

**Vehicle Research and Test Center
FMVSS 208 Dynamic Rollover
of a 2007 Ford Expedition
TRC Inc. Test Number 091022**

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**Final Report
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TRC TEST NUMBER: 091022

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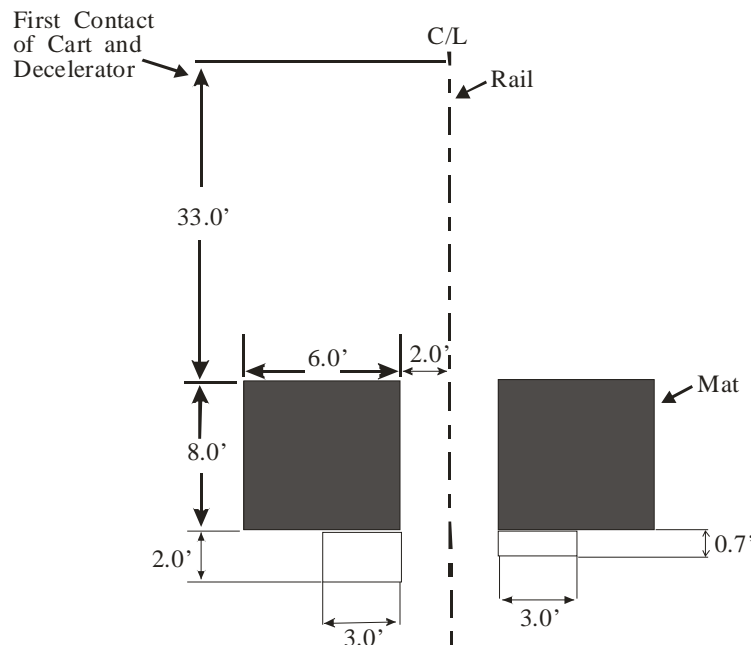
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SECTION 1

PURPOSE AND TEST PROCEDURE

This dynamic rollover crash test was conducted to investigate the dynamics of belted occupants during rollover crashes. This test was conducted with a modified 2007 Ford Expedition on the FMVSS 208 rollover cart moving at 48.1 km/h (29.9 mph), releasing the vehicle with its roll axis perpendicular to the direction of rollover cart motion, and first contacting the passenger's side. The vehicle was modified by replacing the rear seat with a modified front seat to simulate similar characteristics in both seating positions. The center console was also removed. The air bags were disabled for this test condition. The test vehicle contained three (3) instrumented Part 572E dummies. The OEM belts and buckles were replaced in all positions. The driver and left rear seats were replaced with a seat with integrated 3-Point belts without pretensioners. The right front position was equipped with a motorized retractor and a pretension buckle system¹. The pretensioner was fired manually at 300ms into the event and the motorized retractor was manually activated prior to launch. It was conducted for the National Highway Traffic Safety Administration's (NHTSA) Vehicle Research and Test Center (VRTC) by the Transportation Research Center Inc. (TRC Inc.).

The test setup included installing two sections of rubber matting² at the impact area secured with adhesive to steel plates. The left and right sides are symmetrical.



¹ Belt systems were provided by TRW Automotive.

² Rubber matting provided by VRTC.

SECTION 2

SUMMARY OF TEST RESULTS

A 2007 Ford Expedition, containing three (3) instrumented Part 572E test dummies was placed upon the rollover test device at 23 degrees above the horizontal and was released at 48.1 km/h (29.9 mph). The device was attached to the tow cable of the drive system. The device was brought to a stop with water filled decelerator tubes. After release, the vehicle impacted the ground on its right side. The vehicle skidded on its right side roof rail and came to rest on its right side. The dynamic rollover test was conducted by Transportation Research Center Inc. in East Liberty, Ohio on October 22, 2009. Pre-test and post-test photographs of the test vehicle, the cart, and the dummies are included in Appendix A.

Three (3) restrained Part 572E Hybrid III 50th percentile adult male anthropomorphic test devices (dummies) were placed in the driver, right front, and left rear designated seating positions according to the placement procedures specified in Appendix F of Laboratory Procedure TP208-14. The dummies were instrumented with head, chest, and pelvis triaxial accelerometers, upper and lower six-axis neck load cells, and a chest deflection potentiometer. The ATDs in position (1) and (4) were also instrumented with triaxial head rotational rate gyroscopes. The ATD in position (3) was instrumented with six (6) additional head accelerometers to complete a 9-array head configuration. All dummies were restrained by 3-point seat belts. All dummy instrumentation is detailed in this report. Seventy-eight (78) dummy channels of acceleration, force, moment, roll rate, and displacement data were collected for this test. A total of 179 channels of data were recorded.

The rollover test was documented by one (1) real-time camera and fourteen (14) high-speed digital cameras. Camera locations and other pertinent camera information are included in this report.

Appendix A contains pre- & post-test photography. Appendix B contains the vehicle dummy response data traces. A summary of the front impact dummy configuration and verification test data can be found in Appendix C.

TEST RESULTS SUMMARY

	Left Front ATD(#001)	Right Front ATD(#110)	Left Rear ATD(#043)
HIC15 CFC 1000	6	105	7
HIC36 CFC 1000	15	105	16
Chest Clip 3 ms (g) CFC 180	9.3	11.5	10.9
Chest Deflection (mm) CFC 600	-0.1	-8.7	-1.2
Neck Injury (NIJ) (ms) CFC 600			
NTE	0.12	0.13	0.14
NTF	0.05	0.08	0.04
NCE	0.03	0.38	0.01
NCF	0.01	0.31	0.01
Neck Tension (N) CFC1000	500.8	718.1	553.0
Neck Compression (N) CFC1000	-64.3	-2196.7	-66.4

	2007 Ford Expedition
Vehicle Test Weight	2916.0 kg
Left Side - Maximum Crush	7.0 mm
Right Side - Maximum Crush	85.0 mm
Roof - Maximum Crush	9.0 mm
Impact Speed	48.1 km/h

TEST NOTES:

The right front dummy's head top X-axis acceleration data channel recorded invalid data throughout the event.

The vehicle's center of gravity yaw rotational rate gyroscope about the Z-axis exceeded the full scale at 1,074 milliseconds. The data appears valid.

The vehicle's rear deck roll, pitch, and yaw rotational rate gyroscope data channels measuring about the X-, Y-, and Z-axis, respectively, exceeded the full scale value after approximately 995 milliseconds. The data appears valid.

The left front dummy's lap belt load cell data measuring force exceeded the full scale value at 109 milliseconds and recorded questionable data thereafter.

SECTION 3
OCCUPANT AND VEHICLE INFORMATION

DATA SHEET NO. 1
GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2007 Ford Expedition

Test Program: Dynamic Rollover

Test Date: 10/22/09

TEST VEHICLE INFORMATION AND OPTIONS

Make	Ford	Driver & Front Pass Front Airbag ²	Yes
Model Year	2007	Driver & Front Pass Side Airbag ²	Yes
Model	Expedition XLT	Driver & Front Pass Head Airbag	No
Body Style	4-door SUV	Driver & Front Pass Curtain Airbag ²	Yes
		Driver & Front Pass Knee Airbag	No
VIN	1FMFU15537LA63719	Rear Pass. Front Airbag	No
Color	White	Rear Pass. Side Airbag	No
Delivery Date	09/28/09	Rear Pass. Head Airbag	No
Odometer Reading	13,806	Rear Pass. Curtain Airbag ²	Yes
Dealer	--- ¹	Rear Pass. Knee Airbag	No
Transmission	Automatic	Load Limiters	--- ³
Final Drive	Rear wheel drive	Anti-lock Brakes	Yes
Number of Cylinders	V8	All-Wheel Drive	No
Engine Displacement (L)	5.4	Pretensioners	--- ³
Engine Placement	Longitudinal	Air Conditioning	Yes
Roof Rack	Yes	Tilt Wheel	Yes
Sunroof / T-Top	No	Power Seats	No
Tinted Glass	Yes	Power Windows	Yes
Traction Control	No	Power Steering	Yes
Power Brakes	Yes	AM/FM CD	Yes
Front Disc	Yes	Automatic Door Locks	Yes
Rear Disc	Yes	Other	N/A
Does owner's manual provide instructions to turn off automatic door locks?			Yes

DATA FROM CERTIFICATION LABEL

Manufactured by	Ford Motor Co.	GVWR (kg)	3357
Date of Manufacture	03/07	GAWR Front (kg)	1497
		GAWR Rear (kg)	1928

TEST VEHICLE SEAT TYPE AND CAPACITY

Measured Parameter	Front	Mid	Rear ⁴	Total
Type of Seats	Bucket	N/A	Bench	
Designated Seating Capacity (DSC)	2	N/A	3	5
Type of Seat Back	Manual Adjustable	N/A	Fixed	
(A) Capacity Wt. (VCW) (kg)				789
(B) DSC x 68.08 kg				340
(A-B) Cargo Wt. (RCLW) (kg)				449

¹ Not Recorded

² The airbags were disabled for this test.

³ Owner's manual not available at the time the report was prepared, information unknown.

⁴ The original bench seat was removed and replaced with a bucket seat for this test.

DATA SHEET NO. 1 (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2007 Ford Expedition

Test Program: Dynamic Rollover

Test Date: 10/22/09

TEST VEHICLE WEIGHTS

	Units	As Delivered (UVW) ¹			As Tested (ATW)		
		Front	Rear	Total	Front	Rear	Total
Left	kg	642.6	637.0		680.5	788.0	
Right	kg	612.2	662.4		662.5	785.0	
Ratio	%	49.1	50.9		46.1	53.9	
Totals	kg	1254.8	1299.4	2554.2	1343.0	1573.0	2916.0

TARGET TEST WEIGHT CALCULATION

Measured Parameter	Units	Value
(A) Total Delivered Weight (UVW)	kg	2554.2 ¹
(B) Weight of 2 P572M ATDs	kg	165.2 ¹
(C) Rated Cargo/Luggage Weight (RCLW)	kg	136.0 ¹
(A+B+C) Vehicle Target Weight (TVTW)	kg	2855.4 ¹

NOTE: Target Test Weight was based from delivered weight of a 5 passenger (DSC) vehicle as tested on December 3, 2008.

TEST VEHICLE ATTITUDES AND CG

	Units	LF	RF	LR	RR	CG (aft of front axle)
As Delivered	mm	900	897	897	899	1531.3
As Tested	mm	--- ²	--- ²	--- ²	--- ²	1623.7
Fully Loaded	mm	--- ²	--- ²	--- ²	--- ²	

GENERAL TEST VEHICLE DATA

Measurement Description	Units	Value
Test Vehicle Wheelbase	Mm	3010.0
Total Vehicle Length at Left Side	mm	--- ²
Total Vehicle Length at Centerline	mm	5208.0
Total Vehicle Length at Right Side	mm	--- ²
Weight of Ballast in Cargo Area	kg	0.0
Vehicle Components Removed	each	N/A
Weight of Vehicle Components Removed	kg	0.0
Amount of Stoddard Solvent in Fuel Tank	liters	98.4

¹ UVW and Target Test Weight was based on values recorded using a 5-passenger (DSC) vehicle as tested on December 3, 2008.

² Measurements were not requested.

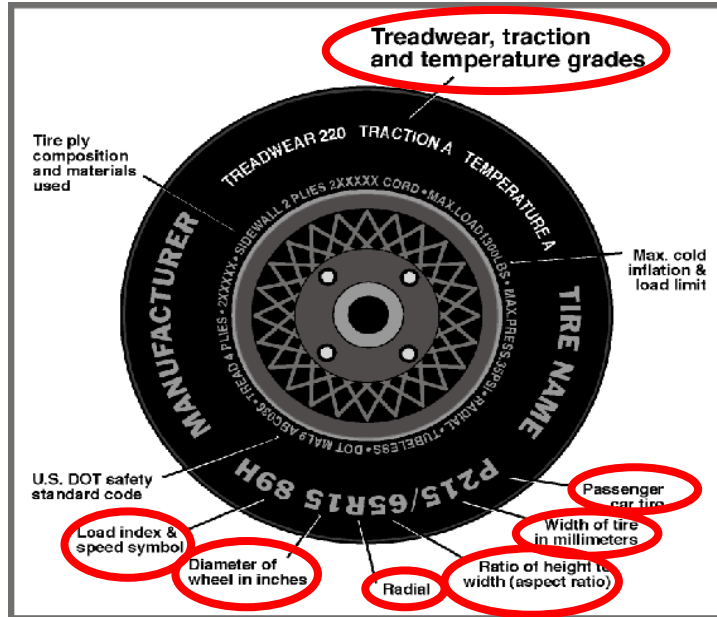
DATA SHEET NO. 1 (CONTINUED)

GENERAL TEST AND VEHICLE PARAMETER DATA

Test Vehicle: 2007 Ford Expedition

Test Program: Dynamic Rollover

Test Date: 10/22/09



DATA FROM TIRE PLACARD

Measured Parameter	Front	Rear
Maximum Tire Pressure (kPa)	300	300
Cold / Test Pressure (kPa)	240	240
Recommended Tire Size	P265/70R17	P265/70R17
Tire Size on Vehicle	P245/70 R17	P245/70 R17
Tire Manufacturer	Continental	Continental
Tire Name	Contitrac	Contitrac
Load Index & Speed Symbol	113S	113S
Tread wear	520	520
Traction Grade	A	A
Temperature Grade	B	B

DATA SHEET NO. 2

SEATS AND SEAT BELTS DATA

Test Vehicle: 2007 Ford Expedition

Test Program: Dynamic Rollover

Test Date: 10/22/09

DUMMY RIDING POSITION

Driver: Total Number of detents: Power

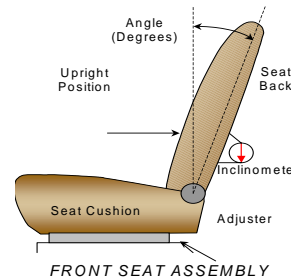
Passenger: Total Number of detents: 23

Left Rear Passenger: Total Number of detents: 18

Driver seat back angle: 11.4°

Passenger seat back angle: 10.1°

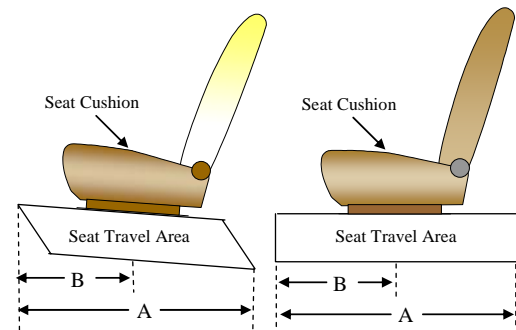
Left Rear Passenger seat back angle: 11°



The rear seat was replaced with a modified front seat to replicate the front occupant seat. Both the driver and rear passenger seats were replaced with an integrated 3-PT belt seat.

SEAT FORE/AFT POSITIONS

The total seat travel was measured from forward most position to rearmost position, irrespective of vertical seat height in those positions. The seat was set at the longitudinal mid position with vertical adjustment at the lowest position obtainable for both the driver and passenger.



SEAT FORE/AFT POSITIONING

	Total Fore/Aft Travel	Placed in Position No.
Driver Seat	225	Mid
Fr Pass	205	Mid
Rear Seat	205	N/A ¹

SEAT BELT UPPER ANCHORAGE

	Total No. of Positions	Placed in Position No.
Driver Seat	5	3
Fr Pass	5	3
Rear Seat	Fixed	Fixed

Position number one is the uppermost adjustment position.

¹ Seat position could not be verified

DATA SHEET NO. 2
SEATS AND SEAT BELTS DATA

Test Vehicle: 2007 Ford Expedition

Test Program: Dynamic Rollover

Test Date: 10/22/09

SEAT BELT CONFIGURATION

	Type	Configuration
Driver	3-PT: Integrated	A
Left Rear Passenger	3-PT: Integrated	A
Front Passenger	3-PT: Motorized Retractor ¹ and Buckle Pretensioner ²	I

¹ Motorized Retractor activated at launch of test

² Pretensioners manually fired at 300ms

DATA SHEET NO. 3

POST-TEST OBSERVATIONS

Test Vehicle: 2007 Ford Expedition

Test Program: Dynamic Rollover

Test Date: 10/22/09

TEST DUMMY INFORMATION AND CONTACT POINTS

Description	Left Front Seat Driver	Right Front Passenger	Left Rear Passenger
Dummy Type / Serial No.	Hybrid III 50 th / 001	Hybrid III 50 th / 110	Hybrid III 50 th / 043
Head Contact	No visible contact	Head restraint, Side window	No visible contact
Upper Torso Contact	No visible contact	Door liner	No visible contact
Lower Torso Contact	No visible contact	No visible contact	No visible contact
Left Knee Contact	No visible contact	No visible contact	No visible contact
Right Knee Contact	No visible contact	Dash panel	No visible contact

POST-TEST DOOR OPENING AND SEAT TRACK INFORMATION

Description	Front	Rear
Locked/Unlocked Doors	Unlocked	Unlocked
Left Side Door Opening	Closed and Latched	Closed and Latched
Right Side Door Opening	Closed and Latched	Closed and Latched
Seat Movement	None	None
Seat Back Failure	None	None

POST-TEST STRUCTURAL OBSERVATIONS

Critical Areas of Performance	Observations and Conclusions
Pillar Performance	Did not separate from vehicle
Sill Separation	Did not separate from vehicle
Windshield Damage	Broken
Window Damage	Right side front, right side rear and rear hatch shattered
Other Notable Effects	None

DATA SHEET NO. 3 (CONTINUED)

POST TEST OBSERVATIONS

Test Vehicle: 2007 Ford Expedition

Test Program: Dynamic Rollover

Test Date: 10/22/09

SUPPLEMENTAL RESTRAINT SYSTEM INFORMATION

Restraint Type ¹	Left Front (Driver) Occupant Location 01		Right Front (Passenger) Occupant Location 03	
	Installed	Operation	Installed	Operation
Front Airbag	Yes	No	Yes	No
Side Airbag	No	N/A	Yes	No
Head Airbag	No	N/A	No	N/A
Curtain Airbag	Yes	No	Yes	No
Seat Belt Pretensioner	No	N/A	Yes	Yes
Seat Belt Load Limiter	Unknown	Unknown	Unknown	Unknown

Restraint Type ¹	Left Rear (Passenger) Occupant Location 04	
	Installed	Operation
Front Airbag	No	N/A
Side Airbag	No	N/A
Head Airbag	No	N/A
Curtain Airbag	Yes	No
Seat Belt Pretensioner	No	N/A
Seat Belt Load Limiter	Unknown	Unknown

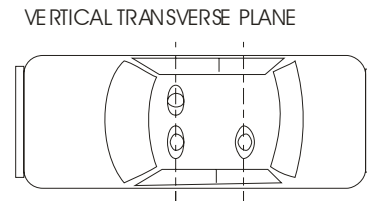
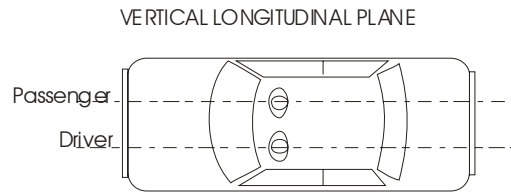
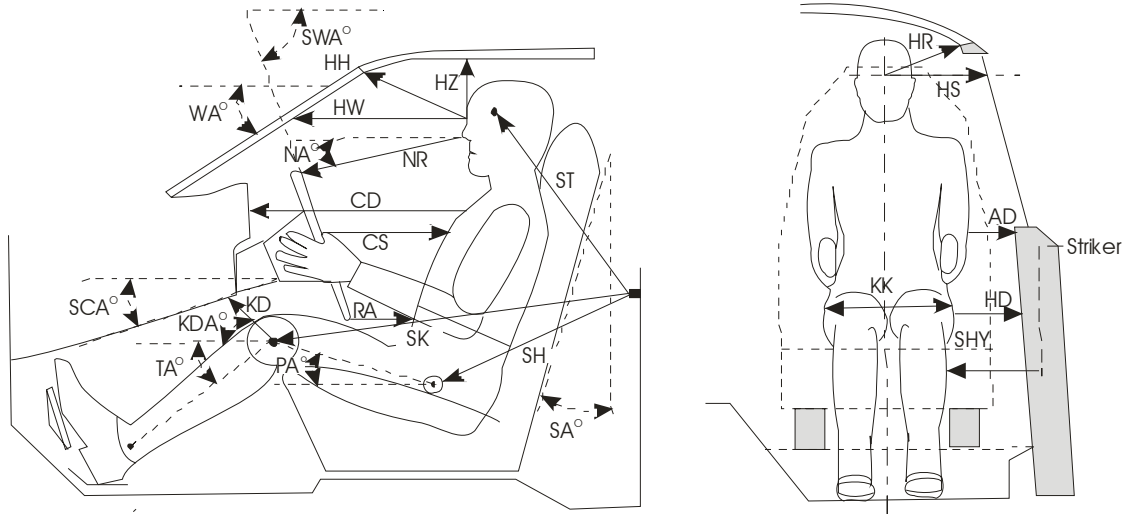
¹The airbags were disabled for this test.

DATA SHEET NO. 4

DUMMY MEASUREMENTS

Test Vehicle: 2007 Ford Expedition
 Test Program: Dynamic Rollover

Test Date: 10/22/09



DATA SHEET NO. 4 (CONTINUED)

DUMMY MEASUREMENTS

Test Vehicle: 2007 Ford Expedition

Test Program: Dynamic Rollover

Test Date: 10/22/09

FRONT SEAT OCCUPANTS

Code	Measurement Description	Driver (# 001)		Passenger (# 110)	
		Length (mm)	Angle (°)	Length (mm)	Angle (°)
WA°	Windshield Angle		---1		
SWA°	Steering Wheel Angle		---2		
SCA°	Steering Column Angle		---2		
SA°	Seat Back Angle (on headrest post)		11.4		10.1
HZ	Head to Roof (Z Direction)	247		225	
HH	Head to Header	443		414	
HW	Head to Windshield	720		658	
HR	Head to Side Header (Y Direction)	240		211	
NR	Nose to Rim	646	---2		
CD	Chest to Dash	603		567	
CS	Steering Wheel to Chest	552			
RA	Rim to Abdomen	---2			
KDL	Left Knee to Dash	261	9.1	140	2.6
KDR	Right Knee to Dash	240	10.3	152	2.8
PA°	Pelvic Angle		25.3		24.1
TA°	Tibia Angle		---1		---1
KK	Knee to Knee (Y Direction)	---1		---1	
ST ²	Striker to Head	---1	---1	---1	---1
SK ²	Striker to Knee	---1	---1	---1	---1
SH ²	Striker to H-Point	218	---1	223	---1
SHY	Striker to H-Point (Y Direction)			---1	
HS	Head to Side Window (Y Direction)	317		297	
HD	H-Point to Door (Y Direction)	90		72	
AD	Arm to Door (Y Direction)	151		122	

The seat back angle (SA°) is measured relative to vertical; all other angles are measured relative to horizontal.

A negative angle indicates the measurement point was above the striker.

¹ Measurement is not available.

² Measurement is not available, steering column was removed pre-test.

DATA SHEET NO. 4 (CONTINUED)

DUMMY MEASUREMENTS

Test Vehicle: 2007 Ford Expedition

Test Program: Dynamic Rollover

Test Date: 09/30/09

LEFT REAR SEAT OCCUPANT

Code	Measurement Description	Left Rear Passenger (#043)	
		Length (mm)	Angle(°)
WA°	Windshield Angle		
SWA°	Steering Wheel Angle		
SCA°	Steering Column Angle		
SA°	Seat Back Angle (on headrest post)		11.0
HZ	Head to Roof (Z Direction)	265	
HH	Head to Header	534	
HW	Head to Windshield		
HR	Head to Side Header (Y Direction)	231	
NR	Nose to Rim		
CD	Chest to Dash	N/A	
CS	Steering Wheel to Chest		
RA	Rim to Abdomen		
KDL	Left Knee to Dash (Seatback)	--- ¹	--- ¹
KDR	Right Knee to Dash (Seatback)	--- ¹	
PA°	Pelvic Angle		24.3
TA°	Tibia Angle		--- ¹
KK	Knee to Knee (Y Direction)	--- ¹	
ST ¹	Striker to Head	--- ¹	--- ¹
SK ¹	Striker to Knee	--- ¹	--- ¹
SH ¹	Striker to H-Point	365	--- ¹
SHY	Striker to H-Point (Y Direction)	--- ¹	
HS	Head to Side Window (Y Direction)	307	
HD	H-Point to Door (Y Direction)	51	
AD	Arm to Door (Y Direction)	125	

A negative angle indicates the measurement point was above the striker.

¹ Measurement not available.

DATA SHEET NO. 5

OCCUPANT INSTRUMENTATION DATA

Test Vehicle: 2007 Ford Expedition

Test Program: Dynamic Rollover

Test Date: 10/22/09

LEFT FRONT

Location		Unit	Positive Direction		Negative Direction	
			Max.	Time (ms)	Max.	Time (ms)
Head Acceleration	X	g	1.8	386.1	-2.4	424.9
	Y	g	2.8	951.8	-8.1	1210.3
	Z	g	11.6	1124.1	-1.7	387.8
	R	g	11.7	1124.1		
Head Rate Gyro	X	°/s	487.9	1285.0	-1106.6	1173.2
	Y	°/s	191.2	487.5	-148.0	1196.7
	Z	°/s	180.9	1303.7	-310.1	1197.9
Upper Neck Force	X	N	41.6	1283.8	-89.0	424.2
	Y	N	121.7	951.2	-341.2	1210.4
	Z	N	500.8	1124.4	-64.3	387.7
Upper Neck Moment	X	Nm	6.4	1112.6	-17.5	1215.8
	Y	Nm	4.4	408.9	-8.1	1167.9
	Z	Nm	2.6	940.7	-6.5	1216.7
Chest Acceleration	X	g	1.8	1206.2	-1.8	480.7
	Y	g	2.2	923.1	-4.7	426.2
	Z	g	9.1	1111.2	-2.0	384.8
	R	g	9.4	1111.5		
Chest Displacement	X	mm	1.7	437.4	-0.1	617.8
Lower Neck Force	X	N	191.5	1139.0	-72.5	437.6
	Y	N	152.0	1133.4	-395.1	509.4
	Z	N	700.8	1130.1	-138.1	388.2
Lower Neck Moment	X	Nm	26.1	955.6	-88.0	1208.6
	Y	Nm	14.0	409.2	-57.0	1139.9
	Z	Nm	3.9	1139.9	-15.4	529.3
Pelvis Acceleration	X	g	4.1	467.3	-3.1	467.0
	Y	g	2.5	498.6	-6.0	396.2
	Z	g	6.7	1116.7	-2.2	385.5
	R	g	8.5	1088.6		

Positive Direction

Longitudinal: Forward
 Lateral: Rightward
 Vertical: Downward

Negative Direction

Longitudinal: Rearward
 Lateral: Leftward
 Vertical: Upward

DATA SHEET NO. 5 (CONTINUED)
OCCUPANT INSTRUMENTATION DATA

Test Vehicle: 2007 Ford Expedition
 Test Program: Dynamic Rollover

Test Date: 10/22/09

RIGHT FRONT

Location		Unit	Positive Direction		Negative Direction	
			Max.	Time (ms)	Max.	Time (ms)
Head Acceleration	X	g	20.5	1086.8	-19.6	1094.4
	Y	g	12.6	1094.2	-62.8	1086.5
	Z	g	44.4	1086.6	-14.0	1090.2
	R	g	77.2	1086.5		
Head Front Acceleration	Y	g	4.0	1215.7	-61.5	1086.6
	Z	g	52.2	1086.7	-8.3	1090.4
Head Top Acceleration ¹	X	g	0.2	512.3	-0.5	475.8
	Y	g	5.7	1189.0	-63.7	1085.4
Head Side Acceleration	X	g	16.4	1085.8	-8.5	1095.3
	Z	g	40.7	1086.3	-9.1	1089.2
Upper Neck Force	X	N	50.1	1213.9	-210.0	1095.3
	Y	N	175.2	1086.8	-262.8	1080.9
	Z	N	718.1	1204.0	-2196.7	1087.8
Upper Neck Moment	X	Nm	7.5	1188.6	-44.5	1091.0
	Y	Nm	13.6	1108.0	-7.7	1175.8
	Z	Nm	4.4	1202.2	-9.0	460.8
Lower Neck Force	X	N	194.4	1203.4	-61.3	1096.5
	Y	N	347.3	1089.0	-328.7	1101.4
	Z	N	709.9	1204.0	-1884.1	1088.2
Lower Neck Moment	X	Nm	27.3	1186.3	-64.7	1084.2
	Y	Nm	124.2	1088.3	-55.1	1203.9
	Z	Nm	14.6	1088.9	-11.8	1101.2
Chest Acceleration	X	g	3.5	1095.8	-6.2	309.3
	Y	g	1.5	310.9	-9.8	1065.7
	Z	g	10.1	1087.5	-3.8	404.5
	R	g	13.8	1087.7		
Chest Displacement	X	mm	4.0	437.8	-8.7	314.8
Pelvis Acceleration	X	g	3.6	381.1	-5.0	306.9
	Y	g	1.5	506.8	-9.3	1061.5
	Z	g	7.7	1088.3	-4.4	408.2
	R	g	10.1	1061.5		

Positive Direction
 Longitudinal: Forward
 Lateral: Rightward
 Vertical: Downward

Negative Direction
 Longitudinal: Rearward
 Lateral: Leftward
 Vertical: Upward

¹ See Test Notes.

DATA SHEET NO. 5 (CONTINUED)
OCCUPANT INSTRUMENTATION DATA

Test Vehicle: 2007 Ford Expedition
 Test Program: Dynamic Rollover

Test Date: 10/22/09

LEFT REAR

Location		Unit	Positive Direction		Negative Direction	
			Max.	Time (ms)	Max.	Time (ms)
Head Acceleration	X	g	2.5	1257.7	-2.2	1377.8
	Y	g	3.2	944.7	-6.3	1183.3
	Z	g	12.6	1095.9	-1.6	332.0
	R	g	12.7	1095.9		
Head Rate Gyro	X	°/s	708.2	478.2	-342.4	593.4
	Y	°/s	465.1	1213.9	-512.5	1333.7
	Z	°/s	175.8	1208.6	-288.4	1147.0
Upper Neck Force	X	N	84.3	1247.4	-87.5	1384.2
	Y	N	146.4	952.1	-241.3	1184.2
	Z	N	553.1	1096.0	-66.5	332.2
Upper Neck Moment	X	Nm	7.5	1088.3	-12.7	1191.9
	Y	Nm	5.8	1181.1	-10.1	1260.1
	Z	Nm	2.9	954.6	-7.8	1175.0
Chest Acceleration	X	g	1.7	1186.2	-1.8	1098.6
	Y	g	1.8	921.9	-7.4	1094.3
	Z	g	9.6	1095.3	-1.6	332.4
	R	g	11.9	1094.3		
Chest Displacement	X	mm	1.3	534.8	-1.2	479.1
Lower Neck Force	X	N	256.0	1094.4	-47.3	71.5
	Y	N	101.4	956.9	-444.3	1094.4
	Z	N	689.9	1096.6	-93.8	1194.8
Lower Neck Moment	X	Nm	32.1	954.6	-73.4	1184.6
	Y	Nm	12.7	1384.2	-55.4	1096.6
	Z	Nm	3.6	386.6	-20.9	1094.4
Pelvis Acceleration	X	g	1.2	321.1	-2.5	464.2
	Y	g	1.3	964.3	-7.3	1078.7
	Z	g	7.2	1098.9	-1.7	393.4
	R	g	10.0	1079.0		

Positive Direction

Longitudinal: Forward
 Lateral: Rightward
 Vertical: Downward

Negative Direction

Longitudinal: Rearward
 Lateral: Leftward
 Vertical: Upward

DATA SHEET NO. 6

VEHICLE STRUCTURAL MEASUREMENTS^{1,2}

Test Vehicle: 2007 Ford Expedition

Test Program: Dynamic Rollover

Test Date: 10/22/09

STRUCTURAL MEASUREMENTS

	Elements	Pre-Test
1	Total Length	5208
2	Total Width	2007
3	Bumper Top Height	491
4	Bumper Bottom Height	424
5	Longitudinal Member Top Height	499
6	Longitudinal Member Bottom Height	414
7	Distance Between Longitudinal Members	871
7'	Longitudinal Member Width	100
8	Engine Top Height	1170
9	Engine Bottom Height	288
10	Engine and Gearbox Width	750
11	Front Bumper - Engine Distance	755
12	Front Shock Absorber Fixing Height	566
13	Bonnet Leading Edge Height	1090
14	Front Shock Absorber Fixing Width	920
15	Front Bumper - Front Axle Distance	940
16	Front Axle - A Pillar Distance	680
17	A Pillar - B Pillar Distance	1070
18	B Pillar - Rear Axle Distance	1285
19	B Pillar - C Pillar Distance	1000
20	Roof Sill Bottom Height	1728
21	Roof Sill Top Height	1800
22	Floor Sill Bottom Height	497
23	Floor Sill Top Height	550

All distance measurements are in millimeters.

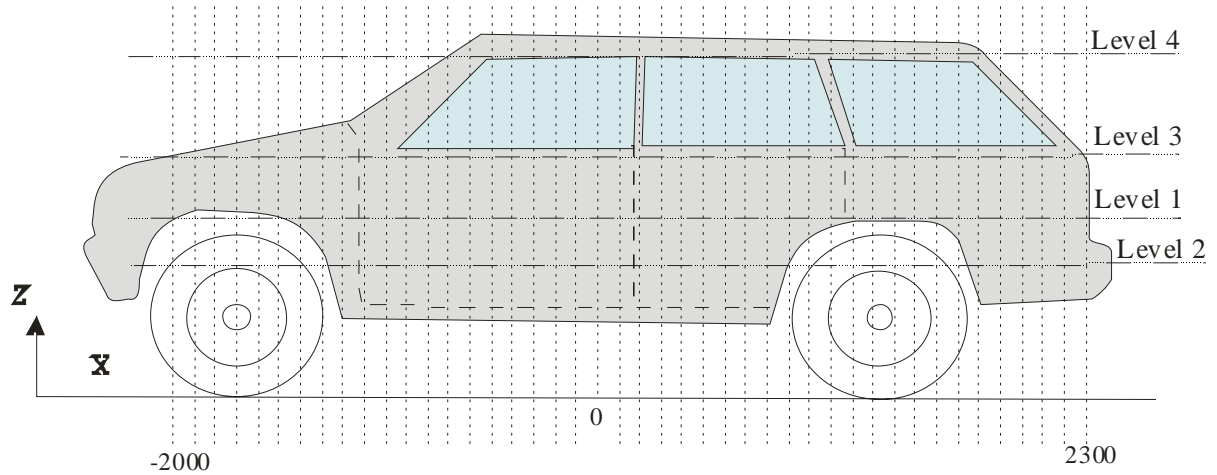
¹ Taken from INSIA report, "Structural Survey of Cars, Methodology of the Main Resistant Elements in the Car Body", March 1999.

² The vertical measurements from the ground are adjusted based on the test vehicle's pre-test attitude measurements.

DATA SHEET NO. 7
VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2007 Ford Expedition
 Test Program: Dynamic Rollover

Test Date: 10/22/09



Left Side View
 All measurements are in millimeters

Measurements are taken when the vehicle is in the “As Tested” configuration.

Measurements along the vertical 0 mm line shown above.

Horizontal measurement spacing is 100 millimeters.

Level	Measurement Description	Height Above Ground (mm)
4	Window Top	1780
3	Window Sill	1140
2	Occupant H-Point	830
1	Mid Door	920

DATA SHEET NO. 7 (CONTINUED)

VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2007 Ford Expedition

Test Program: Dynamic Rollover

Test Date: 10/22/09

LEFT SIDE CRUSH

	Pre-Test				Post-Test				Difference			
	1	2	3	4	1	2	3	4	1	2	3	4
-2000			-833				-831				-2	
-1900			-854				-852				-2	
-1800			-869				-867				-2	
-1700			-880				-879				-1	
-1600			-889				-888				-1	
-1500	-976		-897		-978		-895		2		-2	
-1400	-977		-902		-980		-902		3		0	
-1300	-976		-907		-979		-907		3		0	
-1200	-969	-977	-912		-972	-981	-912		3	4	0	
-1100	-961	-972	-916		-965	-977	-916		4	5	0	
-1000	-961	-964	-918		-965	-969	-919		4	5	1	
-900	-963	-965	-921	-887	-968	-970	-923	-889	5	5	2	2
-800	-967	-968	-926	-855	-972	-974	-927	-856	5	6	1	1
-700	-970	-971	-929	-831	-975	-977	-931	-831	5	6	2	0
-600	-973	-974	-933	-800	-978	-980	-935	-800	5	6	2	0
-500	-976	-976	-936	-765	-981	-982	-938	-763	5	6	2	-2
-400	-978	-978	-939	-730	-983	-984	-941	-728	5	6	2	-2
-300	-981	-980	-941	-701	-986	-986	-944	-699	5	6	3	-2
-200	-982	-982	-944	-689	-987	-988	-946	-687	5	6	2	-2
-100	-983	-983	-946	-686	-989	-989	-949	-683	6	6	3	-3
0	-985	-985	-949	-685	-990	-991	-951	-682	5	6	2	-3
100	-986	-985	-950	-683	-991	-992	-953	-680	5	7	3	-3
200	-986	-986	-952	-684	-992	-992	-955	-682	6	6	3	-2
300	-988	-987	-955	-686	-993	-993	-958	-684	5	6	3	-2
400	-988	-987	-957	-686	-993	-993	-960	-684	5	6	3	-2
500	-988	-987	-959	-687	-993	-992	-961	-685	5	5	2	-2
600	-989	-987	-960	-688	-993	-992	-963	-685	4	5	3	-3
700	-989	-988	-962	-689	-992	-992	-963	-686	3	4	1	-3
800	-989	-987	-963	-689	-992	-991	-964	-685	3	4	1	-4
900	-988	-987	-963	-689	-991	-990	-965	-686	3	3	2	-3
1000	-988	-986	-964	-691	-990	-989	-965	-687	2	3	1	-4
1100	-988	-993	-964	-693	-990	-996	-964	-690	2	3	0	-3
1200	-995	-997	-963	-694	-997	-1000	-964	-691	2	3	1	-3
1300	-1001		-961	-693	-1004		-962	-691	3		1	-2
1400	-1002		-962	-695	-1003		-963	-692	1		1	-3
1500	-1000		-961	-695	-1000		-963	-693	0		2	-2
1600	-998		-960	-694	-997		-961	-692	-1		1	-2
1700	-994		-959	-694	-993		-959	-692	-1		0	-2
1800	-986		-957	-693	-983		-958	-691	-3		1	-2
1900	-974		-955	-692	-971		-954	-690	-3		-1	-2
2000			-953	-691			-952	-689			-1	-2
2100			-951	-689			-950	-686			-1	-3
2200			-948	-685			-947	-683			-1	-2
2300			-945				-943				-2	

DATA SHEET NO. 7 (CONTINUED)

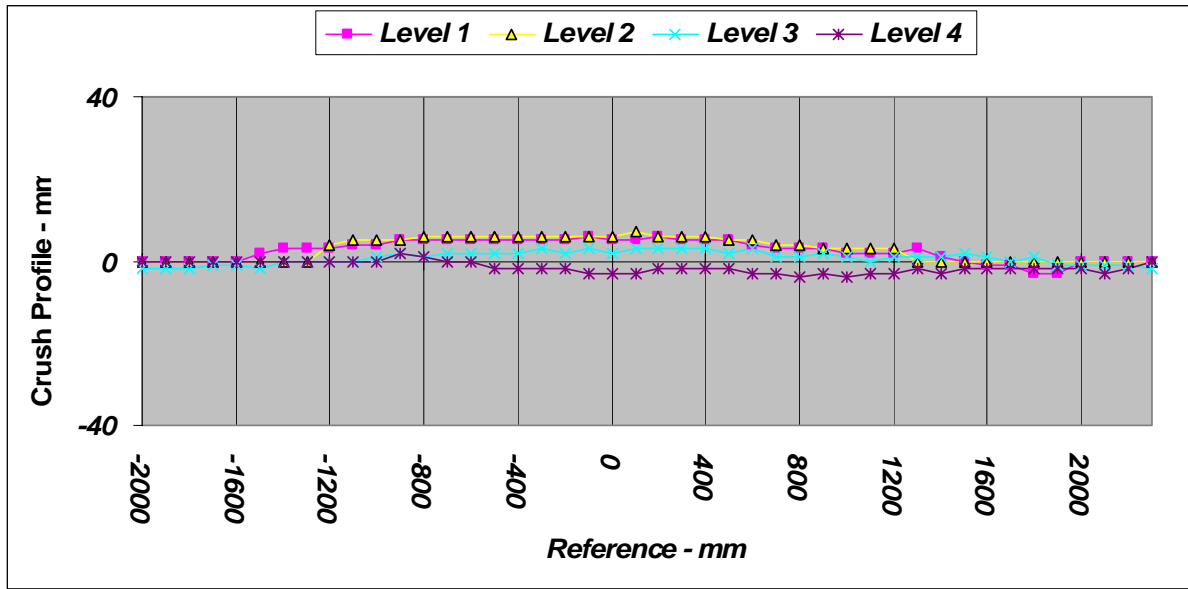
VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2007 Ford Expedition

Test Program: Dynamic Rollover

Test Date: 10/22/09

LEFT SIDE CRUSH



DATA SHEET NO. 7 (CONTINUED)

VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2007 Ford Expedition

Test Program: Dynamic Rollover

Test Date: 10/22/09

RIGHT SIDE CRUSH

	Pre-Test				Post-Test				Difference			
	1	2	3	4	1	2	3	4	1	2	3	4
-2000			824				827				-3	
-1900			845				843				2	
-1800			860				853				7	
-1700			873				853				20	
-1600			883				866				17	
-1500	974		891		952		872		22		19	
-1400	976		897		952		875		24		22	
-1300	975		903		951		871		24		32	
-1200	968	977	908		945	959	878		23	18	30	
-1100	960	973	912		939	954	882		21	19	30	
-1000	961	965	917		941	948	885		20	17	32	
-900	965	967	919	887	942	945	888	856	23	22	31	31
-800	968	970	924	856	932	953	877	834	36	17	47	22
-700	972	974	927	829	932	958	863	811	40	16	64	18
-600	974	976	931	801	945	960	857	777	29	16	74	24
-500	977	979	934	768	951	961	869	751	26	18	65	17
-400	980	981	938	732	954	963	878	728	26	18	60	4
-300	982	983	940	701	956	965	887	700	26	18	53	1
-200	983	984	943	684	958	967	896	683	25	17	47	1
-100	984	985	946	681	960	968	904	679	24	17	42	2
0	986	986	948	679	961	969	911	677	25	17	37	2
100	987	987	950	679	964	971	914	679	23	16	36	0
200	988	988	952	679	963	971	919	679	25	17	33	0
300	987	987	953	678	940	958	907	667	47	29	46	11
400	988	987	955	679	940	959	908	667	48	28	47	12
500	987	987	956	680	941	961	910	668	46	26	46	12
600	987	987	957	681	943	962	911	670	44	25	46	11
700	987	987	959	681	945	962	912	672	42	25	47	9
800	987	986	959	682	948	963	912	673	39	23	47	9
900	986	986	960	682	952	962	912	675	34	24	48	7
1000	986	985	960	684	955	958	908	679	31	27	52	5
1100	986	990	960	684	954	961	907	676	32	29	53	8
1200	993	997	959	684	956	950	908	679	37	47	51	5
1300	1001		959	684	938		892	680	63		67	4
1400	1001		959	684	920		889	684	81		70	0
1500	1000		958	684	915		895	684	85		63	0
1600	997		956	684	922		894	685	75		62	-1
1700	994		954	683	935		892	685	59		62	-2
1800	986		953	682	929		889	684	57		64	-2
1900	975		951	681	931		889	682	44		62	-1
2000			948	678			886	680			62	-2
2100			946	677			885	678			61	-1
2200			943	674			882	675			61	-1
2300			940				876				64	

DATA SHEET NO. 7 (CONTINUED)

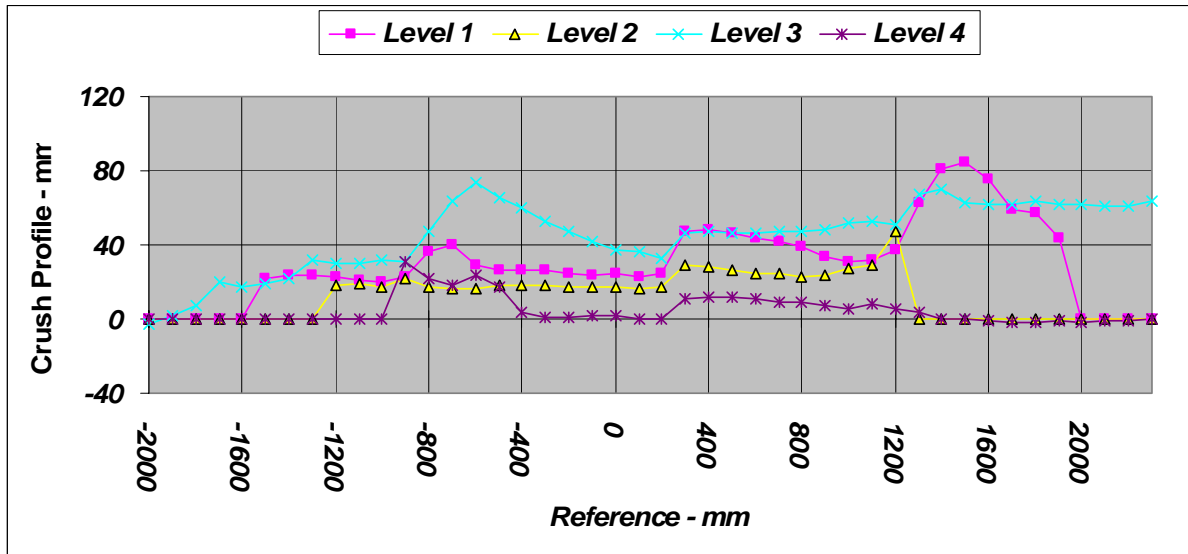
VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2007 Ford Expedition

Test Program: Dynamic Rollover

Test Date: 10/22/09

RIGHT SIDE CRUSH



DATA SHEET NO. 7 (CONTINUED)

VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2007 Ford Expedition

Test Program: Dynamic Rollover

Test Date: 10/22/09

B-PILLAR MEASUREMENTS

Index	Pre-Test			Post-Test			Difference		
	X (mm)	Y (mm)	Z (mm)	X (mm)	Y (mm)	Z (mm)	X (mm)	Y (mm)	Z (mm)
Left B-Pillar									
(1)	2477.6	-670.5	-1119.4	2477.6	-668.8	-1125.0	0.0	-1.7	5.6
(2)	2481.6	-732.5	-1038.4	2481.4	-731.7	-1043.9	0.2	-0.8	5.5
(3)	2488.2	-776.1	-947.3	2487.2	-775.7	-953.6	1.0	-0.4	6.3
(4)	2491.4	-813.7	-855.8	2490.6	-814.2	-862.0	0.8	0.5	6.2
(5)	2497.4	-845.1	-761.5	2496.7	-846.4	-768.0	0.7	1.3	6.5
(6)	2500.4	-867.1	-664.0	2499.4	-869.2	-670.6	1.0	2.1	6.6
(7)	2499.7	-878.6	-562.9	2498.6	-881.3	-569.7	1.1	2.7	6.8
(8)	2505.2	-881.0	-468.3	2503.9	-885.0	-475.3	1.3	4.0	7.0
Right B-Pillar									
(1)	2476.7	662.5	-1123.1	2473.5	639.7	-1090.8	3.2	22.8	-32.3
(2)	2484.2	722.5	-1047.9	2482.0	697.9	-1012.2	2.2	24.6	-35.7
(3)	2489.7	767.7	-957.7	2487.8	740.3	-920.6	1.9	27.4	-37.1
(4)	2493.1	807.4	-865.5	2490.4	777.1	-827.9	2.7	30.3	-37.6
(5)	2498.6	840.1	-772.3	2497.2	808.1	-733.4	1.4	32.0	-38.9
(6)	2503.1	864.4	-673.8	2502.7	830.4	-636.0	0.4	34.0	-37.8
(7)	2507.6	877.1	-569.3	2507.2	842.7	-531.9	0.4	34.4	-37.4
(8)	2504.0	880.1	-471.0	2504.7	841.8	-433.1	-0.7	38.3	-37.9

DATA SHEET NO. 7 (CONTINUED)

VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2007 Ford Expedition

Test Program: Dynamic Rollover

Test Date: 10/22/09

C-PILLAR MEASUREMENTS

Index	Pre-Test			Post-Test			Difference		
	X (mm)	Y (mm)	Z (mm)	X (mm)	Y (mm)	Z (mm)	X (mm)	Y (mm)	Z (mm)
Left C-Pillar									
(1)	1570.1	-712.8	-1145.9	1568.8	-709.1	-1153.2	1.3	-3.7	7.3
(2)	1537.9	-760.7	-1063.9	1536.9	-758.2	-1070.3	1.0	-2.5	6.4
(3)	1503.6	-802.9	-980.0	1502.1	-800.7	-986.6	1.5	-2.2	6.6
(4)	1468.8	-840.2	-893.3	1467.3	-838.3	-900.4	1.5	-1.9	7.1
(5)	1435.6	-873.6	-805.6	1434.8	-872.4	-812.7	0.8	-1.2	7.1
(6)	1403.0	-904.4	-716.4	1401.6	-903.4	-723.2	1.4	-1.0	6.8
(7)	1370.6	-932.9	-626.8	1369.1	-932.4	-633.7	1.5	-0.5	6.9
(8)	1337.0	-958.6	-536.3	1335.7	-958.9	-543.1	1.3	0.3	6.8
Right C-Pillar									
(1)	1565.8	704.5	-1150.3	1566.8	694.2	-1112.6	-1.0	10.3	-37.7
(2)	1531.3	752.1	-1070.7	1533.0	735.3	-1029.1	-1.7	16.8	-41.6
(3)	1497.2	795.0	-985.8	1499.1	760.4	-938.2	-1.9	34.6	-47.6
(4)	1463.2	833.2	-899.3	1467.1	795.8	-849.5	-3.9	37.4	-49.8
(5)	1428.7	868.1	-811.3	1432.3	813.5	-756.9	-3.6	54.6	-54.4
(6)	1394.0	899.7	-722.0	1398.7	839.9	-665.4	-4.7	59.8	-56.6
(7)	1360.5	929.9	-630.2	1365.7	870.1	-573.5	-5.2	59.8	-56.7
(8)	1329.1	954.6	-546.3	1335.5	889.7	-488.6	-6.4	64.9	-57.7

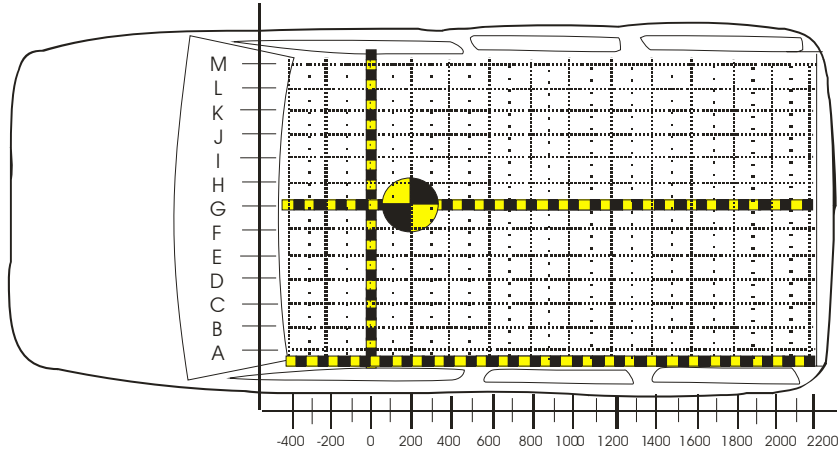
DATA SHEET NO. 7 (CONTINUED)

VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2007 Ford Expedition

Test Program: Dynamic Rollover

Test Date: 10/22/09



ROOF EXTERIOR CRUSH LEFT (ROWS A – D)

	Pre-Test				Post-Test				Difference			
	A	B	C	D	A	B	C	D	A	B	C	D
-400	-598	-500	-406	-306	-596	-499	-404	-304	-2	-1	-2	-2
-300	-600	-502	-401	-301	-598	-501	-399	-299	-2	-1	-2	-2
-200	-601	-502	-402	-303	-599	-501	-400	-300	-2	-1	-2	-3
-100	-601	-502	-401	-301	-599	-500	-399	-299	-2	-2	-2	-2
0	-603	-501	-402	-301	-600	-499	-399	-299	-3	-2	-3	-2
100	-602	-501	-402	-302	-600	-499	-399	-299	-2	-2	-3	-3
200	-602	-503	-403	-303	-599	-500	-400	-300	-3	-3	-3	-3
300	-605	-504	-405	-305	-602	-502	-402	-302	-3	-2	-3	-3
400	-603	-502	-403	-302	-599	-499	-400	-298	-4	-3	-3	-4
500	-604	-507	-405	-303	-602	-503	-402	-300	-2	-4	-3	-3
600	-603	-504	-403	-303	-601	-501	-400	-299	-2	-3	-3	-4
700	-604	-504	-403	-303	-600	-500	-400	-300	-4	-4	-3	-3
800	-603	-504	-404	-302	-600	-500	-399	-300	-3	-4	-5	-2
900	-604	-503	-403	-302	-600	-500	-399	-300	-4	-3	-4	-2
1000	-603	-503	-403	-303	-600	-500	-400	-300	-3	-3	-3	-3
1100	-603	-503	-403	-302	-599	-499	-398	-299	-4	-4	-5	-3
1200	-605	-505	-406	-303	-601	-501	-401	-299	-4	-4	-5	-4
1300	-604	-504	-403	-305	-600	-500	-399	-301	-4	-4	-4	-4
1400	-603	-502	-401	-303	-599	-499	-397	-300	-4	-3	-4	-3
1500	-604	-502	-402	-303	-599	-499	-398	-300	-5	-3	-4	-3
1600	-603	-503	-404	-303	-599	-500	-399	-299	-4	-3	-5	-4
1700	-604	-503	-403	-304	-599	-499	-399	-299	-5	-4	-4	-5
1800	-603	-501	-403	-304	-599	-497	-397	-298	-4	-4	-6	-6
1900	-606	-504	-404	-305	-601	-501	-399	-300	-5	-3	-5	-5
2000	-603	-504	-404	-305	-600	-500	-399	-299	-3	-4	-5	-6
2100	-603	-504	-404	-305	-601	-501	-400	-300	-2	-3	-4	-5
2200	-600	0	0	0	-598	0	0	0	-2	0	0	0

DATA SHEET NO. 7 (CONTINUED)

VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2007 Ford Expedition

Test Program: Dynamic Rollover

Test Date: 10/22/09

ROOF EXTERIOR CRUSH CENTER (ROWS E – I)

	Pre-Test					Post-Test					Difference				
	E	F	G	H	I	E	F	G	H	I	E	F	G	H	I
-400	-208	-106	-9	90	189	-207	-106	-7	93	192	-1	0	-2	-3	-3
-300	-201	-102	-5	97	197	-201	-101	-3	100	201	0	-1	-2	-3	-4
-200	-203	-101	-4	93	194	-201	-100	-1	96	198	-2	-1	-3	-3	-4
-100	-202	-100	-4	92	193	-200	-98	-1	96	197	-2	-2	-3	-4	-4
0	-202	-101	-4	97	197	-200	-99	-1	100	200	-2	-2	-3	-3	-3
100	-202	-98	-5	93	194	-199	-96	-2	97	197	-3	-2	-3	-4	-3
200	-203	-104	-6	92	192	-200	-101	-1	95	196	-3	-3	-5	-3	-4
300	-205	-104	-6	92	191	-202	-102	-2	95	196	-3	-2	-4	-3	-5
400	-203	-103	-7	93	191	-200	-99	-2	98	197	-3	-4	-5	-5	-6
500	-206	-105	-7	92	190	-202	-102	-2	96	196	-4	-3	-5	-4	-6
600	-204	-103	-6	91	192	-201	-99	-1	96	197	-3	-4	-5	-5	-5
700	-205	-101	-5	93	191	-202	-97	-2	98	197	-3	-4	-3	-5	-6
800	-204	-102	-6	92	192	-200	-99	-2	97	198	-4	-3	-4	-5	-6
900	-203	-104	-5	94	195	-200	-101	-2	98	198	-3	-3	-3	-4	-3
1000	-203	-101	-5	93	192	-200	-98	-2	97	195	-3	-3	-3	-4	-3
1100	-204	-102	-5	94	194	-199	-97	1	98	197	-5	-5	-6	-4	-3
1200	-206	-102	-6	93	192	-202	-98	0	98	196	-4	-4	-6	-5	-4
1300	-207	-102	-5	93	195	-202	-98	-0	97	199	-5	-4	-5	-4	-4
1400	-203	-103	-5	93	194	-198	-97	-0	98	198	-5	-6	-5	-5	-4
1500	-204	-102	-5	91	192	-198	-98	-1	95	196	-6	-4	-4	-4	-4
1600	-204	-102	-6	92	193	-200	-97	-0	96	197	-4	-5	-6	-4	-4
1700	-203	-102	-5	92	194	-199	-97	0	96	198	-4	-5	-5	-4	-4
1800	-201	-101	-7	91	191	-197	-96	-0	95	195	-4	-5	-7	-4	-4
1900	-204	-102	-7	92	193	-200	-97	0	95	196	-4	-5	-7	-3	-3
2000	-203	-103	-5	92	193	-199	-98	0	95	196	-4	-5	-5	-3	-3
2100	-203	-106	-5	93	193	-200	-100	1	96	196	-3	-6	-6	-3	-3
2200	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

DATA SHEET NO. 7 (CONTINUED)

VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2007 Ford Expedition

Test Program: Dynamic Rollover

Test Date: 10/22/09

ROOF EXTERIOR CRUSH RIGHT (ROWS J – M)

	Pre-Test				Post-Test				Difference			
	J	K	L	M	J	K	L	M	J	K	L	M
-400	291	390	490	597	293	393	492	600	-2	-3	-2	-3
-300	299	397	498	596	302	401	501	598	-3	-4	-3	-2
-200	295	395	495	595	298	399	498	592	-3	-4	-3	3
-100	295	395	495	594	299	398	498	590	-4	-3	-3	4
0	296	397	497	594	300	401	500	590	-4	-4	-3	4
100	295	393	493	591	298	397	498	583	-3	-4	-5	8
200	293	391	492	592	297	397	496	584	-4	-6	-4	8
300	294	393	492	592	298	396	496	583	-4	-3	-4	9
400	294	392	492	591	298	396	496	584	-4	-4	-4	7
500	293	391	490	591	296	394	494	587	-3	-3	-4	4
600	295	394	493	591	298	397	497	589	-3	-3	-4	2
700	295	394	493	593	298	397	496	591	-3	-3	-3	2
800	295	392	493	593	298	397	496	592	-3	-5	-3	1
900	295	394	495	594	298	398	497	593	-3	-4	-2	1
1000	294	390	492	592	296	394	495	592	-2	-4	-3	0
1100	294	393	493	593	299	398	497	596	-5	-5	-4	-3
1200	294	392	492	592	297	397	496	595	-3	-5	-4	-3
1300	296	393	494	592	300	399	498	595	-4	-6	-4	-3
1400	295	392	494	593	299	398	497	596	-4	-6	-3	-3
1500	295	391	492	592	298	397	496	596	-3	-6	-4	-4
1600	294	391	492	591	298	396	496	596	-4	-5	-4	-5
1700	296	393	494	591	299	398	497	596	-3	-5	-3	-5
1800	294	390	491	590	297	395	495	595	-3	-5	-4	-5
1900	295	392	493	592	298	397	496	596	-3	-5	-3	-4
2000	295	394	493	591	298	395	495	594	-3	-1	-2	-3
2100	293	393	493	594	298	395	495	597	-5	-2	-2	-3
2200	0	0	0	592	0	0	0	594	0	0	0	-2

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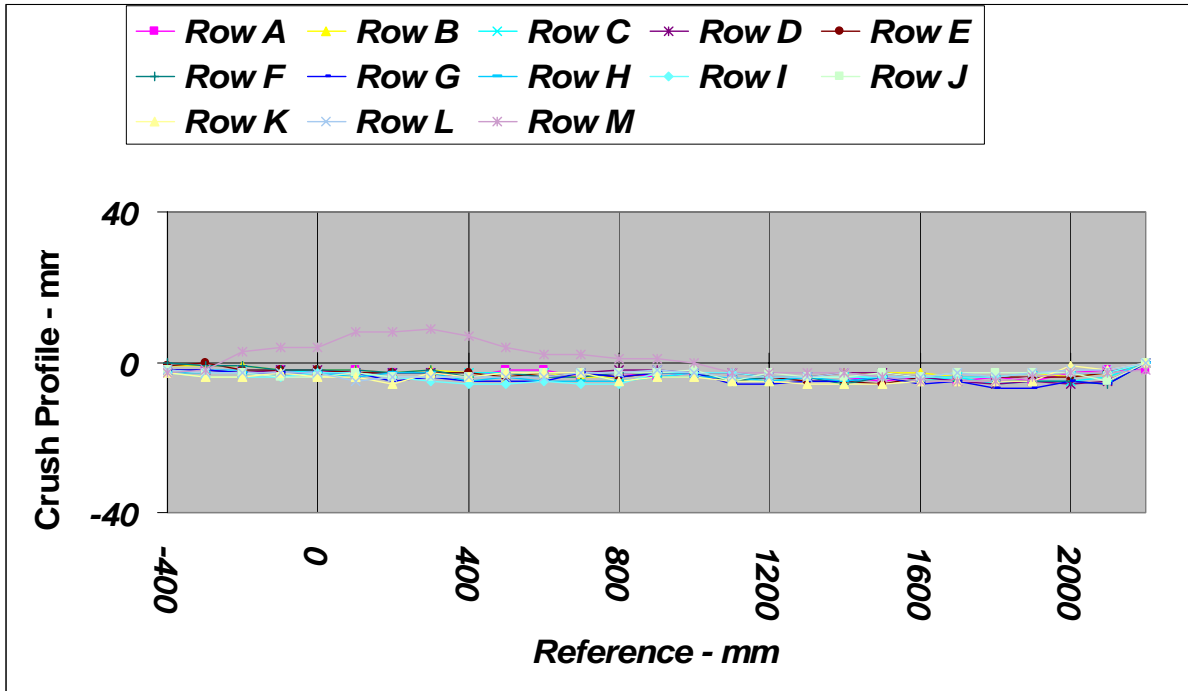
VEHICLE EXTERIOR CRUSH MEASUREMENTS

Test Vehicle: 2007 Ford Expedition

Test Program: Dynamic Rollover

Test Date: 10/22/09

ROOF CRUSH



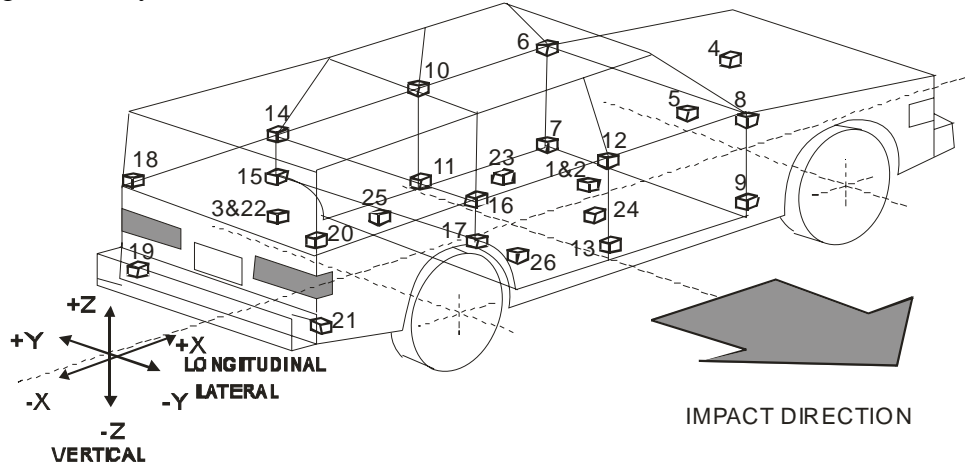
DATA SHEET NO. 8

VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

Test Vehicle: 2007 Ford Expedition

Test Program: Dynamic Rollover

Test Date: 10/22/09



Location No.	Accelerometer Location	Measurements (mm)		
		X	Y	Z
1	Vehicle Center of Gravity	----	----	-
2	Vehicle Center of Gravity ROLL	----	----	-
3	Rear Deck (cargo area) ROLL	410	0	-
4	Top of Engine	4370	200	-
5	Bottom of Engine	4010	15	-
6	Left A-Pillar Upper	3060	645	-
7	Left A-Pillar Lower	3550	790	-
8	Right A-Pillar Upper	3050	645	-
9	Right A-Pillar Lower	3555	790	-
10	Left B-Pillar Upper	2525	765	-
11	Left B-Pillar Lower	2472	825	-
12	Right B-Pillar Upper	2520	765	-
13	Right B-Pillar Lower	2450	825	-
14	Left C-Pillar Upper	1665	675	-
15	Left C-Pillar Lower	1770	810	-
16	Right C-Pillar Upper	1640	675	-
17	Right C-Pillar Lower	1740	810	-
18	Left D-Pillar Upper	520	635	-
19	Left D-Pillar Lower	315	725	-
20	Right D-Pillar Upper	500	635	-
21	Right D-Pillar Lower	310	725	-
22	Vehicle Rear Deck	380	0	-
23	LF Seat Position (on floor)	2800	450	-
24	RF Seat Position (on floor)	2798	450	-
25	LR Seat Position (on floor)	1755	450	-
26	RR Seat Position (on floor)	2060	520	-

DATA SHEET NO. 8 (CONTINUED)

VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

Test Vehicle: 2007 Ford Expedition

Test Program: Dynamic Rollover

Test Date: 10/22/09

Location		Unit	Positive Direction		Negative Direction	
			Max.	Time (ms)	Max.	Time (ms)
(1) Vehicle Center of Gravity Acceleration	X	g	3.5	1075.2	-1.1	1056.6
	Y	g	4.2	65.9	-6.5	1056.9
	Z	g	6.8	1060.6	-4.5	303.8
	R	g	7.3	1066.4		
(2) Vehicle Center of Gravity Gyro ¹	X	°/s	865.4	1076.6	-1103.1	1073.8
	Y	°/s	1029.7	1074.2	-767.9	307.0
	Z	°/s	1039.7	1074.1	-761.8	1076.1
(3) Rear Deck Gyro ¹ (cargo area)	X	°/s	1173.5	1008.7	-902.9	1051.9
	Y	°/s	847.2	1004.8	-1243.4	995.3
	Z	°/s	1209.6	1027.9	-1289.5	1004.1
(4) Top of Engine	X	g	1.8	1061.0	-1.1	142.1
	Y	g	4.6	90.4	-7.0	1090.4
	Z	g	5.1	1059.9	-2.1	384.3
	R	g	8.4	1089.5		
(5) Bottom of Engine	X	g	2.3	1034.2	-1.0	114.6
	Y	g	8.4	65.1	-8.8	356.2
	Z	g	5.1	63.4	-1.6	83.0
	R	g	9.8	64.7		
(6) Left A-Pillar Upper	X	g	3.0	993.5	-2.5	322.2
	Y	g	4.1	3360.2	-6.0	403.7
	Z	g	8.3	1066.2	-2.7	291.4
	R	g	8.6	1075.8		
(7) Left A-Pillar Lower	X	g	3.5	998.5	-1.4	327.8
	Y	g	5.3	69.4	-7.2	1058.4
	Z	g	6.2	1078.5	-3.9	296.5
	R	g	7.7	68.4		
(8) Right A-Pillar Upper	X	g	6.5	1065.3	-3.5	2942.0
	Y	g	8.1	1104.2	-14.1	1108.7
	Z	g	5.2	2941.7	-5.7	407.8
	R	g	15.3	1108.7		
(9) Right A-Pillar Lower	X	g	2.3	3352.0	-2.2	993.4
	Y	g	5.7	65.4	-16.0	1054.2
	Z	g	11.1	1053.4	-4.2	377.7
	R	g	19.1	1054.1		

¹ See Test Notes

DATA SHEET NO. 8 (CONTINUED)

VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

Test Vehicle: 2007 Ford Expedition

Test Program: Dynamic Rollover

Test Date: 10/22/09

Location		Unit	Positive Direction		Negative Direction	
			Max.	Time (ms)	Max.	Time (ms)
(10) Left B-Pillar Upper	X	g	3.4	992.0	-2.1	321.9
	Y	g	2.7	69.9	-6.9	405.6
	Z	g	6.6	1070.2	-2.4	294.8
	R	g	7.6	1067.8		
(11) Left B-Pillar Lower	X	g	3.5	986.0	-1.7	389.3
	Y	g	4.2	68.9	-6.0	293.8
	Z	g	5.4	69.5	-2.7	44.2
	R	g	6.9	69.3		
(12) Right B-Pillar Upper	X	g	3.5	1104.9	-3.6	998.9
	Y	g	5.2	3357.2	-13.5	1017.0
	Z	g	4.6	1021.3	-7.7	1016.1
	R	g	15.3	1016.7		
(13) Right B-Pillar Lower	X	g	2.8	3351.1	-2.3	3357.0
	Y	g	7.7	1015.6	-7.1	3355.2
	Z	g	7.8	1015.6	-4.2	3356.2
	R	g	10.9	1015.6		
(14) Left C-Pillar Upper	X	g	4.0	991.6	-2.0	321.4
	Y	g	3.8	1014.2	-7.7	990.8
	Z	g	8.4	1041.0	-2.7	292.6
	R	g	10.4	991.5		
(15) Left C-Pillar Lower	X	g	4.0	986.4	-7.2	1017.2
	Y	g	3.6	65.6	-6.8	292.7
	Z	g	5.5	1017.7	-4.9	290.9
	R	g	9.1	1017.4		
(16) Right C-Pillar Upper	X	g	28.9	1111.8	-3.7	1117.4
	Y	g	6.2	2193.8	-18.2	986.6
	Z	g	7.6	1075.4	-6.8	370.9
	R	g	29.3	1111.8		
(17) Right C-Pillar Lower	X	g	2.6	1057.0	-17.5	2289.2
	Y	g	6.3	1004.3	-18.7	987.3
	Z	g	13.4	985.6	-5.1	369.6
	R	g	22.5	986.6		
(18) Left D-Pillar Upper	X	g	3.9	990.9	-2.9	1035.3
	Y	g	5.8	1016.6	-10.5	995.5
	Z	g	9.7	1025.0	-2.8	309.8
	R	g	10.8	995.5		

DATA SHEET NO. 8 (CONTINUED)

VEHICLE ACCELEROMETER LOCATIONS AND DATA SUMMARY

Test Vehicle: 2007 Ford Expedition

Test Program: Dynamic Rollover

Test Date: 10/22/09

Location		Unit	Positive Direction		Negative Direction	
			Max.	Time (ms)	Max.	Time (ms)
(19) Left D-Pillar Lower	X	g	3.5	984.5	-1.9	332.7
	Y	g	2.5	63.4	-8.8	988.3
	Z	g	9.4	1040.2	-4.0	394.9
	R	g	11.0	1040.1		
(20) Right D-Pillar Upper	X	g	17.5	1062.2	-2.2	984.0
	Y	g	7.1	1036.9	-117.2	1053.6
	Z	g	6.3	983.8	-6.7	370.4
	R	g	118.0	1053.6		
(21) Right D-Pillar Lower	X	g	4.2	1020.6	-3.4	1027.0
	Y	g	2.1	68.7	-16.3	993.5
	Z	g	16.2	993.9	-5.2	1036.6
	R	g	23.0	993.8		
(22) Vehicle Rear Deck	X	g	1.9	984.7	-15.1	1005.0
	Y	g	2.7	63.4	-8.8	988.8
	Z	g	10.9	982.2	-4.5	374.8
	R	g	15.2	1005.1		
(23) LF Seat Position (on floor)	X	g	2.9	985.9	-1.2	295.8
	Y	g	4.1	66.2	-5.8	395.0
	Z	g	5.7	1076.8	-3.1	294.8
	R	g	6.3	395.8		
(24) RF Seat Position (on floor)	X	g	1.8	3351.8	-1.3	3358.0
	Y	g	4.0	65.9	-6.8	1056.5
	Z	g	6.3	1059.8	-3.7	303.2
	R	g	7.0	1056.3		
(25) LR Seat Position (on floor)	X	g	2.6	1048.6	-1.3	1017.7
	Y	g	3.8	66.7	-6.7	292.6
	Z	g	11.6	1022.7	-142.3	1016.9
	R	g	142.3	1016.9		
(26) RR Seat Position (on floor)	X	g	2.3	3351.8	-1.6	3357.6
	Y	g	3.7	66.6	-6.5	292.3
	Z	g	5.0	1000.8	-3.4	388.3
	R	g	6.6	1010.0		

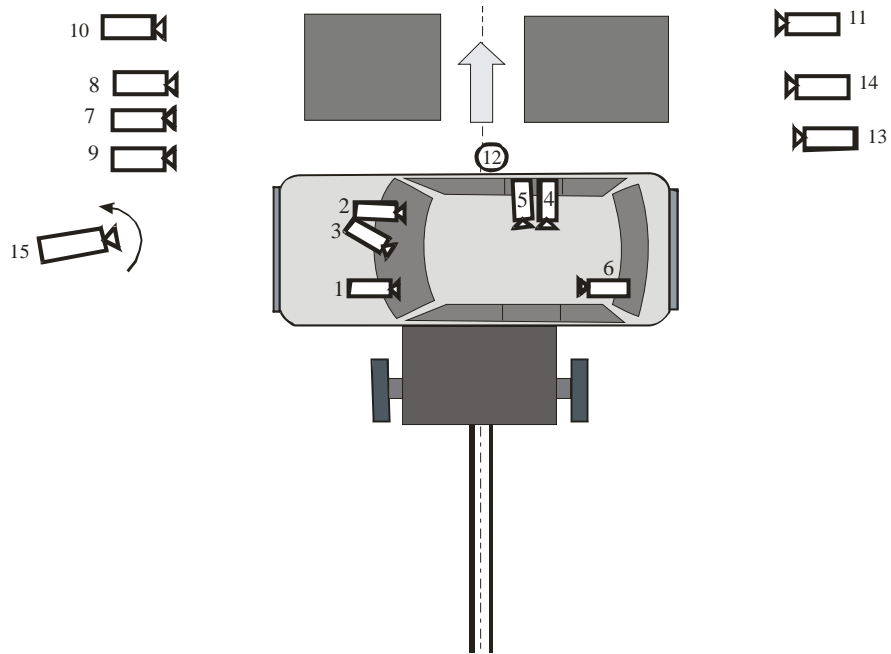
Reference: X: + Forward from rear bumper
 Y: + Rightward from vehicle centerline
 Z: + Downward from ground level

For acceleration data sign convention see Report Sign Convention in Appendix D.

DATA SHEET NO. 9
HIGH-SPEED CAMERA DATA

Test Vehicle: 2007 Ford Expedition
Test Program: Dynamic Rollover

Test Date: 10/22/09



No.	Camera View	Camera Type	Lens (mm)	Speed (fps)	Trigger Delay (ms)
1	Driver Overall - Onboard	VRTC - 1	6.5	500	0
2	Passenger Overall - Onboard	VRTC - 2	6.5	500	0
3	Driver Pelvis Area - Onboard	VRTC - 3	8	500	0
4	Rear Passenger Waste Up	Redlake - LE	6	500	0
5	Rear Passenger Overall	Redlake - LE	4.8	500	0
6	Rear Passenger Head	Redlake - LE	6	500	0
7	Vehicle Front Medium Tight 180-270 deg.	Visario G2	12.5	500	0
8	Vehicle Front Launch to 180 deg.	Visario G2	12.5	500	0
9	Vehicle Front Medium Wide at 270 deg.	Visario G2	12.5	500	0
10	Vehicle Rear Medium Wide at 270 deg.	Redlake - LE	12.5	500	500
11	Rear wide overall entire event	Redlake - LE	10	500	500
12	Overhead wide	Visario G1	12.5	500	0
13	Rear wide Launch to 180 deg. overall	Visario G1	12.5	500	0
14	Rear wide overall entire event	Visario G1	6.5	500	0
15	Real-time Panning	Canon	zoom	24	

DATA SHEET NO. 10

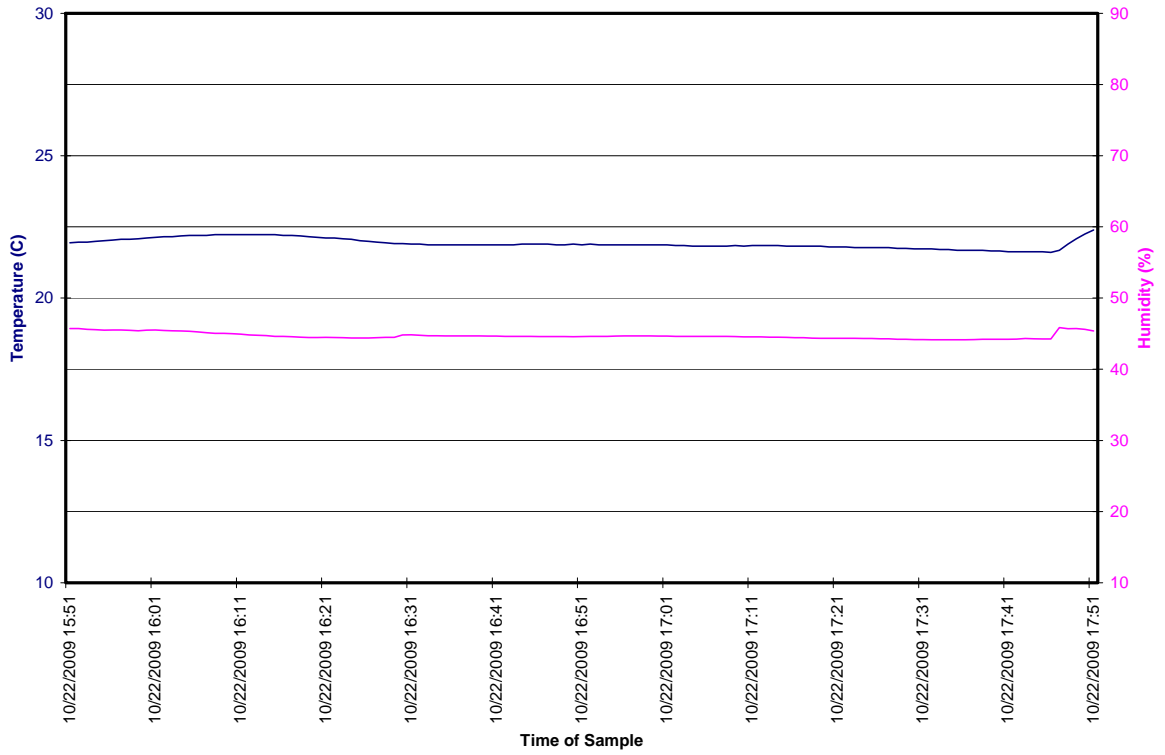
DUMMY / VEHICLE TEMPERATURE STABILIZATION DATA

Test Vehicle: 2007 Ford Expedition

Test Program: Dynamic Rollover

Test Date: 10/22/09

2007 Ford Expedition 208 Dynamic Rollover 091022; Test Time 17:50



APPENDIX A
PHOTOGRAPHS

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Note: The vehicle came to rest on its right side and was positioned upright to take the post-test vehicle photographs

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Figure A-1 Pre-Test Front View



Figure A-2 Post-Test Front View



Figure A-3 Pre-Test Left Front View



Figure A-4 Post-Test Left Front View



Figure A-5 Pre-Test Left Side View



Figure A-6 Post-Test Left Side View



Figure A-7 Pre-Test Left Rear View



Figure A-8 Post-Test Left Rear View



Figure A-9 Pre-Test Rear View



Figure A-10 Post-Test Rear View



Figure A-11 Pre-Test Right Rear View



Figure A-12 Post-Test Right Rear View



Figure A-13 Pre-Test Right Side View



Figure A-14 Post-Test Right Side View



Figure A-15 Pre-Test Right Front View



Figure A-16 Post-Test Right Front View



Figure A-17 Pre-Test Overhead View



Figure A-18 Post-Test Overhead View



Figure A-19 Pre-Test Overhead Close-up View

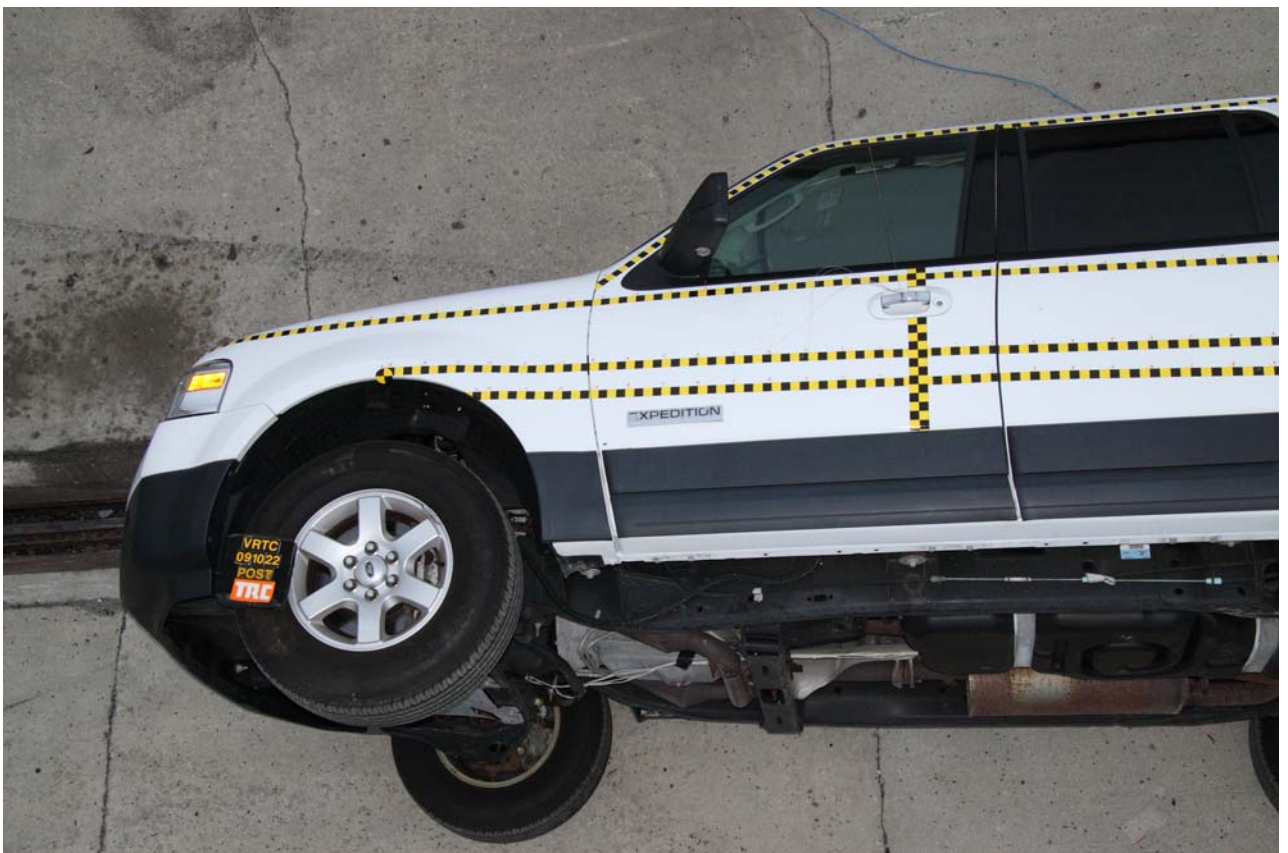


Figure A-20 Post-Test Overhead Close-up – View 1

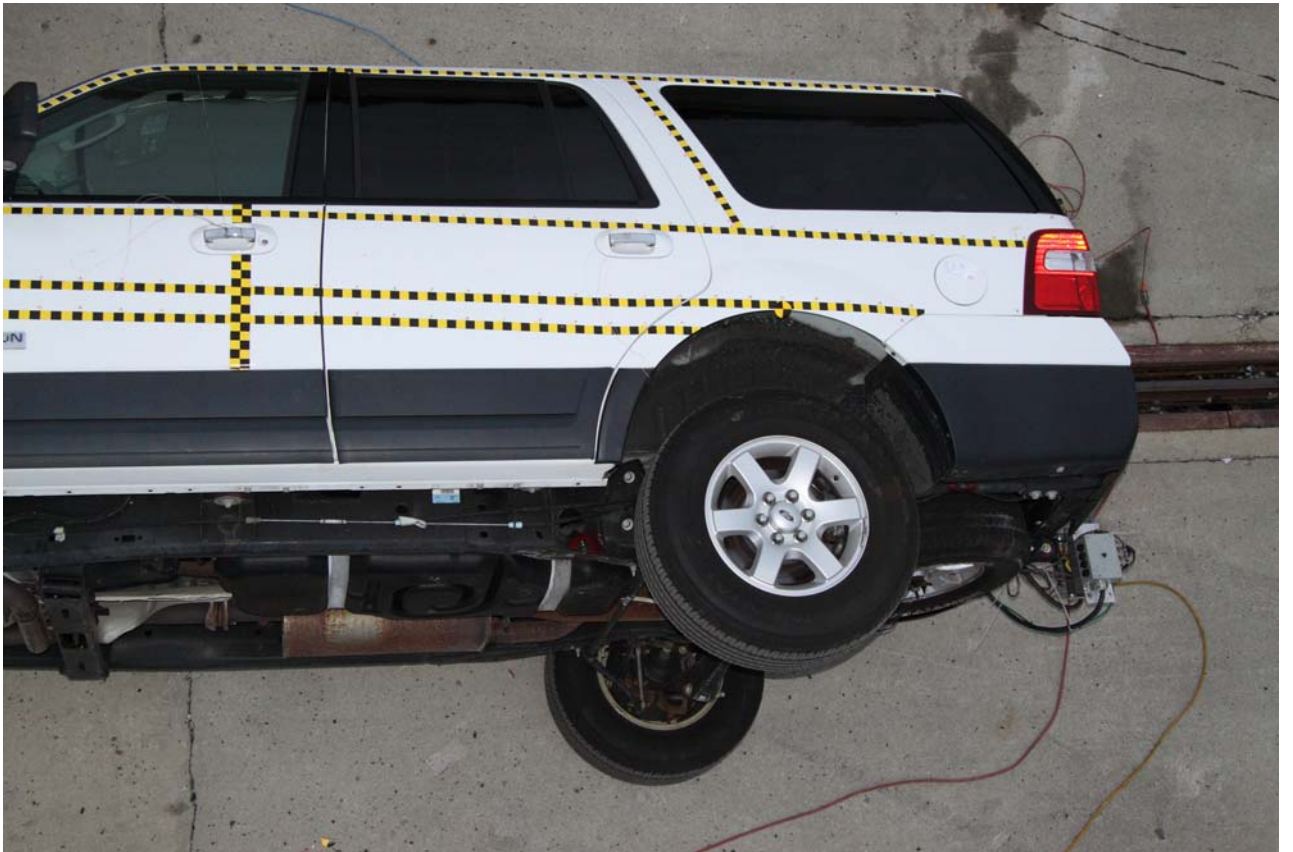


Figure A-21 Post-Test Overhead Close-up – View 2

Intentionally Left Blank



Figure A-22 Pre-Test Front Underbody View



Figure A-23 Post-Test Front Underbody View



Figure A-24 Pre-Test Rear Underbody View



Figure A-25 Post-Test Rear Underbody View



Figure A-26 Pre-Test Windshield View



Figure A-27 Post-Test Windshield View



Figure A-28 Pre-Test Windshield View - Driver Dummy



Figure A-29 Post-Test Windshield View - Driver Dummy



Figure A-30 Pre-Test Driver Dummy - View 1



Figure A-31 Post-Test Driver Dummy - View 1

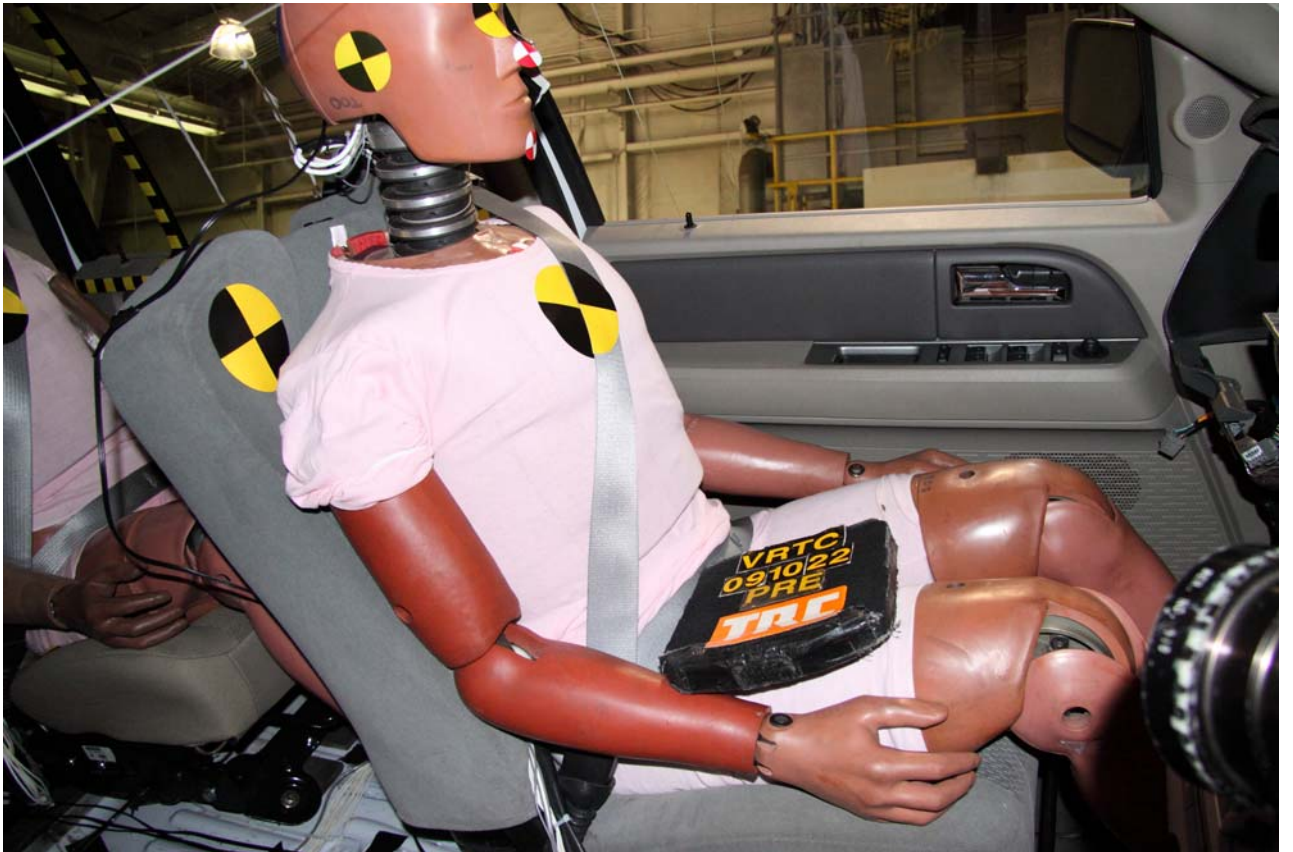


Figure A-32 Pre-Test Driver Dummy - View 2



Figure A-33 Post-Test Driver Dummy - View 3

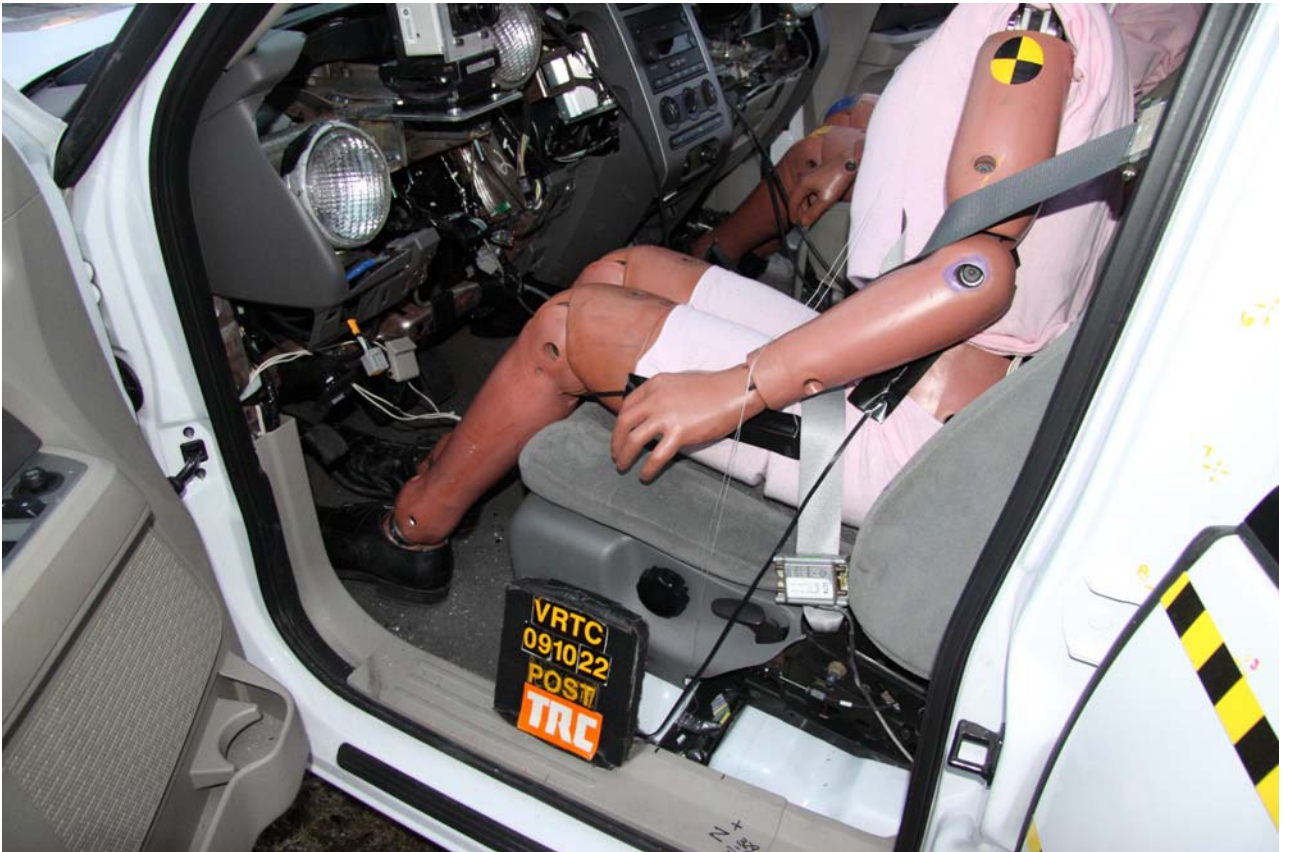


Figure A-34 Post-Test Driver Dummy - View 4

Intentionally Left Blank



Figure A-35 Pre-Test Windshield View – Right Front Passenger



Figure A-36 Post-Test Windshield View – Right Front Passenger



Figure A-37 Post-Test Right Front Passenger Dummy - View 1

Intentionally Left Blank



Figure A-38 Pre-Test Right Front Passenger Dummy - View 2



Figure A-39 Post-Test Right Front Passenger Dummy - View 2



Figure A-40 Pre-Test Right Front Passenger Dummy - View 3



Figure A-41 Post-Test Right Front Passenger Dummy - View 3



Figure A-42 Pre-Test Left Rear Passenger Dummy - View 1



Figure A-43 Post-Test Left Rear Passenger Dummy - View 1



Figure A-44 Pre-Test Left Rear Passenger Dummy - View 2



Figure A-45 Post-Test Left Rear Passenger Dummy - View 2

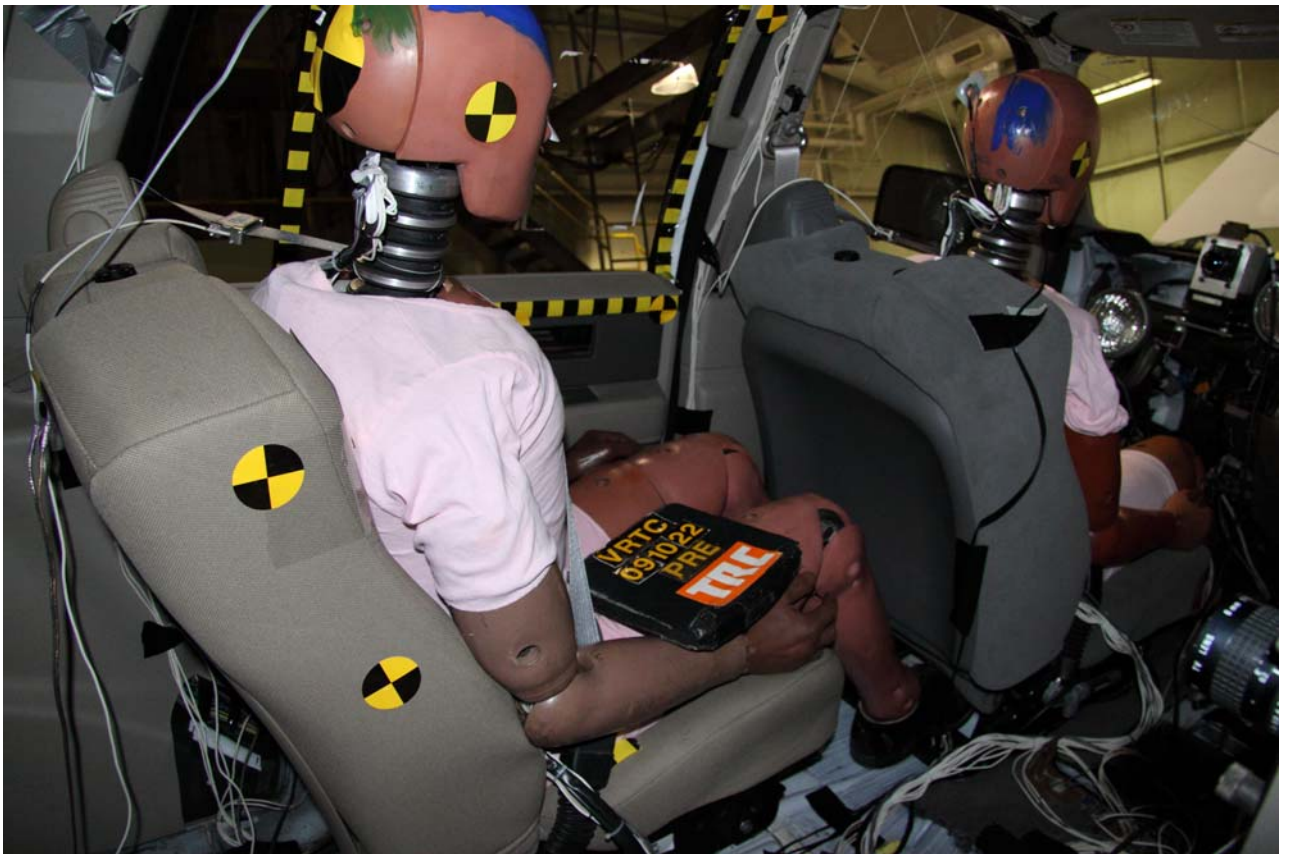


Figure A-46 Post-Test Left Rear Passenger Dummy - View 3

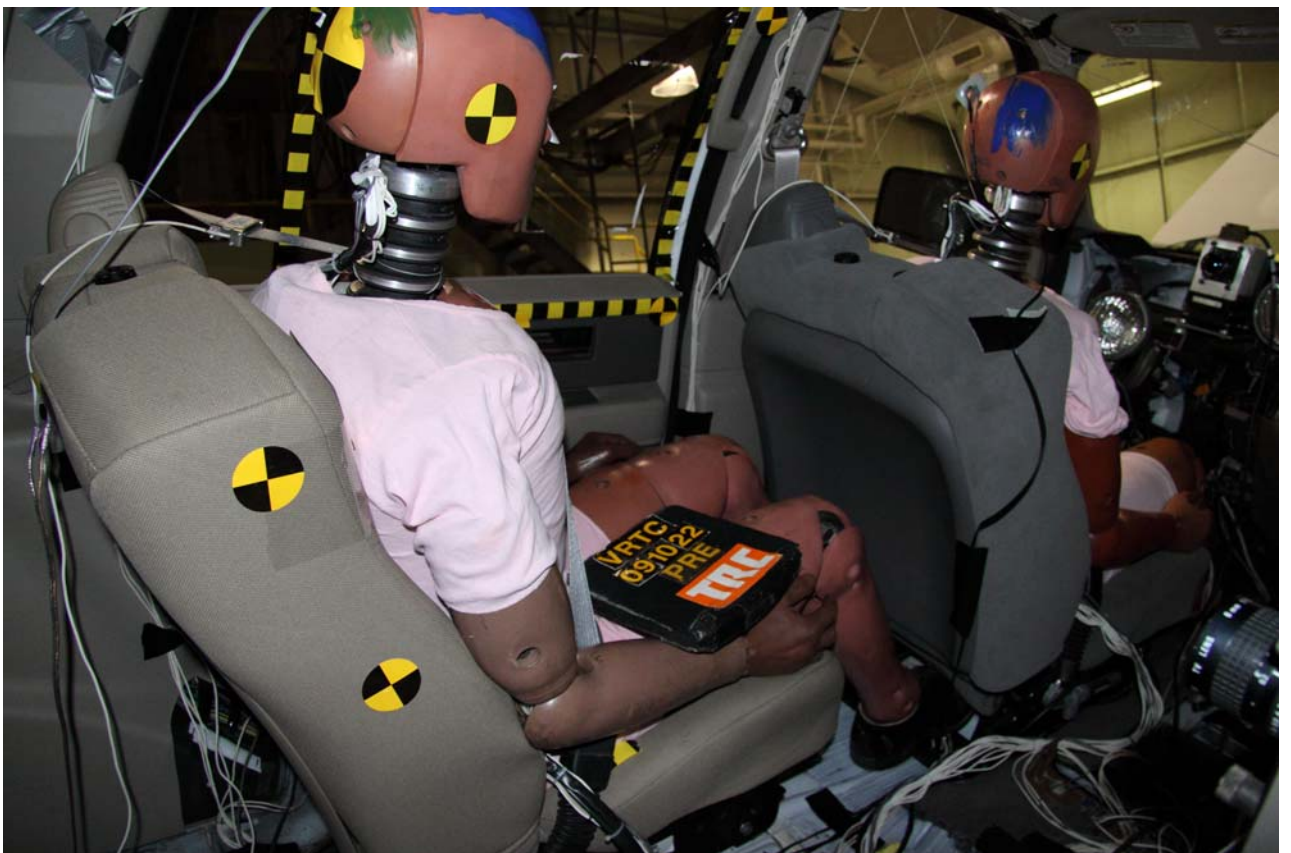


Figure A-47 Post-Test Left Rear Passenger Dummy - View 4



Figure A-48 Post-Test Driver Dummy Overall



Figure A-49 Post-Test Driver Dummy Contact View



Figure A-50 Post-Test Right Front Passenger Dummy Overall



Figure A-51 Post-Test Right Front Passenger Dummy Head Contact View



Figure A-52 Post-Test Right Front Passenger Dummy Knee Contact View



Figure A-53 Post-Test Right Front Passenger Dummy Arm Contact View



Figure A-54 Post-Test Left Rear Passenger Dummy Overall

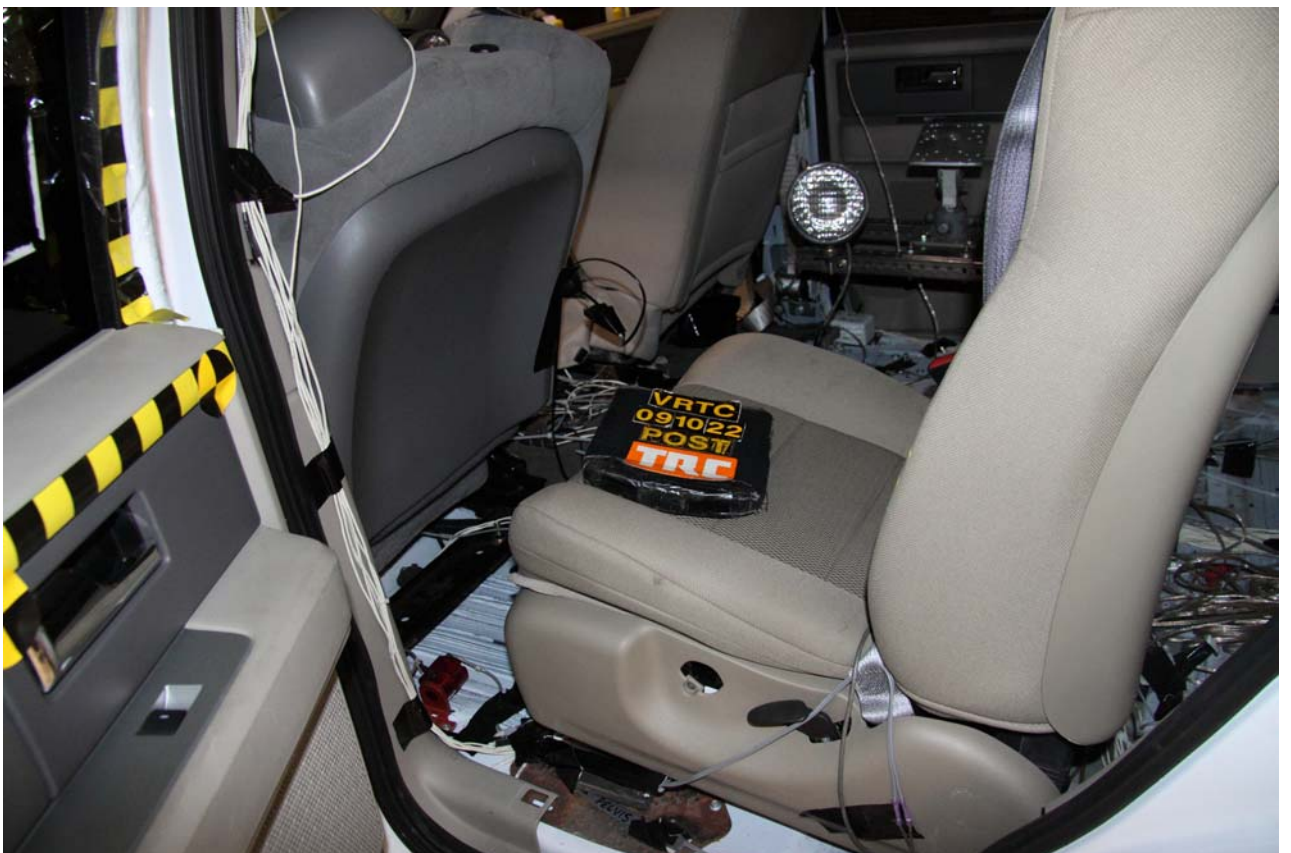


Figure A-55 Post-Test Left Rear Passenger Dummy Contact View



Figure A-56 Pre-Test Driver Buckle Status View



Figure A-57 Post-Test Driver Buckle Status View



Figure A-58 Pre-Test Right Front Passenger Buckle Status View



Figure A-59 Post-Test Right Front Passenger Buckle Status View



Figure A-60 Pre-Test Left Rear Passenger Buckle Status View



Figure A-61 Post-Test Left Rear Passenger Buckle Status View

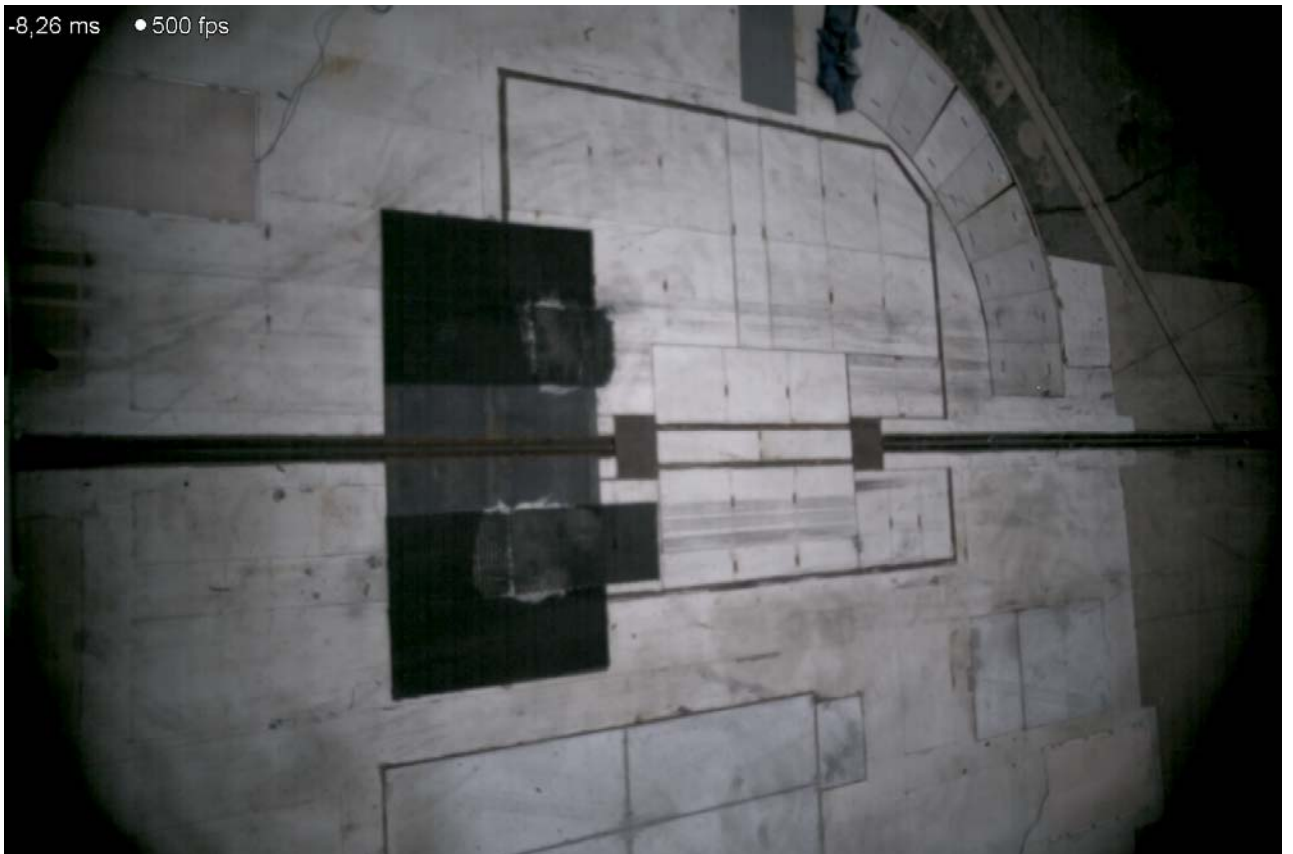


Figure A-62 Pre-Test Rollover Mats Placement View

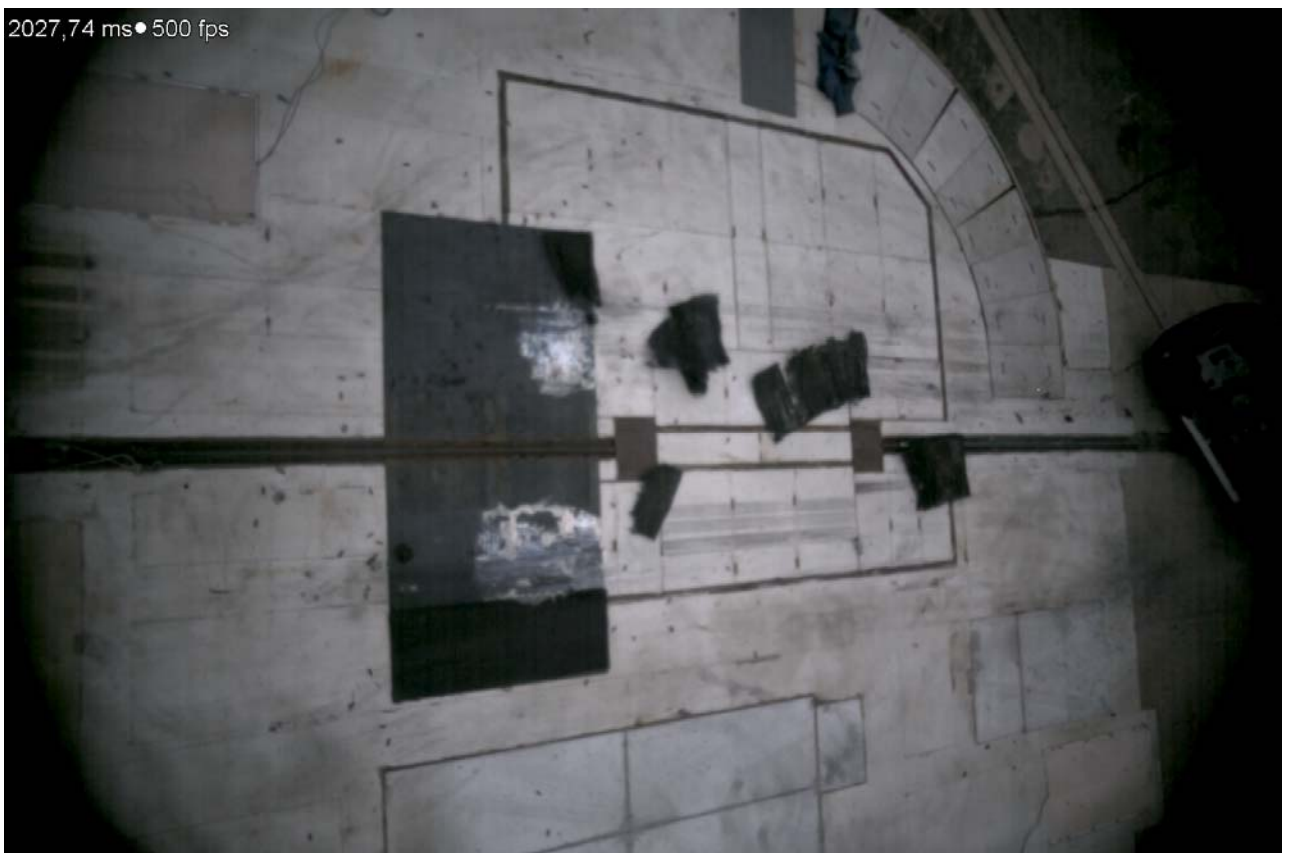


Figure A-63 Post-Test Rollover Mats Displacement View



Figure A-64 Post-Test Mat Displacement – View 1



Figure A-65 Post-Test Mat Displacement – View 2



Figure A-66 Post-Test Mat Displacement – View 3



Figure A-67 Post-Test Mat Displacement – View 4



Figure A-68 Post-Test Mat Displacement – View 5



Figure A-69 Post-Test Mat Displacement – View 6



Figure A-70 Post-Test Mat Displacement – View 7

Intentionally Left Blank

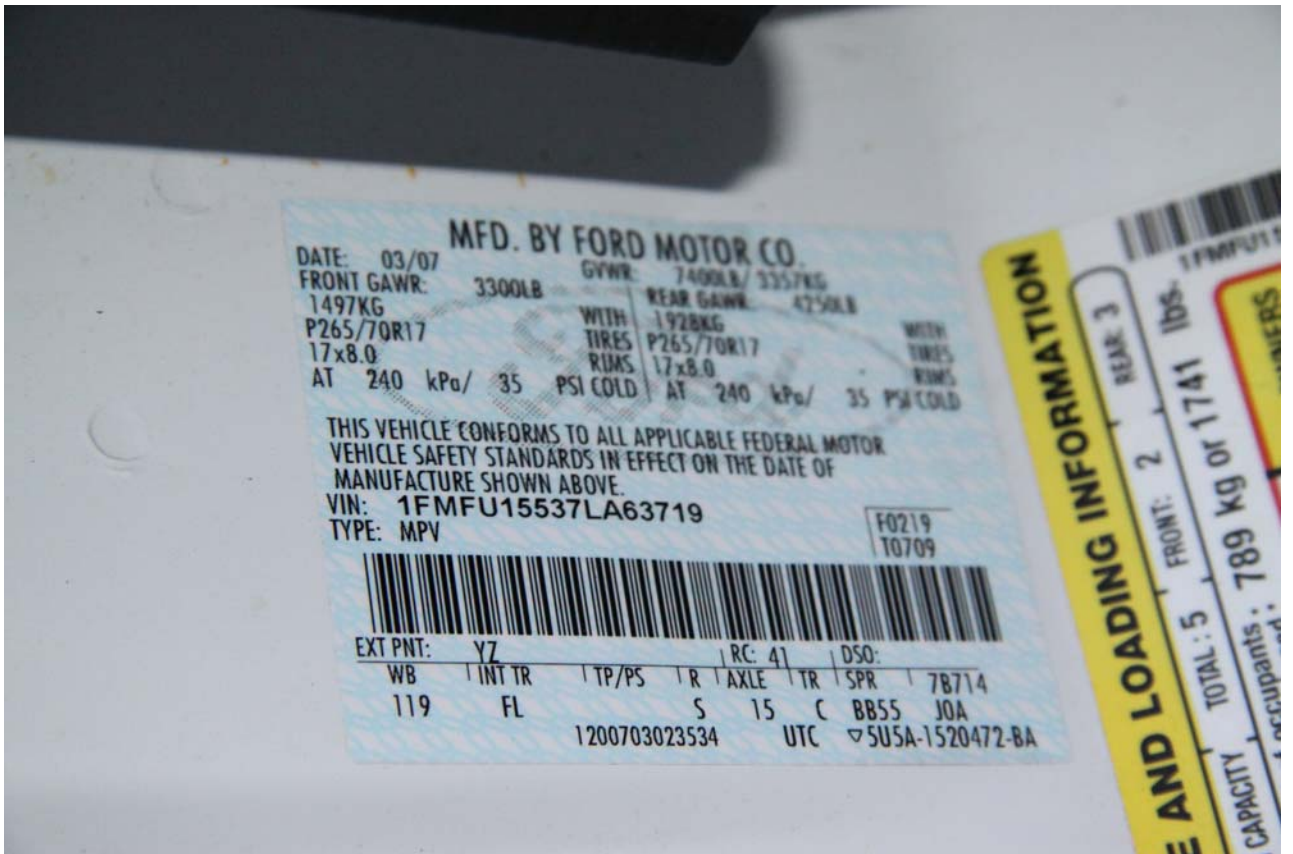


Figure A-71 Vehicle Certification Label View

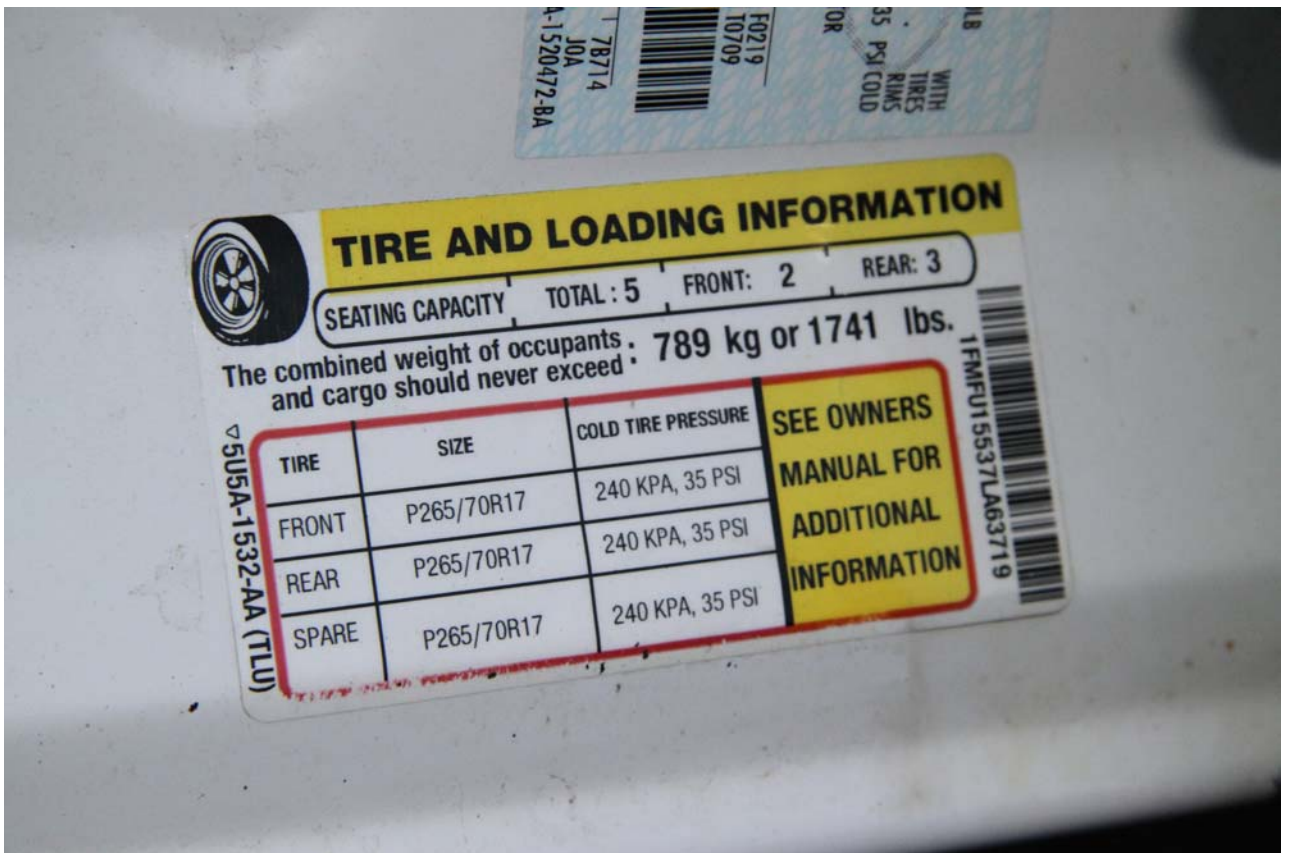


Figure A-72 Vehicle Tire Pressure Label View



Figure A-73 Pre-Test Right Front Tire on Cart View



Figure A-74 Pre-Test Right Rear Tire on Cart View



Figure A-75 Pre-Test Left Front Tire on Cart View



Figure A-76 Pre-Test Left Rear Tire on Cart View



Figure A-77 Pre-Test Ballast View



Figure A-78 Pre-Test Rollover Cart View

APPENDIX B
DATA PLOTS



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Driver Head X-Axis Acceleration

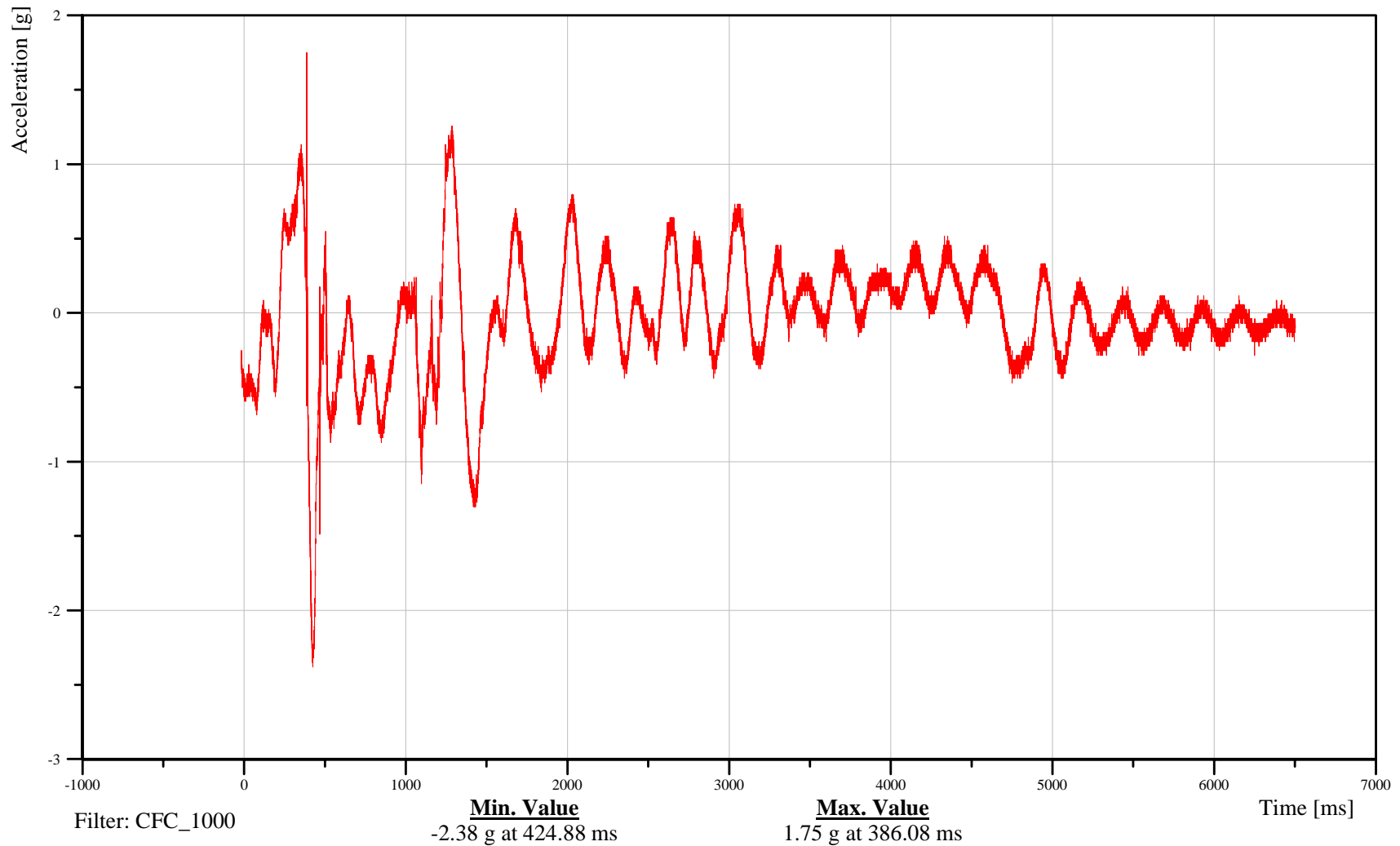
Time: 19:31

Customer: VRTC

11HEADCG00H3ACXA

TRC Inc. Test Lab: CTF

Test Number: 091022



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091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Driver Head Y-Axis Acceleration

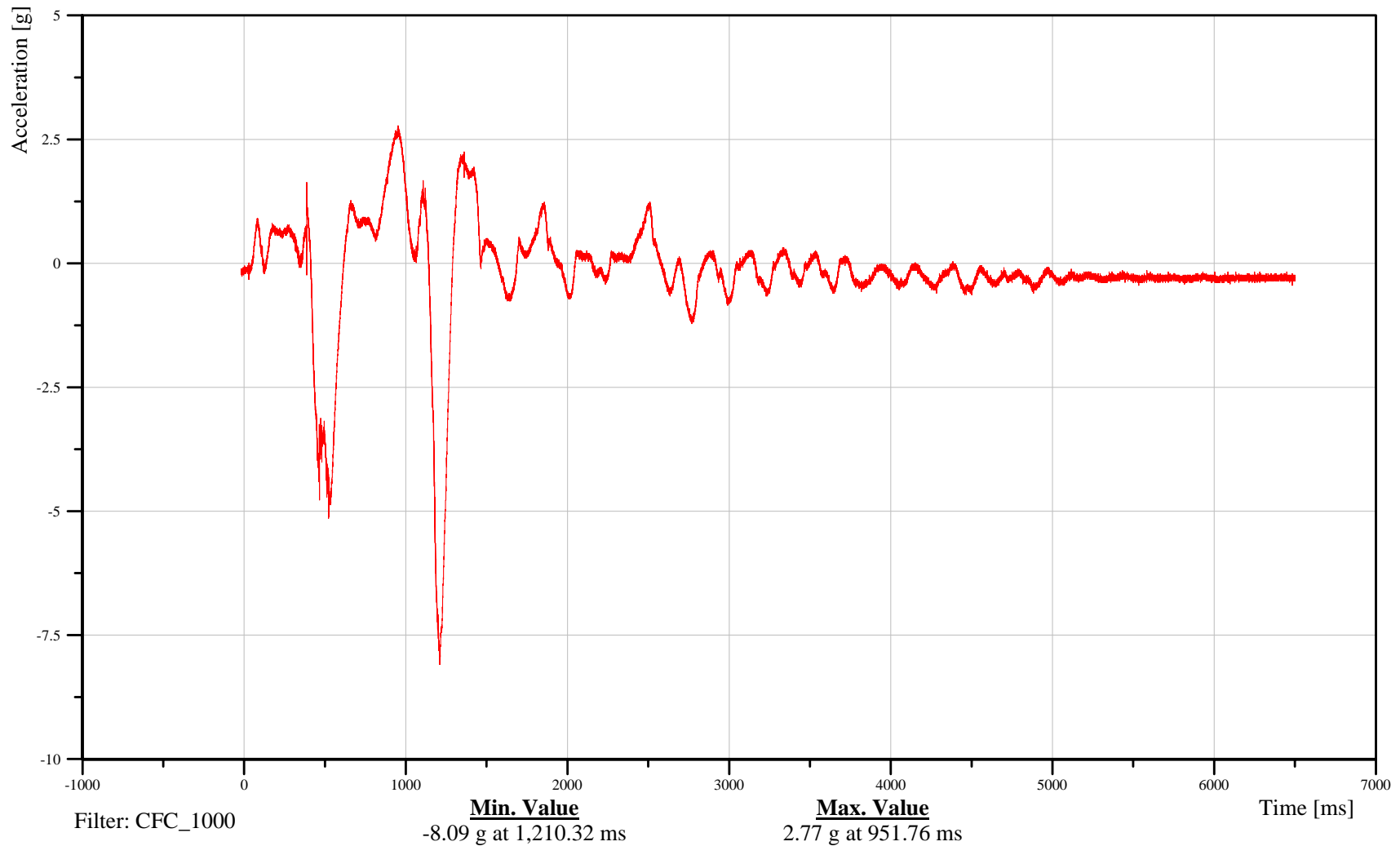
Time: 19:31

Customer: VRTC

11HEADCG00H3ACYA

TRC Inc. Test Lab: CTF

Test Number: 091022



B-3

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Driver Head Z-Axis Acceleration

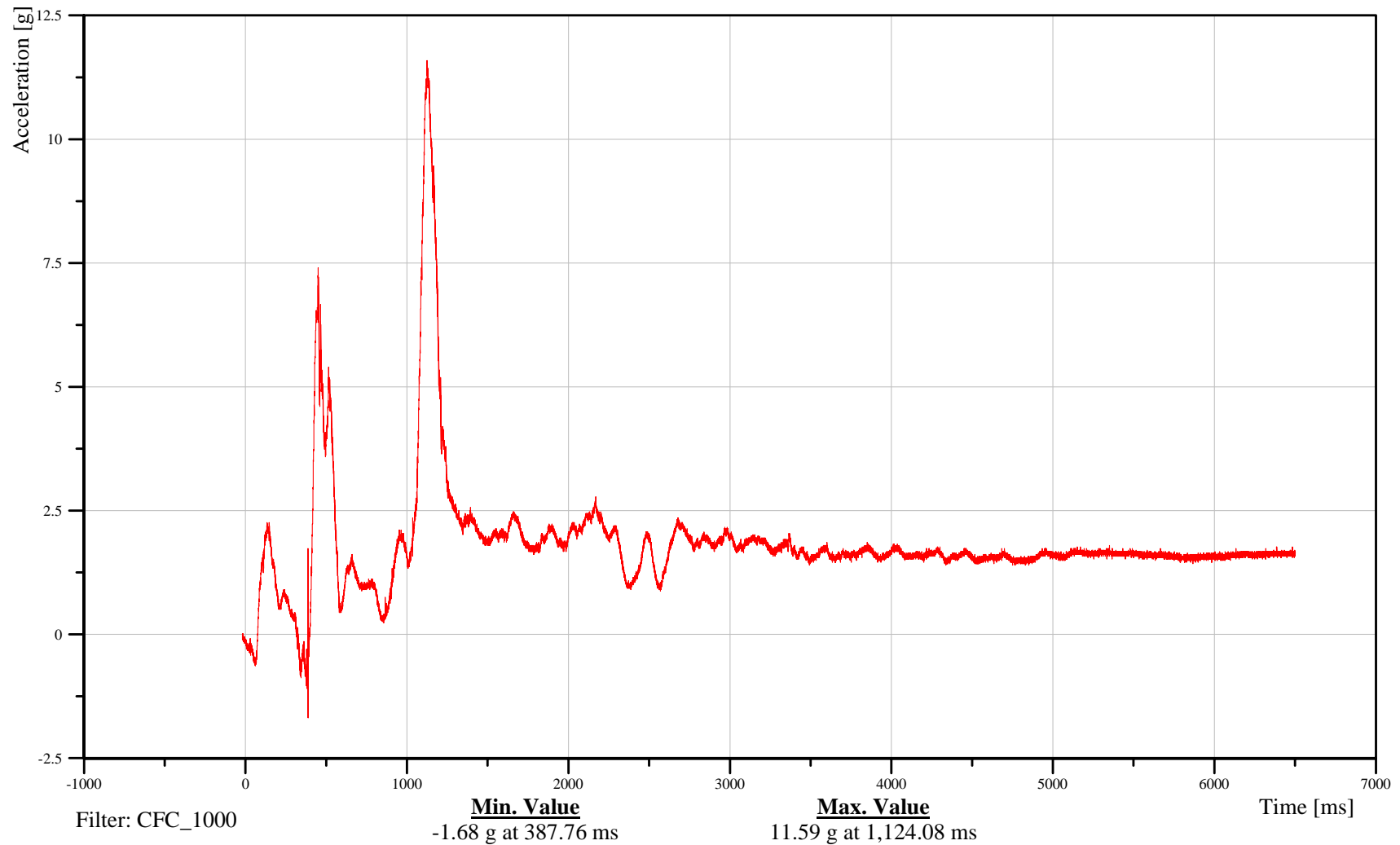
Time: 19:31

Customer: VRTC

11HEADCG00H3ACZA

TRC Inc. Test Lab: CTF

Test Number: 091022



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091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009
Time: 19:31

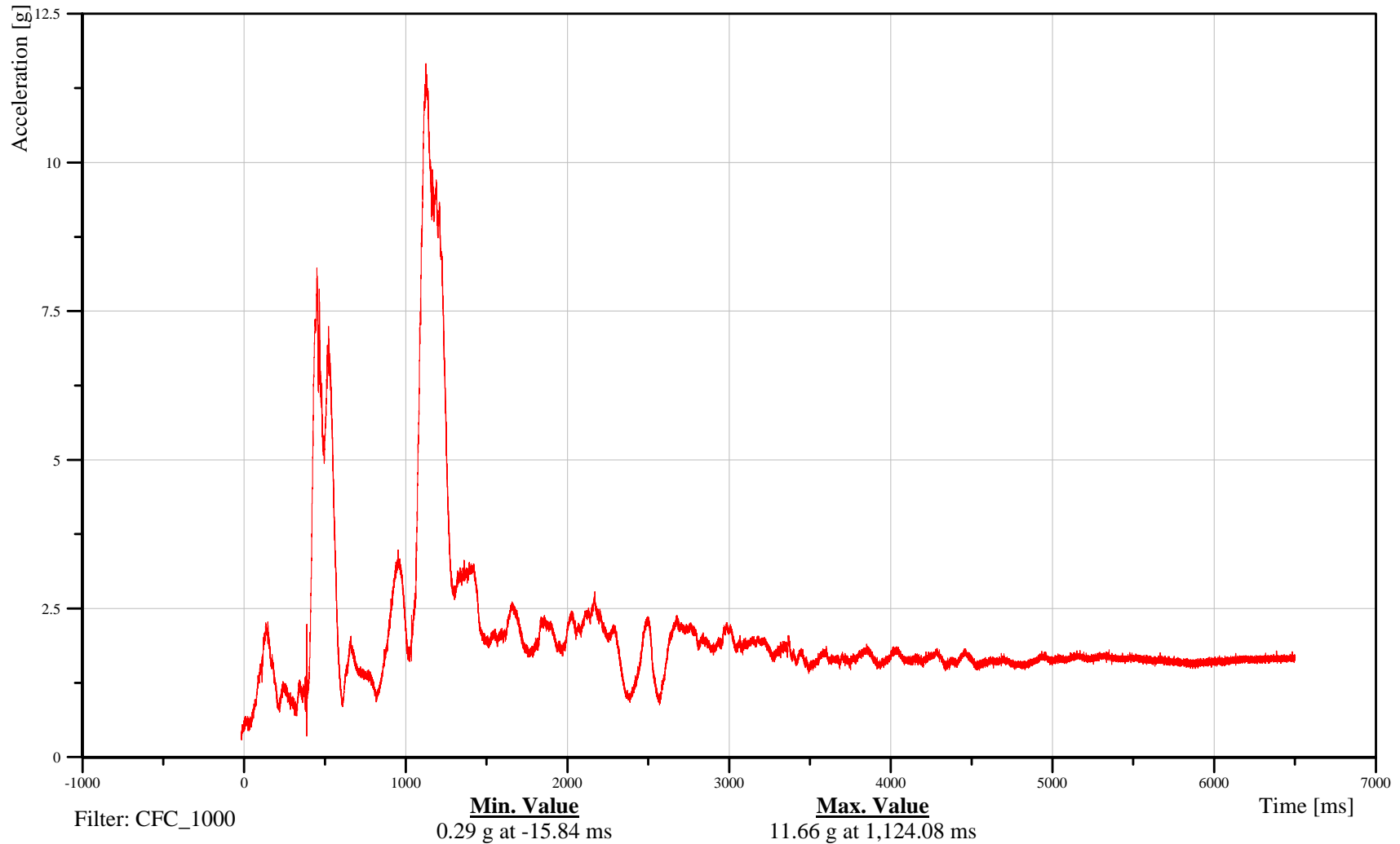
Driver Head Resultant Acceleration

Customer: VRTC

11HEADCG00H3ACRA

TRC Inc. Test Lab: CTF

Test Number: 091022



B-5

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Driver Head (DTS ARS) Rate Gyro X

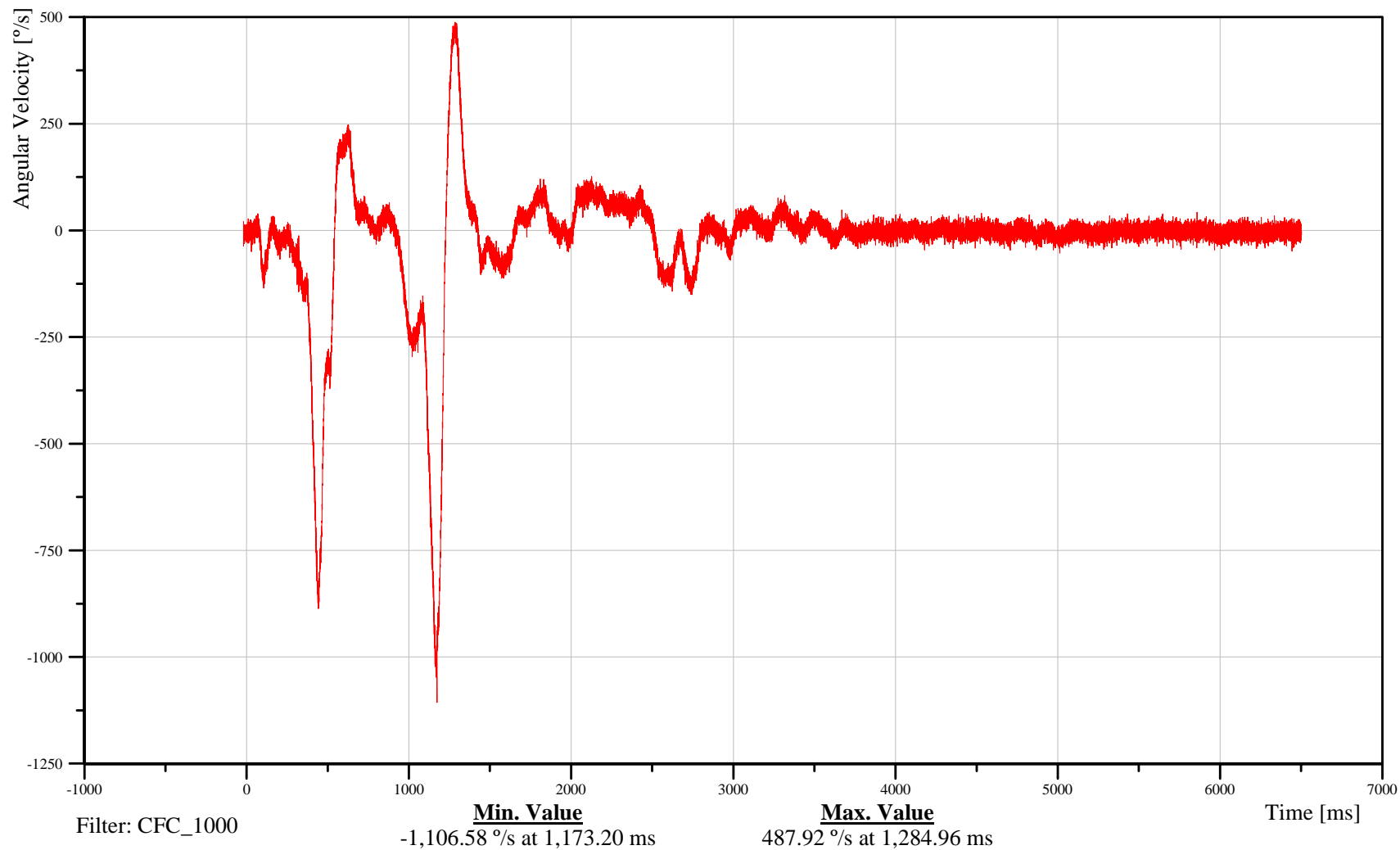
Time: 19:31

Customer: VRTC

11HEADCG00H3AVXA

TRC Inc. Test Lab: CTF

Test Number: 091022



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091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Driver Head (DTS ARS) Rate Gyro Y

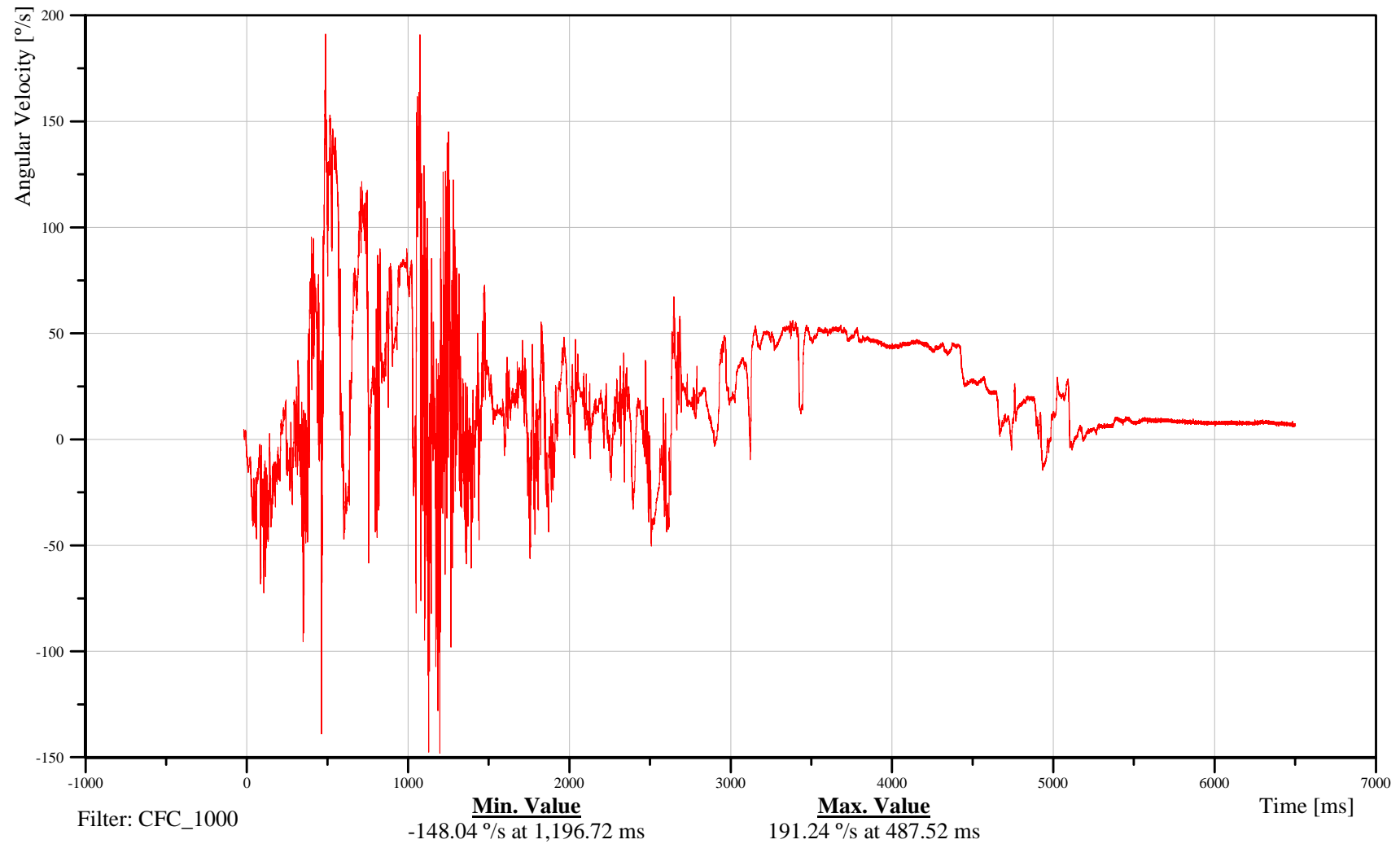
Time: 19:31

Customer: VRTC

11HEADCG00H3AVYA

TRC Inc. Test Lab: CTF

Test Number: 091022



B-7

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

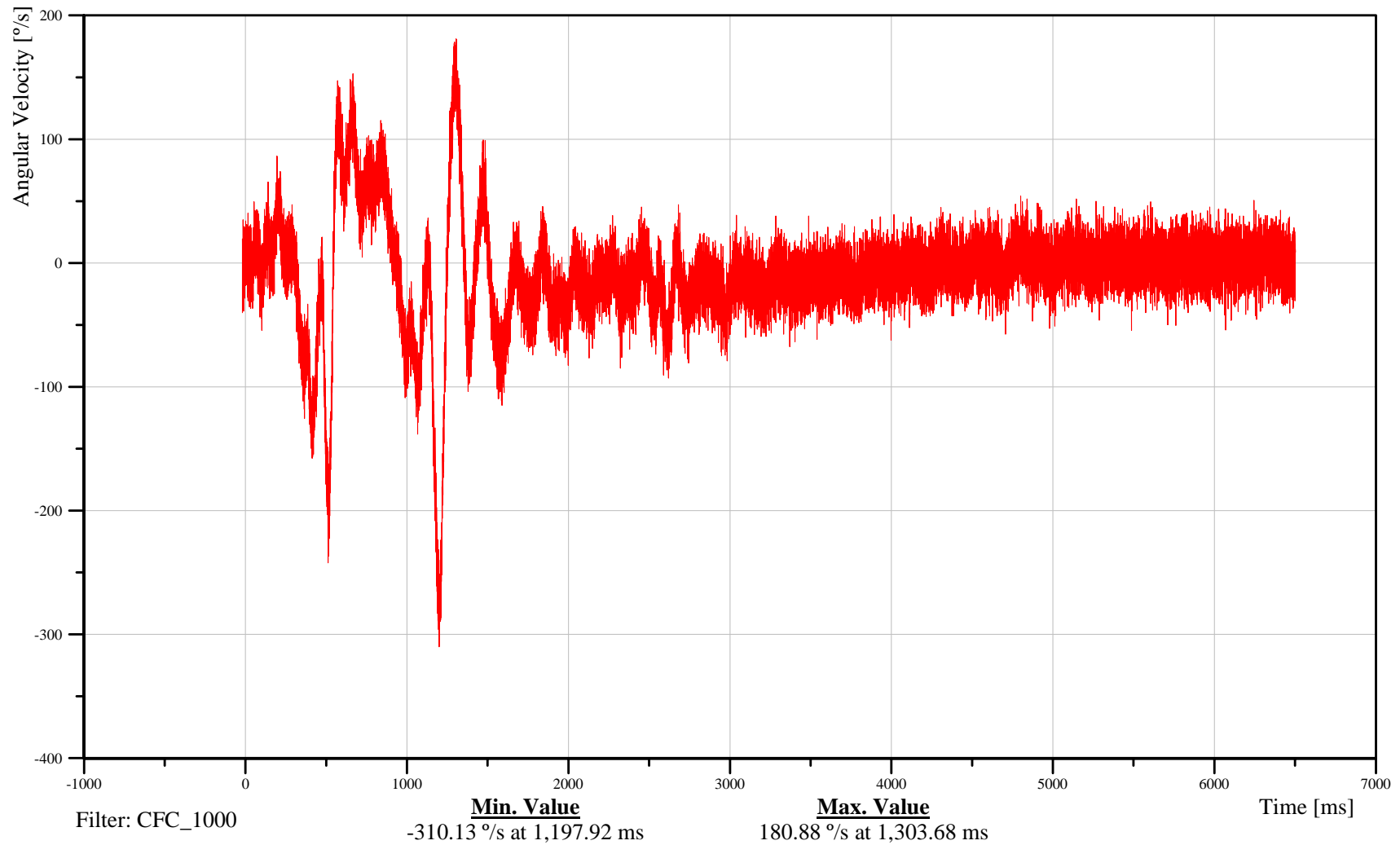
Driver Head (DTS ARS) Rate Gyro Z

Customer: VRTC

11HEADCG00H3AVZA

TRC Inc. Test Lab: CTF

Test Number: 091022



B-8

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

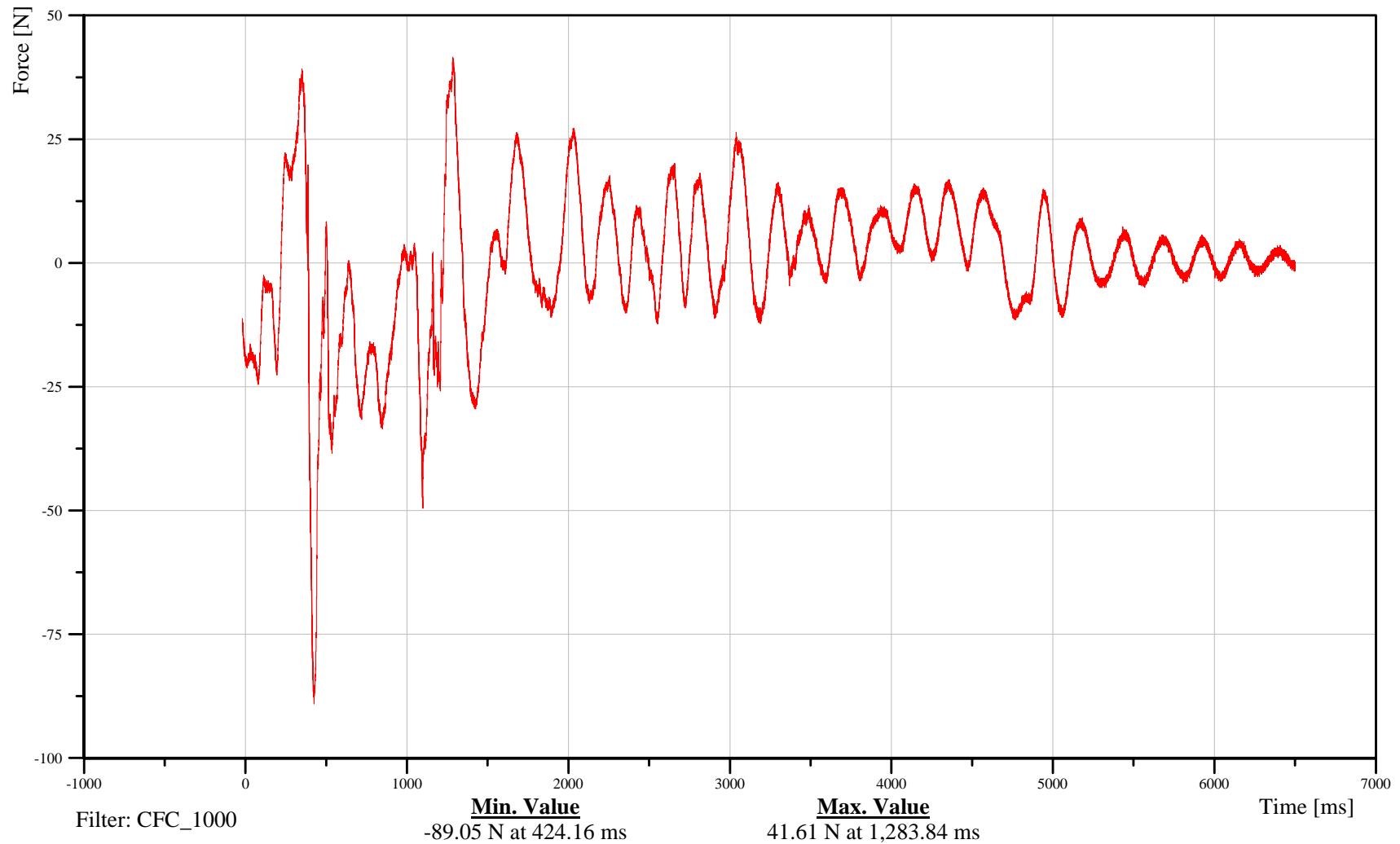
Driver Upper Neck X-Axis Force

Customer: VRTC

11NECKUP00H3FOXA

TRC Inc. Test Lab: CTF

Test Number: 091022



B-9

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009
Time: 19:31

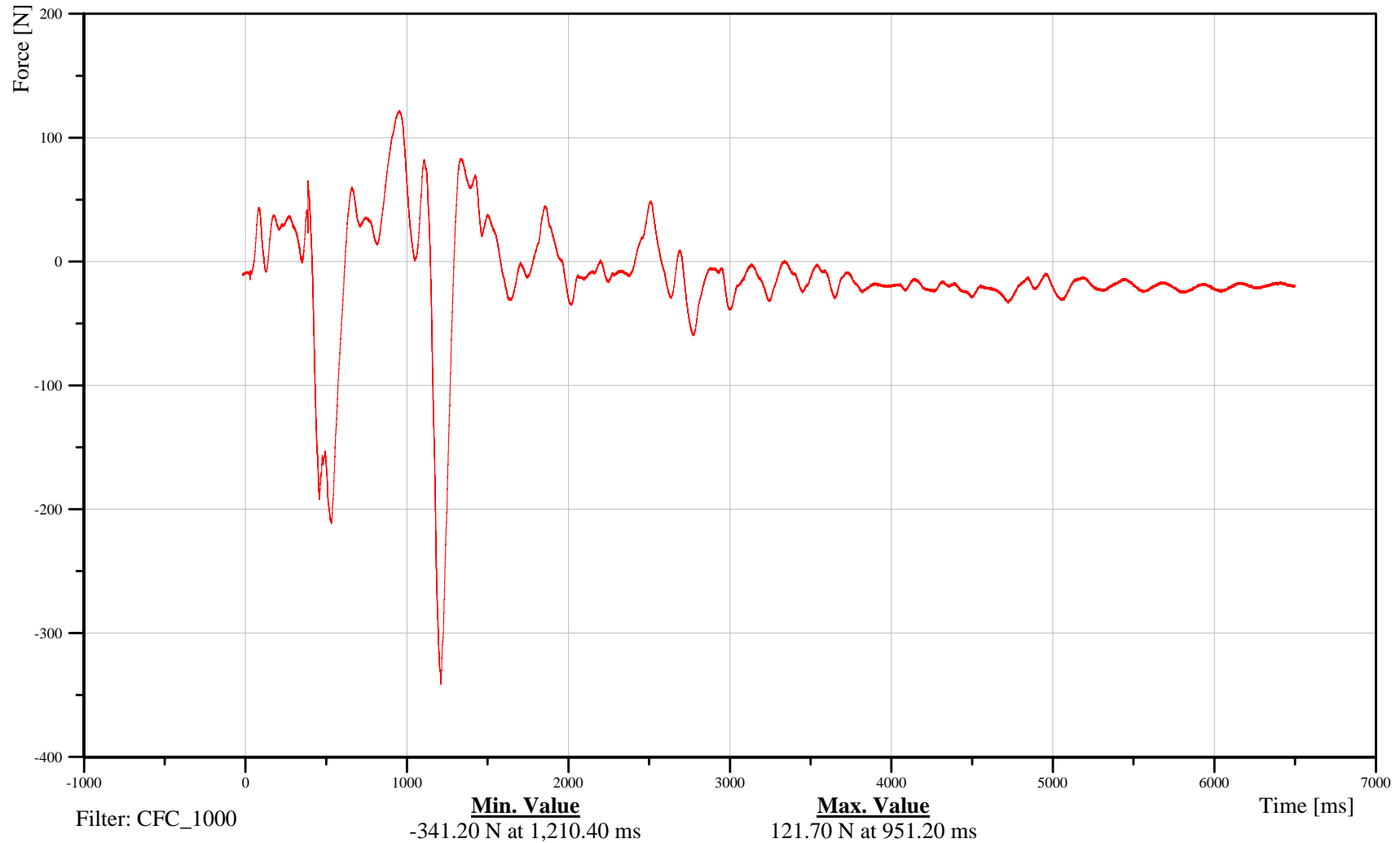
Driver Upper Neck Y-Axis Force

Customer: VRTC

11NECKUP00H3FOYA

TRC Inc. Test Lab: CTF

Test Number: 091022



B-10

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

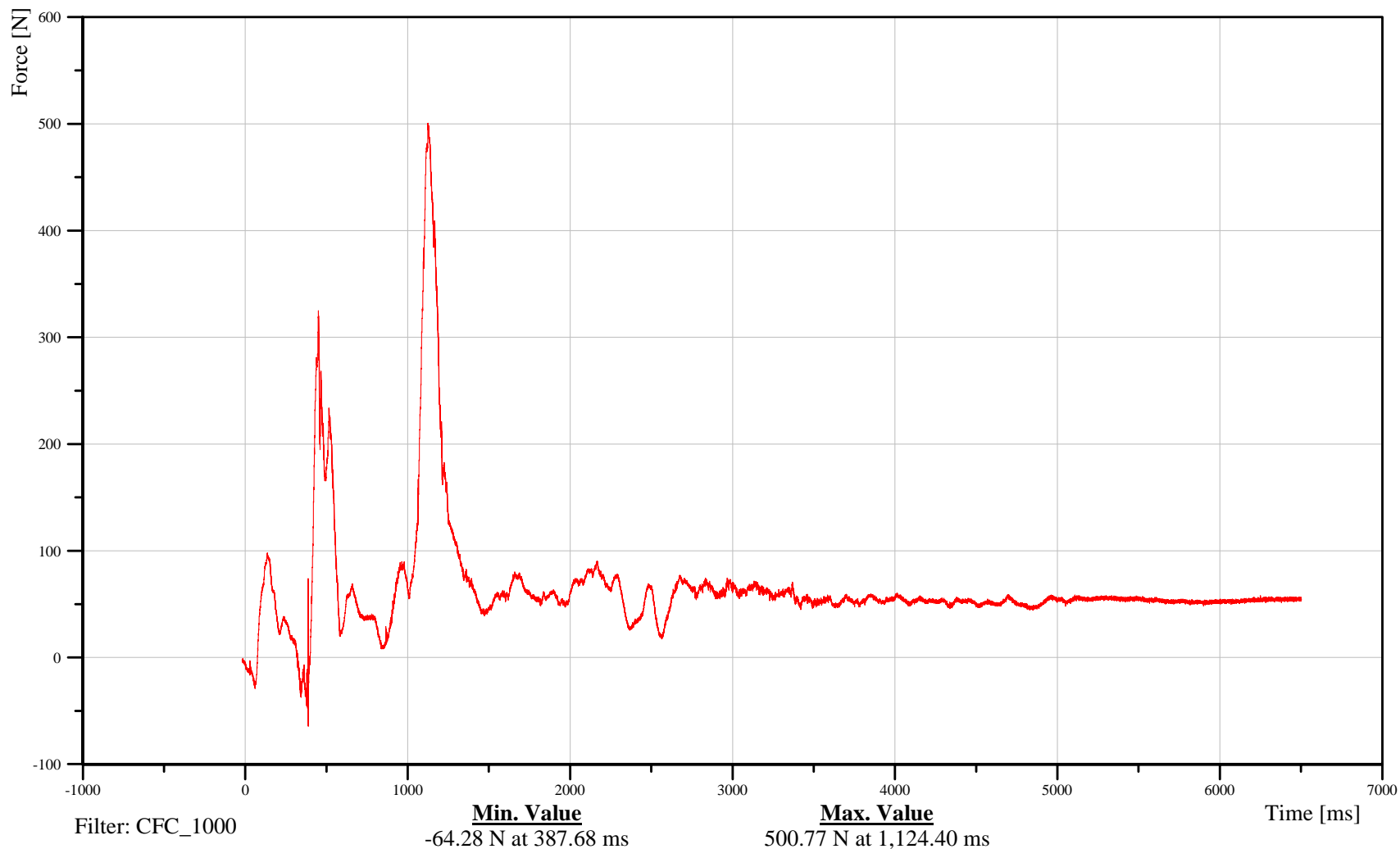
Driver Upper Neck Z-Axis Force

Customer: VRTC

11NECKUP00H3FOZA

TRC Inc. Test Lab: CTF

Test Number: 091022



B-11

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009
Time: 19:31

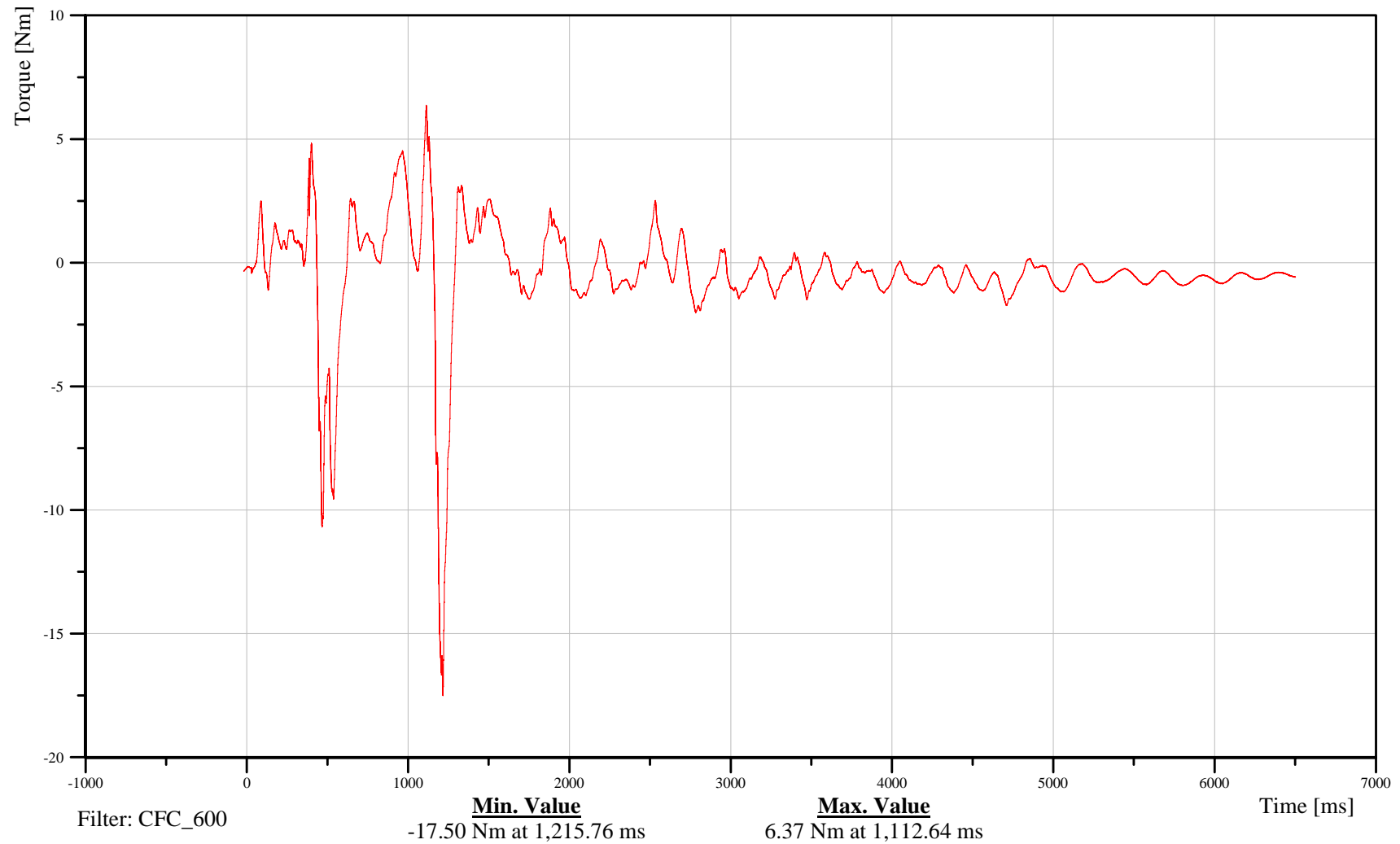
Driver Upper Neck Moment About X Axis

Customer: VRTC

11NECKUP00H3MOXB

TRC Inc. Test Lab: CTF

Test Number: 091022



B-12

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

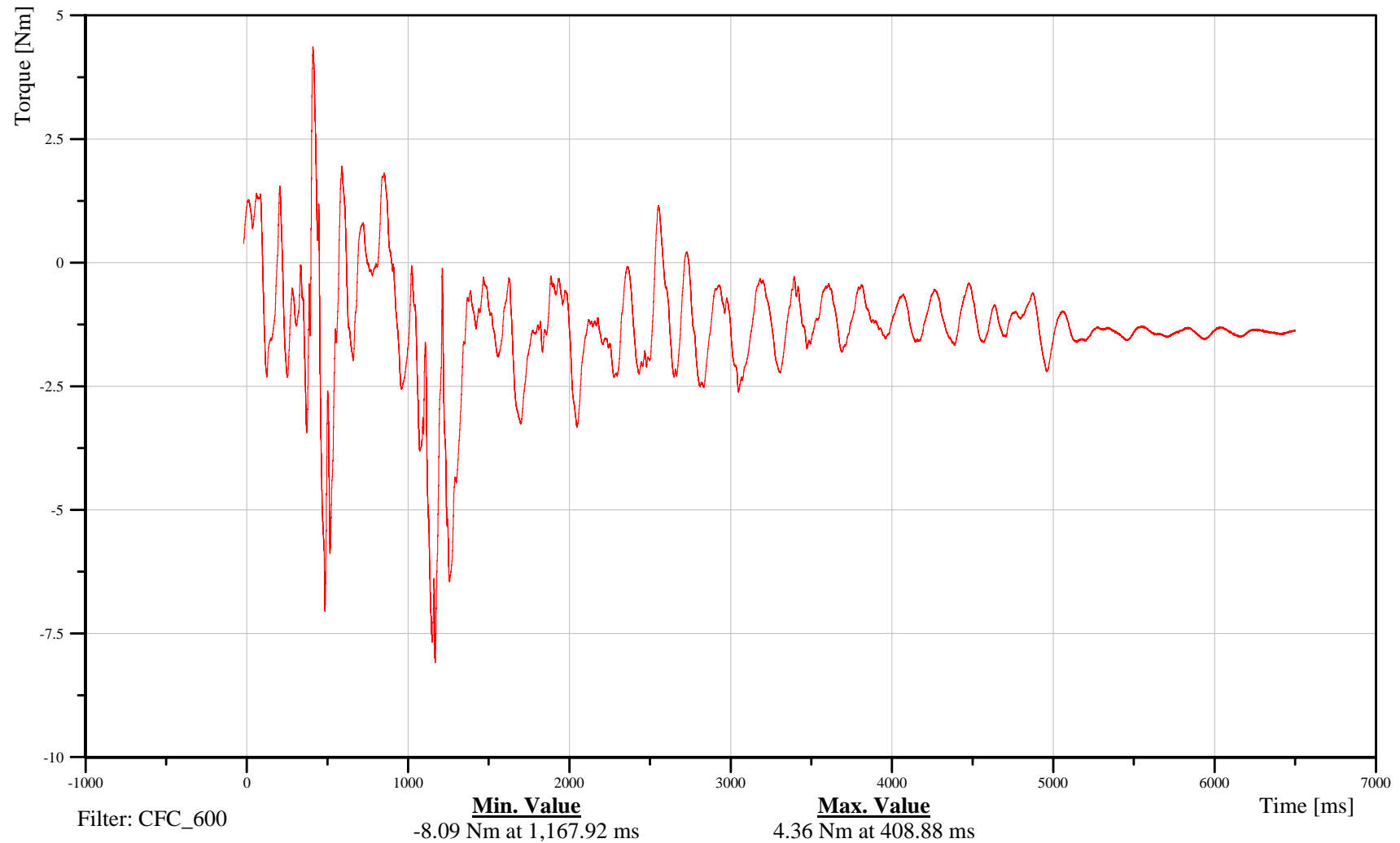
Driver Upper Neck Moment About Y Axis

Customer: VRTC

11NECKUP00H3MOYB

TRC Inc. Test Lab: CTF

Test Number: 091022



B-13

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Driver Upper Neck Moment About Z Axis

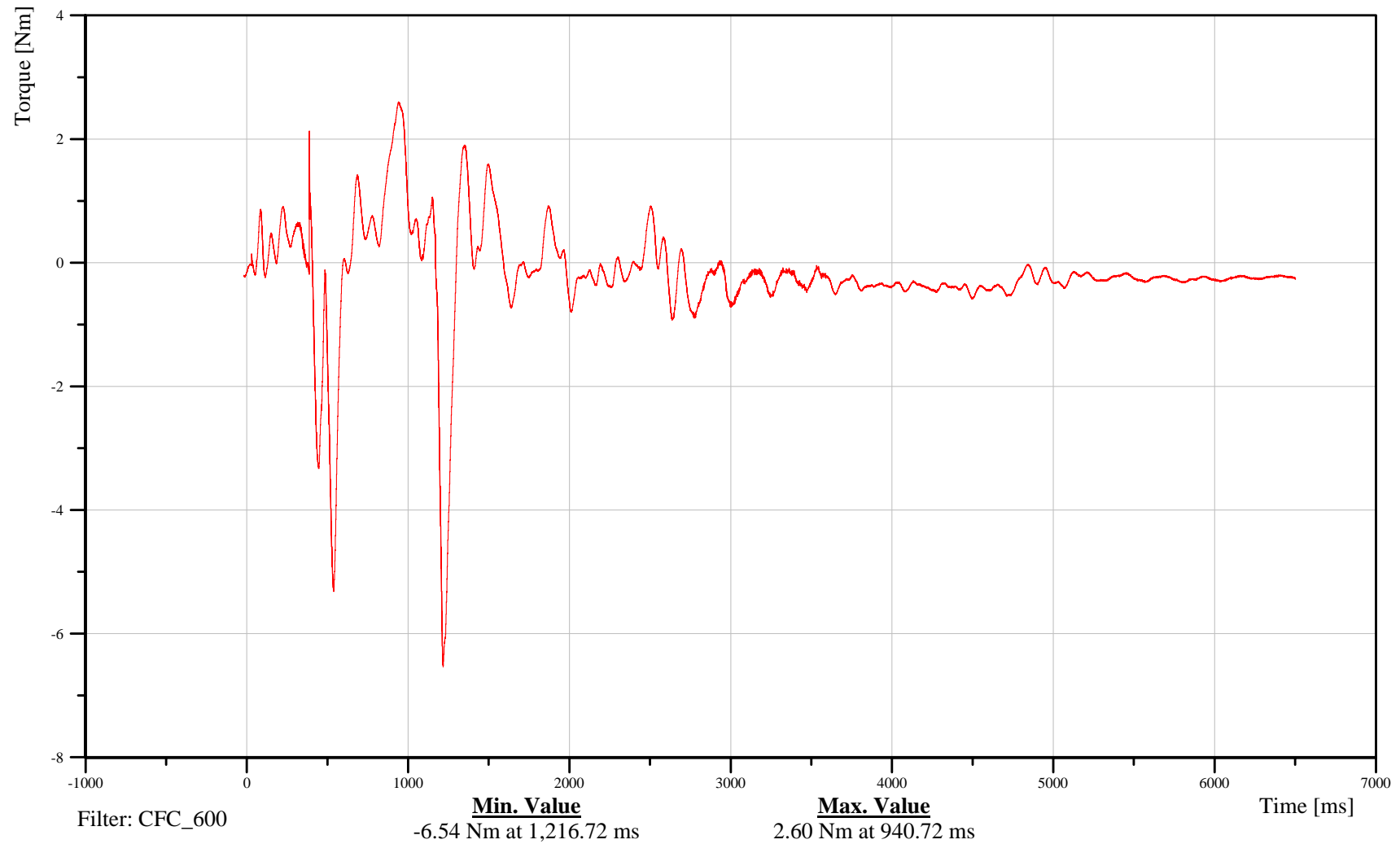
Time: 19:31

Customer: VRTC

11NECKUP00H3MOZB

TRC Inc. Test Lab: CTF

Test Number: 091022



B-14

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Driver Chest X-Axis Acceleration

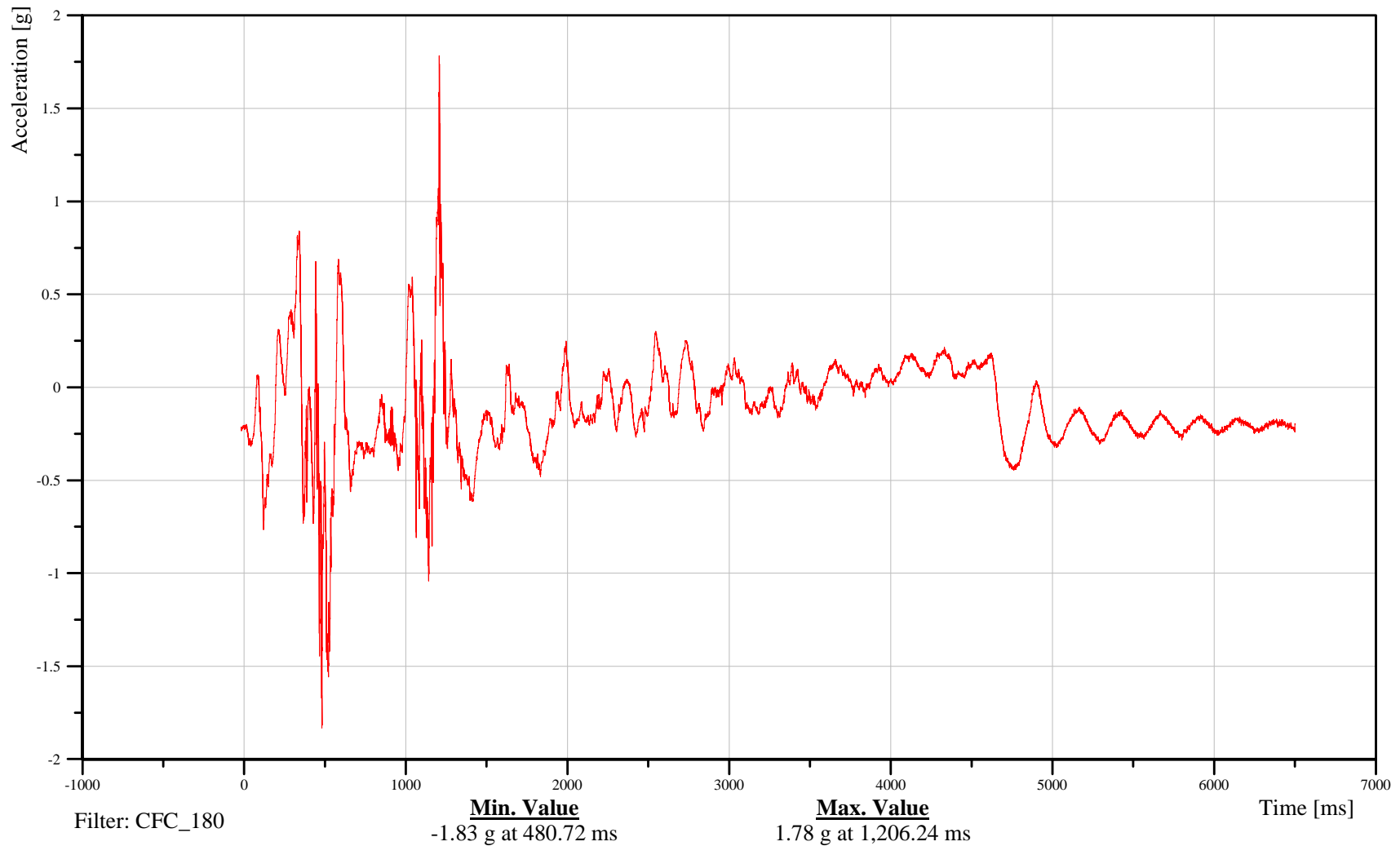
Time: 19:31

Customer: VRTC

11CHSTCG00H3ACXC

TRC Inc. Test Lab: CTF

Test Number: 091022



B-15

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

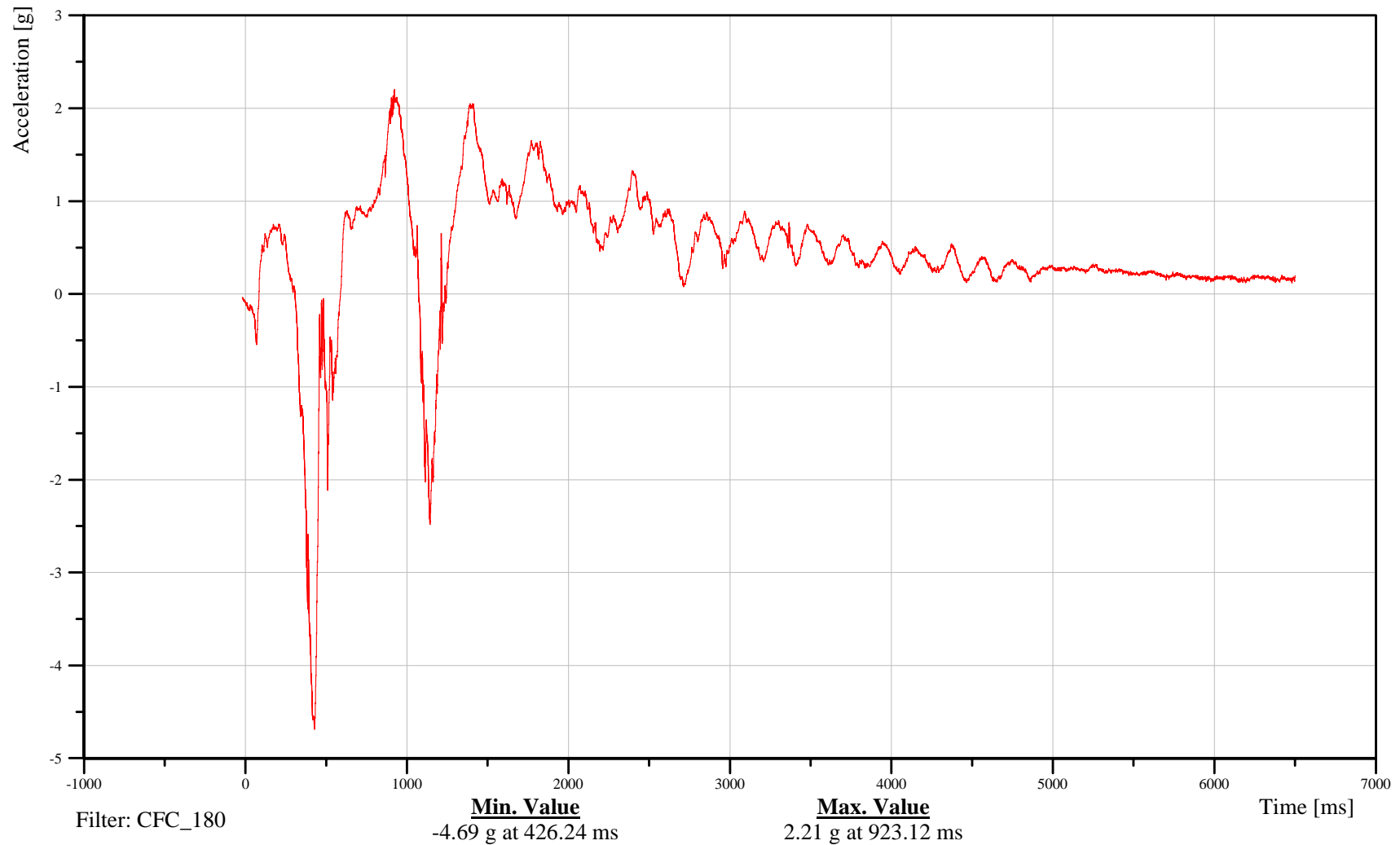
Driver Chest Y-Axis Acceleration

Customer: VRTC

11CHSTCG00H3ACYC

TRC Inc. Test Lab: CTF

Test Number: 091022



B-16

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009
Time: 19:31

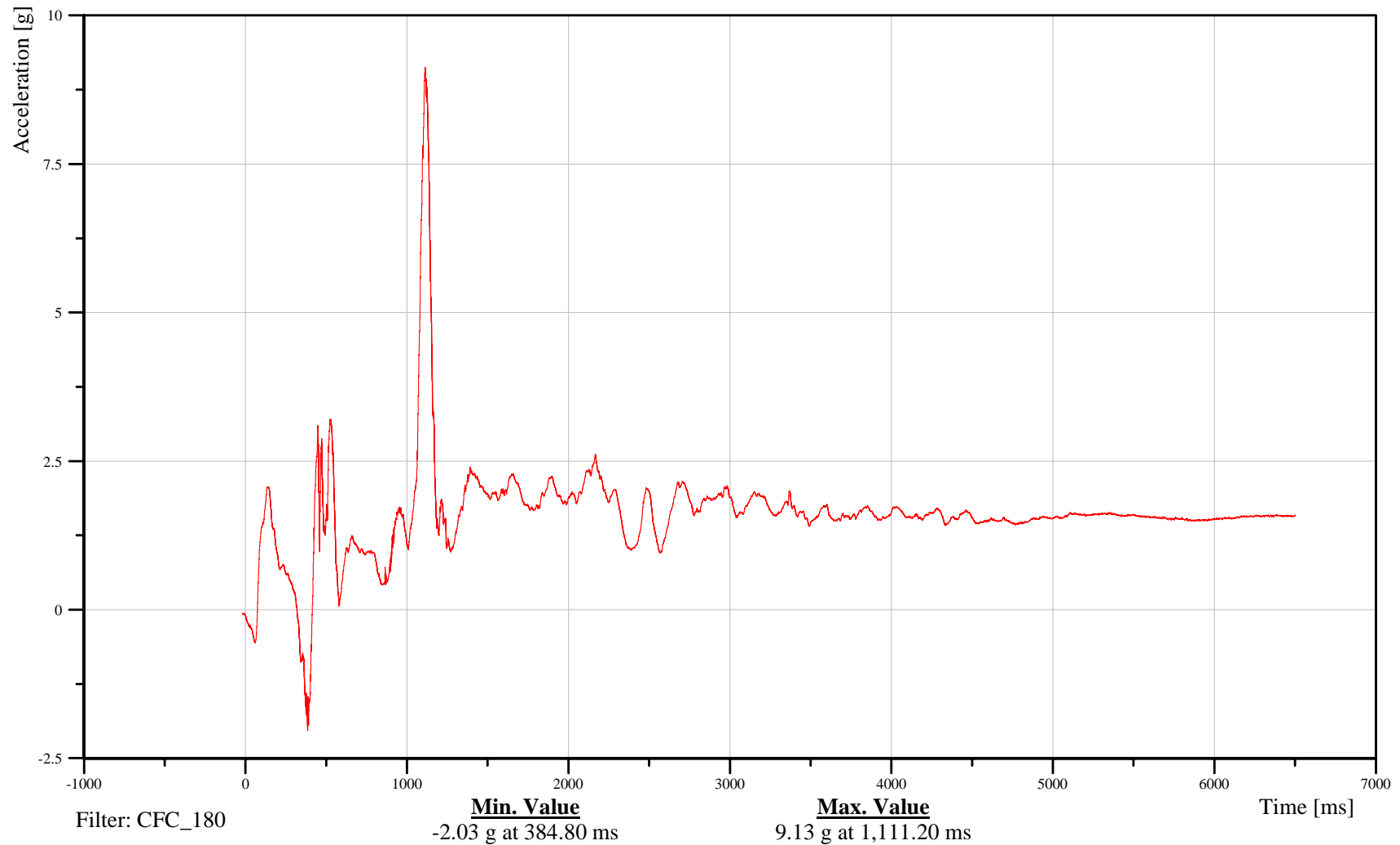
Driver Chest Z-Axis Acceleration

Customer: VRTC

11CHSTCG00H3ACZC

TRC Inc. Test Lab: CTF

Test Number: 091022



B-17

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

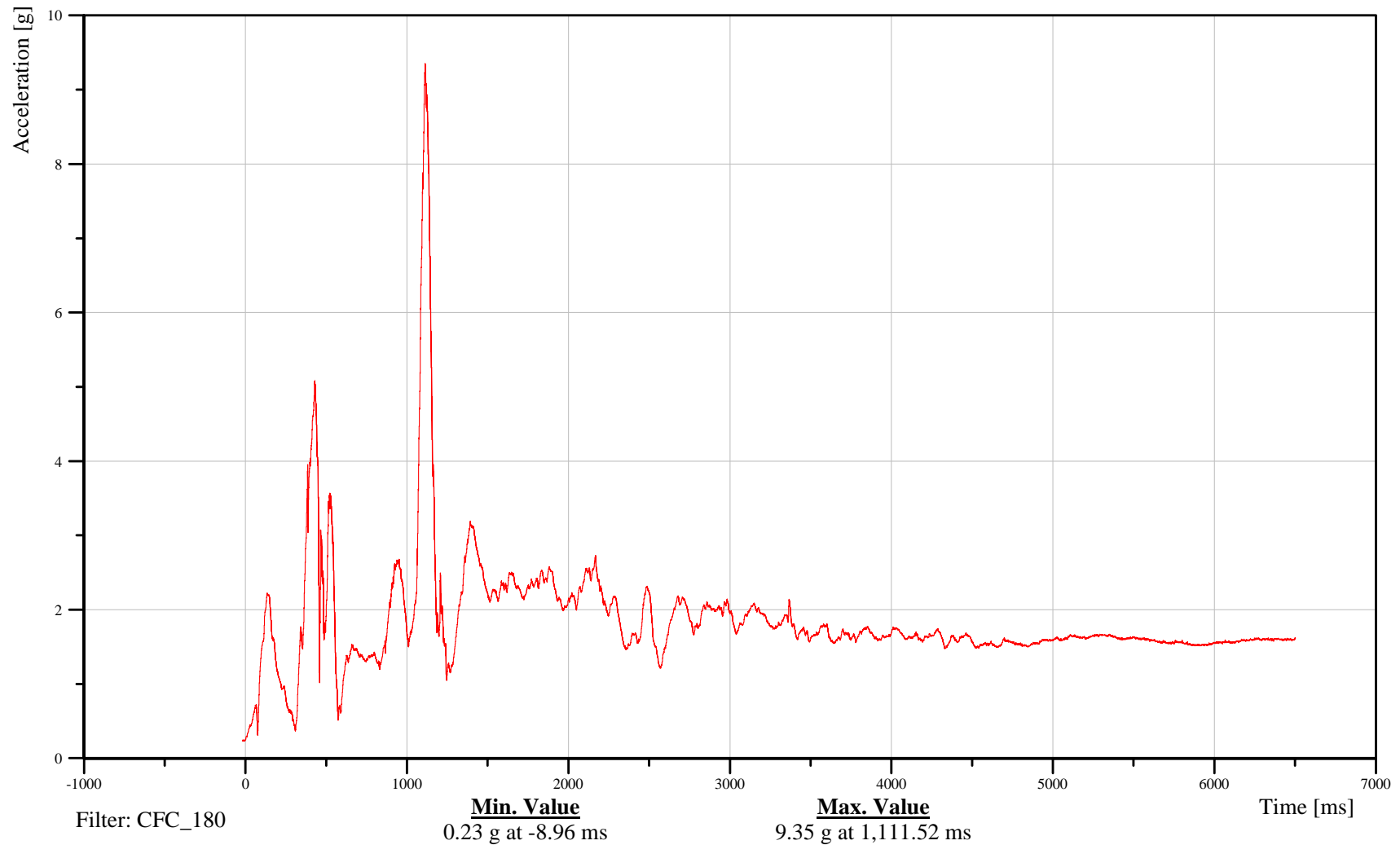
Driver Chest Resultant Acceleration

Customer: VRTC

11CHSTCG00H3ACRC

TRC Inc. Test Lab: CTF

Test Number: 091022



B-18

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

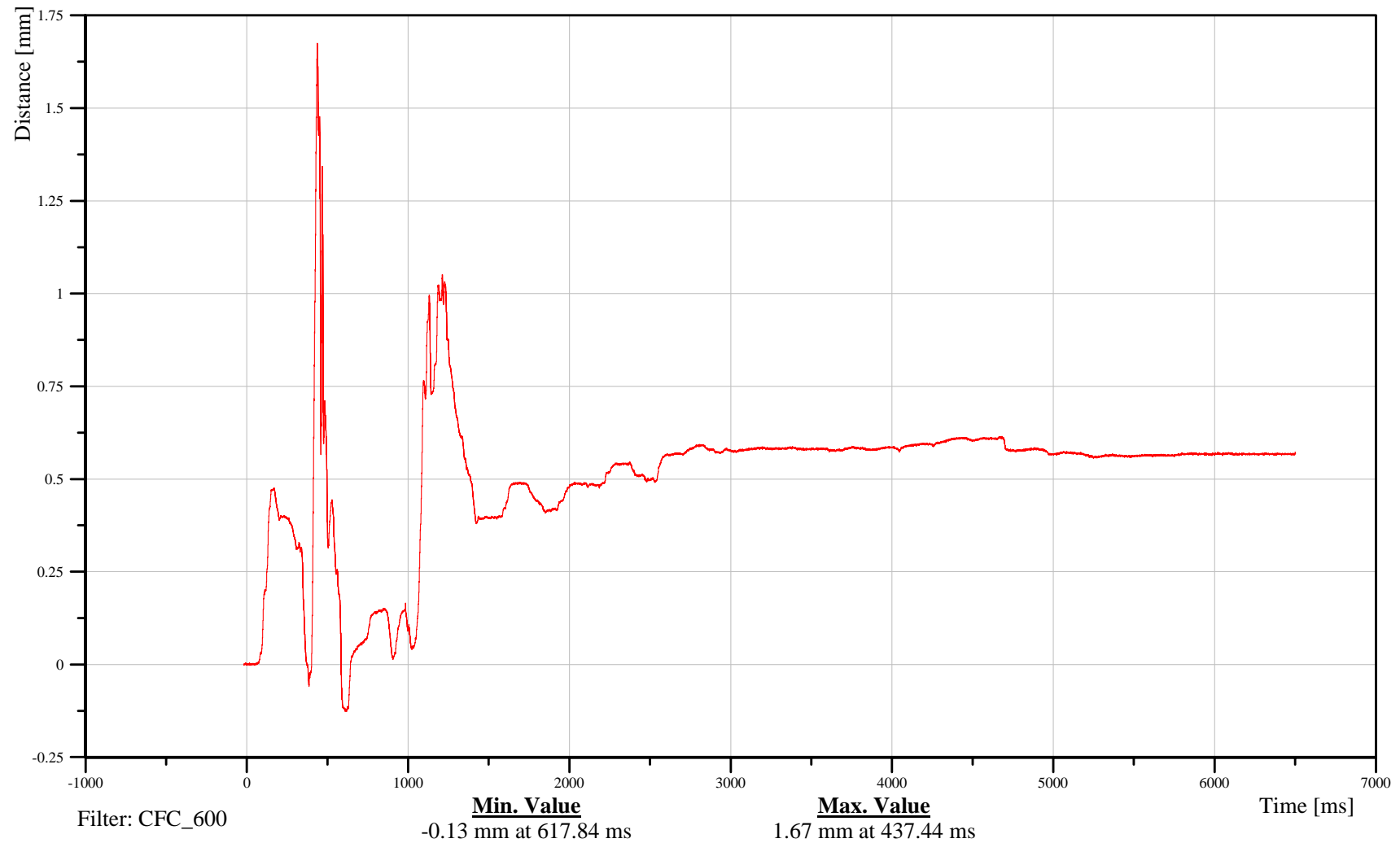
Driver Chest X-Axis Displacement

Customer: VRTC

11CHST0000H3DSXB

TRC Inc. Test Lab: CTF

Test Number: 091022



B-19

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Driver Lower Neck X-Axis Force

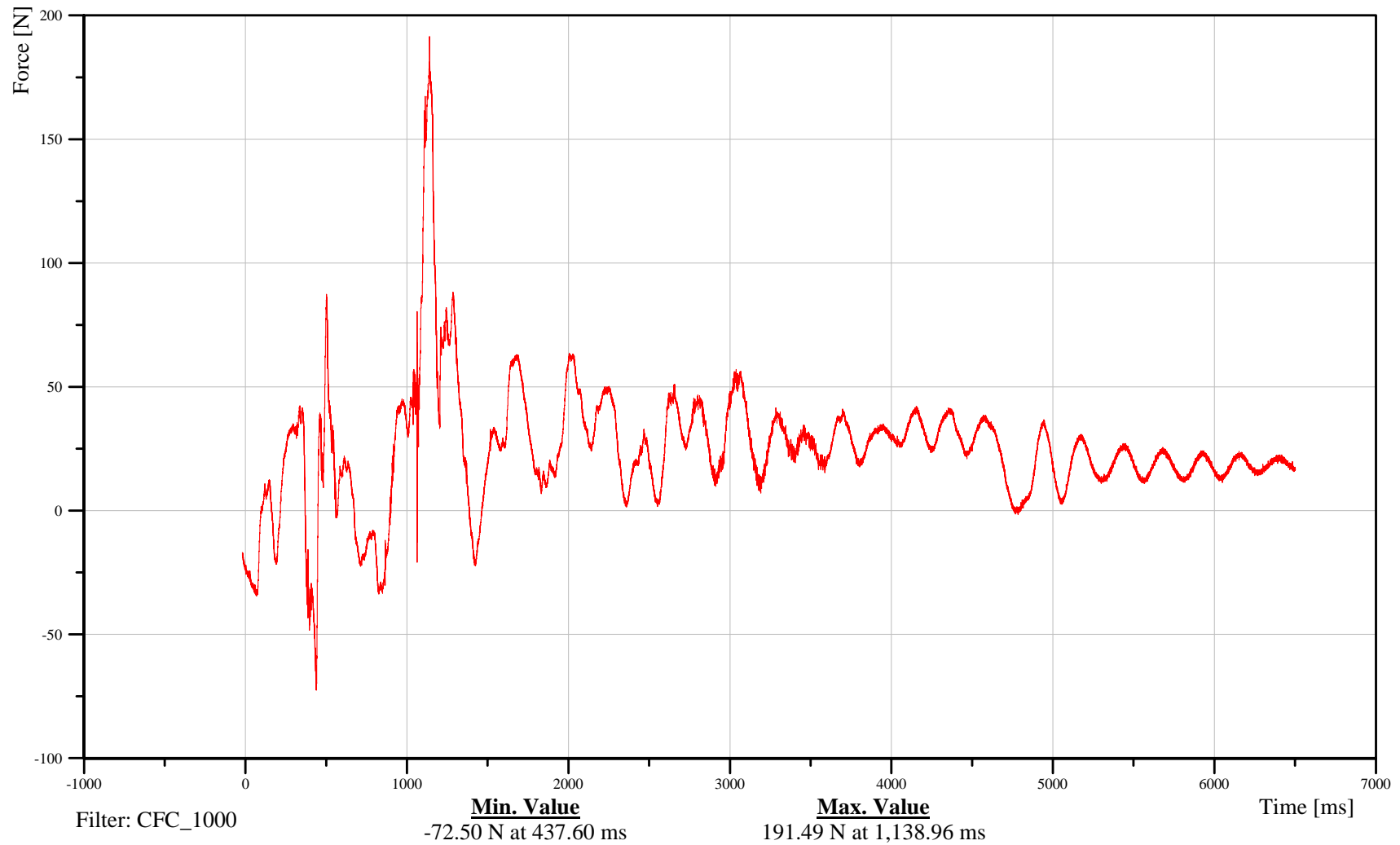
Time: 19:31

Customer: VRTC

11NECKLO00H3FOXA

TRC Inc. Test Lab: CTF

Test Number: 091022



B-20

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009
Time: 19:31

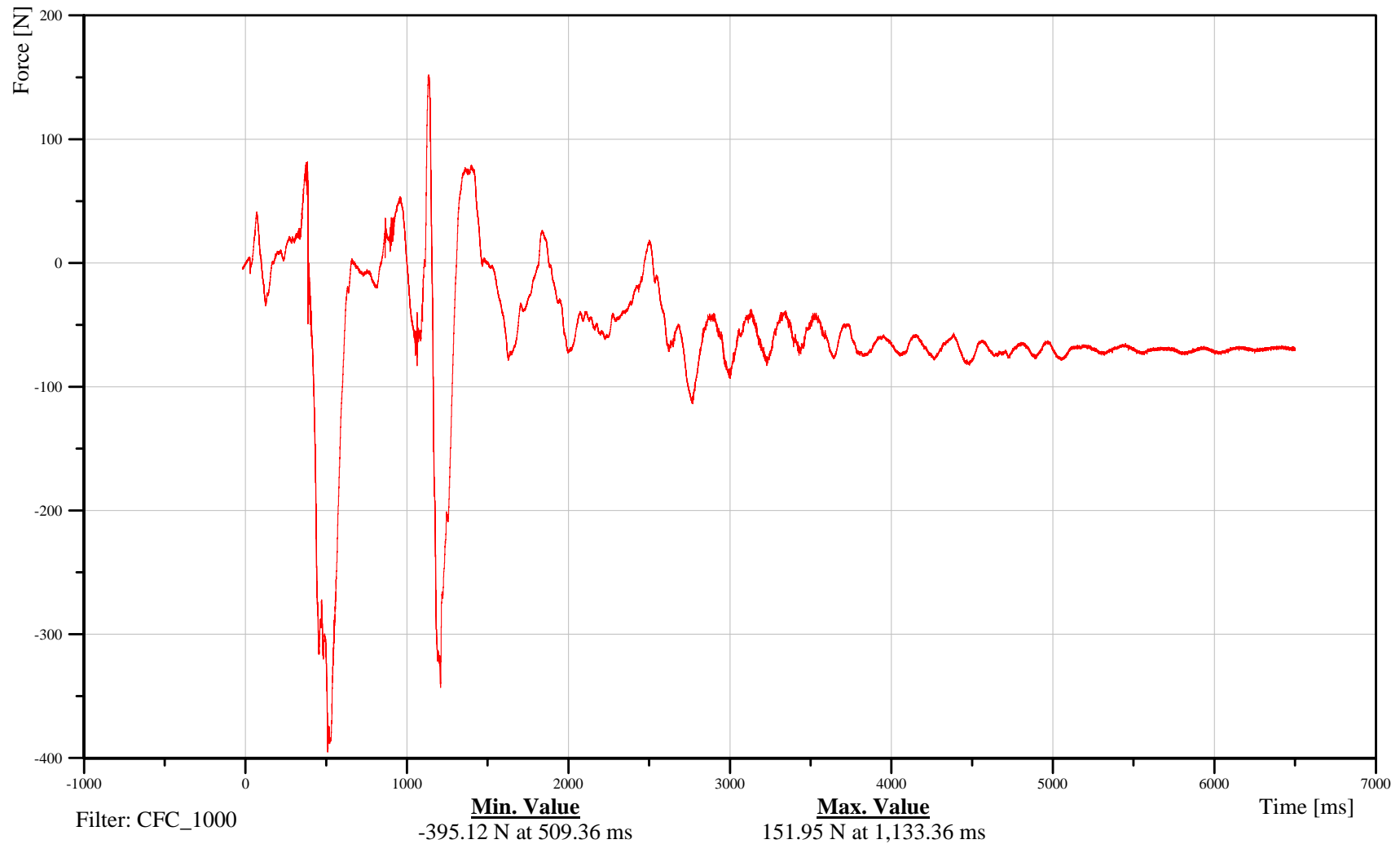
Driver Lower Neck Y-Axis Force

Customer: VRTC

11NECKLO00H3FOYA

TRC Inc. Test Lab: CTF

Test Number: 091022



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091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Driver Lower Neck Z-Axis Force

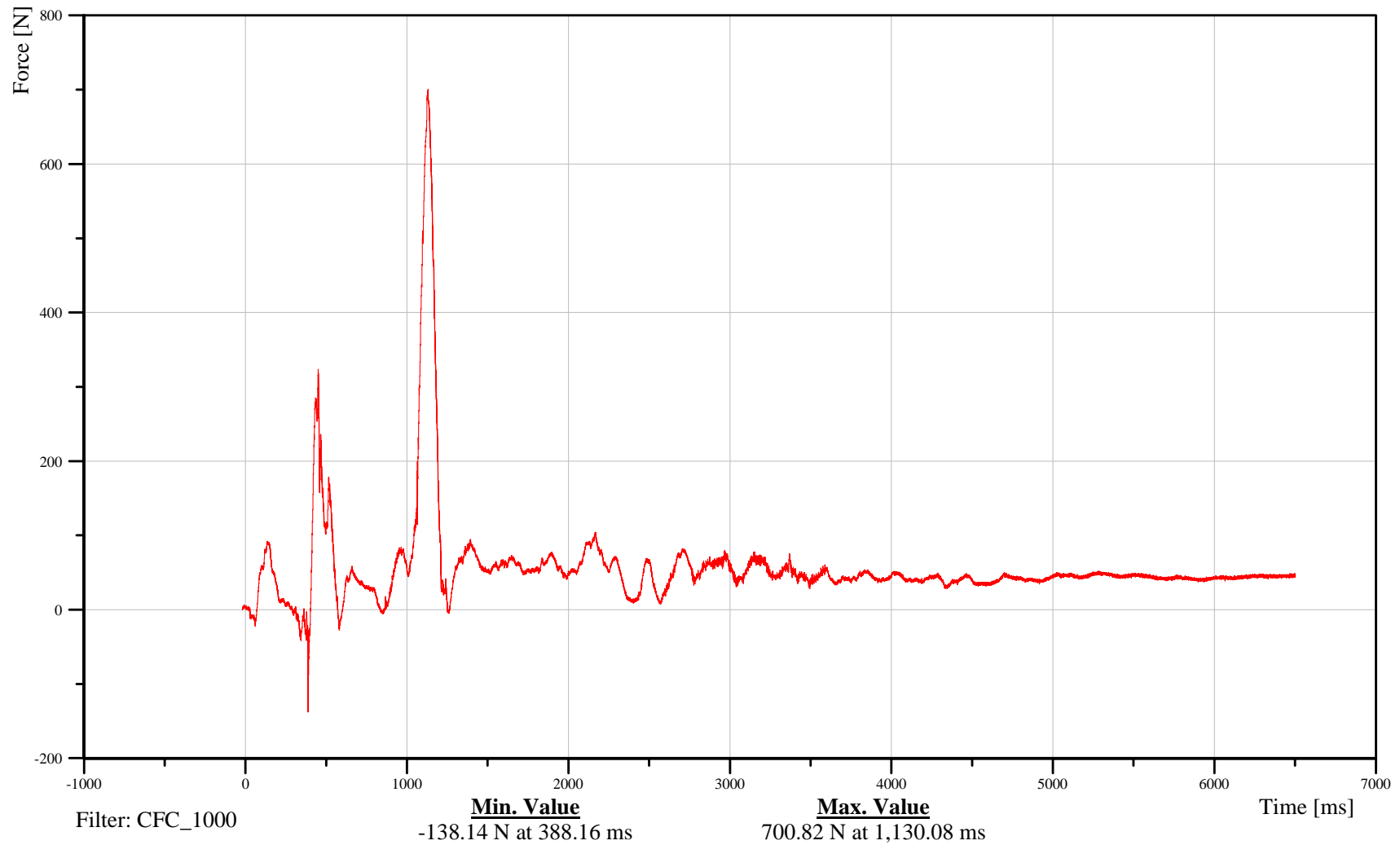
Time: 19:31

Customer: VRTC

11NECKLO00H3FOZA

TRC Inc. Test Lab: CTF

Test Number: 091022



B-22

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Driver Lower Neck Moment About X Axis

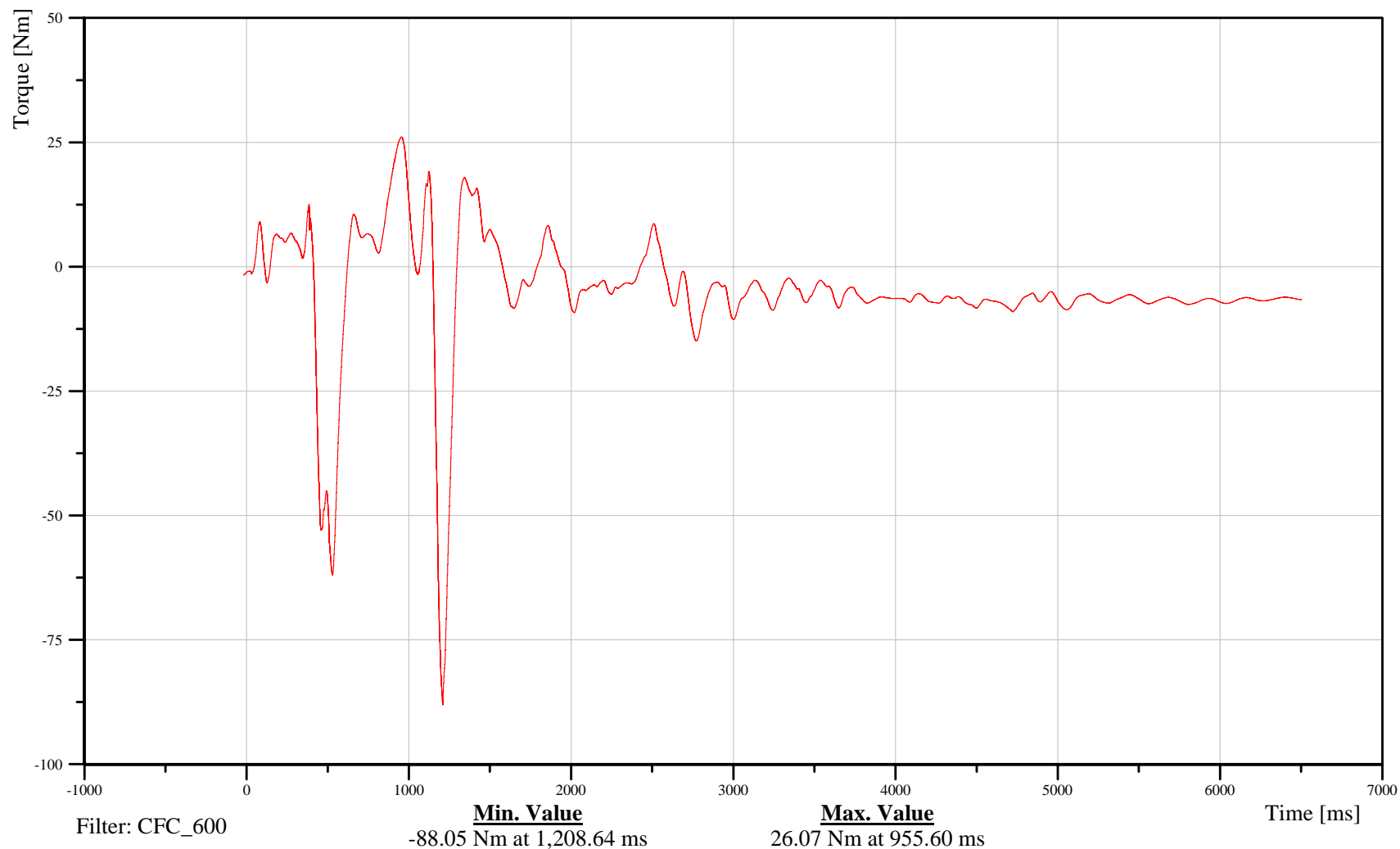
Time: 19:31

Customer: VRTC

11NECKLO00H3MOXB

TRC Inc. Test Lab: CTF

Test Number: 091022



B-23

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Driver Lower Neck Moment About Y Axis

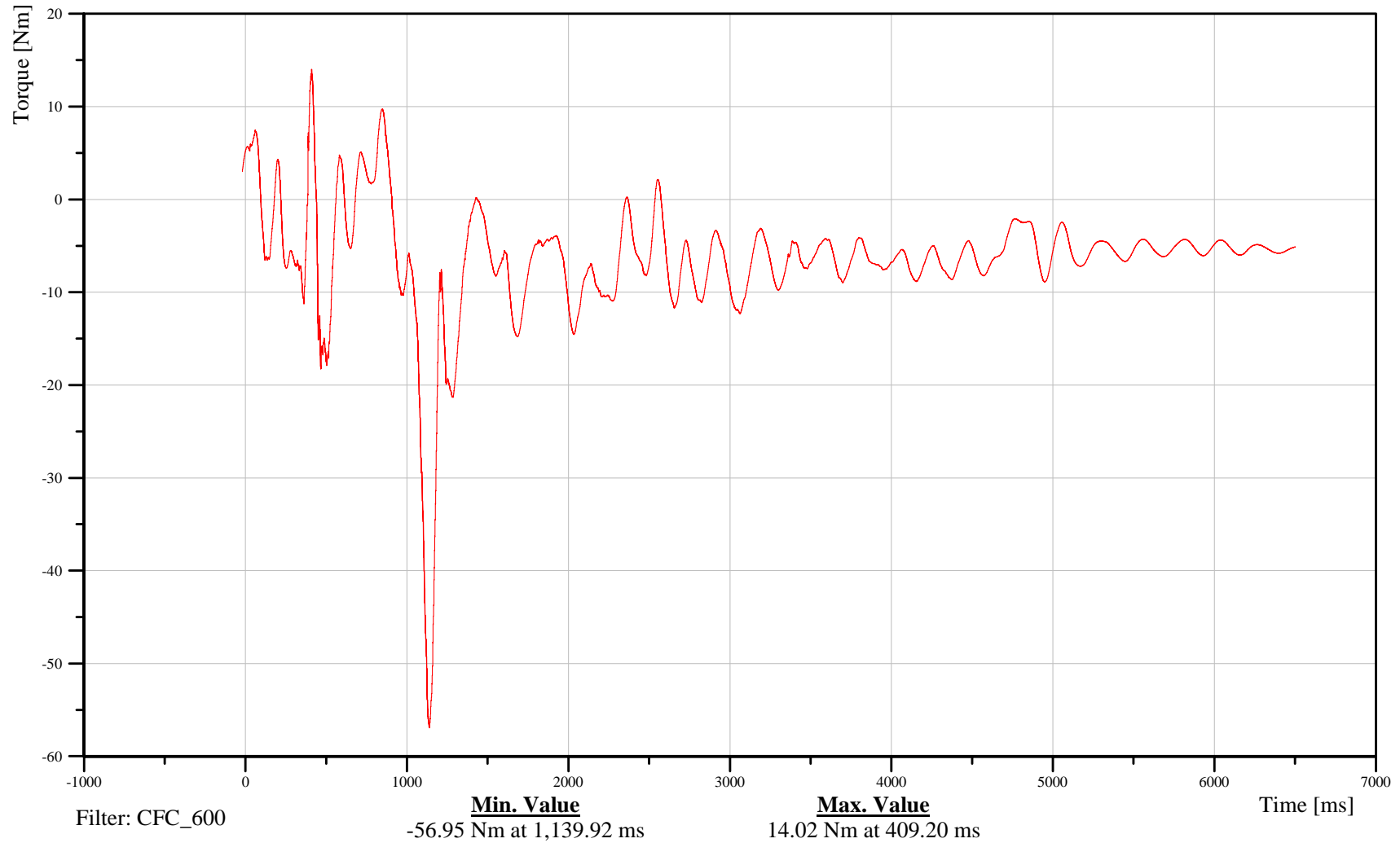
Time: 19:31

Customer: VRTC

11NECKLO00H3MOYB

TRC Inc. Test Lab: CTF

Test Number: 091022



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091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Driver Lower Neck Moment About Z Axis

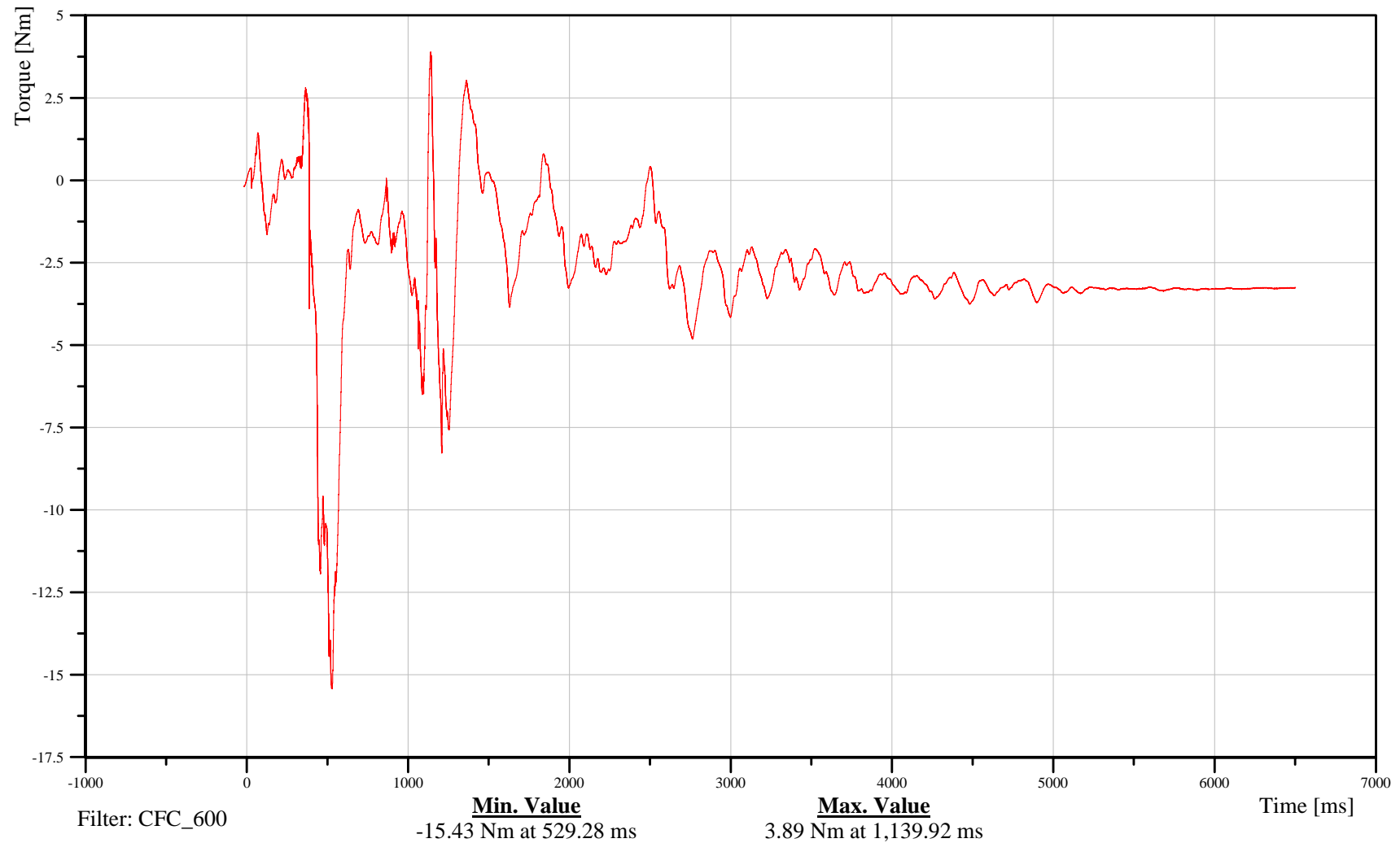
Time: 19:31

Customer: VRTC

11NECKLO00H3MOZB

TRC Inc. Test Lab: CTF

Test Number: 091022



B-25

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Driver Pelvis X-Axis Acceleration

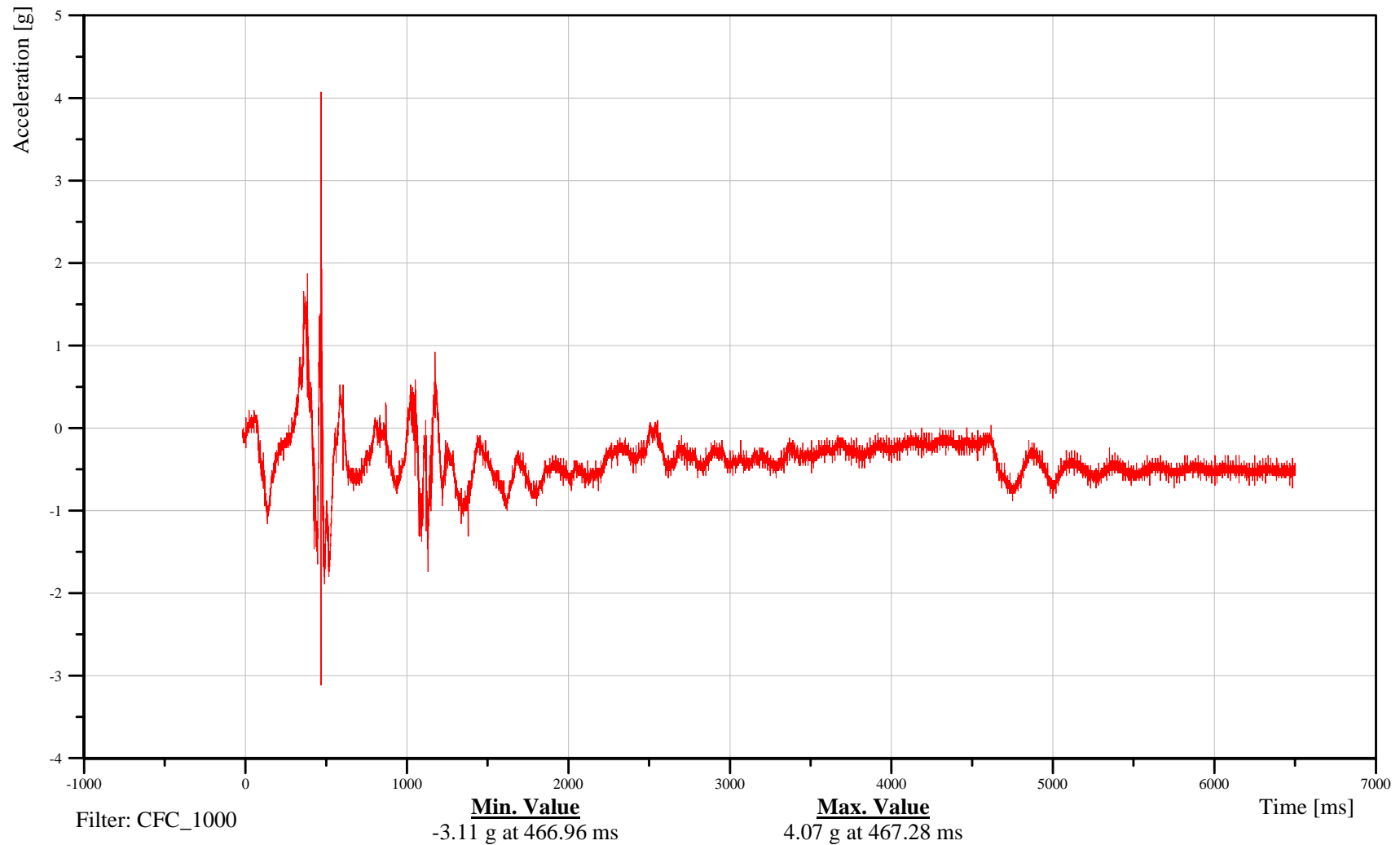
Time: 19:31

Customer: VRTC

11PELVCG00H3ACXA

TRC Inc. Test Lab: CTF

Test Number: 091022



B-26

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Driver Pelvis Y-Axis Acceleration

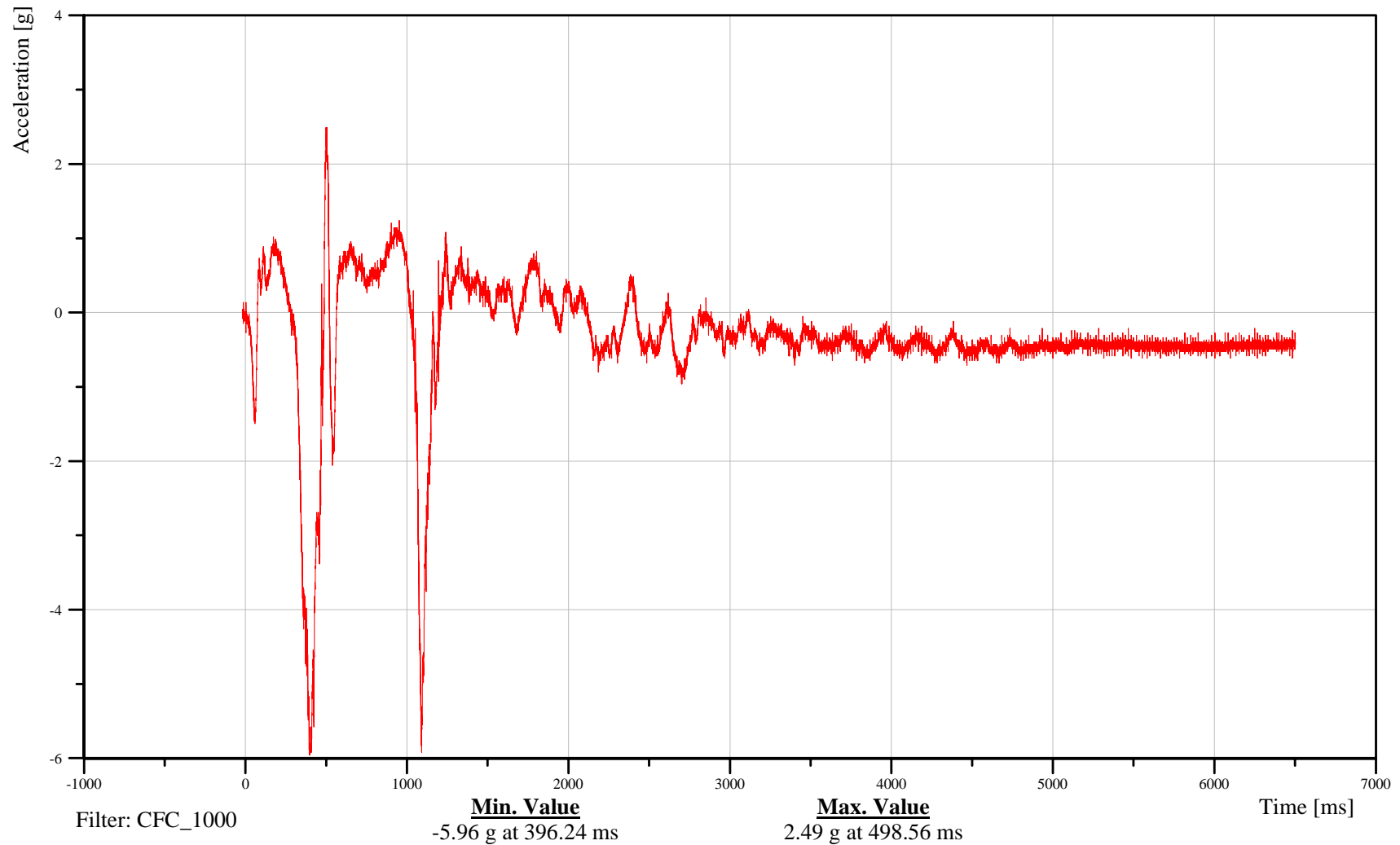
Time: 19:31

Customer: VRTC

11PELVCG00H3ACYA

TRC Inc. Test Lab: CTF

Test Number: 091022



B-27

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Driver Pelvis Z-Axis Acceleration

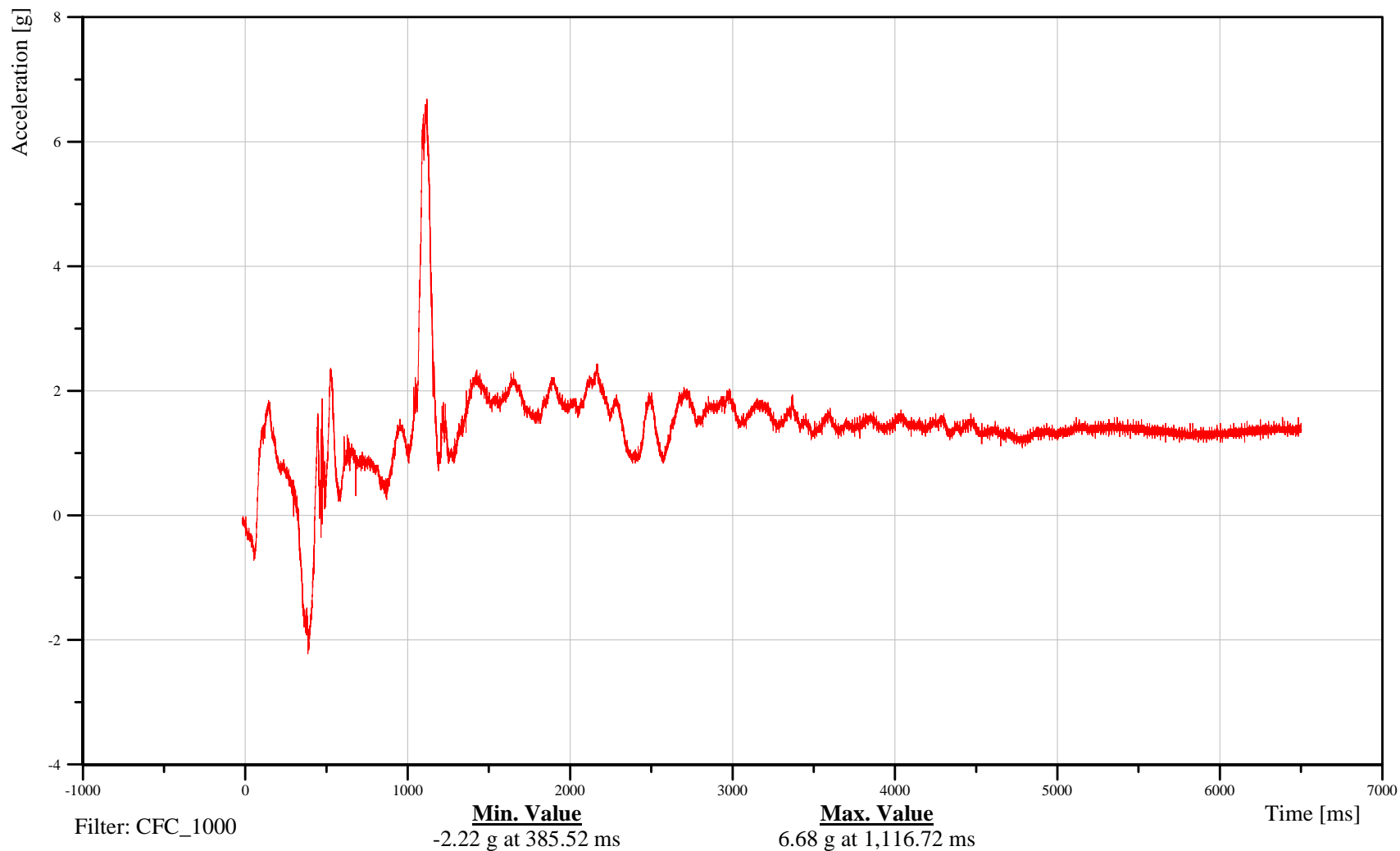
Time: 19:31

Customer: VRTC

11PELVCG00H3ACZA

TRC Inc. Test Lab: CTF

Test Number: 091022



B-28

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

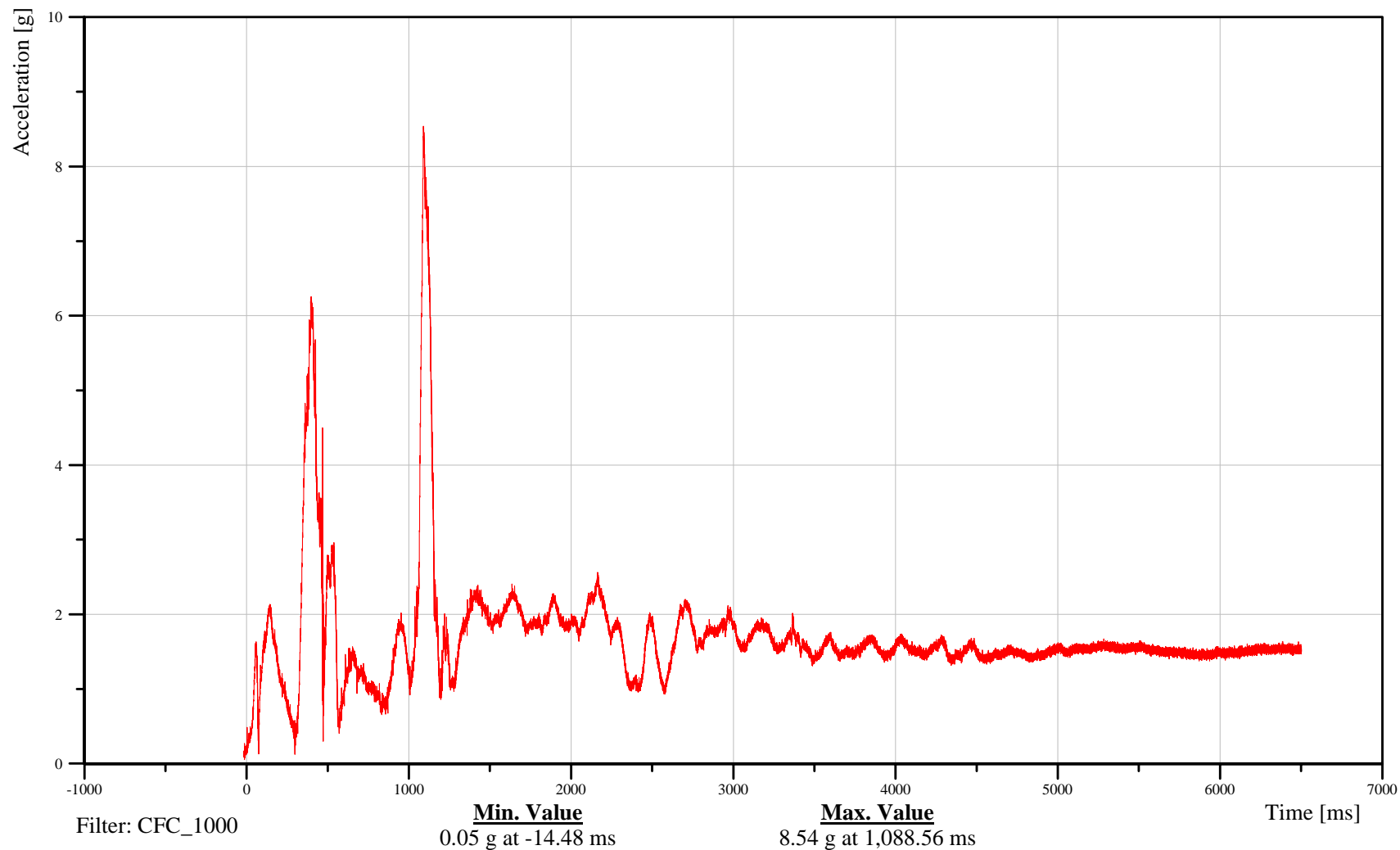
Driver Pelvis Resultant Acceleration

Customer: VRTC

11PELVCG00H3ACRA

TRC Inc. Test Lab: CTF

Test Number: 091022



B-29

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Right Front Passenger Head X-Axis Acceleration

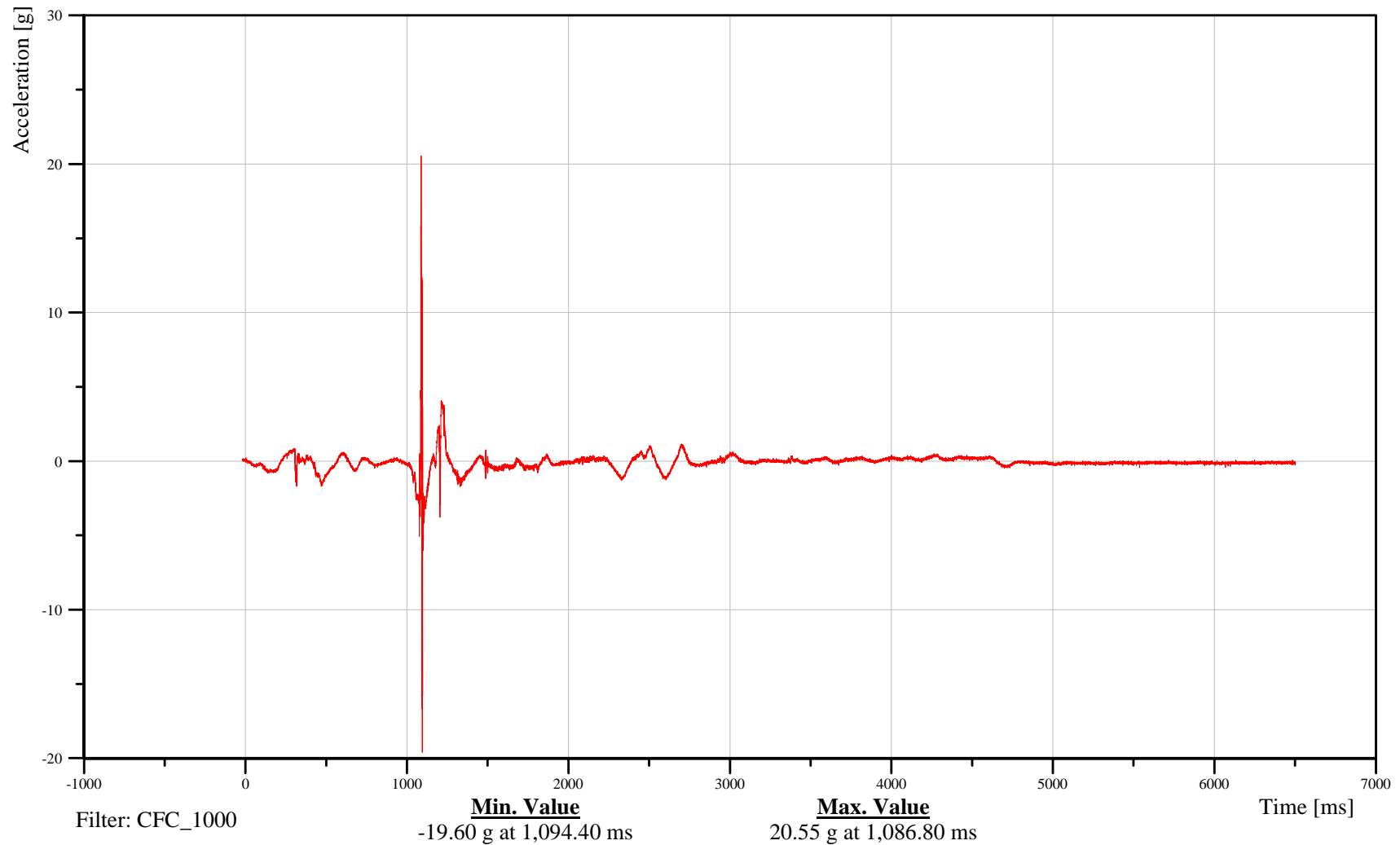
Time: 19:31

Customer: VRTC

13HEADCG00H3ACXA

TRC Inc. Test Lab: CTF

Test Number: 091022



B-30

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Right Front Passenger Head Y-Axis Acceleration

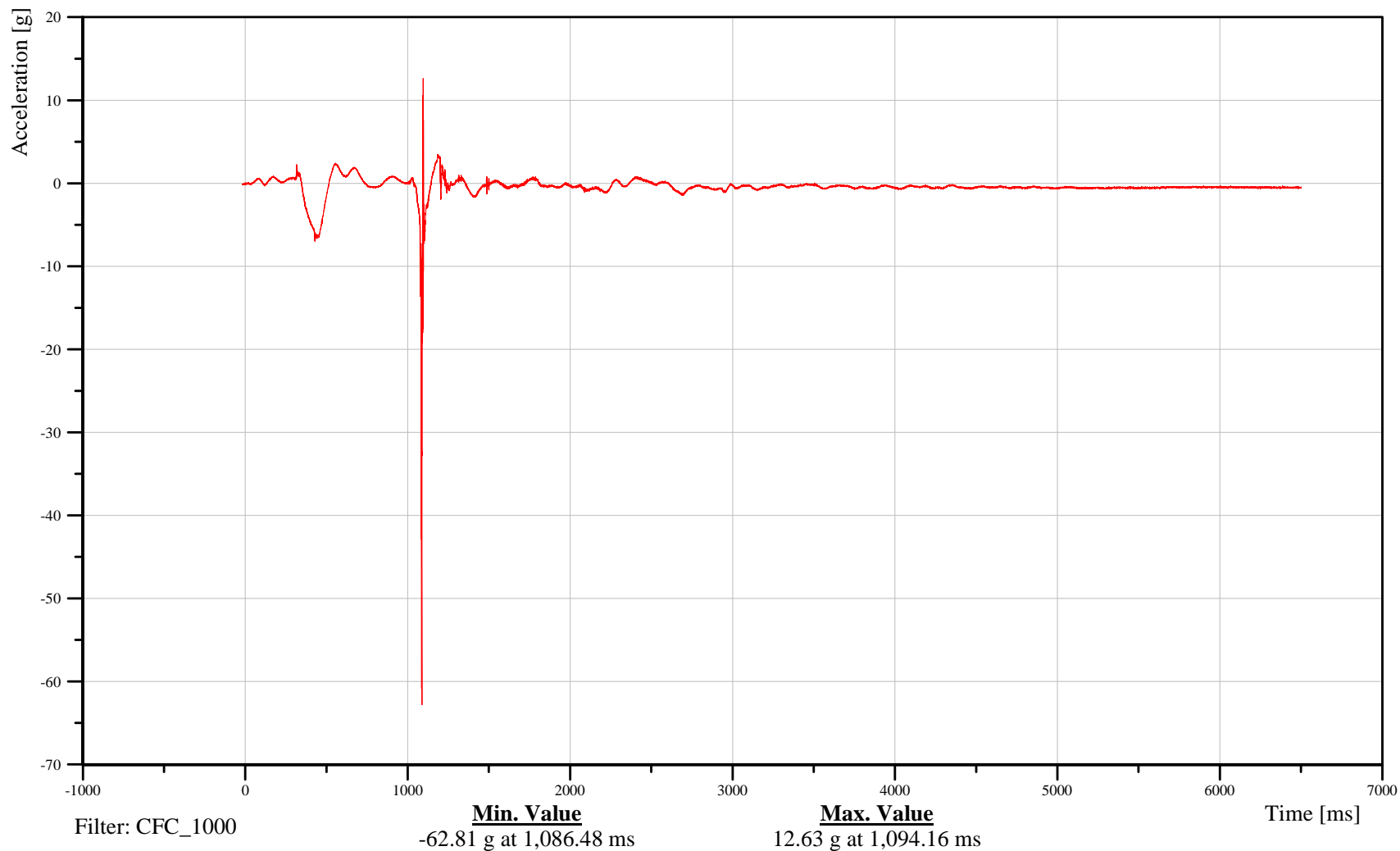
Time: 19:31

Customer: VRTC

13HEADCG00H3ACYA

TRC Inc. Test Lab: CTF

Test Number: 091022



B-31

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

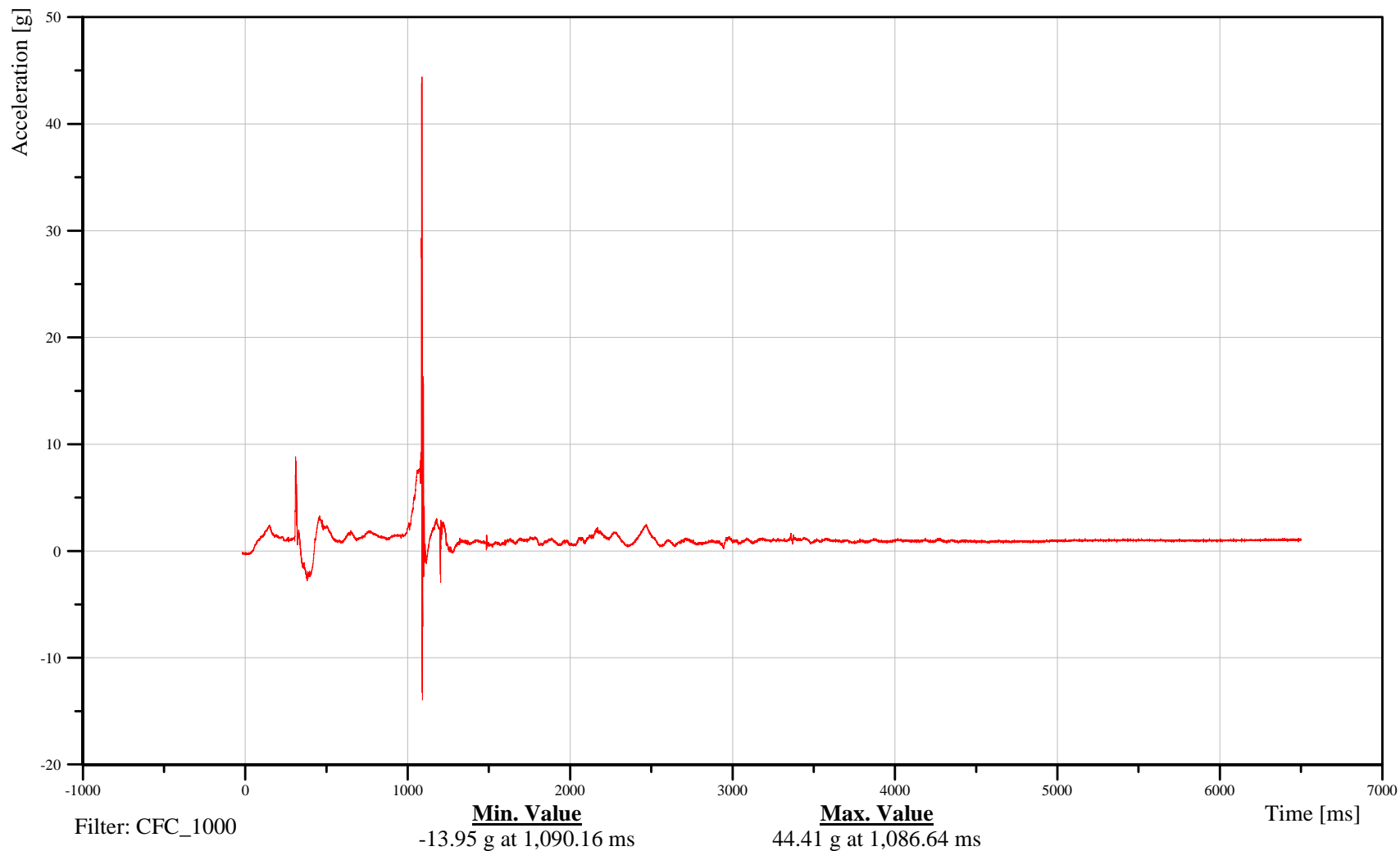
Right Front Passenger Head Z-Axis Acceleration

Customer: VRTC

13HEADCG00H3ACZA

TRC Inc. Test Lab: CTF

Test Number: 091022



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091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Right Front Passenger Head Resultant Acceleration

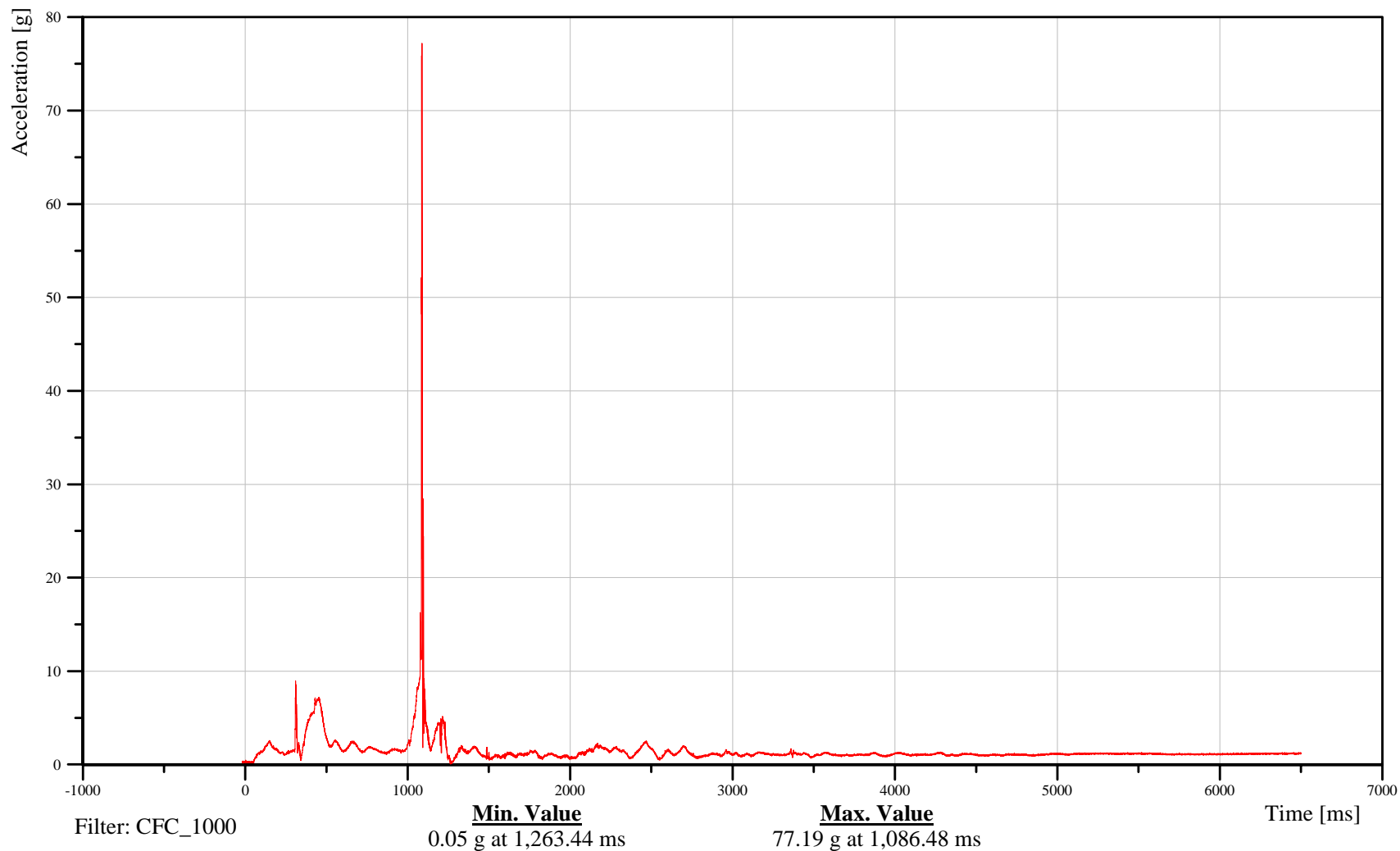
Time: 19:31

Customer: VRTC

13HEADCG00H3ACRA

TRC Inc. Test Lab: CTF

Test Number: 091022



B-33

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Right Front Passenger Head Front Y-Axis Acceleration

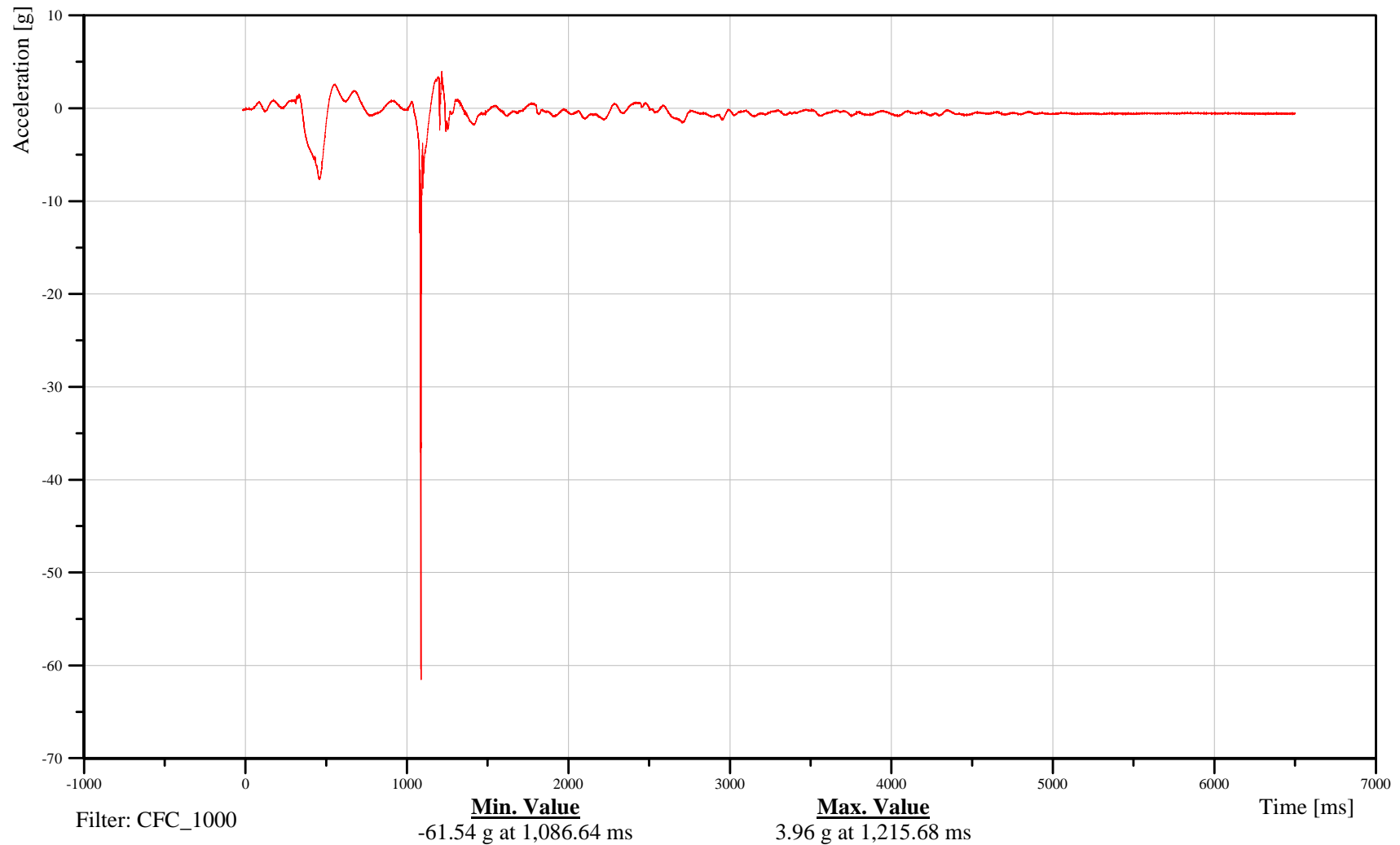
Time: 19:31

Customer: VRTC

13HEADFR00H3ACYA

TRC Inc. Test Lab: CTF

Test Number: 091022



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091022



FMVSS 208 Rollover 2007 Ford Expedition
Right Front Passenger Head Front Z-Axis Acceleration

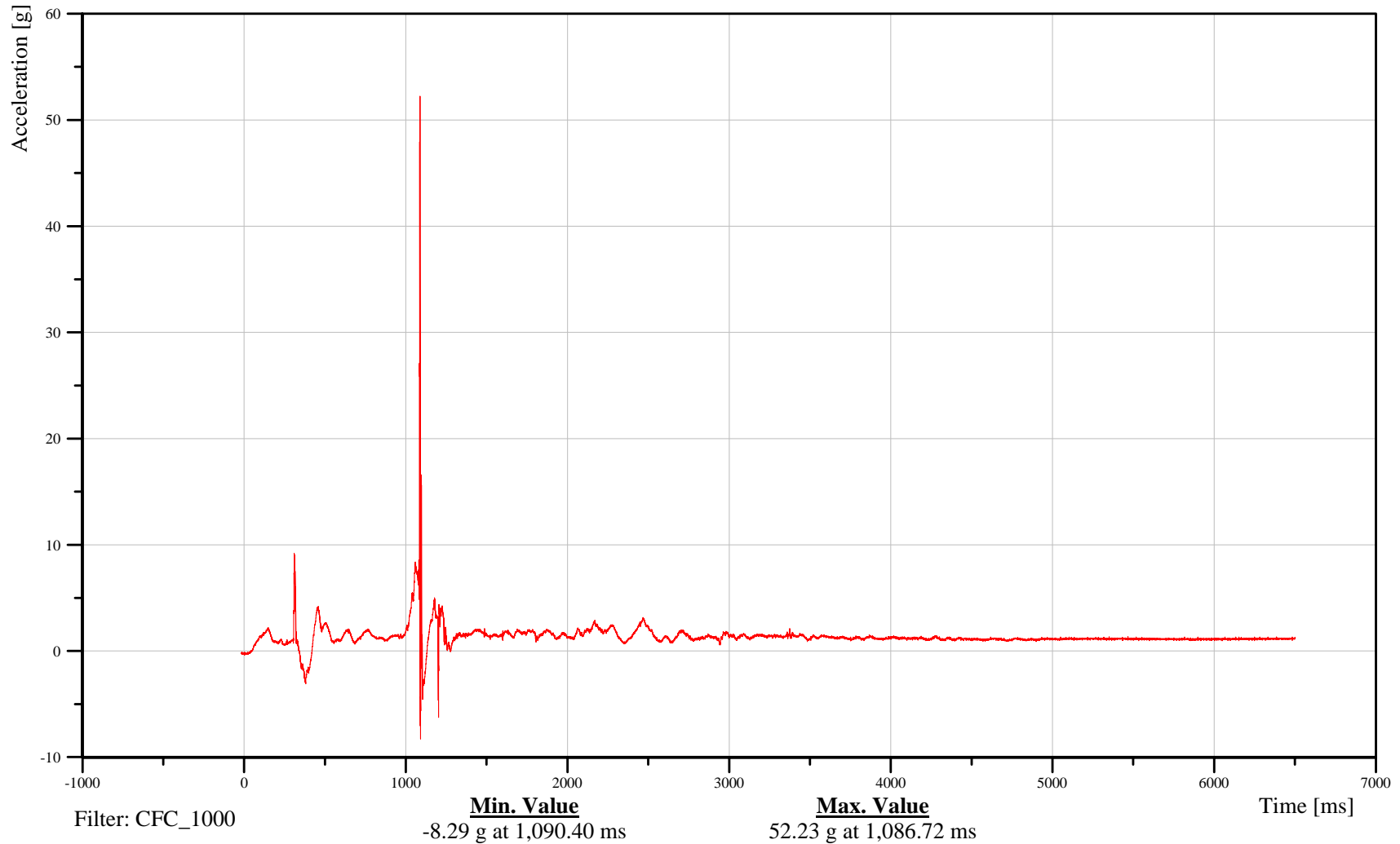
Date: 10/22/2009
Time: 19:31

Customer: VRTC

13HEADFR00H3ACZA

TRC Inc. Test Lab: CTF

Test Number: 091022



B-35

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Right Front Passenger Head Top X-Axis Acceleration

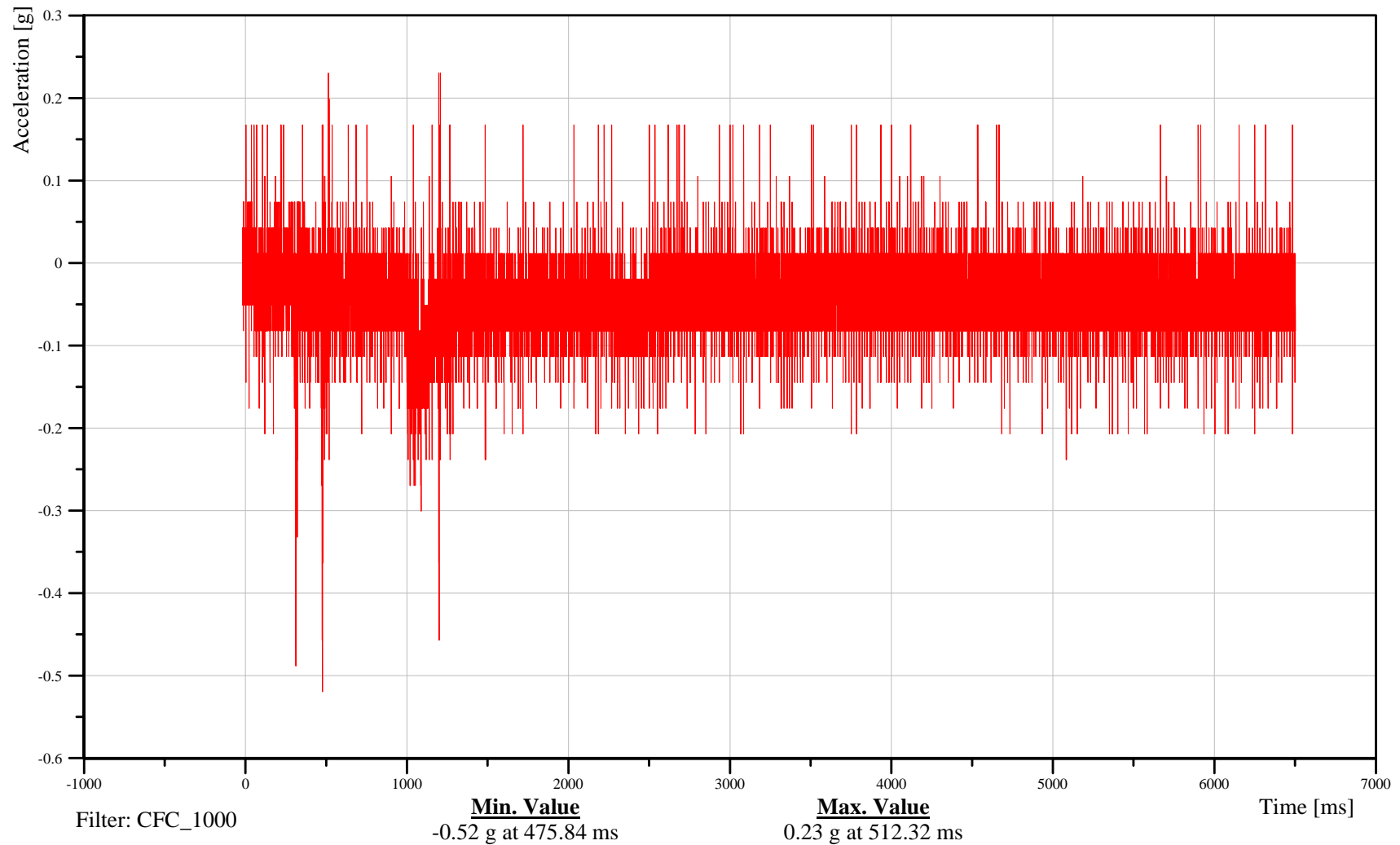
Time: 19:31

Customer: VRTC

13HEADUP00H3ACXA

TRC Inc. Test Lab: CTF

Test Number: 091022



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091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Right Front Passenger Head Top Y-Axis Acceleration

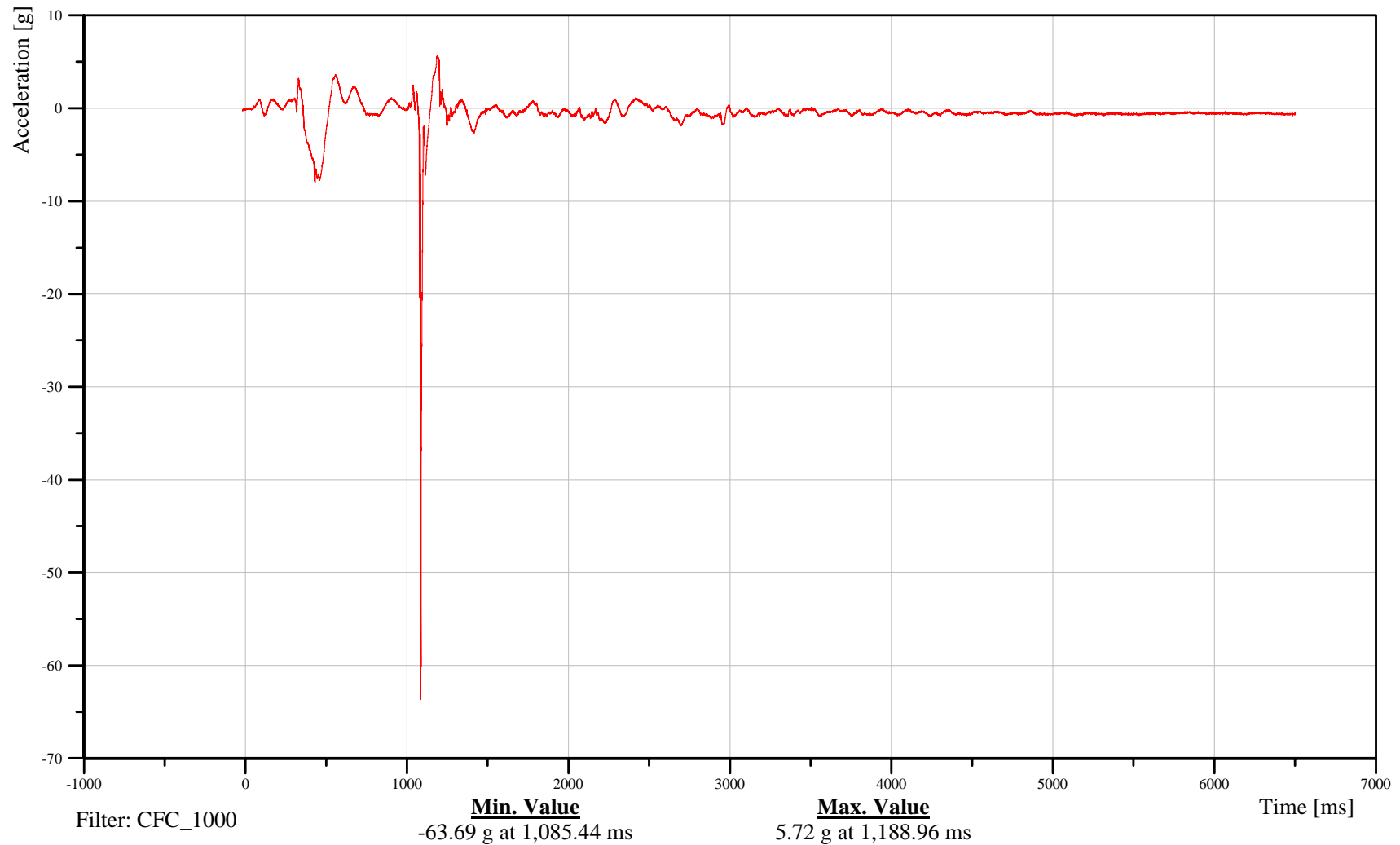
Time: 19:31

Customer: VRTC

13HEADUP00H3ACYA

TRC Inc. Test Lab: CTF

Test Number: 091022



B-37

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Right Front Passenger Head Left X-Axis Acceleration

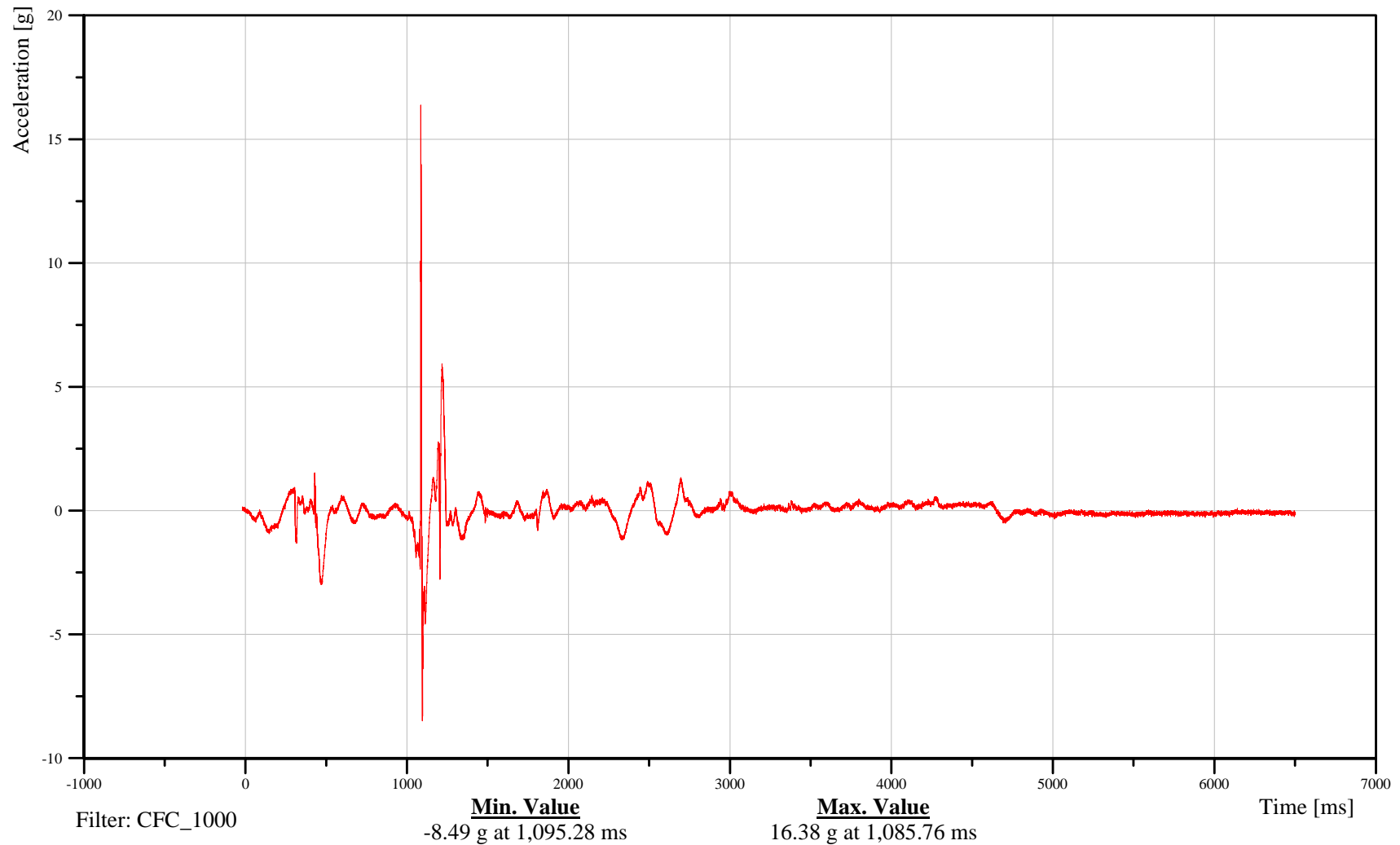
Time: 19:31

Customer: VRTC

13HEADLE00H3ACXA

TRC Inc. Test Lab: CTF

Test Number: 091022



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091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Right Front Passenger Head Left Z-Axis Acceleration

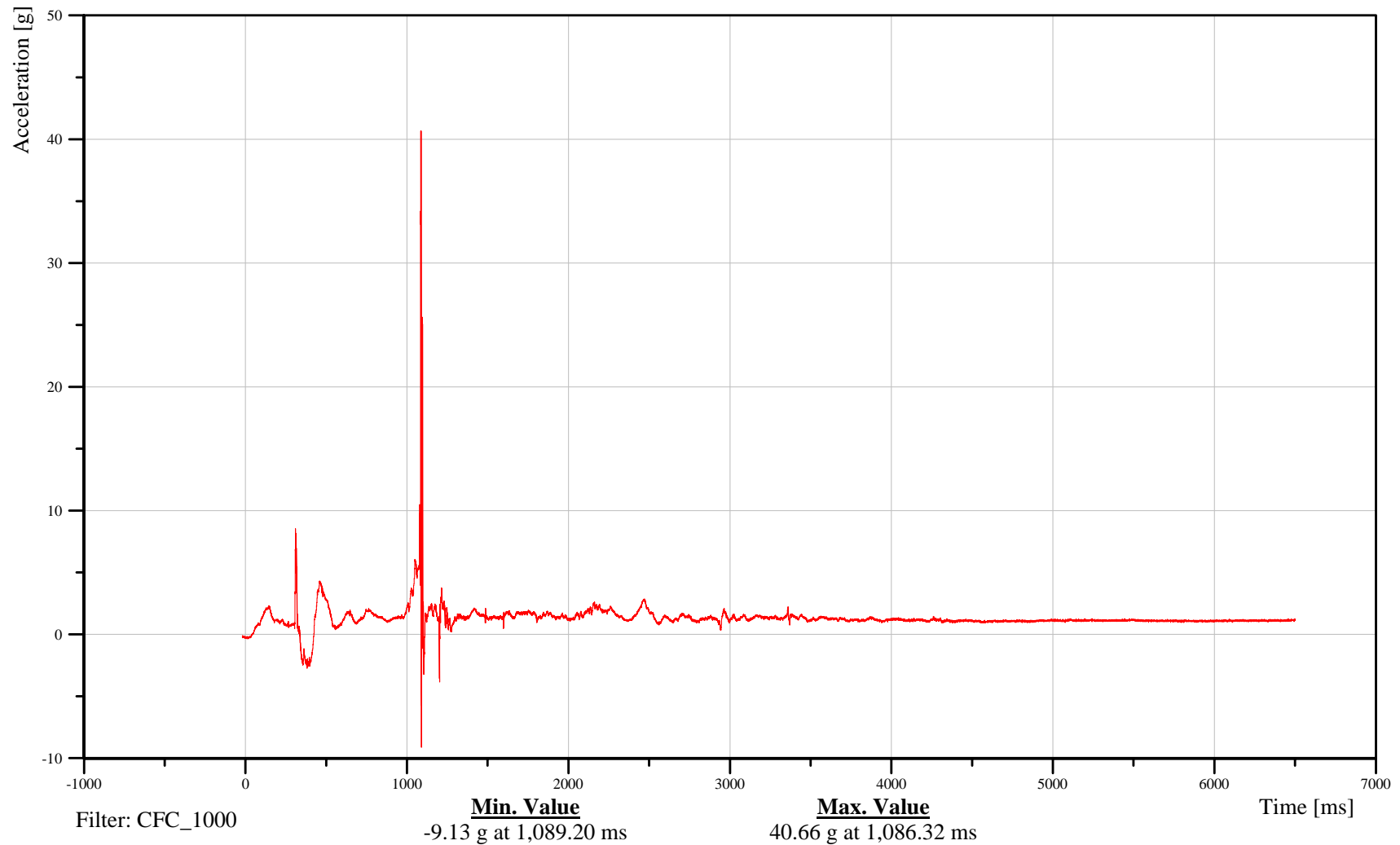
Time: 19:31

Customer: VRTC

13HEADLE00H3ACZA

TRC Inc. Test Lab: CTF

Test Number: 091022



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091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

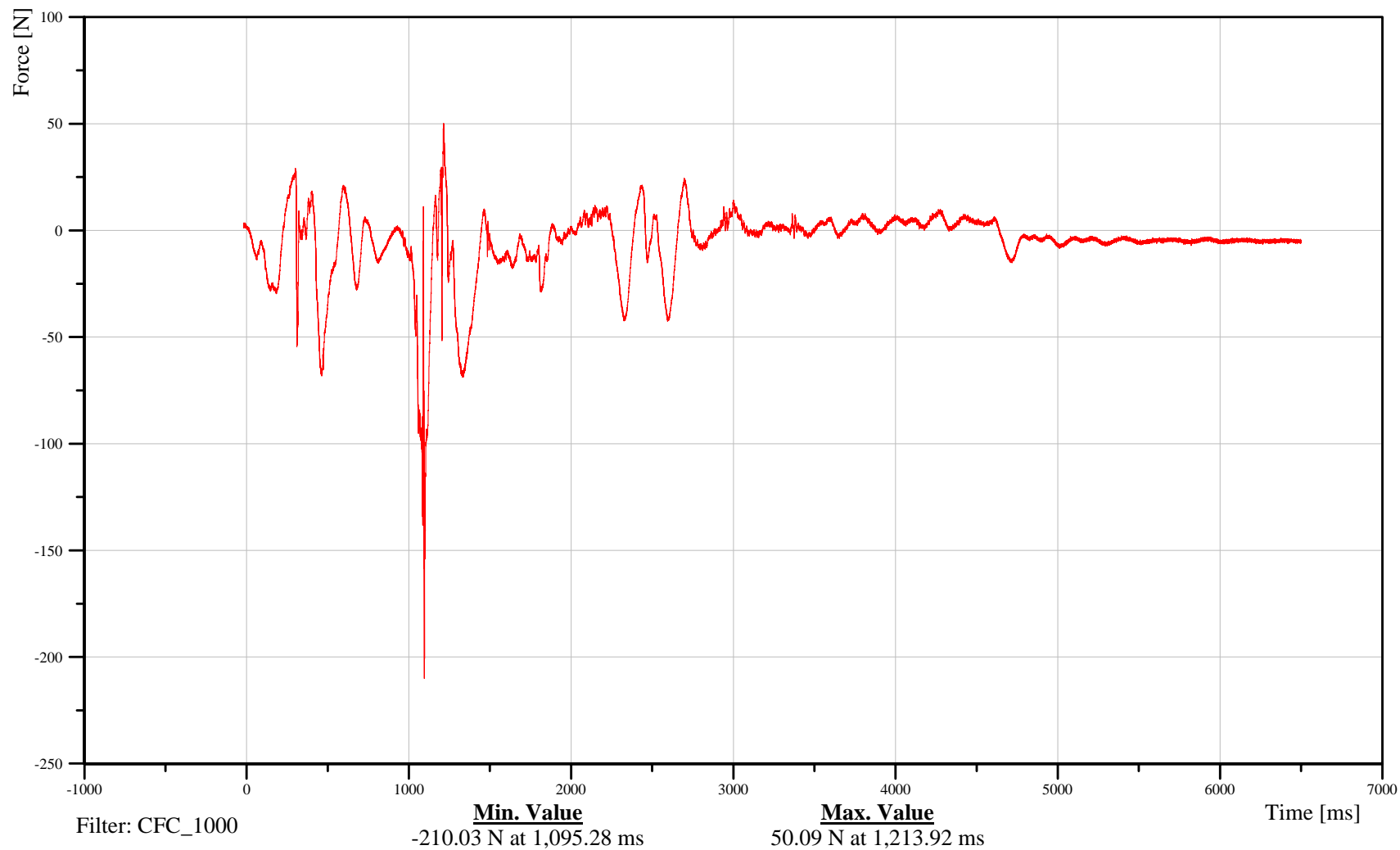
Right Front Passenger Upper Neck X-Axis Force

Customer: VRTC

13NECKUP00H3FOXA

TRC Inc. Test Lab: CTF

Test Number: 091022



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091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Right Front Passenger Upper Neck Y-Axis Force

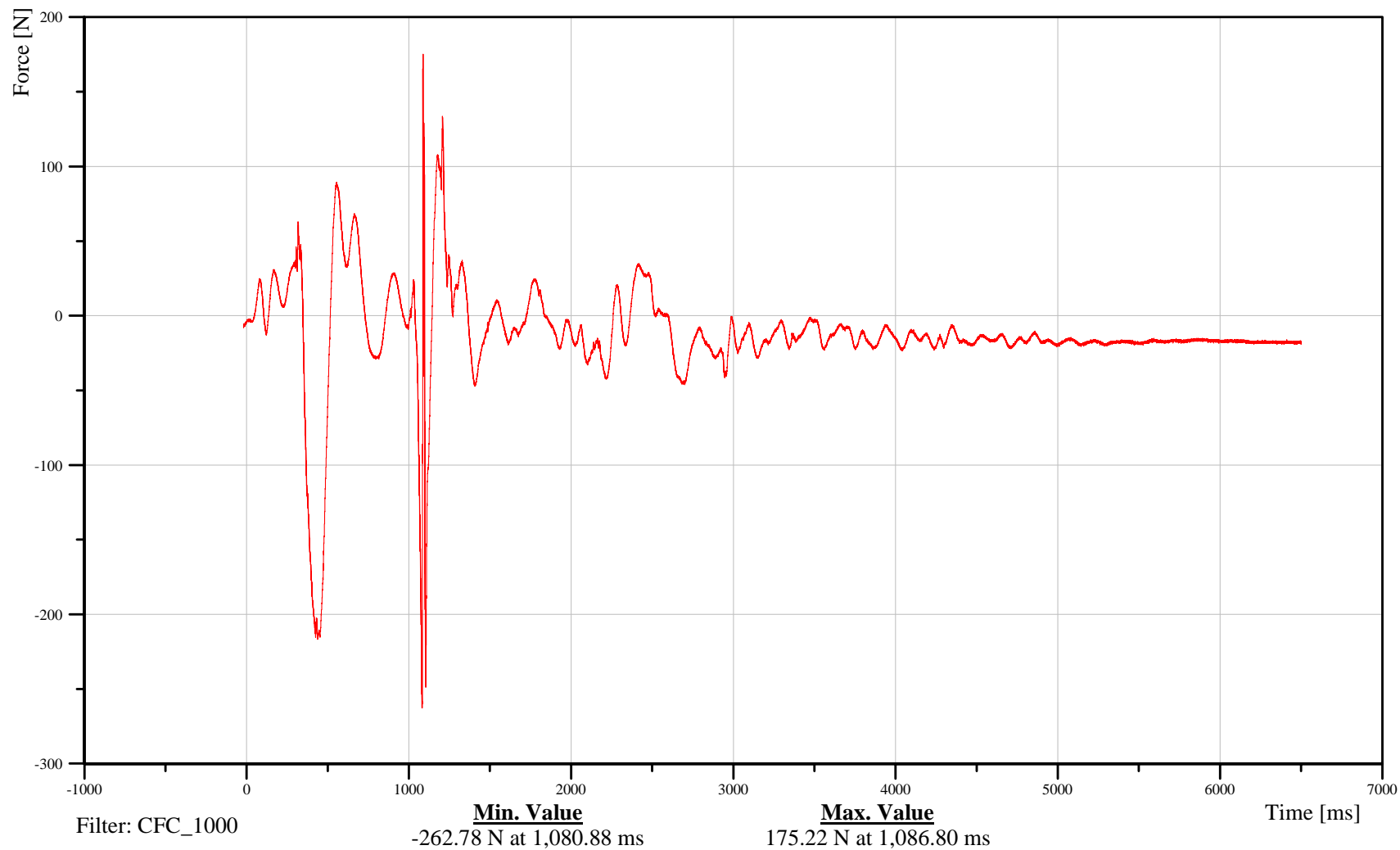
Time: 19:31

Customer: VRTC

13NECKUP00H3FOYA

TRC Inc. Test Lab: CTF

Test Number: 091022



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091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

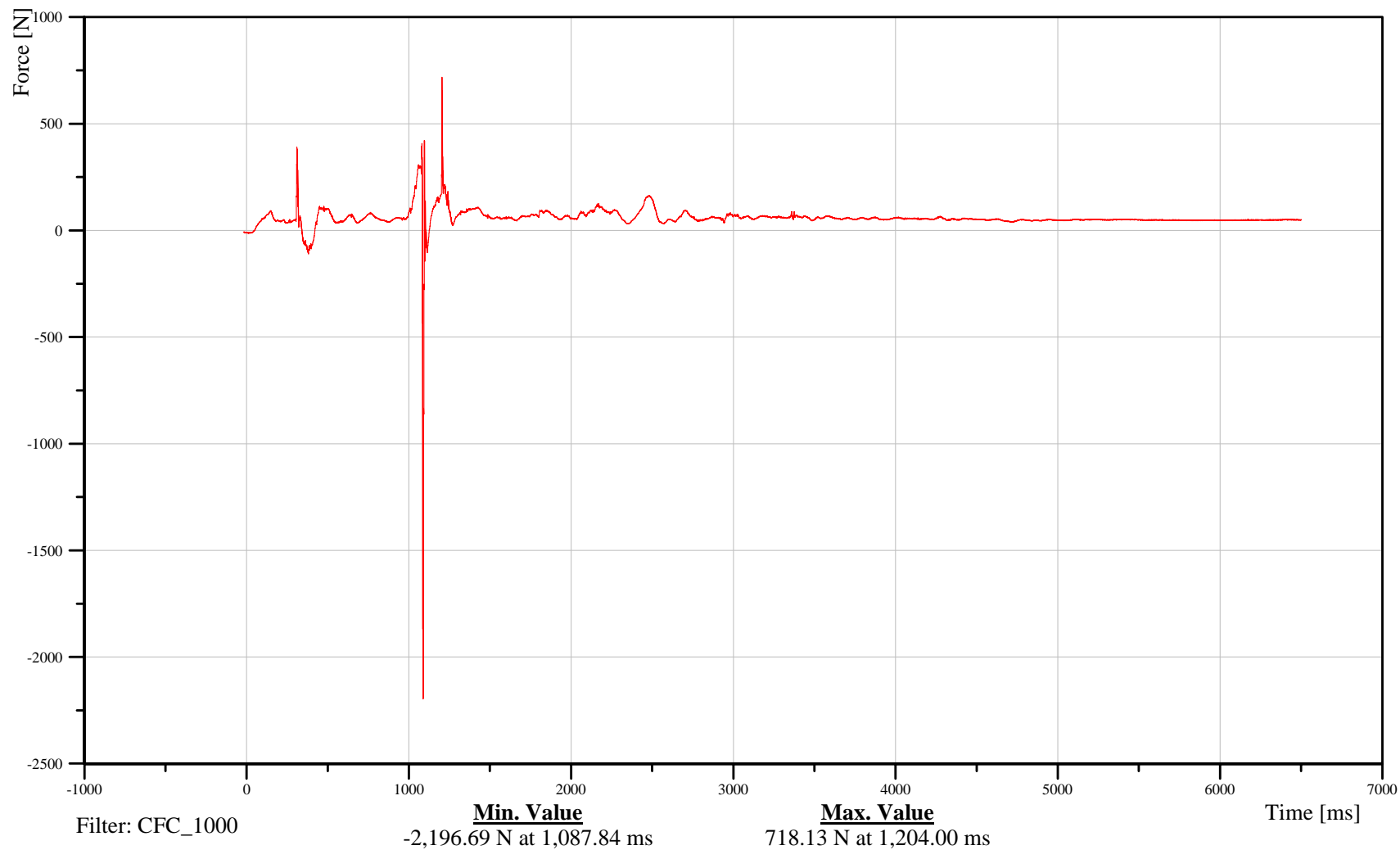
Right Front Passenger Upper Neck Z-Axis Force

Customer: VRTC

13NECKUP00H3FOZA

TRC Inc. Test Lab: CTF

Test Number: 091022



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091022



FMVSS 208 Rollover 2007 Ford Expedition

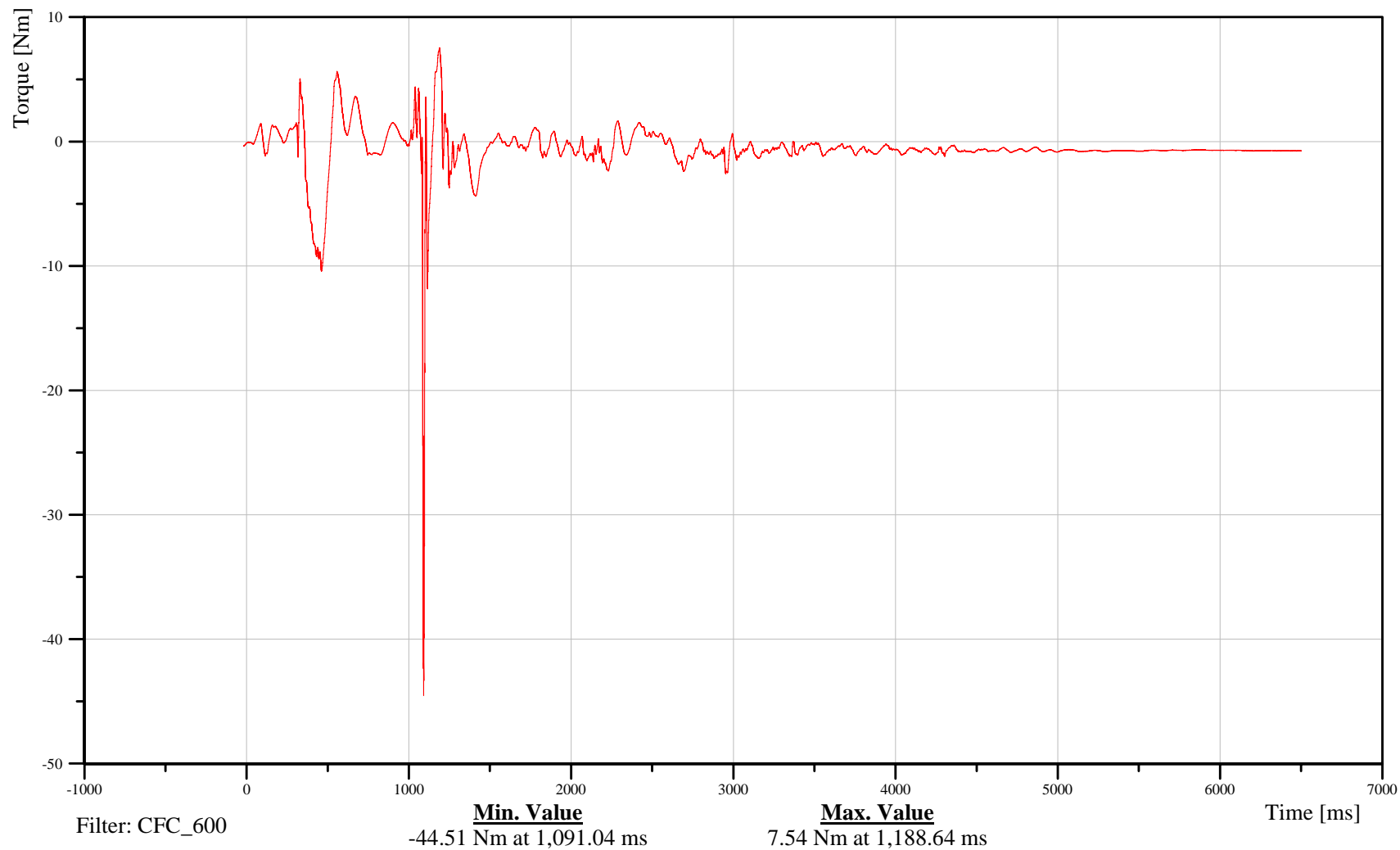
Right Front Passenger Upper Neck Moment About X Axis

Date: 10/22/2009
Time: 19:31

Customer: VRTC

13NECKUP00H3MOXB

TRC Inc. Test Lab: CTF
Test Number: 091022



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091022



FMVSS 208 Rollover 2007 Ford Expedition

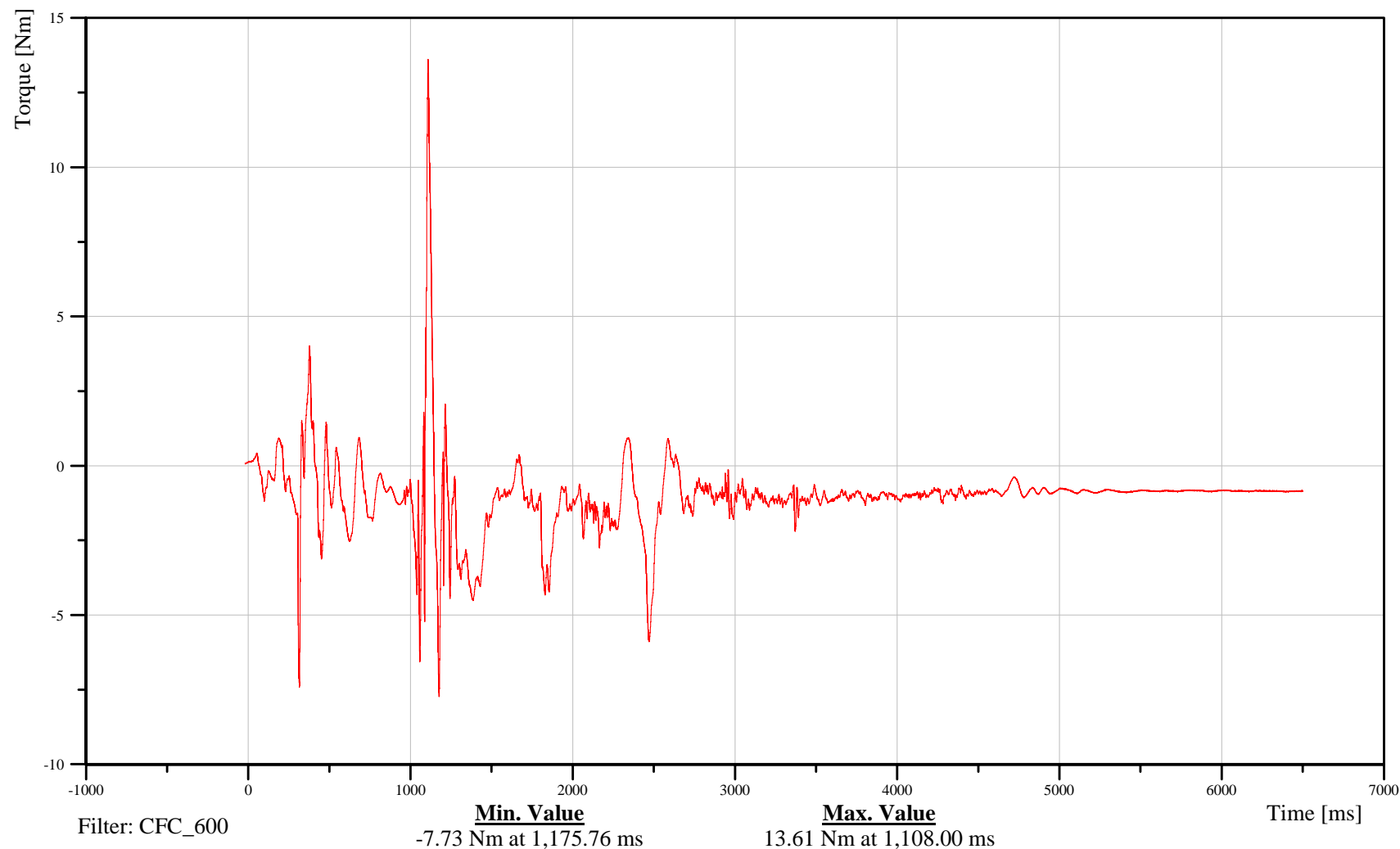
Right Front Passenger Upper Neck Moment About Y Axis

Date: 10/22/2009
Time: 19:31

Customer: VRTC

13NECKUP00H3MOYB

TRC Inc. Test Lab: CTF
Test Number: 091022



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091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

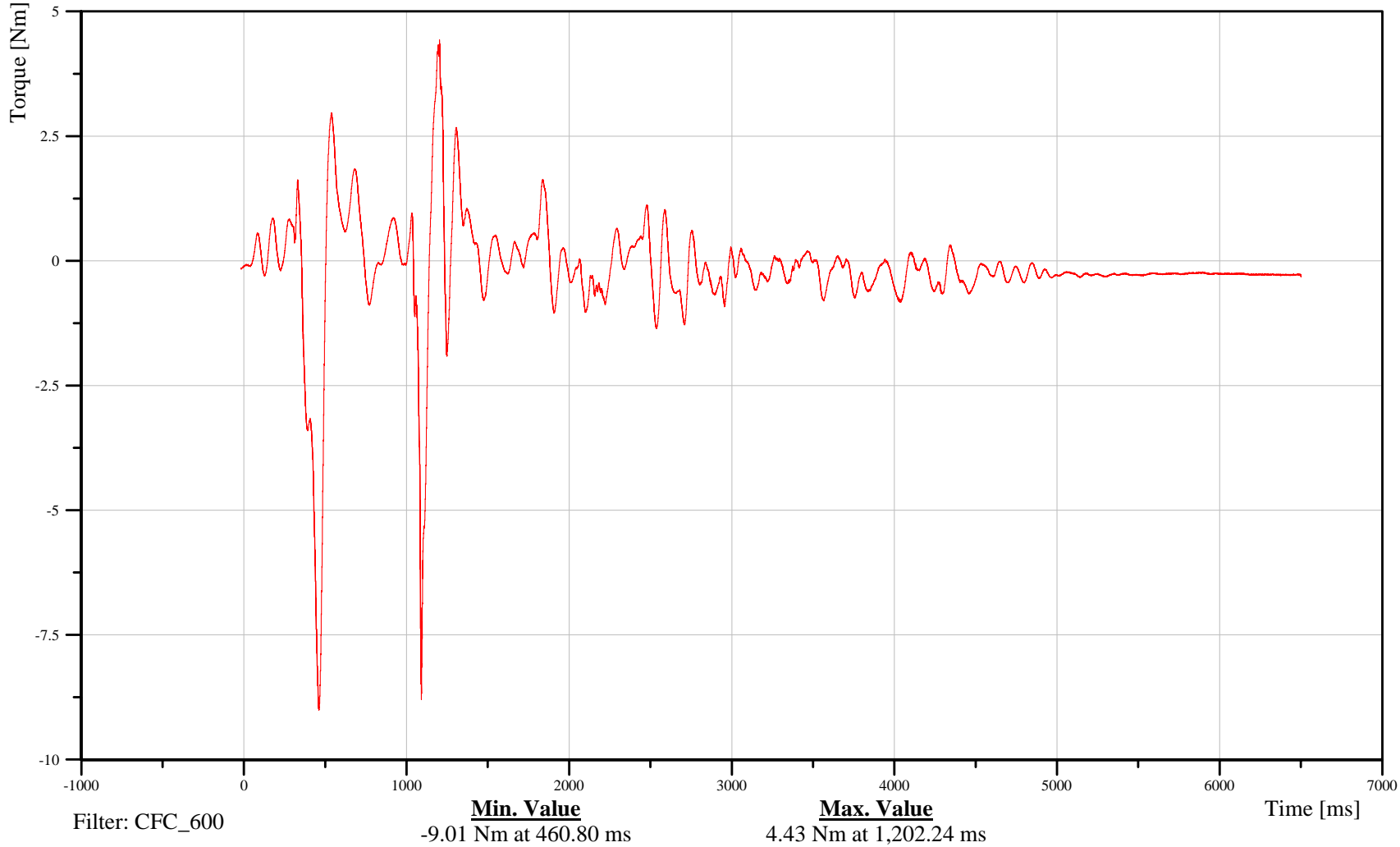
Right Front Passenger Upper Neck Moment About Z Axis

Customer: VRTC

13NECKUP00H3MOZB

TRC Inc. Test Lab: CTF

Test Number: 091022



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091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

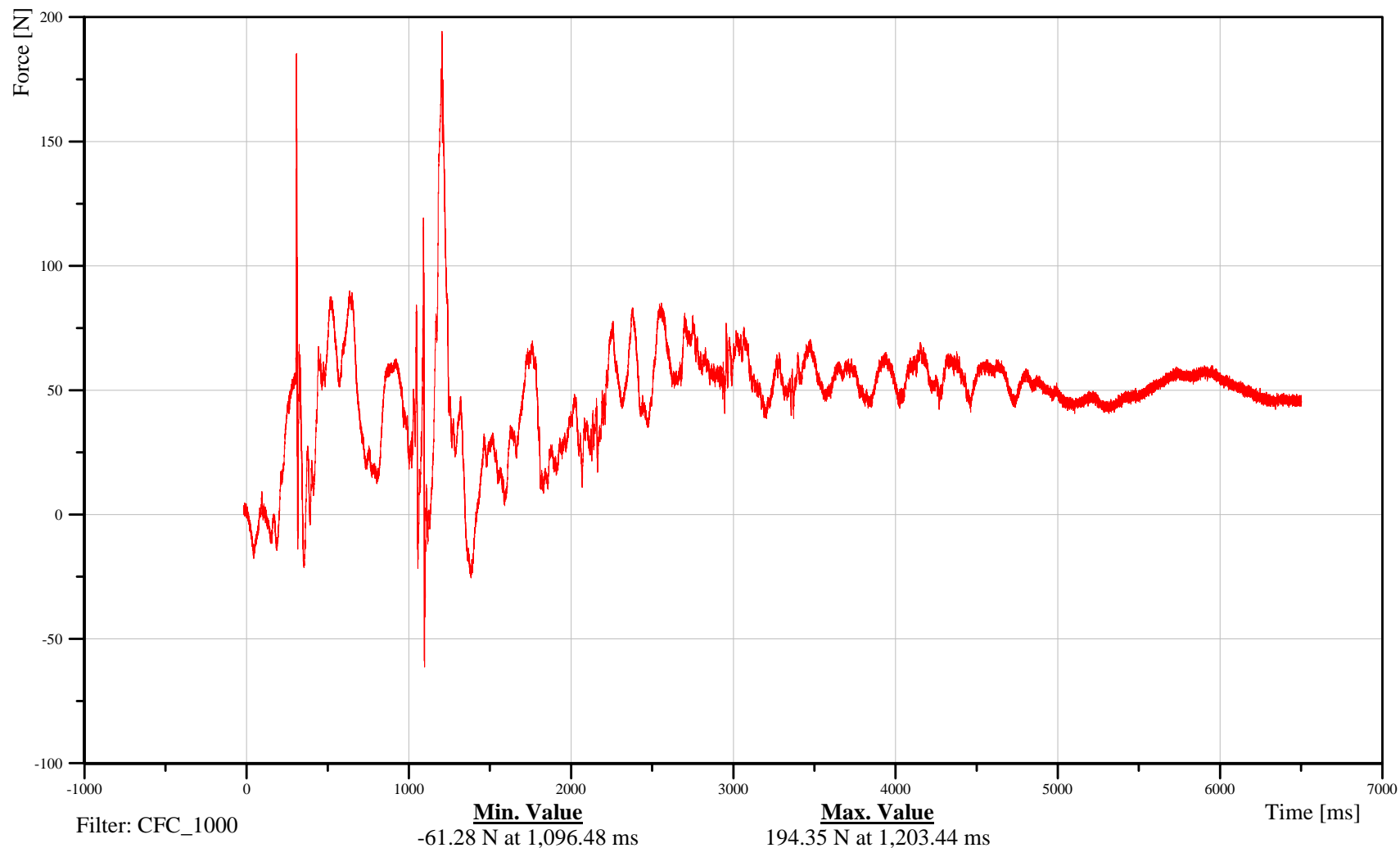
Right Front Passenger Lower Neck X-Axis Force

Customer: VRTC

13NECKLO00H3FOXA

TRC Inc. Test Lab: CTF

Test Number: 091022



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091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Right Front Passenger Lower Neck Y-Axis Force

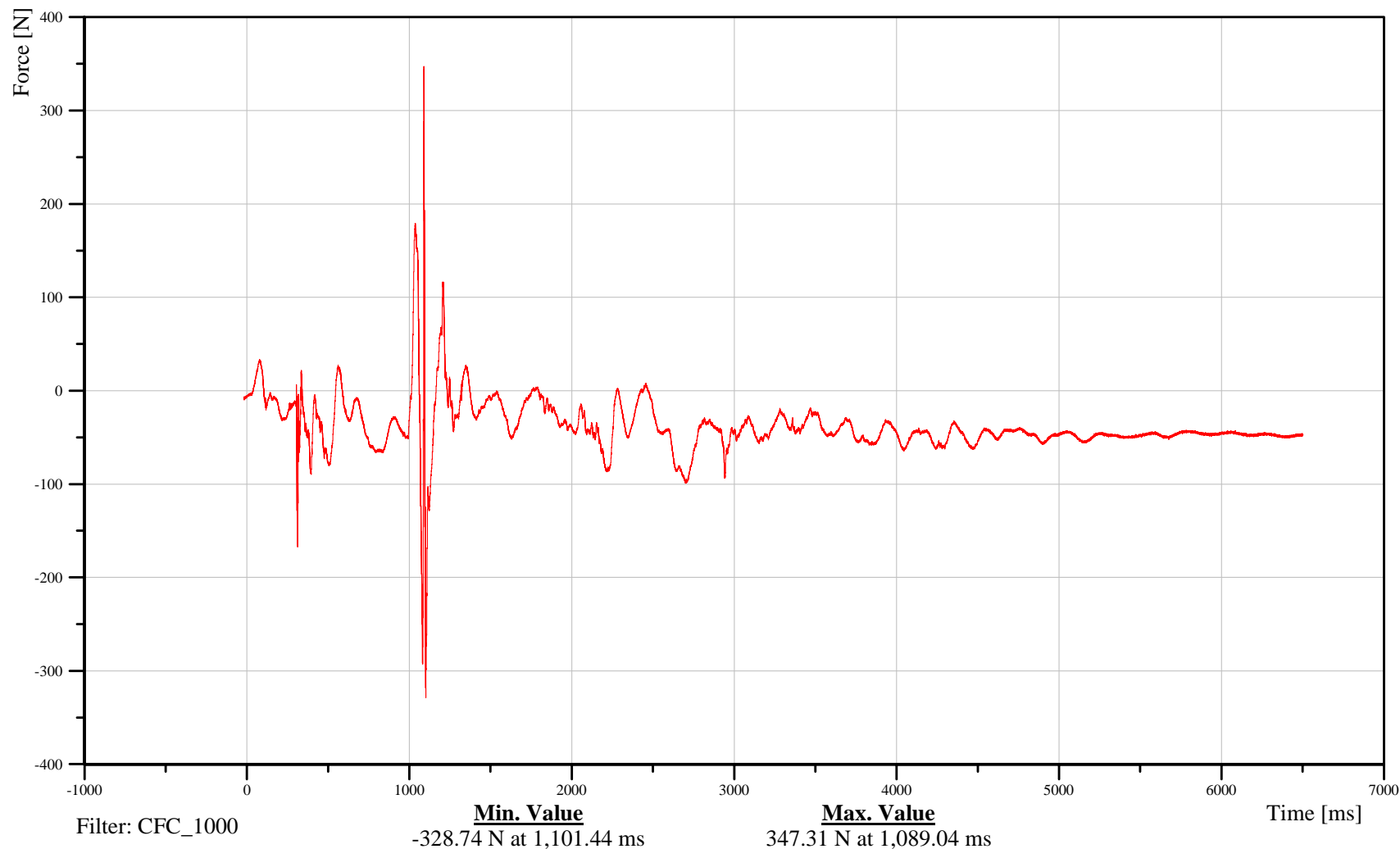
Time: 19:31

Customer: VRTC

13NECKLO00H3FOYA

TRC Inc. Test Lab: CTF

Test Number: 091022



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091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Right Front Passenger Lower Neck Z-Axis Force

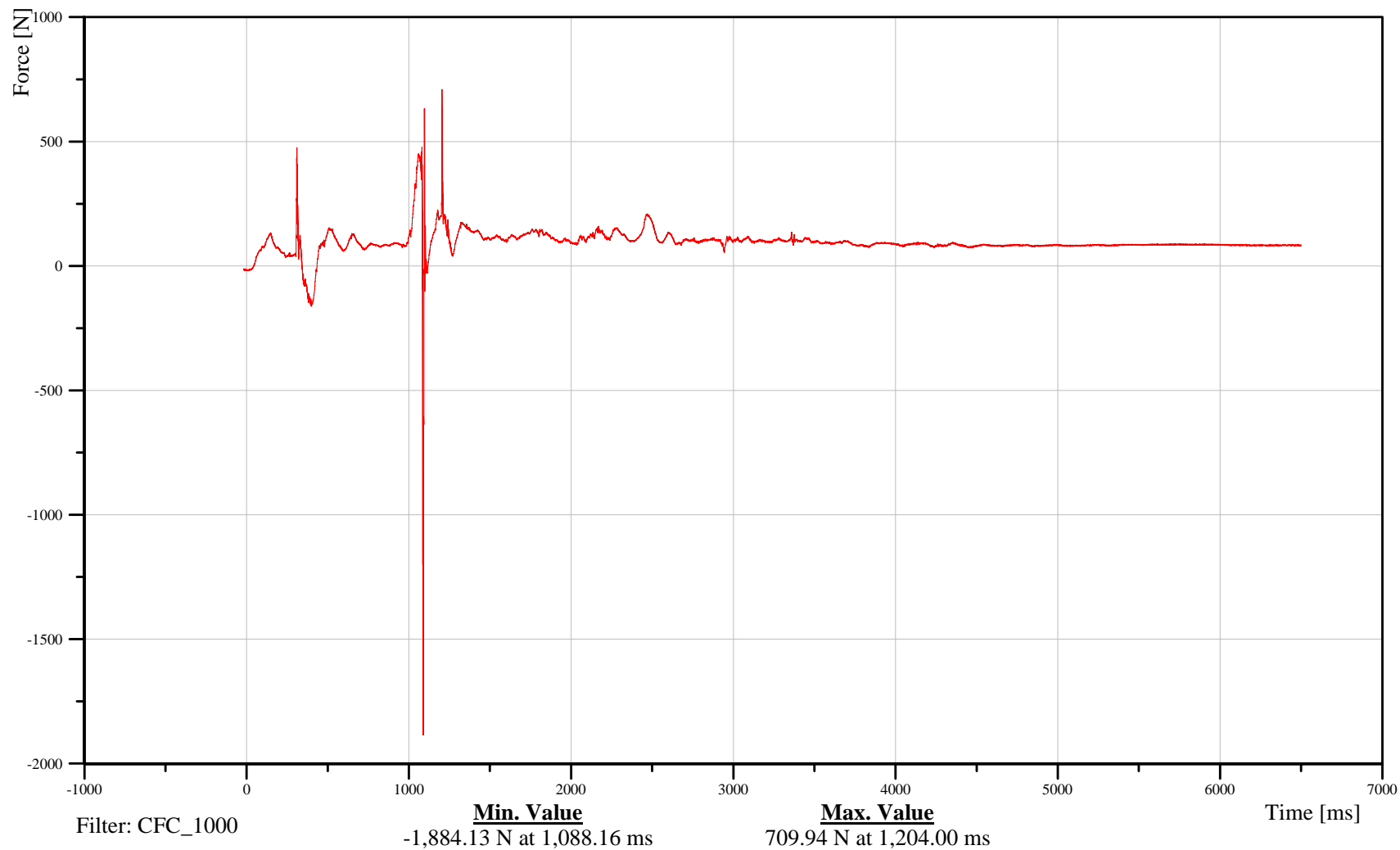
Time: 19:31

Customer: VRTC

13NECKLO00H3FOZA

TRC Inc. Test Lab: CTF

Test Number: 091022



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091022



FMVSS 208 Rollover 2007 Ford Expedition

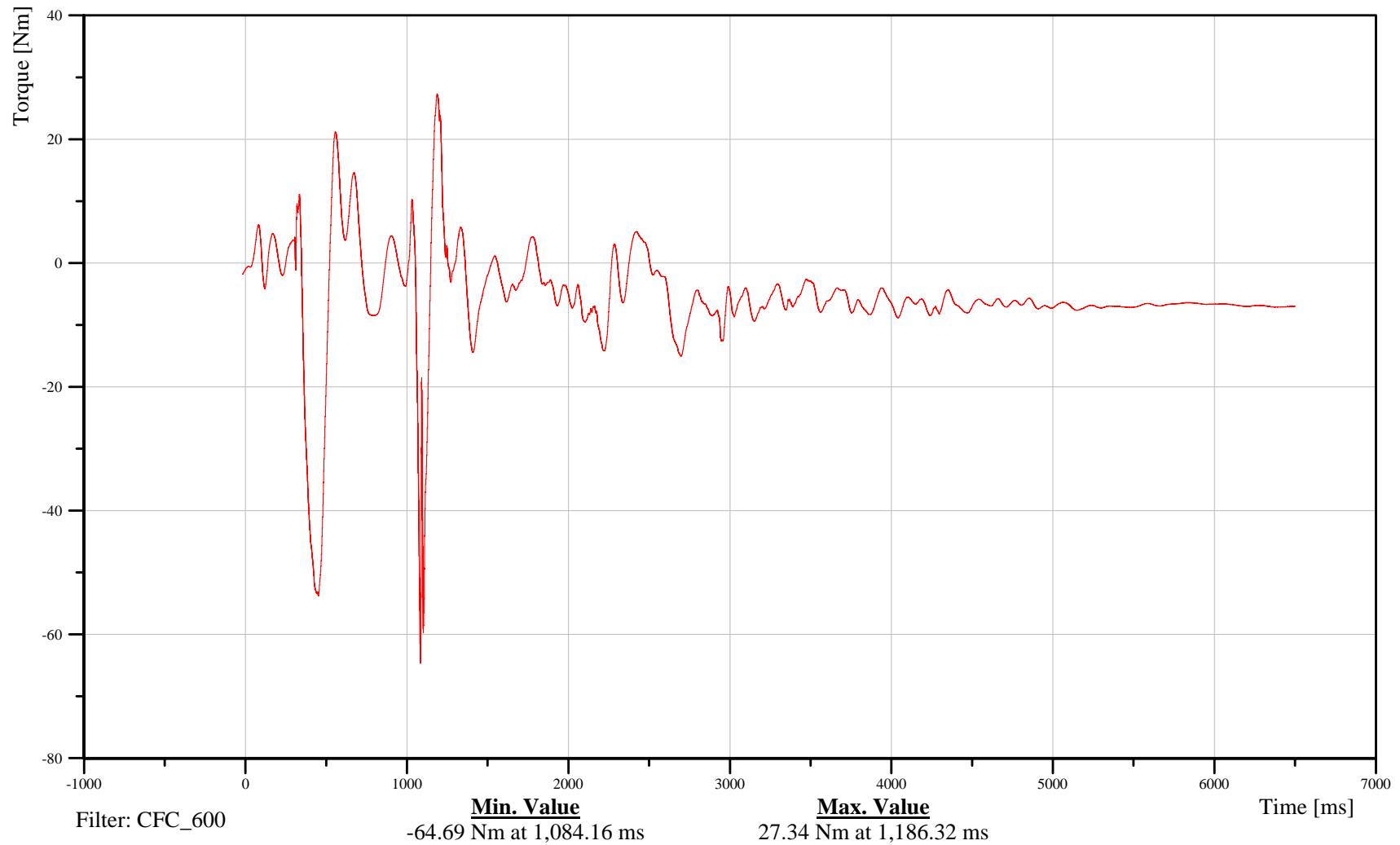
Right Front Passenger Lower Neck Moment About X Axis

Date: 10/22/2009
Time: 19:31

Customer: VRTC

13NECKLO00H3MOXB

TRC Inc. Test Lab: CTF
Test Number: 091022



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091022



FMVSS 208 Rollover 2007 Ford Expedition

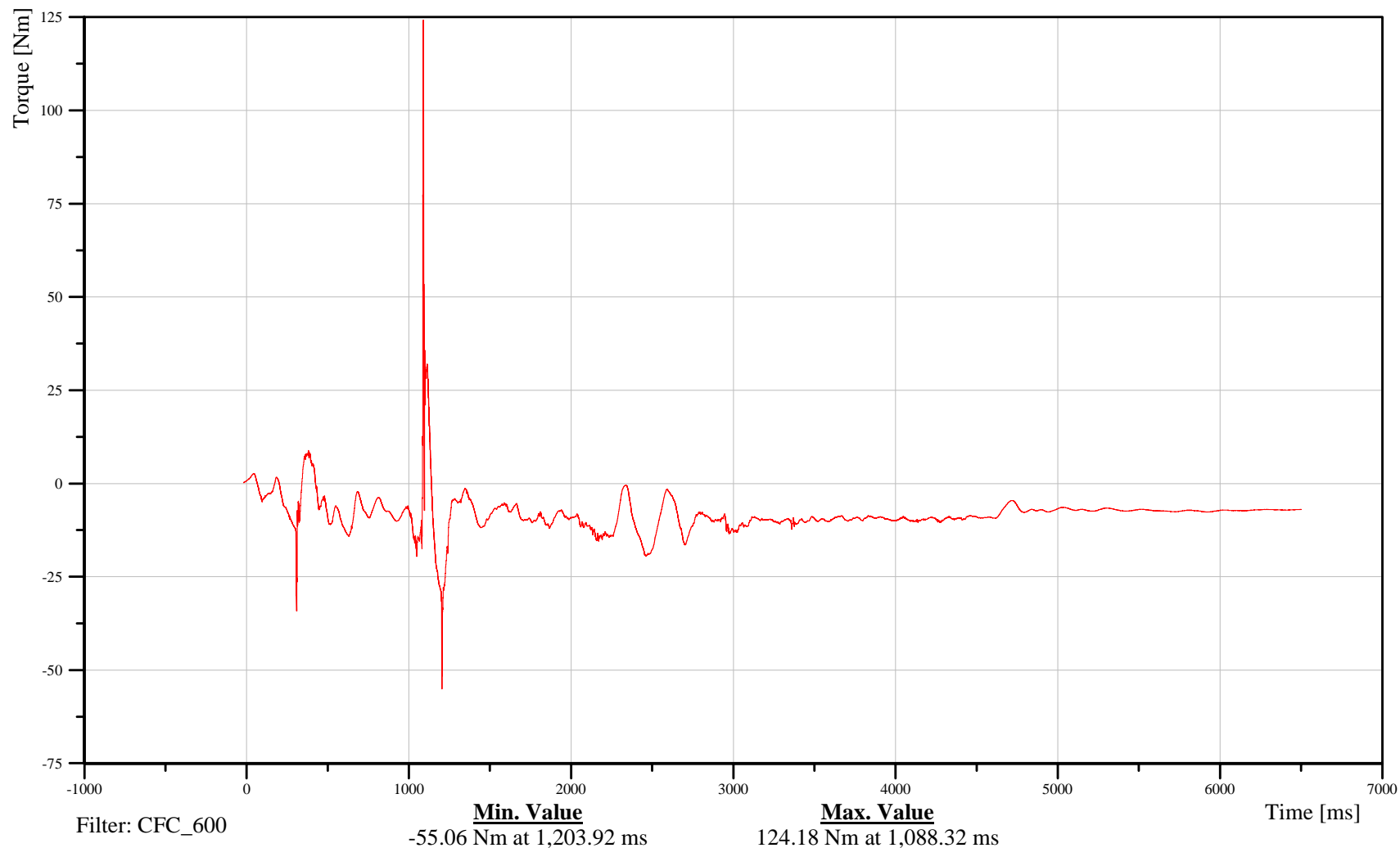
Right Front Passenger Lower Neck Moment About Y Axis

Date: 10/22/2009
Time: 19:31

Customer: VRTC

13NECKLO00H3MOYB

TRC Inc. Test Lab: CTF
Test Number: 091022



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091022



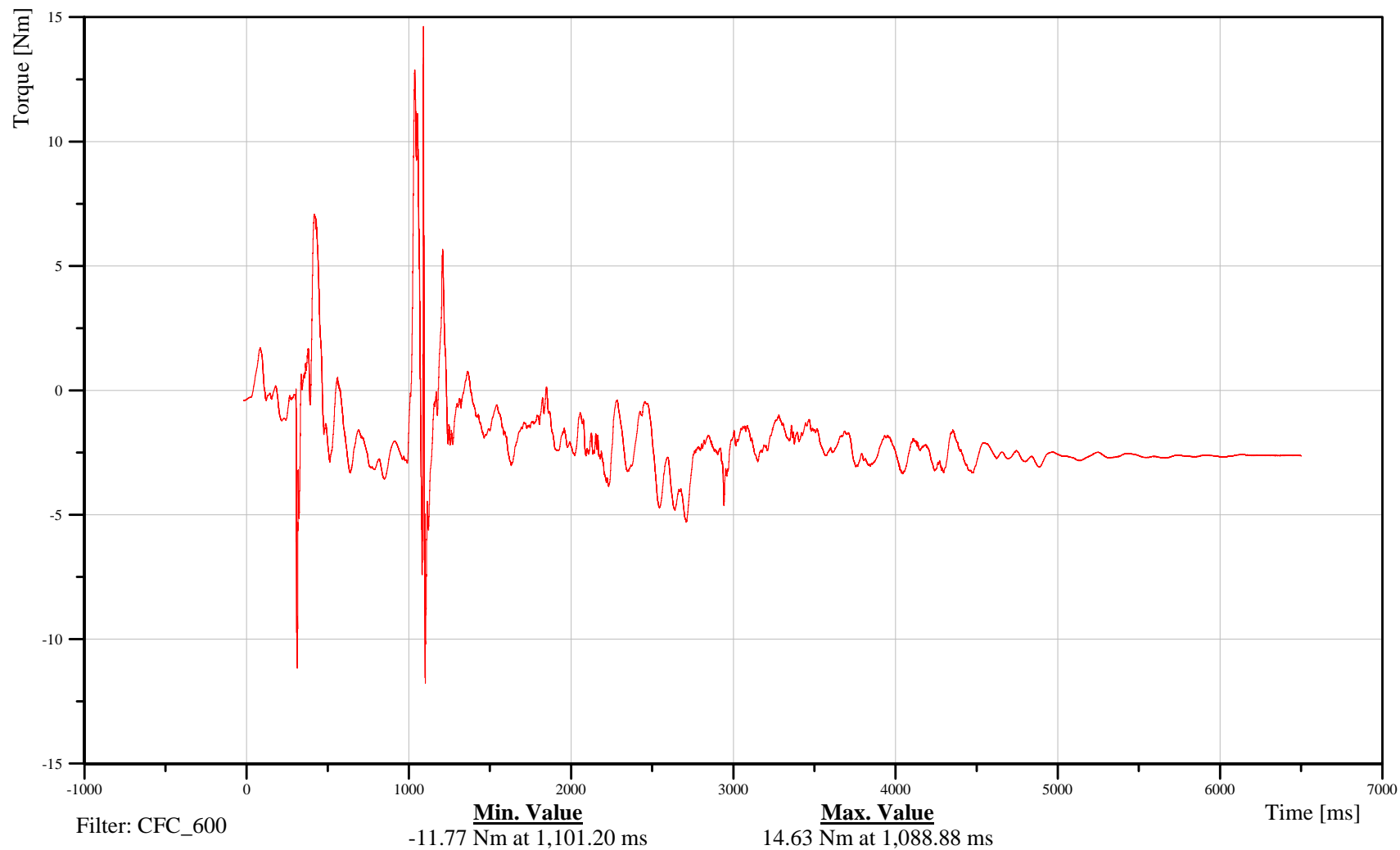
FMVSS 208 Rollover 2007 Ford Expedition
Right Front Passenger Lower Neck Moment About Z Axis

Date: 10/22/2009
Time: 19:31

Customer: VRTC

13NECKLO00H3MOZB

TRC Inc. Test Lab: CTF
Test Number: 091022



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091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Right Front Passenger Chest X-Axis Acceleration

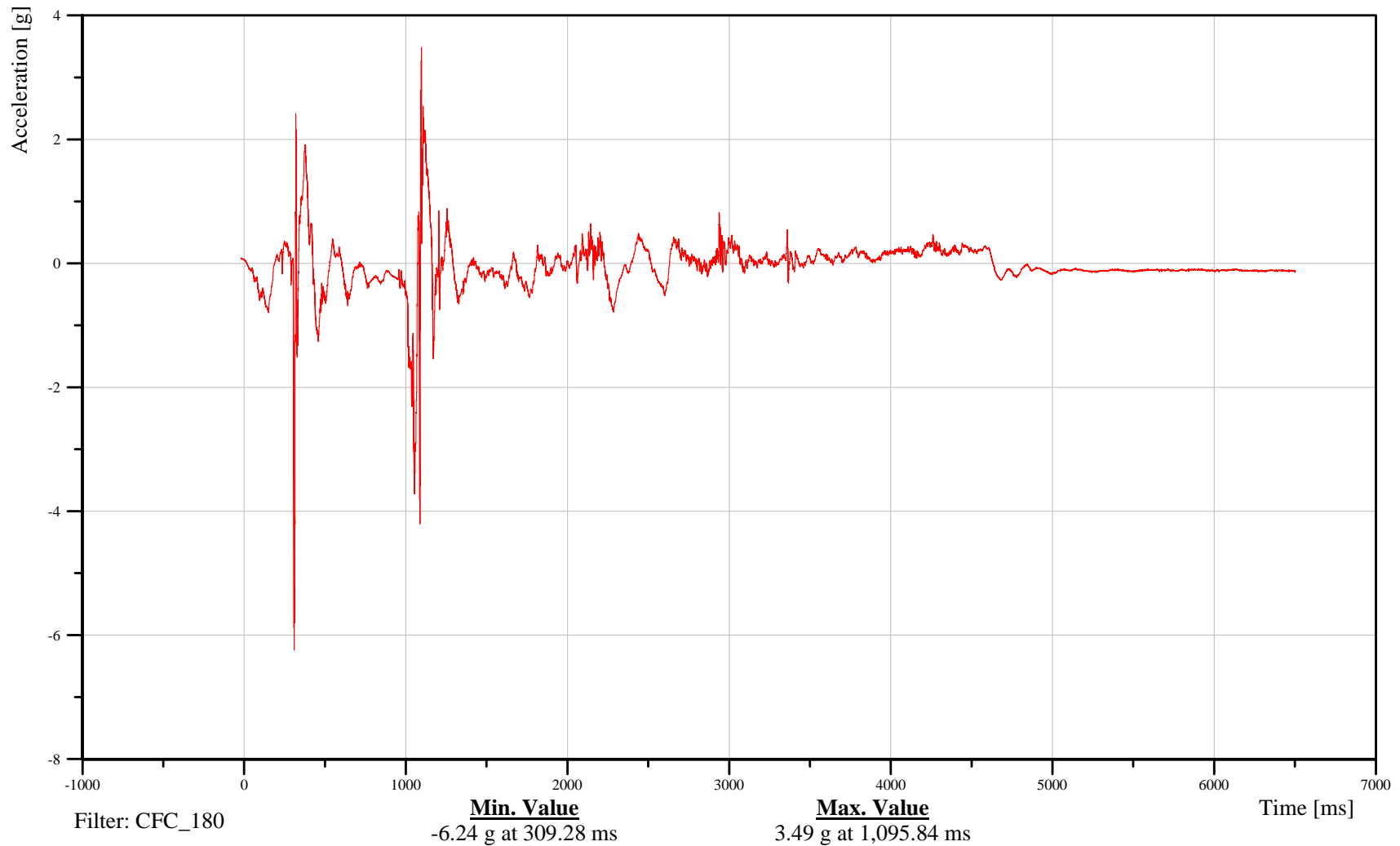
Time: 19:31

Customer: VRTC

13CHSTCG00H3ACXC

TRC Inc. Test Lab: CTF

Test Number: 091022



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091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Right Front Passenger Chest Y-Axis Acceleration

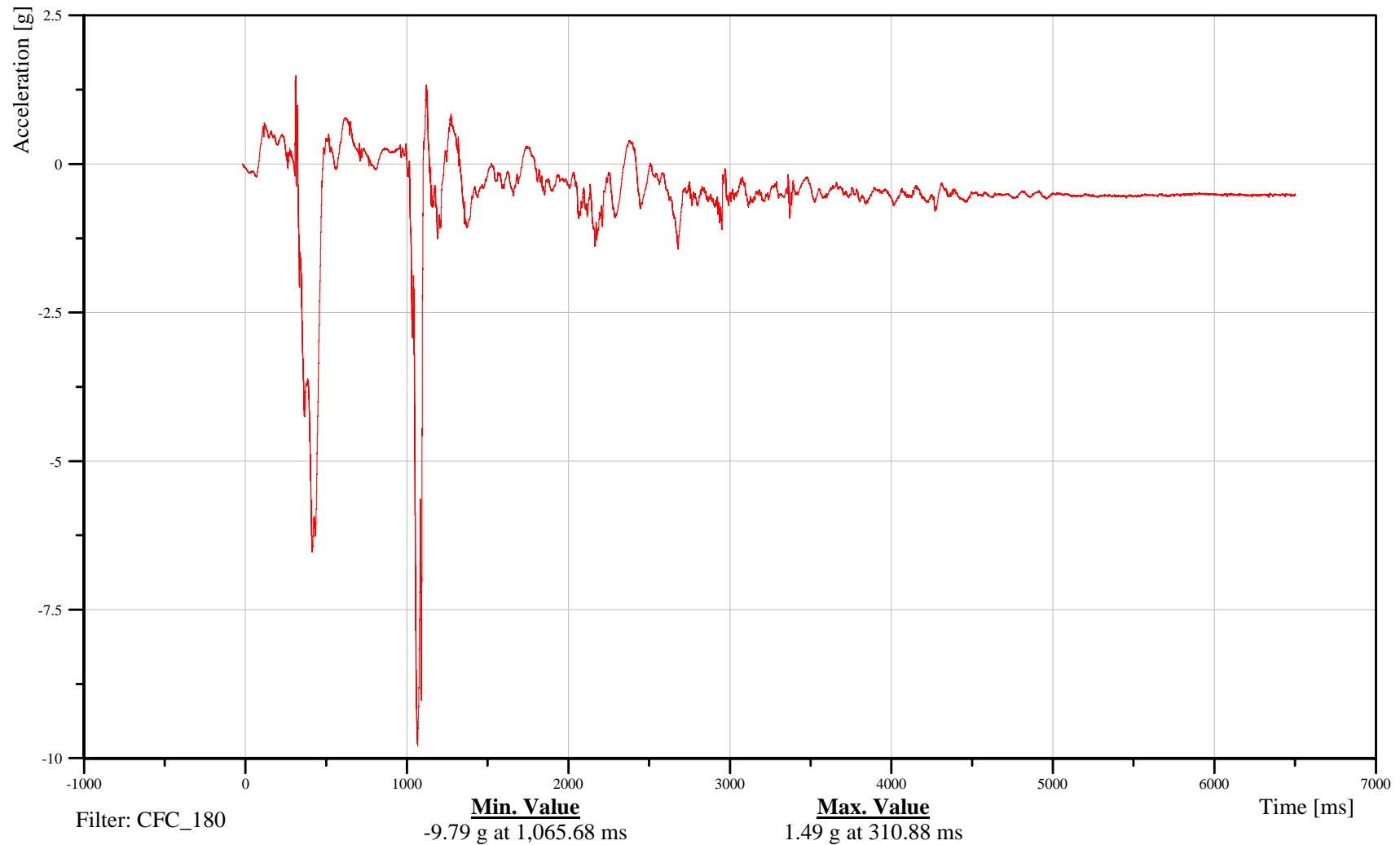
Time: 19:31

Customer: VRTC

13CHSTCG00H3ACYC

TRC Inc. Test Lab: CTF

Test Number: 091022



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091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

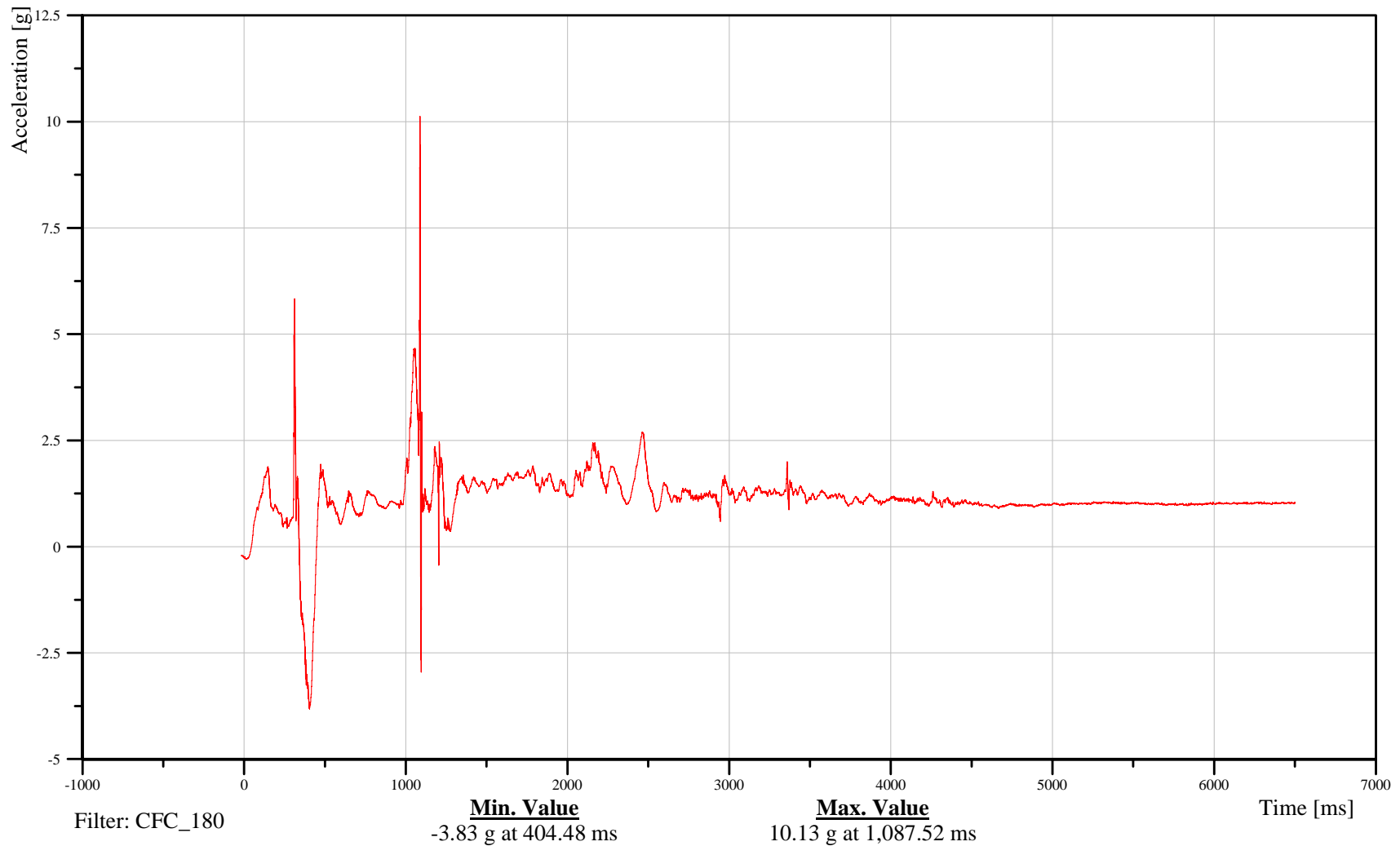
Right Front Passenger Chest Z-Axis Acceleration

Customer: VRTC

13CHSTCG00H3ACZC

TRC Inc. Test Lab: CTF

Test Number: 091022



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091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

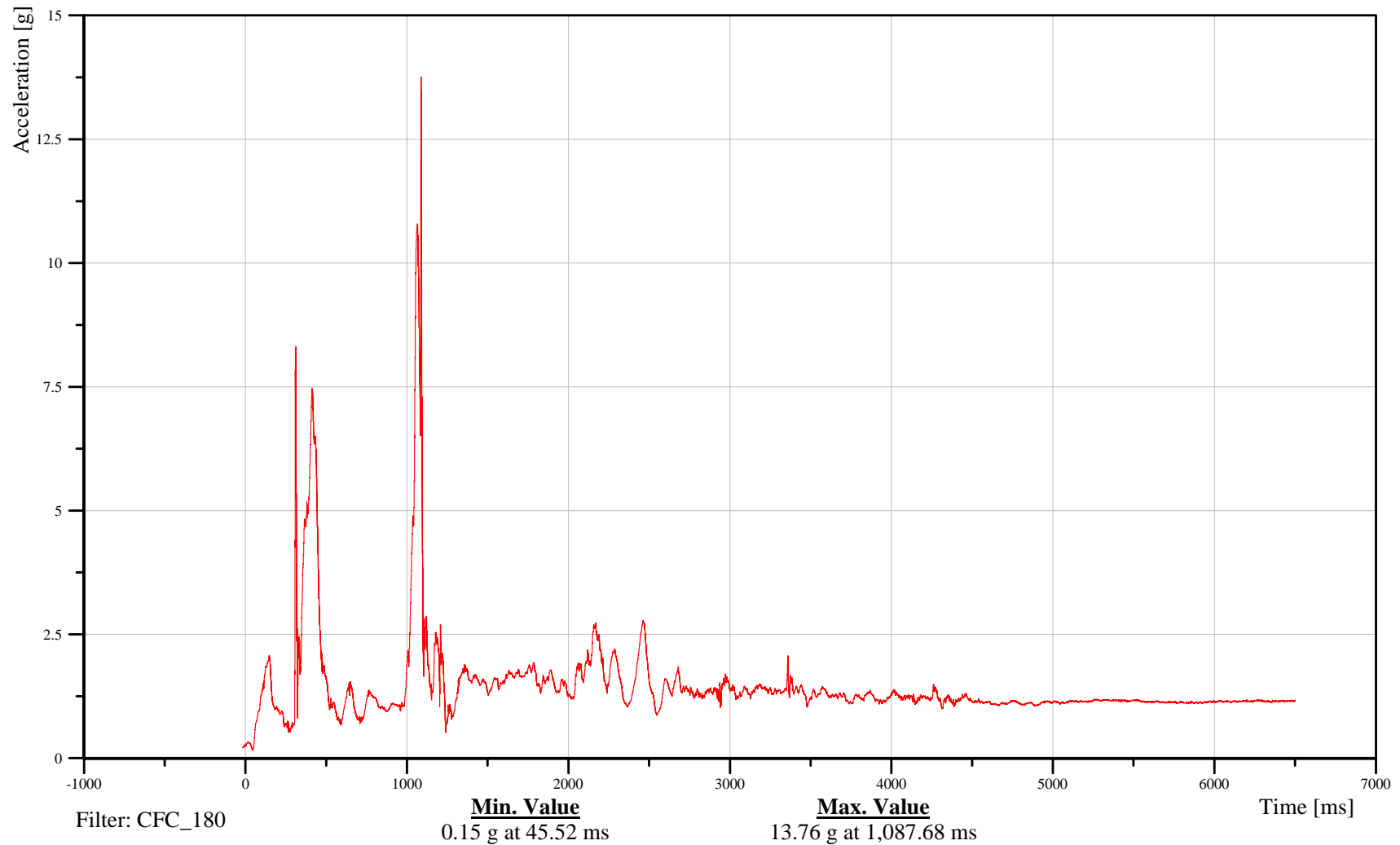
Right Front Passenger Chest Resultant Acceleration

Customer: VRTC

13CHSTCG00H3ACRC

TRC Inc. Test Lab: CTF

Test Number: 091022



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091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009
Time: 19:31

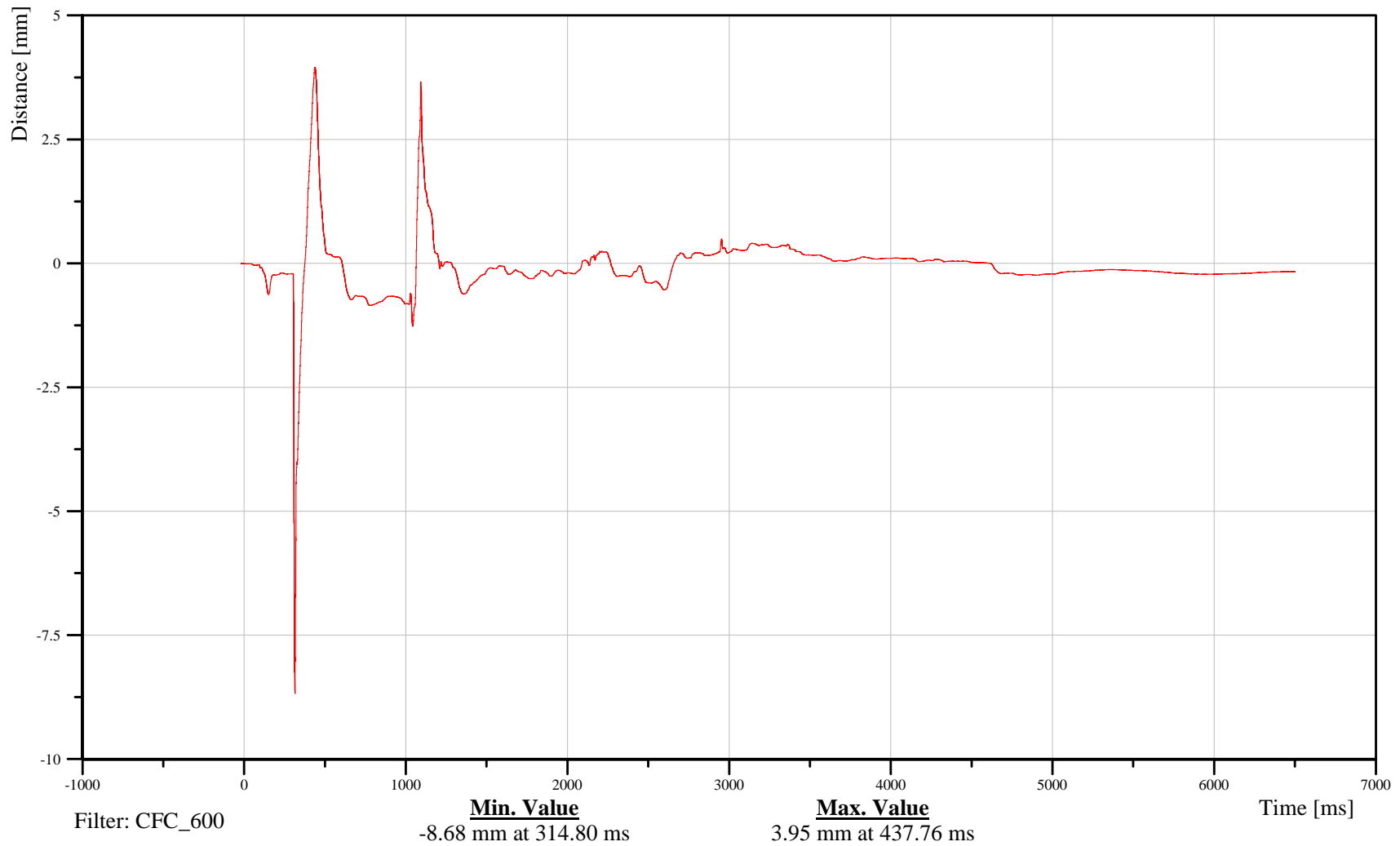
Right Front Passenger Chest X-Axis Displacement

Customer: VRTC

13CHST0000H3DSXB

TRC Inc. Test Lab: CTF

Test Number: 091022



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091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Right Front Passenger Pelvis X-Axis Acceleration

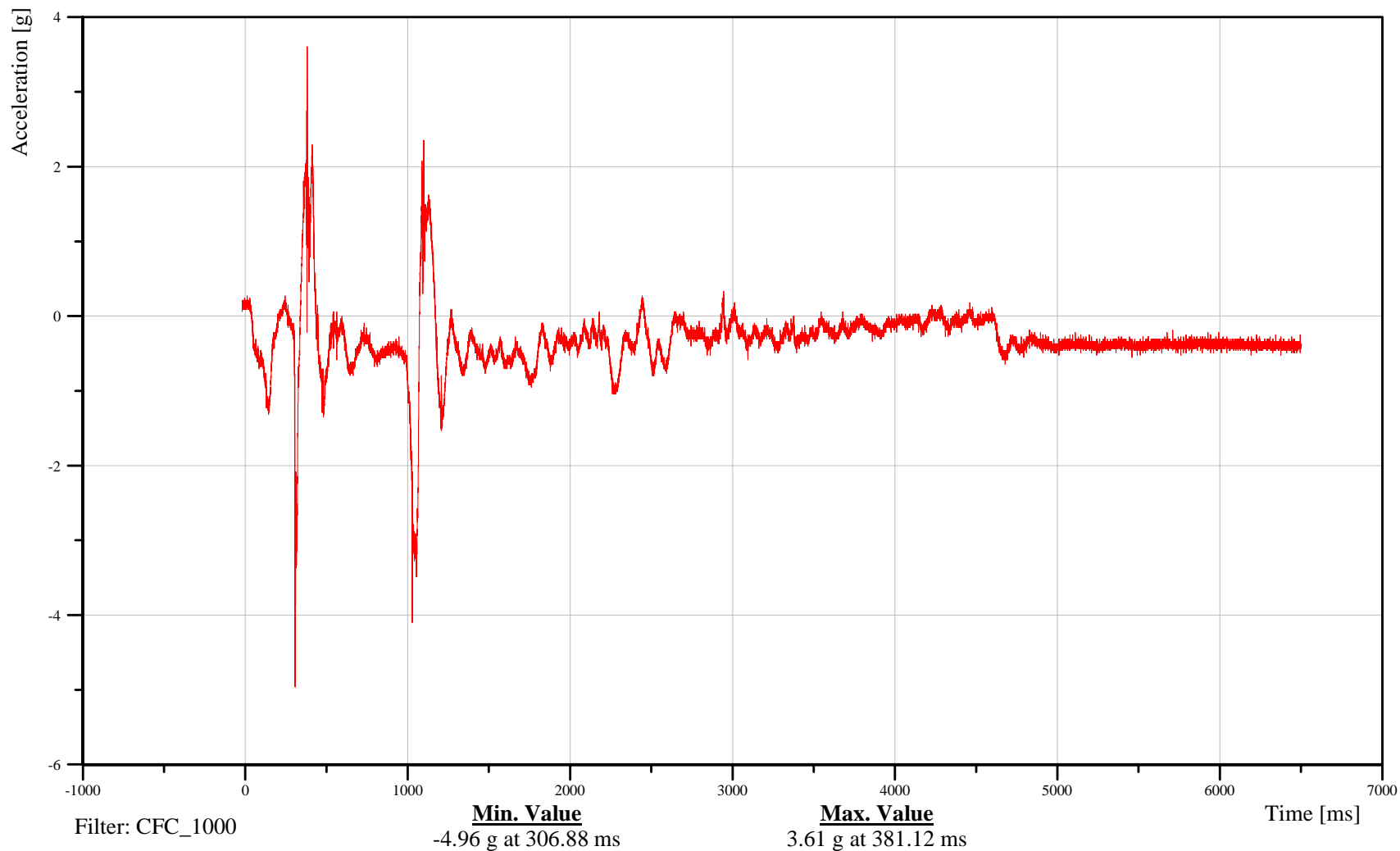
Time: 19:31

Customer: VRTC

13PELVCG00H3ACXA

TRC Inc. Test Lab: CTF

Test Number: 091022



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091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Right Front Passenger Pelvis Y-Axis Acceleration

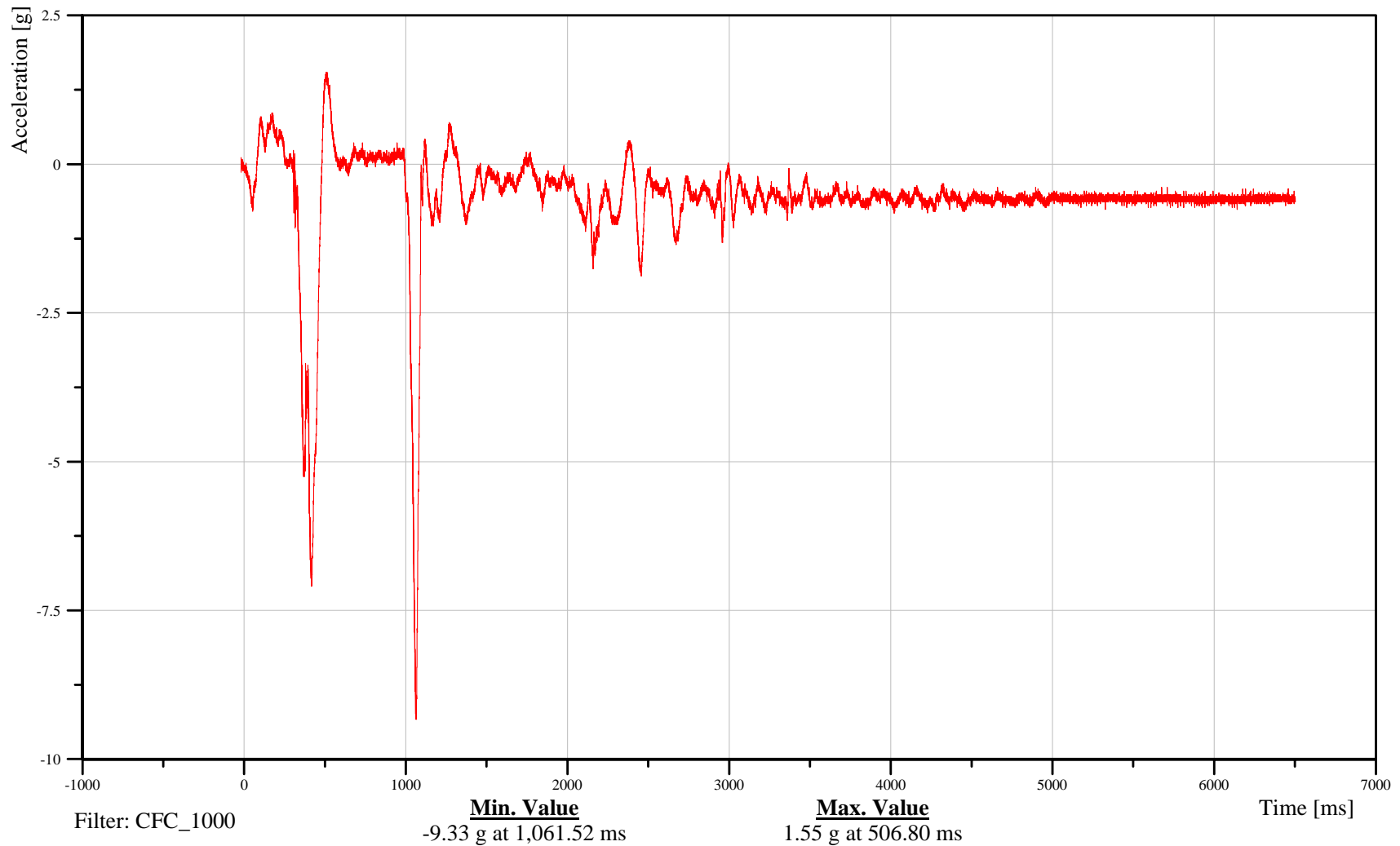
Time: 19:31

Customer: VRTC

13PELVCG00H3ACYA

TRC Inc. Test Lab: CTF

Test Number: 091022



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091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Right Front Passenger Pelvis Z-Axis Acceleration

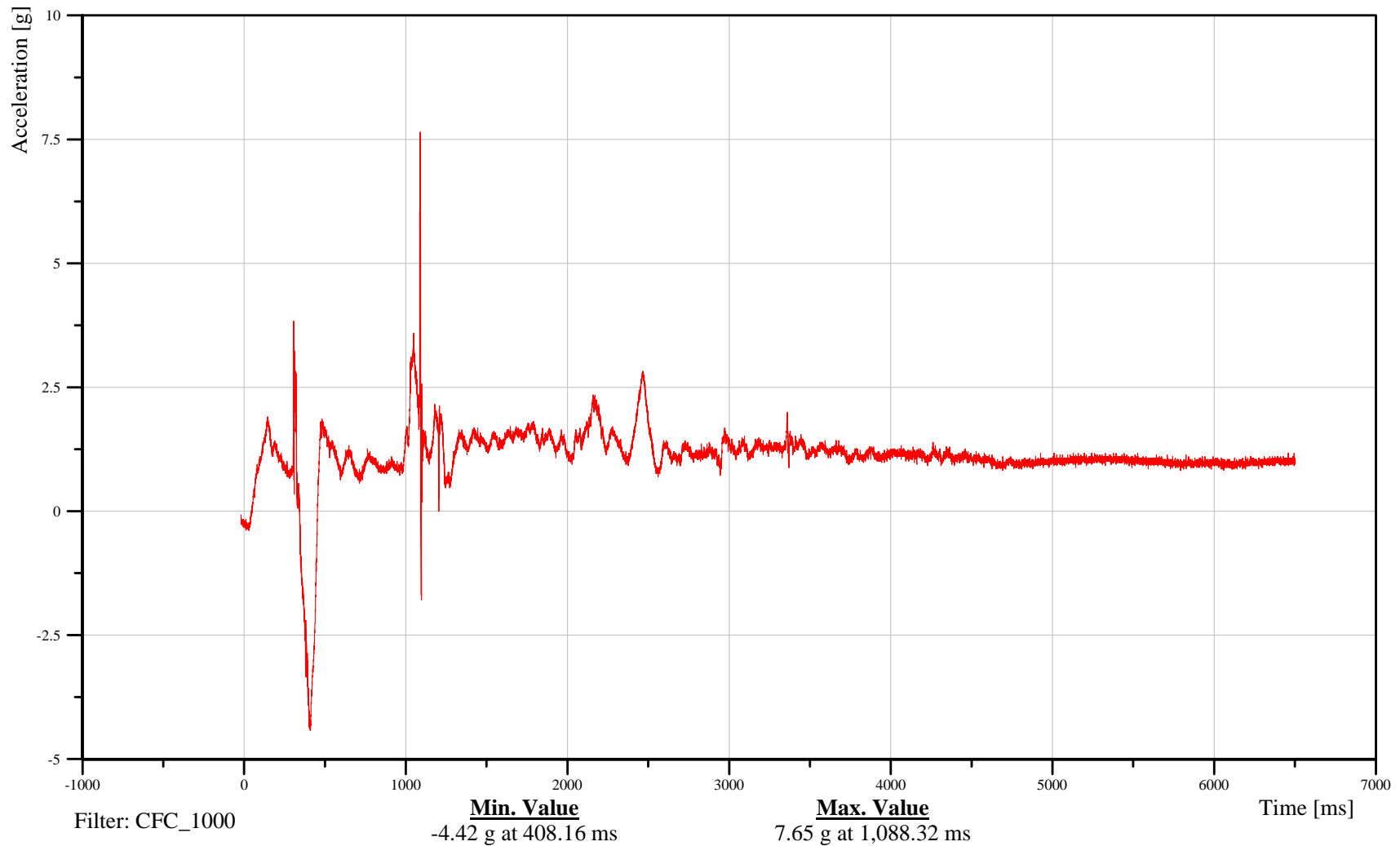
Time: 19:31

Customer: VRTC

13PELVCG00H3ACZA

TRC Inc. Test Lab: CTF

Test Number: 091022



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091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

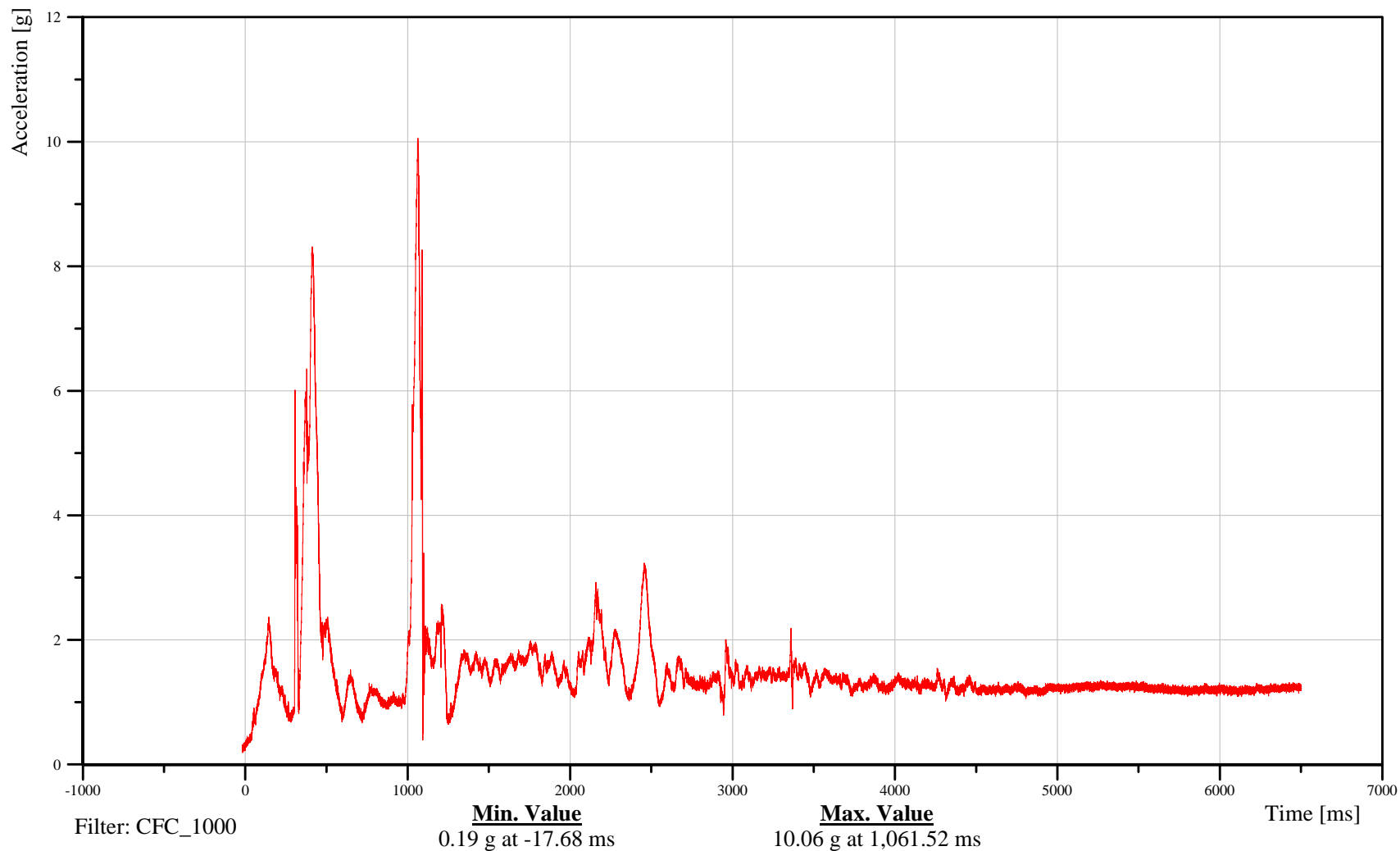
Right Front Passenger Pelvis Resultant Acceleration

Customer: VRTC

13PELVCG00H3ACRA

TRC Inc. Test Lab: CTF

Test Number: 091022



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091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Left Rear Passenger Head X-Axis Acceleration

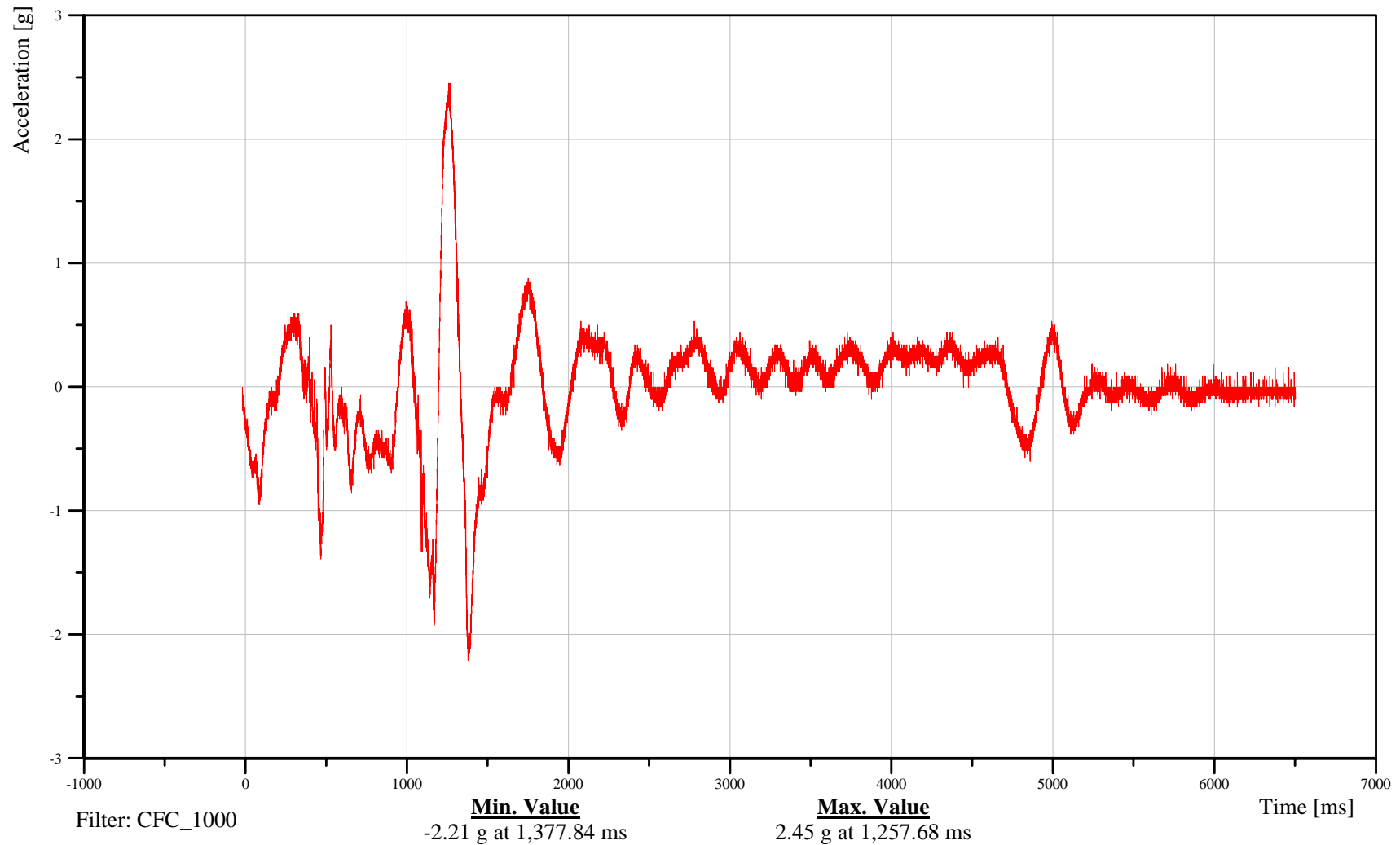
Time: 19:31

Customer: VRTC

14HEADCG00H3ACXA

TRC Inc. Test Lab: CTF

Test Number: 091022



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091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Left Rear Passenger Head Y-Axis Acceleration

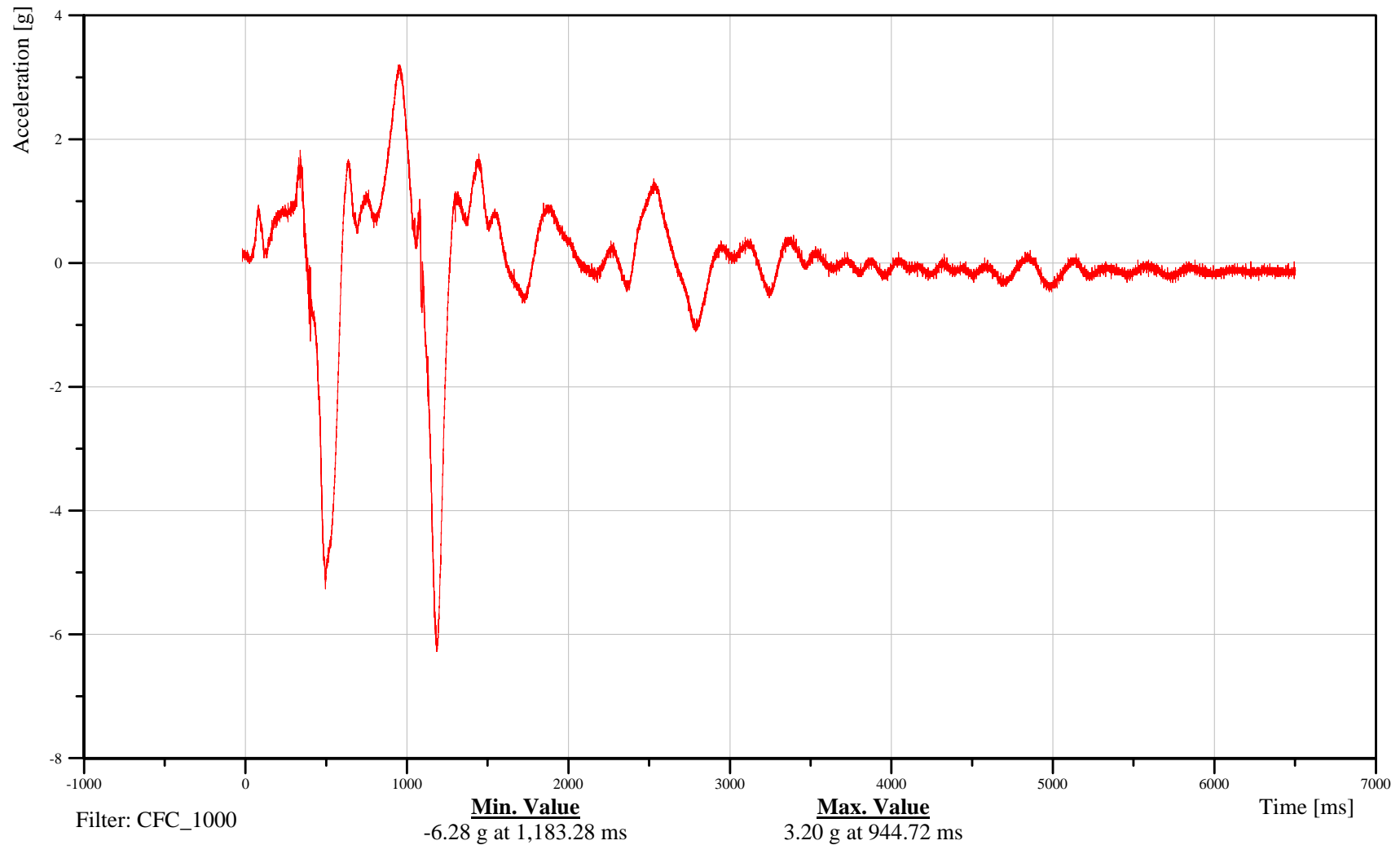
Time: 19:31

Customer: VRTC

14HEADCG00H3ACYA

TRC Inc. Test Lab: CTF

Test Number: 091022



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091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Left Rear Passenger Head Z-Axis Acceleration

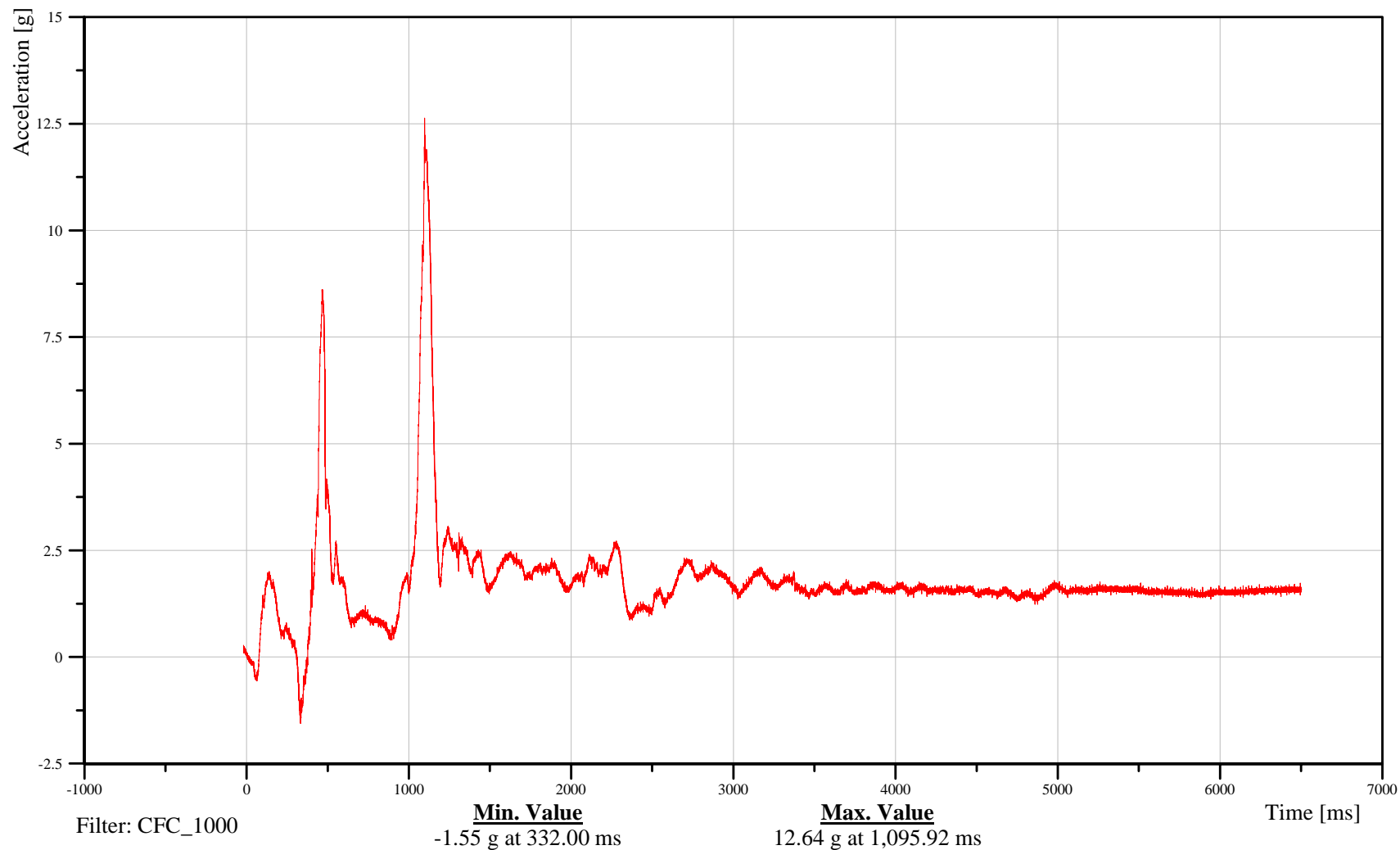
Time: 19:31

Customer: VRTC

14HEADCG00H3ACZA

TRC Inc. Test Lab: CTF

Test Number: 091022



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091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Left Rear Passenger Head Resultant Acceleration

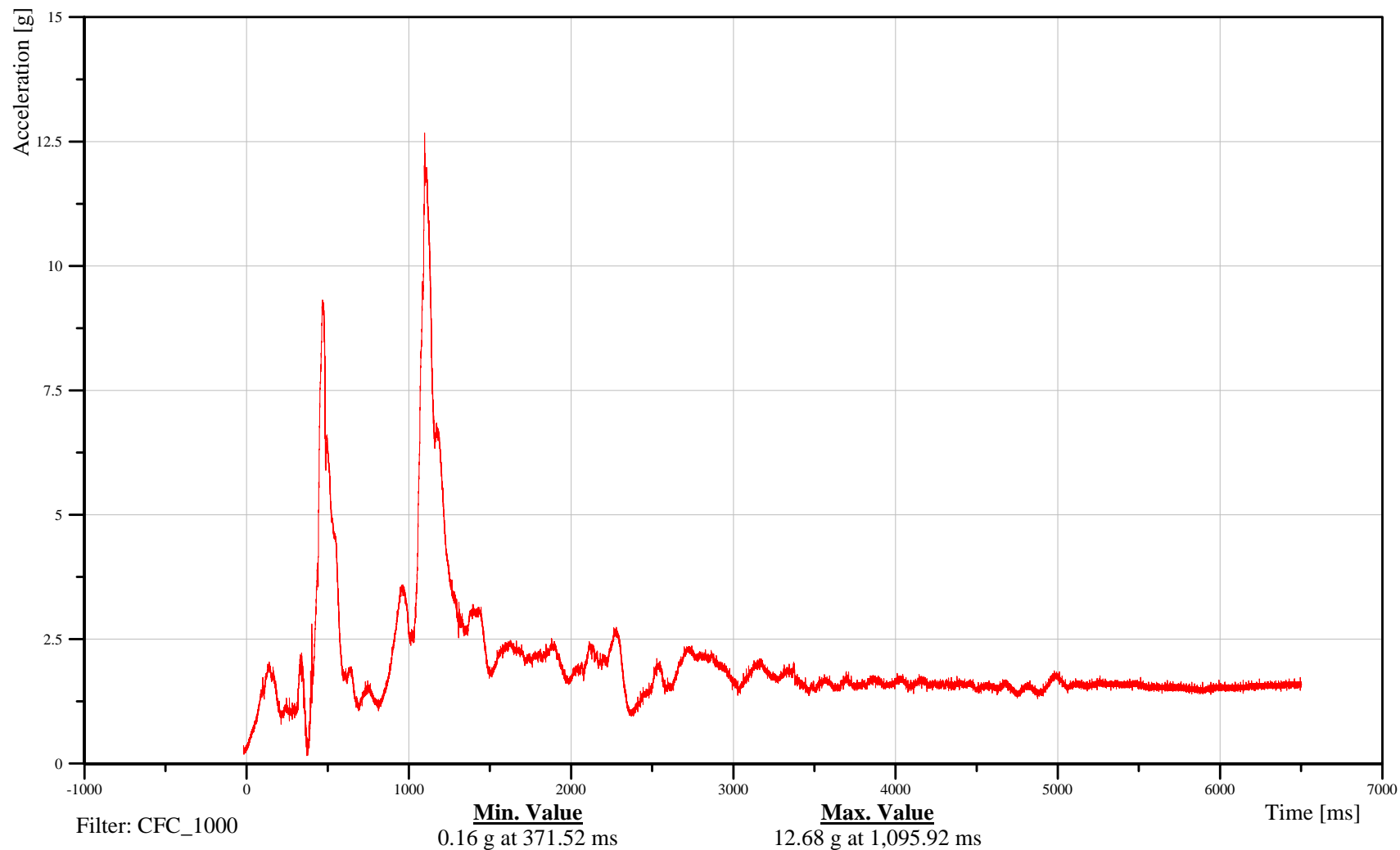
Time: 19:31

Customer: VRTC

14HEADCG00H3ACRA

TRC Inc. Test Lab: CTF

Test Number: 091022



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091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

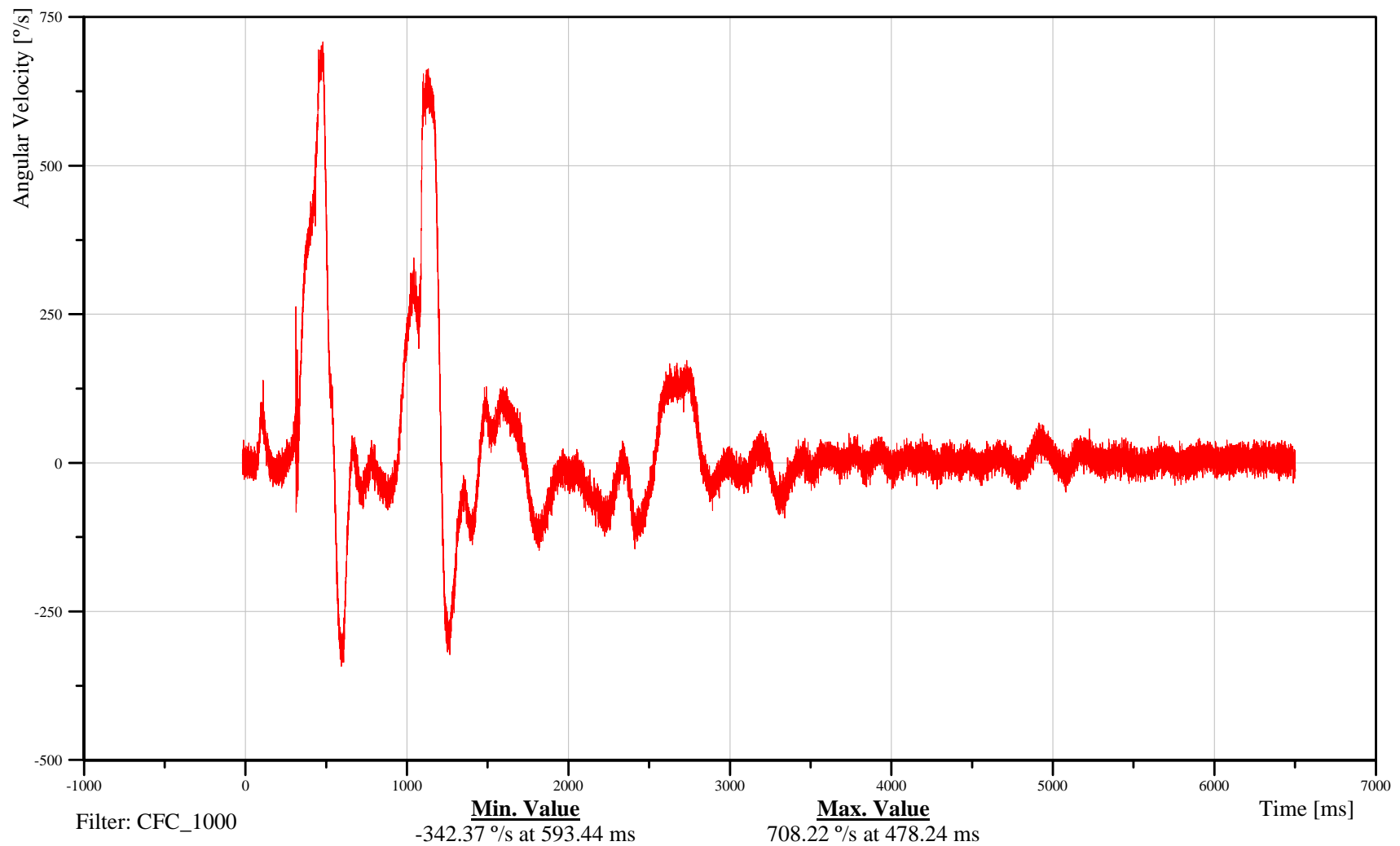
Left Rear Passenger Head (DTS ARS) Rate Gyro X

Customer: VRTC

14HEADCG00H3AVXA

TRC Inc. Test Lab: CTF

Test Number: 091022



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091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

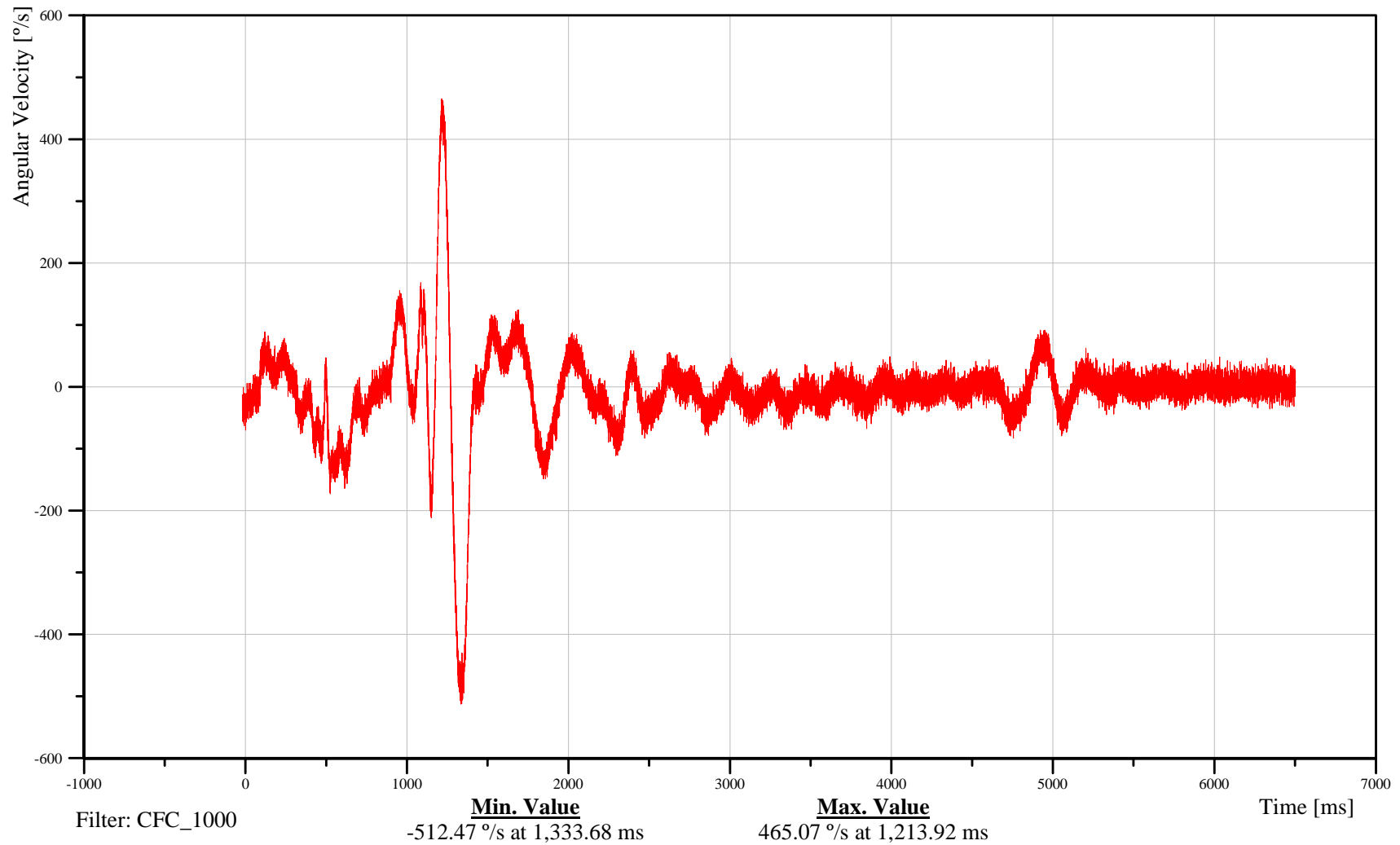
Left Rear Passenger Head (DTS ARS) Rate Gyro Y

Customer: VRTC

14HEADCG00H3AVYA

TRC Inc. Test Lab: CTF

Test Number: 091022



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091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

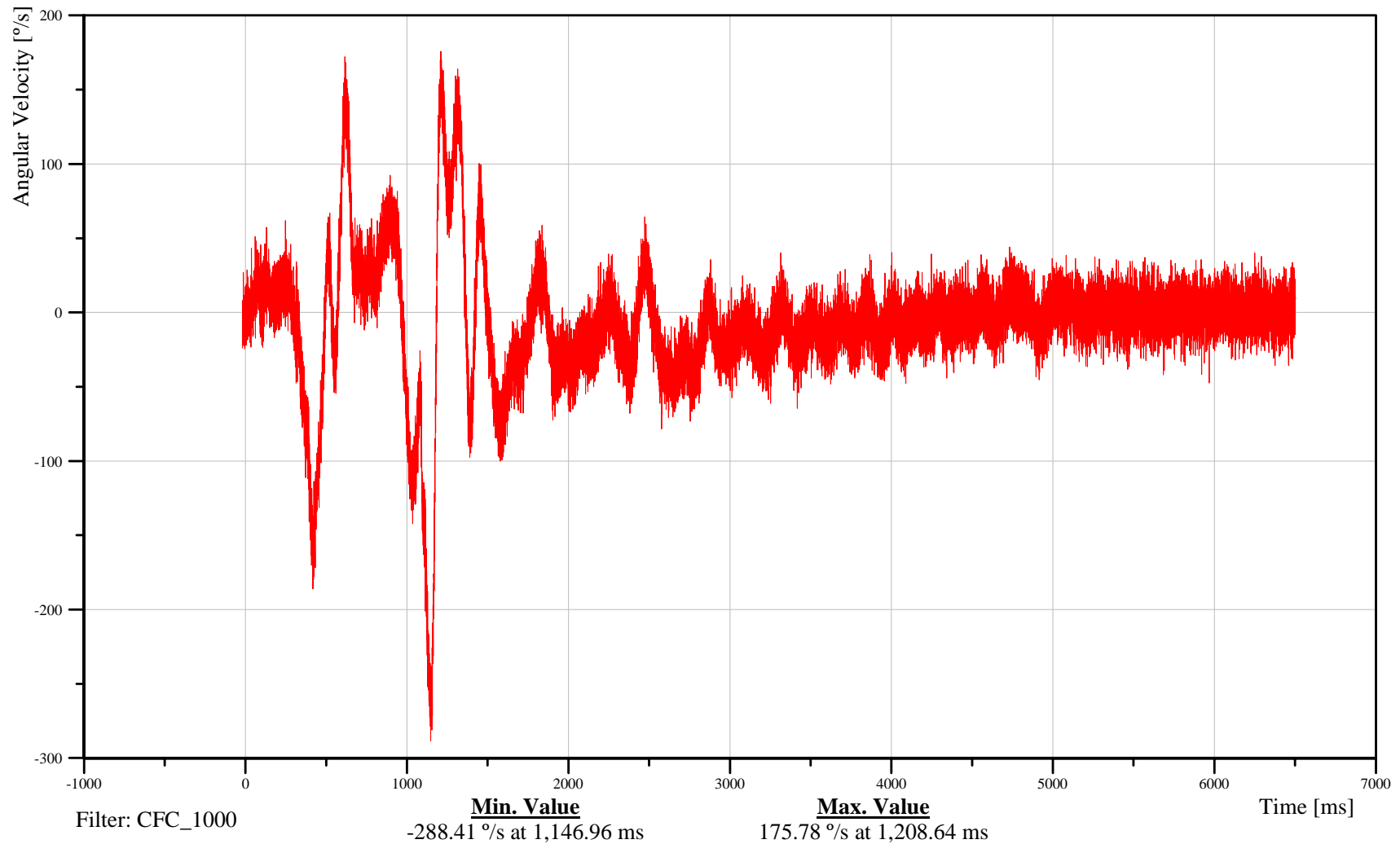
Left Rear Passenger Head (DTS ARS) Rate Gyro Z

Customer: VRTC

14HEADCG00H3AVZA

TRC Inc. Test Lab: CTF

Test Number: 091022



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091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

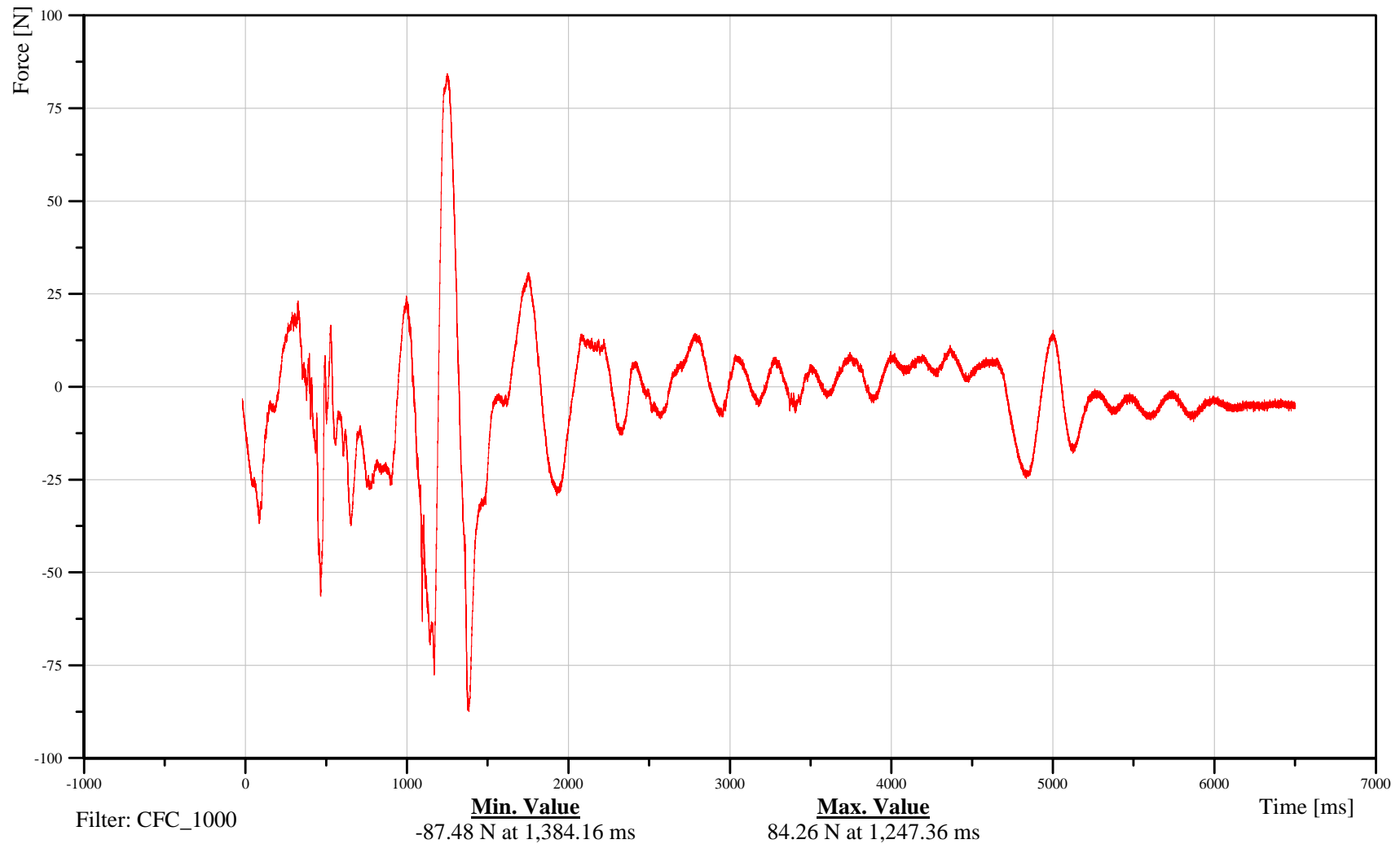
Left Rear Passenger Upper Neck X-Axis Force

Customer: VRTC

14NECKUP00H3FOXA

TRC Inc. Test Lab: CTF

Test Number: 091022



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091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Left Rear Passenger Upper Neck Y-Axis Force

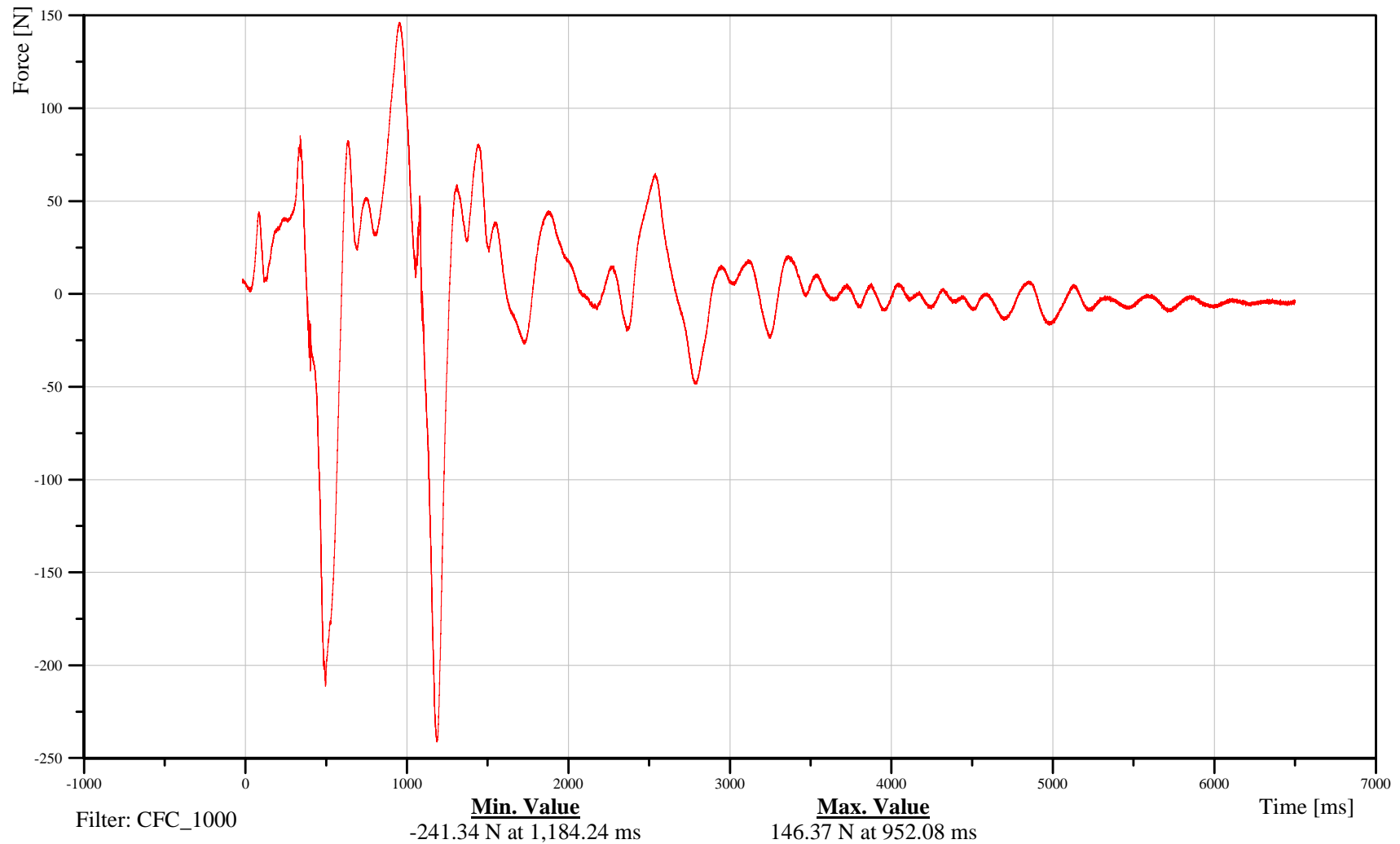
Time: 19:31

Customer: VRTC

14NECKUP00H3FOYA

TRC Inc. Test Lab: CTF

Test Number: 091022



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091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

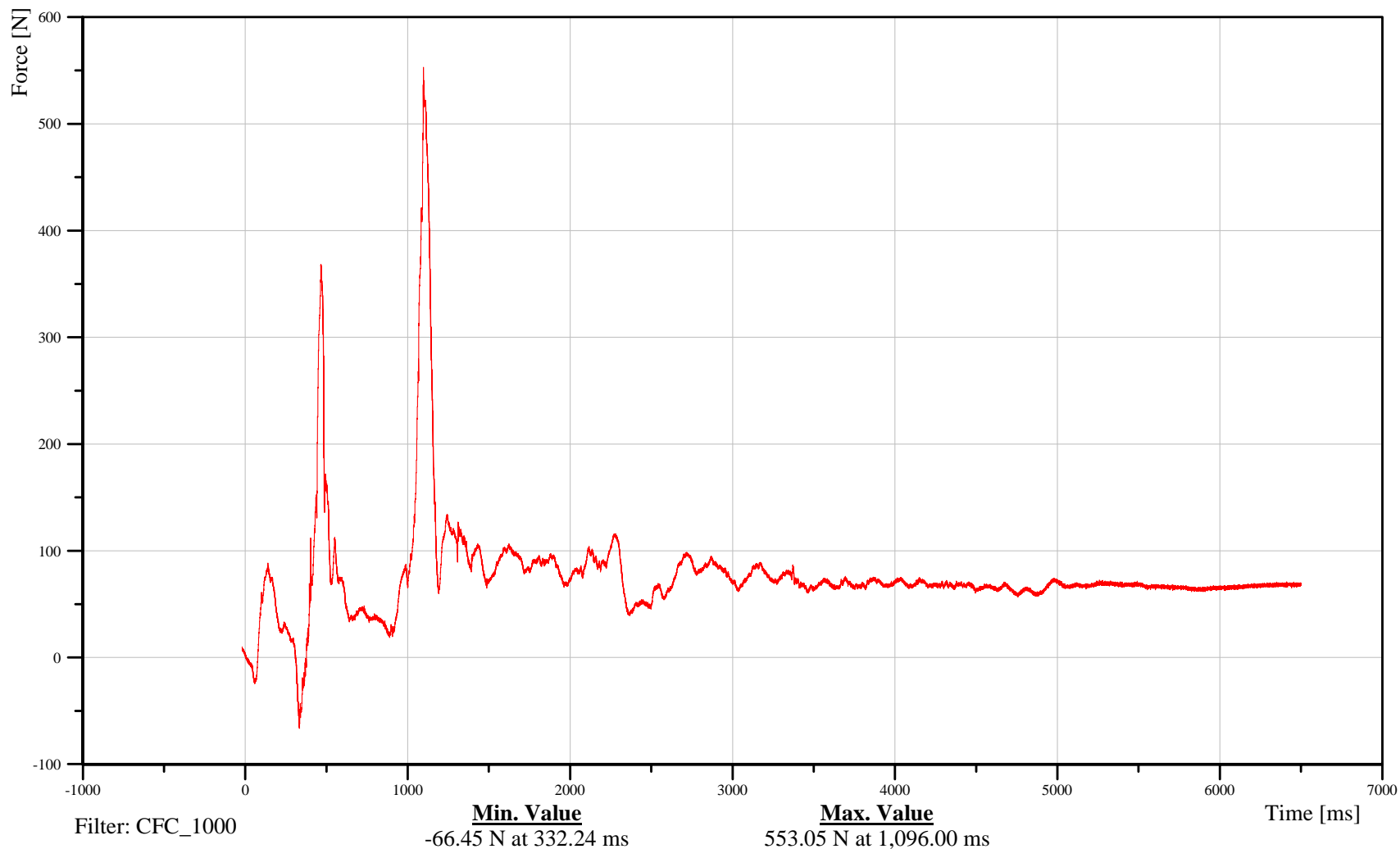
Left Rear Passenger Upper Neck Z-Axis Force

Customer: VRTC

14NECKUP00H3FOZA

TRC Inc. Test Lab: CTF

Test Number: 091022



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091022



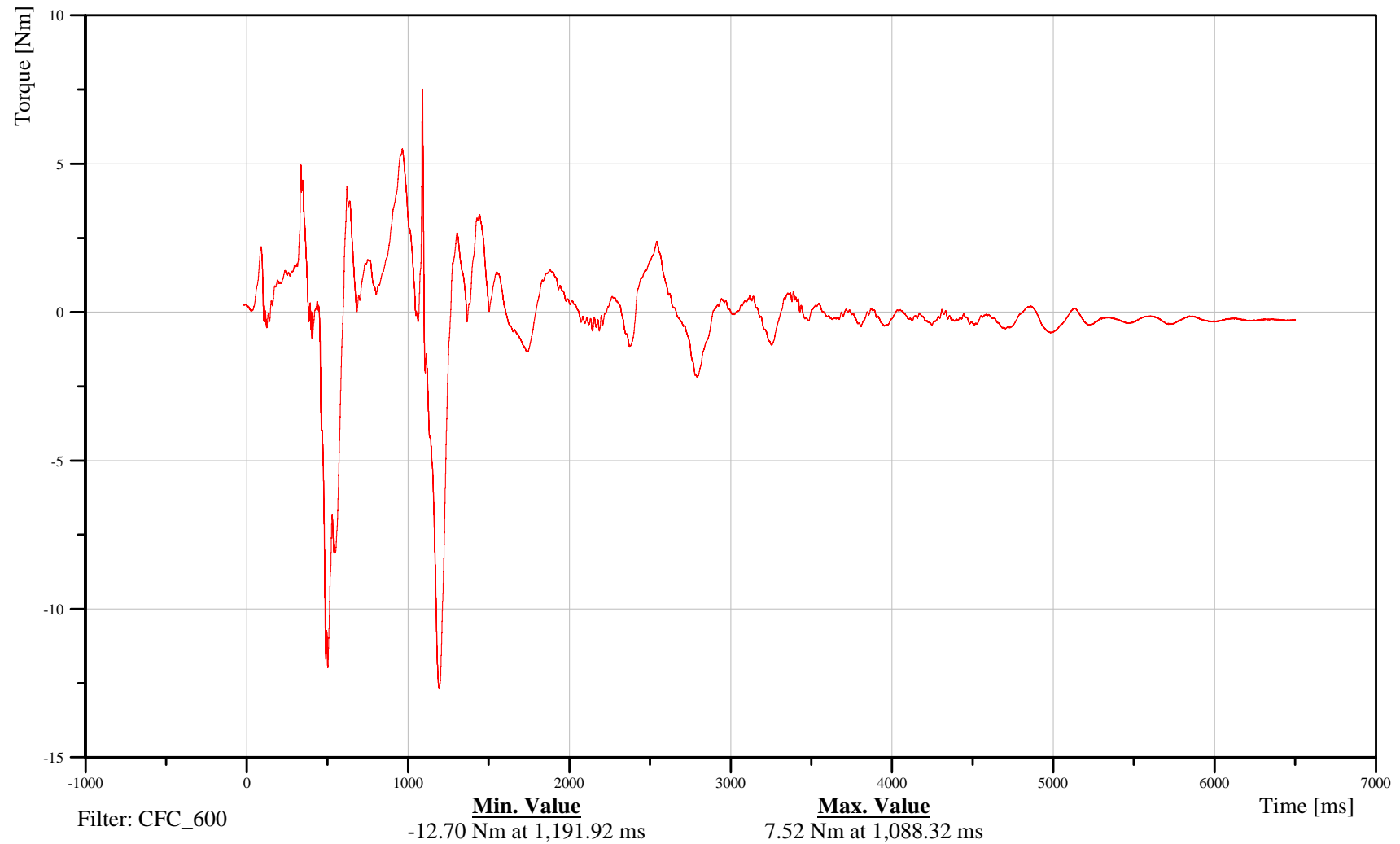
FMVSS 208 Rollover 2007 Ford Expedition
Left Rear Passenger Upper Neck Moment About X Axis

Date: 10/22/2009
Time: 19:31

Customer: VRTC

14NECKUP00H3MOXB

TRC Inc. Test Lab: CTF
Test Number: 091022



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091022



FMVSS 208 Rollover 2007 Ford Expedition
Left Rear Passenger Upper Neck Moment About Y Axis

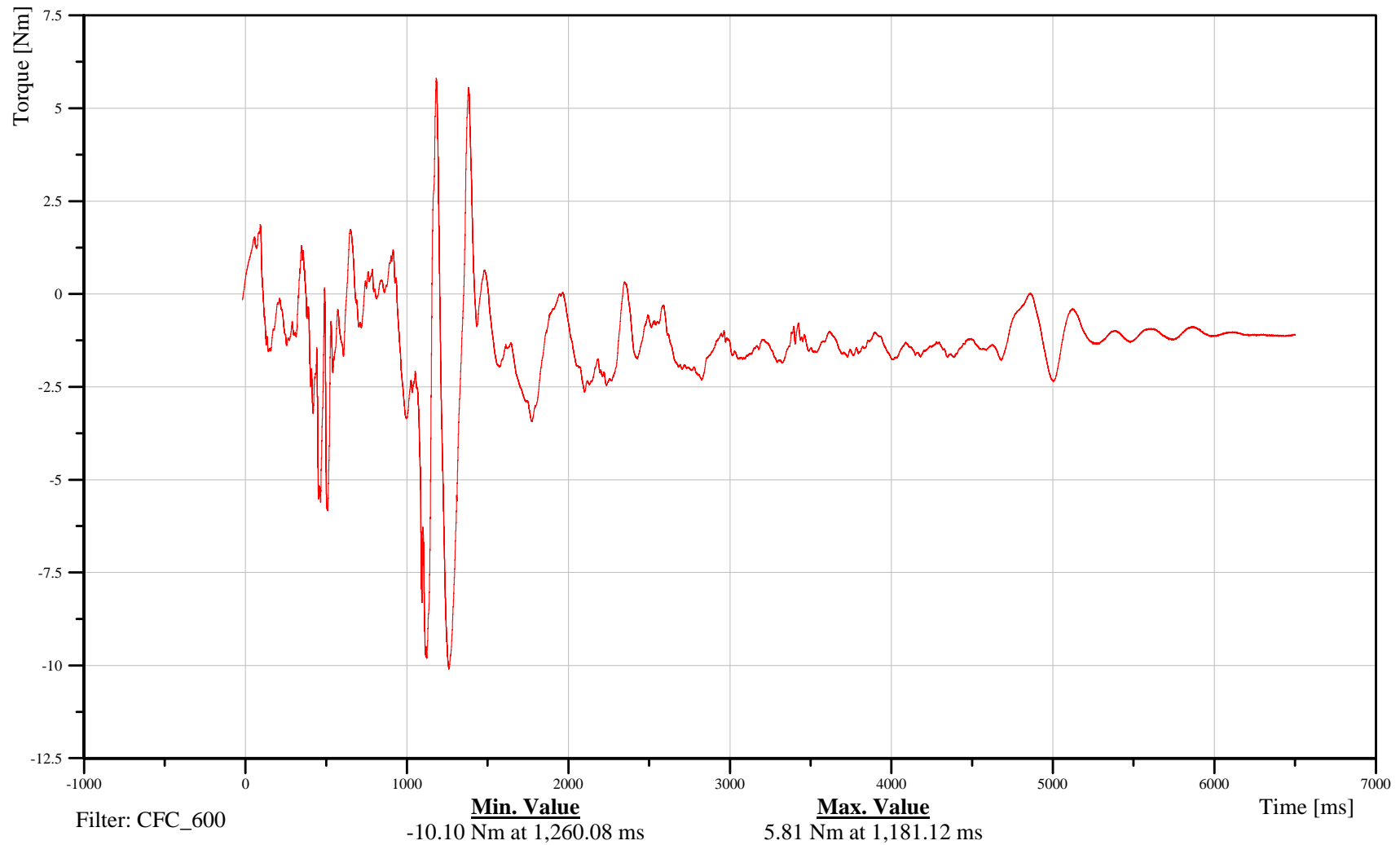
Date: 10/22/2009
Time: 19:31

Customer: VRTC

14NECKUP00H3MOYB

TRC Inc. Test Lab: CTF

Test Number: 091022



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091022



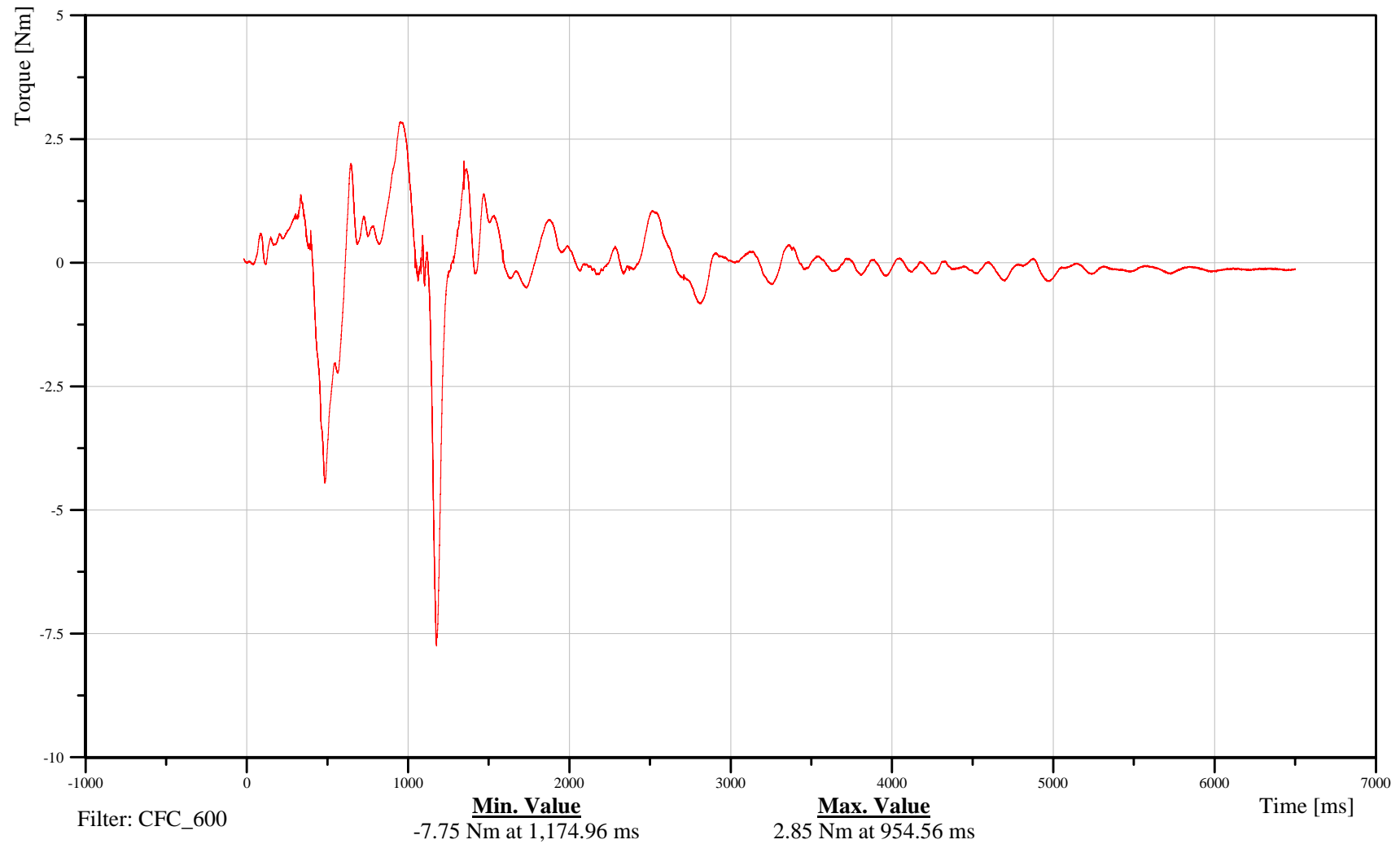
FMVSS 208 Rollover 2007 Ford Expedition
Left Rear Passenger Upper Neck Moment About Z Axis

Date: 10/22/2009
Time: 19:31

Customer: VRTC

14NECKUP00H3MOZB

TRC Inc. Test Lab: CTF
Test Number: 091022



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091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Left Rear Passenger Chest X-Axis Acceleration

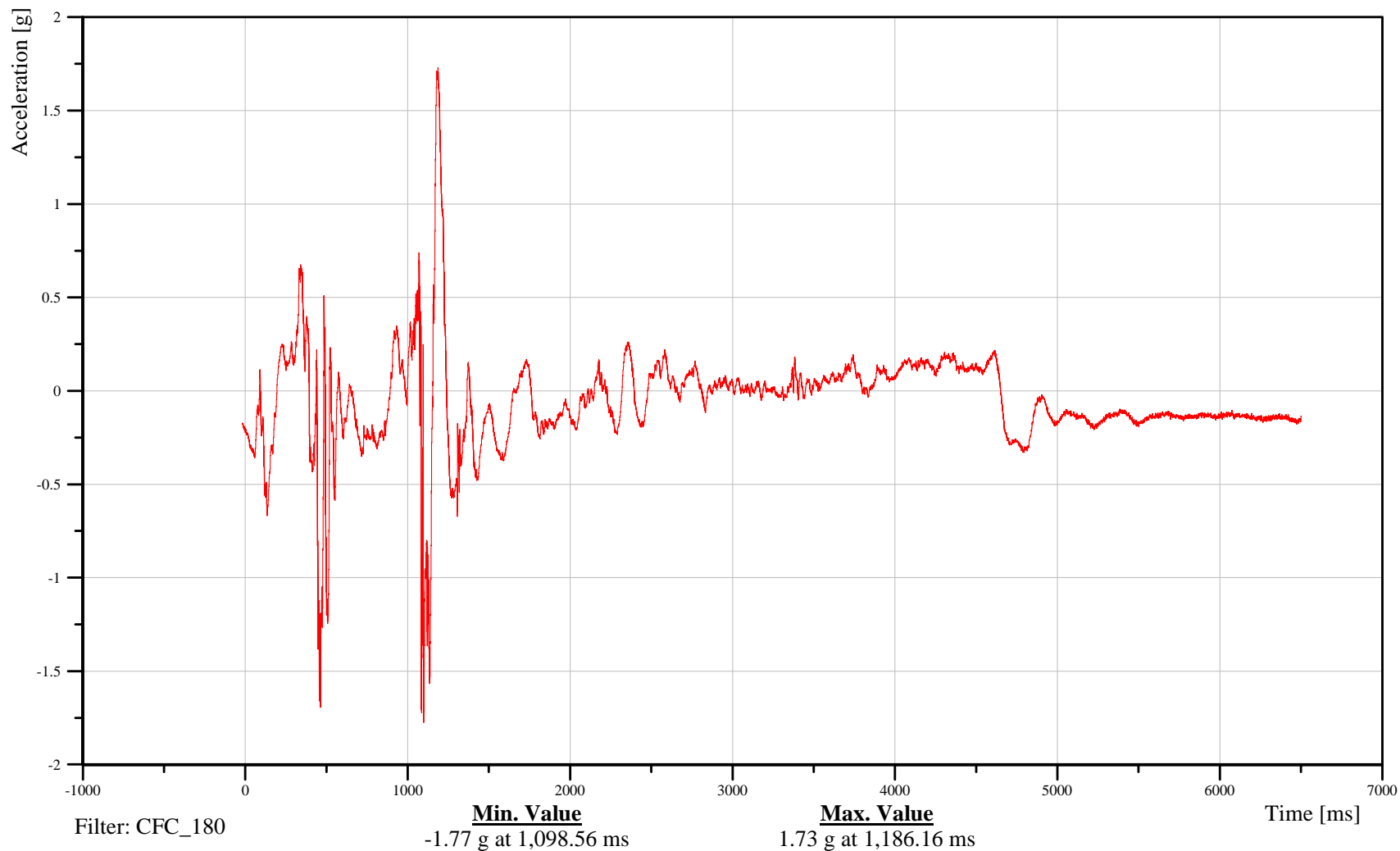
Time: 19:31

Customer: VRTC

14CHSTCG00H3ACXC

TRC Inc. Test Lab: CTF

Test Number: 091022



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091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Left Rear Passenger Chest Y-Axis Acceleration

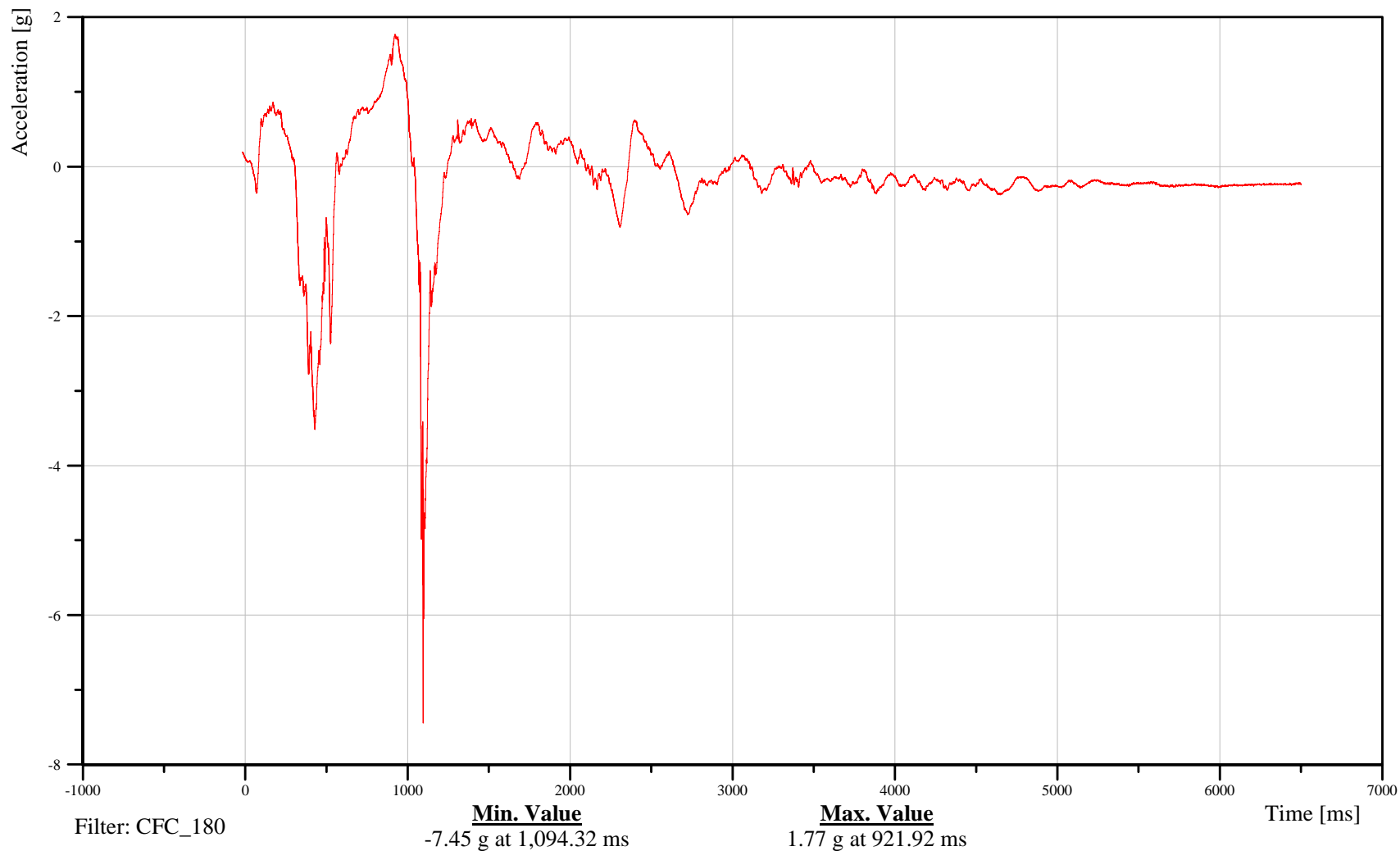
Time: 19:31

Customer: VRTC

14CHSTCG00H3ACYC

TRC Inc. Test Lab: CTF

Test Number: 091022



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091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

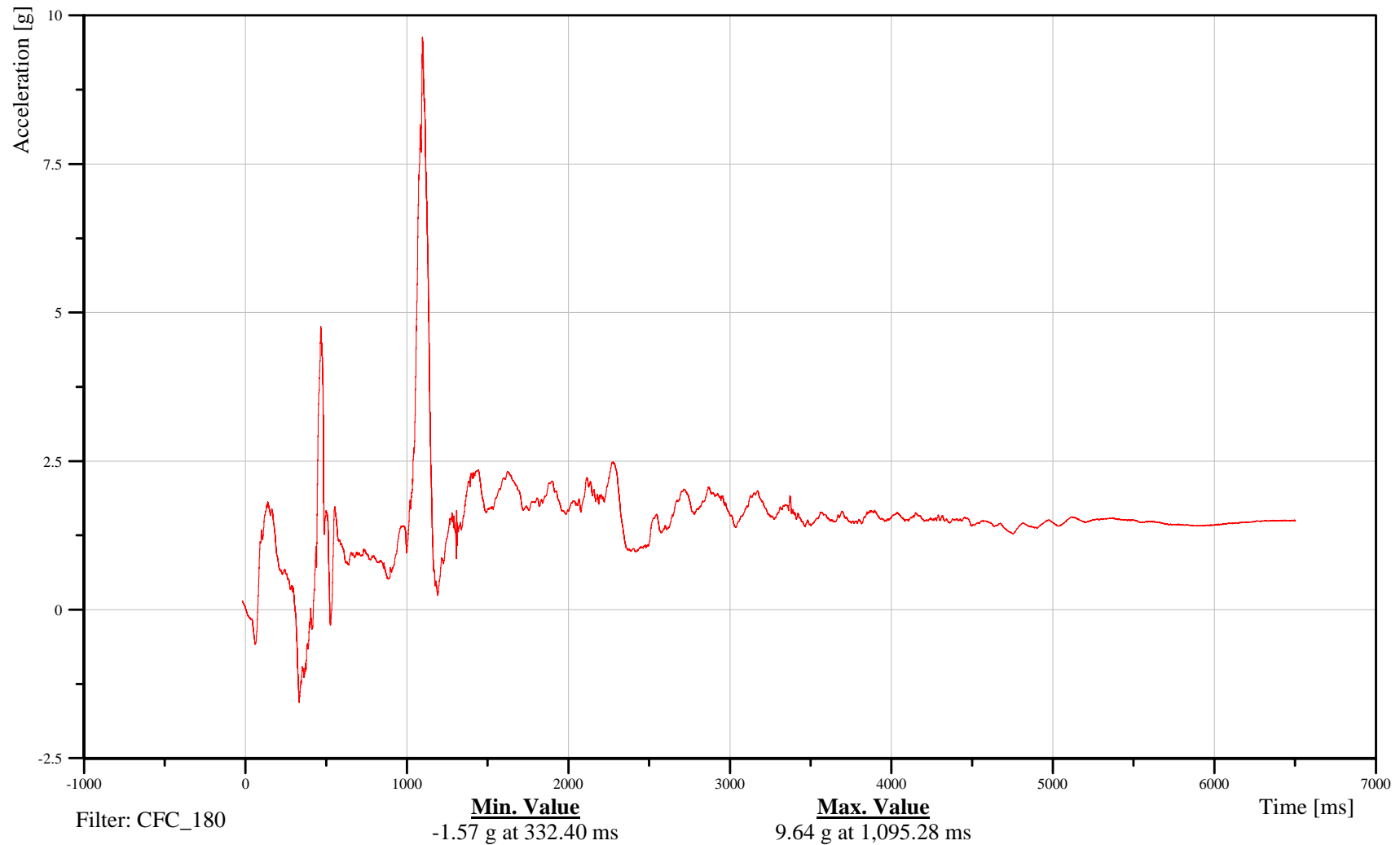
Left Rear Passenger Chest Z-Axis Acceleration

Customer: VRTC

14CHSTCG00H3ACZC

TRC Inc. Test Lab: CTF

Test Number: 091022



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091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Left Rear Passenger Chest Resultant Acceleration

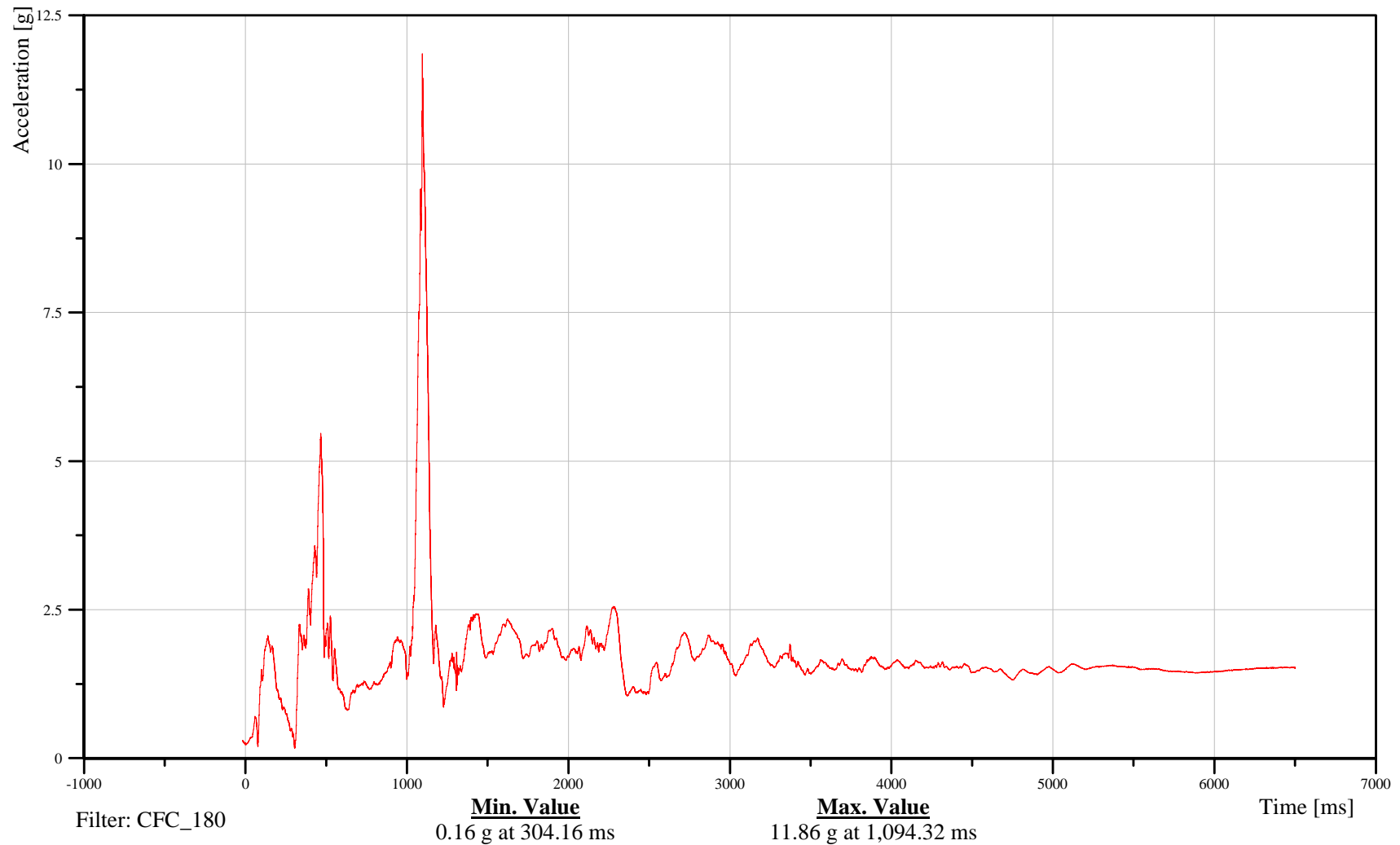
Time: 19:31

Customer: VRTC

14CHSTCG00H3ACRC

TRC Inc. Test Lab: CTF

Test Number: 091022



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091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Left Rear Passenger Chest X-Axis Displacement

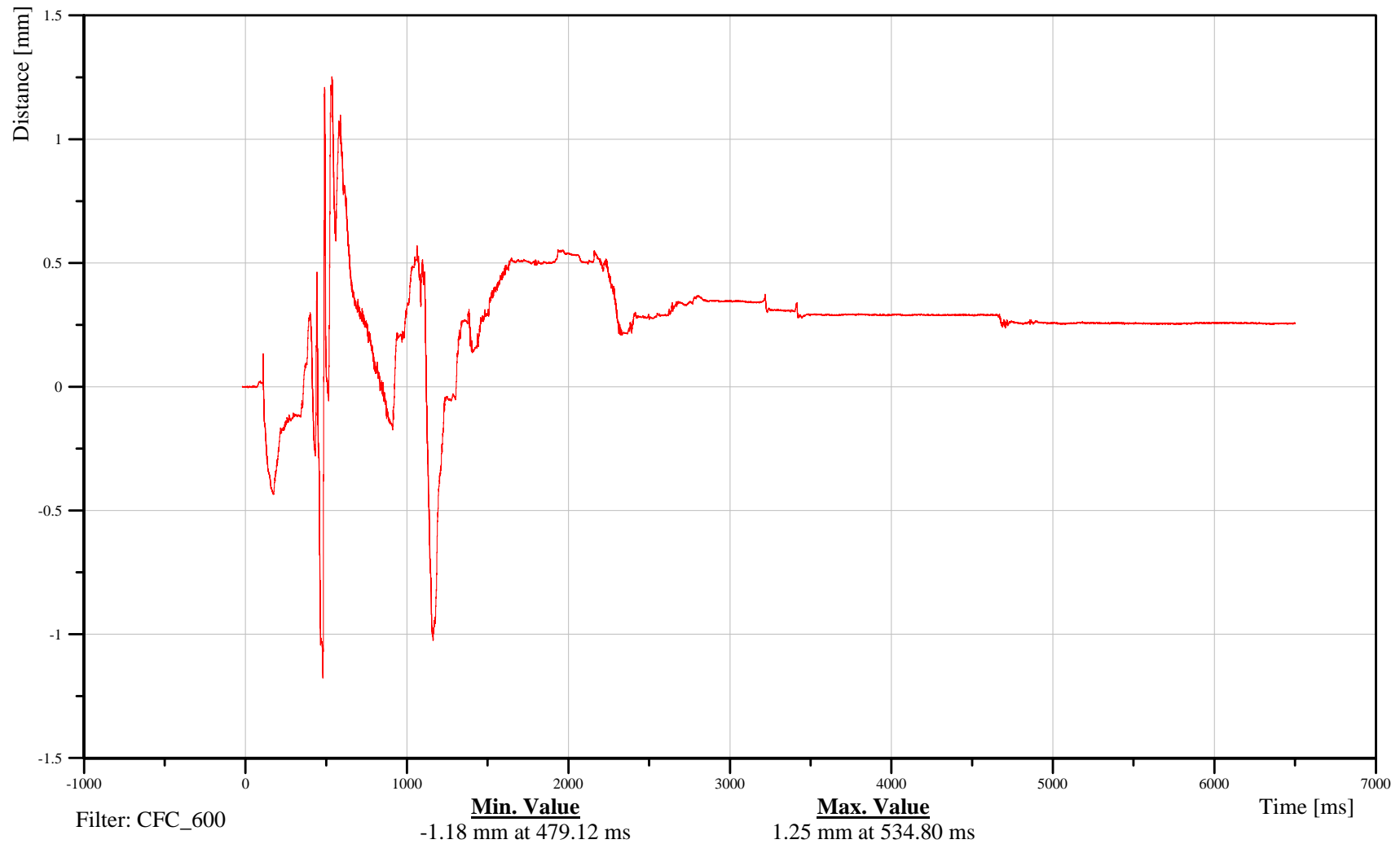
Time: 19:31

Customer: VRTC

14CHST0000H3DSXB

TRC Inc. Test Lab: CTF

Test Number: 091022



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091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Left Rear Passenger Pelvis X-Axis Acceleration

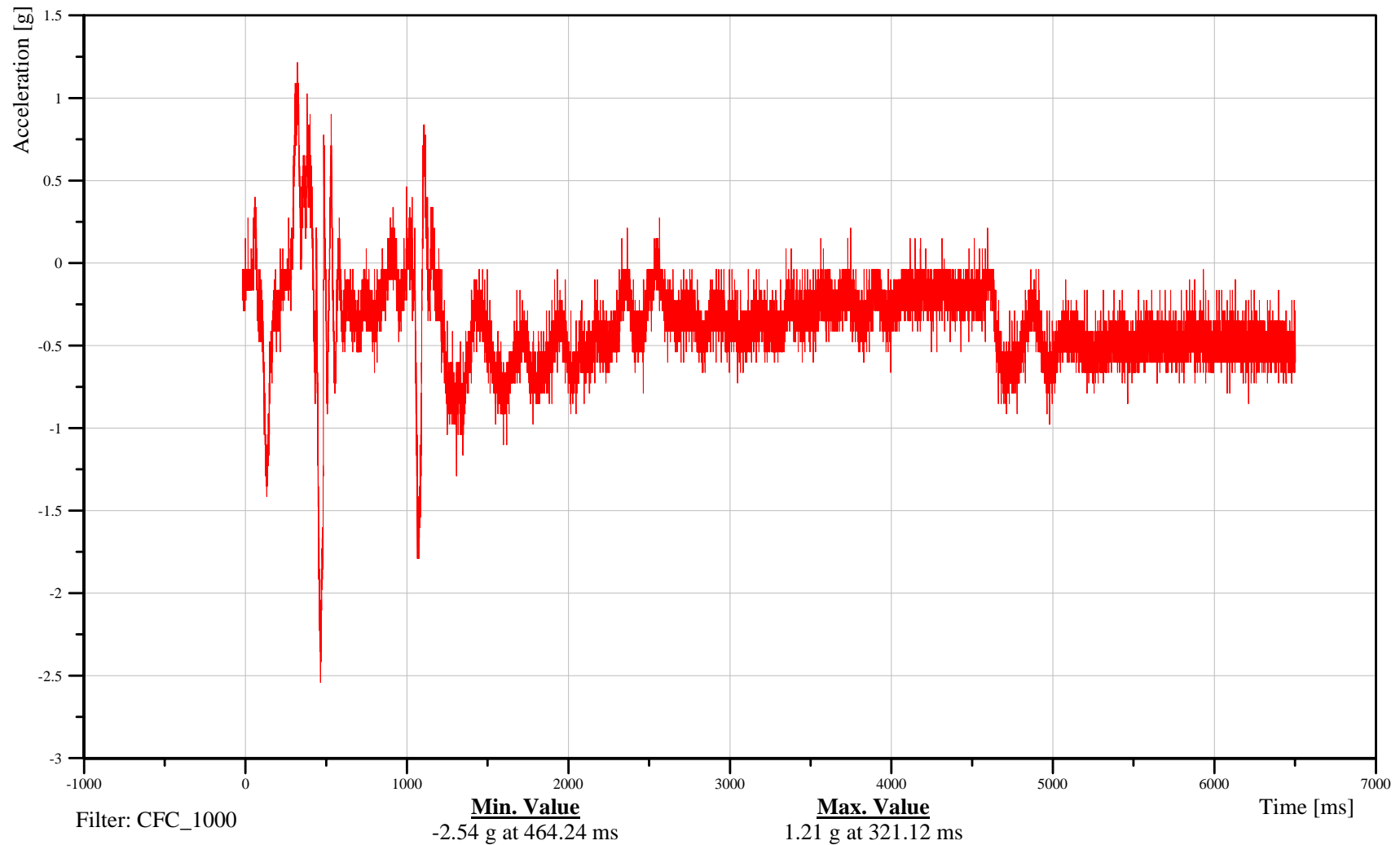
Time: 19:31

Customer: VRTC

14PELVCG00H3ACXA

TRC Inc. Test Lab: CTF

Test Number: 091022



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091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Left Rear Passenger Pelvis Y-Axis Acceleration

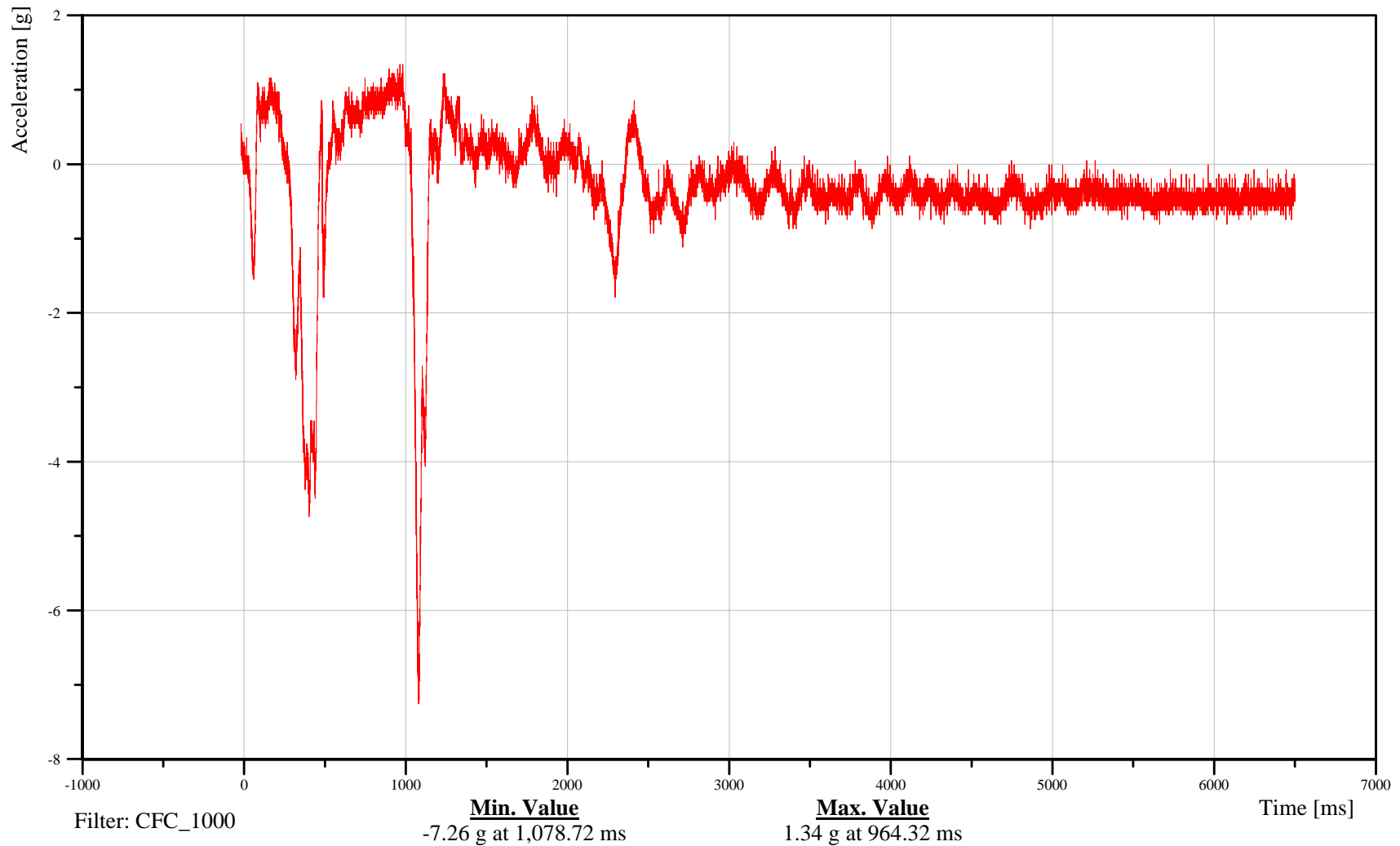
Time: 19:31

Customer: VRTC

14PELVCG00H3ACYA

TRC Inc. Test Lab: CTF

Test Number: 091022



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091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Left Rear Passenger Pelvis Z-Axis Acceleration

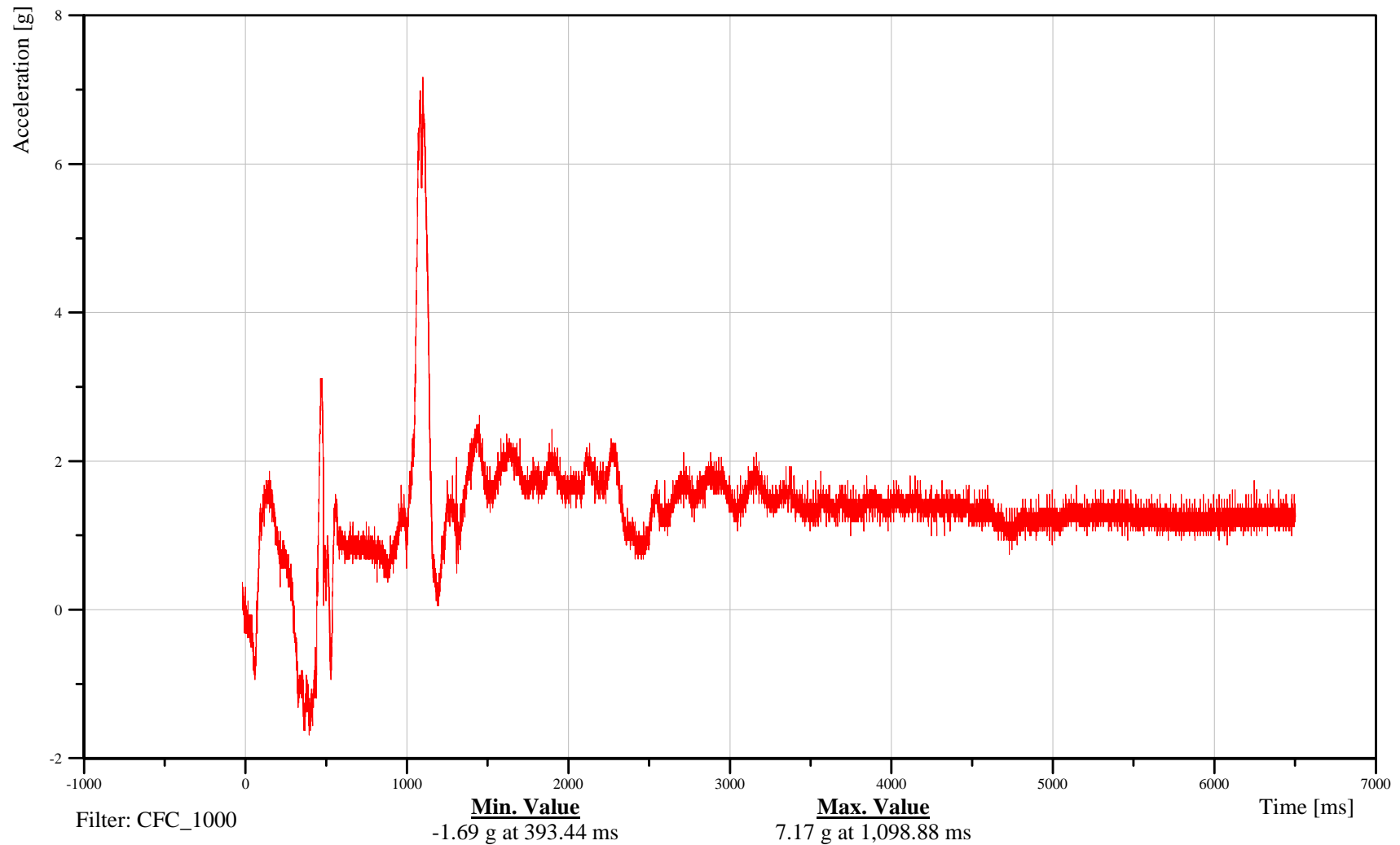
Time: 19:31

Customer: VRTC

14PELVCG00H3ACZA

TRC Inc. Test Lab: CTF

Test Number: 091022



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091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Left Rear Passenger Pelvis Resultant Acceleration

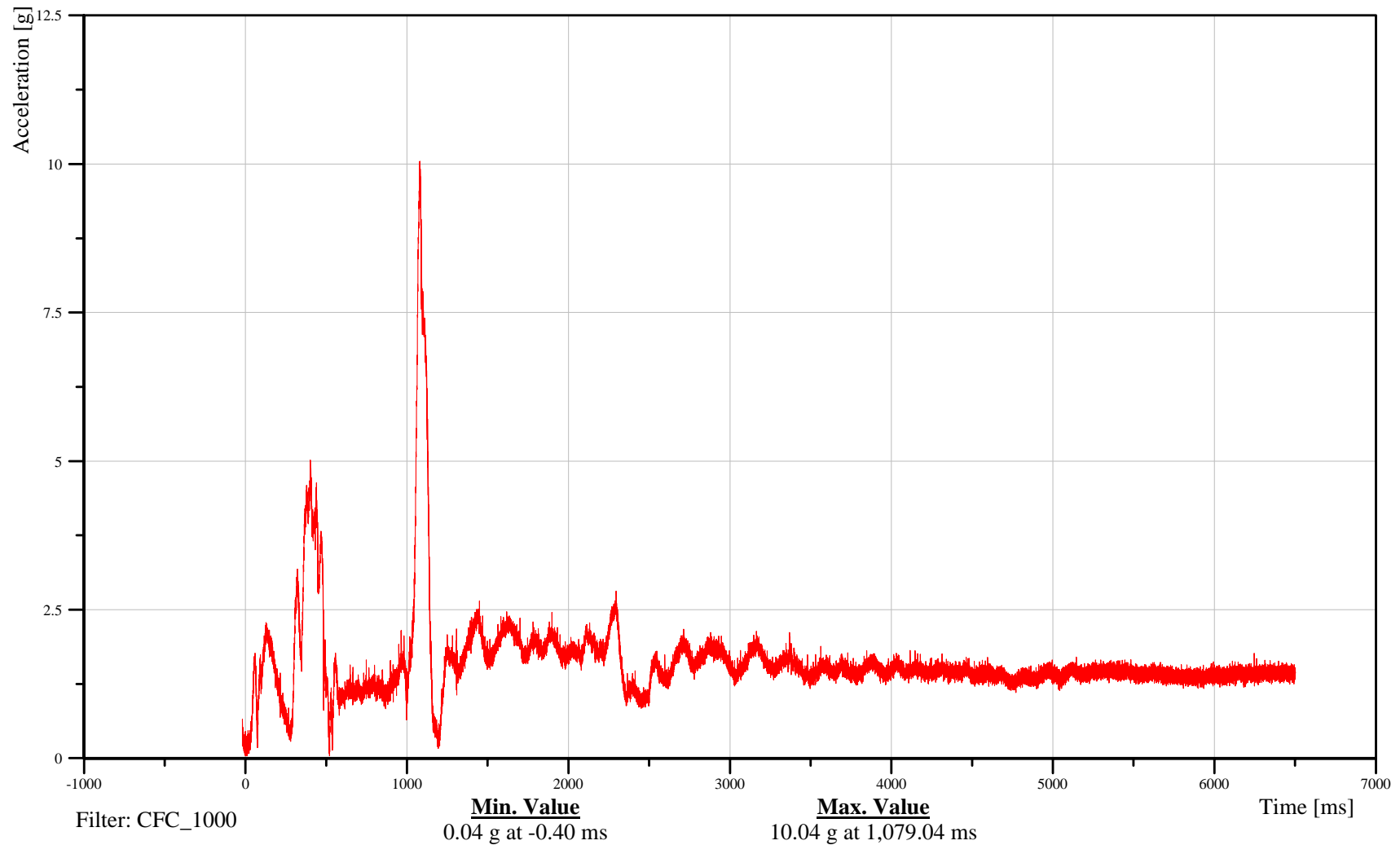
Time: 19:31

Customer: VRTC

14PELVCG00H3ACRA

TRC Inc. Test Lab: CTF

Test Number: 091022



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091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

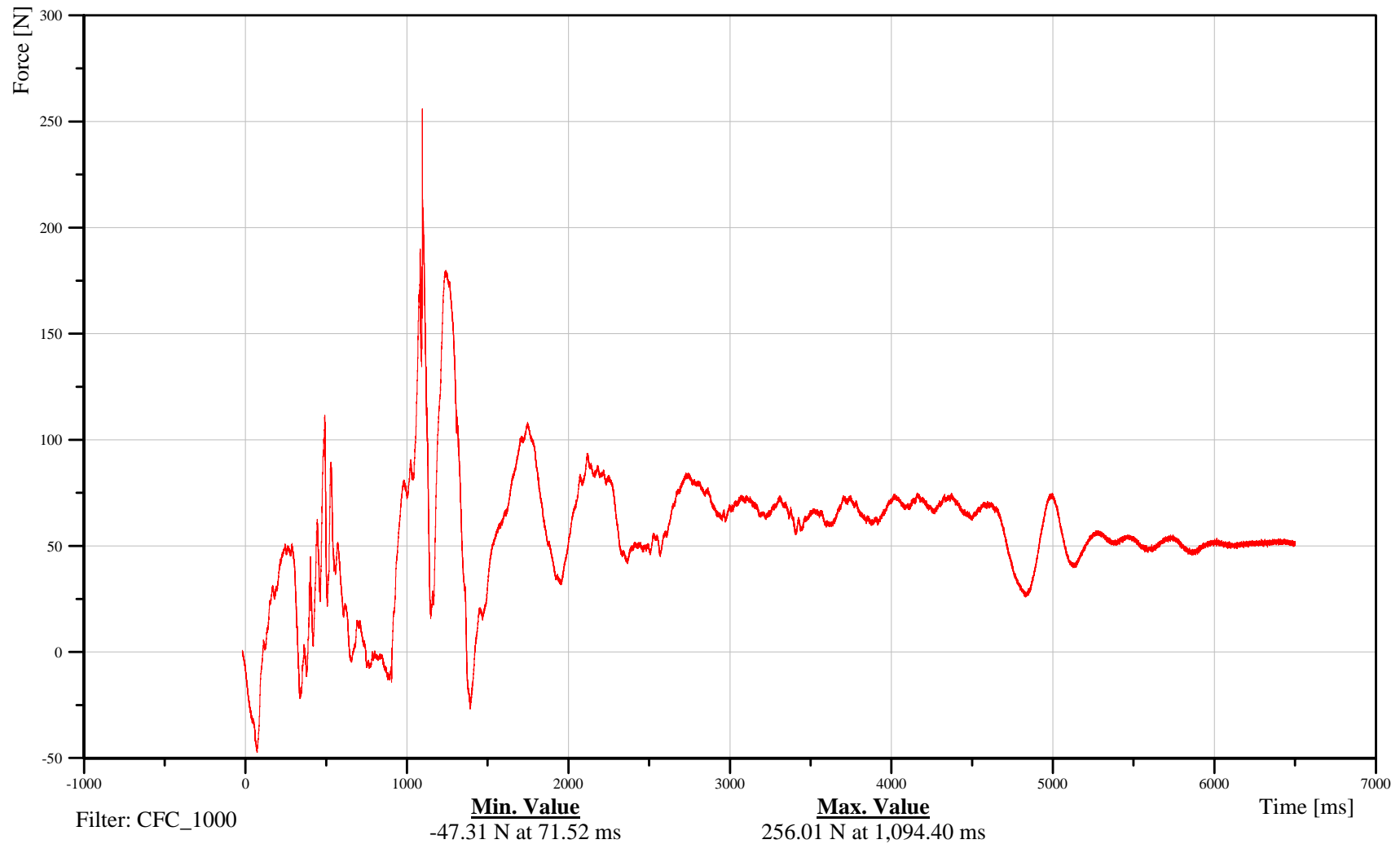
Left Rear Passenger Lower Neck X-Axis Force

Customer: VRTC

14NECKLO00H3FOXA

TRC Inc. Test Lab: CTF

Test Number: 091022



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091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Left Rear Passenger Lower Neck Y-Axis Force

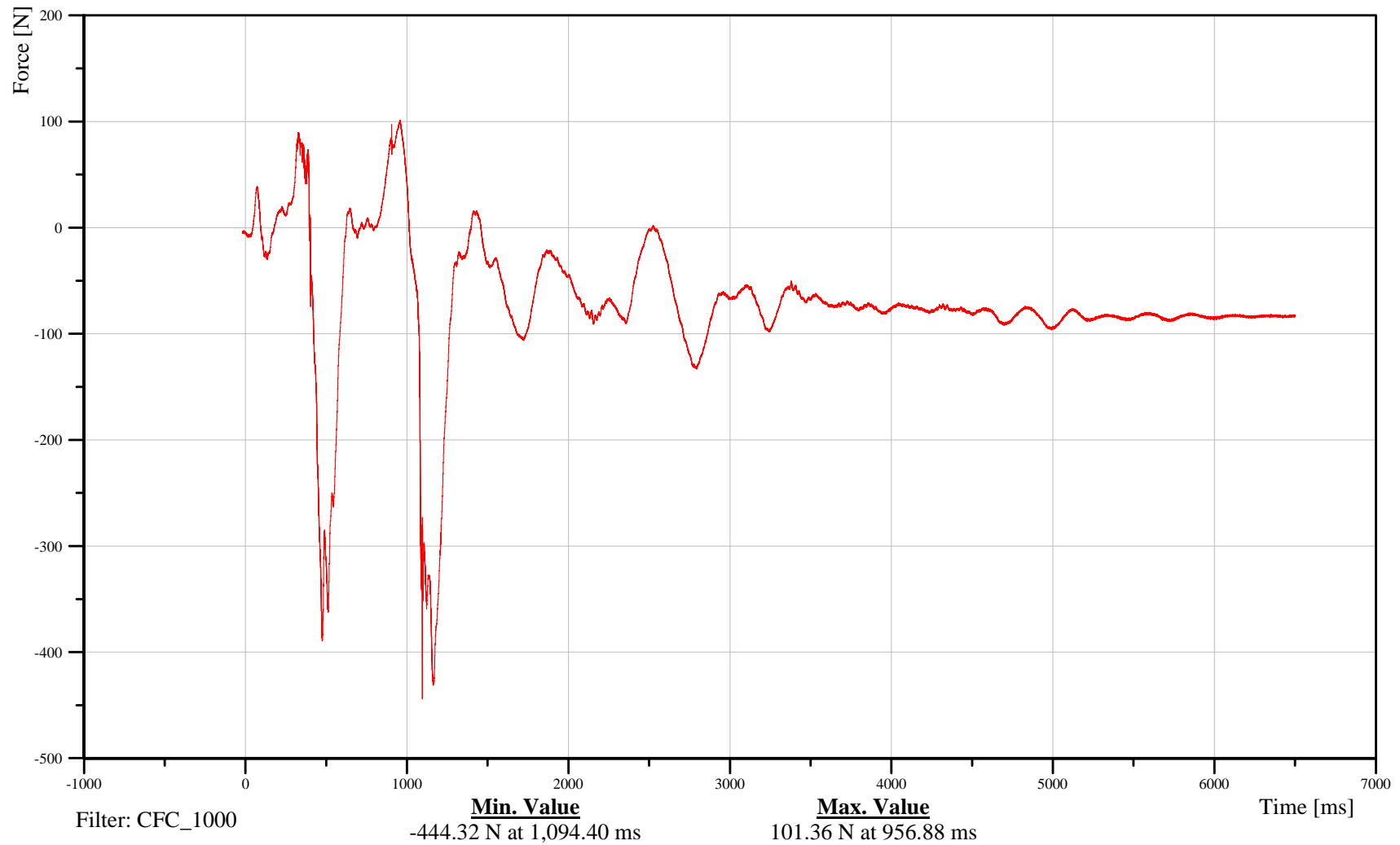
Time: 19:31

Customer: VRTC

14NECKLO00H3FOYA

TRC Inc. Test Lab: CTF

Test Number: 091022



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091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

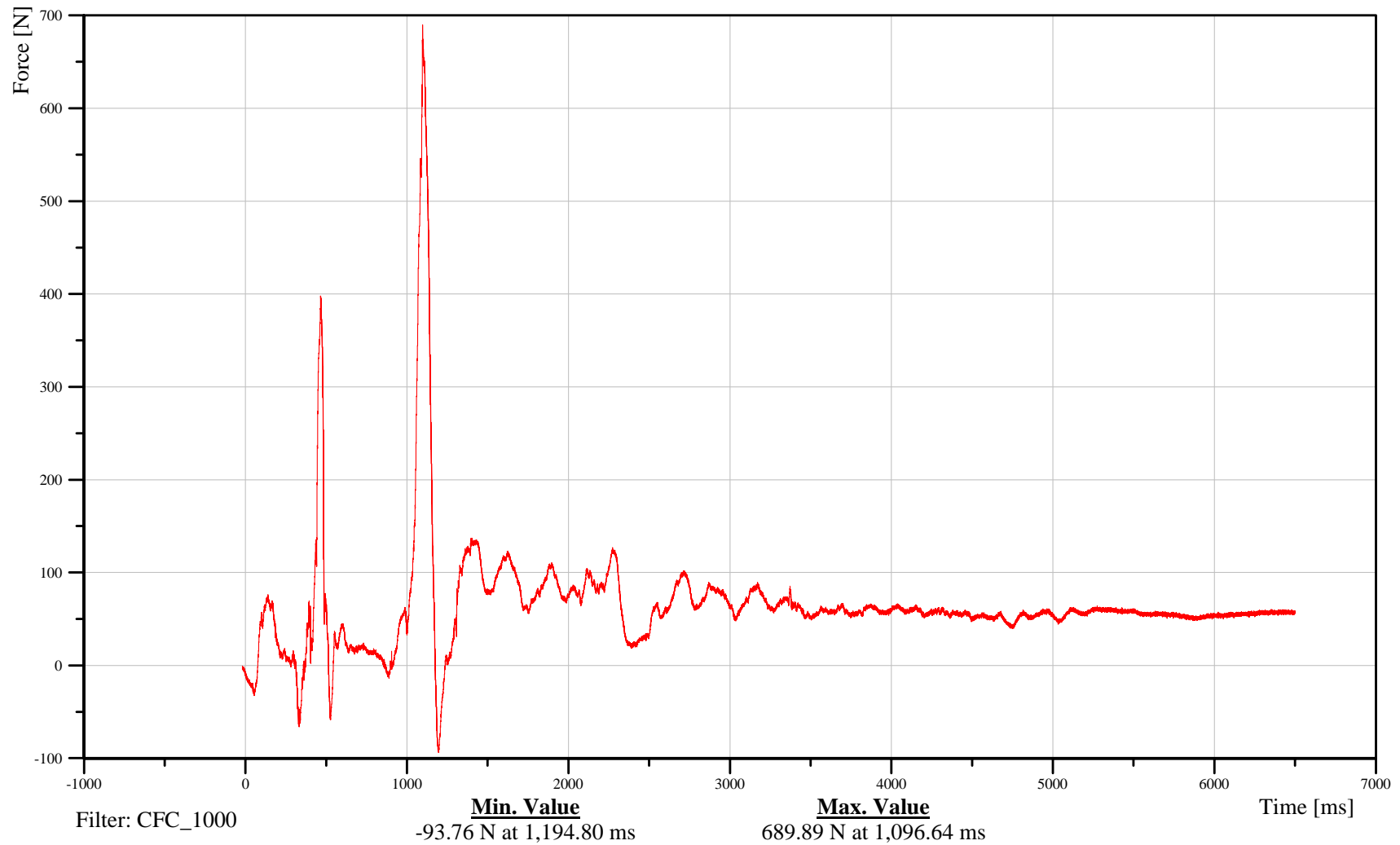
Left Rear Passenger Lower Neck Z-Axis Force

Customer: VRTC

14NECKLO00H3FOZA

TRC Inc. Test Lab: CTF

Test Number: 091022



B-85

091022



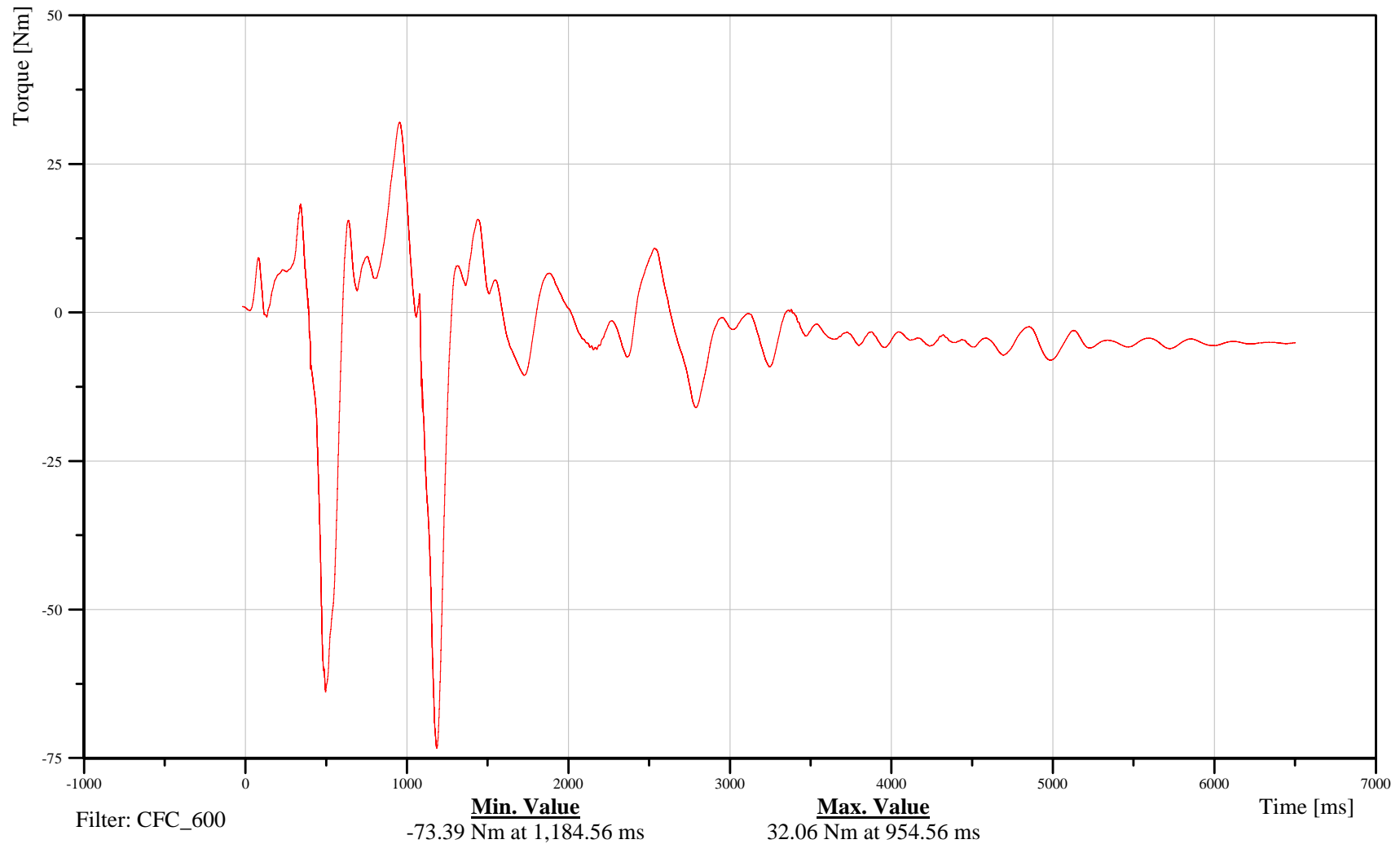
FMVSS 208 Rollover 2007 Ford Expedition
Left Rear Passenger Lower Neck Moment About X Axis

Date: 10/22/2009
Time: 19:31

Customer: VRTC

14NECKLO00H3MOXB

TRC Inc. Test Lab: CTF
Test Number: 091022



B-86

091022



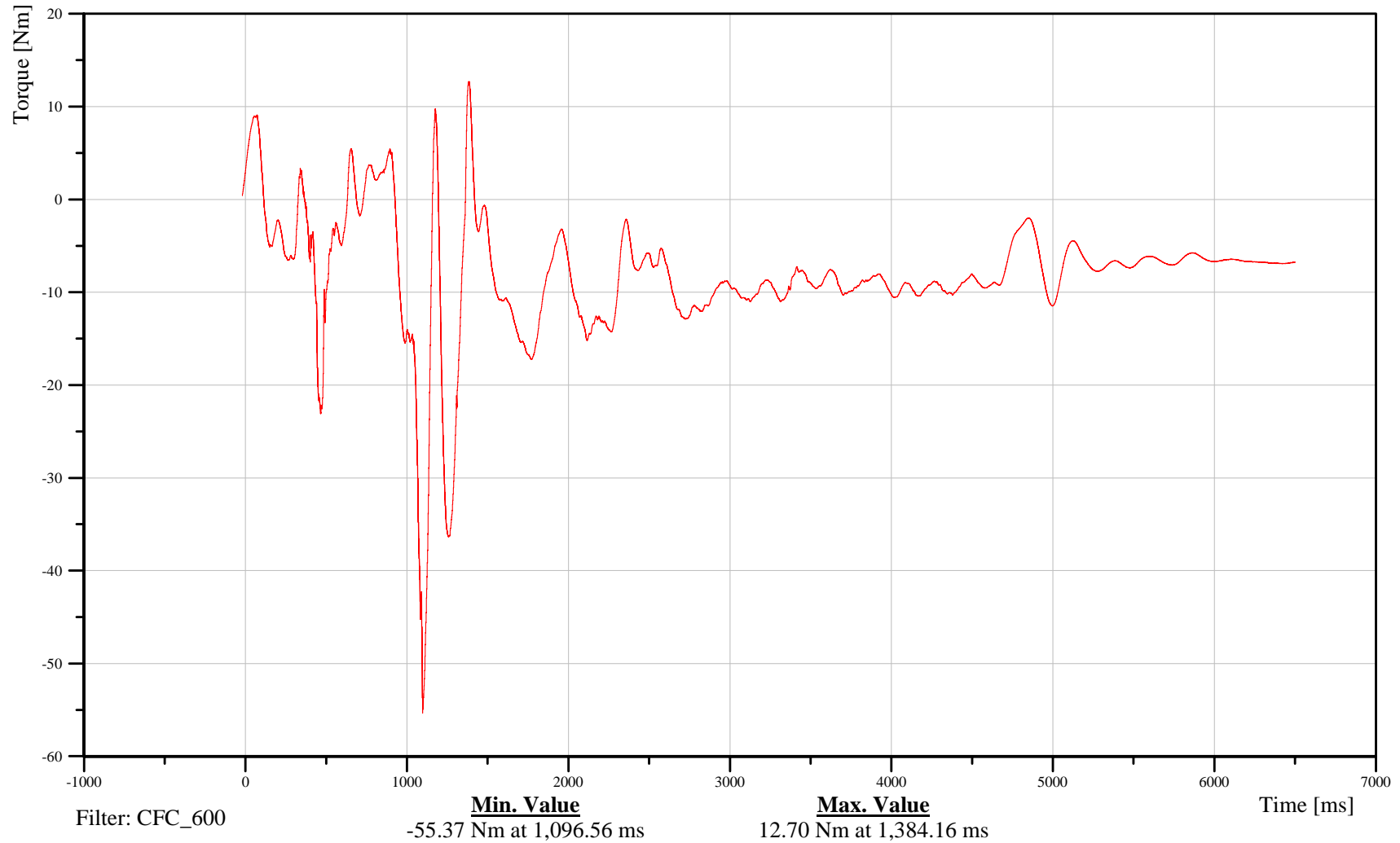
FMVSS 208 Rollover 2007 Ford Expedition
Left Rear Passenger Lower Neck Moment About Y Axis

Date: 10/22/2009
Time: 19:31

Customer: VRTC

14NECKLO00H3MOYB

TRC Inc. Test Lab: CTF
Test Number: 091022



B-87

091022



FMVSS 208 Rollover 2007 Ford Expedition
Left Rear Passenger Lower Neck Moment About Z Axis

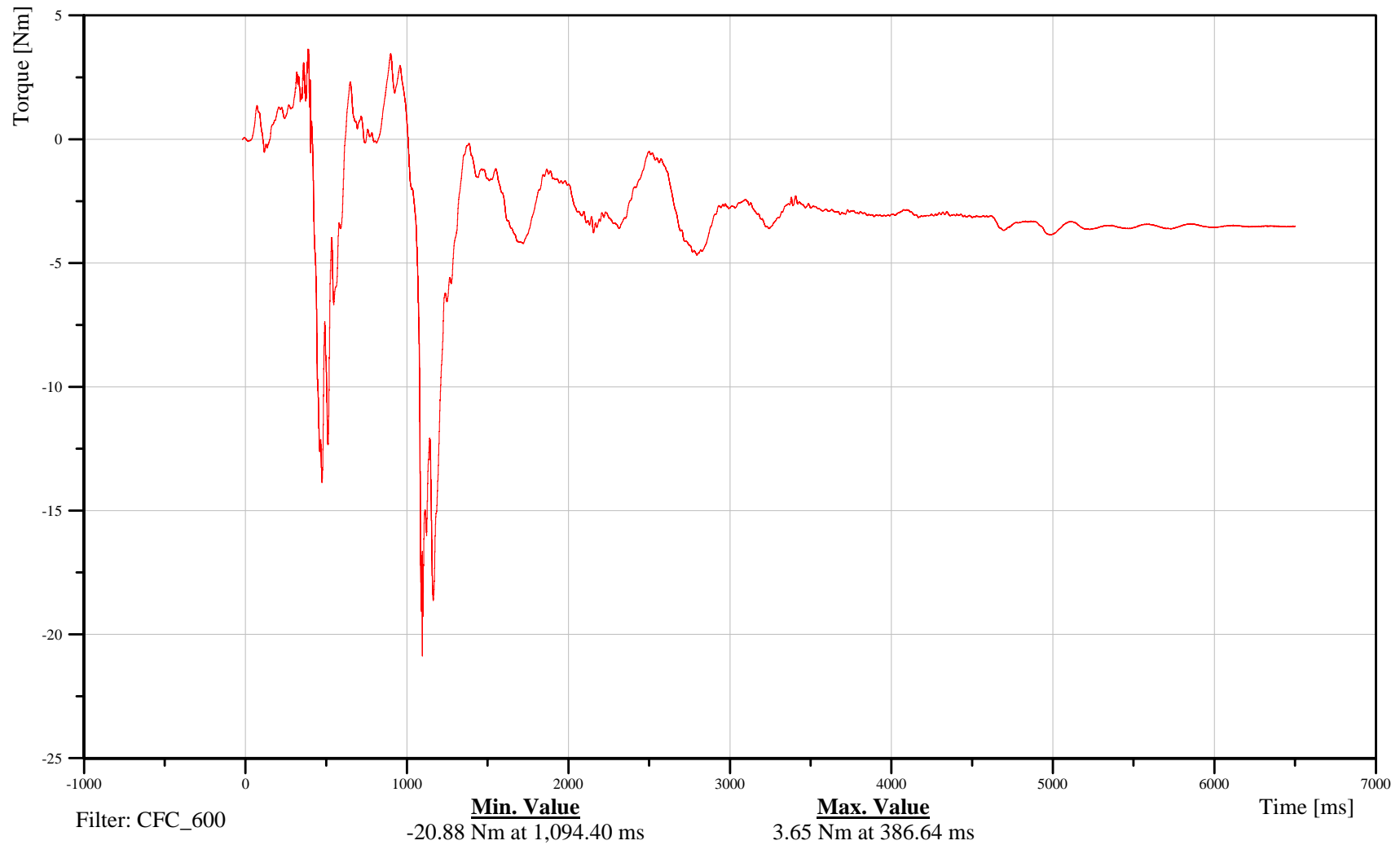
Date: 10/22/2009
Time: 19:31

Customer: VRTC

14NECKLO00H3MOZB

TRC Inc. Test Lab: CTF

Test Number: 091022



B-88

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Vehicle Center of Gravity X-Axis Acceleration

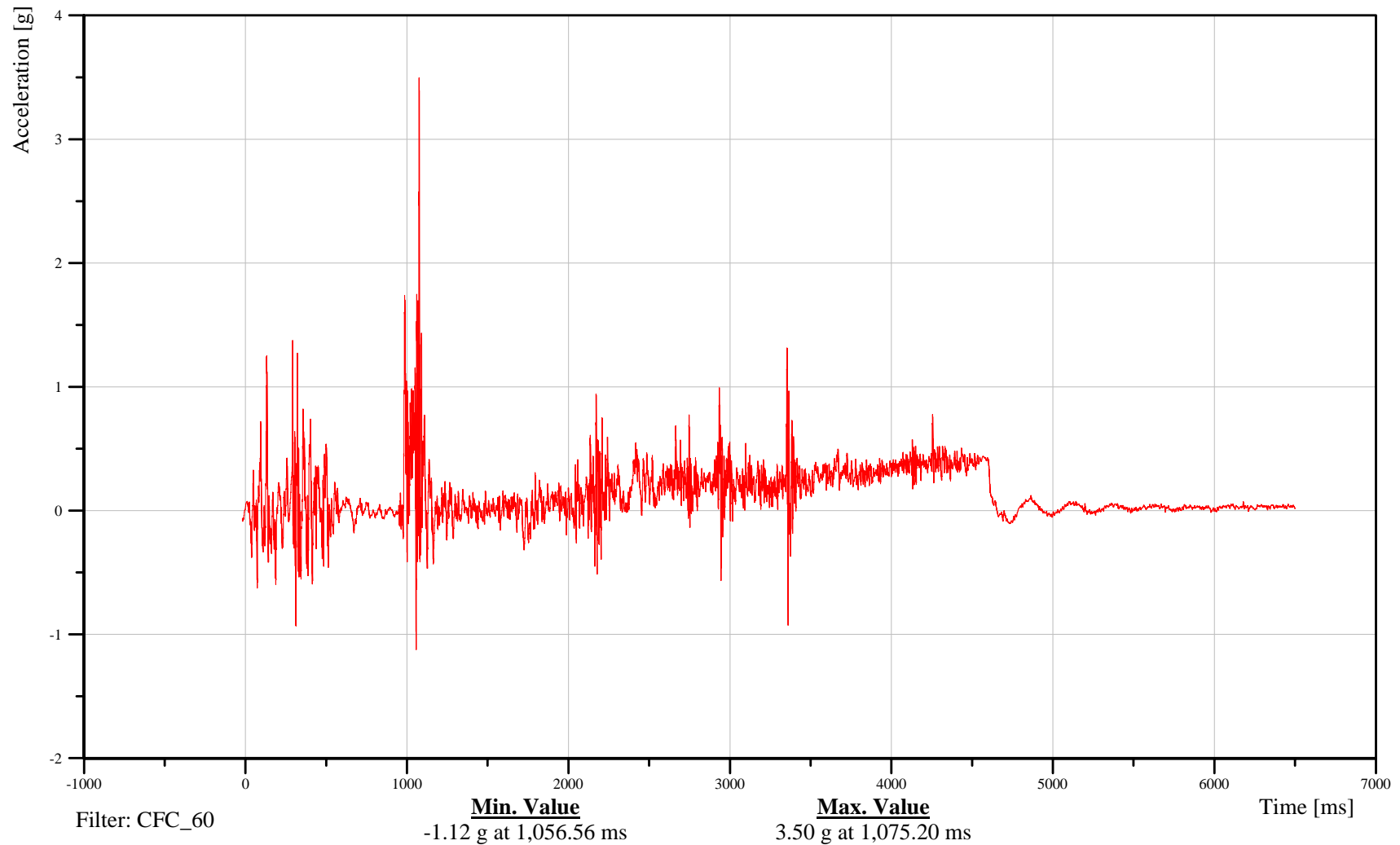
Time: 19:31

Customer: VRTC

10VEHCCG0000ACXD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-89

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Vehicle Center of Gravity Y-Axis Acceleration

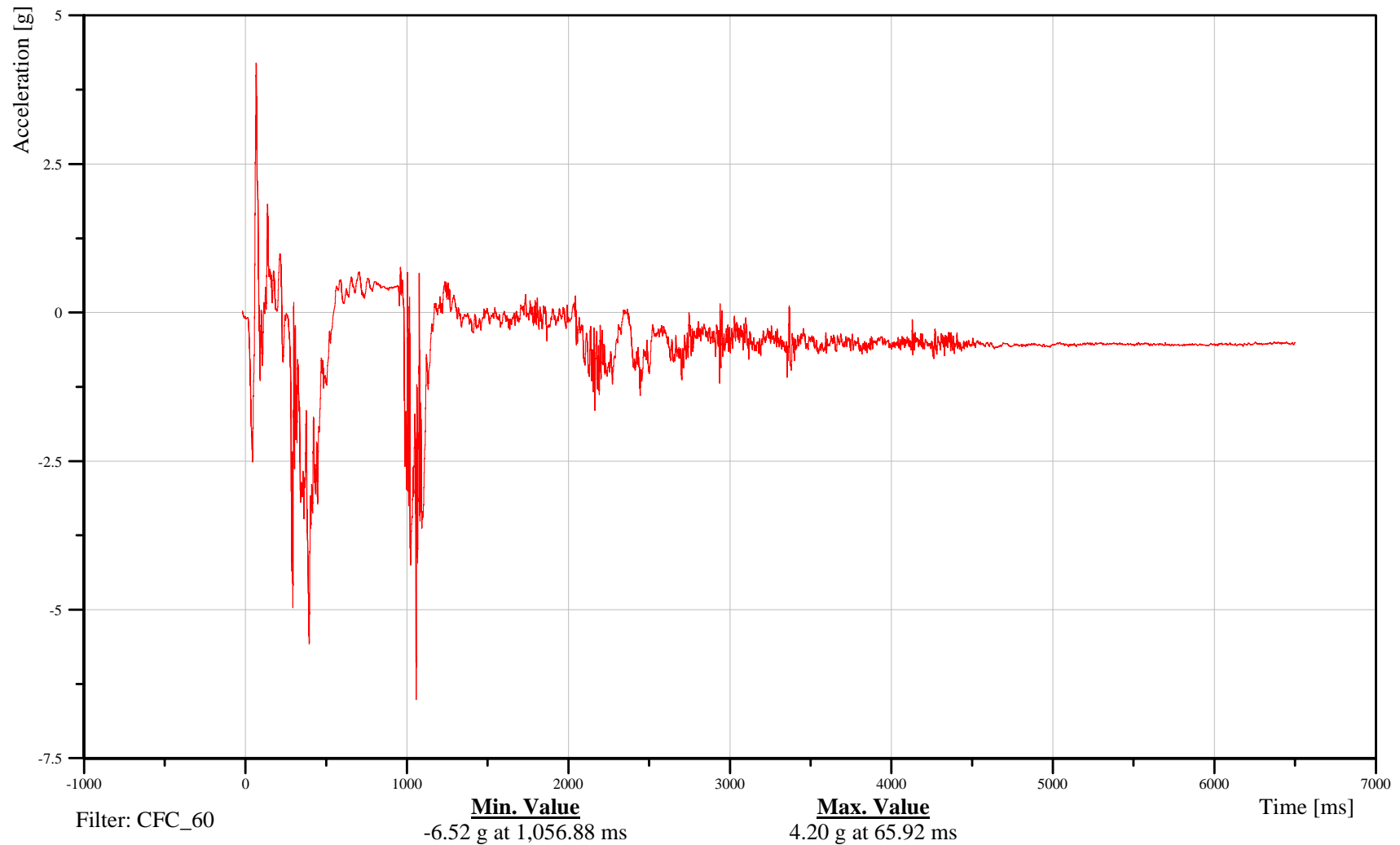
Time: 19:31

Customer: VRTC

10VEHCCG0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-90

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Vehicle Center of Gravity Z-Axis Acceleration

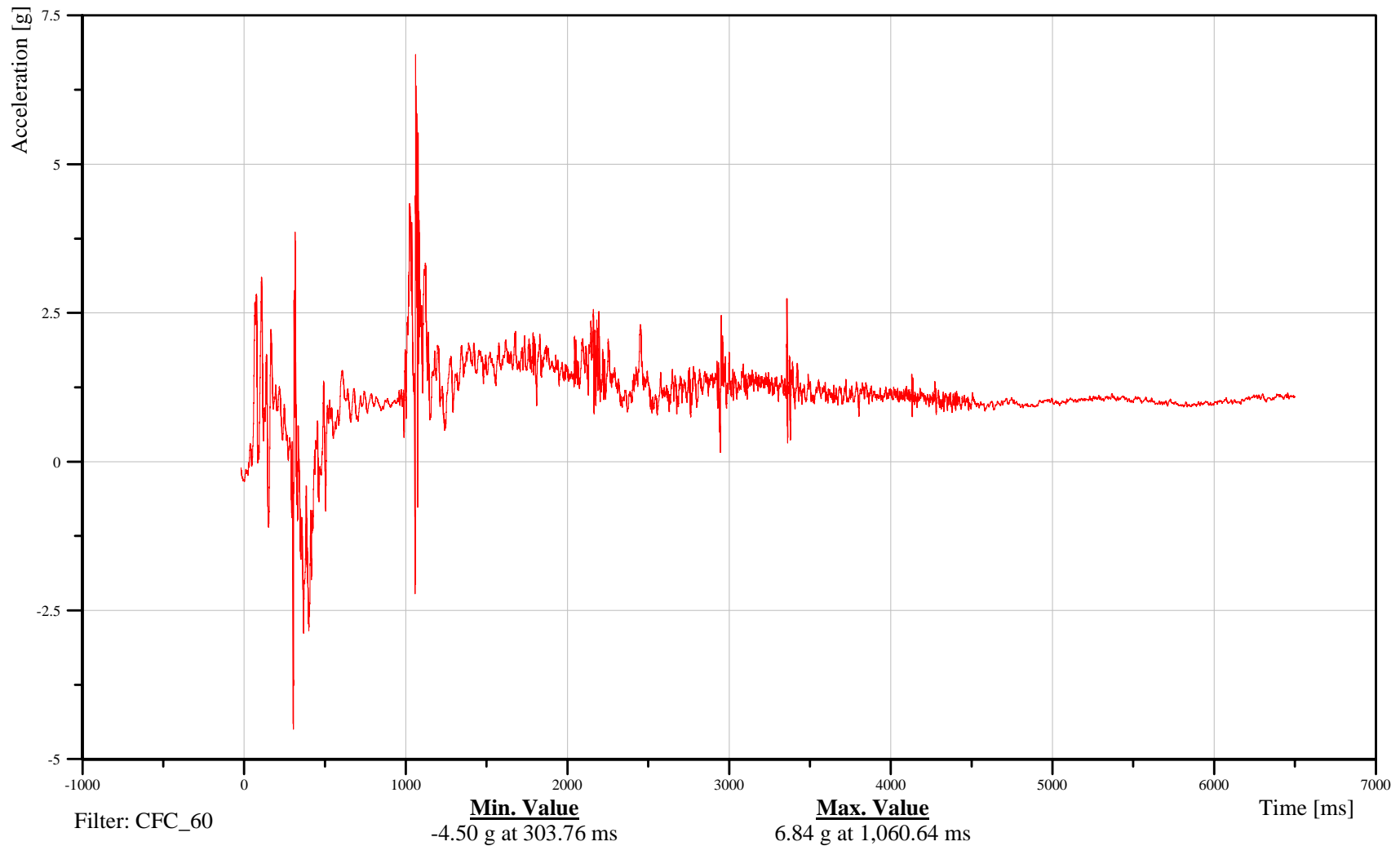
Time: 19:31

Customer: VRTC

10VEHCCG0000ACZD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-91

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Vehicle Center of Gravity Resultant Acceleration

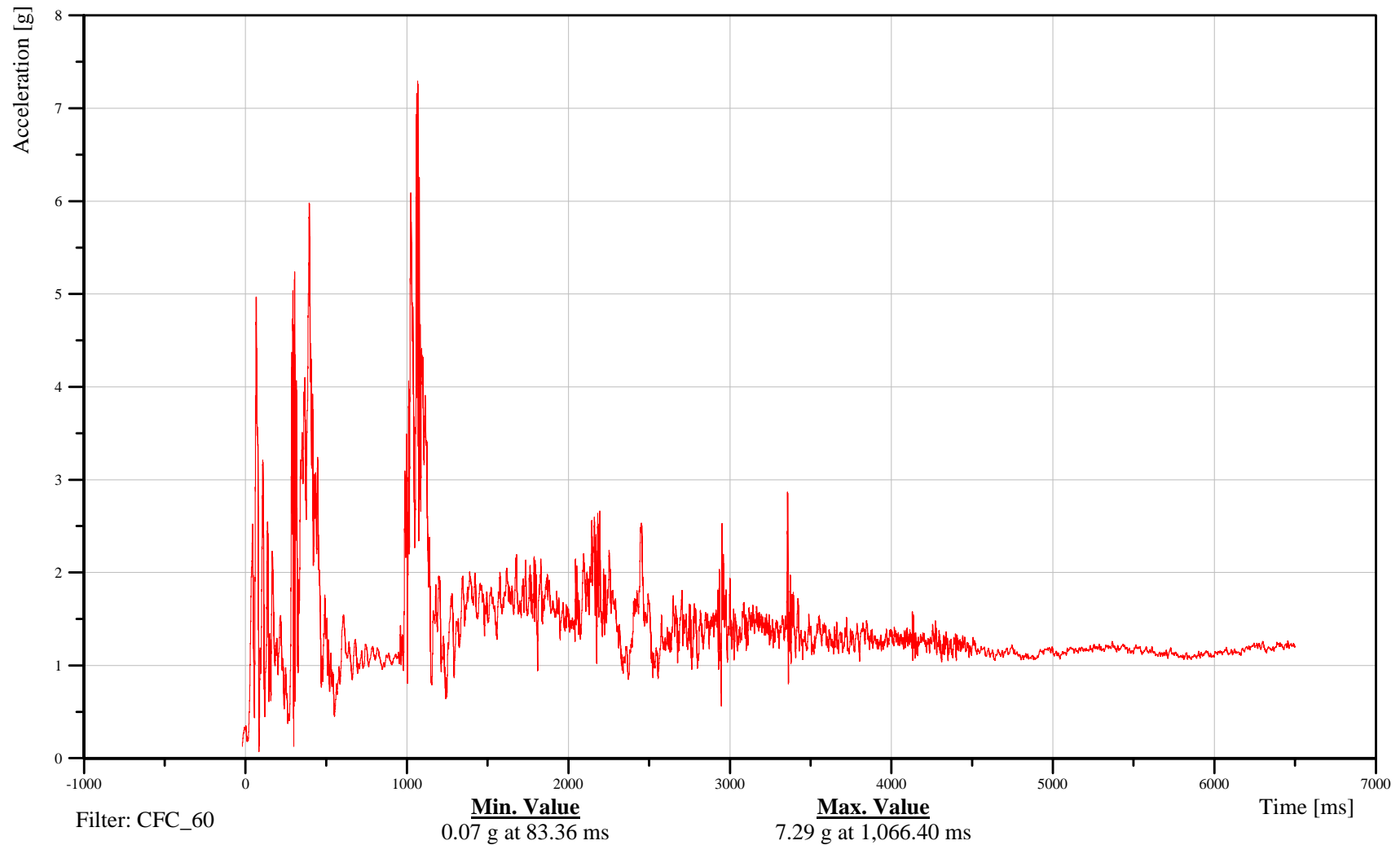
Time: 19:31

Customer: VRTC

10VEHCCG0000ACRD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-92

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

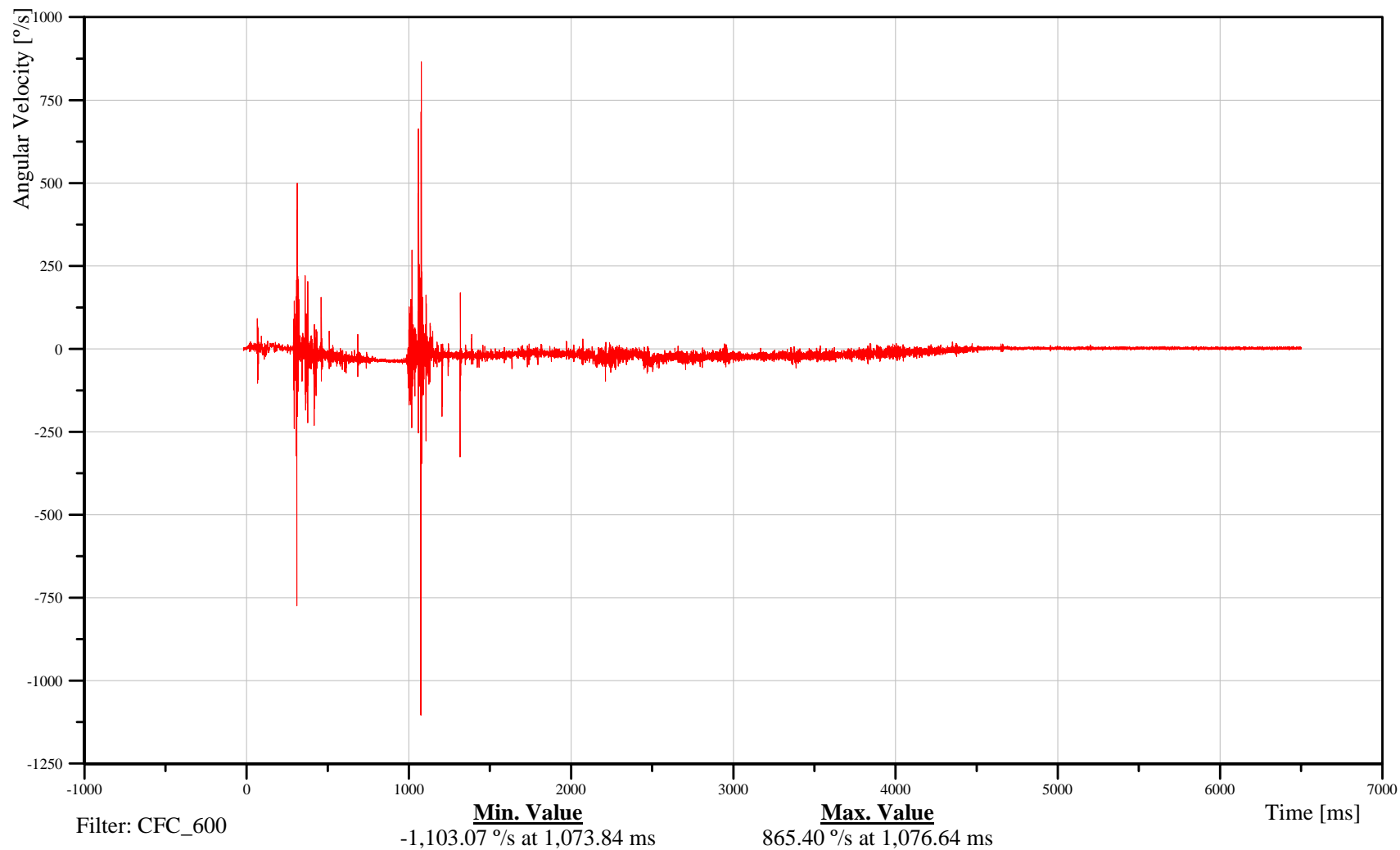
Vehicle Roll Rate

Customer: VRTC

10VEHCCG0000AVXB

TRC Inc. Test Lab: CTF

Test Number: 091022



B-93

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Vehicle Pitch Rate

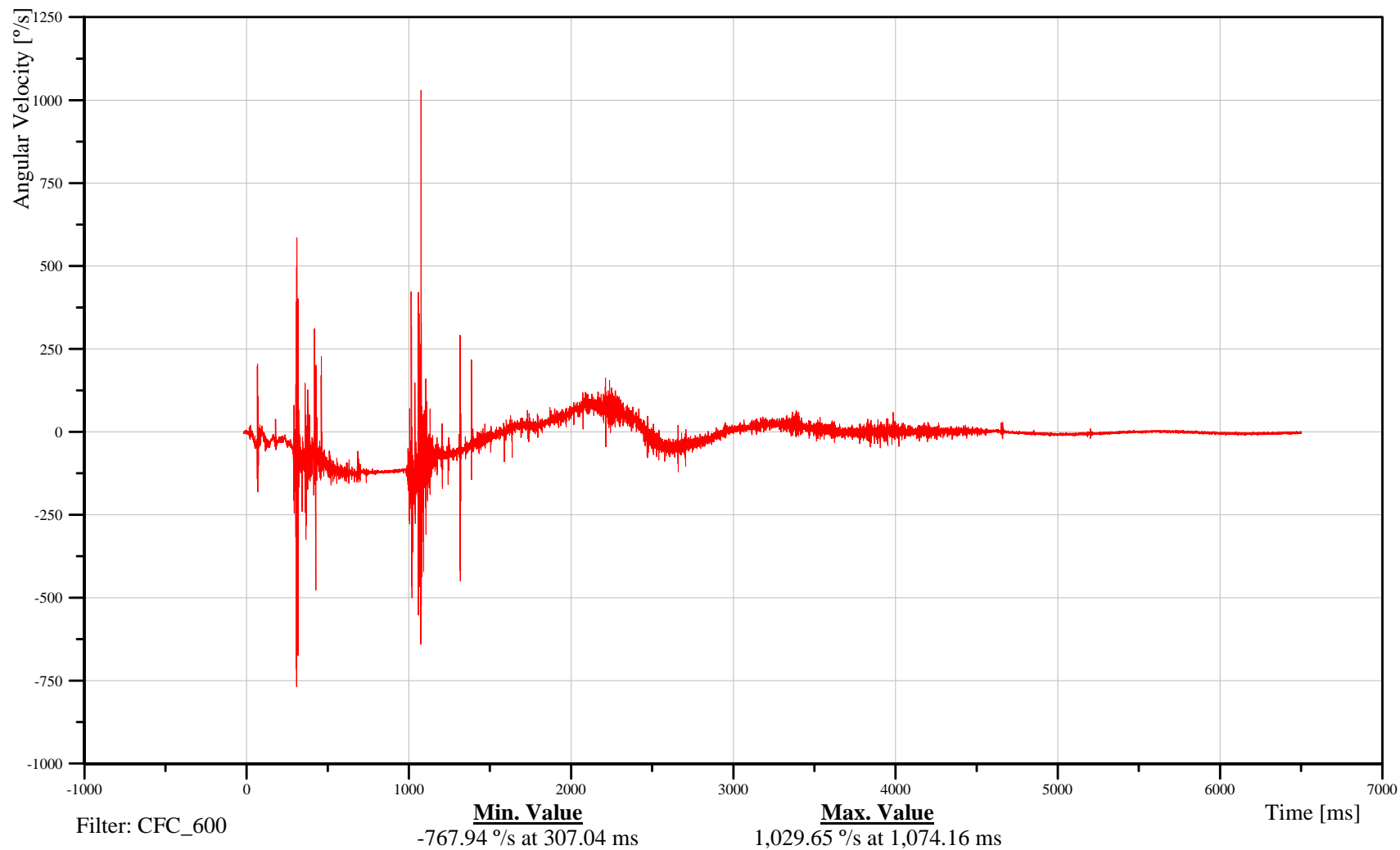
Time: 19:31

Customer: VRTC

10VEHCCG0000AVYB

TRC Inc. Test Lab: CTF

Test Number: 091022



B-94

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Vehicle Yaw Rate

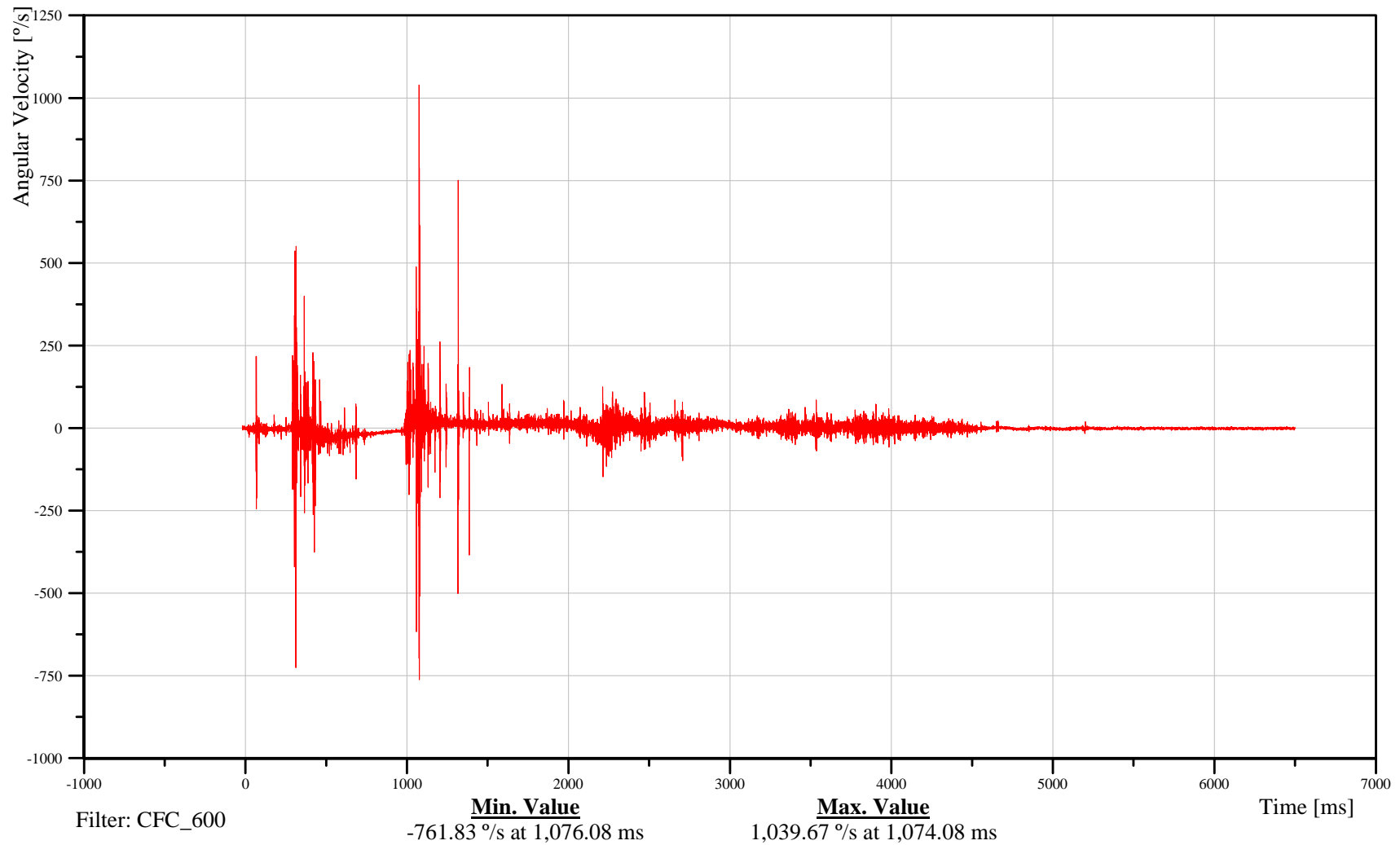
Time: 19:31

Customer: VRTC

10VEHCCG0000AVZB

TRC Inc. Test Lab: CTF

Test Number: 091022



B-95

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Rear Deck Roll Rate Redundant

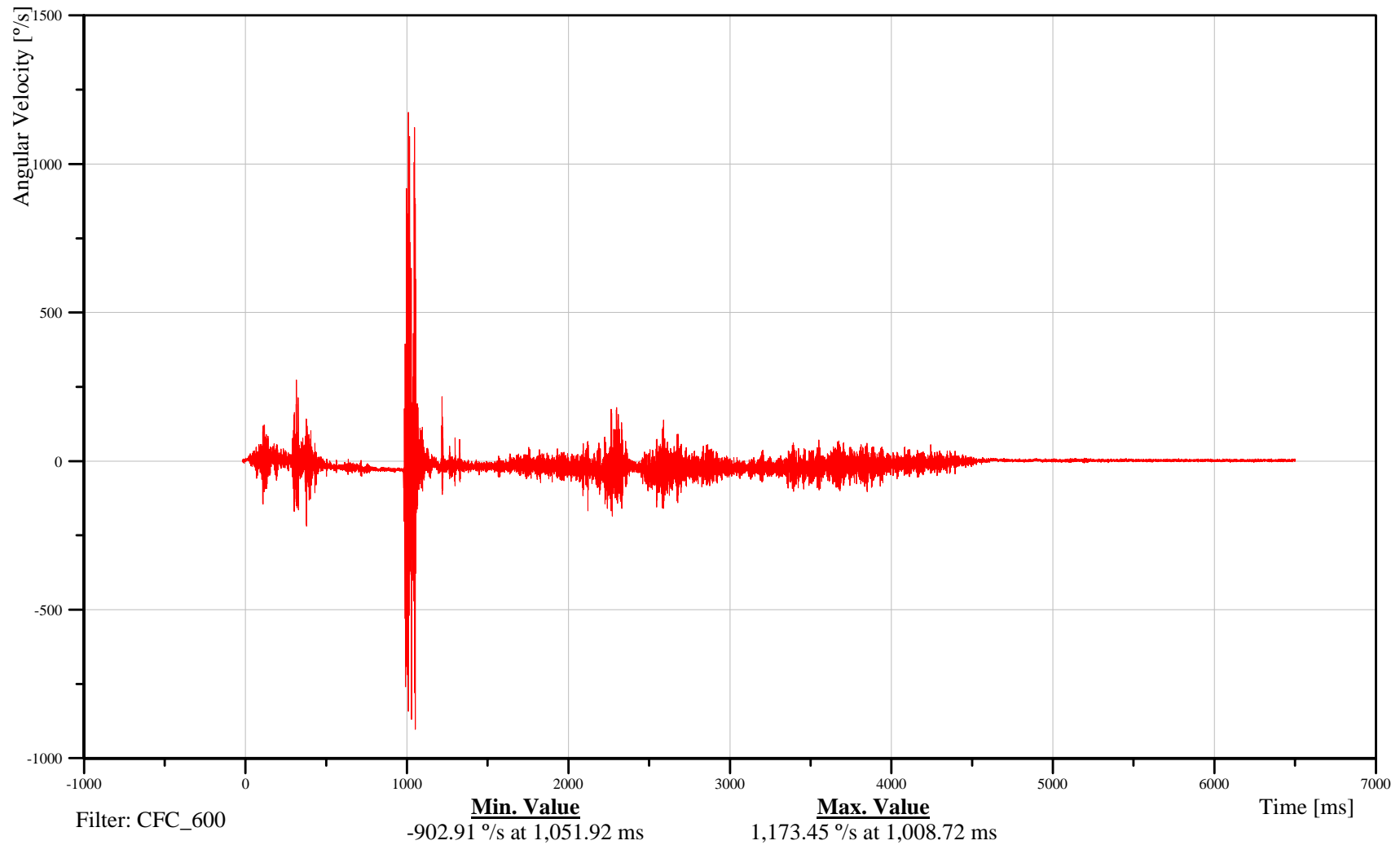
Time: 19:31

Customer: VRTC

10VEHCREDK00AVXB

TRC Inc. Test Lab: CTF

Test Number: 091022



B-96

091022



FMVSS 208 Rollover 2007 Ford Expedition

Rear Deck Pitch Rate Redundant

Date: 10/22/2009

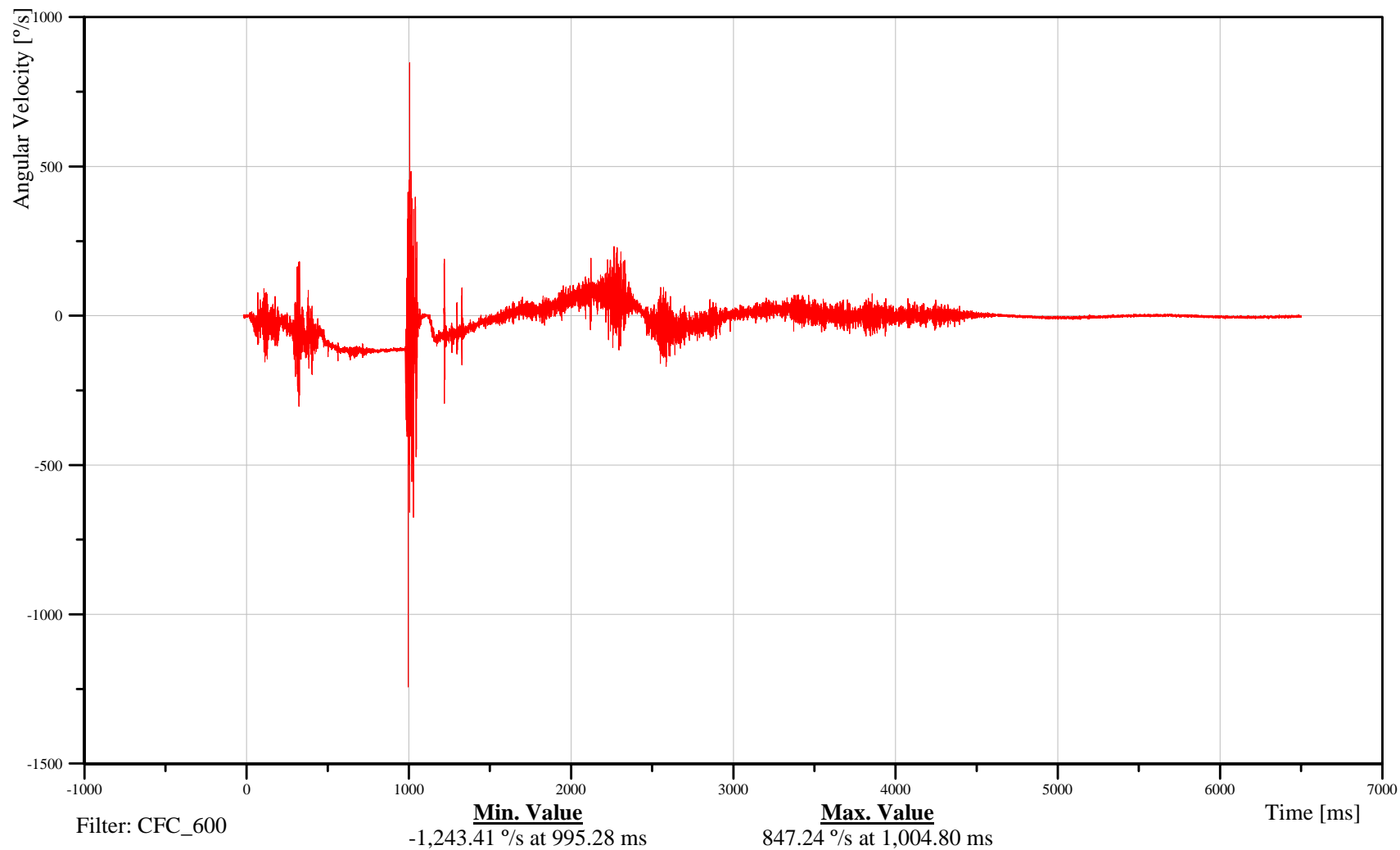
Time: 19:31

Customer: VRTC

10VEHCREDK00AVYB

TRC Inc. Test Lab: CTF

Test Number: 091022



B-97

091022



FMVSS 208 Rollover 2007 Ford Expedition

Rear Deck Yaw Rate Redundant

Date: 10/22/2009

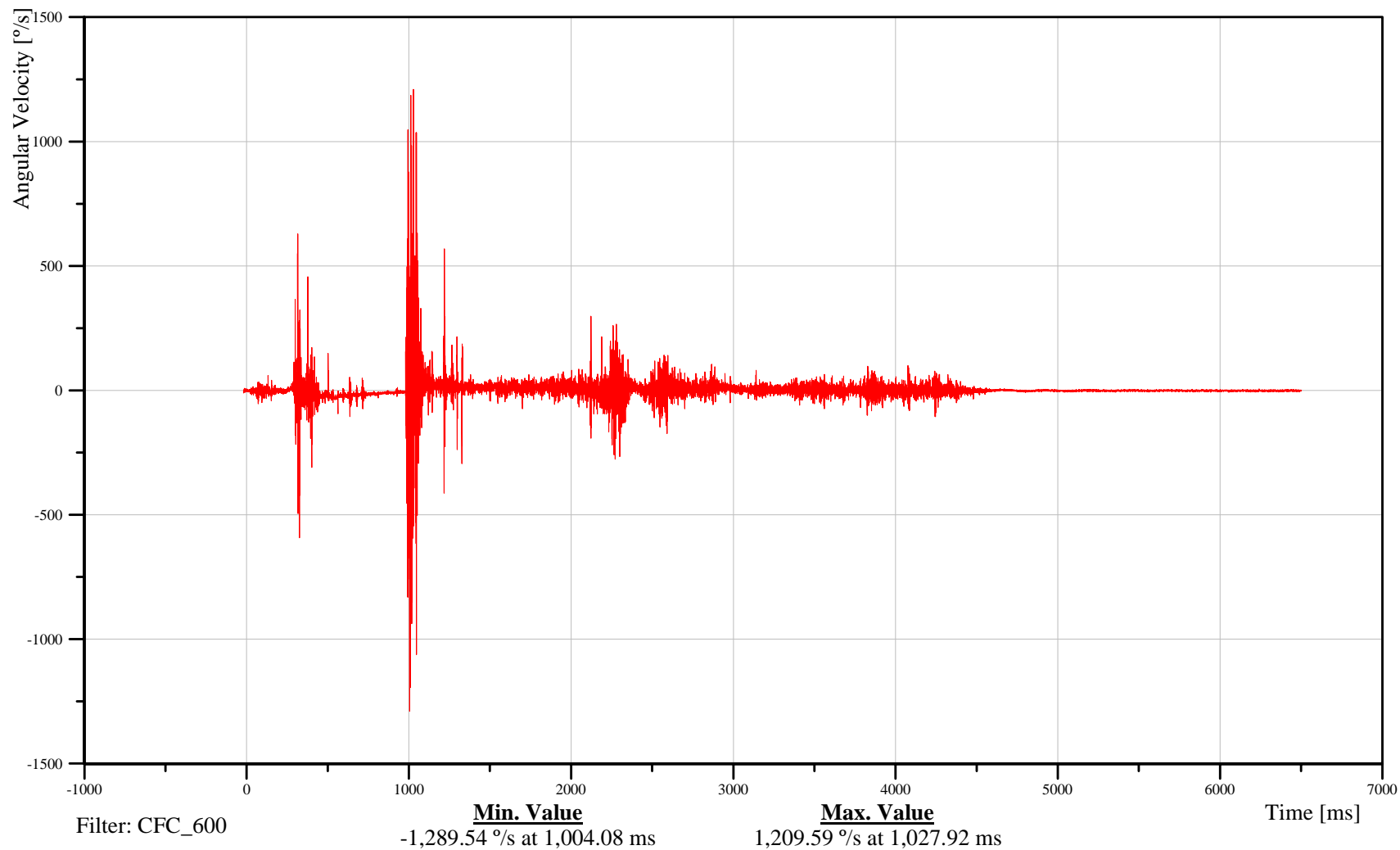
Time: 19:31

Customer: VRTC

10VEHCREDK00AVZB

TRC Inc. Test Lab: CTF

Test Number: 091022



B-98

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

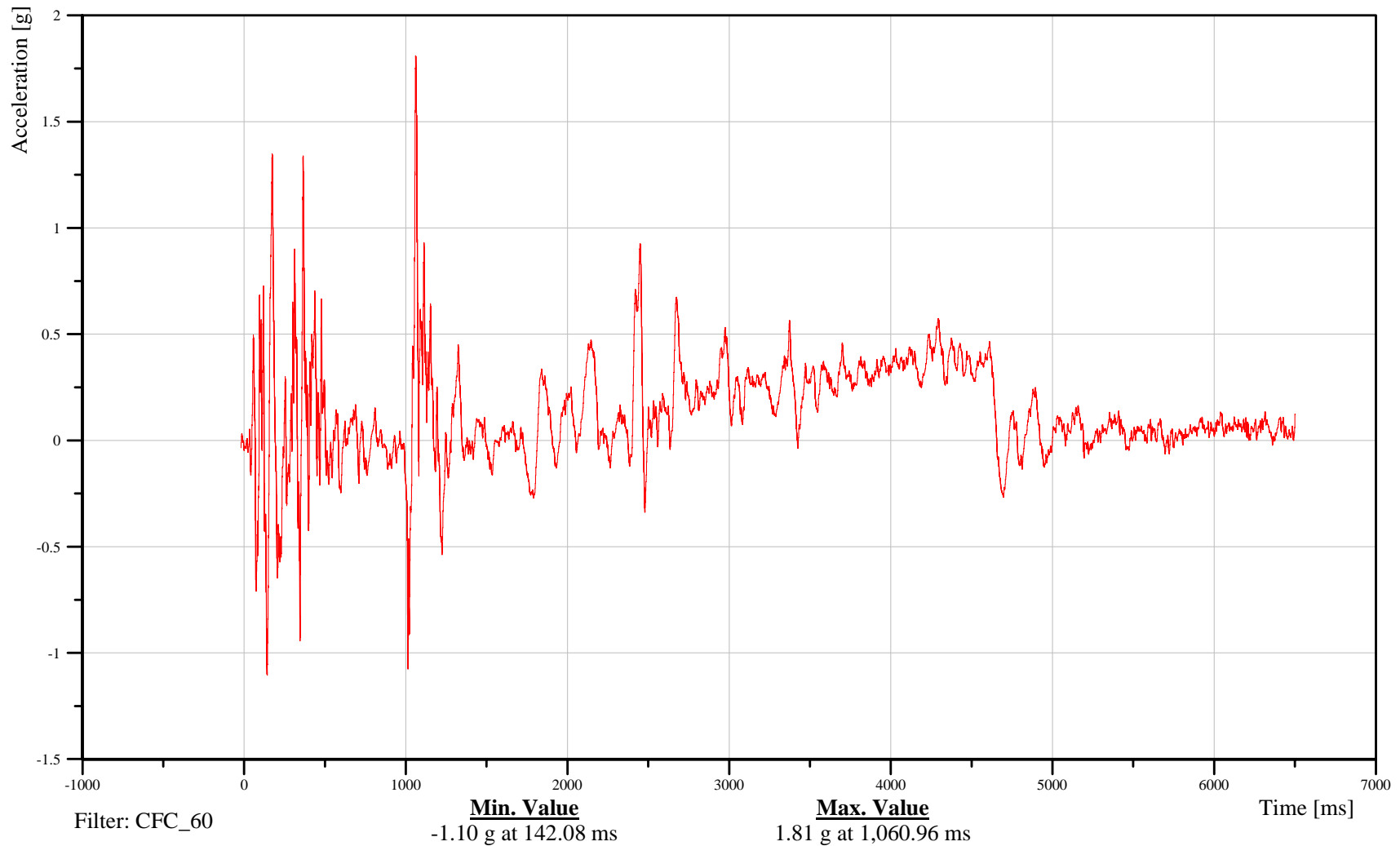
Top of Engine X-Axis Acceleration

Customer: VRTC

10ENGNTTP0000ACXD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-99

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

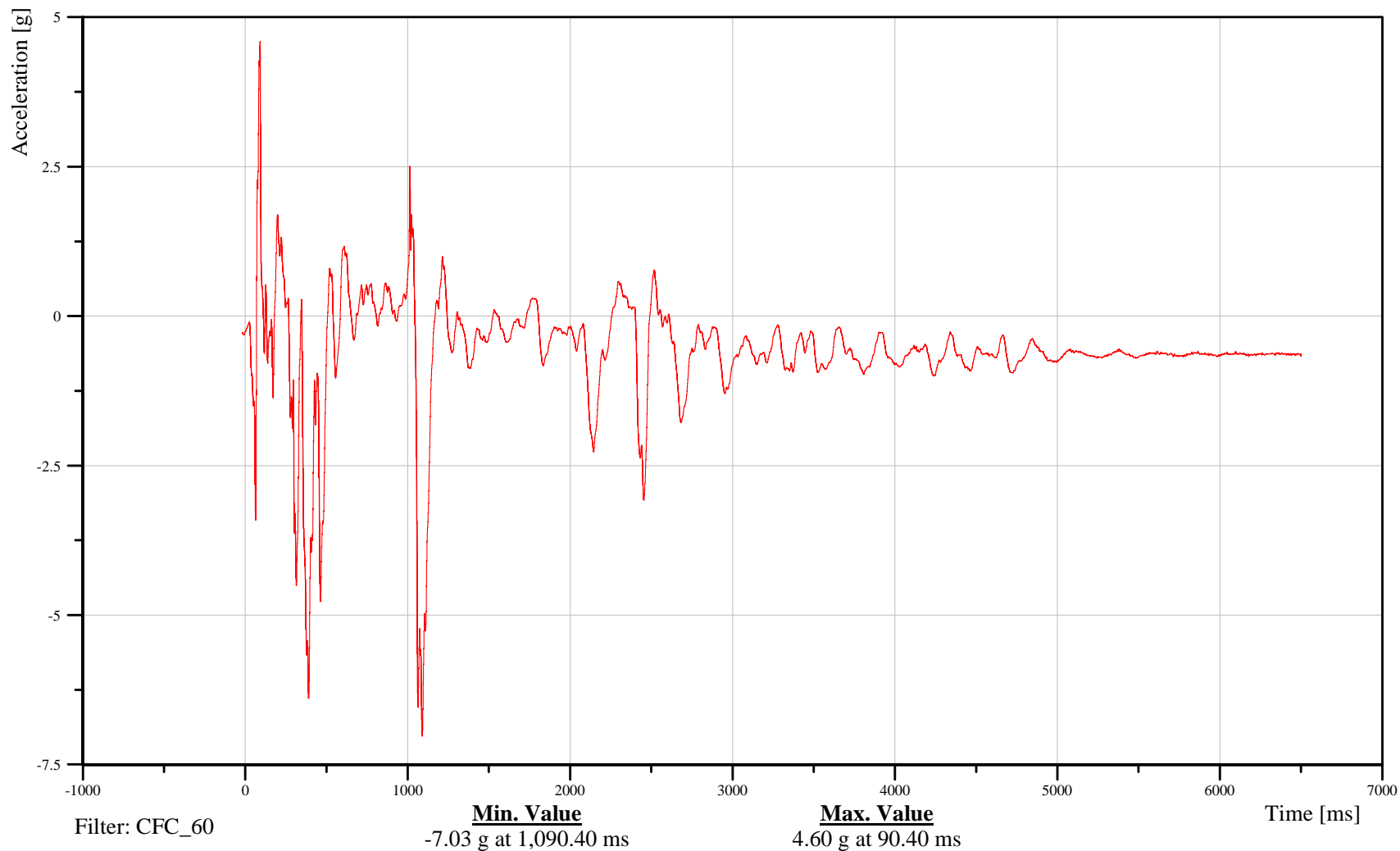
Top of Engine Y-Axis Acceleration

Customer: VRTC

10ENGNTTP0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-100

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

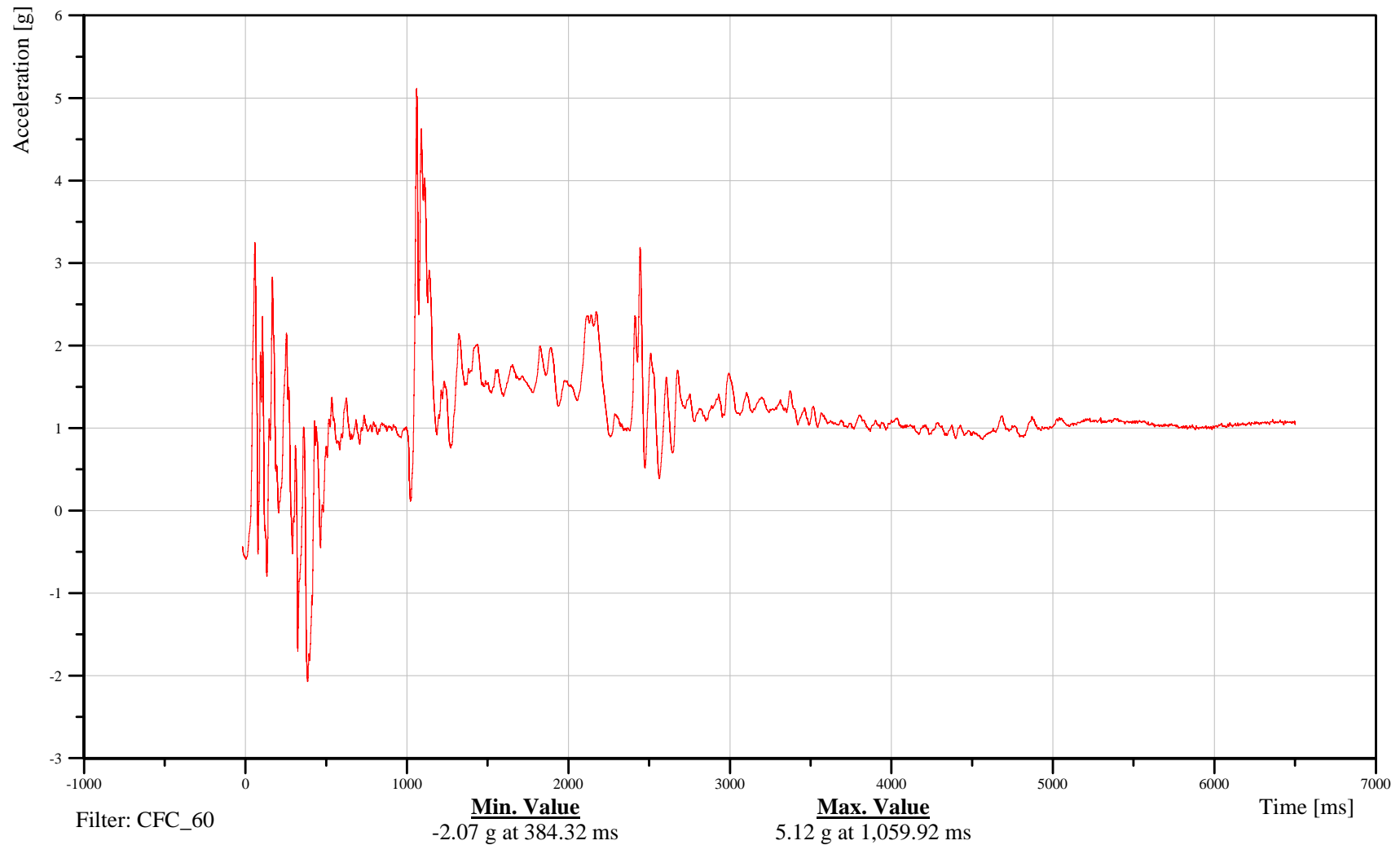
Top of Engine Z-Axis Acceleration

Customer: VRTC

10ENGNTTP0000ACZD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-101

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

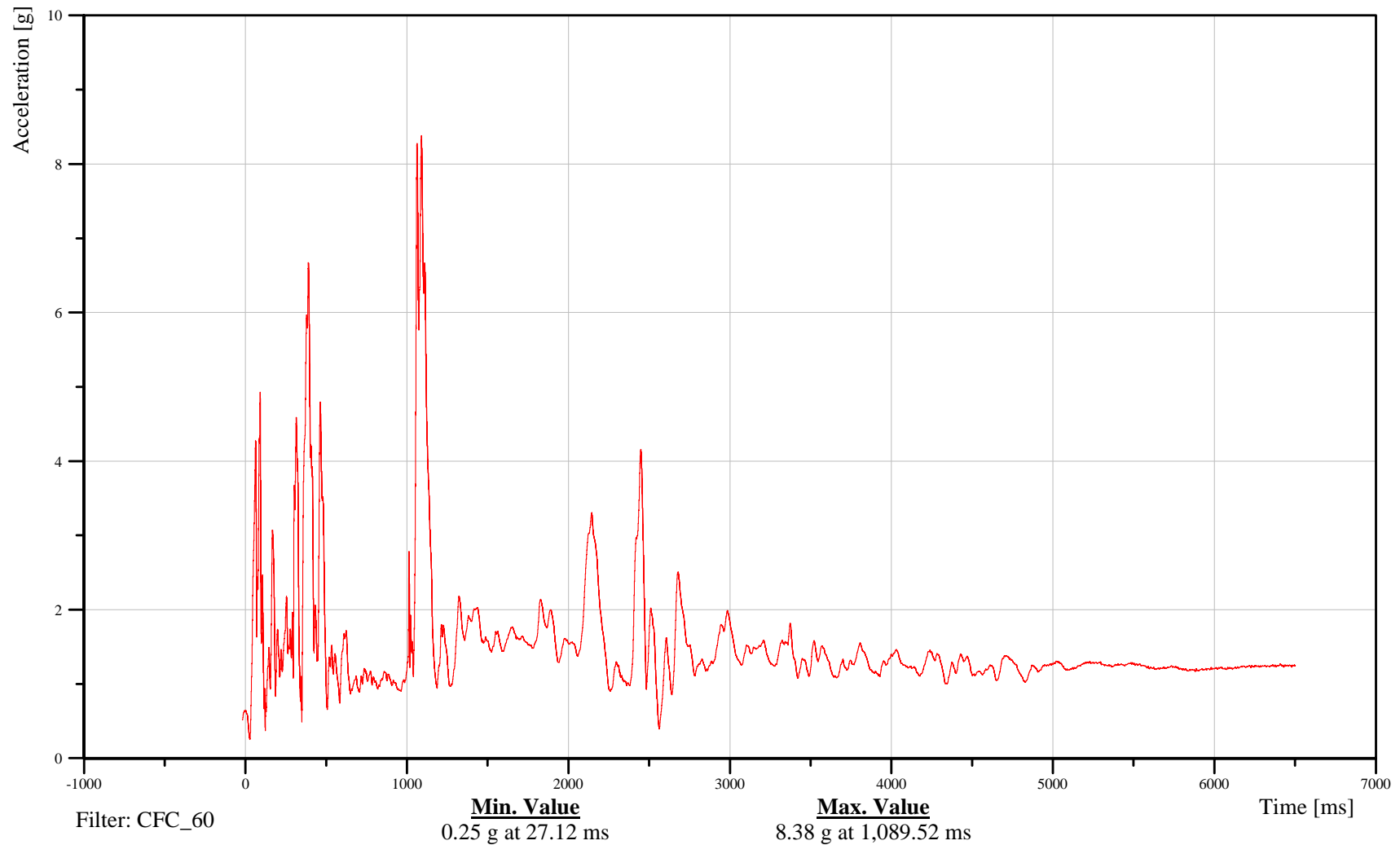
Top of Engine Resultant Acceleration

Customer: VRTC

10ENGNTTP0000ACRD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-102

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Bottom of Engine X-Axis Acceleration

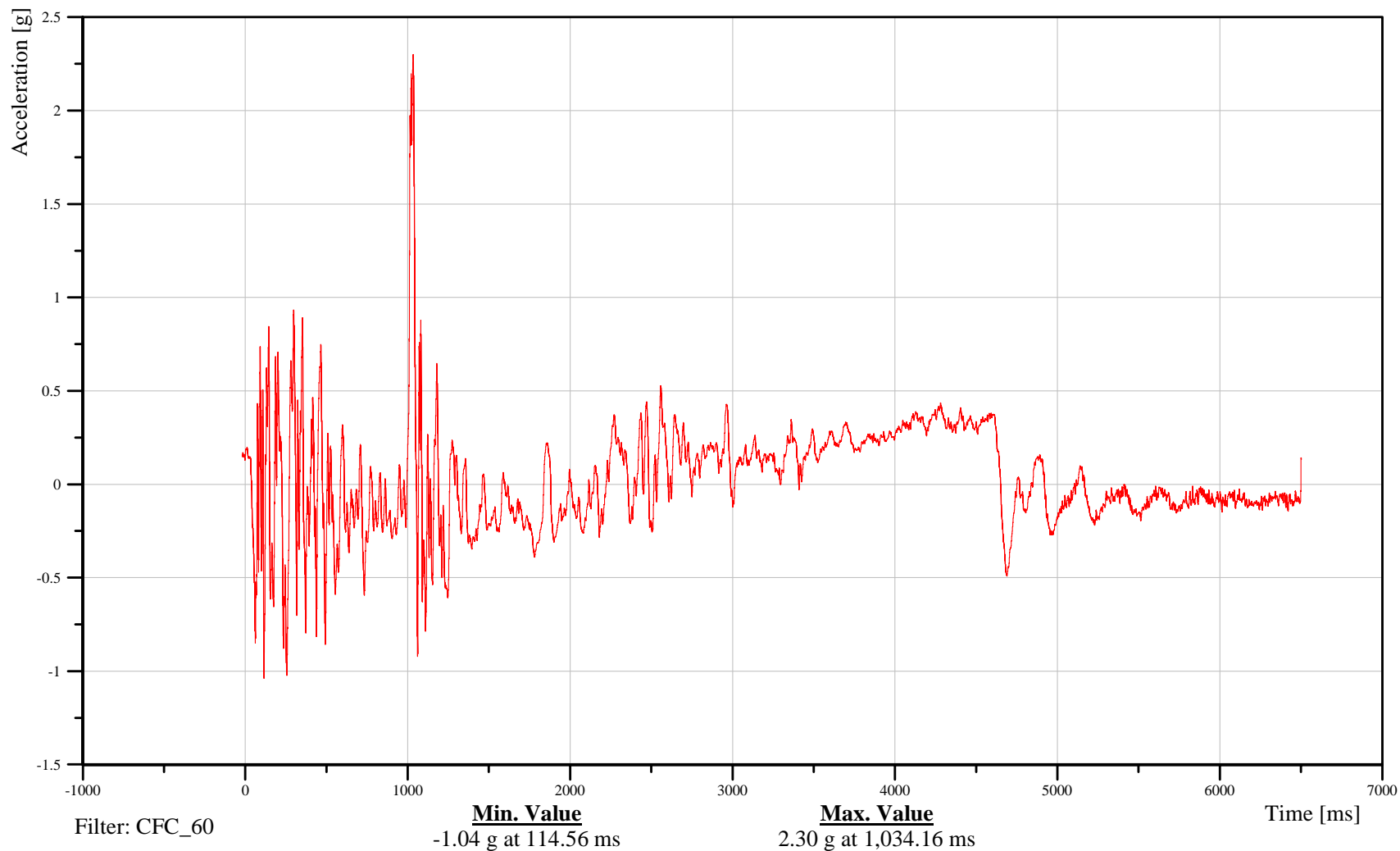
Time: 19:31

Customer: VRTC

10ENGNB00000ACXD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-103

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Bottom of Engine Y-Axis Acceleration

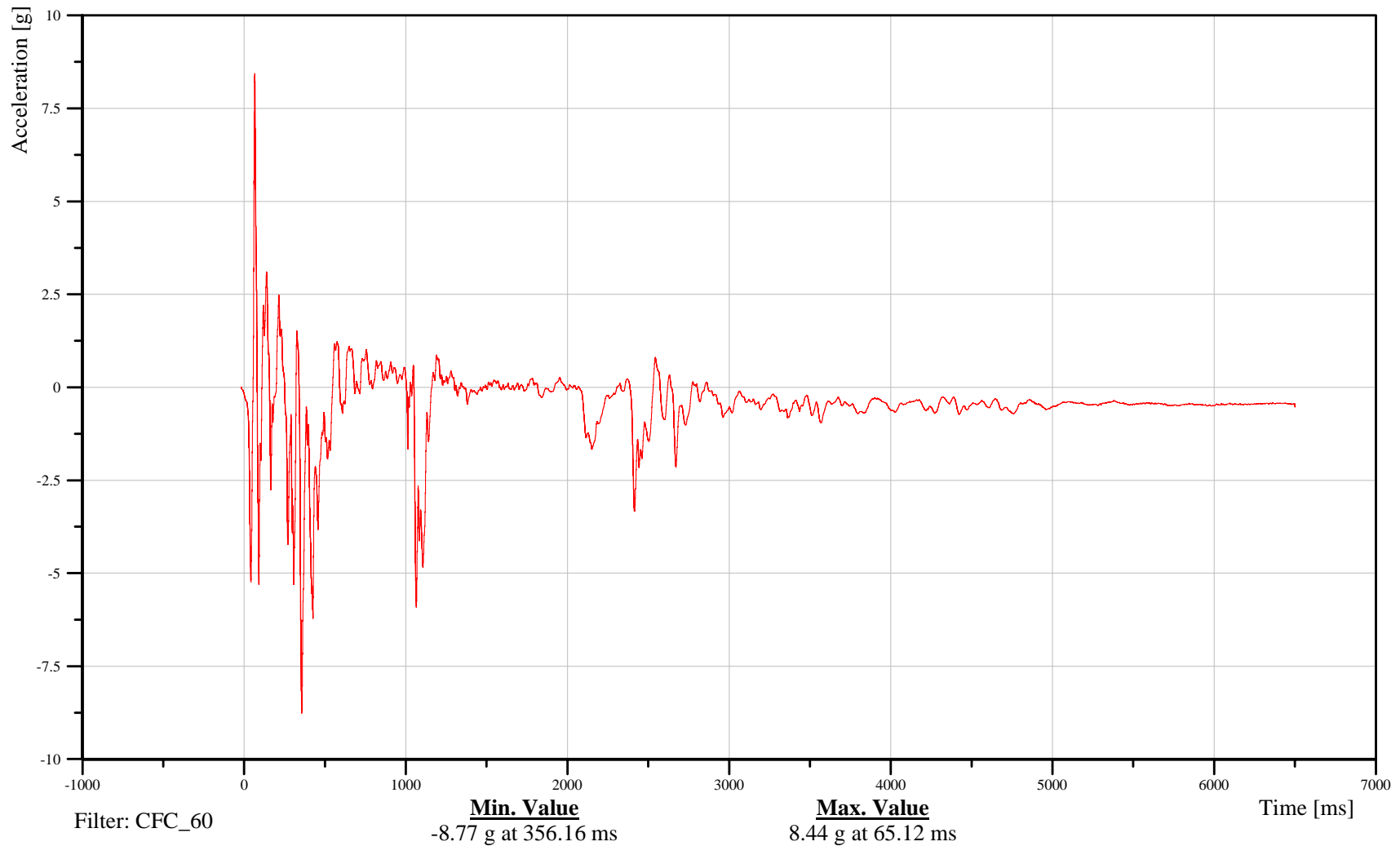
Time: 19:31

Customer: VRTC

10ENGNB00000ACYD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-104

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Bottom of Engine Z-Axis Acceleration

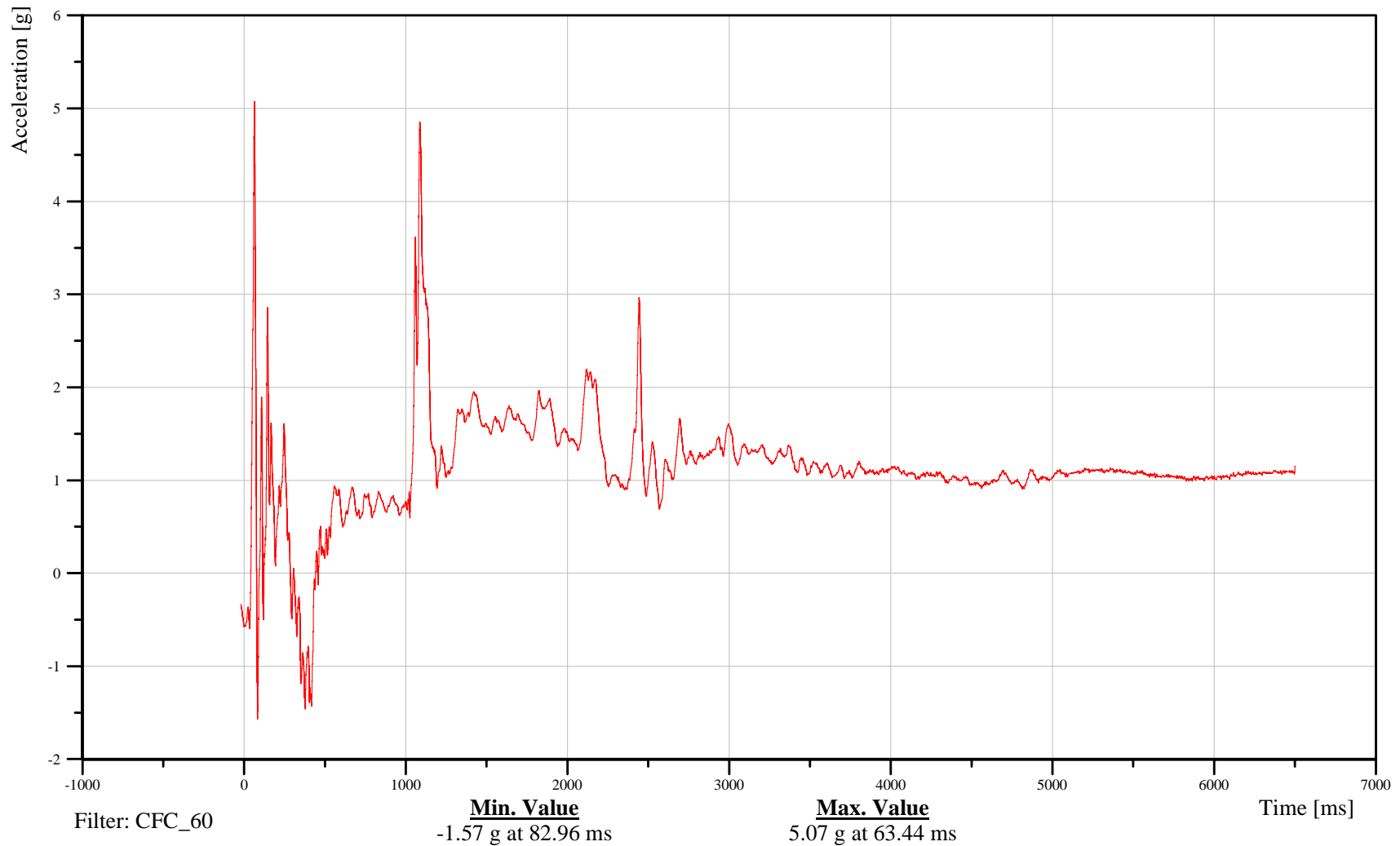
Time: 19:31

Customer: VRTC

10ENGNBO0000ACZD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-105

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009
Time: 19:31

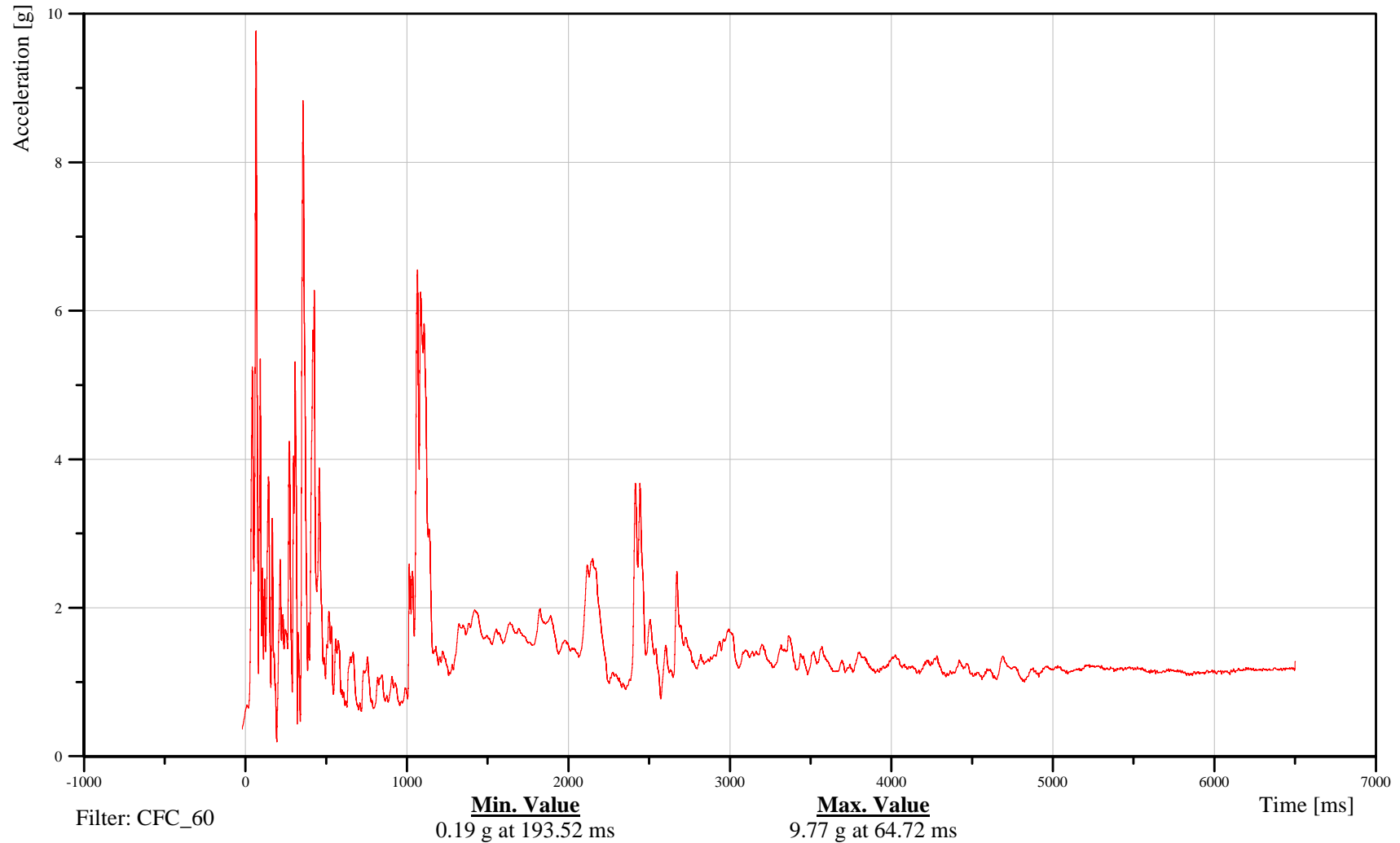
Bottom of Engine Resultant Acceleration

Customer: VRTC

10ENGNB0000ACRD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-106

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

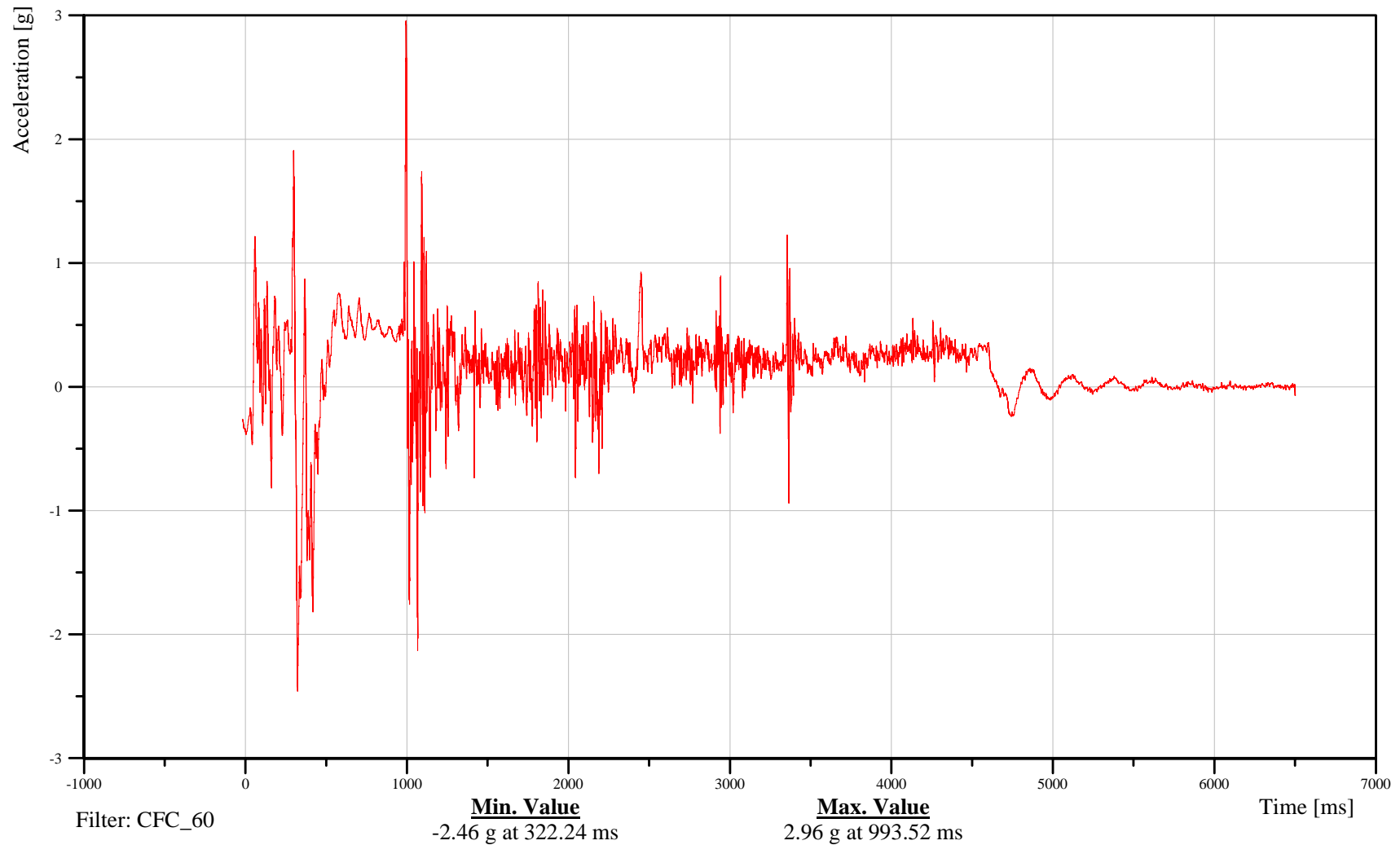
Left A-Pillar Upper X-Axis Acceleration

Customer: VRTC

10APILUPLE00ACXD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-107

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

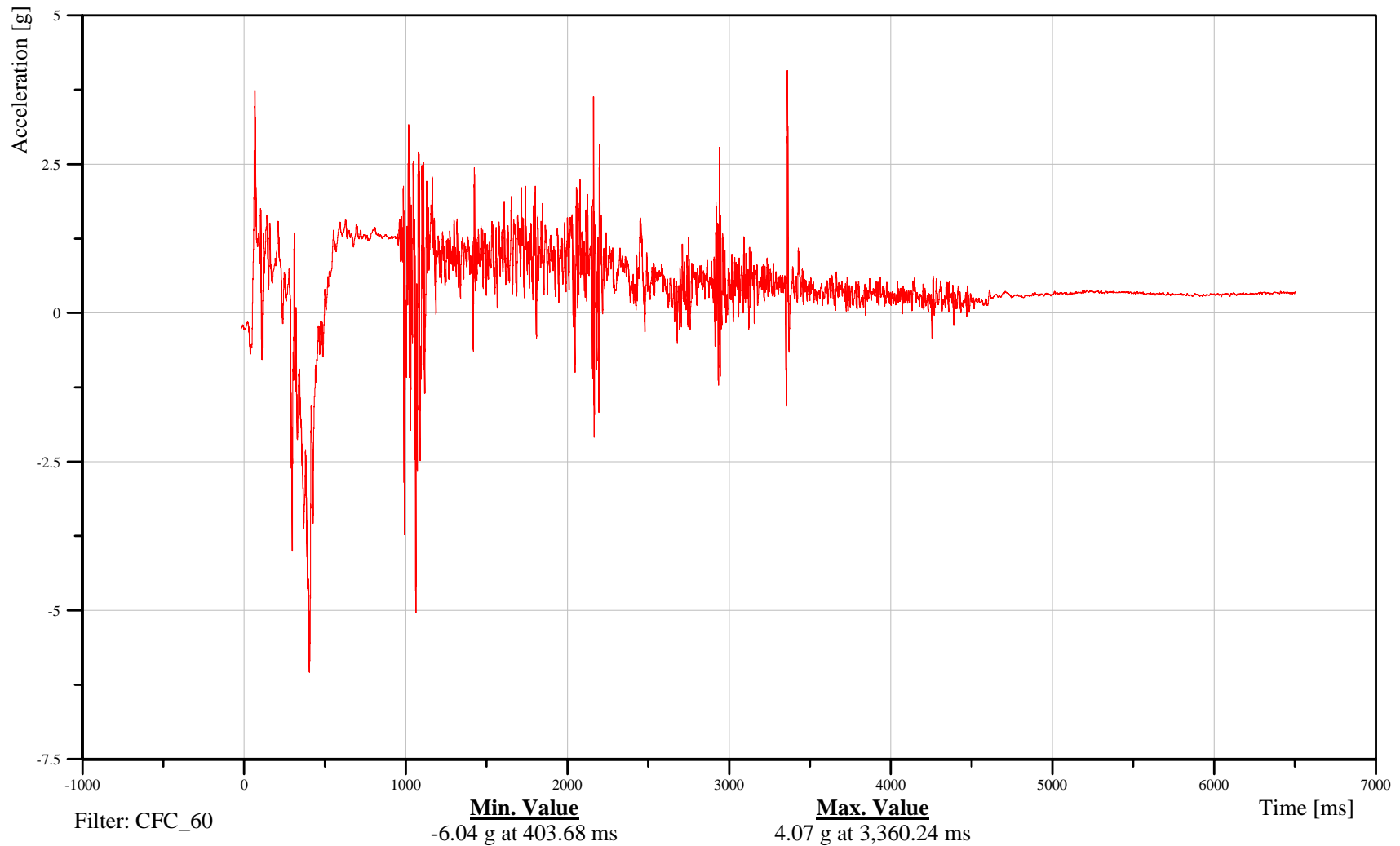
Left A-Pillar Upper Y-Axis Acceleration

Customer: VRTC

10APILUPLE00ACYD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-108

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

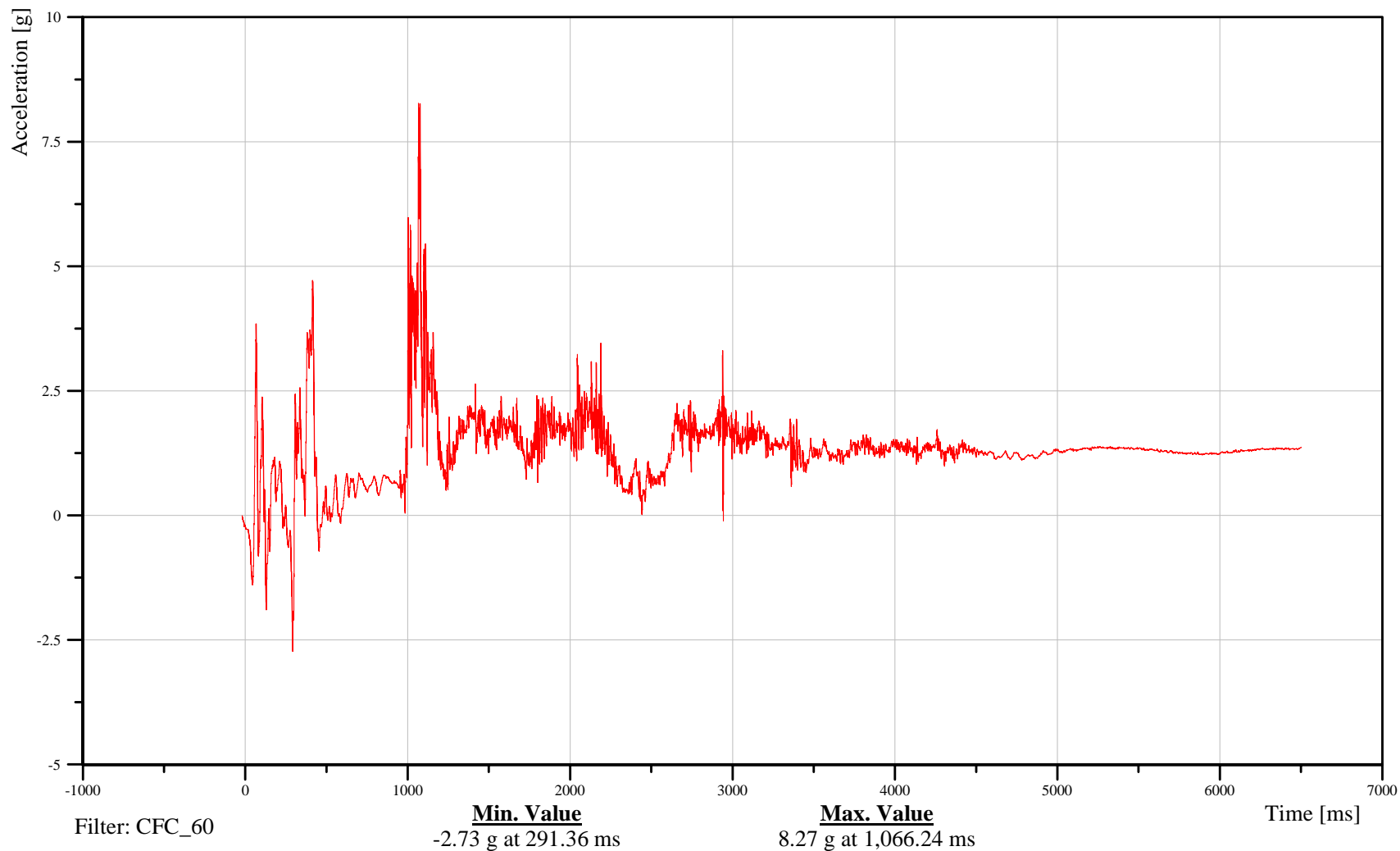
Left A-Pillar Upper Z-Axis Acceleration

Customer: VRTC

10APILUPLE00ACZD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-109

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009
Time: 19:31

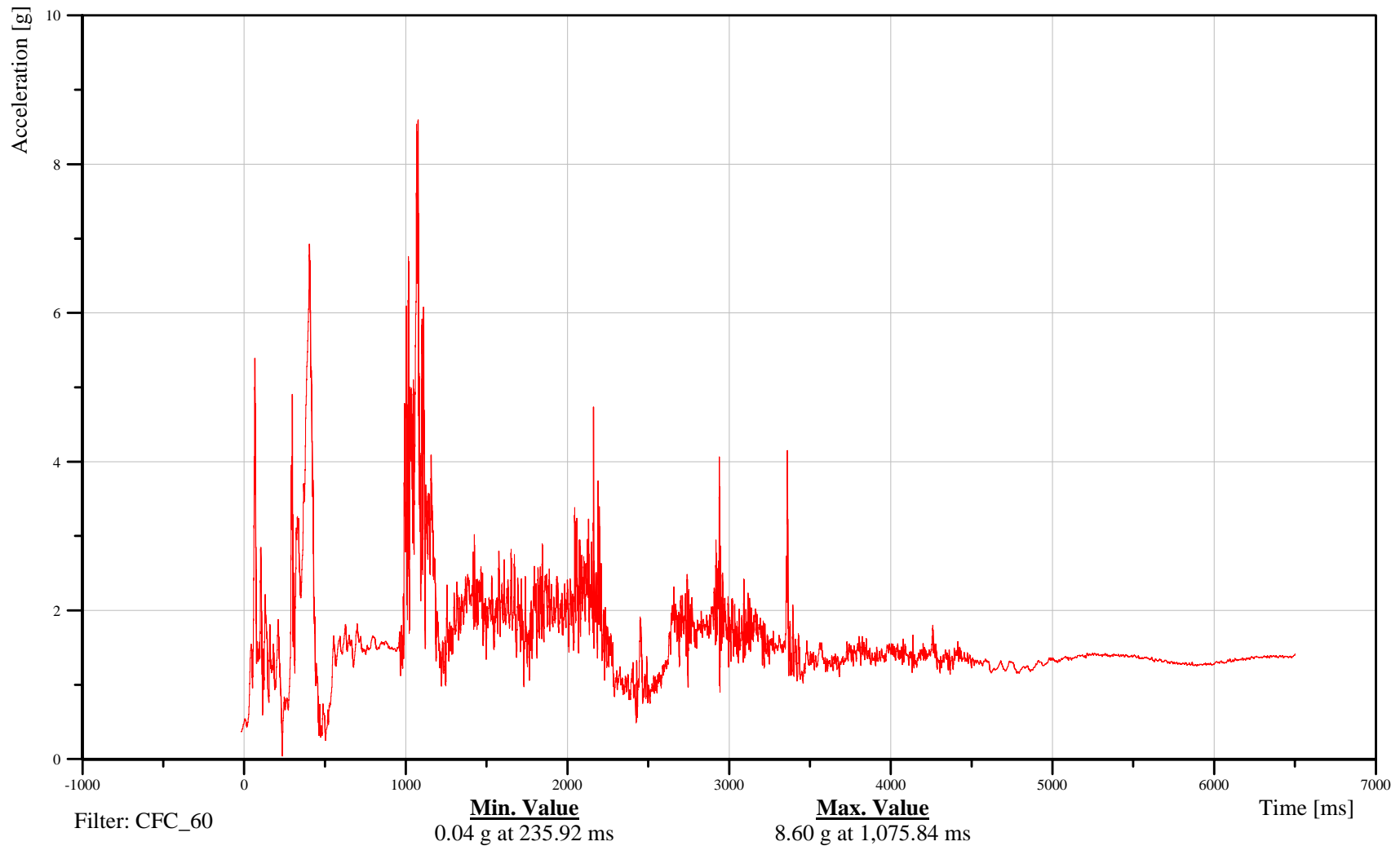
Left A-Pillar Upper Resultant Acceleration

Customer: VRTC

10APILUPLE00ACRD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-110

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

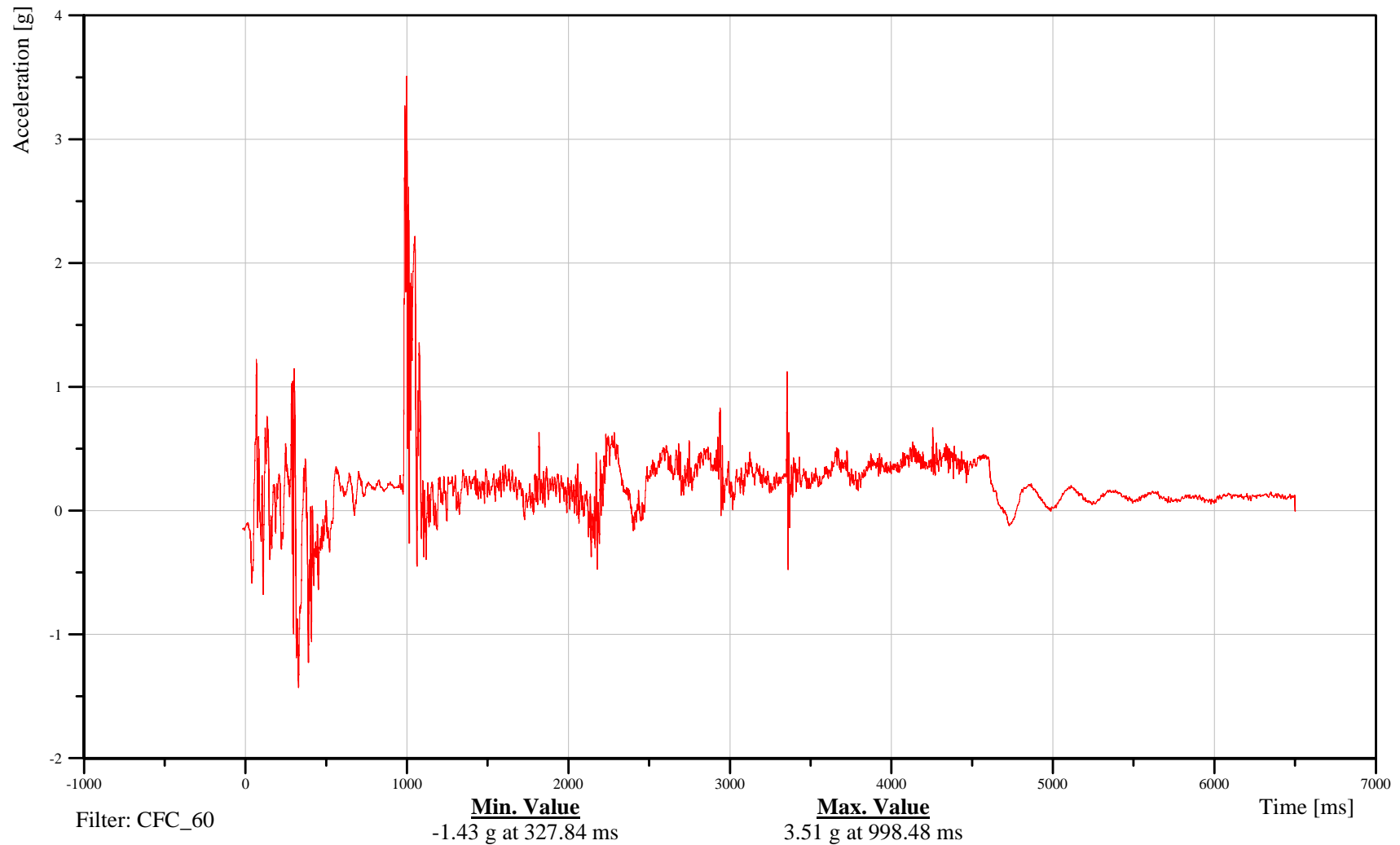
Left A-Pillar Lower X-Axis Acceleration

Customer: VRTC

10APILLOLE00ACXD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-III

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Left A-Pillar Lower Y-Axis Acceleration

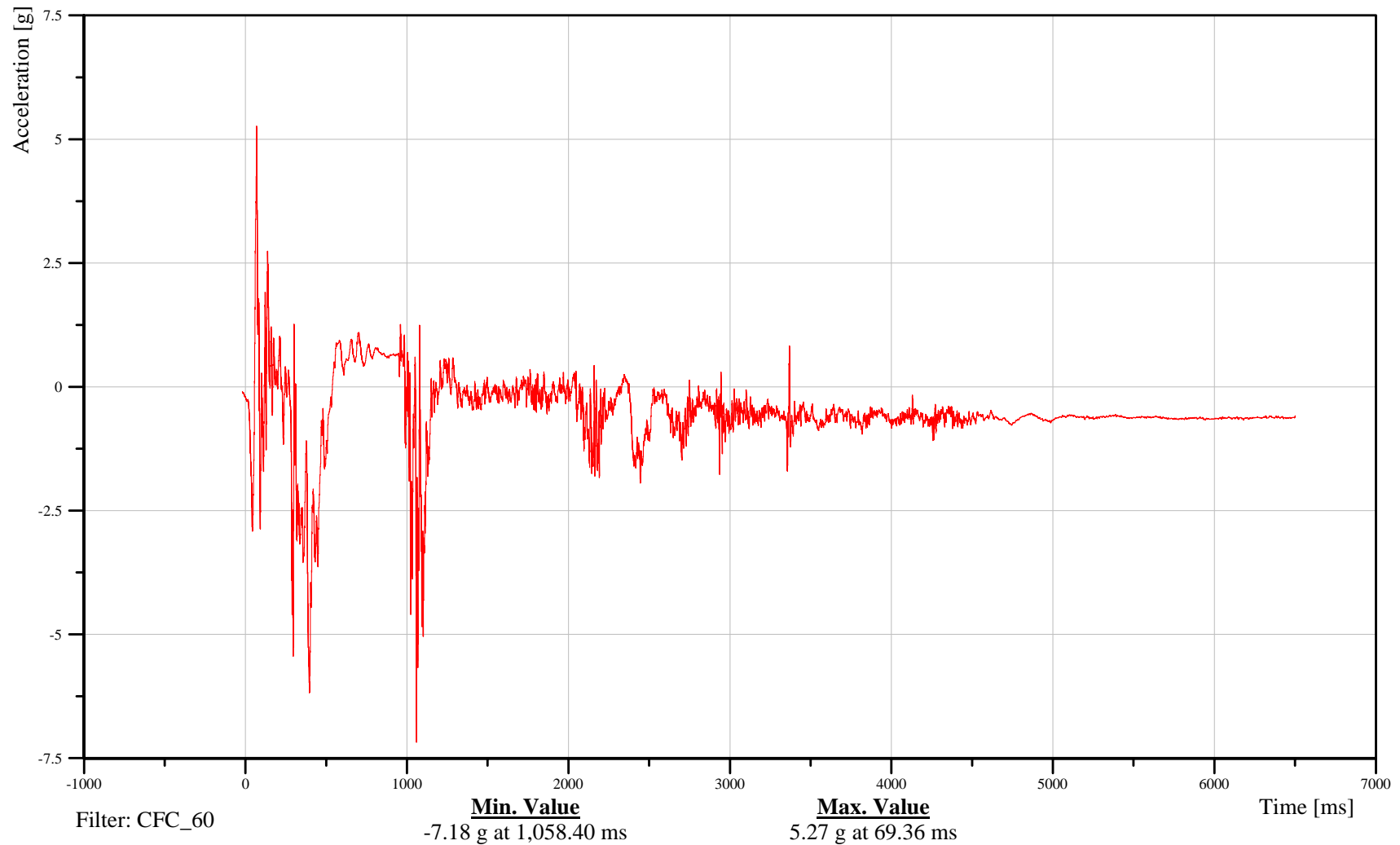
Time: 19:31

Customer: VRTC

10APILLOLE00ACYD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-112

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

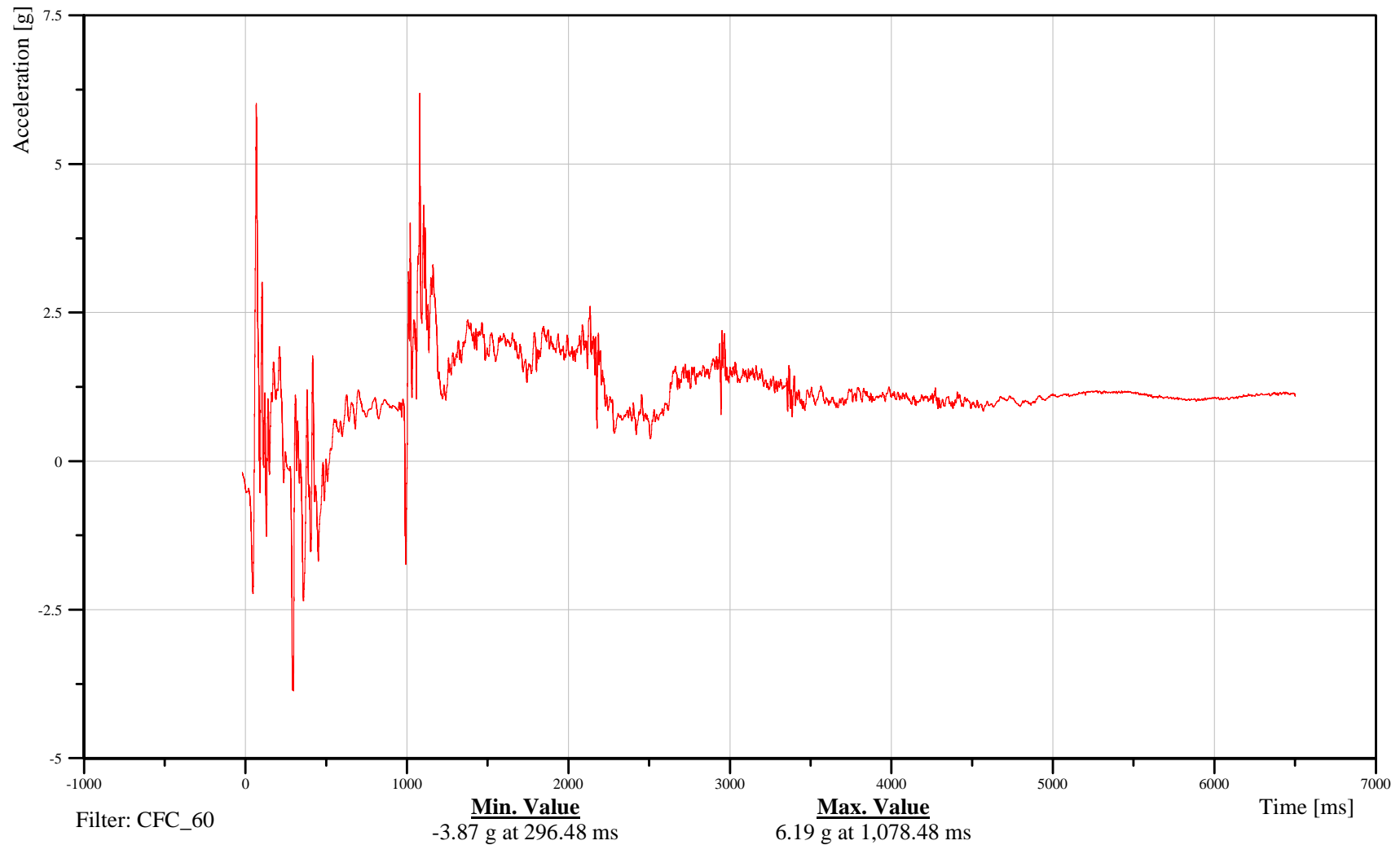
Left A-Pillar Lower Z-Axis Acceleration

Customer: VRTC

10APILLOLE00ACZD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-113

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Left A-Pillar Lower Resultant Acceleration

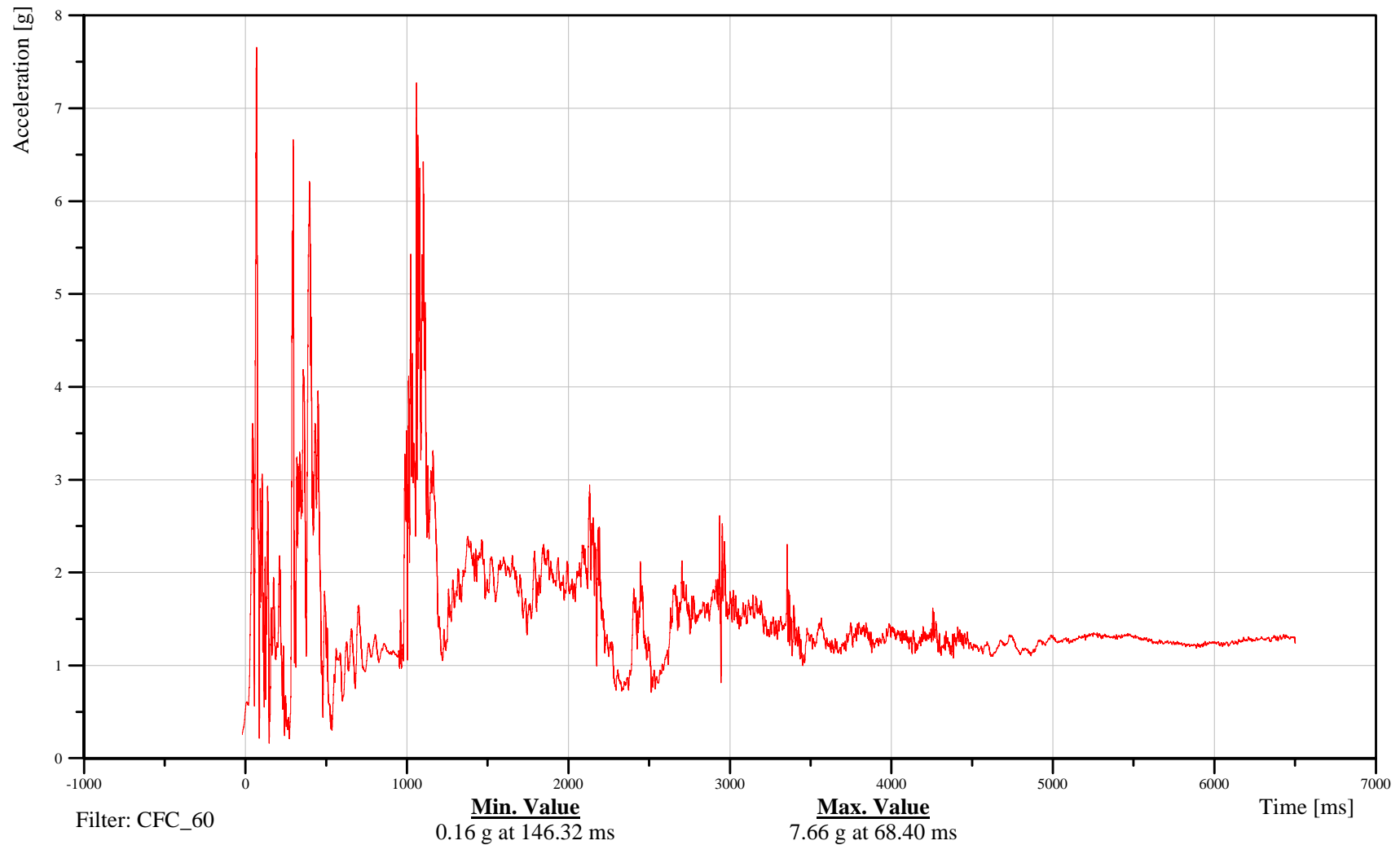
Time: 19:31

Customer: VRTC

10APILLOLE00ACRD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-114

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009
Time: 19:31

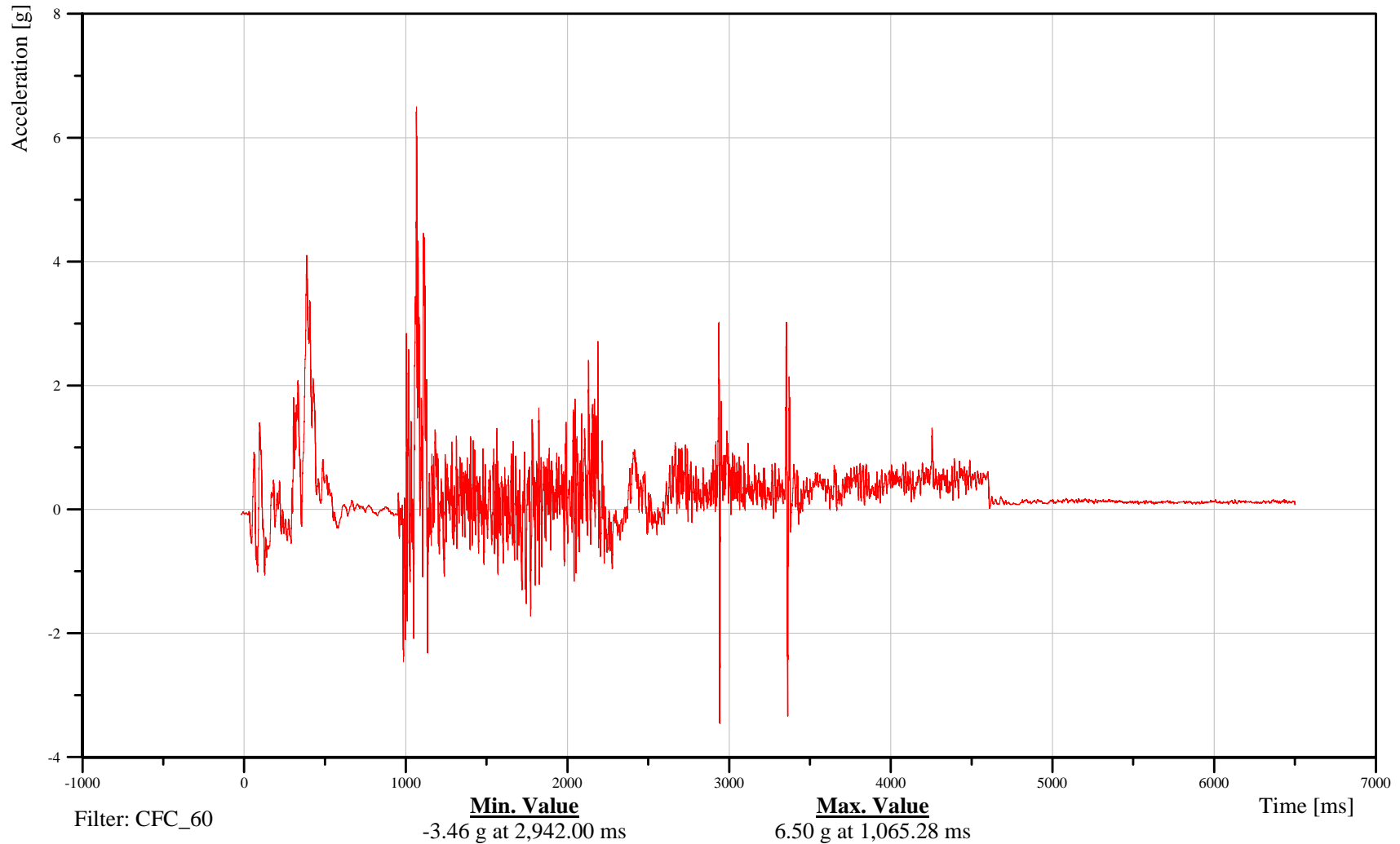
Right A-Pillar Upper X-Axis Acceleration

Customer: VRTC

10APILUPRI00ACXD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-115

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

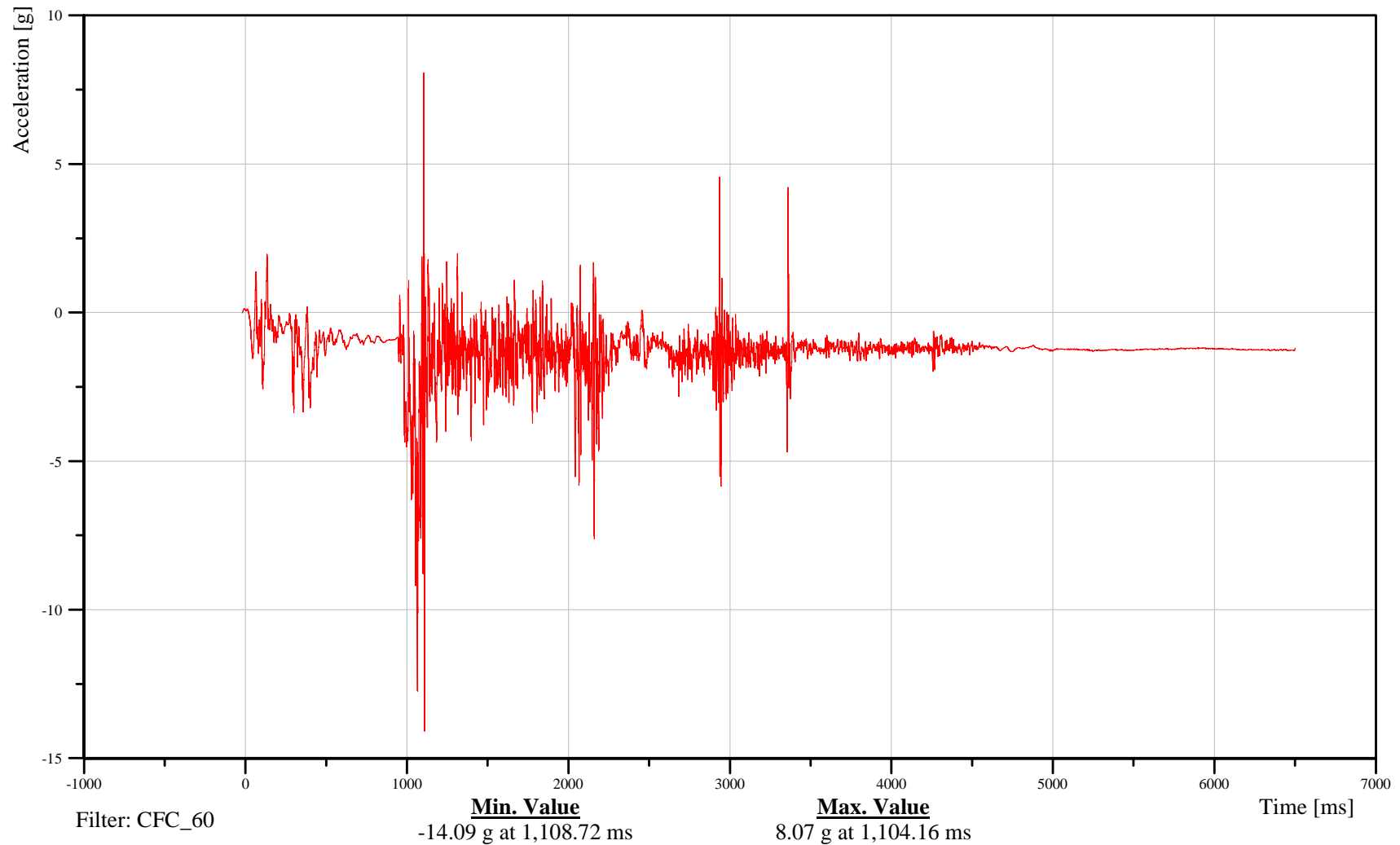
Right A-Pillar Upper Y-Axis Acceleration

Customer: VRTC

10APILUPRI00ACYD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-116

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

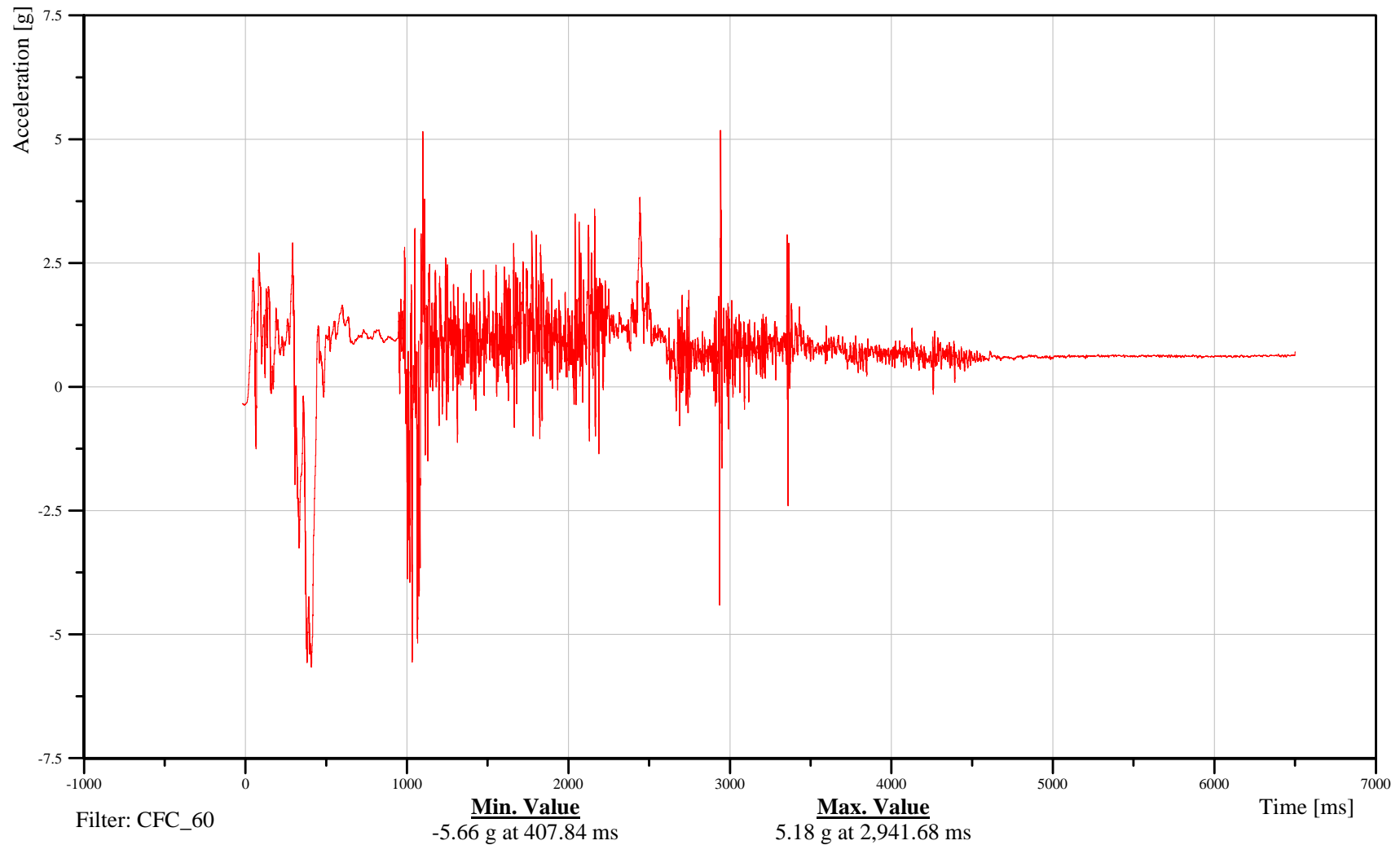
Right A-Pillar Upper Z-Axis Acceleration

Customer: VRTC

10APILUPRI00ACZD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-117

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

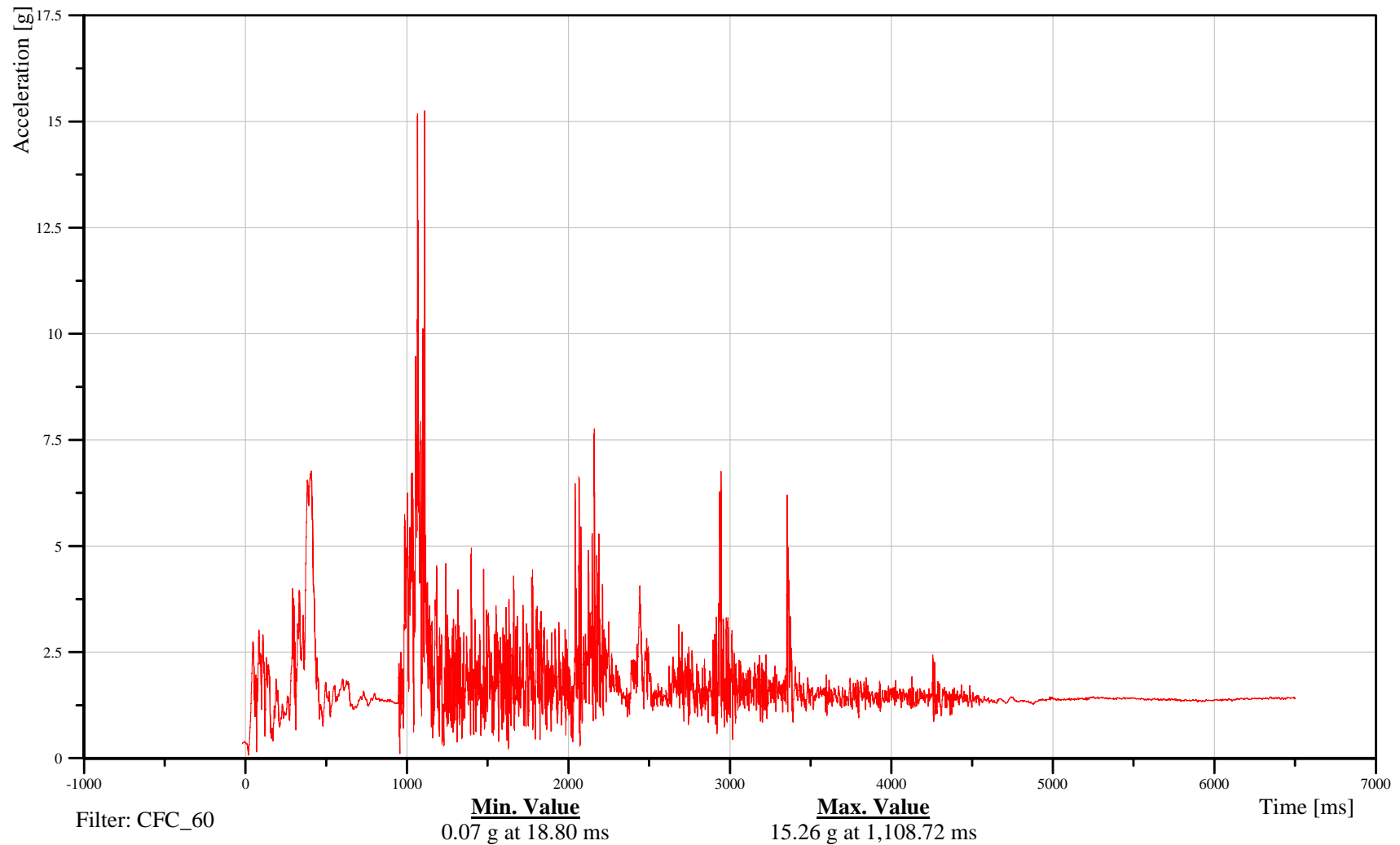
Right A-Pillar Upper Resultant Acceleration

Customer: VRTC

10APILUPRI00ACRD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-118

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

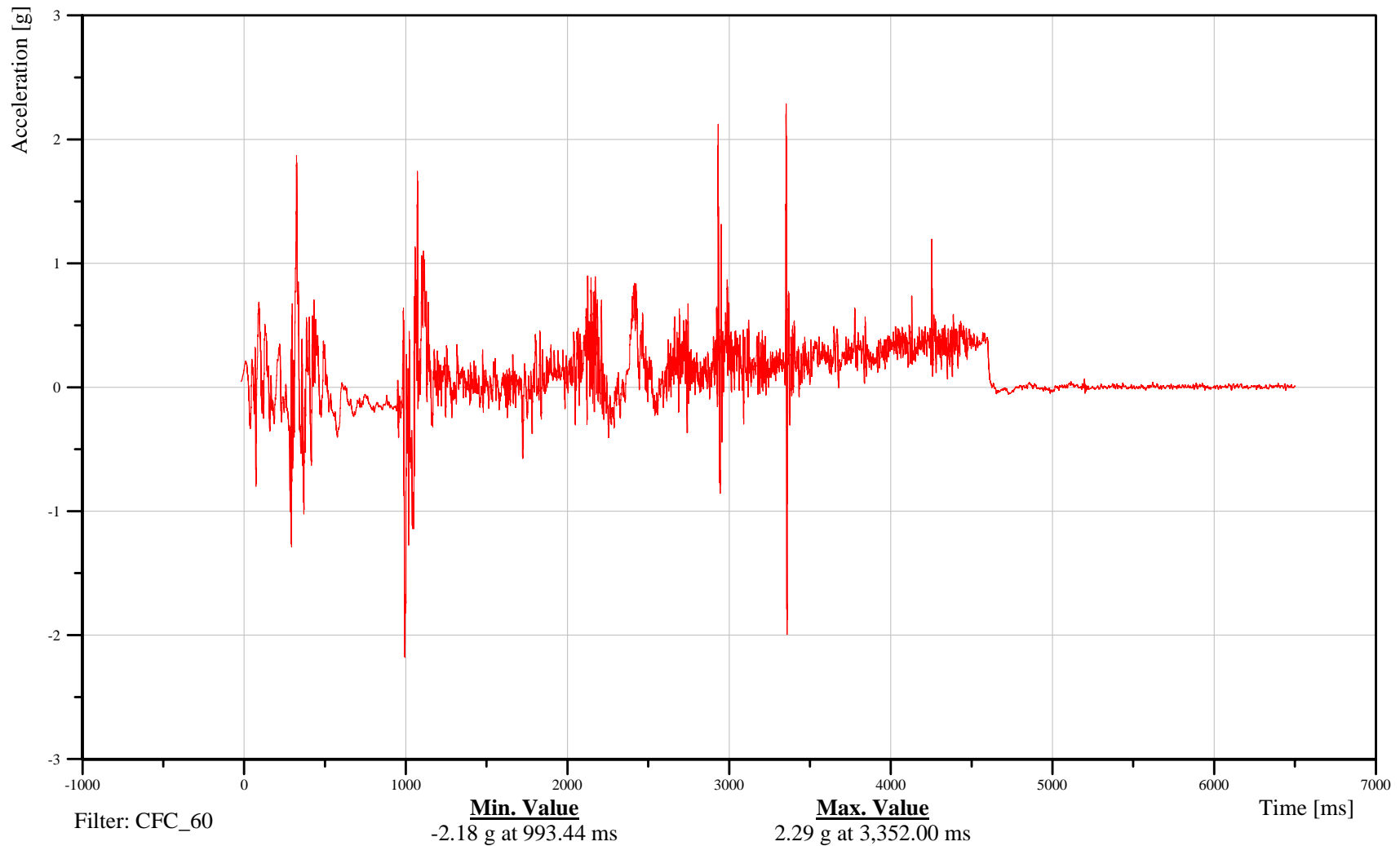
Right A-Pillar Lower X-Axis Acceleration

Customer: VRTC

10APILLORI00ACXD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-119

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

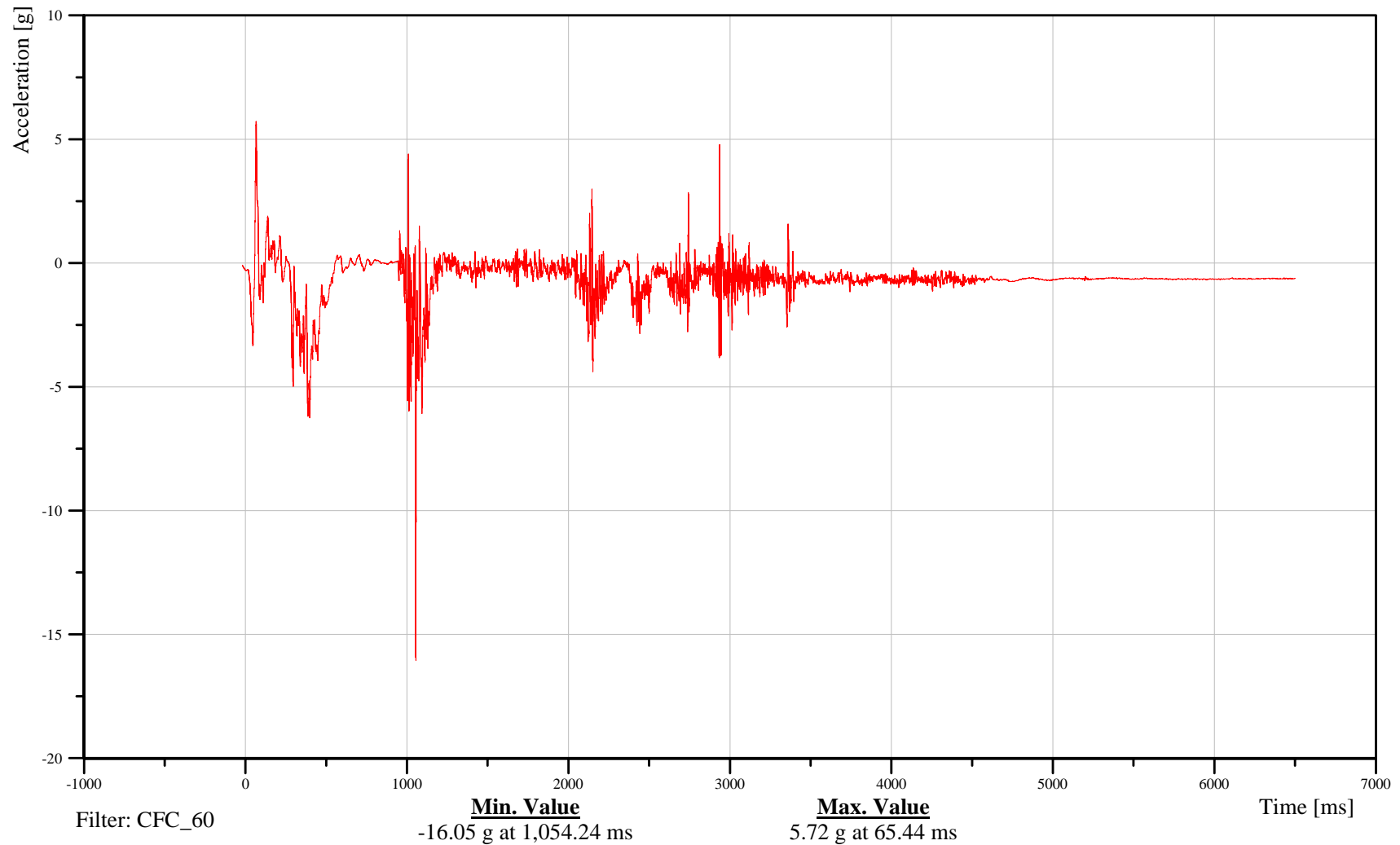
Right A-Pillar Lower Y-Axis Acceleration

Customer: VRTC

10APILLORI00ACYD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-120

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

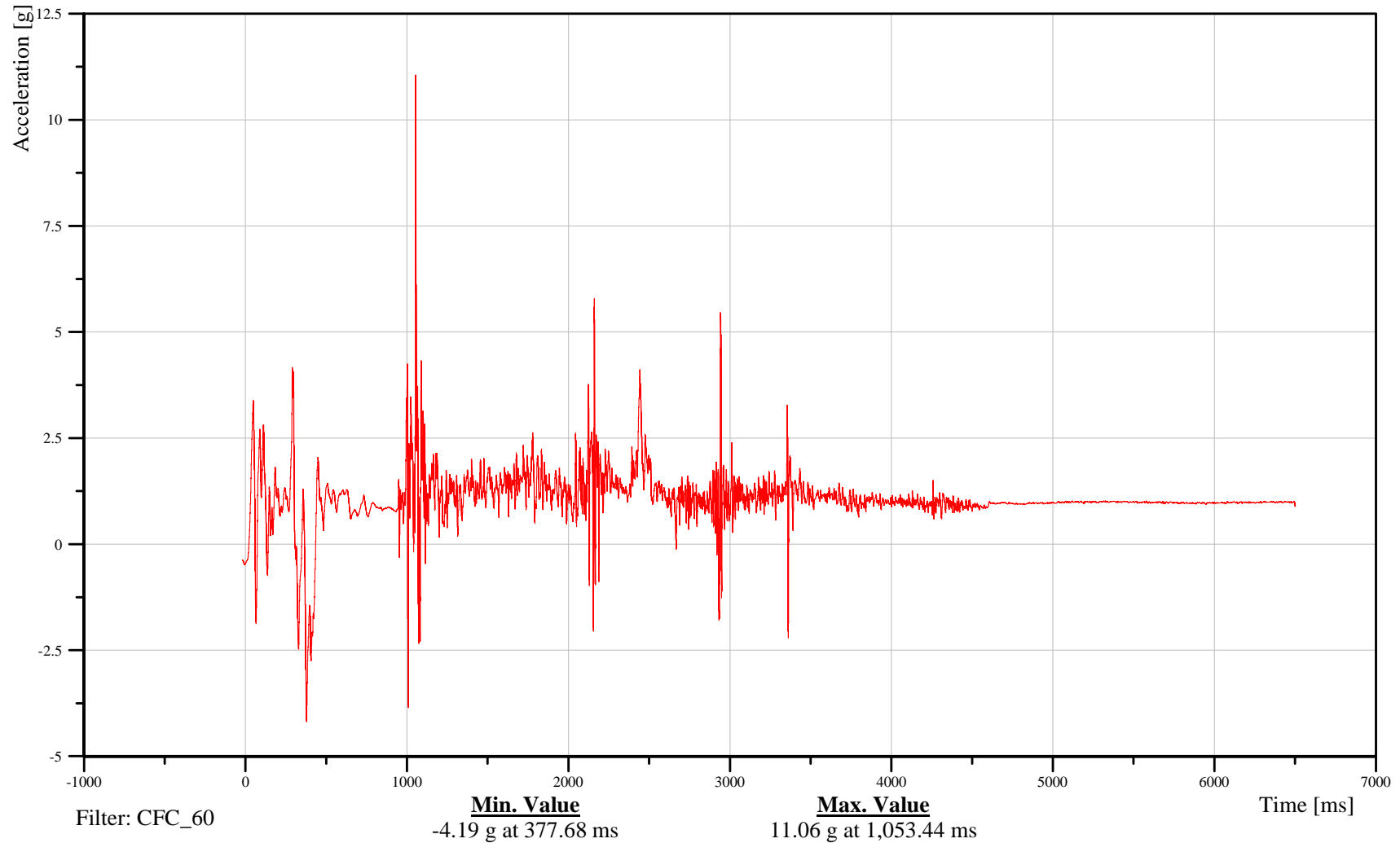
Right A-Pillar Lower Z-Axis Acceleration

Customer: VRTC

10APILLORI00ACZD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-121

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

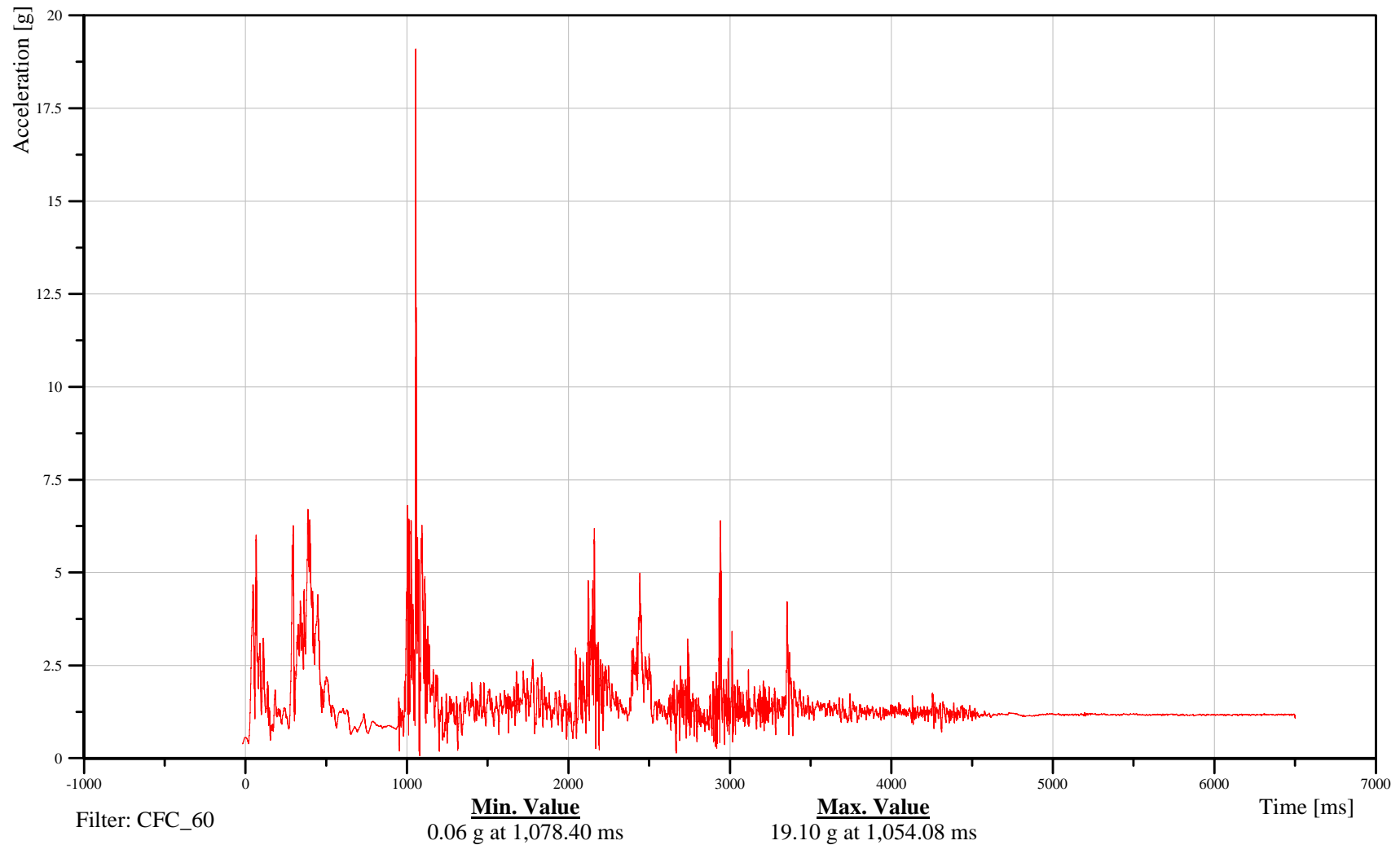
Right A-Pillar Lower Resultant Acceleration

Customer: VRTC

10APILLORI00ACRD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-122

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

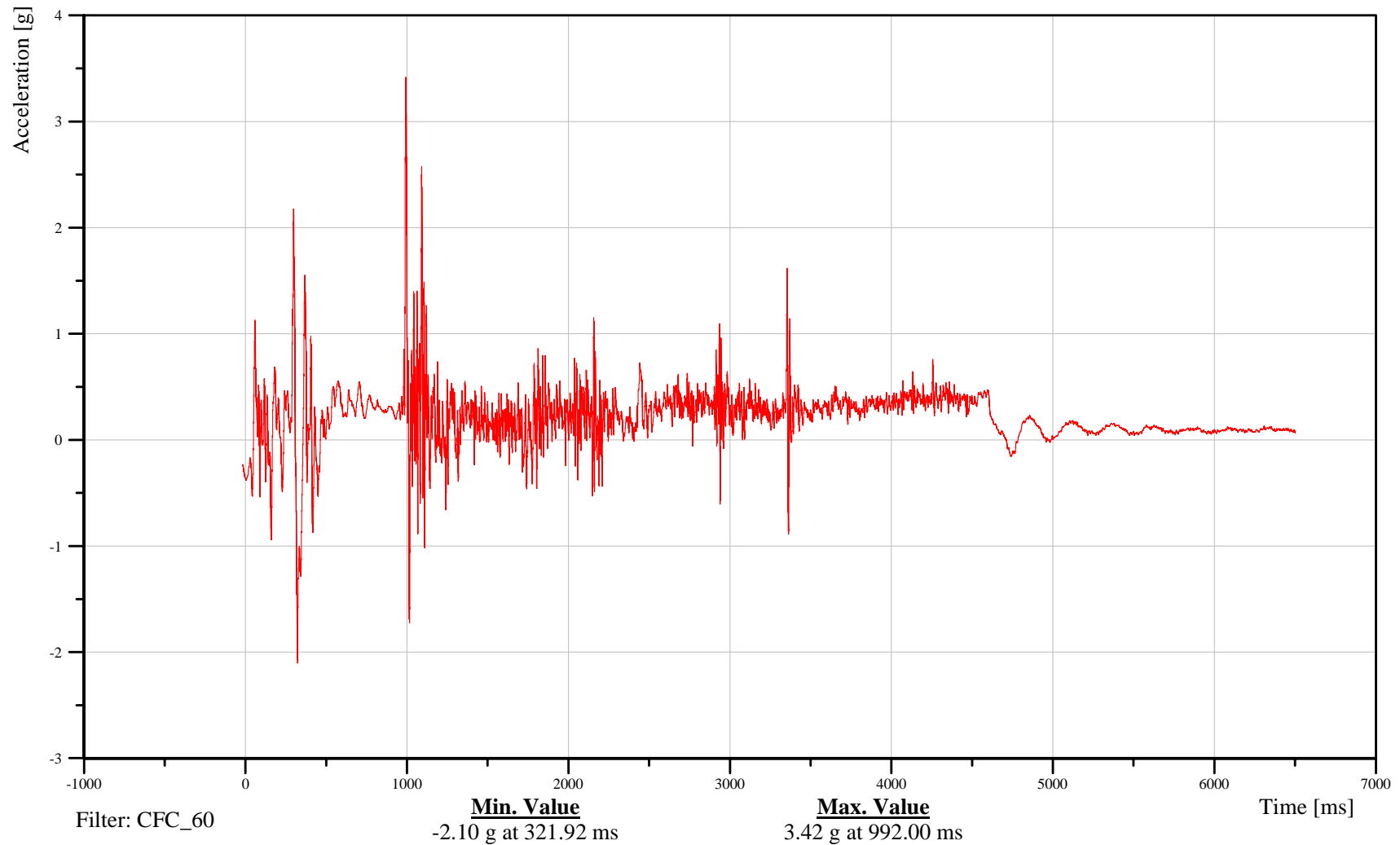
Left B-Pillar Upper X-Axis Acceleration

Customer: VRTC

10BPILUPLE00ACXD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-123

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

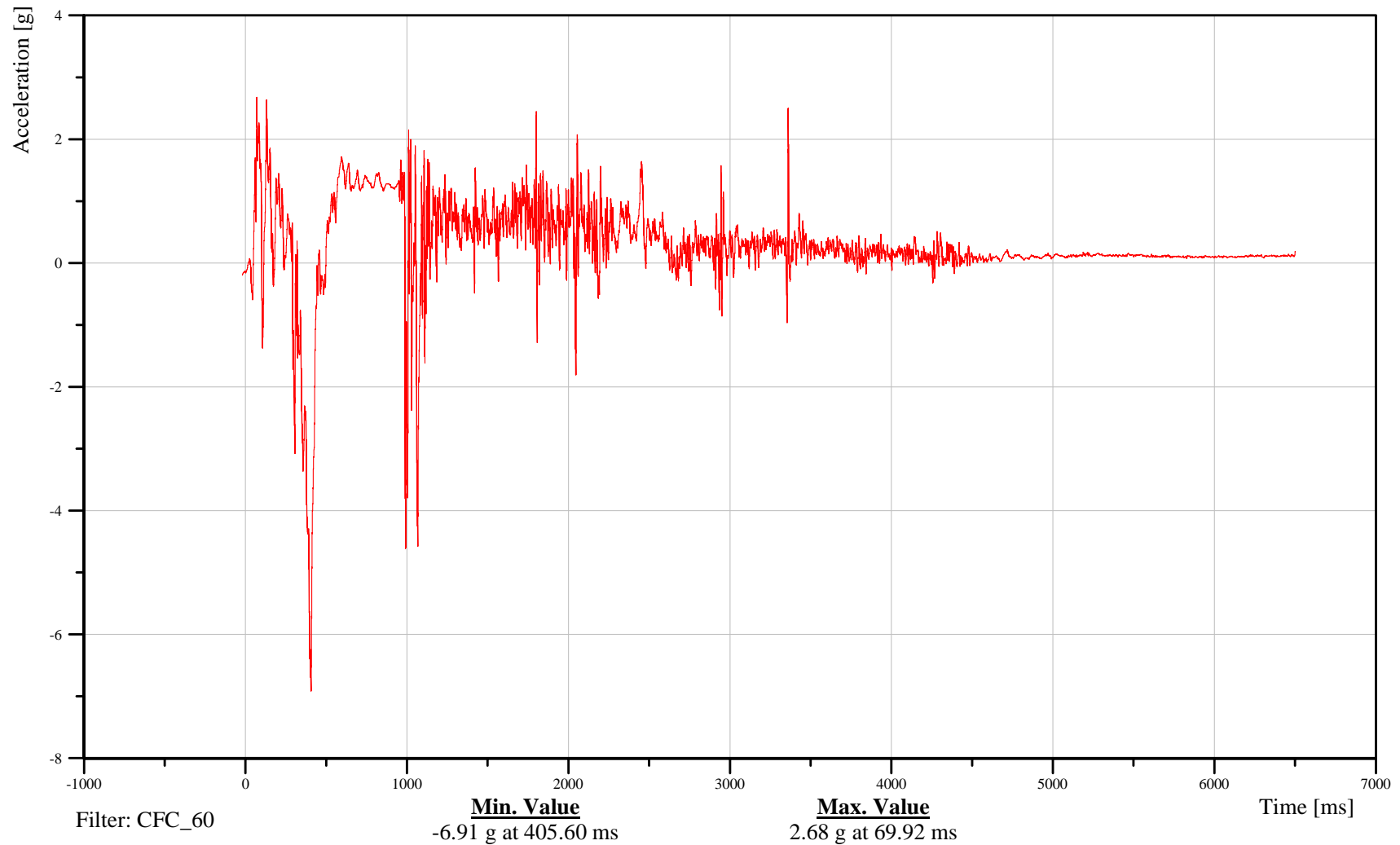
Left B-Pillar Upper Y-Axis Acceleration

Customer: VRTC

10BPILUPLE00ACYD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-124

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

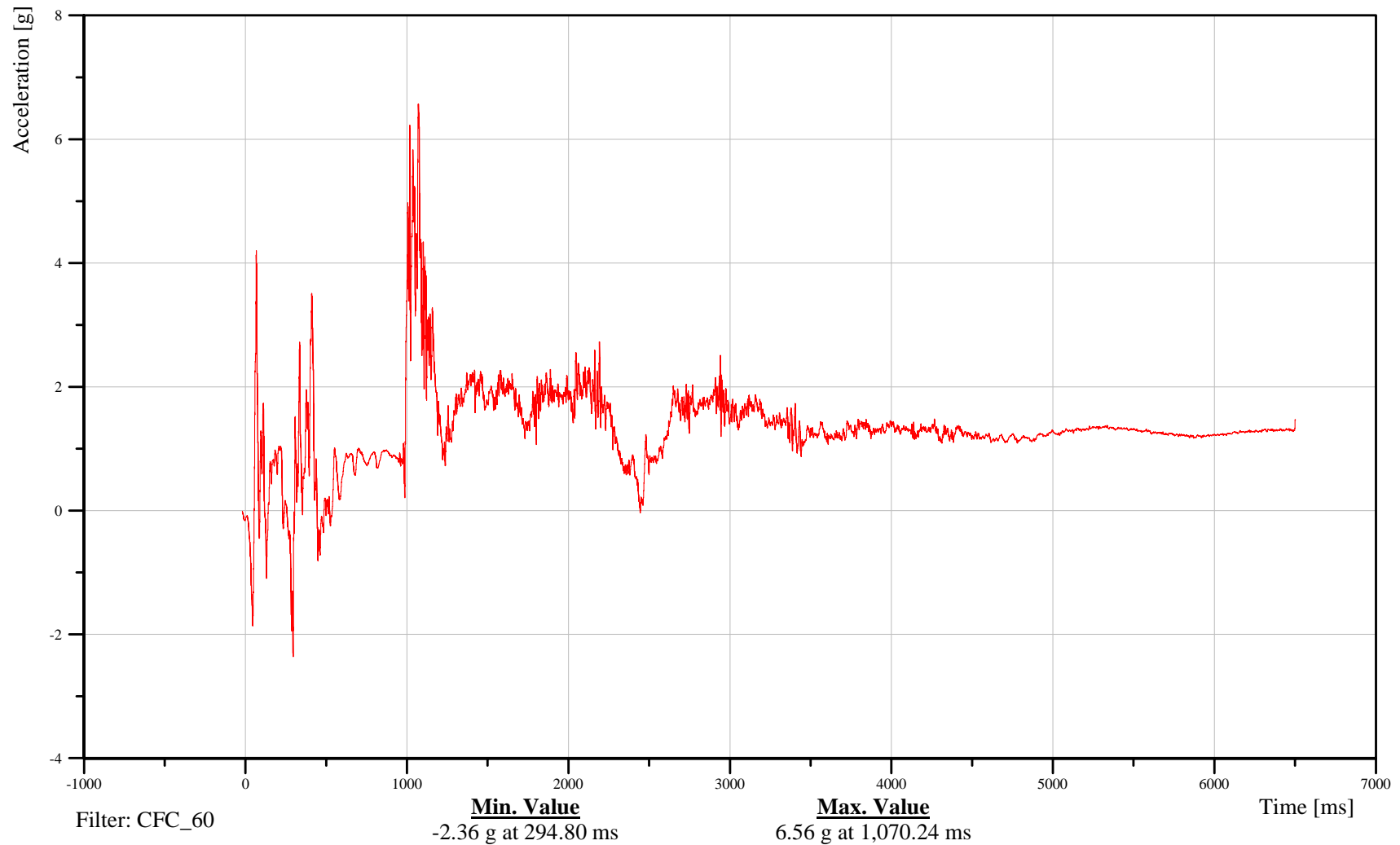
Left B-Pillar Upper Z-Axis Acceleration

Customer: VRTC

10BPILUPLE00ACZD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-125

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

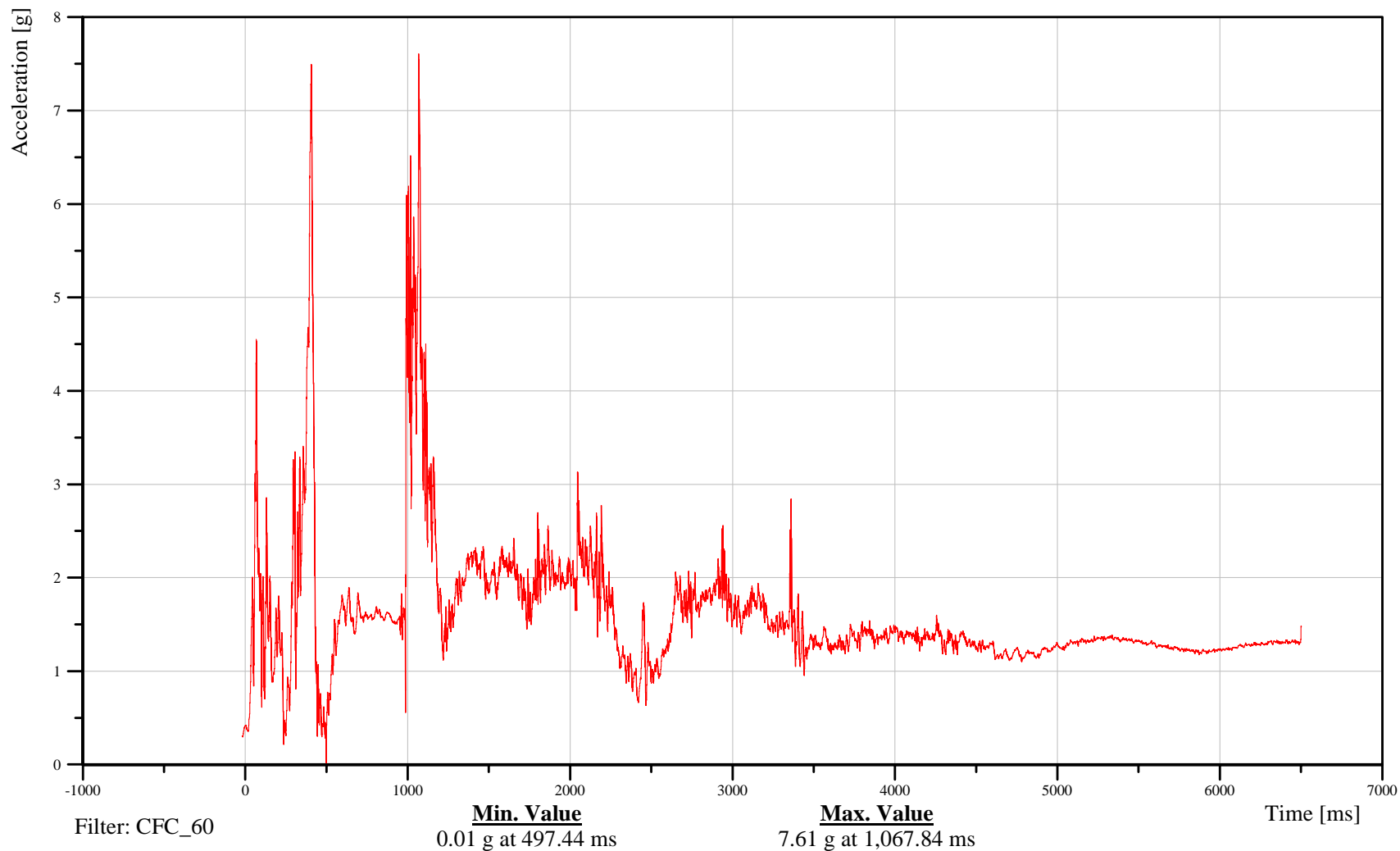
Left B-Pillar Upper Resultant Acceleration

Customer: VRTC

10BPILUPLE00ACRD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-126

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

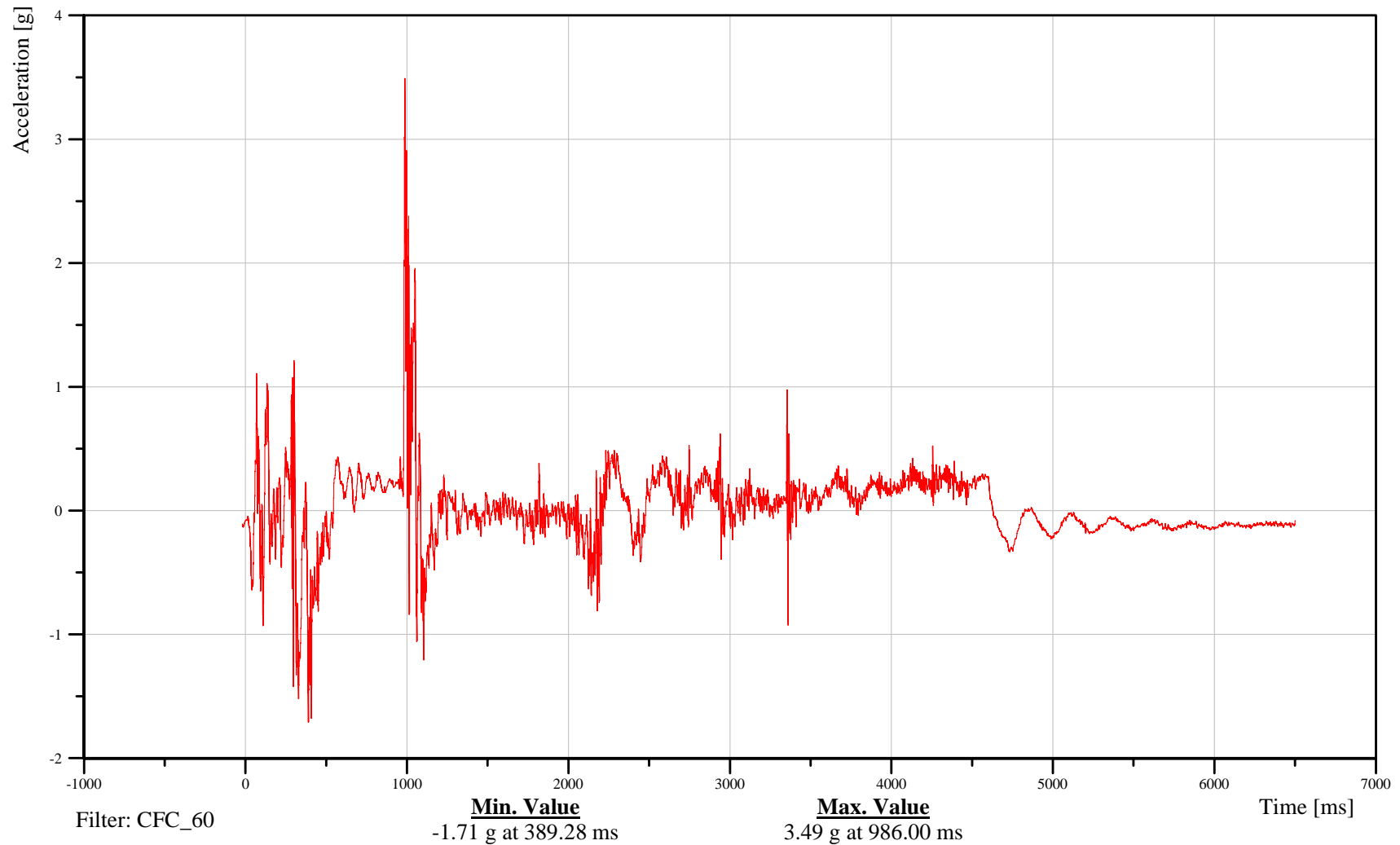
Left B-Pillar Lower X-Axis Acceleration

Customer: VRTC

10BPILLOLE00ACXD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-127

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Left B-Pillar Lower Y-Axis Acceleration

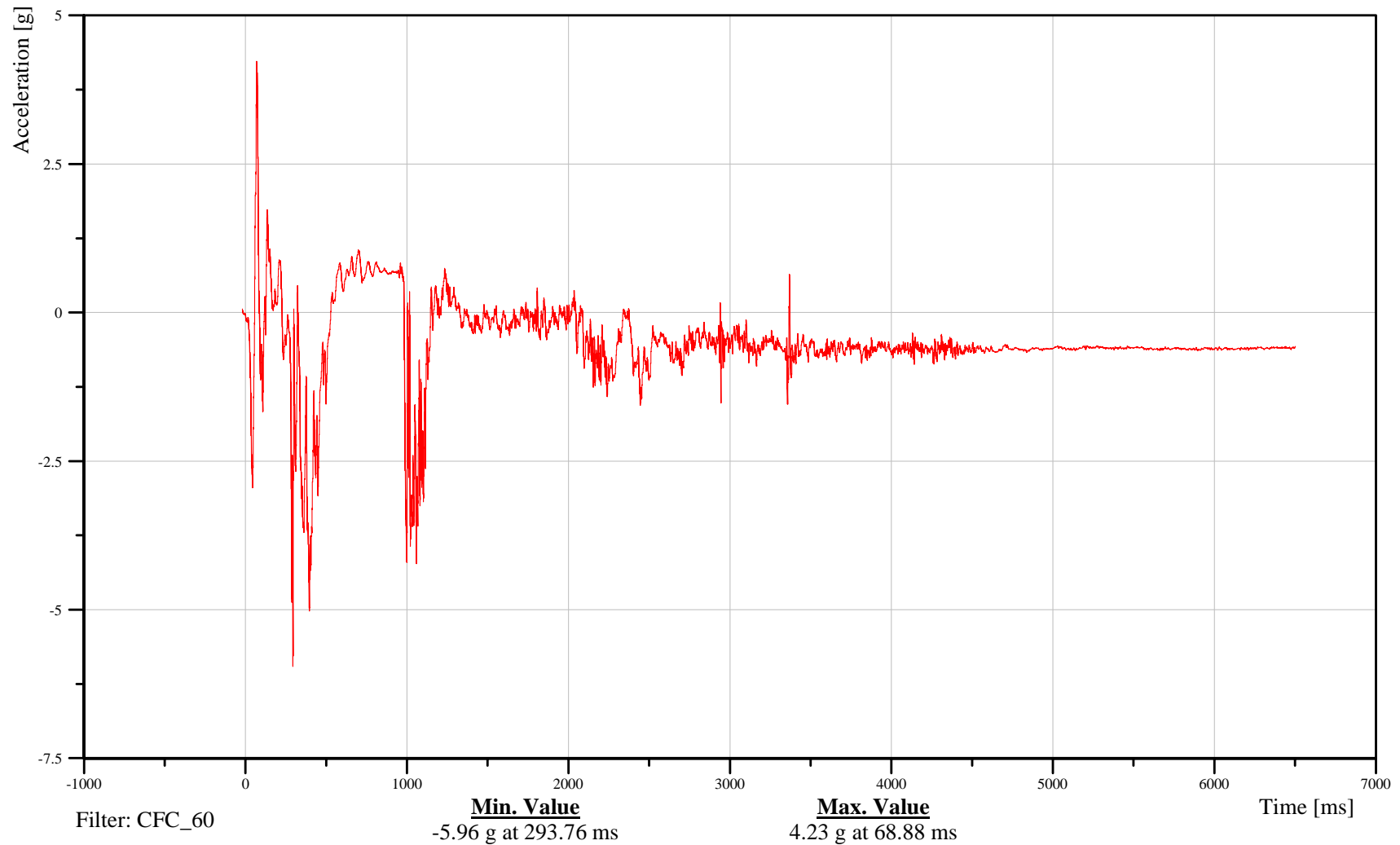
Time: 19:31

Customer: VRTC

10BPILLOLE00ACYD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-128

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

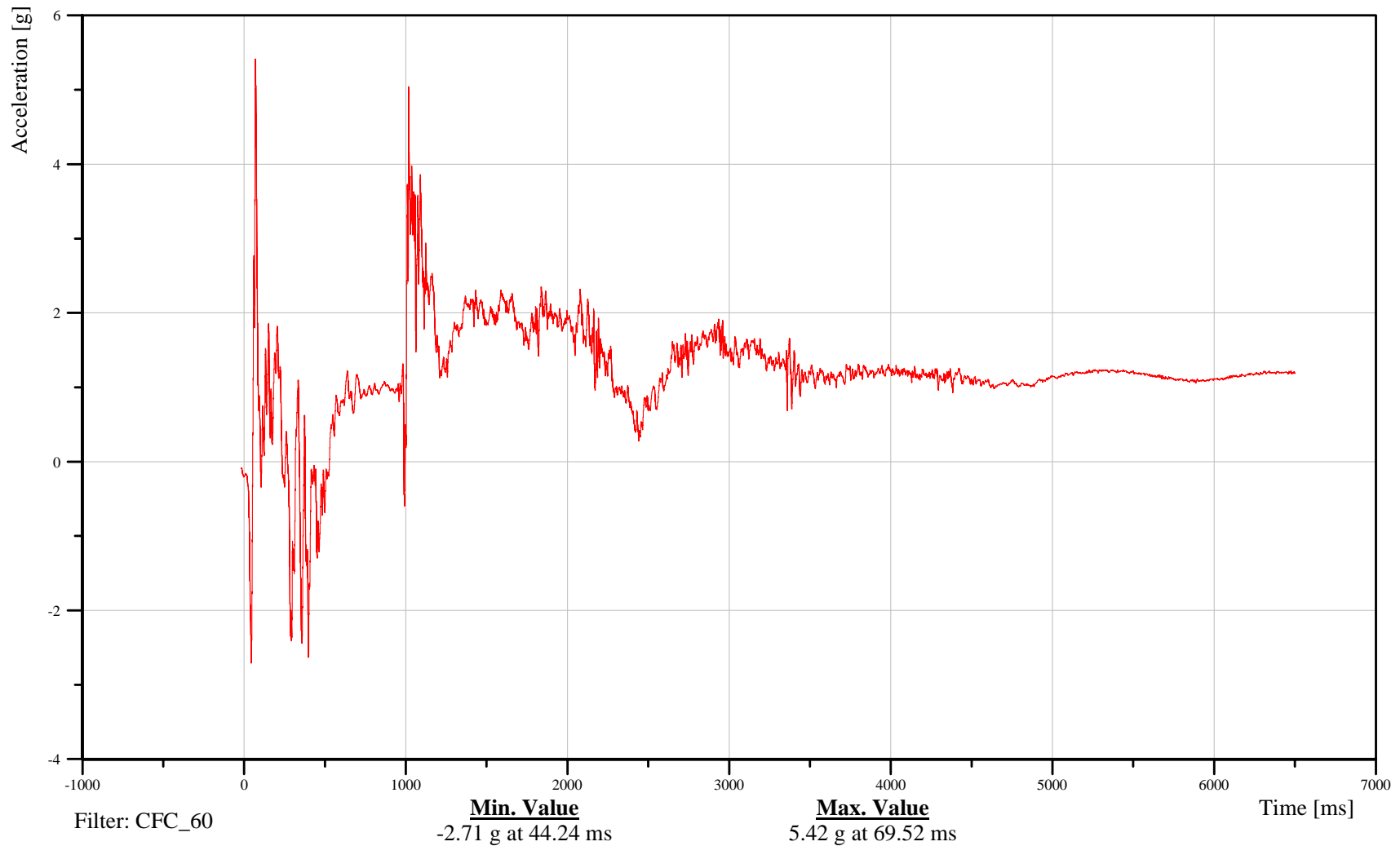
Left B-Pillar Lower Z-Axis Acceleration

Customer: VRTC

10BPILLOLE00ACZD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-129

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

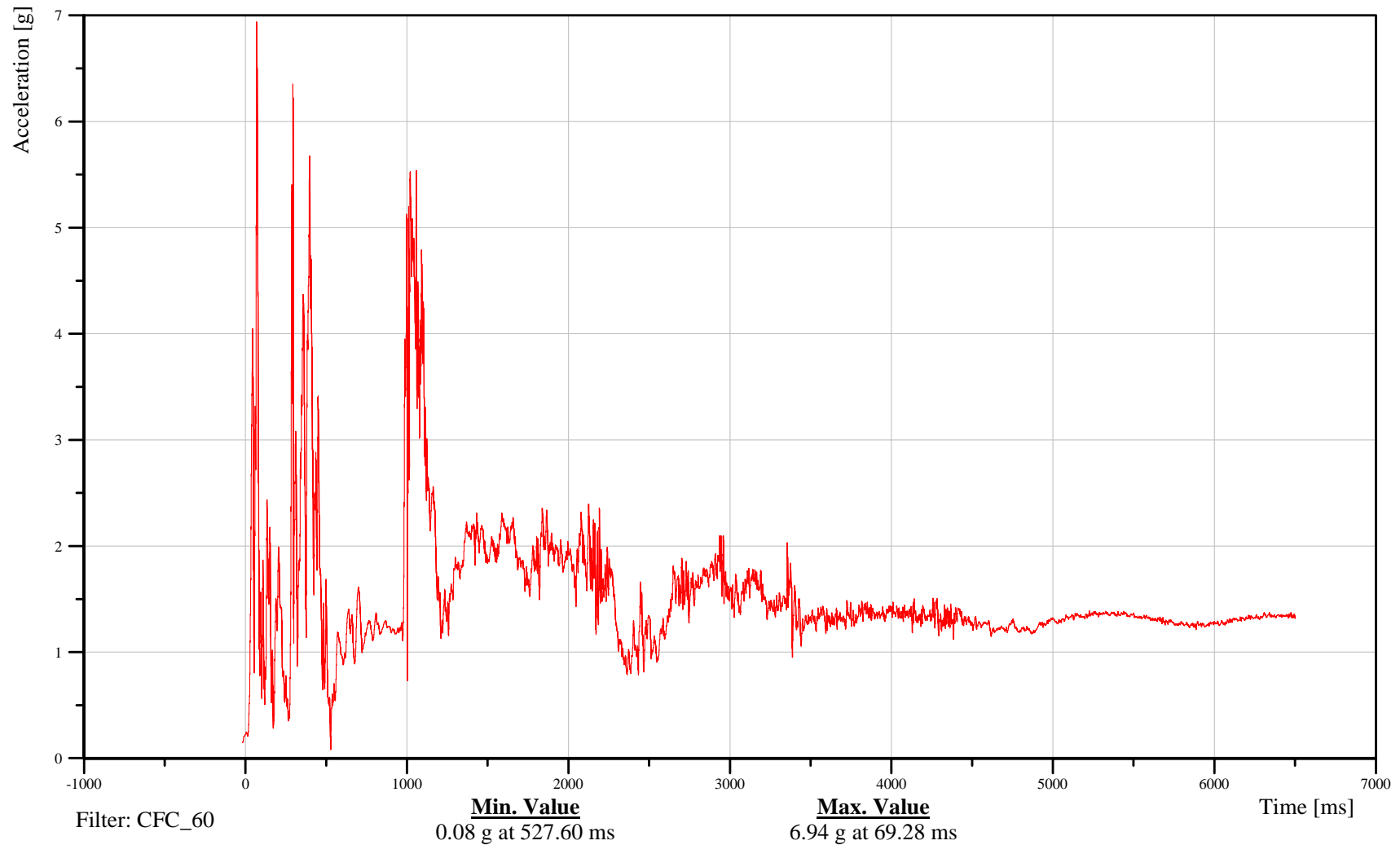
Left B-Pillar Lower Resultant Acceleration

Customer: VRTC

10BPILLOLE00ACRD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-130

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

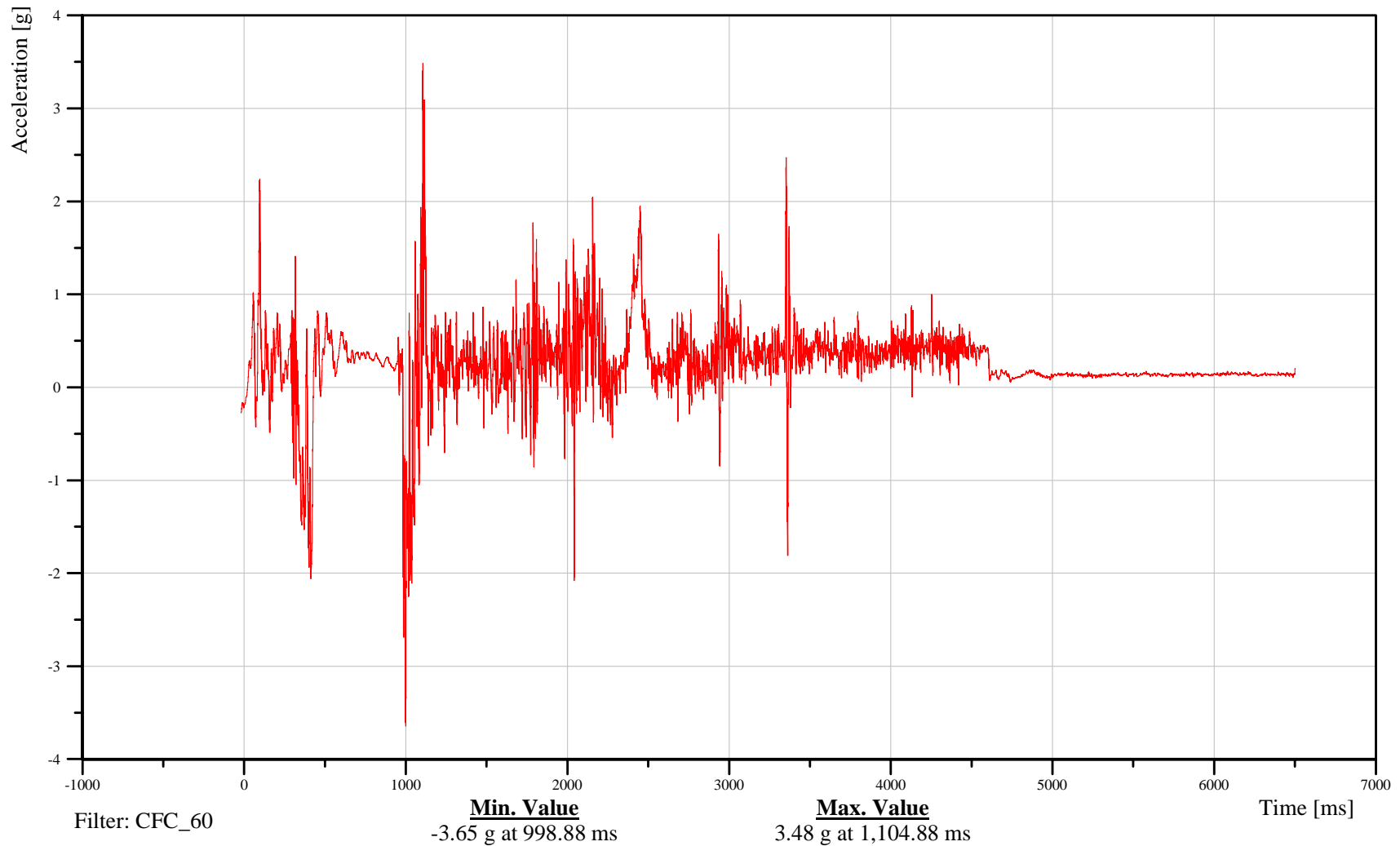
Right B-Pillar Upper X-Axis Acceleration

Customer: VRTC

10BPILUPRI00ACXD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-131

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Right B-Pillar Upper Y-Axis Acceleration

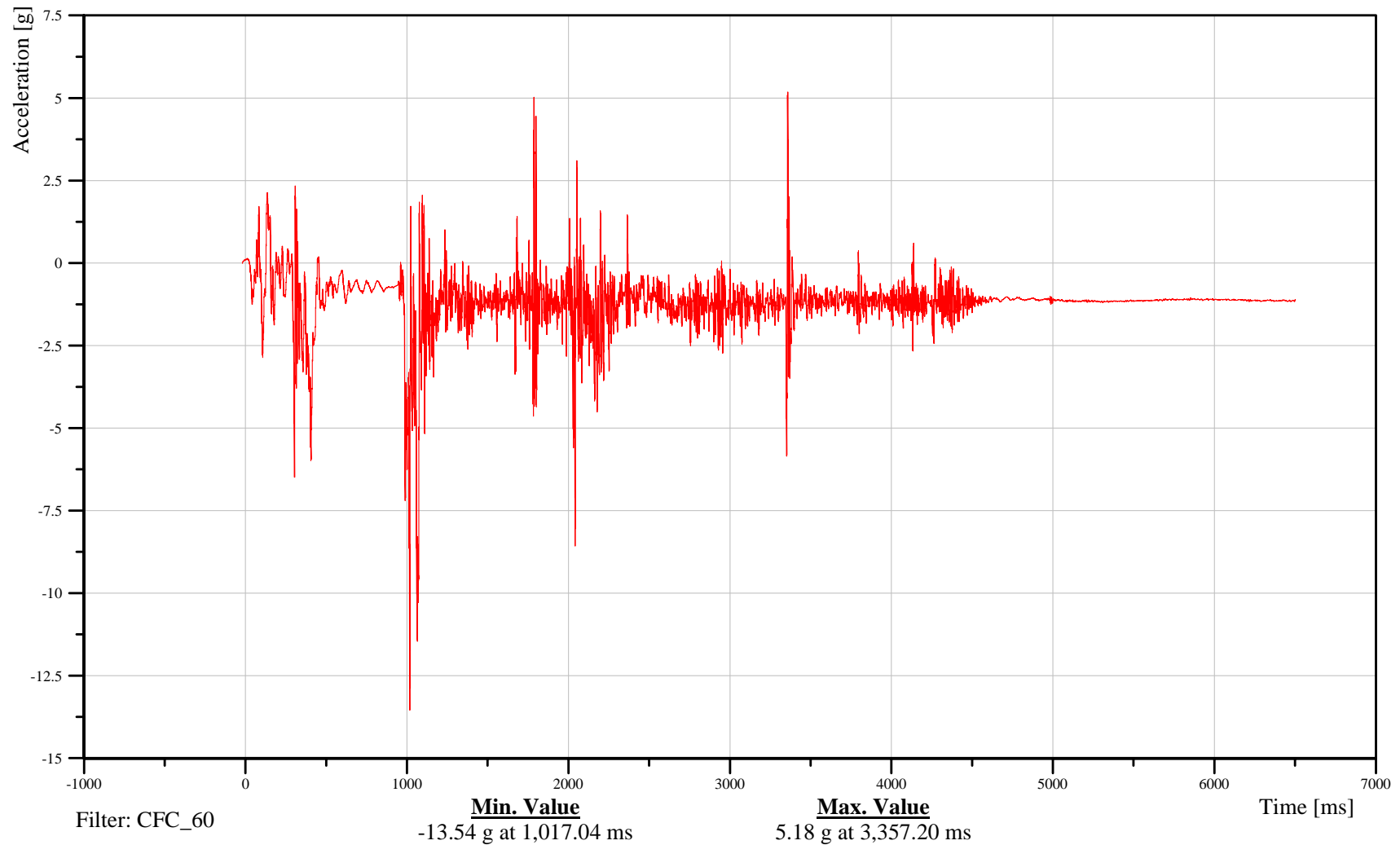
Time: 19:31

Customer: VRTC

10BPILUPRI00ACYD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-132

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

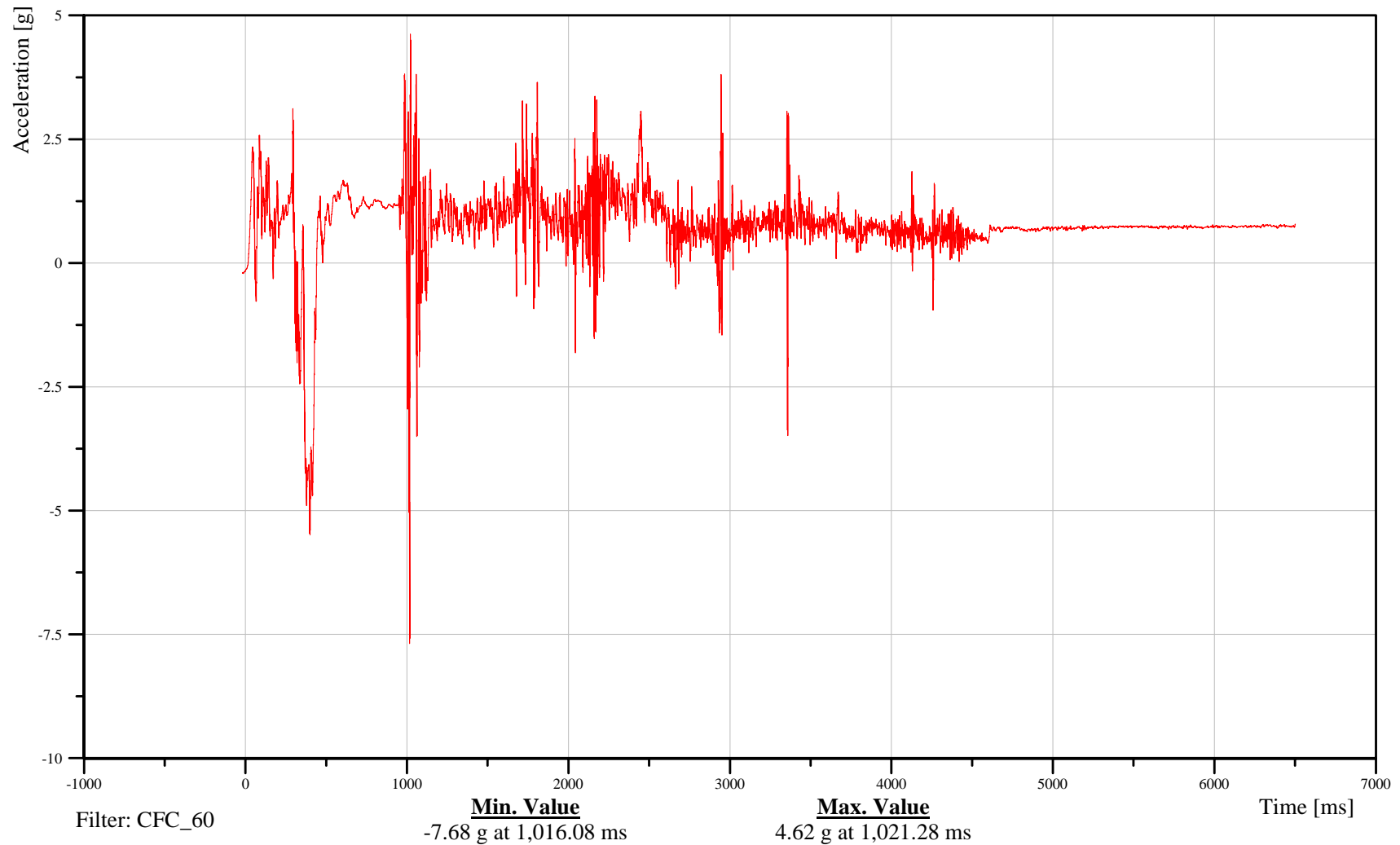
Right B-Pillar Upper Z-Axis Acceleration

Customer: VRTC

TRC Inc. Test Lab: CTF

10BPILUPRI00ACZD

Test Number: 091022



B-133

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

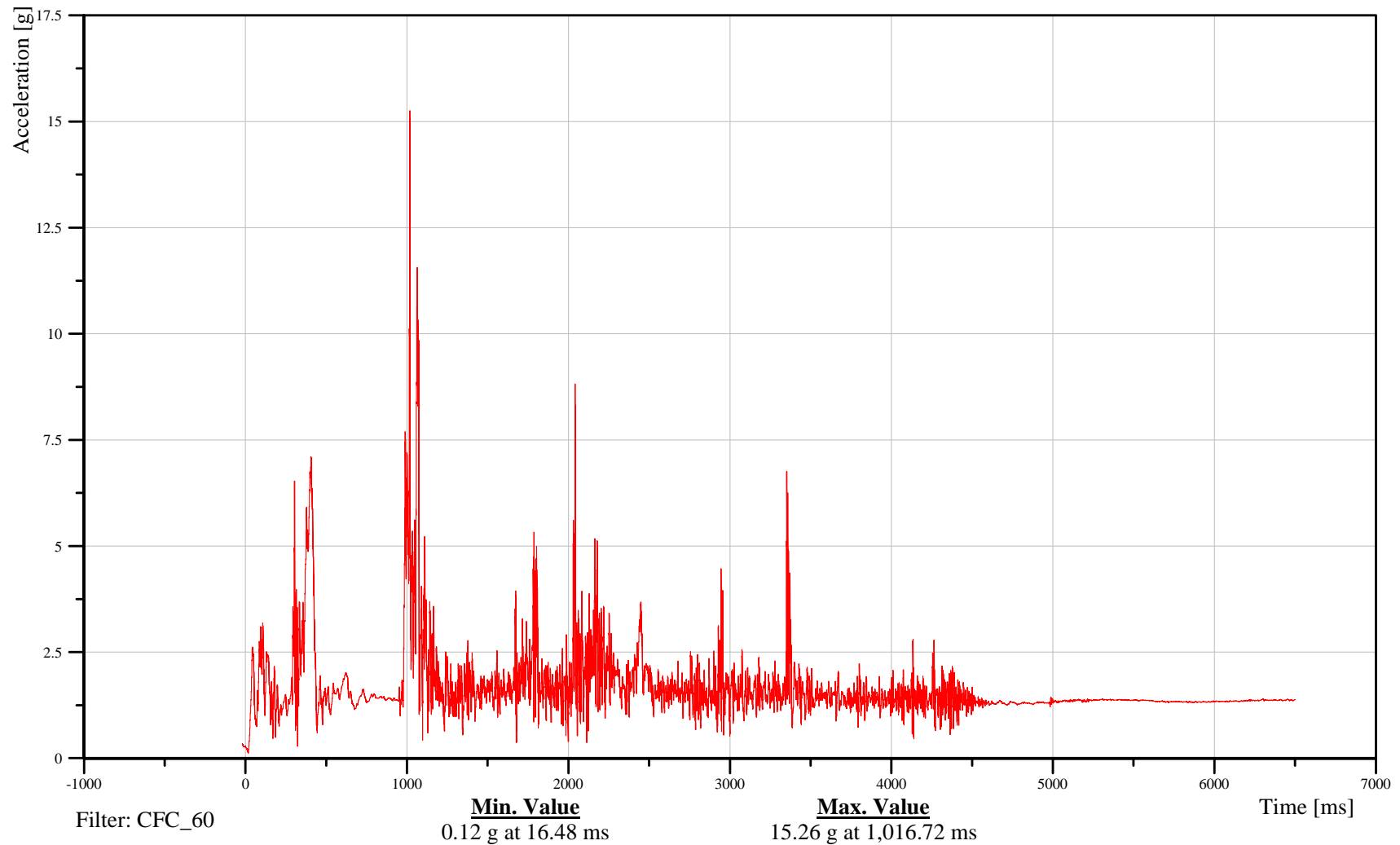
Right B-Pillar Upper Resultant Acceleration

Customer: VRTC

10BPILUPRI00ACRD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-134

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Right B-Pillar Lower X-Axis Acceleration

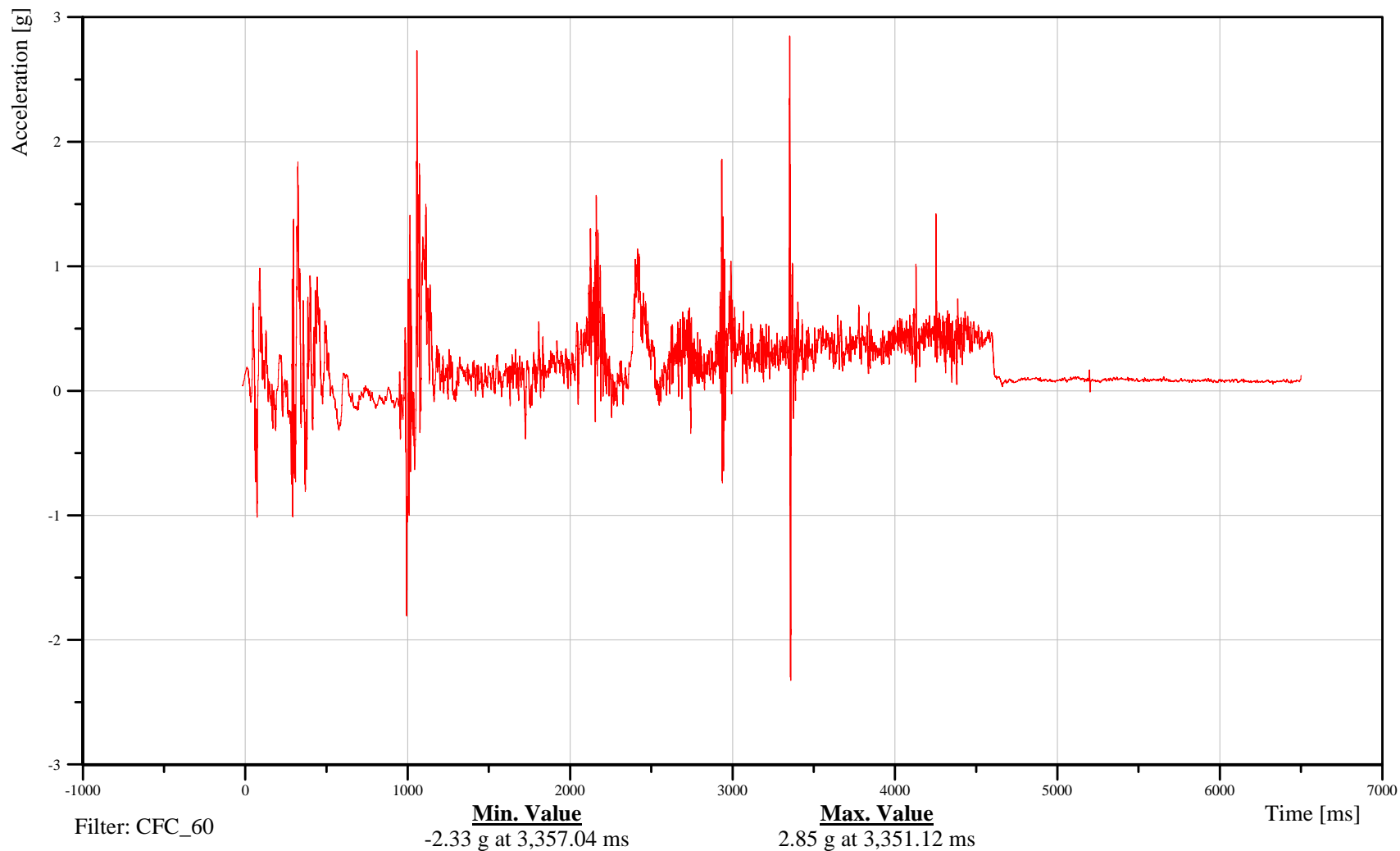
Time: 19:31

Customer: VRTC

10BPILLORI00ACXD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-135

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

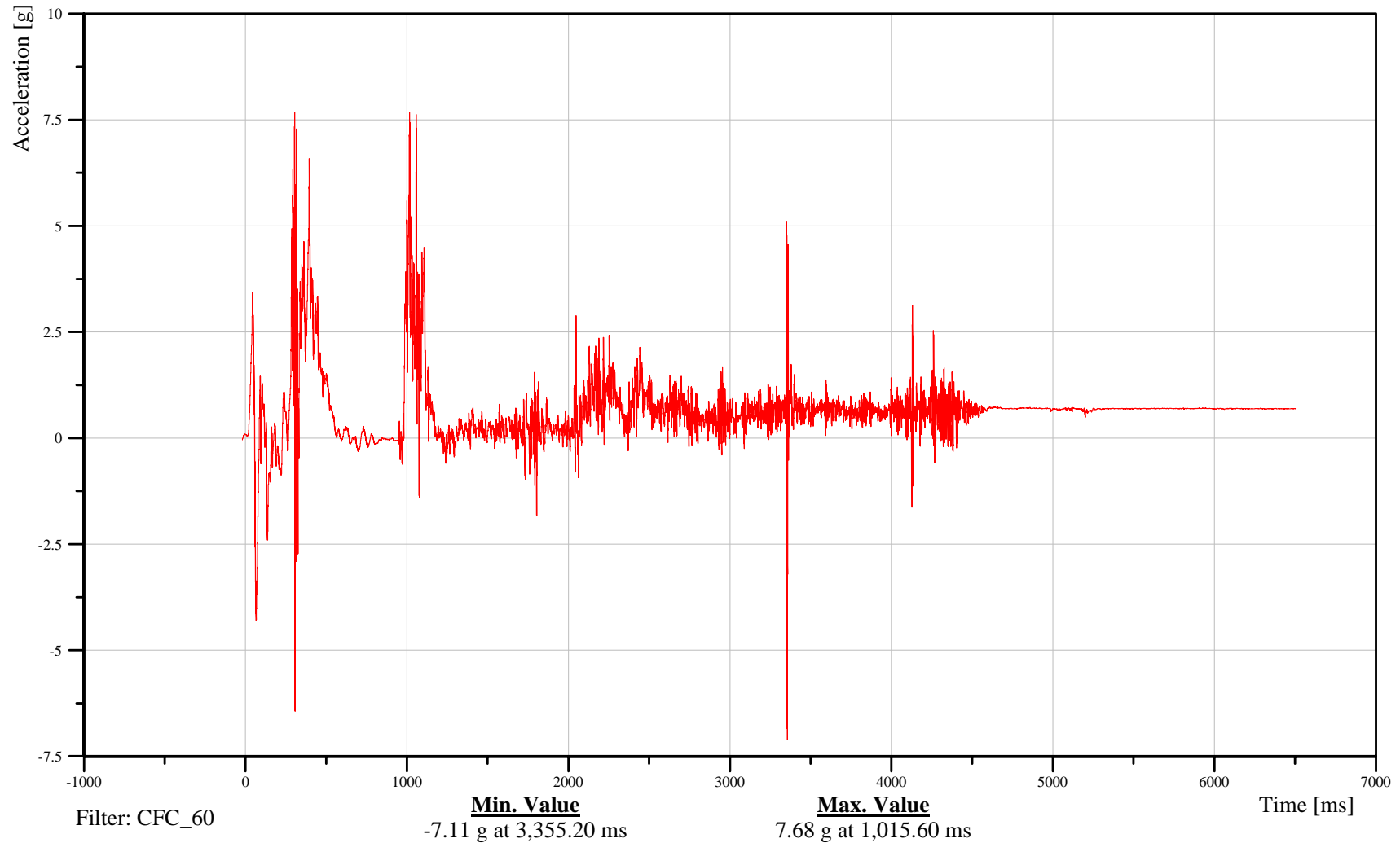
Right B-Pillar Lower Y-Axis Acceleration

Customer: VRTC

10BPILLORI00ACYD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-136

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

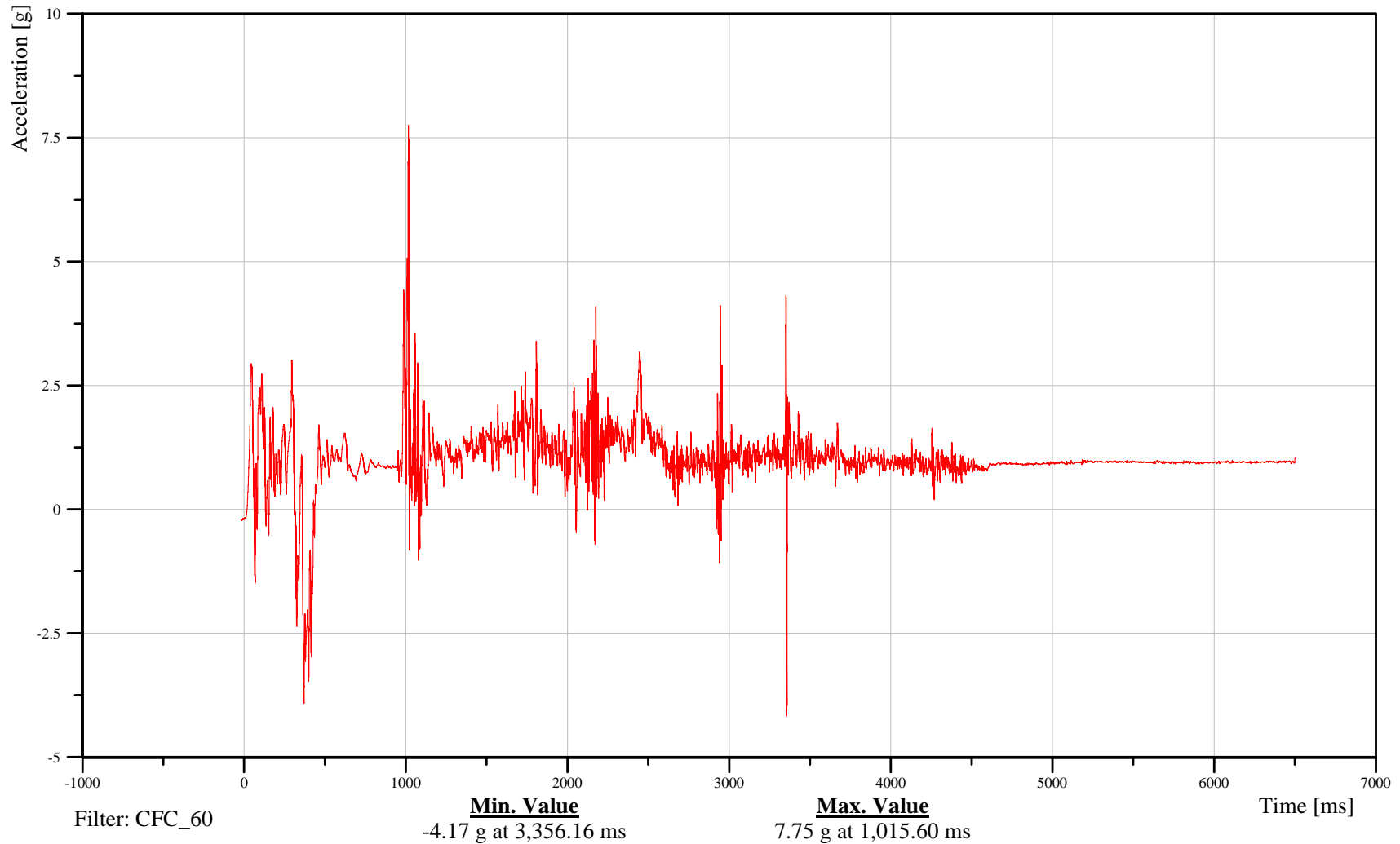
Right B-Pillar Lower Z-Axis Acceleration

Customer: VRTC

10BPILLORI00ACZD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-137

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

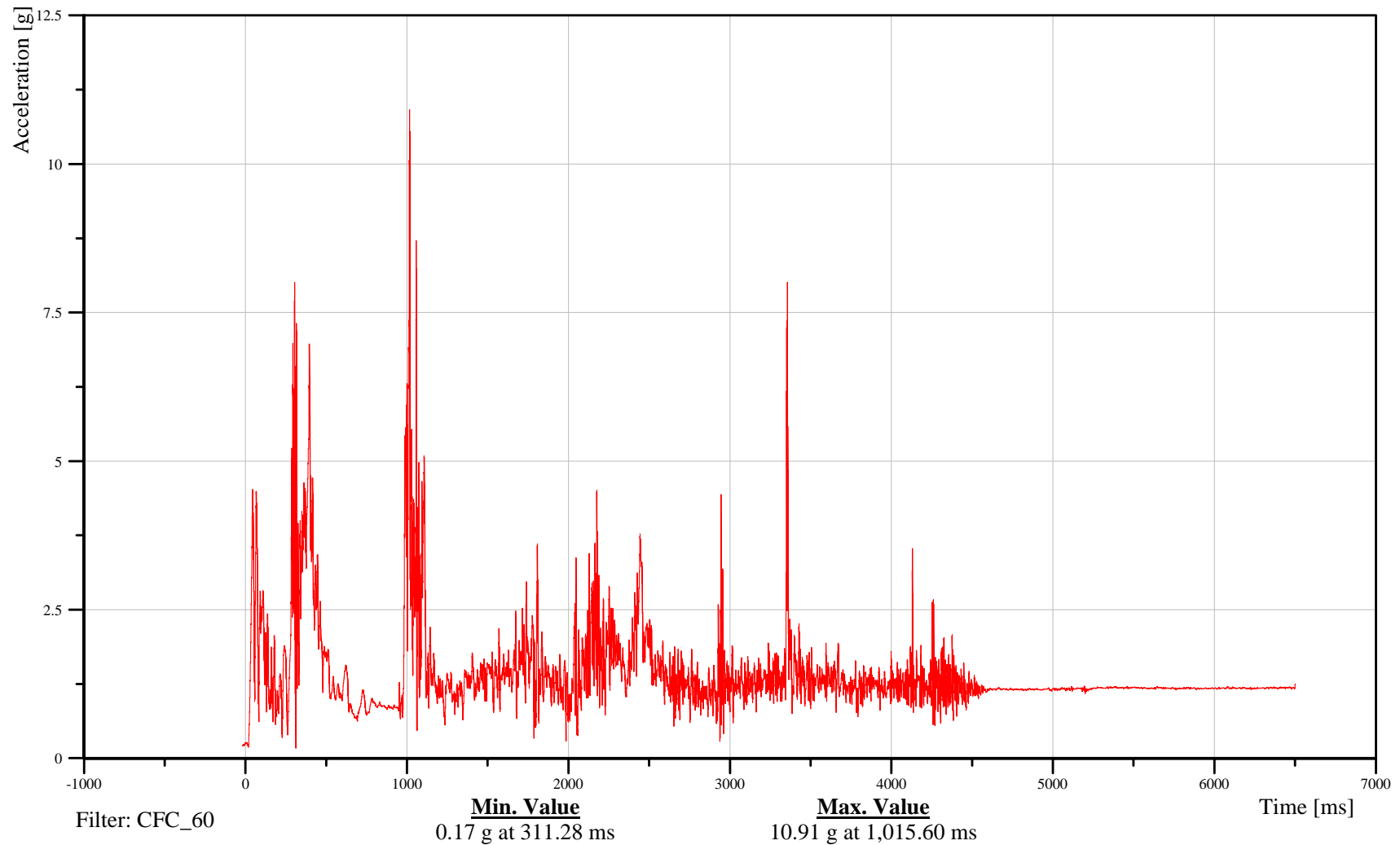
Right B-Pillar Lower Resultant Acceleration

Customer: VRTC

10BPILLORI00ACRD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-138

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

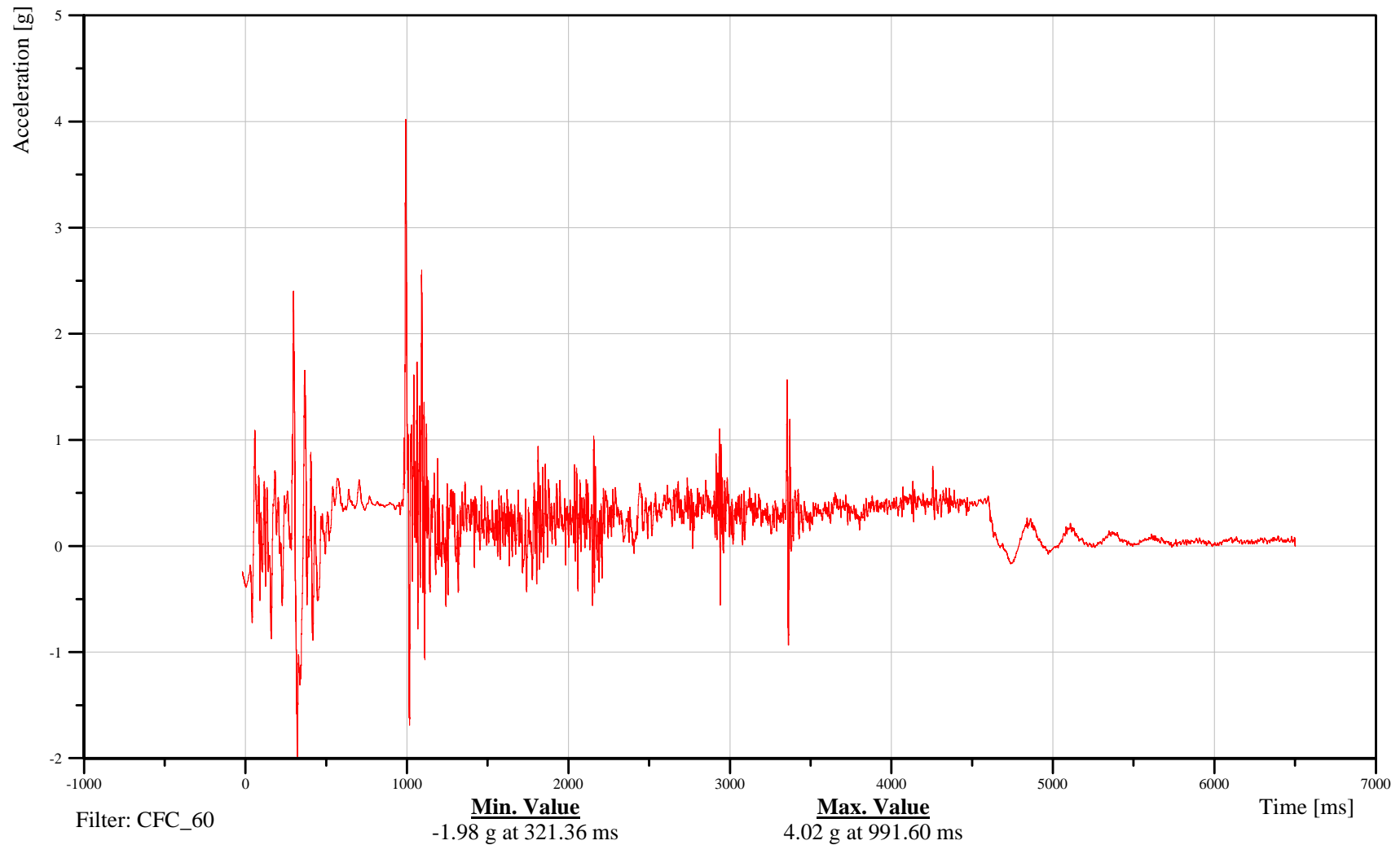
Left C-Pillar Upper X-Axis Acceleration

Customer: VRTC

10CPILUPLE00ACXD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-139

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

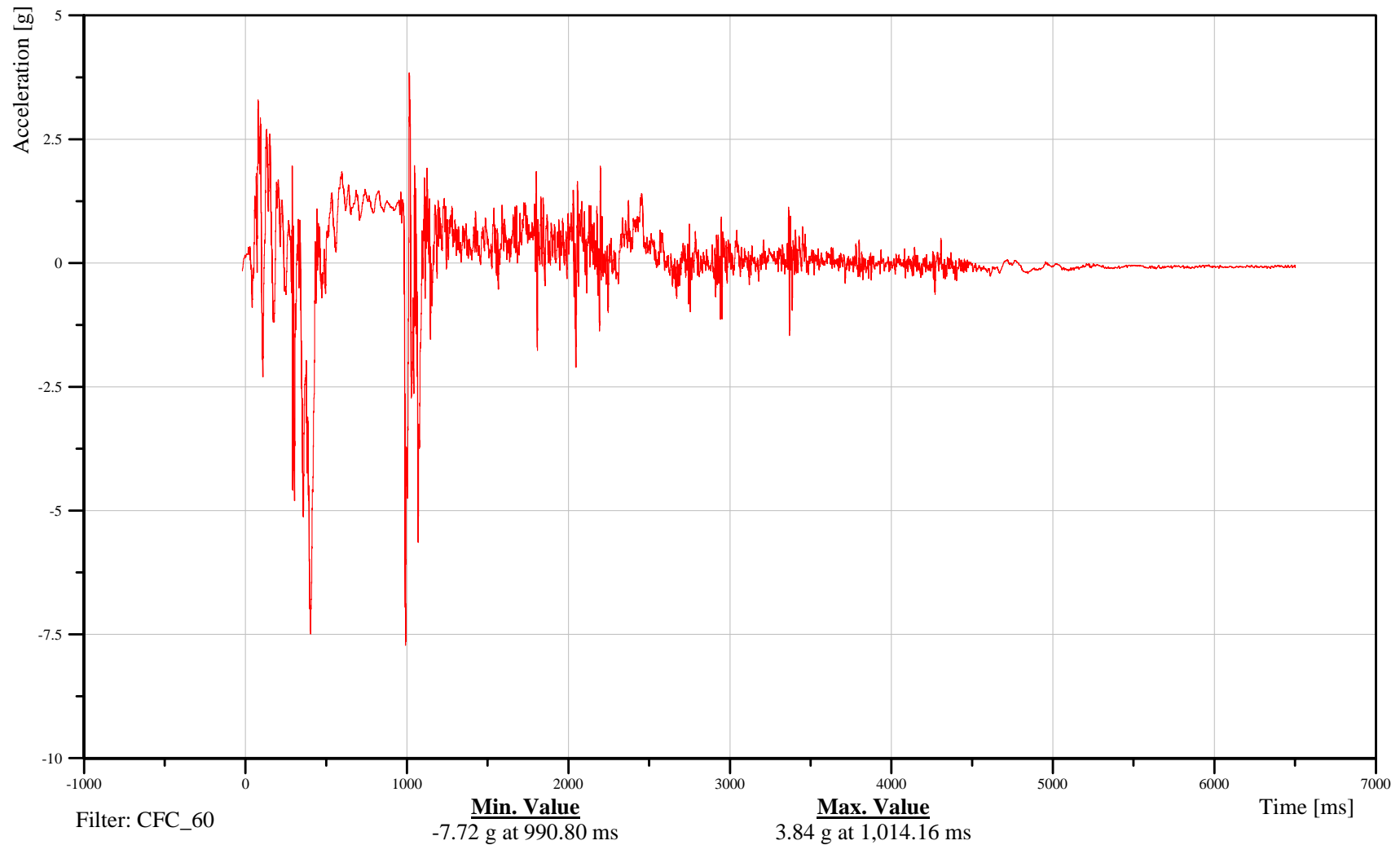
Left C-Pillar Upper Y-Axis Acceleration

Customer: VRTC

10CPILUPLE00ACYD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-140

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

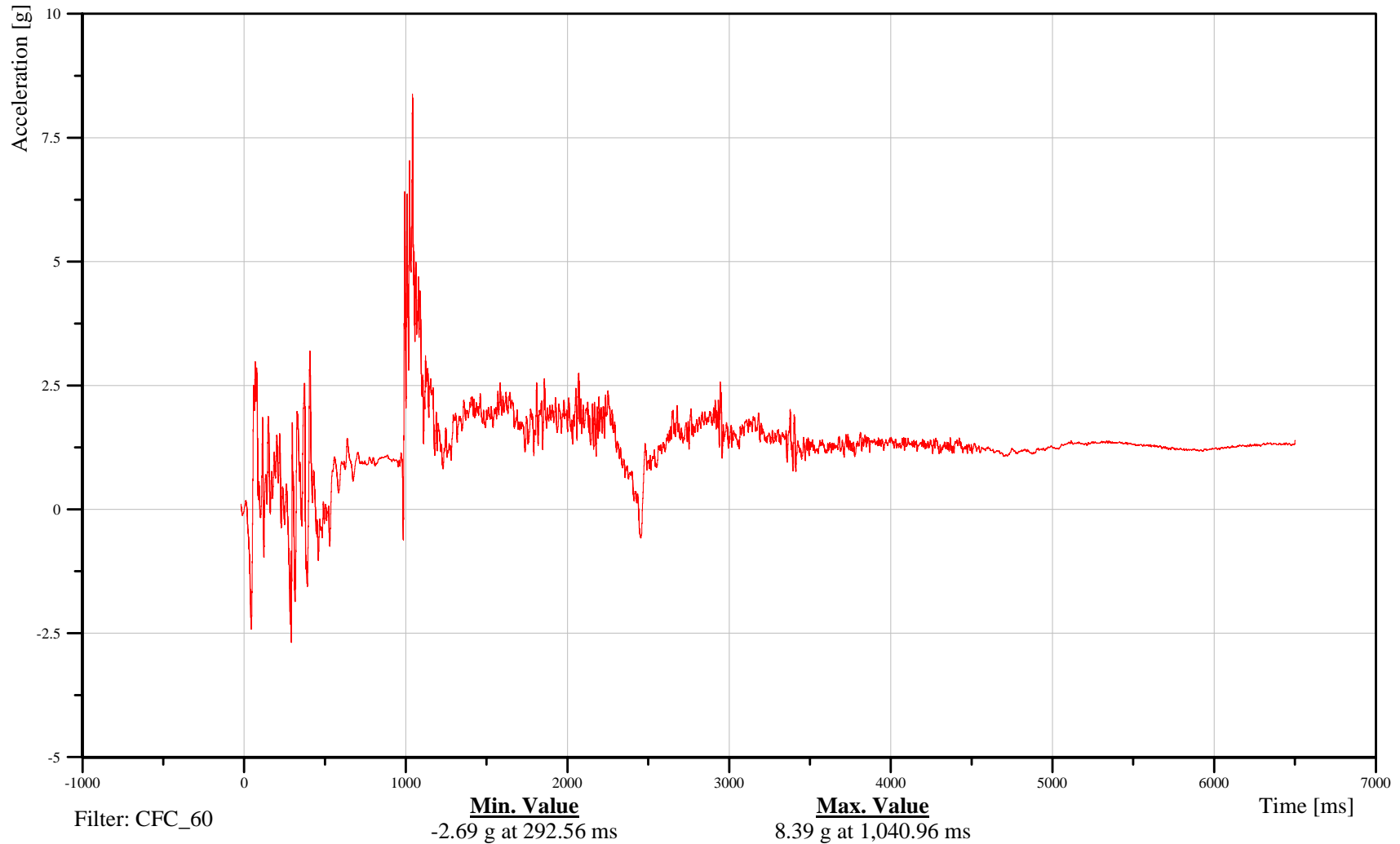
Left C-Pillar Upper Z-Axis Acceleration

Customer: VRTC

10CPILUPLE00ACZD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-141

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

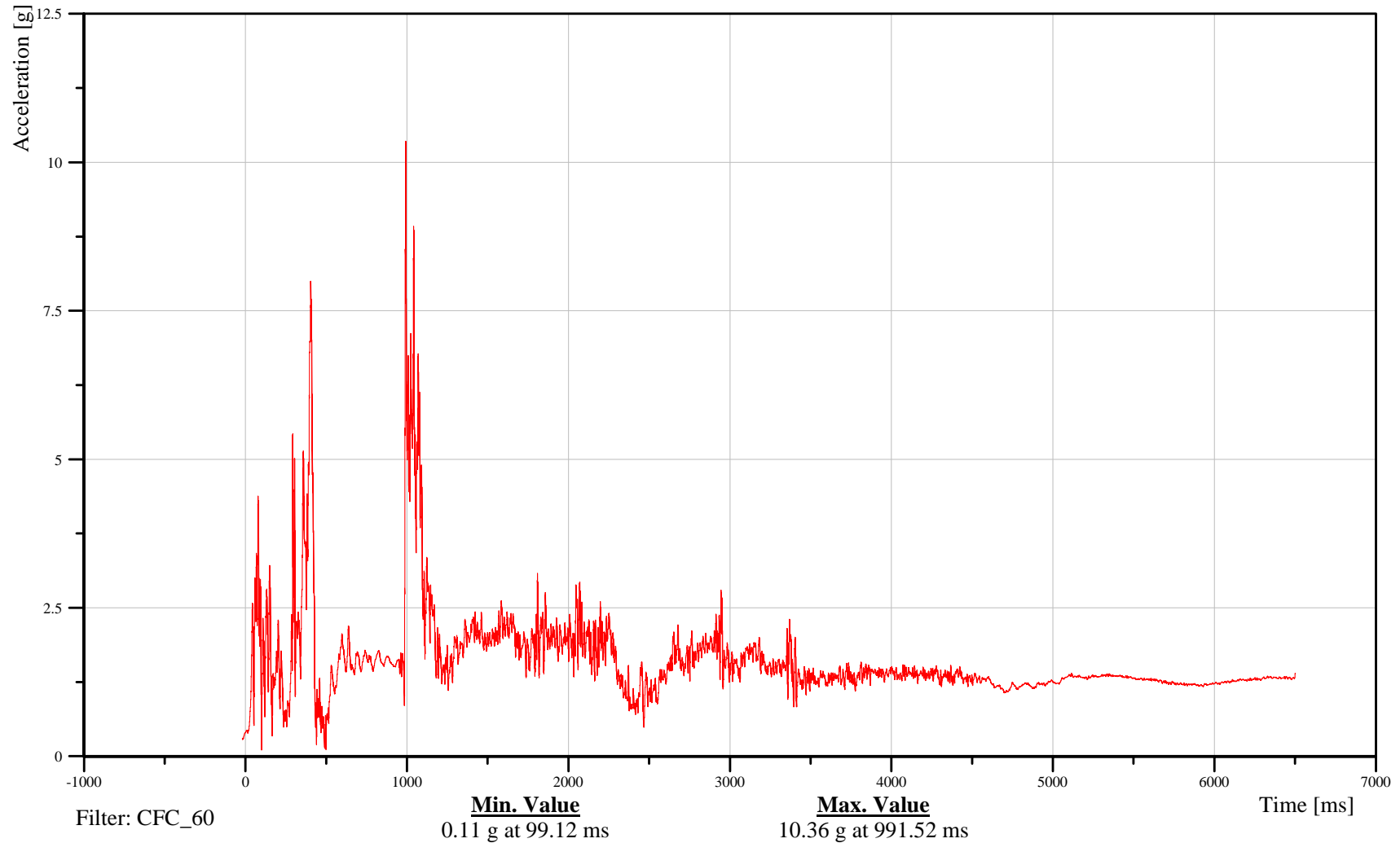
Left C-Pillar Upper Resultant Acceleration

Customer: VRTC

10CPILUPLE00ACRD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-142

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

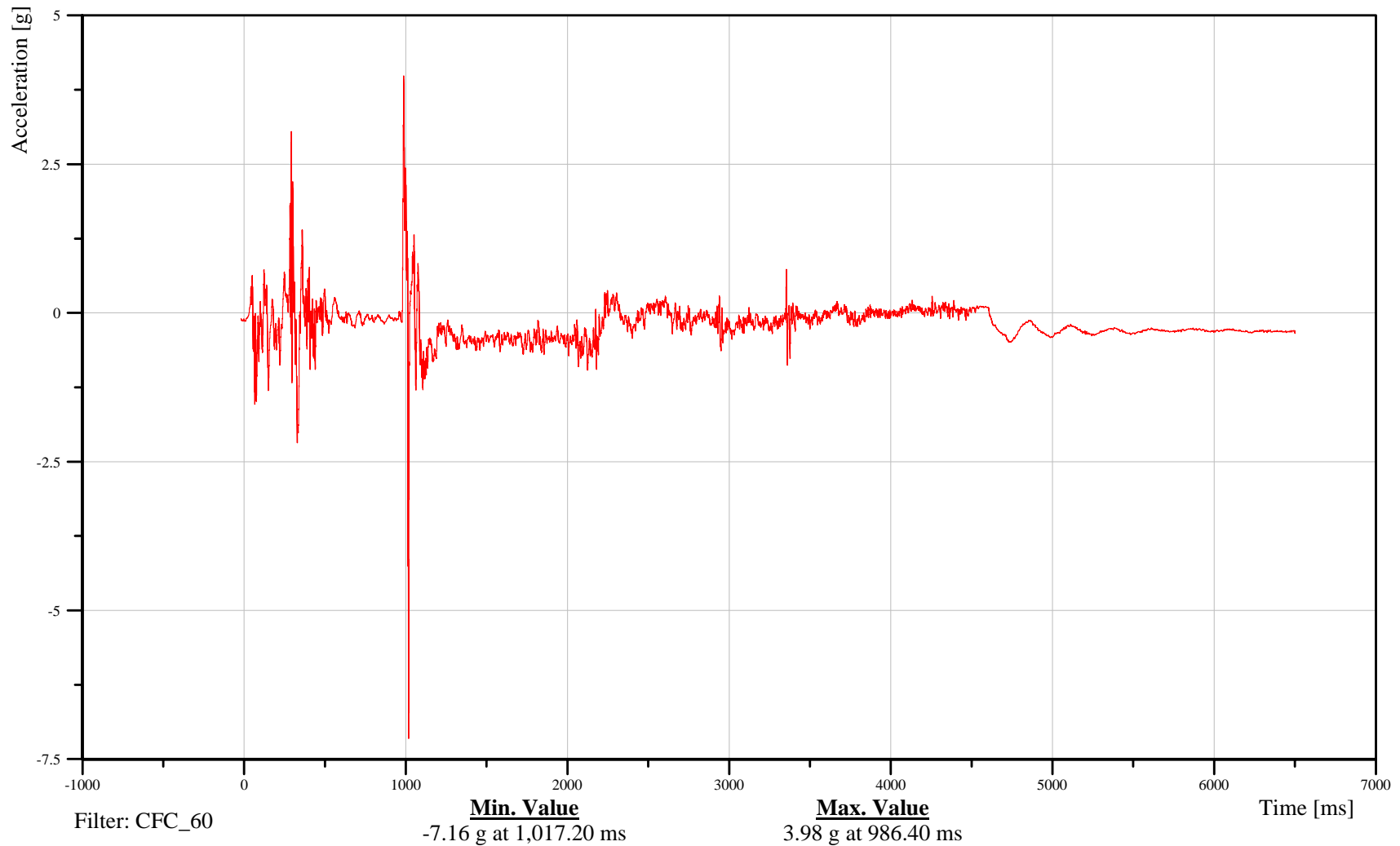
Left C-Pillar Lower X-Axis Acceleration

Customer: VRTC

10CPILLOLE00ACXD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-143

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Left C-Pillar Lower Y-Axis Acceleration

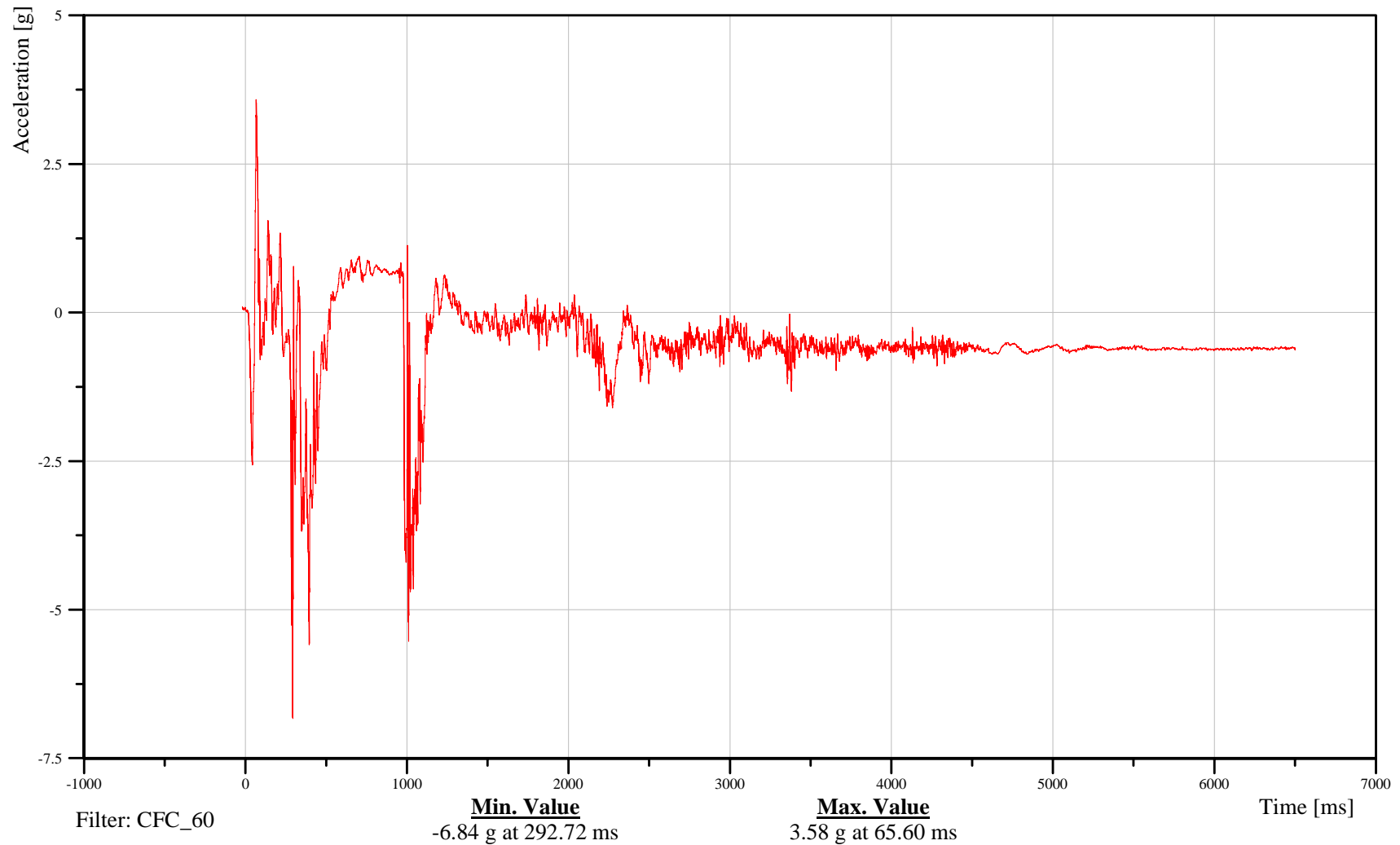
Time: 19:31

Customer: VRTC

10CPILLOLE00ACYD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-144

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Left C-Pillar Lower Z-Axis Acceleration

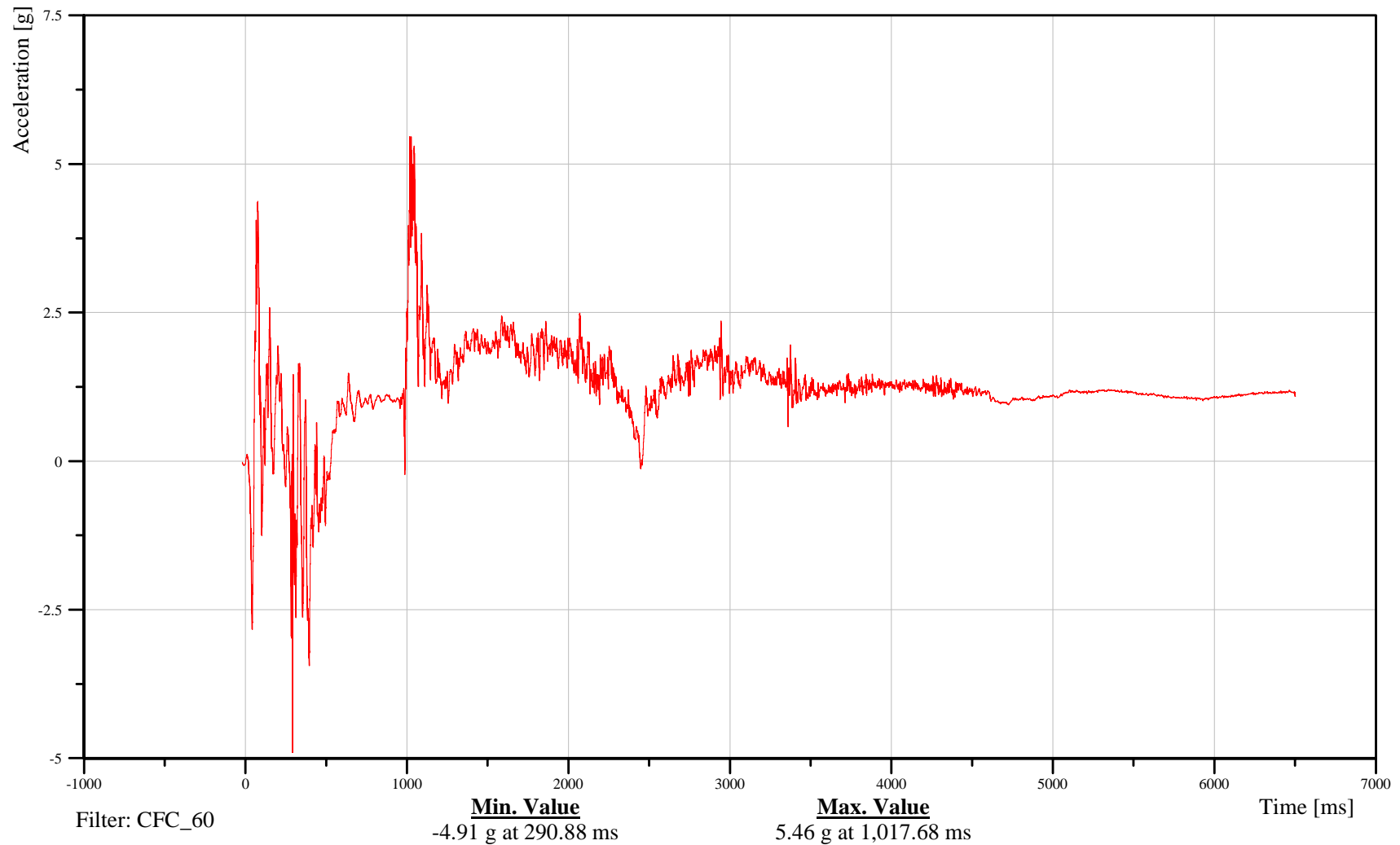
Time: 19:31

Customer: VRTC

10CPILLOLE00ACZD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-145

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

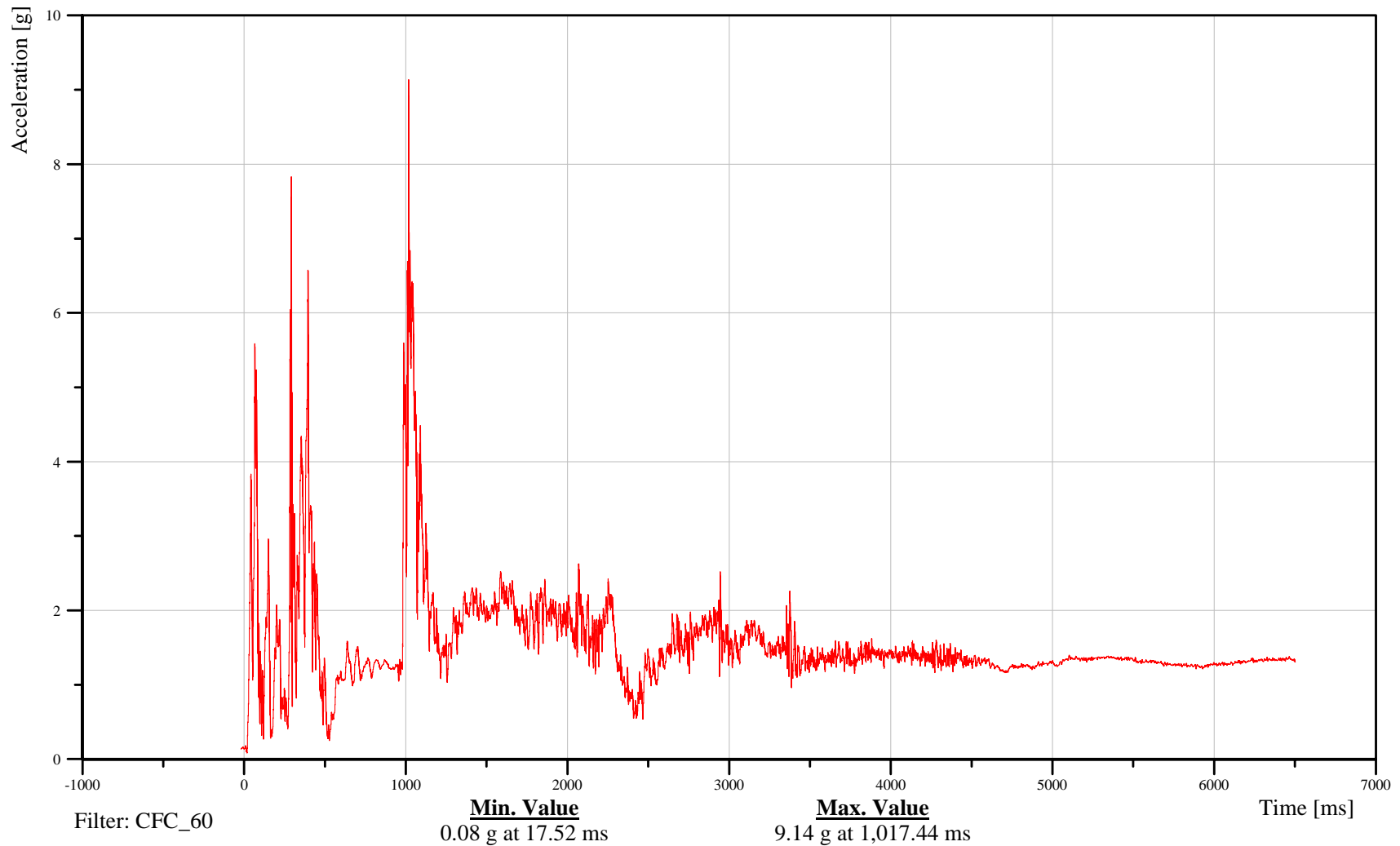
Left C-Pillar Lower Resultant Acceleration

Customer: VRTC

10CPILLOLE00ACRD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-146

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

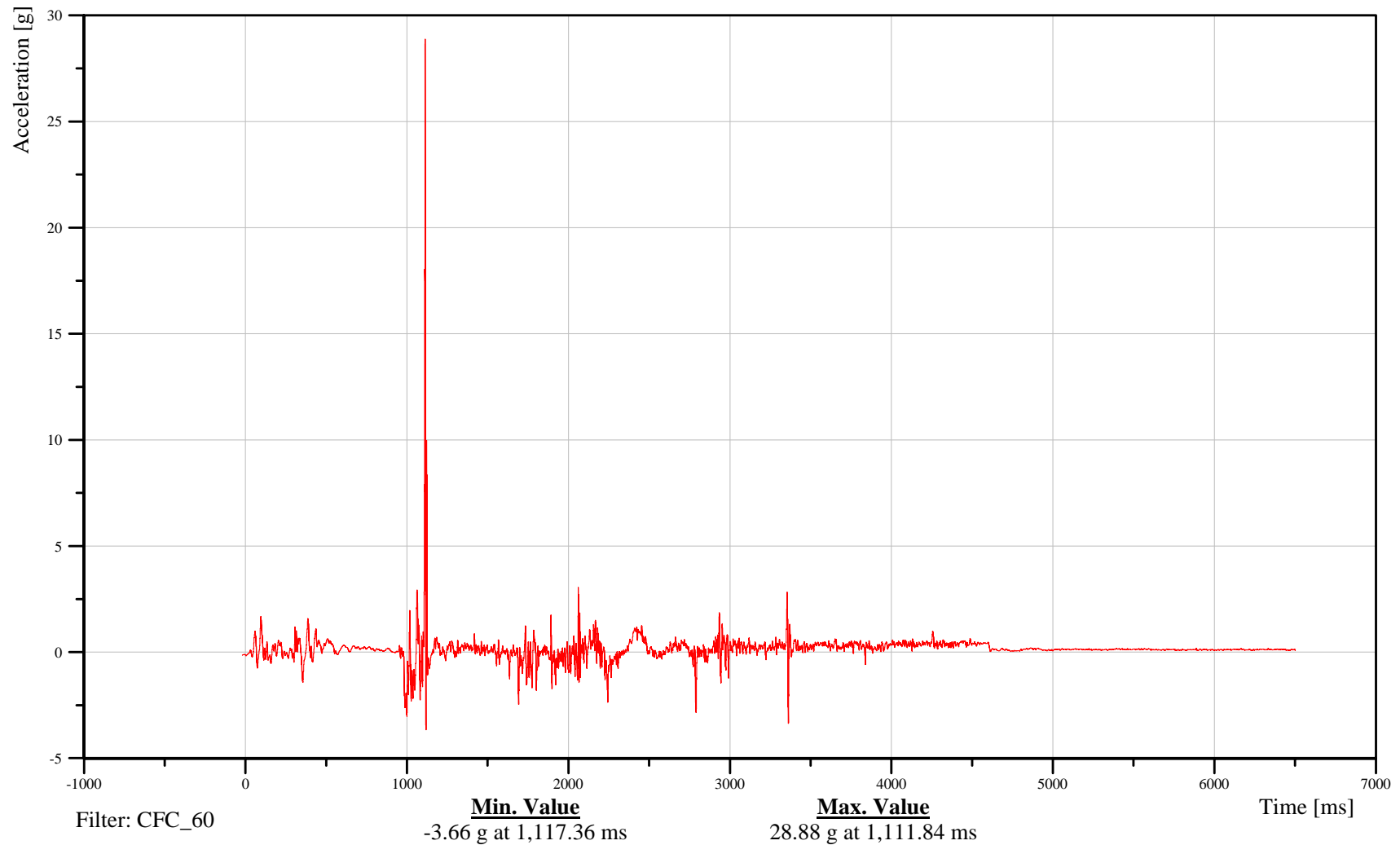
Right C-Pillar Upper X-Axis Acceleration

Customer: VRTC

10CPILUPRI00ACXD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-147

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Right C-Pillar Upper Y-Axis Acceleration

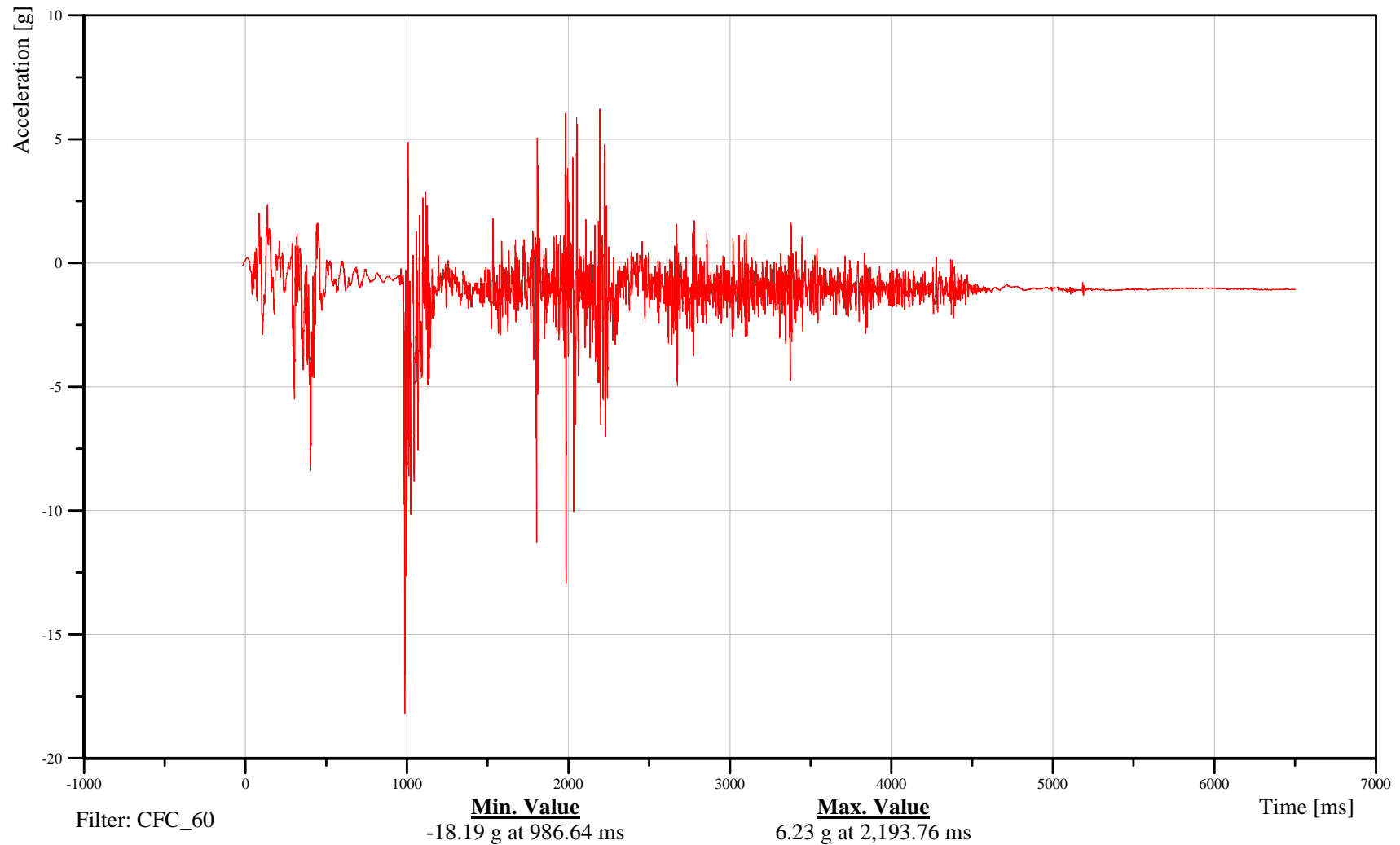
Time: 19:31

Customer: VRTC

10CPILUPRI00ACYD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-148

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

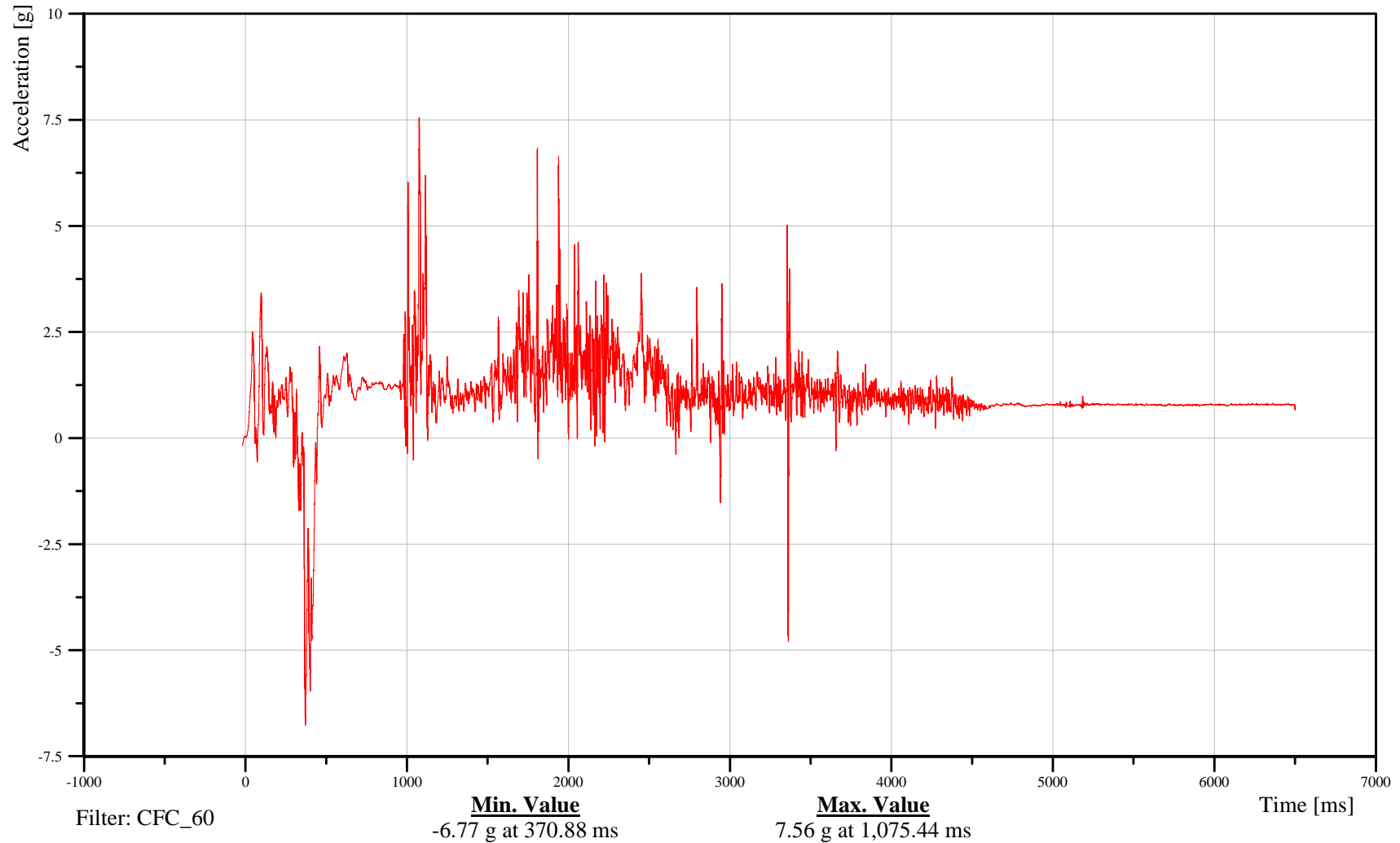
Right C-Pillar Upper Z-Axis Acceleration

Customer: VRTC

TRC Inc. Test Lab: CTF

10CPILUPRI00ACZD

Test Number: 091022



B-149

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009
Time: 19:31

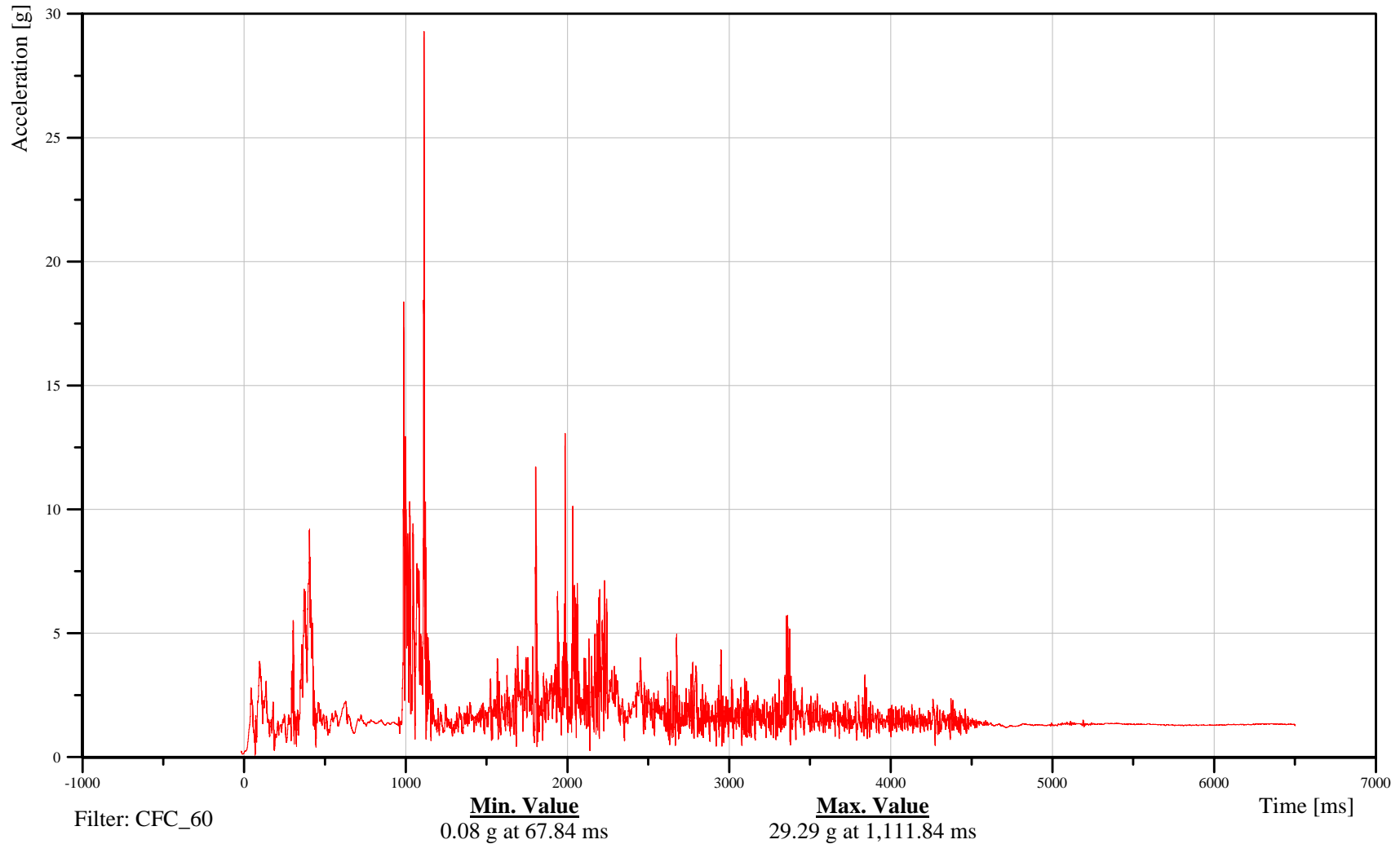
Right C-Pillar Upper Resultant Acceleration

Customer: VRTC

10CPILUPRI00ACRD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-150

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Right C-Pillar Lower X-Axis Acceleration

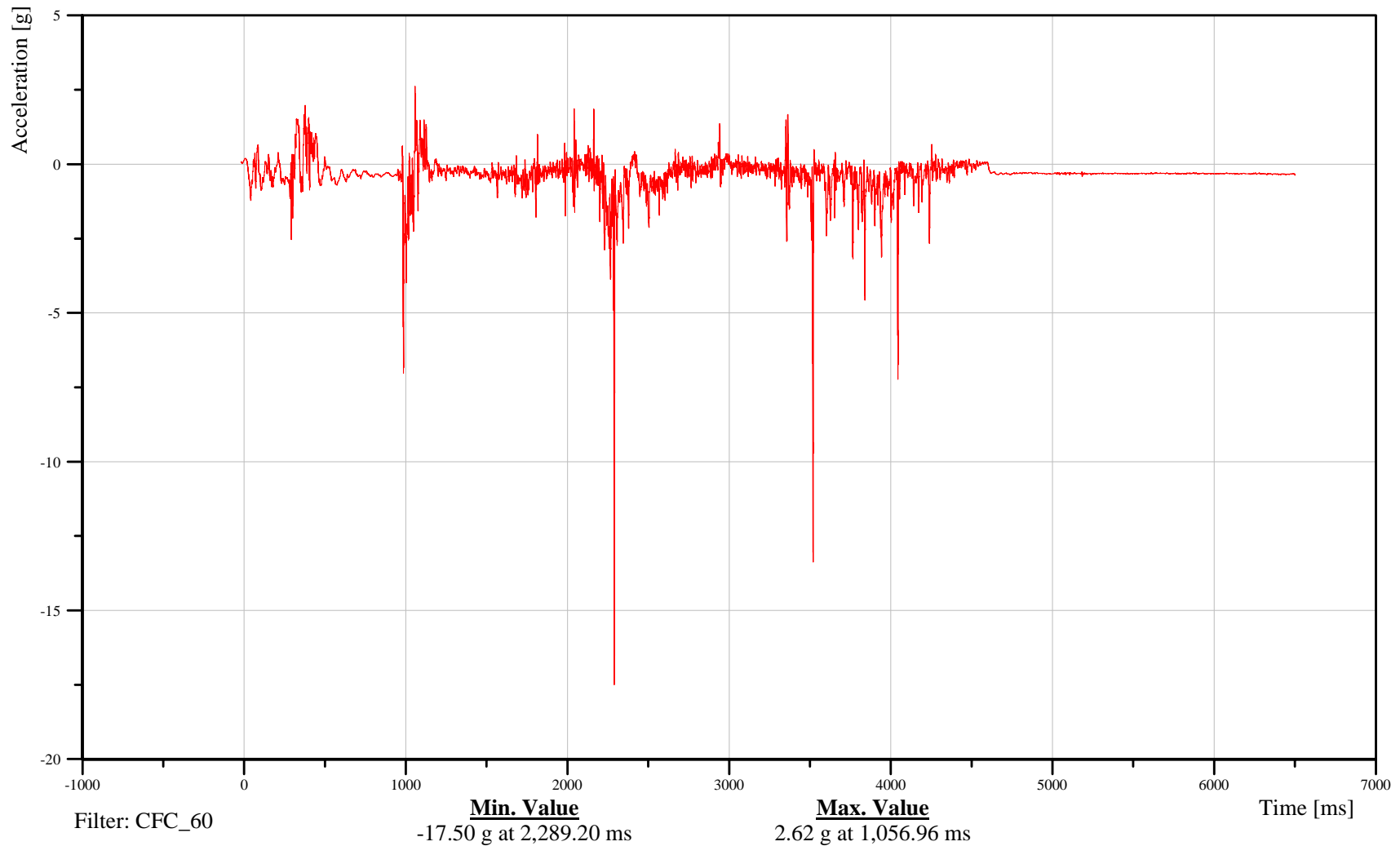
Time: 19:31

Customer: VRTC

10CPILLORI00ACXD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-151

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

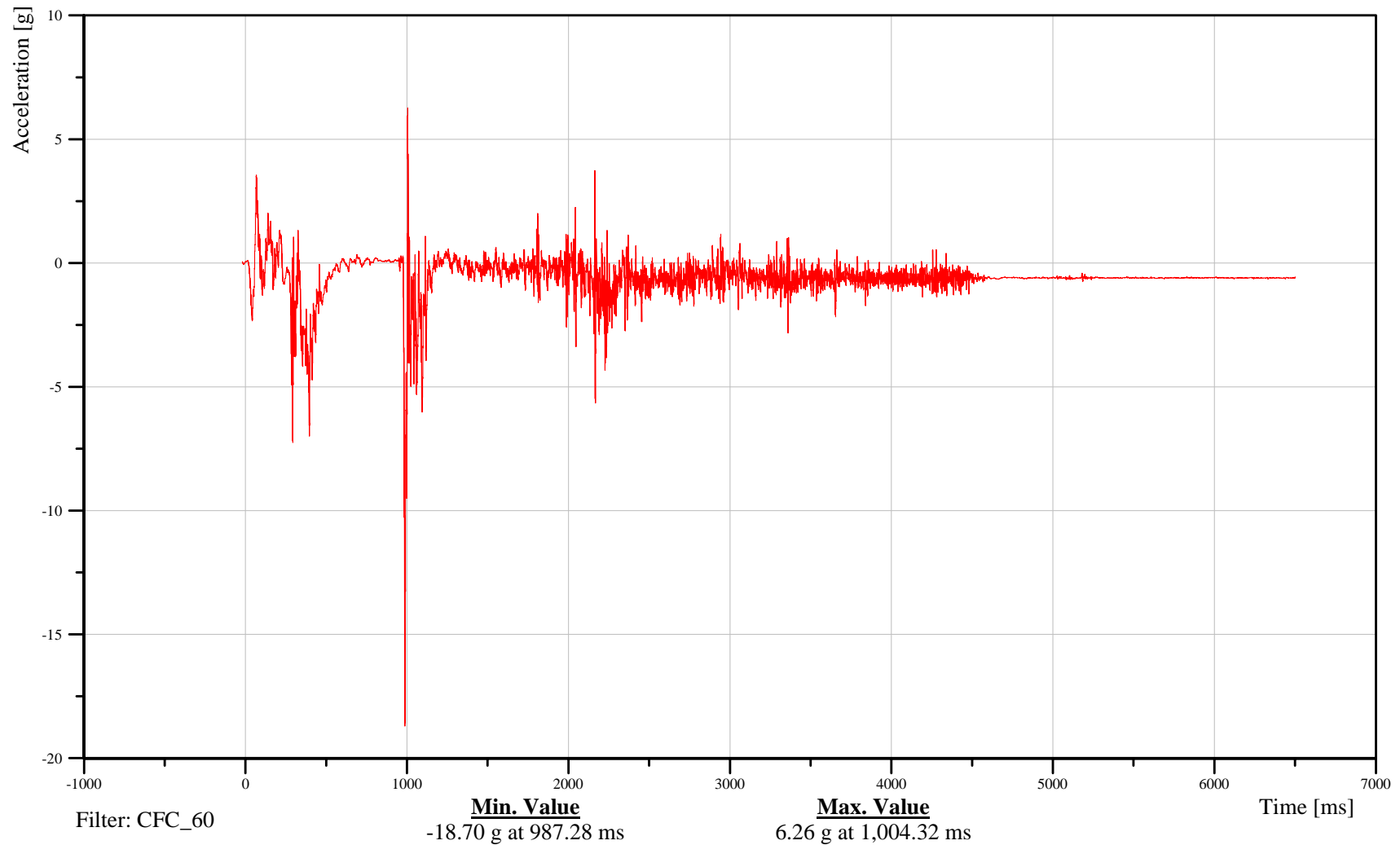
Right C-Pillar Lower Y-Axis Acceleration

Customer: VRTC

10CPILLORI00ACYD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-152

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

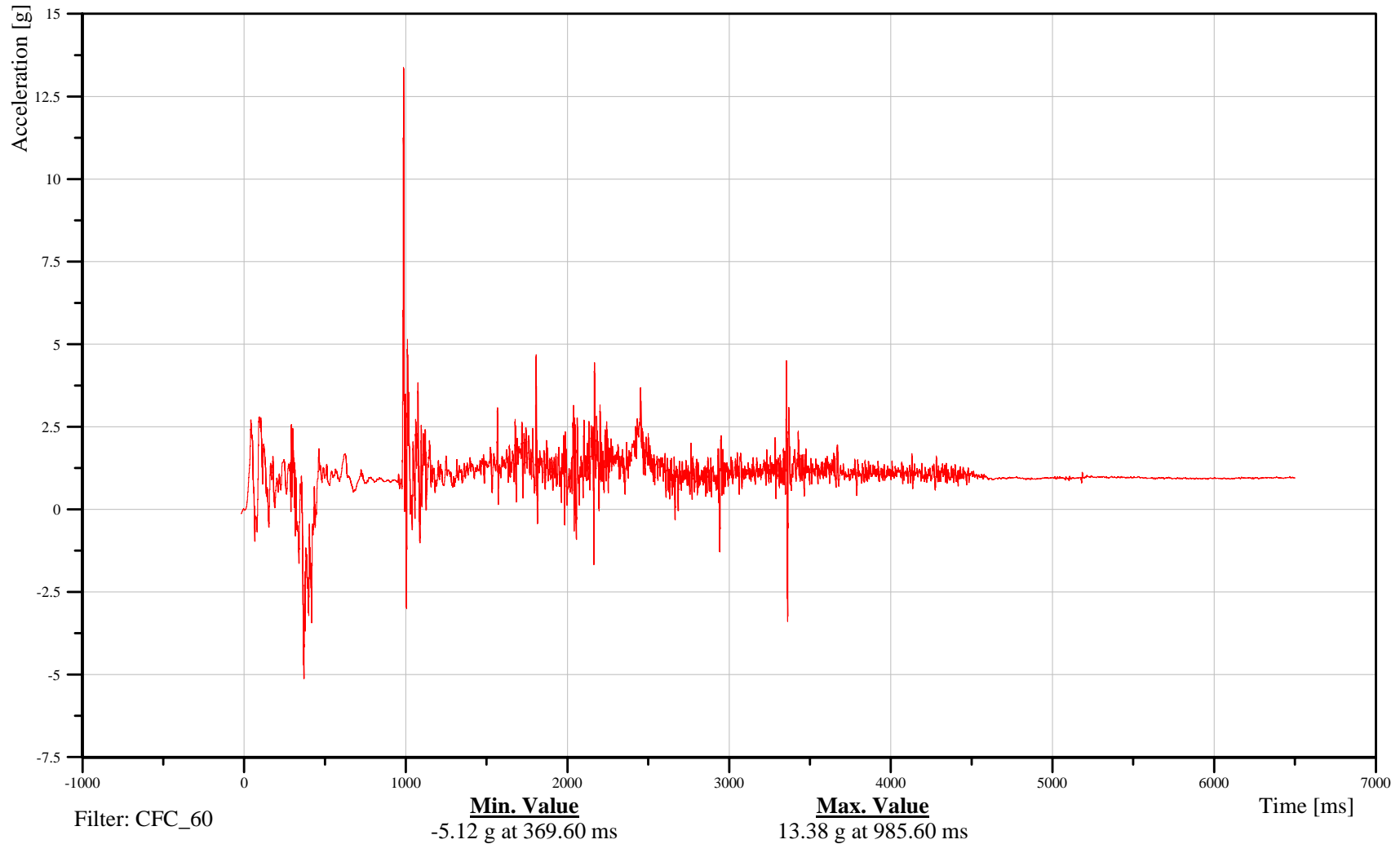
Right C-Pillar Lower Z-Axis Acceleration

Customer: VRTC

10CPILLORI00ACZD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-153

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

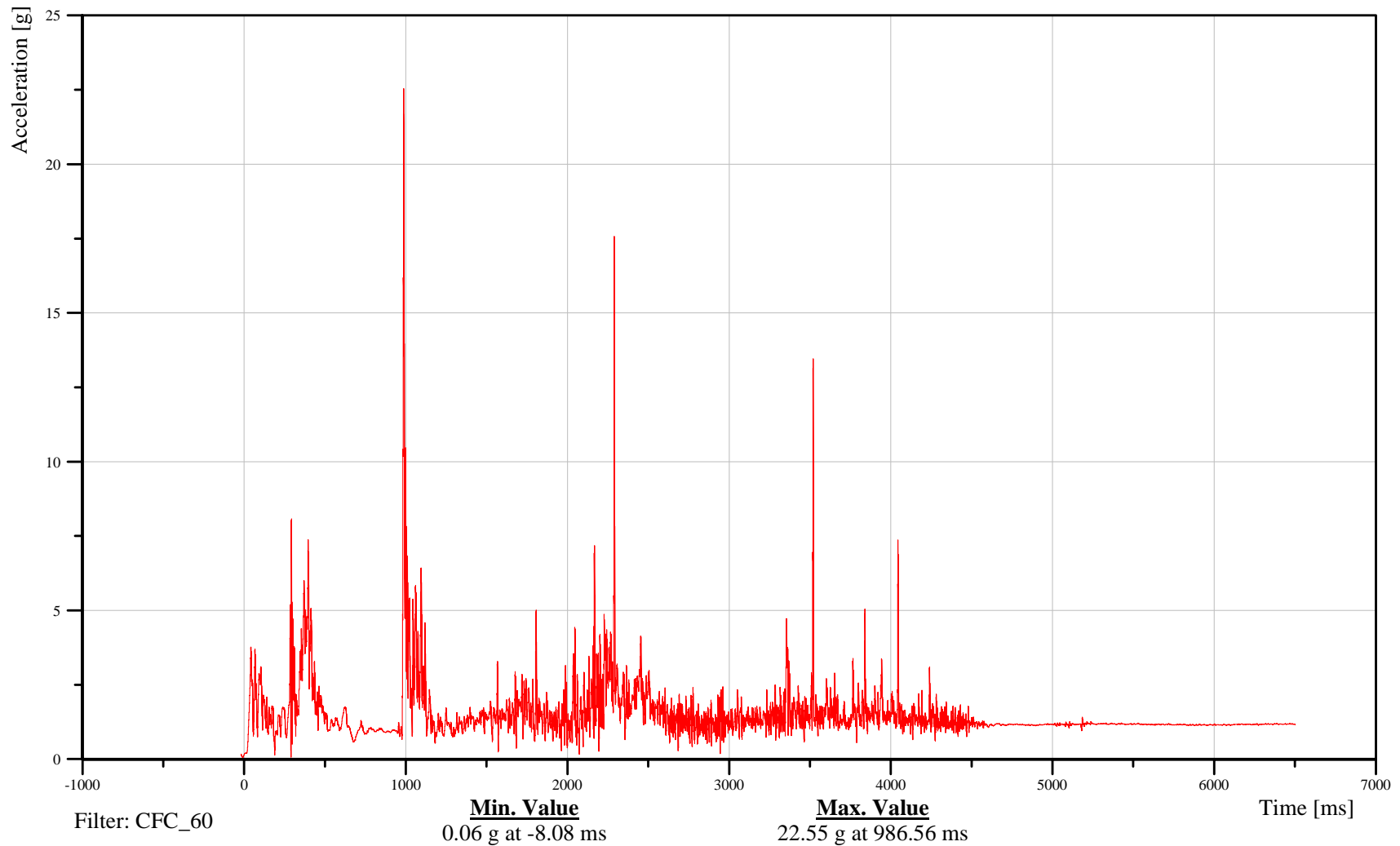
Right C-Pillar Lower Resultant Acceleration

Customer: VRTC

10CPILLORI00ACRD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-154

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

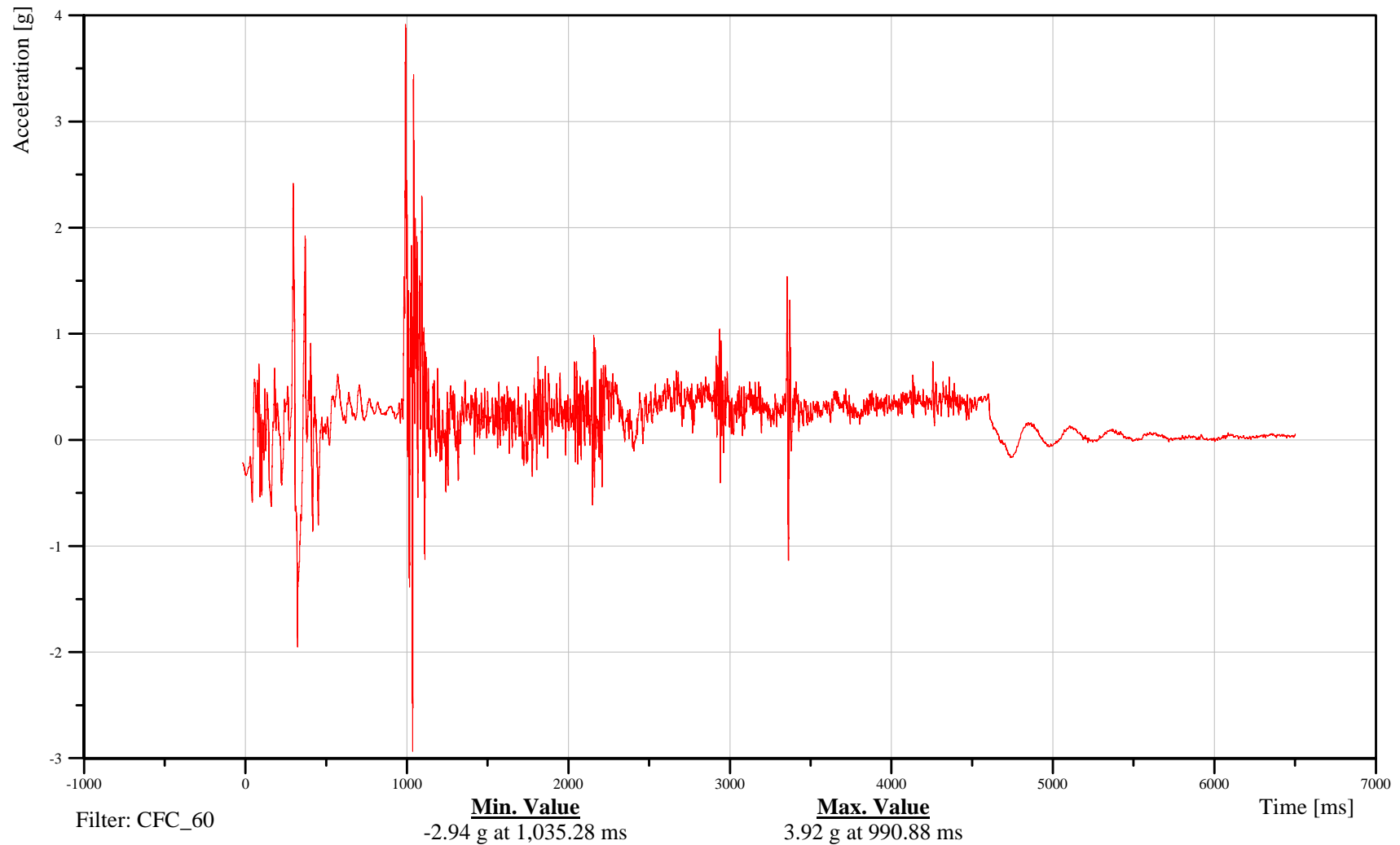
Left D-Pillar Upper X-Axis Acceleration

Customer: VRTC

10DPILUPLE00ACXD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-155

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009
Time: 19:31

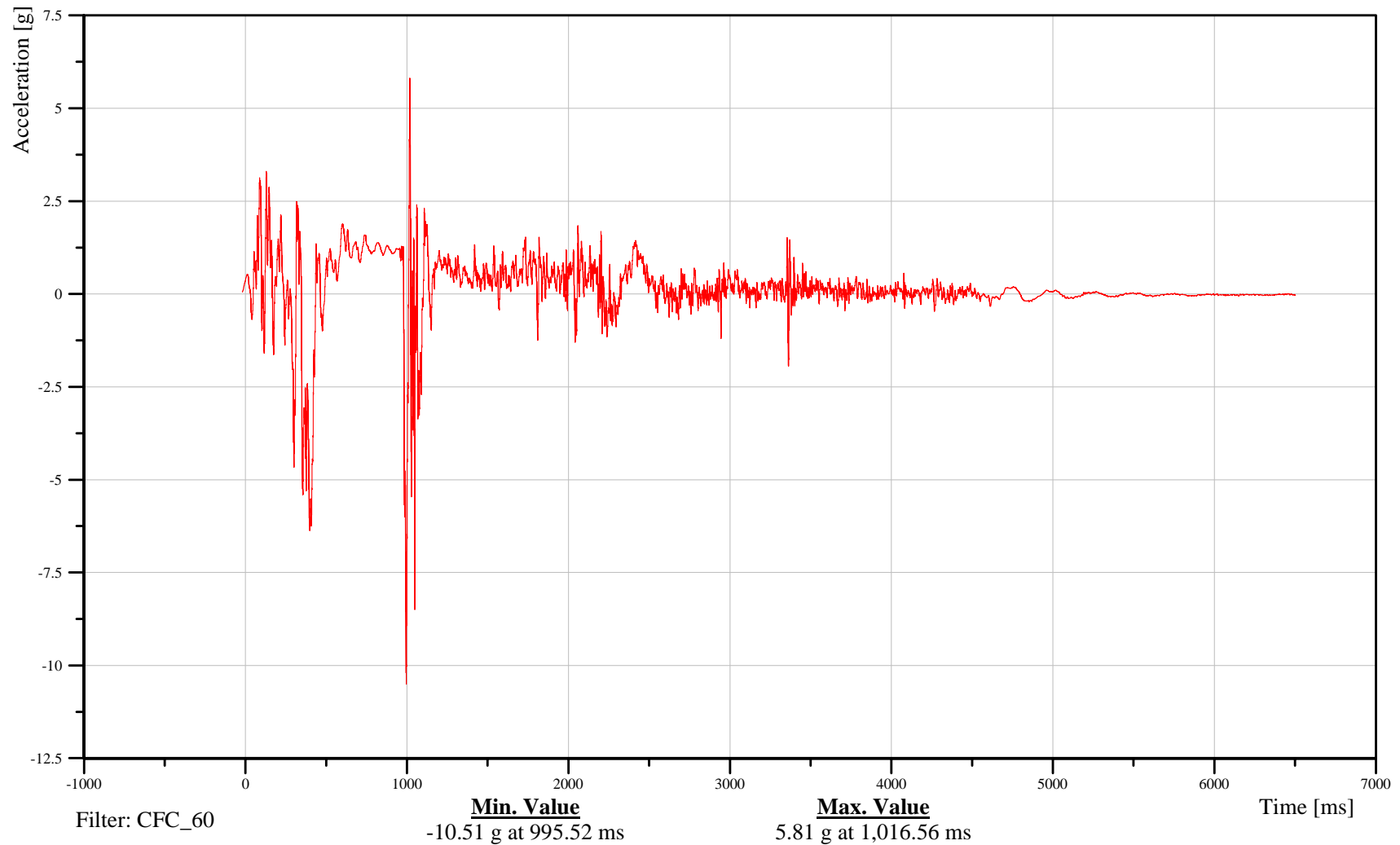
Left D-Pillar Upper Y-Axis Acceleration

Customer: VRTC

10DPILUPLE00ACYD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-156

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

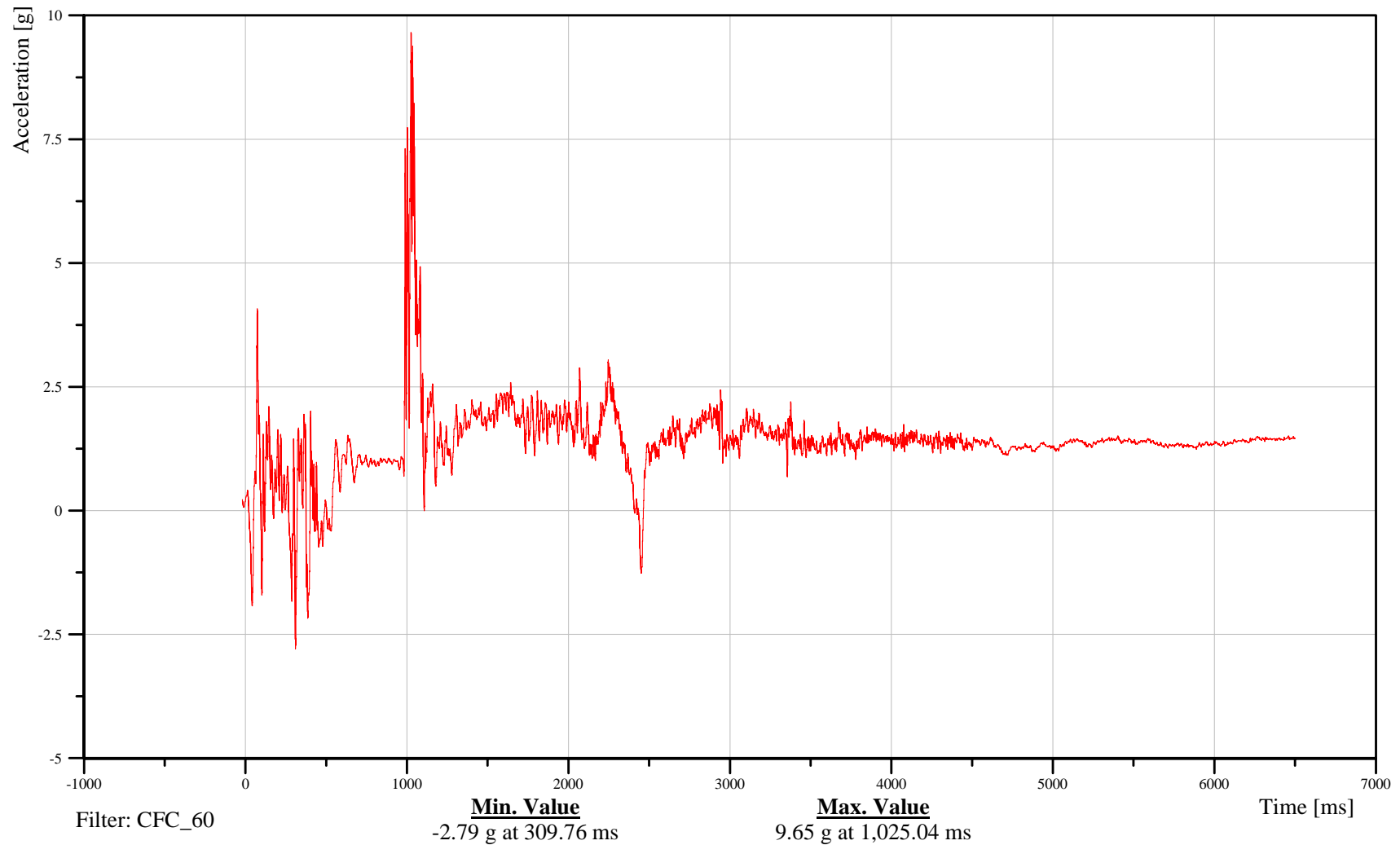
Left D-Pillar Upper Z-Axis Acceleration

Customer: VRTC

10DPILUPLE00ACZD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-157

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

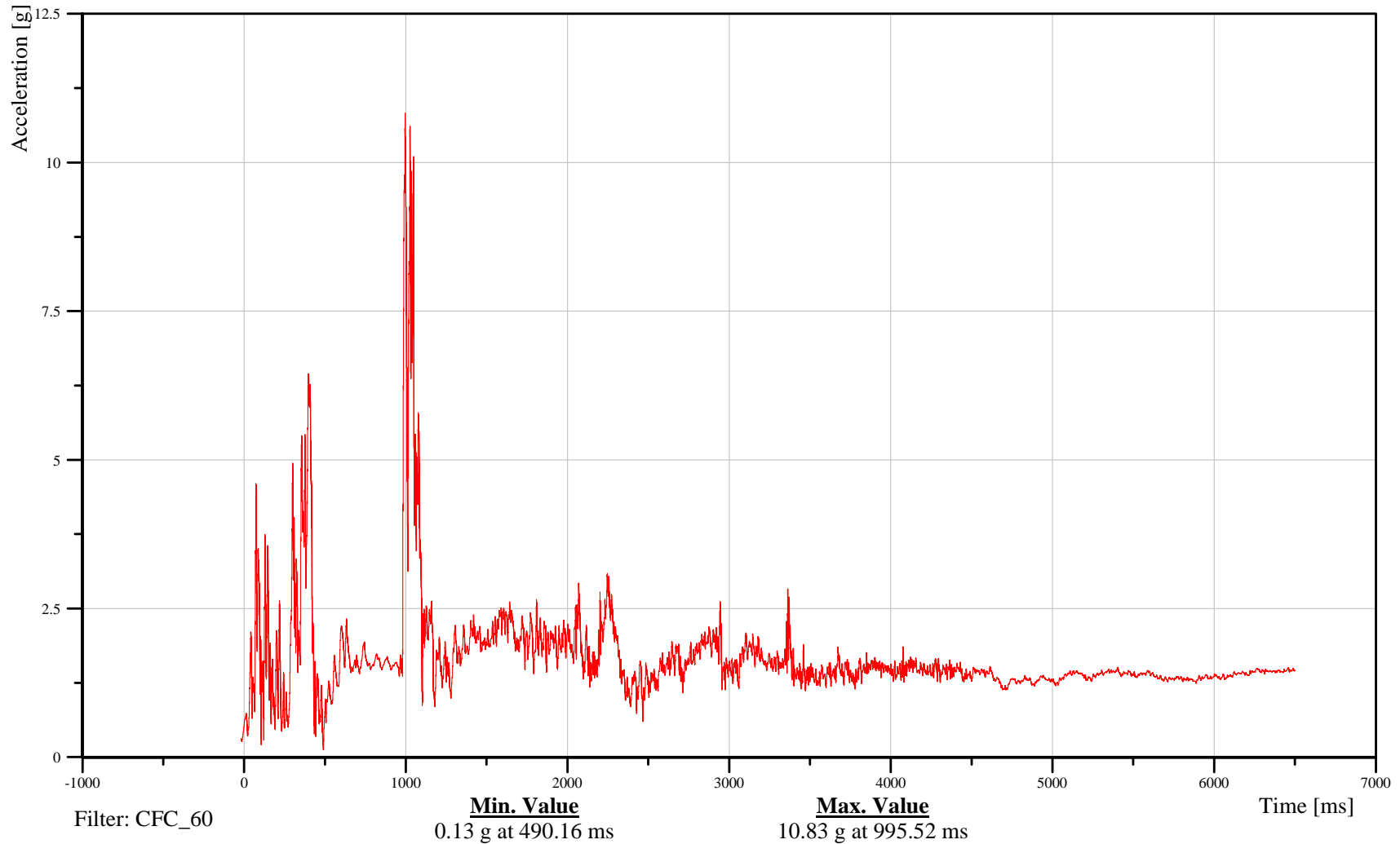
Left D-Pillar Upper Resultant Acceleration

Customer: VRTC

10DPILUPLE00ACRD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-158

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

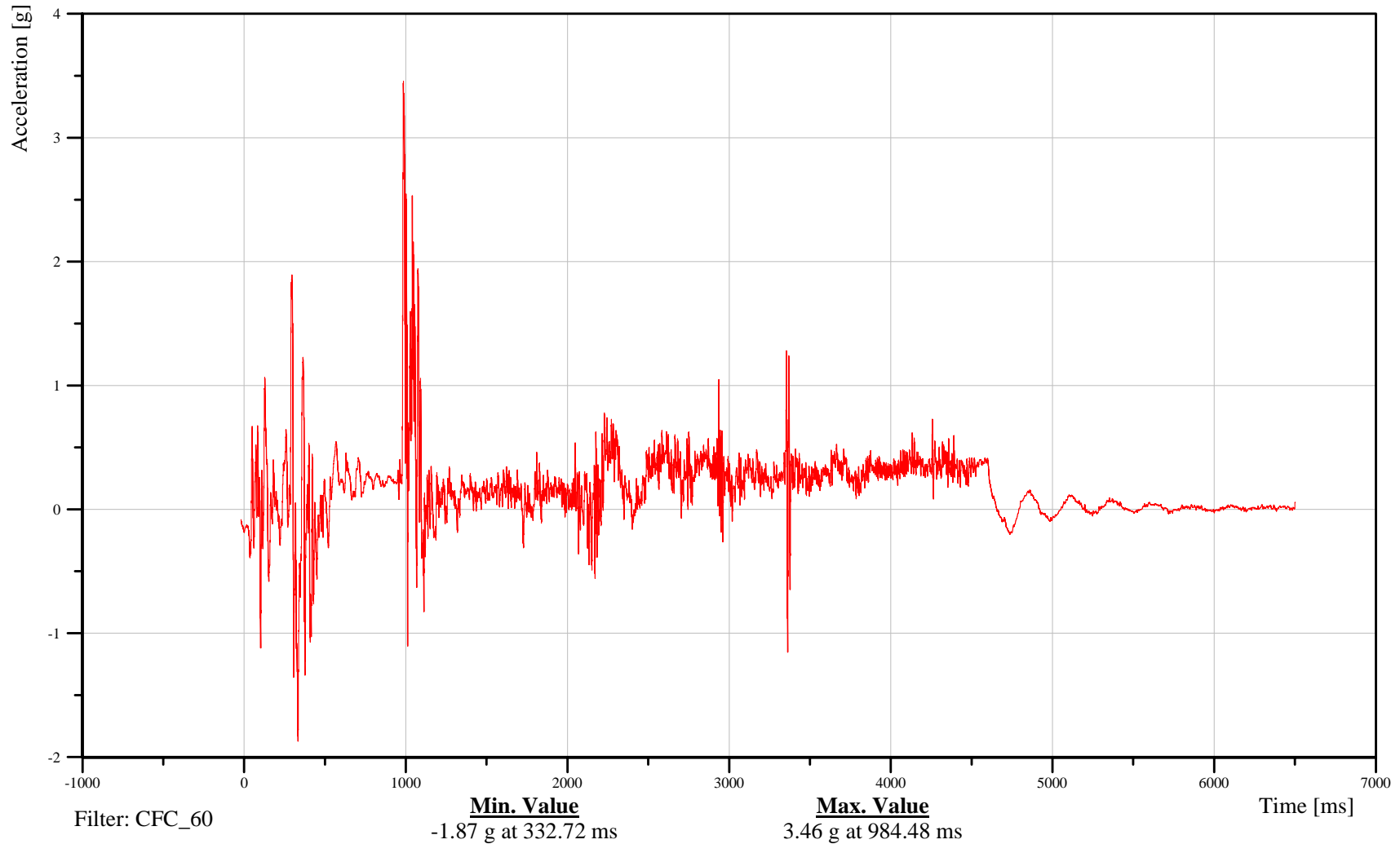
Left D-Pillar Lower X-Axis Acceleration

Customer: VRTC

10DPILLOLE00ACXD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-159

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

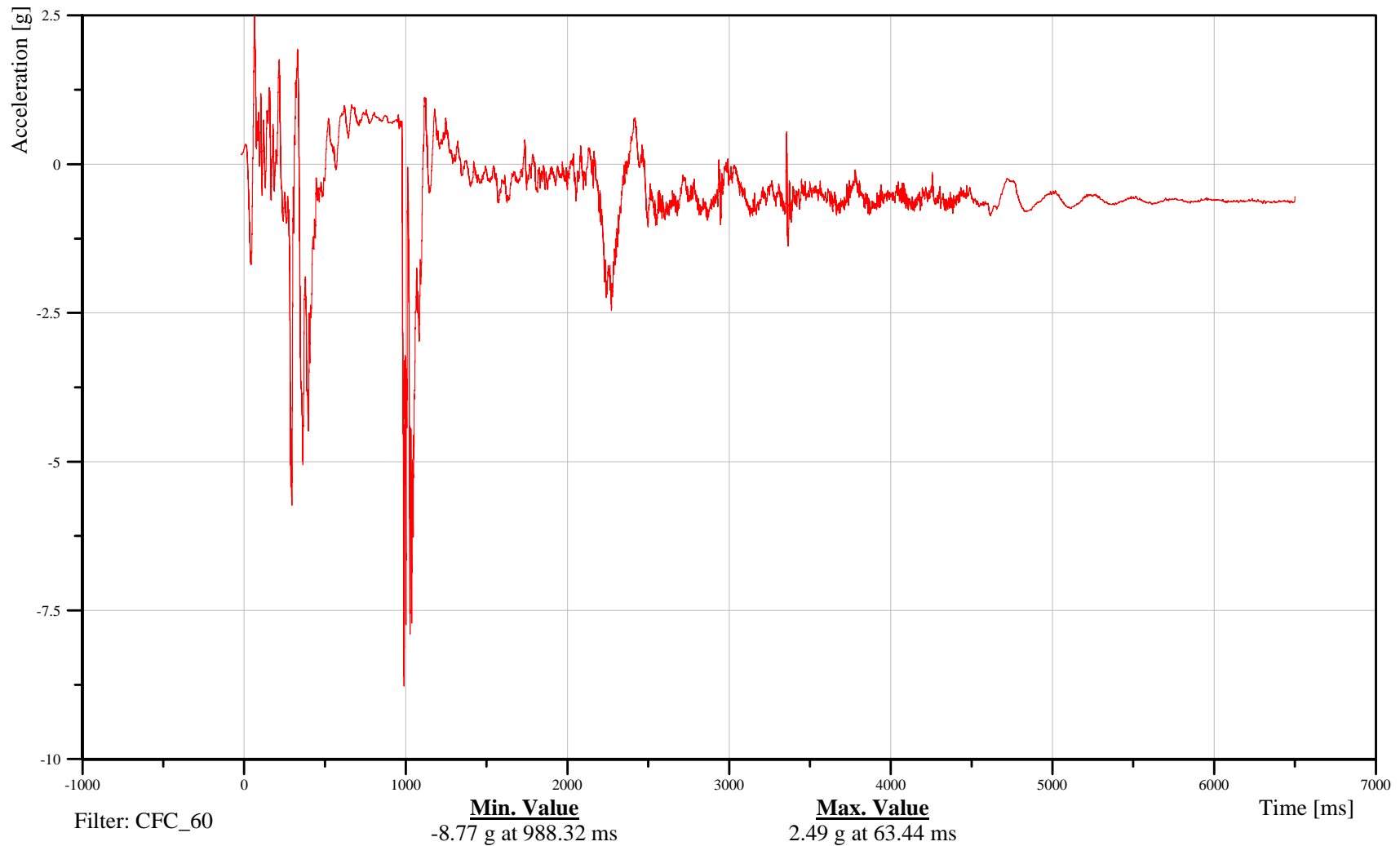
Left D-Pillar Lower Y-Axis Acceleration

Customer: VRTC

10DPILLOLE00ACYD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-160

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

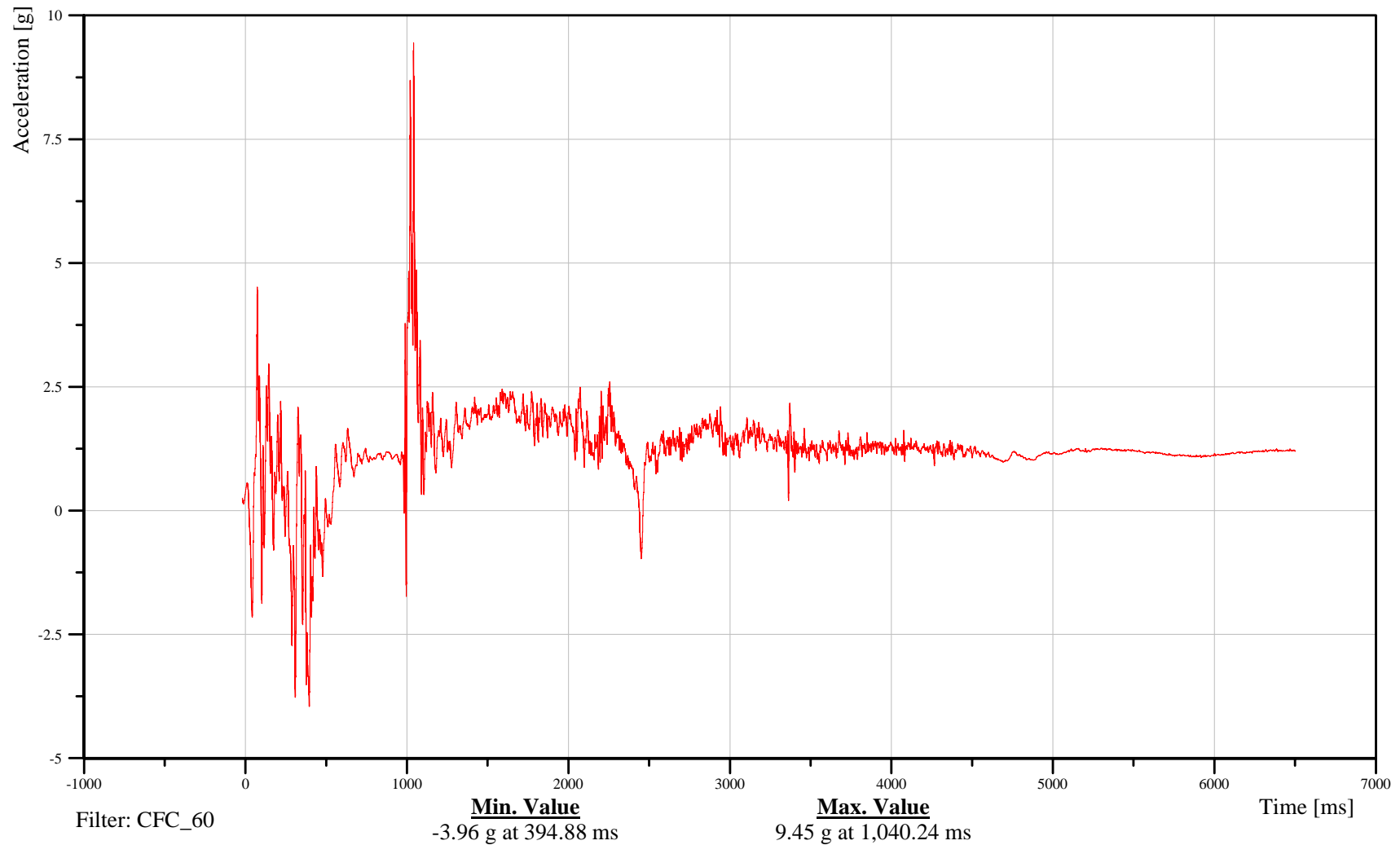
Left D-Pillar Lower Z-Axis Acceleration

Customer: VRTC

10DPILLOLE00ACZD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-161

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Left D-Pillar Lower Resultant Acceleration

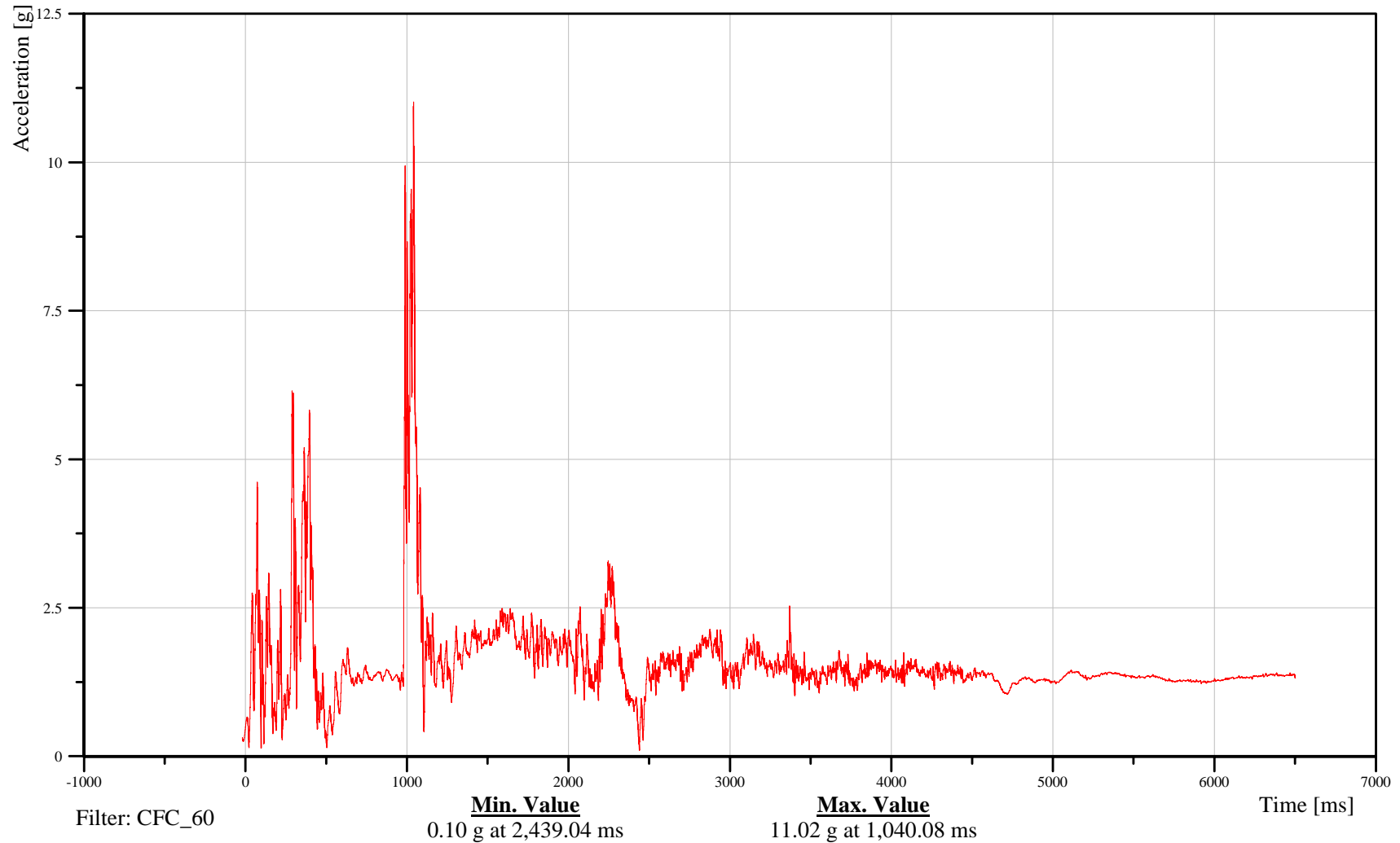
Time: 19:31

Customer: VRTC

10DPILLOLE00ACRD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-162

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

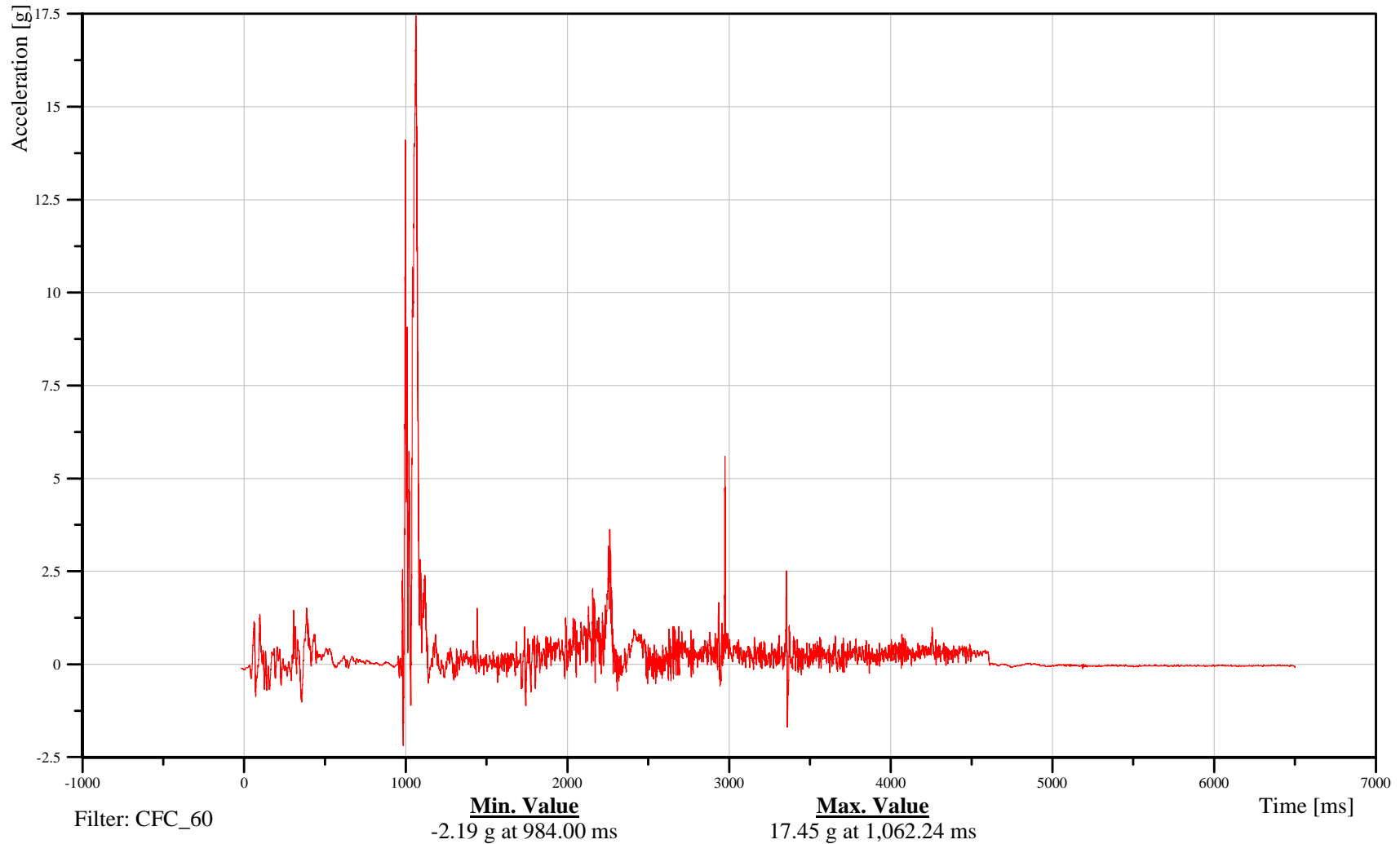
Right D-Pillar Upper X-Axis Acceleration

Customer: VRTC

10DPILUPRI00ACXD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-163

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

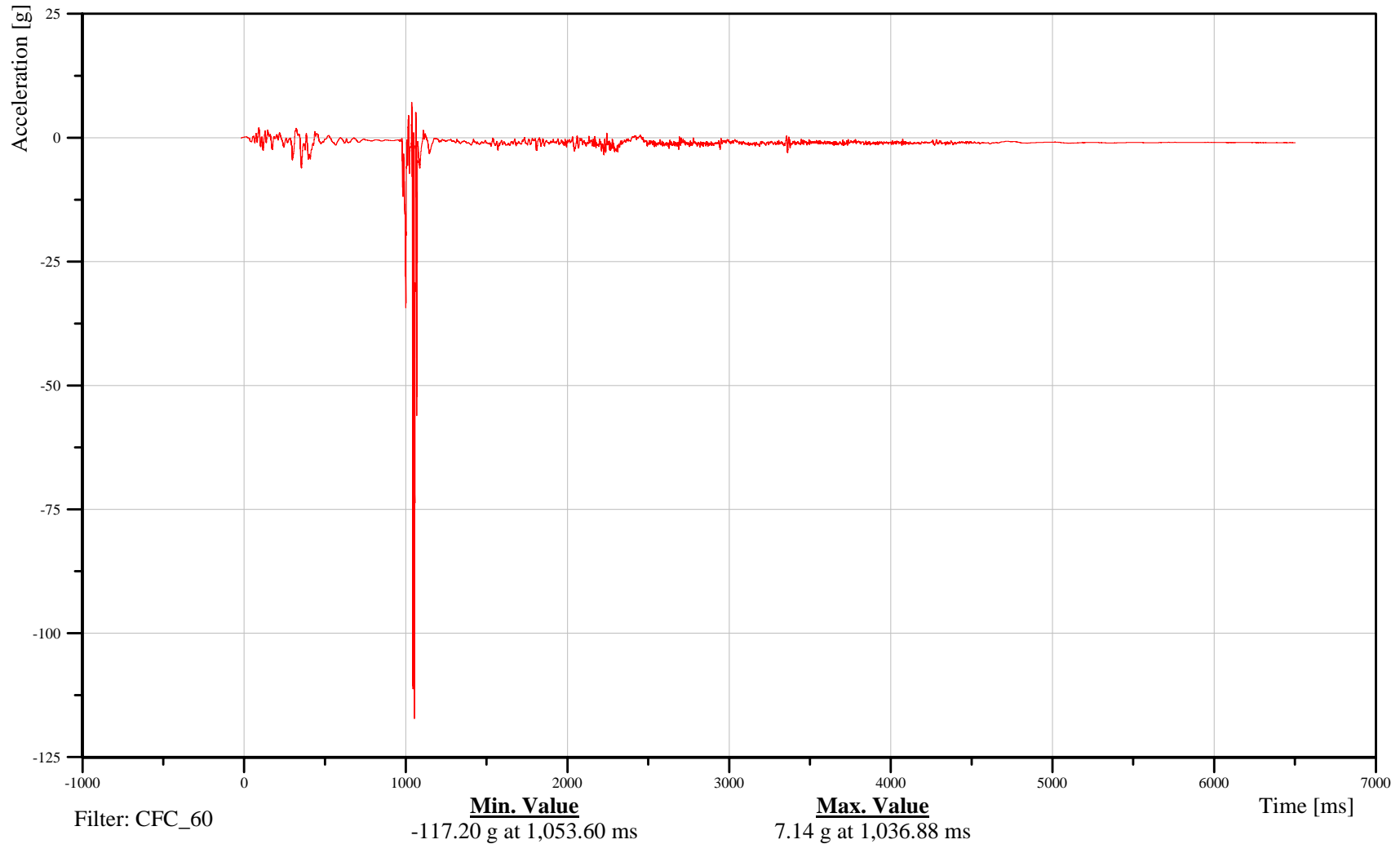
Right D-Pillar Upper Y-Axis Acceleration

Customer: VRTC

10DPILUPRI00ACYD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-164

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

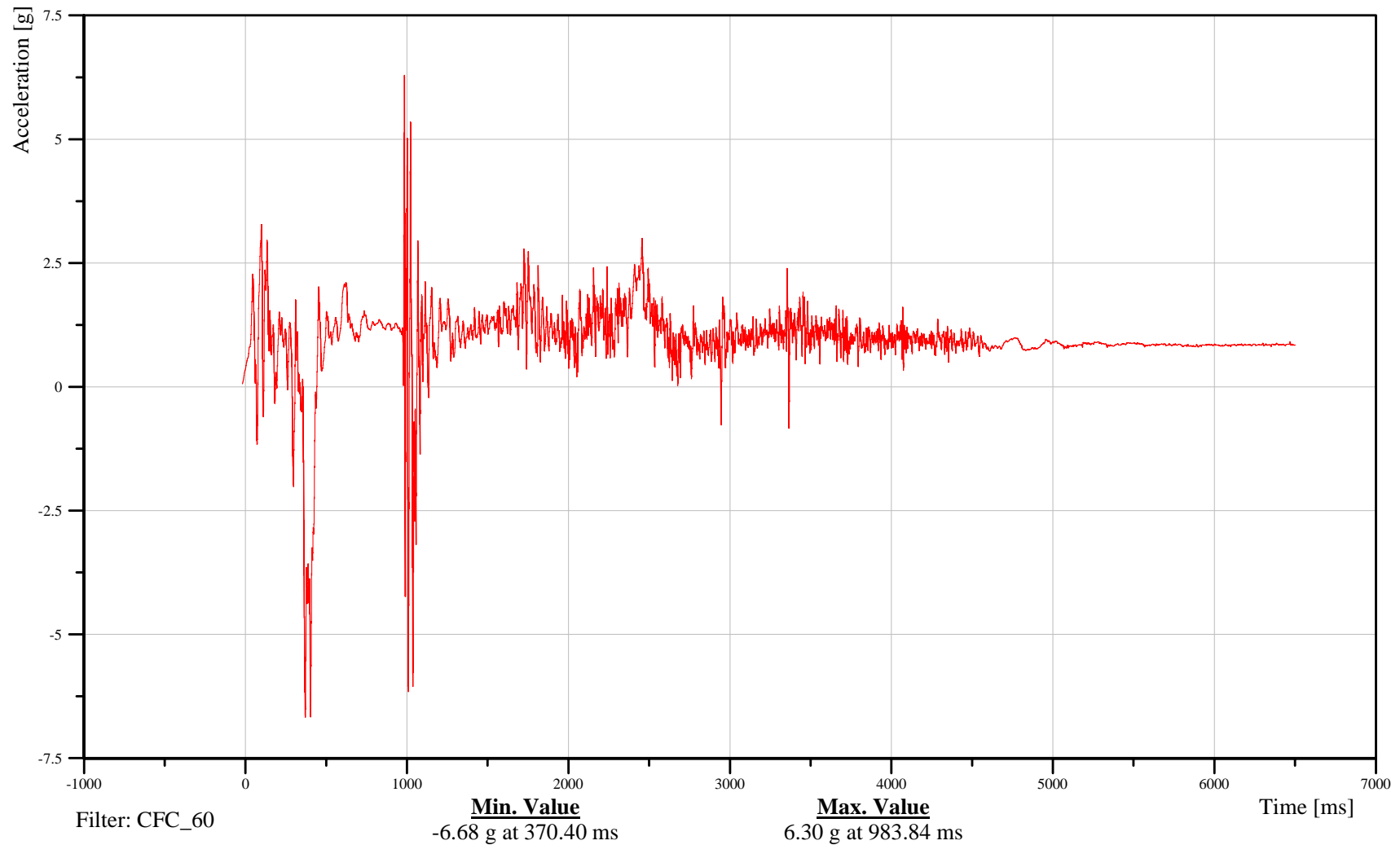
Right D-Pillar Upper Z-Axis Acceleration

Customer: VRTC

TRC Inc. Test Lab: CTF

10DPILUPRI00ACZD

Test Number: 091022



B-165

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

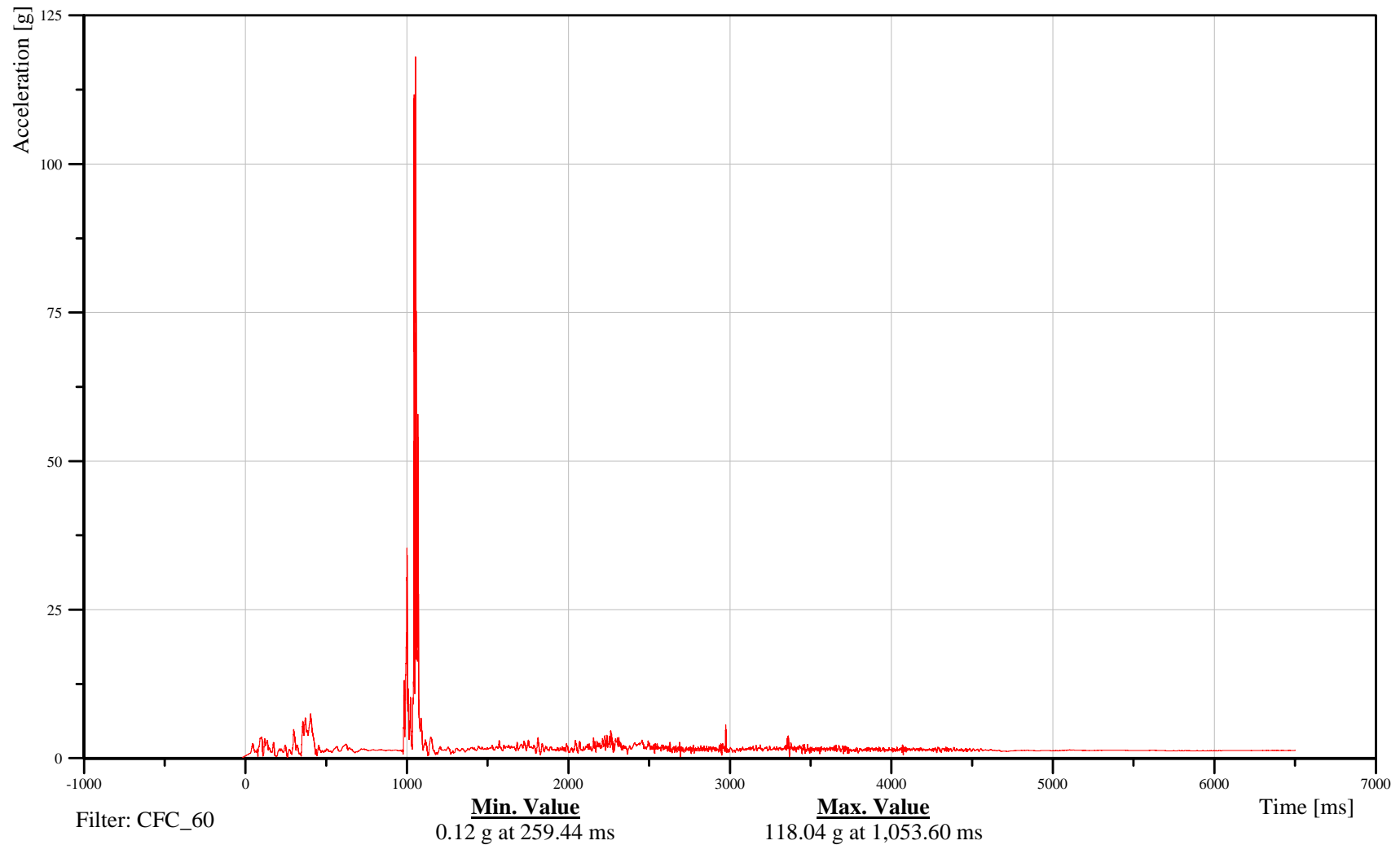
Right D-Pillar Upper Resultant Acceleration

Customer: VRTC

10DPILUPRI00ACRD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-166

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

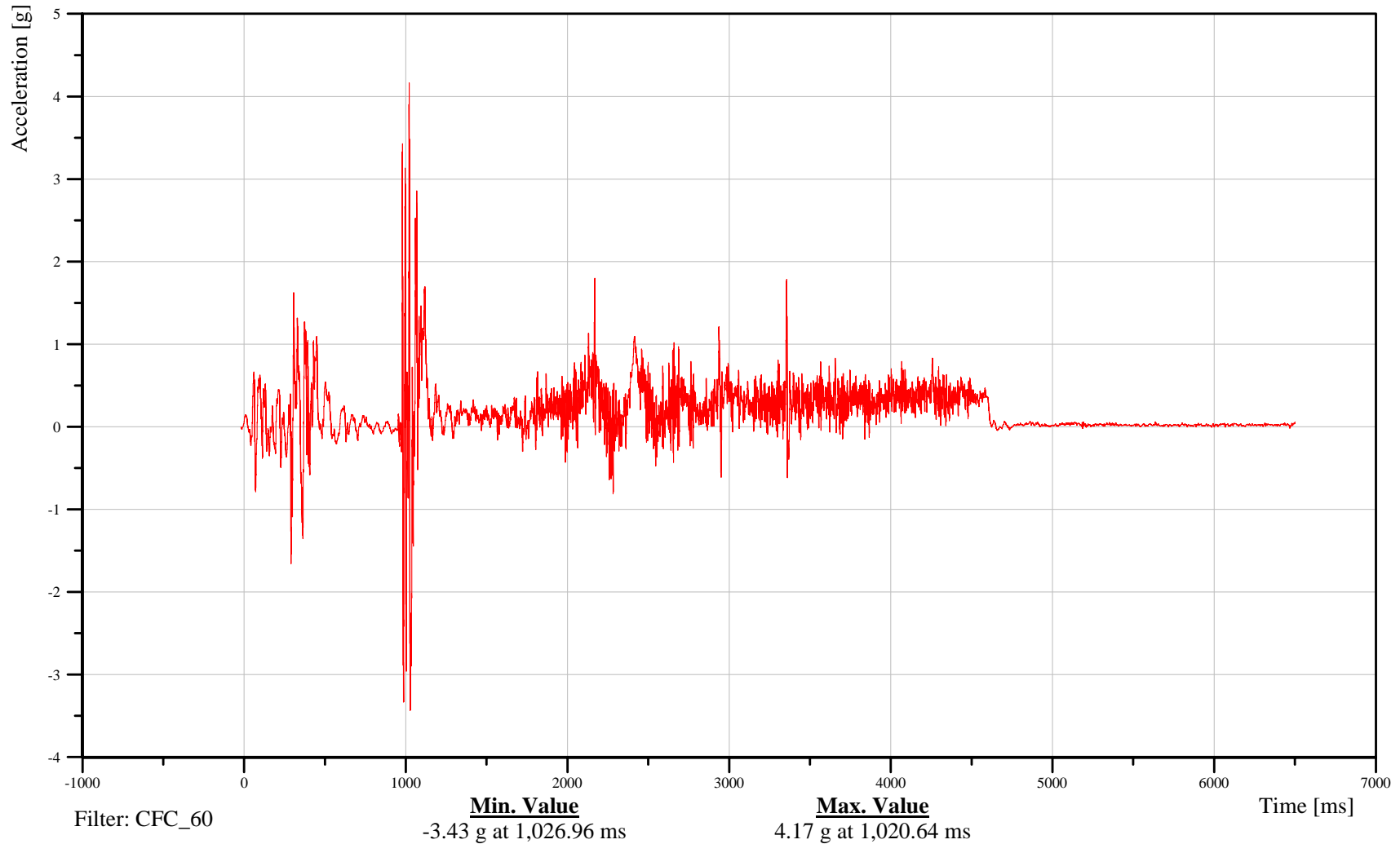
Right D-Pillar Lower X-Axis Acceleration

Customer: VRTC

10DPILLORI00ACXD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-167

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

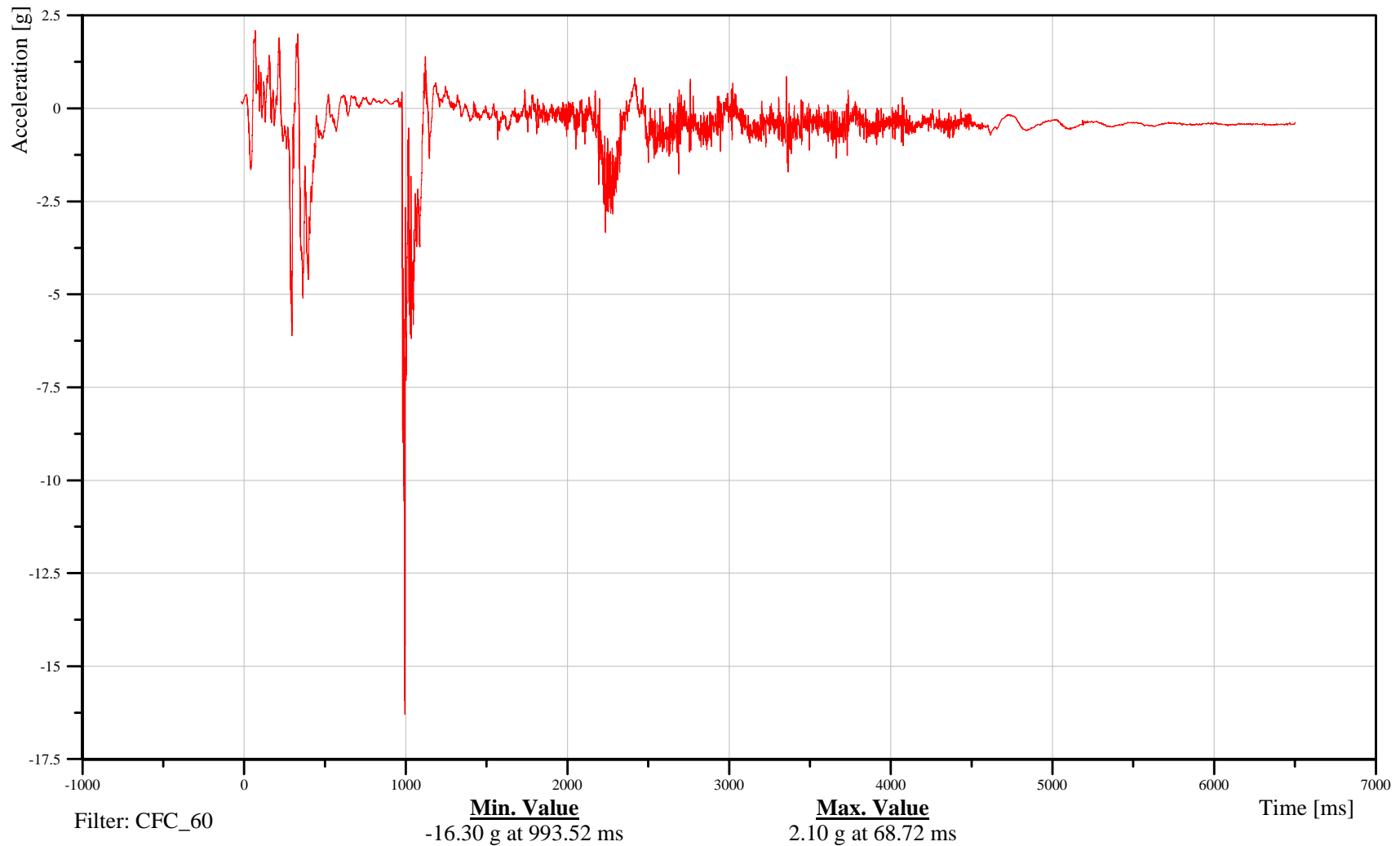
Right D-Pillar Lower Y-Axis Acceleration

Customer: VRTC

10DPILLORI00ACYD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-168

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

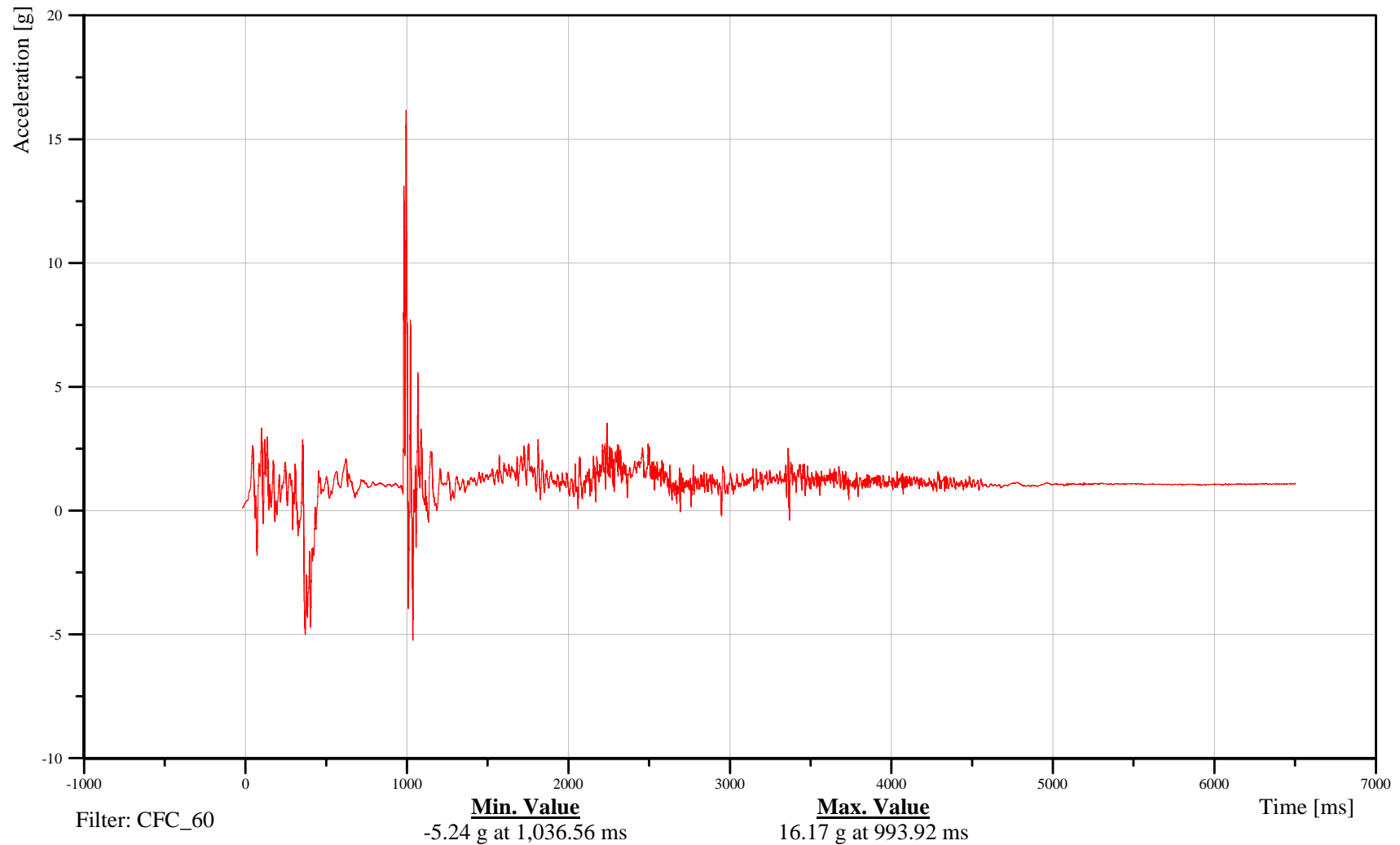
Right D-Pillar Lower Z-Axis Acceleration

Customer: VRTC

10DPILLORI00ACZD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-169

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

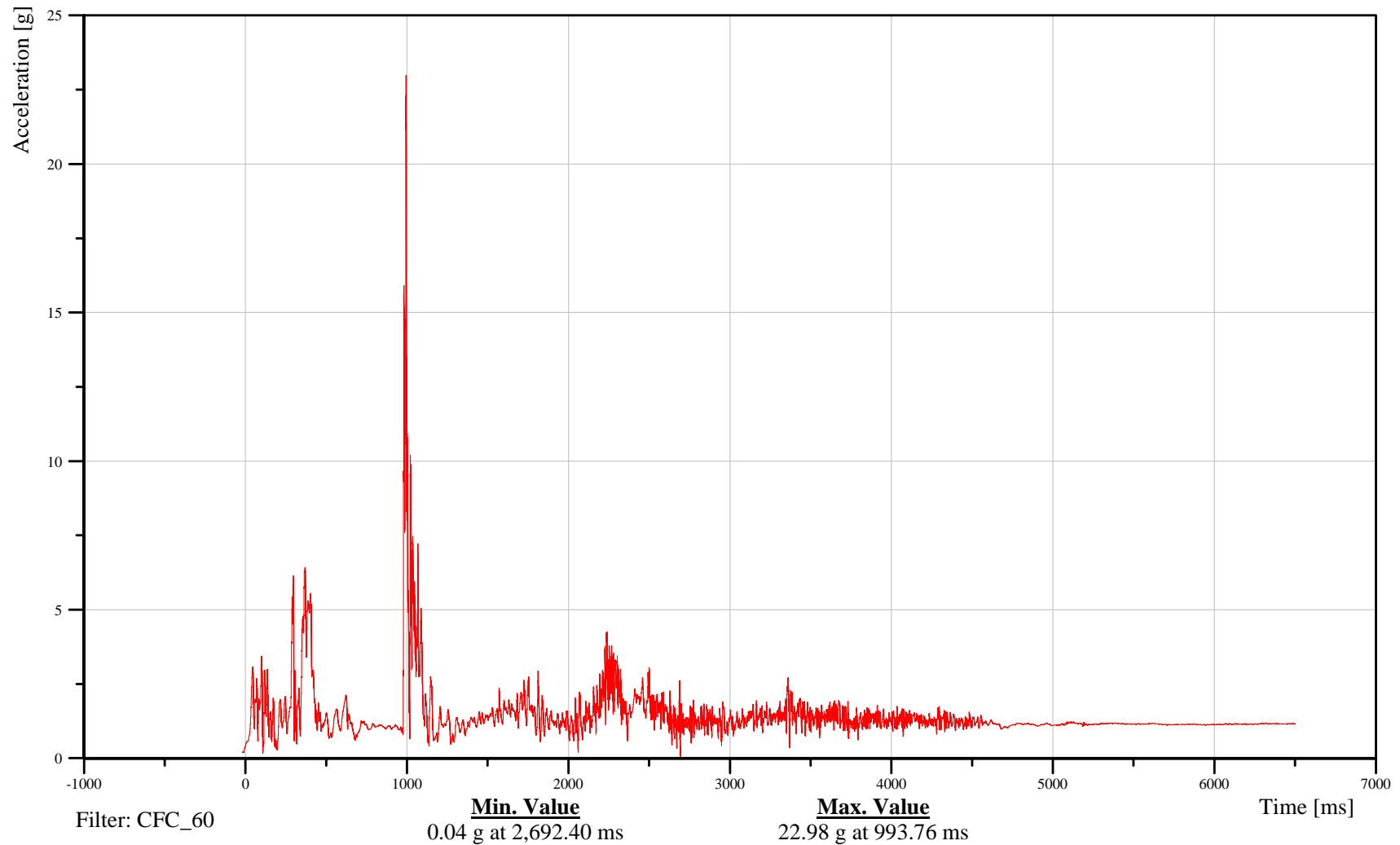
Right D-Pillar Lower Resultant Acceleration

Customer: VRTC

10DPILLORI00ACRD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-170

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Vehicle Rear Deck X-Axis Acceleration

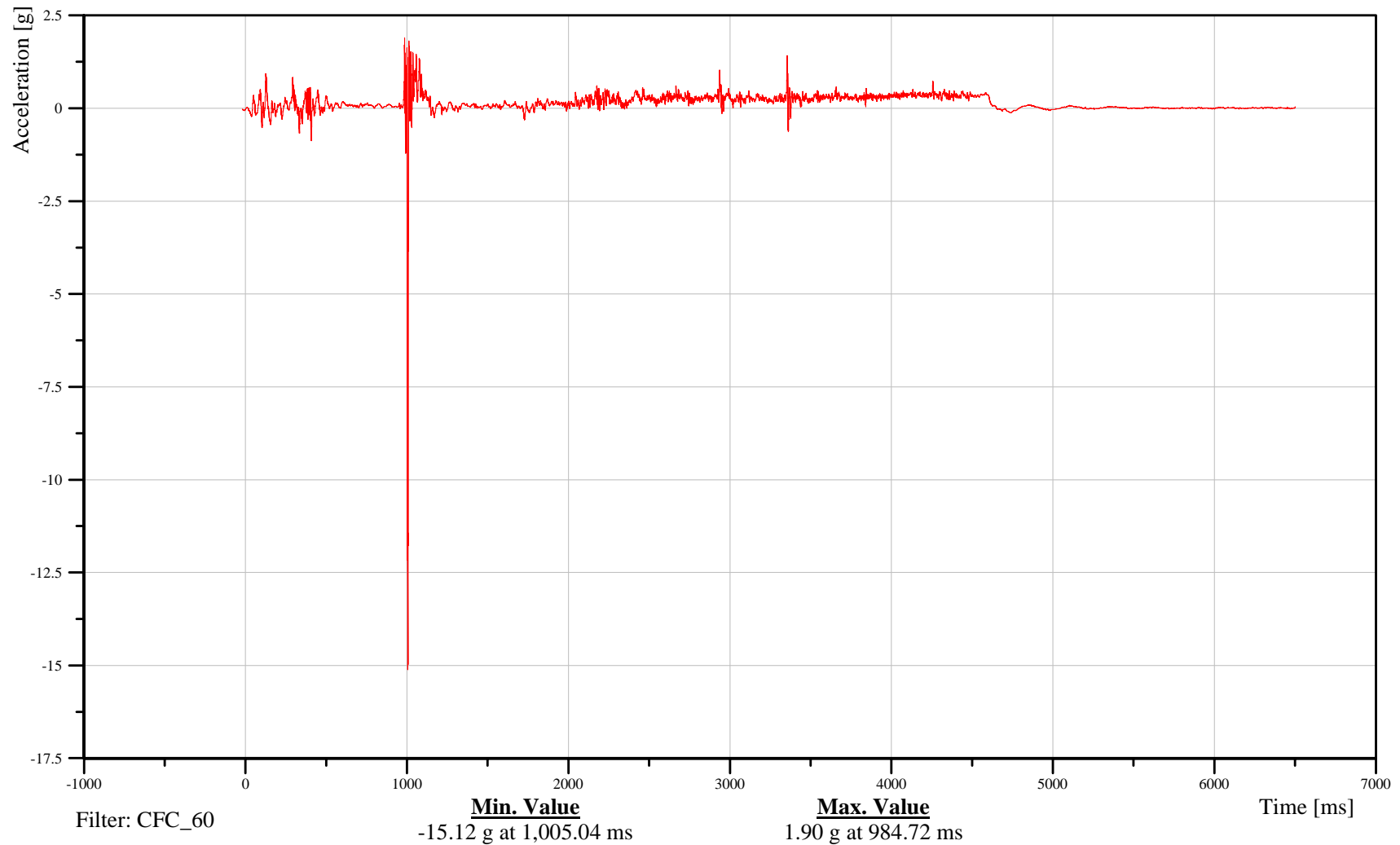
Time: 19:31

Customer: VRTC

102RDK000000ACXD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-171

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Vehicle Rear Deck Y-Axis Acceleration

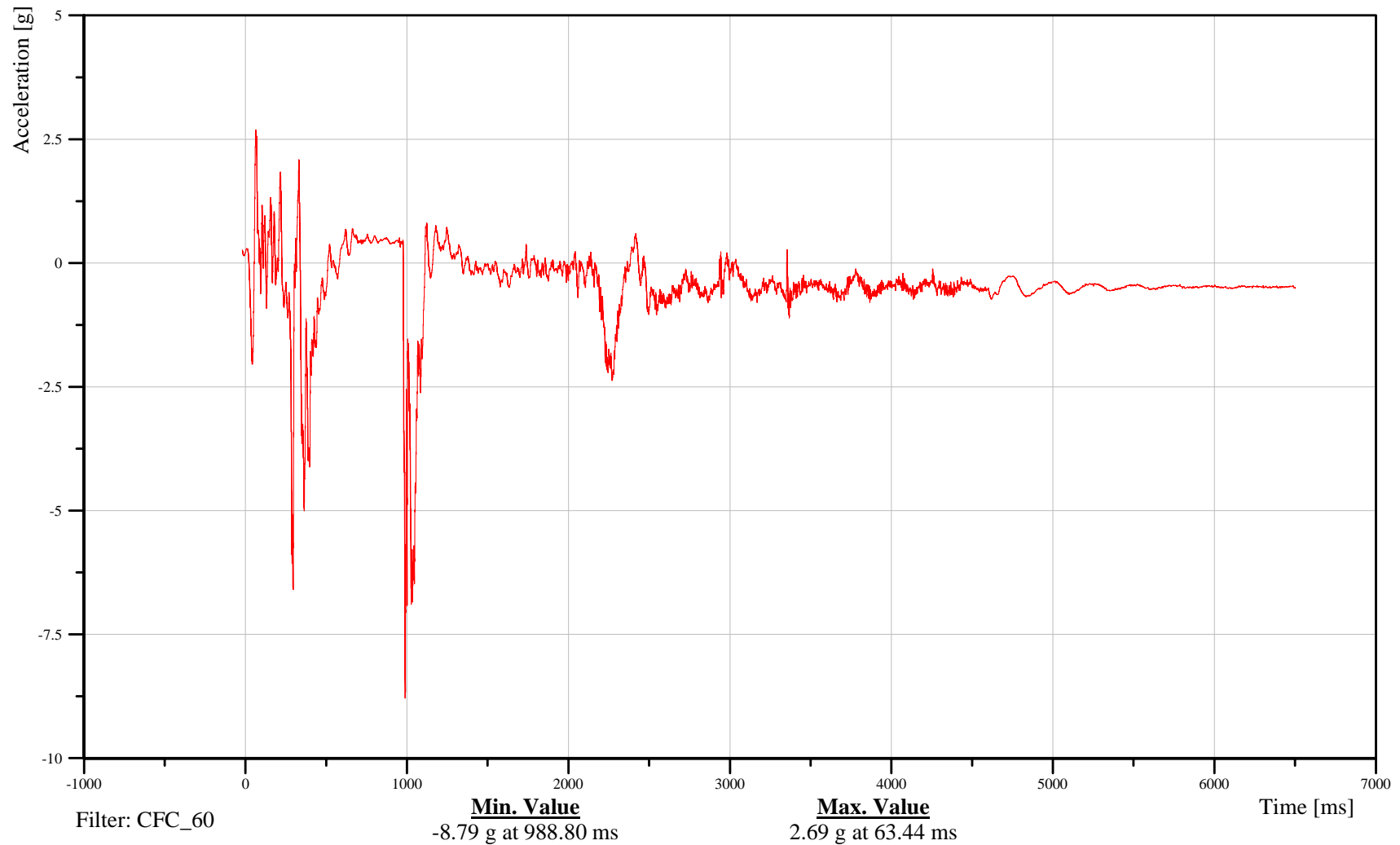
Time: 19:31

Customer: VRTC

102RDK000000ACYD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-172

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

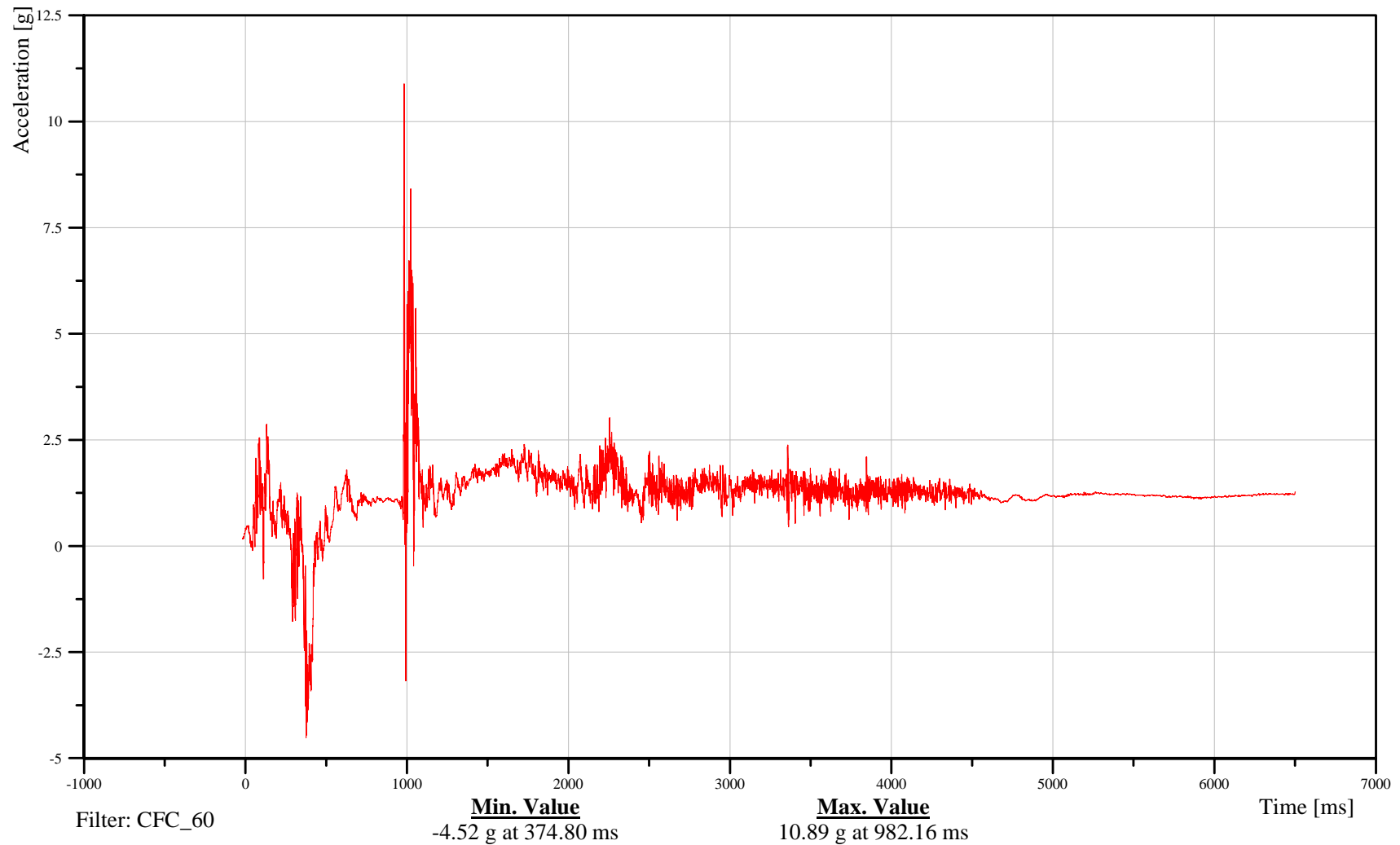
Vehicle Rear Deck Z-Axis Acceleration

Customer: VRTC

102RDK000000ACZD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-173

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

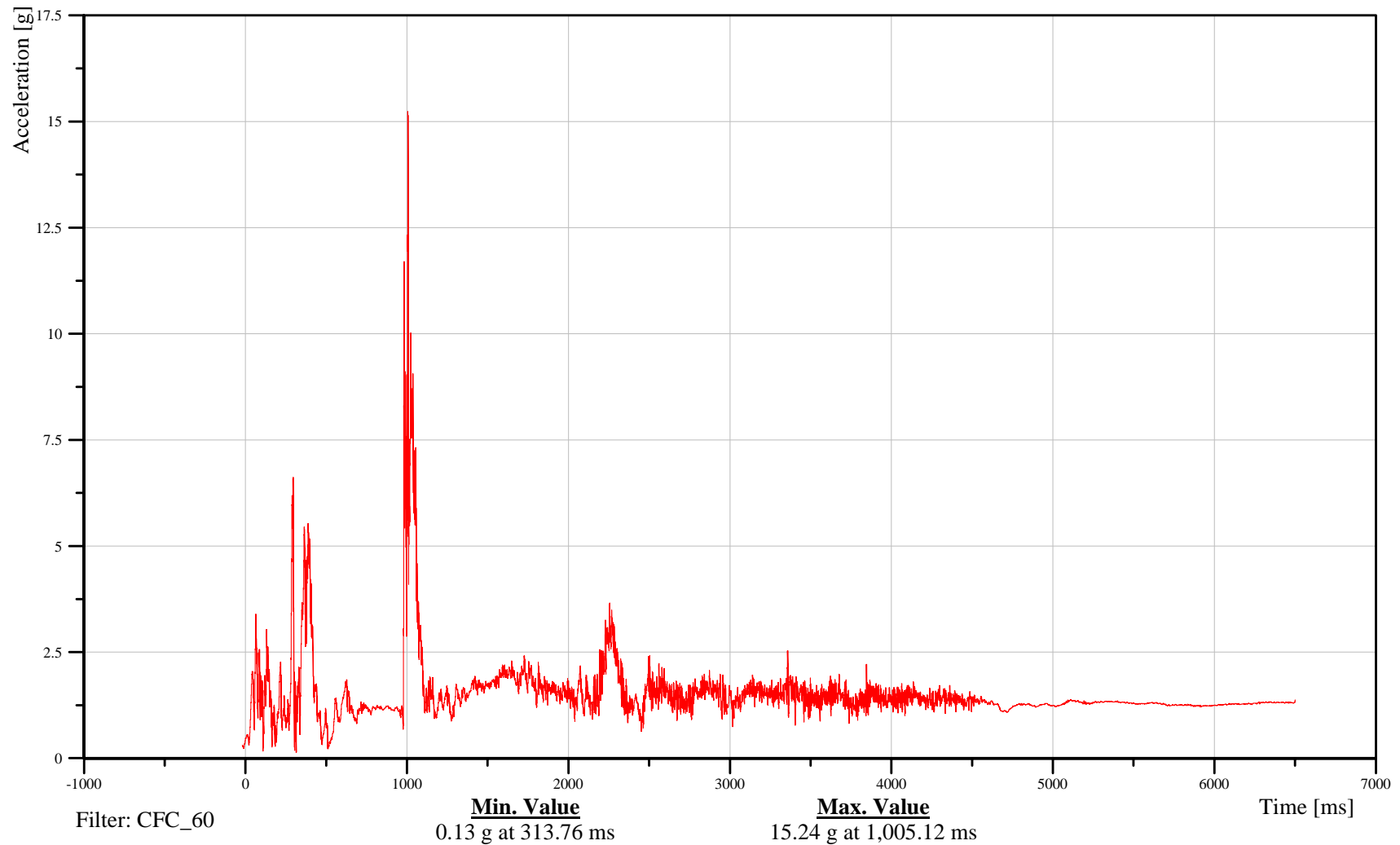
Vehicle Rear Deck Resultant Acceleration

Customer: VRTC

102RDK000000ACXD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-174

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

LF Seat Position (on floor) X-Axis Acceleration

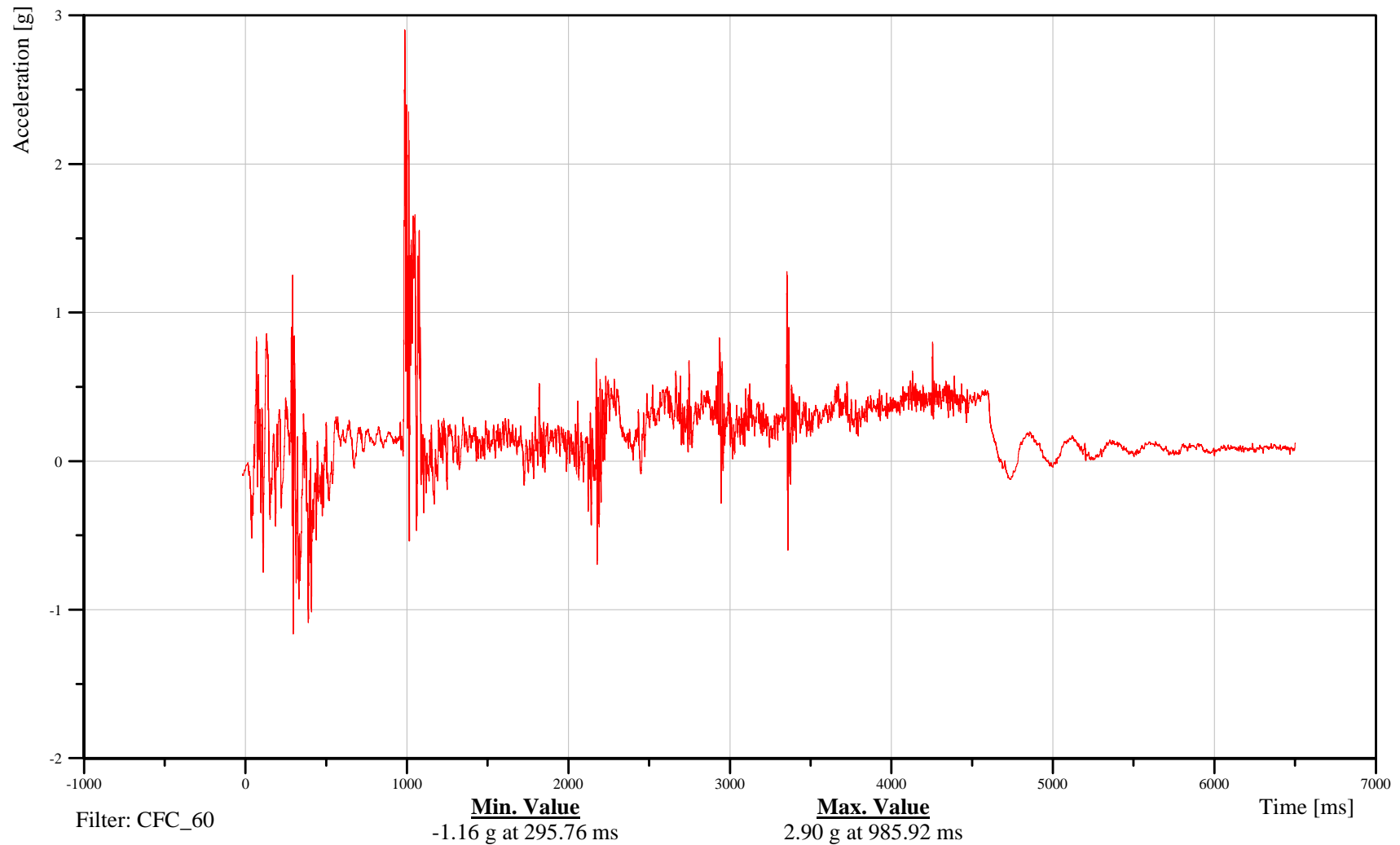
Time: 19:31

Customer: VRTC

11SEAT000000ACXD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-175

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

LF Seat Position (on floor) Y-Axis Acceleration

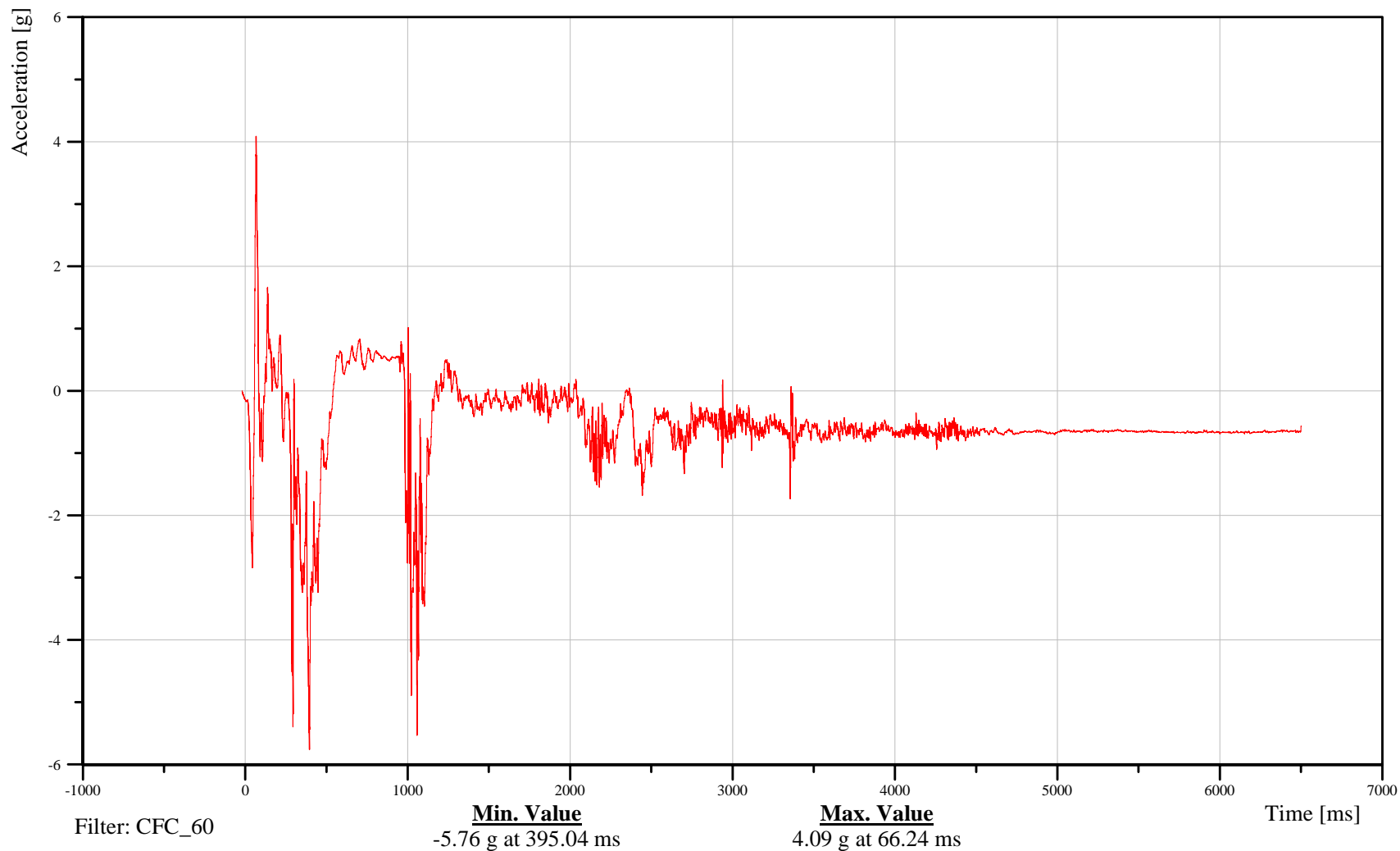
Time: 19:31

Customer: VRTC

11SEAT000000ACYD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-176

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

LF Seat Position (on floor) Z-Axis Acceleration

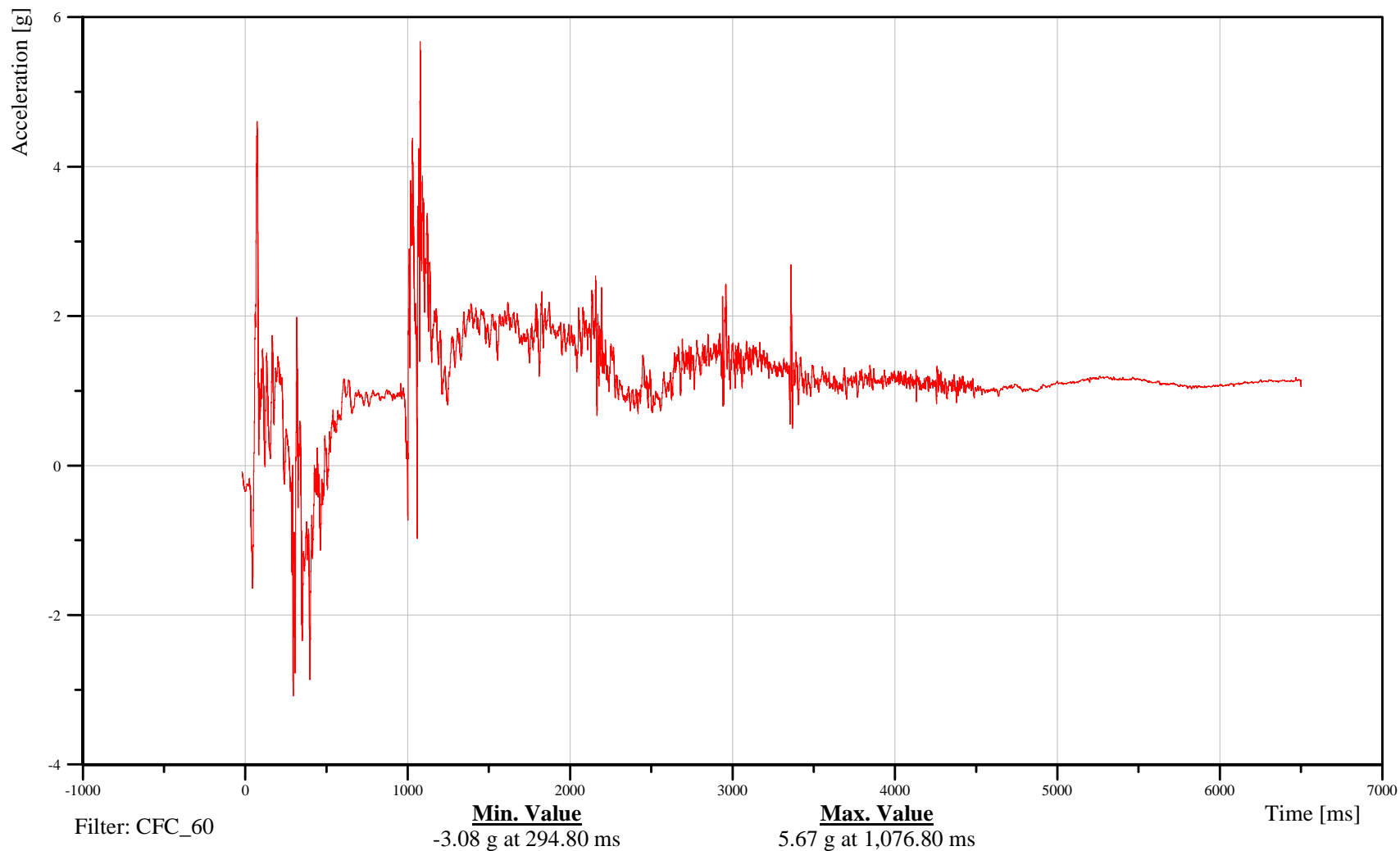
Time: 19:31

Customer: VRTC

11SEAT000000ACZD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-177

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

LF Seat Position (on floor) Resultant Acceleration

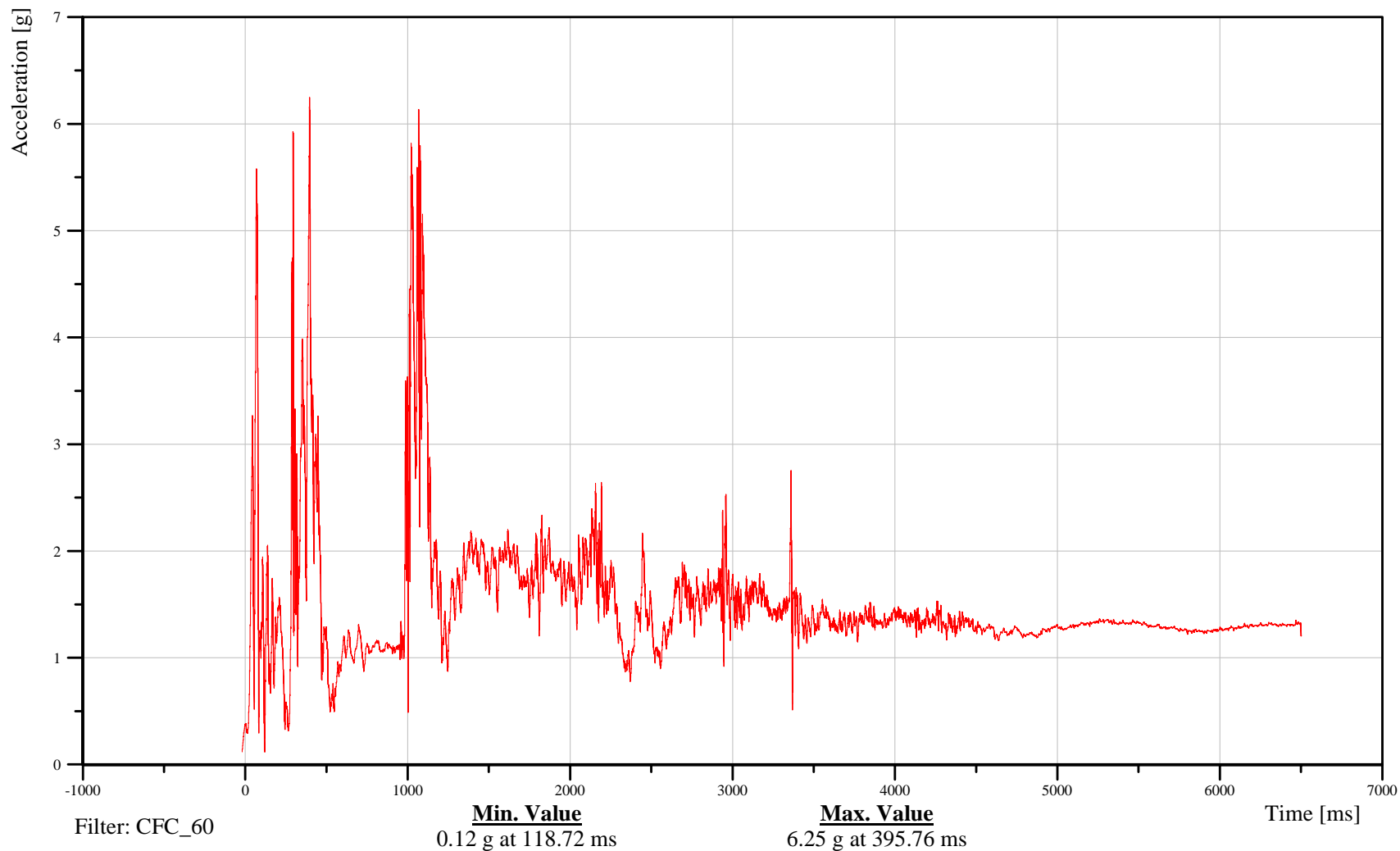
Time: 19:31

Customer: VRTC

11SEAT000000ACRD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-178

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

RF Seat Position (on floor) X-Axis Acceleration

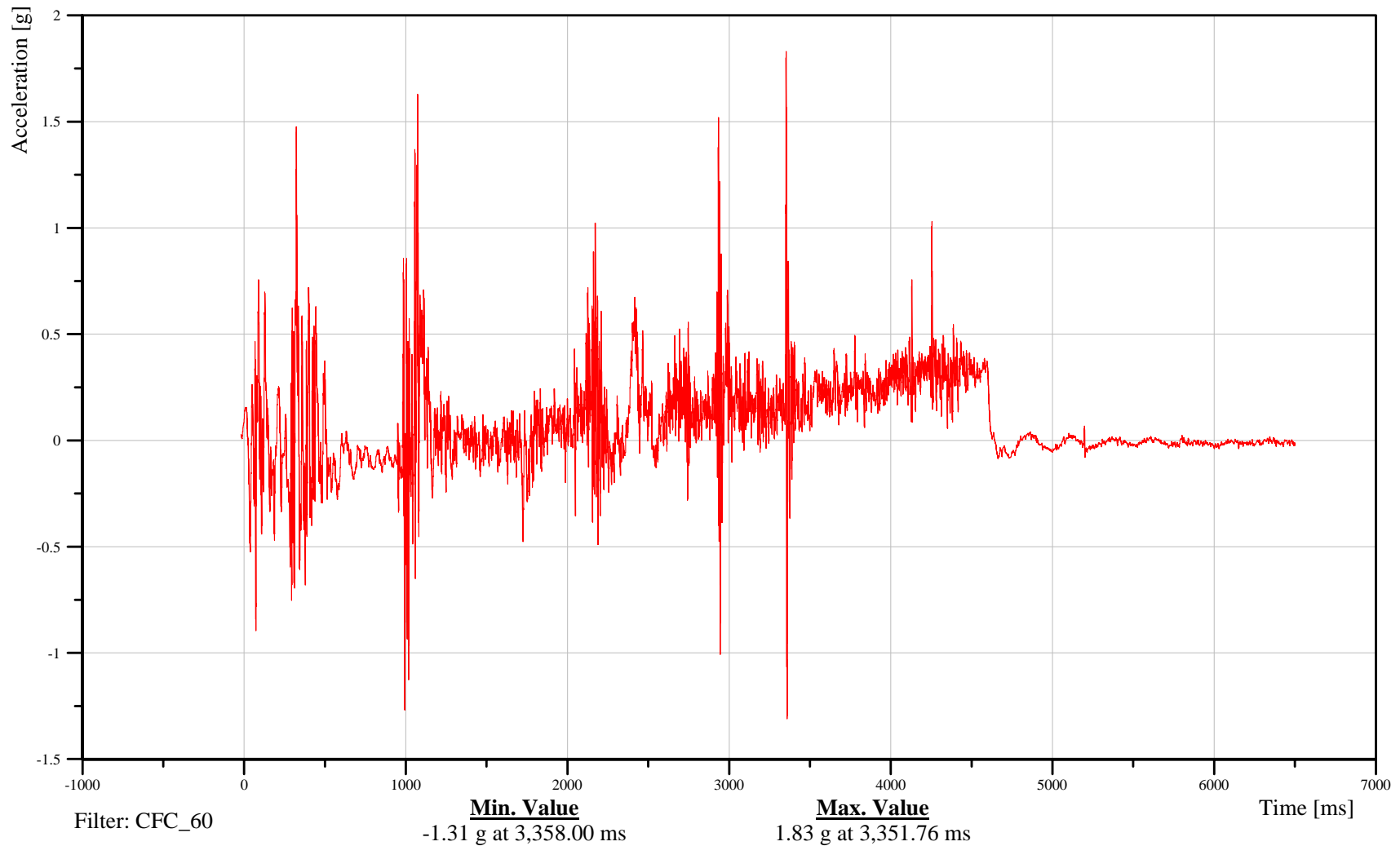
Time: 19:31

Customer: VRTC

13SEAT000000ACXD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-179

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

RF Seat Position (on floor) Y-Axis Acceleration

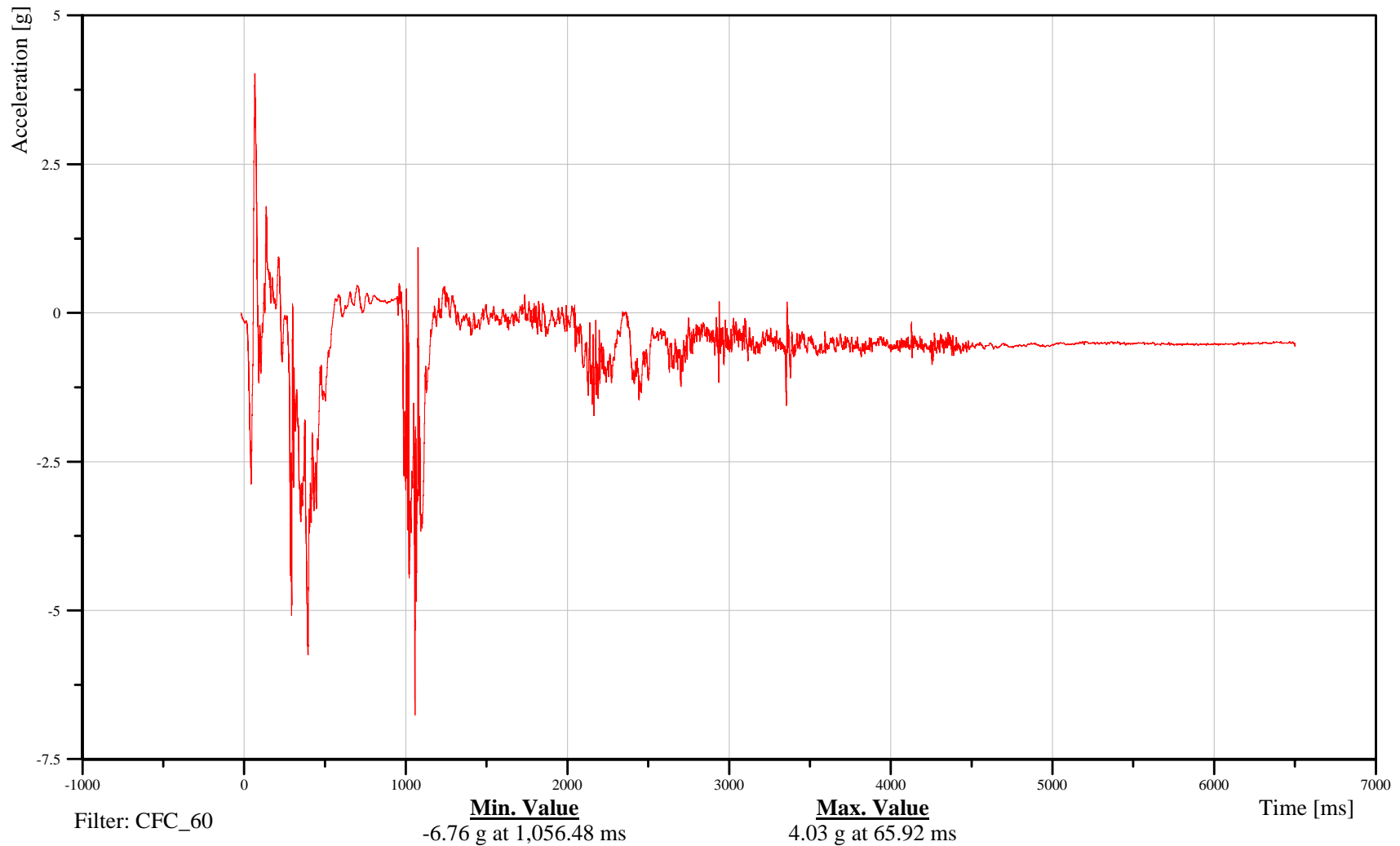
Time: 19:31

Customer: VRTC

13SEAT000000ACYD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-180

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

RF Seat Position (on floor) Z-Axis Acceleration

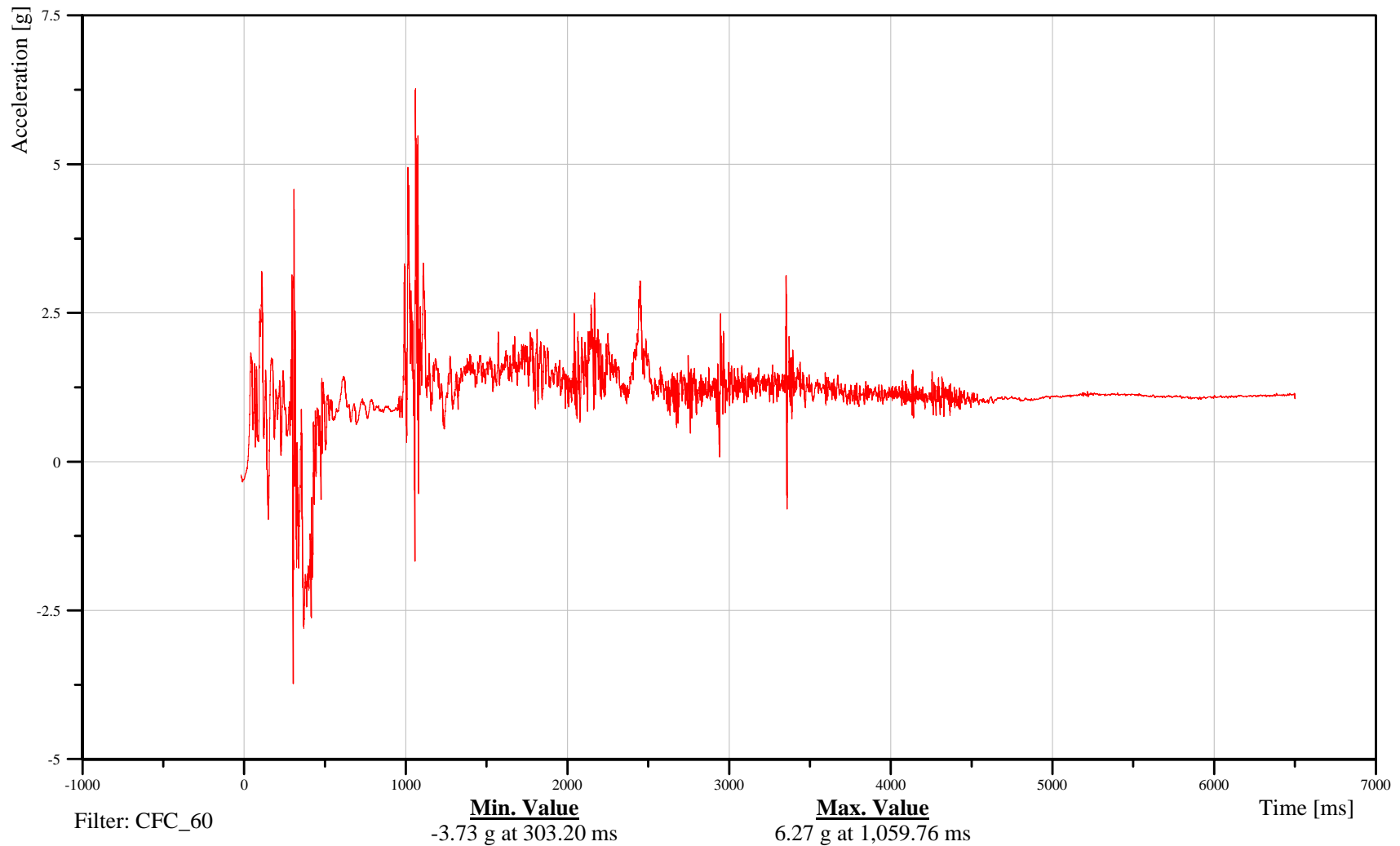
Time: 19:31

Customer: VRTC

13SEAT000000ACZD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-181

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

RF Seat Position (on floor) Resultant Acceleration

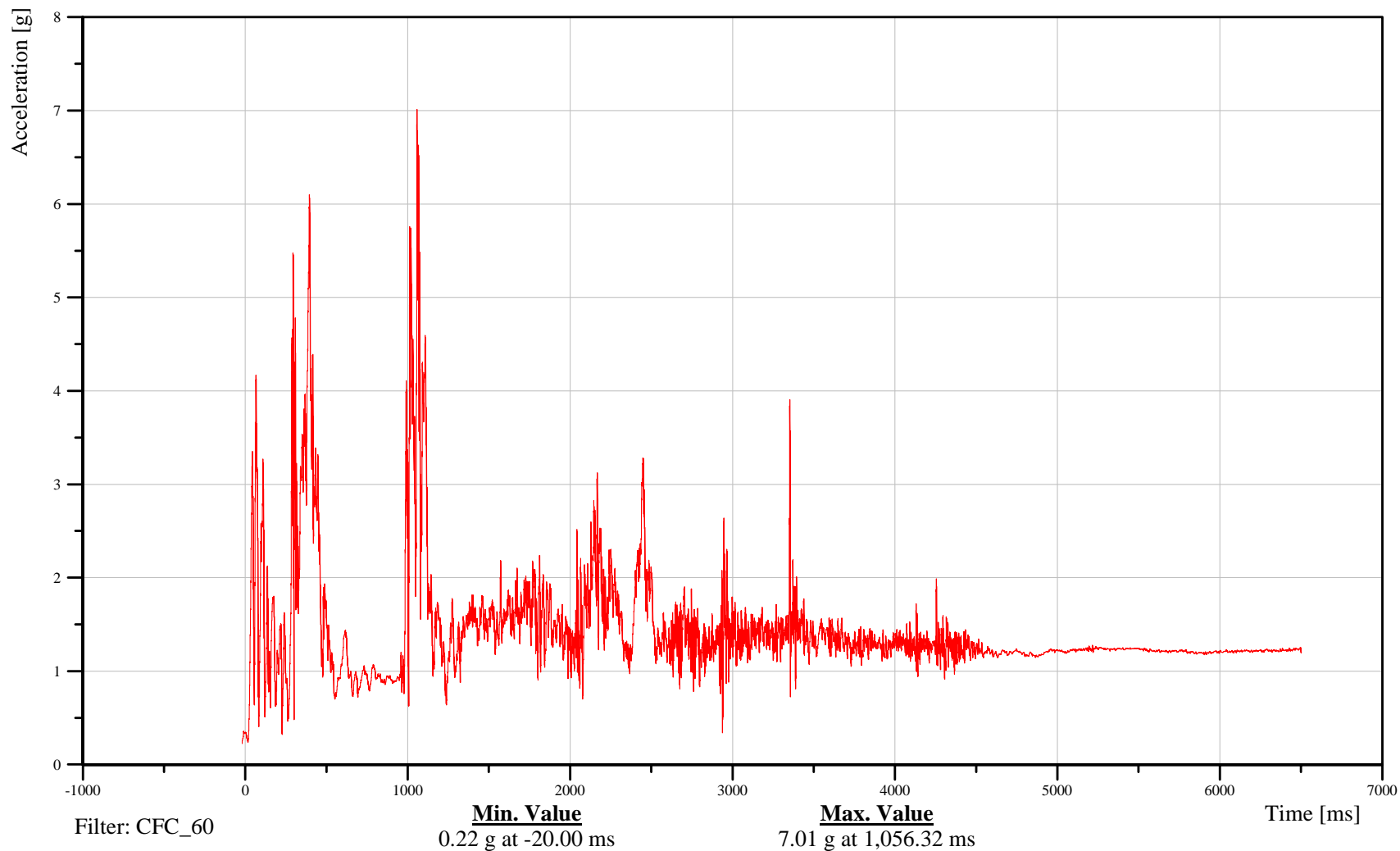
Time: 19:31

Customer: VRTC

13SEAT000000ACRD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-182

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

LR Seat Position (on floor) X-Axis Acceleration

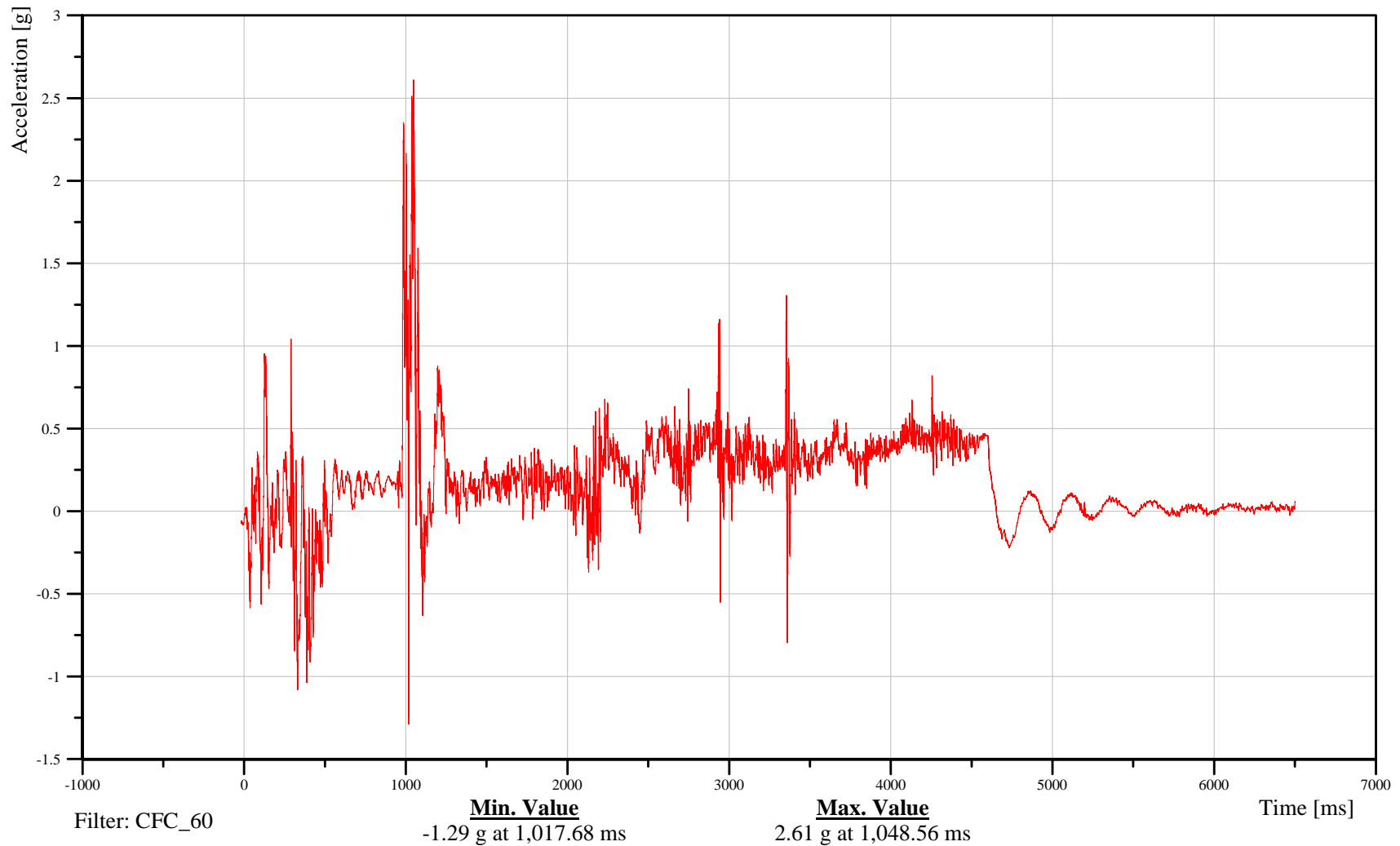
Time: 19:31

Customer: VRTC

14SEAT000000ACXD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-183

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

LR Seat Position (on floor) Y-Axis Acceleration

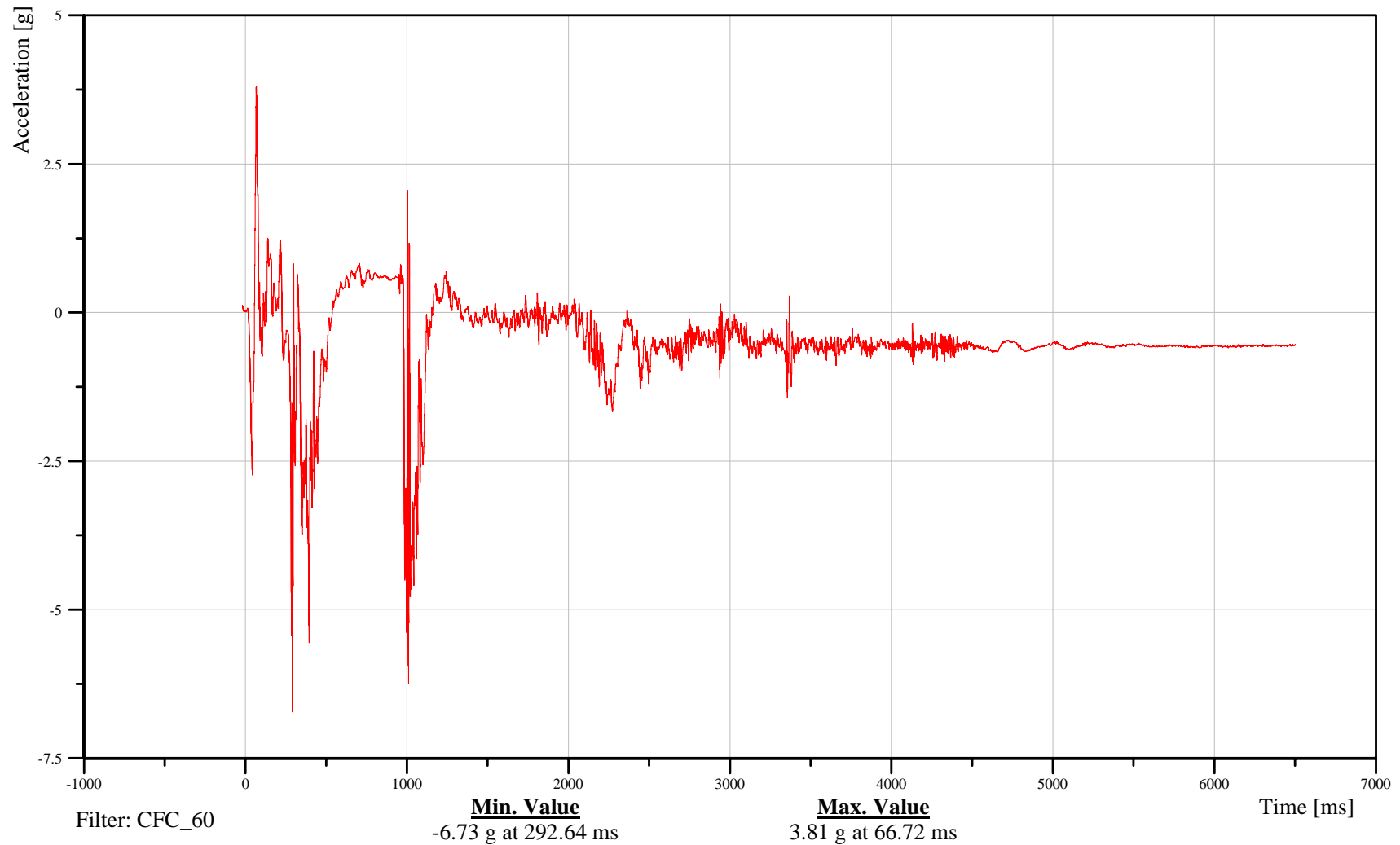
Time: 19:31

Customer: VRTC

14SEAT000000ACYD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-184

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

LR Seat Position (on floor) Z-Axis Acceleration

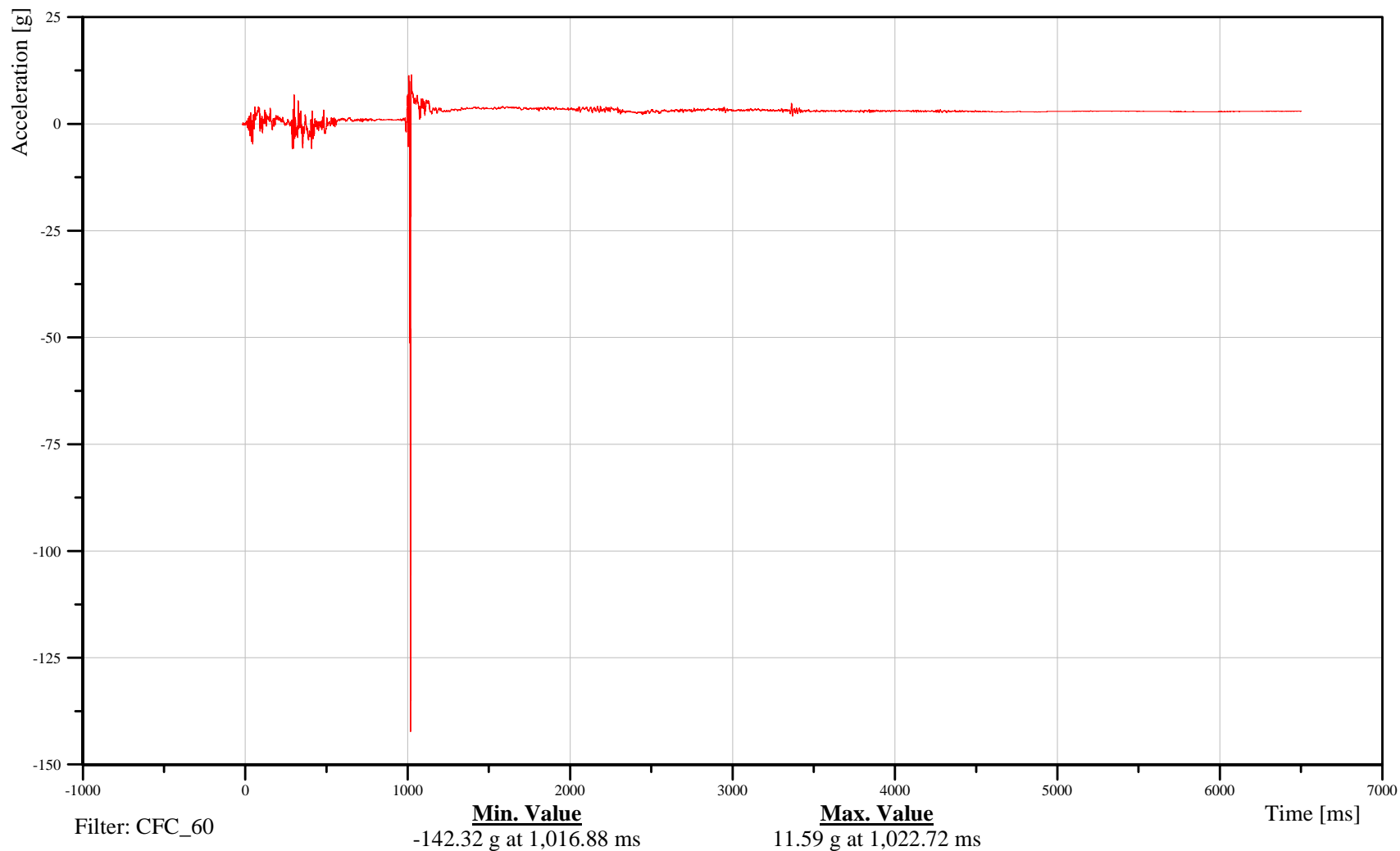
Time: 19:31

Customer: VRTC

14SEAT000000ACZD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-185

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

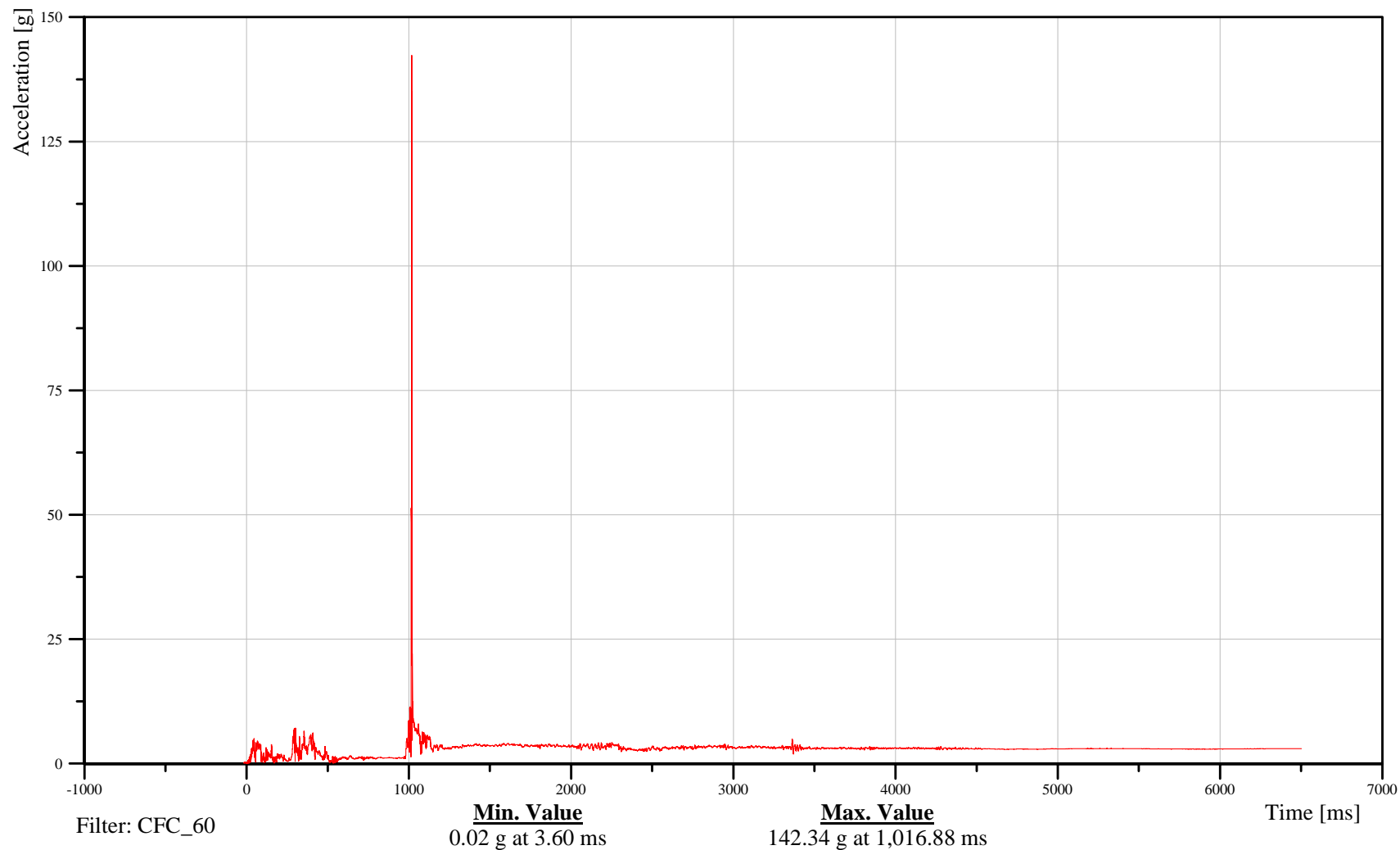
LR Seat Position (on floor) Resultant Acceleration

Customer: VRTC

14SEAT000000ACRD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-186

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

RR Seat Position (on floor) X-Axis Acceleration

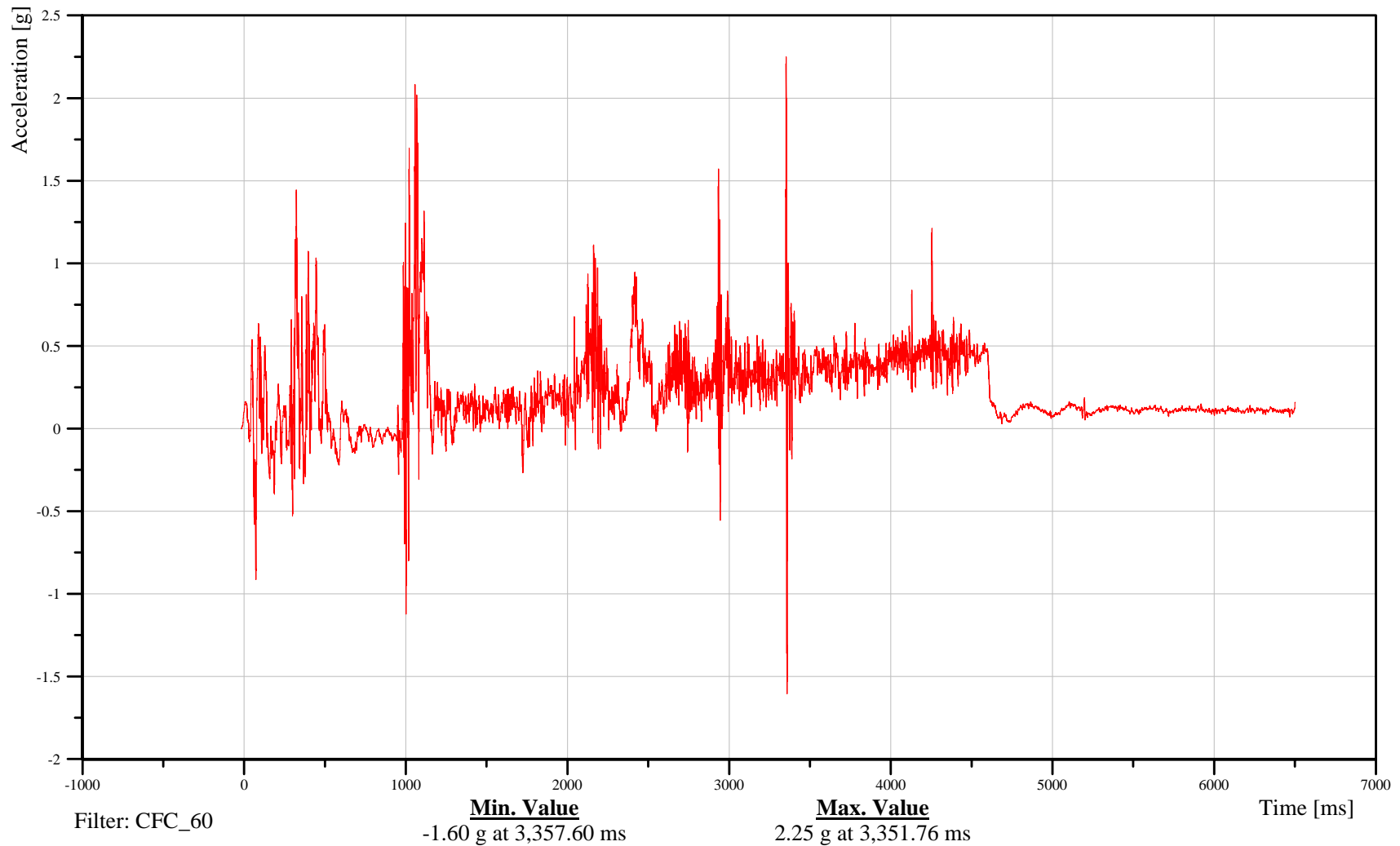
Time: 19:31

Customer: VRTC

16SEAT000000ACXD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-187

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

RR Seat Position (on floor) Y-Axis Acceleration

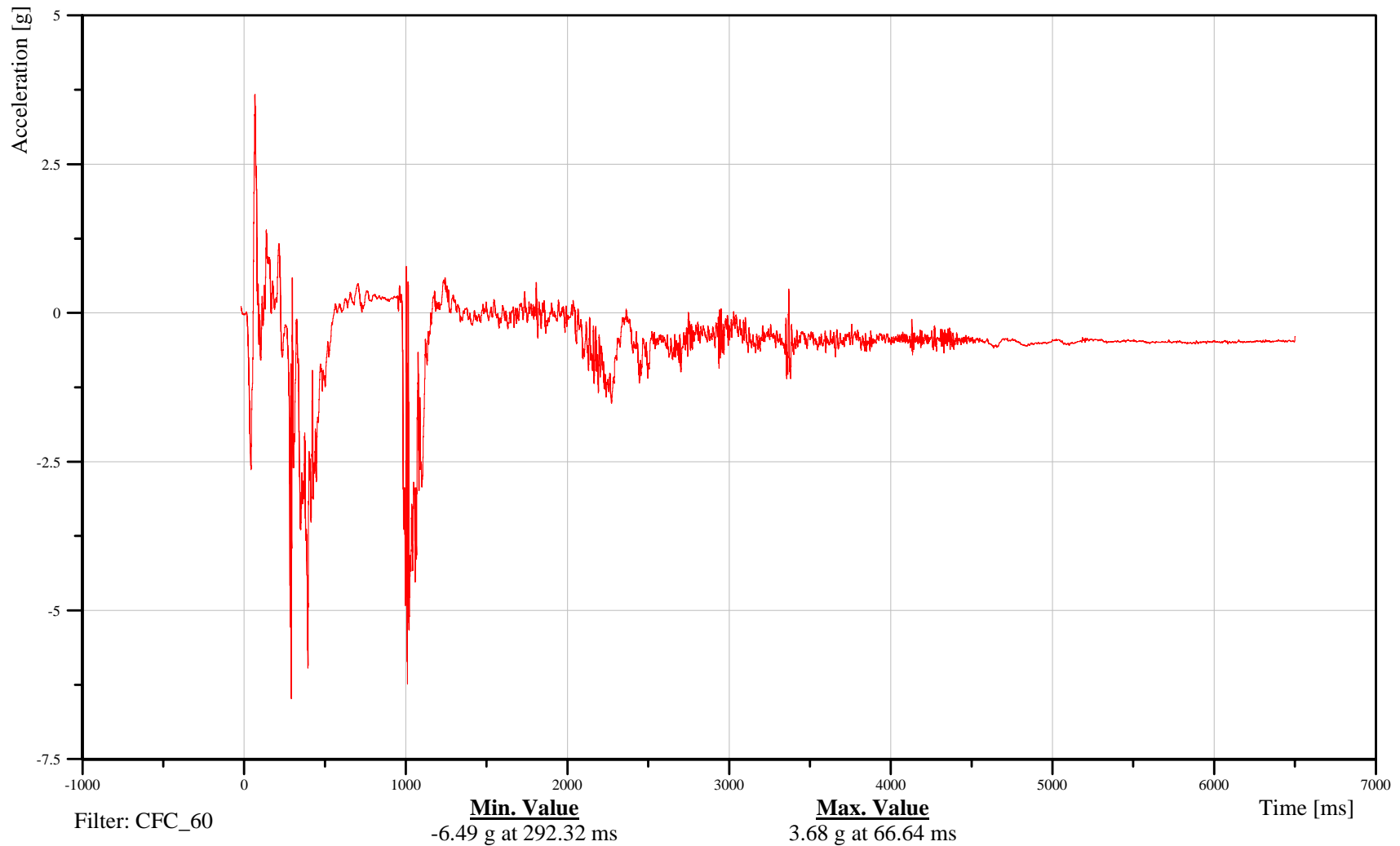
Time: 19:31

Customer: VRTC

16SEAT000000ACYD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-188

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

RR Seat Position (on floor) Z-Axis Acceleration

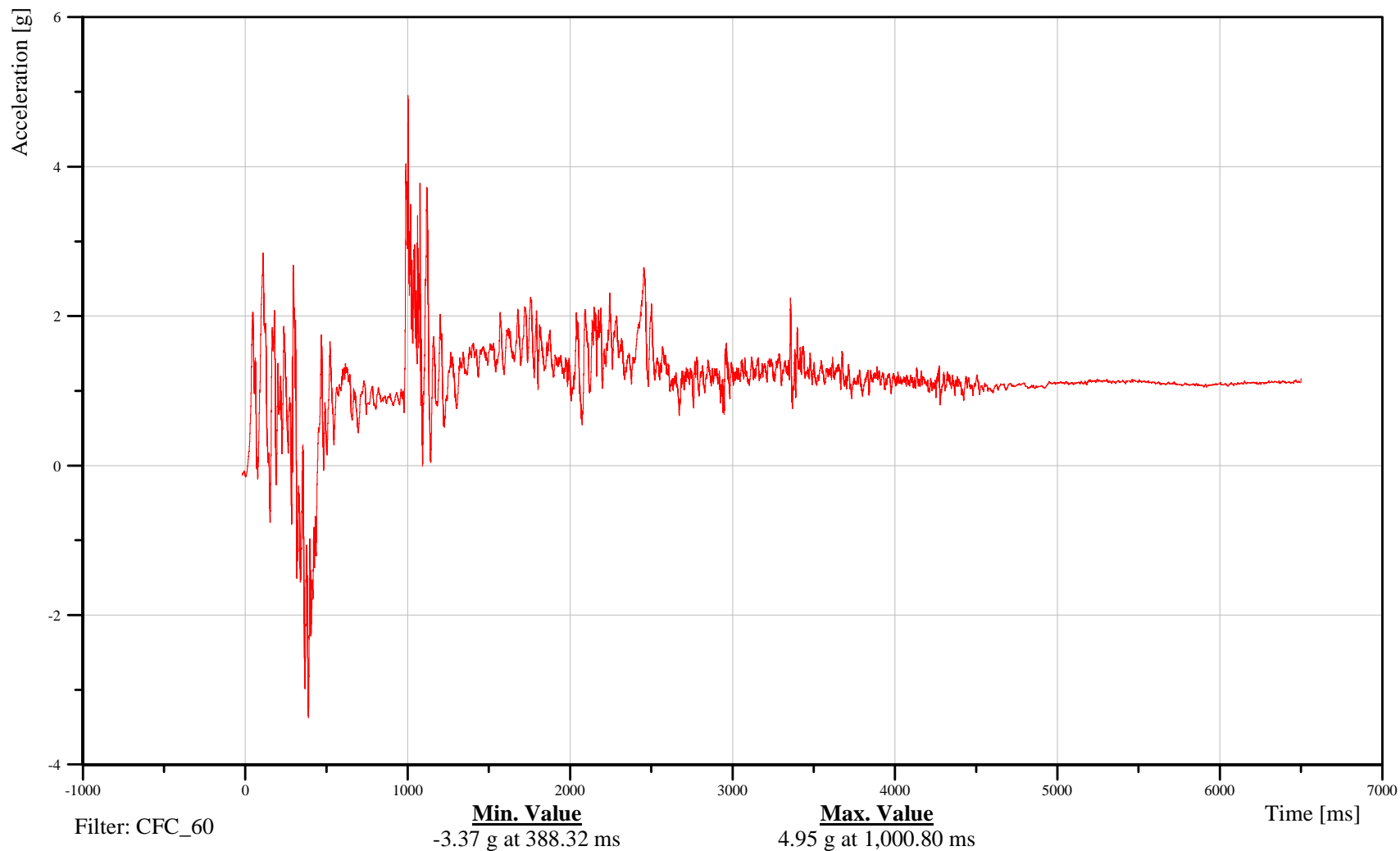
Time: 19:31

Customer: VRTC

16SEAT000000ACZD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-189

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

RR Seat Position (on floor) Resultant Acceleration

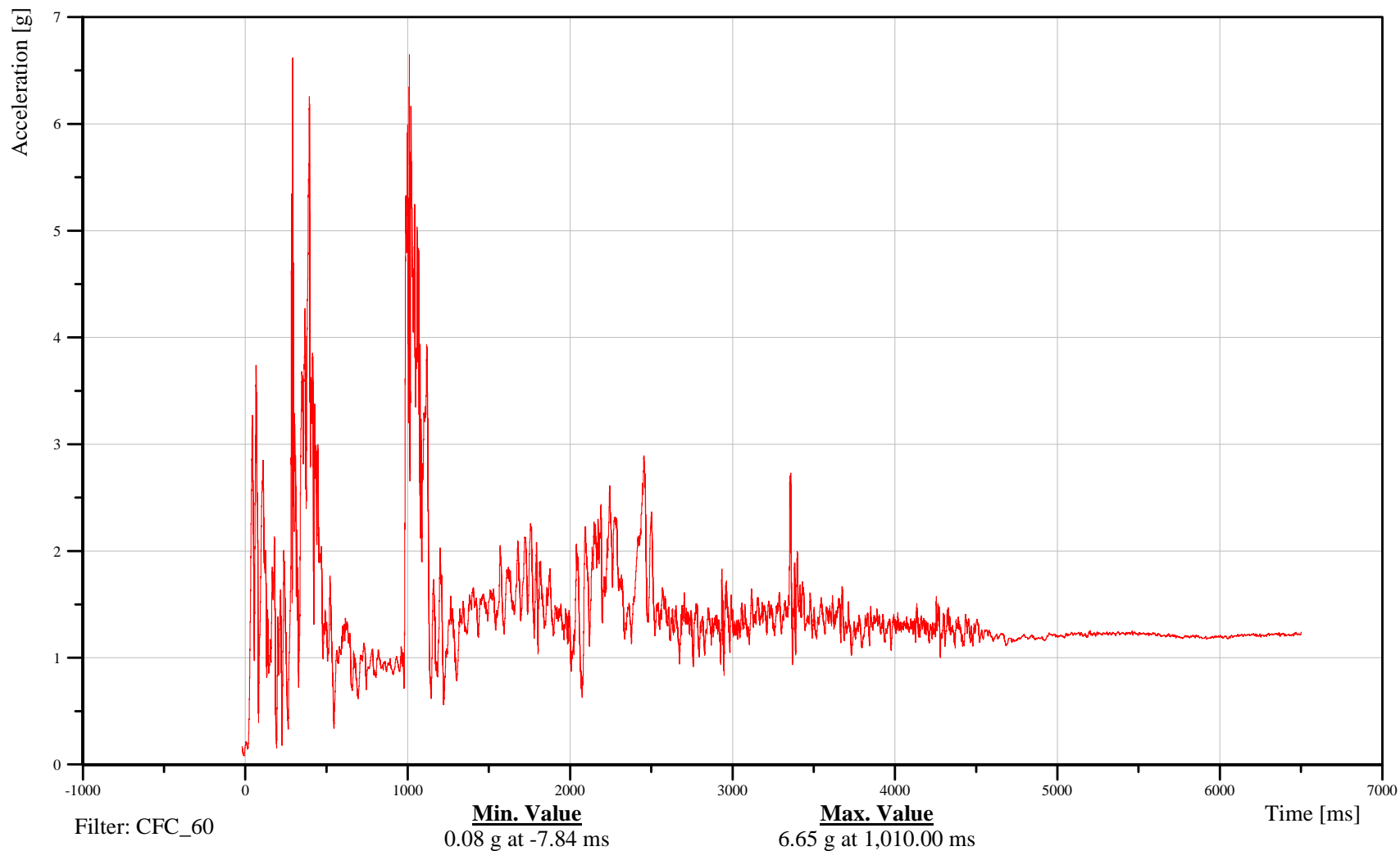
Time: 19:31

Customer: VRTC

16SEAT000000ACRD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-190

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

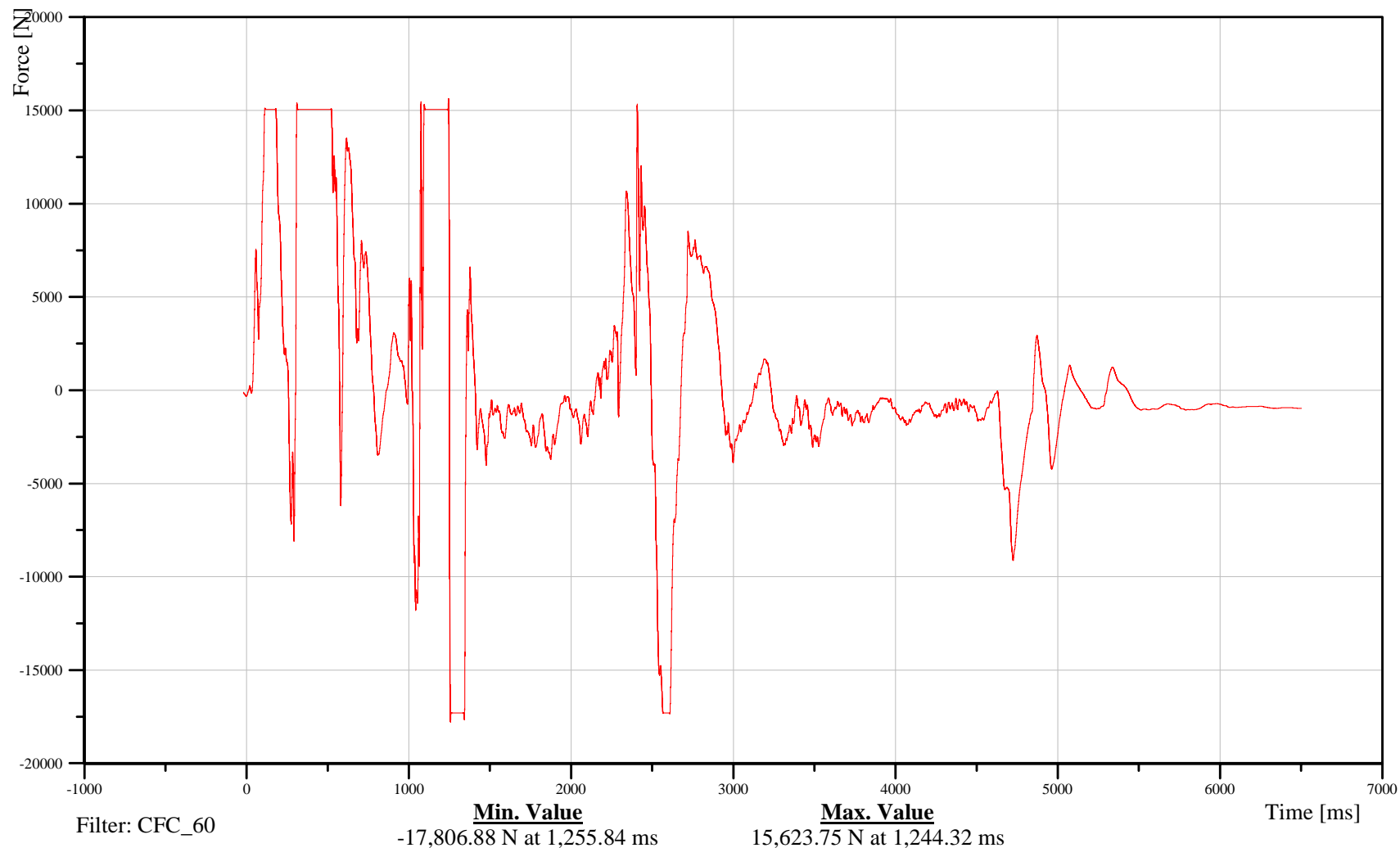
Driver Lap Belt Force

Customer: VRTC

11SEBE0000B5FOOD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-191

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009
Time: 19:31

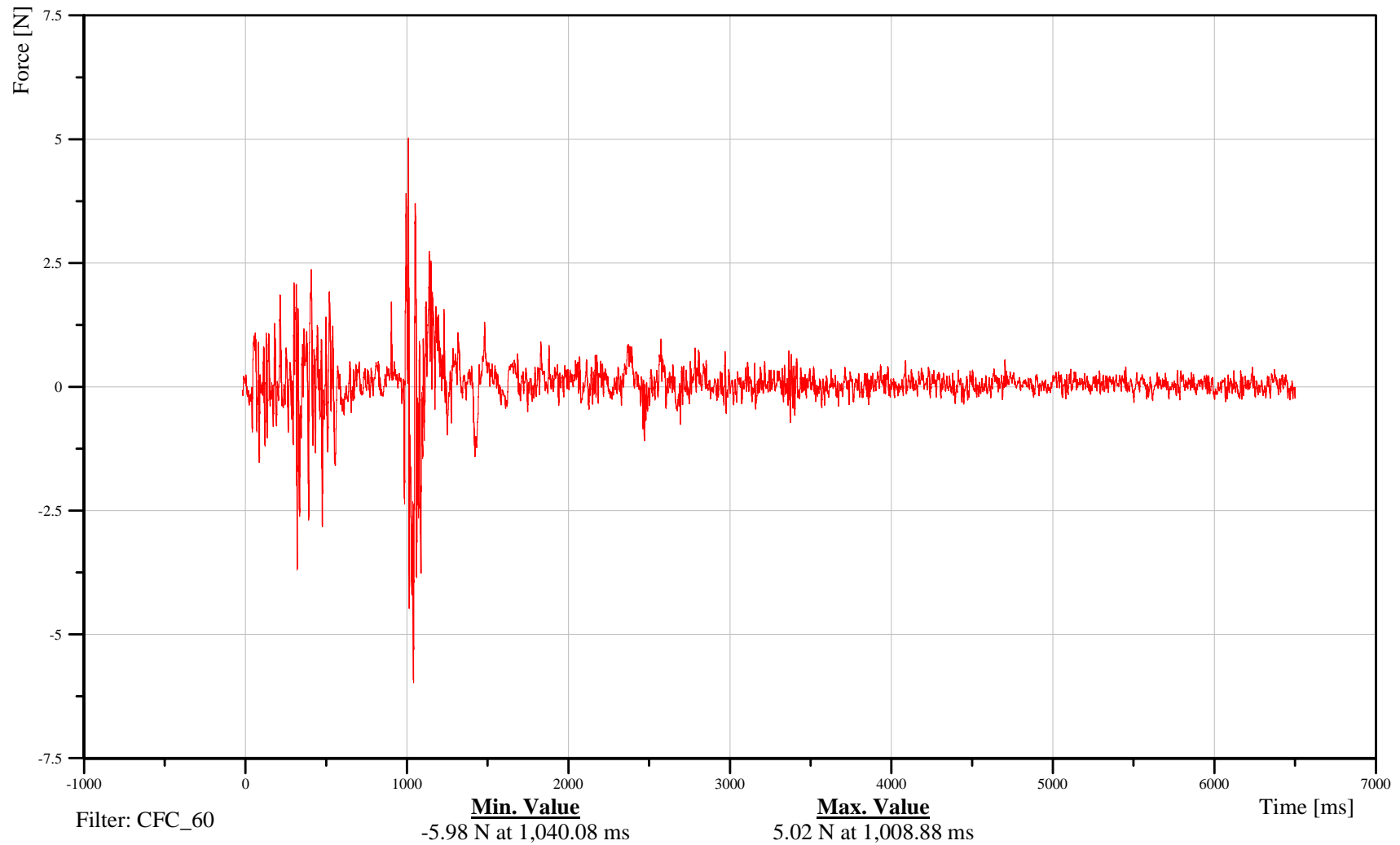
Driver Shoulder Belt Force

Customer: VRTC

11SEBE0000B3FOOD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-192

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009
Time: 19:31

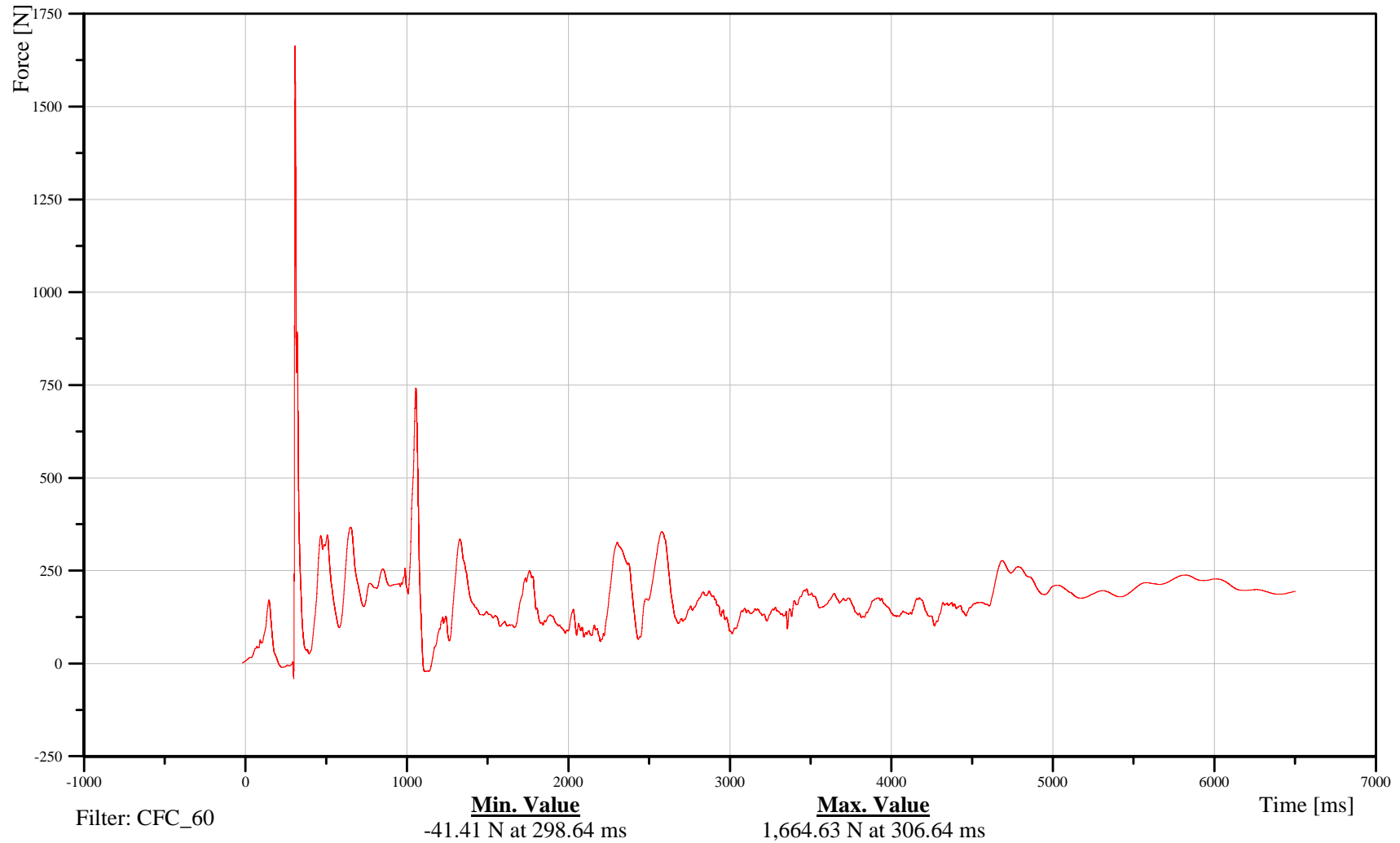
Right Front Passenger Lap Belt Force

Customer: VRTC

13SEBE0000B5FOOD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-193

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

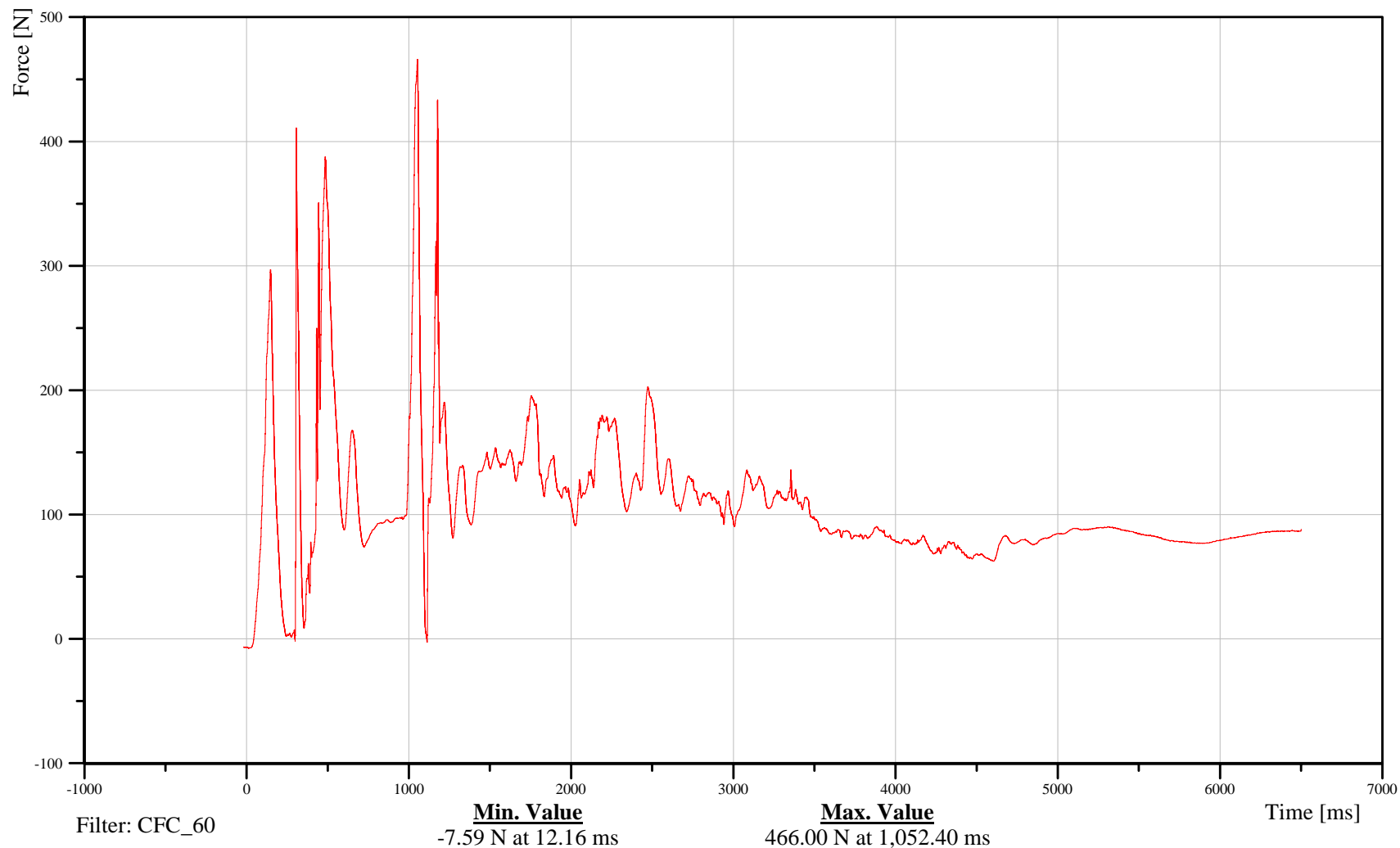
Right Front Passenger Shoulder Belt Force

Customer: VRTC

13SEBE0000B3FOOD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-194

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

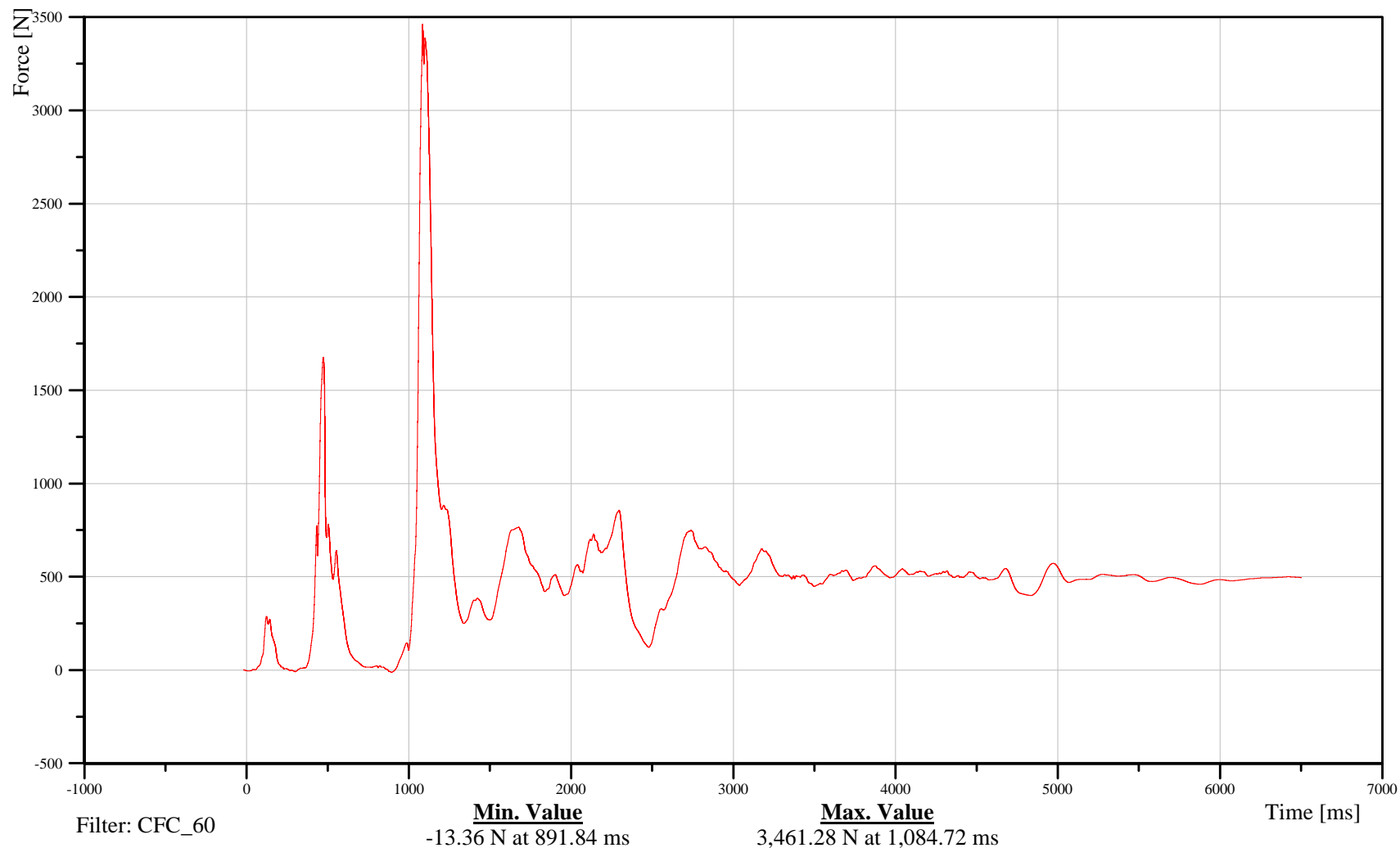
Left Rear Passenger Lap Belt Force

Customer: VRTC

14SEBE0000B5FOOD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-195

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

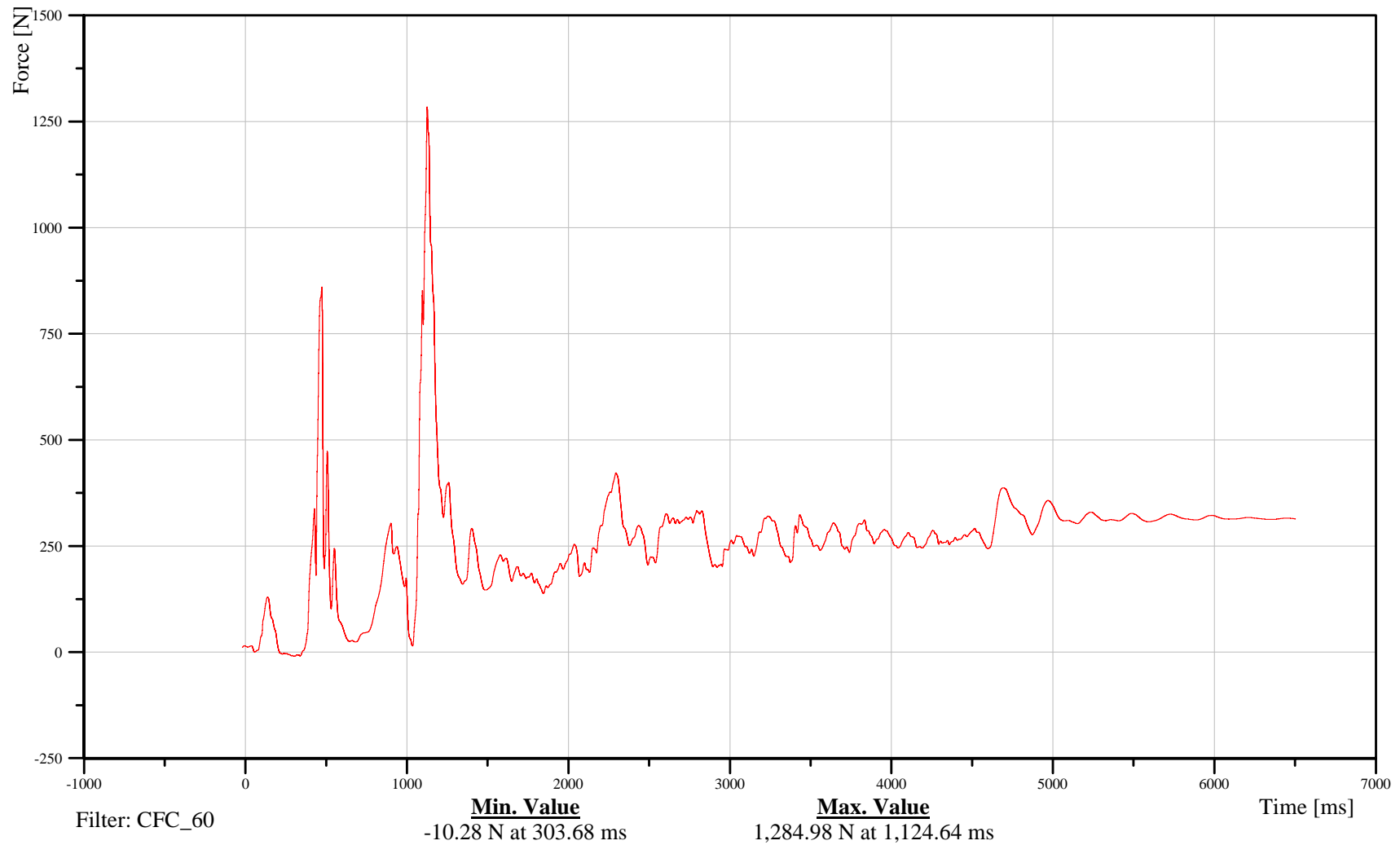
Left Rear Passenger Shoulder Belt Force

Customer: VRTC

14SEBE0000B3FOOD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-196

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

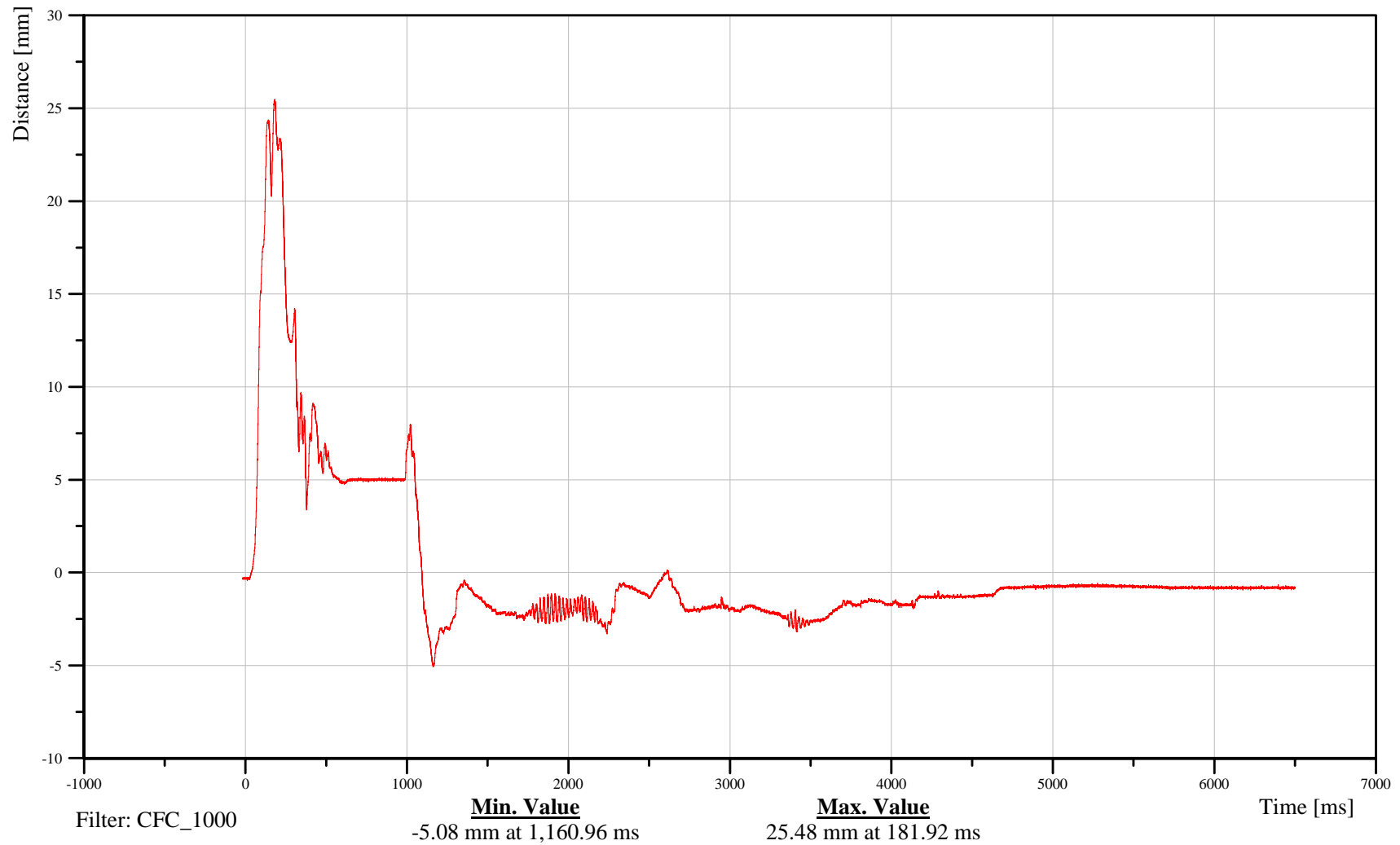
Right Front Passenger Belt Spool Potentiometer

Customer: VRTC

13SEBE0000B5DS0A

TRC Inc. Test Lab: CTF

Test Number: 091022



B-197

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009
Time: 19:31

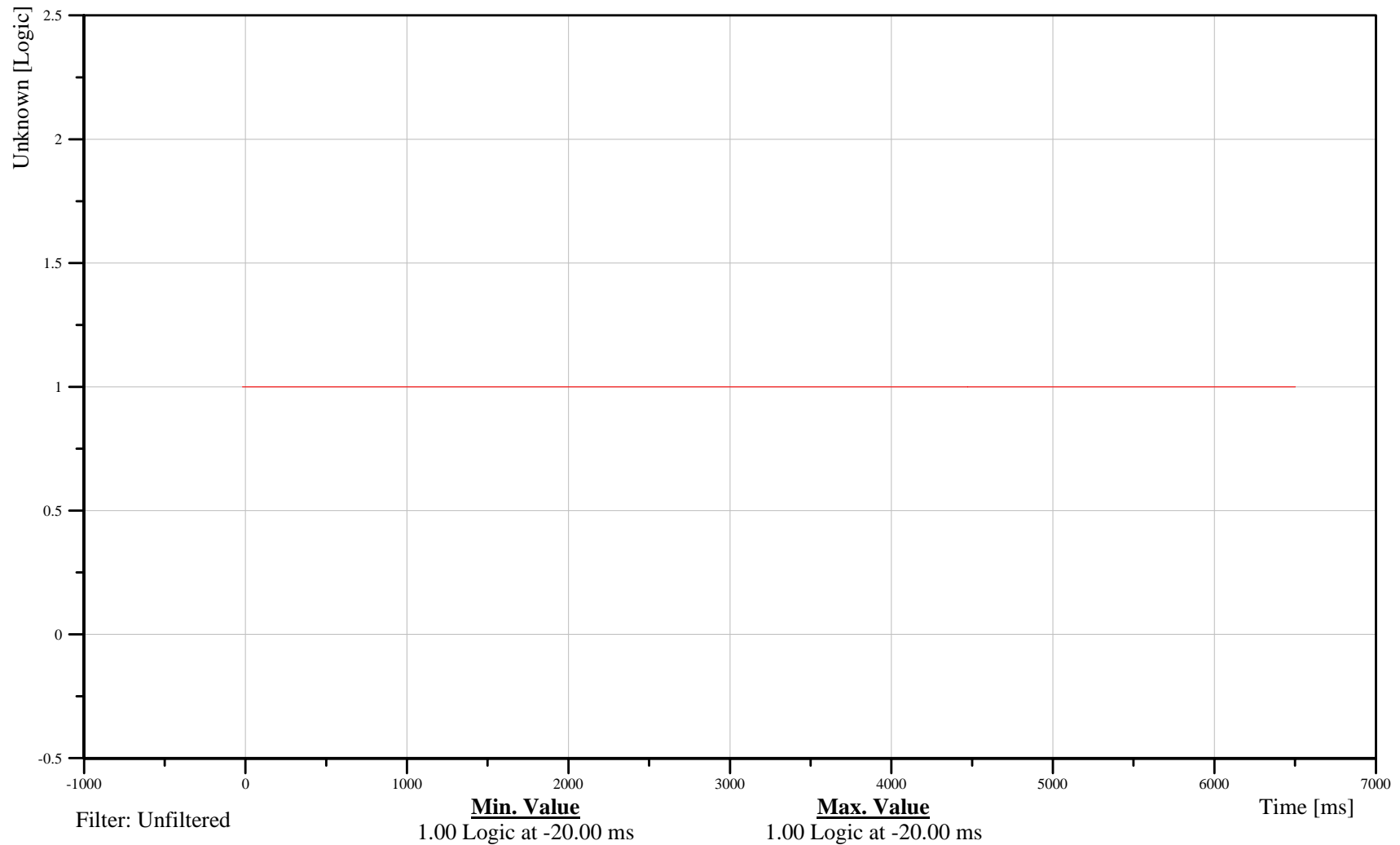
Driver Head Contact

Customer: VRTC

11CONT000023EV00

TRC Inc. Test Lab: CTF

Test Number: 091022



B-198

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009
Time: 19:31

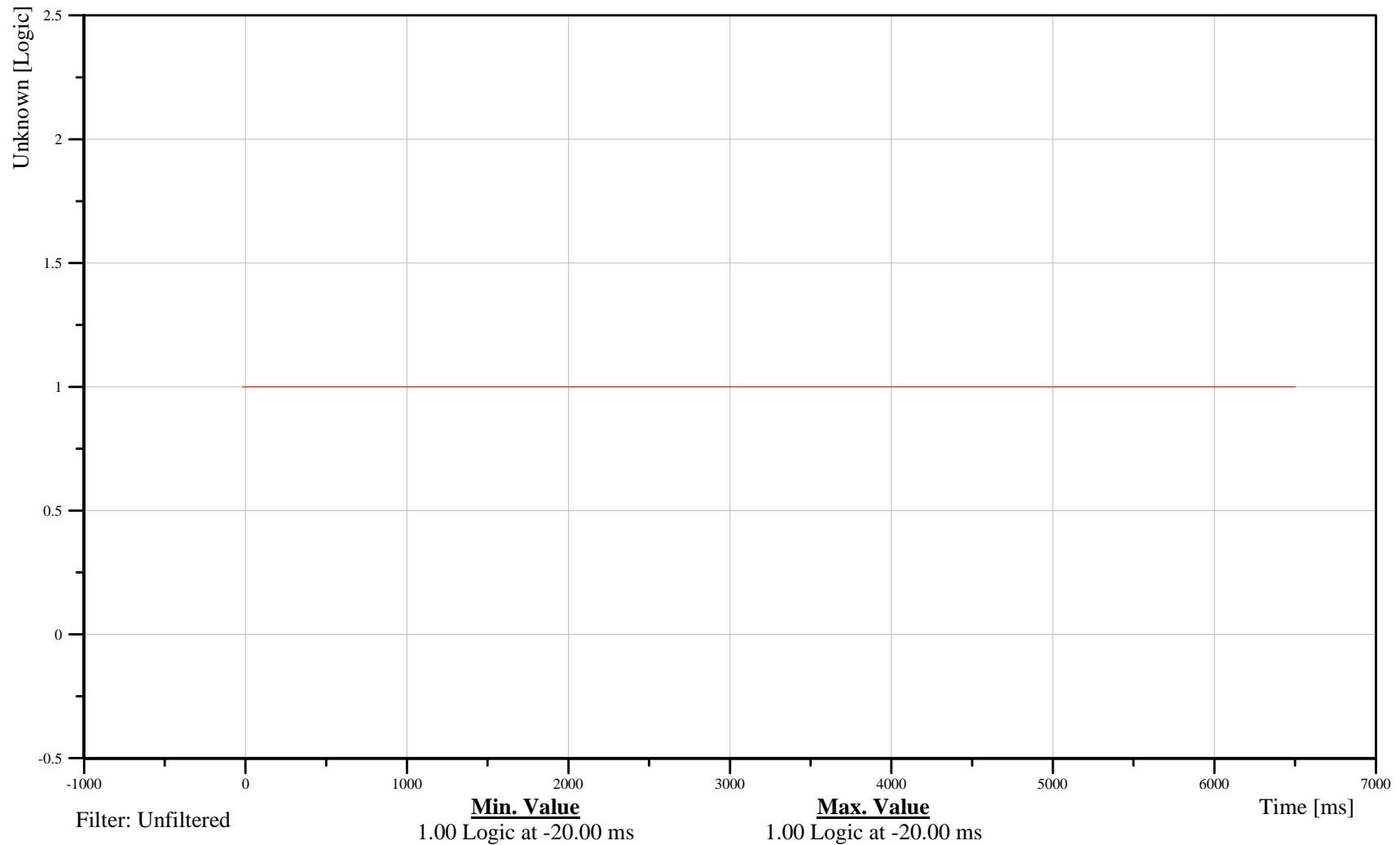
Driver Thorax Contact

Customer: VRTC

11CONT000024EV00

TRC Inc. Test Lab: CTF

Test Number: 091022



B-199

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009
Time: 19:31

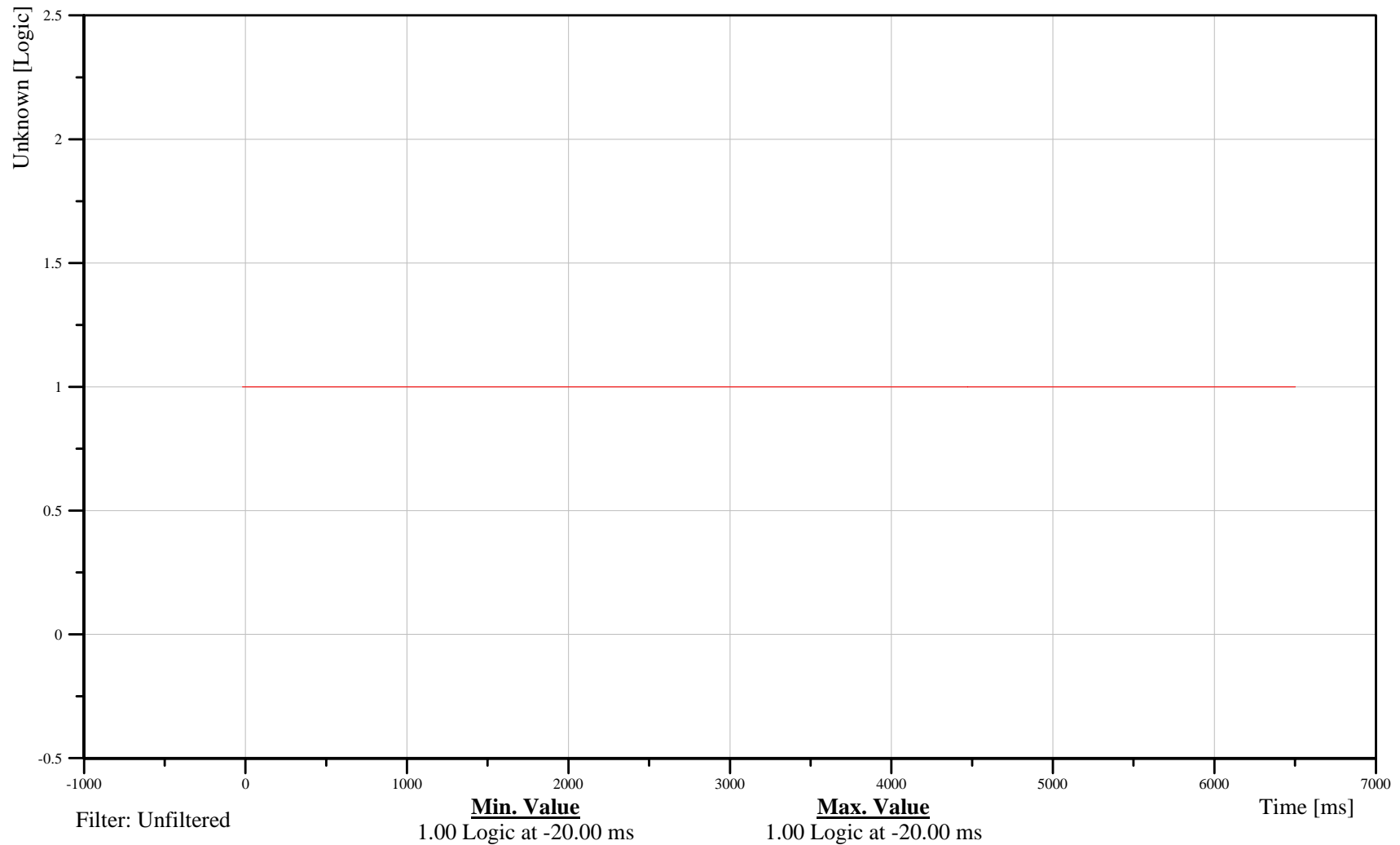
Driver Pelvis Contact

Customer: VRTC

11CONT000025EV00

TRC Inc. Test Lab: CTF

Test Number: 091022



B-200

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

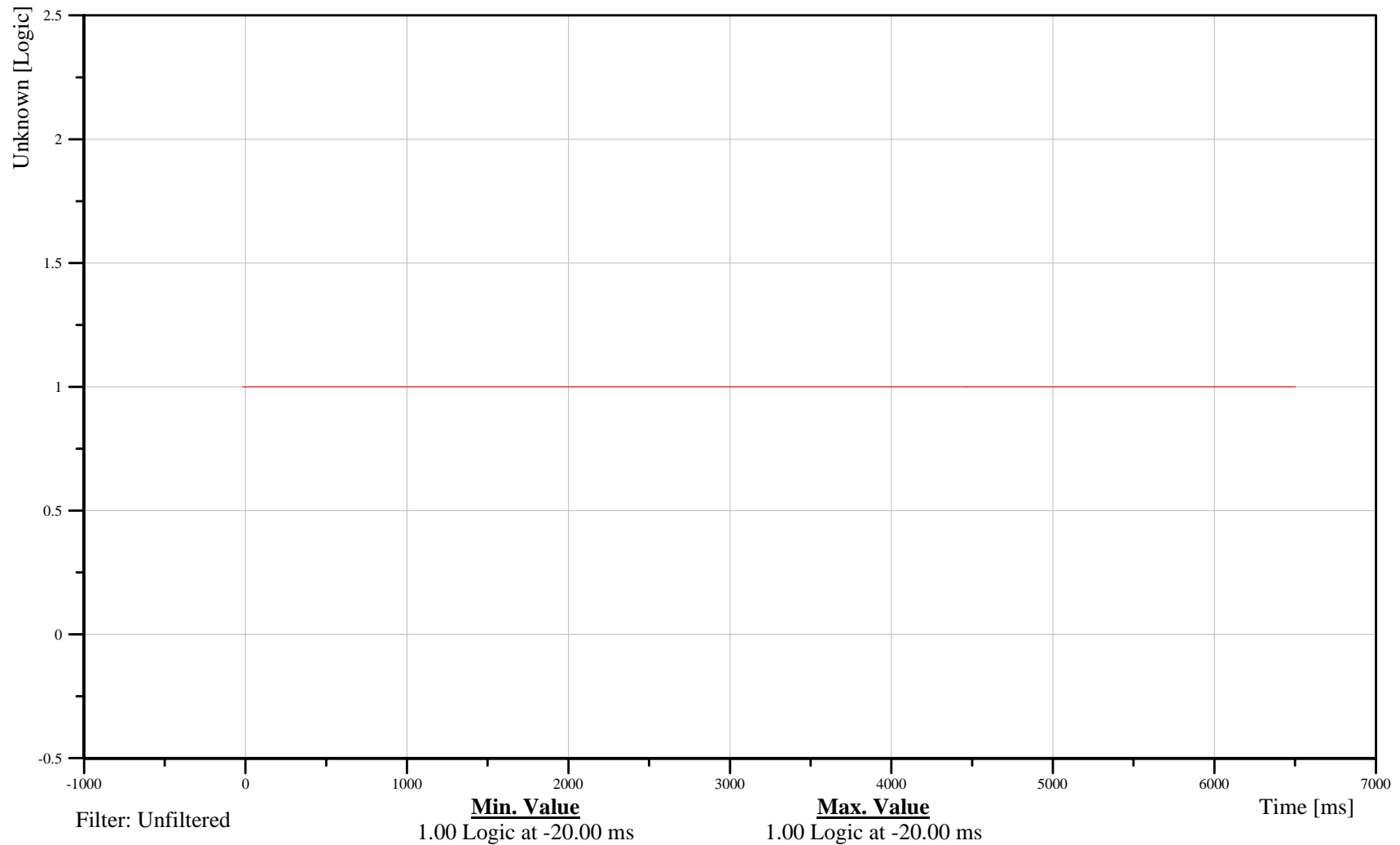
Right Front Passenger Head Contact Switch

Customer: VRTC

13CONT000026EV00

TRC Inc. Test Lab: CTF

Test Number: 091022



B-201

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

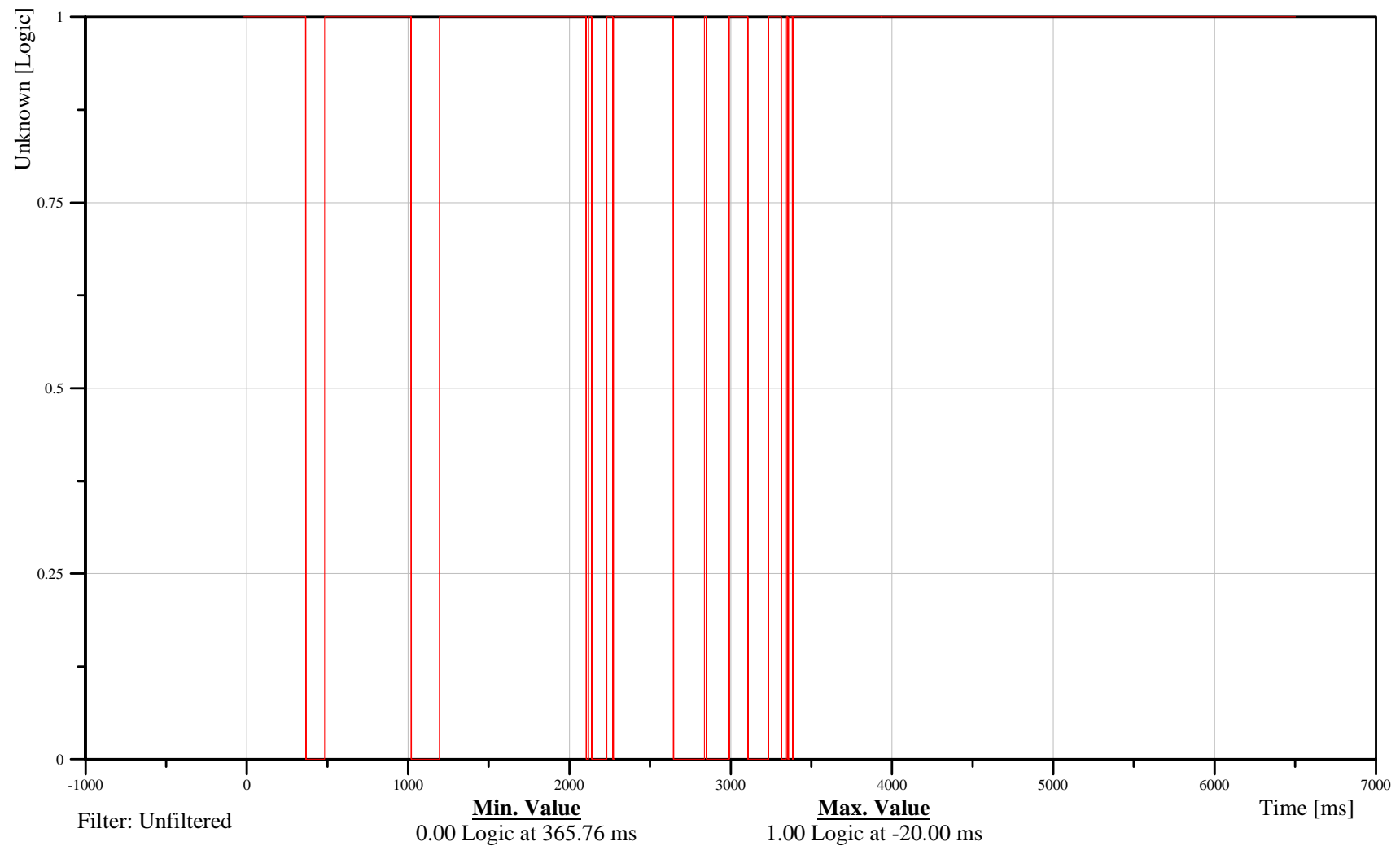
Right Front Passenger Thorax Contact Switch

Customer: VRTC

13CONT000027EV00

TRC Inc. Test Lab: CTF

Test Number: 091022



B-202

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009
Time: 19:31

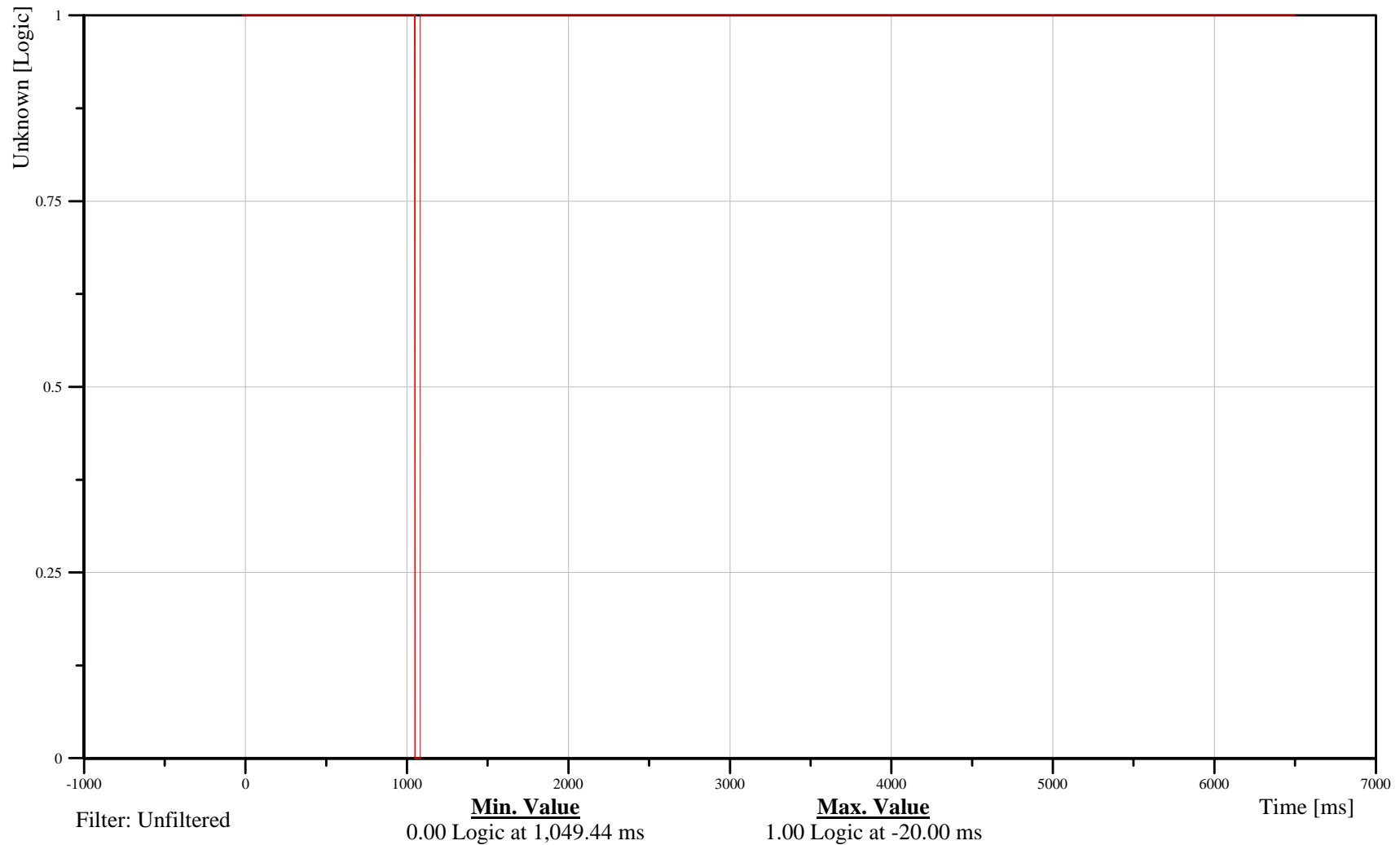
Right Front Passenger Pelvis Contact Switch

Customer: VRTC

13CONT000028EV00

TRC Inc. Test Lab: CTF

Test Number: 091022



B-203

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

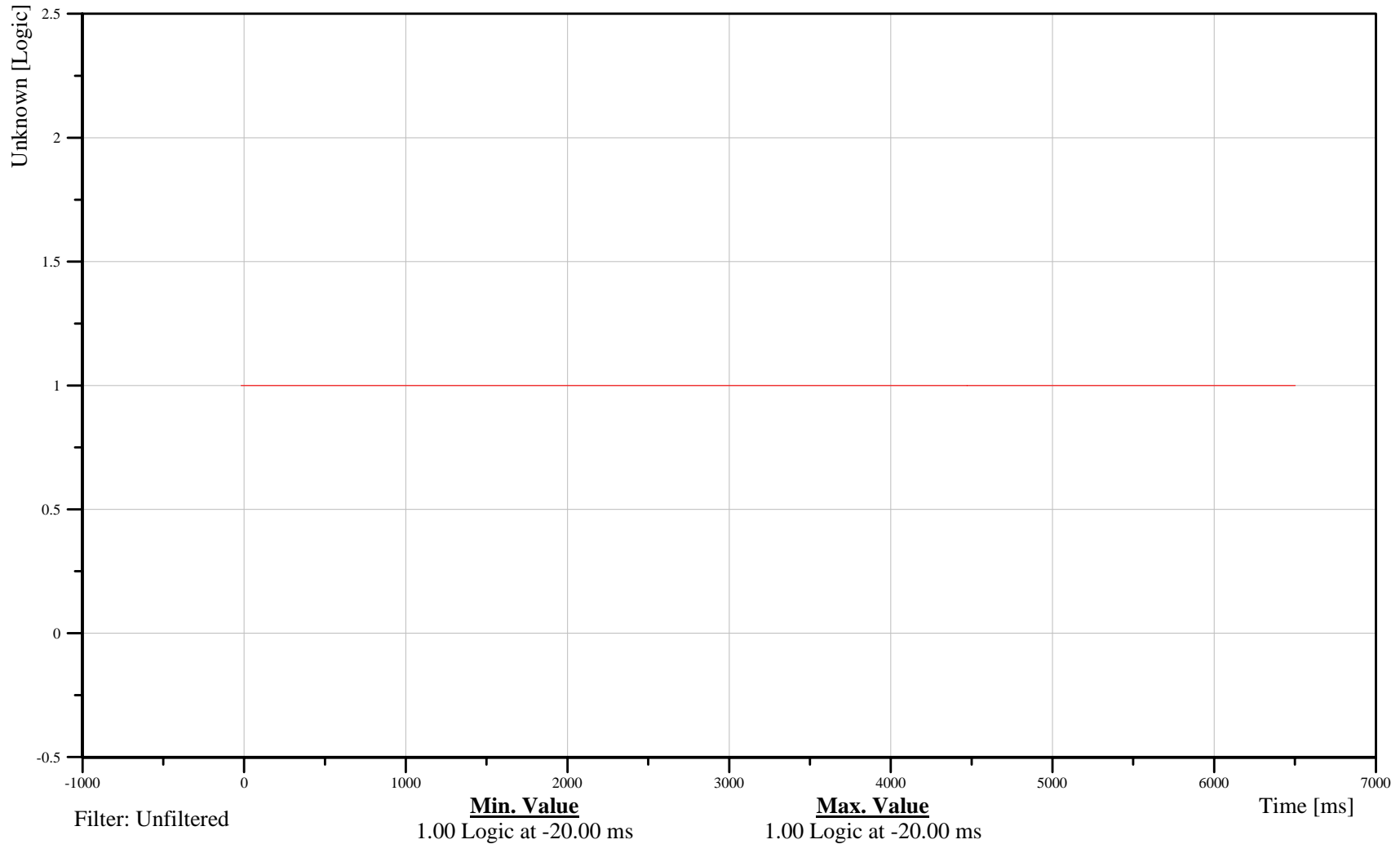
Left Rear Passenger Head Contact

Customer: VRTC

14CONT000029EV00

TRC Inc. Test Lab: CTF

Test Number: 091022



B-204

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

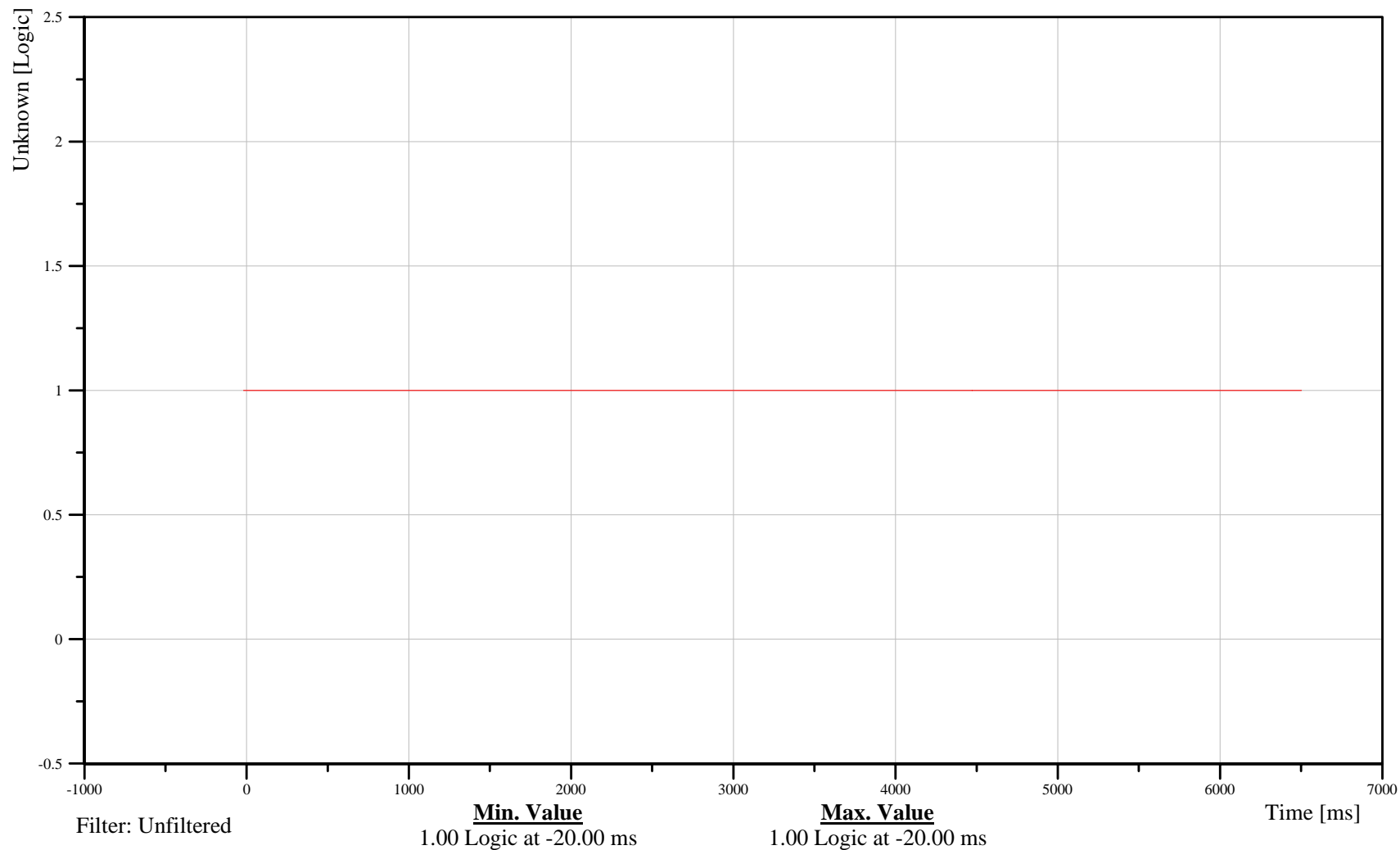
Left Rear Passenger Thorax Contact

Customer: VRTC

14CONT000030EV00

TRC Inc. Test Lab: CTF

Test Number: 091022



B-205

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

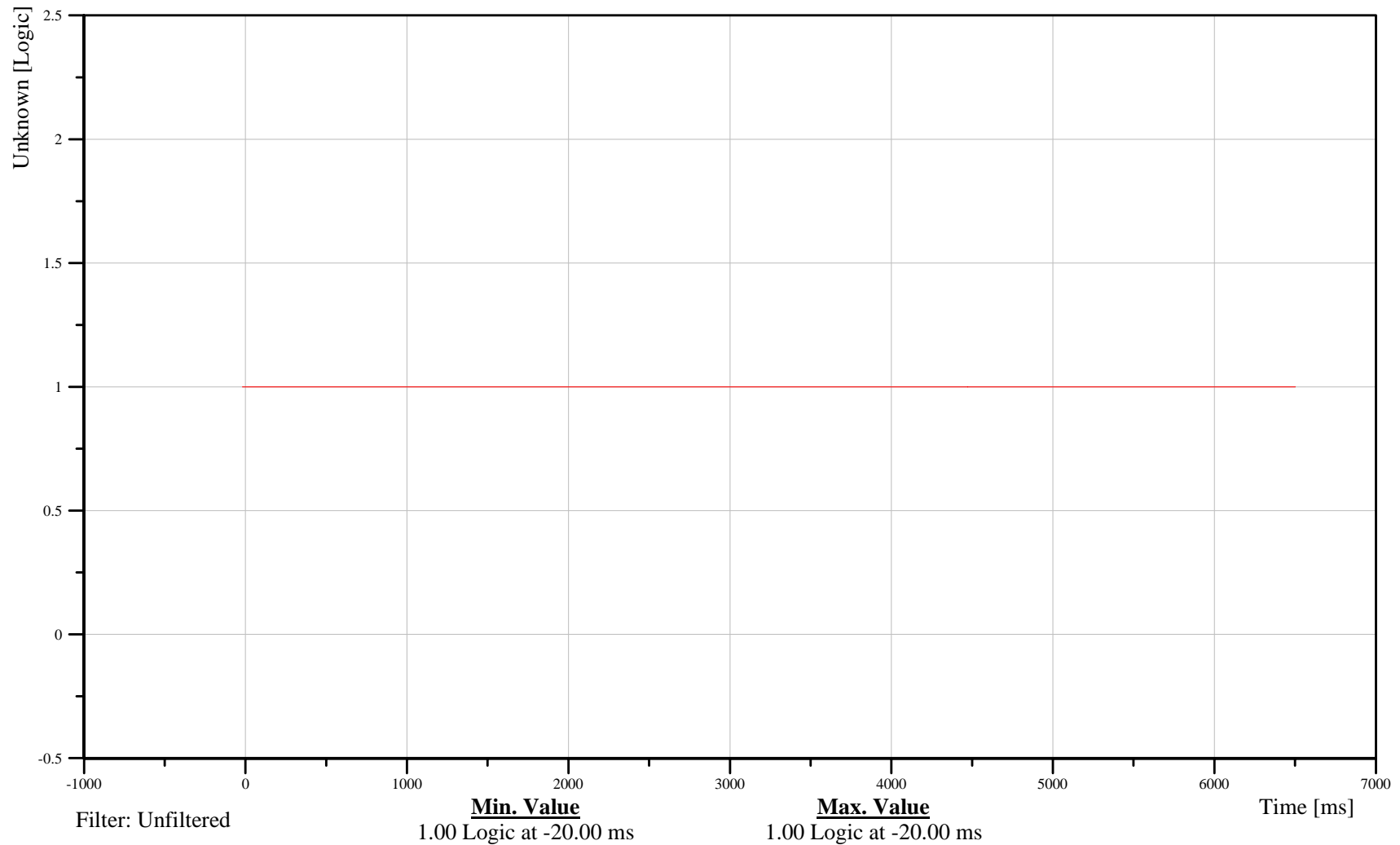
Left Rear Passenger Pelvis Contact

Customer: VRTC

14CONT000031EV00

TRC Inc. Test Lab: CTF

Test Number: 091022



B-206

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

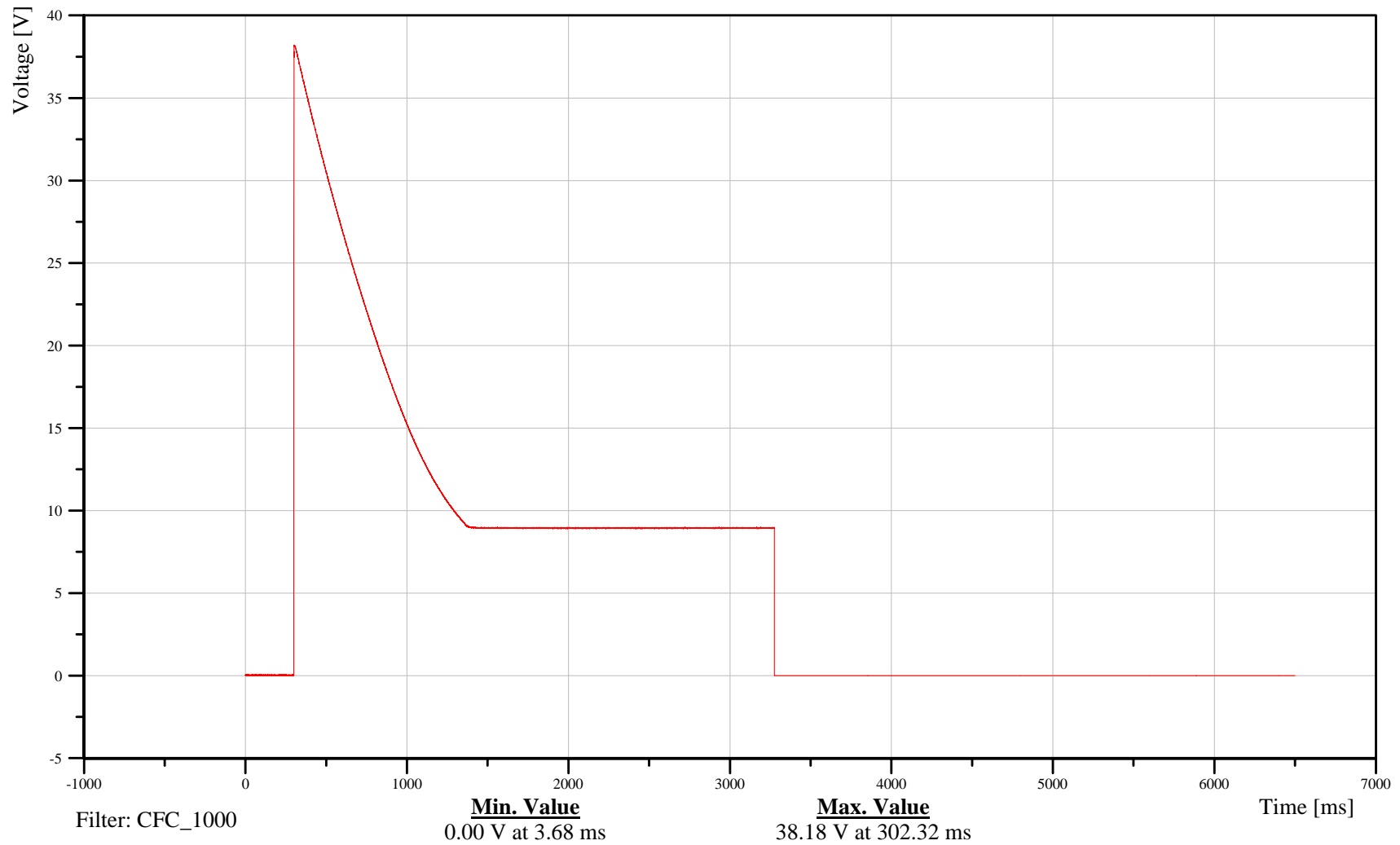
Right Front Passenger Inner Buckle Voltage

Customer: VRTC

13BCKLIN0000VO0A

TRC Inc. Test Lab: CTF

Test Number: 091022



B-207

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009
Time: 19:31

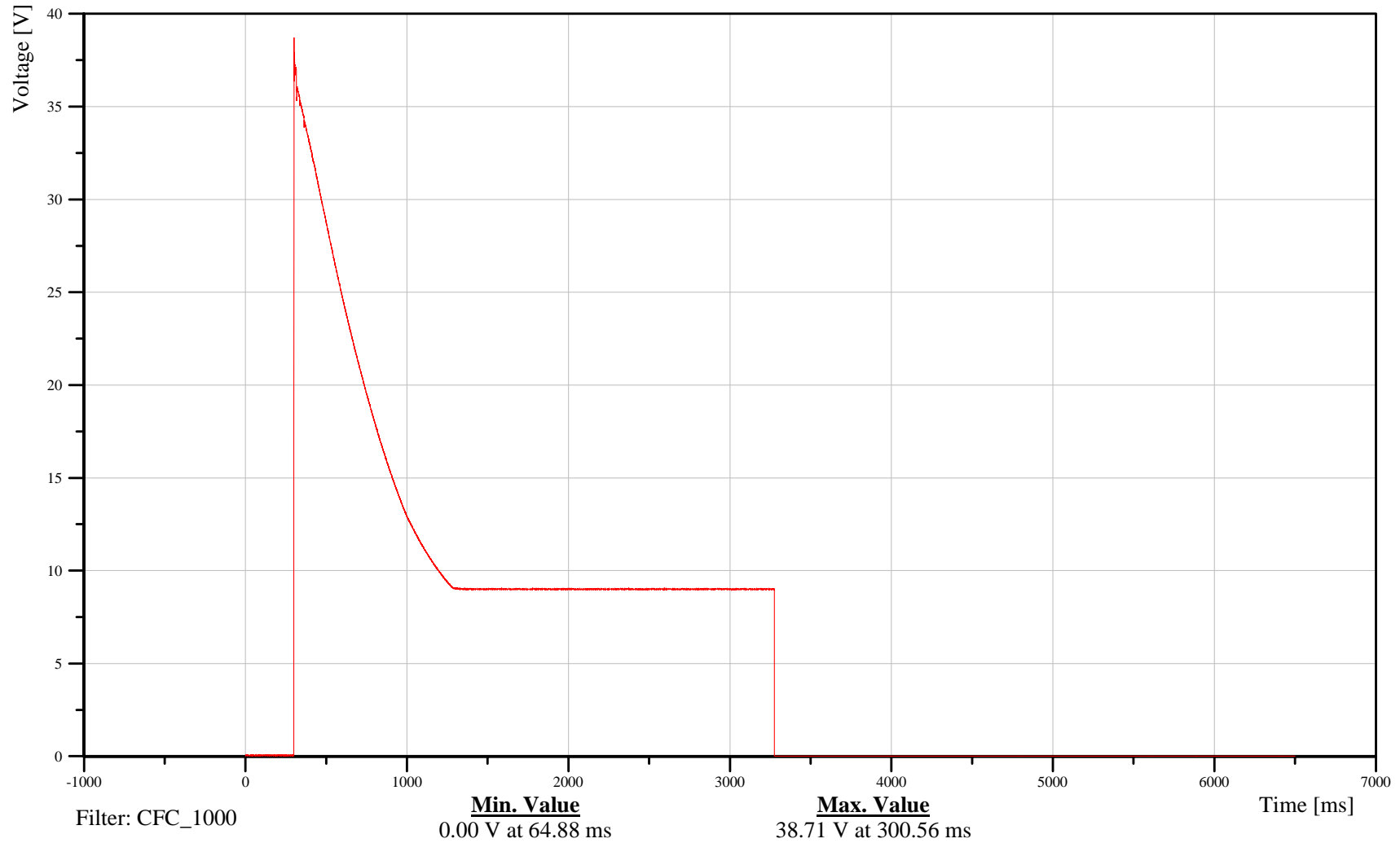
Right Front Passenger Retractor Voltage

Customer: VRTC

13SEBEBK0000V00A

TRC Inc. Test Lab: CTF

Test Number: 091022



B-208

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009
Time: 19:31

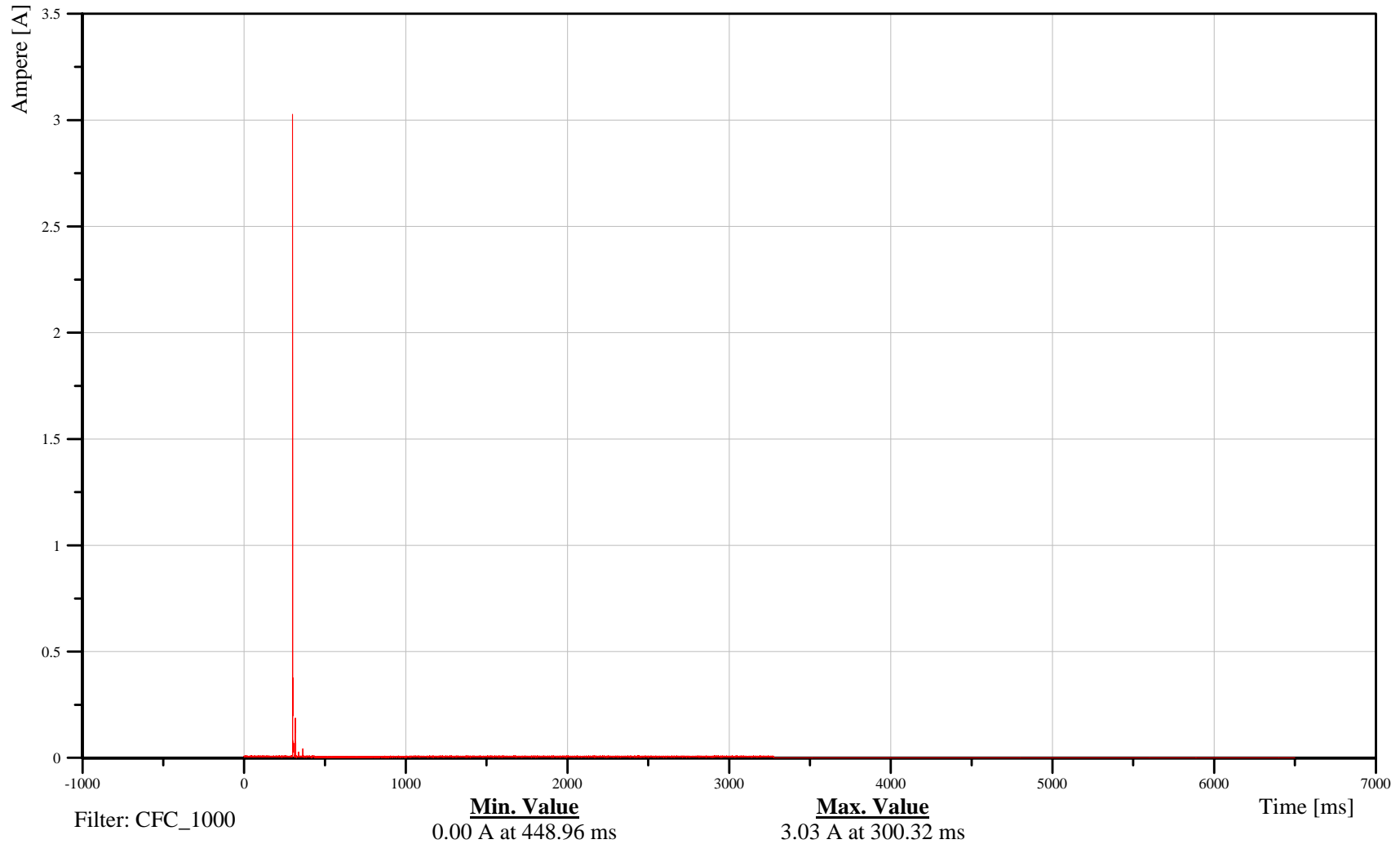
Right Front Passenger Retractor Current

Customer: VRTC

13SEBEBK0000CU0A

TRC Inc. Test Lab: CTF

Test Number: 091022



B-209

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

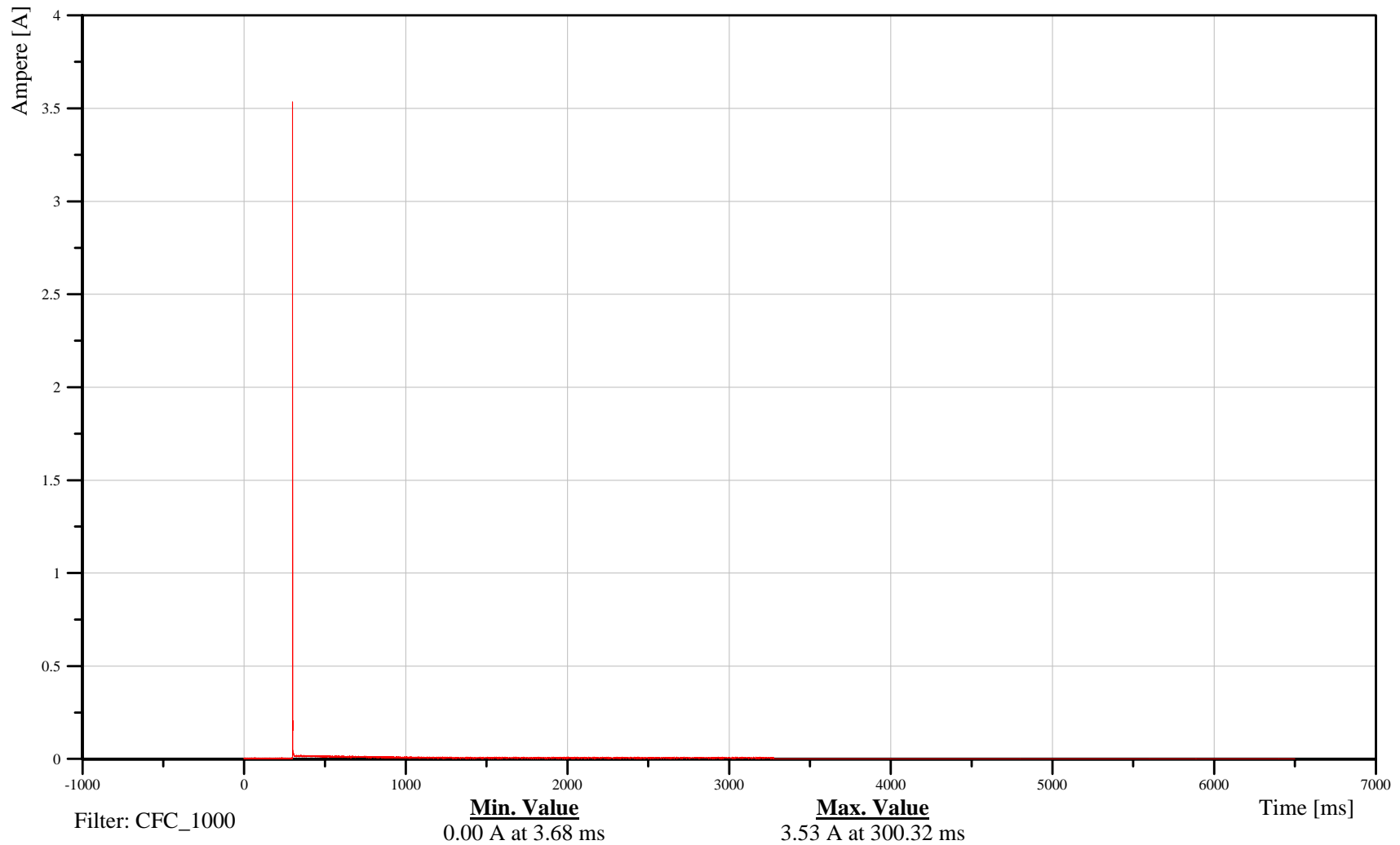
Right Front Passenger Inner Buckle Current

Customer: VRTC

13BCKLIN0000CU0A

TRC Inc. Test Lab: CTF

Test Number: 091022



B-210

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

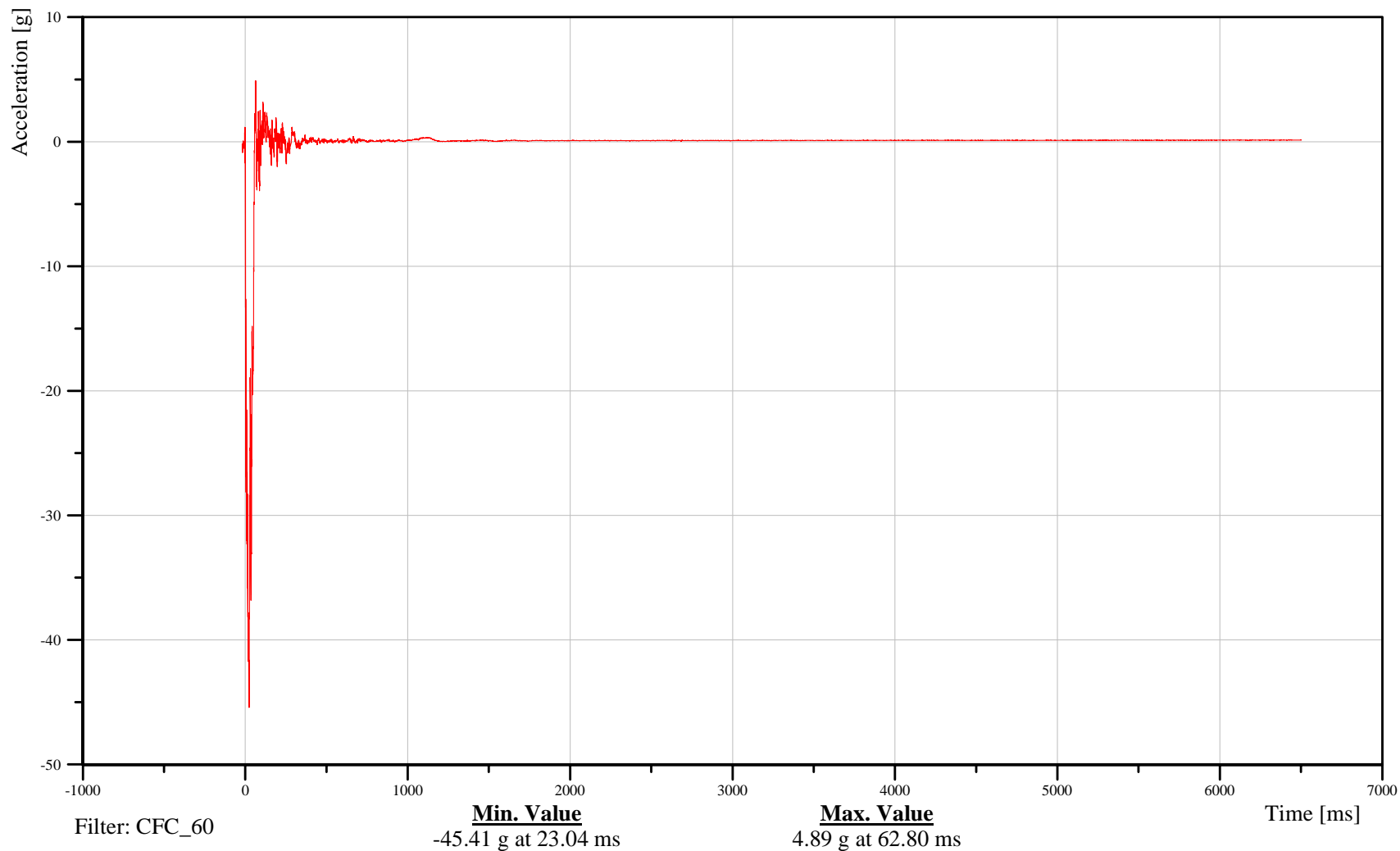
Cart X-Axis Acceleration

Customer: VRTC

M2VEHC000000ACXD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-211

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

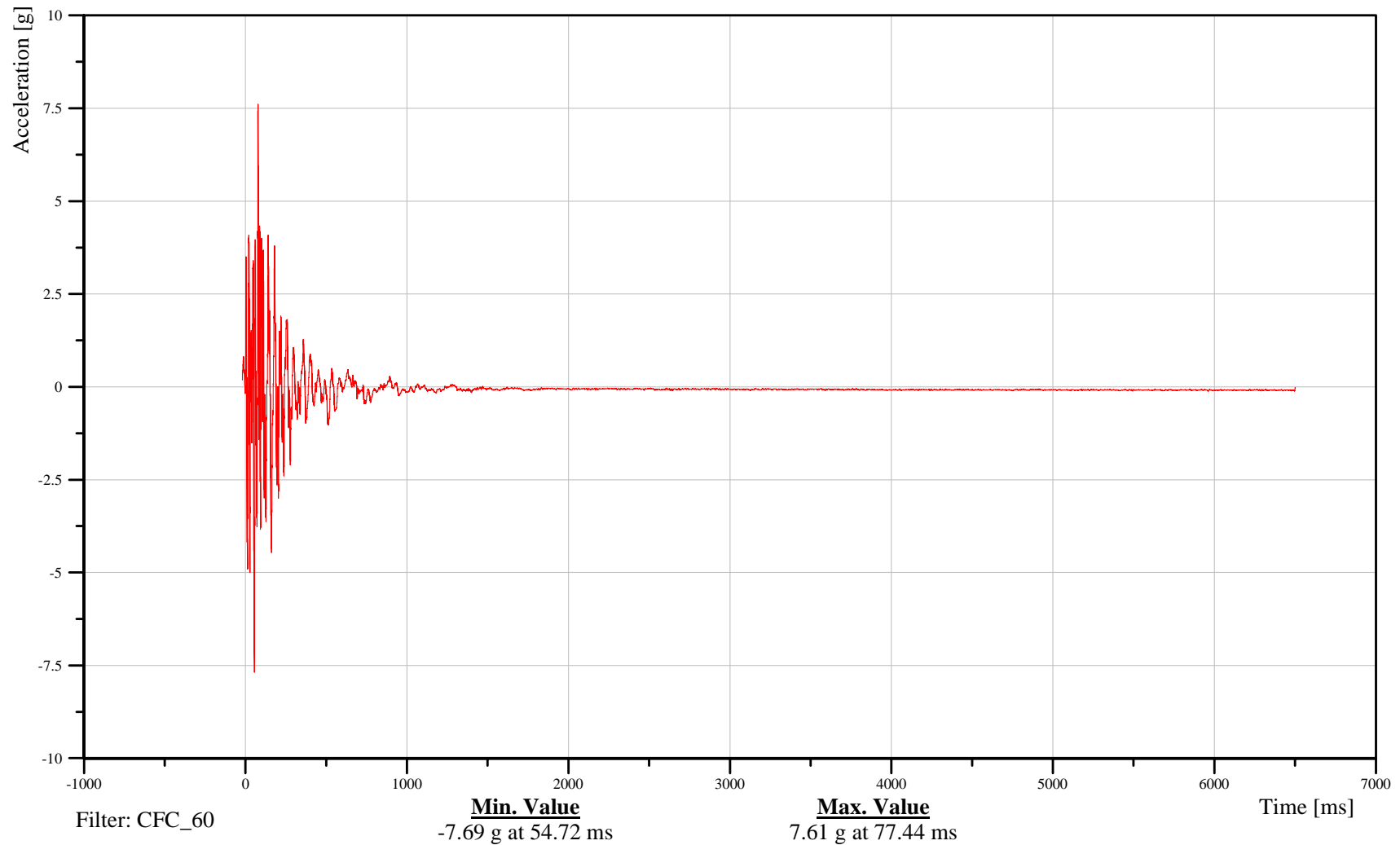
Cart Y-Axis Acceleration

Customer: VRTC

M2VEHC000000ACYD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-212

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

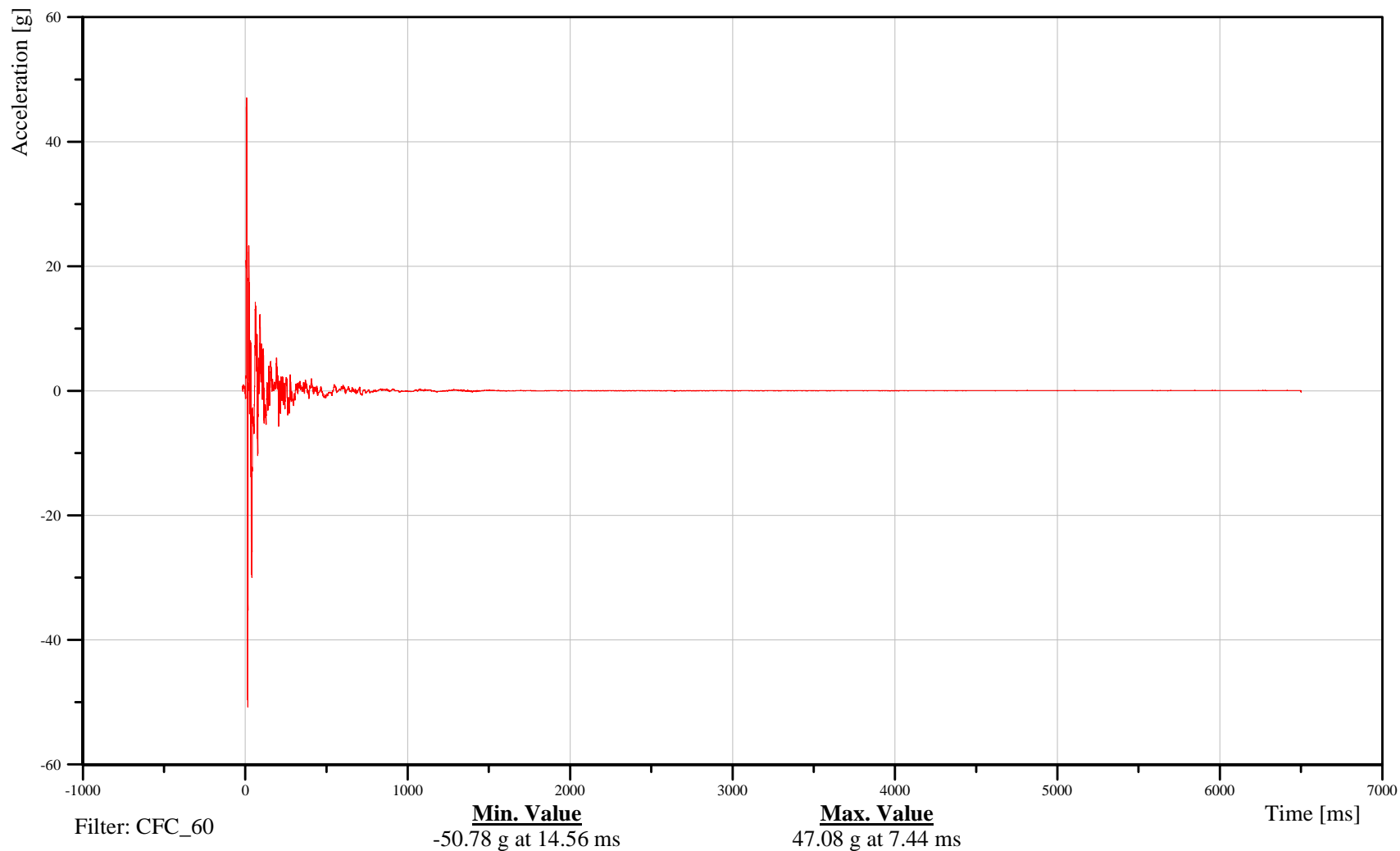
Cart Z-Axis Acceleration

Customer: VRTC

M2VEHC000000ACZD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-213

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

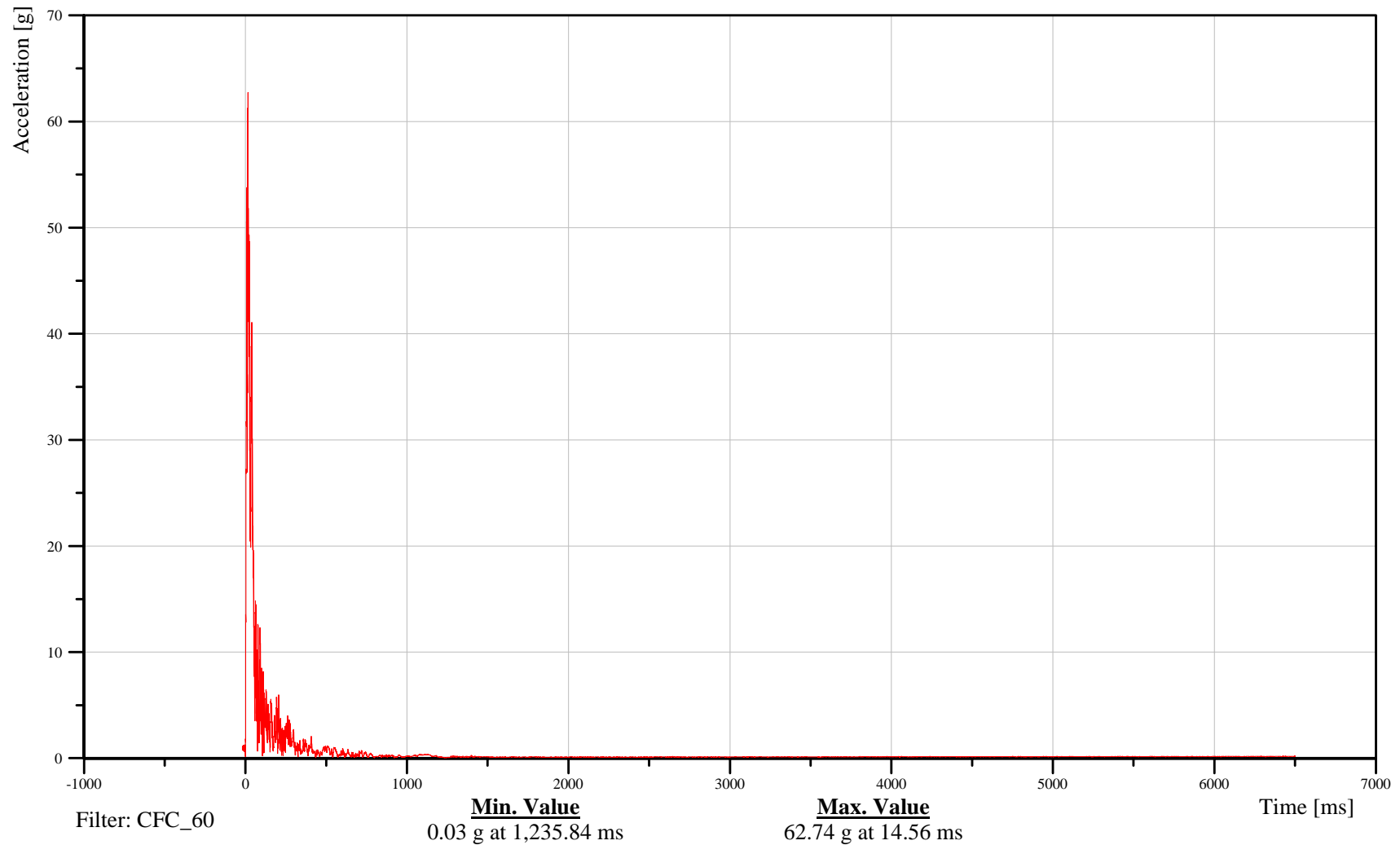
Cart Resultant Acceleration

Customer: VRTC

M2VEHC000000ACRD

TRC Inc. Test Lab: CTF

Test Number: 091022



B-214

091022



FMVSS 208 Rollover 2007 Ford Expedition

Date: 10/22/2009

Time: 19:31

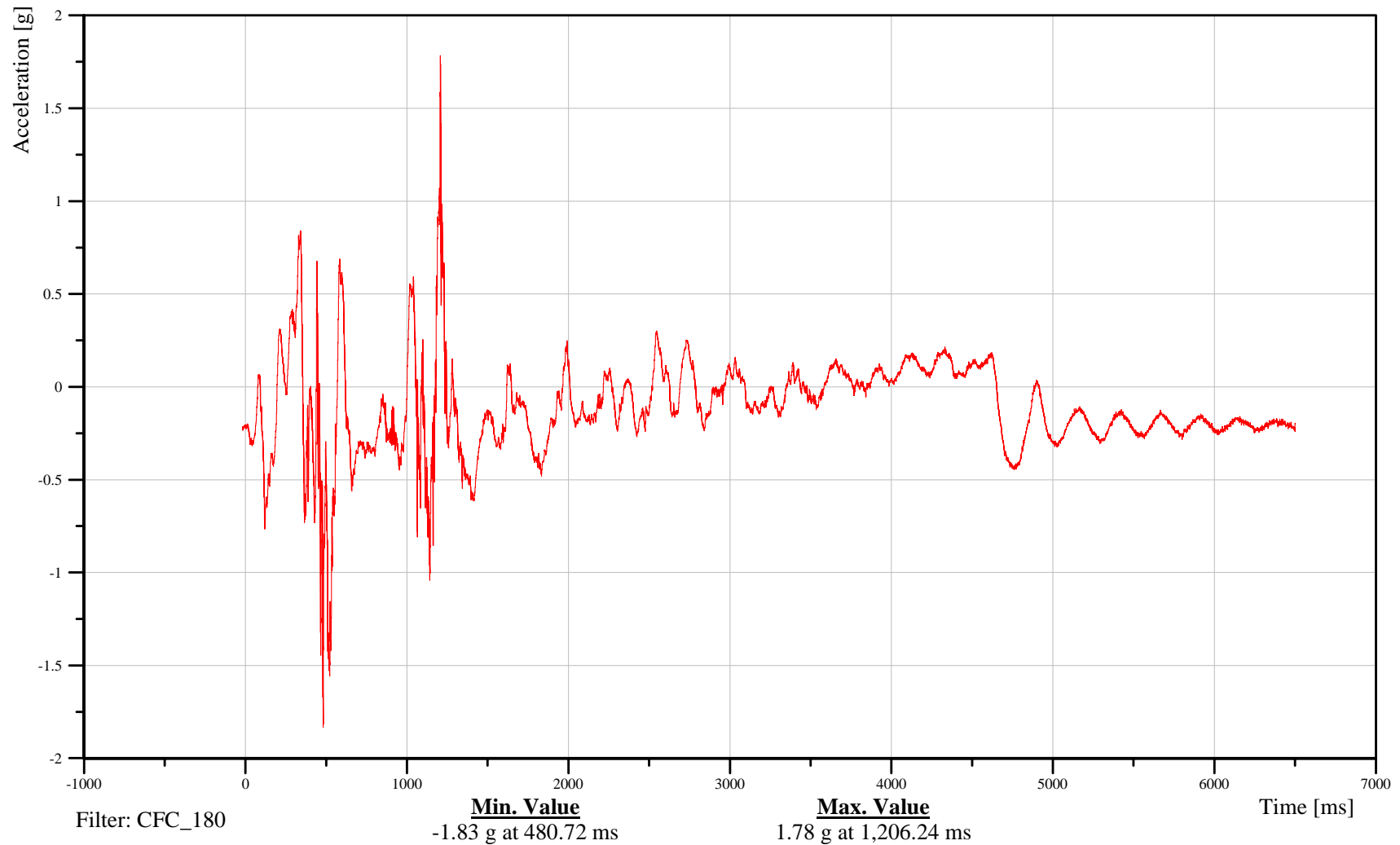
Driver Chest X-Axis Acceleration

Customer: VRTC

11CHSTCG00H3ACXC

TRC Inc. Test Lab: CTF

Test Number: 091022



B-215

091022

APPENDIX C
ATD CONFIGURATION AND PERFORMANCE VERIFICATION DATA

Calibration Test Results

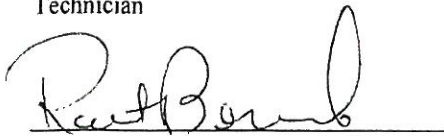
Pre-Test

Driver Dummy S/N: 001

Transportation Research Center Inc.
572E HIII 50th Male Dummy
External Dimensions
Serial No. 001 Calibration No. 11

Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Total Sitting Height	878.8 - 889.0	881	Yes
B	Shoulder Pivot Height	505.5 - 520.7	516	Yes
C	H-Point Height	83.8 - 88.9	87	Yes
D	H-Point From Seatback	134.6 - 139.7	137	Yes
E	Shoulder Pivot From Backline	83.8 - 94.0	94	Yes
F	Thigh Clearance	139.7 - 154.9	153	Yes
G	Back Of Elbow To Wrist Pivot	289.6 - 304.8	299	Yes
H	Skull Cap To Backline	40.6 - 45.7	45	Yes
I	Shoulder-Elbow Length	330.2 - 345.4	341	Yes
J	Elbow Rest Height	190.5 - 210.8	200	Yes
K	Buttock Knee Length	579.1 - 604.5	595	Yes
L	Popliteal Height	429.3 - 454.7	431	Yes
M	Knee Pivot Height	485.1 - 500.4	498	Yes
N	Buttock Popliteal Length	452.1 - 477.5	460	Yes
O	Chest Depth	213.4 - 228.6	228	Yes
P	Foot Length	251.5 - 266.7	260	Yes
V	Shoulder Breadth	421.6 - 436.9	426	Yes
W	Foot Breadth	91.4 - 106.7	99	Yes
Y	Chest Circumference	970.3 - 1000.8	991	Yes
Z	Waist Circumference	835.7 - 866.1	855	Yes
AA	Location For Chest Circumference	429.3 - 434.3	432	Yes
BB	Location For Waist Circumference	226.1 - 231.1	229	Yes

Technician



Approved



Transportation Research Center Inc.

Front Head Drop

HIII 50th Serial No. 001 Certification No. 11-1

Test Date: 11/24/2008

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	31 %	Yes
Peak Head Resultant Acceleration	225 - 275 g	272.2 g	Yes
Peak Head Lateral Acceleration	(-15) - 15 g	-11.5 g	Yes
Is Acceleration Curve Unimodal within 10% of Peak?	Yes	Yes	Yes

Test meets specifications.

Comments:

Technician

Rent Baruch

Approved

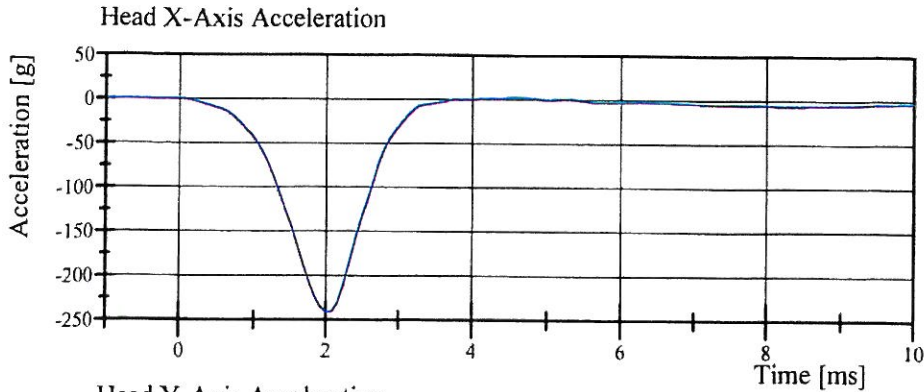
Ron Stoner

Transportation Research Center Inc.

Front Head Drop

HIII 50th Serial No. 001 Certification No. 11-1

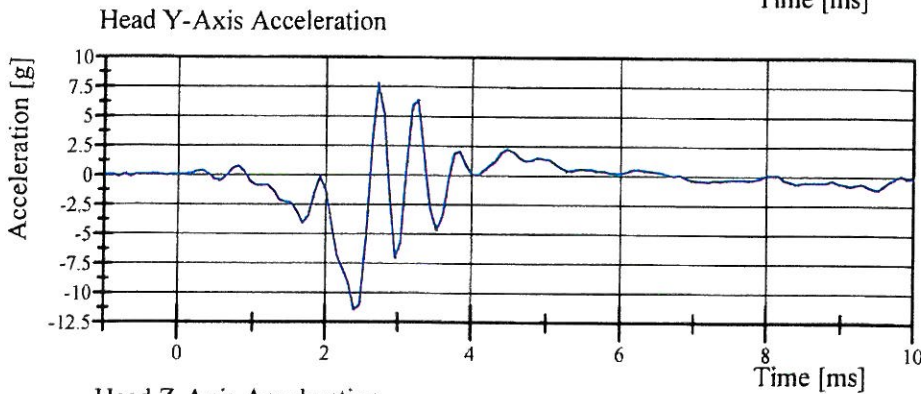
Test Date: 11/24/2008



Filter Class: CFC_1000

Max: 2.2 g at 4.6 ms

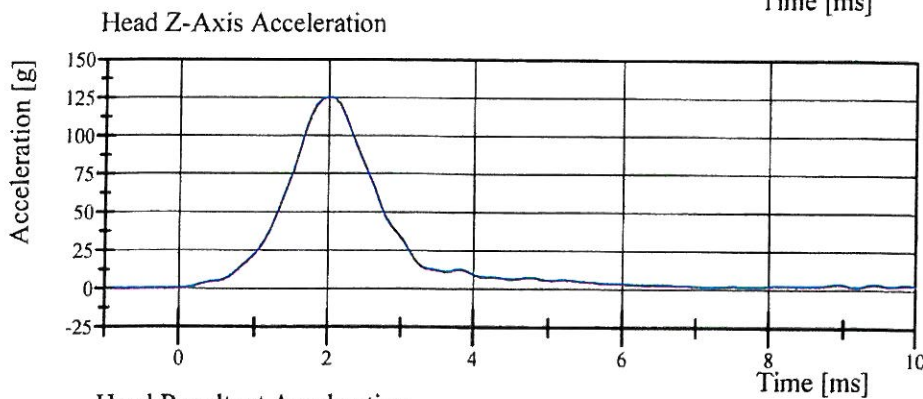
Min: -241.7 g at 2.0 ms



Filter Class: CFC_1000

Max: 7.8 g at 2.7 ms

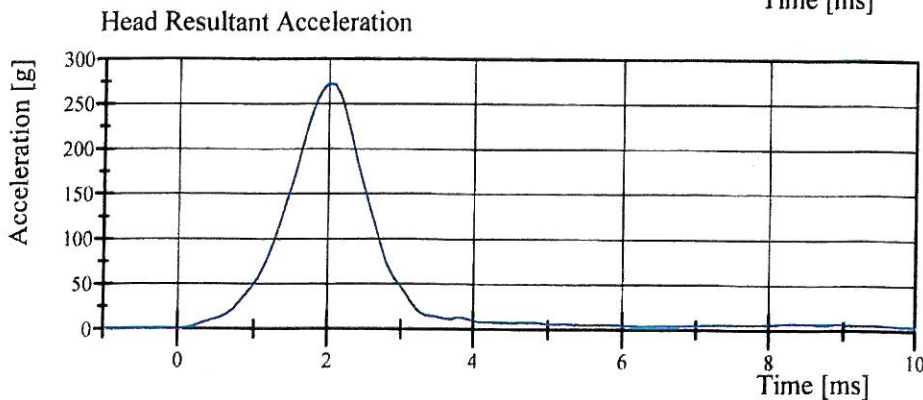
Min: -11.5 g at 2.4 ms



Filter Class: CFC_1000

Max: 125.3 g at 2.0 ms

Min: -0.1 g at -1.0 ms



Filter Class: CFC_1000

Max: 272.2 g at 2.0 ms

Min: 0.0 g at -0.2 ms

Transportation Research Center Inc.

Neck Flexion

HIII 50th Serial No. 001 Certification No. 11-4

Test Date: 10/2/2009

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.8 °C	Yes
Relative Humidity	10 - 70 %	50 %	Yes
Pendulum Velocity	6.89 - 7.13 m/s	6.935 m/s	Yes
Pendulum Acceleration Decay Crossing -5g	34 - 42 ms	40.5 ms	Yes
Pendulum Acceleration at 10ms	(-22.5) - (-27.5) g	-25.02 g	Yes
Pendulum Acceleration at 20ms	(-17.6) - (-22.6) g	-21.17 g	Yes
Pendulum Acceleration at 30ms	(-12.5) - (-18.5) g	-15.12 g	Yes
Pendulum Acceleration > 30ms	>= (-29.0) g	-15.12 g	Yes
Total Head D-Plane Rotation Peak	(-64) - (-78) °	-68.6 °	Yes
Time of Peak	57 - 64 ms	59.4 ms	Yes
Total Head D-Plane Rotation Decay to 0°	113 - 128 ms	117.6 ms	Yes
Total Neck Occipital Condyles Moment Peak	88 - 108 N·m	94.5 N·m	Yes
Time of Peak	47 - 58 ms	52.6 ms	Yes
Total Neck Occipital Condyles Moment Decay to 0 N·m	97 - 107 ms	97.8 ms	Yes

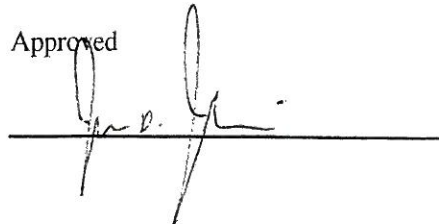
Test meets specifications.

Comments:

Technician



Approved

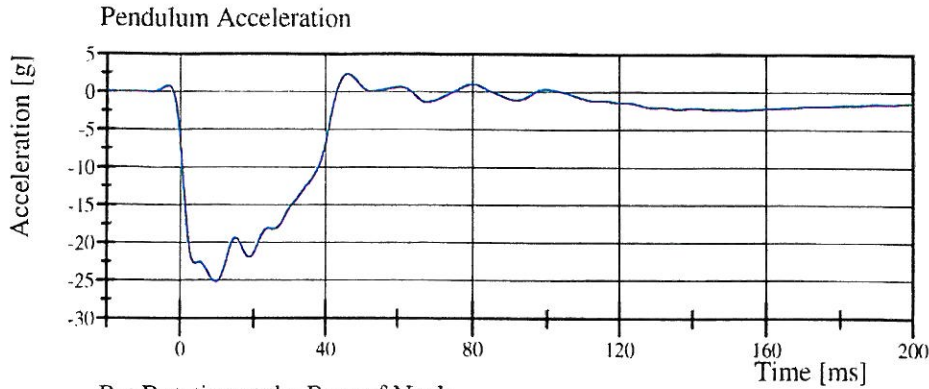


Transportation Research Center Inc.

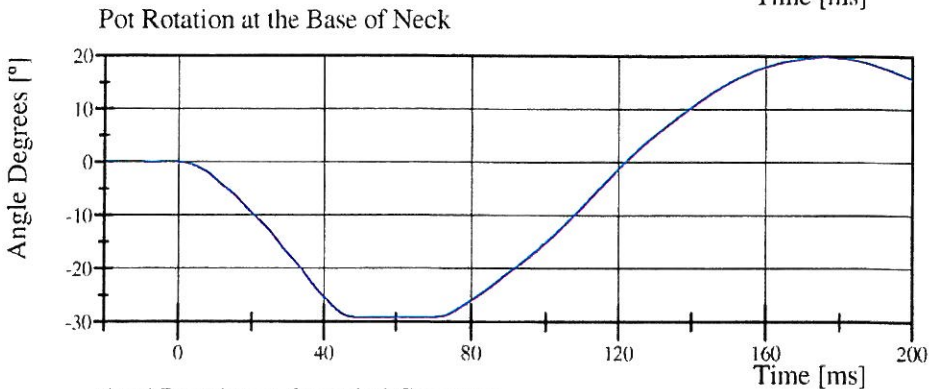
Neck Flexion

HIII 50th Serial No. 001 Certification No. 11-4

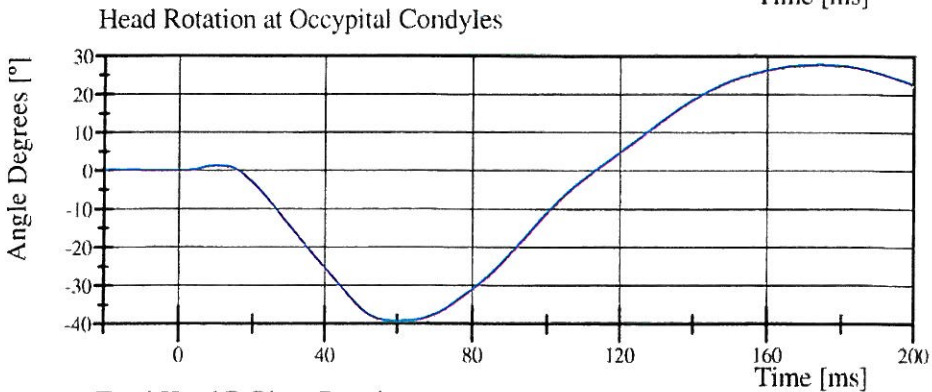
Test Date: 10/2/2009



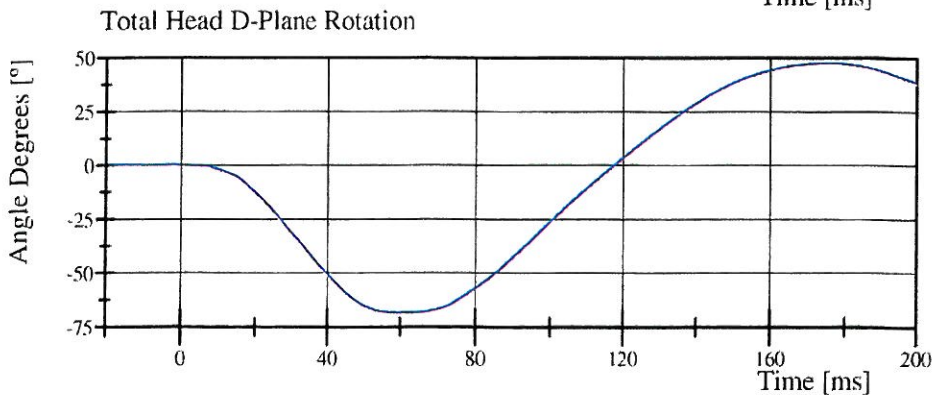
Filter Class: CFC_60
Max: 2.4 g at 46.1 ms
Min: -25.1 g at 9.5 ms



Filter Class: CFC_60
Max: 19.9 ° at 175.8 ms
Min: -29.3 ° at 50.5 ms



Filter Class: CFC_60
Max: 27.6 ° at 174.0 ms
Min: -39.3 ° at 59.4 ms



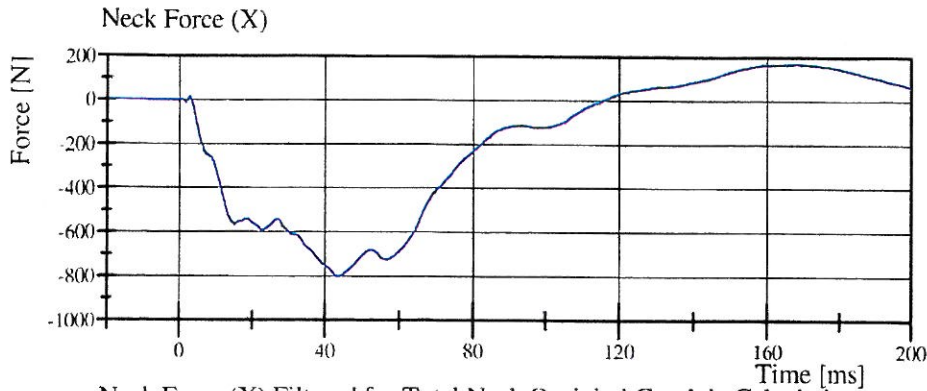
Filter Class: CFC_60
Max: 47.5 ° at 175.2 ms
Min: -68.6 ° at 59.4 ms

Transportation Research Center Inc.

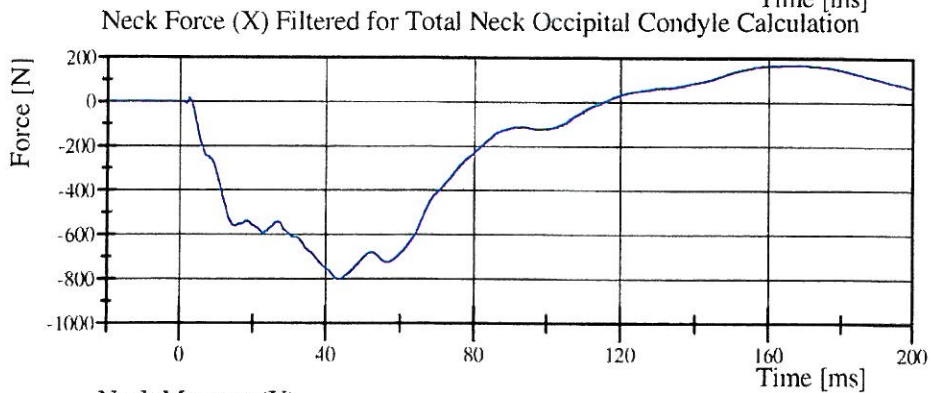
Neck Flexion

HIII 50th Serial No. 001 Certification No. 11-4

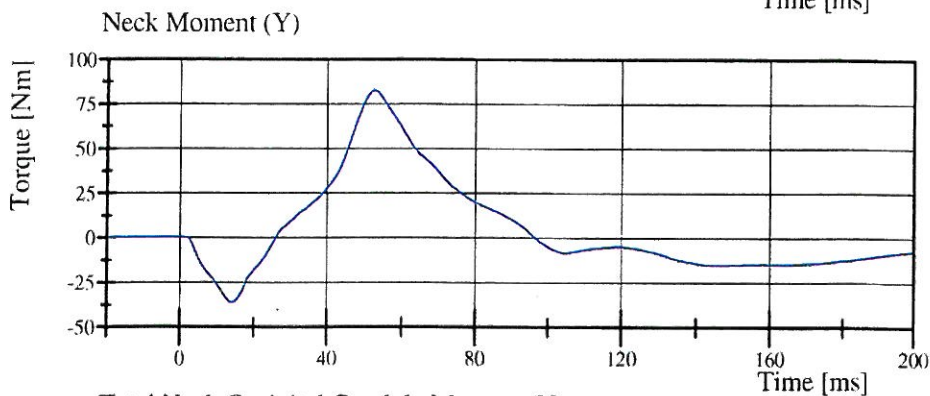
Test Date: 10/2/2009



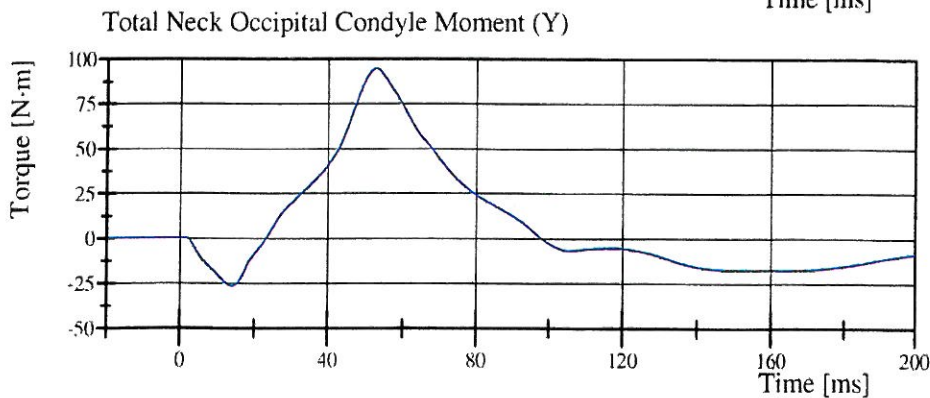
Filter Class: CFC_1000
Max: 168.9 N at 168.4 ms
Min: -801.9 N at 43.4 ms



Filter Class: CFC_600
Max: 168.5 N at 168.4 ms
Min: -801.7 N at 43.4 ms



Filter Class: CFC_600
Max: 82.4 Nm at 52.6 ms
Min: -36.4 Nm at 14.2 ms



Filter Class: CFC_600
Max: 94.5 N·m at 52.6 ms
Min: -26.8 N·m at 13.8 ms

Transportation Research Center Inc.

Neck Extension

HIII 50th Serial No. 001 Certification No. 11-3

Test Date: 10/2/2009

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.8 °C	Yes
Relative Humidity	10 - 70 %	49 %	Yes
Pendulum Velocity	(-5.95) - (-6.18) m/s	-5.990 m/s	Yes
Pendulum Acceleration Decay Crossing 5g	38 - 46 ms	42.3 ms	Yes
Pendulum Acceleration at 10ms	17.2 - 21.2 g	19.92 g	Yes
Pendulum Acceleration at 20ms	14.0 - 19.0 g	17.31 g	Yes
Pendulum Acceleration at 30ms	11.0 - 16.0 g	14.92 g	Yes
Pendulum Acceleration > 30ms	<= 22.0 g	14.92 g	Yes
Total Head D-Plane Rotation Peak	81 - 106 °	96.4 °	Yes
Time of Peak	72 - 82 ms	76.8 ms	Yes
Total Head D-Plane Rotation Decay to 0°	147 - 174 ms	155.0 ms	Yes
Total Neck Occipital Condyles Moment Peak	(-53) - (-80) N·m	-63.5 N·m	Yes
Time of Peak	65 - 79 ms	72.2 ms	Yes
Total Neck Occipital Condyles Moment Decay to 0 N·m	120 - 148 ms	141.3 ms	Yes

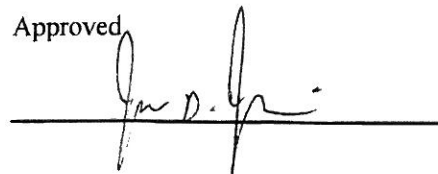
Test meets specifications.

Comments:

Technician



Approved



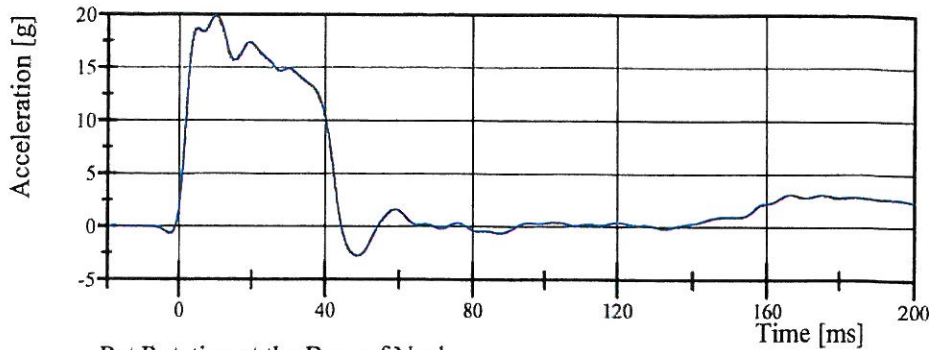
Transportation Research Center Inc.

Neck Extension

HIII 50th Serial No. 001 Certification No. 11-3

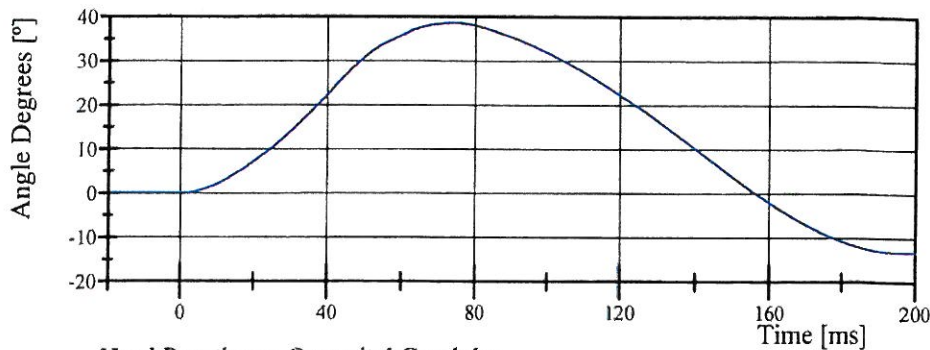
Test Date: 10/2/2009

Pendulum Acceleration



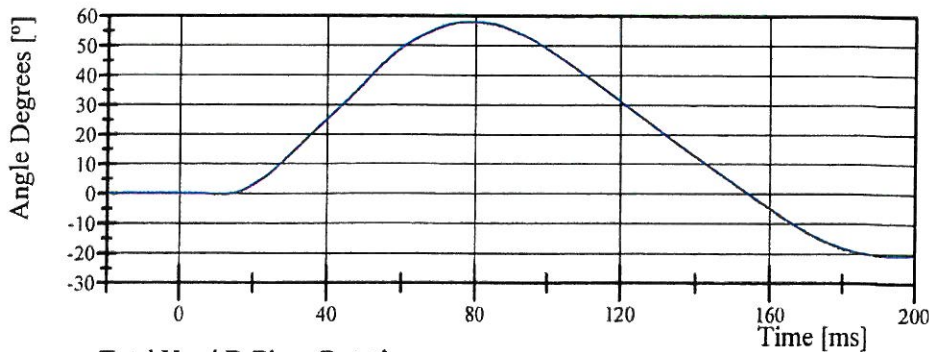
Filter Class: CFC_60
Max: 19.9 g at 10.0 ms
Min: -2.8 g at 48.8 ms

Pot Rotation at the Base of Neck



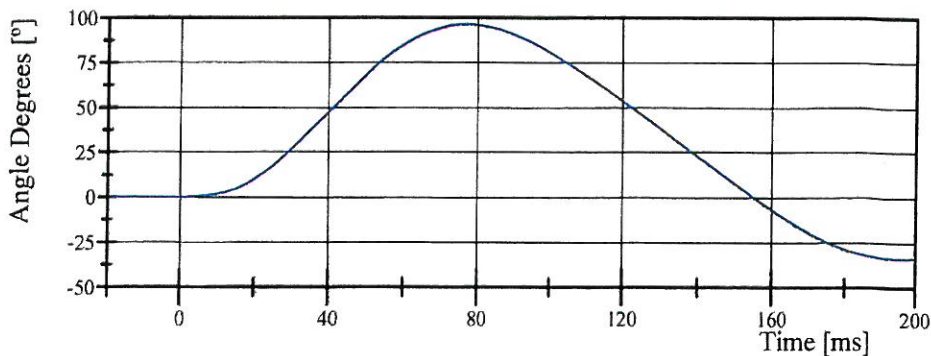
Filter Class: CFC_60
Max: 38.6 ° at 74.6 ms
Min: -13.2 ° at 197.0 ms

Head Rotation at Occypital Condyles



Filter Class: CFC_60
Max: 57.9 ° at 78.6 ms
Min: -20.8 ° at 195.3 ms

Total Head D-Plane Rotation



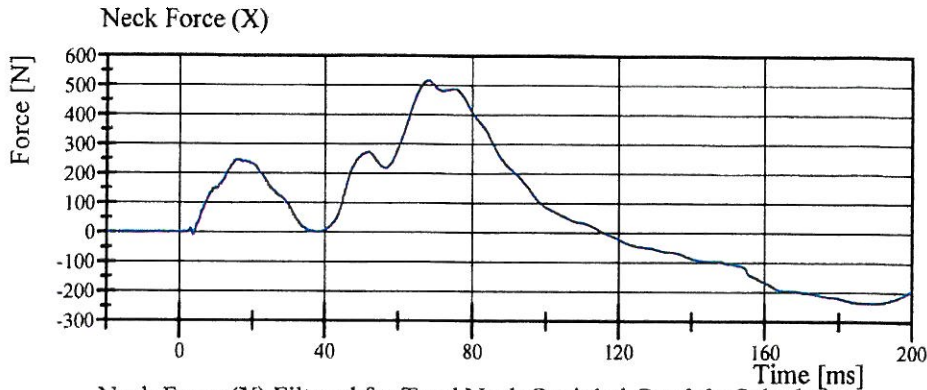
Filter Class: CFC_60
Max: 96.4 ° at 76.8 ms
Min: -34.0 ° at 196.2 ms

Transportation Research Center Inc.

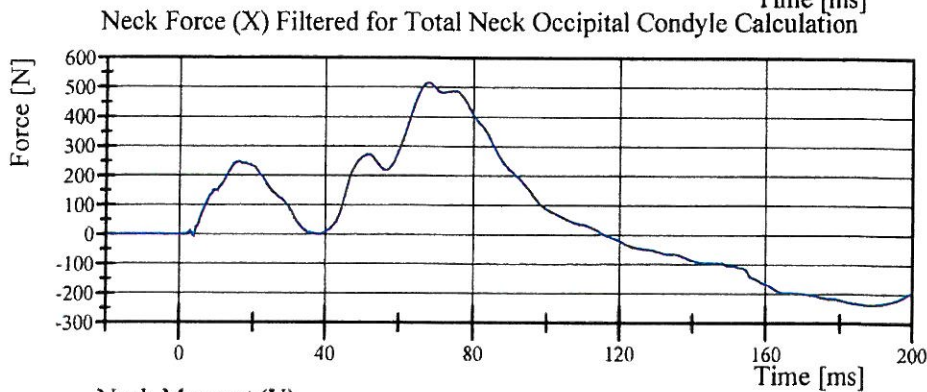
Neck Extension

HIII 50th Serial No. 001 Certification No. 11-3

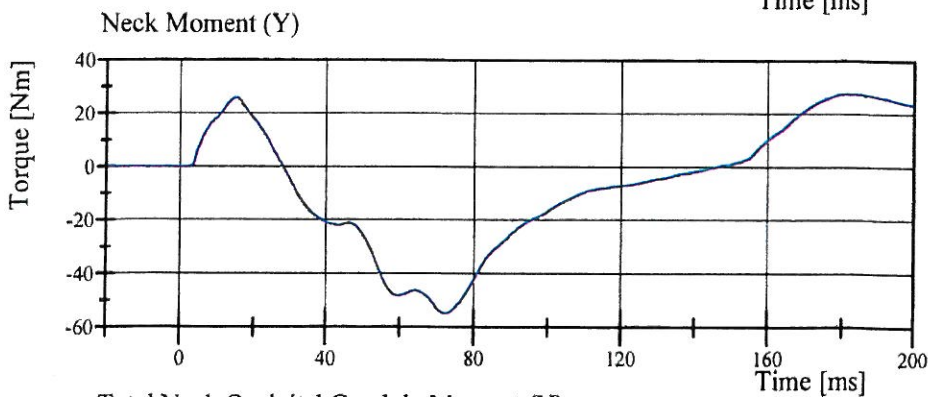
Test Date: 10/2/2009



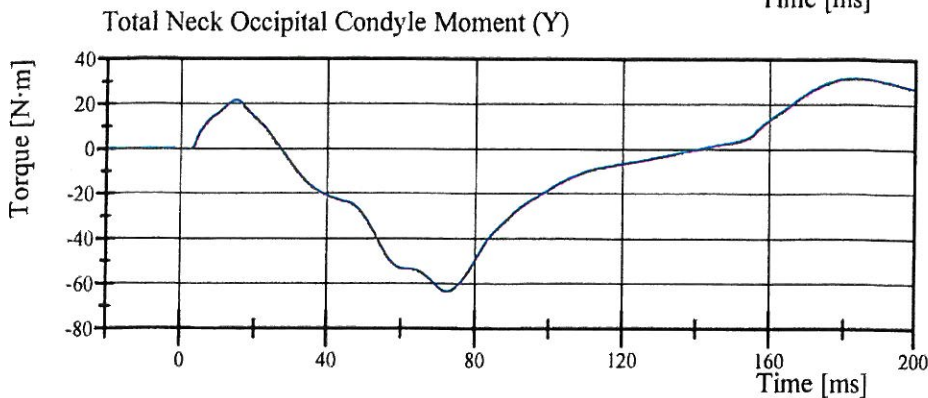
Filter Class: CFC_1000
Max: 517.5 N at 67.8 ms
Min: -236.9 N at 187.5 ms



Filter Class: CFC_600
Max: 517.0 N at 67.8 ms
Min: -236.6 N at 187.7 ms



Filter Class: CFC_600
Max: 27.6 Nm at 181.4 ms
Min: -55.0 Nm at 72.2 ms



Filter Class: CFC_600
Max: 31.6 N·m at 183.4 ms
Min: -63.5 N·m at 72.2 ms

Transportation Research Center Inc.

Front Thorax

HIII 50th Serial No. 001 Certification No. 11-1

Test Date: 11/24/2008

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	28 %	Yes
Probe Velocity	6.59 - 6.83 m/s	6.700 m/s	Yes
Probe Force Peak	(-5,160) - (-5,893) N	-5,888.9 N	Yes
Maximum Chest Compression	(-63.5) - (-72.6) mm	-66.52 mm	Yes
Internal Hysteresis	65 - 85 %	74.9 %	Yes

Test meets specifications.

Comments:

Technician

Rout Brault

Approved

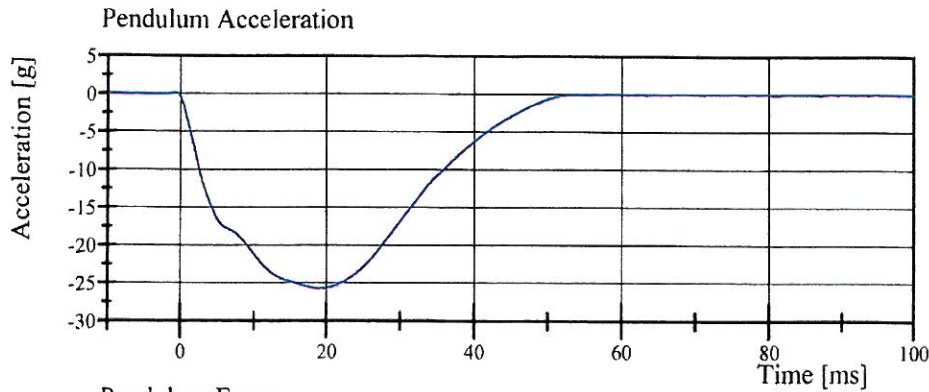
Ron Stouder

Transportation Research Center Inc.

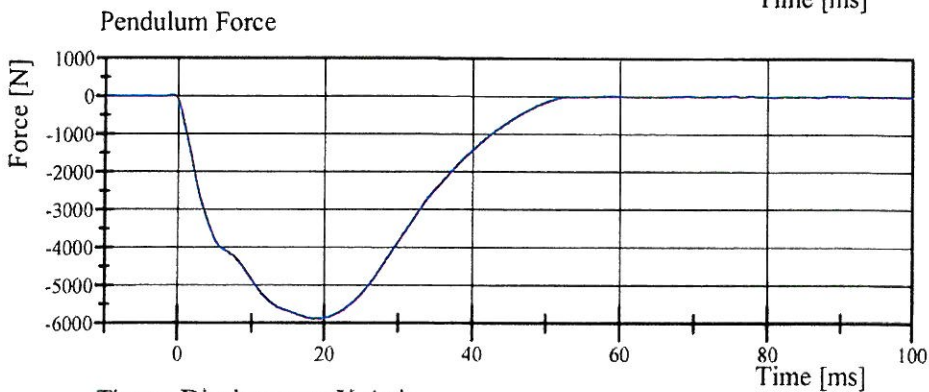
Front Thorax

HIII 50th Serial No. 001 Certification No. 11-1

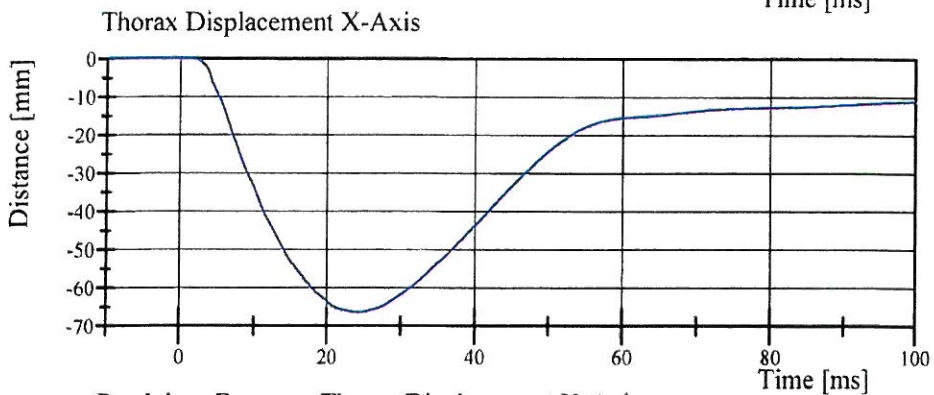
Test Date: 11/24/2008



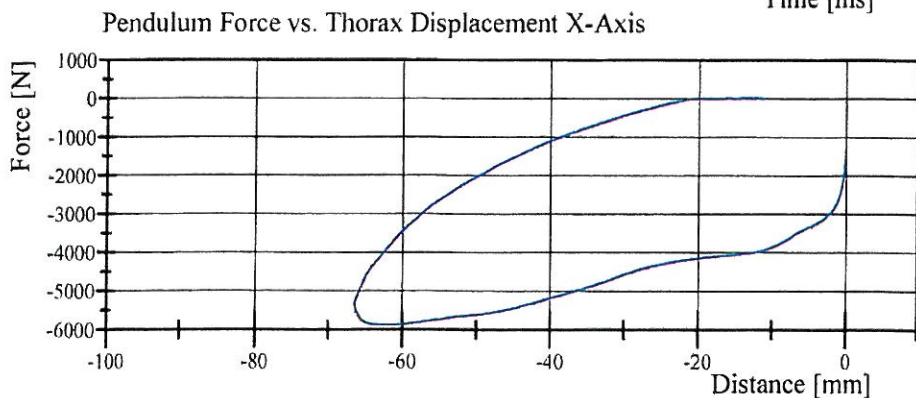
Filter Class: CFC_180
Max: 0.1 g at -0.7 ms
Min: -25.7 g at 18.8 ms



Filter Class: CFC_180
Max: 28.2 N at -0.7 ms
Min: -5,888.9 N at 18.8 ms



Filter Class: CFC_600
Max: 0.0 mm at -9.4 ms
Min: -66.5 mm at 24.5 ms



Filter Class: CFC_180
Max: 28.2 N at 0.0 mm
Min: -5,888.9 N at -61.8 mm

Transportation Research Center Inc

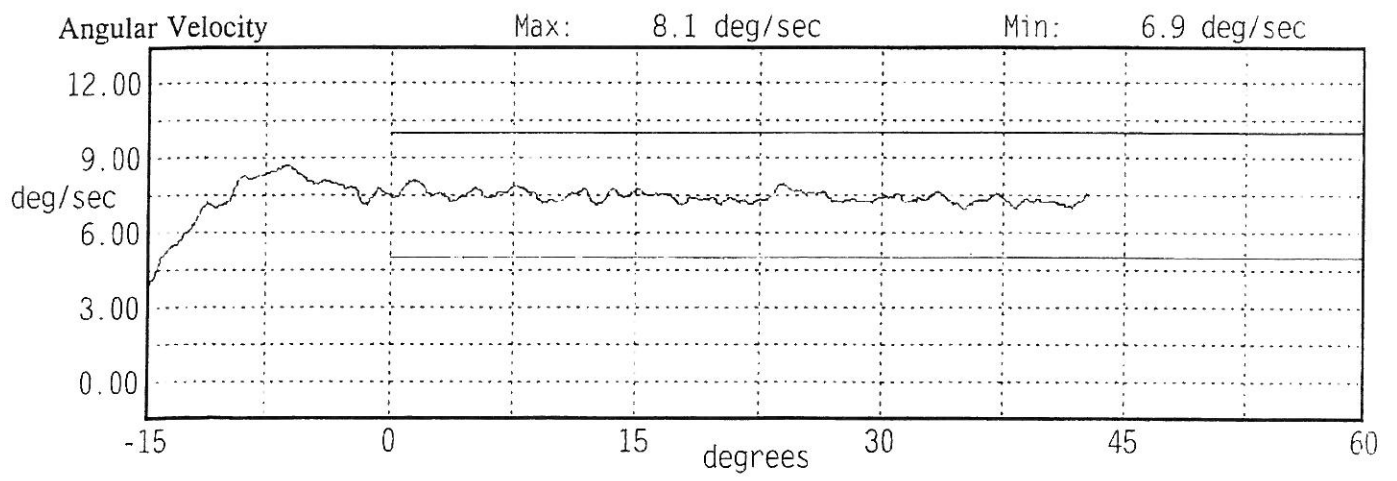
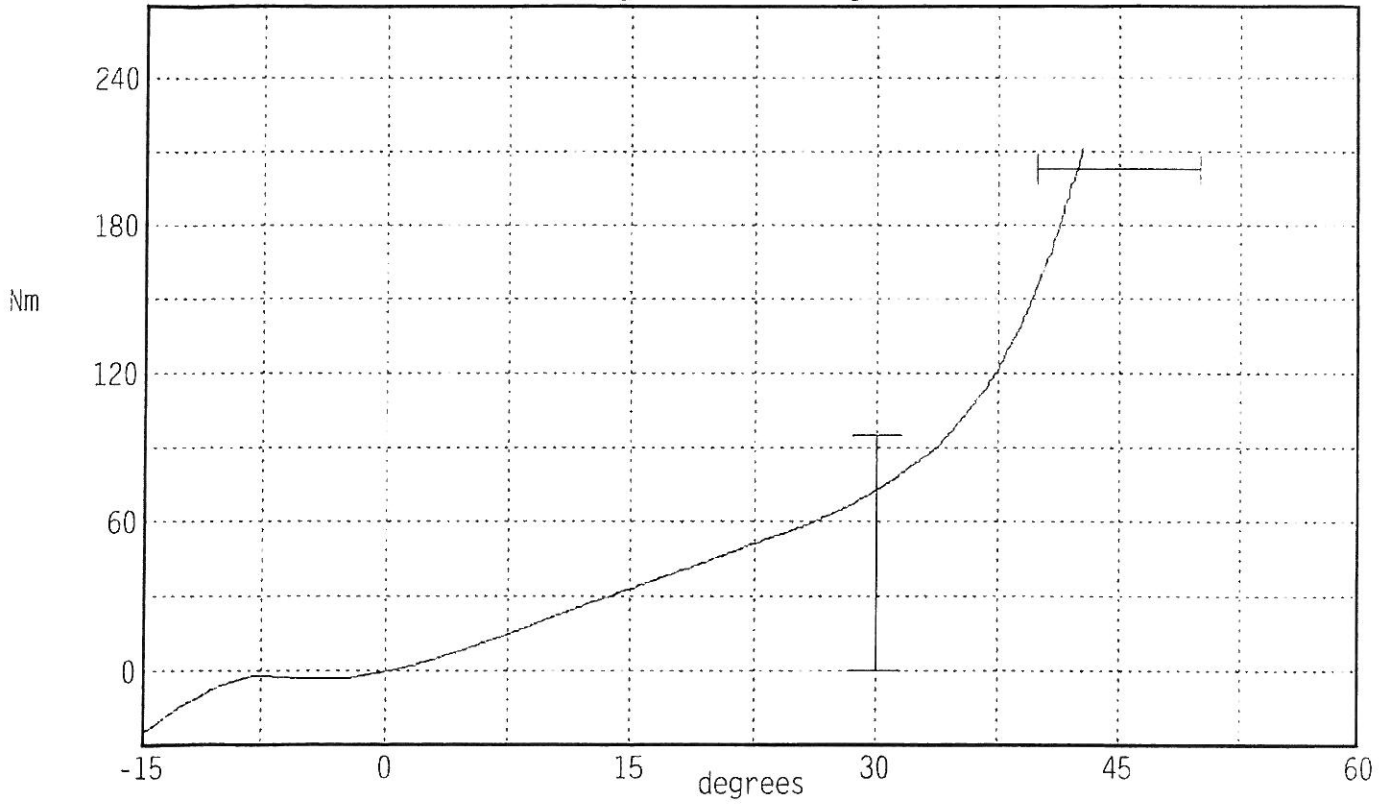
Hybrid III Hip Range of Motion

Serial Number: 001L
 Test Number: 001C11
 Comments:

Date: 11/25/2008
 Time: 14:28

TEST PARAMETER	SPECIFICATION	TEST RESULTS	
Temperature	18.9 - 25.6	21.1 °C	Pass
Humidity	10 - 70	24 %	Pass
Moment at 30 deg	<= 94.9	73.2 Nm	Pass
Angle at 203 Nm	40.0 - 50.0	42.5 deg	Pass
Average Velocity	5.0 - 10.0	7.4 deg/sec	Pass

Moment About H-Point
 Peak Moment: 211.7 Nm at 42.7 deg
 Peak Angle: 42.7 deg at 211.7 Nm



Transportation Research Center Inc

Hybrid III Hip Range of Motion

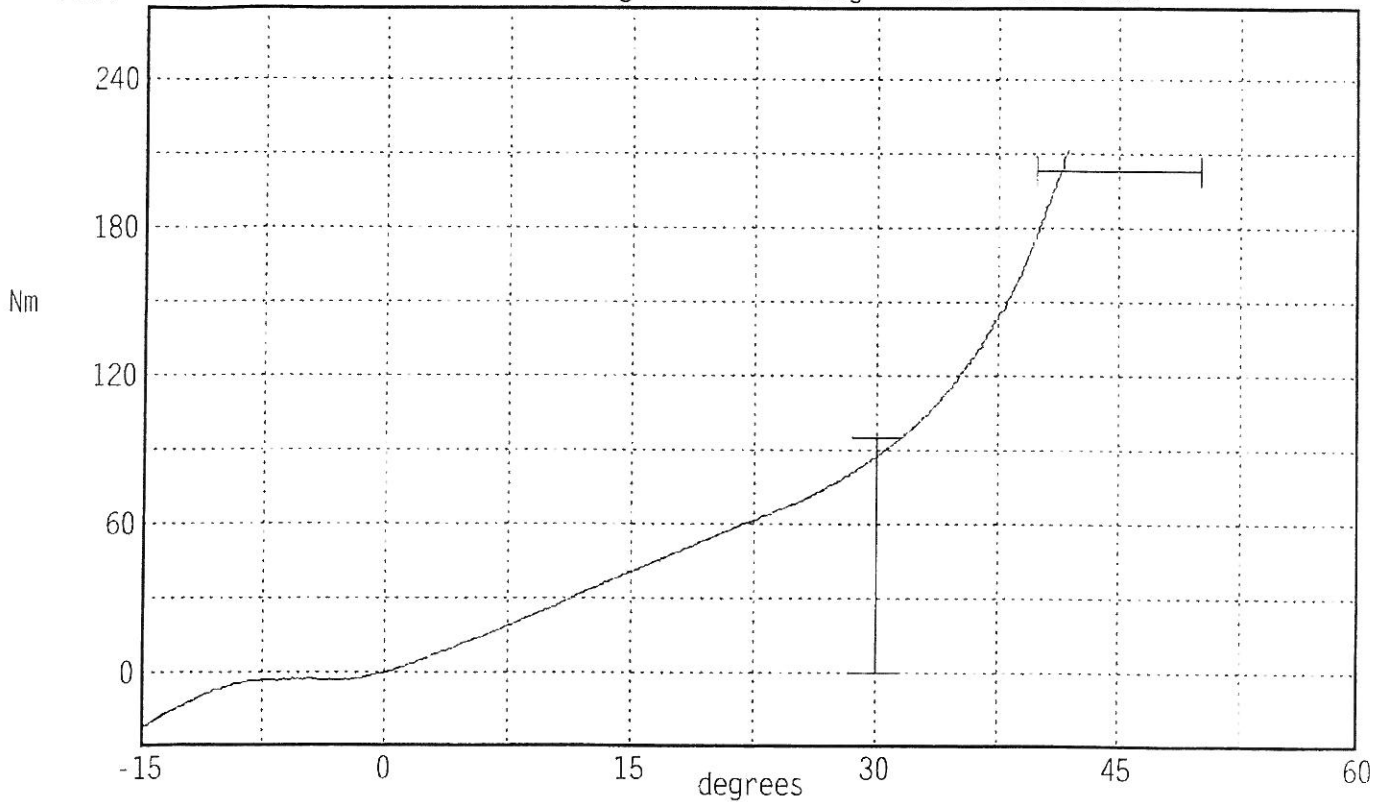
Serial Number: 001R
Test Number: 001C11
Comments:

Date: 11/25/2008
Time: 14:34

TEST PARAMETER	SPECIFICATION	TEST RESULTS	
Temperature	18.9 - 25.6	21.1 °C	Pass
Humidity	10 - 70	24 %	Pass
Moment at 30 deg	<= 94.9	87.6 Nm	Pass
Angle at 203 Nm	40.0 - 50.0	41.6 deg	Pass
Average Velocity	5.0 - 10.0	7.4 deg/sec	Pass

Peak Moment: 211.5 Nm at 41.9 deg
Peak Angle: 41.9 deg at 211.5 Nm

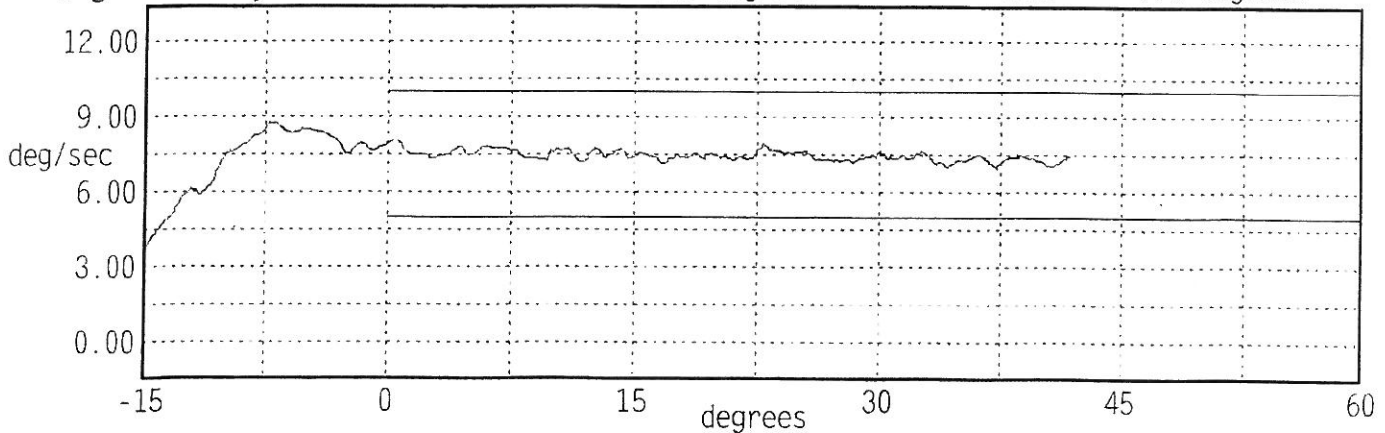
Moment About H-Point



Angular Velocity

Max: 8.1 deg/sec

Min: 7.0 deg/sec



Transportation Research Center Inc.

Left Knee Femur Response Test

HIII 50th Serial No. 001 Certification No. 11-1

Test Date: 11/24/2008

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.5 °C	Yes
Relative Humidity	10 - 70 %	26 %	Yes
Probe Velocity	2.08 - 2.13 m/s	2.084 m/s	Yes
Peak Femur Force	(-4,715.2) - (-5,782.6) N	-5,272.94 N	Yes

Test meets specifications.

Comments:

Technician

Raet Bonch

Approved

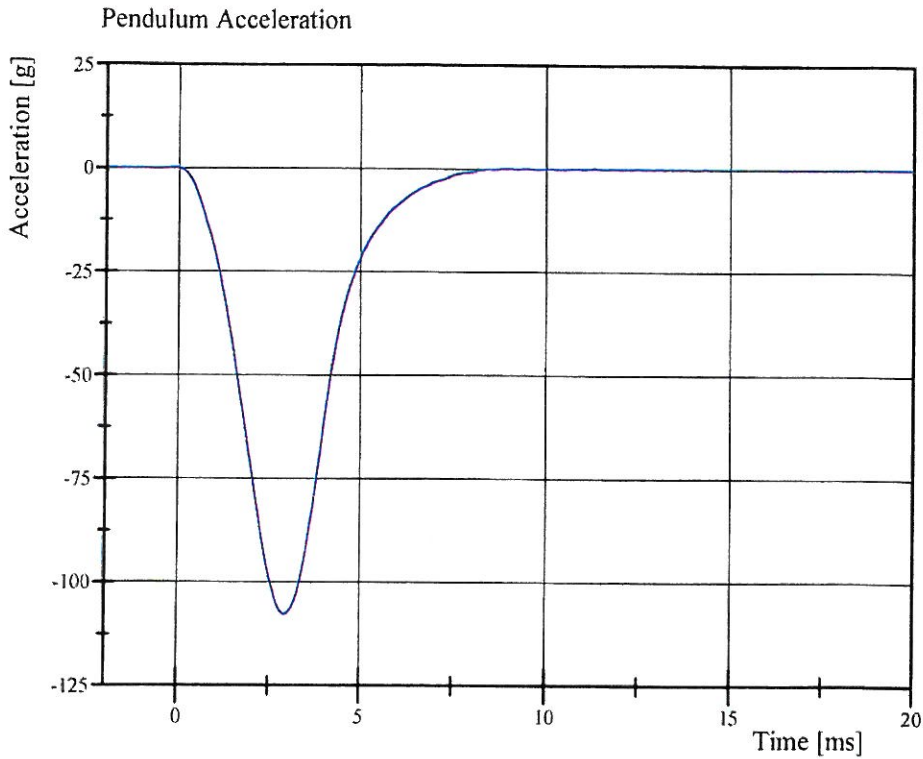
Ron Starn

Transportation Research Center Inc.

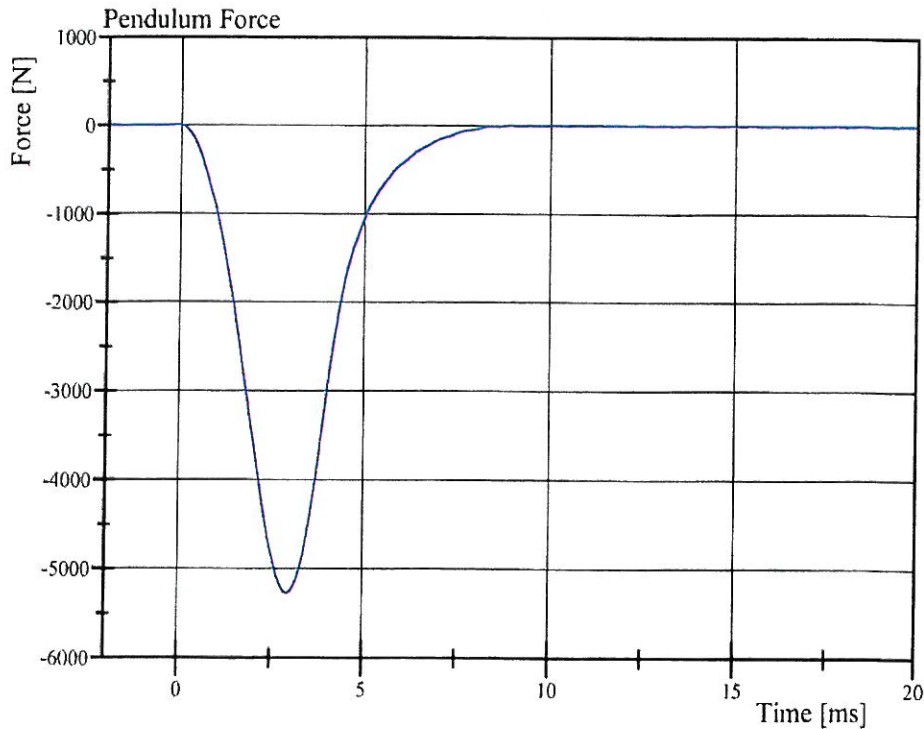
Left Knee Femur Response Test

HIII 50th Serial No. 001 Certification No. 11-1

Test Date: 11/24/2008



Filter Class: CFC_600
Max: 0.1 g at -0.1 ms
Min: -107.8 g at 3.0 ms



Filter Class: CFC_600
Max: 6.8 N at -0.1 ms
Min: -5,272.9 N at 3.0 ms

Transportation Research Center Inc.

Right Knee Femur Response Test

HIII 50th Serial No. 001 Certification No. 11-1

Test Date: 11/24/2008

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.5 °C	Yes
Relative Humidity	10 - 70 %	26 %	Yes
Probe Velocity	2.08 - 2.13 m/s	2.082 m/s	Yes
Peak Femur Force	(-4,715.2) - (-5,782.6) N	-4,894.21 N	Yes

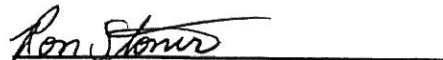
Test meets specifications.

Comments:

Technician



Approved

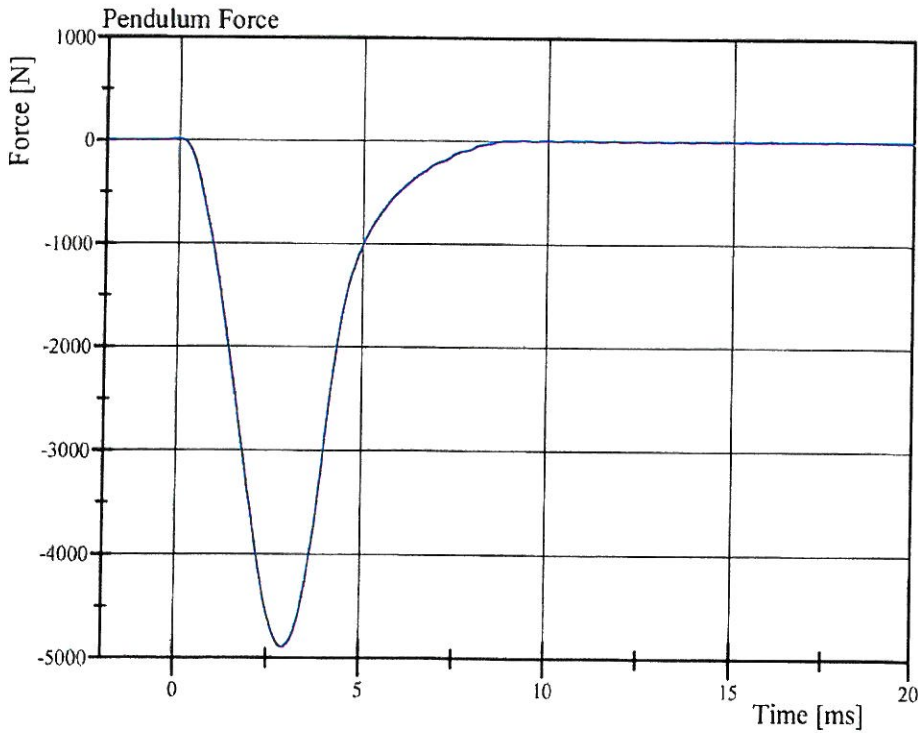


Transportation Research Center Inc.

Right Knee Femur Response Test
HIII 50th Serial No. 001 Certification No. 11-1
Test Date: 11/24/2008



Filter Class: CFC_600
Max: 0.2 g at 0.0 ms
Min: -100.0 g at 2.9 ms



Filter Class: CFC_600
Max: 11.5 N at 0.0 ms
Min: -4,894.2 N at 2.9 ms

Calibration Test Results

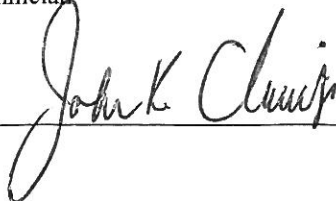
Pre-Test

Right Front Passenger Dummy S/N: 110

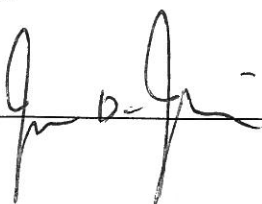
Transportation Research Center Inc.
572E HIII 50th Male Dummy
External Dimensions
Serial No. 110 Calibration No. 31

Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Total Sitting Height	878.8 - 889.0	885	Yes
B	Shoulder Pivot Height	505.5 - 520.7	513	Yes
C	H-Point Height	83.8 - 88.9	87	Yes
D	H-Point From Seatback	134.6 - 139.7	138	Yes
E	Shoulder Pivot From Backline	83.8 - 94.0	93	Yes
F	Thigh Clearance	139.7 - 154.9	152	Yes
G	Back Of Elbow To Wrist Pivot	289.6 - 304.8	292	Yes
H	Skull Cap To Backline	40.6 - 45.7	44	Yes
I	Shoulder-Elbow Length	330.2 - 345.4	337	Yes
J	Elbow Rest Height	190.5 - 210.8	202	Yes
K	Buttock Knee Length	579.1 - 604.5	598	Yes
L	Popliteal Height	429.3 - 454.7	445	Yes
M	Knee Pivot Height	485.1 - 500.4	495	Yes
N	Buttock Popliteal Length	452.1 - 477.5	473	Yes
O	Chest Depth	213.4 - 228.6	225	Yes
P	Foot Length	251.5 - 266.7	260	Yes
V	Shoulder Breadth	421.6 - 436.9	431	Yes
W	Foot Breadth	91.4 - 106.7	100	Yes
Y	Chest Circumference	970.3 - 1000.8	996	Yes
Z	Waist Circumference	835.7 - 866.1	861	Yes
AA	Location For Chest Circumference	429.3 - 434.3	431	Yes
BB	Location For Waist Circumference	226.1 - 231.1	229	Yes

Technician



Approved



Transportation Research Center Inc.

Front Head Drop

HIII 50th Serial No. 110 Certification No. 31-2


Test Date: 6/26/2009

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	50 %	Yes
Peak Head Resultant Acceleration	225 - 275 g	241.3 g	Yes
Peak Head Lateral Acceleration	(-15) - 15 g	4.5 g	Yes
Is Acceleration Curve Unimodal within 10% of Peak?	Yes	Yes	Yes

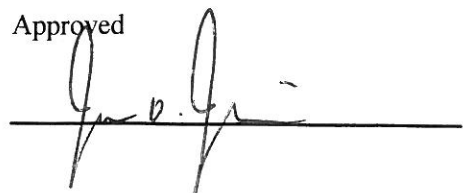
Test meets specifications.

Comments:

Technician



Approved

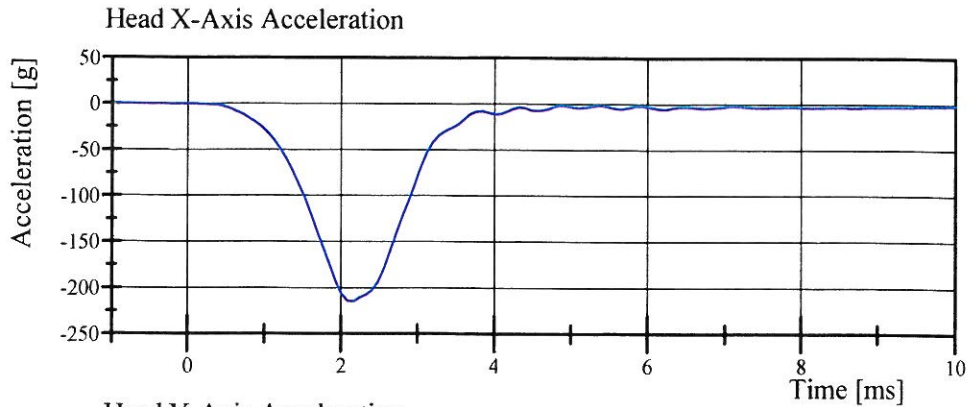


Transportation Research Center Inc.

Front Head Drop

HIII 50th Serial No. 110 Certification No. 31-2

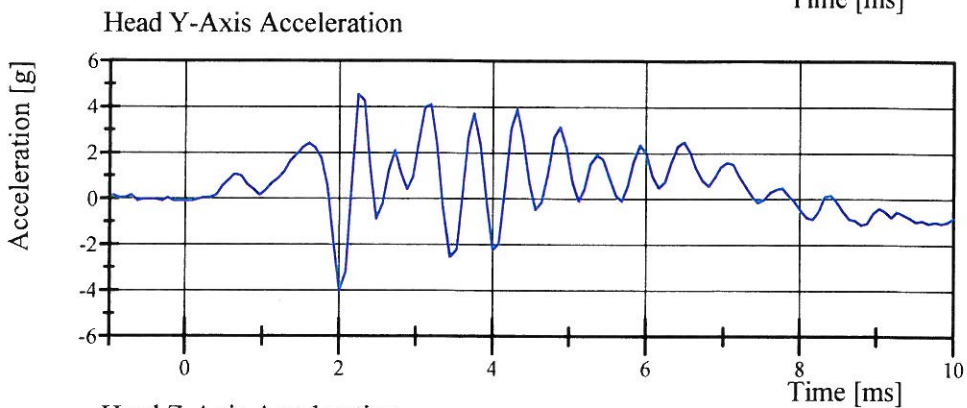
Test Date: 6/26/2009



Filter Class: CFC_1000

Max: 0.3 g at -0.9 ms

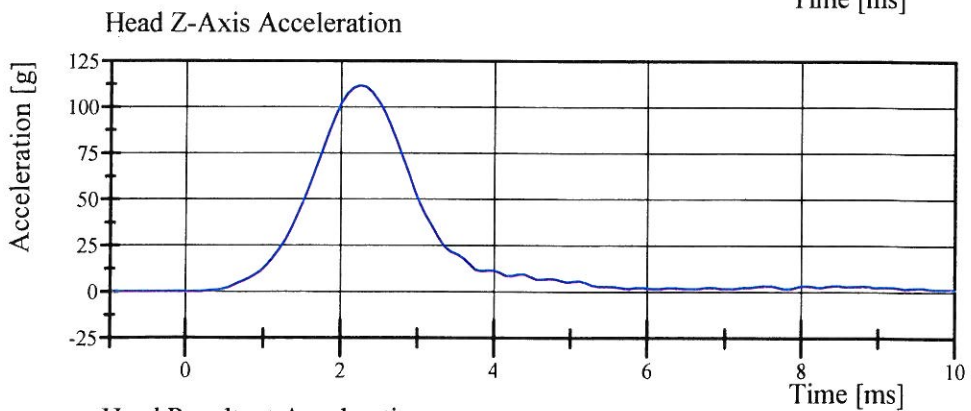
Min: -214.5 g at 2.2 ms



Filter Class: CFC_1000

Max: 4.5 g at 2.2 ms

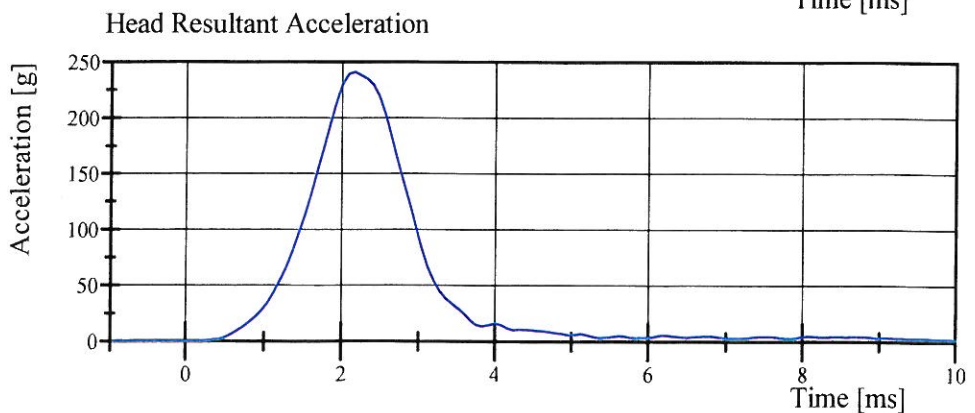
Min: -4.0 g at 2.0 ms



Filter Class: CFC_1000

Max: 111.7 g at 2.2 ms

Min: -0.1 g at -0.9 ms



Filter Class: CFC_1000

Max: 241.3 g at 2.2 ms

Min: 0.1 g at -0.5 ms

Transportation Research Center Inc.

Neck Flexion

HIII 50th Serial No. 110 Certification No. 31-1

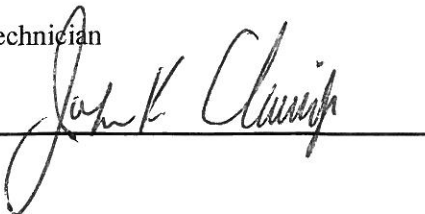
Test Date: 6/27/2009

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	48 %	Yes
Pendulum Velocity	6.89 - 7.13 m/s	6.927 m/s	Yes
Pendulum Acceleration Decay Crossing -5g	34 - 42 ms	36.0 ms	Yes
Pendulum Acceleration at 10ms	(-22.5) - (-27.5) g	-25.63 g	Yes
Pendulum Acceleration at 20ms	(-17.6) - (-22.6) g	-20.29 g	Yes
Pendulum Acceleration at 30ms	(-12.5) - (-18.5) g	-17.61 g	Yes
Pendulum Acceleration > 30ms	>= (-29.0) g	-17.61 g	Yes
Total Head D-Plane Rotation Peak	(-64) - (-78) °	-75.1 °	Yes
Time of Peak	57 - 64 ms	61.1 ms	Yes
Total Head D-Plane Rotation Decay to 0°	113 - 128 ms	122.3 ms	Yes
Total Neck Occipital Condyles Moment Peak	88 - 108 N·m	97.2 N·m	Yes
Time of Peak	47 - 58 ms	49.9 ms	Yes
Total Neck Occipital Condyles Moment Decay to 0 N·m	97 - 107 ms	101.3 ms	Yes

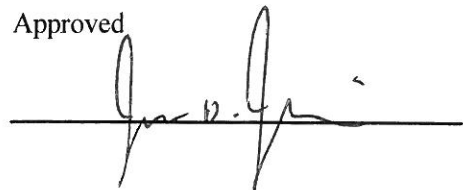
Test meets specifications.

Comments:

Technician



Approved

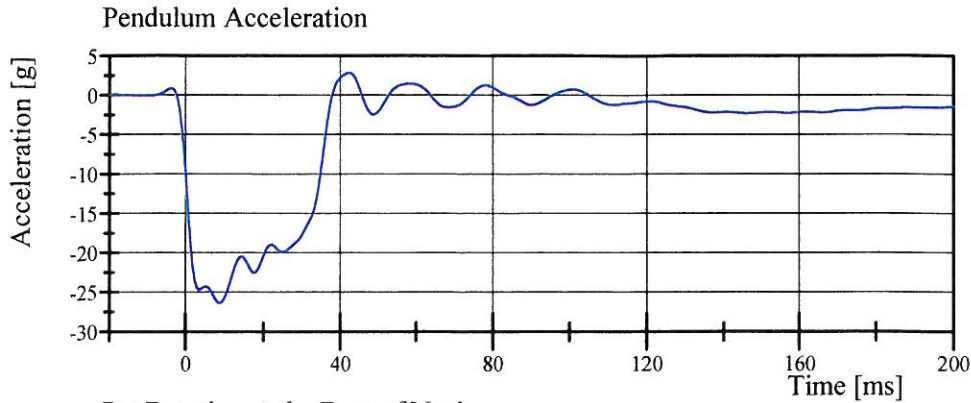


Transportation Research Center Inc.

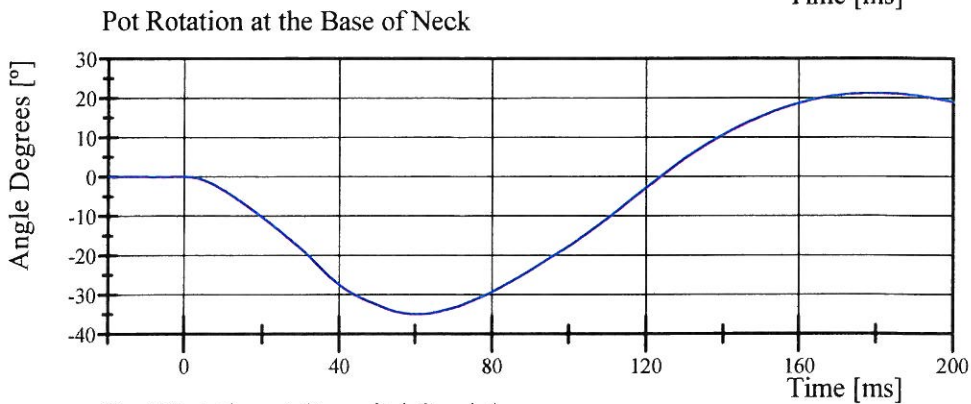
Neck Flexion

HIII 50th Serial No. 110 Certification No. 31-1

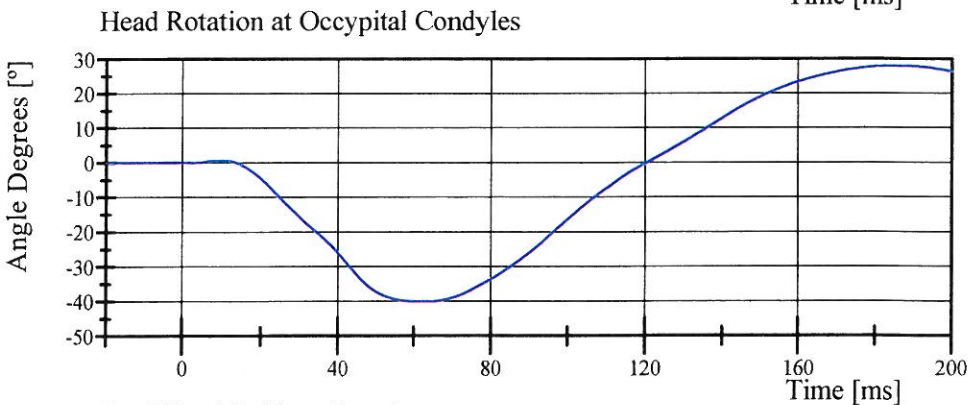
Test Date: 6/27/2009



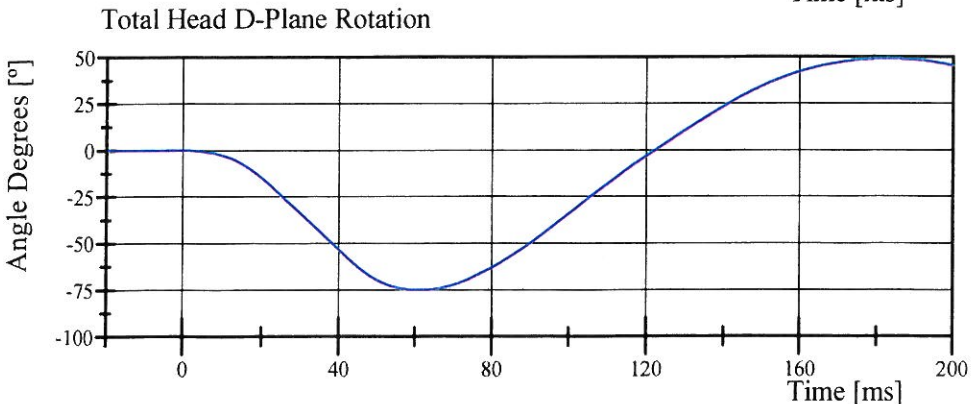
Filter Class: CFC_60
Max: 2.9 g at 42.3 ms
Min: -26.3 g at 8.8 ms



Filter Class: CFC_60
Max: 21.3 ° at 180.2 ms
Min: -35.0 ° at 60.9 ms



Filter Class: CFC_60
Max: 27.9 ° at 186.6 ms
Min: -40.1 ° at 62.0 ms



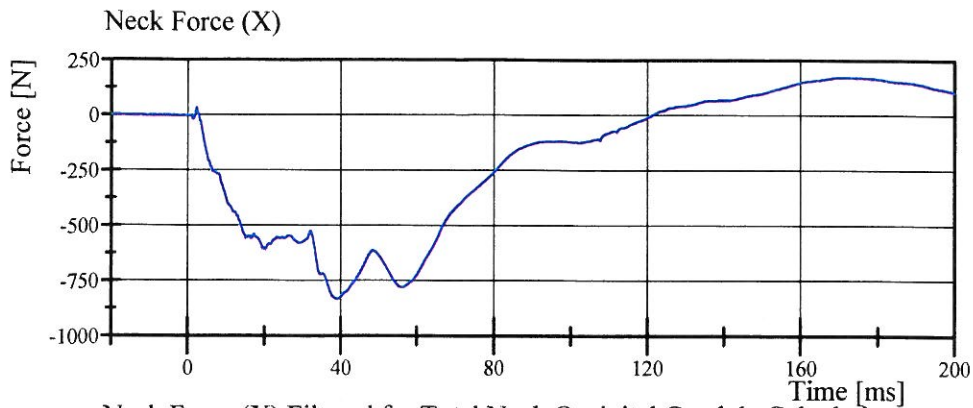
Filter Class: CFC_60
Max: 49.1 ° at 182.9 ms
Min: -75.1 ° at 61.1 ms

Transportation Research Center Inc.

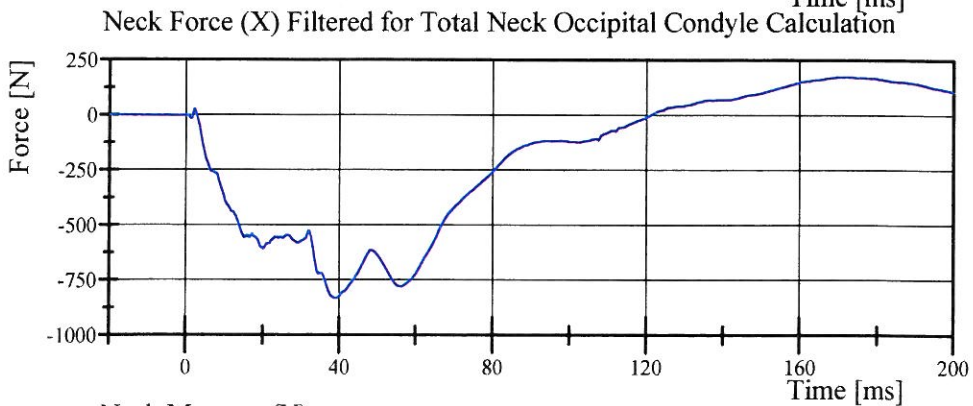
Neck Flexion

HIII 50th Serial No. 110 Certification No. 31-1

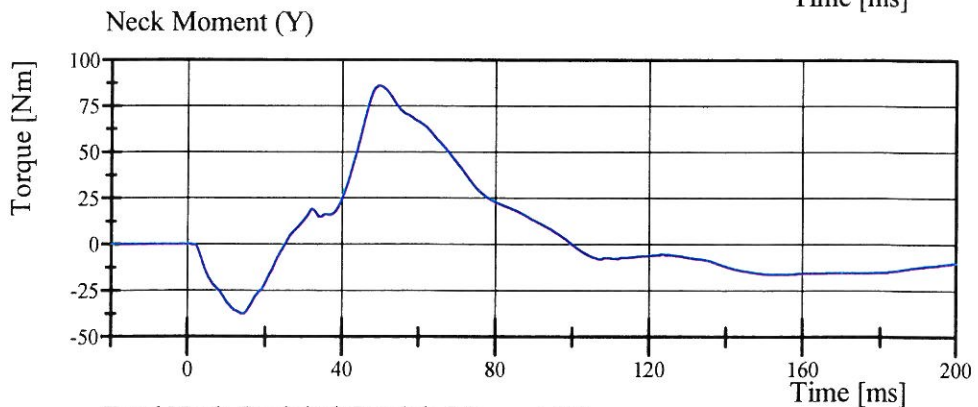
Test Date: 6/27/2009



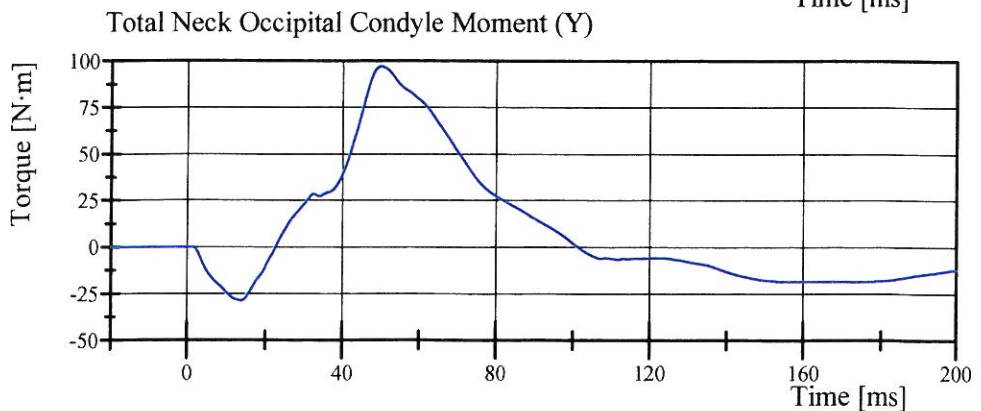
Filter Class: CFC_1000
Max: 174.9 N at 170.7 ms
Min: -832.7 N at 39.0 ms



Filter Class: CFC_600
Max: 174.6 N at 171.0 ms
Min: -832.1 N at 38.9 ms



Filter Class: CFC_600
Max: 86.0 Nm at 49.7 ms
Min: -37.5 Nm at 14.2 ms



Filter Class: CFC_600
Max: 97.2 N·m at 49.9 ms
Min: -28.6 N·m at 13.6 ms

Transportation Research Center Inc.

Neck Extension

HIII 50th Serial No. 110 Certification No. 31-2

Test Date: 6/27/2009

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	50 %	Yes
Pendulum Velocity	(-5.95) - (-6.18) m/s	-5.967 m/s	Yes
Pendulum Acceleration Decay Crossing 5g	38 - 46 ms	39.5 ms	Yes
Pendulum Acceleration at 10ms	17.2 - 21.2 g	19.92 g	Yes
Pendulum Acceleration at 20ms	14.0 - 19.0 g	17.64 g	Yes
Pendulum Acceleration at 30ms	11.0 - 16.0 g	13.16 g	Yes
Pendulum Acceleration > 30ms	<= 22.0 g	13.42 g	Yes
Total Head D-Plane Rotation Peak	81 - 106 °	98.4 °	Yes
Time of Peak	72 - 82 ms	77.8 ms	Yes
Total Head D-Plane Rotation Decay to 0°	147 - 174 ms	157.6 ms	Yes
Total Neck Occipital Condyles Moment Peak	(-53) - (-80) N·m	-71.0 N·m	Yes
Time of Peak	65 - 79 ms	70.6 ms	Yes
Total Neck Occipital Condyles Moment Decay to 0 N·m	120 - 148 ms	142.8 ms	Yes

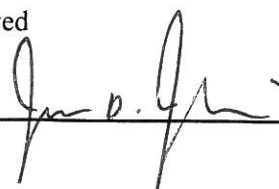
Test meets specifications.

Comments:

Technician



Approved

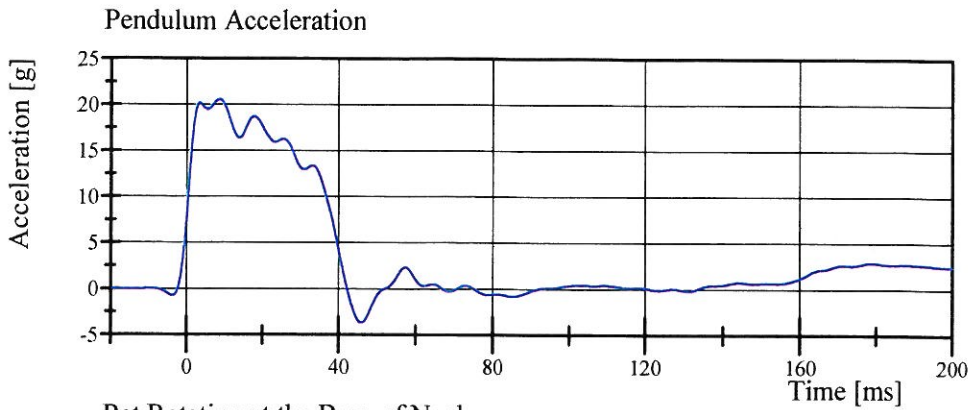


Transportation Research Center Inc.

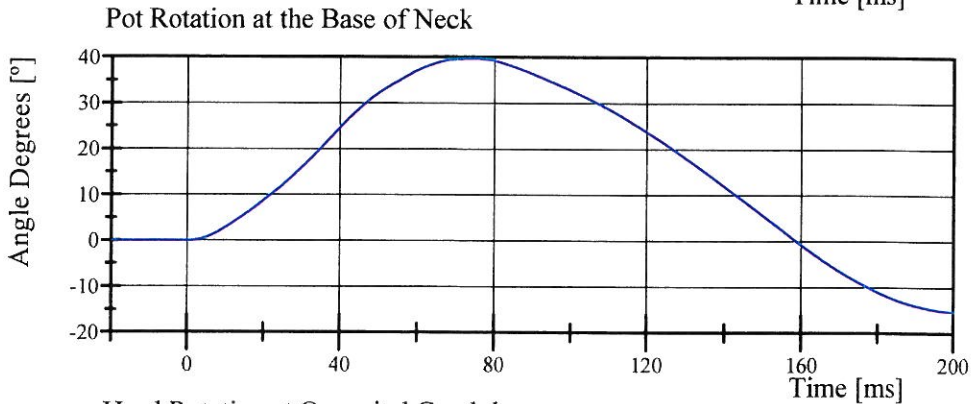
Neck Extension

HIII 50th Serial No. 110 Certification No. 31-2

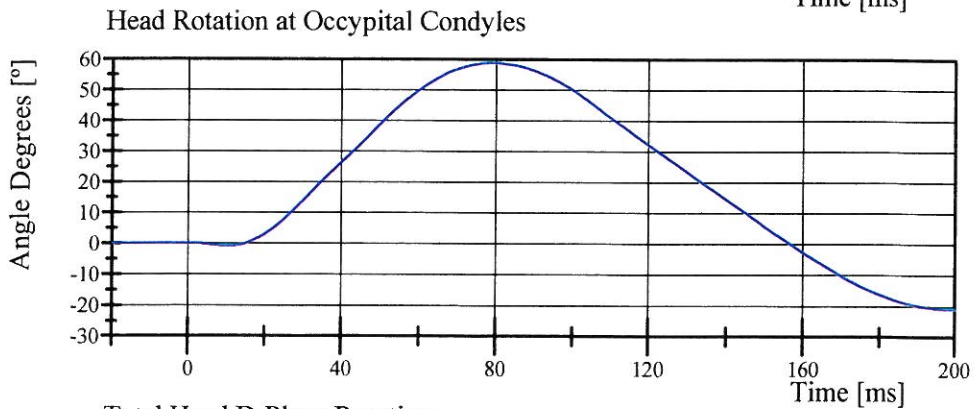
Test Date: 6/27/2009



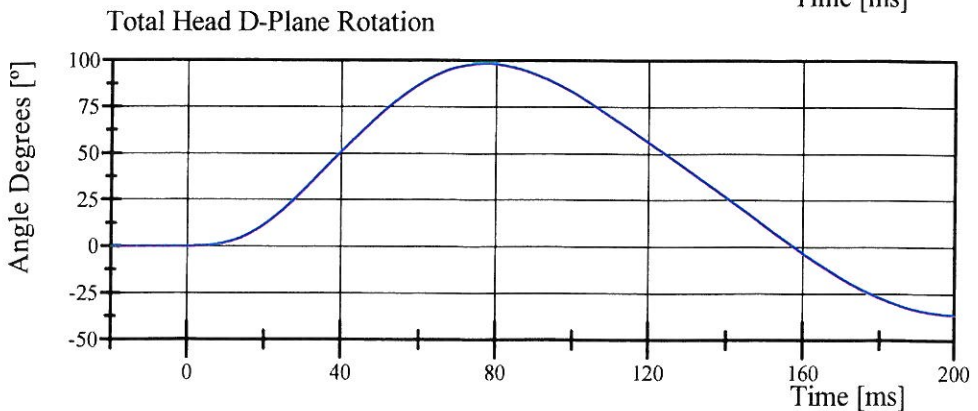
Filter Class: CFC_60
Max: 20.6 g at 8.5 ms
Min: -3.7 g at 45.8 ms



Filter Class: CFC_60
Max: 39.7 ° at 74.0 ms
Min: -15.3 ° at 200.0 ms



Filter Class: CFC_60
Max: 58.9 ° at 78.9 ms
Min: -21.0 ° at 200.0 ms



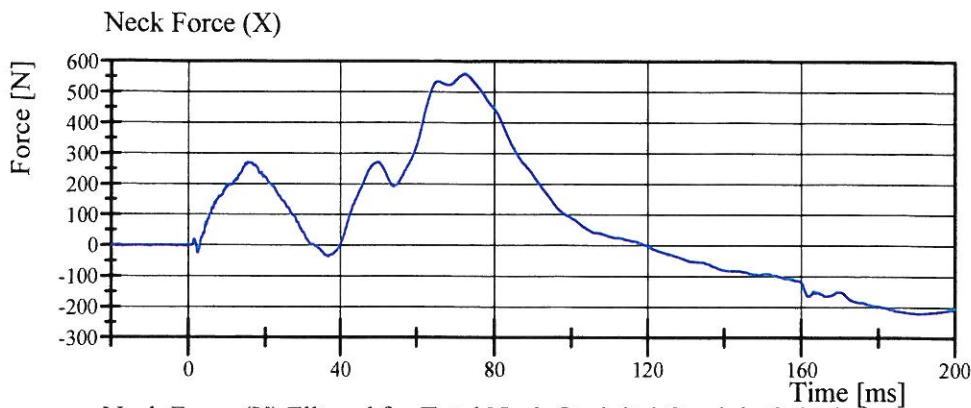
Filter Class: CFC_60
Max: 98.4 ° at 77.8 ms
Min: -36.3 ° at 200.0 ms

Transportation Research Center Inc.

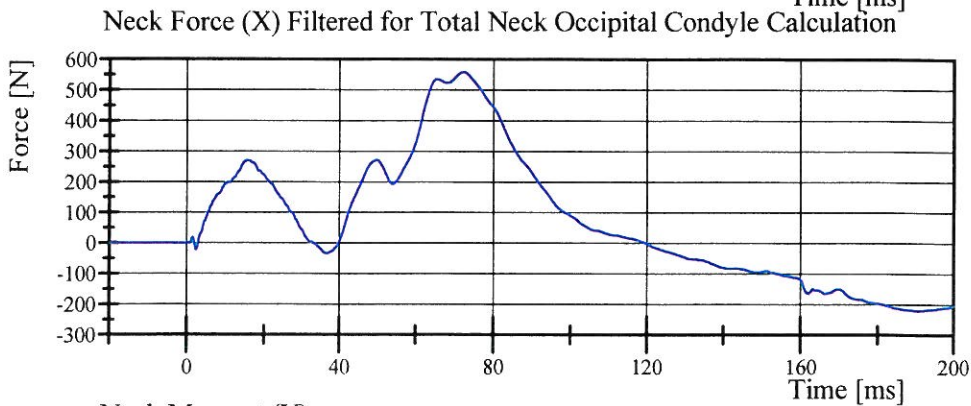
Neck Extension

HIII 50th Serial No. 110 Certification No. 31-2

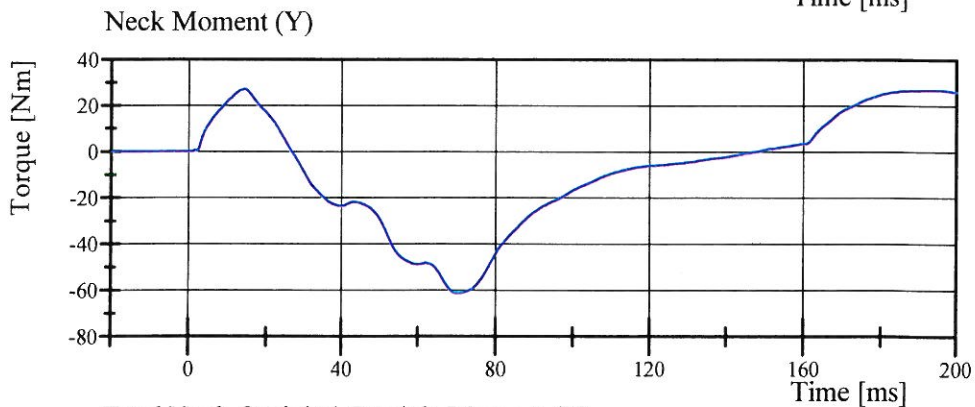
Test Date: 6/27/2009



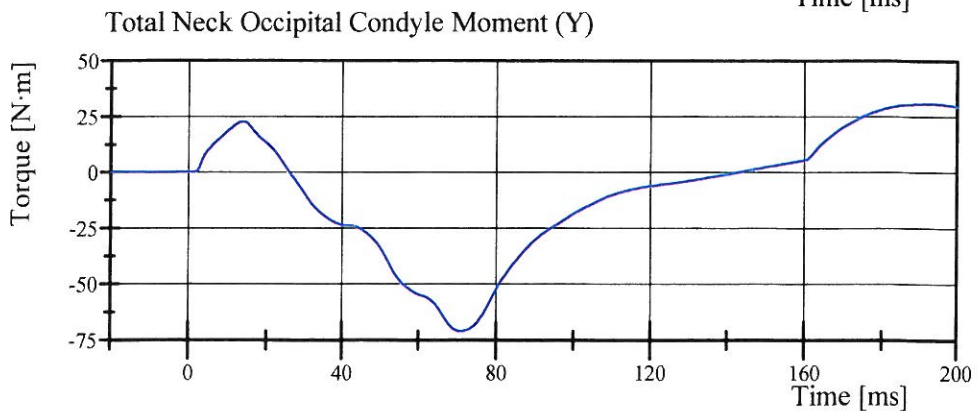
Filter Class: CFC_1000
Max: 560.4 N at 72.0 ms
Min: -221.0 N at 190.7 ms



Filter Class: CFC_600
Max: 560.1 N at 72.0 ms
Min: -220.5 N at 190.8 ms



Filter Class: CFC_600
Max: 27.1 Nm at 14.1 ms
Min: -61.3 Nm at 70.3 ms



Filter Class: CFC_600
Max: 30.8 N·m at 193.1 ms
Min: -71.0 N·m at 70.6 ms

Transportation Research Center Inc.

Front Thorax

HIII 50th Serial No. 110 Certification No. 31-1

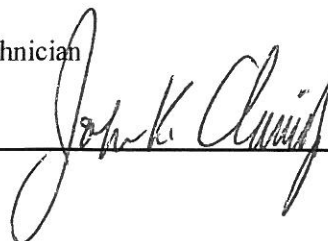
Test Date: 6/27/2009

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.5 °C	Yes
Relative Humidity	10 - 70 %	45 %	Yes
Probe Velocity	6.59 - 6.83 m/s	6.748 m/s	Yes
Probe Force Peak	(-5,160) - (-5,893) N	-5,686.6 N	Yes
Maximum Chest Compression	(-63.5) - (-72.6) mm	-69.64 mm	Yes
Internal Hysteresis	65 - 85 %	73.2 %	Yes

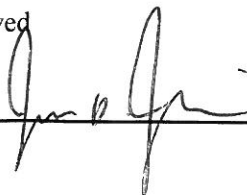
Test meets specifications.

Comments:

Technician



Approved

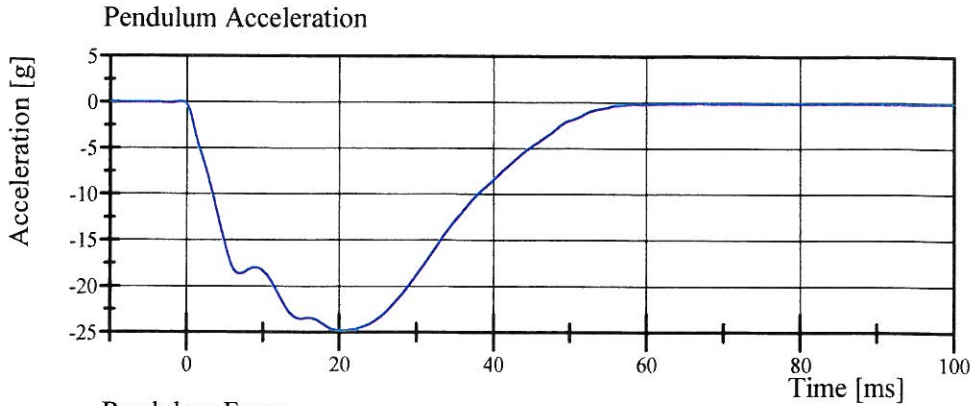


Transportation Research Center Inc.

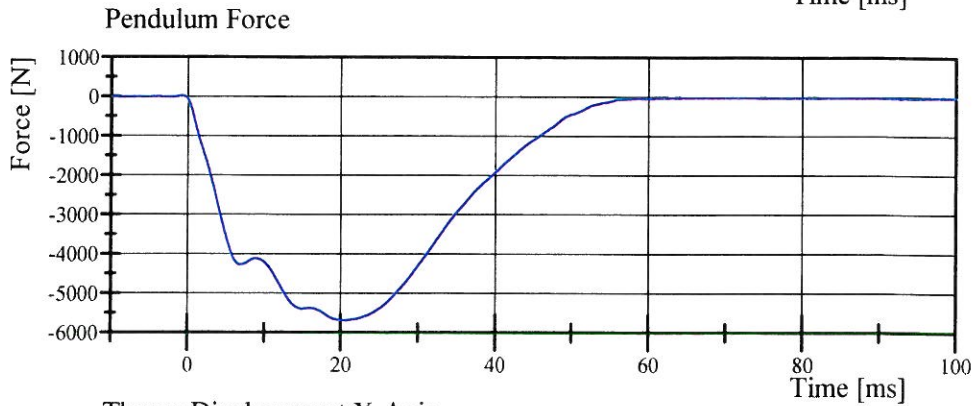
Front Thorax

HIII 50th Serial No. 110 Certification No. 31-1

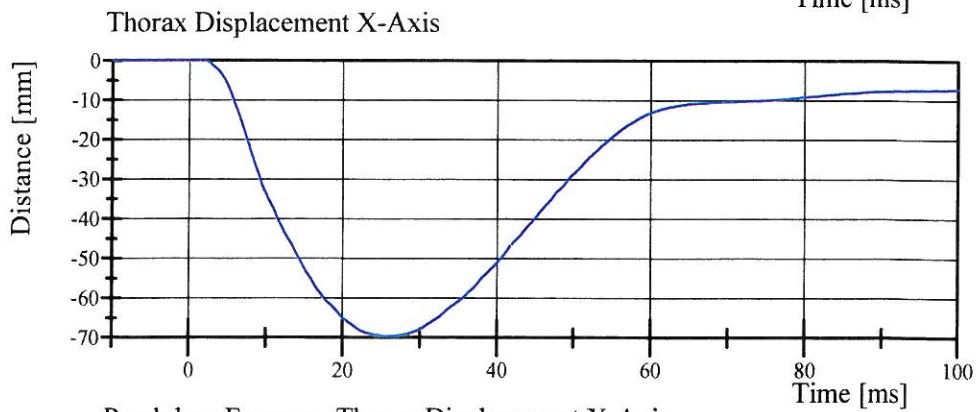
Test Date: 6/27/2009



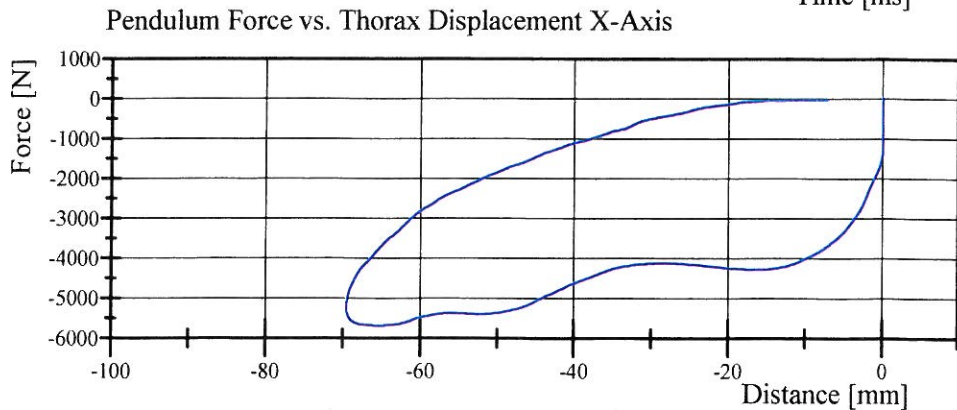
Filter Class: CFC_180
Max: 0.1 g at -0.7 ms
Min: -24.8 g at 20.3 ms



Filter Class: CFC_180
Max: 23.7 N at -0.7 ms
Min: -5,686.6 N at 20.3 ms



Filter Class: CFC_600
Max: 0.0 mm at -9.5 ms
Min: -69.6 mm at 25.8 ms



Filter Class: CFC_180
Max: 23.7 N at 0.0 mm
Min: -5,686.6 N at -65.6 mm

Transportation Research Center Inc

Hybrid III Hip Range of Motion

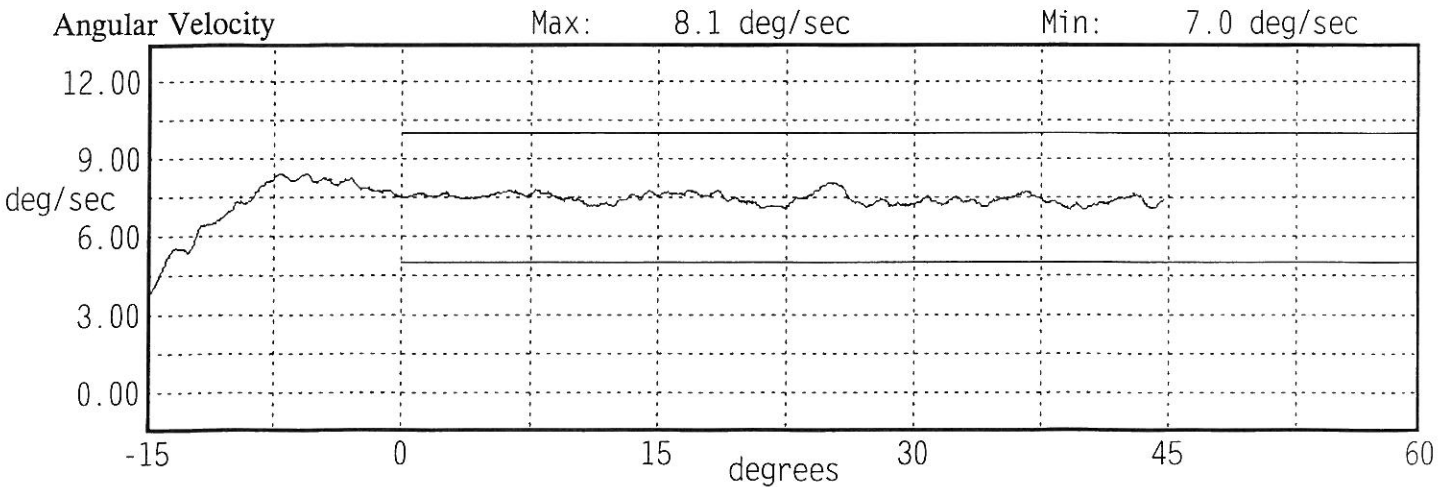
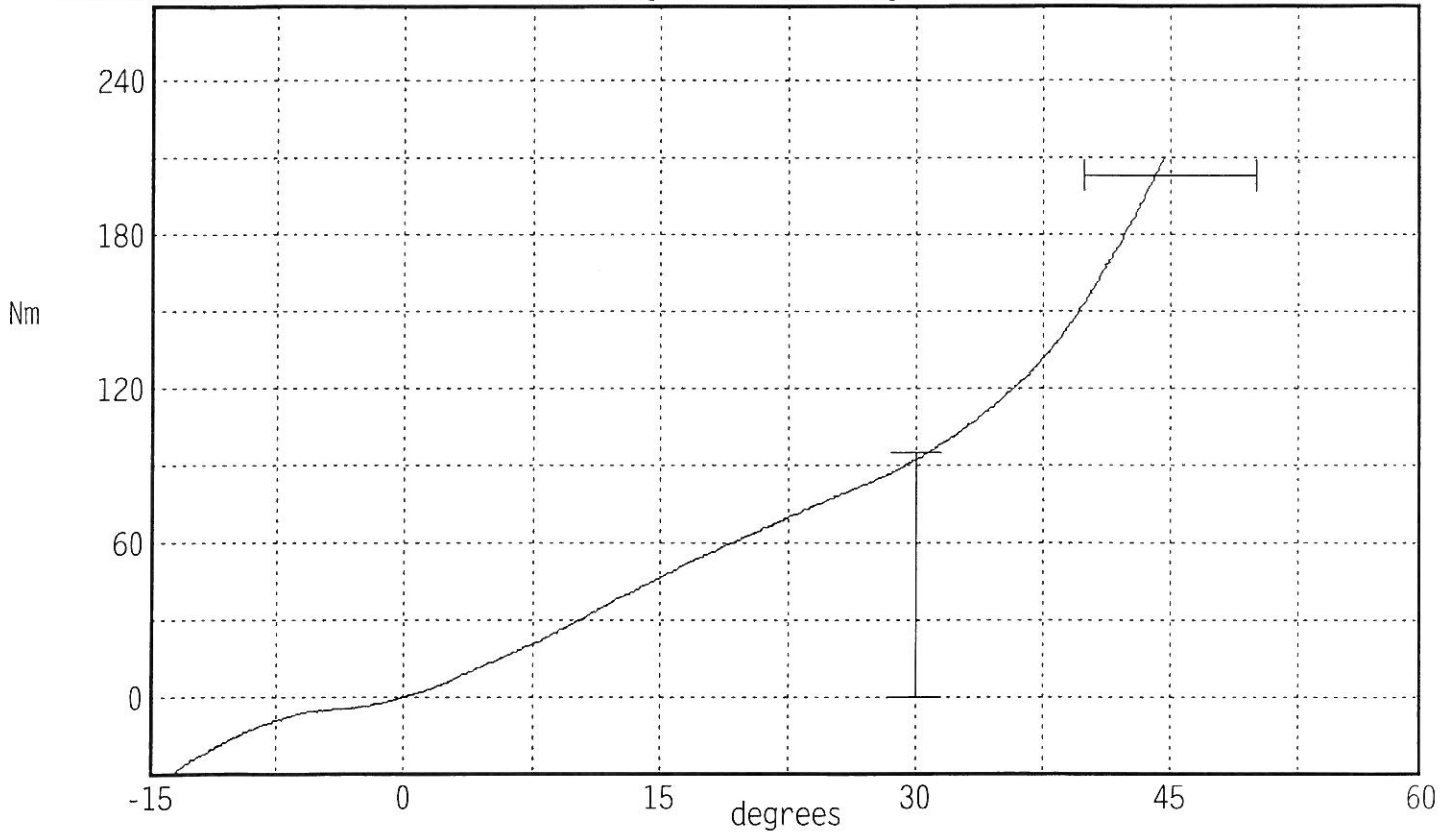
Serial Number: 110R
Test Number: 110C31

Date: 06/25/2009
Time: 16:20

Comments:

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	18.9 - 25.6	21.3 °C Pass
Humidity	10 - 70	45 % Pass
Moment at 30 deg	<= 94.9	92.2 Nm Pass
Angle at 203 Nm	40.0 - 50.0	44.1 deg Pass
Average Velocity	5.0 - 10.0	7.4 deg/sec Pass

Moment About H-Point
Peak Moment: 210.1 Nm at 44.7 deg
Peak Angle: 44.7 deg at 210.1 Nm



Transportation Research Center Inc

Hybrid III Hip Range of Motion

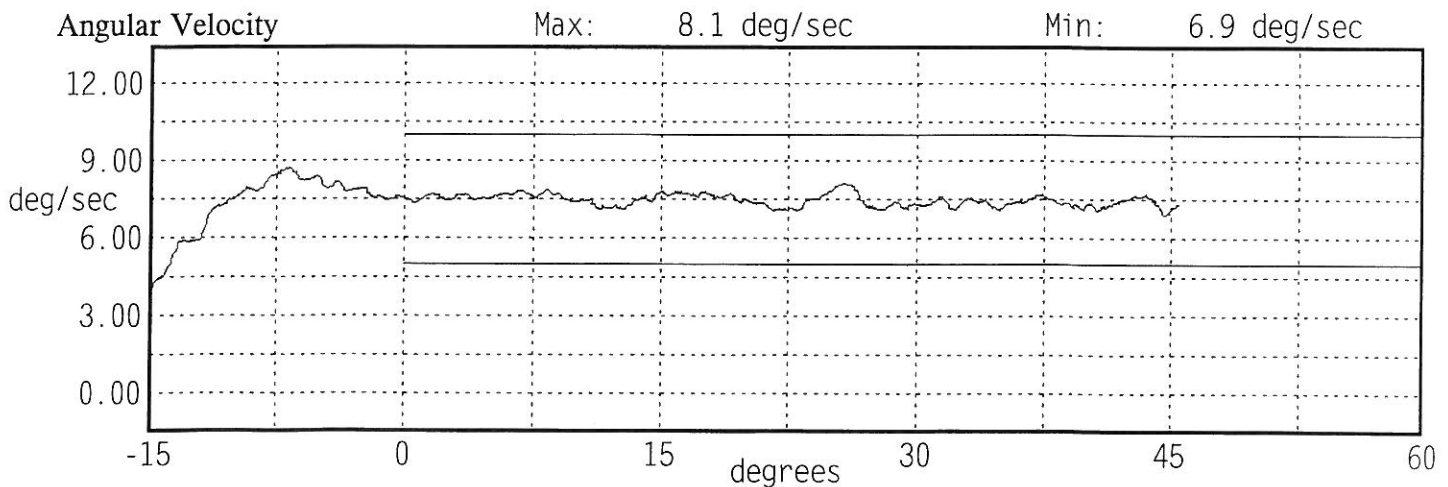
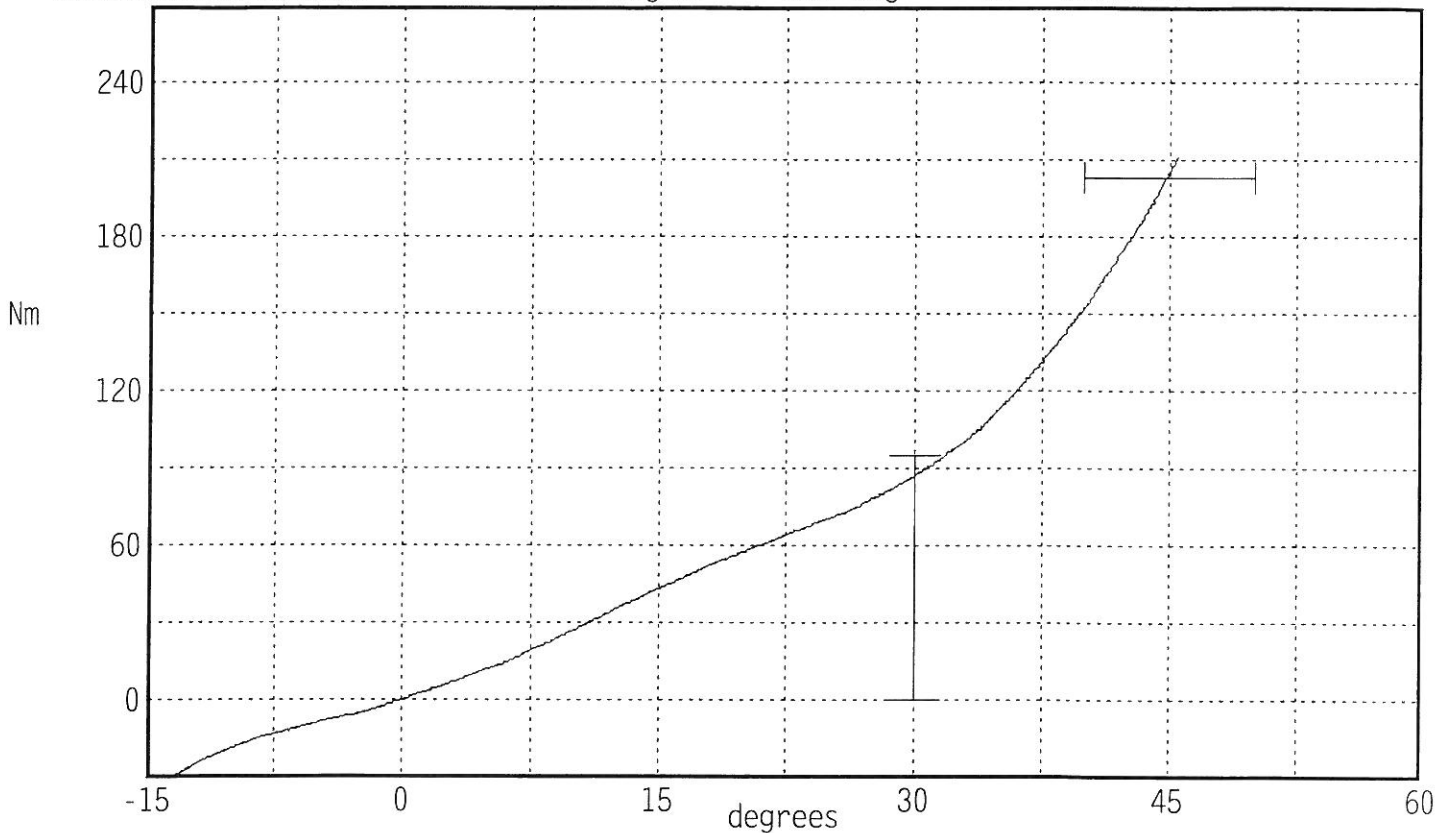
Serial Number: 110L
Test Number: 110C31

Date: 06/25/2009
Time: 16:13

Comments:

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	18.9 - 25.6	21.3 °C Pass
Humidity	10 - 70	45 % Pass
Moment at 30 deg	<= 94.9	87.4 Nm Pass
Angle at 203 Nm	40.0 - 50.0	44.8 deg Pass
Average Velocity	5.0 - 10.0	7.4 deg/sec Pass

Moment About H-Point
Peak Moment: 211.0 Nm at 45.5 deg
Peak Angle: 45.5 deg at 211.0 Nm



Transportation Research Center Inc.

Left Knee Femur Response Test
HIII 50th Serial No. 110 Certification No. 31-1
Test Date: 6/26/2009

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	49 %	Yes
Probe Velocity	2.08 - 2.13 m/s	2.087 m/s	Yes
Peak Femur Force	(-4,715.2) - (-5,782.6) N	-4,941.99 N	Yes

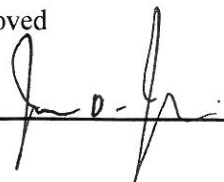
Test meets specifications.

Comments:

Technician

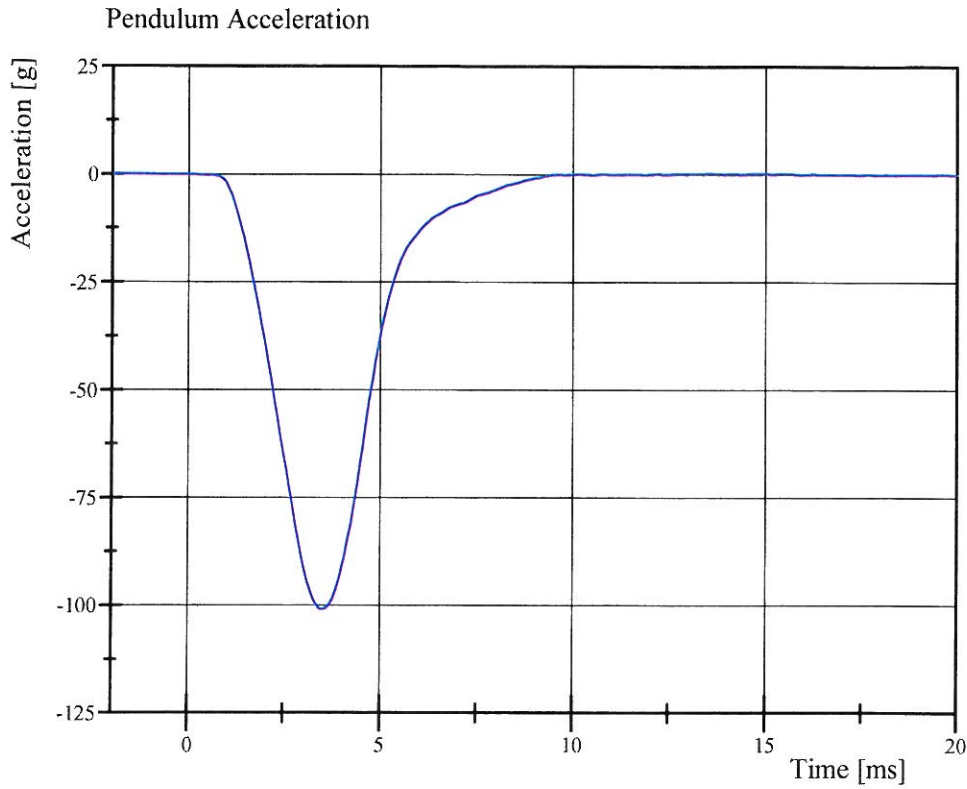


Approved

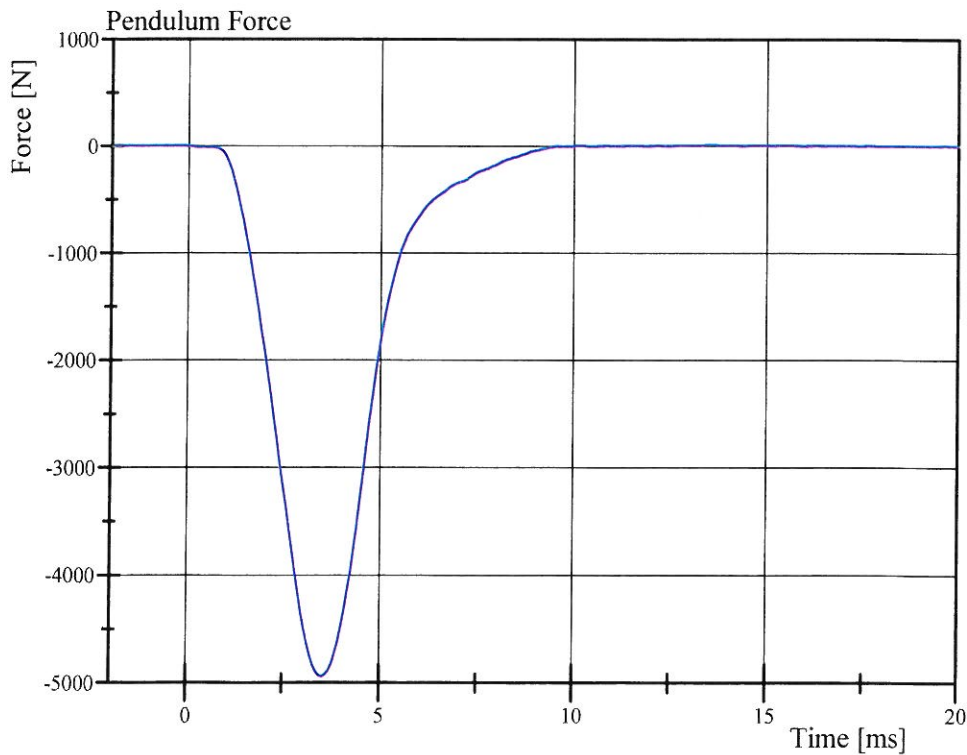


Transportation Research Center Inc.

Left Knee Femur Response Test
HIII 50th Serial No. 110 Certification No. 31-1
Test Date: 6/26/2009



Filter Class: CFC_600
Max: 0.2 g at 13.6 ms
Min: -101.0 g at 3.5 ms



Filter Class: CFC_600
Max: 11.3 N at 13.6 ms
Min: -4,942.0 N at 3.5 ms

Transportation Research Center Inc.

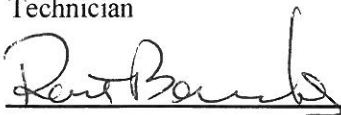
Right Knee Femur Response Test
HIII 50th Serial No. 110 Certification No. 31-1
Test Date: 6/26/2009

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.5 °C	Yes
Relative Humidity	10 - 70 %	49 %	Yes
Probe Velocity	2.08 - 2.13 m/s	2.084 m/s	Yes
Peak Femur Force	(-4,715.2) - (-5,782.6) N	-5,122.99 N	Yes

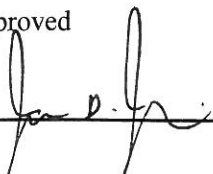
Test meets specifications.

Comments:

Technician

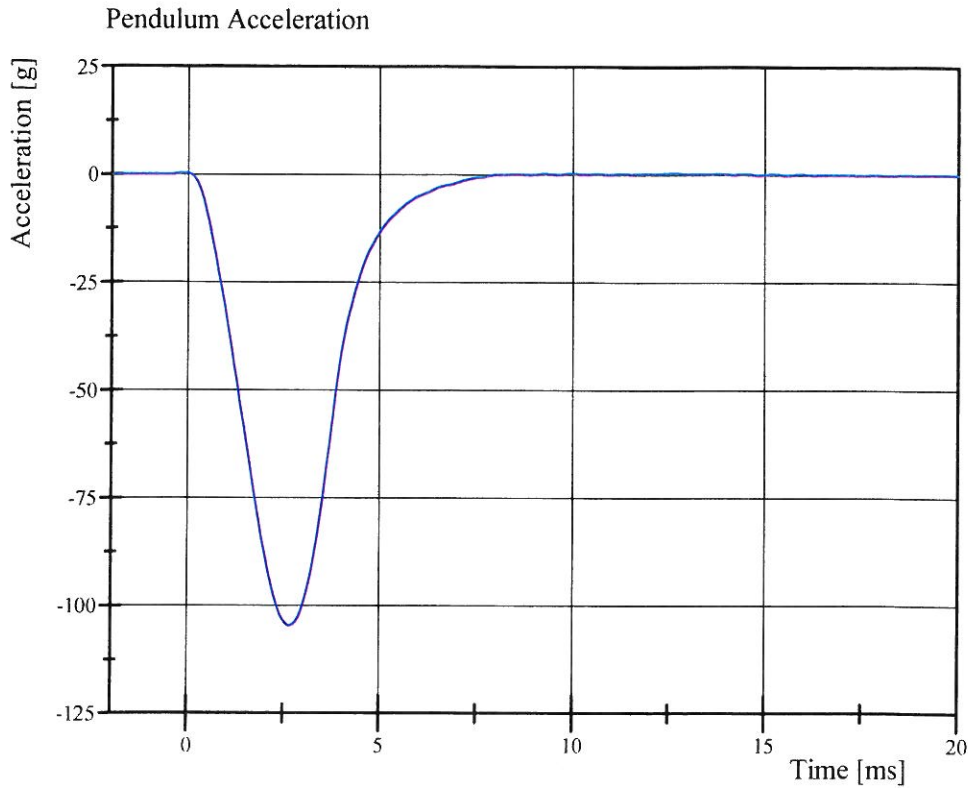


Approved

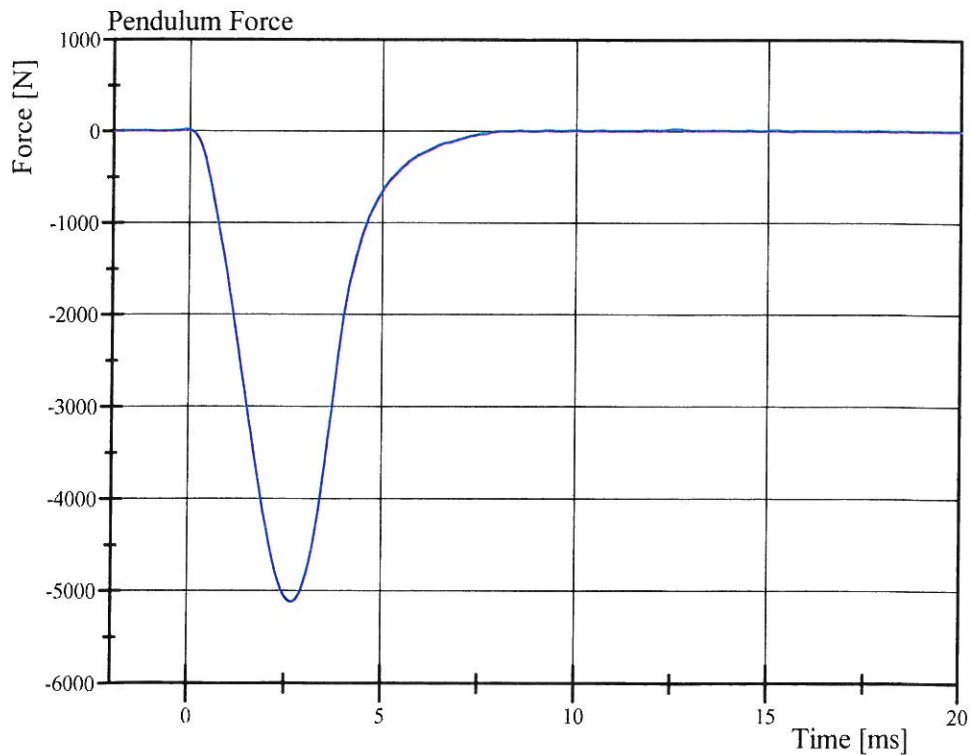


Transportation Research Center Inc.

Right Knee Femur Response Test
HIII 50th Serial No. 110 Certification No. 31-1
Test Date: 6/26/2009



Filter Class: CFC_600
Max: 0.5 g at 12.6 ms
Min: -104.7 g at 2.6 ms



Filter Class: CFC_600
Max: 22.0 N at 12.6 ms
Min: -5,123.0 N at 2.6 ms

Calibration Test Results

Pre-Test

Left Rear Passenger Dummy S/N: 043

Transportation Research Center Inc.
572E HIII 50th Male Dummy
External Dimensions
Serial No. 043
Calibration No. 05

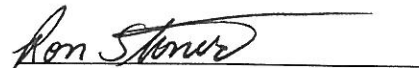
Symbol	Description	Specification	Results	Pass
		mm	mm	
A	Total Sitting Height	878.8 - 889.0	882	Yes
B	Shoulder Pivot Height	505.5 - 520.7	518	Yes
C	H-Point Height	83.8 - 88.9	87	Yes
D	H-Point From Seatback	134.6 - 139.7	136	Yes
E	Shoulder Pivot From Backline	83.8 - 94.0	89	Yes
F	Thigh Clearance	139.7 - 154.9	153	Yes
G	Back Of Elbow To Wrist Pivot	289.6 - 304.8	294	Yes
H	Skull Cap To Backline	40.6 - 45.7	45	Yes
I	Shoulder-Elbow Length	330.2 - 345.4	332	Yes
J	Elbow Rest Height	190.5 - 210.8	203	Yes
K	Buttock Knee Length	579.1 - 604.5	601	Yes
L	Popliteal Height	429.3 - 454.7	435	Yes
M	Knee Pivot Height	485.1 - 500.4	495	Yes
N	Buttock Popliteal Length	452.1 - 477.5	470	Yes
O	Chest Depth	213.4 - 228.6	223	Yes
P	Foot Length	251.5 - 266.7	260	Yes
V	Shoulder Breadth	421.6 - 436.9	430	Yes
W	Foot Breadth	91.4 - 106.7	100	Yes
Y	Chest Circumference	970.3 - 1000.8	988	Yes
Z	Waist Circumference	835.7 - 866.1	858	Yes
AA	Location For Chest Circumference	429.3 - 434.3	430	Yes
BB	Location For Waist Circumference	226.1 - 231.1	230	Yes

Comments:

Technician



Approved



Transportation Research Center Inc.

Front Head Drop

HIII 50th Serial No. 043 Certification No. 5-2

Test Date: 11/24/2008

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	31 %	Yes
Peak Head Resultant Acceleration	225 - 275 g	231.0 g	Yes
Peak Head Lateral Acceleration	(-15) - 15 g	3.9 g	Yes
Is Acceleration Curve Unimodal within 10% of Peak?	Yes	Yes	Yes

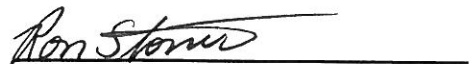
Test meets specifications.

Comments:

Technician



Approved

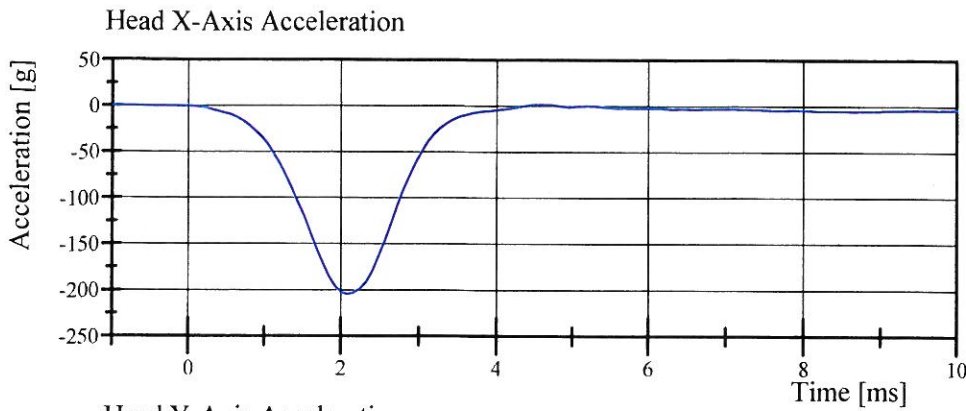


Transportation Research Center Inc.

Front Head Drop

HIII 50th Serial No. 043 Certification No. 5-2

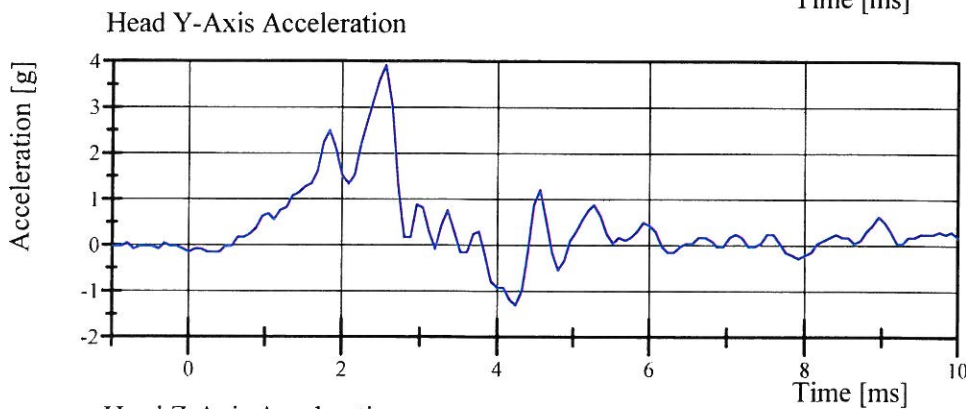
Test Date: 11/24/2008



Filter Class: CFC_1000

Max: 1.8 g at 4.6 ms

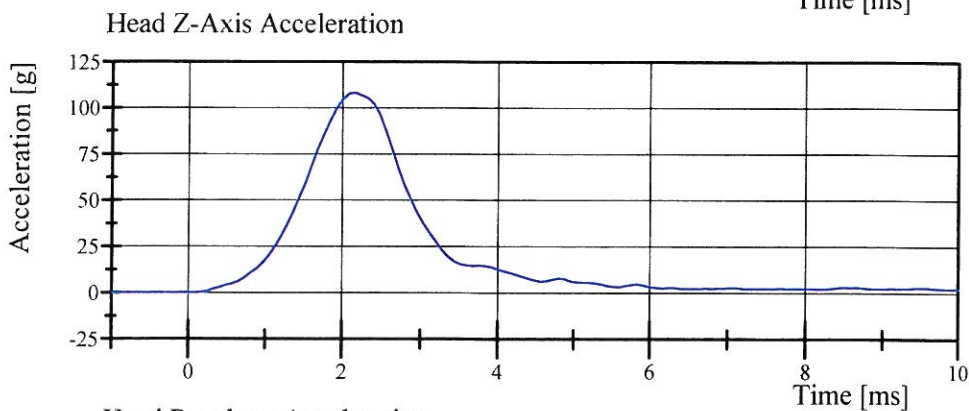
Min: -204.3 g at 2.1 ms



Filter Class: CFC_1000

Max: 3.9 g at 2.6 ms

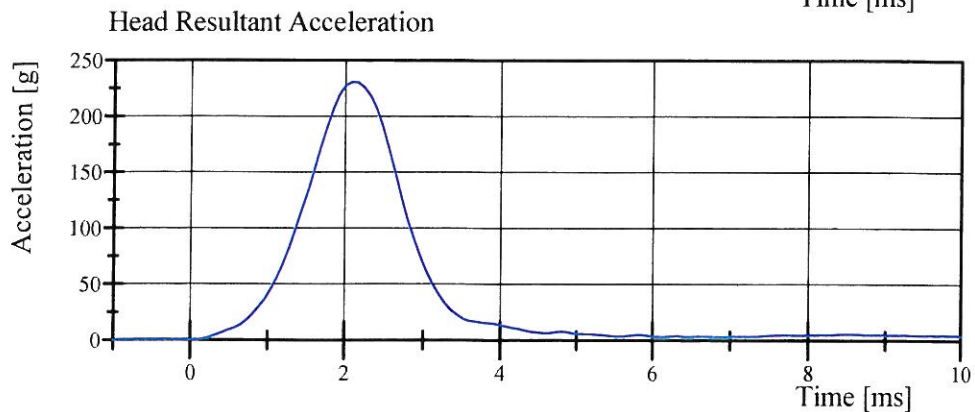
Min: -1.3 g at 4.2 ms



Filter Class: CFC_1000

Max: 108.3 g at 2.2 ms

Min: -0.1 g at -1.0 ms



Filter Class: CFC_1000

Max: 231.0 g at 2.1 ms

Min: 0.0 g at -0.6 ms

Transportation Research Center Inc.

Neck Flexion

HIII 50th Serial No. 043 Certification No. 5-3

Test Date: 11/24/2008

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	29 %	Yes
Pendulum Velocity	6.89 - 7.13 m/s	6.906 m/s	Yes
Pendulum Acceleration Decay Crossing -5g	34 - 42 ms	41.3 ms	Yes
Pendulum Acceleration at 10ms	(-22.5) - (-27.5) g	-23.96 g	Yes
Pendulum Acceleration at 20ms	(-17.6) - (-22.6) g	-20.90 g	Yes
Pendulum Acceleration at 30ms	(-12.5) - (-18.5) g	-14.22 g	Yes
Pendulum Acceleration > 30ms	>= (-29.0) g	-14.22 g	Yes
Total Head D-Plane Rotation Peak	(-64) - (-78) °	-71.6 °	Yes
Time of Peak	57 - 64 ms	60.8 ms	Yes
Total Head D-Plane Rotation Decay to 0°	113 - 128 ms	121.7 ms	Yes
Total Neck Occipital Condyles Moment Peak	88 - 108 N·m	94.5 N·m	Yes
Time of Peak	47 - 58 ms	53.3 ms	Yes
Total Neck Occipital Condyles Moment Decay to 0 N·m	97 - 107 ms	99.5 ms	Yes

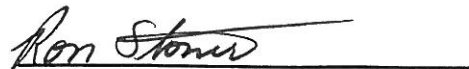
Test meets specifications.

Comments:

Technician



Approved

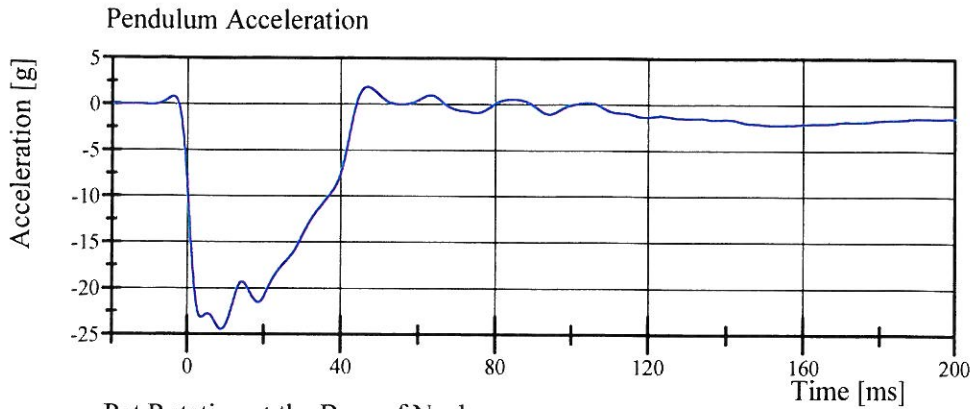


Transportation Research Center Inc.

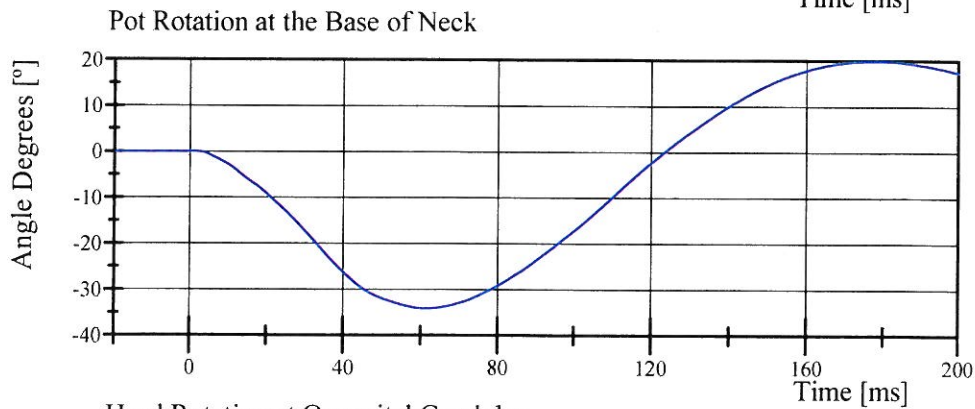
Neck Flexion

HIII 50th Serial No. 043 Certification No. 5-3

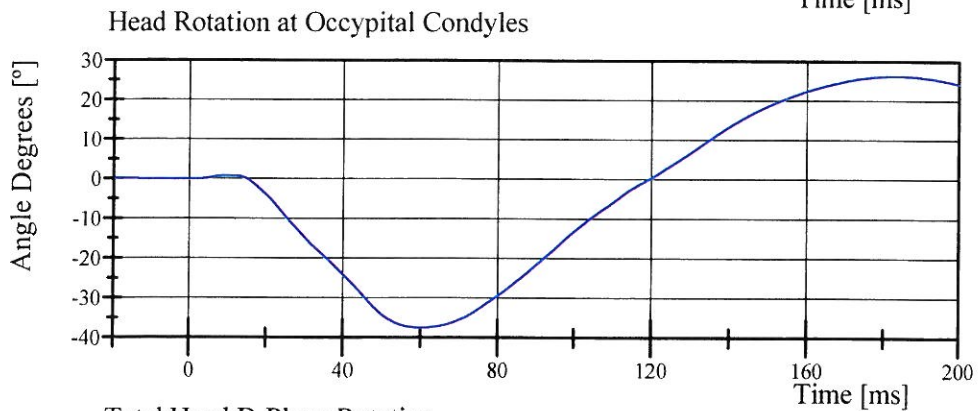
Test Date: 11/24/2008



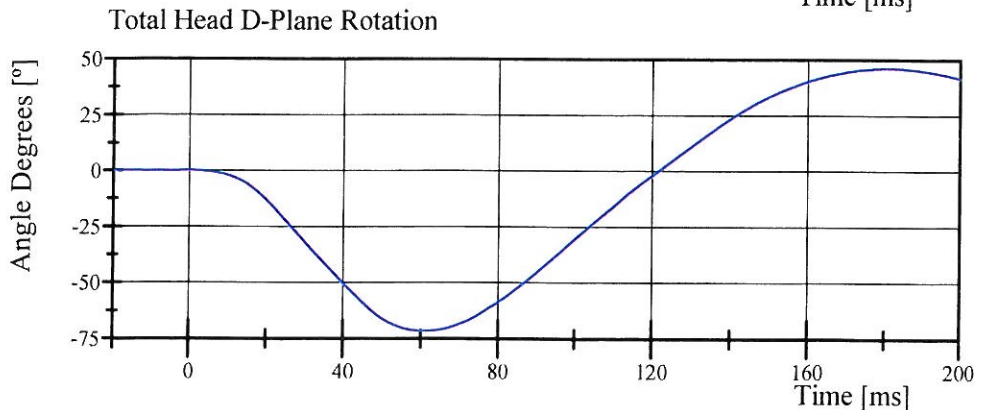
Filter Class: CFC_60
Max: 1.9 g at 46.9 ms
Min: -24.4 g at 8.9 ms



Filter Class: CFC_60
Max: 20.0 ° at 178.1 ms
Min: -34.1 ° at 61.4 ms



Filter Class: CFC_60
Max: 26.2 ° at 183.0 ms
Min: -37.5 ° at 60.2 ms



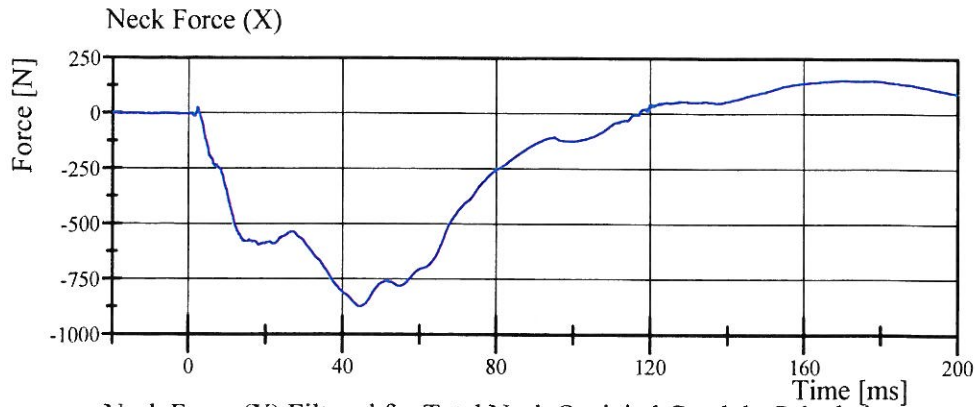
Filter Class: CFC_60
Max: 46.1 ° at 180.9 ms
Min: -71.6 ° at 60.8 ms

Transportation Research Center Inc.

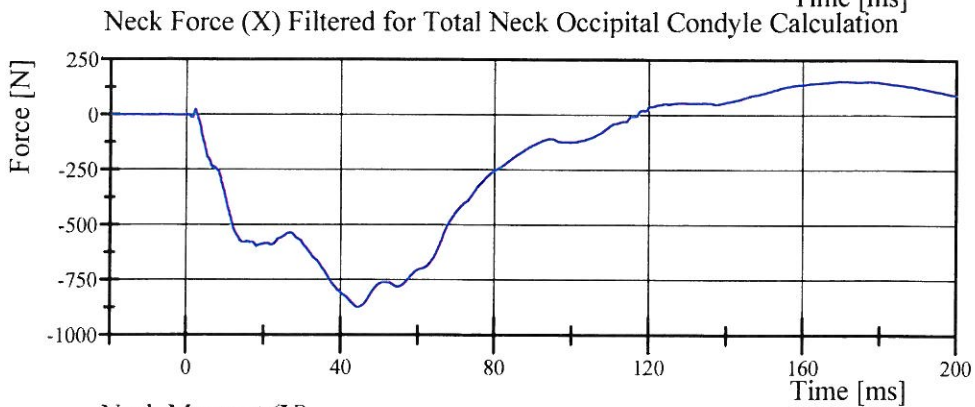
Neck Flexion

HIII 50th Serial No. 043 Certification No. 5-3

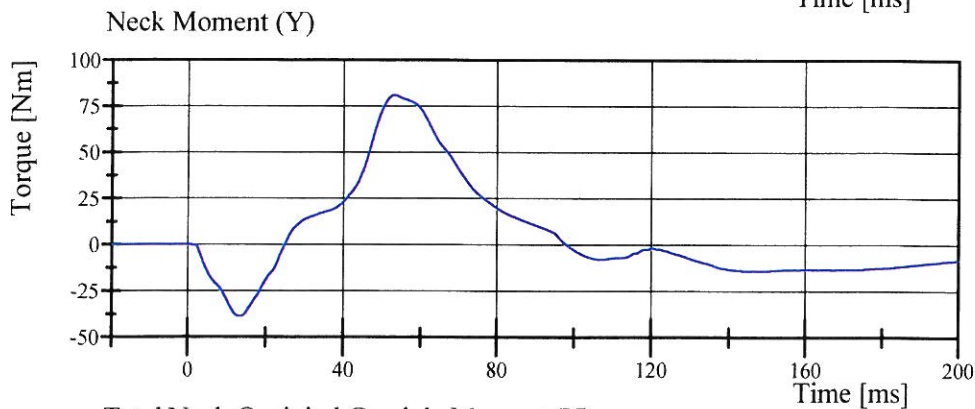
Test Date: 11/24/2008



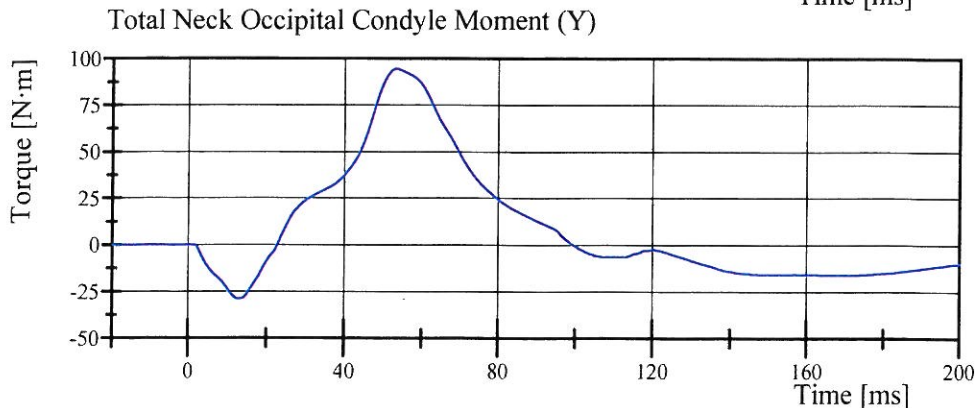
Filter Class: CFC_1000
Max: 154.9 N at 169.5 ms
Min: -874.3 N at 44.4 ms



Filter Class: CFC_600
Max: 154.5 N at 169.6 ms
Min: -873.7 N at 44.4 ms



Filter Class: CFC_600
Max: 80.9 Nm at 53.1 ms
Min: -38.8 Nm at 13.5 ms



Filter Class: CFC_600
Max: 94.5 N·m at 53.3 ms
Min: -29.1 N·m at 12.9 ms

Transportation Research Center Inc.

Neck Extension

HIII 50th Serial No. 043 Certification No. 5-1

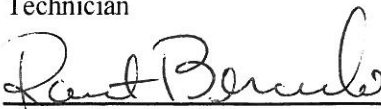
Test Date: 11/24/2008

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	31 %	Yes
Pendulum Velocity	(-5.95) - (-6.18) m/s	-5.984 m/s	Yes
Pendulum Acceleration Decay Crossing 5g	38 - 46 ms	39.1 ms	Yes
Pendulum Acceleration at 10ms	17.2 - 21.2 g	20.67 g	Yes
Pendulum Acceleration at 20ms	14.0 - 19.0 g	18.77 g	Yes
Pendulum Acceleration at 30ms	11.0 - 16.0 g	14.72 g	Yes
Pendulum Acceleration > 30ms	<= 22.0 g	14.72 g	Yes
Total Head D-Plane Rotation Peak	81 - 106 °	96.1 °	Yes
Time of Peak	72 - 82 ms	76.8 ms	Yes
Total Head D-Plane Rotation Decay to 0°	147 - 174 ms	158.7 ms	Yes
Total Neck Occipital Condyles Moment Peak	(-53) - (-80) N·m	-68.5 N·m	Yes
Time of Peak	65 - 79 ms	70.5 ms	Yes
Total Neck Occipital Condyles Moment Decay to 0 N·m	120 - 148 ms	143.9 ms	Yes

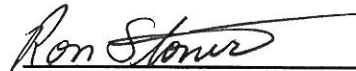
Test meets specifications.

Comments:

Technician



Approved



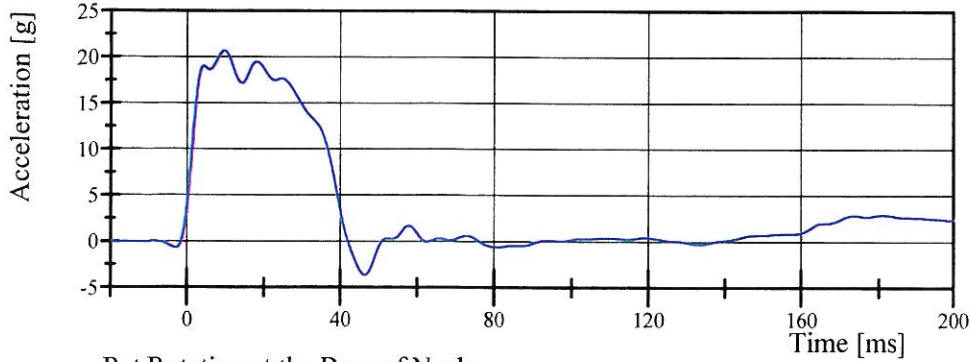
Transportation Research Center Inc.

Neck Extension

HIII 50th Serial No. 043 Certification No. 5-1

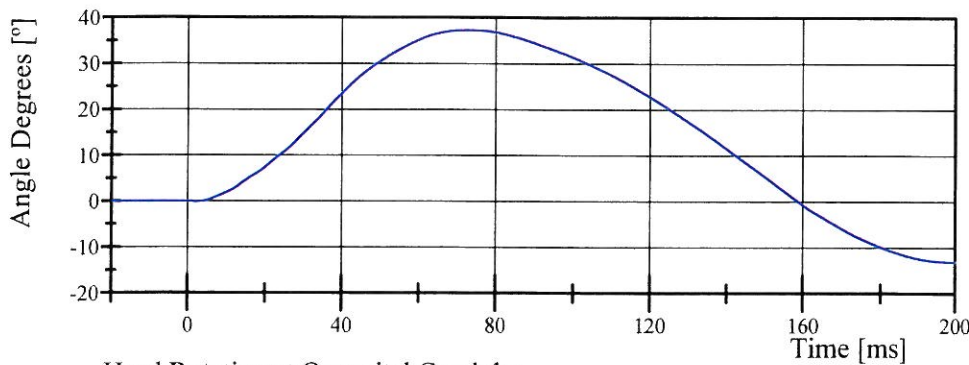
Test Date: 11/24/2008

Pendulum Acceleration



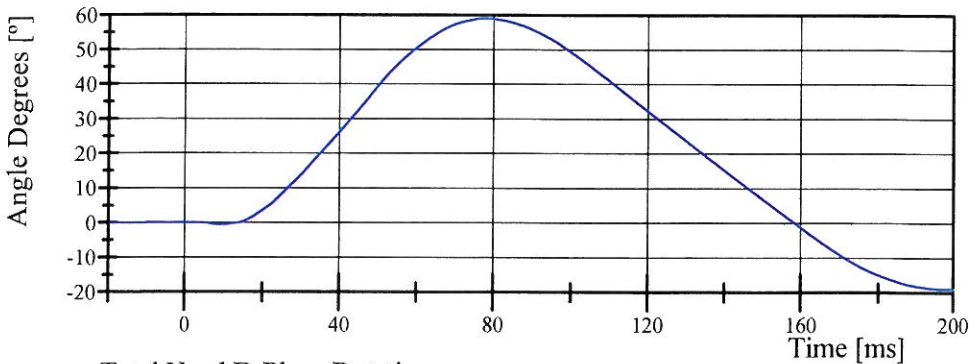
Filter Class: CFC_60
Max: 20.7 g at 9.7 ms
Min: -3.7 g at 46.2 ms

Pot Rotation at the Base of Neck



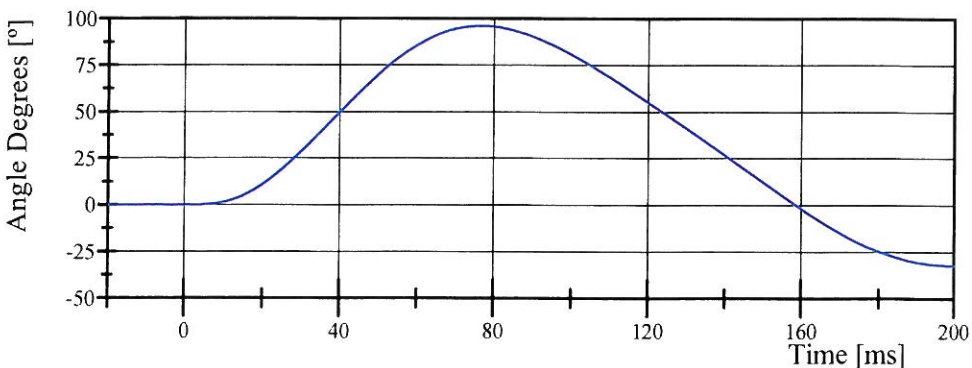
Filter Class: CFC_60
Max: 37.3 ° at 73.1 ms
Min: -13.1 ° at 200.0 ms

Head Rotation at Occipital Condyles



Filter Class: CFC_60
Max: 59.0 ° at 77.8 ms
Min: -19.0 ° at 199.7 ms

Total Head D-Plane Rotation



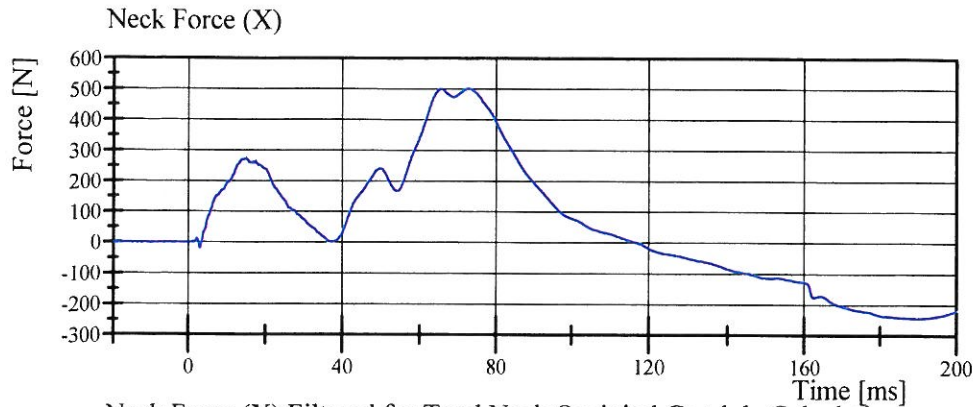
Filter Class: CFC_60
Max: 96.1 ° at 76.8 ms
Min: -32.1 ° at 200.0 ms

Transportation Research Center Inc.

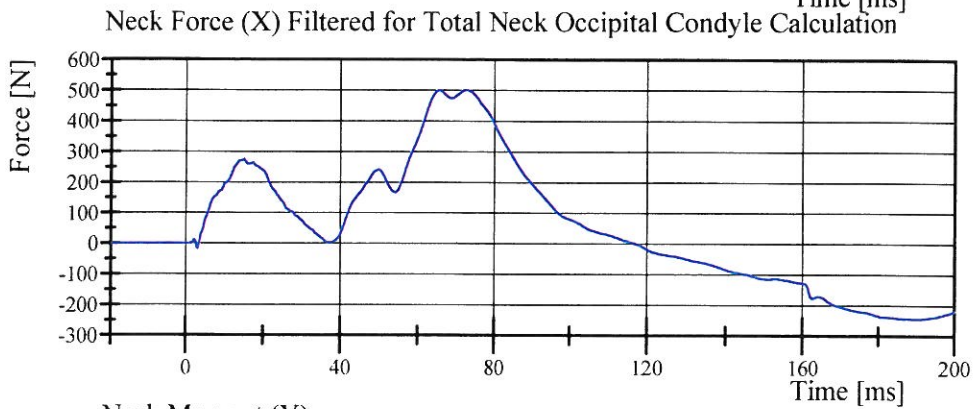
Neck Extension

HIII 50th Serial No. 043 Certification No. 5-1

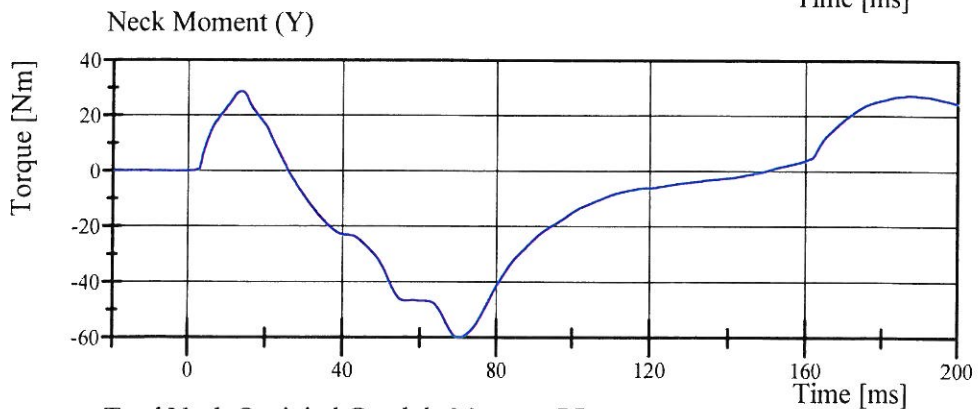
Test Date: 11/24/2008



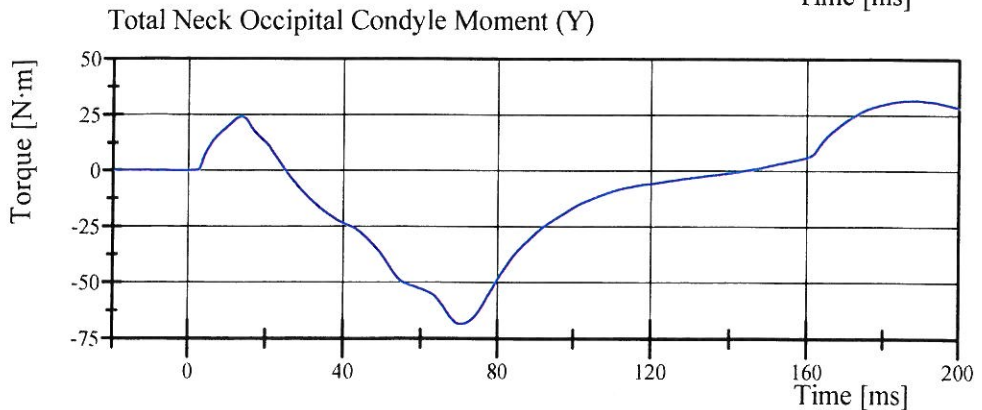
Filter Class: CFC_1000
Max: 502.3 N at 72.5 ms
Min: -244.7 N at 191.4 ms



Filter Class: CFC_600
Max: 502.2 N at 72.6 ms
Min: -244.2 N at 191.4 ms



Filter Class: CFC_600
Max: 28.7 Nm at 13.8 ms
Min: -59.9 Nm at 70.2 ms



Filter Class: CFC_600
Max: 31.6 N·m at 189.0 ms
Min: -68.5 N·m at 70.5 ms

Transportation Research Center Inc.

Front Thorax

HIII 50th Serial No. 043 Certification No. 5-1

Test Date: 11/24/2008

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.2 °C	Yes
Relative Humidity	10 - 70 %	19 %	Yes
Probe Velocity	6.59 - 6.83 m/s	6.685 m/s	Yes
Probe Force Peak	(-5,160) - (-5,893) N	-5,777.6 N	Yes
Maximum Chest Compression	(-63.5) - (-72.6) mm	-69.38 mm	Yes
Internal Hysteresis	65 - 85 %	74.7 %	Yes

Test meets specifications.

Comments:

Technician



Approved



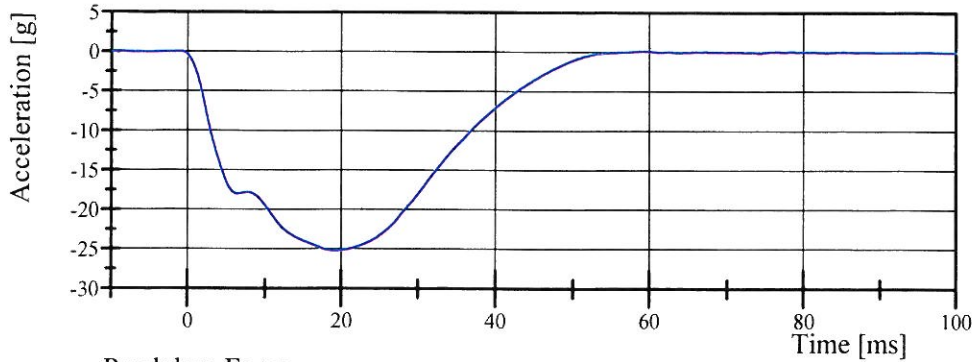
Transportation Research Center Inc.

Front Thorax

HIII 50th Serial No. 043 Certification No. 5-1

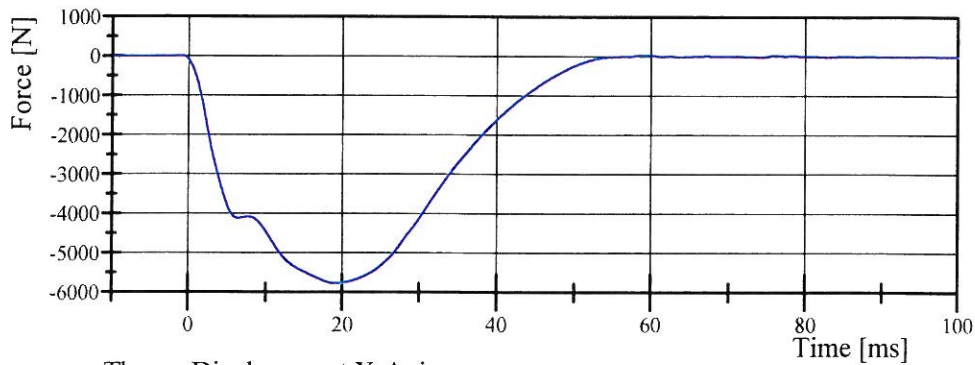
Test Date: 11/24/2008

Pendulum Acceleration



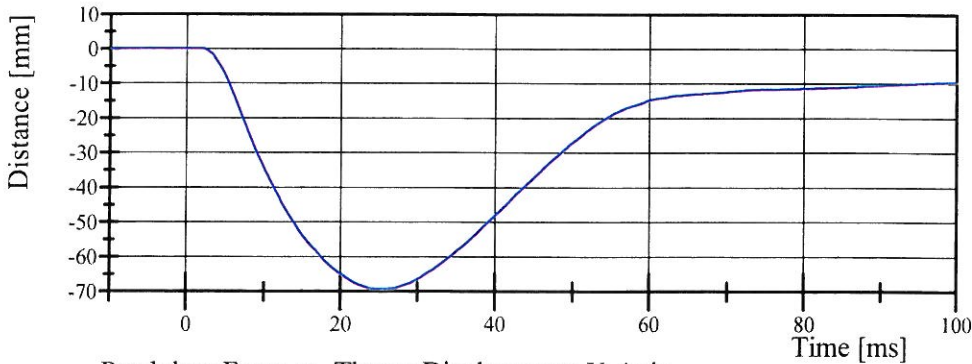
Filter Class: CFC_180
Max: 0.1 g at 59.4 ms
Min: -25.2 g at 19.1 ms

Pendulum Force



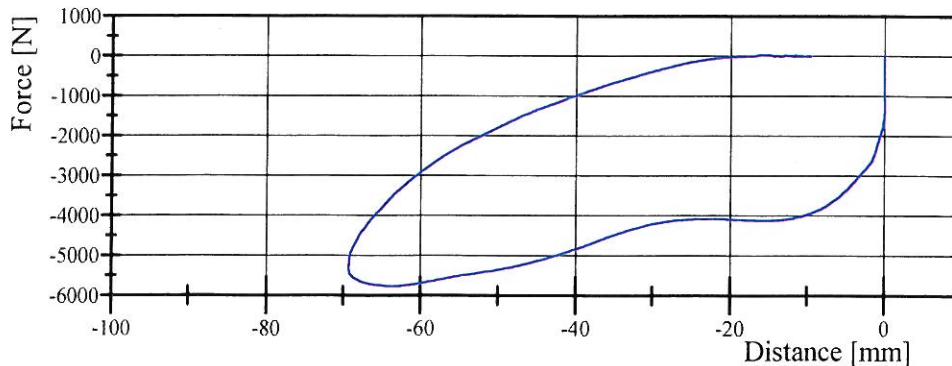
Filter Class: CFC_180
Max: 28.2 N at 59.4 ms
Min: -5,777.6 N at 19.1 ms

Thorax Displacement X-Axis



Filter Class: CFC_600
Max: 0.1 mm at 1.9 ms
Min: -69.4 mm at 25.0 ms

Pendulum Force vs. Thorax Displacement X-Axis



Filter Class: CFC_180
Max: 28.2 N at -15.4 mm
Min: -5,777.6 N at -63.7 mm

Transportation Research Center Inc

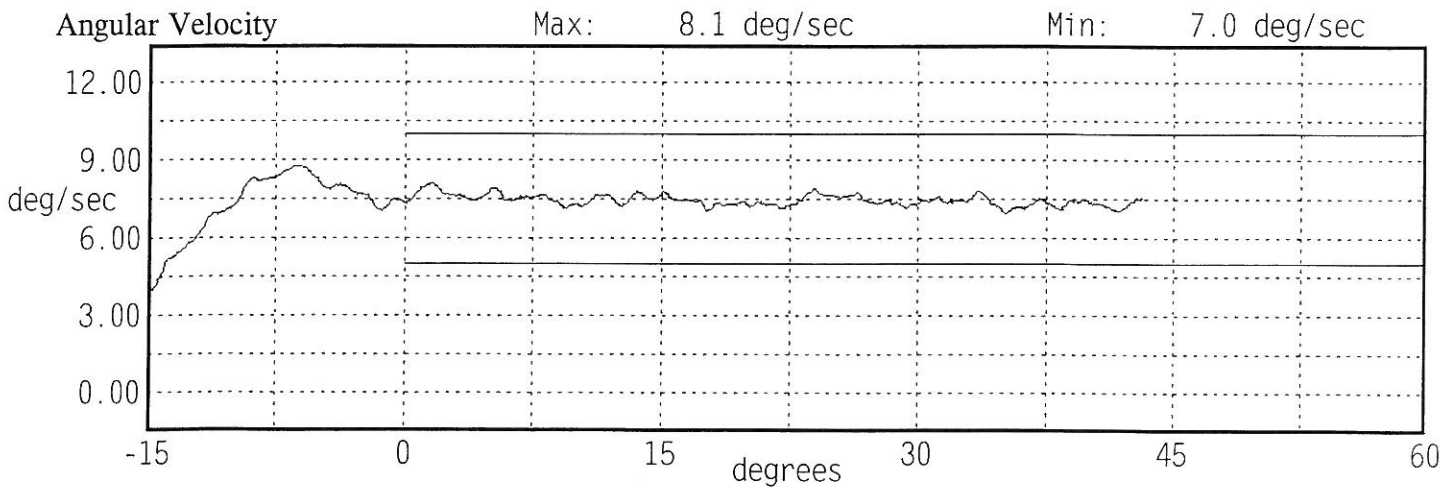
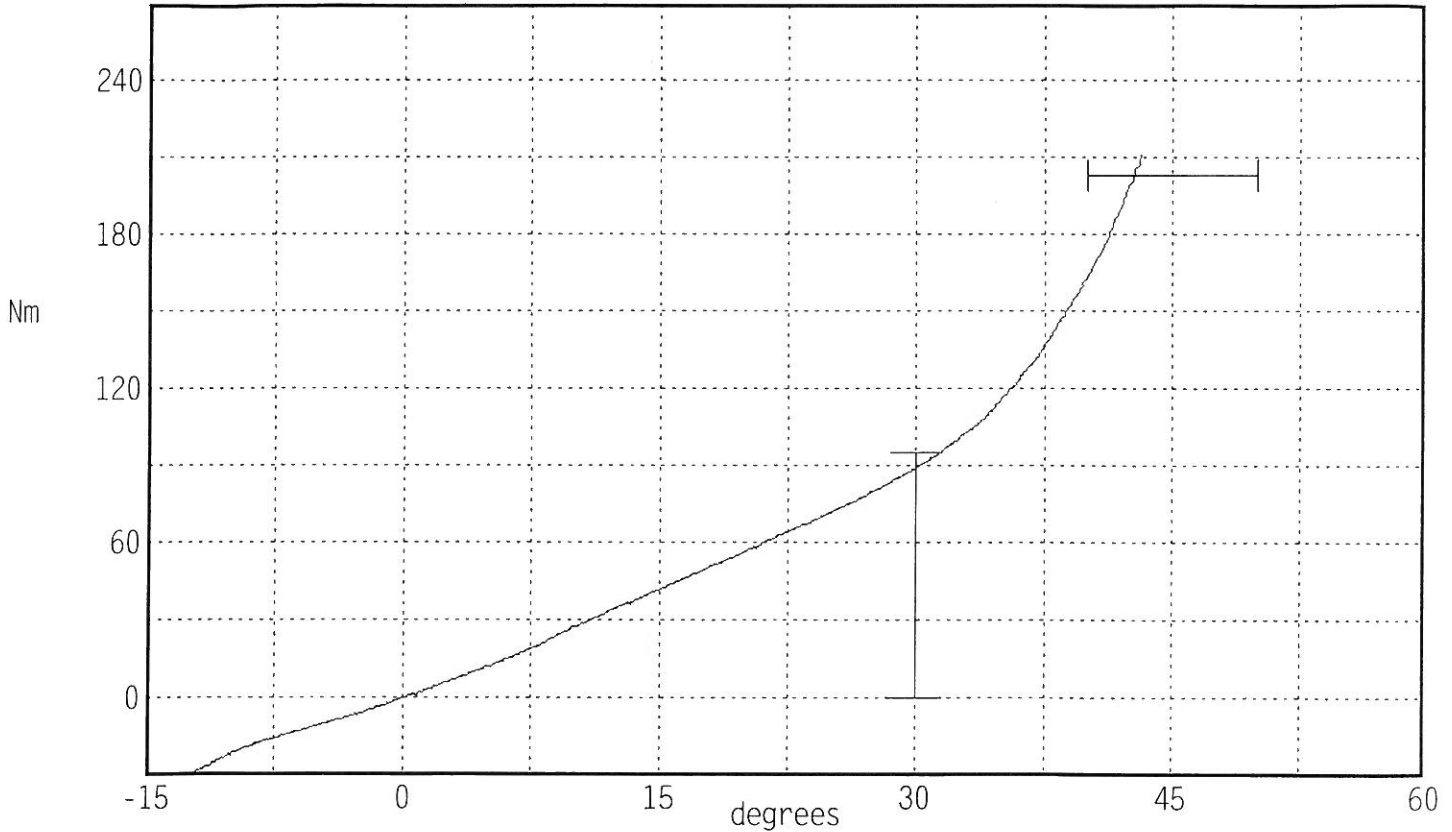
Hybrid III Hip Range of Motion

Serial Number: 043L
Test Number: 043C05
Comments:

Date: 11/24/2008
Time: 09:38

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	18.9 - 25.6	21.2 °C Pass
Humidity	10 - 70	20 % Pass
Moment at 30 deg	<= 94.9	89.6 Nm Pass
Angle at 203 Nm	40.0 - 50.0	42.7 deg Pass
Average Velocity	5.0 - 10.0	7.4 deg/sec Pass

Moment About H-Point
Peak Moment: 211.2 Nm at 43.2 deg
Peak Angle: 43.2 deg at 211.2 Nm



Transportation Research Center Inc

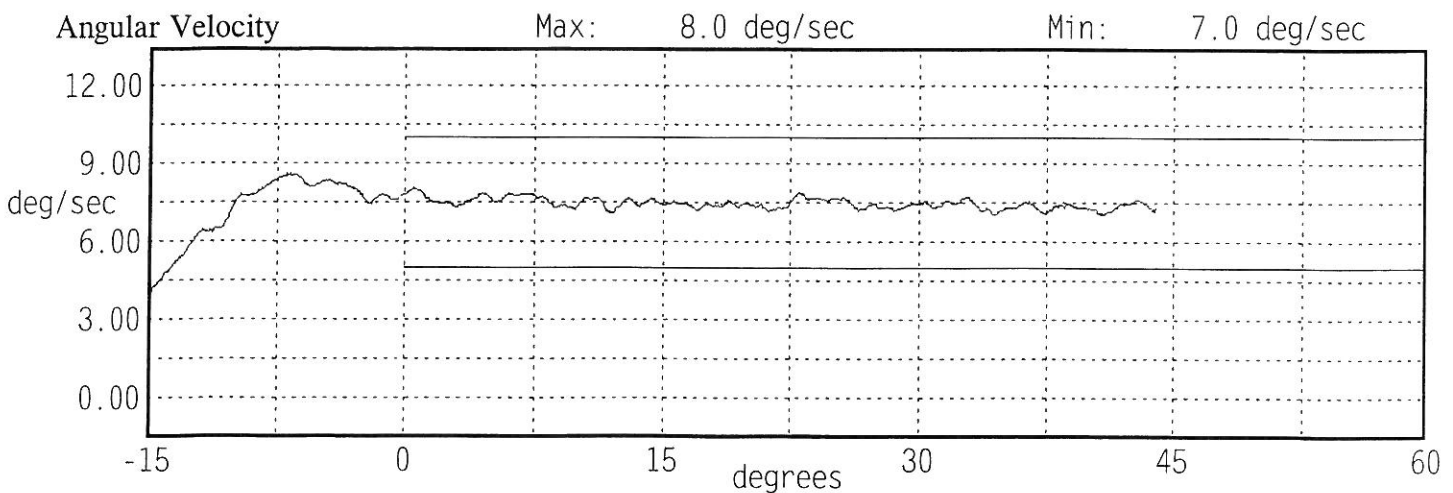
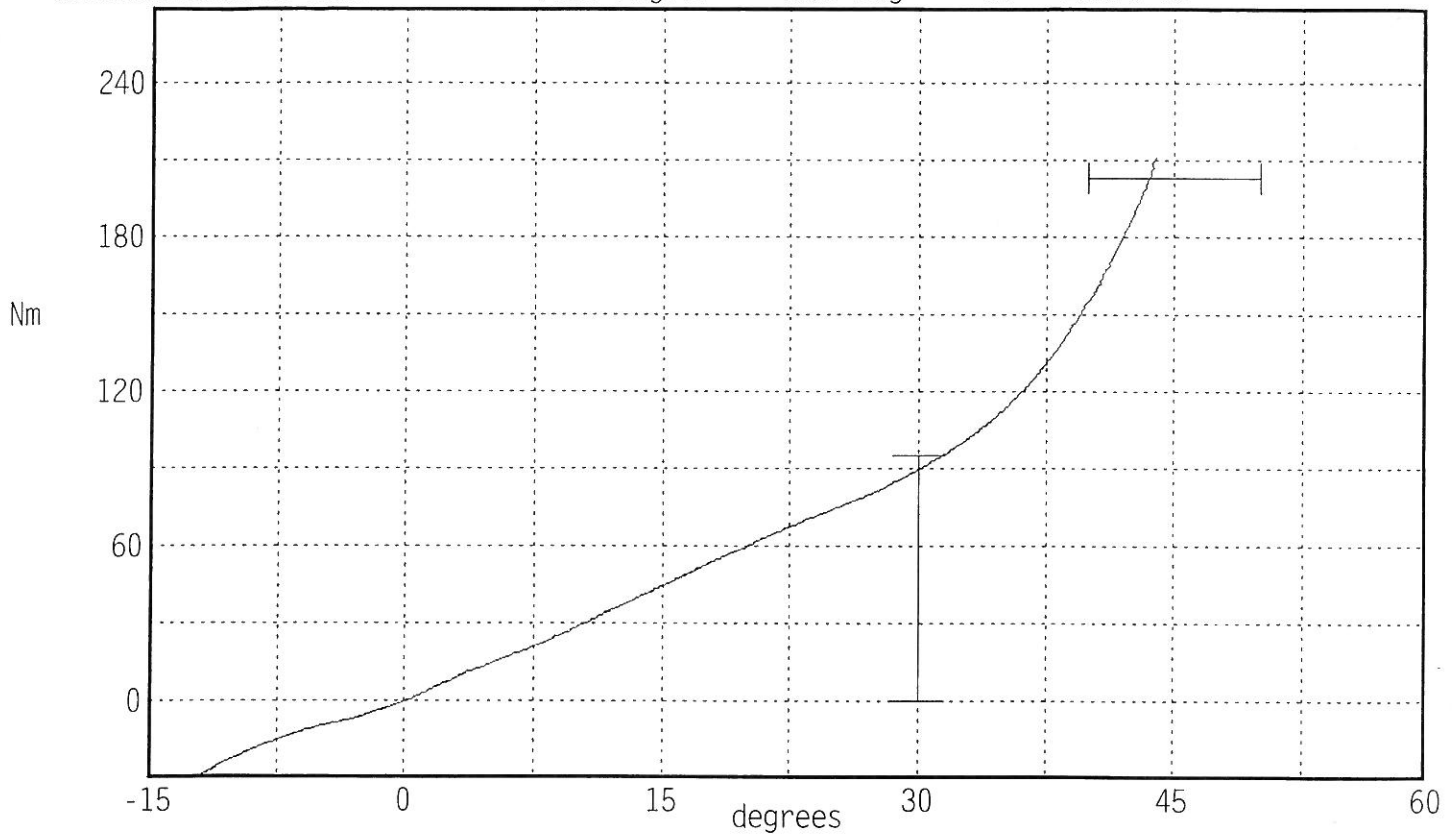
Hybrid III Hip Range of Motion

Serial Number: 043R
Test Number: 043C05
Comments:

Date: 11/24/2008
Time: 09:49

TEST PARAMETER	SPECIFICATION	TEST RESULTS
Temperature	18.9 - 25.6	21.2 °C Pass
Humidity	10 - 70	21 % Pass
Moment at 30 deg	<= 94.9	89.6 Nm Pass
Angle at 203 Nm	40.0 - 50.0	43.6 deg Pass
Average Velocity	5.0 - 10.0	7.5 deg/sec Pass

Moment About H-Point
Peak Moment: 211.0 Nm at 43.9 deg
Peak Angle: 43.9 deg at 211.0 Nm



Transportation Research Center Inc.

Left Knee Femur Response Test
HIII 50th Serial No. 043 Certification No. 5-2
Test Date: 11/24/2008

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	25 %	Yes
Probe Velocity	2.08 - 2.13 m/s	2.116 m/s	Yes
Peak Femur Force	(-4,715.2) - (-5,782.6) N	-5,107.96 N	Yes

Test meets specifications.

Comments:

Technician

Raul Berube

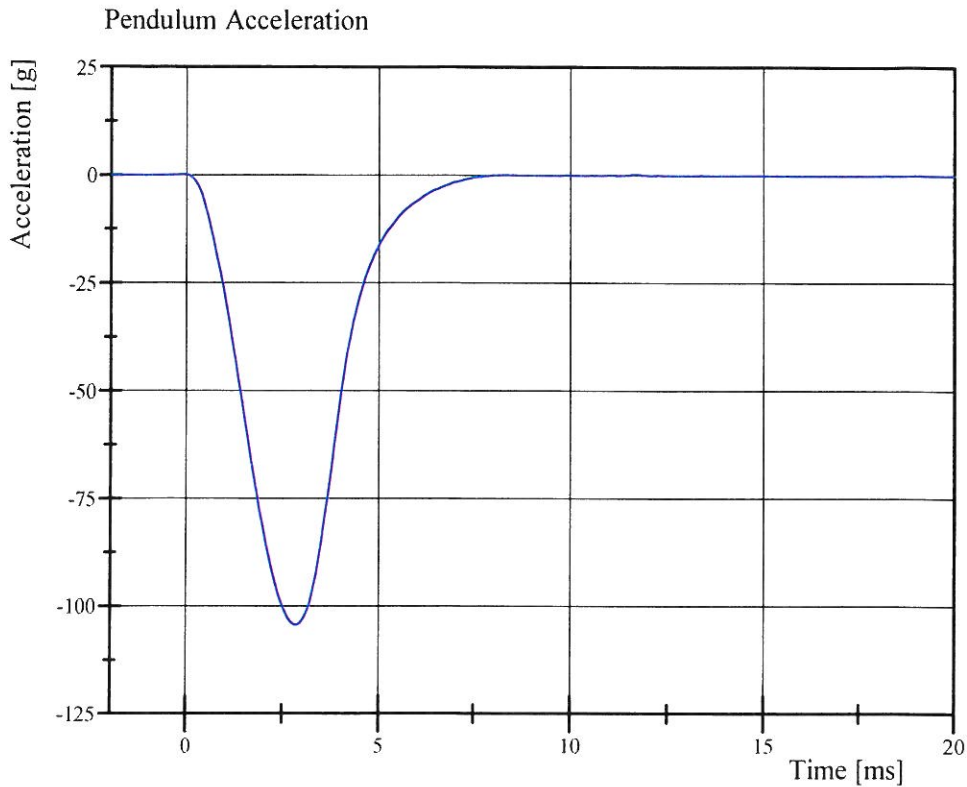
Approved

Ron Stover

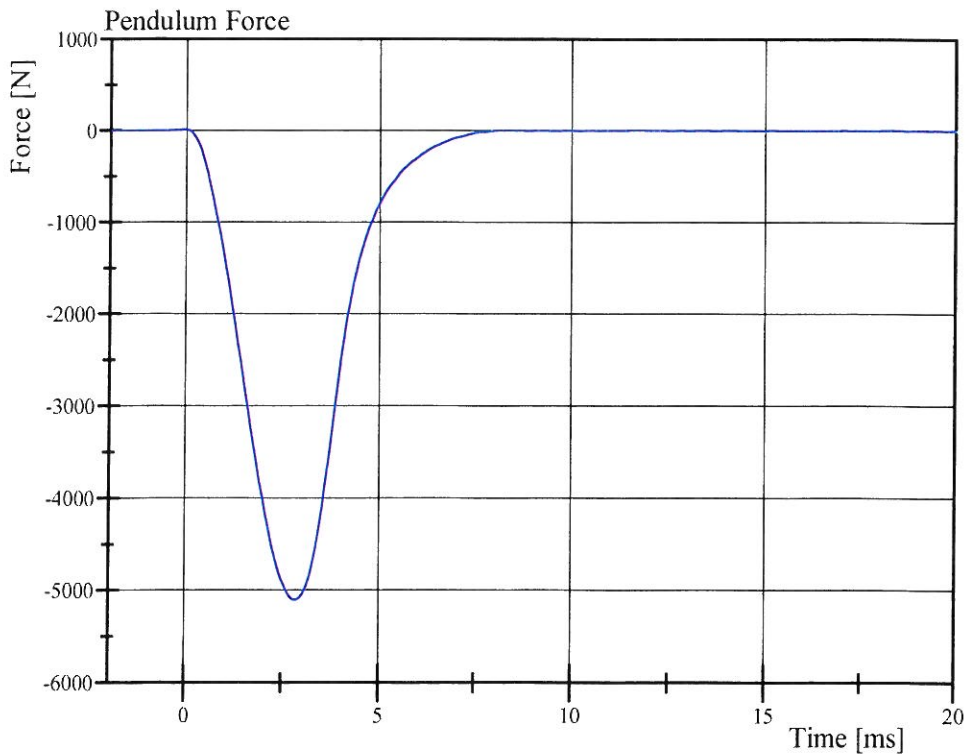


Transportation Research Center Inc.

Left Knee Femur Response Test
HIII 50th Serial No. 043 Certification No. 5-2
Test Date: 11/24/2008



Filter Class: CFC_600
Max: 0.2 g at -0.1 ms
Min: -104.4 g at 2.9 ms



Filter Class: CFC_600
Max: 10.0 N at -0.1 ms
Min: -5,108.0 N at 2.9 ms

Transportation Research Center Inc.

Right Knee Femur Response Test
HIII 50th Serial No. 043 Certification No. 5-2
Test Date: 11/24/2008

Test Parameter	Specification	Test Results	Pass
Temperature	18.9 - 25.5 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	25 %	Yes
Probe Velocity	2.08 - 2.13 m/s	2.118 m/s	Yes
Peak Femur Force	(-4,715.2) - (-5,782.6) N	-5,003.03 N	Yes

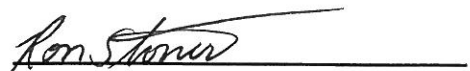
Test meets specifications.

Comments:

Technician

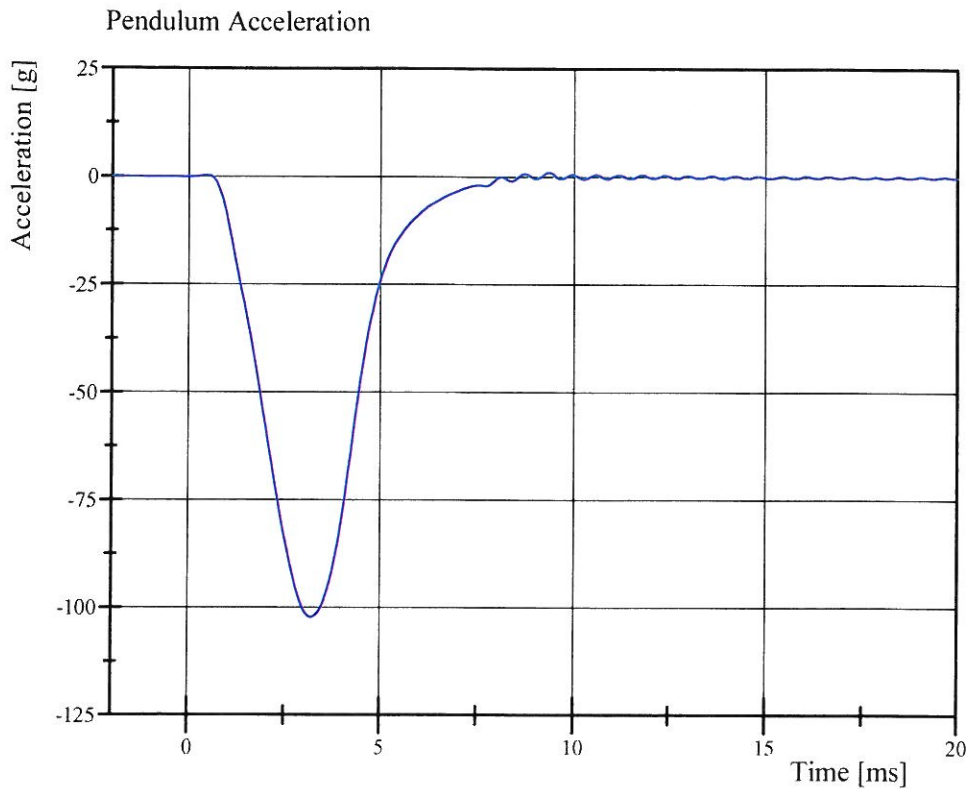


Approved

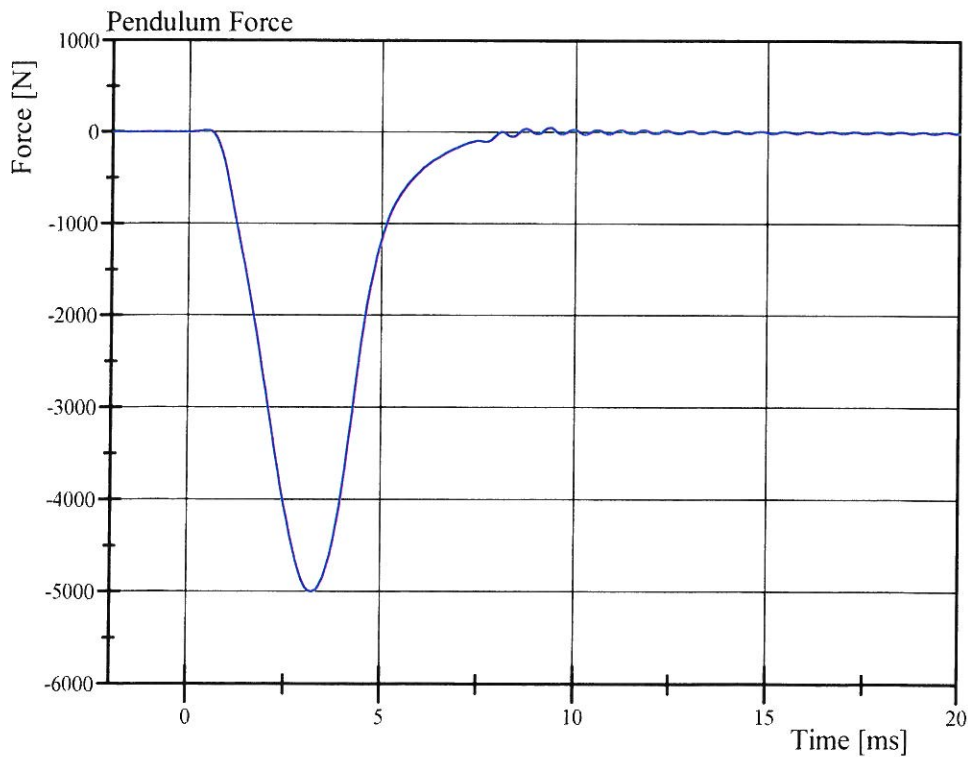


Transportation Research Center Inc.

Right Knee Femur Response Test
HIII 50th Serial No. 043 Certification No. 5-2
Test Date: 11/24/2008



Filter Class: CFC_600
Max: 1.0 g at 9.4 ms
Min: -102.2 g at 3.2 ms



Filter Class: CFC_600
Max: 48.1 N at 9.4 ms
Min: -5,003.0 N at 3.2 ms

APPENDIX D
TEST EQUIPMENT LIST AND CALIBRATION INFORMATION

Sign Convention
SAE J211 MAR95

Accelerometers:

+X: Forward
+Y: Rightward
+Z: Downward

Potentiometers:

+Chest longitudinal deflection: Outward
+Chest lateral deflection: Rightward
+Seat belt displacement: Outward
+Seat belt extension: Elongation
+Knee slider displacement: Distance between femur and tibia increased (in relation to a seated dummy)

Rotation potentiometers:

+About the X-axis: Left foot-eversion
Right foot-inversion
+About the Y-axis: Left/right foot-dorsiflexion
+About the Z-axis: Left foot-internal
Right foot-external

Load cells:

+Femur force: Tension
+Seat belt force: Tension
+Barrier force: Tension

Neck load cells:

+X force: Head pushed rearward
+Y force: Head pushed leftward
+Z force: Head pulled upward (tension on neck)
+X moment: Left ear rotating toward left shoulder
+Y moment: Chin rotating toward chest
+Z moment: Chin rotating toward left shoulder

Tibia load cells:

+X force: Ankle forward, knee rearward
+Y force: Ankle rightward, knee leftward
+Z force: Tension
+X moment: Bottom of tibia moving leftward
+Y moment: Bottom of tibia moving rearward

Sign Convention (Continued)
SAE J211 MAR95

Lumbar load cells:

- +X force: Chest rearward, pelvis forward
- +Y force: Chest leftward, pelvis rightward
- +Z force: Chest upward, pelvis downward
- +X moment: Left shoulder toward left hip
- +Y moment: Sternum toward front of legs
- +Z moment: Right shoulder forward, left shoulder rearward

Frequency Response Classes
SAE J211 MAR95

<u>Typical Test Measurements</u>	<u>Channel Class</u>
Vehicle Structural Accelerations for use in:	
Total vehicle comparison	60
Collision simulation input	60
Component analysis	600
Integration for velocity or displacement	180
Barrier Face Forces	60
Belt Restraint System Loads	60
Anthropomorphic Test Device	
Head accelerations (linear and angular)	1000
Neck	
Forces	1000
Moments	600
Thorax	
Spine accelerations	180
Rib accelerations	1000
Sternum accelerations	1000
Deflections	600
Lumbar	
Forces	1000
Moments	1000
Pelvis	
Accelerations	1000
Forces	1000
Moments	1000
Femur/Knee/Tibia/Ankle	
Forces	600
Moments	600
Displacements	180
Sled Accelerations	60
Steering Column Loads	600
Head Form Accelerations	1000

The direction column on the following sheets describes the transducer output as mounted and wired in the test location. The polarity column indicates whether a polarity change occurred during data acquisition to conform to J211 MAR95. See Report Sign Convention sheet for description of data output as presented in the report: occasionally channels have been adjusted in post-acquisition processing to conform to J211 MAR95.

Channel Report Test Number 091022

Ref	Transducer ID	ISO Signal Identifier	Description	FScale	Units	Polarity	Assembly
1	Trig D1	10ZERO00000VO0A	EVENT		1 Logic	Bipolar	
2	P51954	11HEADCG00H3ACXA	Head Accel X	1000	g	#NAME?	1-001 VRTC H3 50th.001
3	P58726	11HEADCG00H3ACYA	Head Accel Y	1000	g	#NAME?	1-001 VRTC H3 50th.002
4	P51266	11HEADCG00H3ACZA	Head Accel Z	1000	g	#NAME?	1-001 VRTC H3 50th.003
5	ARS-12K-ARS1082	11HEADCG00H3AVXA	Head (DTS ARS) Rate Gyro X	12000	%s	Bipolar	
6	ARS-12K-ARS1087	11HEADCG00H3AVYA	Head (DTS ARS) Rate Gyro Y	12000	%s	Bipolar	
7	ARS-12K-ARS1034	11HEADCG00H3AVZA	Head (DTS ARS) Rate Gyro Z	12000	%s	Bipolar	
8	IF-205-261-FX	11NECKUP00H3FOXA	Neck Force X	8896	N	#NAME?	1-001 VRTC H3 50th.007
9	IF-205-261-FY	11NECKUP00H3FOYA	Neck Force Y	8896	N	Bipolar	1-001 VRTC H3 50th.008
10	IF-205-261-FZ	11NECKUP00H3FOZA	Neck Force Z	13344	N	Bipolar	1-001 VRTC H3 50th.009
11	IF-205-261-MX	11NECKUP00H3MOXA	Neck Moment X	282.5	Nm	#NAME?	1-001 VRTC H3 50th.010
12	IF-205-261-MY	11NECKUP00H3MOYA	Neck Moment Y	282.5	Nm	Bipolar	1-001 VRTC H3 50th.011
13	IF-205-261-MZ	11NECKUP00H3MOZA	Neck Moment Z	282.5	Nm	Bipolar	1-001 VRTC H3 50th.012
14	P52081	11CHSTCG00H3ACXA	Chest Accel X	1000	g	Bipolar	1-001 VRTC H3 50th.013
15	02I02I05-F11	11CHSTCG00H3ACYA	Chest Accel Y	1000	g	#NAME?	1-001 VRTC H3 50th.014
16	P58771	11CHSTCG00H3ACZA	Chest Accel Z	1000	g	#NAME?	1-001 VRTC H3 50th.015
17	CST001	11CHST0000H3DSXA	Chest Deflection X		84 mm	Bipolar	1-001 VRTC H3 50th.019
18	1794A-249-FX	11NECKLO00H3FOXA	Lower Neck Force X	8896	N	#NAME?	1-001 VRTC H3 50th.025
19	1794A-249-FY	11NECKLO00H3FOYA	Lower Neck Force Y	8896	N	Bipolar	1-001 VRTC H3 50th.026
20	1794A-249-FZ	11NECKLO00H3FOZA	Lower Neck Force Z	13345	N	Bipolar	1-001 VRTC H3 50th.027
21	1794A-249-MX	11NECKLO00H3MOXA	Lower Neck Moment X	282.5	Nm	#NAME?	1-001 VRTC H3 50th.028
22	1794A-249-MY	11NECKLO00H3MOYA	Lower Neck Moment Y	282.5	Nm	Bipolar	1-001 VRTC H3 50th.029
23	1794A-249-MZ	11NECKLO00H3MOZA	Lower Neck Moment Z	282.5	Nm	Bipolar	1-001 VRTC H3 50th.030
24	P58870	11PELVCG00H3ACXA	Pelvis Accel X	1000	g	#NAME?	1-001 VRTC H3 50th.020
25	P52071	11PELVCG00H3ACYA	Pelvis Accel Y	1000	g	#NAME?	1-001 VRTC H3 50th.021
26	P52086	11PELVCG00H3ACZA	Pelvis Accel Z	1000	g	#NAME?	1-001 VRTC H3 50th.022
27	05G20-L12	13HEADCG00H3ACXA	Head Accel X	1000	g	Bipolar	3-110 HIII 50th FTSS.001
28	02A18-N15	13HEADCG00H3ACYA	Head Accel Y	1000	g	#NAME?	3-110 HIII 50th FTSS.002
29	02I02I05-F09	13HEADCG00H3ACZA	Head Accel Z	1000	g	#NAME?	3-110 HIII 50th FTSS.003
30	P51712	13HEADFR00H3ACYA	Head (FT) Accel Y	1000	g	#NAME?	3-110 HIII 50th FTSS.004
31	P51717	13HEADFR00H3ACZA	Head (FT) Accel Z	1000	g	#NAME?	3-110 HIII 50th FTSS.005
32	99H30-Z13	13HEADUP00H3ACXA	Head (TP) Accel X	1000	g	Bipolar	3-110 HIII 50th FTSS.006
33	B02A25-N01	13HEADUP00H3ACYA	Head (TP) Accel Y	1000	g	#NAME?	3-110 HIII 50th FTSS.007
34	02A18-N01	13HEADLE00H3ACXA	Head (LT) Accel X	1000	g	Bipolar	3-110 HIII 50th FTSS.008
35	03F03J01-R11	13HEADLE00H3ACZA	Head (LT) Accel Z	1000	g	#NAME?	3-110 HIII 50th FTSS.009
36	1716A-1597-FX	13NECKUP00H3FOXA	Neck Force X	8896.4	N	#NAME?	3-110 HIII 50th FTSS.010
37	1716A-1597-FY	13NECKUP00H3FOYA	Neck Force Y	8896.4	N	Bipolar	3-110 HIII 50th FTSS.011

Channel Report Test Number 091022

Ref	Transducer ID	ISO Signal Identifier	Description	FScale	Units	Polarity	Assembly
38	1716A-1597-FZ	13NECKUP00H3FOZA	Neck Force Z	13344.6	N	Bipolar	3-110 HIII 50th FTSS.012
39	1716A-1597-MX	13NECKUP00H3MOXA	Neck Moment X	282.4	Nm	#NAME?	3-110 HIII 50th FTSS.013
40	1716A-1597-MY	13NECKUP00H3MOYA	Neck Moment Y	282.4	Nm	Bipolar	3-110 HIII 50th FTSS.014
41	1716A-1597-MZ	13NECKUP00H3MOZA	Neck Moment Z	282.4	Nm	Bipolar	3-110 HIII 50th FTSS.015
42	1794A-0216-FX	13NECKLO00H3FOXA	Neck Lower Force X	13345	N	#NAME?	3-110 HIII 50th FTSS.016
43	1794A-0216-FY	13NECKLO00H3FOYA	Neck Lower Force Y	13344.6	N	Bipolar	3-110 HIII 50th FTSS.017
44	1794A-0216-FZ	13NECKLO00H3FOZA	Neck Lower Force Z	13344.6	N	Bipolar	3-110 HIII 50th FTSS.018
45	1794A-0216-MX	13NECKLO00H3MOXA	Neck Lower Moment X	452	Nm	#NAME?	3-110 HIII 50th FTSS.019
46	1794A-0216-MY	13NECKLO00H3MOYA	Neck Lower Moment Y	452	Nm	Bipolar	3-110 HIII 50th FTSS.020
47	1794A-0216-MZ	13NECKLO00H3MOZA	Neck Lower Moment Z	452	Nm	Bipolar	3-110 HIII 50th FTSS.021
48	99H12-F24	13CHSTCG00H3ACXA	Chest Accel X	1000	g	Bipolar	3-110 HIII 50th FTSS.022
49	02I02I05-F04	13CHSTCG00H3ACYA	Chest Accel Y	1000	g	#NAME?	3-110 HIII 50th FTSS.023
50	03D03C27-N07	13CHSTCG00H3ACZA	Chest Accel Z	1000	g	#NAME?	3-110 HIII 50th FTSS.024
51	CST110	13CHST0000H3DSXA	Chest Deflection X	84	mm	Bipolar	3-110 HIII 50th FTSS.028
52	P52008	13PELVCG00H3ACXA	Pelvis Accel X	1000	g	#NAME?	3-110 HIII 50th FTSS.029
53	04J04I20-Z24	13PELVCG00H3ACYA	Pelvis Accel Y	1000	g	#NAME?	3-110 HIII 50th FTSS.030
54	98H13-F19	13PELVCG00H3ACZA	Pelvis Accel Z	1000	g	#NAME?	3-110 HIII 50th FTSS.031
55	P52023	14HEADCG00H3ACXA	Head Accel X	1000	g	#NAME?	4-043 HIII 50th VRTC.001
56	P52013	14HEADCG00H3ACYA	Head Accel Y	1000	g	#NAME?	4-043 HIII 50th VRTC.002
57	P52083	14HEADCG00H3ACZA	Head Accel Z	1000	g	#NAME?	4-043 HIII 50th VRTC.003
58	ARS-12K-ARS2240	14HEADCG00H3AVXA	Head (DTS ARS) Rate Gyro X	12000	%s	Bipolar	
59	ARS-12K-ARS2238	14HEADCG00H3AVYA	Head (DTS ARS) Rate Gyro Y	12000	%s	Bipolar	
60	ARS-12K-ARS0253	14HEADCG00H3AVZA	Head (DTS ARS) Rate Gyro Z	12000	%s	Bipolar	
61	1716A-798-FX	14NECKUP00H3FOXA	Upper Neck Force X	8896	N	#NAME?	4-043 HIII 50th VRTC.004
62	1716A-798-FY	14NECKUP00H3FOYA	Upper Neck Force Y	8896	N	Bipolar	4-043 HIII 50th VRTC.005
63	1716A-798-FZ	14NECKUP00H3FOZA	Upper Neck Force Z	13344	N	Bipolar	4-043 HIII 50th VRTC.006
64	1716A-798-MX	14NECKUP00H3MOXA	Upper Neck Moment X	282	Nm	#NAME?	4-043 HIII 50th VRTC.007
65	1716A-798-MY	14NECKUP00H3MOYA	Upper Neck Moment Y	282	Nm	Bipolar	4-043 HIII 50th VRTC.008
66	1716A-798-MZ	14NECKUP00H3MOZA	Upper Neck Moment Z	282	Nm	Bipolar	4-043 HIII 50th VRTC.009
67	P16899	14CHSTCG00H3ACXA	Chest Accel X	400	g	Bipolar	4-043 HIII 50th VRTC.010
68	P16517	14CHSTCG00H3ACYA	Chest Accel Y	400	g	#NAME?	4-043 HIII 50th VRTC.011
69	P51702	14CHSTCG00H3ACZA	Chest Accel Z	400	g	#NAME?	4-043 HIII 50th VRTC.012
70	84892-A-CST043	14CHST0000H3DSXA	Chest Deflection X	84	mm	#NAME?	4-043 HIII 50th VRTC.013
71	1794A-250-FX	14NECKLO00H3FOXA	Lower Neck Force X	8896	N	#NAME?	4-043 HIII 50th VRTC.016
72	1794A-250-FY	14NECKLO00H3FOYA	Lower Neck Force Y	8896	N	Bipolar	4-043 HIII 50th VRTC.017
73	1794A-250-FZ	14NECKLO00H3FOZA	Lower Neck Force Z	13345	N	Bipolar	4-043 HIII 50th VRTC.018
74	1794A-250-MX	14NECKLO00H3MOXA	Lower Neck Moment X	282	Nm	#NAME?	4-043 HIII 50th VRTC.019

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Ref	Transducer ID	ISO Signal Identifier	Description	FScale	Units	Polarity	Assembly
75	1794A-250-MY	14NECKLO00H3MOYA	Lower Neck Moment Y	282	Nm	Bipolar	4-043 HIII 50th VRTC.020
76	1794A-250-MZ	14NECKLO00H3MOZA	Lower Neck Moment Z	282	Nm	Bipolar	4-043 HIII 50th VRTC.021
77	98H10-F18	14PELVCG00H3ACXA	Pelvis Accel X	2000	g	#NAME?	4-043 HIII 50th VRTC.022
78	P51710	14PELVCG00H3ACYA	Pelvis Accel Y	2000	g	#NAME?	4-043 HIII 50th VRTC.023
79	P16225	14PELVCG00H3ACZA	Pelvis Accel Z	2000	g	#NAME?	4-043 HIII 50th VRTC.024
80	P62203	10VEHCCG0000ACXA	Vehicle Center of Gravity X-axis	2000	g	Bipolar	
81	P62222	10VEHCCG0000ACYA	Vehicle Center of Gravity Y-axis	2000	g	#NAME?	
82	P63126	10VEHCCG0000ACZA	Vehicle Center of Gravity Z-axis	2000	g	#NAME?	
83	ARS-1500-ARS1055	10VEHCCG0000AVXA	Vehicle Center of Gravity ROLL F	1500	%s	Bipolar	
84	ARS-1500-ARS0738	10VEHCCG0000AVYA	Vehicle Center of Gravity PITCH	1500	%s	Bipolar	
85	ARS-1500-ARS1091	10VEHCCG0000AVZA	Vehicle Center of Gravity YAW F	1500	%s	Bipolar	
86	ARS-1500-ARS0665	10VEHCREDK00AVXA	Rear Deck (cargo area) ROLL R	1500	%s	Bipolar	
87	ARS-1500-ARS0737	10VEHCREDK00AVYA	Rear Deck (cargo area) PITCH F	1500	%s	Bipolar	
88	ARS-1500-ARS0732	10VEHCREDK00AVZA	Rear Deck (cargo area) YAW R	1500	%s	Bipolar	
89	P61736	10ENGNTTP0000ACXA	Top of Engine X-axis AccelTop c	2000	g	Bipolar	
90	P57430	10ENGNTTP0000ACYA	Top of Engine Y-axis Accel	2000	g	#NAME?	
91	P61317	10ENGNTTP0000ACZA	Top of Engine Z-axis Accel	2000	g	#NAME?	
92	P61280	10ENGNBO0000ACXA	Bottom of Engine X-axis Accel	2000	g	Bipolar	
93	P49042	10ENGNBO0000ACYA	Bottom of Engine Y-axis Accel	2000	g	#NAME?	
94	P61269	10ENGNBO0000ACZA	Left Bottom of Engine Z-axis Acc	2000	g	Bipolar	
95	P62555	10APILUPLE00ACXA	Left A-Pillar Upper X-Axis Accele	2000	g	#NAME?	
96	P61735	10APILUPLE00ACYA	Left A-Pillar Upper Y-Axis Accele	2000	g	Bipolar	
97	P58576	10APILUPLE00ACZA	Left A-Pillar Upper Z-Axis Accele	2000	g	#NAME?	
98	P58544	10APILLOLE00ACXA	Left A-Pillar Lower X-Axis Accele	2000	g	Bipolar	
99	P46509	10APILLOLE00ACYA	Left A-Pillar Lower Y-Axis Accele	2000	g	Bipolar	
100	P61314	10APILLOLE00ACZA	Left A-Pillar Lower Z-Axis Accele	2000	g	#NAME?	
101	P57876	10APILUPRI00ACXA	Right A-Pillar Upper X-Axis Acce	2000	g	#NAME?	
102	P61536	10APILUPRI00ACYA	Right A-Pillar Upper Y-Axis Acce	2000	g	#NAME?	
103	P57207	10APILUPRI00ACZA	Right A-Pillar Upper Z-Axis Acce	2000	g	Bipolar	
104	P63125	10APILLORI00ACXA	Right A-Pillar Lower X-Axis Acce	2000	g	Bipolar	
105	P62204	10APILLORI00ACYA	Right A-Pillar Lower Y-Axis Acce	2000	g	#NAME?	
106	P62216	10APILLORI00ACZA	Right A-Pillar Lower Z-Axis Acce	2000	g	#NAME?	
107	P61733	10BPILUPLE00ACXA	Left B-Pillar Upper X-Axis Accele	2000	g	#NAME?	
108	P61732	10BPILUPLE00ACYA	Left B-Pillar Upper Y-Axis Accele	2000	g	Bipolar	
109	P61754	10BPILUPLE00ACZA	Left B-Pillar Upper Z-Axis Accele	2000	g	#NAME?	
110	P62207	10BPILLOLE00ACXA	Left B-Pillar Lower X-Axis Accele	2000	g	Bipolar	
111	P62232	10BPILLOLE00ACYA	Left B-Pillar Lower Y-Axis Accele	2000	g	Bipolar	

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Ref	Transducer ID	ISO Signal Identifier	Description	FScale	Units	Polarity	Assembly
112	P63133	10BPILLOLE00ACZA	Left B-Pillar Lower Z-Axis Accele	2000	g	#NAME?	
113	P62213	10BPILUPRI00ACXA	Right B-Pillar Upper X-Axis Acce	2000	g	#NAME?	
114	P61394	10BPILUPRI00ACYA	Right B-Pillar Upper Y-Axis Acce	2000	g	#NAME?	
115	P45012	10BPILUPRI00ACZA	Right B-Pillar Upper Z-Axis Acce	2000	g	#NAME?	
116	P58572	10BPILLORI00ACXA	Right B-Pillar Lower X-Axis Acce	2000	g	Bipolar	
117	P61388	10BPILLORI00ACYA	Right B-Pillar Lower Y-Axis Acce	2000	g	Bipolar	
118	P58024	10BPILLORI00ACZA	Right B-Pillar Lower Z-Axis Acce	2000	g	#NAME?	
119	P63168	10CPILUPLE00ACXA	Left C-Pillar Upper X-Axis Accele	2000	g	Bipolar	
120	P57784	10CPILUPLE00ACYA	Left C-Pillar Upper Y-Axis Accele	2000	g	Bipolar	
121	P61434	10CPILUPLE00ACZA	Left C-Pillar Upper Z-Axis Accele	2000	g	#NAME?	
122	P61361	10CPILLOLE00ACXA	Left C-Pillar Lower X-Axis Accele	2000	g	Bipolar	
123	P61746	10CPILLOLE00ACYA	Left C-Pillar Lower Y-Axis Accele	2000	g	Bipolar	
124	P61444	10CPILLOLE00ACZA	Left C-Pillar Lower Z-Axis Accele	2000	g	#NAME?	
125	P61297	10CPILUPRI00ACXA	Right C-Pillar Upper X-Axis Acce	2000	g	Bipolar	
126	P57161	10CPILUPRI00ACYA	Right C-Pillar Upper Y-Axis Acce	2000	g	#NAME?	
127	P61344	10CPILUPRI00ACZA	Right C-Pillar Upper Z-Axis Acce	2000	g	#NAME?	
128	P61453	10CPILLORI00ACXA	Right C-Pillar Lower X-Axis Acce	2000	g	Bipolar	
129	P34212	10CPILLORI00ACYA	Right C-Pillar Lower Y-Axis Acce	2000	g	#NAME?	
130	P57790	10CPILLORI00ACZA	Right C-Pillar Lower Z-Axis Acce	2000	g	#NAME?	
131	P64806	10DPILUPLE00ACXA	Left D-Pillar Upper X-Axis Accele	2000	g	Bipolar	
132	P63123	10DPILUPLE00ACYA	Left D-Pillar Upper Y-Axis Accele	2000	g	Bipolar	
133	P63147	10DPILUPLE00ACZA	Left D-Pillar Upper Z-Axis Accele	2000	g	#NAME?	
134	P62546	10DPILLOLE00ACXA	Left D-Pillar Lower X-Axis Accele	2000	g	Bipolar	
135	P61752	10DPILLOLE00ACYA	Left D-Pillar Lower Y-Axis Accele	2000	g	Bipolar	
136	P57185	10DPILLOLE00ACZA	Left D-Pillar Lower Z-Axis Accele	2000	g	#NAME?	
137	A044158	10DPILUPRI00ACXA	Right D-Pillar Upper X-Axis Acce	2000	g	Bipolar	
138	P57332	10DPILUPRI00ACYA	Right D-Pillar Upper Y-Axis Acce	2000	g	#NAME?	
139	A044169	10DPILUPRI00ACZA	Right D-Pillar Upper Z-Axis Acce	2000	g	#NAME?	
140	P62622	10DPILLORI00ACXA	Right D-Pillar Lower X-Axis Acce	2000	g	Bipolar	
141	P62625	10DPILLORI00ACYA	Right D-Pillar Lower Y-Axis Acce	2000	g	#NAME?	
142	P62548	10DPILLORI00ACZA	Right D-Pillar Lower Z-Axis Acce	2000	g	#NAME?	
143	P63131	102RDK000000ACXA	Vehicle Rear Deck X-axis Accele	2000	g	Bipolar	
144	P34982	102RDK000000ACYA	Vehicle Rear Deck Y-axis Accele	2000	g	#NAME?	
145	P62241	102RDK000000ACZA	Vehicle Rear Deck Z-axis Accele	2000	g	#NAME?	
146	P62580	11SEAT000000ACXA	LF Seat Position (on floor) X-axis	2000	g	Bipolar	
147	P62553	11SEAT000000ACYA	LF Seat Position (on floor) Y-axis	2000	g	Bipolar	
148	P62619	11SEAT000000ACZA	LF Seat Position (on floor) Z-axis	2000	g	#NAME?	

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Ref	Transducer ID	ISO Signal Identifier	Description	FScale	Units	Polarity	Assembly
149	P61400	13SEAT000000ACXA	RF Seat Position (on floor) X-axis	2000	g	Bipolar	
150	P48549	13SEAT000000ACYA	RF Seat Position (on floor) Y-axis	2000	g	#NAME?	
151	P61319	13SEAT000000ACZA	RF Seat Position (on floor) Z-axis	2000	g	#NAME?	
152	P63139	14SEAT000000ACXA	LR Seat Position (on floor) X-axis	2000	g	Bipolar	
153	P62225	14SEAT000000ACYA	LR Seat Position (on floor) Y-axis	2000	g	#NAME?	
154	P62197	14SEAT000000ACZA	LR Seat Position (on floor) Z-axis	2000	g	#NAME?	
155	P57160	16SEAT000000ACXA	RR Seat Position (on floor) X-axis	2000	g	Bipolar	
156	P63134	16SEAT000000ACYA	RR Seat Position (on floor) Y-axis	2000	g	#NAME?	
157	P61282	16SEAT000000ACZA	RR Seat Position (on floor) Z-axis	2000	g	#NAME?	
158	3419-829	11SEBE0000B5FO0A	Driver Lap Belt Force	15568	N	Bipolar	
159	X08010	11SEBE0000B3FO0A	Driver Shoulder Belt Force (S151	16000	N	Bipolar	
160	X08011	13SEBE0000B5FO0A	Front Pass. Lap Belt Force	16000	N	Bipolar	
161	X08014	13SEBE0000B3FO0A	Front Pass. Shldr. Belt Force	16000	N	Bipolar	
162	3419T-828	14SEBE0000B5FO0A	Left Rear Pass. Lap Belt Force	15568	N	Bipolar	
163	X08012	14SEBE0000B3FO0A	Left Rear Pass. Shldr. Belt Force	16000	N	Bipolar	
164	K1506281A	13SEBE0000B5DS0A	Front Pass. Belt Spool Potentiom	750	mm	Bipolar	
165	Bit.00	11CONT000023EV00	DRIV. Head Contact Switch	1	Logic	Bipolar	
166	Bit.01	11CONT000024EV00	DRIV. Thorax Contact Switch	1	Logic	Bipolar	
167	Bit.02	11CONT000025EV00	DRIV. Pelvis Contact Switch	1	Logic	Bipolar	
168	Bit.03	13CONT000026EV00	Pass. Head Contact Switch	1	Logic	Bipolar	
169	Bit.05	13CONT000027EV00	Pass. Thorax Contact Switch	1	Logic	Bipolar	
170	Bit.06	13CONT000028EV00	Pass. Pelvis Contact Switch	1	Logic	Bipolar	
171	Bit.07	14CONT000029EV00	Left Rear Pass. Head Contact S	1	Logic	Bipolar	
172	Bit.08	14CONT000030EV00	Left Rear Pass. Thorax Contact :	1	Logic	Bipolar	
173	Bit.09	14CONT000031EV00	Left Rear Pass. Pelvis Contact S	1	Logic	Bipolar	
174	ABT squib volts	13BCKLIN0000VO0A	Right front Inner Buckle Voltage	50	V	Bipolar	
175	ABT squib volts	13SEBEBK0000VO0A	Pass Retractor Voltage	50	V	Bipolar	
177	P62576	M2VEHC000000ACXA	Cart X	2000	g	Bipolar	
178	P62628	M2VEHC000000ACYA	Cart Y	2000	g	#NAME?	
179	P61296	M2VEHC000000ACZA	Cart Z	2000	g	#NAME?	
	ABT squib amps	13BCKLIN0000CU0A	Pass Inner Buckle Current	5	A	Bipolar	
	ABT squib amps	13SEBEBK0000CU0A	Pass Retractor Current	5	A	Bipolar	

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Channel	ISO mnemonic	Channel Title	Filter	Zero	Full Scale
	1	11HEADCG00H3ACXA	Driver Head X-Axis Acceleration	1000 + yes	1000
	2	11HEADCG00H3ACYA	Driver Head Y-Axis Acceleration	1000 + yes	1000
	3	11HEADCG00H3ACZA	Driver Head Z-Axis Acceleration	1000 + yes	1000
3A		11HEADCG00H3ACRA	Driver Head Resultant Acceleration	1000	
	4	11HEADCG00H3AVXA	Driver Head (DTS ARS) Rate Gyro X	1000 + yes	12000
	5	11HEADCG00H3AVYA	Driver Head (DTS ARS) Rate Gyro Y	1000 + yes	12000
	6	11HEADCG00H3AVZA	Driver Head (DTS ARS) Rate Gyro Z	1000 + yes	12000
	7	11NECKUP00H3FOXA	Driver Upper Neck X-Axis Force	1000 + yes	8896
	8	11NECKUP00H3FOYA	Driver Upper Neck Y-Axis Force	1000 + yes	8896
	9	11NECKUP00H3FOZA	Driver Upper Neck Z-Axis Force	1000 + yes	13344
	10	11NECKUP00H3MOXA	Driver Upper Neck Moment About X Axis	600 + yes	282.5
	11	11NECKUP00H3MOYA	Driver Upper Neck Moment About Y Axis	600 + yes	282.5
	12	11NECKUP00H3MOZA	Driver Upper Neck Moment About Z Axis	600 + yes	282.5
	13	11CHSTCG00H3ACXA	Driver Chest X-Axis Acceleration	180 + yes	1000
	14	11CHSTCG00H3ACYA	Driver Chest Y-Axis Acceleration	180 + yes	1000
	15	11CHSTCG00H3ACZA	Driver Chest Z-Axis Acceleration	180 + yes	1000
15A		11CHSTCG00H3ACRA	Driver Chest Resultant Acceleration	180	
	16	11CHST0000H3DSXA	Driver Chest X-Axis Displacement	600 + yes	84
	17	11NECKLO00H3FOXA	Driver Lower Neck X-Axis Force	1000 + yes	8896
	18	11NECKLO00H3FOYA	Driver Lower Neck Y-Axis Force	1000 + yes	8896
	19	11NECKLO00H3FOZA	Driver Lower Neck Z-Axis Force	1000 + yes	13345
	20	11NECKLO00H3MOXA	Driver Lower Neck Moment About X Axis	600 + yes	282.5
	21	11NECKLO00H3MOYA	Driver Lower Neck Moment About Y Axis	600 + yes	282.5
	22	11NECKLO00H3MOZA	Driver Lower Neck Moment About Z Axis	600 + yes	282.5
	23	11PELVCG00H3ACXA	Driver Pelvis X-Axis Acceleration	1000 + yes	1000
	24	11PELVCG00H3ACYA	Driver Pelvis Y-Axis Acceleration	1000 + yes	1000
	25	11PELVCG00H3ACZA	Driver Pelvis Z-Axis Acceleration	1000 + yes	1000
25A		11PELVCG00H3ACRA	Driver Pelvis Resultant Acceleration	1000	
	26	13HEADCG00H3ACXA	Right Front Passenger Head X-Axis Acceleration	1000 + yes	1000
	27	13HEADCG00H3ACYA	Right Front Passenger Head Y-Axis Acceleration	1000 + yes	1000
	28	13HEADCG00H3ACZA	Right Front Passenger Head Z-Axis Acceleration	1000 + yes	1000
28A		13HEADCG00H3ACRA	Right Front Passenger Head Resultant Acceleration	1000	
	29	13HEADFR00H3ACYA	Right Front Passenger Head Front Y-Axis Acceleration	1000 + yes	1000
	30	13HEADFR00H3ACZA	Right Front Passenger Head Front Z-Axis Acceleration	1000 + yes	1000
	31	13HEADUP00H3ACXA	Right Front Passenger Head Top X-Axis Acceleration	1000 + yes	1000
	32	13HEADUP00H3ACYA	Right Front Passenger Head Top Y-Axis Acceleration	1000 + yes	1000

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Channel	ISO mnemonic	Channel Title	Filter	Zero	Full Scale
	33	13HEADLE00H3ACXA	Right Front Passenger Head Left X-Axis Acceleration	1000 + yes	1000
	34	13HEADLE00H3ACZA	Right Front Passenger Head Left Z-Axis Acceleration	1000 + yes	1000
	35	13NECKUP00H3FOXA	Right Front Passenger Upper Neck X-Axis Force	1000 + yes	8896.4
	36	13NECKUP00H3FOYA	Right Front Passenger Upper Neck Y-Axis Force	1000 + yes	8896.4
	37	13NECKUP00H3FOZA	Right Front Passenger Upper Neck Z-Axis Force	1000 + yes	13344.6
	38	13NECKUP00H3MOXA	Right Front Passenger Upper Neck Moment About X Axis	600 + yes	282.4
	39	13NECKUP00H3MOYA	Right Front Passenger Upper Neck Moment About Y Axis	600 + yes	282.4
	40	13NECKUP00H3MOZA	Right Front Passenger Upper Neck Moment About Z Axis	600 + yes	282.4
	41	13NECKLO00H3FOXA	Right Front Passenger Lower Neck X-Axis Force	1000 + yes	13345
	42	13NECKLO00H3FOYA	Right Front Passenger Lower Neck Y-Axis Force	1000 + yes	13344.6
	43	13NECKLO00H3FOZA	Right Front Passenger Lower Neck Z-Axis Force	1000 + yes	13344.6
	44	13NECKLO00H3MOXA	Right Front Passenger Lower Neck Moment About X Axis	600 + yes	452
	45	13NECKLO00H3MOYA	Right Front Passenger Lower Neck Moment About Y Axis	600 + yes	452
	46	13NECKLO00H3MOZA	Right Front Passenger Lower Neck Moment About Z Axis	600 + yes	452
	47	13CHSTCG00H3ACXA	Right Front Passenger Chest X-Axis Acceleration	180 + yes	1000
	48	13CHSTCG00H3ACYA	Right Front Passenger Chest Y-Axis Acceleration	180 + yes	1000
	49	13CHSTCG00H3ACZA	Right Front Passenger Chest Z-Axis Acceleration	180 + yes	1000
49A		13CHSTCG00H3ACRA	Right Front Passenger Chest Resultant Acceleration	180	
	50	13CHST0000H3DSXA	Right Front Passenger Chest X-Axis Displacement	600 + yes	84
	51	13PELVCG00H3ACXA	Right Front Passenger Pelvis X-Axis Acceleration	1000 + yes	1000
	52	13PELVCG00H3ACYA	Right Front Passenger Pelvis Y-Axis Acceleration	1000 + yes	1000
	53	13PELVCG00H3ACZA	Right Front Passenger Pelvis Z-Axis Acceleration	1000 + yes	1000
53A		13PELVCG00H3ACRA	Right Front Passenger Pelvis Resultant Acceleration	1000	
	54	14HEADCG00H3ACXA	Left Rear Passenger Head X-Axis Acceleration	1000 + yes	1000
	55	14HEADCG00H3ACYA	Left Rear Passenger Head Y-Axis Acceleration	1000 + yes	1000
	56	14HEADCG00H3ACZA	Left Rear Passenger Head Z-Axis Acceleration	1000 + yes	1000
56A		14HEADCG00H3ACRA	Left Rear Passenger Head Resultant Acceleration	1000	
	57	14HEADCG00H3AVXA	Left Rear Passenger Head (DTS ARS) Rate Gyro X	1000 + yes	12000
	58	14HEADCG00H3AVYA	Left Rear Passenger Head (DTS ARS) Rate Gyro Y	1000 + yes	12000
	59	14HEADCG00H3AVZA	Left Rear Passenger Head (DTS ARS) Rate Gyro Z	1000 + yes	12000
	60	14NECKUP00H3FOXA	Left Rear Passenger Upper Neck X-Axis Force	1000 + yes	8896
	61	14NECKUP00H3FOYA	Left Rear Passenger Upper Neck Y-Axis Force	1000 + yes	8896
	62	14NECKUP00H3FOZA	Left Rear Passenger Upper Neck Z-Axis Force	1000 + yes	13344
	63	14NECKUP00H3MOXA	Left Rear Passenger Upper Neck Moment About X Axis	600 + yes	282
	64	14NECKUP00H3MOYA	Left Rear Passenger Upper Neck Moment About Y Axis	600 + yes	282
	65	14NECKUP00H3MOZA	Left Rear Passenger Upper Neck Moment About Z Axis	600 + yes	282

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Channel	ISO mnemonic	Channel Title	Filter	Zero	Full Scale
66	14CHSTCG00H3ACXA	Left Rear Passenger Chest X-Axis Acceleration	180 +	yes	400
67	14CHSTCG00H3ACYA	Left Rear Passenger Chest Y-Axis Acceleration	180 +	yes	400
68	14CHSTCG00H3ACZA	Left Rear Passenger Chest Z-Axis Acceleration	180 +	yes	400
68A	14CHSTCG00H3ACRA	Left Rear Passenger Chest Resultant Acceleration	180		
69	14CHST0000H3DSXA	Left Rear Passenger Chest X-Axis Displacement	600 +	yes	84
70	14PELVCG00H3ACXA	Left Rear Passenger Pelvis X-Axis Acceleration	1000 +	yes	2000
71	14PELVCG00H3ACYA	Left Rear Passenger Pelvis Y-Axis Acceleration	1000 +	yes	2000
72	14PELVCG00H3ACZA	Left Rear Passenger Pelvis Z-Axis Acceleration	1000 +	yes	2000
72A	14PELVCG00H3ACRA	Left Rear Passenger Pelvis Resultant Acceleration	1000		
73	14NECKLO00H3FOXA	Left Rear Passenger Lower Neck X-Axis Force	1000 +	yes	8896
74	14NECKLO00H3FOYA	Left Rear Passenger Lower Neck Y-Axis Force	1000 +	yes	8896
75	14NECKLO00H3FOZA	Left Rear Passenger Lower Neck Z-Axis Force	1000 +	yes	13345
76	14NECKLO00H3MOXA	Left Rear Passenger Lower Neck Moment About X Axis	600 +	yes	282
77	14NECKLO00H3MOYA	Left Rear Passenger Lower Neck Moment About Y Axis	600 +	yes	282
78	14NECKLO00H3MOZA	Left Rear Passenger Lower Neck Moment About Z Axis	600 +	yes	282
79	10VEHCCG0000ACXA	Vehicle Center of Gravity X-Axis Acceleration	60 +	yes	2000
80	10VEHCCG0000ACYA	Vehicle Center of Gravity Y-Axis Acceleration	60 +	yes	2000
81	10VEHCCG0000ACZA	Vehicle Center of Gravity Z-Axis Acceleration	60 +	yes	2000
81A	10VEHCCG0000ACRA	Vehicle Center of Gravity Resultant Acceleration	60		
82	10VEHCCG0000AVXA	Vehicle Roll Rate	600 +	yes	1500
83	10VEHCCG0000AVYA	Vehicle Pitch Rate	600 +	yes	1500
84	10VEHCCG0000AVZA	Vehicle Yaw Rate	600 +	yes	1500
85	10VEHCREDK00AVXA	Rear Deck Roll Rate Redundant	600 +	yes	1500
86	10VEHCREDK00AVYA	Rear Deck Pitch Rate Redundant	600 +	yes	1500
87	10VEHCREDK00AVZA	Rear Deck Yaw Rate Redundant	600 +	yes	1500
88	10ENGNTTP0000ACXA	Top of Engine X-Axis Acceleration	60 +	yes	2000
89	10ENGNTTP0000ACYA	Top of Engine Y-Axis Acceleration	60 +	yes	2000
90	10ENGNTTP0000ACZA	Top of Engine Z-Axis Acceleration	60 +	yes	2000
90A	10ENGNTTP0000ACRA	Top of Engine Resultant Acceleration	60		
91	10ENGNBO0000ACXA	Bottom of Engine X-Axis Acceleration	60 +	yes	2000
92	10ENGNBO0000ACYA	Bottom of Engine Y-Axis Acceleration	60 +	yes	2000
93	10ENGNBO0000ACZA	Bottom of Engine Z-Axis Acceleration	60 +	yes	2000
93A	10ENGNBO0000ACRA	Bottom of Engine Resultant Acceleration	60		
94	10APILUPLE00ACXA	Left A-Pillar Upper X-Axis Acceleration	60 +	yes	2000
95	10APILUPLE00ACYA	Left A-Pillar Upper Y-Axis Acceleration	60 +	yes	2000
96	10APILUPLE00ACZA	Left A-Pillar Upper Z-Axis Acceleration	60 +	yes	2000

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Channel	ISO mnemonic	Channel Title	Filter	Full Scale
96A	10APILUPLE00ACRA	Left A-Pillar Upper Resultant Acceleration	60	
97	10APILLOLE00ACXA	Left A-Pillar Lower X-Axis Acceleration	60 + yes	2000
98	10APILLOLE00ACYA	Left A-Pillar Lower Y-Axis Acceleration	60 + yes	2000
99	10APILLOLE00ACZA	Left A-Pillar Lower Z-Axis Acceleration	60 + yes	2000
99A	10APILLOLE00ACRA	Left A-Pillar Lower Resultant Acceleration	60	
100	10APILUPRI00ACXA	Right A-Pillar Upper X-Axis Acceleration	60 + yes	2000
101	10APILUPRI00ACYA	Right A-Pillar Upper Y-Axis Acceleration	60 + yes	2000
102	10APILUPRI00ACZA	Right A-Pillar Upper Z-Axis Acceleration	60 + yes	2000
102A	10APILUPRI00ACRA	Right A-Pillar Upper Resultant Acceleration	60	
103	10APILLORI00ACXA	Right A-Pillar Lower X-Axis Acceleration	60 + yes	2000
104	10APILLORI00ACYA	Right A-Pillar Lower Y-Axis Acceleration	60 + yes	2000
105	10APILLORI00ACZA	Right A-Pillar Lower Z-Axis Acceleration	60 + yes	2000
105A	10APILLORI00ACRA	Right A-Pillar Lower Resultant Acceleration	60	
106	10BPILUPLE00ACXA	Left B-Pillar Upper X-Axis Acceleration	60 + yes	2000
107	10BPILUPLE00ACYA	Left B-Pillar Upper Y-Axis Acceleration	60 + yes	2000
108	10BPILUPLE00ACZA	Left B-Pillar Upper Z-Axis Acceleration	60 + yes	2000
108A	10BPILUPLE00ACRA	Left B-Pillar Upper Resultant Acceleration	60	
109	10BPILLOLE00ACXA	Left B-Pillar Lower X-Axis Acceleration	60 + yes	2000
110	10BPILLOLE00ACYA	Left B-Pillar Lower Y-Axis Acceleration	60 + yes	2000
111	10BPILLOLE00ACZA	Left B-Pillar Lower Z-Axis Acceleration	60 + yes	2000
111A	10BPILLOLE00ACRA	Left B-Pillar Lower Resultant Acceleration	60	
112	10BPILUPRI00ACXA	Right B-Pillar Upper X-Axis Acceleration	60 + yes	2000
113	10BPILUPRI00ACYA	Right B-Pillar Upper Y-Axis Acceleration	60 + yes	2000
114	10BPILUPRI00ACZA	Right B-Pillar Upper Z-Axis Acceleration	60 + yes	2000
114A	10BPILUPRI00ACRA	Right B-Pillar Upper Resultant Acceleration	60	
115	10BPILLORI00ACXA	Right B-Pillar Lower X-Axis Acceleration	60 + yes	2000
116	10BPILLORI00ACYA	Right B-Pillar Lower Y-Axis Acceleration	60 + yes	2000
117	10BPILLORI00ACZA	Right B-Pillar Lower Z-Axis Acceleration	60 + yes	2000
117A	10BPILLORI00ACRA	Right B-Pillar Lower Resultant Acceleration	60	
118	10CPILUPLE00ACXA	Left C-Pillar Upper X-Axis Acceleration	60 + yes	2000
119	10CPILUPLE00ACYA	Left C-Pillar Upper Y-Axis Acceleration	60 + yes	2000
120	10CPILUPLE00ACZA	Left C-Pillar Upper Z-Axis Acceleration	60 + yes	2000
120A	10CPILUPLE00ACRA	Left C-Pillar Upper Resultant Acceleration	60	
121	10CPILLOLE00ACXA	Left C-Pillar Lower X-Axis Acceleration	60 + yes	2000
122	10CPILLOLE00ACYA	Left C-Pillar Lower Y-Axis Acceleration	60 + yes	2000
123	10CPILLOLE00ACZA	Left C-Pillar Lower Z-Axis Acceleration	60 + yes	2000

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Channel	ISO mnemonic	Channel Title	Filter	Zero	Full Scale
123A	10CPILLOLE00ACRA	Left C-Pillar Lower Resultant Acceleration	60		
	124 10CPILUPRI00ACXA	Right C-Pillar Upper X-Axis Acceleration	60 +	yes	2000
	125 10CPILUPRI00ACYA	Right C-Pillar Upper Y-Axis Acceleration	60 +	yes	2000
	126 10CPILUPRI00ACZA	Right C-Pillar Upper Z-Axis Acceleration	60 +	yes	2000
126A	10CPILUPRI00ACRA	Right C-Pillar Upper Resultant Acceleration	60		
	127 10CPILLORI00ACXA	Right C-Pillar Lower X-Axis Acceleration	60 +	yes	2000
	128 10CPILLORI00ACYA	Right C-Pillar Lower Y-Axis Acceleration	60 +	yes	2000
	129 10CPILLORI00ACZA	Right C-Pillar Lower Z-Axis Acceleration	60 +	yes	2000
129A	10CPILLORI00ACRA	Right C-Pillar Lower Resultant Acceleration	60		
	130 10DPILUPLE00ACXA	Left D-Pillar Upper X-Axis Acceleration	60 +	yes	2000
	131 10DPILUPLE00ACYA	Left D-Pillar Upper Y-Axis Acceleration	60 +	yes	2000
	132 10DPILUPLE00ACZA	Left D-Pillar Upper Z-Axis Acceleration	60 +	yes	2000
132A	10DPILUPLE00ACRA	Left D-Pillar Upper Resultant Acceleration	60		
	133 10DPILLOLE00ACXA	Left D-Pillar Lower X-Axis Acceleration	60 +	yes	2000
	134 10DPILLOLE00ACYA	Left D-Pillar Lower Y-Axis Acceleration	60 +	yes	2000
	135 10DPILLOLE00ACZA	Left D-Pillar Lower Z-Axis Acceleration	60 +	yes	2000
135A	10DPILLOLE00ACRA	Left D-Pillar Lower Resultant Acceleration	60		
	136 10DPILUPRI00ACXA	Right D-Pillar Upper X-Axis Acceleration	60 +	yes	2000
	137 10DPILUPRI00ACYA	Right D-Pillar Upper Y-Axis Acceleration	60 +	yes	2000
	138 10DPILUPRI00ACZA	Right D-Pillar Upper Z-Axis Acceleration	60 +	yes	2000
138A	10DPILUPRI00ACRA	Right D-Pillar Upper Resultant Acceleration	60		
	139 10DPILLORI00ACXA	Right D-Pillar Lower X-Axis Acceleration	60 +	yes	2000
	140 10DPILLORI00ACYA	Right D-Pillar Lower Y-Axis Acceleration	60 +	yes	2000
	141 10DPILLORI00ACZA	Right D-Pillar Lower Z-Axis Acceleration	60 +	yes	2000
141A	10DPILLORI00ACRA	Right D-Pillar Lower Resultant Acceleration	60		
	142 102RDK000000ACXA	Vehicle Rear Deck X-Axis Acceleration	60 +	yes	2000
	143 102RDK000000ACYA	Vehicle Rear Deck Y-Axis Acceleration	60 +	yes	2000
	144 102RDK000000ACZA	Vehicle Rear Deck Z-Axis Acceleration	60 +	yes	2000
144A	102RDK000000ACRA	Vehicle Rear Deck Resultant Acceleration	60		
	145 11SEAT000000ACXA	LF Seat Position (on floor) X-Axis Acceleration	60 +	yes	2000
	146 11SEAT000000ACYA	LF Seat Position (on floor) Y-Axis Acceleration	60 +	yes	2000
	147 11SEAT000000ACZA	LF Seat Position (on floor) Z-Axis Acceleration	60 +	yes	2000
147A	11SEAT000000ACRA	LF Seat Position (on floor) Resultant Acceleration	60		
	148 13SEAT000000ACXA	RF Seat Position (on floor) X-Axis Acceleration	60 +	yes	2000
	149 13SEAT000000ACYA	RF Seat Position (on floor) Y-Axis Acceleration	60 +	yes	2000
	150 13SEAT000000ACZA	RF Seat Position (on floor) Z-Axis Acceleration	60 +	yes	2000

Command File Test Number 091022

Channel	ISO mnemonic	Channel Title	Filter	Zero	Full Scale
150A	13SEAT000000ACRA	RF Seat Position (on floor) Resultant Acceleration	60		
151	14SEAT000000ACXA	LR Seat Position (on floor) X-Axis Acceleration	60 + yes		2000
152	14SEAT000000ACYA	LR Seat Position (on floor) Y-Axis Acceleration	60 + yes		2000
153	14SEAT000000ACZA	LR Seat Position (on floor) Z-Axis Acceleration	60 + yes		2000
153A	14SEAT000000ACRA	LR Seat Position (on floor) Resultant Acceleration	60		
154	16SEAT000000ACXA	RR Seat Position (on floor) X-Axis Acceleration	60 + yes		2000
155	16SEAT000000ACYA	RR Seat Position (on floor) Y-Axis Acceleration	60 + yes		2000
156	16SEAT000000ACZA	RR Seat Position (on floor) Z-Axis Acceleration	60 + yes		2000
156A	16SEAT000000ACRA	RR Seat Position (on floor) Resultant Acceleration	60		
157	11SEBE0000B5FO0A	Driver Lap Belt Force	60 + yes		15568
158	11SEBE0000B3FO0A	Driver Shoulder Belt Force	60 + yes		16000
159	13SEBE0000B5FO0A	Right Front Passenger Lap Belt Force	60 + yes		16000
160	13SEBE0000B3FO0A	Right Front Passenger Shoulder Belt Force	60 + yes		16000
161	14SEBE0000B5FO0A	Left Rear Passenger Lap Belt Force	60 + yes		15568
162	14SEBE0000B3FO0A	Left Rear Passenger Shoulder Belt Force	60 + yes		16000
163	13SEBE0000B5DS0A	Right Front Passenger Belt Spool Potentiometer	1000 + yes		750
164	11CONT000023EV00	Driver Head Contact	0 + no		1
165	11CONT000024EV00	Driver Thorax Contact	0 + no		1
166	11CONT000025EV00	Driver Pelvis Contact	0 + no		1
167	13CONT000026EV00	Right Front Passenger Head Contact Switch	0 + no		1
168	13CONT000027EV00	Right Front Passenger Thorax Contact Switch	0 + no		1
169	13CONT000028EV00	Right Front Passenger Pelvis Contact Switch	0 + no		1
170	14CONT000029EV00	Left Rear Passenger Head Contact	0 + no		1
171	14CONT000030EV00	Left Rear Passenger Thorax Contact	0 + no		1
172	14CONT000031EV00	Left Rear Passenger Pelvis Contact	0 + no		1
173	13BCKLIN0000VO0A	Right Front Passenger Inner Buckle Voltage	1000 + no		50
174	13SEBEBK0000VO0A	Right Front Passenger Retractor Voltage	1000 + no		50
175	13SEBEBK0000CU0A	Right Front Passenger Retractor Current	1000 + no		5
176	13BCKLIN0000CU0A	Right Front Passenger Inner Buckle Current	1000 + no		5
177	M2VEHC000000ACXA	Cart X-Axis Acceleration	60 + yes		2000
178	M2VEHC000000ACYA	Cart Y-Axis Acceleration	60 + yes		2000
179	M2VEHC000000ACZA	Cart Z-Axis Acceleration	60 + yes		2000
179A	M2VEHC000000ACRA	Cart Resultant Acceleration	60		

APPENDIX E
INSIA Report on Structural Measurements

STRUCTURAL SURVEY OF CARS. MEASUREMENT METHODOLOGY OF THE MAIN RESISTANT ELEMENTS IN THE CAR BODY

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March, 1999

REPORT DOCUMENTATION PAGE**Title:**

STRUCTURAL SURVEY OF CARS. MEASUREMENT METHODOLOGY OF THE MAIN RESISTANT ELEMENTS IN THE CAR BODY

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Supplementary notes:

Under contract to:

THE EUROPEAN COMMUNITY

Project: “Improvement of Crash Compatibility between Cars”
Contract N°: RO – 97 – SC.1064

Abstract:

The main aim of this working package -*Structural Survey of Cars*- is the reduction of incompatibilities, both structural and geometric, between passenger vehicles and their potential collision partners. The understanding of these incompatibilities needs a previous step for the knowledge of the existing car fleet.

Firstly, it is necessary to select the main resistant elements in the car body. These elements have to be chosen from the point of view of the sort of collision that we want to study, that is to say, frontal and side impacts.

Detailed measurements have been taken from exterior and interior elements, spread to a total number of 74 models selected from the main vehicle manufacturers at Spain. All of them are being sold this year. Using the information available from the previous measurements in vehicles, the geometric characteristics of the main resistant elements involved in the geometric compatibility between cars will be defined.

This report shows the methodology followed to get these measurements.

Subject terms:

Crash compatibility, geometric compatibility, resistant elements, measure methodology

Date:

March, 1999

1.- METHODOLOGY.

Detailed measurements have been taken from exterior and interior elements. Using the information available from the previous measurements in vehicles, the geometric characteristics of the main resistant elements involved in the geometric compatibility between cars have been defined. These elements are presented in the following figures, and have been divided in two main groups according to the vehicle zones studied in this project.

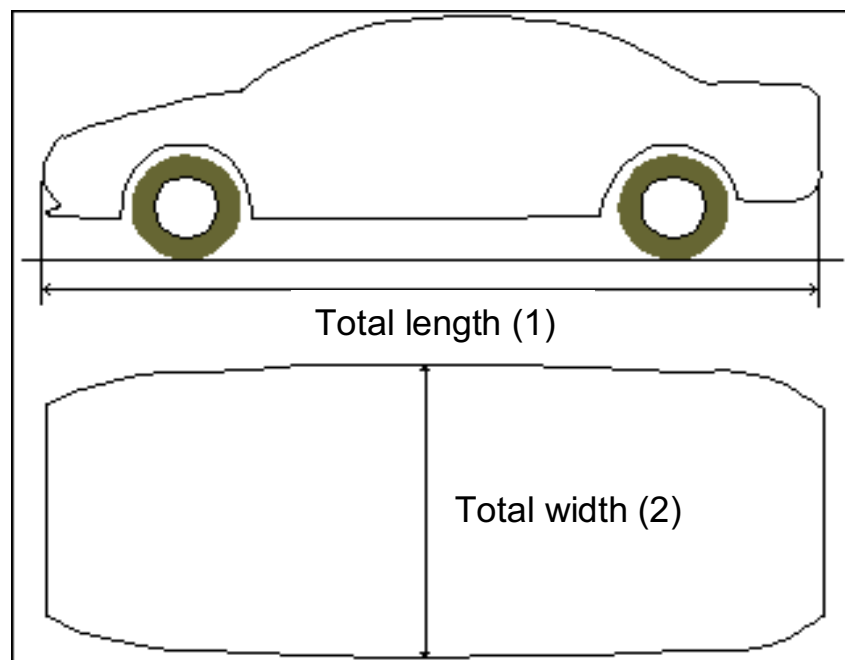


Figure 1.- Definition of the main resistant elements. General dimensions.

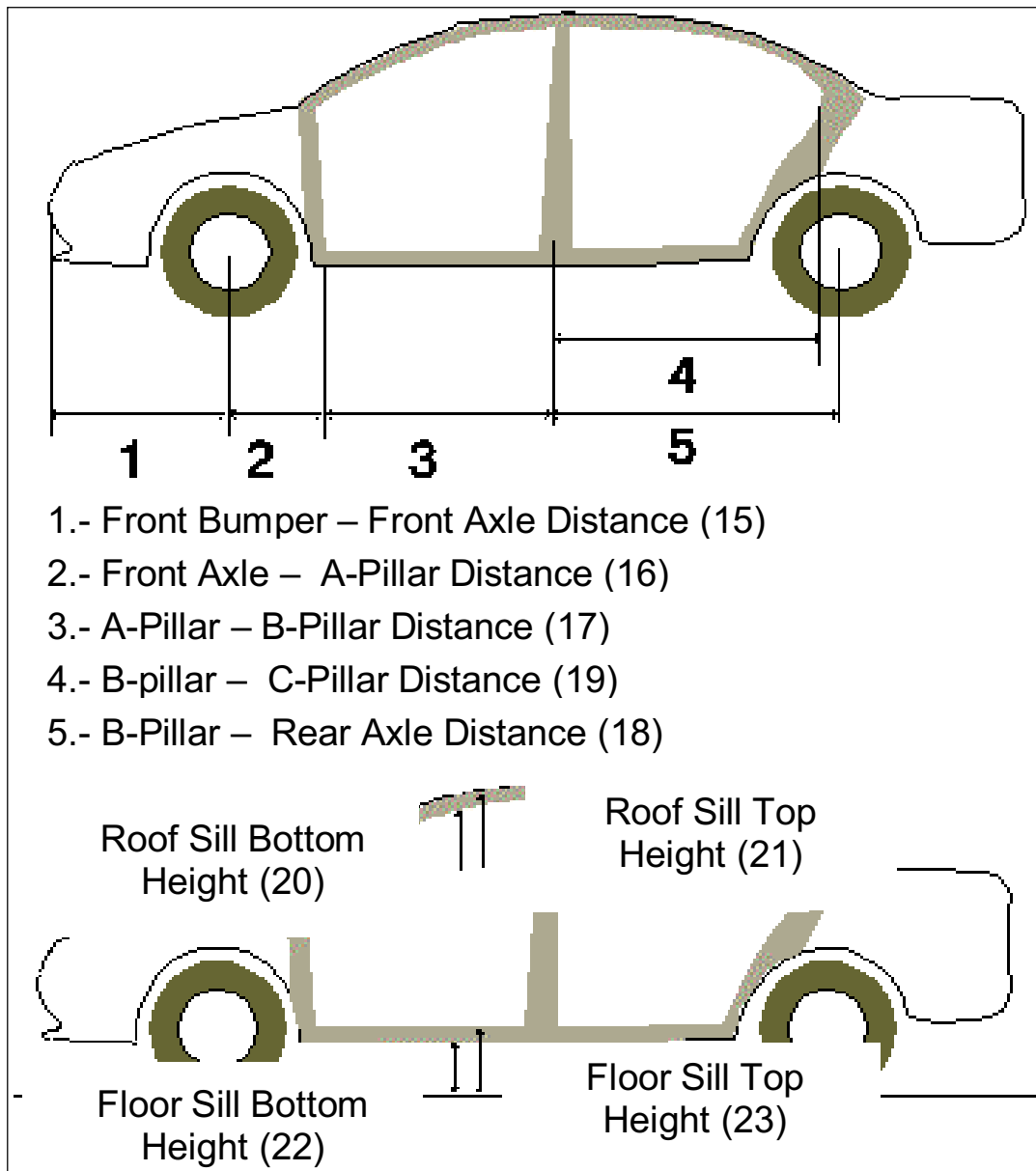


Figure 2.- Definition of the main resistant elements. Side elements.

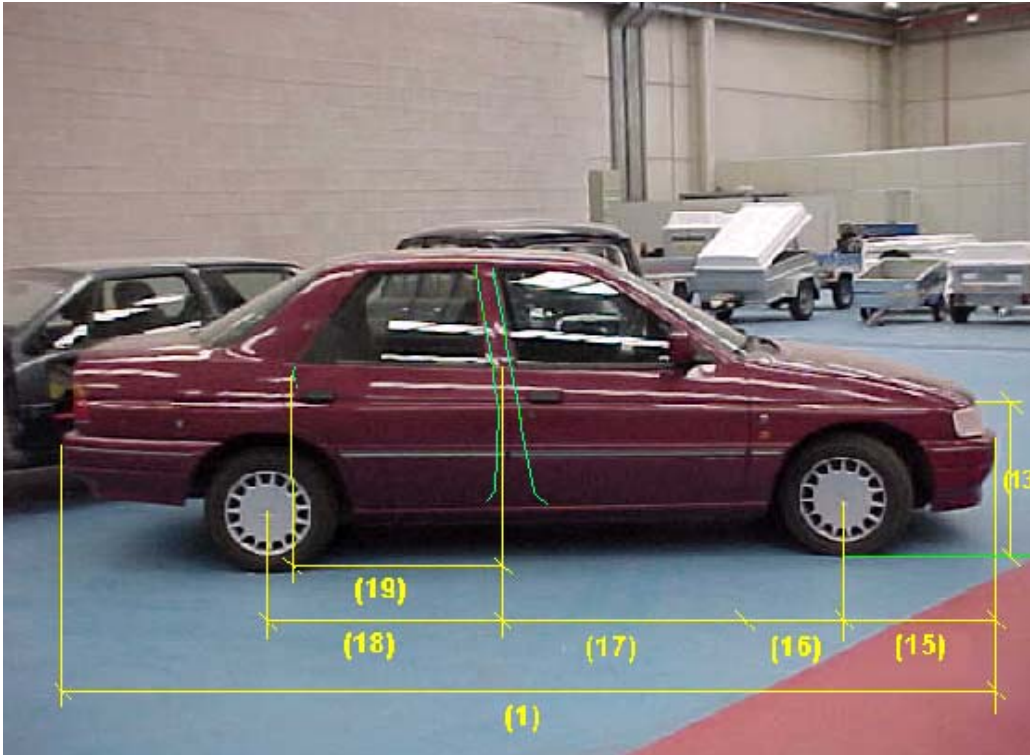
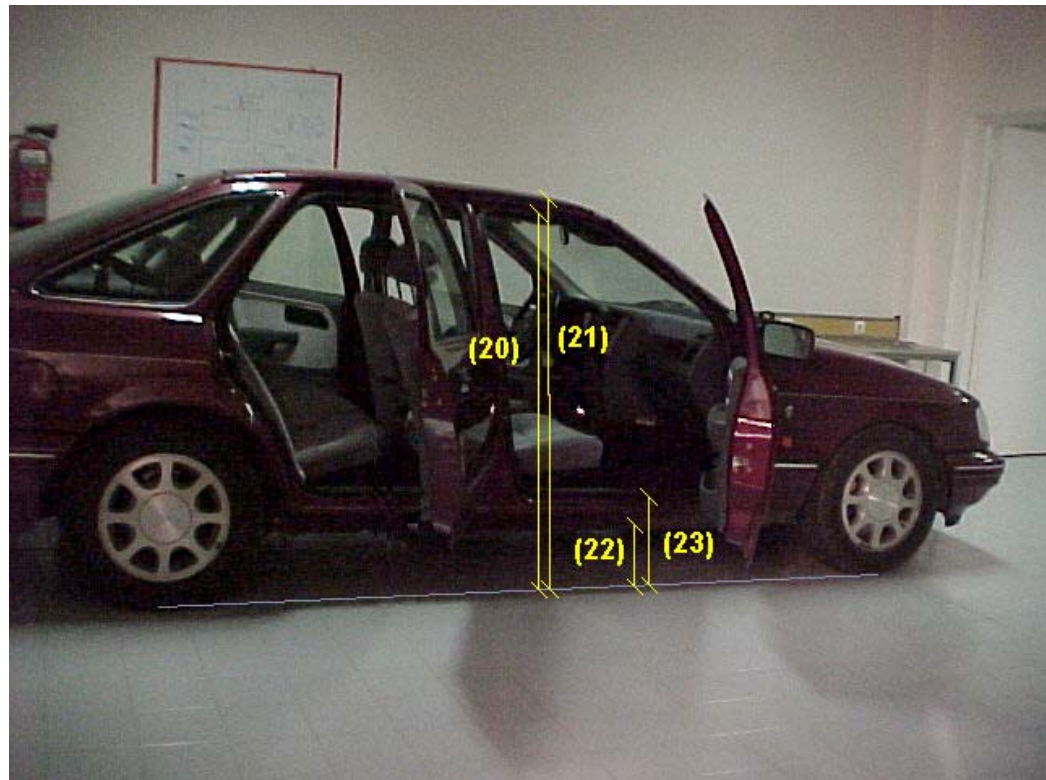


Figure 3.-
Measurements of
the side resistant
elements (outer).

Figure 4.- Measurements
of the side resistant
elements (inner).



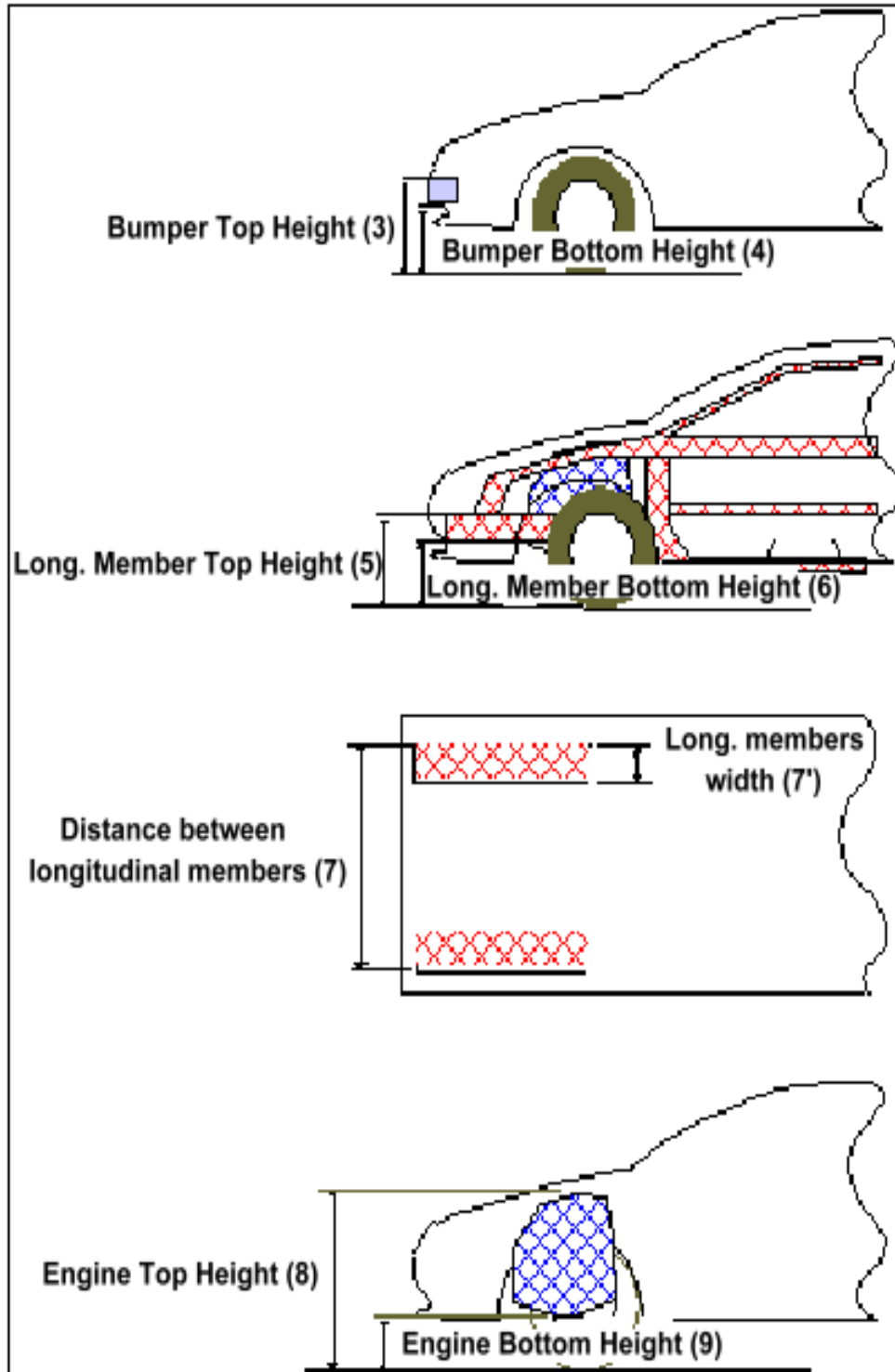


Figure 5.- Definition of the main resistant elements. Front elements.

Figure 6.-
Measurements of the
main resistant elements.
Front elements 1.

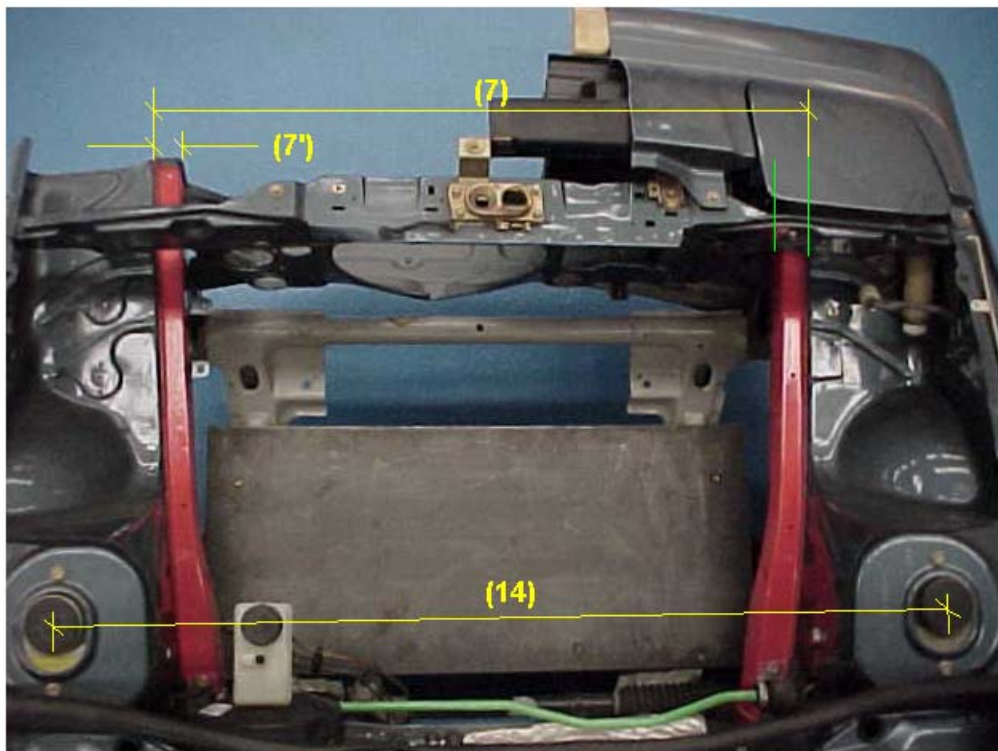
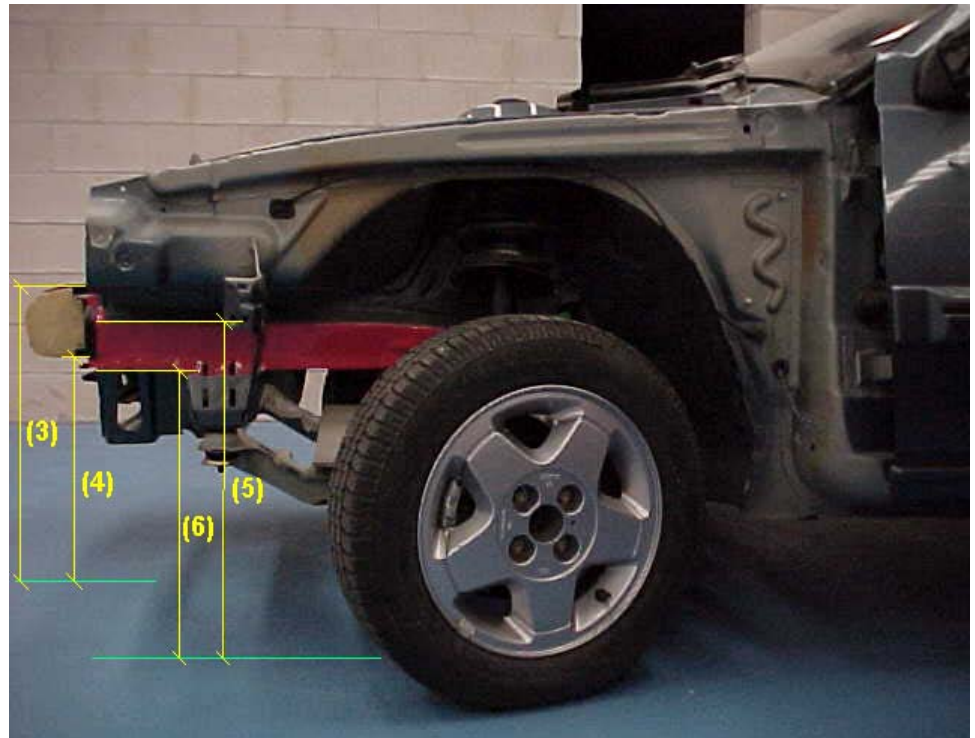


Figure 7.-
Measurements
of the main
resistant
elements. Front
elements 2.

Figure 8.-
Measurements of
the main resistant
elements. Front
elements 3.

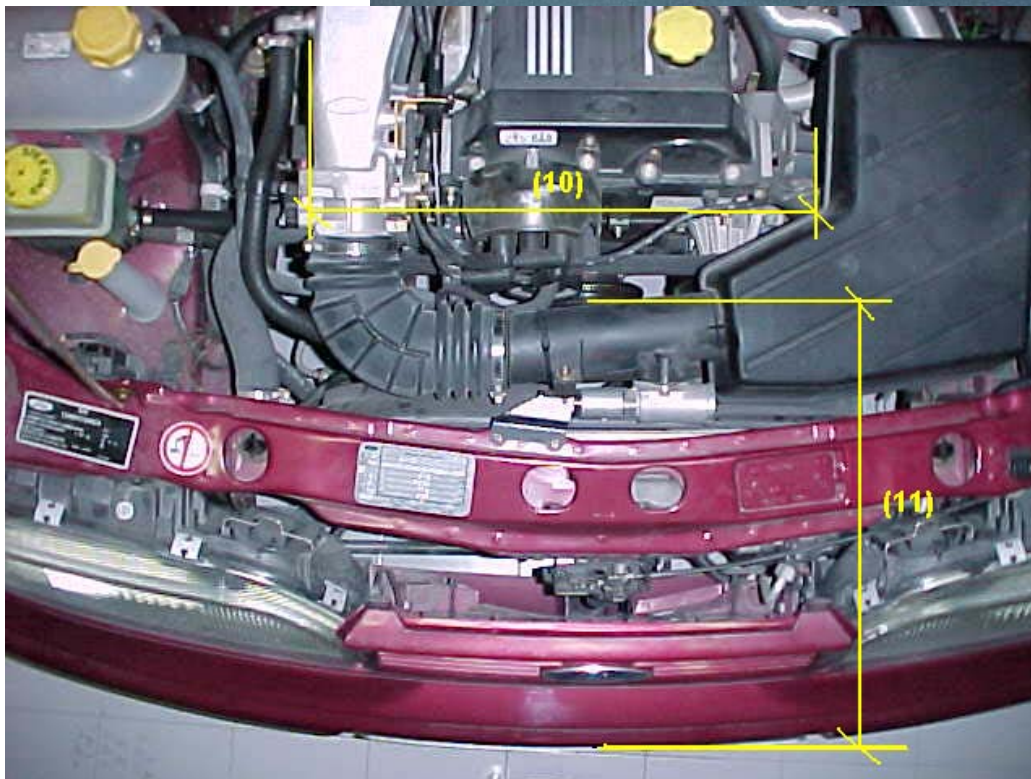
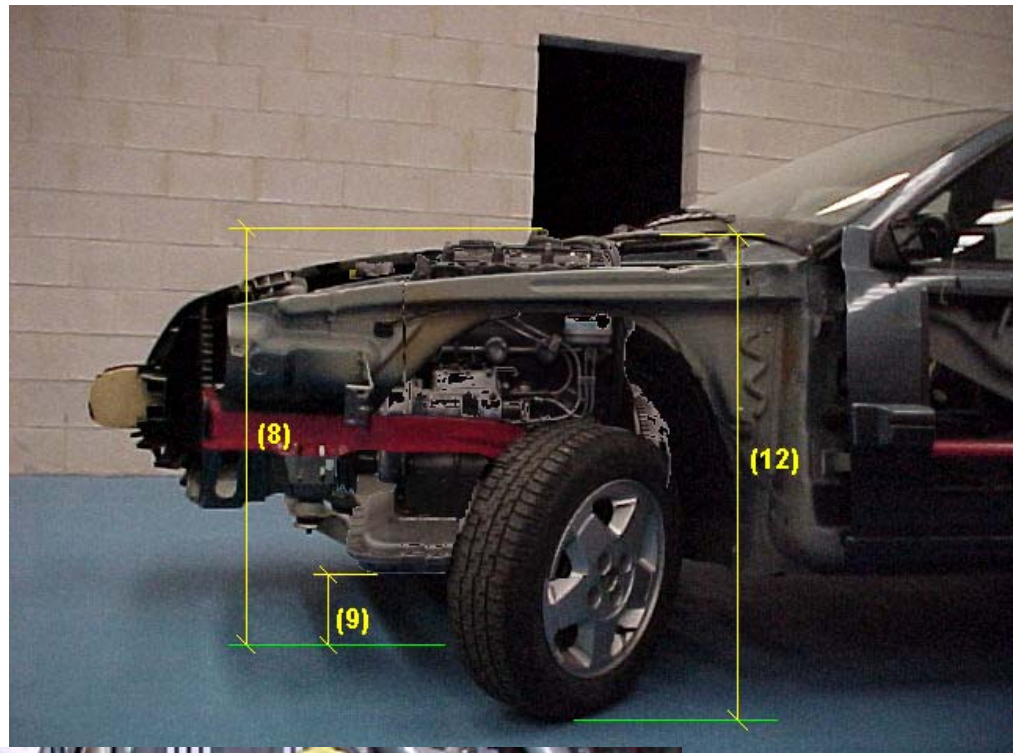


Figure 9.-
Definition of
the main
resistant
elements. Front
elements
(Longitudinal
engine).

The procedure considered to measure these elements is described as follows, where it is indicated the location of these ones in the Excel Sheet (SURVEY.XLS) into brackets:

FRONT ELEMENTS

- **Total Length –(1)- (Side & Front Sheets - C column):** distance between the point in the front bumper further on and the point in the rear bumper further back.
- **Weight (Side & Front Sheets - D column):** mass, including an average driver weight (70 kg), and the fuel tank mass (at half-capacity).
- **Total Width –(2)- (Side & Front Sheets - E column):** distance between the outer side points in a transverse plane of the vehicle (middle plane between the front and rear axles).
- **Bumper bottom height –(4)- (Front Sheet G column):** distance between the ground and the lowest point on the front bumper, being a resistant member (aerodynamic elements under the front bumper are not considered).
- **Bumper top height –(3)- (Front Sheet H column):** distance between the ground and the highest point on the front bumper, being a resistant member (aerodynamic elements are not considered).
- **Longitudinal member top height –(5)- (Front Sheet I column):** distance between the ground and the highest point on the longitudinal members, measured approximately in the front bumper-longitudinal member joint (when accessible).
- **Longitudinal member bottom height –(6)- (Front Sheet J column):** distance between the ground and the lowest point on the longitudinal members, measured approximately in the front bumper-longitudinal member joint.
- **Distance between longitudinal members (Front Sheet K column):** transverse distance between extreme points in longitudinal members, measured approximately in the front bumper-longitudinal member joint.

Depending on the accessibility of these members, the extreme points are the inner points (I) or the outer points (O).

- **Longitudinal member width -7'- (Front Sheet L column):** width of one of the longitudinal members, measured approximately in the front bumper-longitudinal member joint.

-
- **Engine top height (8) (Front Sheet N column):** distance between the ground and the highest point on the engine that can be a resistant member in case of accident (usually, the highest point on the head, or the highest point of the inlet or exhaust manifolds).
 - **Engine bottom height (9) (Front Sheet M column):** distance between the ground and the lowest point on the engine (usually, the lowest point on the crankcase).
 - **Engine and Gearbox width (10) (Front Sheet O & P columns):**
 - *Transverse configuration engine:* distance between extreme points in the gearbox-cylinder block unit or others resistant members attached to the cylinder block unit, i.e. fan belts (from a front point of view).
 - *Longitudinal configuration engine:* distance between extreme points in the cylinder block unit (from a front point of view).
 - **Front bumper - Engine distance (11) (Front Sheet Q column):** distance between the point in the front bumper further on and the point in the engine further on that is a resistant element, i.e. the further on point of the exhaust manifold placed in the front of the engine.
 - **Front shock absorber fixing width (14) (Front Sheet R column):** transverse distance between the front shock absorber - body car joints.
 - **Front shock absorber fixing height (12) (Front Sheet S column):** distance between the ground and the front shock absorber-body car joint.
 - **Bonnet leading edge height (Front Sheet T column):** distance between the ground and the bonnet edge further on.

SIDE ELEMENTS

- **Front bumper - Front axle distance (15) (Side Sheet G column):** distance between the point in the front bumper further on and the middle point in the front tyre-road contact patch.
- **Front axle - A Pillar distance (16) (Side Sheet H column):** distance between the middle point in the front tyre-road contact patch and the point in the A-pillar further back.
- **A Pillar - B Pillar distance (17) (Side Sheet I column):** distance between the point in the A-pillar further back and the middle point in the B-pillar.
- **B Pillar - C Pillar distance (19) (Side Sheet J column):** distance between the middle point in the B-pillar and the point in the C-pillar further back (only 4/5-door vehicles).
- **B Pillar - Rear axle distance (18) (Side Sheet K column):** distance between the middle point in the B-pillar and the middle point in the rear tyre-road contact patch.
- **Roof sill bottom height (20) (Side Sheet L column):** distance between the ground and the lowest point on the roof sill, measured in the front door middle point.
- **Roof sill top height (21) (Side Sheet M column):** distance between the ground and the highest point on the roof sill (usually located in the sill-roof joint), measured in the front door middle point.
- **Floor sill bottom height (22) (Side Sheet N column):** distance between the ground and the lowest point on the floor sill, measured in the front door middle point.
- **Floor sill top height (23) (Side Sheet O column):** distance between the ground and the highest point on the floor sill, measured in the front door middle point.

NOTE

- N/A: dimension not available.