

REPORT NO. MCW-DOT-214-D3

**NEW CAR ASSESSMENT PROGRAM  
SIDE IMPACT TESTING**

GENERAL MOTORS CORPORATION  
2001 BUICK CENTURY SEDAN

NHTSA NUMBER: M1 0106

MCW TEST NUMBER: 01SN05

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



March 14, 2001

FINAL REPORT

U.S. DEPARTMENT OF TRANSPORTATION  
National Highway Traffic Safety Administration  
Safety Performance Standards  
Office of Crashworthiness Standards  
Mail Code: NPS-10  
400 Seventh Street, SW, Room 5313  
Washington, DC 20590

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<b>4. Title and Subtitle</b> Final Report of New Car Assessment Program Side Impact Test of a 2001 Buick Century Sedan NHTSA No.: M1 0106		<b>5. Report Date</b> March 14, 2001	
		<b>6. Performing Organization Code</b> MCW	
<b>7. Author(s)</b> Michael Schlick, John Humm		<b>8. Performing Organization Report No.</b>	
<b>9. Performing Organization Name and Address</b> Medical College of Wisconsin 5000 W. National Avenue Milwaukee, WI 53295		<b>10. Work Unit No.</b>	
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		<b>14. Sponsoring Agency Code</b> NPS-10	
<b>15. Supplementary Notes</b>			
<b>16. Abstract</b> A 55/28 km/h 90° Impact Moving Deformable Barrier NCAP Side Impact Test was conducted on the subject 2001 Buick Century 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 March 14, 2001. The impact velocity of the Moving Deformable Barrier (MDB) was 61.8 km/h, and the ambient temperature at the struck side (driver's) of the target vehicle at the time of impact was 23° C. The target vehicle post-test maximum crush was 516 mm at Level 2. The test vehicle's performance follows:			
	<b><u>DRIVER</u></b>	<b><u>PASSENGER</u></b>	
<b>Left Upper Rib Acceleration G</b>	<b>78</b>	<b>59</b>	
<b>Left Lower Rib Acceleration G</b>	<b>70</b>	<b>76</b>	
<b>Lower Spine Acceleration G</b>	<b>96</b>	<b>71</b>	
<b>Thoracic Trauma Index TTI</b>	<b>87</b>	<b>73</b>	
<b>Pelvis Acceleration G</b>	<b>139</b>	<b>88</b>	
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.			
<b>17. Key Words</b> New Car Assessment Program (NCAP) Side Impact MDB Side Impact Dummy (SID) NHTSA No. M1 0106		<b>18. Distribution Statement</b> <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 FY01 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 2001 Buick Century Sedan. This side impact test was conducted in accordance with the Office of Crashworthiness Standard's Laboratory Test Procedure dated May 1999.

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

## SECTION 2

### SUMMARY OF SIDE IMPACT TEST

A 2001 Buick Century Sedan was impacted on the left or driver's side by a Moving Deformable Barrier (MDB) that was moving forward in a 27° crabbed position to the tow road guidance system at a velocity of 61.8 km/h (38.4 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 March 14, 2001. Pre- and post-test photographs of the test vehicle, the MDB, and the side impact dummies (SIDs) are included in Appendix A.

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 and one real-time camera. 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 (T<sub>12</sub>) uniaxial accelerometer (Y-direction)
4. Pelvic (PEV) section uniaxial accelerometer (Y-direction)
5. Head Center of Gravity triaxial accelerometers (X-, Y-, and Z-direction)

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)	87	73
PELVIS (G)	139	88

**SECTION 3**  
**SUMMARY OF TEST RESULTS**

**DATA SHEET NO. 1**

**GENERAL VEHICLE TEST PARAMETER DATA**

**TEST VEHICLE INFORMATION**

Year/ Make/ Model/ Body Style	<u>2001 Buick Century Sedan</u>		
Vehicle NHTSA No.	<u>M1 0106</u>	VIN	<u>2G4WY55J311120507</u>
Vehicle Body Color	<u>White</u>	Build Date	<u>August 2000</u>
Engine Data	<u>6</u> Cylinders	<u>-</u> CID	<u>3.1</u> Liter <u>-</u> cc
Placement	<u>   </u> Longitudinal	<u>X</u> Lateral	
Transmission	<u>4</u> Speed	<u>   </u> Manual	<u>X</u> Automatic <u>   </u> Overdrive
Final Drive	<u>   </u> Rear Wheel Drive	<u>X</u> Front Wheel Drive	<u>   </u> Four Wheel Drive
Odometer Reading	<u>97 Miles</u>	Date	<u>March 7, 2001</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>30</u> PSI Front
	<u>30</u> PSI Rear
Recommended Tire Size	<u>P205-70R15</u>
Tires on Test Vehicle	<u>P205-70R15</u> Manufacturer <u>General</u>

**VEHICLE CAPACITY DATA:**

Number of Occupants:	<u>3</u> Front	<u>3</u> Rear	<u>   </u> 3 <sup>rd</sup> Seat	<u>6</u> Total
Type of Front Seats	<u>   </u> Bucket	<u>   </u> Bench	<u>X</u> Split Bench	
Type of Front Seat Back	<u>   </u> Fixed	<u>X</u> Adjustable w/	<u>X</u> Lever	<u>   </u> Knob
Vehicle Max Capacity Loading		<u>488.1</u>	kg	(A)
No. of Occupants X 68.04 kg		<u>408.2</u>	kg	(B)
Cargo Capacity (A) – (B)		<u>79.9</u>	kg	

**TEST VEHICLE DELIVERED WEIGHT WITH MAXIMUM FLUIDS:**

Left Front	=	<u>480.4</u>	kg	Left Rear	=	<u>280.3</u>	kg
Right Front	=	<u>483.1</u>	kg	Right Rear	=	<u>285.8</u>	kg
TOTAL FRONT	=	<u>963.5</u>	kg	TOTAL REAR	=	<u>566.1</u>	kg
% Total Weight	=	<u>63.0</u>	%	%Total Weight	=	<u>37.0</u>	%
TOTAL WEIGHT	=	<u>1529.6</u>	kg				

**DATA SHEET 1 (continued)**

**GENERAL VEHICLE TEST PARAMETER DATA**

Vehicle: 2001 Buick Century

NHTSA No.: M1 0106

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:

Total Test Vehicle Delivered Weight with Max Fluids	=	<u>1529.6</u>	kg	(A)
Maximum Cargo Carrying Capacity of Test Vehicle	=	<u>79.9</u>	kg	(B)
Weight of (2) instrumented Side Impact Dummies	=	<u>161.3</u>	kg	(C)
TEST VEHICLE TARGET WEIGHT	=	<u>1770.8</u>	kg	(A+B+C)

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

Left Front	=	<u>533.1</u>	kg	Left Rear	=	<u>378.3</u>	kg
Right Front	=	<u>360.2</u>	kg	Right Rear	=	<u>499.2</u>	kg
TOTAL FRONT	=	<u>893.3</u>	kg	TOTAL REAR	=	<u>877.5</u>	kg
% Total Weight	=	<u>50.4</u>	%	%Total Weight	=	<u>49.6</u>	%
TOTAL WEIGHT	=	<u>1770.8</u>	kg				

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

Left Front	=	<u>529.3</u>	kg	Left Rear	=	<u>375.6</u>	kg
Right Front	=	<u>358.8</u>	Kg	Right Rear	=	<u>499.9</u>	kg
TOTAL FRONT	=	<u>888.1</u>	kg	TOTAL REAR	=	<u>875.5</u>	kg
% Total Weight	=	<u>50.4</u>	%	%Total Weight	=	<u>49.6</u>	%
TOTAL WEIGHT	=	<u>1763.6</u>	kg				

TEST VEHICLE ATTITUDE (all dimensions in millimeters):

AS DELIVERED

Left Front	<u>740</u>	Right Front	<u>736</u>	Left Rear	<u>758</u>	Right Rear	<u>757</u>
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FULLY LOADED

Left Front	<u>728</u>	Right Front	<u>726</u>	Left Rear	<u>712</u>	Right Rear	<u>724</u>
------------	------------	-------------	------------	-----------	------------	------------	------------

AS TESTED

Left Front	<u>729</u>	Right Front	<u>726</u>	Left Rear	<u>717</u>	Right Rear	<u>728</u>
------------	------------	-------------	------------	-----------	------------	------------	------------

Test Vehicle Wheelbase 2770 mm

As Tested CG = 1374 mm rearward of front wheel centerline

TOTAL VEHICLE LENGTH:

Right Side	=	<u>4611</u>	mm
Left Side	=	<u>4611</u>	mm
Centerline	=	<u>4947</u>	mm

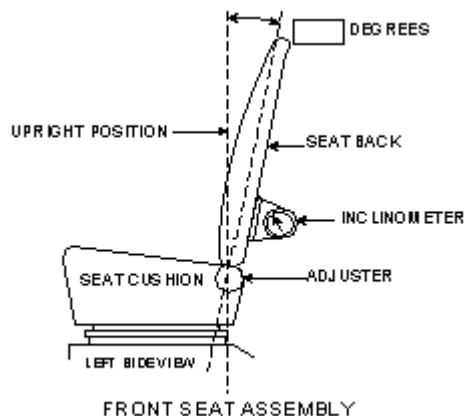
**DATA SHEET 1 (continued)**

**GENERAL TEST VEHICLE PARAMETER DATA**

Vehicle: 2001 Buick Century

NHTSA No.: M1 0106

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>240 mm</u>
Total Number of Detents	<u>N/a</u>	Test Position <u>120 mm from rearmost position</u>

FRONT SEAT BACK ADJUSTMENT:

Seat Back Angle	<u>26.5° measured from seat frame</u>
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SECOND POSITION SEAT:

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

ADJUSTABLE STEERING COLUMN POSITION:

5<sup>th</sup> notch from upper position. Measured 21° from vertical along steering column

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>65.1 liters</u>	
Test Volume	<u>60.5 liters</u>	<u>93% usable capacity</u>

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

Wheelbase	<u>2770 mm</u>	
Impact Point is	<u>445 mm rearward</u>	of front axle centerline
Actual Impact Point is	<u>429 mm rearward</u>	of front axle centerline

**DATA SHEET 2**  
**TEST VEHICLE SUMMARY**

VEHICLE IDENTIFICATION:

Year/Make/Model/Body Style	2001 Buick Century Sedan		
Body Color	White	VIN	2G4WY55J311120507
NHTSA No.	M1 0106	Test Date	August 2000
Overall Length	4947	Overall Width	1838

VEHICLE TEST WEIGHT (Pre-Test):

Left Front	=	<u>529.3</u>	kg	Left Rear	=	<u>375.6</u>	kg
Right Front	=	<u>358.8</u>	kg	Right Rear	=	<u>499.9</u>	kg
TOTAL FRONT	=	<u>888.1</u>	kg	TOTAL REAR	=	<u>875.5</u>	kg
% Total Weight	=	<u>50.4</u>	%	%Total Weight	=	<u>49.6</u>	%
TOTAL WEIGHT	=	<u>1763.6</u>	kg				
Wheelbase	=				=	<u>2770</u>	mm
Longitudinal CG from Center of Front Axle	=				=	<u>1374</u>	mm
Impact Angle with Respect to Impactor	=				=	<u>90°</u>	

ACTUAL IMPACT POINT

Actual Impact Point is 16 mm forward of nominal impact reference line (lateral)

Actual Impact Point is 1 mm above nominal impact line (vertical)

MAXIMUM EXTERIOR STATIC CRUSH:

1. LEVEL 1	(1311 mm above ground)	=	<u>348</u>	mm
2. LEVEL 2	(917 mm above ground)	=	<u>516</u>	mm
3. LEVEL 3	(587 mm above ground)	=	<u>462</u>	mm
4. LEVEL 4	(488 mm above ground)	=	<u>355</u>	mm
5. LEVEL 5	(234 mm above ground)	=	<u>152</u>	mm

Maximum Post-Test intrusion at Level 2 is 516 mm

OCCUPANTS

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

INSTRUMENTATION:

Number of Vehicle Data Channels		<u>47</u>
Number of Cameras	Onboard	<u>3</u>
	Off board	<u>4</u>
	MDB	<u>2</u>
	TOTAL	<u>9</u>

**DATA SHEET NO. 3**

**MOVING DEFORMABLE BARRIER (MDB) SUMMARY**

Vehicle: 2001 Buick Century

NHTSA No.: M1 0106

MDB FACE MANUFACTURER AND SERIAL NUMBER:

Plascor Serial Number 097A1200-4 001B1200

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>61.8 km/h</u>	<u>38.4 mph</u>
	Secondary	<u>61.6 km/h</u>	<u>38.3 mph</u>
	Radar	<u>61.8 km/h</u>	<u>38.4 mph</u>
	On-Board	<u>61.6 km/h</u>	<u>38.3 mph</u>

MAXIMUM STATIC CRUSH OF HONEYCOMB IMPACT FACE:

1. Row A Center of Bumper	=	<u>97</u>	mm
2. Row B Top of Bumper	=	<u>50</u>	mm
3. Row C Mid-Level	=	<u>104</u>	mm
4. Row D Top of Stack	=	<u>177</u>	mm

INSTRUMENTATION:

Number of MDB Data Channels = 5

**DATA SHEET NO. 4**

**POST-TEST OBSERVATIONS**

Vehicle: 2001 Buick Century

NHTSA No.: M1 0106

VISIBLE DUMMY CONTACT POINTS:

	<u>LEFT FRONT SID</u>	<u>LEFT REAR SID</u>
Head	<u>Left side of head to driver side airbag</u>	<u>Top of head to upper C-pillar trim panel</u>
Upper Torso	<u>Left side of upper torso to driver side airbag</u>	<u>Left side of upper torso to left rear door panel</u>
Lower Torso	<u>Left side of lower torso to arm rest</u>	<u>Left side of lower torso to left rear door panel</u>
Left Knee	<u>Left knee to left front door panel</u>	<u>Left knee to left lower rear door panel</u>
Right Knee	<u>Right knee to left knee</u>	<u>Right knee to left knee</u>

DOOR OPENING:

	<u>LEFT DOOR</u>	<u>RIGHT DOOR</u>
Front	<u>Closed/Inoperable</u>	<u>Closed/Operable</u>
Rear	<u>Closed/Inoperable</u>	<u>Closed/Operable</u>

MDB DISTANCE FROM TARGET IMPACT POINT:

Horizontal	<u>16 mm forward</u>	Vertical	<u>1 mm upward</u>
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ARM REST LOCATIONS:

Front	<u>244 mm below window opening</u>
Rear	<u>274 mm below window opening</u>

SEAT MOVEMENT:

Front	<u>Left front seat back was pushed inboard against center console</u>
Rear	<u>Left seat cushion was pushed upward and inboard by left rear door</u>

GLAZING DAMAGE

Windshield	<u>Lower left windshield cracked</u>
Window	<u>Driver and passenger door windows shattered on impact</u>

PILLAR PERFORMANCE:

None noted

SILL SEPARATION

None noted

AIRBAG DEPLOYMENT STATUS:

	<u>DRIVER</u>	<u>FRONT PASSENGER</u>	<u>REAR PASSENGER</u>
<u>FRONT</u>	<u>Did not deploy</u>	<u>Did not deploy</u>	<u>N/a</u>
<u>SIDE</u>	<u>Deployed</u>	<u>N/a</u>	<u>N/a</u>

OTHER NOTABLE IMPACT EFFECTS:

None noted

**SECTION 4**  
**OCCUPANT AND VEHICLE INFORMATION**

**DATA SHEET 5**

**SID INSTRUMENTATION DATA**

Vehicle: 2001 Buick Century

NHTSA No.: M1 0106

	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
<b>HEAD ACCELERATIONS</b>								
Longitudinal (X)	16.6	79.0	-19.9	35.3	21.4	74.0	-7.3	184.0
Lateral (Y)	36.5	56.7	-4.3	199.4	132.9	59.8	-15.4	40.3
Vertical (Z)	9.5	34.7	-38.1	57.7	67.2	64.6	-24.7	96.8
Resultant (R)	54.8	57.7	-	-	133.1	59.8	-	-
HIC	215	-	-	-	1109			
<b>RIB ACCELERATIONS</b>								
Upper Rib Lateral (Y)	78.1	26.9	-18.0	38.1	58.7	50.0	-8.1	120.0
Upper Rib Lateral (Y <sub>R</sub> )	83.6	26.9	-19.8	38.1	57.1	50.0	-8.0	120.0
Lower Rib Lateral (Y)	70.4	45.6	-13.9	83.8	75.9	43.1	-32.1	76.2
Lower Rib Lateral (Y <sub>R</sub> )	69.9	45.6	-14.0	93.1	75.6	43.1	-32.3	76.2
<b>SPINE ACCELERATIONS</b>								
Lower Lateral (Y)	95.7	44.4	-18.2	94.4	70.9	41.9	-53.0	70.6
Lower Lateral (Y <sub>R</sub> )	94.7	44.4	-18.5	94.4	69.2	41.2	-53.1	70.6
<b>PELVIS ACCELERATIONS</b>								
Lateral (Y)	138.8	38.1	-18.5	83.8	87.9	35.0	-31.5	67.5
Lateral (Y <sub>R</sub> )	138.9	38.1	-18.5	84.4	86.3	34.4	-29.0	68.1

REFERENCE:

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

(As described in Side NCAP Test Procedure Manual dated May 1999)

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

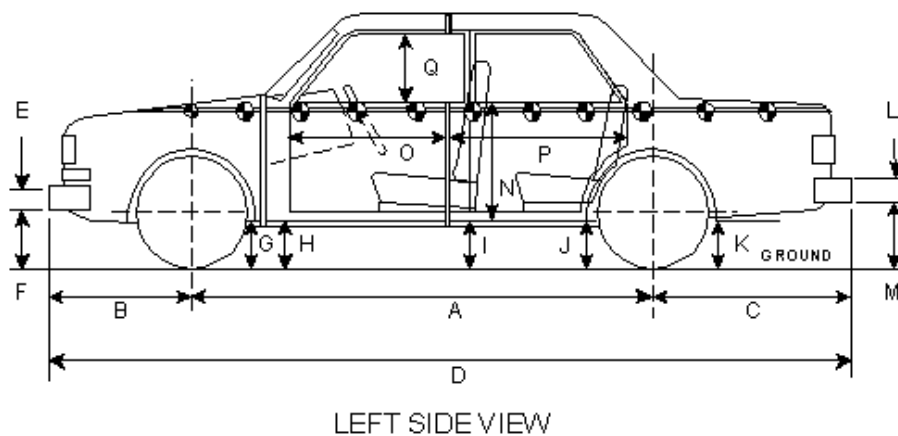
Y<sub>R</sub> denotes redundant Y-direction accelerometer

## DATA SHEET 6

### VEHICLE PRE- AND POST- MEASUREMENTS

Vehicle: 2001 Buick Century

NHTSA No.: M1 0106



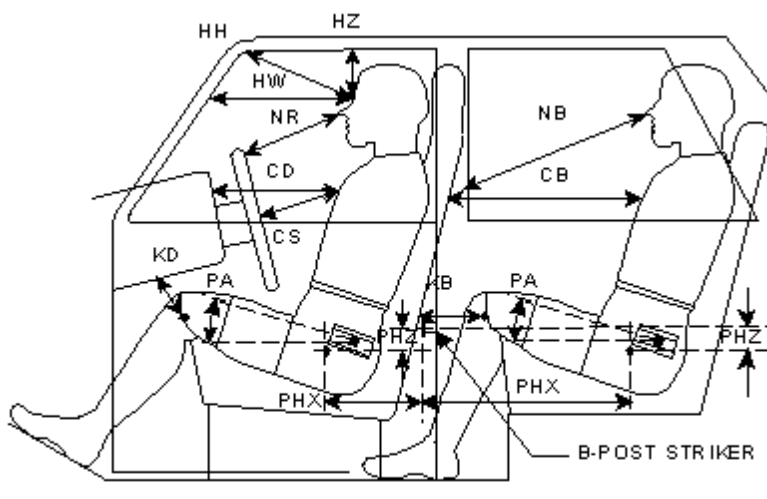
	PRE-TEST As delivered	PRE-TEST As Tested	POST-TEST	Δ CHANGE
A	2770	-	2695	-75
B	875	-	878	3
C	966	-	972	6
D	4947	-	4917	-30
E	256	-	257	1
F	274	272	295	23
G	220	202	200	-2
H	222	203	293	90
I	225	204	303	99
J1	205	168	168	0
J2	230	192	199	7
K	288	240	242	2
L	319	-	318	-1
M	355	303	302	-1
N	692	-	615	-77
O	1083	-	1039	-44
P	1062	-	965	-97
Q	450	-	424	-26
R	4611	-	4615	4
S	4611	-	4545	-66
T	1838	-	1422	-416

## DATA SHEET 7

### SID LONGITUDINAL CLEARANCE DIMENSIONS

Vehicle: 2001 Buick Century

NHTSA No.: M1 0106



### LEFT SIDE VIEW

NOTE: All dimensions are in millimeters with tolerance of  $\pm 3$  mm

	DRIVER ID# 056	LEFT REAR PASSENGER ID# 058
HH	383	-
HW	677	-
HZ	178	144
NR/NB	425	621
CD/CB	542	543
CS	325	-
KDL(KDA°)/KBL(KDA°)	149/28°	185/17.8°
KDR(KDA°)/KBR(KDA°)	133/21.5°	180/19.4°
PA°	24.7°	24.2°
PHX	194	269
PHZ	82	305

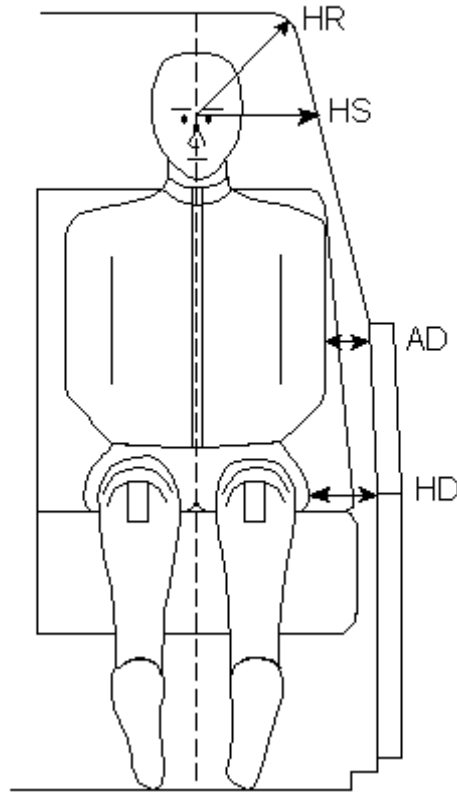
Note: 2-door vehicle shown. Rear dummy PHX & PHZ measurements for 4-door vehicle would use the C-Pillar striker as a reference point

**DATASHEET 8**

**SID LATERAL CLEARANCE DIMENSIONS**

Vehicle: 2001 Buick Century

NHTSA No.: M1 0106



NOTE: All dimensions are in millimeters with tolerance of  $\pm 3$  mm

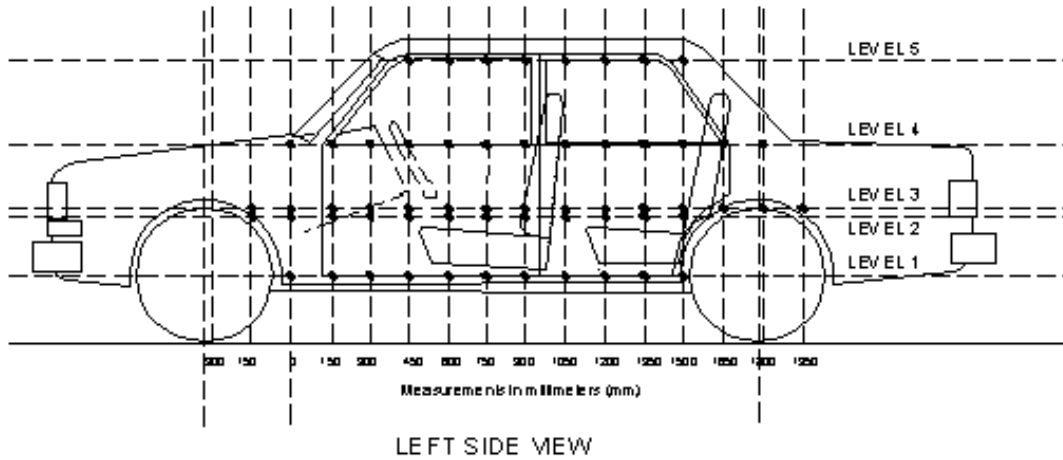
	DRIVER ID# 056		LEFT REAR PASSENGER ID# 058	
HR	201		185	
HS	316		309	
AD	Upper 66	Lower 141	Upper 75	Lower 119
HD	161		140	

**DATA SHEET 9**

**VEHICLE SIDE MEASUREMENTS**

Vehicle: 2001 Buick Century

NHTSA No.: M1 0106



- 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	1311
Level 4 @ Window Sill	917
Level 3 @ Mid-Door	587
Level 2 @ Occupant H-Point	488
Level 1 @ Axle Centerline or Sill Top Height	234

DATA SHEET 10

VEHICLE EXTERIOR CRUSH PROFILES – ALL LEVELS

Vehicle: 2001 Buick Century

NHTSA No.: MI 0106

Note: All Dimensions are in millimeters with a tolerance of  $\pm 3$  mm

LEVEL	HEIGHT	DISTANCE IN MILLIMETERS (mm) FROM IMPACT POINT																												
		-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	PRE							241	242	240	235	233	230	230	229	228	228	227	227	227										
	POST							321	420	440	460	482	501	520	541	548	576	410	354	314										
	CRUSH							80	198	200	225	249	271	290	312	320	348	183	127	87										
LEVEL 2	PRE							150	151	151	151	150	150	150	150	150	150	150	150	150	140									
	POST							238	524	573	593	604	612	620	624	650	666	662	640	580	241									
	CRUSH							88	373	422	442	454	462	470	474	500	516	512	490	430	101									
LEVEL 3	PRE							142	140	140	140	140	141	142	140	141	141	140	140	139	135									
	POST							253	451	489	514	539	557	569	589	603	594	581	566	530	435									
	CRUSH							111	311	349	374	399	416	427	449	462	453	441	426	391	300									
LEVEL 4	PRE							237	240	238	237	235	235	235	235	239	245	250	252	257	264									
	POST							290	360	427	485	511	525	540	562	594	575	558	538	480	373									
	CRUSH							53	120	189	248	276	290	305	327	355	330	308	286	193	109									
LEVEL 5	PRE																													
	POST																													
	CRUSH																													

DATA SHEET 10 (continued)

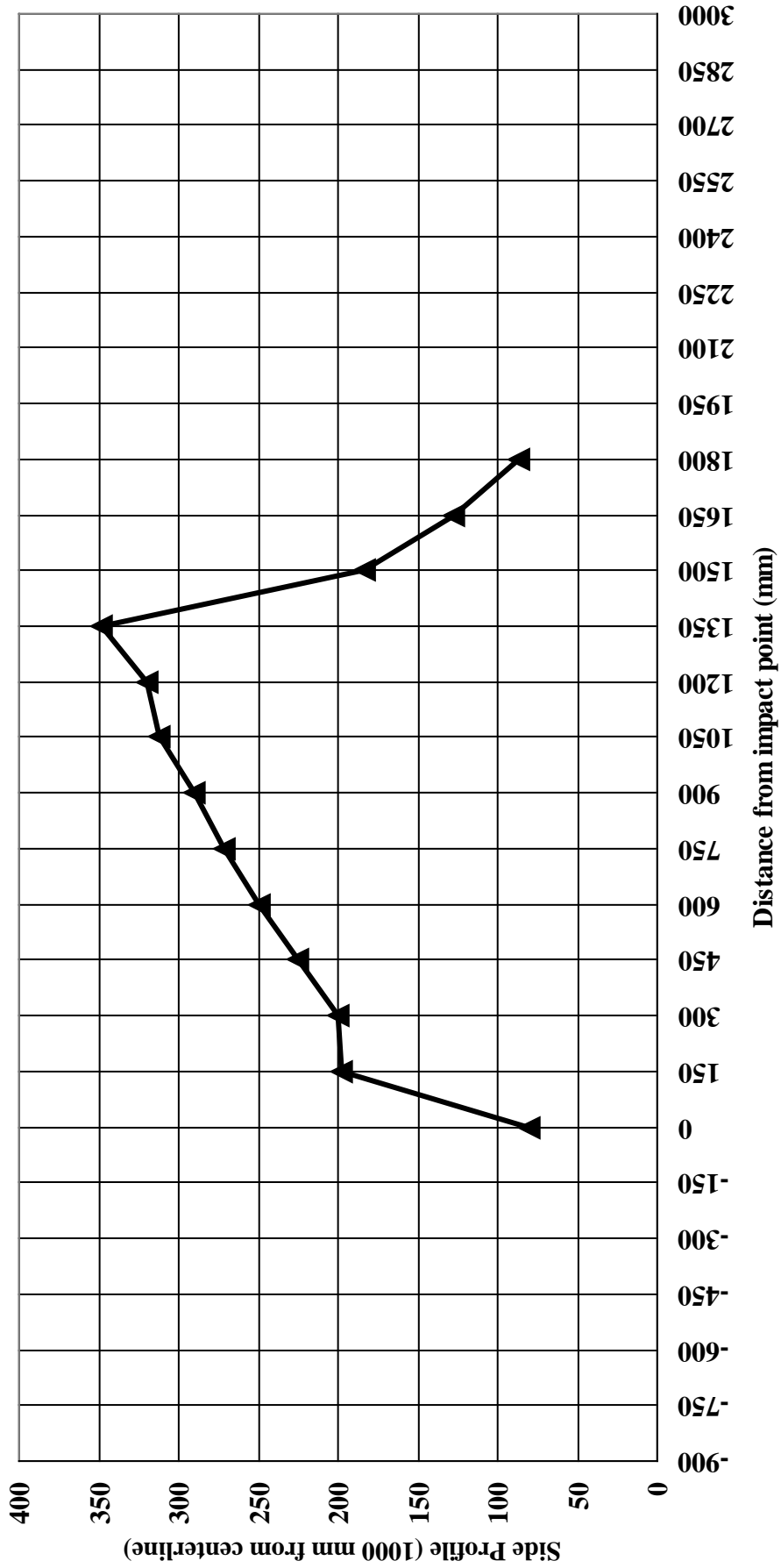
VEHICLE EXTERIOR CRUSH PROFILES

Vehicle: 2001 Buick Century

NHTSA No.: MI 0106

SIDE PROFILE LEVEL 1

1311 mm above ground



DATA SHEET 10 (continued)

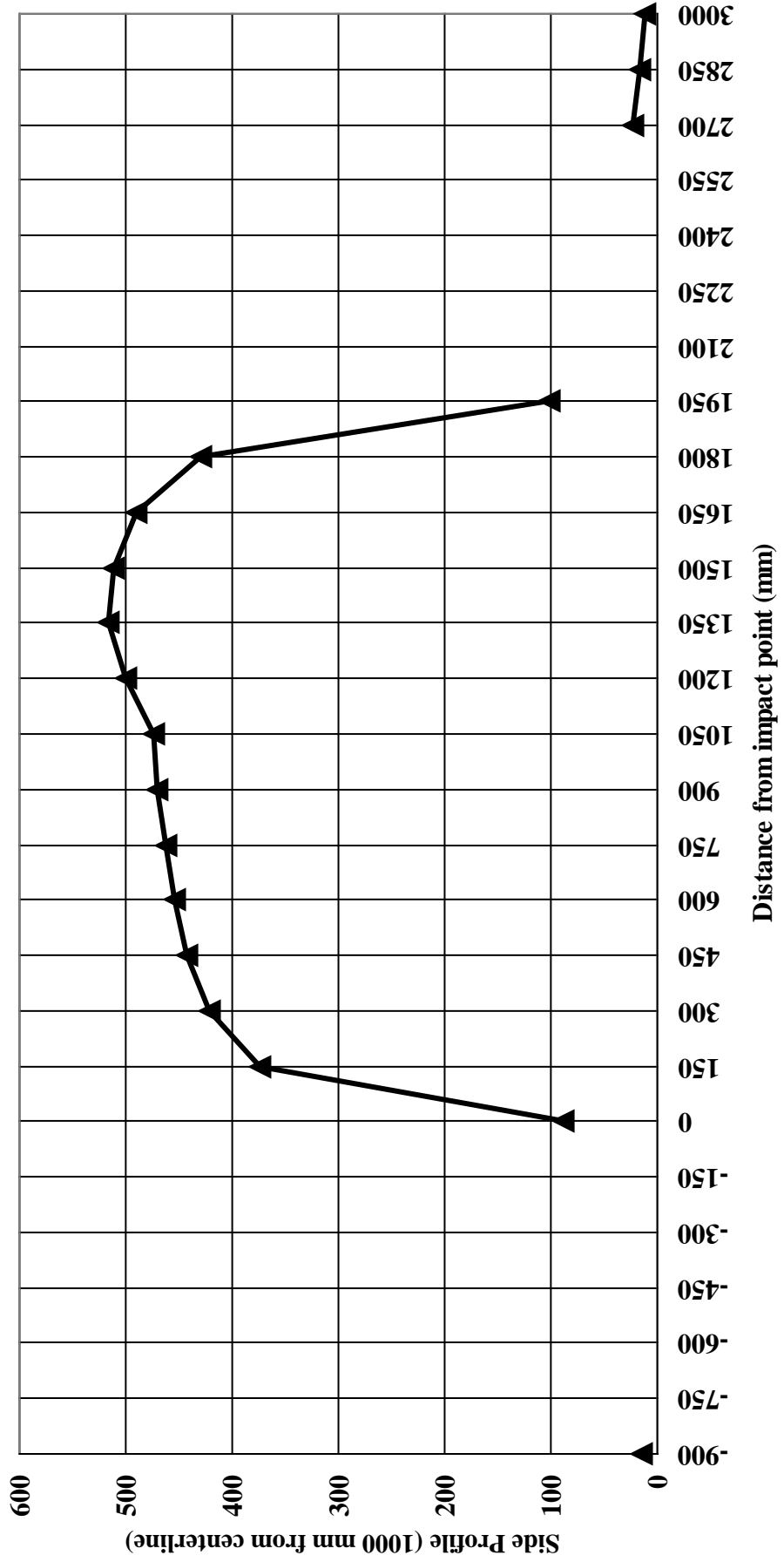
VEHICLE EXTERIOR CRUSH PROFILES

Vehicle: 2001 Buick Century

NHTSA No.: MI 0106

SIDE PROFILE LEVEL 2

917 mm above ground



DATA SHEET 10 (continued)

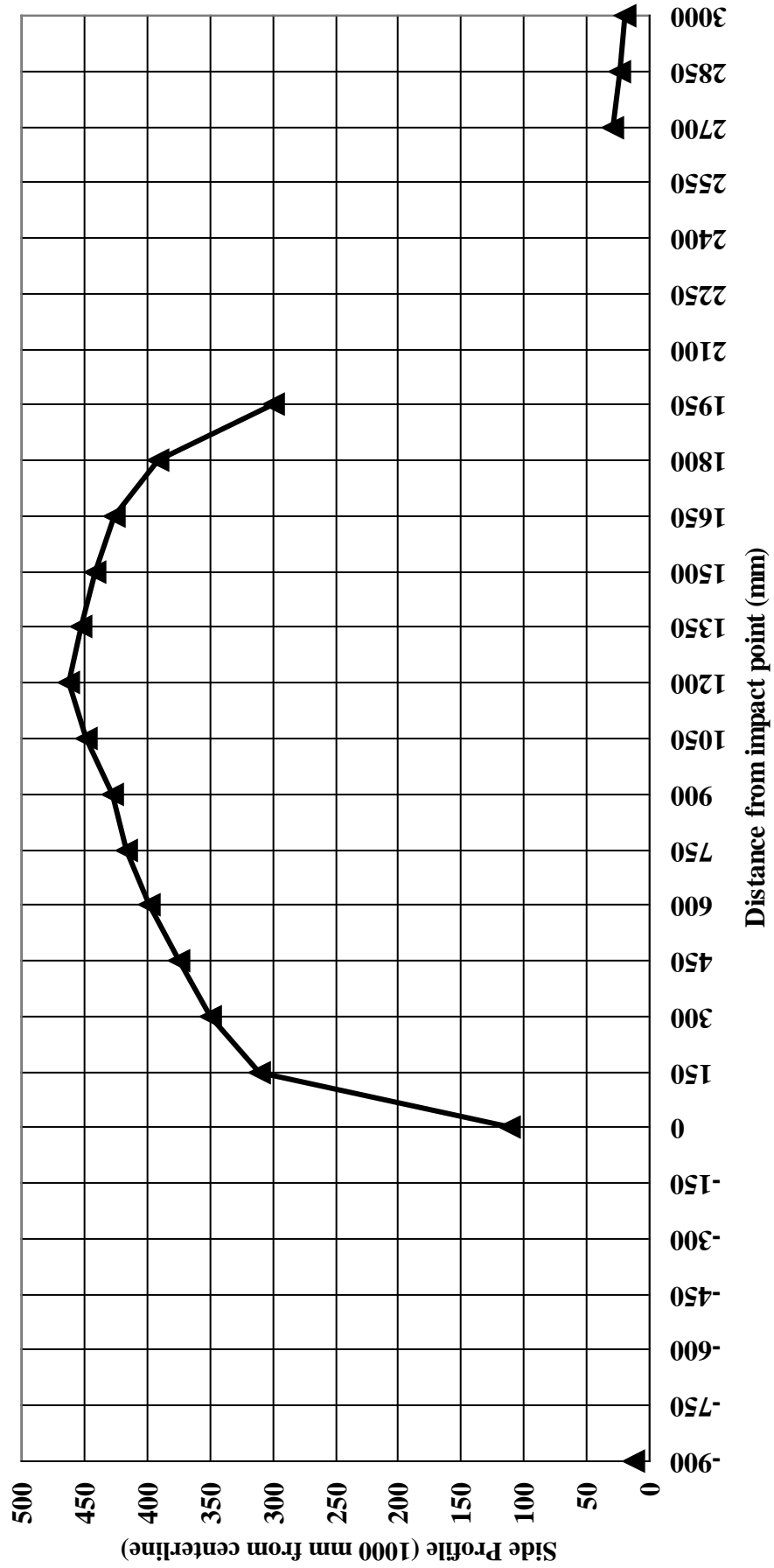
VEHICLE EXTERIOR CRUSH PROFILES

Vehicle: 2001 Buick Century

NHTSA No.: MI 0106

SIDE PROFILE LEVEL 3

587 mm above ground



DATA SHEET 10 (continued)

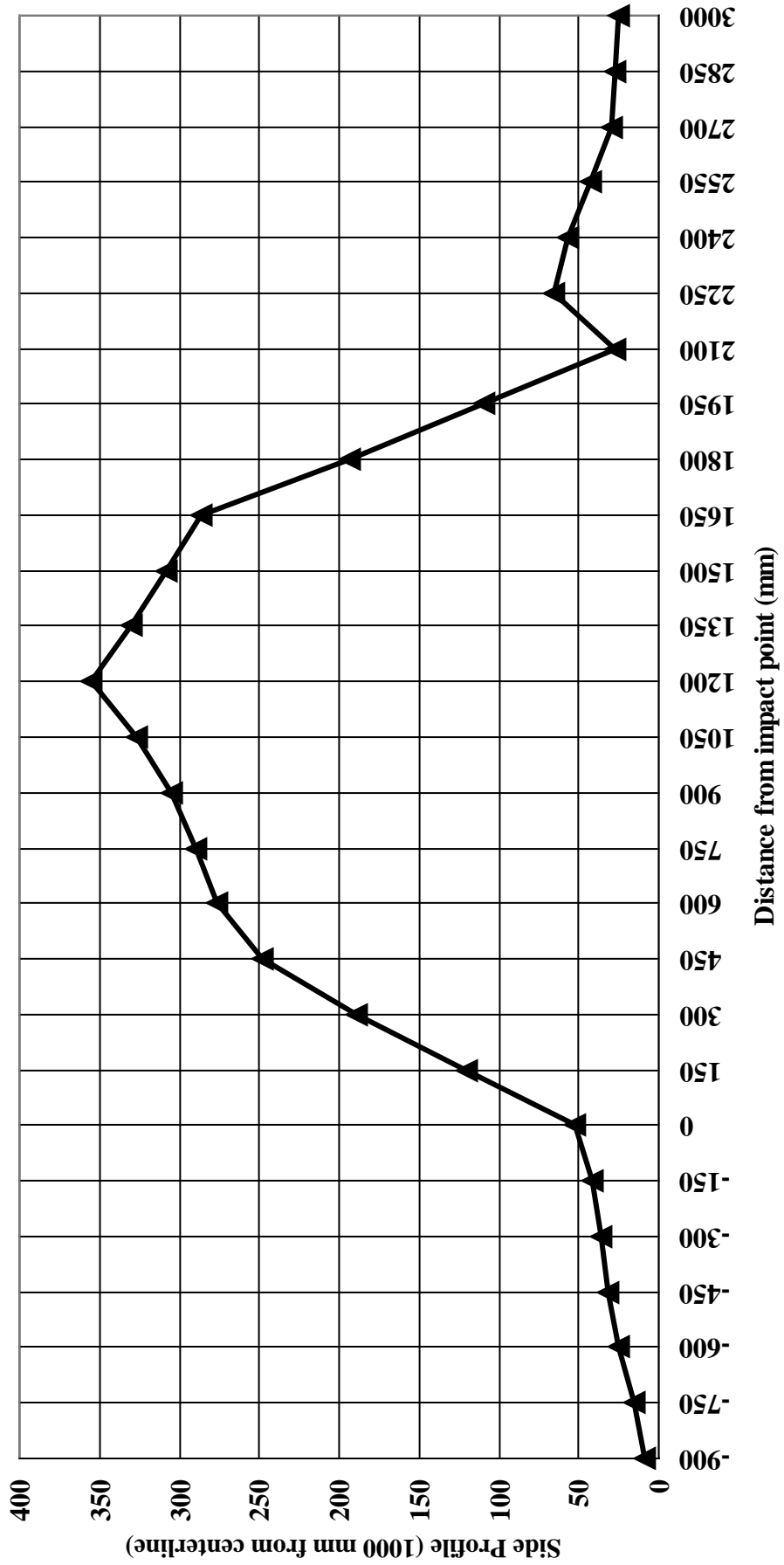
VEHICLE EXTERIOR CRUSH PROFILES

Vehicle: 2001 Buick Century

NHTSA No.: MI 0106

SIDE PROFILE LEVEL 4

488 mm above ground



DATA SHEET 10 (continued)

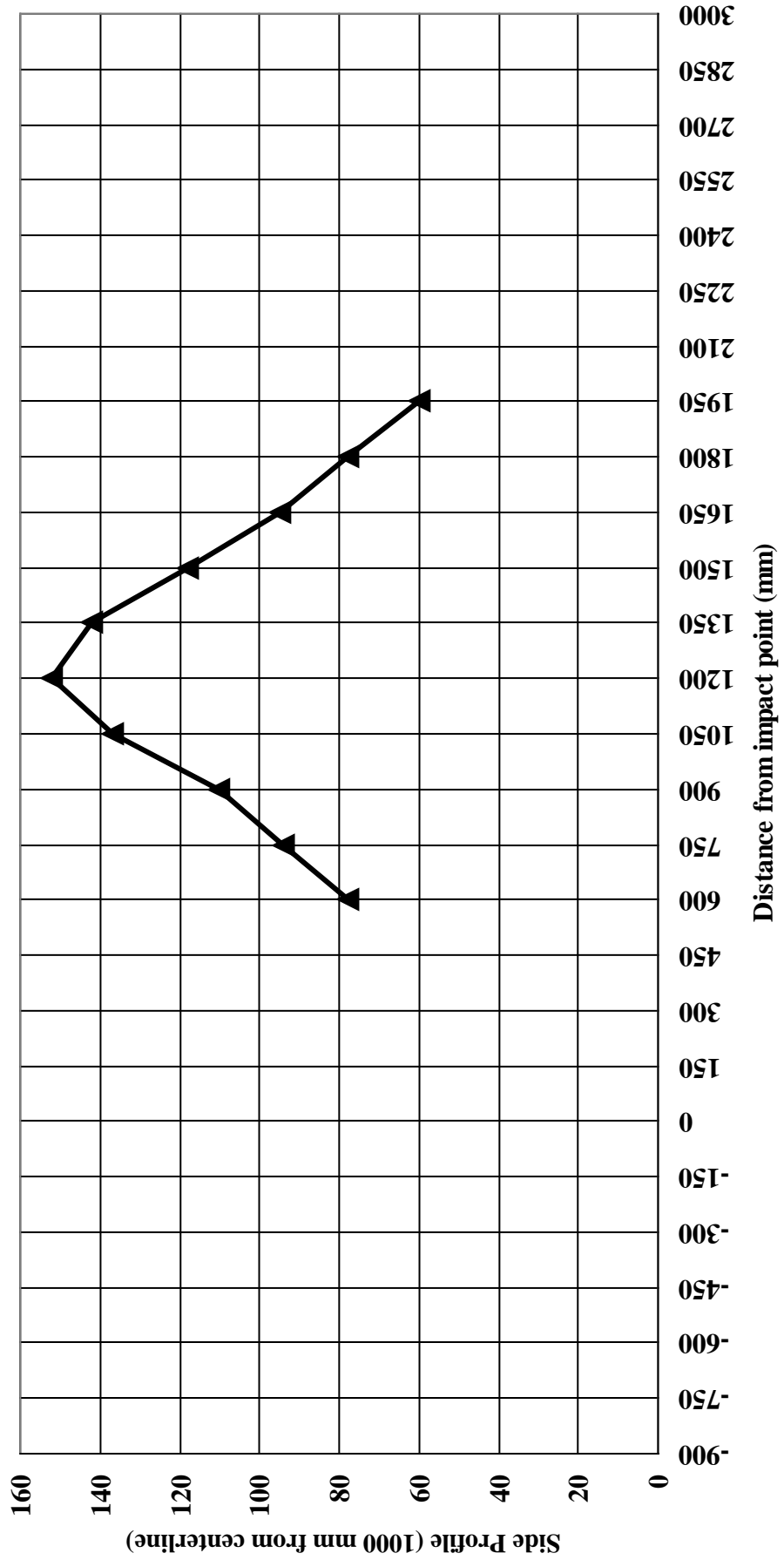
VEHICLE EXTERIOR CRUSH PROFILES

Vehicle: 2001 Buick Century

NHTSA No.: MI 0106

**SIDE PROFILE LEVEL 5**

234 mm above ground

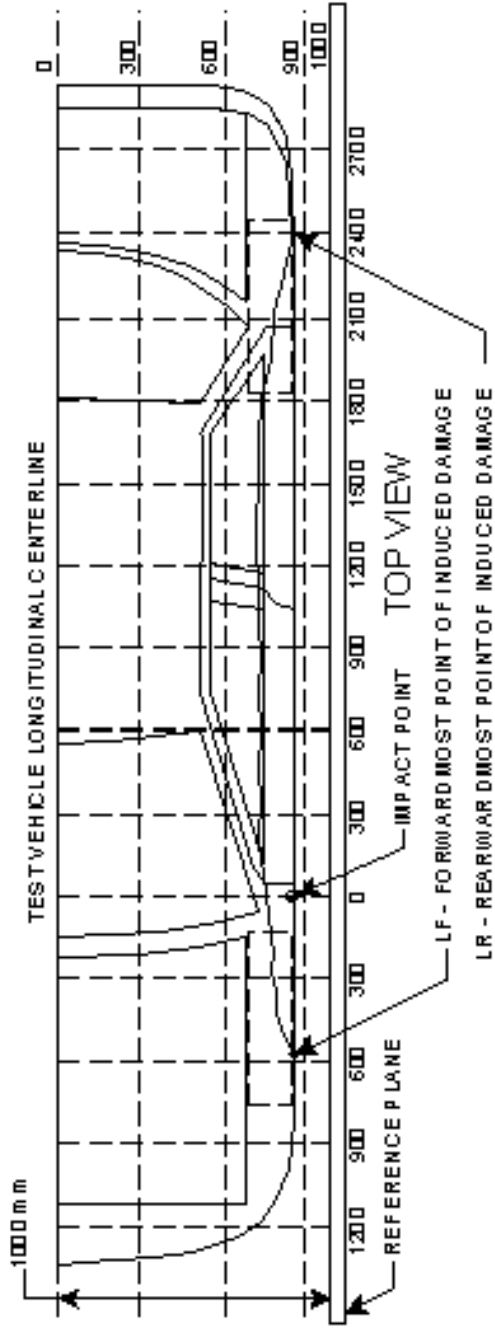


DATA SHEET 11

VEHICLE DAMAGE PROFILE DISTANCES

Vehicle: 2001 Buick Century

NHTSA No.: M11 0106



DPD MEASUREMENTS (mm)	POST-TEST (mm)	PRE-TEST (mm)	STATIC CRUSH (mm)
1	178	178	0
2	242	185	57
3	606	190	416
4	652	186	466
5	650	193	457
6	202	202	0

**DATA SHEET 12**

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

Vehicle: 2001 Buick Century

NHTSA No.: MI 0106

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

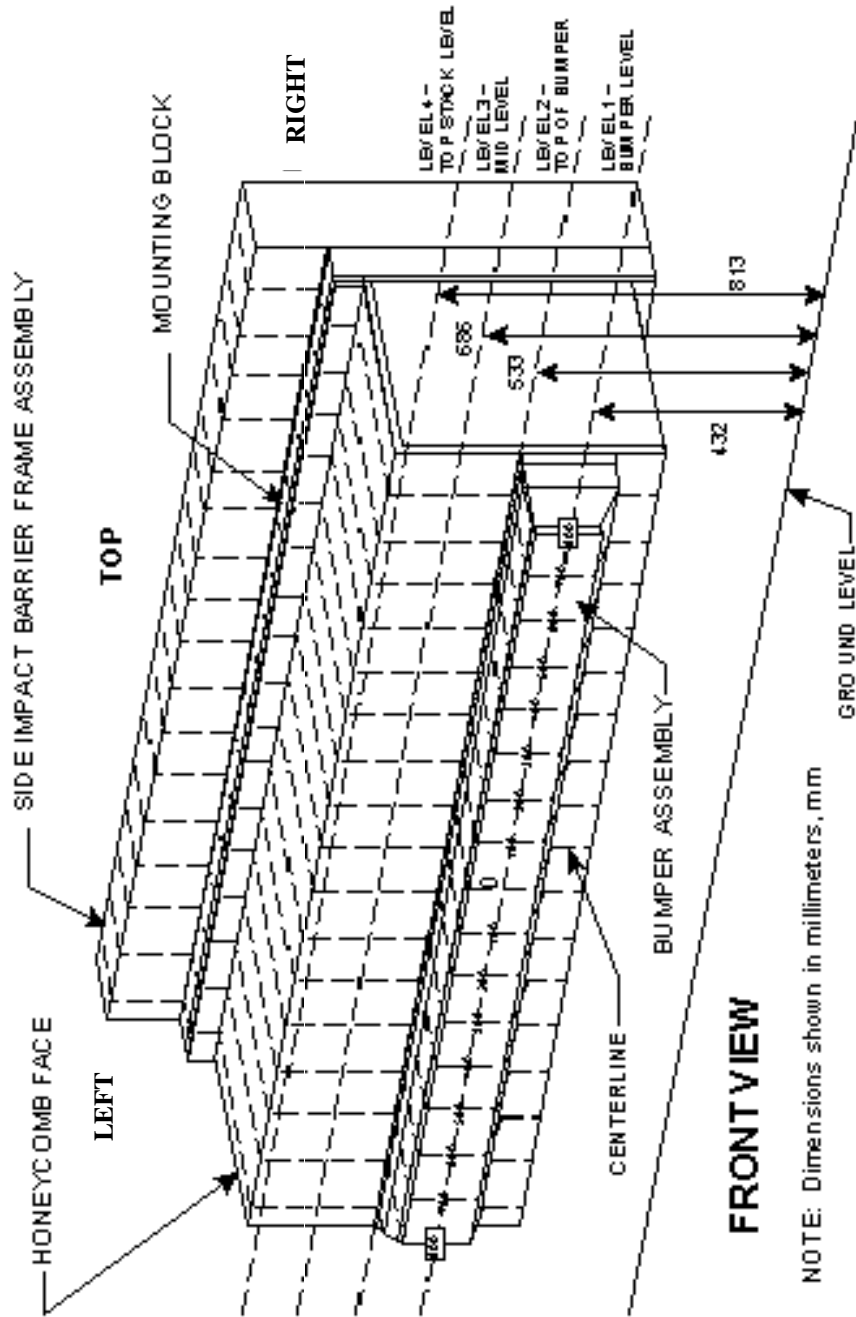
LEVEL	HEIGHT AT CL (mm)	DISTANCE LEFT OF CENTER								DISTANCE RIGHT OF CENTER									
		800	700	600	500	400	300	200	100	0	100	200	300	400	500	600	700	800	
LEVEL 4 TOP STACK	810	PRE-	578	578	578	578	578	578	578	578	579	579	579	580	580	580	580	580	
		POST-	671	625	593	578	580	583	588	585	585	586	589	591	596	596	637	688	757
		CRUSH	93	47	15	0	2	5	15	10	6	7	10	11	16	57	108	177	
LEVEL 3 MID- LEVEL	685	PRE-	577	577	576	576	576	576	576	576	576	577	577	577	577	578	578	578	
		POST-	638	607	580	576	577	578	584	579	578	580	580	581	583	586	626	682	
		CRUSH	61	30	14	0	1	2	4	8	3	3	3	4	6	8	48	104	
LEVEL 2 TOP BUMPER	560	PRE-	573	573	573	573	573	573	573	573	573	574	574	574	574	575	575	575	
		POST-	619	592	580	578	580	580	575	575	580	582	582	583	585	590	604	625	
		CRUSH	46	19	7	5	7	7	6	2	2	7	8	9	11	15	29	50	
LEVEL 1 MID- BUMPER	432	PRE-	487	471	471	471	471	471	471	471	472	471	472	472	472	473	472	483	
		POST-	533	505	495	491	494	501	496	492	493	497	500	503	506	515	535	580	
		CRUSH	46	34	24	20	23	30	27	25	21	26	28	31	34	42	63	97	

DATA SHEET 12 (continued)

STATIC CRUSH OF IMPACTOR FACE

Vehicle: 2001 Buick Century

NHTSA No.: MI 0106

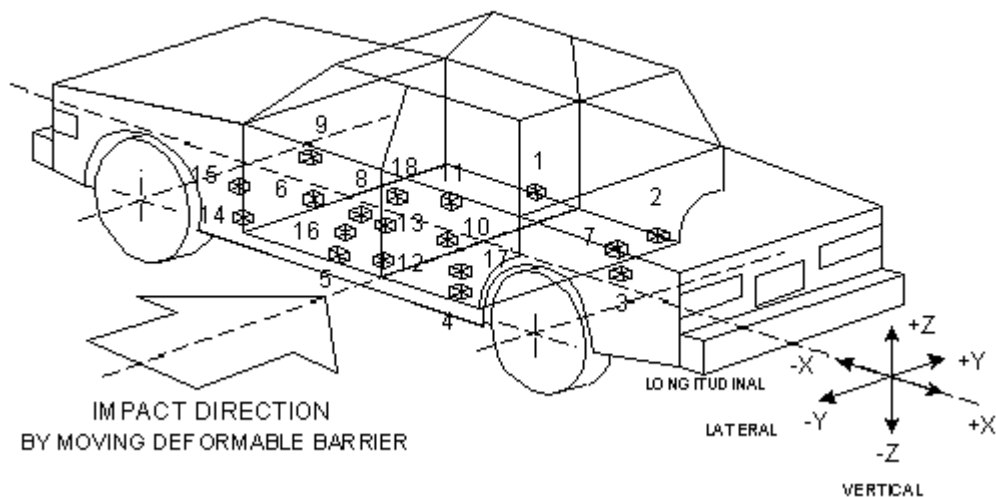


DATA SHEET 13

TEST VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

Vehicle: 2001 Buick Century

NHTSA No.: M1 0106



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: 2001 Buick Century

NHTSA No.: MI 0106

Location	Coordinates			Longitudinal (X)			Lateral (Y)			Vertical (Z)			Resultant				
	X mm	Y mm	Z mm	Max G's	Max msec	Min G's	Max msec	Min G's	Max msec	Min G's	Max msec	Max G's	Max msec	Max G's	Max msec		
1 Right Side Sill at Front Seat	2123	760	199	3.7	15.4	-3.5	67.0	19.5	12.8	-2.5	180.3	6.9	15.5	-2.5	100.2	19.9	13.0
2 Right Side Sill at Rear Seat	3044	764	202	4.0	25.0	-3.2	68.2	17.3	11.0	-2.9	163.7	6.8	21.4	-3.0	103.8	17.5	11.0
3 Rear Floorpan Above Axle	3819	0	570	6.2	21.4	-2.2	104.6	16.2	37.0	-2.6	135.7	11.6	15.7	-7.6	34.6	17.4	34.8
4 Left Side Sill at Rear Seat	3031	770	215					58.9	8.3	-26.2	199.9						
5 Left Side Sill at Front Seat	2125	772	210					40.9	8.6	-7.8	14.2						
6 Left Front Door on Centerline	2230	-830	405					170.6	8.8	-95.0	17.0						
7 Right Rear Occupant Compartment	3023	351	392					19.0	35.0	-2.6	163.2						
8 Midrear of Left Front Door	2460	-810	440					242.4	10.2	192.3	17.7*						
9 Left Front Door Upper Centerline	2240	-812	910					212.1	21.5	-96.7	28.9						
10 Midrear of Left Rear Door	3530	-790	610					96.8	17.0	-44.1	36.2						

Axis Origin X – Front Bumper  
 Y – Vehicle Centerline  
 Z – Test Surface  
 Axis Orientation + (X) Rearward  
 + (Y) Right  
 + (Z) Up

(As described in Side NCAP Test Procedure Manual dated May 1999)

\*Accelerometer not requested

**DATASHEET 13 (continued)**

**VEHICLE ACCELEROMETER LOCATIONS AND SUMMARY DATA**

Vehicle: 2001 Buick Century

NHTSA No.: MI 0106

Location	Coordinates			Longitudinal (X)			Lateral (Y)			Vertical (Z)			Resultant	
	X mm	Y mm	Z mm	Max G's	Min G's	Max msec	Max G's	Min G's	Max msec	Max G's	Min G's	Max msec	Max G's	Max msec
11 Left Rear Door Upper Centerline	3086	-795	925				97.5	-42.3	12.0	27.8				
12 Left Lower B-Pillar	2605	-725	605				194.8	-80.7	8.3	16.1				
13 Left Middle B-Pillar	2609	-728	795				175.1	-47.7	22.5	16.1				
14 Left Lower A-Pillar	1572	-709	352				145.9	-21.7	31.7	12.4				
15 Left Middle A-Pillar	1565	-802	930				29.7	-4.9	15.7	11.0				
16 Front Seat Track	2343	-525	320				49.3	-31.7	10.7	37.5				
17 Rear Seat Track														
18 Vehicle CG	2420	0	375	2.4	-4.7	73.0	18.7	-1.9	36.1	176.0	7.9	27.3	-7.7	14.0

Axis Origin X – Front Bumper  
 Y – Vehicle Centerline  
 Z – Test Surface  
 (As described in Side NCAP Test Procedure Manual dated May 1999)

Axis Orientation  
 +(X) Rearward  
 +(Y) Right  
 +(Z) Up

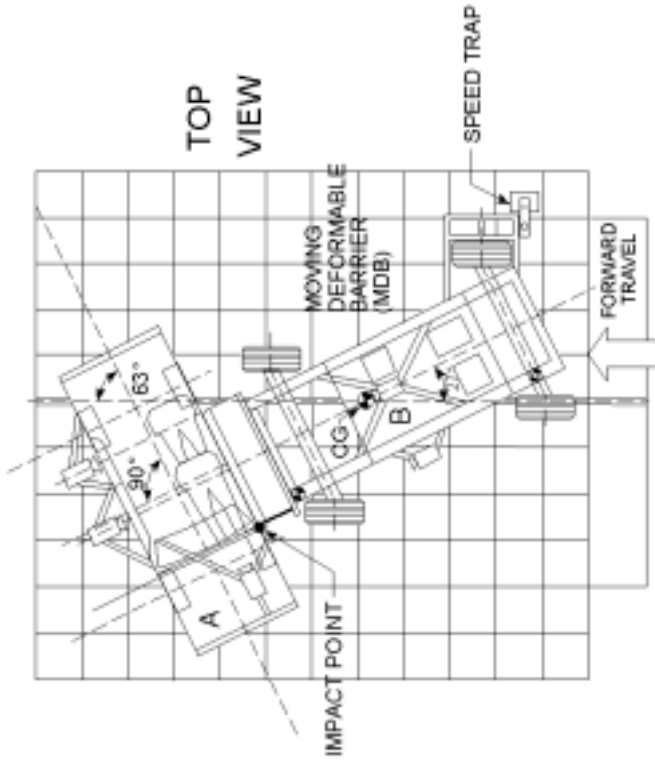
\*Accelerometer not requested

DATA SHEET 14

MDB ACCELEROMETER LOCATIONS AND DATA SUMMARY

Vehicle: 2001 Buick Century

NHTSA No.: MI 0106



Location	Coordinates			Longitudinal (X)			Lateral (Y)			Vertical (Z)			Resultant			
	X mm	Y mm	Z mm	Max msec	G's	Min msec	Max msec	G's	Min msec	Max msec	G's	Min msec	G's	Max Msec		
1 MDB Center of Gravity	1113	-1	311	33.3	23.6	116.6	68.5	6.1	27.1	27.1	16.8	22.8	-10.6	15.6	28.0	33.8
2 MDB Rear Frame Member	2812	-614	585	26.7	4.0	116.3	145.2	2.2	36.9	36.9						

Axis Origin X – Front Bumper  
 Y – Vehicle Centerline  
 Z – Test Surface  
 Axis Orientation + (X) Rearward  
 + (Y) Right  
 + (Z) Up

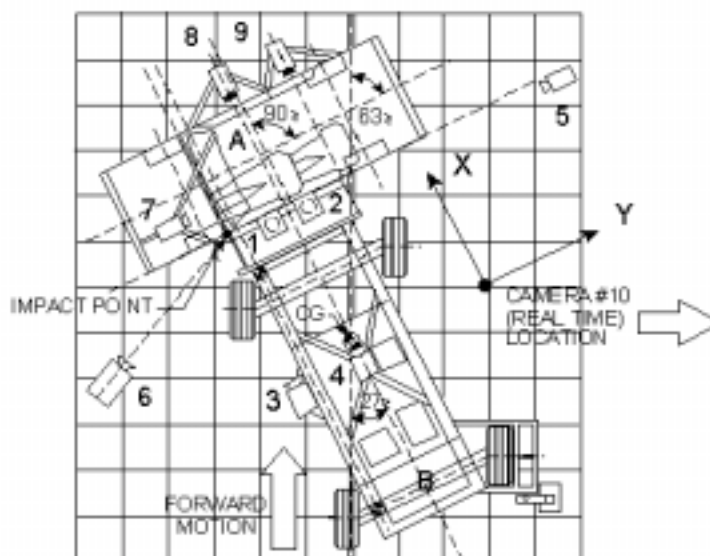
(As described in Side NCAP Test Procedure Manual dated May 1999)

## DATA SHEET 15

### HIGH-SPEED CAMERA LOCATIONS AND DATA SUMMARY

Vehicle: 2001 Buick Century

NHTSA No.: M1 0106



Camera No.	View	Coordinates (mm)*			Angle wrt Horiz.	Lens (mm)	Film Speed (fps)
		X	Y	Z			
1	Overhead view of test vehicle	795	1381	5622	-90	7	1000
2	Overhead close-up view of impact plane	154	685	5622	-90	12	1000
3	MDB onboard close-up view of impact point	-2321	0	756	0	13	1000
4	MDB onboard view of driver dummy	-2321	960	1320	-7	13	1000
5	Right side ground level overall view	832	12344	1462	-4	45	1000
6	Left side ground level overall view	-958	-4216	392	-6	25	1000
7	Test vehicle onboard driver front view	-624	710	1321	-15	10	1000
8	Test vehicle onboard driver side view	908	1525	1054	-5	10	1000
9	Test vehicle onboard passenger side view	1825	1536	1045	-5	10	1000
10	Real-time film coverage of test	-	-	-	-	-	-

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

**SECTION 5**  
**FUEL SYSTEM INTEGRITY**

**DATA SHEET 16**

**FUEL SYSTEM INTEGRITY DATA**

Vehicle: 2001 Buick Century

NHTSA No.: M1 0106

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:

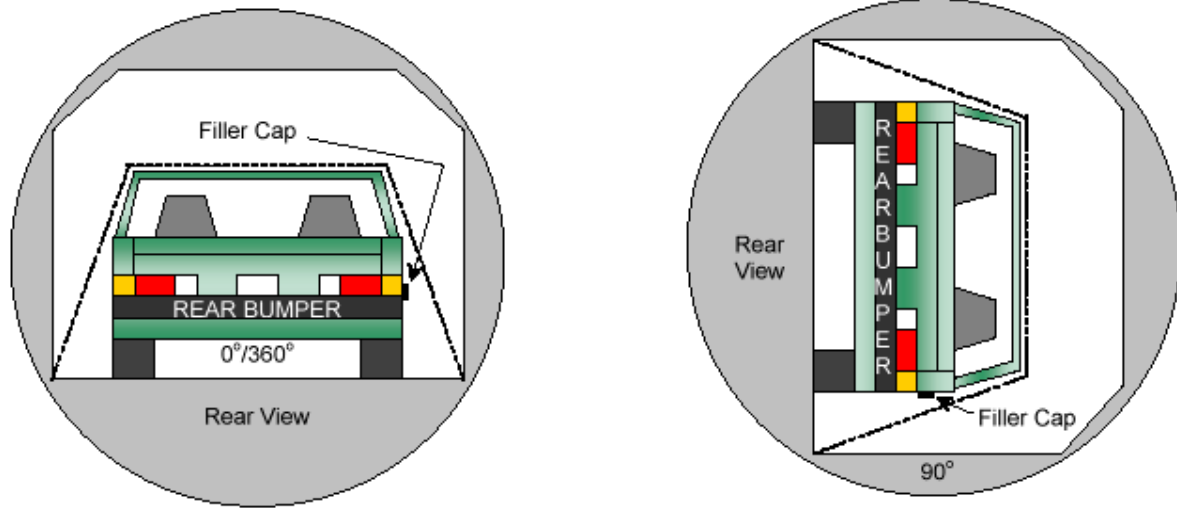
POST IMPACT TEST	TEST RESULTS	MAXIMUM ALLOWABLE
1. From impact until vehicle motion ceases	0	29.6 ml
2. For 5 minute period after vehicle motion ceases	0	147.9 ml
3. For next 25 minutes	0	29.6 ml / 1 min.

FUEL SPILLAGE LOCATION(S): None

**DATA SHEET 17**  
**ROLLOVER DATA**

Vehicle: 2001 Buick Century

NHTSA No.: M1 0106



0° TO 90°

DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time	1	minutes	05	seconds
(Spec Range =1 to 3 minutes)				
FMVSS 301 Position Hold Time	5	minutes	04	seconds
TOTAL	6	minutes	09	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	N/a	29.6 ml

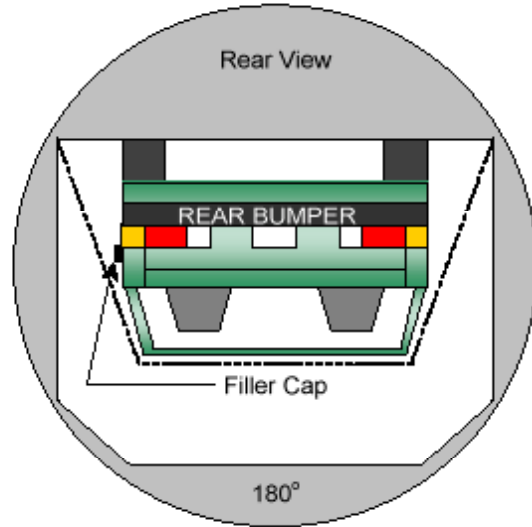
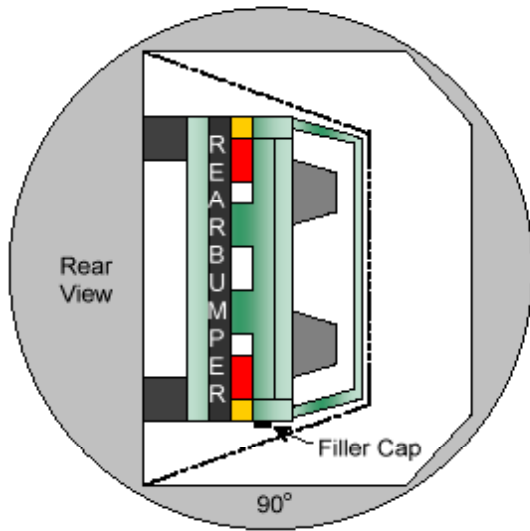
FUEL SPILLAGE LOCATION(S): None

DATA SHEET 17 (continued)

ROLLOVER VEHICLE

Vehicle: 2001 Buick Century

NHTSA No.: M1 0106



90° TO 180°

DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time	<u>1</u> minutes	<u>03</u> seconds
(Spec Range =1 to 3 minutes)		
FMVSS 301 Position Hold Time	<u>5</u> minutes	<u>0</u> seconds
TOTAL	<u>6</u> minutes	<u>03</u> seconds
Next whole minute interval	<u>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	N/a	29.6 ml.

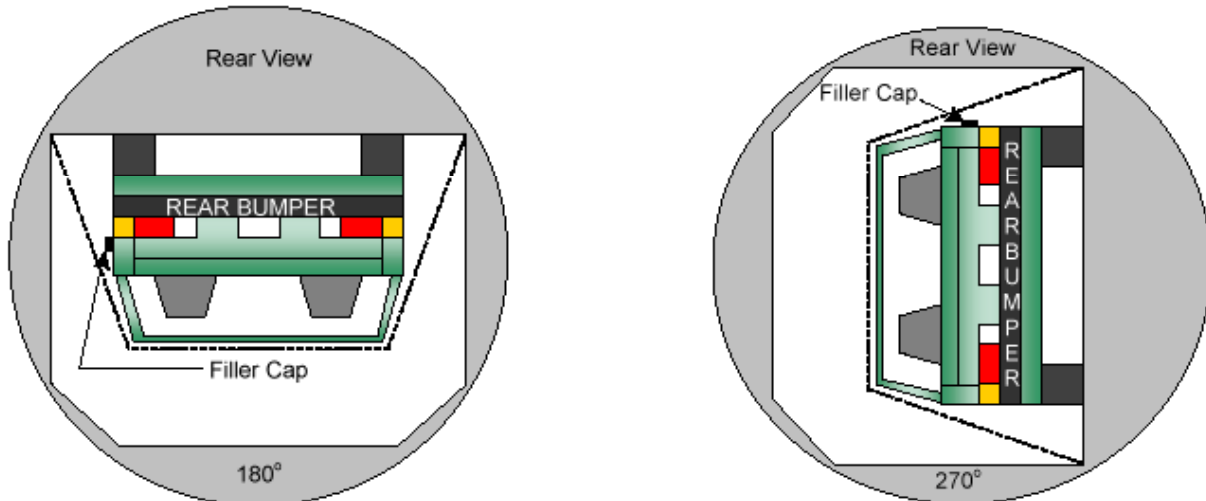
FUEL SPILLAGE LOCATION(S): None

**DATA SHEET 17 (continued)**

**ROLLOVER VEHICLE**

Vehicle: 2001 Buick Century

NHTSA No.: M1 0106



**180° TO 270°**

DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time	<u>1</u> minutes	<u>02</u> seconds
(Spec Range =1 to 3 minutes)		
FMVSS 301 Position Hold Time	<u>5</u> minutes	<u>03</u> seconds
TOTAL	<u>6</u> minutes	<u>05</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	N/a	29.6 ml

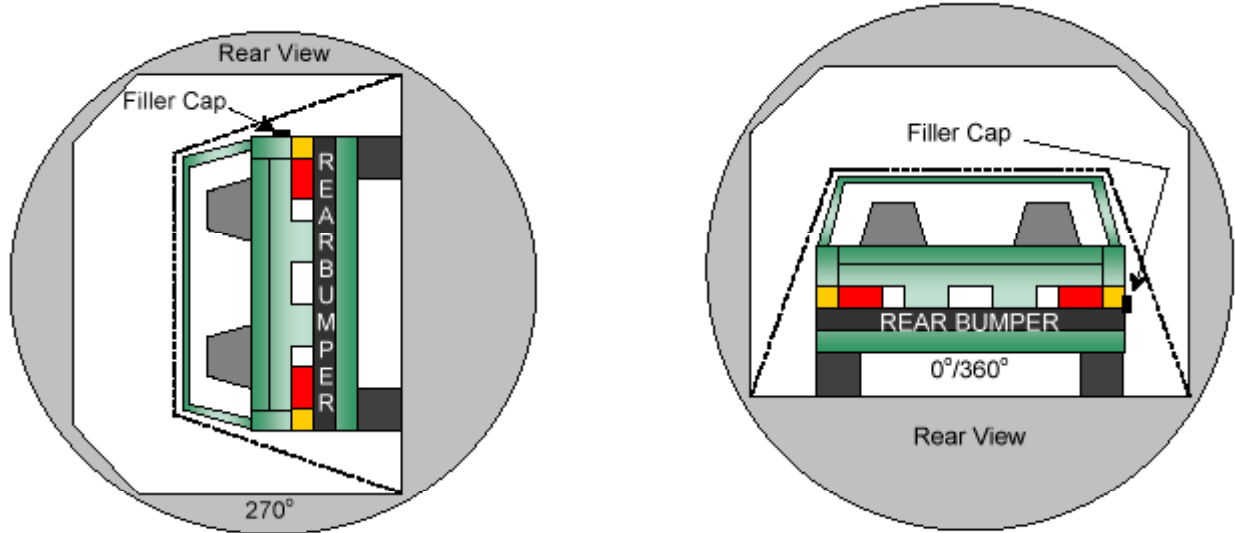
FUEL SPILLAGE LOCATION(S): None

DATA SHEET 17 (continued)

ROLLOVER VEHICLE

Vehicle: 2001 Buick Century

NHTSA No.: M1 0106



270° TO 360°

DETERMINATION OF SOLVENT COLLECTION TIME PERIOD:

Rollover Fixture 90° Rotation Time                    1 minutes                    02 seconds  
 (Spec Range =1 to 3 minutes)  
 FMVSS 301 Position Hold Time                    5 minutes                    05 seconds  
 TOTAL                    6 minutes                    07 seconds  
 Next whole minute interval                    7 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	N/a	29.6 ml

FUEL SPILLAGE LOCATION(S): None

**APPENDIX A**  
**PHOTOGRAPHS**

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



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

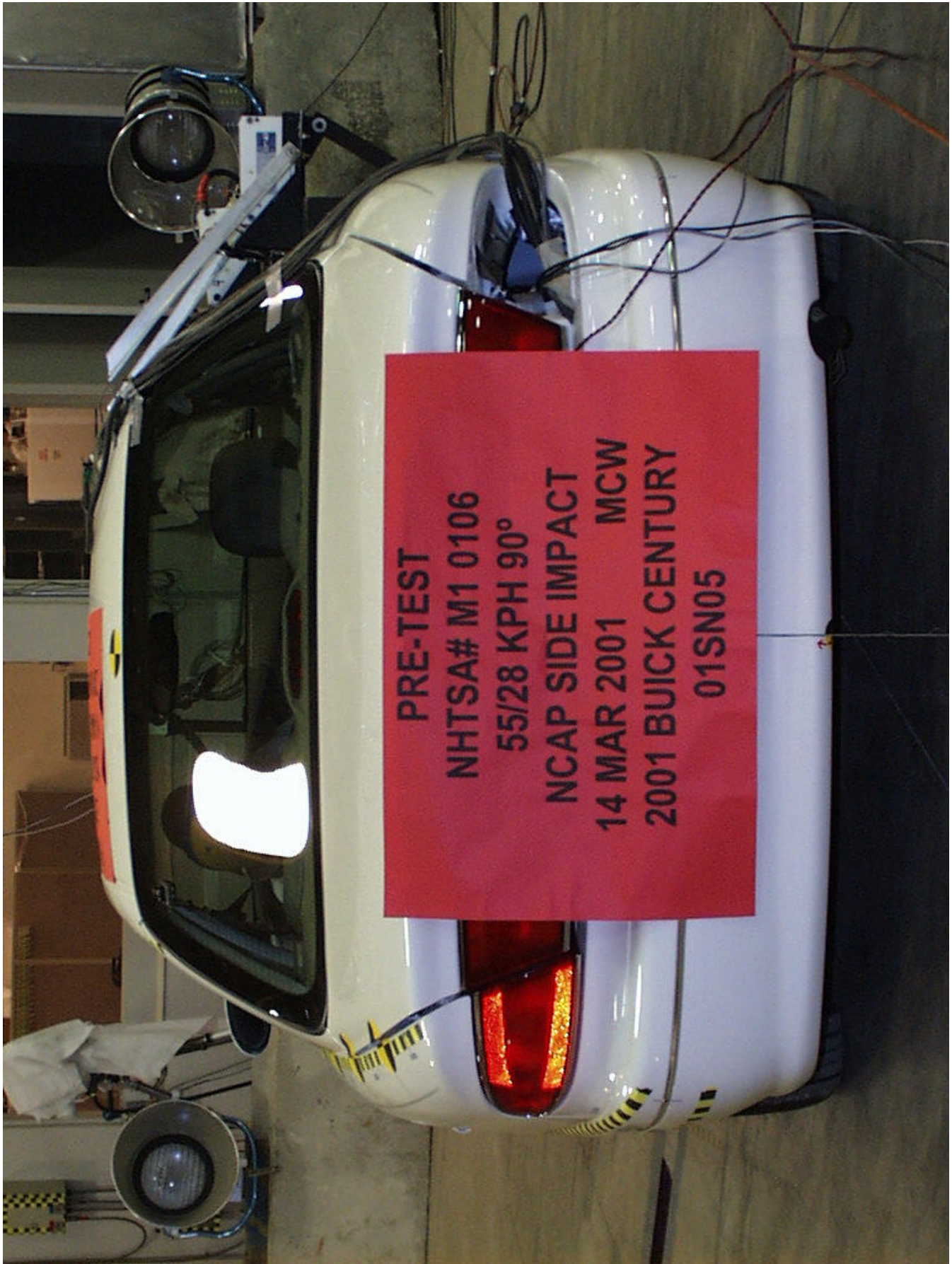


Figure A-3: PRE-TEST REAR VIEW OF TEST VEHICLE



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



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



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



Figure A-7: PRE-TEST RIGHT SIDE VIEW OF TEST VEHICLE



Figure A-8: POST-TEST RIGHT SIDE VIEW OF TEST VEHICLE



Figure A-9: PRE-TEST RIGHT OCCUPANT COMPARTMENT VIEW OF FRONT SID



Figure A-10: POST-TEST RIGHT OCCUPANT COMPARTMENT VIEW OF FRONT SID



Figure A-11: PRE-TEST RIGHT OCCUPANT COMPARTMENT VIEW OF REAR SID



Figure A-12: POST-TEST RIGHT OCCUPANT COMPARTMENT VIEW OF REAR SID



**PRE-TEST**  
**NHTSA# M1 0106**  
**55/28 KPH 90°**  
**NCAP SIDE IMPACT**  
**14 MAR 2001**  
**2001 BUICK CENTURY**  
**MCW 01SN05**

Figure A-13: PRE-TEST LEFT OCCUPANT COMPARTMENT VIEW OF FRONT SID



Figure A-14: POST-TEST LEFT OCCUPANT COMPARTMENT VIEW OF FRONT SID



Figure A-15: PRE-TEST LEFT OCCUPANT COMPARTMENT VIEW OF REAR SID



Figure A-16: POST-TEST LEFT OCCUPANT COMPARTMENT VIEW OF REAR SID



Figure A-17: PRE-TEST INTERIOR OF FRONT DOOR



Figure A-18: POST-TEST INTERIOR OF FRONT DOOR SHOWING SID IMPACT LOCATIONS



Figure A-19: POST-TEST INTERIOR OF REAR DOOR



Figure A-20: POST-TEST INTERIOR OF REAR DOOR SHOWING SID IMPACT LOCATIONS



Figure A-21: PRE-TEST LEFT SIDE VIEW OF MDB IN IMPACT POSITION



Figure A-22: POST-TEST LEFT SIDE VIEW OF MDB



Figure A-23: PRE-TEST RIGHT SIDE VIEW OF MDB IN IMPACT POSITION



Figure A-24: POST-TEST RIGHT SIDE VIEW OF MDB



Figure A-25: PRE-TEST OVERHEAD VIEW OF MDB IN IMPACT POSITION

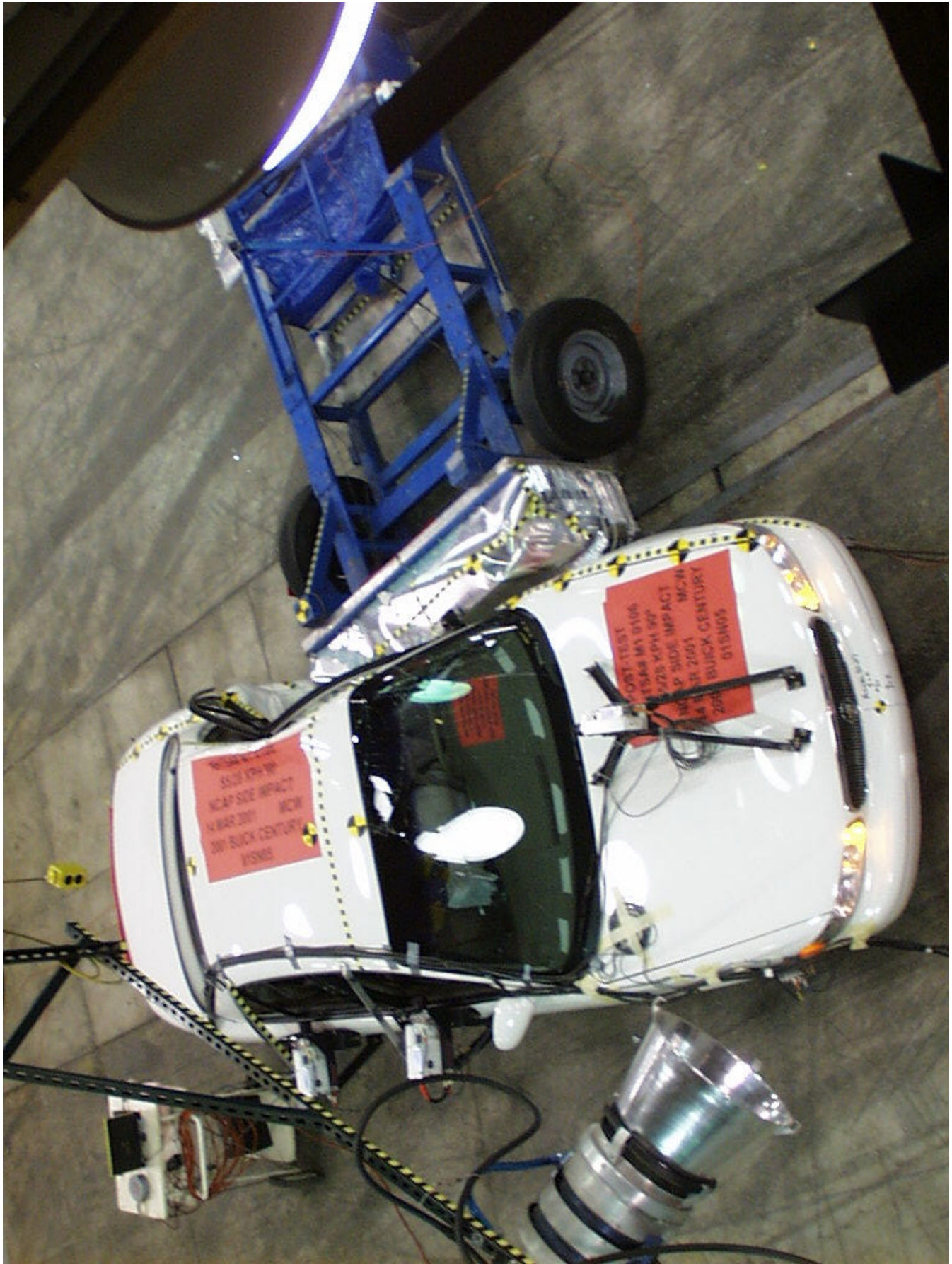


Figure A-26: POST-TEST OVERHEAD VIEW OF MDB



Figure A-27: PRE-TEST CLOSE UP OF IMPACT POINT TARGET SHOWING WELDING ROD



Figure A-28: POST-TEST CLOSE UP OF IMPACT POINT TARGET

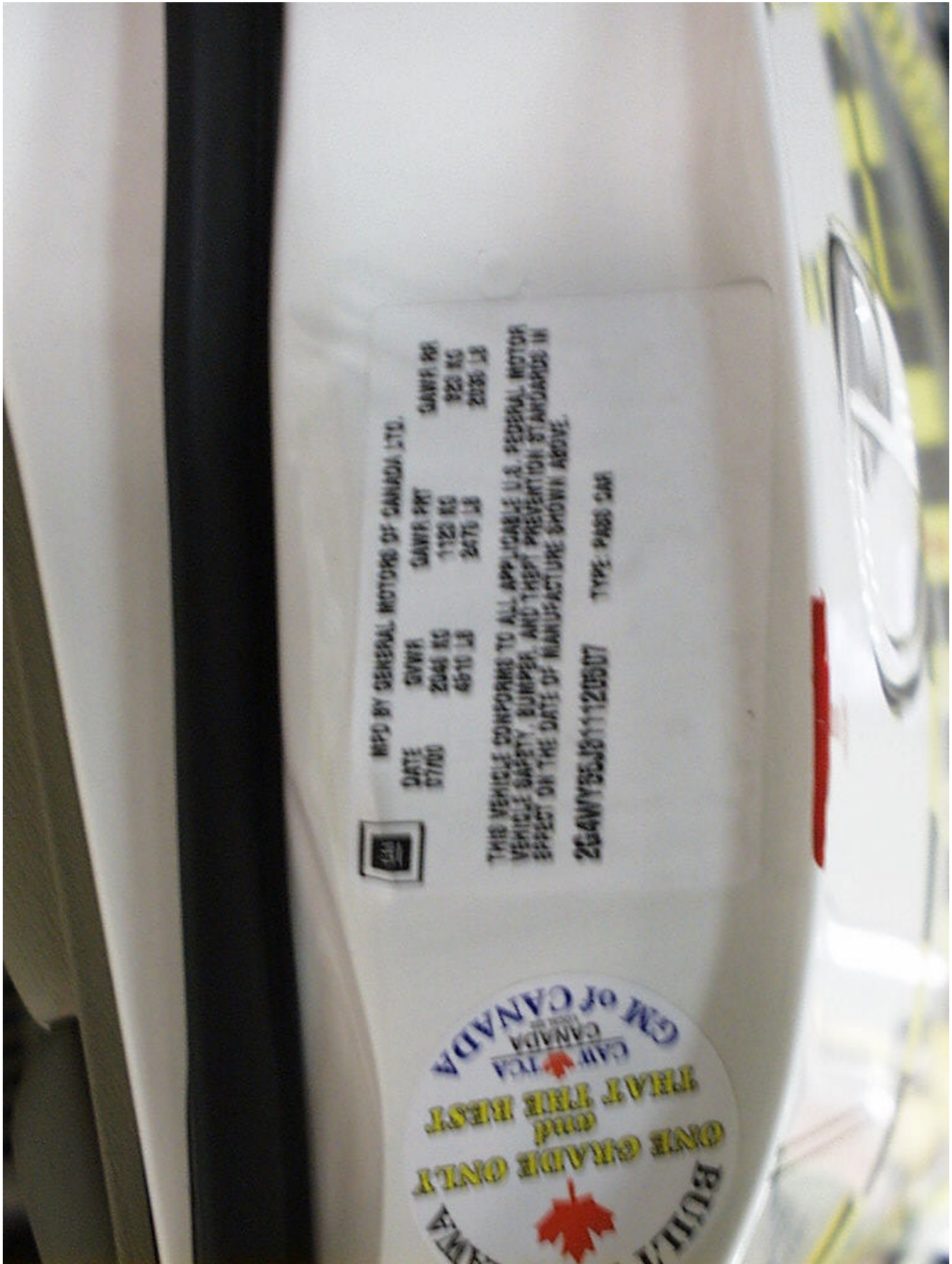


Figure A-29: CLOSE-UP OF VEHICLE'S CERTIFICATION LABELS

**DO NOT REMOVE**

4WY69  
FE1 FE9 F83  
NPS OST PG1  
VM3 V73 1AY

522



**TIRE - LOADING INFORMATION**

OCCUPANTS		VEHICLE CAP. WT.	
FRT.	RR.	TOTAL	LBS
3	3	6	1076

MAX. LOADING @ GVWR SAME AS VEHICLE CAPACITY WEIGHT.  
2G4WY55J811120507  
MODEL: WY69 WAA

TIRE SIZE	SPEED RTG	COLD TIRE PRESSURE
FRT P205/70R15	S	210KPA(30PSI)
RR P205/70R15	S	210KPA(30PSI)
SPA T125/70D15	M	420KPA(60PSI)

IF TIRES ARE HOT, ADD 28KPA(4PSI)  
SEE OWNER'S MANUAL FOR MORE INFORMATION

Figure A-30: CLOSE-UP OF VEHICLE'S TIRE PLACARD



Figure A-31: IMPACT PHOTO



Figure A -32: ROLLOVER 0 DEGREES

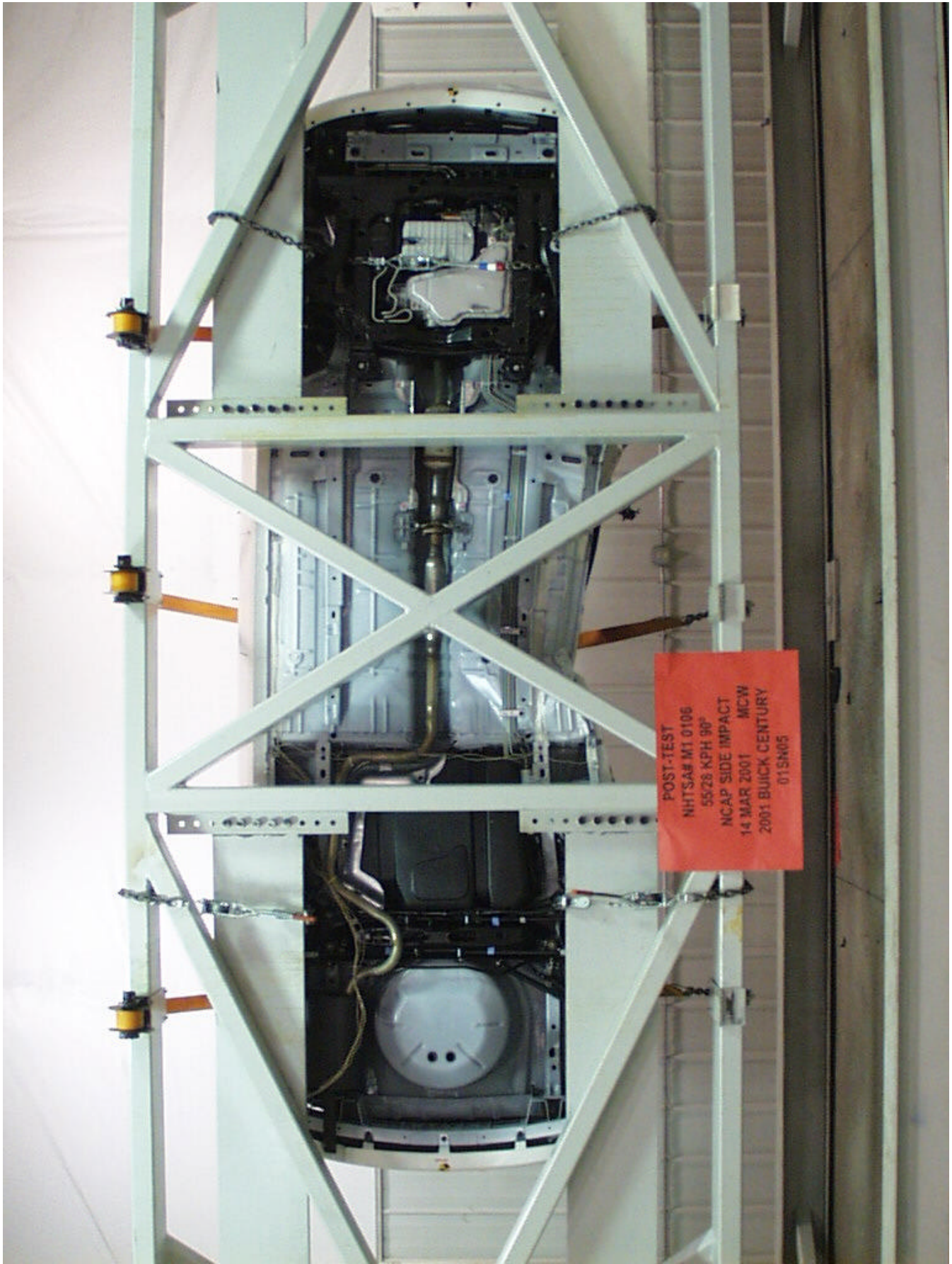


Figure A-33: ROLLOVER 90 DEGREES

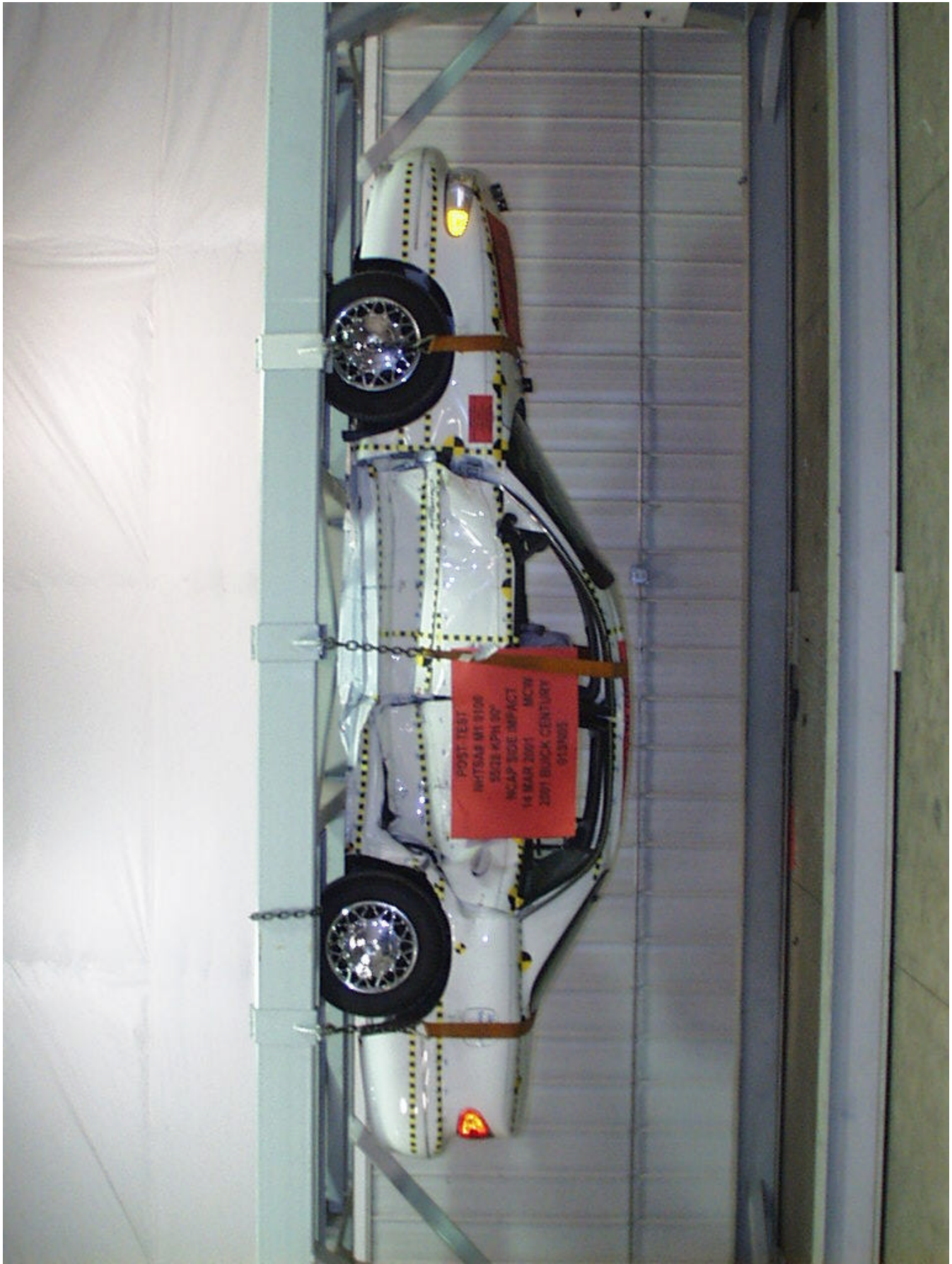


Figure A-34: ROLLOVER 180 DEGREES



Figure A-35: ROLLOVER 270 DEGREES



Figure A-36: ROLLOVER 360 DEGREES

**APPENDIX B**

**VEHICLE, MDB, AND SID RESPONSE DATA**

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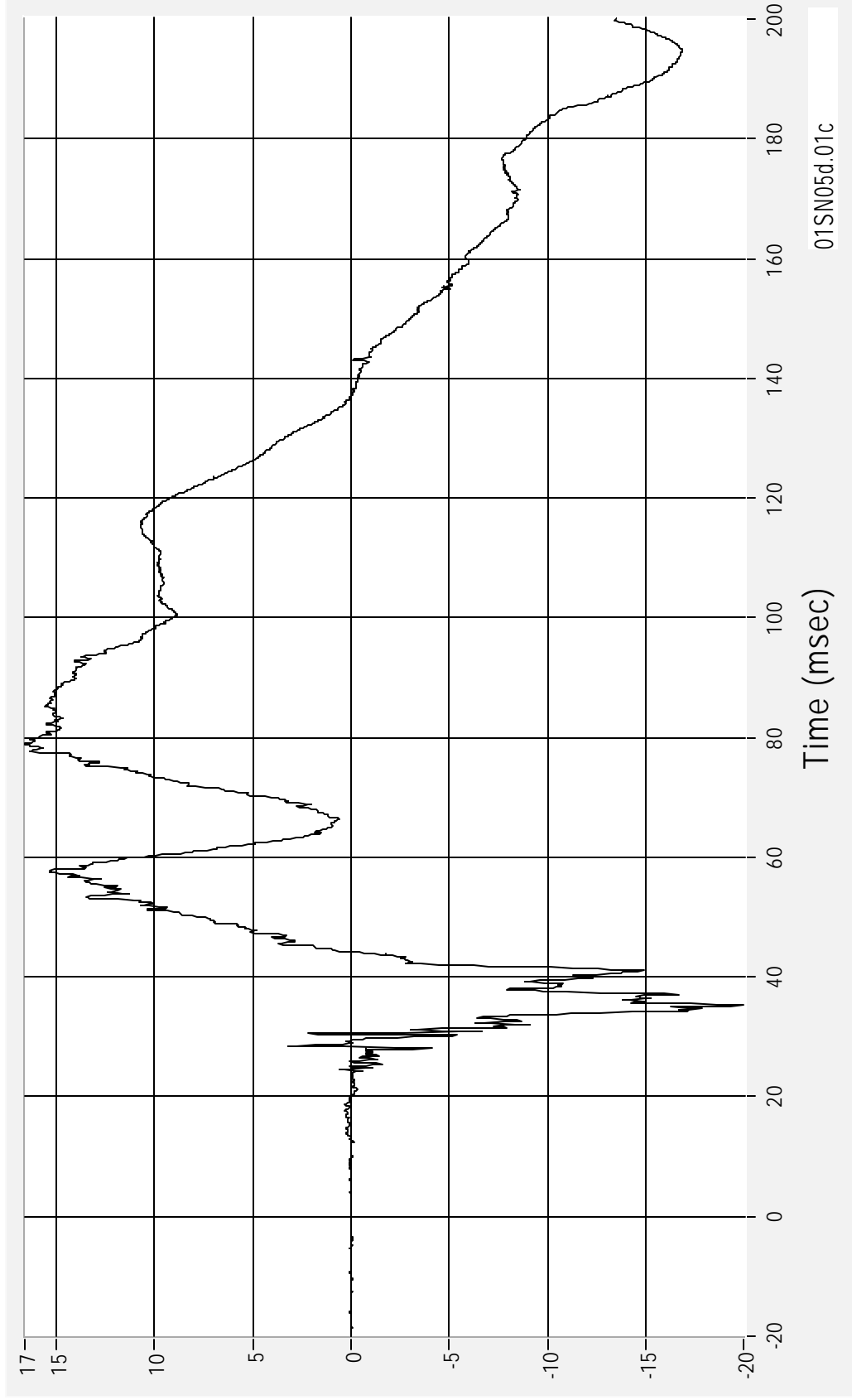
**DRIVER AND PASSENGER DUMMY INSTRUMENTATION PLOT (REDUNDANT)**  
 ACCELERATION DATA – FIR FILTERED

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Driver Dummy Head CG X Acceleration

Acceleration (G's) CFC 1000

Max 16.6 G's at 79.0 msec  
Min -19.9 G's at 35.3 msec



01SN05d.01c

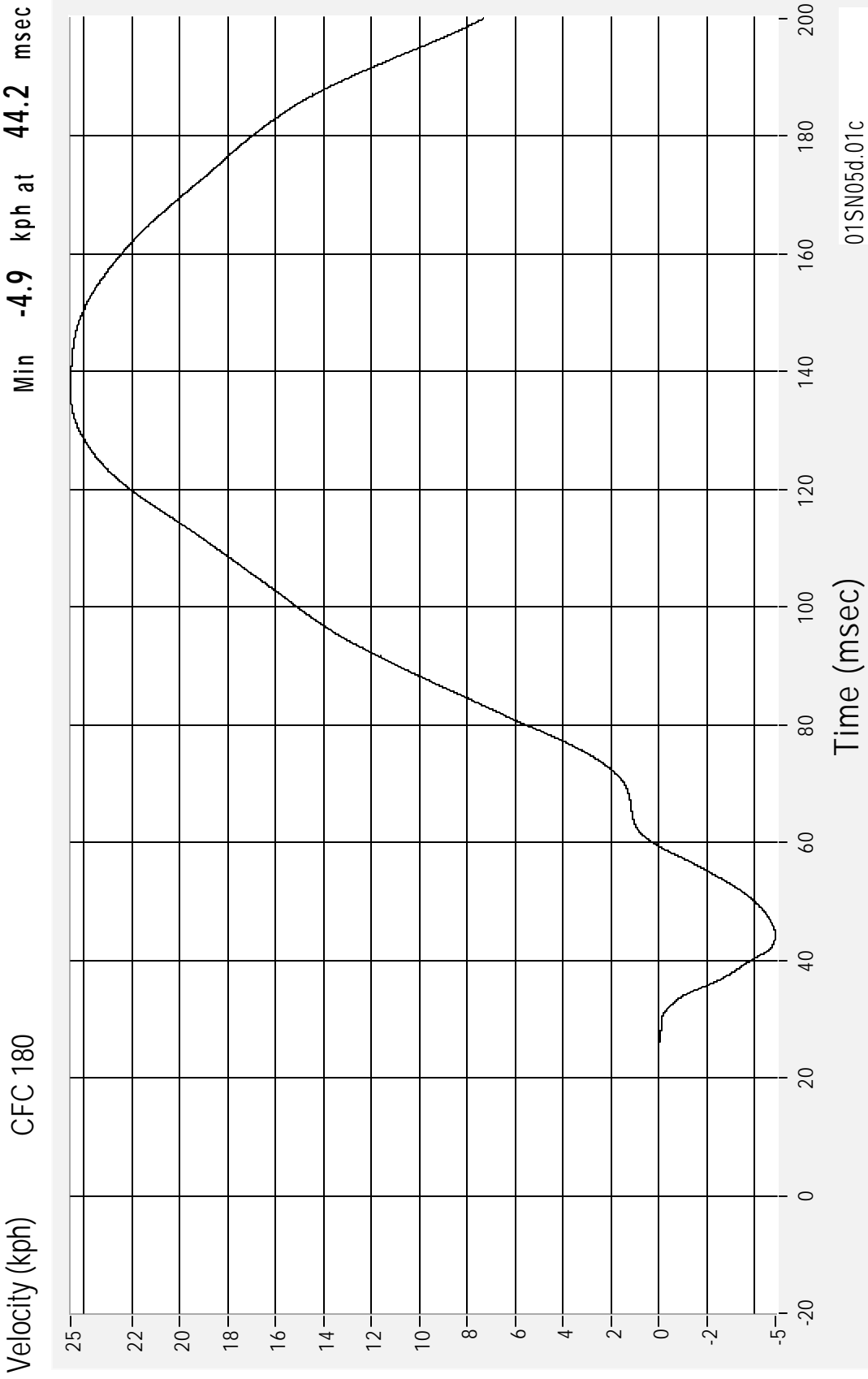
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01SN05 - 2001 Buick Century  
14 March 2001

Driver Dummy Head CG X Velocity

Velocity (kph)

Max 24.5 kph at 137.0 msec  
Min -4.9 kph at 44.2 msec



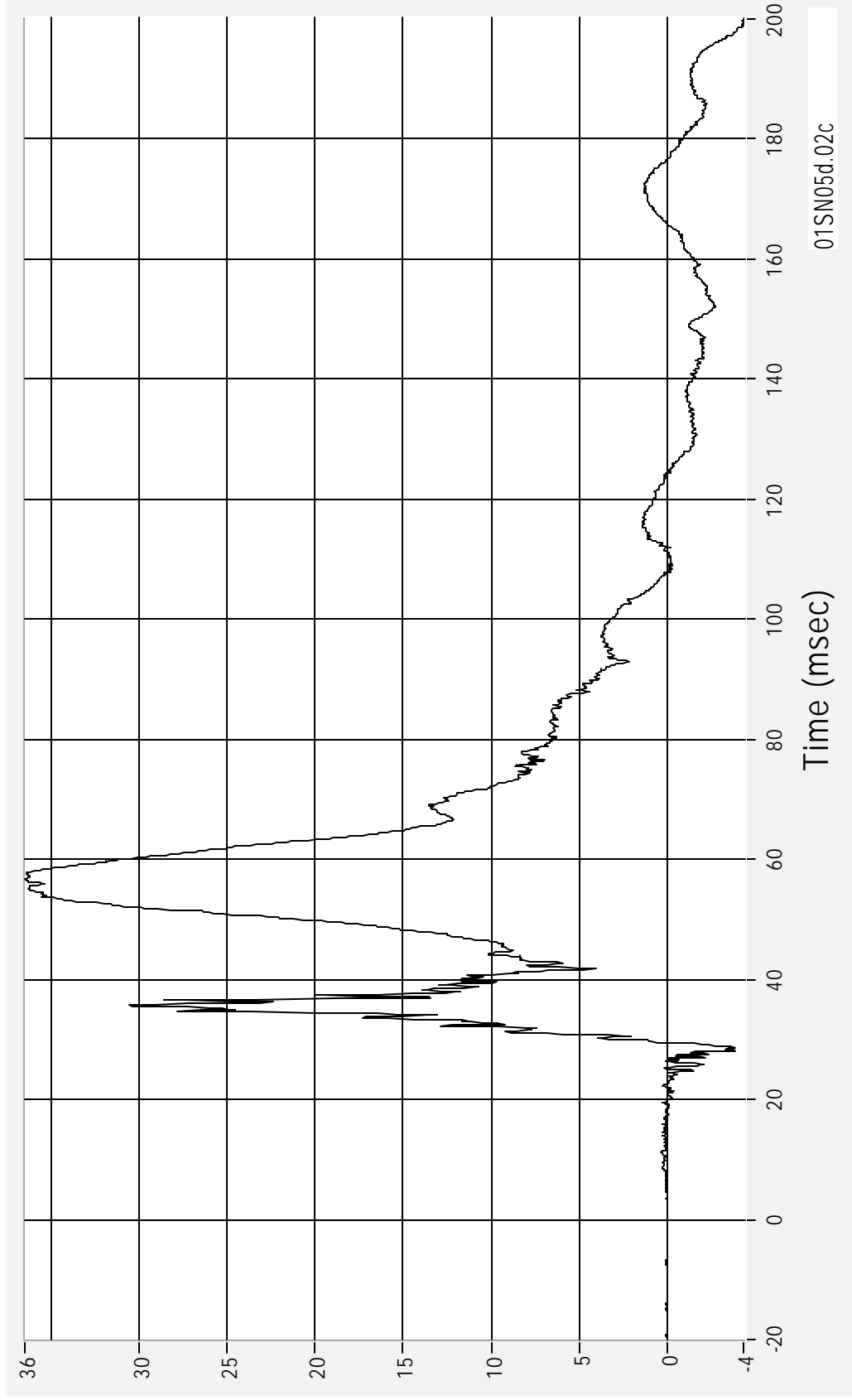
Time (msec)

01SN05d.01c

Driver Dummy Head CG Y Acceleration

Acceleration (G's) CFC 1000

Max 36.5 G's at 56.7 msec  
Min -4.3 G's at 199.4 msec



Time (msec)

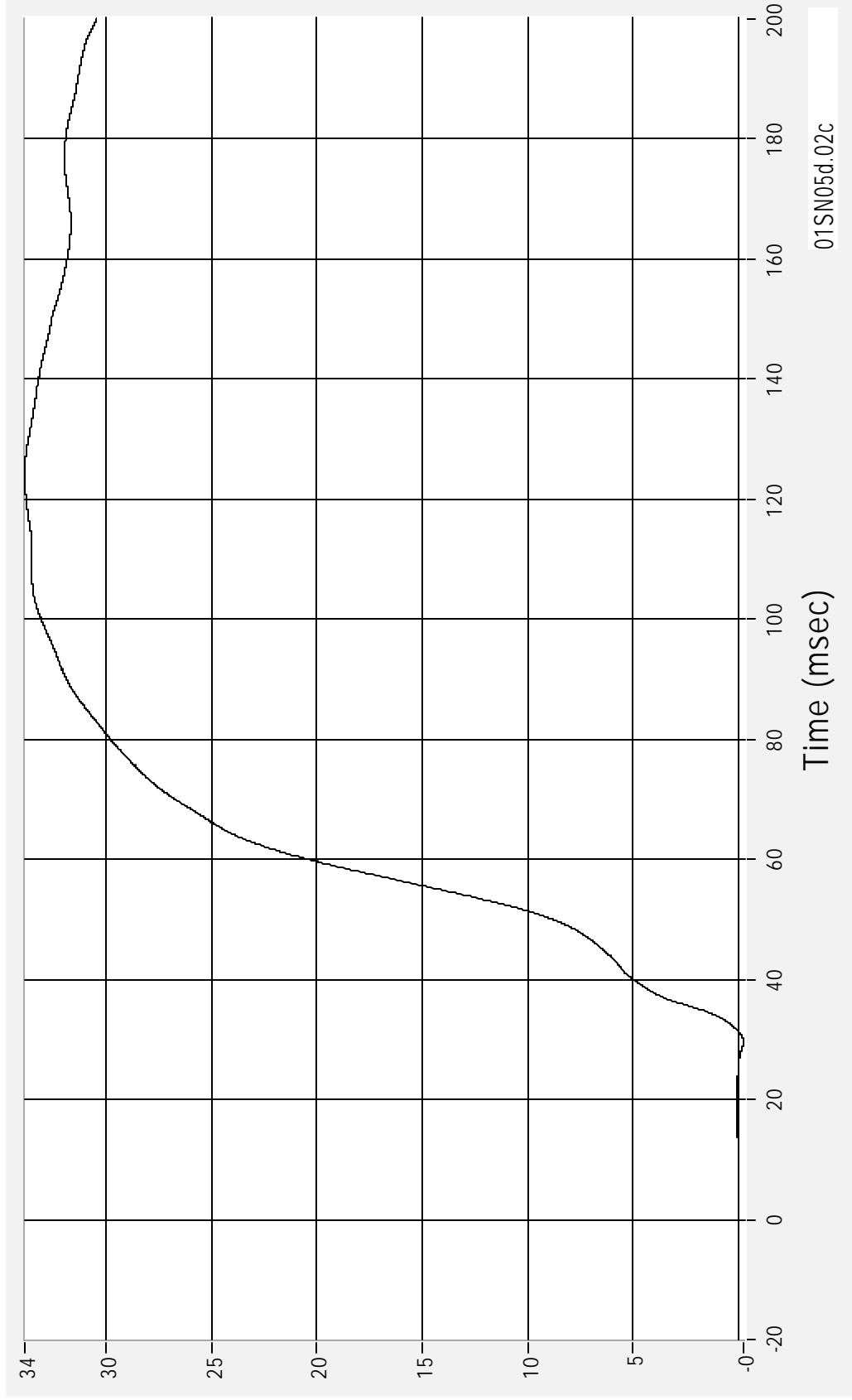
01SN05d.02c

Driver Dummy Head CG Y Velocity

Velocity (kph)

CFC 180

Max 33.9 kph at 124.2 msec  
Min -0.2 kph at 29.6 msec



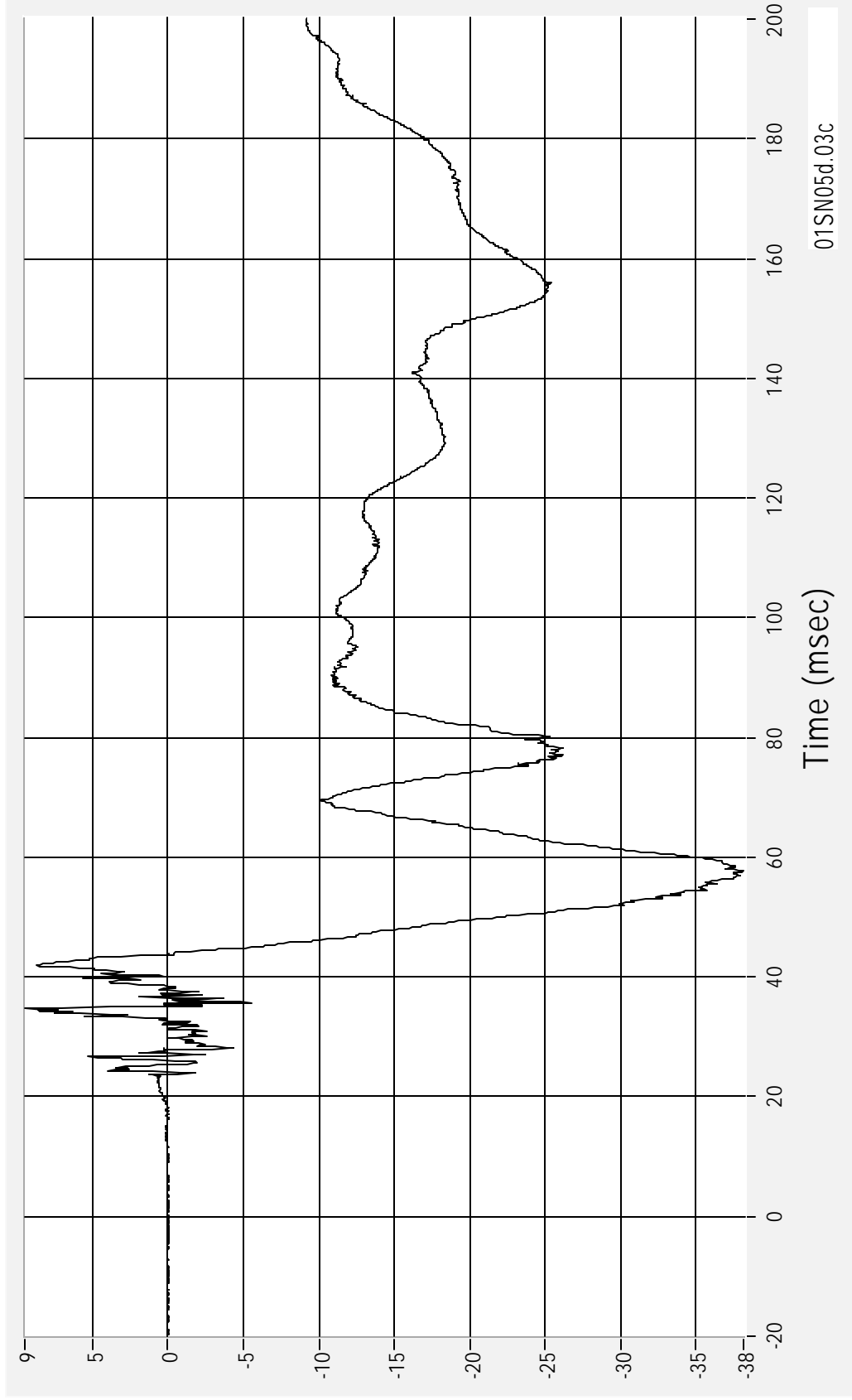
Time (msec)

01SN05d.02c

Driver Dummy Head CG Z Acceleration

Acceleration (G's) CFC 1000

Max 9.5 G's at 34.7 msec  
Min -38.1 G's at 57.7 msec



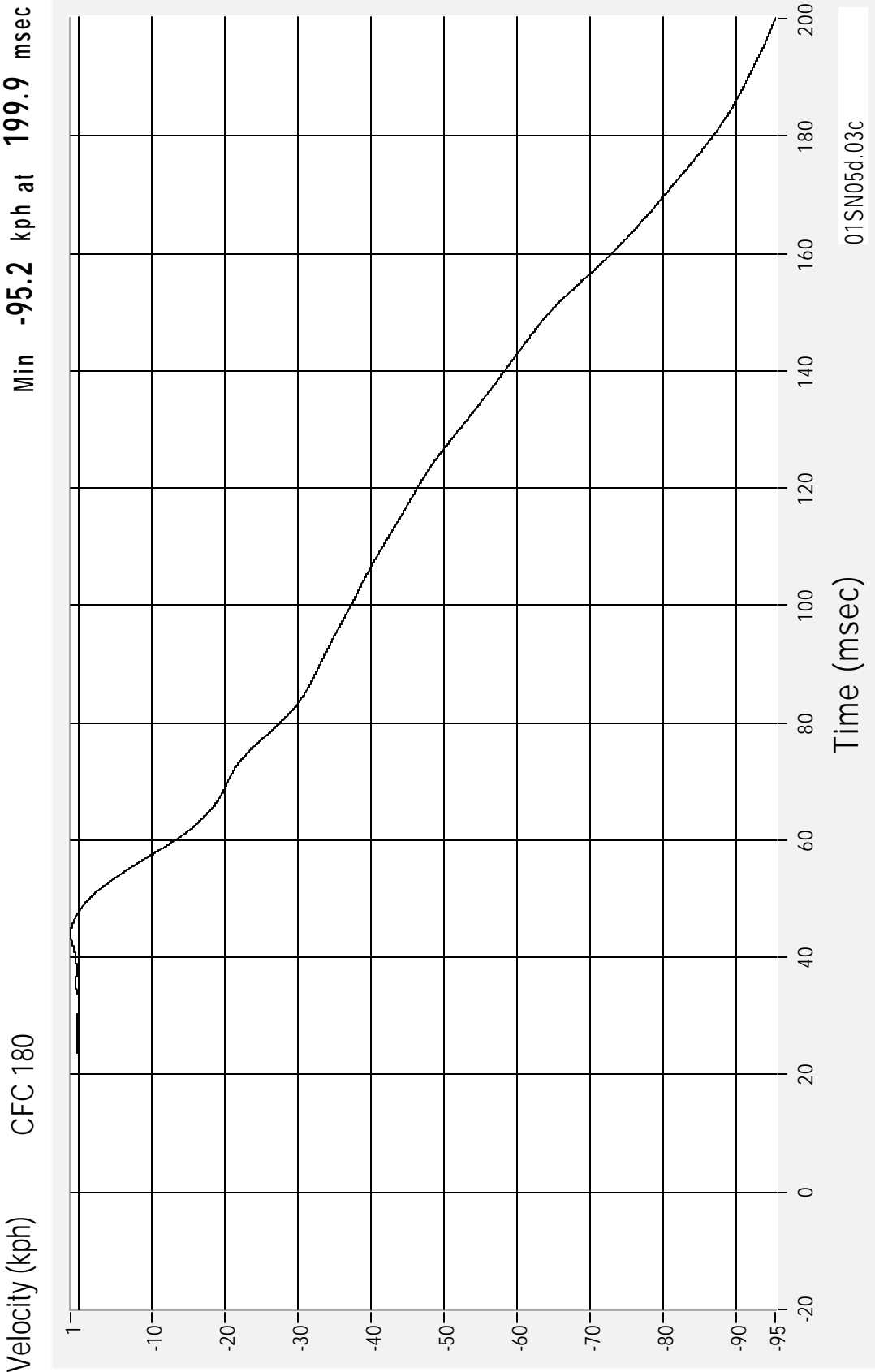
Time (msec)

01SN05d.03c

Driver Dummy Head CG Z Velocity

CFC 180

Max 1.1 kph at 43.9 msec  
Min -95.2 kph at 199.9 msec



Time (msec)

01SN05d.03c

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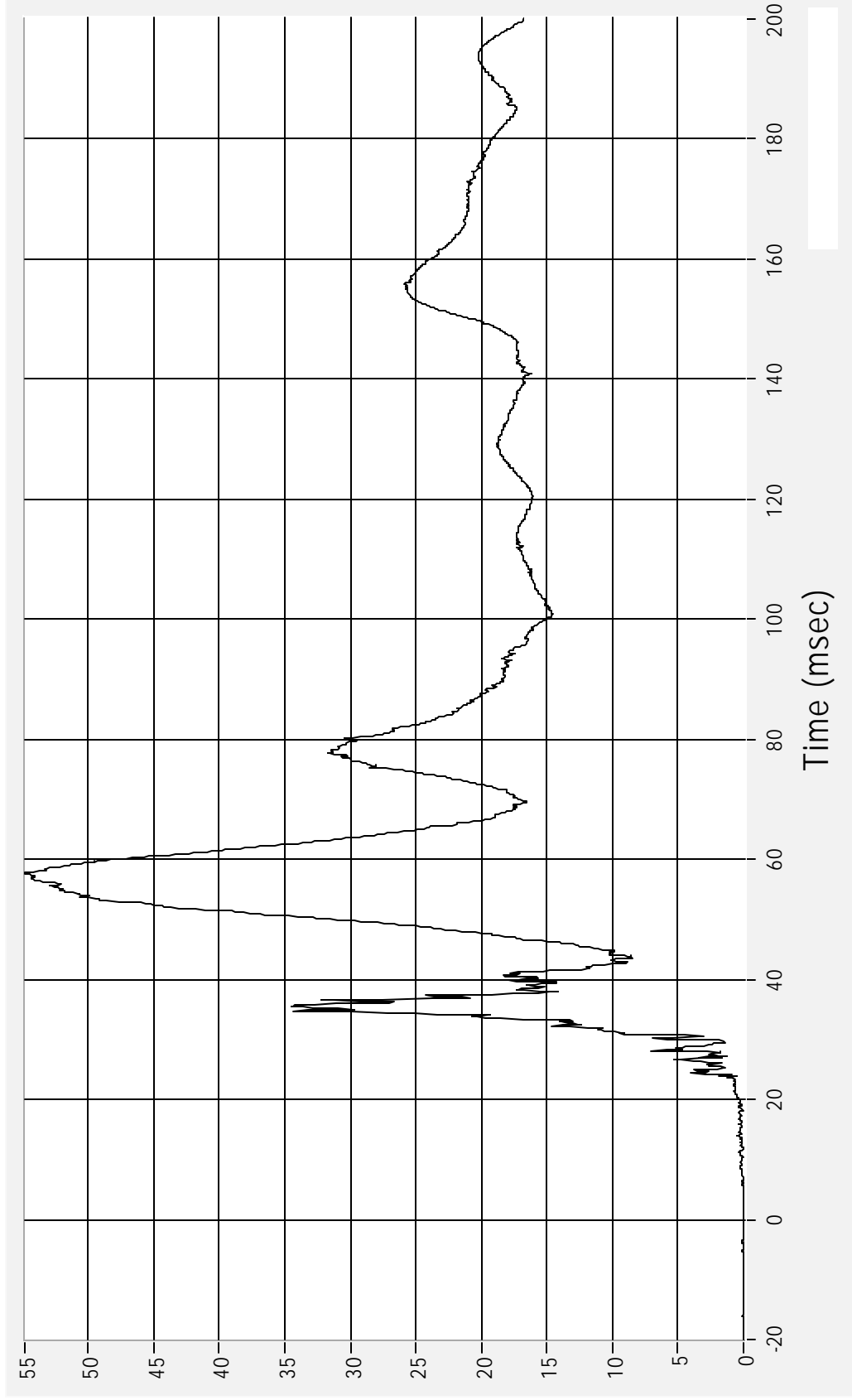
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Driver Dummy Head CG - Resultant

Acceleration (G's) CFC 1000

Max 54.8 G's at 57.7 msec  
Min 0.0 G's at 0.7 msec



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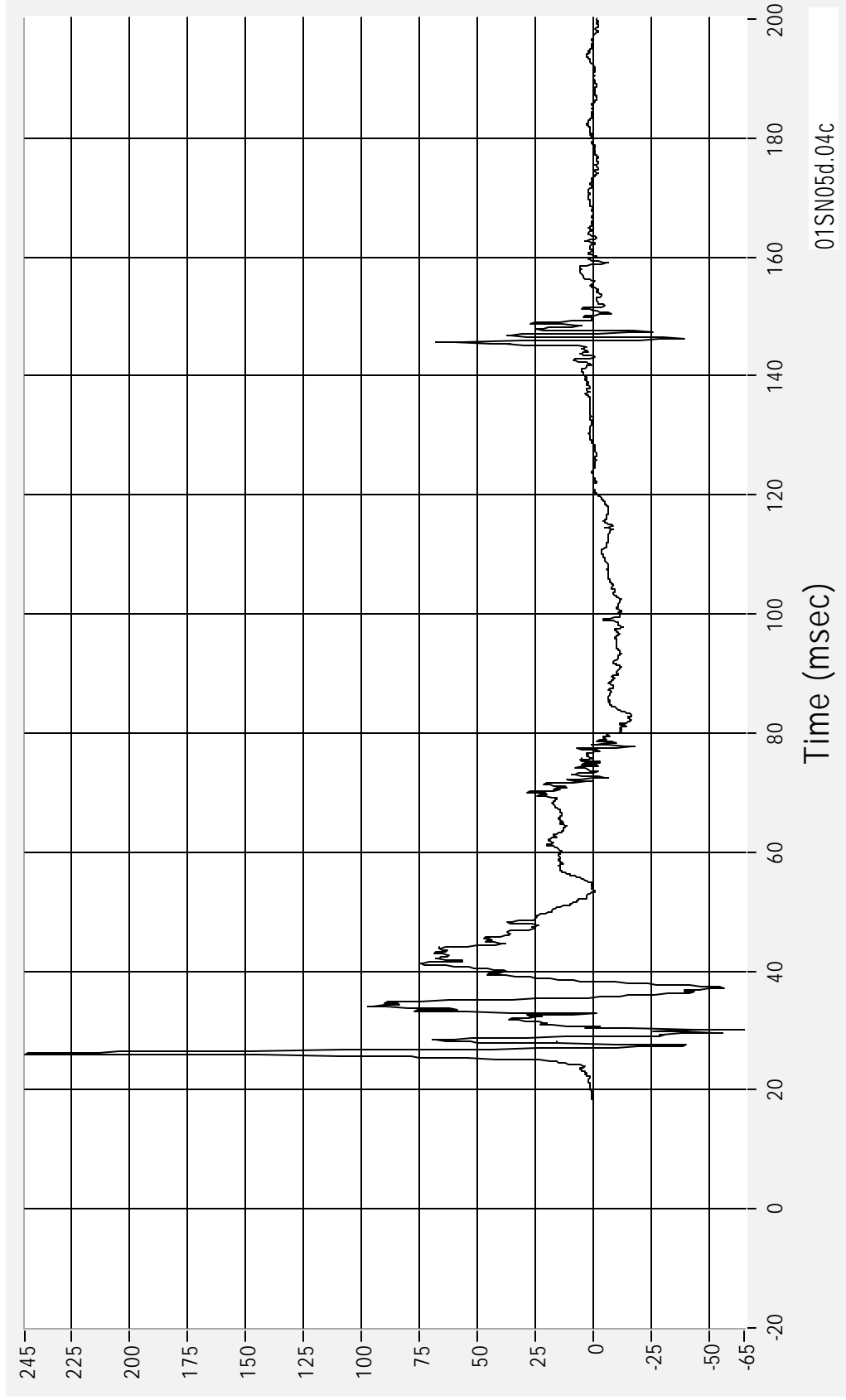
14 March 2001

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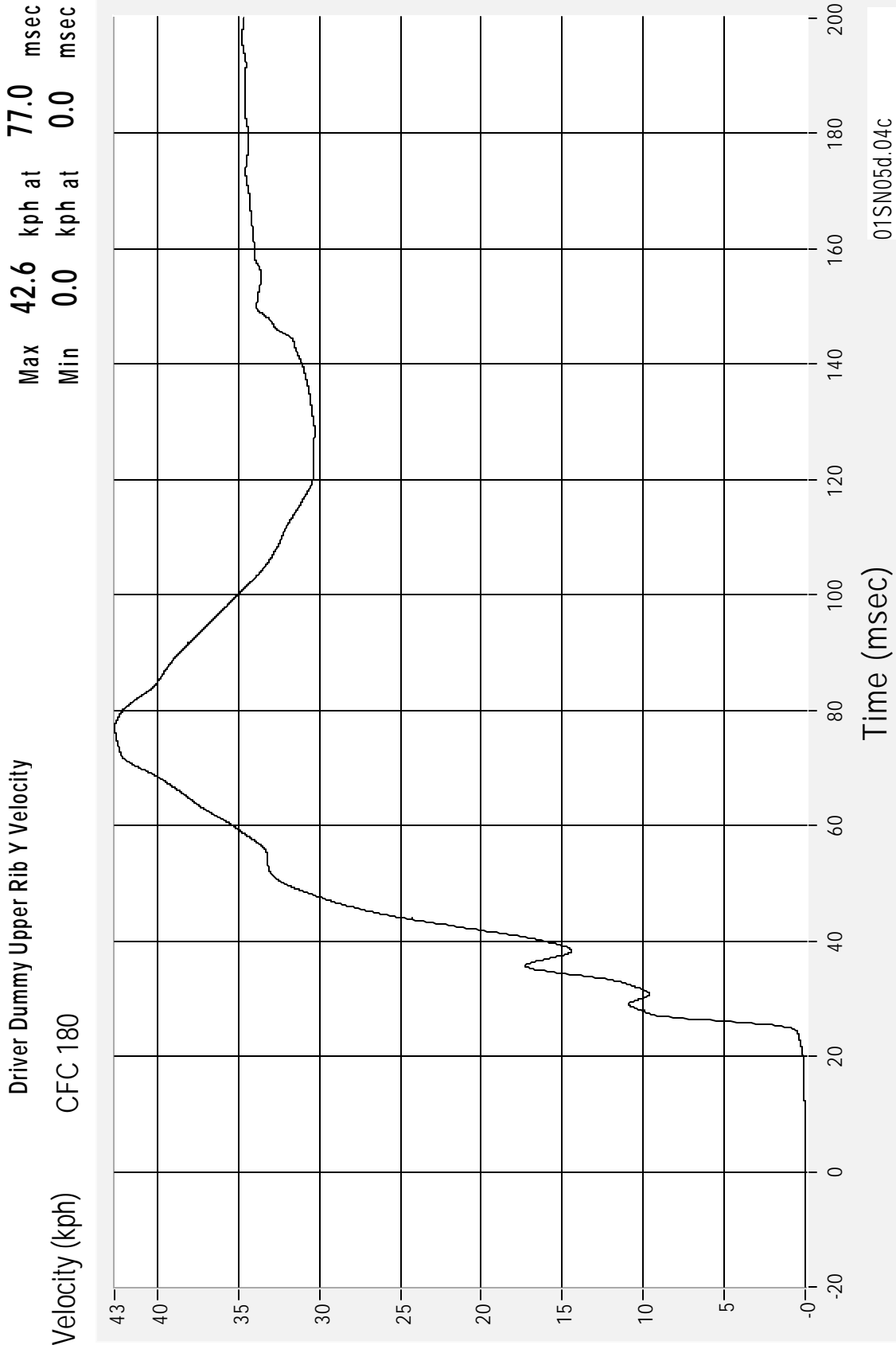
Driver Dummy Upper Rib Y Acceleration

Max 245.4 G's at 26.1 msec  
Min -64.8 G's at 30.2 msec

Acceleration (G's) CFC 1000



01SN05d.04c



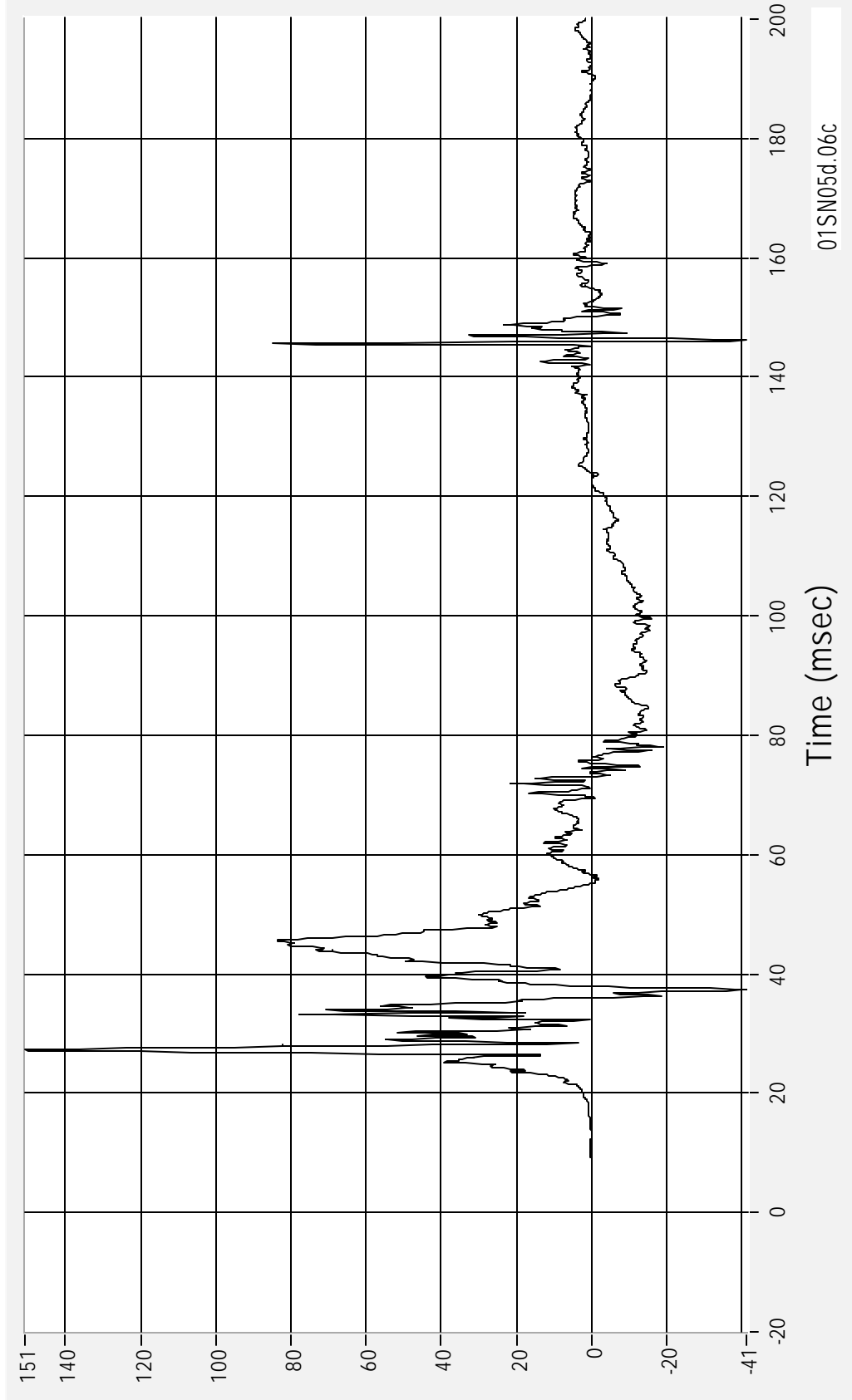
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14 March 2001

Driver Dummy Lower Rib Y Acceleration

Max 150.8 G's at 27.3 msec  
Min -41.3 G's at 146.2 msec

Acceleration (G's) CFC 1000



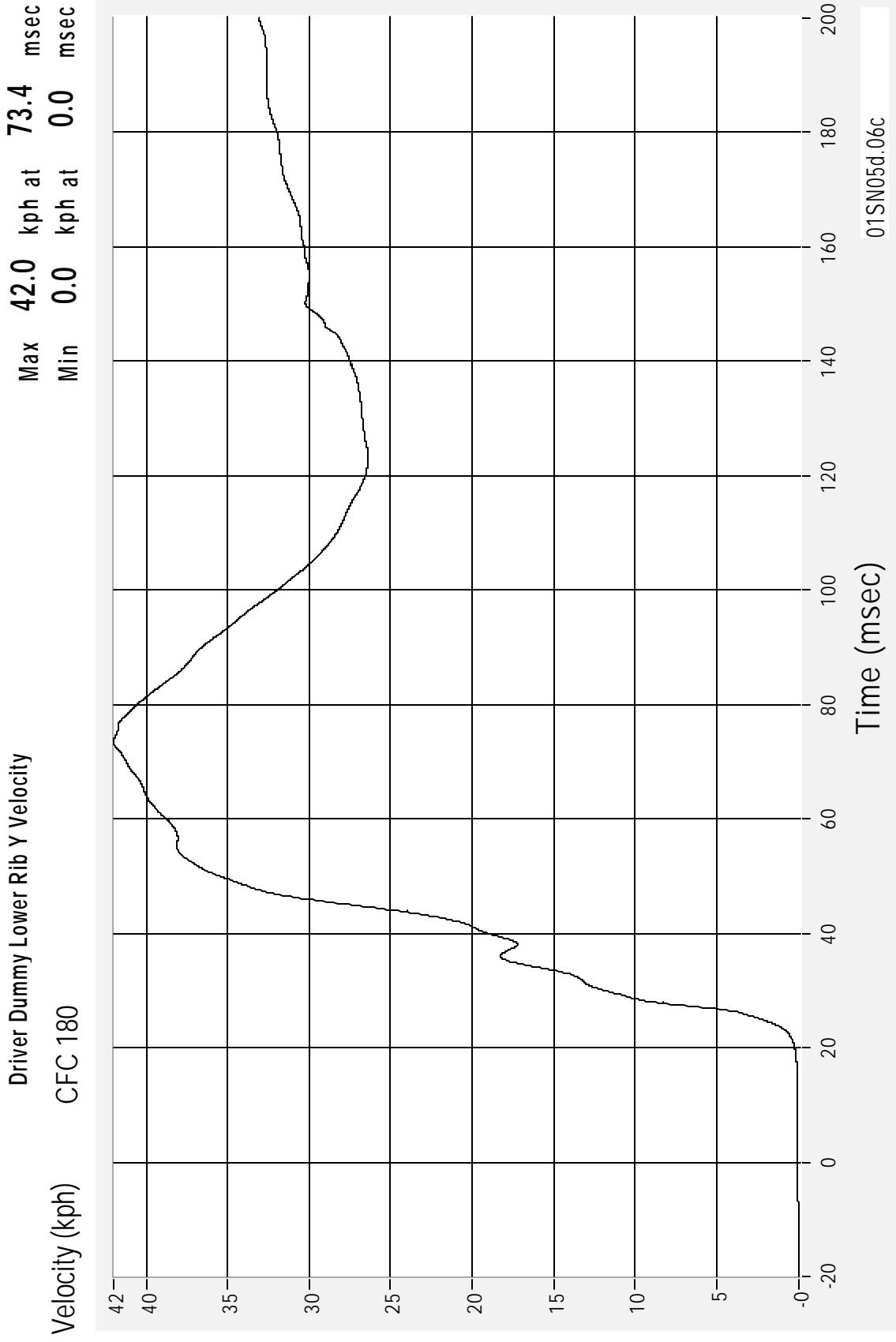
Time (msec)

01SN05d.06c

01SN05 - 2001 Buick Century

14 March 2001

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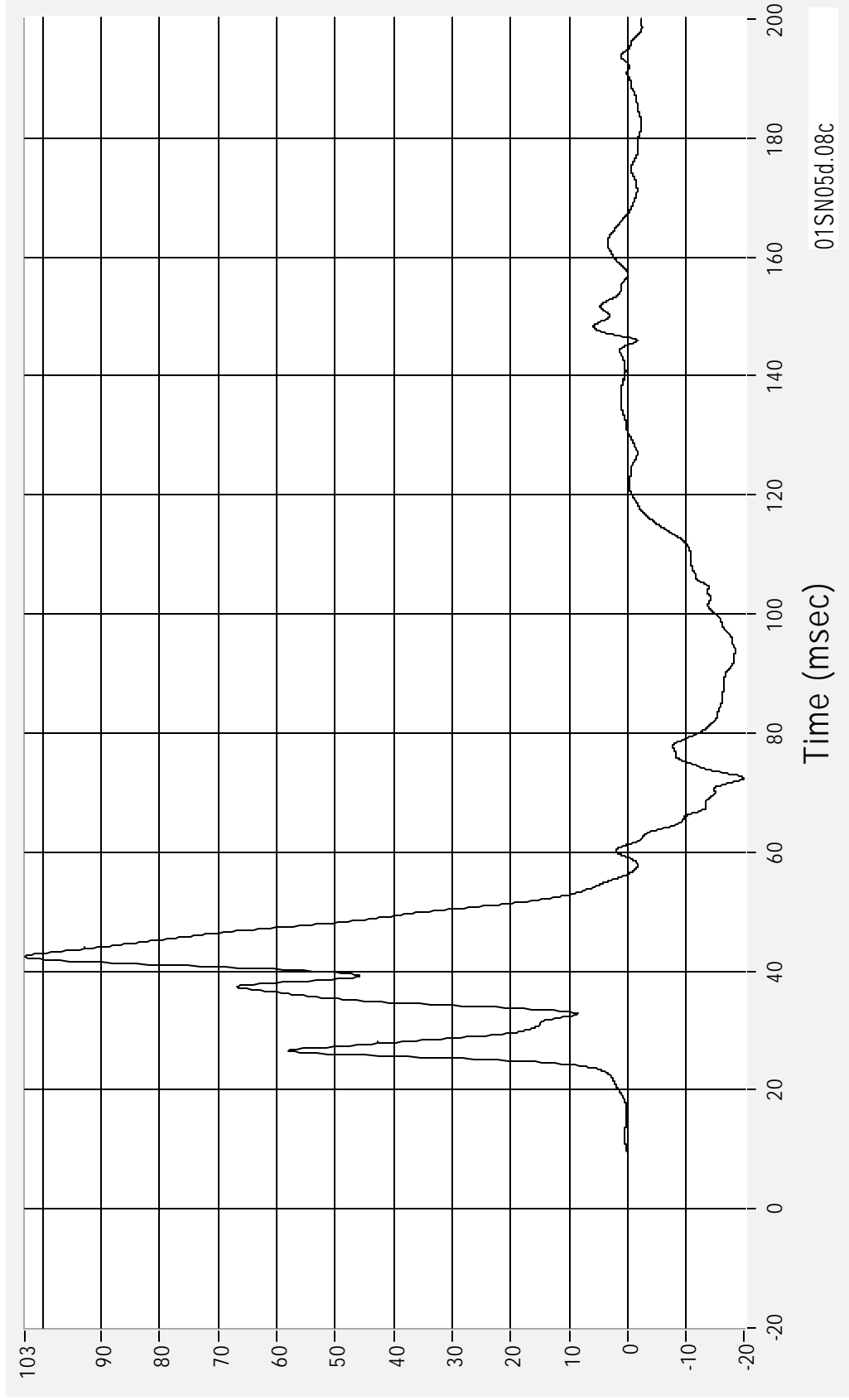
01SN05 - 2001 Buick Century  
14 March 2001

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Vehicle Crashworthiness Lab

Driver Dummy Lower Spine Y Acceleration

Max 103.1 G's at 42.4 msec  
Min -19.8 G's at 72.4 msec

Acceleration (G's) CFC 180

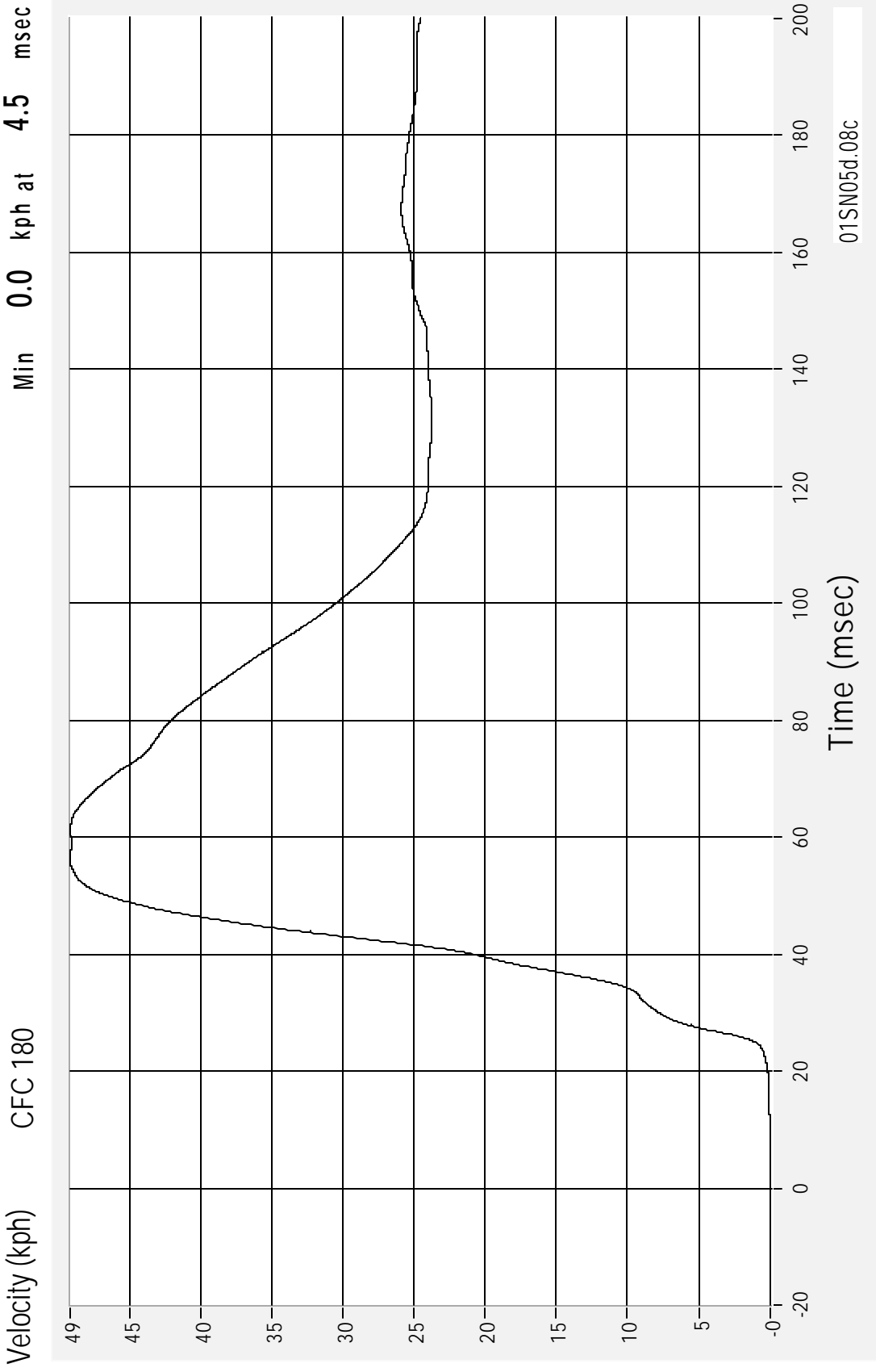


Time (msec)

01SN05d.08c

Driver Dummy Lower Spine Y Velocity  
CFC 180

Max 49.1 kph at 56.3 msec  
Min 0.0 kph at 4.5 msec



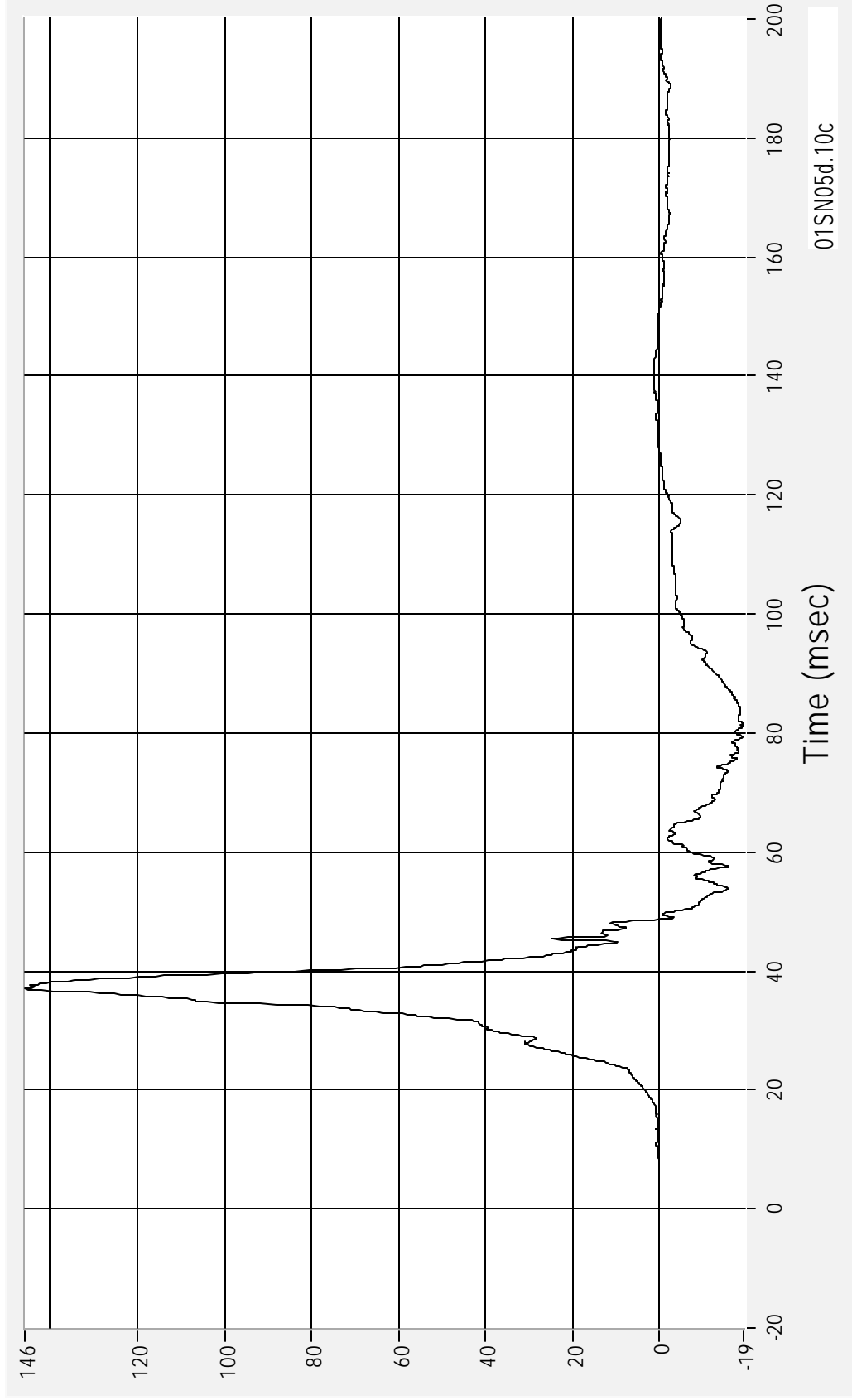
01SN05d.08c  
Medical College of Wisconsin  
Vehicle Crashworthiness Lab

01SN05 - 2001 Buick Century  
14 March 2001

Driver Dummy Pelvis Y Acceleration

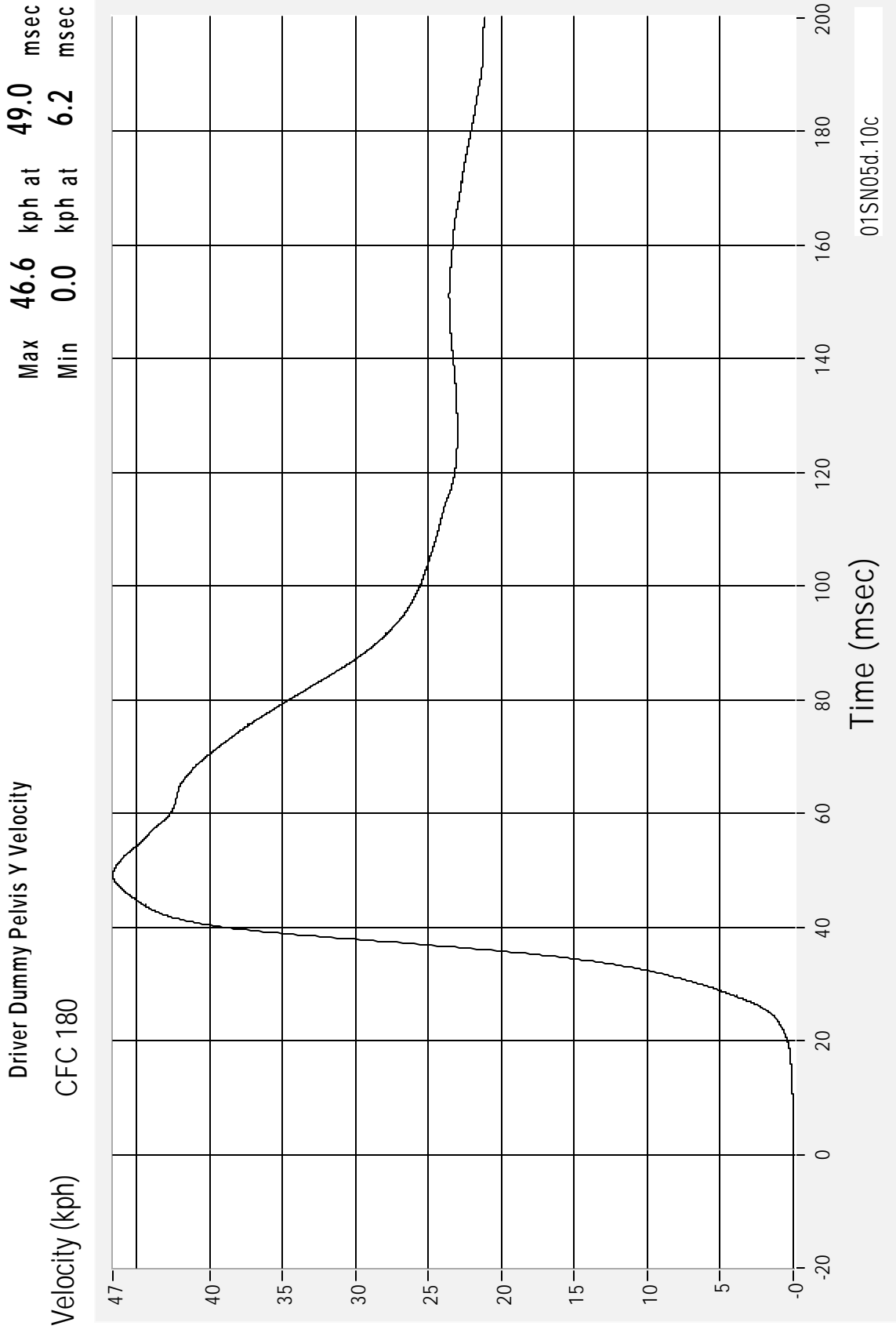
Acceleration (G's) CFC 1000

Max 145.9 G's at 37.0 msec  
Min -19.3 G's at 81.5 msec



Time (msec)

01SN05d.10c



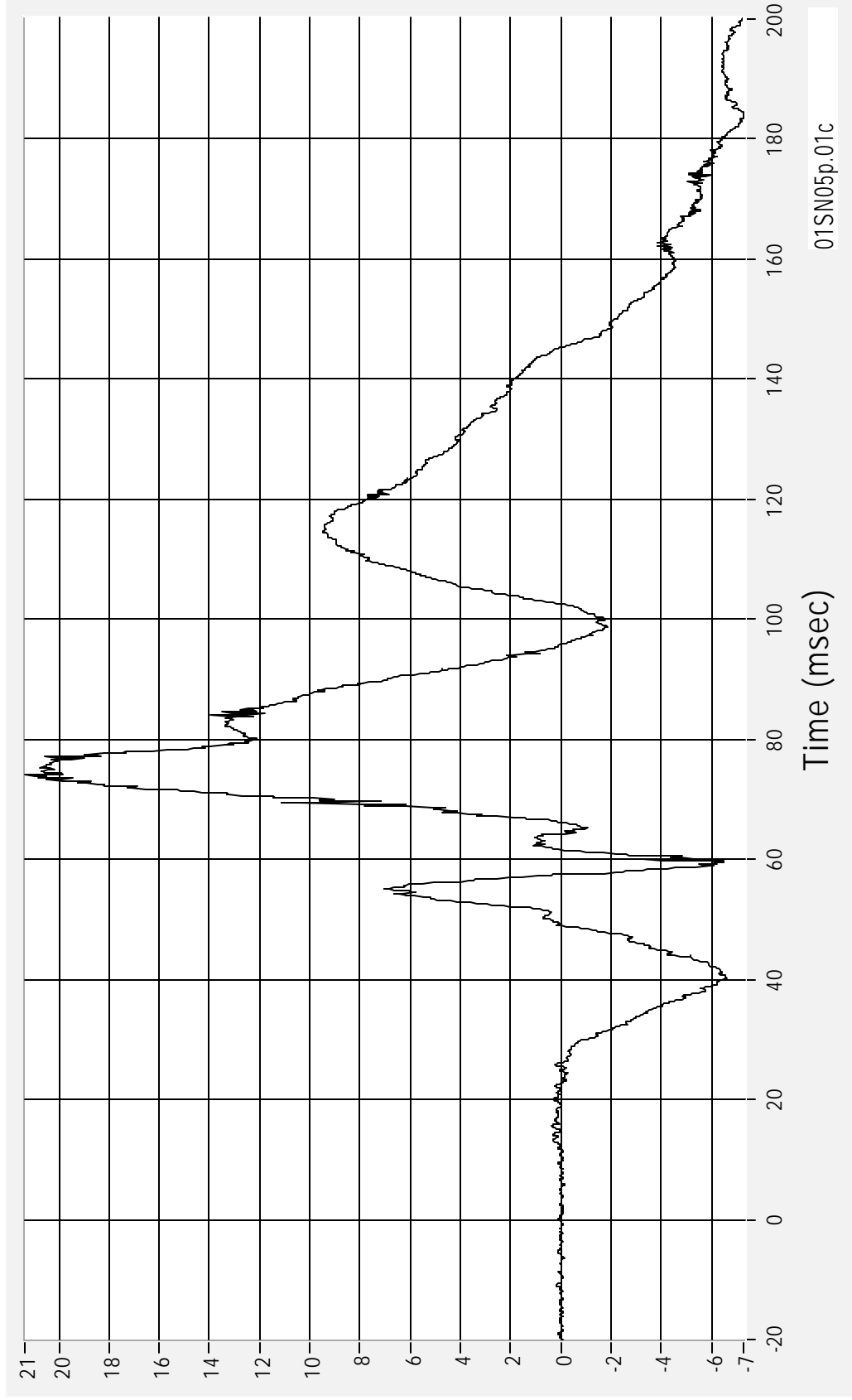
01SN05 - 2001 Buick Century  
 14 March 2001

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 Vehicle Crashworthiness Lab

Passenger Dummy Head CG X Acceleration

Max 21.4 G's at 74.0 msec  
Min -7.3 G's at 184.0 msec

Acceleration (G's) CFC 1000

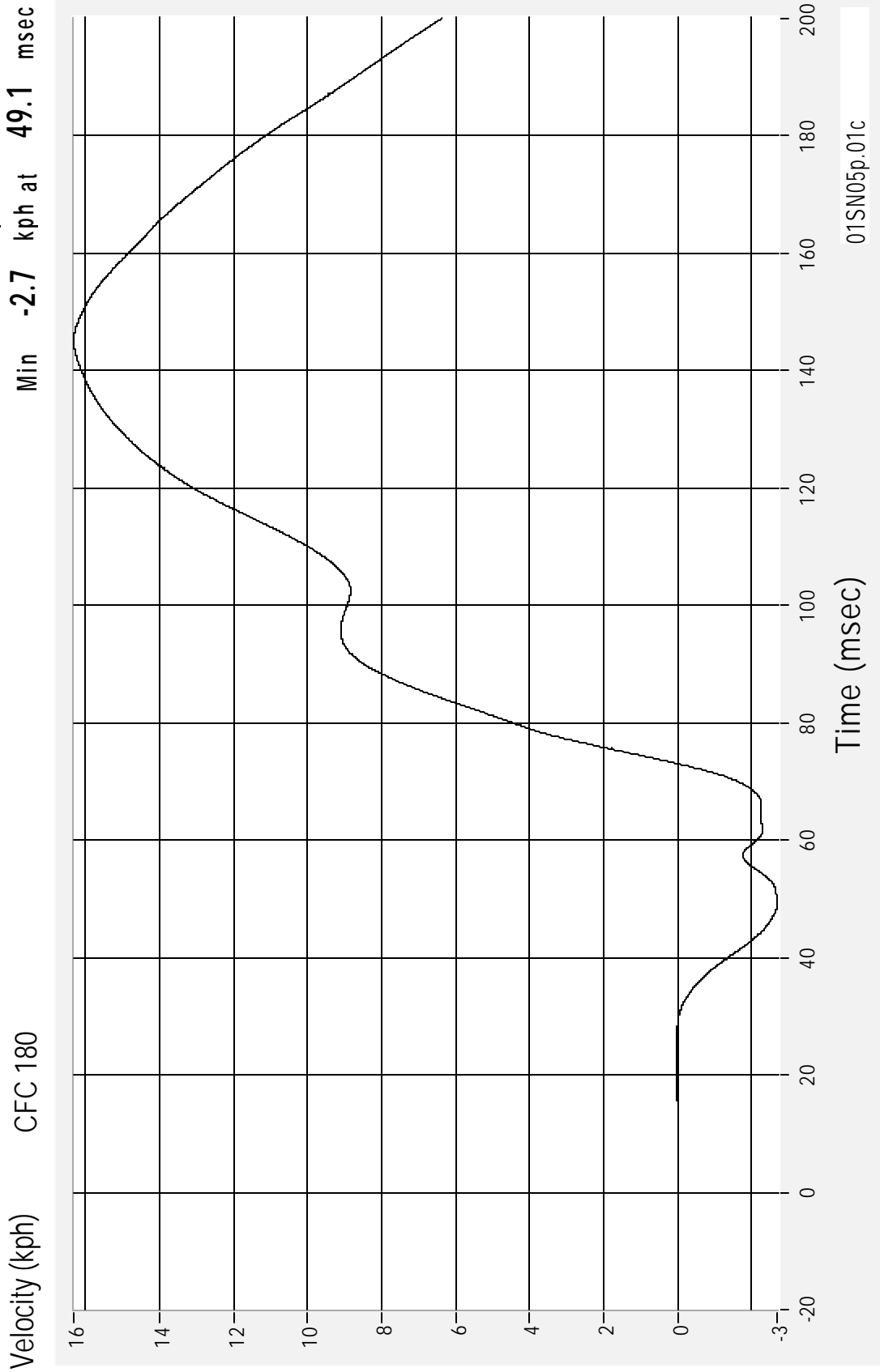


Time (msec)

01SN05p.01c

Passenger Dummy Head CG X Velocity  
CFC 180

Max 16.3 kph at 145.2 msec  
Min -2.7 kph at 49.1 msec



01SN05p.01c

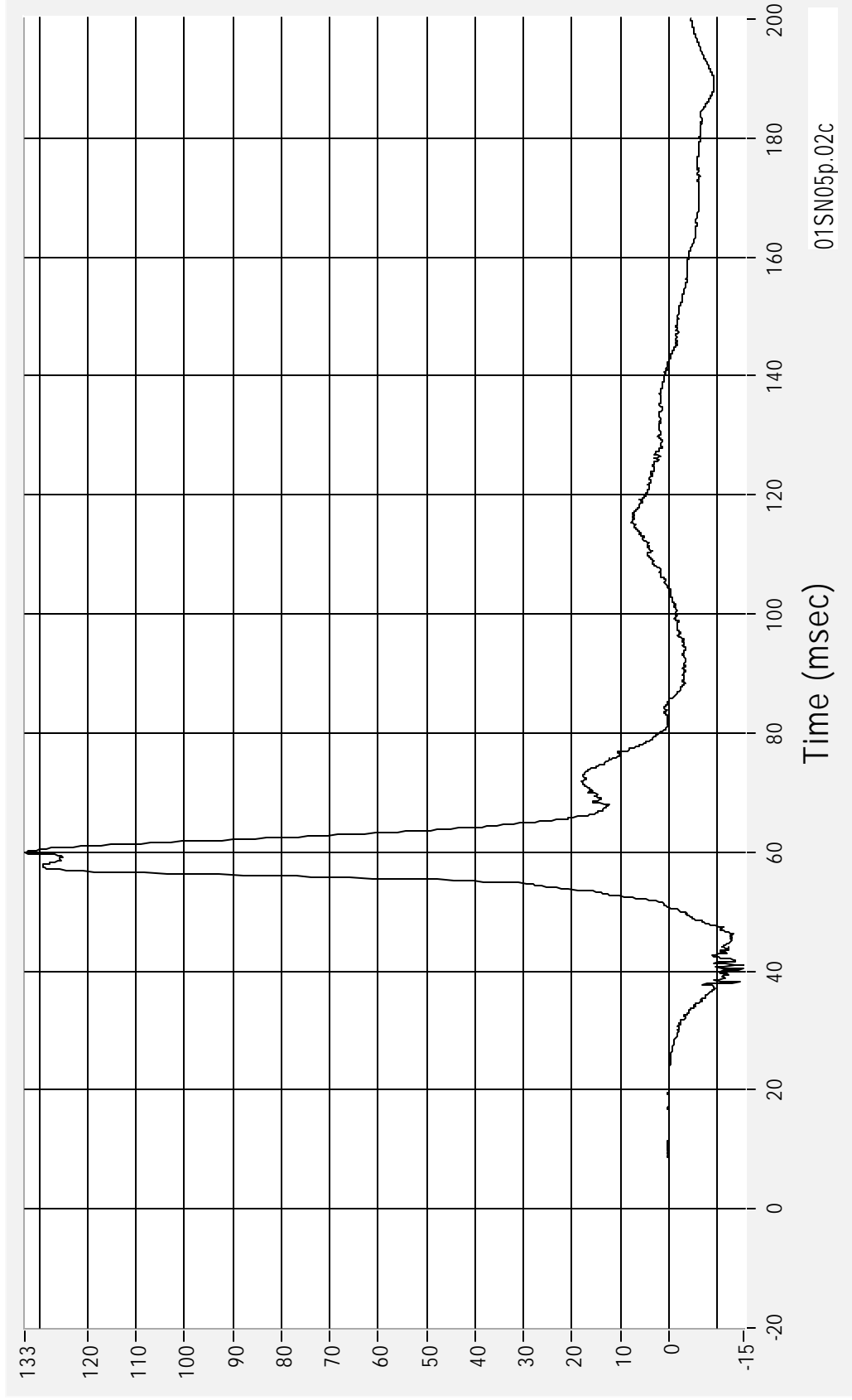
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Vehicle Crashworthiness Lab

01SN05 - 2001 Buick Century  
14 March 2001

Passenger Dummy Head CG Y Acceleration

Acceleration (G's) CFC 1000

Max 132.9 G's at 59.8 msec  
Min -15.4 G's at 40.3 msec

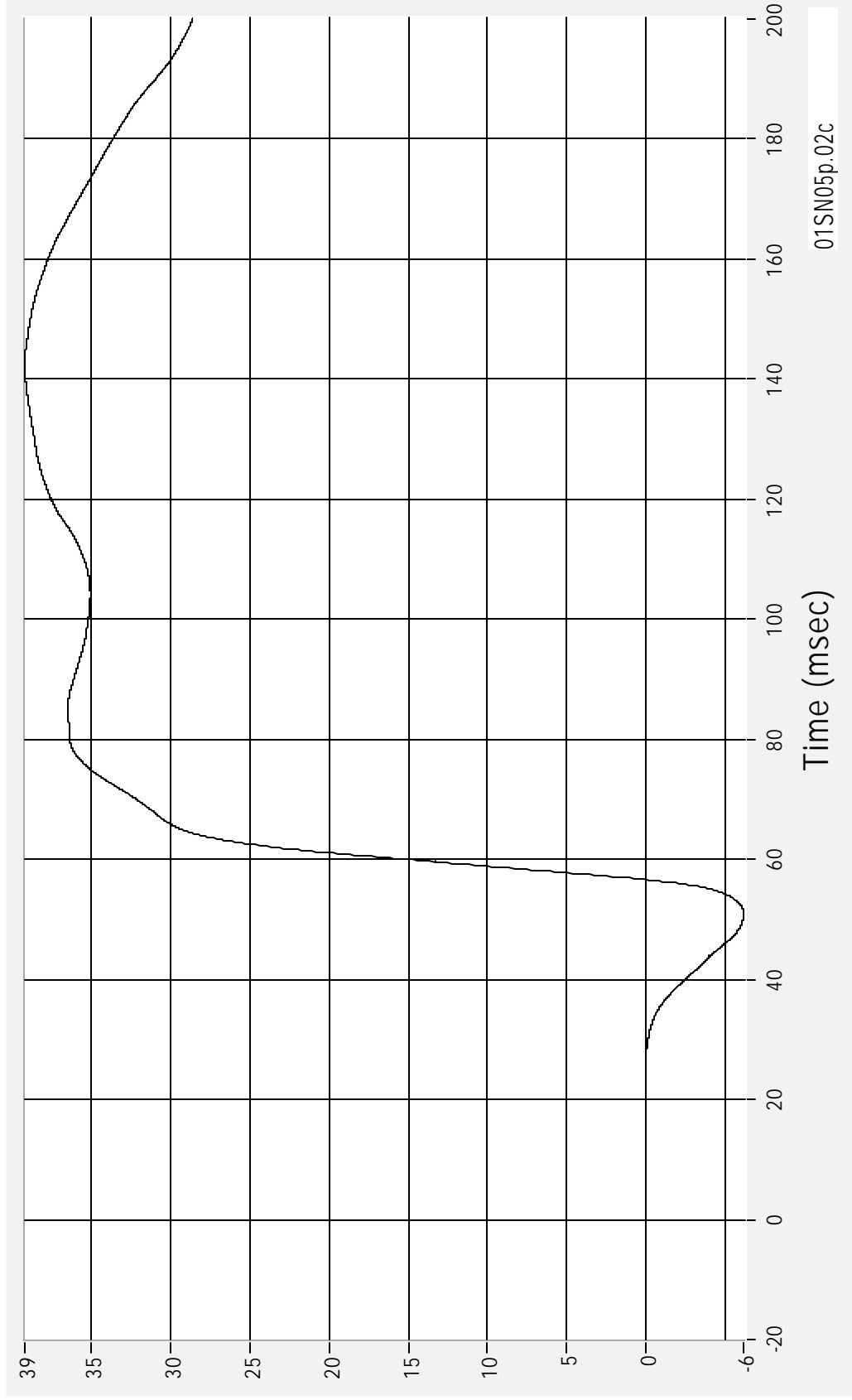


01SN05p.02c

Passenger Dummy Head CG Y Velocity

Velocity (kph) CFC 180

Max 39.2 kph at 142.4 msec  
Min -6.2 kph at 50.9 msec



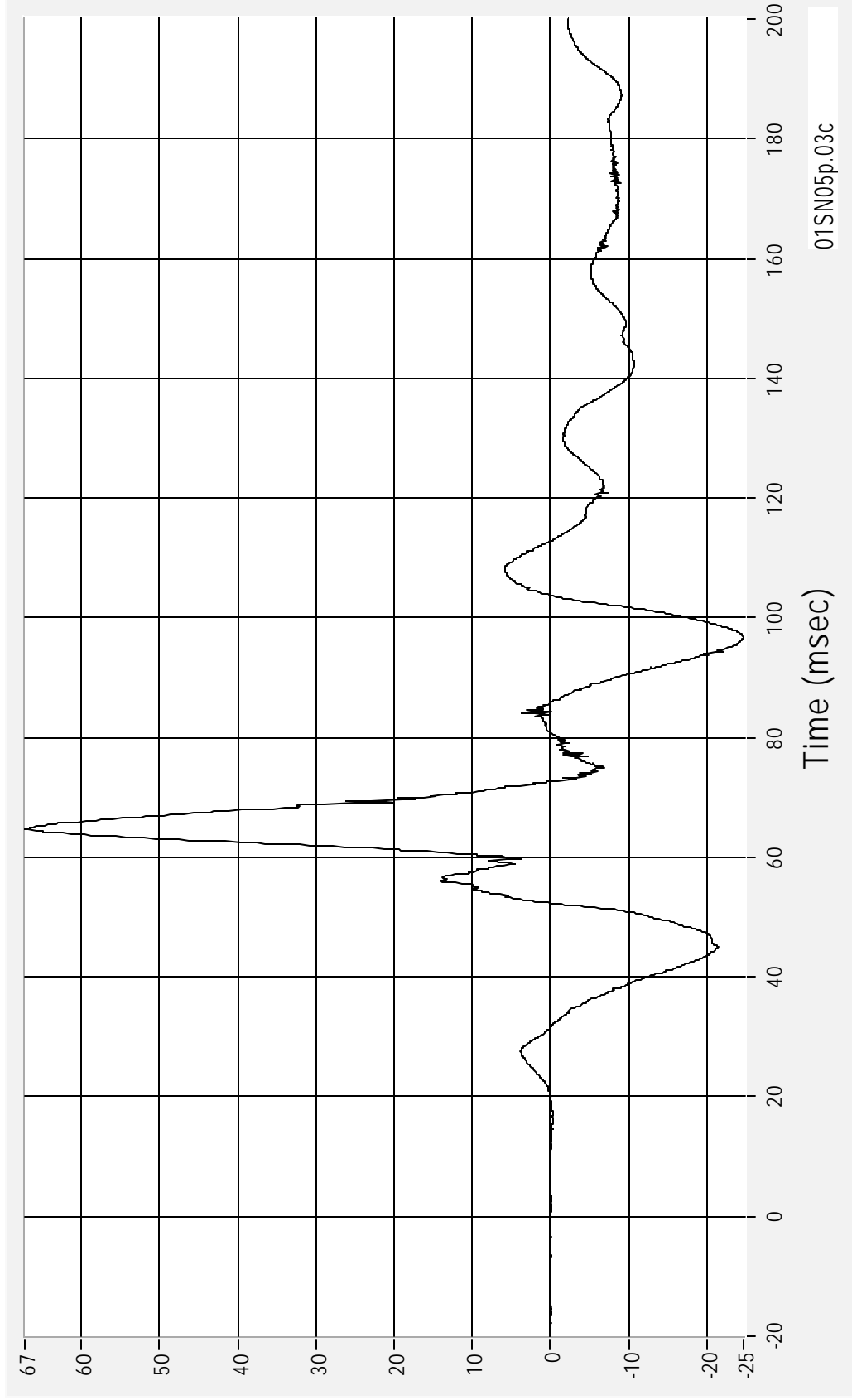
Time (msec)

01SN05p.02c

Passenger Dummy Head CG Z Acceleration

Acceleration (G's) CFC 1000

Max 67.2 G's at 64.6 msec  
Min -24.7 G's at 96.8 msec



01SN05p.03c

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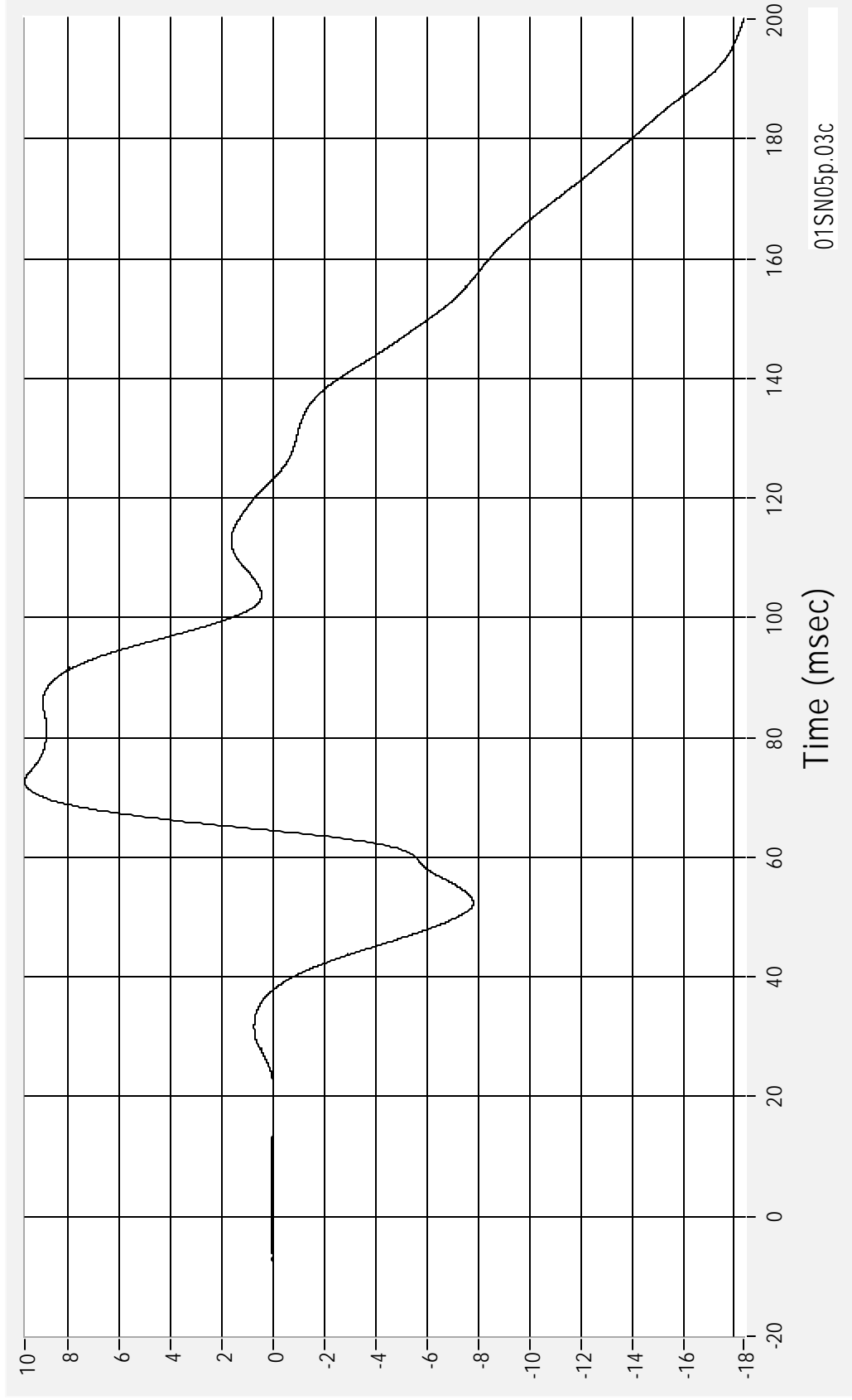
01SN05 - 2001 Buick Century  
14 March 2001

Passenger Dummy Head CG Z Velocity

CFC 180

Max 9.7 kph at 72.6 msec  
Min -18.4 kph at 199.9 msec

Velocity (kph)



Time (msec)

01SN05p.03c

01SN05 - 2001 Buick Century

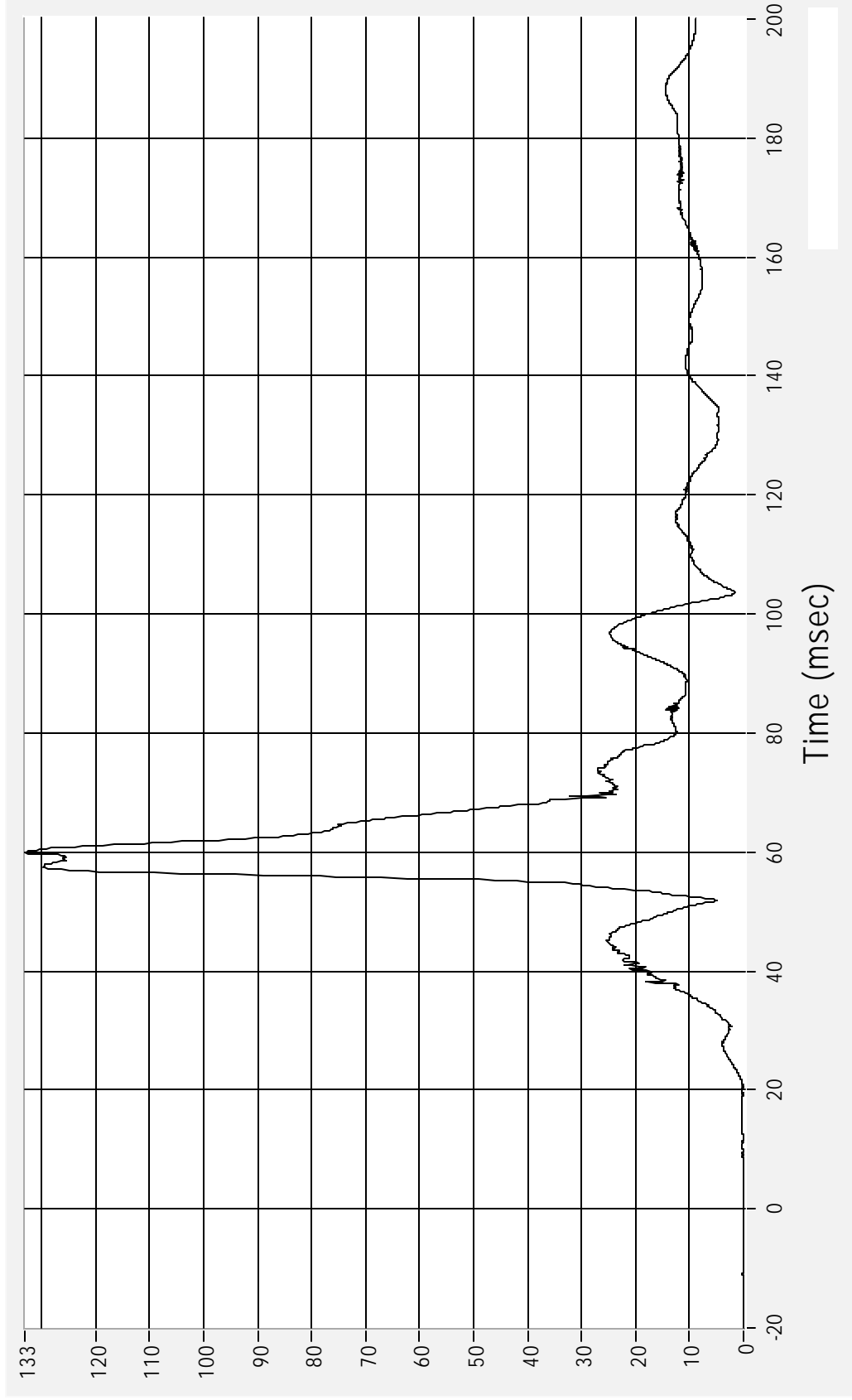
14 March 2001

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Passenger Dummy Head CG - Resultant

Acceleration (G's) CFC 1000

Max 133.1 G's at 59.8 msec  
Min 0.0 G's at 7.4 msec



01SN05 - 2001 Buick Century

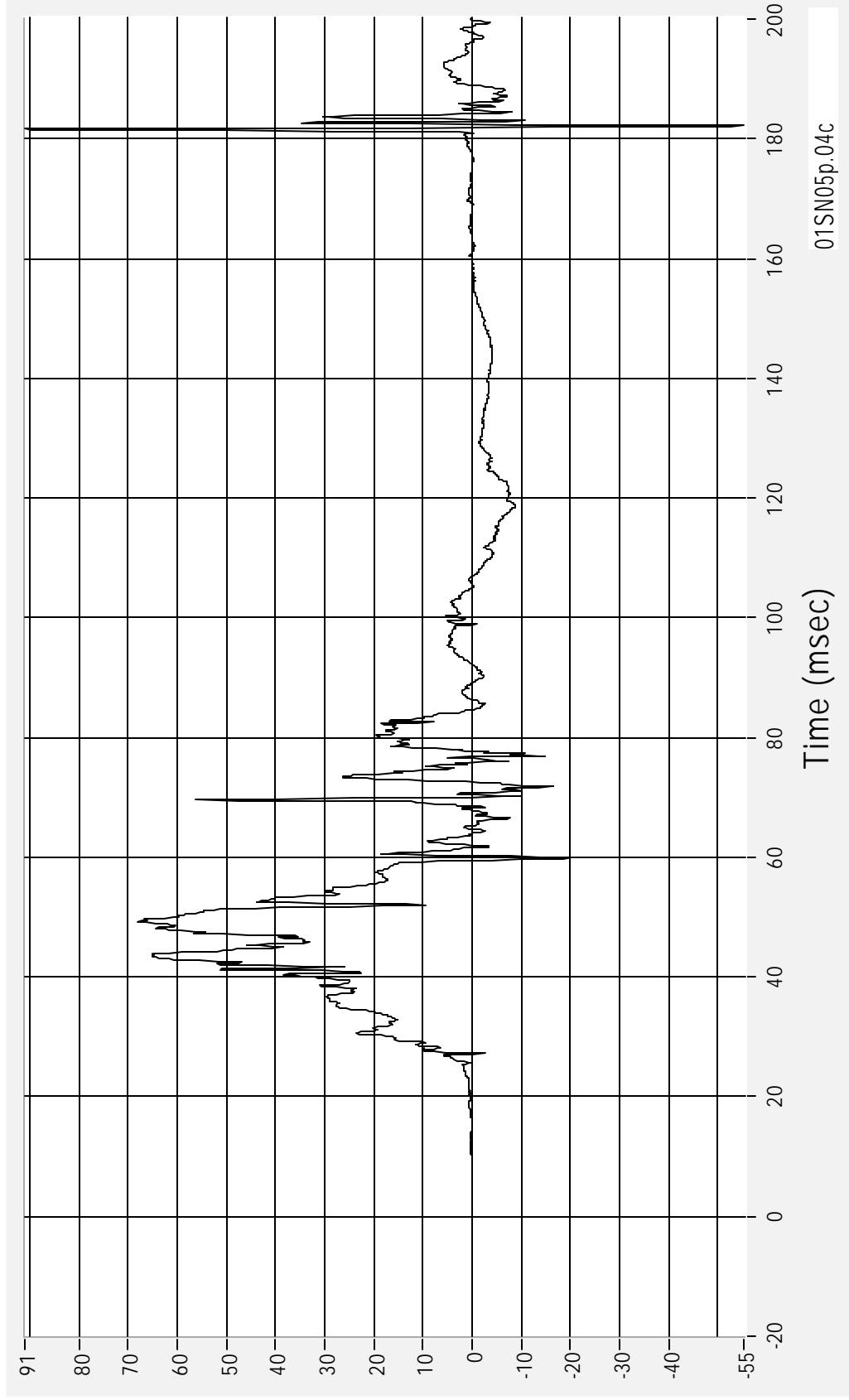
14 March 2001

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Passenger Dummy Upper Rib Y Acceleration

Max 91.0 G's at 181.6 msec  
Min -55.3 G's at 182.2 msec

Acceleration (G's) CFC 1000



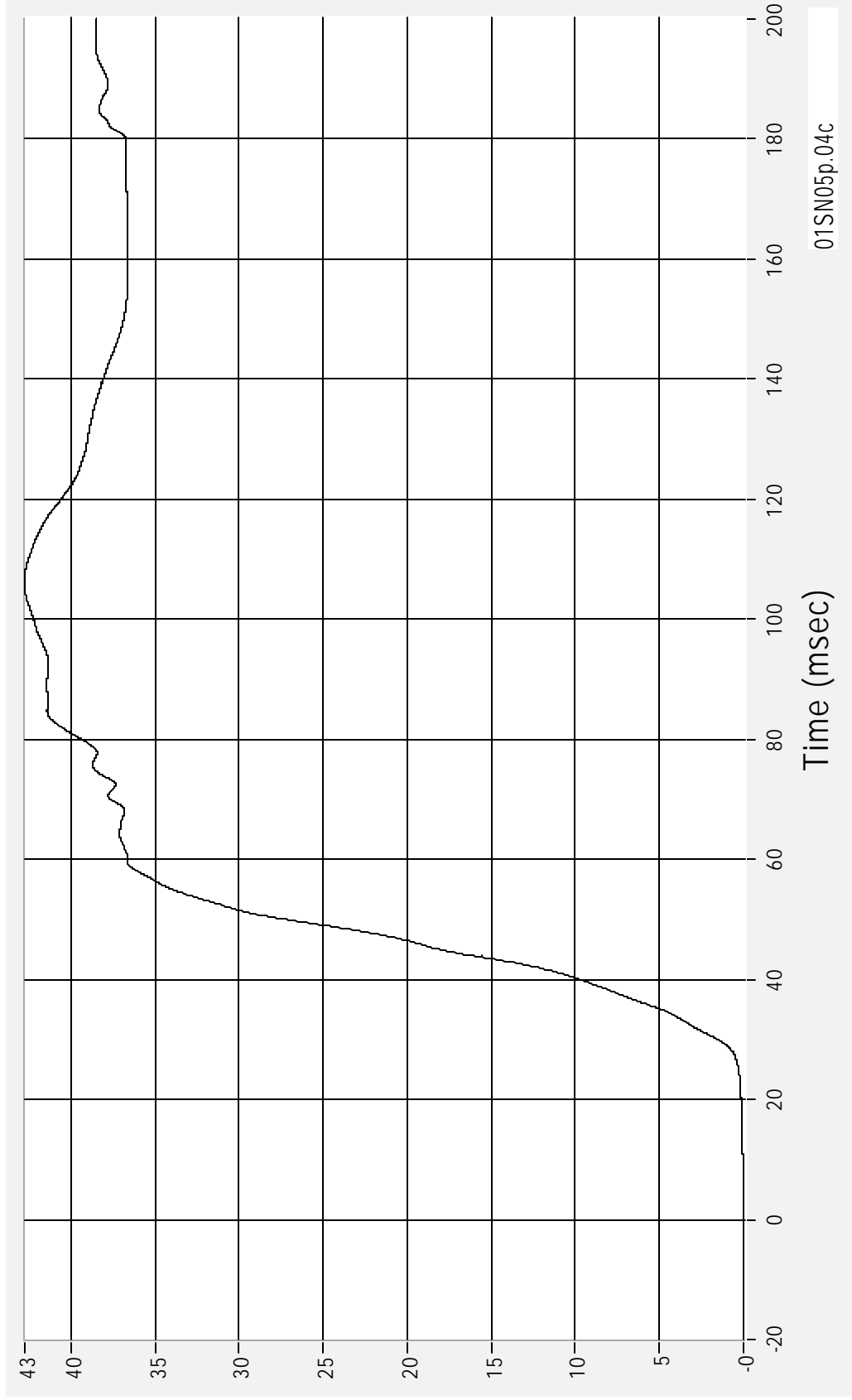
Time (msec)

01SN05p.04c

Passenger Dummy Upper Rib Y Velocity

Velocity (kph) CFC 180

Max 42.8 kph at 106.9 msec  
Min 0.0 kph at 5.7 msec



Time (msec)

01SN05p.04c

01SN05 - 2001 Buick Century

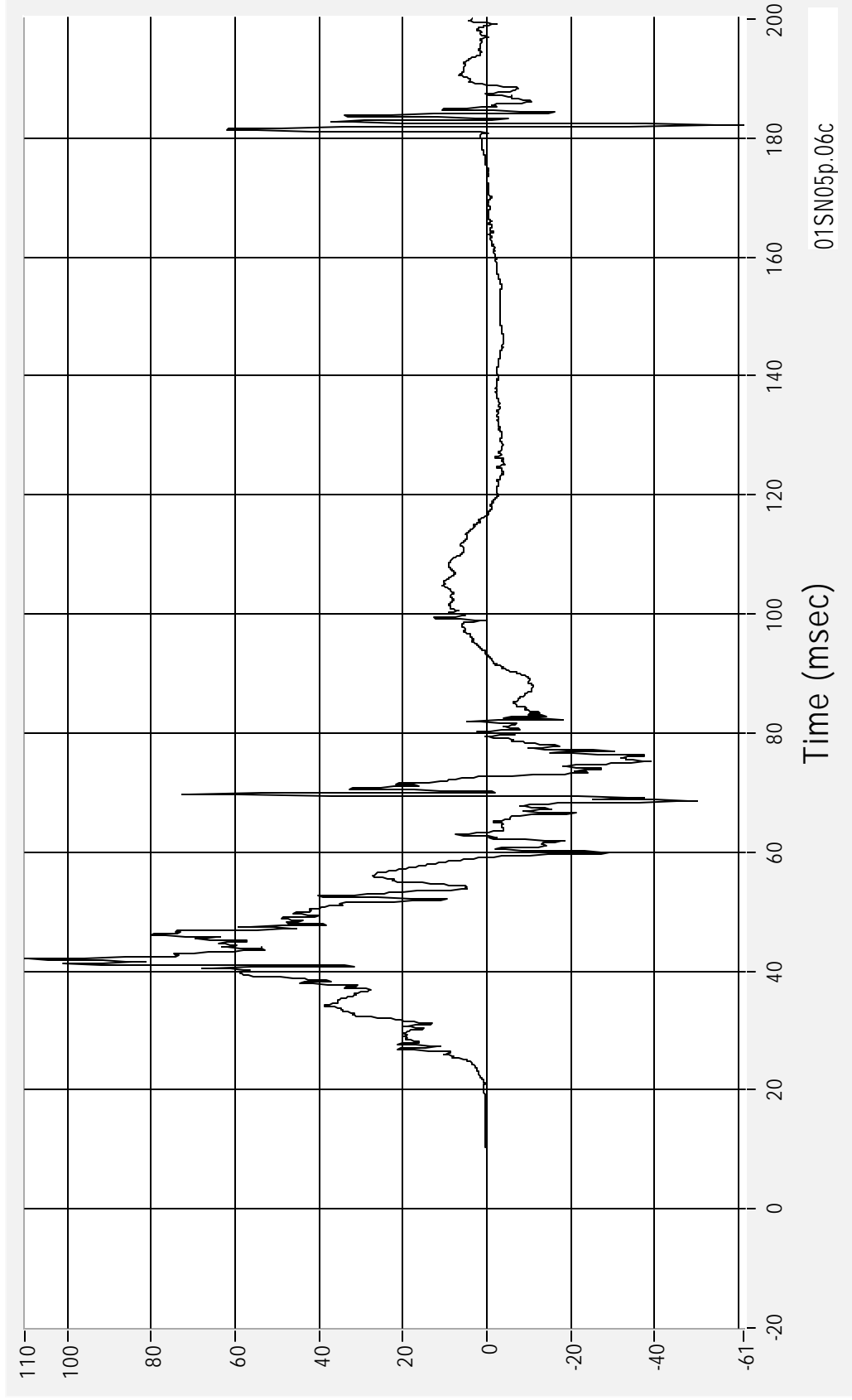
14 March 2001

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Passenger Dummy Lower Rib Y Acceleration

Max 110.2 G's at 42.1 msec  
Min -61.3 G's at 182.2 msec

Acceleration (G's) CFC 1000



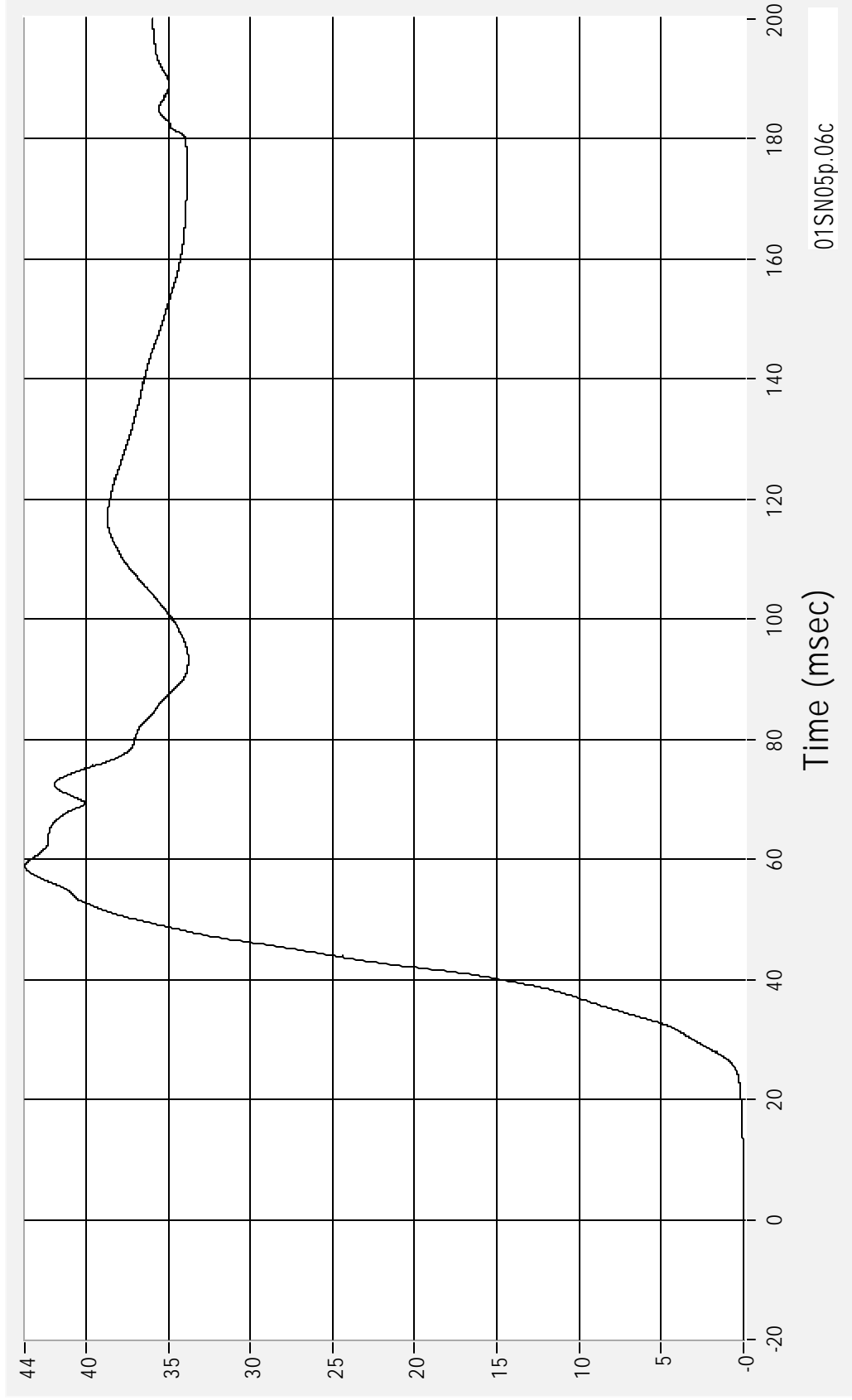
Time (msec)

01SN05p.06c

Passenger Dummy Lower Rib Y Velocity

Velocity (kph) CFC 180

Max 43.8 kph at 58.9 msec  
Min 0.0 kph at 5.5 msec



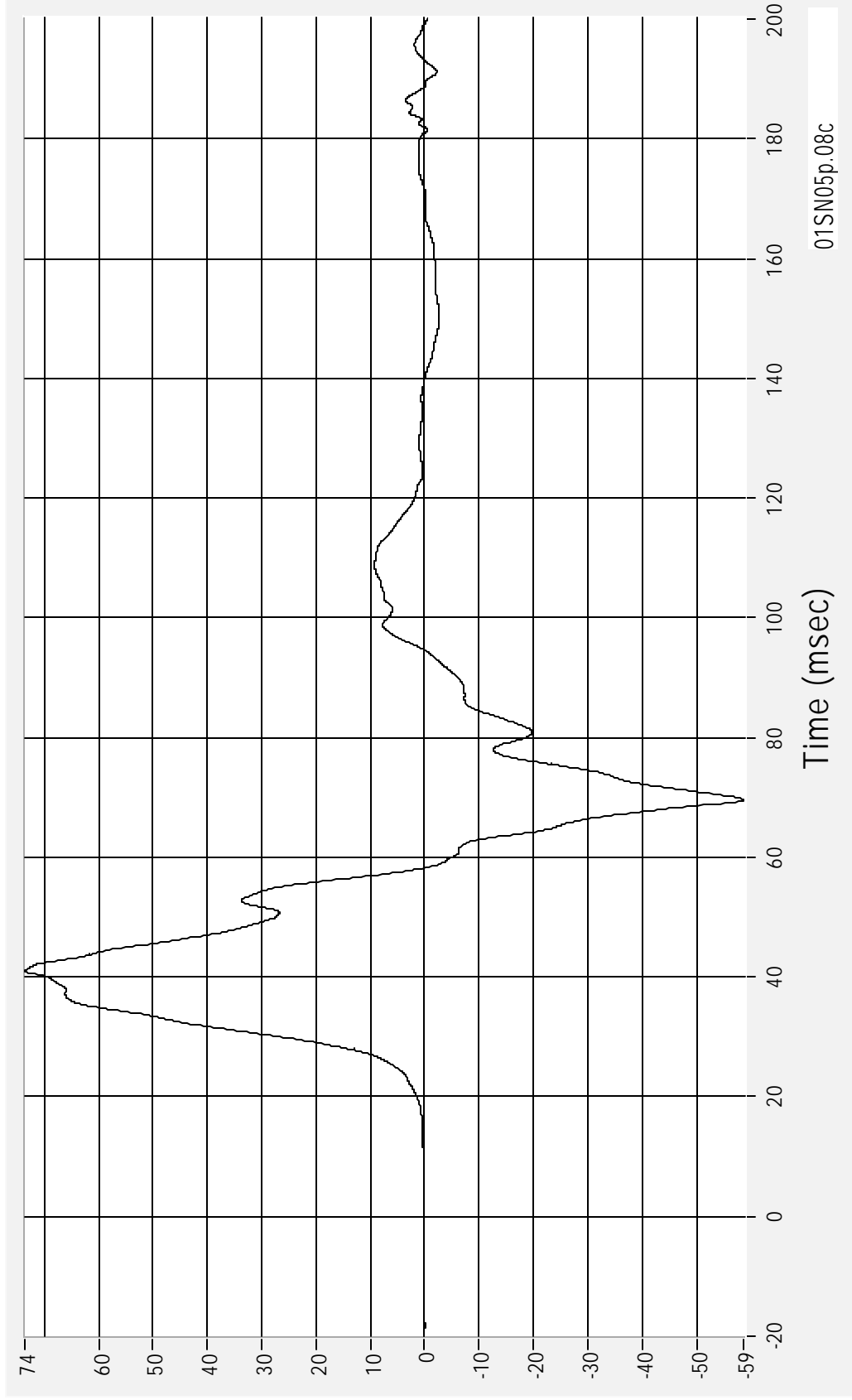
Time (msec)

01SN05p.06c

Passenger Dummy Lower Spine Y Acceleration

Max 73.6 G's at 41.0 msec  
Min -58.7 G's at 69.5 msec

Acceleration (G's) CFC 180



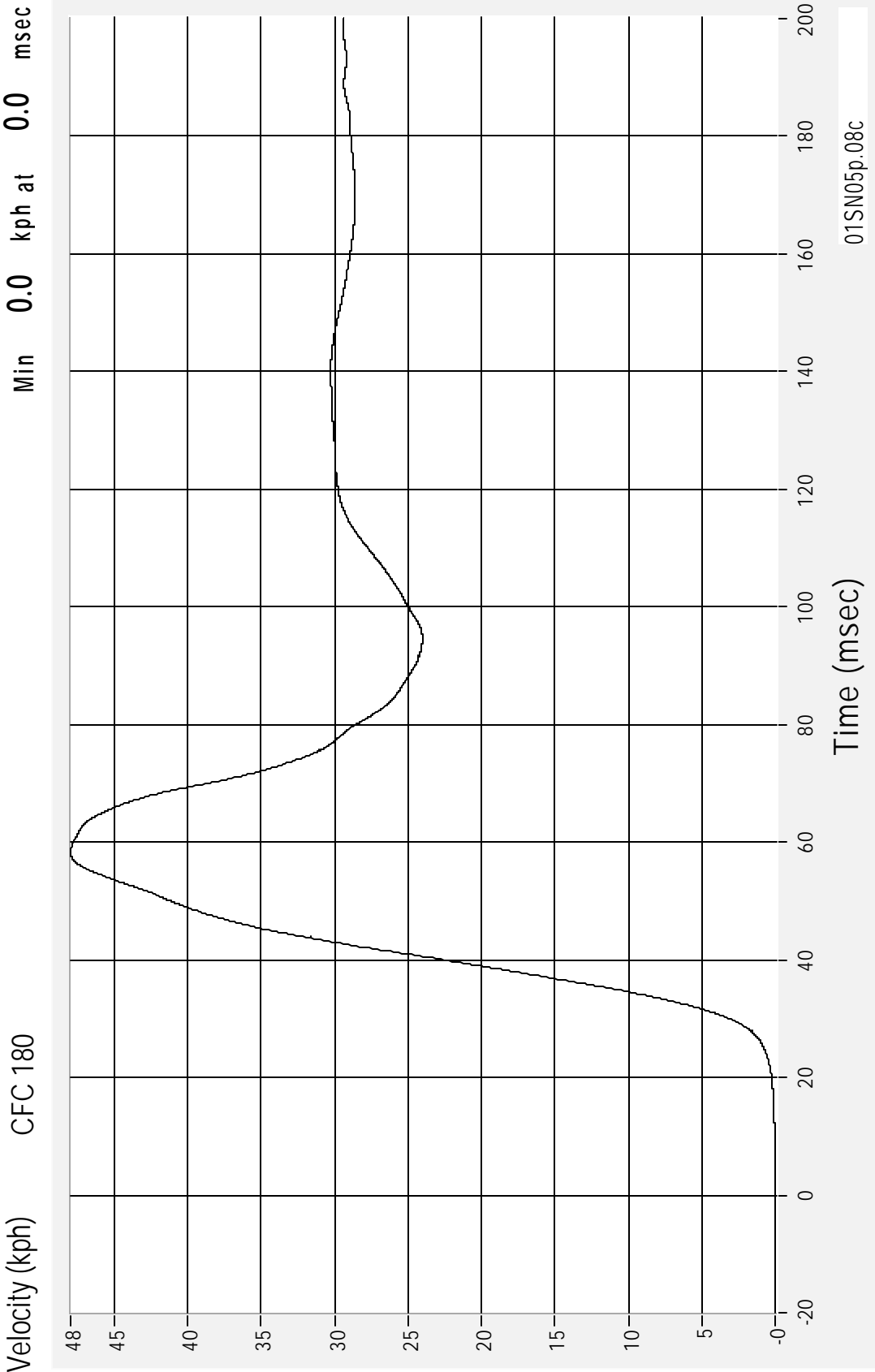
Time (msec)

01SN05p.08c

Passenger Dummy Lower Spine Y Velocity

CFC 180

Max 48.0 kph at 58.2 msec  
Min 0.0 kph at 0.0 msec



01SN05p.08c

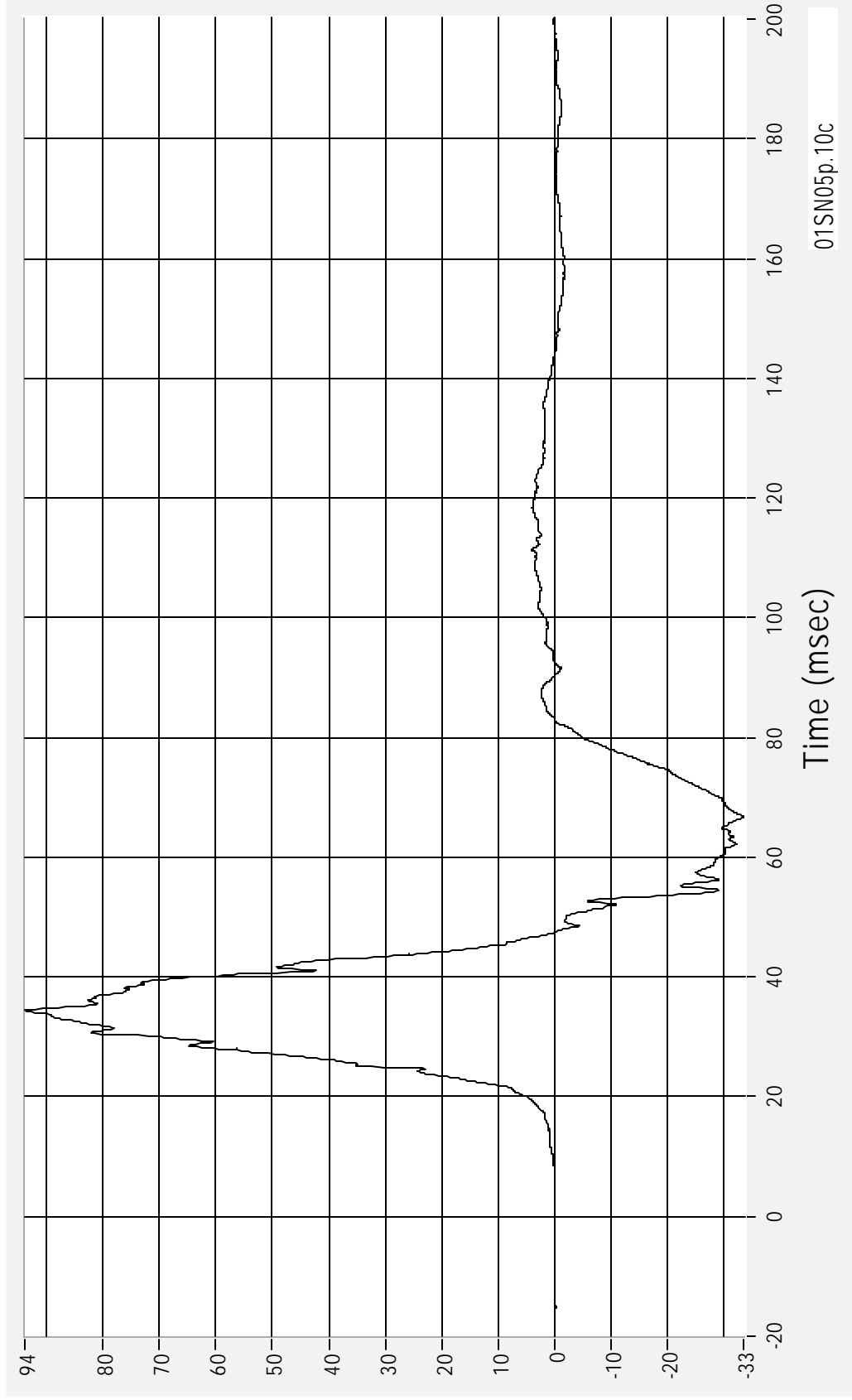
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01SN05 - 2001 Buick Century  
14 March 2001

Passenger Dummy Pelvis Y Acceleration

Acceleration (G's) CFC 1000

Max 93.8 G's at 34.4 msec  
Min -33.4 G's at 66.7 msec



Time (msec)

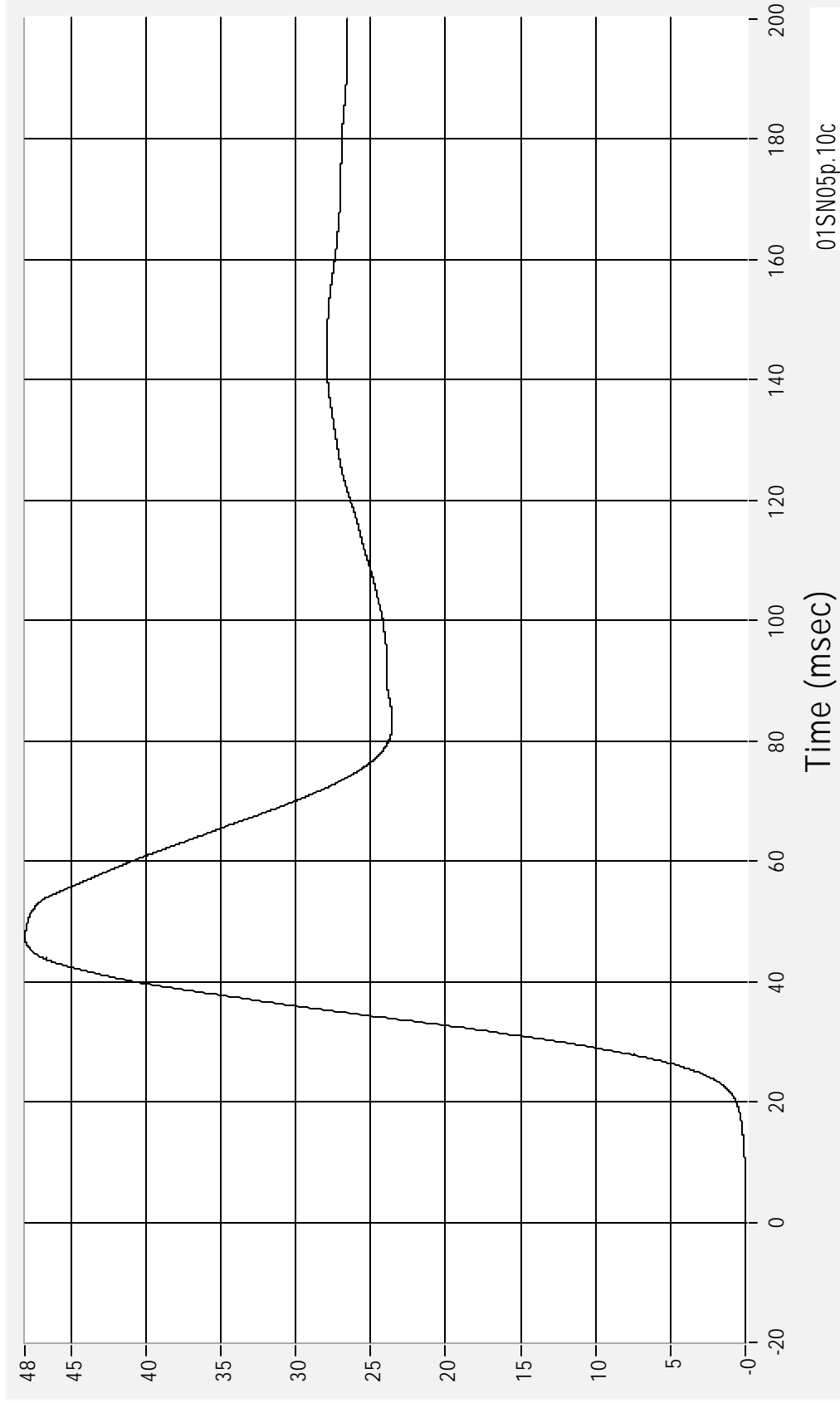
01SN05p.10c

Passenger Dummy Pelvis Y Velocity

Velocity (kph)

CFC 180

Max 48.1 kph at 47.4 msec  
Min 0.0 kph at 0.0 msec



Time (msec)

01SN05p.10c

01SN05 - 2001 Buick Century

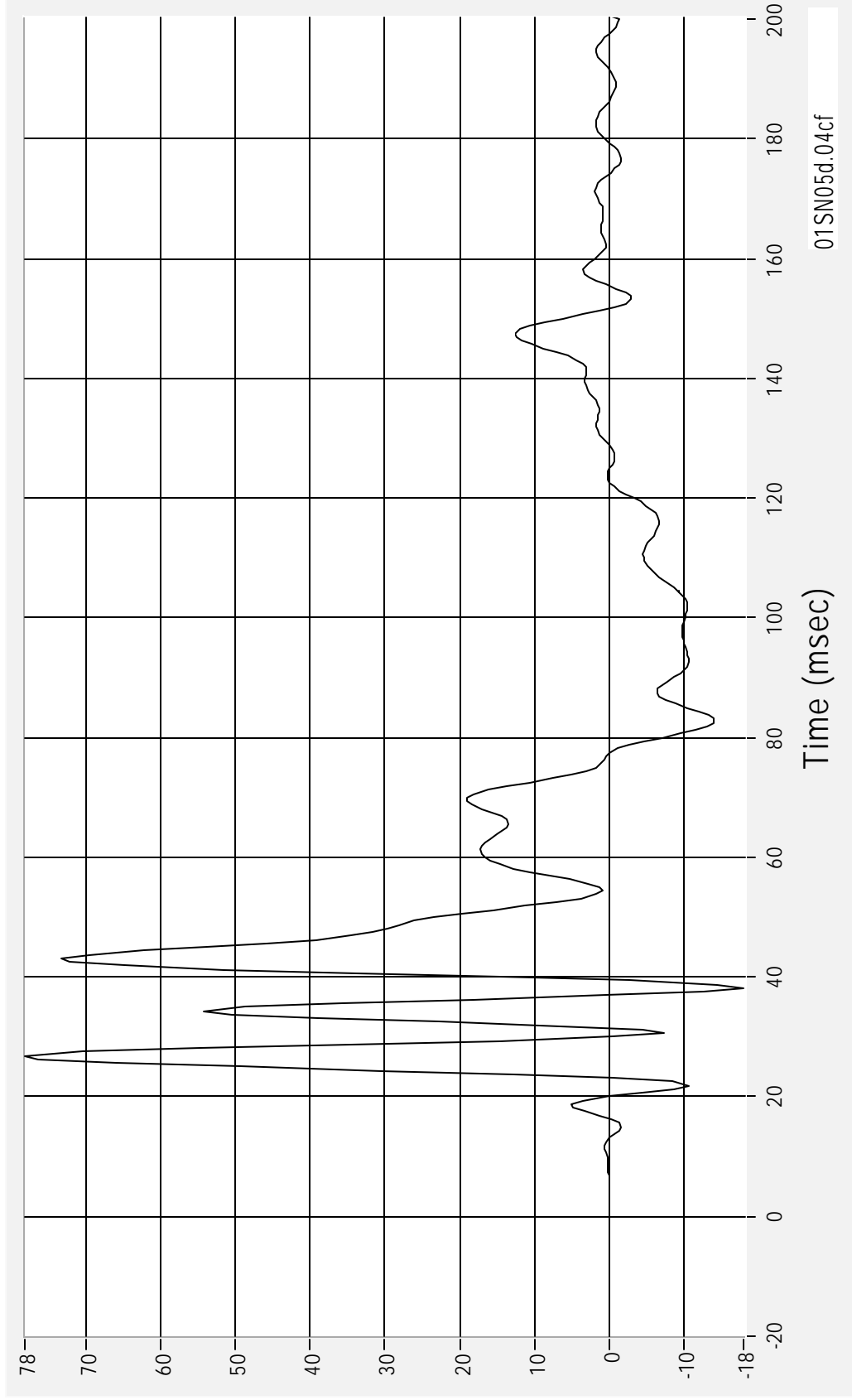
14 March 2001

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Driver Dummy Upper Rib Y Acceleration

Acceleration (G's) FIR100

Max 78.1 G's at 26.9 msec  
Min -18.0 G's at 38.1 msec



01SN05d.04cf

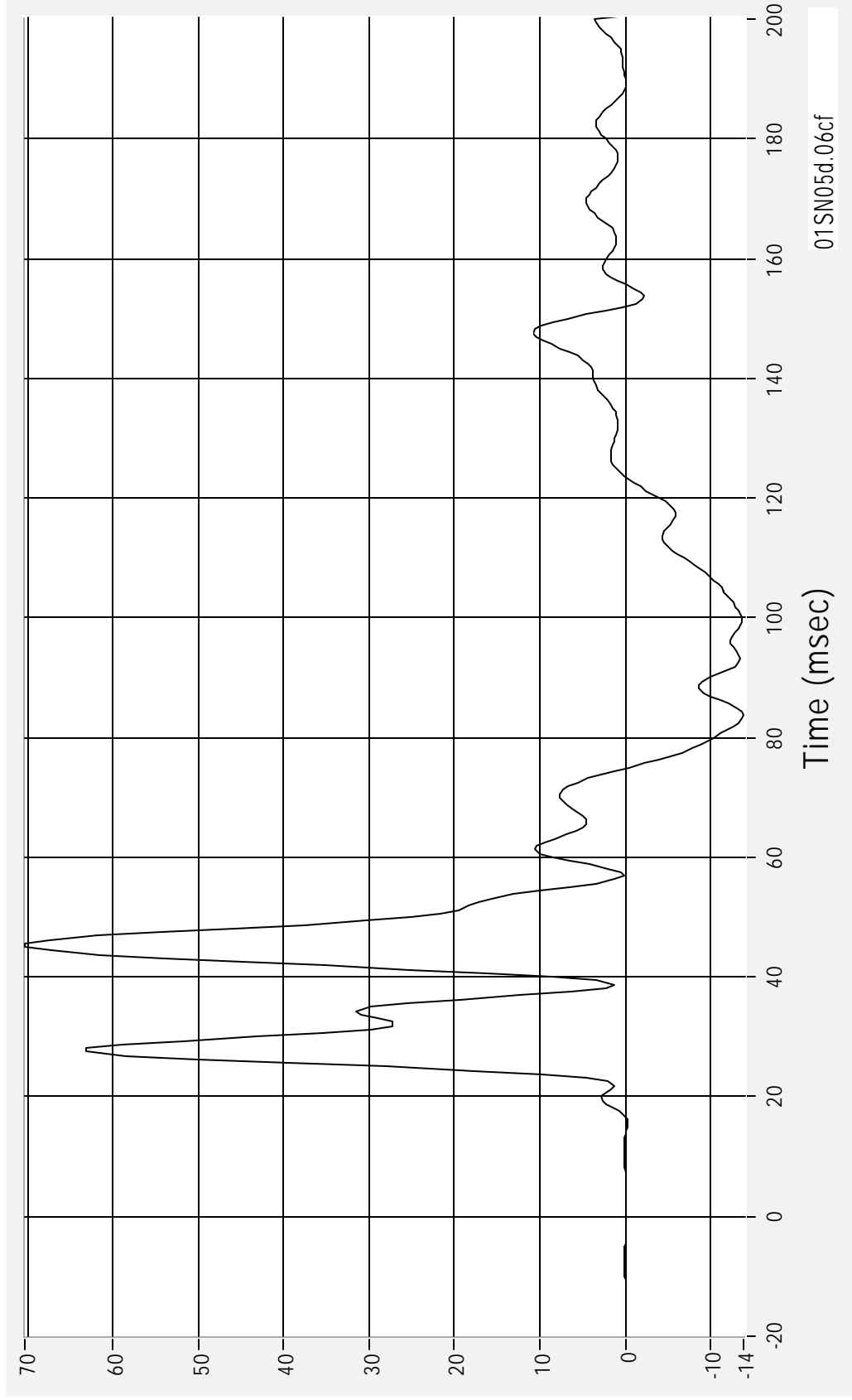
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14 March 2001

Driver Dummy Lower Rib Y Acceleration

Acceleration (G's) FIR100

Max 70.4 G's at 45.6 msec  
Min -13.9 G's at 83.8 msec



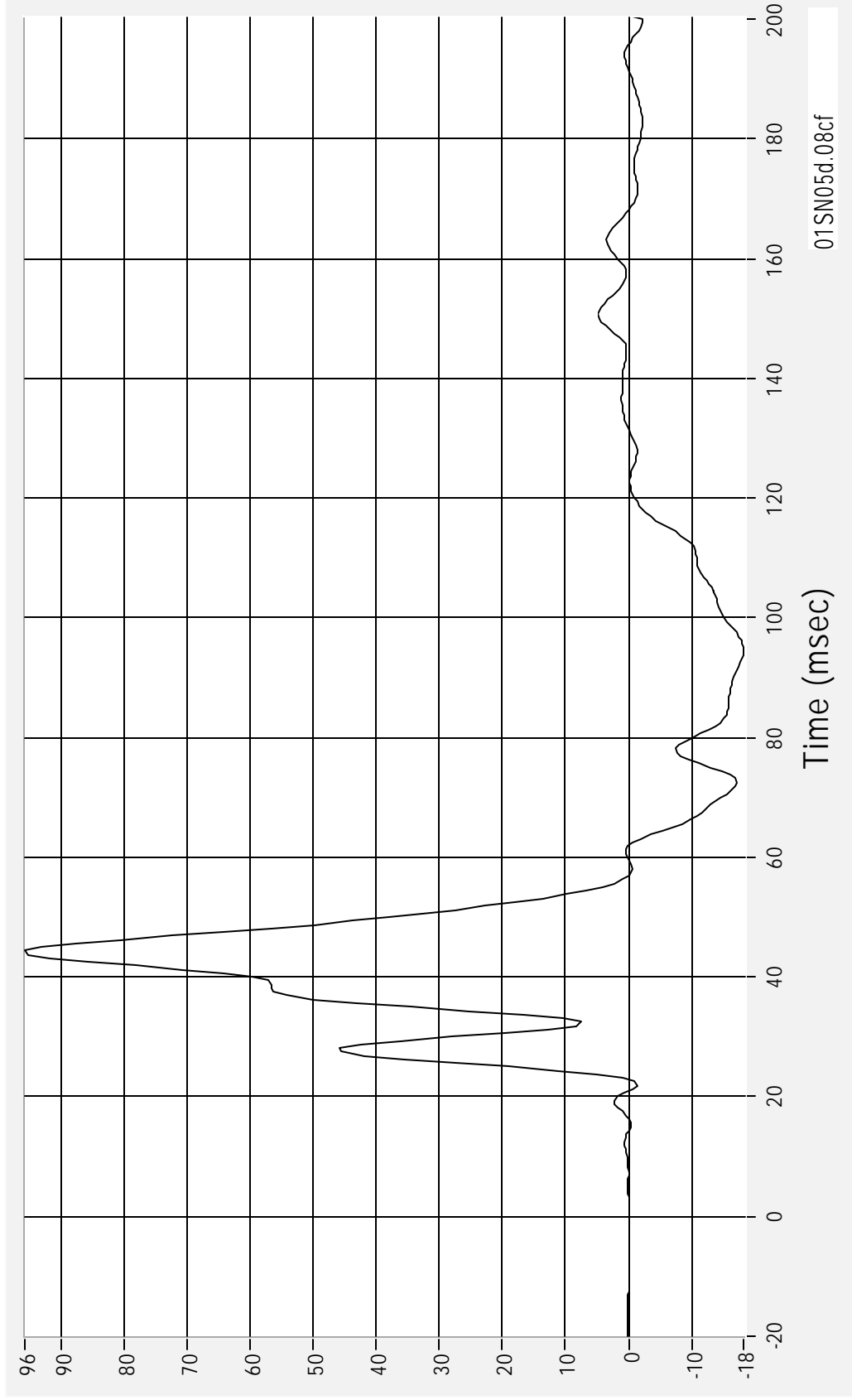
Time (msec)

01SN05d.06cf

Driver Dummy Lower Spine Y Acceleration

Max 95.7 G's at 44.4 msec  
Min -18.2 G's at 94.4 msec

Acceleration (G's) FIR100



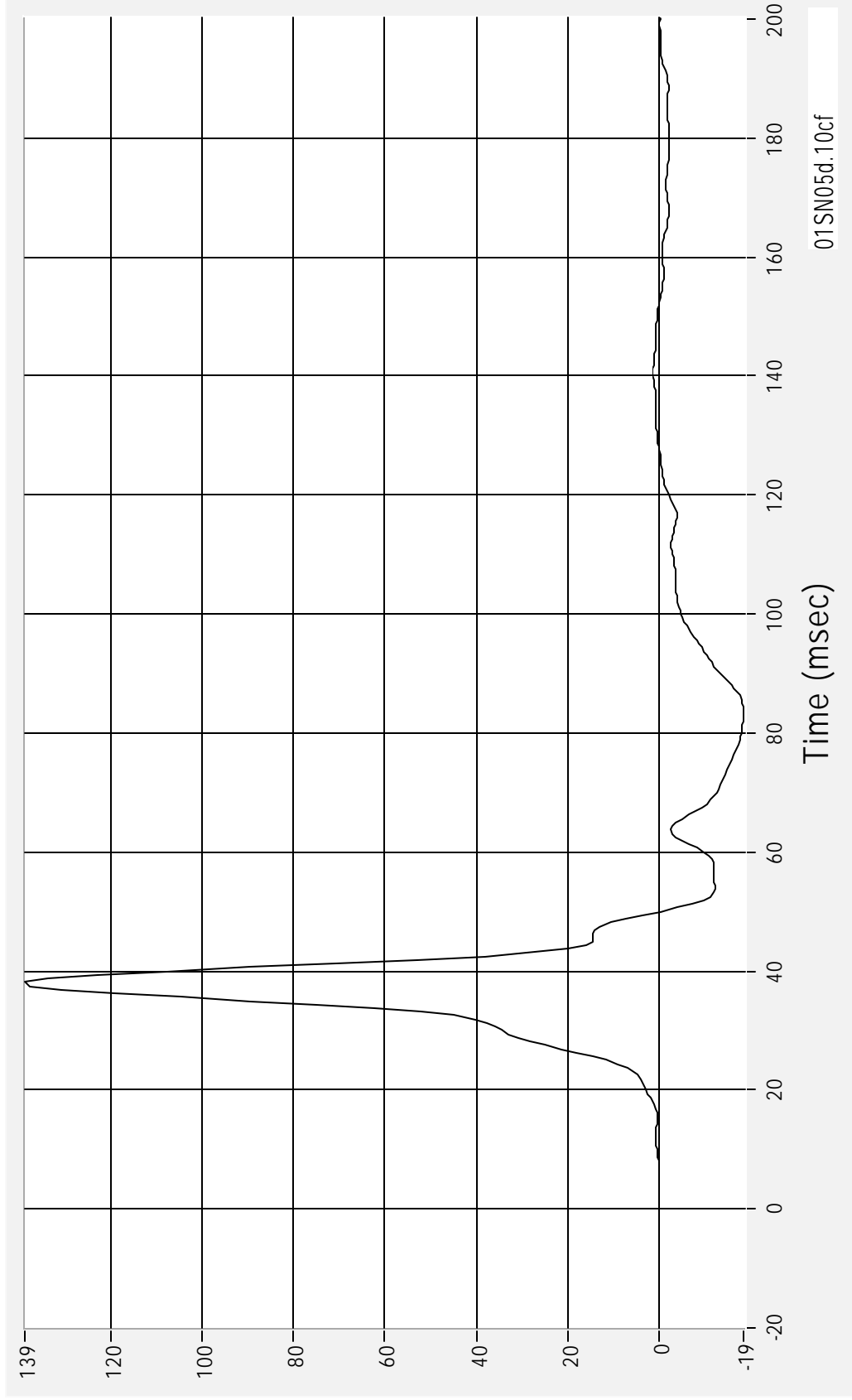
Time (msec)

01SN05d.08cf

Driver Dummy Pelvis Y Acceleration

Acceleration (G's) FIR100

Max 138.8 G's at 38.1 msec  
Min -18.5 G's at 83.8 msec



Time (msec)

01SN05d.10cf

01SN05 - 2001 Buick Century

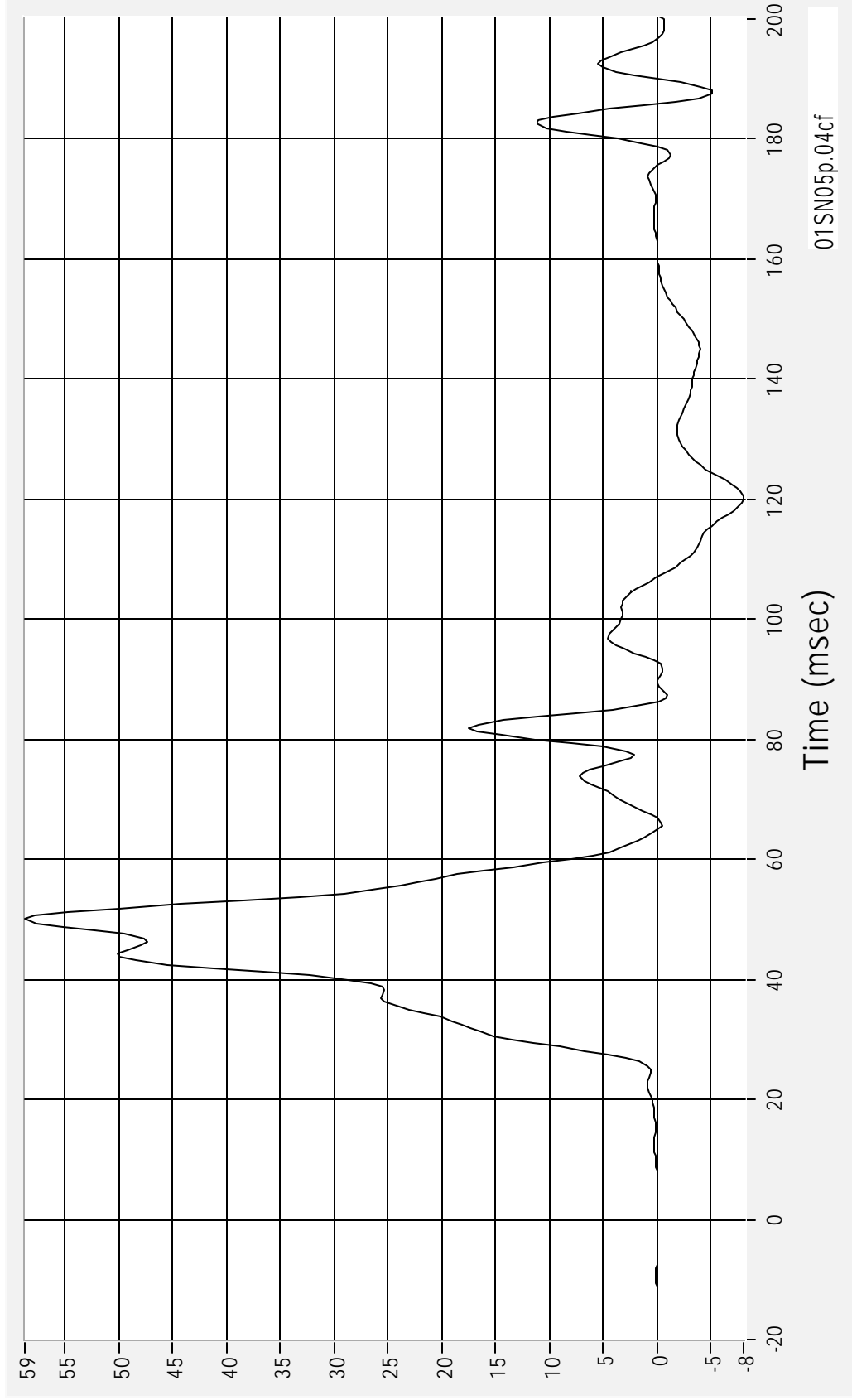
14 March 2001

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Passenger Dummy Upper Rib Y Acceleration

Acceleration (G's) FIR100

Max 58.7 G's at 50.0 msec  
Min -8.1 G's at 120.0 msec



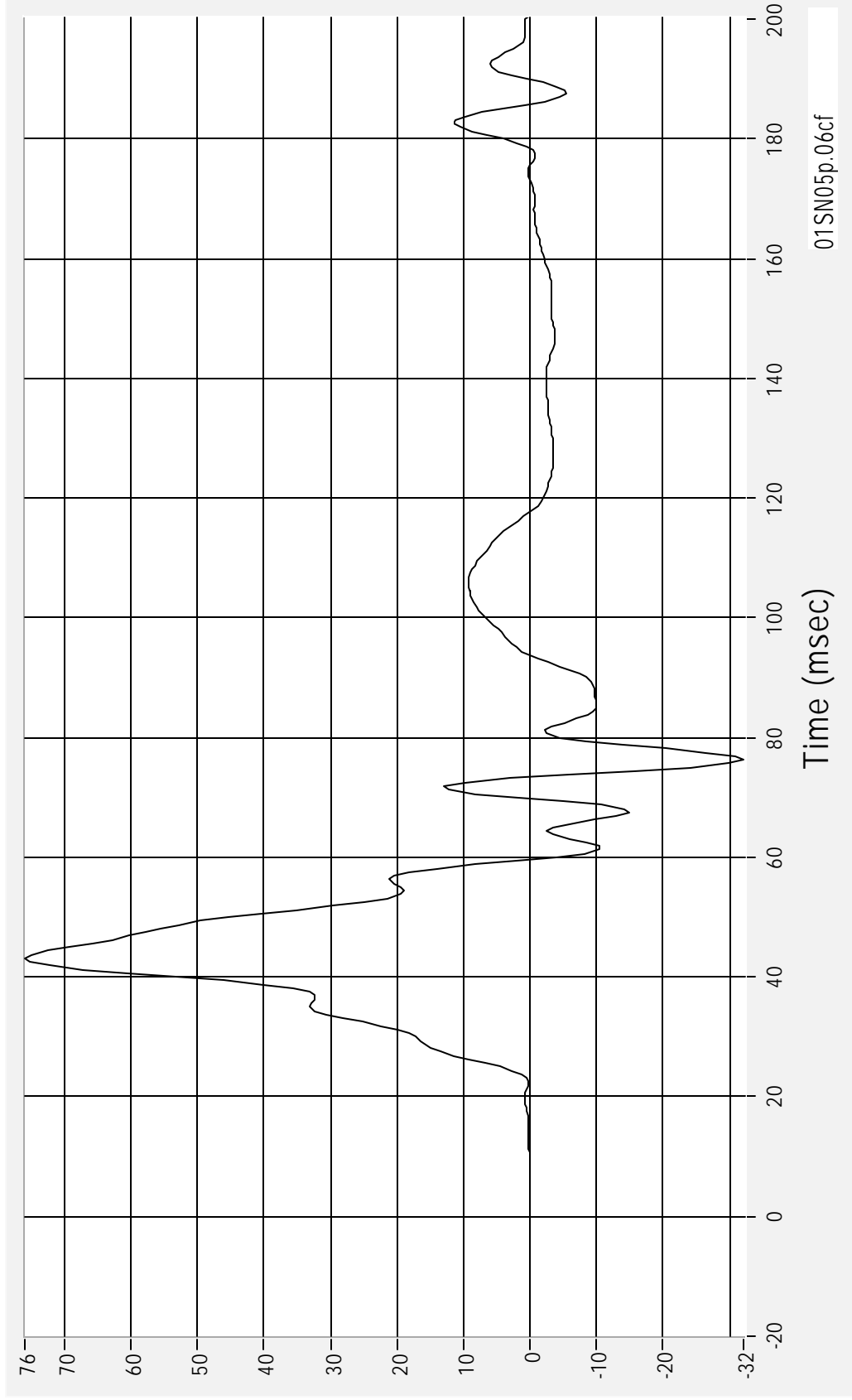
Time (msec)

01SN05p.04cf

Passenger Dummy Lower Rib Y Acceleration

Acceleration (G's) FIR100

Max 75.9 G's at 43.1 msec  
Min -32.1 G's at 76.2 msec



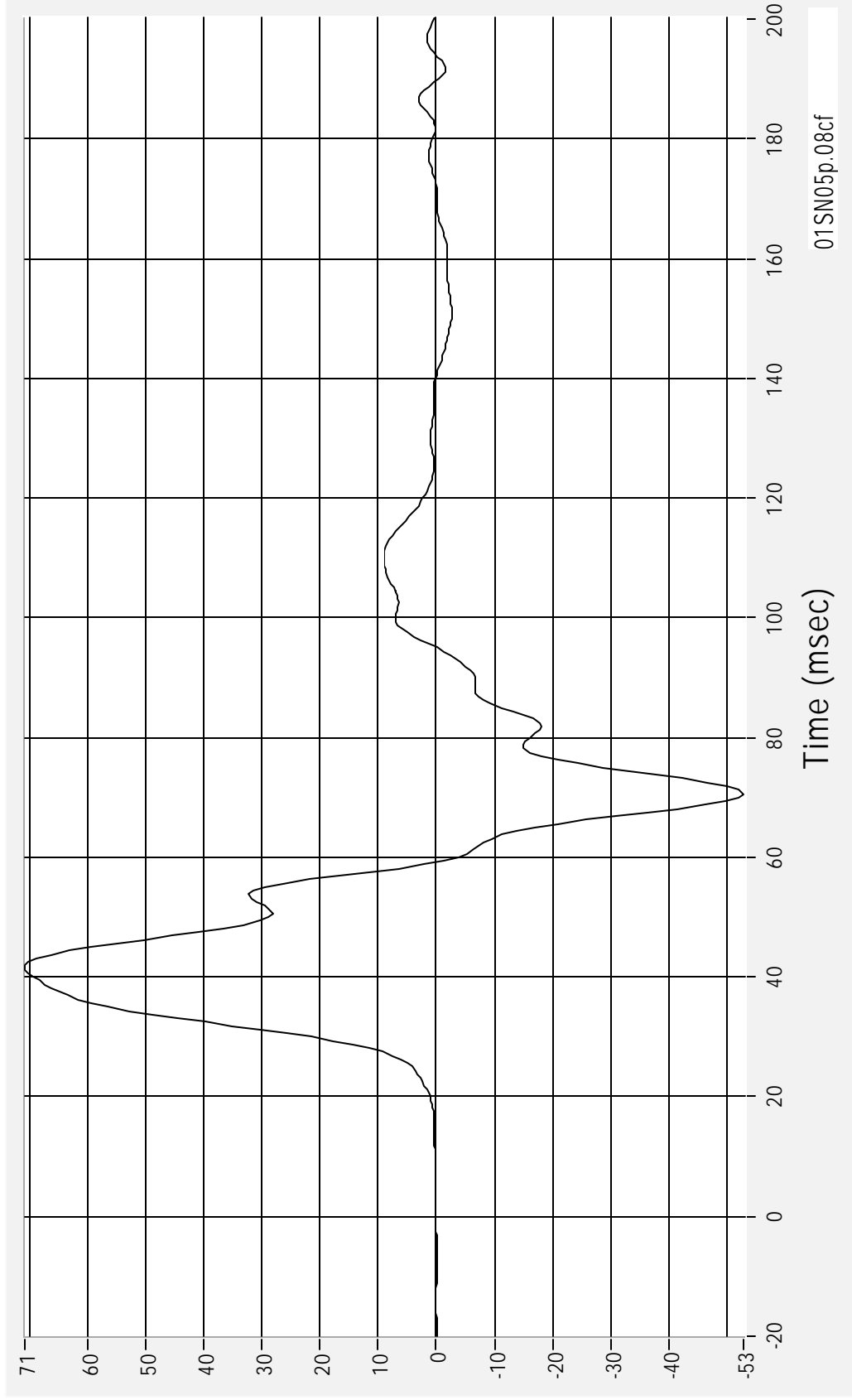
Time (msec)

01SN05p.06cf

Passenger Dummy Lower Spine Y Acceleration

Acceleration (G's) FIR100

Max 70.9 G's at 41.9 msec  
Min -53.0 G's at 70.6 msec



01SN05p.08cf

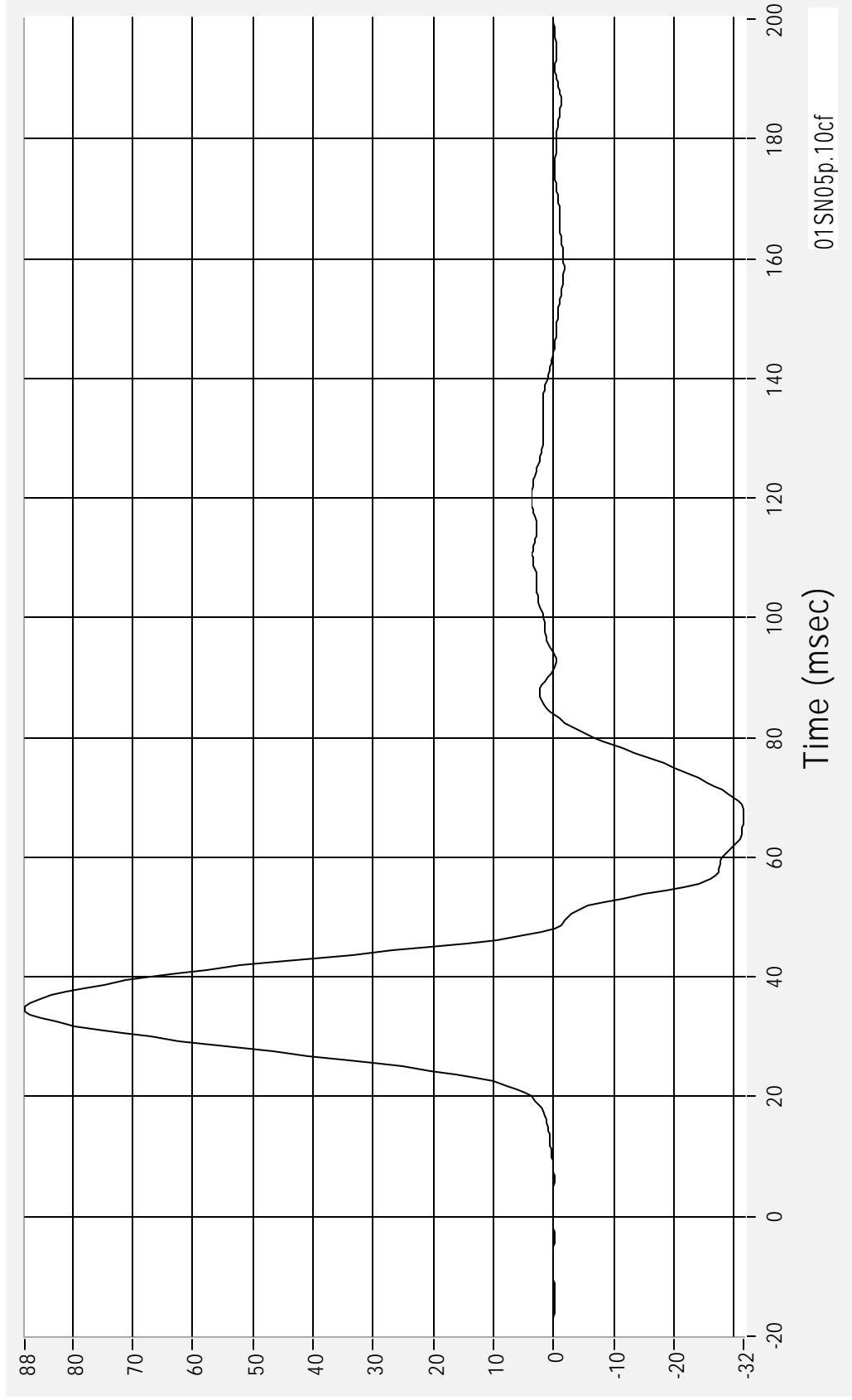
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14 March 2001

Passenger Dummy Pelvis Y Acceleration

Acceleration (G's) FIR100

Max 87.9 G's at 35.0 msec  
Min -31.5 G's at 67.5 msec



01SN05p.10cf

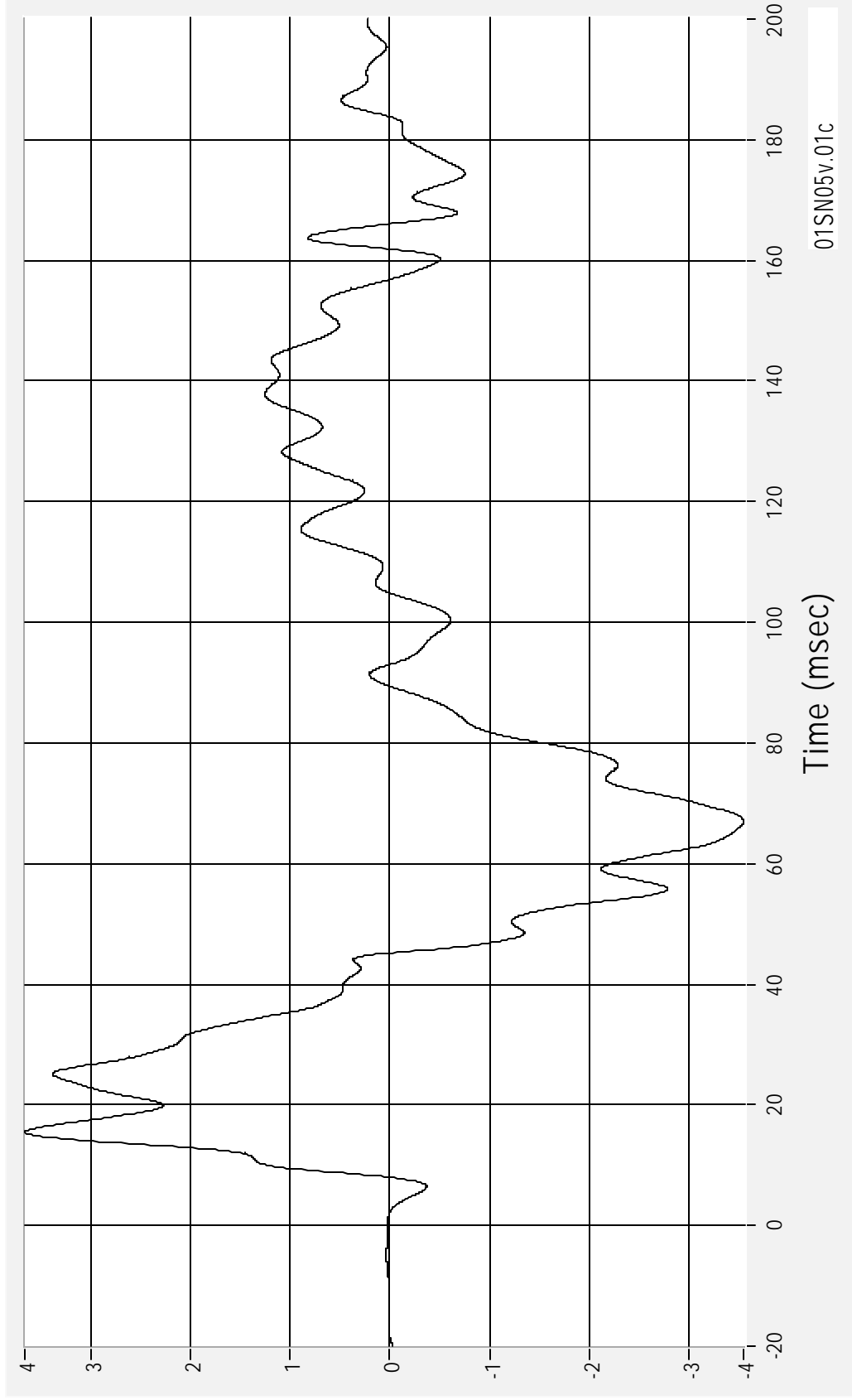
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14 March 2001

Right Side Sill at Front Seat X Acceleration

Acceleration (G's) CFC 60

Max 3.7 G's at 15.4 msec  
Min -3.5 G's at 67.0 msec

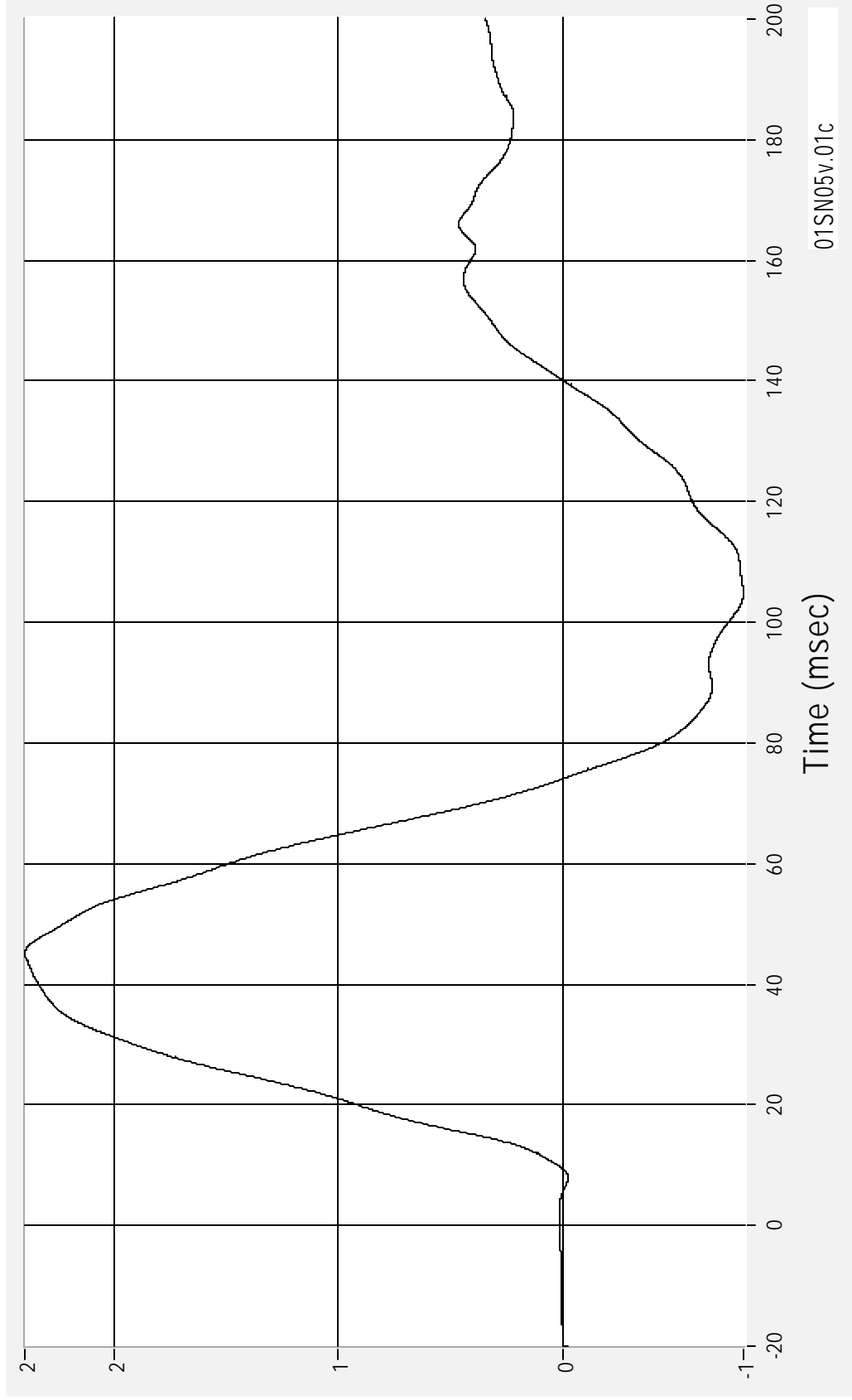


01SN05v.01c

Right Side Sill at Front Seat X Velocity

Velocity (kph) CFC 180

Max 2.4 kph at 45.1 msec  
Min -0.8 kph at 104.8 msec

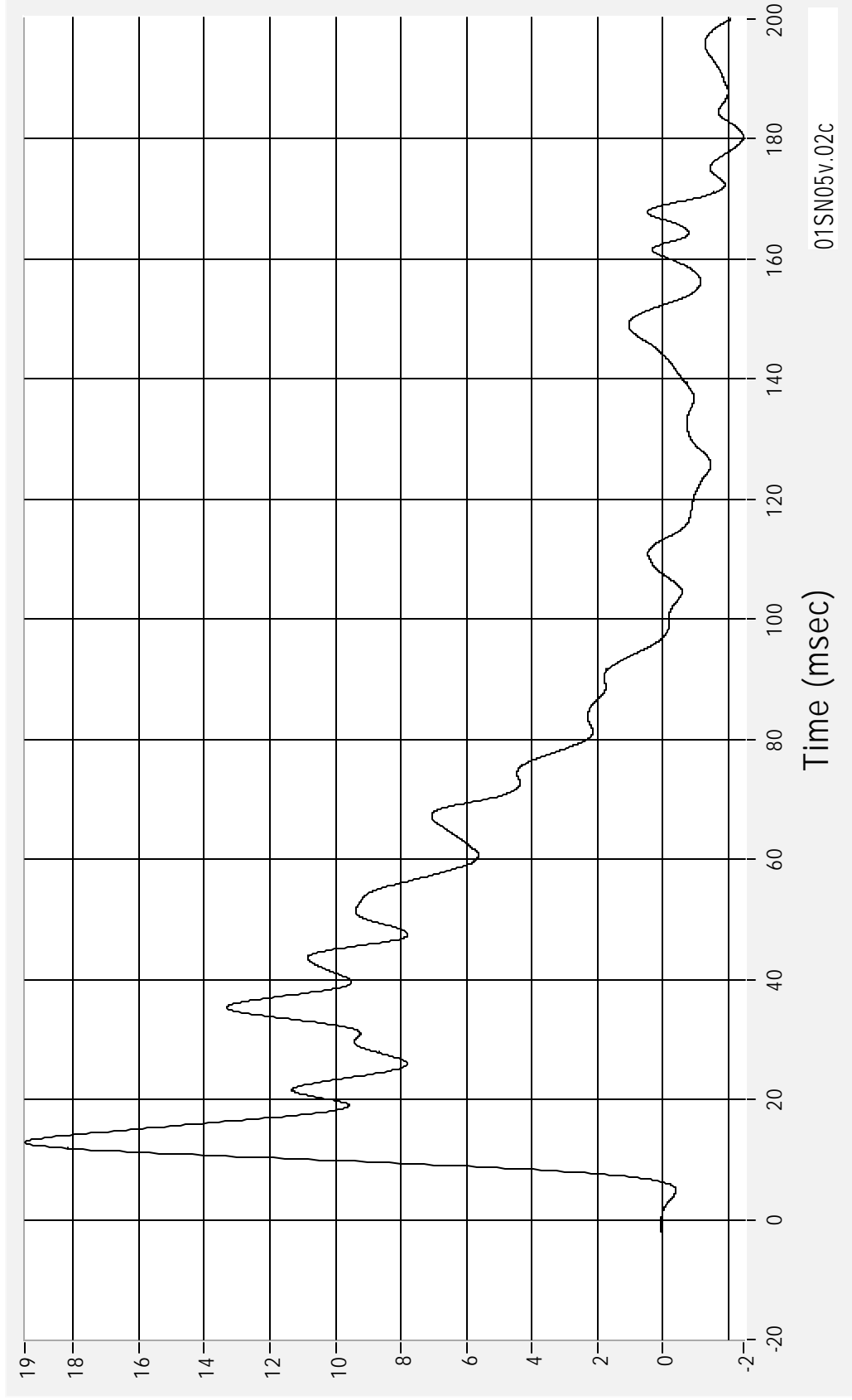


01SN05v.01c

Right Side Sill at Front Seat Y Acceleration

Acceleration (G's) CFC 60

Max 19.5 G's at 12.8 msec  
Min -2.5 G's at 180.3 msec



Time (msec)

01SN05v.02c

01SN05 - 2001 Buick Century

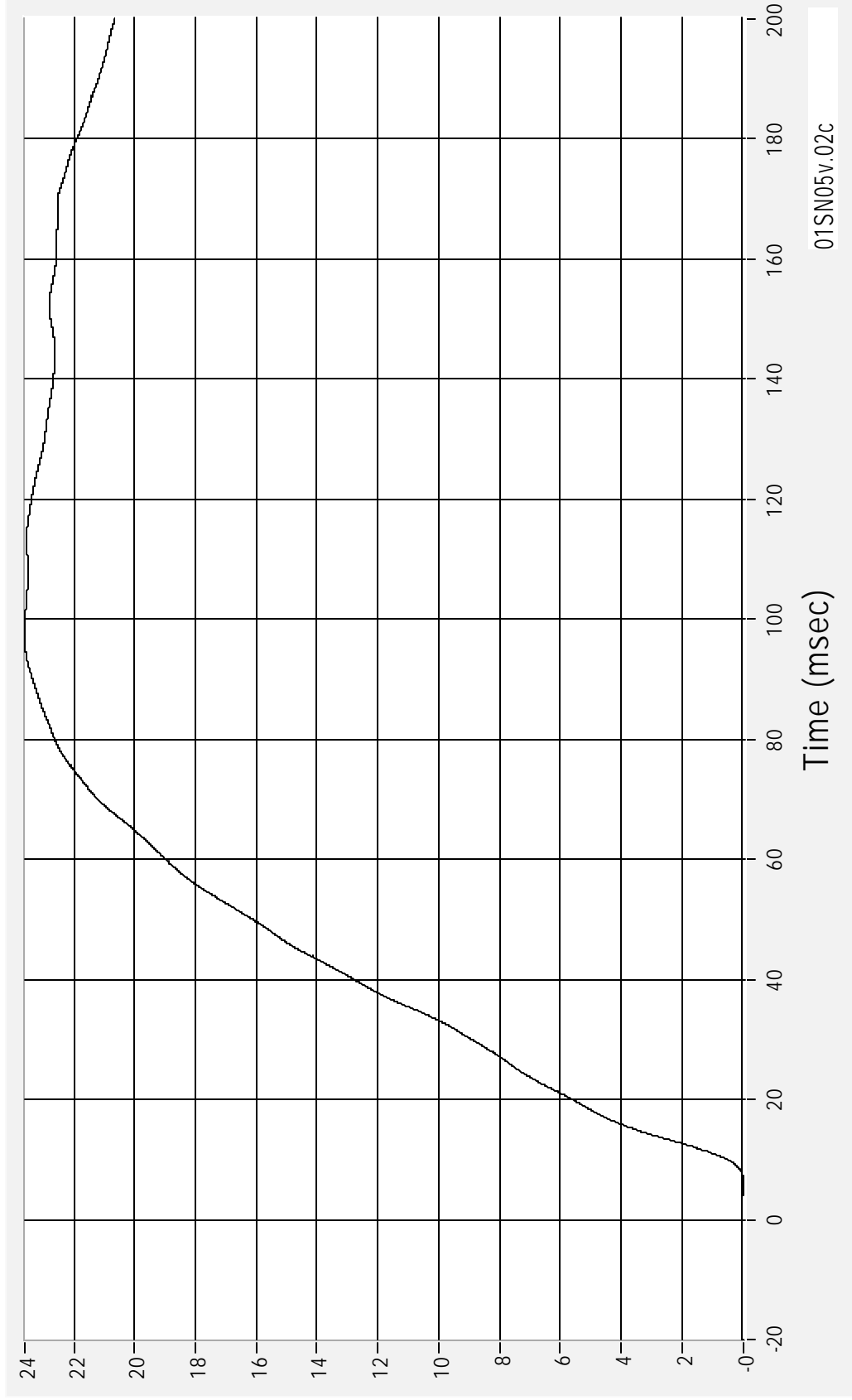
14 March 2001

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Right Side Sill at Front Seat Y Velocity

Velocity (kph) CFC 180

Max 23.6 kph at 96.9 msec  
Min 0.0 kph at 6.2 msec



Time (msec)

01SN05v.02c

01SN05 - 2001 Buick Century

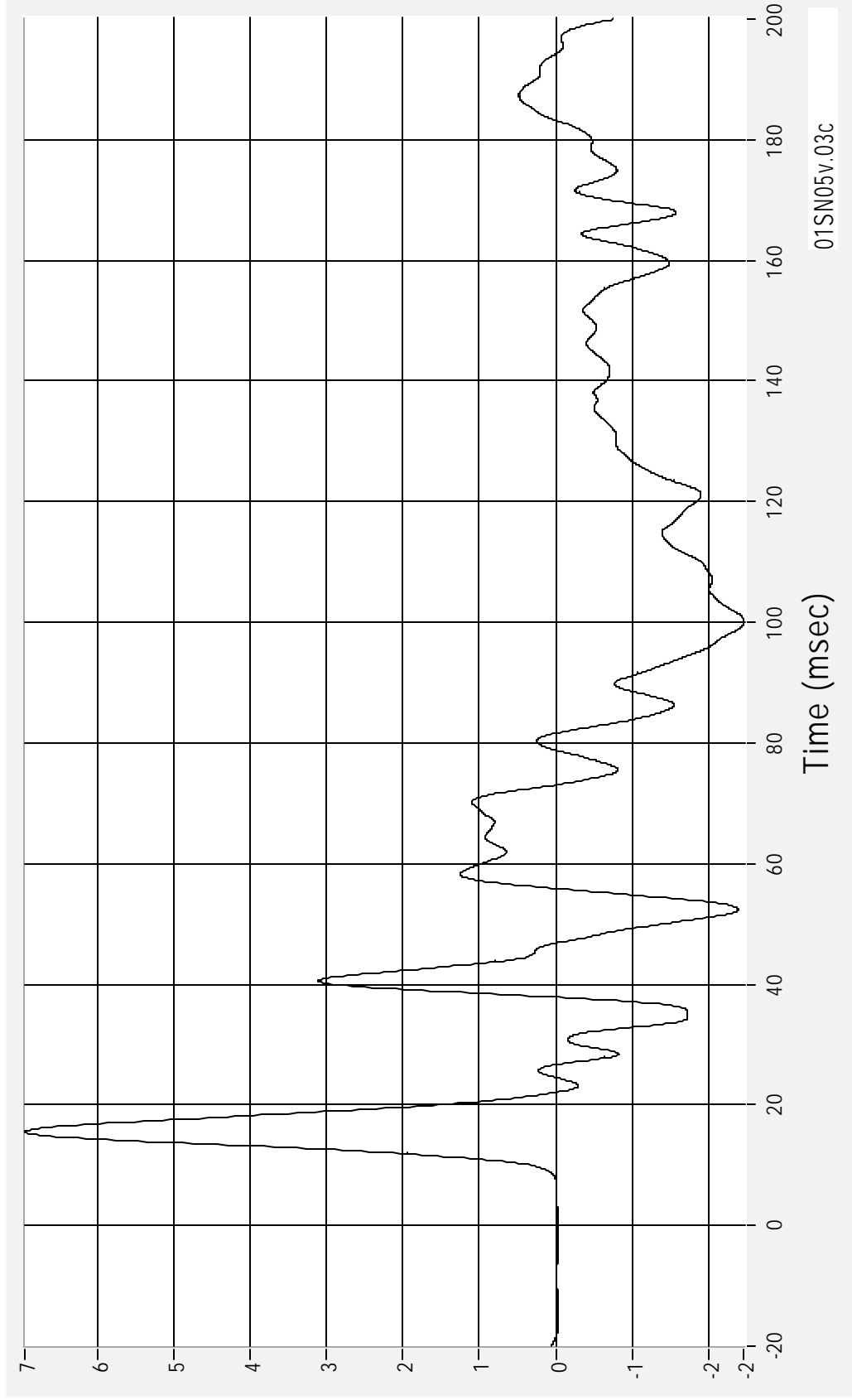
14 March 2001

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Right Side Sill at Front Seat Z Acceleration

Acceleration (G's) CFC 60

Max 6.9 G's at 15.5 msec  
Min -2.5 G's at 100.2 msec



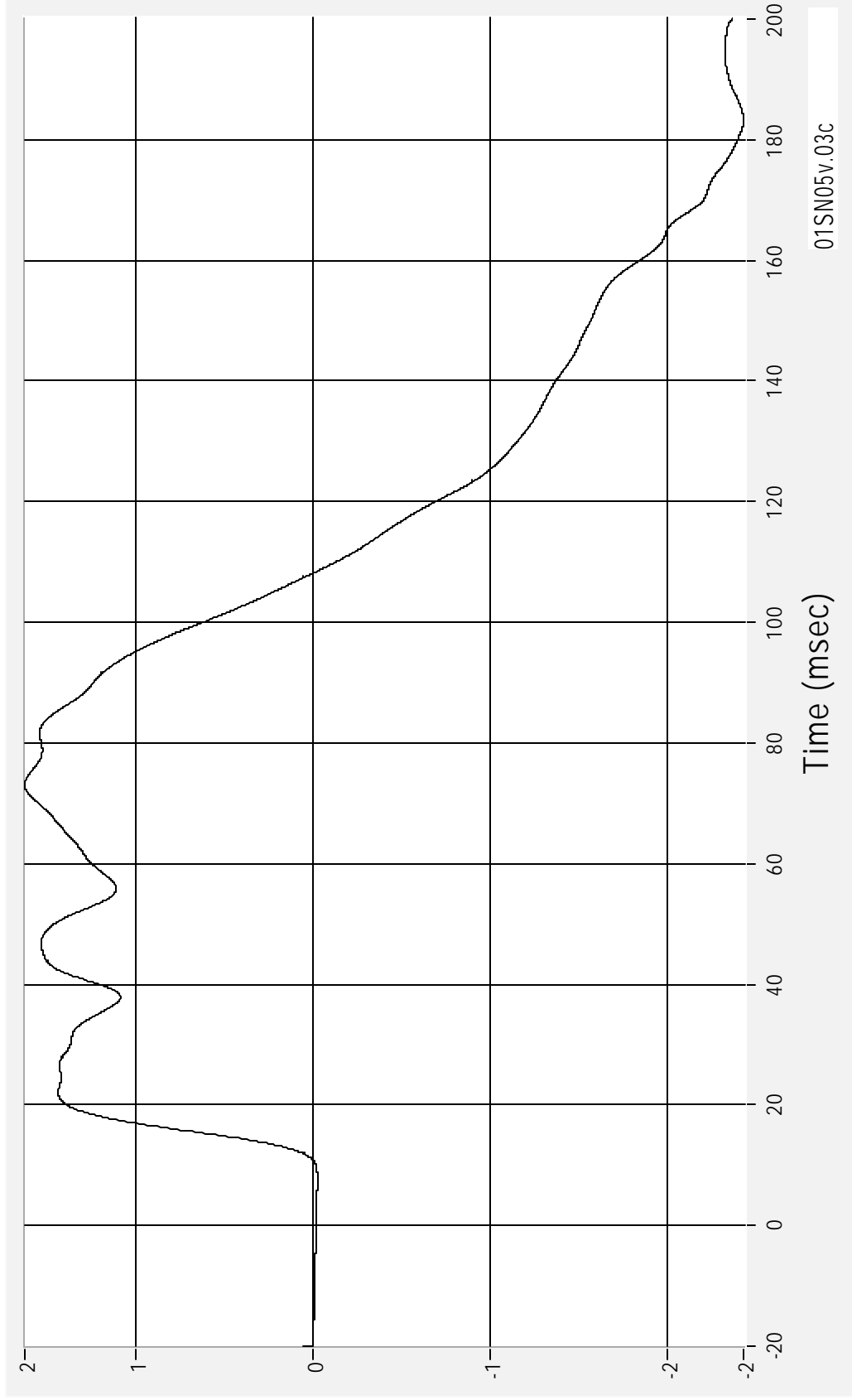
01SN05v.03c

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14 March 2001

Max 1.6 kph at 73.0 msec  
Min -2.4 kph at 183.2 msec

Right Side Sill at Front Seat Z Velocity  
CFC 180



01SN05v.03c

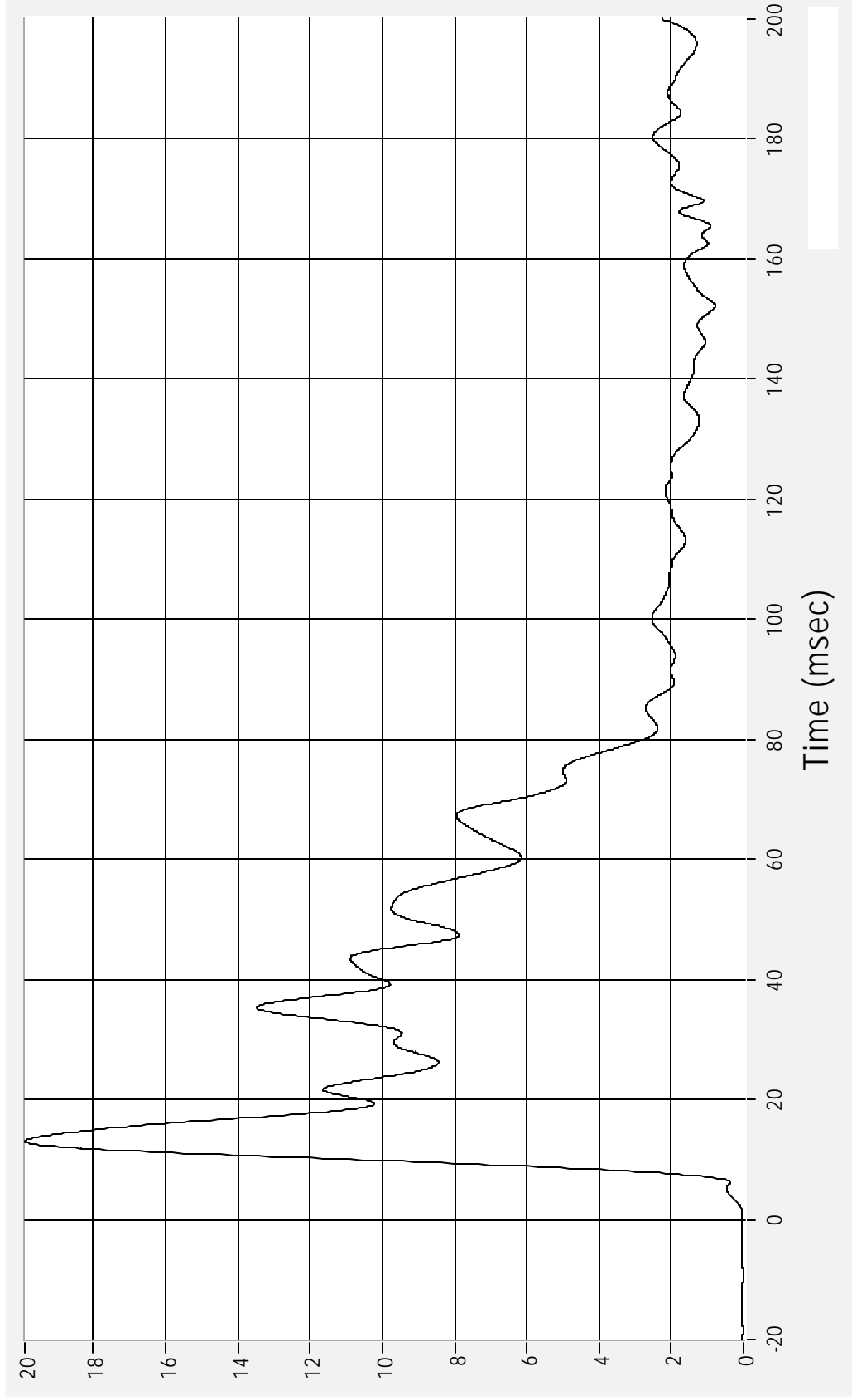
Medical College of Wisconsin  
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14 March 2001

Right Side Sill at Front Seat - Resultant

Acceleration (G's) CFC 60

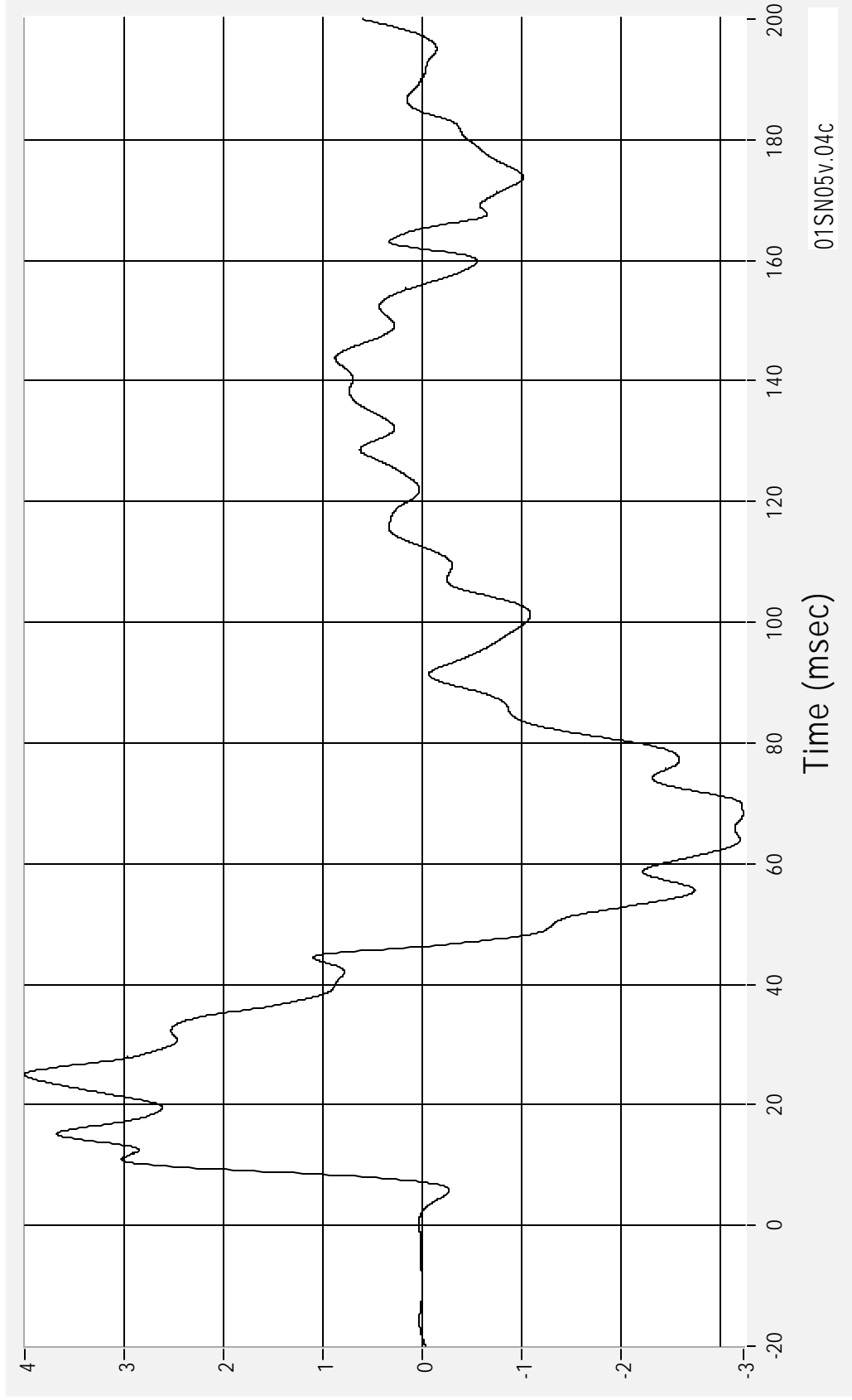
Max 19.9 G's at 13.0 msec  
Min 0.0 G's at 1.4 msec



Right Side Sill at Rear Seat X Acceleration

Acceleration (G's) CFC 60

Max 4.0 G's at 25.0 msec  
Min -3.2 G's at 68.2 msec

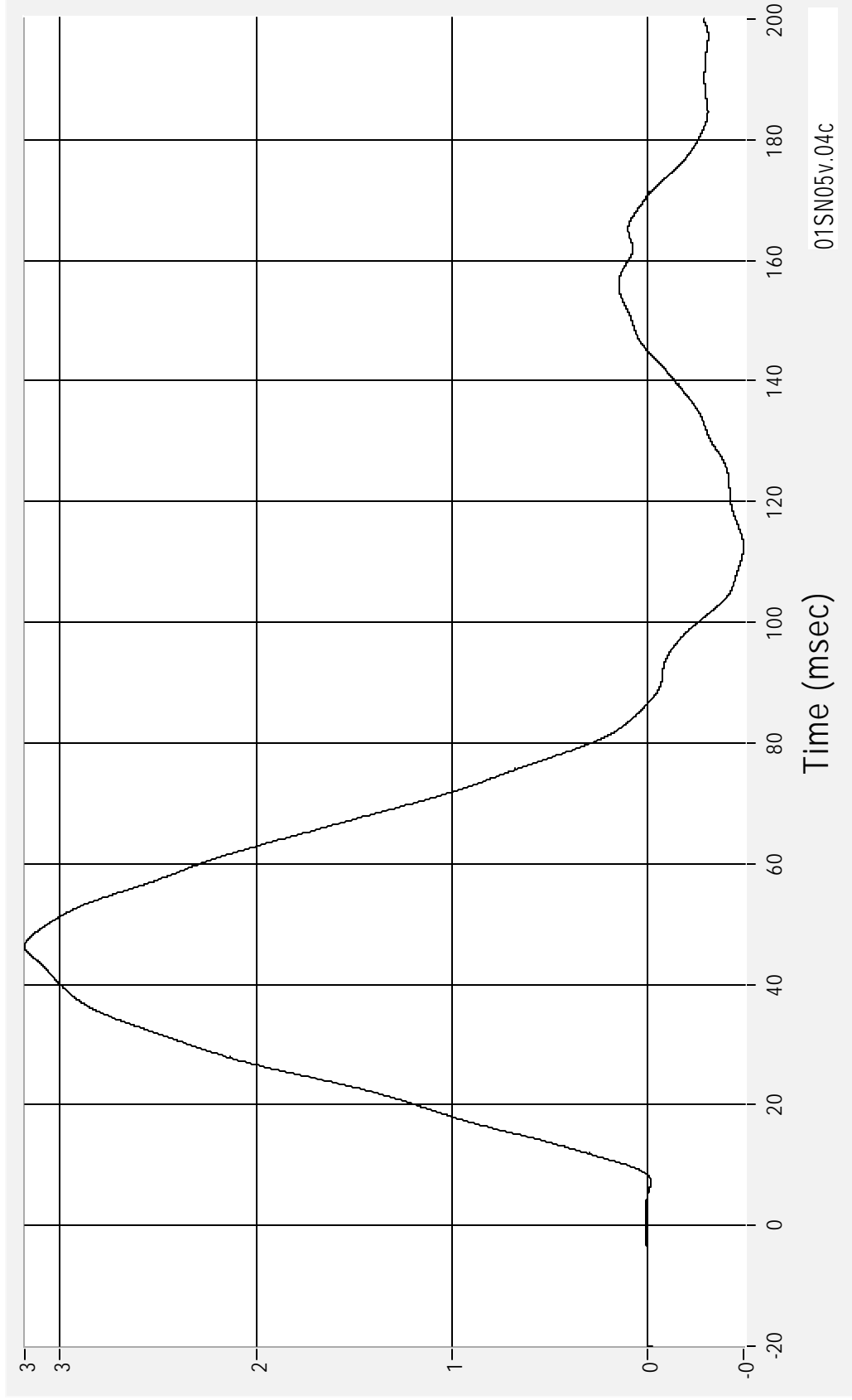


01SN05v.04c

Right Side Sill at Rear Seat X Velocity

Velocity (kph) CFC 180

Max 3.2 kph at 46.3 msec  
Min -0.5 kph at 112.5 msec

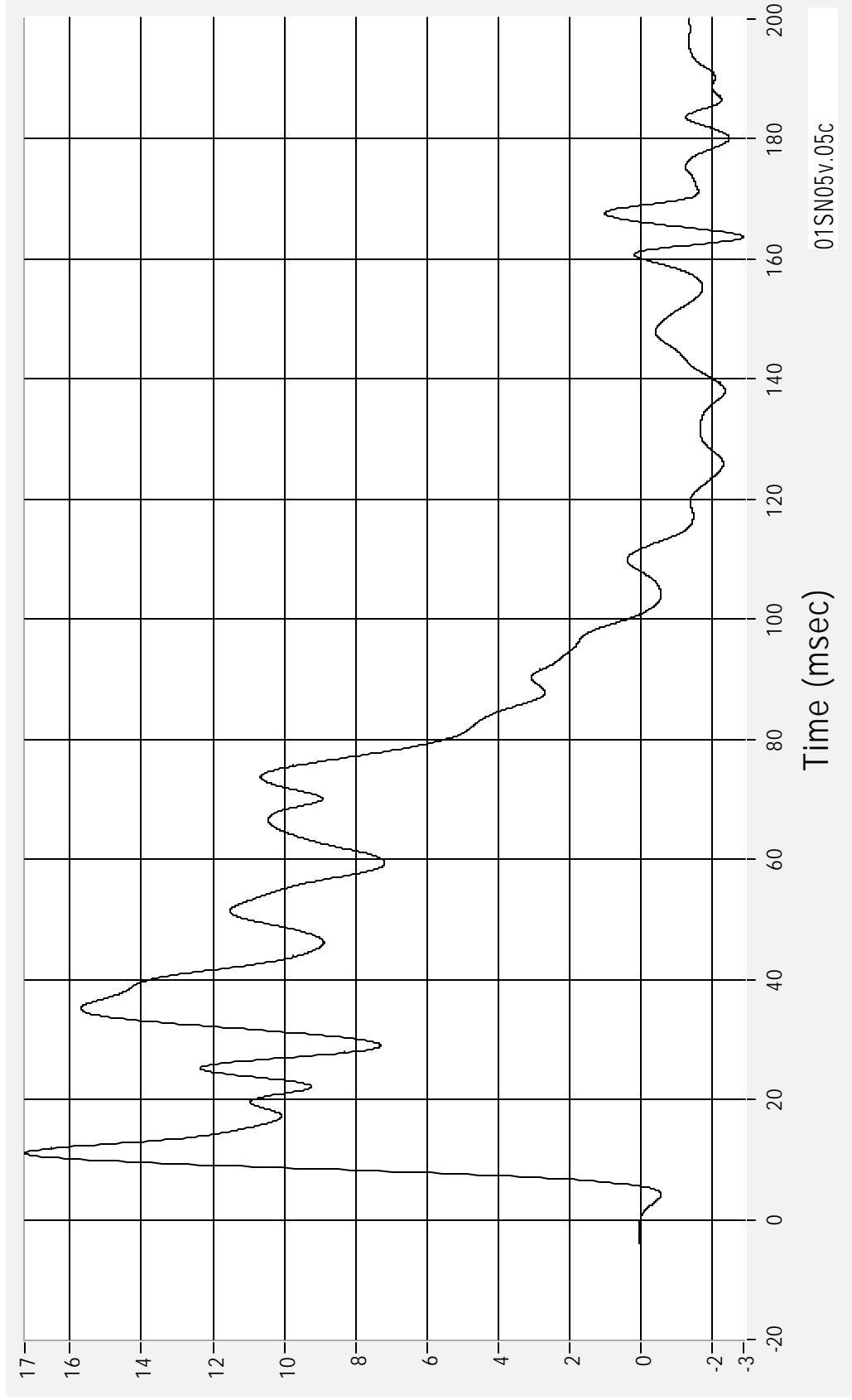


01SN05v.04c

Right Side Sill at Rear Seat Y Acceleration

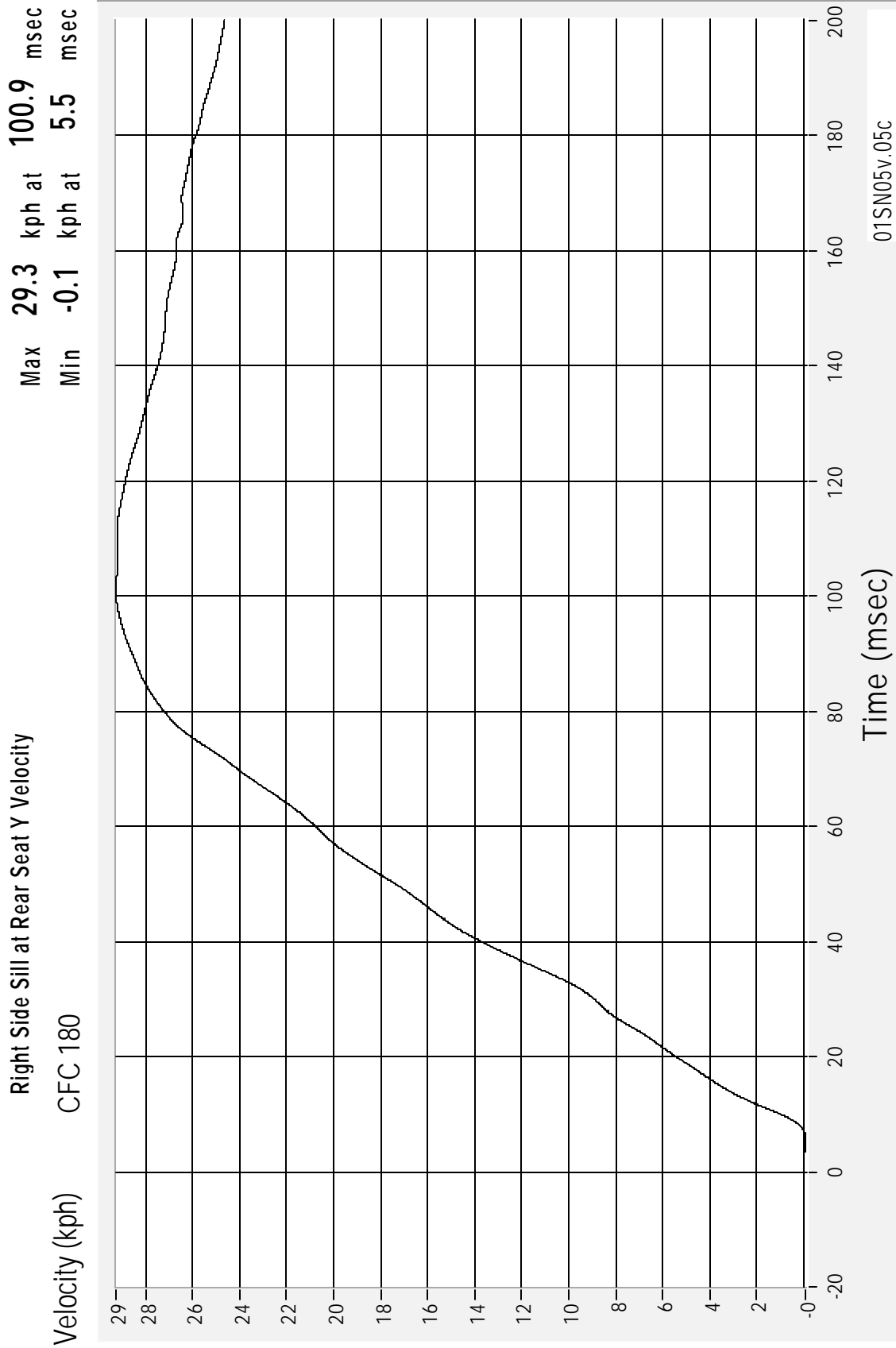
Max 17.3 G's at 11.0 msec  
Min -2.9 G's at 163.7 msec

Acceleration (G's) CFC 60



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14 March 2001

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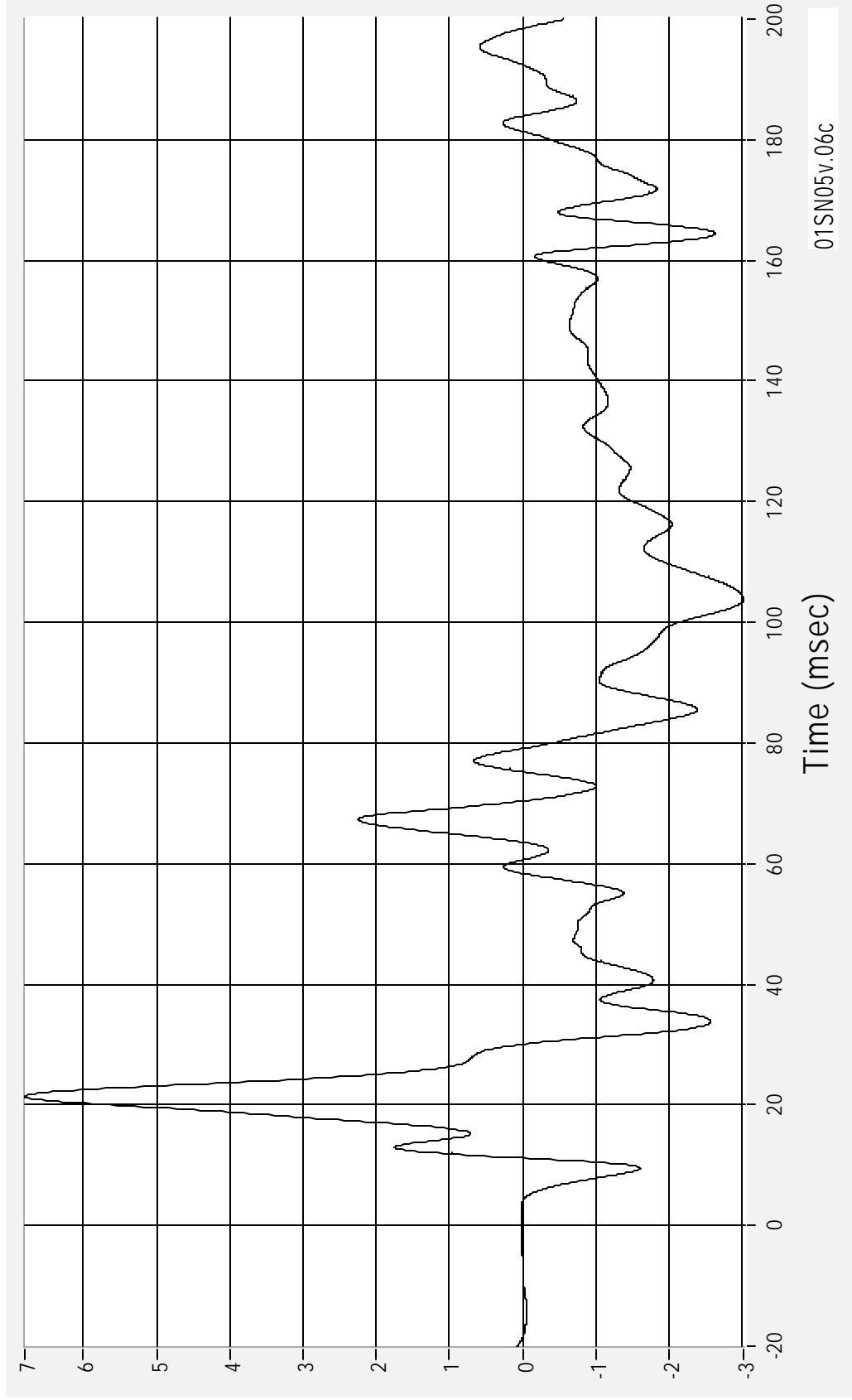
01SN05 - 2001 Buick Century  
14 March 2001

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Right Side Sill at Rear Seat Z Acceleration

Acceleration (G's) CFC 60

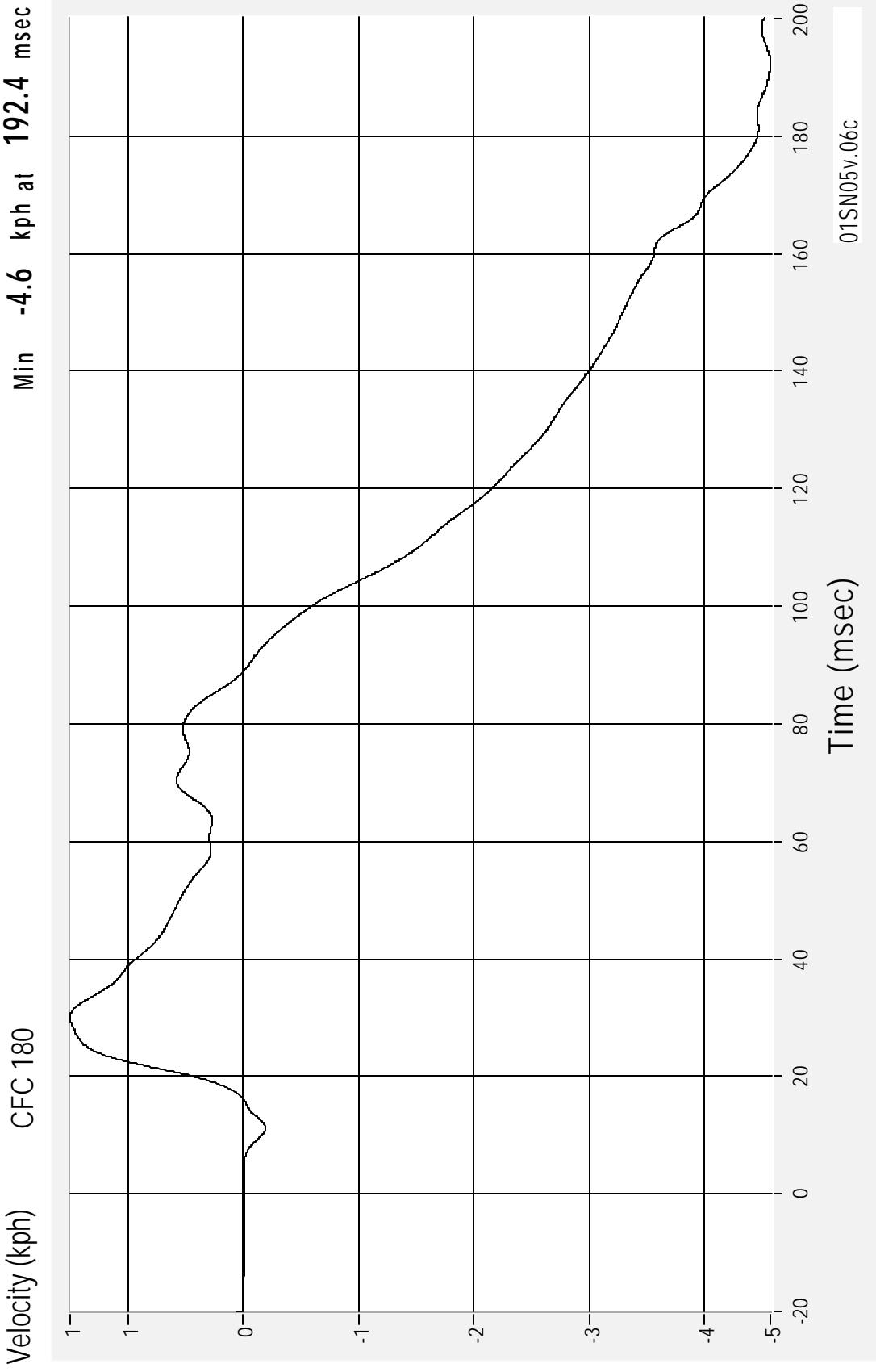
Max 6.8 G's at 21.4 msec  
Min -3.0 G's at 103.8 msec



01SN05v.06c

Right Side Sill at Rear Seat Z Velocity  
CFC 180

Max 1.5 kph at 30.0 msec  
Min -4.6 kph at 192.4 msec



01SN05v.06c

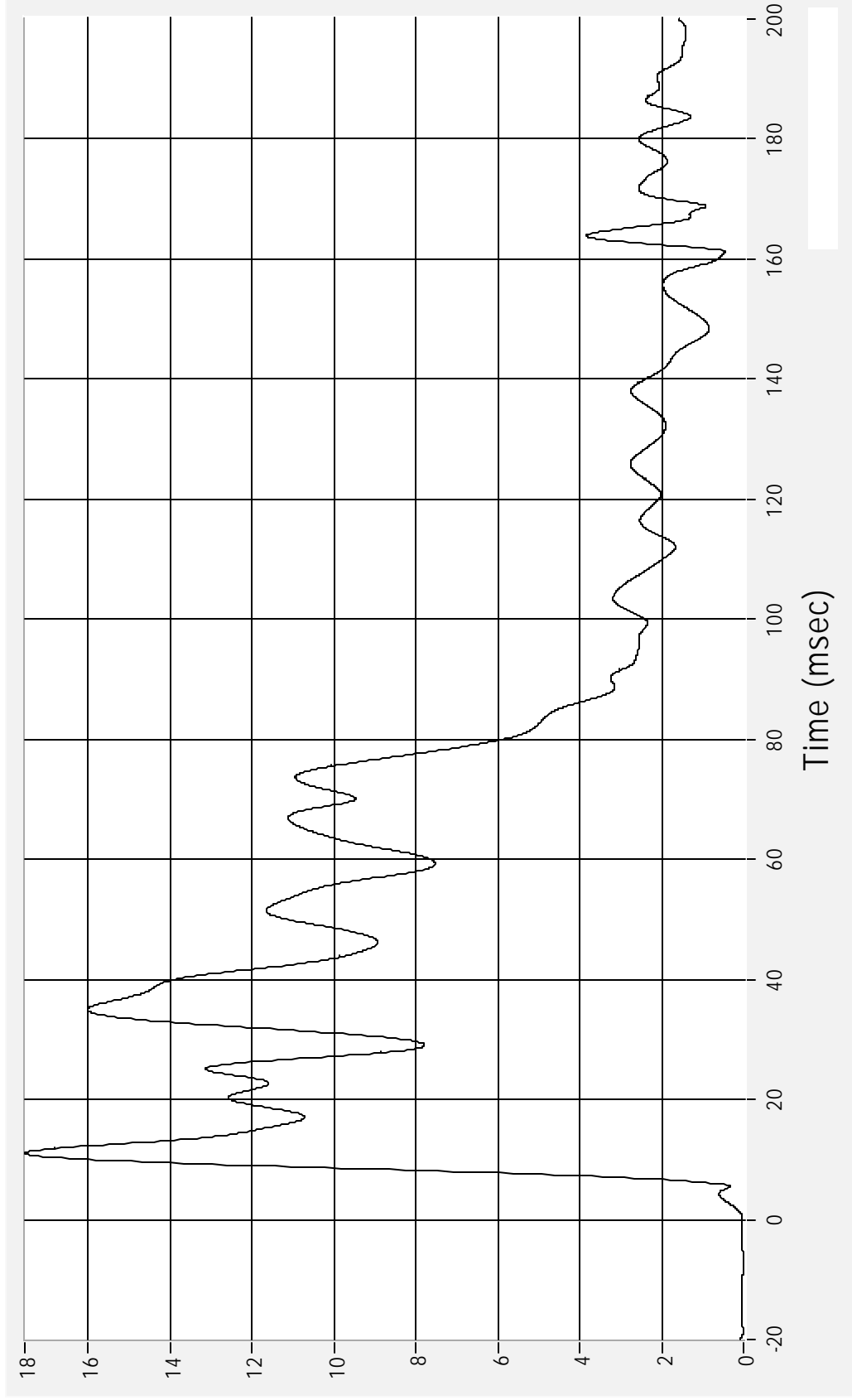
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14 March 2001

Right Side Sill at Rear Seat - Resultant

Acceleration (G's) CFC 60

Max 17.5 G's at 11.0 msec  
Min 0.0 G's at 0.2 msec



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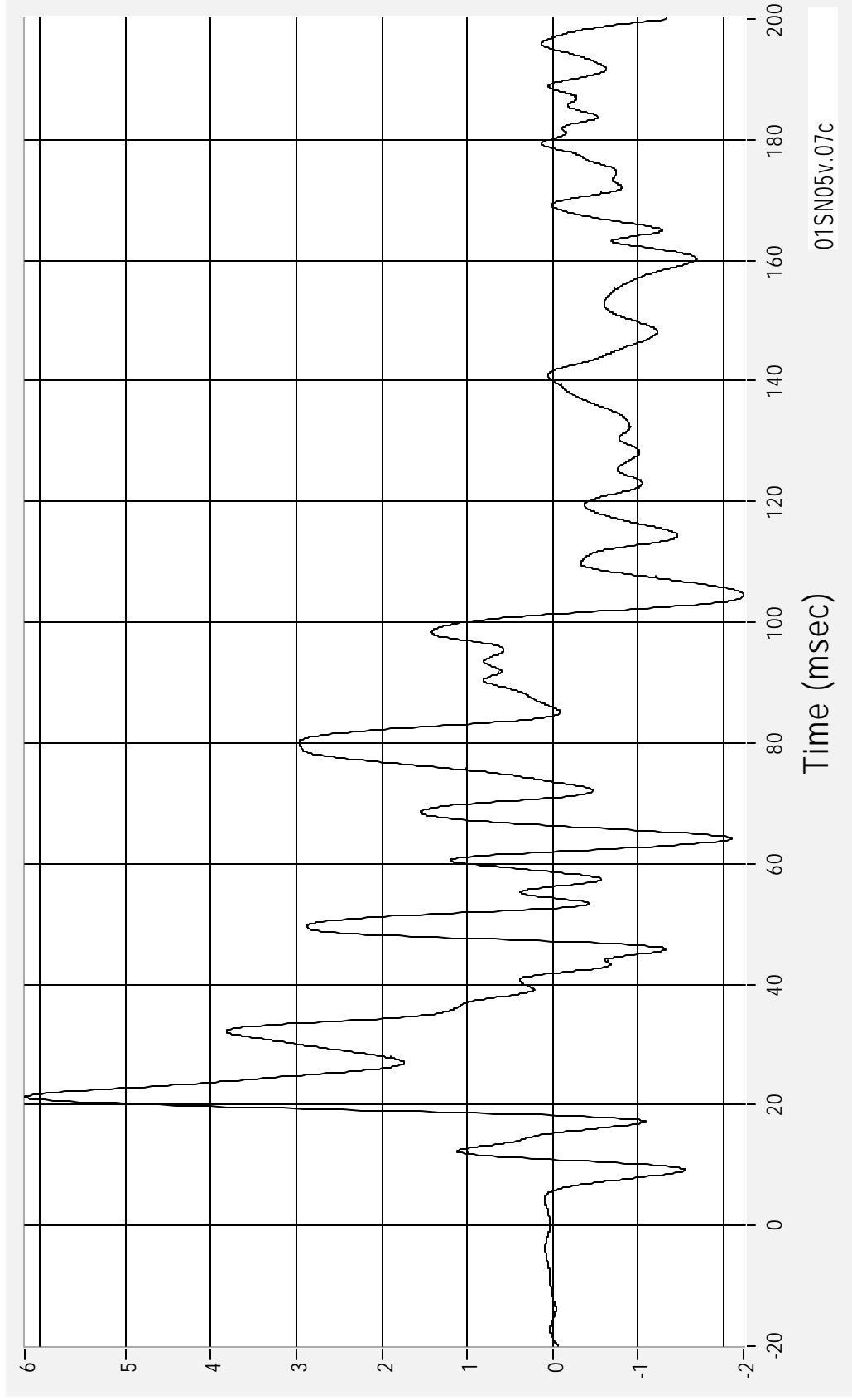
14 March 2001

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Rear Floorpan Above Axle X Acceleration

Max 6.2 G's at 21.4 msec  
Min -2.2 G's at 104.6 msec

Acceleration (G's) CFC 60



01SN05v.07c

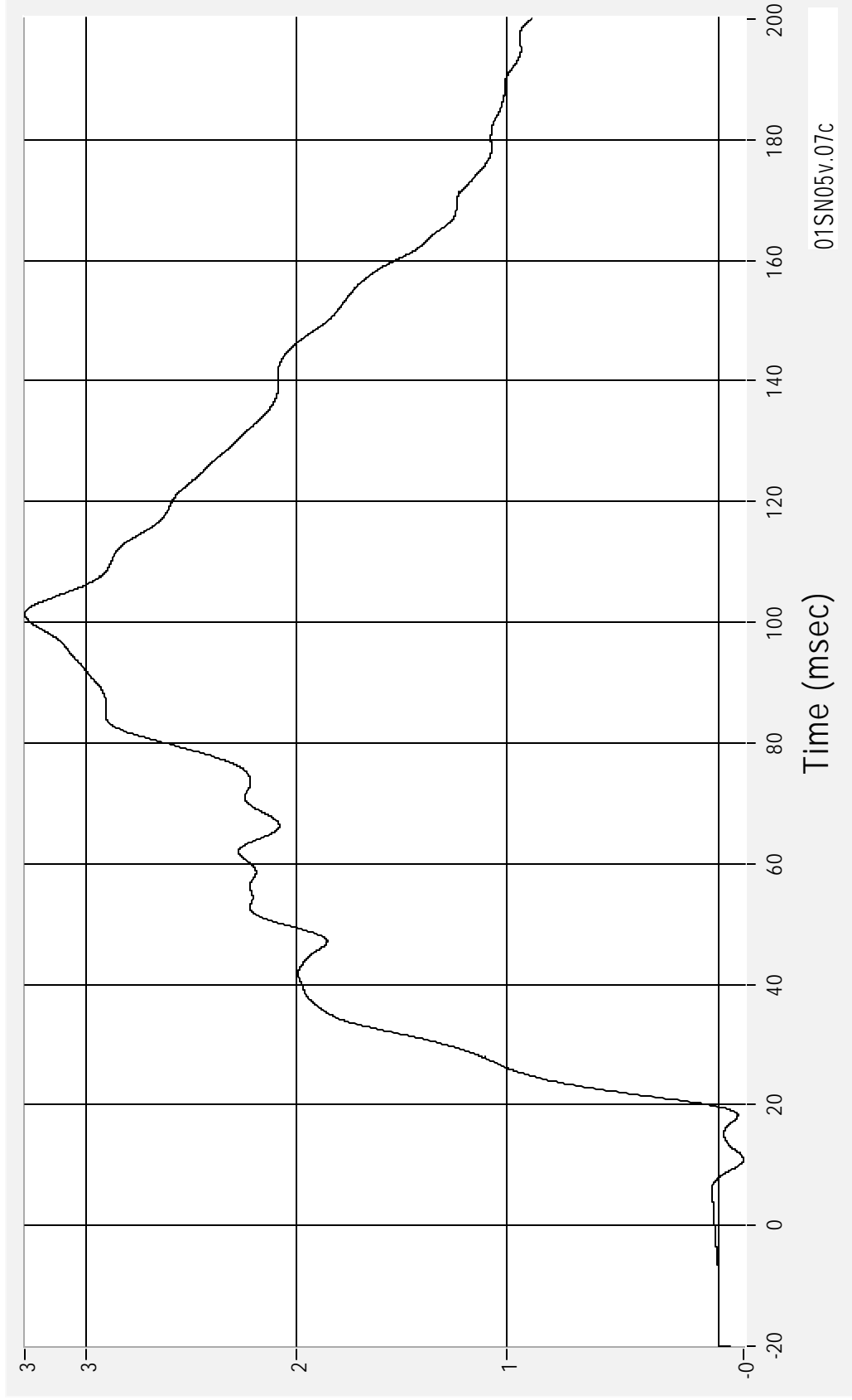
Medical College of Wisconsin  
Vehicle Crashworthiness Lab

01SN05 - 2001 Buick Century  
14 March 2001

Rear Floorpan Above Axle X Velocity

Velocity (kph) CFC 180

Max 3.3 kph at 101.4 msec  
Min -0.1 kph at 11.0 msec



01SN05v.07c

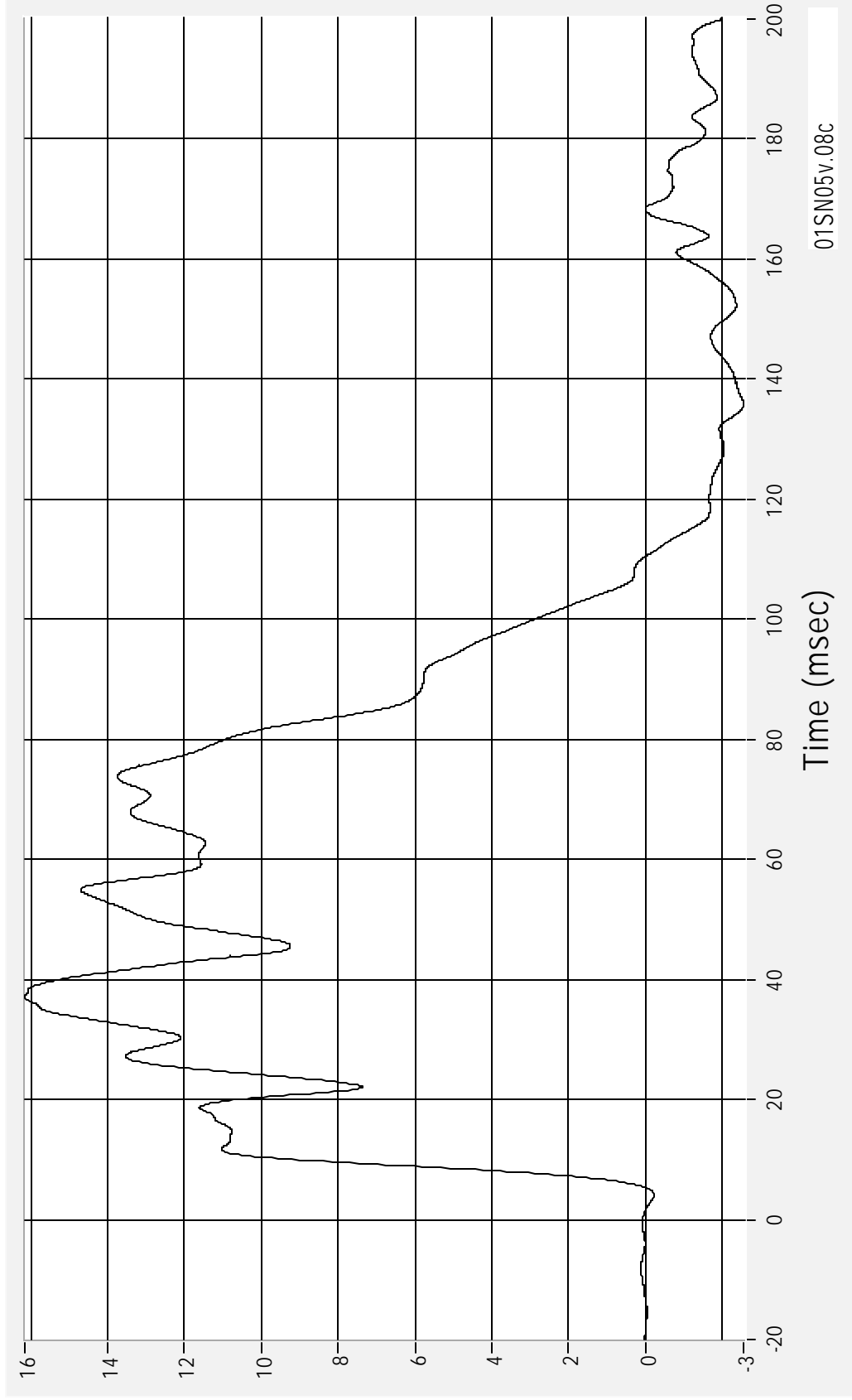
Medical College of Wisconsin  
Vehicle Crashworthiness Lab

01SN05 - 2001 Buick Century  
14 March 2001

Rear Floorpan Above Axle Y Acceleration

Max 16.2 G's at 37.0 msec  
Min -2.6 G's at 135.7 msec

Acceleration (G's) CFC 60



01SN05v.08c

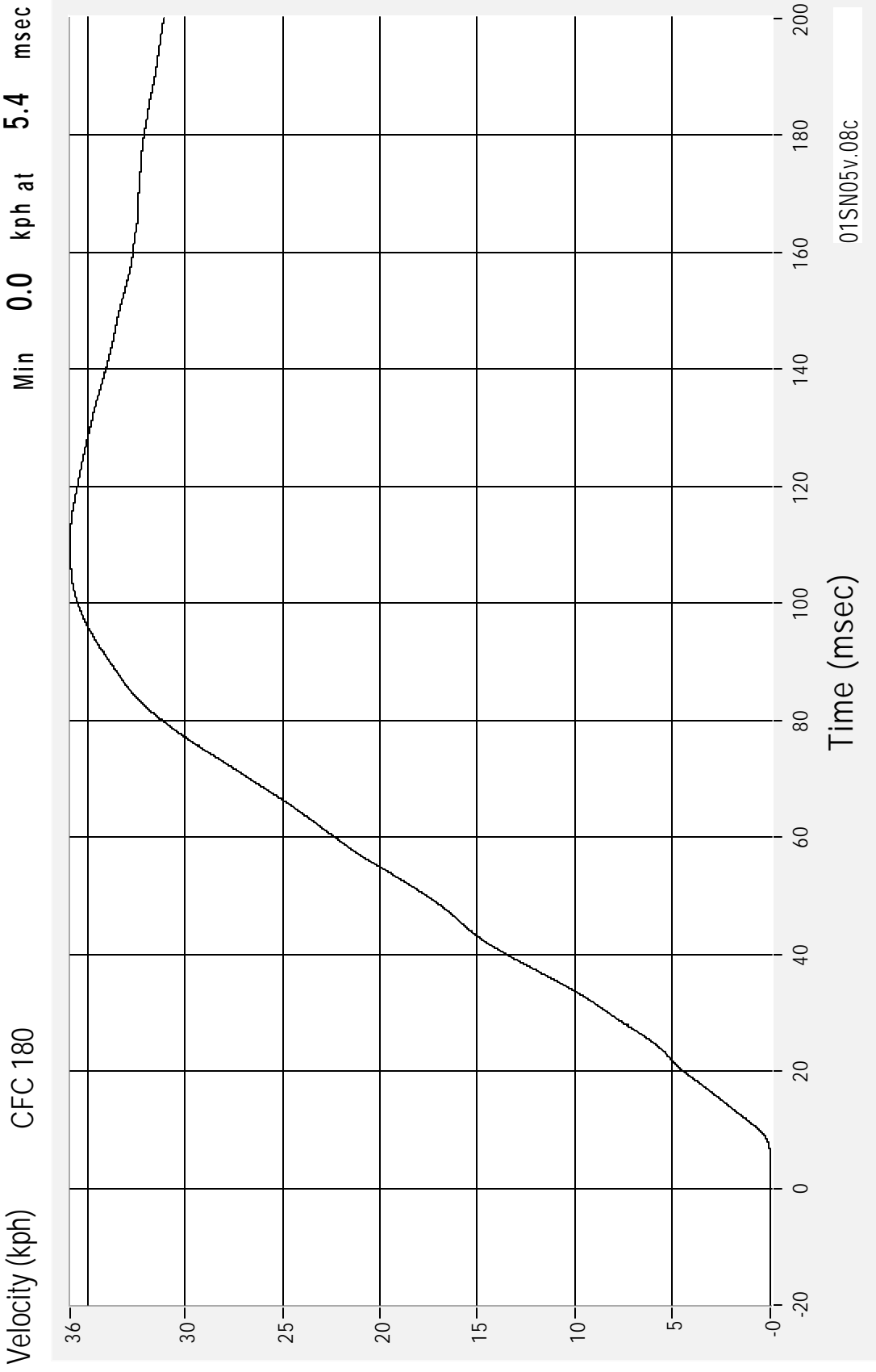
Medical College of Wisconsin  
Vehicle Crashworthiness Lab

01SN05 - 2001 Buick Century  
14 March 2001

Rear Floorpan Above Axle Y Velocity

Velocity (kph)

Max 35.9 kph at 110.5 msec  
Min 0.0 kph at 5.4 msec



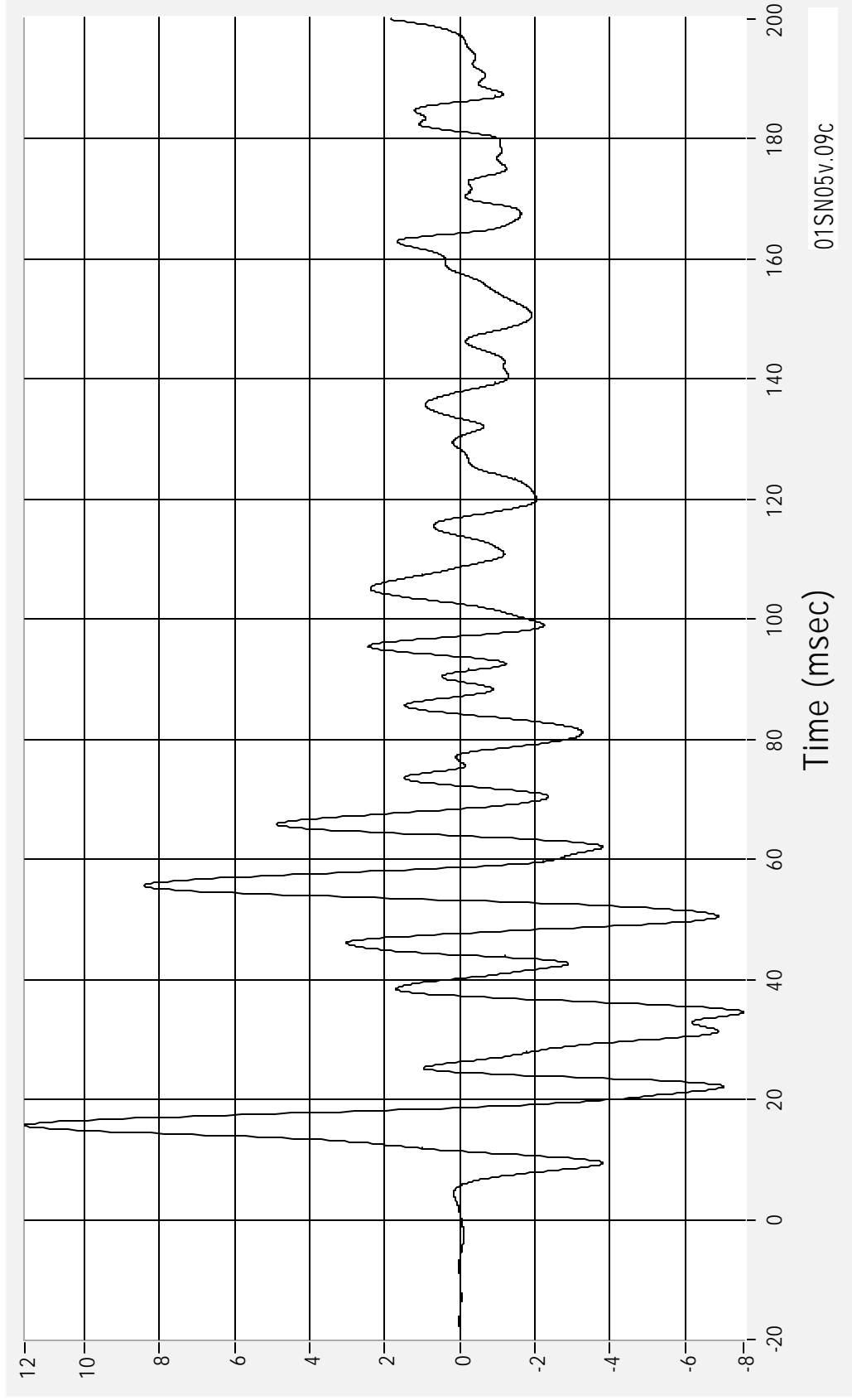
Time (msec)

01SN05v.08c

Rear Floorpan Above Axle Z Acceleration

Acceleration (G's) CFC 60

Max 11.6 G's at 15.7 msec  
Min -7.6 G's at 34.6 msec

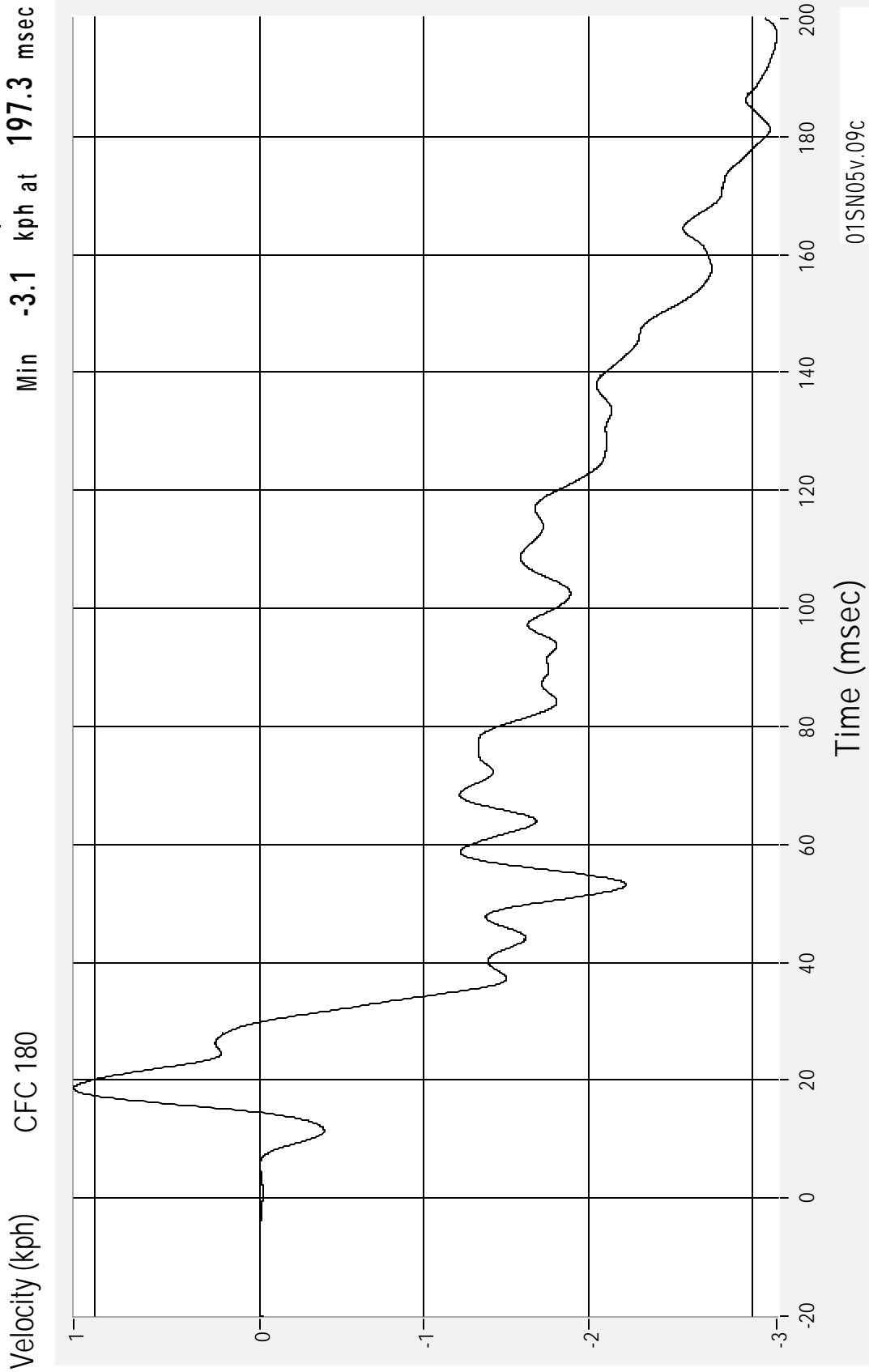


01SN05 - 2001 Buick Century

14 March 2001

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Rear Floorpan Above Axle Z Velocity



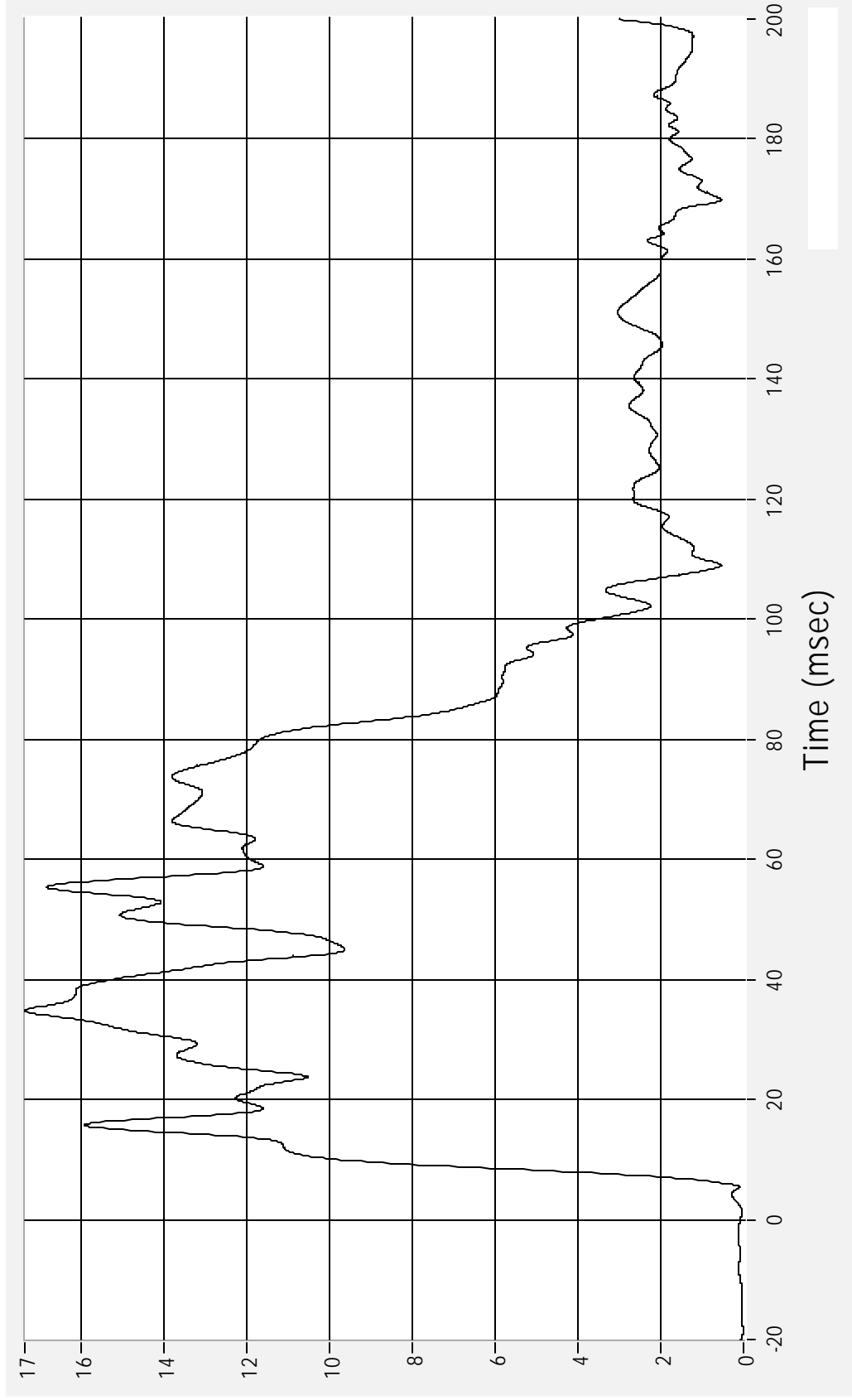
01SN05 - 2001 Buick Century  
14 March 2001

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Rear Floorpan Above Axle - Resultant

Acceleration (G's) CFC 60

Max 17.4 G's at 34.8 msec  
Min 0.1 G's at 1.4 msec



01SN05 - 2001 Buick Century

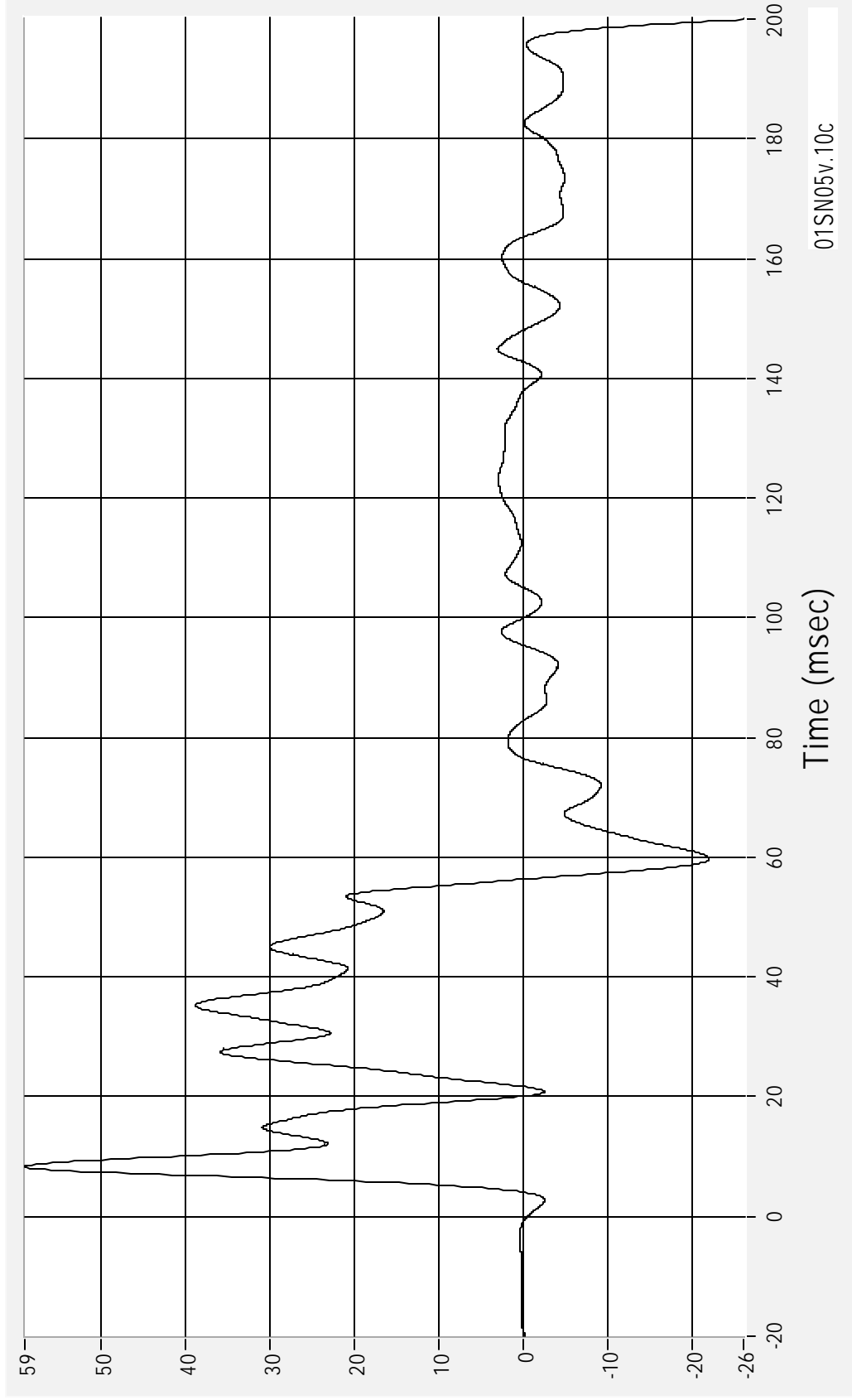
14 March 2001

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Left Side Sill at Rear Seat Y Acceleration

Max 58.9 G's at 8.3 msec  
Min -26.2 G's at 199.9 msec

Acceleration (G's) CFC 60



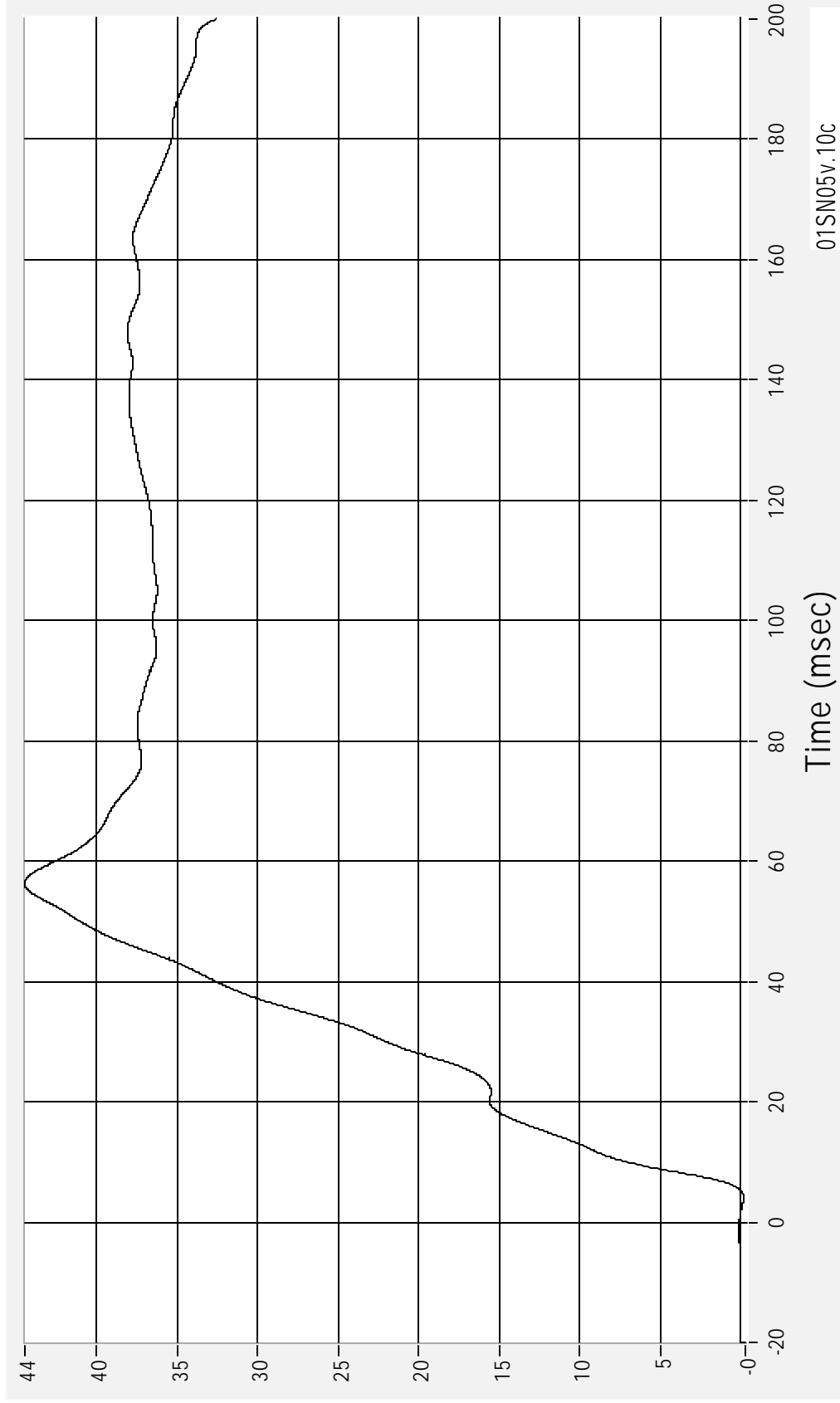
01SN05 - 2001 Buick Century  
14 March 2001

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Left Side Sill at Rear Seat Y Velocity

Velocity (kph) CFC 180

Max 44.4 kph at 56.3 msec  
Min -0.2 kph at 4.1 msec

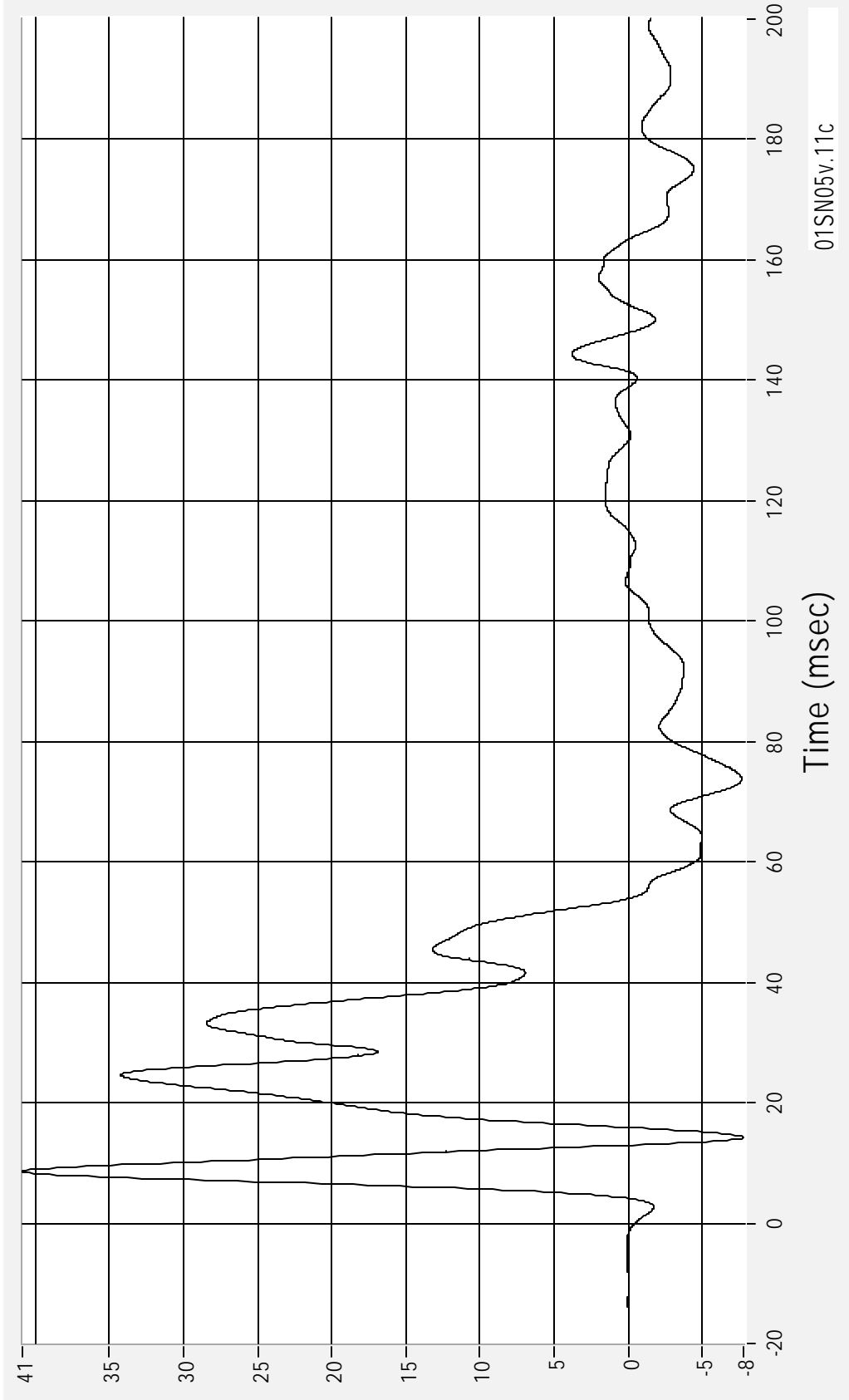


01SN05v.10c

Left Side Sill at Front Seat Y Acceleration

Max 40.9 G's at 8.6 msec  
Min -7.8 G's at 14.2 msec

Acceleration (G's) CFC 60

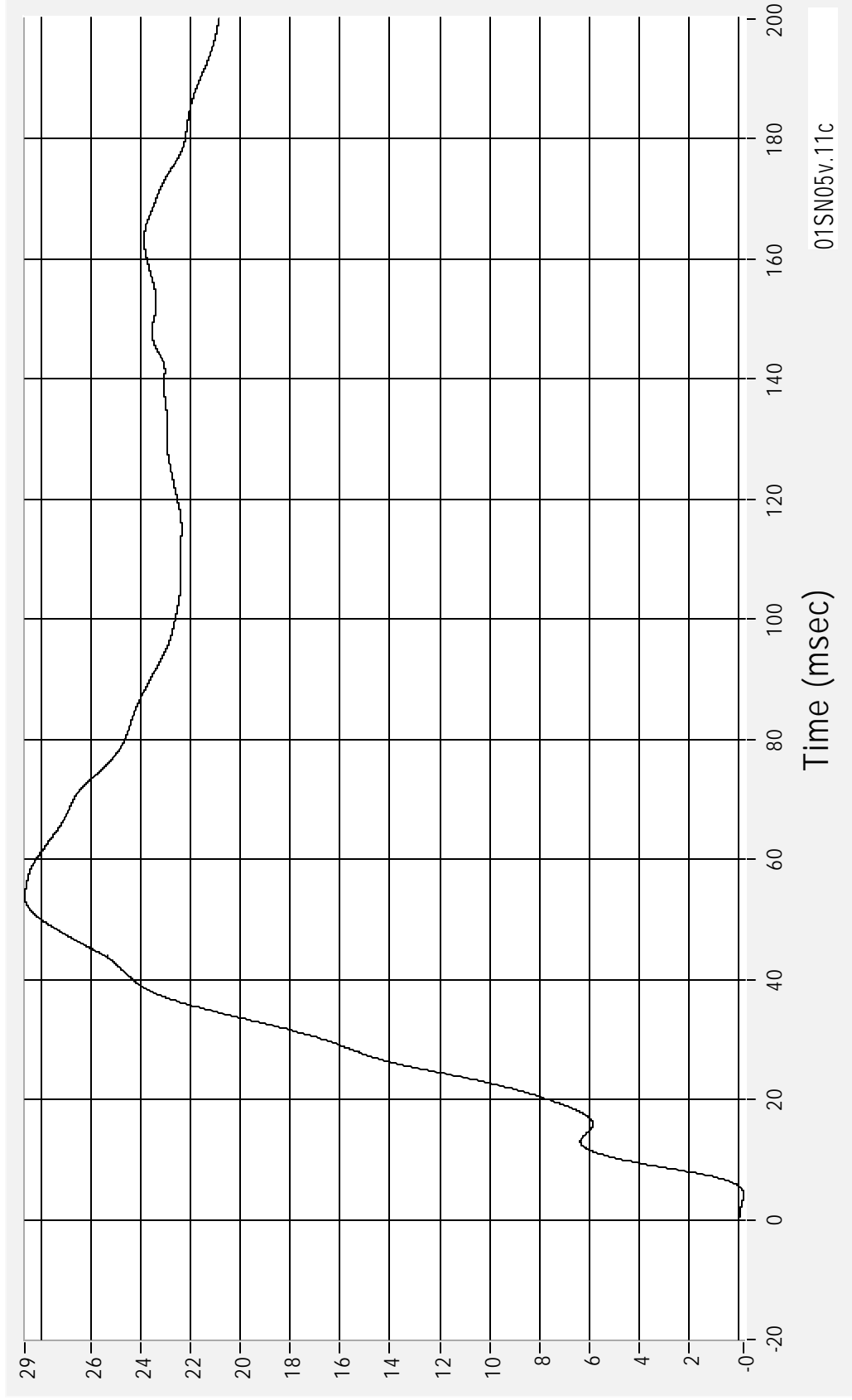


01SN05v.11c

Left Side Sill at Front Seat Y Velocity

Velocity (kph) CFC 180

Max 28.6 kph at 53.9 msec  
Min -0.2 kph at 4.1 msec



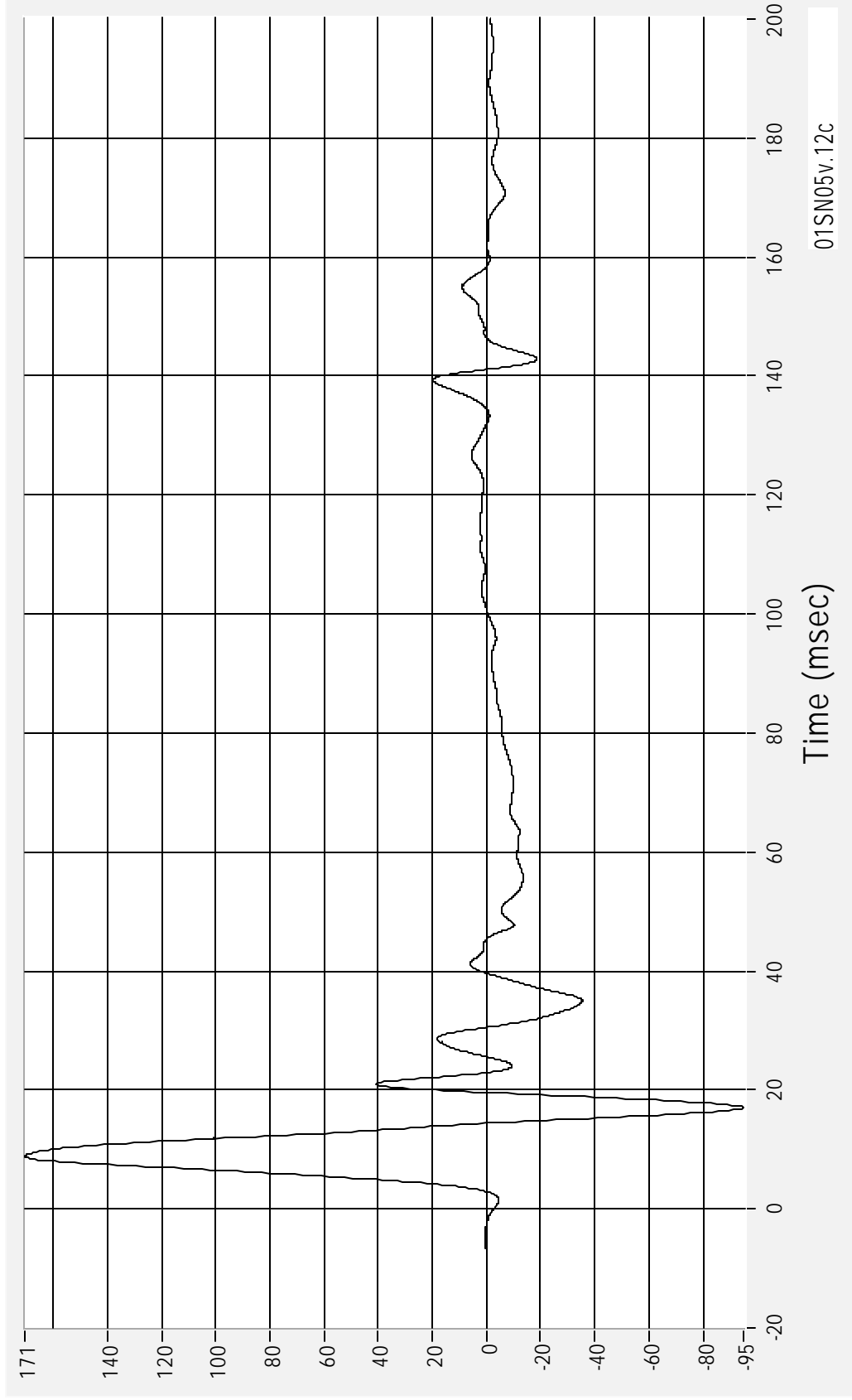
Time (msec)

01SN05v.11c

Left Front Door on Centerline Y Acceleration

Max 170.6 G's at 8.8 msec  
Min -95.0 G's at 17.0 msec

Acceleration (G's) CFC 60



Time (msec)

01SN05v.12c

01SN05 - 2001 Buick Century

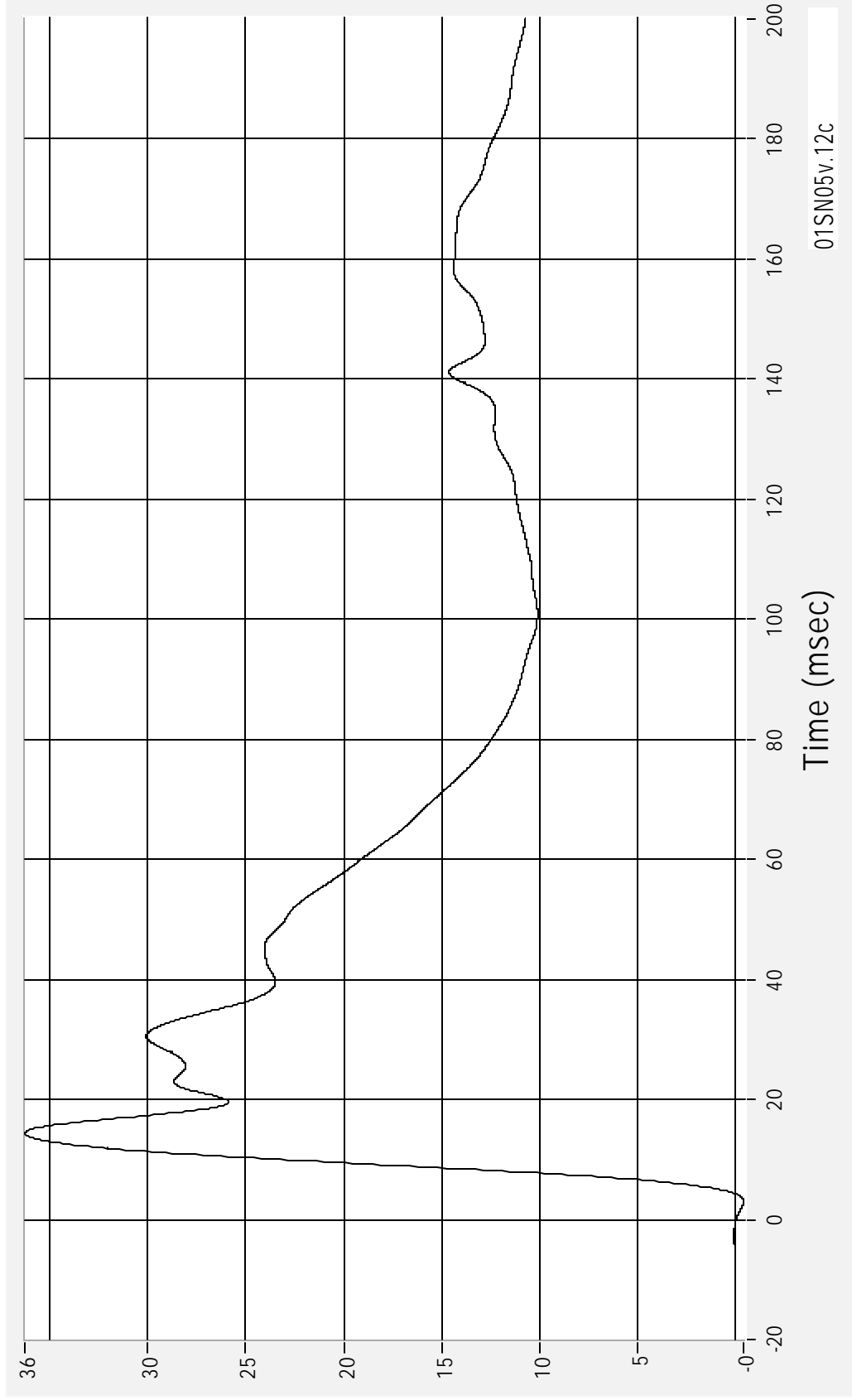
14 March 2001

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Vehicle Crashworthiness Lab

Left Front Door on Centerline Y Velocity

Velocity (kph) CFC 180

Max 36.3 kph at 14.4 msec  
Min -0.4 kph at 3.0 msec



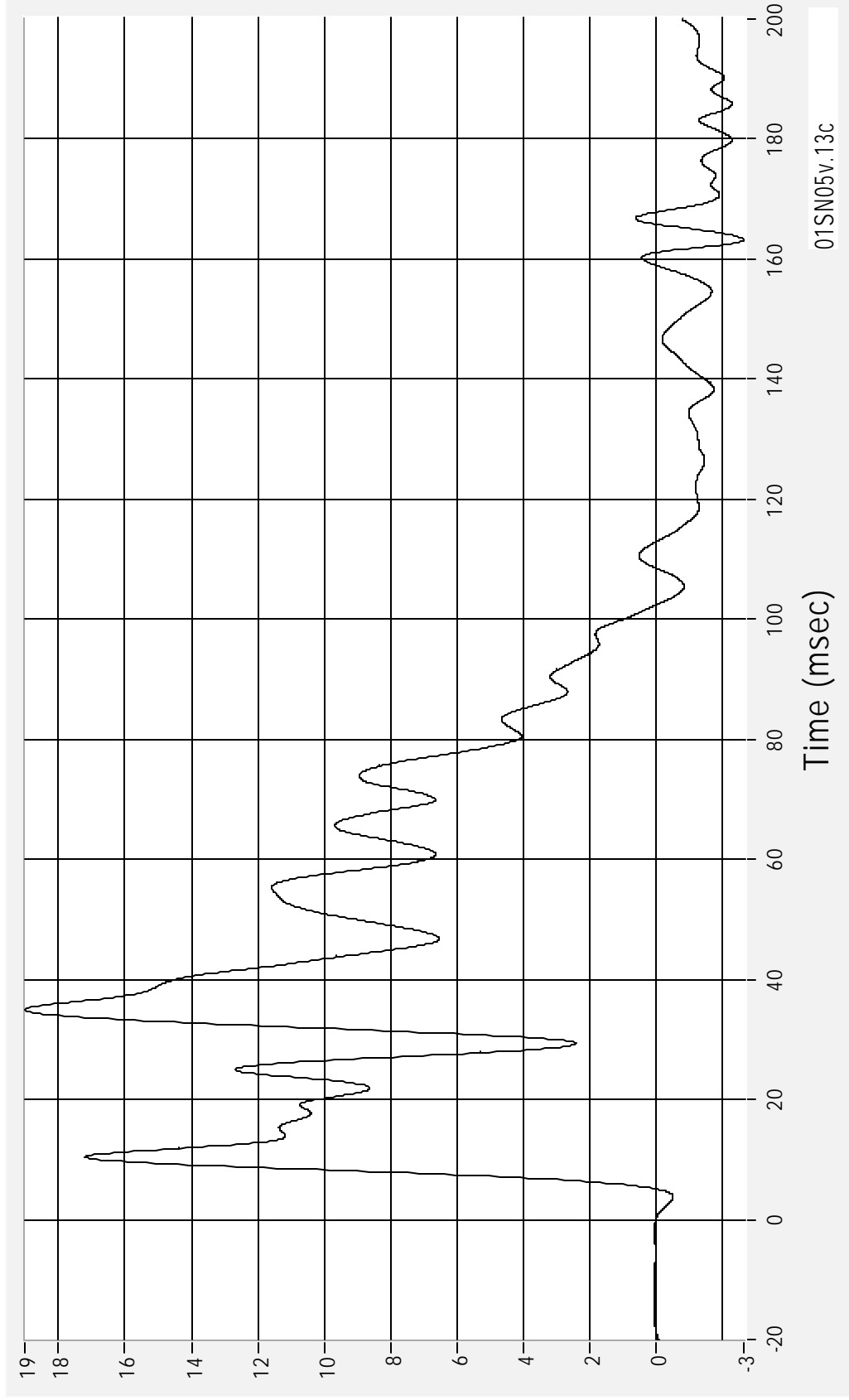
Time (msec)

01SN05v.12c

Right Rear Occupant Compartment Y Acceleration

Max 19.0 G's at 35.0 msec  
Min -2.6 G's at 163.2 msec

Acceleration (G's) CFC 60



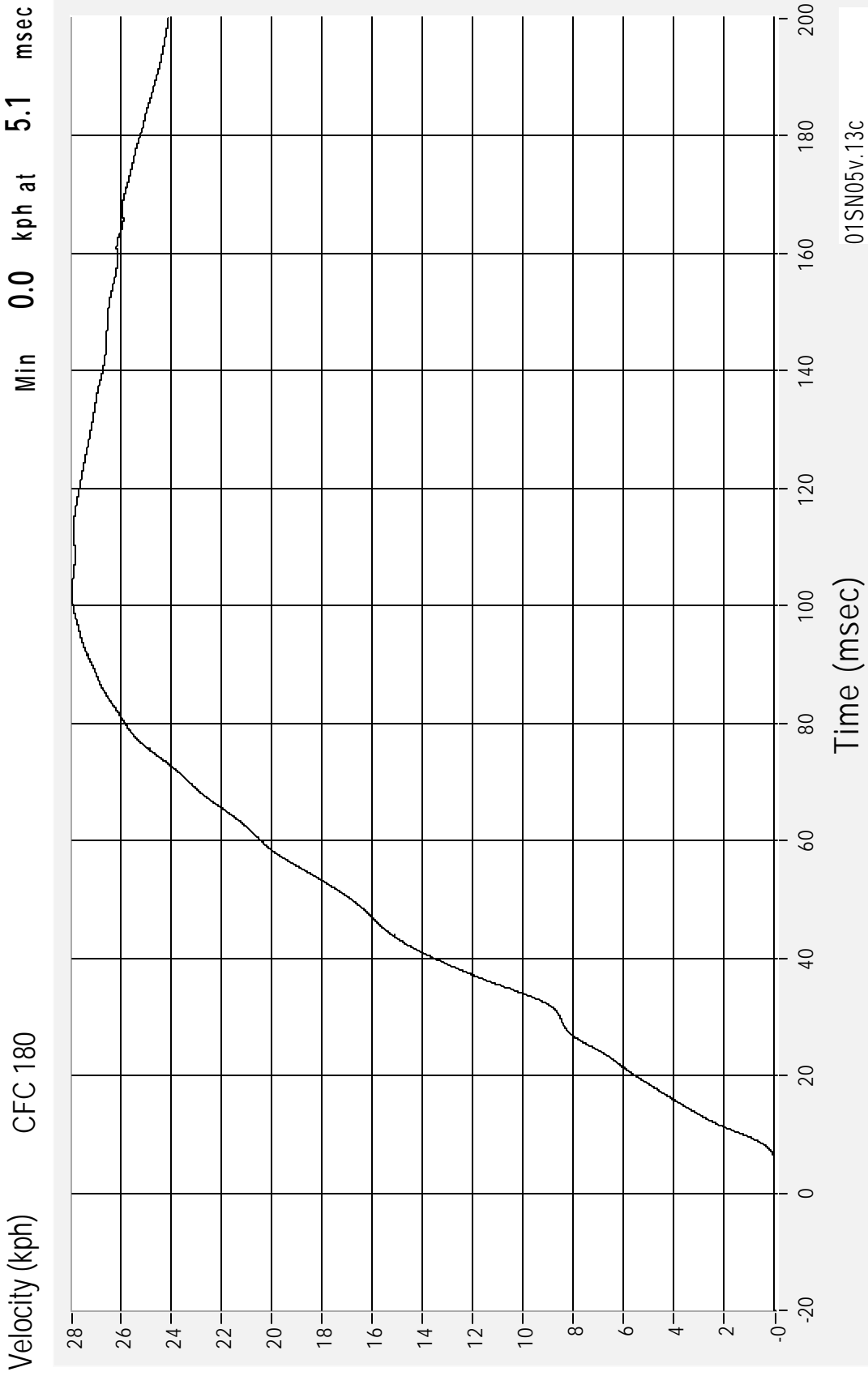
Time (msec)

01SN05v.13c

Right Rear Occupant Compartment Y Velocity

Velocity (kph)

Max 28.0 kph at 102.4 msec  
Min 0.0 kph at 5.1 msec



Time (msec)

01SN05v.13c

01SN05 - 2001 Buick Century

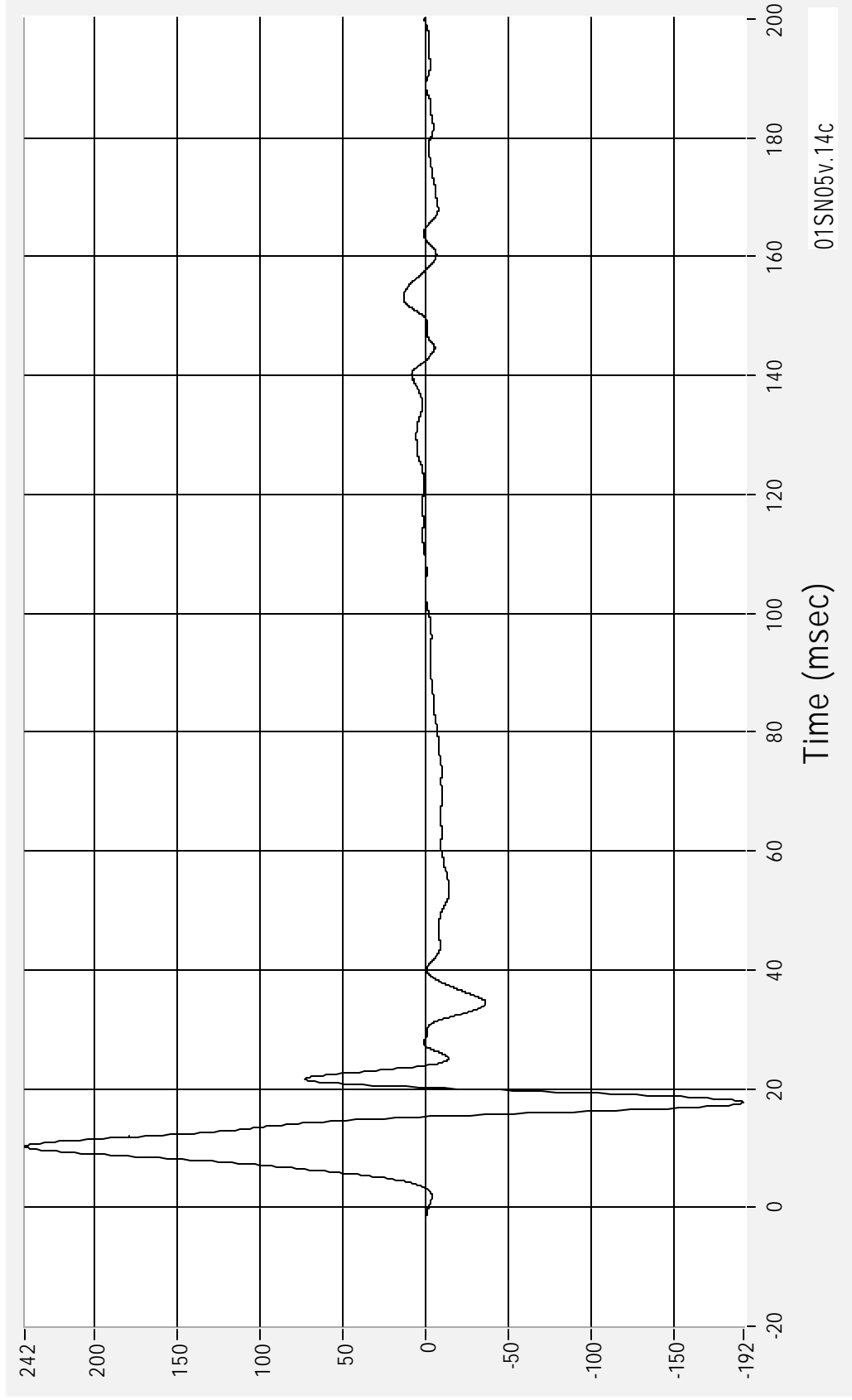
14 March 2001

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Mid Rear of Left Front Door Y Acceleration

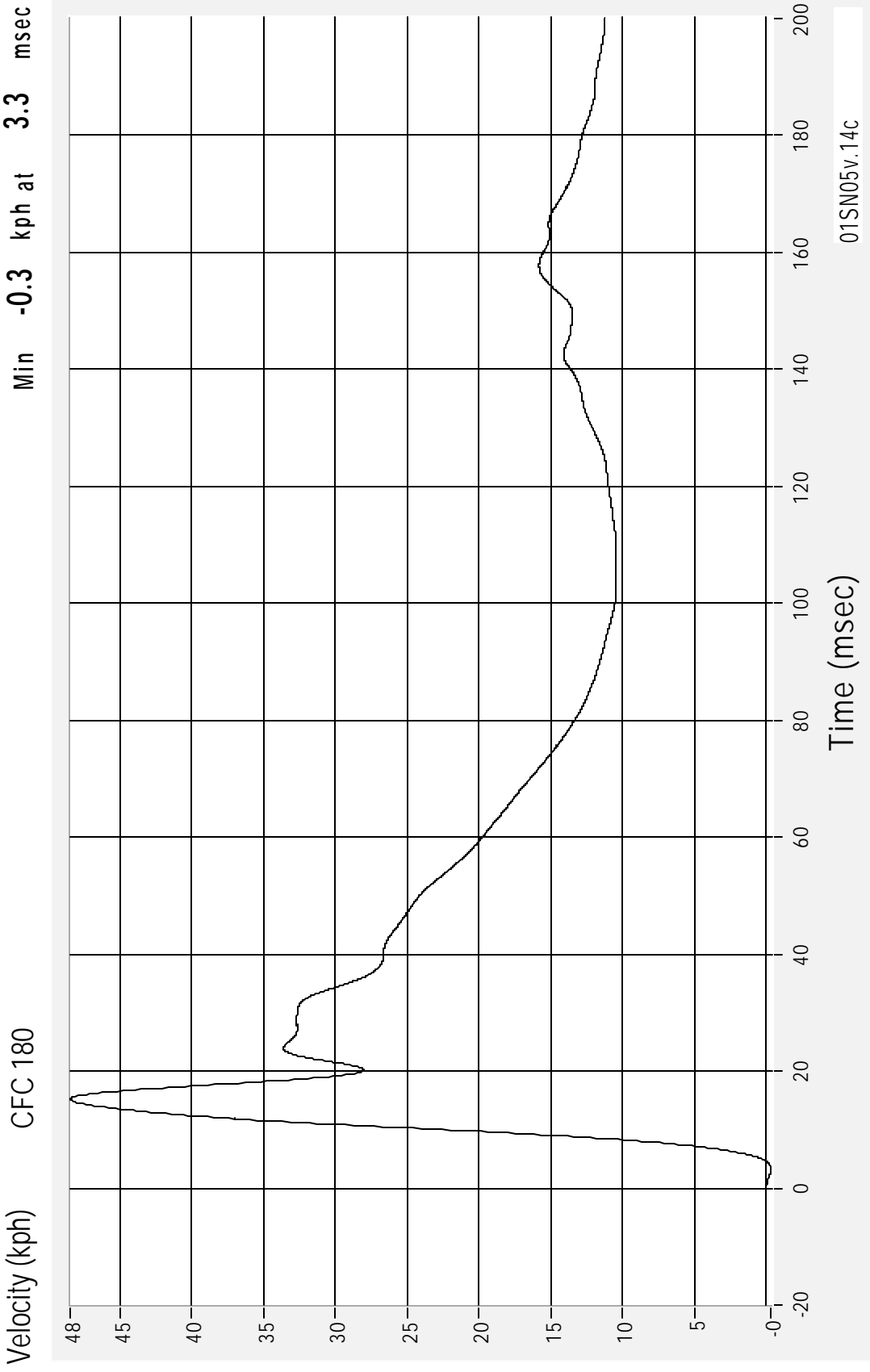
Max 242.4 G's at 10.2 msec  
Min -192.3 G's at 17.7 msec

Acceleration (G's) CFC 60



01SN05v.14c

Mid Rear of Left Front Door Y Velocity



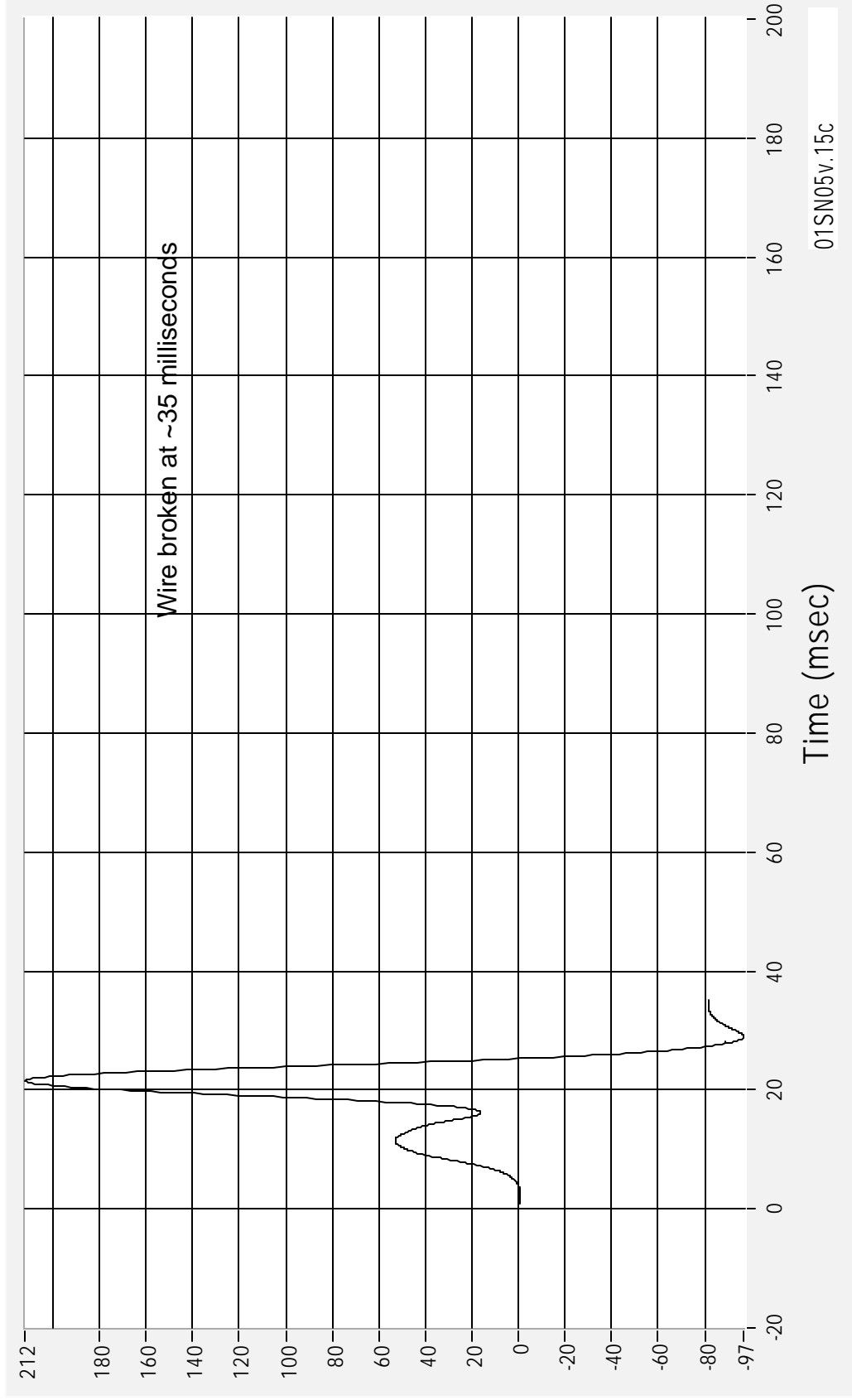
01SN05 - 2001 Buick Century  
14 March 2001

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Left Front Door Upper Centerline Y Acceleration

Acceleration (G's) CFC 60

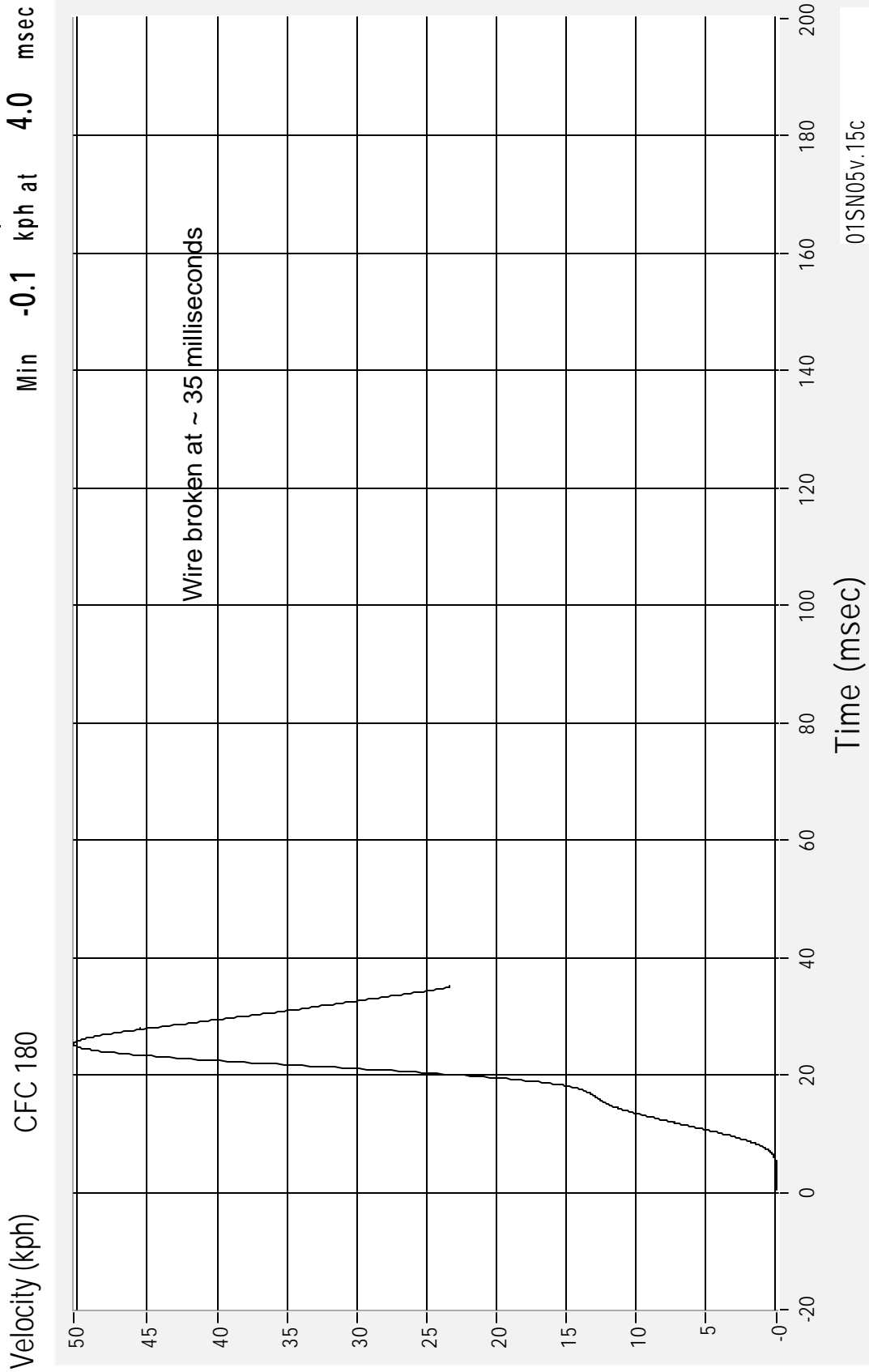
Max 212.1 G's at 21.5 msec  
Min -96.7 G's at 28.9 msec



Time (msec)

01SN05v.15c

Left Front Door Upper Centerline Y Velocity



01SN05 - 2001 Buick Century

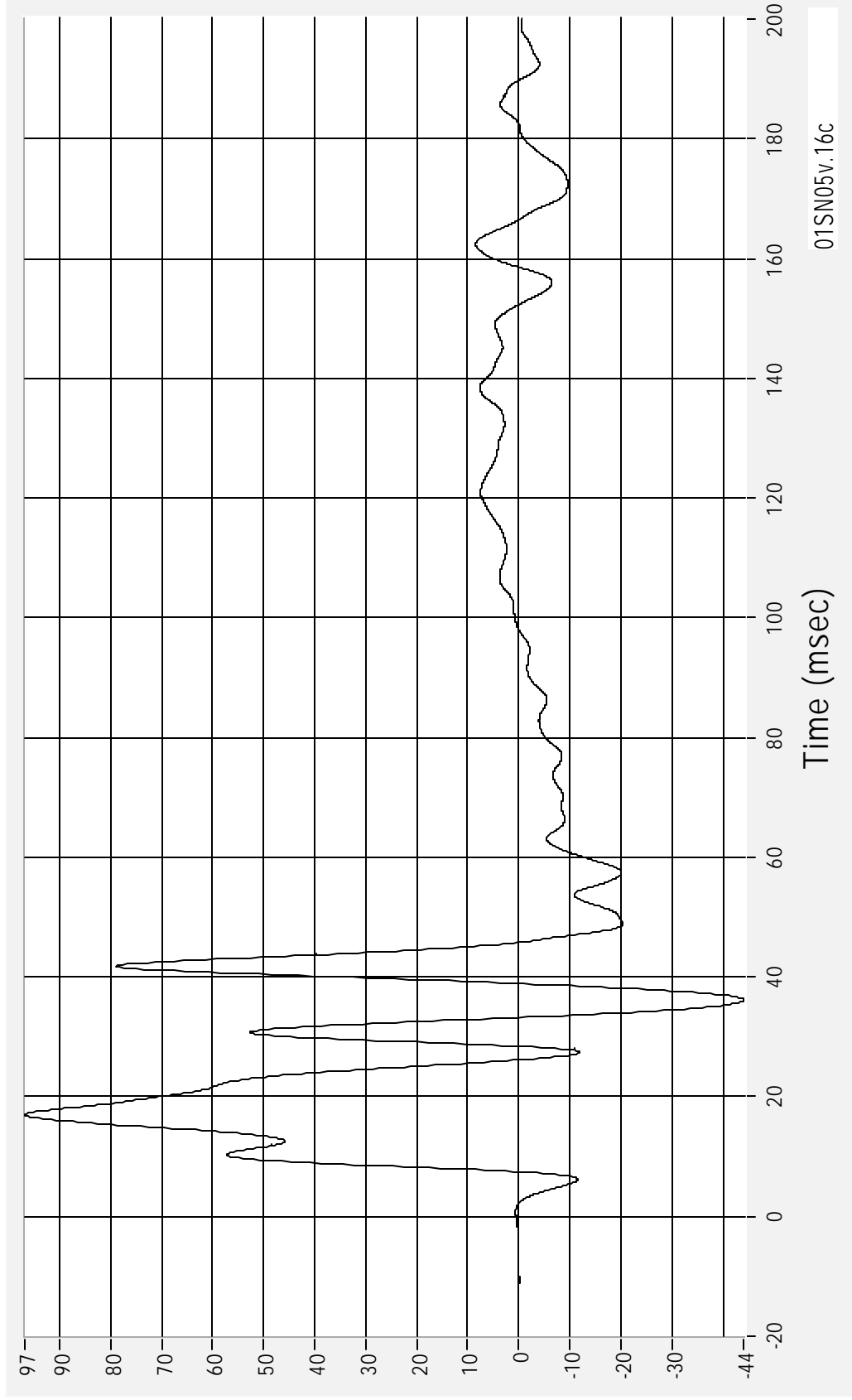
14 March 2001

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Mid Rear of Left Rear Door Y Acceleration

Acceleration (G's) CFC 60

Max 96.8 G's at 17.0 msec  
Min -44.1 G's at 36.2 msec

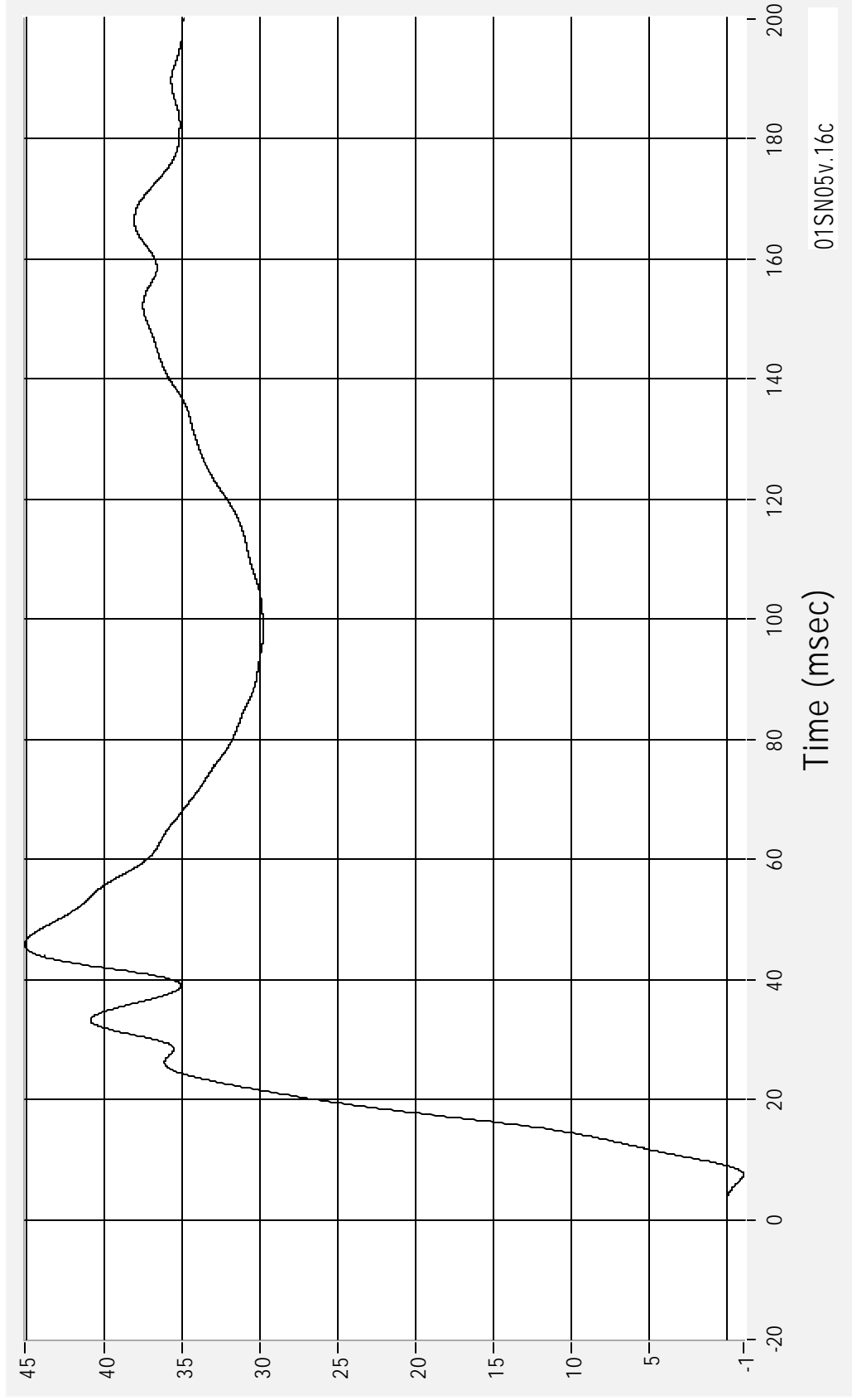


01SN05v.16c

Mid Rear of Left Rear Door Y Velocity

Velocity (kph) CFC 180

Max 45.1 kph at 45.8 msec  
Min -1.0 kph at 7.4 msec



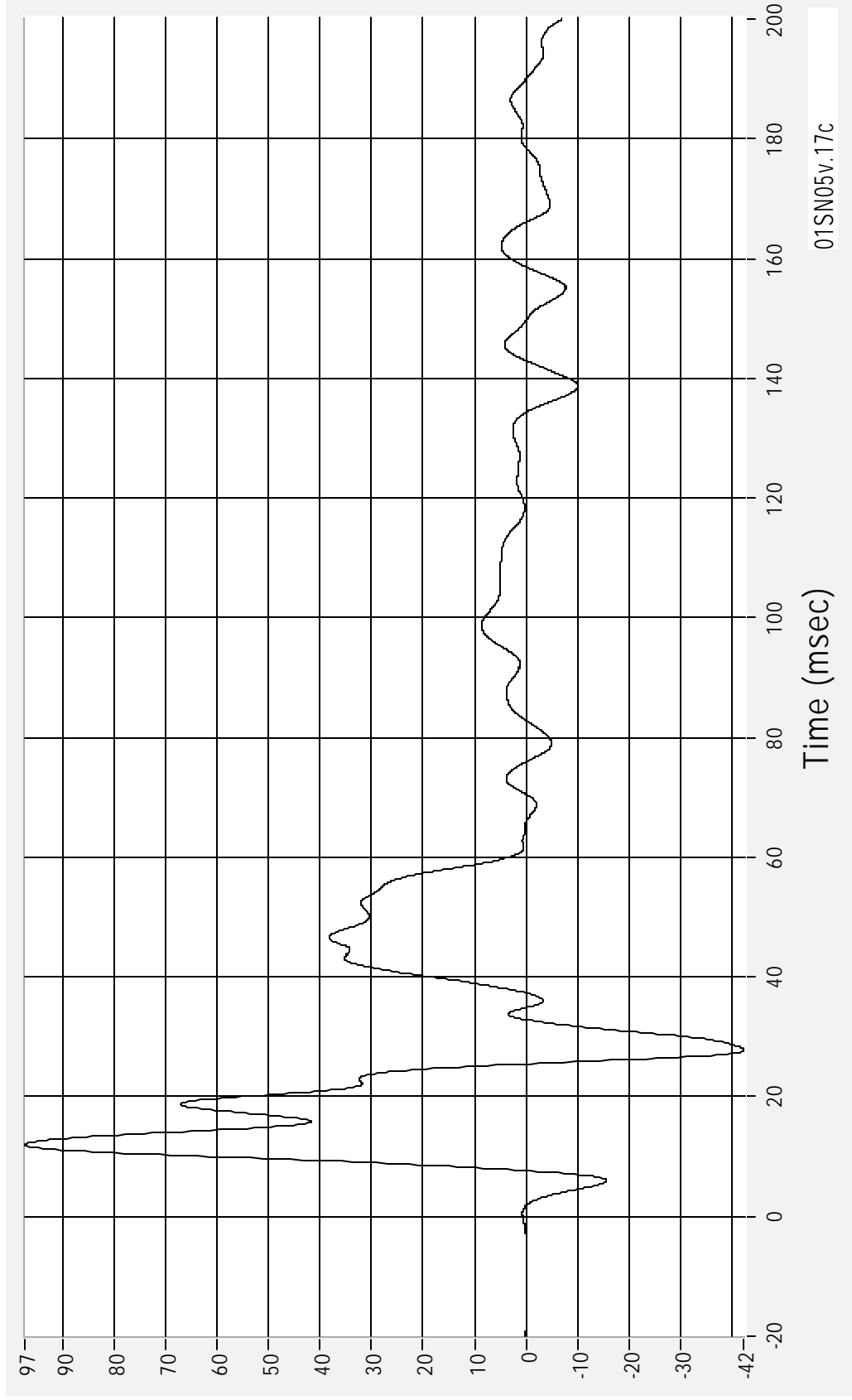
01SN05 - 2001 Buick Century  
14 March 2001

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Left Rear Door Upper Centerline Y Acceleration

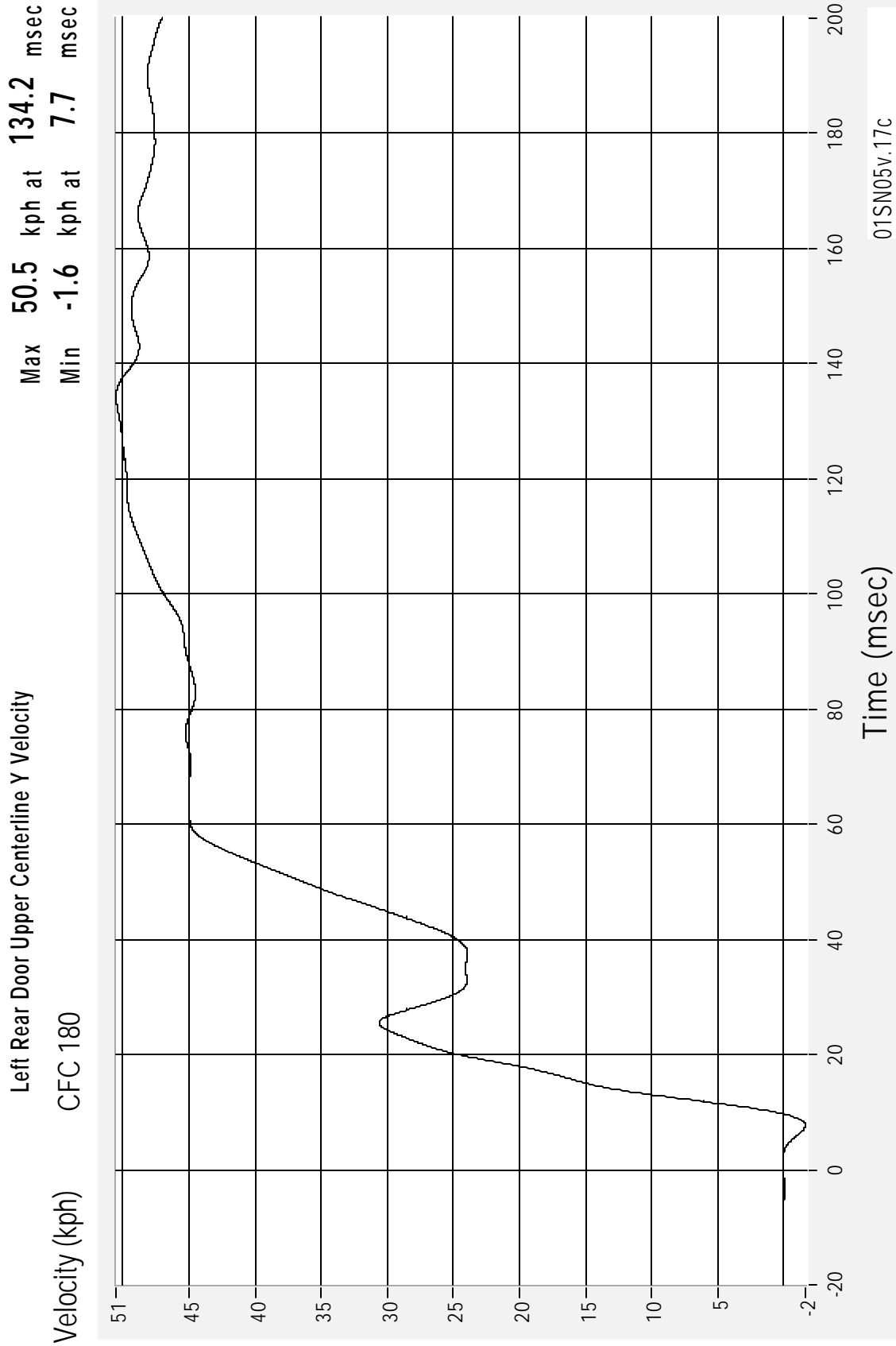
Max 97.5 G's at 12.0 msec  
Min -42.3 G's at 27.8 msec

Acceleration (G's) CFC 60



Time (msec)

01SN05v.17c



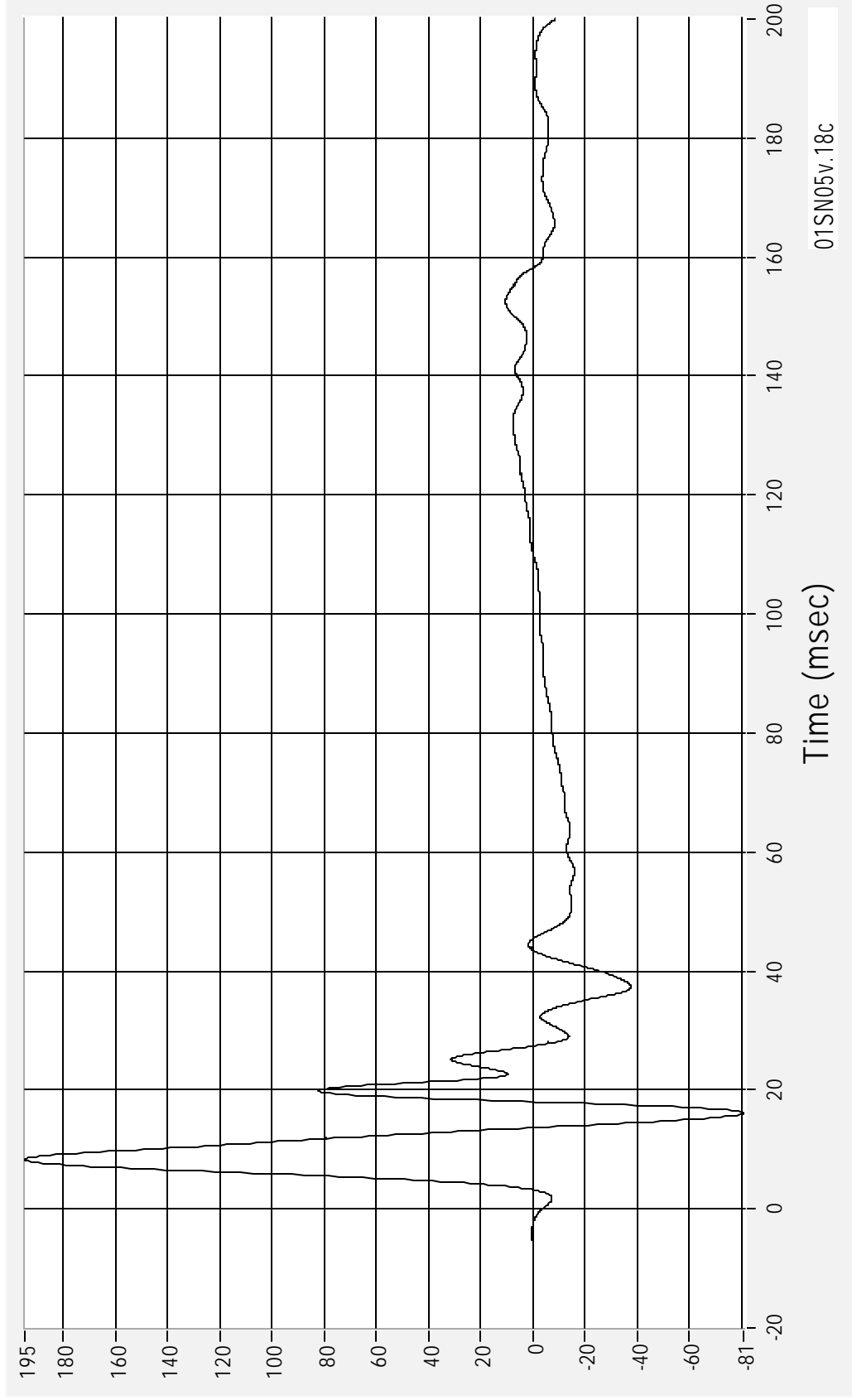
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Lower B-Pillar Y Acceleration

Max 194.8 G's at 8.3 msec  
Min -80.7 G's at 16.1 msec

Acceleration (G's) CFC 60



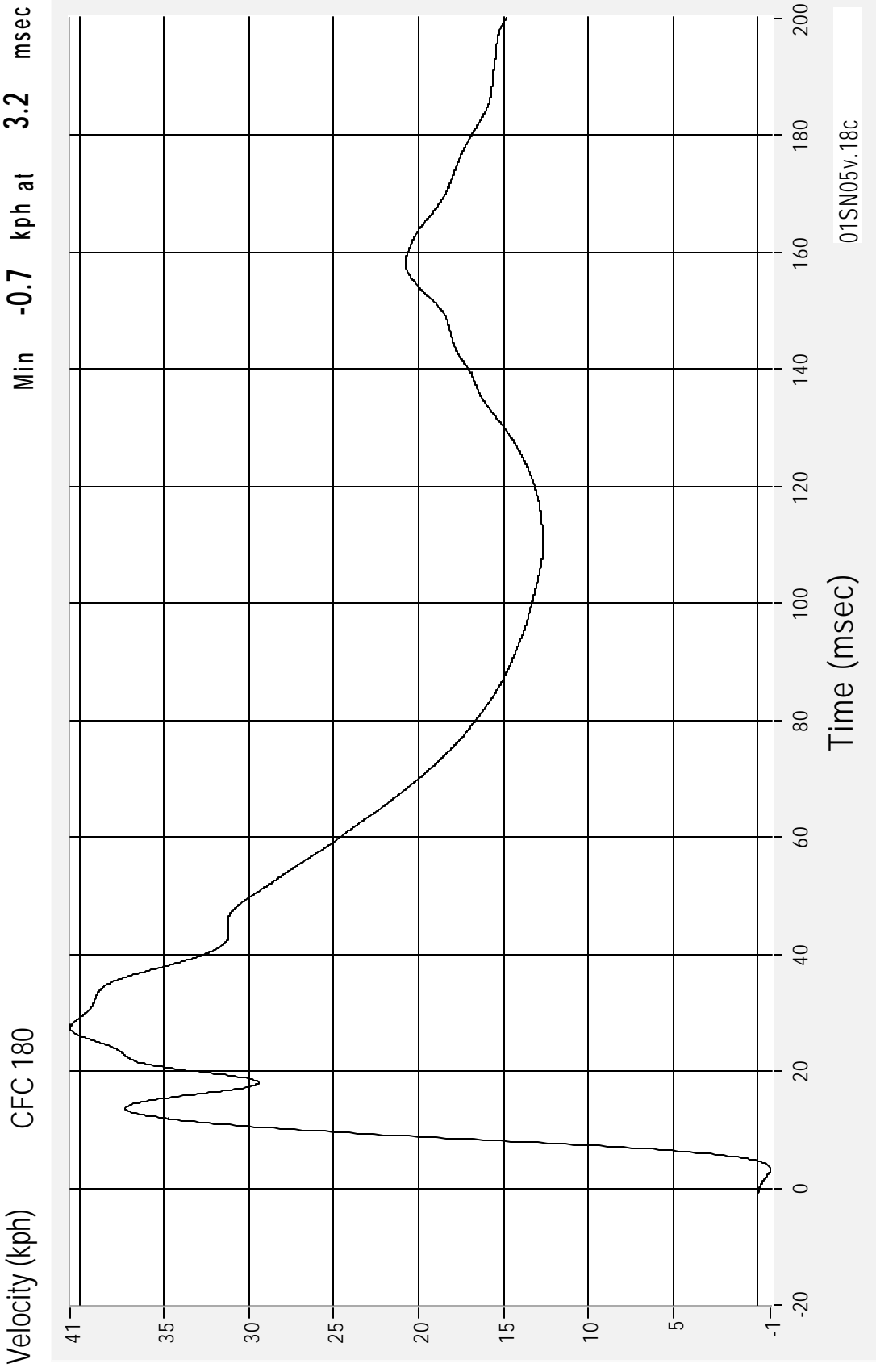
01SN05v.18c

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Max 40.5 kph at 27.4 msec  
Min -0.7 kph at 3.2 msec

Lower B-Pillar Y Velocity  
CFC 180



Time (msec)

01SN05v.18c

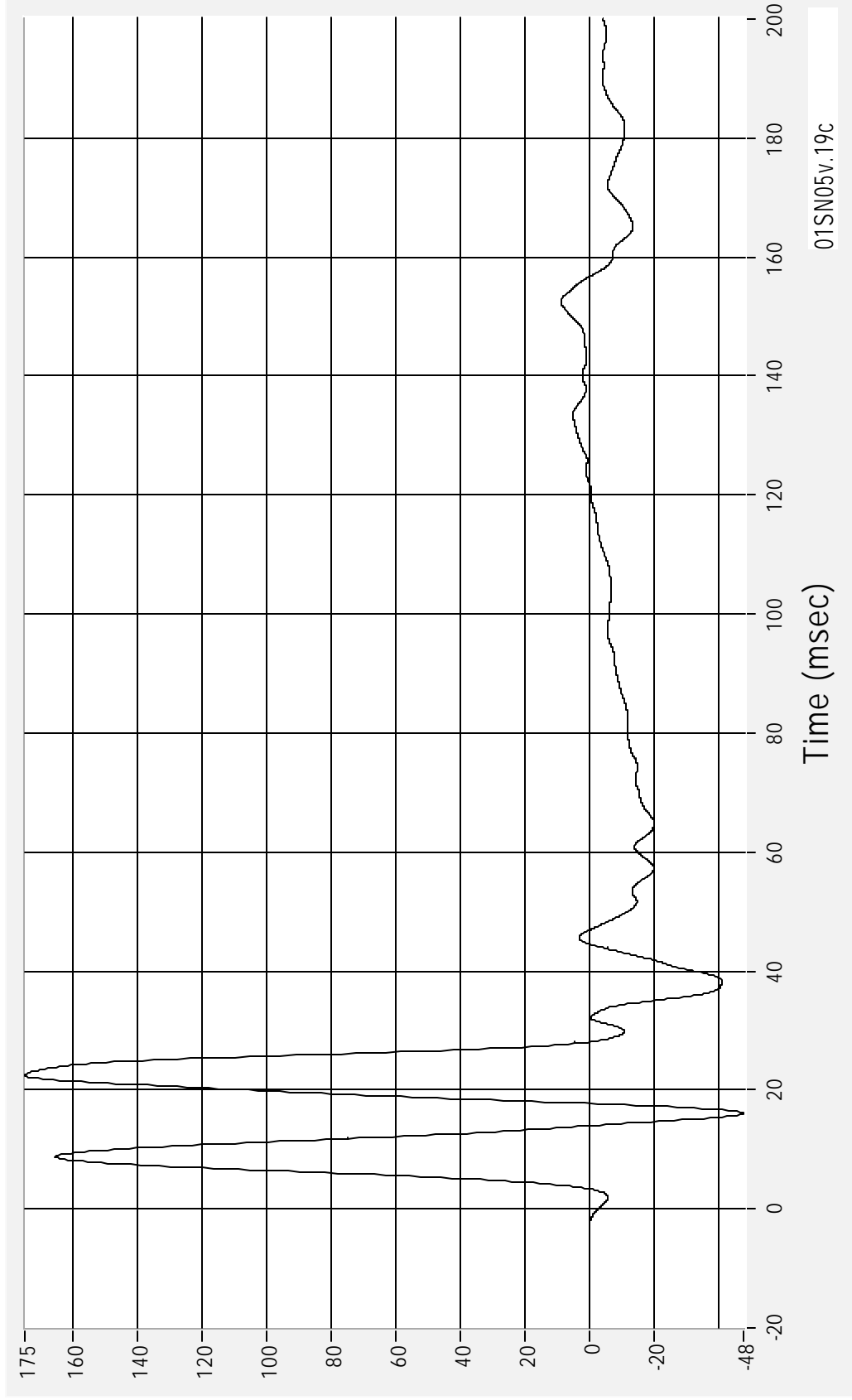
01SN05 - 2001 Buick Century  
14 March 2001

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Middle B-Pillar Y Acceleration

Max 175.1 G's at 22.5 msec  
Min -47.7 G's at 16.1 msec

Acceleration (G's) CFC 60



Time (msec)

01SN05v.19c

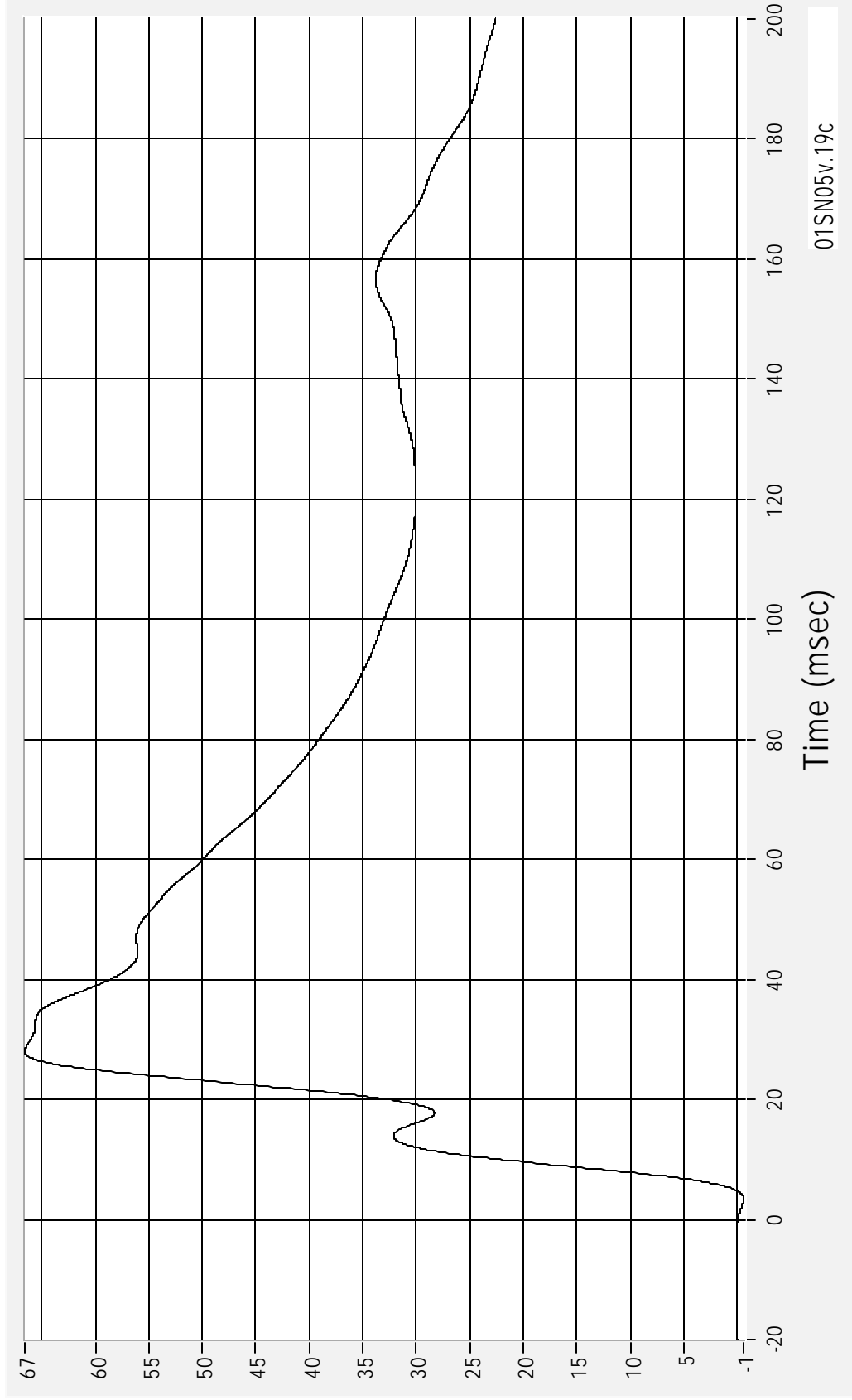
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Max 66.6 kph at 28.1 msec  
Min -0.6 kph at 3.4 msec

Middle B-Pillar Y Velocity  
CFC 180



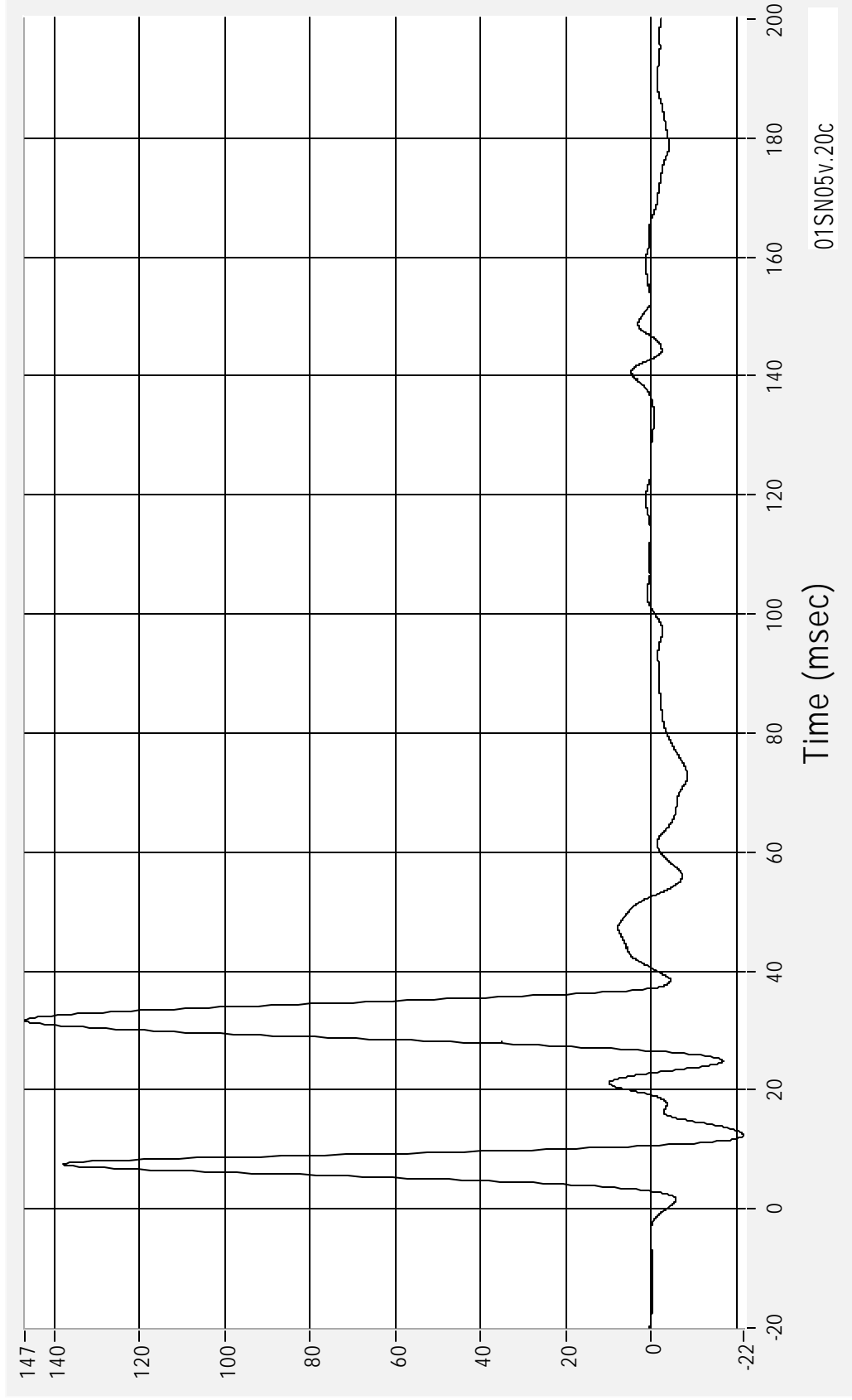
Time (msec)

01SN05v.19c

Lower A-Pillar Y Acceleration

Acceleration (G's) CFC 60

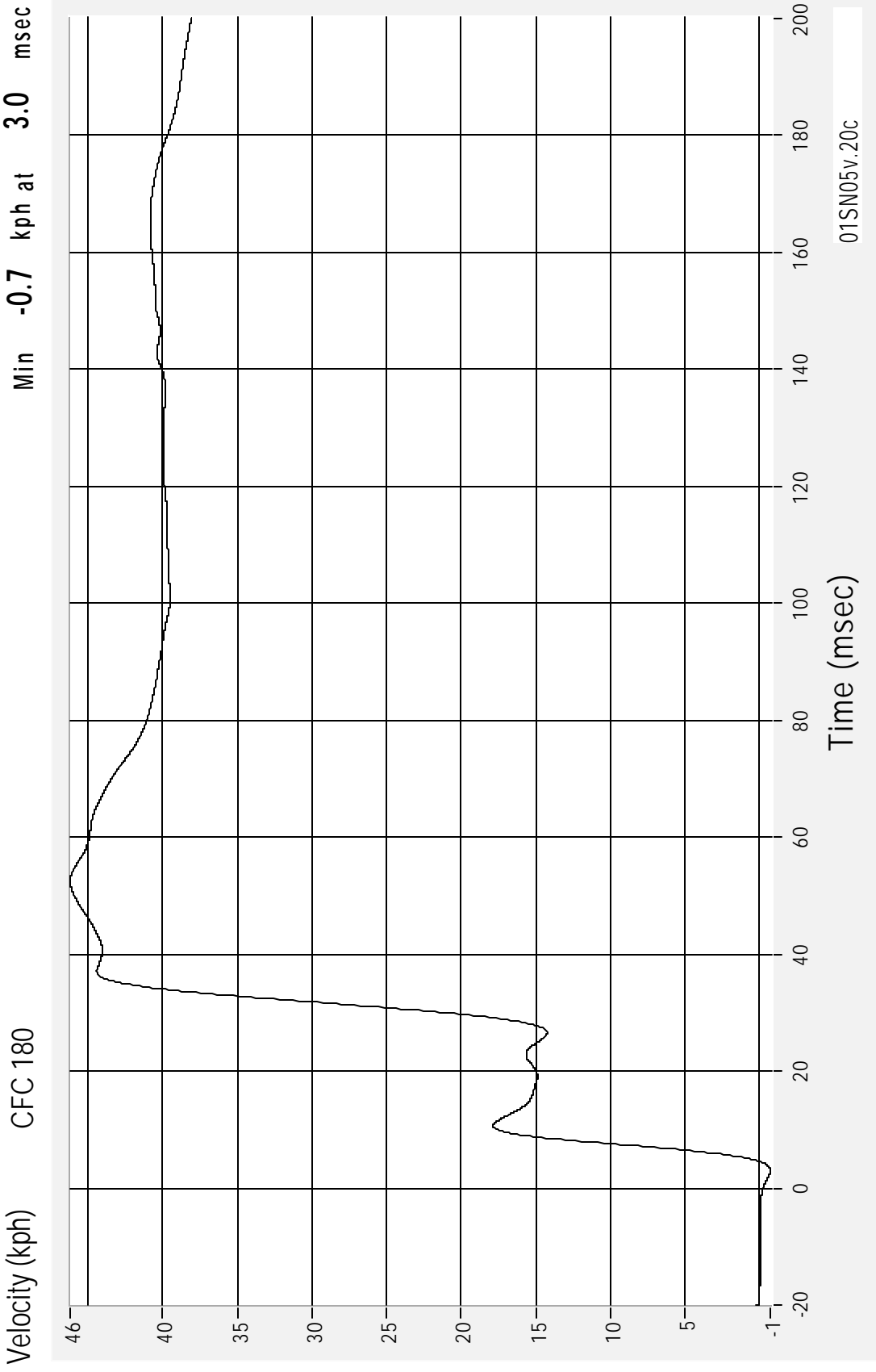
Max 146.9 G's at 31.7 msec  
Min -21.7 G's at 12.4 msec



01SN05v.20c

Lower A-Pillar Y Velocity  
CFC 180

Max 46.2 kph at 52.5 msec  
Min -0.7 kph at 3.0 msec



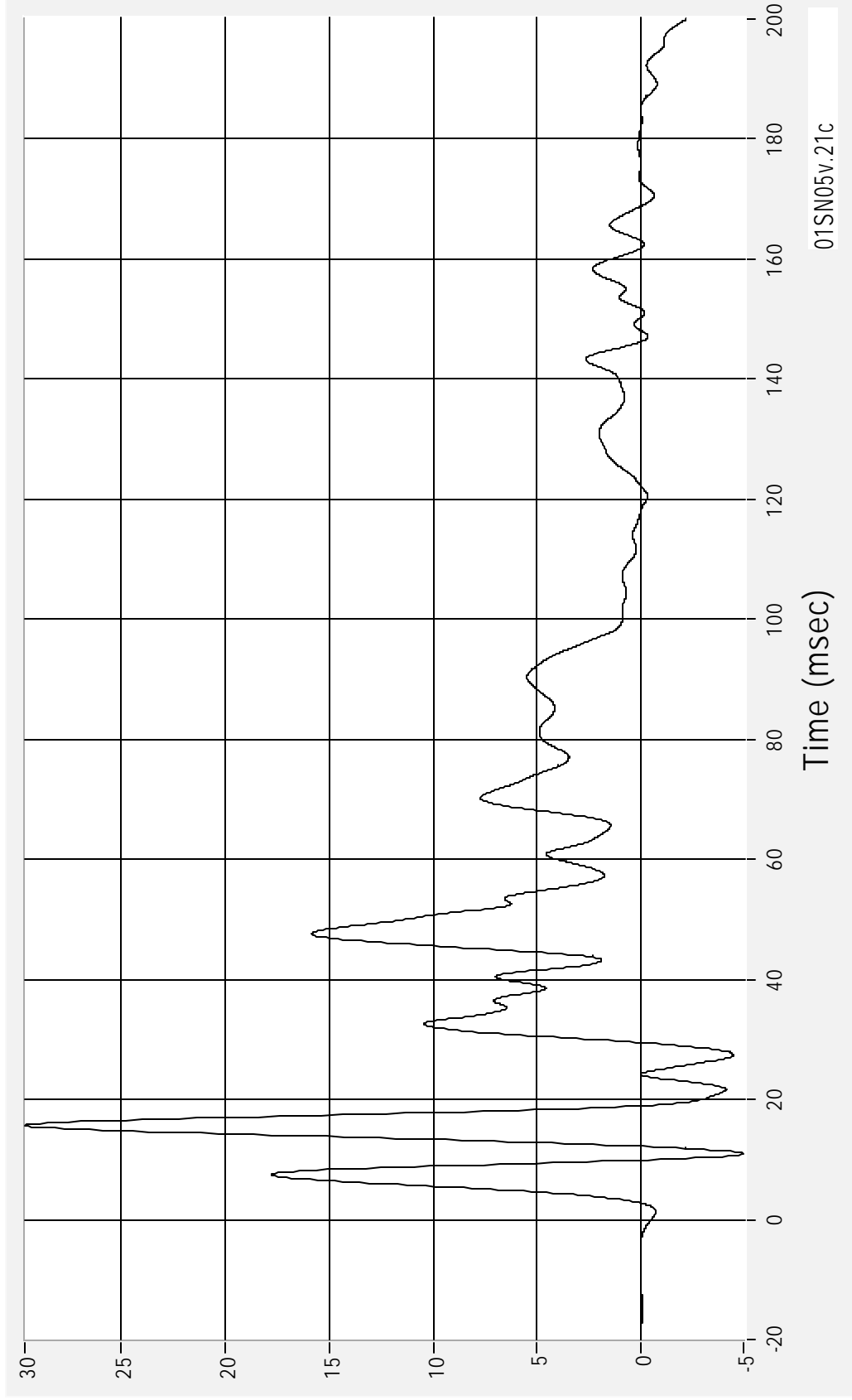
01SN05v.20c  
Medical College of Wisconsin  
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Middle A-Pillar Y Acceleration

Acceleration (G's) CFC 60

Max 29.7 G's at 15.7 msec  
Min -4.9 G's at 11.0 msec



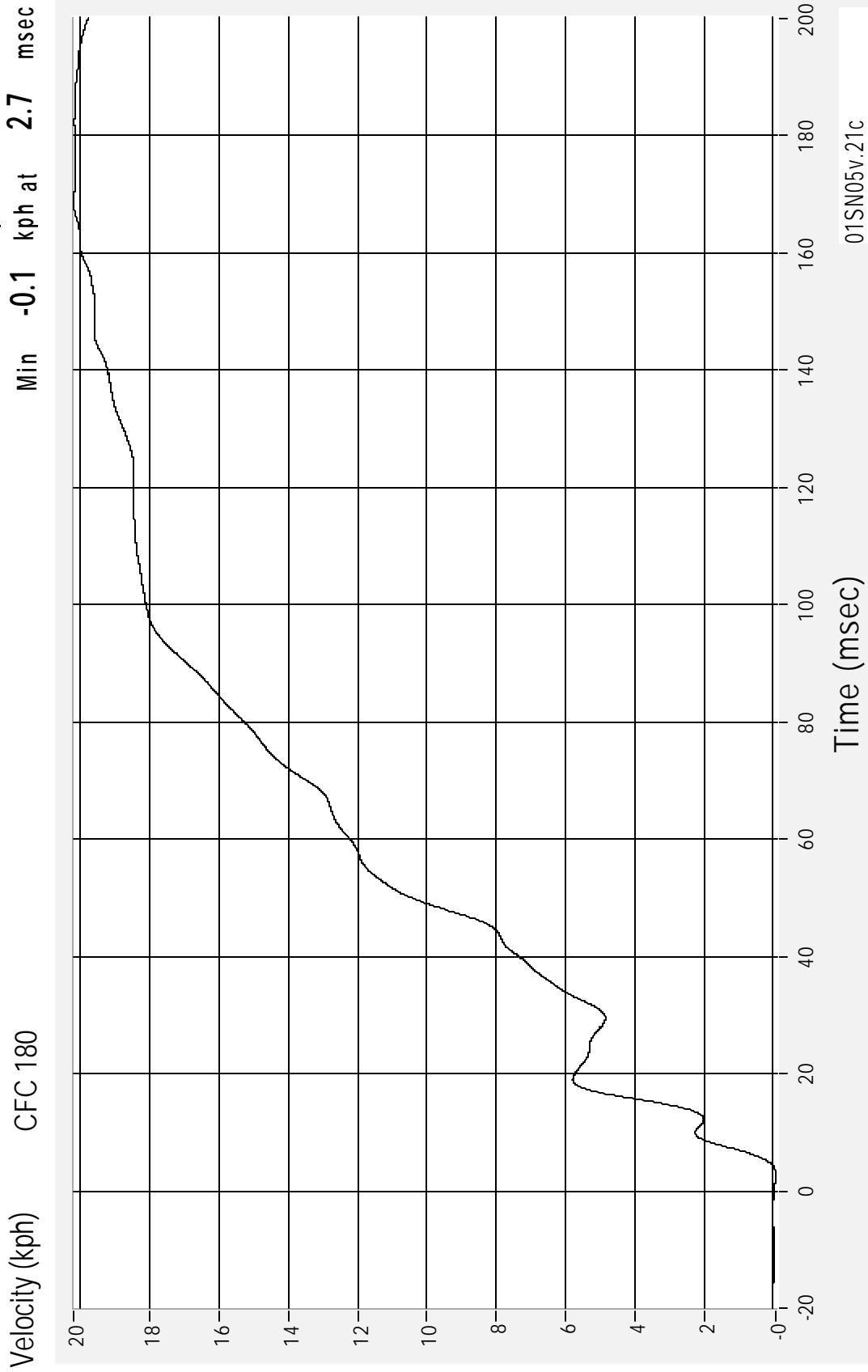
01SN05v.21c

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Middle A-Pillar Y Velocity  
CFC 180

Max 20.2 kph at 168.8 msec  
Min -0.1 kph at 2.7 msec



01SN05v.21c

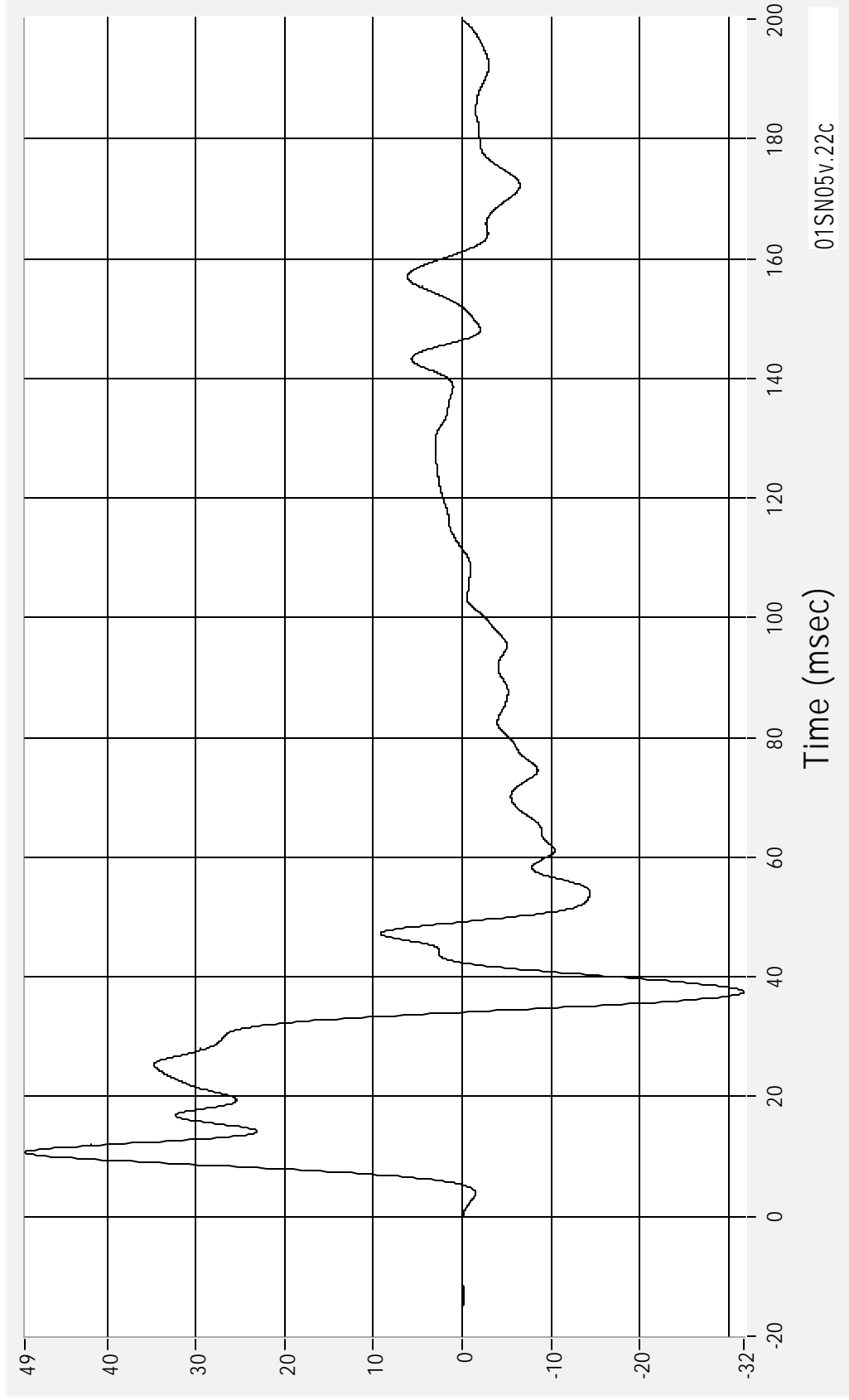
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Front Seat Track Y Acceleration

Max 49.3 G's at 10.7 msec  
Min -31.7 G's at 37.5 msec

Acceleration (G's) CFC 60



01SN05v.22c

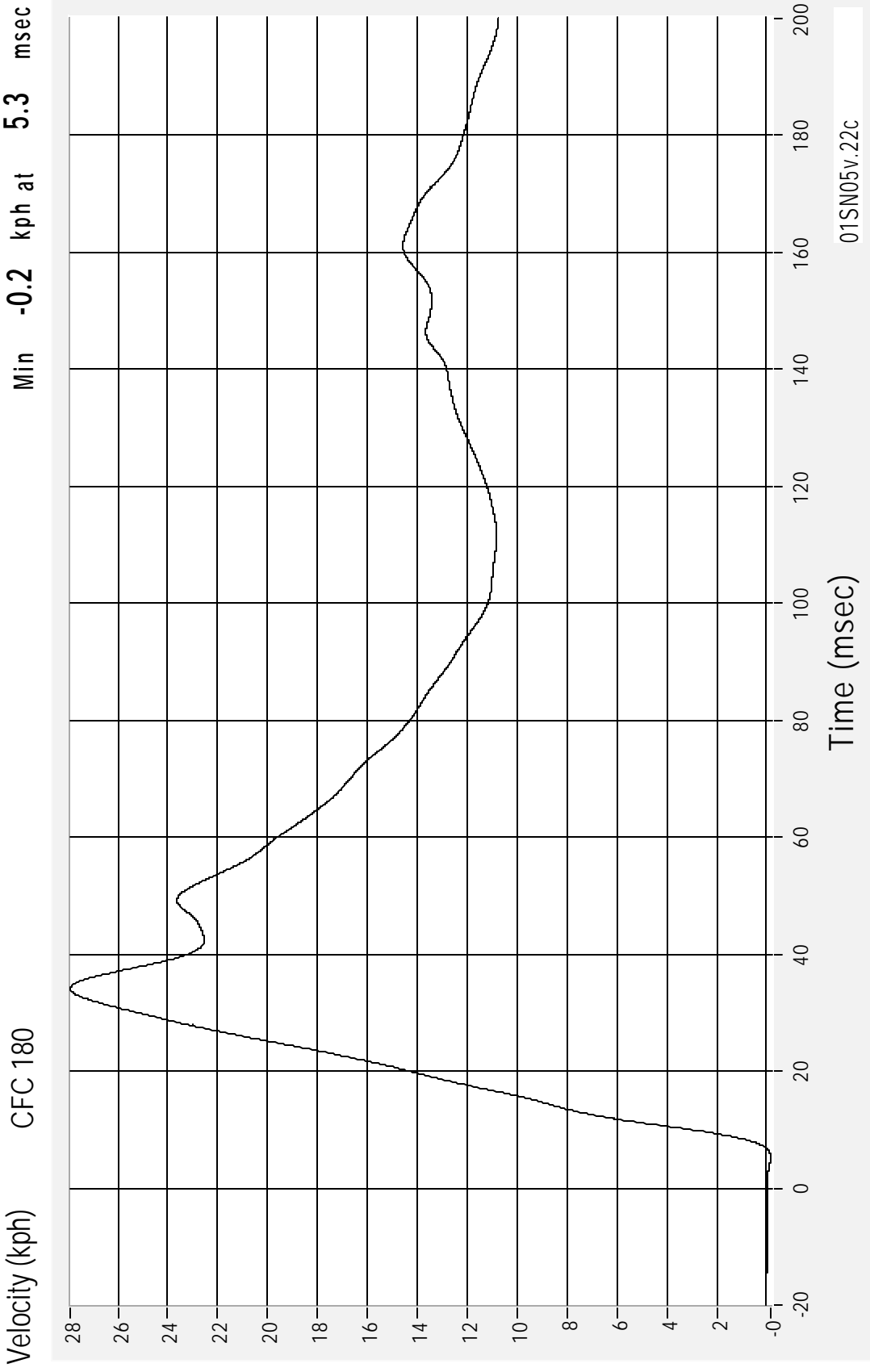
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Max 27.9 kph at 34.1 msec  
Min -0.2 kph at 5.3 msec

Front Seat Track Y Velocity  
CFC 180



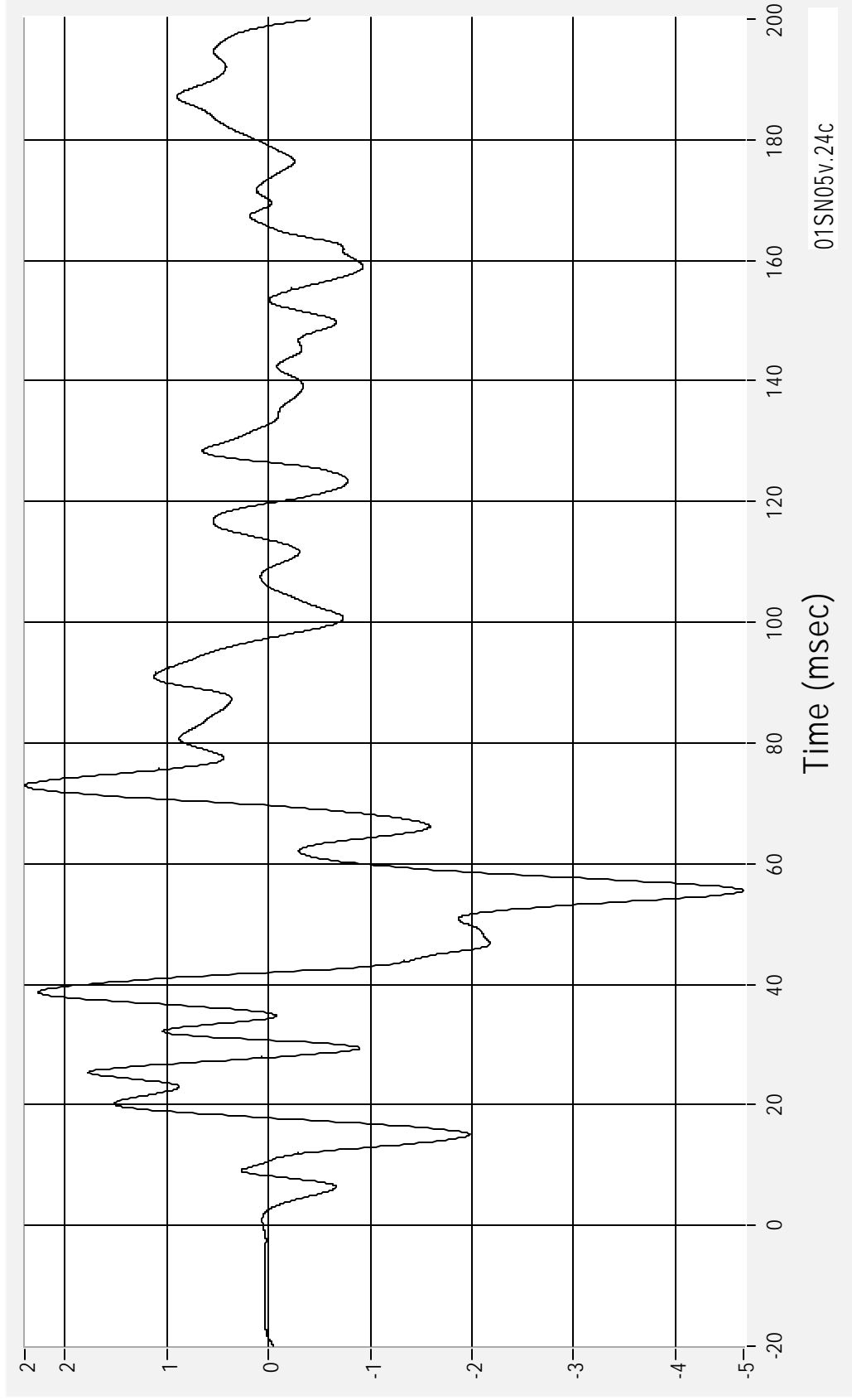
01SN05v.22c  
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Vehicle Center of Gravity X Acceleration

Max 2.4 G's at 73.0 msec  
Min -4.7 G's at 55.5 msec

Acceleration (G's) CFC 60

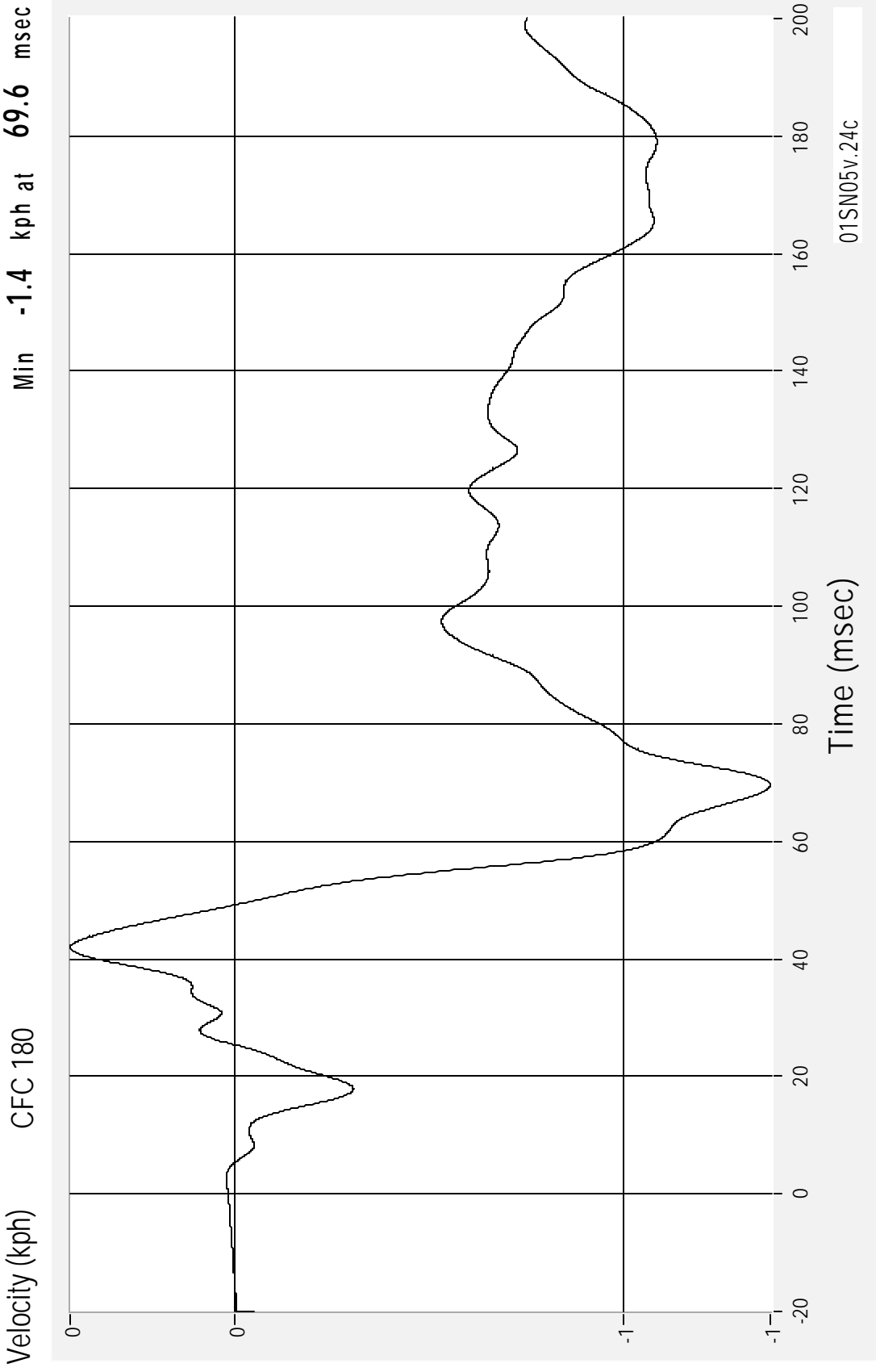


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Vehicle Center of Gravity X Velocity  
CFC 180

Max 0.4 kph at 41.9 msec  
Min -1.4 kph at 69.6 msec



01SN05v.24c

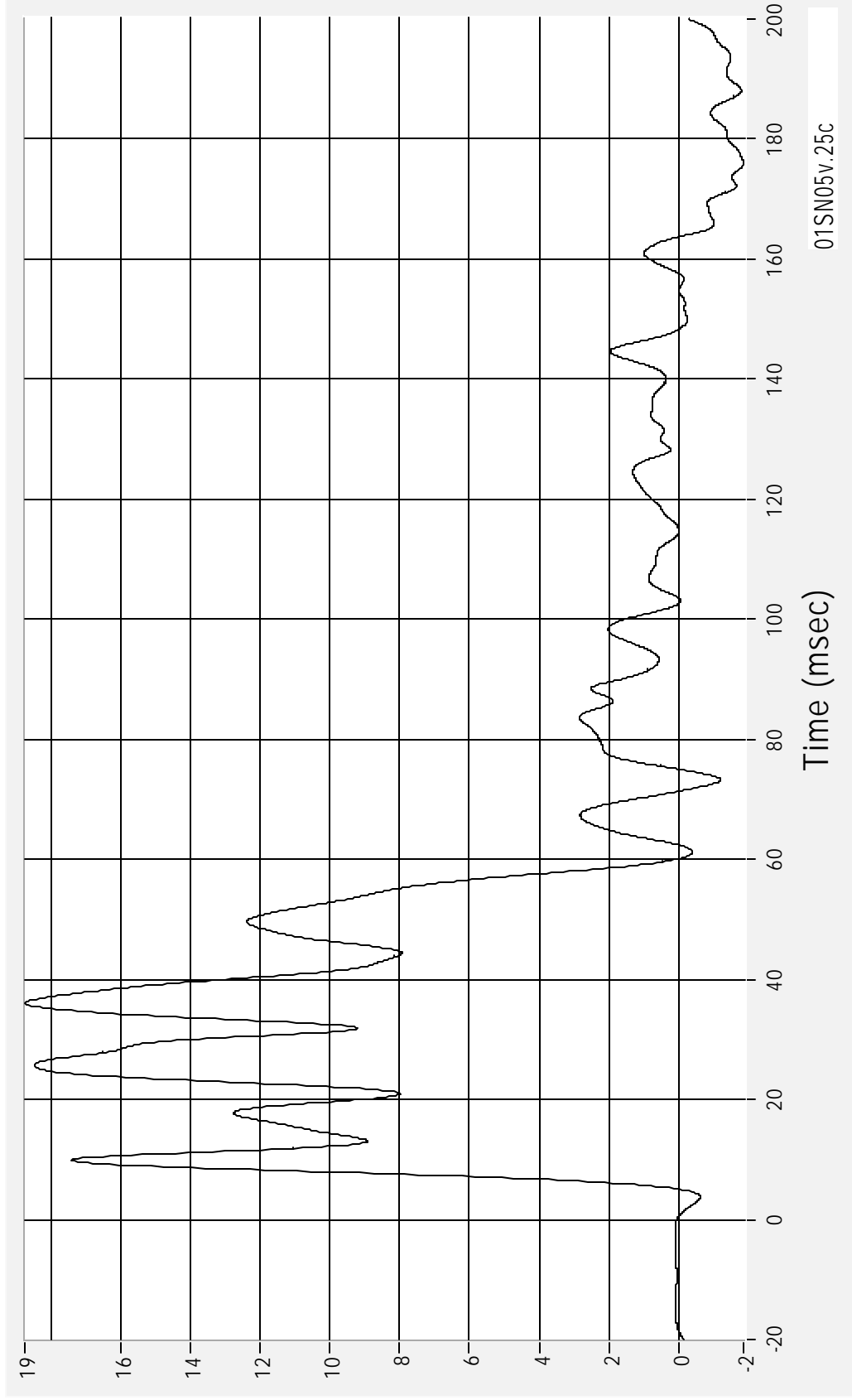
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Vehicle Crashworthiness Lab

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14 March 2001

Vehicle Center of Gravity Y Acceleration

Max 18.7 G's at 36.1 msec  
Min -1.9 G's at 176.0 msec

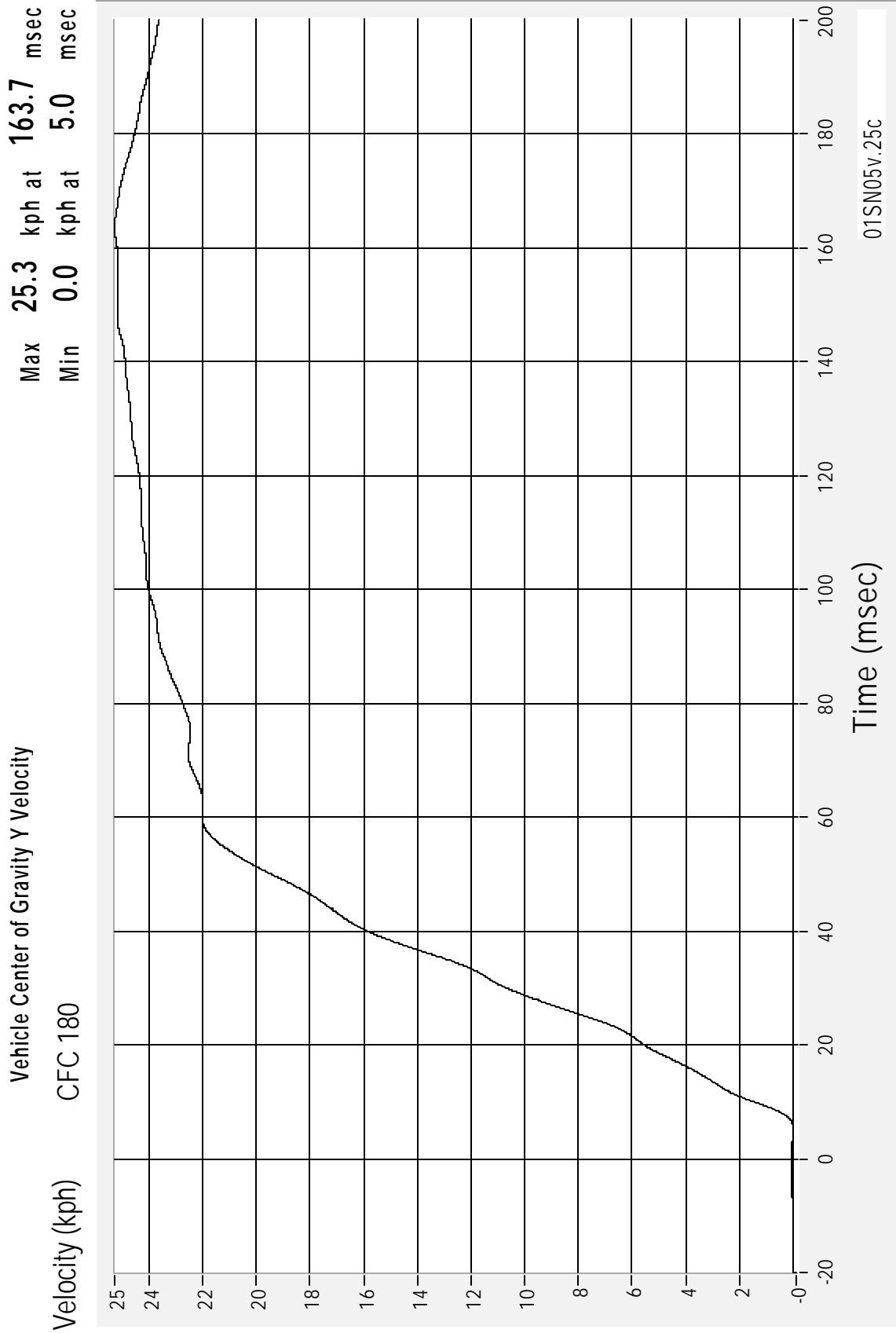
Acceleration (G's) CFC 60



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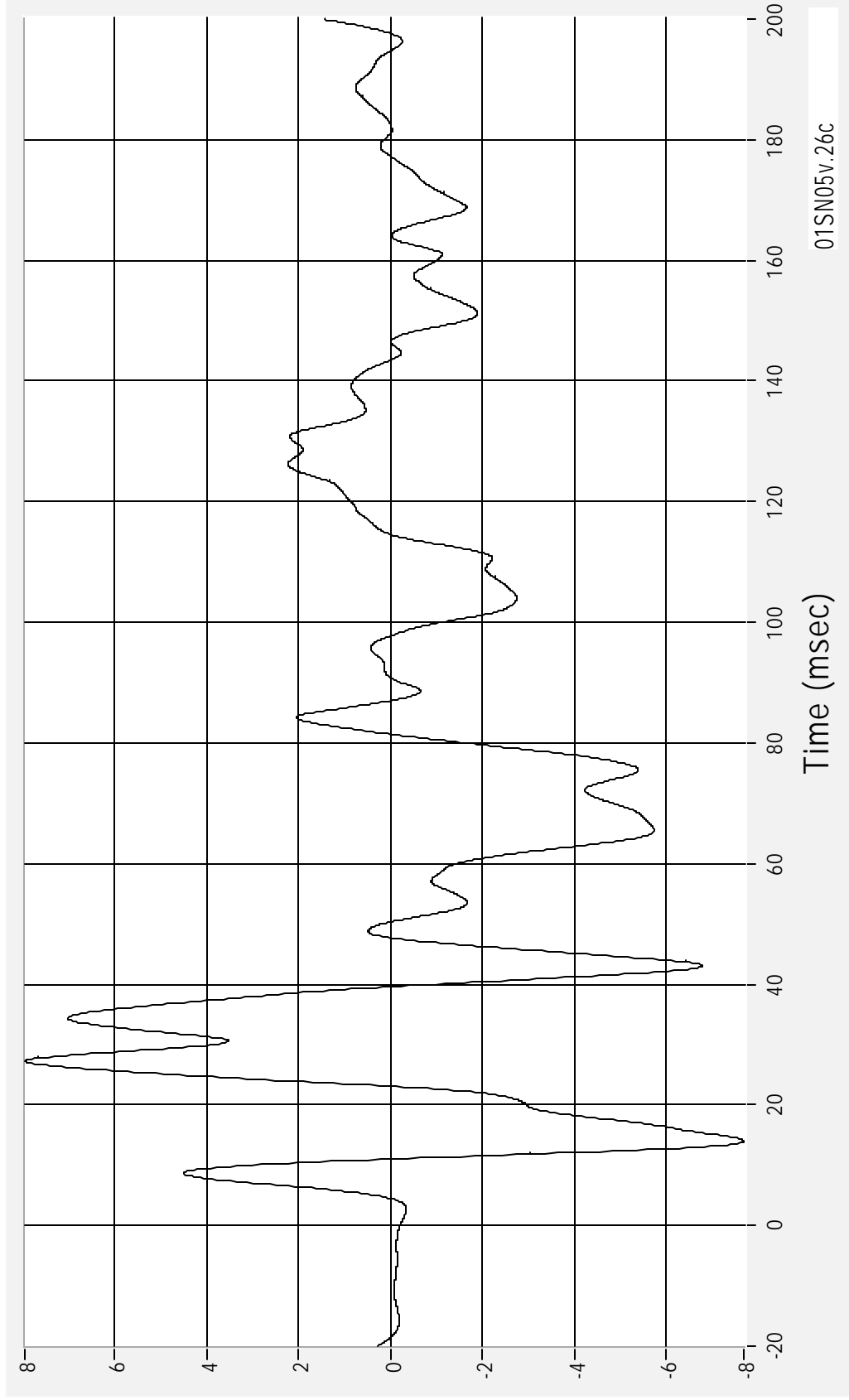
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Vehicle Center of Gravity Z Acceleration

Max 7.9 G's at 27.3 msec  
Min -7.7 G's at 14.0 msec

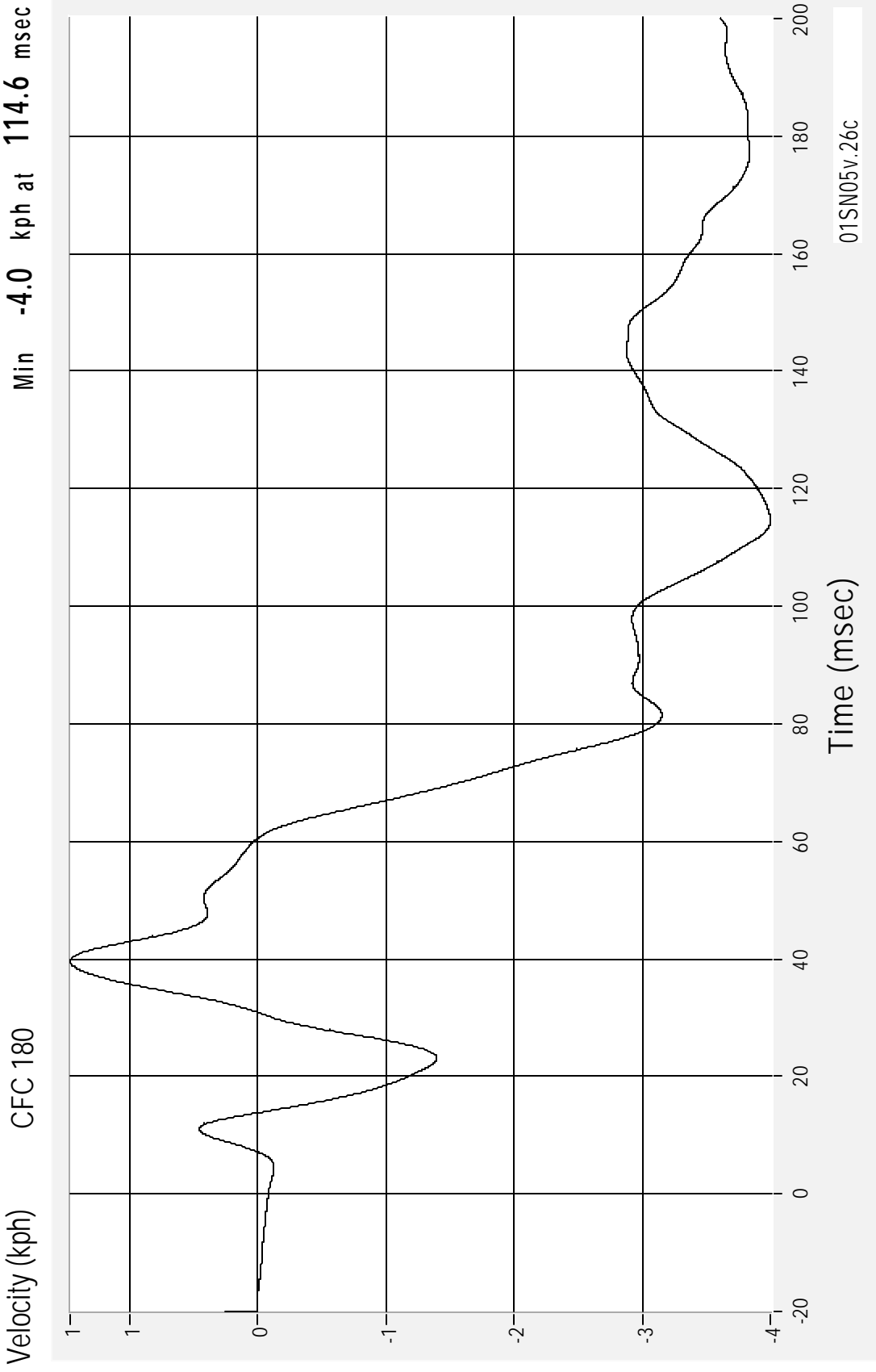
Acceleration (G's) CFC 60



01SN05v.26c

Vehicle Center of Gravity Z Velocity  
CFC 180

Max 1.5 kph at 39.6 msec  
Min -4.0 kph at 114.6 msec



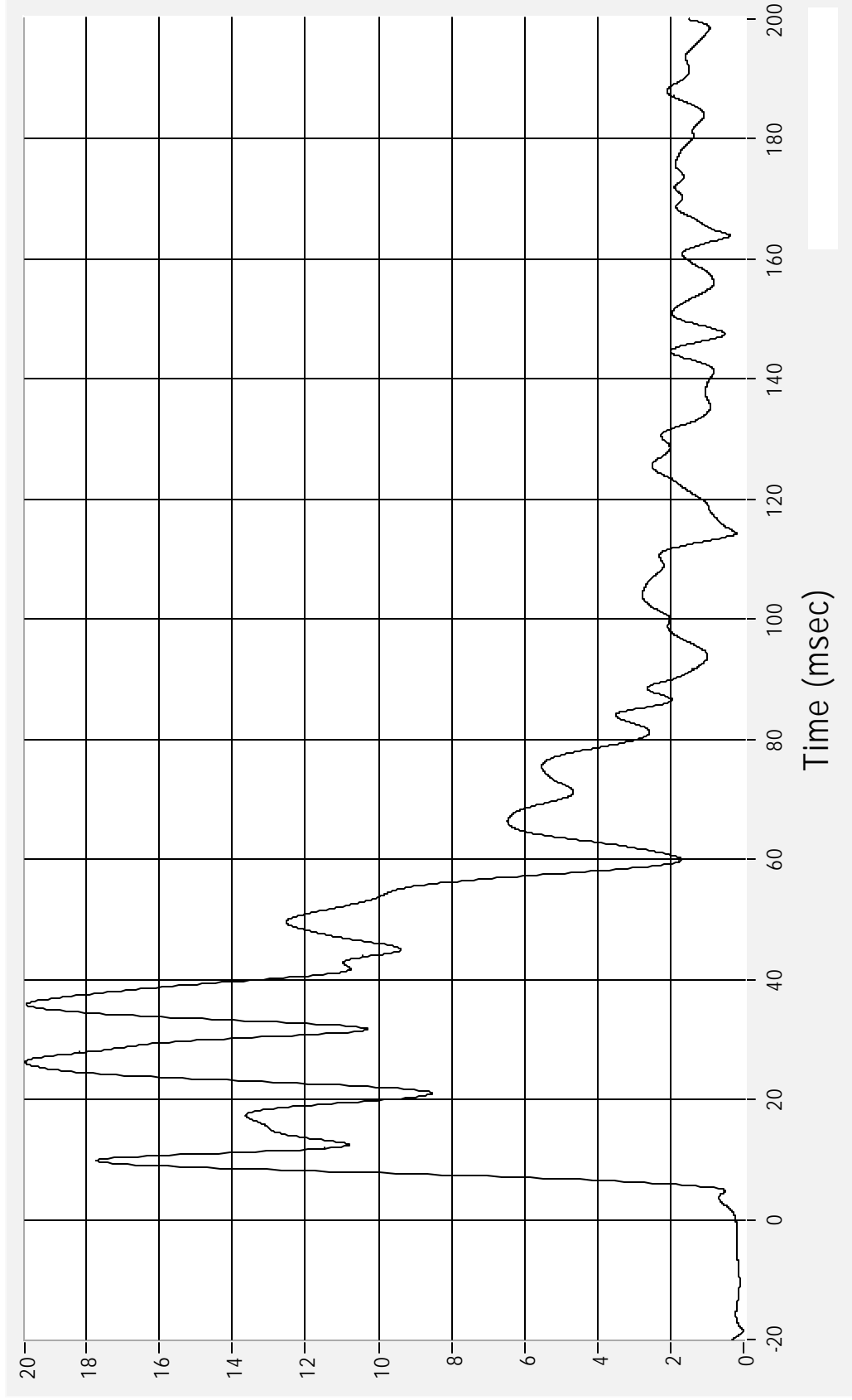
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Vehicle Center of Gravity - Resultant

Acceleration (G's) CFC 60

Max 19.7 G's at 26.2 msec  
Min 0.2 G's at 114.3 msec



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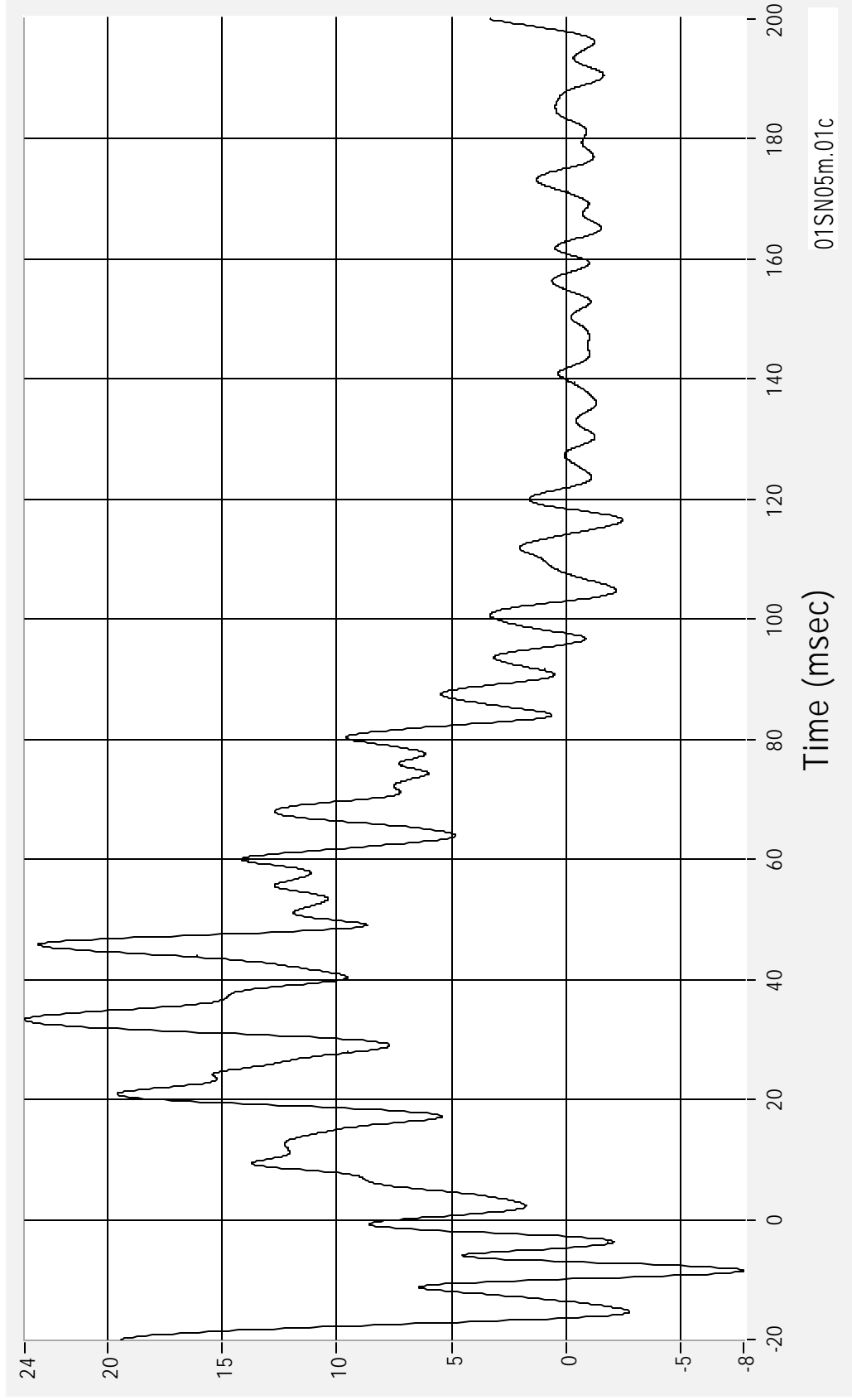
14 March 2001

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MDB Center of Gravity - X Acceleration

Acceleration (G's) CFC 60

Max 23.6 G's at 33.3 msec  
Min -2.4 G's at 116.6 msec



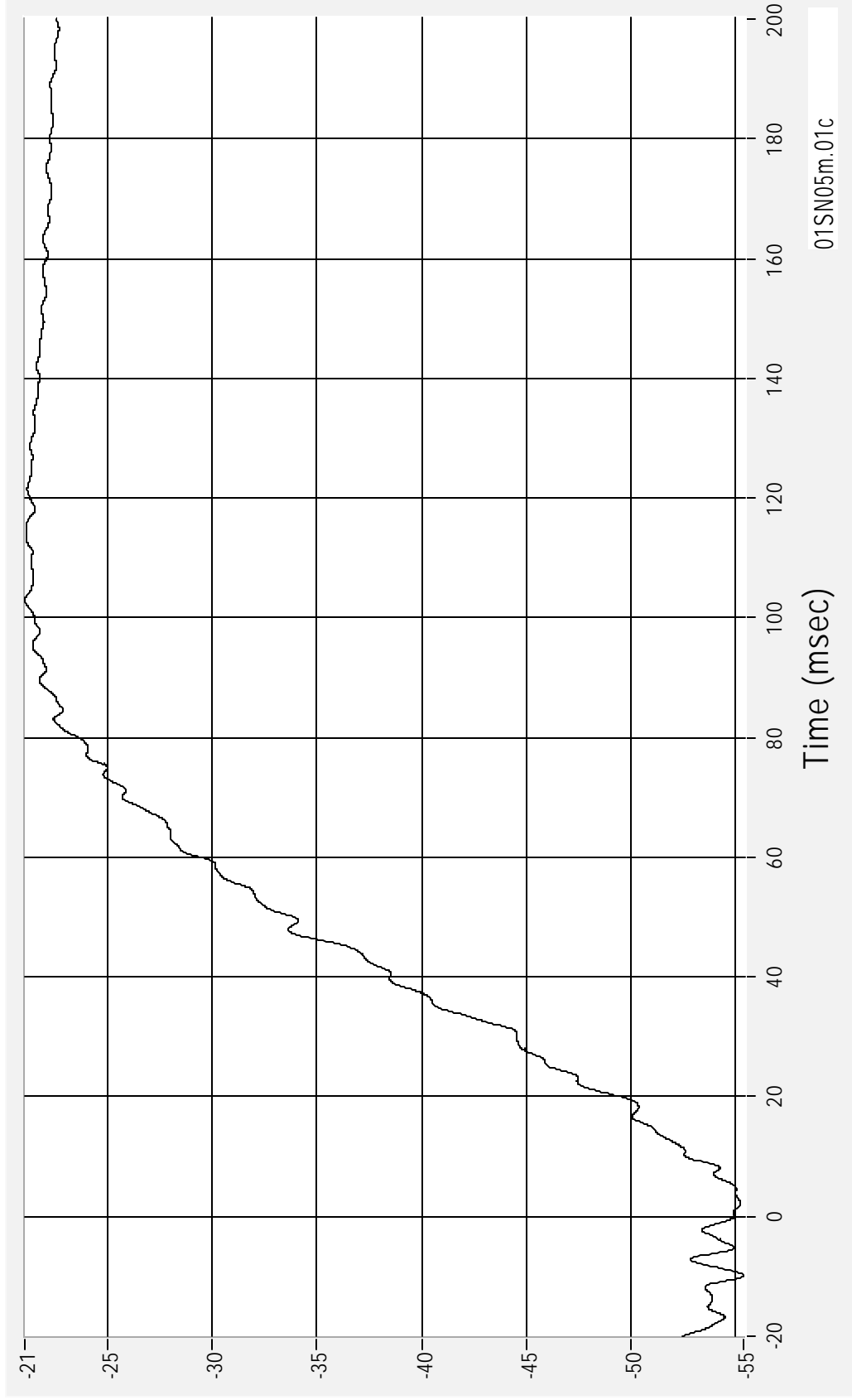
01SN05m.01c  
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14 March 2001

Max -21.0 kph at 103.0 msec  
Min -55.3 kph at 2.2 msec

MDB Center of Gravity - X Velocity  
CFC 180

Velocity (KPH)



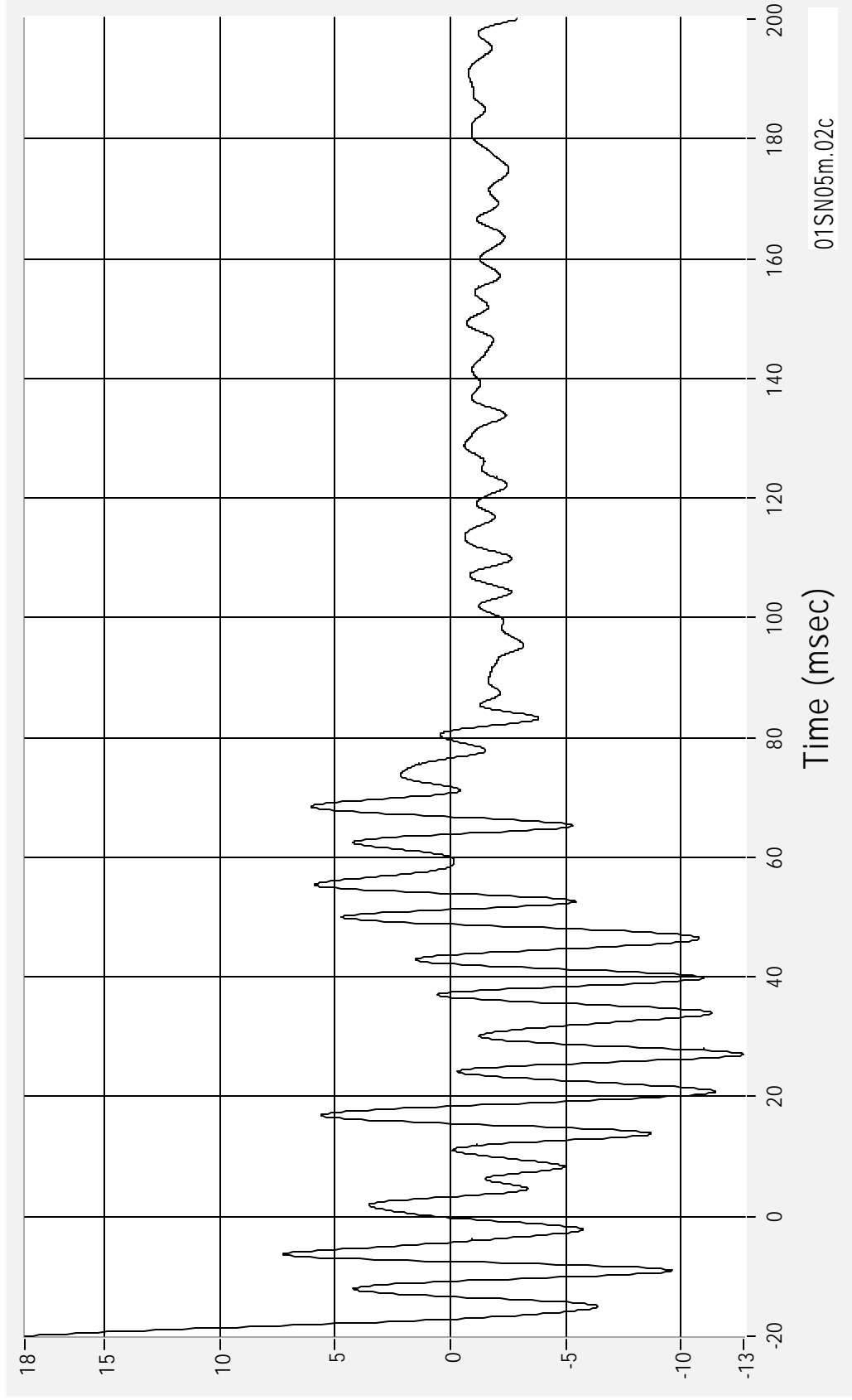
Time (msec)

01SN05m.01c

MDB Center of Gravity - Y Acceleration

Acceleration (G's) CFC 60

Max 6.1 G's at 68.5 msec  
Min -12.7 G's at 27.1 msec

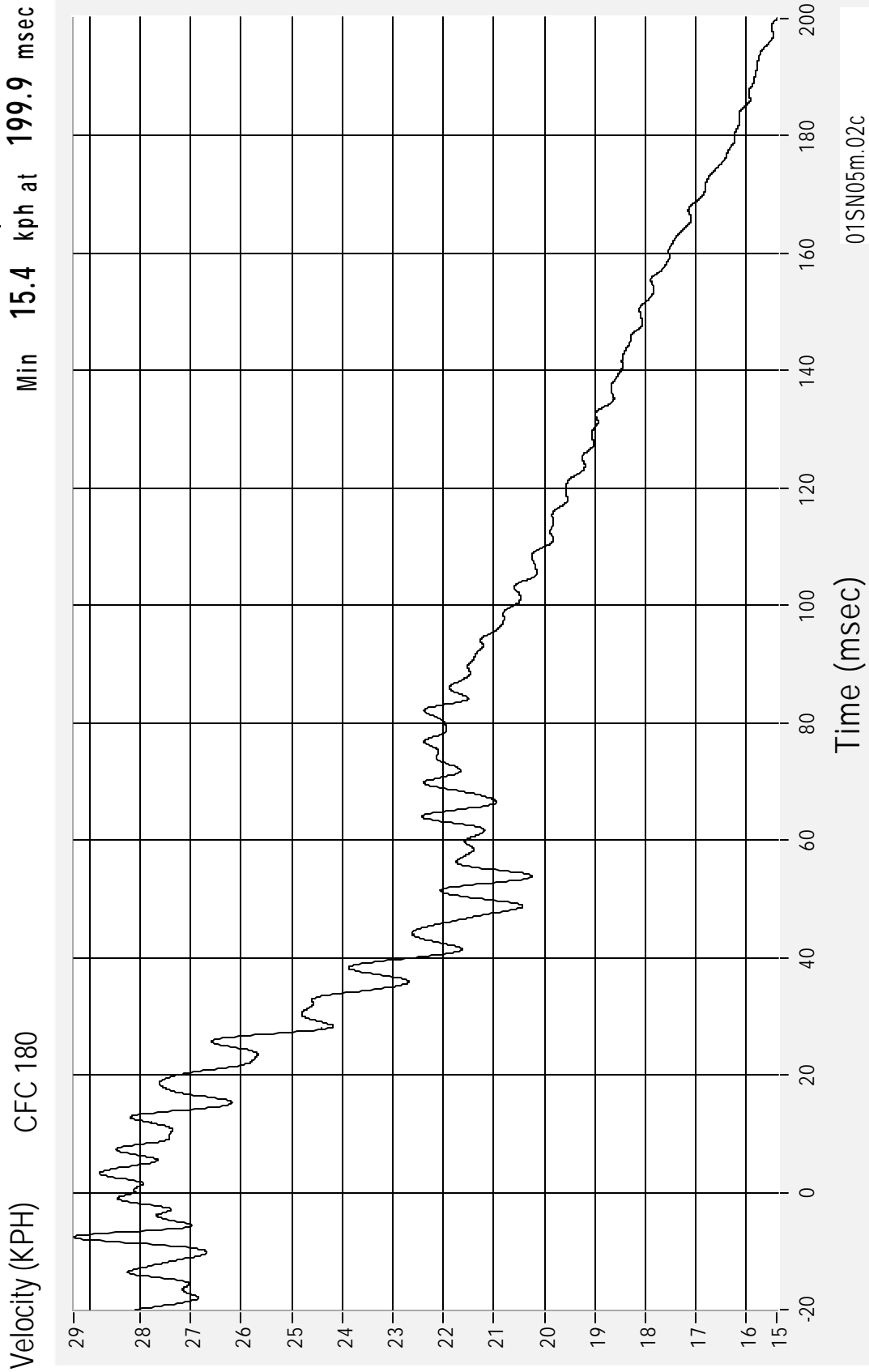


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MDB Center of Gravity - Y Velocity



Max 28.8 kph at 3.3 msec  
Min 15.4 kph at 199.9 msec

CFC 180

01SN05 - 2001 Buick Century

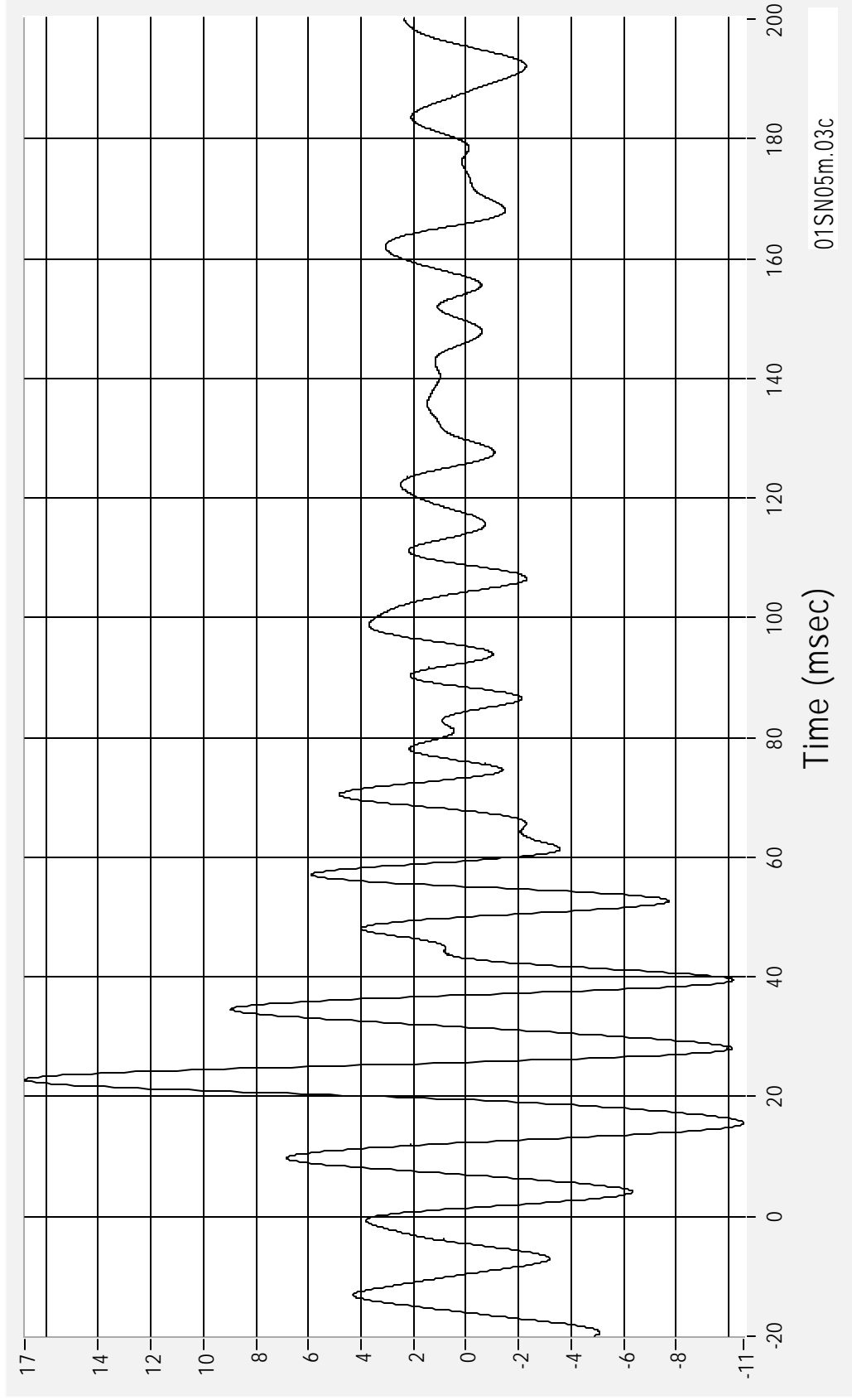
14 March 2001

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MDB Center of Gravity - Z Acceleration

Max 16.8 G's at 22.8 msec  
Min -10.6 G's at 15.6 msec

Acceleration (G's) CFC 60



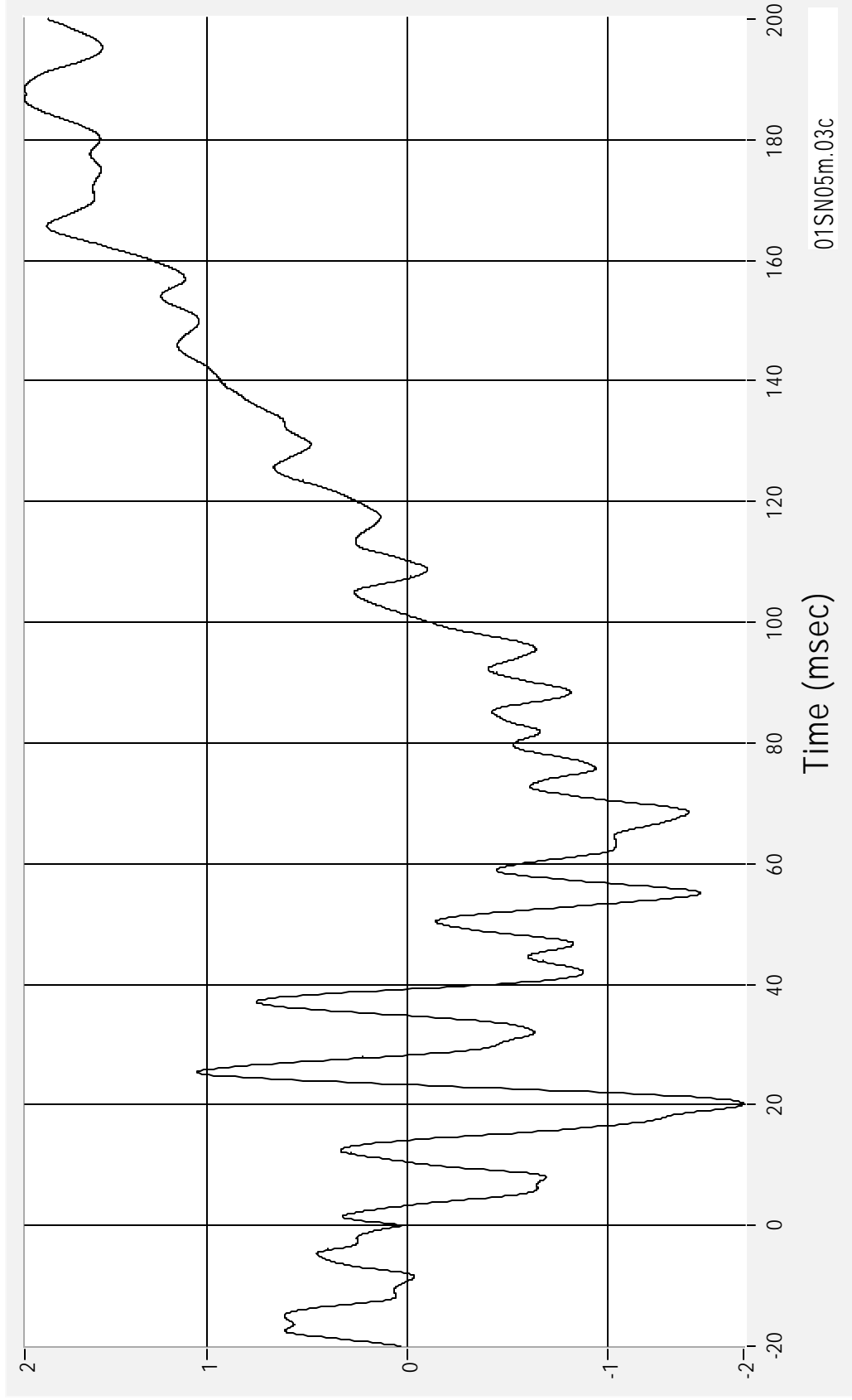
Time (msec)

01SN05m.03c

MDB Center of Gravity - Z Velocity

Velocity (KPH) CFC 180

Max 1.9 kph at 188.6 msec  
Min -1.7 kph at 20.2 msec



Time (msec)

01SN05m.03c

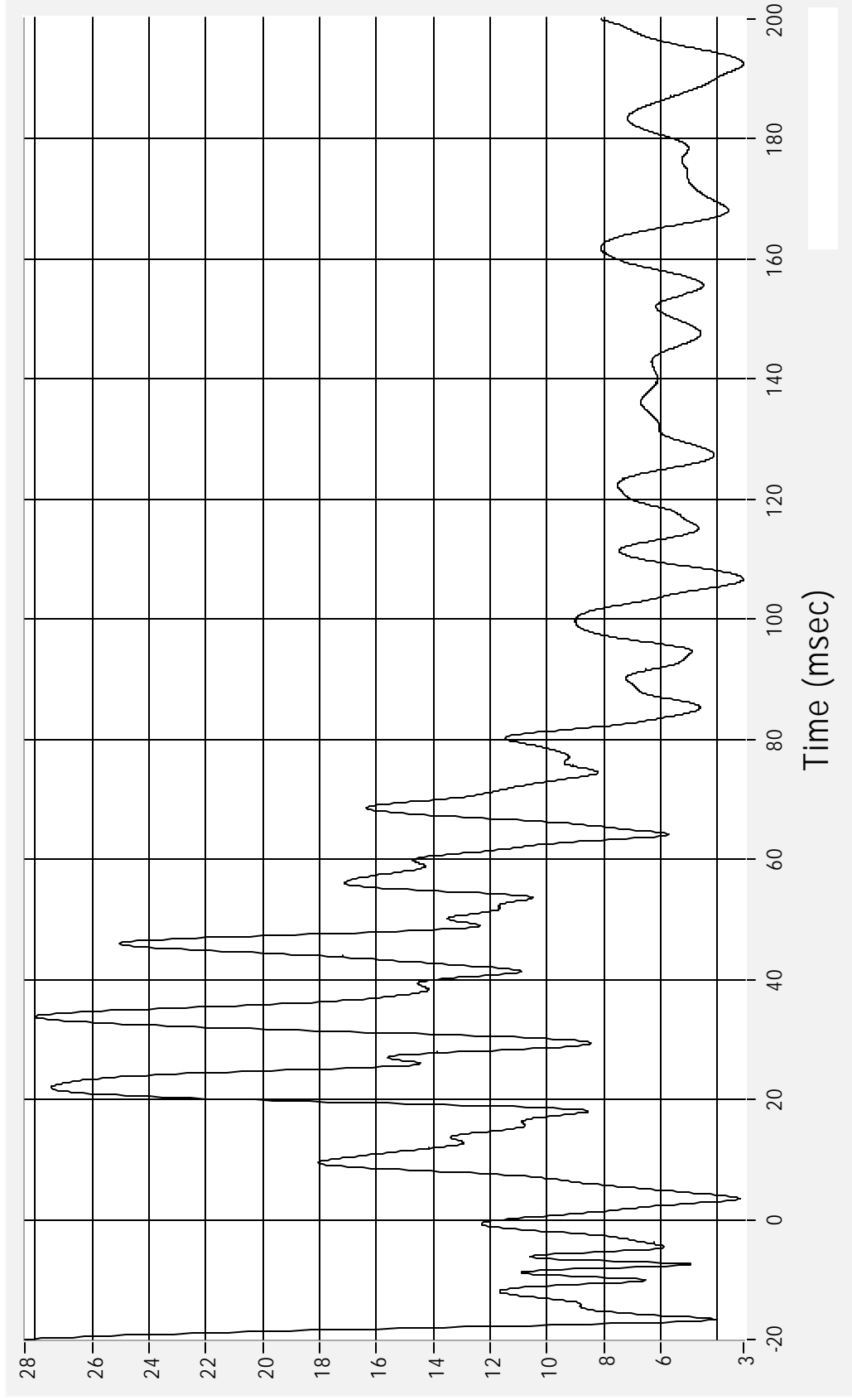
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MDB Center of Gravity Resultant Acceleration

Acceleration (G's) CFC 60

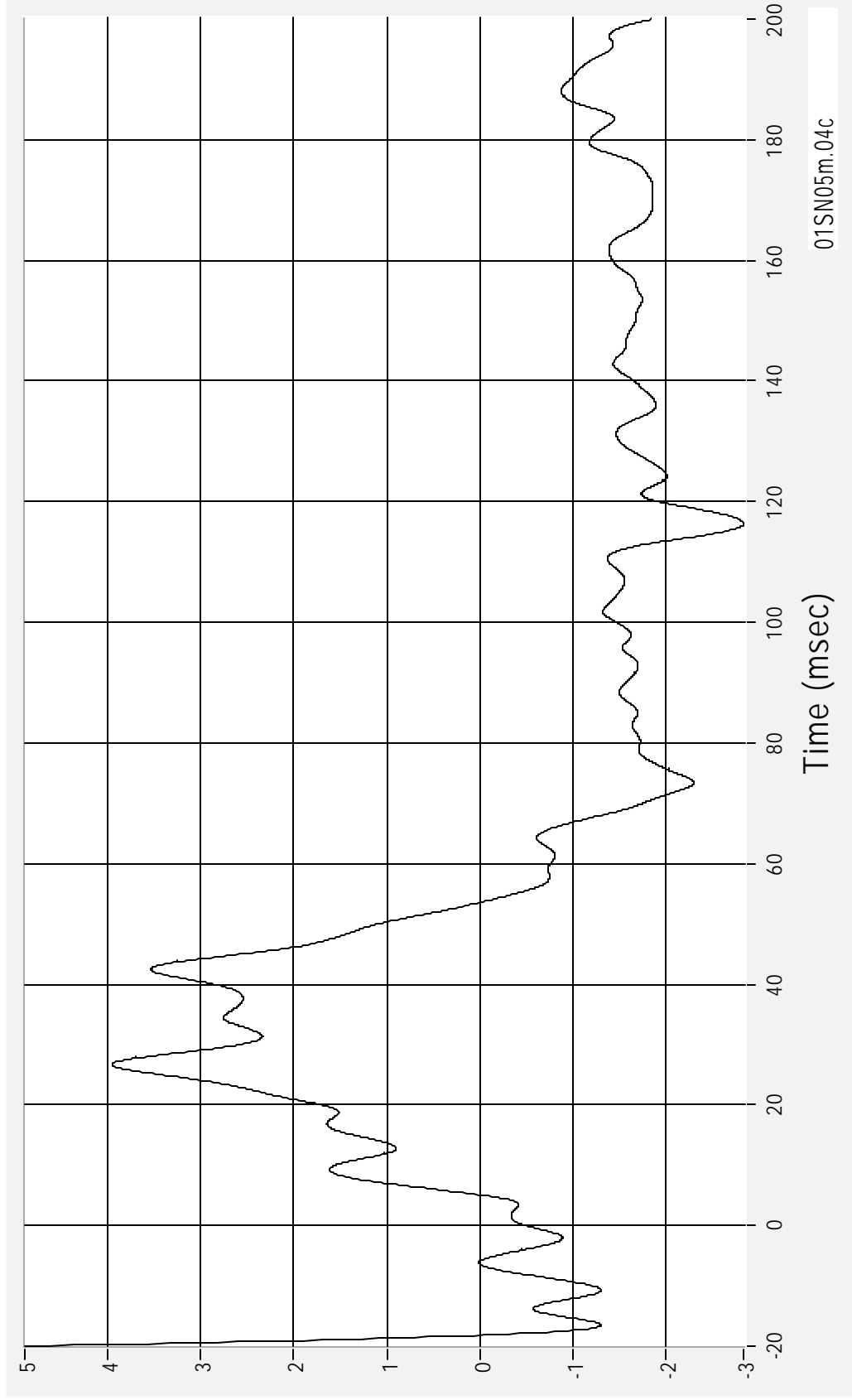
Max 28.0 G's at 33.8 msec  
Min 3.1 G's at 192.6 msec



MDB Rear Axle - X Acceleration

Acceleration (G's) CFC 60

Max 4.0 G's at 26.7 msec  
Min -2.8 G's at 116.3 msec



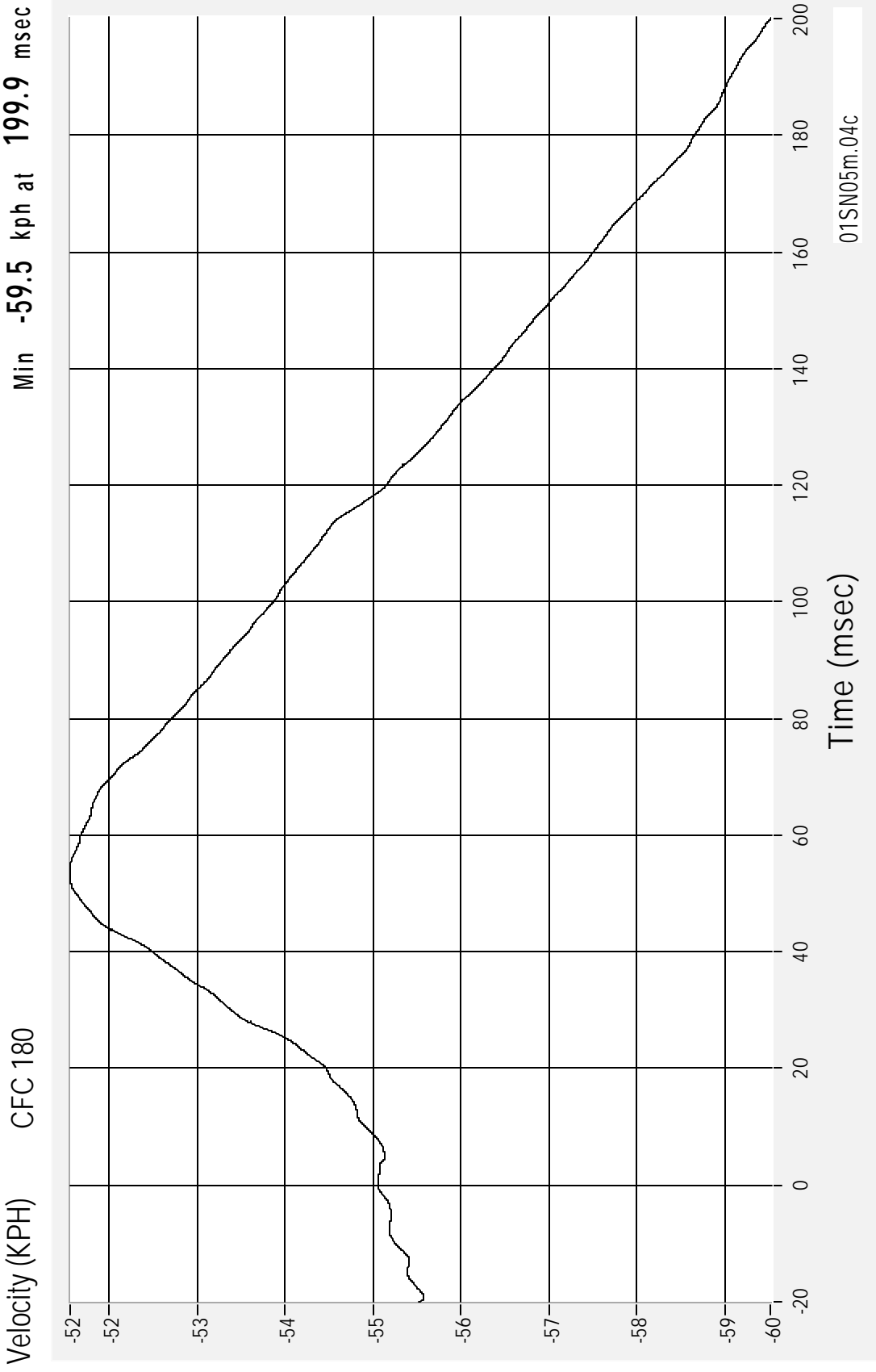
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MDB Rear Axle - X Velocity  
CFC 180

Max -51.6 kph at 53.4 msec  
Min -59.5 kph at 199.9 msec



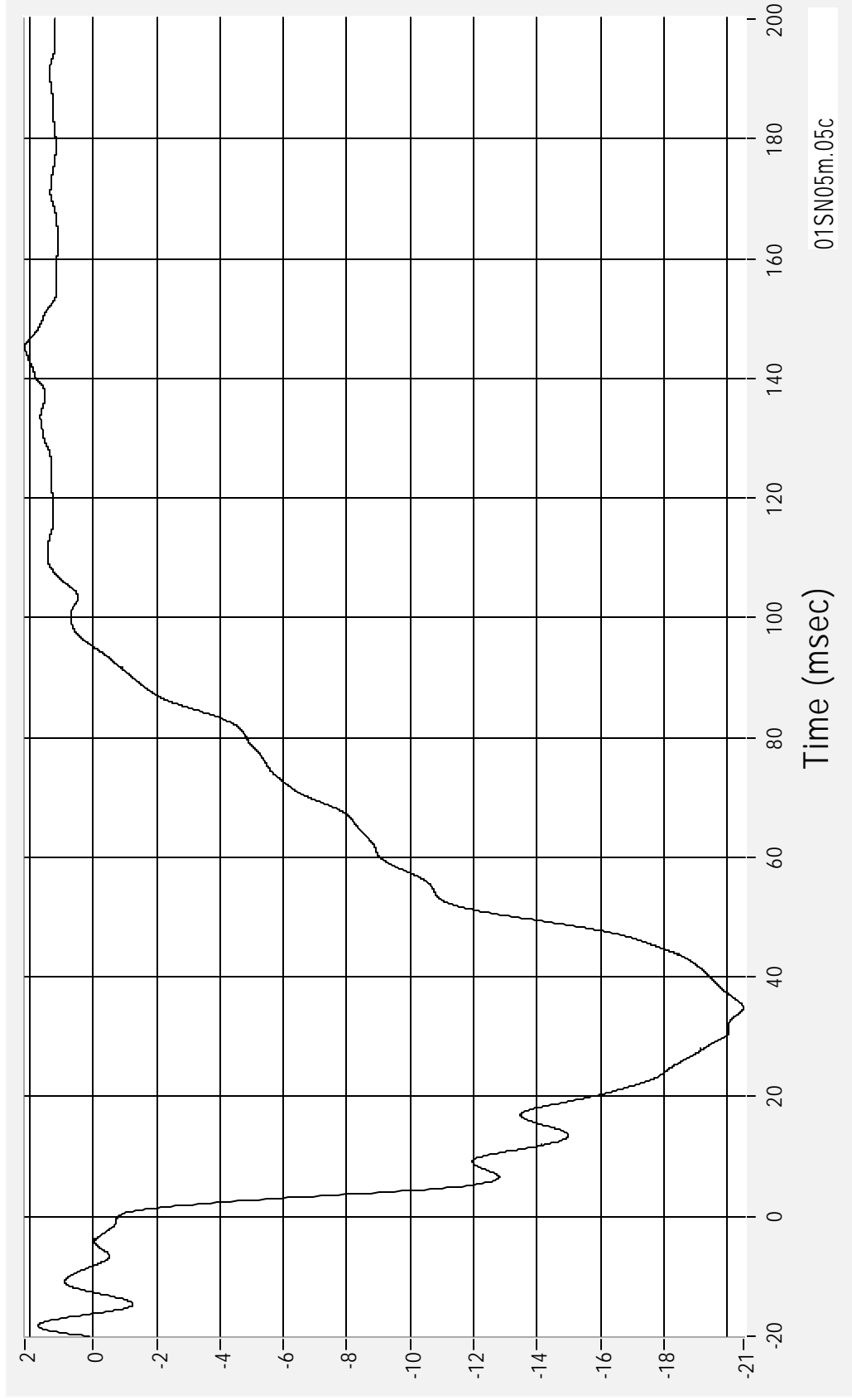
01SN05m.04c  
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14 March 2001

MDB Rear Axle - Y Acceleration

Acceleration (G's) CFC 60

Max 2.2 G's at 145.2 msec  
Min -20.5 G's at 34.9 msec

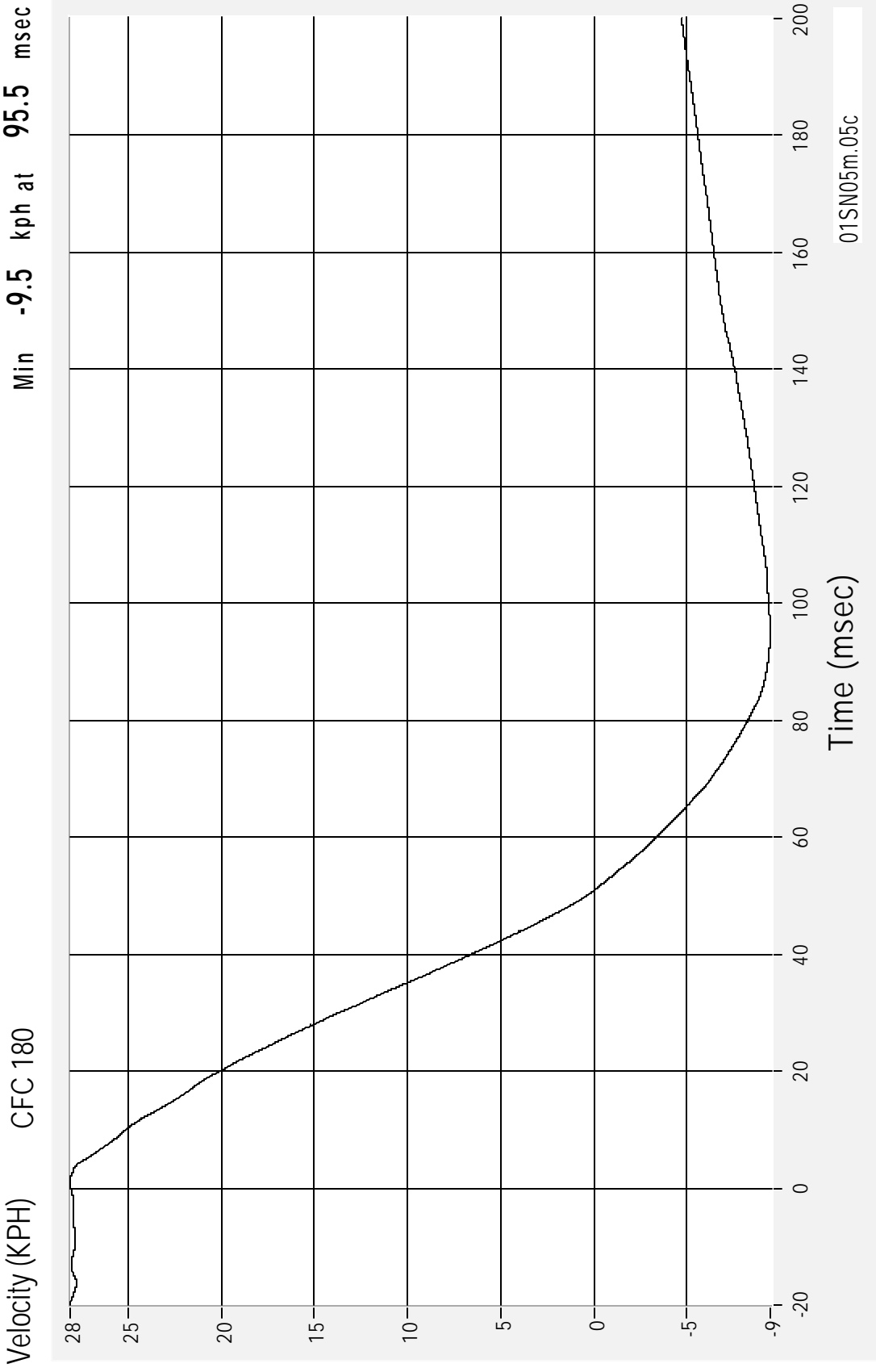


Time (msec)

01SN05m.05c

Max 28.1 kph at 1.5 msec  
Min -9.5 kph at 95.5 msec

MDB Rear Axle - Y Velocity  
CFC 180



01SN05m.05c

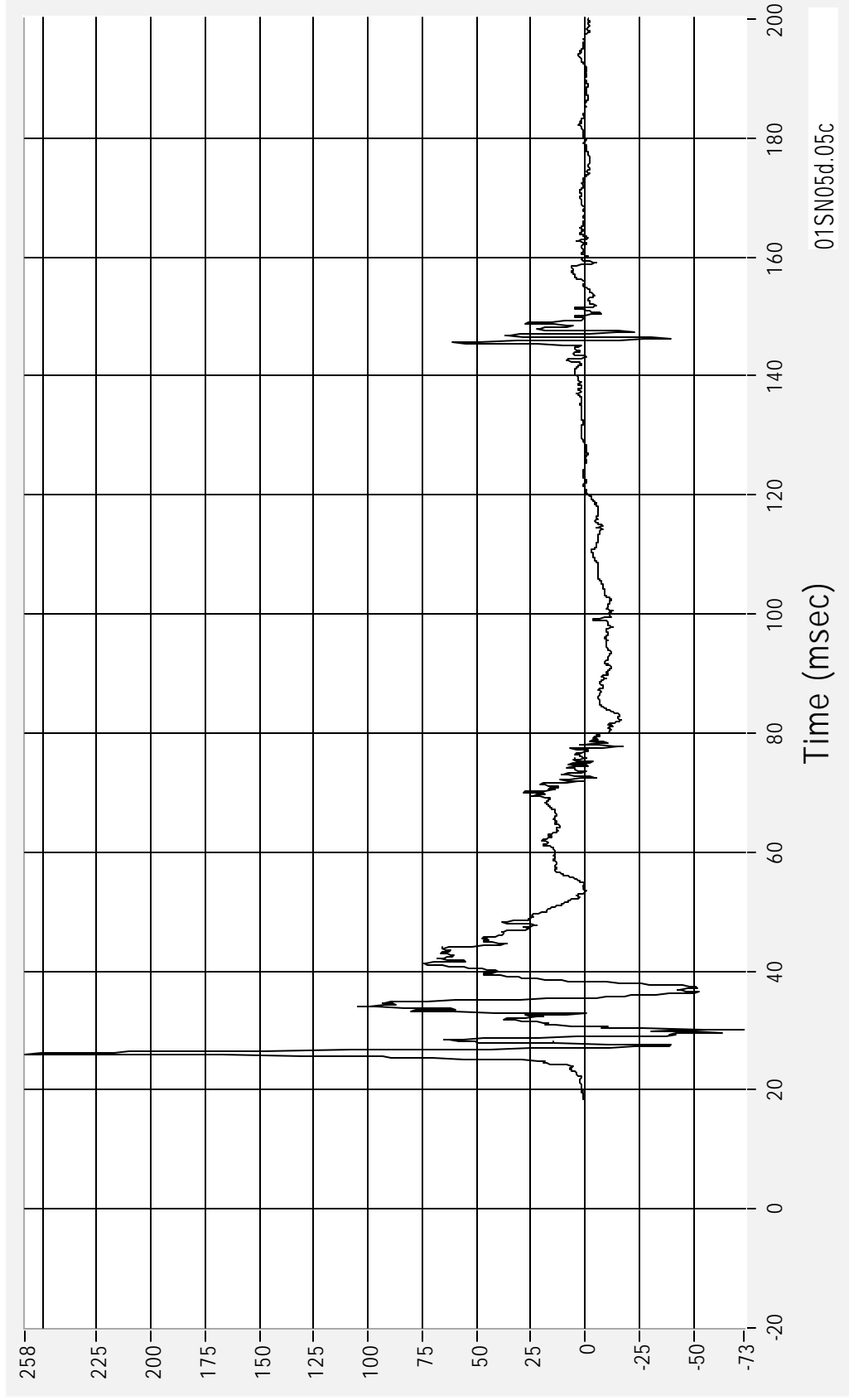
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Driver Dummy Upper Rib Y Acceleration - Redundant

Max 258.0 G's at 26.1 msec  
Min -73.1 G's at 30.2 msec

Acceleration (G's) CFC 1000



01SN05d.05c

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Driver Dummy Upper Rib Y Velocity - Redundant

Velocity (kph)

CFC 180

Max 42.2 kph at 77.0 msec  
Min 0.0 kph at 0.0 msec



Time (msec)

01SN05d.05c

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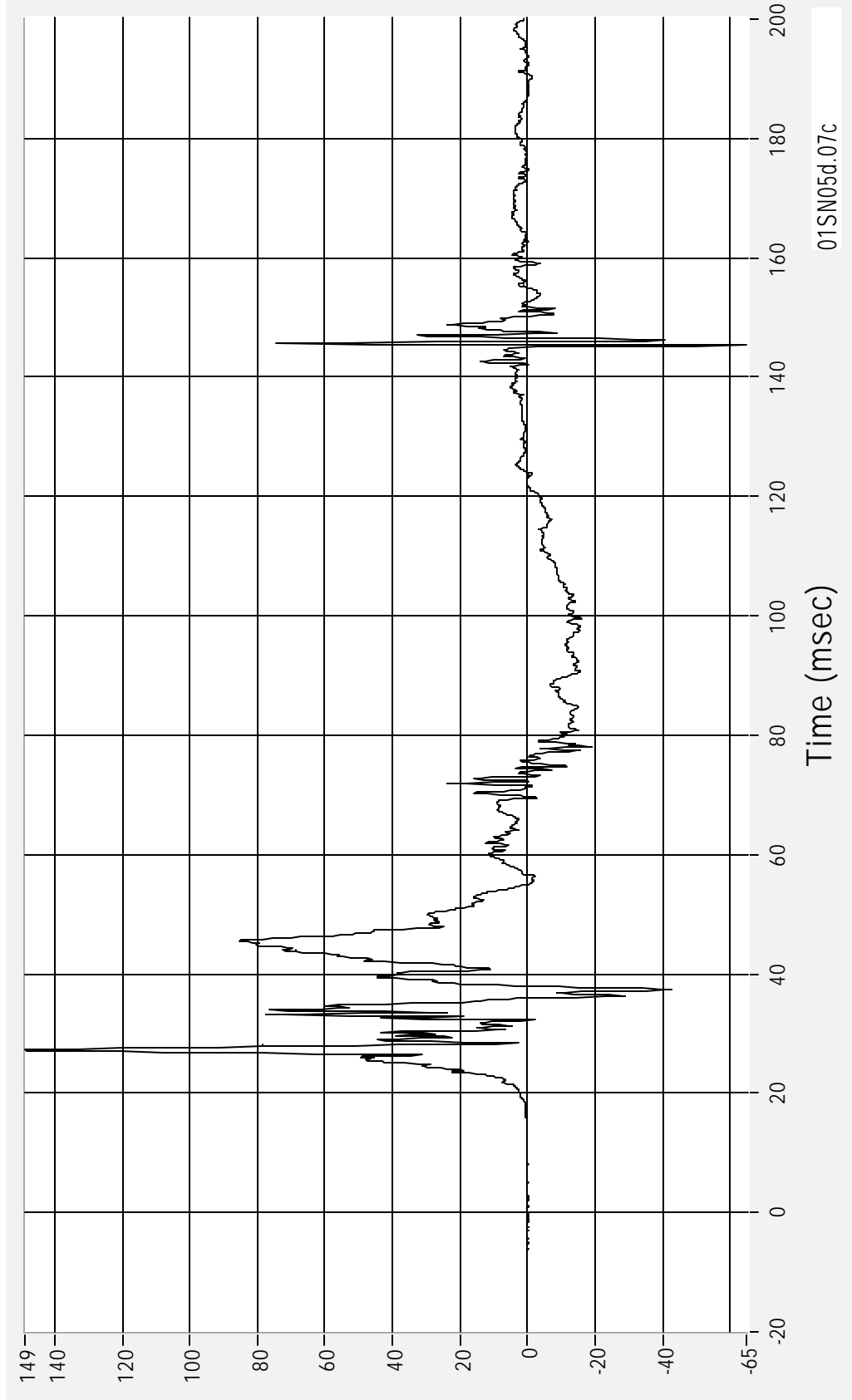
14 March 2001

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Driver Dummy Lower Rib Y Acceleration - Redundant

Max 148.8 G's at 27.3 msec  
Min -64.7 G's at 145.3 msec

Acceleration (G's) CFC 1000



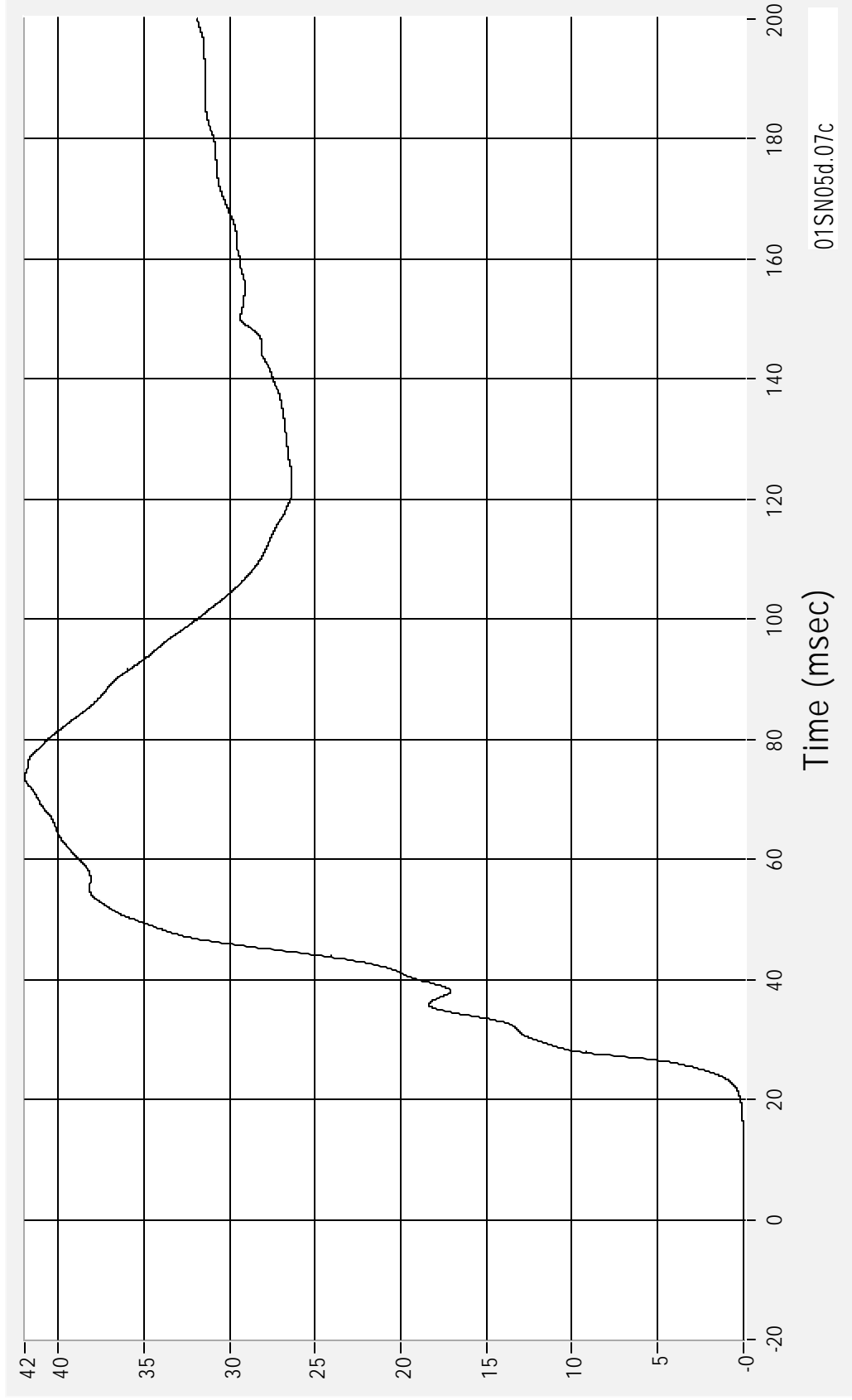
Time (msec)

01SN05d.07c

Driver Dummy Lower Rib Y Velocity - Redundant

Velocity (kph)

Max 42.0 kph at 73.7 msec  
Min 0.0 kph at 8.4 msec



Time (msec)

01SN05d.07c

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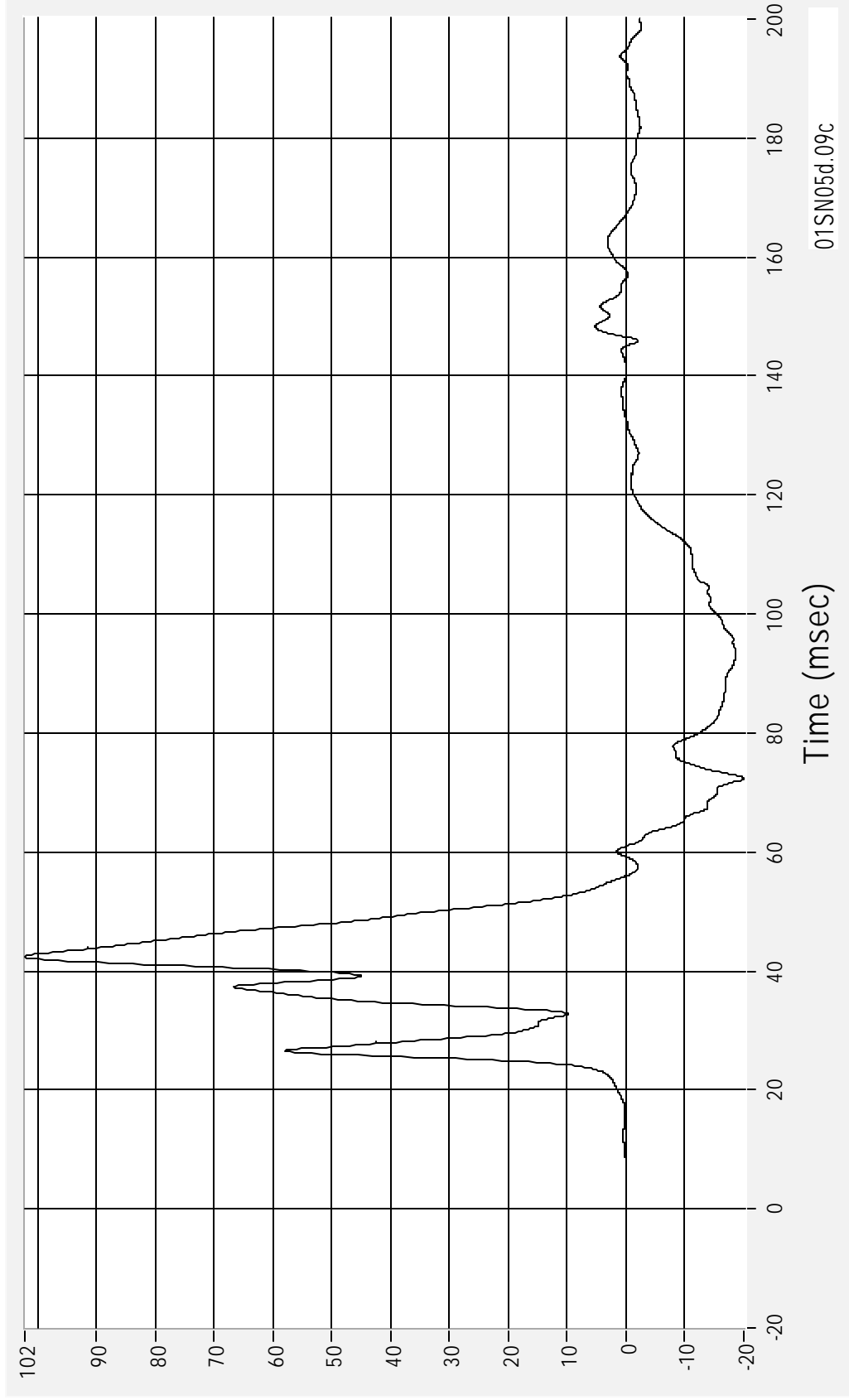
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Driver Dummy Lower Spine Y Acceleration - Redundant

Max 102.2 G's at 42.4 msec  
Min -20.0 G's at 72.4 msec

Acceleration (G's) CFC 180



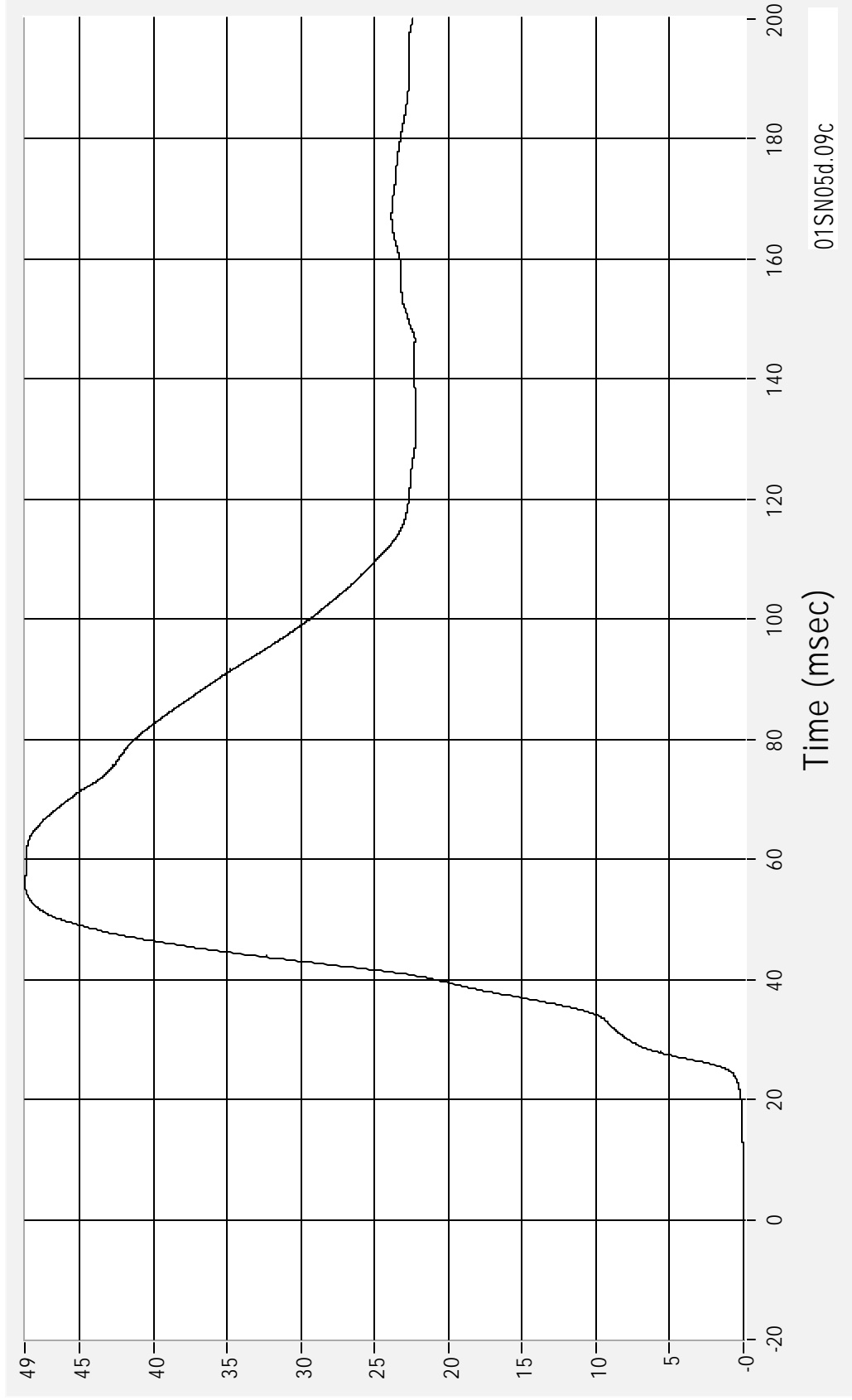
Time (msec)

01SN05d.09c

Driver Dummy Lower Spine Y Velocity - Redundant

Velocity (kph)

Max 48.7 kph at 56.0 msec  
Min 0.0 kph at 3.1 msec



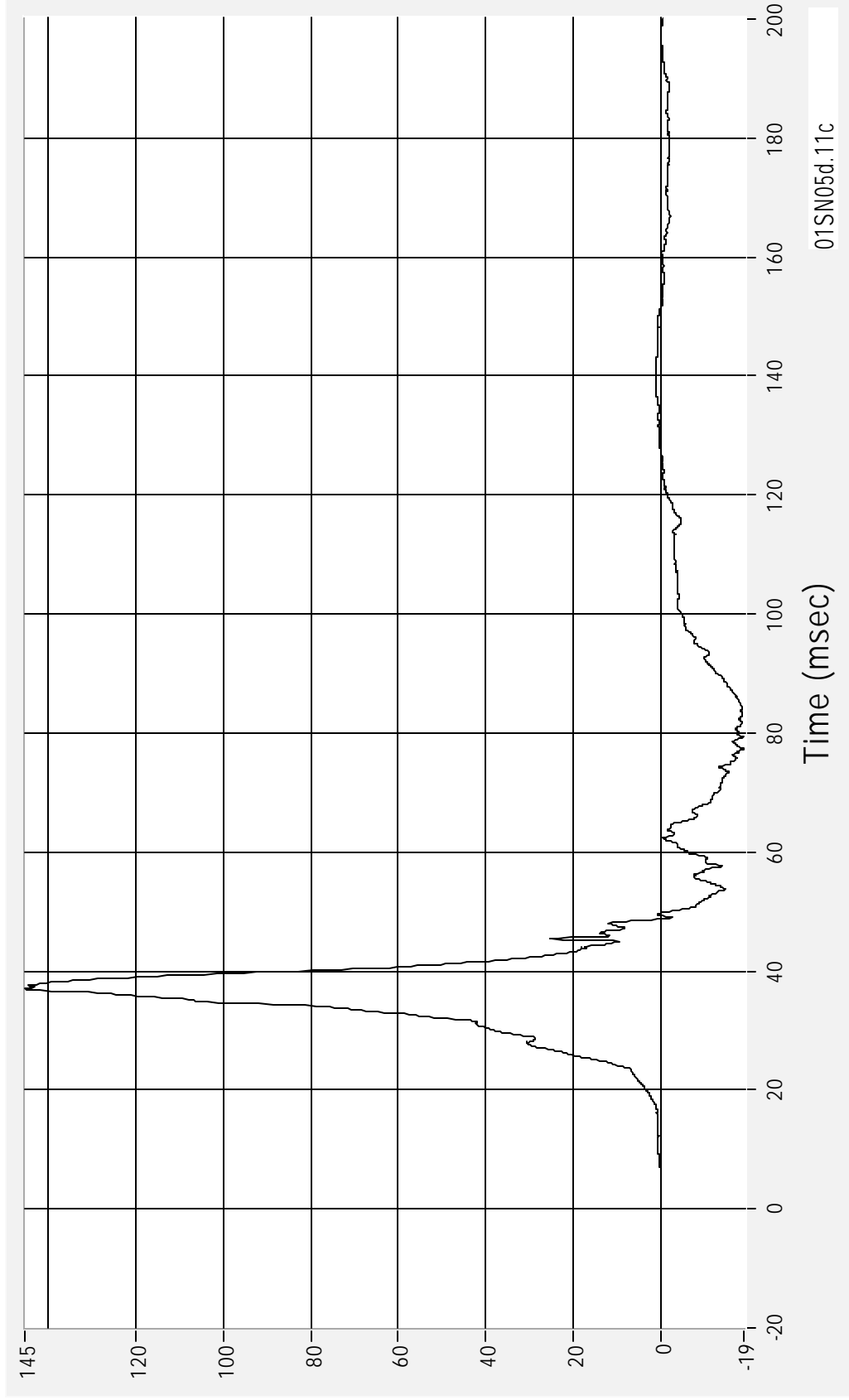
Time (msec)

01SN05d.09c

Driver Dummy Pelvis Y Acceleration - Redundant

Max 145.4 G's at 37.0 msec  
Min -19.1 G's at 77.3 msec

Acceleration (G's) CFC 1000



Time (msec)

01SN05d.11c

01SN05 - 2001 Buick Century

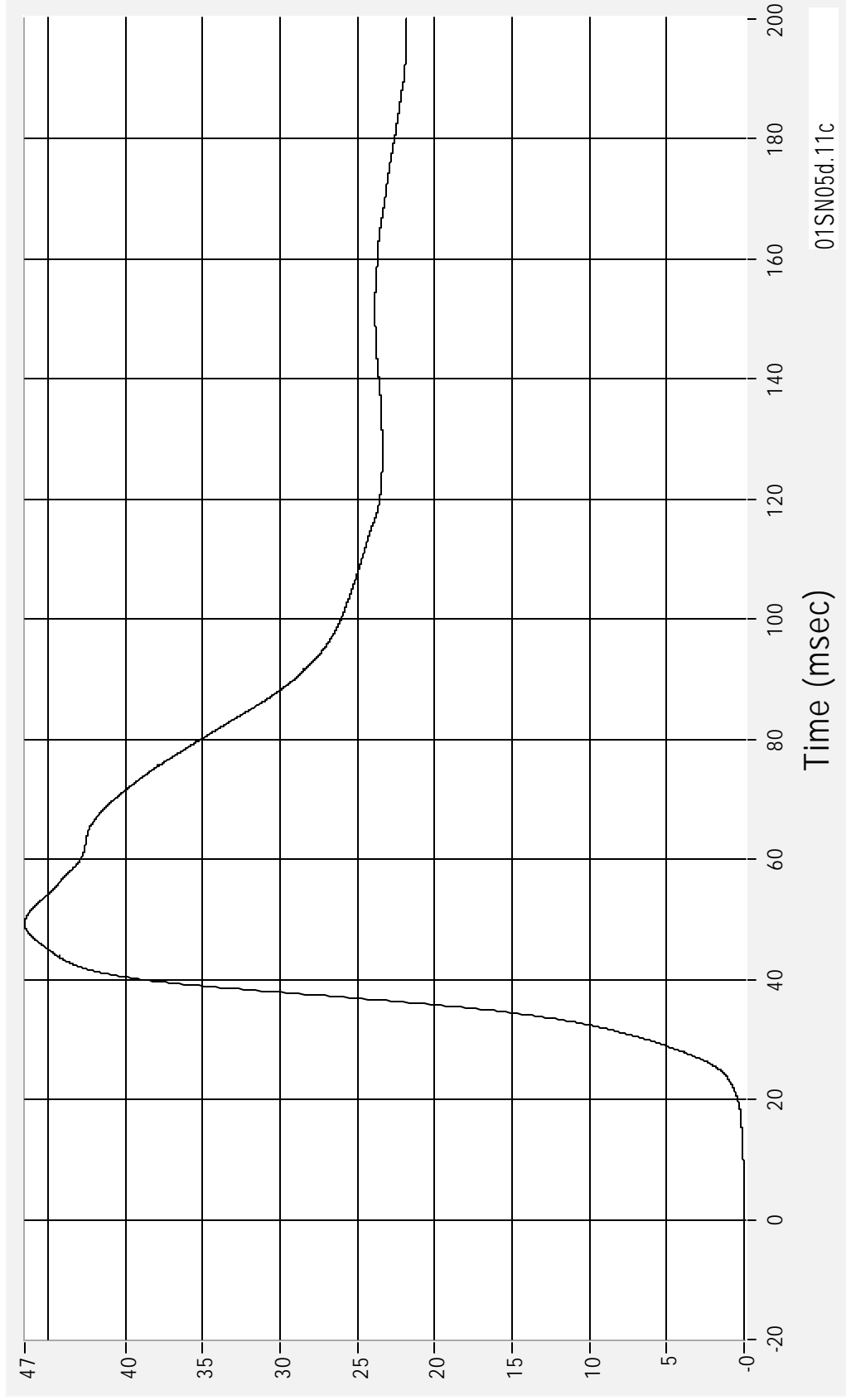
14 March 2001

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Driver Dummy Pelvis Y Velocity - Redundant

Velocity (kph)

Max 46.5 kph at 49.2 msec  
Min 0.0 kph at 0.0 msec



Time (msec)

01SN05d.11c

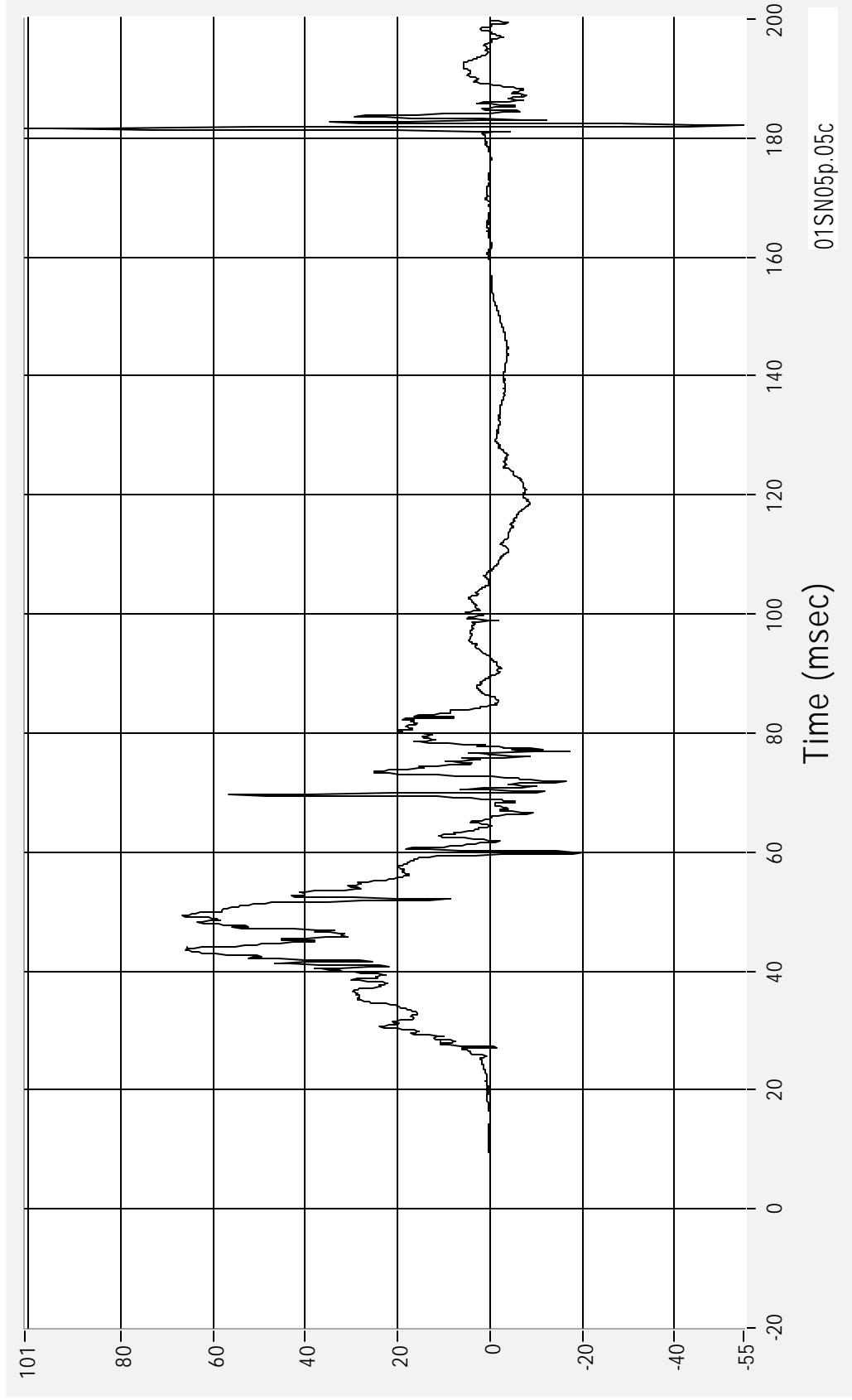
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Passenger Dummy Upper Rib Y Acceleration - Redundant  
Max 100.8 G's at 181.6 msec  
Min -55.0 G's at 182.2 msec

Acceleration (G's) CFC 1000



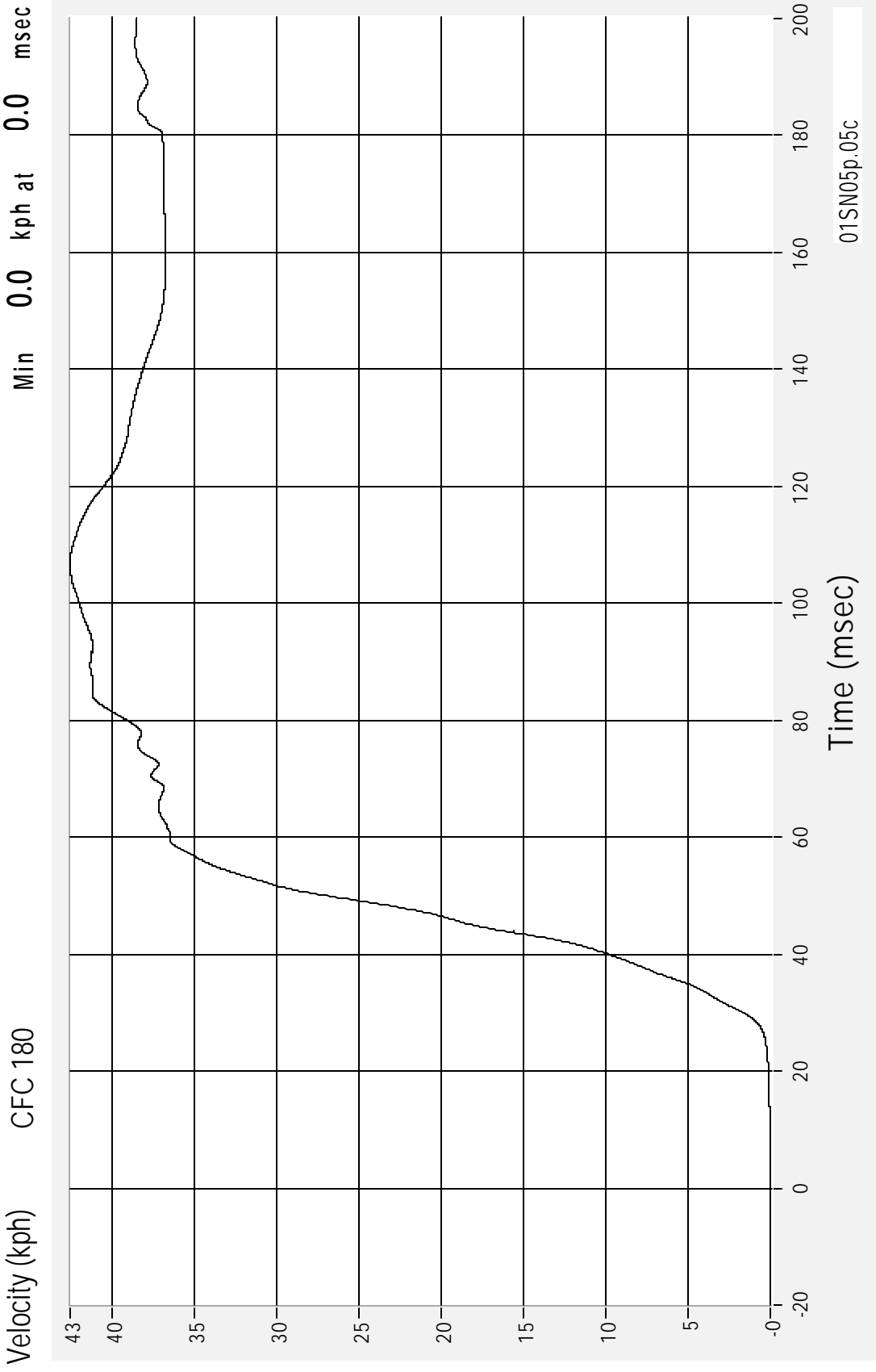
01SN05p.05c

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14 March 2001

Passenger Dummy Upper Rib Y Velocity - Redundant  
CFC 180

Max 42.5 kph at 107.3 msec  
Min 0.0 kph at 0.0 msec



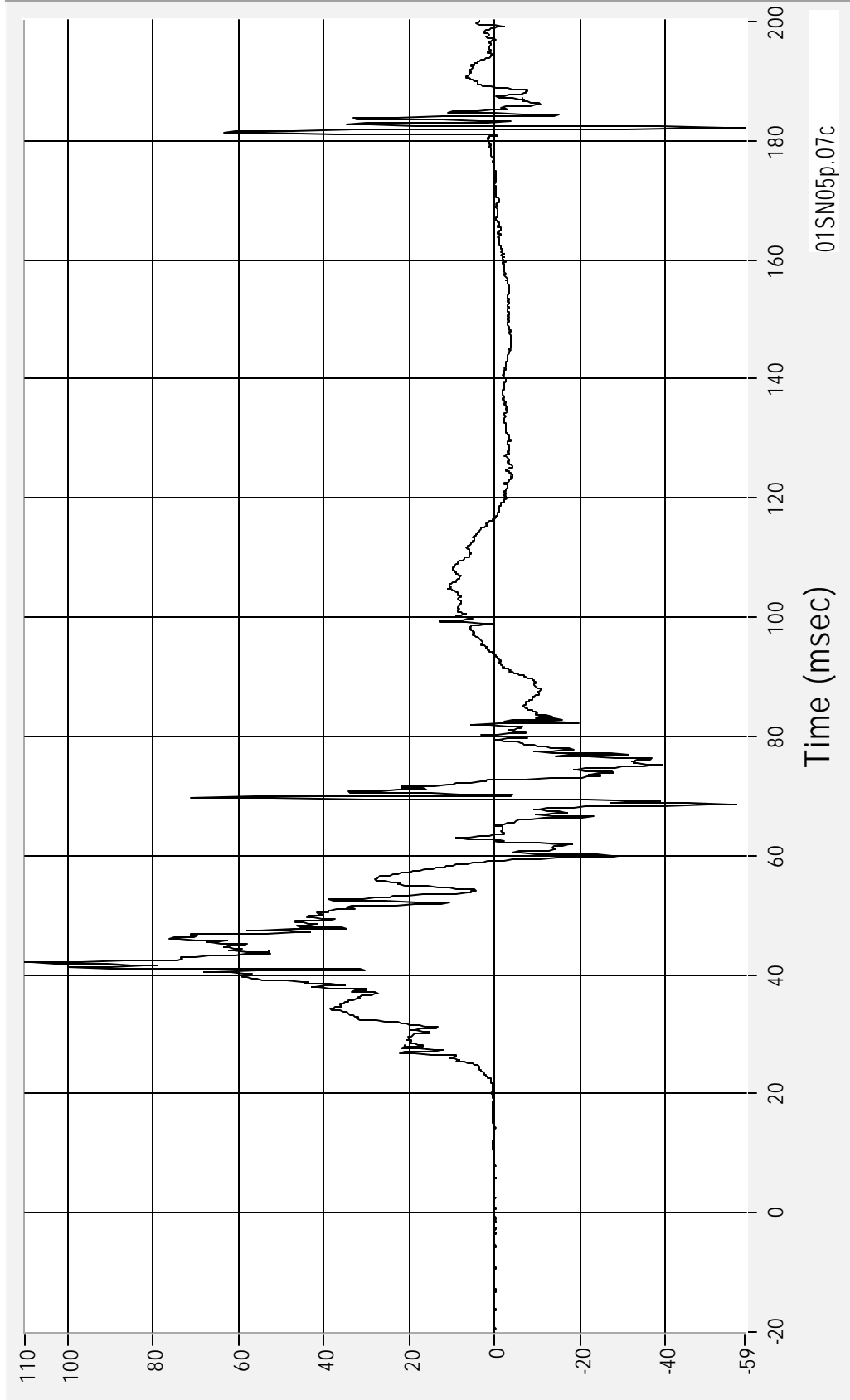
01SN05p.05c  
Medical College of Wisconsin  
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Passenger Dummy Lower Rib Y Acceleration - Redundant

Max 110.1 G's at 42.1 msec  
Min -58.6 G's at 182.2 msec

Acceleration (G's) CFC 1000



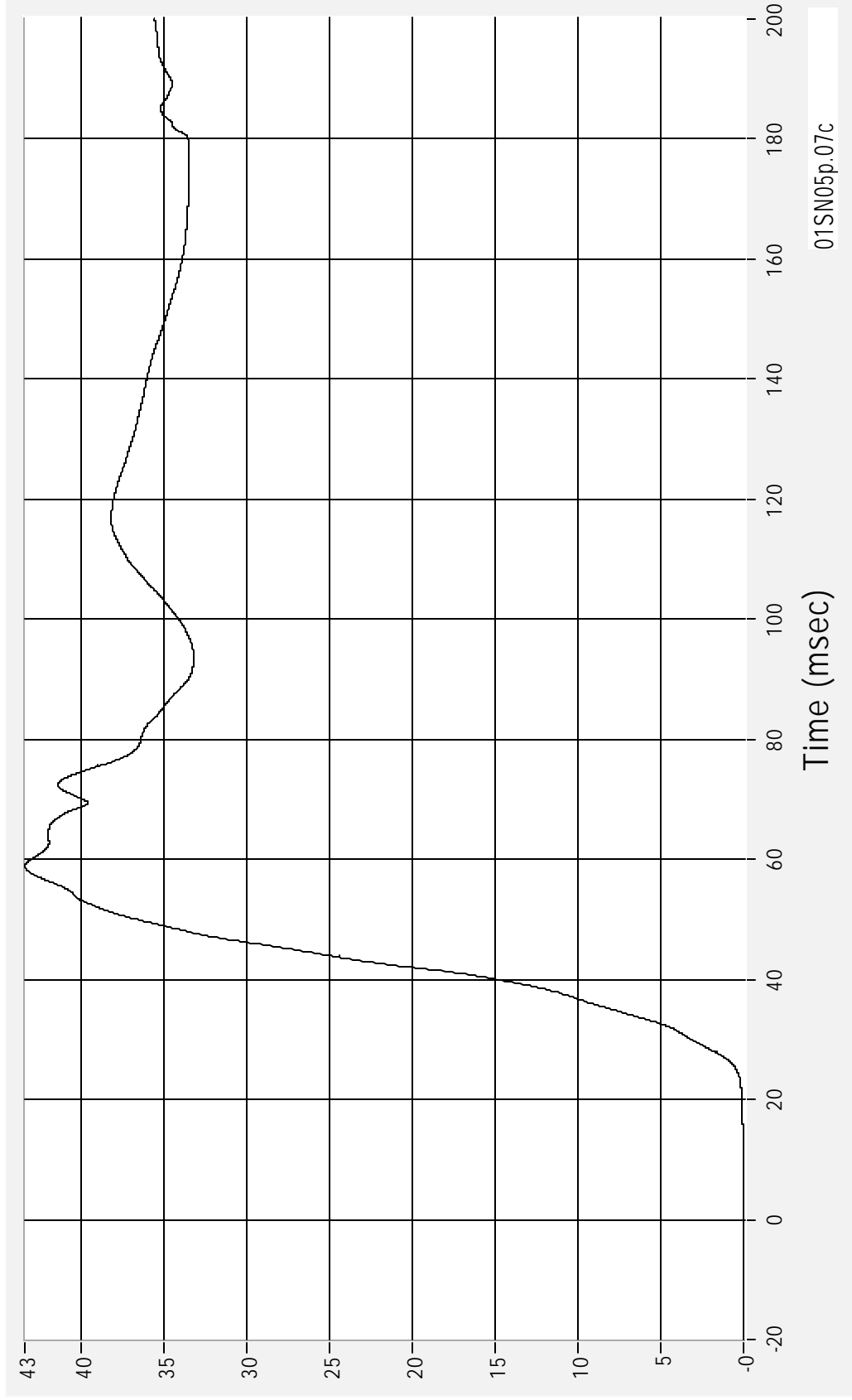
Time (msec)

01SN05p.07c

Passenger Dummy Lower Rib Y Velocity - Redundant

Velocity (kph)

Max 43.4 kph at 58.9 msec  
Min 0.0 kph at 8.9 msec

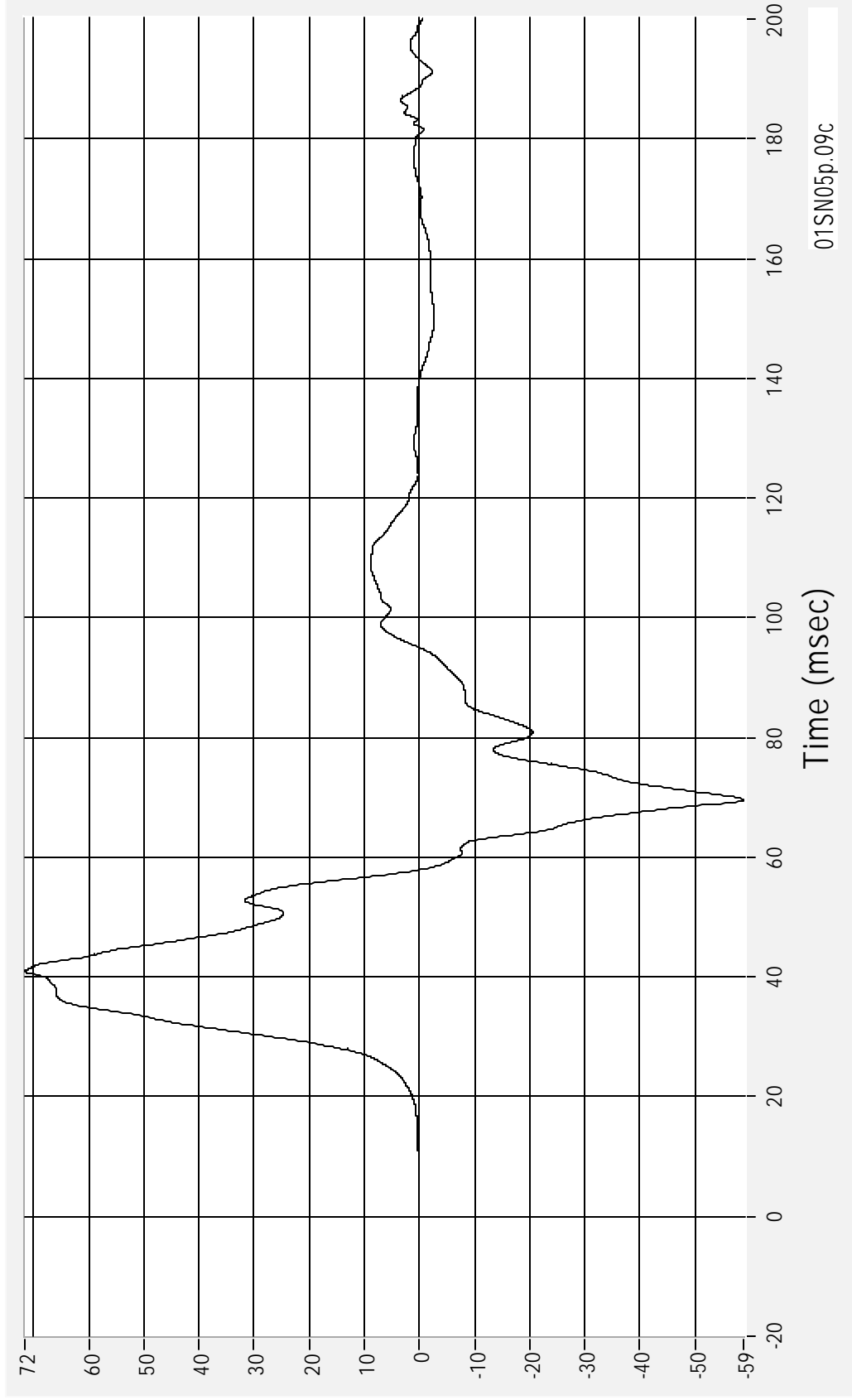


Time (msec)

01SN05p.07c

Passenger Dummy Lower Spine Y Acceleration - Redundant  
Max 71.6 G's at 41.0 msec  
Min -58.8 G's at 69.5 msec

Acceleration (G's) CFC 180



01SN05p.09c

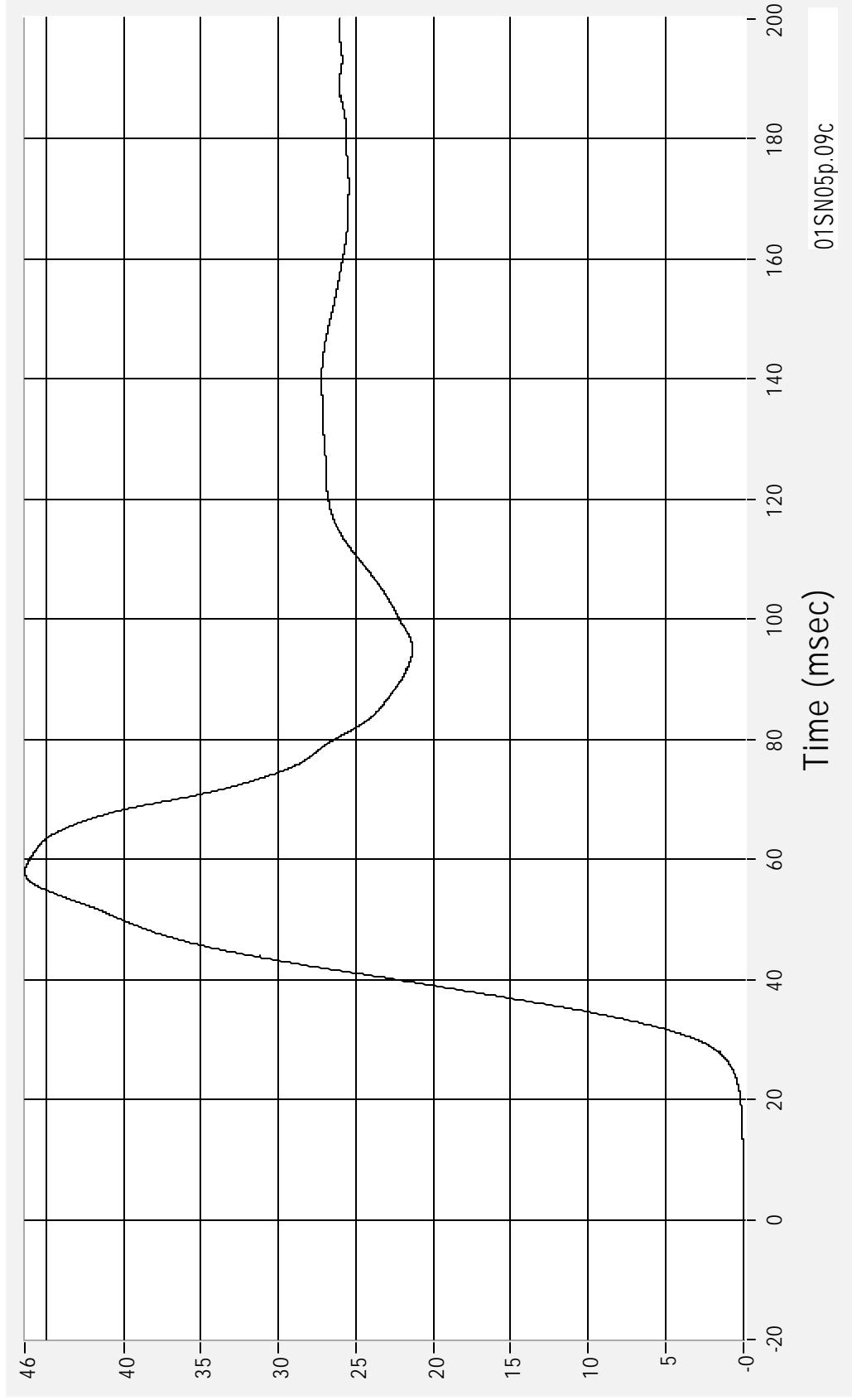
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14 March 2001

Passenger Dummy Lower Spine Y Velocity - Redundant

Velocity (kph) CFC 180

Max 46.4 kph at 57.9 msec  
Min 0.0 kph at 4.7 msec



Time (msec)

01SN05p.09c

01SN05 - 2001 Buick Century

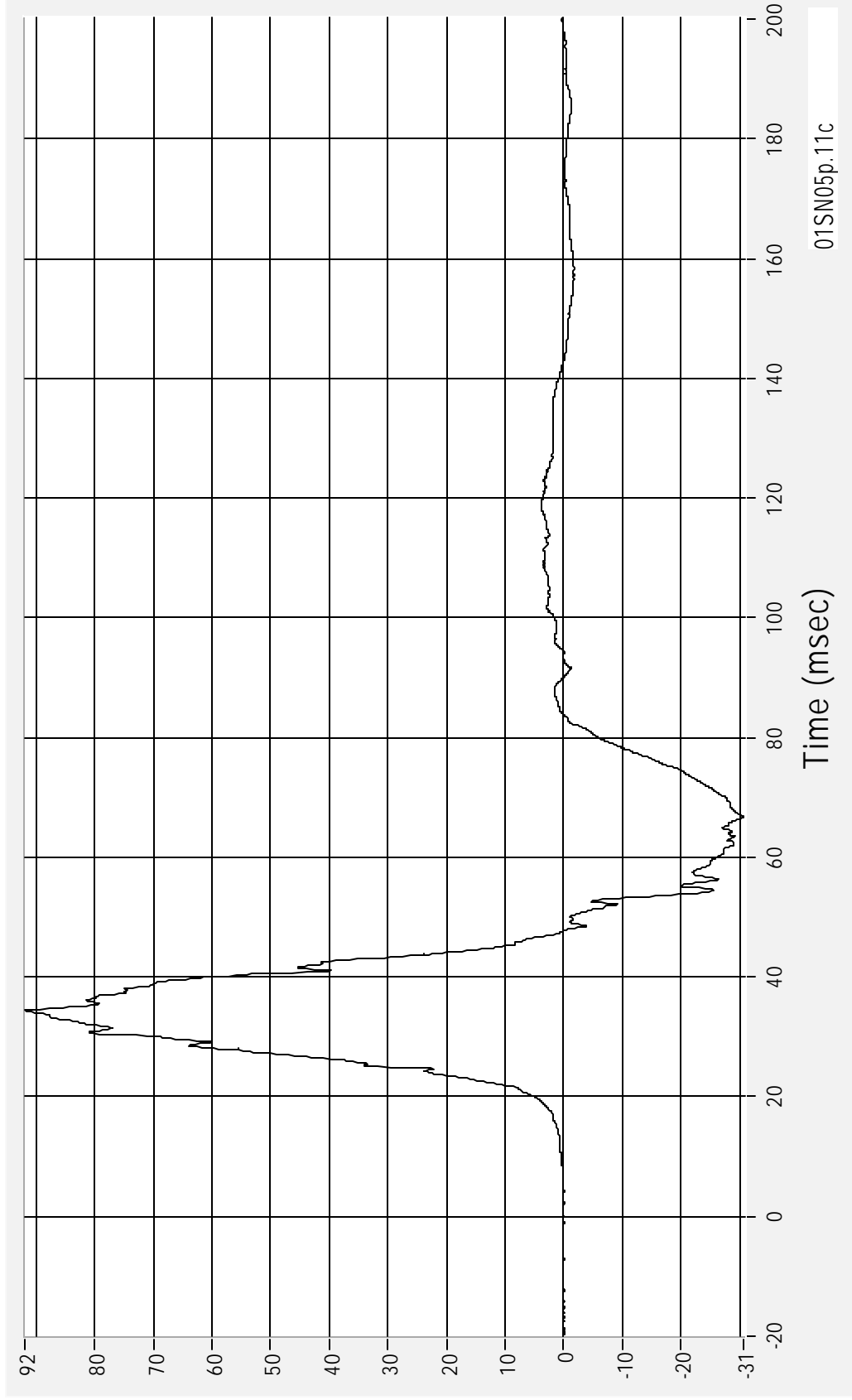
14 March 2001

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Passenger Dummy Pelvis Y Acceleration - Redundant

Acceleration (G's) CFC 1000

Max 91.9 G's at 34.4 msec  
Min -30.7 G's at 66.7 msec



01SN05p.11c

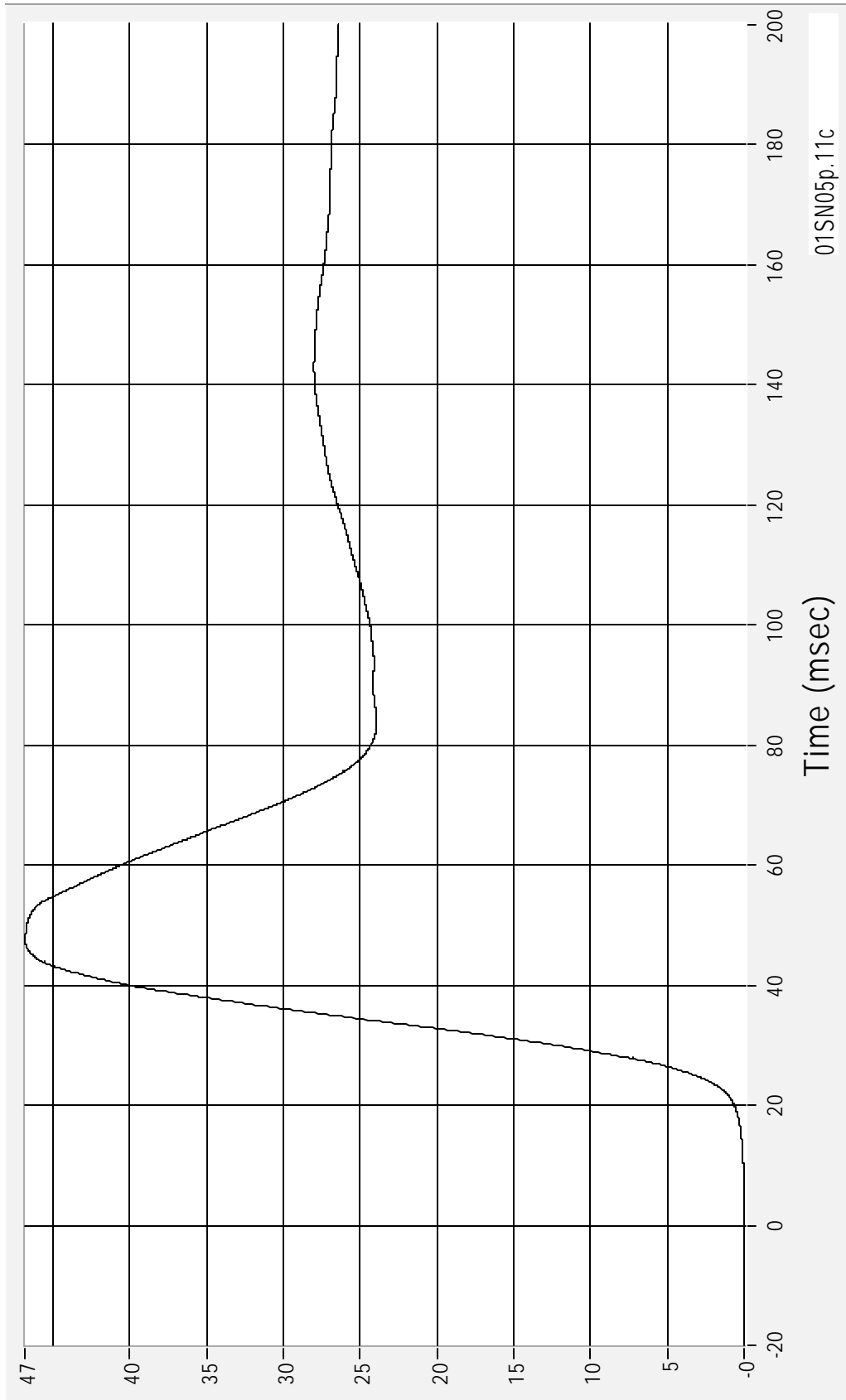
Medical College of Wisconsin  
Vehicle Crashworthiness Lab

01SN05 - 2001 Buick Century  
14 March 2001

Passenger Dummy Pelvis Y Velocity - Redundant

Velocity (kph) CFC 180

Max 46.8 kph at 47.6 msec  
Min 0.0 kph at 0.0 msec



01SN05 - 2001 Buick Century

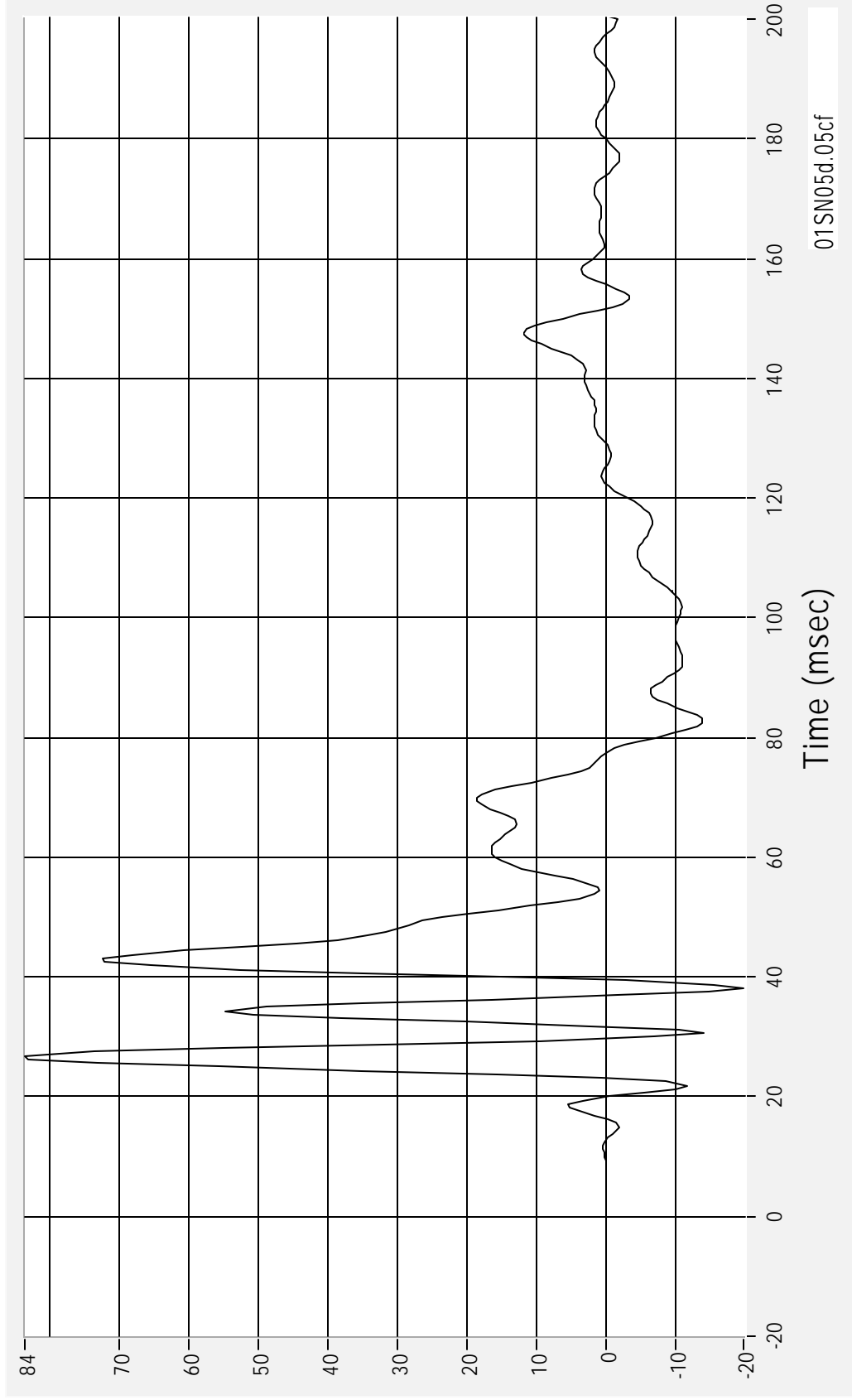
14 March 2001

Medical College of Wisconsin  
Vehicle Crashworthiness Lab

Driver Dummy Upper Rib Y Acceleration - Redundant

Max 83.6 G's at 26.9 msec  
Min -19.8 G's at 38.1 msec

Acceleration (G's) FIR100



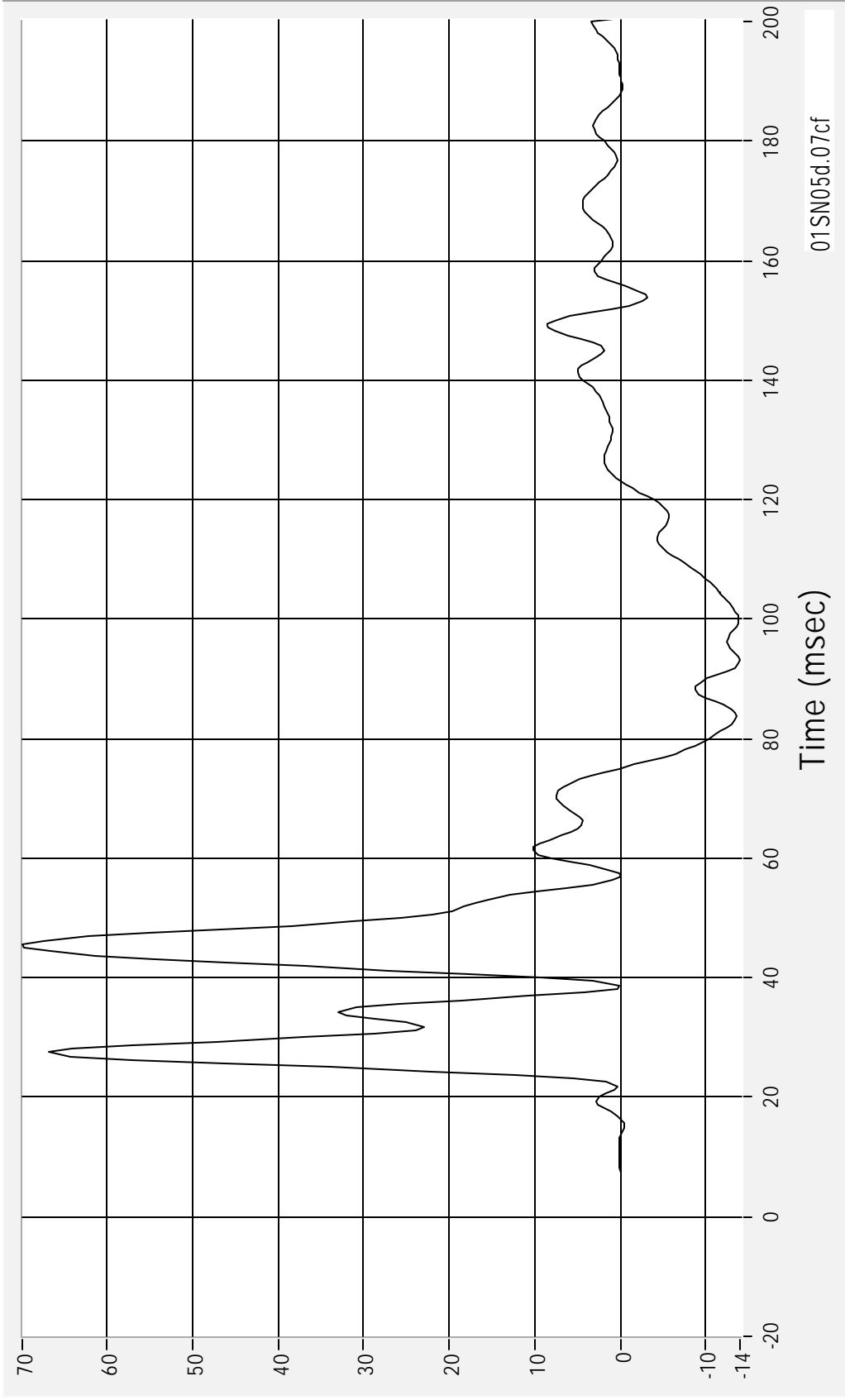
Time (msec)

01SN05d.05cf

Driver Dummy Lower Rib Y Acceleration - Redundant

Max 69.9 G's at 45.6 msec  
Min -14.0 G's at 93.1 msec

Acceleration (G's) FIR100



01SN05d.07cf

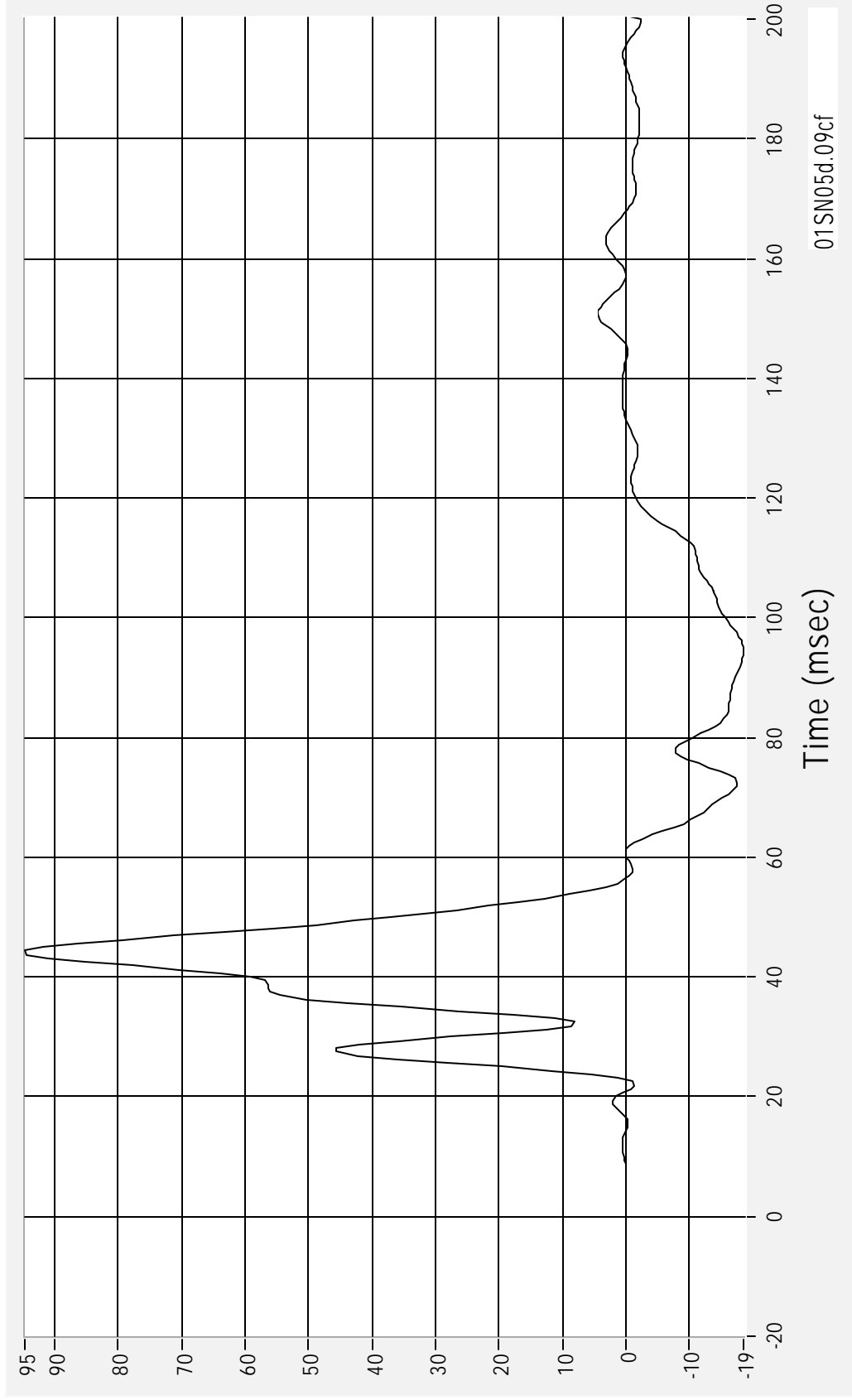
Medical College of Wisconsin  
Vehicle Crashworthiness Lab

01SN05 - 2001 Buick Century  
14 March 2001

Driver Dummy Lower Spine Y Acceleration - Redundant

Acceleration (G's) FIR100

Max 94.7 G's at 44.4 msec  
Min -18.5 G's at 94.4 msec



01SN05d.09cf

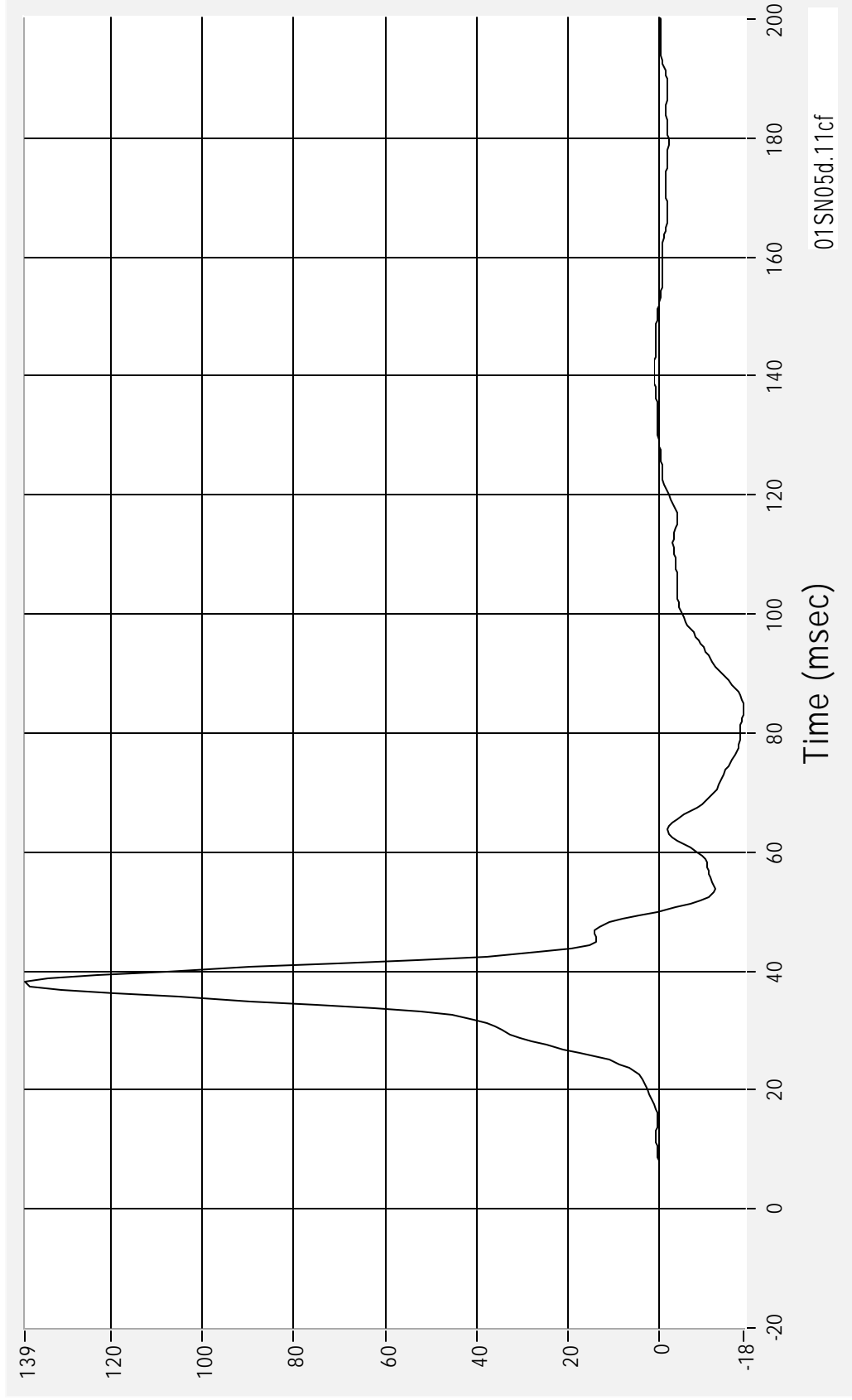
Medical College of Wisconsin  
Vehicle Crashworthiness Lab

01SN05 - 2001 Buick Century  
14 March 2001

Driver Dummy Pelvis Y Acceleration - Redundant

Max 138.9 G's at 38.1 msec  
Min -18.5 G's at 84.4 msec

Acceleration (G's) FIR100

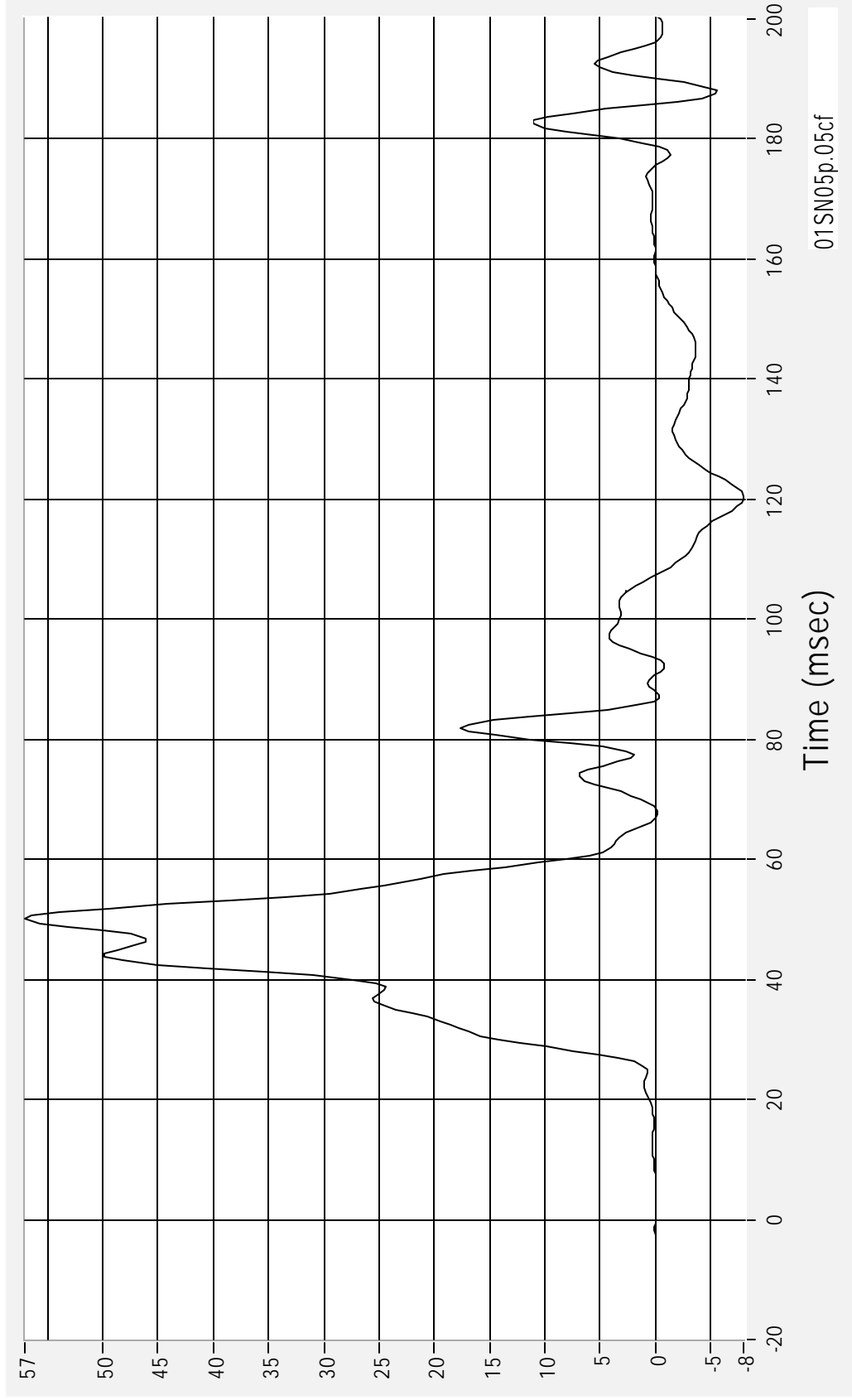


01SN05d.11cf

Passenger Dummy Upper Rib Y Acceleration - Redundant

Acceleration (G's) FIR100

Max 57.1 G's at 50.0 msec  
Min -8.0 G's at 120.0 msec



01SN05p.05cf

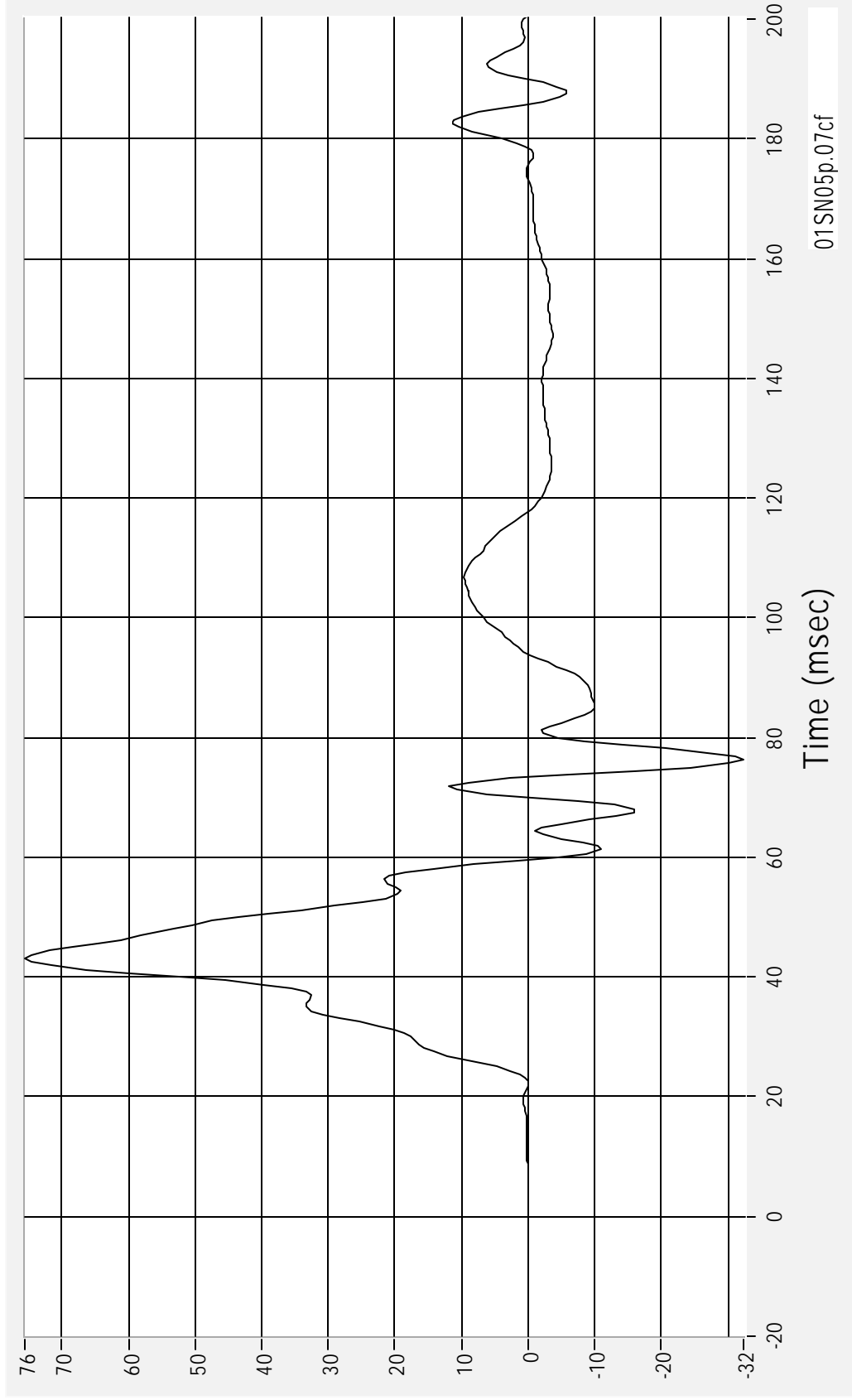
Medical College of Wisconsin  
Vehicle Crashworthiness Lab

01SN05 - 2001 Buick Century  
14 March 2001

Passenger Dummy Lower Rib Y Acceleration - Redundant

Acceleration (G's) FIR100

Max 75.6 G's at 43.1 msec  
Min -32.3 G's at 76.2 msec



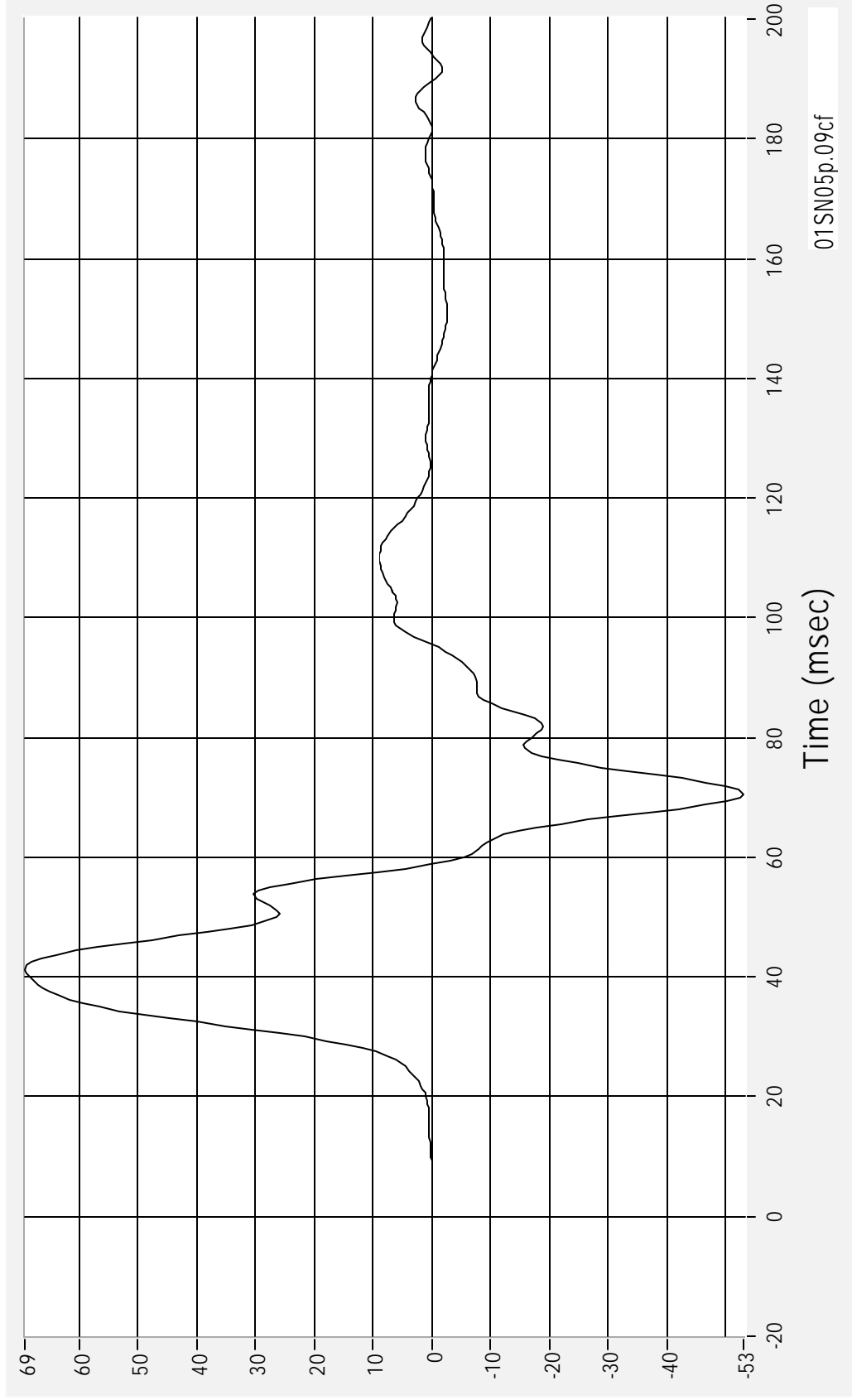
01SN05p.07cf

Medical College of Wisconsin  
Vehicle Crashworthiness Lab

01SN05 - 2001 Buick Century  
14 March 2001

Passenger Dummy Lower Spine Y Acceleration - Redundant  
Max 69.2 G's at 41.2 msec  
Min -53.1 G's at 70.6 msec

Acceleration (G's) FIR100



01SN05p.09cf

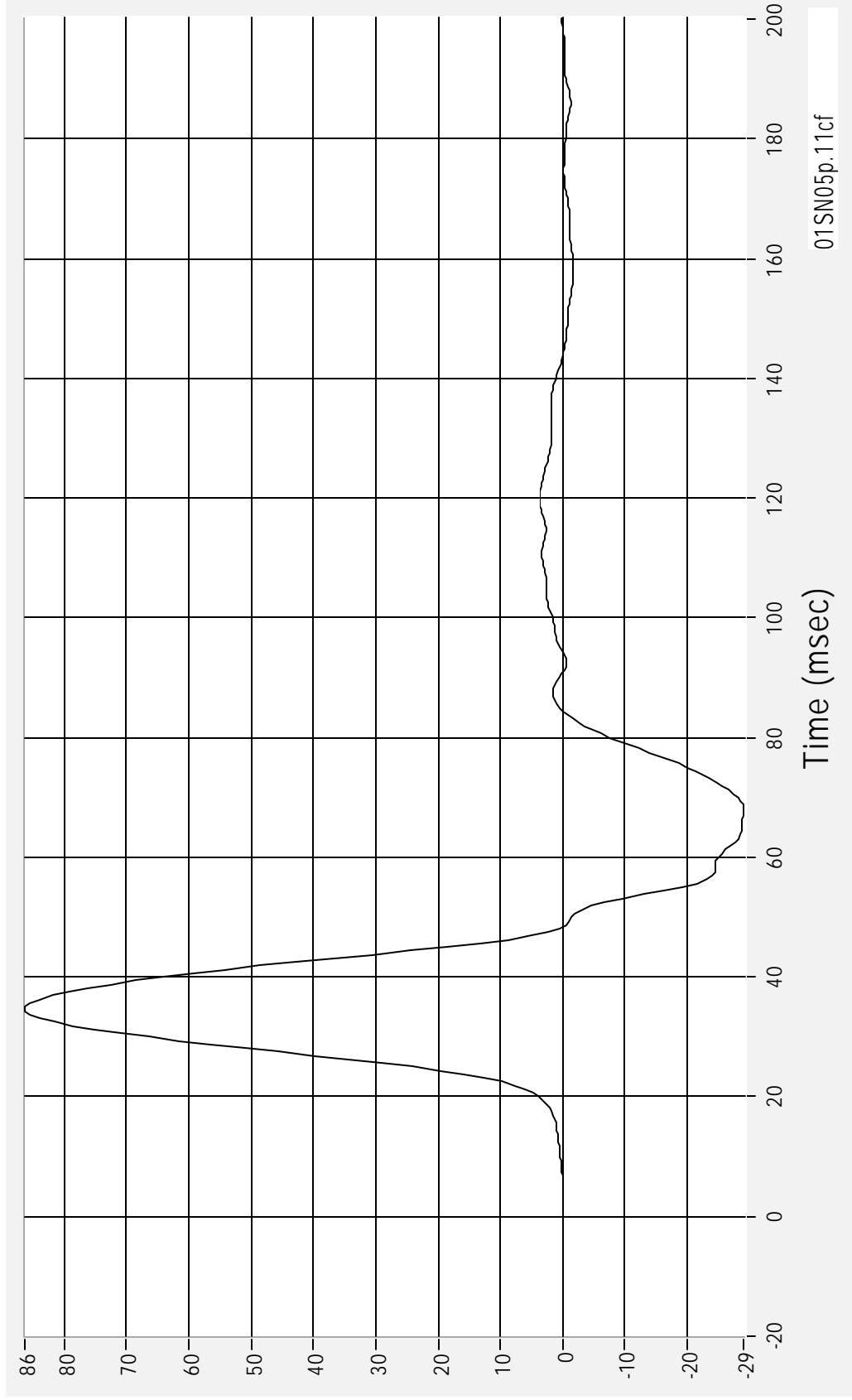
Medical College of Wisconsin  
Vehicle Crashworthiness Lab

01SN05 - 2001 Buick Century  
14 March 2001

Passenger Dummy Pelvis Y Acceleration - Redundant

Acceleration (G's) FIR100

Max 86.3 G's at 34.4 msec  
Min -29.0 G's at 68.1 msec



01SN05p.11cf

Medical College of Wisconsin  
Vehicle Crashworthiness Lab

01SN05 - 2001 Buick Century  
14 March 2001

**APPENDIX C**

**SID CONFIGURATION AND VERIFICATION RESULTS**

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

**CONFIGURED FOR LEFT SIDE IMPACT**

SID Serial Number 056 Test Sequences 05 and 06

TEST	PRE		POST	
	COMMENTS	BY	COMMENTS	BY
EXTERNAL DIMENSIONS	Passed all requirements	John Humm and Michael Schlick	Passed all requirements	John Humm and Michael Schlick
THORACIC SHOCK ABSORBER TEST	Passed all requirements	John Humm	John Humm	John Humm
LATERAL THORAX IMPACT TEST	Passed all requirements	John Humm and Michael Schlick	Passed all requirements	John Humm and Michael Schlick
LATERAL PELVIS IMPACT TEST	Passed all requirements	John Humm and Michael Schlick	Passed all requirements	John Humm and Michael Schlick

SID Serial Number 058 Test Sequences 05 and 06

TEST	PRE		POST	
	COMMENTS	BY	COMMENTS	BY
EXTERNAL DIMENSIONS	Passed all requirements	John Humm and Michael Schlick	Passed all requirements	John Humm and Michael Schlick
THORACIC SHOCK ABSORBER TEST	Passed all requirements	John Humm	John Humm	John Humm
LATERAL THORAX IMPACT TEST	Passed all requirements	John Humm and Michael Schlick	Passed all requirements	John Humm and Michael Schlick
LATERAL PELVIS IMPACT TEST	Passed all requirements	John Humm and Michael Schlick	Passed all requirements	John Humm and Michael Schlick

**SUMMARY  
SID PRE AND POST VERIFICATION**

**CONFIGURED FOR LEFT SIDE IMPACT**

SID Serial Number 056 and 058

Test Sequences

05 and 06

TEST PARAMETER	SPECIFICATION	056		058	
		PRE	POST	PRE	POST
<b>MEASUREMENTS</b>					
Date	-	3/5/2001	3/19/2001	3/5/2001	3/19/2001
Sequential Test Number	-	05	06	05	06
Temperature (°C)	18.9-25.5	20.0	21.5	20.0	21.5
Relative Humidity (%)	10-70	30	35	30	35
SH – Seated Height (mm)	889-909	904	904	896	895
RH – Rib Height (mm)	501-521	511	510	519	517
HP – Hip Pivot Height (mm)	99	99	99	99	99
RD – Rib From Back Line (mm)	229-241	235	233	235	234
KH – Knee Pivot from Back Line (mm)	511-526	520	521	519	519
KV – Knee Pivot to Floor (mm)	490-505	496	495	494	496
HW – Hip Width (mm)	356-391	385	383	375	377
<b>THORAX IMPACTS</b>					
Date	-	3/5/2001	3/19/2001	3/5/2001	3/19/2001
Sequential Test Number	-	05	06	05	06
Temperature (°C)	18.9-25.5	20.0	21.5	20.0	21.5
Relative Humidity (%)	10-70	30	35	30	35
Probe Speed (m/s)	4.21-4.33	4.25	4.22	4.25	4.22
Upper Rib Acceleration (G)	37-46	43.7	41.8	45.4	43.6
Lower Rib Acceleration (G)	37-46	42.2	41.8	44.0	43.8
Lower Spine Acceleration (G)	15-22	19.6	20.1	20.5	20.0
<b>PELVIS IMPACTS</b>					
Date	-	3/5/2001	3/19/2001	3/5/2001	3/19/2001
Sequential Test Number	-	05	06	05	06
Temperature (°C)	18.9-25.5	20.0	21.5	20.0	21.5
Relative Humidity (%)	10-70	30	35	30	35
Probe Speed (m/s)	4.21-4.33	4.25	4.22	4.23	4.22
Pelvis Acceleration (G)	40-60	44.6	43.2	41.3	40.9
<b>THORACIC SHOCK ABSORBER</b>					
Shock Absorber ID Number	-	486	-	03130164	-
Damper Setting	1-10	6	-	5	-
Date	-	3/7/2001	-	3/7/2001	-
Sequential Test Number	-	02	-	02	-
Temperature	18.9-25.5	20.5	-	20.5	-
Relative Humidity	10-70	30	-	30	-
Probe Speed (m/s) Low	3.05	3.05	-	3.05	-
Force (N)	836 – 1125	1108	-	844	-
Displacement (mm)	30 – 35	21.0	-	32.0	-
Probe Speed (m/s) Middle	4.27	4.27	-	4.27	-
Force (N)	1730 – 2099	1756	-	1814	-
Displacement (mm)	32 – 37	35.2	-	35.7	-
Probe Speed (m/s) High	6.10	6.10	-	6.10	-
Force (N)	3741 – 4448	4048	-	4057	-
Displacement (mm)	33 - 40	37.4	-	37.0	-

**DUMMY INSPECTION LIST  
PRE AND POST TEST**

**CONFIGURED FOR LEFT SIDE IMPACT**

SID Serial Number 056 and 058

Test Sequences 05 and 06

		SID 056		SID 058	
		PRE	POST	PRE	POST
	Date	2/19/2001	3/5/2001	2/19/2001	3/5/2001
	Performed By	John Humm	John Humm	John Humm	John Humm
<b>PART</b>	<b>INSPECTION</b>				
Skin	Visual	Passed	Passed	Passed	Passed
Head	Visual, Ballast, Accelerometer Mount	Passed	Passed	Passed	Passed
Neck	Visual and Palpated, Cable Torque	Passed	Passed	Passed	Passed
Spine Box	Visual, Ballast, Weldment, Accelerometer Mount	Passed	Passed	Passed	Passed
Rib Cage	Visual, Palpated, Measured, Stiffness	Passed	Passed	Passed	Passed
Sternum	Visual	Passed	Passed	Passed	Passed
Lumbar Spine	Visual	Passed	Passed	Passed	Passed
Abdomen	Visual	Passed	Passed	Passed	Passed
Pelvis	Visual, Palpated, Accelerometer Mount	Passed	Passed	Passed	Passed
Upper Legs	Visual	Passed	Passed	Passed	Passed
Knees	Visual, Stops, Inserts	Passed	Passed	Passed	Passed
Lower Legs	Visual, Range of Motion	Passed	Passed	Passed	Passed
Ankles	Visual, Range of Motion	Passed	Passed	Passed	Passed
Feet	Visual, Range of Motion	Passed	Passed	Passed	Passed
Joints	1 to 2 G Range	Passed	Passed	Passed	Passed
Other					

**APPENDIX D**

**TEST EQUIPMENT LIST AND CALIBRATION INFORMATION**

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**SID INSTRUMENTATION**

**FRONT SID NO. 056**

	SERIAL NUMBER	MANUFACTURER	CALIBRATION DATE
HEAD X	J32800	ENDEVCO	10/24/2000
HEAD Y	J32565	ENDEVCO	10/24/2000
HEAD Z	J32567	ENDEVCO	10/24/2000
UPPER RIB	J35981	ENDEVCO	10/3/2000
LOWER RIB	J22318	ENDEVCO	10/24/2000
LOWER SPINE	J36616	ENDEVCO	10/3/2000
PELVIS	J32566	ENDEVCO	10/24/2000
UPPER RIB REDUNDANT	J18553	ENDEVCO	10/24/2000
LOWER RIB REDUNDANT	J35768	ENDEVCO	10/24/2000
LOWER SPINE REDUNDANT	J35940	ENDEVCO	10/3/2000
PELVIS REDUNDANT	J32662	ENDEVCO	10/24/2000

**REAR SID NO. 058**

	SERIAL NUMBER	MANUFACTURER	CALIBRATION DATE
HEAD X	J21552	ENDEVCO	6/11/2000
HEAD Y	J22189	ENDEVCO	6/11/2000
HEAD Z	J21551	ENDEVCO	5/10/2000
UPPER RIB	J36614	ENDEVCO	10/3/2000
LOWER RIB	J36018	ENDEVCO	10/3/2000
LOWER SPINE	J36659	ENDEVCO	10/3/2000
PELVIS	J36031	ENDEVCO	10/3/2000
UPPER RIB REDUNDANT	J35849	ENDEVCO	10/3/2000
LOWER RIB REDUNDANT	J35937	ENDEVCO	10/3/2000
LOWER SPINE REDUNDANT	J36603	ENDEVCO	10/3/2000
PELVIS REDUNDANT	J34364	ENDEVCO	10/24/2000

### VEHICLE INSTRUMENTATION

	SERIAL NUMBER	MANUFACTURER	CALIBRATION DATE
RIGHT FRONT SILL X	J36617	ENDEVCO	1/19/2001
RIGHT FRONT SILL Y	J21693	ENDEVCO	1/19/2001
RIGHT FRONT SILL Z	J35641	ENDEVCO	1/19/2001
RIGHT REAR SILL X	J32665	ENDEVCO	1/26/2001
RIGHT REAR SILL Y	J21342	ENDEVCO	1/19/2001
RIGHT REAR SILL Z	J35932	ENDEVCO	1/19/2001
REAR FLOORPAN ABOVE AXLE X	98G98E11-K02	ENTRAN	1/24/2001
REAR FLOORPAN ABOVE AXLE Y	98G98E07-Z09	ENTRAN	1/24/2001
REAR FLOORPAN ABOVE AXLE Z	98G98D22-Z04	ENTRAN	1/24/2001
LEFT REAR SILL Y	J21505	ENDEVCO	1/19/2001
LEFT FRONT SILL Y	J21466	ENDEVCO	1/23/2001
LEFT FRONT DOOR CENTERLINE Y	P13837	ENDEVCO	2/27/2001
RIGHT REAR OCCUPANT COMP Y	J19089	ENDEVCO	2/9/2001
MID-REAR OF LEFT FRONT DOOR Y	P13836	ENDEVCO	2/27/2001
LEFT FRONT DOOR UPPER C/L Y	P13491	ENDEVCO	2/27/2001
MID-REAR OF LEFT REAR DOOR Y	P12931	ENDEVCO	2/27/2001
LEFT REAR DOOR UPPER C/L Y	P13835	ENDEVCO	2/27/2001
LEFT LOWER B-PILLAR Y	98F98E11-K05	ENTRAN	2/20/2001
LEFT MIDDLE B-PILLAR Y	98F98D06-F01	ENTRAN	2/20/2001
LEFT LOWER A-PILLAR Y	P12746	ENDEVCO	2/27/2001
LEFT UPPER A-PILLAR	B12916	ENTRAN	2/9/2001
FRONT SEAT TRACK Y	B12920	ENTRAN	2/20/2001
REAR SEAT TRACK Y	N/a	N/a	N/a
VEHICLE CG X	B12689	ENDEVCO	2/9/2001
VEHICLE CG Y	B12912	ENDEVCO	2/9/2001
VEHICLE CG Z	B12808	ENDEVCO	2/20/2001

### MDB INSTRUMENTATION

MDB CG X	98F98D06-F06	ENTRAN	6/01/2000
MDB CG Y	98F98C27-B04	ENTRAN	6/01/2000
MDB CG Z	98F98E11-K10	ENTRAN	6/01/2000
MDB REAR FRAME MEMBER X	B12853	ENDEVCO	6/01/2000
MDB REAR FRAME MEMBER Y	B13038	ENDEVCO	6/01/2000