

REPORT NUMBER: 201UI-CAL-08-05

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

**GENERAL MOTORS DE MEXICO
2008 SATURN VUE XE**

NHTSA NUMBER: C80113

CALSPAN TEST NUMBER: 8851-05

CALSPAN
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Test Date: March 26, 2008

FINAL REPORT


PREPARED FOR:

U. S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Enforcement
Office of Vehicle Safety Compliance
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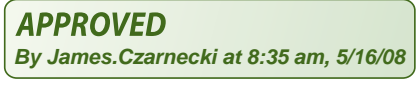
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Date of Report Acceptance

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15. <i>Supplementary Notes</i>																							
16. <i>Abstract</i> Compliance tests were conducted on the subject vehicle, a 2008 Saturn Vue XE, 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	-	-	-	-	-																		
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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 2008 Saturn Vue XE, NHTSA No. C80113, 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 2008 Saturn Vue XE , NHTSA No. C80113 , was tested at various upper interior locations by a 4.54 kg 50th percentile headform. A total of twelve (12) impacts were performed in this test series. The target area impacts were chosen by the NHTSA Contracting Officer's Technical Representative (COTR). A summary of test results can be found on Data Sheet 2-1, Summary of Upper Interior Head Impact Tests. The twelve (12) area chosen for testing were:

OP1	UROP	BP4	BP1	SR2B
AP3	AP1	BP3	URRP	BP2
URBP	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 ± 0.5 kg and had an orthogonal tri-axis accelerometer pack mounted at the headform's center of gravity (c.g.).

A total of three (3) channels of data for each test were recorded on a Keyser-Threde data acquisition system. Data plots, along with still images, can be found in Section 3, Summary of Test Results and Data Plots.

To document each target area impact test, a Weinberger high-speed video camera was placed at an appropriate location to record the headform contact with the selected target area.

DATA SHEET 2-1

SUMMARY OF UPPER INTERIOR HEAD IMPACT TESTS

VEHICLE YEAR/MAKE/MODEL/STYLE:	2008 Saturn Vue XE
VIN:	3GSCL33P08S593009
DATE OF MANUFACTURE:	10/07 (SEE CERTIFICATION LABEL)
COLOR:	White

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	2834.095	-536.736	1476.910	2834.567	548.514	1471.805	Relocated 1 circle		-	-	-
AP1 R1	-	-	-	2846.435	551.002	1470.505	106°	17°	18.48	317.4	405.8
AP2	2761.523	-579.548	1389.881	2759.150	587.088	1387.556	209°	45°	18.71	247.9	353.4
AP3	2576.193	-618.208	1300.611	2567.335	619.767	1300.111	123°	42°	18.78	234.6	343.4
BP1	3341.355	-499.005	1547.727	3338.748	495.205	1554.909	90°	20°	18.5	404.4	471.5
BP2	3316.358	-605.301	1282.852	3318.514	606.937	1277.811	270°	0°	23.65	564.6	592.3
BP3	3248.979	-628.665	1324.391	3249.642	628.077	1329.745	Relocated 2 circles		-	-	-
BP3 R2	3254.875	-624.788	1374.112	-	-	-	90°	0°	23.63	768.1	745.9
BP4	3392.101	-658.432	1211.269	3391.989	656.907	1216.976	142°	-10°	23.36	684.4	682.7
FH1	2759.898	-425.537	1490.551	2761.835	434.845	1493.395	-	-	-	-	-
FH2	2747.433	-274.993	1495.738	2742.005	284.269	1497.470	Relocated 1 circle		-	-	-
FH2 R1	2747.723	-298.063	1494.887	2741.050	307.277	1495.943	-	-	-	-	-
OP1	4177.271	-608.032	1331.428	4175.370	605.621	1332.108	90°	-3°	23.68	587.4	609.5
OP2	4181.028	-595.947	1358.959	4182.474	593.548	1359.544	-	-	-	-	-
SR1	2988.053	-500.204	1512.264	2983.139	505.846	1510.496	-	-	-	-	-
SR2	3137.037	-498.770	1526.041	3133.520	500.230	1528.344	-	-	-	-	-
SR2B	3040.770	-518.856	1541.233	3036.725	524.128	1543.225	Relocated 2 circles		-	-	-
SR2B R2	3047.269	-534.215	1495.314	3041.555	539.431	1496.438	90°	17°	18.66	221.8	333.7
SR3F	3665.498	-490.678	1542.400	3666.055	493.427	1537.442	-	-	-	-	-
SR3R	3825.690	-492.234	1536.621	3827.591	494.145	1531.791	-	-	-	-	-
URAP	3020.049	-371.955	1564.479	3013.505	395.500	1565.146	-	-	-	-	-
URBP	3343.503	-368.651	1596.869	3349.452	367.640	1602.992	270°	50°	23.73	632.9	643.9
UROP	4123.240	-376.814	1574.398	4120.253	372.028	1578.169	90°	45°	23.63	741.2	725.6
URRP	4353.353	-389.263	1538.786	4319.852	363.022	1555.073	308°	45°	23.66	468.9	520.2
URRSR	3756.174	-353.604	1600.575	3760.067	368.949	1601.735	-	-	-	-	-

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

DATA SHEET 2-2

GENERAL TEST AND VEHICLE PARAMETER DATA

TEST VEHICLE INFORMATION:									
Year/Make/Model/Body Style:				2008 Saturn Vue XE					
VIN:				3GSCL33P08S593009					
Month & Year of Manufacture:				10/07 (SEE CERTIFICATION LABEL)					
Vehicle Body Color:				White					
Engine Data:	4	Cylinders;	-	CID;	2.4	Liters;	-	cc	
Engine Placement:		-	Longitudinal;	or		x	Lateral		
Transmission:	4	Speed;	-	Manual;	x	Automatic;	-	Overdrive	
Final Drive:	-	Rear Wheel Drive;	x	Front Wheel Drive;	-	Four Wheel Drive			
Odometer Reading:		97	km						
Options:	x	A/C;	x	Power Steering;	x	Pwr.Brakes;	x	Pwr. Windows	
Interior Trim Information :									
1. Grab handles on all outboard seating position									
2. Adjustable seat belt anchorages on b-pillars									
3. Non-adjustable seat belt anchorages on other pillars.									

DATA FROM TIRE PLACARD:									
Tire Pressure (at capacity);				210			kPa FRONT		
				210			kPa REAR		
Recommended Tire Size:				P235/65R16					
Tires on Test Vehicle:		P235/65R16			Manufacturer:		-		
Vehicle Capacity Data:									
Number of Occupants:	2	Front;	3	Rear;	-	3rd Seat;	5	Total	
Type of Front Seats:	x	Bucket;	-	Bench;	-	Split Bench			
Type of Front Seat Back:	-	Fixed;	x	Adjustable with	x	Lever or	-	Knob	
Vehicle Capacity Weight (VCW)=				479			kg (A)		
No. of Occupants x 68 kg. =				340			kg (B)		
Rated Cargo/Luggage Weight (RCLW) =				139			kg (A-B) Max. RCLW = 136 kg.		

DATA SHEET 2-2

GENERAL TEST AND VEHICLE PARAMETER DATA (cont.)

TEST VEHICLE DELIVERED WEIGHT WITH MAXIMUM FLUIDS:							
Left Front	=	483.5	kg	Left Rear	=	378	kg
Right Front	=	487	kg	Right Rear	=	355.5	kg
TOTAL FRONT	=	970.5	kg	TOTAL REAR	=	733.5	kg
% of Total Weight	=	57.0%	%	% of Total Weight	=	43.0%	%
TOTAL WEIGHT	=	1704.0				kg	

CALCULATION OF VEHICLE'S TARGET TEST WEIGHT:		
Total Test Vehicle Delivered Weight=	1704.0	kg (A)
+ Rated Cargo/Luggage Weight =	136.0	kg (B)
TEST VEHICLE TARGET WEIGHT =	1840.0	kg (A+B)

WEIGHT OF TEST VEHICLE (FULLY LOADED):							
Left Front	=	477	kg	Left Rear	=	450.5	kg
Right Front	=	482	kg	Right Rear	=	428.5	kg
TOTAL FRONT	=	959.0	kg	TOTAL REAR	=	879.0	kg
% of Total Weight	=	52.2%	%	% of Total Weight	=	47.8%	%
TOTAL TEST WEIGHT	=	1838.0					
Weight of vehicle secured in test vehicles cargo area	=	134.0				kg	

TEST VEHICLE ATTITUDE (all dimensions in millimeters):				
AS DELIVERED:	Left Front	809	Left Rear	818
	Right Front	815	Right Rear	828
FULLY LOADED:	Left Front	809	Left Rear	798
	Right Front	815	Right Rear	808
Test Vehicle Wheelbase:	-			millimeters

TEST VEHICLE PITCH AND ROLL ANGLES:				
AS DELIVERED:	PITCH ANGLES		ROLL ANGLES	
	Left Door Sill	↑0.8↓	Front Bumper	↑0.2↓
	Right Door Sill	↓0.9↑	Rear Bumper	0.0
FULLY LOADED:	PITCH ANGLES		ROLL ANGLES	
	Left Door Sill	↑0.3↓	Front Bumper	↑0.2↓
	Right Door Sill	↓0.4↑	Rear Bumper	0.0
AS TESTED:	PITCH ANGLES		ROLL ANGLES	
	Left Door Sill	↑0.4↓	Front Bumper	↑0.2↓
	Right Door Sill	↓0.4↑	Rear Bumper	0.0

DATA SHEET 2-3

APPROACH ANGLE LIMITS

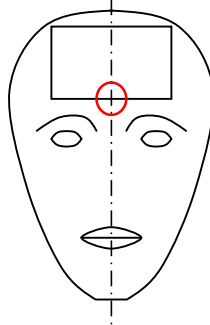
Target Code	Left Side				Target Code	Right Side			
	Horizontal Angles (deg.)		Vertical Angles (deg.)			Horizontal Angles (deg.)		Vertical Angles (deg.)	
	Minimum	Maximum	Minimum	Maximum		Minimum	Maximum	Minimum	Maximum
AP1	206	255	-5	17	AP1	105	154	-5	17
AP2	206	255	-5	45	AP2	105	154	-5	45
AP3	206	255	-5	42	AP3	105	154	-5	42
BP1	202	298	-10	20	BP1	62	158	-10	20
BP2	ANY		0	0	BP2	ANY		0	0
BP3	202	298	-10	0	BP3	62	158	-10	0
BP4	202	298	-10	-10	BP4	62	158	-10	-10
OP1	ANY		-10	-3	OP1	ANY		-10	-3
OP2	270		-10	-3	OP2	90		-10	-3
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	40	SR1	90		0	40
SR2A	270		0	40	SR2A	90		0	40
SR2B	270		0	17	SR2B	90		0	17
SR3F	270		0	40	SR3F	90		0	40
SR3R	270		0	40	SR3R	90		0	40
URAP	ANY		0	50	URAP	ANY		0	50
URBP	ANY		0	50	URBP	ANY		0	50
UROPP	ANY		0	45	UROPP	ANY		0	45
URRP	ANY		0	45	URRP	ANY		0	45

Note : BP2 and OP1 target location – Seat belt anchorage

DATA SHEET 2-4

SUMMARY TARGET IMPACT LOCATION ON FMH

VEHICLE YEAR/MAKE/MODEL/STYLE:	2008 Saturn Vue XE
VIN:	3GSCL33P08S593009
DATE OF MANUFACTURE:	10/07(SEE CERTIFICATION LABEL)
COLOR:	White



ã RIGHT SIDE OF FACE

TARGET	Distance Above Point O (mm)	Distance Over From Pt. O (mm)
OP1	18	10L
UROP	51	5L
BP4	15	5R
BP1	27	0
SR2B	5	4L
AP3	14	2L
AP1	1	9R
BP3	2	18R
URRP	27	7L
BP2	14	9L
URBP	40	8L
AP2	14	3L

SECTION 3

SUMMARY OF TEST RESULTS AND DATA PLOTS

VEHICLE YEAR/MAKE/MODEL/STYLE:	2008 Saturn Vue XE
VIN:	3GSCL33P08S593009
DATE OF MANUFACTURE:	10/07(SEE CERTIFICATION LABEL)
COLOR:	White

Test Number:	01
Test Date:	03/25/08
Target Location:	OTHER PILLAR
Target Code:	OP1
Horizontal Impact Angle:	90°
Vertical Impact Angle:	-3°
Ambient Temperature:	22.5 C°
Relative Humidity:	14.7
Time of Impact:	10:47
Headform Number:	1142

Impact Point Description (from lower midpoint on midsagittal line)					
On Centerline	10	<input type="checkbox"/>	mm right	<input checked="" type="checkbox"/>	mm left
On Centerline	18				mm up



POST-IMPACT OP1 HEADFORM

Free Motion HIC	587.4
HIC(d)	609.5
Impact Velocity (kph)	23.68
HIC T1 (msec)	2.6
HIC T2 (msec)	10.9

FMVSS 201U 2008 Saturn Vue C80113 - OP1

FMH Headform 1142

Location: OP1

Test Date: March 25, 2008

Work File: OP1

-----TEST RESULTS-----

Lab Temperature: 22.5 C

HICd: 609.5

Lab Humidity: 14.7 %

HIC (36ms): 587.4

Velocity at Impact: 23.68 KPH

t1: 2.6 msec

t2: 10.9 msec

Free Flight Distance: 215.84 mm

Duration: 8.2 msec

Average Acceleration: 9.0 g

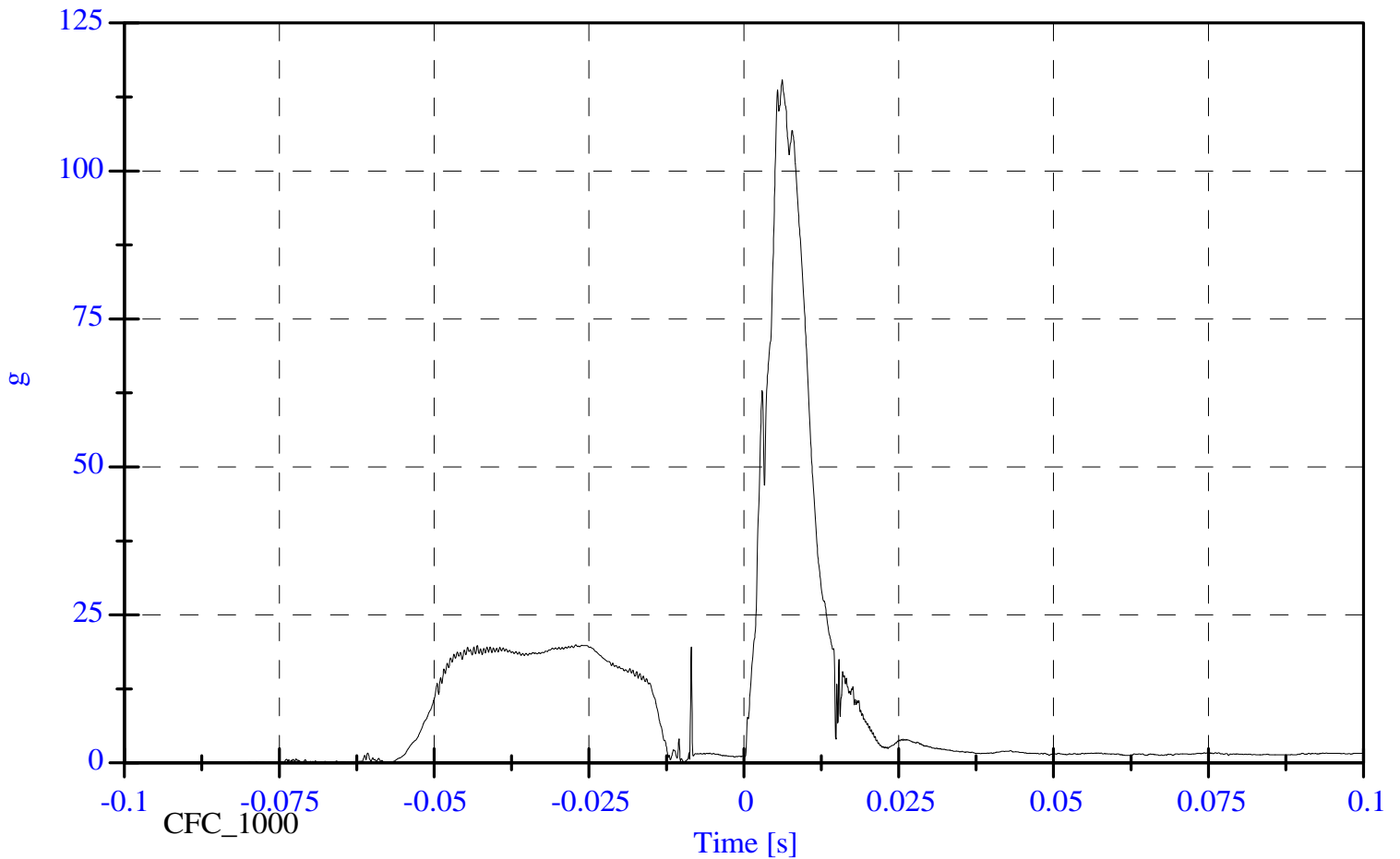
Maximum: 115.4 g

FMVSS 201U 2008 Saturn Vue

Headform Resultant

Max: 115.4 [g] at 0.006 [s]

Min: 0.0 [g] at -0.090 [s]

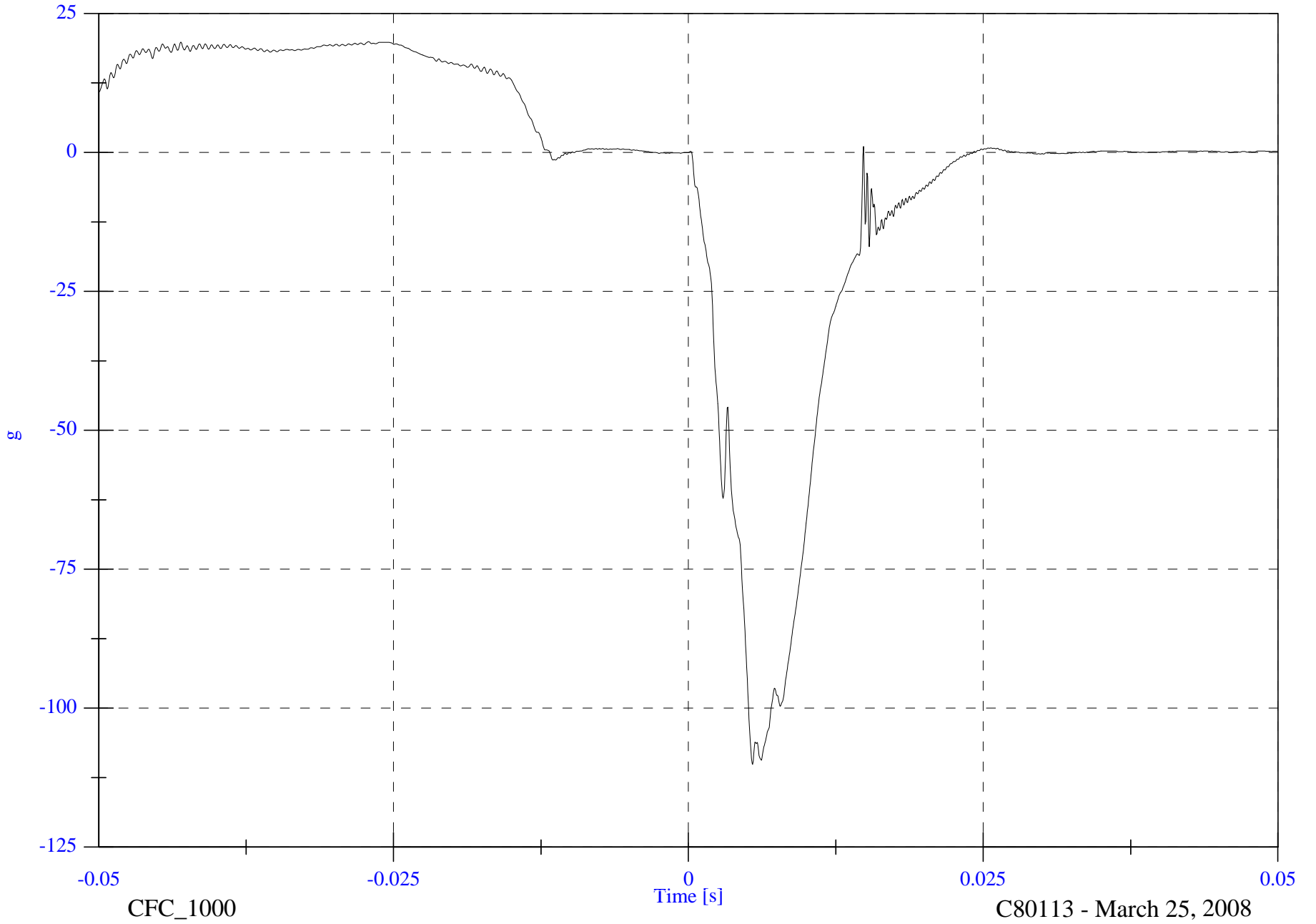


FMVSS 201U 2008 Saturn Vue

Headform X Acceleration

Max: 19.9 [g] at -0.027 [s]

Min: -110.1 [g] at 0.005 [s]



C80113 PASSENGER SIDE OP1 IMPACT PLOT #2

8851-05

CFC_1000

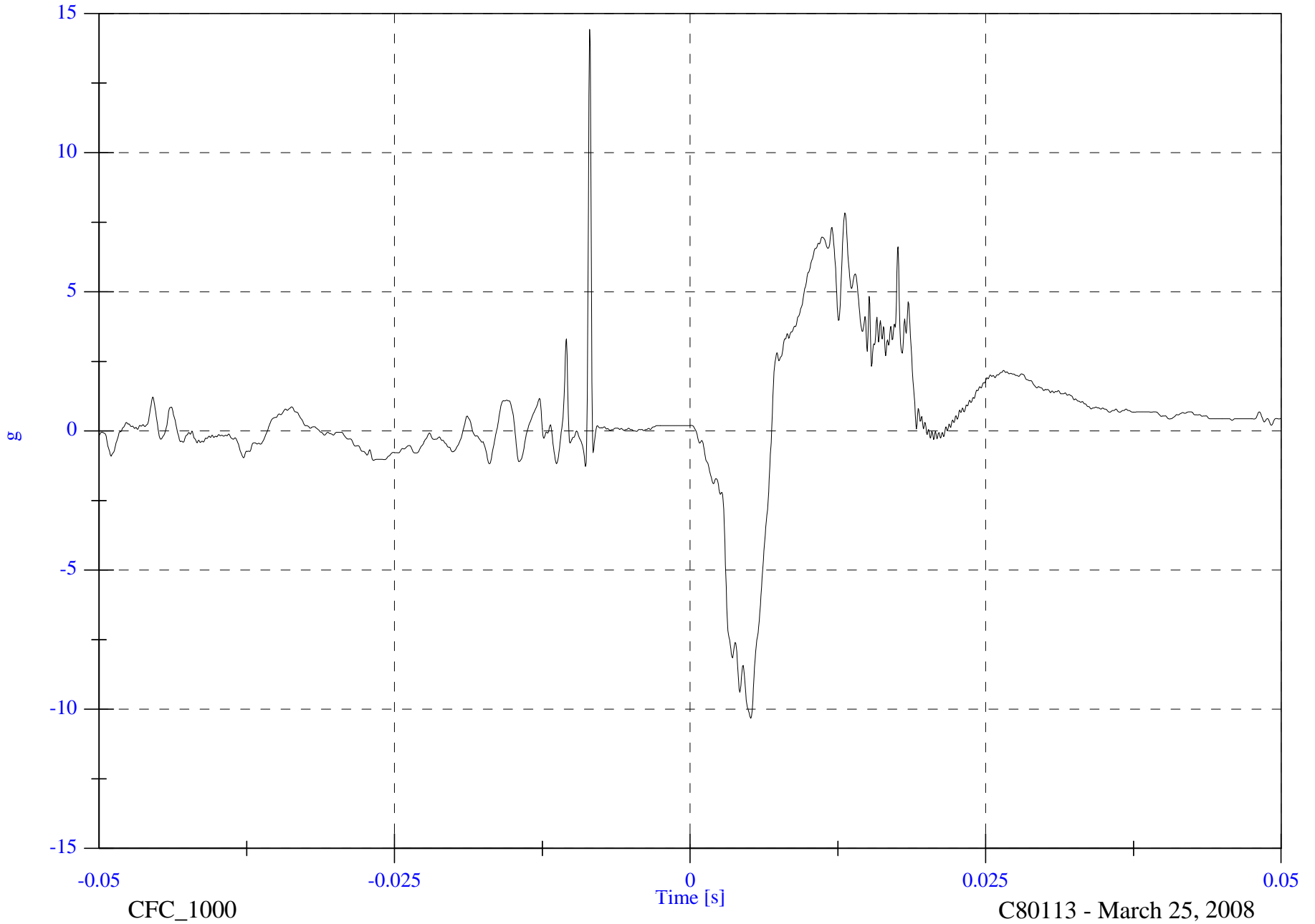
C80113 - March 25, 2008

FMVSS 201U 2008 Saturn Vue

Max: 14.4 [g] at -0.008 [s]

Min: -10.3 [g] at 0.005 [s]

Headform Y Acceleration



C80113 PASSENGER SIDE OP1 IMPACT PLOT #3

8851-05

CFC_1000

C80113 - March 25, 2008

FMVSS 201U 2008 Saturn Vue

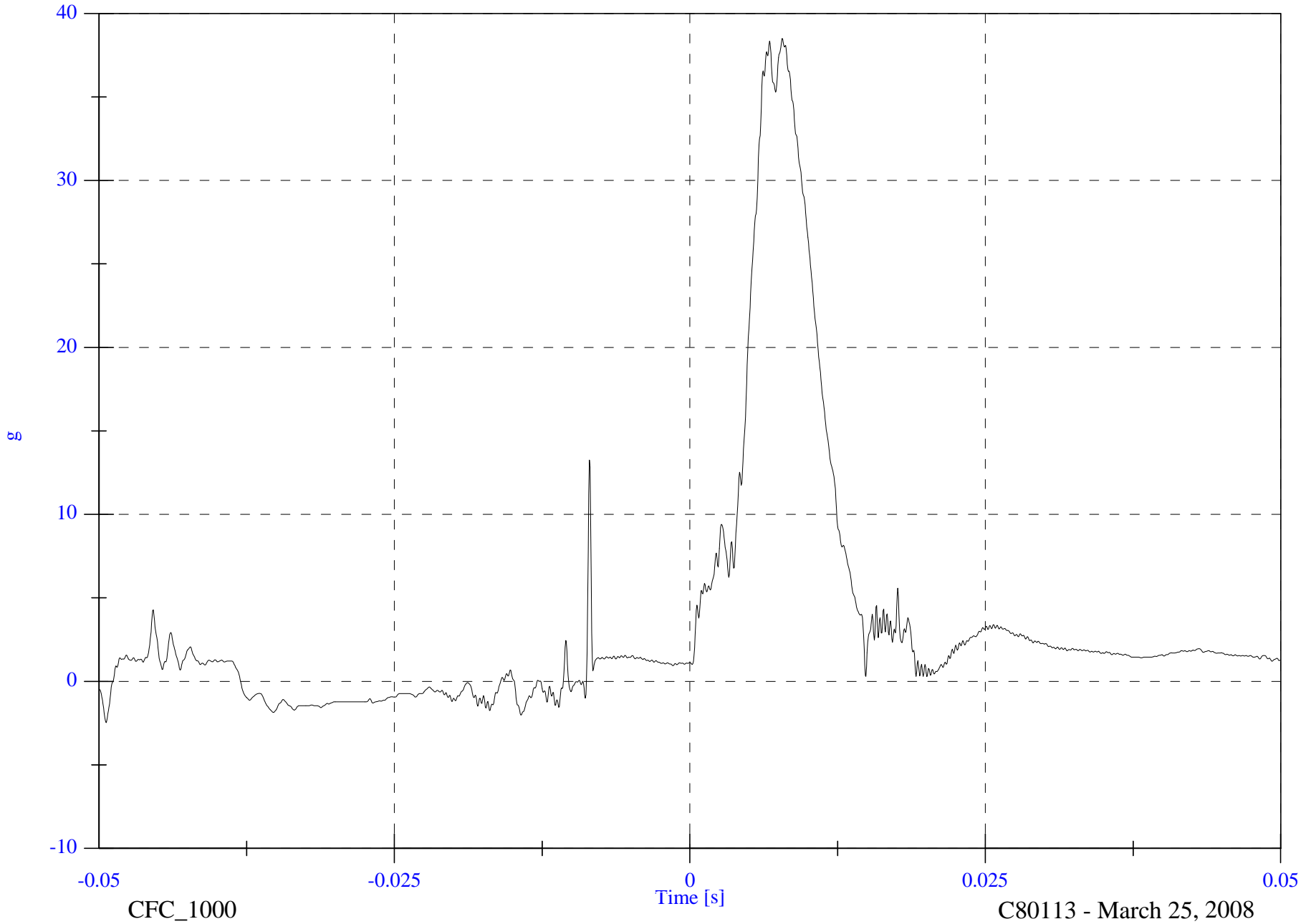
Headform Z Acceleration

Max: 38.5 [g] at 0.008 [s]

Min: -2.5 [g] at -0.049 [s]

C80113 PASSENGER SIDE OP1 IMPACT PLOT #4

8851-05



CFC_1000

C80113 - March 25, 2008

FMVSS 201U 2008 Saturn Vue

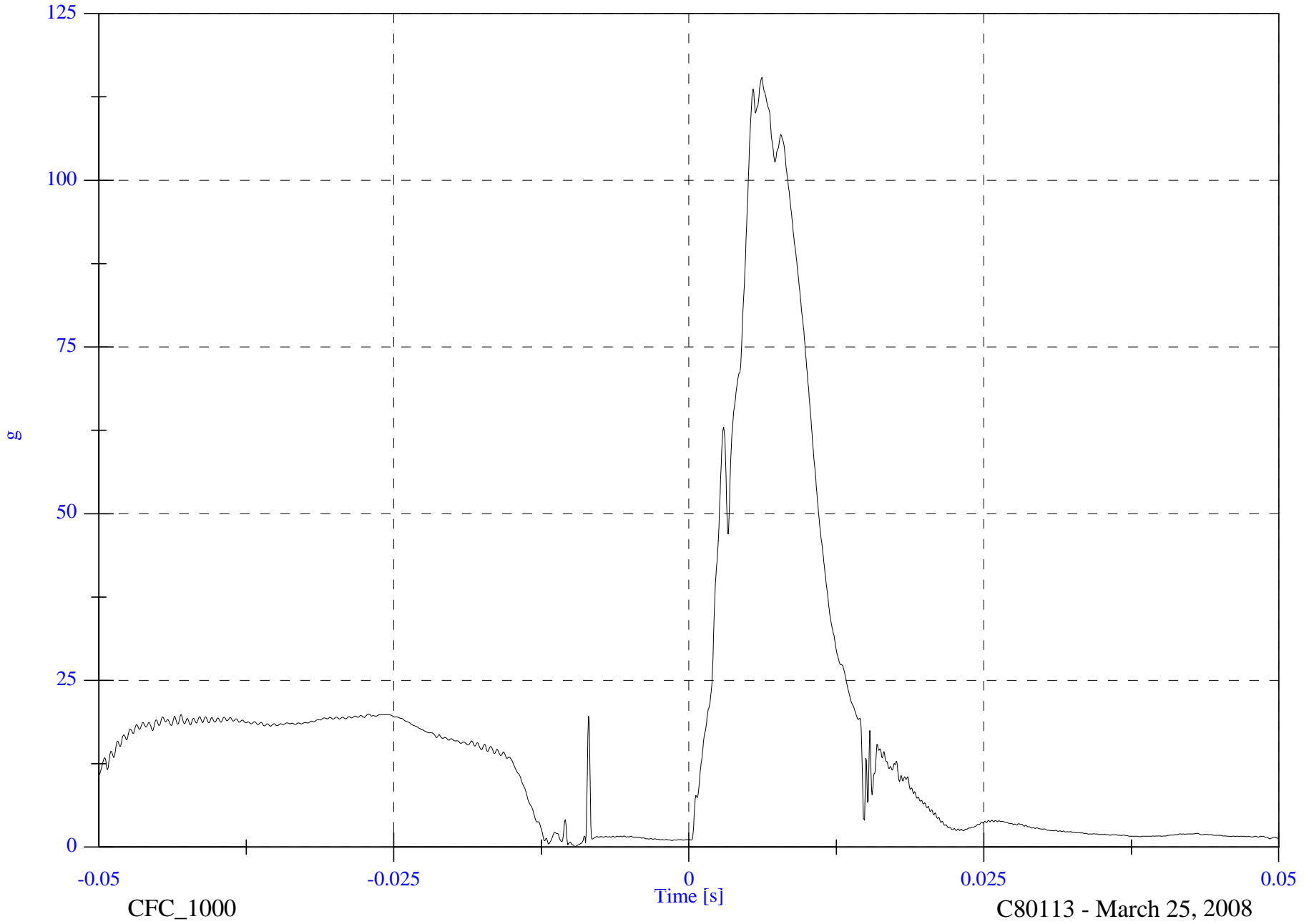
Headform Resultant

Max: 115.4 [g] at 0.006 [s]

Min: 0.0 [g] at -0.010 [s]

C80113 PASSENGER SIDE OP1 IMPACT PLOT #5

8851-05



CFC_1000

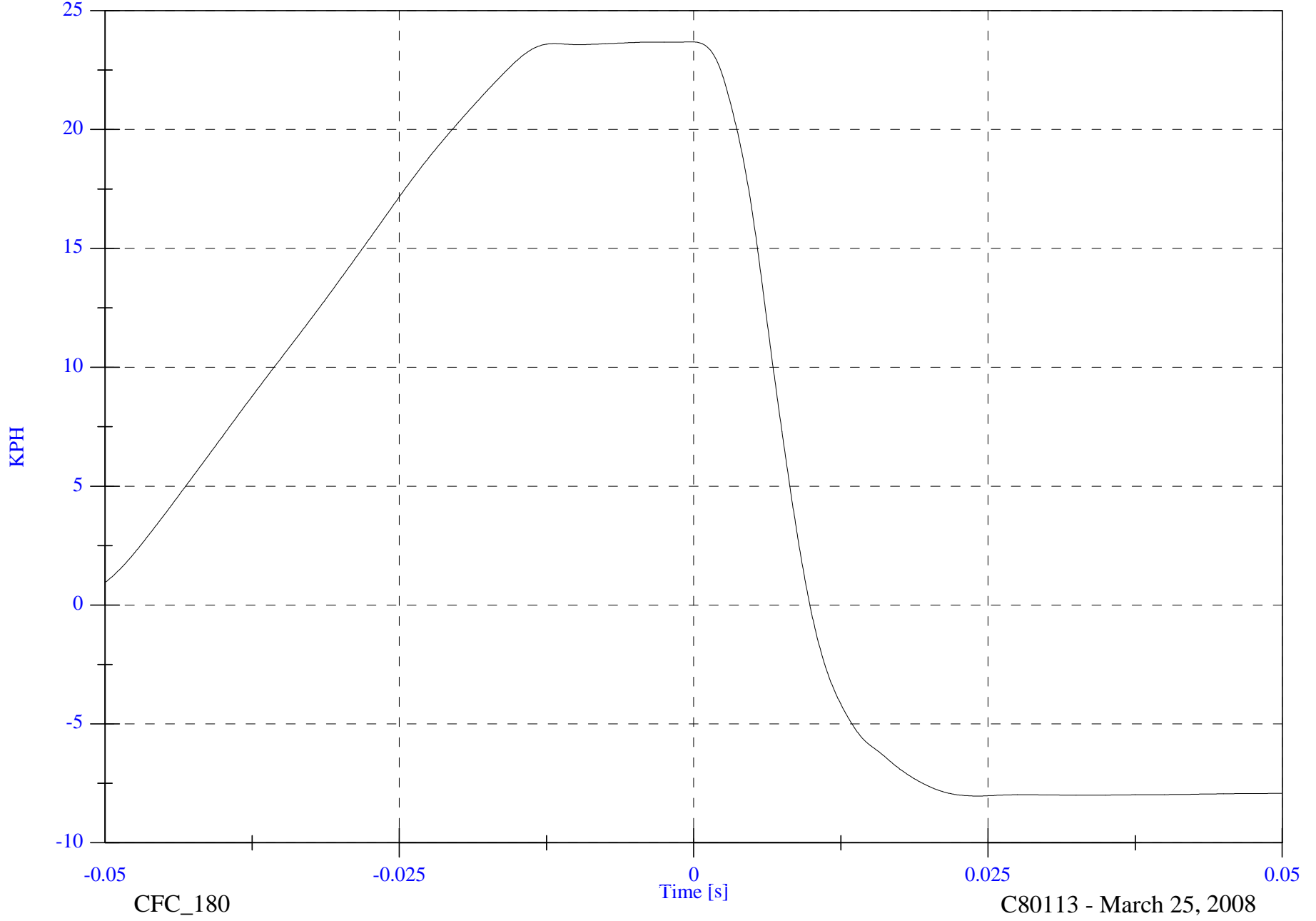
C80113 - March 25, 2008

FMVSS 201U 2008 Saturn Vue

Headform Velocity

Max: 23.7 [KPH] at -0.000 [s]

Min: -8.0 [KPH] at 0.024 [s]



C80113 PASSENGER SIDE OP1 IMPACT PLOT #6

8851-05

CFC_180

Time [s]

C80113 - March 25, 2008



PRE-IMPACT OPI



POST-IMPACT OPI

VEHICLE YEAR/MAKE/MODEL/STYLE:	2008 Saturn Vue XE
VIN:	3GSCL33P08S593009
DATE OF MANUFACTURE:	10/07(SEE CERTIFICATION LABEL)
COLOR:	White

Test Number:	02
Test Date:	03/25/08
Target Location:	UPPER ROOF
Target Code:	UROP
Horizontal Impact Angle:	90°
Vertical Impact Angle:	45°
Ambient Temperature:	22.5 C°
Relative Humidity:	14.7
Time of Impact:	11:25
Headform Number:	0355

Impact Point Description (from lower midpoint on midsagittal line)					
On Centerline	5	<input type="checkbox"/>	mm right	<input checked="" type="checkbox"/>	mm left
On Centerline	51				mm up



POST-IMPACT UROP HEADFORM

Free Motion HIC	741.2
HIC(d)	725.6
Impact Velocity (kph)	23.63
HIC T1 (msec)	3.3
HIC T2 (msec)	11.1

FMVSS 201U 2008 Saturn Vue C80113 - UROP

FMH Headform 0355

Location: UROP

Test Date: March 25, 2008

Work File: UROP

-----TEST RESULTS-----

Lab Temperature: 22.5 C

HICd: 725.6

Lab Humidity: 14.7 %

HIC (36ms): 741.2

Velocity at Impact: 23.63 KPH

t1: 3.3 msec

t2: 11.1 msec

Free Flight Distance: 219.31 mm

Duration: 7.8 msec

Average Acceleration: 11.7 g

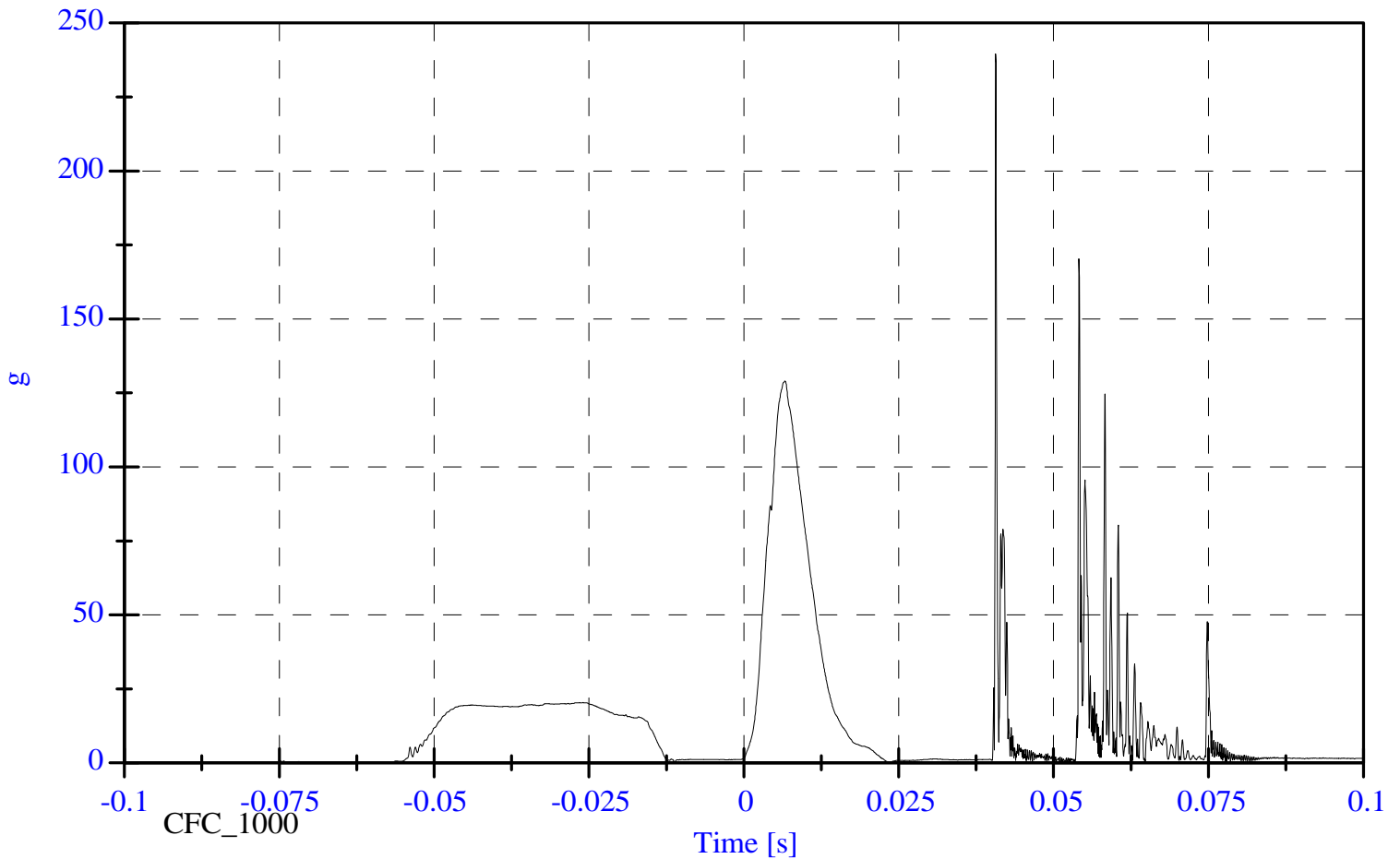
Maximum: 129.1 g

FMVSS 201U 2008 Saturn Vue

Headform Resultant

Max: 129.1 [g] at 0.007 [s]

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



FMVSS 201U 2008 Saturn Vue

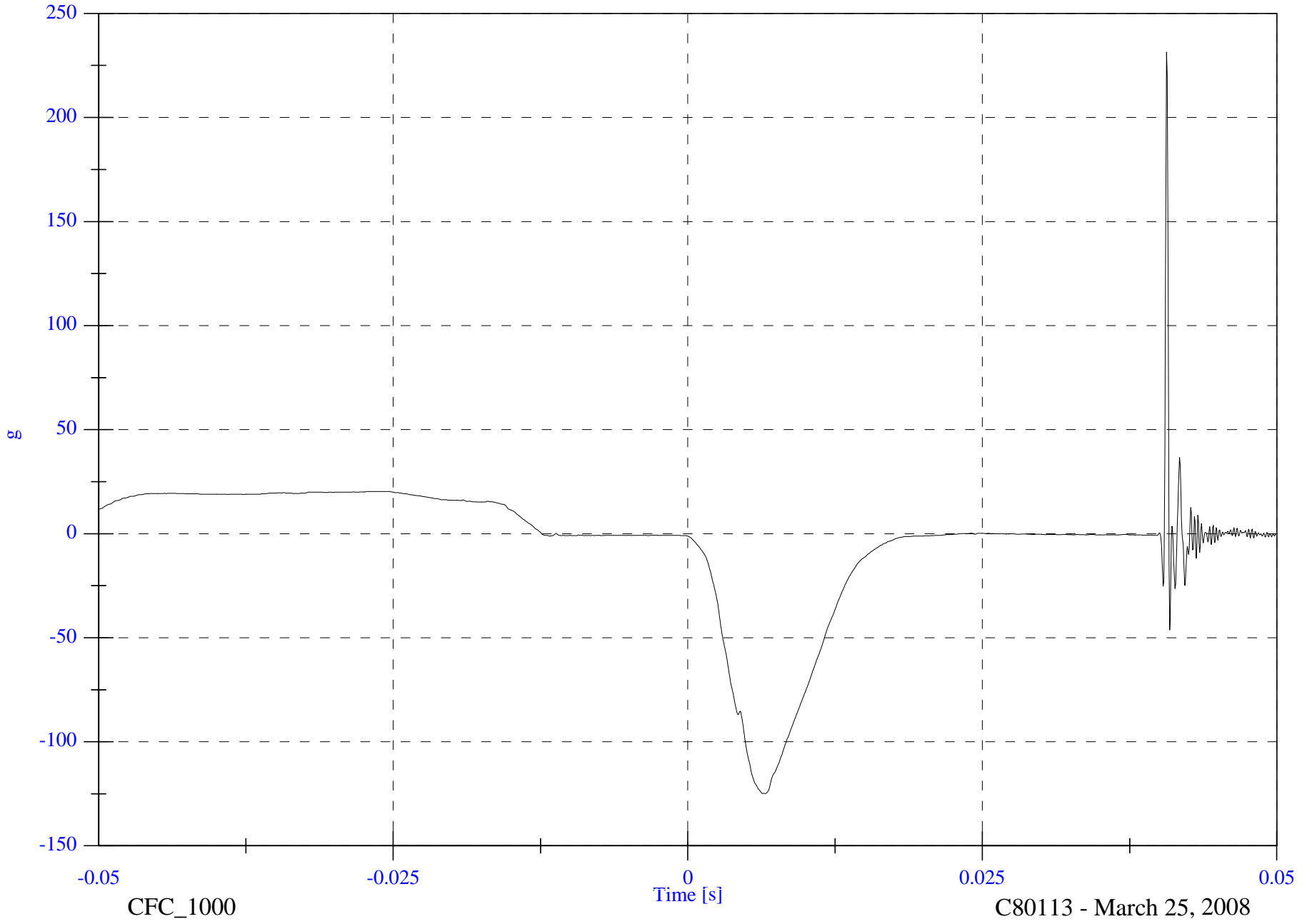
Headform X Acceleration

Max: 231.5 [g] at 0.041 [s]

Min: -124.9 [g] at 0.007 [s]

C80113 PASSENGER SIDE UROP IMPACT PLOT #2

8851-05



CFC_1000

C80113 - March 25, 2008

FMVSS 201U 2008 Saturn Vue

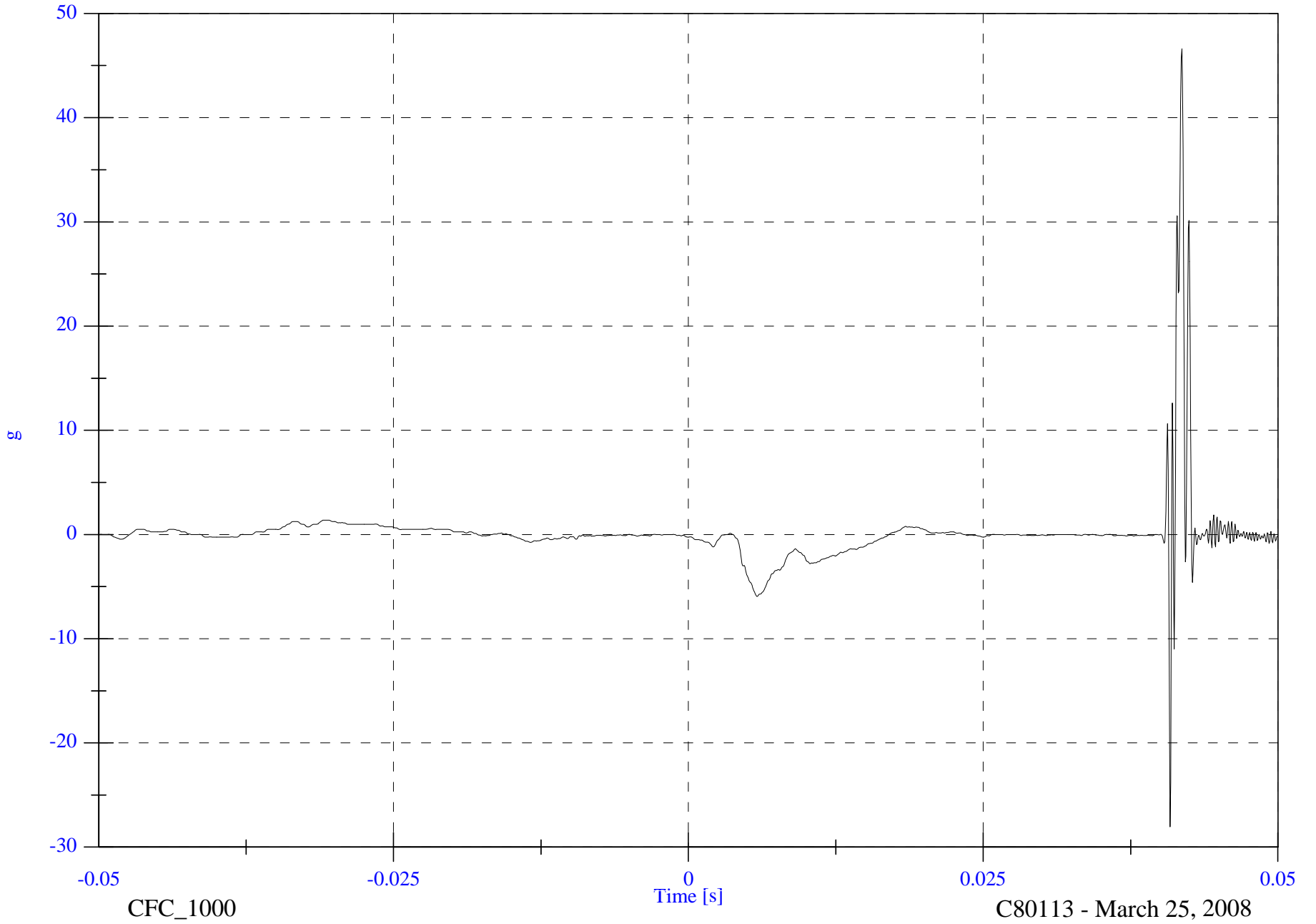
Headform Y Acceleration

Max: 46.6 [g] at 0.042 [s]

Min: -28.0 [g] at 0.041 [s]

C80113 PASSENGER SIDE UROP IMPACT PLOT #3

8851-05



CFC_1000

C80113 - March 25, 2008

FMVSS 201U 2008 Saturn Vue

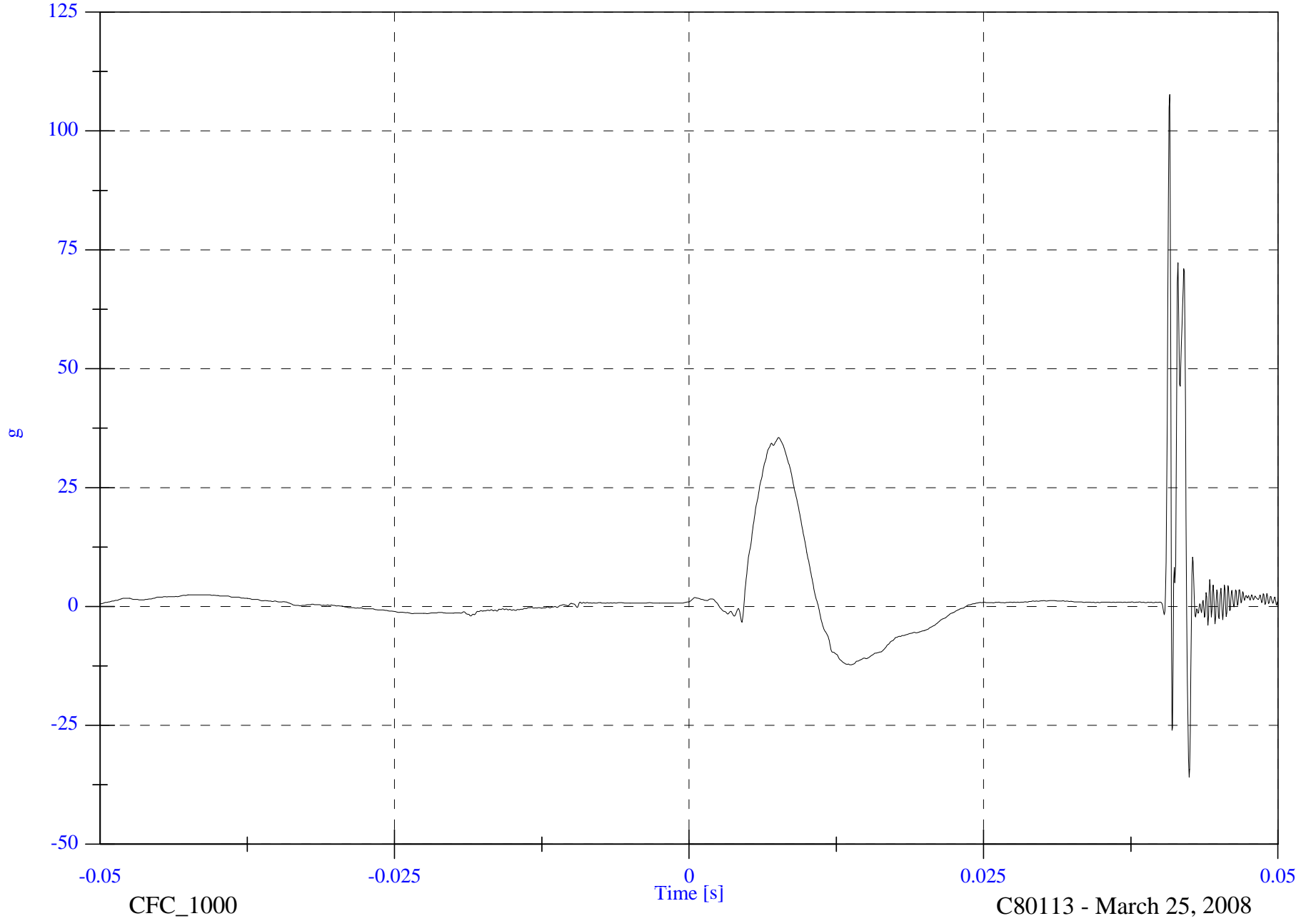
Headform Z Acceleration

Max: 107.7 [g] at 0.041 [s]

Min: -35.9 [g] at 0.042 [s]

C80113 PASSENGER SIDE UROP IMPACT PLOT #4

8851-05



CFC_1000

Time [s]

C80113 - March 25, 2008

FMVSS 201U 2008 Saturn Vue

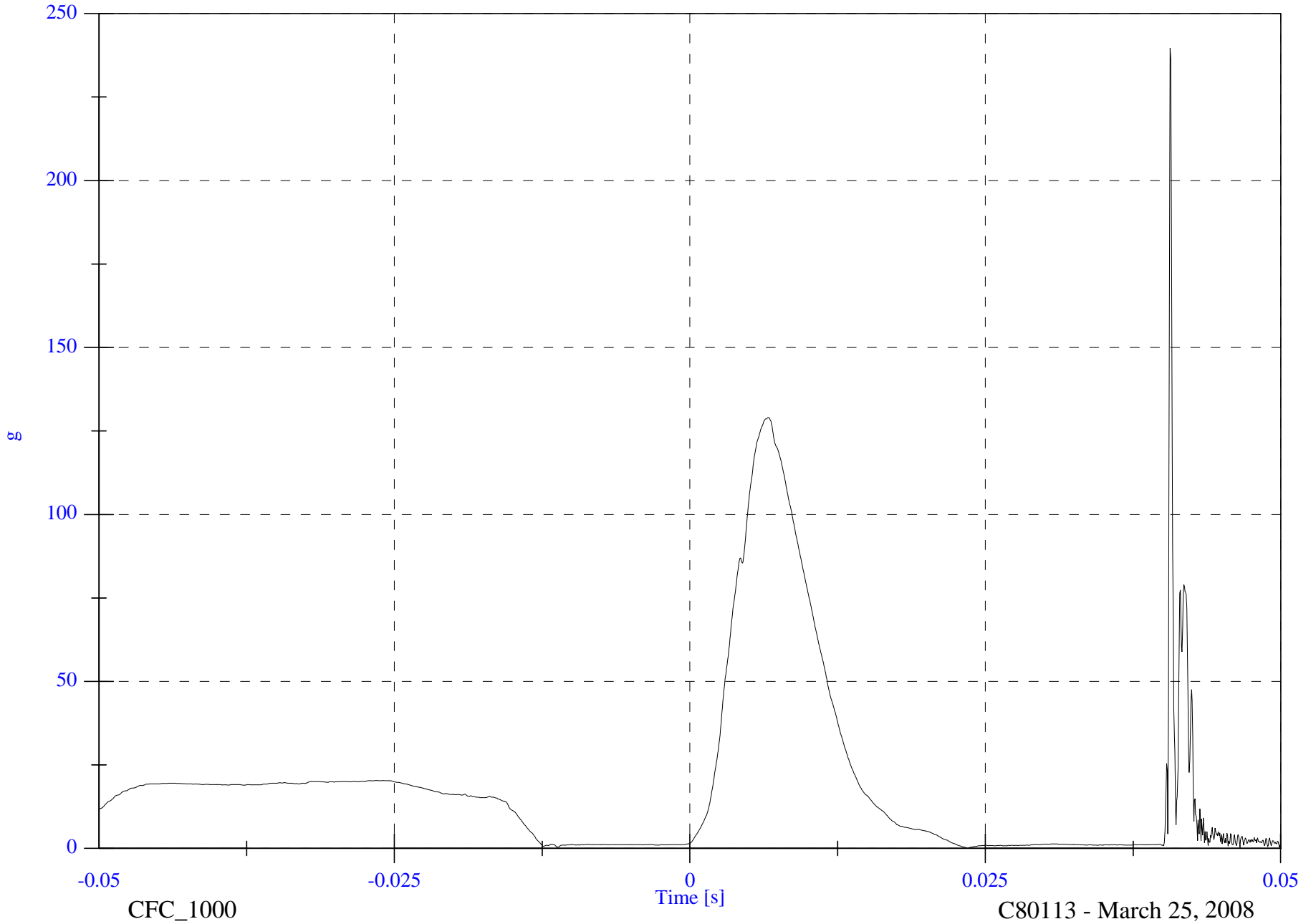
Headform Resultant

Max: 239.6 [g] at 0.041 [s]

Min: 0.0 [g] at 0.024 [s]

C80113 PASSENGER SIDE UROP IMPACT PLOT #5

8851-05



FMVSS 201U 2008 Saturn Vue

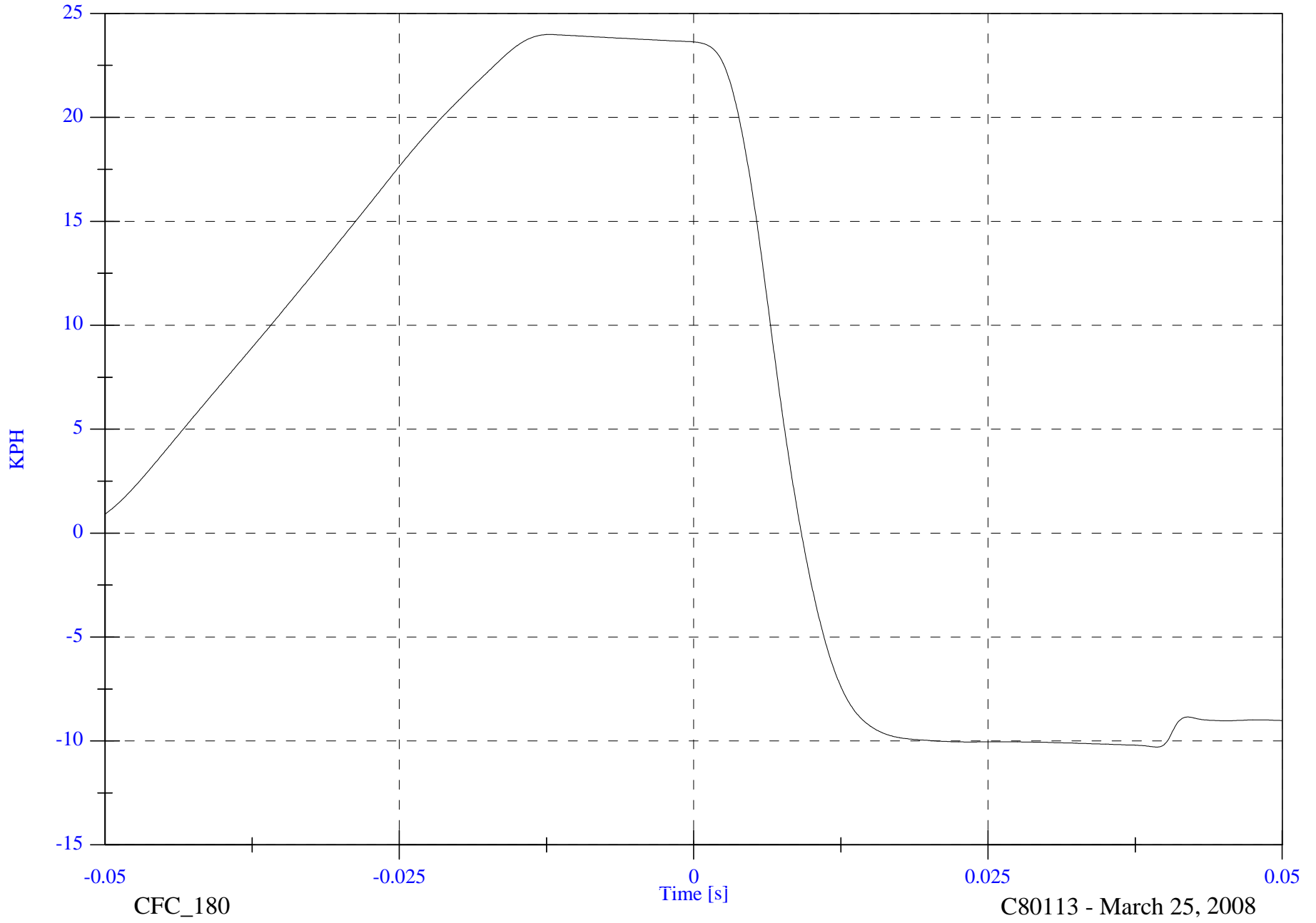
Headform Velocity

Max: 24.0 [KPH] at -0.012 [s]

Min: -10.3 [KPH] at 0.039 [s]

C80113 PASSENGER SIDE UROP IMPACT PLOT #6

8851-05



CFC_180

Time [s]

C80113 - March 25, 2008



PRE-IMPACT UROP



POST-IMPACT UROP

VEHICLE YEAR/MAKE/MODEL/STYLE:	2008 Saturn Vue XE
VIN:	3GSCL33P08S593009
DATE OF MANUFACTURE:	10/07(SEE CERTIFICATION LABEL)
COLOR:	White

Test Number:	03
Test Date:	03/25/08
Target Location:	B-PILLAR
Target Code:	BP4
Horizontal Impact Angle:	142°
Vertical Impact Angle:	-10°
Ambient Temperature:	22.5 C°
Relative Humidity:	14.7
Time of Impact:	11:55
Headform Number:	1140

Impact Point Description (from lower midpoint on midsagittal line)			
On Centerline	5	<input checked="" type="checkbox"/> mm right	<input type="checkbox"/> mm left
On Centerline	15	mm up	



POST-IMPACT BP4 HEADFORM

Free Motion HIC	684.4
HIC(d)	682.7
Impact Velocity (kph)	23.36
HIC T1 (msec)	1.7
HIC T2 (msec)	10.4

FMVSS 201U 2008 Saturn Vue C80113 - BP4

FMH Headform 1140

Location: BP4

Test Date: March 25, 2008

Work File: BP4

-----TEST RESULTS-----

Lab Temperature: 22.5 C

HICd: 682.7

Lab Humidity: 14.7 %

HIC (36ms): 684.4

Velocity at Impact: 23.36 KPH

t1: 1.7 msec

t2: 10.4 msec

Free Flight Distance: 212.45 mm

Duration: 8.6 msec

Average Acceleration: 10.2 g

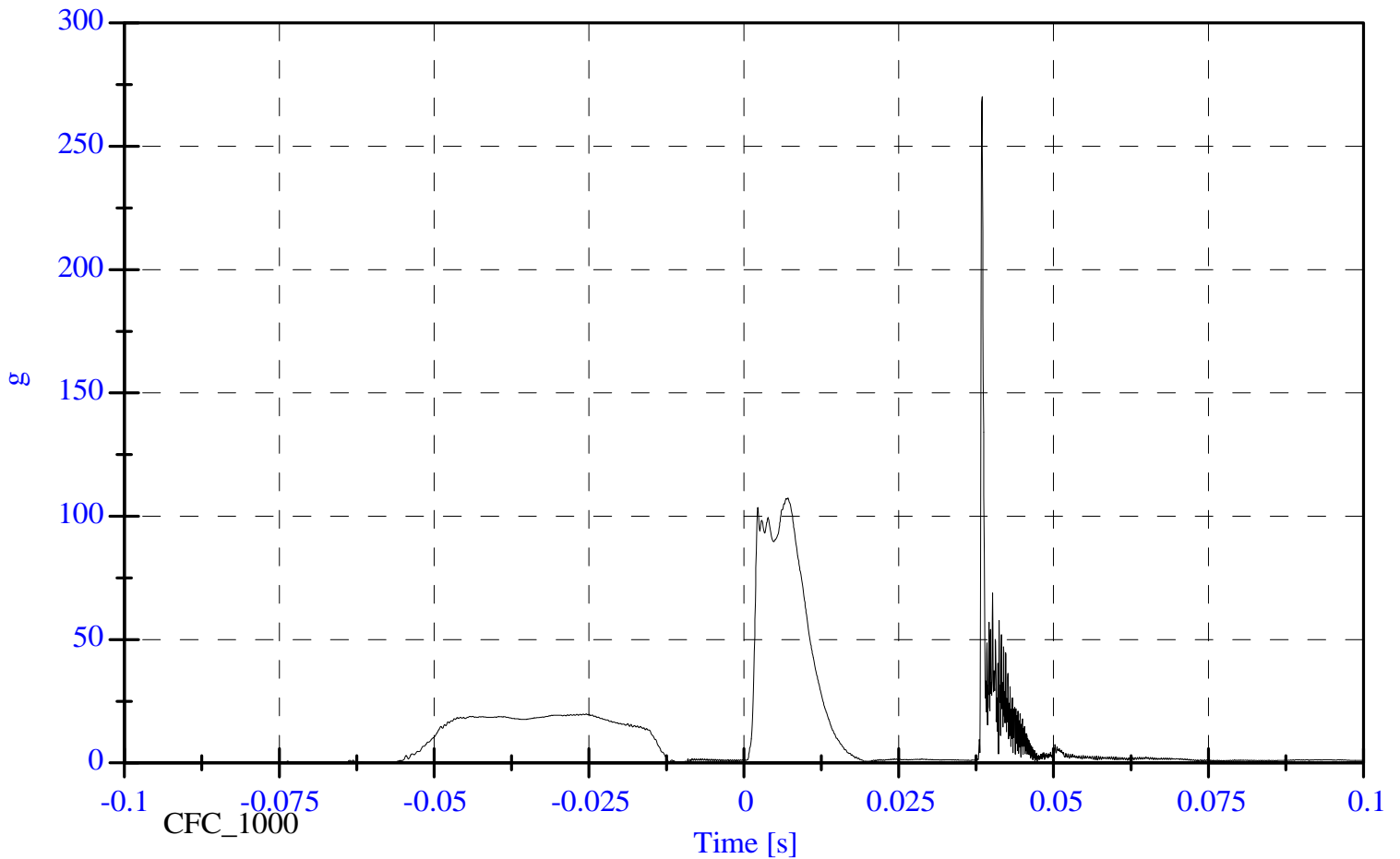
Maximum: 107.4 g

FMVSS 201U 2008 Saturn Vue

Headform Resultant

Max: 107.4 [g] at 0.007 [s]

Min: 0.0 [g] at -0.085 [s]

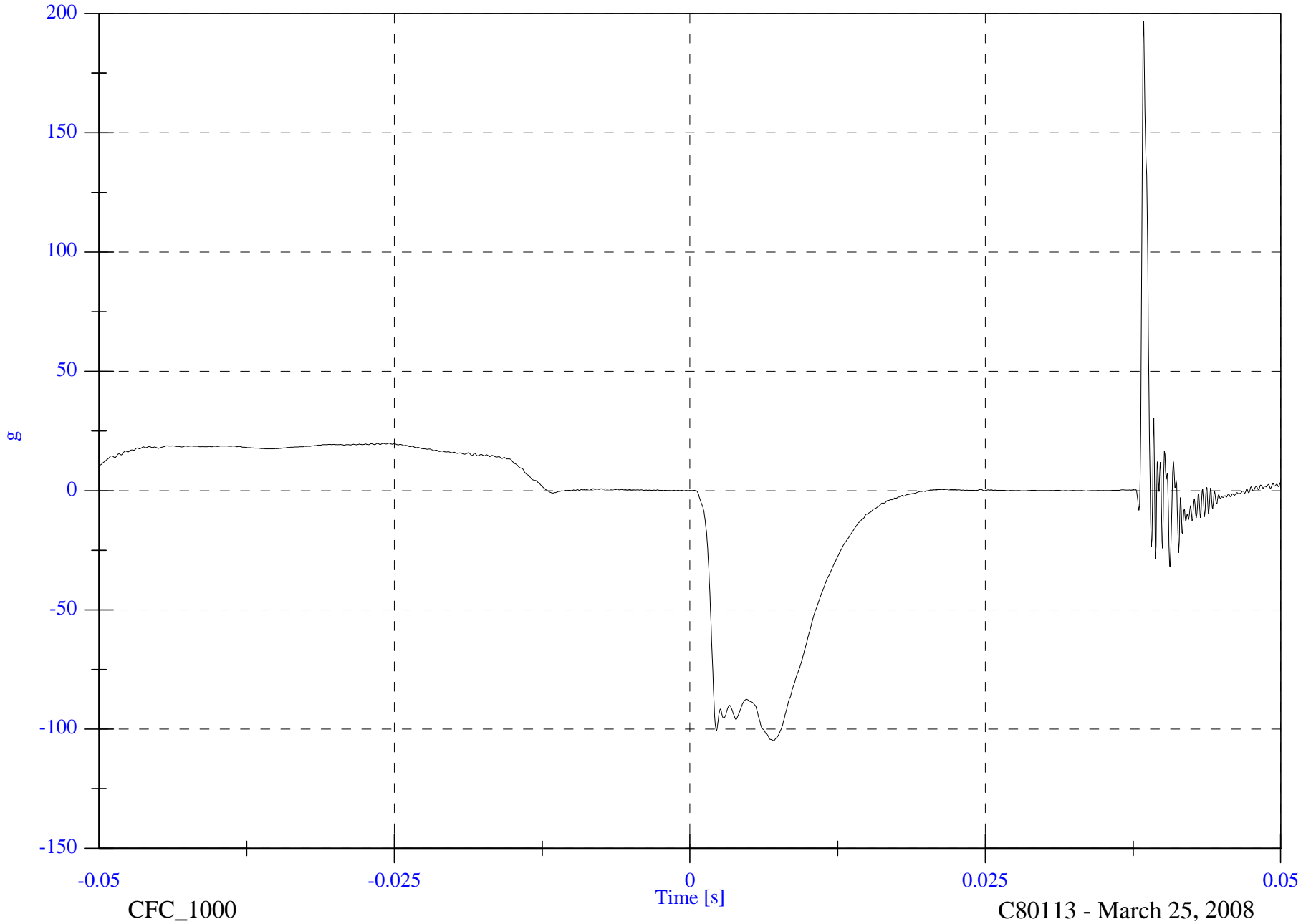


FMVSS 201U 2008 Saturn Vue

Headform X Acceleration

Max: 196.6 [g] at 0.038 [s]

Min: -104.8 [g] at 0.007 [s]



C80113 PASSENGER SIDE BP4 IMPACT PLOT #2

8851-05

CFC_1000

C80113 - March 25, 2008

FMVSS 201U 2008 Saturn Vue

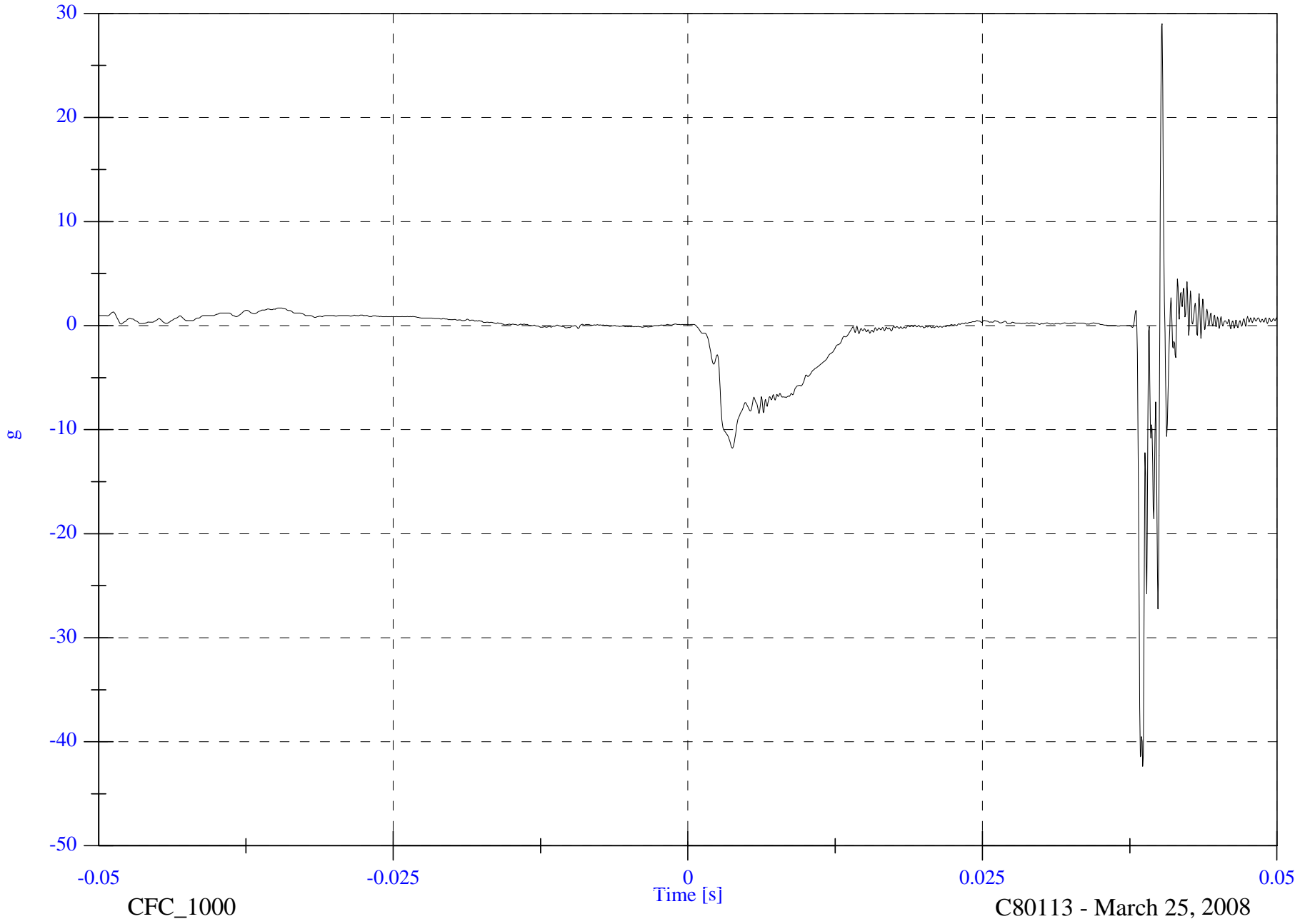
Headform Y Acceleration

Max: 29.0 [g] at 0.040 [s]

Min: -42.4 [g] at 0.039 [s]

C80113 PASSENGER SIDE BP4 IMPACT PLOT #3

8851-05



CFC_1000

C80113 - March 25, 2008

FMVSS 201U 2008 Saturn Vue

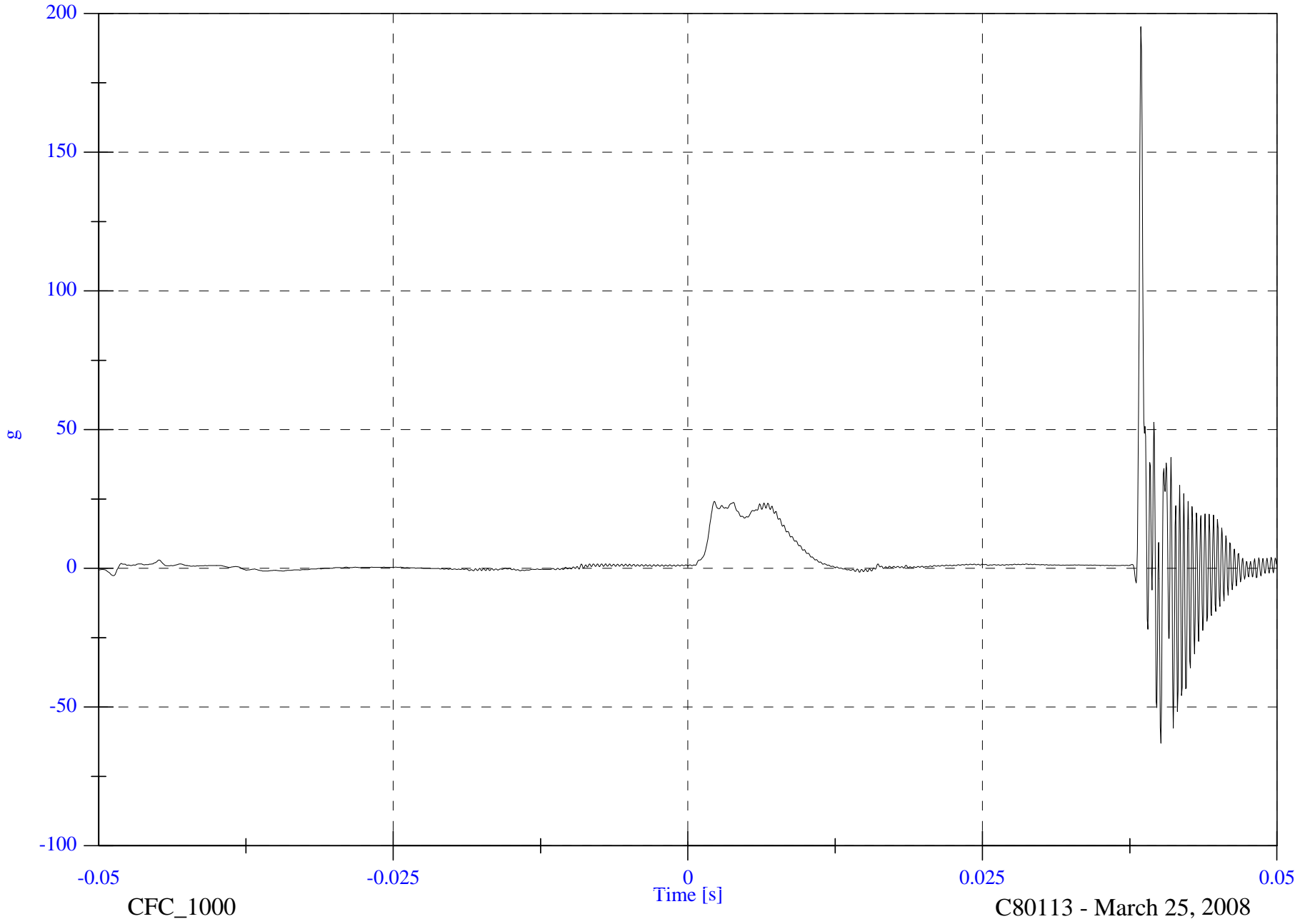
Headform Z Acceleration

Max: 195.3 [g] at 0.038 [s]

Min: -63.1 [g] at 0.040 [s]

C80113 PASSENGER SIDE BP4 IMPACT PLOT #4

8851-05



CFC_1000

C80113 - March 25, 2008

FMVSS 201U 2008 Saturn Vue

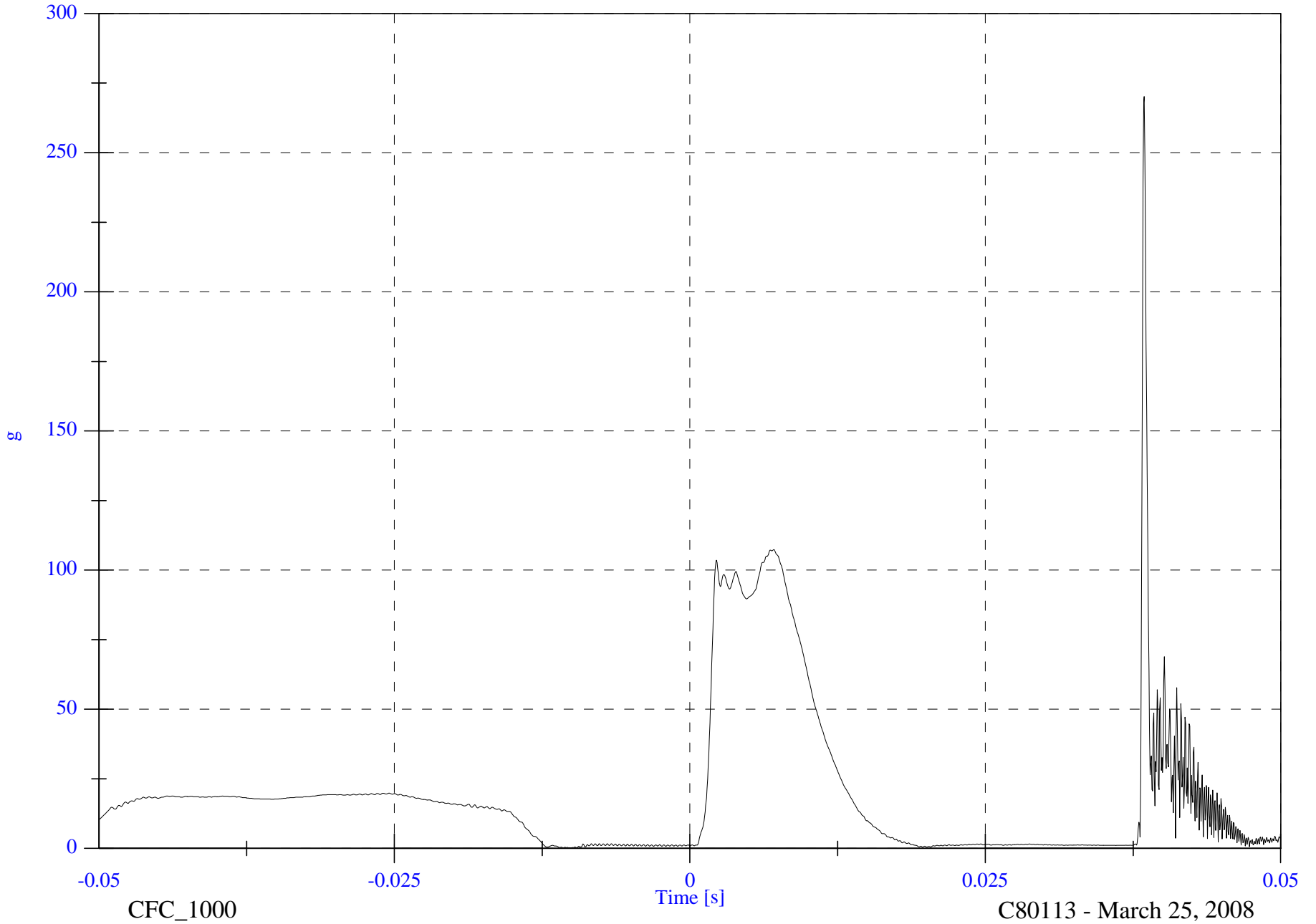
Headform Resultant

Max: 270.2 [g] at 0.038 [s]

Min: 0.2 [g] at -0.010 [s]

C80113 PASSENGER SIDE BP4 IMPACT PLOT #5

8851-05

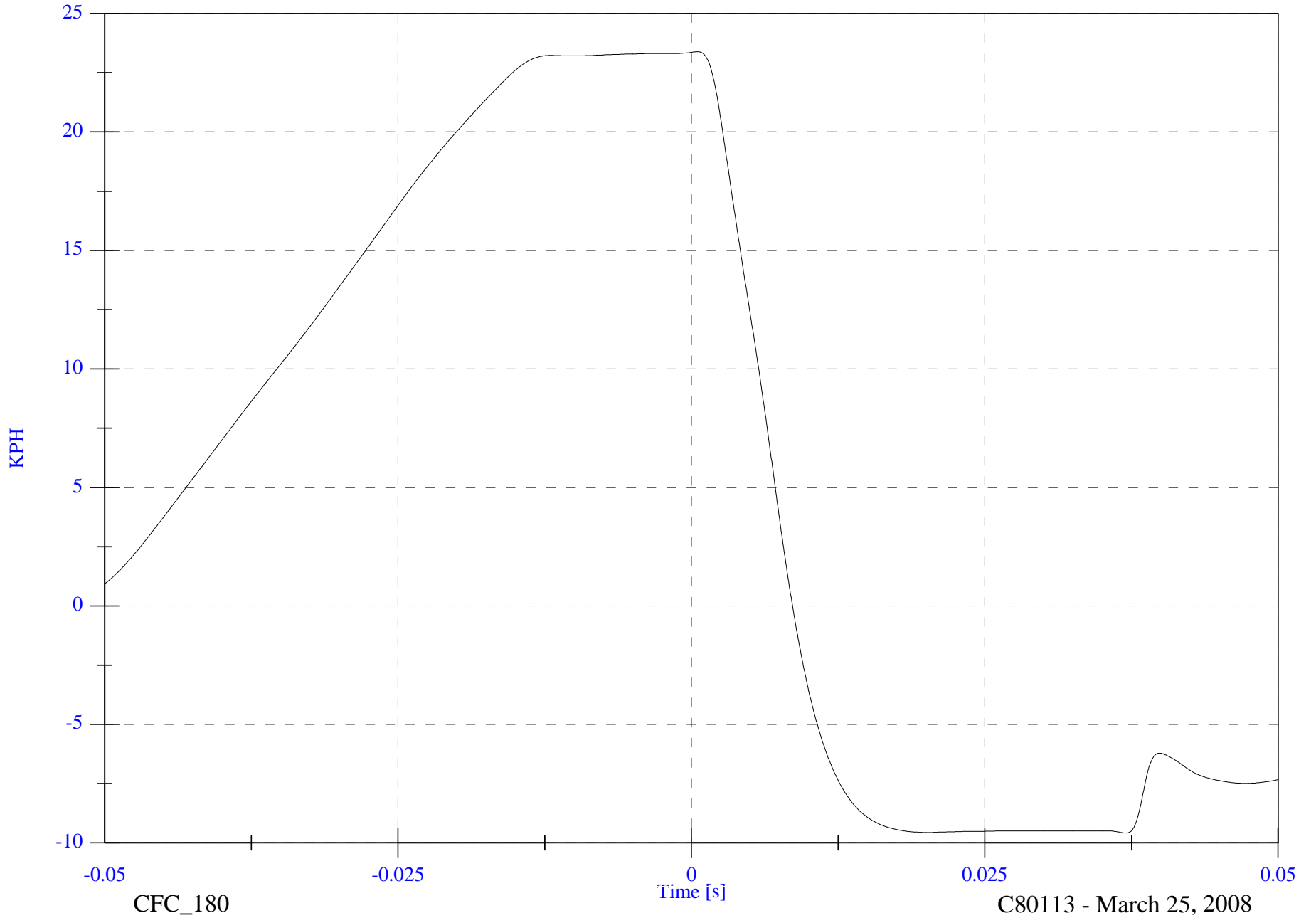


FMVSS 201U 2008 Saturn Vue

Headform Velocity

Max: 23.4 [KPH] at 0.000 [s]

Min: -9.6 [KPH] at 0.037 [s]

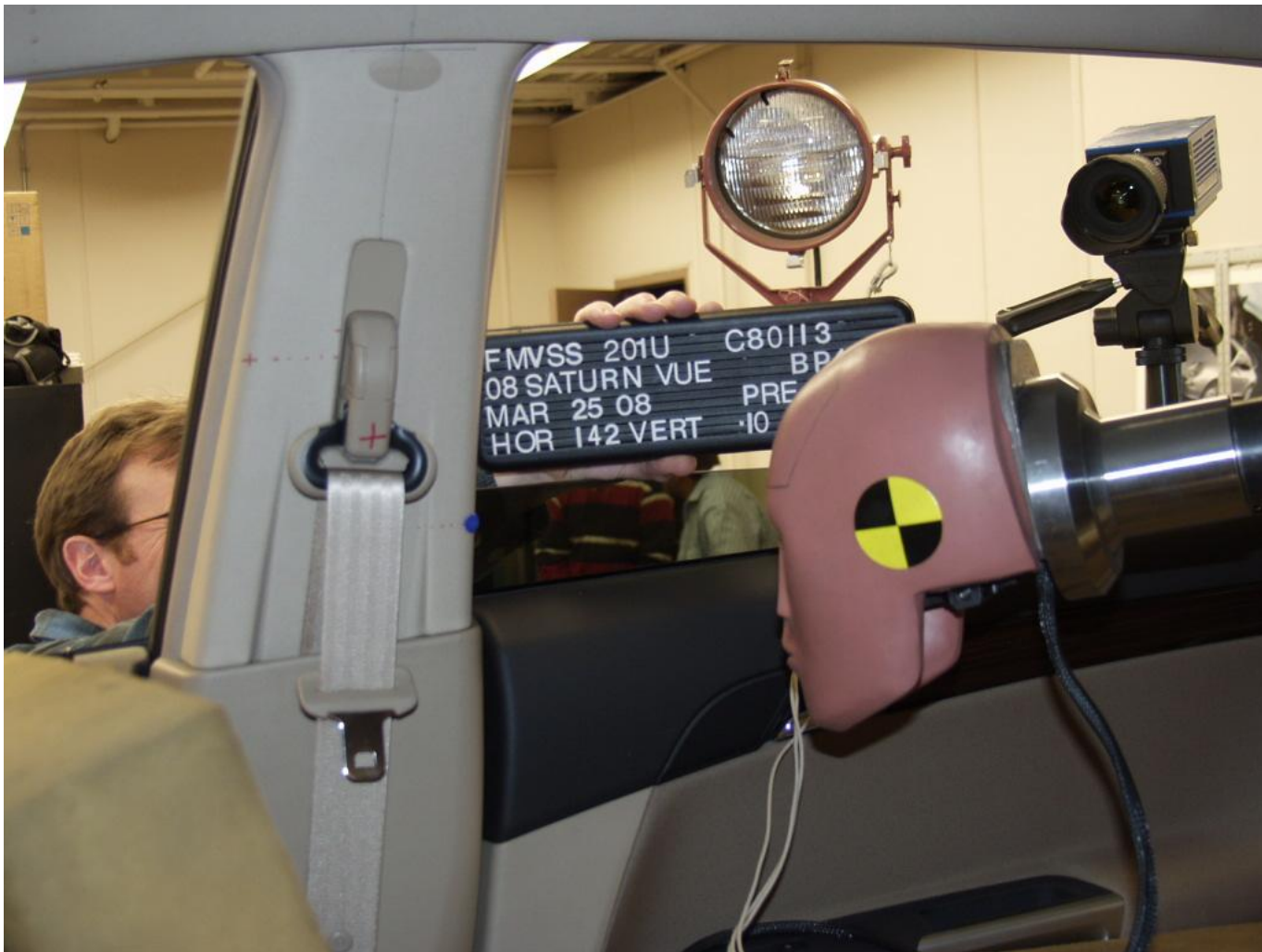


C80113 PASSENGER SIDE BP4 IMPACT PLOT #6

8851-05

CFC_180

C80113 - March 25, 2008



PRE-IMPACT BP4

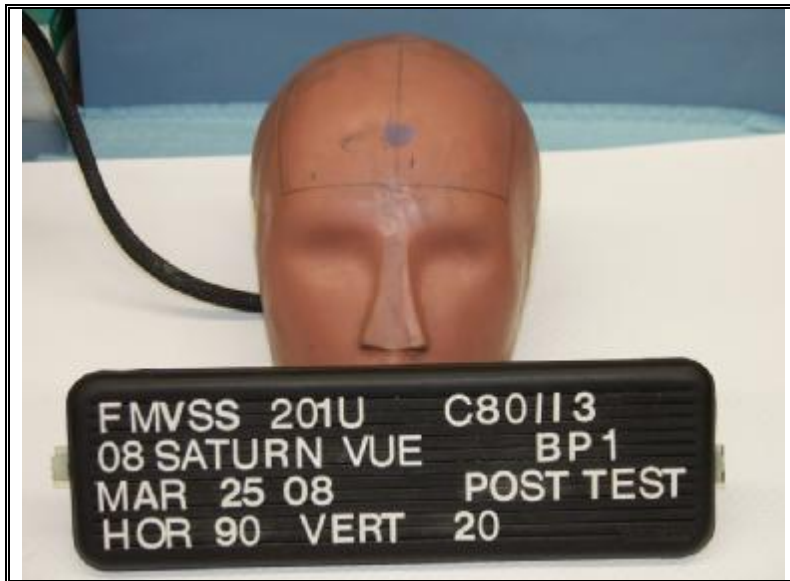


POST-IMPACT BP4

VEHICLE YEAR/MAKE/MODEL/STYLE:	2008 Saturn Vue XE
VIN:	3GSCL33P08S593009
DATE OF MANUFACTURE:	10/07(SEE CERTIFICATION LABEL)
COLOR:	White

Test Number:	04
Test Date:	03/25/08
Target Location:	B-PILLAR
Target Code:	BP1
Horizontal Impact Angle:	90°
Vertical Impact Angle:	20°
Ambient Temperature:	22.5 C°
Relative Humidity:	16
Time of Impact:	12:25
Headform Number:	0805

Impact Point Description (from lower midpoint on midsagittal line)			
On Centerline	0	mm right	mm left
On Centerline	27	mm up	



POST-IMPACT BP1 HEADFORM

Free Motion HIC	404.4
HIC(d)	471.5
Impact Velocity (kph)	18.5
HIC T1 (msec)	5.4
HIC T2 (msec)	11.9

FMVSS 201U 2008 Saturn Vue C80113 - BP1

FMH Headform 0805

Location: BP1

Test Date: March 25, 2008

Work File: BP1

-----TEST RESULTS-----

Lab Temperature: 22.5 C

HICd: 471.5

Lab Humidity: 16.0 %

HIC (36ms): 404.4

Velocity at Impact: 18.50 KPH

t1: 5.4 msec

t2: 11.9 msec

Free Flight Distance: 217.66 mm

Duration: 6.4 msec

Average Acceleration: 8.1 g

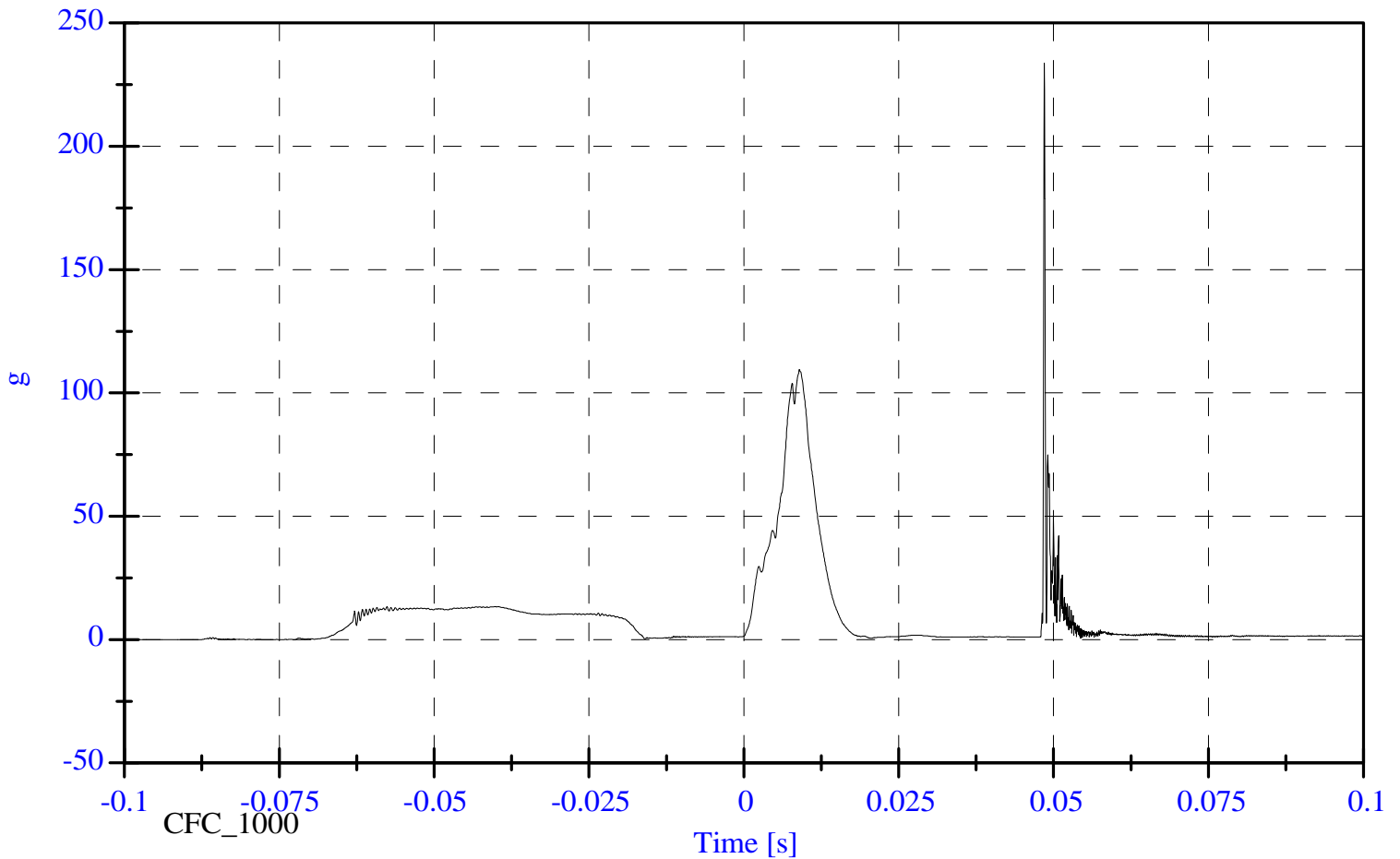
Maximum: 109.5 g

FMVSS 201U 2008 Saturn Vue

Headform Resultant

Max: 109.5 [g] at 0.009 [s]

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



FMVSS 201U 2008 Saturn Vue

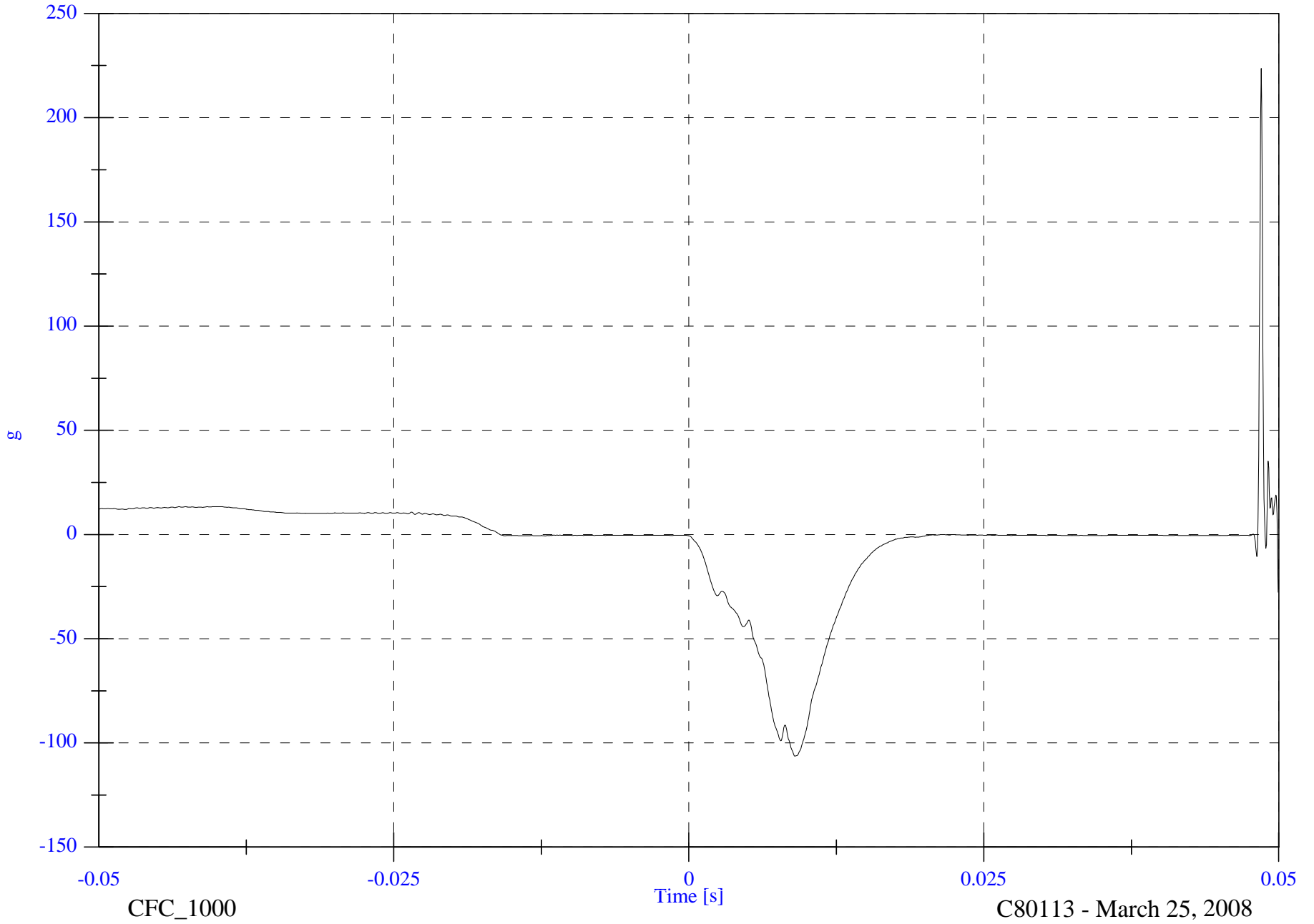
Headform X Acceleration

Max: 223.6 [g] at 0.049 [s]

Min: -106.4 [g] at 0.009 [s]

C80113 PASSENGER SIDE BPI IMPACT PLOT #2

8851-05



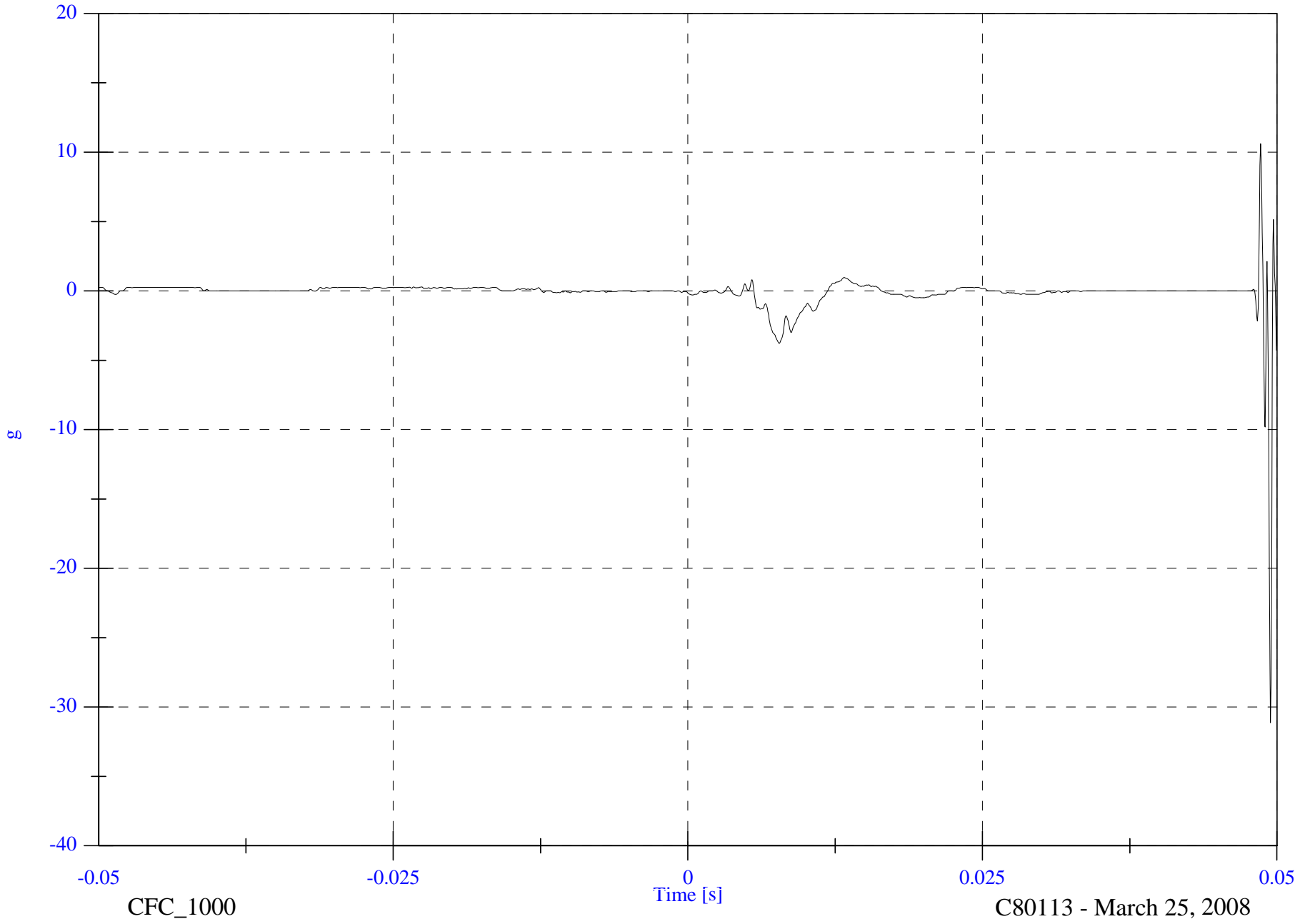
FMVSS 201U 2008 Saturn Vue

Headform Y Acceleration

Max: 10.6 [g] at 0.049 [s]
Min: -31.1 [g] at 0.049 [s]

C80113 PASSENGER SIDE BPI IMPACT PLOT #3

8851-05



CFC_1000

Time [s]

C80113 - March 25, 2008

FMVSS 201U 2008 Saturn Vue

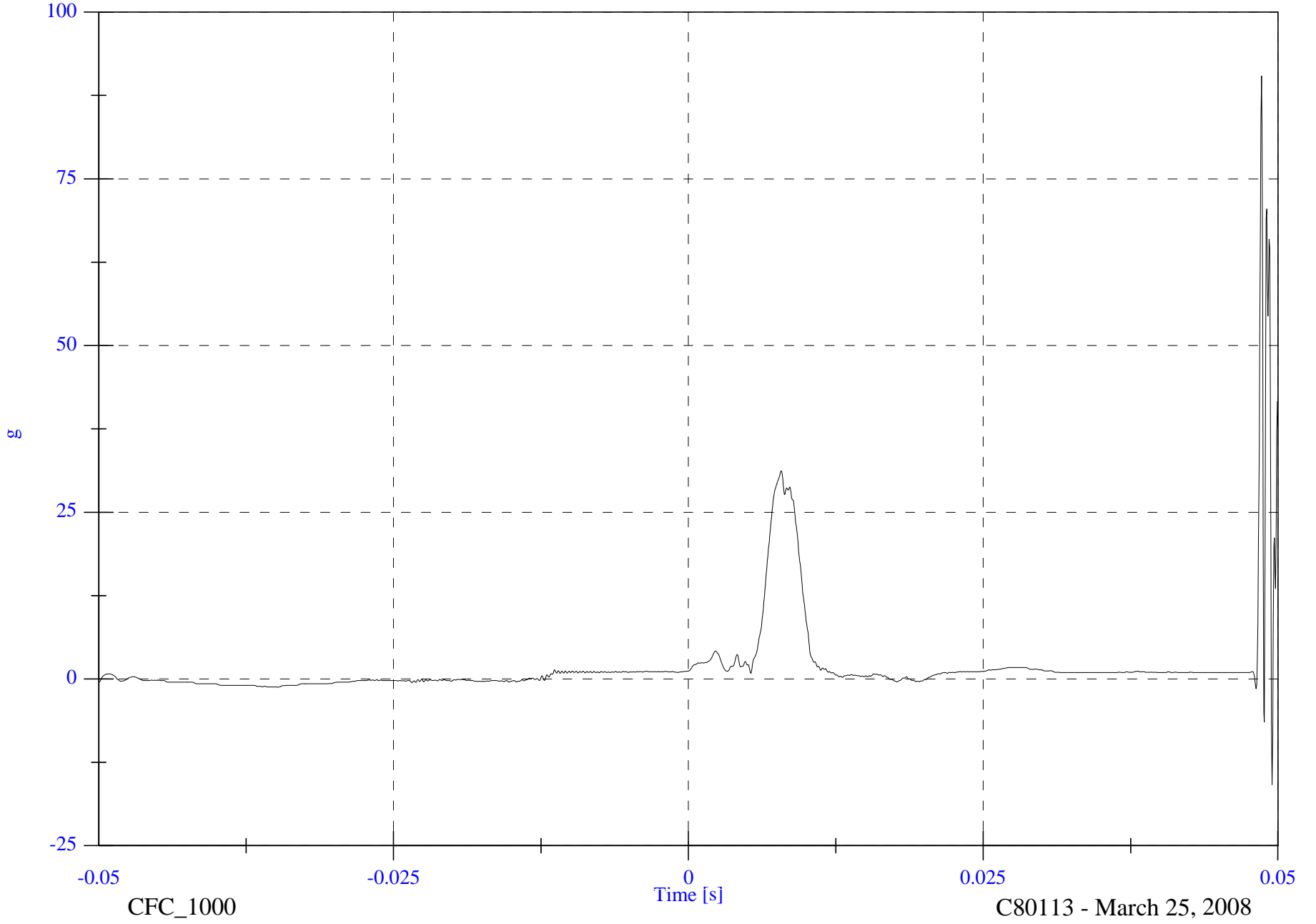
Headform Z Acceleration

Max: 90.4 [g] at 0.049 [s]

Min: -15.8 [g] at 0.050 [s]

C80113 PASSENGER SIDE BPI IMPACT PLOT #4

8851-05



FMVSS 201U 2008 Saturn Vue

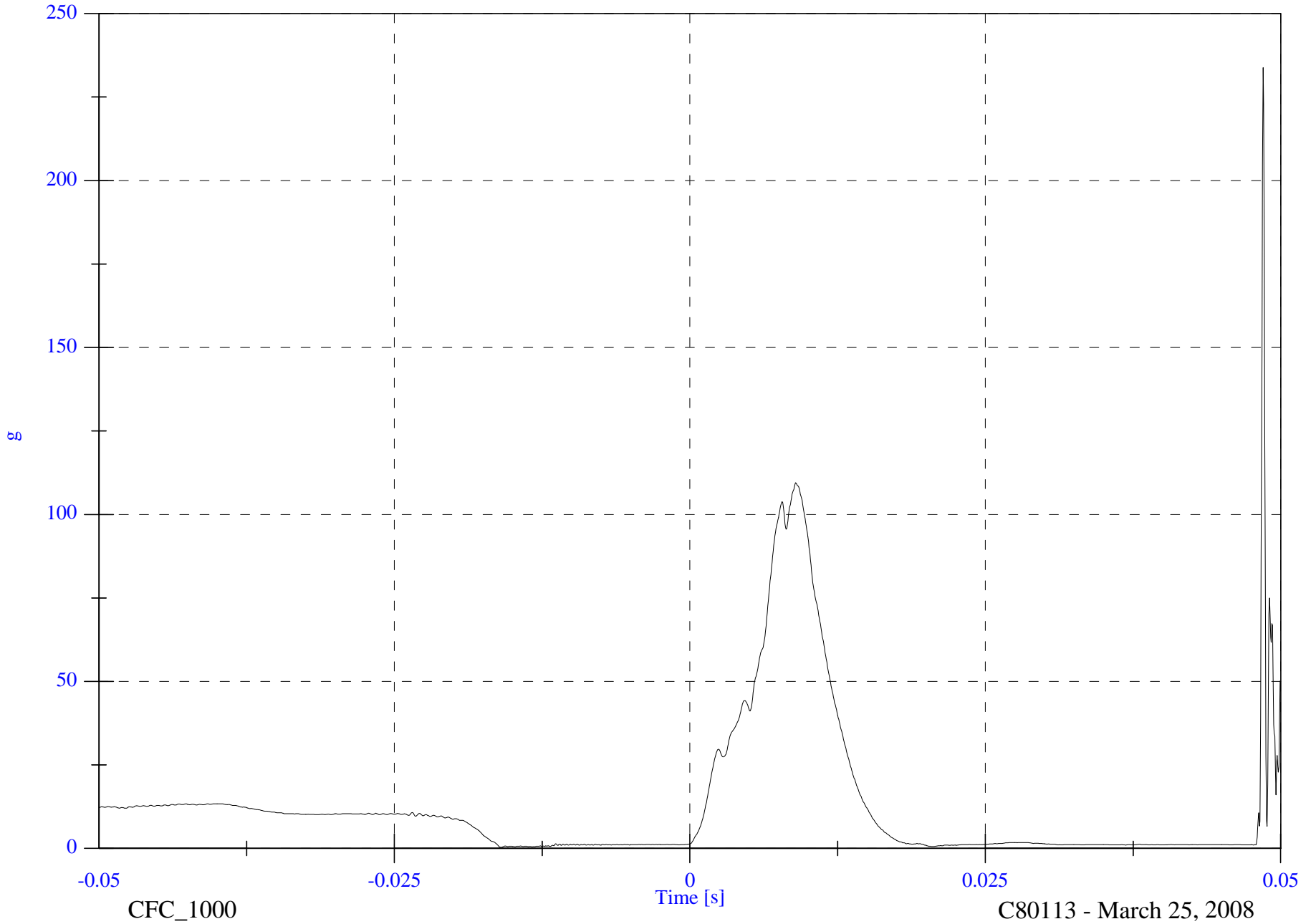
Headform Resultant

Max: 233.8 [g] at 0.049 [s]

Min: 0.3 [g] at -0.016 [s]

C80113 PASSENGER SIDE BPI IMPACT PLOT #5

8851-05



CFC_1000

C80113 - March 25, 2008

FMVSS 201U 2008 Saturn Vue

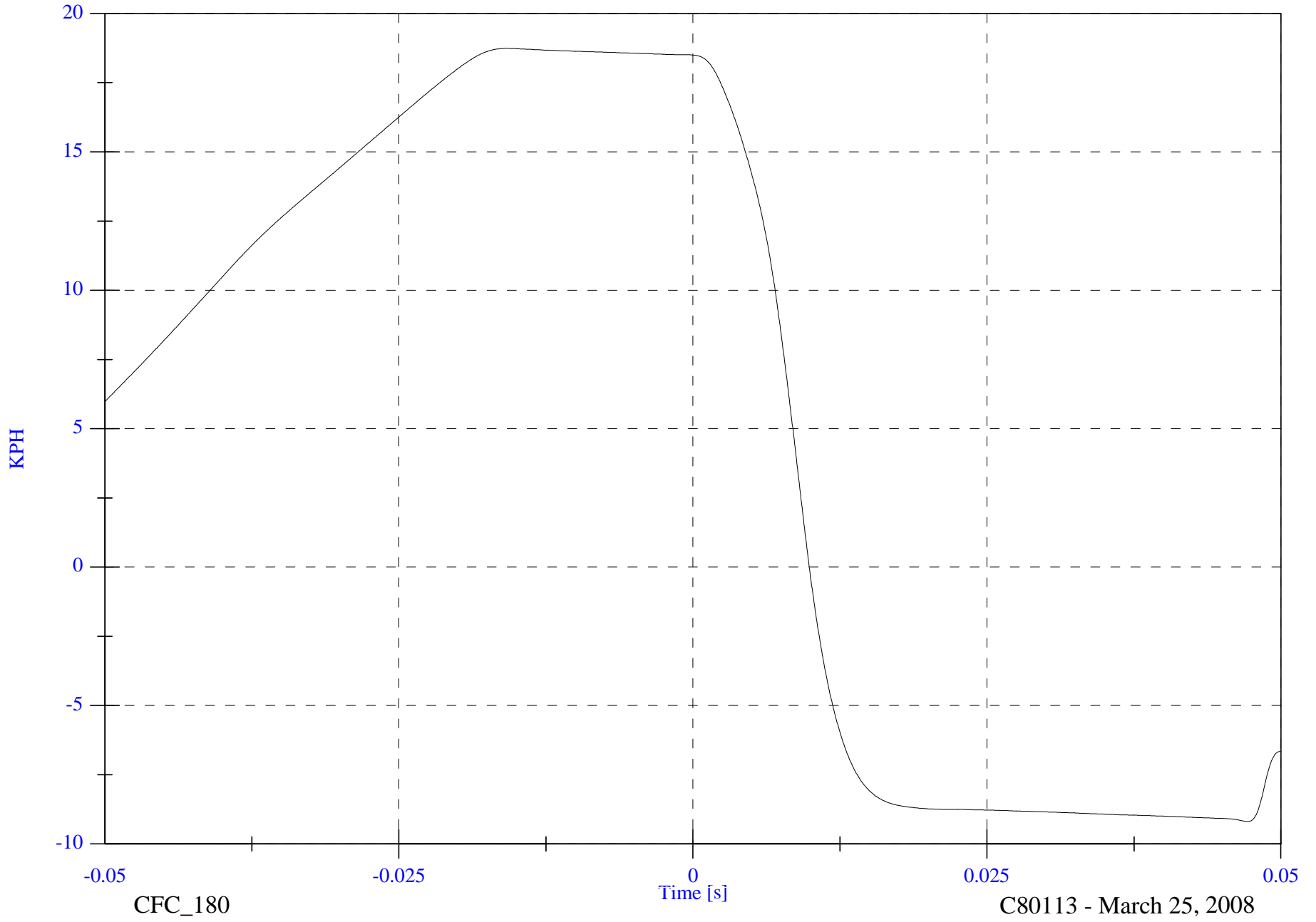
Headform Velocity

Max: 18.7 [KPH] at -0.016 [s]

Min: -9.2 [KPH] at 0.047 [s]

C80113 PASSENGER SIDE BPI IMPACT PLOT #6

8851-05



CFC_180

Time [s]

C80113 - March 25, 2008



PRE-IMPACT BP1



POST-IMPACT BP1

VEHICLE YEAR/MAKE/MODEL/STYLE:	2008 Saturn Vue XE
VIN:	3GSCL33P08S593009
DATE OF MANUFACTURE:	10/07(SEE CERTIFICATION LABEL)
COLOR:	White

Test Number:	05
Test Date:	03/25/08
Target Location:	SIDE RAIL
Target Code:	SR2B
Horizontal Impact Angle:	90°
Vertical Impact Angle:	17°
Ambient Temperature:	22.5 C°
Relative Humidity:	16.6
Time of Impact:	14:15
Headform Number:	0062

Impact Point Description (from lower midpoint on midsagittal line)					
On Centerline	4	<input type="checkbox"/>	mm right	<input checked="" type="checkbox"/>	mm left
On Centerline	5				mm up



POST-IMPACT SR2B HEADFORM

Free Motion HIC	221.8
HIC(d)	333.7
Impact Velocity (kph)	18.66
HIC T1 (msec)	5.5
HIC T2 (msec)	12.4

FMVSS 201U 2008 Saturn Vue C80113 - SR2B

FMH Headform 0062

Location: SR2B

Test Date: March 25, 2008

Work File: SR2B

-----TEST RESULTS-----

Lab Temperature: 22.5 C

HICd: 333.7

Lab Humidity: 16.6 %

HIC (36ms): 221.8

Velocity at Impact: 18.66 KPH

t1: 5.5 msec

t2: 12.4 msec

Free Flight Distance: 217.93 mm

Duration: 6.9 msec

Average Acceleration: 6.7 g

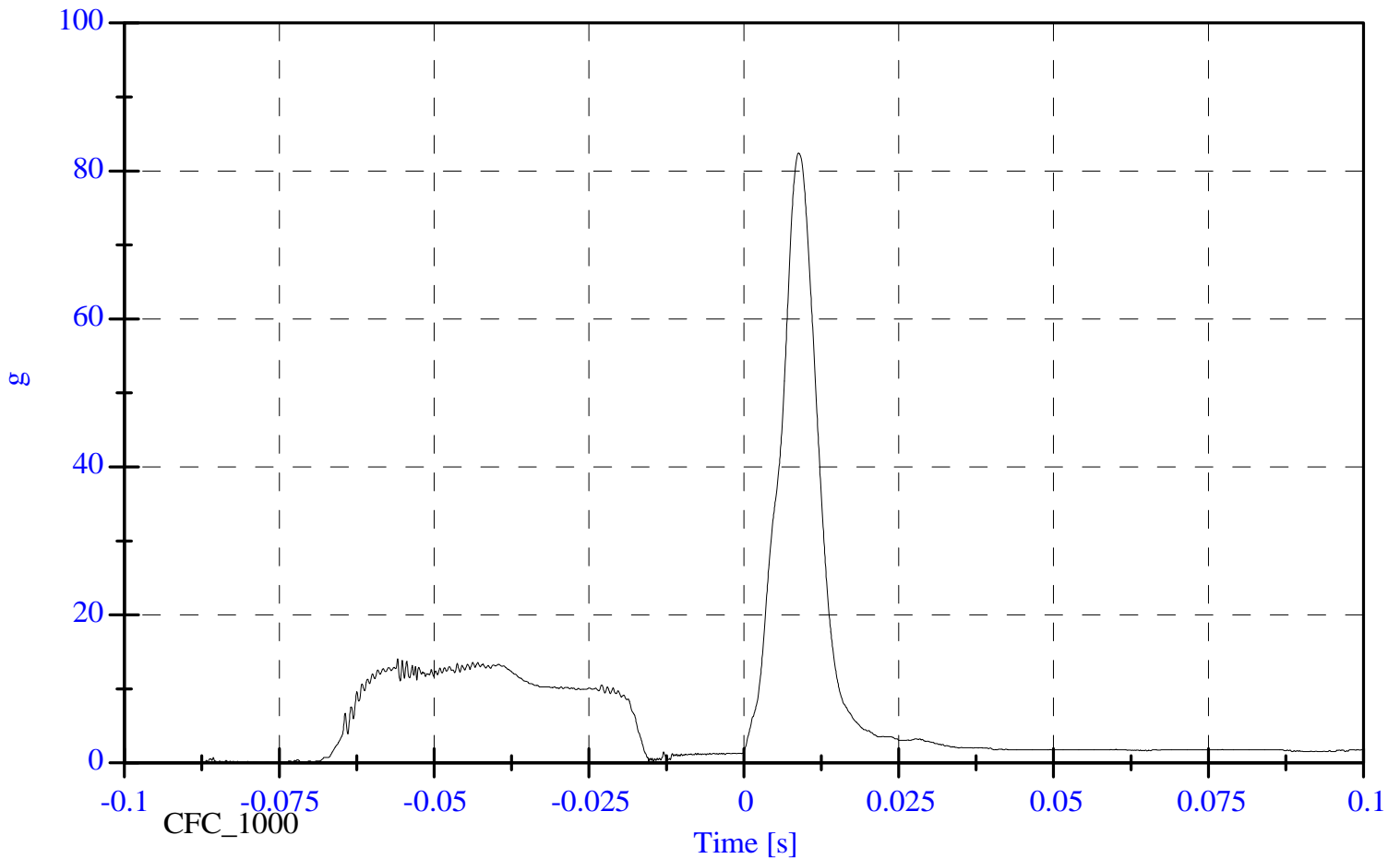
Maximum: 82.4 g

FMVSS 201U 2008 Saturn Vue

Headform Resultant

Max: 82.4 [g] at 0.009 [s]

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



FMVSS 201U 2008 Saturn Vue

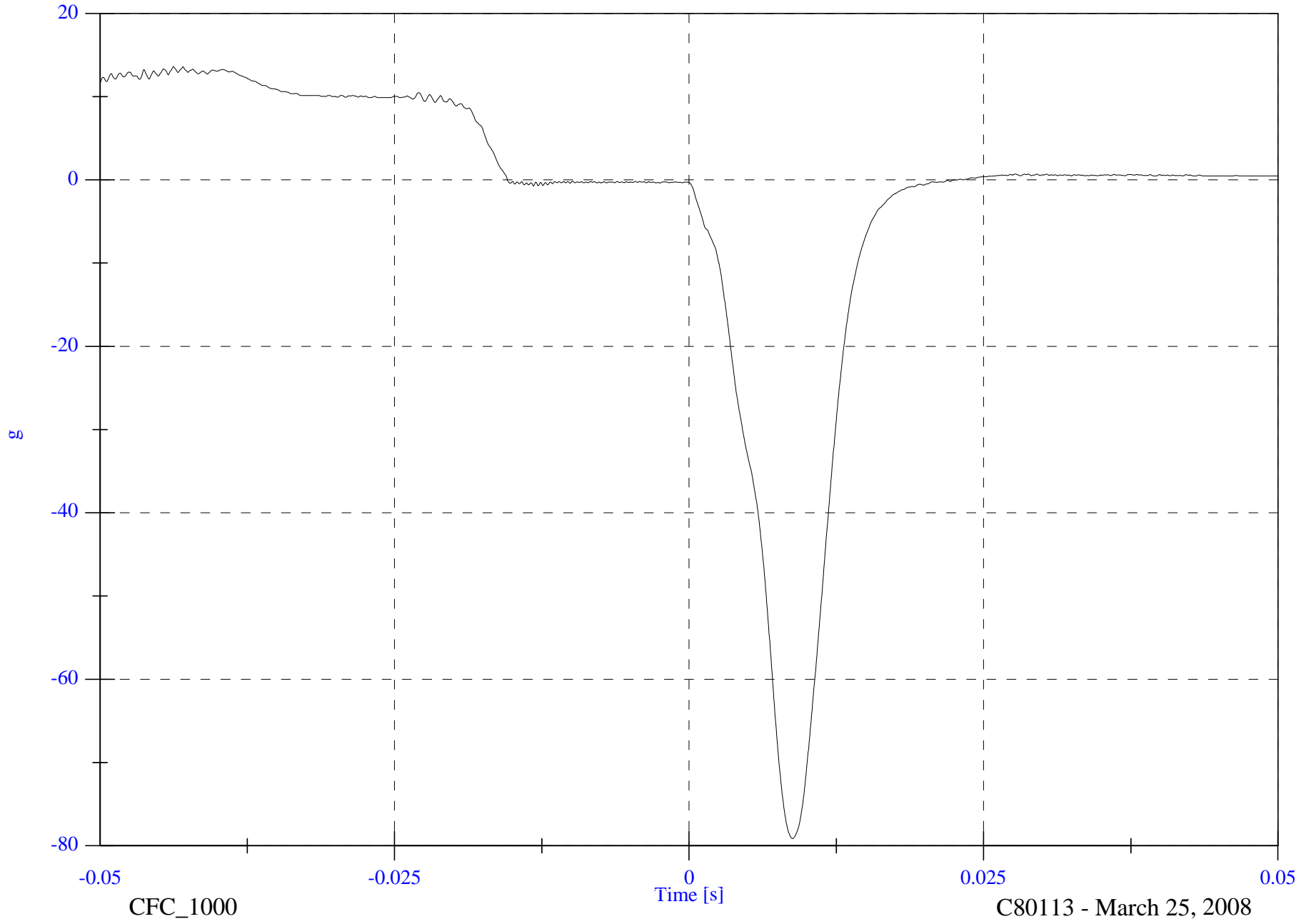
Headform X Acceleration

Max: 13.6 [g] at -0.044 [s]

Min: -79.1 [g] at 0.009 [s]

C80113 PASSENGER SIDE SR2B IMPACT PLOT #2

8851-05



CFC_1000

C80113 - March 25, 2008

FMVSS 201U 2008 Saturn Vue

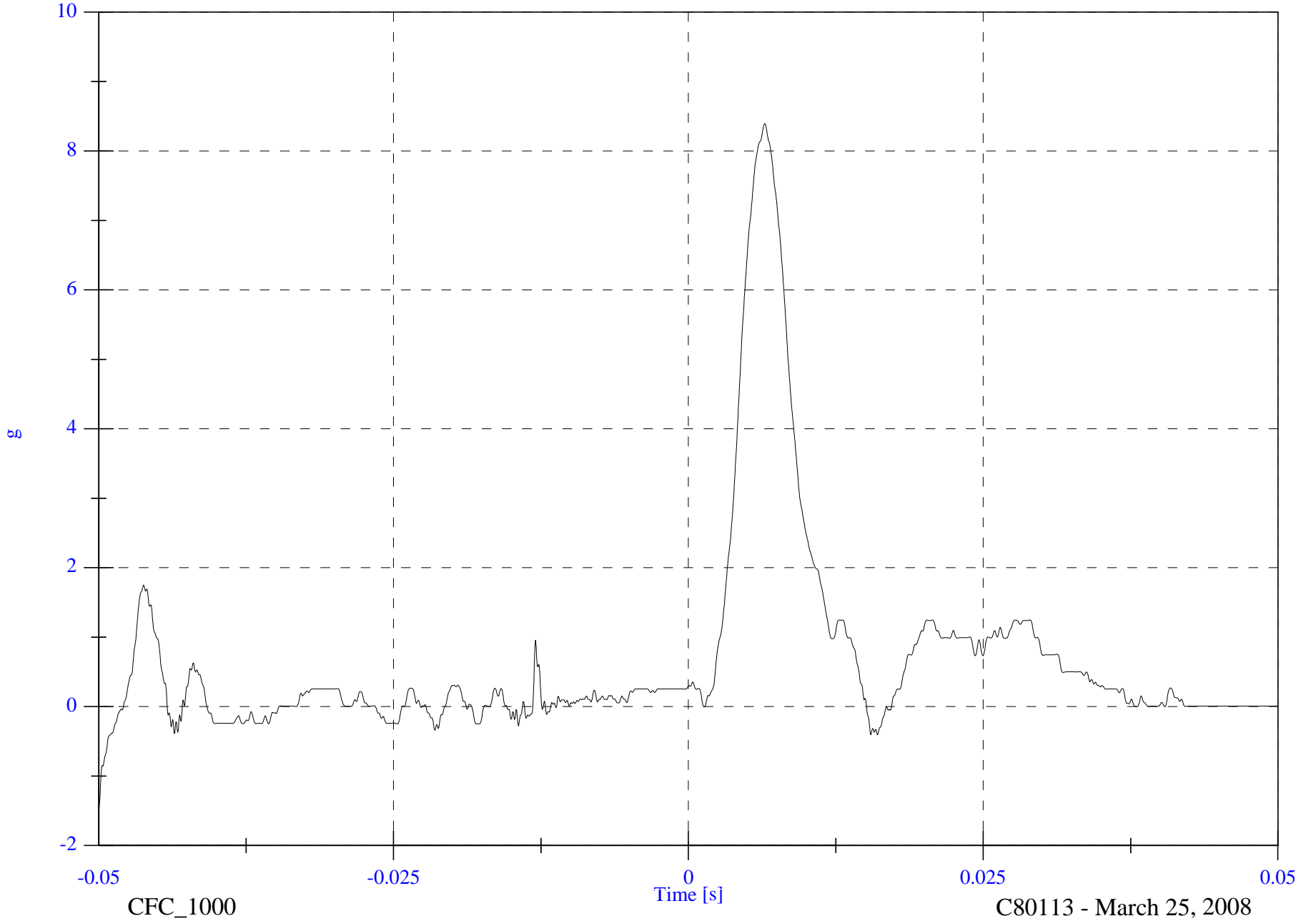
Headform Y Acceleration

Max: 8.4 [g] at 0.006 [s]

Min: -1.5 [g] at -0.050 [s]

C80113 PASSENGER SIDE SR2B IMPACT PLOT #3

8851-05



CFC_1000

C80113 - March 25, 2008

FMVSS 201U 2008 Saturn Vue

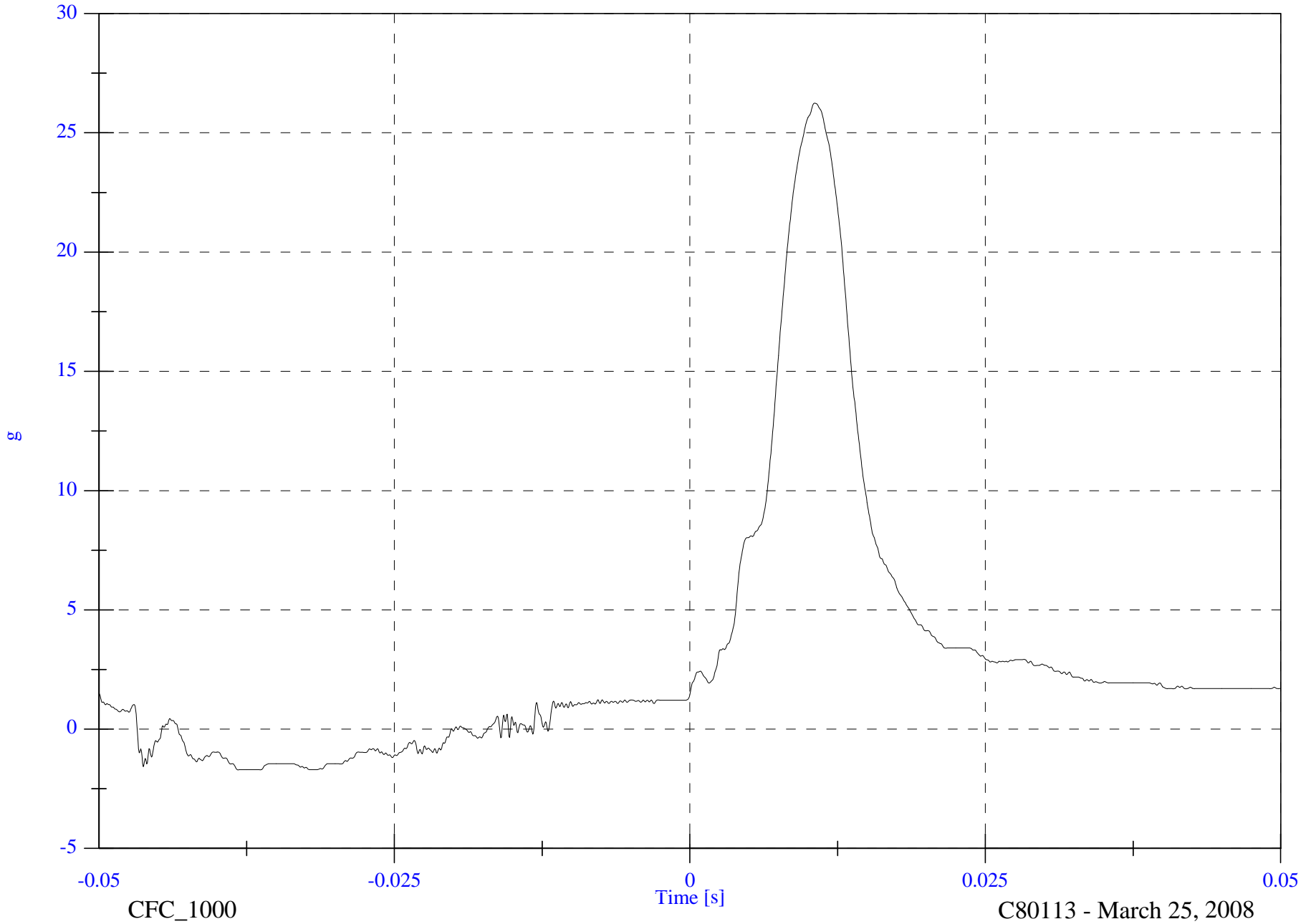
Headform Z Acceleration

Max: 26.2 [g] at 0.011 [s]

Min: -1.7 [g] at -0.038 [s]

C80113 PASSENGER SIDE SR2B IMPACT PLOT #4

8851-05



FMVSS 201U 2008 Saturn Vue

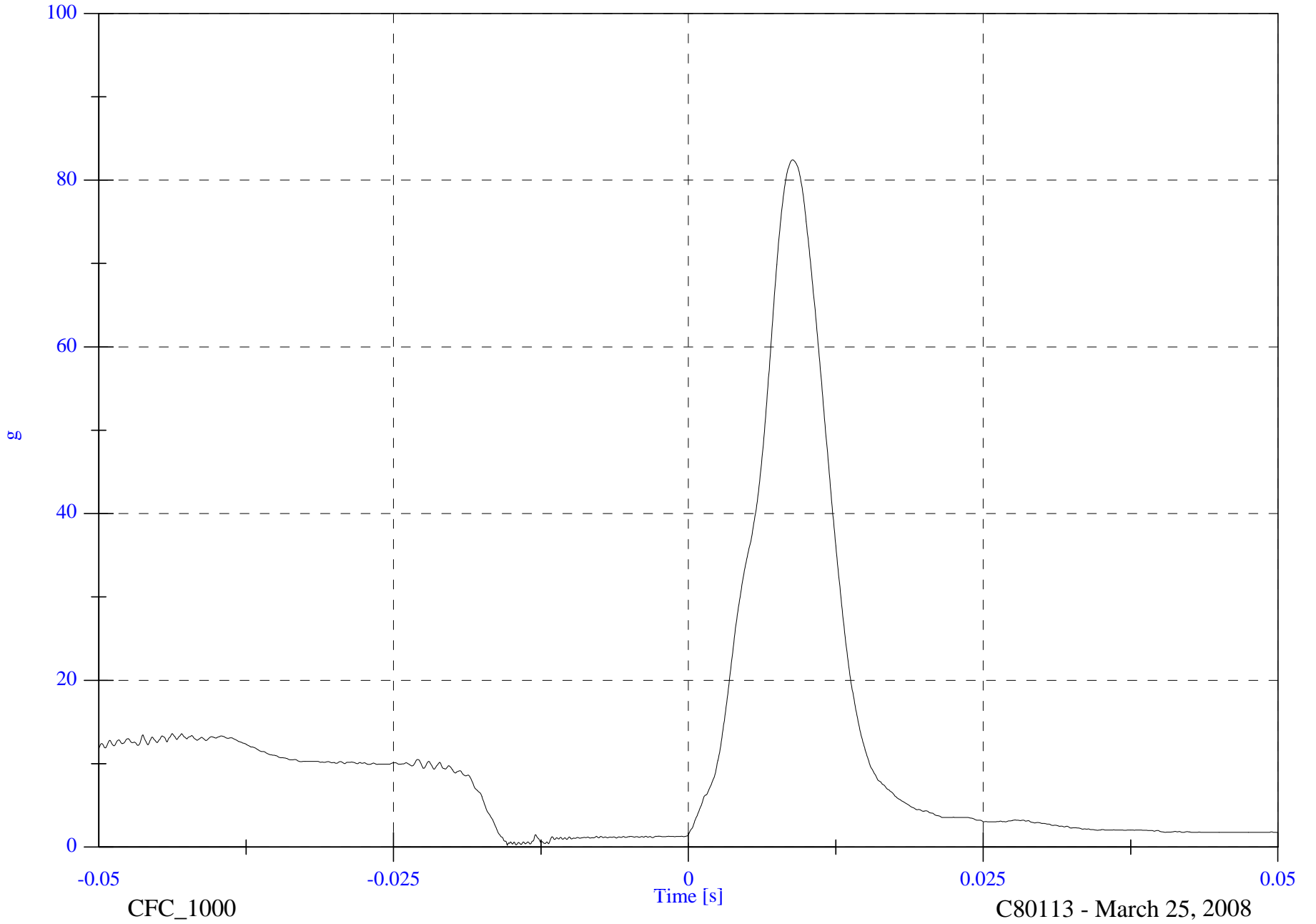
Headform Resultant

Max: 82.4 [g] at 0.009 [s]

Min: 0.2 [g] at -0.015 [s]

C80113 PASSENGER SIDE SR2B IMPACT PLOT #5

8851-05

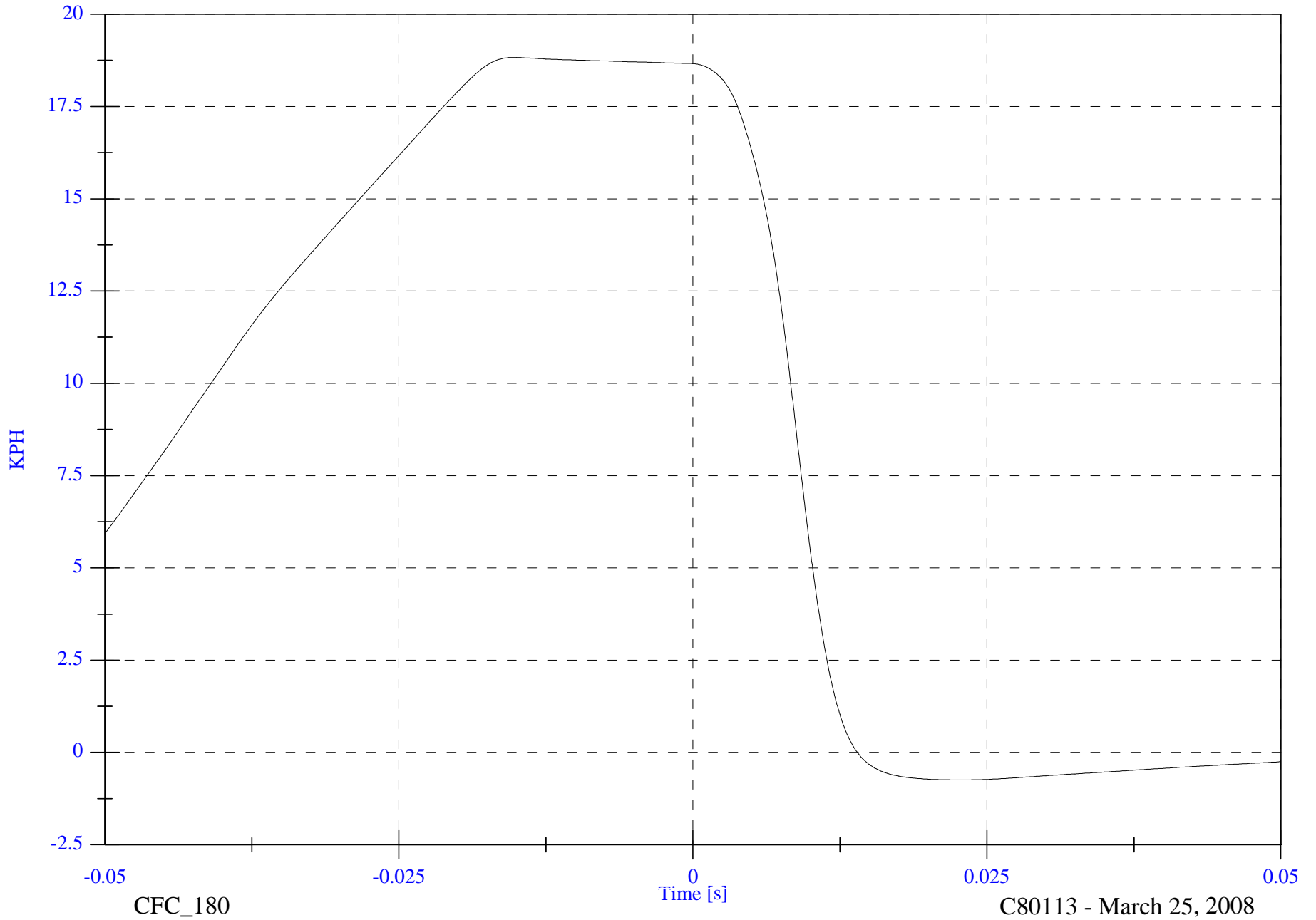


FMVSS 201U 2008 Saturn Vue

Headform Velocity

Max: 18.8 [KPH] at -0.015 [s]

Min: -0.7 [KPH] at 0.023 [s]



C80113 PASSENGER SIDE SR2B IMPACT PLOT #6

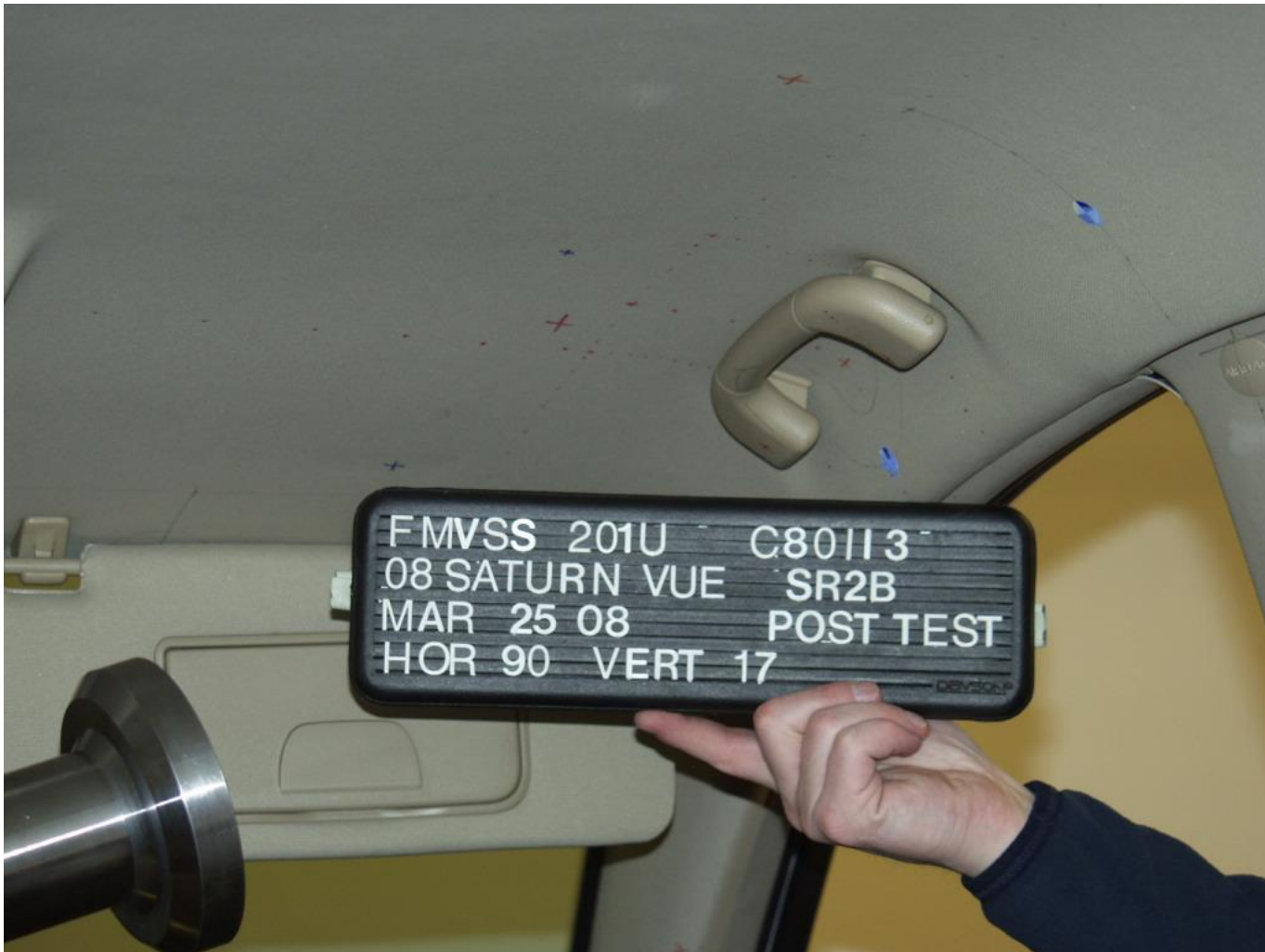
8851-05

CFC_180

C80113 - March 25, 2008



PRE-IMPACT SR2B

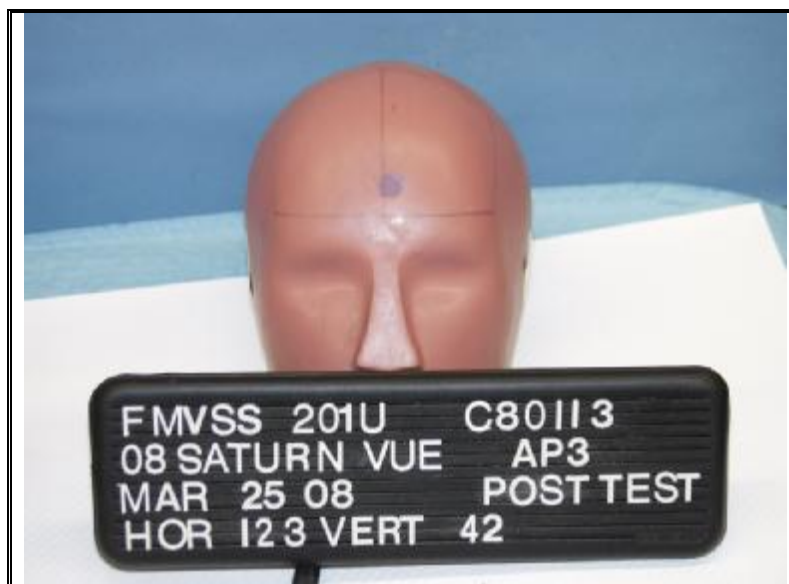


POST-IMPACT SR2B

VEHICLE YEAR/MAKE/MODEL/STYLE:	2008 Saturn Vue XE
VIN:	3GSCL33P08S593009
DATE OF MANUFACTURE:	10/07(SEE CERTIFICATION LABEL)
COLOR:	White

Test Number:	06
Test Date:	03/25/08
Target Location:	A-PILLAR
Target Code:	AP3
Horizontal Impact Angle:	123°
Vertical Impact Angle:	42°
Ambient Temperature:	22.6 C°
Relative Humidity:	16.6
Time of Impact:	15:00
Headform Number:	1142

Impact Point Description (from lower midpoint on midsagittal line)					
On Centerline	2	<input type="checkbox"/>	mm right	<input checked="" type="checkbox"/>	mm left
On Centerline	14				mm up



POST-IMPACT AP3 HEADFORM

Free Motion HIC	234.6
HIC(d)	343.4
Impact Velocity (kph)	18.78
HIC T1 (msec)	2.6
HIC T2 (msec)	8.7

FMVSS 201U 2008 Saturn Vue C80113 - AP3

FMH Headform 1142

Location: AP3

Test Date: March 25, 2008

Work File: AP3

-----TEST RESULTS-----

Lab Temperature: 22.6 C

HICd: 343.4

Lab Humidity: 16.6 %

HIC (36ms): 234.6

Velocity at Impact: 18.78 KPH

t1: 2.6 msec

t2: 8.7 msec

Free Flight Distance: 221.01 mm

Duration: 6.1 msec

Average Acceleration: 7.3 g

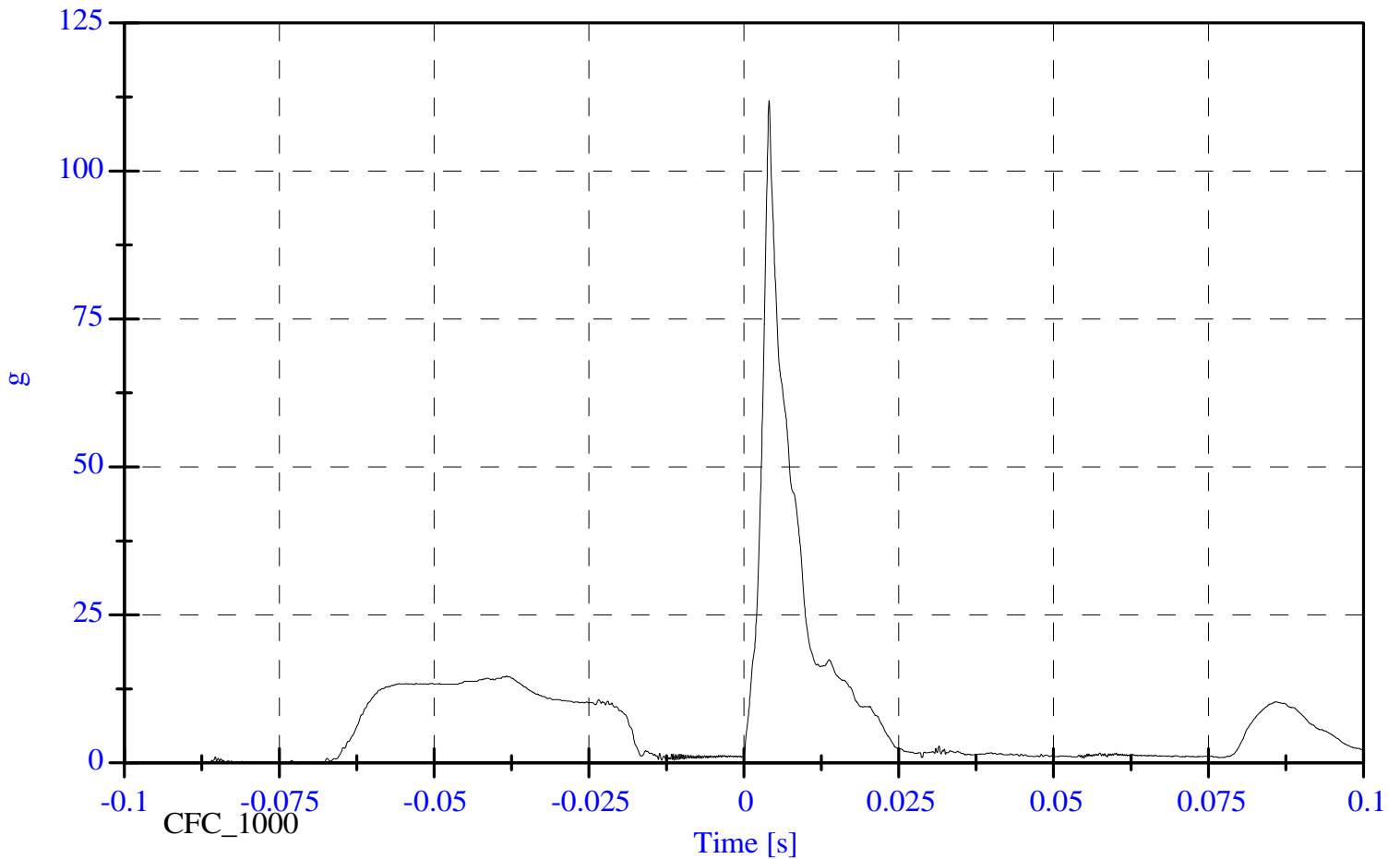
Maximum: 111.9 g

FMVSS 201U 2008 Saturn Vue

Headform Resultant

Max: 111.9 [g] at 0.004 [s]

Min: 0.0 [g] at -0.078 [s]

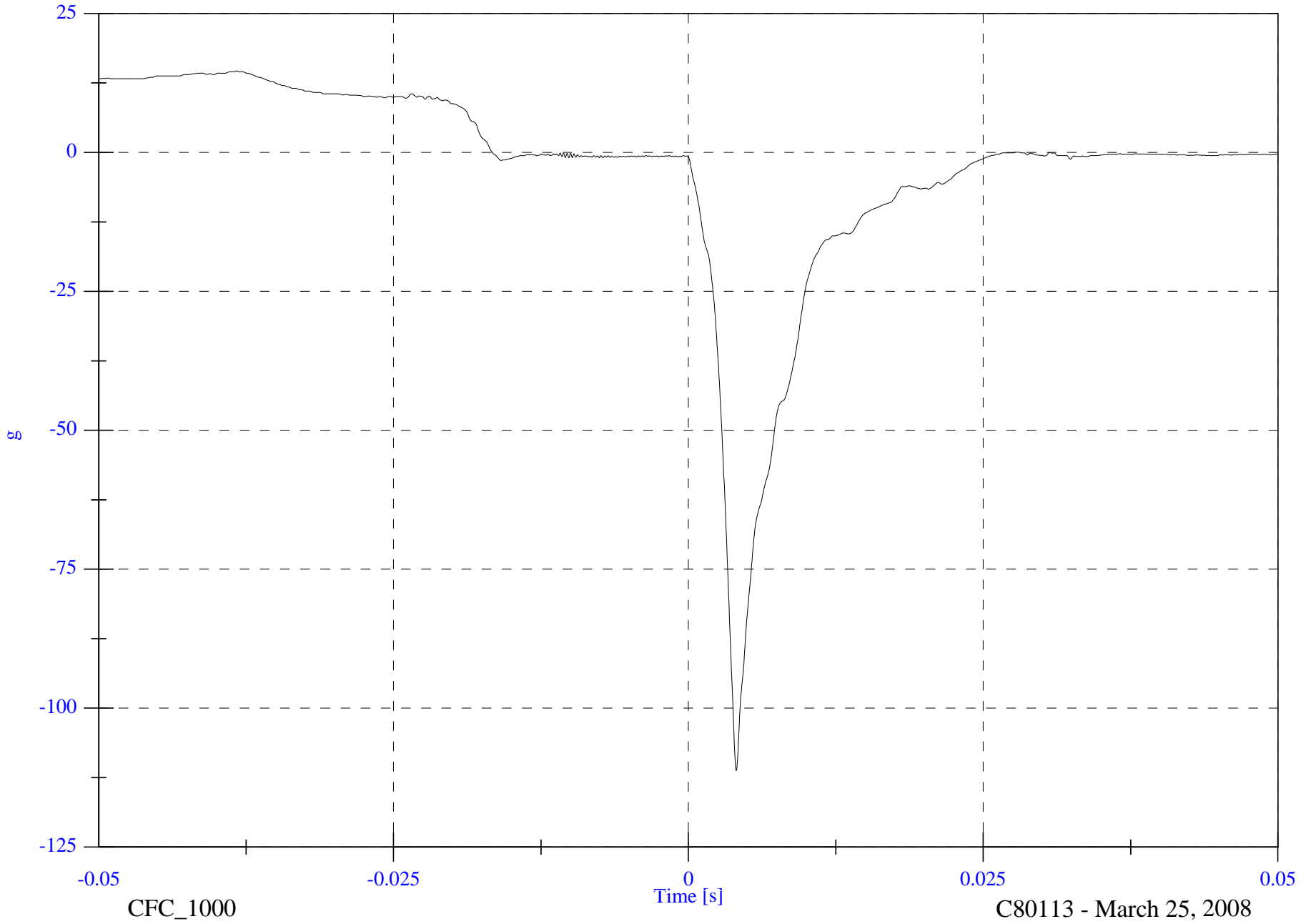


FMVSS 201U 2008 Saturn Vue

Headform X Acceleration

Max: 14.7 [g] at -0.038 [s]

Min: -111.2 [g] at 0.004 [s]



C80113 PASSENGER SIDE AP3 IMPACT PLOT #1

8851-05

CFC_1000

C80113 - March 25, 2008

FMVSS 201U 2008 Saturn Vue

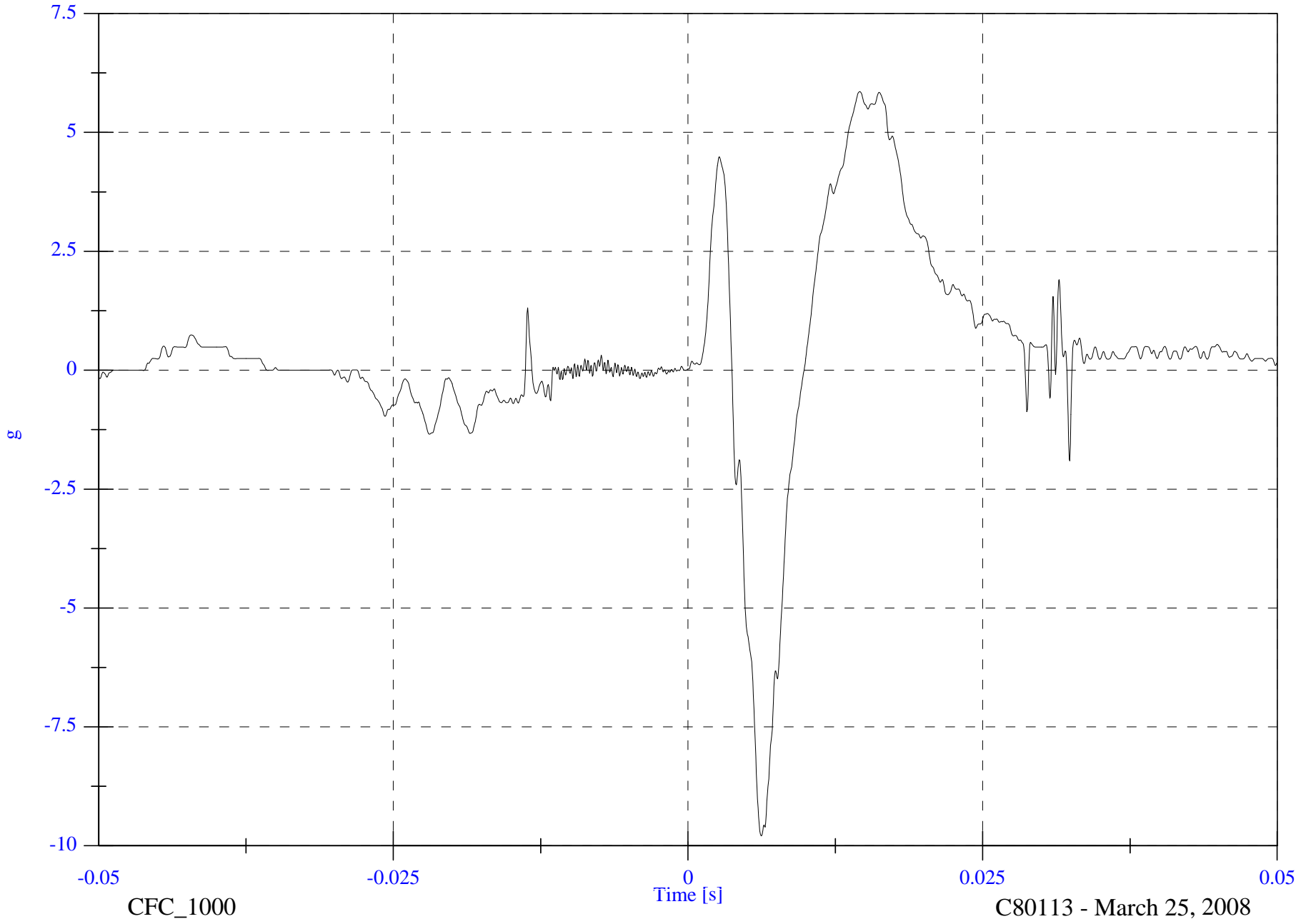
Headform Y Acceleration

Max: 5.9 [g] at 0.015 [s]

Min: -9.8 [g] at 0.006 [s]

C80113 PASSENGER SIDE AP3 IMPACT PLOT #2

8851-05



CFC_1000

C80113 - March 25, 2008

FMVSS 201U 2008 Saturn Vue

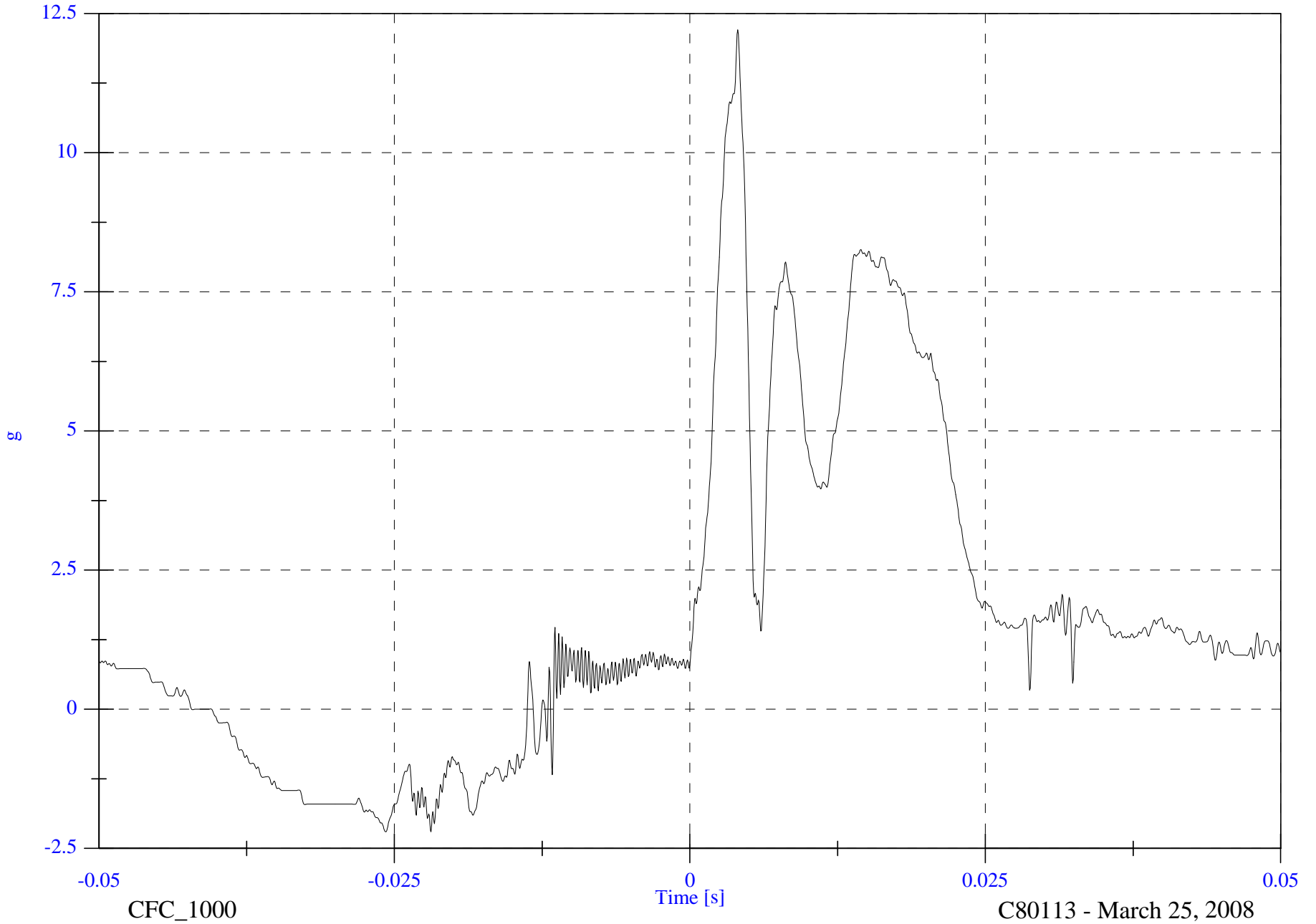
Headform Z Acceleration

Max: 12.2 [g] at 0.004 [s]

Min: -2.2 [g] at -0.026 [s]

C80113 PASSENGER SIDE AP3 IMPACT PLOT #3

8851-05



FMVSS 201U 2008 Saturn Vue

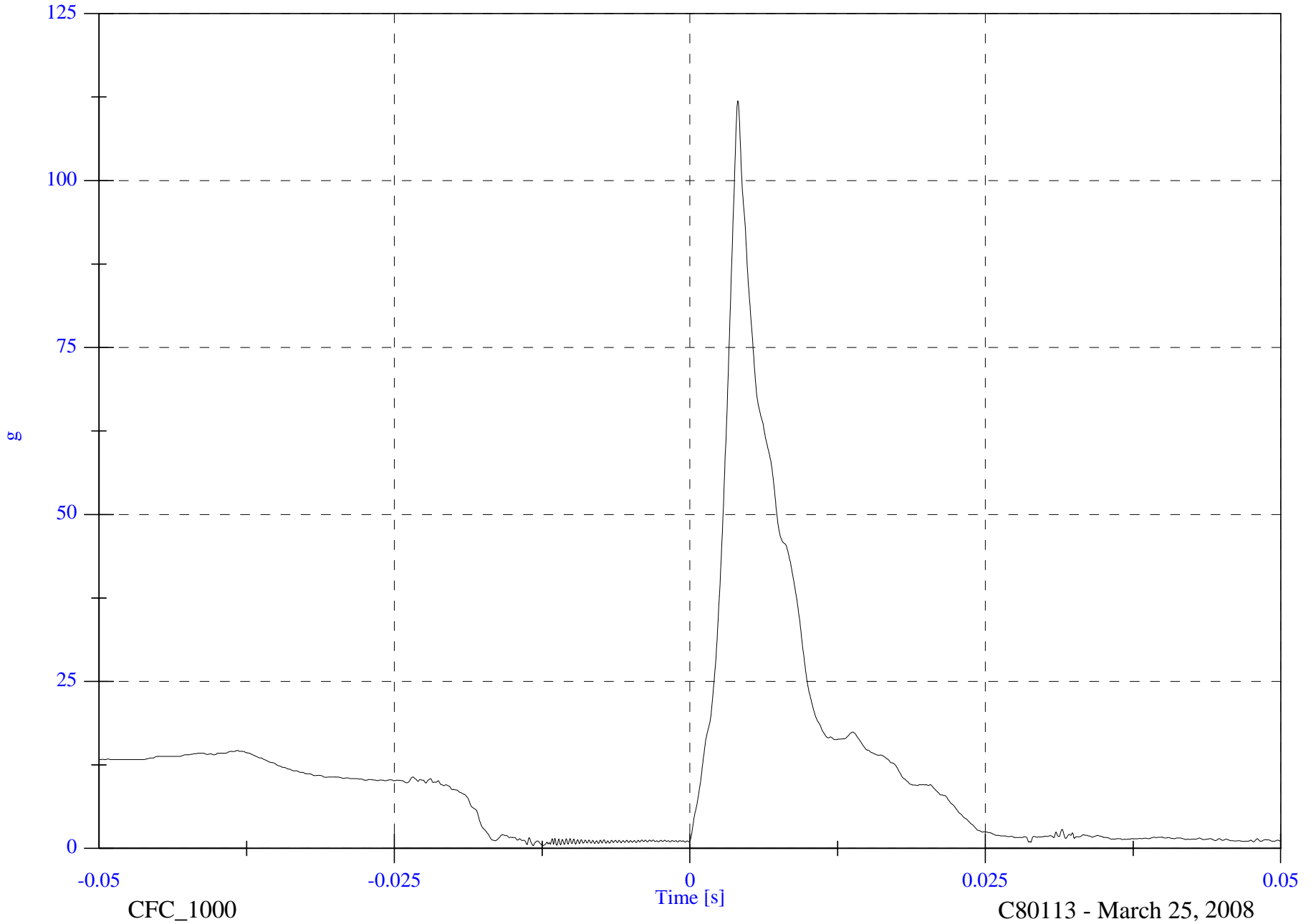
Headform Resultant

Max: 111.9 [g] at 0.004 [s]

Min: 0.4 [g] at -0.013 [s]

C80113 PASSENGER SIDE AP3 IMPACT PLOT #4

8851-05

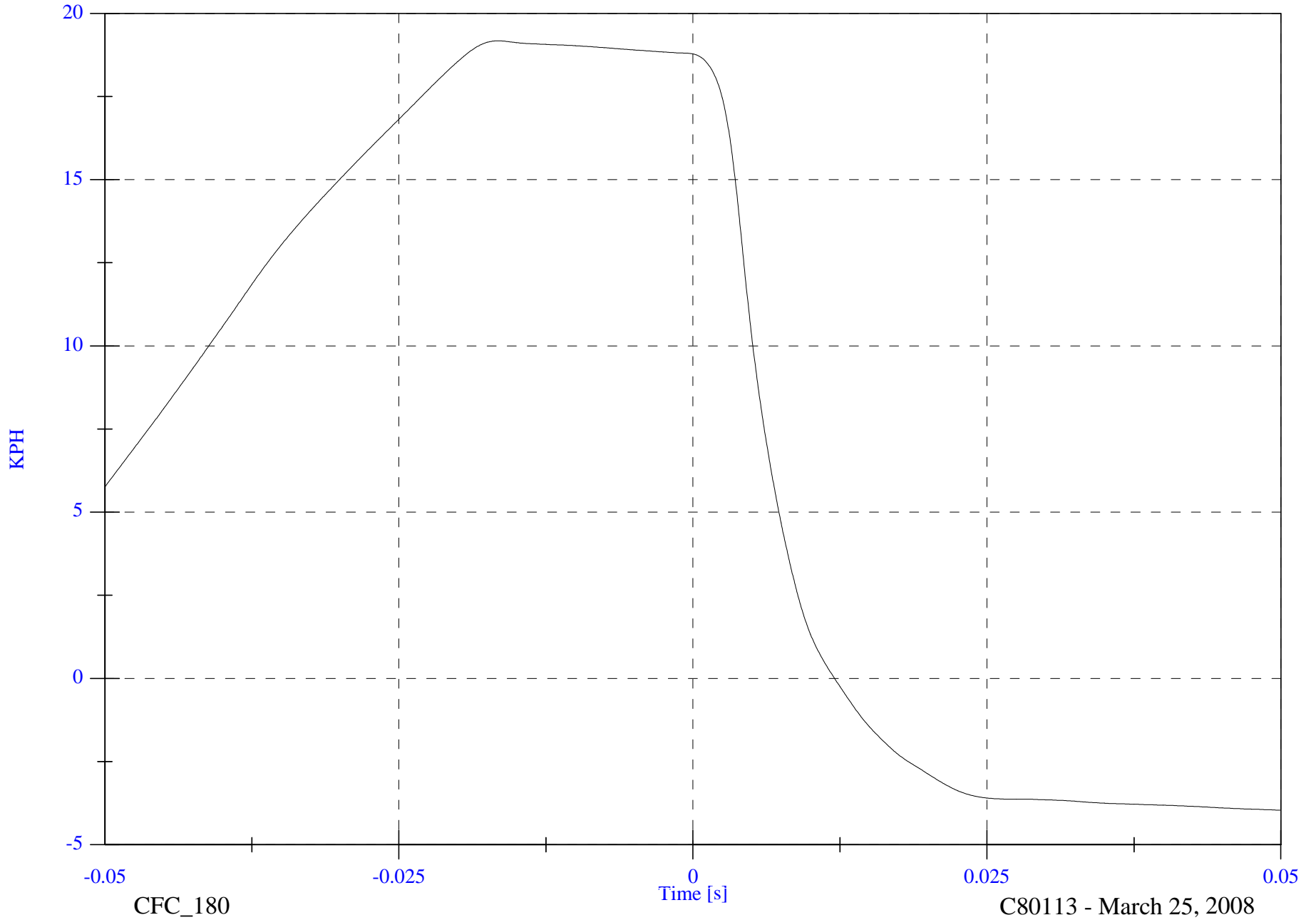


FMVSS 201U 2008 Saturn Vue

Headform Velocity

Max: 19.2 [KPH] at -0.017 [s]

Min: -4.0 [KPH] at 0.050 [s]



C80113 PASSENGER SIDE AP3 IMPACT PLOT #5

8851-05

CFC_180

C80113 - March 25, 2008



PRE-IMPACT AP3



POST-IMPACT AP3

VEHICLE YEAR/MAKE/MODEL/STYLE:	2008 Saturn Vue XE
VIN:	3GSCL33P08S593009
DATE OF MANUFACTURE:	10/07(SEE CERTIFICATION LABEL)
COLOR:	White

Test Number:	07
Test Date:	03/25/08
Target Location:	A-PILLAR
Target Code:	AP1
Horizontal Impact Angle:	106°
Vertical Impact Angle:	17°
Ambient Temperature:	22.6 C°
Relative Humidity:	16.8
Time of Impact:	16:09
Headform Number:	1140

Impact Point Description (from lower midpoint on midsagittal line)					
On Centerline	9	<input checked="" type="checkbox"/>	mm right	<input type="checkbox"/>	mm left
On Centerline	1				mm up



POST-IMPACT AP1 HEADFORM

Free Motion HIC	317.4
HIC(d)	405.8
Impact Velocity (kph)	18.48
HIC T1 (msec)	5.3
HIC T2 (msec)	9.6

FMVSS 201U 2008 Saturn Vue C80113 - AP1

FMH Headform 1140

Location: AP1

Test Date: March 25, 2008

Work File: AP1

-----TEST RESULTS-----

Lab Temperature: 22.6 C

HICd: 405.8

Lab Humidity: 16.8 %

HIC (36ms): 317.4

Velocity at Impact: 18.48 KPH

t1: 5.3 msec

t2: 9.6 msec

Free Flight Distance: 204.68 mm

Duration: 4.3 msec

Average Acceleration: 6.7 g

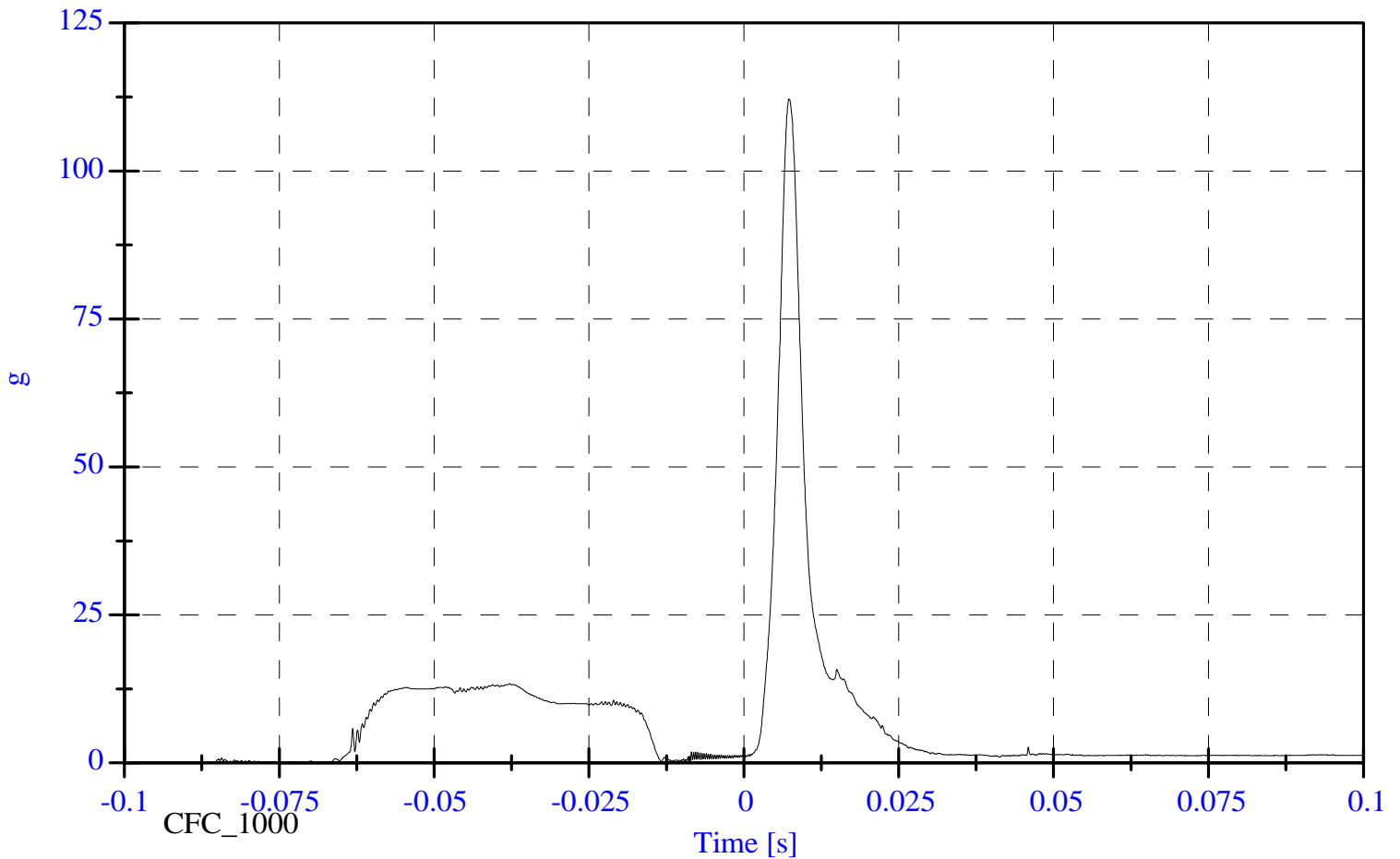
Maximum: 112.2 g

FMVSS 201U 2008 Saturn Vue

Headform Resultant

Max: 112.2 [g] at 0.007 [s]

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

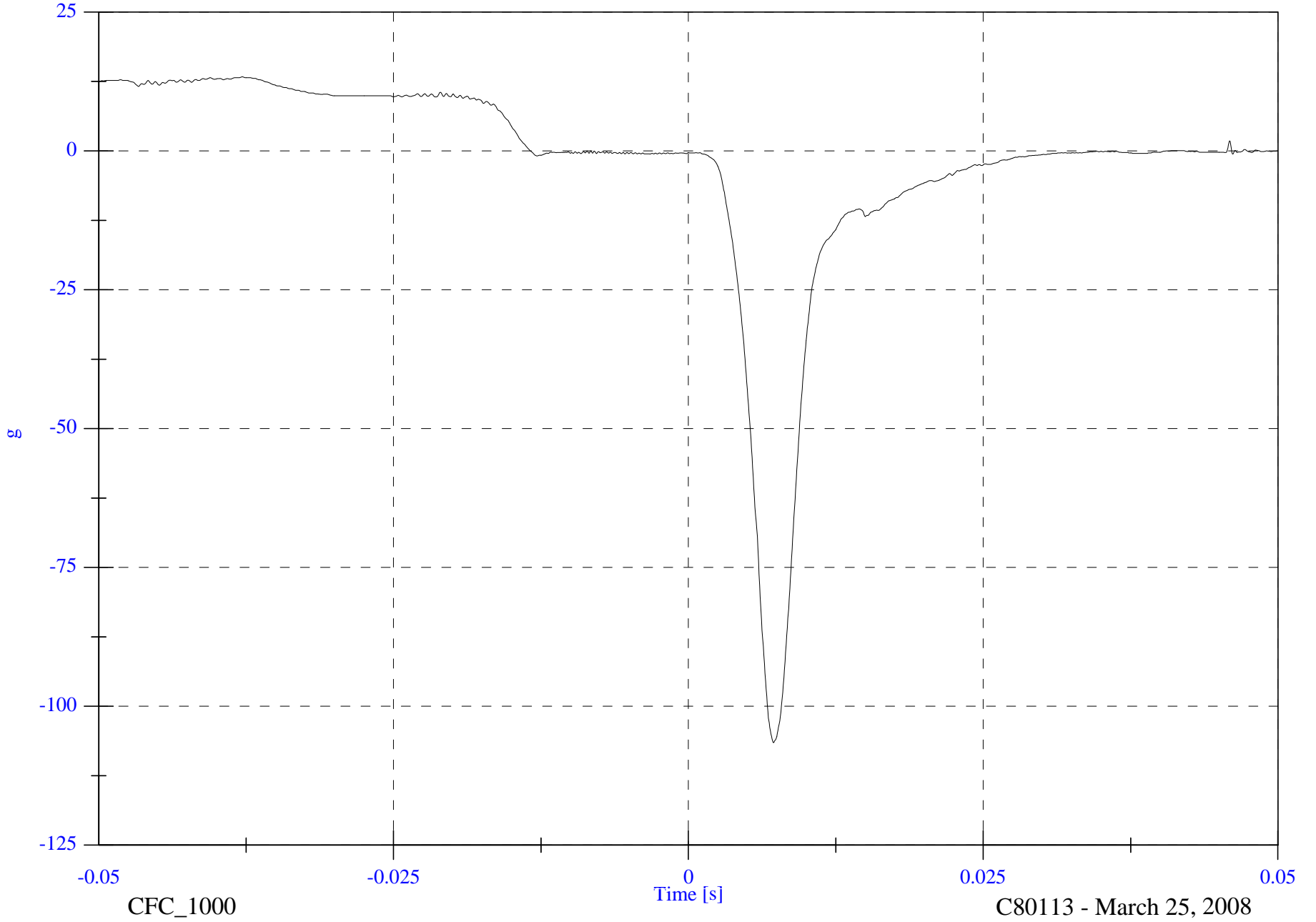


FMVSS 201U 2008 Saturn Vue

Headform X Acceleration

Max: 13.3 [g] at -0.038 [s]

Min: -106.5 [g] at 0.007 [s]



C80113 PASSENGER SIDE AP1 IMPACT PLOT #2

8851-05

CFC_1000

C80113 - March 25, 2008

FMVSS 201U 2008 Saturn Vue

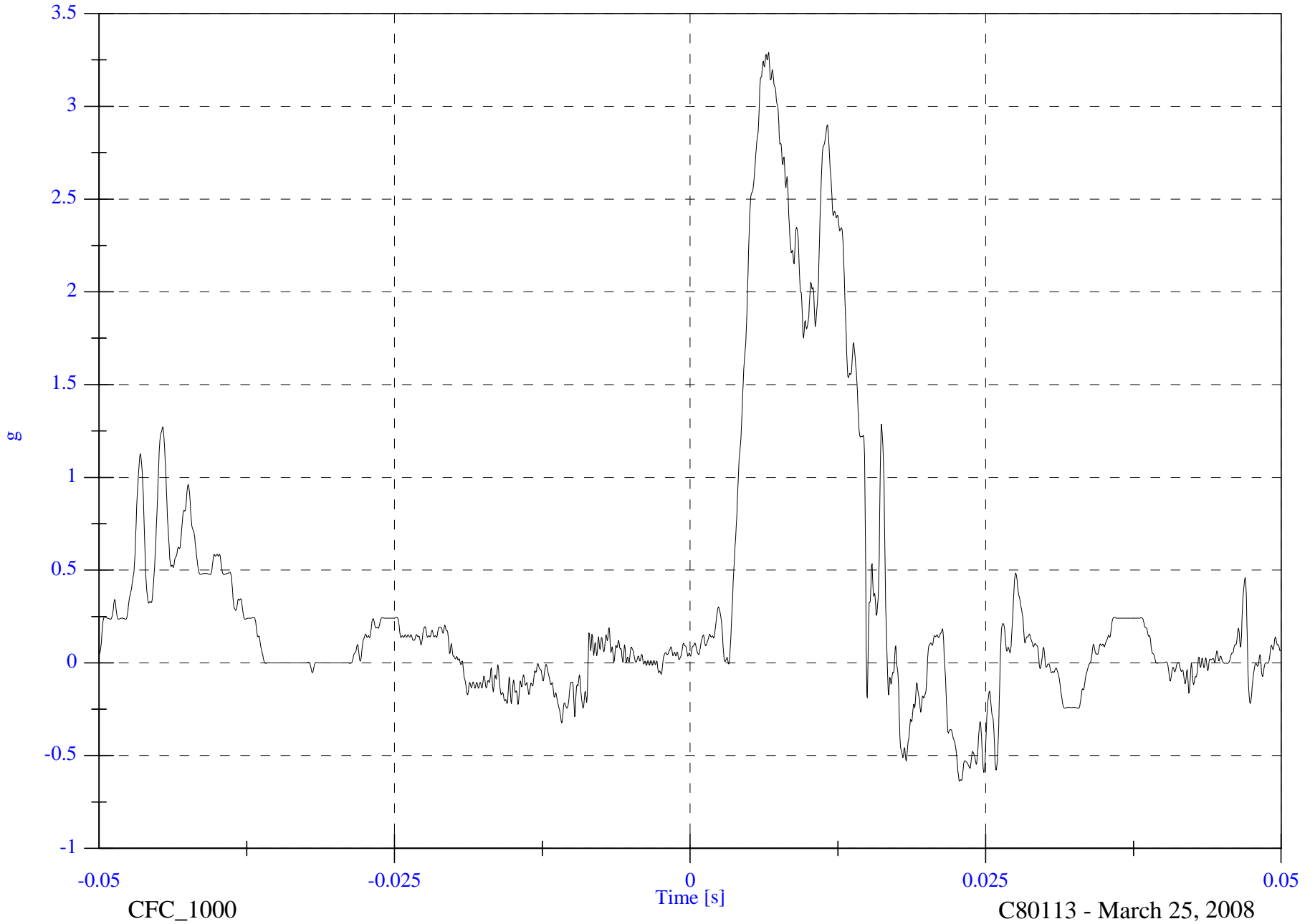
Headform Y Acceleration

Max: 3.3 [g] at 0.007 [s]

Min: -0.6 [g] at 0.023 [s]

C80113 PASSENGER SIDE AP1 IMPACT PLOT #3

8851-05



CFC_1000

Time [s]

C80113 - March 25, 2008

FMVSS 201U 2008 Saturn Vue

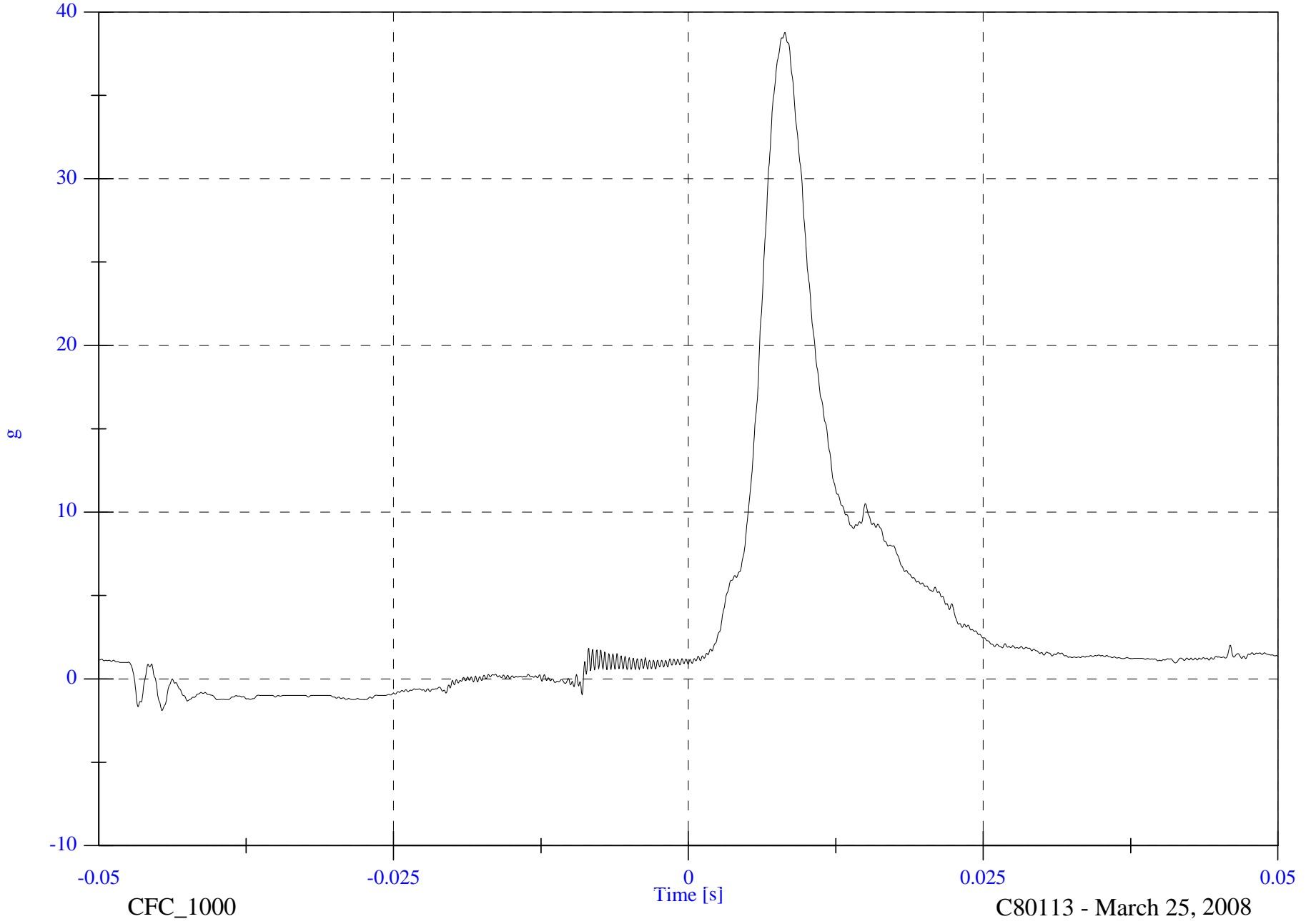
Headform Z Acceleration

Max: 38.8 [g] at 0.008 [s]

Min: -1.9 [g] at -0.045 [s]

C80113 PASSENGER SIDE AP1 IMPACT PLOT #4

8851-05



CFC_1000

C80113 - March 25, 2008

FMVSS 201U 2008 Saturn Vue

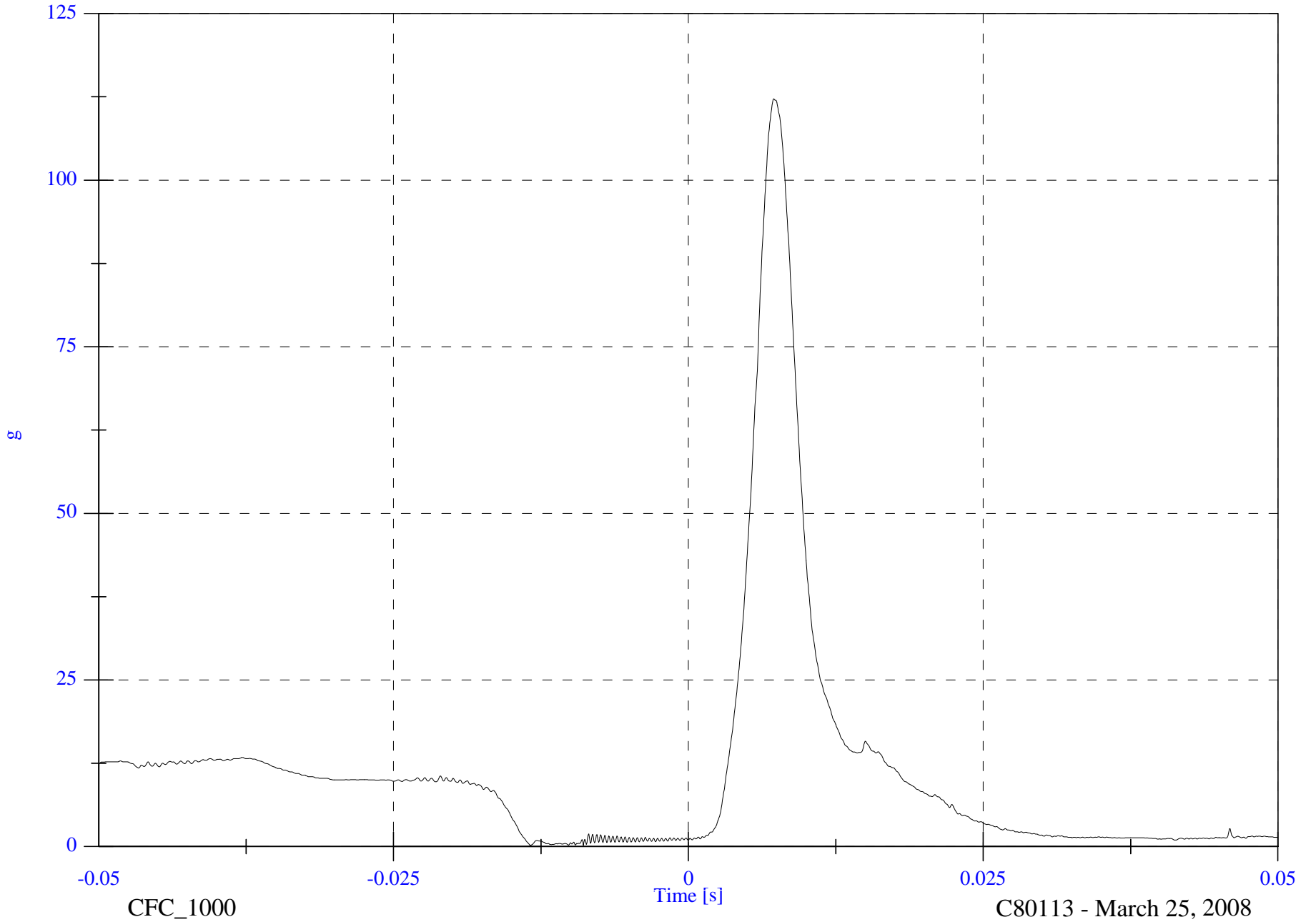
Headform Resultant

Max: 112.2 [g] at 0.007 [s]

Min: 0.2 [g] at -0.013 [s]

C80113 PASSENGER SIDE AP1 IMPACT PLOT #5

8851-05



FMVSS 201U 2008 Saturn Vue

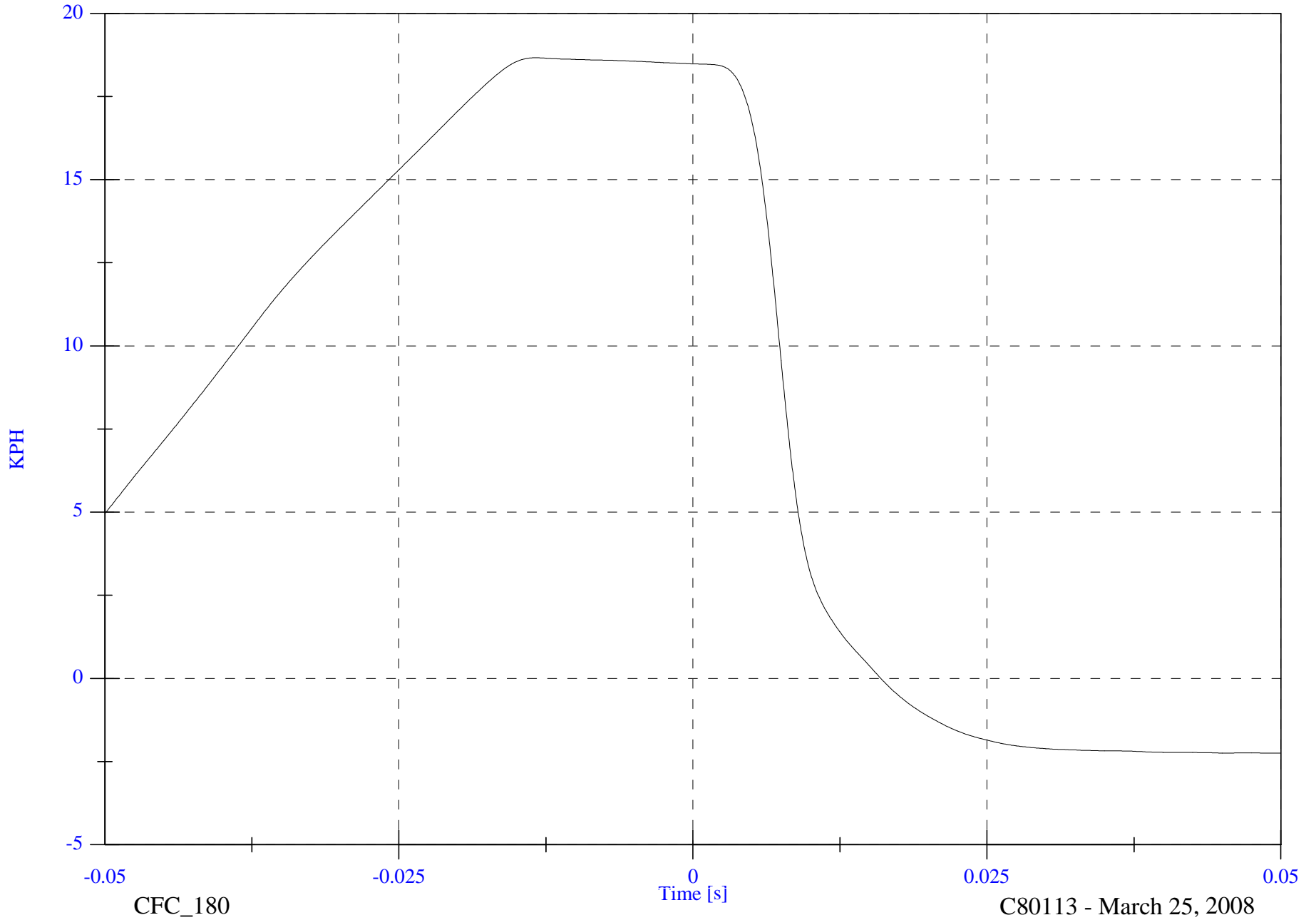
Headform Velocity

Max: 18.7 [KPH] at -0.013 [s]

Min: -2.2 [KPH] at 0.045 [s]

C80113 PASSENGER SIDE AP1 IMPACT PLOT #6

8851-05



CFC_180

Time [s]

C80113 - March 25, 2008



PRE-IMPACT API

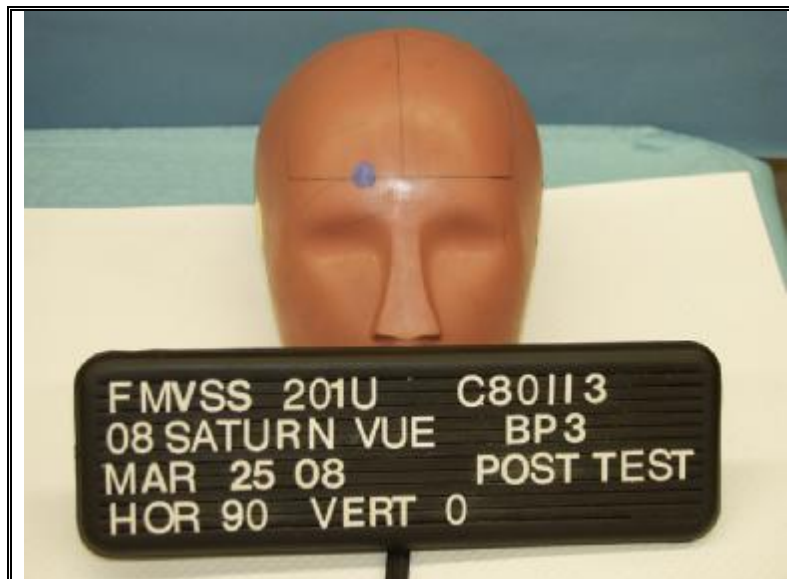


POST-IMPACT API

VEHICLE YEAR/MAKE/MODEL/STYLE:	2008 Saturn Vue XE
VIN:	3GSCL33P08S593009
DATE OF MANUFACTURE:	10/07(SEE CERTIFICATION LABEL)
COLOR:	White

Test Number:	08
Test Date:	03/26/08
Target Location:	B-PILLAR
Target Code:	BP3
Horizontal Impact Angle:	90°
Vertical Impact Angle:	0°
Ambient Temperature:	22.6 C°
Relative Humidity:	20.7
Time of Impact:	9:08
Headform Number:	1140

Impact Point Description (from lower midpoint on midsagittal line)					
On Centerline	18	<input checked="" type="checkbox"/>	mm right	<input type="checkbox"/>	mm left
On Centerline	2				mm up



POST-IMPACT BP3 HEADFORM (TEST PLACARD DATE SHOULD BE MAR. 26, 2008)

Free Motion HIC	768.1
HIC(d)	745.9
Impact Velocity (kph)	23.63
HIC T1 (msec)	1.3
HIC T2 (msec)	8.3

FMVSS 201U 2008 Saturn Vue C80113 - BP3

FMH Headform 1140

Location: BP3

Test Date: March 26, 2008

Work File: BP3

-----TEST RESULTS-----

Lab Temperature: 22.6 C

HICd: 745.9

Lab Humidity: 20.7 %

HIC (36ms): 768.1

Velocity at Impact: 23.63 KPH

t1: 1.3 msec

t2: 8.3 msec

Free Flight Distance: 218.46 mm

Duration: 7.1 msec

Average Acceleration: 8.9 g

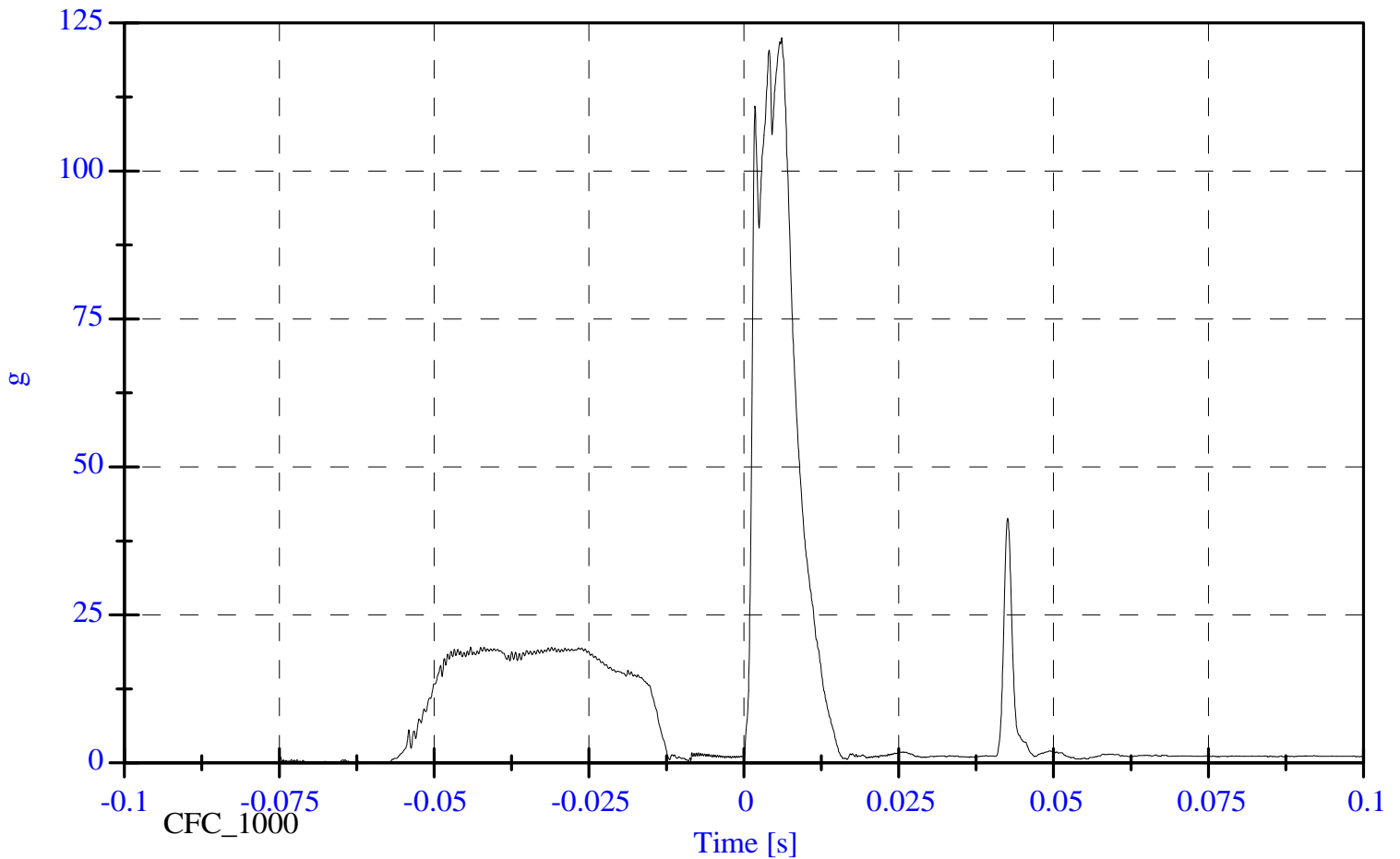
Maximum: 122.5 g

FMVSS 201U 2008 Saturn Vue

Headform Resultant

Max: 122.5 [g] at 0.006 [s]

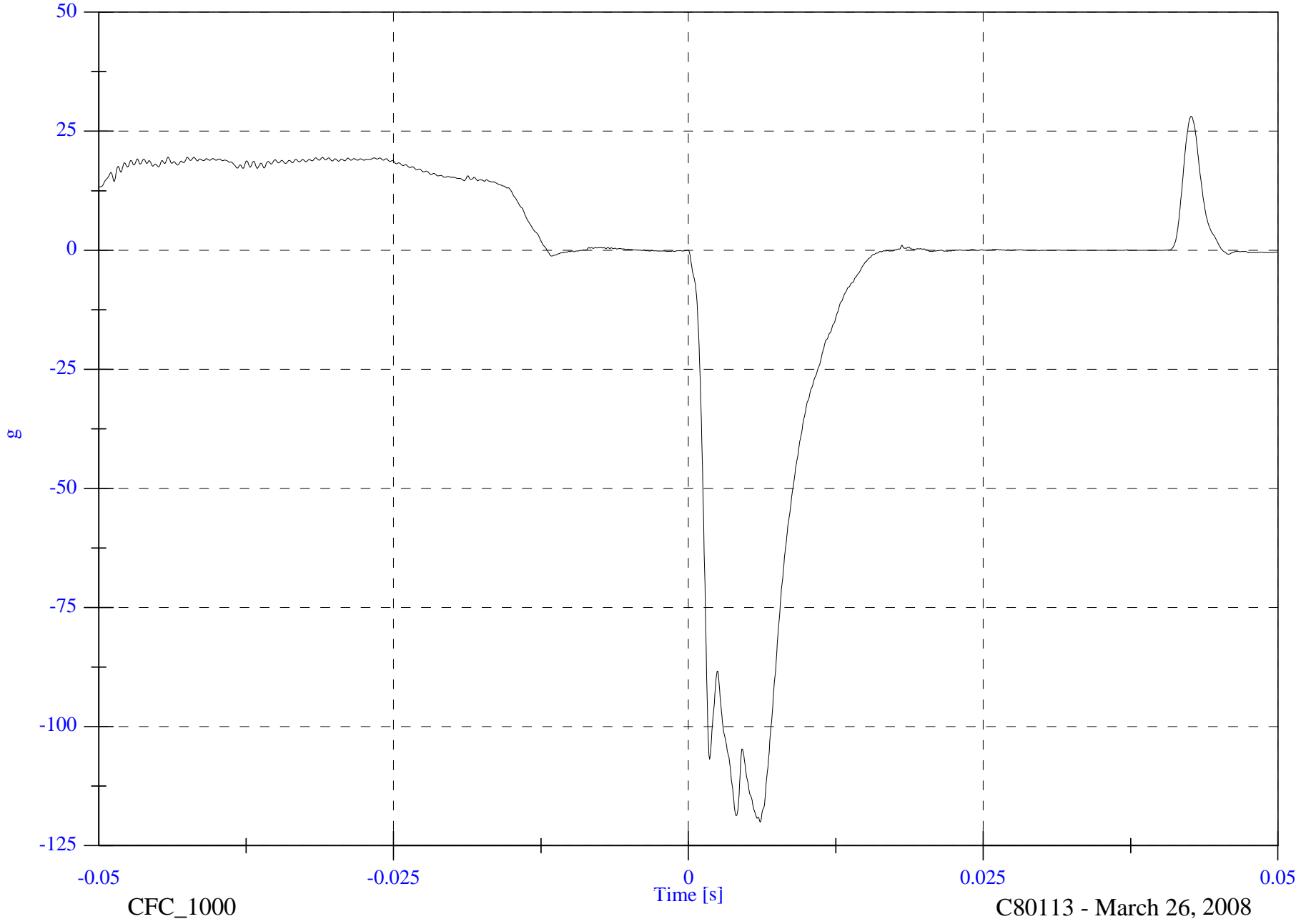
Min: 0.0 [g] at -0.080 [s]



FMVSS 201U 2008 Saturn Vue

Headform X Acceleration

Max: 28.1 [g] at 0.043 [s]
Min: -120.1 [g] at 0.006 [s]



C80113 DRIVER SIDE BP3 IMPACT PLOT #2

8851-05

CFC_1000

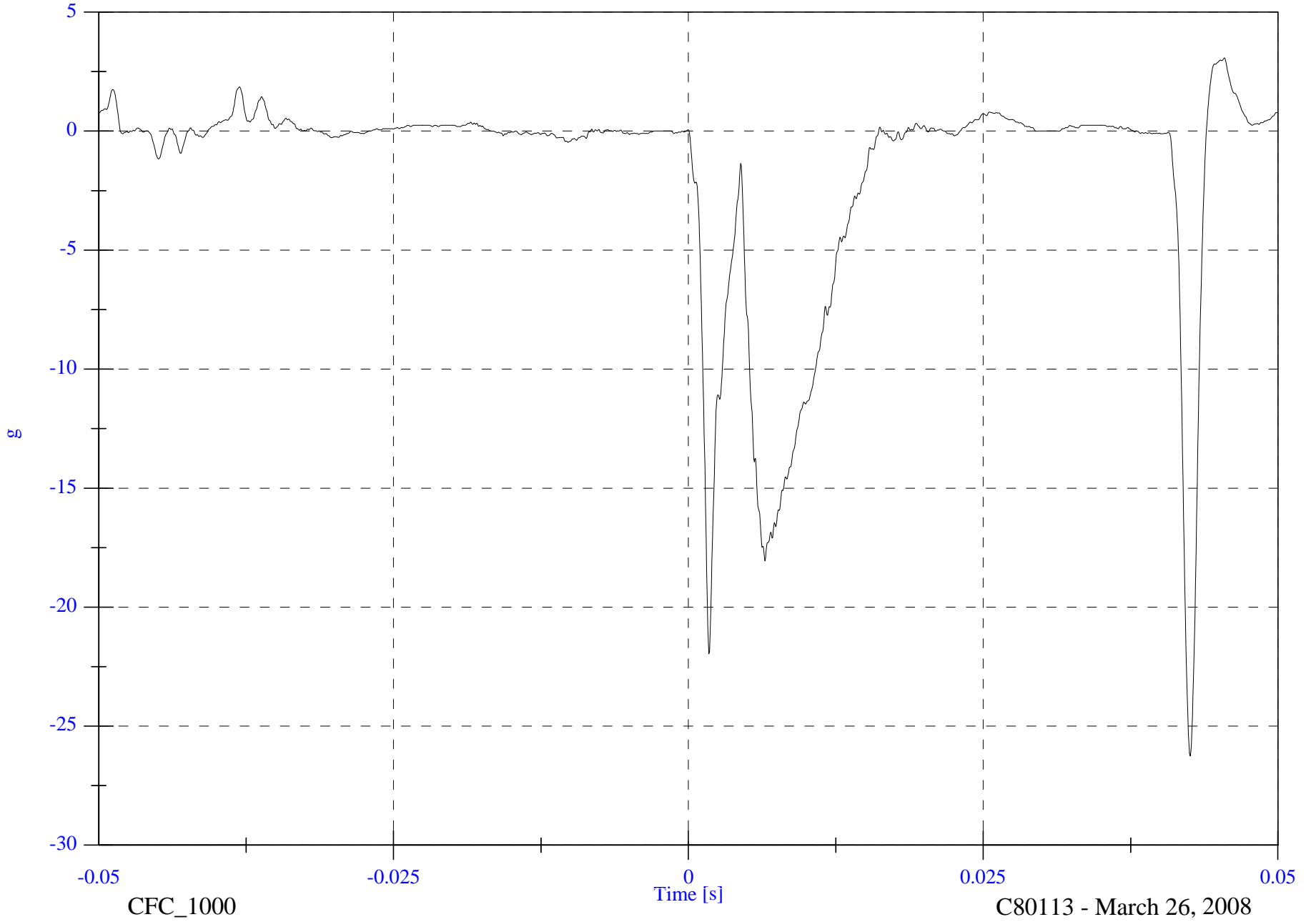
C80113 - March 26, 2008

FMVSS 201U 2008 Saturn Vue

Headform Y Acceleration

Max: 3.1 [g] at 0.045 [s]

Min: -26.3 [g] at 0.043 [s]



C80113 DRIVER SIDE BP3 IMPACT PLOT #3

8851-05

CFC_1000

C80113 - March 26, 2008

FMVSS 201U 2008 Saturn Vue

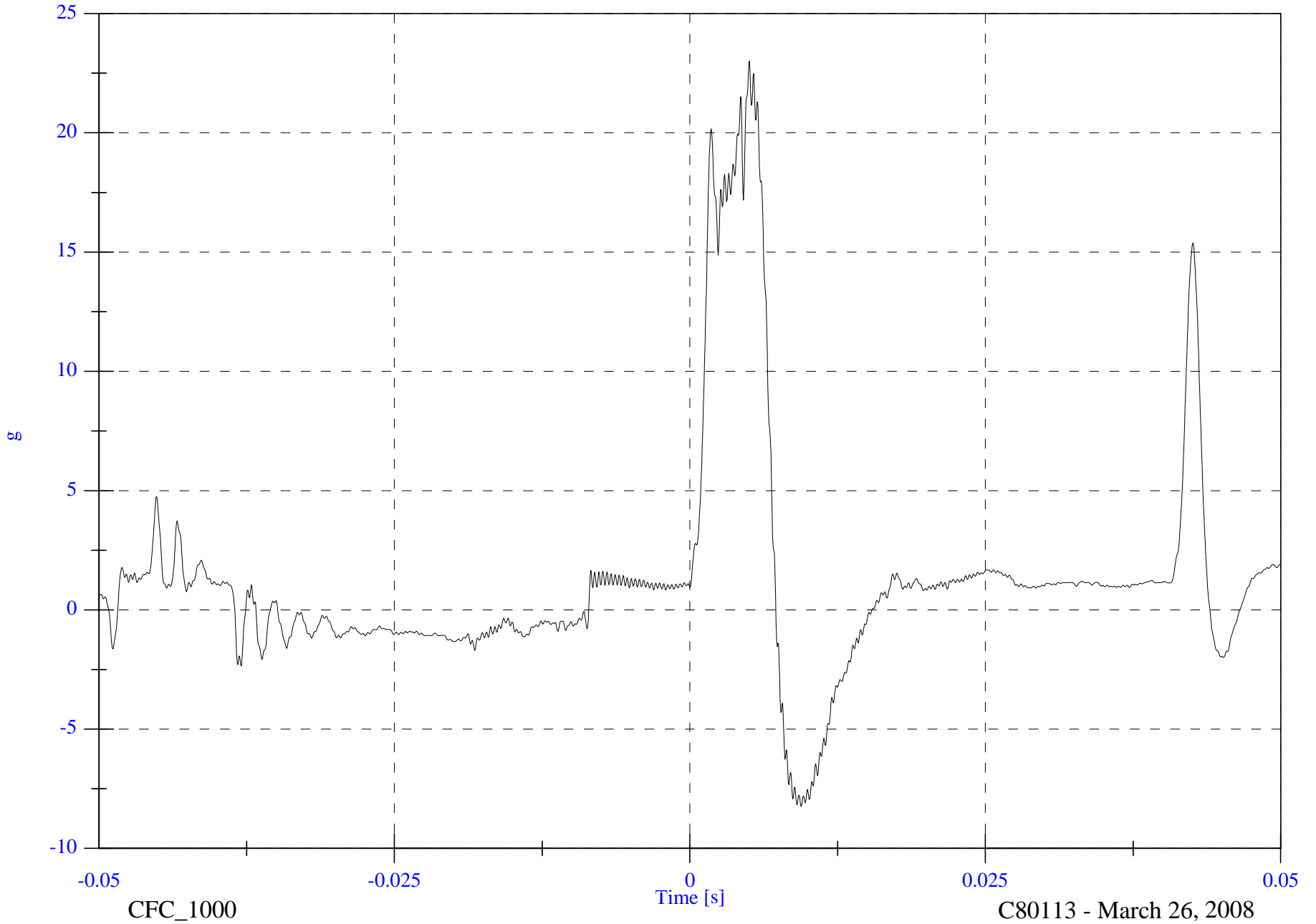
Headform Z Acceleration

Max: 23.0 [g] at 0.005 [s]

Min: -8.2 [g] at 0.009 [s]

C80113 DRIVER SIDE BP3 IMPACT PLOT #4

8851-05



FMVSS 201U 2008 Saturn Vue

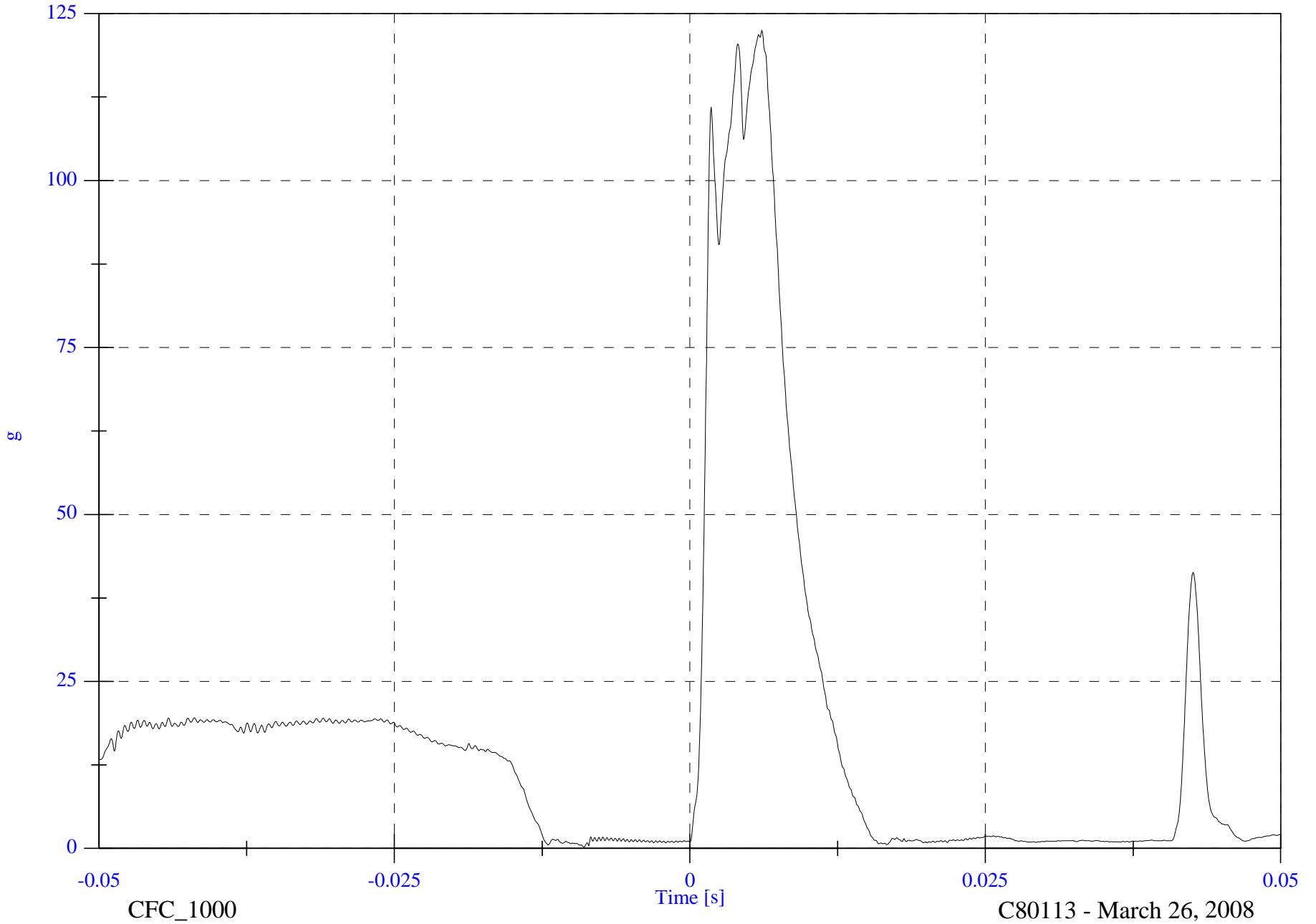
Headform Resultant

Max: 122.5 [g] at 0.006 [s]

Min: 0.2 [g] at -0.009 [s]

C80113 DRIVER SIDE BP3 IMPACT PLOT #5

8851-05



FMVSS 201U 2008 Saturn Vue

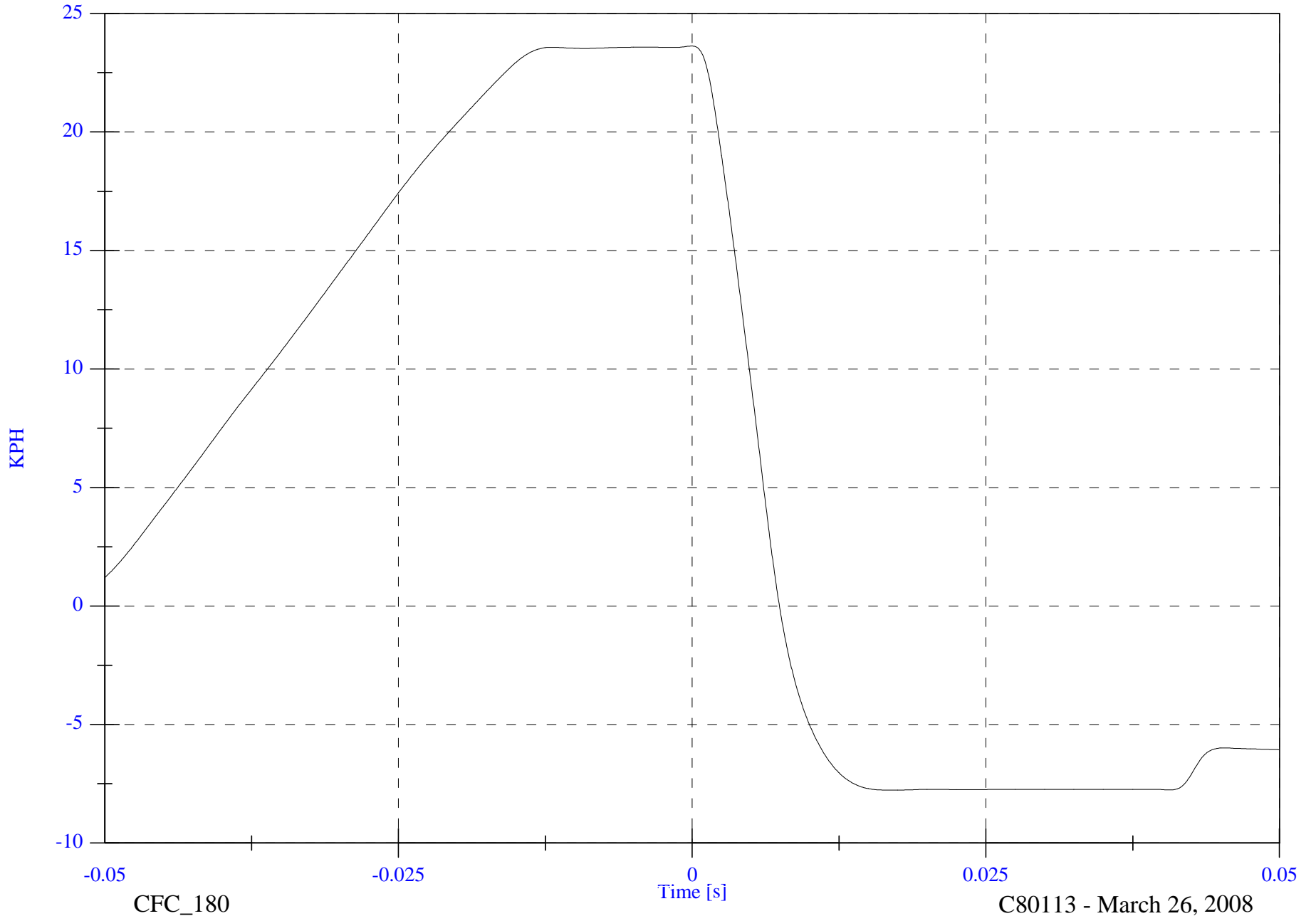
Headform Velocity

Max: 23.6 [KPH] at -0.000 [s]

Min: -7.8 [KPH] at 0.017 [s]

C80113 DRIVER SIDE BP3 IMPACT PLOT #6

8851-05



CFC_180

C80113 - March 26, 2008



PRE-IMPACT BP3 (TEST PLACARD DATE SHOULD BE MAR. 26, 2008)



POST-IMPACT BP3 (TEST PLACARD DATE SHOULD BE MAR. 26, 2008)

VEHICLE YEAR/MAKE/MODEL/STYLE:	2008 Saturn Vue XE
VIN:	3GSCL33P08S593009
DATE OF MANUFACTURE:	10/07(SEE CERTIFICATION LABEL)
COLOR:	White

Test Number:	09
Test Date:	03/26/08
Target Location:	UPPER ROOF
Target Code:	URRP
Horizontal Impact Angle:	308°
Vertical Impact Angle:	45°
Ambient Temperature:	22.8C°
Relative Humidity:	20.6
Time of Impact:	10:15
Headform Number:	0062

Impact Point Description (from lower midpoint on midsagittal line)					
On Centerline	7	<input type="checkbox"/>	mm right	<input checked="" type="checkbox"/>	mm left
On Centerline	27				mm up



POST-IMPACT URRP HEADFORM

Free Motion HIC	468.9
HIC(d)	520.2
Impact Velocity (kph)	23.66
HIC T1 (msec)	6.2
HIC T2 (msec)	15.1

FMVSS 201U 2008 Saturn Vue C80113 - URRP

FMH Headform 0062

Location: URRP

Test Date: March 26, 2008

Work File: URRP

-----TEST RESULTS-----

Lab Temperature: 22.8 C

HICd: 520.2

Lab Humidity: 20.6 %

HIC (36ms): 468.9

Velocity at Impact: 23.66 KPH

t1: 6.2 msec

t2: 15.1 msec

Free Flight Distance: 214.28 mm

Duration: 8.9 msec

Average Acceleration: 9.8 g

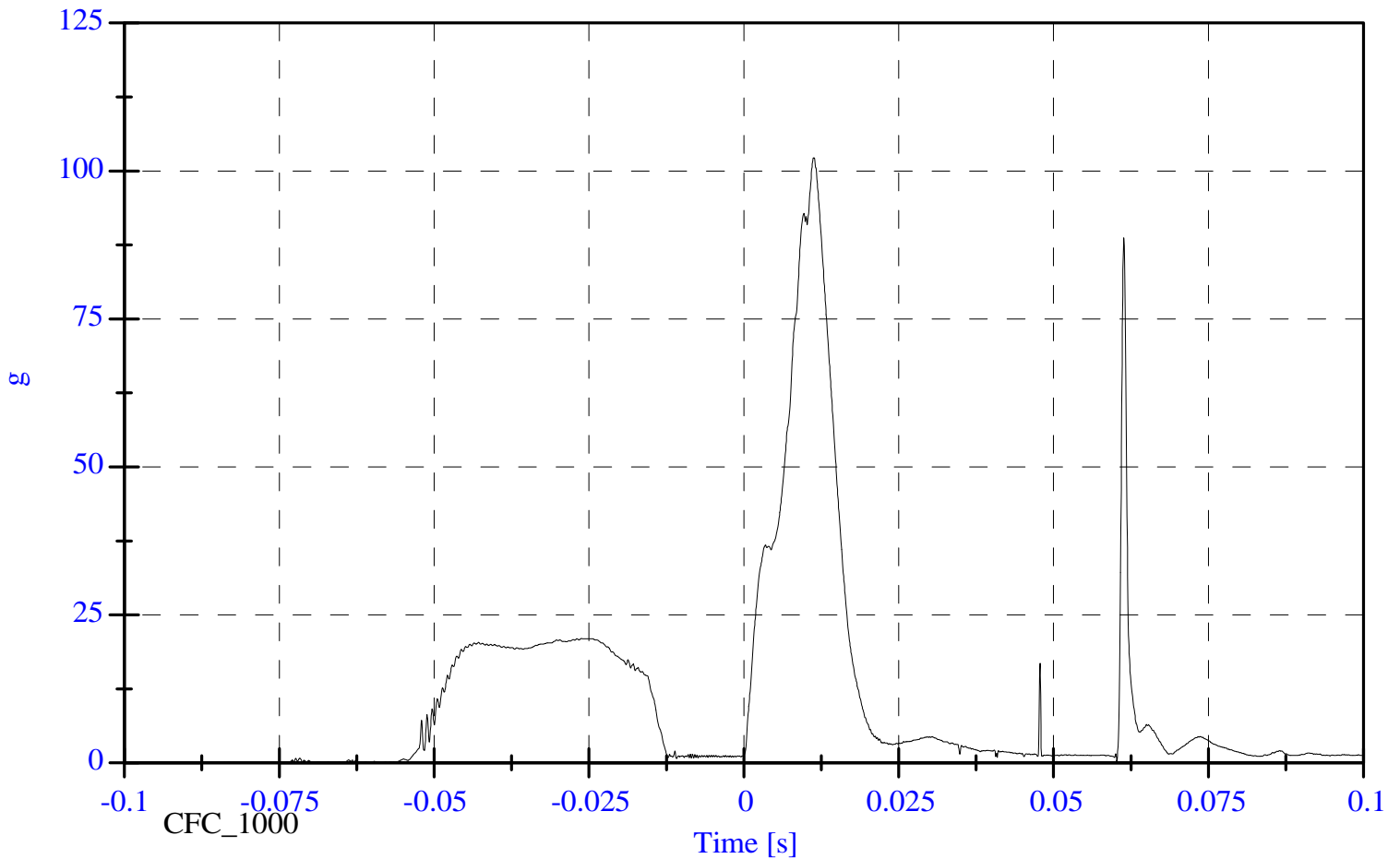
Maximum: 102.2 g

FMVSS 201U 2008 Saturn Vue

Headform Resultant

Max: 102.2 [g] at 0.011 [s]

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



FMVSS 201U 2008 Saturn Vue

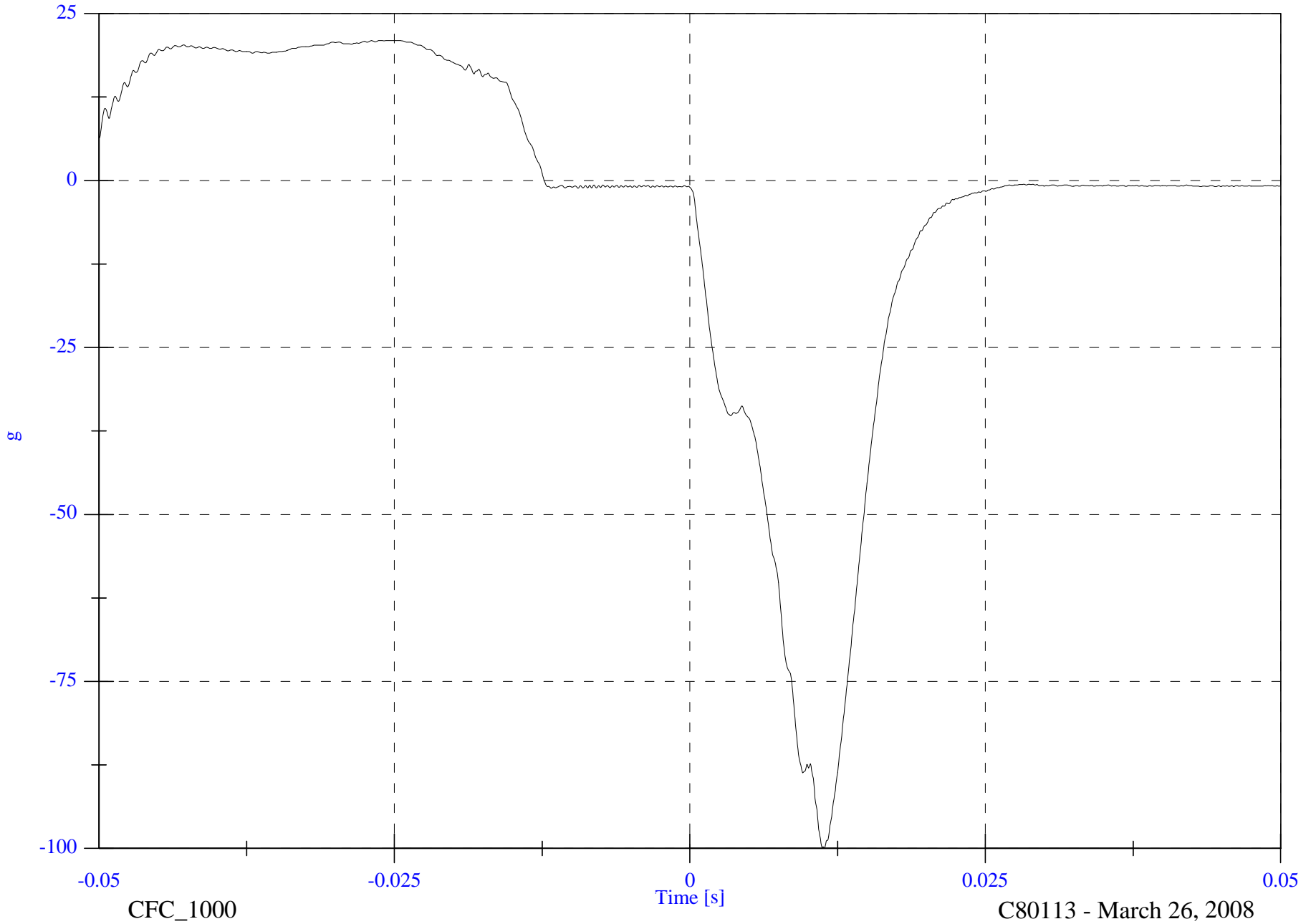
Headform X Acceleration

Max: 21.0 [g] at -0.026 [s]

Min: -100.0 [g] at 0.011 [s]

C80113 DRIVER SIDE URRP IMPACT PLOT #2

8851-05



CFC_1000

C80113 - March 26, 2008

FMVSS 201U 2008 Saturn Vue

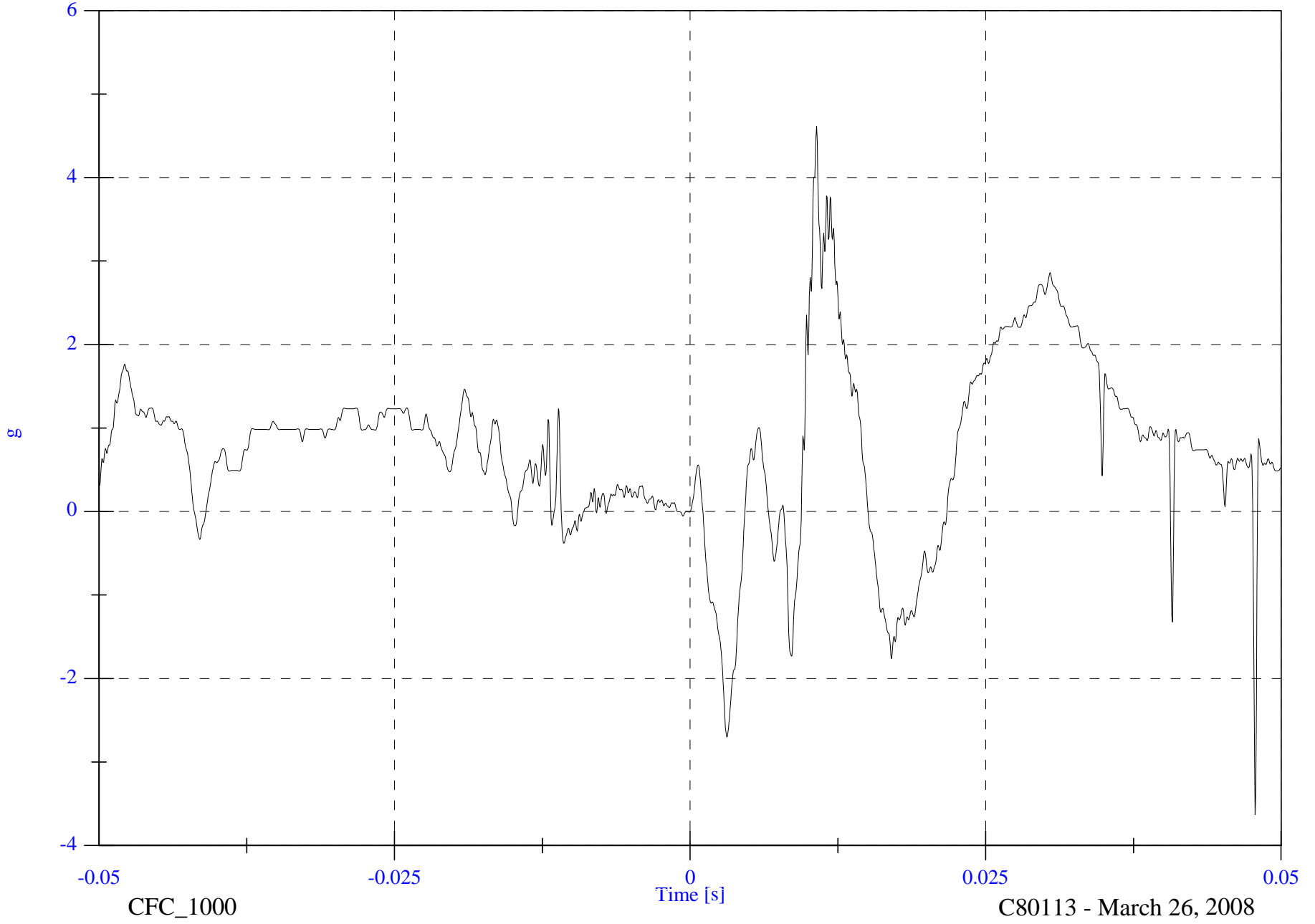
Headform Y Acceleration

Max: 4.6 [g] at 0.011 [s]

Min: -3.6 [g] at 0.048 [s]

C80113 DRIVER SIDE URRP IMPACT PLOT #3

8851-05



CFC_1000

C80113 - March 26, 2008

FMVSS 201U 2008 Saturn Vue

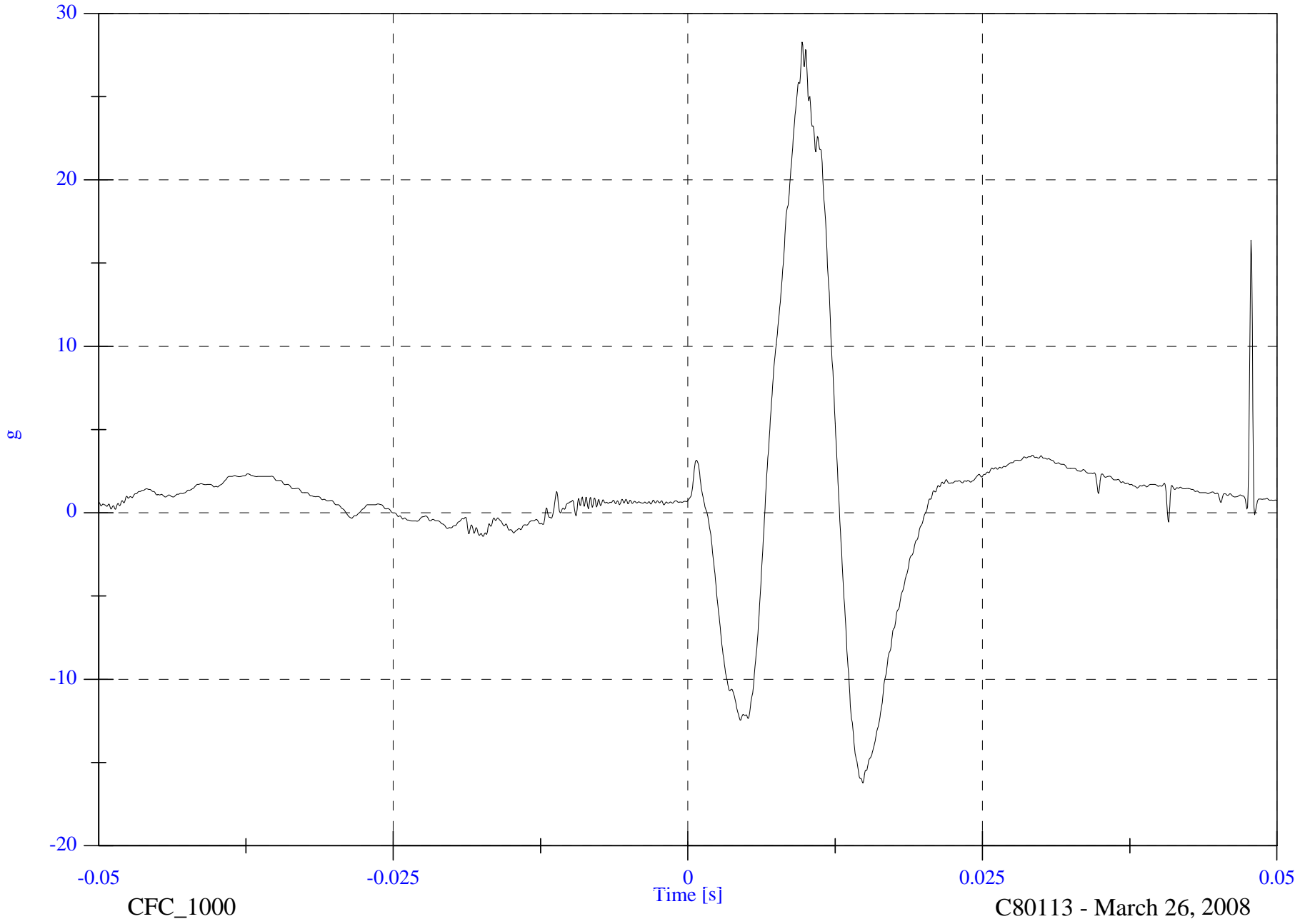
Headform Z Acceleration

Max: 28.3 [g] at 0.010 [s]

Min: -16.2 [g] at 0.015 [s]

C80113 DRIVER SIDE URRP IMPACT PLOT #4

8851-05



CFC_1000

Time [s]

C80113 - March 26, 2008

FMVSS 201U 2008 Saturn Vue

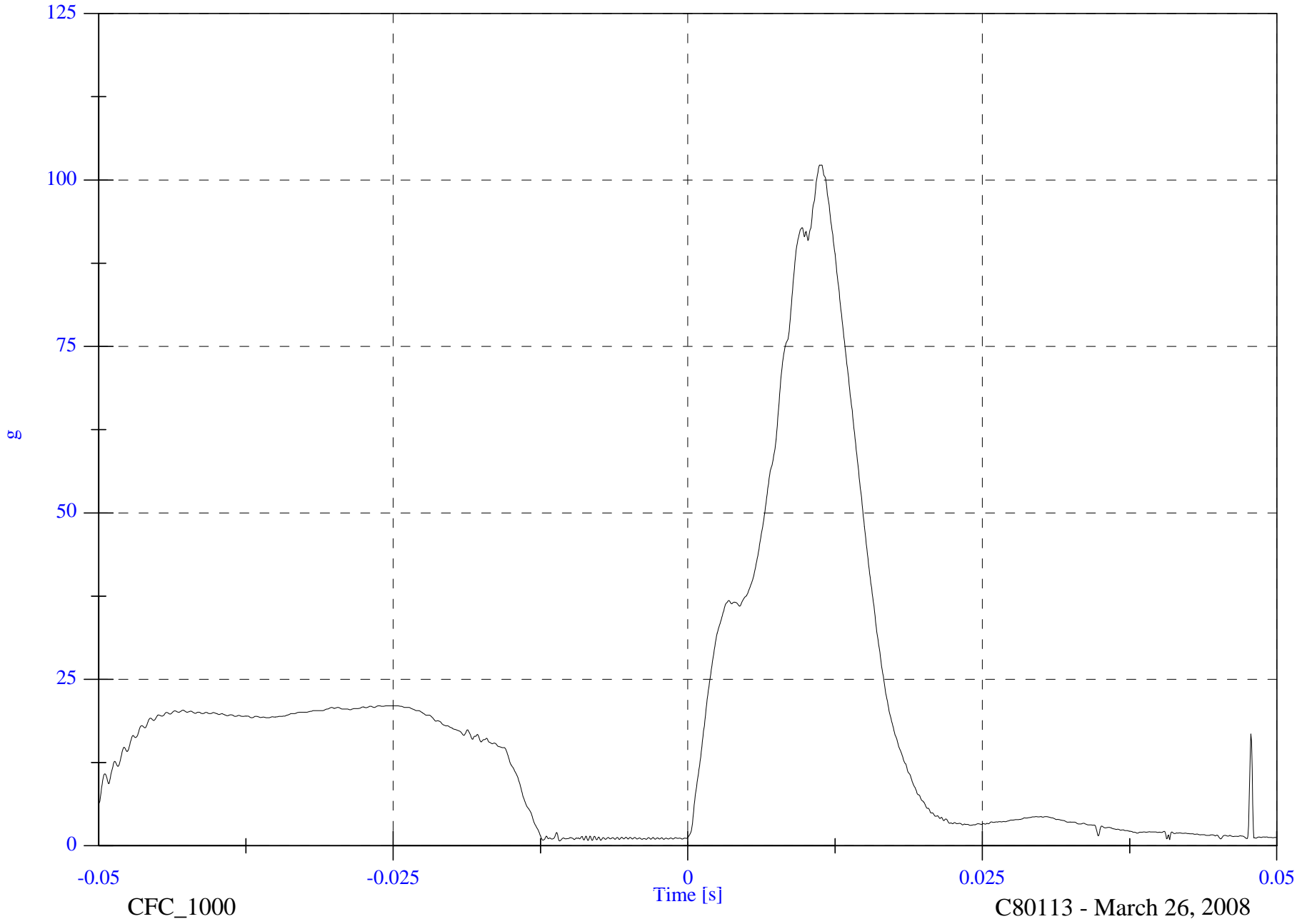
Headform Resultant

Max: 102.2 [g] at 0.011 [s]

Min: 0.7 [g] at -0.011 [s]

C80113 DRIVER SIDE URRP IMPACT PLOT #5

8851-05



CFC_1000

C80113 - March 26, 2008

FMVSS 201U 2008 Saturn Vue

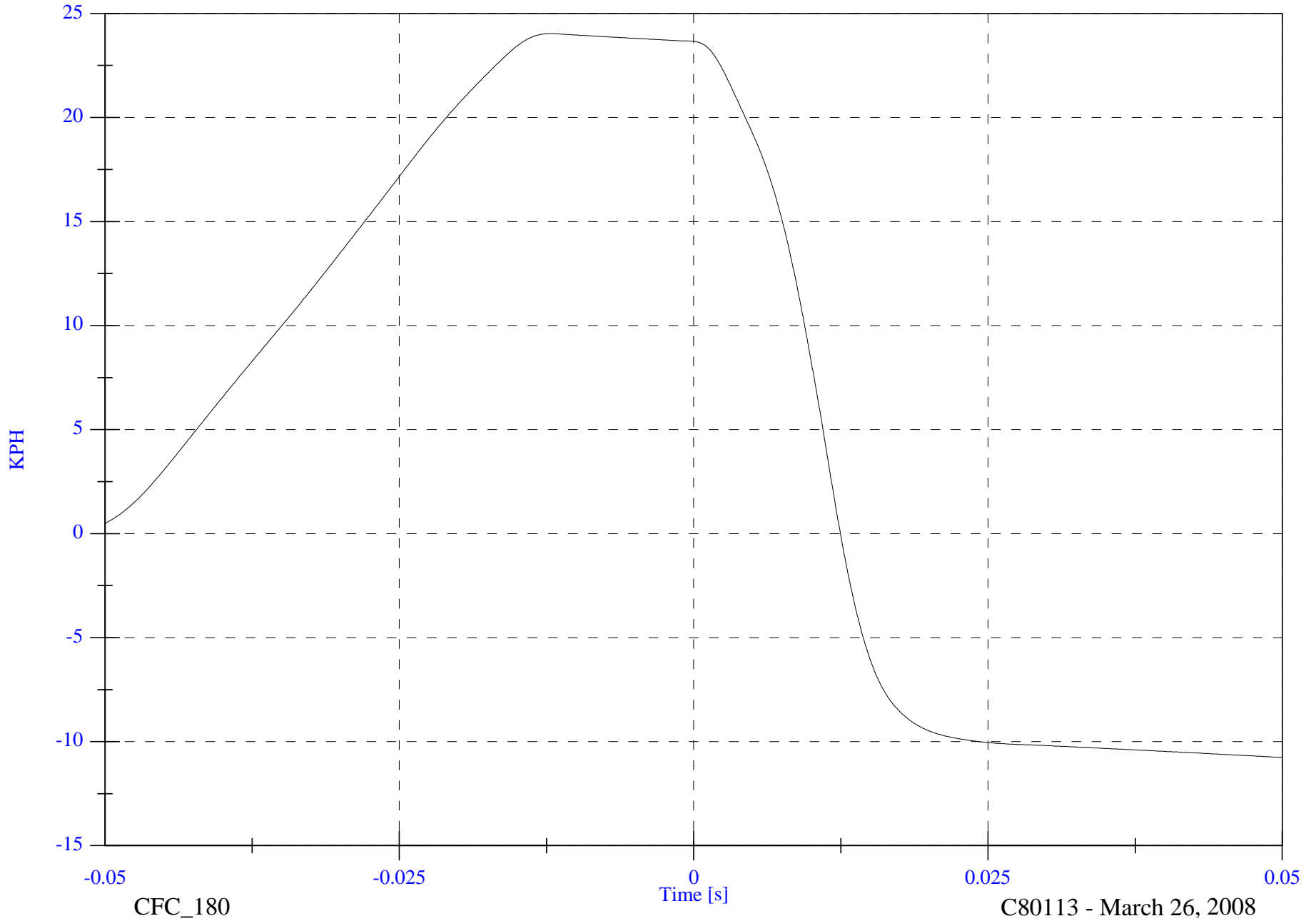
Headform Velocity

Max: 24.0 [KPH] at -0.012 [s]

Min: -10.8 [KPH] at 0.050 [s]

C80113 DRIVER SIDE URRP IMPACT PLOT #6

8851-05



CFC_180

C80113 - March 26, 2008



PRE-IMPACT URRP



POST-IMPACT URRP

VEHICLE YEAR/MAKE/MODEL/STYLE:	2008 Saturn Vue XE
VIN:	3GSCL33P08S593009
DATE OF MANUFACTURE:	10/07(SEE CERTIFICATION LABEL)
COLOR:	White

Test Number:	10
Test Date:	03/26/08
Target Location:	B-PILLAR
Target Code:	BP2
Horizontal Impact Angle:	270°
Vertical Impact Angle:	0°
Ambient Temperature:	22.8 C°
Relative Humidity:	20.8
Time of Impact:	11:00
Headform Number:	1142

Impact Point Description (from lower midpoint on midsagittal line)					
On Centerline	9	<input type="checkbox"/>	mm right	<input checked="" type="checkbox"/>	mm left
On Centerline	14				mm up



POST-IMPACT BP2 HEADFORM

Free Motion HIC	564.6
HIC(d)	592.3
Impact Velocity (kph)	23.65
HIC T1 (msec)	1.1
HIC T2 (msec)	9.8

FMVSS 201U 2008 Saturn Vue C80113 - BP2

FMH Headform 1142

Location: BP2

Test Date: March 26, 2008

Work File: BP2

-----TEST RESULTS-----

Lab Temperature: 22.8 C

HICd: 592.3

Lab Humidity: 20.8 %

HIC (36ms): 564.6

Velocity at Impact: 23.65 KPH

t1: 1.1 msec

t2: 9.8 msec

Free Flight Distance: 218.79 mm

Duration: 8.8 msec

Average Acceleration: 8.6 g

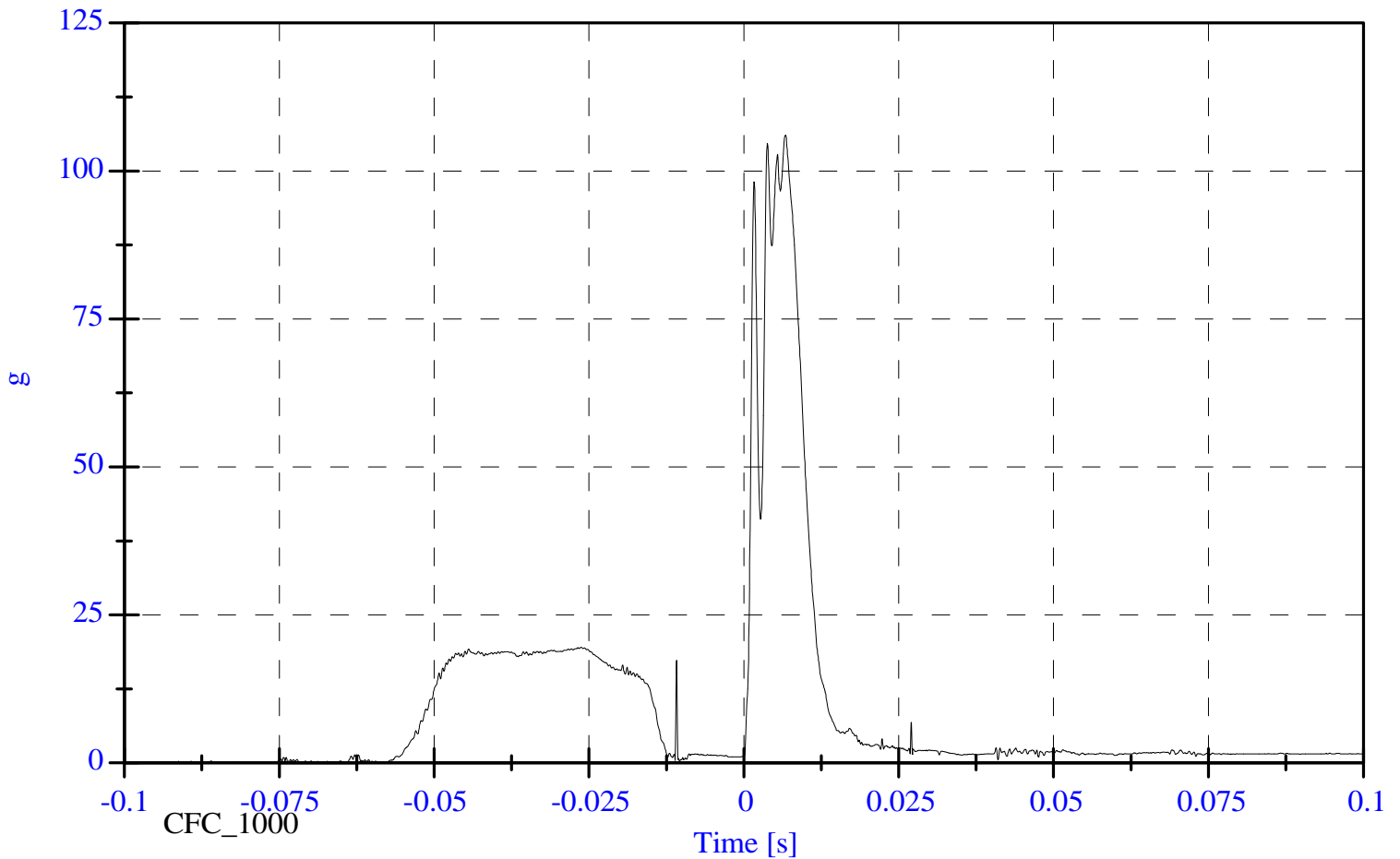
Maximum: 106.1 g

FMVSS 201U 2008 Saturn Vue

Headform Resultant

Max: 106.1 [g] at 0.007 [s]

Min: 0.0 [g] at -0.091 [s]

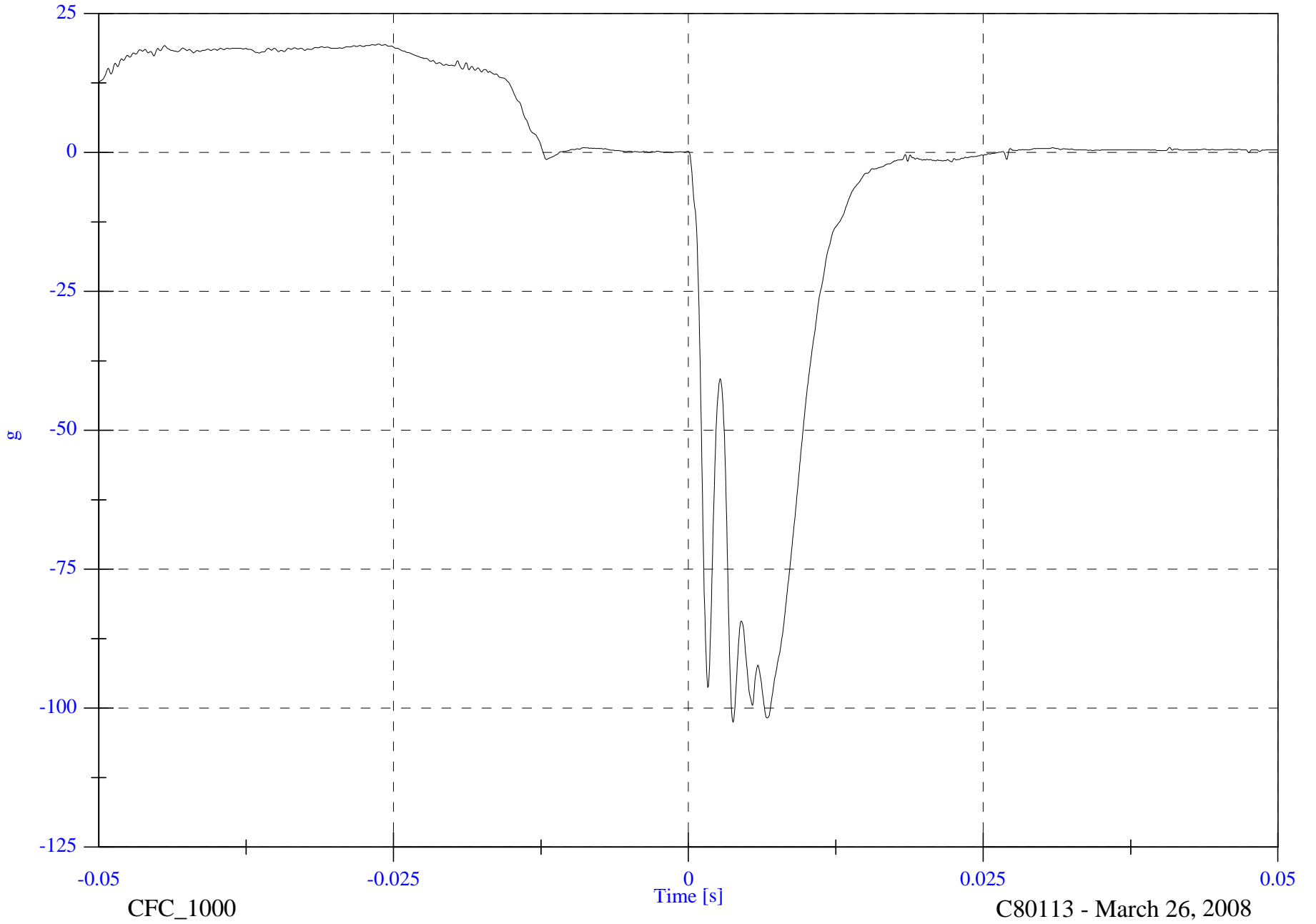


FMVSS 201U 2008 Saturn Vue

Headform X Acceleration

Max: 19.5 [g] at -0.026 [s]

Min: -102.5 [g] at 0.004 [s]



C80113 DRIVER SIDE BP2 IMPACT PLOT #2

8851-05

CFC_1000

C80113 - March 26, 2008

FMVSS 201U 2008 Saturn Vue

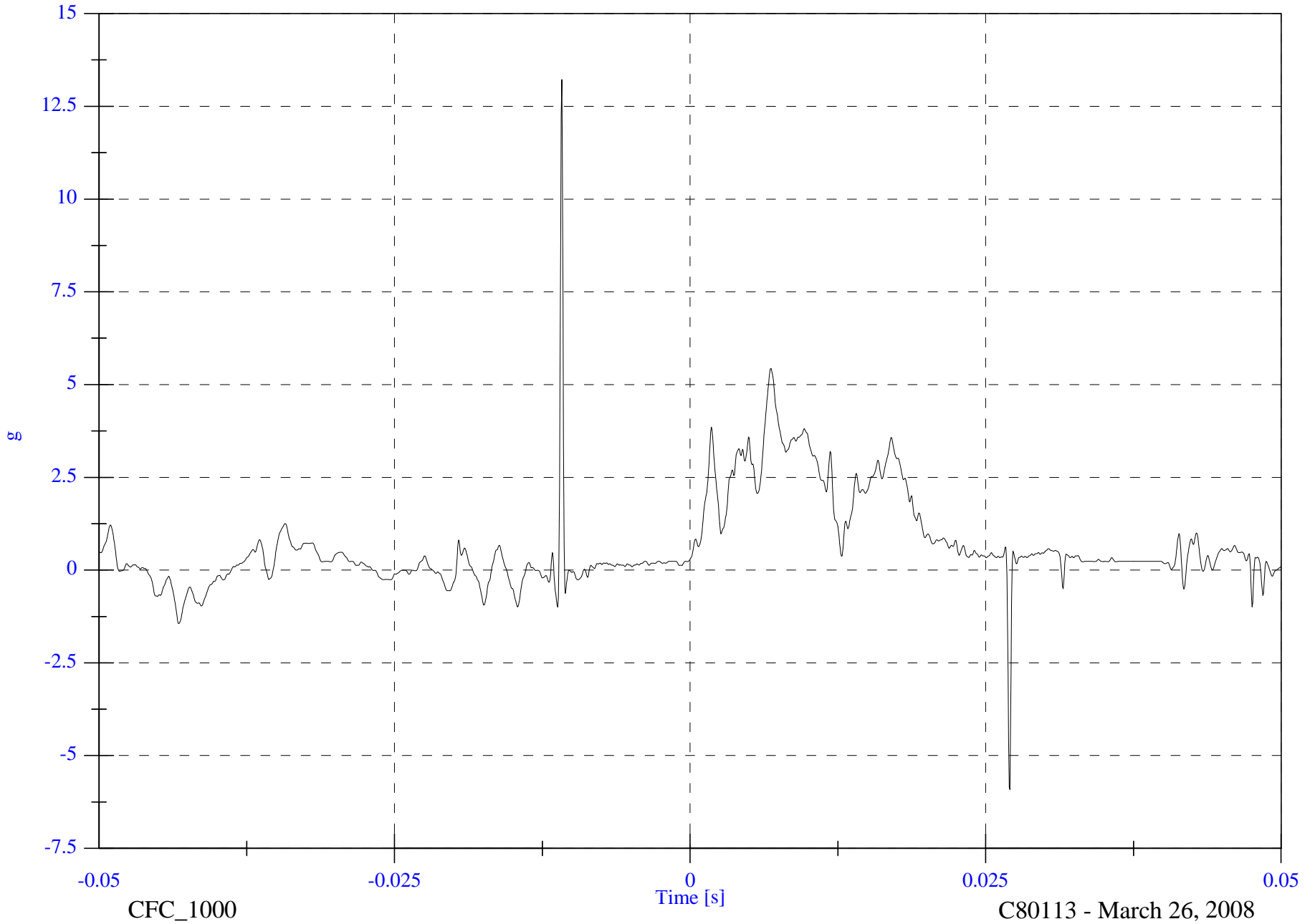
Headform Y Acceleration

Max: 13.2 [g] at -0.011 [s]

Min: -5.9 [g] at 0.027 [s]

C80113 DRIVER SIDE BP2 IMPACT PLOT #3

8851-05



CFC_1000

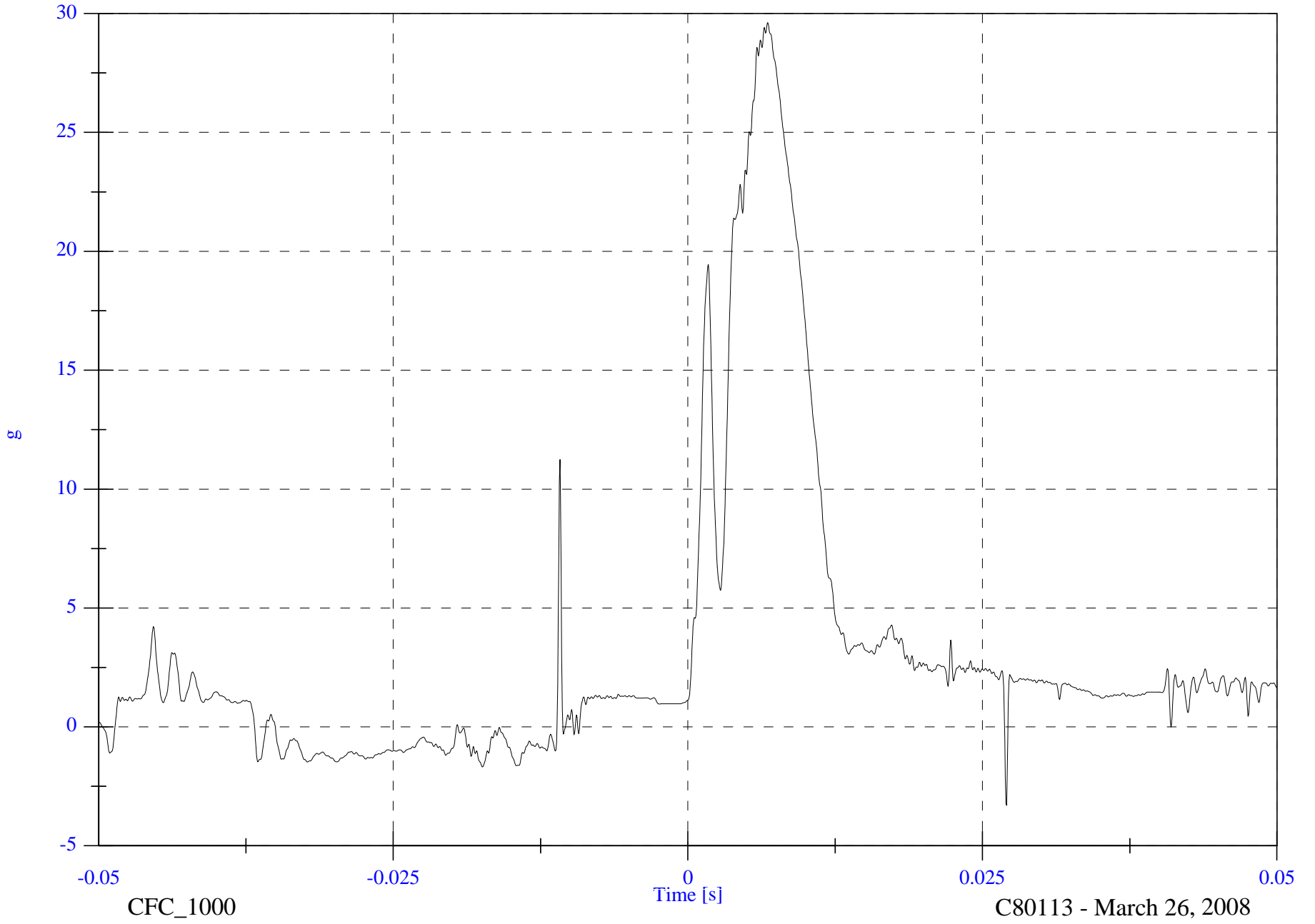
C80113 - March 26, 2008

FMVSS 201U 2008 Saturn Vue

Headform Z Acceleration

Max: 29.6 [g] at 0.007 [s]

Min: -3.3 [g] at 0.027 [s]



C80113 DRIVER SIDE BP2 IMPACT PLOT #4

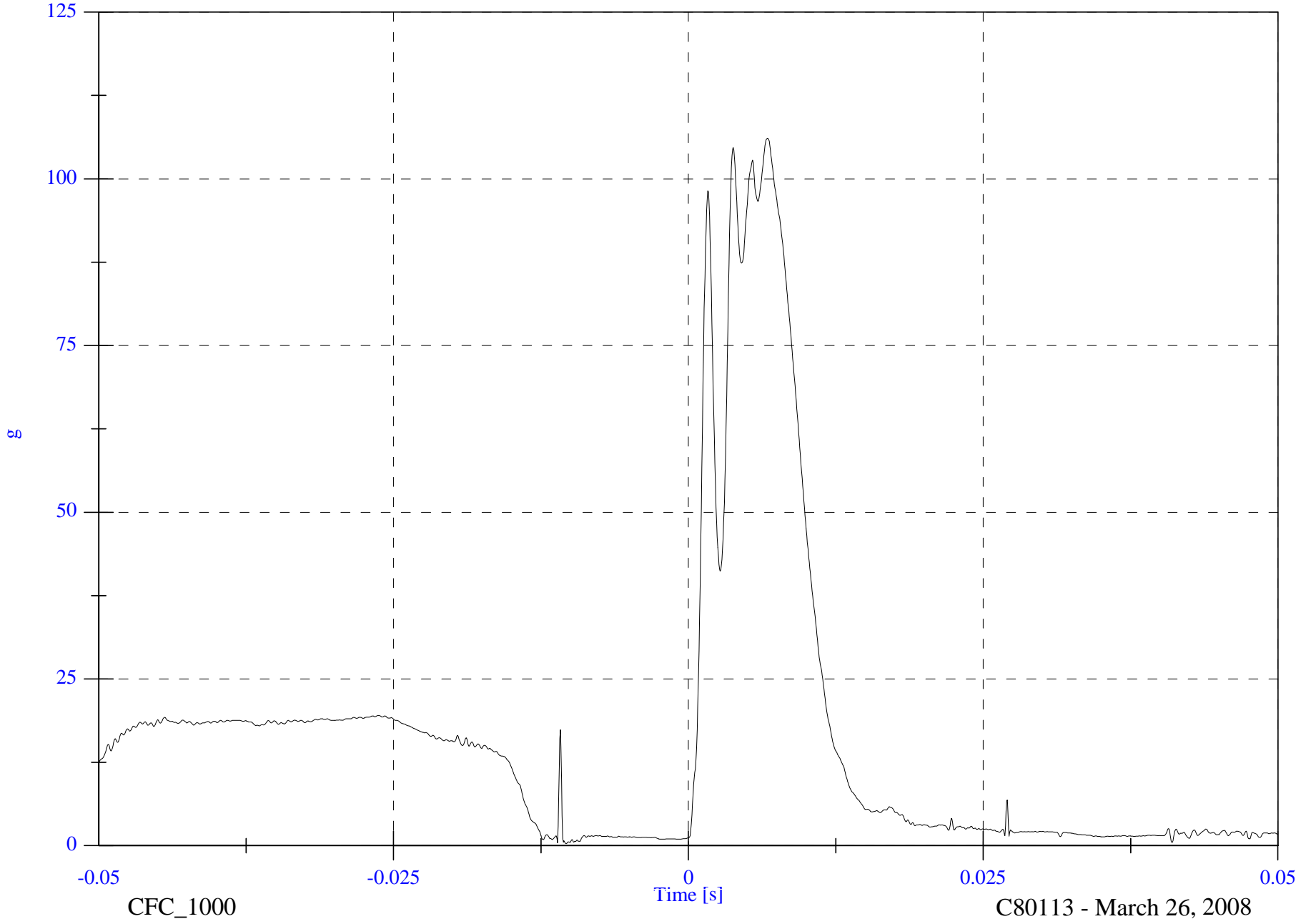
8851-05

FMVSS 201U 2008 Saturn Vue

Headform Resultant

Max: 106.1 [g] at 0.007 [s]

Min: 0.3 [g] at -0.010 [s]



C80113 DRIVER SIDE BP2 IMPACT PLOT #5

8851-05

CFC_1000

C80113 - March 26, 2008

FMVSS 201U 2008 Saturn Vue

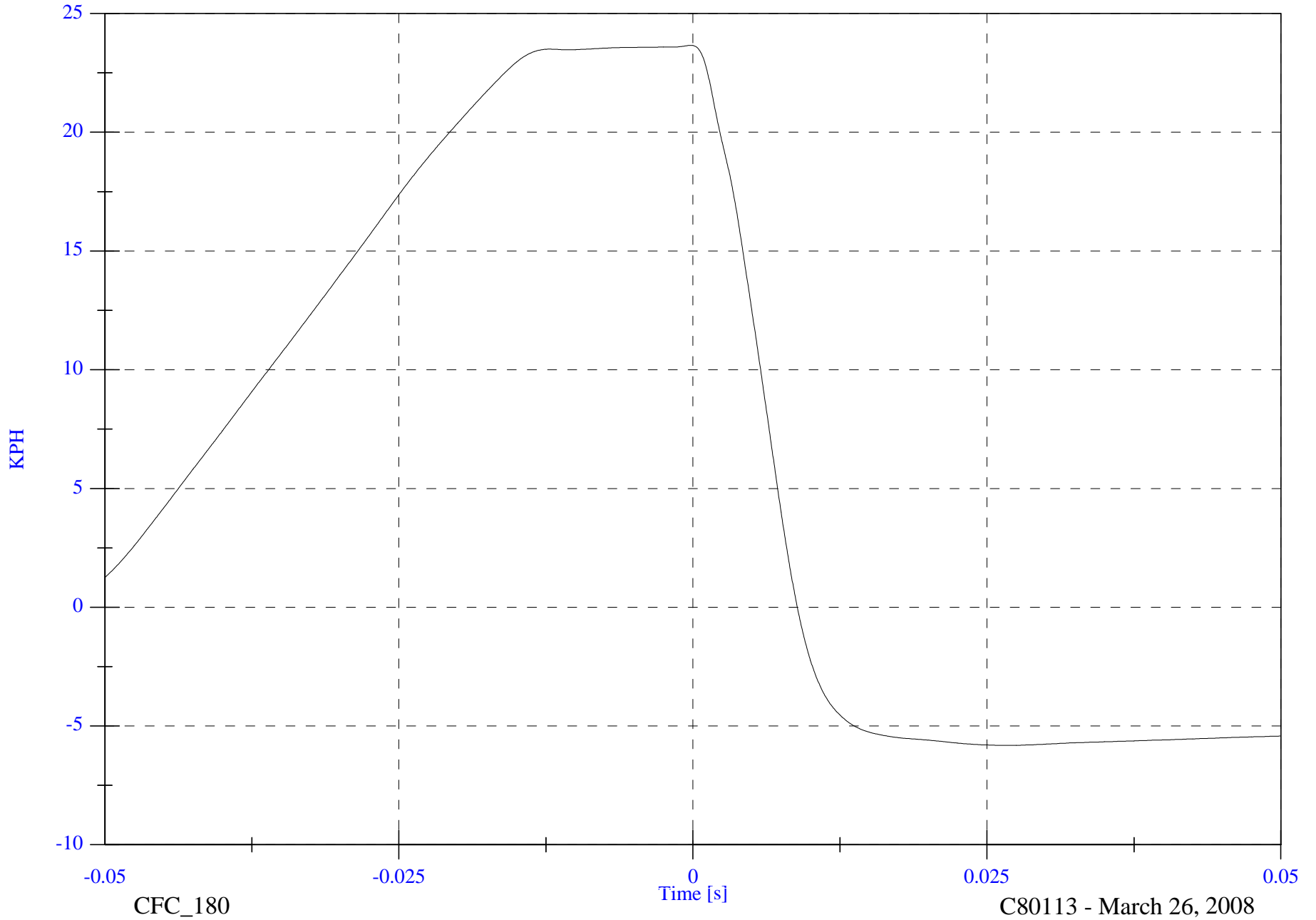
Headform Velocity

Max: 23.7 [KPH] at -0.000 [s]

Min: -5.8 [KPH] at 0.027 [s]

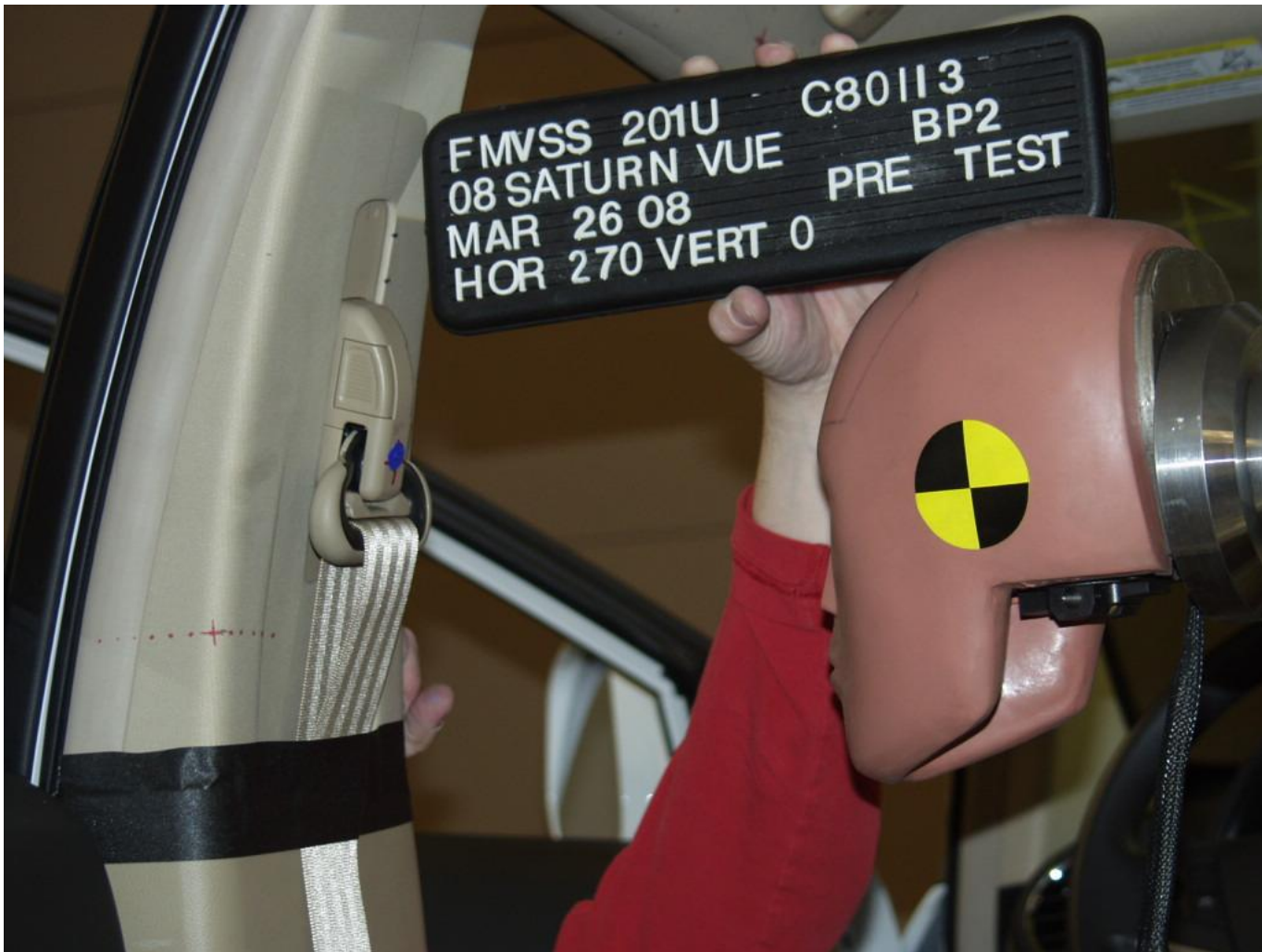
C80113 DRIVER SIDE BP2 IMPACT PLOT #6

8851-05



CFC_180

C80113 - March 26, 2008



PRE-IMPACT BP2



POST-IMPACT BP2

VEHICLE YEAR/MAKE/MODEL/STYLE:	2008 Saturn Vue XE
VIN:	3GSCL33P08S593009
DATE OF MANUFACTURE:	10/07(SEE CERTIFICATION LABEL)
COLOR:	White

Test Number:	11
Test Date:	03/26/08
Target Location:	UPPER ROOF
Target Code:	URBP
Horizontal Impact Angle:	270°
Vertical Impact Angle:	50°
Ambient Temperature:	22.8 C°
Relative Humidity:	19.6
Time of Impact:	11:40
Headform Number:	0355

Impact Point Description (from lower midpoint on midsagittal line)					
On Centerline	8	<input type="checkbox"/>	mm right	<input checked="" type="checkbox"/>	mm left
On Centerline	40				mm up



POST-IMPACT URBP HEADFORM

Free Motion HIC	632.9
HIC(d)	643.9
Impact Velocity (kph)	23.73
HIC T1 (msec)	3.8
HIC T2 (msec)	10.9

FMVSS 201U 2008 Saturn Vue C80113 - URBP

FMH Headform 0355

Location: URBP

Test Date: March 26, 2008

Work File: URBP

-----TEST RESULTS-----

Lab Temperature: 22.8 C

HICd: 643.9

Lab Humidity: 19.6 %

HIC (36ms): 632.9

Velocity at Impact: 23.73 KPH

t1: 3.8 msec

t2: 10.9 msec

Free Flight Distance: 221.74 mm

Duration: 7.1 msec

Average Acceleration: 8.9 g

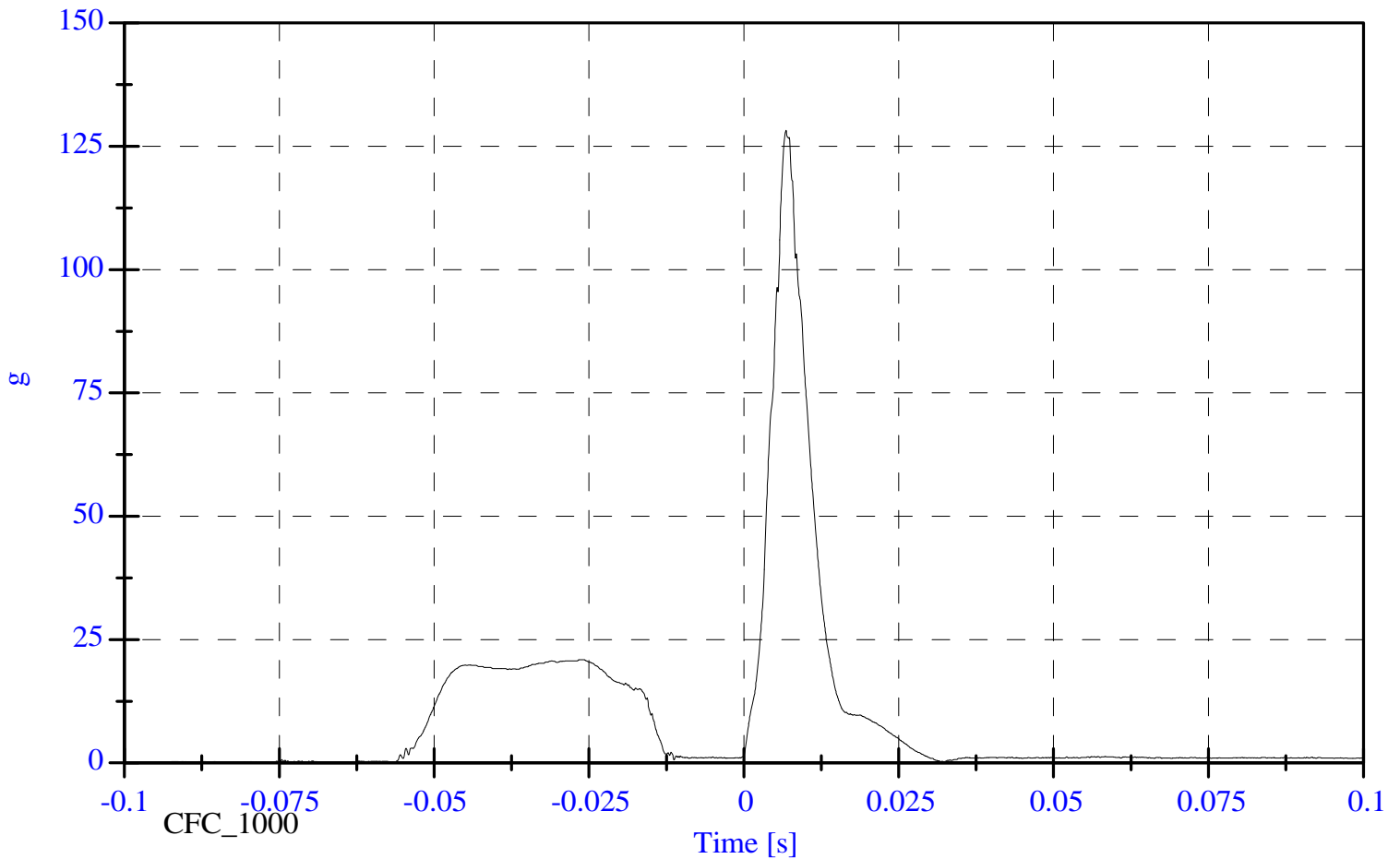
Maximum: 128.2 g

FMVSS 201U 2008 Saturn Vue

Headform Resultant

Max: 128.2 [g] at 0.007 [s]

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

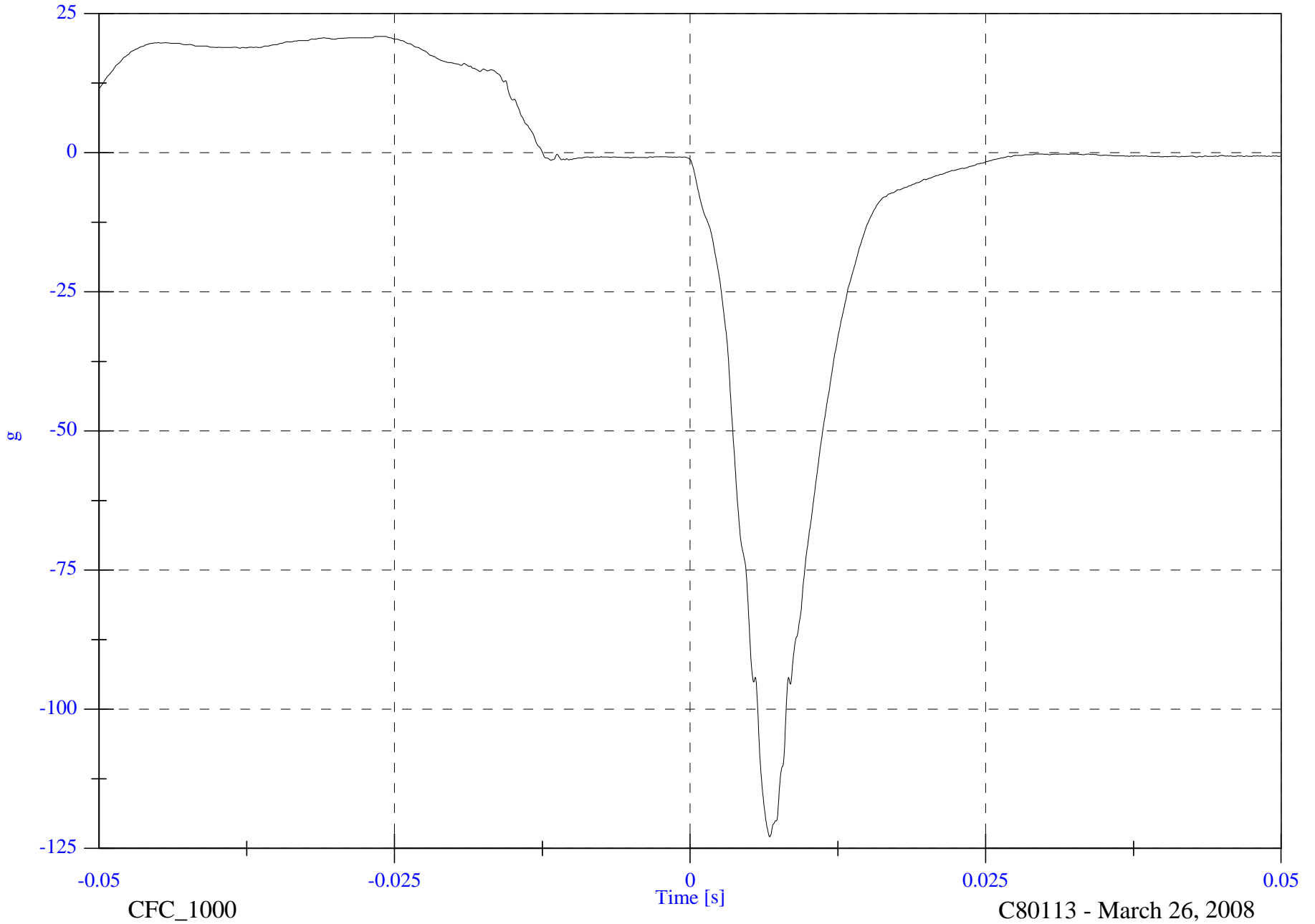


FMVSS 201U 2008 Saturn Vue

Headform X Acceleration

Max: 20.9 [g] at -0.027 [s]

Min: -122.9 [g] at 0.007 [s]



C80113 DRIVER SIDE URBP IMPACT PLOT #2

8851-05

CFC_1000

C80113 - March 26, 2008

FMVSS 201U 2008 Saturn Vue

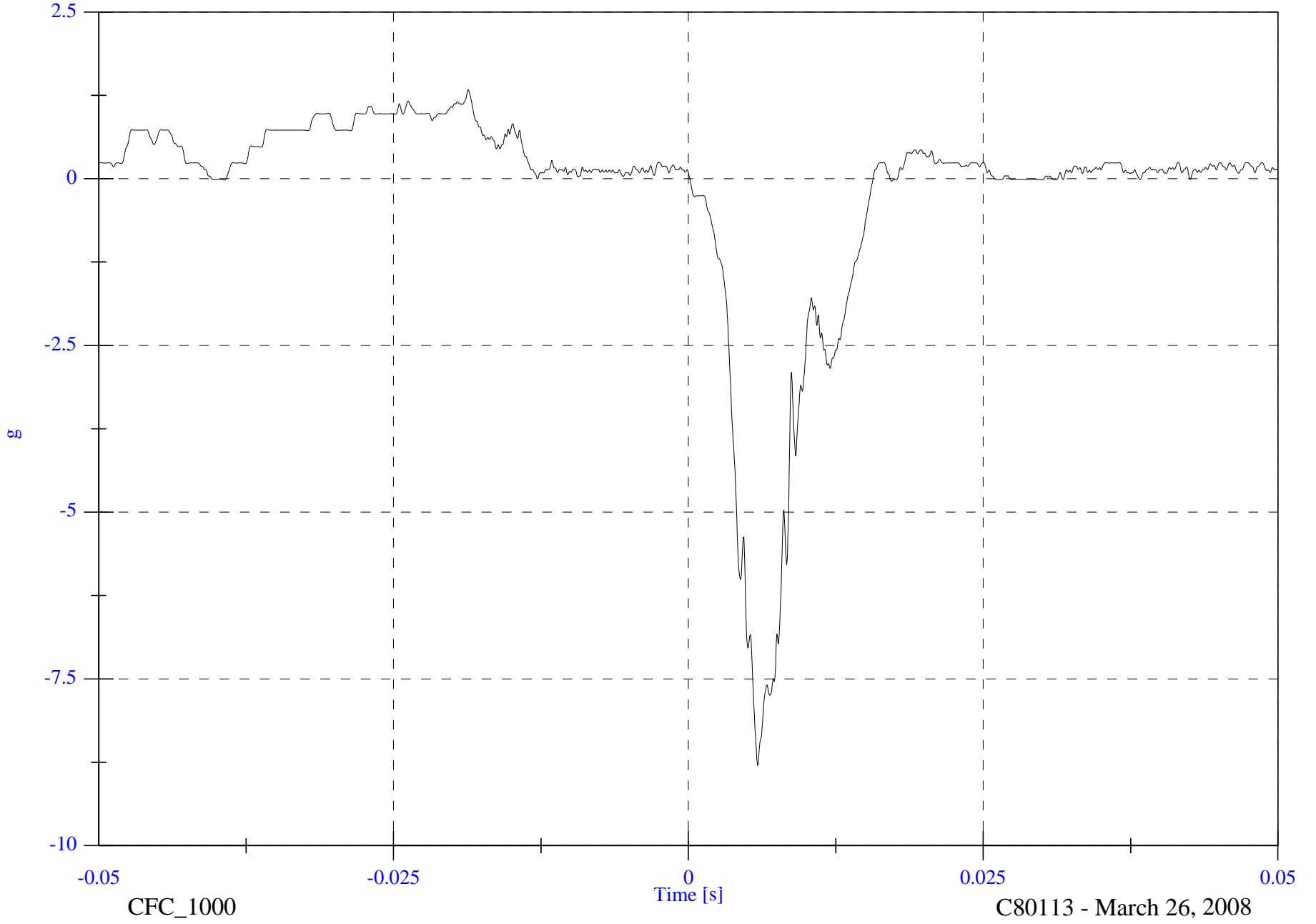
Headform Y Acceleration

Max: 1.3 [g] at -0.019 [s]

Min: -8.8 [g] at 0.006 [s]

C80113 DRIVER SIDE URBP IMPACT PLOT #3

8851-05



CFC_1000

Time [s]

C80113 - March 26, 2008

FMVSS 201U 2008 Saturn Vue

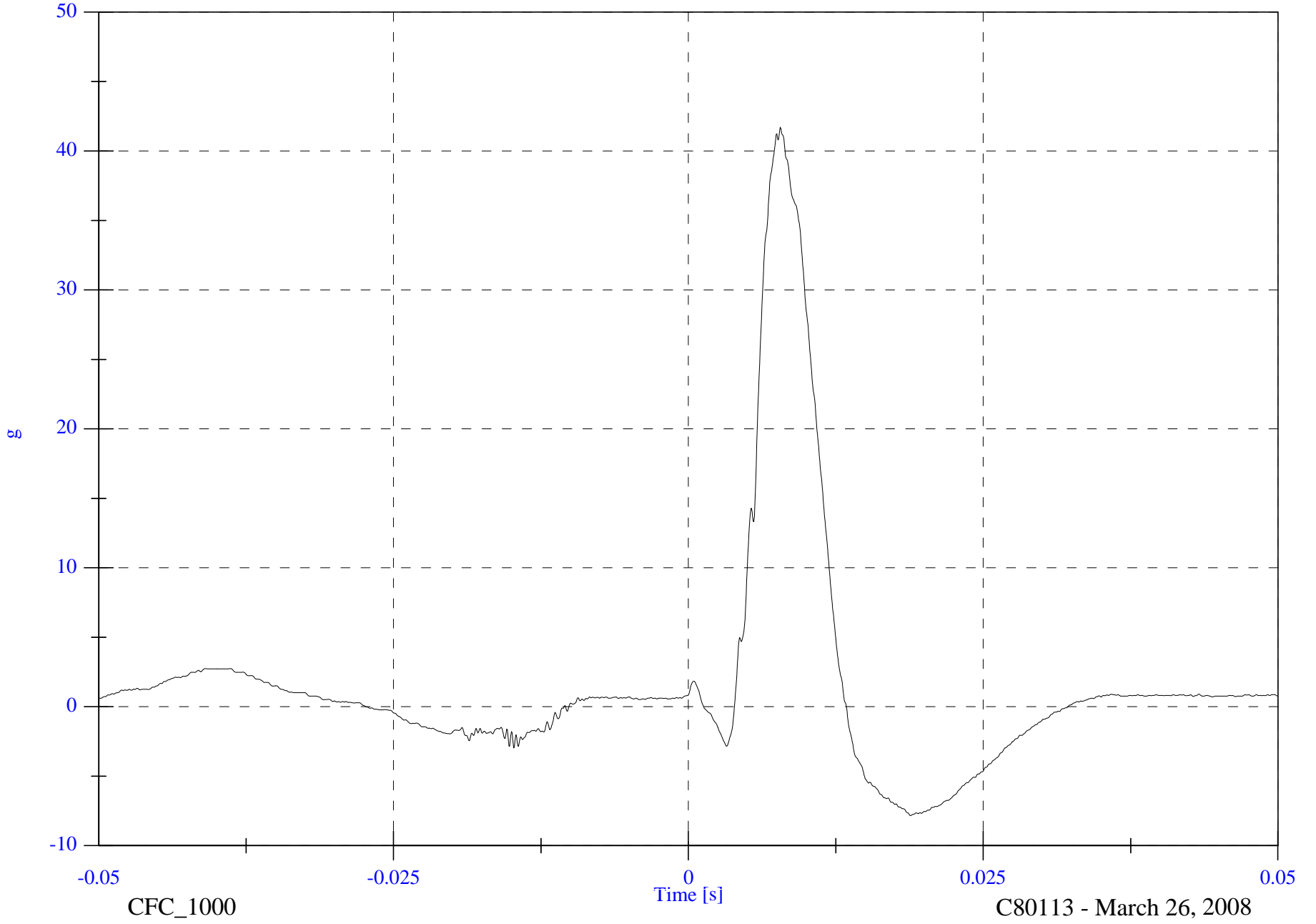
Headform Z Acceleration

Max: 41.7 [g] at 0.008 [s]

Min: -7.8 [g] at 0.019 [s]

C80113 DRIVER SIDE URBP IMPACT PLOT #4

8851-05



FMVSS 201U 2008 Saturn Vue

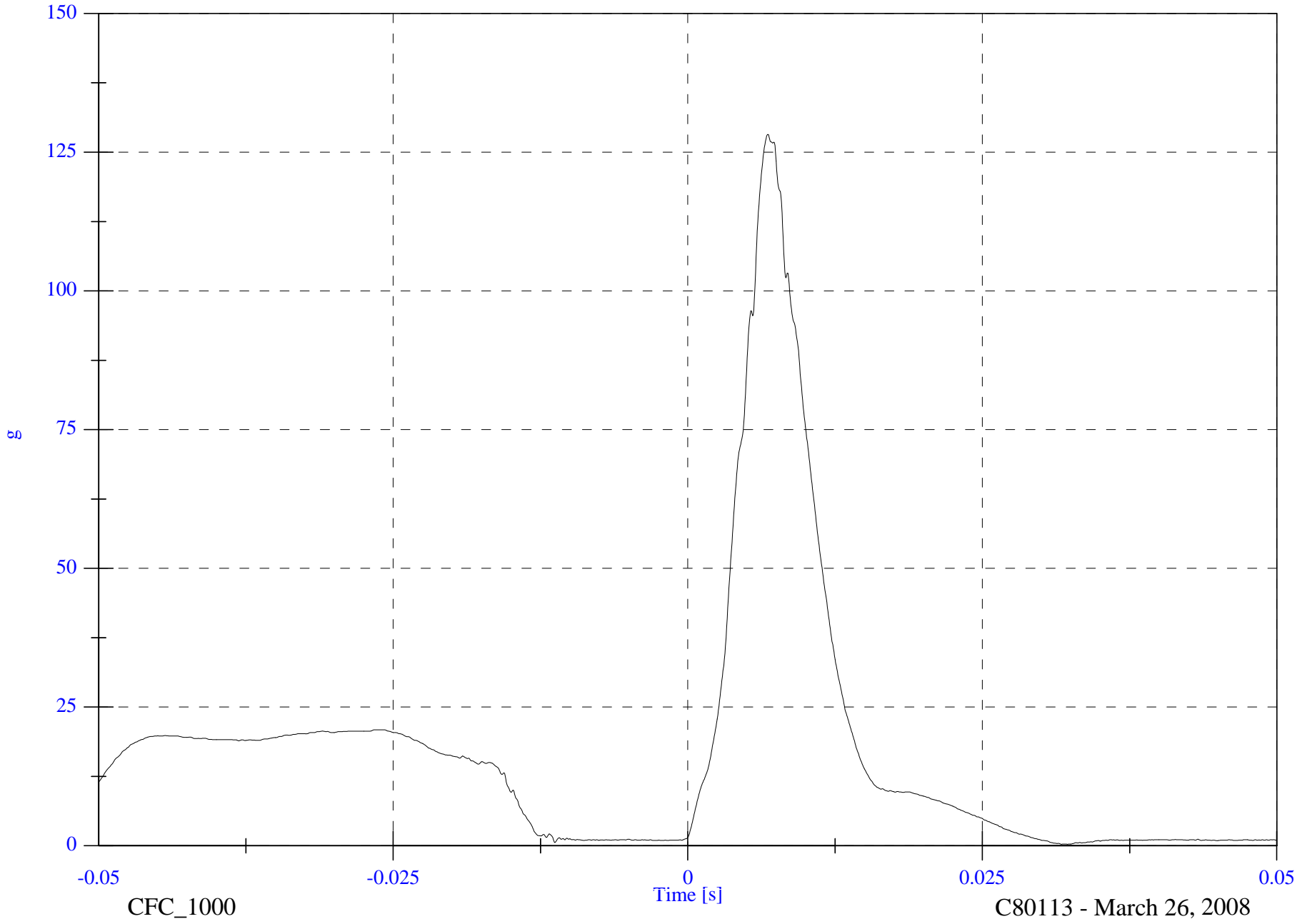
Headform Resultant

Max: 128.2 [g] at 0.007 [s]

Min: 0.3 [g] at 0.032 [s]

C80113 DRIVER SIDE URBP IMPACT PLOT #5

8851-05



FMVSS 201U 2008 Saturn Vue

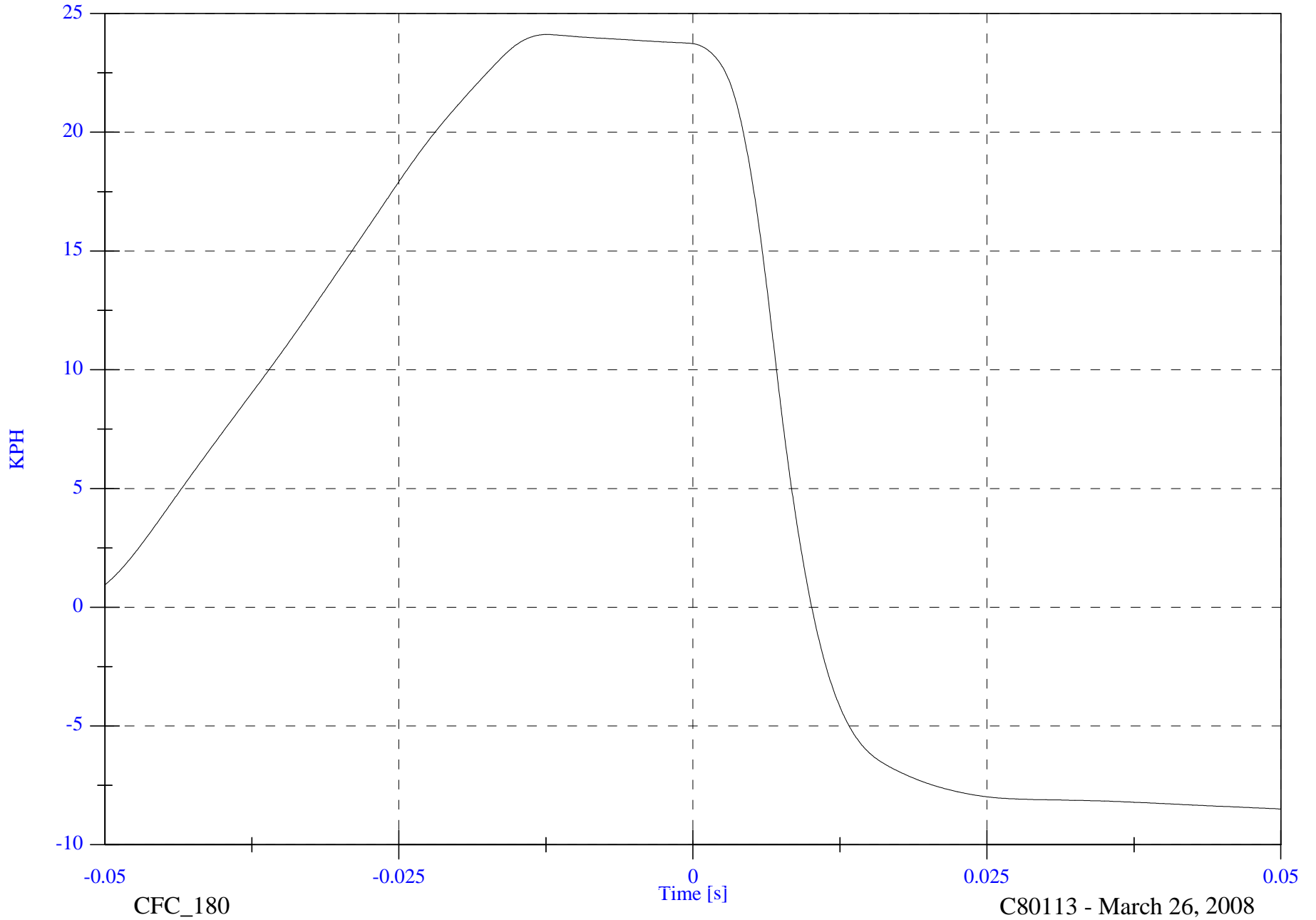
Headform Velocity

Max: 24.1 [KPH] at -0.012 [s]

Min: -8.5 [KPH] at 0.050 [s]

C80113 DRIVER SIDE URBP IMPACT PLOT #6

8851-05



CFC_180

Time [s]

C80113 - March 26, 2008



PRE-IMPACT URBP

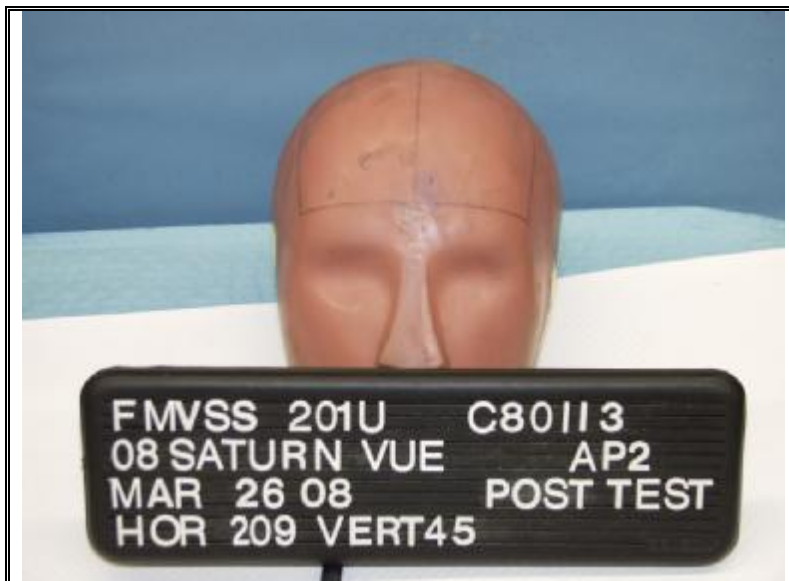


POST-IMPACT URBP

VEHICLE YEAR/MAKE/MODEL/STYLE:	2008 Saturn Vue XE
VIN:	3GSCL33P08S593009
DATE OF MANUFACTURE:	10/07(SEE CERTIFICATION LABEL)
COLOR:	White

Test Number:	12
Test Date:	03/26/08
Target Location:	A-PILLAR
Target Code:	AP2
Horizontal Impact Angle:	209°
Vertical Impact Angle:	45°
Ambient Temperature:	22.8 C°
Relative Humidity:	19.6
Time of Impact:	13:50
Headform Number:	0805

Impact Point Description (from lower midpoint on midsagittal line)					
On Centerline	3	<input type="checkbox"/>	mm right	<input checked="" type="checkbox"/>	mm left
On Centerline	14				mm up



POST-IMPACT AP2 HEADFORM

Free Motion HIC	247.9
HIC(d)	353.4
Impact Velocity (kph)	18.71
HIC T1 (msec)	3.6
HIC T2 (msec)	11.8

FMVSS 201U 2008 Saturn Vue C80113 - AP2

FMH Headform 0805

Location: AP2

Test Date: March 26, 2008

Work File: AP2

-----TEST RESULTS-----

Lab Temperature: 22.8 C

HICd: 353.4

Lab Humidity: 19.6 %

HIC (36ms): 247.9

Velocity at Impact: 18.71 KPH

t1: 3.7 msec

t2: 11.8 msec

Free Flight Distance: 222.21 mm

Duration: 8.1 msec

Average Acceleration: 7.0 g

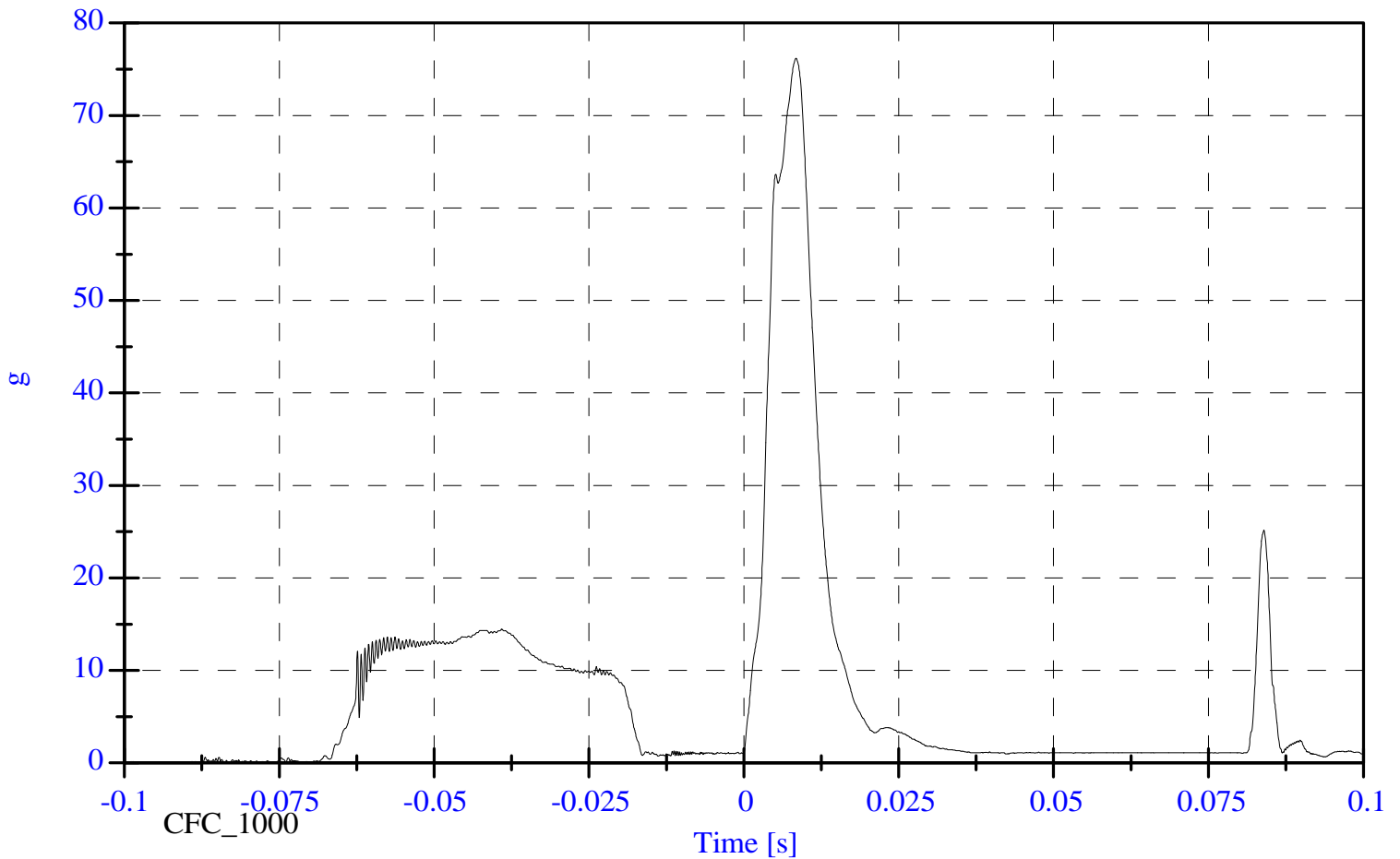
Maximum: 76.2 g

FMVSS 201U 2008 Saturn Vue

Headform Resultant

Max: 76.2 [g] at 0.008 [s]

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

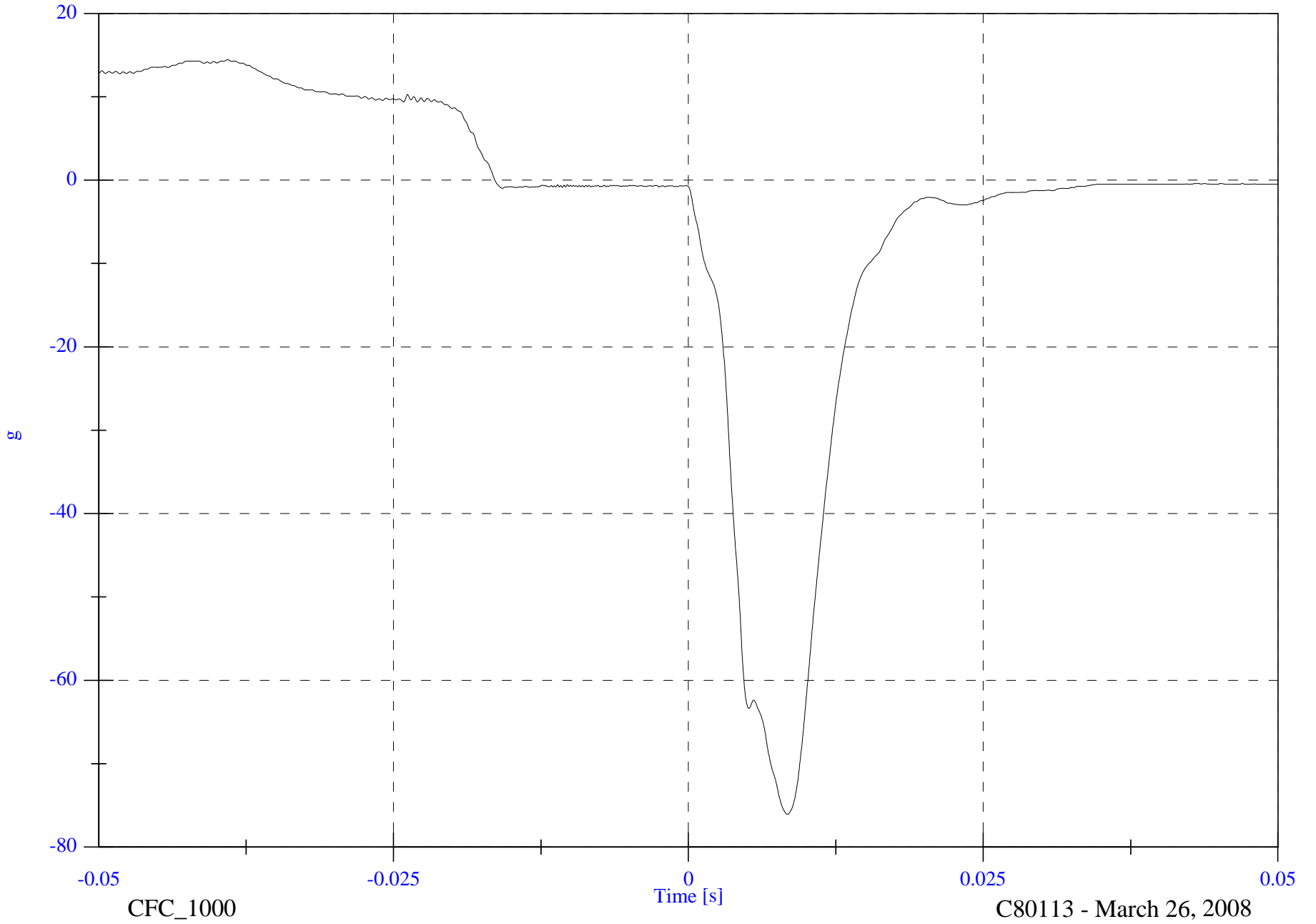


FMVSS 201U 2008 Saturn Vue

Headform X Acceleration

Max: 14.5 [g] at -0.039 [s]

Min: -76.1 [g] at 0.008 [s]



C80113 DRIVER SIDE AP2 IMPACT PLOT #2

8851-05

CFC_1000

C80113 - March 26, 2008

FMVSS 201U 2008 Saturn Vue

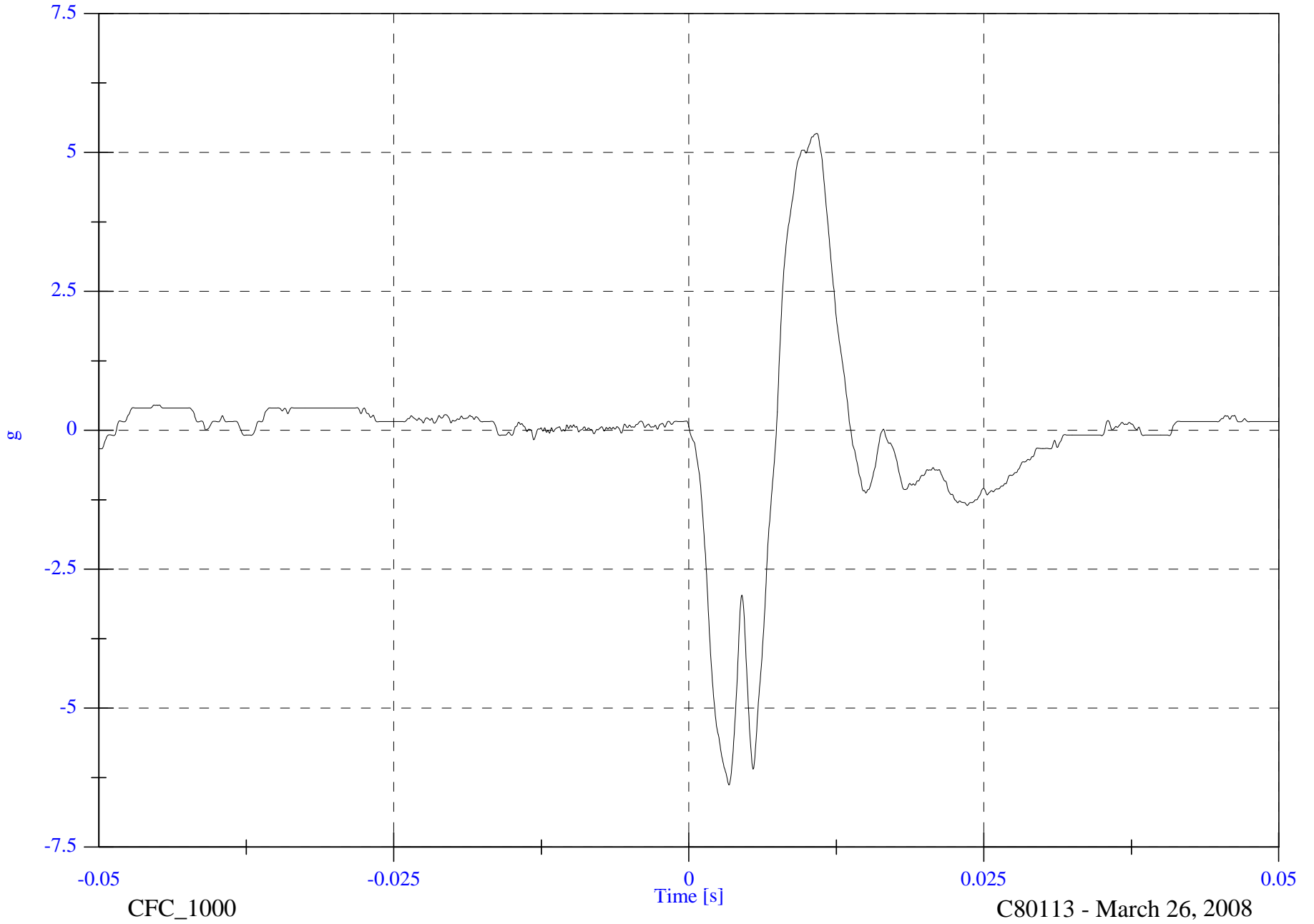
Headform Y Acceleration

Max: 5.3 [g] at 0.011 [s]

Min: -6.4 [g] at 0.003 [s]

C80113 DRIVER SIDE AP2 IMPACT PLOT #3

8851-05



FMVSS 201U 2008 Saturn Vue

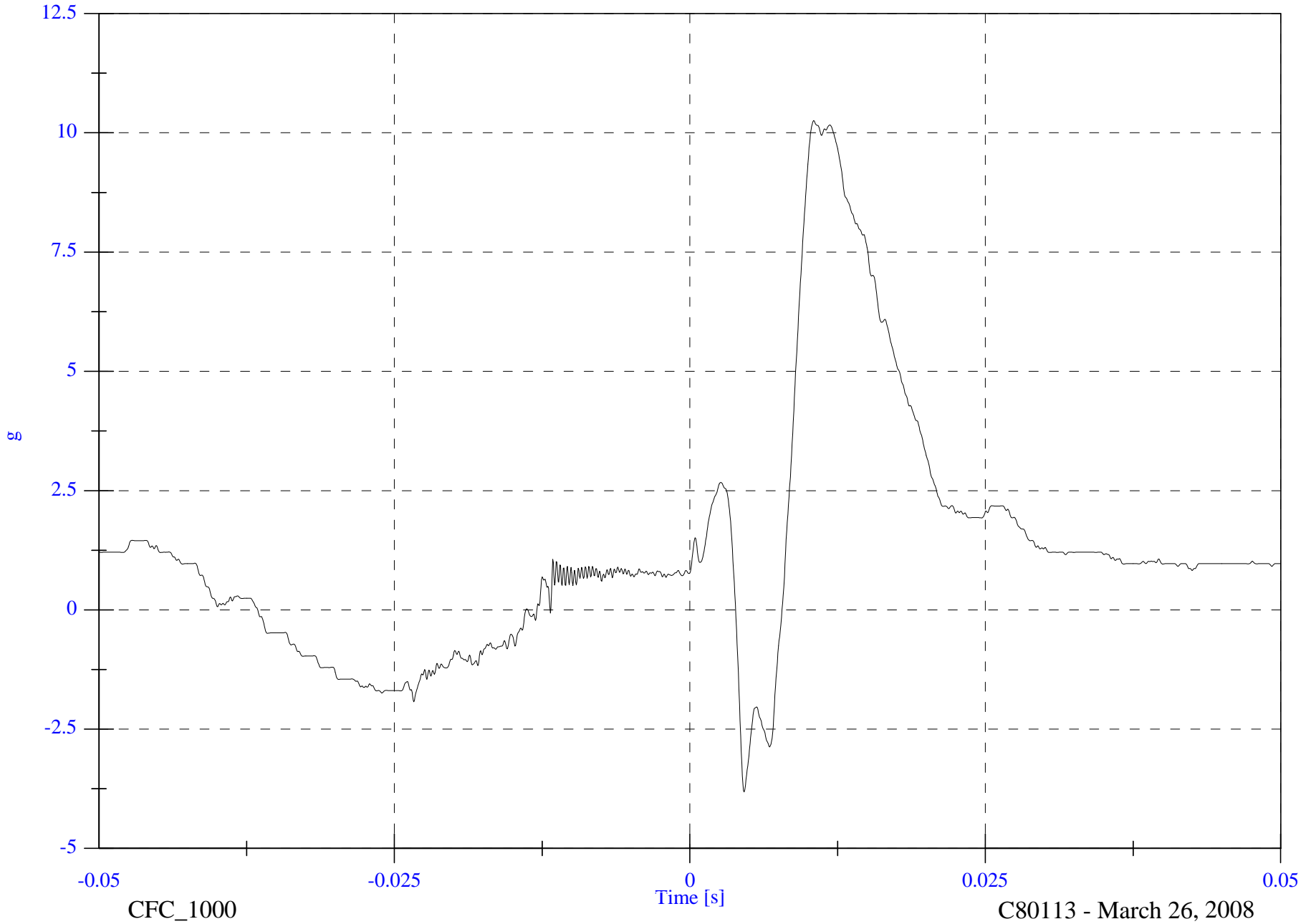
Headform Z Acceleration

Max: 10.3 [g] at 0.011 [s]

Min: -3.8 [g] at 0.005 [s]

C80113 DRIVER SIDE AP2 IMPACT PLOT #4

8851-05



CFC_1000

C80113 - March 26, 2008

FMVSS 201U 2008 Saturn Vue

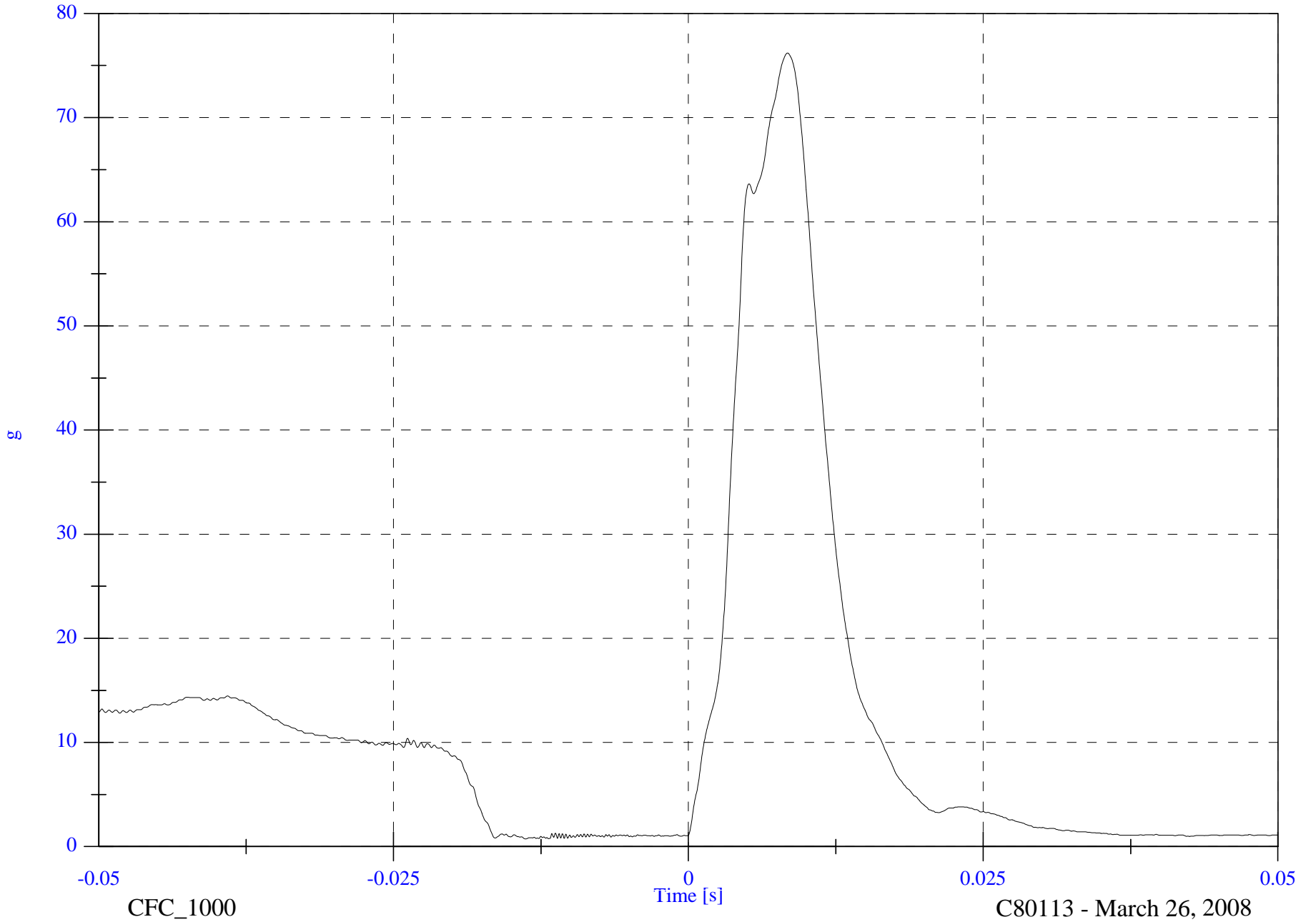
Headform Resultant

Max: 76.2 [g] at 0.008 [s]

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

C80113 DRIVER SIDE AP2 IMPACT PLOT #5

8851-05



CFC_1000

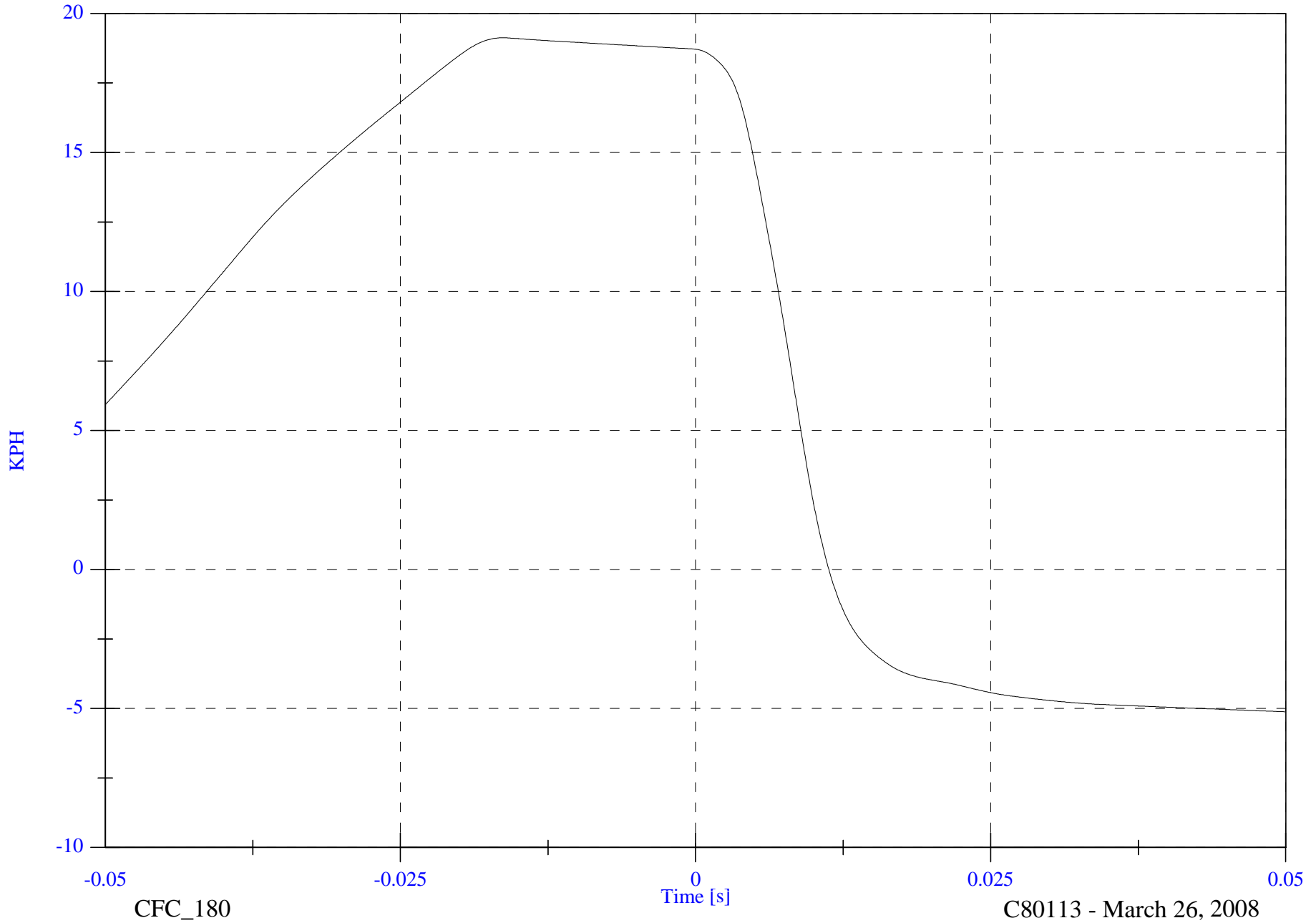
C80113 - March 26, 2008

FMVSS 201U 2008 Saturn Vue

Headform Velocity

Max: 19.1 [KPH] at -0.016 [s]

Min: -5.1 [KPH] at 0.050 [s]



C80113 DRIVER SIDE AP2 IMPACT PLOT #6

8851-05

CFC_180

C80113 - March 26, 2008



PRE-IMPACT AP2



POST-IMPACT AP2

APPENDIX A

PHOTOGRAPHS

PHOTOGRAPHS

FIGURE	VIEW	PAGE
A-1	LEFT SIDE VIEW OF VEHICLE	A-3
A-2	RIGHT SIDE VIEW OF VEHICLE	A-4
A-3	3/4 FRONTAL VIEW FROM LEFT SIDE OF VEHICLE	A-5
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A-18	POST-TEST DRIVER SIDE FRONT HEADER	A-20
A-19	POST-TEST DRIVER SIDE SIDE RAIL	A-21
A-20	POST-TEST DRIVER SIDE B-PILLAR	A-22
A-21	POST-TEST DRIVER SIDE OTHER PILLAR	A-23
A-22	POST-TEST PASSENGER SIDE A-PILLAR	A-24
A-23	POST-TEST PASSENGER SIDE FRONT HEADER	A-25
A-24	POST-TEST PASSENGER SIDE SIDE RAIL	A-26
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A-26	POST-TEST PASSENGER SIDE OTHER PILLAR	A-28



Figure A-1 : LEFT SIDE VIEW OF VEHICLE



Figure A-2 : RIGHT SIDE VIEW OF VEHICLE



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



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



Figure A-5 : VEHICLE'S CERTIFICATION LABEL

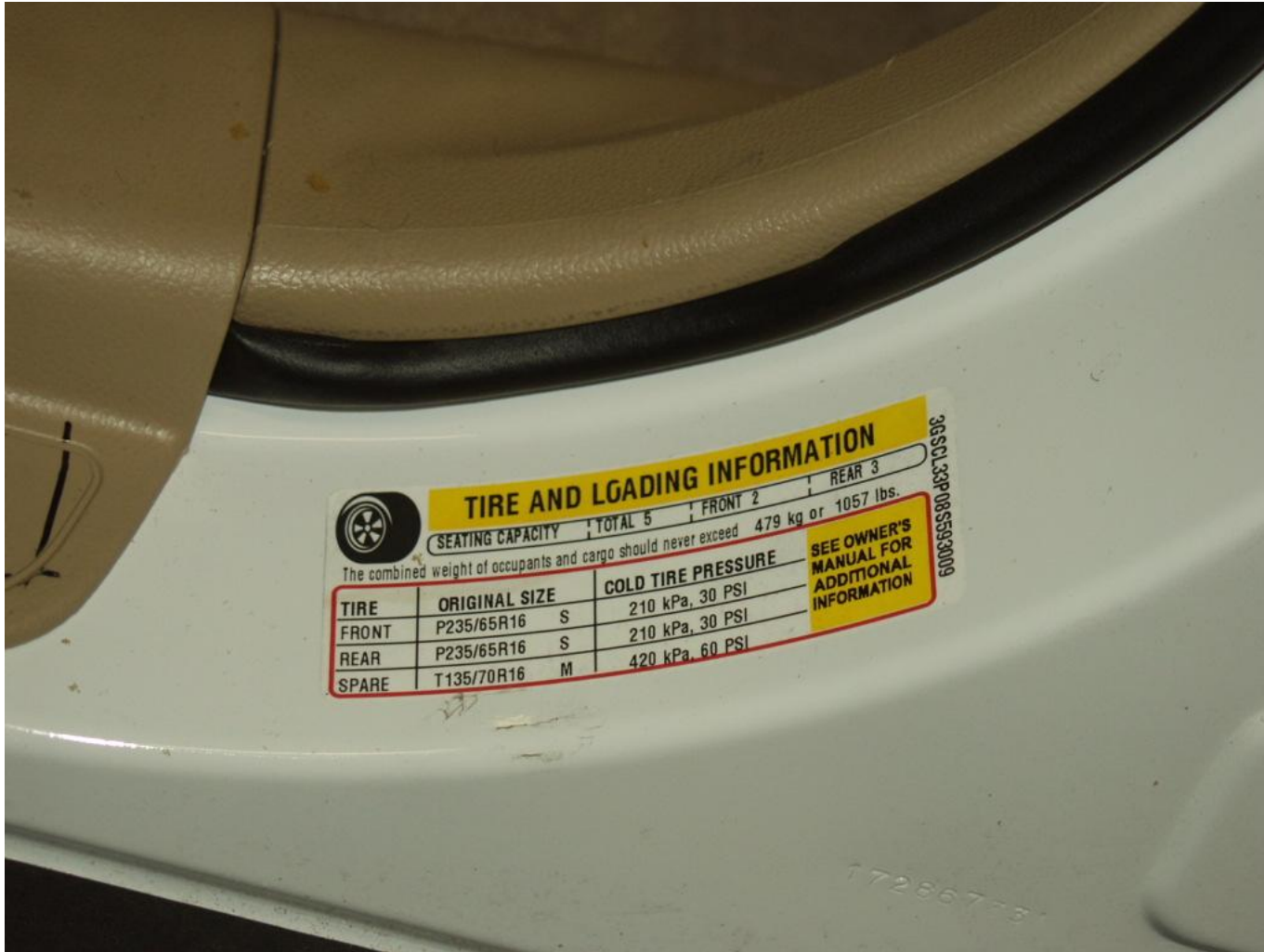


Figure A-6 : VEHICLE'S TIRE INFORMATION LABEL



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 OTHER PILLAR



Figure A-12 : PRE-TEST PASSENGER SIDE A-PILLAR



Figure A-13 : PRE-TEST PASSENGER SIDE FRONT HEADER



Figure A-14 : PRE-TEST PASSENGER SIDE SIDE RAIL

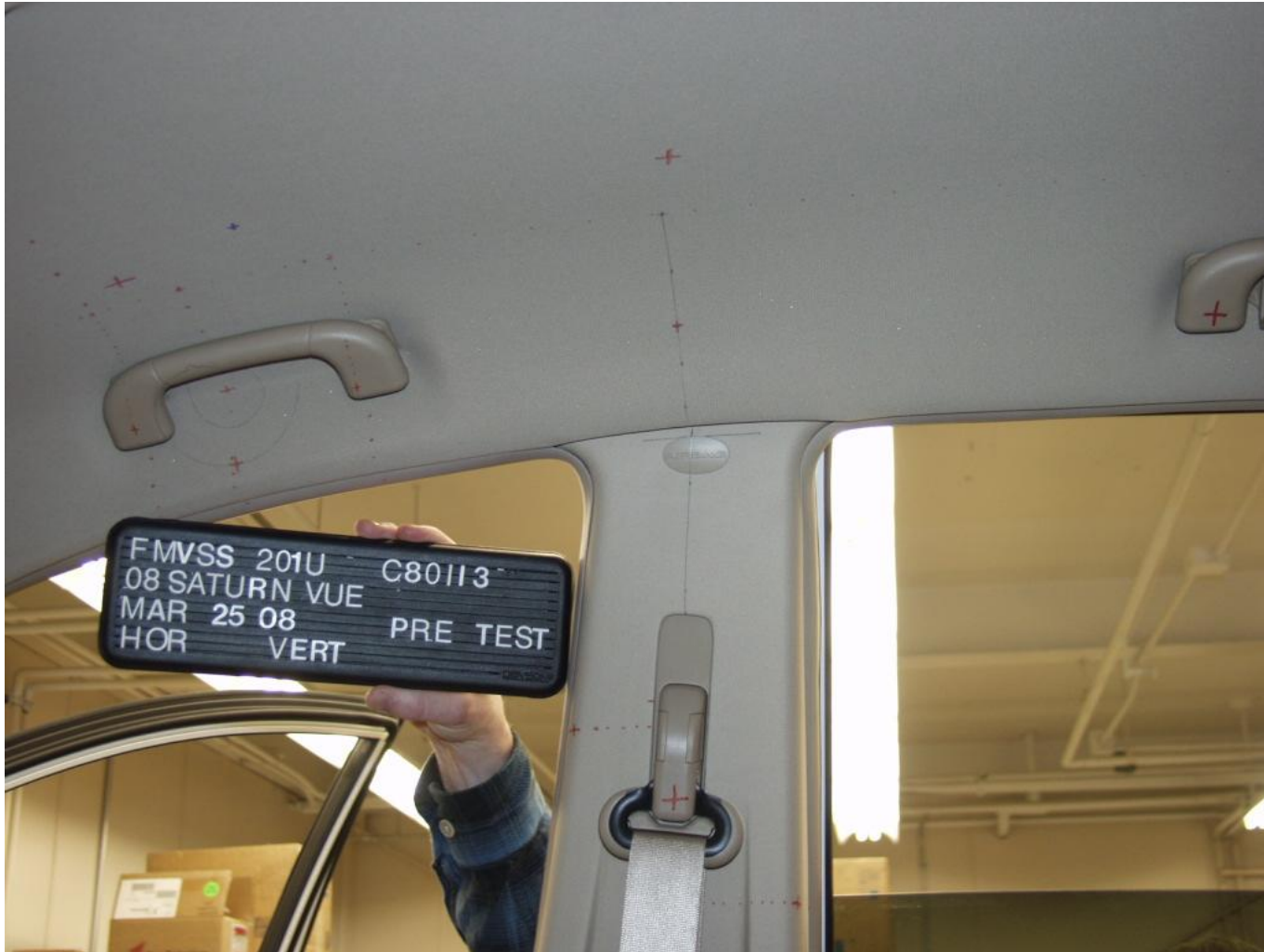


Figure A-15 : PRE-TEST PASSENGER SIDE B-PILLAR



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



Figure A-17 : POST-TEST DRIVER SIDE A-PILLAR



Figure A-18 : POST-TEST DRIVER SIDE FRONT HEADER



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



Figure A-20 : POST-TEST DRIVER SIDE B-PILLAR



Figure A-21 : POST-TEST DRIVER SIDE OTHER PILLAR



Figure A-22 : POST-TEST PASSENGER SIDE A-PILLAR



Figure A-23 : POST-TEST PASSENGER SIDE FRONT HEADER



Figure A-24 : POST-TEST PASSENGER SIDE SIDE RAIL

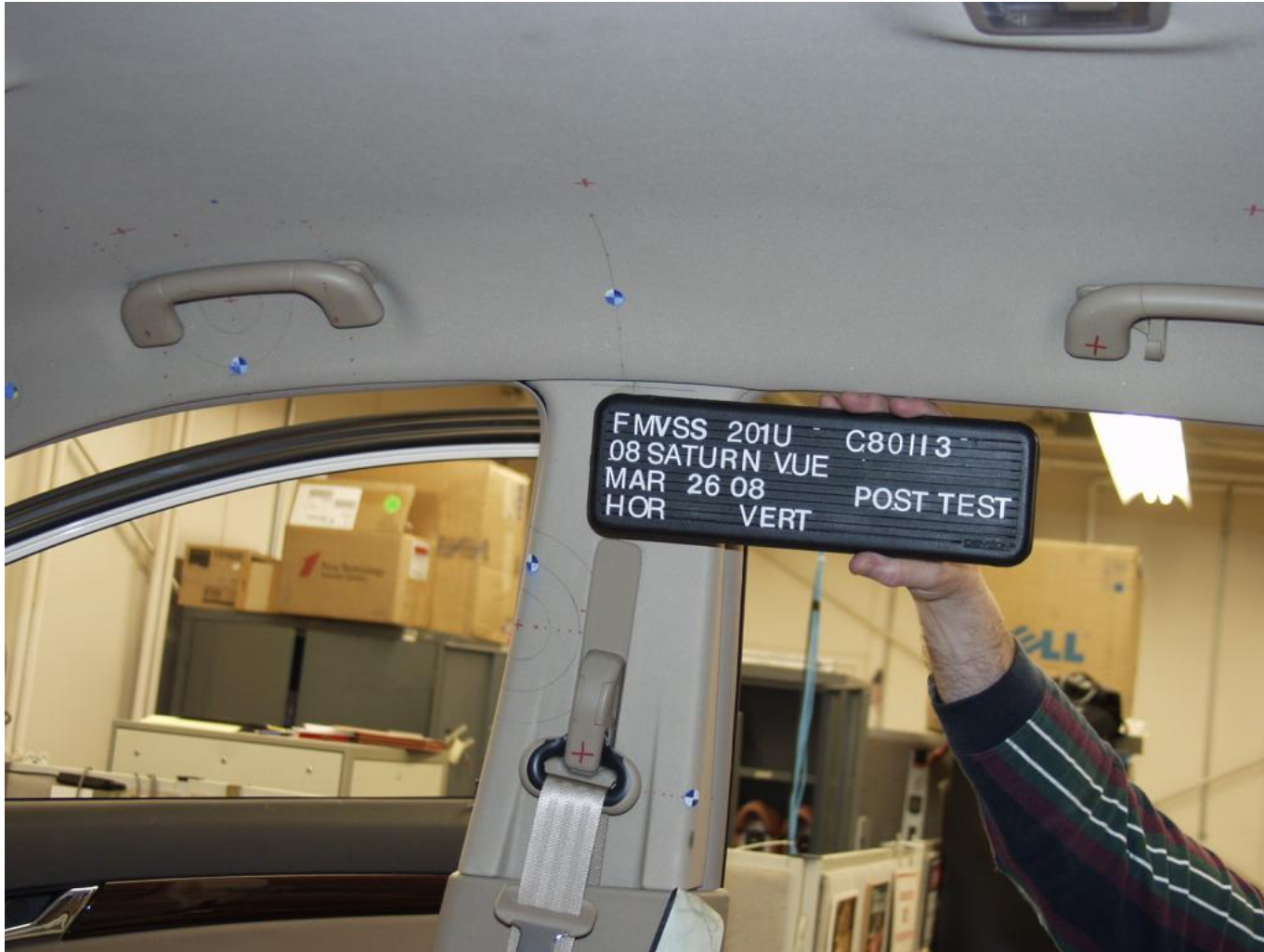


Figure A-25 : POST-TEST PASSENGER SIDE B-PILLAR



Figure A-26 : POST-TEST PASSENGER SIDE OTHER 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**

MANUFACTURER:		FIRST TECHNOLOGY SAFETY SYSTEMS	
SERIAL NUMBER:		1140	
CALIBRATION DATE:		MARCH 4, 2008	
TEST PARAMETER	SPECIFICATION	TEST RESULTS	
TEMPERATURE	19°C to 26°C	22.8	
RELATIVE HUMIDITY	10% to 70%	18	
PEAK RESULTANT ACCELERATION	225 Gs to 275 Gs	271.5	
PEAK LATERAL ACCELERATION	15 Gs Maximum	2.3	
IS ACCELERATION CURVE UNIMODAL?	YES	YES	

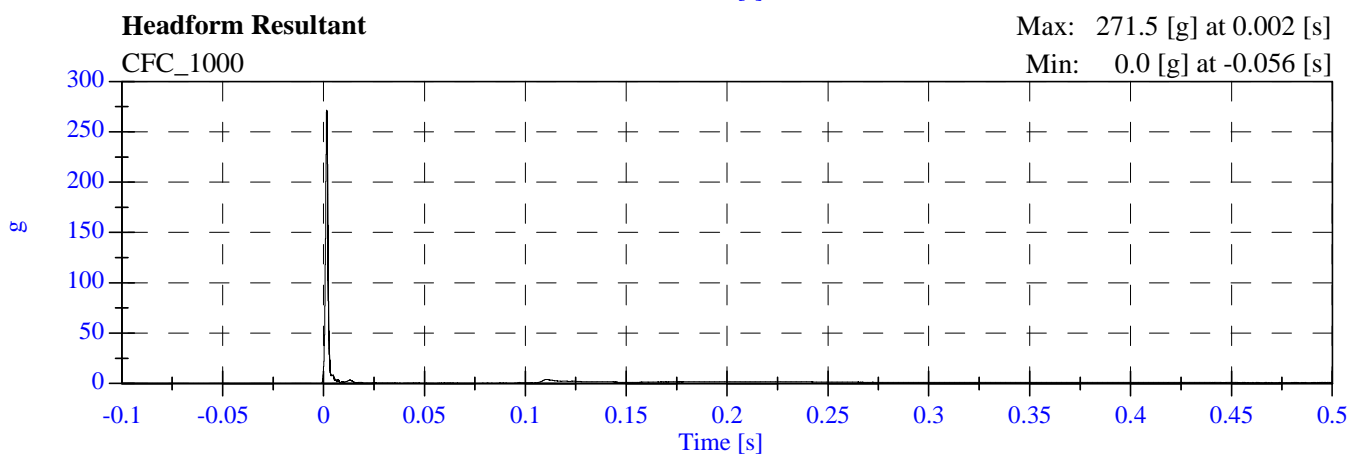
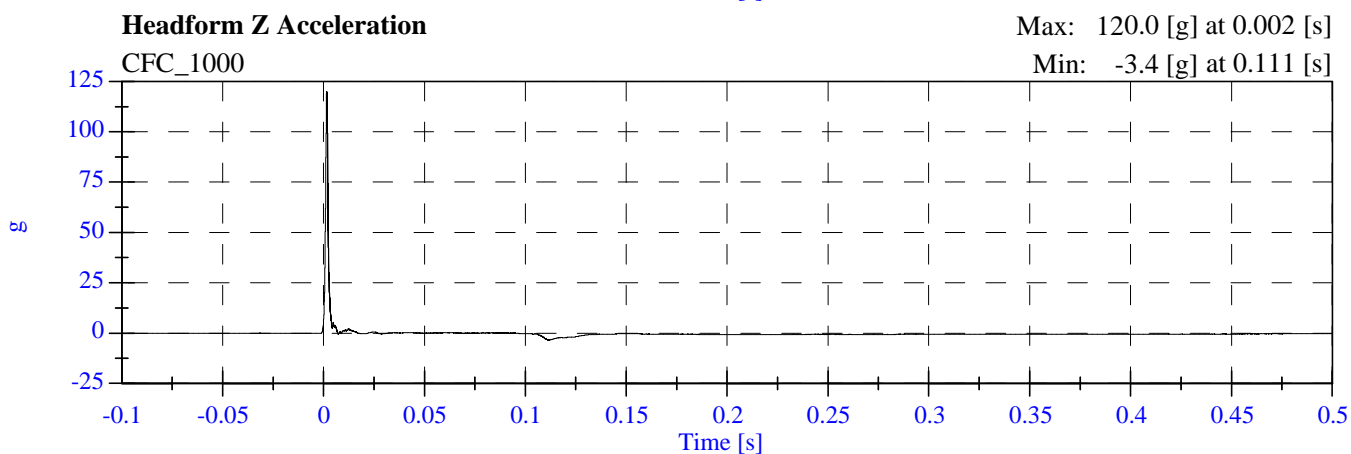
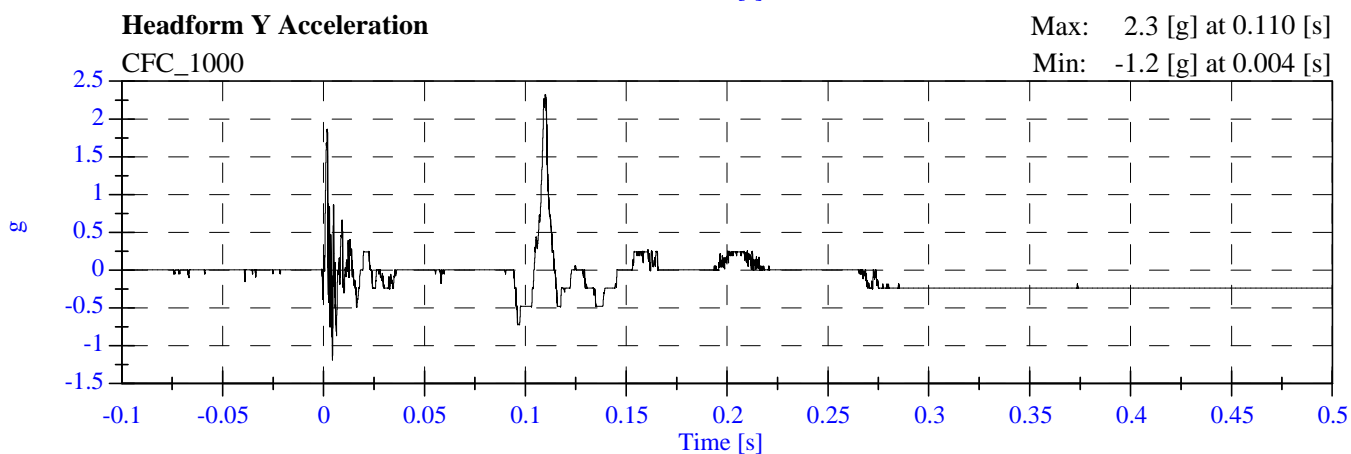
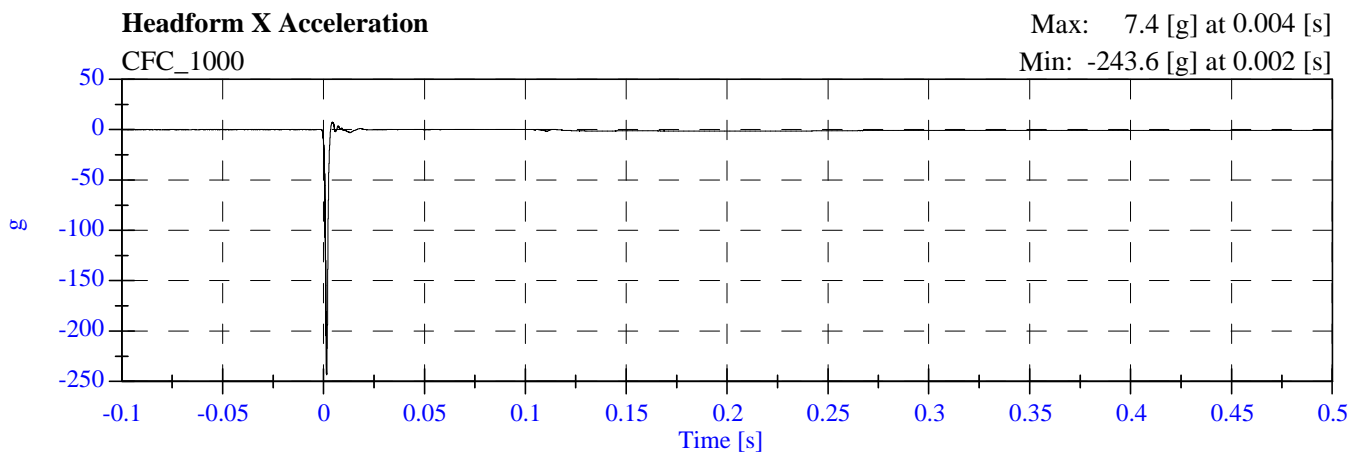
HEAD ACCELEROMETER CALIBRATION INFORMATION

I.D. NUMBER	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	DATE OF LAST CALIBRATION	DATE OF NEXT CALIBRATION
1 - LONGITUDINAL	ENDEVCO	7264-2000T	J24876	Jan. 18, 2008	June 18, 2008
2 - LATERAL	ENDEVCO	7264-2000T	J33030	Jan. 18, 2008	June 18, 2008
3 - VERTICAL	ENDEVCO	7264-2000T	J31009	Jan. 18, 2008	June 18, 2008

REMARKS:

FMVSS 201U - Headform Calibration Drops

C80113 - March 04, 2008



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

MANUFACTURER:		DENTON ATD INC.	
SERIAL NUMBER:		0062	
CALIBRATION DATE:		MARCH 4, 2008	
TEST PARAMETER	SPECIFICATION	TEST RESULTS	
TEMPERATURE	19°C to 26°C	22.8	
RELATIVE HUMIDITY	10% to 70%	18	
PEAK RESULTANT ACCELERATION	225 Gs to 275 Gs	272.2	
PEAK LATERAL ACCELERATION	15 Gs Maximum	7.4	
IS ACCELERATION CURVE UNIMODAL?	YES	YES	

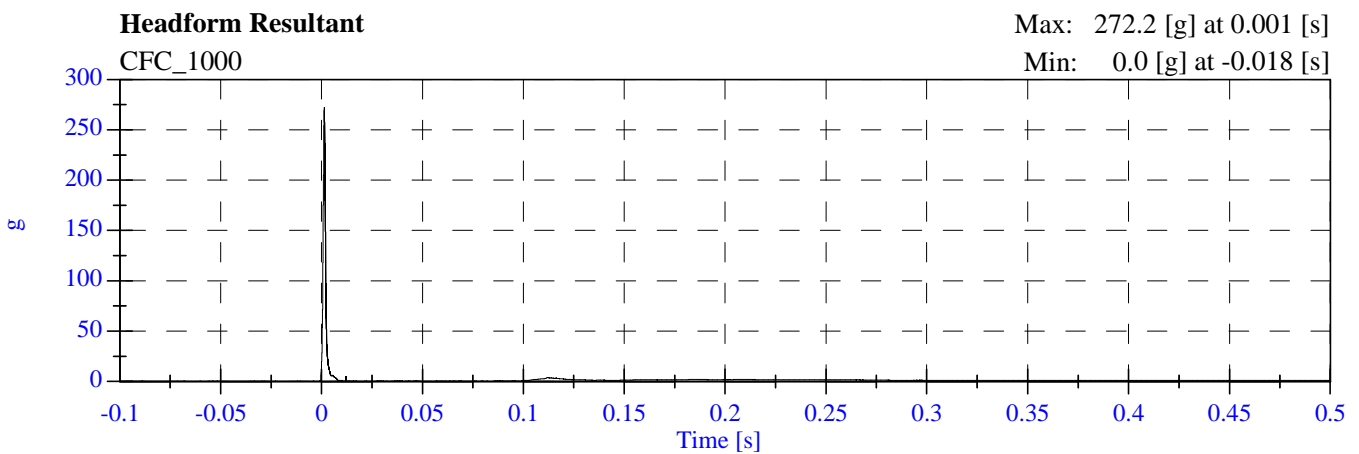
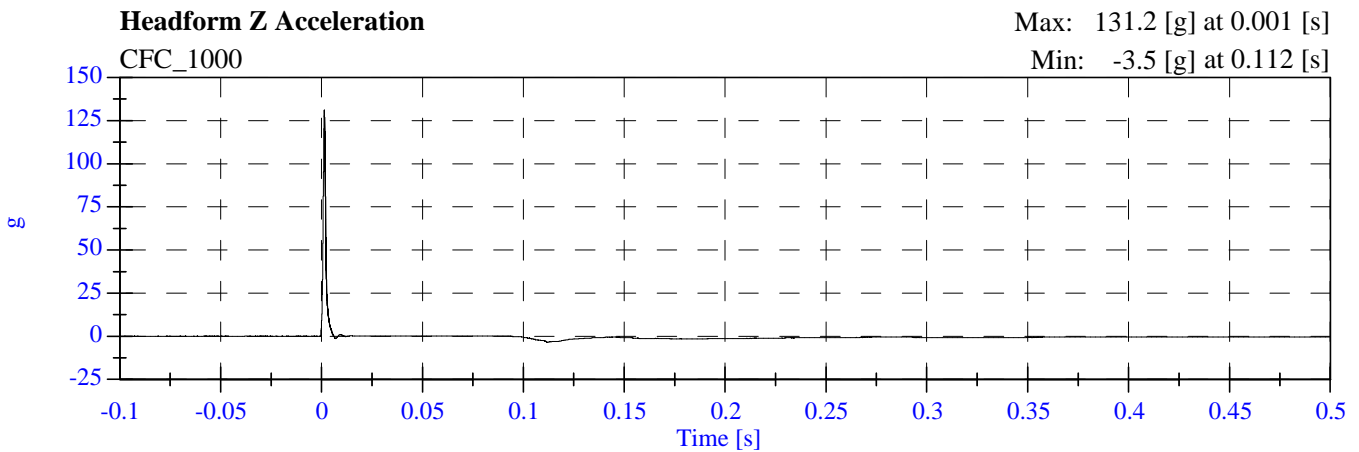
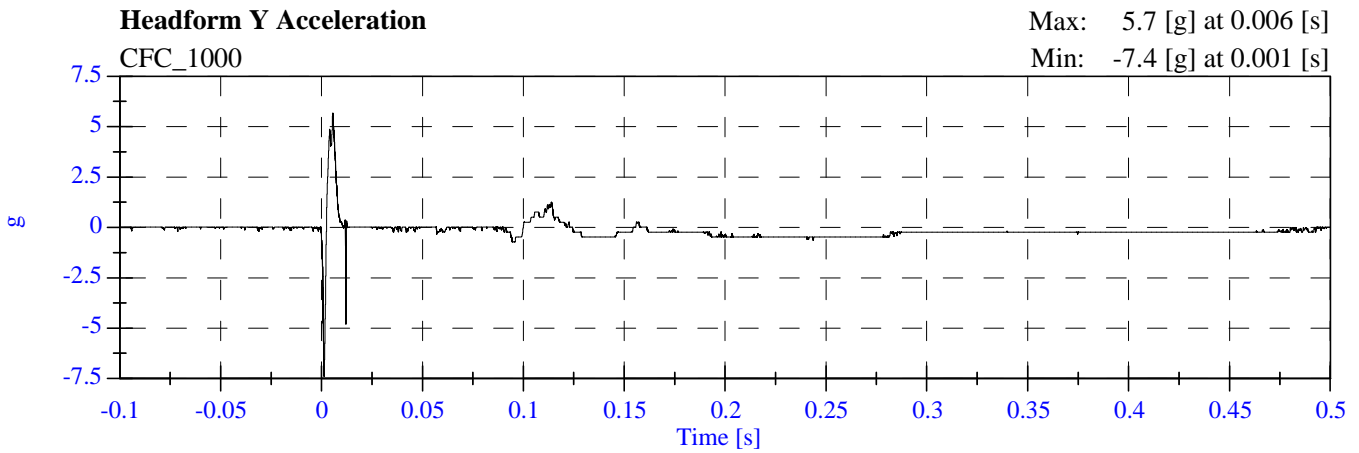
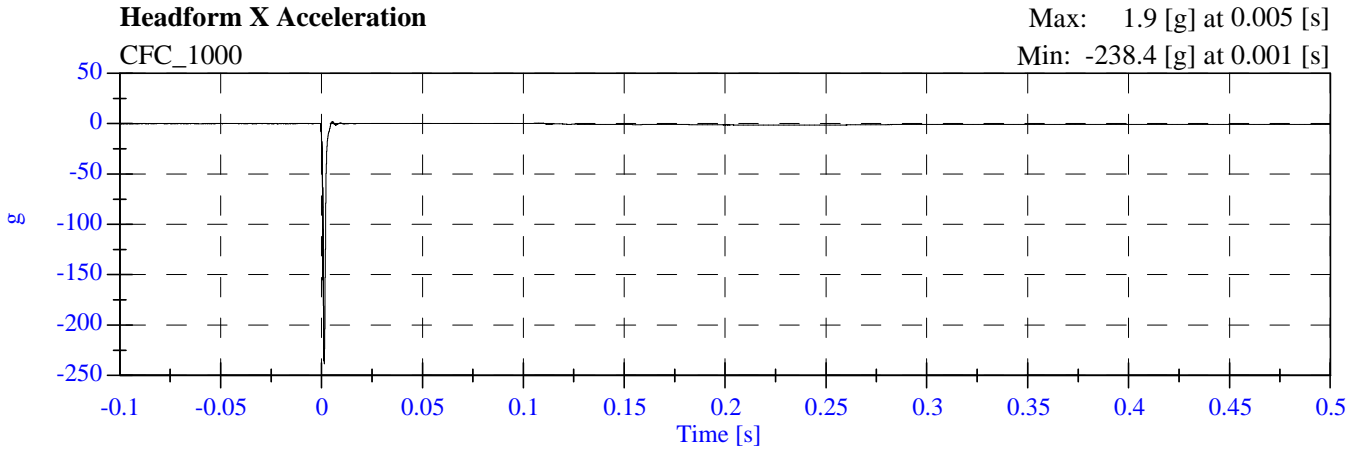
HEAD ACCELEROMETER CALIBRATION INFORMATION

I.D. NUMBER	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	DATE OF LAST CALIBRATION	DATE OF NEXT CALIBRATION
1 - LONGITUDINAL	ENDEVCO	7264-2000T	J33127	Jan. 18, 2008	June 18, 2008
2 - LATERAL	ENDEVCO	7264-2000T	J33019	Jan. 18, 2008	June 18, 2008
3 - VERTICAL	ENDEVCO	7264-2000T	J32782	Jan. 18, 2008	June 18, 2008

REMARKS:

FMVSS 201U - Headform Calibration Drops

C80113 - March 04, 2008



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

MANUFACTURER:		FIRST TECHNOLOGY SAFETY SYSTEMS	
SERIAL NUMBER:		805	
CALIBRATION DATE:		MARCH 4, 2008	
TEST PARAMETER	SPECIFICATION	TEST RESULTS	
TEMPERATURE	19°C to 26°C	22.2	
RELATIVE HUMIDITY	10% to 70%	23	
PEAK RESULTANT ACCELERATION	225 Gs to 275 Gs	245.0	
PEAK LATERAL ACCELERATION	15 Gs Maximum	2.6	
IS ACCELERATION CURVE UNIMODAL?	YES	YES	

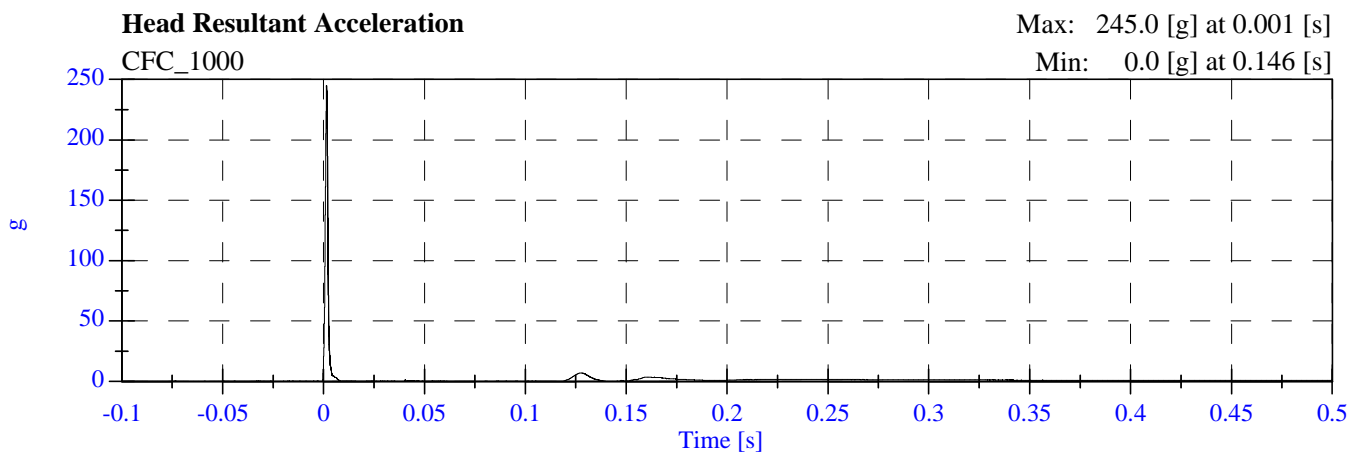
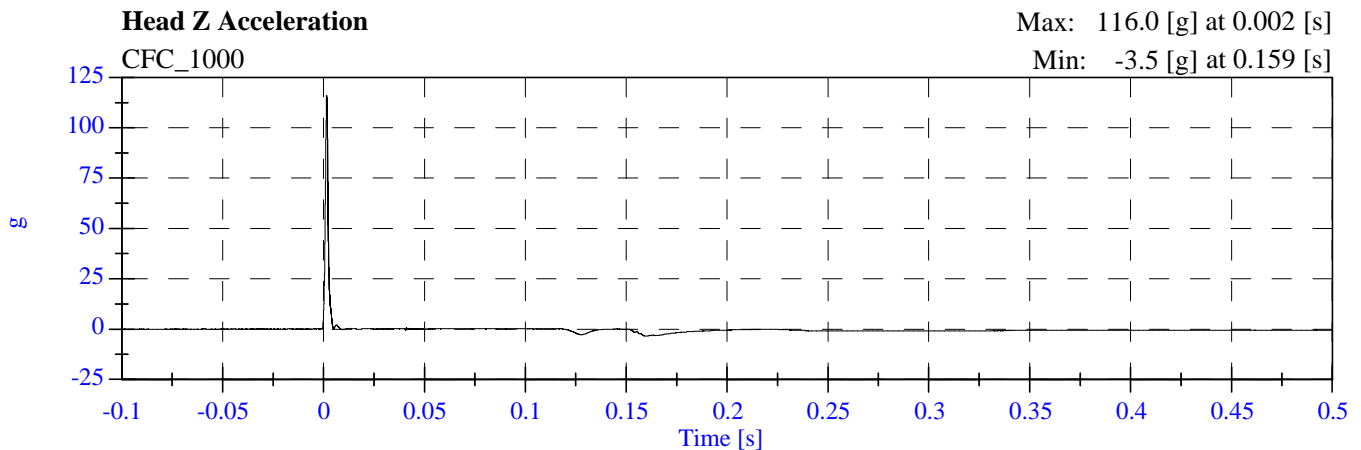
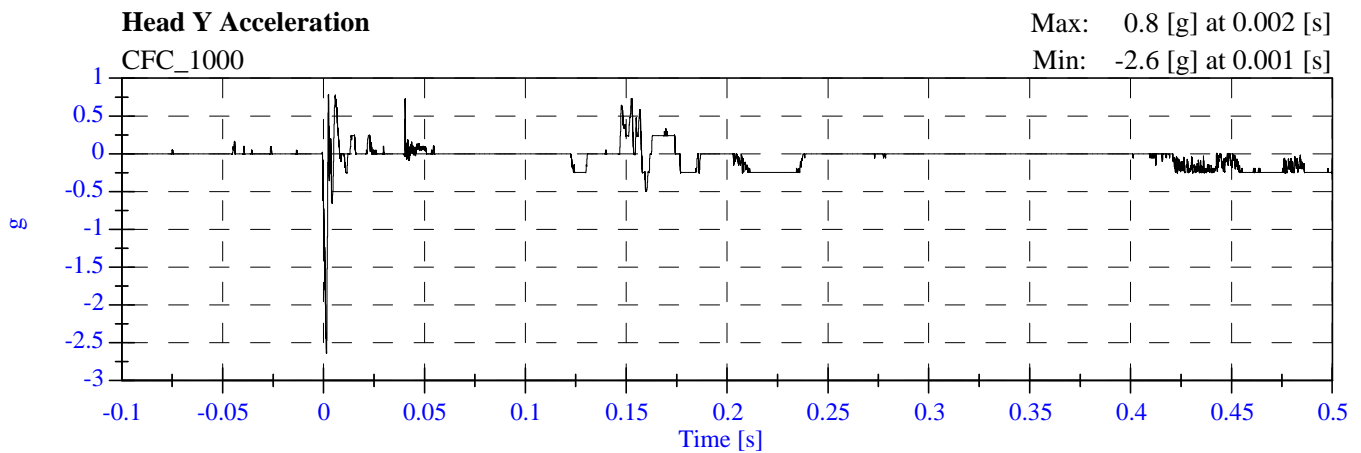
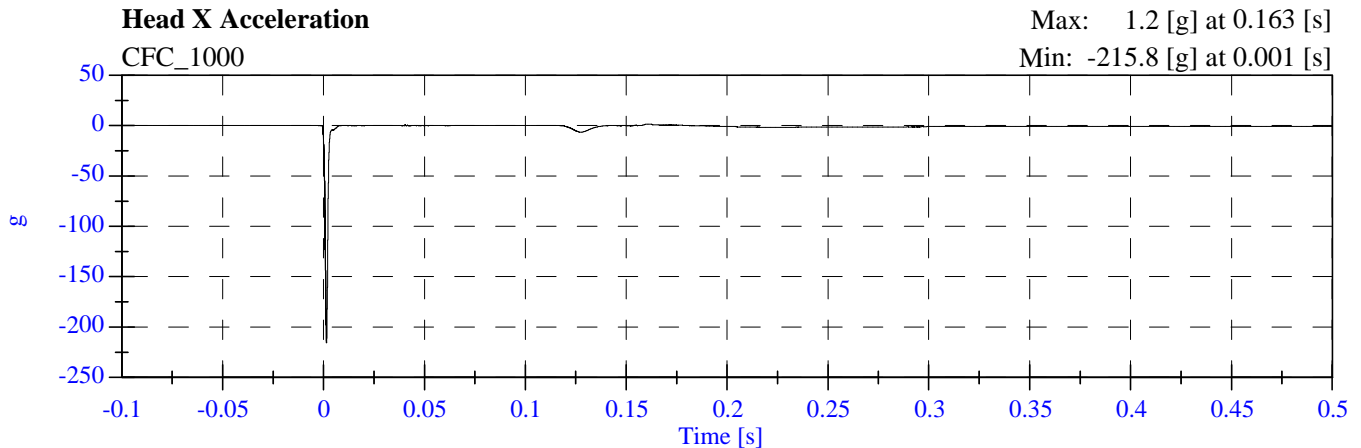
HEAD ACCELEROMETER CALIBRATION INFORMATION

I.D. NUMBER	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	DATE OF LAST CALIBRATION	DATE OF NEXT CALIBRATION
1 - LONGITUDINAL	ENDEVCO	7264-2000T	J41004	Jan. 18, 2008	June 18, 2008
2 - LATERAL	ENDEVCO	7264-2000T	J37496	Jan. 18, 2008	June 18, 2008
3 - VERTICAL	ENDEVCO	7264-2000T	J41016	Jan. 18, 2008	June 18, 2008

REMARKS:

FMVSS 201U - Headform Calibration Drops

C80113 - March 04, 2008



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

MANUFACTURER:		DENTON ATD INC.	
SERIAL NUMBER:		0355	
CALIBRATION DATE:		MARCH 4, 2008	
TEST PARAMETER	SPECIFICATION	TEST RESULTS	
TEMPERATURE	19°C to 26°C	22.8	
RELATIVE HUMIDITY	10% to 70%	18	
PEAK RESULTANT ACCELERATION	225 Gs to 275 Gs	260.4	
PEAK LATERAL ACCELERATION	15 Gs Maximum	3.3	
IS ACCELERATION CURVE UNIMODAL?	YES	YES	

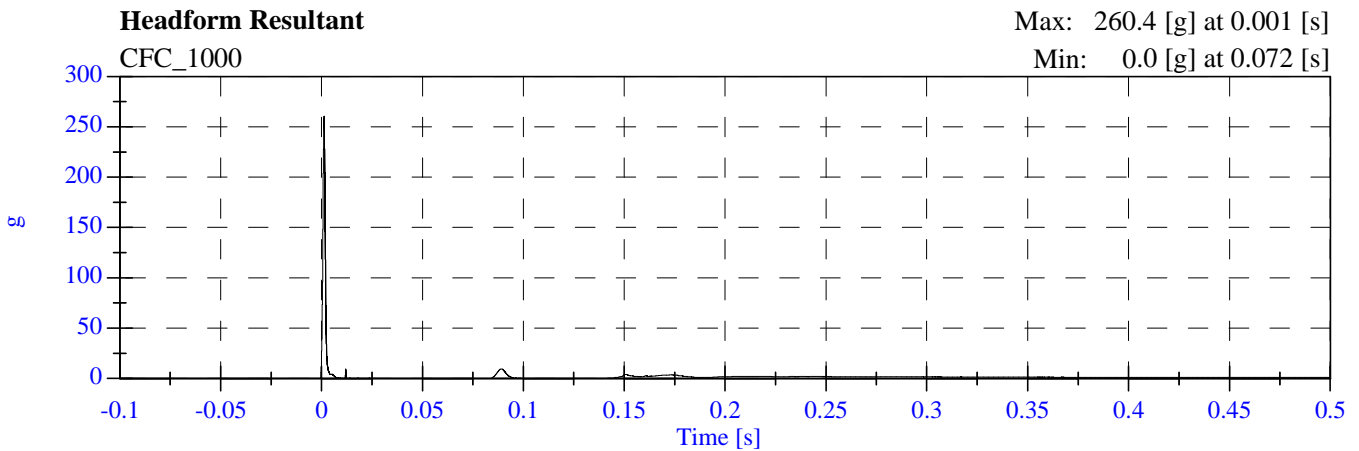
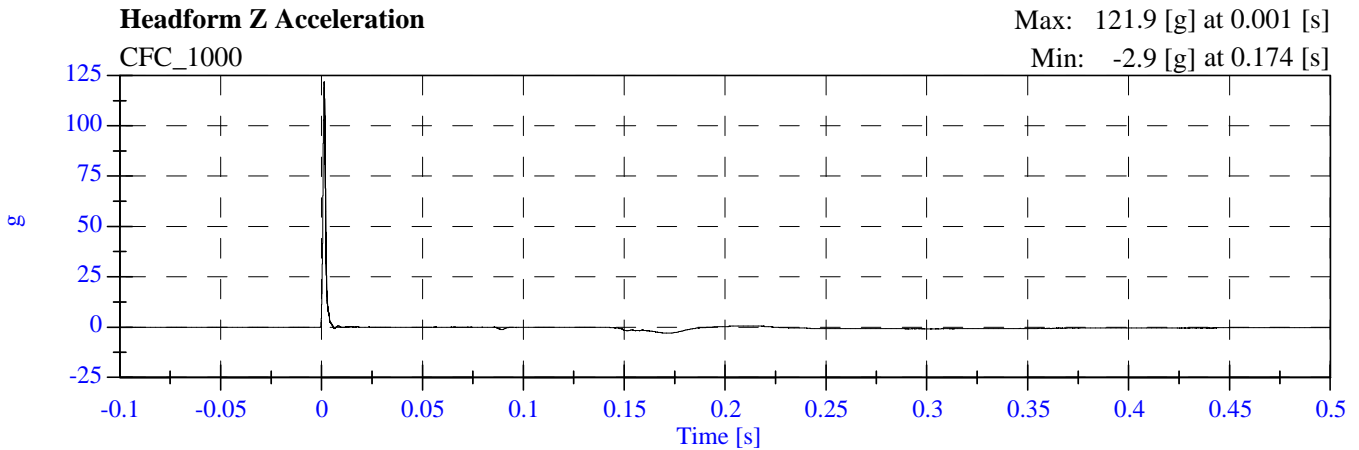
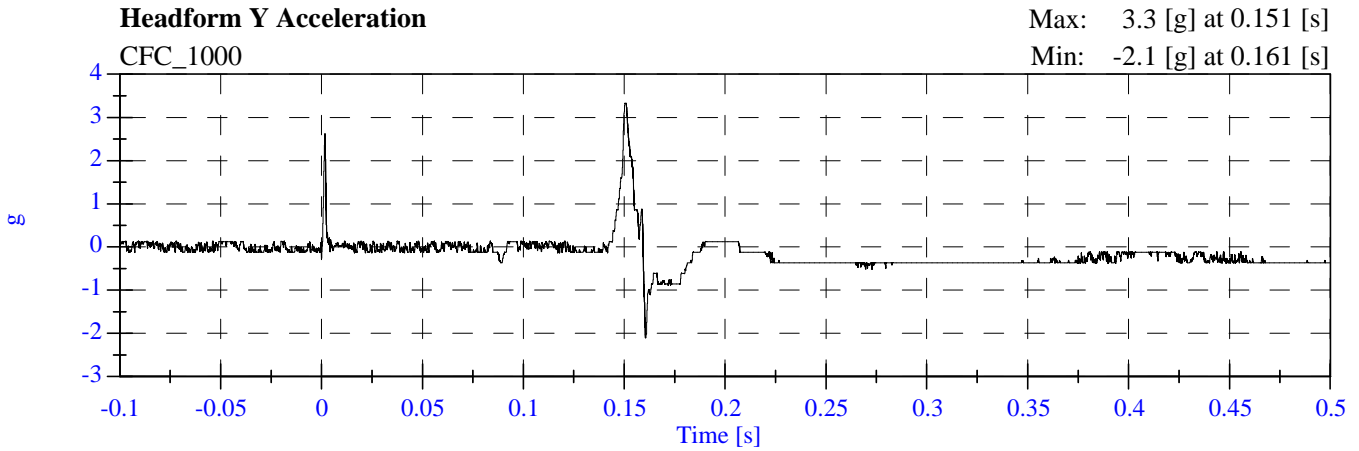
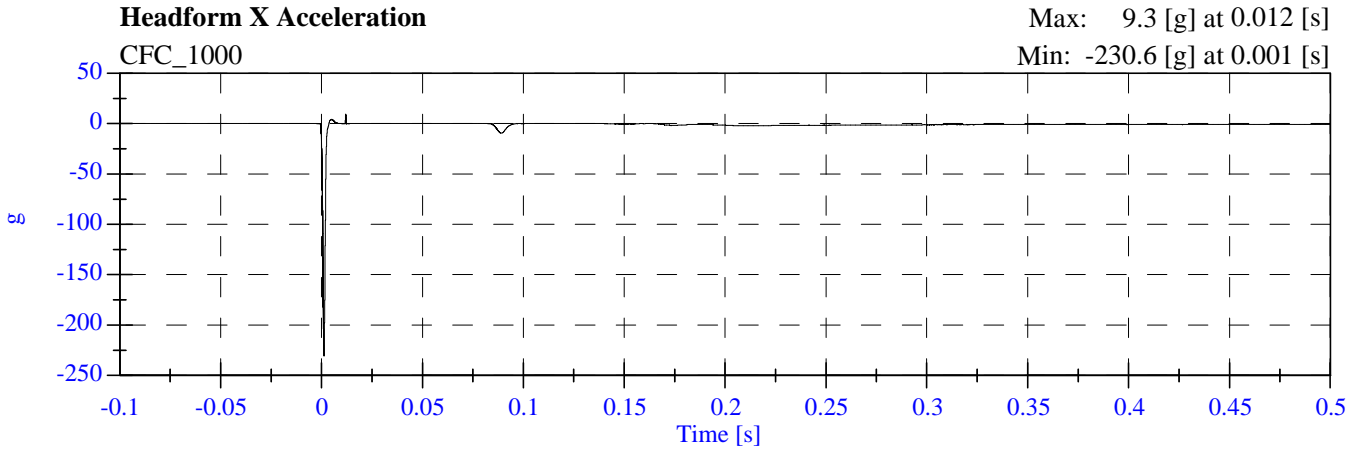
HEAD ACCELEROMETER CALIBRATION INFORMATION

I.D. NUMBER	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	DATE OF LAST CALIBRATION	DATE OF NEXT CALIBRATION
1 - LONGITUDINAL	ENDEVCO	7264-2000T	J28671	Jan. 18, 2008	June 18, 2008
2 - LATERAL	ENDEVCO	7264-2000T	J32779	Jan. 18, 2008	June 18, 2008
3 - VERTICAL	ENDEVCO	7264-2000T	J25854	Jan. 18, 2008	June 18, 2008

REMARKS:

FMVSS 201U - Headform Calibration Drops

C80113 - March 04, 2008



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

MANUFACTURER:		FIRST TECHNOLOGY SAFETY SYSTEMS	
SERIAL NUMBER:		1142	
CALIBRATION DATE:		MARCH 4, 2008	
TEST PARAMETER	SPECIFICATION	TEST RESULTS	
TEMPERATURE	19°C to 26°C	22.8	
RELATIVE HUMIDITY	10% to 70%	18	
PEAK RESULTANT ACCELERATION	225 Gs to 275 Gs	257.7	
PEAK LATERAL ACCELERATION	15 Gs Maximum	2.7	
IS ACCELERATION CURVE UNIMODAL?	YES	YES	

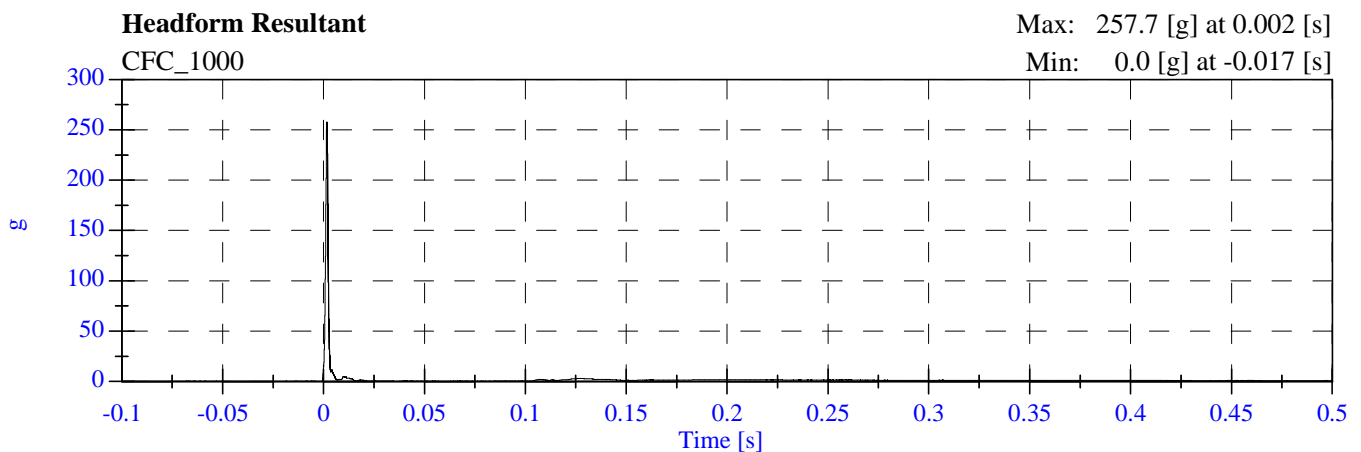
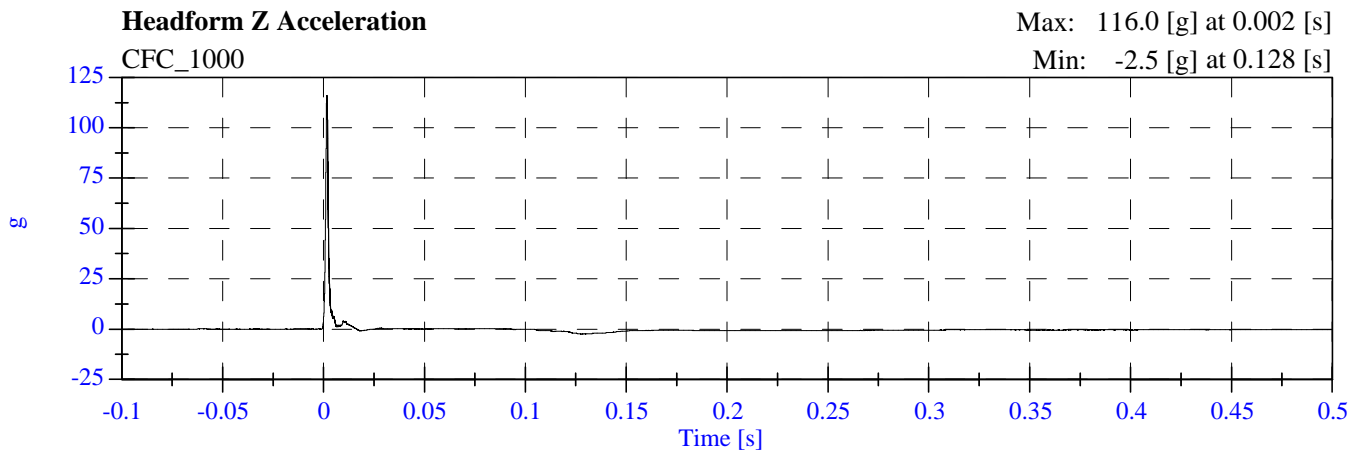
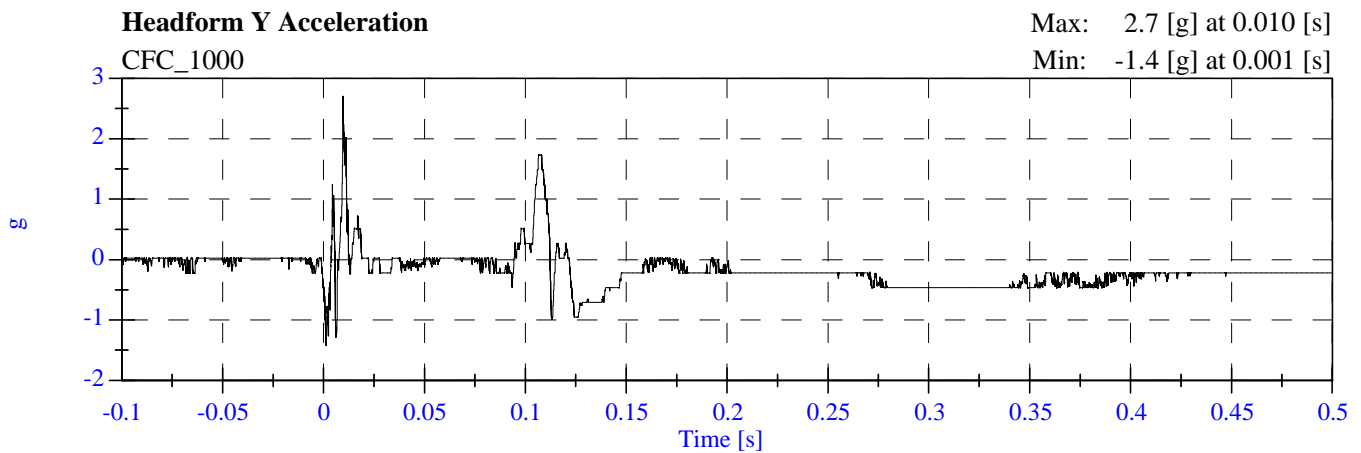
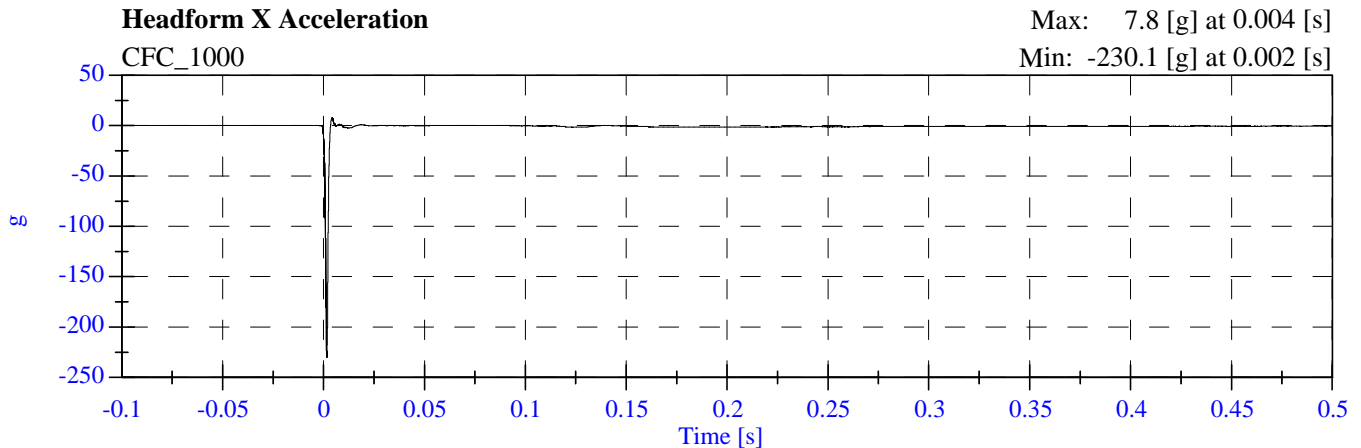
HEAD ACCELEROMETER CALIBRATION INFORMATION

I.D. NUMBER	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	DATE OF LAST CALIBRATION	DATE OF NEXT CALIBRATION
1 - LONGITUDINAL	ENDEVCO	7264-2000T	J41006	Jan. 18, 2008	June 18, 2008
2 - LATERAL	ENDEVCO	7264-2000T	J40994	Jan. 18, 2008	June 18, 2008
3 - VERTICAL	ENDEVCO	7264-2000T	J41007	Jan. 18, 2008	June 18, 2008

REMARKS:

FMVSS 201U - Headform Calibration Drops

C80113 - March 04, 2008



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

MANUFACTURER:		FIRST TECHNOLOGY SAFETY SYSTEMS	
SERIAL NUMBER:		1140	
CALIBRATION DATE:		MARCH 31, 2008	
TEST PARAMETER	SPECIFICATION	TEST RESULTS	
TEMPERATURE	19°C to 26°C	22.2	
RELATIVE HUMIDITY	10% to 70%	25	
PEAK RESULTANT ACCELERATION	225 Gs to 275 Gs	270.9	
PEAK LATERAL ACCELERATION	15 Gs Maximum	2.7	
IS ACCELERATION CURVE UNIMODAL?	YES	YES	

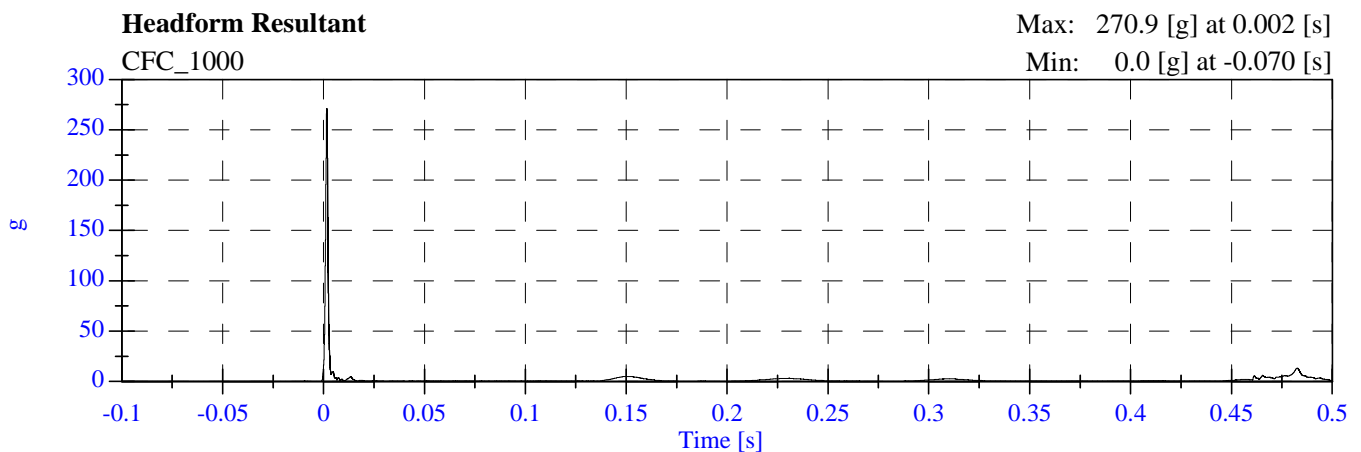
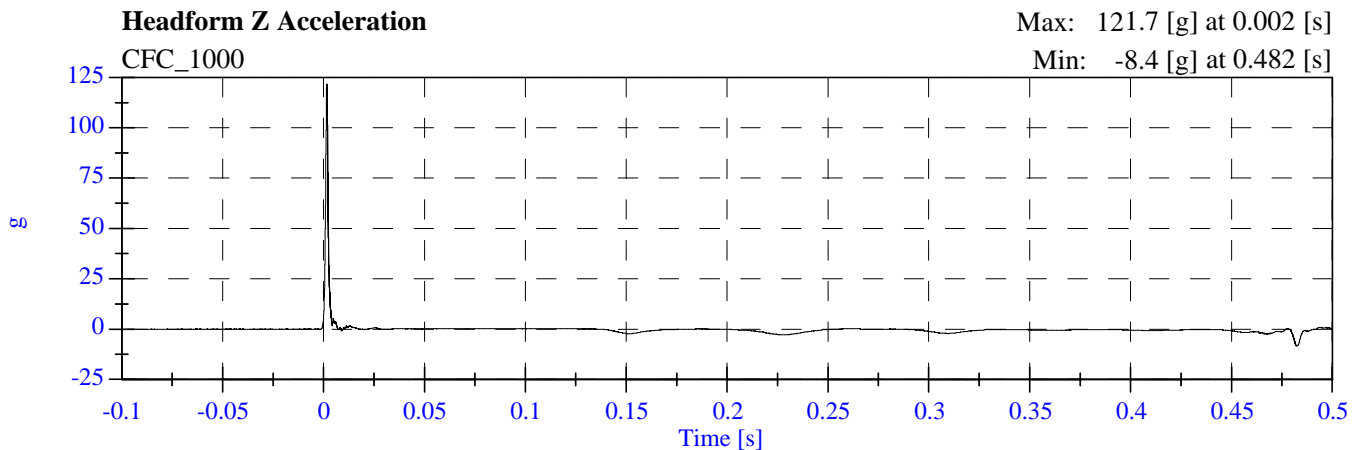
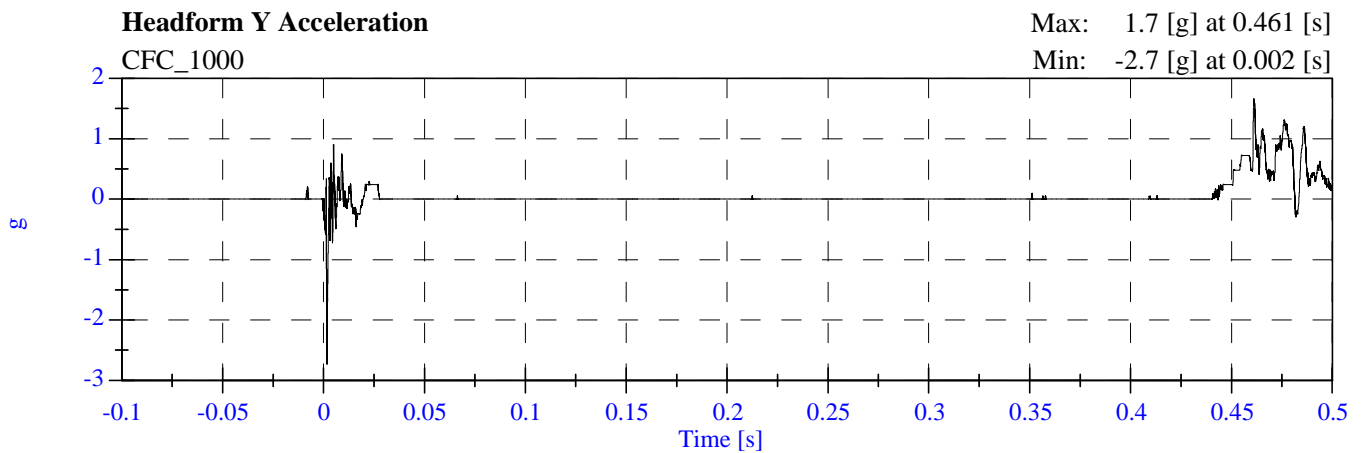
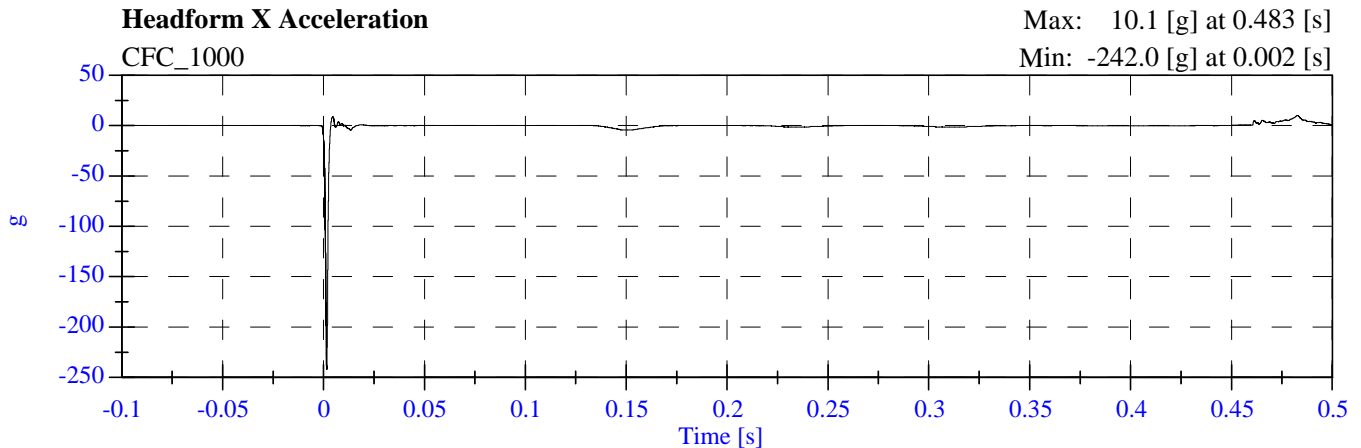
HEAD ACCELEROMETER CALIBRATION INFORMATION

I.D. NUMBER	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	DATE OF LAST CALIBRATION	DATE OF NEXT CALIBRATION
1 - LONGITUDINAL	ENDEVCO	7264-2000T	J24876	Jan. 18, 2008	June 18, 2008
2 - LATERAL	ENDEVCO	7264-2000T	J33030	Jan. 18, 2008	June 18, 2008
3 - VERTICAL	ENDEVCO	7264-2000T	J31009	Jan. 18, 2008	June 18, 2008

REMARKS:

FMVSS 201U - Headform Calibration Drops

C80113 - March 31, 2008



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

MANUFACTURER:		DENTON ATD INC.	
SERIAL NUMBER:		0062	
CALIBRATION DATE:		MARCH 31, 2008	
TEST PARAMETER	SPECIFICATION	TEST RESULTS	
TEMPERATURE	19°C to 26°C	22.2	
RELATIVE HUMIDITY	10% to 70%	25	
PEAK RESULTANT ACCELERATION	225 Gs to 275 Gs	261.4	
PEAK LATERAL ACCELERATION	15 Gs Maximum	3.2	
IS ACCELERATION CURVE UNIMODAL?	YES	YES	

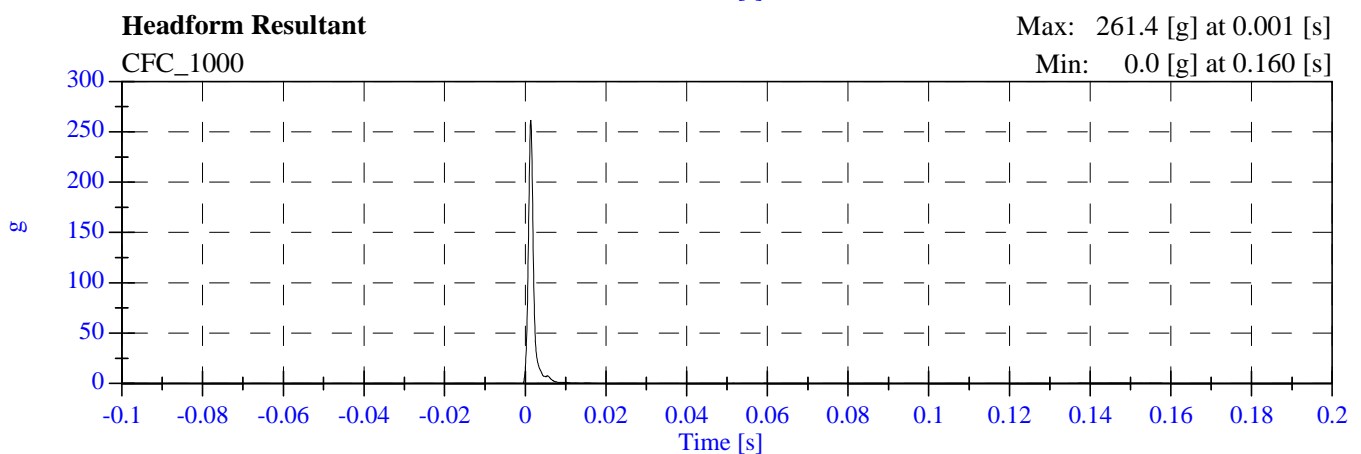
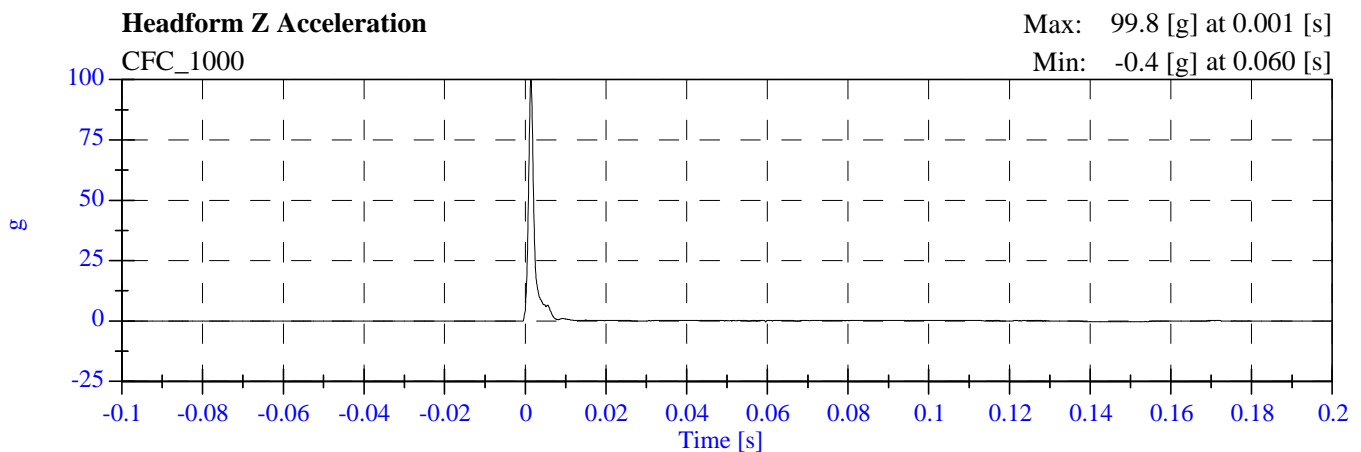
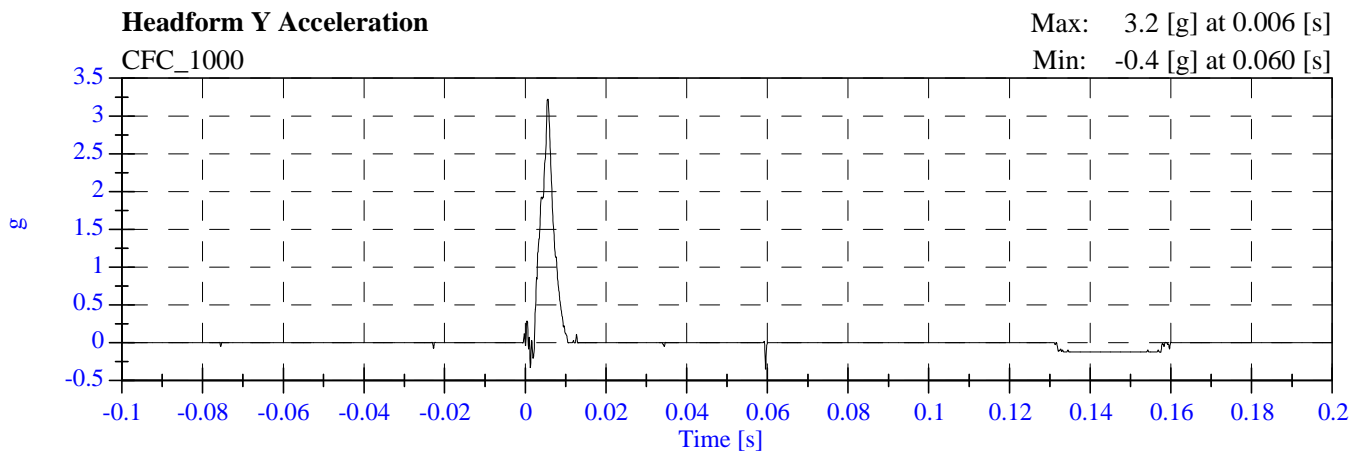
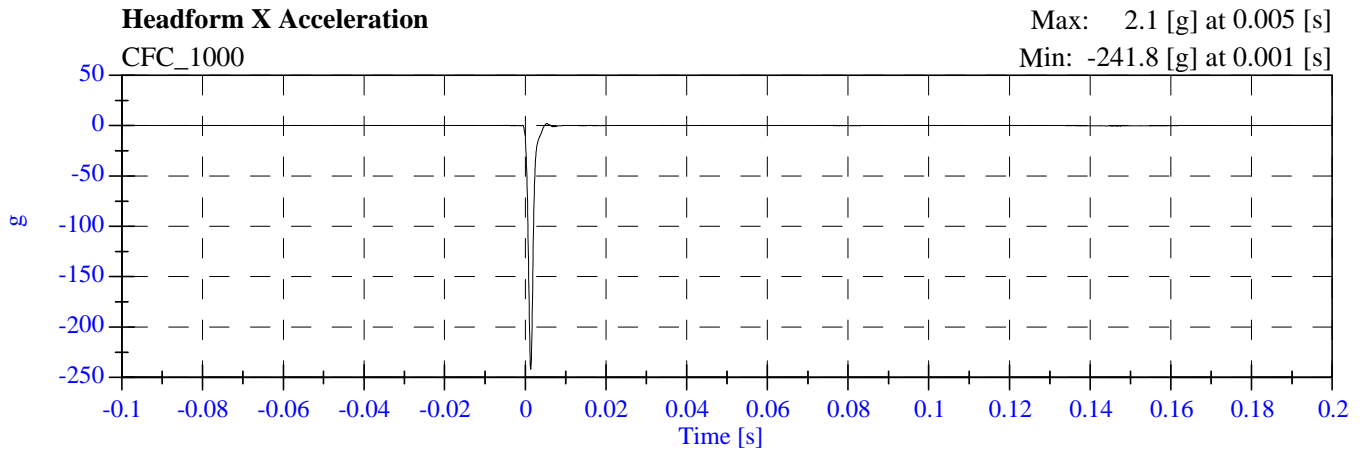
HEAD ACCELEROMETER CALIBRATION INFORMATION

I.D. NUMBER	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	DATE OF LAST CALIBRATION	DATE OF NEXT CALIBRATION
1 - LONGITUDINAL	ENDEVCO	7264-2000T	J33127	Jan. 18, 2008	June 18, 2008
2 - LATERAL	ENDEVCO	7264-2000T	J33019	Jan. 18, 2008	June 18, 2008
3 - VERTICAL	ENDEVCO	7264-2000T	J32782	Jan. 18, 2008	June 18, 2008

REMARKS:

FMVSS 201U - Headform Calibration Drops

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

MANUFACTURER:		FIRST TECHNOLOGY SAFETY SYSTEMS	
SERIAL NUMBER:		805	
CALIBRATION DATE:		MARCH 31, 2008	
TEST PARAMETER	SPECIFICATION	TEST RESULTS	
TEMPERATURE	19°C to 26°C	22.2	
RELATIVE HUMIDITY	10% to 70%	25	
PEAK RESULTANT ACCELERATION	225 Gs to 275 Gs	274.4	
PEAK LATERAL ACCELERATION	15 Gs Maximum	6.3	
IS ACCELERATION CURVE UNIMODAL?	YES	YES	

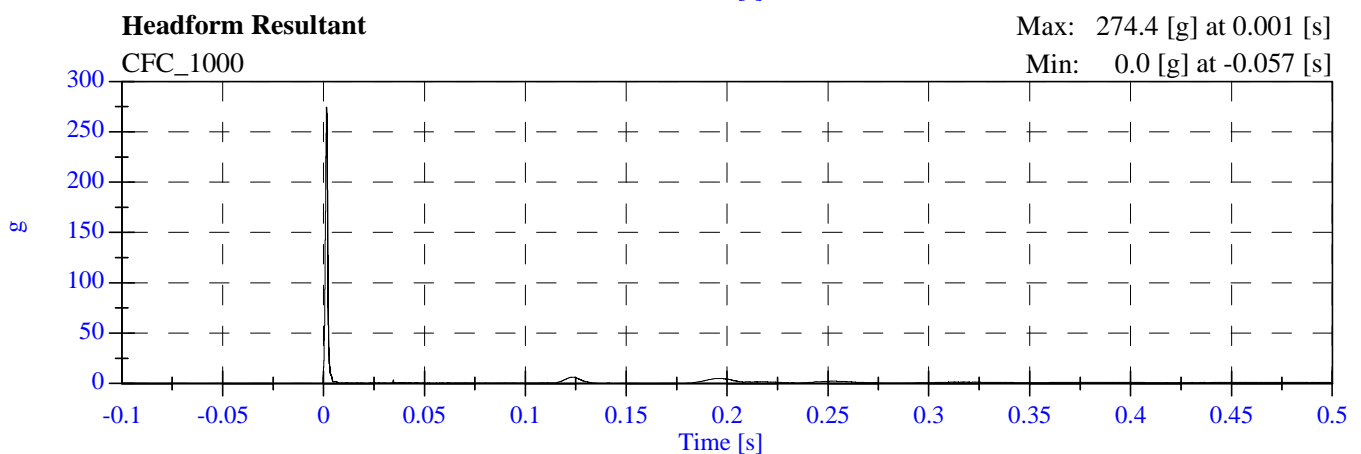
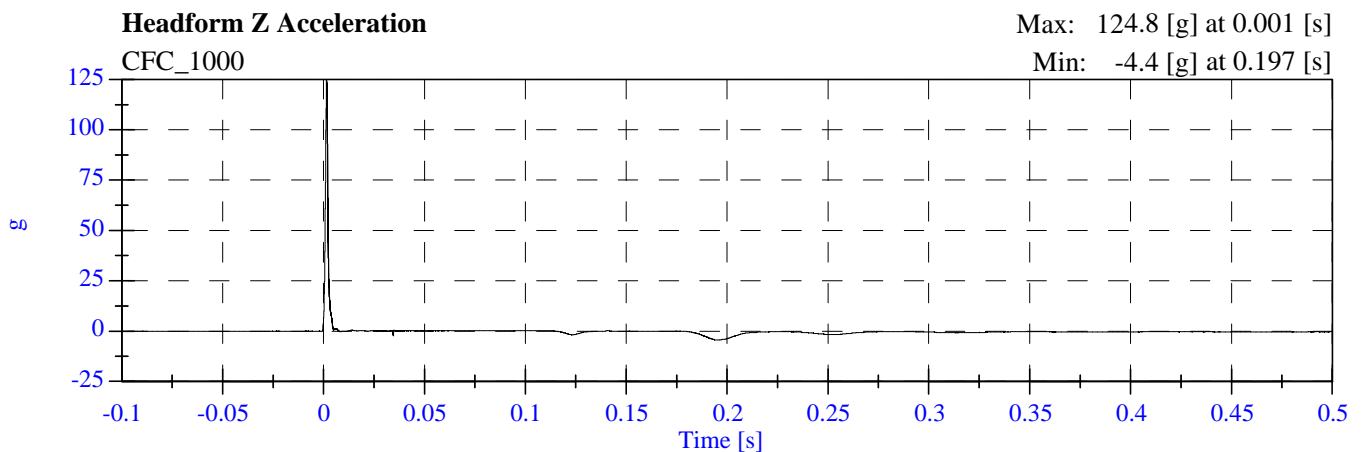
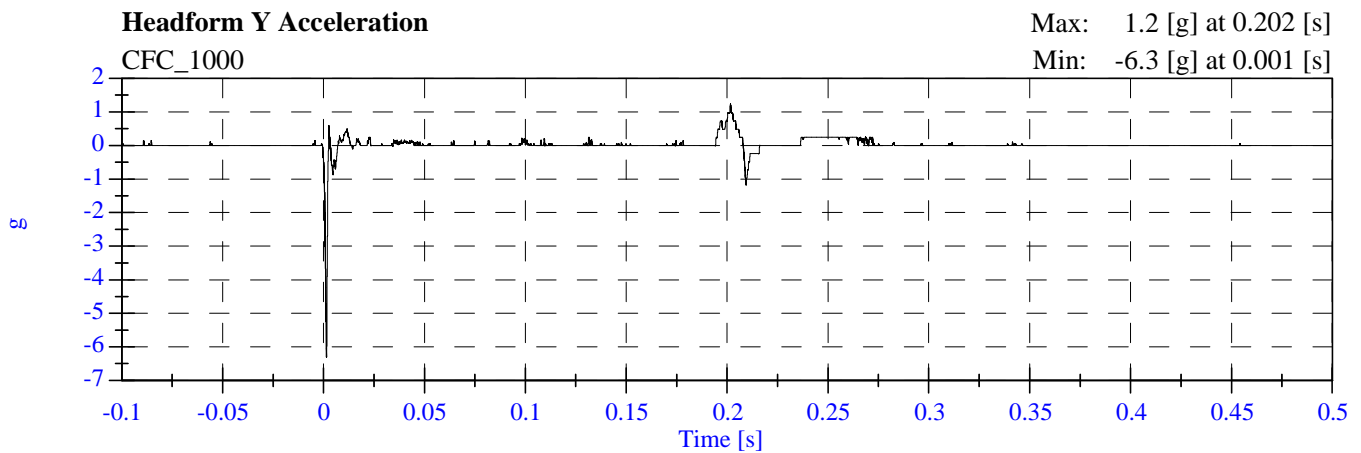
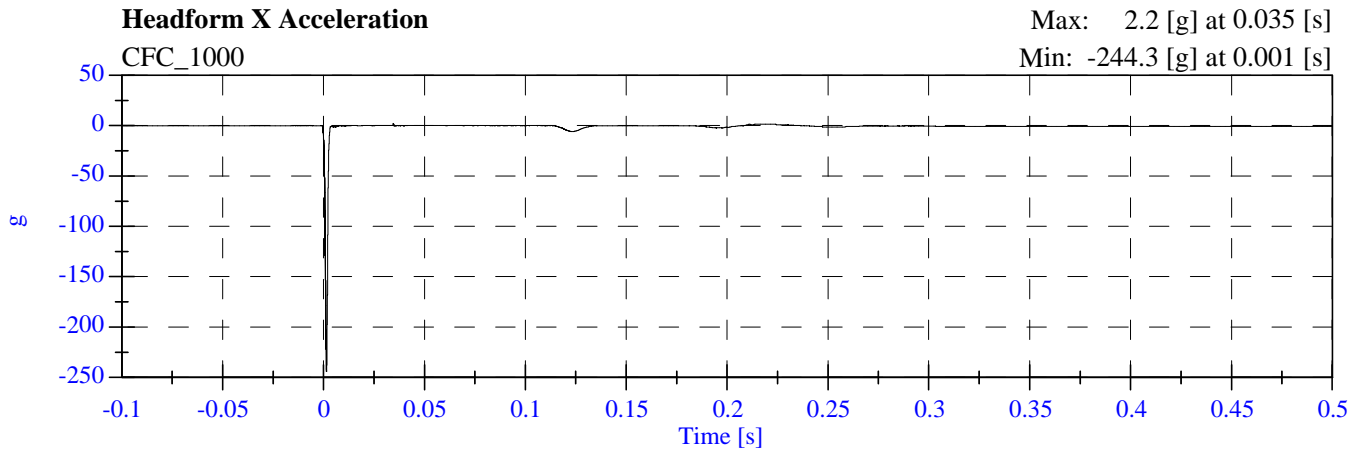
HEAD ACCELEROMETER CALIBRATION INFORMATION

I.D. NUMBER	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	DATE OF LAST CALIBRATION	DATE OF NEXT CALIBRATION
1 - LONGITUDINAL	ENDEVCO	7264-2000T	J41004	Jan. 18, 2008	June 18, 2008
2 - LATERAL	ENDEVCO	7264-2000T	J37496	Jan. 18, 2008	June 18, 2008
3 - VERTICAL	ENDEVCO	7264-2000T	J41016	Jan. 18, 2008	June 18, 2008

REMARKS:

FMVSS 201U - Headform Calibration Drops

C80113 - March 31, 2008



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

MANUFACTURER:		DENTON ATD INC.	
SERIAL NUMBER:		0355	
CALIBRATION DATE:		MARCH 31, 2008	
TEST PARAMETER	SPECIFICATION	TEST RESULTS	
TEMPERATURE	19°C to 26°C	22.2	
RELATIVE HUMIDITY	10% to 70%	25	
PEAK RESULTANT ACCELERATION	225 Gs to 275 Gs	250.6	
PEAK LATERAL ACCELERATION	15 Gs Maximum	12.1	
IS ACCELERATION CURVE UNIMODAL?	YES	YES	

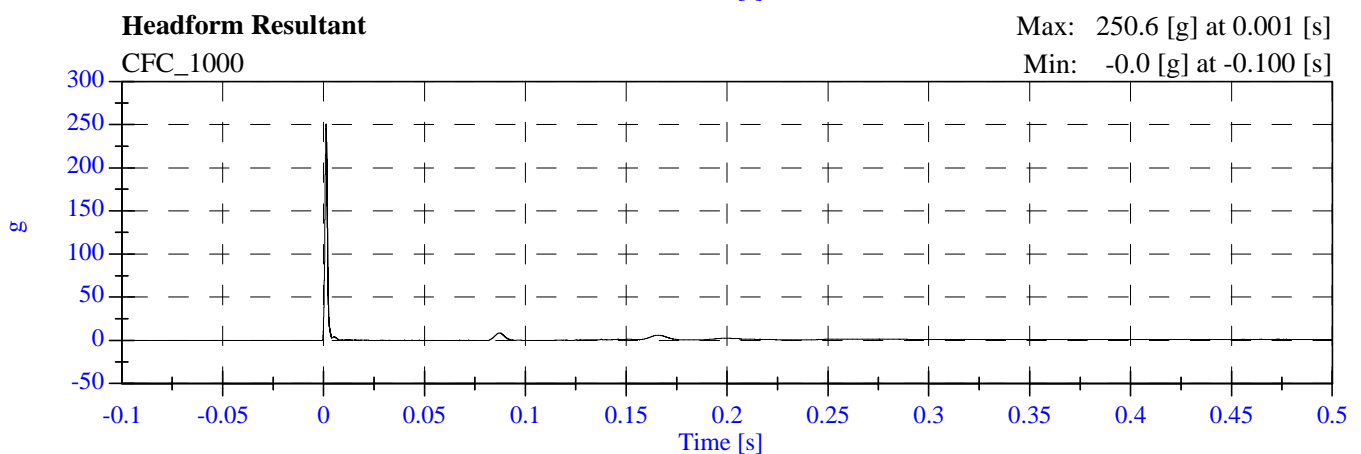
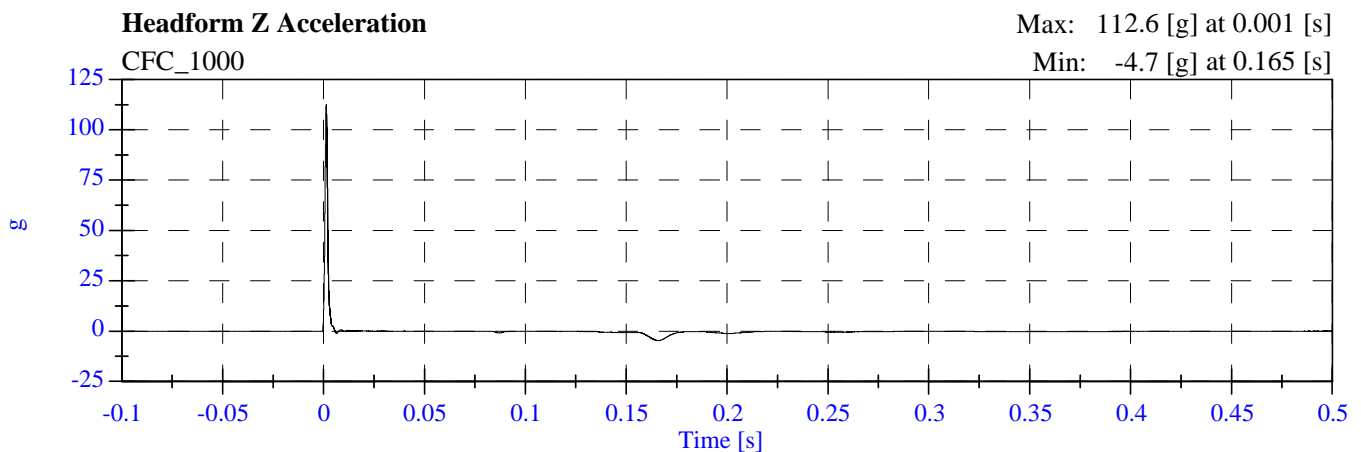
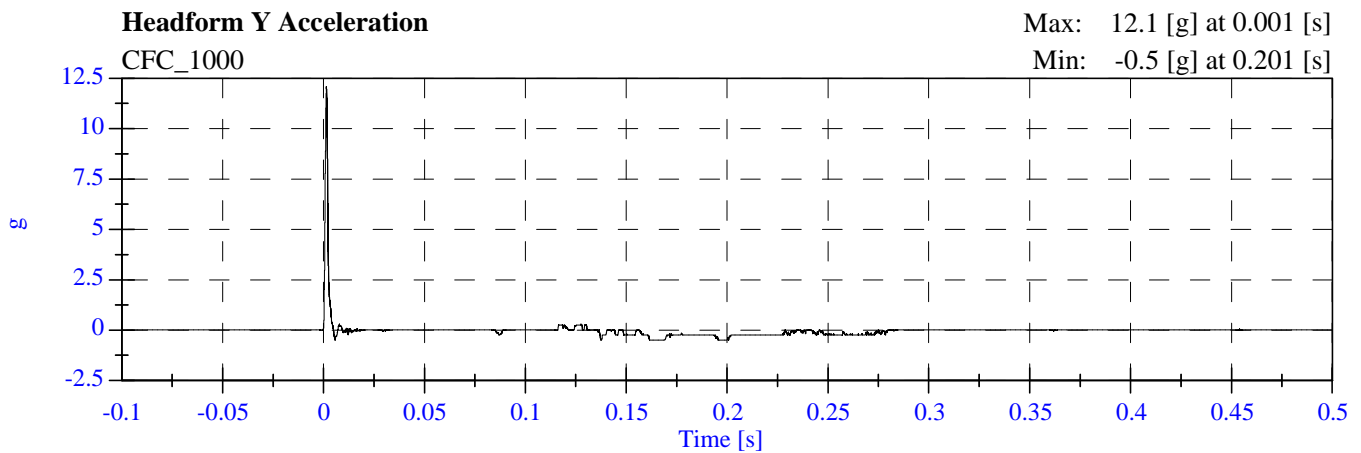
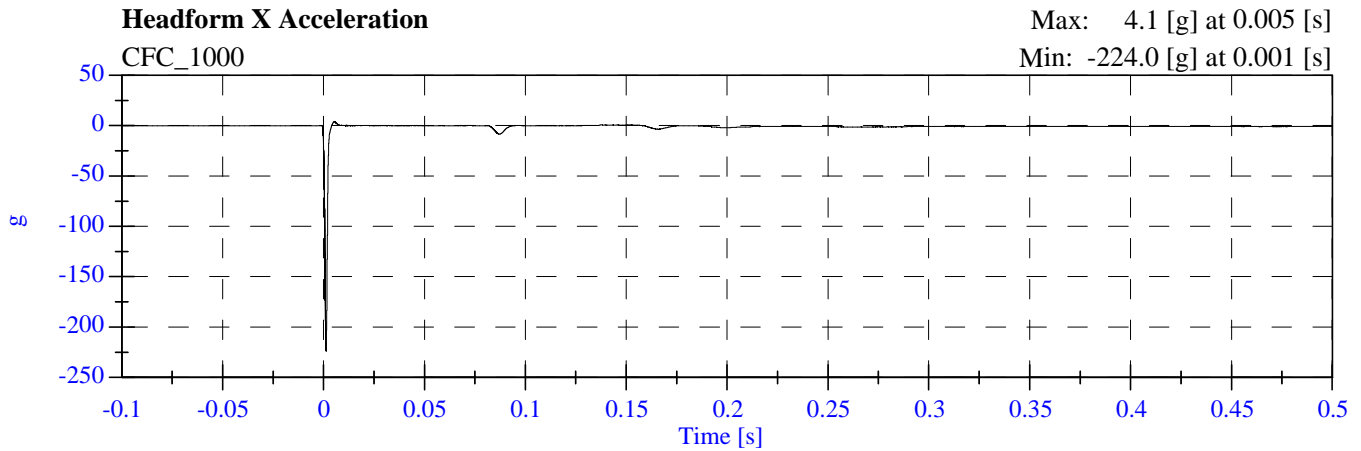
HEAD ACCELEROMETER CALIBRATION INFORMATION

I.D. NUMBER	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	DATE OF LAST CALIBRATION	DATE OF NEXT CALIBRATION
1 - LONGITUDINAL	ENDEVCO	7264-2000T	J28671	Jan. 18, 2008	June 18, 2008
2 - LATERAL	ENDEVCO	7264-2000T	J32779	Jan. 18, 2008	June 18, 2008
3 - VERTICAL	ENDEVCO	7264-2000T	J25854	Jan. 18, 2008	June 18, 2008

REMARKS:

FMVSS 201U - Headform Calibration Drops

C80113 - March 31, 2008



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

MANUFACTURER:		FIRST TECHNOLOGY SAFETY SYSTEMS	
SERIAL NUMBER:		1142	
CALIBRATION DATE:		MARCH 31, 2008	
TEST PARAMETER	SPECIFICATION	TEST RESULTS	
TEMPERATURE	19°C to 26°C	22.2	
RELATIVE HUMIDITY	10% to 70%	25	
PEAK RESULTANT ACCELERATION	225 Gs to 275 Gs	256.0	
PEAK LATERAL ACCELERATION	15 Gs Maximum	2.6	
IS ACCELERATION CURVE UNIMODAL?	YES	YES	

HEAD ACCELEROMETER CALIBRATION INFORMATION

I.D. NUMBER	MANUFACTURER	MODEL NUMBER	SERIAL NUMBER	DATE OF LAST CALIBRATION	DATE OF NEXT CALIBRATION
1 - LONGITUDINAL	ENDEVCO	7264-2000T	J41006	Jan. 18, 2008	June 18, 2008
2 - LATERAL	ENDEVCO	7264-2000T	J40994	Jan. 18, 2008	June 18, 2008
3 - VERTICAL	ENDEVCO	7264-2000T	J41007	Jan. 18, 2008	June 18, 2008

REMARKS:

FMVSS 201U - Headform Calibration Drops

C80113 - March 31, 2008

