

REPORT NUMBER: 201U-CAL-06-02

**SAFETY COMPLIANCE TESTING FOR FMVSS 201  
OCCUPANT PROTECTION IN INTERIOR IMPACT  
UPPER INTERIOR HEAD IMPACT PROTECTION**

**GENERAL MOTORS OF CANADA LTD.  
2005 BUICK LACROSSE CX**

NHTSA NUMBER: C50115

CALSPAN TEST NUMBER: 8754-FMH-09

CALSPAN  
TRANSPORTATION SCIENCES CENTER  
P.O. BOX 400  
BUFFALO, NEW YORK 14225



Test Date: April 4, 2006

FINAL REPORT

PREPARED FOR:

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

This publication is distributed by the U. S. Department of Transportation, National Highway Traffic Safety Administration, in the interest of information exchange. The opinions, findings and conclusions expressed in this publication are those of the author(s) and not necessarily those of the Department of Transportation or the National Highway Traffic Safety Administration. The United States Government assumes no liability for its contents or use thereof. If trade or manufacturers' names or products are mentioned, it is only because they are considered essential to the object of the publication and should not be construed as an endorsement. The United States Government does not endorse products or manufacturers.

Prepared by:

---

James Czarnecki, Project Engineer

Approved by:

---

David J. Travale, Program Manager  
Transportation Science Center

Approval Date:

---

FINAL REPORT ACCEPTANCE BY:

---

NHTSA, Office of Vehicle Safety Compliance

---

Date of Report Acceptance

**TECHNICAL REPORT STANDARD TITLE PAGE**

1. <i>Report No.</i> 201U-CAL-06-02		2. <i>Government Accession No.</i>		3. <i>Recipient's Catalog No.</i>																			
4. <i>Title and Subtitle</i> Final Report of FMVSS 201 Compliance Testing of a 2005 Buick LaCrosse CX, NHTSA No. C50115				5. <i>Report Date</i> April 4, 2006																			
				6. <i>Performing Organization Code</i> CAL																			
7. <i>Author(s)</i> David J. Travale, Program Manager James Czarnecki, Project Engineer				8. <i>Performing Organization Report No.</i> 8754-FMH-09																			
9. <i>Performing Organization Name and Address</i> Calspan 4455 Genesee Street Buffalo, New York 14225				10. <i>Work Unit No.</i>																			
				11. <i>Contract or Grant No.</i> DTNH22-04-C-01027																			
12. <i>Sponsoring Agency Name and Address</i> U.S. Department of Transportation National Highway Traffic Safety Administration Office of Vehicle Safety Compliance Mail Code: NVS-220 400 Seventh, SW, Room 6111 Washington, D.C. 20590				13. <i>Type of Report and Period Covered</i> Final Report April 2006																			
				14. <i>Sponsoring Agency Code</i> NVS-220																			
15. <i>Supplementary Notes</i>																							
16. <i>Abstract</i>  Compliance tests were conducted on the subject vehicle, a 2005 Buick LaCrosse CX, in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure TP-201U-01 for determination of FMVSS 201 compliance. Test failures identified were as follows in the table below:																							
<table border="1"> <thead> <tr> <th>Target Point</th> <th>Horizontal</th> <th>Vertical</th> <th>Velocity</th> <th>HIC</th> <th>HICd</th> </tr> </thead> <tbody> <tr> <td>None</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> </tr> <tr> <td>None</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> </tr> </tbody> </table>						Target Point	Horizontal	Vertical	Velocity	HIC	HICd	None	-	-	-	-	-	None	-	-	-	-	-
Target Point	Horizontal	Vertical	Velocity	HIC	HICd																		
None	-	-	-	-	-																		
None	-	-	-	-	-																		
17. <i>Key Words</i> Compliance Testing Safety Engineering FMVSS 201				18. <i>Distribution Statement</i> <u>Copies of this report are available from:</u> NHTSA Technical Reference Division National Highway Traffic Safety Admin. 400 Seventh St., SW Washington, DC 20590 Telephone No.: 202-366-4946																			
19. <i>Security Classif. (of this report)</i> UNCLASSIFIED		20. <i>Security Classif. (of this page)</i> UNCLASSIFIED		21. <i>No. of Pages</i>	22. <i>Price</i>																		

**Form DOT F1700.7 (8-69)**

## TABLE OF CONTENTS

SECTION		PAGE
1	PURPOSE AND TEST PROCEDURE	1-1
2	SUMMARY OF UPPER INTERIOR HEAD IMPACTS	2-1
3	SUMMARY OF TEST RESULTS AND DATA PLOTS	3-1
APPENDIX A	PHOTOGRAPHS	A-1
APPENDIX B	PART 572L PERFORMANCE CALIBRATION IN SUPPORT OF VEHICLE SAFETY COMPLIANCE TESTING FOR OCCUPANT PROTECTION IN INTERIOR IMPACT	B-1

## LIST OF DATA SHEETS

<b>DATA SHEET</b>	<b>DESCRIPTION</b>	<b>PAGE NO.</b>
2-1	SUMMARY OF UPPER INTERIOR HEAD IMPACT TESTS	2-2
2-2	GENERAL TEST AND VEHICLE PARAMETER DATA	2-4
2-3	APPROACH ANGLE LIMITS	2-6
2-4	SUMMARY TARGET IMPACT LOCATION ON FMH	2-7

## **SECTION 1**

### **PURPOSE AND TEST PROCEDURE**

This head impact compliance test is part of the FMVSS 201, Upper Interior Head Impact Protection, Test Program sponsored by the National Highway Traffic Safety Administration (NHTSA) under Contract No. DTNH22-04-C-01027. The purpose of this head impact compliance test was to determine whether the subject vehicle, a 2005 Buick LaCrosse CX, NHTSA No. C50115, meets the performance requirements of FMVSS 201, Occupant Protection in Interior Impact. The compliance test was conducted in accordance with the OVSC Laboratory Test Procedure No. TP-201U-01 dated April\_03, 1998.

## SECTION 2

### SUMMARY OF UPPER INTERIOR HEAD IMPACTS

A 2005 Buick LaCrosse CX, NHTSA No.C50115, was impacted at various locations throughout its upper interior by a 4.54 kg 50<sup>th</sup> percentile headform. A total of twelve (12) impacts were performed in this test series. The target area impacts were chosen by the NHTSA Contracting Officers Technical Representative (COTR). A summary of test results can be found on data sheet 2-1. The twelve (12) area chosen for testing were:

URBP <sub>PASSENGER</sub>	BP2	RP1	SR3R	AP3
AP1	URSR1	URRP	BP3	URBP <sub>DRIVER</sub>
SR2A	AP2			

The selected impact areas on the test vehicle appeared to comply with the performance requirements of FMVSS 201.

Five Free Motion Headforms (FMH), were used in this test series. All five FMH's were calibrated prior to and after the test series. Calibration information are included in Appendix B. Each FMH weighed  $4.54 \pm 0.5$  kg and has an orthogonal tri-axis accelerometer pack mounted at the center of gravity (c.g.).

A total of three (3) channels of data for each target impact test are recorded on a Keyser-Threde data acquisition system. Data plots along with still photographs can be found in Section 3 of this report.

To document each target area impact test, one Weinberger high-speed video camera was placed at various locations to view the headform contact with the selected target area.

**DATA SHEET 2-1**

**SUMMARY OF UPPER INTERIOR HEAD IMPACT TESTS**

VEHICLE YEAR/MAKE/MODEL/STYLE:	2005 Buick LaCrosse CX
VIN:	2G4WC532X51323166
DATE OF MANUFACTURE:	04/05 (SEE CERTIFICATION LABEL)
COLOR:	Sapphire Metallic

TARGET CODE	Target Coordinates						Approach Angles (degrees)		Velocity (kph)	FMH HIC	HIC(d)
	Driver Side			Passenger Side			Horizontal	Vertical			
	X(mm)	Y(mm)	Z(mm)	X(mm)	Y(mm)	Z(mm)					
AP1	2916.864	-534.62	1453.017	2917.006	541.6762	1451.207	121 °	26 °	23.34	544.8	577.5
AP2	2811.994	-598.098	1365.211	2806.311	604.0472	1363.284	216 °	40 °	23.48	342.0	424.4
AP3	2701.317	-624.261	1303.637	2693.025	631.6823	1300.853	135 °	42 °	23.46	660.5	664.7
BP1	3455.556	-474.276	1535.453	3454.529	476.0883	1542.145	-	-	-	-	-
BP2	3424.874	-609.772	1309.993	3425.507	611.3871	1316.986	90 °	17 °	23.45	939.7	875.3
BP3	3380.94	-614.549	1348.401	3381.63	617.9403	1353.325	270 °	"-" 4 °	23.78	593.4	614.1
BP4	3478.843	-660.619	1255.145	3479.74	664.5538	1256.571	-	-	-	-	-
FH1	2860.268	-433.313	1492.935	2863.912	437.4066	1494.801	Relocated 1 circle		-	-	-
FH1_R1	2856.947	-411.08	1494.993	2860.679	415.186	1496.254	-	-	-	-	-
FH2	2847.162	-281.572	1504.856	2850.309	287.0419	1506.729	-	-	-	-	-
OP1	4163.2	-462.548	1528.305	4166.274	470.9992	1531.529	-	-	-	-	-
OP2	4238.528	-626.352	1354.840	4243.810	631.238	1358.824	-	-	-	-	-
RH	4249.914	-363.266	1518.321	4248.740	364.0609	1526.253	-	-	-	-	-
RP1	4224.716	-499.331	1491.24	4219.790	503.1203	1498.718	Relocated 1 circle		-	-	-
RP1-R1	4208.086	-506.254	1483.363	4201.030	511.3249	1488.830	86 °	24 °	23.79	635.8	646.1
RP2	4452.663	-620.948	1340.419	4455.368	623.0866	1346.996	Relocated 8 circles		-	-	-
RP2_R8	4289.169	-558.581	1430.787	4290.978	558.7361	1438.705	-	-	-	-	-
SR1	3068.417	-496.075	1501.025	3067.229	497.1689	1512.229	Relocated 1 circle		-	-	-
SR1_R1	3068.519	-504.147	1494.164	3066.677	507.184	1500.931	-	-	-	-	-
SR2A	3218.192	-485.034	1526.624	3217.226	492.5728	1546.856	270 °	35 °	23.51	931.0	868.8
SR2A_R2	-	-	-	3221.370	516.0363	1508.825	Relocated 2 circles on Pass. Side		-	-	-
SR2B	3155.062	-488.708	1517.848	3153.598	497.5475	1539.054	Relocated 1 circle		-	-	-
SR2B_R1	-	-	-	3146.238	482.0947	1518.175	-	-	-	-	-
SR3F	3758.990	-458.463	1536.293	3755.697	461.3715	1541.590	-	-	-	-	-
SR3R	3918.292	-461.359	1528.084	3914.115	463.0164	1534.136	90 °	40 °	23.44	887.7	956.1



URSR1	3083.696	-404.774	1529.908	3082.016	398.9012	1533.349	152 °	50 °	23.59	323.0	410.1
URBP	3463.884	-381.130	1591.437	3463.026	381.2308	1594.881	270 °	37 °	23.35	878.2	829.0
							90 °	37 °	23.44	792.2	764.1
URRP	4098.629	-387.285	1558.196	4096.806	382.2407	1566.032	310 °	50 °	23.71	994.4	916.6
URRSR	3825.087	-385.559	1590.823	3820.116	385.4055	1596.575	-	-	-	-	-

\*HIC(d)=0.75446(Free Motion Headform HIC)+166.4

**DATA SHEET 2-2**

**GENERAL TEST AND VEHICLE PARAMETER DATA**

<b>TEST VEHICLE INFORMATION:</b>									
Year/Make/Model/Body Style:				2005 Buick LaCrosse CX					
VIN:				2G4WC532X51323166					
Month & Year of Manufacture:				04/05 (SEE CERTIFICATION LABEL)					
Vehicle Body Color:				Sapphire Metallic					
Engine Data:	6	Cylinders;	-	CID;	3.8	Liters;	-	cc	
Engine Placement:		x	Longitudinal;	or		-	Lateral		
Transmission:	4	Speed;	-	Manual;	x	Automatic;	-	Overdrive	
Final Drive:	-	Rear Wheel Drive;	x	Front Wheel Drive;	-	Four Wheel Drive			
Odometer Reading:	246		km						
Options:	x	A/C;	x	Power Steering;	x	Pwr.Brakes;	x	Pwr. Windows	
Interior Trim Information :									
1. Adjustable seat belt anchorages located vehicle B-Pillars.									
2. Front passenger side rail grab handle.									
3. Rear outboard occupant grab handles located on side rails.									

<b>DATA FROM TIRE PLACARD:</b>									
Tire Pressure (at capacity);				210		kPa FRONT			
				210		kPa REAR			
Recommended Tire Size:				P225/60R16					
Tires on Test Vehicle:		P225/60R16		Manufacturer:			Goodyear		
Vehicle Capacity Data:									
Number of Occupants:	2	Front;	3	Rear;	-	3rd Seat;	5	Total	
Type of Front Seats:	-	Bucket;	x	Bench;	-	Split Bench			
Type of Front Seat Back:	-	Fixed;	x	Adjustable with	x	Lever or	-	Knob	
Vehicle Capacity Weight (VCW)=				416		kg (A)			
No. of Occupants x 68 kg. =				340		kg (B)			
Rated Cargo/Luggage Weight (RCLW) =				76		kg (A-B) Max. RCLW = 136 kg.			

**DATA SHEET 2-2**

**GENERAL TEST AND VEHICLE PARAMETER DATA (cont.)**

<b>TEST VEHICLE DELIVERED WEIGHT WITH MAXIMUM FLUIDS:</b>							
Left Front	=	<b>492</b>	<b>kg</b>	Left Rear	=	<b>291</b>	<b>kg</b>
Right Front	=	<b>504</b>	<b>kg</b>	Right Rear	=	<b>301</b>	<b>kg</b>
TOTAL FRONT	=	<b>996</b>	<b>kg</b>	TOTAL REAR	=	<b>592</b>	<b>kg</b>
% of Total Weight	=	<b>62.7</b>	<b>%</b>	% of Total Weight	=	<b>37.3</b>	<b>%</b>
TOTAL WEIGHT	=	<b>1588</b>				<b>kg</b>	

<b>CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:</b>		
Total Test Vehicle Delivered Weight=	<b>1588</b>	kg (A)
+ Rated Cargo/Luggage Weight =	<b>76</b>	kg (B)
TEST VEHICLE TARGET WEIGHT =	<b>1664</b>	kg (A+B)

<b>WEIGHT OF TEST VEHICLE (FULLY LOADED):</b>							
Left Front	=	<b>488</b>	<b>kg</b>	Left Rear	=	<b>330</b>	<b>kg</b>
Right Front	=	<b>500</b>	<b>kg</b>	Right Rear	=	<b>341</b>	<b>kg</b>
TOTAL FRONT	=	<b>988</b>	<b>kg</b>	TOTAL REAR	=	<b>671</b>	<b>kg</b>
% of Total Weight	=	<b>59.6</b>	<b>%</b>	% of Total Weight	=	<b>40.4</b>	<b>%</b>
TOTAL TEST WEIGHT	=	<b>1659</b>					
Weight of vehicle secured in test vehicles cargo area	=	<b>71</b>				<b>kg</b>	

<b>TEST VEHICLE ATTITUDE (all dimensions in millimeters):</b>				
AS DELIVERED:	Left Front	<b>768</b>	Left Rear	<b>755</b>
	Right Front	<b>768</b>	Right Rear	<b>754</b>
FULLY LOADED:	Left Front	<b>768</b>	Left Rear	<b>732</b>
	Right Front	<b>766</b>	Right Rear	<b>733</b>
Test Vehicle Wheelbase:	<b>2800</b>		millimeters	

<b>TEST VEHICLE PITCH AND ROLL ANGLES:</b>				
AS DELIVERED:	PITCH ANGLES		ROLL ANGLES	
	Left Door Sill	<b>↑0.2↓</b>	Front Bumper	<b>↑0.1↓</b>
	Right Door Sill	<b>0.0</b>	Rear Bumper	<b>0.0</b>
FULLY LOADED:	PITCH ANGLES		ROLL ANGLES	
	Left Door Sill	<b>↓0.3↑</b>	Front Bumper	<b>↓0.1↑</b>
	Right Door Sill	<b>↑0.5↓</b>	Rear Bumper	<b>↓0.1↑</b>
AS TESTED:	PITCH ANGLES		ROLL ANGLES	
	Left Door Sill	<b>↑0.1↓</b>	Front Bumper	<b>↑0.1↓</b>
	Right Door Sill	<b>0.0</b>	Rear Bumper	<b>↓0.1↑</b>

DATA SHEET 2-3

APPROACH ANGLE LIMITS

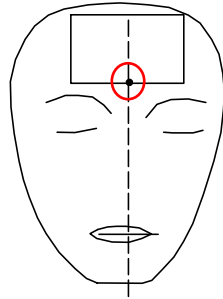
Target Code	Left Side				Target Code	Right Side			
	Horizontal Angles (deg.)		Vertical Angles (deg.)			Horizontal Angles (deg.)		Vertical Angles (deg.)	
	Minimum	Maximum	Minimum	Maximum		Minimum	Maximum	Minimum	Maximum
AP1	203	255	-5	26	AP1	105	157	-5	26
AP2	203	255	-5	40	AP2	105	157	-5	40
AP3	203	255	-5	42	AP3	105	157	-5	42
BP1	204	283	-10	21	BP1	77	156	-10	21
BP2	ANY		0	17	BP2	ANY		0	17
BP3	204	283	-10	-4	BP3	77	156	-10	-4
BP4	204	283	-10	-7	BP4	77	156	-10	-7
OP1	270		-10	19	OP1	90		-10	19
OP2	270		-10	9	OP2	90		-10	9
RP1	270	345	-10	24	RP1	15	90	-10	24
RP2	270	345	-10	27	RP2	15	90	-10	27
FH1	180		0	50	FH1	180		0	50
FH2	180		0	50	FH2	180		0	50
RH	360		0	50	RH	0		0	50
SR1	270		0	36	SR1	90		0	36
SR2A	270		0	35	SR2A	90		0	35
SR2B	270		0	42	SR2B	90		0	42
SR3	270		0	40	SR3	90		0	40
URAP	ANY		0	50	URAP	ANY		0	50
URBP	ANY		0	37	URBP	ANY		0	37
URRP	ANY		0	50	URRP	ANY		0	50
URSR1	ANY		0	50	URSR1	ANY		0	50

Note : BP2 target location – Seat belt anchorage

**DATA SHEET 2-4**

**SUMMARY TARGET IMPACT LOCATION ON FMH**

VEHICLE YEAR/MAKE/MODEL/STYLE:	2005 Buick LaCrosse CX
VIN:	2G4WC532X51323166
DATE OF MANUFACTURE:	04/05 (SEE CERTIFICATION LABEL)
COLOR:	Sapphire Metallic



ã RIGHT SIDE OF FACE

TARGET	Distance Above Point 0 (mm)	Distance Over From Pt. O (mm)
URBP <sub>PASSENGER</sub>	<b>56</b>	<b>3 R</b>
BP2	<b>7</b>	<b>3 L</b>
RP1	<b>16</b>	<b>0</b>
SR3	<b>6</b>	<b>3 R</b>
AP3	<b>20</b>	<b>8 L</b>
AP1	<b>26</b>	<b>12 L</b>
URSR1	<b>23</b>	<b>5 L</b>
URRP	<b>33</b>	<b>4 L</b>
BP3	<b>21</b>	<b>21L</b>
URBP <sub>DRIVER</sub>	<b>54</b>	<b>3L</b>
SR2A	<b>10</b>	<b>3R</b>
AP2	<b>31</b>	<b>6R</b>

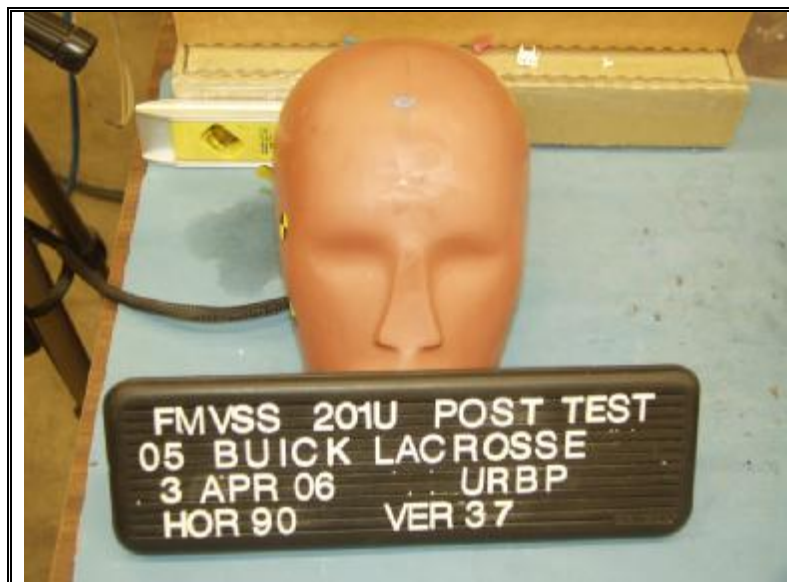
**SECTION 3**

**SUMMARY OF TEST RESULTS AND DATA PLOTS**

VEHICLE YEAR/MAKE/MODEL/STYLE:	2005 Buick LaCrosse CX
VIN:	2G4WC532X51323166
DATE OF MANUFACTURE:	04/05 (SEE CERTIFICATION LABEL)
COLOR:	Sapphire Metallic

Test Number:	01
Test Date:	04/03/06
Target Location:	UPPER ROOF
Target Code:	URBP PASSENGER
Horizontal Impact Angle:	90 °
Vertical Impact Angle:	37 °
Ambient Temperature:	22.0 C°
Relative Humidity:	41.9
Time of Impact:	10:38
Headform Number:	355

Impact Point Description (from lower midpoint on midsagittal line)				
On Centerline	3	x	mm right	mm left
On Centerline	56		mm up	



POST-IMPACT URBP PASSENGER HEADFORM

Free Motion HIC	792.2
HIC(d)	764.1
Impact Velocity (kph)	23.44
HIC T1 (msec)	4.1
HIC T2 (msec)	10.2

# FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse C50115 - URBP

FMH Headform 0355

Location: URBP

Test Date: April 03, 2006

Work File: URBP

## -----TEST RESULTS-----

Lab Temperature: 22.0 C

HICd: 764.1

Lab Humidity: 37 %

HIC (36ms): 792.2

Velocity at Impact: 23.44 KPH

t1: 4.1 msec

t2: 10.2 msec

Free Flight Distance: 220.99 mm

Duration: 6.0 msec

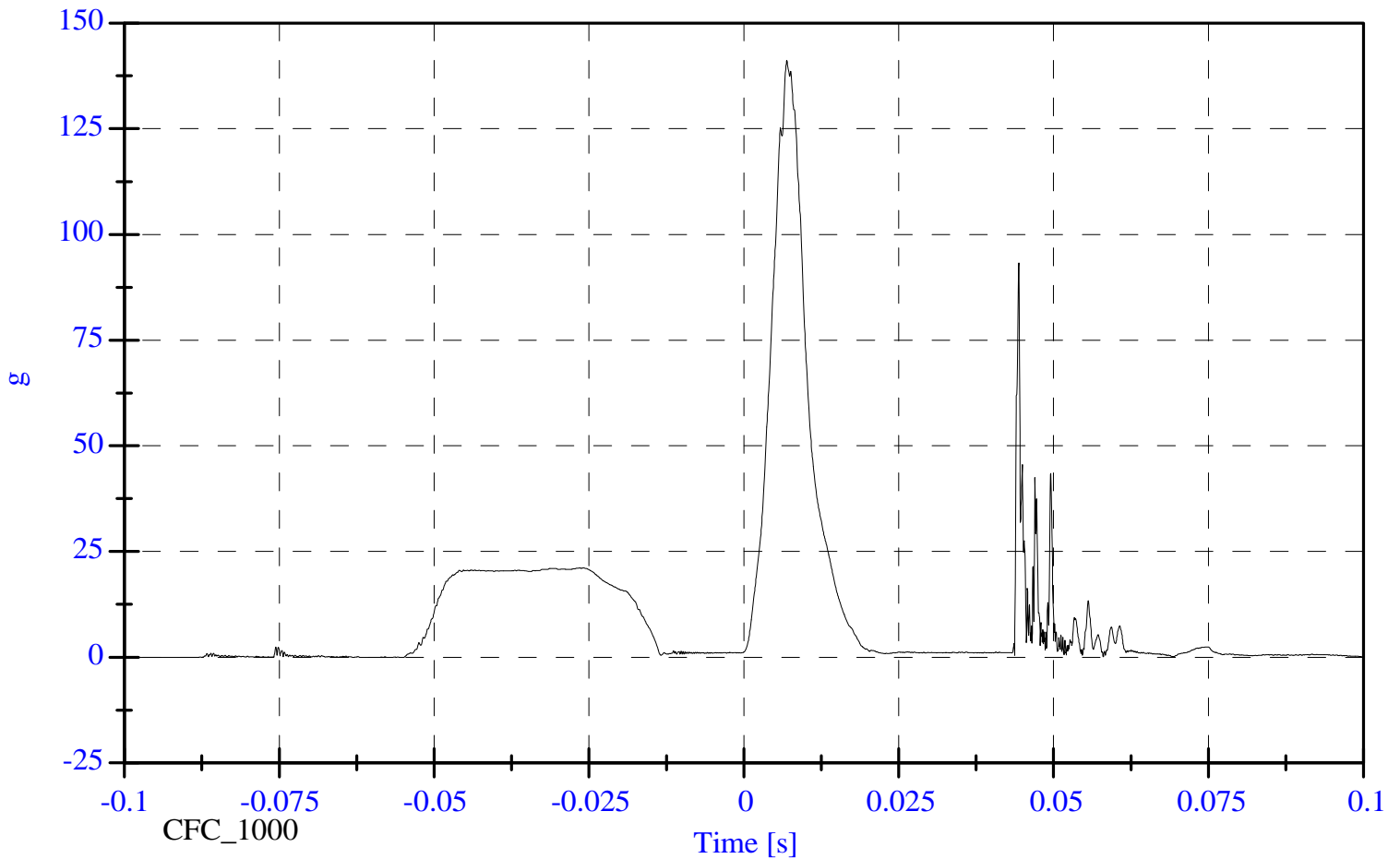
Maximum: 141.2 g

Average Acceleration: 9.7 g

FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse  
Headform Resultant

Max: 141.2 [g] at 0.007 [s]

Min: -0.0 [g] at -0.099 [s]





FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse

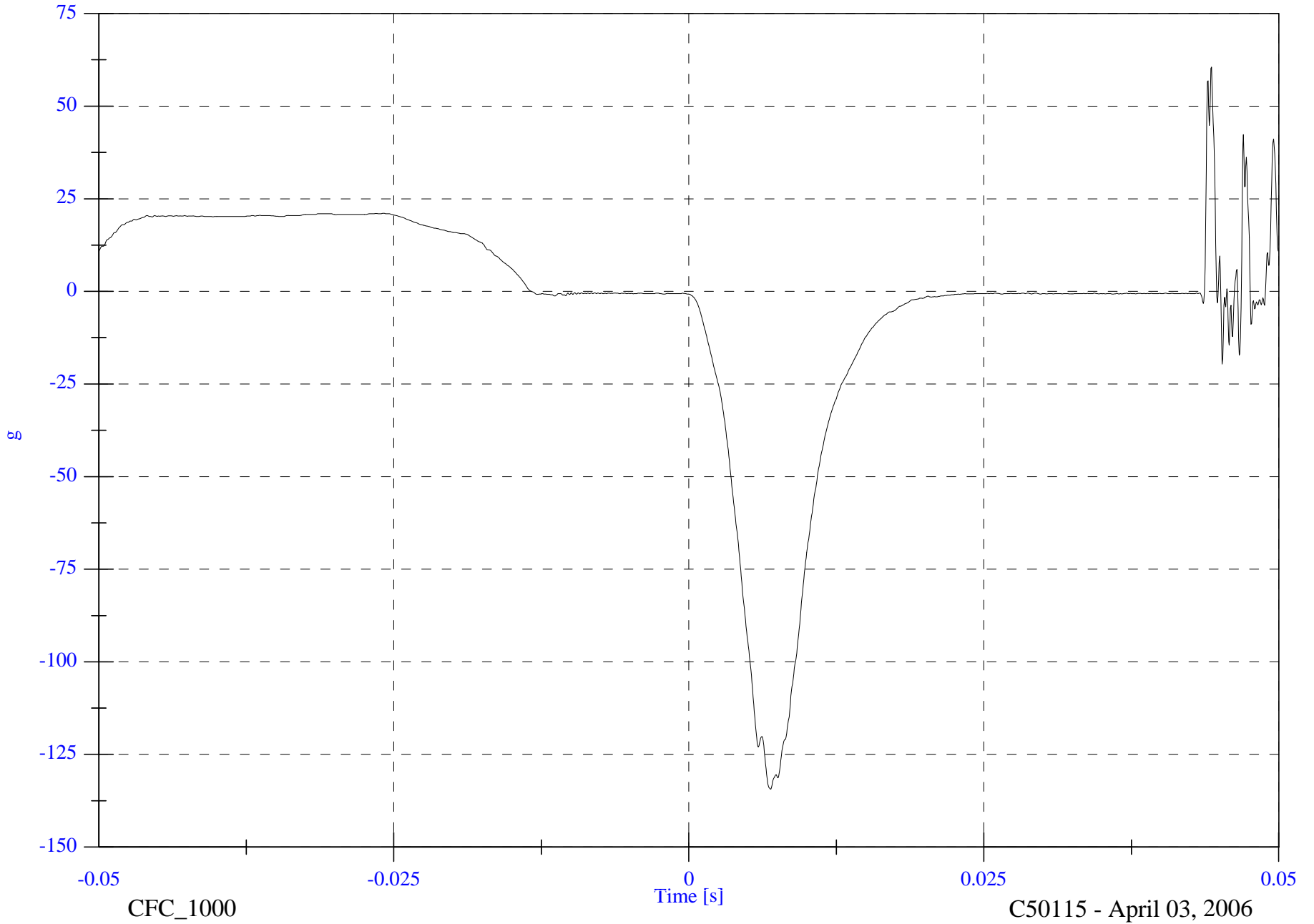
Headform X Acceleration

Max: 60.6 [g] at 0.044 [s]

Min: -134.4 [g] at 0.007 [s]

C50115 PASSENGER SIDE URBP IMPACT PLOT #1

8754+FMH-09



C50115 - April 03, 2006

FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse

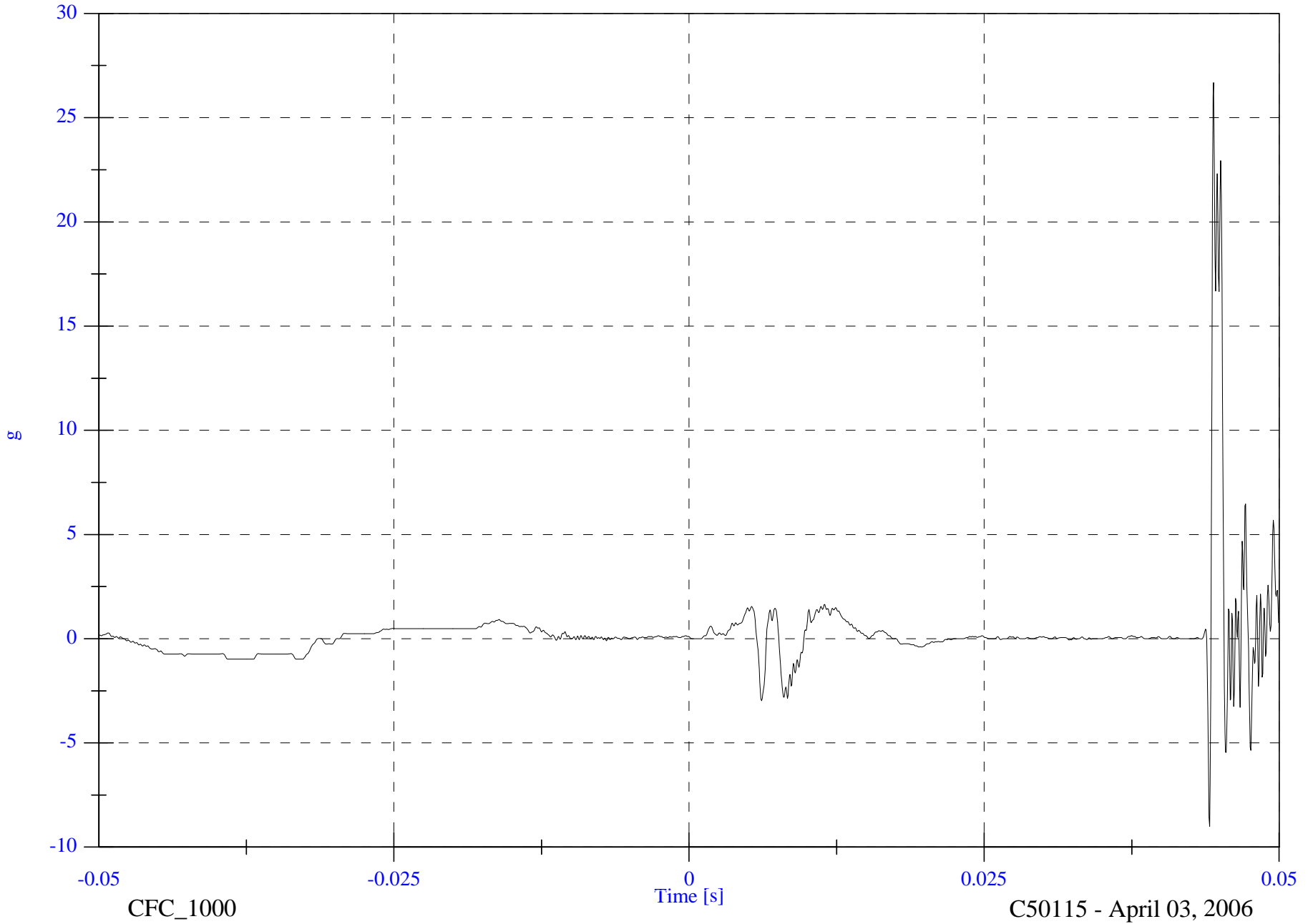
Headform Y Acceleration

Max: 26.7 [g] at 0.044 [s]

Min: -9.0 [g] at 0.044 [s]

C50115 PASSENGER SIDE URBP IMPACT PLOT #2

8754+FMH-09



CFC\_1000

C50115 - April 03, 2006

FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse

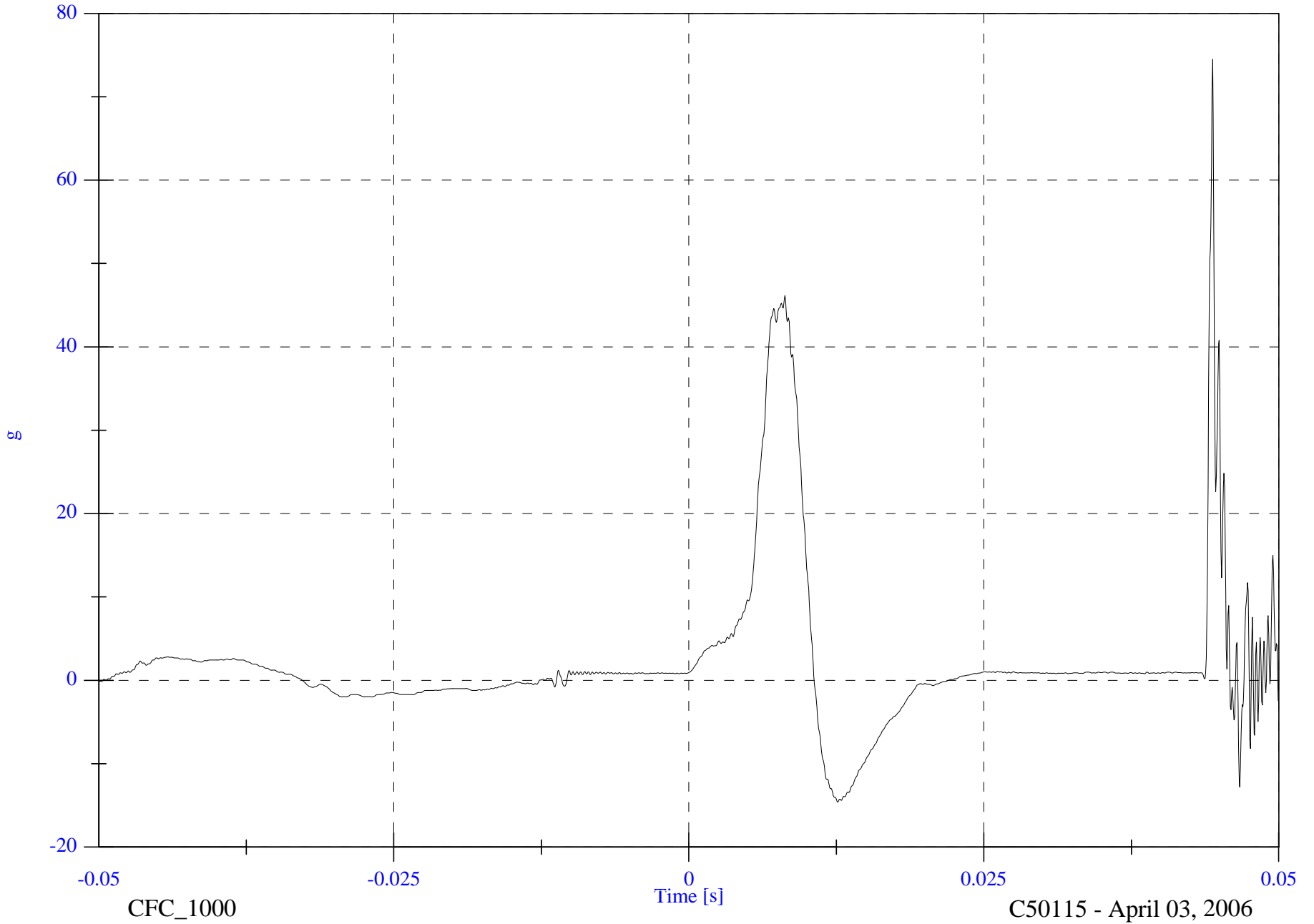
Headform Z Acceleration

Max: 74.5 [g] at 0.044 [s]

Min: -14.6 [g] at 0.013 [s]

C50115 PASSENGER SIDE URBP IMPACT PLOT #3

8754+FMH-09



CFC\_1000

C50115 - April 03, 2006

FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse

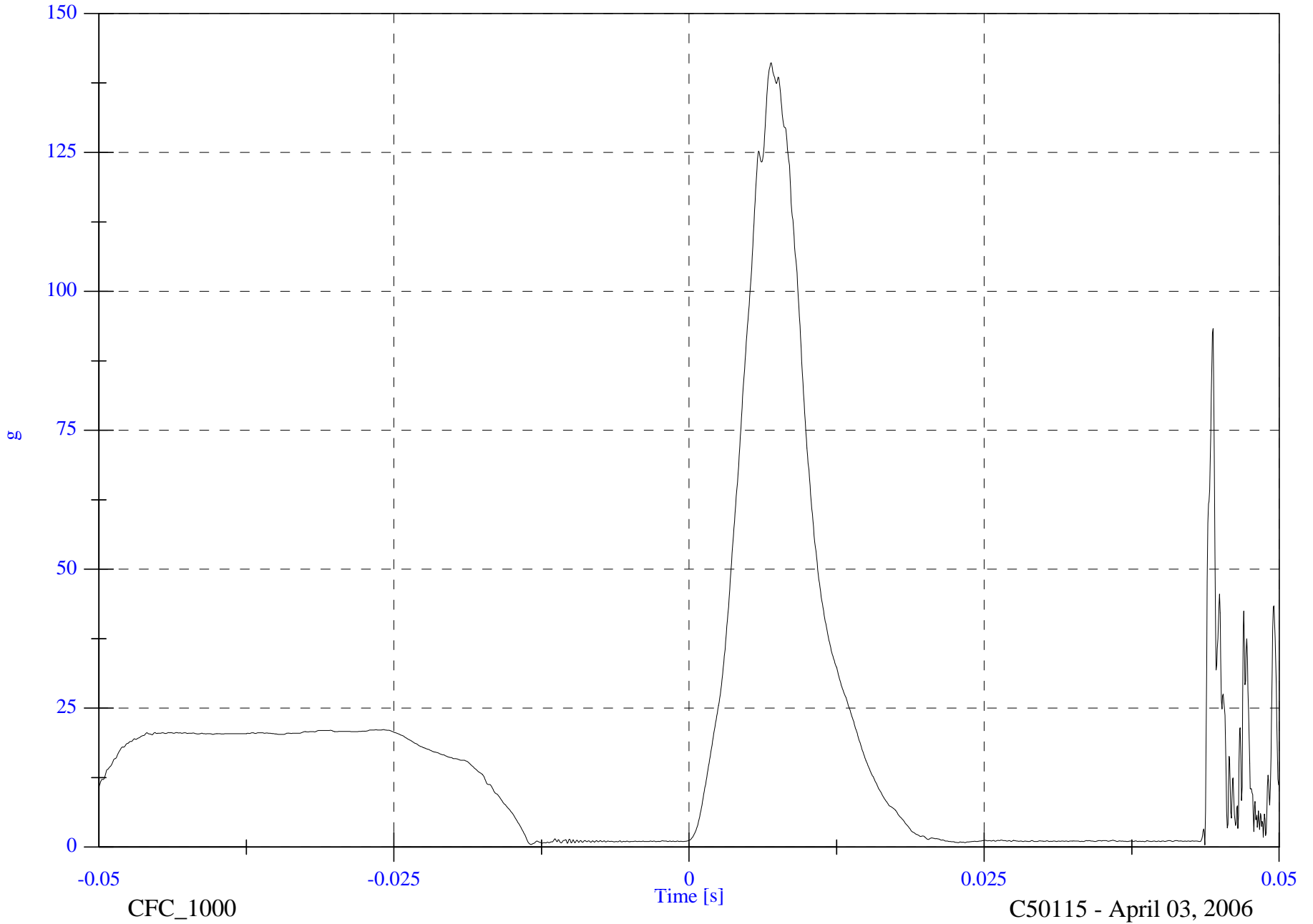
Headform Resultant

Max: 141.2 [g] at 0.007 [s]

Min: 0.4 [g] at 0.044 [s]

C50115 PASSENGER SIDE URBP IMPACT PLOT #4

8754+FMH-09



CFC\_1000

C50115 - April 03, 2006

FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse

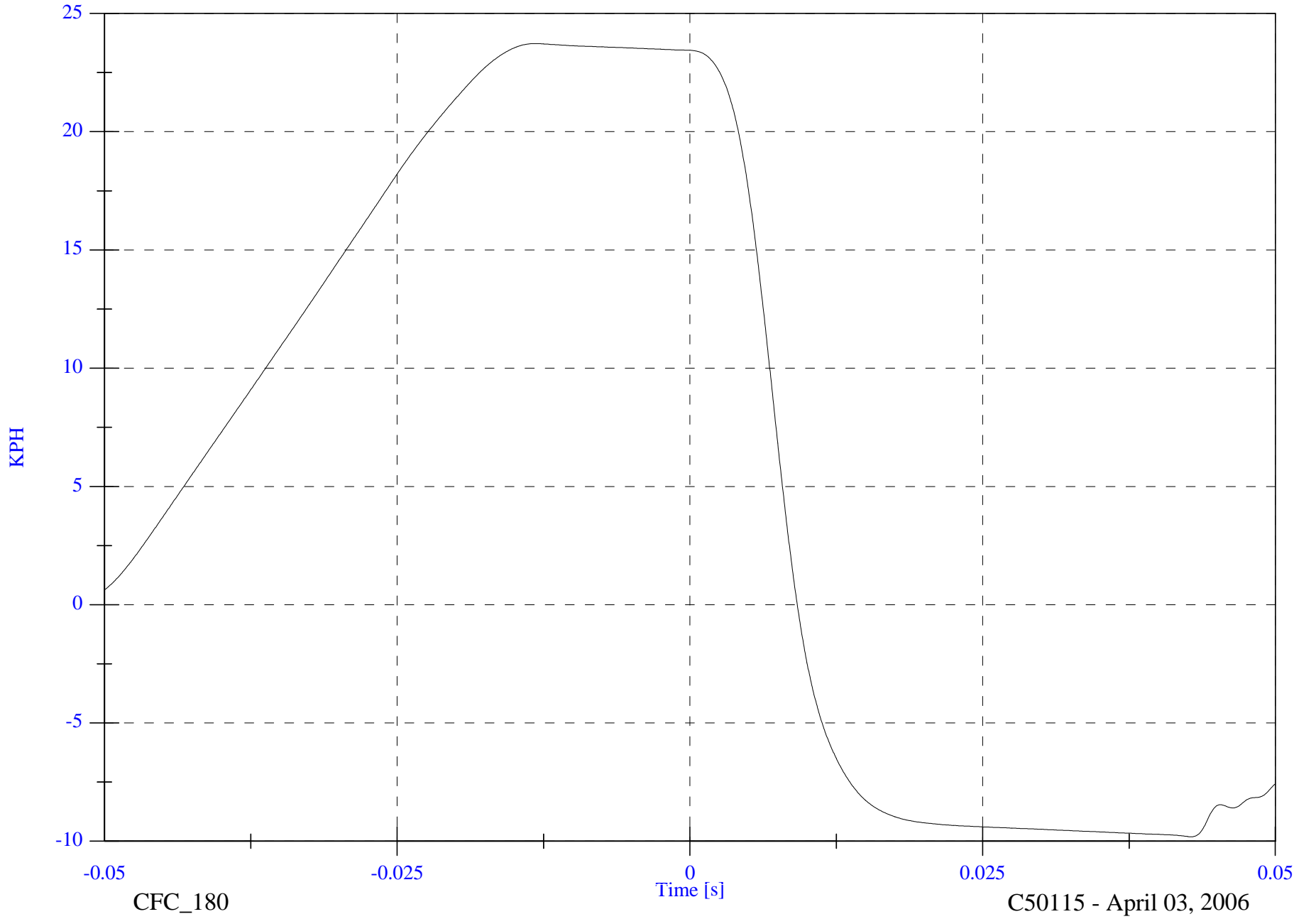
Headform Velocity

Max: 23.7 [KPH] at -0.013 [s]

Min: -9.8 [KPH] at 0.043 [s]

C50115 PASSENGER SIDE URBP IMPACT PLOT #5

8754+FMH-09



CFC\_180

C50115 - April 03, 2006



PRE-IMPACT URBP PASSENGER



POST-IMPACT URBP PASSENGER

VEHICLE YEAR/MAKE/MODEL/STYLE:	2005 Buick LaCrosse CX
VIN:	2G4WC532X51323166
DATE OF MANUFACTURE:	04/05 (SEE CERTIFICATION LABEL)
COLOR:	Sapphire Metallic

Test Number:	02
Test Date:	<b>04/03/06</b>
Target Location:	B-PILLAR
Target Code:	BP2
Horizontal Impact Angle:	<b>90 °</b>
Vertical Impact Angle:	<b>17 °</b>
Ambient Temperature:	<b>23.1 C°</b>
Relative Humidity:	<b>38</b>
Time of Impact:	<b>11:35</b>
Headform Number:	<b>805</b>

Impact Point Description (from lower midpoint on midsagittal line)			
On Centerline	3	mm right	x mm left
On Centerline	7	mm up	



POST-IMPACT BP2 HEADFORM

Free Motion HIC	<b>939.7</b>
HIC(d)	<b>875.3</b>
Impact Velocity (kph)	<b>23.45</b>
HIC T1 (msec)	<b>2.1</b>
HIC T2 (msec)	<b>7.8</b>



# FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse C50115 - BP2

FMH Headform 0805

Location: BP2

Test Date: April 03, 2006

Work File: BP2

## -----TEST RESULTS-----

Lab Temperature: 23.1 C

HICd: 875.3

Lab Humidity: 38.0 %

HIC (36ms): 939.7

Velocity at Impact: 23.45 KPH

t1: 2.1 msec

t2: 7.8 msec

Free Flight Distance: 220.40 mm

Duration: 5.7 msec

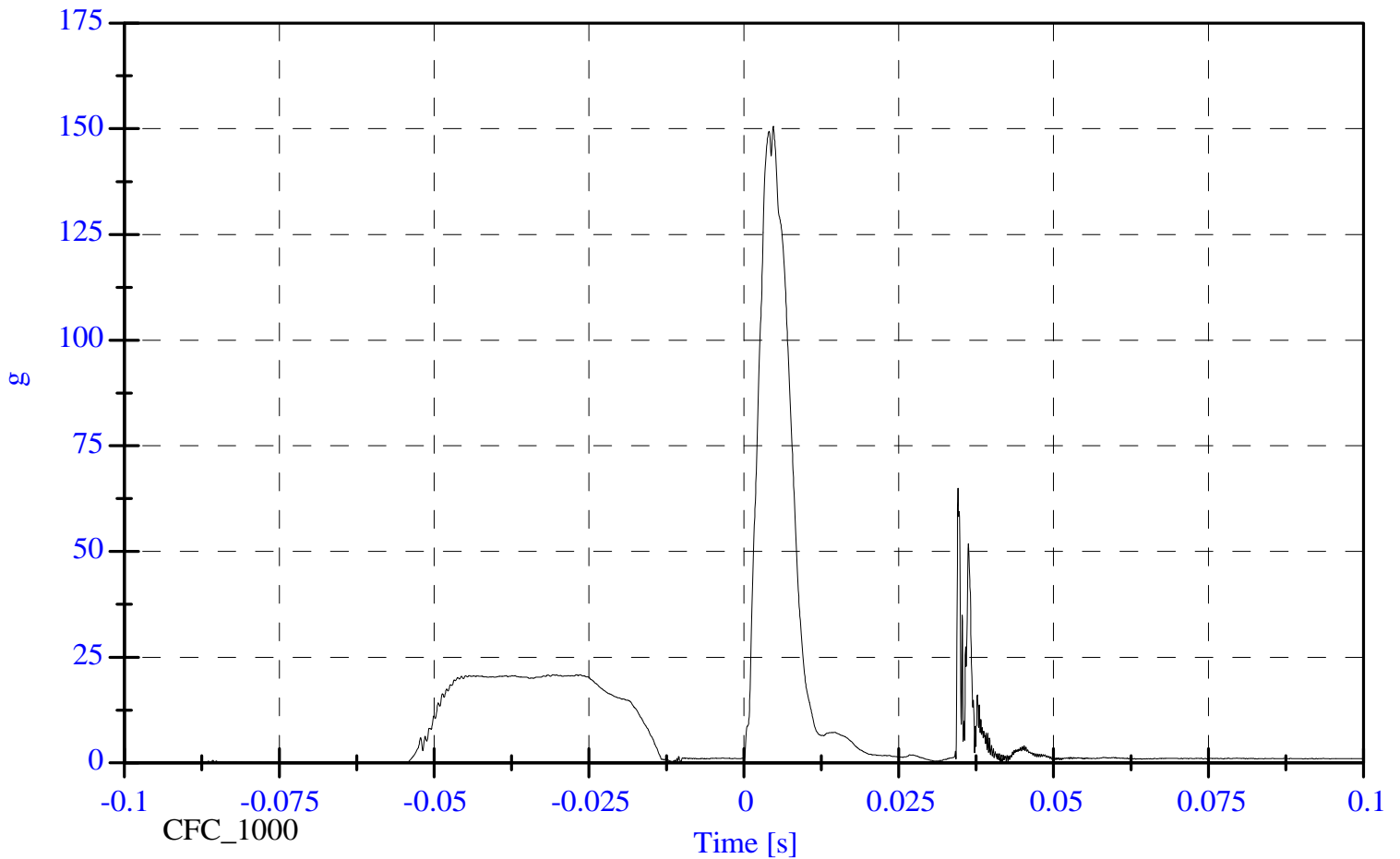
Maximum: 150.6 g

Average Acceleration: 9.0 g

FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse  
Headform Resultant

Max: 150.6 [g] at 0.005 [s]

Min: 0.0 [g] at -0.076 [s]



FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse

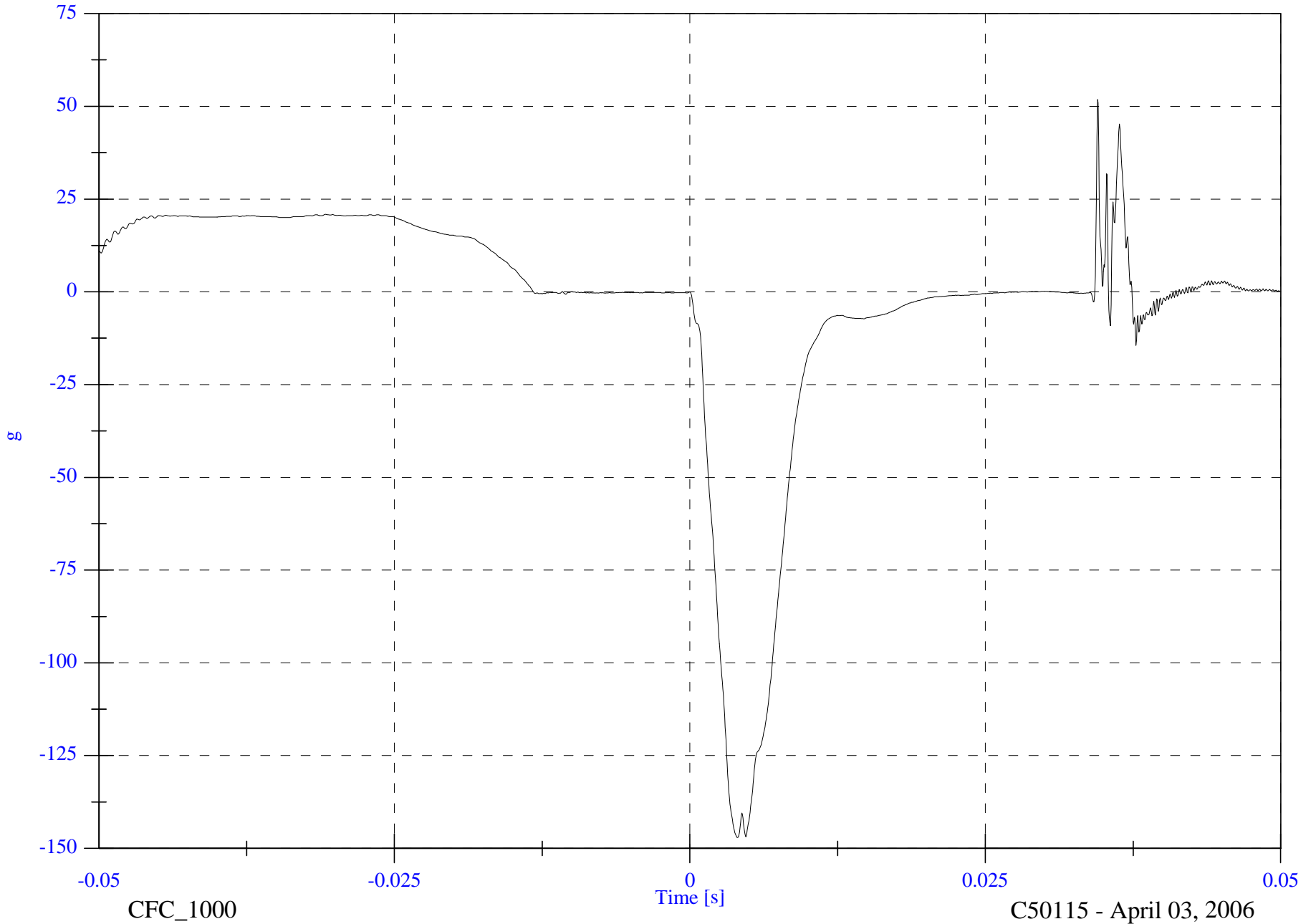
Headform X Acceleration

Max: 51.8 [g] at 0.034 [s]

Min: -147.1 [g] at 0.004 [s]

C50115 PASSENGER SIDE BP2 IMPACT PLOT #1

8754+FMH-09



CFC\_1000

C50115 - April 03, 2006

FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse

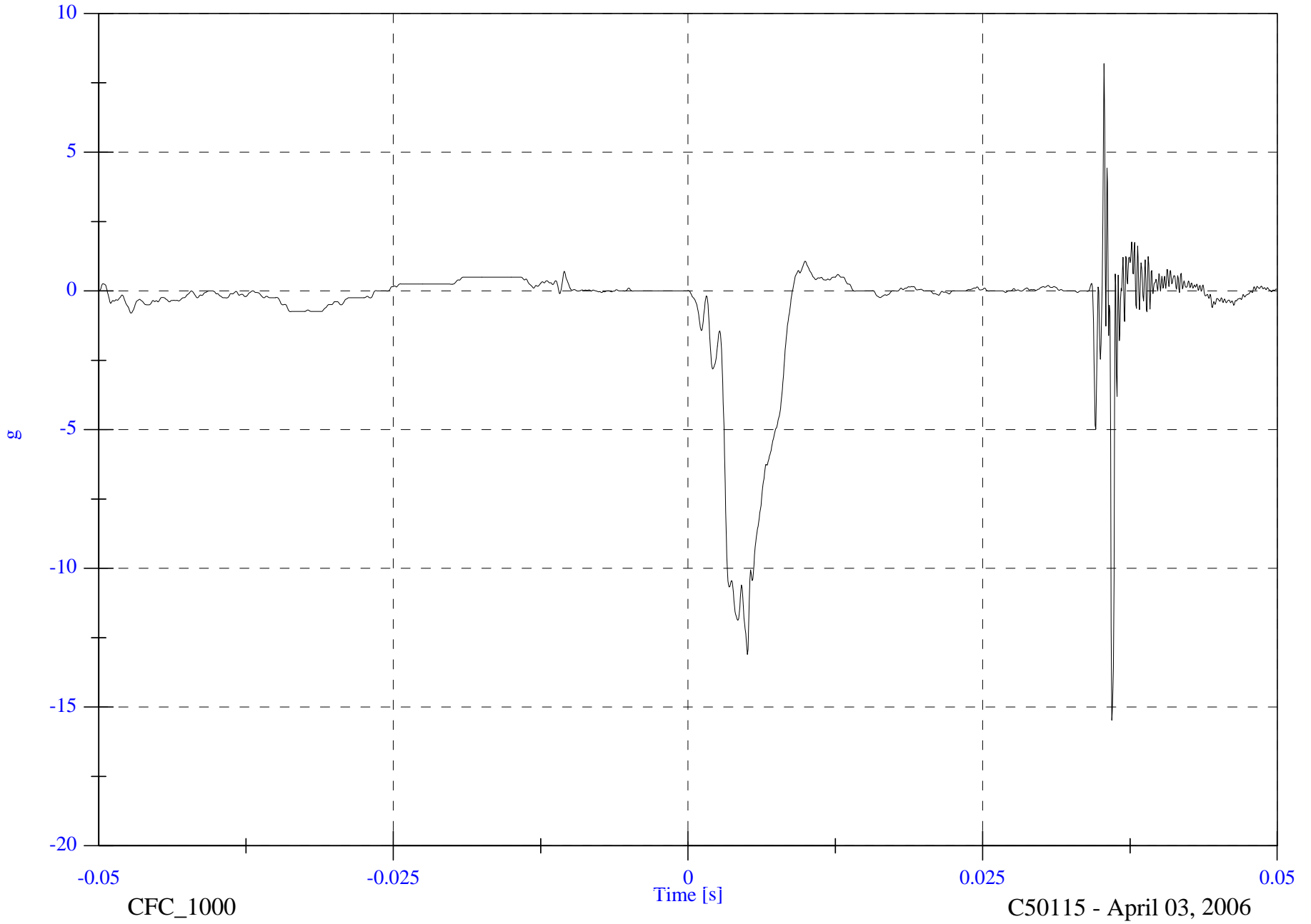
Headform Y Acceleration

Max: 8.2 [g] at 0.035 [s]

Min: -15.5 [g] at 0.036 [s]

C50115 PASSENGER SIDE BP2 IMPACT PLOT #2

8754+FMH-09



CFC\_1000

C50115 - April 03, 2006

FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse

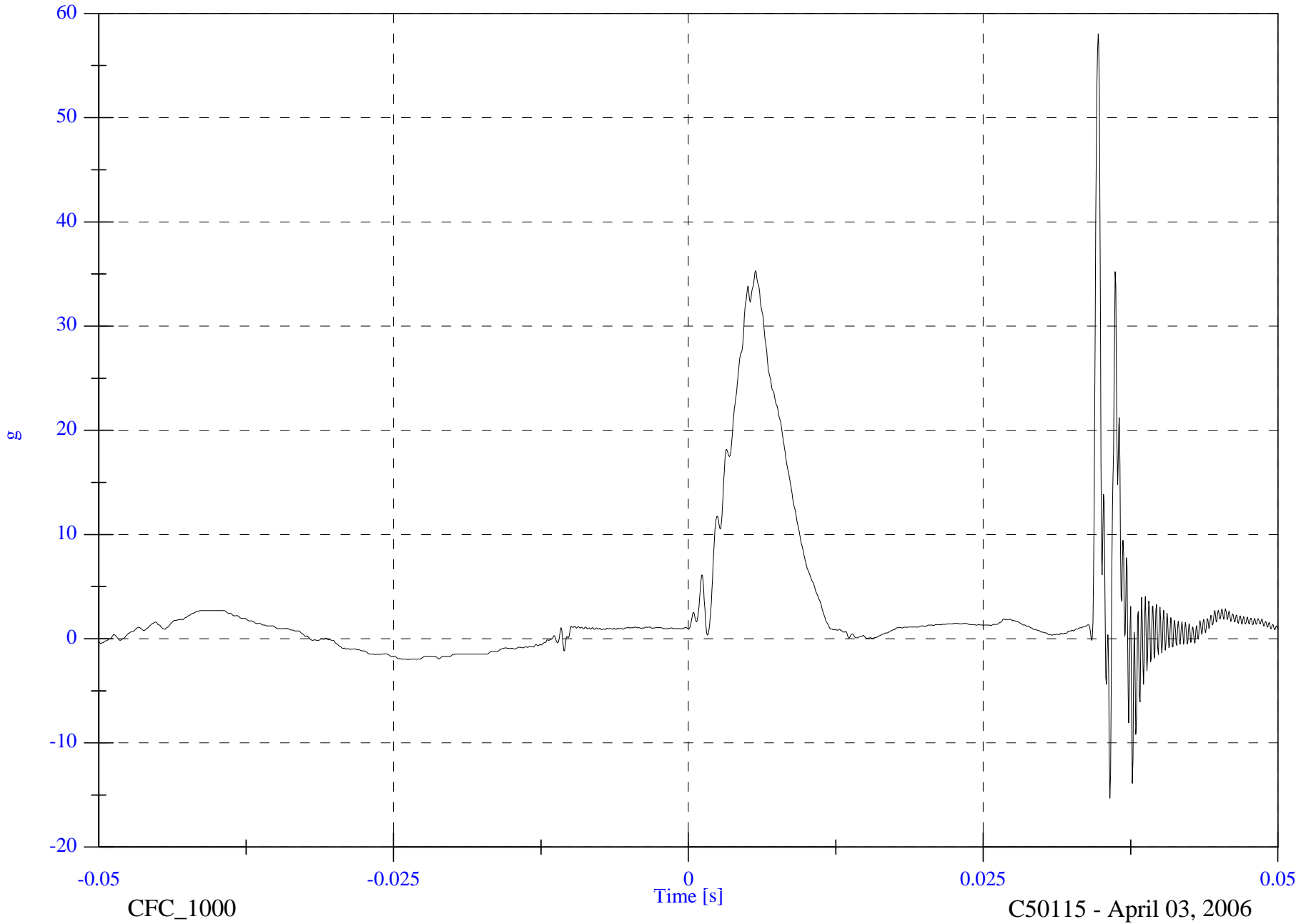
Headform Z Acceleration

Max: 58.1 [g] at 0.035 [s]

Min: -15.3 [g] at 0.036 [s]

C50115 PASSENGER SIDE BP2 IMPACT PLOT #3

8754+FMH-09



CFC\_1000

C50115 - April 03, 2006

FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse

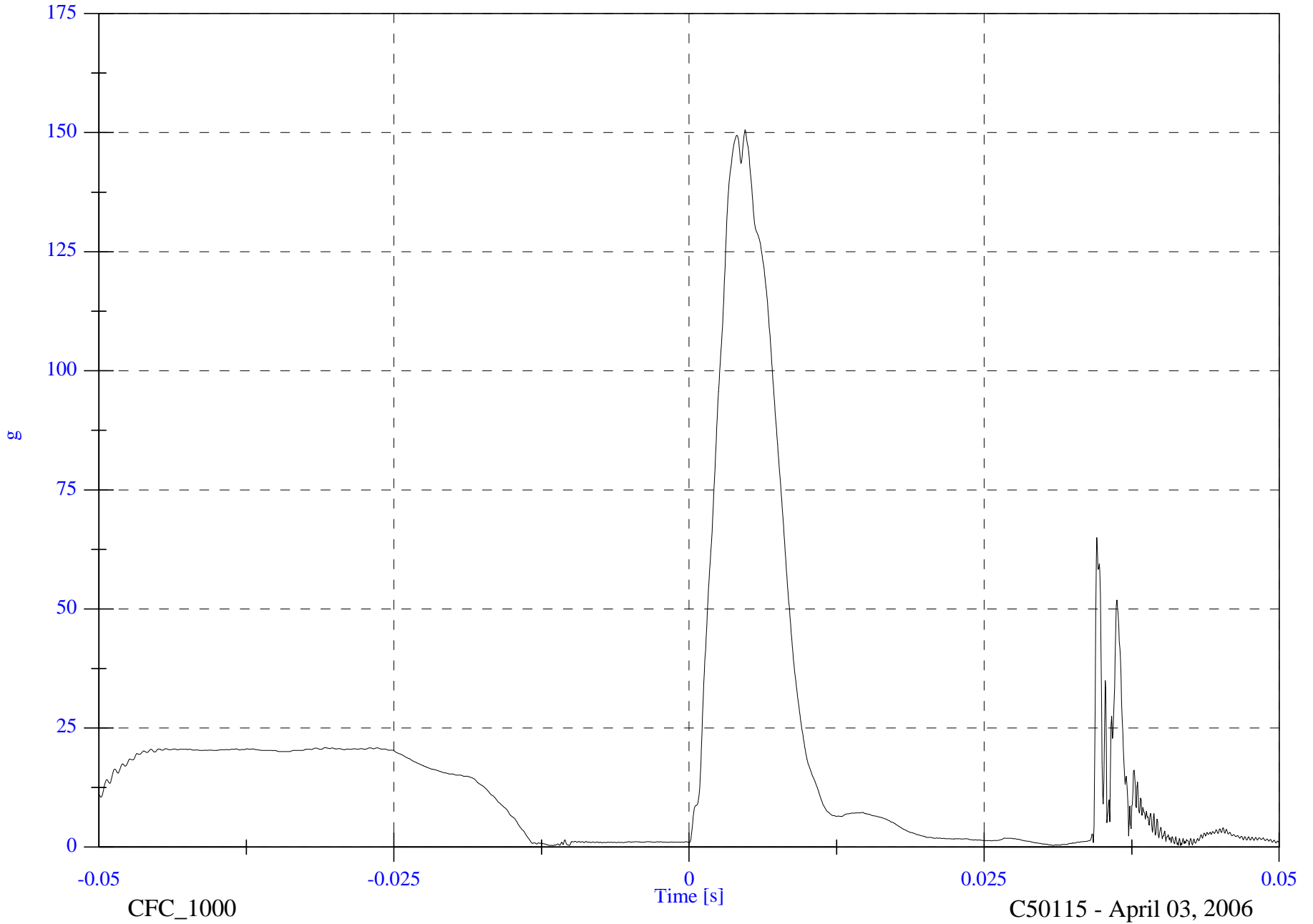
Headform Resultant

Max: 150.6 [g] at 0.005 [s]

Min: 0.3 [g] at -0.012 [s]

C50115 PASSENGER SIDE BP2 IMPACT PLOT #4

8754+FMH-09



CFC\_1000

C50115 - April 03, 2006

FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse

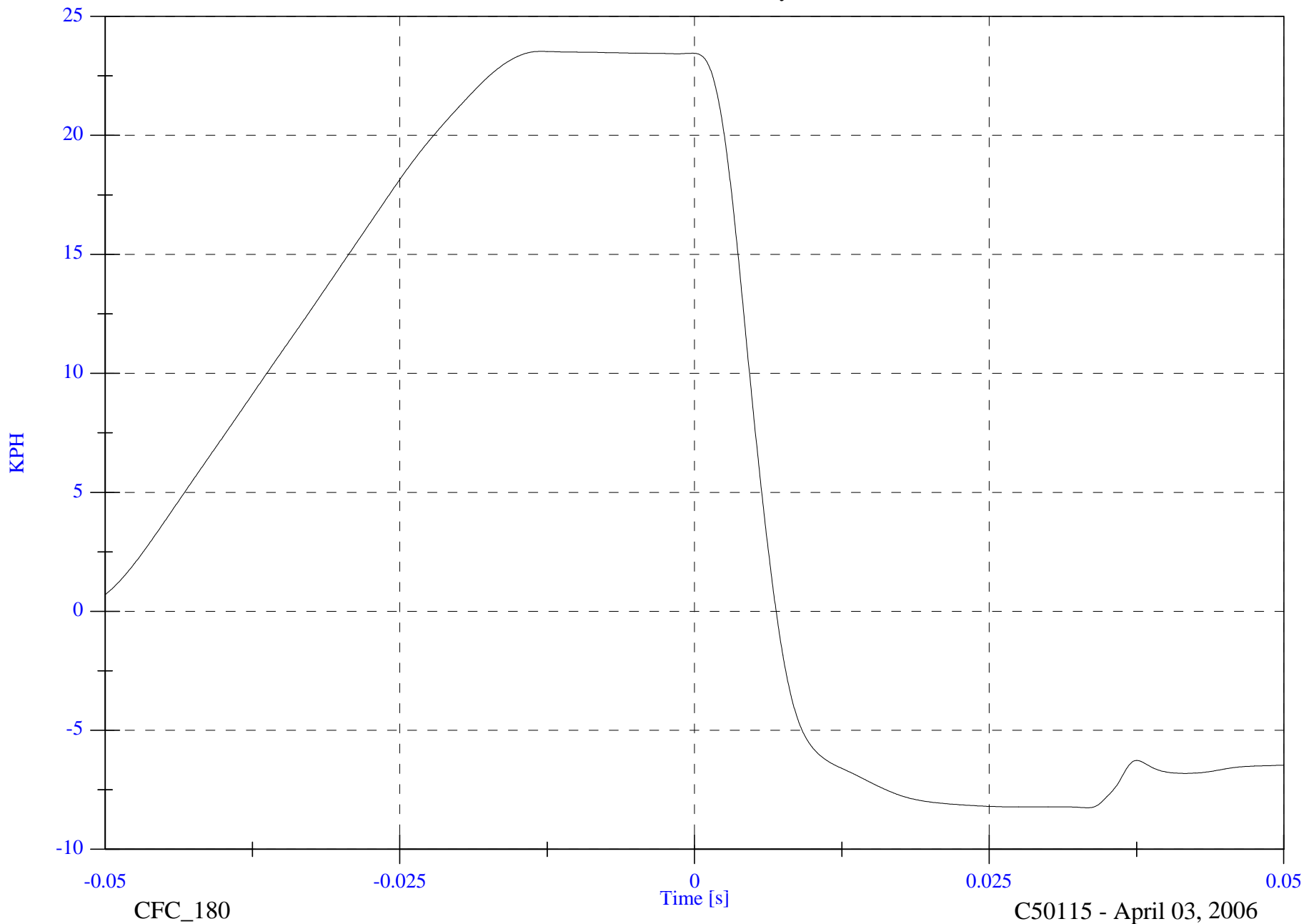
Max: 23.5 [KPH] at -0.013 [s]

Headform Velocity

Min: -8.3 [KPH] at 0.033 [s]

C50115 PASSENGER SIDE BP2 IMPACT PLOT #5

8754+FMH-09



CFC\_180

C50115 - April 03, 2006



PRE-IMPACT BP2



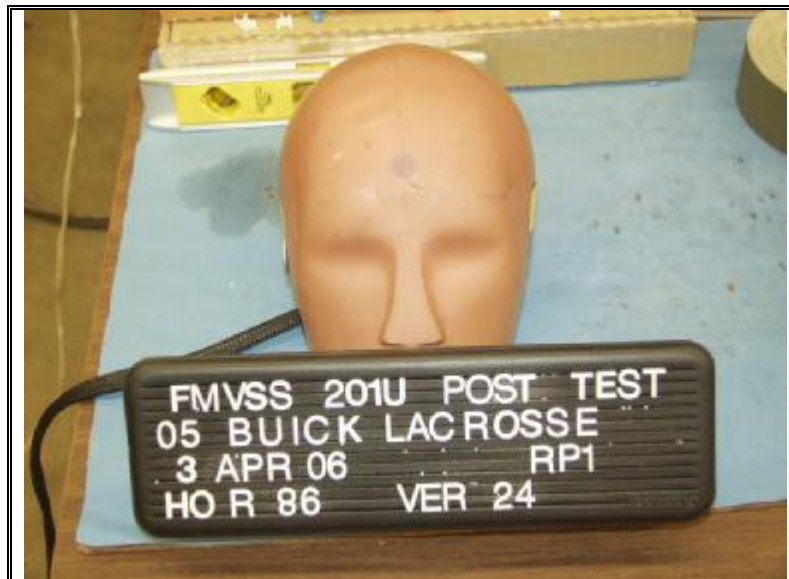
POST-IMPACT BP2



VEHICLE YEAR/MAKE/MODEL/STYLE:	2005 Buick LaCrosse CX
VIN:	2G4WC532X51323166
DATE OF MANUFACTURE:	04/05 (SEE CERTIFICATION LABEL)
COLOR:	Sapphire Metallic

Test Number:	03
Test Date:	<b>04/03/06</b>
Target Location:	REAR PILLAR
Target Code:	RP1
Horizontal Impact Angle:	<b>86 °</b>
Vertical Impact Angle:	<b>24 °</b>
Ambient Temperature:	<b>22.5 C°</b>
Relative Humidity:	<b>38.9</b>
Time of Impact:	<b>12:30</b>
Headform Number:	<b>642</b>

Impact Point Description (from lower midpoint on midsagittal line)					
On Centerline	<b>0</b>	<input type="checkbox"/>	mm right	<input type="checkbox"/>	mm left
On Centerline	<b>16</b>				mm up



POST-IMPACT RP1 HEADFORM

Free Motion HIC	<b>635.8</b>
HIC(d)	<b>646.1</b>
Impact Velocity (kph)	<b>23.79</b>
HIC T1 (msec)	<b>2.6</b>
HIC T2 (msec)	<b>11.8</b>

# FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse C50115 - RP1

FMH Headform 0642

Location: RP1

Test Date: April 03, 2006

Work File: RP1

## -----TEST RESULTS-----

Lab Temperature: 22.5 C

HICd: 646.1

Lab Humidity: 38.9 %

HIC (36ms): 635.8

Velocity at Impact: 23.79 KPH

t1: 2.6 msec

t2: 11.8 msec

Free Flight Distance: 220.14 mm

Duration: 9.1 msec

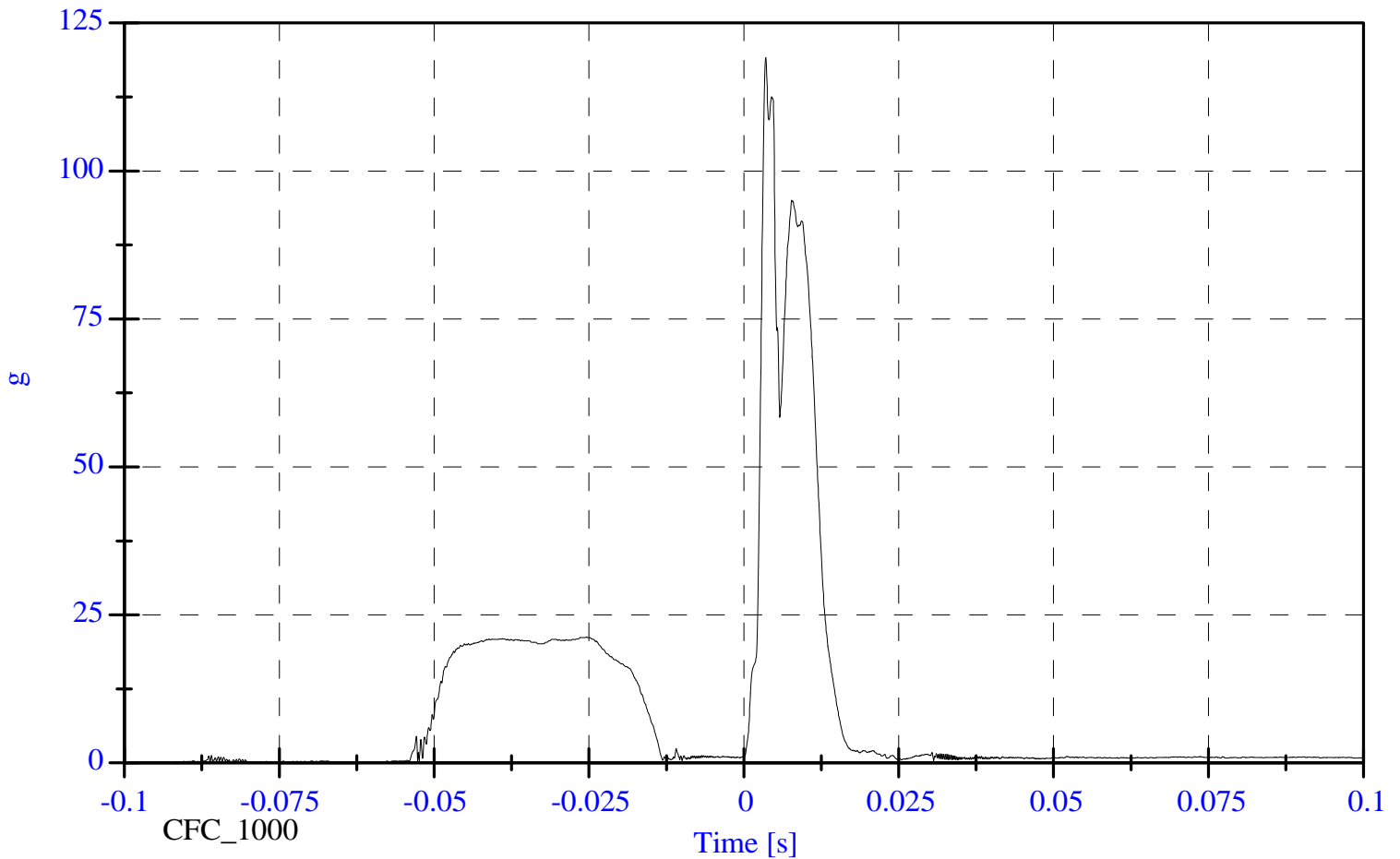
Maximum: 119.1 g

Average Acceleration: 8.6 g

FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse  
Headform Resultant

Max: 119.1 [g] at 0.004 [s]

Min: 0.0 [g] at -0.097 [s]



FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse

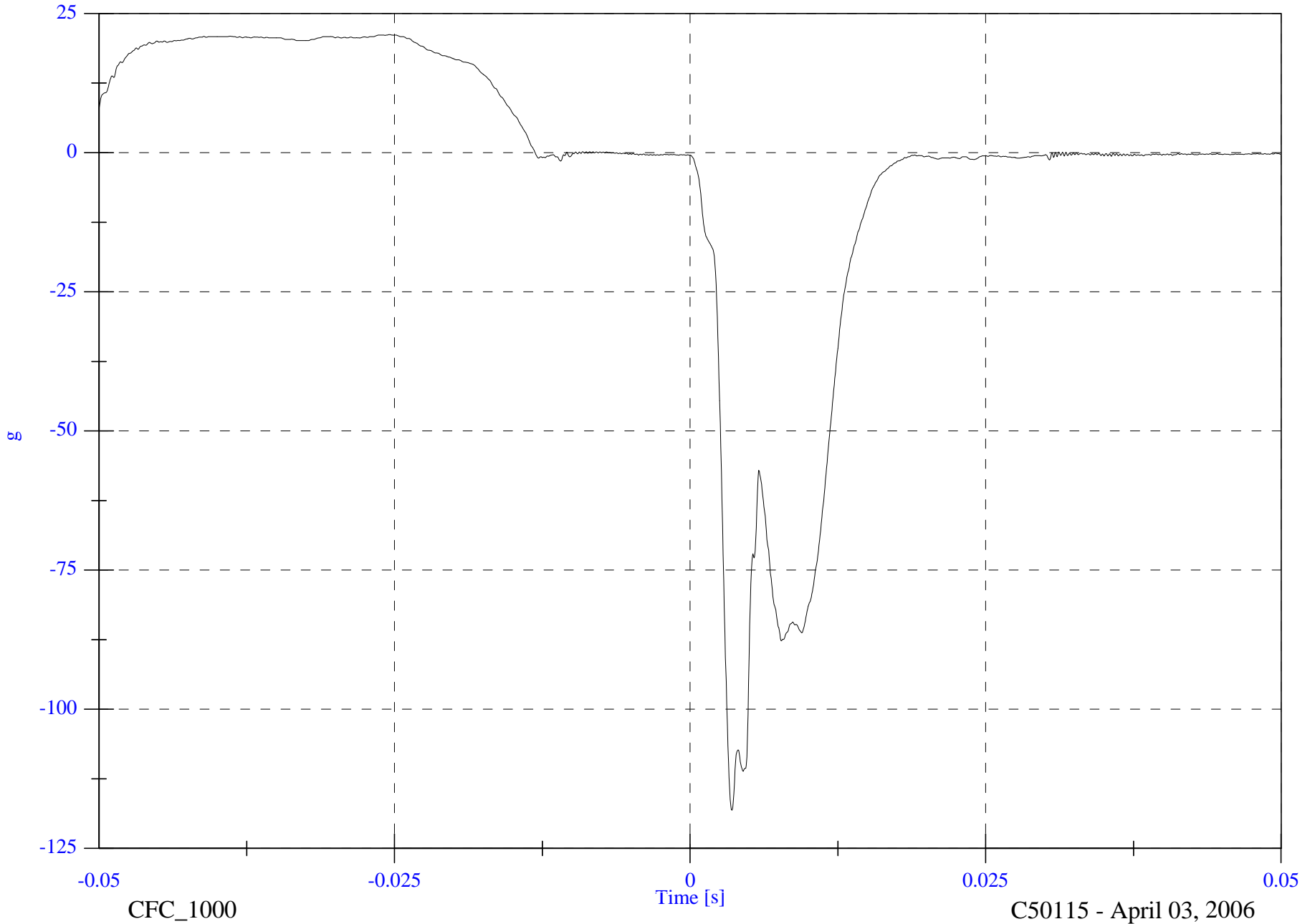
Headform X Acceleration

Max: 21.2 [g] at -0.025 [s]

Min: -118.2 [g] at 0.004 [s]

C50115 PASSENGER SIDE RP1 IMPACT PLOT #1

8754+FMH-09



CFC\_1000

C50115 - April 03, 2006

FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse

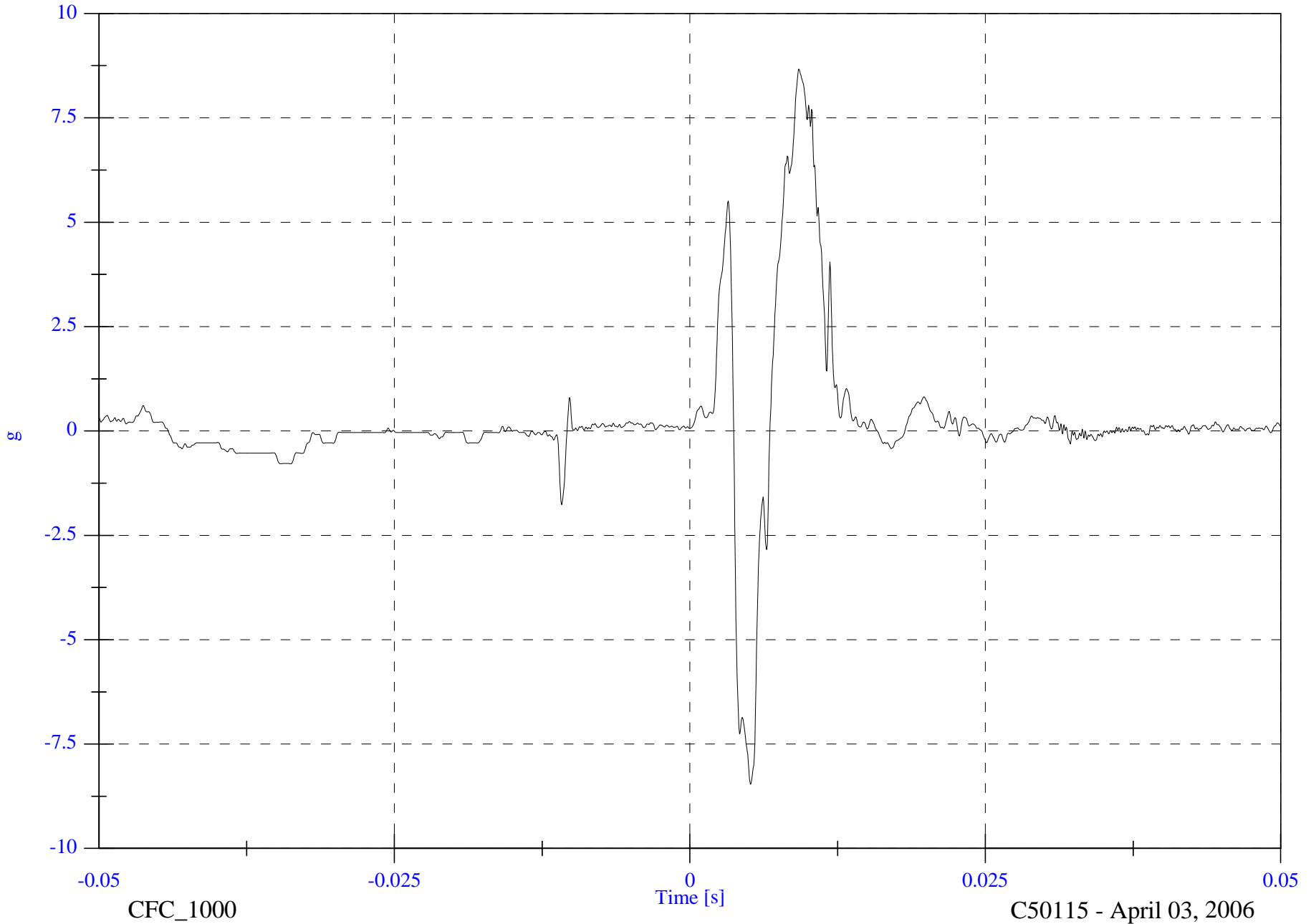
Headform Y Acceleration

Max: 8.7 [g] at 0.009 [s]

Min: -8.5 [g] at 0.005 [s]

C50115 PASSENGER SIDE RP1 IMPACT PLOT #2

8754-FMH-09



CFC\_1000

C50115 - April 03, 2006

FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse

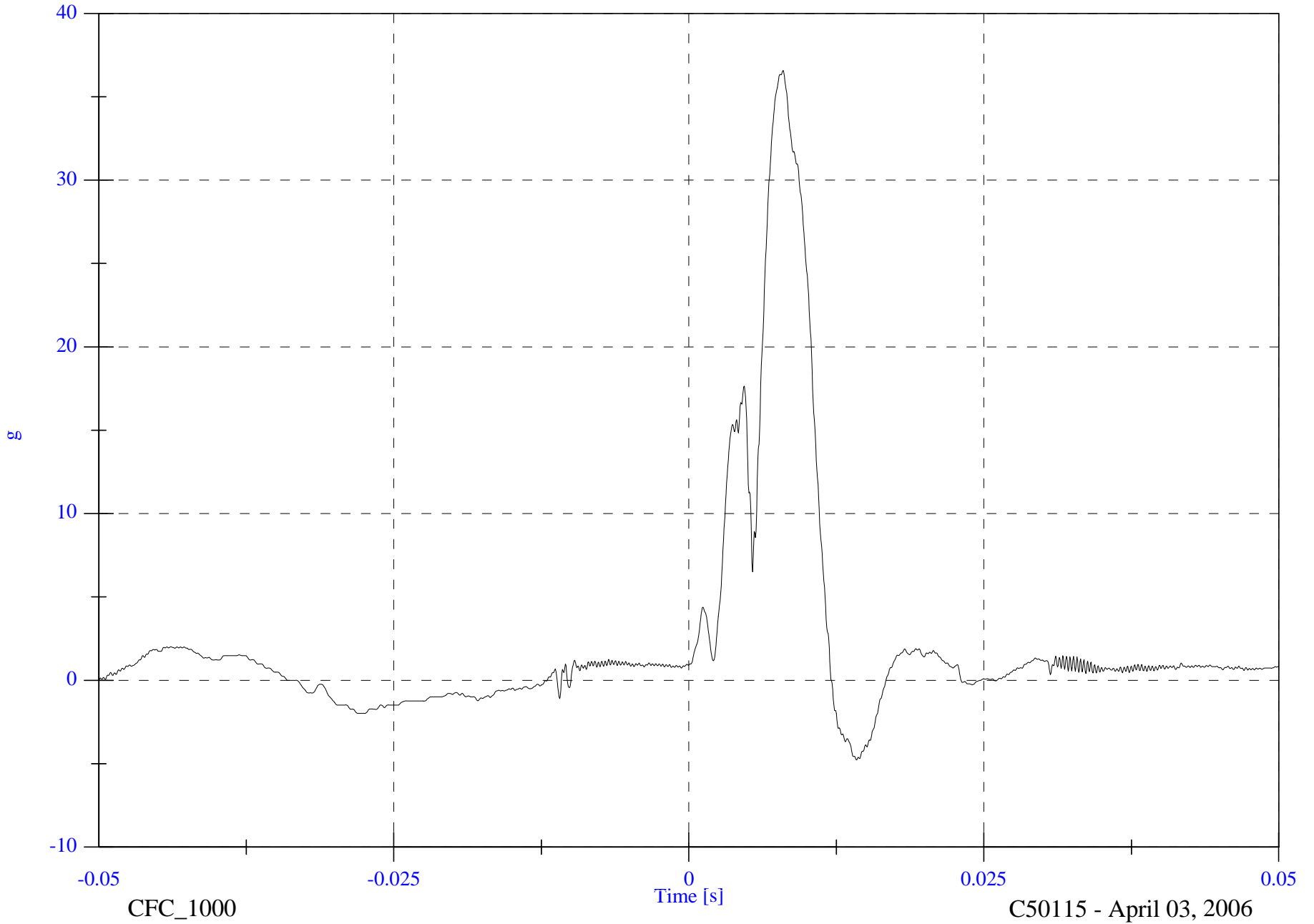
Headform Z Acceleration

Max: 36.6 [g] at 0.008 [s]

Min: -4.8 [g] at 0.014 [s]

C50115 PASSENGER SIDE RP1 IMPACT PLOT #3

8754+FMH-09



CFC\_1000

C50115 - April 03, 2006

FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse

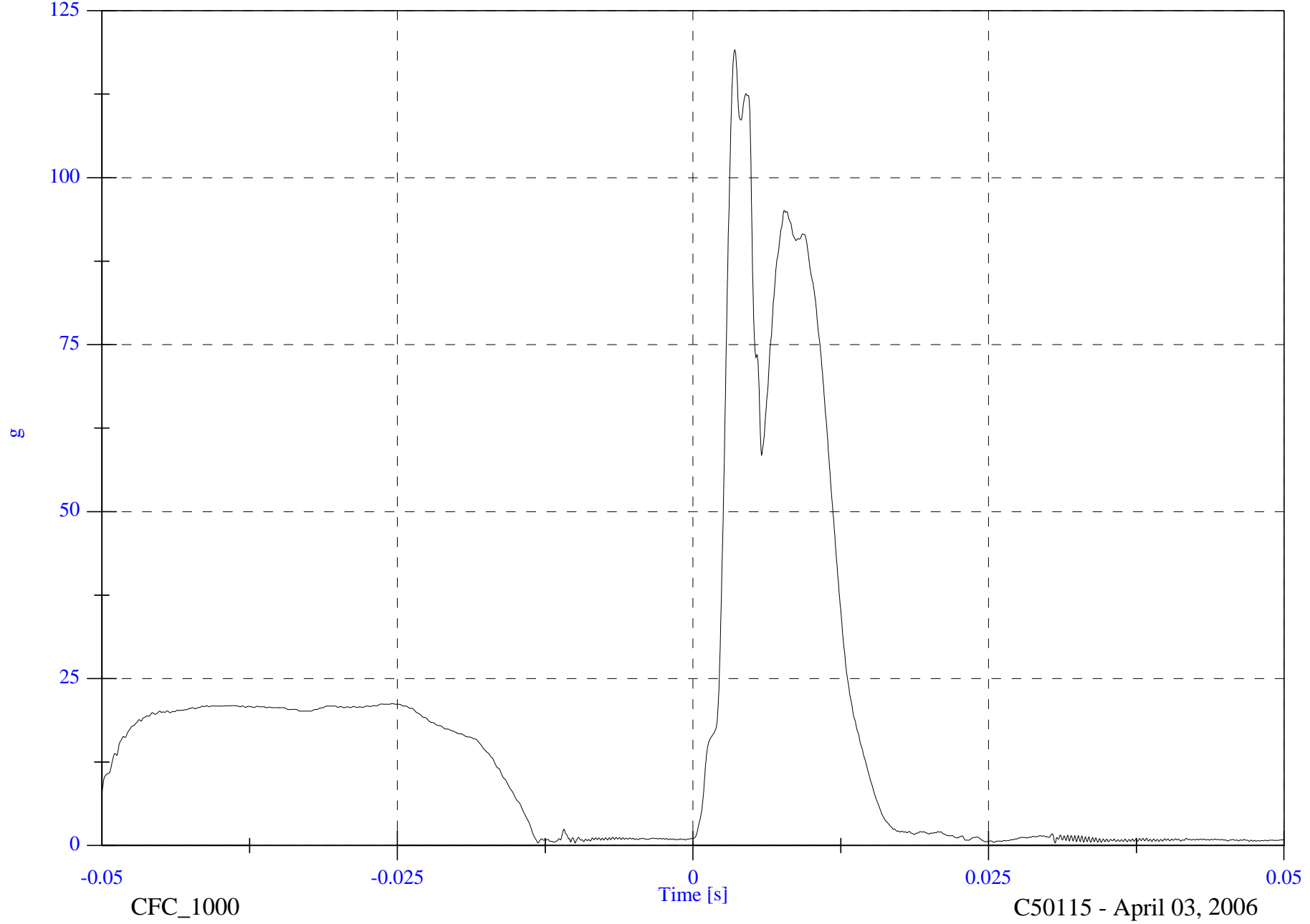
Headform Resultant

Max: 119.1 [g] at 0.004 [s]

Min: 0.4 [g] at 0.031 [s]

C50115 PASSENGER SIDE RP1 IMPACT PLOT #4

8754+FMH-09



CFC\_1000

C50115 - April 03, 2006

FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse

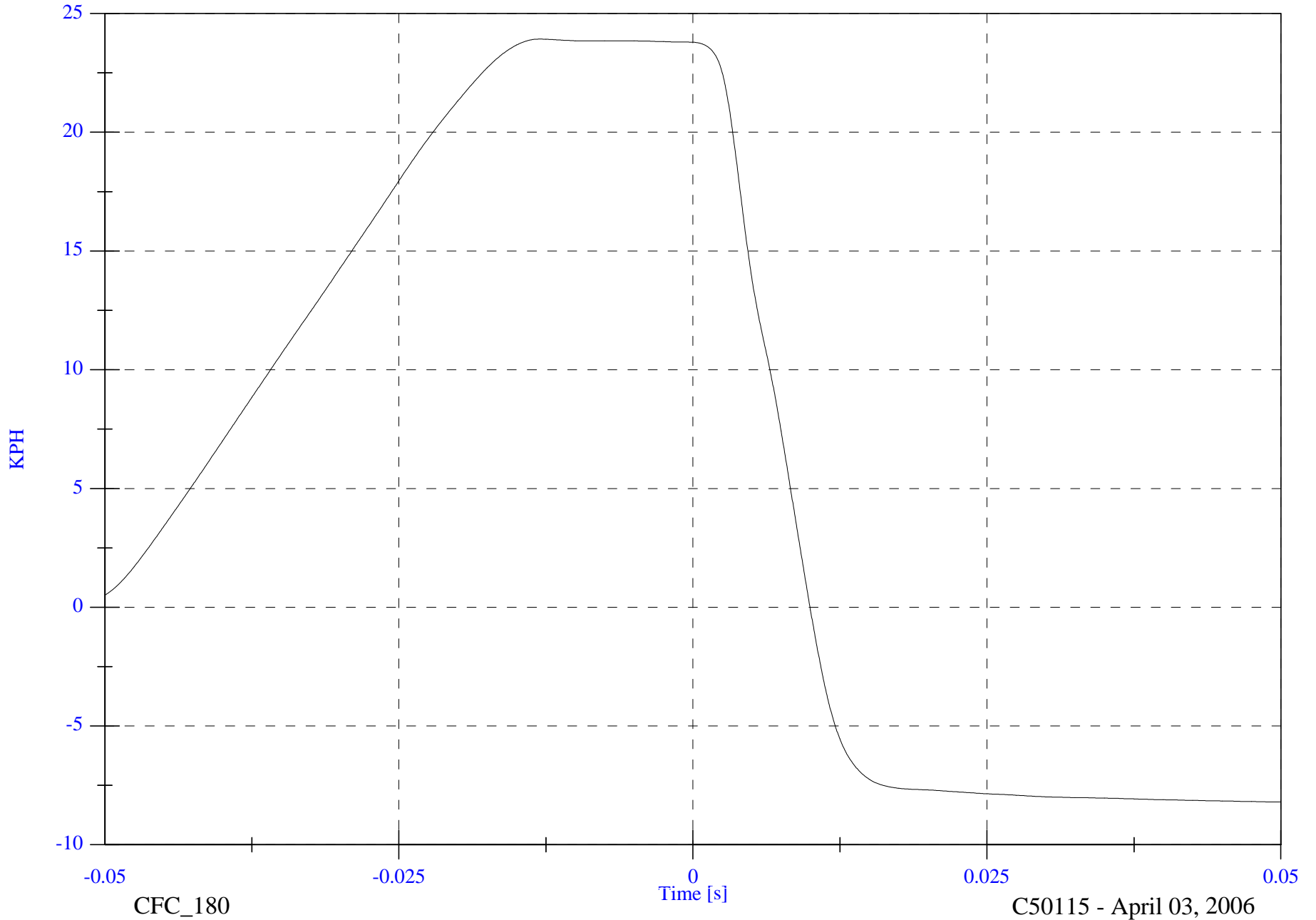
Headform Velocity

Max: 23.9 [KPH] at -0.013 [s]

Min: -8.2 [KPH] at 0.050 [s]

C50115 PASSENGER SIDE RP1 IMPACT PLOT #5

8754+FMH-09



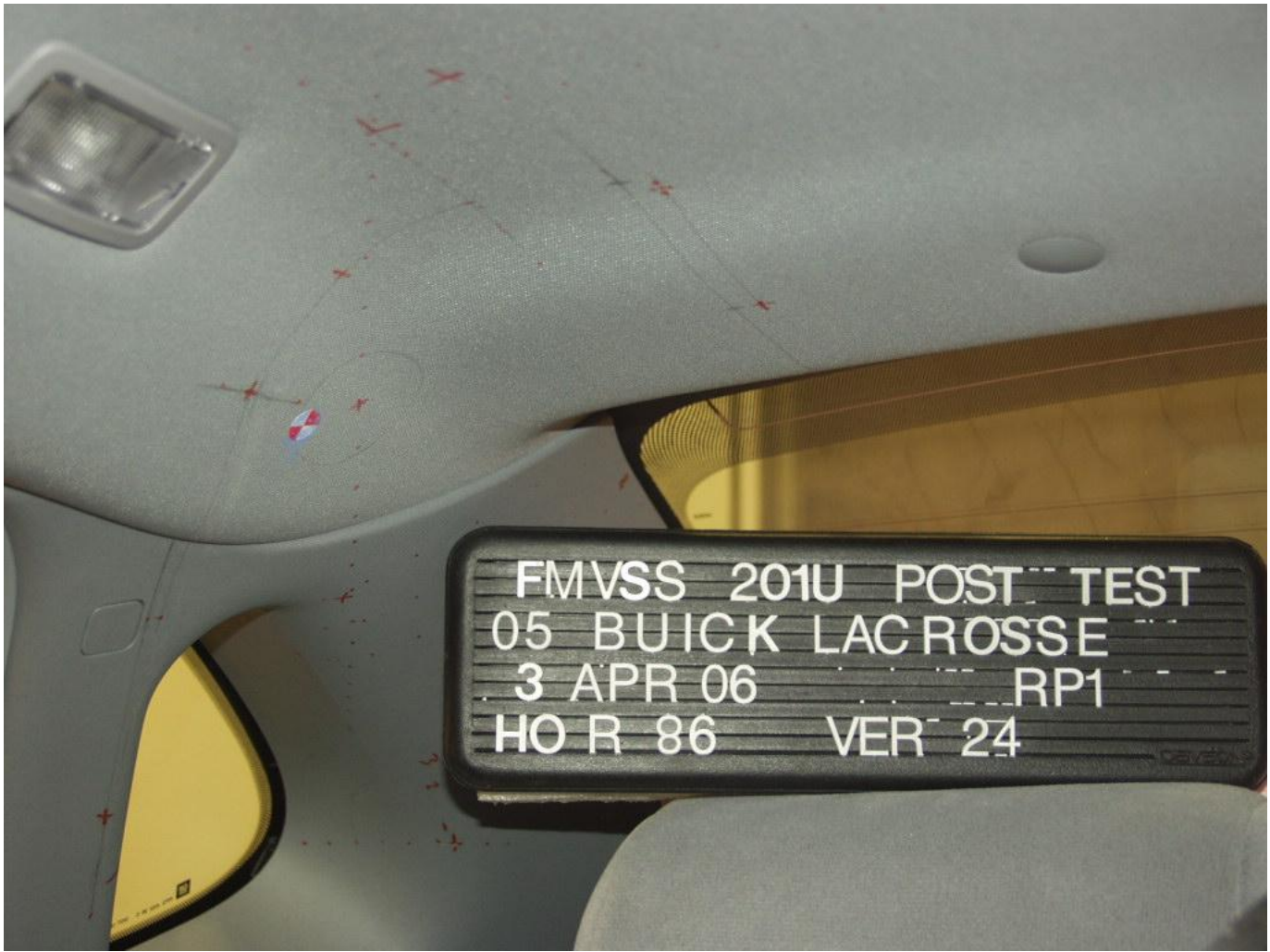
CFC\_180

C50115 - April 03, 2006



PRE-IMPACT RP1



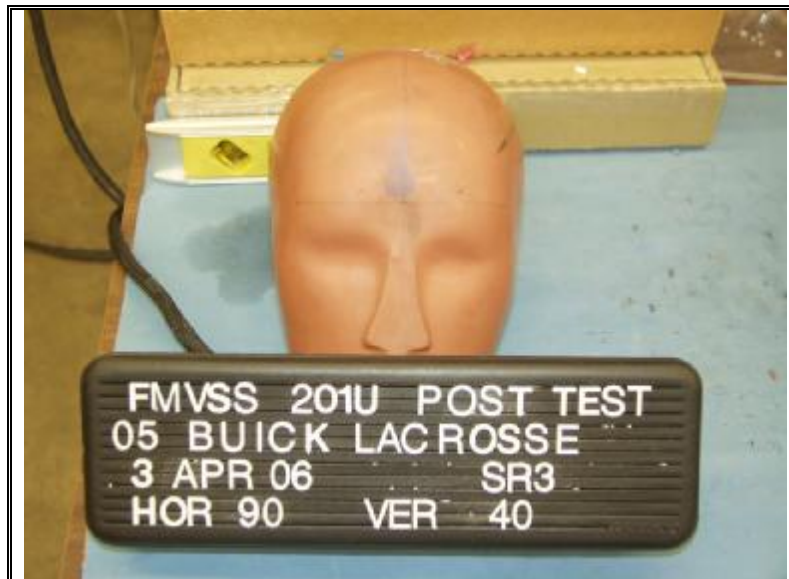


POST-IMPACT RP1

VEHICLE YEAR/MAKE/MODEL/STYLE:	2005 Buick LaCrosse CX
VIN:	2G4WC532X51323166
DATE OF MANUFACTURE:	04/05 (SEE CERTIFICATION LABEL)
COLOR:	Sapphire Metallic

Test Number:	04
Test Date:	<b>04/03/06</b>
Target Location:	SIDE RAIL
Target Code:	SR3R
Horizontal Impact Angle:	<b>90 °</b>
Vertical Impact Angle:	<b>40 °</b>
Ambient Temperature:	<b>22.8 C°</b>
Relative Humidity:	<b>37.5</b>
Time of Impact:	<b>14:15</b>
Headform Number:	<b>62</b>

Impact Point Description (from lower midpoint on midsagittal line)					
On Centerline	3	x	mm right		mm left
On Centerline	6				mm up



POST-IMPACT SR3R HEADFORM

Free Motion HIC	<b>887.7</b>
HIC(d)	<b>956.1</b>
Impact Velocity (kph)	<b>23.44</b>
HIC T1 (msec)	<b>3.5</b>
HIC T2 (msec)	<b>9.2</b>

# FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse C50115 - SR3

FMH Headform 0062

Location: SR3

Test Date: April 03, 2006

Work File: SR3

## -----TEST RESULTS-----

Lab Temperature: 22.8 C

HICd: 887.7

Lab Humidity: 37.5 %

HIC (36ms): 956.1

Velocity at Impact: 23.44 KPH

t1: 3.5 msec

t2: 9.2 msec

Free Flight Distance: 215.32 mm

Duration: 5.7 msec

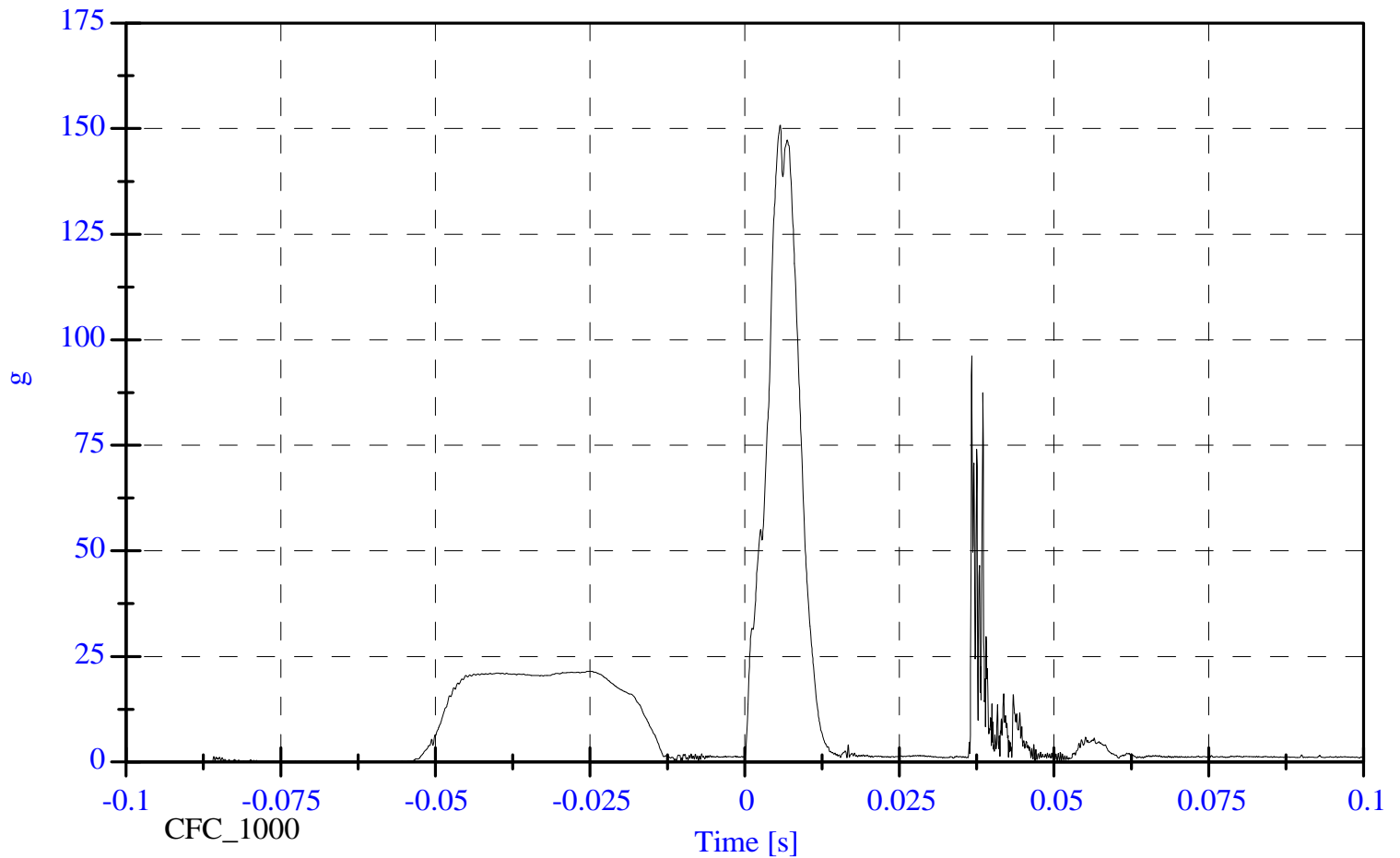
Maximum: 150.8 g

Average Acceleration: 9.7 g

FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse  
Headform Resultant

Max: 150.8 [g] at 0.006 [s]

Min: 0.0 [g] at -0.064 [s]



FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse

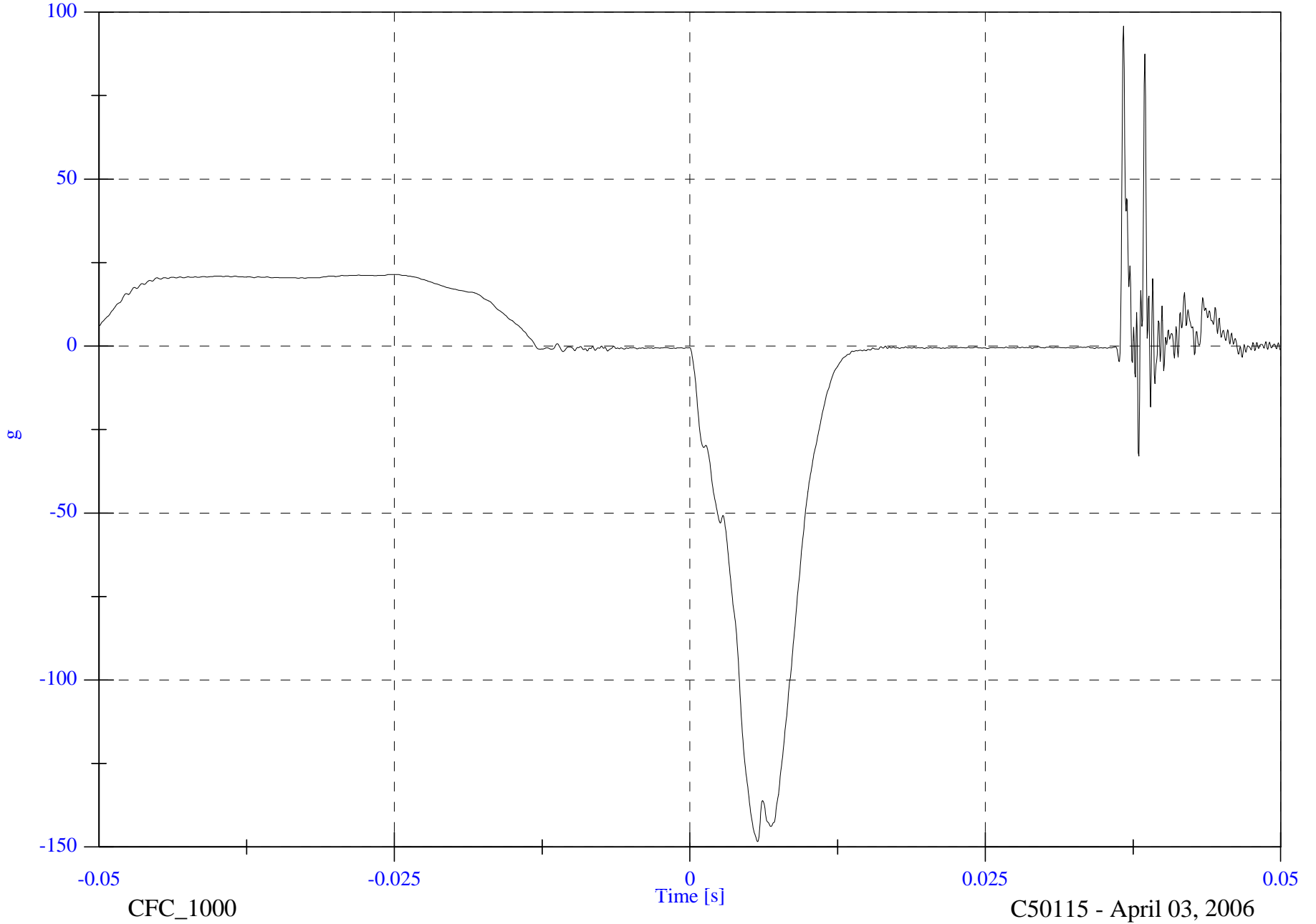
Headform X Acceleration

Max: 95.8 [g] at 0.037 [s]

Min: -148.4 [g] at 0.006 [s]

C50115 PASSENGER SIDE SR3 IMPACT PLOT #1

8754-FMH-09



CFC\_1000

C50115 - April 03, 2006

FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse

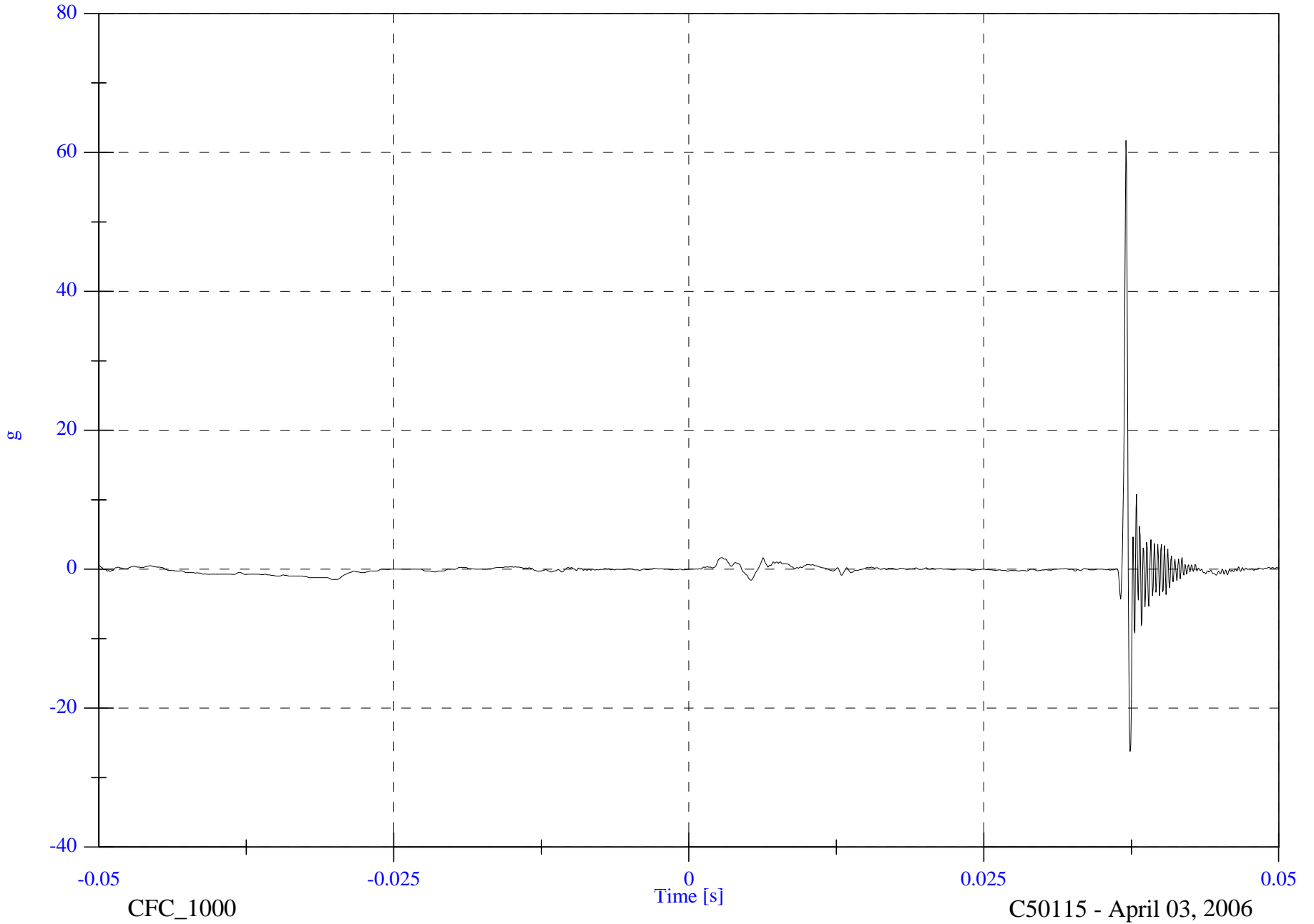
Headform Y Acceleration

Max: 61.7 [g] at 0.037 [s]

Min: -26.2 [g] at 0.037 [s]

C50115 PASSENGER SIDE SR3 IMPACT PLOT #2

8754+FMH-09



CFC\_1000

C50115 - April 03, 2006

FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse

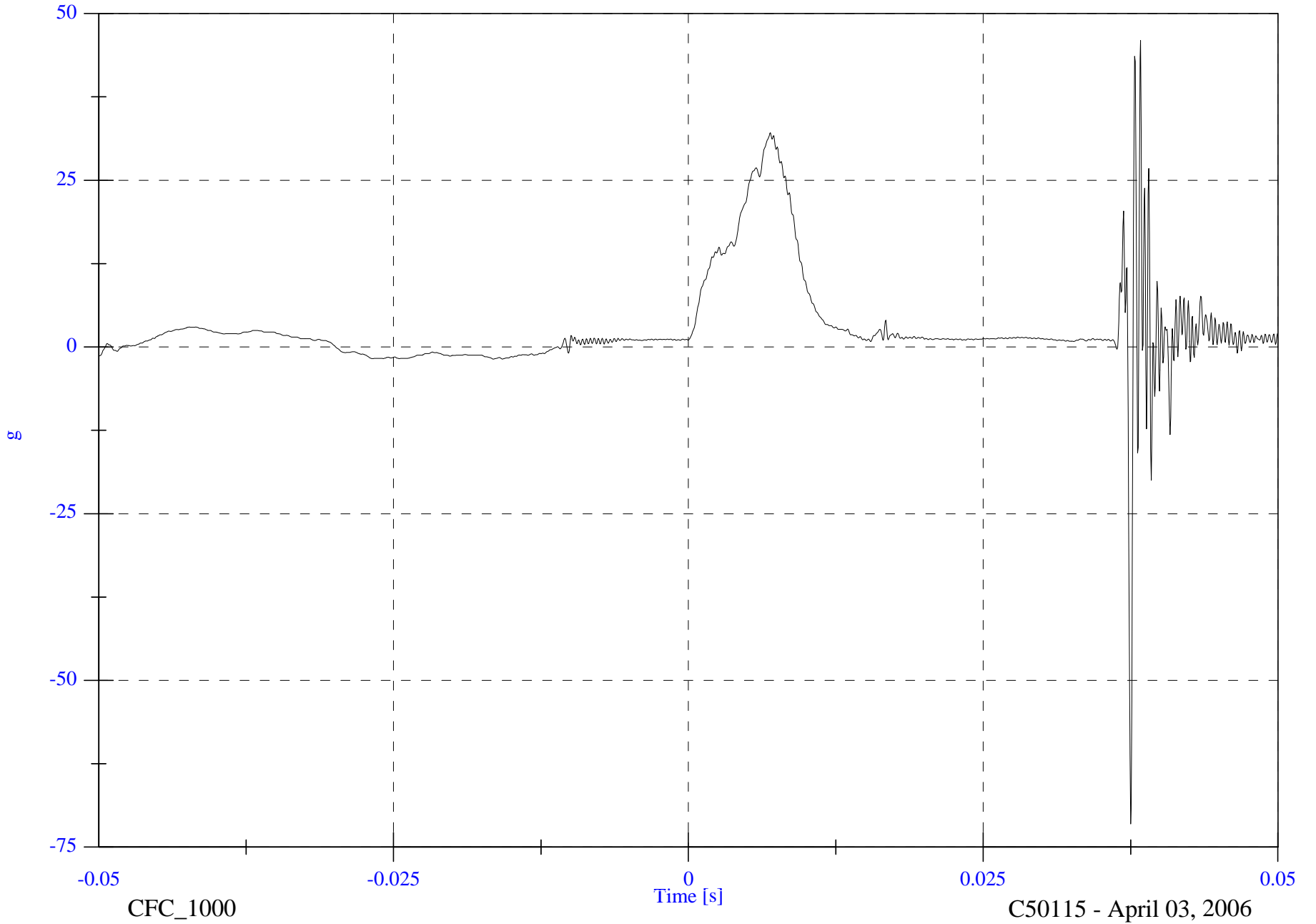
Headform Z Acceleration

Max: 46.0 [g] at 0.038 [s]

Min: -71.5 [g] at 0.038 [s]

C50115 PASSENGER SIDE SR3 IMPACT PLOT #3

8754+FMH-09



FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse

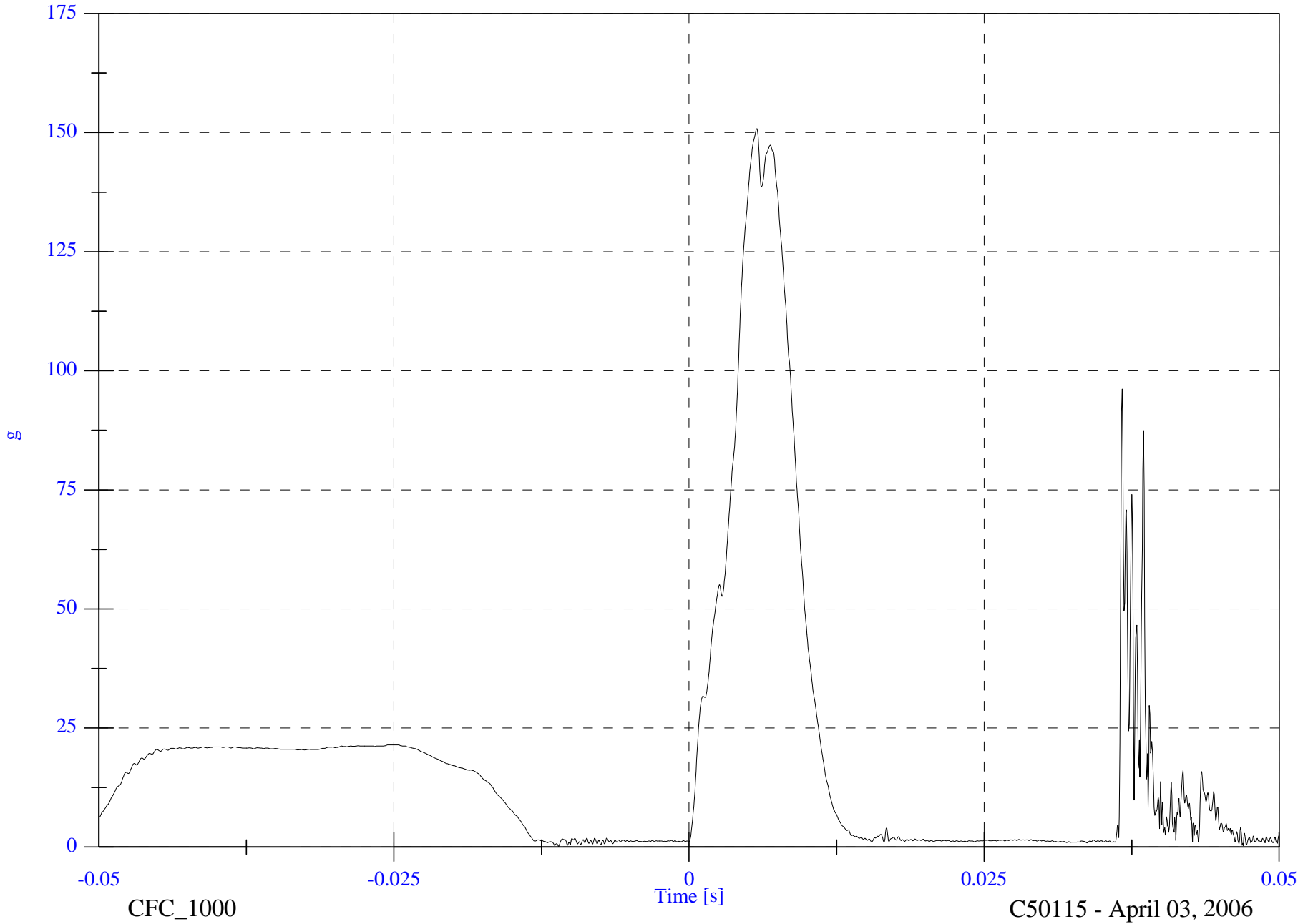
Headform Resultant

Max: 150.8 [g] at 0.006 [s]

Min: 0.1 [g] at -0.011 [s]

C50115 PASSENGER SIDE SR3 IMPACT PLOT #4

8754+FMH-09



CFC\_1000

C50115 - April 03, 2006

FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse

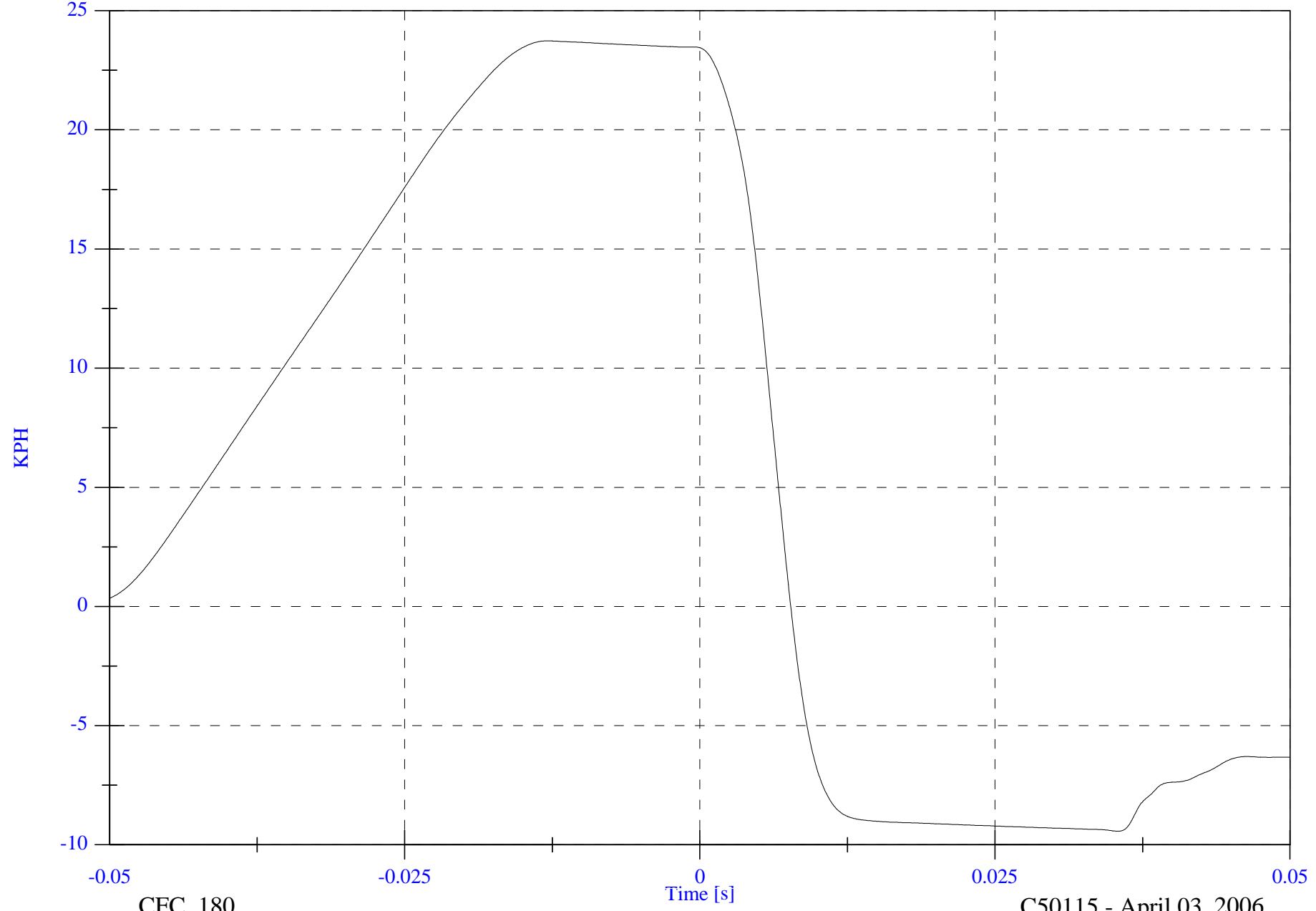
Headform Velocity

Max: 23.7 [KPH] at -0.013 [s]

Min: -9.4 [KPH] at 0.035 [s]

C50115 PASSENGER SIDE SR3 IMPACT PLOT #5

8754+FMH-09



CFC\_180

C50115 - April 03, 2006





PRE-IMPACT SR3R

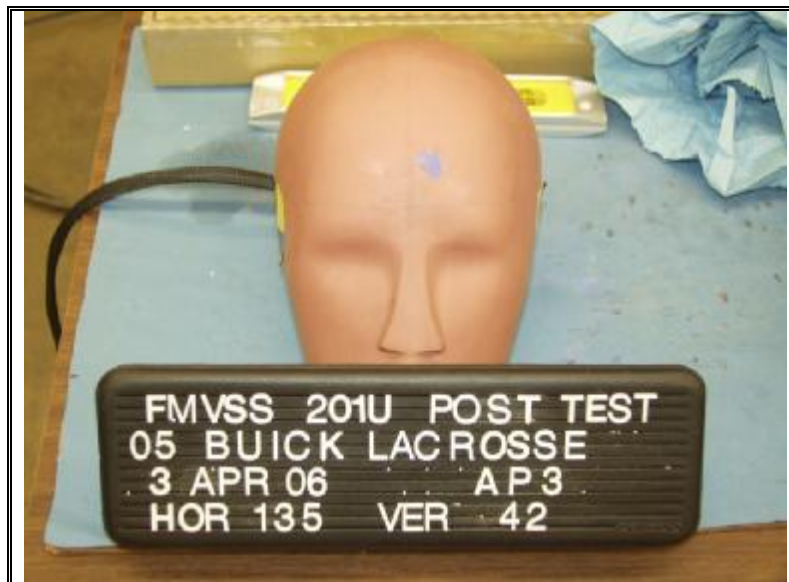


POST-IMPACT SR3R

VEHICLE YEAR/MAKE/MODEL/STYLE:	2005 Buick LaCrosse CX
VIN:	2G4WC532X51323166
DATE OF MANUFACTURE:	04/05 (SEE CERTIFICATION LABEL)
COLOR:	Sapphire Metallic

Test Number:	05
Test Date:	04/03/06
Target Location:	A-PILLAR
Target Code:	AP3
Horizontal Impact Angle:	135 °
Vertical Impact Angle:	42 °
Ambient Temperature:	22.8 C°
Relative Humidity:	39.7
Time of Impact:	15:09
Headform Number:	1255

Impact Point Description (from lower midpoint on midsagittal line)					
On Centerline	2	<input checked="" type="checkbox"/>	mm right	<input type="checkbox"/>	mm left
On Centerline	20				mm up



POST-IMPACT AP3 HEADFORM

Free Motion HIC	660.5
HIC(d)	664.7
Impact Velocity (kph)	23.46
HIC T1 (msec)	1.9
HIC T2 (msec)	10.6

# FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse C50115 - AP3

FMH Headform 1255

Location: AP3

Test Date: April 03, 2006

Work File: AP3

## -----TEST RESULTS-----

Lab Temperature: 22.8 C

HICd: 664.7

Lab Humidity: 39.7 %

HIC (36ms): 660.5

Velocity at Impact: 23.46 KPH

t1: 1.9 msec

t2: 10.6 msec

Free Flight Distance: 216.76 mm

Duration: 8.7 msec

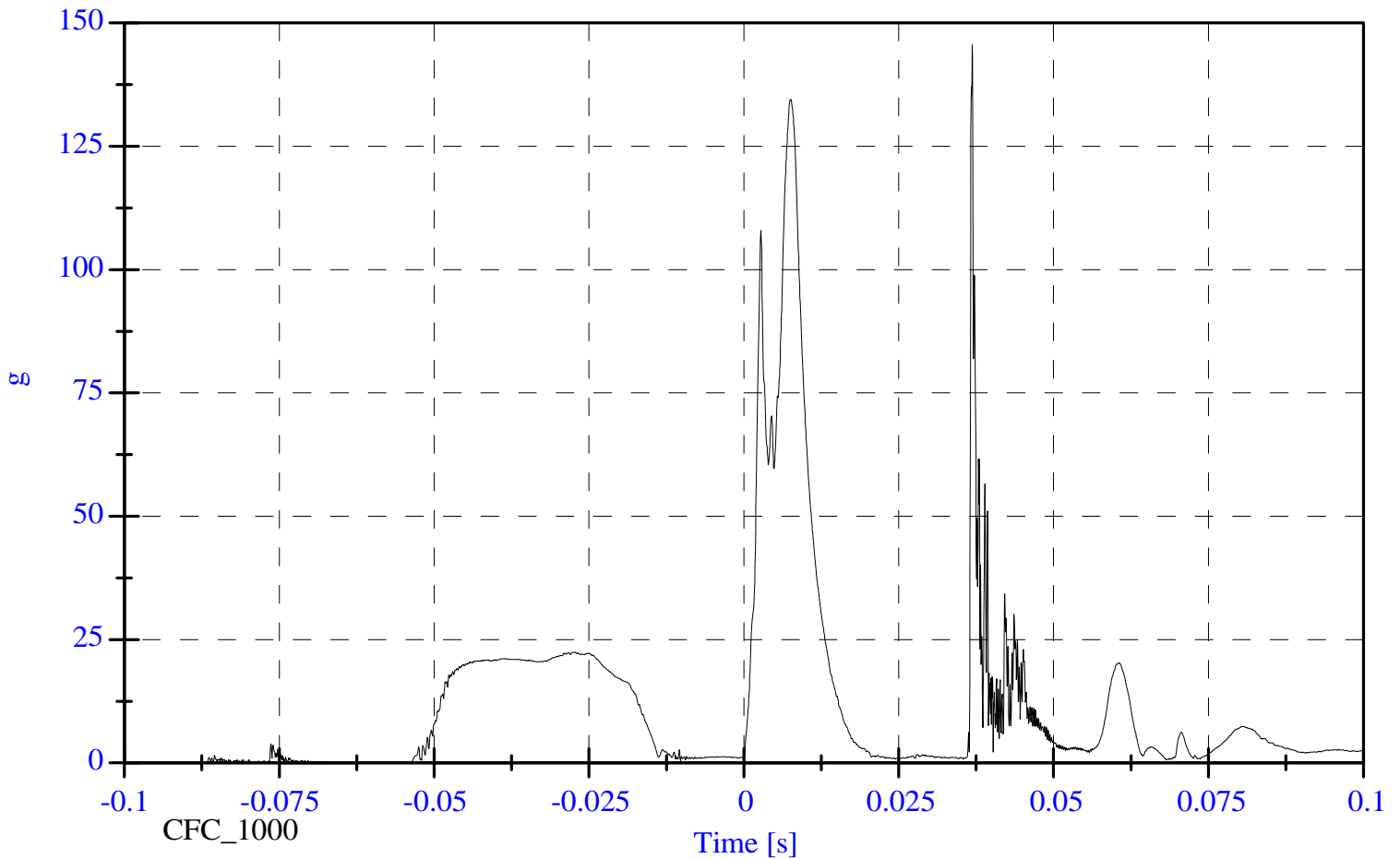
Maximum: 134.5 g

Average Acceleration: 11.2 g

FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse  
Headform Resultant

Max: 134.5 [g] at 0.008 [s]

Min: 0.0 [g] at -0.094 [s]



FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse

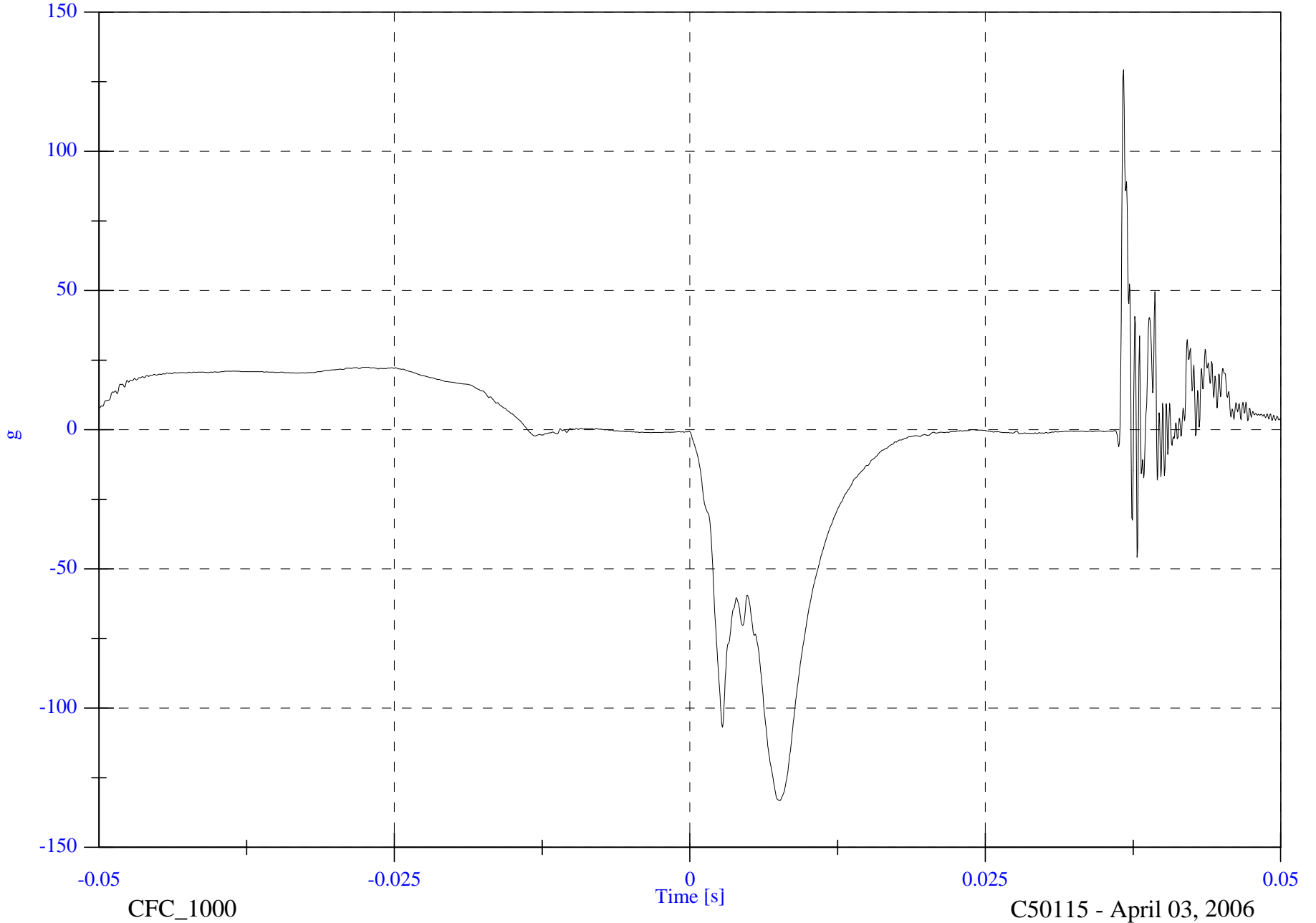
Headform X Acceleration

Max: 129.3 [g] at 0.037 [s]

Min: -133.3 [g] at 0.008 [s]

C50115 PASSENGER SIDE AP3 IMPACT PLOT #1

8754+FMH-09



CFC\_1000

C50115 - April 03, 2006

FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse

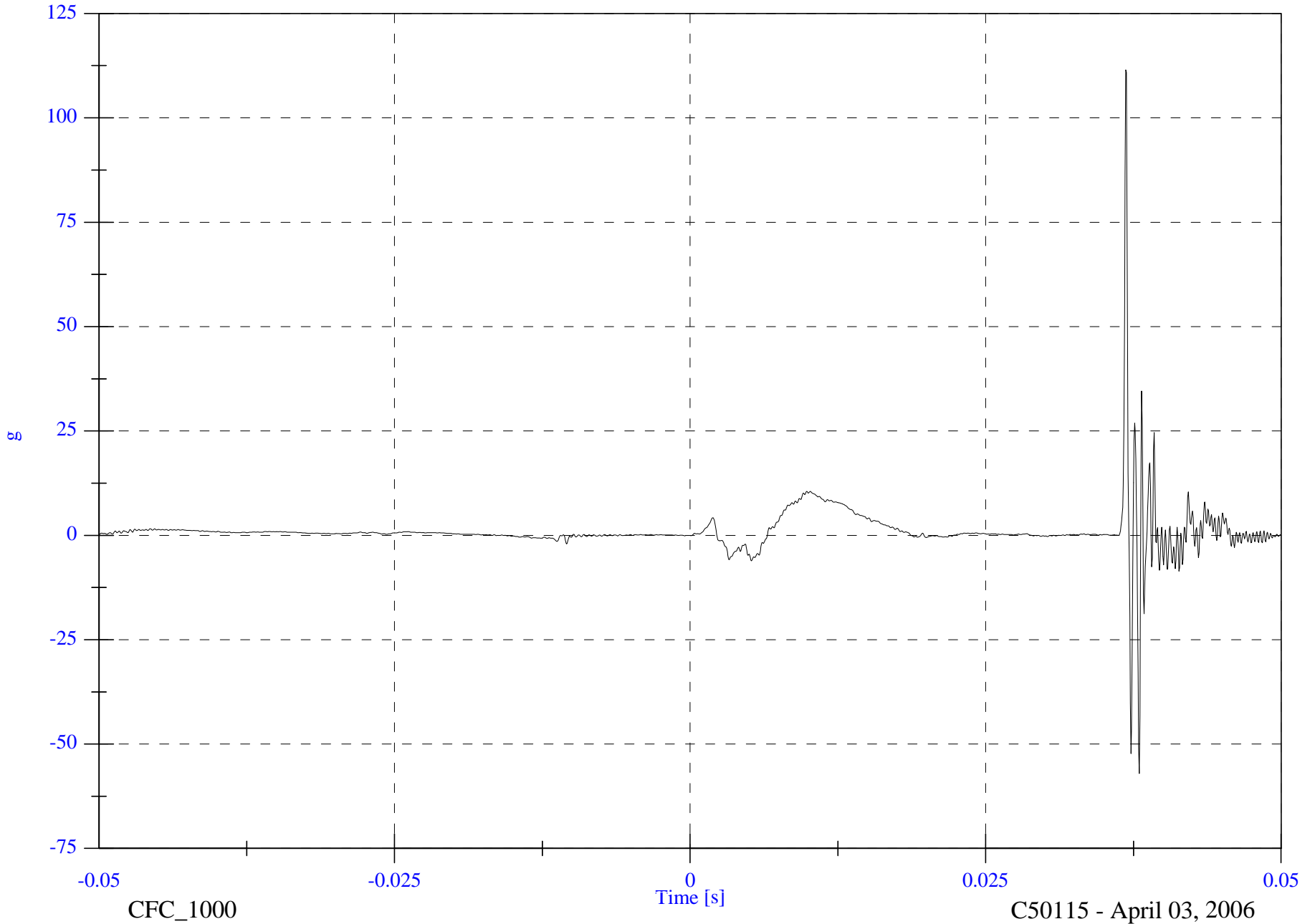
Headform Y Acceleration

Max: 111.5 [g] at 0.037 [s]

Min: -57.0 [g] at 0.038 [s]

C50115 PASSENGER SIDE AP3 IMPACT PLOT #2

8754+FMH-09



CFC\_1000

C50115 - April 03, 2006

FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse

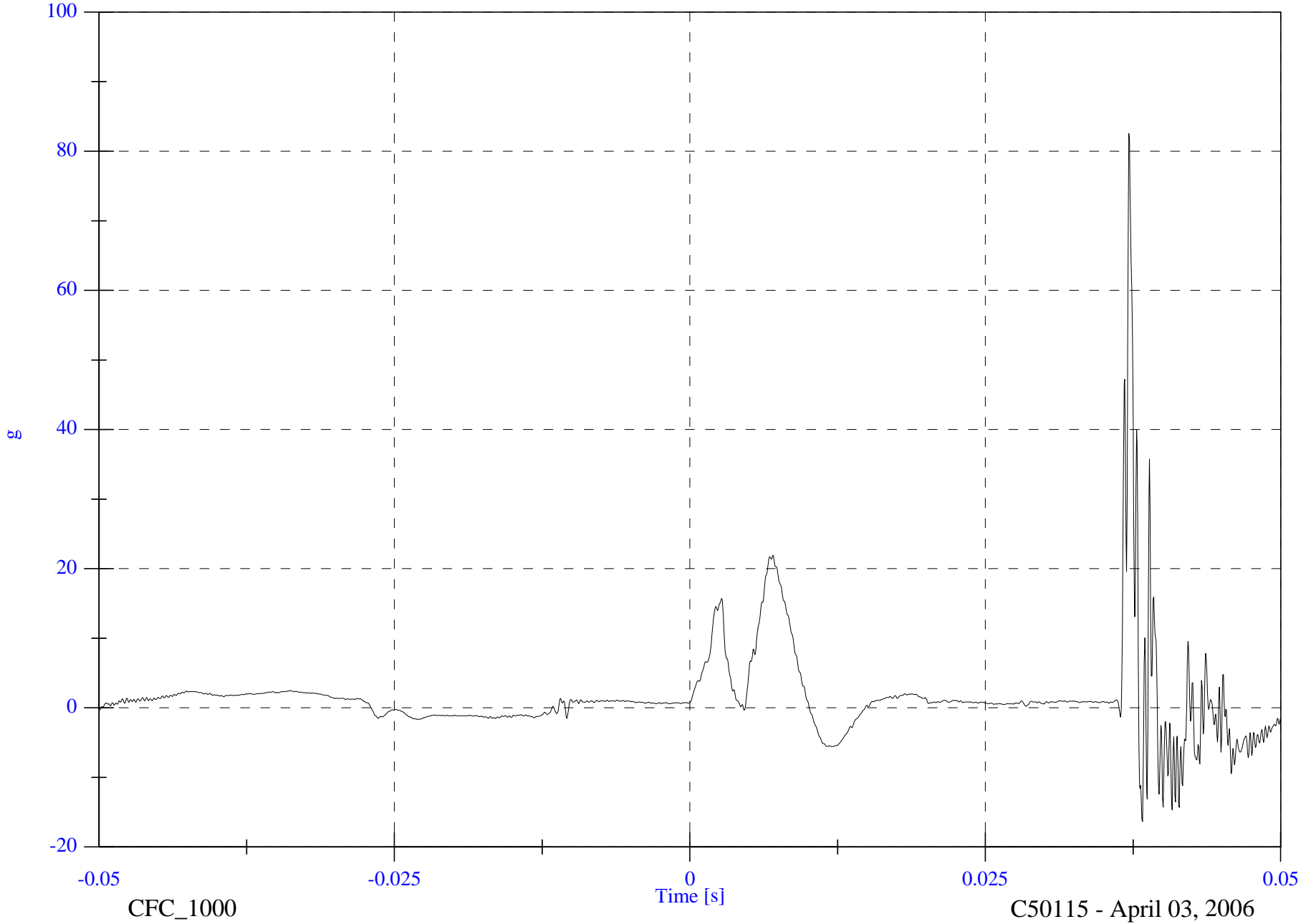
Headform Z Acceleration

Max: 82.6 [g] at 0.037 [s]

Min: -16.3 [g] at 0.038 [s]

C50115 PASSENGER SIDE AP3 IMPACT PLOT #3

8754+FMH-09



CFC\_1000

C50115 - April 03, 2006

FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse

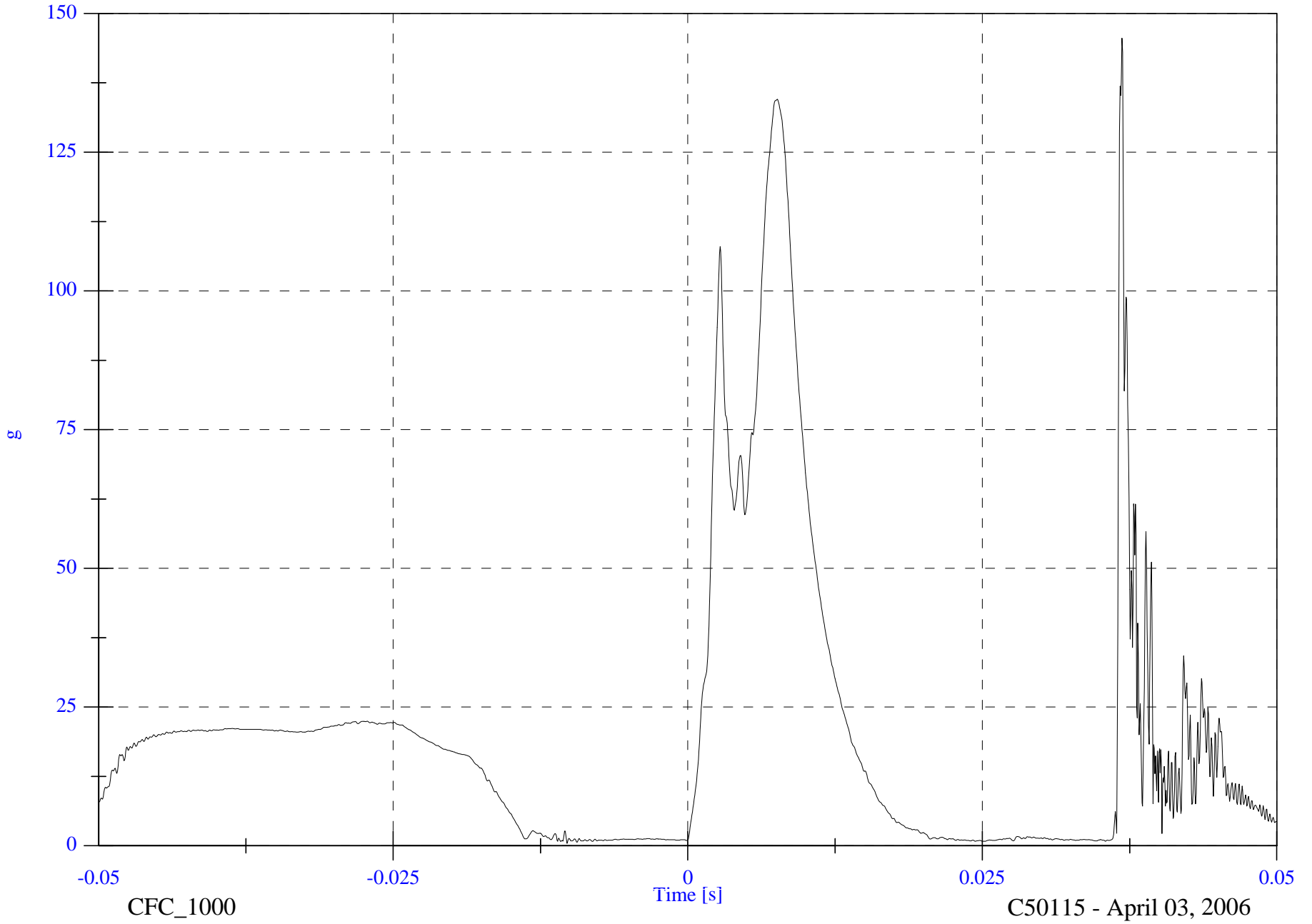
Headform Resultant

Max: 145.5 [g] at 0.037 [s]

Min: 0.4 [g] at -0.010 [s]

C50115 PASSENGER SIDE AP3 IMPACT PLOT #4

8754+FMH-09





FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse

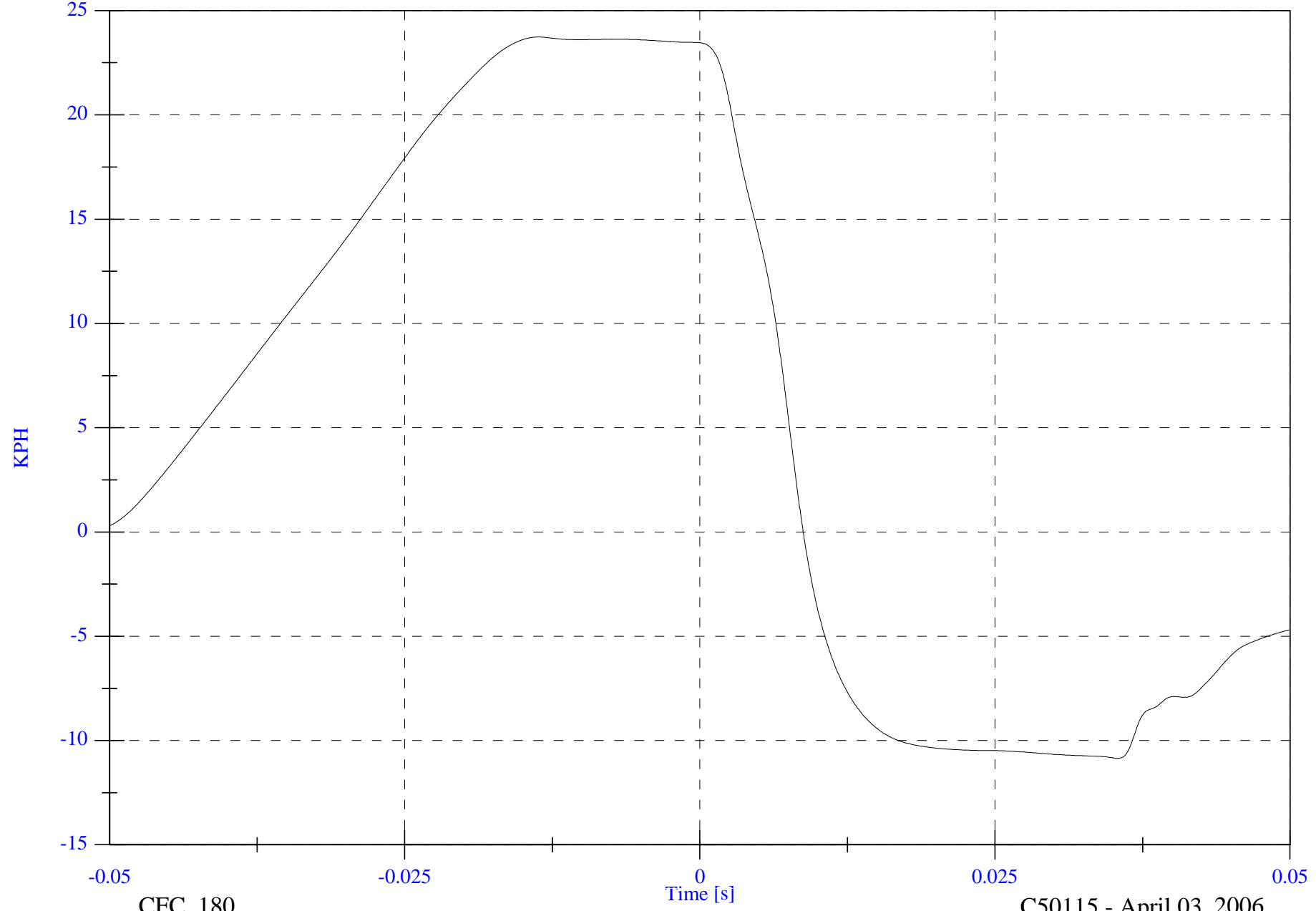
Headform Velocity

Max: 23.7 [KPH] at -0.014 [s]

Min: -10.9 [KPH] at 0.035 [s]

C50115 PASSENGER SIDE AP3 IMPACT PLOT #5

8754+FMH-09



CFC\_180

C50115 - April 03, 2006



PRE-IMPACT AP3

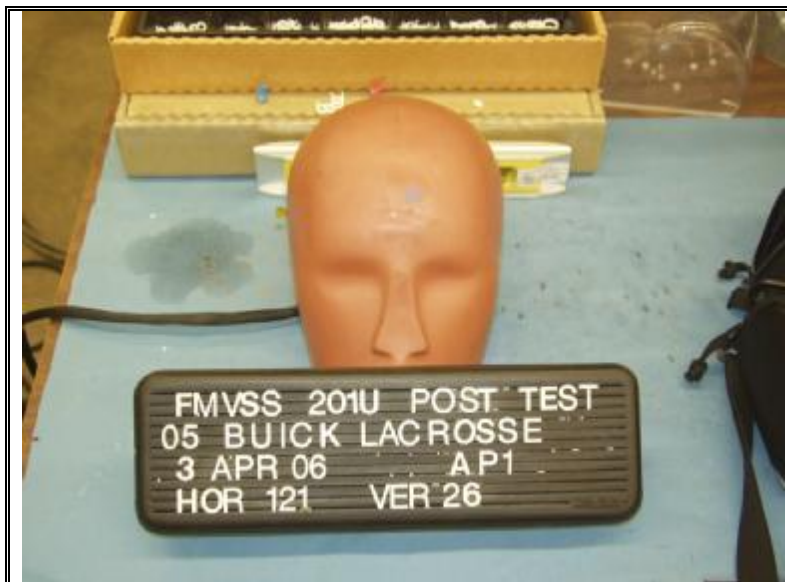


POST-IMPACT AP3

VEHICLE YEAR/MAKE/MODEL/STYLE:	2005 Buick LaCrosse CX
VIN:	2G4WC532X51323166
DATE OF MANUFACTURE:	04/05 (SEE CERTIFICATION LABEL)
COLOR:	Sapphire Metallic

Test Number:	06
Test Date:	04/03/06
Target Location:	A-PILLAR
Target Code:	AP1
Horizontal Impact Angle:	121 °
Vertical Impact Angle:	26 °
Ambient Temperature:	21.8 C°
Relative Humidity:	45.2
Time of Impact:	16:06
Headform Number:	355

Impact Point Description (from lower midpoint on midsagittal line)			
On Centerline	12	mm right	x mm left
On Centerline	26	mm up	



POST-IMPACT AP1 HEADFORM

Free Motion HIC	544.8
HIC(d)	577.5
Impact Velocity (kph)	23.34
HIC T1 (msec)	2.5
HIC T2 (msec)	7.5

# FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse C50115 - AP1

FMH Headform 0355

Location: AP1

Test Date: April 03, 2006

Work File: AP1

## -----TEST RESULTS-----

Lab Temperature: 21.8 C

HICd: 577.5

Lab Humidity: 45.2 %

HIC (36ms): 544.8

Velocity at Impact: 23.34 KPH

t1: 2.5 msec

t2: 7.5 msec

Free Flight Distance: 219.93 mm

Duration: 5.1 msec

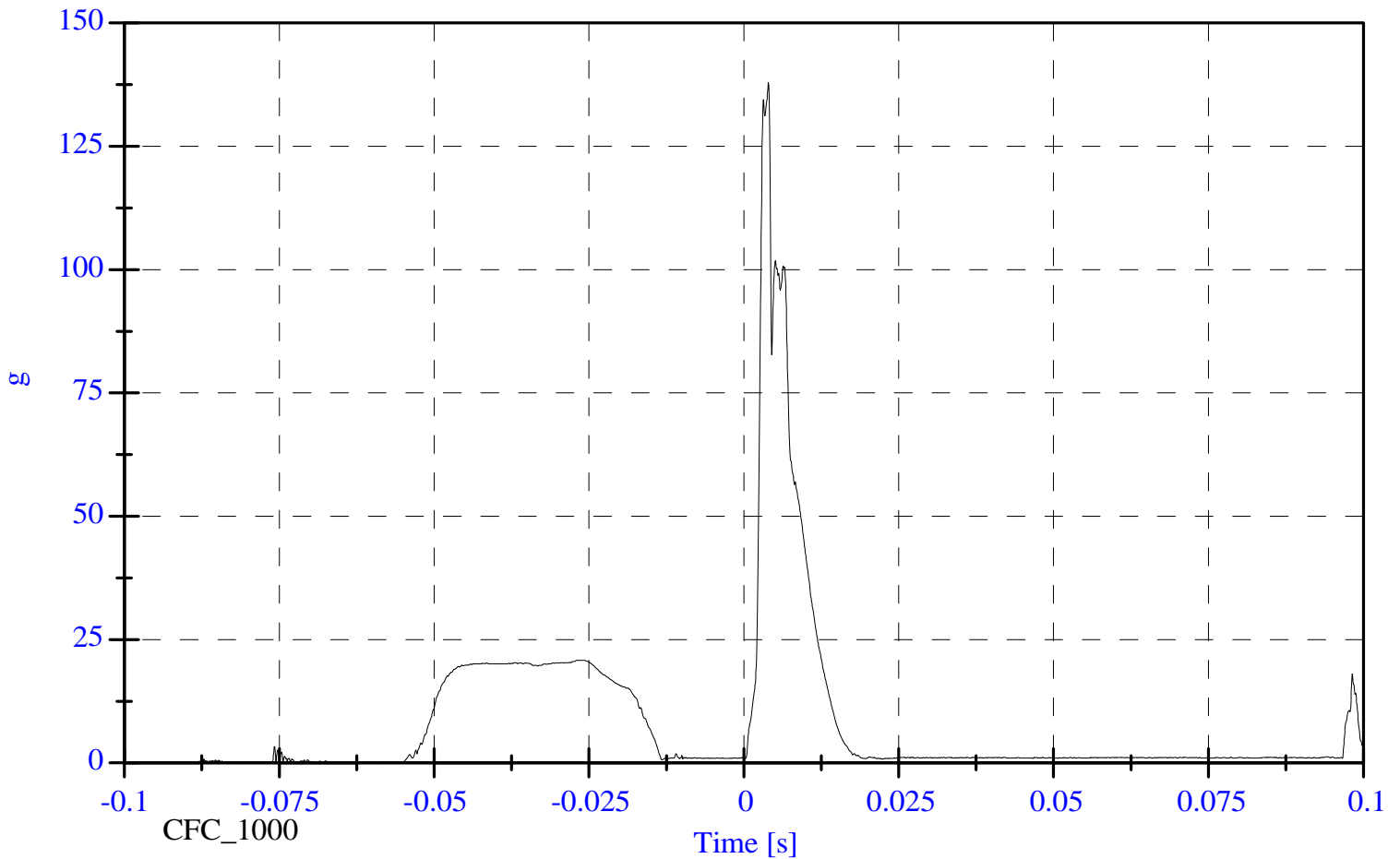
Maximum: 138.0 g

Average Acceleration: 8.1 g

FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse  
Headform Resultant

Max: 138.0 [g] at 0.004 [s]

Min: 0.0 [g] at -0.096 [s]

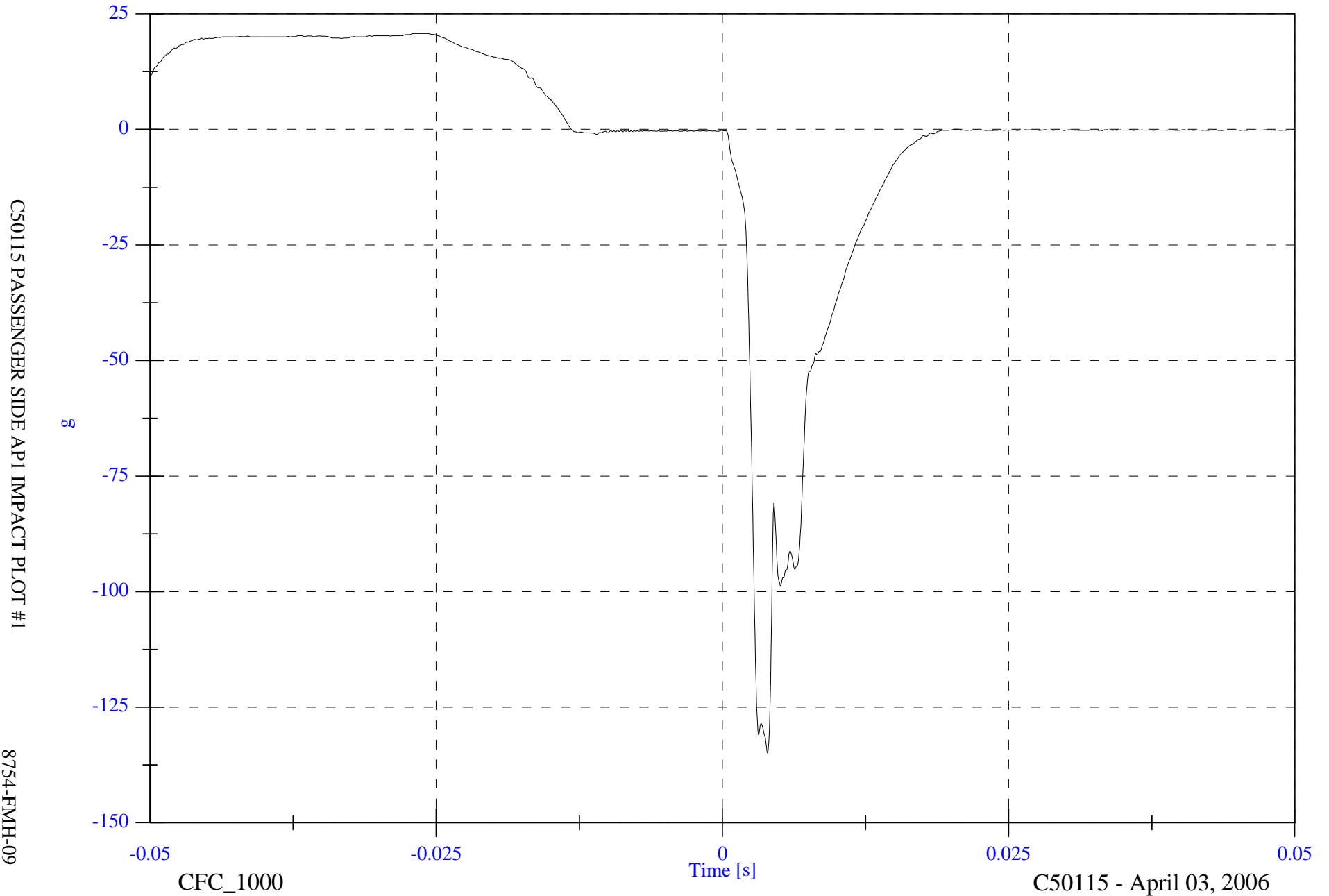


FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse

Headform X Acceleration

Max: 20.7 [g] at -0.027 [s]

Min: -134.9 [g] at 0.004 [s]



C50115 PASSENGER SIDE AP1 IMPACT PLOT #1

8754+FMH-09

CFC\_1000

C50115 - April 03, 2006

FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse

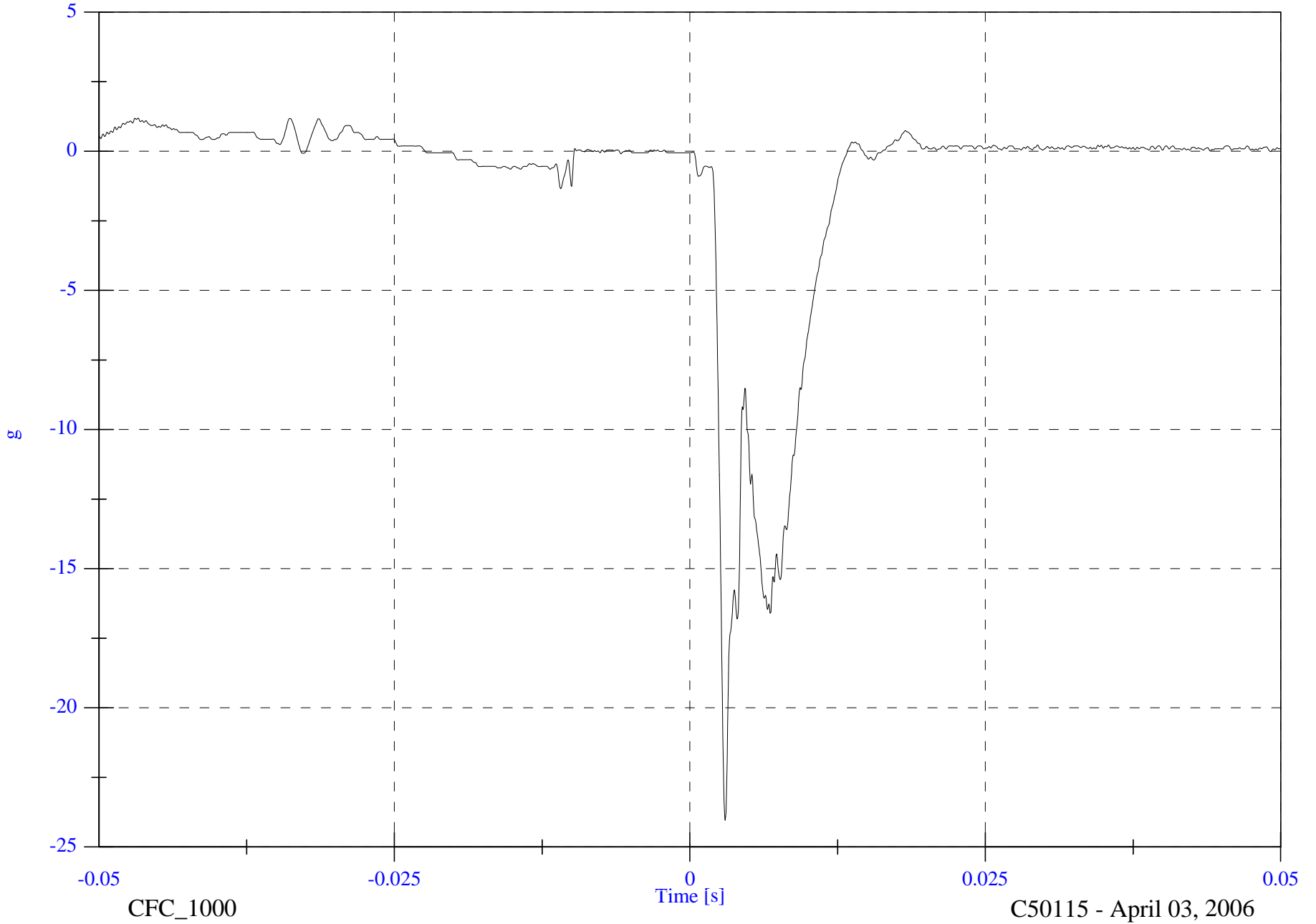
Headform Y Acceleration

Max: 1.2 [g] at -0.047 [s]

Min: -24.0 [g] at 0.003 [s]

C50115 PASSENGER SIDE AP1 IMPACT PLOT #2

8754+FMH-09



CFC\_1000

C50115 - April 03, 2006

FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse

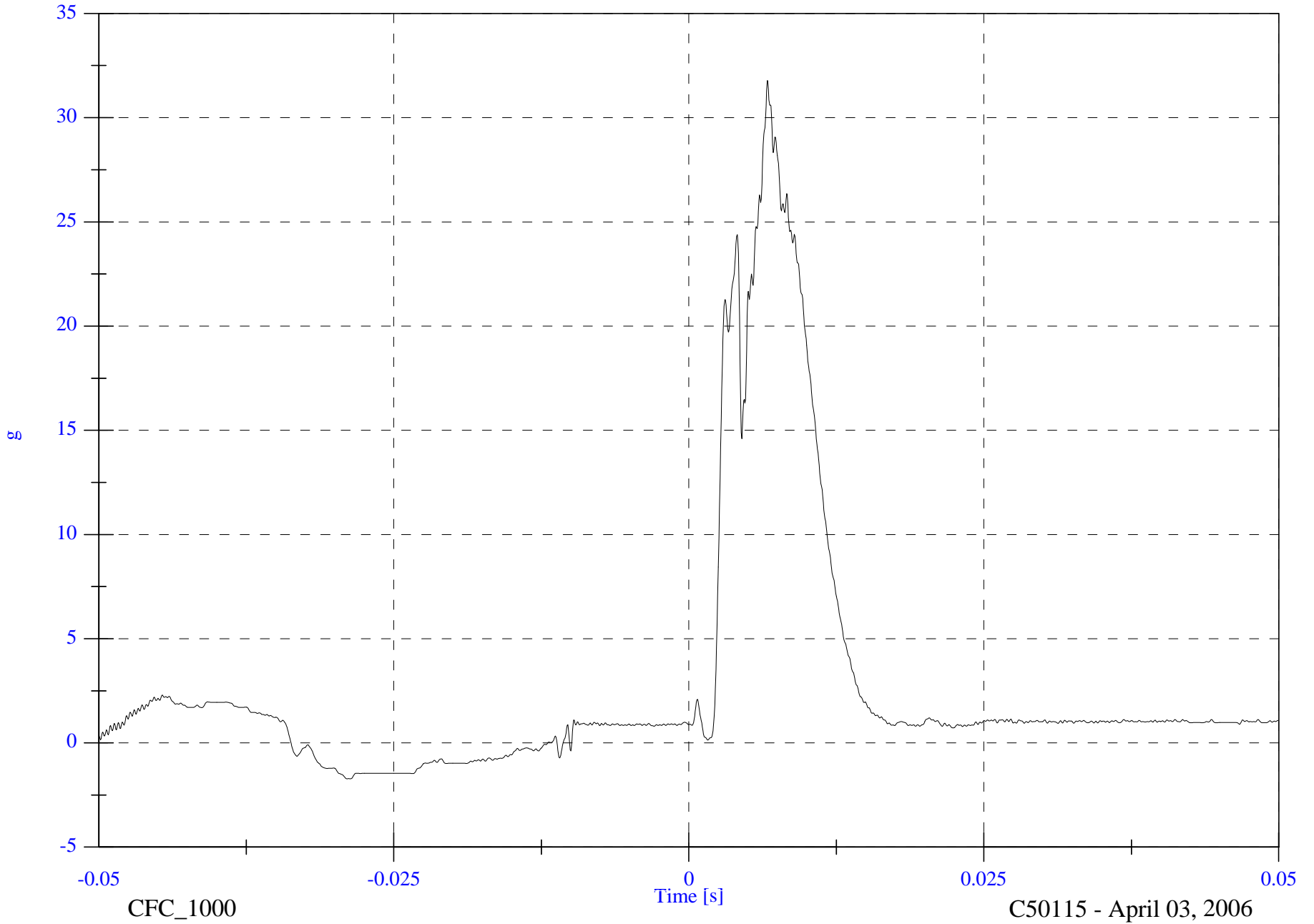
Headform Z Acceleration

Max: 31.8 [g] at 0.007 [s]

Min: -1.7 [g] at -0.029 [s]

C50115 PASSENGER SIDE AP1 IMPACT PLOT #3

8754+FMH-09



CFC\_1000

C50115 - April 03, 2006



FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse

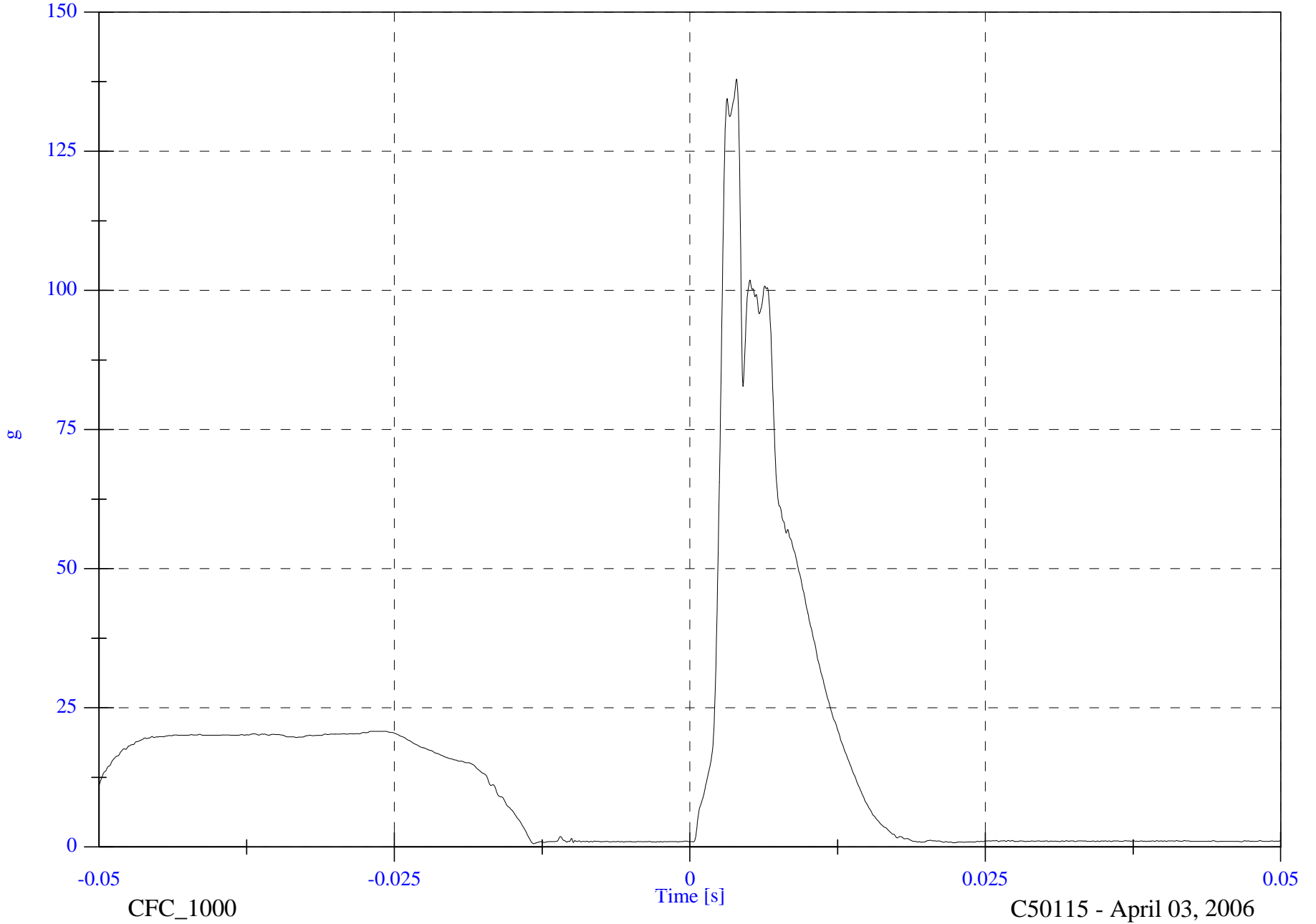
Headform Resultant

Max: 138.0 [g] at 0.004 [s]

Min: 0.6 [g] at -0.013 [s]

C50115 PASSENGER SIDE AP1 IMPACT PLOT #4

8754+FMH-09



C50115 - April 03, 2006

FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse

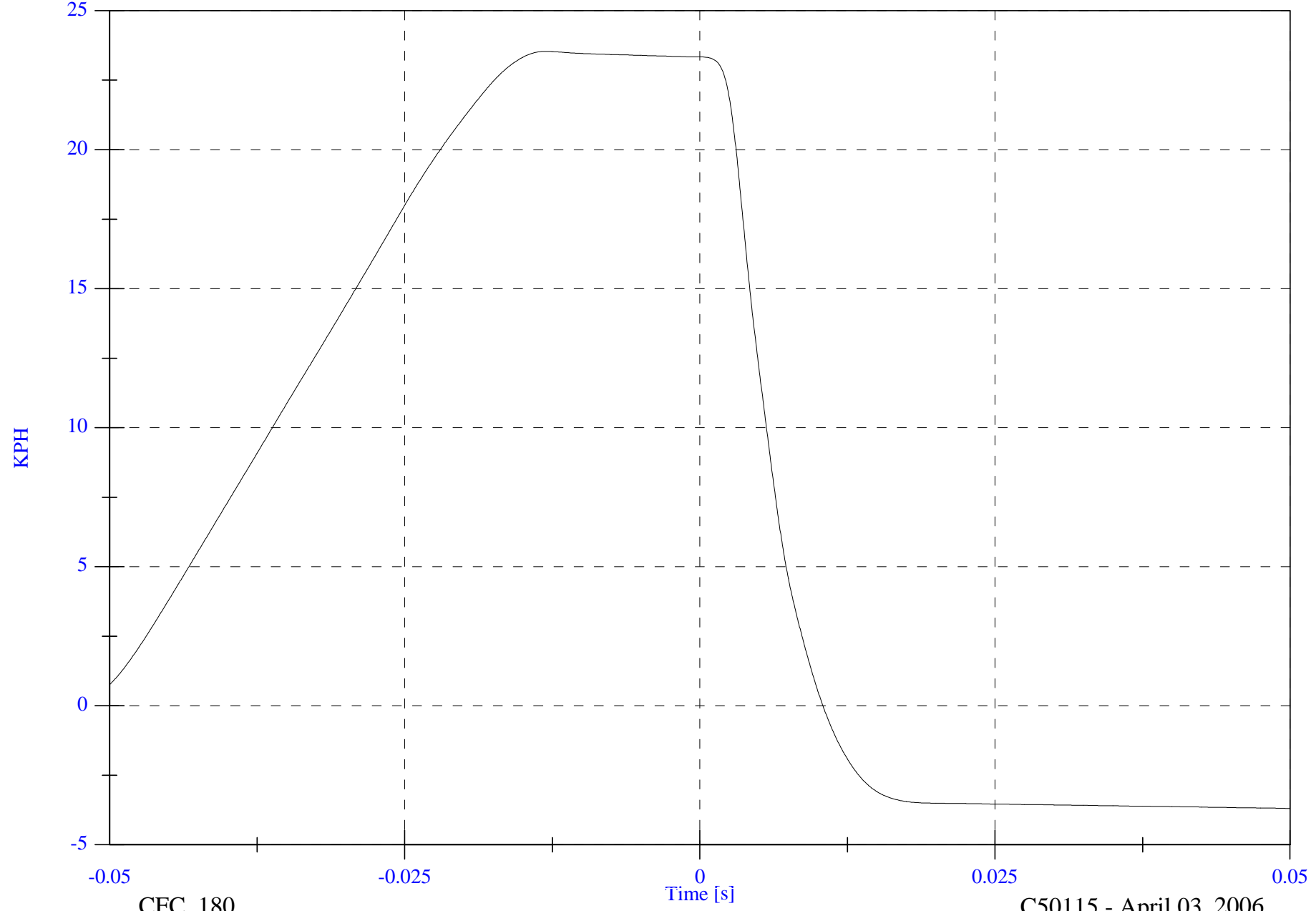
Headform Velocity

Max: 23.5 [KPH] at -0.013 [s]

Min: -3.7 [KPH] at 0.050 [s]

C50115 PASSENGER SIDE AP1 IMPACT PLOT #5

8754+FMH-09



CFC\_180

C50115 - April 03, 2006



PRE-IMPACT AP1 (PLACARD MISLABELED - HOR 121)



POST-IMPACT AP1

VEHICLE YEAR/MAKE/MODEL/STYLE:	2005 Buick LaCrosse CX
VIN:	2G4WC532X51323166
DATE OF MANUFACTURE:	04/05 (SEE CERTIFICATION LABEL)
COLOR:	Sapphire Metallic

Test Number:	07
Test Date:	04/04/06
Target Location:	UPPER ROOF
Target Code:	URSR1
Horizontal Impact Angle:	152 °
Vertical Impact Angle:	50 °
Ambient Temperature:	21.1 C°
Relative Humidity:	24.2
Time of Impact:	9:05
Headform Number:	355

Impact Point Description (from lower midpoint on midsagittal line)			
On Centerline	5	mm right	x mm left
On Centerline	23	mm up	



POST-IMPACT URSR1 HEADFORM

Free Motion HIC	323
HIC(d)	410.1
Impact Velocity (kph)	23.59
HIC T1 (msec)	2.4
HIC T2 (msec)	18.2

# FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse C50115 - URSR1

FMH Headform 0355

Location: URSR1

Test Date: April 04, 2006

Work File: URSR1

## -----TEST RESULTS-----

Lab Temperature: 21.1 C

HICd: 410.1

Lab Humidity: 24.2 %

HIC (36ms): 323.0

Velocity at Impact: 23.59 KPH

t1: 2.4 msec

t2: 18.2 msec

Free Flight Distance: 228.18 mm

Duration: 15.8 msec

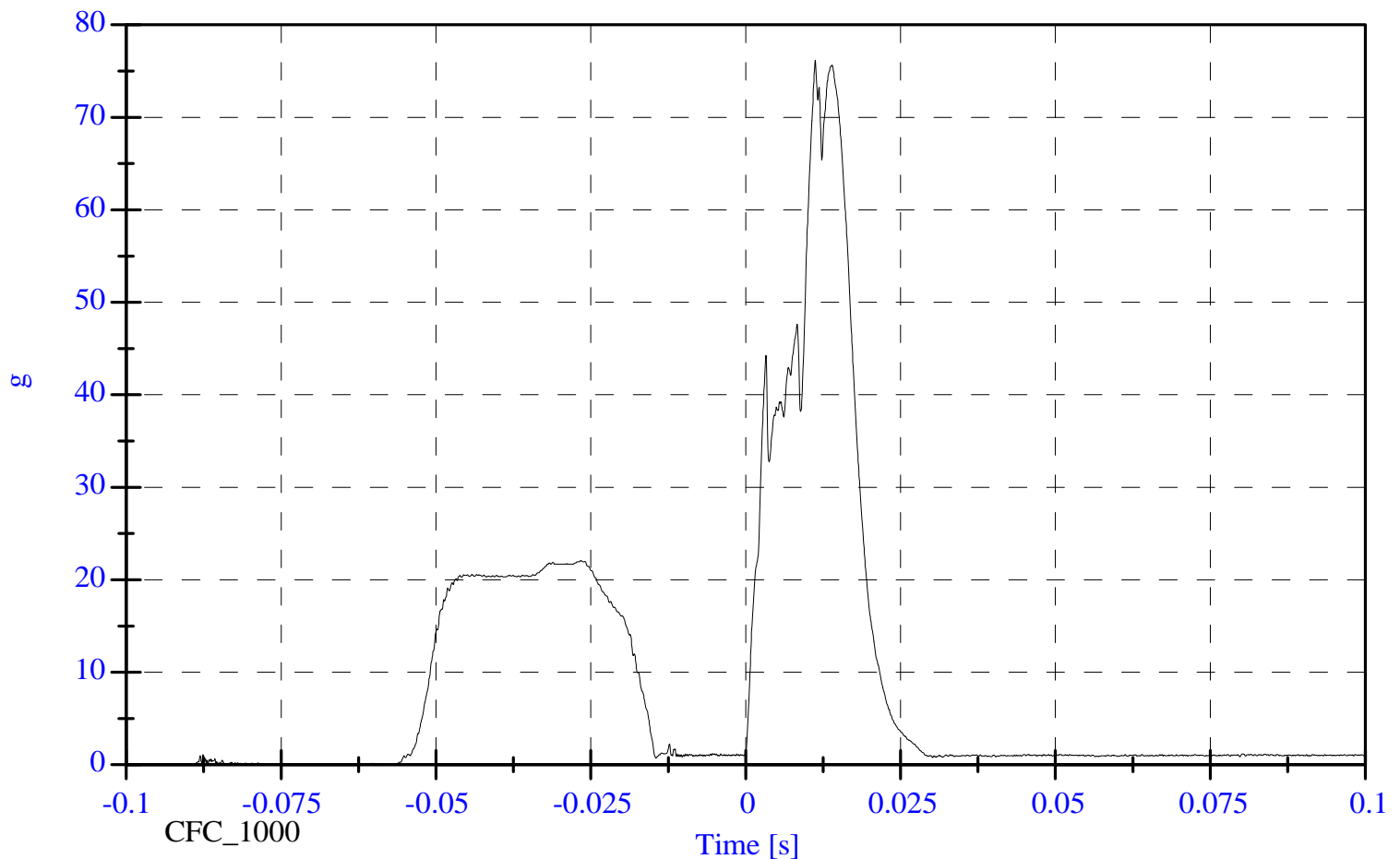
Maximum: 76.2 g

Average Acceleration: 8.7 g

FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse  
Headform Resultant

Max: 76.2 [g] at 0.011 [s]

Min: 0.0 [g] at -0.073 [s]



FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse

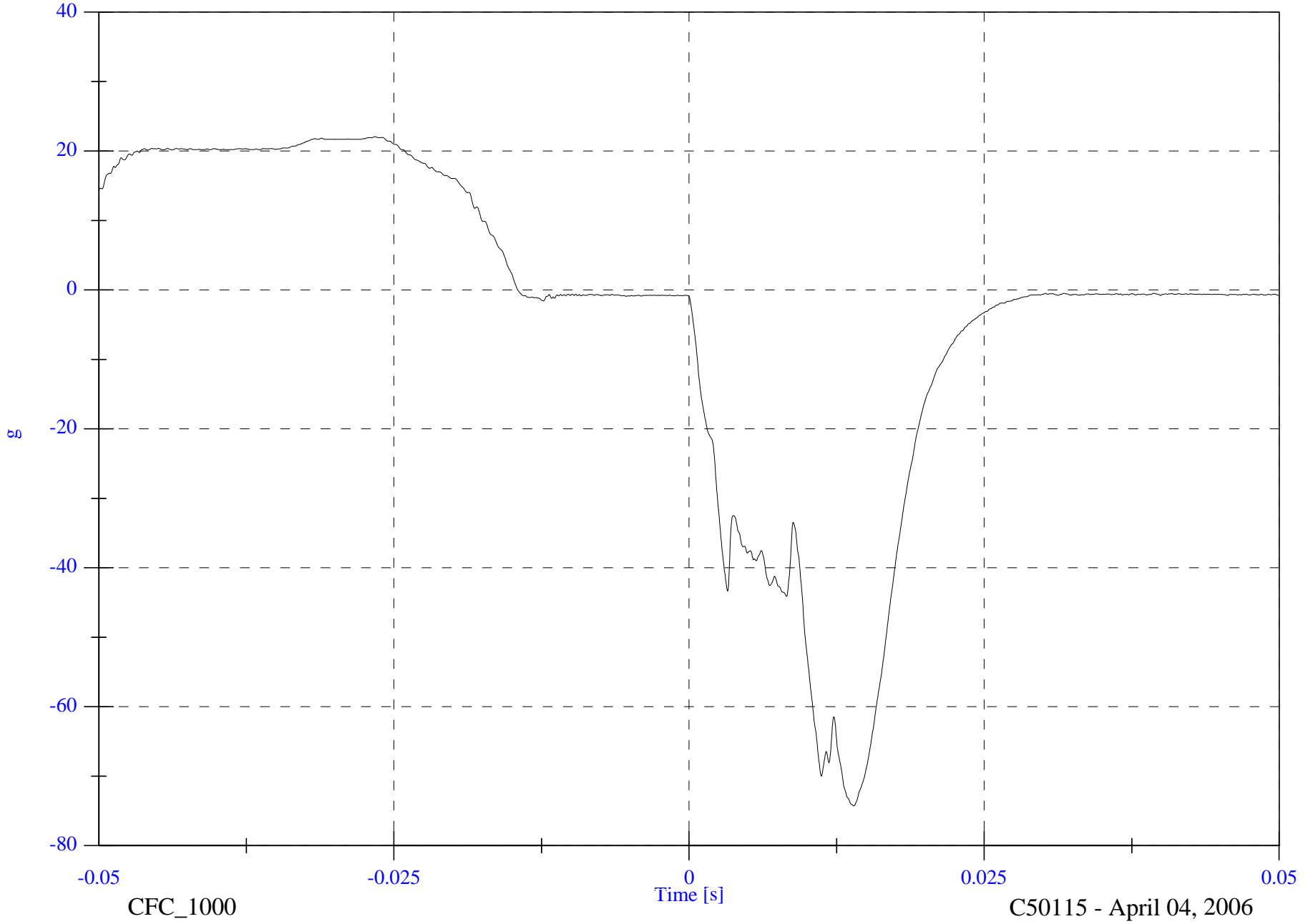
Headform X Acceleration

Max: 22.1 [g] at -0.027 [s]

Min: -74.3 [g] at 0.014 [s]

C50115 PASSENGER SIDE URSR1 IMPACT PLOT #1

8754+FMH-09



CFC\_1000

C50115 - April 04, 2006

FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse

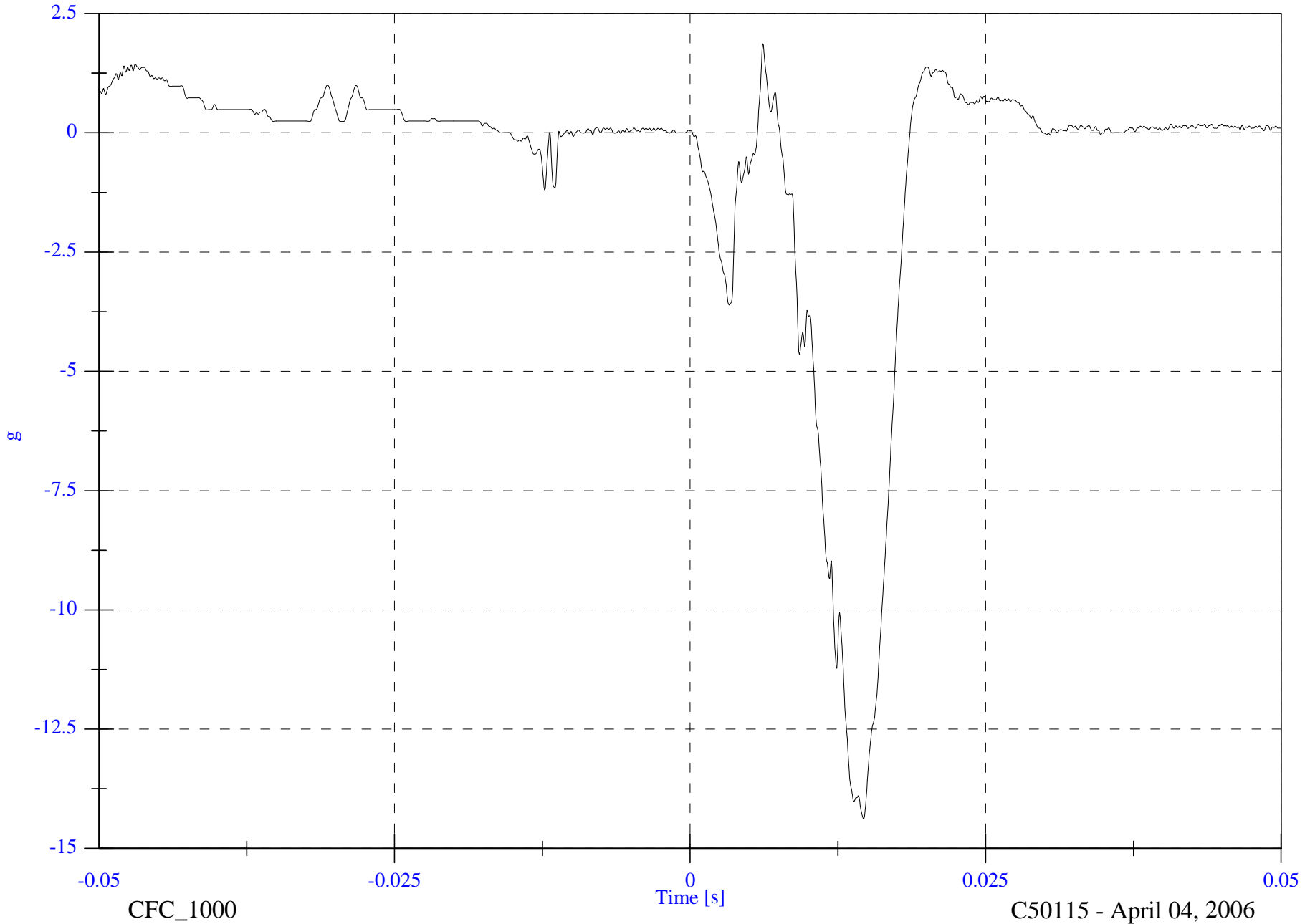
Headform Y Acceleration

Max: 1.9 [g] at 0.006 [s]

Min: -14.4 [g] at 0.015 [s]

C50115 PASSENGER SIDE URSR1 IMPACT PLOT #2

8754+FMH-09



CFC\_1000

C50115 - April 04, 2006



FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse

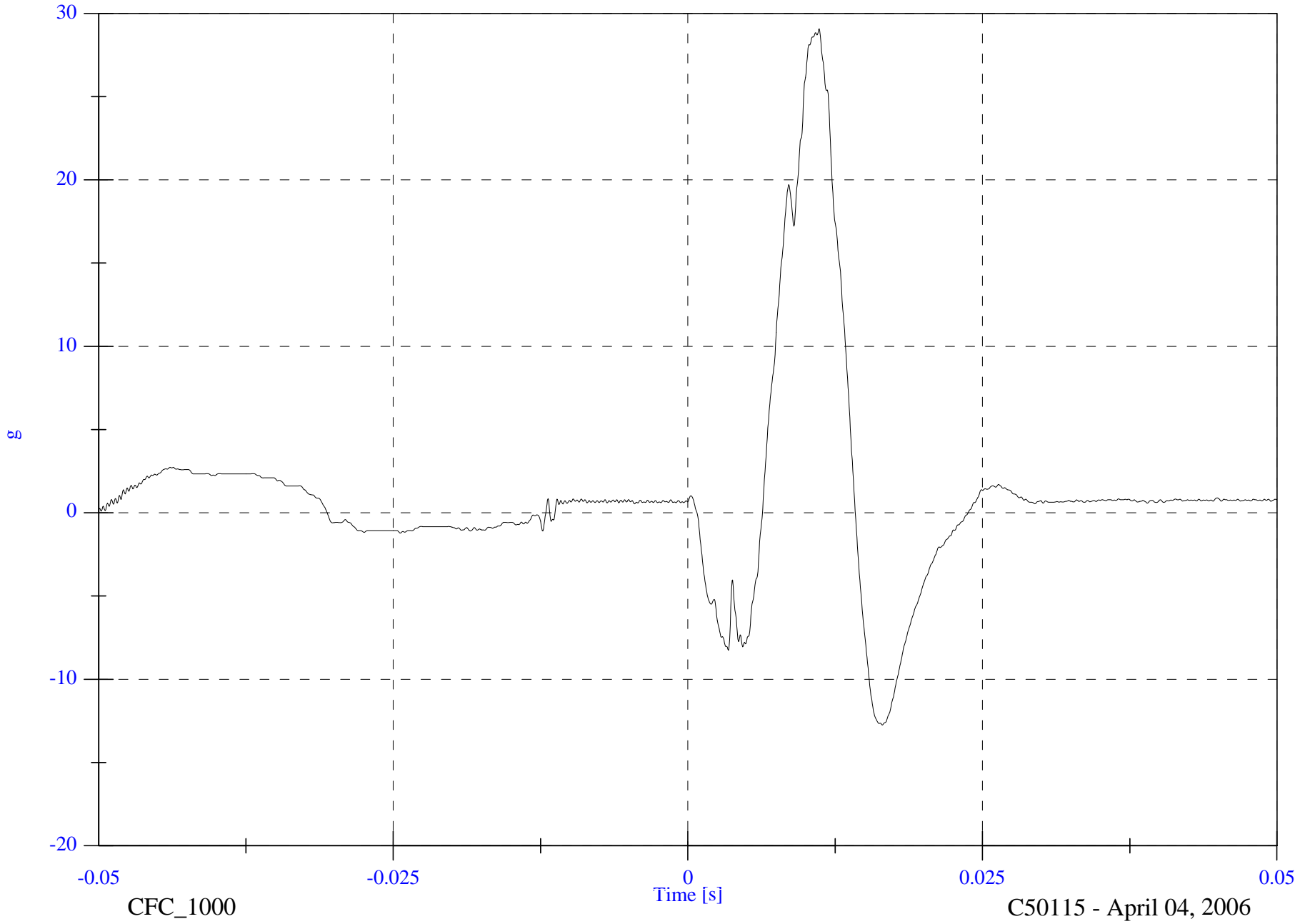
Headform Z Acceleration

Max: 29.1 [g] at 0.011 [s]

Min: -12.7 [g] at 0.017 [s]

C50115 PASSENGER SIDE URSR1 IMPACT PLOT #3

8754+FMH-09



CFC\_1000

C50115 - April 04, 2006

FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse

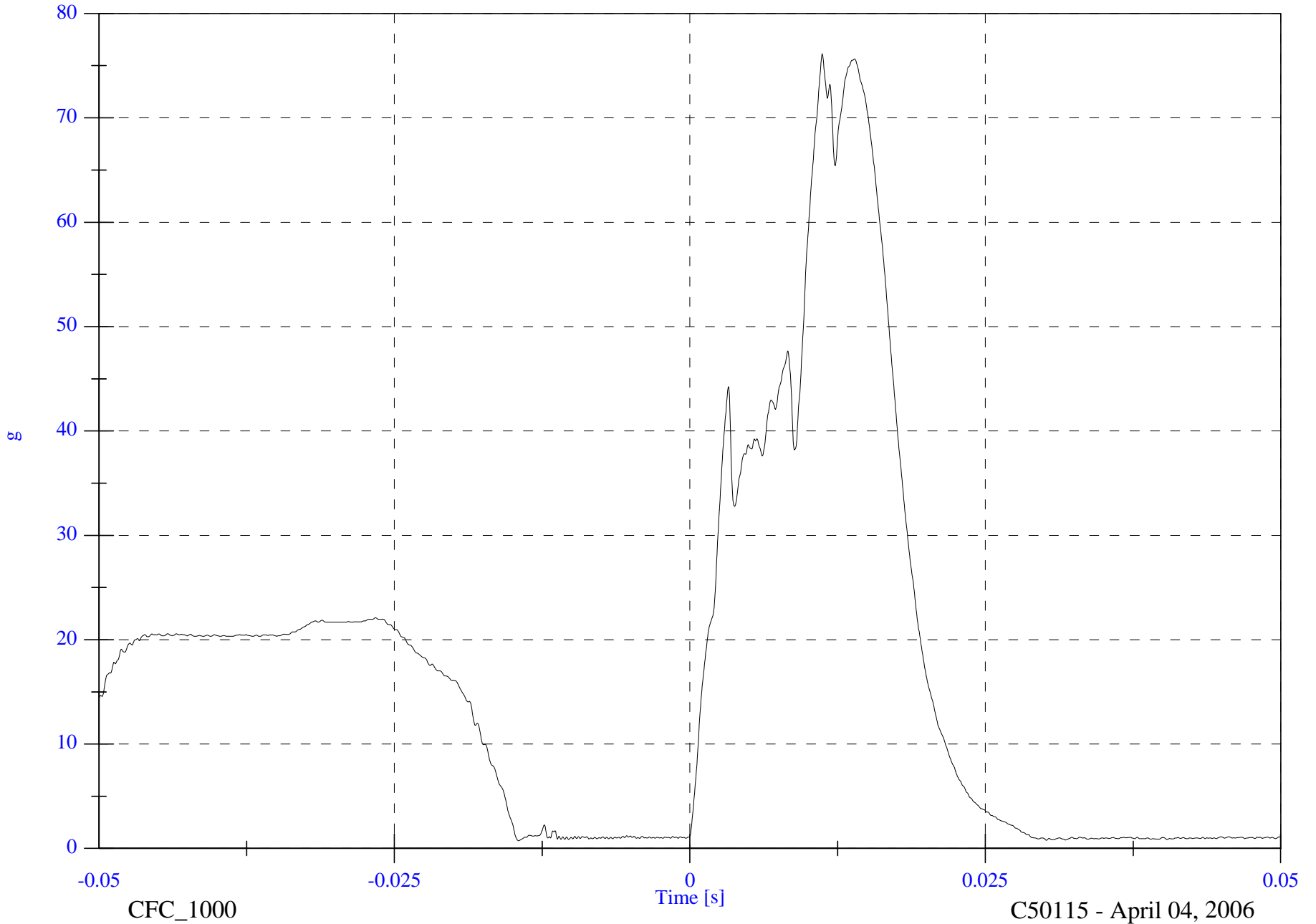
Headform Resultant

Max: 76.2 [g] at 0.011 [s]

Min: 0.7 [g] at -0.014 [s]

C50115 PASSENGER SIDE URSR1 IMPACT PLOT #4

8754+FMH-09



CFC\_1000

C50115 - April 04, 2006

FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse

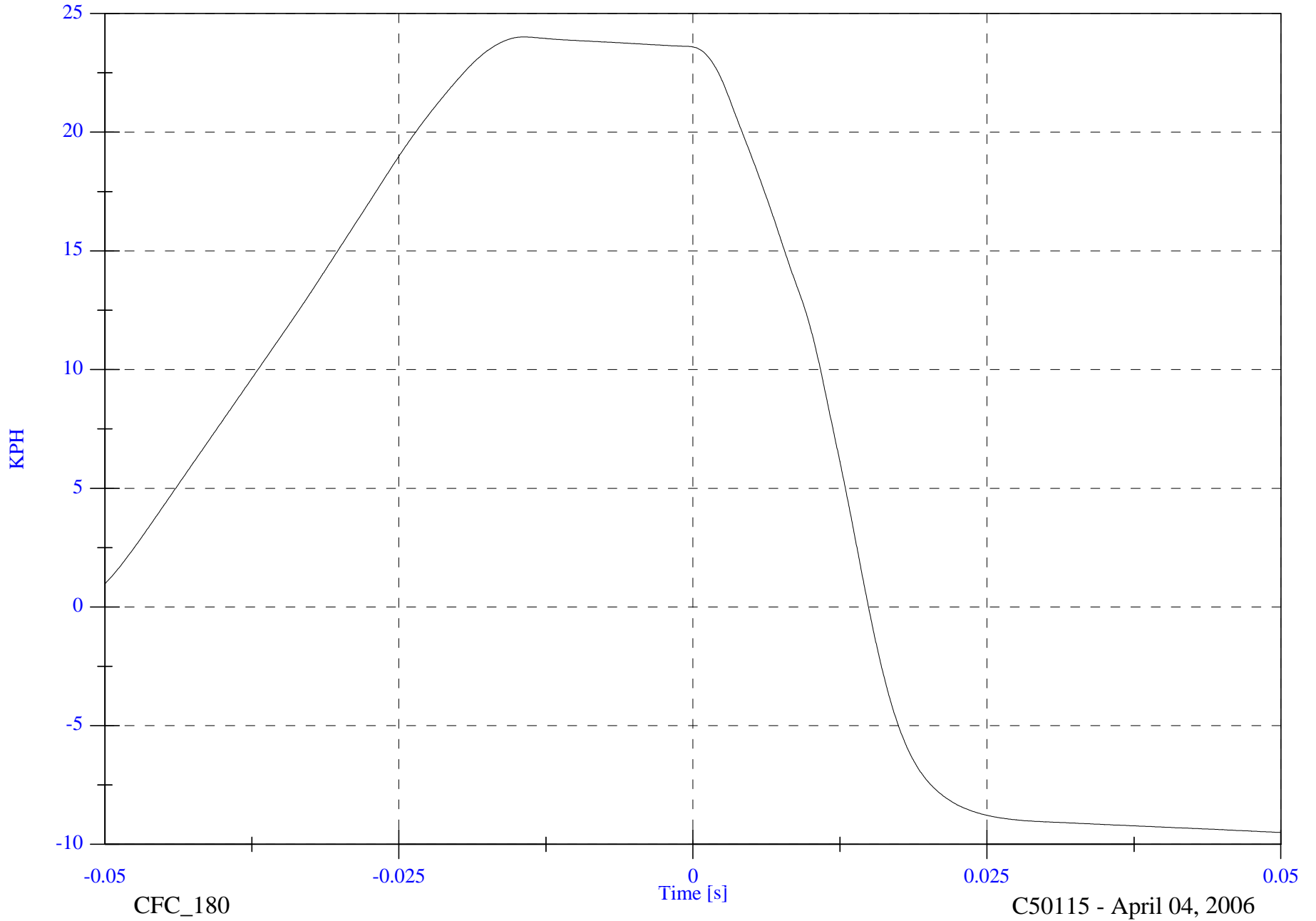
Headform Velocity

Max: 24.0 [KPH] at -0.014 [s]

Min: -9.5 [KPH] at 0.050 [s]

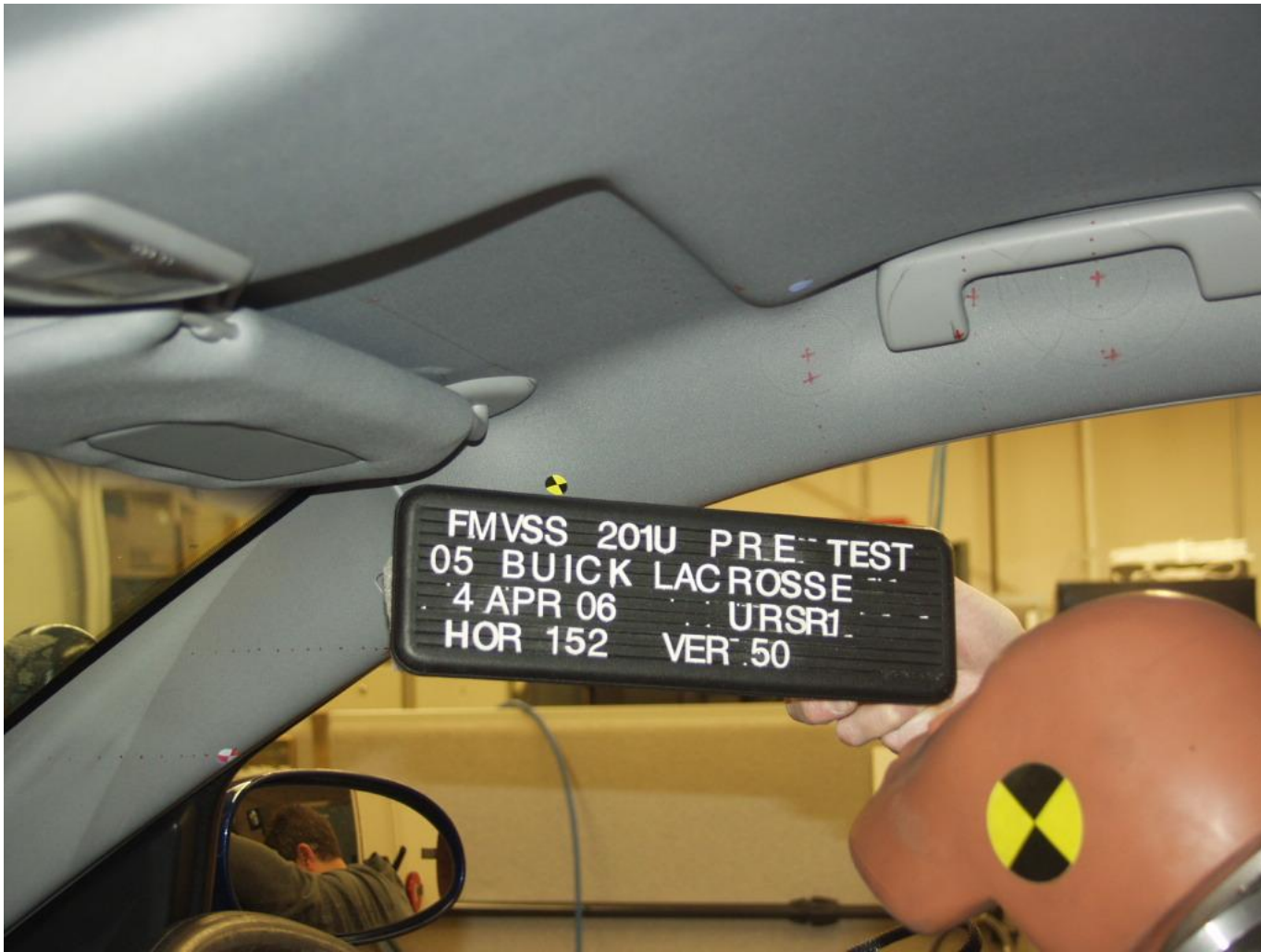
C50115 PASSENGER SIDE URSR1 IMPACT PLOT #5

8754+FMH-09



CFC\_180

C50115 - April 04, 2006



PRE-IMPACT URSR1

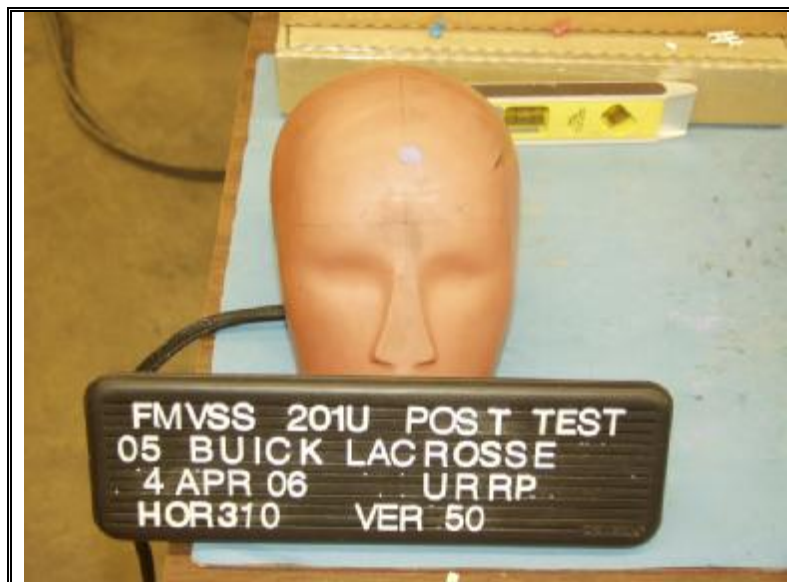


POST-IMPACT URSRI

VEHICLE YEAR/MAKE/MODEL/STYLE:	2005 Buick LaCrosse CX
VIN:	2G4WC532X51323166
DATE OF MANUFACTURE:	04/05 (SEE CERTIFICATION LABEL)
COLOR:	Sapphire Metallic

Test Number:	08
Test Date:	04/04/06
Target Location:	UPPER ROOF
Target Code:	URRP
Horizontal Impact Angle:	310 °
Vertical Impact Angle:	50 °
Ambient Temperature:	21.3 C°
Relative Humidity:	24.2
Time of Impact:	10:16
Headform Number:	0062

Impact Point Description (from lower midpoint on midsagittal line)			
On Centerline	4	mm right	x mm left
On Centerline	33	mm up	



POST-IMPACT URRP HEADFORM

Free Motion HIC	994.4
HIC(d)	916.6
Impact Velocity (kph)	23.71
HIC T1 (msec)	2.5
HIC T2 (msec)	9.3

# FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse C50115 - URRP

FMH Headform 0062

Location: URRP

Test Date: April 04, 2006

Work File: URRP

## -----TEST RESULTS-----

Lab Temperature: 21.3 C

HICd: 916.6

Lab Humidity: 24.2 %

HIC (36ms): 994.4

Velocity at Impact: 23.71 KPH

t1: 2.5 msec

t2: 9.3 msec

Free Flight Distance: 222.70 mm

Duration: 6.8 msec

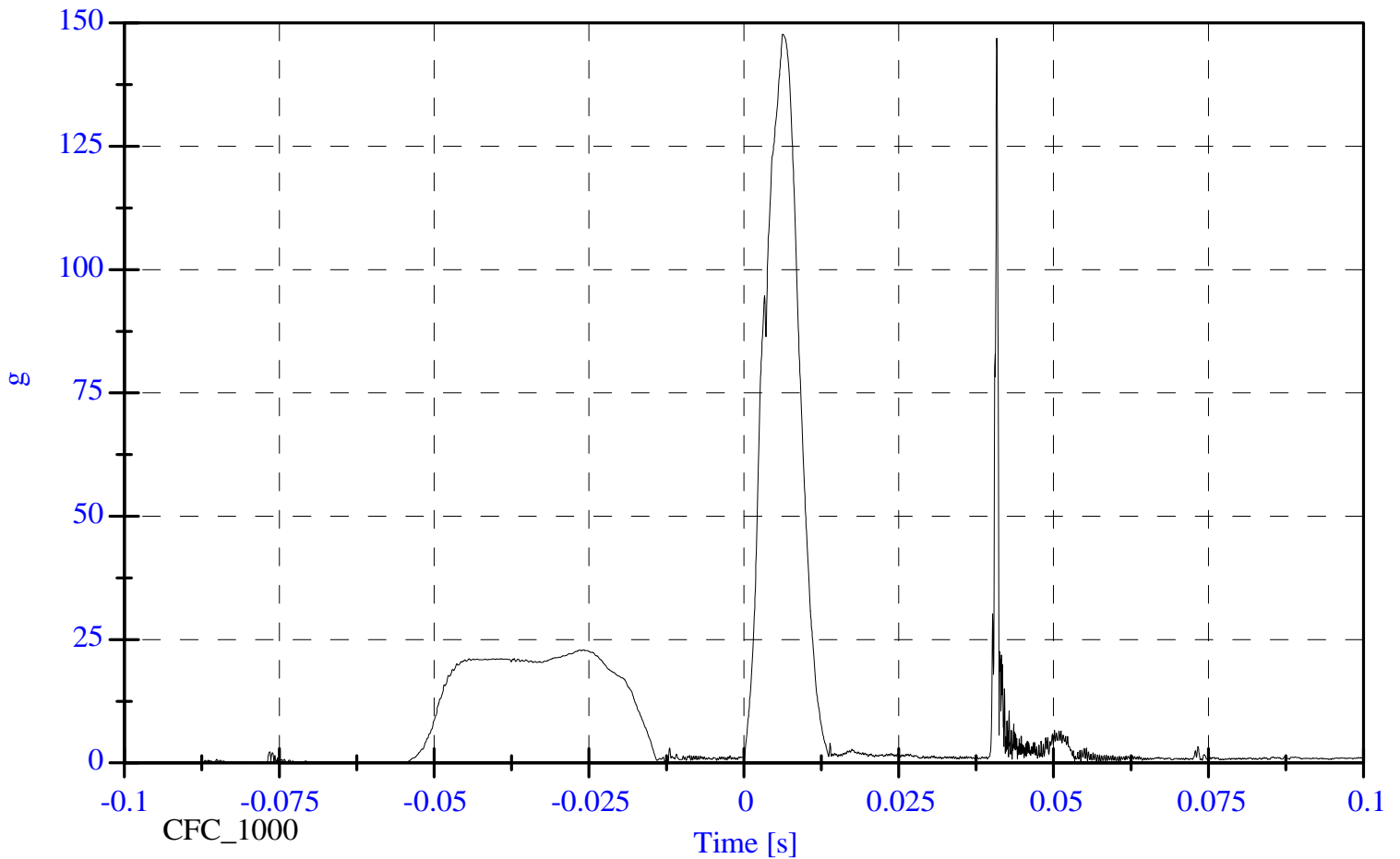
Maximum: 147.8 g

Average Acceleration: 9.4 g

FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse  
Headform Resultant

Max: 147.8 [g] at 0.006 [s]

Min: 0.0 [g] at -0.095 [s]

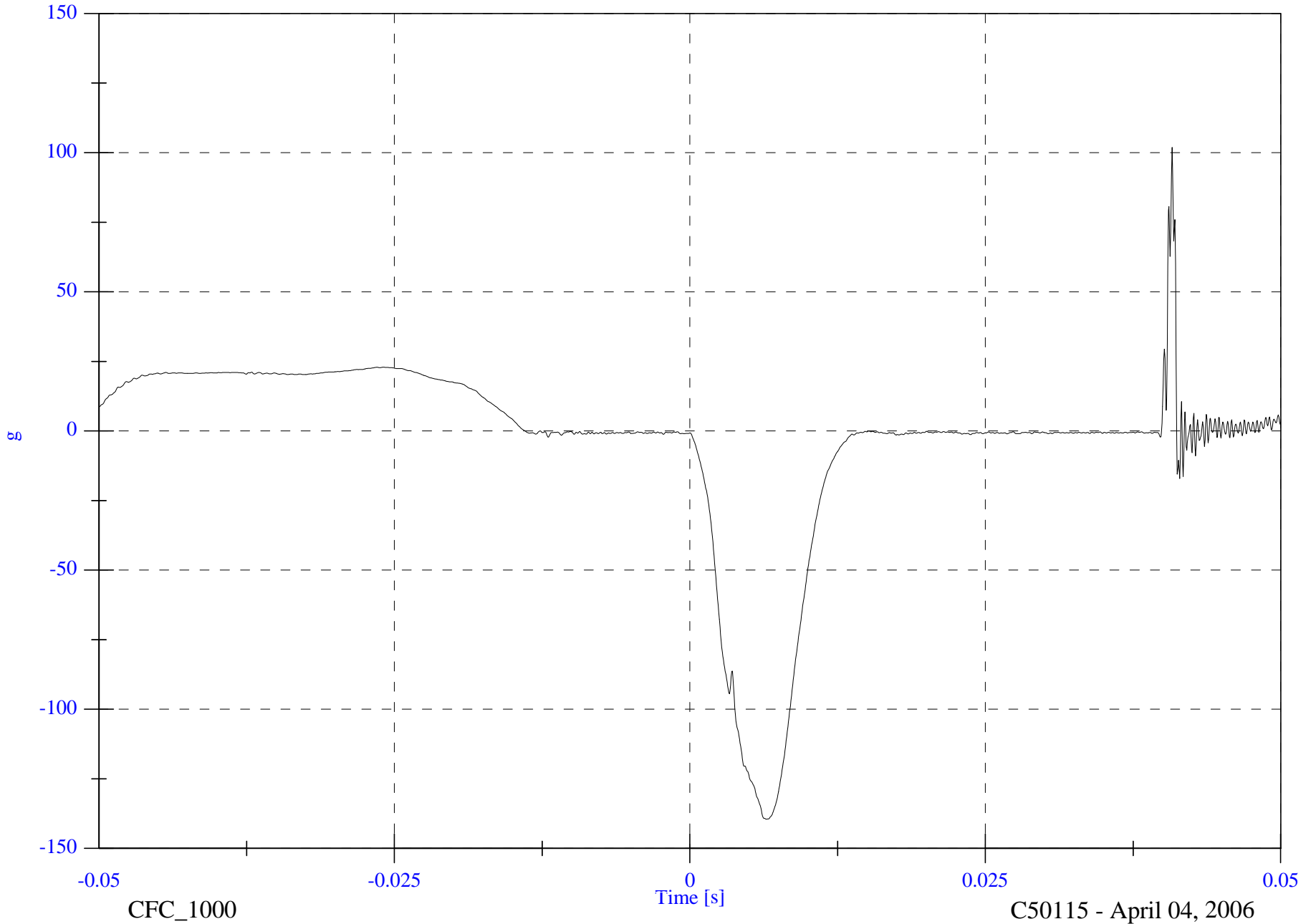


FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse

Headform X Acceleration

Max: 101.9 [g] at 0.041 [s]

Min: -139.5 [g] at 0.006 [s]



C50115 DRIVER SIDE URRP IMPACT PLOT #1

8754+FMH-09

CFC\_1000

C50115 - April 04, 2006



FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse

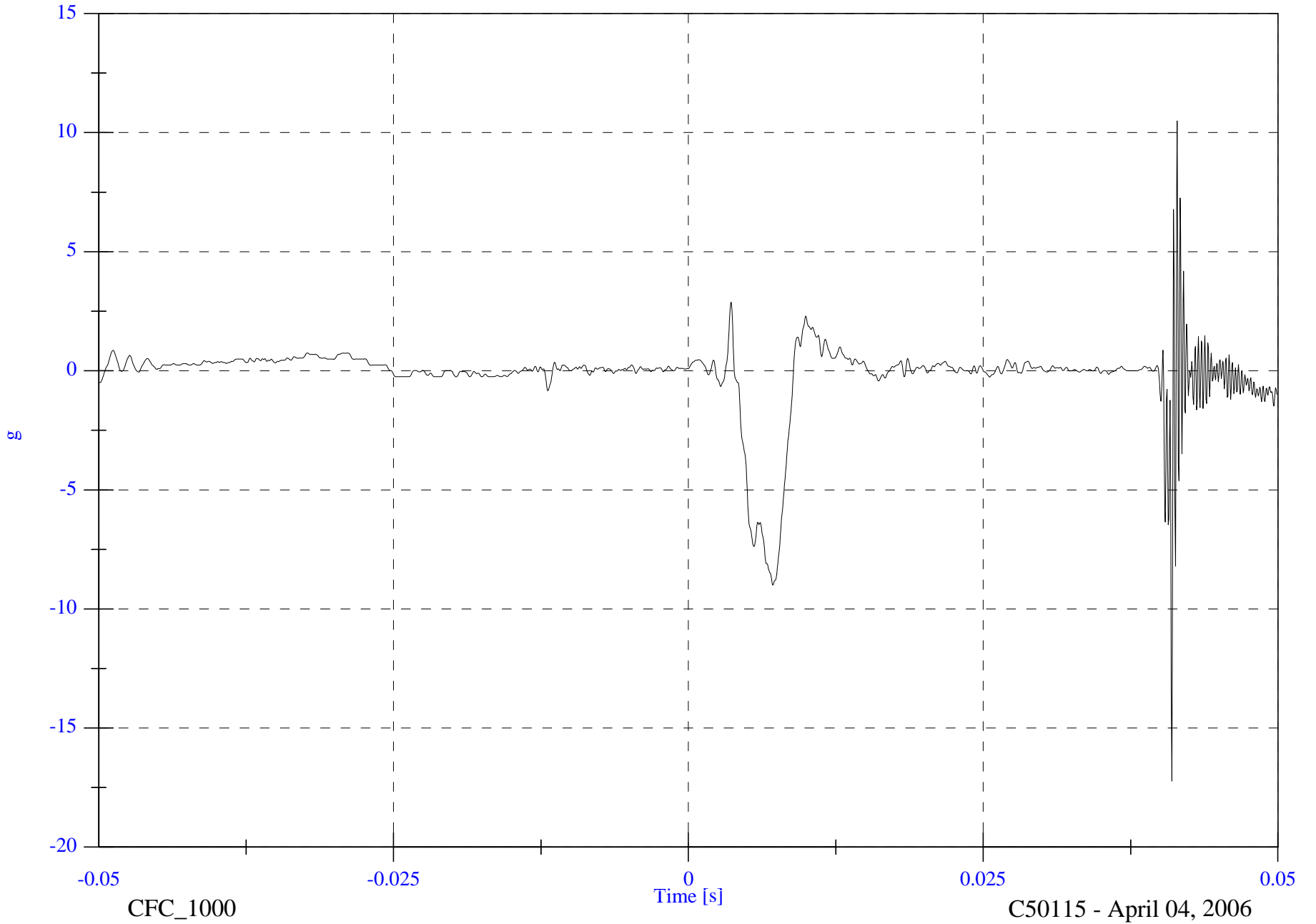
Headform Y Acceleration

Max: 10.5 [g] at 0.041 [s]

Min: -17.2 [g] at 0.041 [s]

C50115 DRIVER SIDE URRP IMPACT PLOT #2

8754+FMH-09



CFC\_1000

C50115 - April 04, 2006

FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse

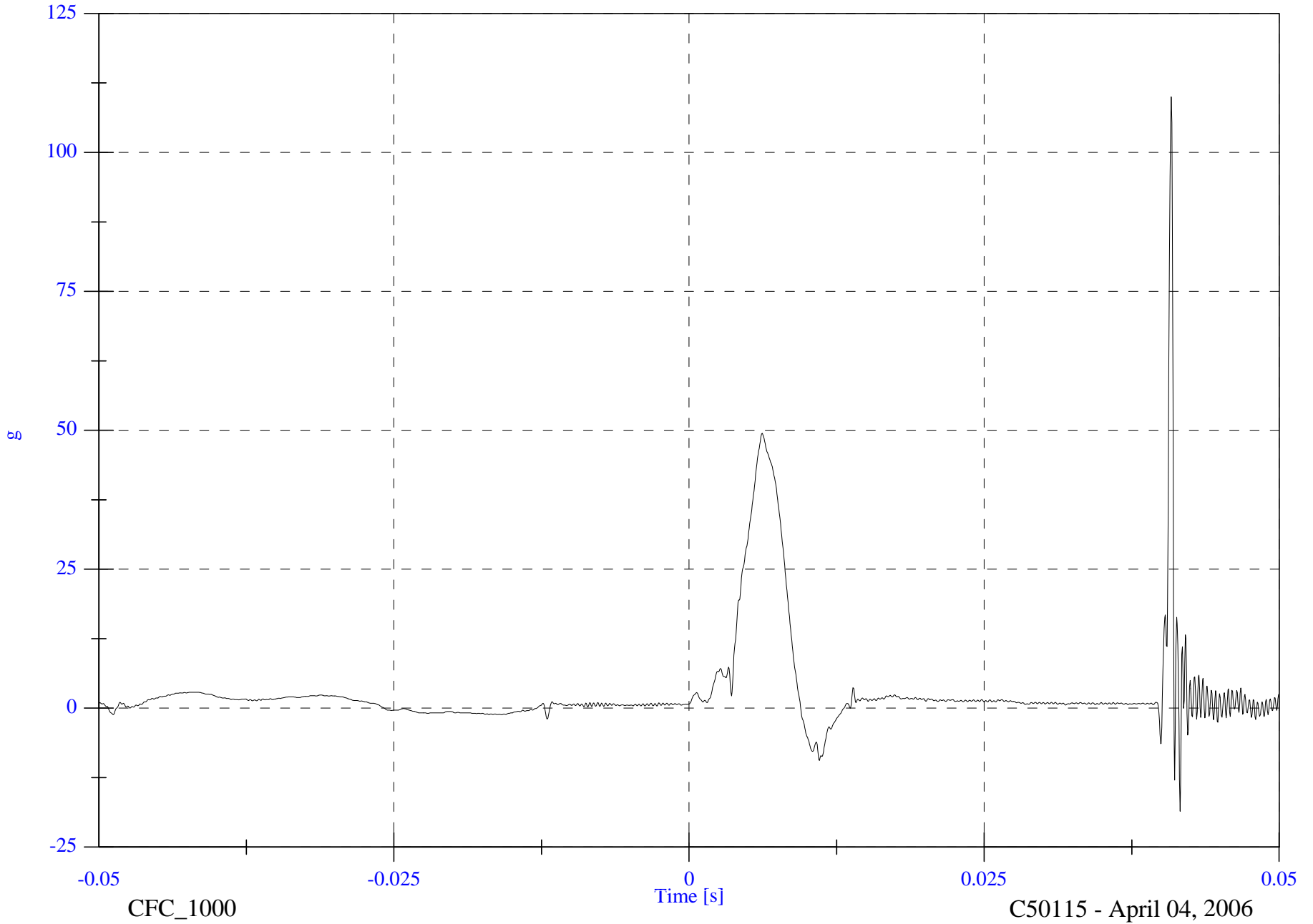
Headform Z Acceleration

Max: 110.0 [g] at 0.041 [s]

Min: -18.6 [g] at 0.042 [s]

C50115 DRIVER SIDE URRP IMPACT PLOT #3

8754+FMH-09



CFC\_1000

C50115 - April 04, 2006

FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse

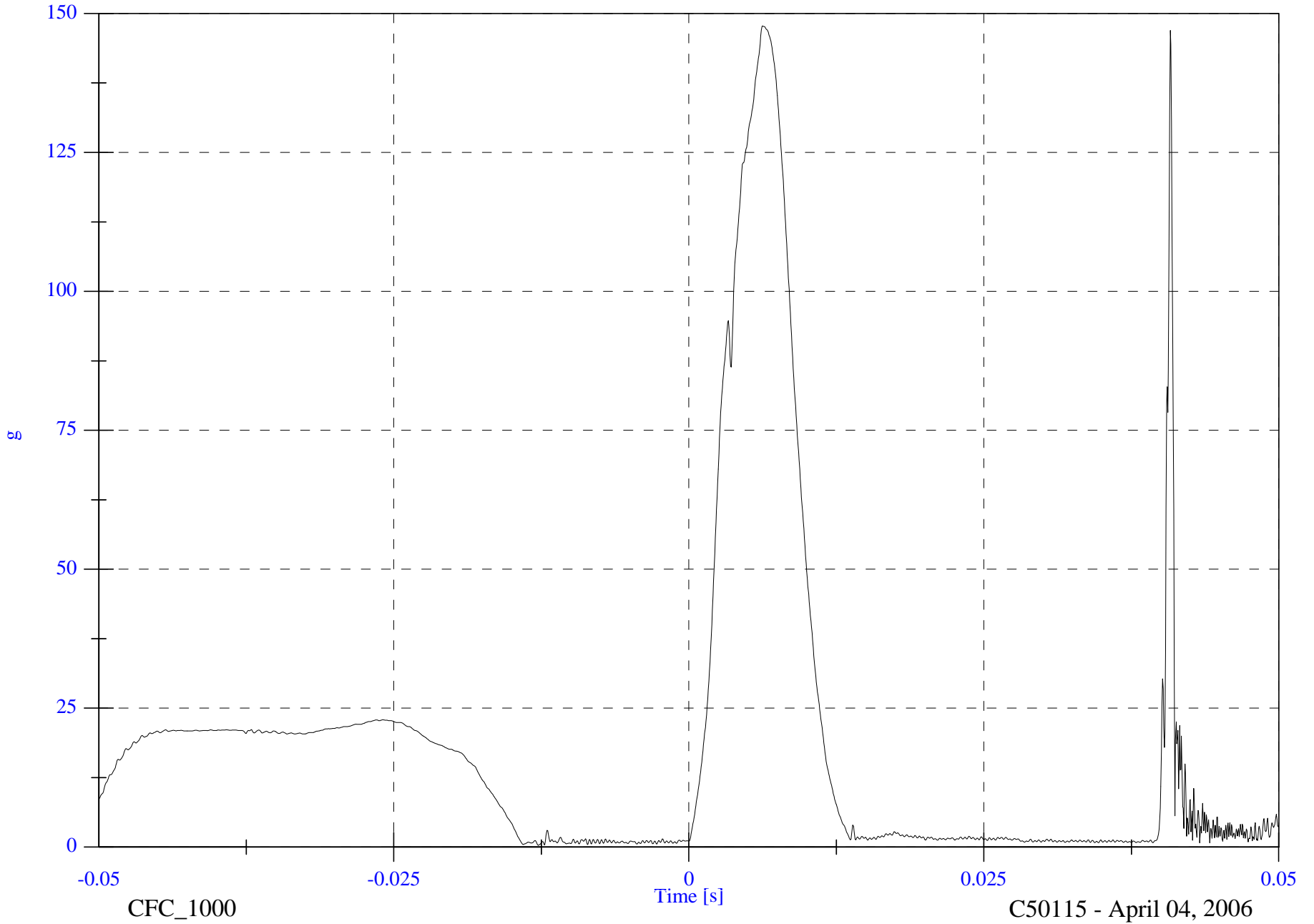
Headform Resultant

Max: 147.8 [g] at 0.006 [s]

Min: 0.3 [g] at -0.013 [s]

C50115 DRIVER SIDE URRP IMPACT PLOT #4

8754+FMH-09



FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse

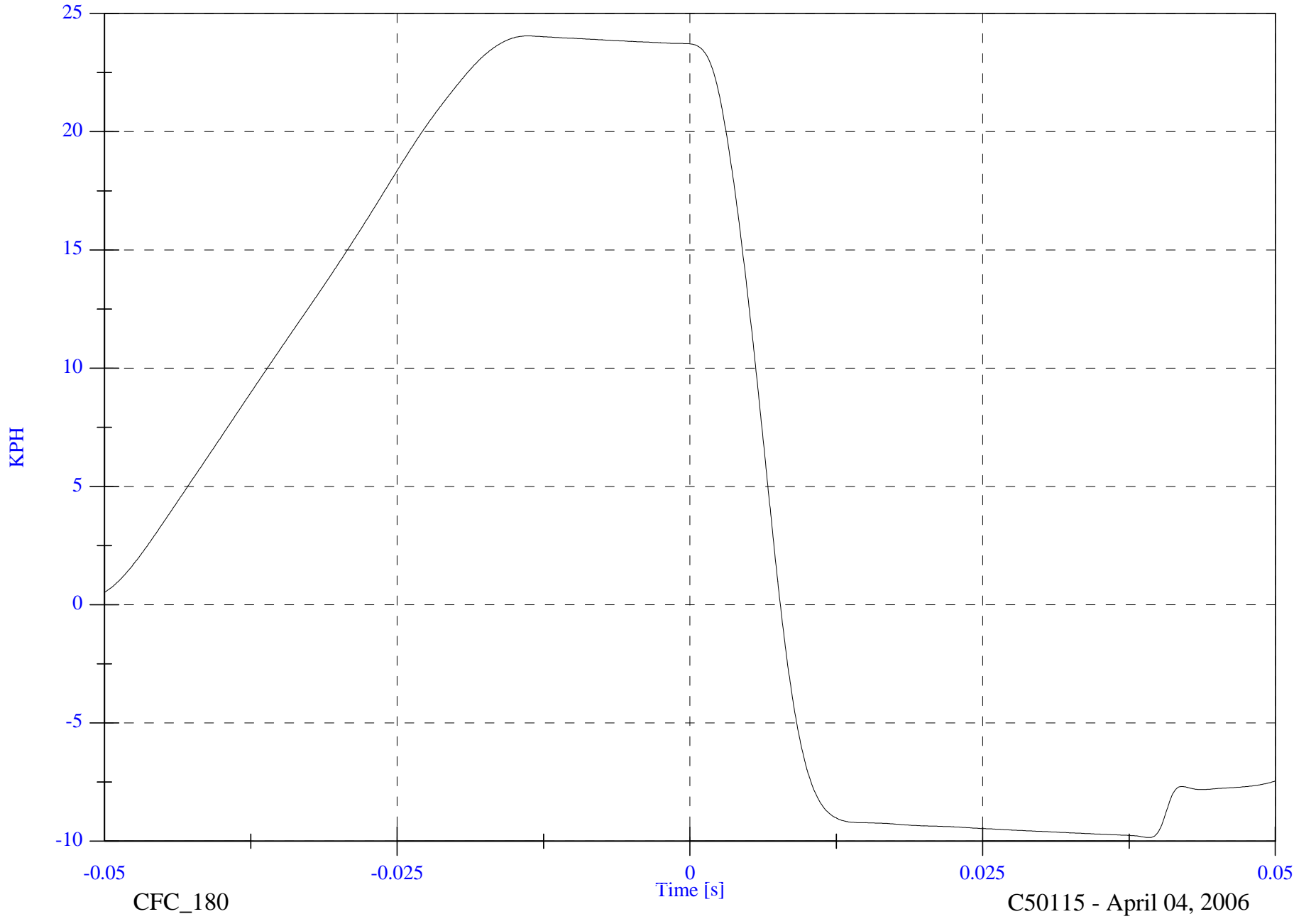
Headform Velocity

Max: 24.0 [KPH] at -0.014 [s]

Min: -9.8 [KPH] at 0.039 [s]

C50115 DRIVER SIDE URRP IMPACT PLOT #5

8754+FMH-09



CFC\_180

C50115 - April 04, 2006



**PRE-IMPACT URRP**

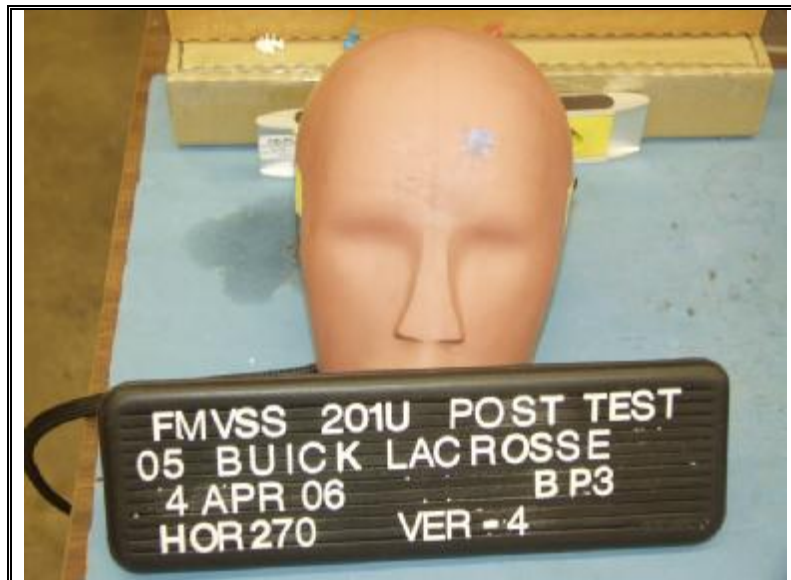


POST-IMPACT URRP

VEHICLE YEAR/MAKE/MODEL/STYLE:	2005 Buick LaCrosse CX
VIN:	2G4WC532X51323166
DATE OF MANUFACTURE:	04/05 (SEE CERTIFICATION LABEL)
COLOR:	Sapphire Metallic

Test Number:	09
Test Date:	04/04/06
Target Location:	B-PILLAR
Target Code:	BP3
Horizontal Impact Angle:	270 °
Vertical Impact Angle:	- 4 °
Ambient Temperature:	21.1C°
Relative Humidity:	23.2
Time of Impact:	11:05
Headform Number:	1255

Impact Point Description (from lower midpoint on midsagittal line)			
On Centerline	21	mm right	x mm left
On Centerline	21	mm up	



POST-IMPACT BP3 HEADFORM

Free Motion HIC	593.4
HIC(d)	614.1
Impact Velocity (kph)	23.78
HIC T1 (msec)	3.3
HIC T2 (msec)	10.8

# FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse C50115 - BP3

FMH Headform 1255

Location: BP3

Test Date: April 04, 2006

Work File: BP3

## -----TEST RESULTS-----

Lab Temperature: 21.1 C

HICd: 614.1

Lab Humidity: 23.2 %

HIC (36ms): 593.4

Velocity at Impact: 23.78 KPH

t1: 3.3 msec

t2: 10.8 msec

Free Flight Distance: 217.38 mm

Duration: 7.5 msec

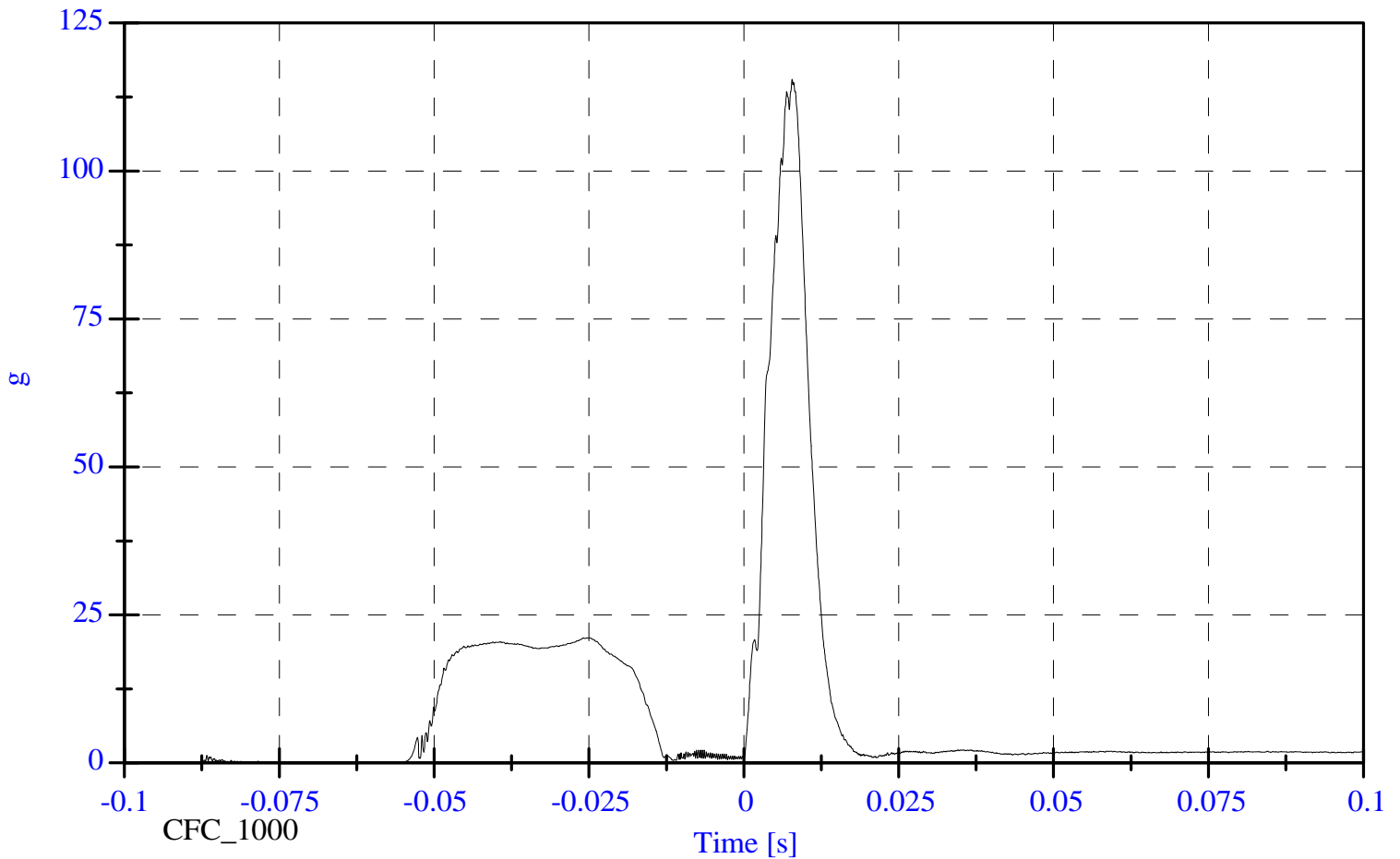
Maximum: 115.5 g

Average Acceleration: 8.5 g

FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse  
Headform Resultant

Max: 115.5 [g] at 0.008 [s]

Min: 0.0 [g] at -0.064 [s]



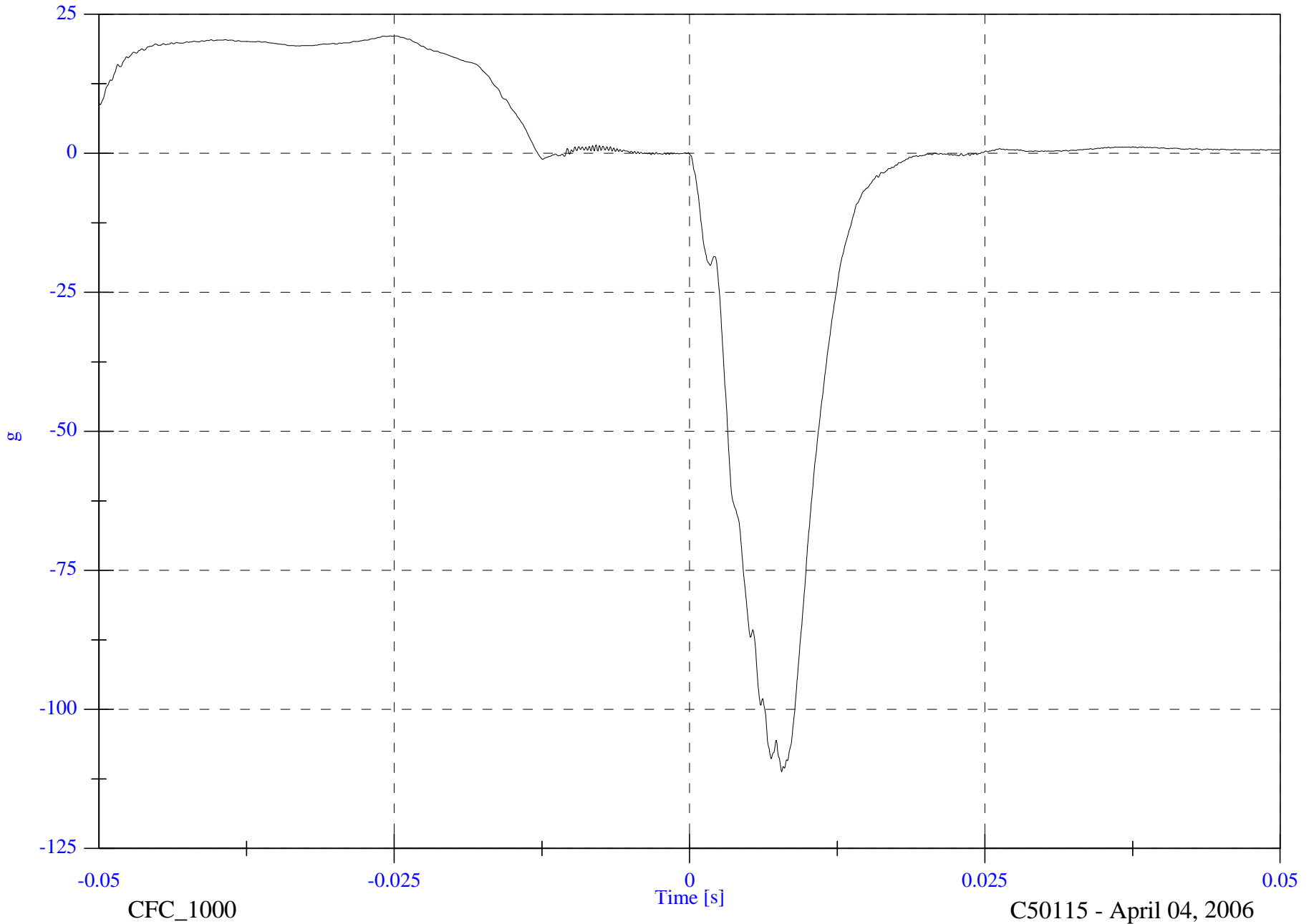


FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse

Headform X Acceleration

Max: 21.1 [g] at -0.025 [s]

Min: -111.2 [g] at 0.008 [s]



C50115 DRIVER SIDE BP3 IMPACT PLOT #1

8754+FMH-09

CFC\_1000

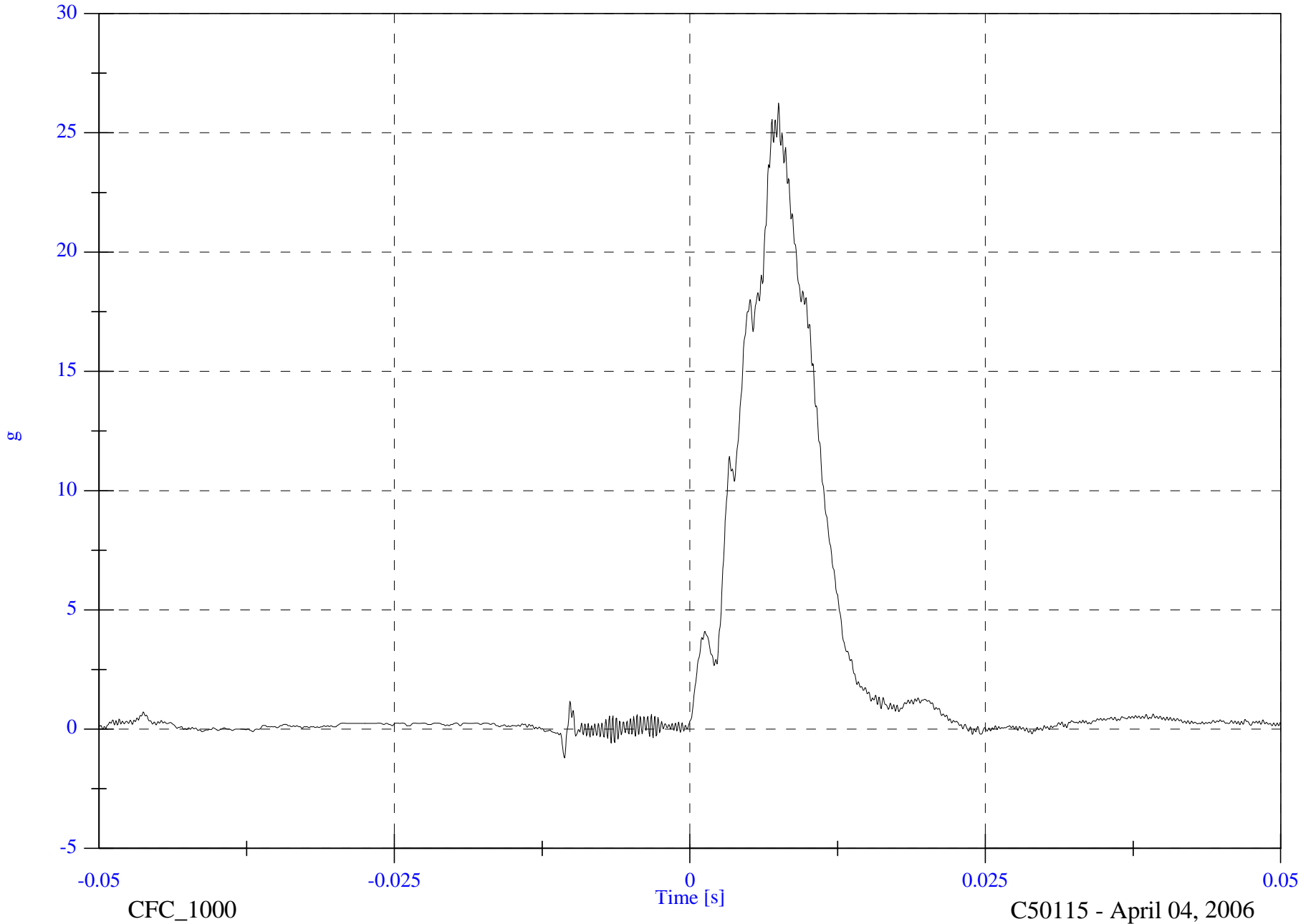
C50115 - April 04, 2006

FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse

Headform Y Acceleration

Max: 26.2 [g] at 0.008 [s]

Min: -1.2 [g] at -0.011 [s]



C50115 DRIVER SIDE BP3 IMPACT PLOT #2

8754+FMH-09

CFC\_1000

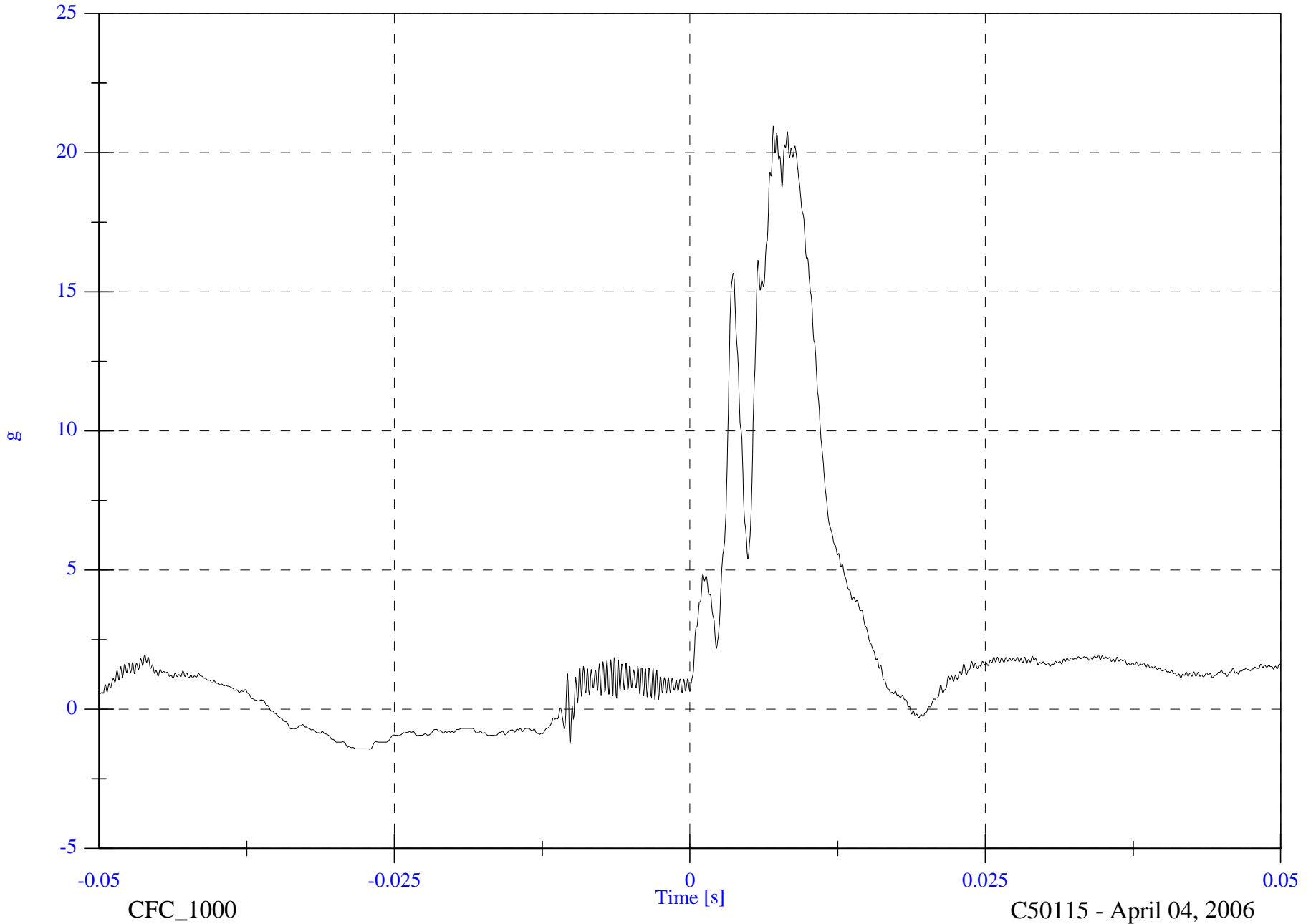
C50115 - April 04, 2006

FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse

Headform Z Acceleration

Max: 21.0 [g] at 0.007 [s]

Min: -1.4 [g] at -0.027 [s]



C50115 DRIVER SIDE BP3 IMPACT PLOT #3

8754+FMH-09

CFC\_1000

C50115 - April 04, 2006

FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse

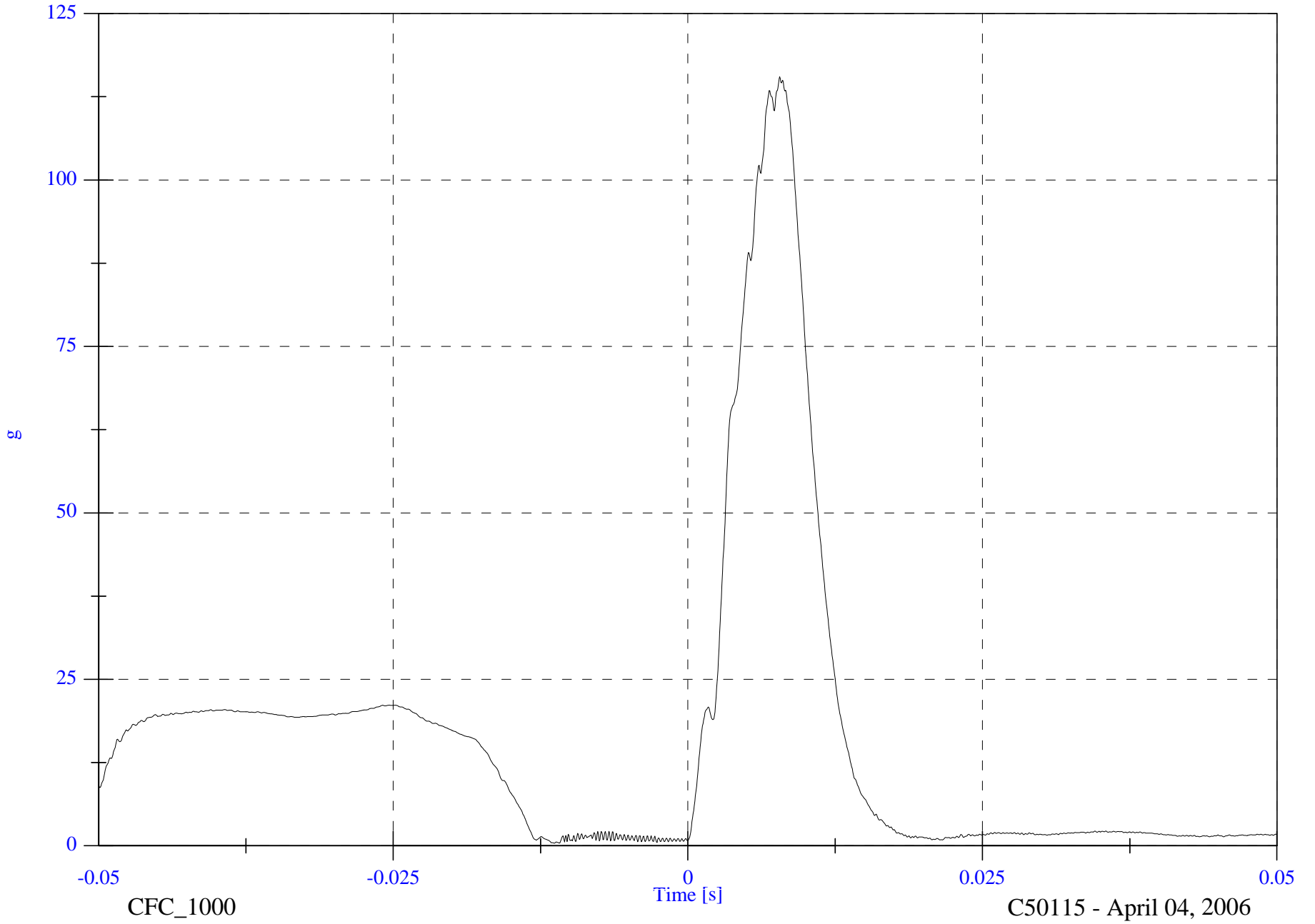
Headform Resultant

Max: 115.5 [g] at 0.008 [s]

Min: 0.4 [g] at -0.011 [s]

C50115 DRIVER SIDE BP3 IMPACT PLOT #4

8754+FMH-09



CFC\_1000

C50115 - April 04, 2006

FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse

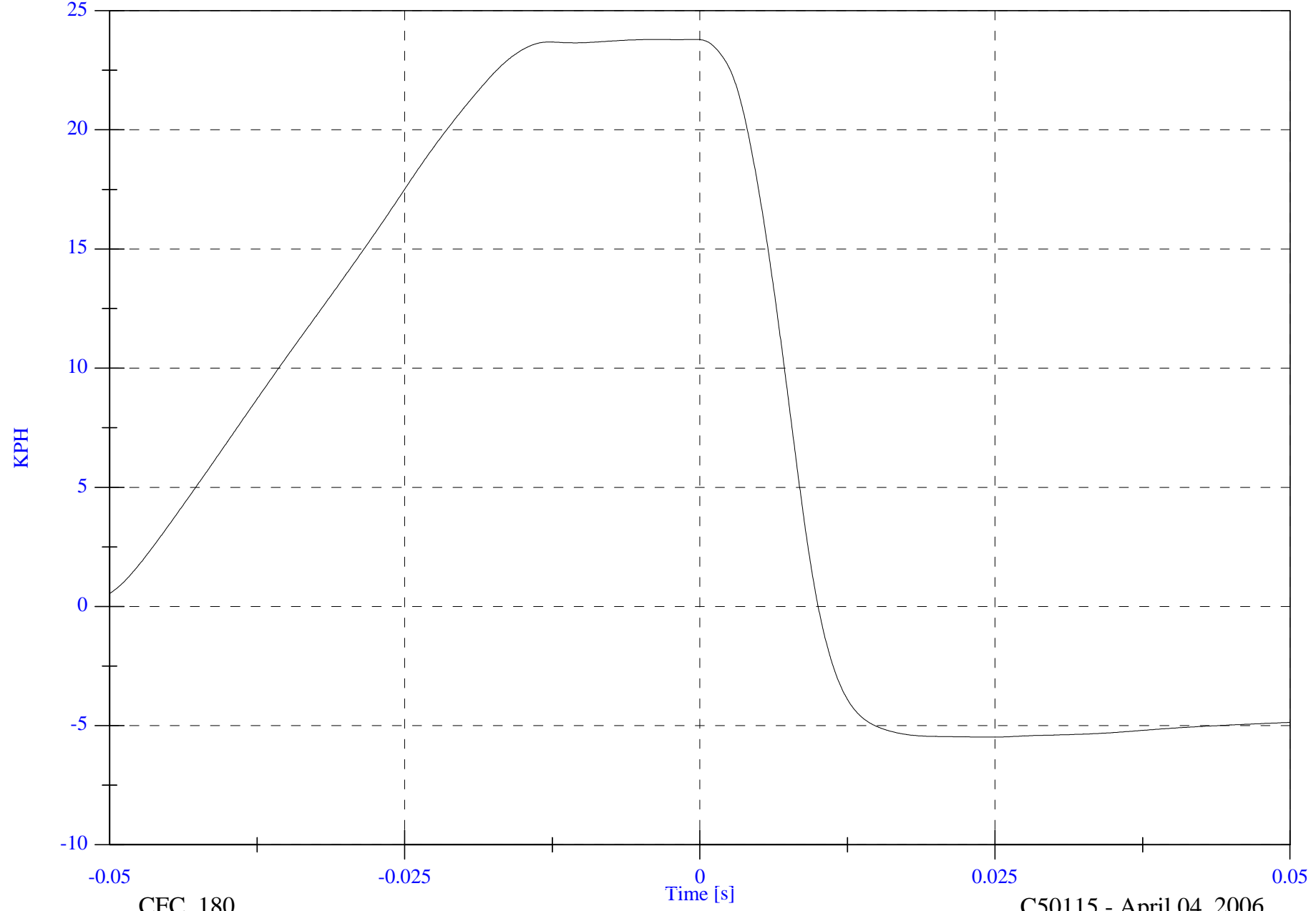
Headform Velocity

Max: 23.8 [KPH] at -0.000 [s]

Min: -5.5 [KPH] at 0.024 [s]

C50115 DRIVER SIDE BP3 IMPACT PLOT #5

8754+FMH-09



CFC\_180

C50115 - April 04, 2006



PRE-IMPACT BP3



POST-IMPACT BP3

VEHICLE YEAR/MAKE/MODEL/STYLE:	2005 Buick LaCrosse CX
VIN:	2G4WC532X51323166
DATE OF MANUFACTURE:	04/05 (SEE CERTIFICATION LABEL)
COLOR:	Sapphire Metallic

Test Number:	10
Test Date:	04/04/06
Target Location:	UPPER ROOF
Target Code:	URBP DRIVER
Horizontal Impact Angle:	270 °
Vertical Impact Angle:	37 °
Ambient Temperature:	21.7C°
Relative Humidity:	22.8
Time of Impact:	11:35
Headform Number:	805

Impact Point Description (from lower midpoint on midsagittal line)			
On Centerline	3	mm right	x mm left
On Centerline	54	mm up	



POST-IMPACT URBP DRIVER HEADFORM

Free Motion HIC	878.2
HIC(d)	829.0
Impact Velocity (kph)	23.35
HIC T1 (msec)	3.0
HIC T2 (msec)	8.9



# FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse C50115 - URBP

FMH Headform 0805

Location: URBP

Test Date: April 04, 2006

Work File: URBP

## -----TEST RESULTS-----

Lab Temperature: 21.7 C

HICd: 829.0

Lab Humidity: 22.8 %

HIC (36ms): 878.2

Velocity at Impact: 23.35 KPH

t1: 3.0 msec

t2: 8.9 msec

Free Flight Distance: 227.98 mm

Duration: 5.8 msec

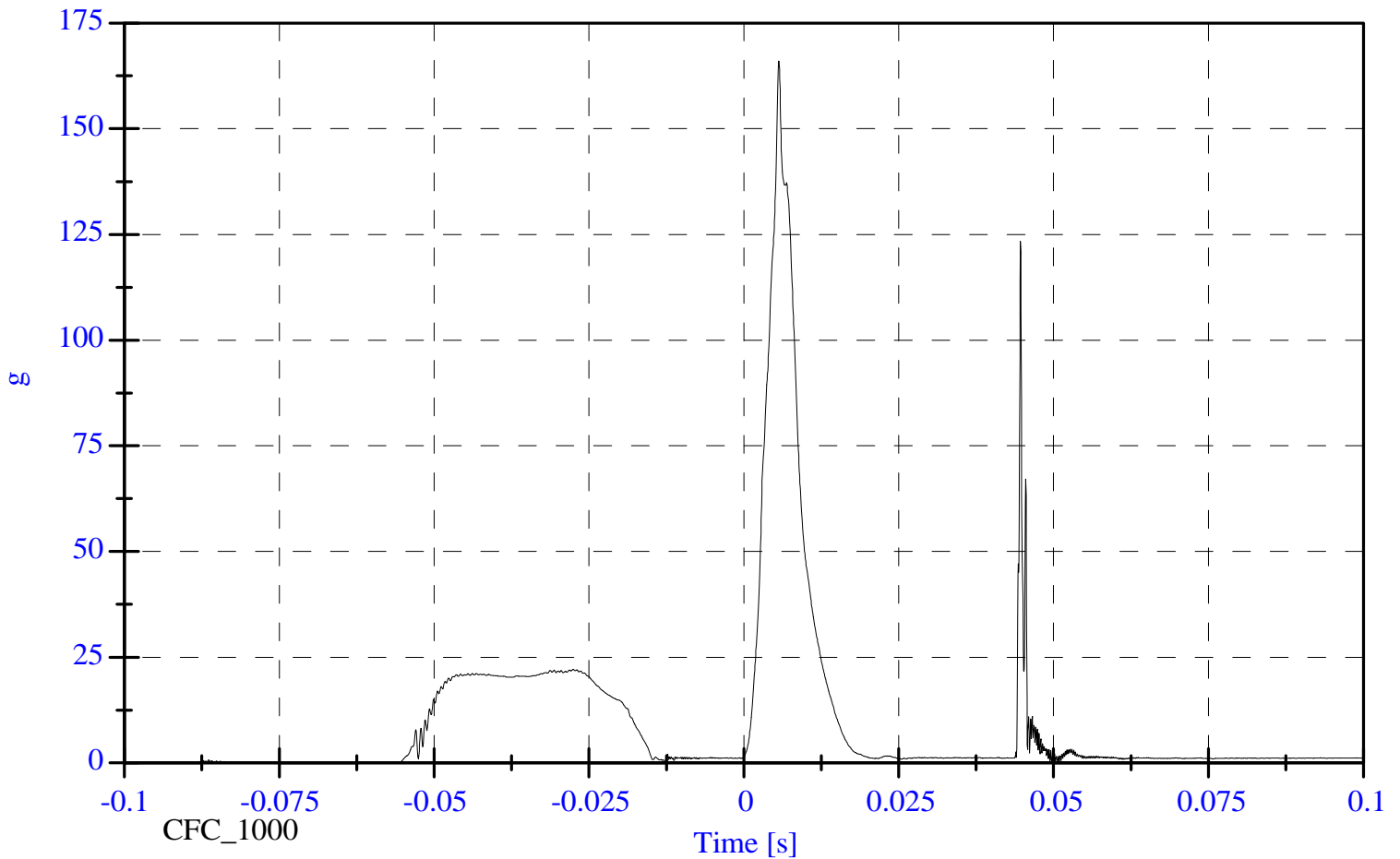
Maximum: 166.0 g

Average Acceleration: 9.4 g

FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse  
Headform Resultant

Max: 166.0 [g] at 0.006 [s]

Min: 0.0 [g] at -0.093 [s]

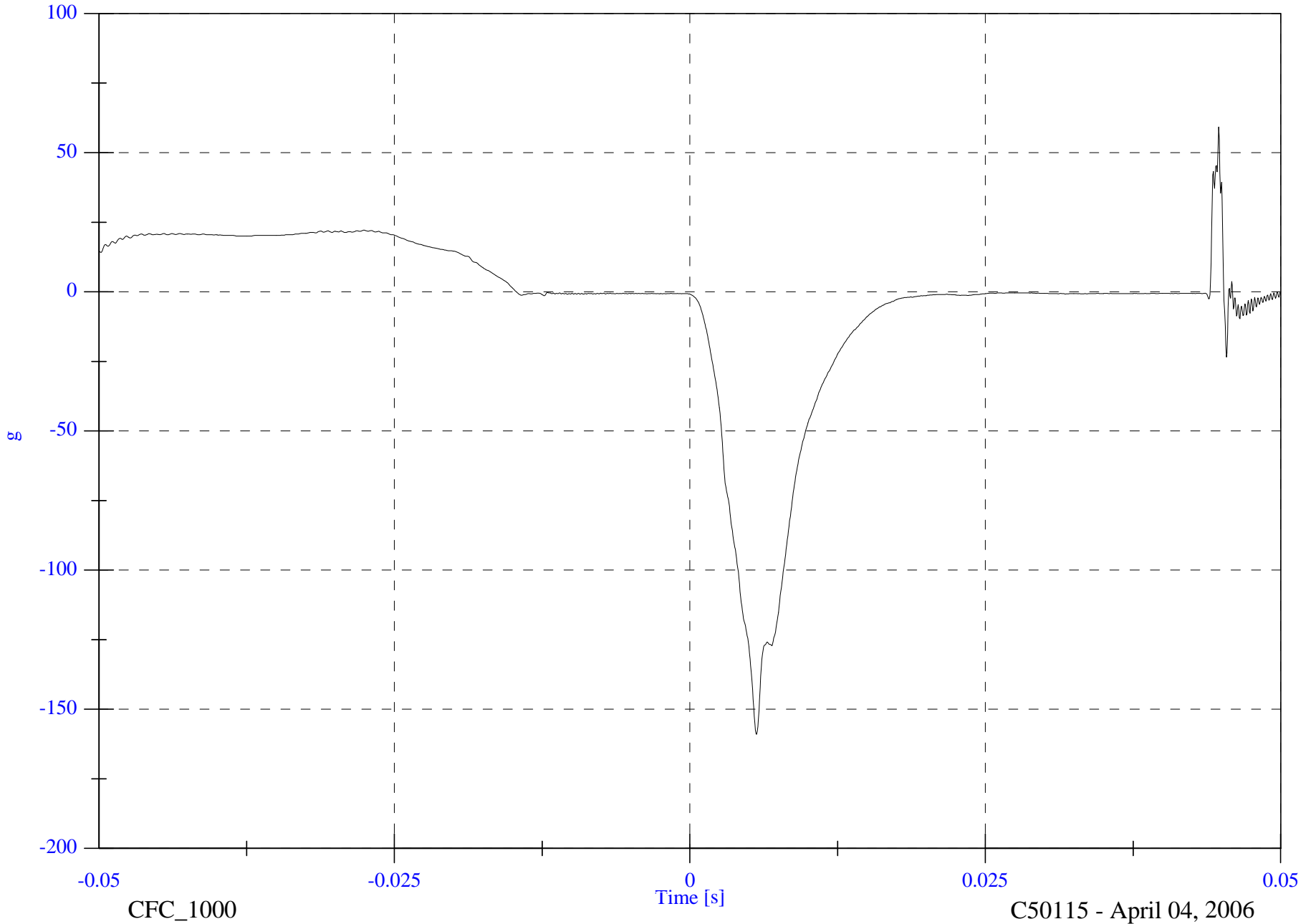


FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse

Headform X Acceleration

Max: 59.2 [g] at 0.045 [s]

Min: -159.0 [g] at 0.006 [s]



C50115 DRIVER SIDE URBP IMPACT PLOT #1

8754+FMH-09

CFC\_1000

C50115 - April 04, 2006

FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse

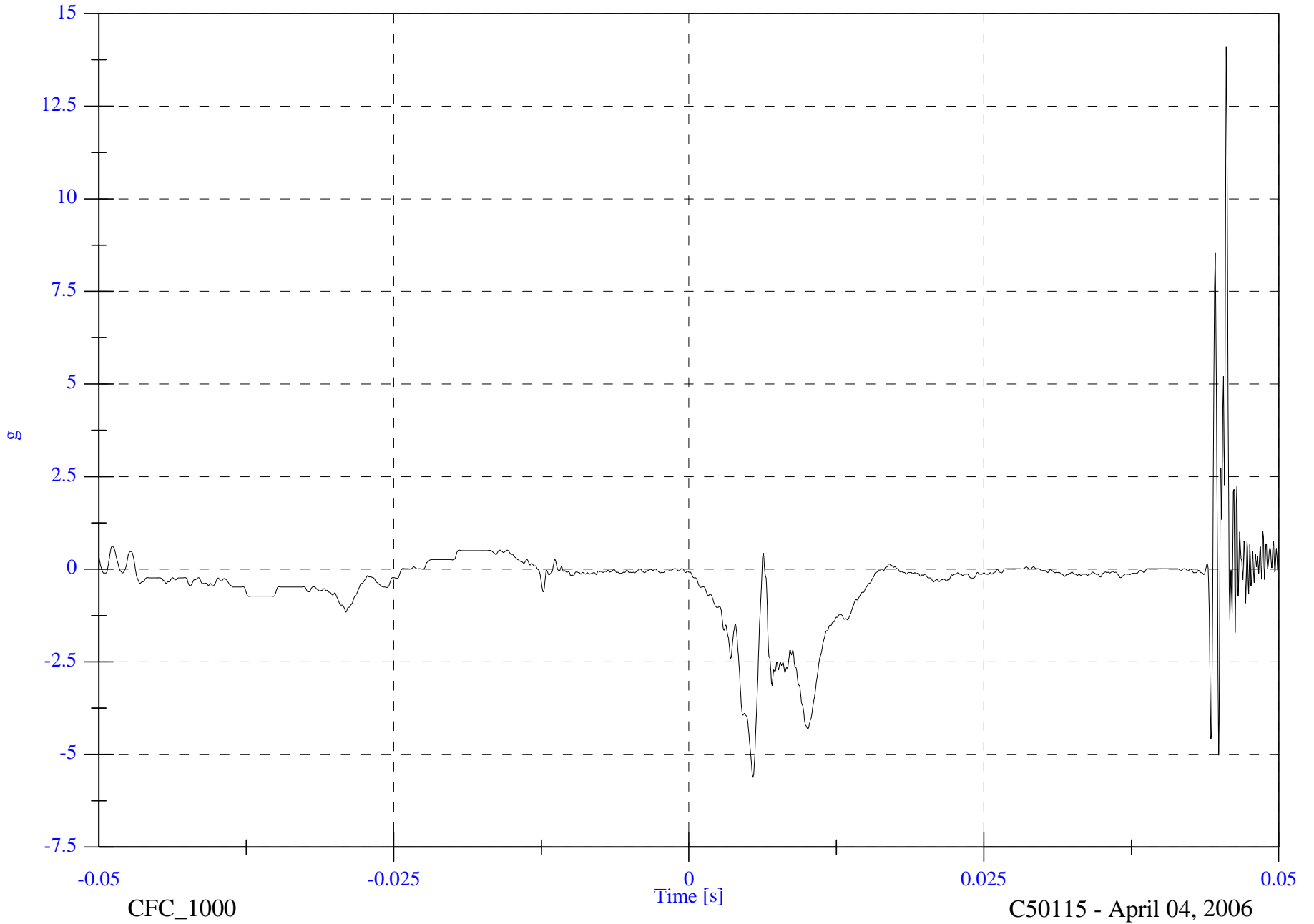
Headform Y Acceleration

Max: 14.1 [g] at 0.046 [s]

Min: -5.6 [g] at 0.005 [s]

C50115 DRIVER SIDE URBP IMPACT PLOT #2

8754+FMH-09



CFC\_1000

C50115 - April 04, 2006

FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse

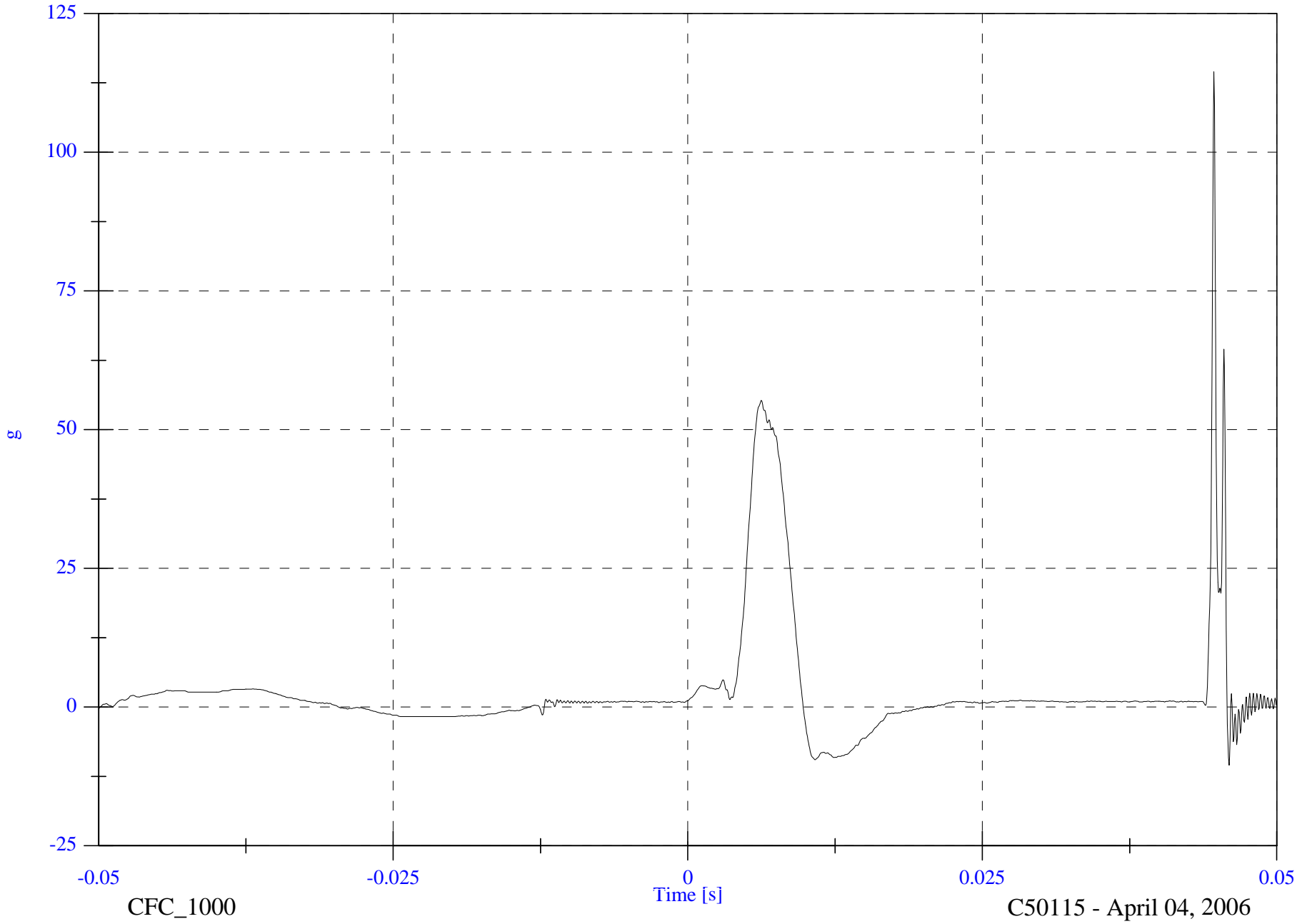
Headform Z Acceleration

Max: 114.5 [g] at 0.045 [s]

Min: -10.5 [g] at 0.046 [s]

C50115 DRIVER SIDE URBP IMPACT PLOT #3

8754+FMH-09



CFC\_1000

C50115 - April 04, 2006

FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse

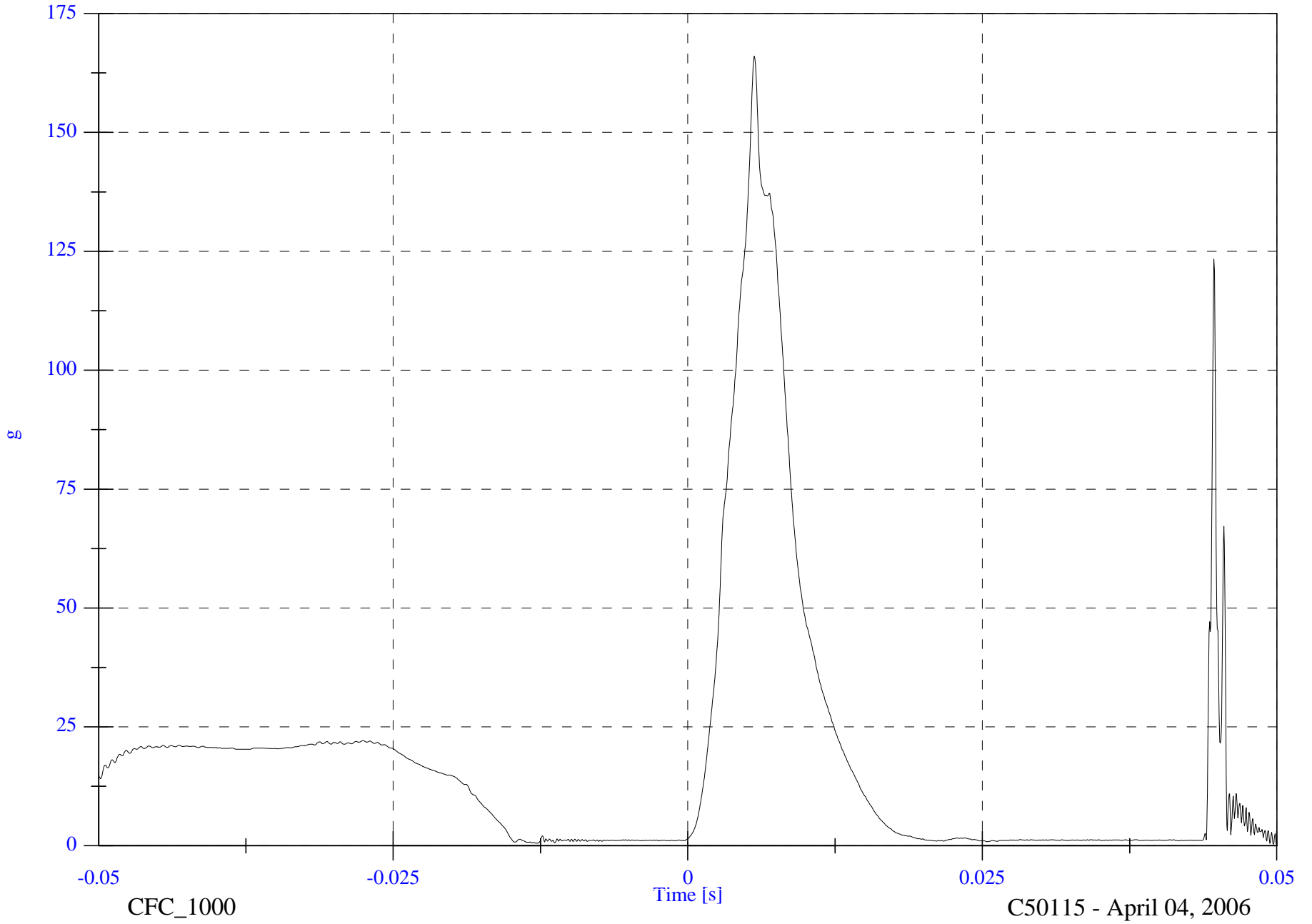
Headform Resultant

Max: 166.0 [g] at 0.006 [s]

Min: 0.3 [g] at 0.050 [s]

C50115 DRIVER SIDE URBP IMPACT PLOT #4

8754+FMH-09



CFC\_1000

C50115 - April 04, 2006

FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse

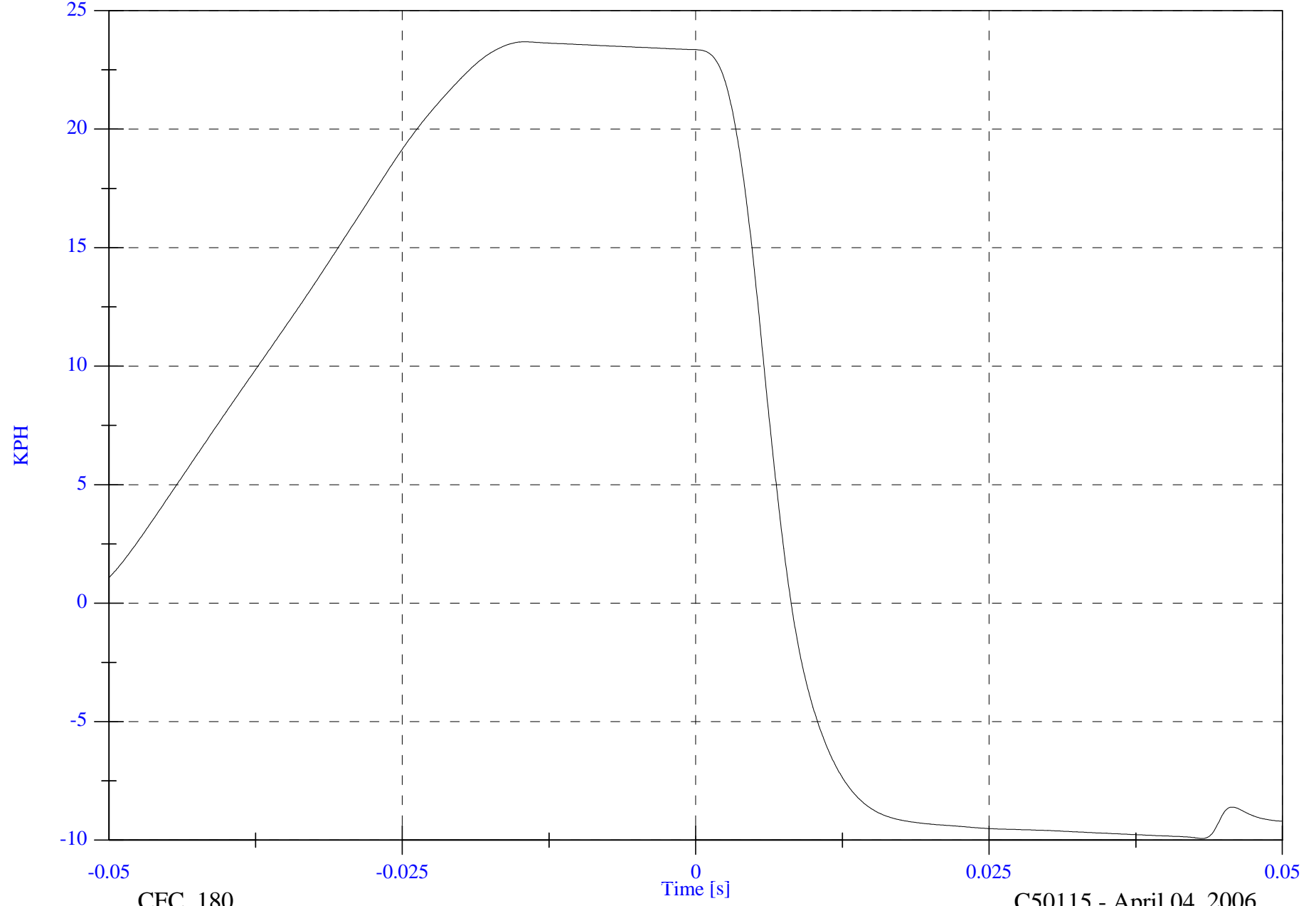
Headform Velocity

Max: 23.7 [KPH] at -0.015 [s]

Min: -9.9 [KPH] at 0.043 [s]

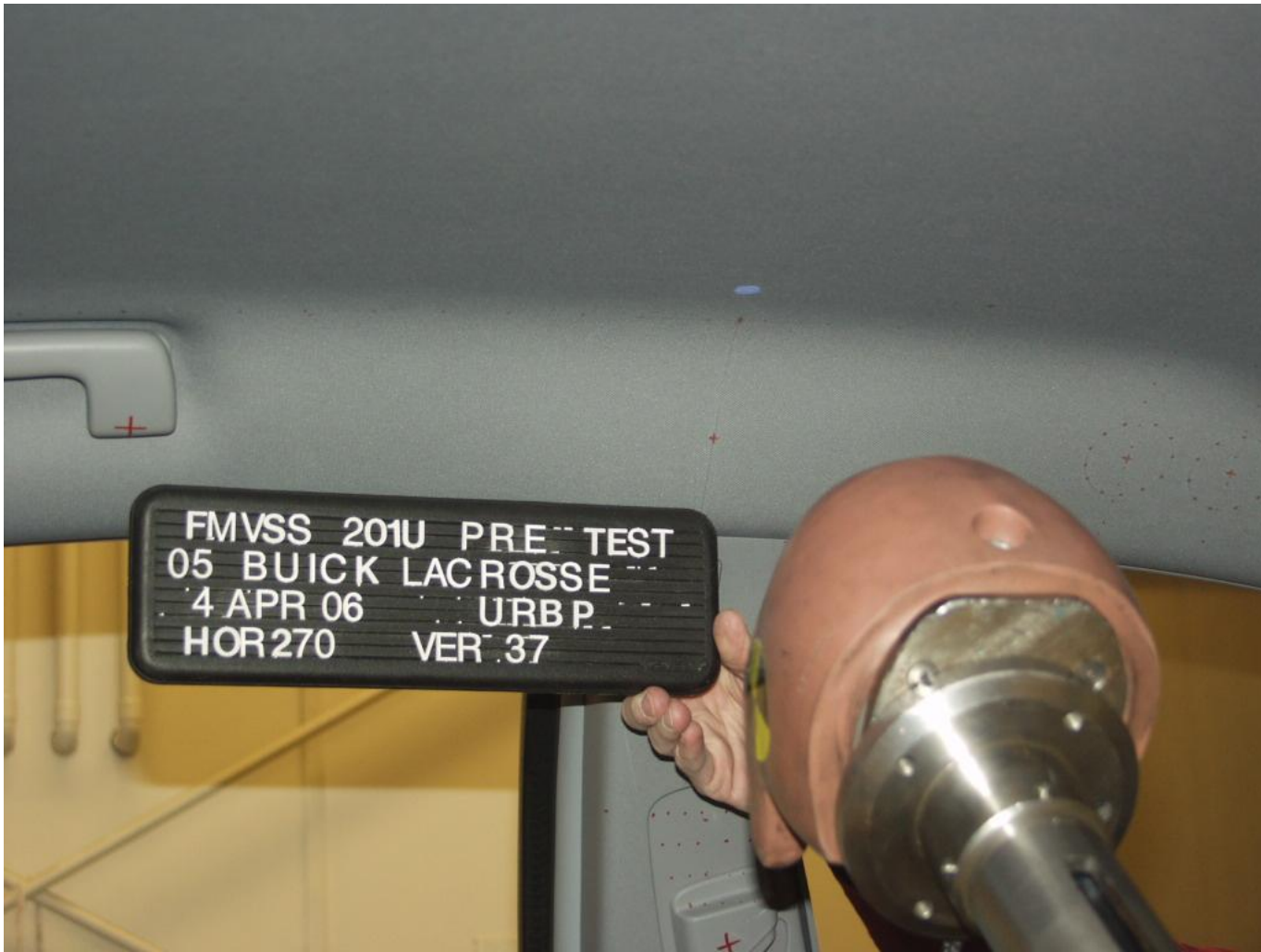
C50115 DRIVER SIDE URBAN IMPACT PLOT #5

8754+FMH-09



CFC\_180

C50115 - April 04, 2006



PRE-IMPACT URBP DRIVER



POST-IMPACT D URB.P



VEHICLE YEAR/MAKE/MODEL/STYLE:	2005 Buick LaCrosse CX
VIN:	2G4WC532X51323166
DATE OF MANUFACTURE:	04/05 (SEE CERTIFICATION LABEL)
COLOR:	Sapphire Metallic

Test Number:	11
Test Date:	04/04/06
Target Location:	SIDE RAIL
Target Code:	SR2A
Horizontal Impact Angle:	270 °
Vertical Impact Angle:	35 °
Ambient Temperature:	21.7C°
Relative Humidity:	23.2
Time of Impact:	13:15
Headform Number:	642

Impact Point Description (from lower midpoint on midsagittal line)					
On Centerline	3	<input checked="" type="checkbox"/>	mm right	<input type="checkbox"/>	mm left
On Centerline	10				mm up



POST-IMPACT SR2A HEADFORM

Free Motion HIC	931.0
HIC(d)	868.8
Impact Velocity (kph)	23.51
HIC T1 (msec)	2.5
HIC T2 (msec)	8.1

# FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse C50115 - SR2A

FMH Headform 0642

Location: SR2A

Test Date: April 04, 2006

Work File: SR2A

## -----TEST RESULTS-----

Lab Temperature: 21.7 C

HICd: 868.8

Lab Humidity: 23.2 %

HIC (36ms): 931.0

Velocity at Impact: 23.51 KPH

t1: 2.5 msec

t2: 8.1 msec

Free Flight Distance: 221.01 mm

Duration: 5.6 msec

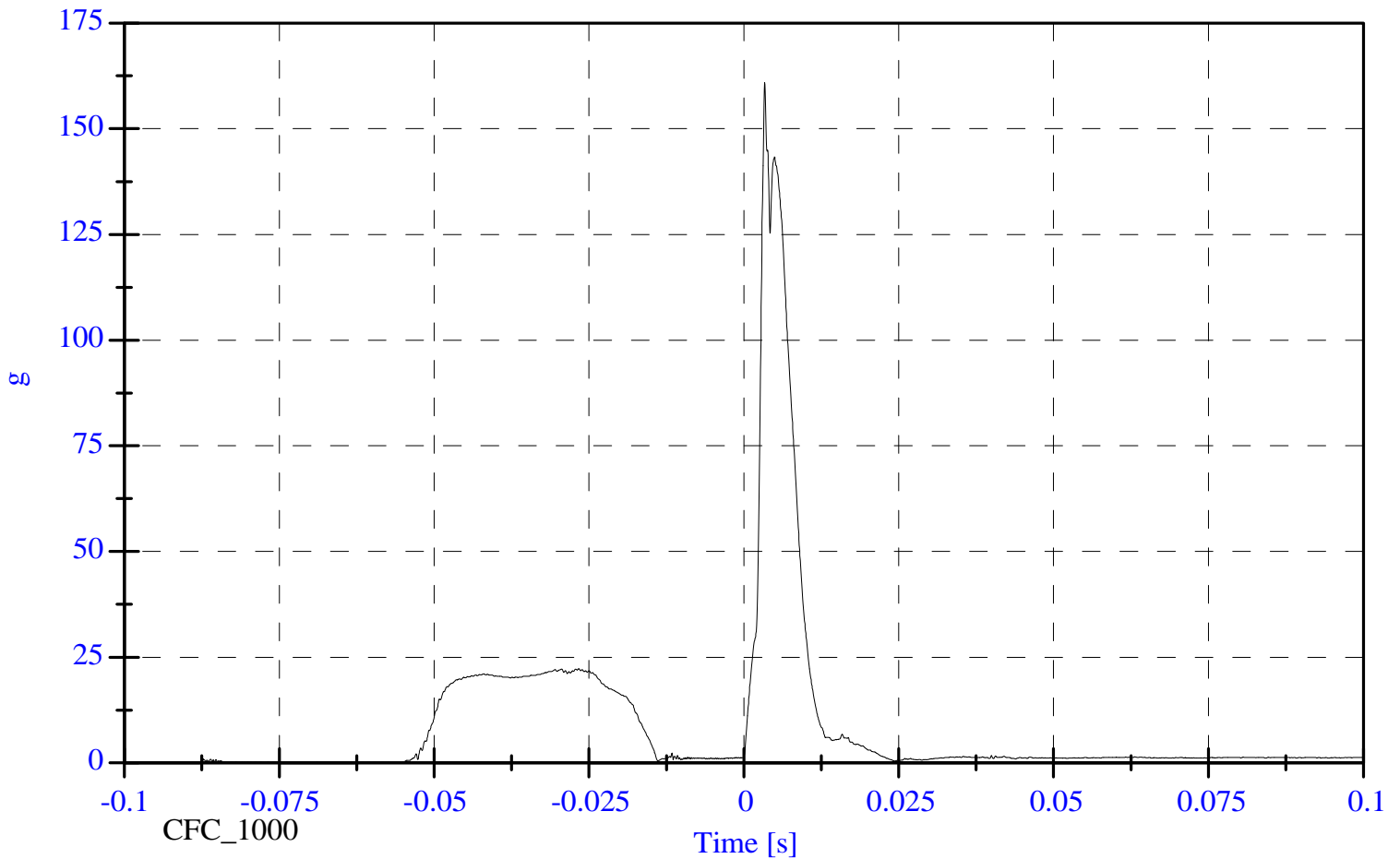
Maximum: 160.9 g

Average Acceleration: 8.6 g

FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse  
Headform Resultant

Max: 160.9 [g] at 0.003 [s]

Min: 0.0 [g] at -0.098 [s]

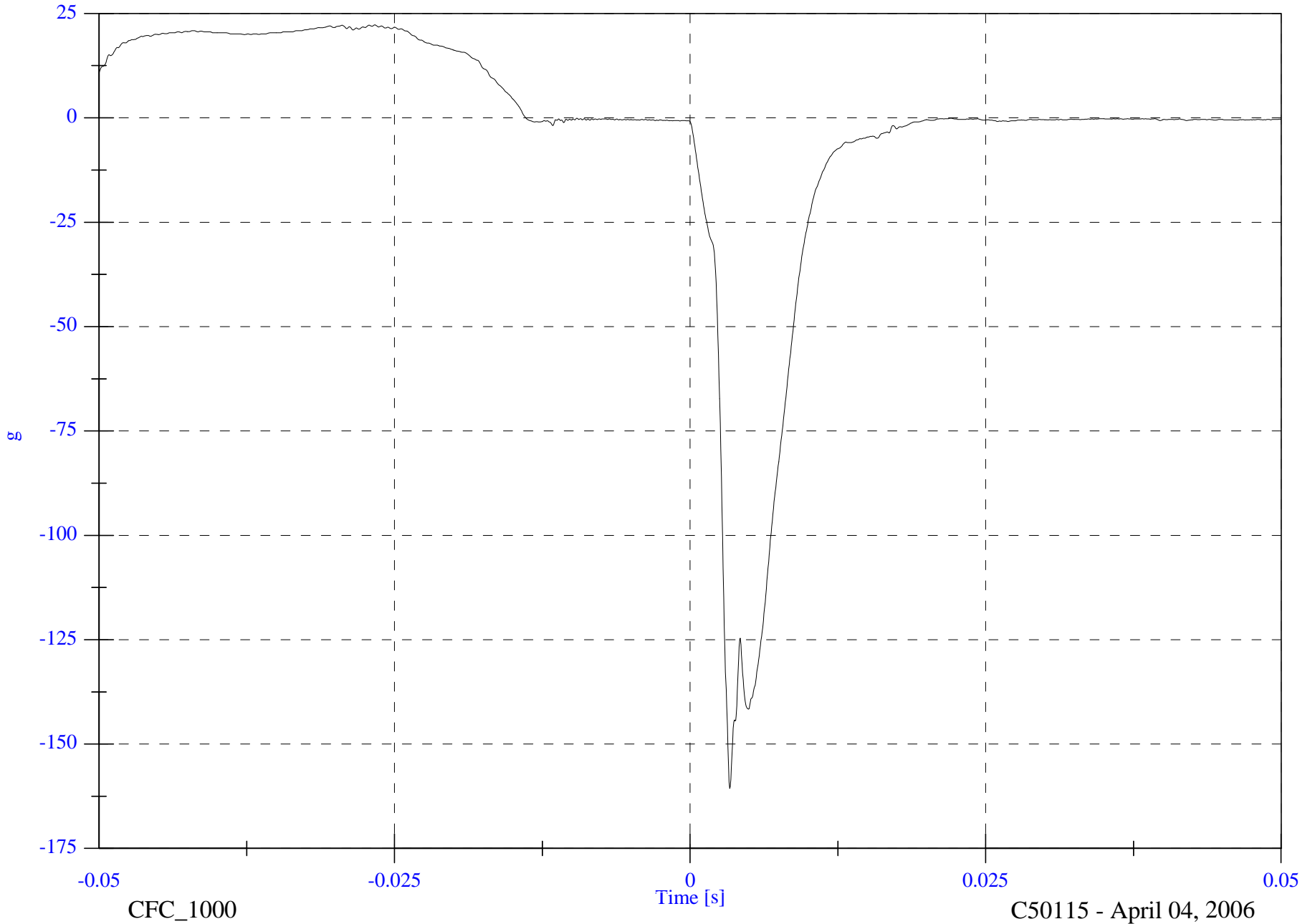


FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse

Headform X Acceleration

Max: 22.3 [g] at -0.027 [s]

Min: -160.7 [g] at 0.003 [s]



C50115 DRIVER SIDE SR2A IMPACT PLOT #1

8754+FMH-09

CFC\_1000

C50115 - April 04, 2006

FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse

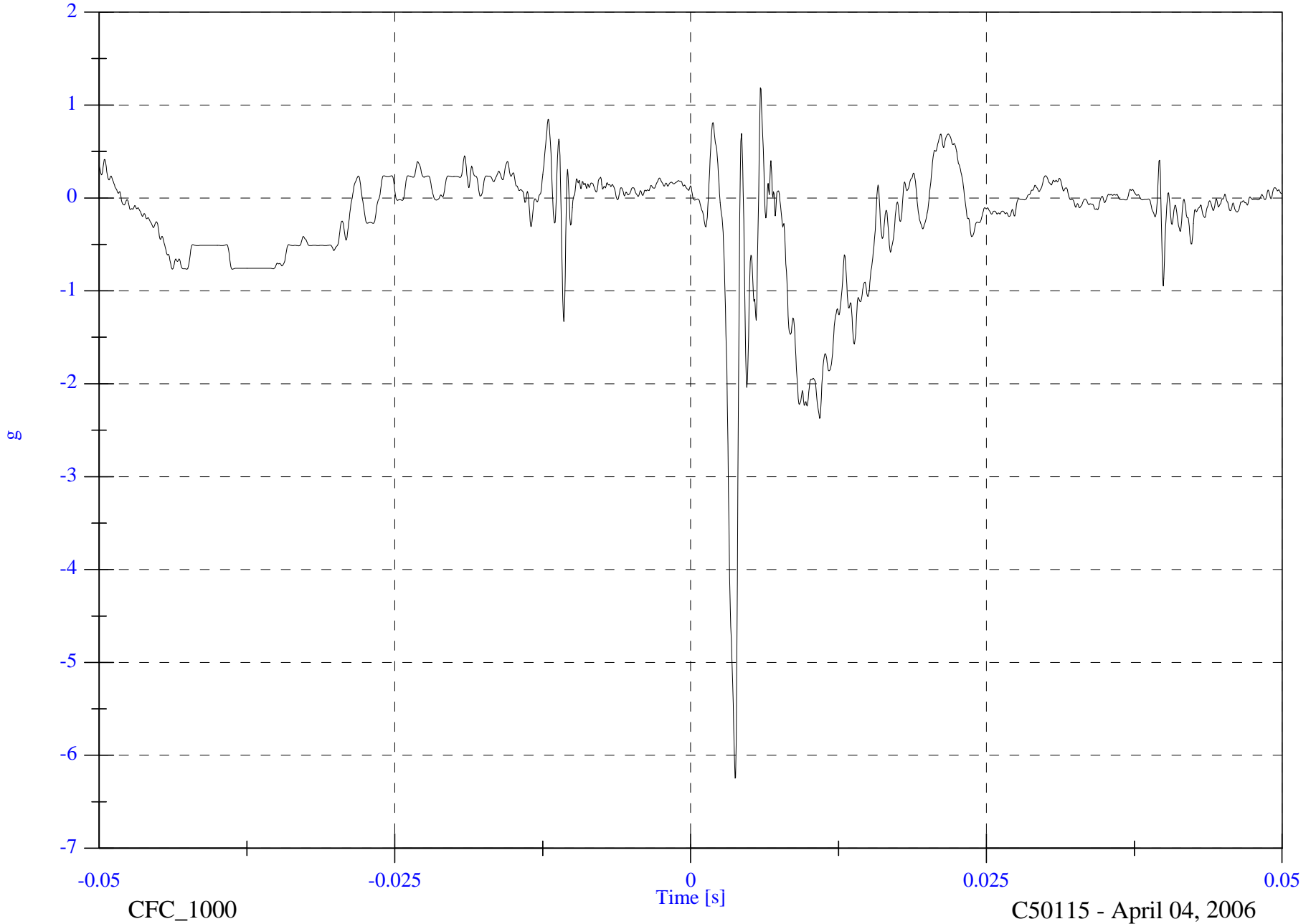
Headform Y Acceleration

Max: 1.2 [g] at 0.006 [s]

Min: -6.2 [g] at 0.004 [s]

C50115 DRIVER SIDE SR2A IMPACT PLOT #2

8754+FMH-09



CFC\_1000

C50115 - April 04, 2006

FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse

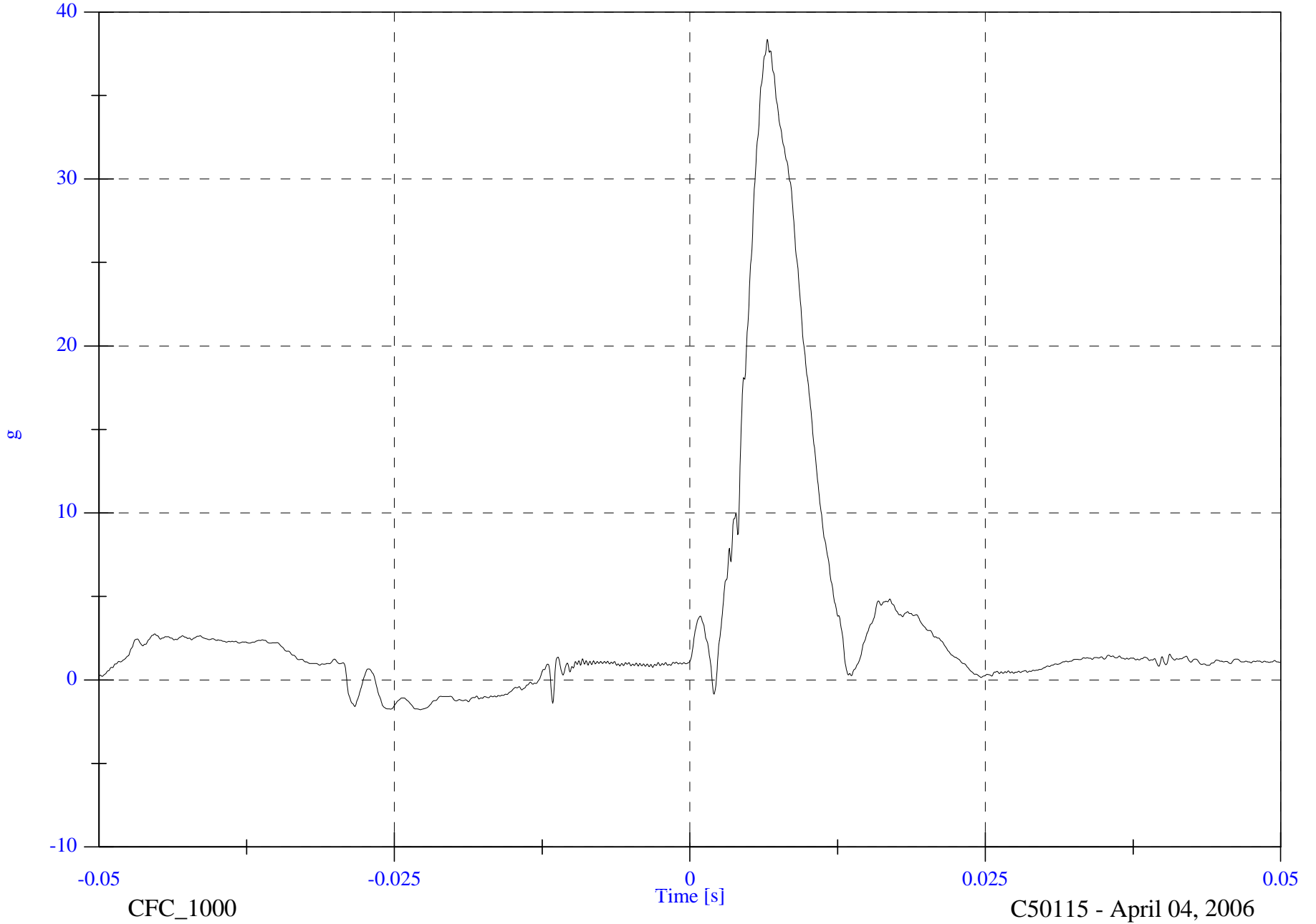
Headform Z Acceleration

Max: 38.4 [g] at 0.007 [s]

Min: -1.8 [g] at -0.023 [s]

C50115 DRIVER SIDE SR2A IMPACT PLOT #3

8754+FMH-09



CFC\_1000

C50115 - April 04, 2006

FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse

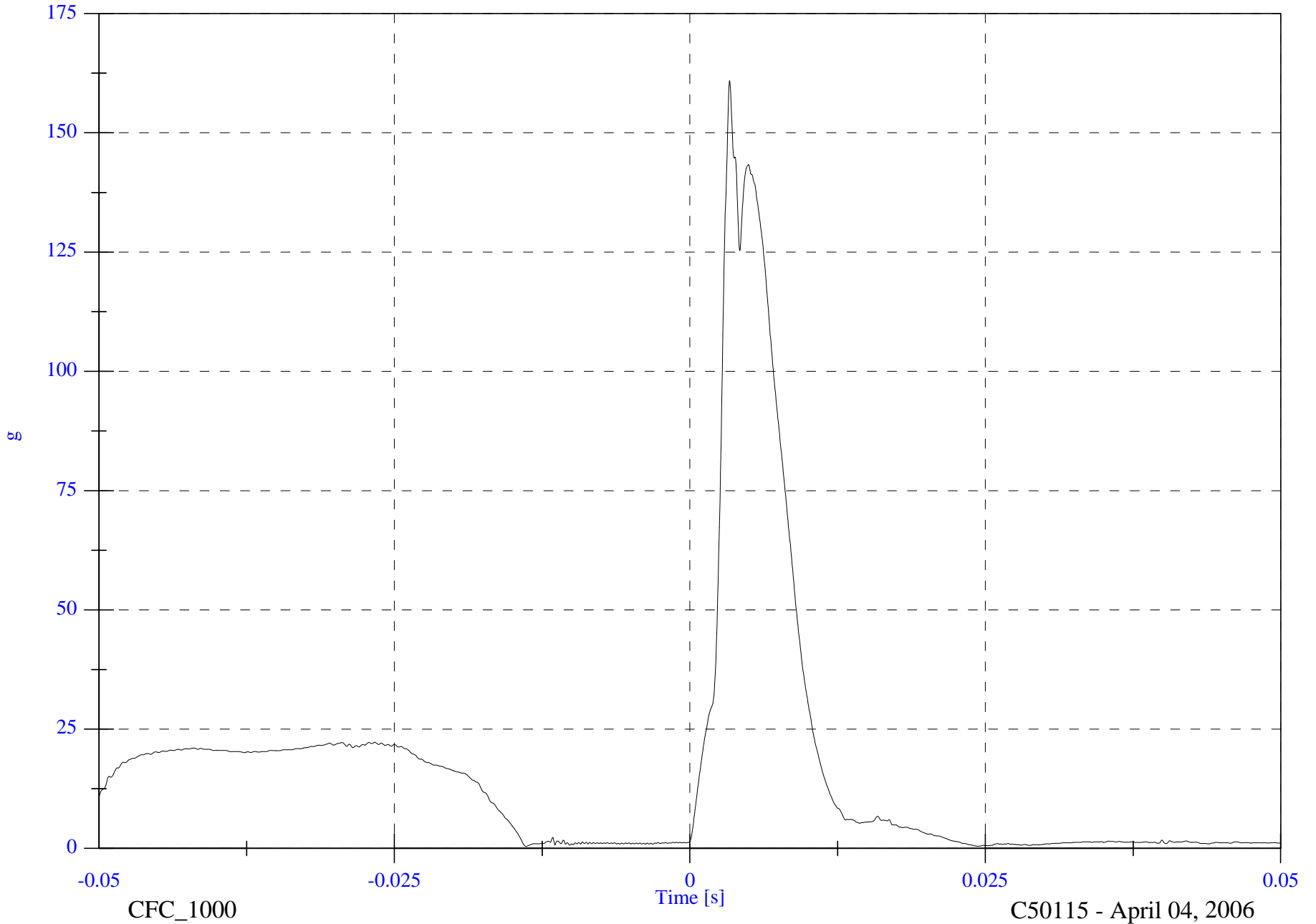
Headform Resultant

Max: 160.9 [g] at 0.003 [s]

Min: 0.4 [g] at -0.014 [s]

C50115 DRIVER SIDE SR2A IMPACT PLOT #4

8754+FMH-09



CFC\_1000

C50115 - April 04, 2006

FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse

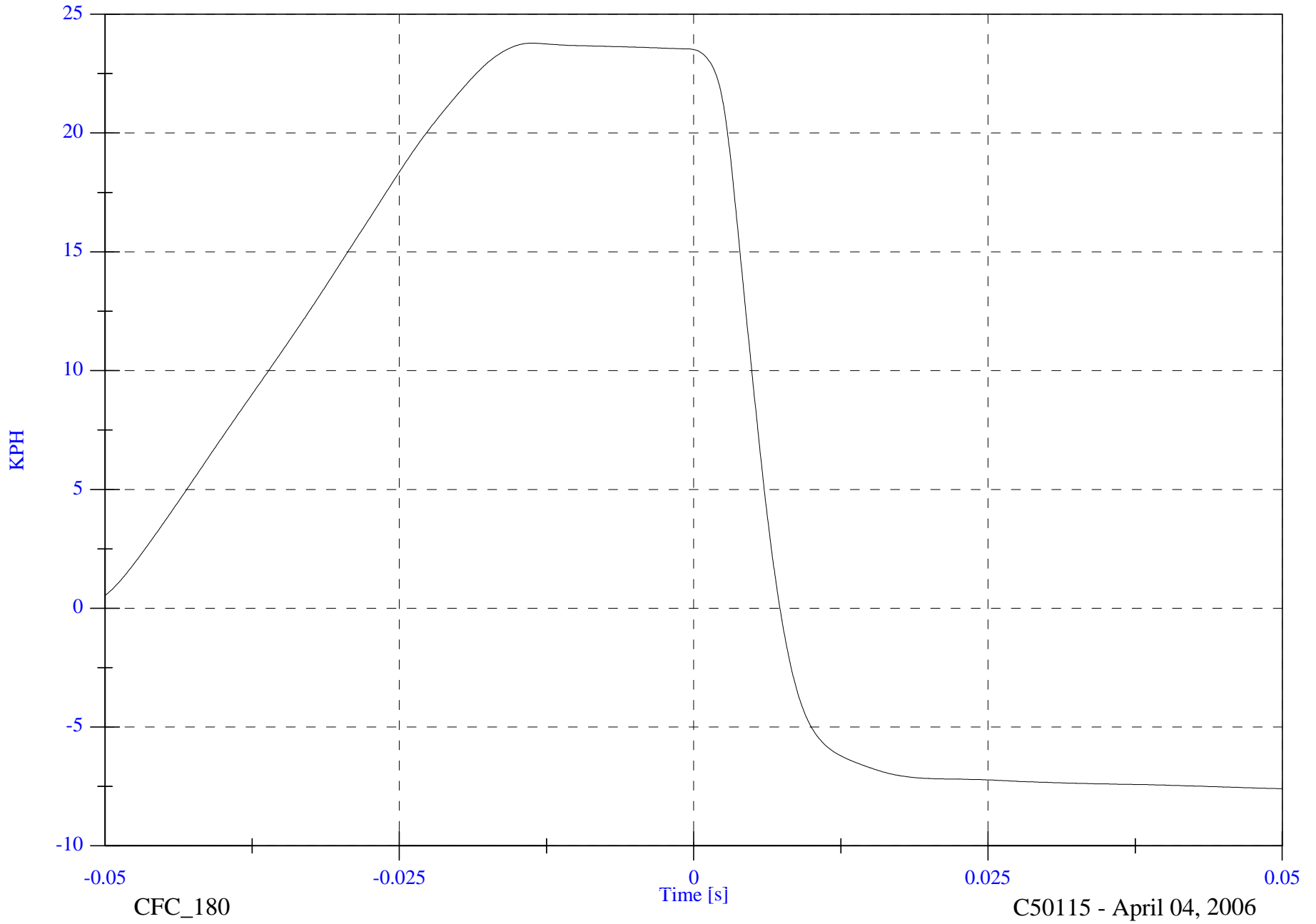
Headform Velocity

Max: 23.8 [KPH] at -0.014 [s]

Min: -7.6 [KPH] at 0.050 [s]

C50115 DRIVER SIDE SR2A IMPACT PLOT #5

8754+FMH-09



CFC\_180

C50115 - April 04, 2006



PRE-IMPACT SR2A





POST-IMPACT SR2A

VEHICLE YEAR/MAKE/MODEL/STYLE:	2005 Buick LaCrosse CX
VIN:	2G4WC532X51323166
DATE OF MANUFACTURE:	04/05(SEE CERTIFICATION LABEL)
COLOR:	Sapphire Metallic

Test Number:	12
Test Date:	04/04/06
Target Location:	A-PILLAR
Target Code:	AP2
Horizontal Impact Angle:	216 °
Vertical Impact Angle:	40 °
Ambient Temperature:	21.7C°
Relative Humidity:	23.1
Time of Impact:	13:50
Headform Number:	355

Impact Point Description (from lower midpoint on midsagittal line)					
On Centerline	6	x	mm right		mm left
On Centerline	31				mm up



POST-IMPACT AP2 HEADFORM

Free Motion HIC	342
HIC(d)	424.4
Impact Velocity (kph)	23.48
HIC T1 (msec)	1.8
HIC T2 (msec)	11.3

# FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse C50115 - AP2

FMH Headform 0355

Location: AP2

Test Date: April 04, 2006

Work File: AP2

## -----TEST RESULTS-----

Lab Temperature: 21.7 C

HICd: 424.4

Lab Humidity: 23.1 %

HIC (36ms): 342.0

Velocity at Impact: 23.48 KPH

t1: 1.8 msec

t2: 11.3 msec

Free Flight Distance: 226.19 mm

Duration: 9.5 msec

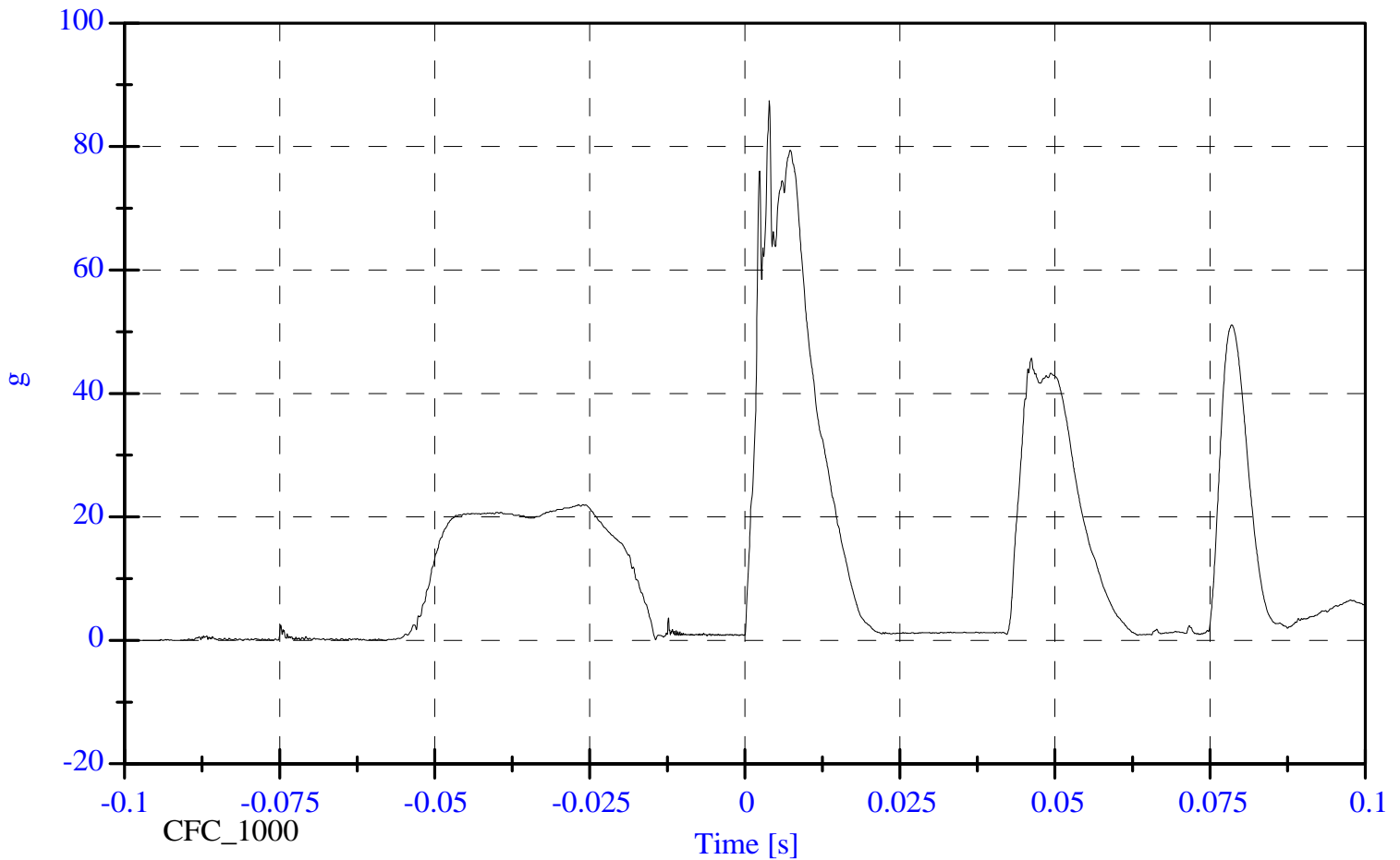
Maximum: 87.4 g

Average Acceleration: 11.8 g

FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse  
Headform Resultant

Max: 87.4 [g] at 0.004 [s]

Min: -0.0 [g] at -0.099 [s]



FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse

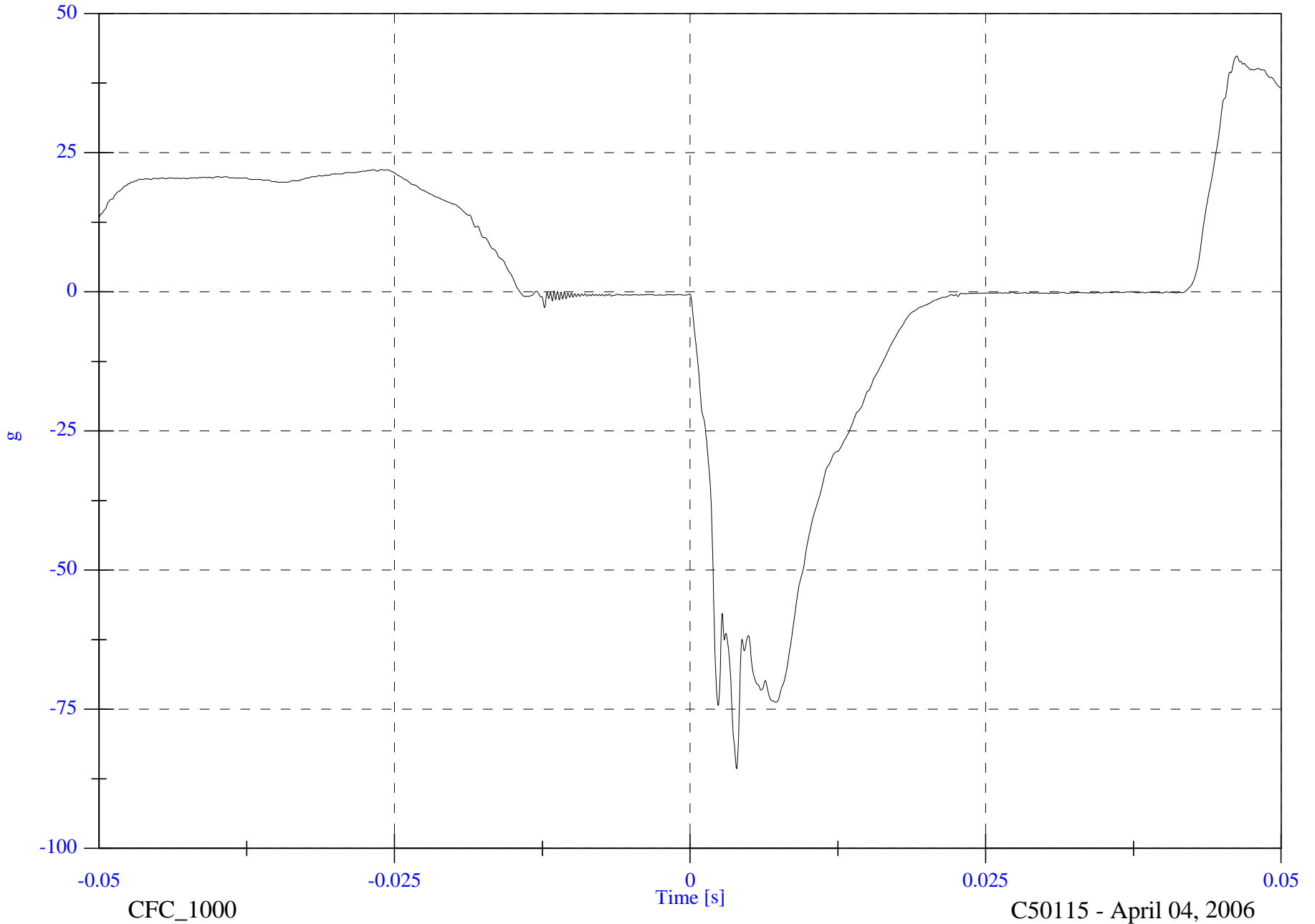
Headform X Acceleration

Max: 42.4 [g] at 0.046 [s]

Min: -85.7 [g] at 0.004 [s]

C50115 DRIVER SIDE AP2 IMPACT PLOT #1

8754+FMH-09



CFC\_1000

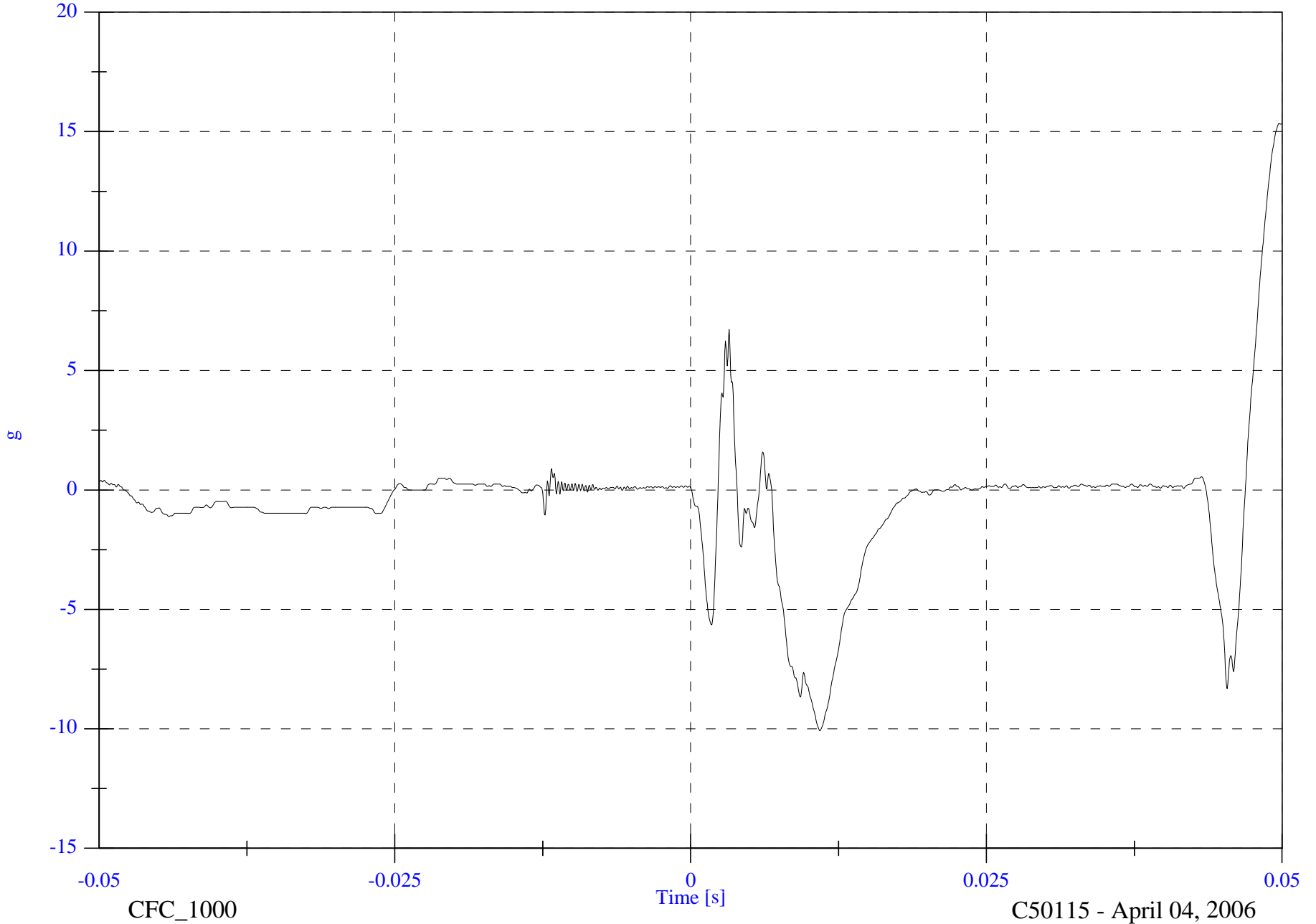
C50115 - April 04, 2006

FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse

Headform Y Acceleration

Max: 15.3 [g] at 0.050 [s]

Min: -10.1 [g] at 0.011 [s]



C50115 DRIVER SIDE AP2 IMPACT PLOT #2

8754+FMH-09

CFC\_1000

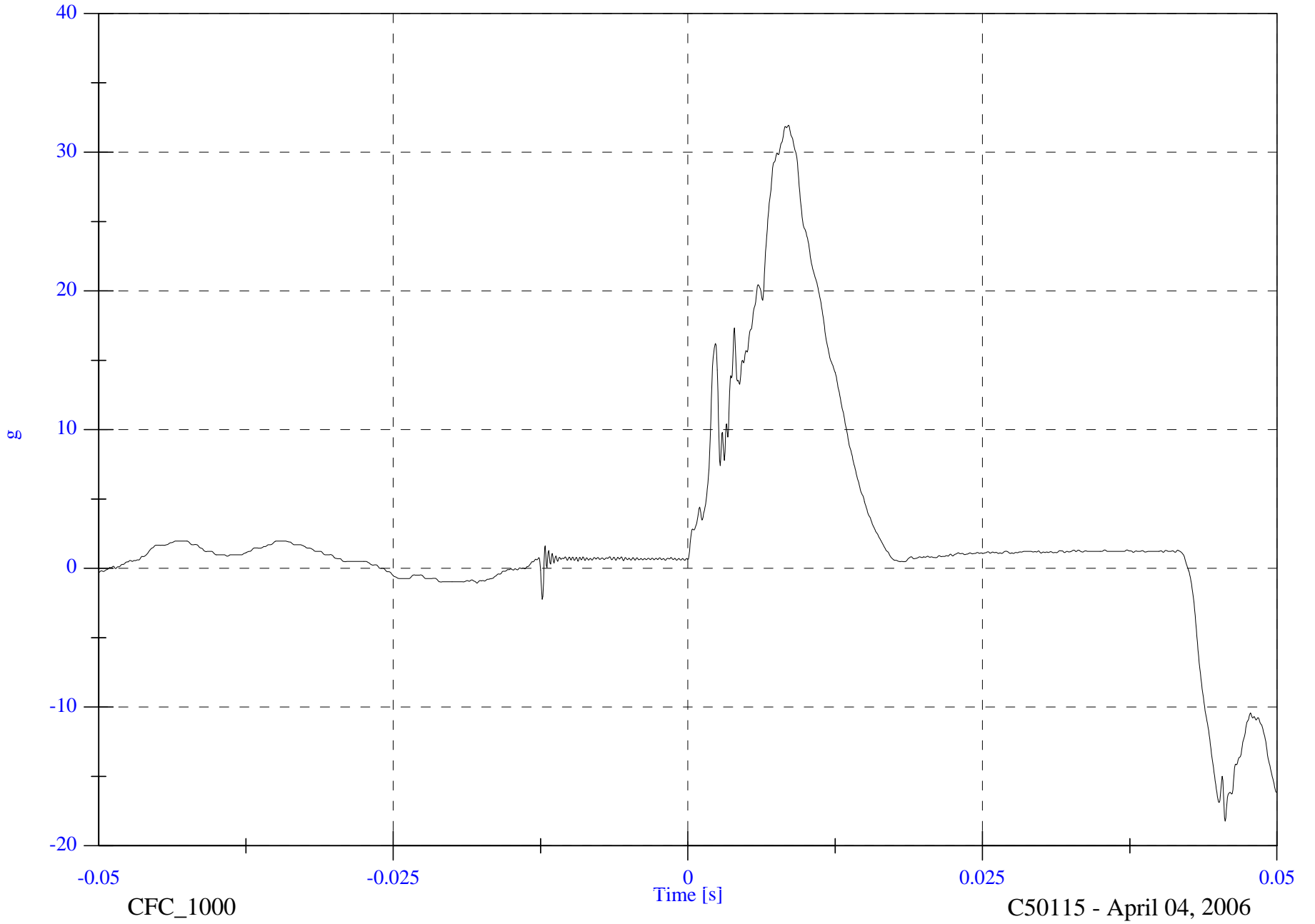
C50115 - April 04, 2006

FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse

Headform Z Acceleration

Max: 31.9 [g] at 0.009 [s]

Min: -18.2 [g] at 0.046 [s]



C50115 DRIVER SIDE AP2 IMPACT PLOT #3

8754+FMH-09

CFC\_1000

C50115 - April 04, 2006

FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse

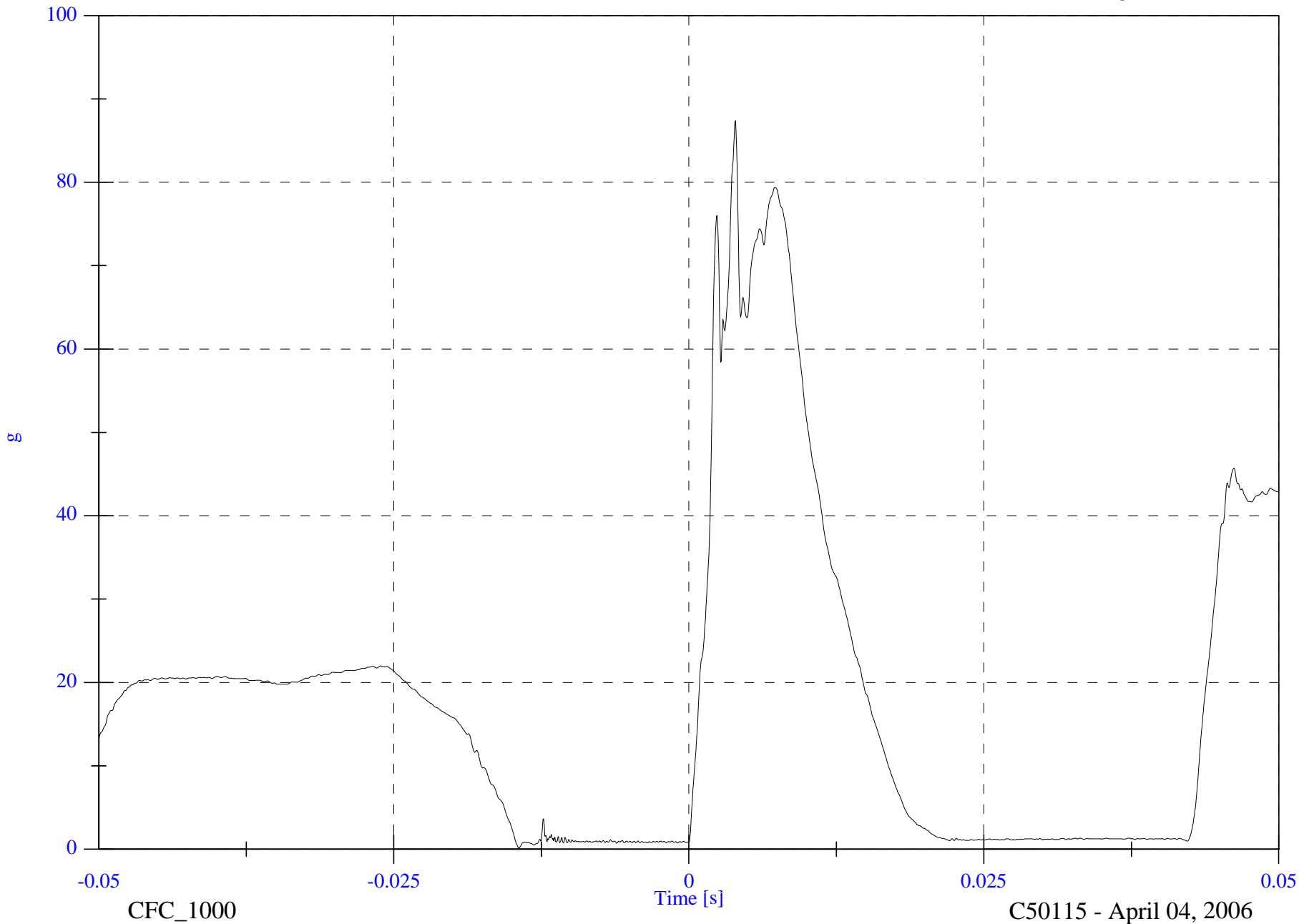
Headform Resultant

Max: 87.4 [g] at 0.004 [s]

Min: 0.1 [g] at -0.014 [s]

C50115 DRIVER SIDE AP2 IMPACT PLOT #4

8754+FMH-09



CFC\_1000

C50115 - April 04, 2006

FMVSS 201U IMPACT TEST - 2005 Buick LaCrosse

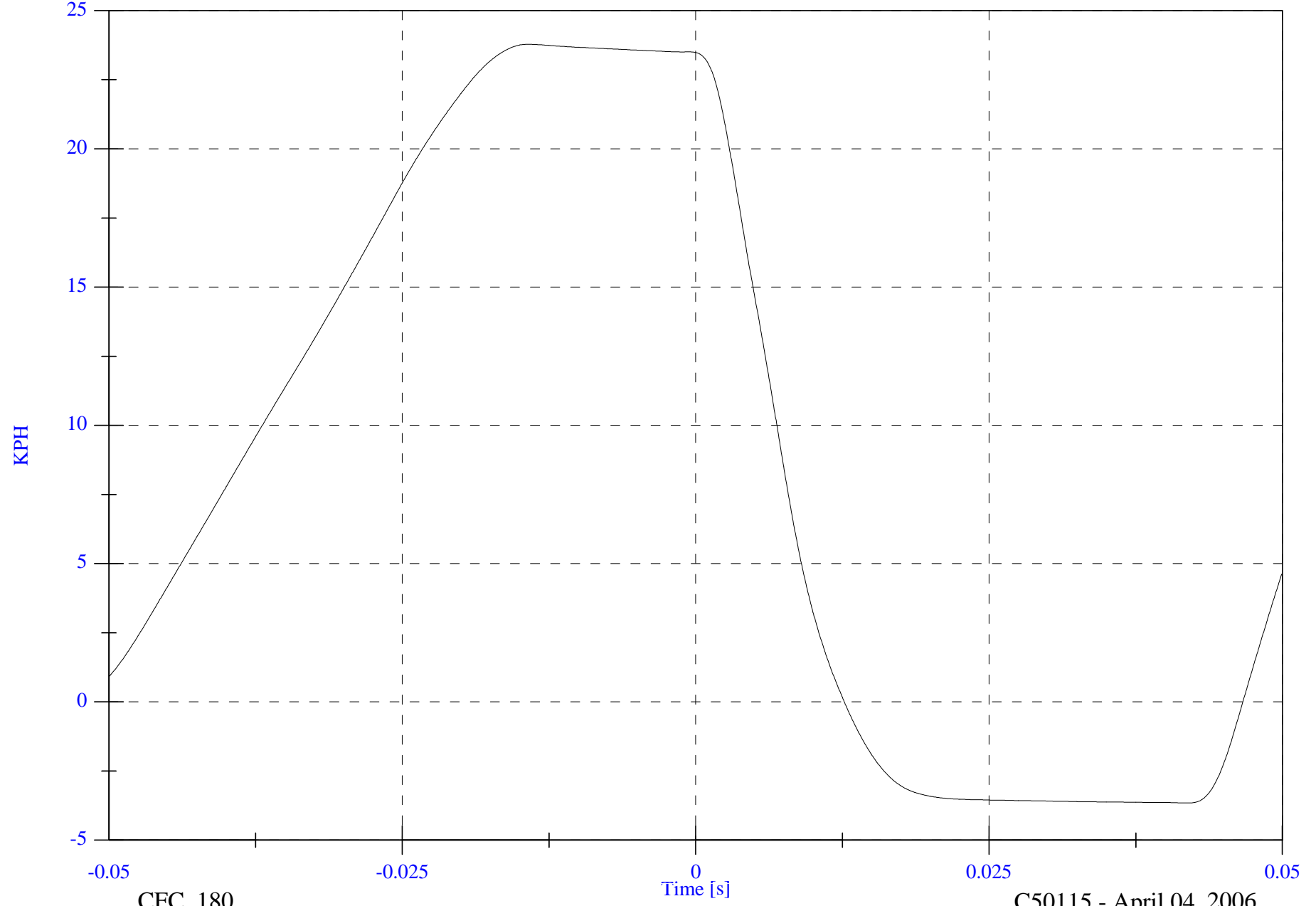
Headform Velocity

Max: 23.8 [KPH] at -0.014 [s]

Min: -3.7 [KPH] at 0.042 [s]

C50115 DRIVER SIDE AP2 IMPACT PLOT #5

8754+FMH-09



CFC\_180

C50115 - April 04, 2006





**PRE-IMPACT AP2 (PLACARD MISLABELED – VER 40)**



POST-IMPACT AP2

**APPENDIX A**

**PHOTOGRAPHS**

**PHOTOGRAPHS**

<b>FIGURE</b>	<b>VIEW</b>
A-1	LEFT SIDE VIEW OF VEHICLE
A-2	RIGHT SIDE VIEW OF VEHICLE
A-3	3/4 FRONTAL VIEW FROM RIGHT SIDE OF VEHICLE
A-4	3/4 REAR VIEW FROM LEFT SIDE OF VEHICLE
A-5	VEHICLE'S CERTIFICATION LABEL
A-6	VEHICLE'S TIRE INFORMATION LABEL
A-7	PRE-TEST DRIVER SIDE A-PILLAR
A-8	PRE-TEST DRIVER SIDE FRONT HEADER
A-9	PRE-TEST DRIVER SIDE SIDE RAIL
A-10	PRE-TEST DRIVER SIDE B-PILLAR
A-11	PRE-TEST DRIVER SIDE REAR SIDE RAIL
A-12	PRE-TEST DRIVER SIDE REAR PILLAR
A-13	PRE-TEST PASSENGER SIDE A-PILLAR
A-14	PRE-TEST PASSENGER SIDE FRONT HEADER
A-15	PRE-TEST PASSENGER SIDE SIDE RAIL
A-16	PRE-TEST PASSENGER SIDE B-PILLAR
A-17	PRE-TEST PASSENGER SIDE REAR SIDE RAIL
A-18	PRE-TEST PASSENGER SIDE REAR PILLAR
A-19	POST-TEST DRIVER SIDE A-PILLAR
A-20	POST-TEST DRIVER FRONT HEADER
A-21	POST-TEST DRIVER SIDE SIDE RAIL
A-22	POST-TEST DRIVER SIDE B-PILLAR
A-23	POST-TEST DRIVER SIDE REAR SIDE RAIL
A-24	POST-TEST DRIVER SIDE REAR PILLAR
A-25	POST-TEST PASSENGER SIDE A-PILLAR
A-26	POST-TEST PASSENGER FRONT HEADER
A-27	POST-TEST PASSENGER SIDE SIDE RAIL
A-28	POST-TEST PASSENGER SIDE B-PILLAR
A-29	POST-TEST PASSENGER SIDE REAR SIDE RAIL
A-30	POST-TEST PASSENGER SIDE REAR PILLAR



Figure A-1 : LEFT SIDE VIEW OF VEHICLE



Figure A-2 : RIGHT SIDE VIEW OF VEHICLE



Figure A-3 : 3/4 FRONTAL VIEW FROM RIGHT SIDE OF VEHICLE



Figure A-4 : 3/4 REAR VIEW FROM LEFT SIDE OF VEHICLE



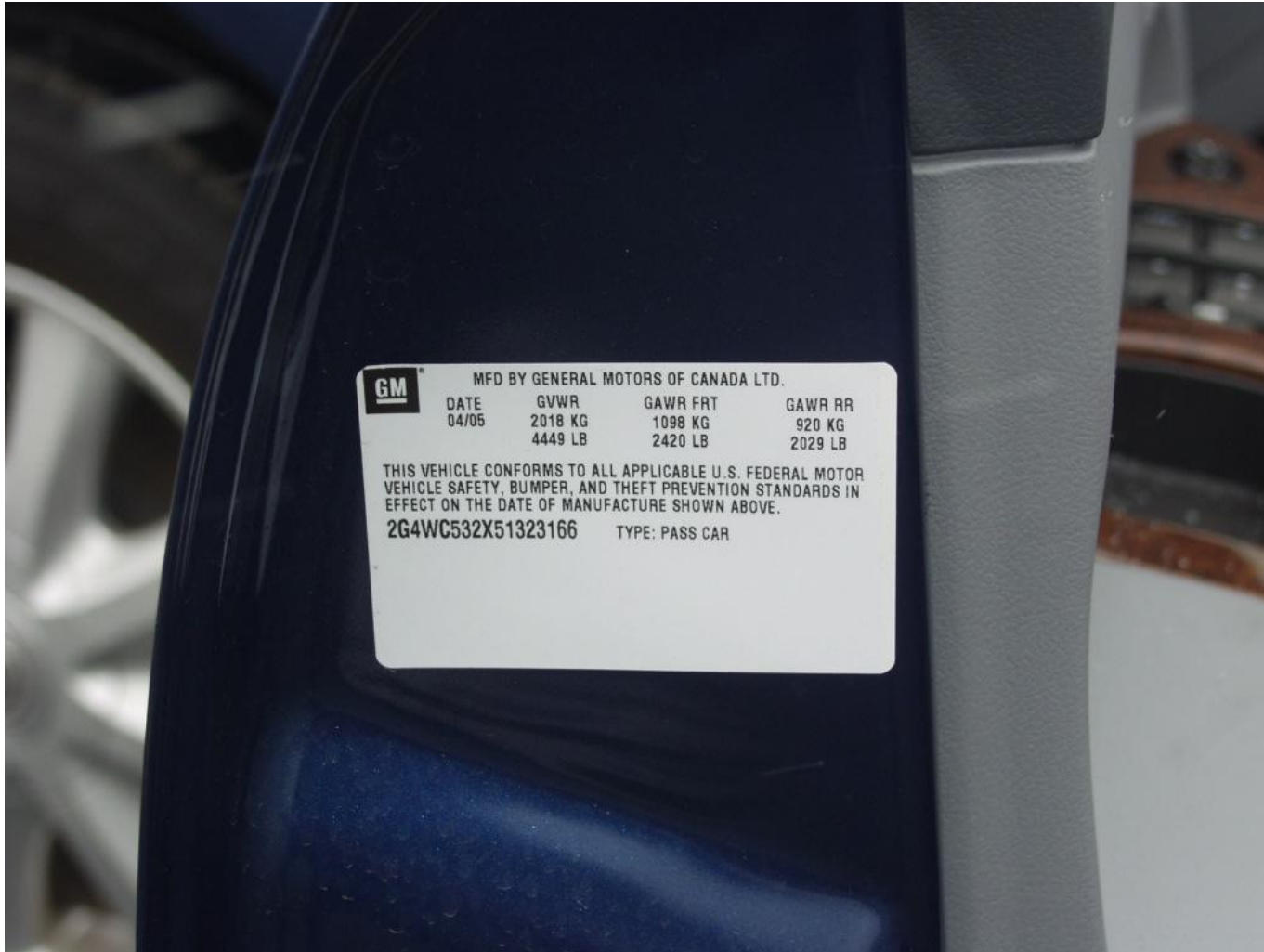


Figure A-5 : VEHICLE'S CERTIFICATION LABEL



Figure A-6 : VEHICLE'S TIRE INFORMATION LABEL



Figure A-7 : PRE-TEST DRIVER SIDE A-PILLAR



Figure A-8 : PRE-TEST DRIVER SIDE FRONT HEADER



Figure A-9 : PRE-TEST DRIVER SIDE SIDE RAIL



Figure A-10 : PRE-TEST DRIVER SIDE B-PILLAR



Figure A-11 : PRE-TEST DRIVER SIDE REAR SIDE RAIL



Figure A-12 : PRE-TEST DRIVER SIDE REAR PILLAR





Figure A-13 : PRE-TEST PASSENGER SIDE A-PILLAR



Figure A-14 : PRE-TEST PASSENGER SIDE FRONT HEADER



Figure A-15 : PRE-TEST PASSENGER SIDE SIDE RAIL



Figure A-16 : PRE-TEST PASSENGER SIDE B-PILLAR



Figure A-17 : PRE-TEST PASSENGER SIDE REAR SIDE RAIL



Figure A-18 : PRE-TEST PASSENGER SIDE REAR PILLAR



Figure A-19 : POST-TEST DRIVER SIDE A-PILLAR



Figure A-20 : POST-TEST DRIVER SIDE FRONT HEADER





Figure A-21 : POST-TEST DRIVER SIDE SIDE RAIL



Figure A-22 : POST-TEST DRIVER SIDE B-PILLAR



Figure A-23 : POST-TEST DRIVER SIDE REAR SIDE RAIL



Figure A-24 : POST-TEST DRIVER SIDE REAR PILLAR



Figure A-25 : POST-TEST PASSENGER SIDE A-PILLAR





Figure A-27 : POST-TEST PASSENGER SIDE SIDE RAIL



Figure A-28 : POST-TEST PASSENGER SIDE B-PILLAR





Figure A-29 : POST-TEST PASSENGER SIDE REAR SIDE RAIL



Figure A-30 : POST-TEST PASSENGER SIDE REAR PILLAR

## **APPENDIX B**

### **PART 572L PERFORMANCE CALIBRATION IN SUPPORT OF VEHICLE SAFETY COMPLIANCE TESTING FOR OCCUPANT PROTECTION IN INTERIOR IMPACT**

Appendix B contains the results from certification tests performed on the Free Motion Headforms utilized in this test program. The results indicate that the headforms meet all of the performance specifications given in 49 CFR Part 572 Subpart L.

The tests were conducted at the Dummy Certification Test Facility of Calspan Corporation. A summary of the test results are included in this Appendix.

**PART 572L  
HEAD DROP PRE-TEST**

<b>MANUFACTURER:</b>		<b>FIRST TECHNOLOGY SAFETY SYSTEMS</b>	
<b>SERIAL NUMBER:</b>		<b>0642</b>	
<b>CALIBRATION DATE:</b>		<b>March 29,2006</b>	
<b>TEST PARAMETER</b>	<b>SPECIFICATION</b>	<b>TEST RESULTS</b>	
<b>TEMPERATURE</b>	<b>19°C to 26°C</b>	<b>22</b>	
<b>RELATIVE HUMIDITY</b>	<b>10% to 70%</b>	<b>18</b>	
<b>PEAK RESULTANT ACCELERATION</b>	<b>225 Gs to 275 Gs</b>	<b>269.5</b>	
<b>PEAK LATERAL ACCELERATION</b>	<b>15 Gs Maximum</b>	<b>8.1</b>	
<b>IS ACCELERATION CURVE UNIMODAL?</b>	<b>YES</b>	<b>YES</b>	

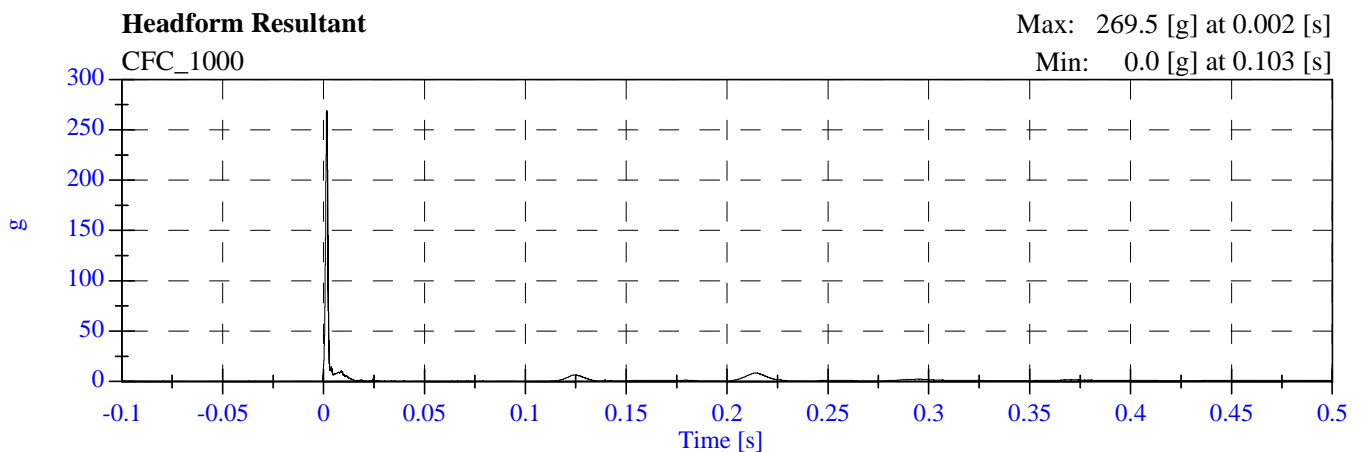
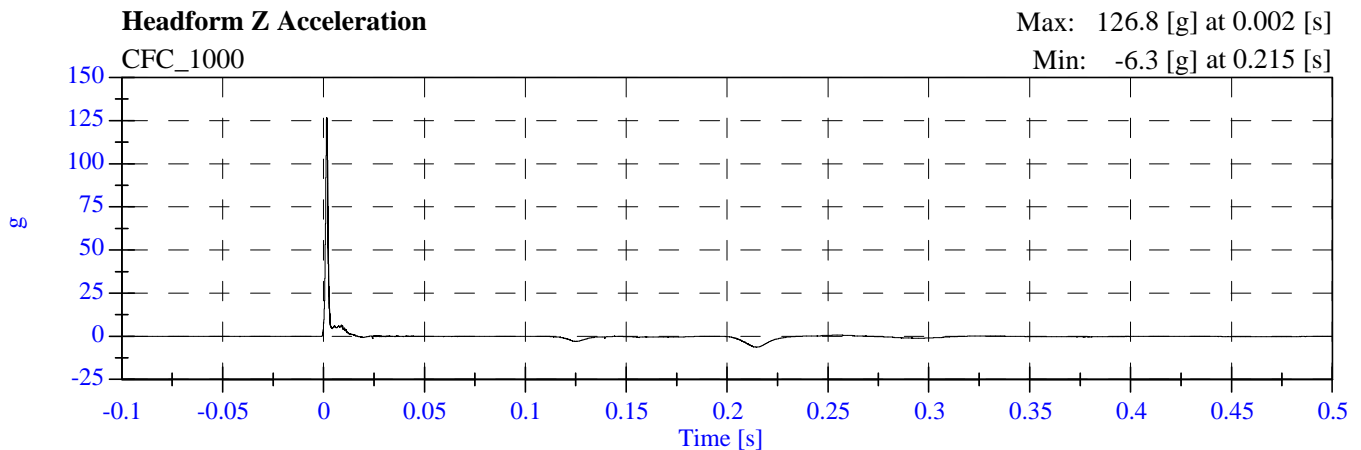
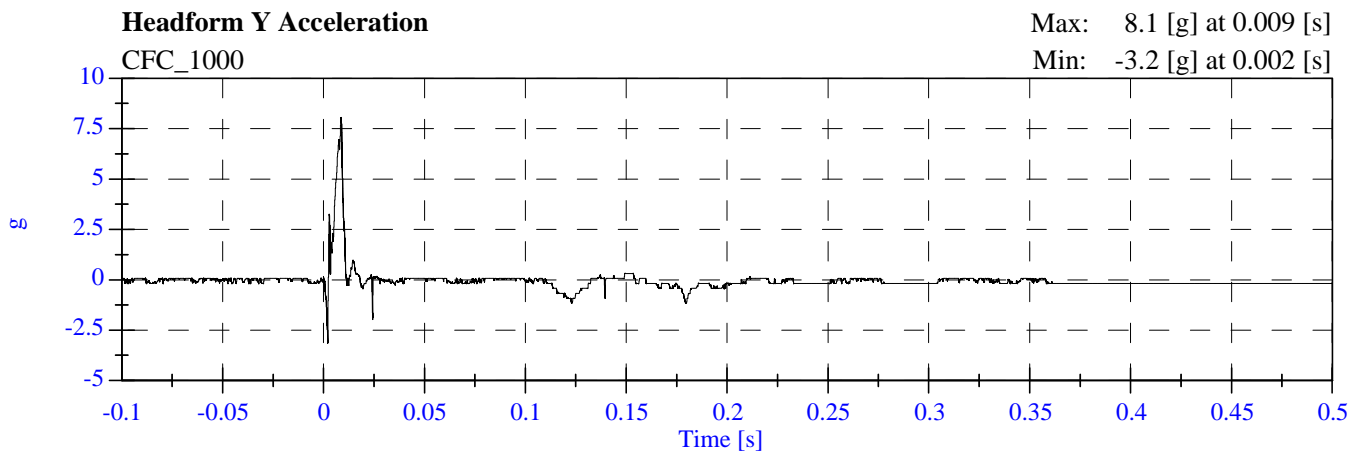
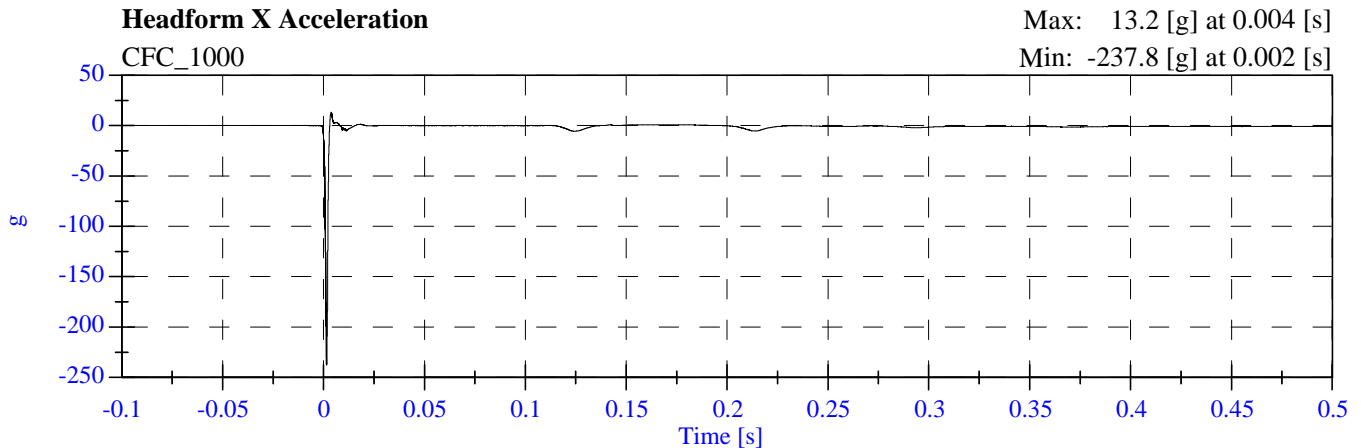
**HEAD ACCELEROMETER CALIBRATION INFORMATION**

<b>I.D. NUMBER</b>	<b>MANUFACTURER</b>	<b>MODEL NUMBER</b>	<b>SERIAL NUMBER</b>	<b>DATE OF LAST CALIBRATION</b>	<b>DATE OF NEXT CALIBRATION</b>
<b>1 - LONGITUDINAL</b>	<b>ENDEVCO</b>	<b>7264-2000T</b>	<b>J24876</b>	<b>3/9/2006</b>	<b>9/9/2006</b>
<b>2 - LATERAL</b>	<b>ENDEVCO</b>	<b>7264-2000T</b>	<b>J33030</b>	<b>3/9/2006</b>	<b>9/9/2006</b>
<b>3 - VERTICAL</b>	<b>ENDEVCO</b>	<b>7264-2000T</b>	<b>J31009</b>	<b>3/9/2006</b>	<b>9/9/2006</b>

**REMARKS:**

# FMVSS 201U - Headform Calibration Drops

## FMH 0642 - March 29, 2006



**PART 572L  
HEAD DROP PRE-TEST**

<b>MANUFACTURER:</b>		<b>DENTON ATD INC.</b>	
<b>SERIAL NUMBER:</b>		<b>0062</b>	
<b>CALIBRATION DATE:</b>		<b>March 29,2006</b>	
<b>TEST PARAMETER</b>	<b>SPECIFICATION</b>	<b>TEST RESULTS</b>	
<b>TEMPERATURE</b>	<b>19°C to 26°C</b>	<b>22</b>	
<b>RELATIVE HUMIDITY</b>	<b>10% to 70%</b>	<b>18</b>	
<b>PEAK RESULTANT ACCELERATION</b>	<b>225 Gs to 275 Gs</b>	<b>265.3</b>	
<b>PEAK LATERAL ACCELERATION</b>	<b>15 Gs Maximum</b>	<b>4.8</b>	
<b>IS ACCELERATION CURVE UNIMODAL?</b>	<b>YES</b>	<b>YES</b>	

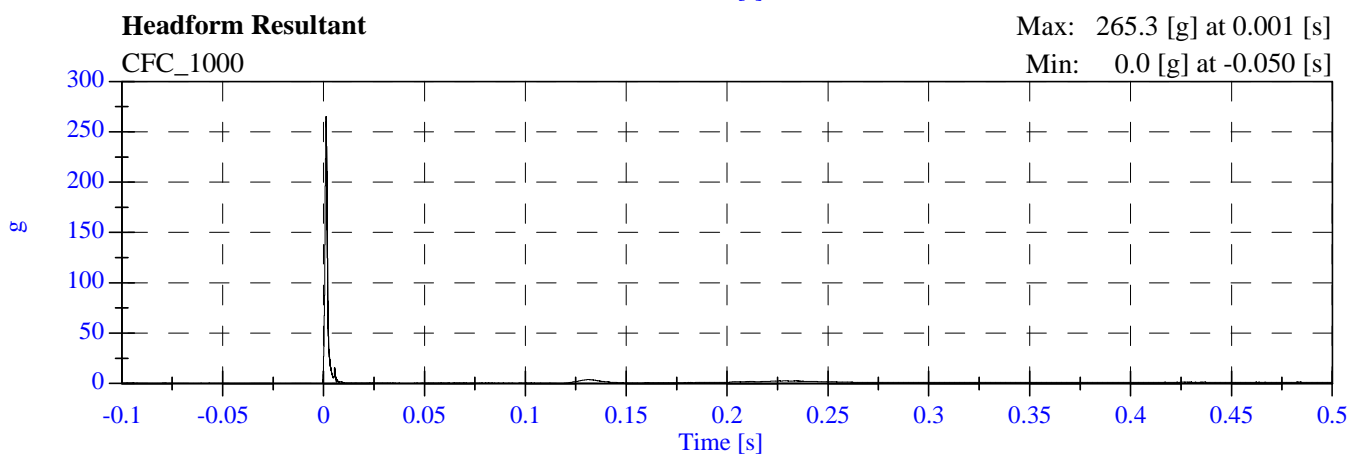
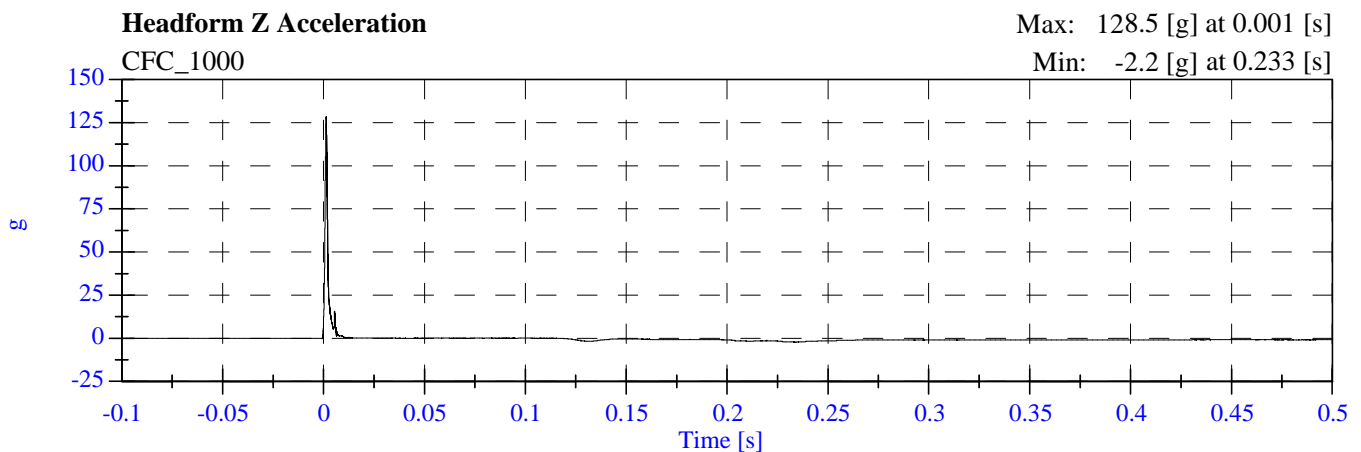
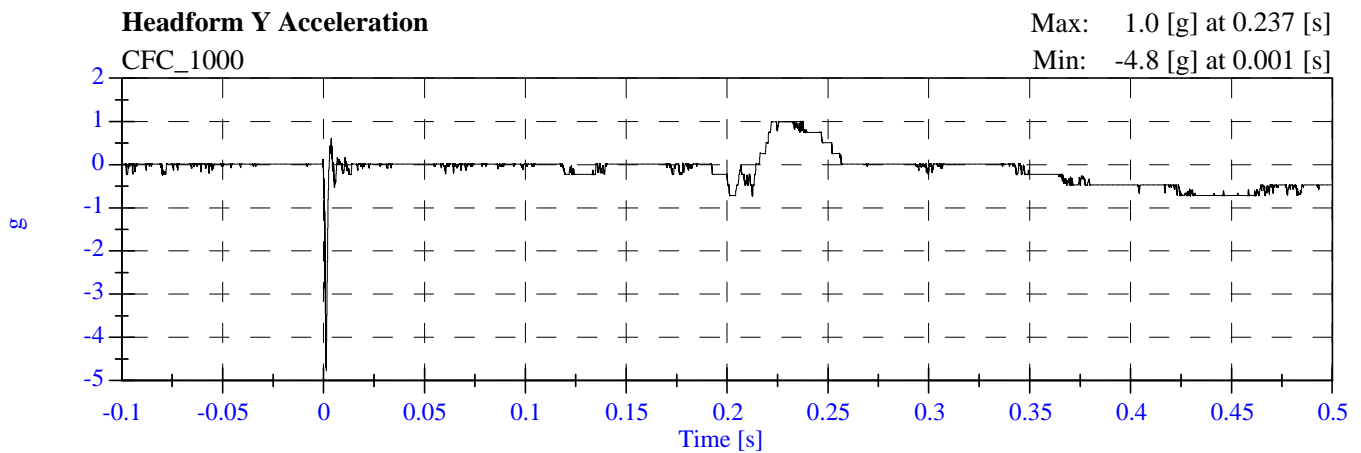
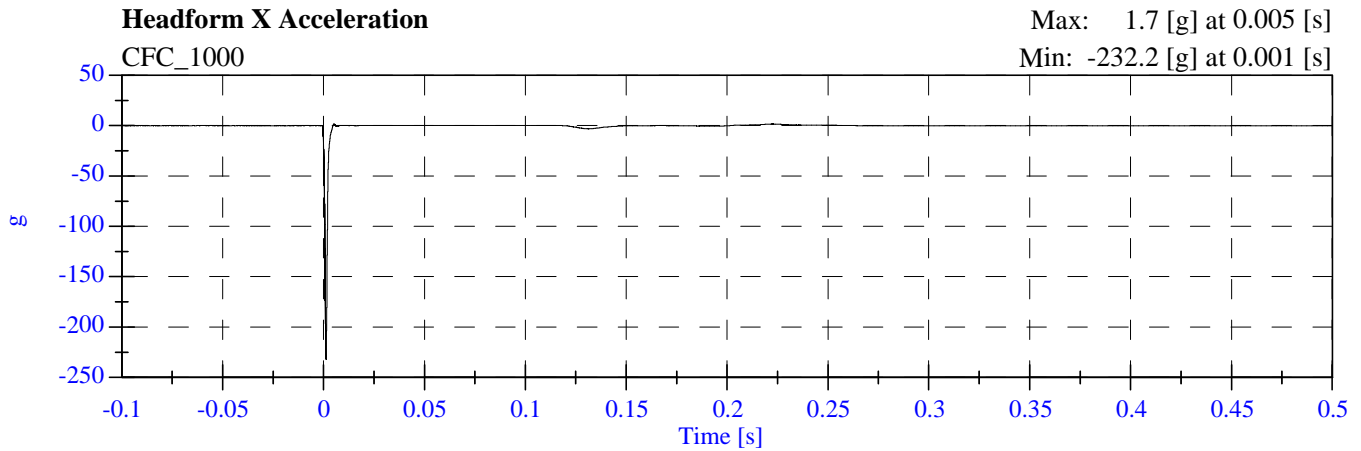
**HEAD ACCELEROMETER CALIBRATION INFORMATION**

<b>I.D. NUMBER</b>	<b>MANUFACTURER</b>	<b>MODEL NUMBER</b>	<b>SERIAL NUMBER</b>	<b>DATE OF LAST CALIBRATION</b>	<b>DATE OF NEXT CALIBRATION</b>
<b>1 -LONGITUDINAL</b>	<b>ENDEVCO</b>	<b>7264-2000T</b>	<b>J33127</b>	<b>3/9/2006</b>	<b>9/9/2006</b>
<b>2 - LATERAL</b>	<b>ENDEVCO</b>	<b>7264-2000T</b>	<b>J33019</b>	<b>3/9/2006</b>	<b>9/9/2006</b>
<b>3 - VERTICAL</b>	<b>ENDEVCO</b>	<b>7264-2000T</b>	<b>J32782</b>	<b>3/9/2006</b>	<b>9/9/2006</b>

**REMARKS:**

# FMVSS 201U - Headform Calibration Drops

## FMH 0062 - March 29, 2006



**PART 572L  
HEAD DROP PRE-TEST**

<b>MANUFACTURER:</b>		<b>FIRST TECHNOLOGY SAFETY SYSTEMS</b>	
<b>SERIAL NUMBER:</b>		<b>805</b>	
<b>CALIBRATION DATE:</b>		<b>March 29,2006</b>	
<b>TEST PARAMETER</b>	<b>SPECIFICATION</b>	<b>TEST RESULTS</b>	
<b>TEMPERATURE</b>	<b>19°C to 26°C</b>	<b>22</b>	
<b>RELATIVE HUMIDITY</b>	<b>10% to 70%</b>	<b>18</b>	
<b>PEAK RESULTANT ACCELERATION</b>	<b>225 Gs to 275 Gs</b>	<b>267.6</b>	
<b>PEAK LATERAL ACCELERATION</b>	<b>15 Gs Maximum</b>	<b>14.7</b>	
<b>IS ACCELERATION CURVE UNIMODAL?</b>	<b>YES</b>	<b>YES</b>	

**HEAD ACCELEROMETER CALIBRATION INFORMATION**

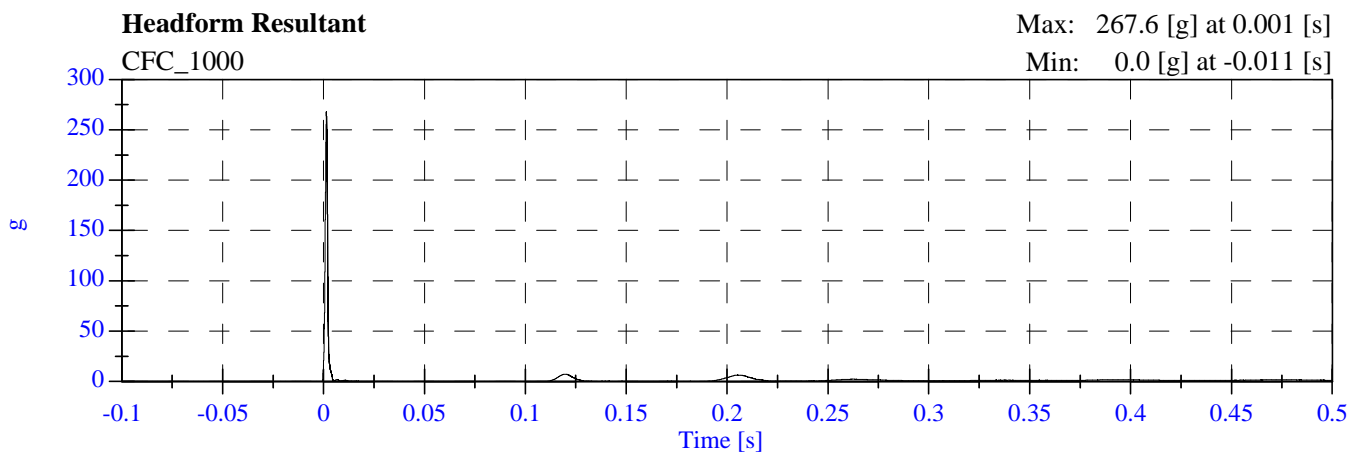
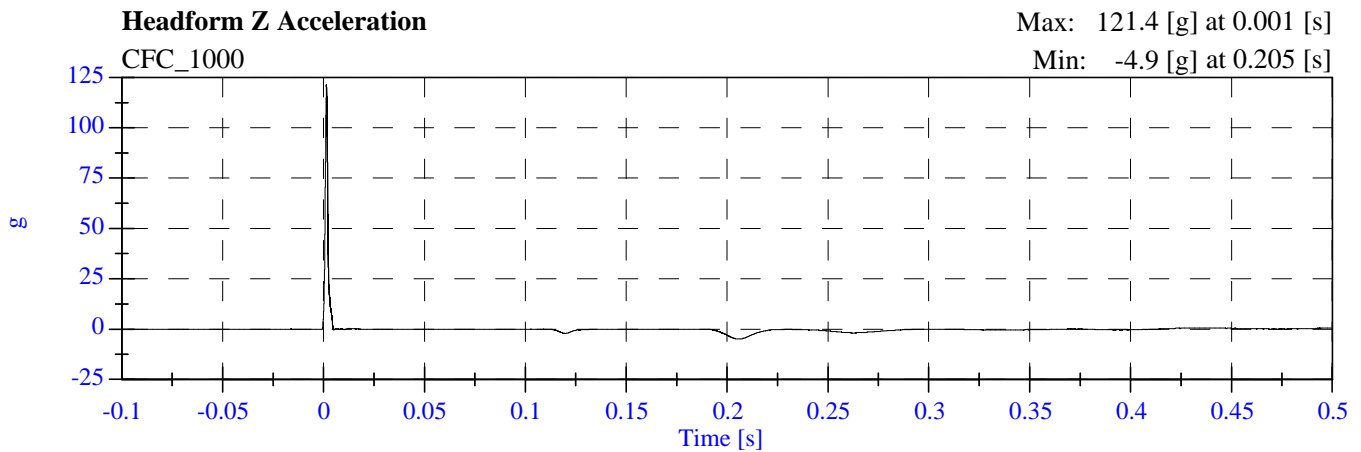
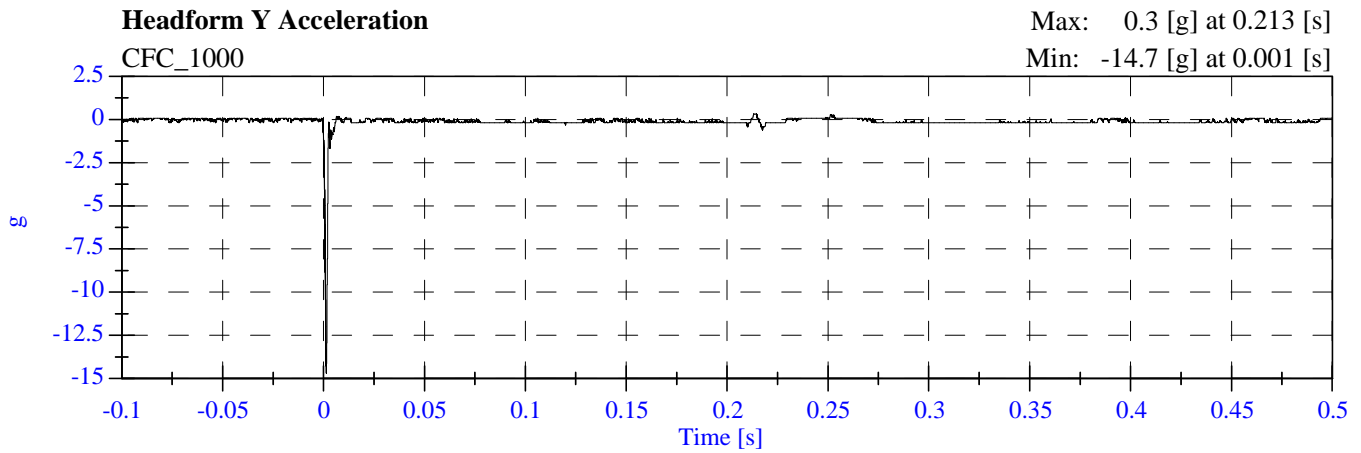
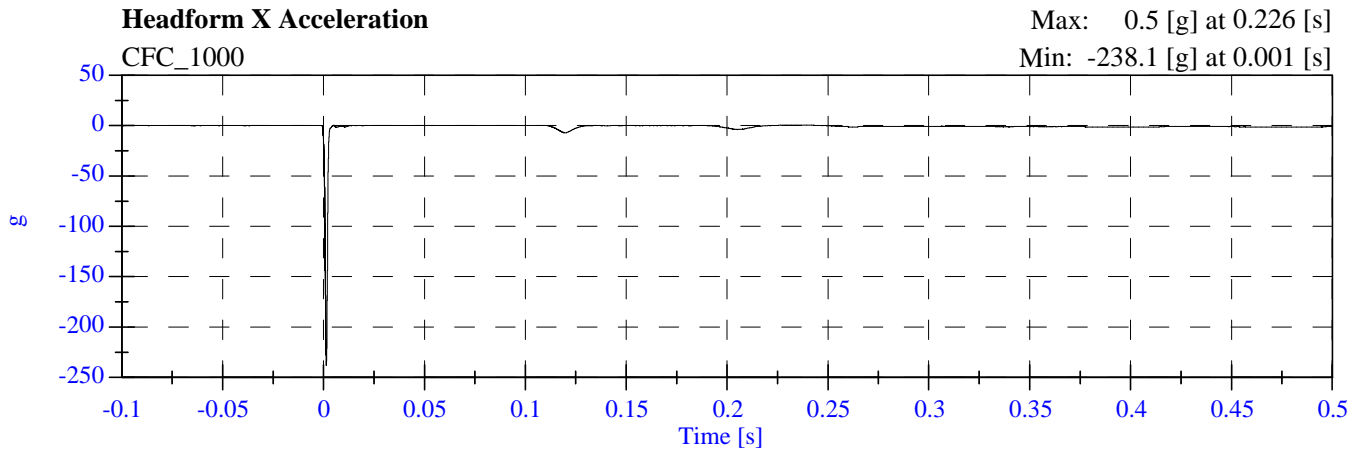
<b>I.D. NUMBER</b>	<b>MANUFACTURER</b>	<b>MODEL NUMBER</b>	<b>SERIAL NUMBER</b>	<b>DATE OF LAST CALIBRATION</b>	<b>DATE OF NEXT CALIBRATION</b>
<b>1 - LONGITUDINAL</b>	<b>ENDEVCO</b>	<b>7264-2000T</b>	<b>J38127</b>	<b>3/9/2006</b>	<b>9/9/2006</b>
<b>2 - LATERAL</b>	<b>ENDEVCO</b>	<b>7264-2000T</b>	<b>J37980</b>	<b>3/9/2006</b>	<b>9/9/2006</b>
<b>3 - VERTICAL</b>	<b>ENDEVCO</b>	<b>7264-2000T</b>	<b>J37854</b>	<b>3/9/2006</b>	<b>9/9/2006</b>

**REMARKS:**



# FMVSS 201U - Headform Calibration Drops

## FMH 0805 - March 29, 2006



**PART 572L  
HEAD DROP PRE-TEST**

<b>MANUFACTURER:</b>		<b>DENTON ATD INC.</b>	
<b>SERIAL NUMBER:</b>		<b>0355</b>	
<b>CALIBRATION DATE:</b>		<b>March 29,2006</b>	
<b>TEST PARAMETER</b>	<b>SPECIFICATION</b>	<b>TEST RESULTS</b>	
<b>TEMPERATURE</b>	<b>19°C to 26°C</b>	<b>22</b>	
<b>RELATIVE HUMIDITY</b>	<b>10% to 70%</b>	<b>18</b>	
<b>PEAK RESULTANT ACCELERATION</b>	<b>225 Gs to 275 Gs</b>	<b>256.9</b>	
<b>PEAK LATERAL ACCELERATION</b>	<b>15 Gs Maximum</b>	<b>5.1</b>	
<b>IS ACCELERATION CURVE UNIMODAL?</b>	<b>YES</b>	<b>YES</b>	

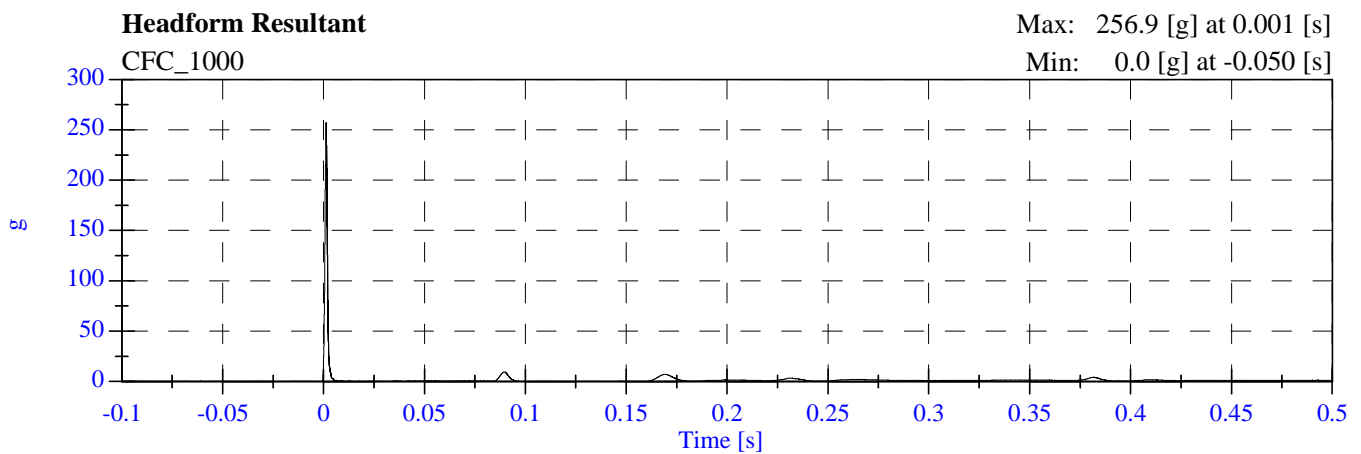
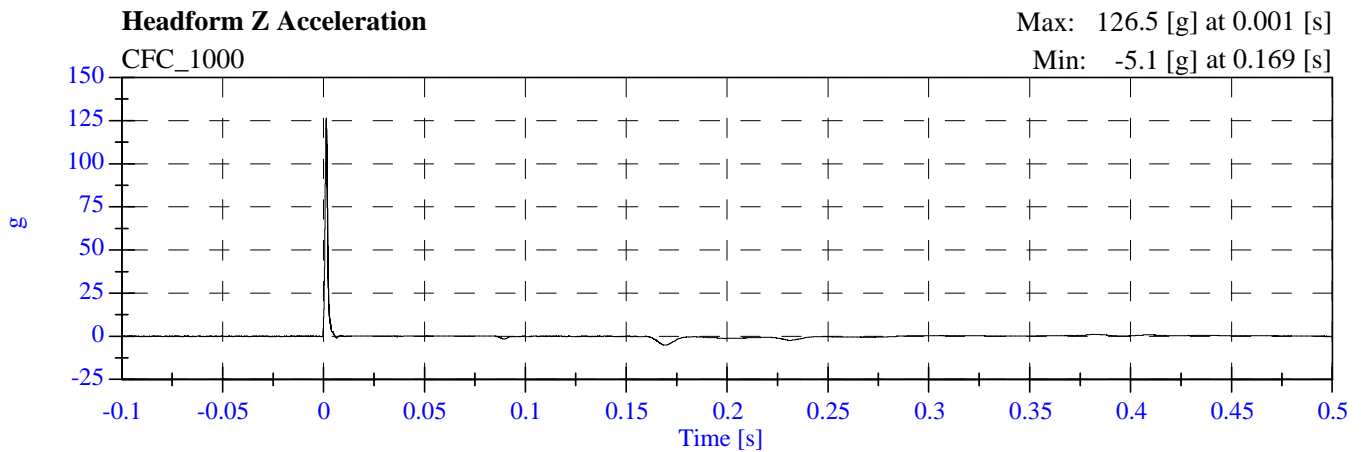
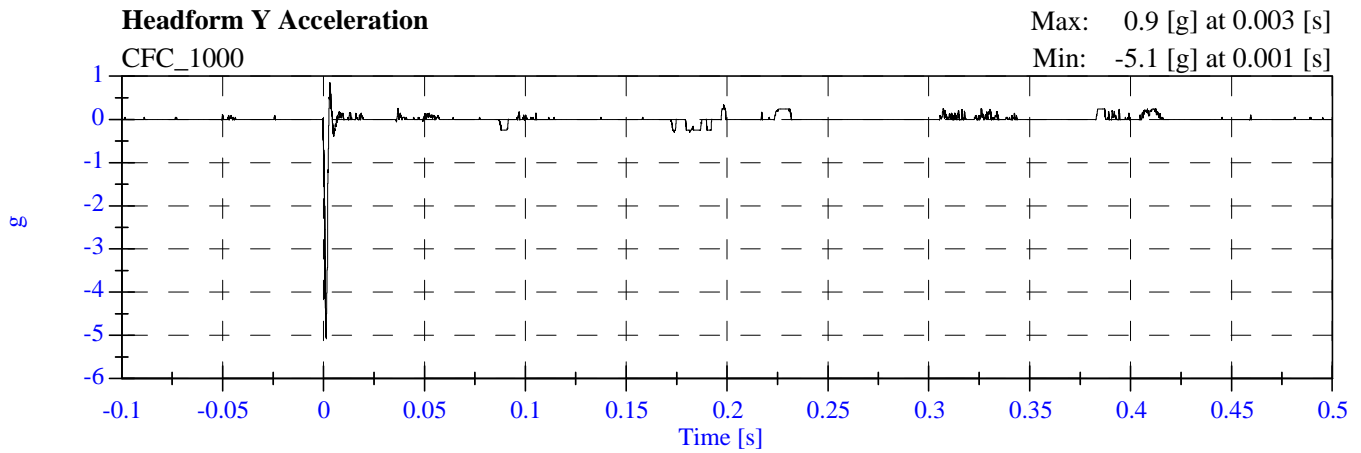
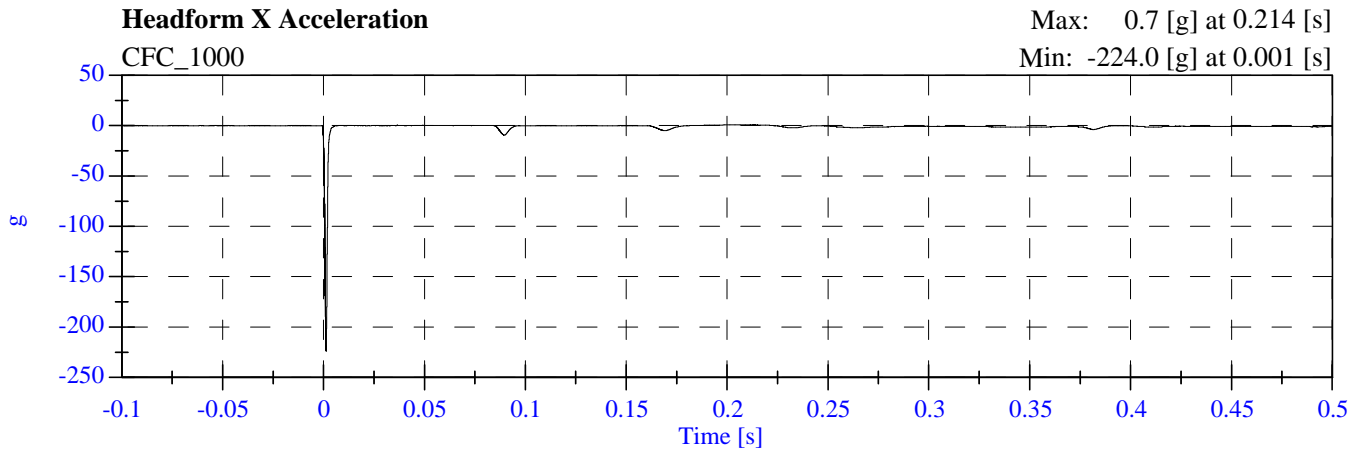
**HEAD ACCELEROMETER CALIBRATION INFORMATION**

<b>I.D. NUMBER</b>	<b>MANUFACTURER</b>	<b>MODEL NUMBER</b>	<b>SERIAL NUMBER</b>	<b>DATE OF LAST CALIBRATION</b>	<b>DATE OF NEXT CALIBRATION</b>
<b>1 - LONGITUDINAL</b>	<b>ENDEVCO</b>	<b>7264-2000T</b>	<b>J28671</b>	<b>3/9/2006</b>	<b>9/9/2006</b>
<b>2 - LATERAL</b>	<b>ENDEVCO</b>	<b>7264-2000T</b>	<b>J32779</b>	<b>3/9/2006</b>	<b>9/9/2006</b>
<b>3 - VERTICAL</b>	<b>ENDEVCO</b>	<b>7264-2000T</b>	<b>J25854</b>	<b>3/9/2006</b>	<b>9/9/2006</b>

**REMARKS:**

# FMVSS 201U - Headform Calibration Drops

## FMH 0355 - March 29, 2006



**PART 572L  
HEAD DROP PRE-TEST**

<b>MANUFACTURER:</b>		<b>FIRST TECHNOLOGY SAFETY SYSTEMS</b>	
<b>SERIAL NUMBER:</b>		1255	
<b>CALIBRATION DATE:</b>		March 29,2006	
<b>TEST PARAMETER</b>	<b>SPECIFICATION</b>	<b>TEST RESULTS</b>	
<b>TEMPERATURE</b>	19°C to 26°C	22	
<b>RELATIVE HUMIDITY</b>	10% to 70%	18	
<b>PEAK RESULTANT ACCELERATION</b>	225 Gs to 275 Gs	265.7	
<b>PEAK LATERAL ACCELERATION</b>	15 Gs Maximum	10.7	
<b>IS ACCELERATION CURVE UNIMODAL?</b>	YES	YES	

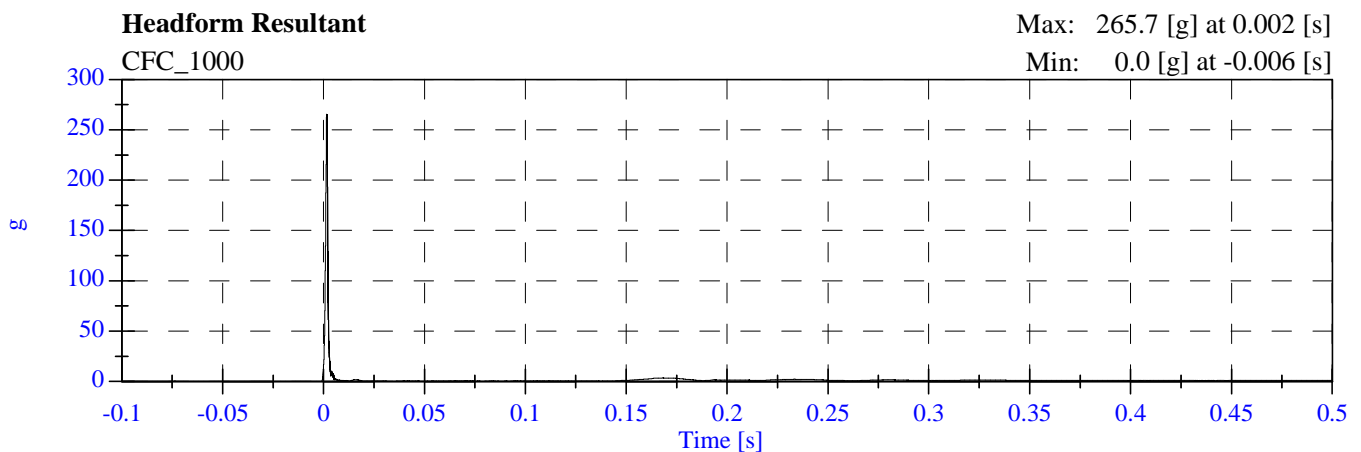
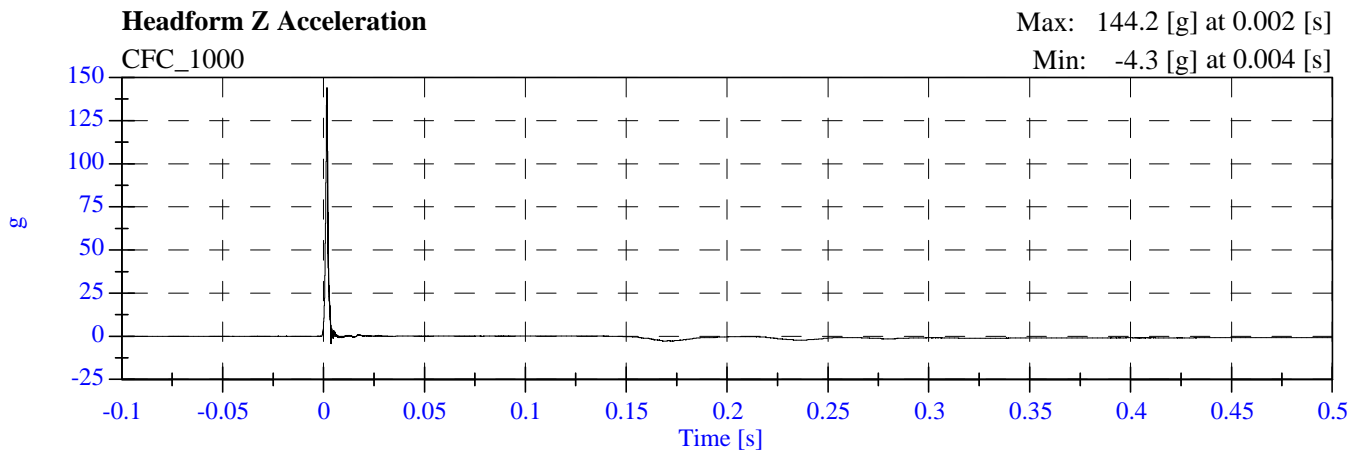
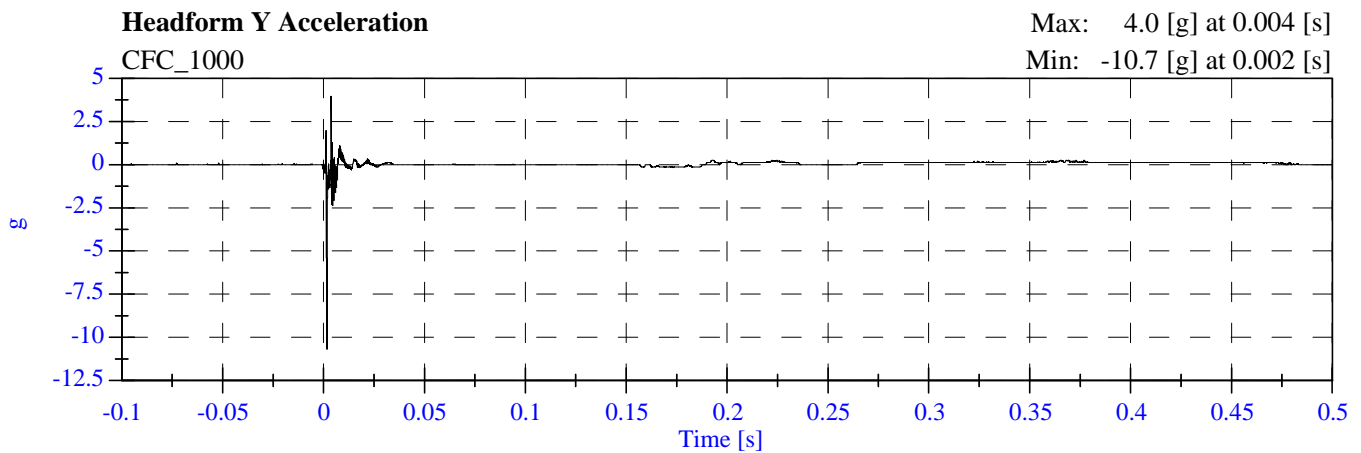
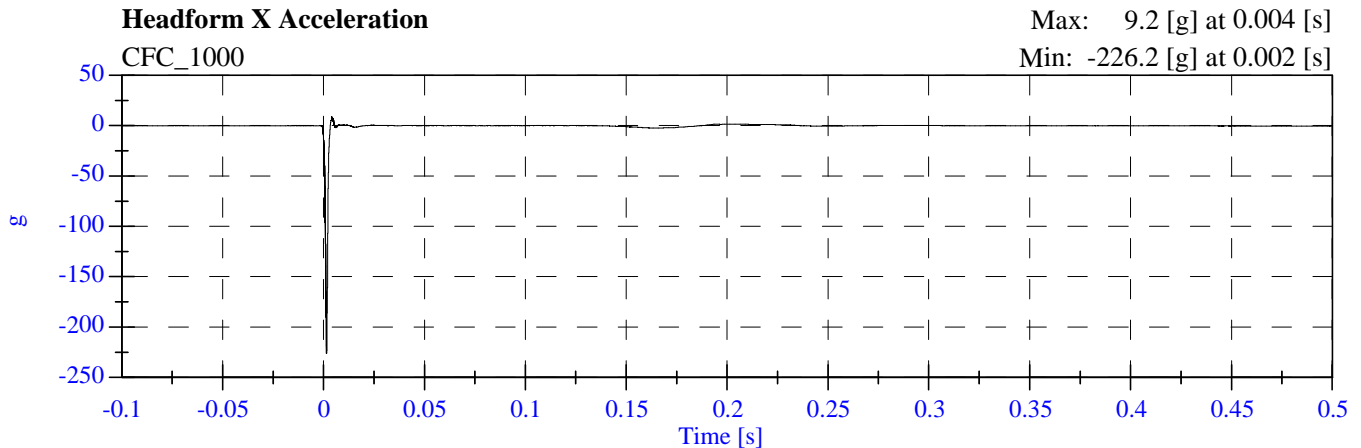
**HEAD ACCELEROMETER CALIBRATION INFORMATION**

<b>I.D. NUMBER</b>	<b>MANUFACTURER</b>	<b>MODEL NUMBER</b>	<b>SERIAL NUMBER</b>	<b>DATE OF LAST CALIBRATION</b>	<b>DATE OF NEXT CALIBRATION</b>
<b>1 - LONGITUDINAL</b>	<b>ENDEVCO</b>	<b>7264-2000T</b>	<b>J41006</b>	<b>3/9/2006</b>	<b>9/9/2006</b>
<b>2 - LATERAL</b>	<b>ENDEVCO</b>	<b>7264-2000T</b>	<b>J40994</b>	<b>3/9/2006</b>	<b>9/9/2006</b>
<b>3 - VERTICAL</b>	<b>ENDEVCO</b>	<b>7264-2000T</b>	<b>J41007</b>	<b>3/9/2006</b>	<b>9/9/2006</b>

**REMARKS:**

# FMVSS 201U - Headform Calibration Drops

## FMH 1255 - March 29, 2006



**PART 572L  
HEAD DROP POST-TEST**

<b>MANUFACTURER:</b>		<b>FIRST TECHNOLOGY SAFETY SYSTEMS</b>	
<b>SERIAL NUMBER:</b>		<b>0642</b>	
<b>CALIBRATION DATE:</b>		<b>April 6, 2006</b>	
<b>TEST PARAMETER</b>	<b>SPECIFICATION</b>	<b>TEST RESULTS</b>	
<b>TEMPERATURE</b>	<b>19°C to 26°C</b>	<b>22</b>	
<b>RELATIVE HUMIDITY</b>	<b>10% to 70%</b>	<b>25</b>	
<b>PEAK RESULTANT ACCELERATION</b>	<b>225 Gs to 275 Gs</b>	<b>269.9</b>	
<b>PEAK LATERAL ACCELERATION</b>	<b>15 Gs Maximum</b>	<b>7.9</b>	
<b>IS ACCELERATION CURVE UNIMODAL?</b>	<b>YES</b>	<b>YES</b>	

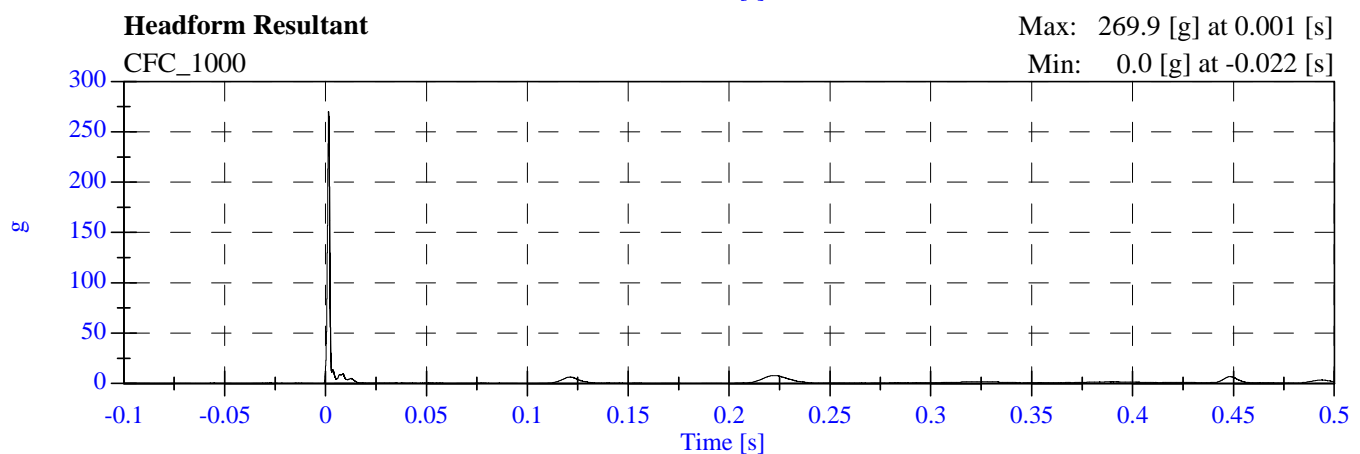
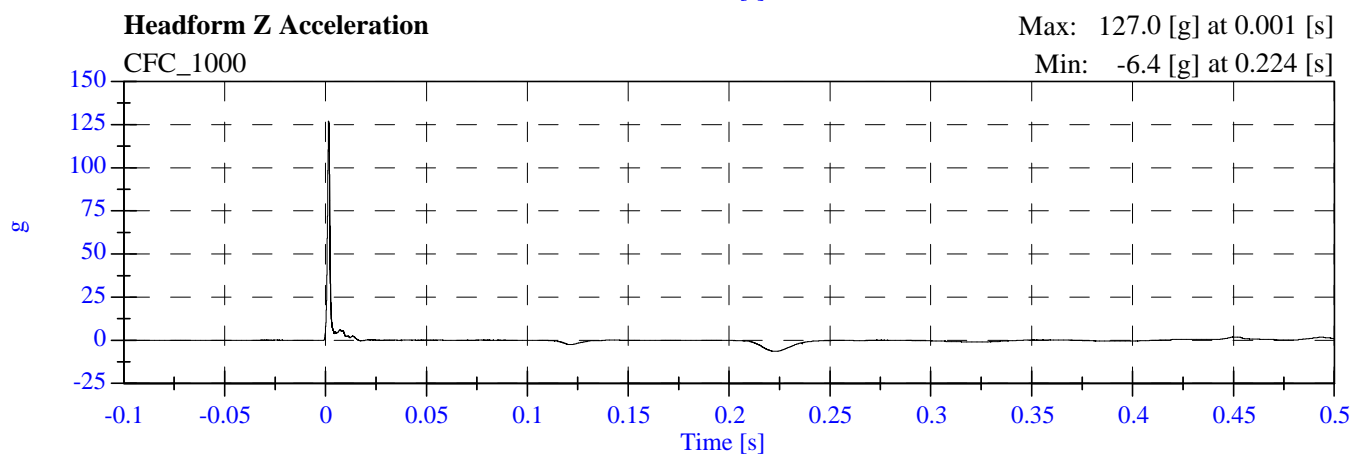
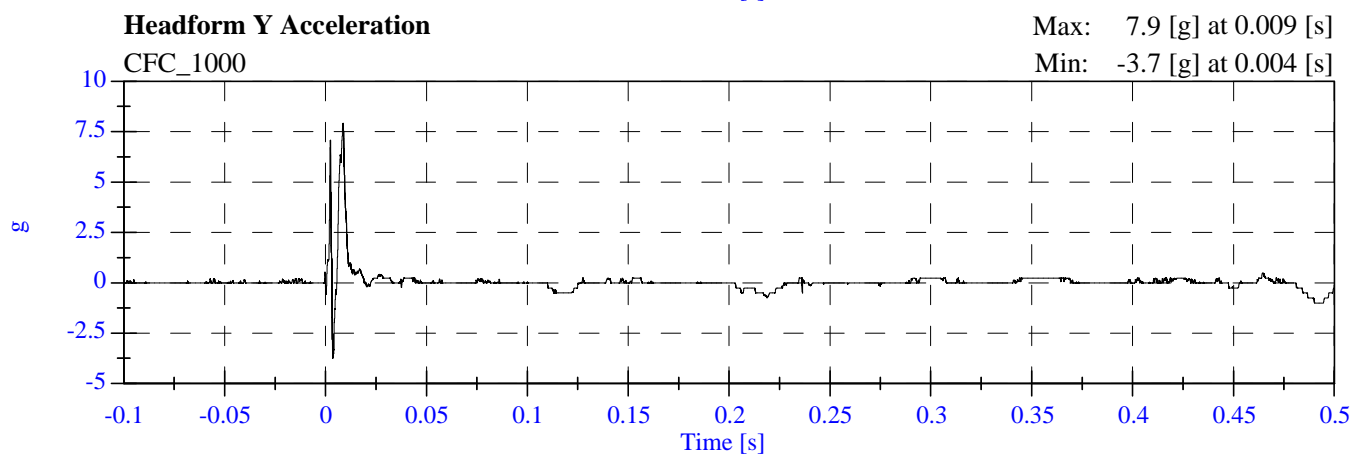
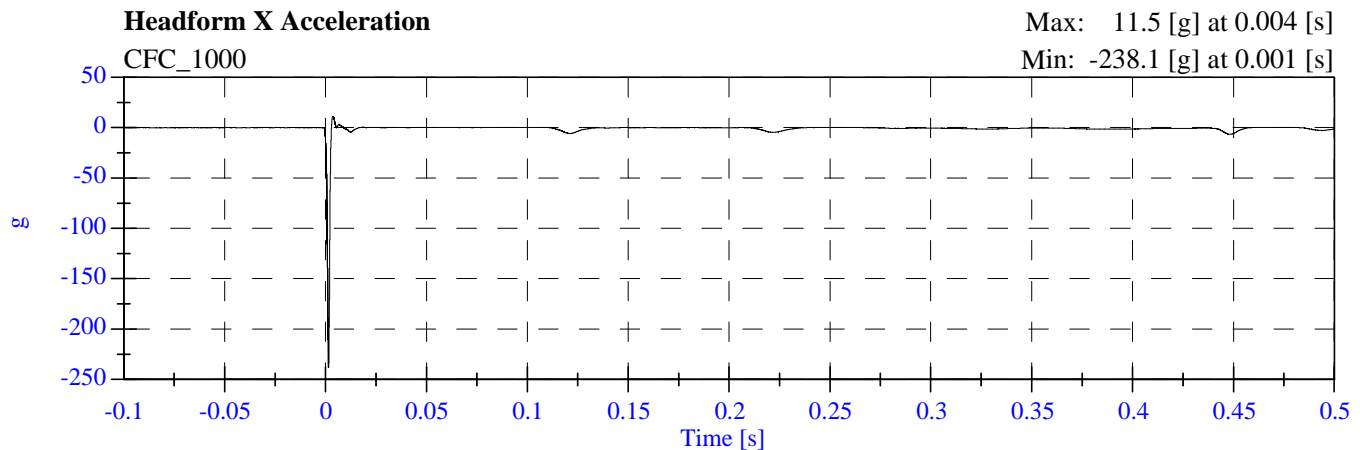
**HEAD ACCELEROMETER CALIBRATION INFORMATION**

<b>I.D. NUMBER</b>	<b>MANUFACTURER</b>	<b>MODEL NUMBER</b>	<b>SERIAL NUMBER</b>	<b>DATE OF LAST CALIBRATION</b>	<b>DATE OF NEXT CALIBRATION</b>
<b>1 - LONGITUDINAL</b>	<b>ENDEVCO</b>	<b>7264-2000T</b>	<b>J24876</b>	<b>3/9/2006</b>	<b>9/9/2006</b>
<b>2 - LATERAL</b>	<b>ENDEVCO</b>	<b>7264-2000T</b>	<b>J33030</b>	<b>3/9/2006</b>	<b>9/9/2006</b>
<b>3 - VERTICAL</b>	<b>ENDEVCO</b>	<b>7264-2000T</b>	<b>J31009</b>	<b>3/9/2006</b>	<b>9/9/2006</b>

**REMARKS:**

# FMVSS 201U - Headform Calibration Drops

## FMH 0642 - April 06, 2006



**PART 572L  
HEAD DROP POST-TEST**

<b>MANUFACTURER:</b>		<b>DENTON ATD INC.</b>	
<b>SERIAL NUMBER:</b>		<b>0062</b>	
<b>CALIBRATION DATE:</b>		<b>April 6, 2006</b>	
<b>TEST PARAMETER</b>	<b>SPECIFICATION</b>	<b>TEST RESULTS</b>	
<b>TEMPERATURE</b>	<b>19°C to 26°C</b>	<b>22</b>	
<b>RELATIVE HUMIDITY</b>	<b>10% to 70%</b>	<b>25</b>	
<b>PEAK RESULTANT ACCELERATION</b>	<b>225 Gs to 275 Gs</b>	<b>267.0</b>	
<b>PEAK LATERAL ACCELERATION</b>	<b>15 Gs Maximum</b>	<b>7.4</b>	
<b>IS ACCELERATION CURVE UNIMODAL?</b>	<b>YES</b>	<b>YES</b>	

**HEAD ACCELEROMETER CALIBRATION INFORMATION**

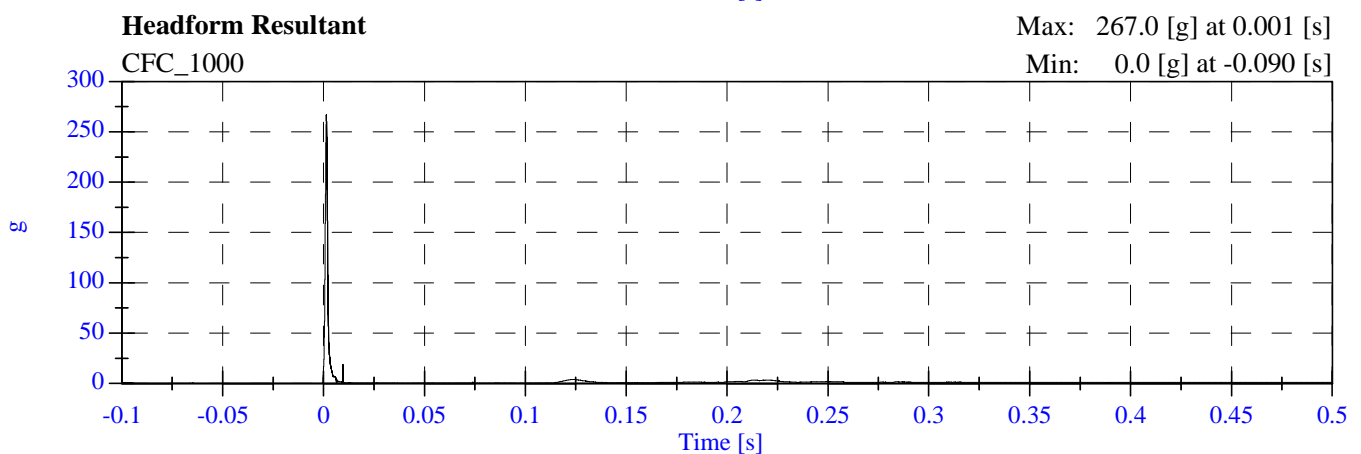
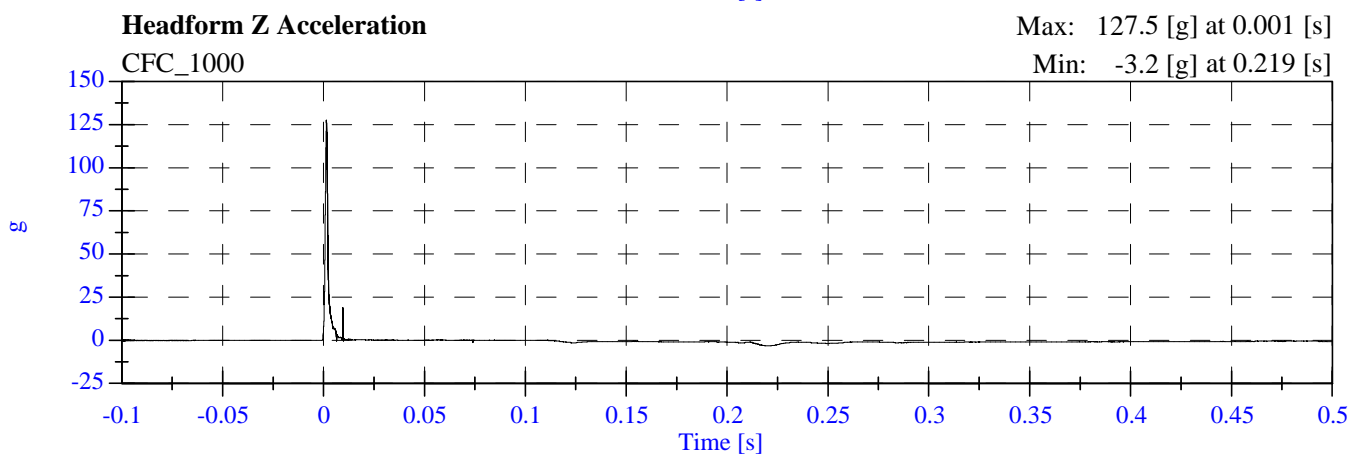
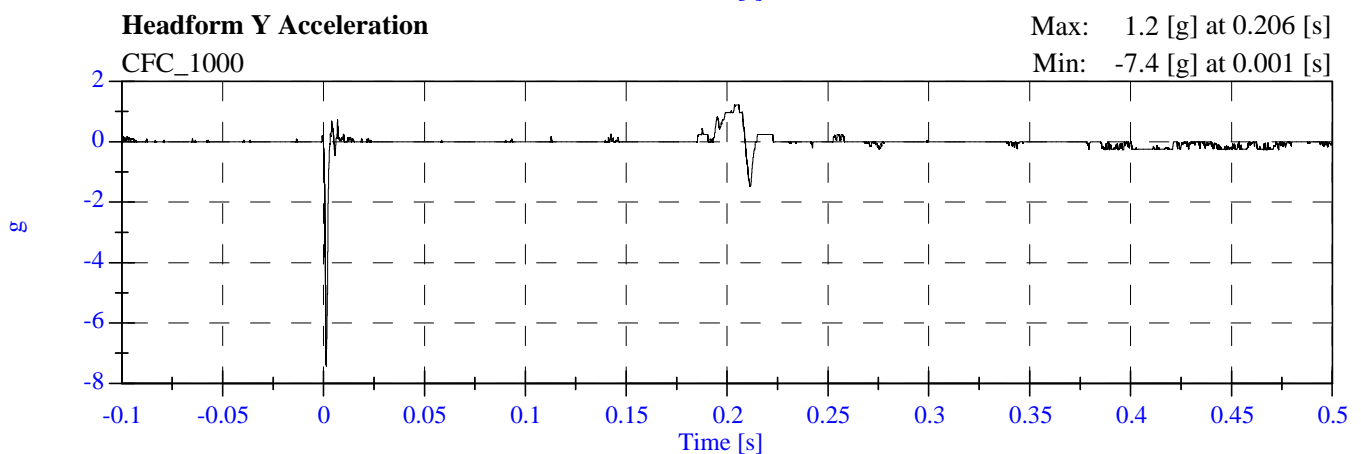
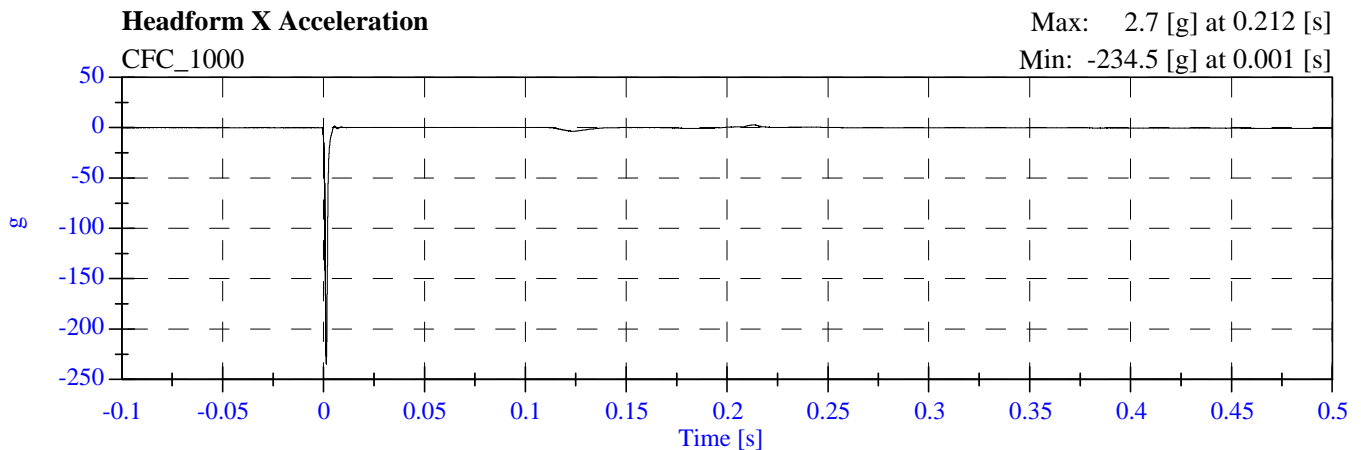
<b>I.D. NUMBER</b>	<b>MANUFACTURER</b>	<b>MODEL NUMBER</b>	<b>SERIAL NUMBER</b>	<b>DATE OF LAST CALIBRATION</b>	<b>DATE OF NEXT CALIBRATION</b>
<b>1 - LONGITUDINAL</b>	<b>ENDEVCO</b>	<b>7264-2000T</b>	<b>J33127</b>	<b>3/9/2006</b>	<b>9/9/2006</b>
<b>2 - LATERAL</b>	<b>ENDEVCO</b>	<b>7264-2000T</b>	<b>J33019</b>	<b>3/9/2006</b>	<b>9/9/2006</b>
<b>3 - VERTICAL</b>	<b>ENDEVCO</b>	<b>7264-2000T</b>	<b>J32782</b>	<b>3/9/2006</b>	<b>9/9/2006</b>

**REMARKS:**



# FMVSS 201U - Headform Calibration Drops

## FMH 0062 - April 06, 2006



**PART 572L  
HEAD DROP POST-TEST**

<b>MANUFACTURER:</b>		<b>FIRST TECHNOLOGY SAFETY SYSTEMS</b>	
<b>SERIAL NUMBER:</b>		<b>805</b>	
<b>CALIBRATION DATE:</b>		<b>April 6, 2006</b>	
<b>TEST PARAMETER</b>	<b>SPECIFICATION</b>	<b>TEST RESULTS</b>	
<b>TEMPERATURE</b>	<b>19°C to 26°C</b>	<b>22</b>	
<b>RELATIVE HUMIDITY</b>	<b>10% to 70%</b>	<b>25</b>	
<b>PEAK RESULTANT ACCELERATION</b>	<b>225 Gs to 275 Gs</b>	<b>266.3</b>	
<b>PEAK LATERAL ACCELERATION</b>	<b>15 Gs Maximum</b>	<b>6.4</b>	
<b>IS ACCELERATION CURVE UNIMODAL?</b>	<b>YES</b>	<b>YES</b>	

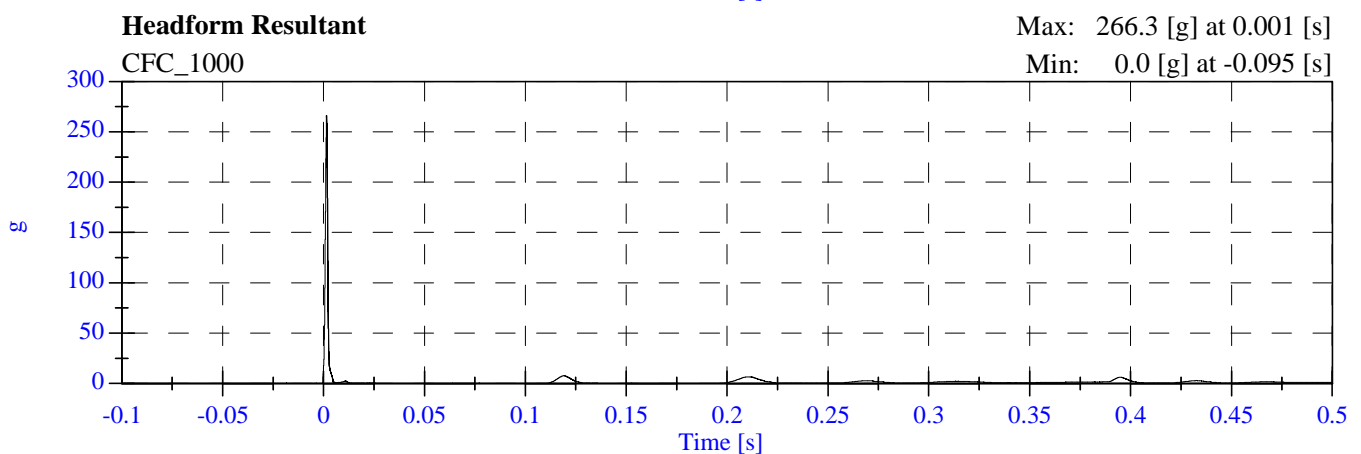
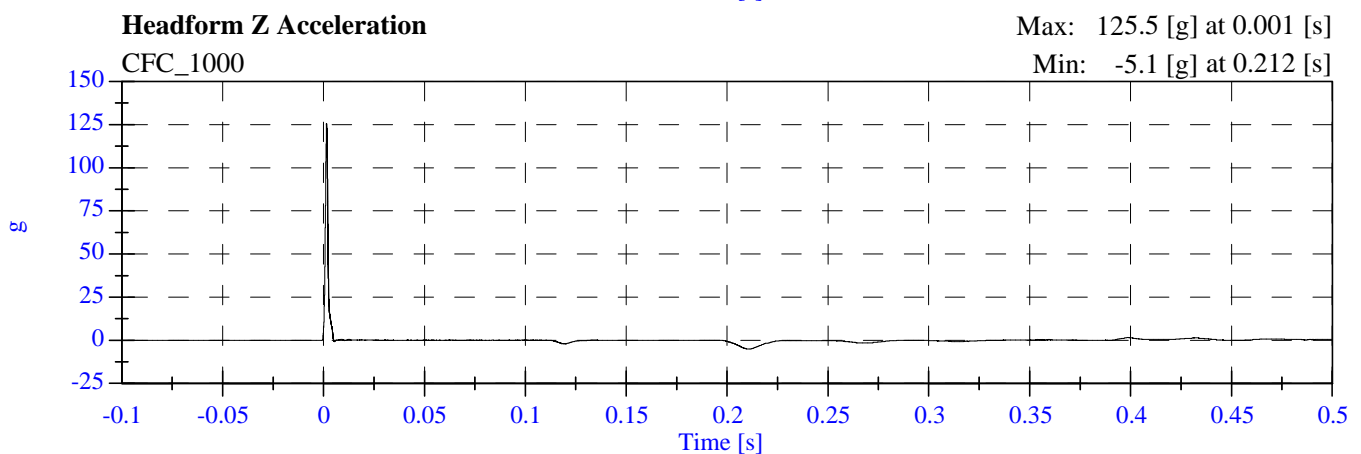
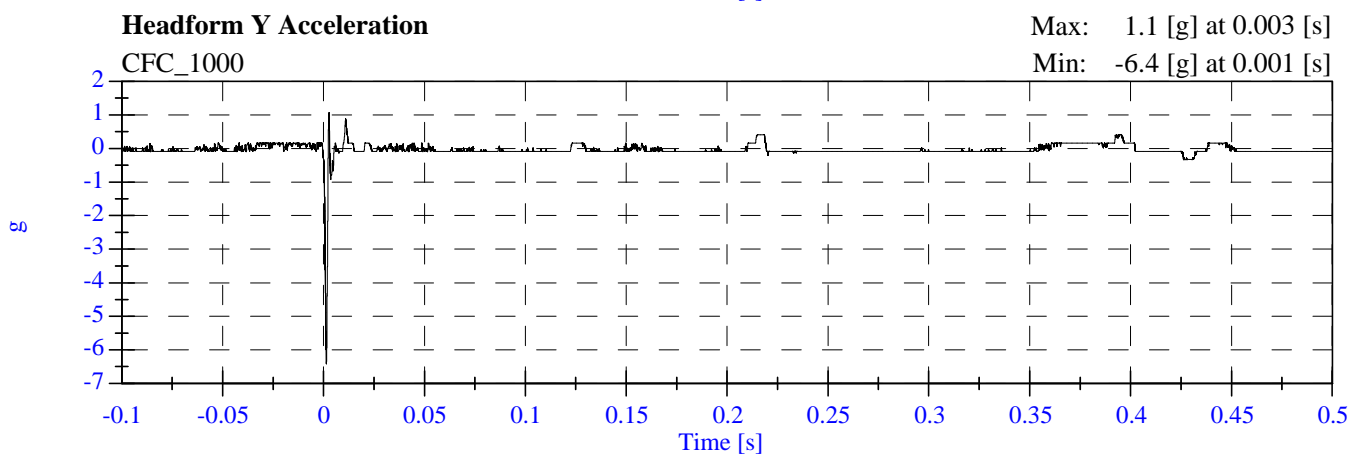
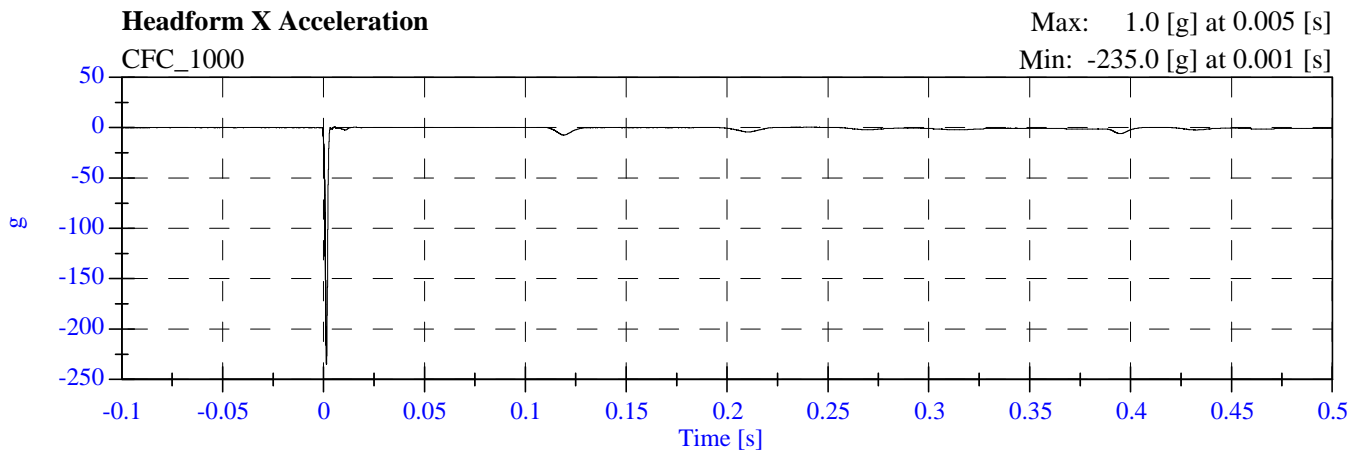
**HEAD ACCELEROMETER CALIBRATION INFORMATION**

<b>I.D. NUMBER</b>	<b>MANUFACTURER</b>	<b>MODEL NUMBER</b>	<b>SERIAL NUMBER</b>	<b>DATE OF LAST CALIBRATION</b>	<b>DATE OF NEXT CALIBRATION</b>
<b>1 - LONGITUDINAL</b>	<b>ENDEVCO</b>	<b>7264-2000T</b>	<b>J38127</b>	<b>3/9/2006</b>	<b>9/9/2006</b>
<b>2 - LATERAL</b>	<b>ENDEVCO</b>	<b>7264-2000T</b>	<b>J37980</b>	<b>3/9/2006</b>	<b>9/9/2006</b>
<b>3 - VERTICAL</b>	<b>ENDEVCO</b>	<b>7264-2000T</b>	<b>J37854</b>	<b>3/9/2006</b>	<b>9/9/2006</b>

**REMARKS:**

# FMVSS 201U - Headform Calibration Drops

## FMH 0805 - April 06, 2006



**PART 572L  
HEAD DROP POST-TEST**

<b>MANUFACTURER:</b>		<b>DENTON ATD INC.</b>	
<b>SERIAL NUMBER:</b>		<b>0355</b>	
<b>CALIBRATION DATE:</b>		<b>April 6, 2006</b>	
<b>TEST PARAMETER</b>	<b>SPECIFICATION</b>	<b>TEST RESULTS</b>	
<b>TEMPERATURE</b>	<b>19°C to 26°C</b>	<b>22</b>	
<b>RELATIVE HUMIDITY</b>	<b>10% to 70%</b>	<b>25</b>	
<b>PEAK RESULTANT ACCELERATION</b>	<b>225 Gs to 275 Gs</b>	<b>250.1</b>	
<b>PEAK LATERAL ACCELERATION</b>	<b>15 Gs Maximum</b>	<b>1.2</b>	
<b>IS ACCELERATION CURVE UNIMODAL?</b>	<b>YES</b>	<b>YES</b>	

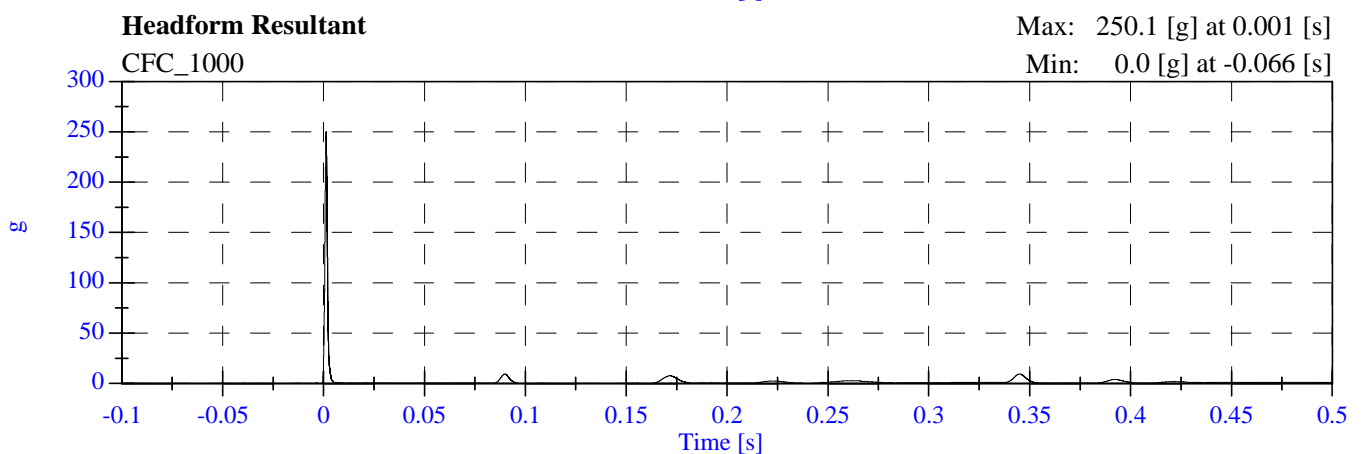
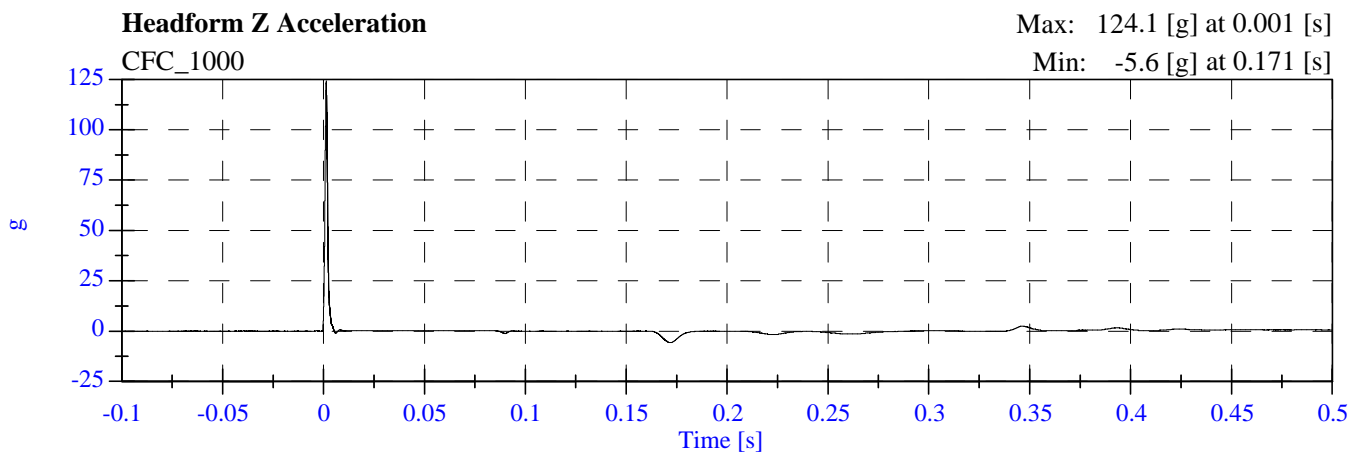
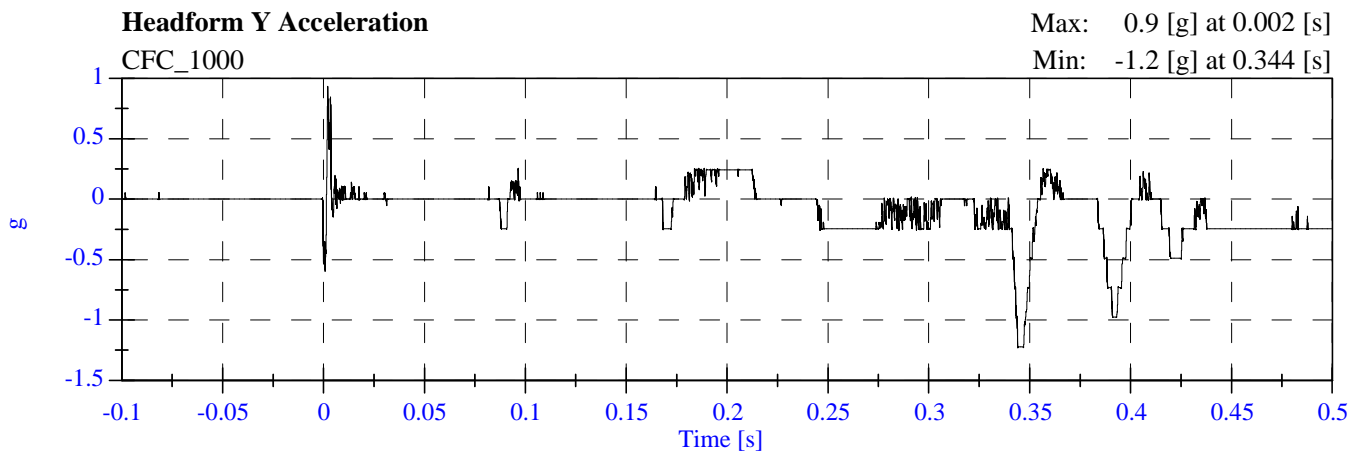
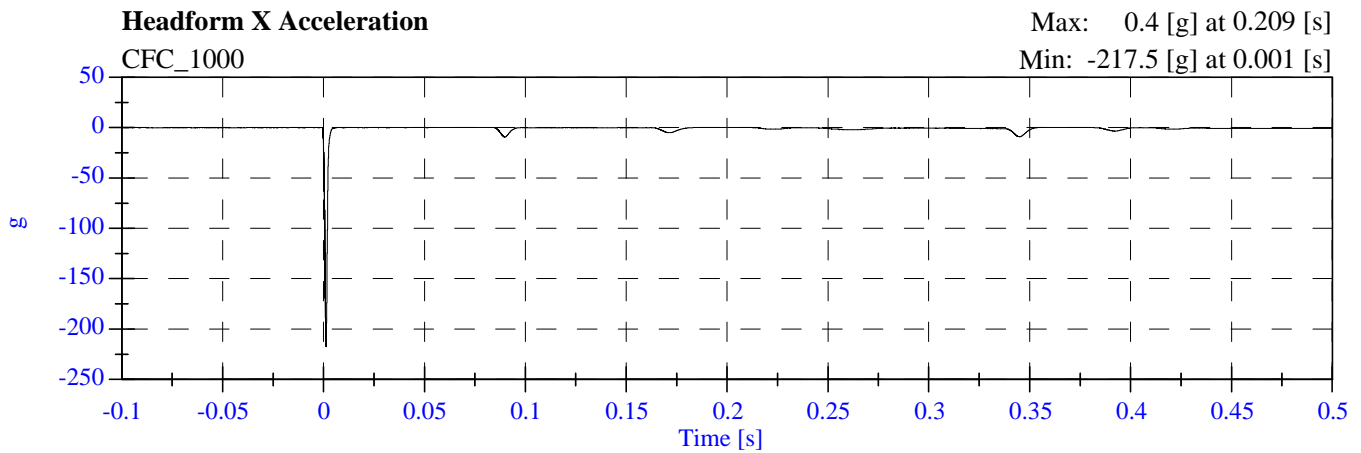
**HEAD ACCELEROMETER CALIBRATION INFORMATION**

<b>I.D. NUMBER</b>	<b>MANUFACTURER</b>	<b>MODEL NUMBER</b>	<b>SERIAL NUMBER</b>	<b>DATE OF LAST CALIBRATION</b>	<b>DATE OF NEXT CALIBRATION</b>
<b>1 - LONGITUDINAL</b>	<b>ENDEVCO</b>	<b>7264-2000T</b>	<b>J28671</b>	<b>3/9/2006</b>	<b>9/9/2006</b>
<b>2 - LATERAL</b>	<b>ENDEVCO</b>	<b>7264-2000T</b>	<b>J32779</b>	<b>3/9/2006</b>	<b>9/9/2006</b>
<b>3 - VERTICAL</b>	<b>ENDEVCO</b>	<b>7264-2000T</b>	<b>J25854</b>	<b>3/9/2006</b>	<b>9/9/2006</b>

**REMARKS:**

# FMVSS 201U - Headform Calibration Drops

## FMH 0355 - April 06, 2006



**PART 572L  
HEAD DROP POST-TEST**

<b>MANUFACTURER:</b>		<b>FIRST TECHNOLOGY SAFETY SYSTEMS</b>	
<b>SERIAL NUMBER:</b>		1255	
<b>CALIBRATION DATE:</b>		April 6, 2006	
<b>TEST PARAMETER</b>	<b>SPECIFICATION</b>	<b>TEST RESULTS</b>	
<b>TEMPERATURE</b>	19°C to 26°C	22	
<b>RELATIVE HUMIDITY</b>	10% to 70%	25	
<b>PEAK RESULTANT ACCELERATION</b>	225 Gs to 275 Gs	265.0	
<b>PEAK LATERAL ACCELERATION</b>	15 Gs Maximum	6.7	
<b>IS ACCELERATION CURVE UNIMODAL?</b>	YES	YES	

**HEAD ACCELEROMETER CALIBRATION INFORMATION**

<b>I.D. NUMBER</b>	<b>MANUFACTURER</b>	<b>MODEL NUMBER</b>	<b>SERIAL NUMBER</b>	<b>DATE OF LAST CALIBRATION</b>	<b>DATE OF NEXT CALIBRATION</b>
<b>1 - LONGITUDINAL</b>	<b>ENDEVCO</b>	<b>7264-2000T</b>	<b>J41006</b>	<b>3/9/2006</b>	<b>9/9/2006</b>
<b>2 - LATERAL</b>	<b>ENDEVCO</b>	<b>7264-2000T</b>	<b>J40994</b>	<b>3/9/2006</b>	<b>9/9/2006</b>
<b>3 - VERTICAL</b>	<b>ENDEVCO</b>	<b>7264-2000T</b>	<b>J41007</b>	<b>3/9/2006</b>	<b>9/9/2006</b>

**REMARKS:**

# FMVSS 201U - Headform Calibration Drops

## FMH 1255 - April 06, 2006

