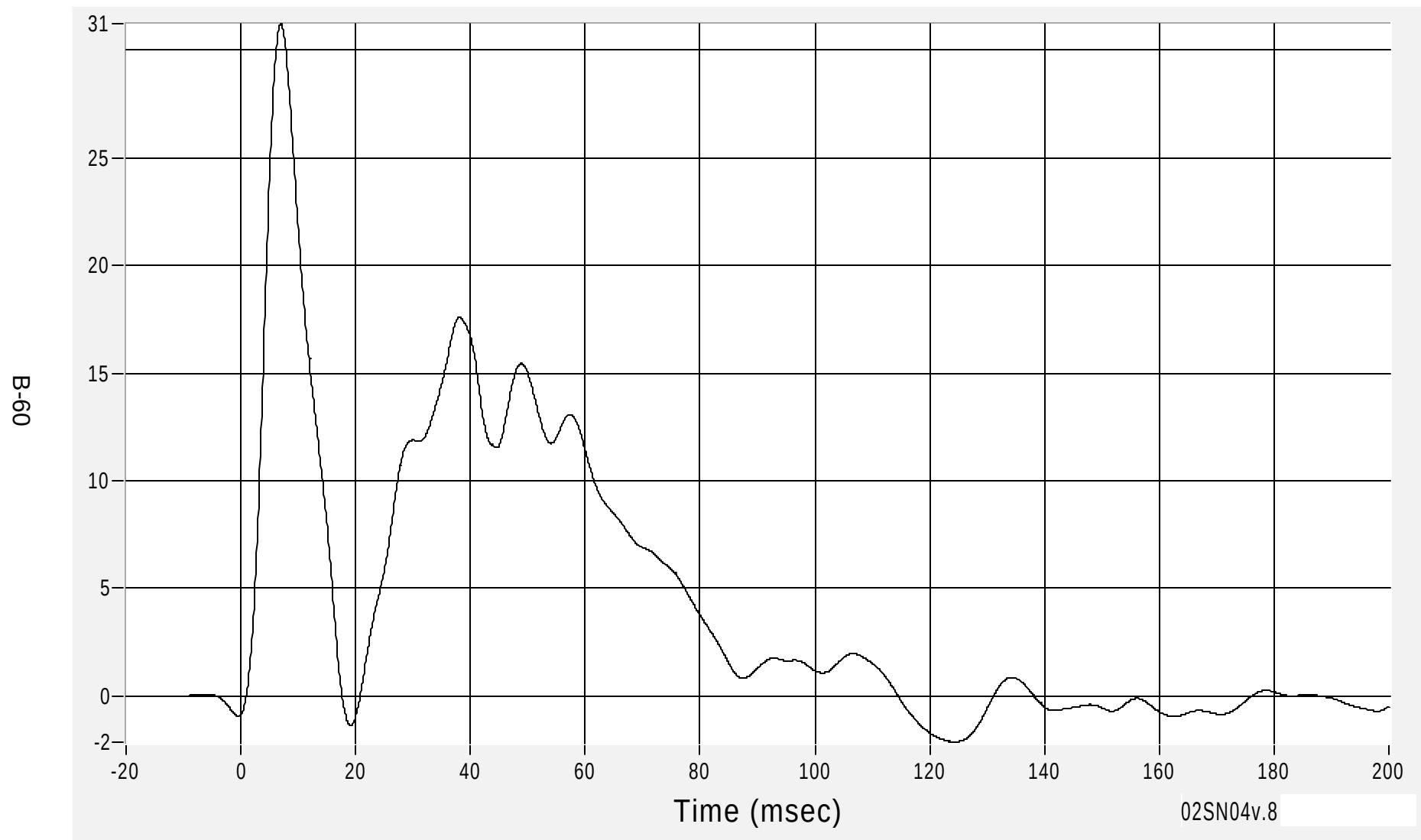
Medical College of Wisconsin
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Rear Floorpan Above Axle (Y) Acceleration

Max 31.2 G's at 7.0 msec

Acceleration (G's) CFC60

Min -2.1 G's at 124.2 msec



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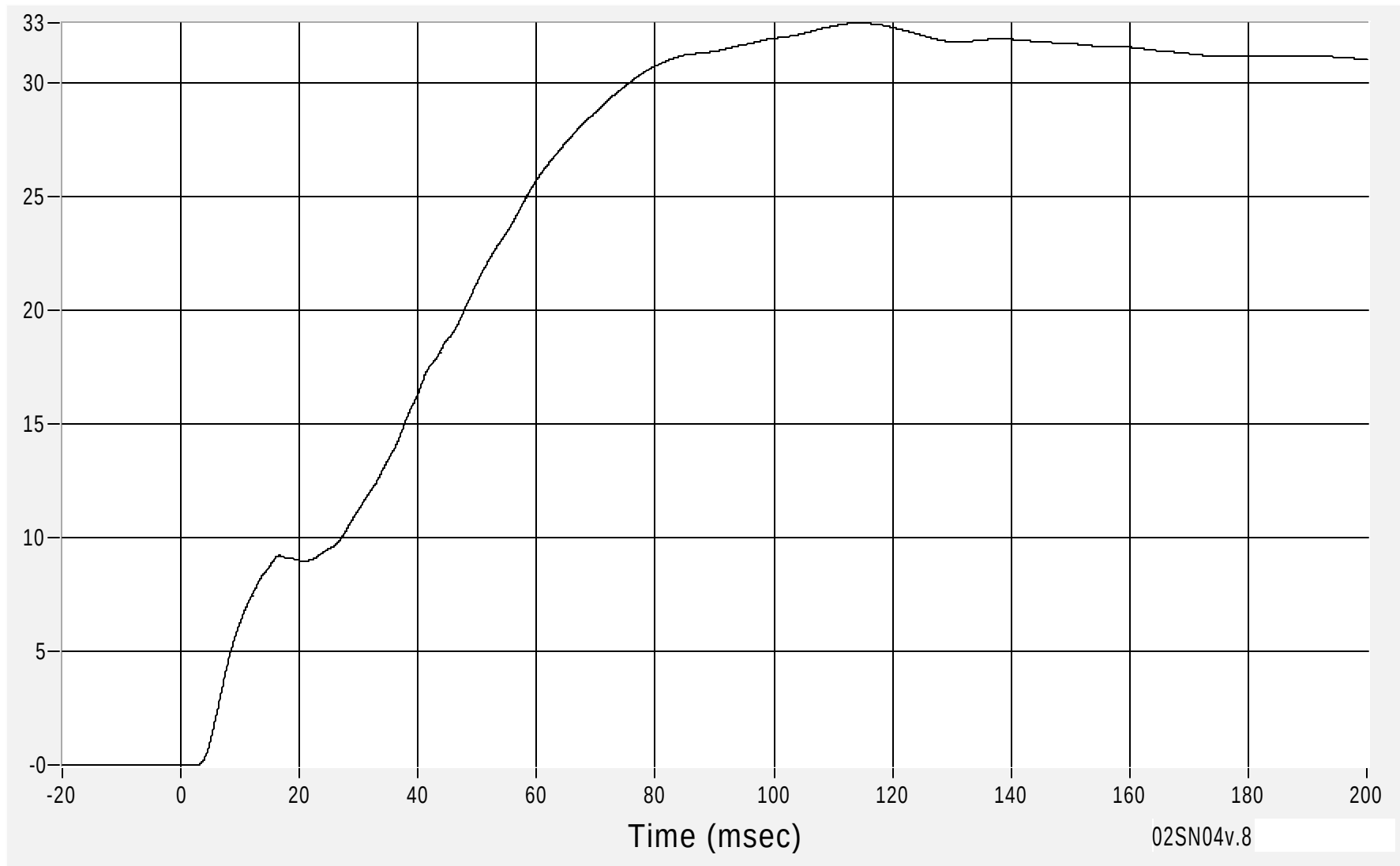
Rear Floorpan Above Axle (Y) Velocity

Max 32.6 km/h at 114.5 msec

Velocity (km/h) CFC180

Min 0.0 km/h at 2.1 msec

B-61



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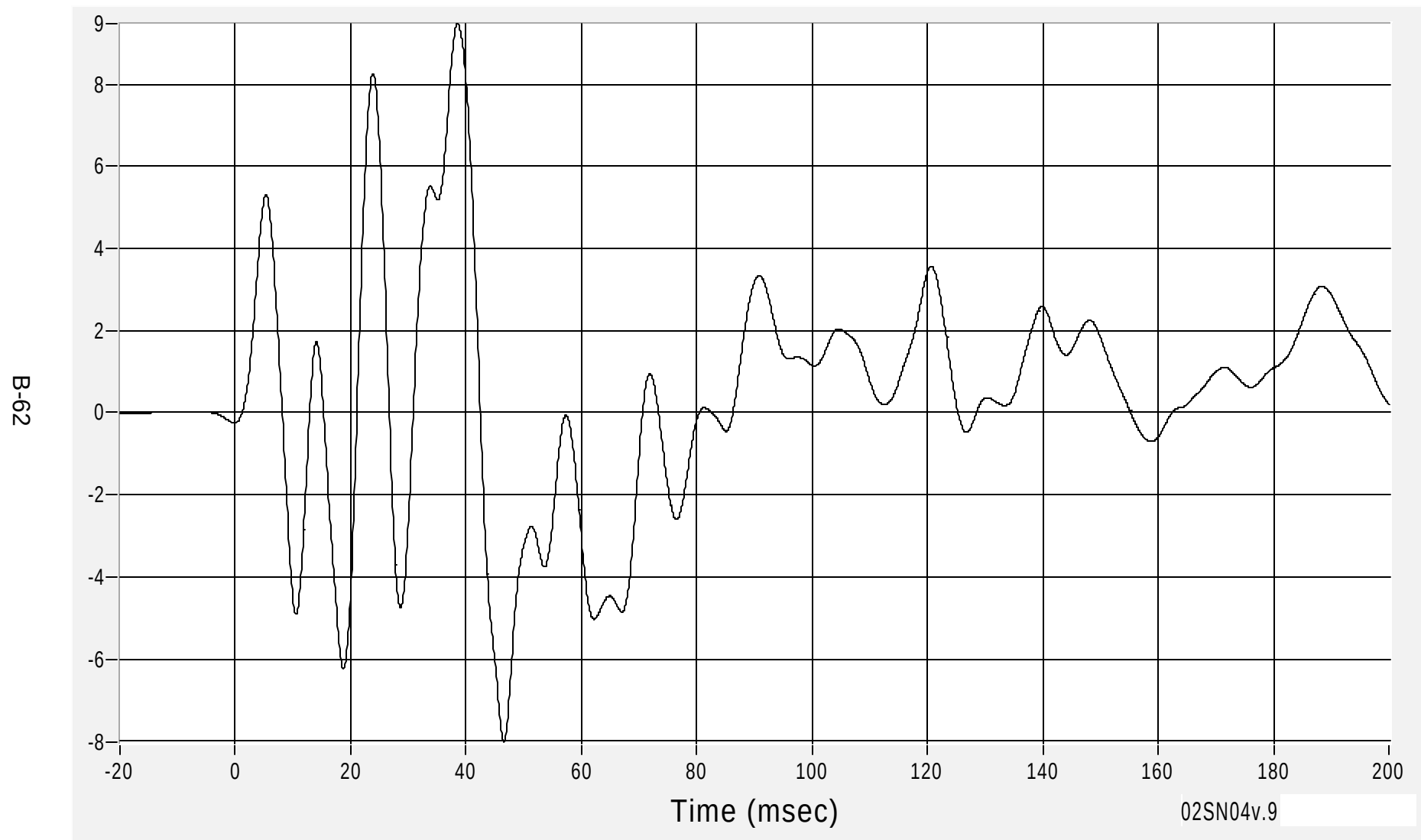
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Rear Floorpan Above Axle (Z) Acceleration

Max 9.5 G's at 38.5 msec

Acceleration (G's) CFC60

Min -8.0 G's at 46.6 msec



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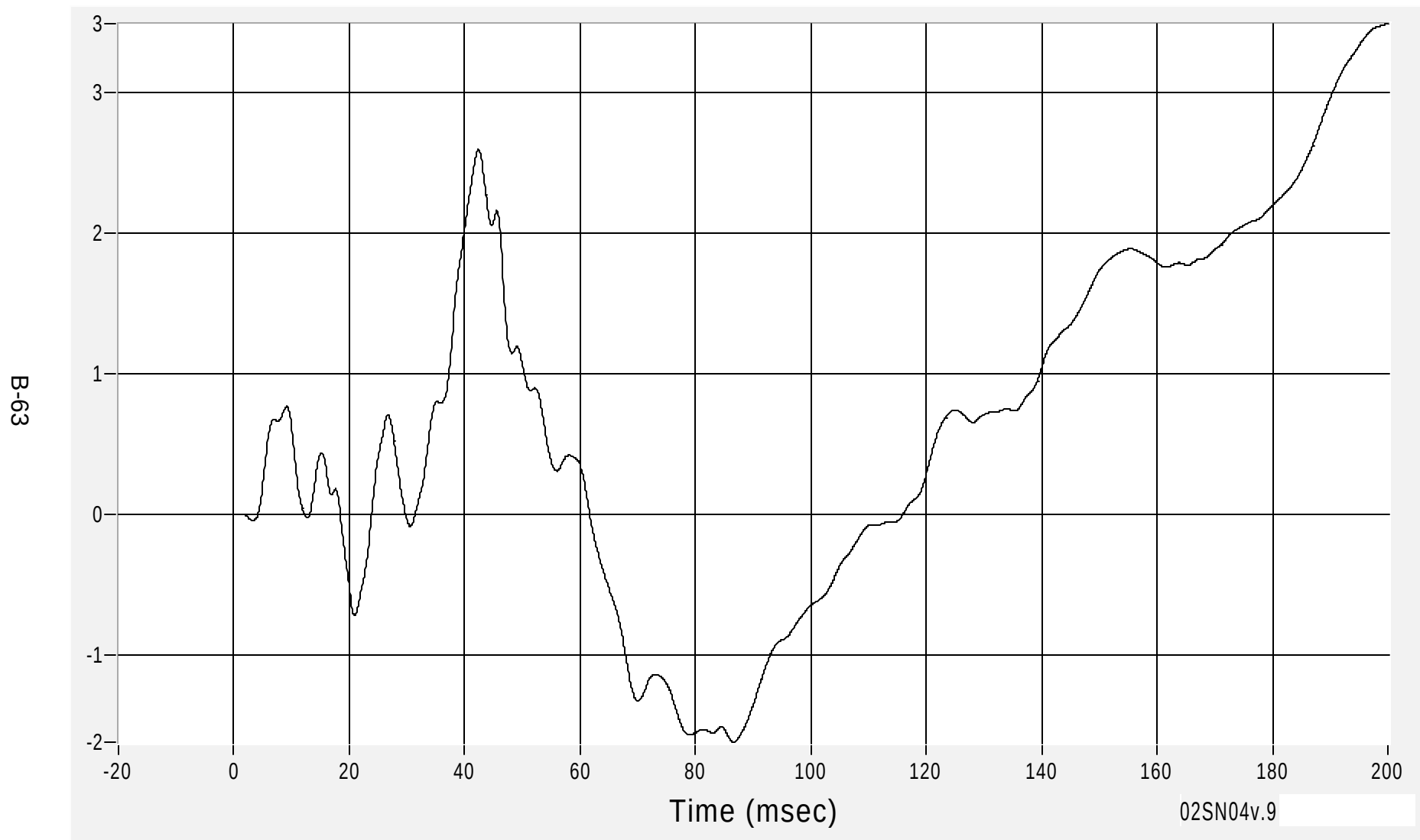
Medical College of Wisconsin
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Rear Floorpan Above Axle (Z) Velocity

Max 3.5 km/h at 199.9 msec

Velocity (km/h) CFC180

Min -1.6 km/h at 86.6 msec



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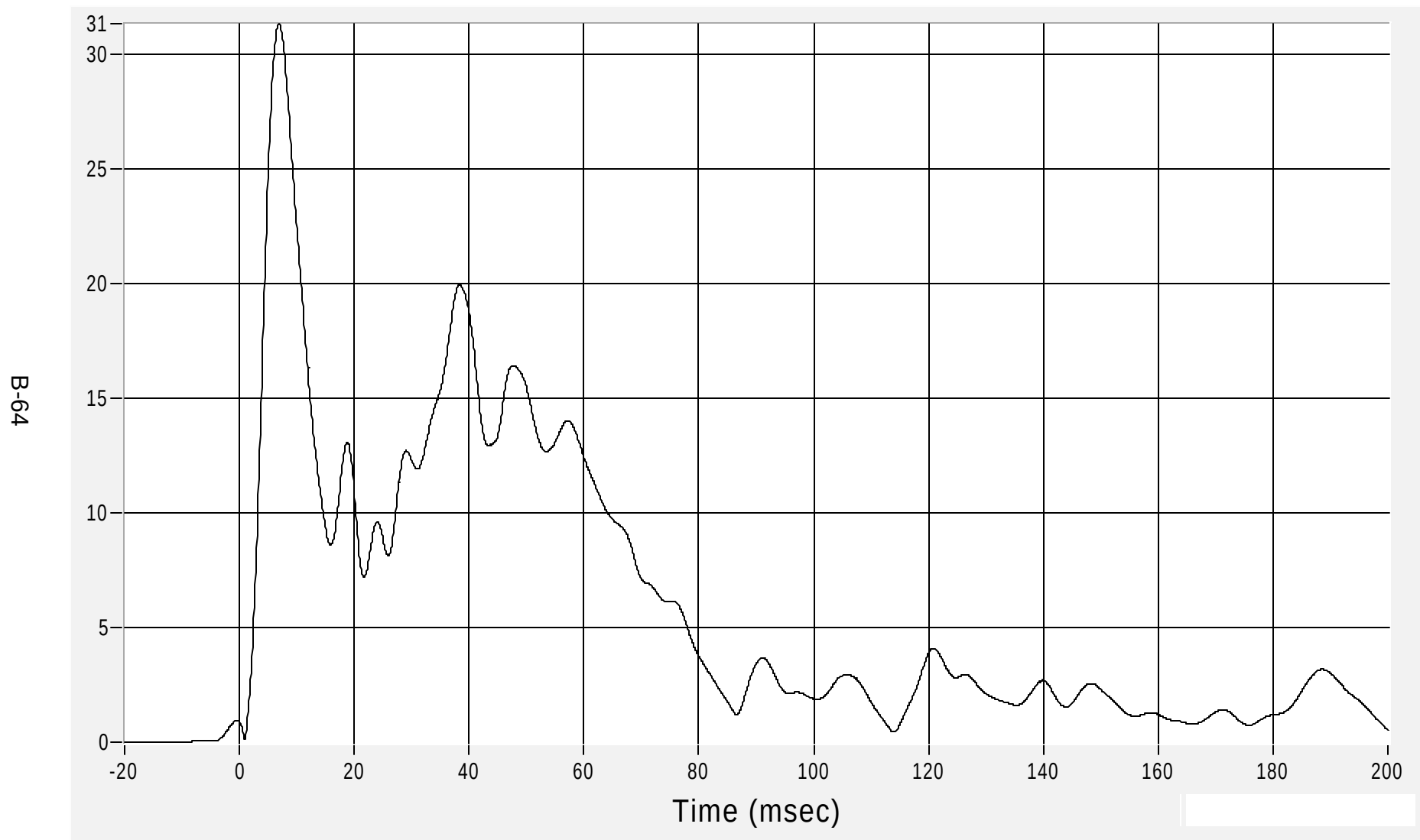
Medical College of Wisconsin
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Rear Floorpan Above Axle Resultant Acceleration

Max 31.4 G's at 6.9 msec

Acceleration (G's) CFC60

Min 0.1 G's at 1.0 msec



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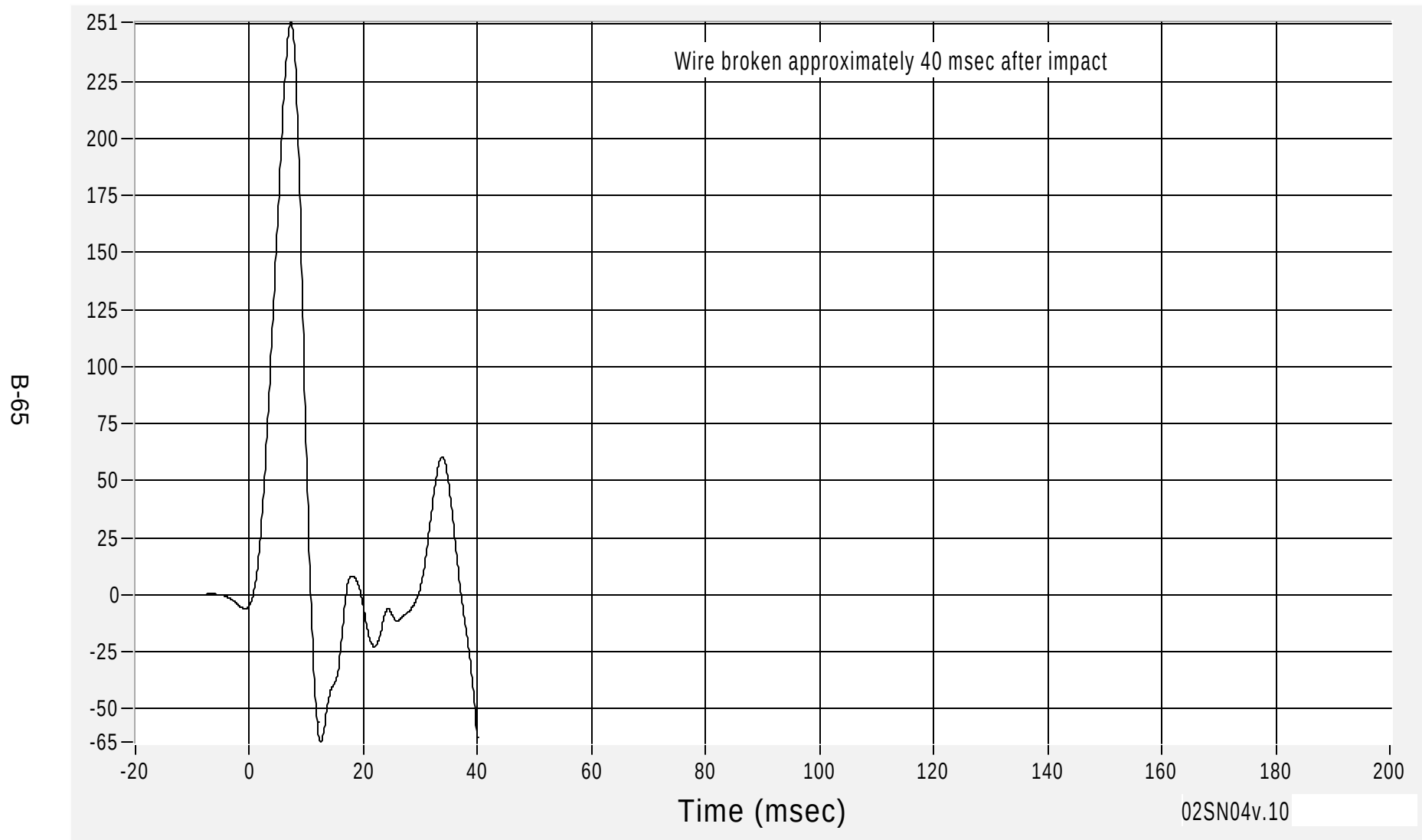
Medical College of Wisconsin
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Left Side Sill at Rear Seat (Y) Acceleration

Max 251.0 G's at 7.3 msec

Min -64.5 G's at 12.5 msec

Acceleration (G's) CFC60



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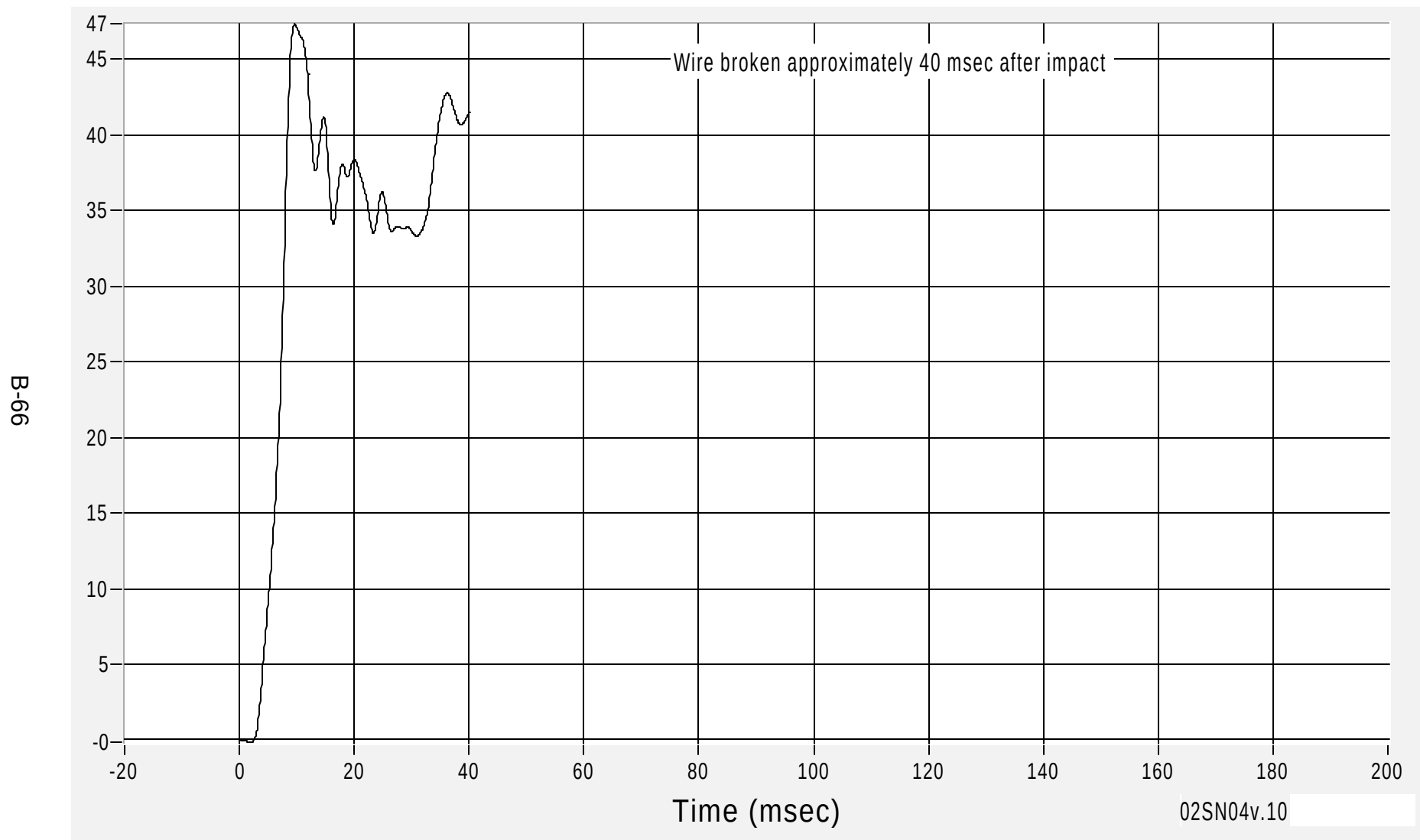
Medical College of Wisconsin
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Left Side Sill at Rear Seat (Y) Velocity

Max 47.4 km/h at 9.6 msec

Min -0.2 km/h at 1.9 msec

Velocity (km/h) CFC180



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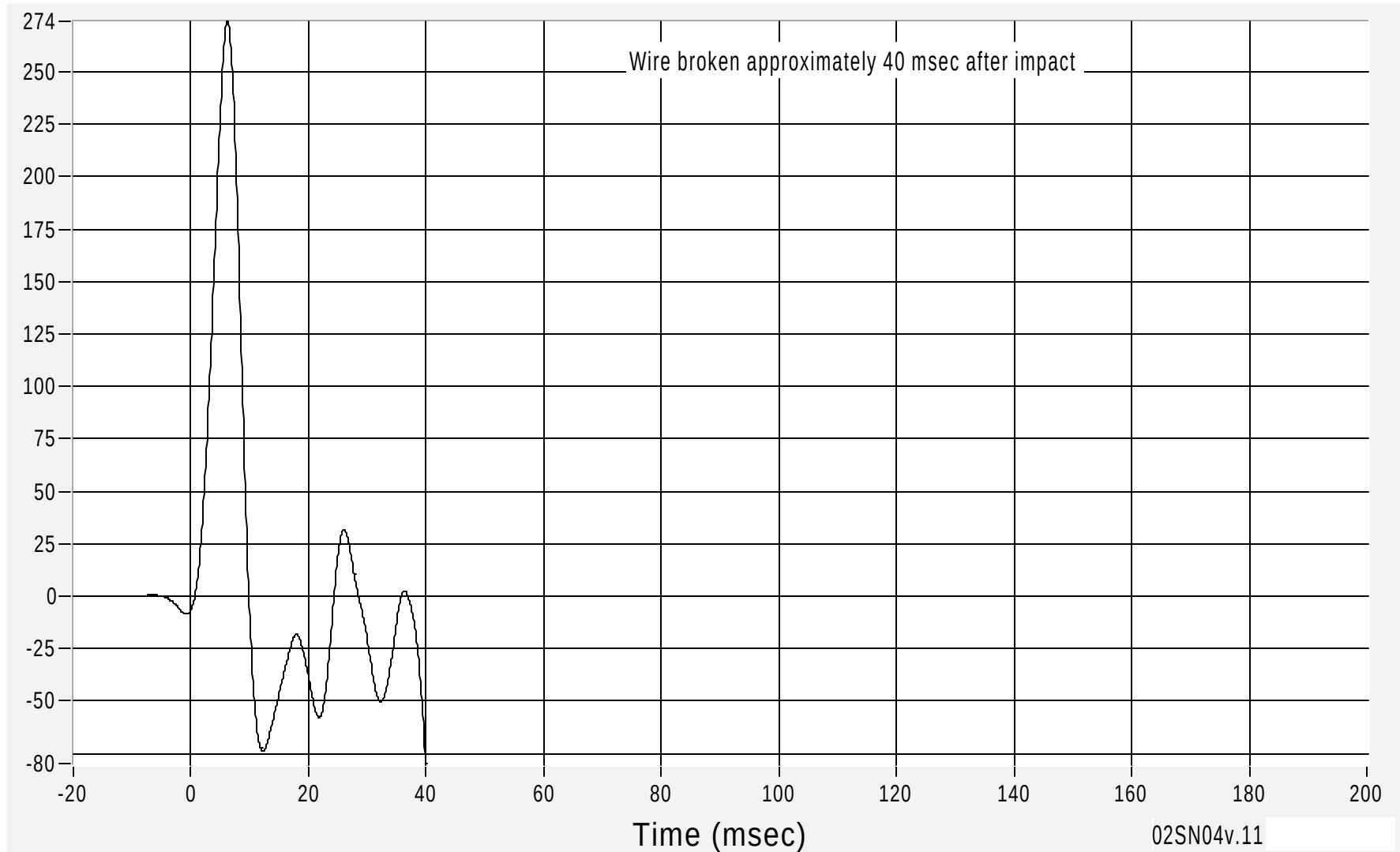
Left Side Sill at Front Seat (Y) Acceleration

Max 274.0 G's at 6.2 msec

Min -79.9 G's at 39.9 msec

Acceleration (G's) CFC60

B-67



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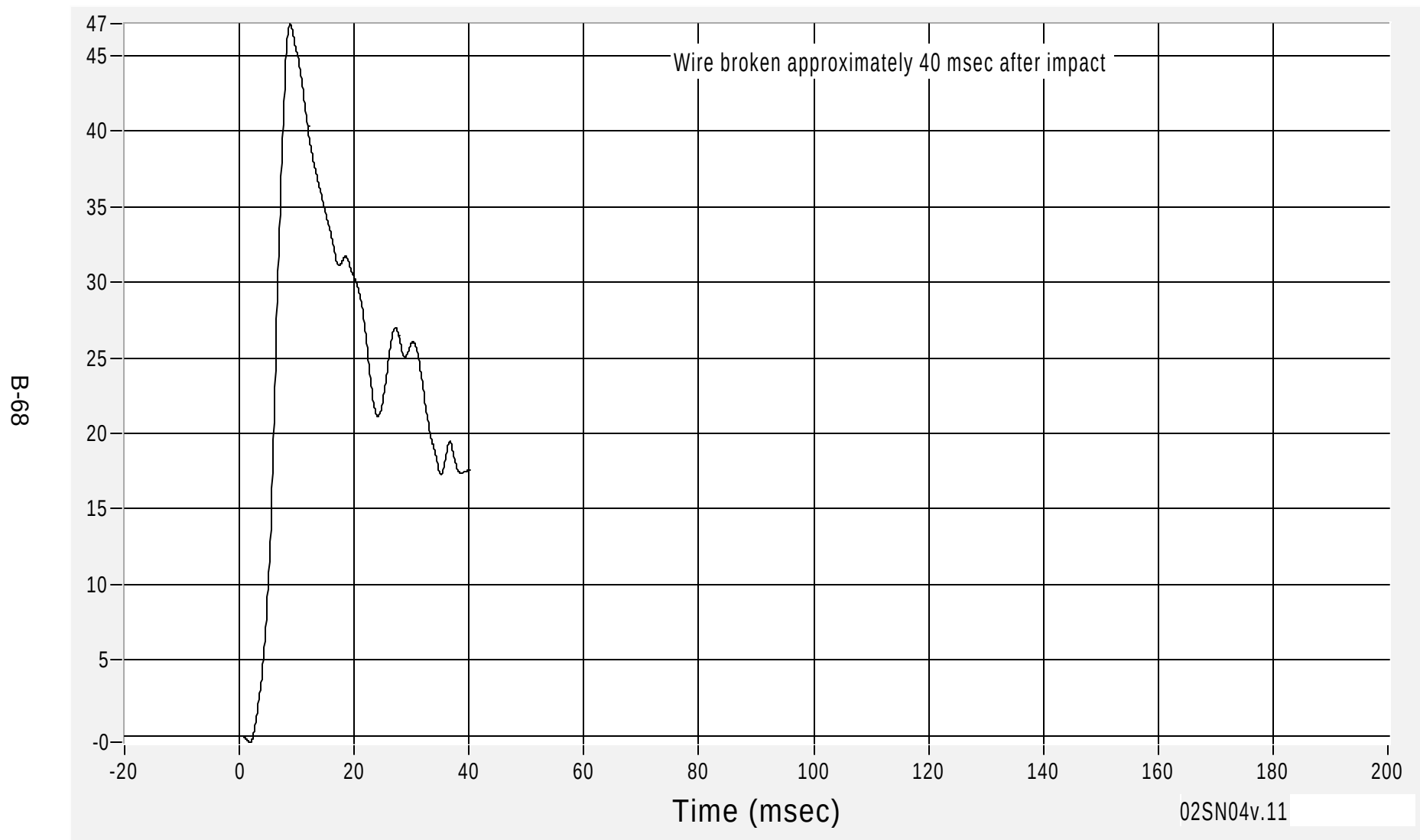
Medical College of Wisconsin
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Left Side Sill at Front Seat (Y) Velocity

Max 47.1 km/h at 8.8 msec

Min -0.4 km/h at 1.8 msec

Velocity (km/h) CFC180



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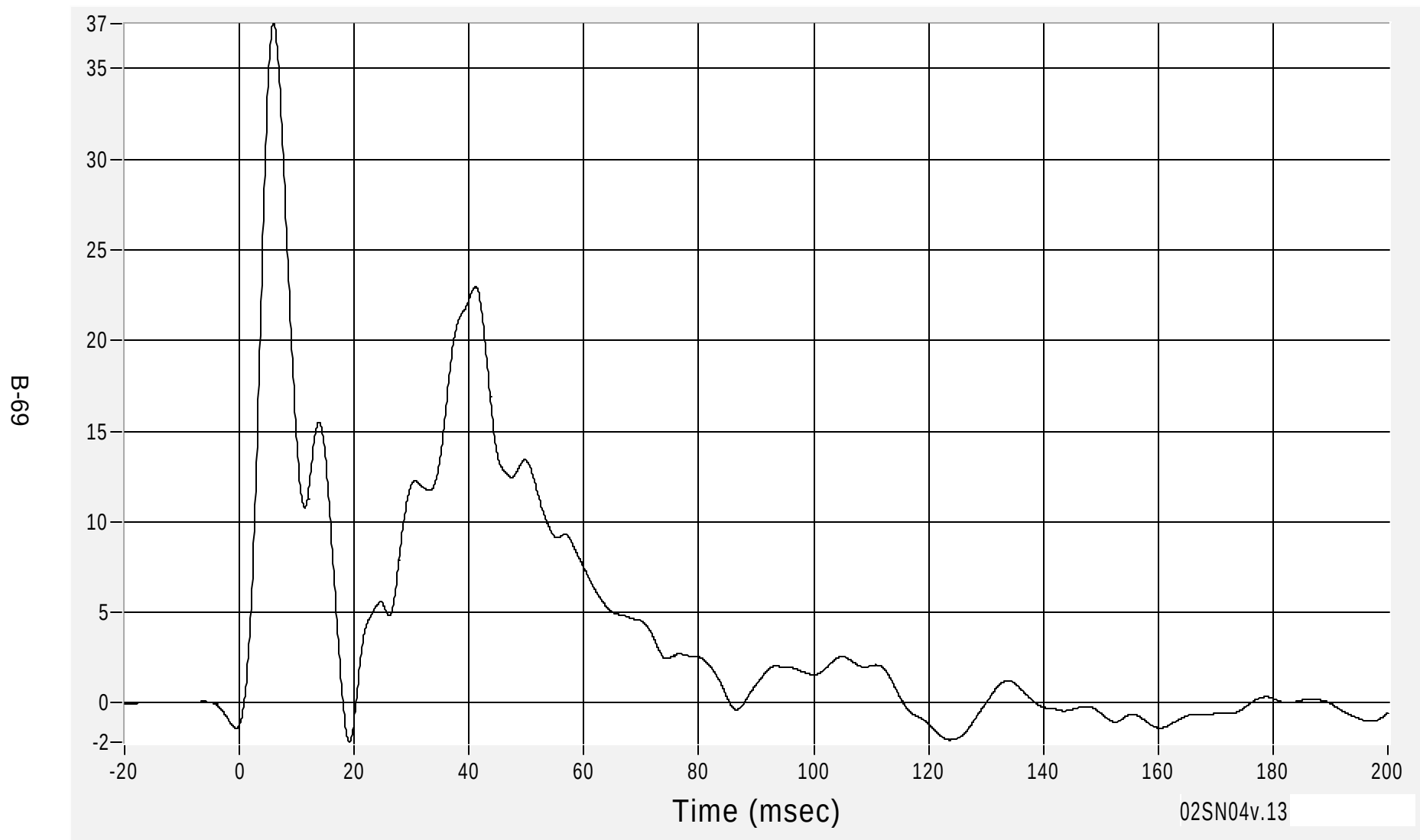
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Right Rear Occupant Compartment (Y) Acceleration

Max 37.5 G's at 5.9 msec

Acceleration (G's) CFC60

Min -2.2 G's at 19.1 msec



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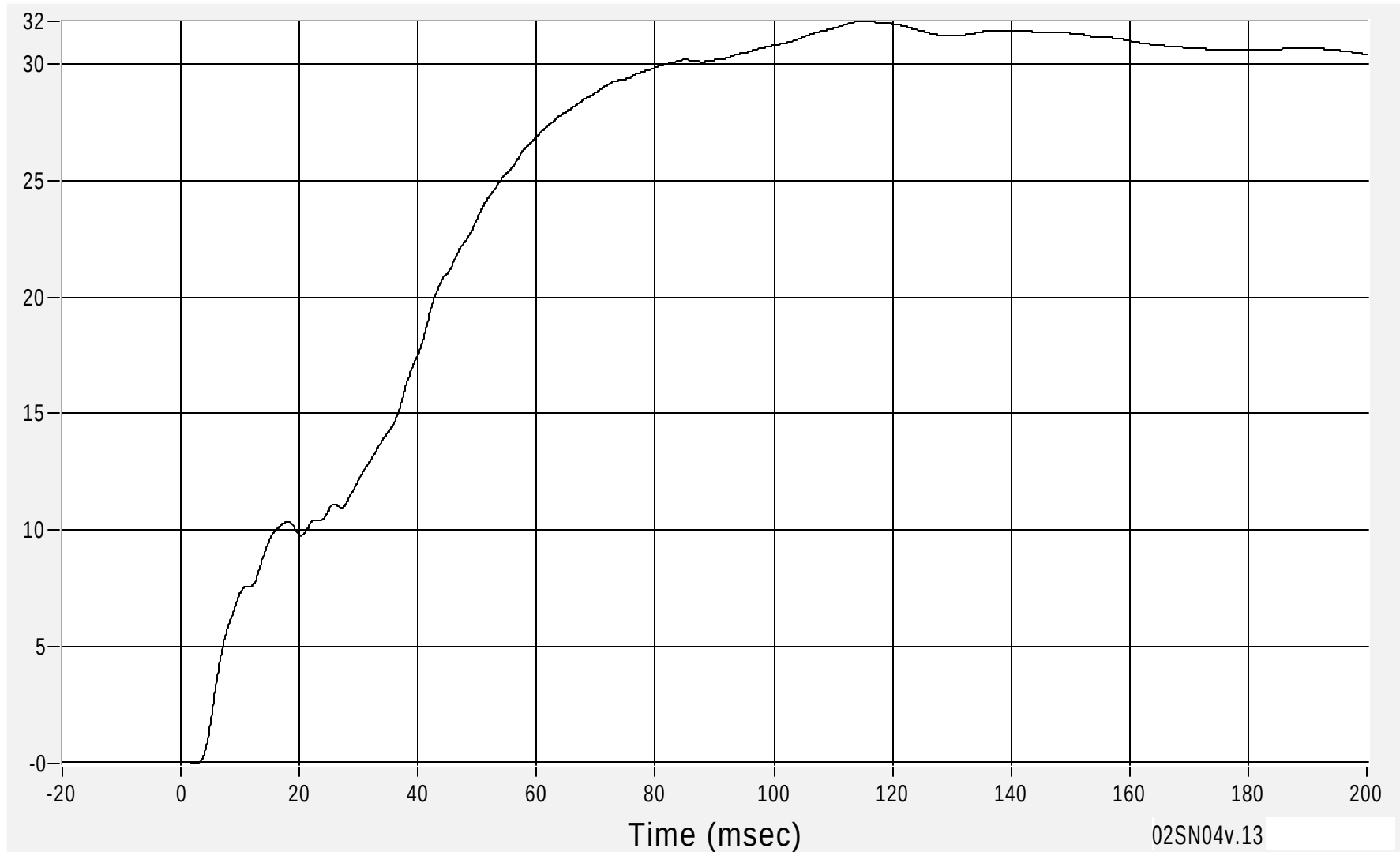
Right Rear Occupant Compartment (Y) Velocity

Max 31.9 km/h at 115.4 msec

Velocity (km/h) CFC180

Min 0.0 km/h at 2.6 msec

B-70



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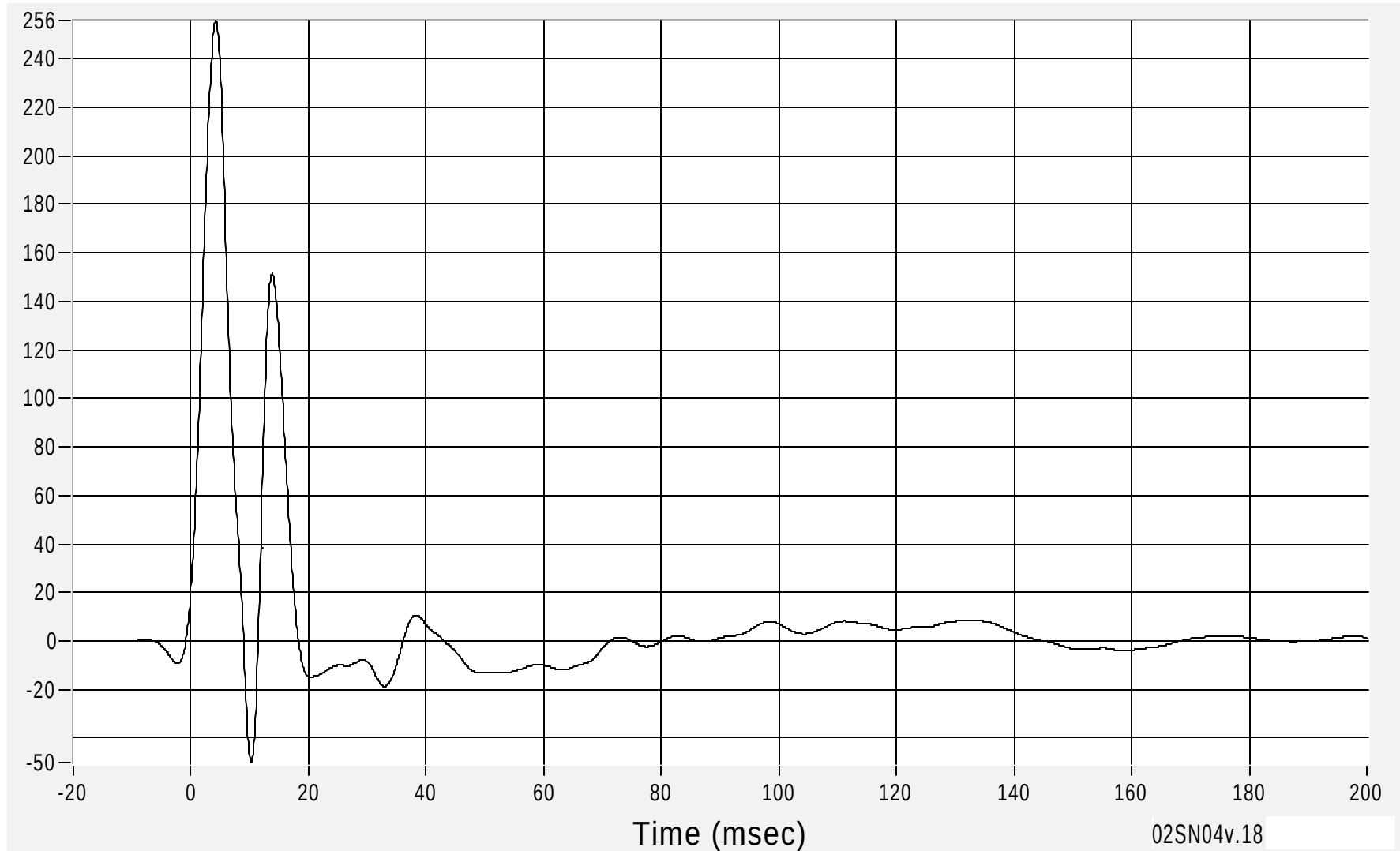
Left Lower B-Pillar (Y) Acceleration

Max 255.7 G's at 4.2 msec

Min -50.1 G's at 10.2 msec

Acceleration (G's) CFC60

B-71



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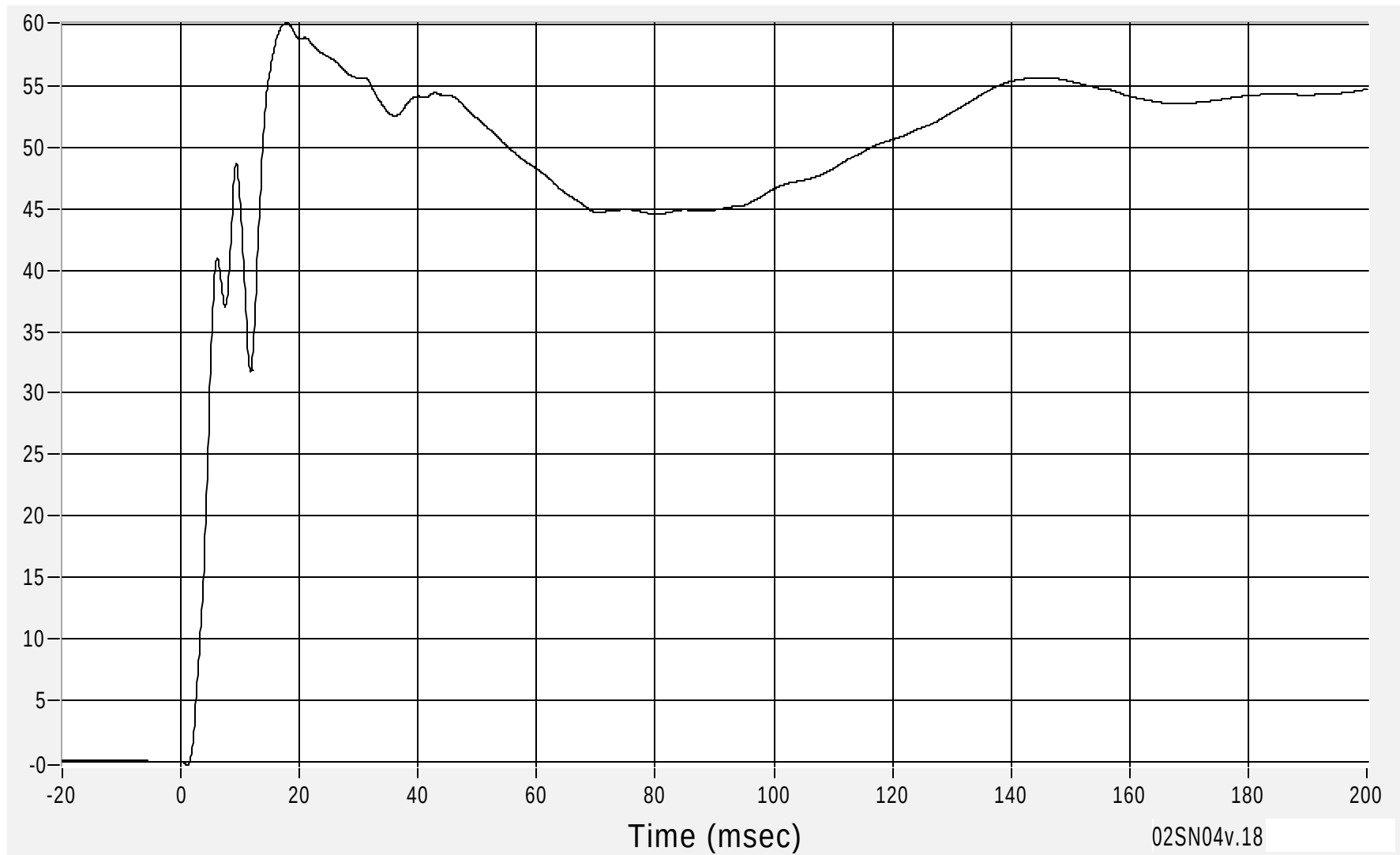
Left Lower B-Pillar (Y) Velocity

Max 60.2 km/h at 17.8 msec

Min -0.3 km/h at 1.1 msec

Velocity (km/h) CFC180

B-72



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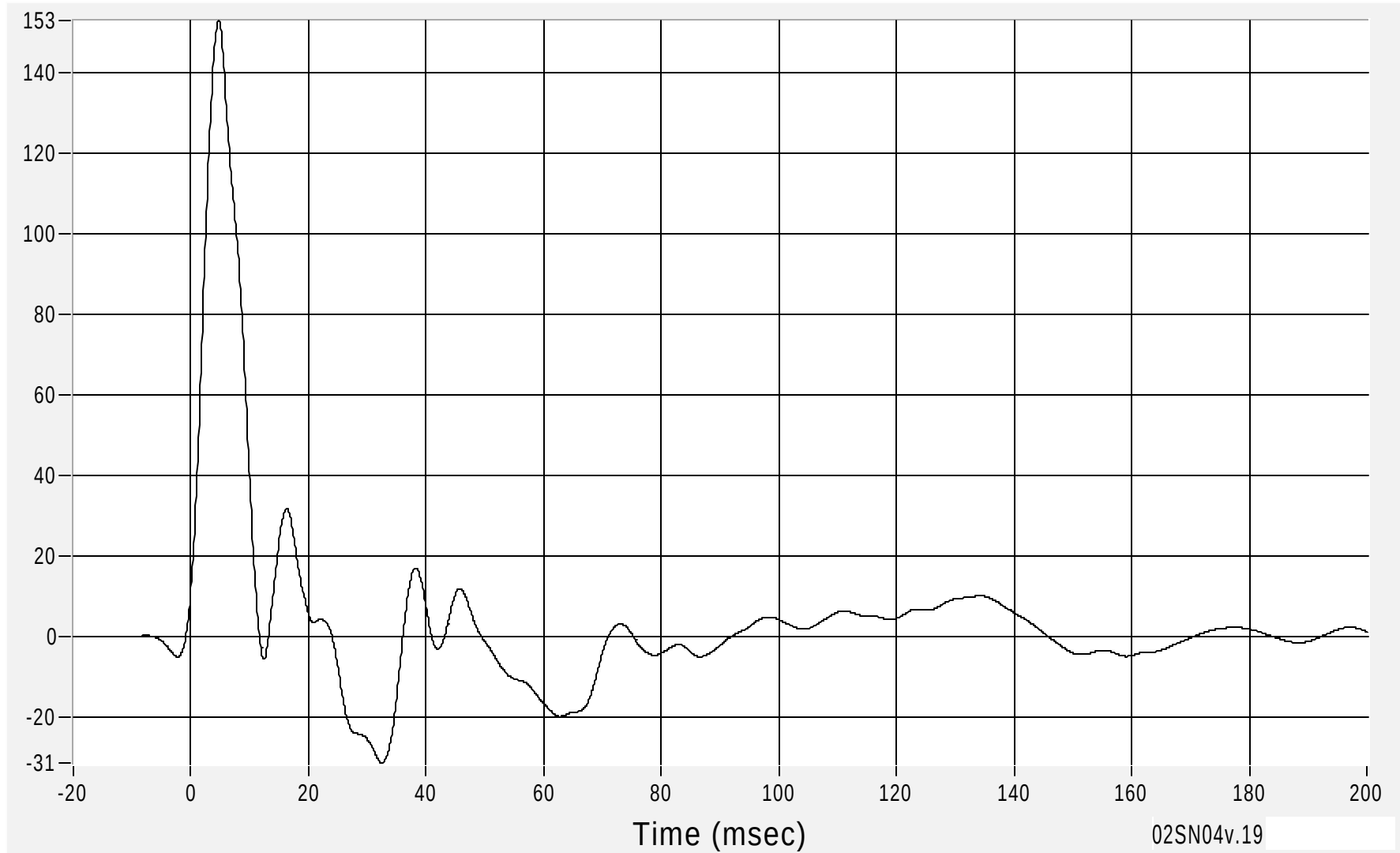
Left Middle B-Pillar (Y) Acceleration

Max 153.0 G's at 4.7 msec

Acceleration (G's) CFC60

Min -31.3 G's at 32.5 msec

B-73



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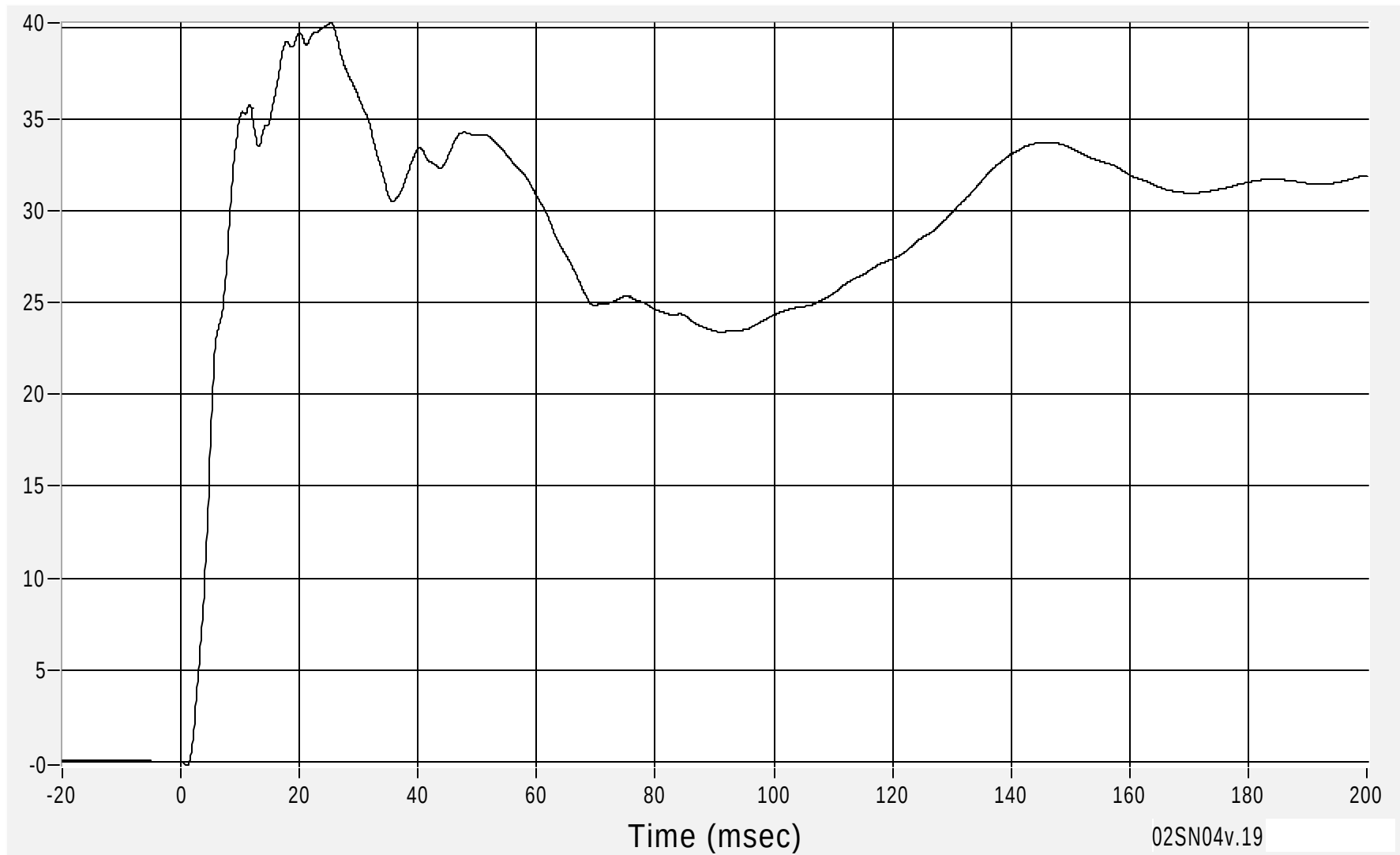
Left Middle B-Pillar (Y) Velocity

Max 40.2 km/h at 25.2 msec

Min -0.2 km/h at 1.0 msec

Velocity (km/h) CFC180

B-74



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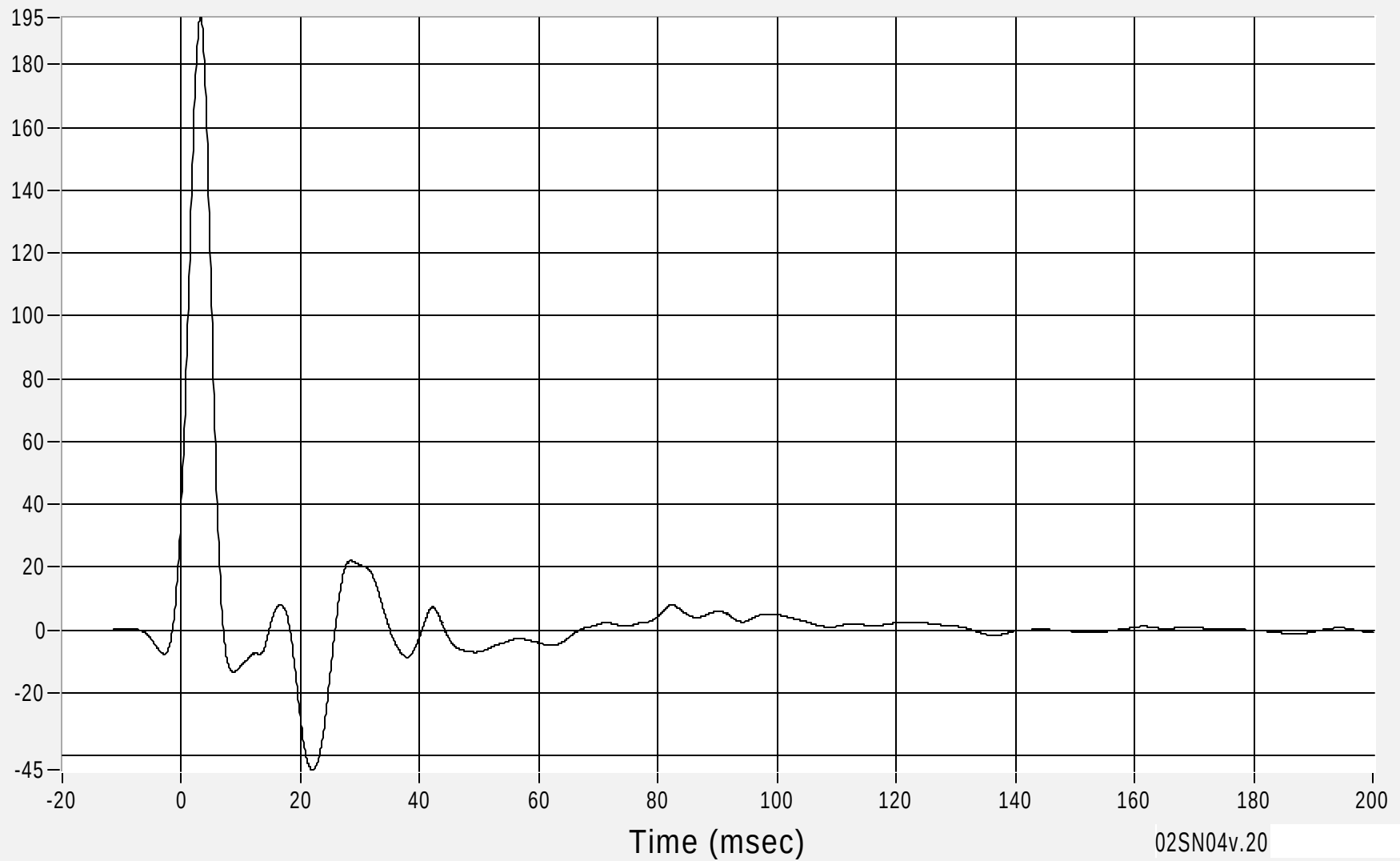
Left Lower A-Pillar (Y) Acceleration

Max 195.0 G's at 3.2 msec

Min -44.6 G's at 22.0 msec

Acceleration (G's) CFC60

B-75



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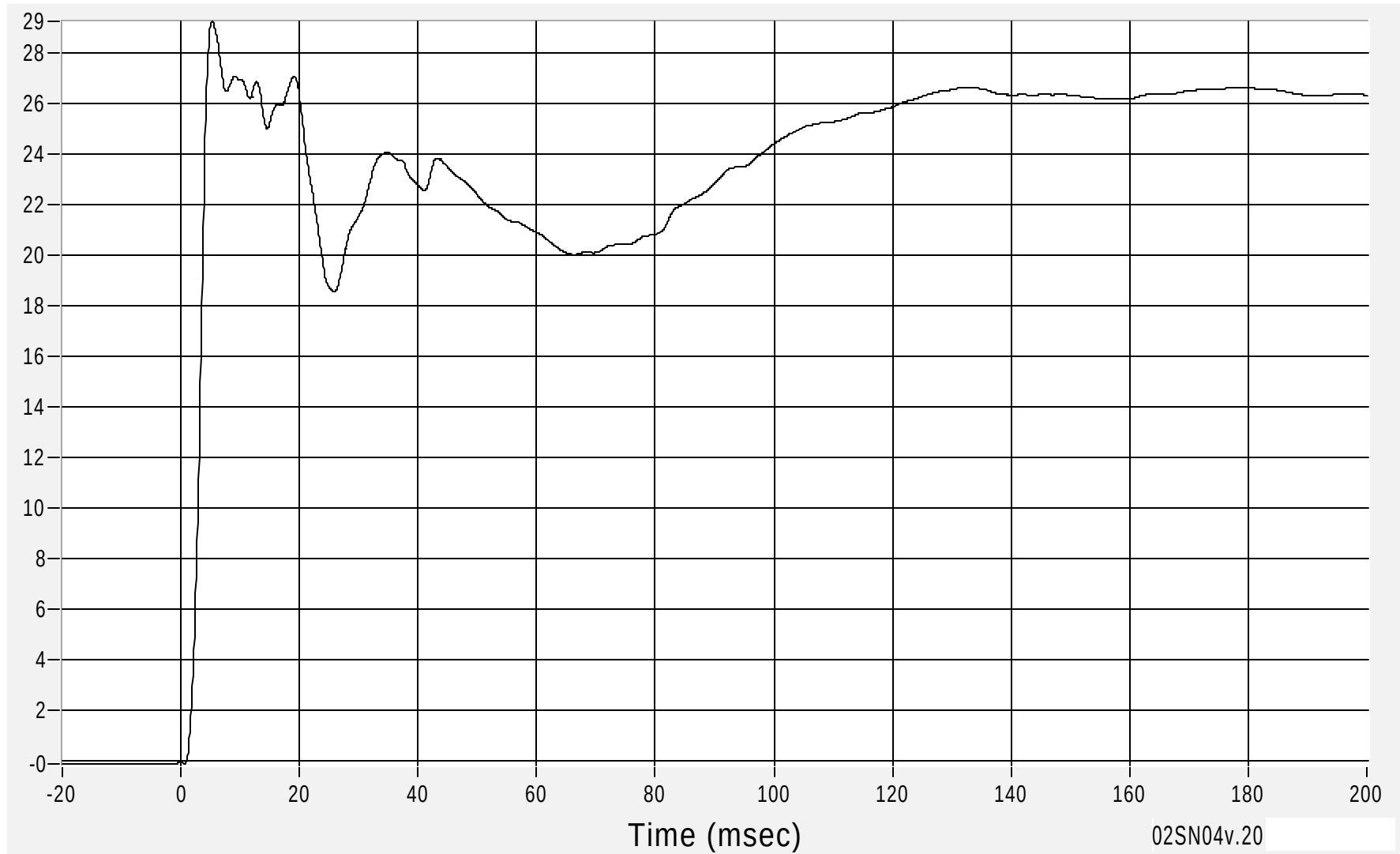
Left Lower A-Pillar (Y) Velocity

Max 29.3 km/h at 5.3 msec

Min -0.1 km/h at 0.6 msec

Velocity (km/h) CFC180

B-76



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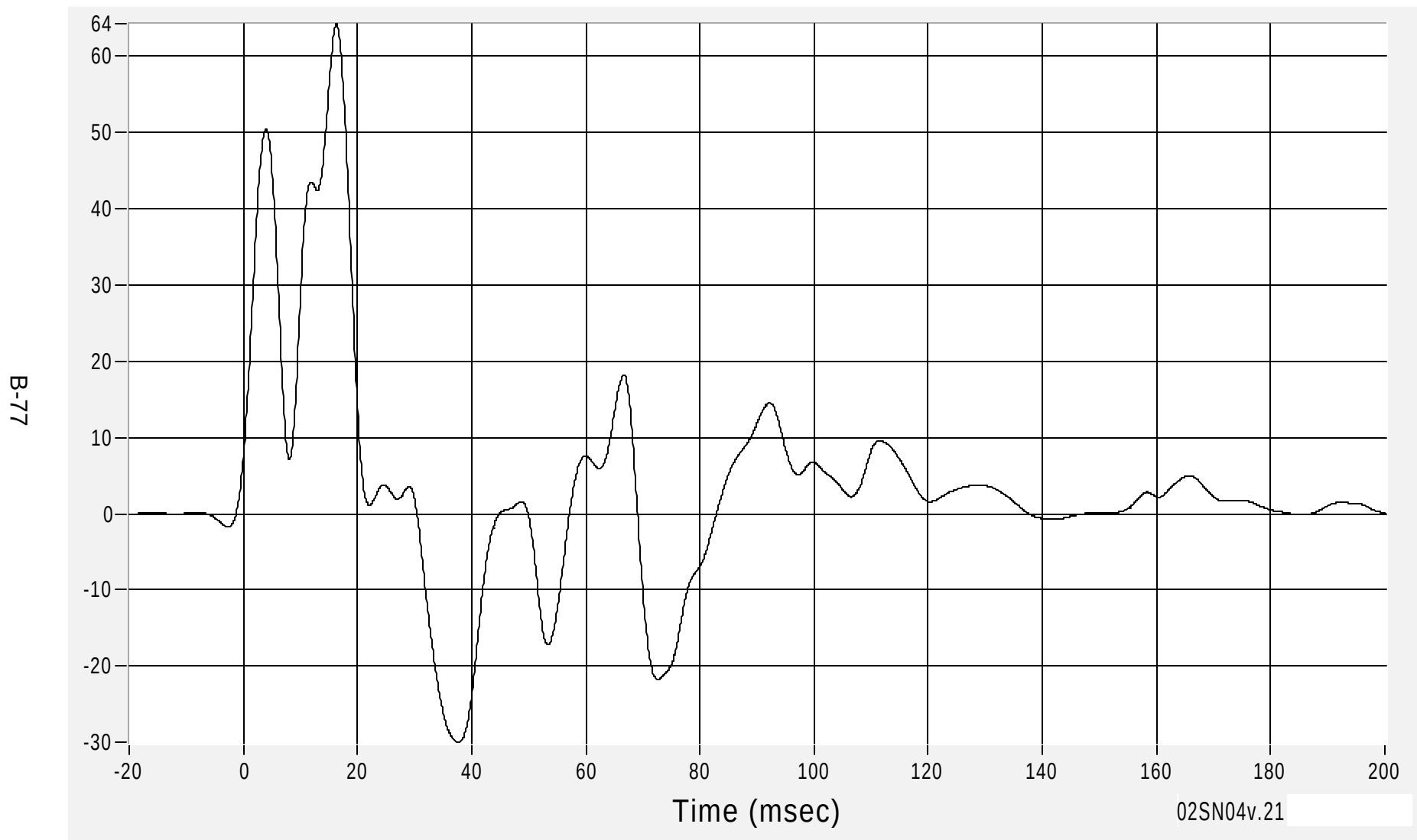
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Left Middle A-Pillar (Y) Acceleration

Max 64.1 G's at 16.3 msec

Acceleration (G's) CFC60

Min -29.9 G's at 37.7 msec



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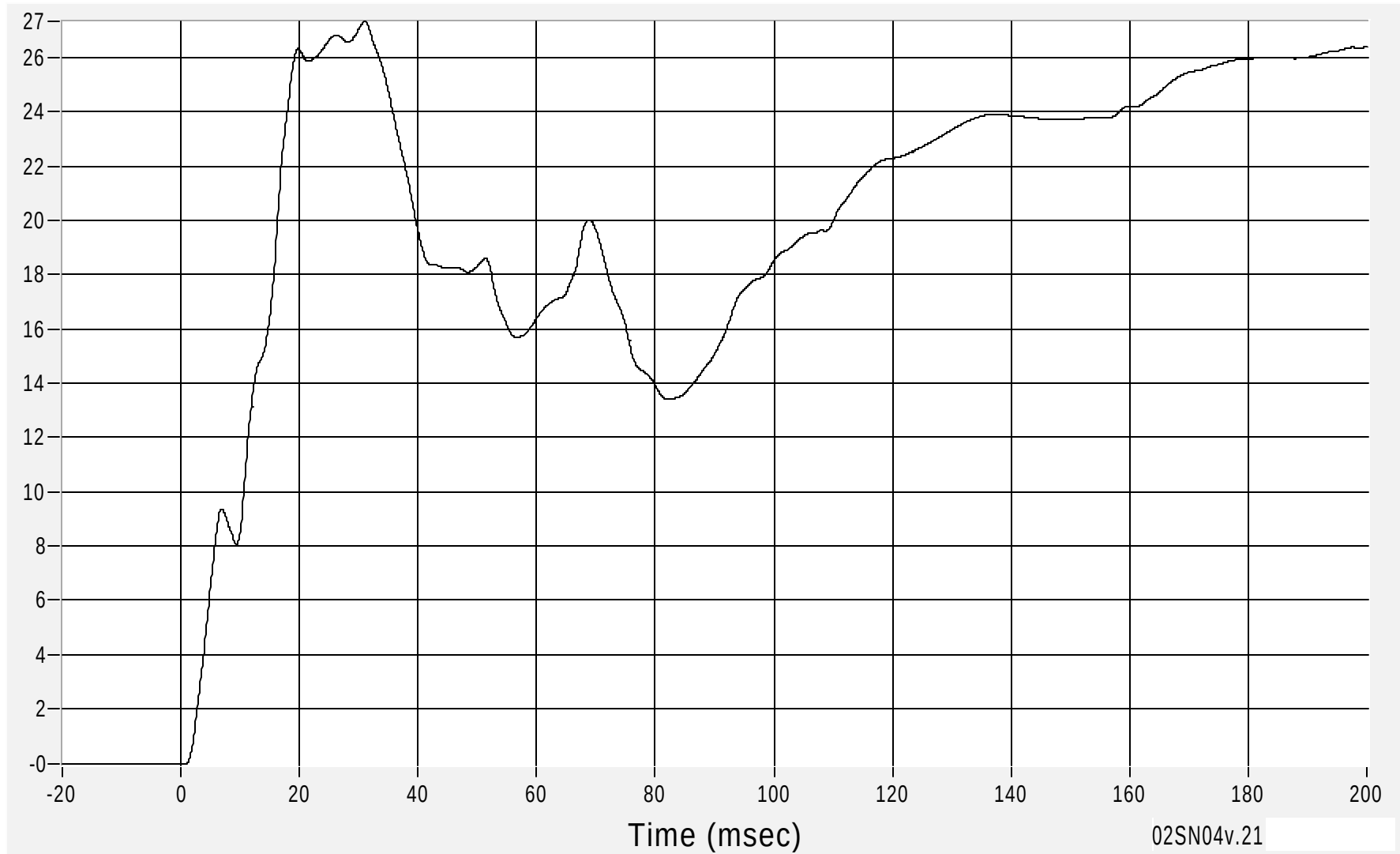
Left Middle A-Pillar (Y) Velocity

Max 27.3 km/h at 31.0 msec

Min 0.0 km/h at 0.6 msec

Velocity (km/h) CFC180

B-78



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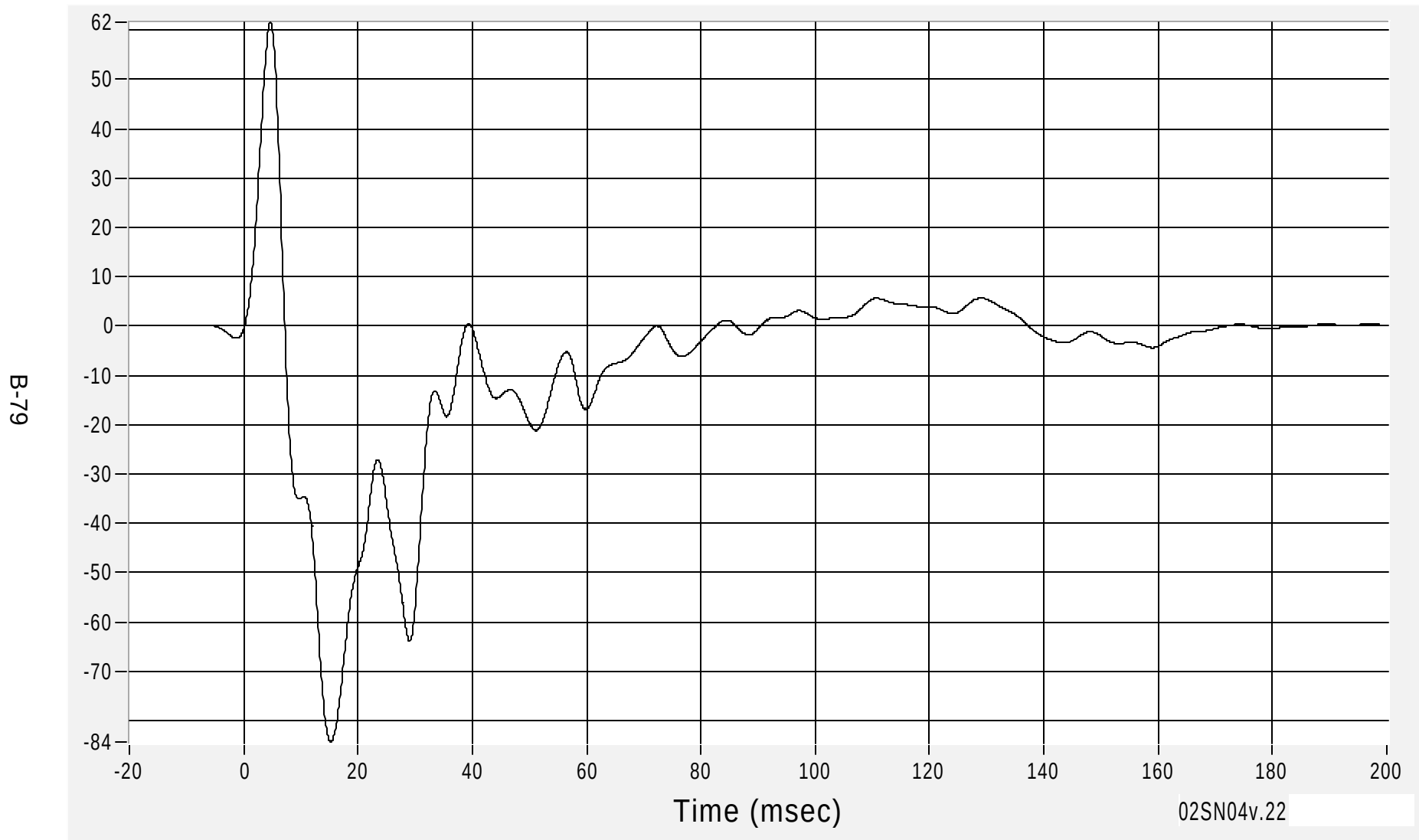
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Front Seat Track (Y) Acceleration

Max 61.6 G's at 4.6 msec

Acceleration (G's) CFC60

Min -84.3 G's at 15.2 msec



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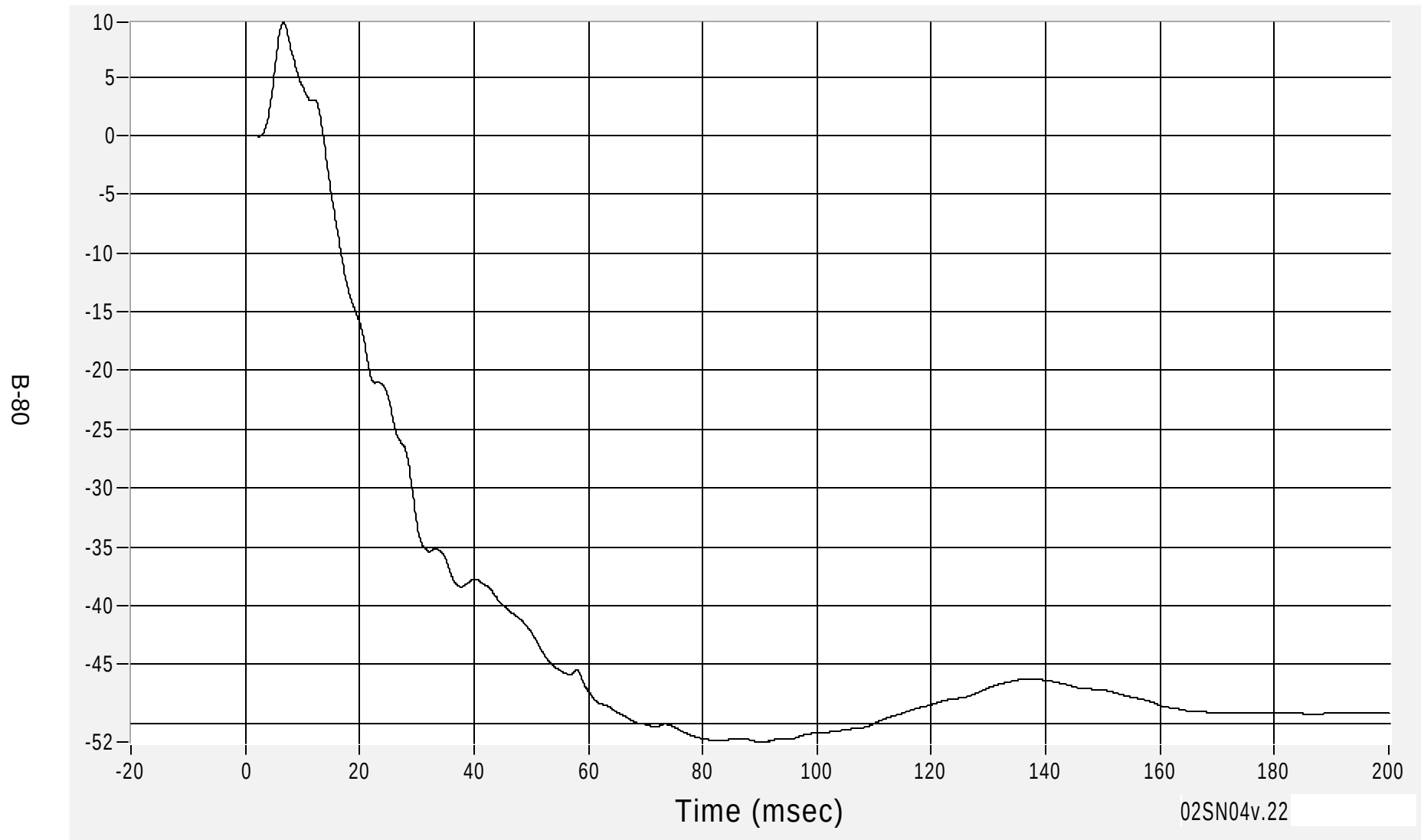
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Front Seat Track (Y) Velocity

Max 9.6 km/h at 6.6 msec

Velocity (km/h) CFC180

Min -51.6 km/h at 90.0 msec



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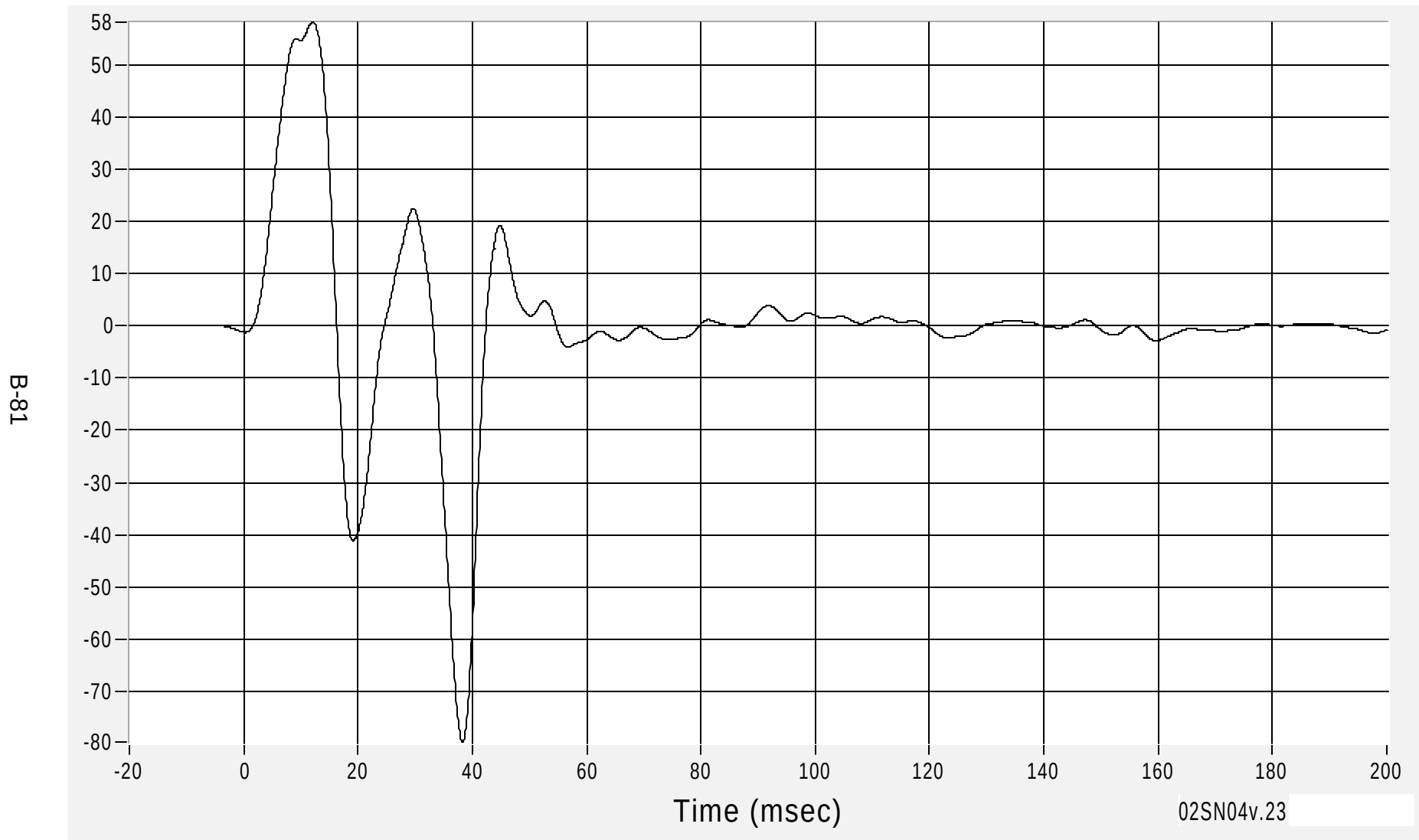
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Rear Seat Track (Y) Acceleration

Max 58.1 G's at 12.1 msec

Acceleration (G's) CFC60

Min -79.7 G's at 38.3 msec



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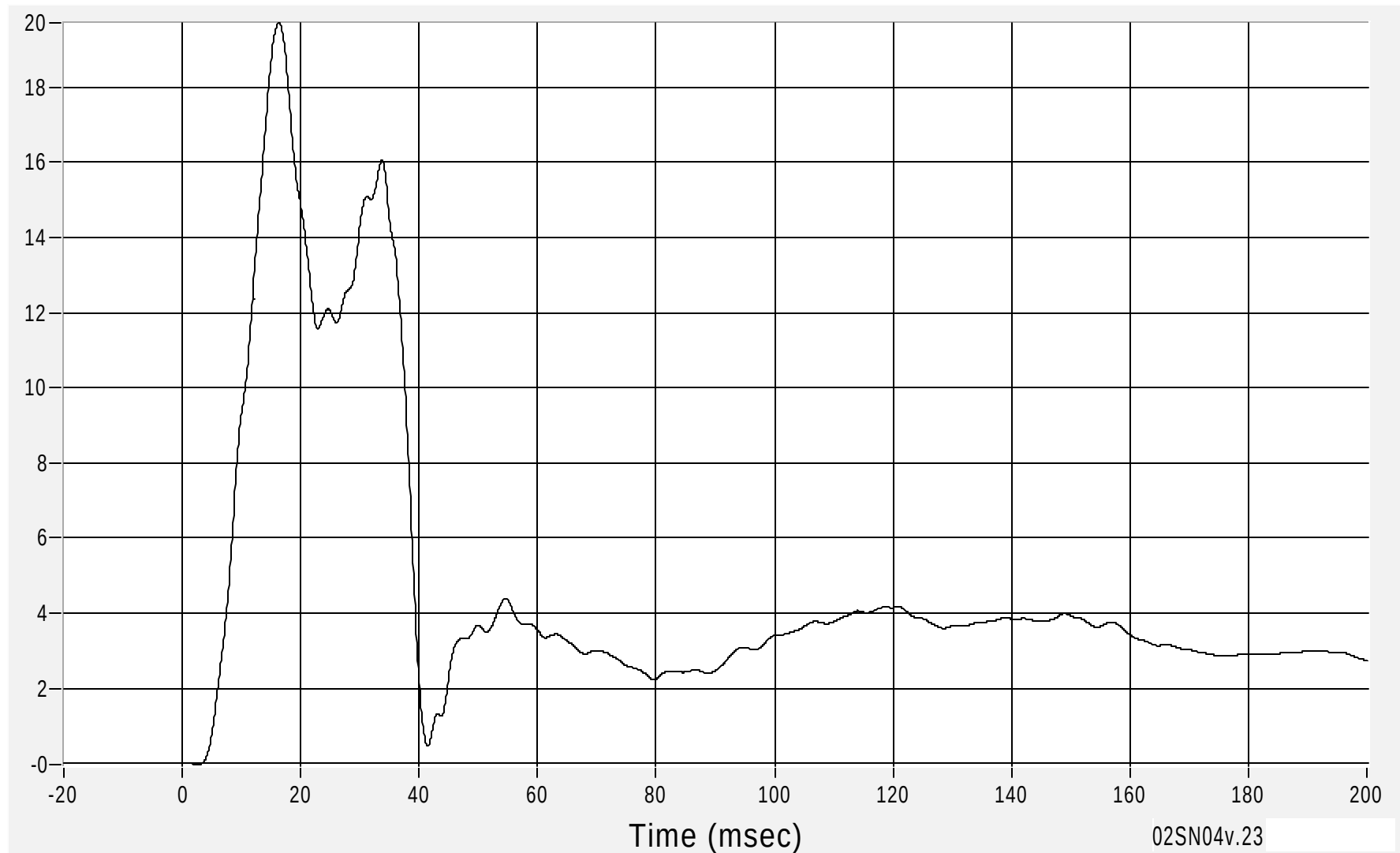
Rear Seat Track (Y) Velocity

Max 19.7 km/h at 16.3 msec

Velocity (km/h) CFC180

Min 0.0 km/h at 2.7 msec

B-82



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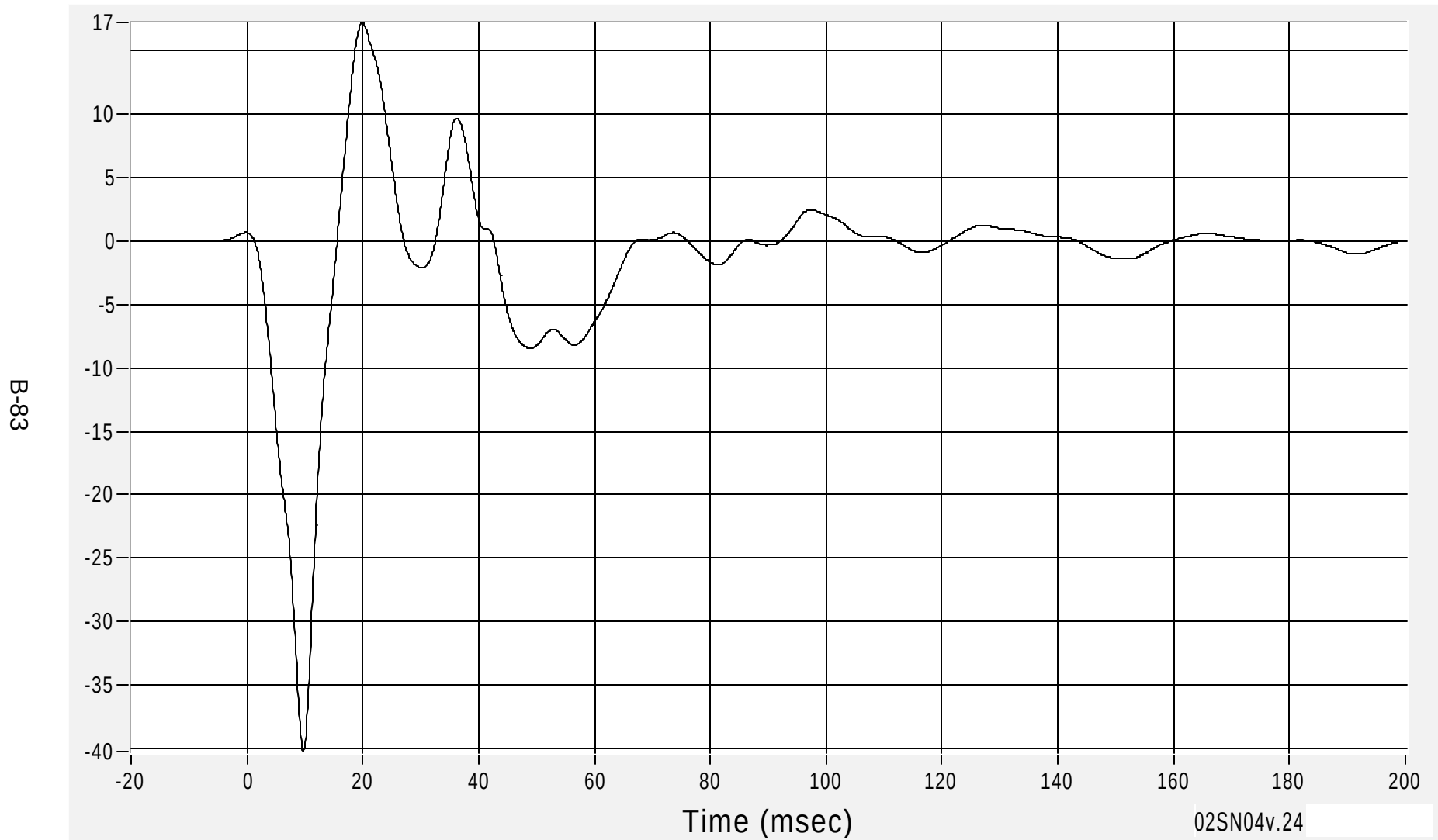
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Vehicle Center of Gravity (X) Acceleration

Max 17.2 G's at 19.8 msec

Acceleration (G's) CFC60

Min -40.2 G's at 9.8 msec



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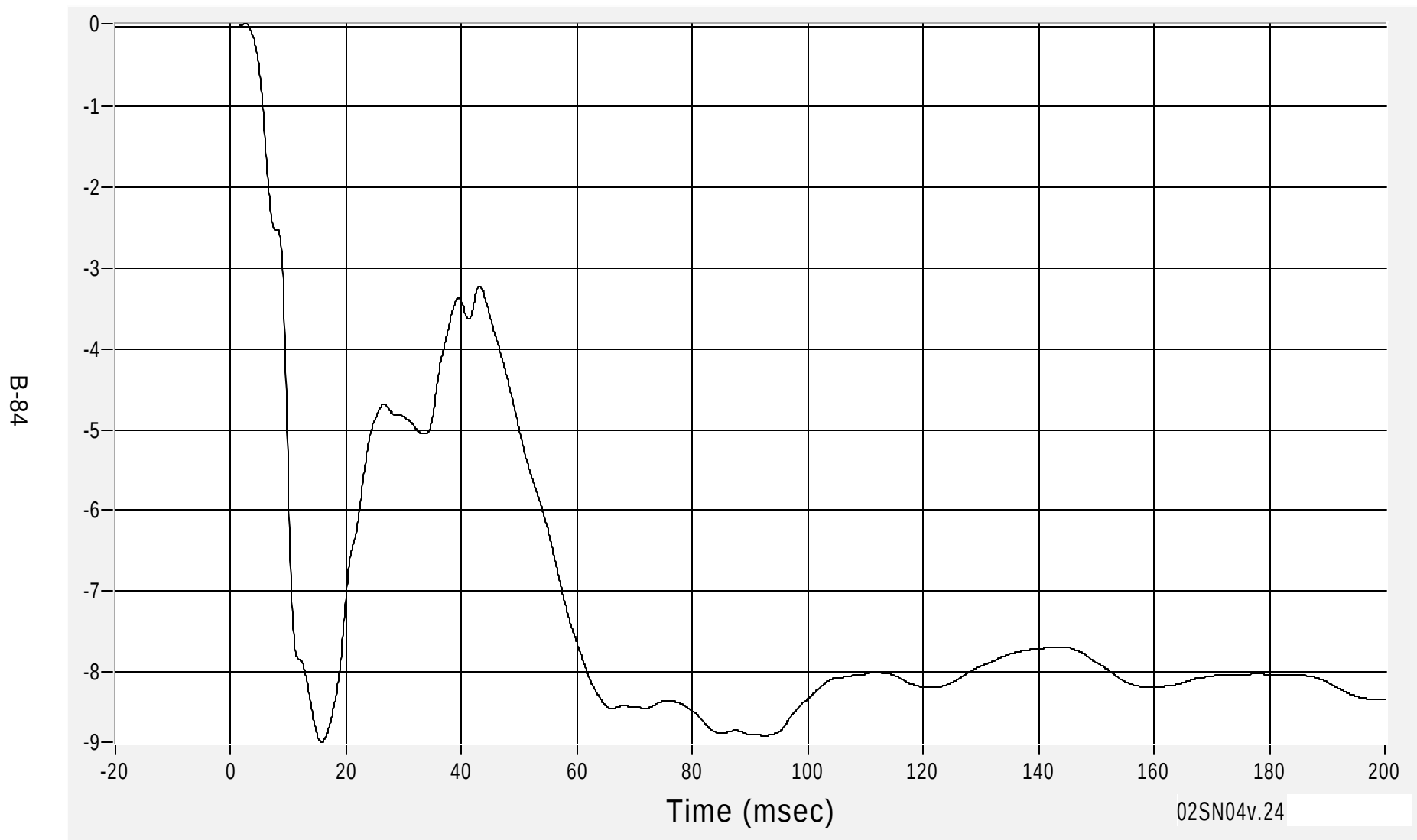
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Vehicle Center of Gravity (X) Velocity

Max 0.0 km/h at 2.6 msec

Min -8.9 km/h at 15.7 msec

Velocity (km/h) CFC180



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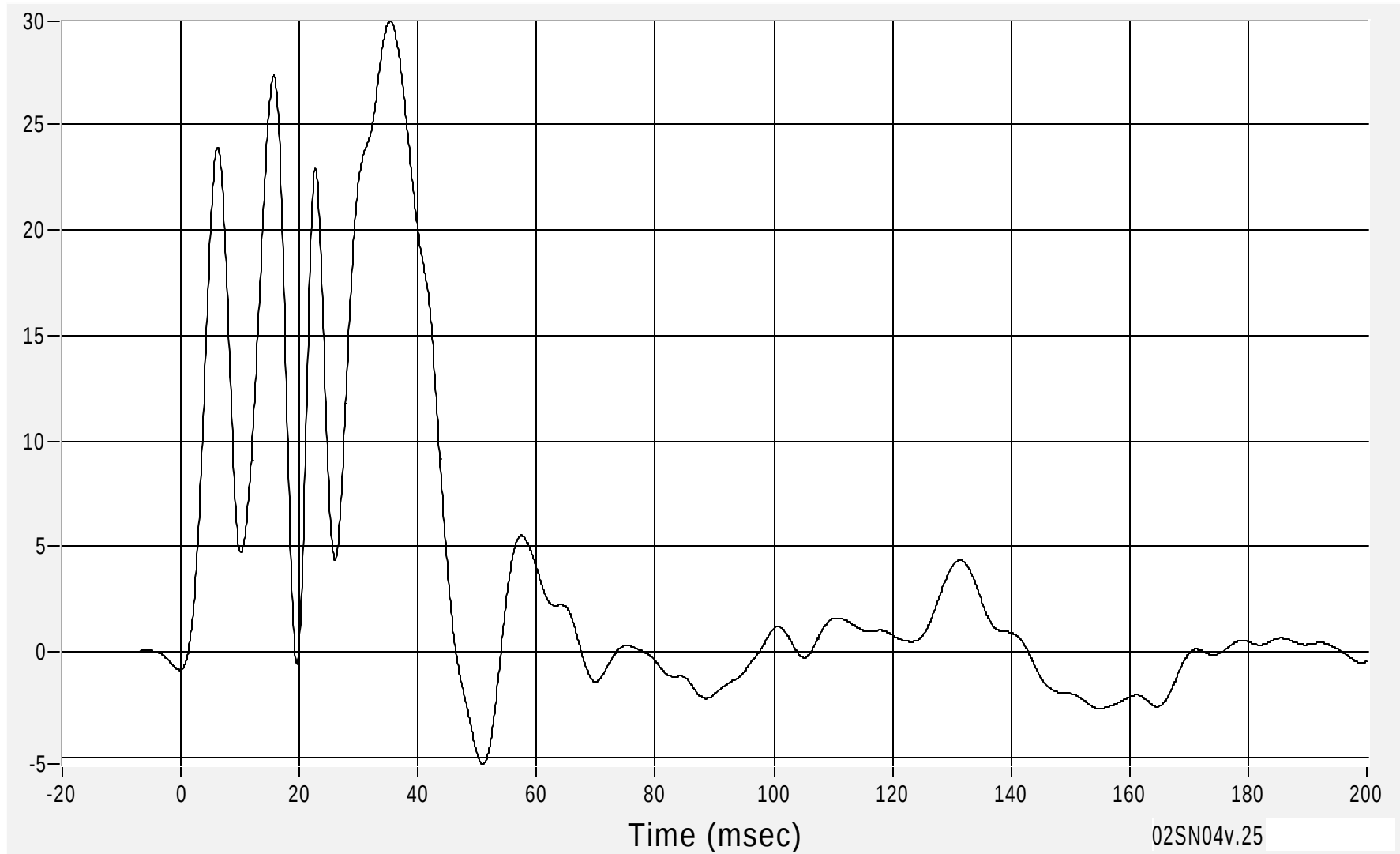
Vehicle Center of Gravity (Y) Acceleration

Max 29.9 G's at 35.3 msec

Acceleration (G's) CFC60

Min -5.3 G's at 50.9 msec

B-85



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27 March 2002

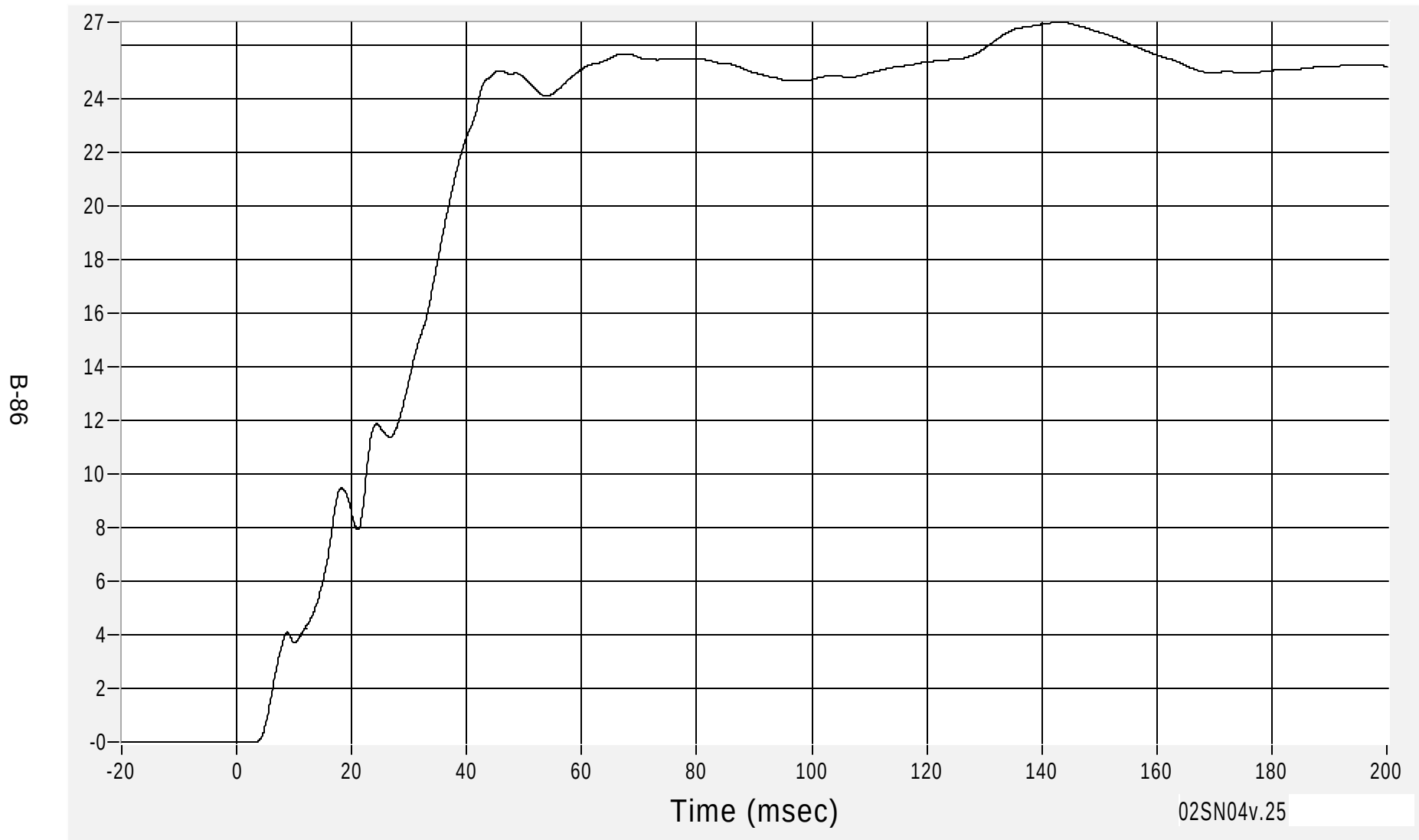
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Vehicle Center of Gravity (Y) Velocity

Max 26.8 km/h at 143.4 msec

Velocity (km/h) CFC180

Min 0.0 km/h at 2.9 msec



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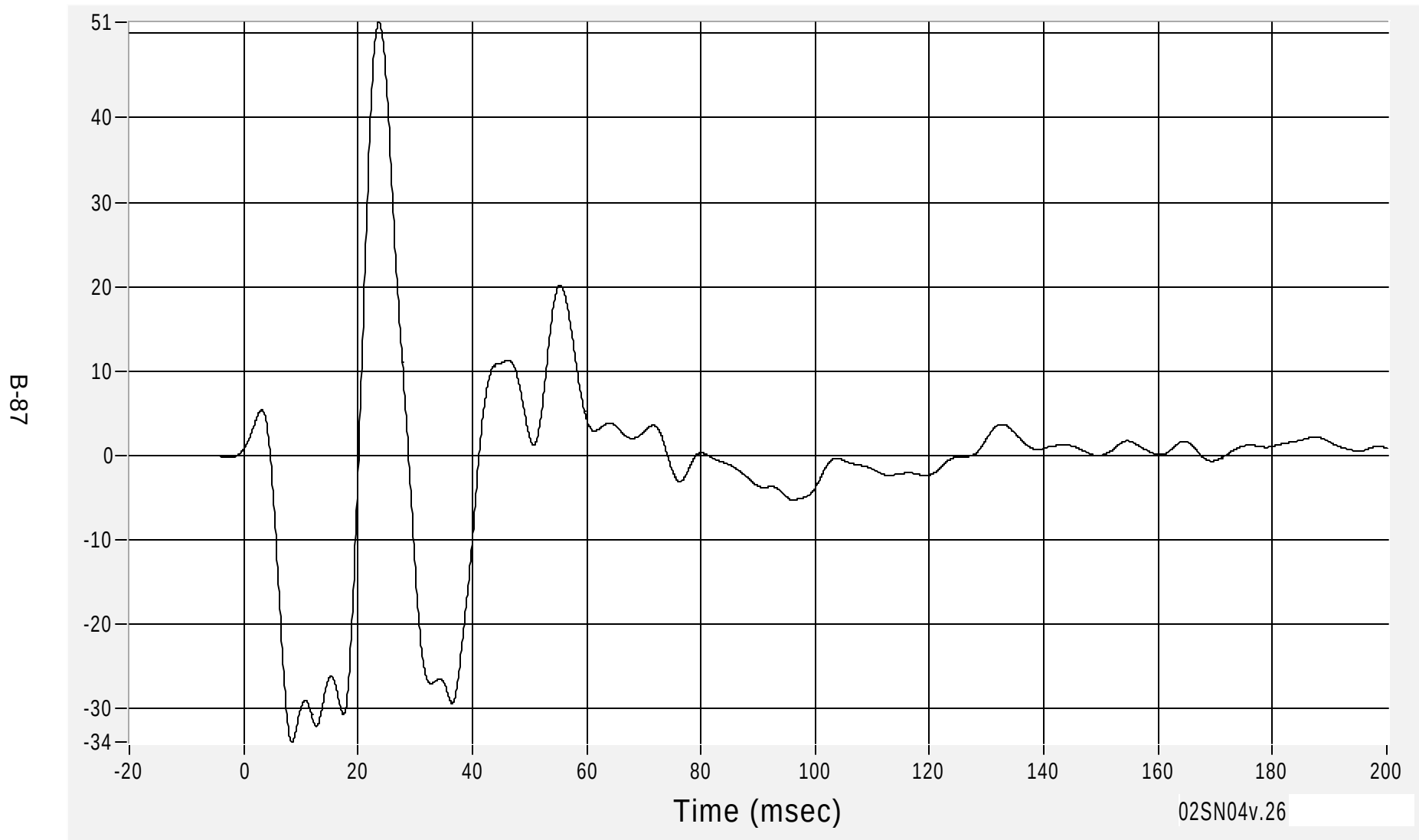
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Vehicle Center of Gravity (Z) Acceleration

Max 51.3 G's at 23.7 msec

Acceleration (G's) CFC60

Min -34.0 G's at 8.5 msec



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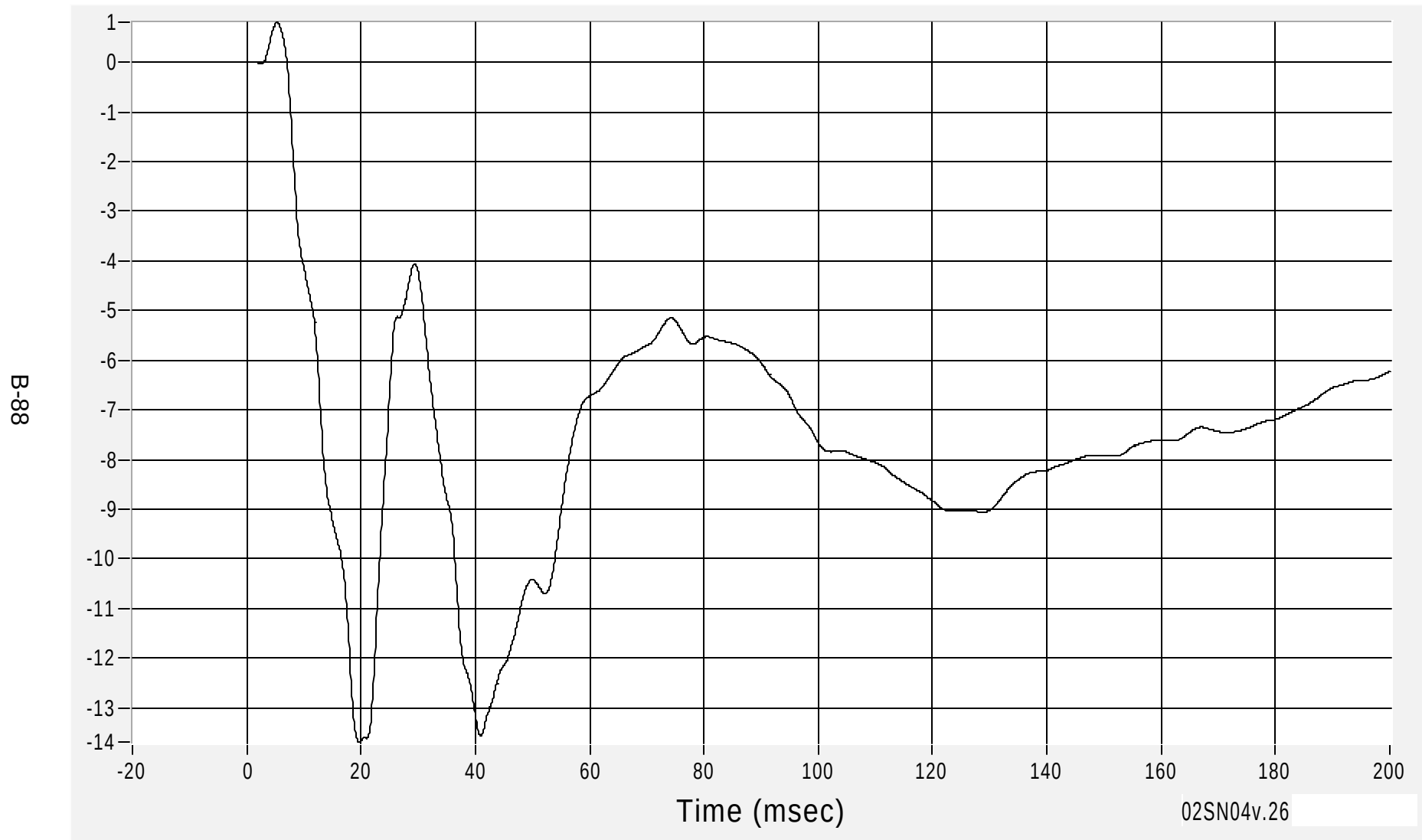
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Vehicle Center of Gravity (Z) Velocity

Max 0.8 km/h at 5.3 msec

Min -13.7 km/h at 19.7 msec

Velocity (km/h) CFC180



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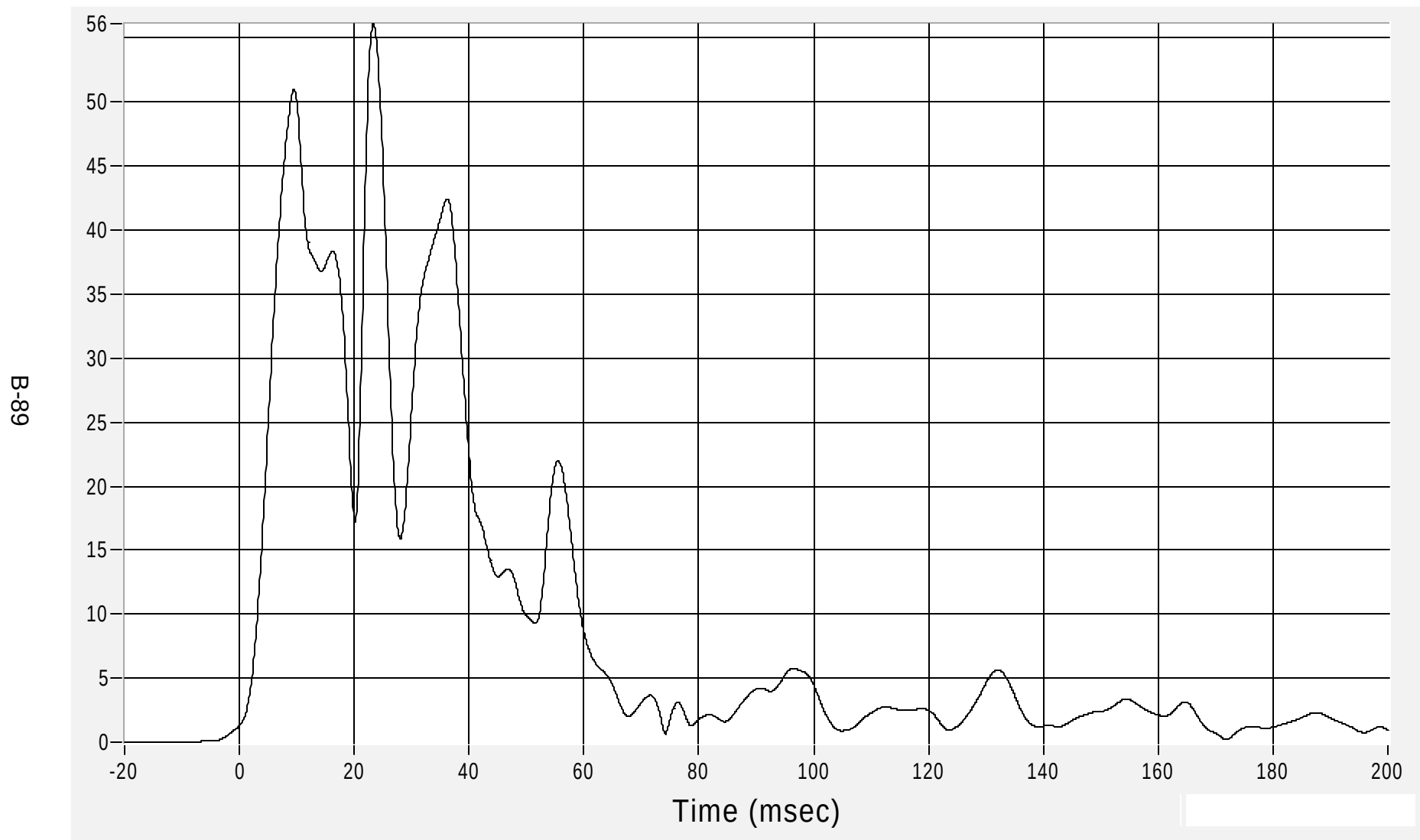
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Vehicle Center of Gravity Resultant Acceleration

Max 56.1 G's at 23.3 msec

Acceleration (G's) CFC60

Min 0.2 G's at 171.9 msec



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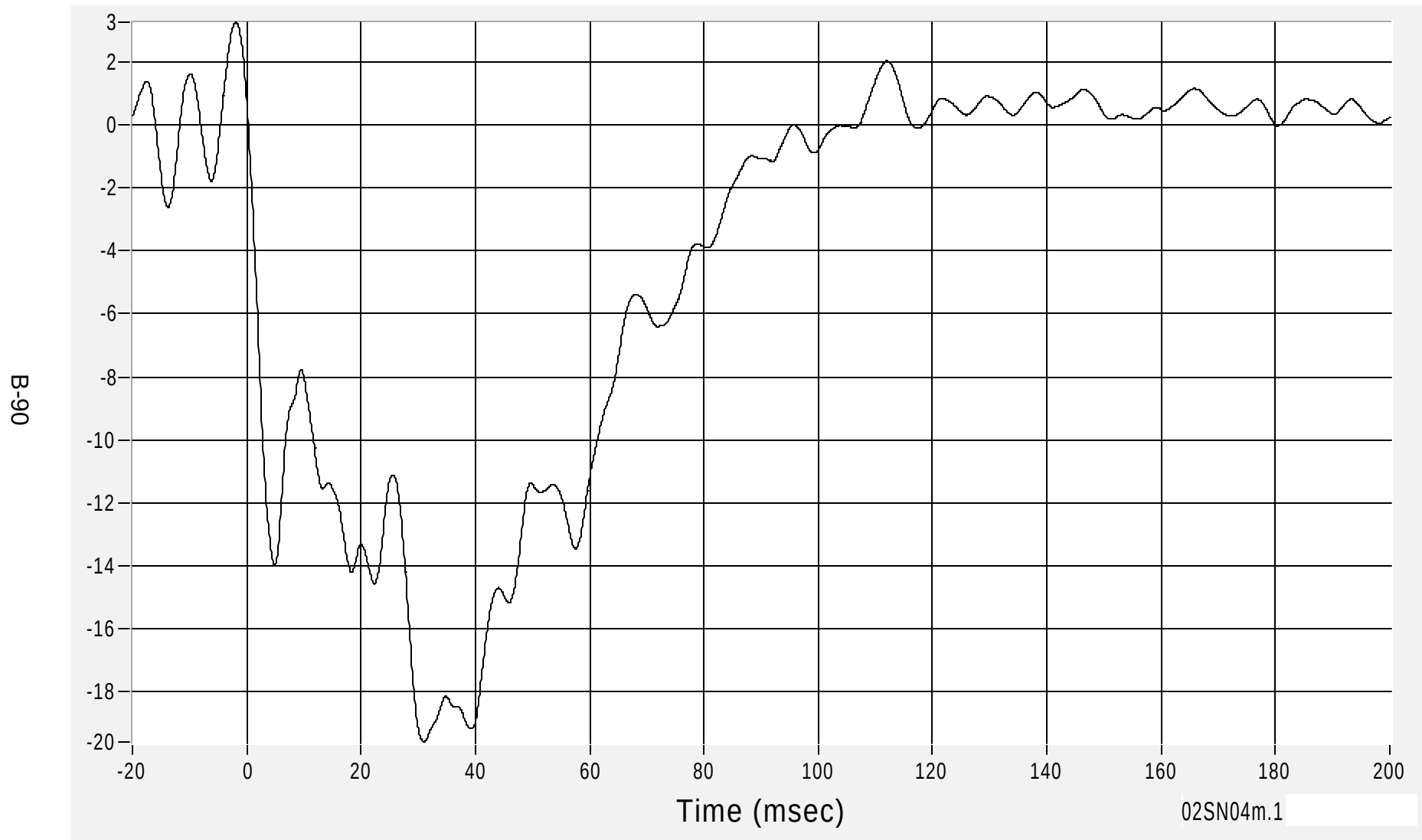
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MDB Center of Gravity (X) Acceleration

Max 2.0 G's at 112.0 msec

Acceleration (G's) CFC60

Min -19.6 G's at 31.0 msec



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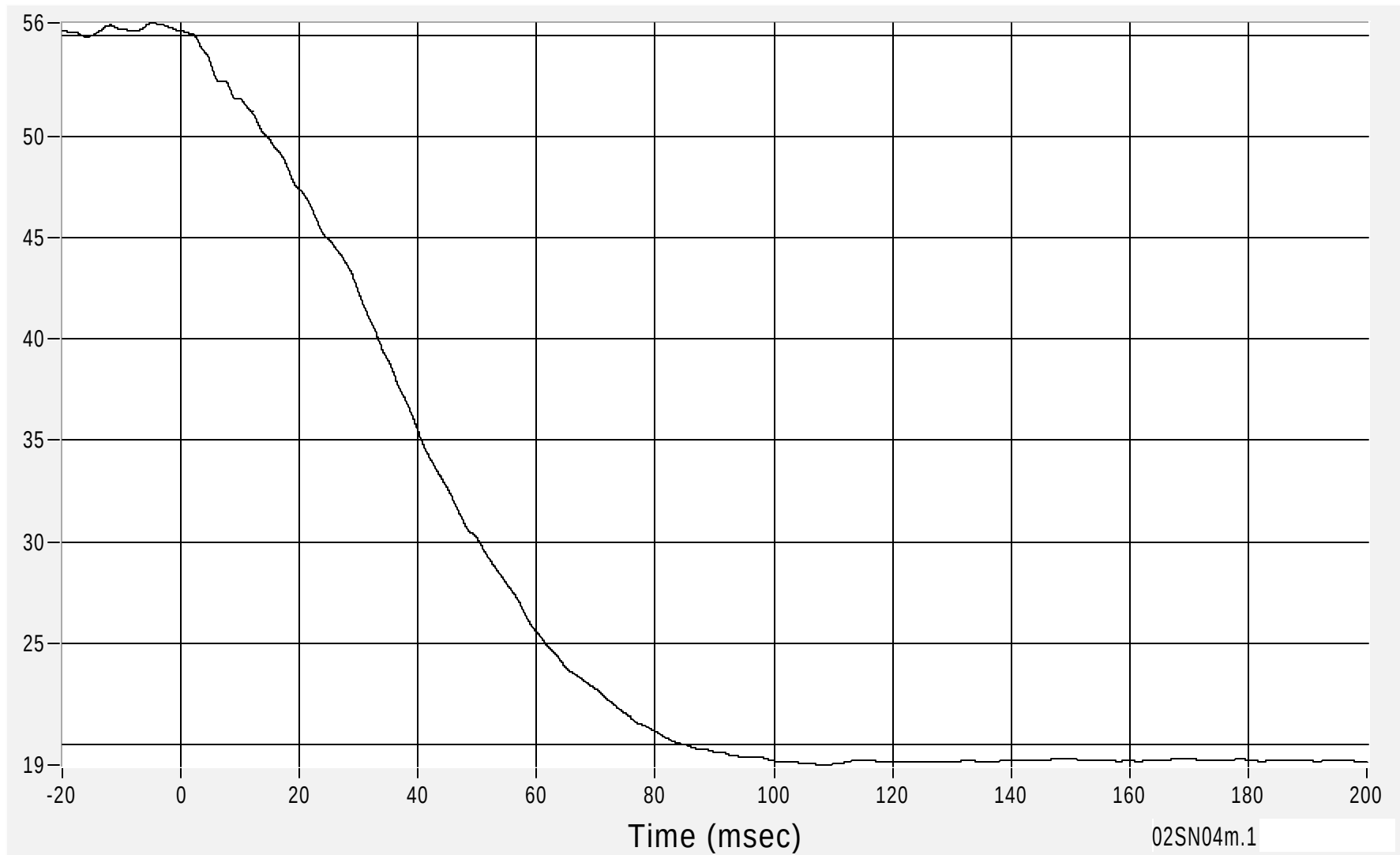
MDB Center of Gravity (X) Velocity

Max 55.2 km/h at 0.2 msec

Min 19.0 km/h at 108.0 msec

Velocity (km/h) CFC180

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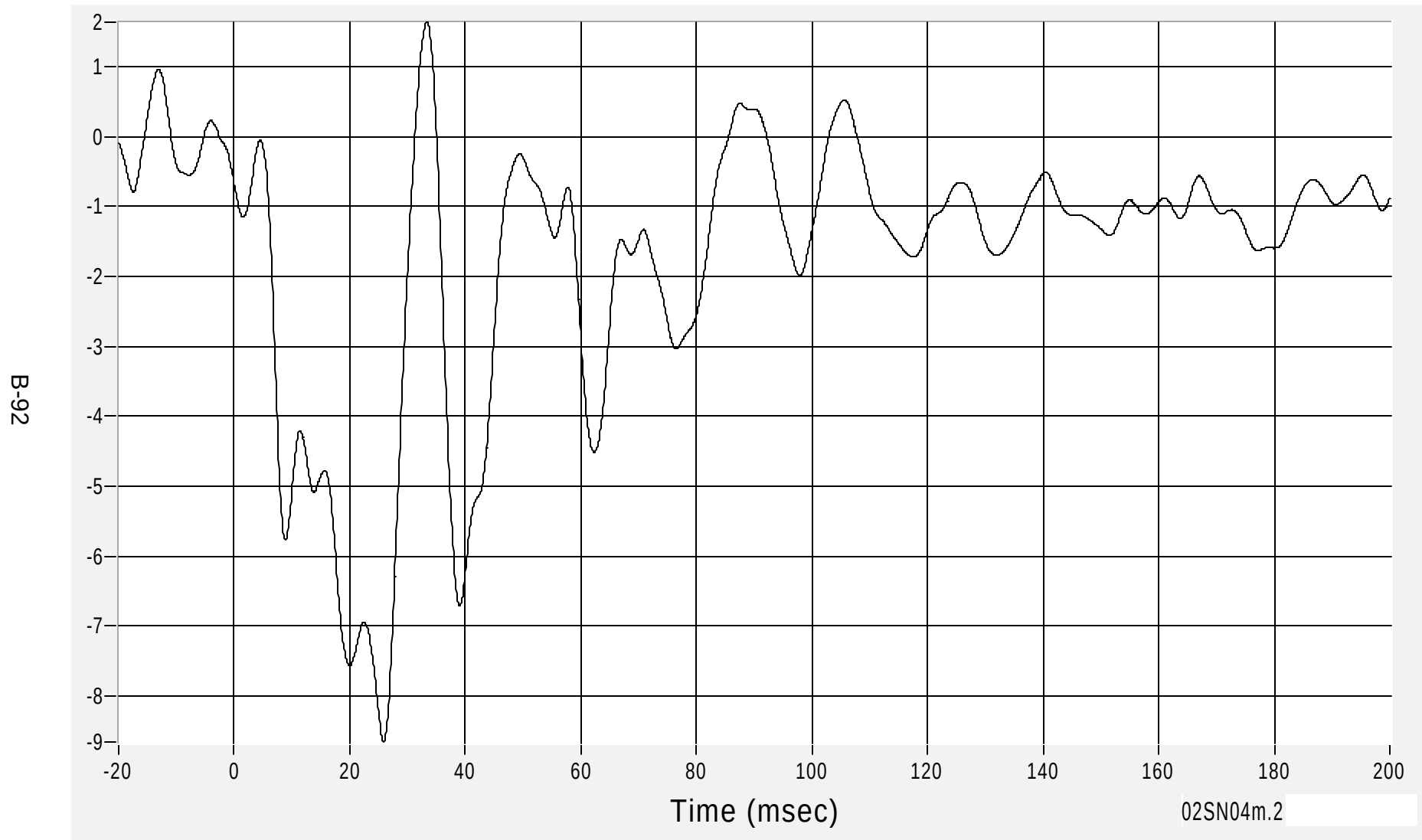
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MDB Center of Gravity (Y) Acceleration

Max 1.6 G's at 33.3 msec

Acceleration (G's) CFC60

Min -8.7 G's at 25.8 msec



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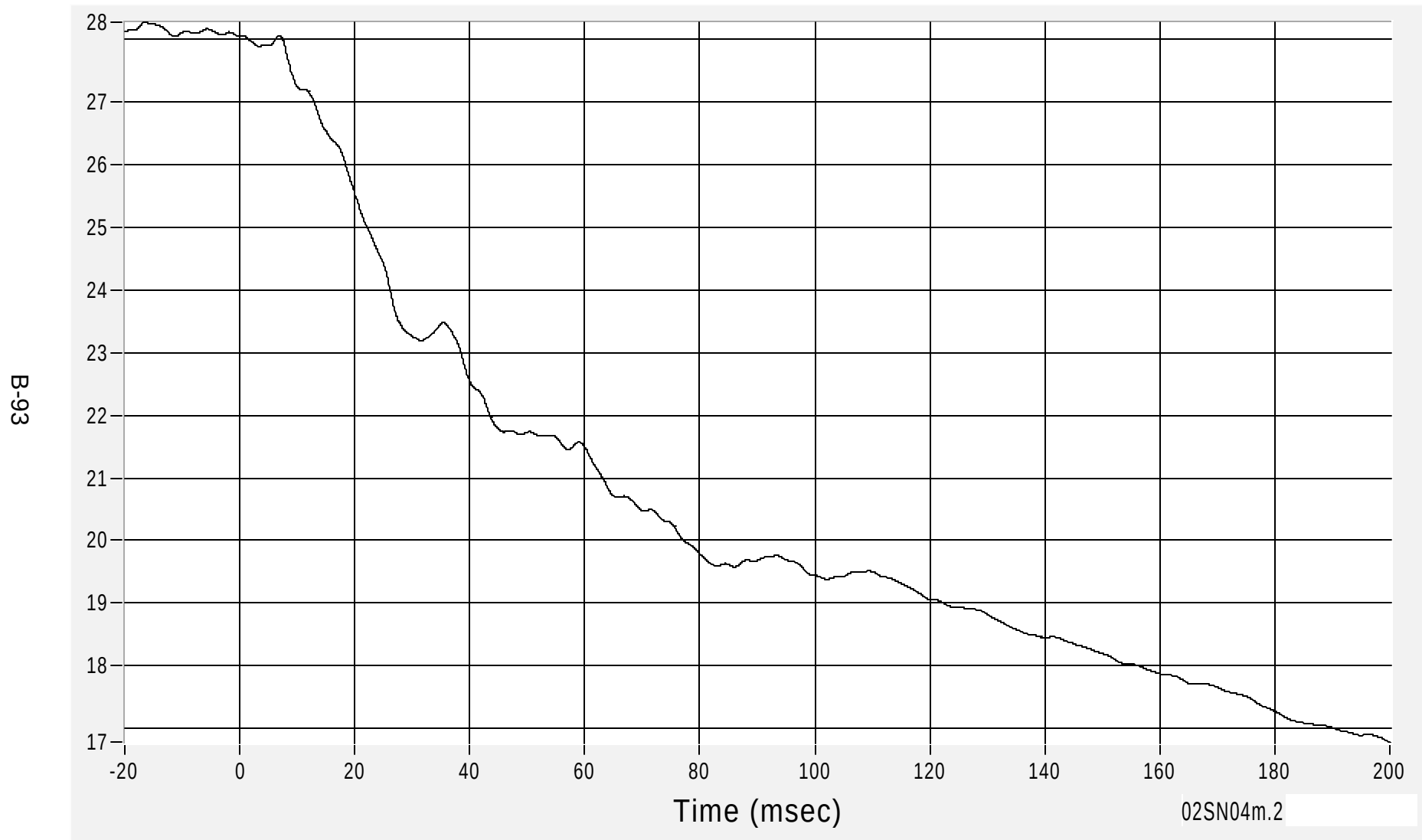
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MDB Center of Gravity (Y) Velocity

Max 28.1 km/h at 0.0 msec

Min 16.8 km/h at 199.9 msec

Velocity (km/h) CFC180



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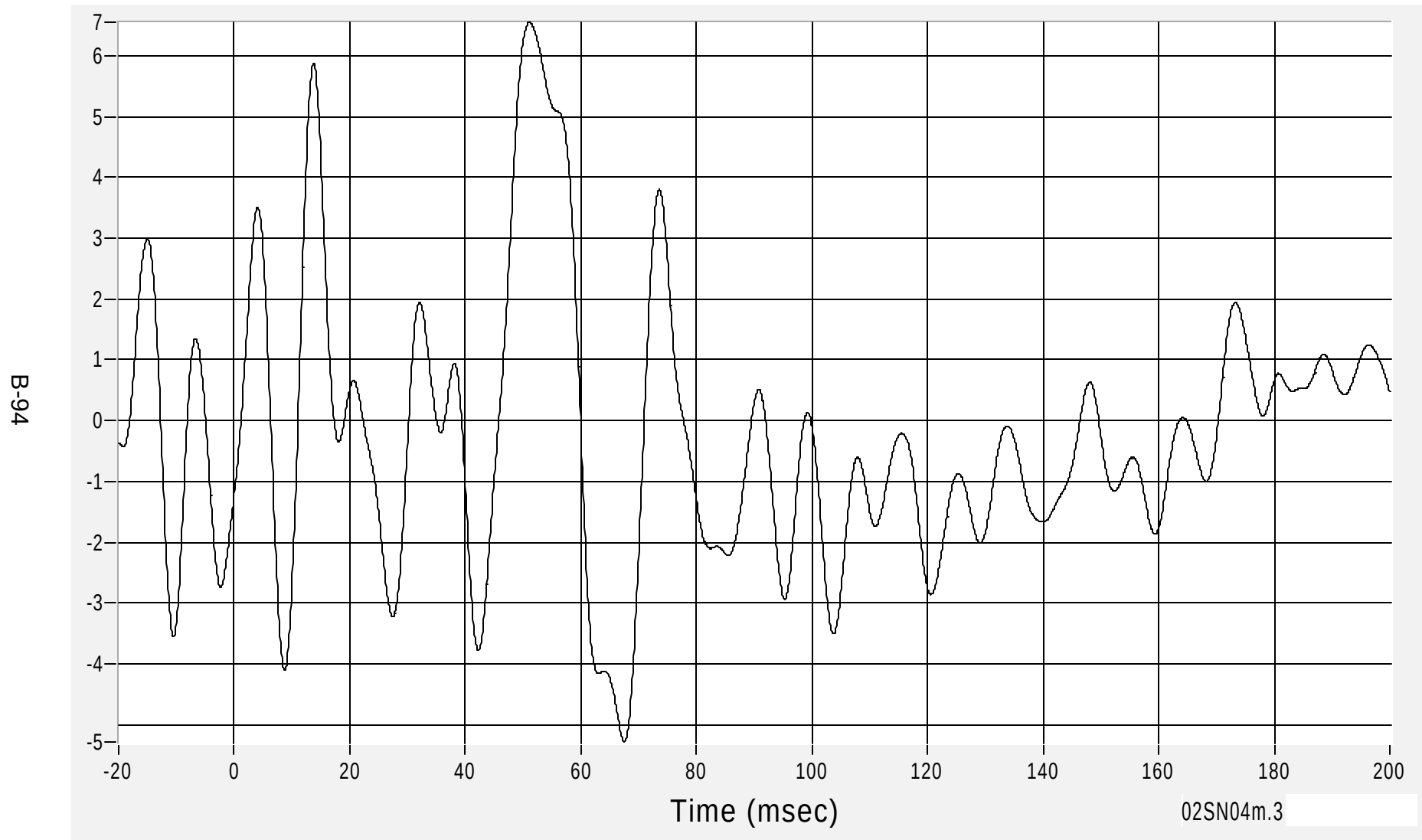
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MDB Center of Gravity (Z) Acceleration

Max 6.5 G's at 51.0 msec

Acceleration (G's) CFC60

Min -5.3 G's at 67.5 msec



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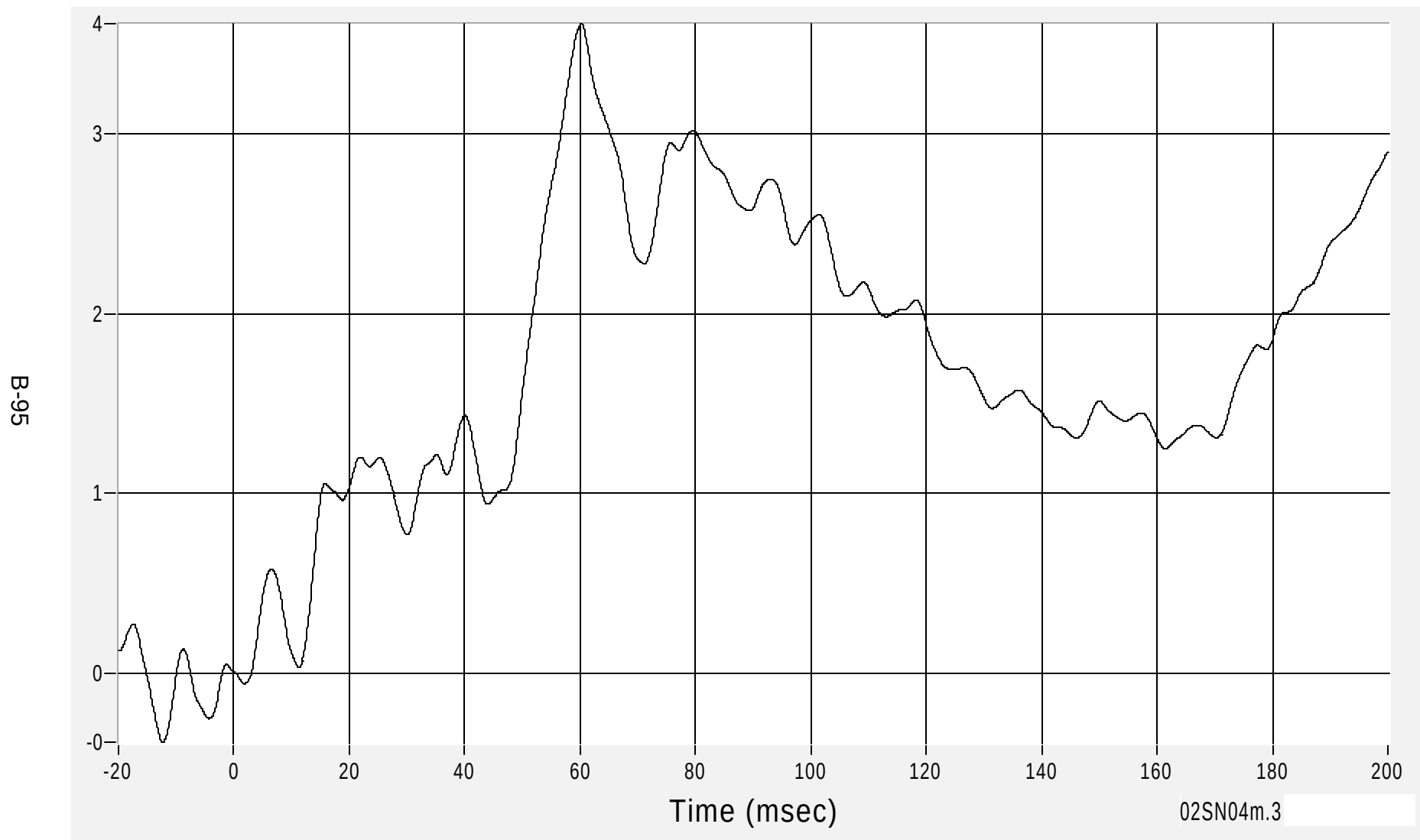
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MDB Center of Gravity (Z) Velocity

Max 3.6 km/h at 60.2 msec

Velocity (km/h) CFC180

Min 0.0 km/h at 1.8 msec



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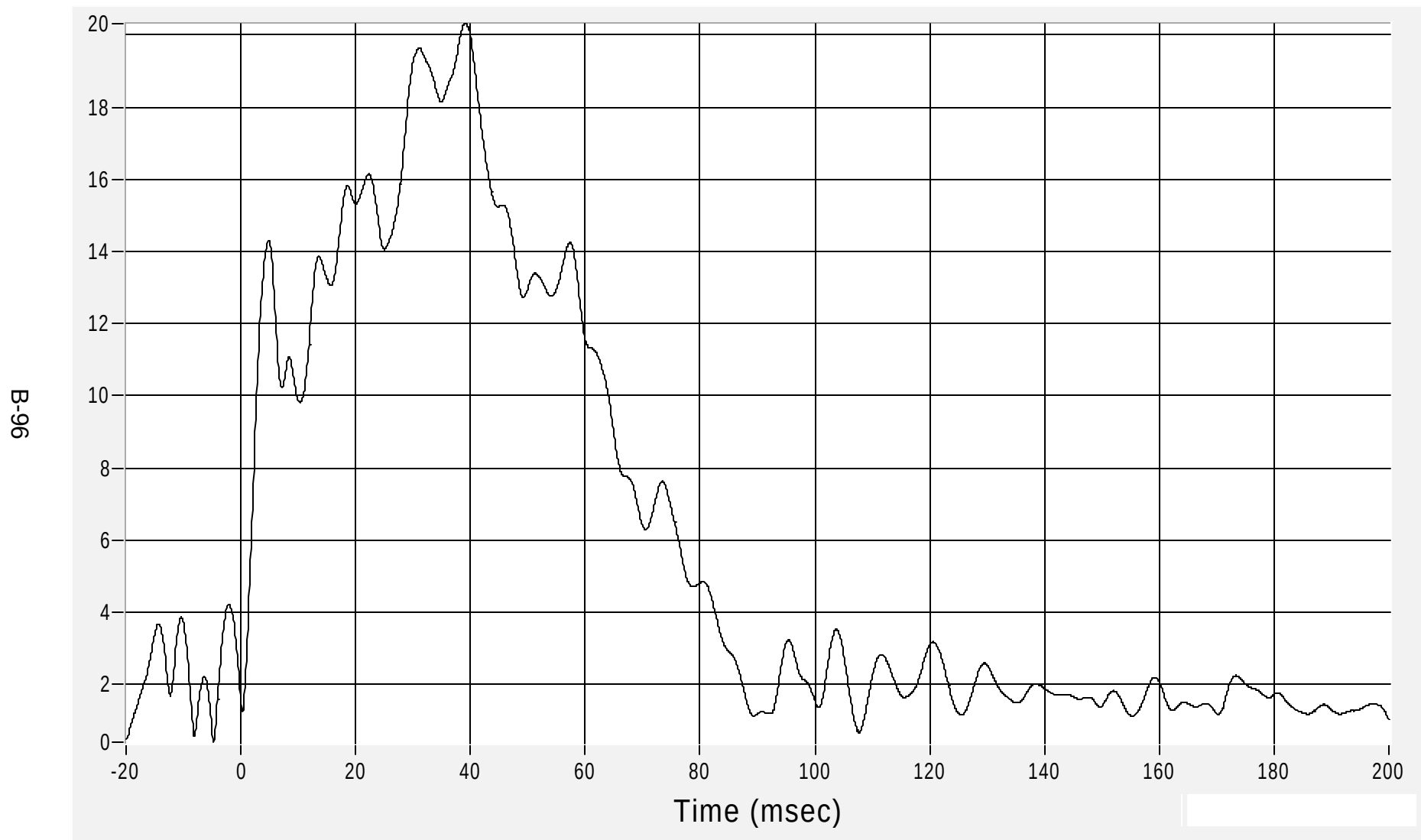
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MDB Center of Gravity Resultant Acceleration

Max 20.3 G's at 39.1 msec

Acceleration (G's) CFC60

Min 0.7 G's at 107.7 msec



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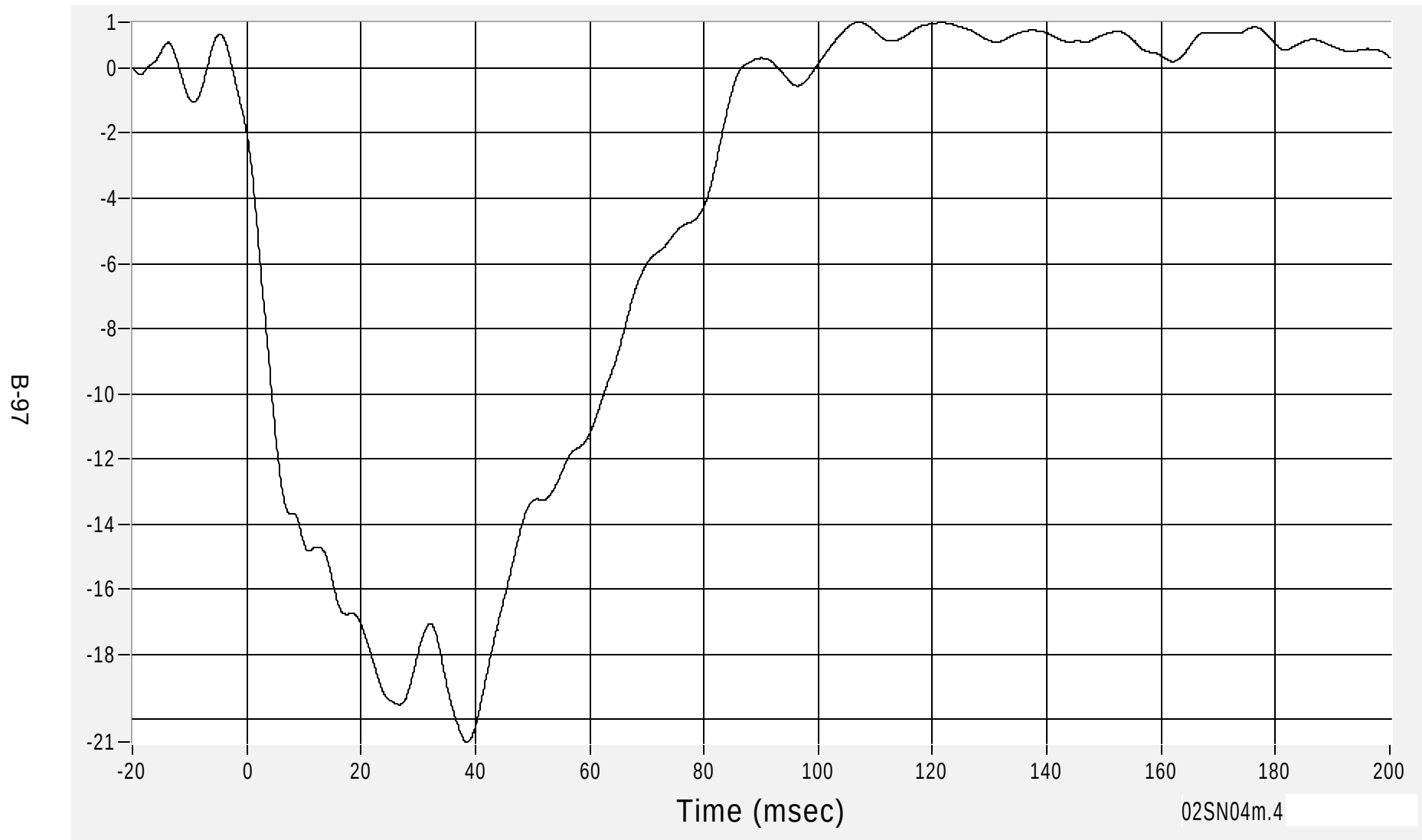
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MDB Rear (X) Acceleration

Max 1.4 G's at 107.1 msec

Acceleration (G's) CFC60

Min -20.7 G's at 38.6 msec



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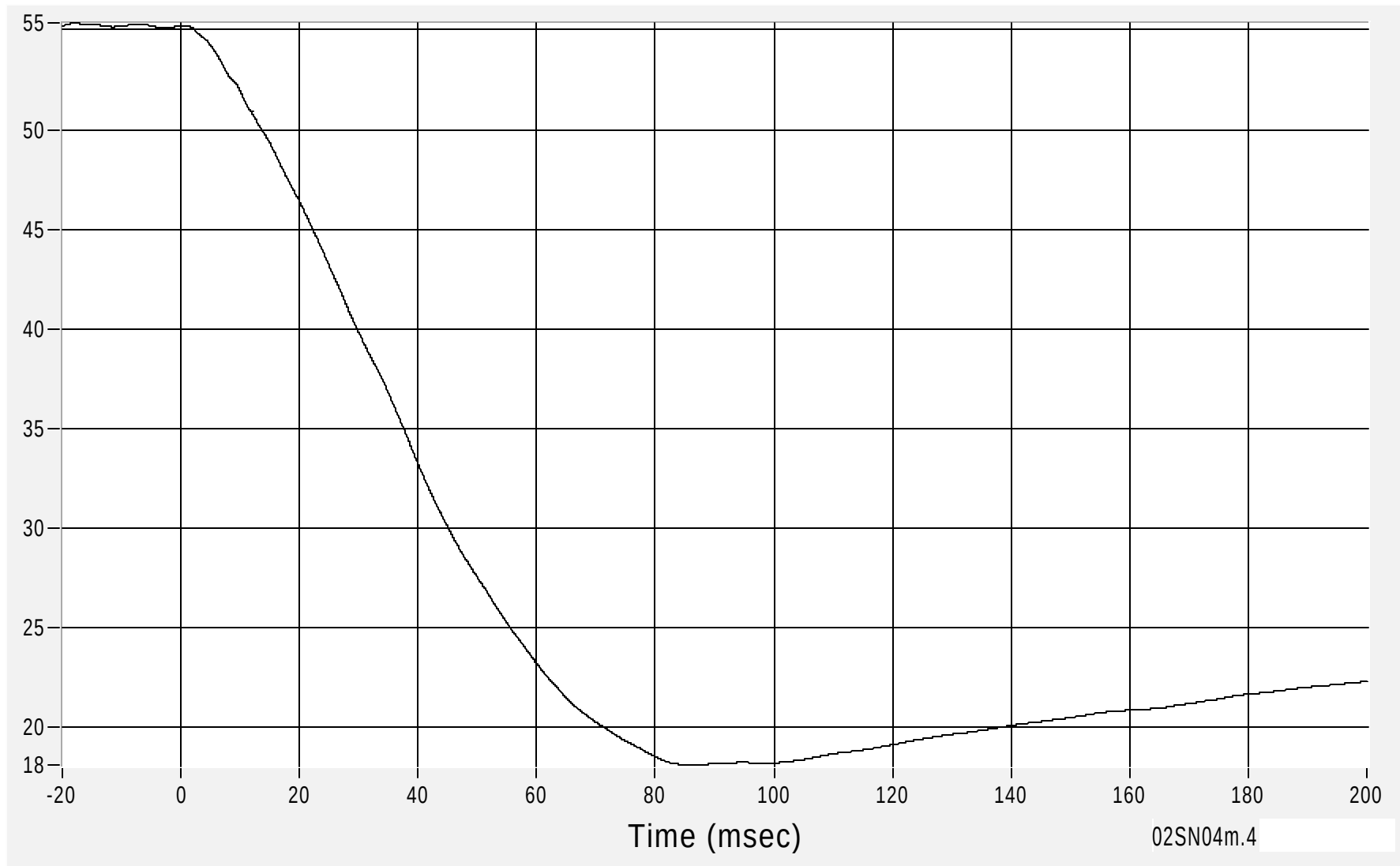
MDB Rear (X) Velocity

Max 55.2 km/h at 0.0 msec

Min 18.1 km/h at 85.4 msec

Velocity (km/h) CFC180

86-B



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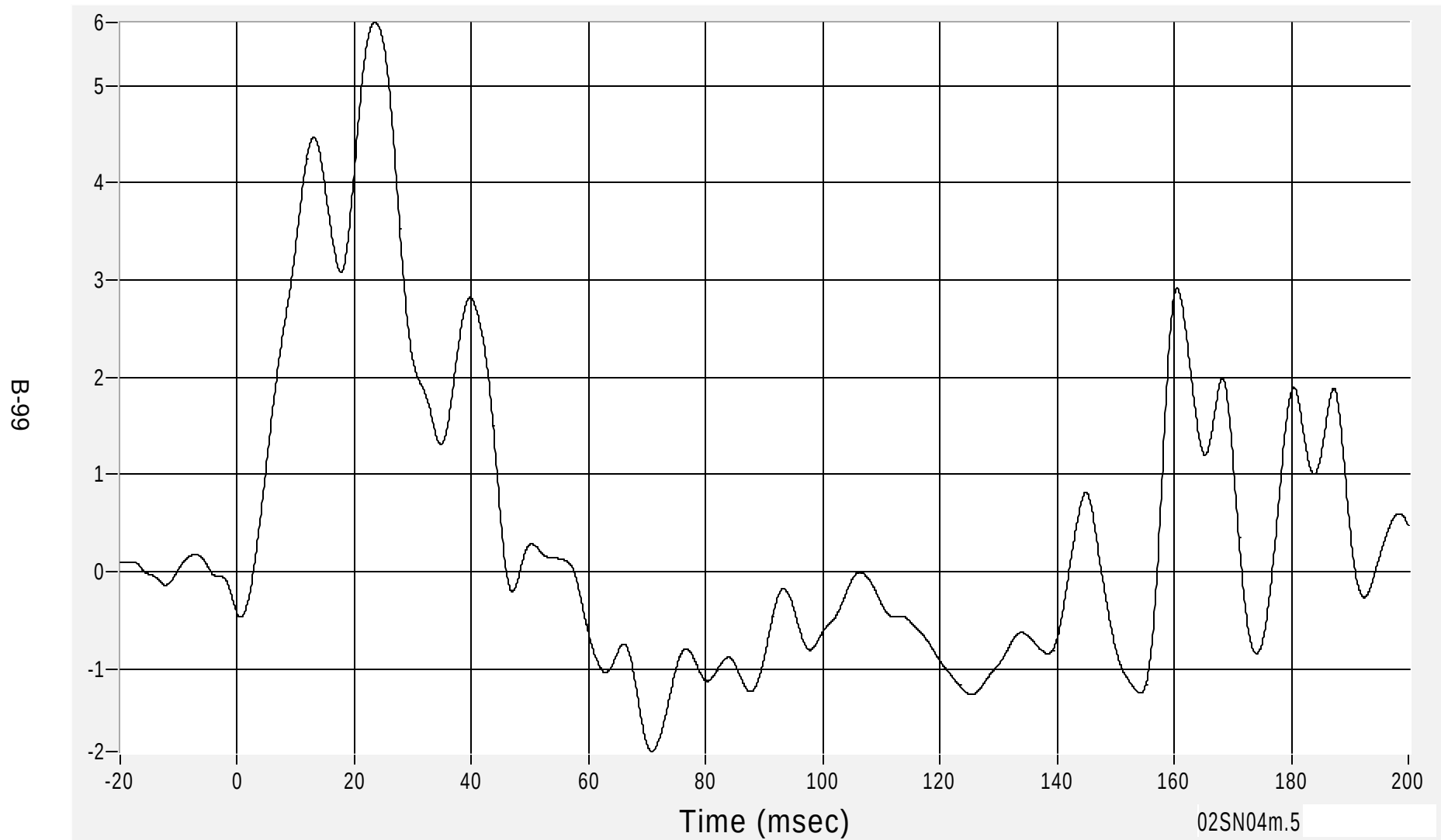
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MDB Rear (Y) Acceleration

Max 5.7 G's at 23.5 msec

Acceleration (G's) CFC60

Min -1.9 G's at 70.8 msec



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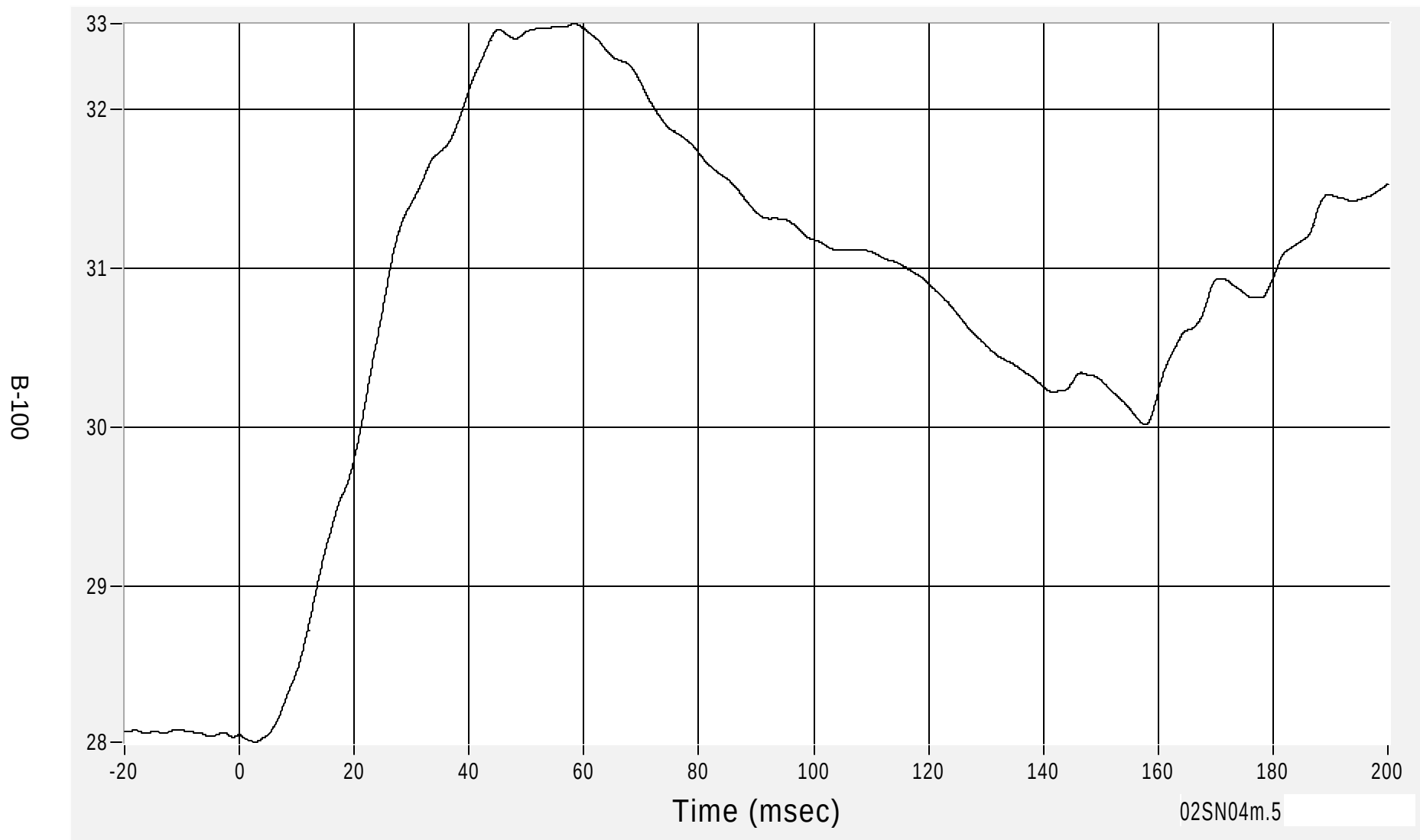
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MDB Rear (Y) Velocity

Max 32.5 km/h at 58.3 msec

Velocity (km/h) CFC180

Min 28.0 km/h at 2.7 msec



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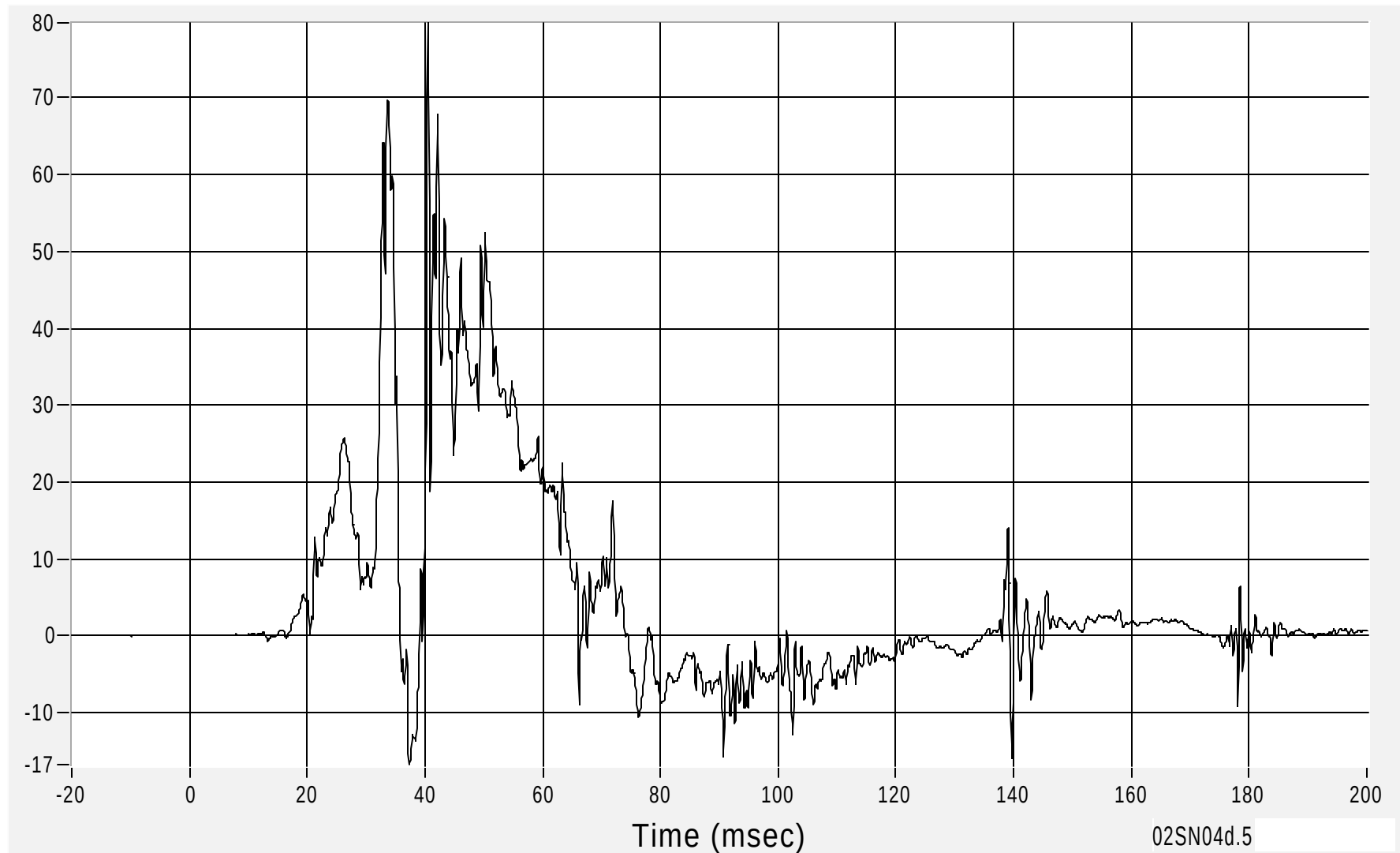
Driver Upper Rib (Y) Acceleration - Redundant

Max 79.7 G's at 40.6 msec

Acceleration (G's) CFC1000

Min -16.8 G's at 37.4 msec

B-101



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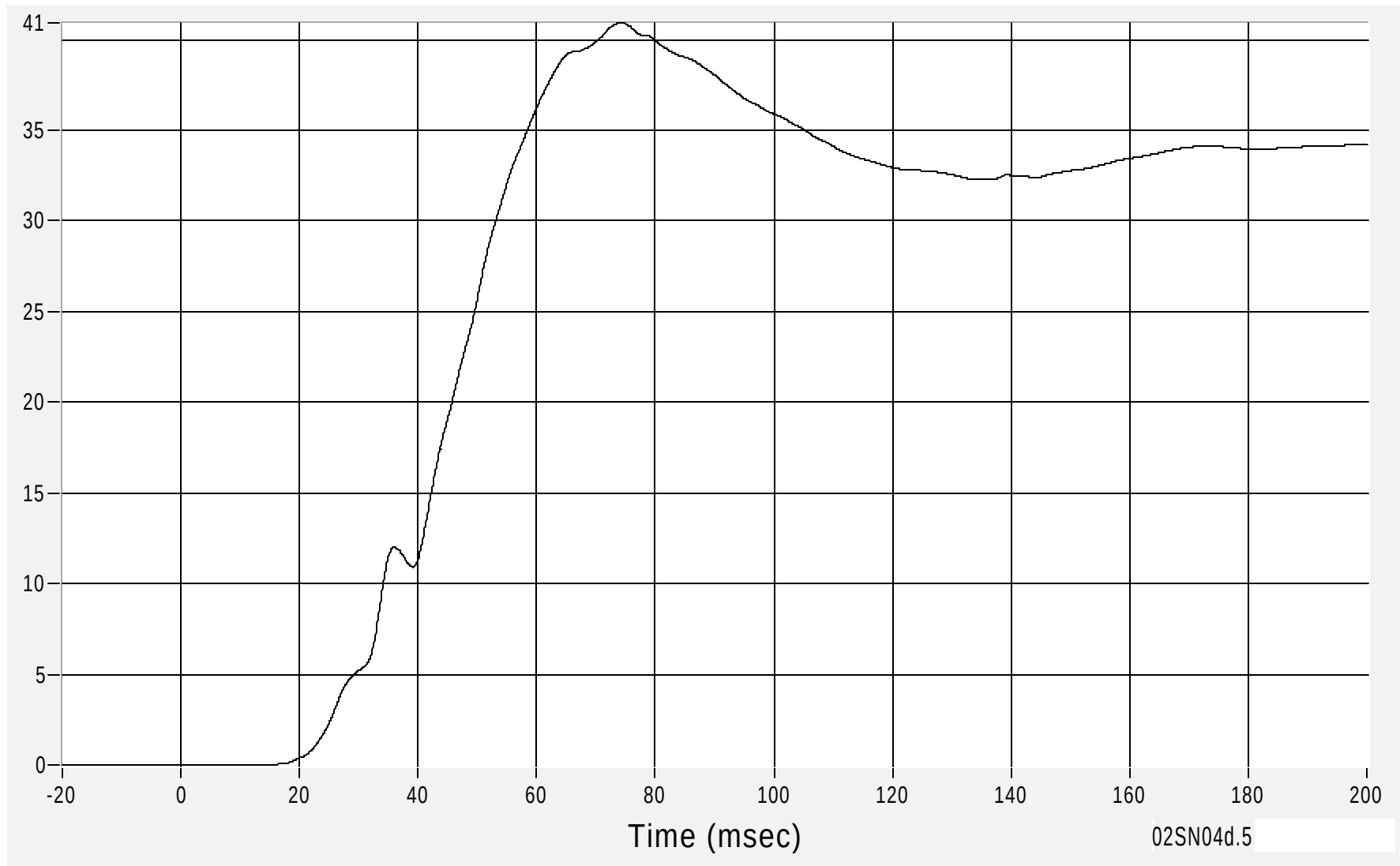
Driver Upper Rib (Y) Velocity - Redundant

Max 40.9 km/h at 74.2 msec

Velocity (km/h) CFC180

Min 0.0 km/h at 0.0 msec

B-102



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27 March 2002

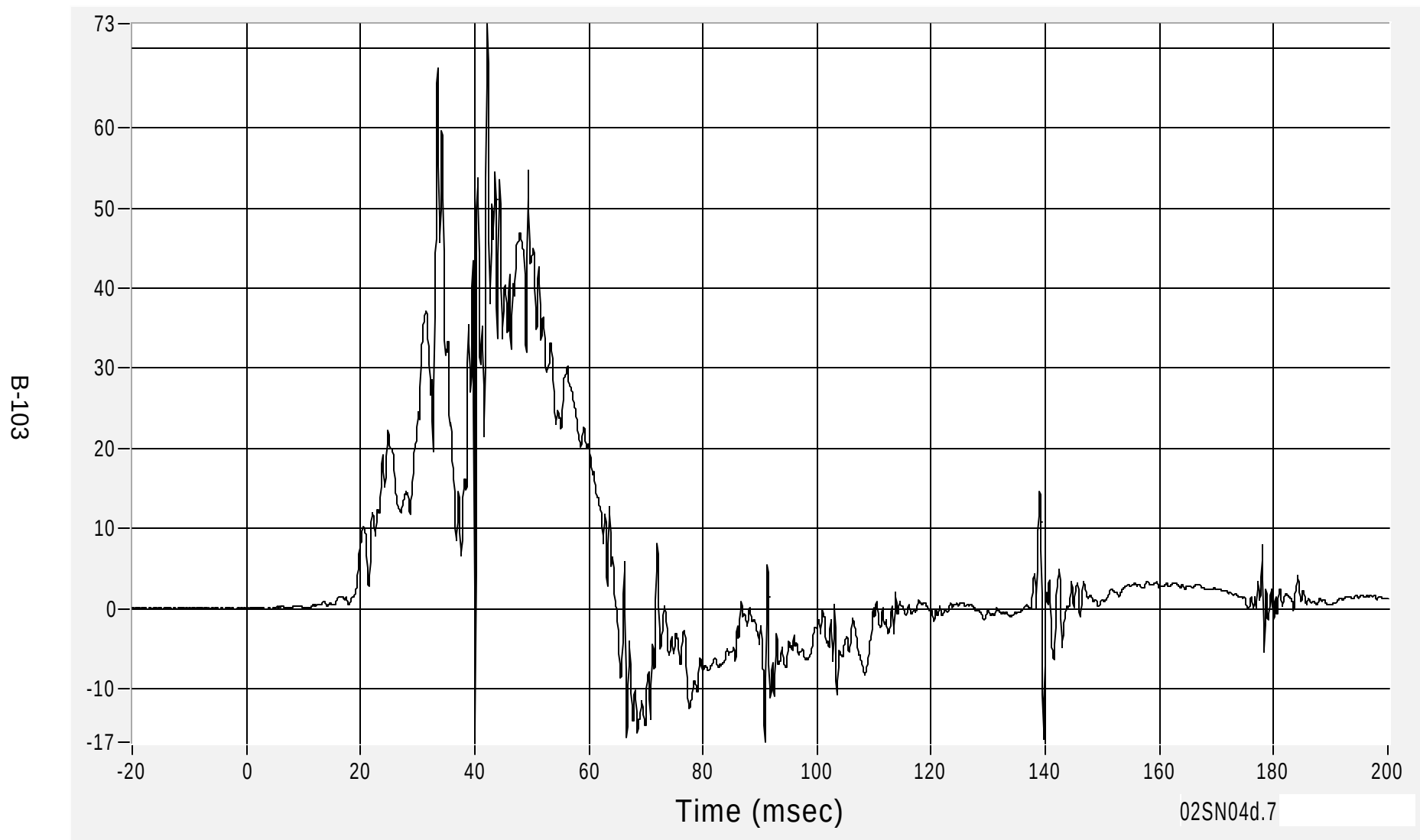
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Driver Lower Rib (Y) Acceleration - Redundant

Max 73.0 G's at 42.2 msec

Acceleration (G's) CFC1000

Min -16.7 G's at 90.9 msec



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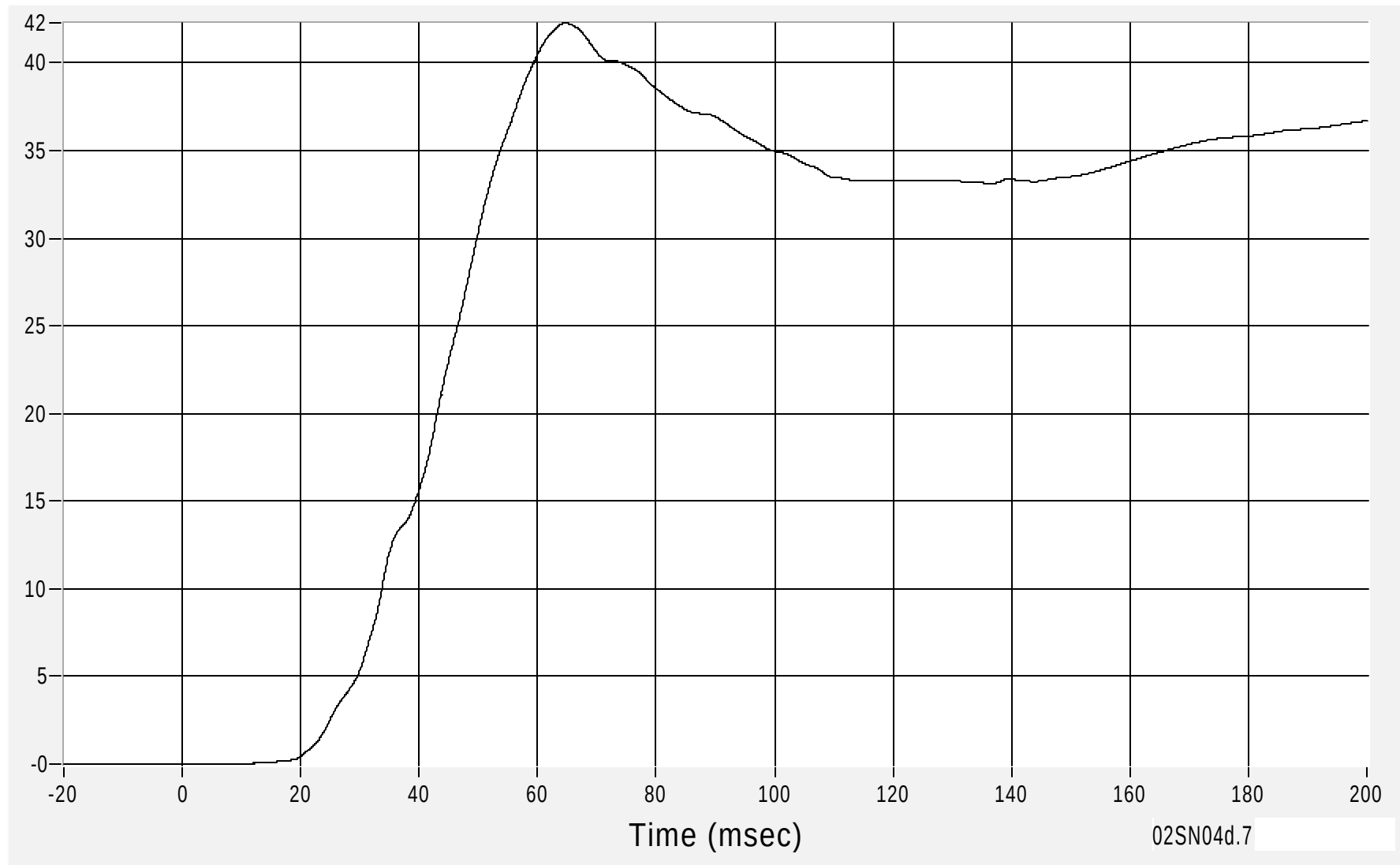
Driver Lower Rib (Y) Velocity - Redundant

Max 42.3 km/h at 64.7 msec

Velocity (km/h) CFC180

Min 0.0 km/h at 0.0 msec

B-104



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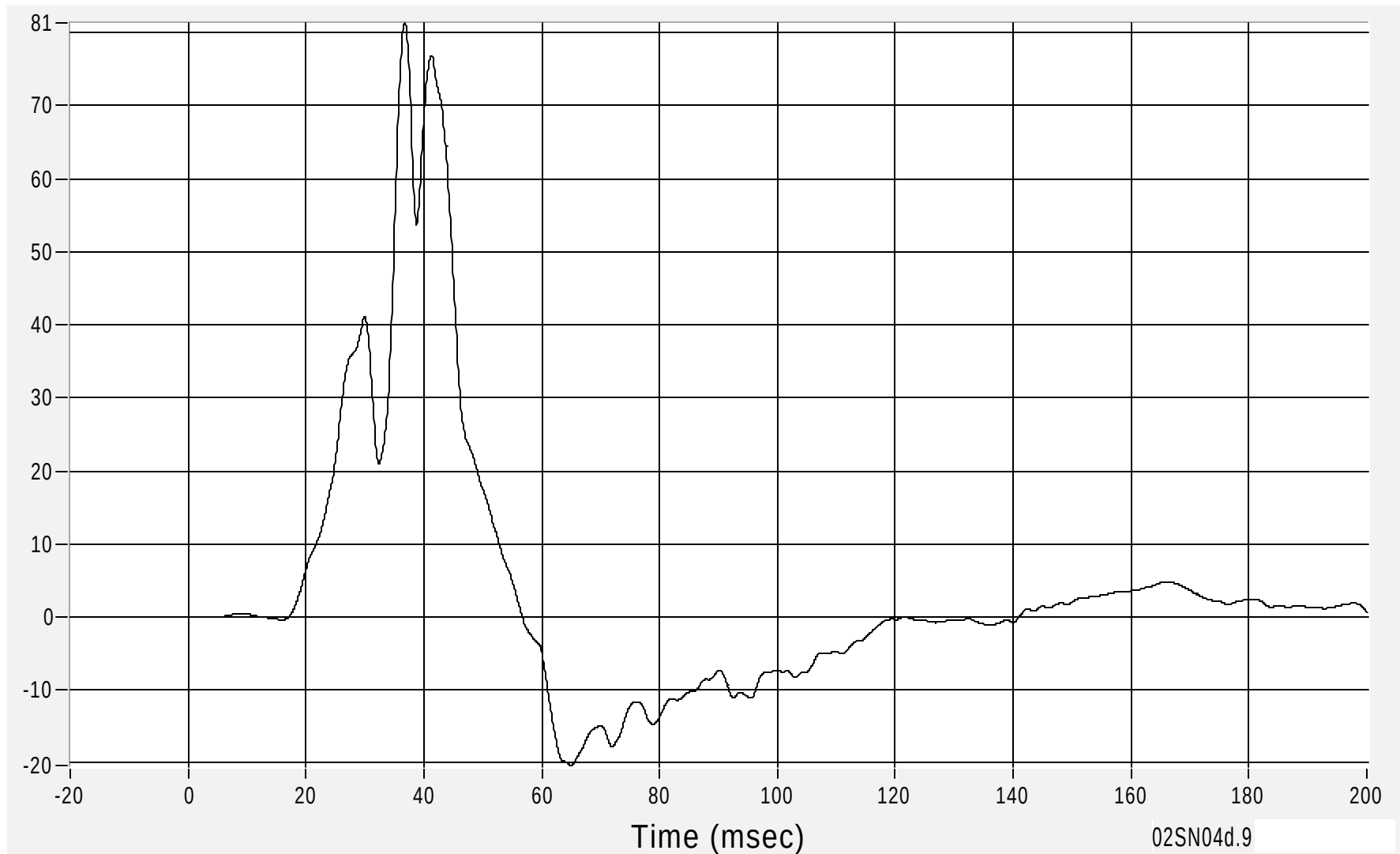
Driver Lower Spine (Y) Acceleration - Redundant

Max 81.3 G's at 36.8 msec

Acceleration (G's) CFC180

Min -20.3 G's at 65.0 msec

B-105



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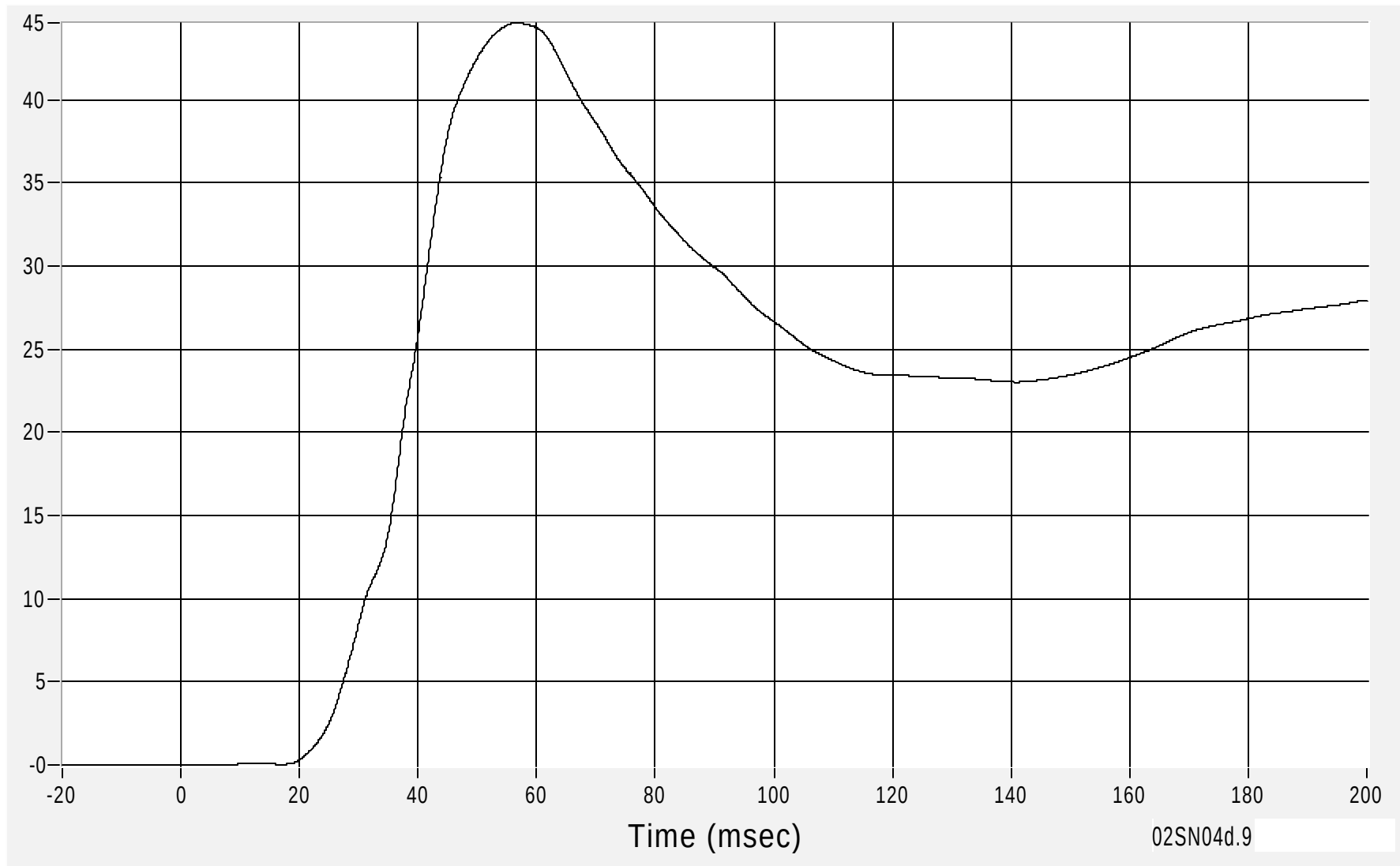
Driver Lower Spine (Y) Velocity - Redundant

Max 44.6 km/h at 56.7 msec

Velocity (km/h) CFC180

Min 0.0 km/h at 0.0 msec

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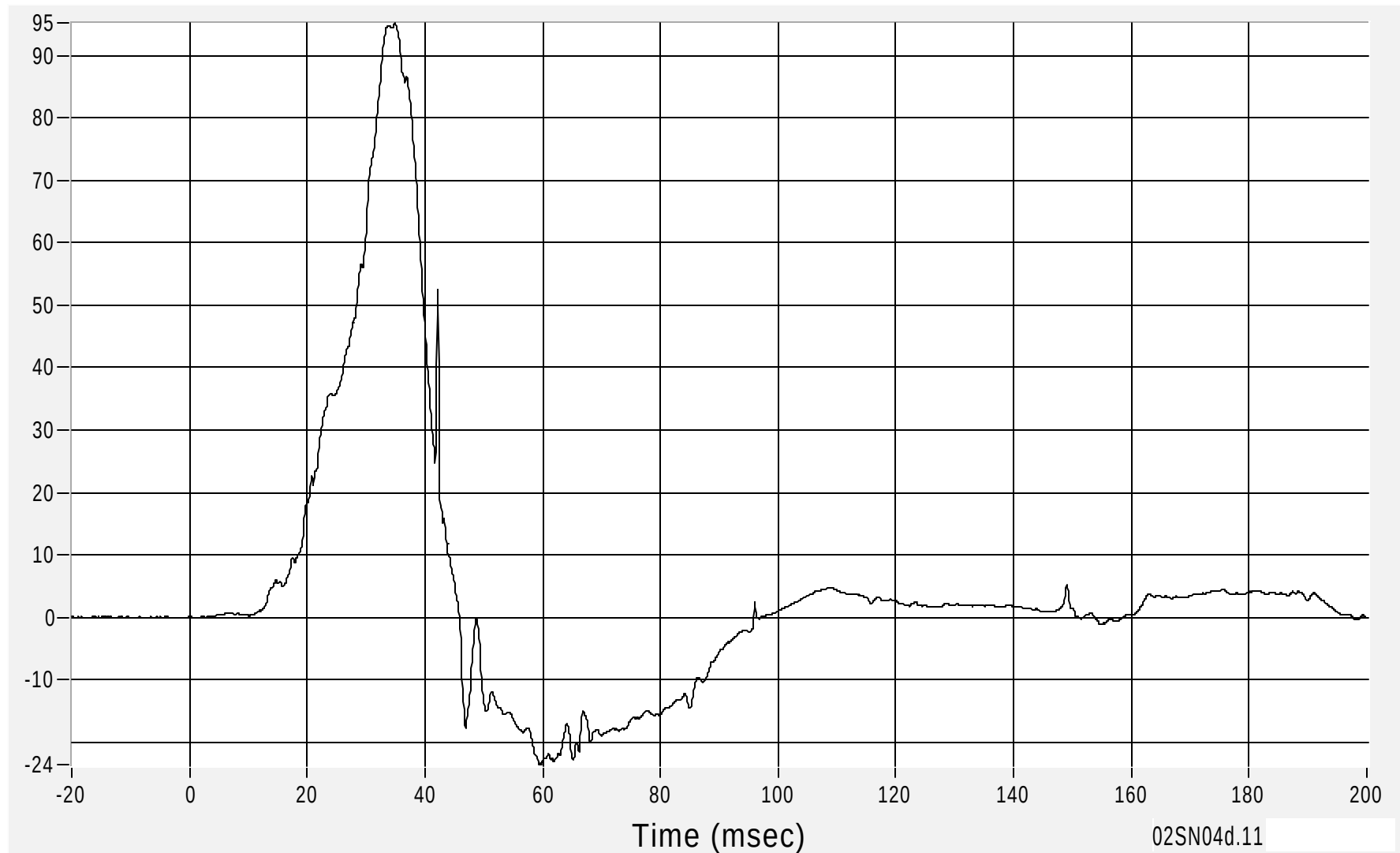
Driver Pelvic (Y) Acceleration - Redundant

Max 95.3 G's at 34.9 msec

Min -23.6 G's at 59.5 msec

Acceleration (G's) CFC1000

B-107



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27 March 2002

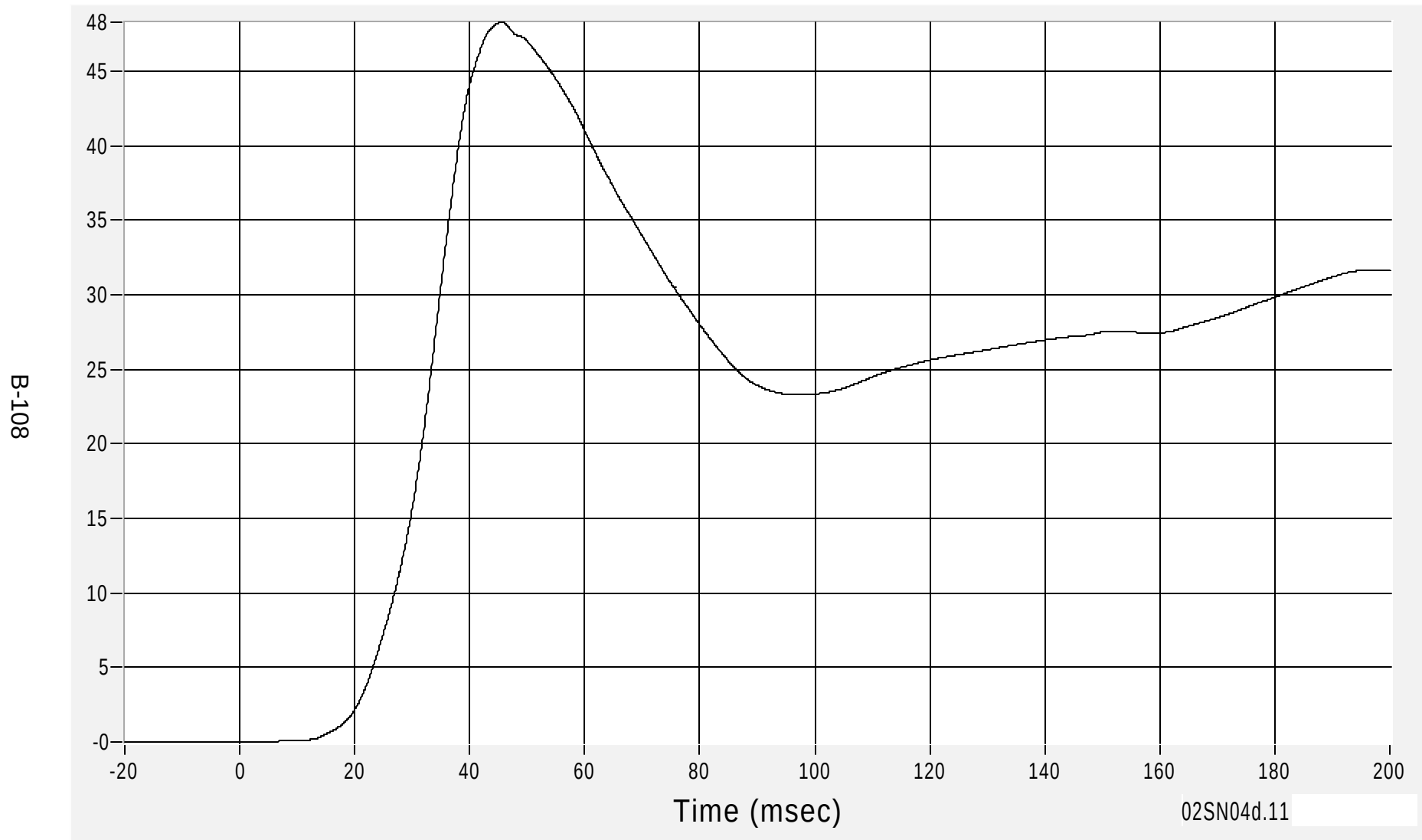
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Driver Pelvic (Y) Velocity - Redundant

Velocity (km/h) CFC180

Max 48.3 km/h at 45.5 msec

Min 0.0 km/h at 0.0 msec



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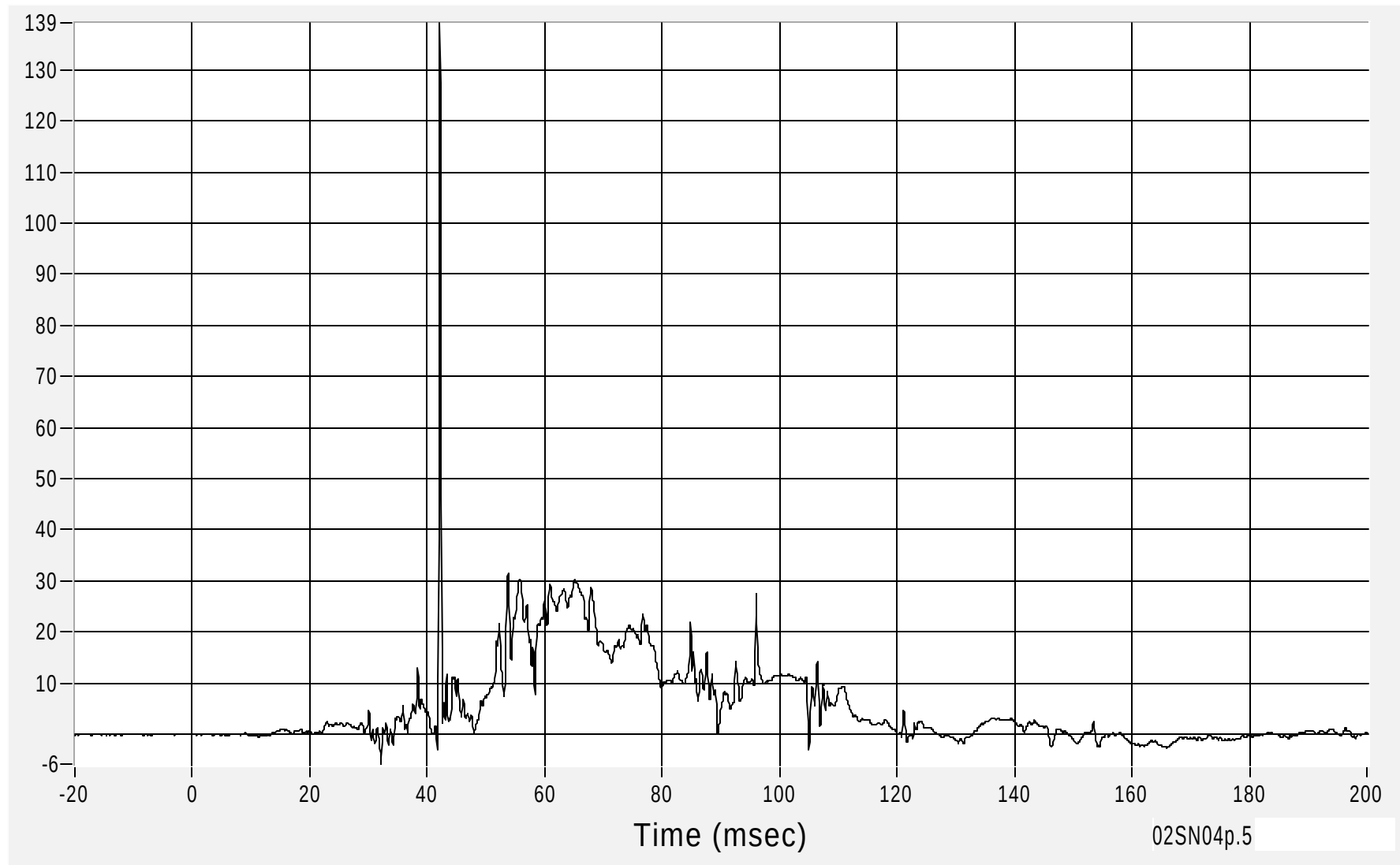
Passenger Upper Rib (Y) Acceleration - Redundant

Max 139.2 G's at 42.2 msec

Acceleration (G's) CFC1000

Min -5.8 G's at 32.2 msec

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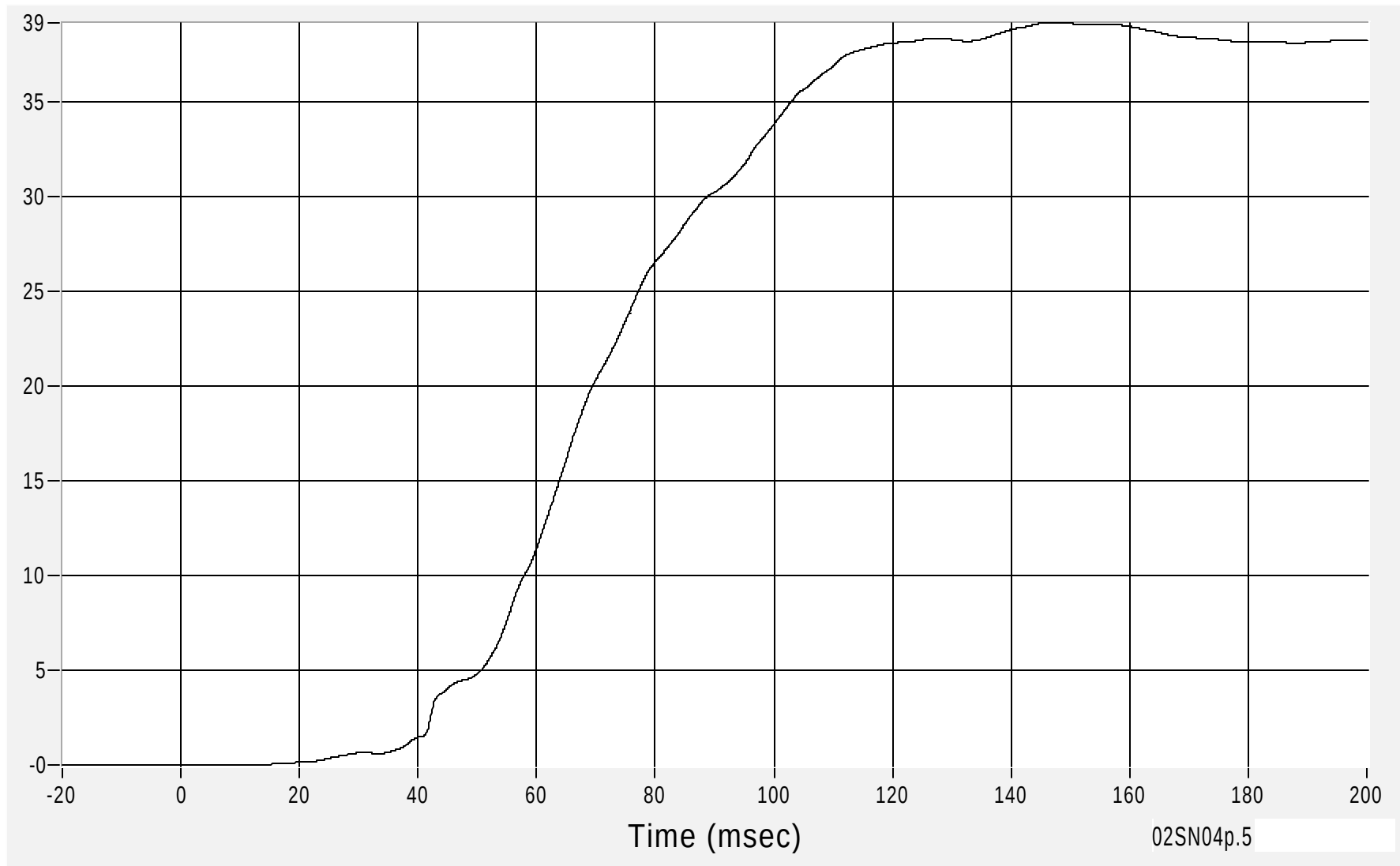
Passenger Upper Rib (Y) Velocity - Redundant

Max 39.1 km/h at 149.0 msec

Min 0.0 km/h at 13.1 msec

Velocity (km/h) CFC180

B-110



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27 March 2002

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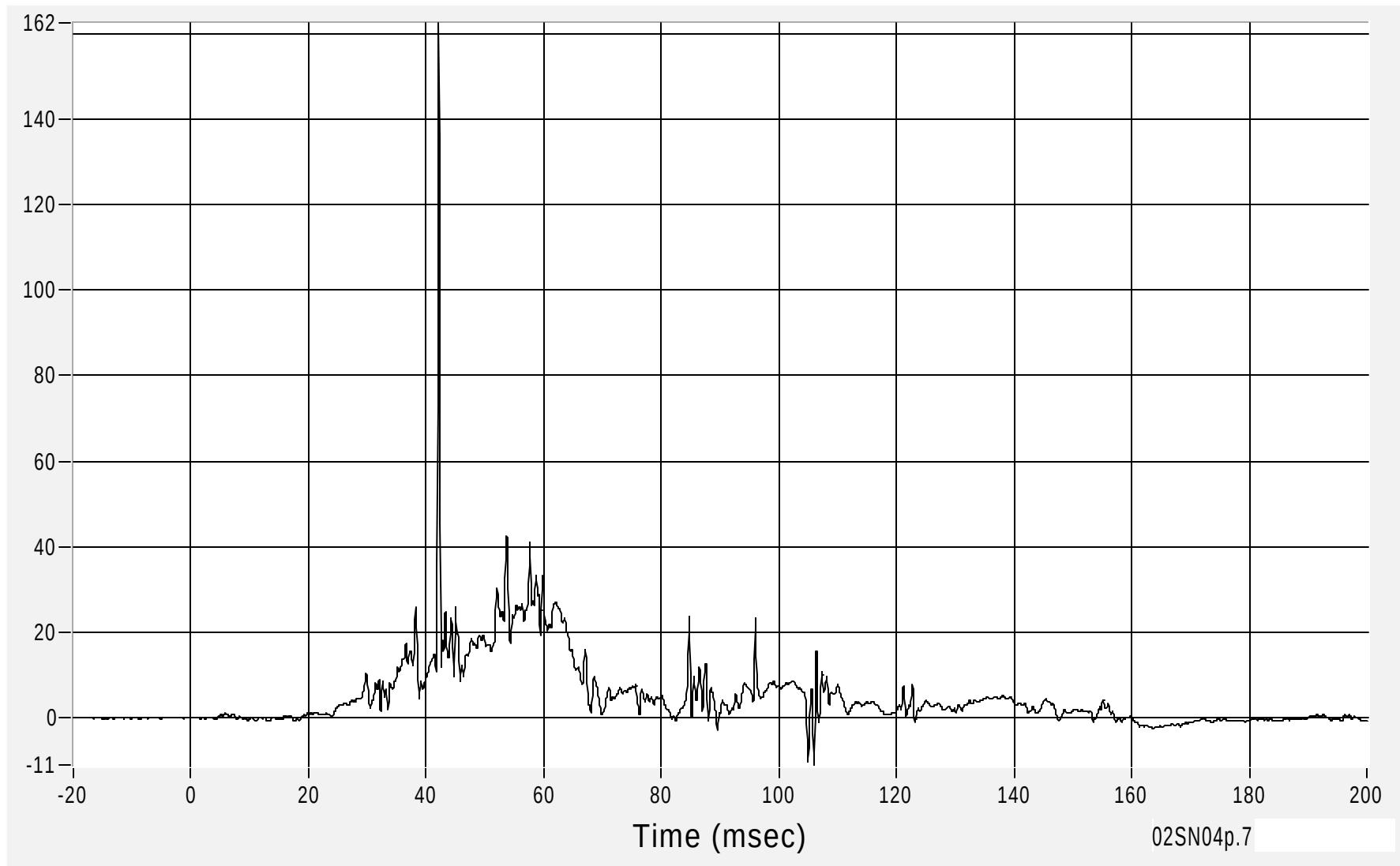
Passenger Lower Rib (Y) Acceleration - Redundant

Max 162.5 G's at 42.2 msec

Acceleration (G's) CFC1000

Min -11.0 G's at 106.0 msec

B-111



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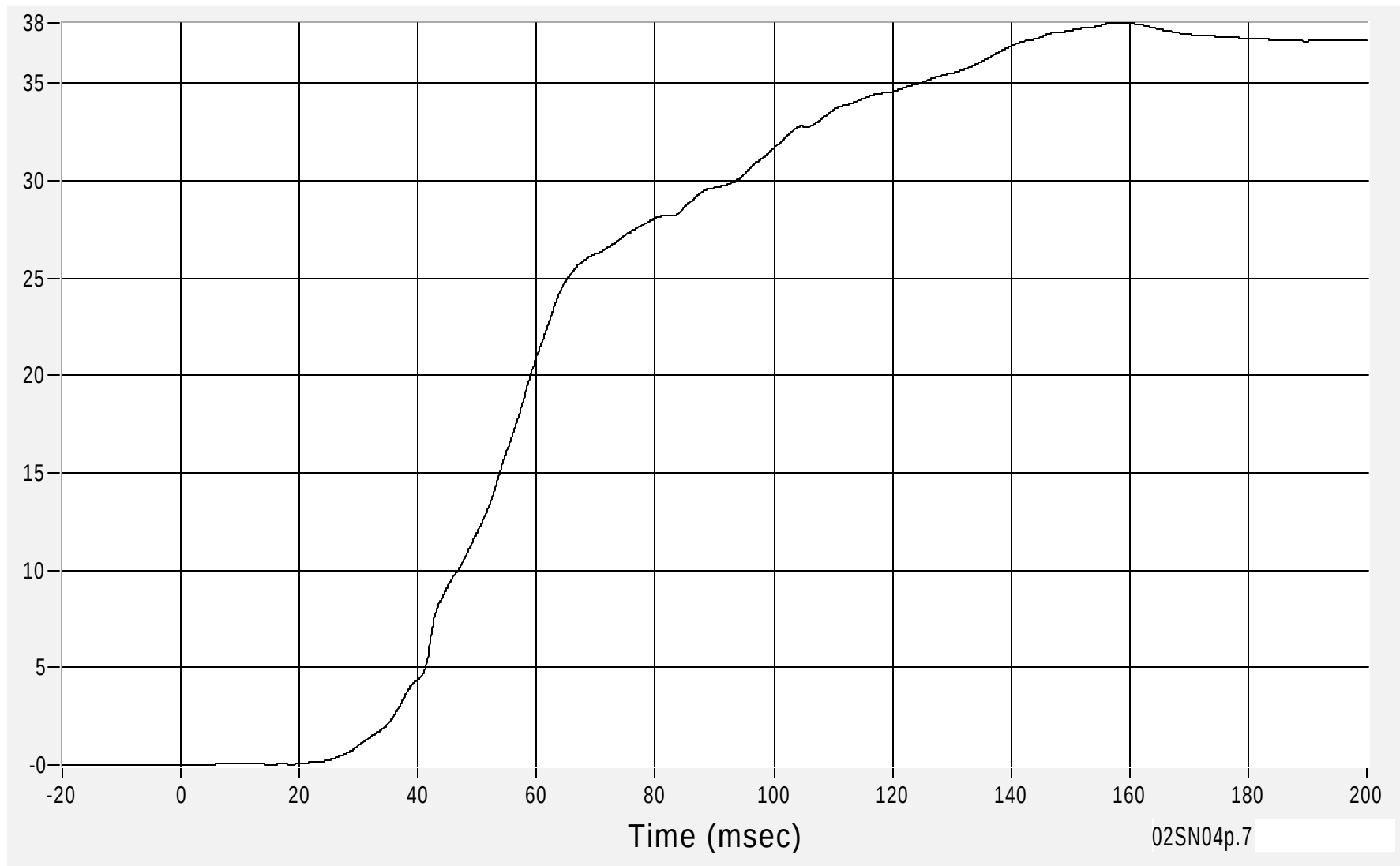
Passenger Lower Rib (Y) Velocity - Redundant

Max 38.1 km/h at 157.2 msec

Min 0.0 km/h at 2.6 msec

Velocity (km/h) CFC180

B-112



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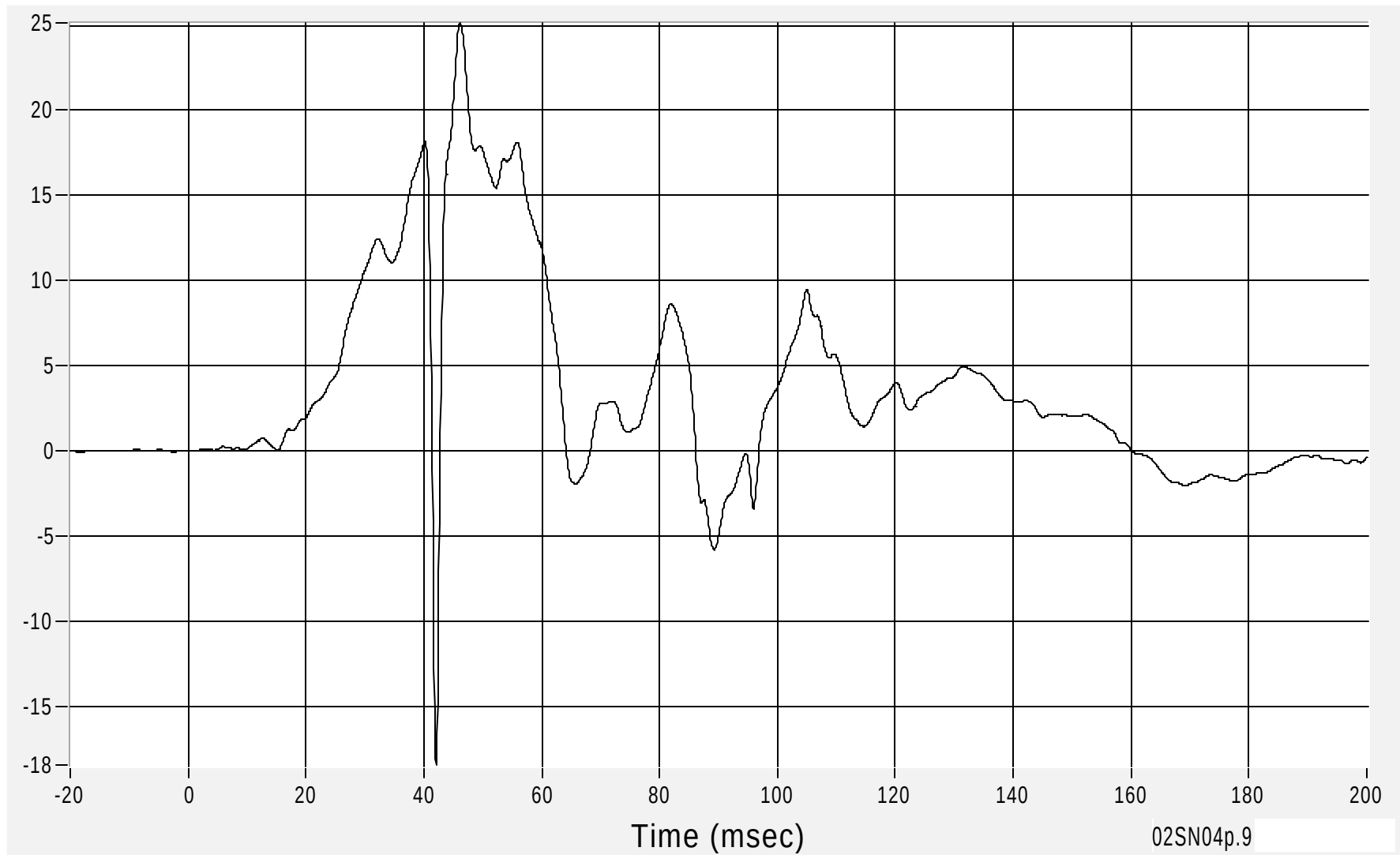
Passenger Lower Spine (Y) Acceleration - Redundant

Max 25.1 G's at 46.2 msec

Acceleration (G's) CFC180

Min -18.4 G's at 42.1 msec

B-113



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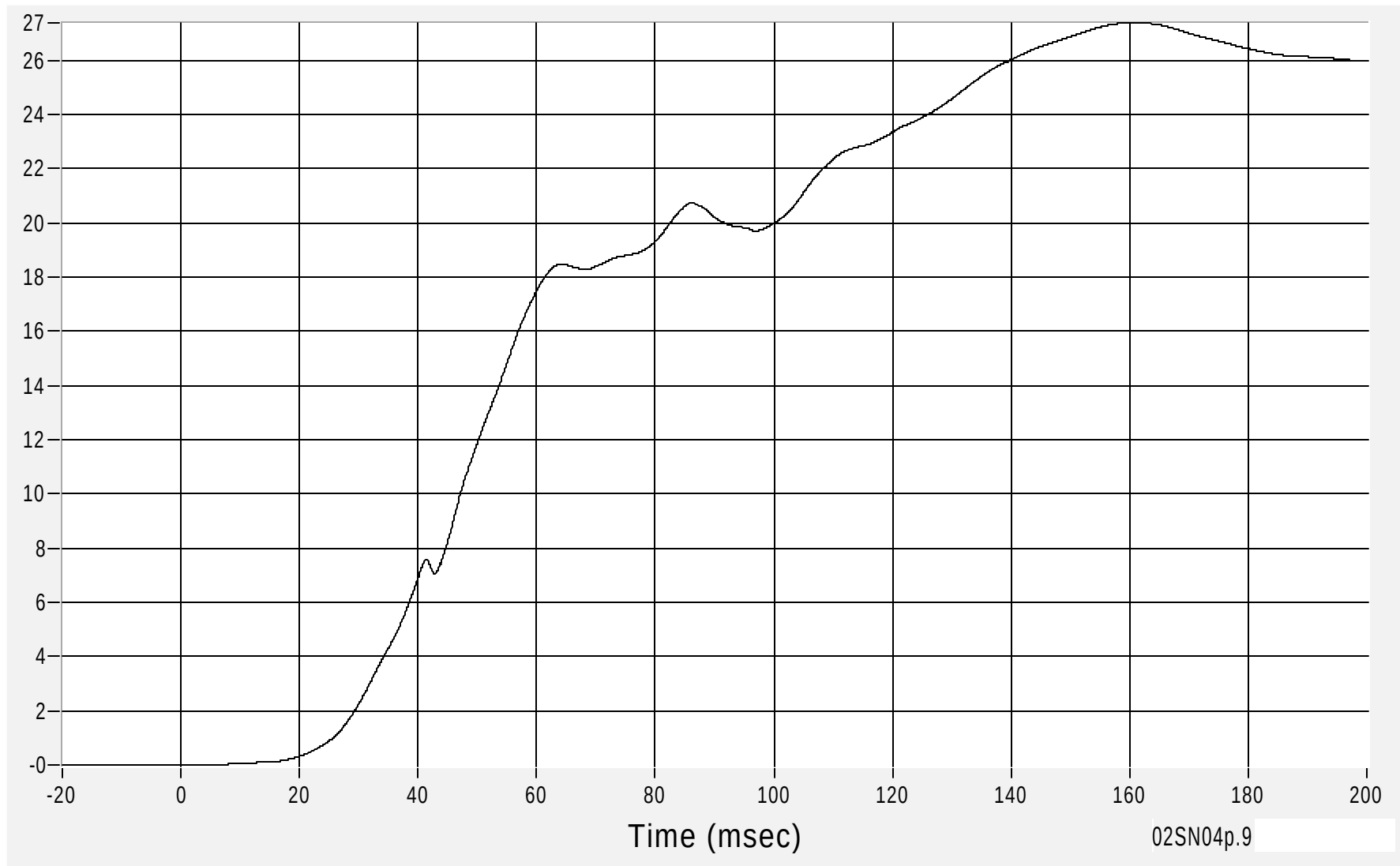
Passenger Lower Spine (Y) Velocity - Redundant

Velocity (km/h) CFC180

Max 27.4 km/h at 160.2 msec

Min 0.0 km/h at 0.0 msec

B-114



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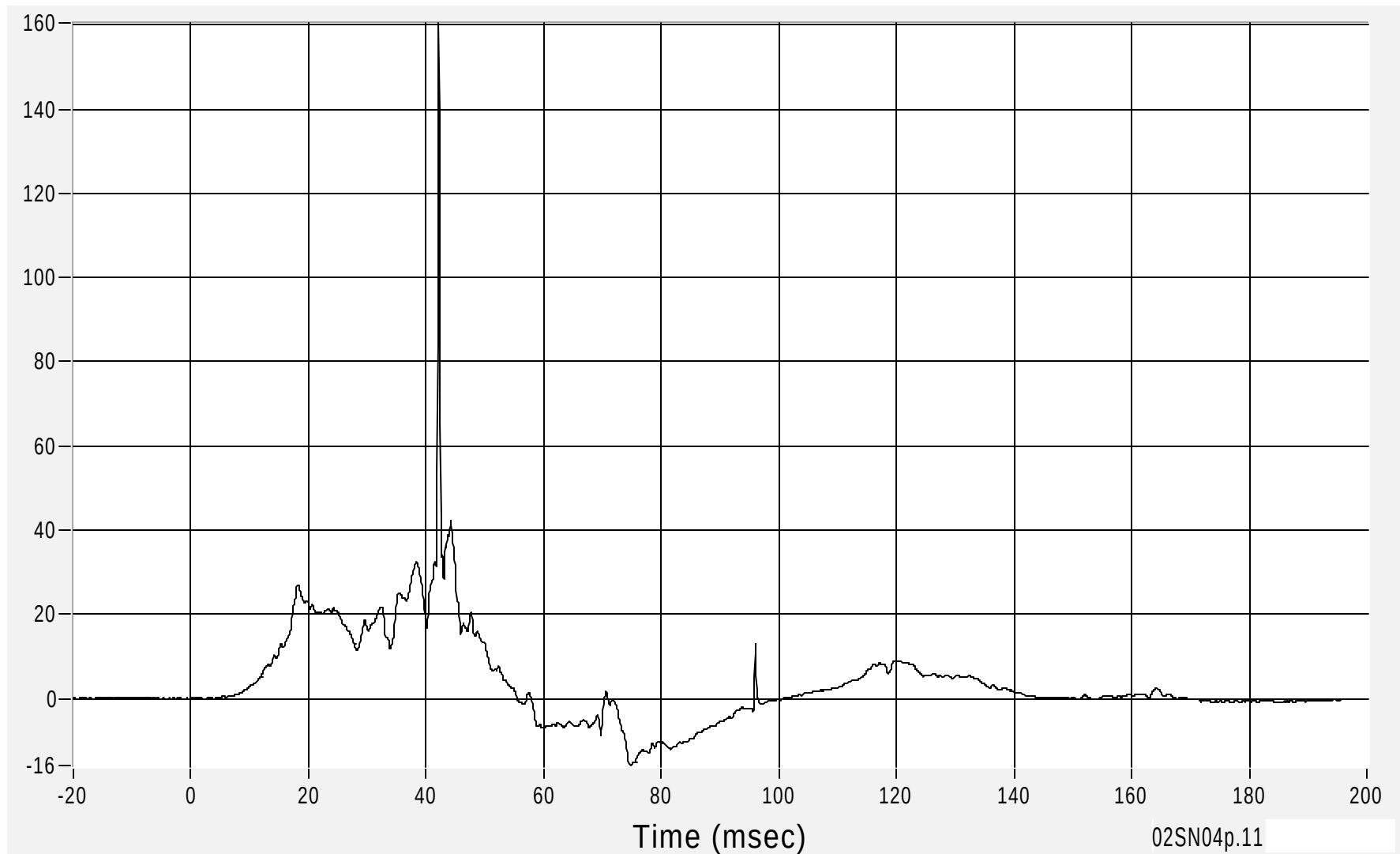
Passenger Pelvic (Y) Acceleration - Redundant

Max 160.5 G's at 42.2 msec

Acceleration (G's) CFC1000

Min -15.9 G's at 74.8 msec

B-115



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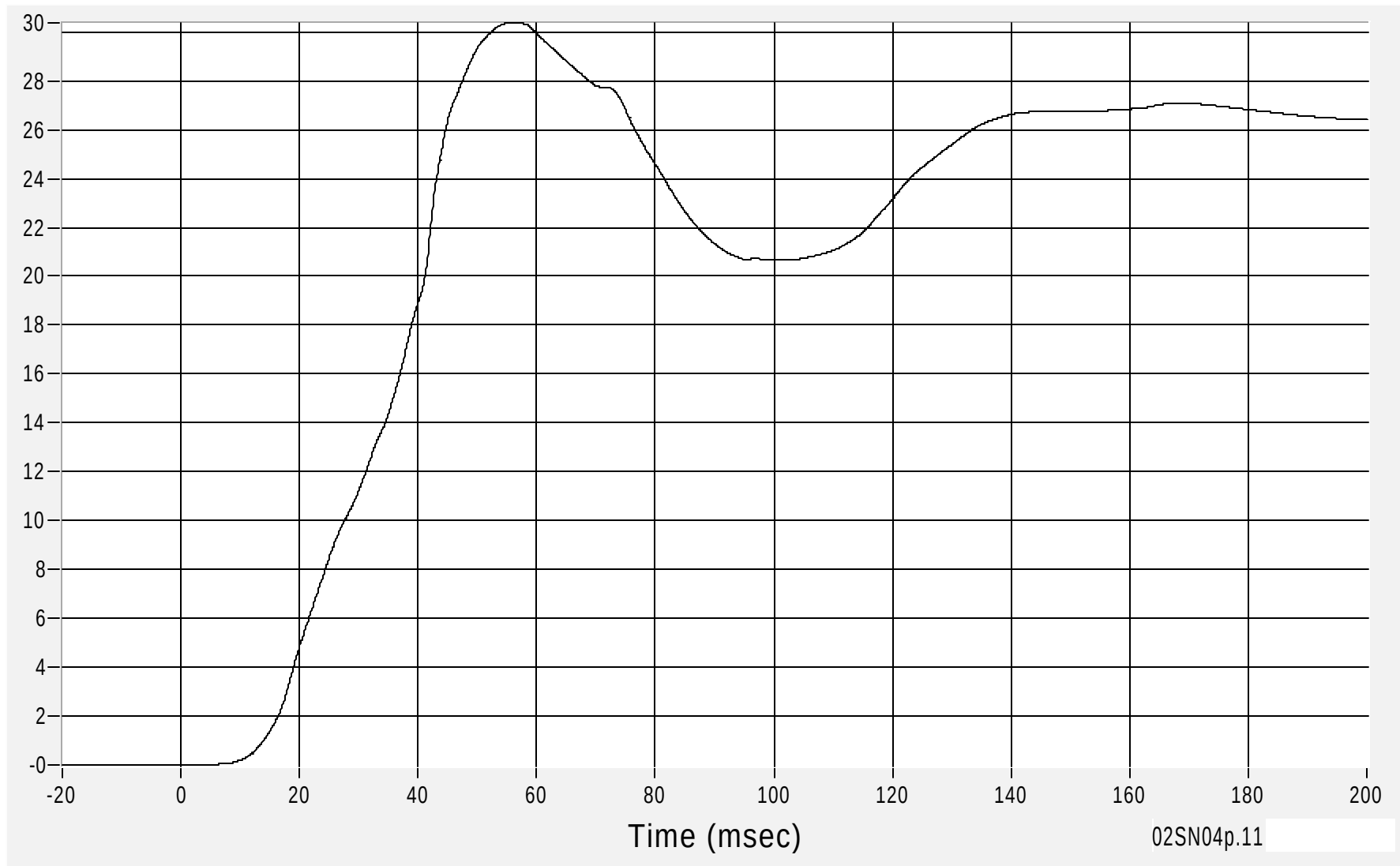
Passenger Pelvic (Y) Velocity - Redundant

Max 30.4 km/h at 55.4 msec

Velocity (km/h) CFC180

Min 0.0 km/h at 4.1 msec

B-116



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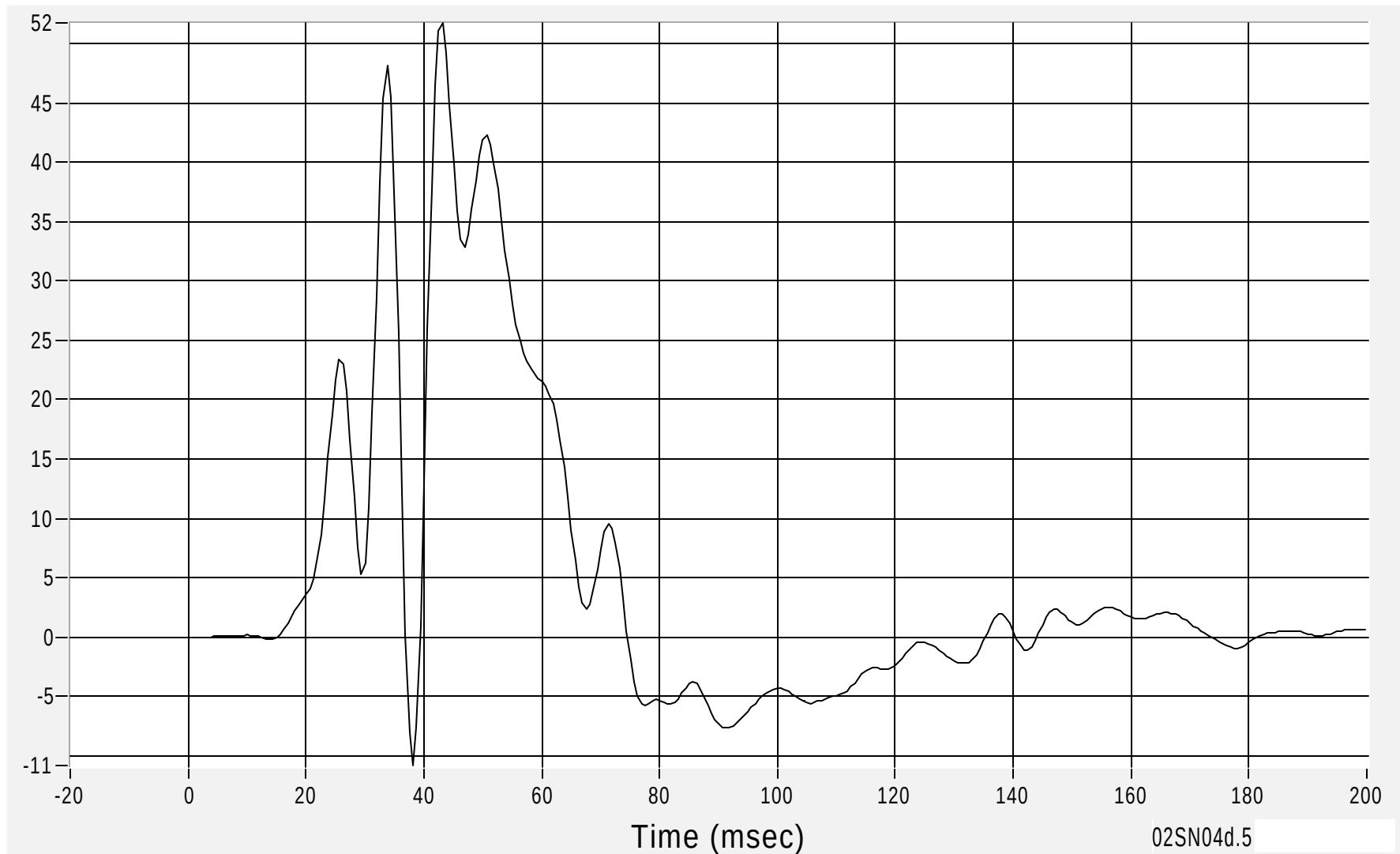
Driver Upper Rib (Y) Acceleration - Redundant

Max 51.7 G's at 43.1 msec

Acceleration (G's) FIR100

Min -10.8 G's at 38.1 msec

B-117



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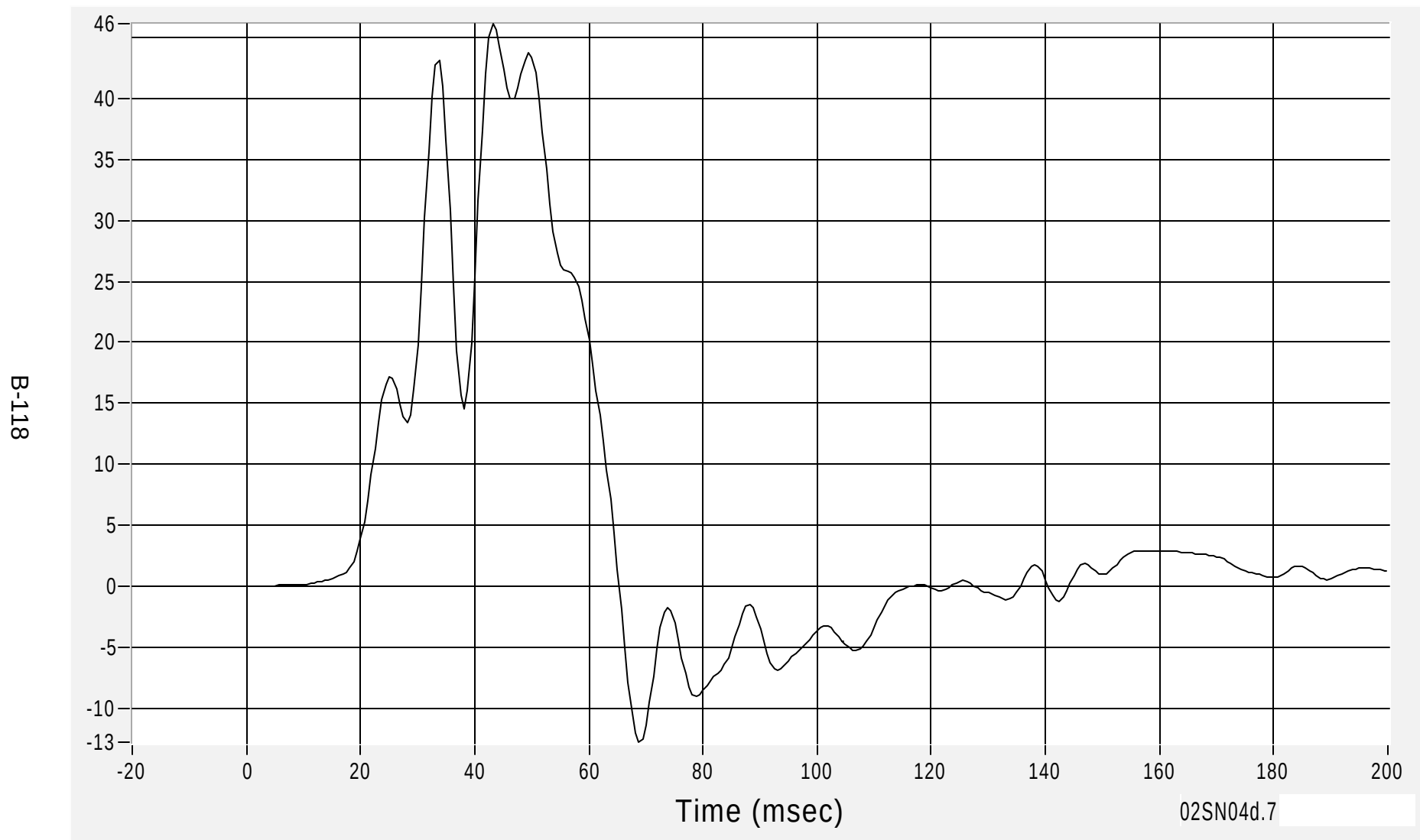
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Driver Lower Rib (Y) Acceleration - Redundant

Max 46.1 G's at 43.1 msec

Acceleration (G's) FIR100

Min -12.7 G's at 68.8 msec



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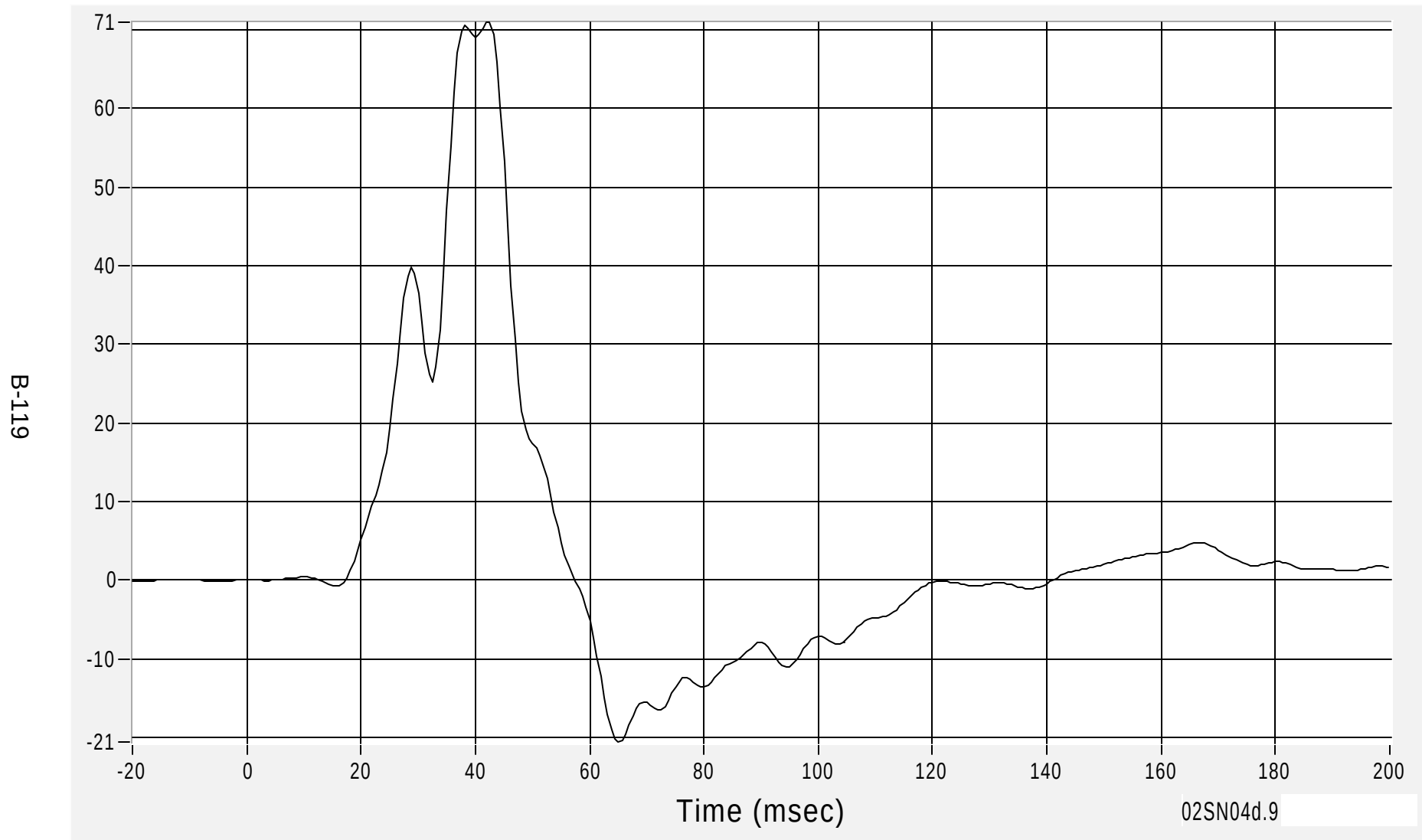
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Driver Lower Spine (Y) Acceleration - Redundant

Max 70.9 G's at 41.9 msec

Acceleration (G's) FIR100

Min -20.5 G's at 65.0 msec



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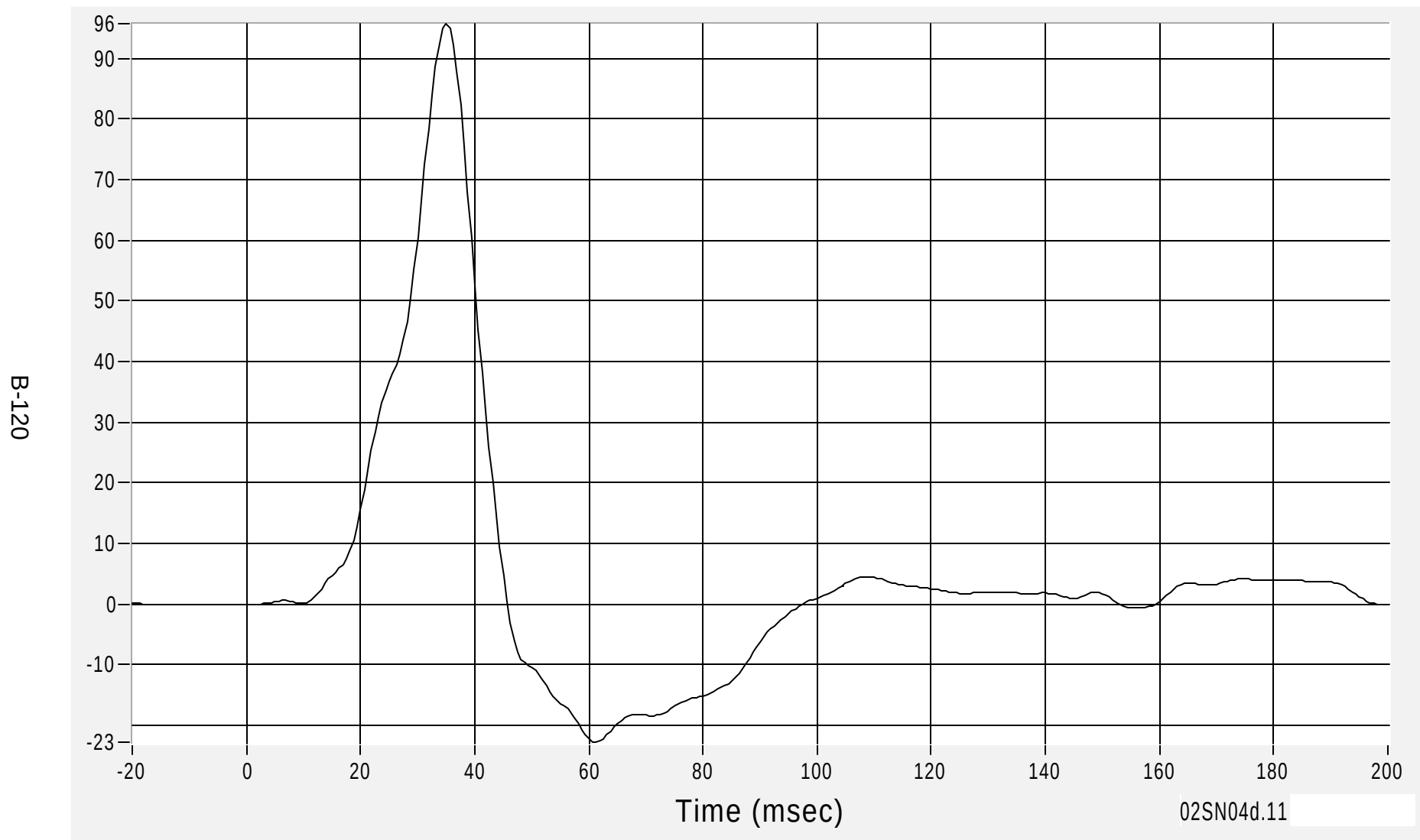
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Driver Pelvic (Y) Acceleration - Redundant

Max 95.7 G's at 35.0 msec

Min -22.8 G's at 61.2 msec

Acceleration (G's) FIR100



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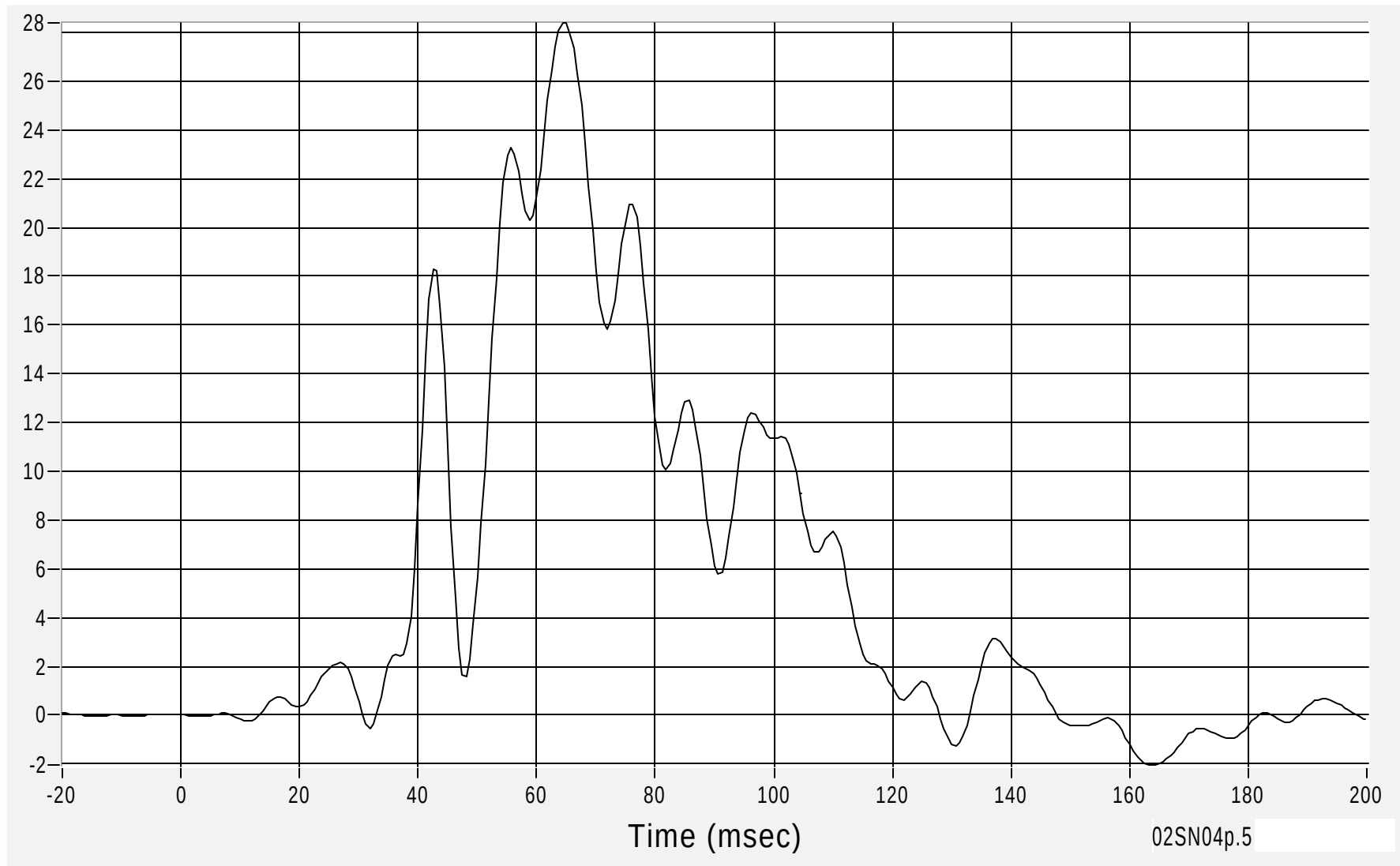
Passenger Upper Rib (Y) Acceleration - Redundant

Max 28.4 G's at 64.4 msec

Acceleration (G's) FIR100

Min -2.0 G's at 163.8 msec

B-121



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27 March 2002

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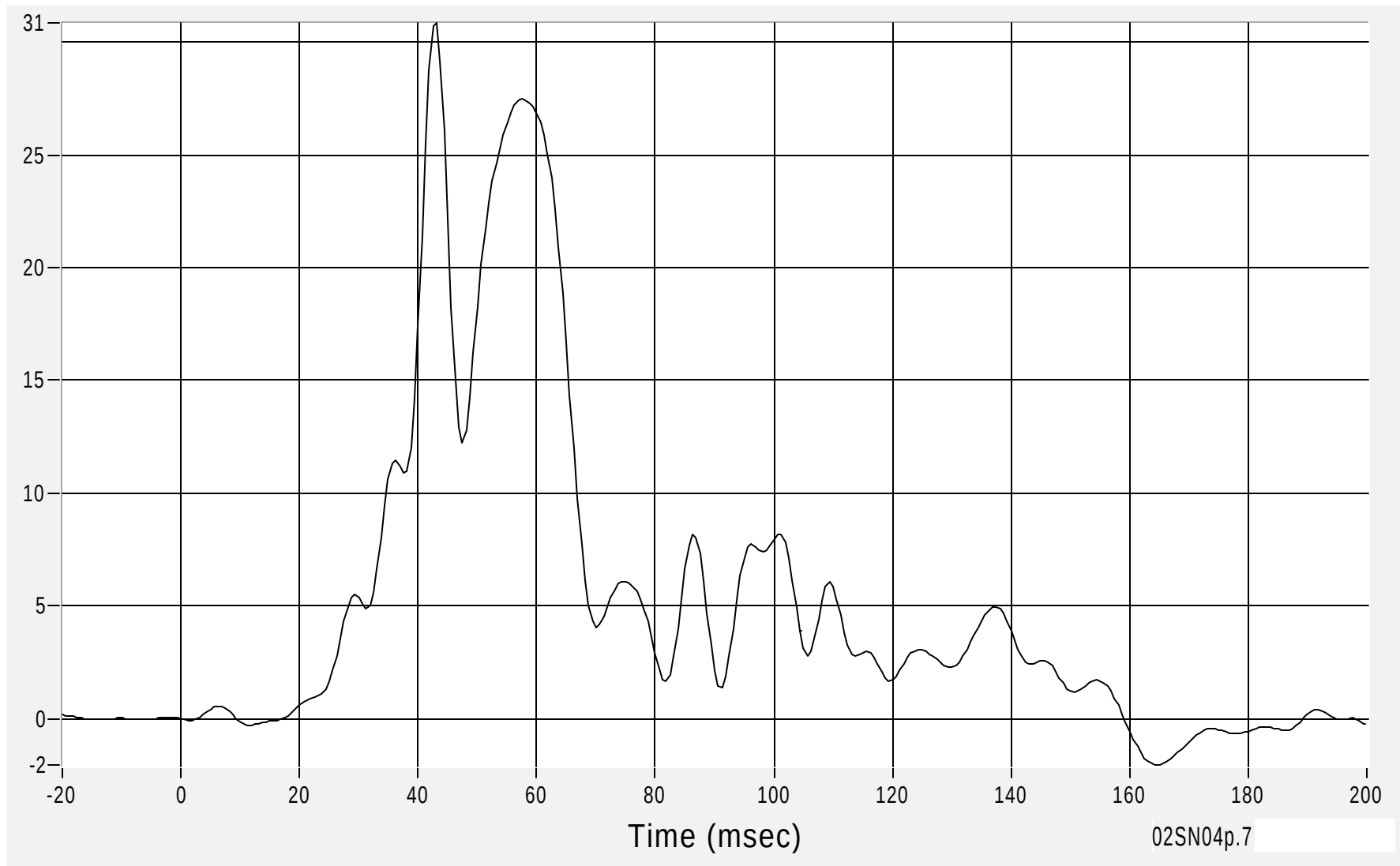
Passenger Lower Rib (Y) Acceleration - Redundant

Max 30.8 G's at 43.1 msec

Acceleration (G's) FIR100

Min -2.0 G's at 164.4 msec

B-122



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27 March 2002

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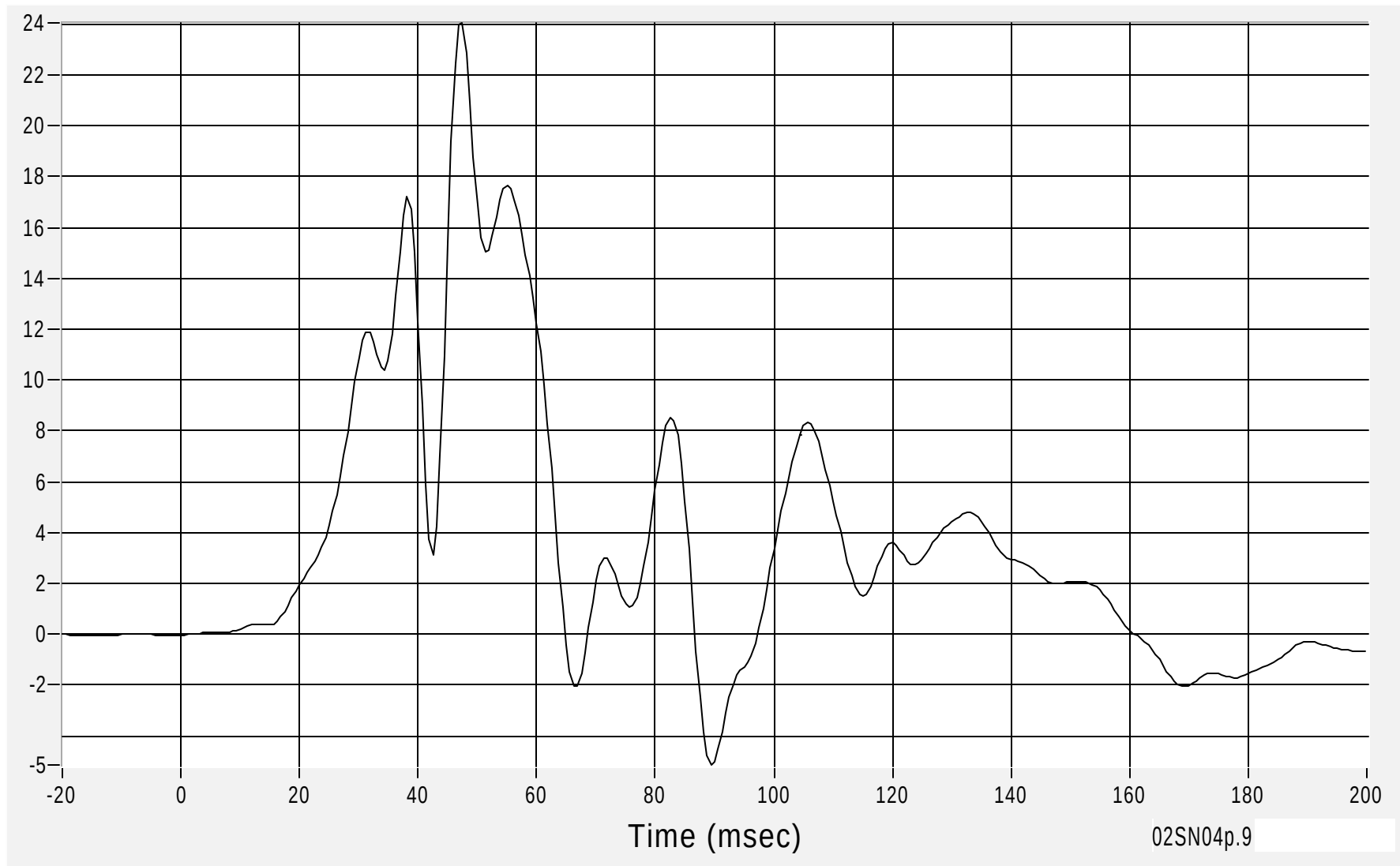
Passenger Lower Spine (Y) Acceleration - Redundant

Max 24.1 G's at 47.5 msec

Acceleration (G's) FIR100

Min -5.1 G's at 89.4 msec

B-123



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27 March 2002

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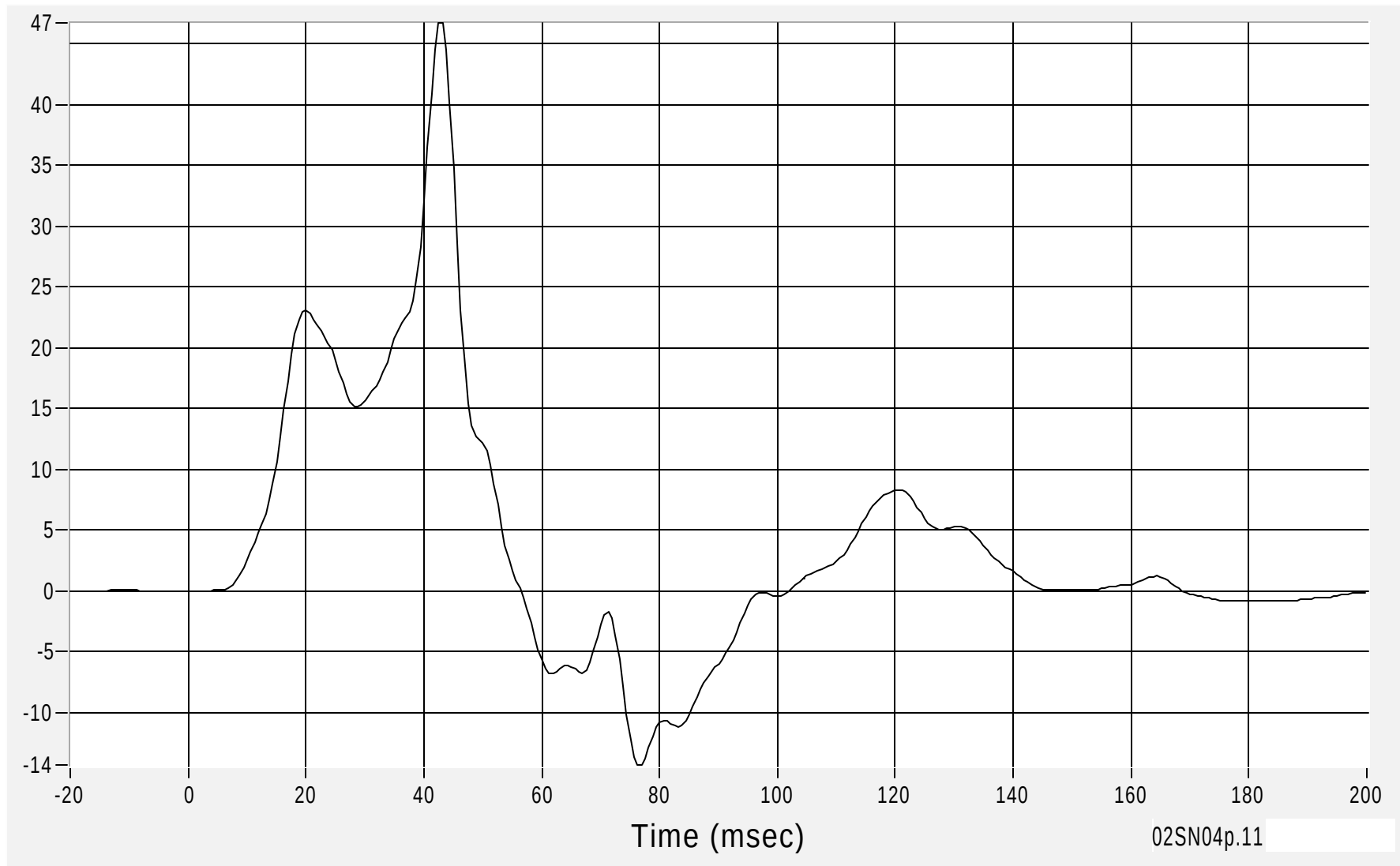
Passenger Pelvic (Y) Acceleration - Redundant

Max 46.7 G's at 43.1 msec

Acceleration (G's) FIR100

Min -14.3 G's at 76.2 msec

B-124



02SN04 - 2002 SUZUKI VITARA 4 DOOR MPV
27 March 2002

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Vehicle Crashworthiness Lab

APPENDIX C

SID CONFIGURATION AND VERIFICATION RESULTS

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

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

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial Number 056 Test Sequences 03 and 04

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		
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		
LUMBAR FLEXION	Pass all requirements	Mark Meyer		

SID Serial Number 058 Test Sequences 04 and 05

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		
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		
LUMBAR FLEXION	Pass all requirements	Mark Meyer		

SUMMARY
SID PRE AND POST VERIFICATION

CONFIGURED FOR LEFT SIDE IMPACT

SID Serial Number	056 and 058	Test Sequences	03 and 04 (056) 04 and 05 (058)
-------------------	-------------	----------------	------------------------------------

TEST PARAMETER	SPECIFICATION	056		058	
		PRE	POST	PRE	POST
MEASUREMENTS					
Date	-	13Mar02	28Mar02	12Mar02	28Mar02
Sequential Test Number	-	03	04	04	05
Temperature (°C)	18.9-25.5	22.1	21.4	21.7	21.4
Relative Humidity (%)	10-70	25	27	27	27
SH – Seated Height (mm)	889-909	903	906	905	903
RH – Rib Height (mm)	501-521	508	512	515	513
HP – Hip Pivot Height (mm)	99	99/99	99/99	99/99	99/99
RD – Rib From Back Line (mm)	229-241	230	229	229	231
KH – Knee Pivot from Back Line (mm)	511-526	523/525	525/525	520/525	518/516
KV – Knee Pivot to Floor (mm)	490-505	502/504	504/500	501/502	493/500
HW – Hip Width (mm)	356-391	360	365	368	358
THORAX IMPACTS					
Date	-	13Mar02	28Mar02	12Mar02	28Mar02
Sequential Test Number	-	03	04	04	05
Temperature (°C)	18.9-25.5	22.1	21.4	21.7	21.4
Relative Humidity (%)	10-70	25	27	27	27
Probe Speed (m/s)	4.21-4.33	4.27	4.27	4.27	4.27
Upper Rib Acceleration (G)	37-46	42.2	43.3	40.8	41.7
Lower Rib Acceleration (G)	37-46	39.7	39.9	38.0	40.6
Lower Spine Acceleration (G)	15-22	19.4	19.7	18.4	19.3
PELVIS IMPACTS					
Date	-	13Mar02	28Mar02	12Mar02	28Mar02
Sequential Test Number	-	03	04	04	05
Temperature (°C)	18.9-25.5	22.1	21.4	21.7	21.4
Relative Humidity (%)	10-70	25	27	27	27
Probe Speed (m/s)	4.21-4.33	4.27	4.27	4.27	1.27
Pelvis Acceleration (G)	40-60	47.6	45.0	45.6	40.1
THORACIC SHOCK ABSORBER					
Shock Absorber ID Number	-	486	-	03130164	-
Damper Setting	1-10	6	-	5	-
Date	-	14Feb02	-	14Feb02	-
Sequential Test Number	-	02	-	02	-
Temperature	18.9-25.5	22.5	-	22.5	-
Relative Humidity	10-70	30	-	30	-
Probe Speed (m/s) Low	3.05	3.05	-	3.05	-
Force (N)	836 – 1125	1065	-	850	-
Displacement (mm)	30 – 35	30.0	-	30.4	-
Probe Speed (m/s) Middle	4.27	4.27	-	4.27	-
Force (N)	1730 – 2099	1747	-	1739	-
Displacement (mm)	32 – 37	33.7	-	36.3	-
Probe Speed (m/s) High	6.10	6.10	-	6.10	-
Force (N)	3741 – 4448	4216	-	3928	-
Displacement (mm)	33 - 40	36.3	-	37.4	-

TEST PARAMETER	SPECIFICATION	056		058	
		PRE	POST	PRE	POST
ABDOMINAL COMPRESSION					
Date	-	22Feb02	-	22Feb02	-
Sequential Test Number	-	02	-	02	-
Temperature (°C)	18.9-25.5	20.8	-	20.8	-
Relative Humidity (%)	10-70	20	-	20	-
Force at 13 mm (N)	104-162	133	-	143	-
Force at 19 mm (N)	163-221	191	-	190	-
Force at 25 mm (N)	222-280	260	-	248	-
Force at 33 mm (N)	325-391	389	-	363	-
LUMBAR FLEXION					
Date	-	22Feb02	-	22Feb02	-
Sequential Test Number	-	02	-	02	-
Temperature (°C)	18.9-25.5	20.8	-	20.8	-
Relative Humidity (%)	10-70	20	-	20	-
Force at 0° (N)	0-26.7	10	-	0	-
Force at 0° (N)	97.8-151.2	154	-	140	-
Force at 0° (N)	151.2-204.6	180	-	183	-
Force at 0° (N)	204.6-258	230	-	240	-
Return Angle	12° Maximum	3.5	-	3.1	-

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

SID Serial Number 056 and 058

Test Sequences

03 and 04 (056)

04 and 05 (058)

		SID 056		SID 058	
		PRE	POST	PRE	POST
	Date	13Mar02	28Mar02	12Mar02	28Mar02
	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

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

SID INSTRUMENTATION**FRONT SID NO. 056**

	SERIAL NUMBER	MANUFACTURER	CALIBRATION DATE
HEAD X	P12931	ENDEVCO	14Nov01
HEAD Y	P13836	ENDEVCO	14Nov01
HEAD Z	P22993	ENDEVCO	14Nov01
UPPER RIB	P13819	ENDEVCO	14Nov01
LOWER RIB	P13868	ENDEVCO	14Nov01
LOWER SPINE	P12746	ENDEVCO	14Nov01
PELVIS	P13598	ENDEVCO	14Nov01
UPPER RIB REDUNDANT	P13491	ENDEVCO	14Nov01
LOWER RIB REDUNDANT	P13835	ENDEVCO	14Nov01
LOWER SPINE REDUNDANT	P14274	ENDEVCO	14Nov01
PELVIS REDUNDANT	P13837	ENDEVCO	14Nov01

REAR SID NO. 058

	SERIAL NUMBER	MANUFACTURER	CALIBRATION DATE
HEAD X	J35932	ENDEVCO	14Nov01
HEAD Y	J36031	ENDEVCO	14Nov01
HEAD Z	J35641	ENDEVCO	14Nov01
UPPER RIB	J35839	ENDEVCO	14Nov01
LOWER RIB	J32665	ENDEVCO	14Nov01
LOWER SPINE	J35937	ENDEVCO	14Nov01
PELVIS	J36603	ENDEVCO	14Nov01
UPPER RIB REDUNDANT	J36617	ENDEVCO	14Nov01
LOWER RIB REDUNDANT	J32662	ENDEVCO	14Nov01
LOWER SPINE REDUNDANT	J36614	ENDEVCO	14Nov01
PELVIS REDUNDANT	J34364	ENDEVCO	14Nov01

VEHICLE INSTRUMENTATION

	SERIAL NUMBER	MANUFACTURER	CALIBRATION DATE
RIGHT FRONT SILL X	J32565	ENDEVCO	14Nov01
RIGHT FRONT SILL Y	P22539	ENDEVCO	14Nov01
RIGHT FRONT SILL Z	J36018	ENDEVCO	14Nov01
RIGHT REAR SILL X	P23025	ENDEVCO	14Nov01
RIGHT REAR SILL Y	P14223	ENDEVCO	14Nov01
RIGHT REAR SILL Z	P16867	ENDEVCO	14Nov01
REAR FLOORPAN ABOVE AXLE X	98B98A26-D05	ENTRAN	14Nov01
REAR FLOORPAN ABOVE AXLE Y	98B98A26-D17	ENTRAN	14Nov01
REAR FLOORPAN ABOVE AXLE Z	98G98D22-Z13	ENTRAN	14Nov01
LEFT REAR SILL Y	P13839	ENDEVCO	14Nov01
LEFT FRONT SILL Y	J21693	ENDEVCO	14Nov01
LEFT FRONT DOOR CENTERLINE Y	N/a	N/a	N/a
RIGHT REAR OCCUPANT COMP Y	P23579	ENDEVCO	14Nov01
MID-REAR OF LEFT FRONT DOOR Y	N/a	N/a	N/a
LEFT FRONT DOOR UPPER C/L Y	N/a	N/a	N/a
MID-REAR OF LEFT REAR DOOR Y	N/a	N/a	N/a
LEFT REAR DOOR UPPER C/L Y	N/a	N/a	N/a
LEFT LOWER B-PILLAR Y	J22318	ENDEVCO	14Nov01
LEFT MIDDLE B-PILLAR Y	J35768	ENDEVCO	14Nov01
LEFT LOWER A-PILLAR Y	J22189	ENDEVCO	14Nov01
LEFT UPPER A-PILLAR	B13036	ENDEVCO	14Nov01
FRONT SEAT TRACK Y	P13725	ENDEVCO	14Nov01
REAR SEAT TRACK Y	P13842	ENDEVCO	14Nov01
VEHICLE CG X	B13846	ENDEVCO	14Nov01
VEHICLE CG Y	B22577	ENDEVCO	14Nov01
VEHICLE CG Z	B22912	ENDEVCO	14Nov01

MDB INSTRUMENTATION

MDB CG X	P19211	ENDEVCO	14Nov01
MDB CG Y	P23595	ENDEVCO	14Nov01
MDB CG Z	P19145	ENDEVCO	14Nov01
MDB REAR FRAME MEMBER X	P21151	ENDEVCO	14Nov01
MDB REAR FRAME MEMBER Y	P22978	ENDEVCO	14Nov01