

**Vehicle Research and Test Center
Moving Deformable Barrier into
2005 Subaru Forester at 52.9 km/h
TRC Inc. Test Number: 050624**

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Section 1.0

Purpose and Test Procedure

Purpose

This 48/24 km/h (32.9 mph) 90° side impact test was conducted for the National Highway Traffic Safety Administration (NHTSA) and Vehicle Research and Test Center (VRTC) by Transportation Research Center Inc. (TRC Inc.).

The purpose of this test was to evaluate side impact protection in a moving deformable barrier impact test. The subject vehicle was a 2005 Subaru Forester 4-door.

Test Procedure

This test was conducted in accordance with VRTC instructions for a moving deformable barrier into a vehicle side impact test. Data was obtained relative to FMVSS 214, "Side Impact Protection" performed using EuroSID-2 with rib extenders anthropomorphic test devices (dummies).

A 2005 Subaru Forester 4-door was impacted on the driver's side by a Moving Deformable Barrier (MDB) which was moving forward in a 27° crabbed position to the monorail at a velocity of 53.5 km/h (33.2 mph). The target vehicle was stationary and was positioned at an angle of 63° to the line of forward motion. The side impact test was conducted by Transportation Research Center Inc. in East Liberty, Ohio on June 24, 2005. Pre-test and post-test photographs of the test vehicle, the moving deformable barrier (MDB), and the side impact dummies (ES-2re) are included in Appendix A.

The moving deformable barrier was equipped with a 214 style deformable barrier face and five (5) accelerometers to measure longitudinal, lateral, and vertical axis accelerations. The barrier's specified impact velocity range was 52.1 to 53.8 km/h.

Two restrained EuroSID 2 dummies (ES-2re) were placed in the driver (Pos. #1) and left rear (Pos. #4) designated seating positions according to the instructions specified in the Federal Register Part 572-214 Section S8.3 and S12.2 (May 17, 2004). Both ES-2re were certified prior to this test and were restrained by 3-point seat belts. The driver dummy was additionally restrained by a combination head/torso airbag.

Both dummies were instrumented with head, shoulder, pelvis, and rib (at spine, thorax, and abdomen) accelerometers to measure longitudinal, lateral, and vertical accelerations and upper and lower neck, thorax, abdomen, pubic symphysis, and femur load cells to measure forces and moments, and three (3) rib deflection potentiometers.

The 180 data channels were digitally sampled and recorded at 12,500 samples per second and processed per SAE J211 March 1995.

The crash event was recorded by one (1) real-time panning motion picture camera and ten (10) high-speed digital motion picture cameras. The pre- and post-test conditions were recorded by one (1) real-time motion picture camera.

The side impact test summary data are presented in Section 2.0. The summary of FMVSS 214 data are presented in Section 3.0. The occupant, camera, vehicle, and barrier measurements are presented in Section 4.0. Appendix A contains the still photographic prints. Appendix B contains the dummy and vehicle data plots. Appendix C contains the dummy verification data. Appendix D contains test equipment and instrumentation calibration information. Appendix E contains a copy of the INSIA Report on Structural Measurements.

Section 2.0

Moving Deformable Barrier Side Impact Test Summary

Test Results Summary

This moving deformable barrier side impact test was conducted by TRC Inc. on June 24, 2005.

The test vehicle, a 2005 Subaru Forester 4-door, was equipped with a 2.5-liter transverse engine, automatic transmission, steering, brakes, single stage front airbags, and side front torso airbags. The vehicle's test weight was 1644.8 kg. The moving deformable barrier's impact speed was 53.5 km/h. The moving deformable barrier impacted 1 mm to the right of the target point (323 mm rearward of front axle).

Injury Criteria Data Summary		
	Driver	Left Rear Passenger
HIC (15 ms)	32	224
HIC (36 ms)	44	226
Upper Rib Displacement (mm)	15	23
Middle Rib Displacement (mm)	17	13
Lower Rib Displacement (mm)	21	14
Lower Spine Acceleration (g)	33	35
Abdominal Force (N)	598	967
Pubic Force (N)	-1,694	-1,948

Data Acquisition Explanations

The left rear passenger right femur force Y-axis data channel, 14FEMRRI00E2FOYA, recorded an anomalous data spike at approximately 84 milliseconds.

The left rear passenger right femur force Z-axis data channel, 14FEMRRI00E2FOZA, recorded an anomalous data spike at approximately 84 milliseconds.

The vehicle's left lower A-post Y-axis acceleration data channel, 11APILLO0000ACYA, recorded questionable data throughout test.

The vehicle's left middle A-post Y-axis acceleration data channel, 11APILLM0000ACYA, recorded questionable data throughout test.

The vehicle's top of engine Y-axis acceleration data channel, 12ENGN000000ACYA, did not record any useful data throughout the test. A cut sensor cable was found during the post-test investigation.

The vehicle's left front door mid-rear 430 mm above ground Y-axis acceleration data channel, 11DOOR000002ACYA, did not record any useful data after approximately 32 milliseconds. A cut sensor cable was found during the post-test investigation.

Table 1 Crash Test Summary

Test mode:	Moving deformable barrier side impact		
Test date:	06/24/05		
Test time:	11:53		
Ambient temperature:	21° C		
Vehicle year/make/ model/body style:	2005/Subaru/Forester/4-door		
Vehicle test weight:	1644.4 kg		
Impact angle ¹ :	270°		
Impact velocity ² :	53.5 km/h		
Maximum vehicle static crush:	187 mm		
Maximum barrier static crush:	121 mm		
Number of data channels:	180		
Number of cameras:	High-speed	10	Real-time 1
<u>Dummies:</u>	<u>Driver #010</u>	<u>Passenger #009</u>	
Type:	ES-2re	ES-2re	
Location:	Left front	Left rear	
Restraint:	3-pt. seat belt, side torso airbag	3-pt. seat belt	
<u>Seat track position for test:</u>			
Driver:	Middle of range of travel; 124 mm rearward of full forward		
Passenger:	Fixed		
<u>Seat back position for test:</u>			
Driver:	11° back from full upright measured at the seatback		
Passenger:	Fixed		
<u>Head restraint position for test:</u>			
Driver:	Full up		
Passenger:	Full up		
<u>Steering column position:</u>	Middle of geometric range of travel		

¹ With respect to tow track centerline.

² Speed trap measurement ($\pm .08$ km/h accuracy)

Table 2 General Test and Vehicle Parameter Data

Vehicle year/make/
model/body style: 2005/Subaru/Forester/4-door

VIN: JF1SG63605G748808

Model year: 2005

Body style: 4-door

Color: Black Pearl

Engine data:

 Cylinders: 4

 Displacement 2.5 liters

 Cylinder placement: Straight

 Engine placement: Transverse

Transmission data: 5 speed, X manual, ___ automatic, ___ overdrive

 Final drive: ___ FWD, ___ RWD, X 4WD

Date vehicle received: 06/18/05

Odometer reading: 83 miles

Dealer's name and address: Vehicle supplied by VRTC

Accessories:

Power steering	Yes	Automatic transmission	No
Power brakes	Yes	Automatic speed control	Yes
Power seats	No	Tilting steering wheel	Yes
Power windows	Yes	Telescoping steering wheel	No
Tinted glass	Yes	Air conditioning	Yes
Radio	Yes	Anti-skid brake	Yes
Clock	Yes	Rear window defroster	Yes
Other	No	Power door locks	Yes

Certification data from vehicle's label:

Vehicle manufactured by: Fuji Heavy Ind. LTD Japan

Date of manufacture: 02/05

VIN: JF1SG63605G748808

GVWR: 1880 kg (4150 lbs.)

GAWR: Front: 930 kg (2050 lbs.)

 Rear: 1000 kg (2200 lbs.)

Table 2 General Test and Vehicle Parameter Data, Continued

Tires on vehicle (mfr., line, size): Yokohama, Geolandar, P215/60R16

Tire pressure with maximum capacity vehicle load:

Front:	44 psi	(300 kPa)
Rear:	44 psi	(300 kPa)

Spare tire (mfr., line, size): Yokohama, Geolandar, P215/60R16

Type of seats:

Front	Bucket
Rear	Split bench 60/40

Maximum width: 1710 mm

Wheelbase: 2525 mm

Location of “Recommended Tire Pressure” label:

The label was located on driver side B-pillar.

Data from vehicle’s “Recommended Tire Pressure” label”:

Recommended tire size: P215/60R16

Recommended cold tire pressure:

Front:	29 psi	(200 kPa)
Rear:	29 psi	(200 kPa)

Vehicle Capacity Data:

Number of Occupants (Designated seating capacity):

Front	2
Rear	3
Total	5

Vehicle capacity weight: 408 kg

Rated cargo/luggage weight¹ 68 kg

Test vehicle attitude:

Delivered attitude:	LF	770 mm;	RF	772 mm;	LR	766 mm;	RR	764 mm
Fully loaded attitude:	LF	738 mm;	RF	747 mm;	LR	705 mm;	RR	715 mm
Pre-test attitude:	LF	740 mm;	RF	750 mm;	LR	710 mm;	RR	715 mm
Post-test attitude:	LF	740 mm;	RF	745 mm;	LR	715 mm;	RR	690 mm

¹ RCLW = VCW - (68 kg * designated seating capacity)

Table 2 General Test and Vehicle Parameter Data, Continued

Test vehicle sill heights:

Pre-test heights: LF 290 mm; RF 292 mm; LR 270 mm; RR 280 mm

Post-test heights: LF 289 mm; RF 292 mm; LR 242 mm; RR 260 mm

Weight of test vehicle as received (with maximum fluids)=UDW:

Right front	388.0 kg	Right rear	312.5 kg
Left front	403.0 kg	Left rear	324.0 kg
Total front weight	791.0 kg	(55.4 % of total vehicle weight)	
Total rear weight	636.5 kg	(44.6 % of total vehicle weight)	
Total delivered weight	1427.5 kg		

Calculation of test vehicle's target test weight:

Total Delivered Weight (UDW) =	1427.5 kg
Rated Cargo/Luggage Weight (RCLW) =	68.0 kg
Weight of 2 ES-2re Dummies @ 77 kg each =	154.0 kg
Target test weight =	1649.5 kg

Weight of test vehicle with required dummies:

Right front	406.8 kg	Right rear	392.6 kg
Left front	435.0 kg	Left rear	410.0 kg
Total front weight	841.8 kg	(51.2% of total vehicle weight)	
Total rear weight	802.6 kg	(48.8% of total vehicle weight)	
Total test weight	1644.4 kg		

Weight of ballast secured in vehicle: None

Components removed to meet target test weight: Rear deck fascia, bumper beam, taillights, radiator, air filter box, power steering pump, A/C pump, alternator, rear seal, power steering reservoir, three headrests, one mud flap, serpentine belts.

Location of Vehicle's CG: 1232 mm rearward of front wheel centerline

Fuel System Data:

Usable fuel system capacity 60.2 liters (from owner's manual)

Actual test volume: 55.8 liters (93% of usable)

Table 3 Post-Impact Data

Test number: 050624
Test date: 06/24/05
Test time: 11:53
Test type: Moving deformable barrier left side impact
Impact angle: 270°
Ambient temperature
at impact area: 21° C
Required impact velocity range: 52.1 to 53.8 km/h

MDB impact velocity:

Primary: 53.5 km/h
Secondary: 53.5 km/h
Distance from vehicle to barrier:
Entering velocity trap: 661 mm
Exiting velocity trap: 51 mm

Location of Impact Point On Test Vehicle Side To Be Impacted:

Wheelbase = 2525 millimeters
Intended impact point is 322 millimeters rearward of front axle centerline
(which is 940 millimeters forward of the wheelbase midpoint)
Actual Impact Point is 323 millimeters rearward of front axle centerline

Impact Point:

Actual Impact Point is 1 mm right of nominal impact ref. line (Lateral)
Actual Impact Point is 1 mm down from nominal impact point (Vertical)

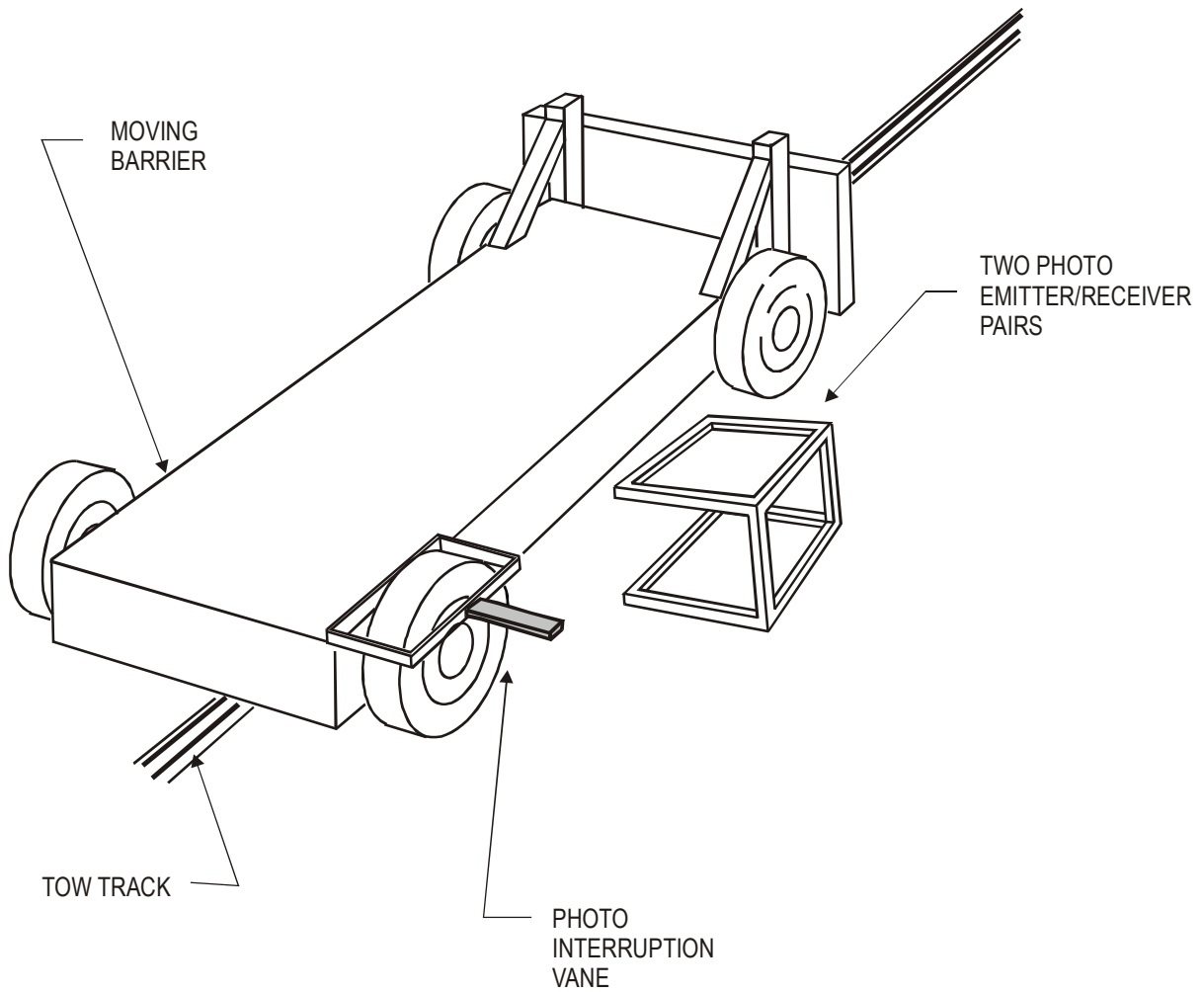
Maximum Exterior Static Crush:

1. Level 1 (311 mm above ground) = 35 mm
2. Level 2 (637 mm above ground) = 187 mm
3. Level 3 (682 mm above ground) = 177 mm
4. Level 4 (960 mm above ground) = 75 mm
5. Level 5 (1507 mm above ground) = N/A¹ mm

Maximum Post-Test Intrusion = 187 mm

¹ No positive post-test intrusion measurements at Level 5.

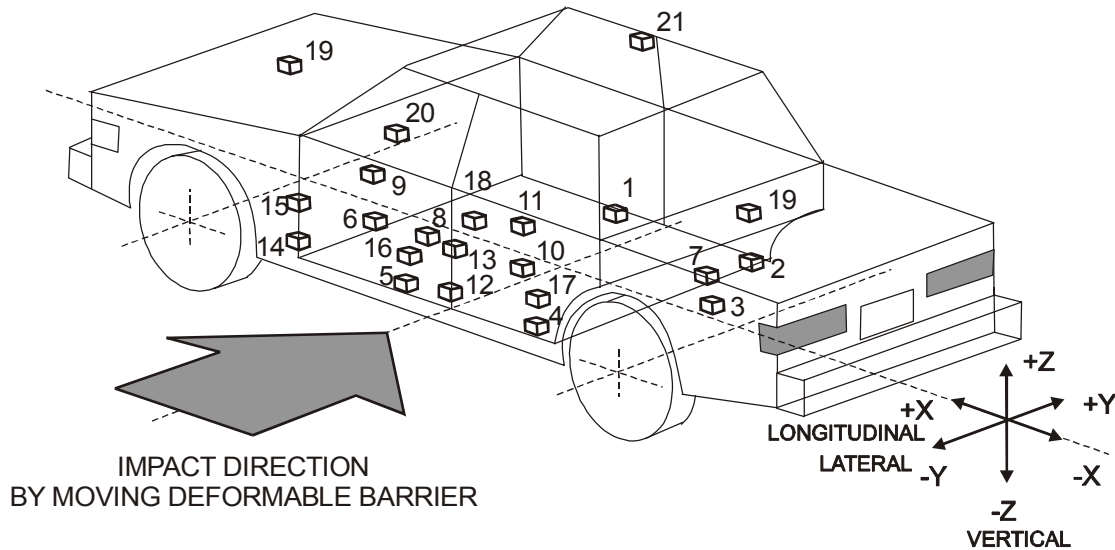
Figure 1 Impact Velocity Measurement System



The final vane clears the final emitter/receiver pair 51 millimeters before impact.

The vanes have 610-millimeter spacing.

Figure 2 Vehicle Accelerometer and String Potentiometer Placement



- 1-Right Front Side Sill
- 2-Right Side Sill at Rear Seat
- 3-Rear Floorpan above Axle
- 4-Left Side Sill at Rear Seat
- 5-Left Front Side Sill
- 6-Left Front Door Centerline
- 7-Right Rear Occupant Compartment
- 8-Left Front Door Mid-Rear
- 9-Left Front Door Upper Centerline
- 10-Left Rear Door Mid-Rear
- 11-Left Rear Door Upper Centerline

- 12-Left Side Lower B-pillar
- 13-Left Side Middle B-pillar
- 14-Left Side Lower A-pillar
- 15-Left Side Middle A-pillar
- 16-Left Side Front Seat Track at H-point
- 17-Left Rear Seat Track at H-point
- 18-Vehicle Center of Gravity
- 19-Engine Top
- 20-Firewall
- 21-Right Side Roof Rail

Table 4 Test Vehicle Accelerometer Locations and Data Summary

Accel. No.	Location		Positive Direction		Negative Direction	
			Max. (g)	Time (ms)	Max. (g)	Time (ms)
1	Right Side Sill at Front Seat	X	3.0	49.9	4.9	11.2
		Y	21.0	8.6	3.0	53.4
		Z	3.0	91.8	10.5	17.7
2	Right Side Sill At Rear Seat	X	2.9	50.0	5.7	11.2
		Y	20.3	22.2	1.7	137.6
		Z	4.2	94.0	5.3	22.1
3	Rear Floorpan Above Axle	X	2.2	18.8	6.9	13.8
		Y	21.4	38.6	2.1	113.7
		Z	3.6	66.4	6.2	51.7
4	Left Side Sill at Rear Seat	Y	54.7	5.4	6.9	50.0
5	Left Side Sill at Front Seat	Y	43.5	4.8	6.2	17.8
6	Left Front Door Centerline	Y	109.5	10.3	48.2	18.2
7	Right Rear Occupant Compartment	Y	20.9	22.2	1.6	52.6
8	Left Front Door Mid-Rear ¹	Y	----	----	----	----
9	Left Front Door Upper Centerline	Y	85.3	10.6	31.3	31.4
10	Left Rear Door Mid-Rear	Y	93.4	4.6	19.1	31.8
11	Left Rear Door Upper Centerline	Y	90.3	8.2	90.1	32.4
12	Left Lower B-Pillar	Y	163.2	10.0	13.0	49.0
13	Left Middle B-Pillar	Y	106.1	4.6	17.4	17.8
14	Left Lower A-Pillar ¹	Y	43.6	10.5	96.8	18.0
15	Left Middle A-Pillar ¹	Y	48.9	4.0	17.8	26.8
16	Left Front Seat Track	Y	71.3	13.7	24.2	9.4
17	Left Rear Seat Track	Y	31.4	24.1	5.9	51.5
18	Vehicle Center of Gravity	X	5.4	48.4	16.1	28.6
		Y	79.5	20.4	48.8	24.6
		Z	19.8	22.6	21.8	7.7
	Resultant		79.7	20.4		

¹ See Data Acquisition Explanations.

Table 4 Test Vehicle Accelerometer Locations and Data Summary, Cont'd.

Accel. No.	Location		Positive Direction		Negative Direction	
			Max. (g)	Time (ms)	Max. (g)	Time (ms)
19	Top of Engine ^I	X	6.5	70.7	16.6	39.8
		Y	----	----	----	----
20	Firewall	X	4.4	4.6	12.3	20.1
		Y	49.3	31.8	1.5	91.2
21	Right Roof Rail	X	4.7	53.1	7.2	23.4
		Y	18.2	32.5	4.1	92.0

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.

Table 5 Moving Deformable Barrier (MDB) Summary

MDB Face Manufacturer And Serial Number:

Cellbond, EH310

Position Of Impactor (MDB) On Monorail:

Crabbed 27° to the left

MDB Specifications:

Overall Width of Framework Carriage = 1251 mm

Overall Length of MDB (Incl. honeycomb impact face) = 4014 mm

Wheelbase of Framework Carriage = 2591 mm

Track of Framework Carriage (Front & Rear) = 1881 mm

C.G. Location Rearward of Front Axle = 1135 mm

MDB Weight:

Left Front = 481.6 kg Left Rear = 200.4 kg

Right Front = 284.8 kg Right Rear = 397.4 kg

Total Front = 766.4 kg Total Rear = 597.8 kg

Total MDB Weight = 1364.2 kg

Impact Angle (MDB C/L to Target Vehicle C/L) = 90 degrees

Impact Speed = 53.5 km/h

Maximum Static Crush of Honeycomb Impact Face:

1. Row A at Center of Bumper Level = 121 millimeters

2. Row B at Top of Bumper Level = 73 millimeters

3. Row C at Mid Level = 63 millimeters

4. Row D at Top of Stack Level = 116 millimeters

Instrumentation:

Number of MDB Data Channels = 5

Section 3.0

Summary of FMVSS 214 Data

Table 6 Dummy Injury Criteria Data

Driver Dummy S/N 010

Location	Positive Direction Max. Time (ms)		Negative Direction Max. Time (ms)	
Head Acceleration (g)				
Longitudinal X	2.7	217.3	11.8	64.7
Lateral Y	15.3	65.0	4.3	15.0
Vertical Z	17.4	65.3	2.3	12.2
Resultant	26.0	65.0		
HIC (36 ms)	44			
Head Left Acceleration (g)				
Longitudinal X	3.5	217.2	14.6	63.2
Vertical Z	24.8	60.8	7.6	82.7
Head Front Acceleration (g)				
Lateral Y	16.1	95.0	4.6	301.0
Vertical Z	2.8	12.2	23.1	64.8
Head Top Acceleration (g)				
Longitudinal X	3.4	226.3	11.7	98.2
Vertical Y	25.2	81.4	5.4	60.7
Upper Neck Force (N)				
X-Axis Shear	51.6	213.4	315.8	96.6
Y-Axis Shear	516.0	94.3	45.7	310.0
Z-Axis Axial	676.2	65.4	35.9	11.8
Upper Neck Moment (N-m)				
About X-Axis	36.0	82.4	23.0	61.6
About Y-Axis	14.2	82.9	22.1	62.9
About Z-Axis	11.5	80.3	12.4	301.0
Lower Neck Force (N)				
X-Axis Shear	57.2	206.0	401.3	63.3
Y-Axis Shear	953.4	63.4	71.5	309.8
Z-Axis Axial	568.9	56.4	364.7	94.4

Table 6 Dummy Injury Criteria Data, Cont'd.

Driver Dummy S/N 010

Location	Positive Direction		Negative Direction	
	Max.	Time (ms)	Max.	Time (ms)
Lower Neck Moment (N-m)				
About X-Axis	113.2	91.8	12.2	310.0
About Y-Axis	41.8	63.4	13.0	175.2
About Z-Axis	11.3	78.9	11.9	300.5
Shoulder Force (N)				
X-Axis	286.2	16.0	194.4	55.0
Y-Axis	710.6	16.3	94.6	55.7
Z-Axis	444.6	15.9	20.8	255.8
Upper Spine Acceleration (g)				
Longitudinal X	5.0	19.9	16.8	15.3
Lateral Y	26.2	52.4	6.3	62.6
Vertical Z	3.3	27.0	2.4	14.2
Resultant	26.6	52.3		
Torso Back Plate Force (N)				
Longitudinal X	940.2	45.8	131.6	11.4
Lateral Y	64.1	11.3	274.2	49.8
Torso Back Plate Moment (N-m)				
Lateral Y	8.9	19.9	12.6	16.2
Vertical Z	19.8	48.9	2.5	16.5
Upper Rib Acceleration (g)				
Lateral Y	27.7	51.4	16.7	22.2
Mid Rib Acceleration (g)				
Lateral Y	52.7	10.6	24.2	16.9
Lower Rib Acceleration (g)				
Lateral Y	74.2	10.7	31.1	16.2
Upper Rib Displacement (mm)				
Lateral Y	15.1	46.6	0.6	85.1

Table 6 Dummy Injury Criteria Data, Cont'd.

Driver Dummy S/N 010

Location	Positive Direction Max. Time (ms)		Negative Direction Max. Time (ms)	
Mid Rib Displacement (mm)				
Lateral Y	17.4	46.3	0.7	81.0
Lower Rib Displacement (mm)				
Lateral Y	21.2	47.1	2.4	81.8
Lower Spine Acceleration (g)				
Longitudinal X	2.0	131.6	9.9	22.2
Lateral Y	32.5	44.4	7.0	80.6
Vertical Z	3.0	27.4	3.8	51.4
Resultant	32.8	44.3		
Lower Spine Force (N)				
Longitudinal X	460.0	49.9	216.0	18.6
Lateral Y	886.2	48.5	568.6	22.6
Lower Spine Moment (N-m)				
Longitudinal X	111.8	77.6	80.0	44.8
Lateral Y	75.5	50.0	42.8	20.1
Lumbar Force (N)				
Y-Axis	1380.6	42.8	473.9	78.0
Z-Axis	1110.1	61.6	338.3	39.4
Lumbar Moment (N-m)				
About X-Axis	73.0	47.5	25.0	22.5
Front Abdominal Force (N)				
Lateral Y	115.9	47.0	25.6	29.9
Mid Abdominal Force (N)				
Lateral Y	177.3	46.4	25.6	18.1
Rear Abdominal Force (N)				
Lateral Y	334.6	46.3	14.2	20.2
Abdominal Total Force (N)				

Table 6 Dummy Injury Criteria Data, Cont'd.

Driver Dummy S/N 010

Location	Positive Direction		Negative Direction	
	Max.	Time (ms)	Max.	Time (ms)
Pubic Force (N)				
Lateral Y	185.4	84.2	1693.9	47.1
Pelvis Acceleration (g)				
Longitudinal X	4.0	20.4	10.2	17.8
Lateral Y	46.7	35.4	11.6	59.0
Vertical Z	6.5	24.9	5.5	80.1
Resultant	46.9	35.4		
Left Femur Force (N)				
X-Axis	206.0	26.9	174.8	39.1
Y-Axis	525.7	54.5	105.3	106.1
Z-Axis	949.9	42.2	170.3	140.0
Left Femur Moment (N-m)				
About Longitudinal	20.9	152.5	127.8	55.4
About Lateral	20.6	25.2	45.6	40.6
About Vertical	4.0	213.3	27.6	55.6
Right Femur Force (N)				
X-Axis	221.0	55.1	98.6	21.0
Y-Axis ¹	309.6	35.0	932.6	52.2
Z-Axis ¹	970.4	49.4	113.4	97.8
Right Femur Moment (N-m)				
About Longitudinal	42.0	55.8	126.5	46.2
About Lateral	18.7	55.6	30.3	47.4
About Vertical	13.6	61.9	18.4	54.0

Positive Direction:

Longitudinal: Forward

Lateral: Rightward

Vertical: Downward

Negative Direction:

Longitudinal: Rearward

Lateral: Leftward

Vertical: Upward

¹ See Data Acquisition Explanations

Table 6 Dummy Injury Criteria Data, Cont'd.

Left Rear Passenger Dummy S/N 009

Location	Positive Direction Max. Time (ms)		Negative Direction Max. Time (ms)	
Head Acceleration (g)				
Longitudinal X	3.6	300.2	21.1	53.1
Lateral Y	74.4	62.5	4.0	299.9
Vertical Z	11.9	52.6	23.4	68.5
Resultant	75.3	62.5		
HIC (36 ms)	226			
Head Left Acceleration (g)				
Longitudinal X	7.5	75.6	44.1	54.2
Vertical Z	11.5	73.8	27.0	68.7
Head Front Acceleration (g)				
Lateral Y	75.9	62.6	4.6	303.9
Vertical Z	12.8	72.7	10.3	68.6
Head Top Acceleration (g)				
Longitudinal X	20.7	65.1	41.2	53.0
Vertical Y	92.5	61.4	13.3	83.8
Upper Neck Force (N)				
X-Axis Shear	217.2	69.0	212.6	98.1
Y-Axis Shear	163.4	172.2	1154.0	66.9
Z-Axis Axial	168.8	289.5	2099.9	66.4
Upper Neck Moment (N-m)				
About X-Axis	12.5	179.7	22.5	93.8
About Y-Axis	15.9	109.5	44.0	65.2
About Z-Axis	31.6	73.0	8.3	163.7
Lower Neck Force (N)				
X-Axis Shear	142.4	306.7	433.2	70.7
Y-Axis Shear	904.2	65.8	199.2	303.9
Z-Axis Axial	166.2	239.0	2236.6	67.8

Table 6 Dummy Injury Criteria Data, Cont'd.

Left Rear Passenger Dummy S/N 009

Location	Positive Direction		Negative Direction	
	Max.	Time (ms)	Max.	Time (ms)
Lower Neck Moment (N-m)				
About X-Axis	37.5	170.5	84.6	76.0
About Y-Axis	64.1	84.0	32.3	308.9
About Z-Axis	32.3	83.3	6.6	160.8
Shoulder Force (N)				
X-Axis	1147.8	57.8	49.1	26.2
Y-Axis	2327.0	58.2	69.3	27.3
Z-Axis	433.9	55.8	40.1	117.4
Upper Spine Acceleration (g)				
Longitudinal X	1.5	247.8	12.5	68.9
Lateral Y	36.2	57.0	2.7	168.4
Vertical Z	8.3	64.8	5.9	42.4
Resultant	38.3	57.0		
Torso Back Plate Force (N)				
Longitudinal X	162.9	73.6	97.3	120.2
Lateral Y	59.3	23.3	425.3	54.8
Torso Back Plate Moment (N-m)				
Lateral Y	6.2	86.0	10.3	73.6
Vertical Z	7.1	54.4	4.7	309.6
Upper Rib Acceleration (g)				
Lateral Y	63.9	51.7	9.7	59.9
Mid Rib Acceleration (g)				
Lateral Y	43.3	50.5	4.0	104.5
Lower Rib Acceleration (g)				
Lateral Y	43.5	79.4	4.7	90.8
Upper Rib Displacement (mm)				
Lateral Y	23.1	62.4	0.4	253.5

Table 6 Dummy Injury Criteria Data, Cont'd.

Left Rear Passenger Dummy S/N 009

Location	Positive Direction Max. Time (ms)		Negative Direction Max. Time (ms)	
Mid Rib Displacement (mm)				
Lateral Y	12.8	62.9	2.0	86.8
Lower Rib Displacement (mm)				
Lateral Y	13.6	55.2	1.7	80.2
Lower Spine Acceleration (g)				
Longitudinal X	2.5	172.9	8.1	65.3
Lateral Y	34.6	48.1	2.2	154.7
Vertical Z	7.4	68.1	7.5	45.8
Resultant	35.2	48.0		
Lower Spine Force (N)				
Longitudinal X	313.3	78.9	211.3	58.2
Lateral Y	2013.5	47.4	261.6	173.2
Lower Spine Moment (N-m)				
Longitudinal X	29.3	95.4	144.1	51.8
Lateral Y	32.7	101.3	34.6	308.6
Lumbar Force (N)				
Y-Axis	1967.7	48.9	271.7	181.9
Z-Axis	797.7	81.8	1175.4	42.5
Lumbar Moment (N-m)				
About X-Axis	90.8	49.8	21.5	181.4
Front Abdominal Force (N)				
Lateral Y	186.2	45.3	26.8	25.8
Mid Abdominal Force (N)				
Lateral Y	348.2	47.1	17.9	84.6
Rear Abdominal Force (N)				
Lateral Y	442.4	46.4	13.2	77.9
Abdominal Total Force (N)				

Table 6 Dummy Injury Criteria Data, Cont'd.

Left Rear Passenger Dummy S/N 009

Location	Positive Direction Max. Time (ms)		Negative Direction Max. Time (ms)	
Pubic Force (N)				
Lateral Y	148.8	156.7	1948.4	43.8
Pelvis Acceleration (g)				
Longitudinal X	5.0	165.6	17.8	49.0
Lateral Y ¹	47.2	41.9	12.8	74.6
Vertical Z	8.8	66.4	10.5	47.8
Resultant ¹	48.1	41.9		
Left Femur Force (N)				
X-Axis	265.6	69.5	112.2	180.9
Y-Axis	243.9	47.2	307.3	49.7
Z-Axis	1259.6	44.8	188.7	177.1
Left Femur Moment (N-m)				
About Longitudinal	31.1	40.2	109.3	47.5
About Lateral	15.4	188.1	41.9	49.6
About Vertical	19.2	56.4	6.2	179.0
Right Femur Force (N)				
X-Axis	222.0	41.4	112.4	54.9
Y-Axis	312.2	84.6	2029.6	84.2
Z-Axis	774.1	84.2	990.5	34.2
Right Femur Moment (N-m)				
About Longitudinal	49.0	48.8	34.2	41.8
About Lateral	48.2	43.4	14.8	153.2
About Vertical	14.9	56.1	5.0	30.4

Positive Direction:

Longitudinal: Forward

Lateral: Rightward

Vertical: Downward

Negative Direction:

Longitudinal: Rearward

Lateral: Leftward

Vertical: Upward

¹ See Data Acquisition Explanations.

Table 7 Post-Impact Dummy/Vehicle Data

Visible Dummy Contact Points:

	<u>Driver</u>	<u>Passenger</u>
Head	Side head/torso airbag, head restraint	C-pillar, head restraint
Shoulder	Side head/torso airbag	Door panel
Abdomen	Side head/torso airbag	Door panel
Left knee	Door panel	Door panel
Right knee	None	None

Door opening:

	<u>Left</u>	<u>Right</u>
Front	Jammed & latched	Easy
Rear	Jammed & latched	Easy

Seat movement:

	<u>Seat back failure</u>	<u>Seat shift</u>
Left Front	None	None
Left Rear	None	None

Glazing damage: Driver's side window broken.

Other notable impact effects: None

Section 4.0

Occupant, Vehicle, Camera, and Barrier Information

Table 8 Vehicle Structural Measurements^{1,2}

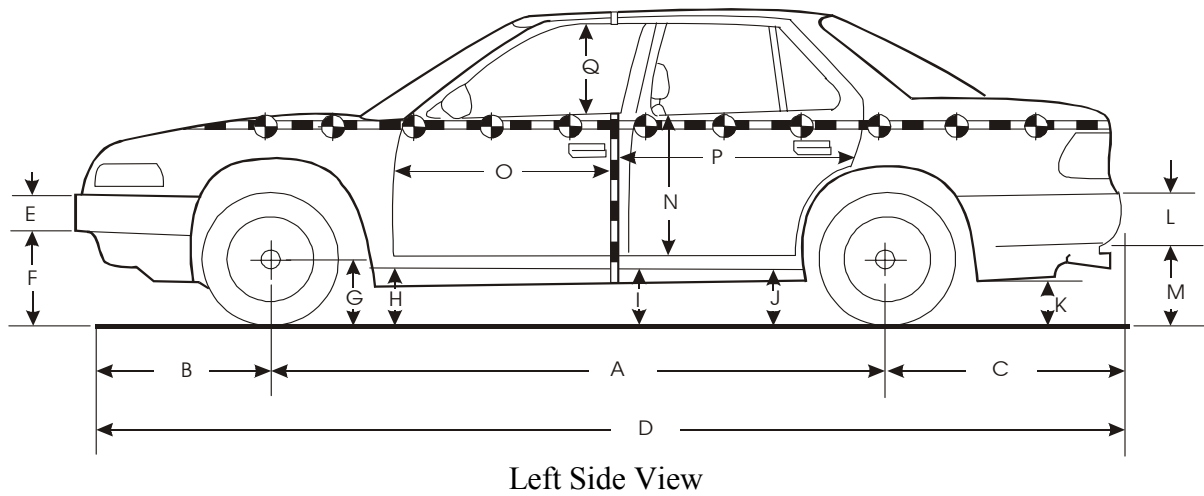
	Elements	Pre-Test
1	Total Length	4460
2	Total Width	1710
3	Bumper Top Height	610
4	Bumper Bottom Height	401
5	Longitudinal Member Top Height	565
6	Longitudinal Member Bottom Height	475
7	Distance Between Longitudinal Members	991
7'	Longitudinal Member Width	69
8	Engine Top Height	860
9	Engine Bottom Height	234
10	Engine and Gearbox Width	678
11	Front Bumper - Engine Distance	453
12	Front Shock Absorber Fixing Height	914
13	Bonnet Leading Edge Height	807
14	Front Shock Absorber Fixing Width	1075
15	Front Bumper - Front Axle Distance	900
16	Front Axle - A Pillar Distance	510
17	A Pillar - B Pillar Distance	987
18	B Pillar - Rear Axle Distance	1017
19	B Pillar - C Pillar Distance	860
20	Roof Sill Bottom Height	1423
21	Roof Sill Top Height	1457
22	Floor Sill Bottom Height	348
23	Floor Sill Top Height	400

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. This report is included in Appendix E.

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

Figure 3 Pre-Test And Post-Test Measurement Points



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

Code	Measurement Description	Pre-Test	Post-Test	Change
A	Wheelbase	2525	2505	20
B	Front Axle to Front Surface of Vehicle	900	895	5
C	Rear Axle to Rear Surface of Vehicle	1035	1035	0
D	Total Length at Centerline	4460	4430	30
E	Front Bumper Thickness	166	166	0
F	Front Bumper Bottom to Ground	429	438	-9
G	Sill Height at Front Wheel Well	318	318	0
H	Sill Height at Front Door Leading Edge	288	270	18
I	Sill Height at "B" Pillar	270	250	20
J1	Sill Height at Rear Wheel Well	222	220	2
J2	Pinch Weld Height at Rear Wheel Well	267	239	28
K	Sill Height Aft of Rear Wheel Well	338	335	3
L	Rear Bumper Thickness	195	195	0
M	Rear Bumper Bottom to Ground	468	444	24
N	Sill Height to Window Bottom Sill	735	697	38
O	Front Door Leading Edge to Impact CL	813	827	-14
P	Rear Door Trailing Edge to Impact CL	1139	1085	54
Q	Front Window Opening	435	470	-35
R	Right Side Length	4335	4330	5
S	Left Side Length	4335	4290	45
T	Vehicle Width at "B" Post	1282	1204	78

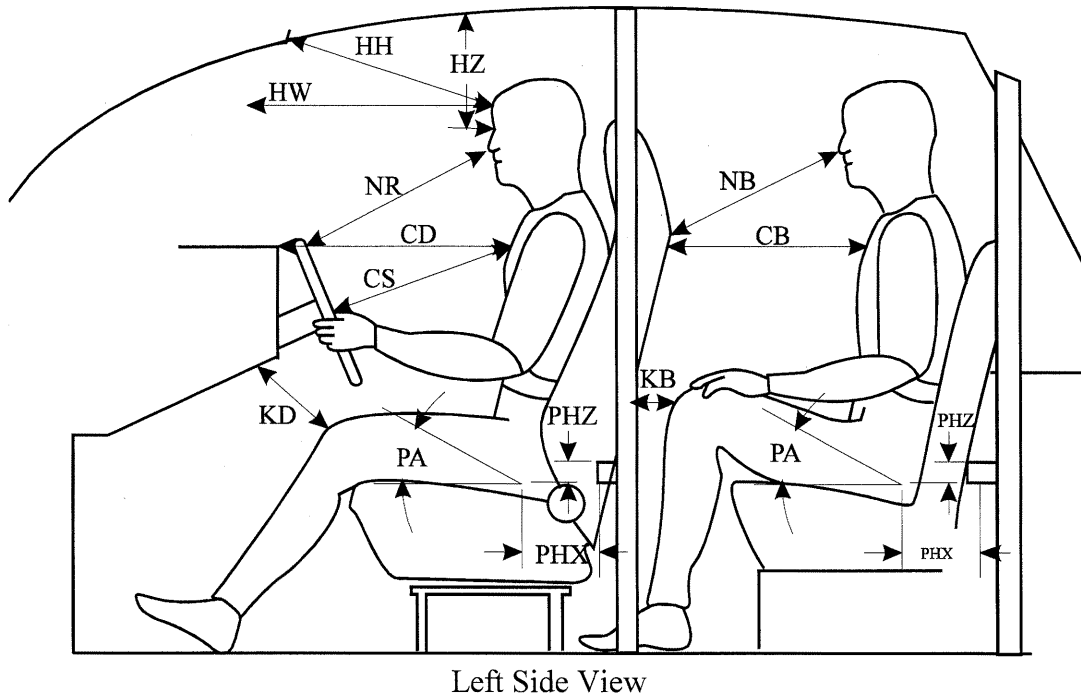
D = Length at centerline
T = Width at B-pillar

E&L = Bumper Thickness
J1 = To Pinch Weld

R = Right Side Length
J2 = To Sill

S = Left Side Length

Figure 4 ES-2re Longitudinal Clearance Dimensions

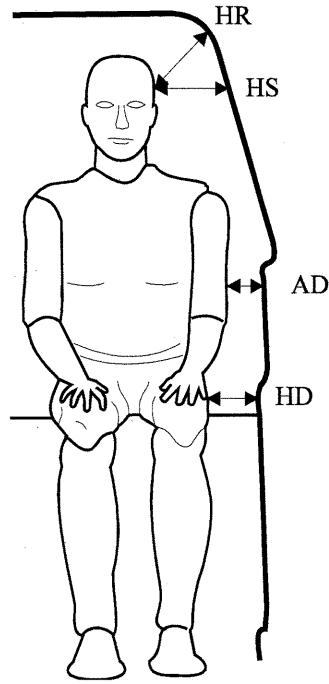


Note: All measurements were recorded using TRC Inc.'s FARO Arm with a tolerance of ± 0.1 mm.

Measurement	Driver ES-2re # 010	Left Rear Pass. ES-2re # 009
HH	373	N/A
HW	569	N/A
HZ	185	195
NR/NB	423	563
CD/CB	582	519
CS	302	N/A
KDL(KDA°)/KBL(KBA°)	126/(7.0°)	142/(12.0°)
KDR(KDA°)/KBR(KBA°)	125/(2.0°)	140/(14.0°)
PA°	N/A	N/A
PHX	153	235
PHZ	74	293
Tilt Sensor Pelvic °	N/A	N/A
Tilt Sensor Spine °	N/A	N/A

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

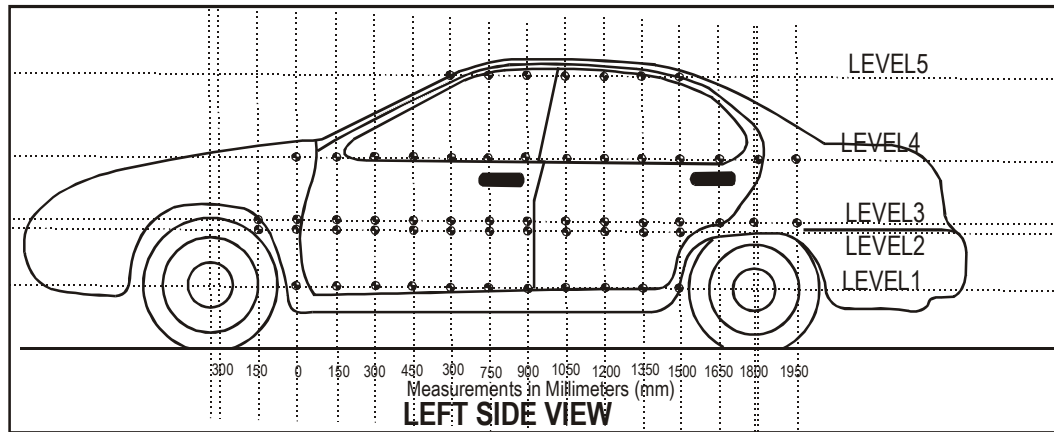
Figure 5 ES-2re Lateral Clearance Dimensions



Note: All measurements were recorded using TRC Inc.'s FARO Arm with a tolerance of ± 0.1 mm

Measurement	Driver ES-2re # 010		Left Rear Pass. ES-2re # 009	
HR	198		208	
HS	297		312	
AD*	Lower: 65	Upper: 81	Lower: 132	Upper: 110
HD	127		153	

Figure 6 Vehicle Side Measurements



Level 5 - Window Top

Level 4 - Window Sill

Level 3 - Mid-Door

Level 2 - Occupant H-Point

Level 1 - Axle Centerline Height or Sill Top Height

Measurements Are Taken When The Vehicle Is In The “As Tested” Configuration.

Measurements along the vertical 750 mm line shown above:

Level 5 @ Window Top	=	<u>1507</u>	mm
Level 4 @ Window Sill	=	<u>960</u>	mm
Level 3 @ Mid Door	=	<u>682</u>	mm
Level 2 @ Occupant H-Point	=	<u>637</u>	mm
Level 1 @ Axle Centerline Height (or Sill Top Height)	=	<u>311</u>	mm

Table 9 Vehicle Exterior Crush Profiles - All Levels

Location	Height		(mm) From Impact Point													
			-1200	-1050	-900	-750	-600	-450	-300	-150	0	150	300	450	600	750
Level 1 Side Sill	311	Pre	---	---	---	---	---	---	---	---	---	797	772	770	769	768
		Post	---	---	---	---	---	---	---	---	---	767	740	739	735	733
		Crush	---	---	---	---	---	---	---	---	---	30	32	31	34	35
Level 2 H-Point	637	Pre	---	---	---	835	864	---	---	---	---	851	844	845	846	846
		Post	---	---	---	835	---	---	---	---	811	713	703	699	688	686
		Crush	---	---	---	0	---	---	---	---	---	138	141	146	158	160
Level 3 Mid-Door	682	Pre	---	---	---	825	860	---	---	---	866	848	849	850	851	851
		Post	---	---	---	825	860	---	---	---	813	722	716	711	709	708
		Crush	---	---	---	0	0	---	---	---	53	126	133	139	142	143
Level 4 Window Sill	960	Pre	---	---	---	731	753	770	783	791	798	804	807	810	812	813
		Post	---	---	---	734	755	771	782	789	792	789	787	783	777	777
		Crush	---	---	---	-3	-2	-1	1	2	6	15	20	27	35	36
Level 5 Window Top	1507	Pre	---	---	---	---	---	---	---	---	---	---	---	---	---	593
		Post	---	---	---	---	---	---	---	---	---	---	---	---	---	598
		Crush	---	---	---	---	---	---	---	---	---	---	---	---	---	-5

All measurements were recorded using TRC Inc.'s FARO Arm with a tolerance of ± 0.1 mm.

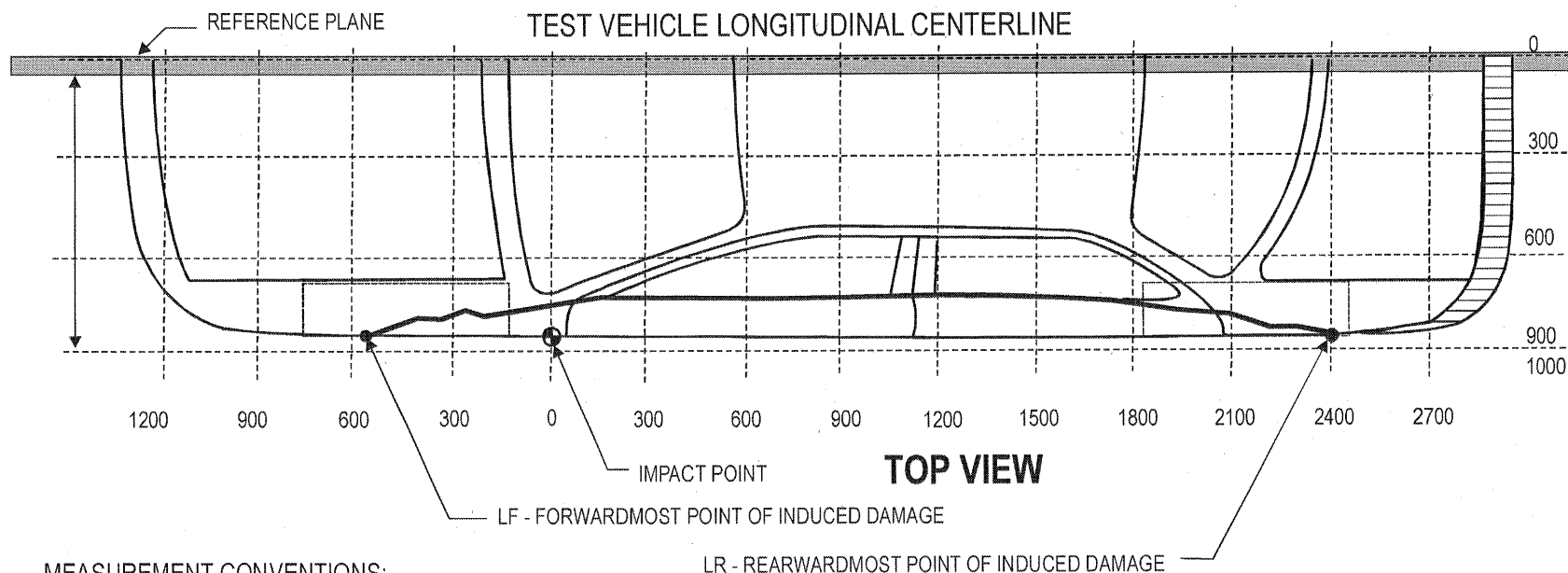
Table 9 Vehicle Exterior Crush Profiles - All Levels, Cont'd.

Location	Height		(mm) From Impact Point												
			900	1050	1200	1350	1500	1650	1800	1950	2100	2250	2400	2550	2700
Level 1 Side Sill	311	Pre	767	765	766	766	765	770	790	---	---	---	---	---	---
		Post	734	734	733	733	732	741	767	---	---	---	---	---	---
		Crush	33	31	33	33	33	29	23	---	---	---	---	---	---
Level 2 H-Point	637	Pre	846	847	849	850	851	852	855	---	---	---	---	856	843
		Post	705	698	695	693	684	665	732	---	---	---	---	---	---
		Crush	141	149	154	157	167	187	123	---	---	---	---	---	---
Level 3 Mid-Door	682	Pre	851	850	849	849	847	845	850	862	---	---	---	855	835
		Post	707	699	704	682	678	668	730	835	---	---	---	---	---
		Crush	144	151	145	167	169	177	120	27	---	---	---	---	---
Level 4 Window Sill	960	Pre	815	816	818	818	818	814	818	809	815	813	808	802	795
		Post	777	777	743	753	764	776	786	808	822	825	827	839	845
		Crush	38	39	75	65	54	38	32	1	-7	-12	-19	-37	-50
Level 5 Window Top	1507	Pre	594	593	590	588	586	584	581	579	575	572	568	561	552
		Post	601	597	595	595	598	600	601	604	609	610	608	604	598
		Crush	-7	-4	-5	-7	-12	-16	-20	-25	-34	-38	-40	-43	-46

All measurements were recorded using TRC Inc.'s FARO Arm with a tolerance of ± 0.1 mm.

Figure 7 Vehicle Damage Profile Distances

NOTE: All measurements were recorded using TRC Inc.'s FARO Arm with a tolerance of plus or minus 0.1 mm.



MEASUREMENT CONVENTIONS:

Forward of the impact point (towards front of vehicle) is considered negative (-)

Rearward of the impact point (towards rear end of vehicle) is considered positive (+)

DPD Measurements	Pre-Test (mm)	Post-Test (mm)	Static Crush (mm)
6: LF = 0 mm (Level 3)	866	813	53
5: 450 mm (Level 2)	845	699	146
4: 750 mm (Level 2)	846	686	160
3: 1200 mm (Level 2)	849	695	154
2: 1650 mm (Level 2)	856	665	187
1: LR = 1950 mm (Level 3)	862	835	27

Full length of induced damage was 1950 mm.

Figure 8 Exterior Static Crush For Impactor Face

(Grid as looking at MDB from front)

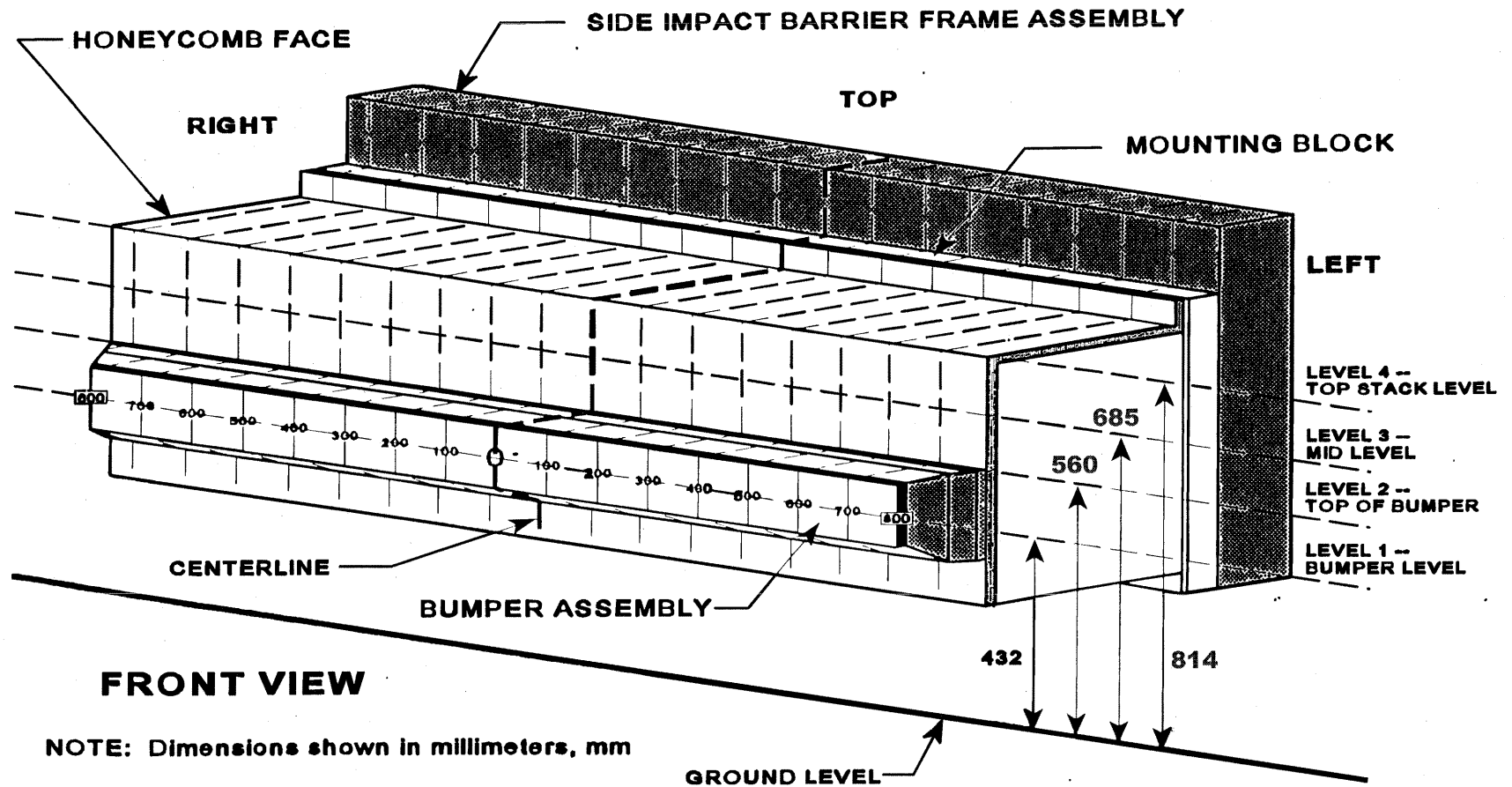


Table 10 Exterior Static Crush For Impactor Face

		Distance Right of Center (mm)										Distance Left of Center (mm)							
Location	Height At CL	800	700	600	500	400	300	200	100	0	100	200	300	400	500	600	700	800	
Top Stack Level - Level D	814	-39	-25	-20	-18	-23	-51	-67	-35	-19	-18	-17	-21	-25	-31	-39	-78	-116	
Mid Level Level C	685	-32	-7	-7	-10	-12	-22	-42	-23	-20	-16	-13	-13	-17	-24	-33	-46	-63	
Top Bumper Level-Level B	560	-73	-73	-71	-69	-66	-64	N/A	N/A	N/A	-56	-55	-53	-53	-52	-53	-53	-57	
Mid Bumper Level - Level A	432	-121	-117	-116	-115	-113	-117	-112	-110	-109	-106	-104	-103	-102	-101	-100	-102	-109	

All measurements were recorded using TRC Inc.'s FARO Arm with a tolerance of ± 0.1 mm.

Table 11 Deformable Barrier Face Profiles

Deformable Barrier Face Profile

Level D - Top Stack

Pre-Test

Index	Xmm	Ymm	Zmm
1	-388	802	-54
2	-388	702	-54
3	-388	602	-55
4	-388	503	-55
5	-388	402	-55
6	-388	303	-55
7	-388	203	-55
8	-388	102	-55
9	-388	3	-54
10	-387	-97	-55
11	-387	-197	-55
12	-387	-297	-55
13	-386	-396	-55
14	-386	-497	-55
15	-386	-596	-55
16	-385	-697	-55
17	-385	-797	-54

Post-Test

Index	Xmm	Ymm	Zmm
1	-349	769	-94
2	-363	671	-94
3	-368	571	-95
4	-370	472	-95
5	-365	371	-96
6	-337	275	-100
7	-320	179	-102
8	-352	83	-95
9	-368	-15	-89
10	-369	-115	-86
11	-370	-215	-82
12	-366	-315	-77
13	-362	-414	-72
14	-355	-515	-68
15	-347	-613	-63
16	-307	-705	-69
17	-269	-794	-71

Difference

Index	Xmm	Ymm	Zmm
1	-39	33	40
2	-25	32	40
3	-20	32	40
4	-18	31	40
5	-23	31	41
6	-51	28	45
7	-67	24	46
8	-35	19	40
9	-19	18	35
10	-18	18	31
11	-17	18	27
12	-21	18	22
13	-25	18	17
14	-31	18	13
15	-39	17	8
16	-78	8	13
17	-116	-3	17

Table 11 Deformable Barrier Face Profiles, Cont'd.

Deformable Barrier Face Profile Cont'd.

Level C - Mid Level

Pre-Test

Index	Xmm	Ymm	Zmm
18	-387	801	-183
19	-387	702	-183
20	-387	602	-184
21	-387	502	-184
22	-387	402	-183
23	-387	301	-183
24	-387	202	-184
25	-387	101	-184
26	-387	1	-184
27	-386	-99	-184
28	-386	-198	-184
29	-386	-299	-185
30	-386	-399	-185
31	-385	-498	-185
32	-385	-598	-184
33	-385	-698	-185
34	-384	-798	-185

Post-Test

Index	Xmm	Ymm	Zmm
18	-355	765	-221
19	-380	671	-221
20	-380	571	-222
21	-378	471	-222
22	-375	371	-224
23	-364	271	-225
24	-344	175	-228
25	-364	76	-222
26	-366	-23	-217
27	-370	-123	-213
28	-373	-222	-208
29	-372	-322	-203
30	-368	-423	-199
31	-361	-522	-194
32	-352	-622	-190
33	-339	-721	-186
34	-322	-819	-182

Difference

Index	Xmm	Ymm	Zmm
18	-32	36	38
19	-7	30	38
20	-7	31	38
21	-10	31	39
22	-12	31	40
23	-22	30	42
24	-42	27	44
25	-23	25	38
26	-20	24	34
27	-16	25	29
28	-13	24	24
29	-13	24	19
30	-17	24	14
31	-24	24	10
32	-33	24	5
33	-46	23	1
34	-63	20	-3

Table 11 Deformable Barrier Face Profiles, Cont'd.

Deformable Barrier Face Profile Cont'd.

Level B - Top of Bumper

Pre-Test

Index	Xmm	Ymm	Zmm
35	-386	802	-309
36	-386	703	-310
37	-386	601	-310
38	-386	502	-310
39	-386	402	-309
40	-386	302	-310
41	-386	202	-310
42	-386	102	-311
43	-385	2	-310
44	-385	-98	-311
45	-385	-198	-310
46	-385	-298	-311
47	-385	-397	-311
48	-384	-498	-311
49	-384	-598	-311
50	-384	-698	-311
51	-384	-798	-311

Post-Test

Index	Xmm	Ymm	Zmm
35	-313	772	-325
36	-313	673	-324
37	-315	571	-324
38	-317	472	-325
39	-320	373	-325
40	-322	273	-328
41	N/A	N/A	N/A
42	N/A	N/A	N/A
43	N/A	N/A	N/A
44	-330	-127	-323
45	-330	-228	-319
46	-332	-328	-315
47	-332	-428	-311
48	-332	-529	-307
49	-332	-628	-305
50	-330	-727	-301
51	-327	-828	-297

Difference

Index	Xmm	Ymm	Zmm
35	-73	30	16
36	-73	30	14
37	-71	30	14
38	-69	30	16
39	-66	29	16
40	-64	29	17
41	N/A	N/A	N/A
42	N/A	N/A	N/A
43	N/A	N/A	N/A
44	-56	30	13
45	-55	30	9
46	-53	30	4
47	-53	31	1
48	-52	31	-4
49	-53	29	-6
50	-53	30	-10
51	-57	30	-14

Table 11 Deformable Barrier Face Profiles, Cont'd.

Deformable Barrier Face Profile Cont'd.

Level A - Mid Bumper

Pre-Test

Index	Xmm	Ymm	Zmm
52	-478	794	-437
53	-488	696	-437
54	-488	596	-437
55	-488	496	-437
56	-488	396	-437
57	-488	296	-437
58	-488	196	-438
59	-487	96	-438
60	-487	-5	-438
61	-487	-104	-438
62	-487	-203	-438
63	-487	-304	-438
64	-487	-403	-438
65	-486	-504	-438
66	-486	-604	-439
67	-486	-704	-439
68	-471	-800	-439

Post-Test

Index	Xmm	Ymm	Zmm
52	-358	762	-452
53	-371	664	-453
54	-371	564	-452
55	-373	464	-450
56	-374	364	-450
57	-371	264	-447
58	-376	165	-447
59	-378	64	-445
60	-378	-35	-444
61	-382	-136	-443
62	-383	-235	-442
63	-384	-336	-441
64	-385	-435	-439
65	-385	-535	-437
66	-386	-635	-436
67	-384	-736	-433
68	-362	-832	-430

Difference

Index	Xmm	Ymm	Zmm
52	-121	32	15
53	-117	32	16
54	-116	32	14
55	-115	32	13
56	-113	32	13
57	-117	32	10
58	-112	31	8
59	-110	32	7
60	-109	31	6
61	-106	32	5
62	-104	32	4
63	-103	32	2
64	-102	32	1
65	-101	31	-1
66	-100	32	-3
67	-102	32	-5
68	-109	32	-9

Figure 9 Deformable Barrier Face Profiles

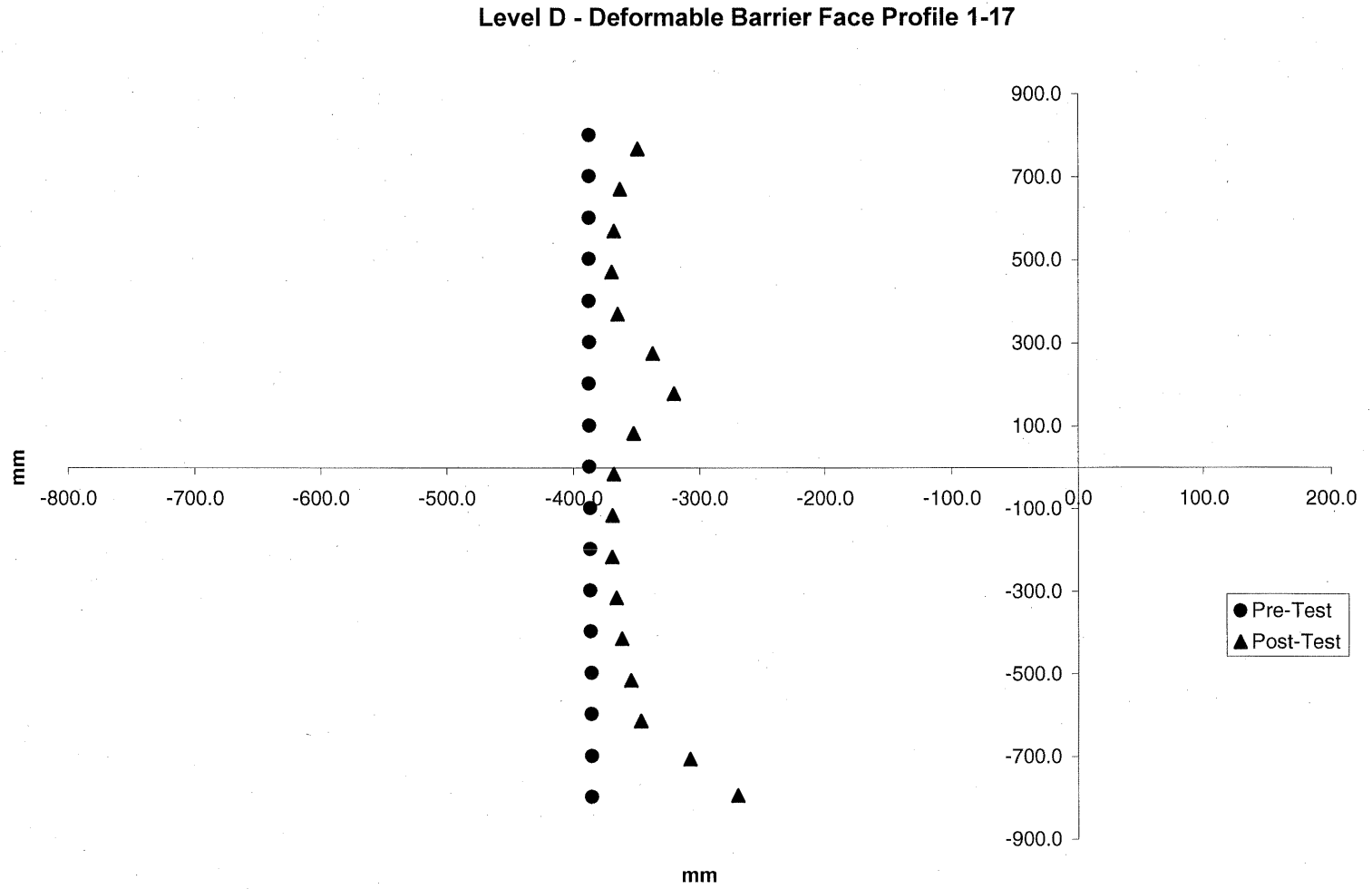


Figure 9 Deformable Barrier Face Profiles, Cont'd.

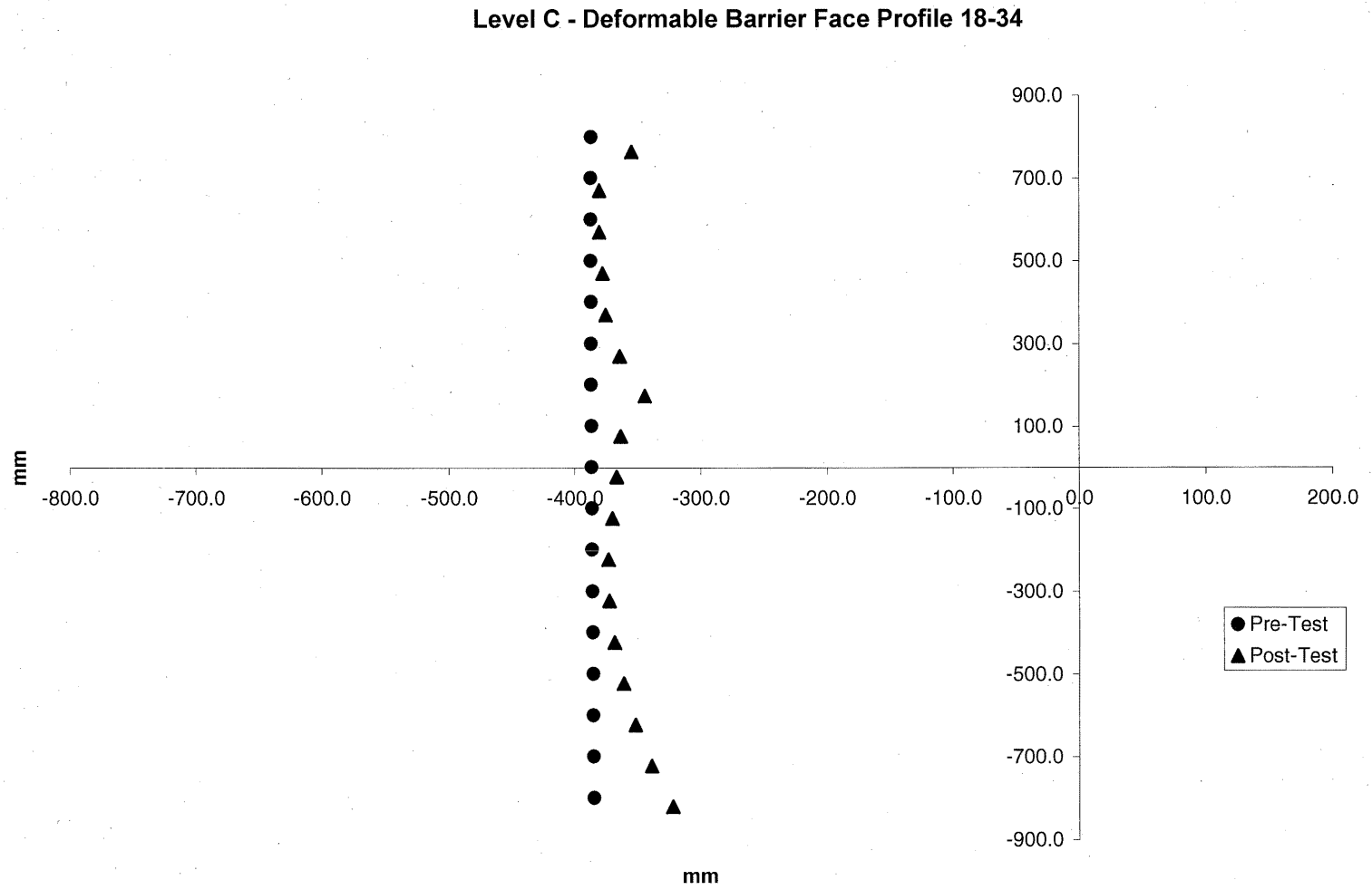


Figure 9 Deformable Barrier Face Profiles, Cont'd.

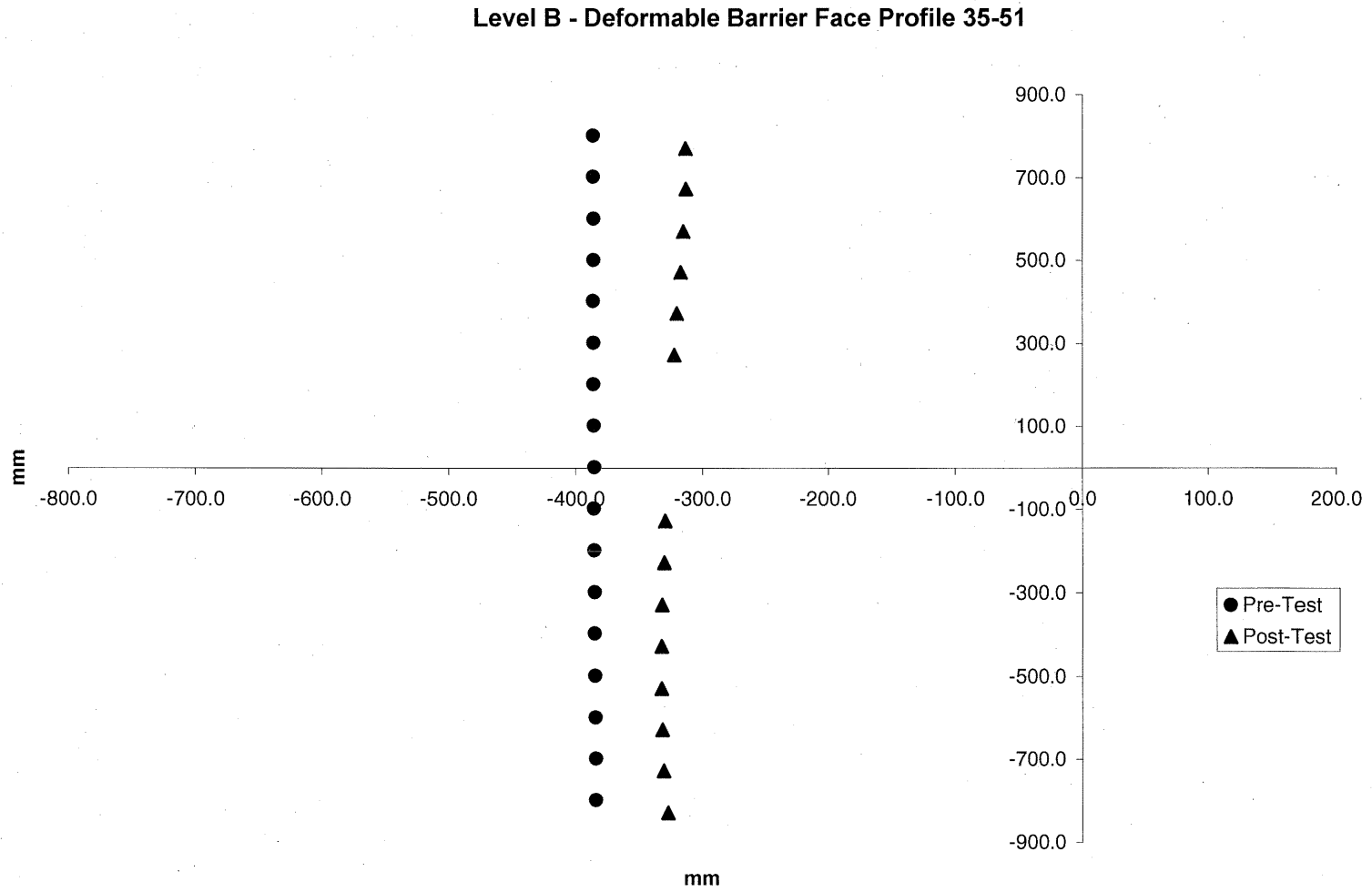


Figure 9 Deformable Barrier Face Profiles, Cont'd.

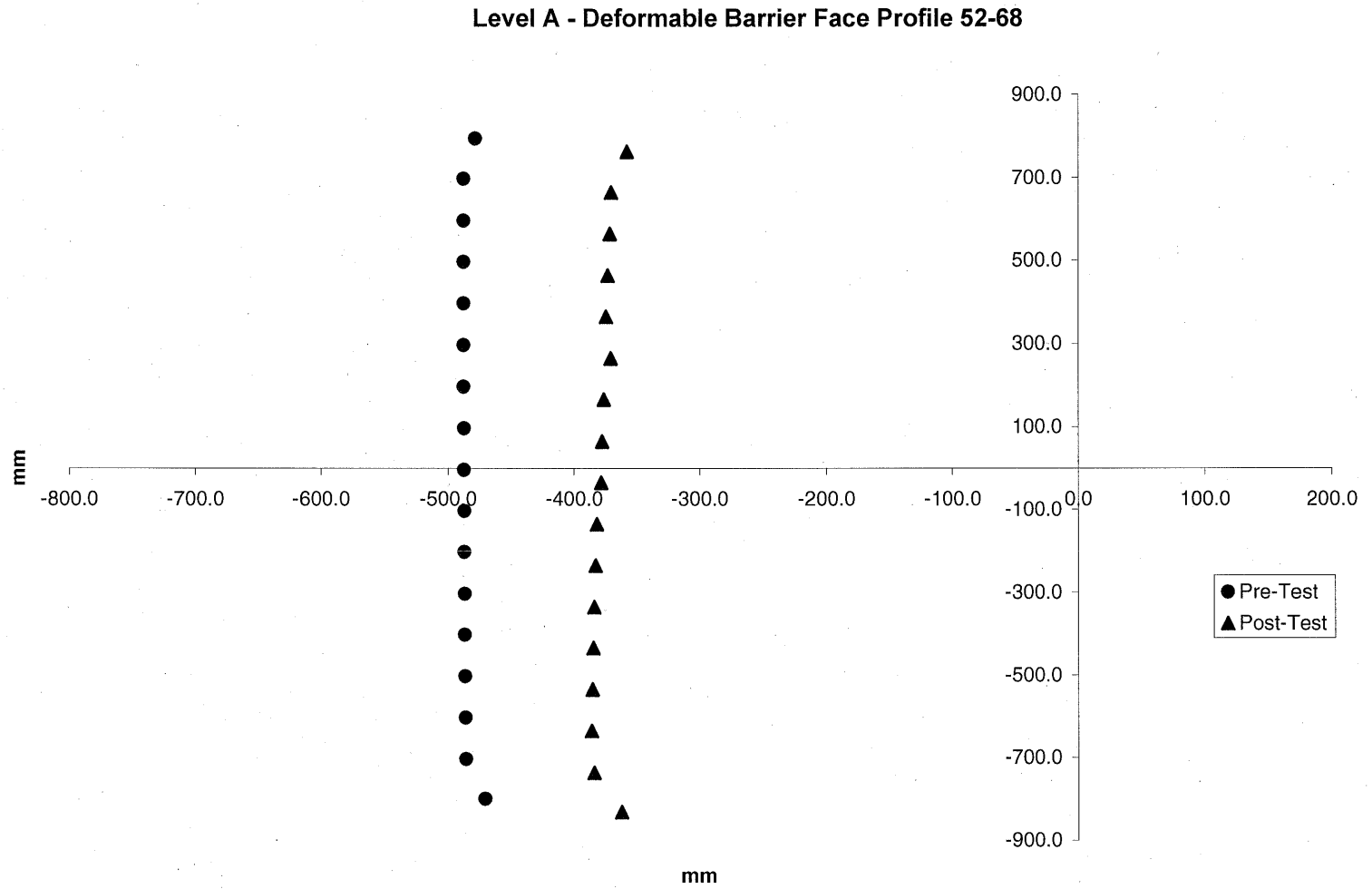
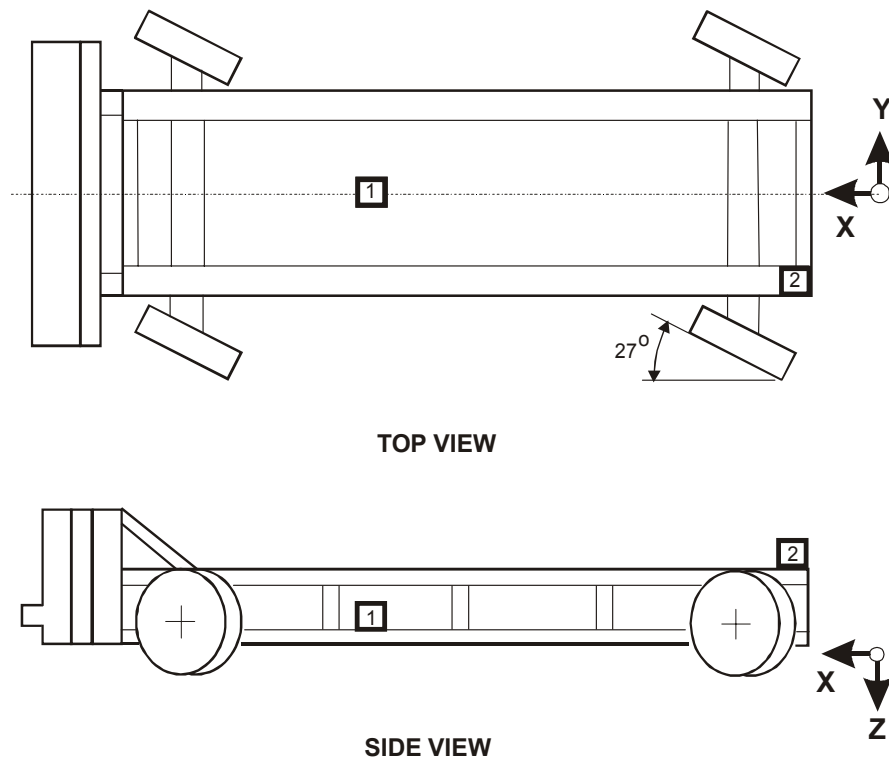


Figure 10 MDB Accelerometer Locations and Data Summary



Accel. No.	Location	Coordinates (millimeters)			Positive Direction		Negative Direction	
		X*	Y*	Z*	Max. (g)	Time (ms)	Max. (g)	Time (ms)
1	MDB Center of Gravity	1853	0	-519				
	Longitudinal X				1.5	93.0	22.5	41.0
	Lateral Y				1.3	54.2	7.3	27.6
	Vertical Z				9.6	15.2	7.1	22.6
	Resultant R				23.2	40.5		
2	Rear Frame Member	411	-738	-628				
	Longitudinal X				1.4	88.7	21.9	39.0
	Lateral Y				3.3	19.2	2.5	54.9

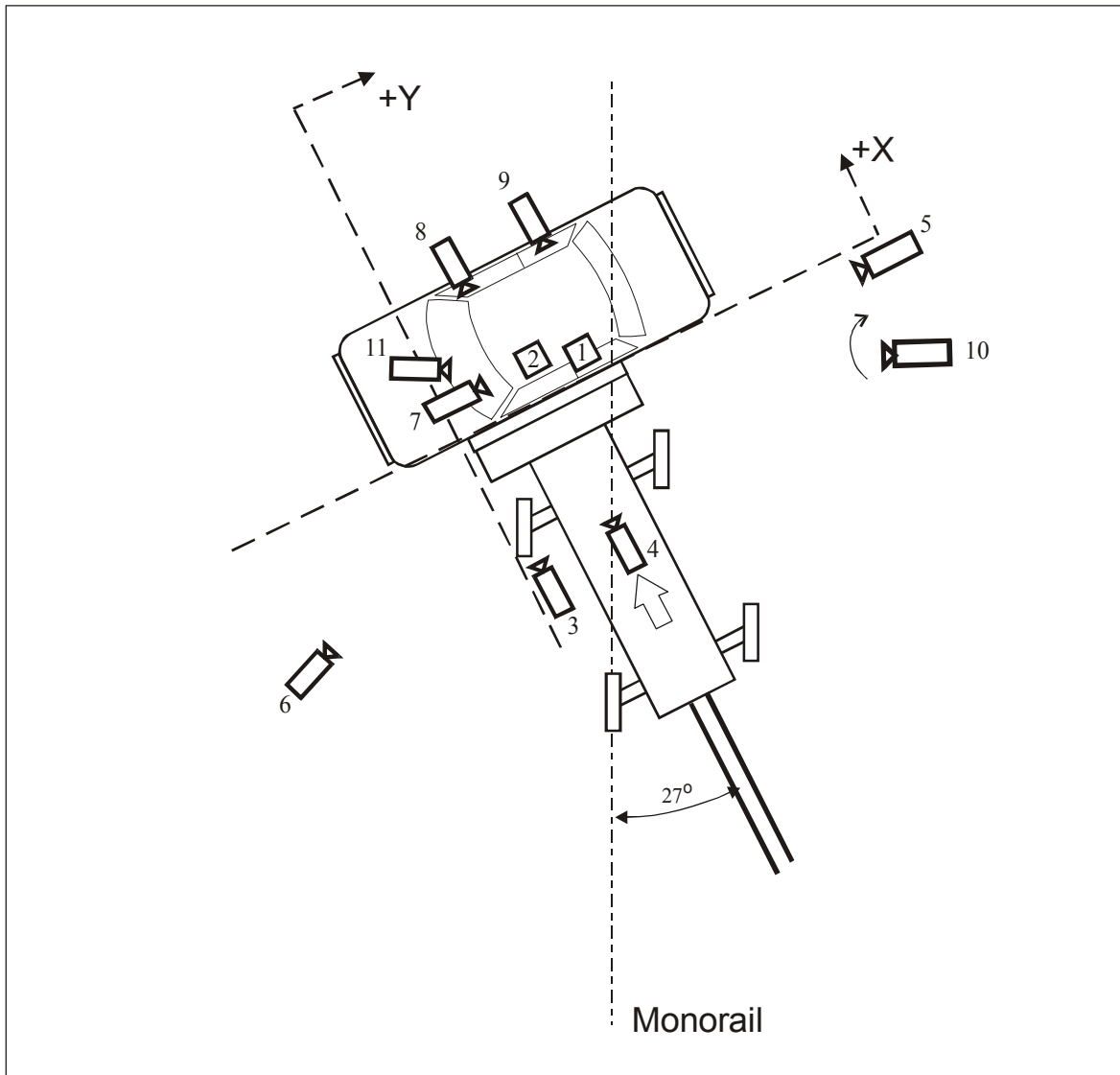
*Reference: X = Rear Bumper (+ Forward)

Y = Vehicle Centerline (+ To Right)

Z = Ground Level (+ Down)

All measurements accurate to within ± 3 mm.

Figure 11 Camera Positions



Impact
Area

Table 12 Camera Information

Camera Number	Location	Location, mm			Angle (deg.)	Lens (mm)	Speed (fps)
		X	Y	Z			
1	Overhead wide	250	2150	-5750	-77.5	10	1000
2	Overhead tight	370	1800	-5750	-85.5	Zoom	1000
3	Onboard MDB left side	-1750	-40	-720	-0.5	13	1000
4	Onboard MDB center	-2480	-830	-1353	-5.2	17	1000
5	Right wide	200	10400	-950	-2.8	12.5	1000
6	Left quarter wide	-3100	-4100	-950	-2.2	25	1000
7	Onboard vehicle front	450	-600	-1300	-4.0	25	1000
8	Onboard side front door	1530	650	-1200	-9.1	12.5	1000
9	Onboard side rear door	1470	1500	-1200	-8.3	12.5	1000
10	Real-time Panning-Video	N/A	N/A	N/A	N/A		30
11	Onboard vehicle driver hip	750	-300	-1650	-25.7	50	1000

+X: Forward (referenced to MDB) from impact point

+Y: Rightward (referenced to MDB) from impact point

+Z: Downward from ground level

Appendix A

Photographs



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

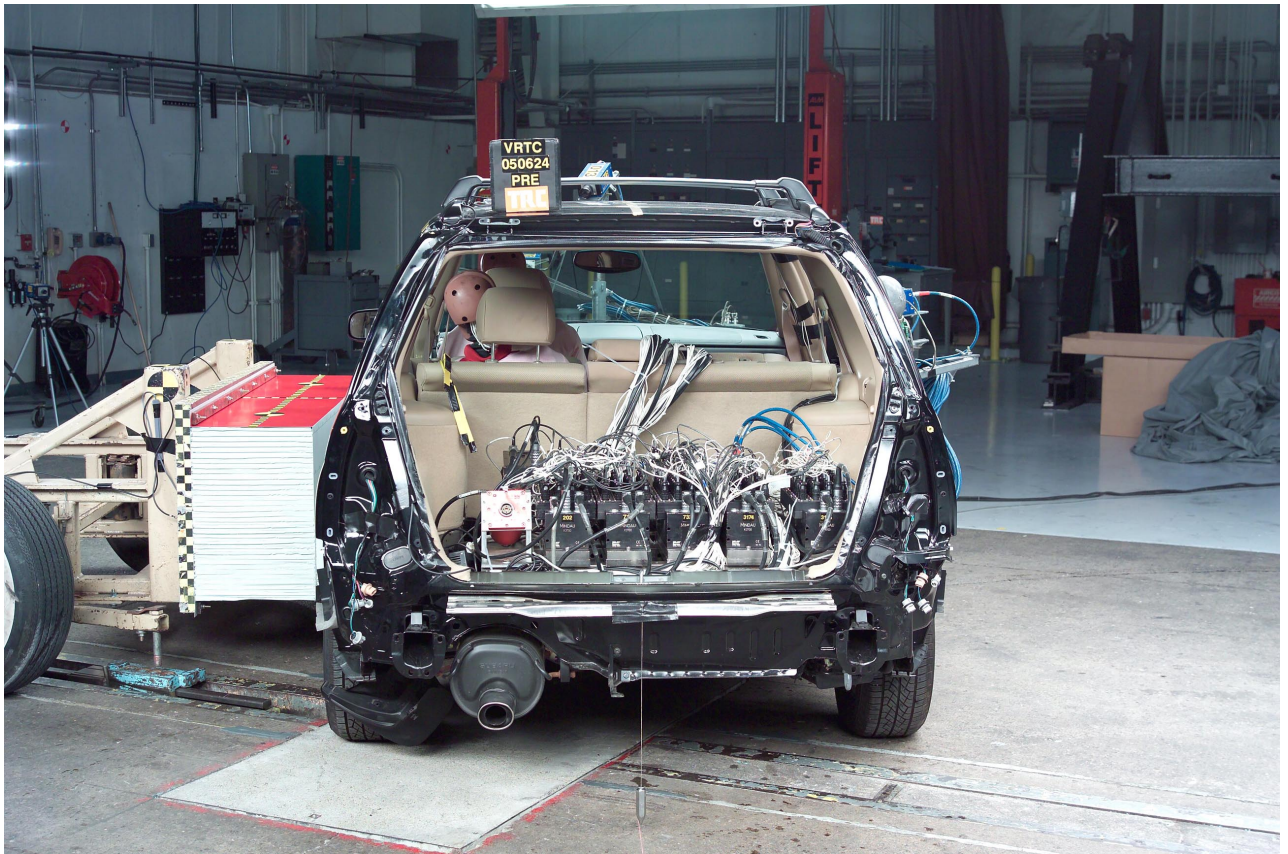


Figure A-9 Pre-Test Rear View



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

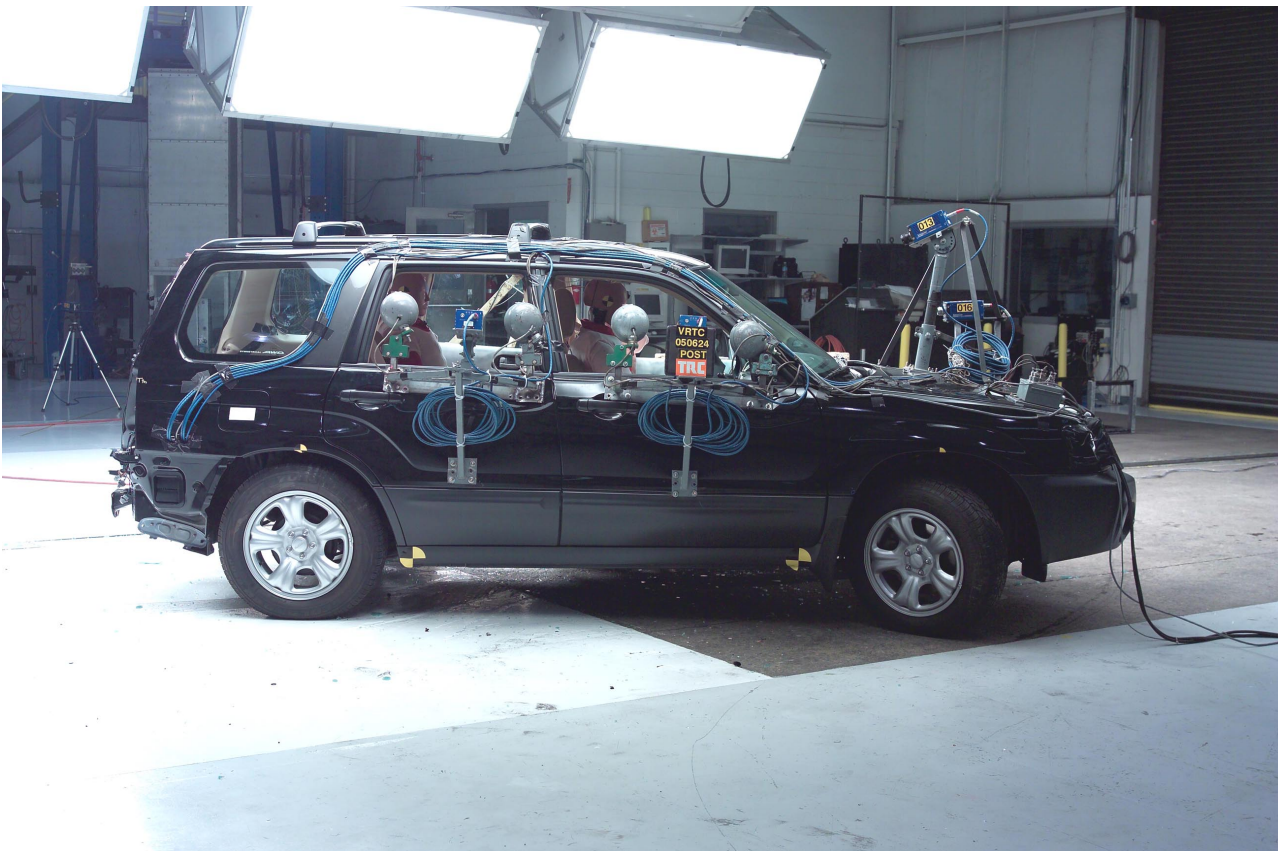


Figure A-14 Post-Test Right Side View



Figure A-15 Pre-Test Right Front View

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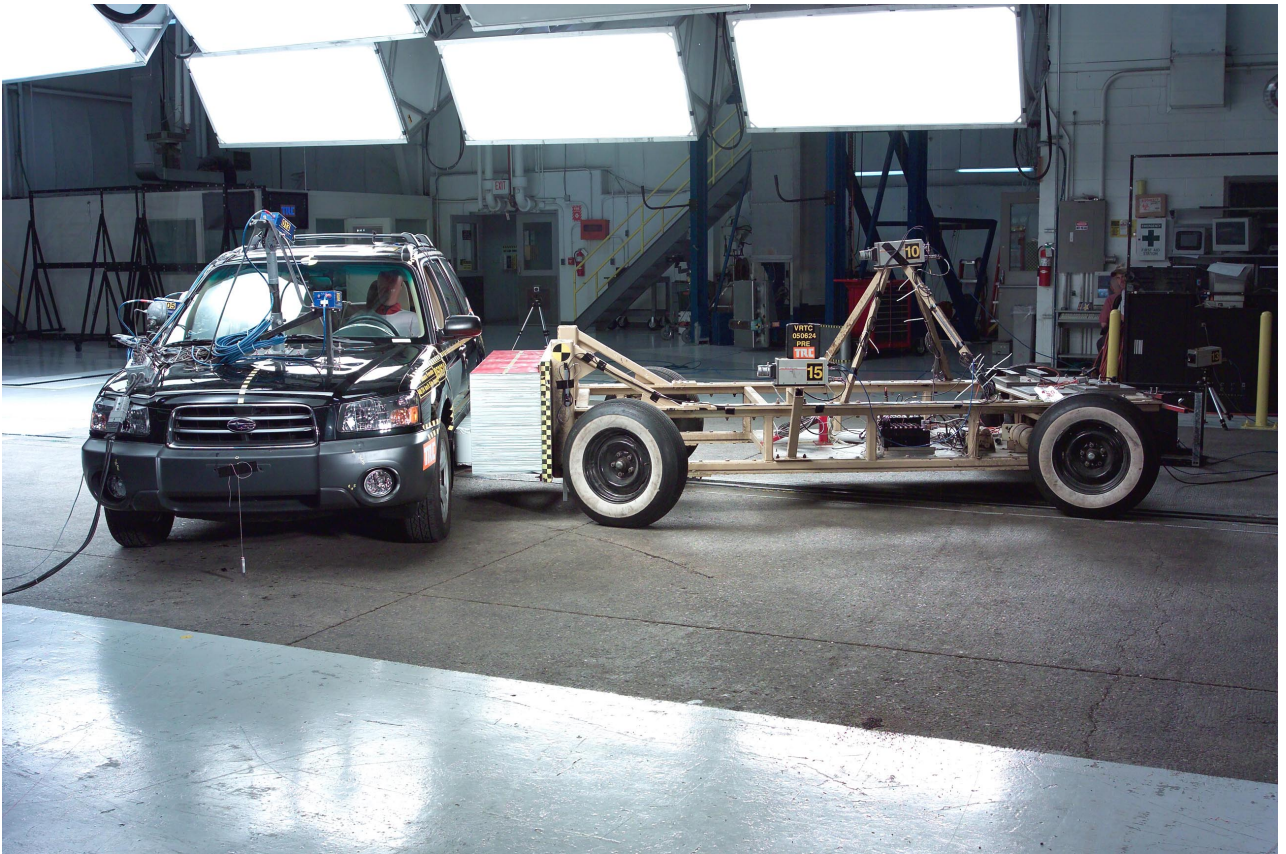


Figure A-16 Pre-Test Front View with MDB in Position

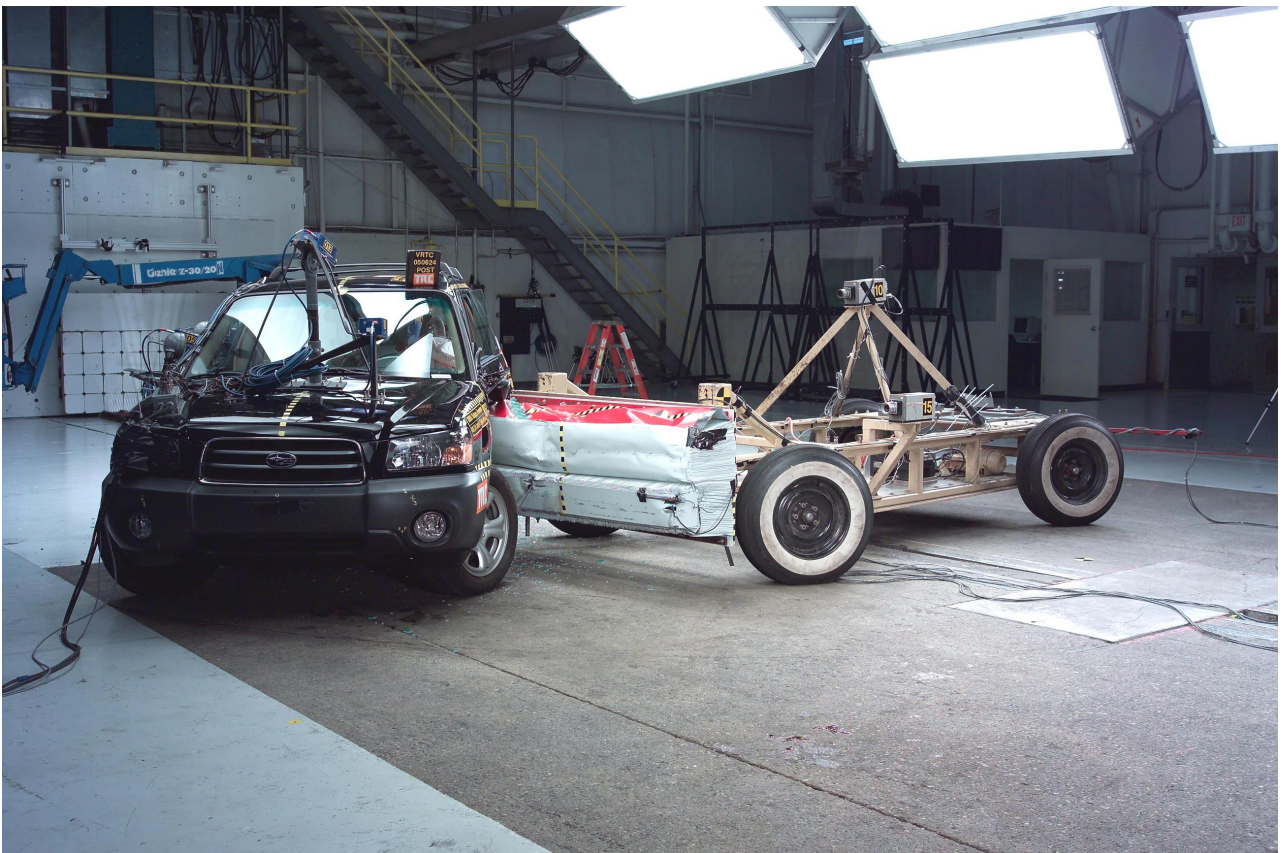


Figure A-17 Post-Test Front View with MDB in Position

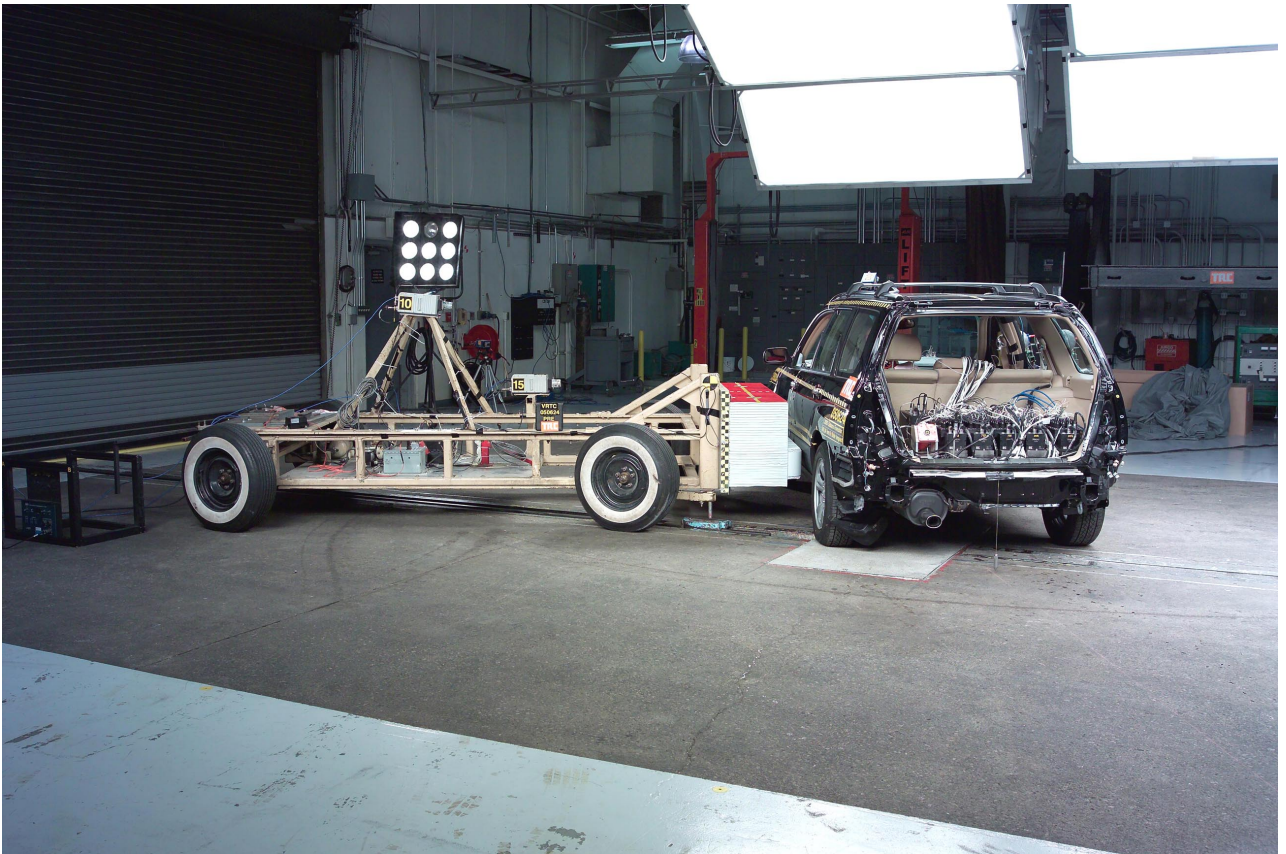


Figure A-18 Pre-Test Rear View with MDB in Position

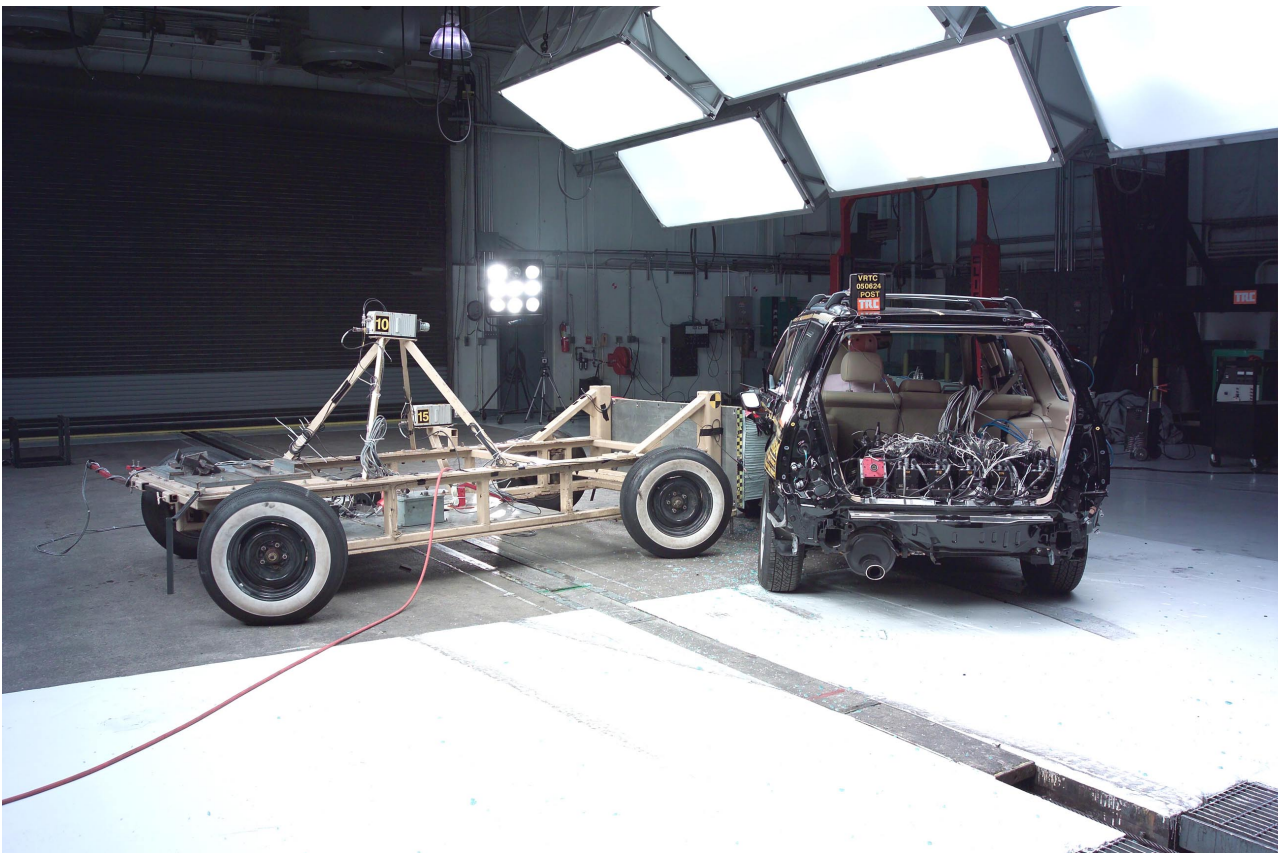


Figure A-19 Post-Test Rear View with MDB in Position



Figure A-20 Pre-Test Left Front View of MDB with Impactor Face in Position



Figure A-21 Post-Test Left Front View of MDB with Impactor Face in Position

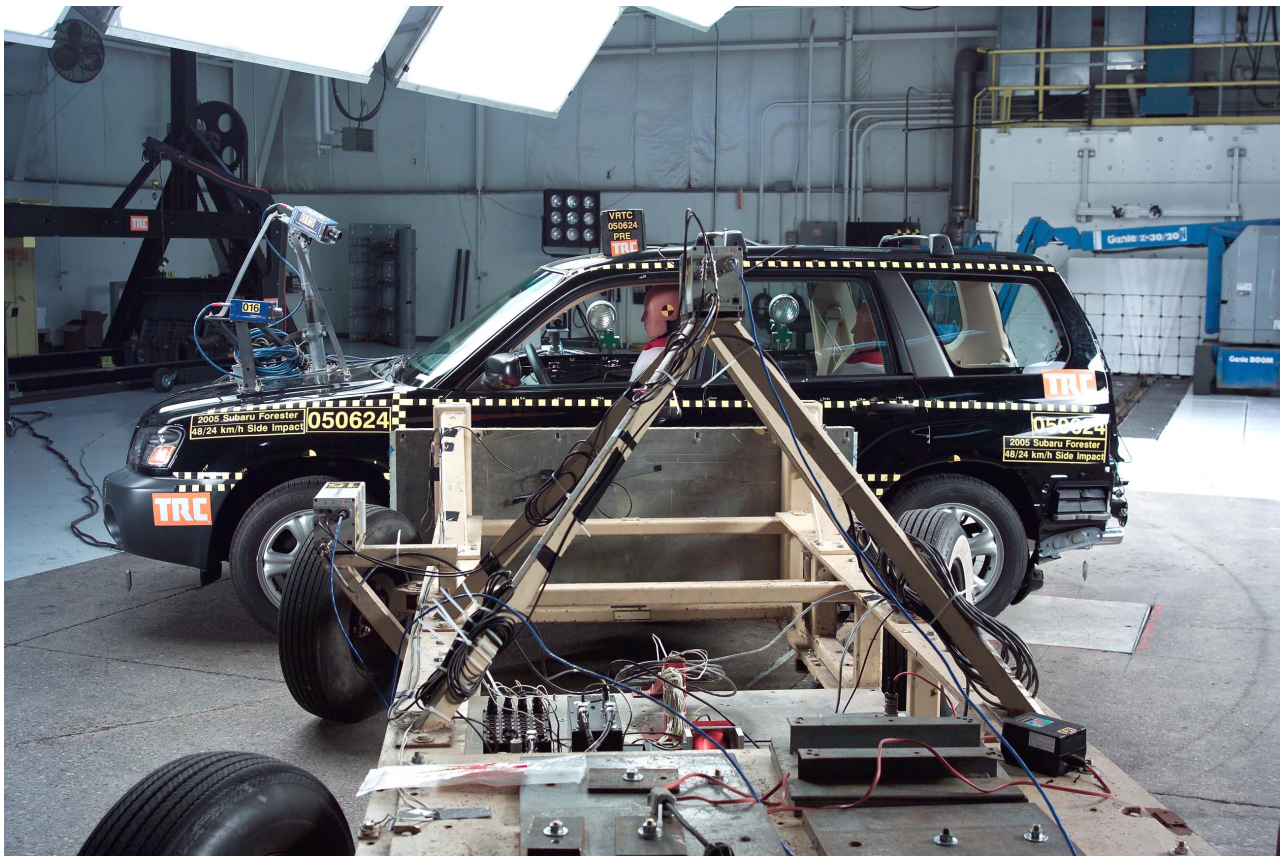


Figure A-22 Pre-Test Left Side View of MDB with Impactor Face in Position

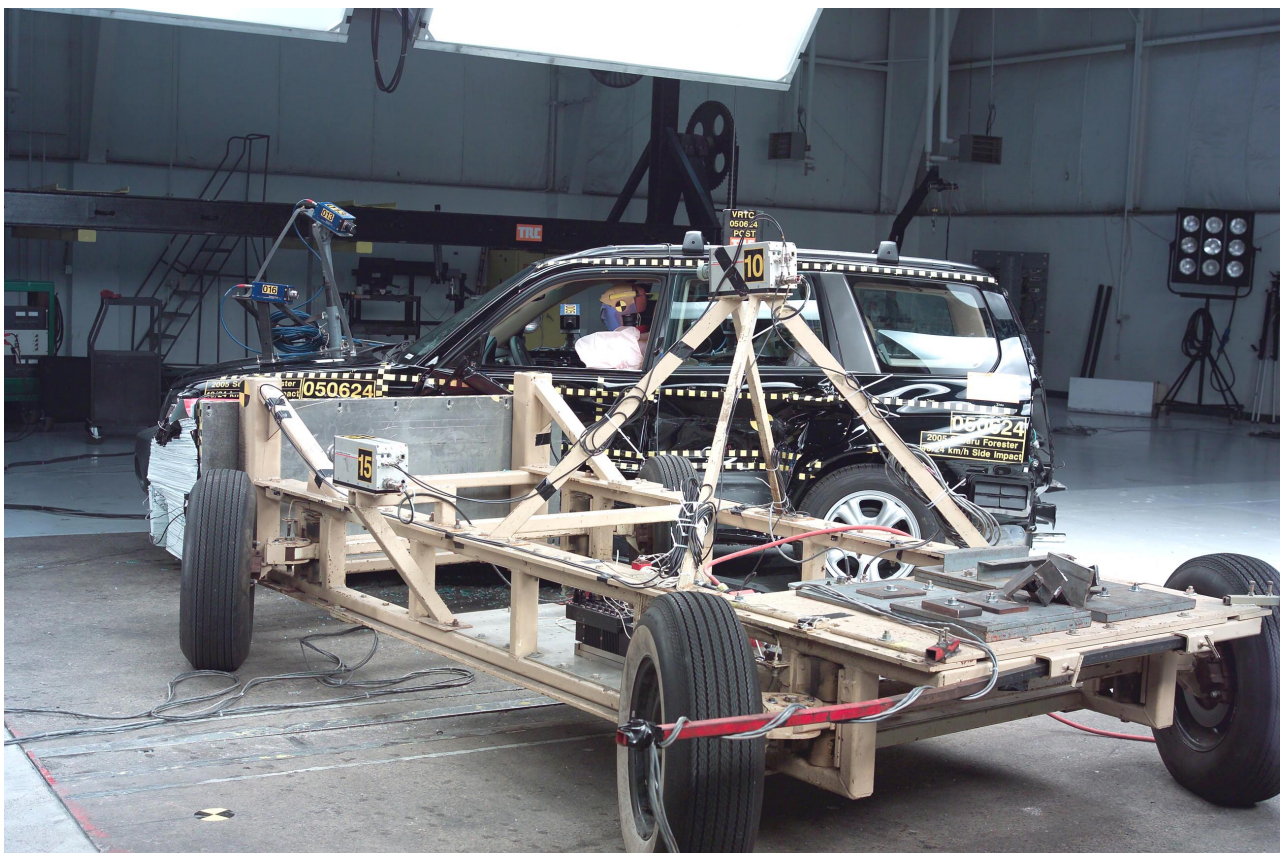


Figure A-23 Post-Test Left Side View of MDB with Impactor Face in Position



Figure A-24 Pre-Test Left Rear View of MDB with Impactor Face in Position



Figure A-25 Post-Test Left Rear View of MDB with Impactor Face in Position



Figure A-26 Pre-Test Overhead View of MDB Aligned with Vehicle



Figure A-27 Post-Test Overhead View of MDB Aligned with Vehicle

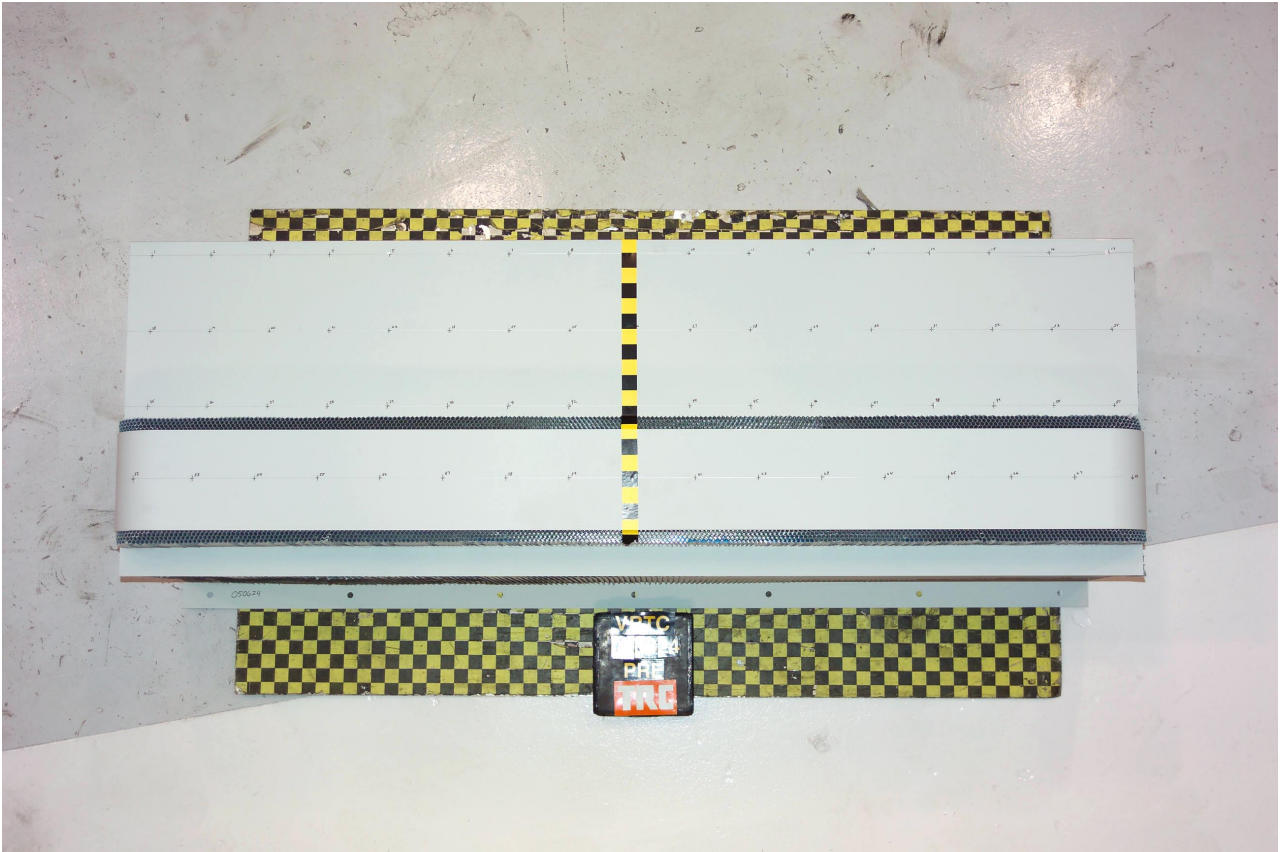


Figure A-28 Pre-Test Frontal View of Impactor Face

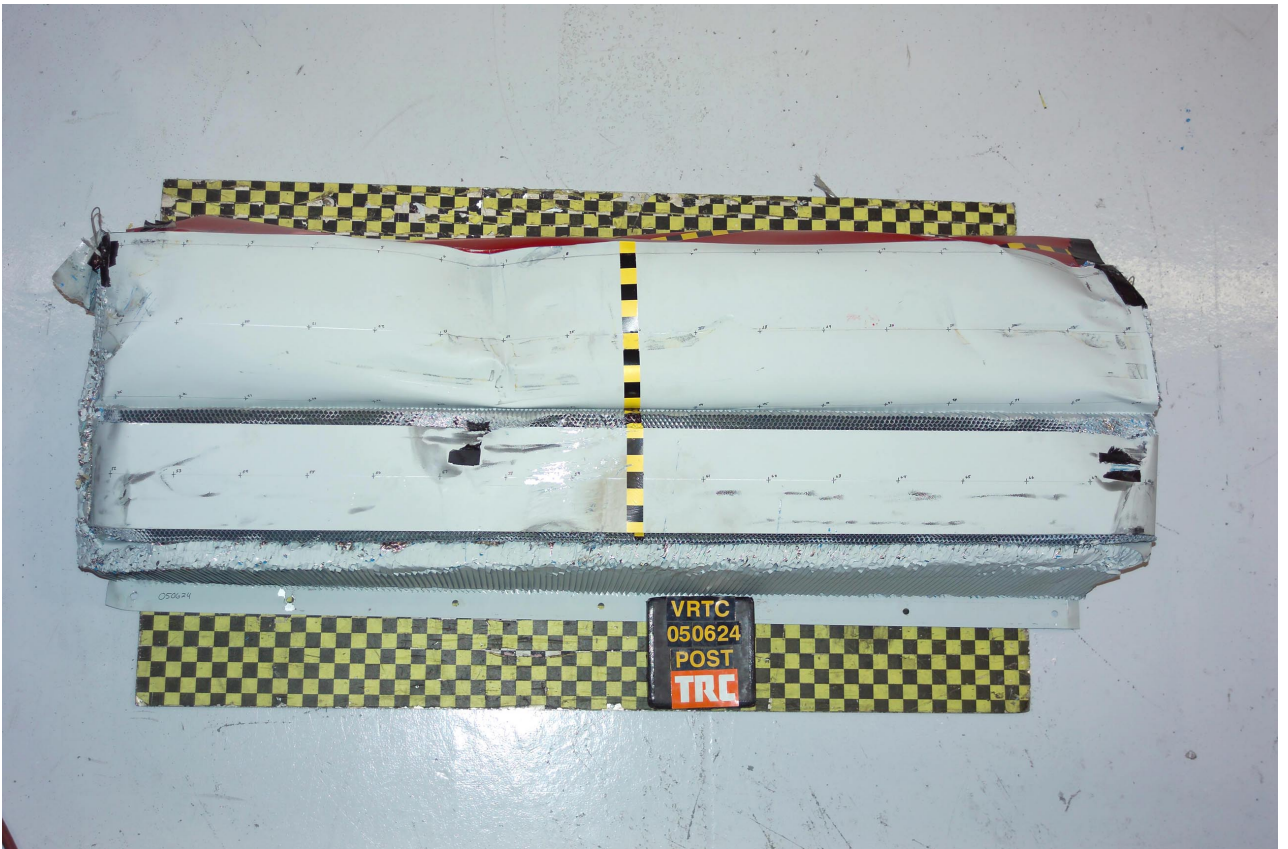


Figure A-29 Post-Test Frontal View of Impactor Face

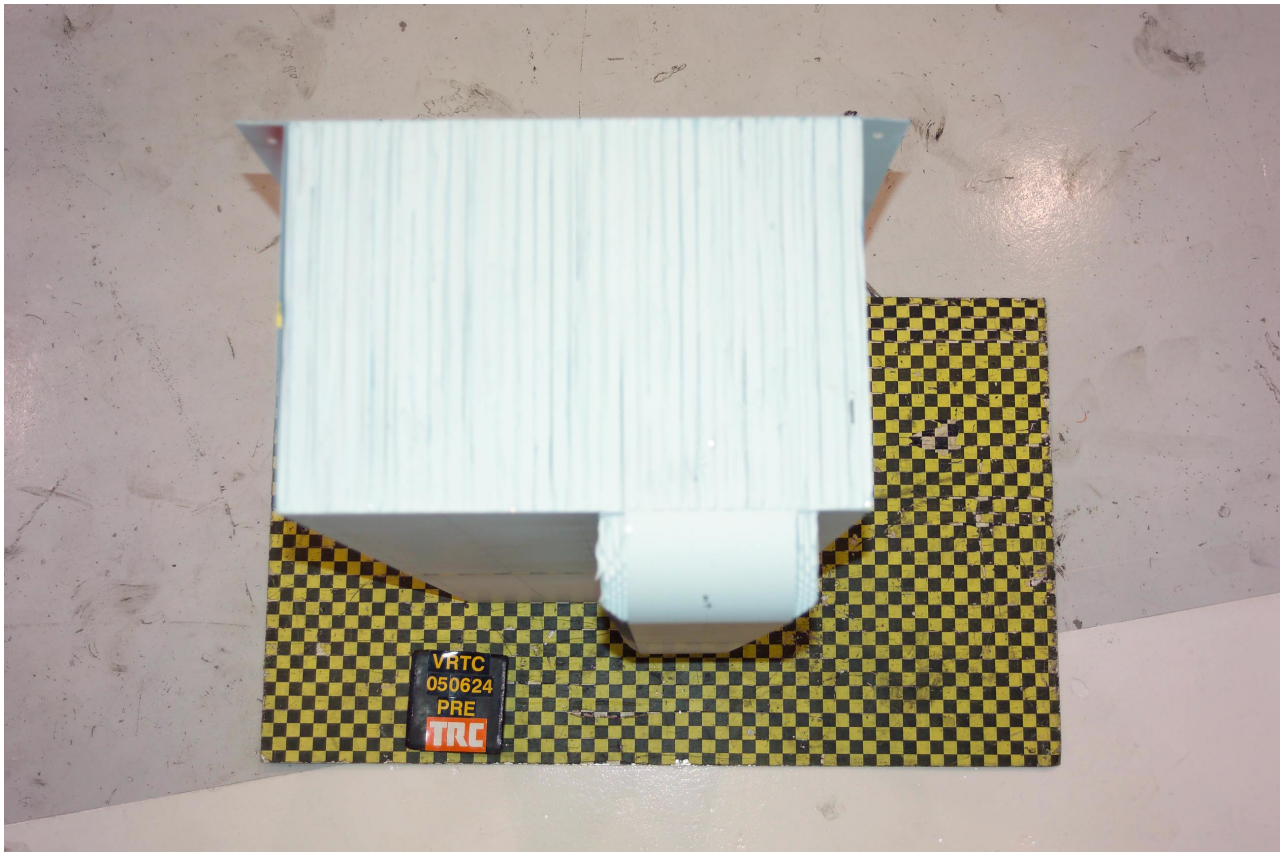


Figure A-30 Pre-Test Left Side View of Impactor Face



Figure A-31 Post-Test Left Side View of Impactor Face

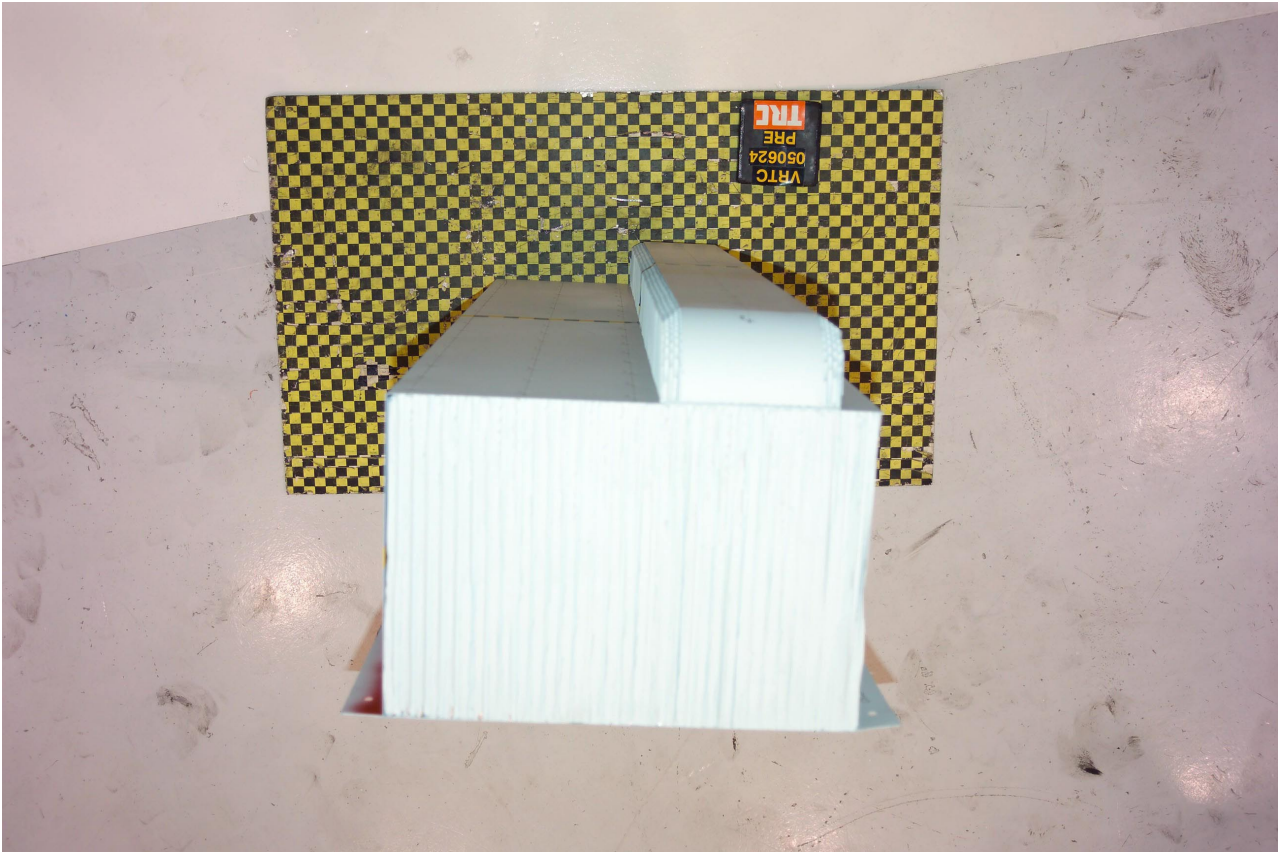


Figure A-32 Pre-Test Right Side View of Impactor Face



Figure A-33 Post-Test Right Side View of Impactor Face

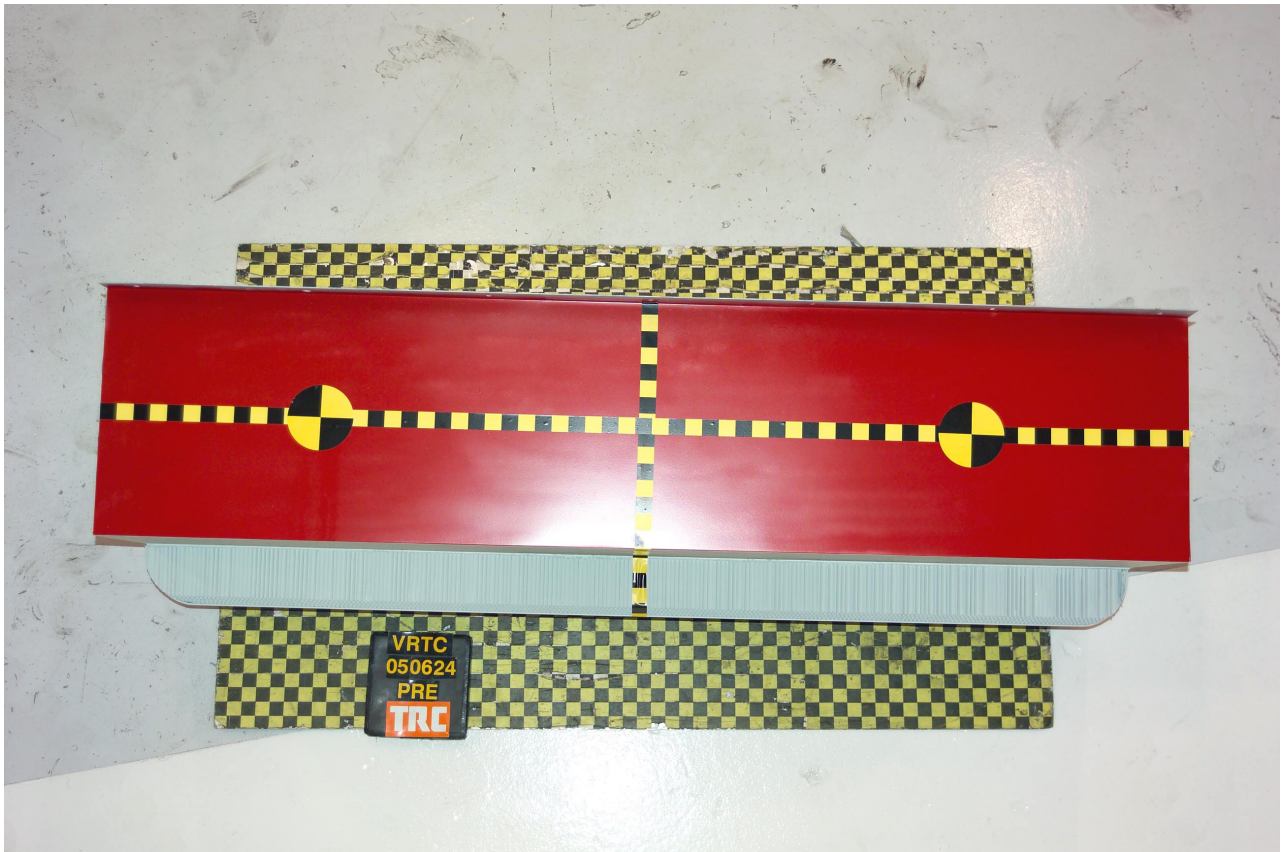


Figure A-34 Pre-Test Top View of Impactor Face



Figure A-35 Post-Test Top View of Impactor Face



Figure A-36 Pre-Test View of MDB Showing Contact Switches in Place



Figure A-37 Post-Test View of MDB Showing Contact Switches in Place



Figure A-38 Pre-Test Primary Impact Point View



Figure A-39 Post-Test Primary Impact Point View



Figure A-40 Pre-Test Secondary Impact Point View



Figure A-41 Post-Test Secondary Impact Point View



Figure A-42 Pre-Test Fuel Filler Cap View



Figure A-43 Post-Test Fuel Filler Cap View



Figure A-44 Pre-Test Right Occupant Compartment View of Front ES-2re



Figure A-45 Post-Test Right Occupant Compartment View of Front ES-2re

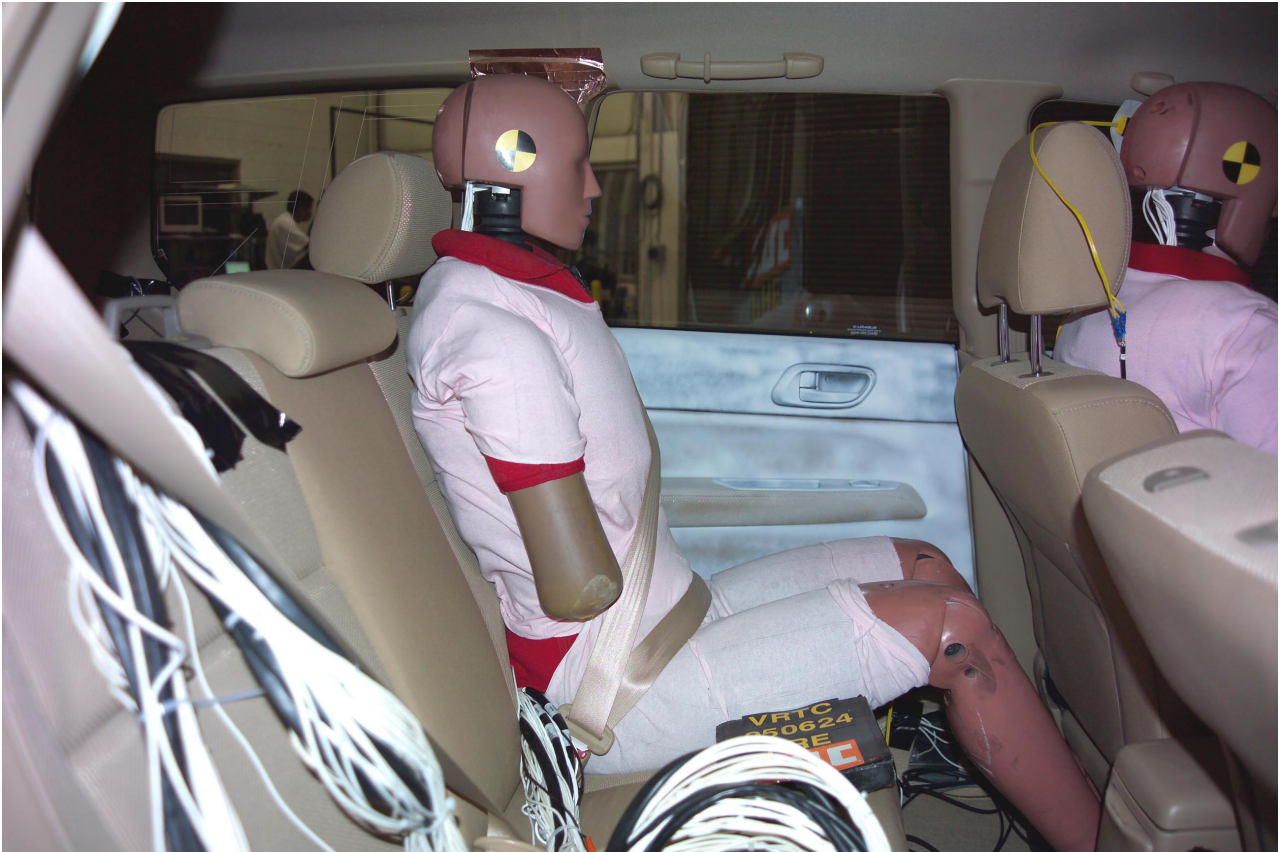


Figure A-46 Pre-Test Right Occupant Compartment View of Rear ES-2re



Figure A-47 Post-Test Right Occupant Compartment View of Rear ES-2re



Figure A-48 Pre-Test Left View of Front ES-2re - View 1



Figure A-49 Post-Test Left View of Front ES-2re View



Figure A-50 Pre-Test Left View of Front ES-2re - View 2

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Figure A-51 Pre-Test Left View of Front ES-2re and Door Clearance



Figure A-52 Post-Test Left View of Front ES-2re and Door Clearance



Figure A-53 Pre-Test Left View of Rear ES-2re - View 1



Figure A-54 Post-Test Left View of Rear ES-2re View



Figure A-55 Pre-Test Left View of Rear ES-2re - View 2

Intentionally Left Blank



Figure A-56 Pre-Test Left View of Rear ES-2re and Door Clearance



Figure A-57 Post-Test Left View of Rear ES-2re and Door Clearance



Figure A-58 Pre-Test Interior of Front Door



Figure A-59 Post-Test Interior of Front Door Showing ES-2re Impact Locations



Figure A-60 Post-Test Front ES-2re Contact - View 1



Figure A-61 Post-Test Front ES-2re Contact - View 2



Figure A-62 Post-Test Front ES-2re Contact - View 3



Figure A-63 Post-Test Front ES-2re Contact - View 4



Figure A-64 Post-Test Front ES-2re Contact - View 5

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Figure A-65 Pre-Test Interior of Rear Door



Figure A-66 Post-Test Interior of Rear Door Showing ES-2re Impact Locations



Figure A-67 Post-Test Rear ES-2re Contact - View 1



Figure A-68 Post-Test Rear ES-2re Contact - View 2



Figure A-69 Post-Test Rear ES-2re Contact - View 3



Figure A-70 Post-Test Rear ES-2re Contact - View 4

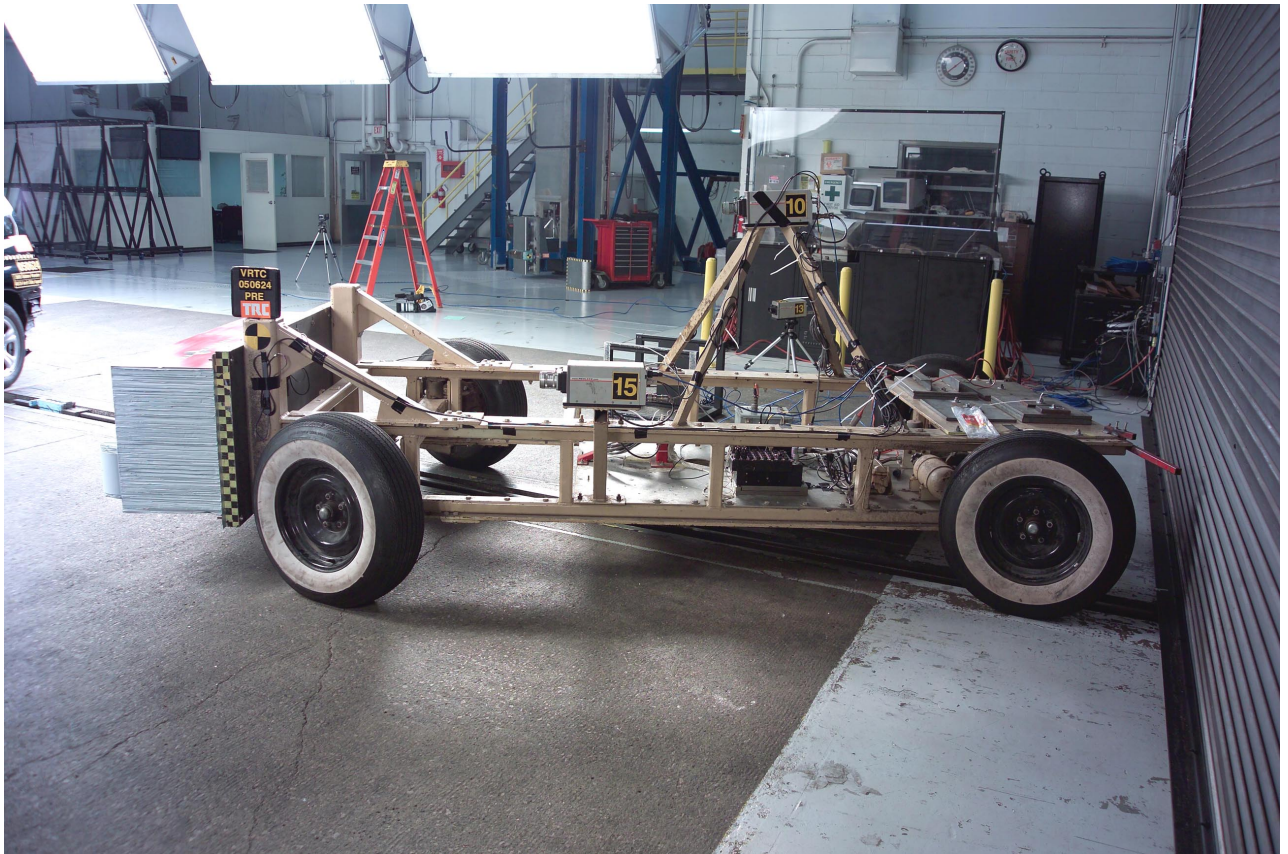


Figure A-71 Pre-Test Left Side Overall View of MDB

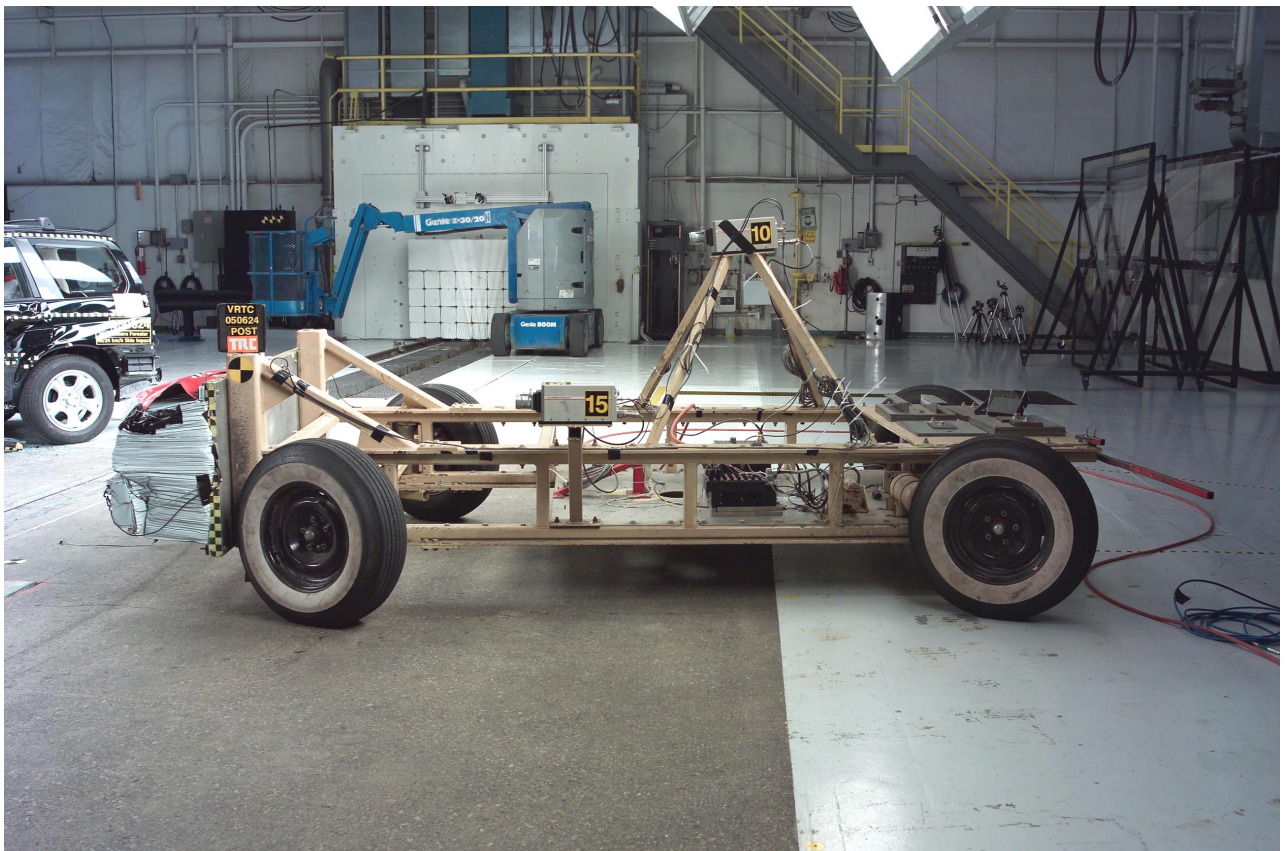


Figure A-72 Post-Test Left Side Overall View of MDB

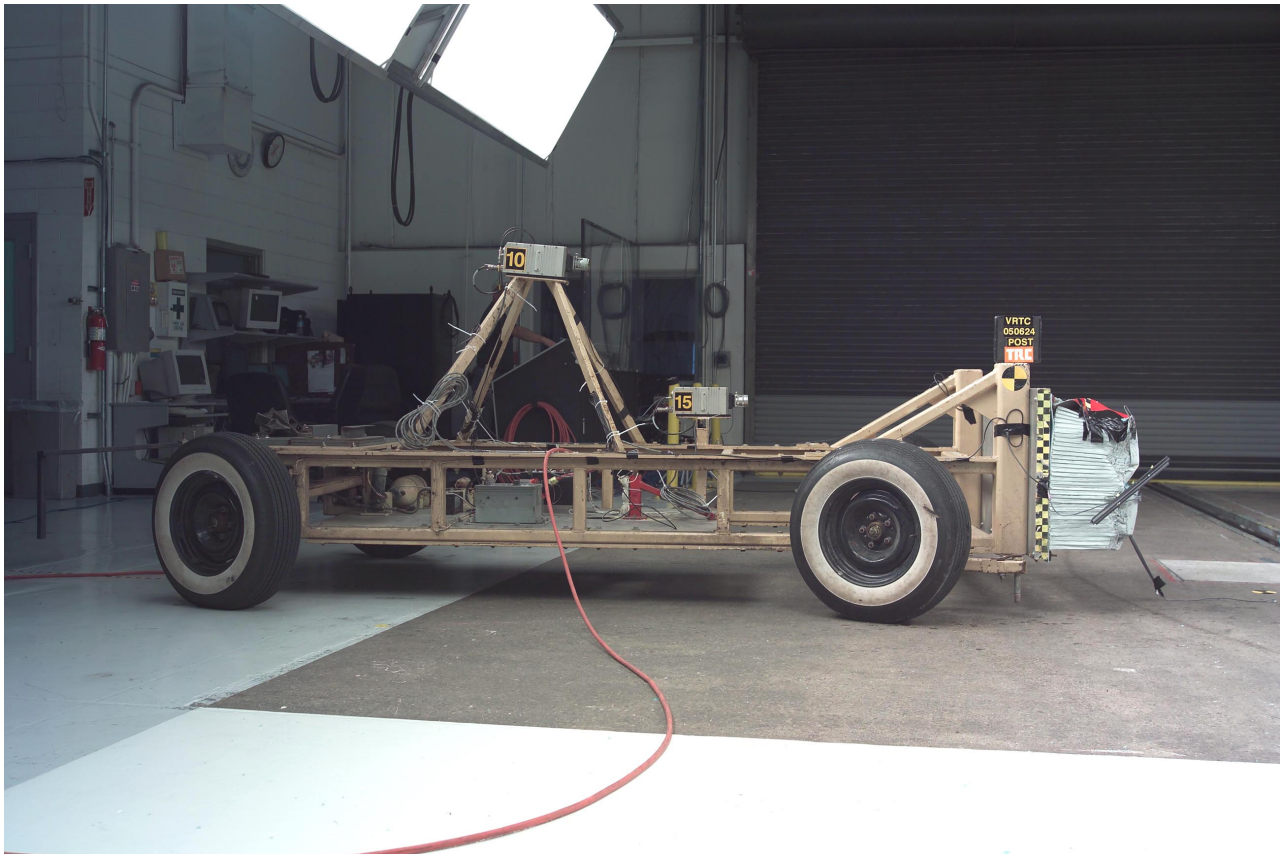


Figure A-73 Pre-Test Right Side Overall View of MDB

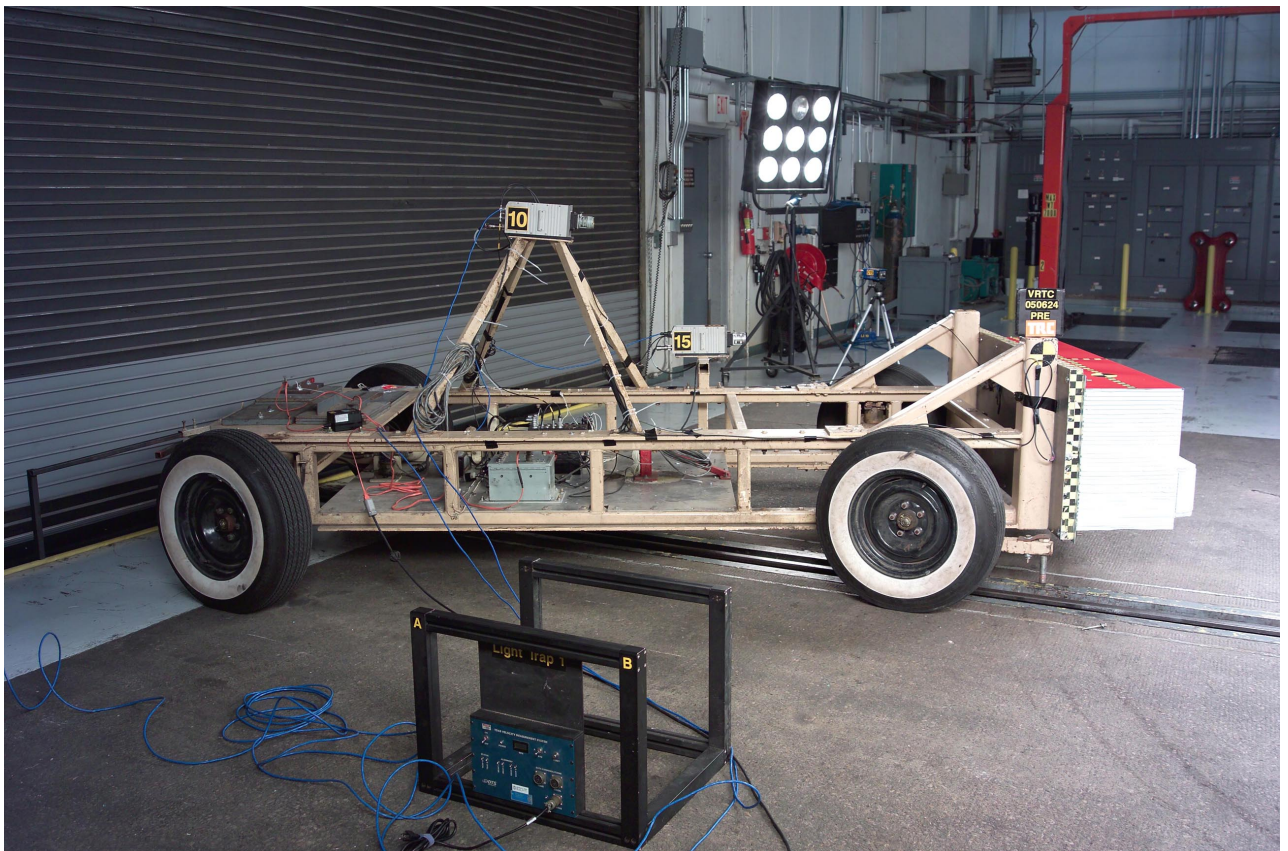


Figure A-74 Post-Test Right Side Overall View of MDB

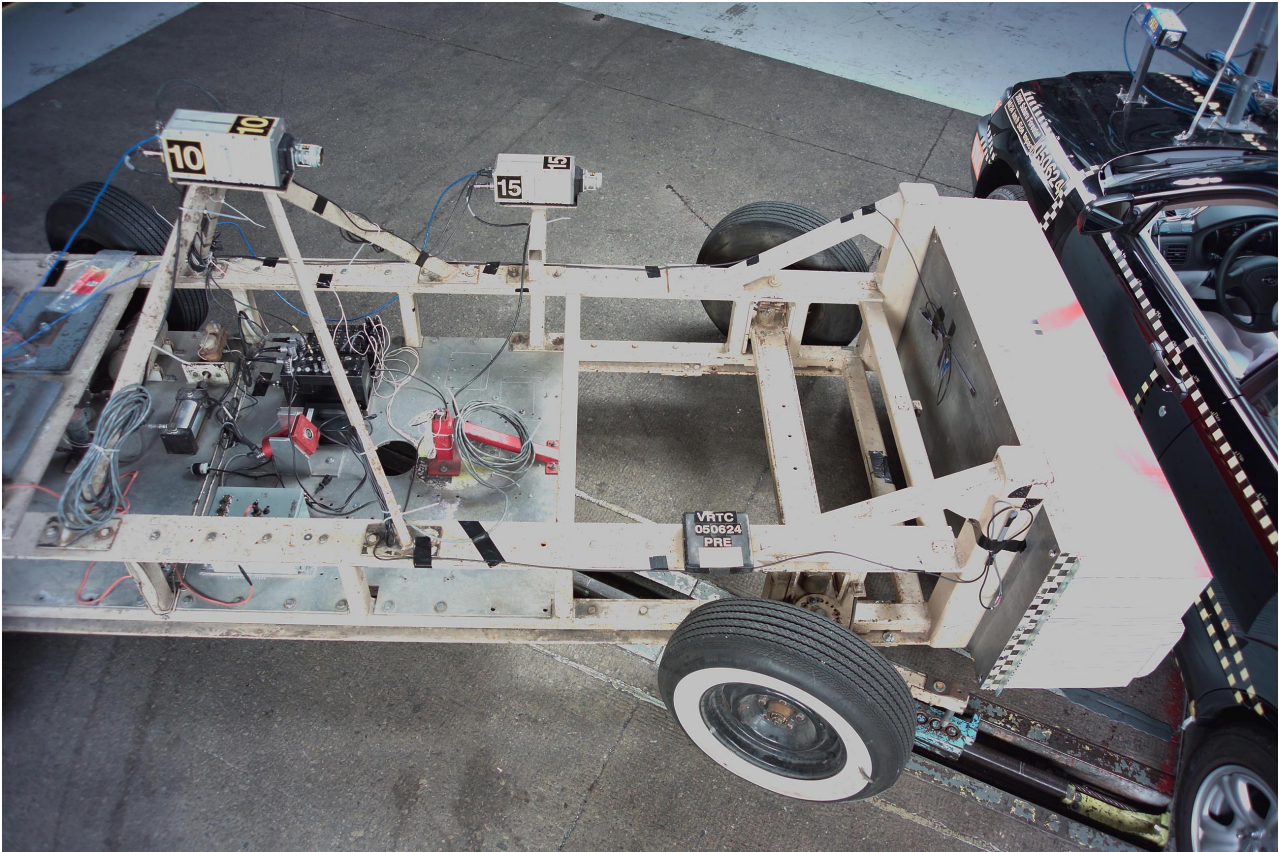


Figure A-75 Pre-Test Right Front Overall View of MDB

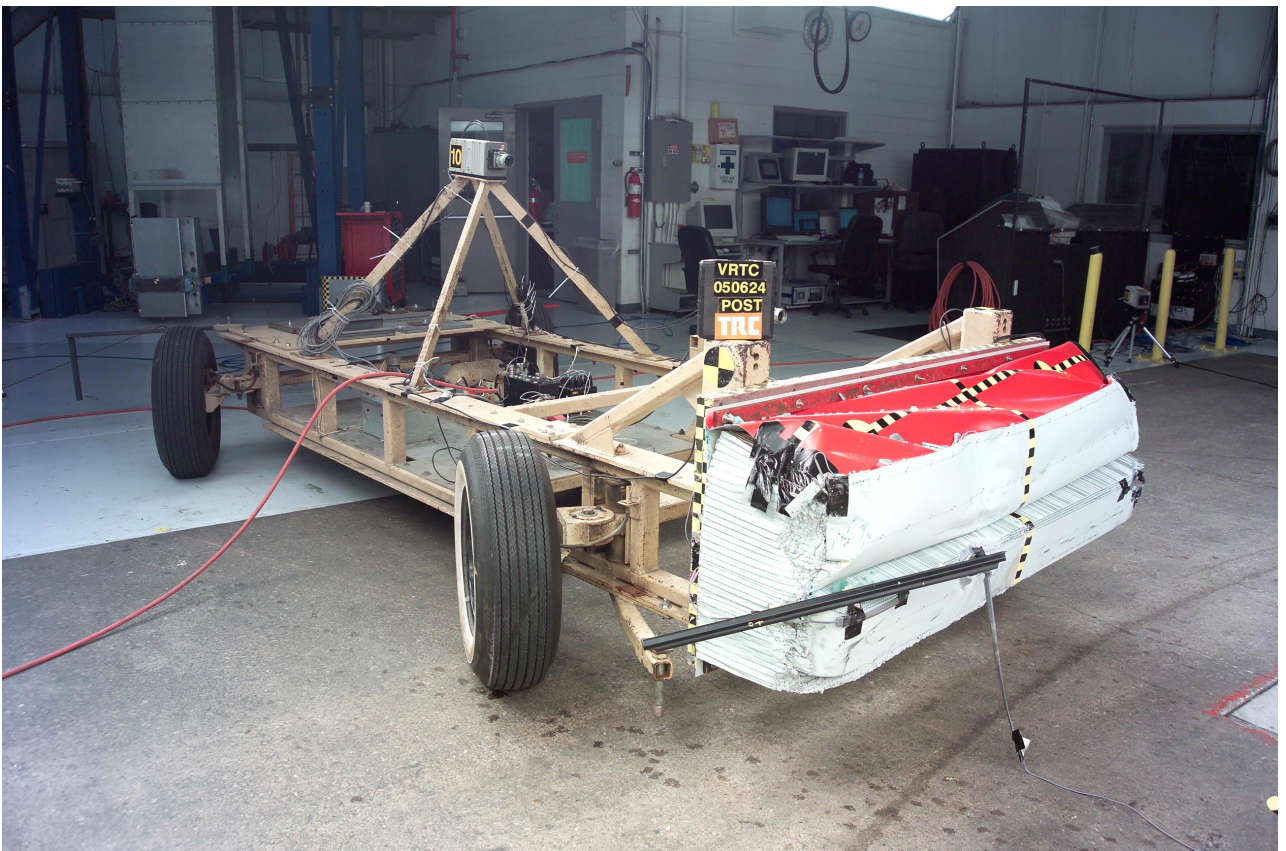


Figure A-76 Post-Test Right Front Overall View of MDB



Figure A-77 Pre-Test Barrier Face Front View

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Figure A-78 Pre-Test Barrier Face Left Side View



Figure A-79 Post-Test Barrier Face Left Side View



Figure A-80 Pre-Test Barrier Face Right Side View



Figure A-81 Post-Test Barrier Face Right Side View

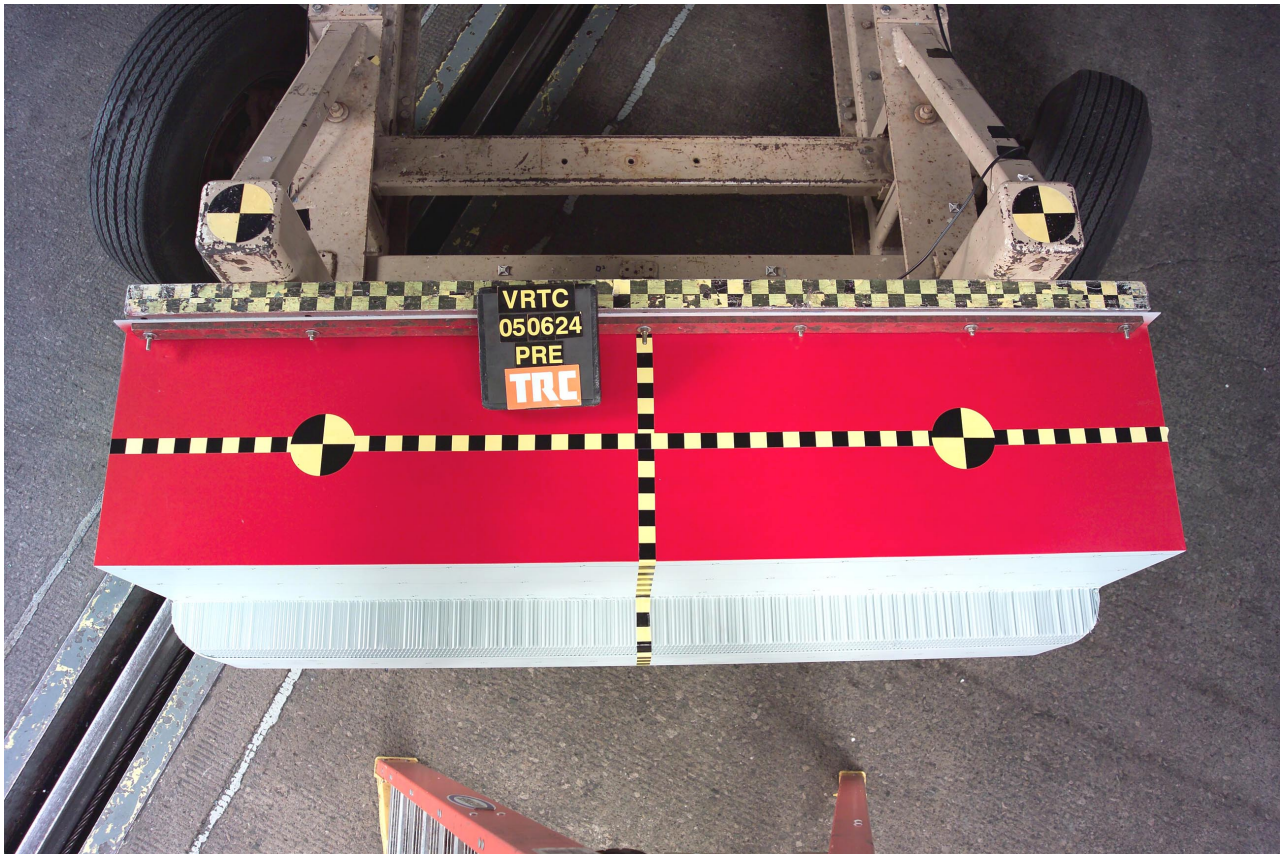


Figure A-82 Pre-Test Barrier Face Overhead View

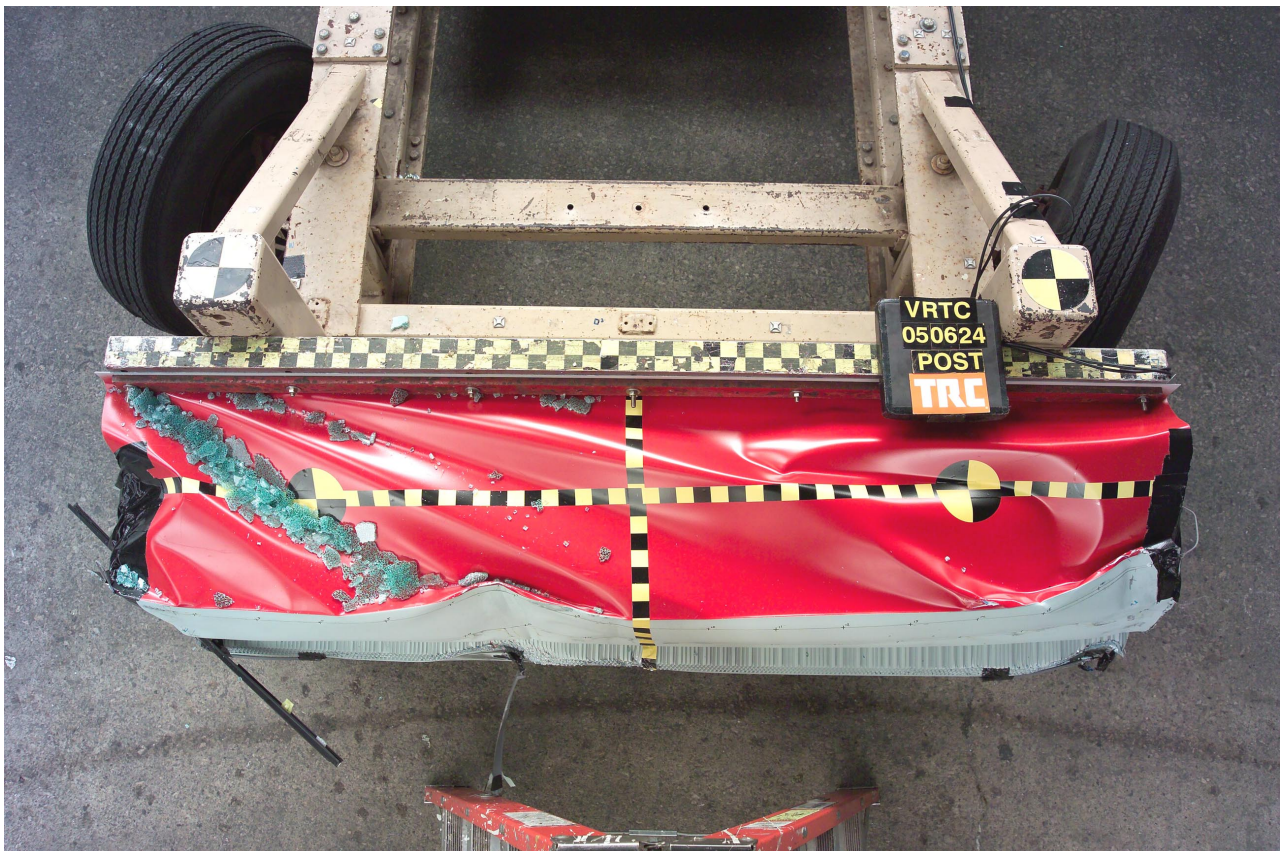


Figure A-83 Post-Test Barrier Face Overhead View



Figure A-84 Vehicle Certification Label View



Figure A-85 Vehicle Tire Load Label View

Appendix B

Data Plots



MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

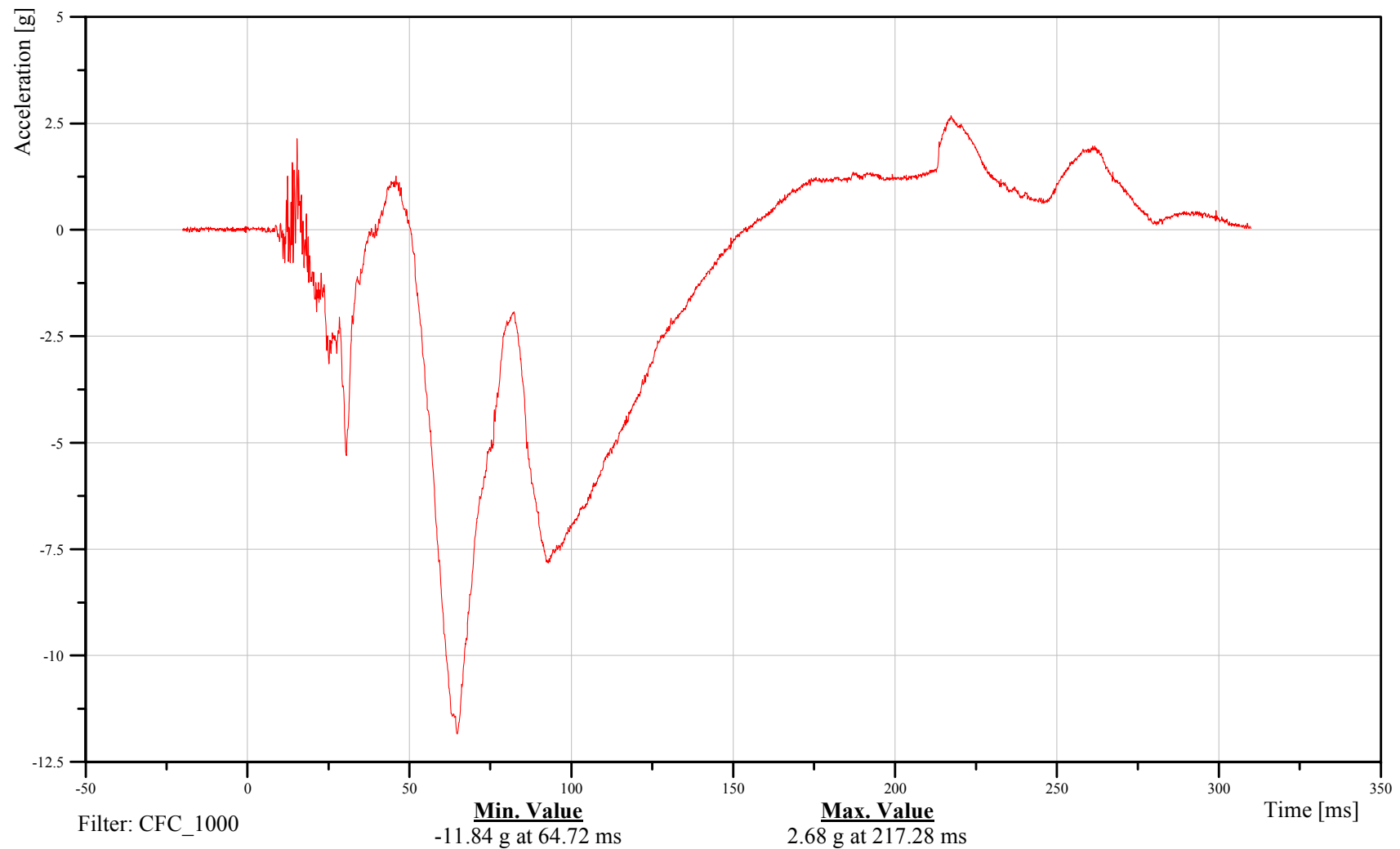
Head Accel X

Customer: VRTC

11HEADCG00E2ACXA

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

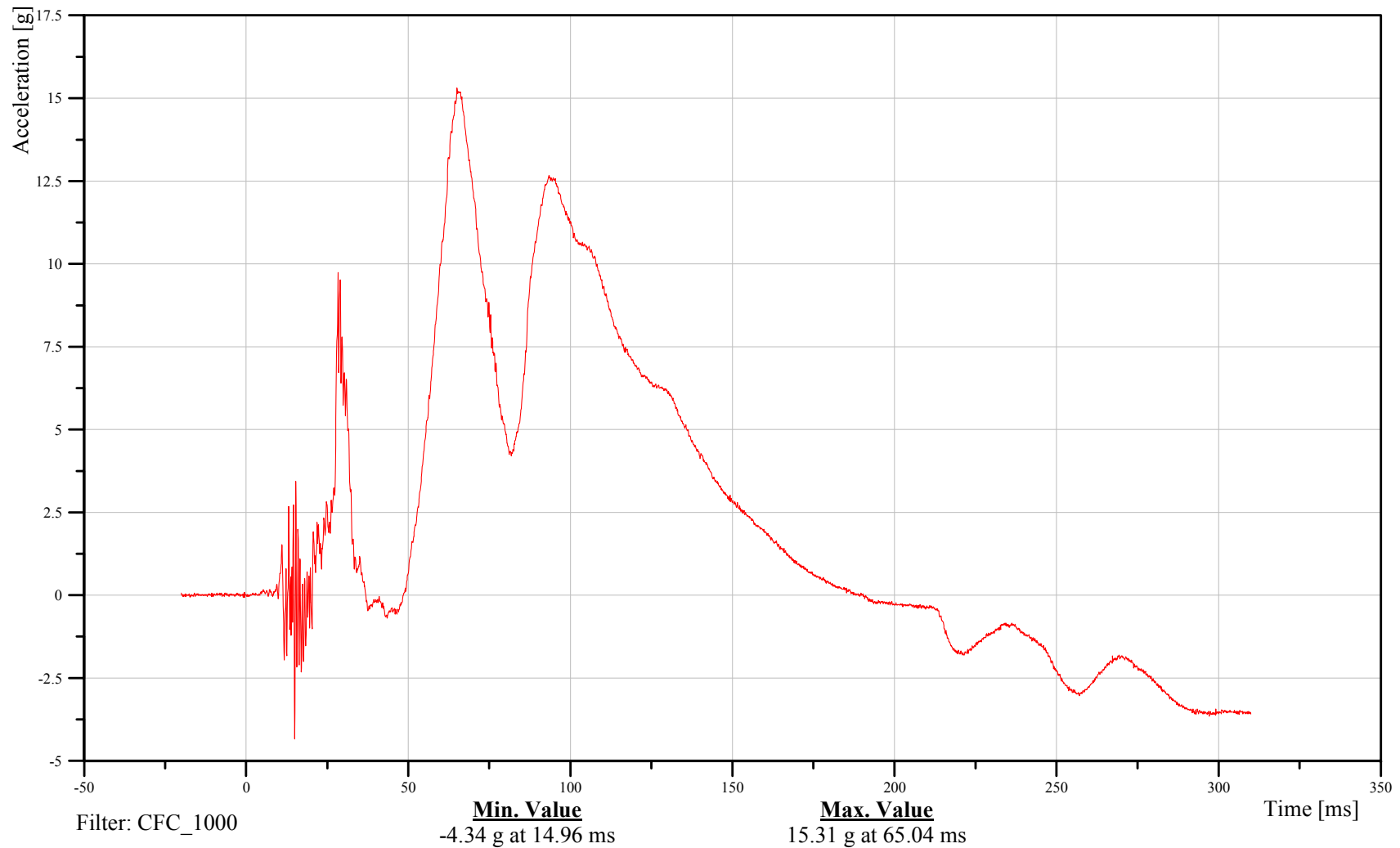
Head Accel Y

Customer: VRTC

11HEADCG00E2ACYA

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

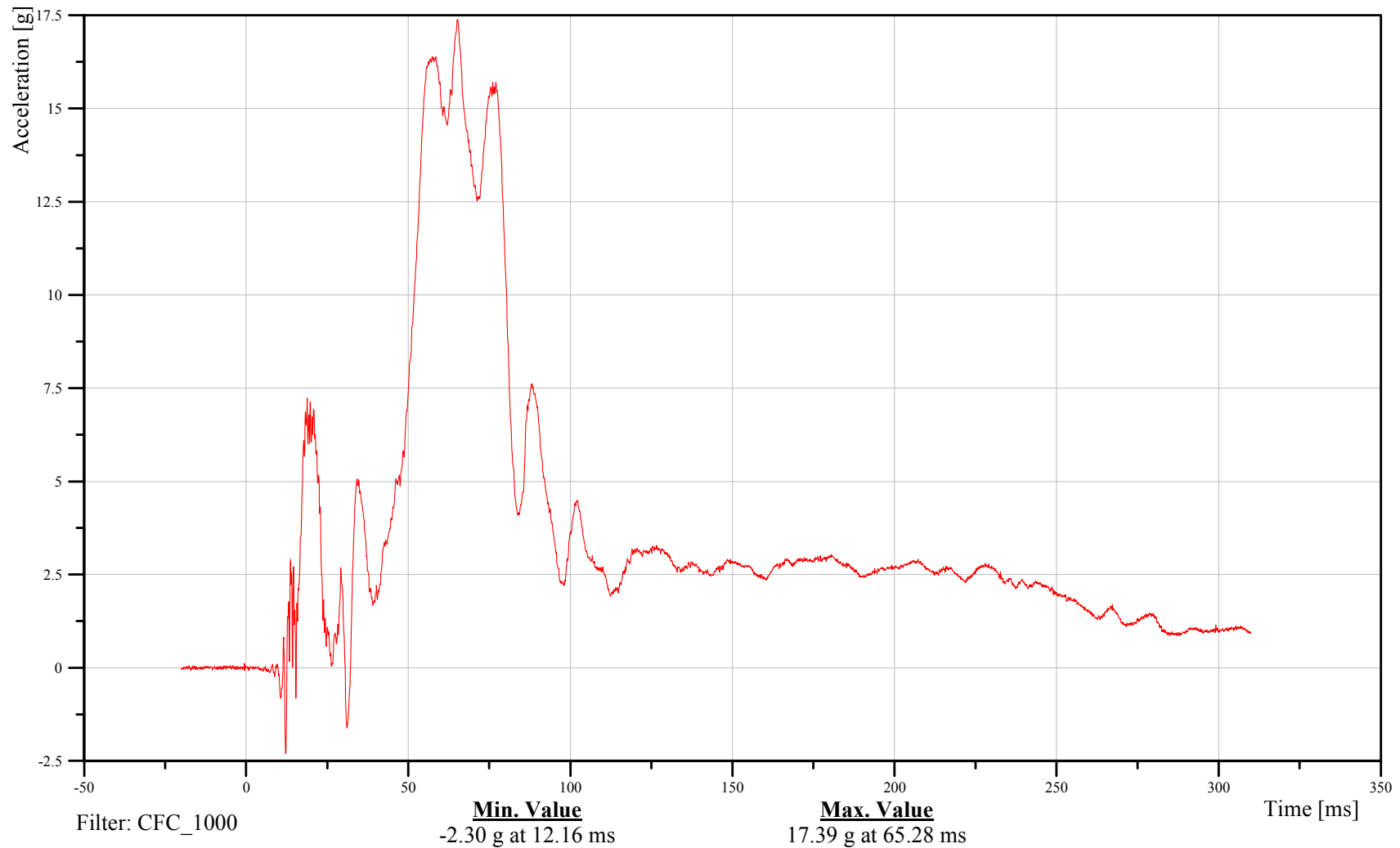
Head Accel Z

Customer: VRTC

11HEADCG00E2ACZA

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

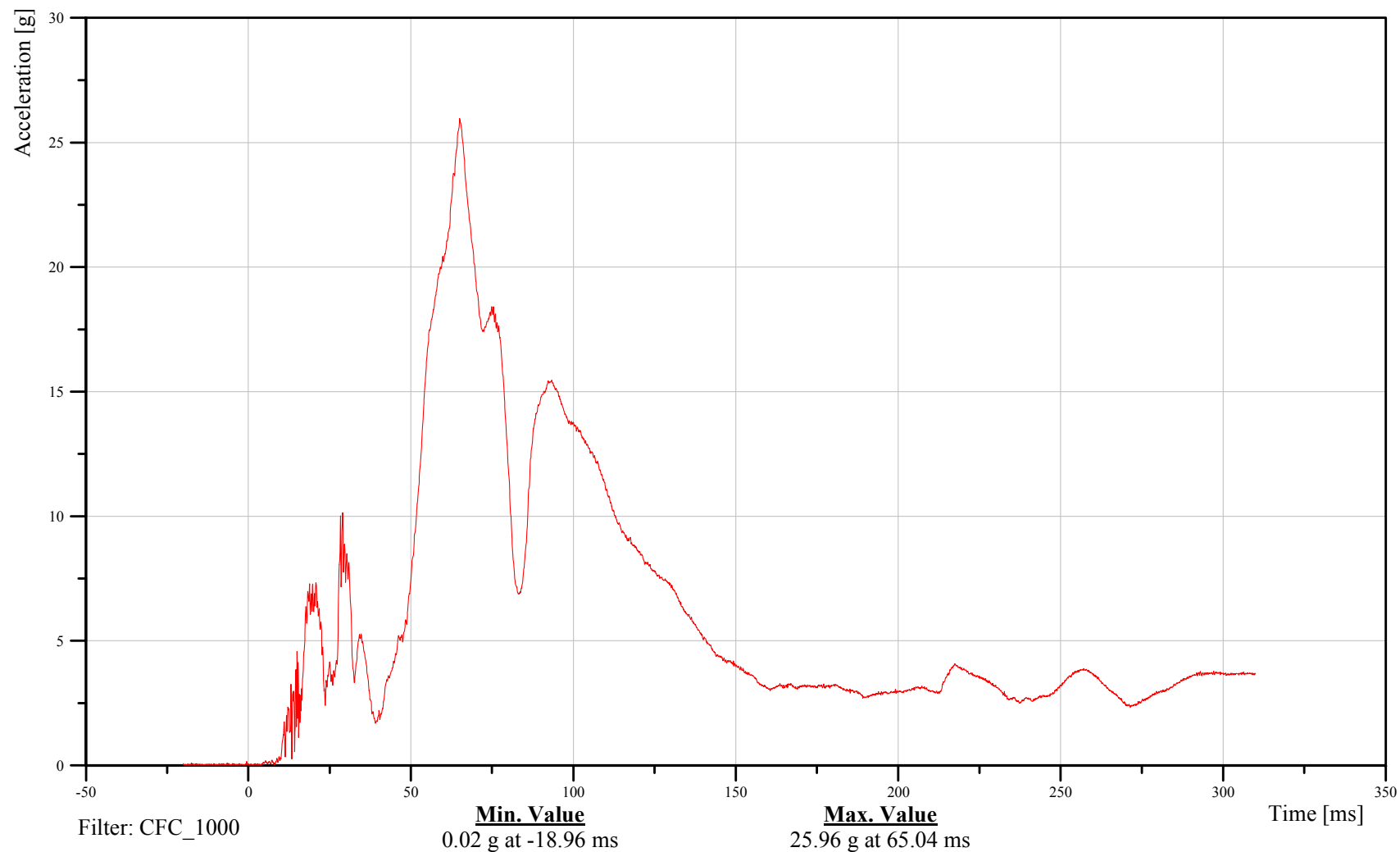
Head Accel Resultant

Customer: VRTC

11HEADCG00E2ACRA

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Head (LT) Accel X

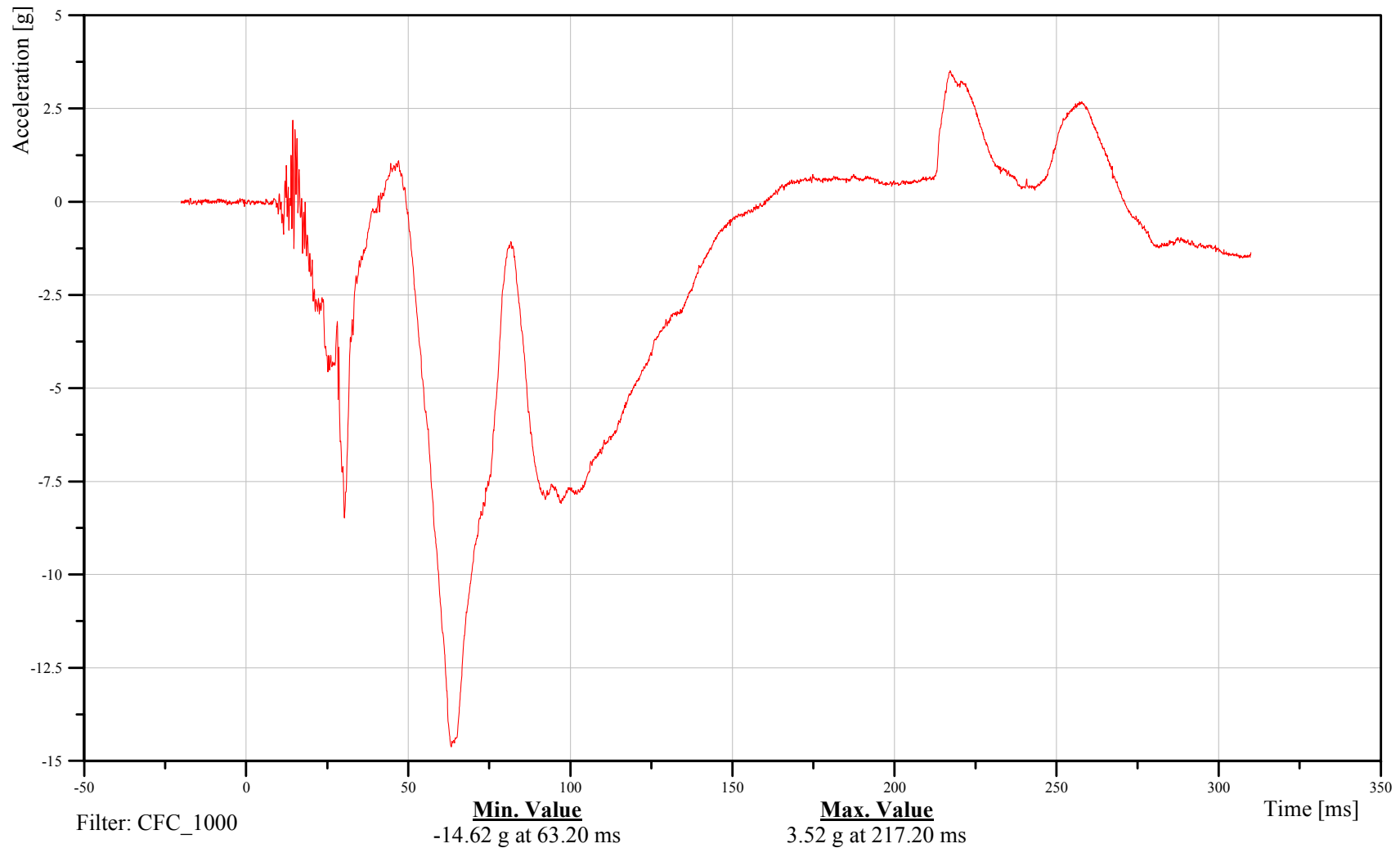
Date: 06/24/2005
Time: 12:02

Customer: VRTC

11HEADLE00E2ACXA

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Head (LT) Accel Z

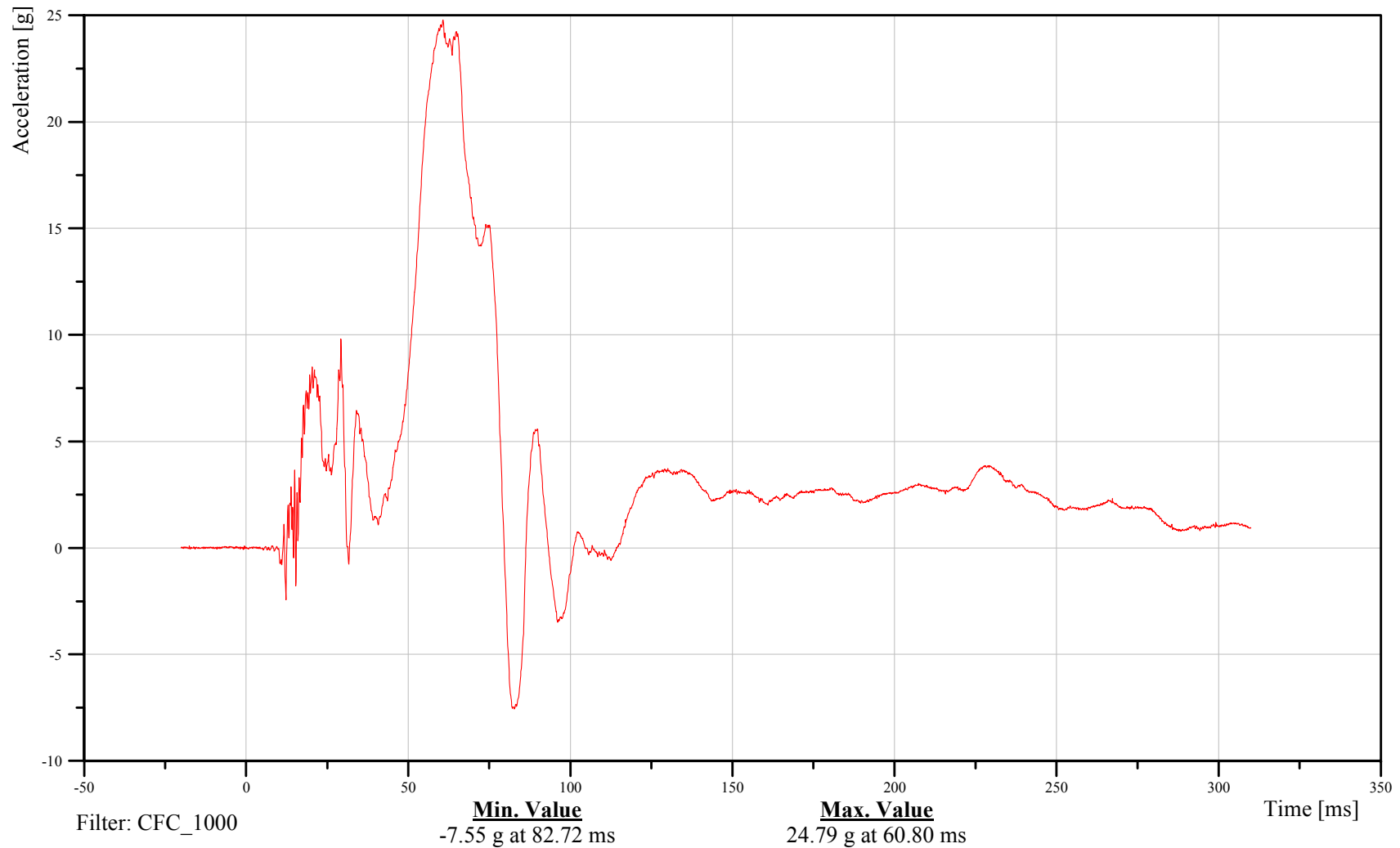
Date: 06/24/2005
Time: 12:02

Customer: VRTC

11HEADLE00E2ACZA

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

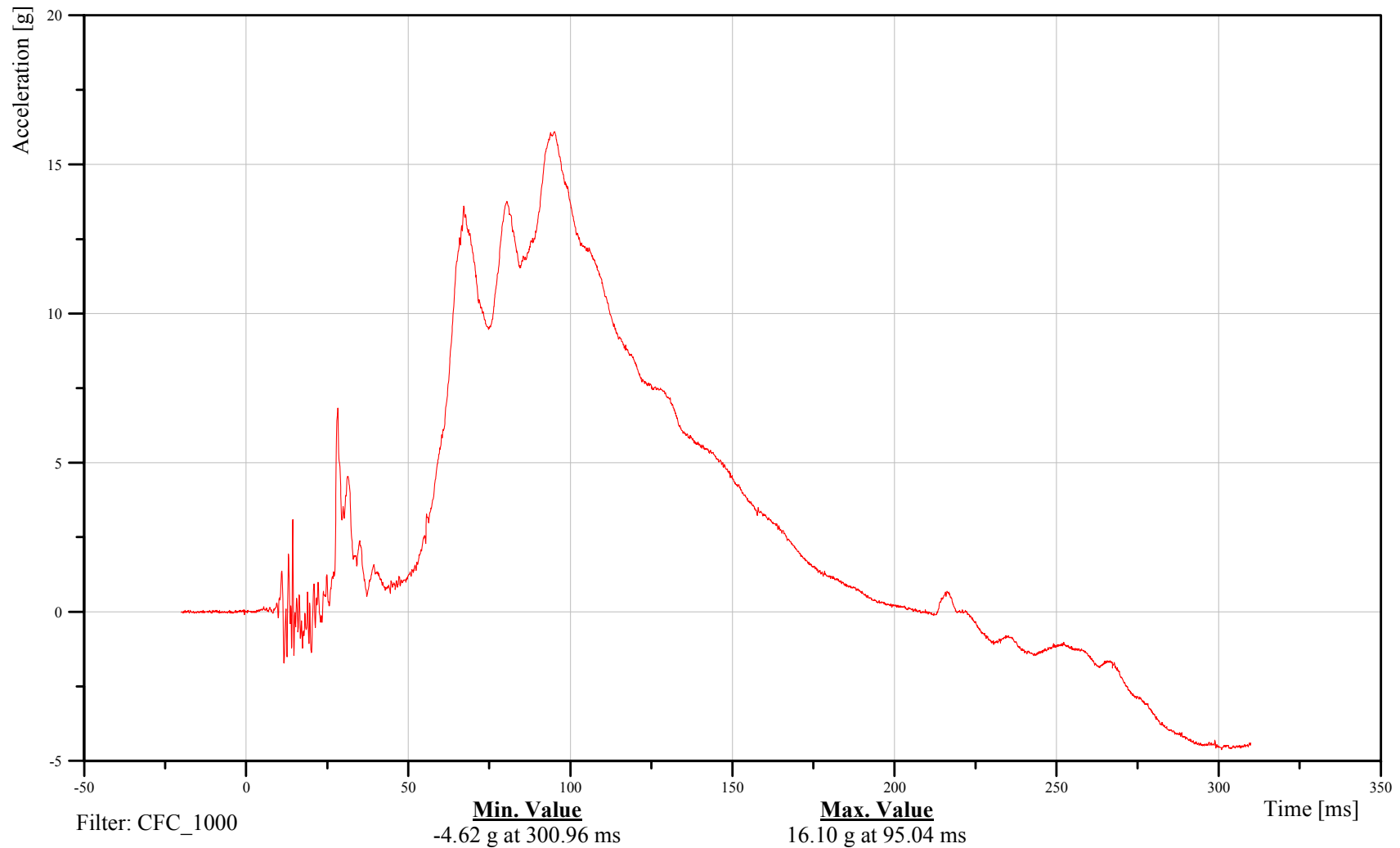
Head (FT) Accel Y

Customer: VRTC

11HEADFR00E2ACYA

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

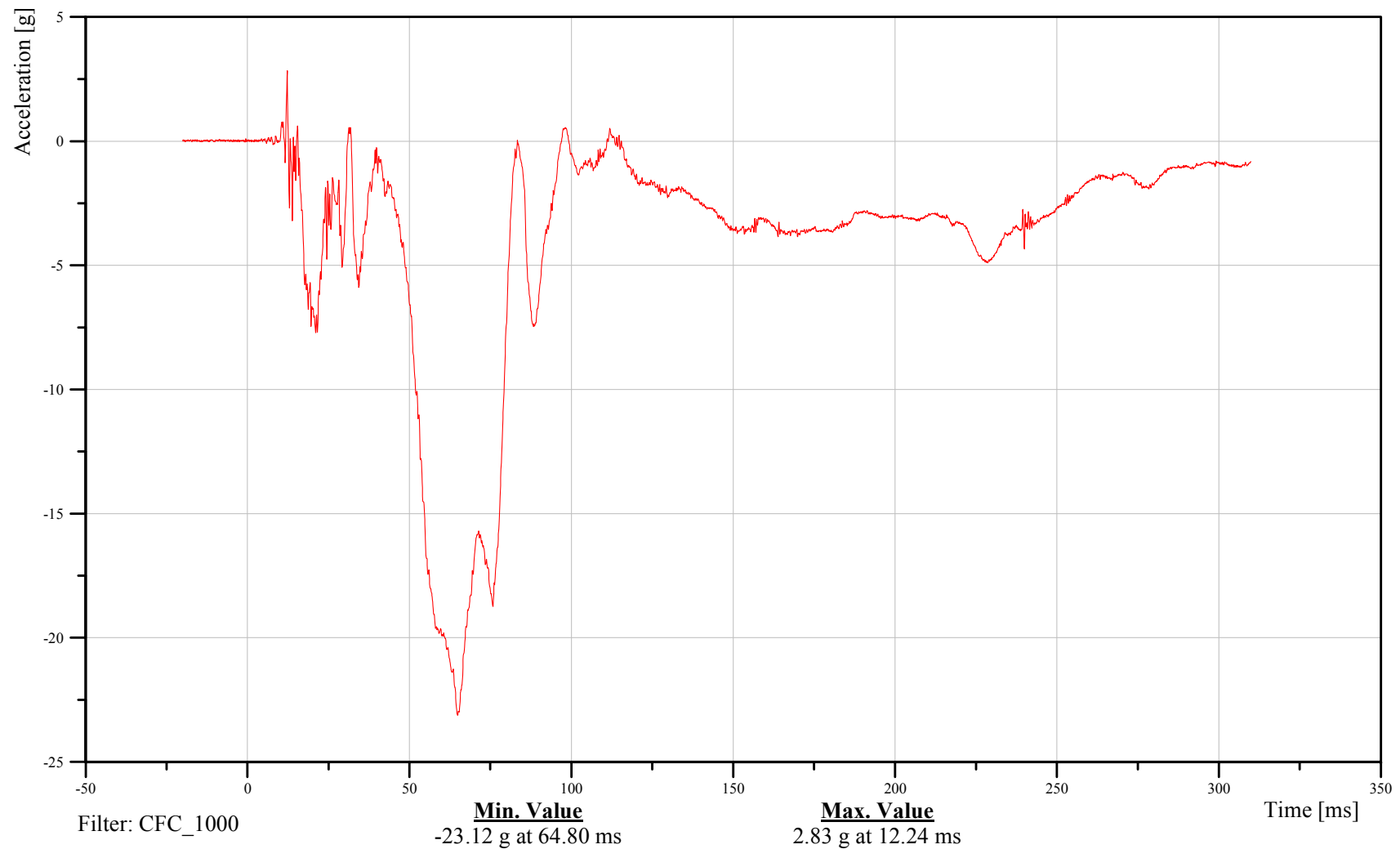
Head (FT) Accel Z

Customer: VRTC

11HEADFR00E2ACZA

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

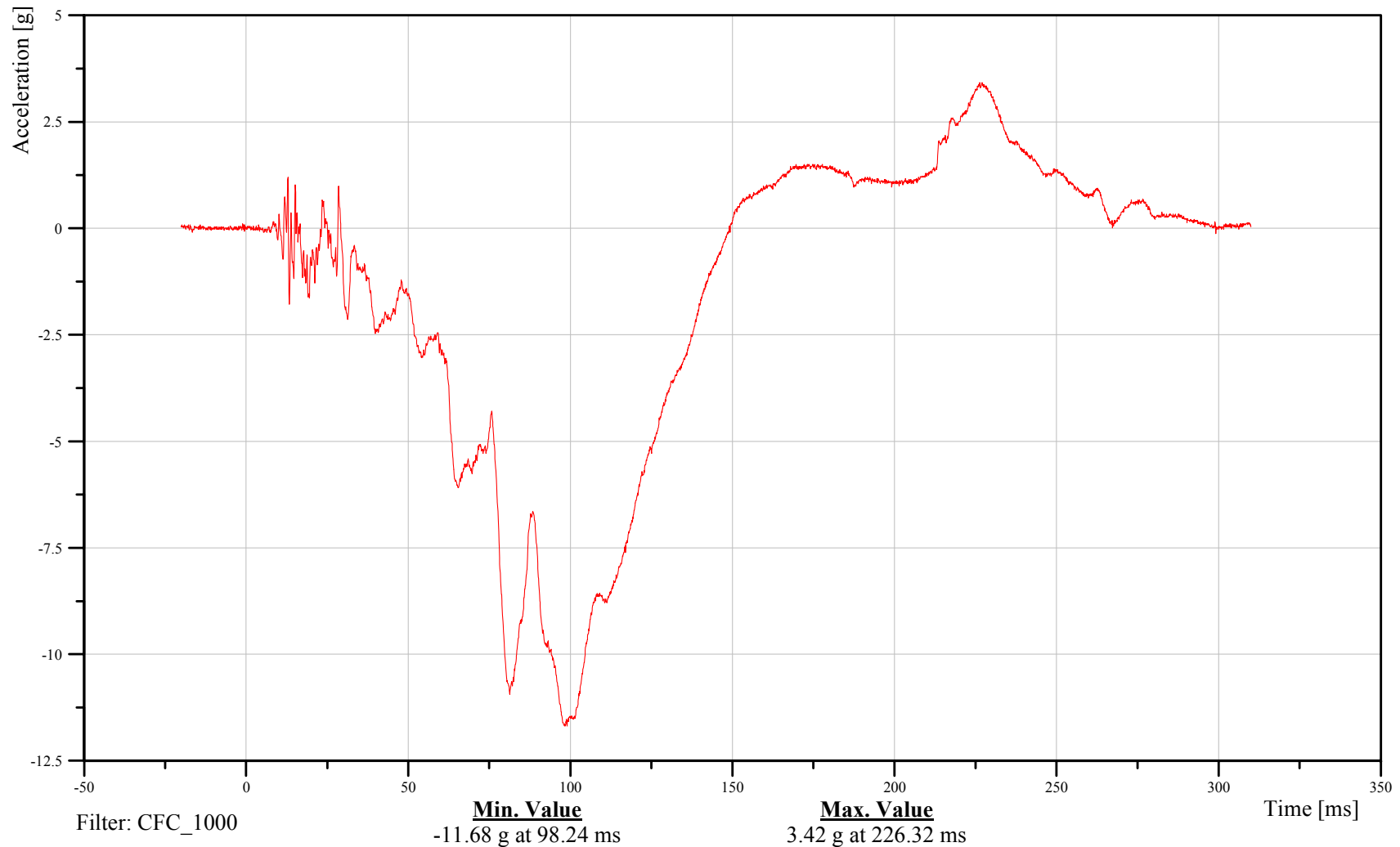
Head (TP) Accel X

Customer: VRTC

11HEADUP00E2ACXA

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

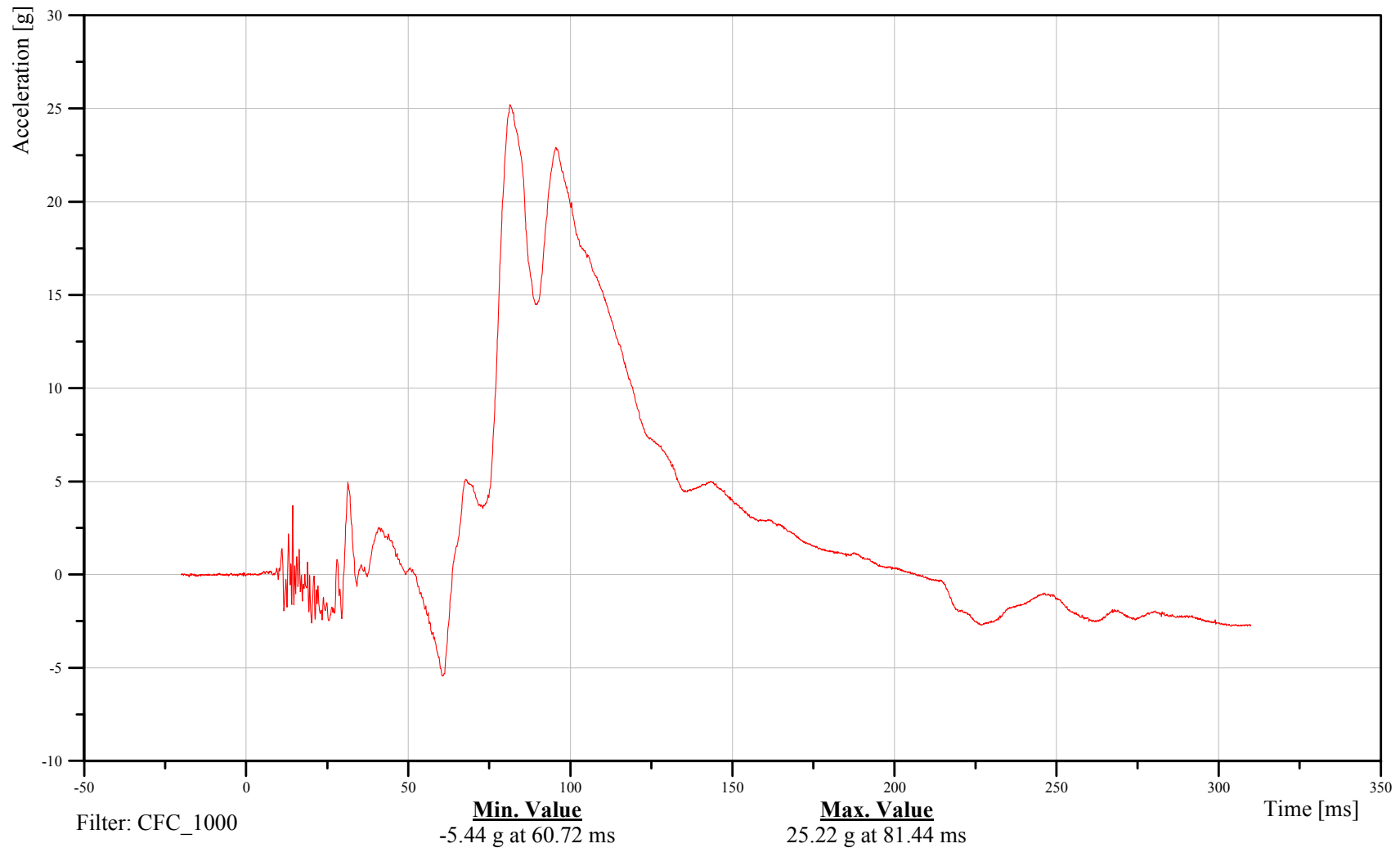
Head (TP) Accel Y

Customer: VRTC

11HEADUP00E2ACYA

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Neck Force X

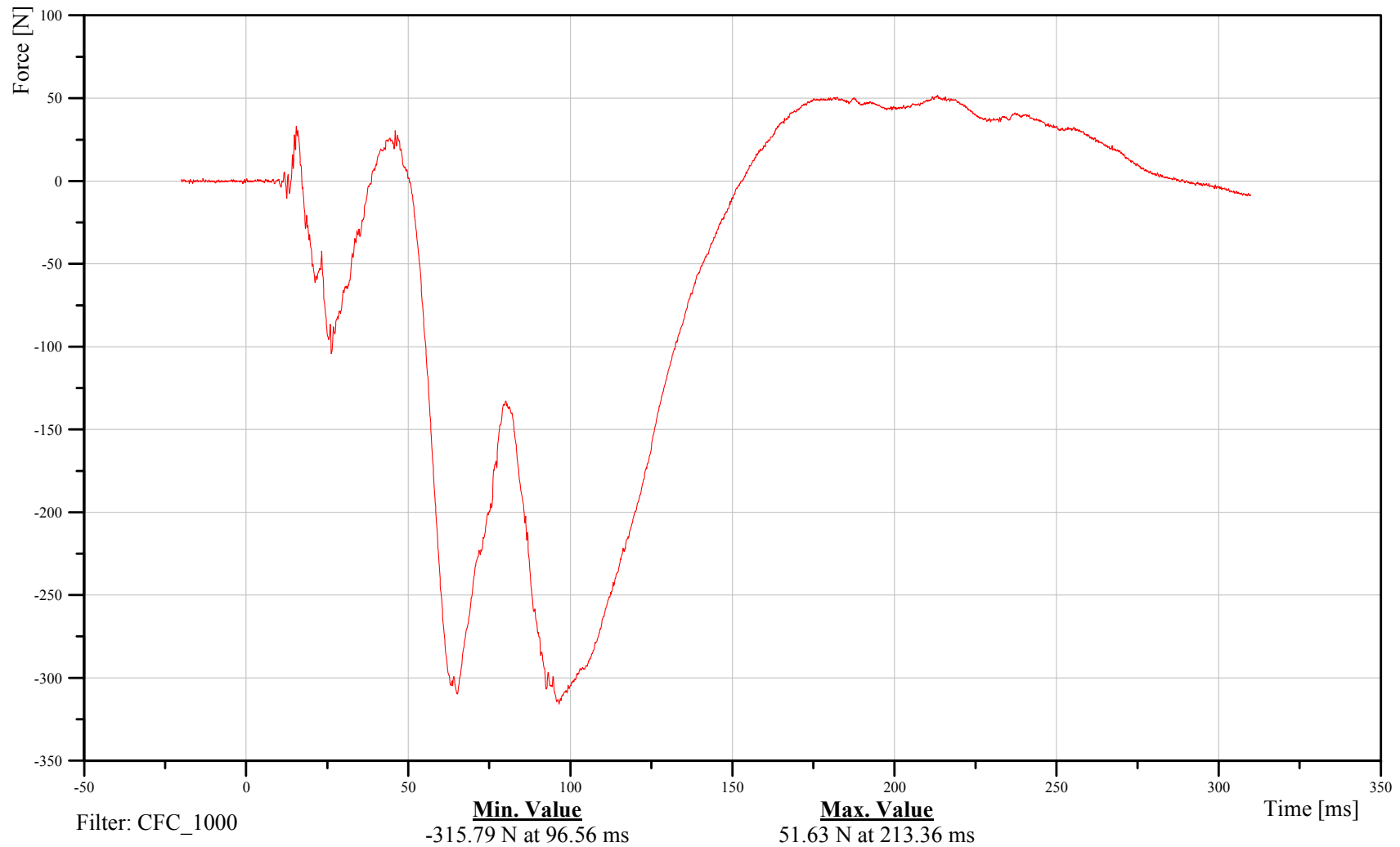
Date: 06/24/2005
Time: 12:02

Customer: VRTC

11NECKUP00E2FOXA

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

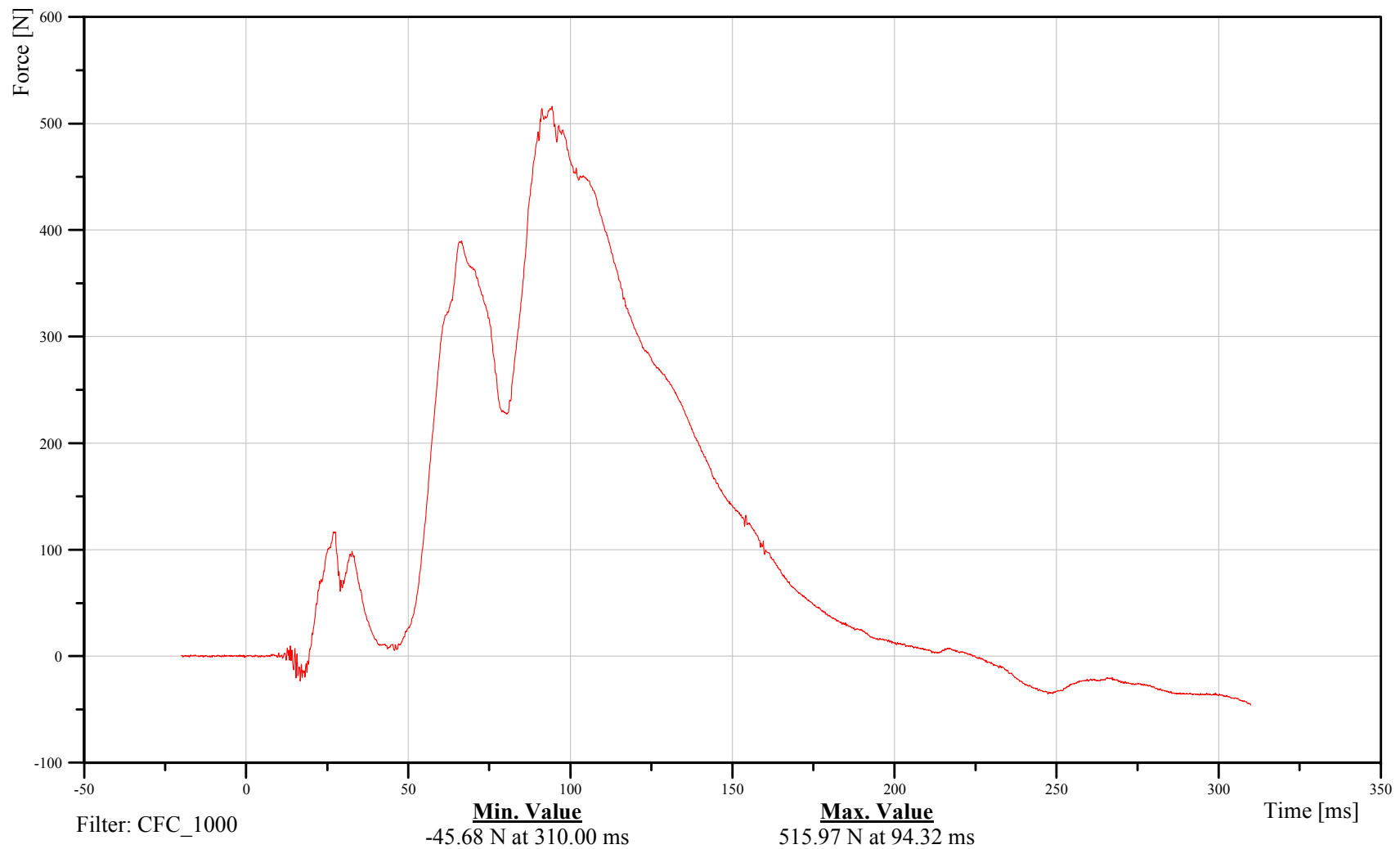
Neck Force Y

Customer: VRTC

11NECKUP00E2FOYA

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

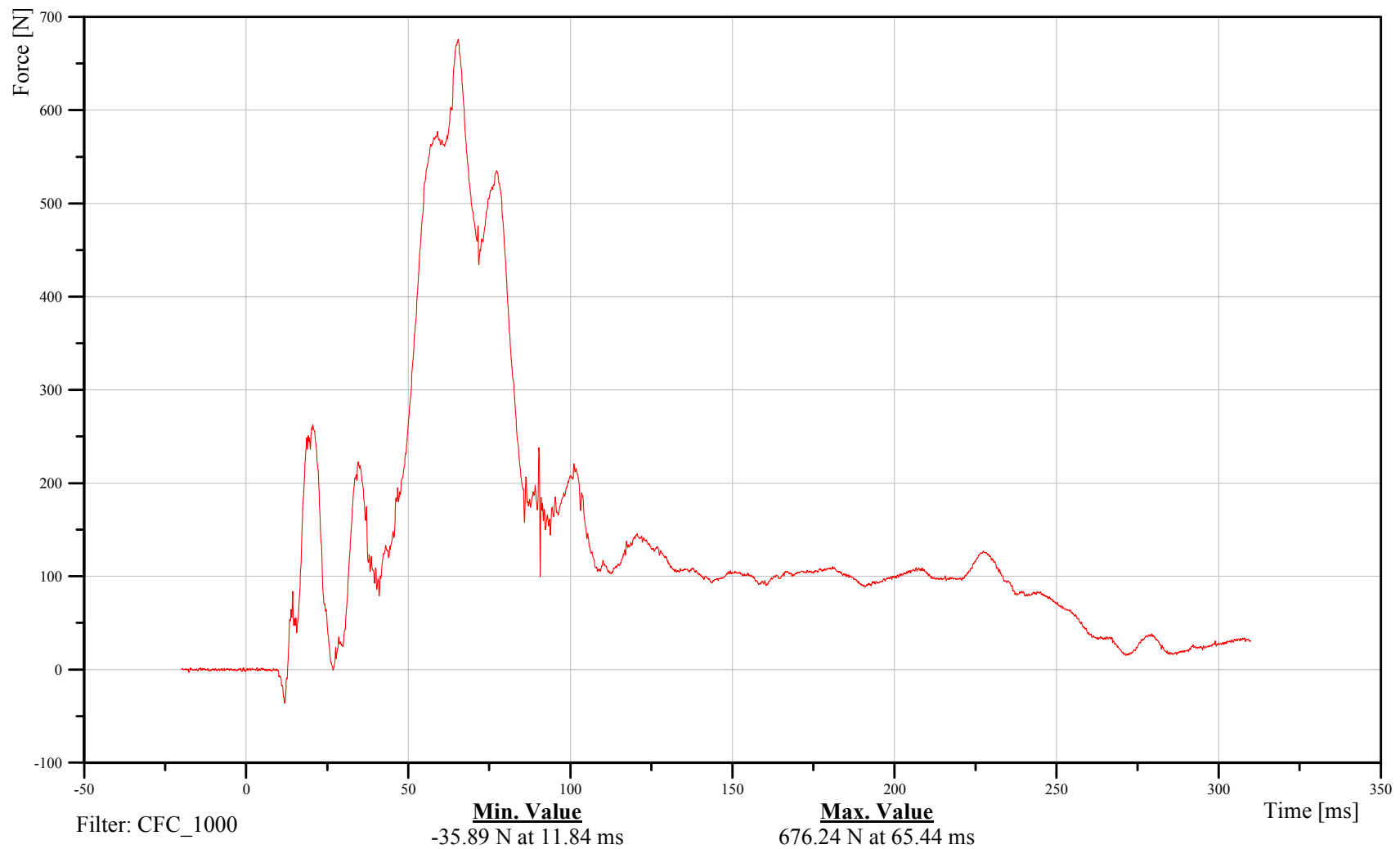
Neck Force Z

Customer: VRTC

11NECKUP00E2FOZA

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

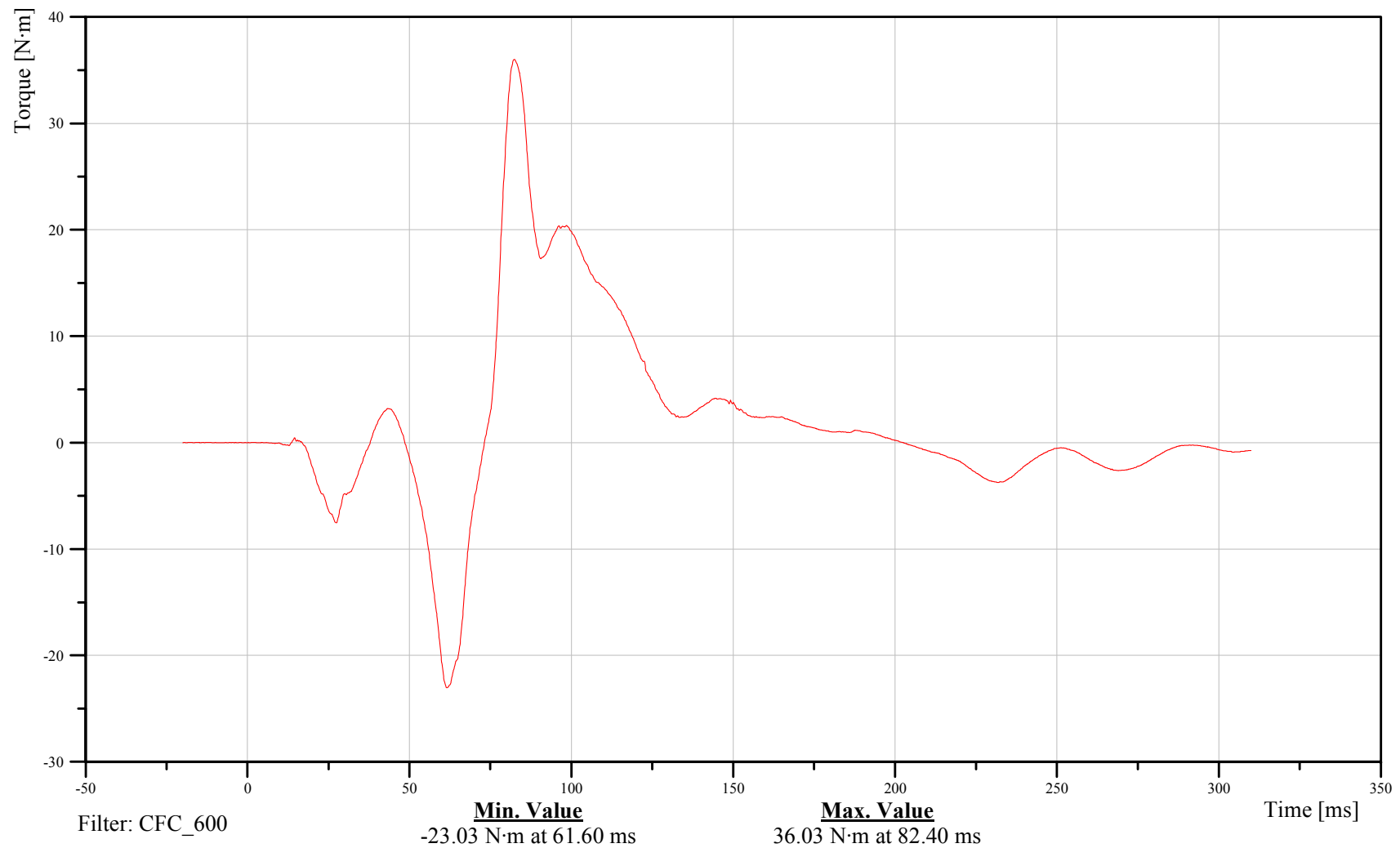
Neck Moment X

Customer: VRTC

11NECKUP00E2MOXB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

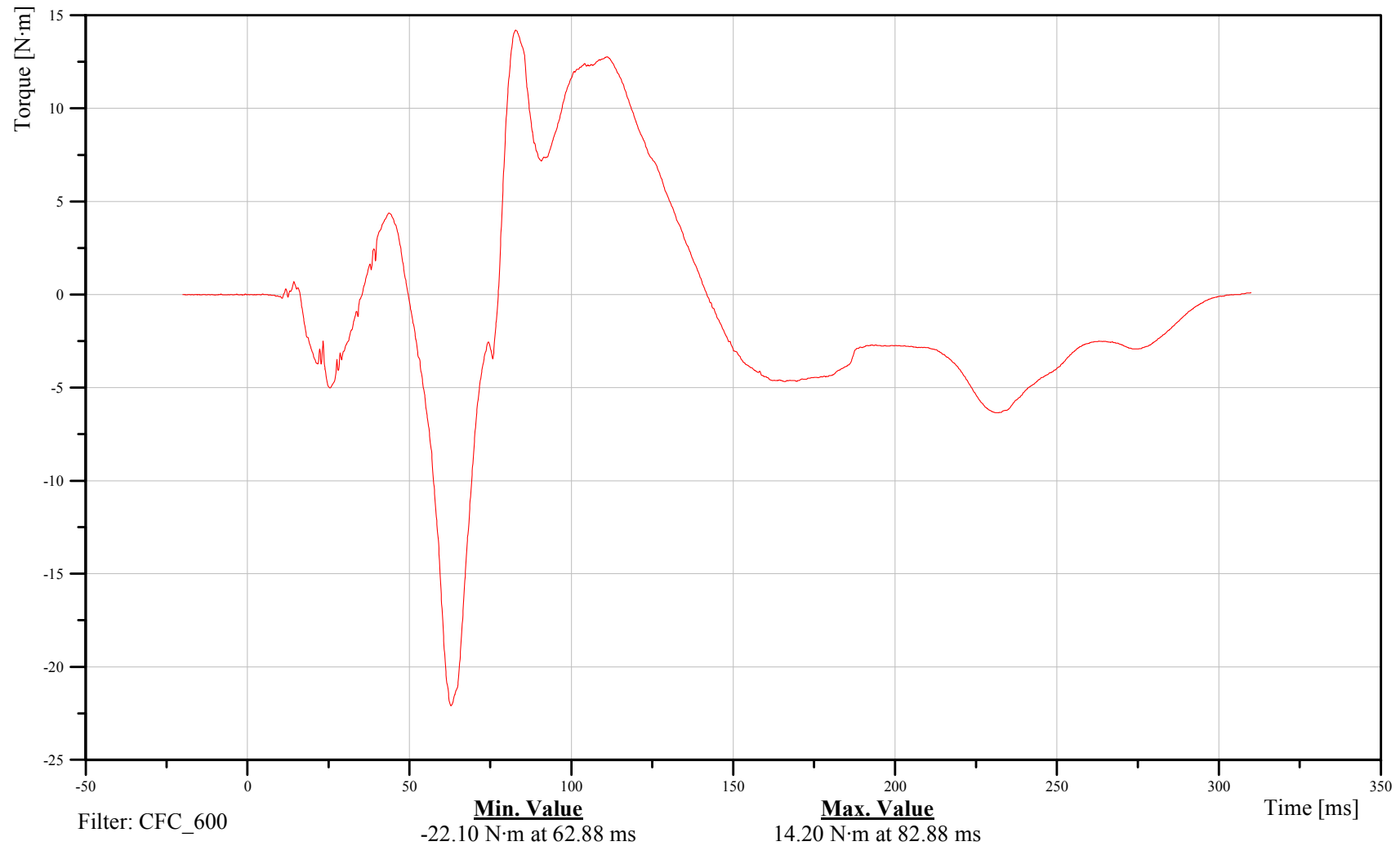
Neck Moment Y

Customer: VRTC

11NECKUP00E2MOYB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

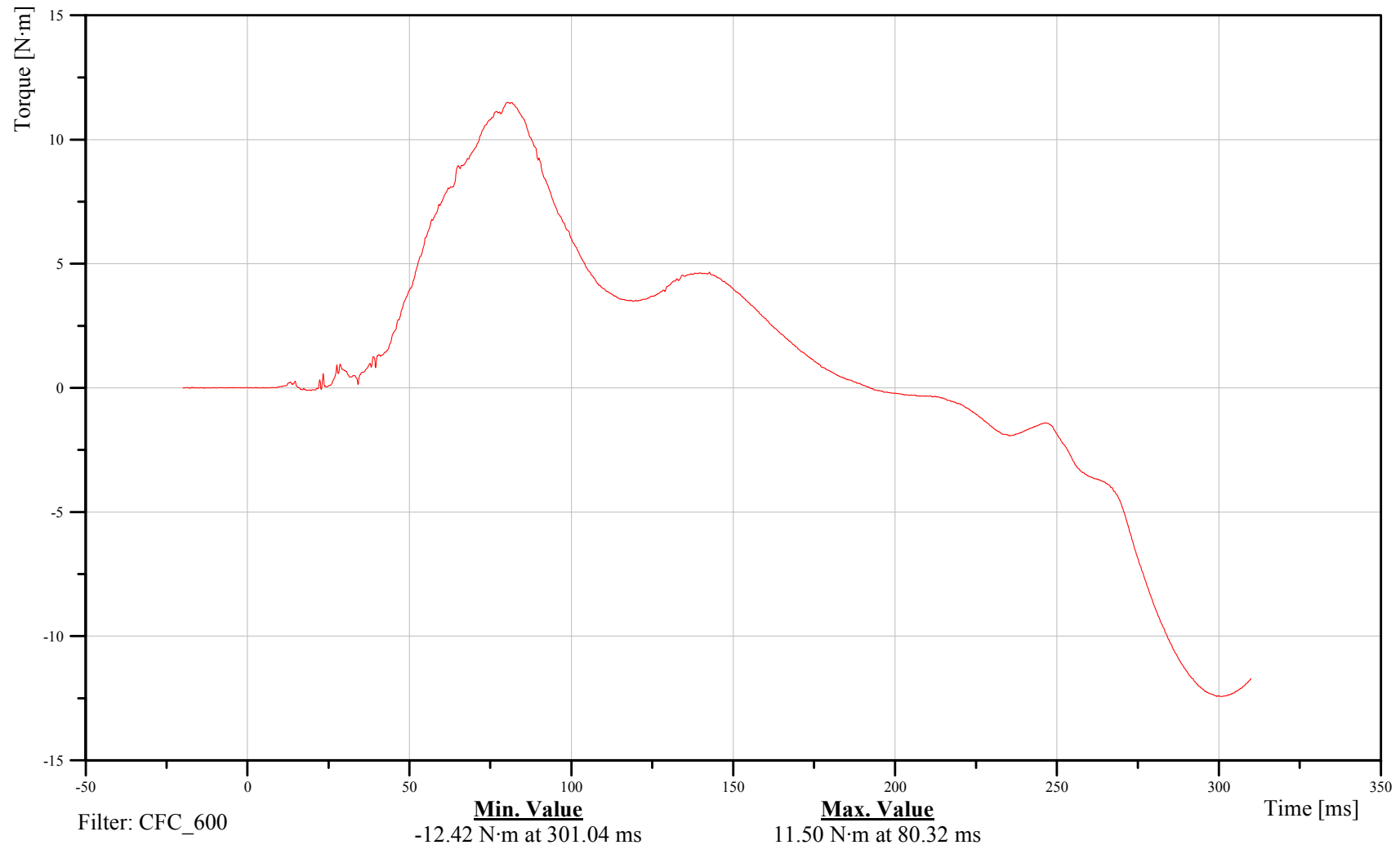
Neck Moment Z

Customer: VRTC

11NECKUP00E2MOZB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

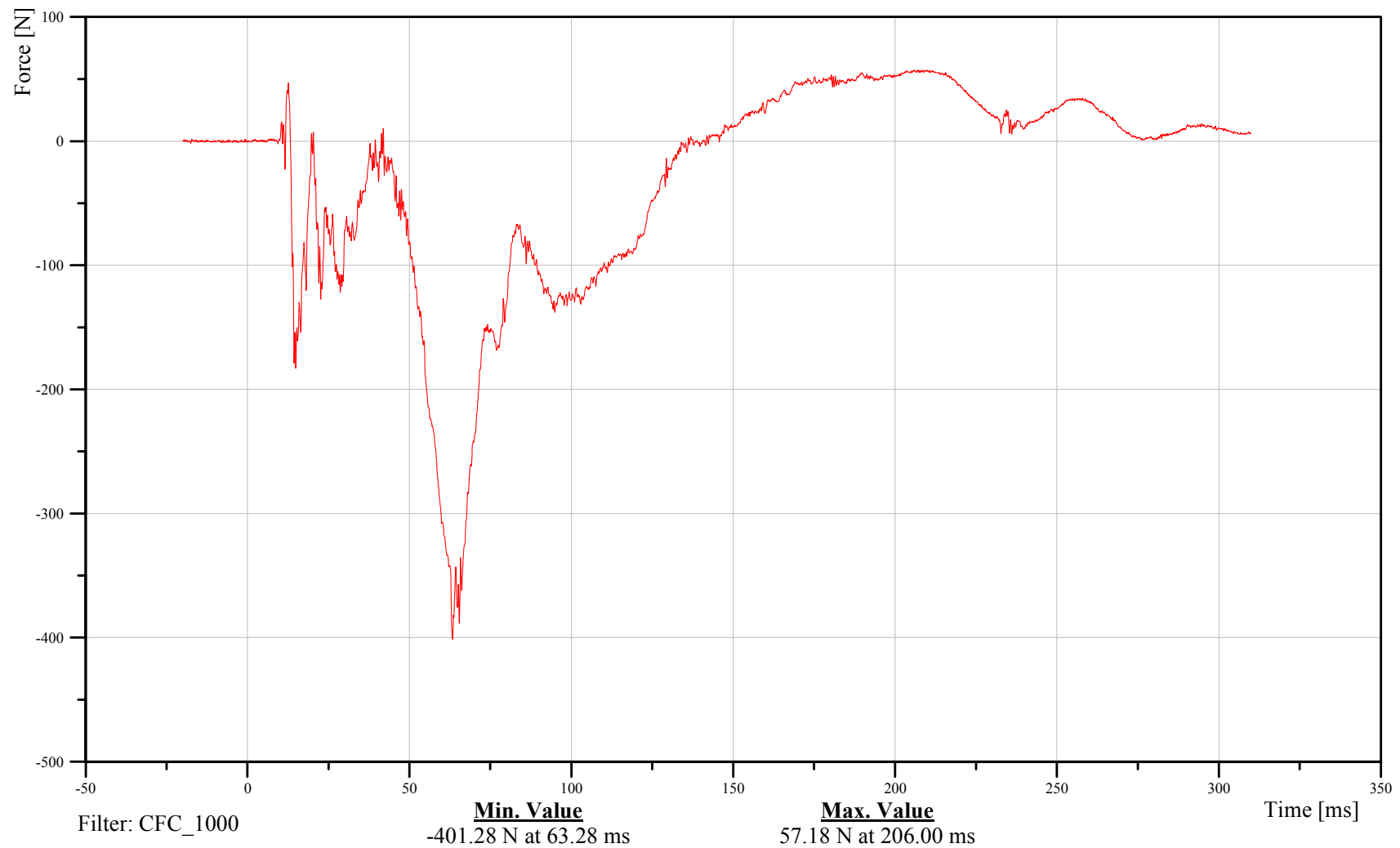
Neck Lower Force X

Customer: VRTC

11NECKLO00E2FOXA

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

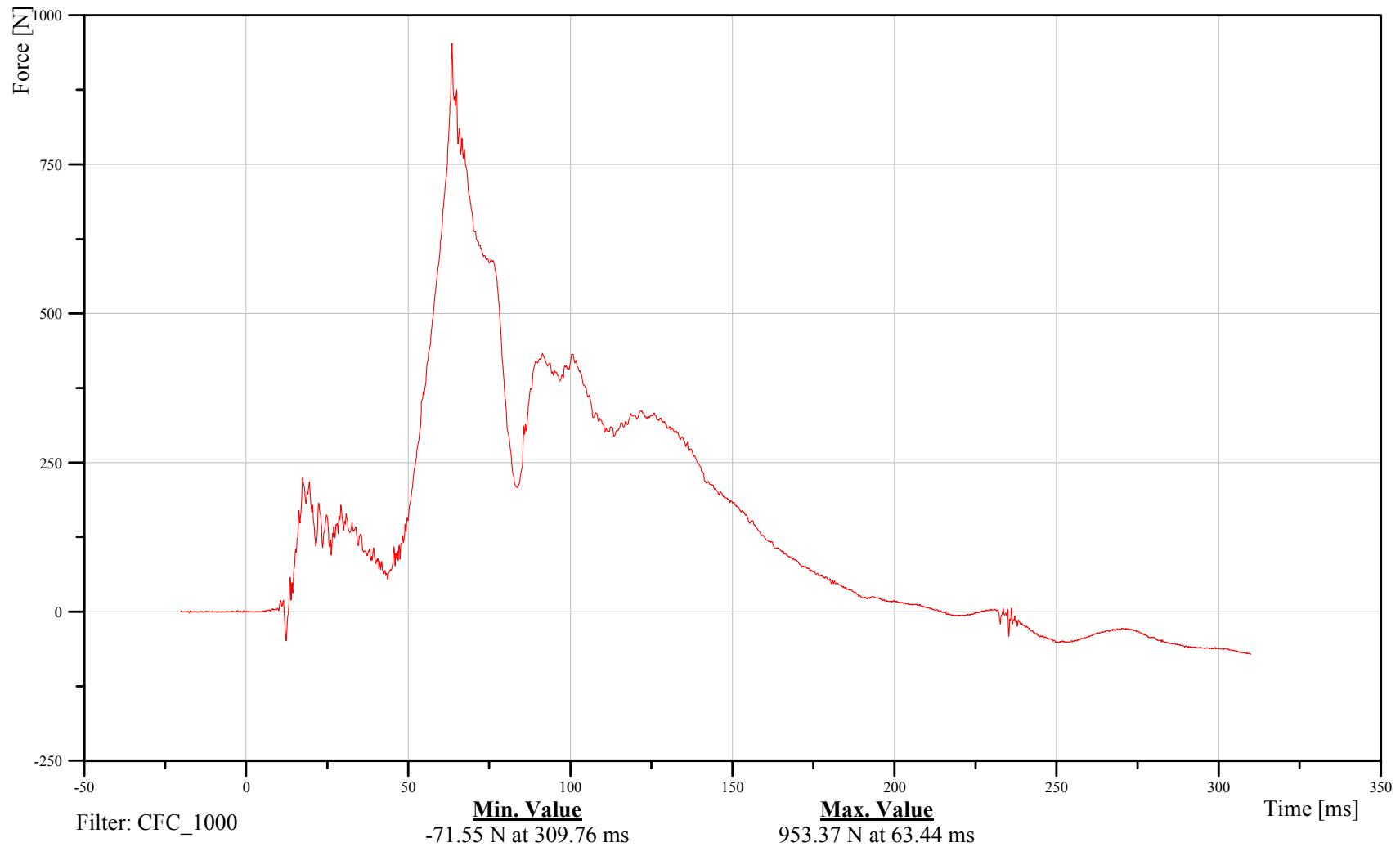
Neck Lower Force Y

Customer: VRTC

11NECKLO00E2FOYA

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

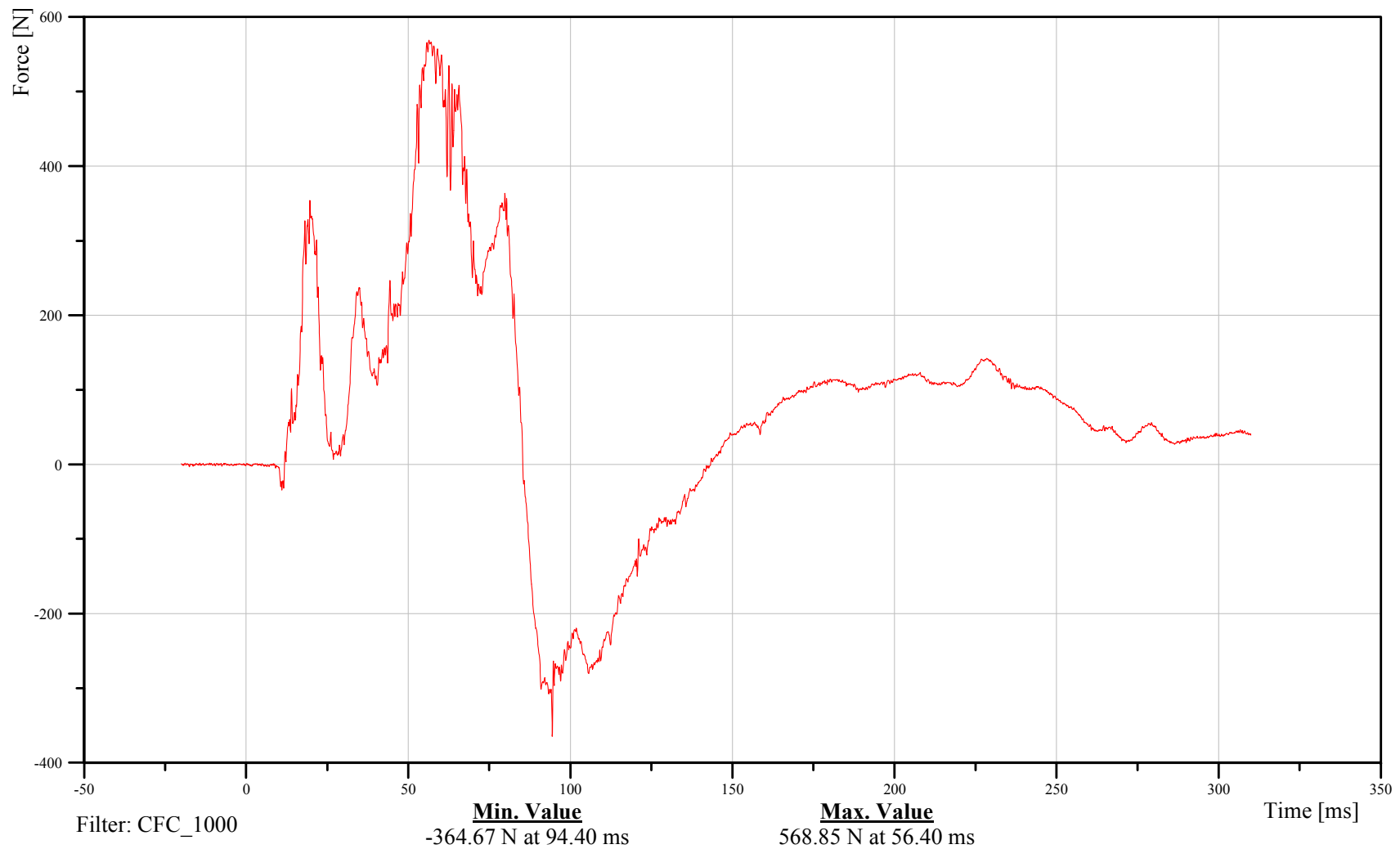
Neck Lower Force Z

Customer: VRTC

11NECKLO00E2FOZA

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

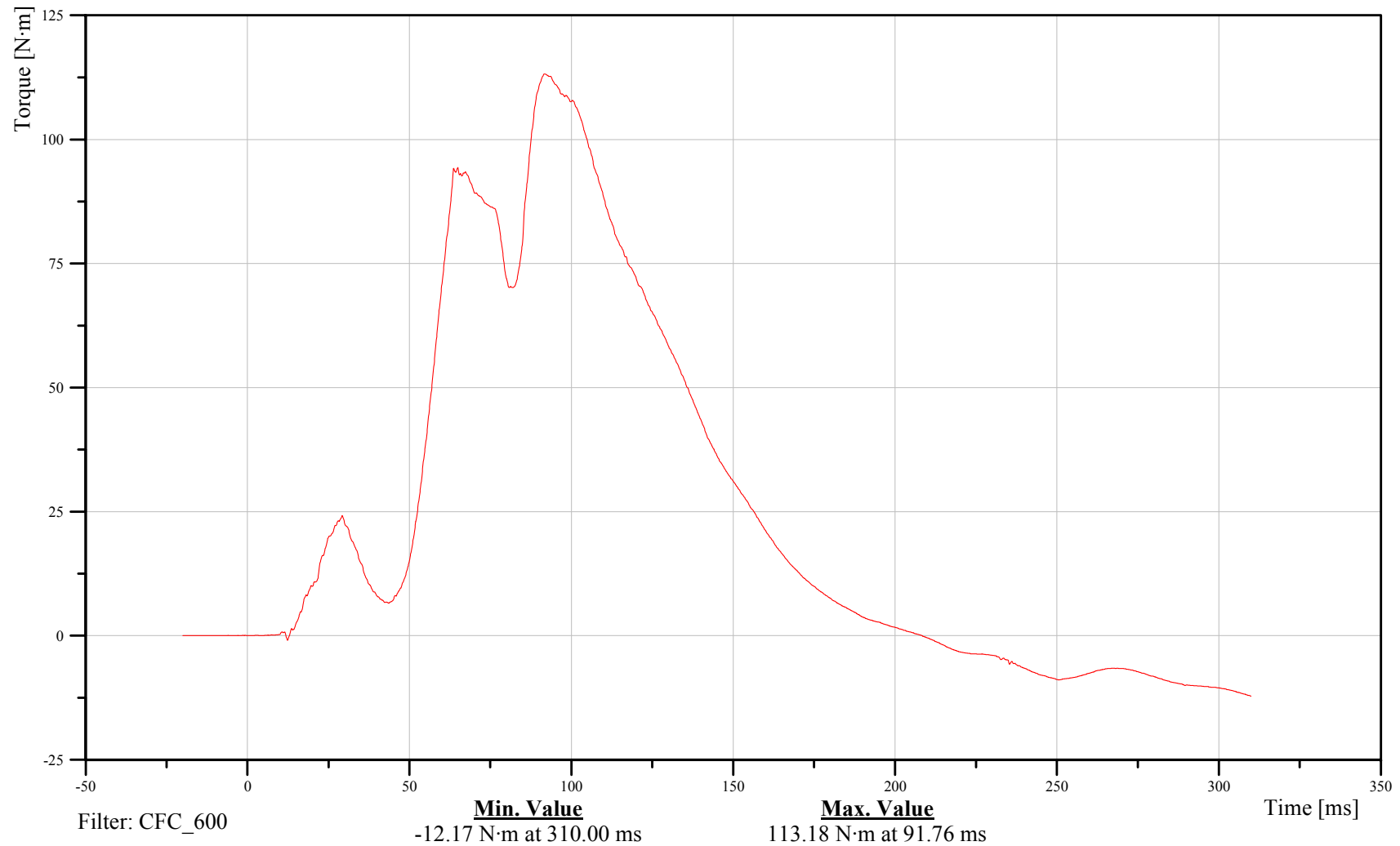
Neck Lower Moment X

Customer: VRTC

11NECKLO00E2MOXB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

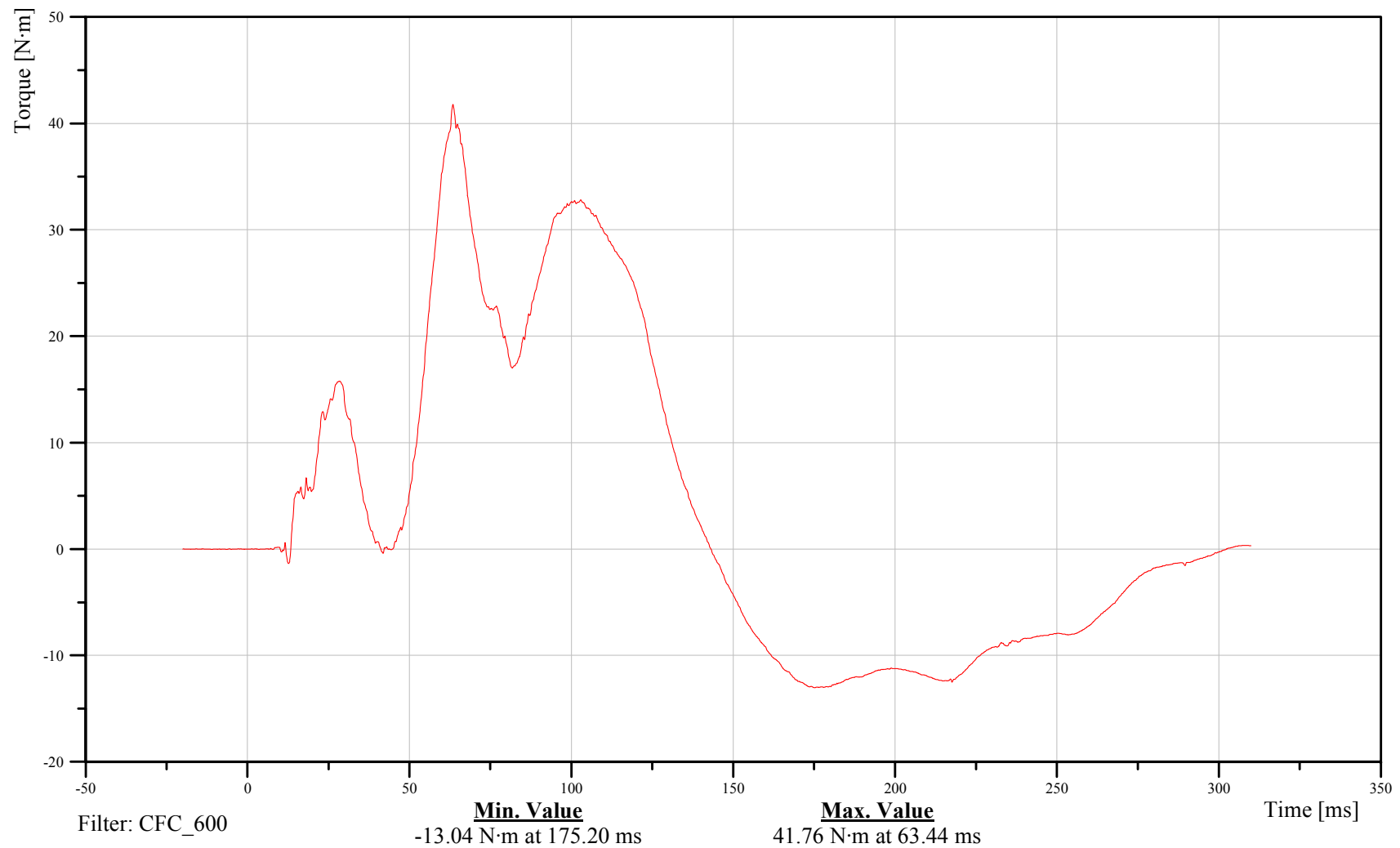
Neck Lower Moment Y

Customer: VRTC

11NECKLO00E2MOYB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

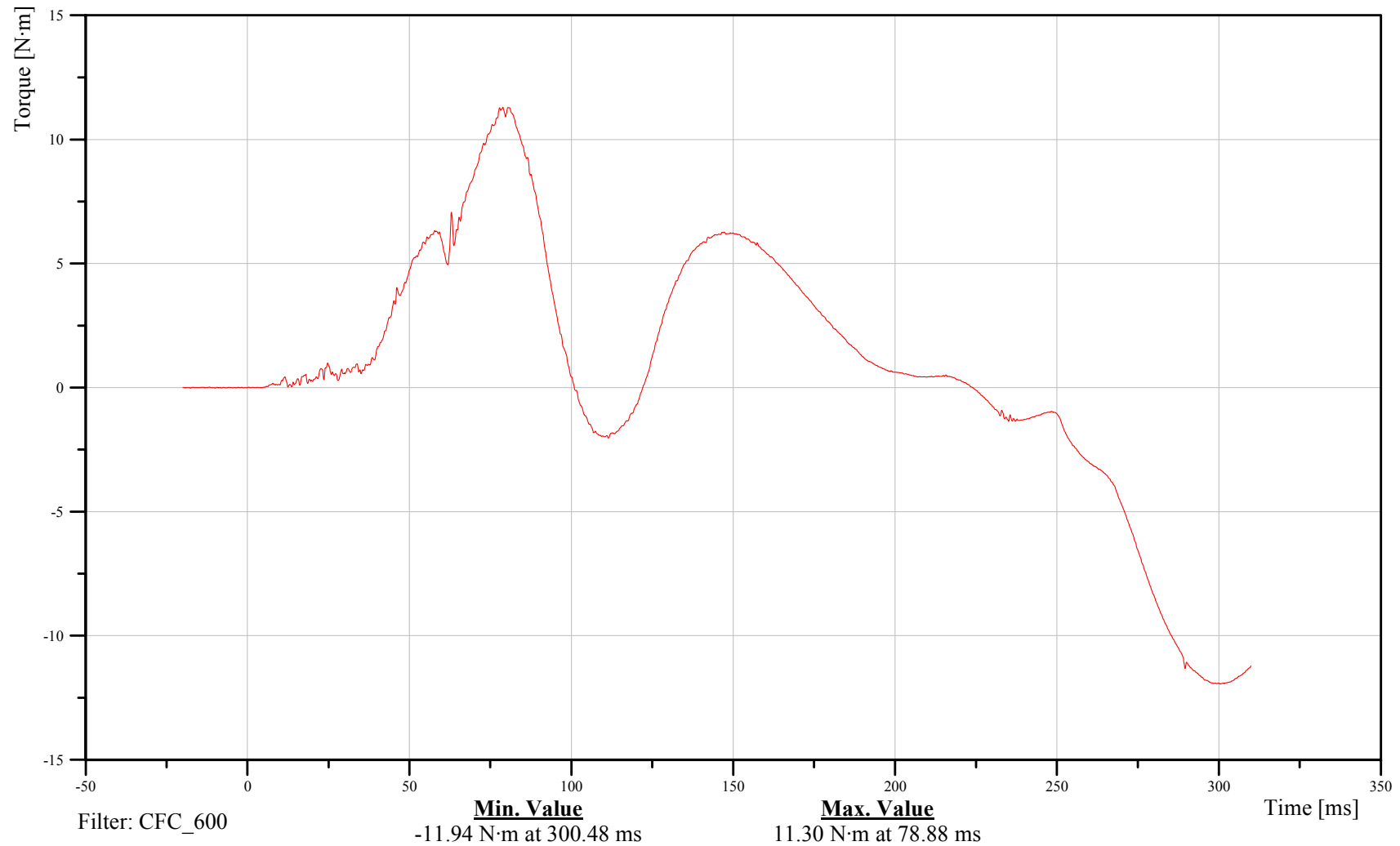
Neck Lower Moment Z

Customer: VRTC

11NECKLO00E2MOZB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

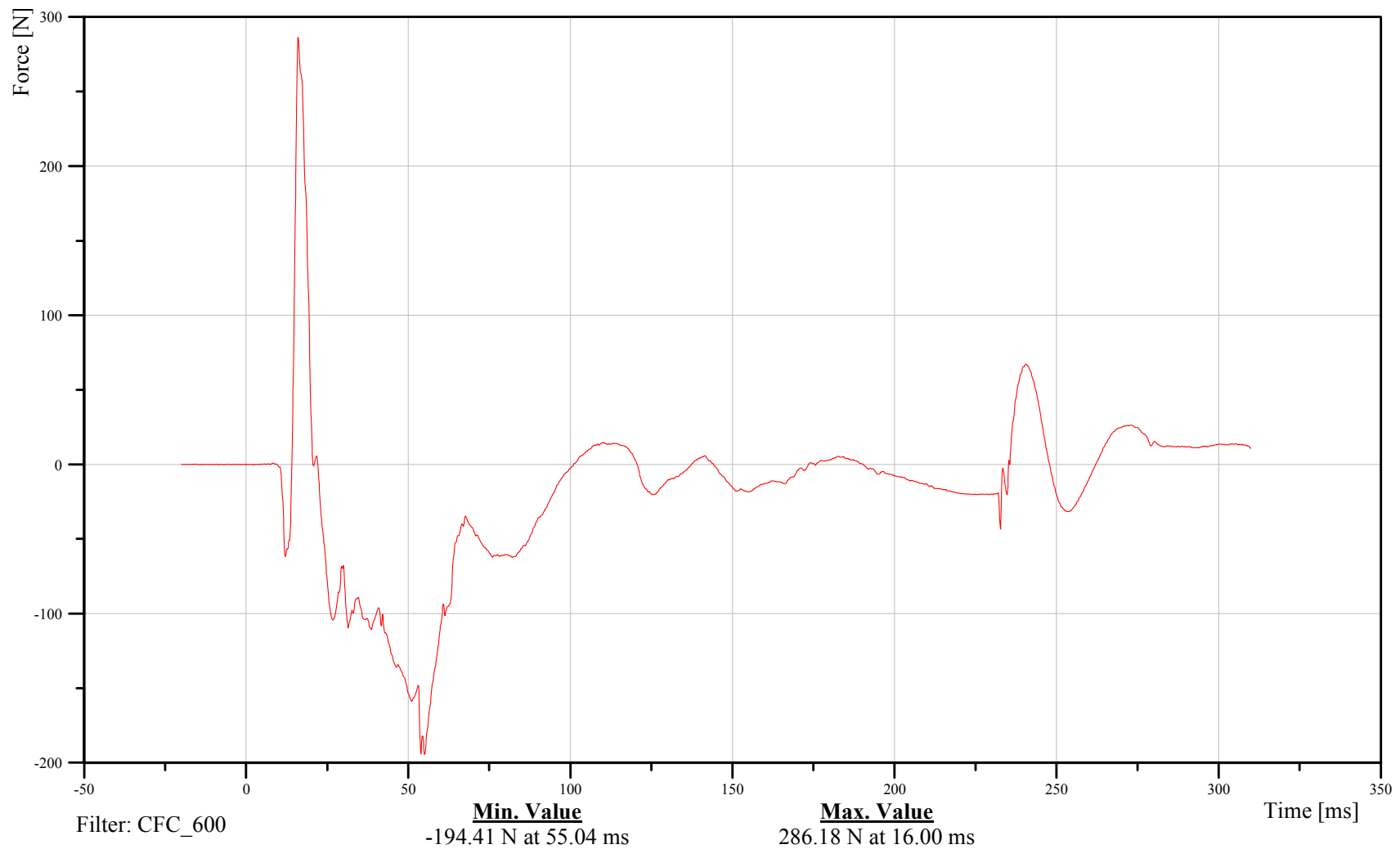
Shoulder Left Force X

Customer: VRTC

11SHLDLE00E2FOXB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

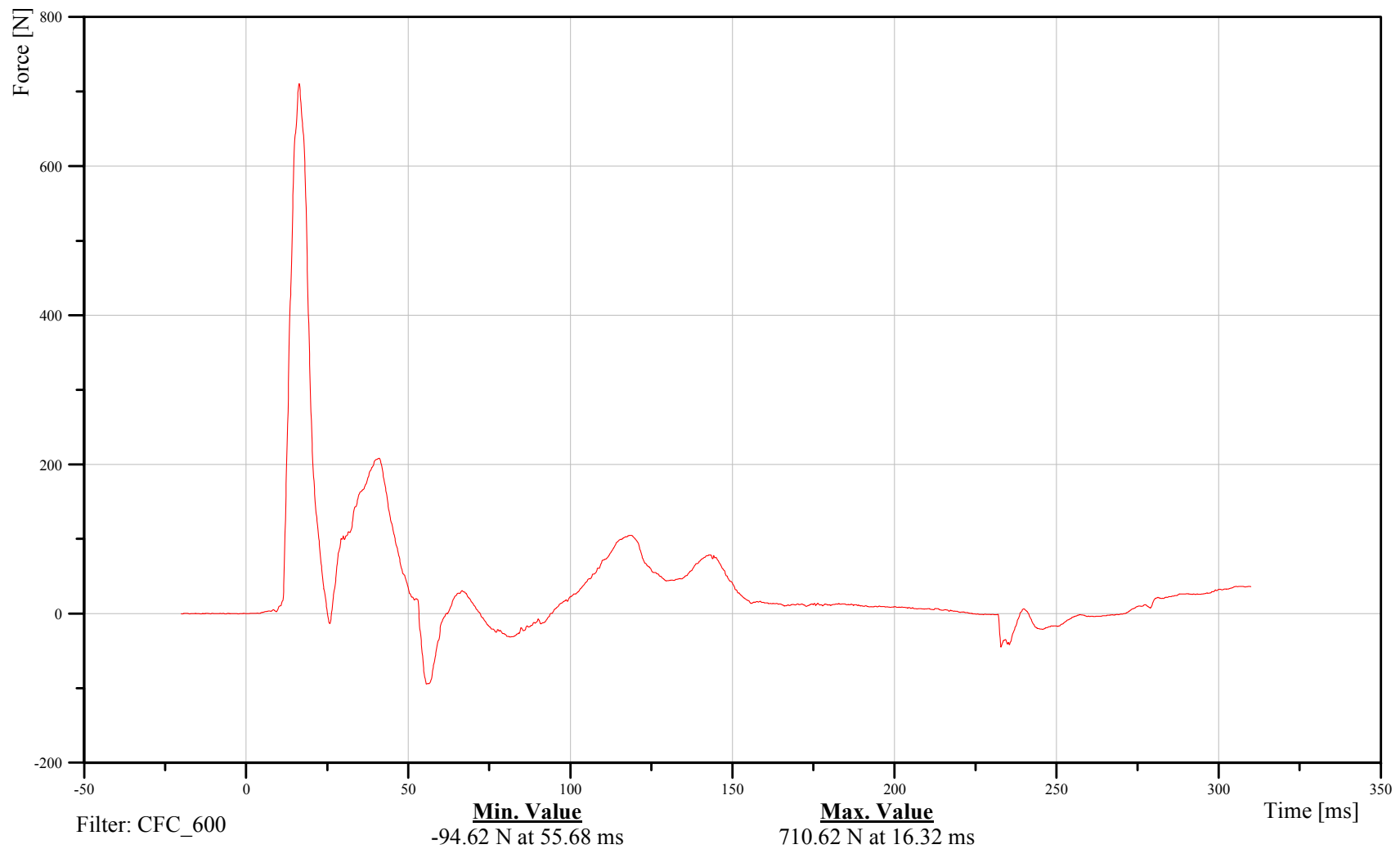
Shoulder Left Force Y

Customer: VRTC

11SHLDLE00E2FOYB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

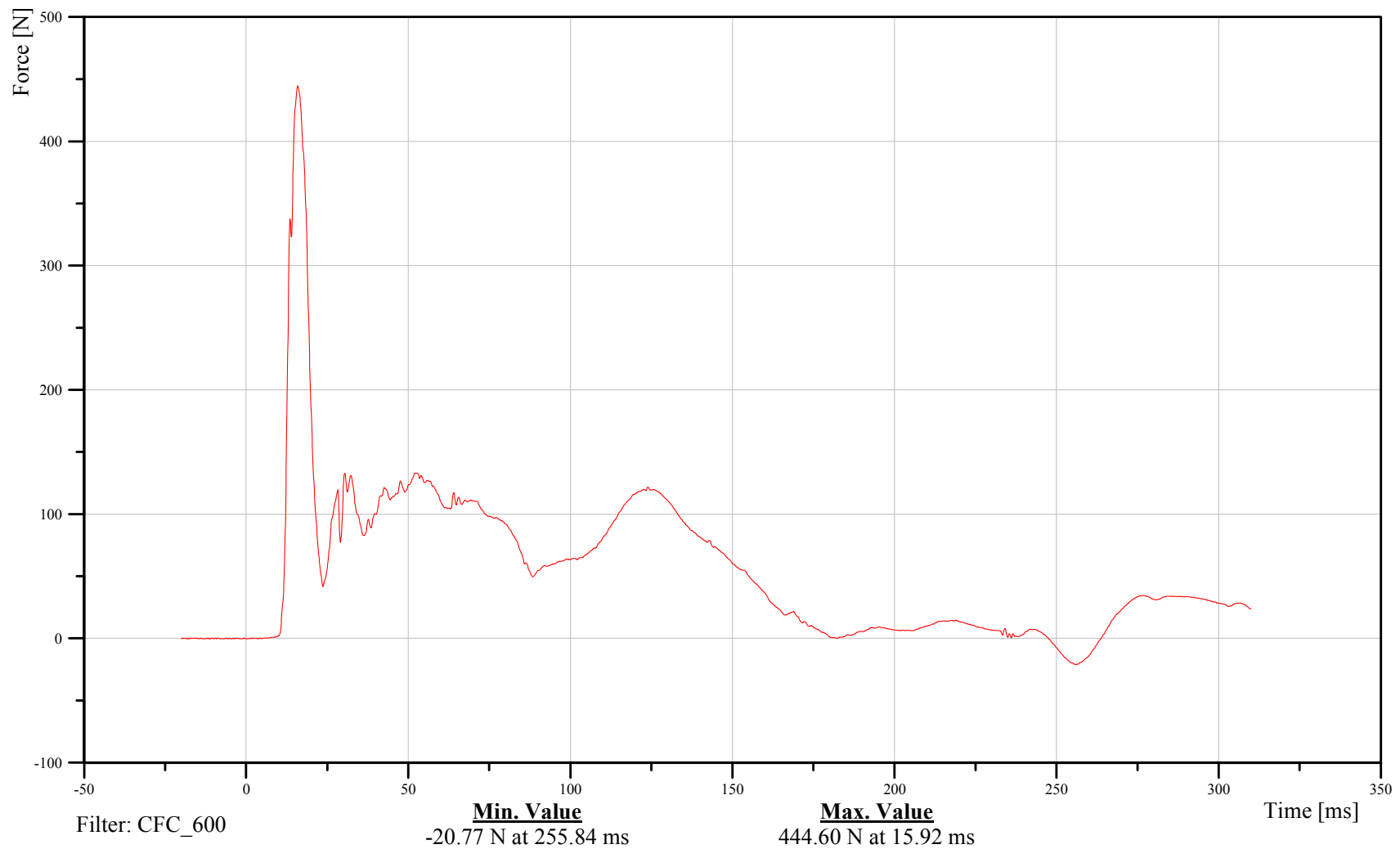
Shoulder Left Force Z

Customer: VRTC

11SHLDLE00E2FOZB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

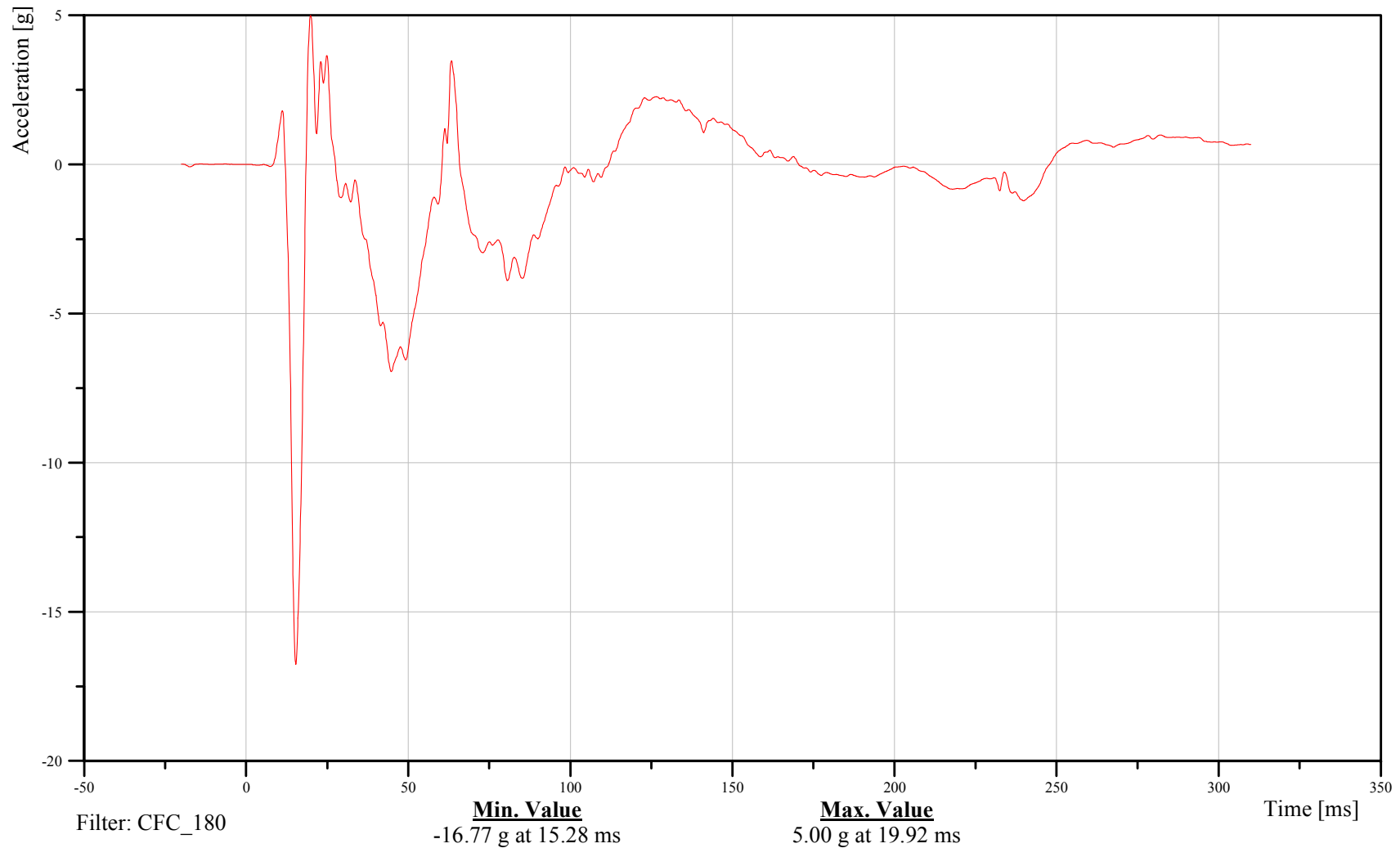
Upper Spine X

Customer: VRTC

11SPIN0100E2ACXC

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

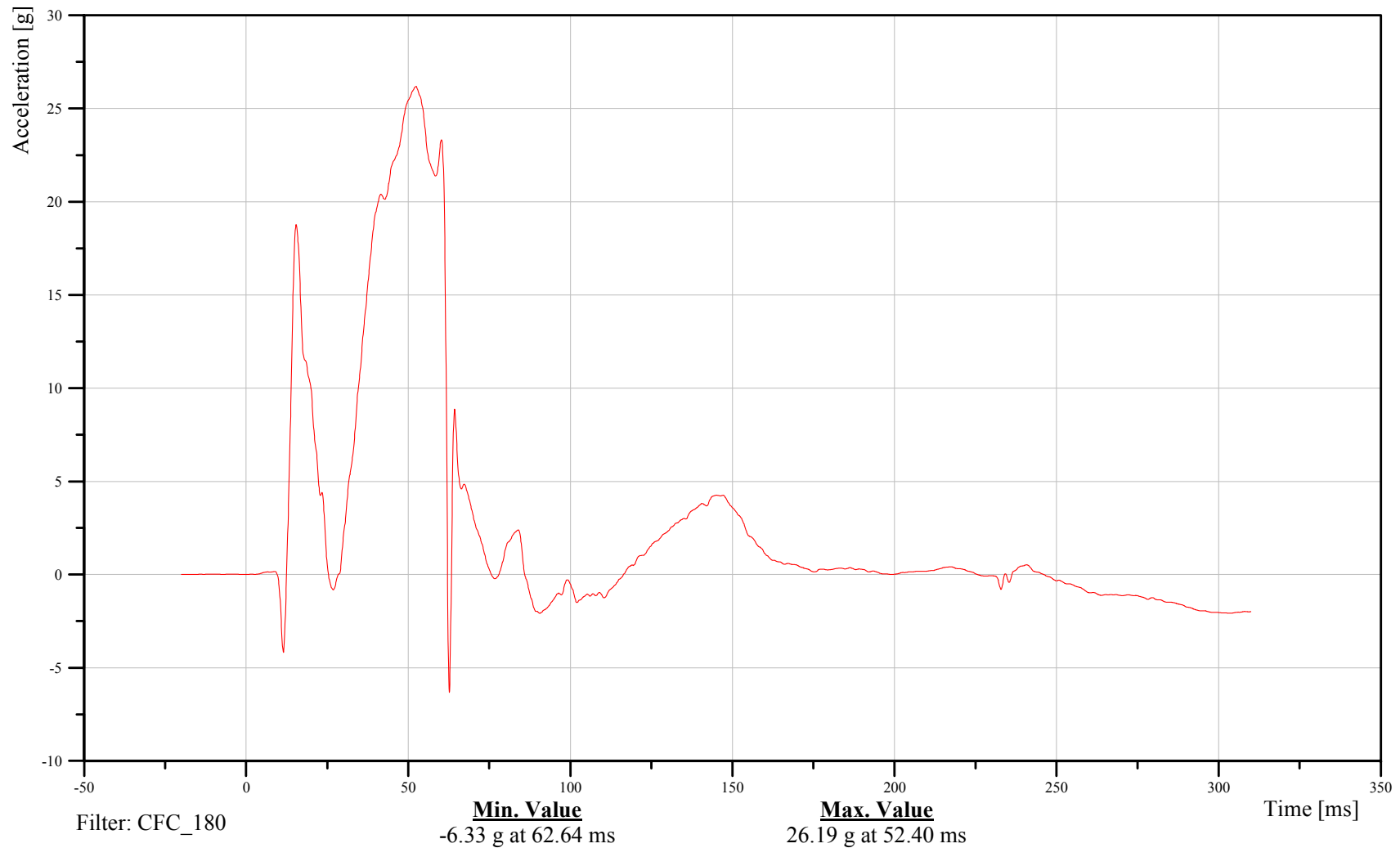
Upper Spine Y

Customer: VRTC

11SPIN0100E2ACYC

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

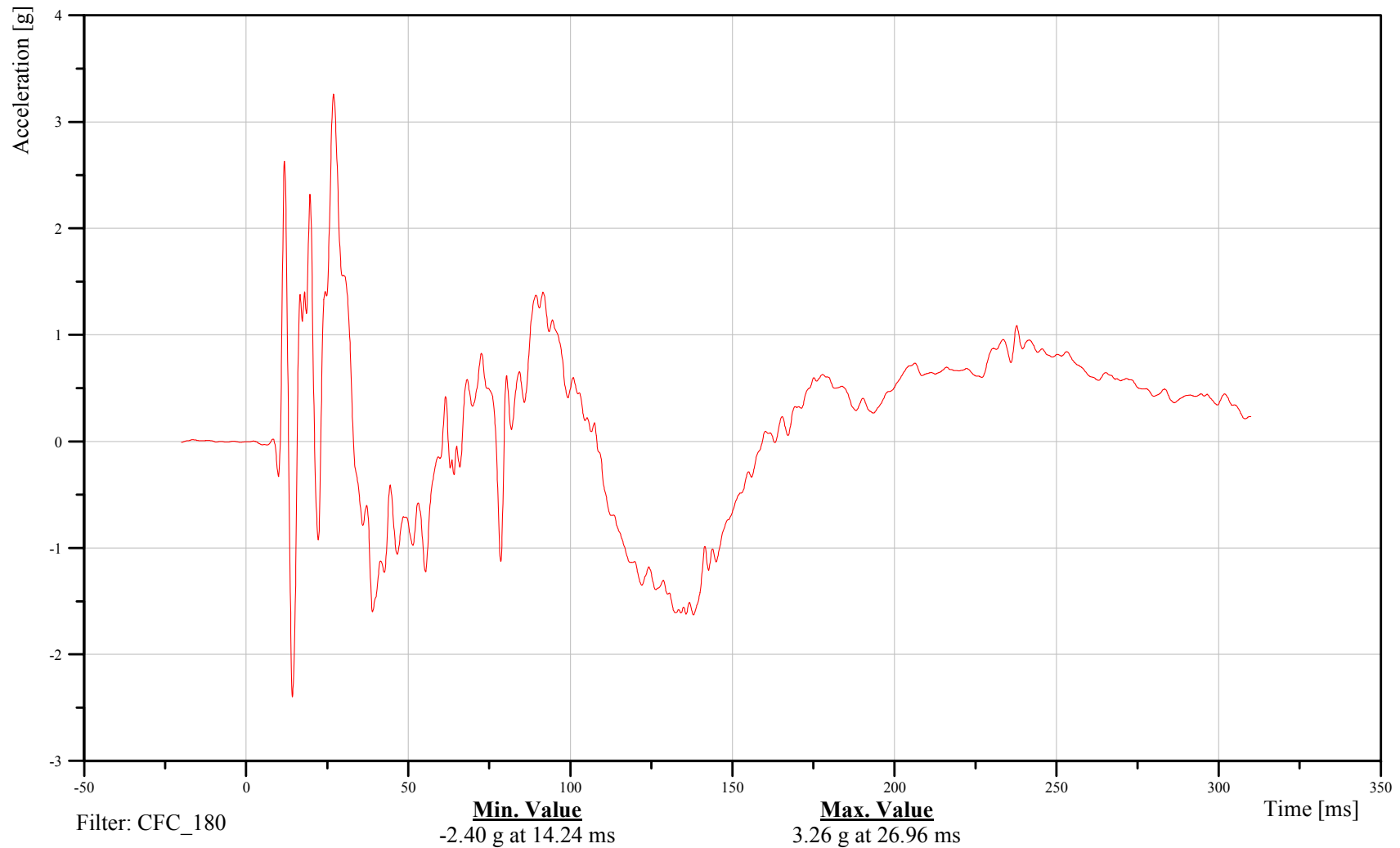
Upper Spine Z

Customer: VRTC

11SPIN0100E2ACZC

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

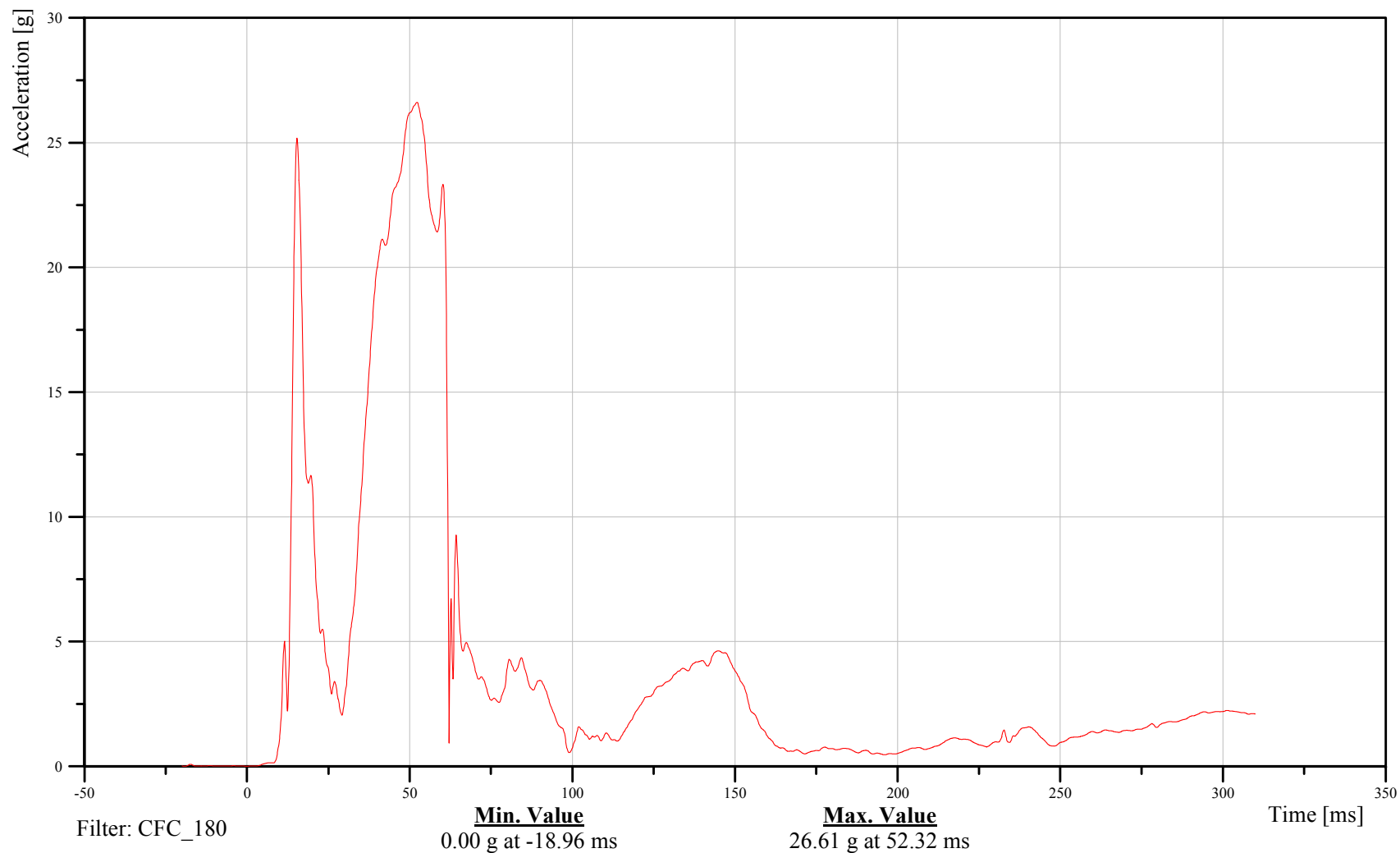
Upper Spine Resultant

Customer: VRTC

11SPIN0100E2ACRC

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

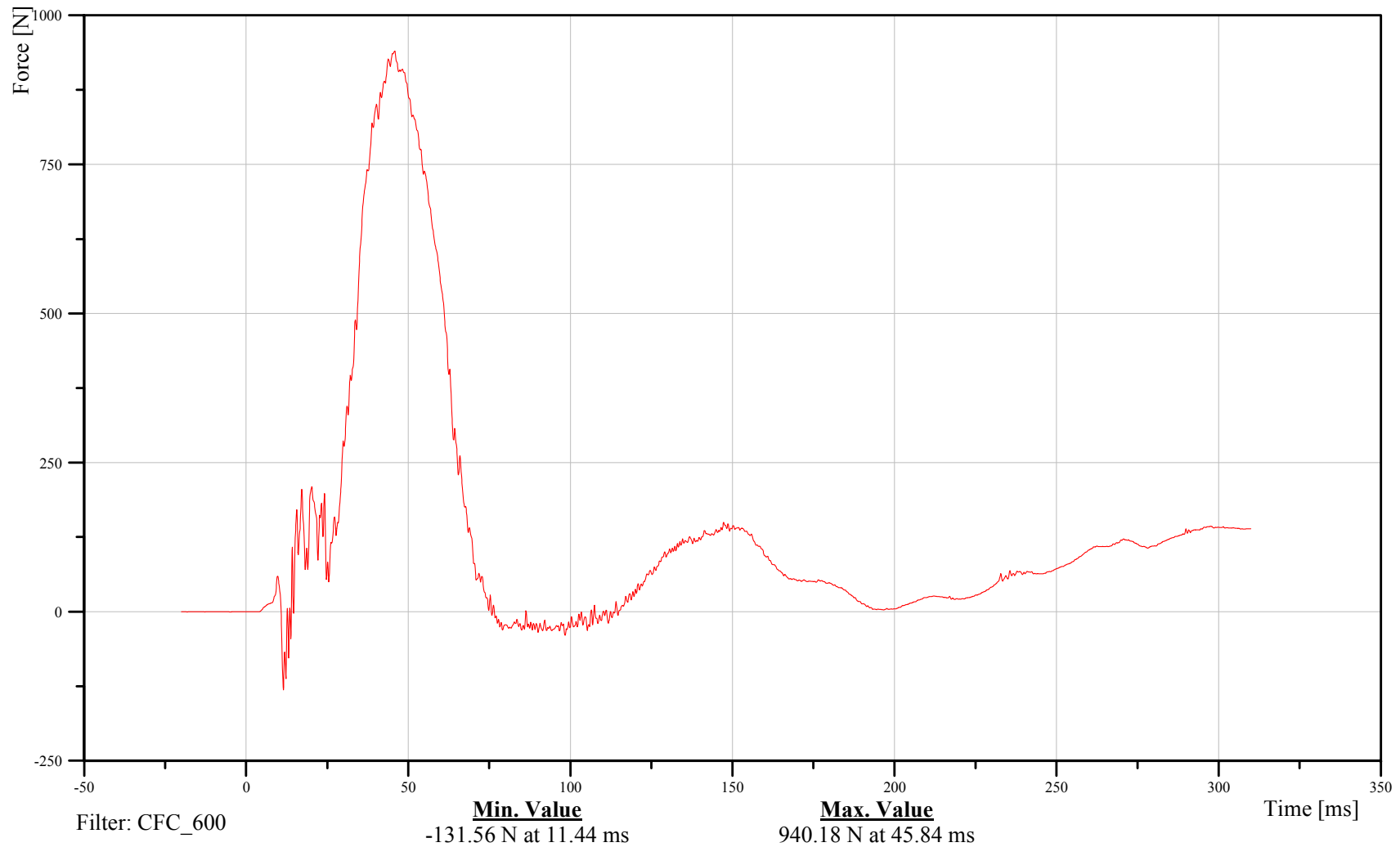
Torso Back Plate Force X

Customer: VRTC

11BAPL0000E2FOXB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Torso Back Plate Force Y

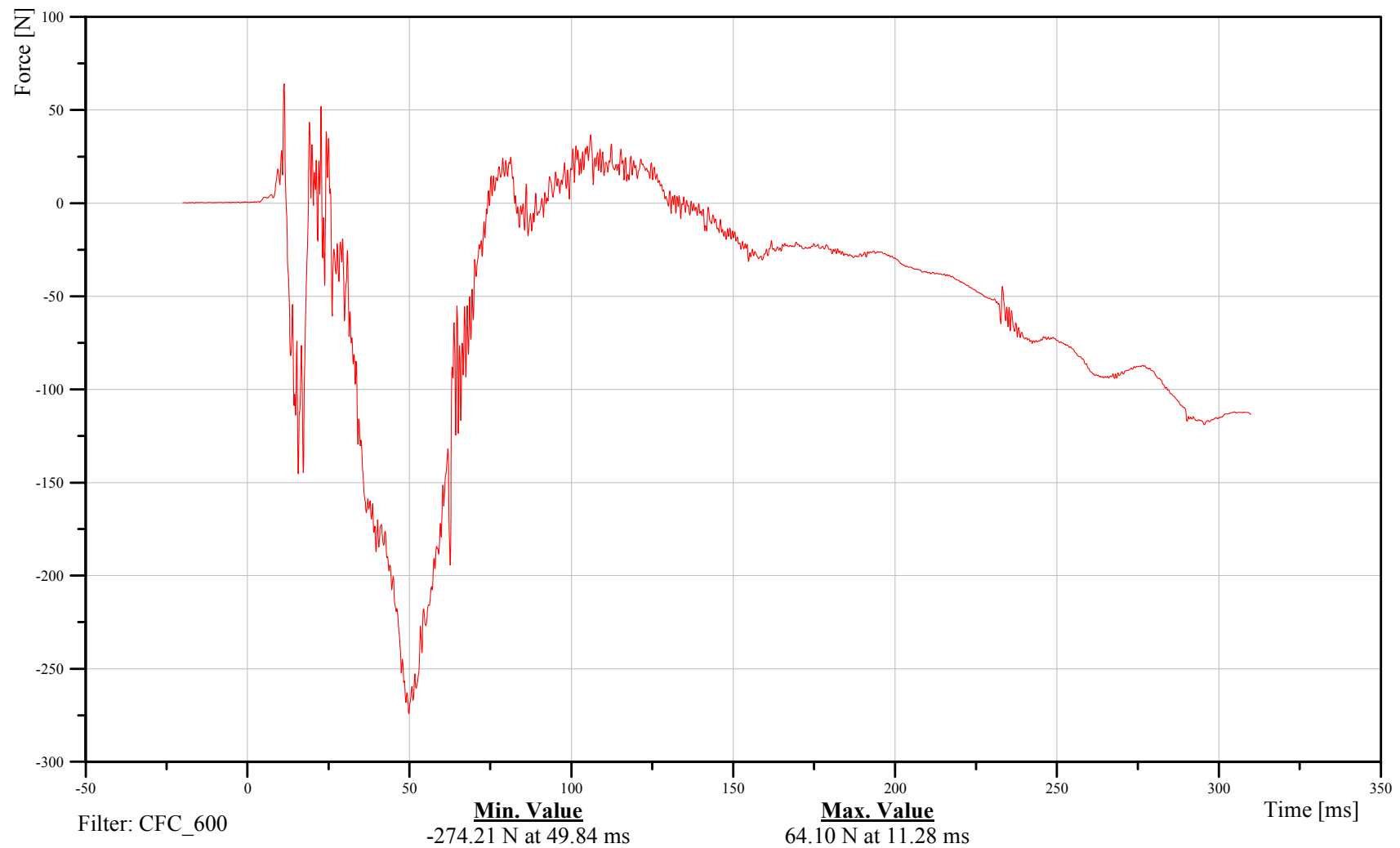
Date: 06/24/2005
Time: 12:02

Customer: VRTC

11BAPL0000E2FOYB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

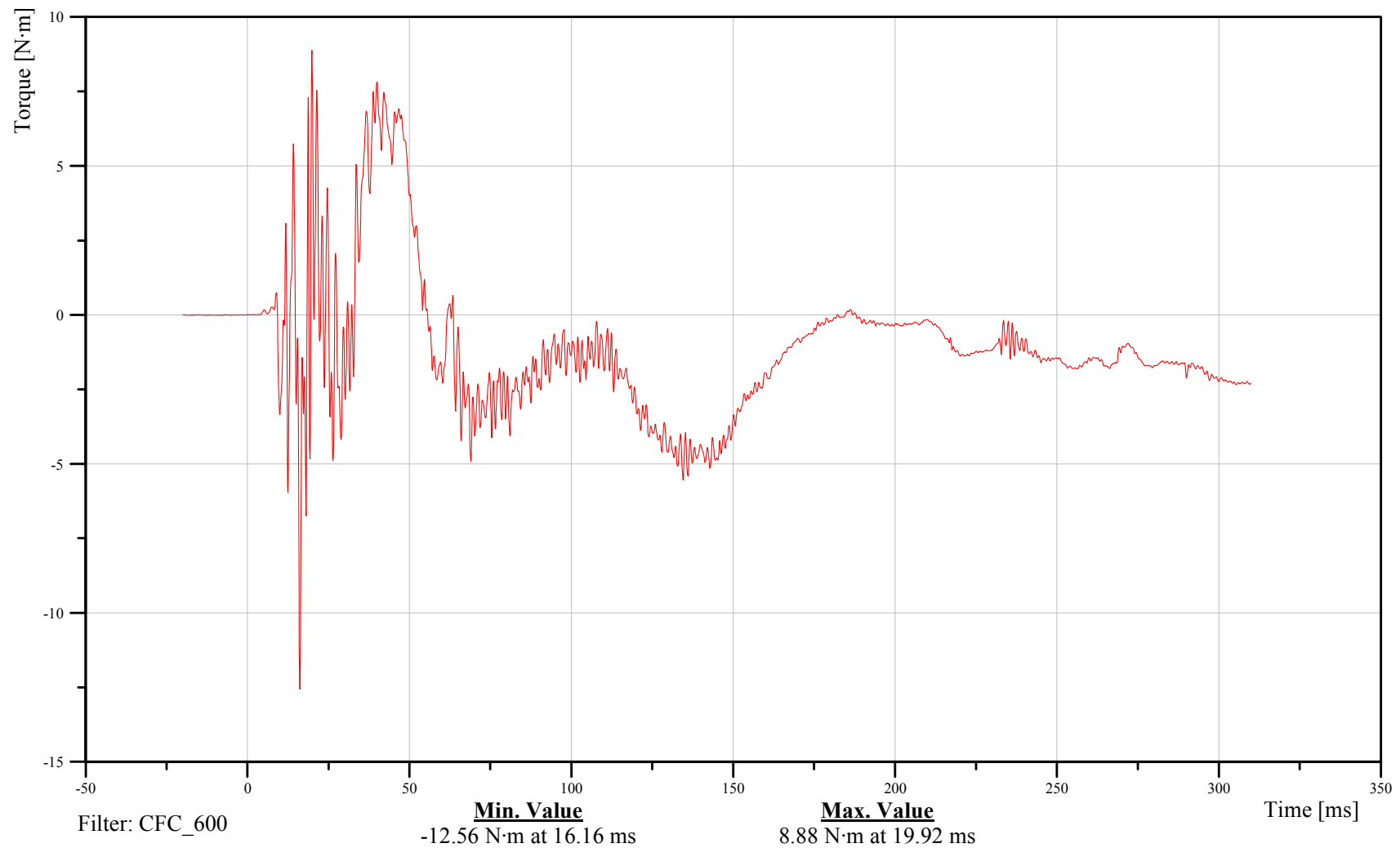
Torso Back Plate Moment Y

Customer: VRTC

11BAPL0000E2MOYB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Torso Back Plate Moment Z

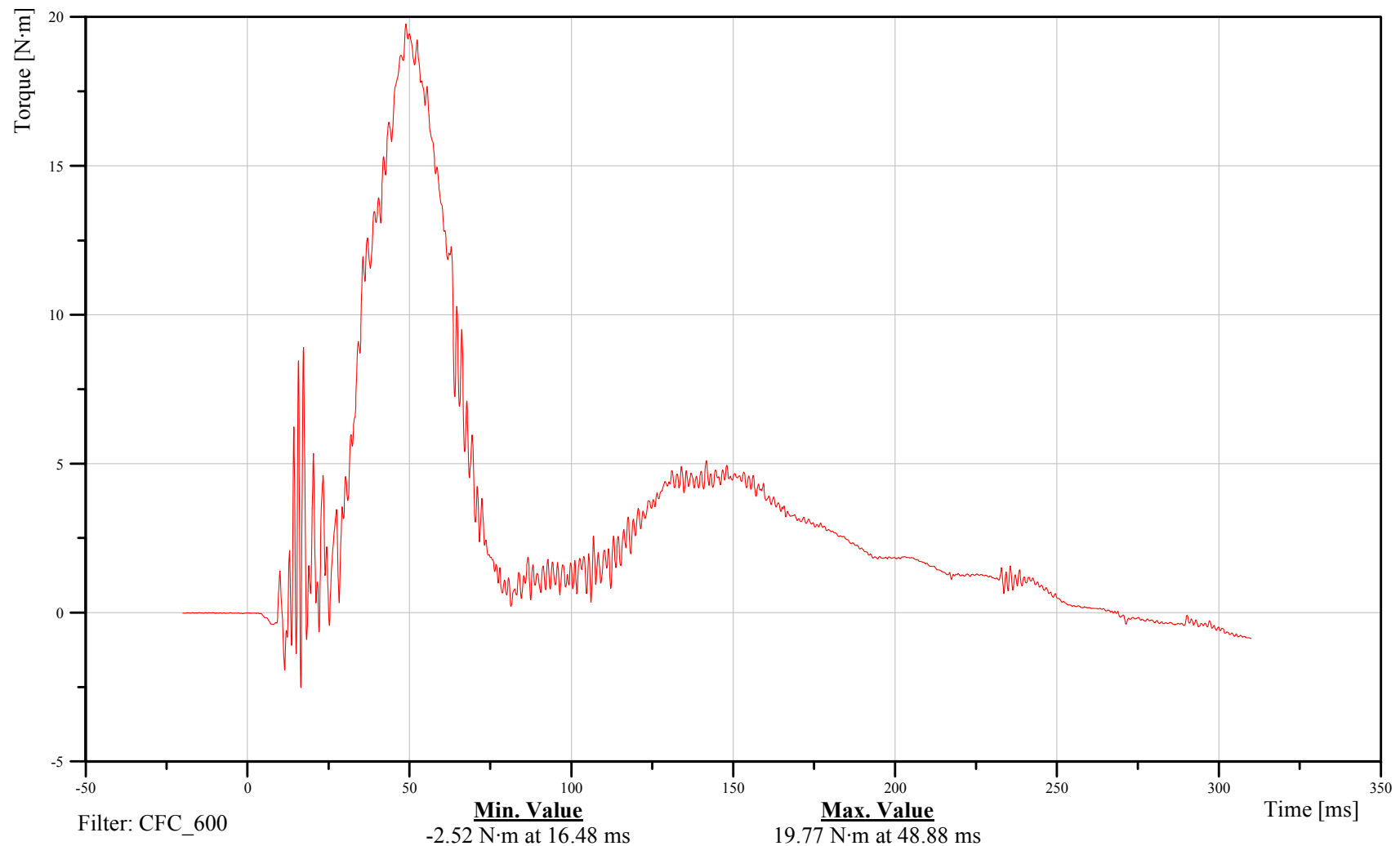
Date: 06/24/2005
Time: 12:02

Customer: VRTC

11BAPL0000E2MOZB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

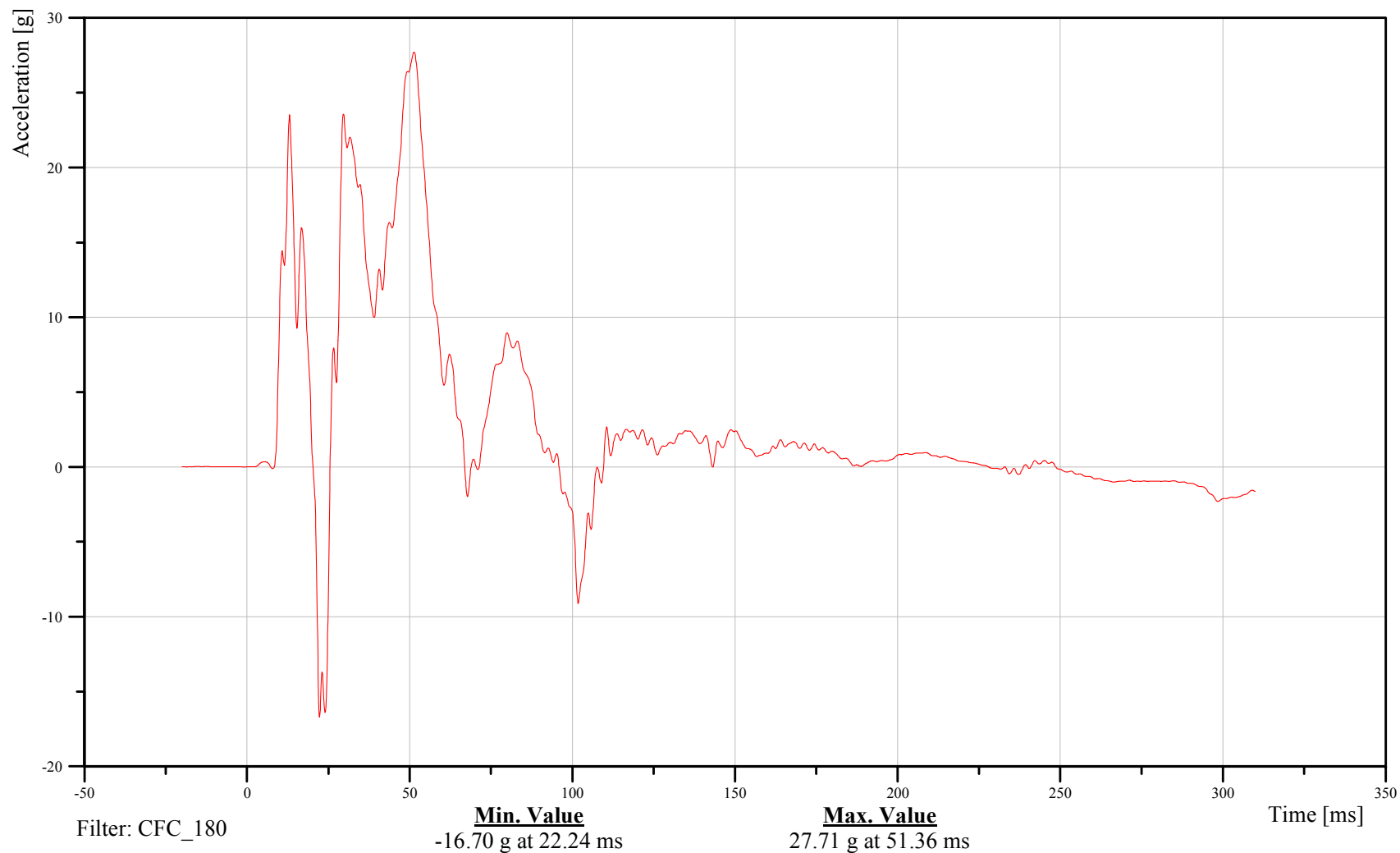
Upper Rib Accel Y

Customer: VRTC

11RIBSLU00E2ACYC

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

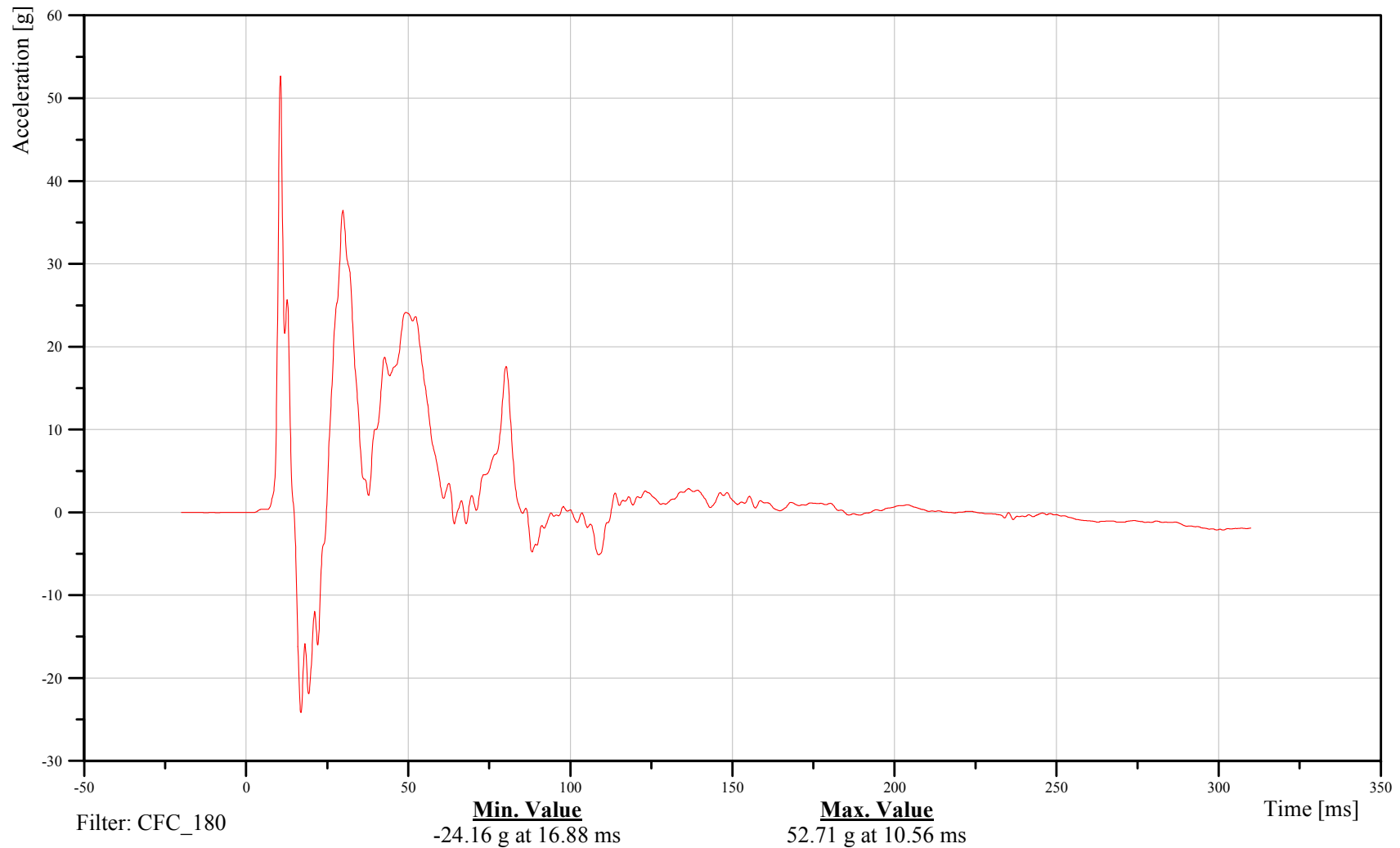
Mid Rib Accel Y

Customer: VRTC

11RIBSLM00E2ACYC

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

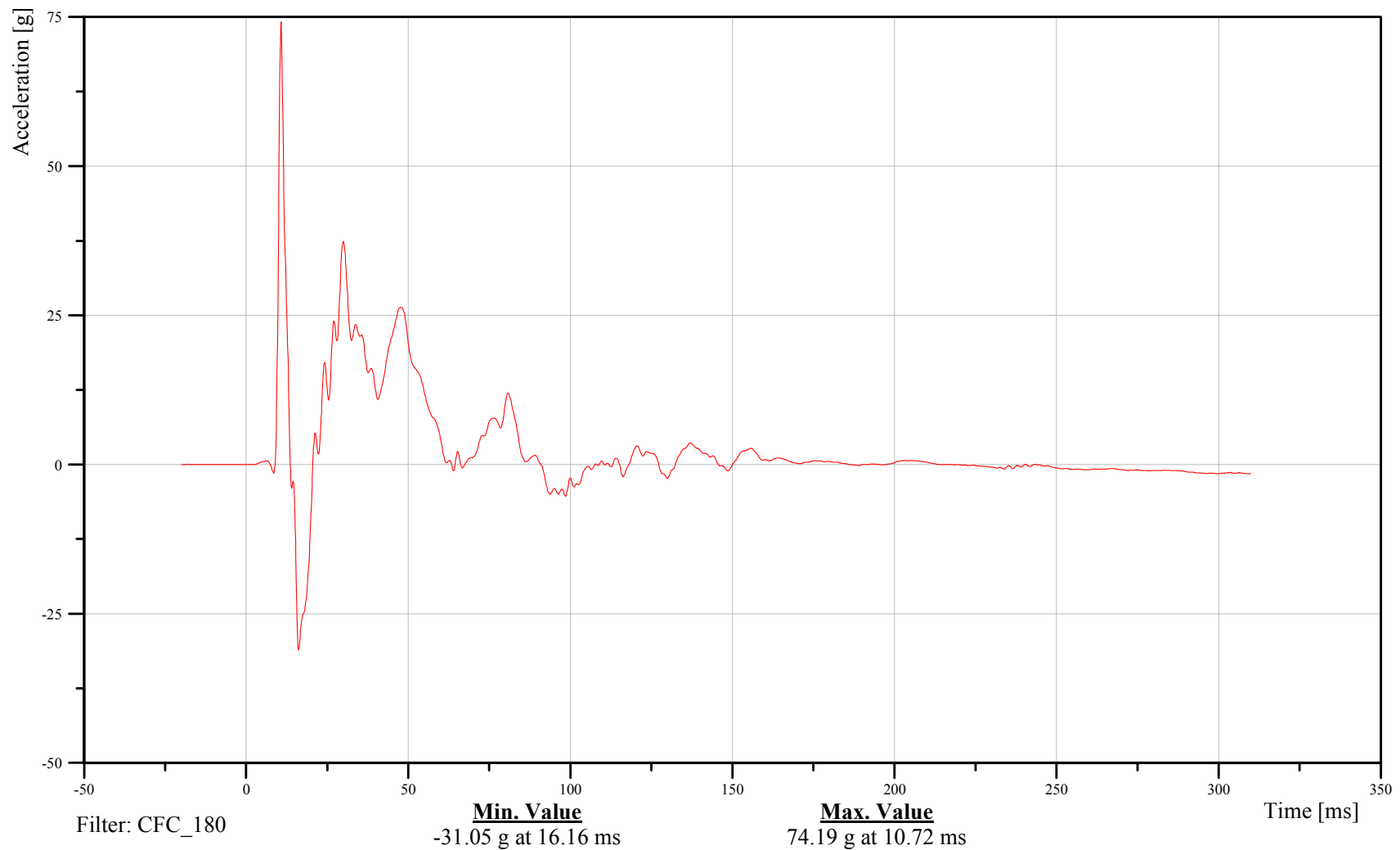
Lower Rib Accel Y

Customer: VRTC

11RIBSLL00E2ACYC

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Upper Rib Disp. Y

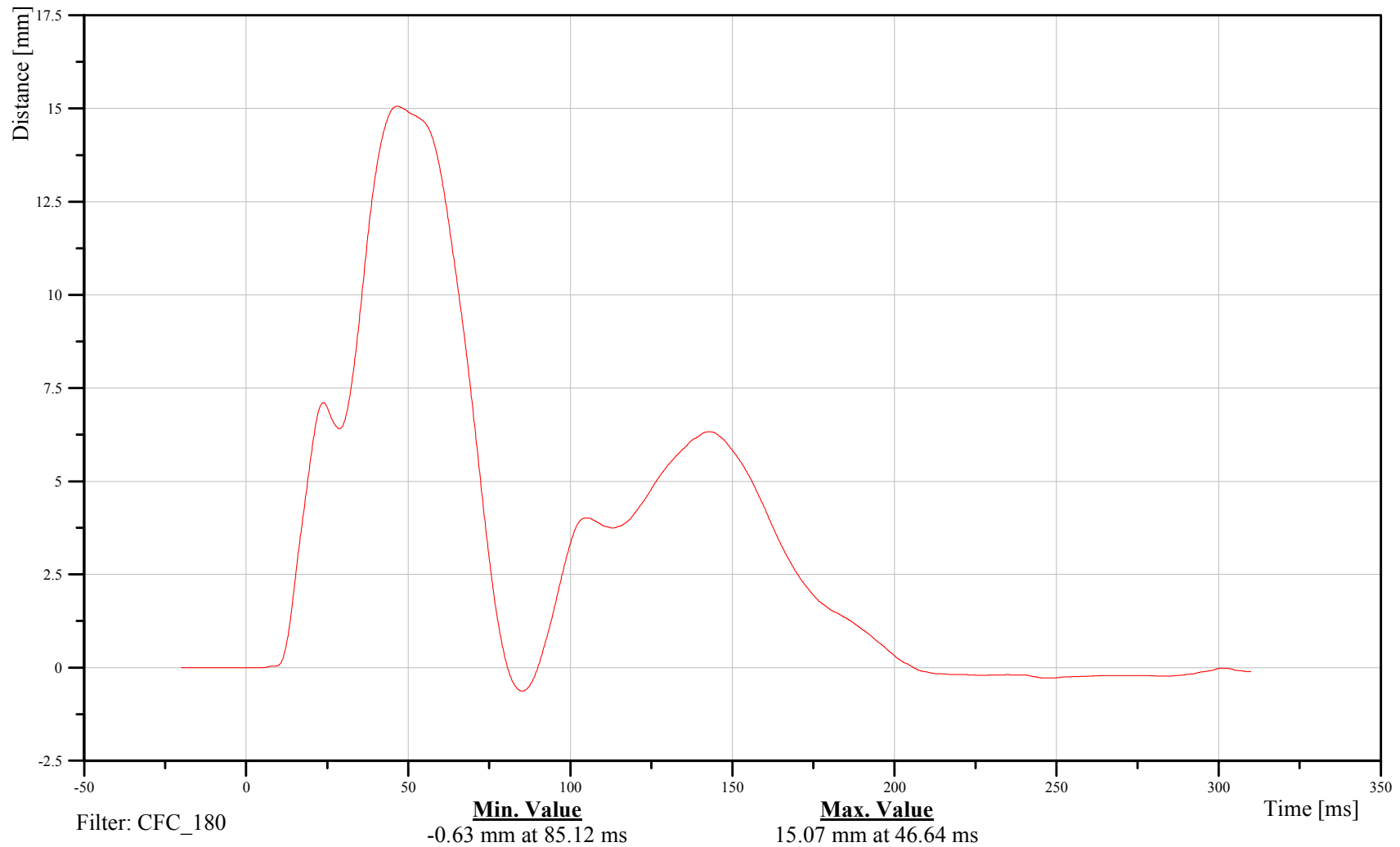
Date: 06/24/2005
Time: 12:02

Customer: VRTC

11RIBSLU00E2DSYC

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

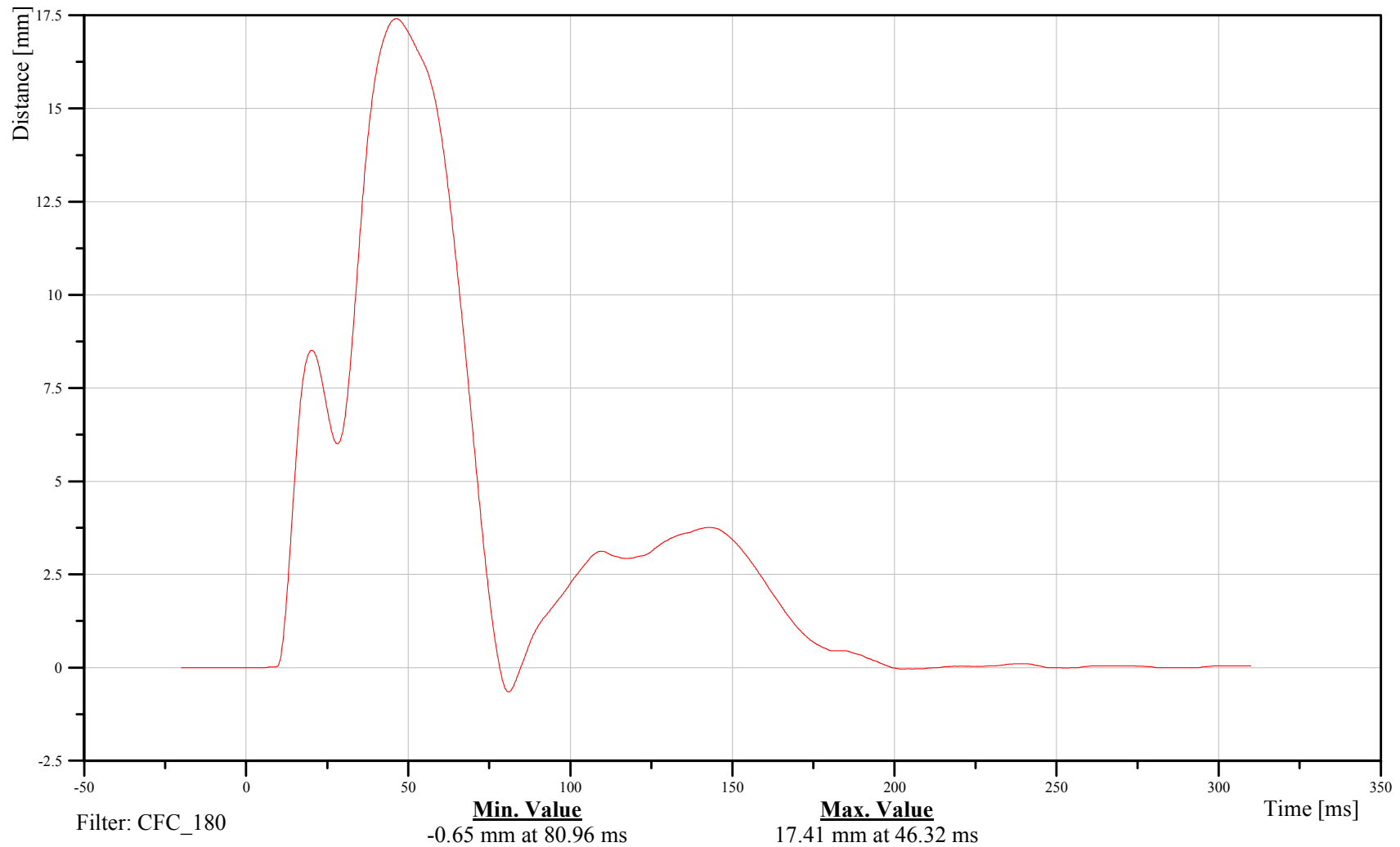
Mid Rib Disp. Y

Customer: VRTC

11RIBSLM00E2DSYC

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

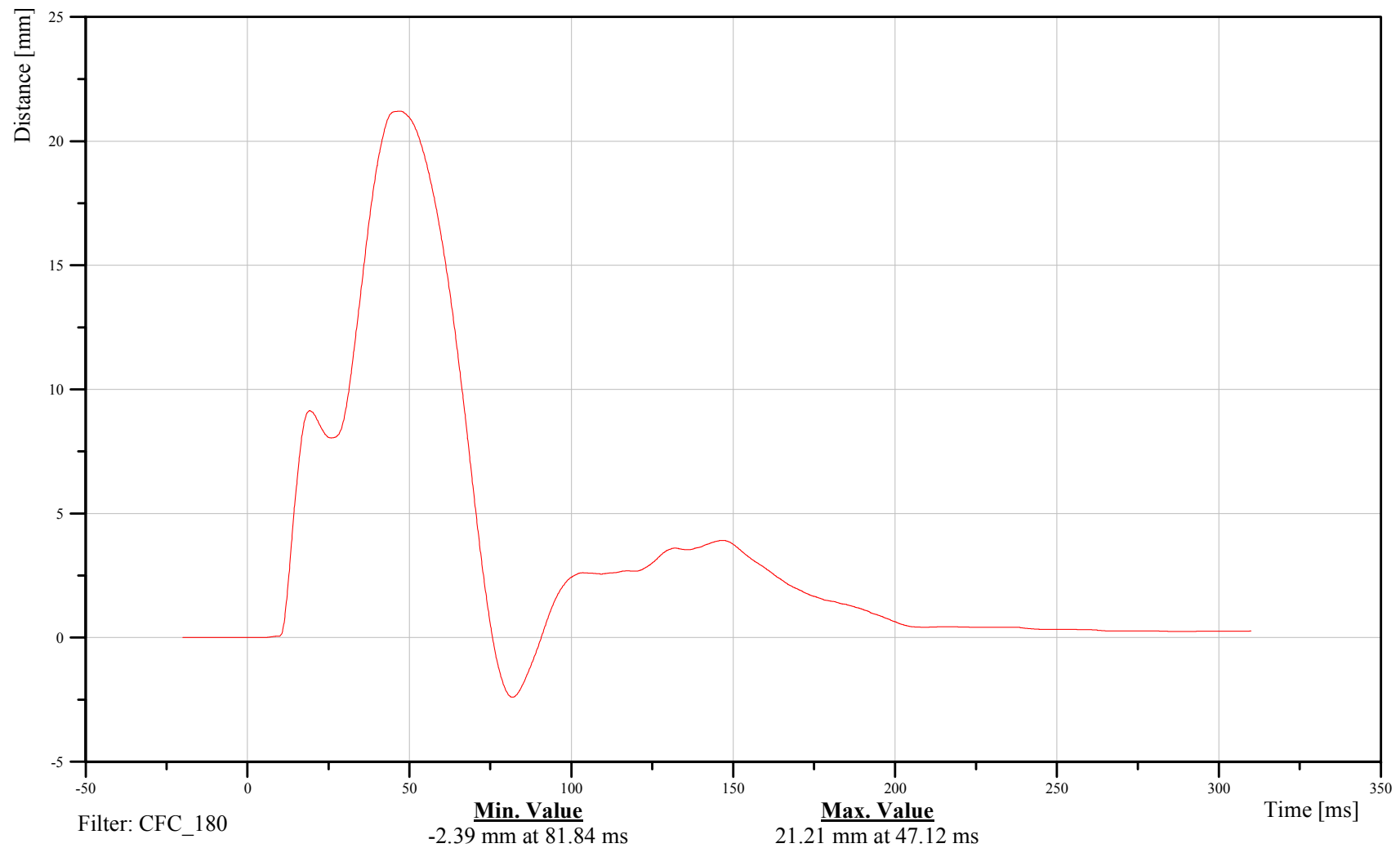
Lower Rib Disp. Y

Customer: VRTC

11RIBSLL00E2DSYC

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

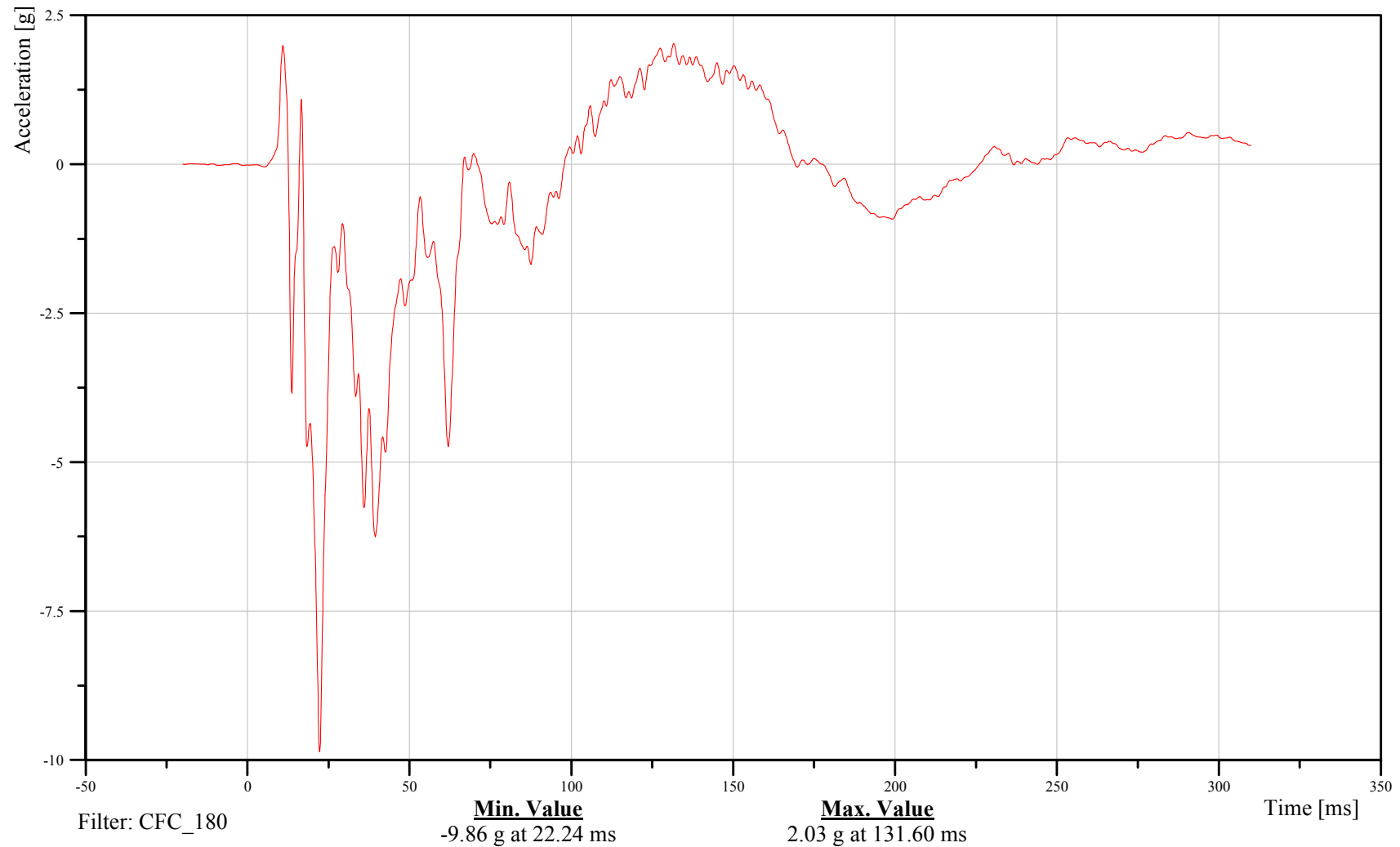
Lower Spine X

Customer: VRTC

11SPIN1200E2ACXC

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

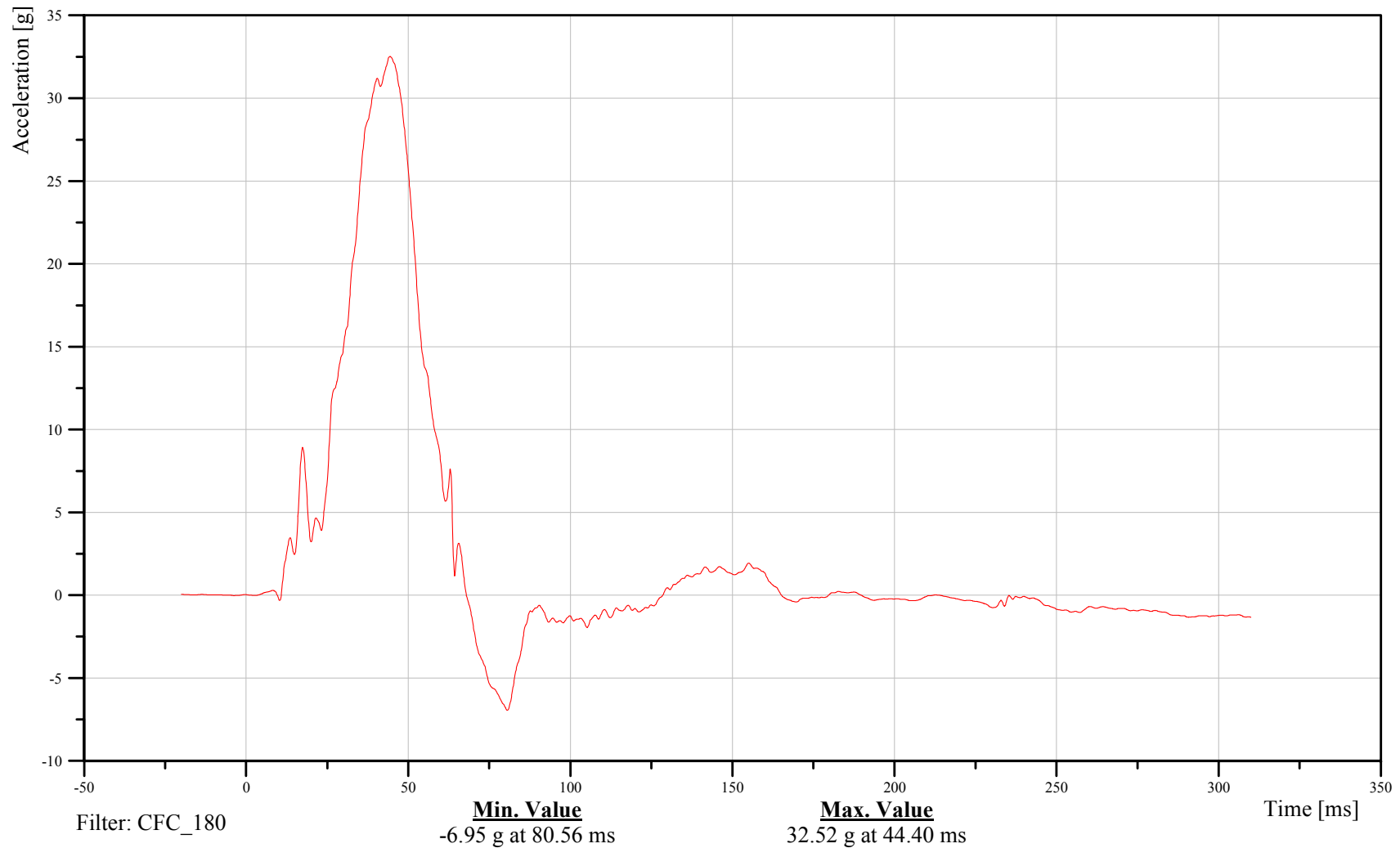
Lower Spine Y

Customer: VRTC

11SPIN1200E2ACYC

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Lower Spine Z

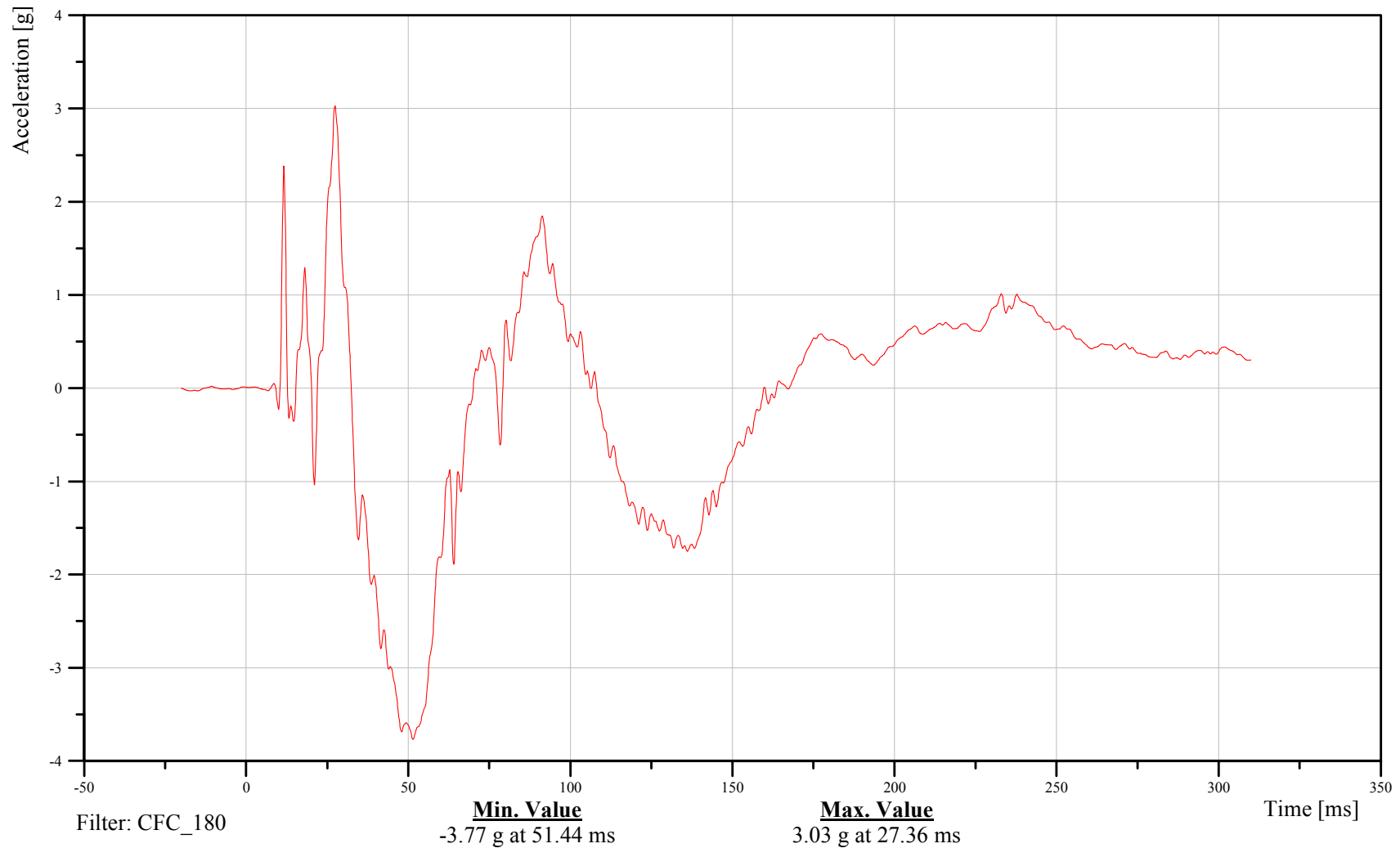
Date: 06/24/2005
Time: 12:02

Customer: VRTC

11SPIN1200E2ACZC

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

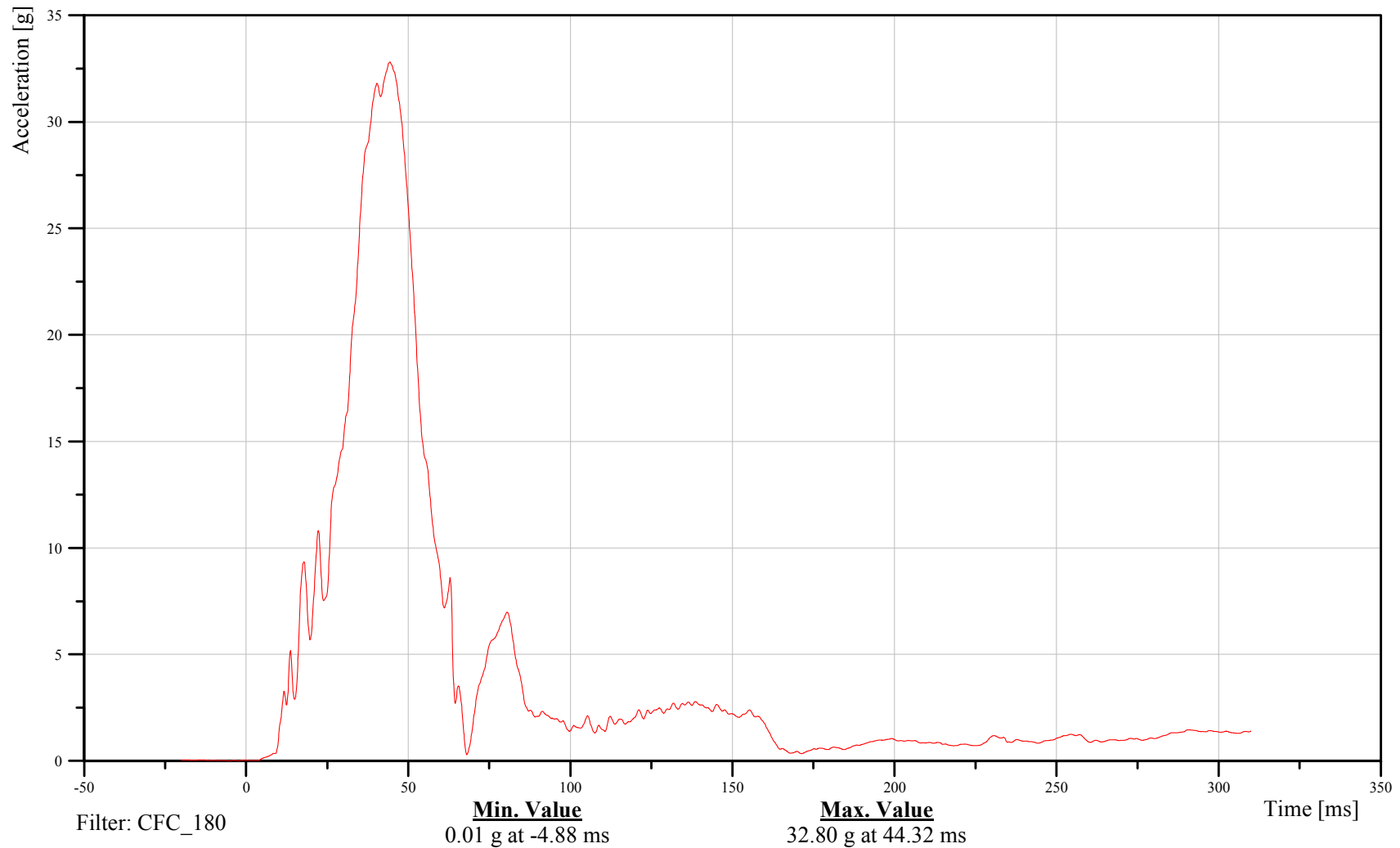
Lower Spine Resultant

Customer: VRTC

11SPIN1200E2ACRC

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

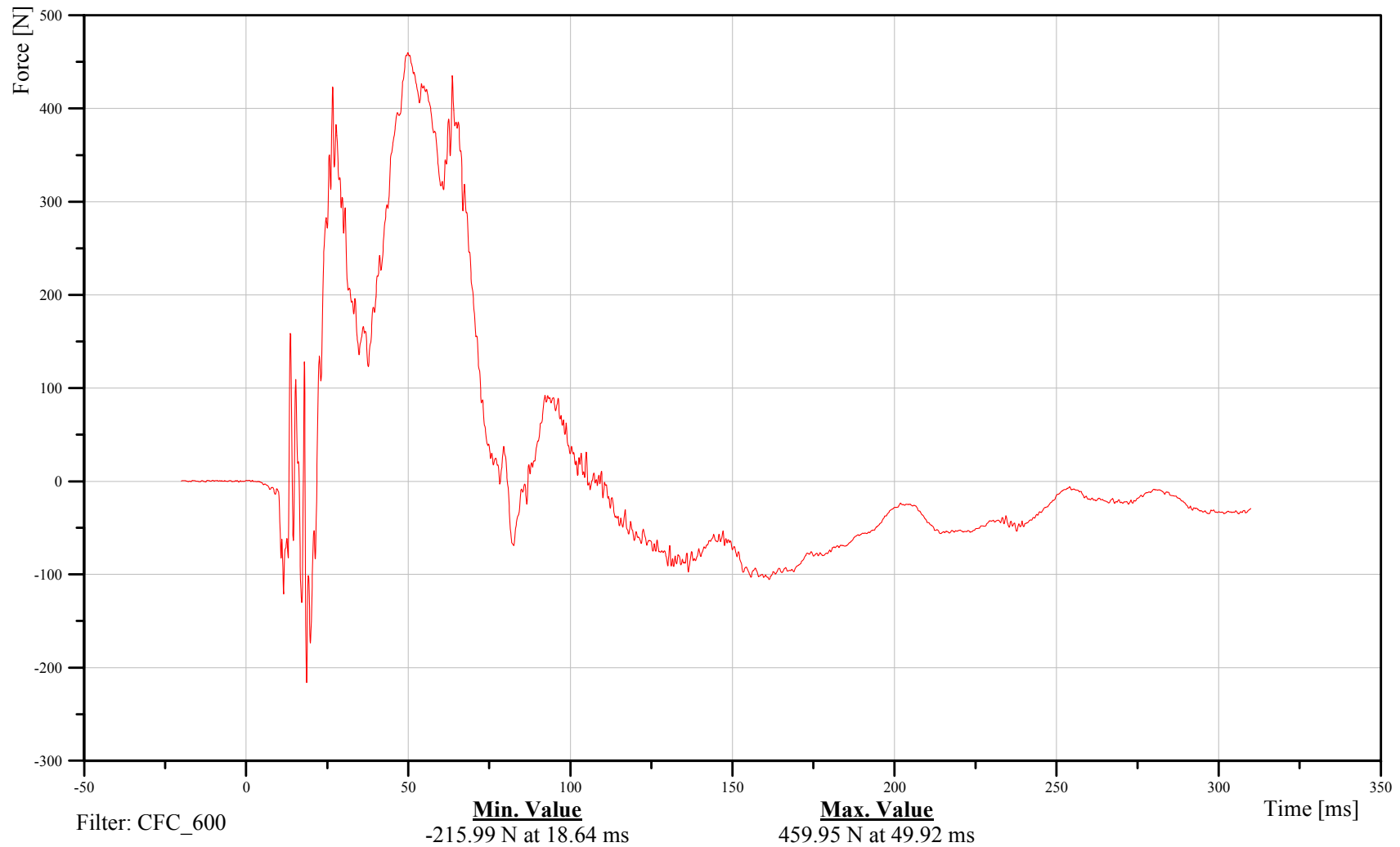
Lower Spine Force X

Customer: VRTC

11SPIN1200E2FOXB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

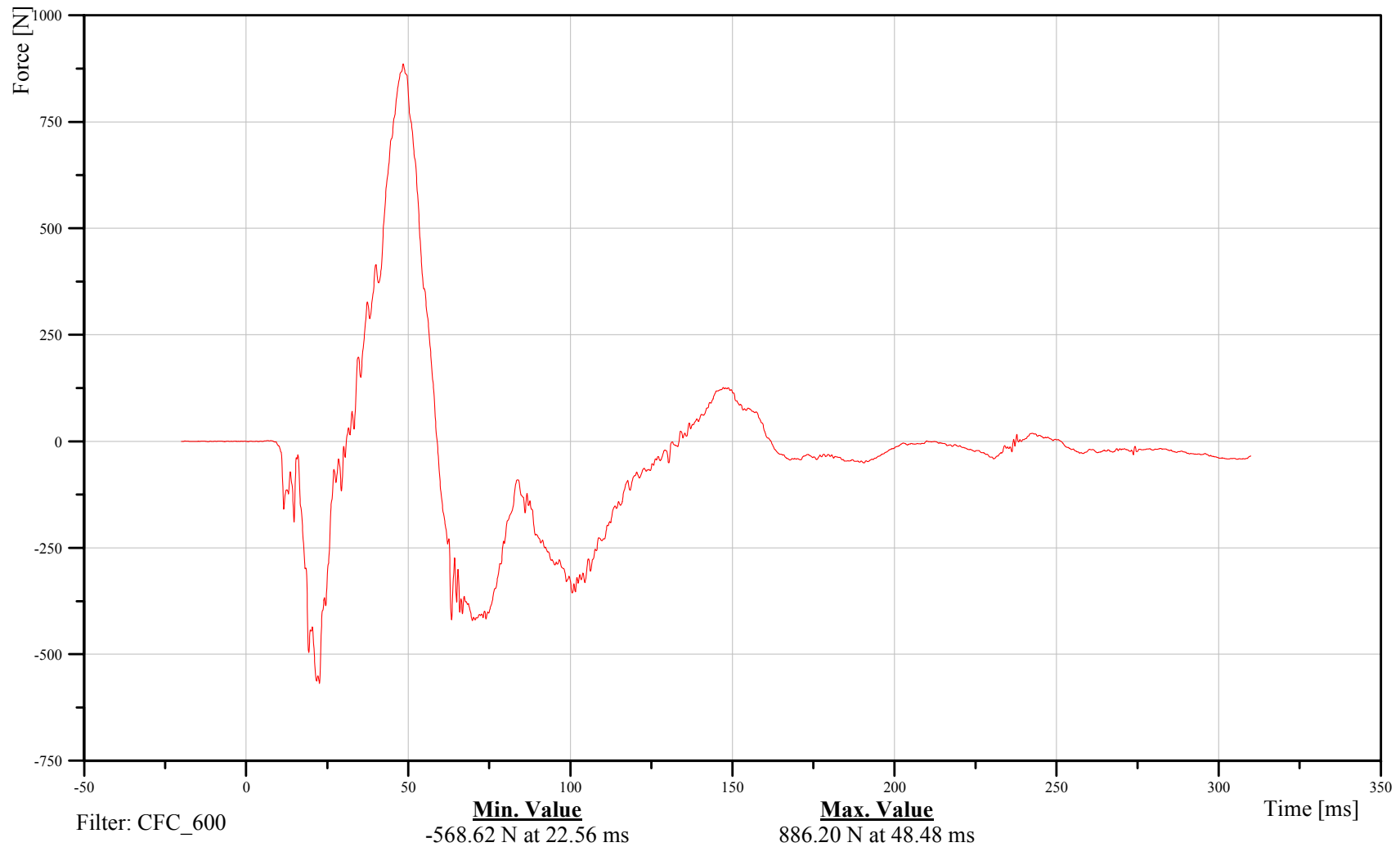
Lower Spine Force Y

Customer: VRTC

11SPIN1200E2FOYB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

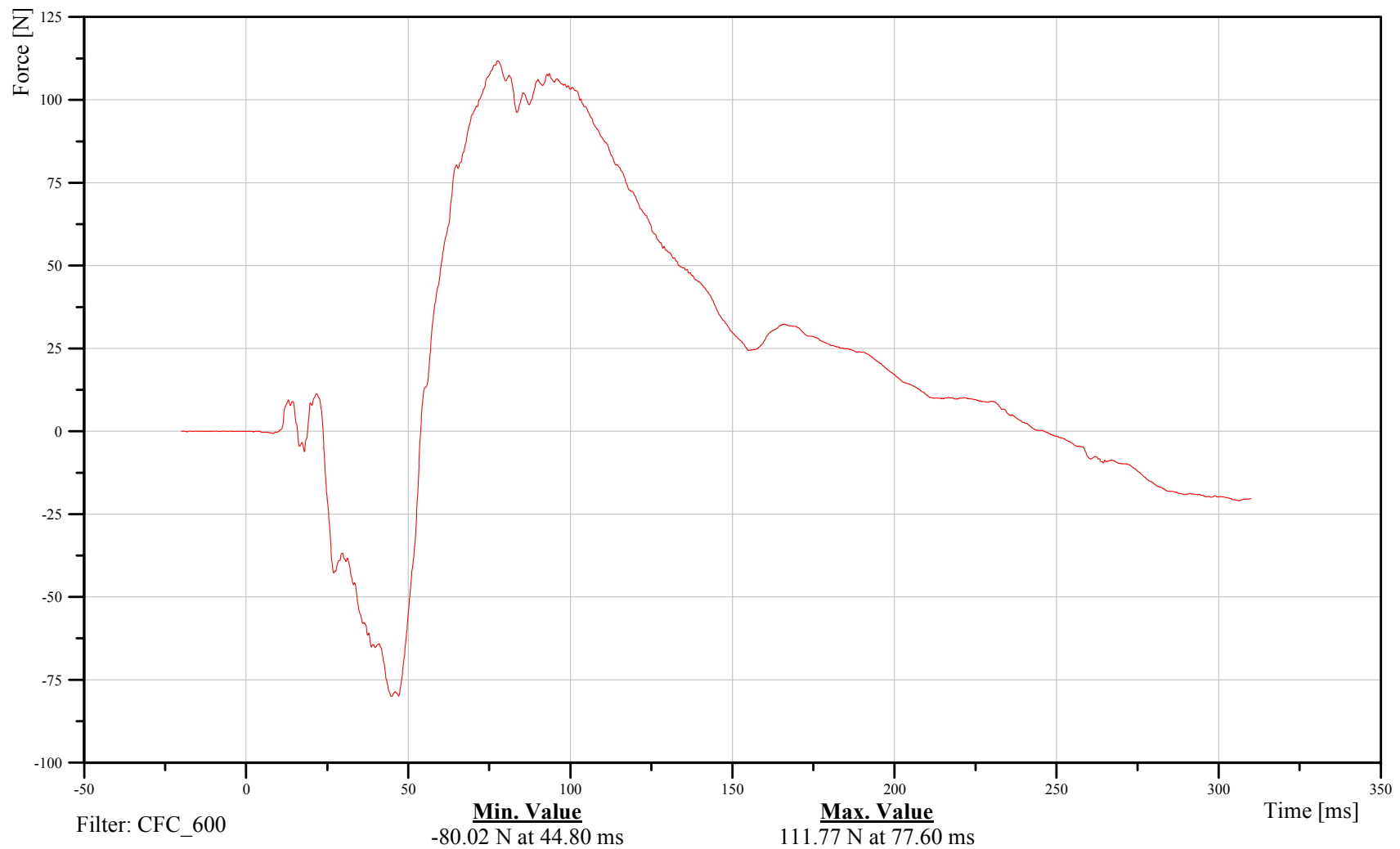
Lower Spine Moment X

Customer: VRTC

11SPIN1200E2MOXB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

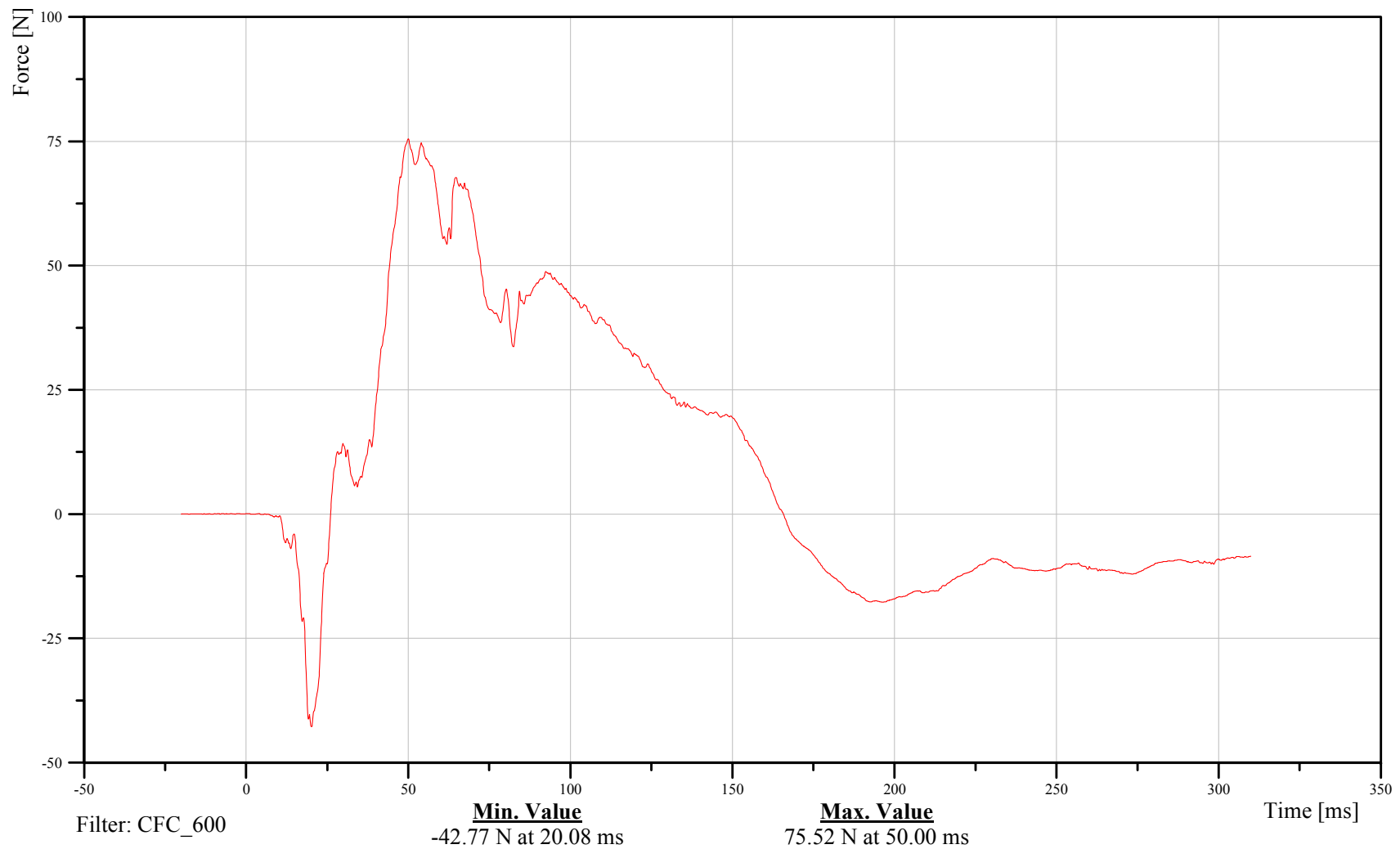
Lower Spine Moment Y

Customer: VRTC

11SPIN1200E2MOYB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Lumbar Force Y

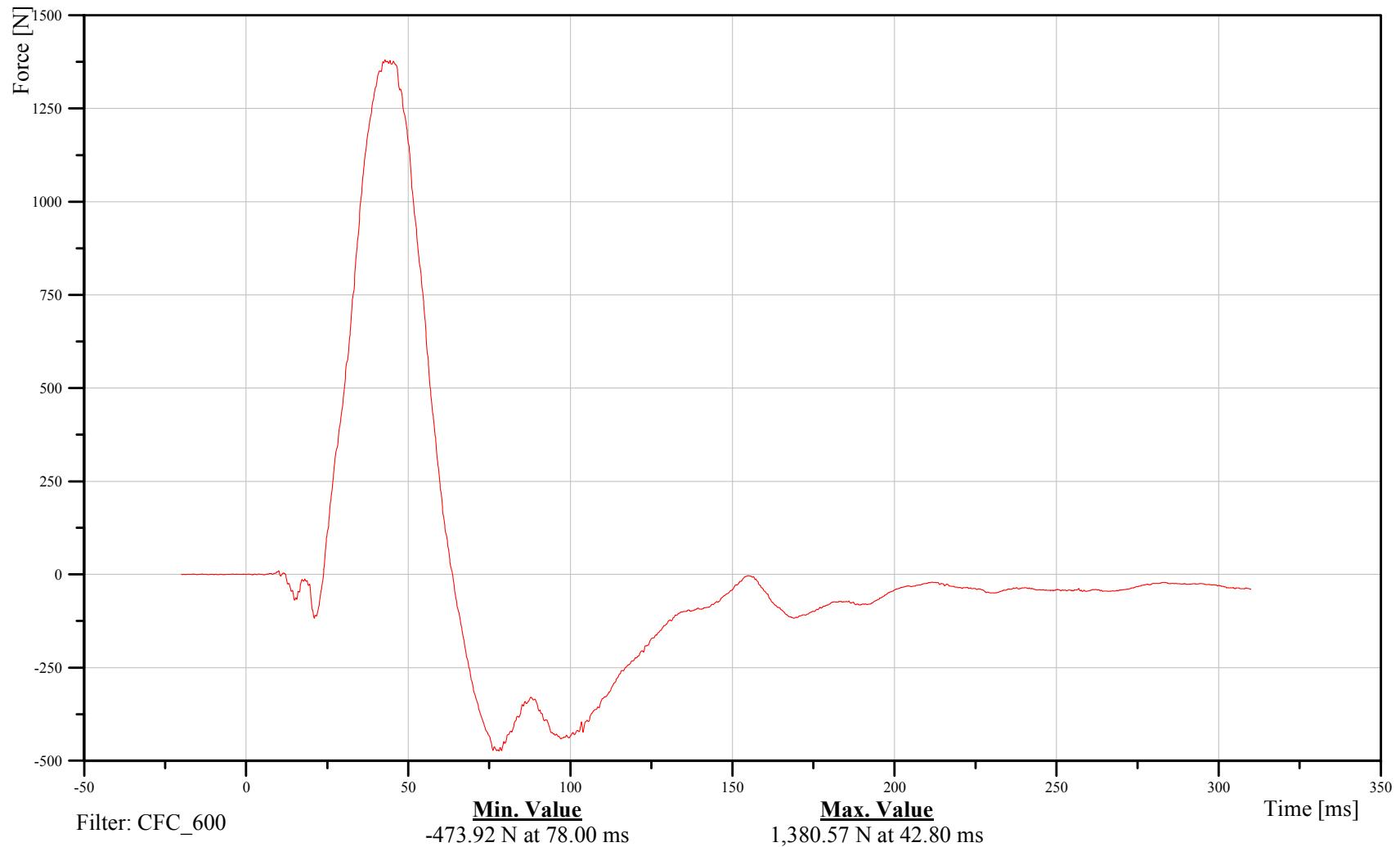
Date: 06/24/2005
Time: 12:02

Customer: VRTC

11LUSP0000E2FOYB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

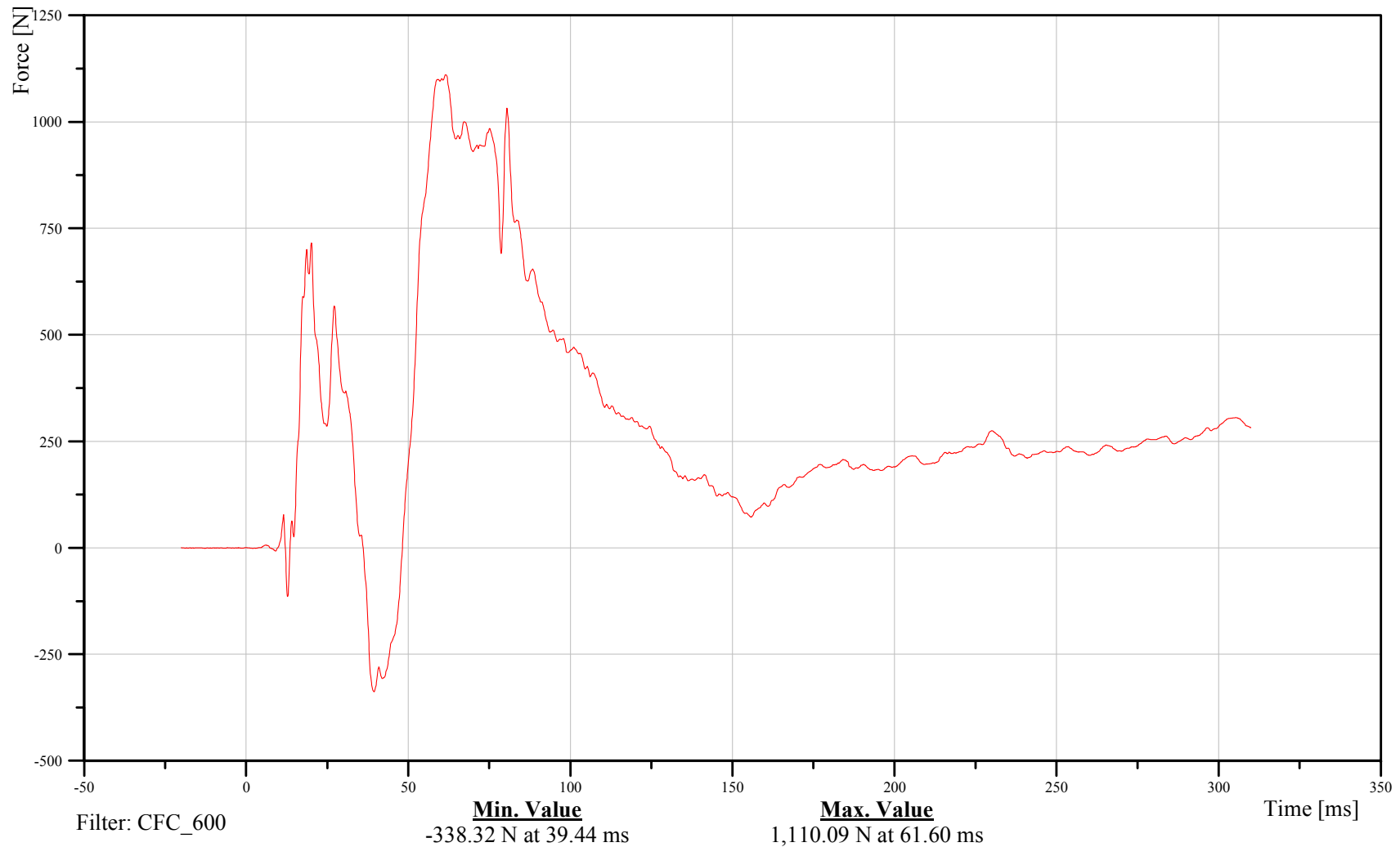
Lumbar Force Z

Customer: VRTC

11LUSP0000E2FOZB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

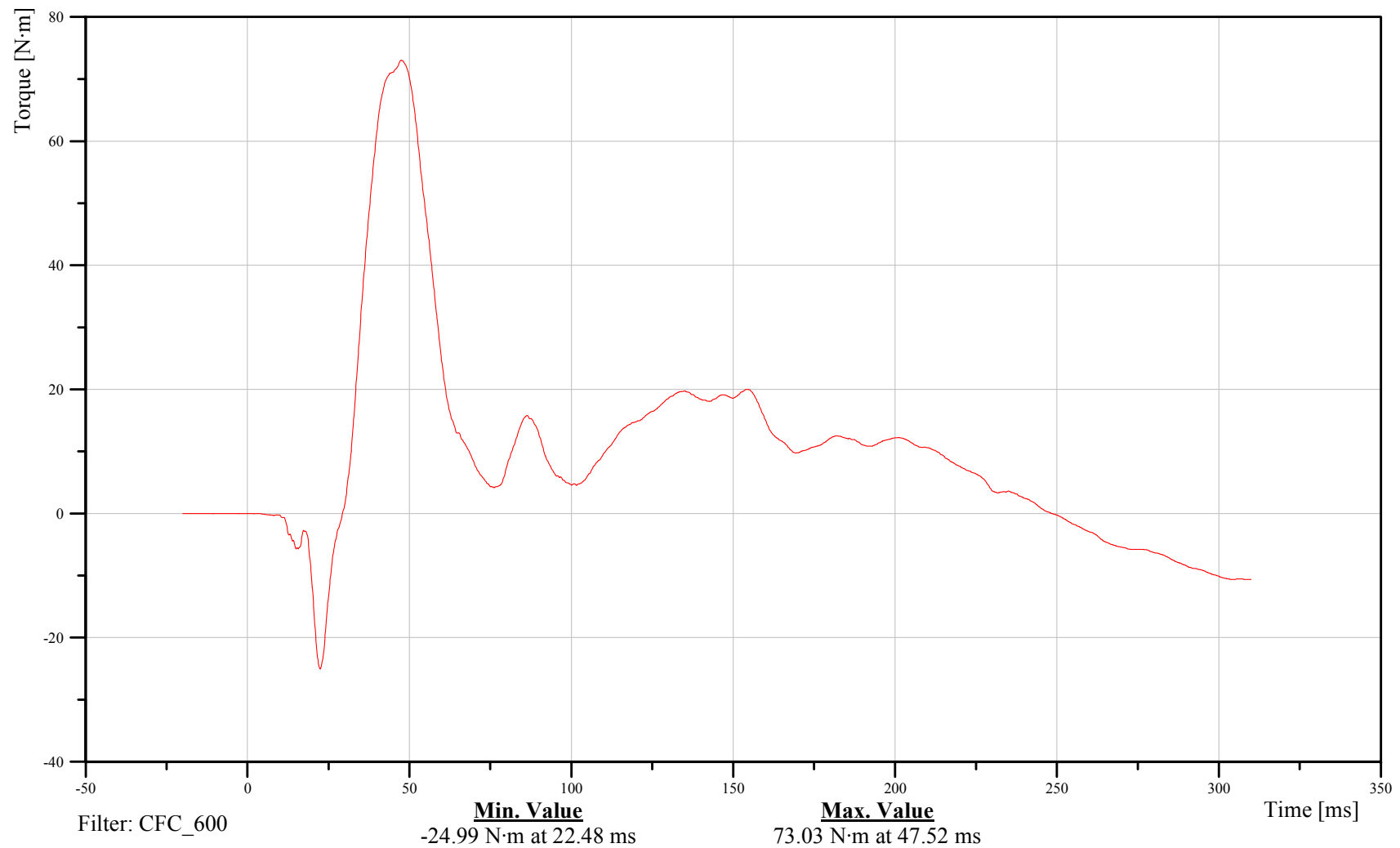
Lumbar Moment X

Customer: VRTC

11LUSP0000E2MOXB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Front Abdominal Force Y

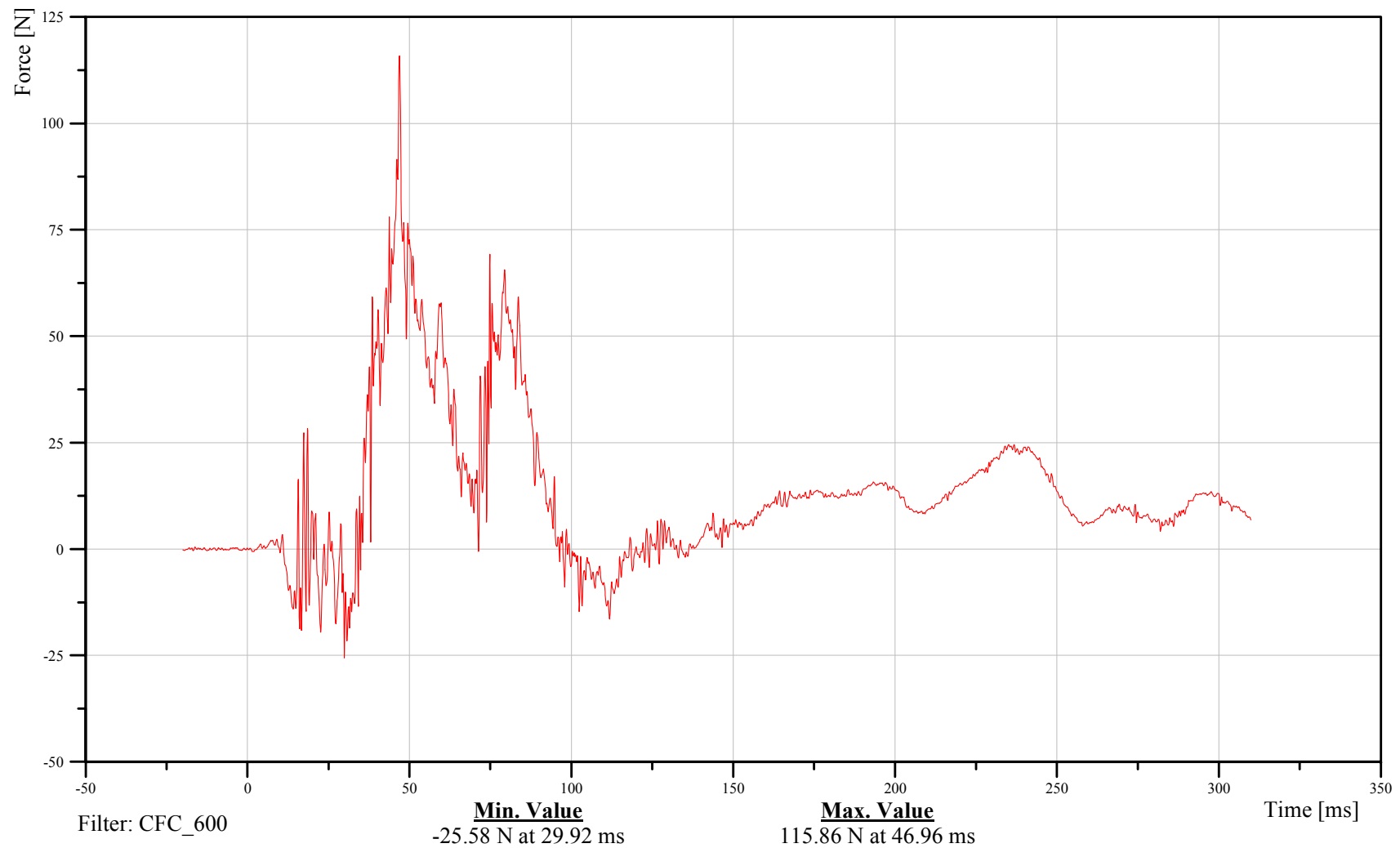
Date: 06/24/2005
Time: 12:02

Customer: VRTC

11ABDOLEFRE2FOYB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

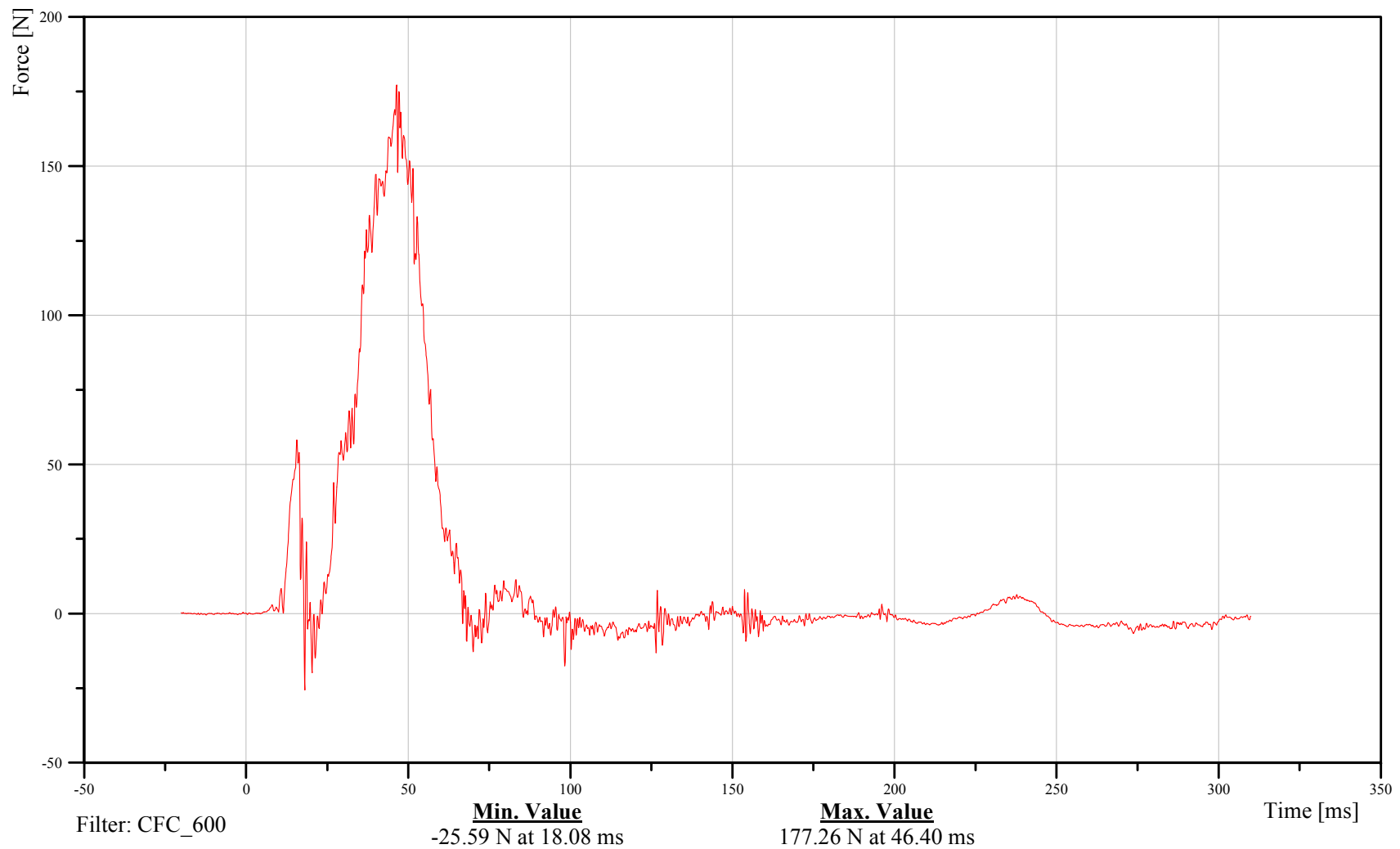
Mid Abdominal Force Y

Customer: VRTC

11ABDOLEMIE2FOYB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Rear Abdominal Force Y

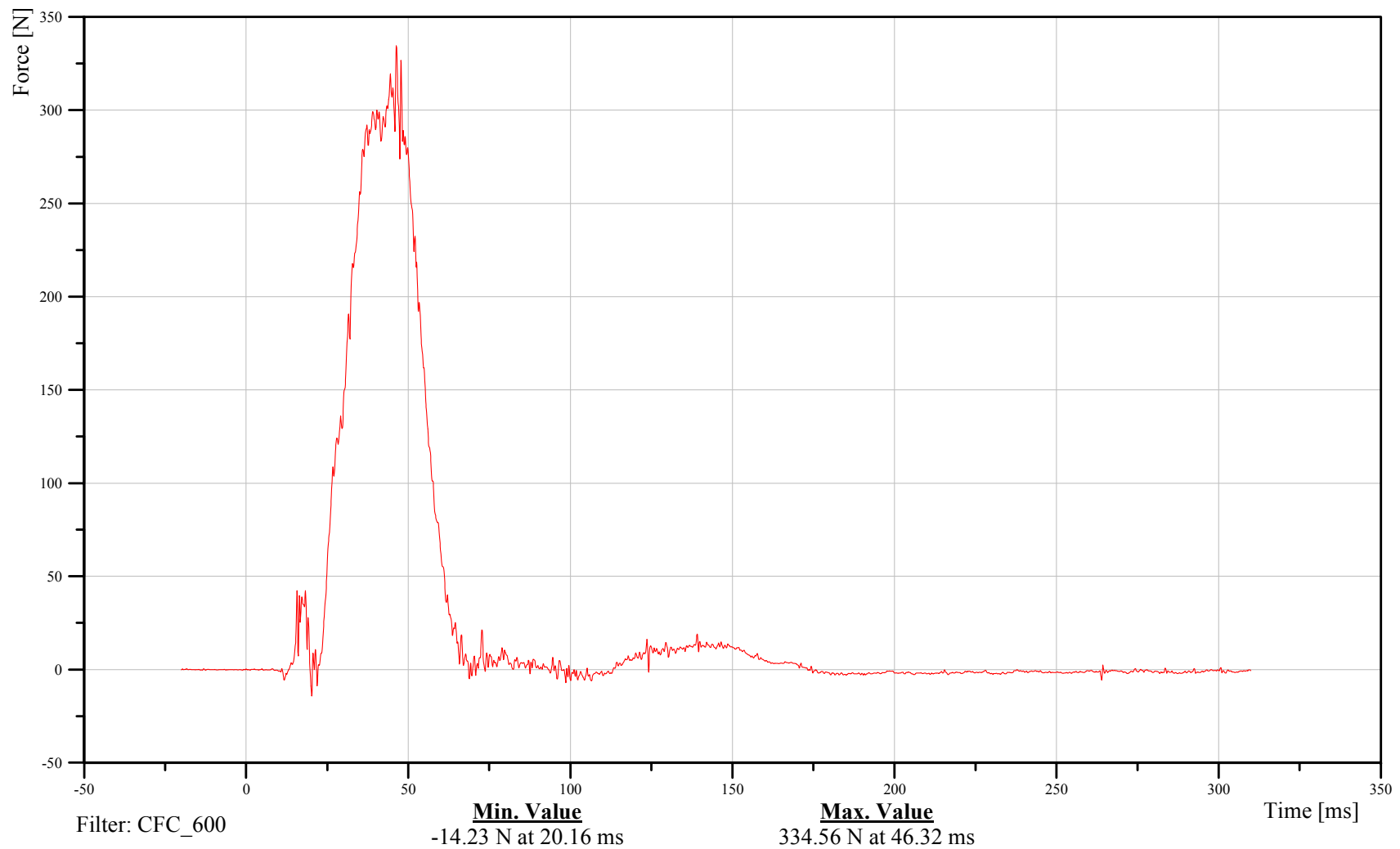
Date: 06/24/2005
Time: 12:02

Customer: VRTC

11ABDOLEREE2FOYB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

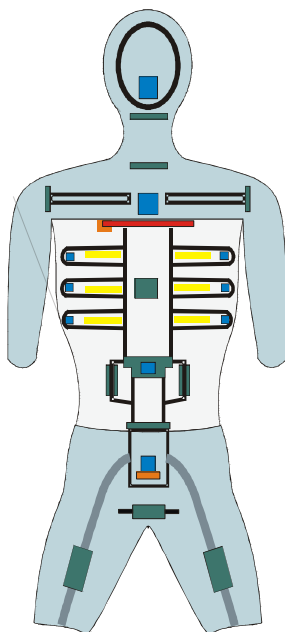
Abdominal Summation

Customer: VRTC

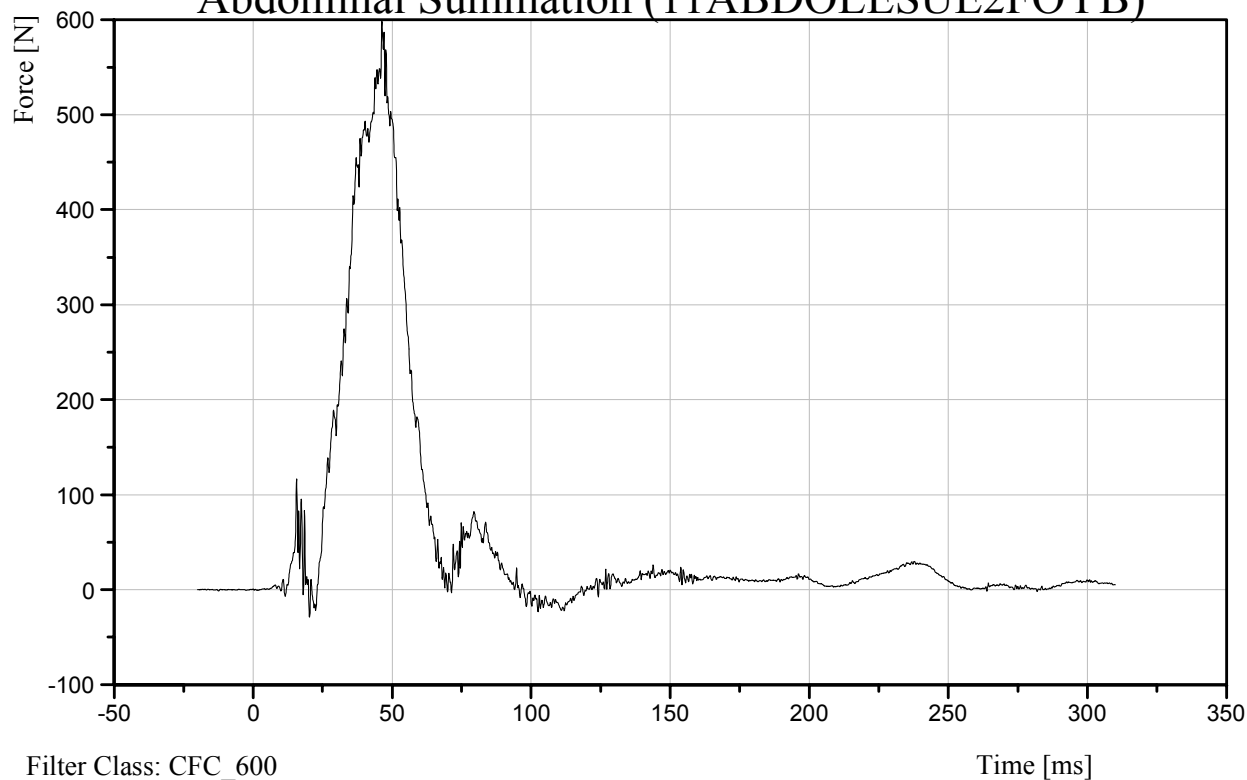
TRC Inc. Test Lab: CTF

Test Number: 050624

Test Orientation = Side



Abdominal Summation (11ABDOLESUE2FOYB)



Dummy: Euro SID II
Seating Position:
Driver

[Max.] 598.27 N at 46.32 ms

[Min.] -28.72 N at 20.32 ms

Abdominal Summation Source Code : Summation of Channels 11ABDOLEFRE2FOYB, 11ABDOLEMIE2FOYB, 11ABDOLEREE2FOYB



MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Pubic Force Y

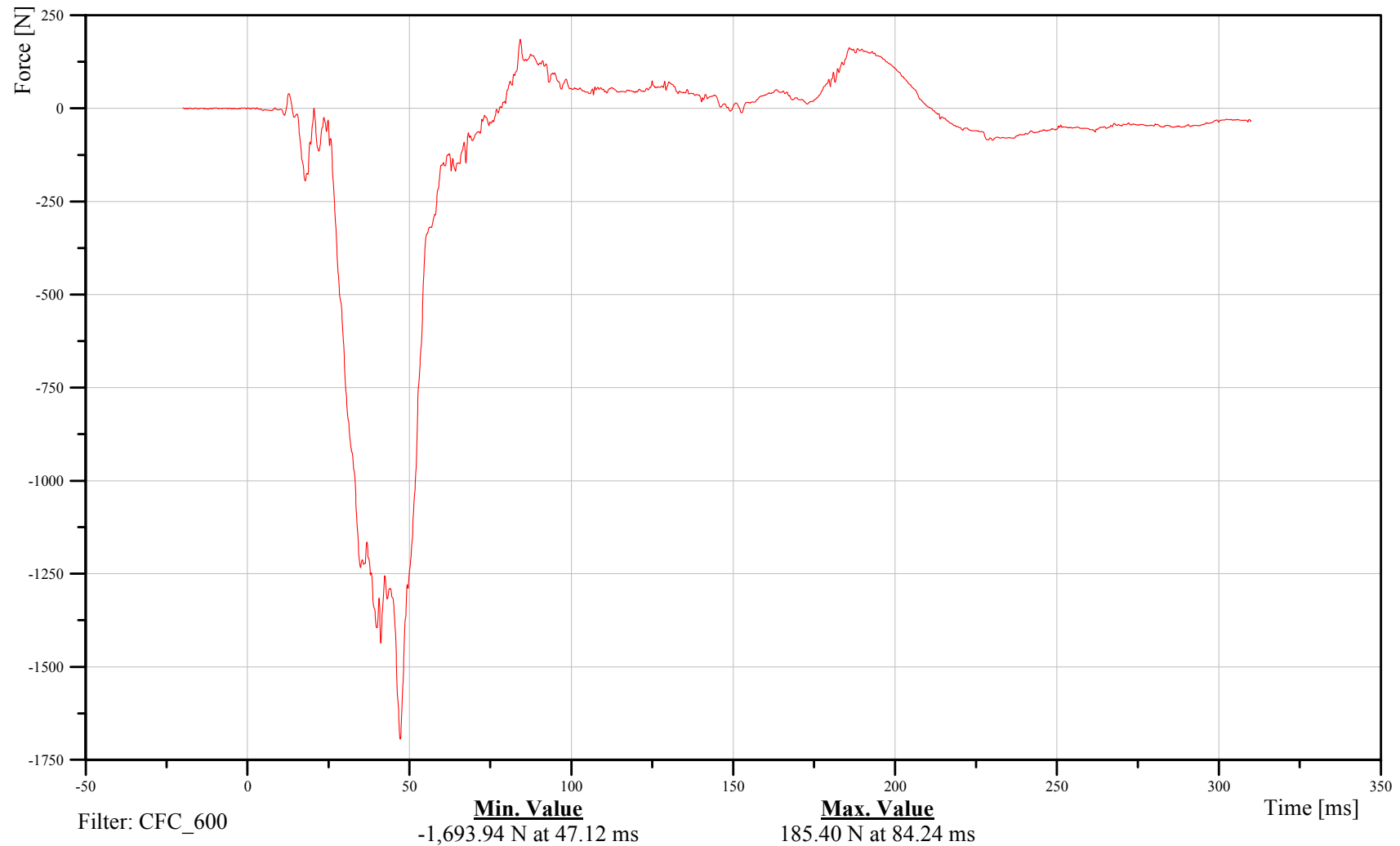
Date: 06/24/2005
Time: 12:02

Customer: VRTC

11PUBC0000E2FOYB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Pelvis Accel X

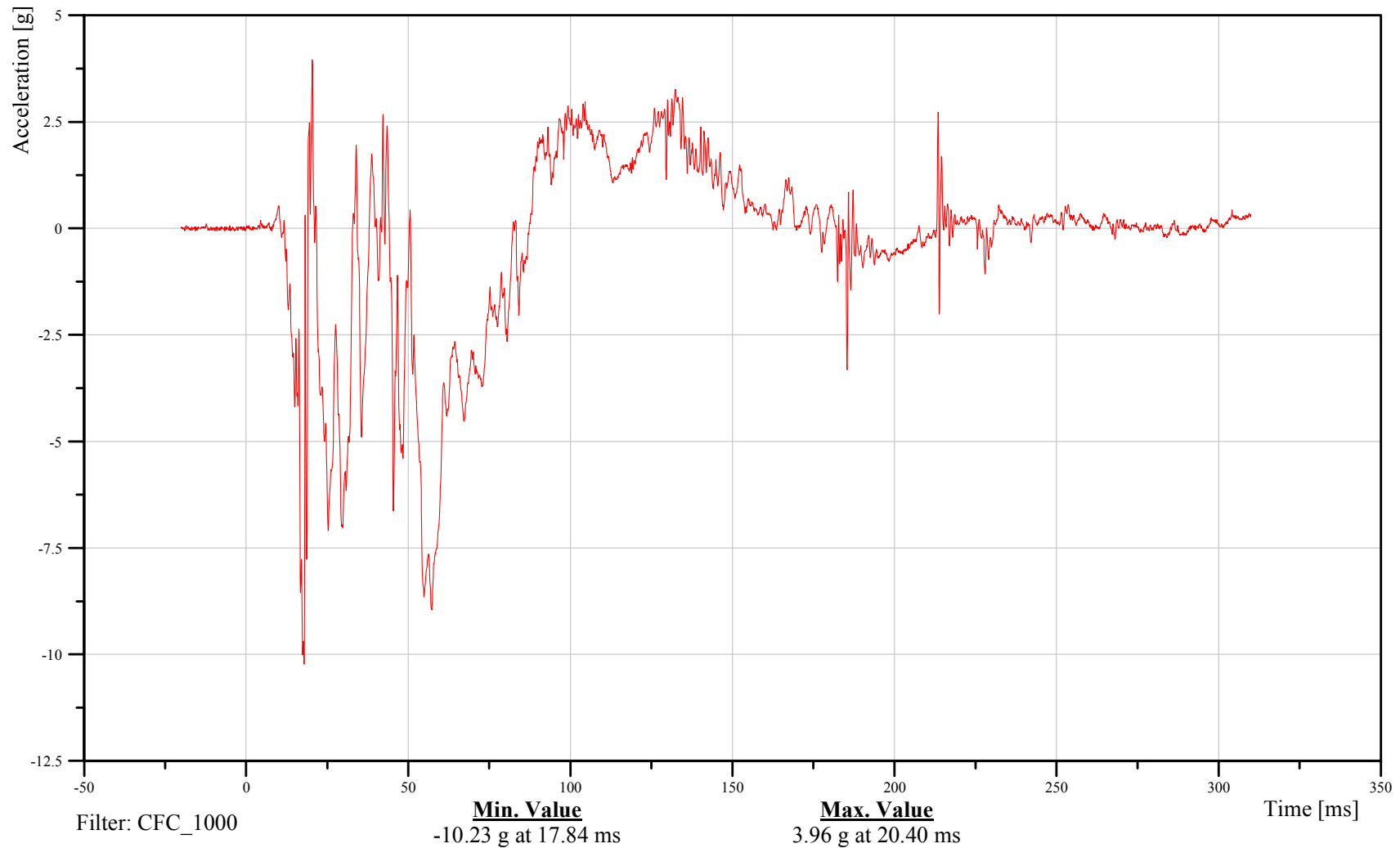
Date: 06/24/2005
Time: 12:02

Customer: VRTC

11PELVCG00E2ACXA

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

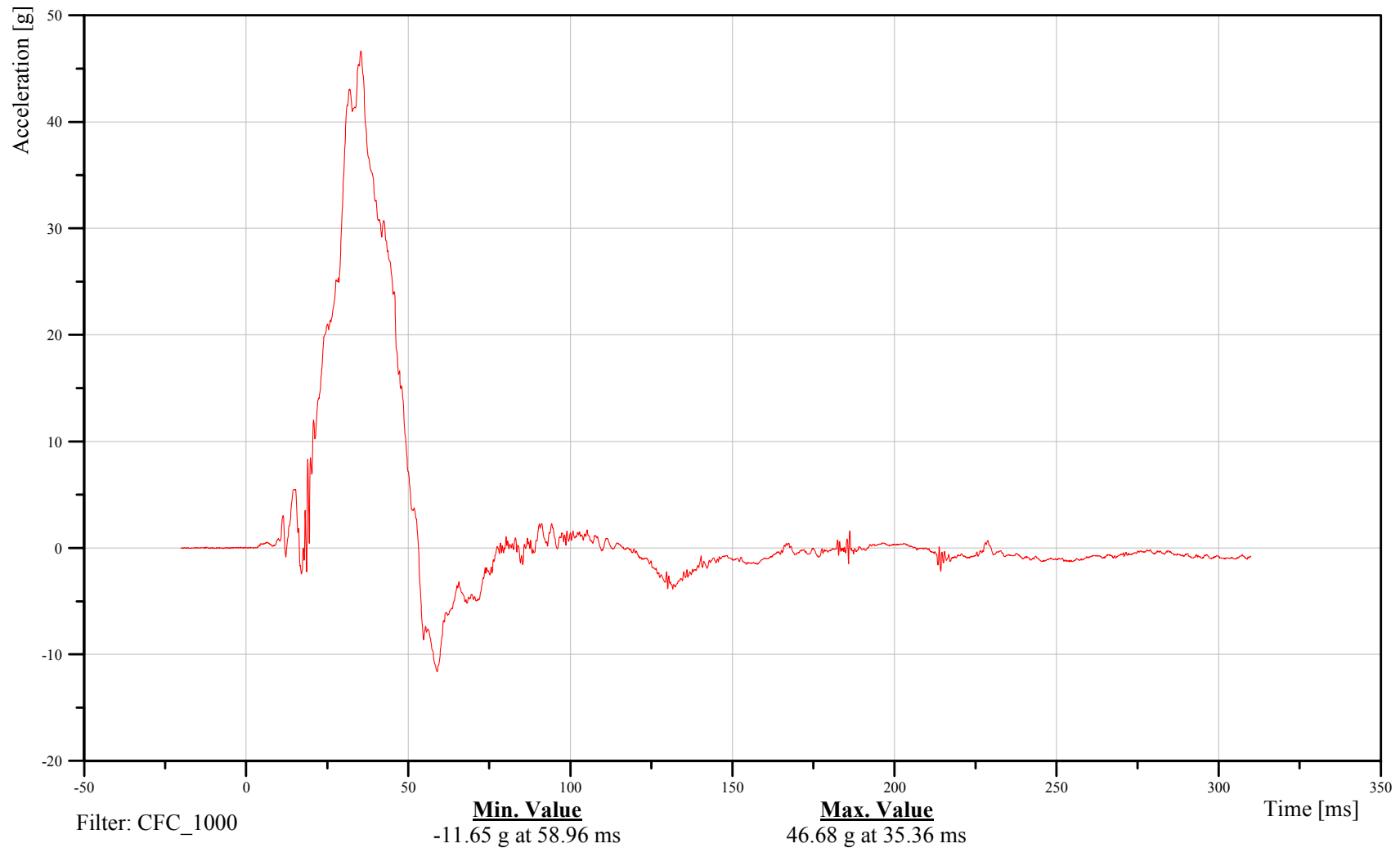
Pelvis Accel Y

Customer: VRTC

11PELVCG00E2ACYA

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Pelvis Accel Z

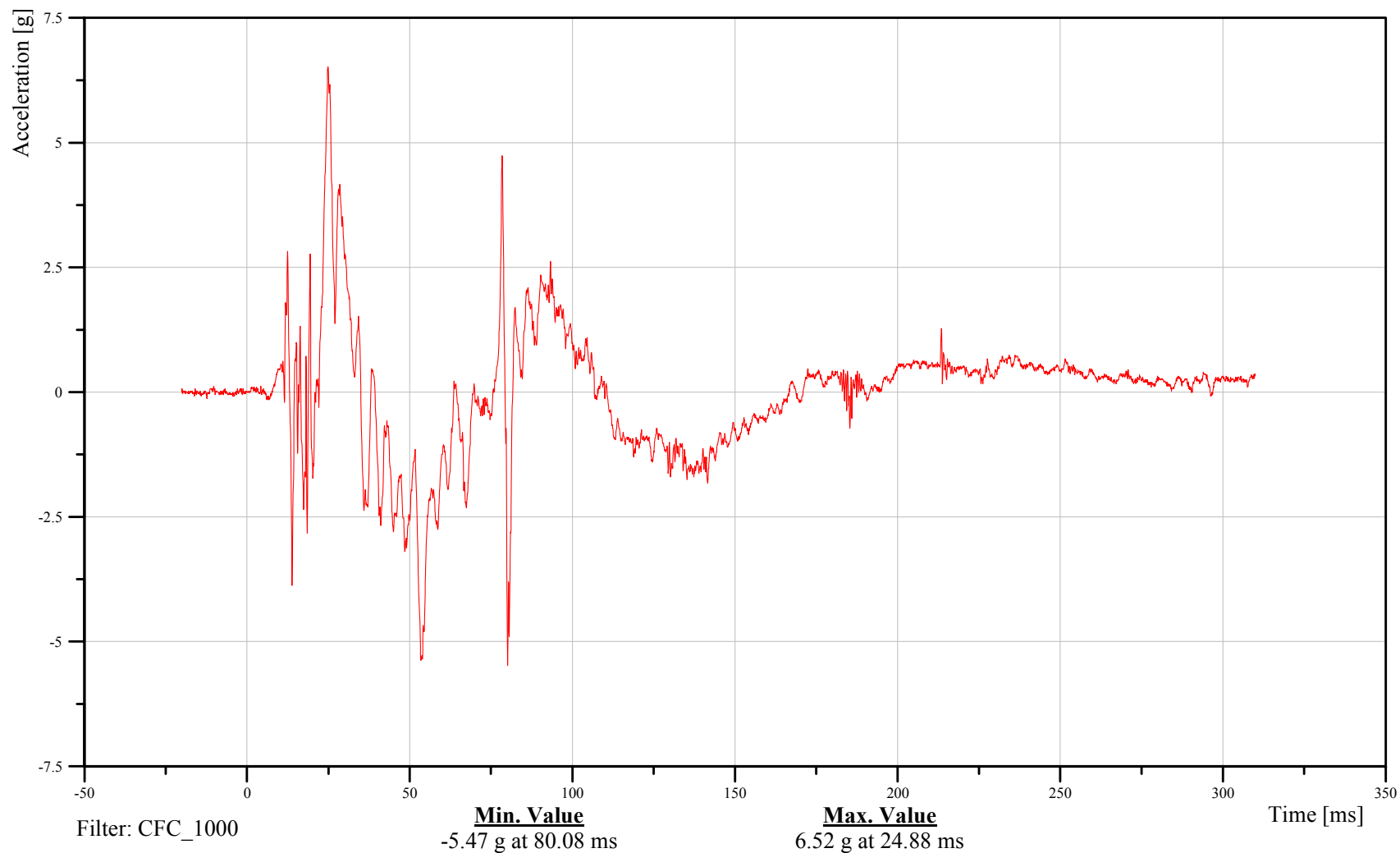
Date: 06/24/2005
Time: 12:02

Customer: VRTC

11PELVCG00E2ACZA

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

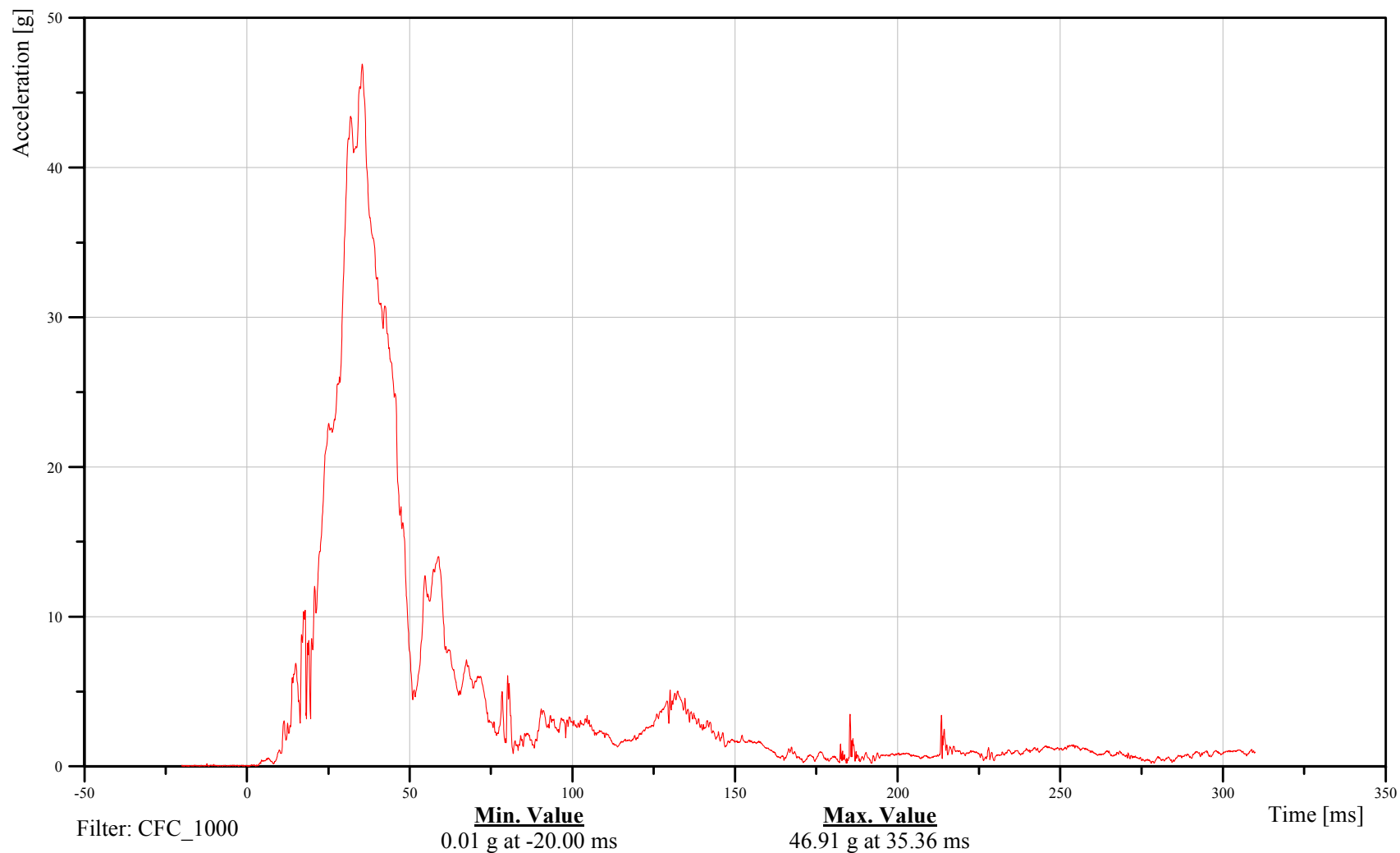
Pelvis Accel Resultant

Customer: VRTC

11PELVCG00E2ACRA

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Left Femur Force X

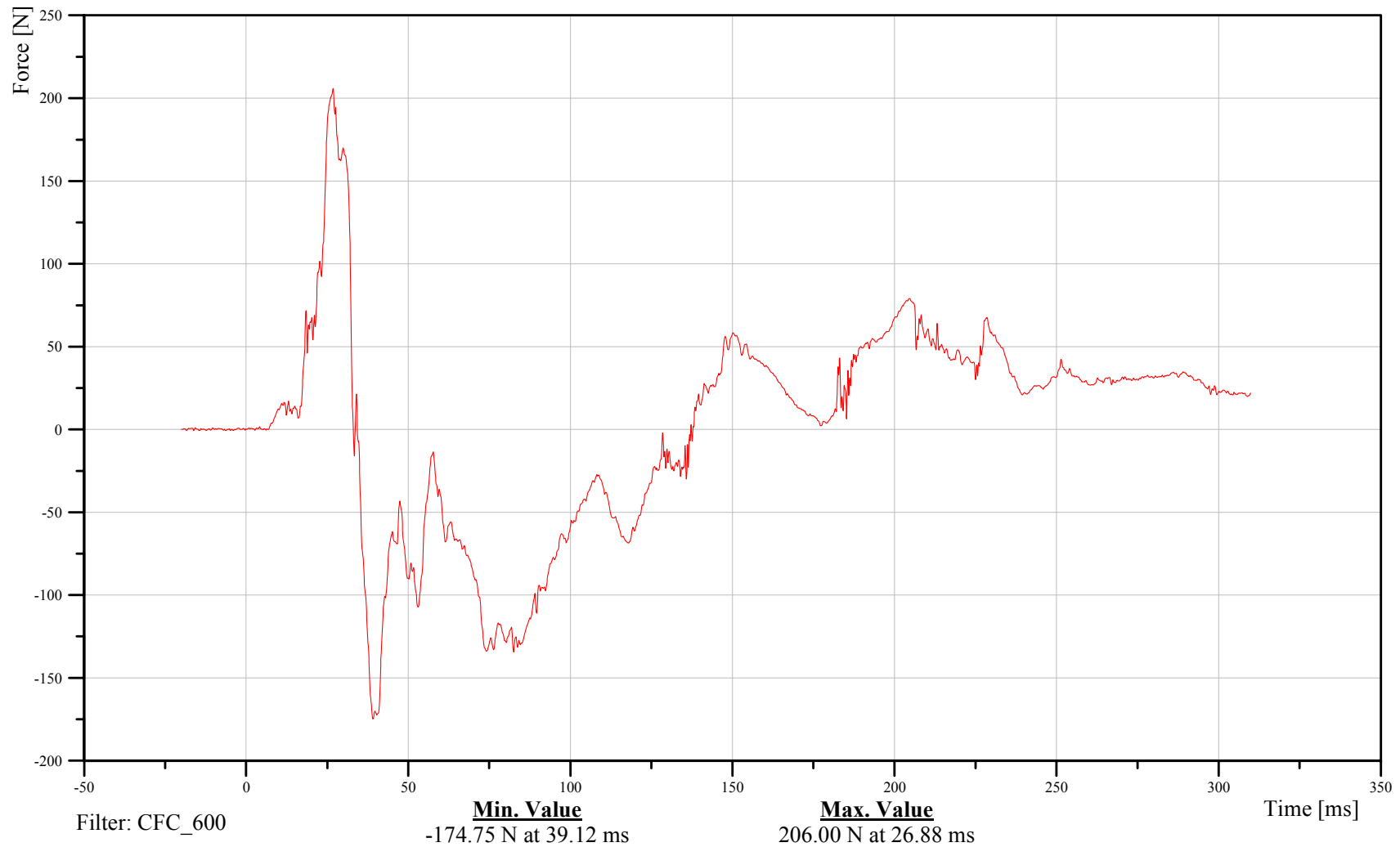
Date: 06/24/2005
Time: 12:02

Customer: VRTC

11FEMRLE00E2FOXB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

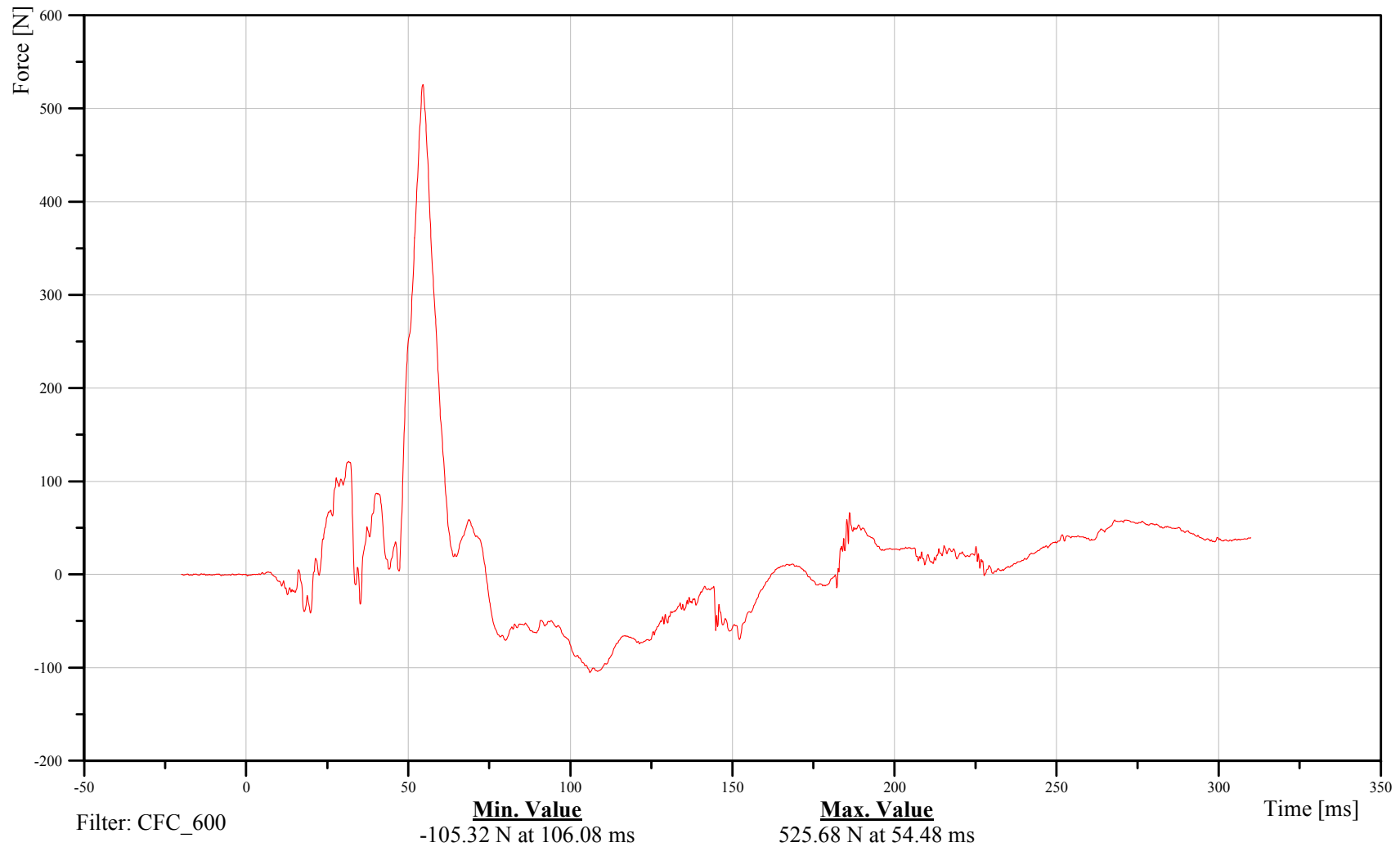
Left Femur Force Y

Customer: VRTC

11FEMRLE00E2FOYB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

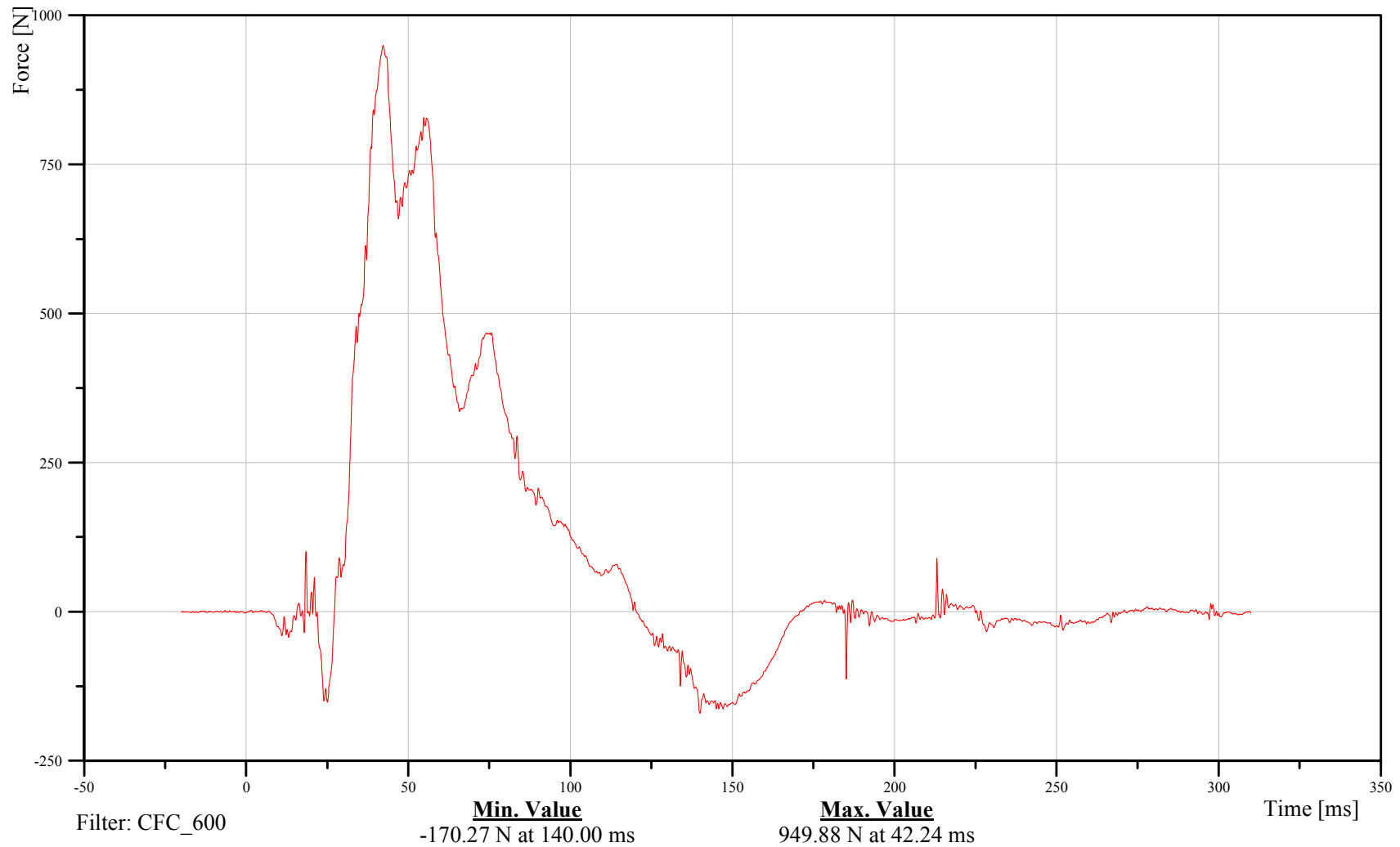
Left Femur Force Z

Customer: VRTC

11FEMRLE00E2FOZB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Left Femur Moment X

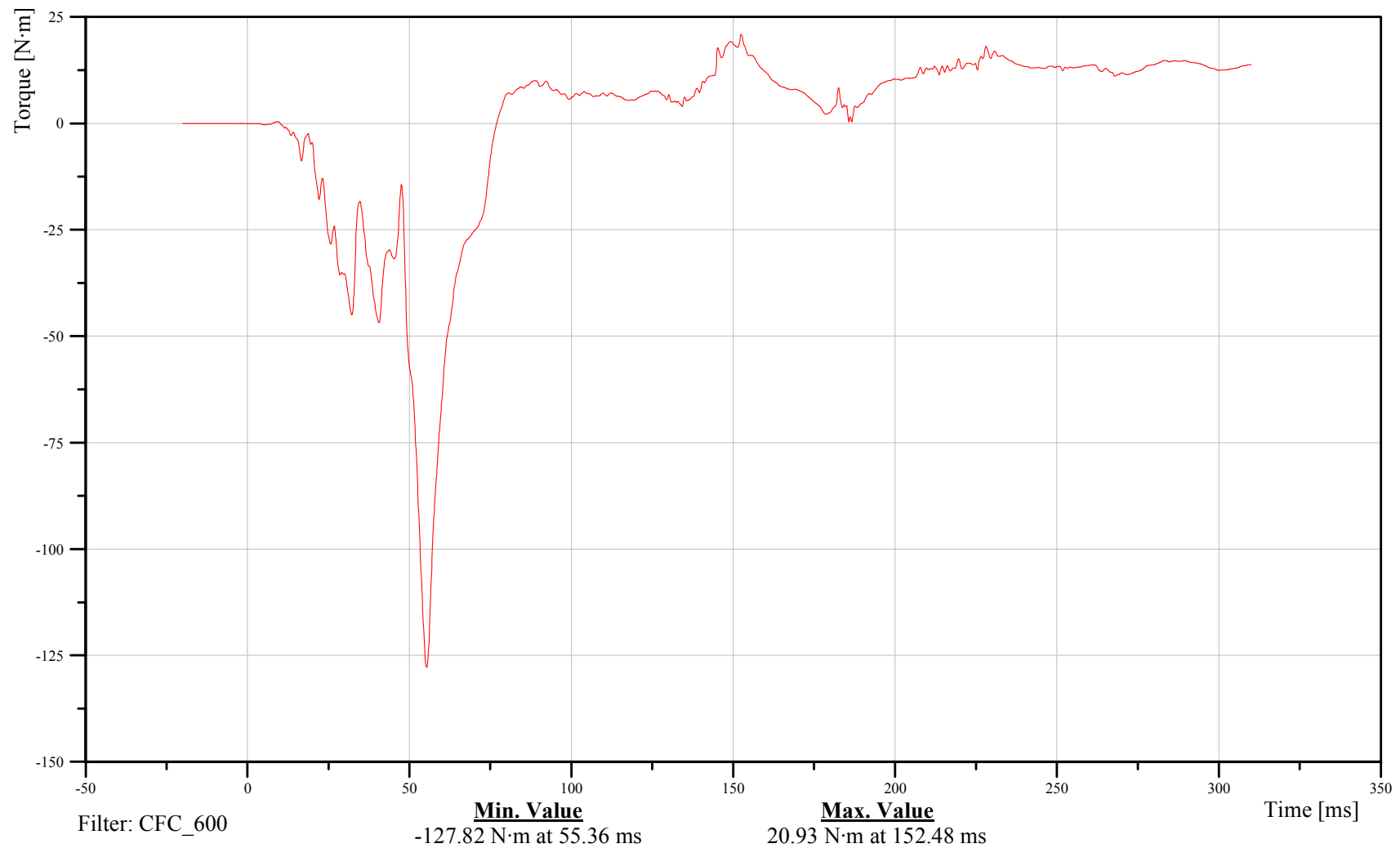
Date: 06/24/2005
Time: 12:02

Customer: VRTC

11FEMRLE00E2MOXB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

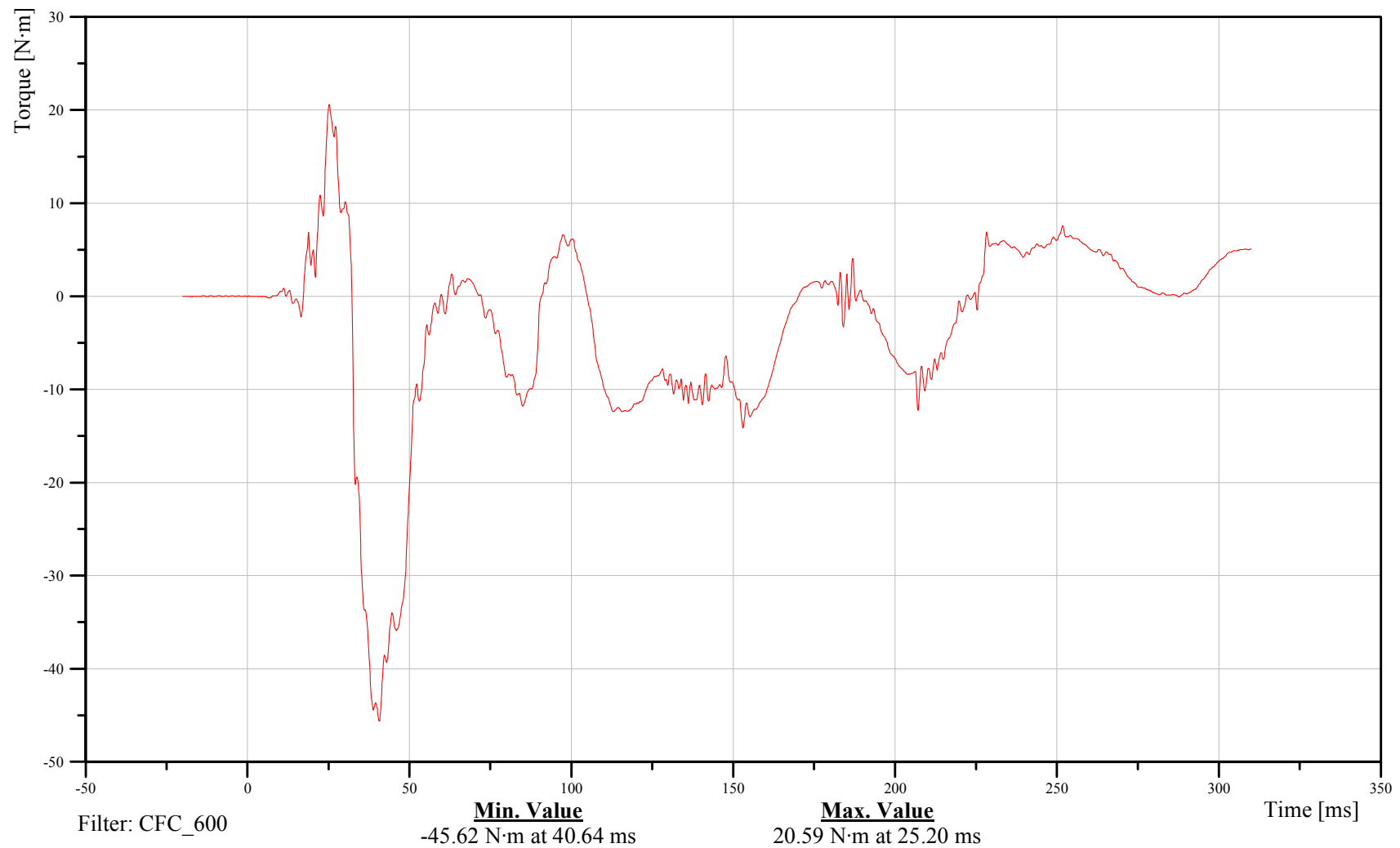
Left Femur Moment Y

Customer: VRTC

11FEMRLE00E2MOYB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Left Femur Moment Z

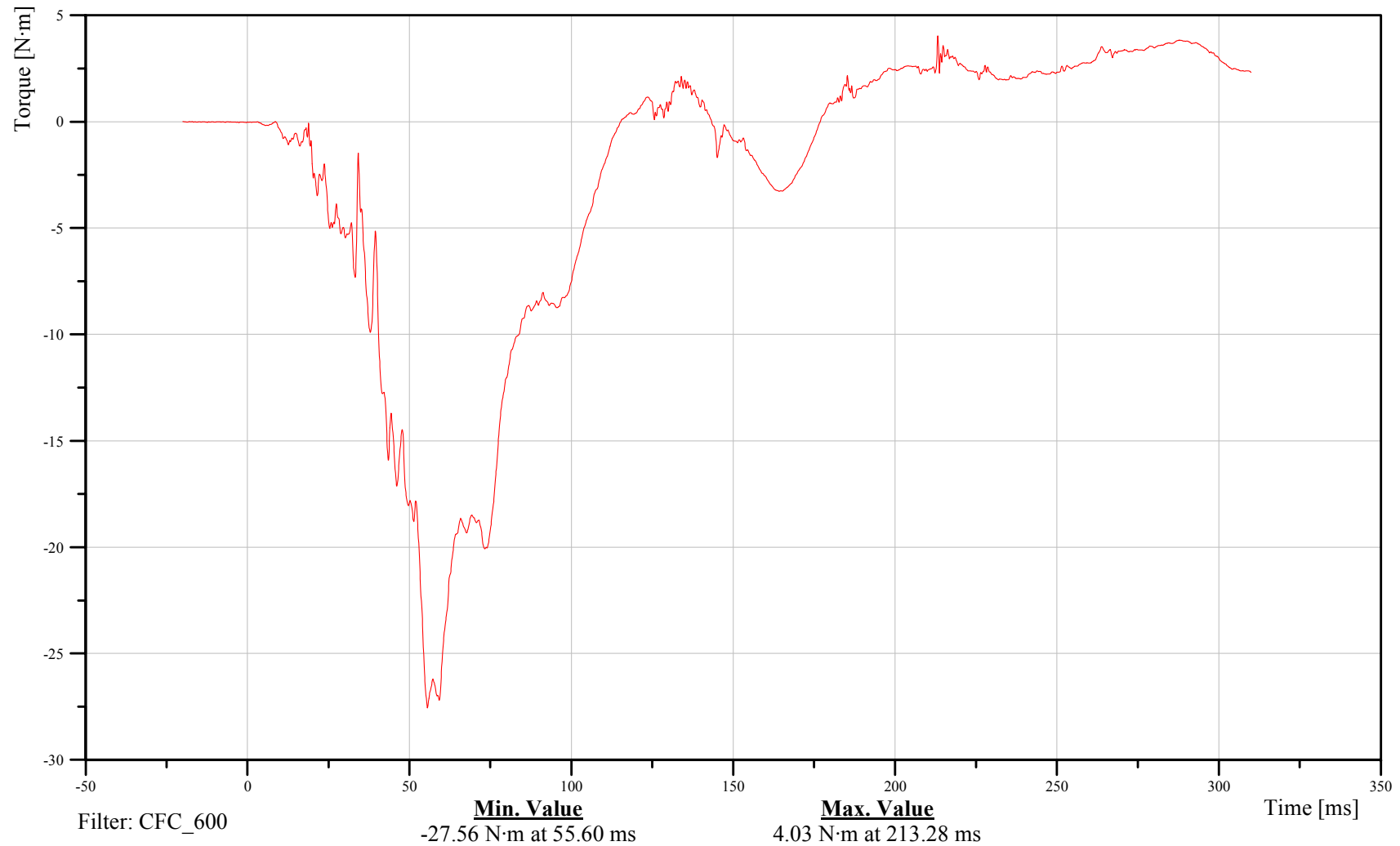
Date: 06/24/2005
Time: 12:02

Customer: VRTC

11FEMRLE00E2MOZB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

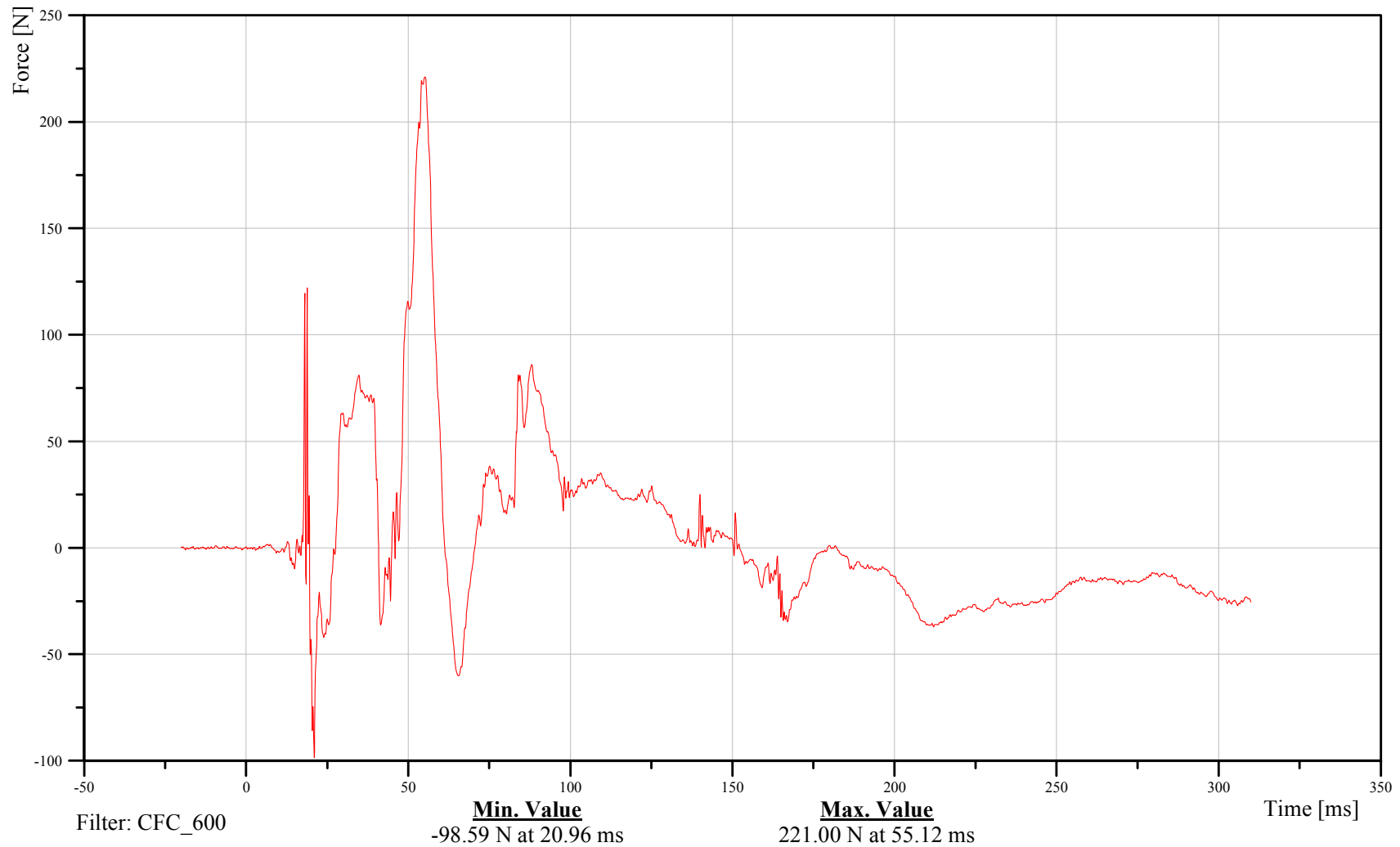
Right Femur Force X

Customer: VRTC

11FEMRRI00E2FOXB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

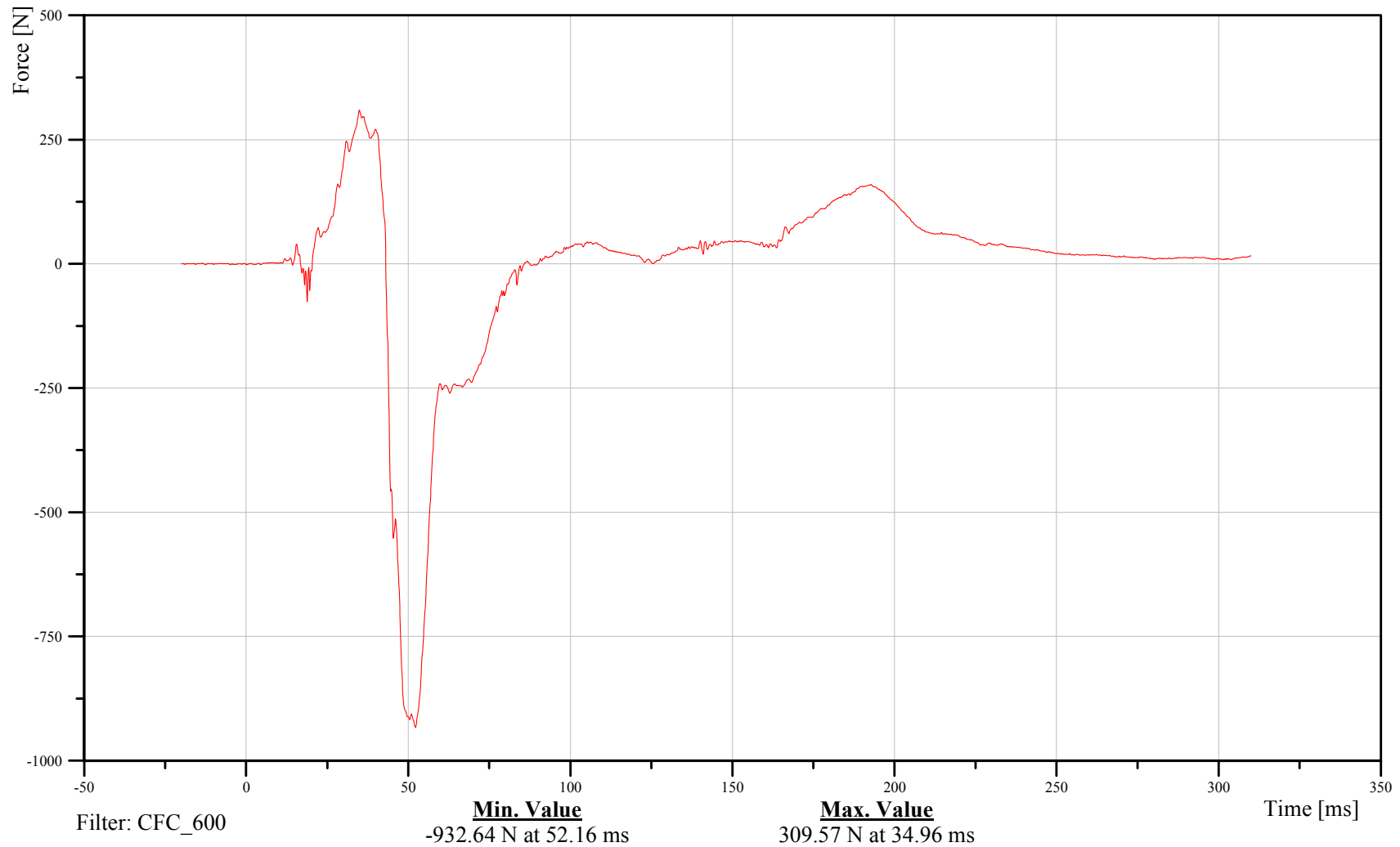
Right Femur Force Y

Customer: VRTC

11FEMRRI00E2FOYB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

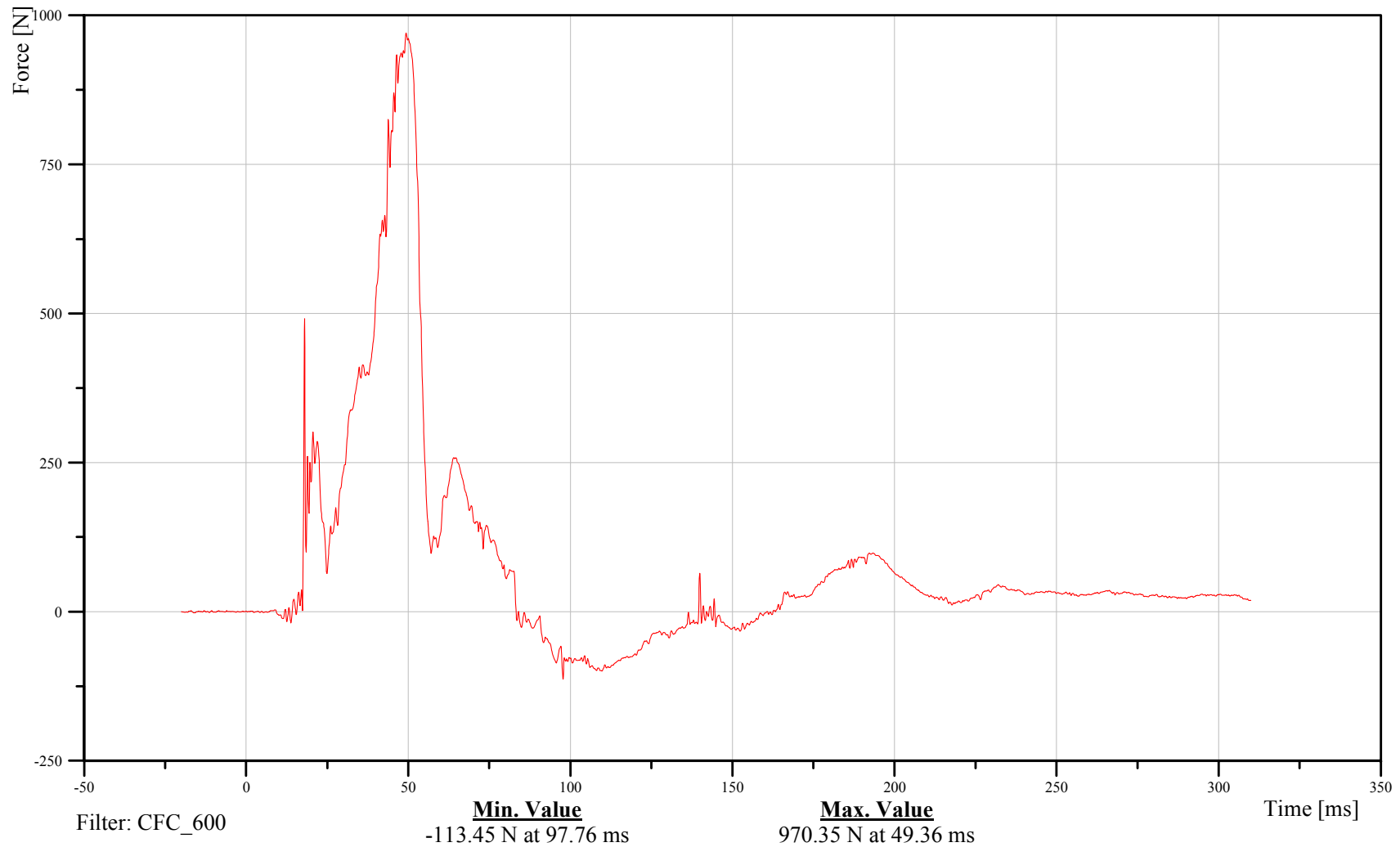
Right Femur Force Z

Customer: VRTC

11FEMRRI00E2FOZB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

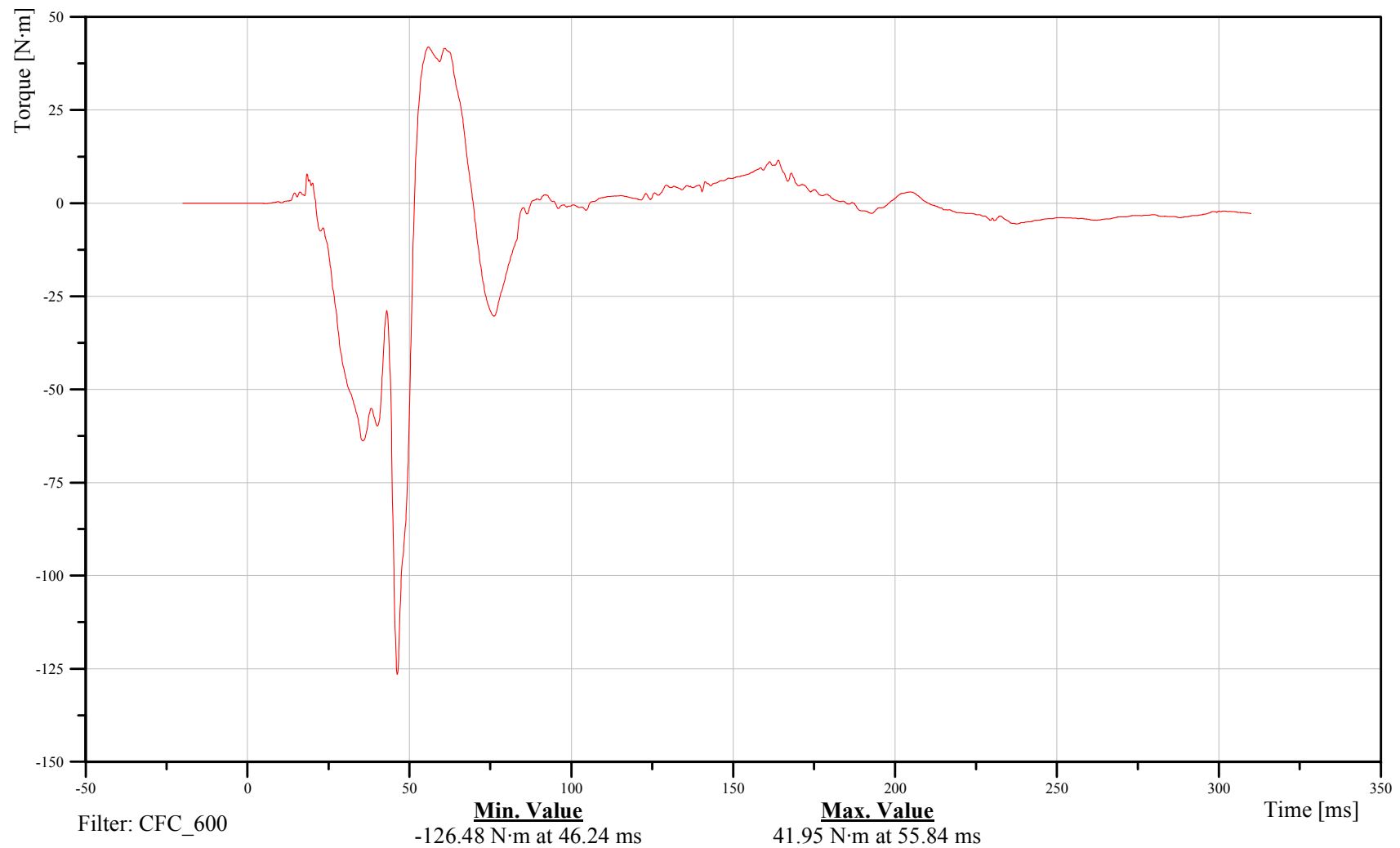
Right Femur Moment X

Customer: VRTC

11FEMRRI00E2MOXB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

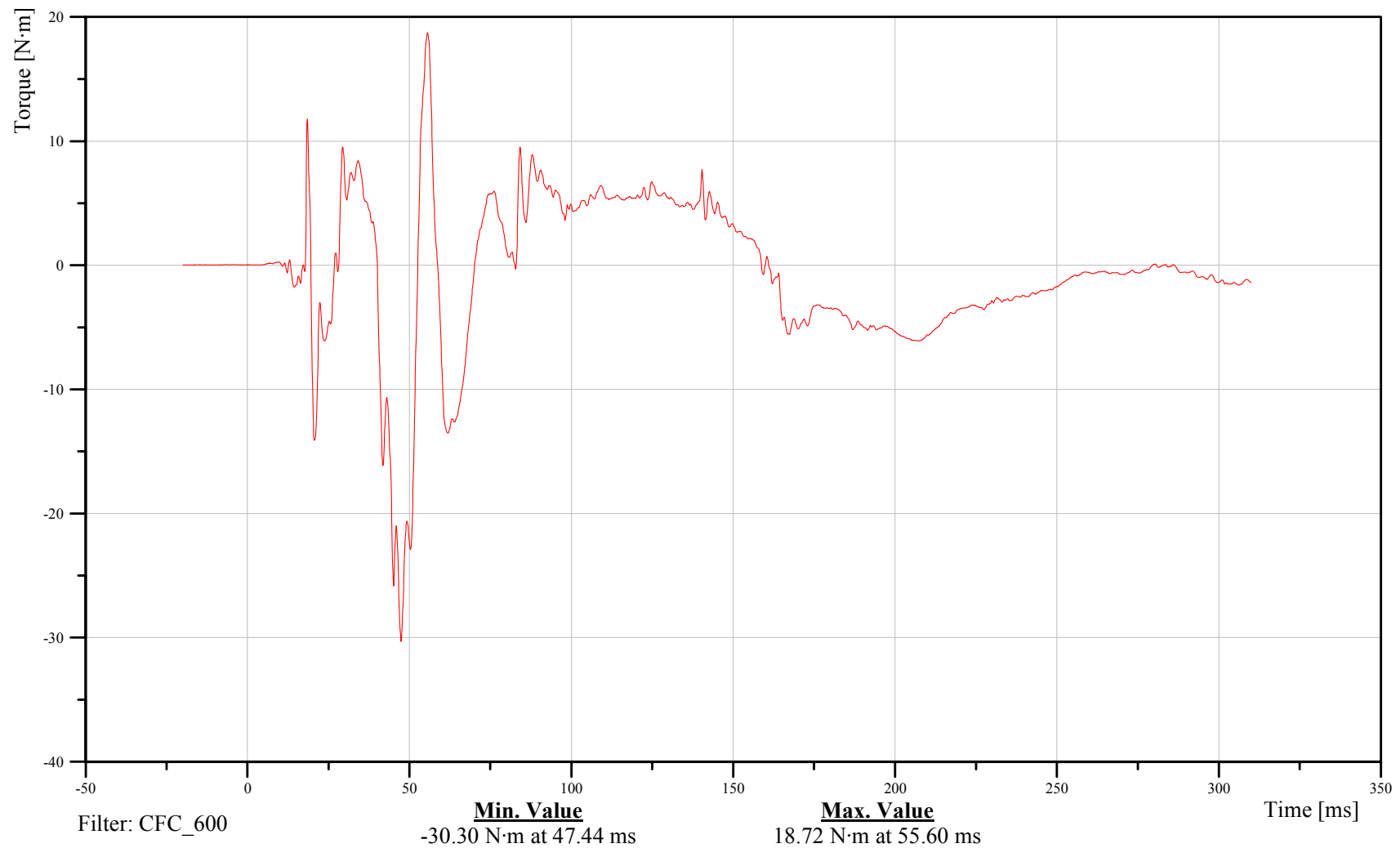
Right Femur Moment Y

Customer: VRTC

11FEMRRI00E2MOYB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

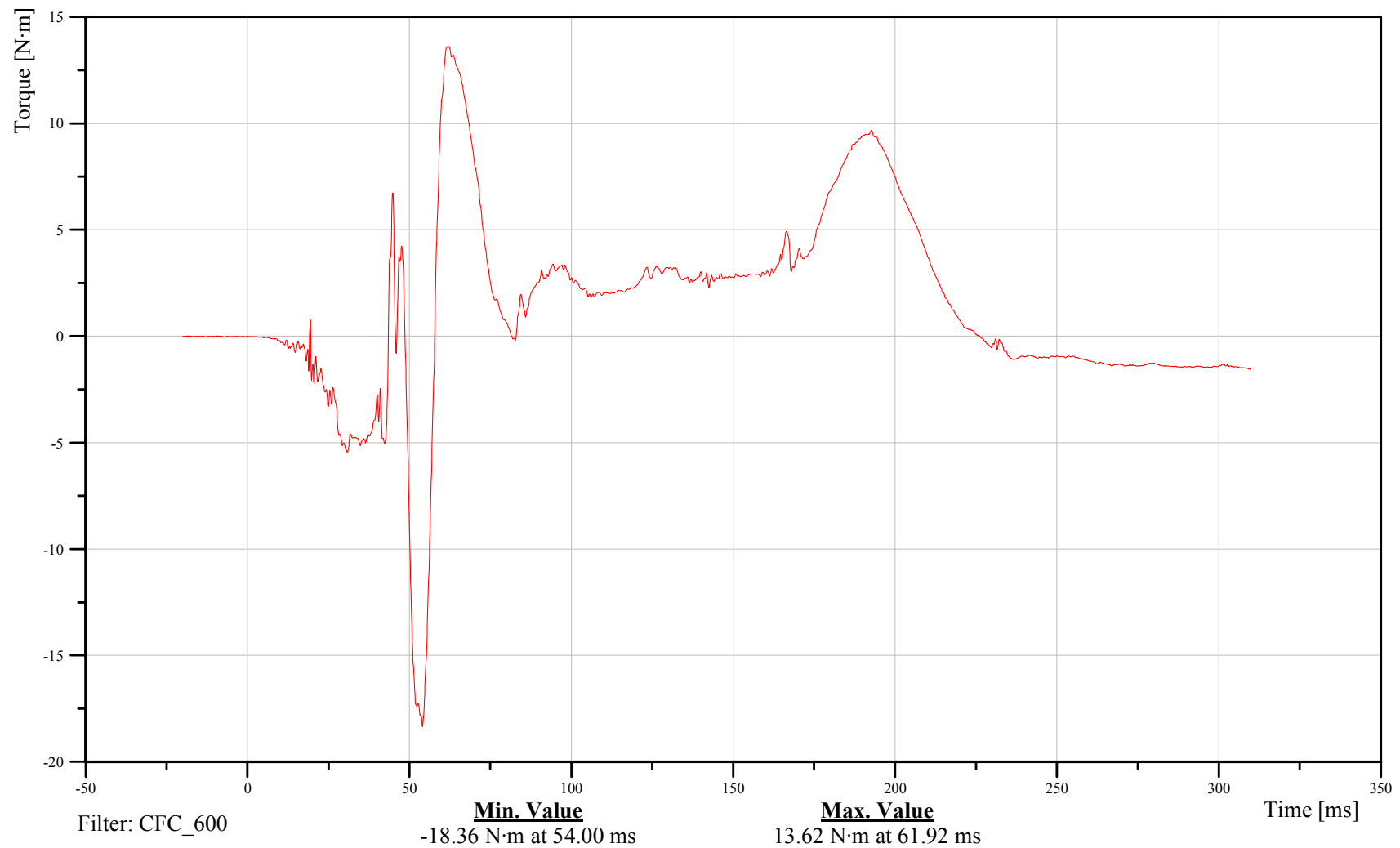
Right Femur Moment Z

Customer: VRTC

11FEMRRI00E2MOZB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

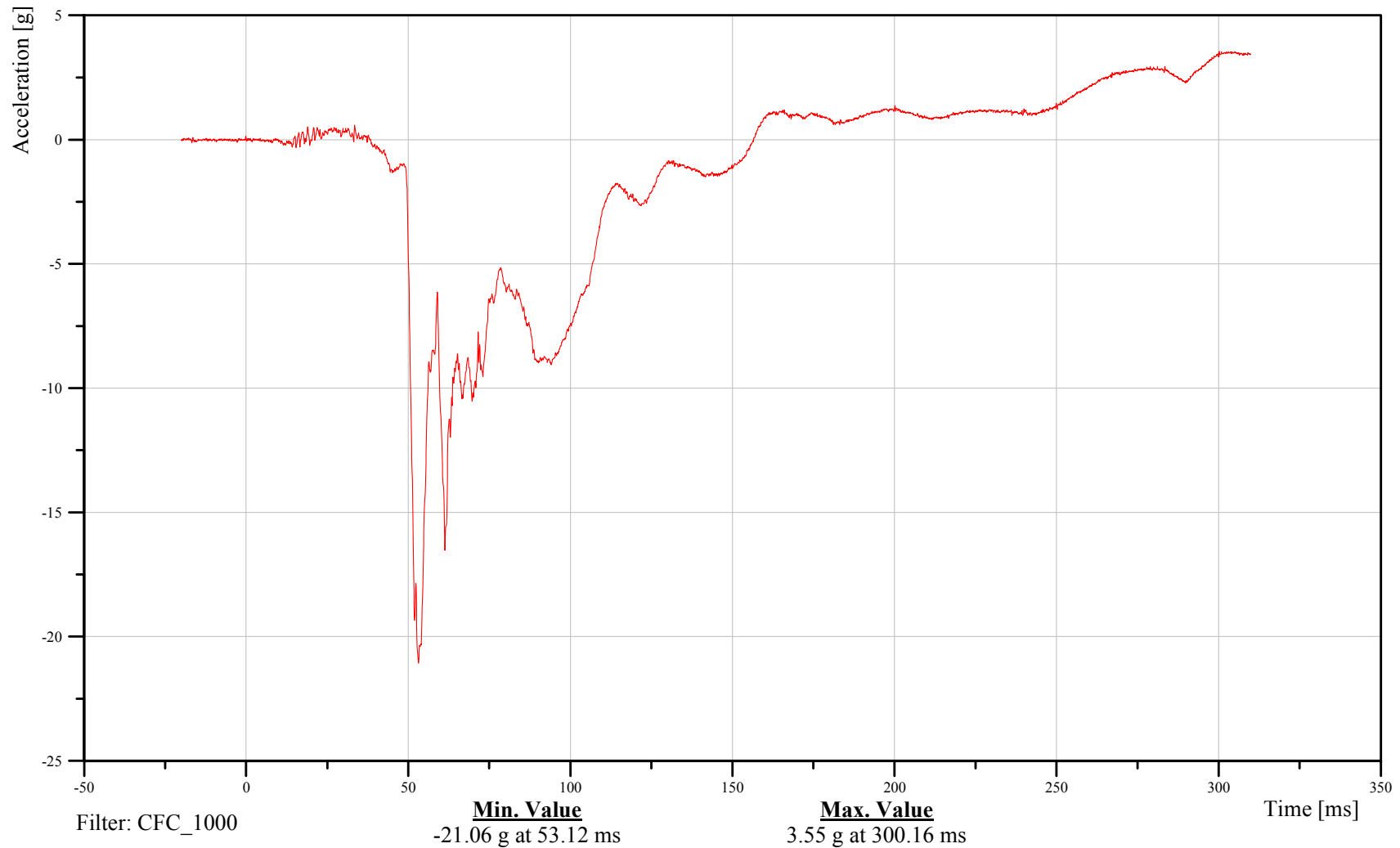
Head Accel X

Customer: VRTC

14HEADCG00E2ACXA

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

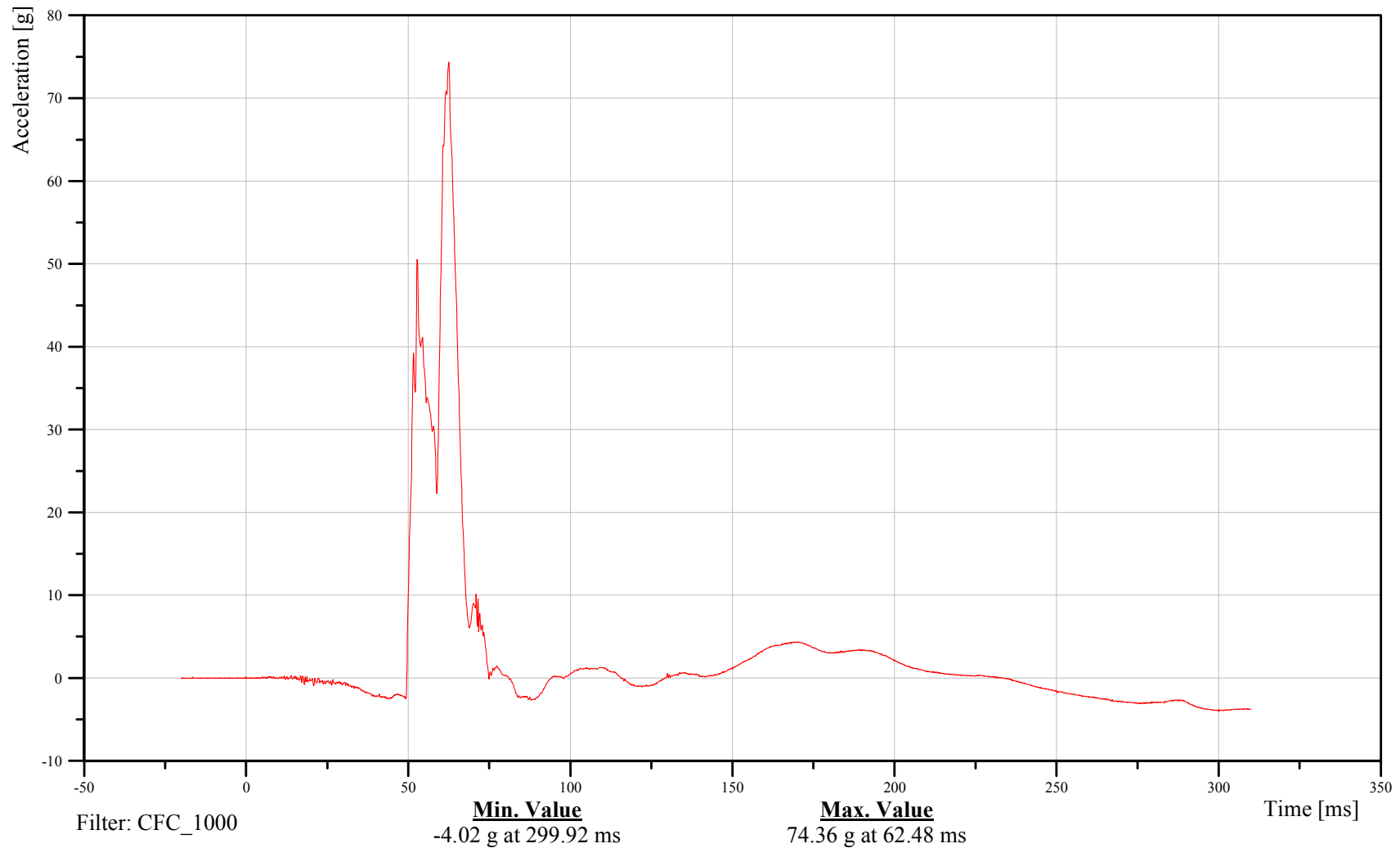
Head Accel Y

Customer: VRTC

14HEADCG00E2ACYA

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

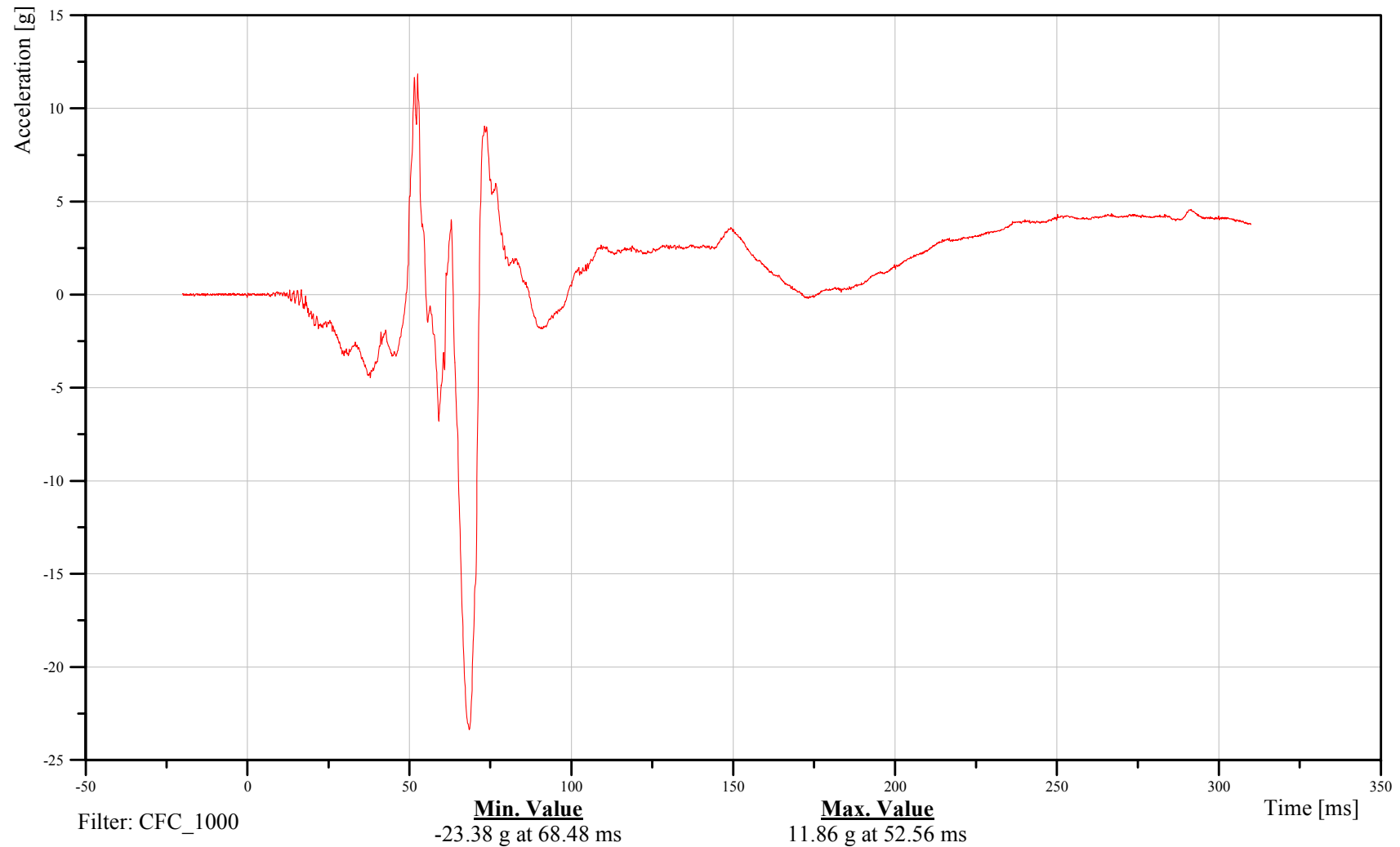
Head Accel Z

Customer: VRTC

14HEADCG00E2ACZA

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

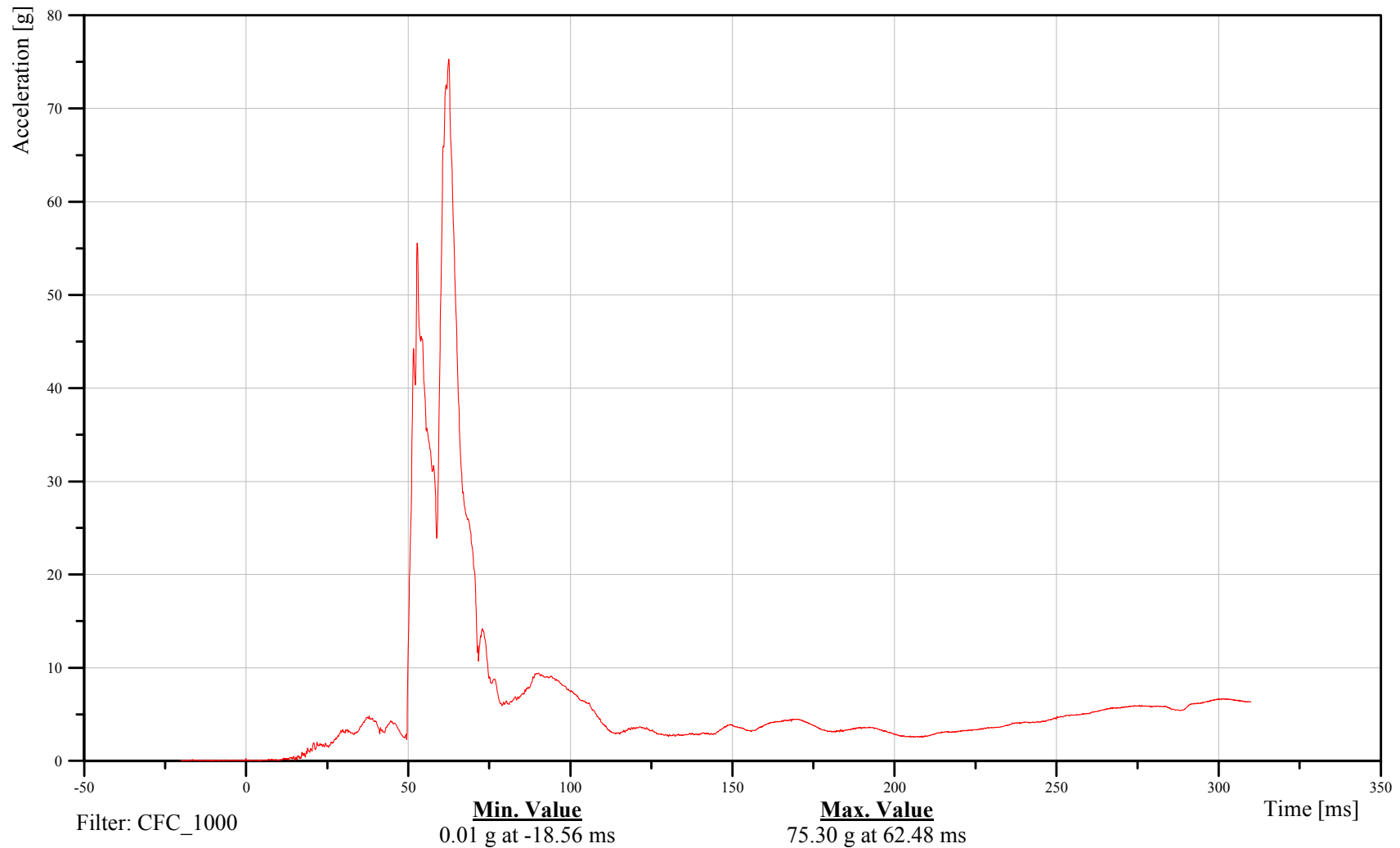
Head Accel Resultant

Customer: VRTC

14HEADCG00E2ACRA

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

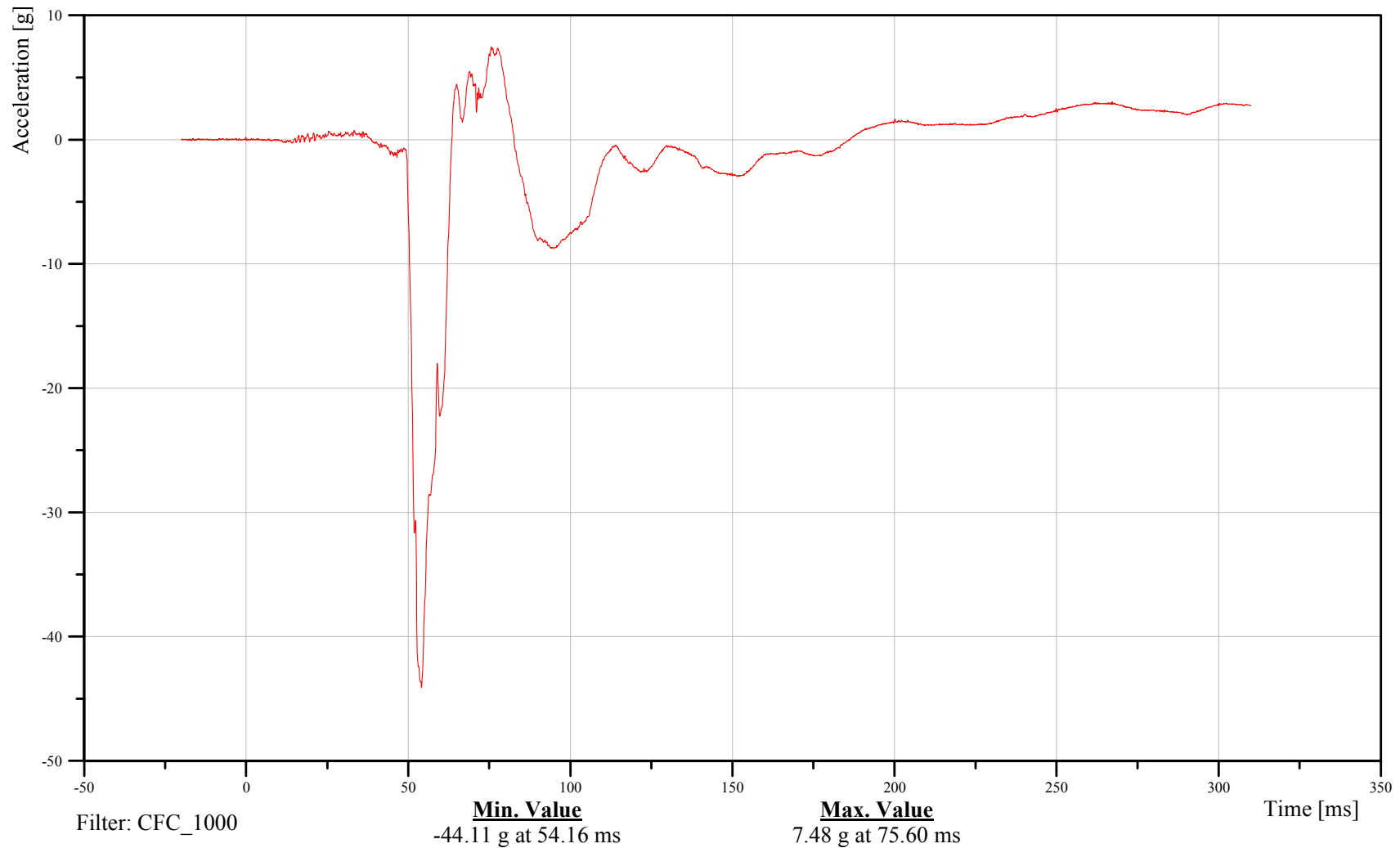
Head (LT) Accel X

Customer: VRTC

14HEADLE00E2ACXA

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

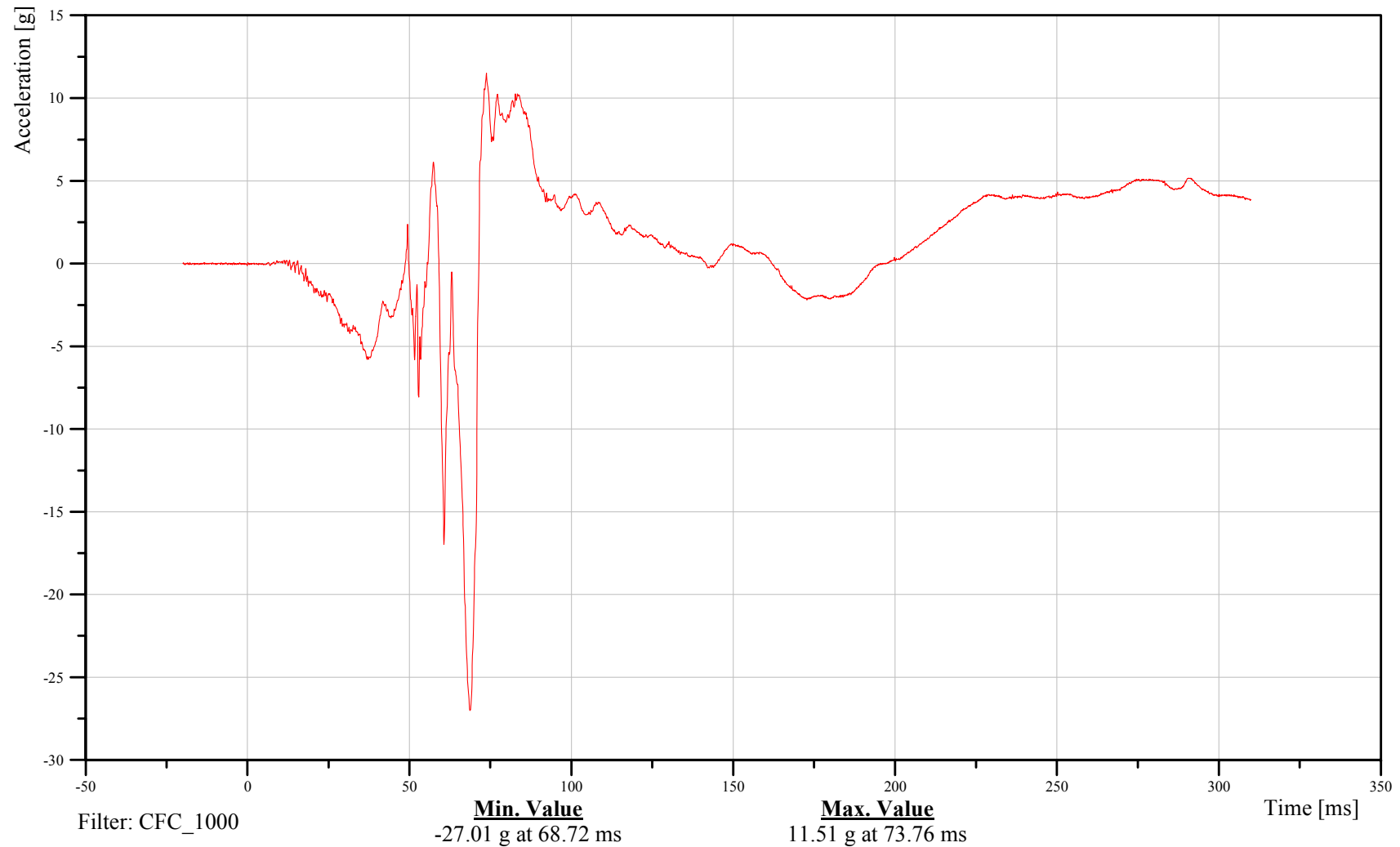
Head (LT) Accel Z

Customer: VRTC

14HEADLE00E2ACZA

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

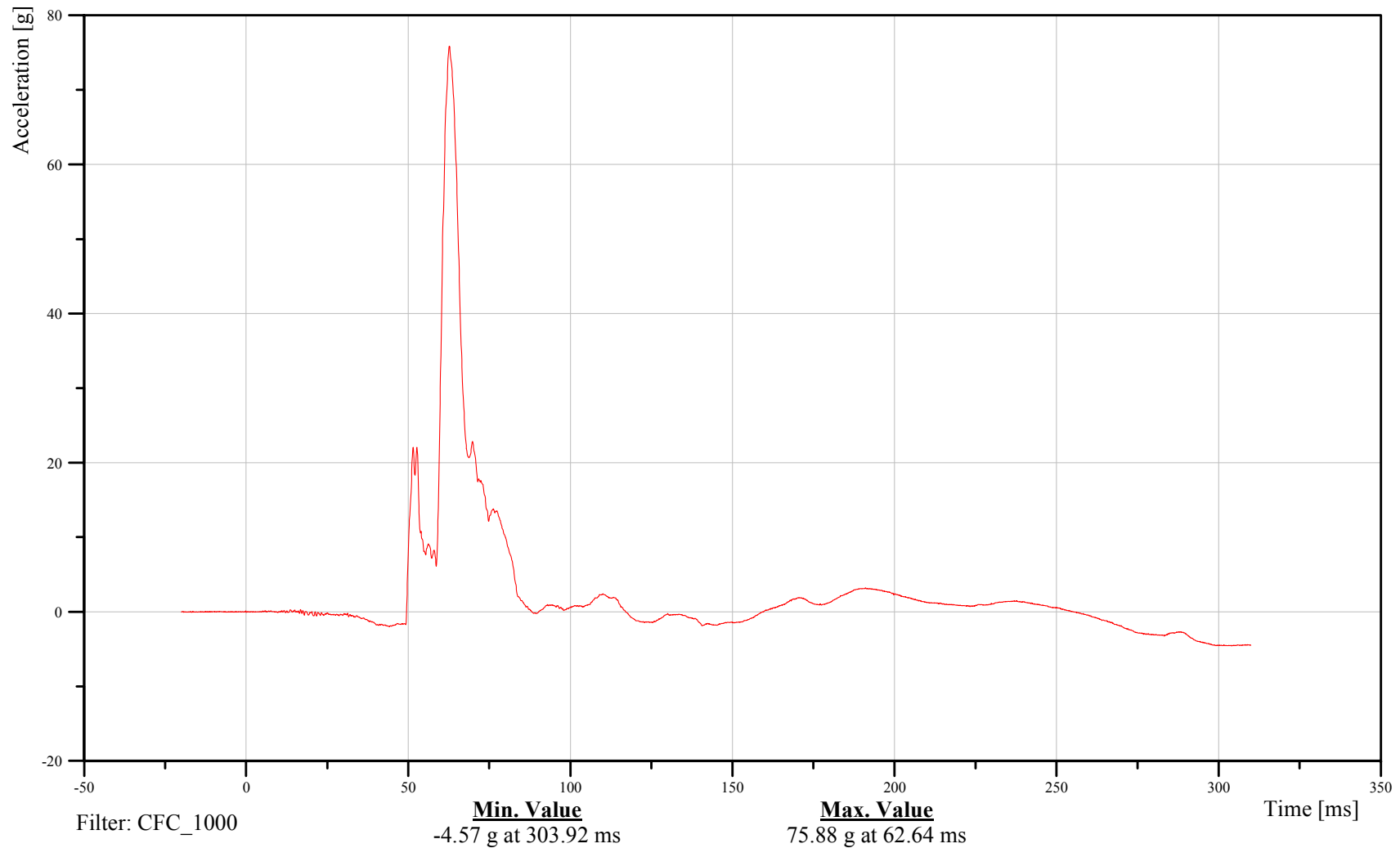
Head (FT) Accel Y

Customer: VRTC

14HEADFR00E2ACYA

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

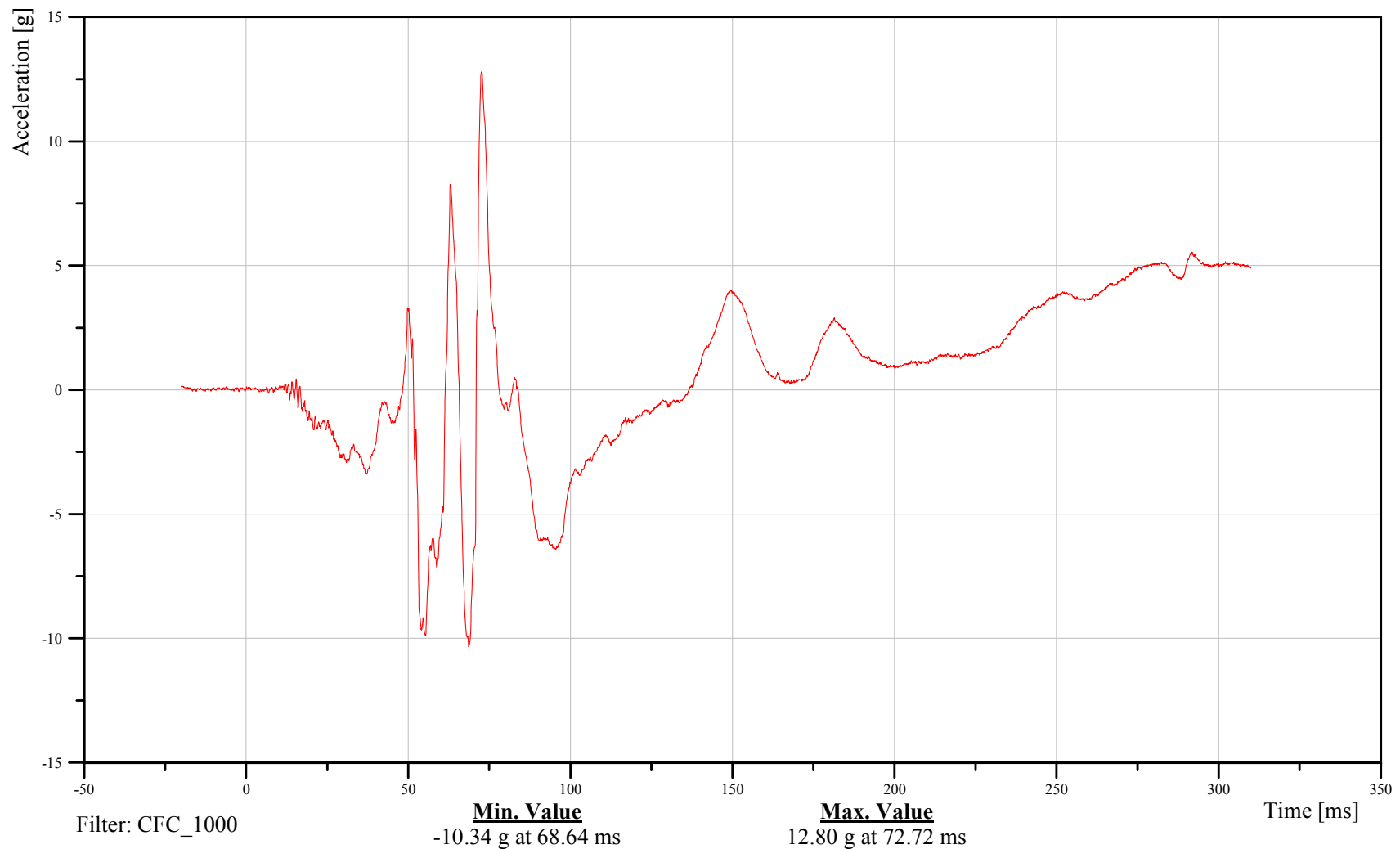
Head (FT) Accel Z

Customer: VRTC

14HEADFR00E2ACZA

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

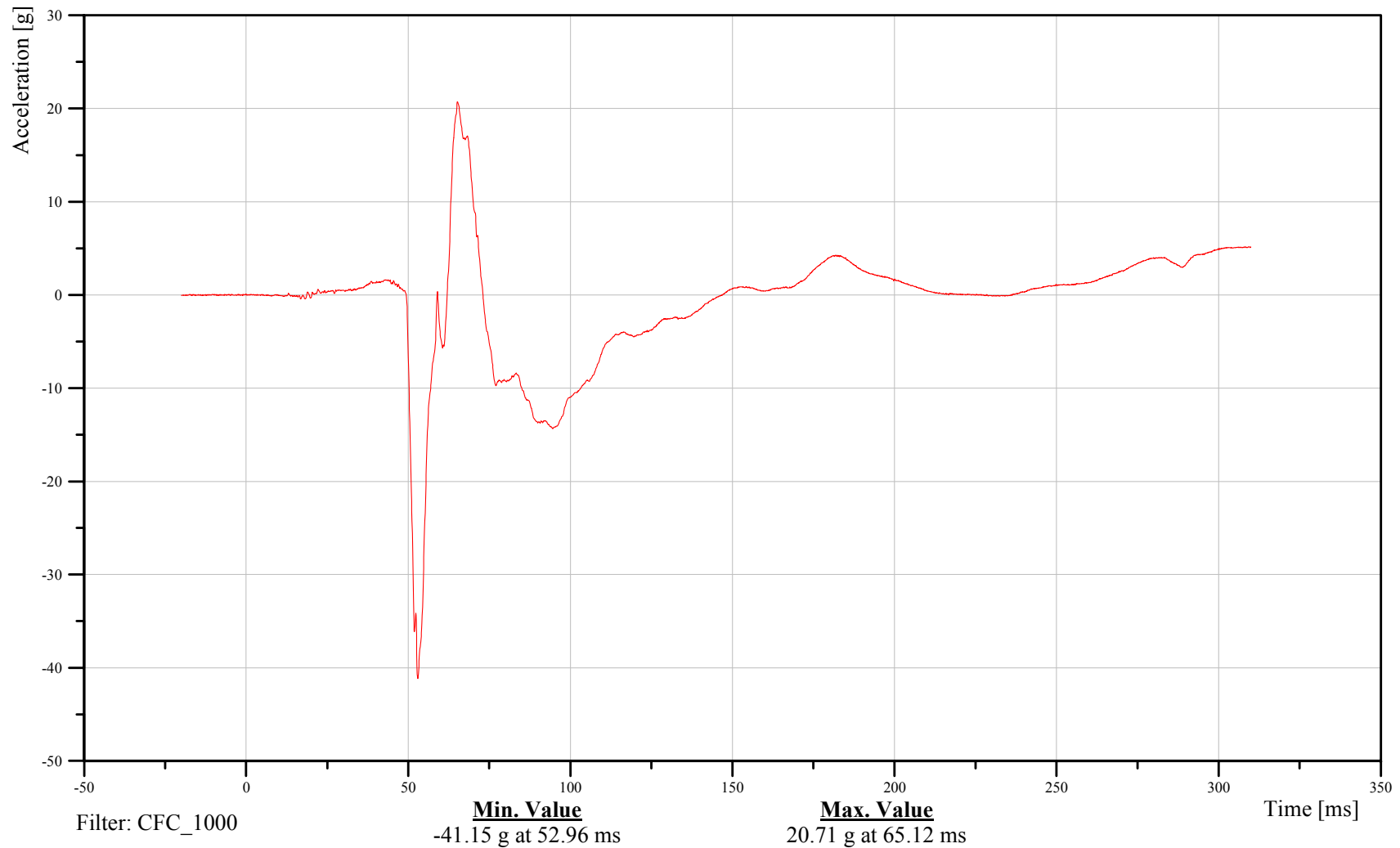
Head (TP) Accel X

Customer: VRTC

14HEADUP00E2ACXA

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

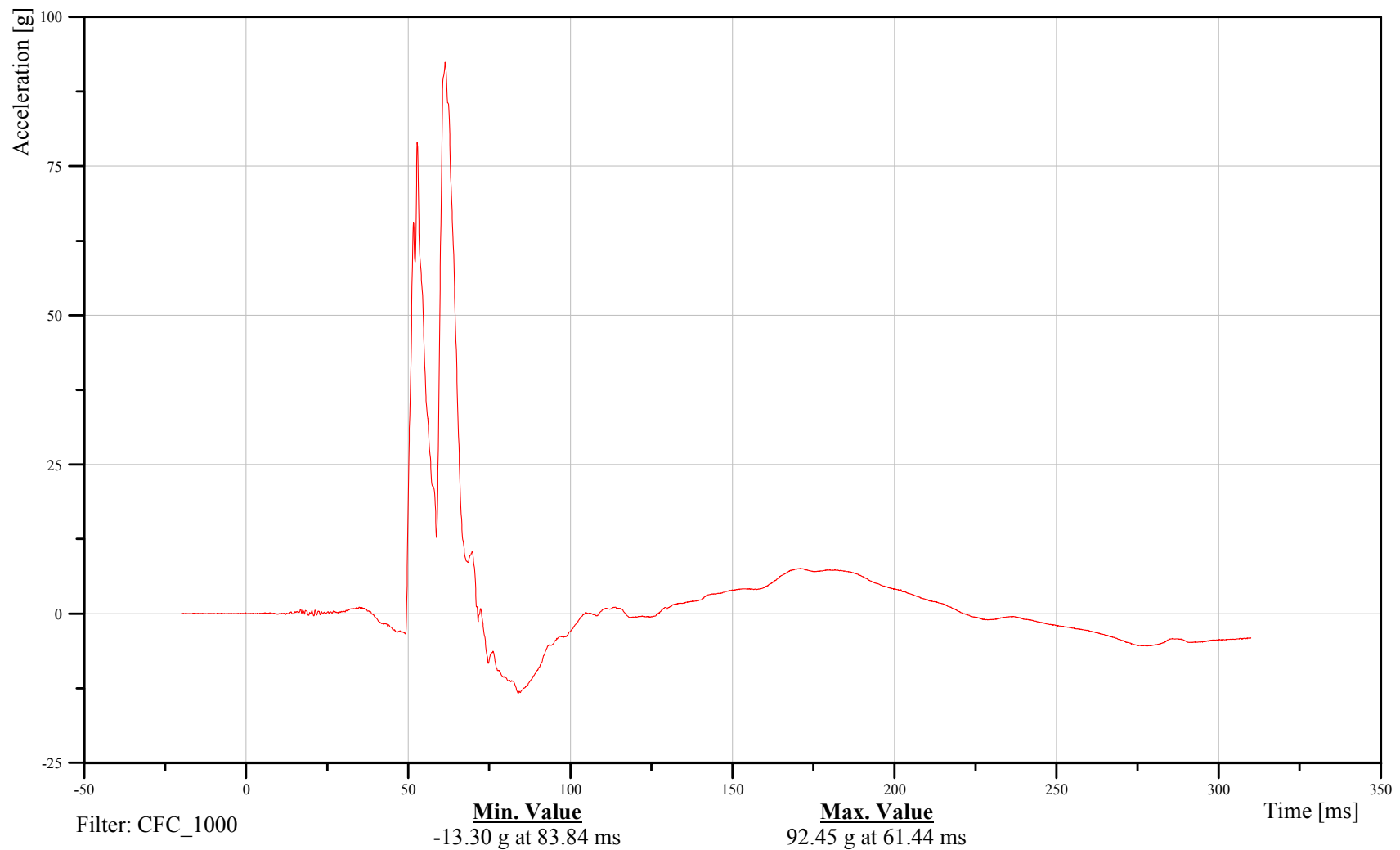
Head (TP) Accel Y

Customer: VRTC

14HEADUP00E2ACYA

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

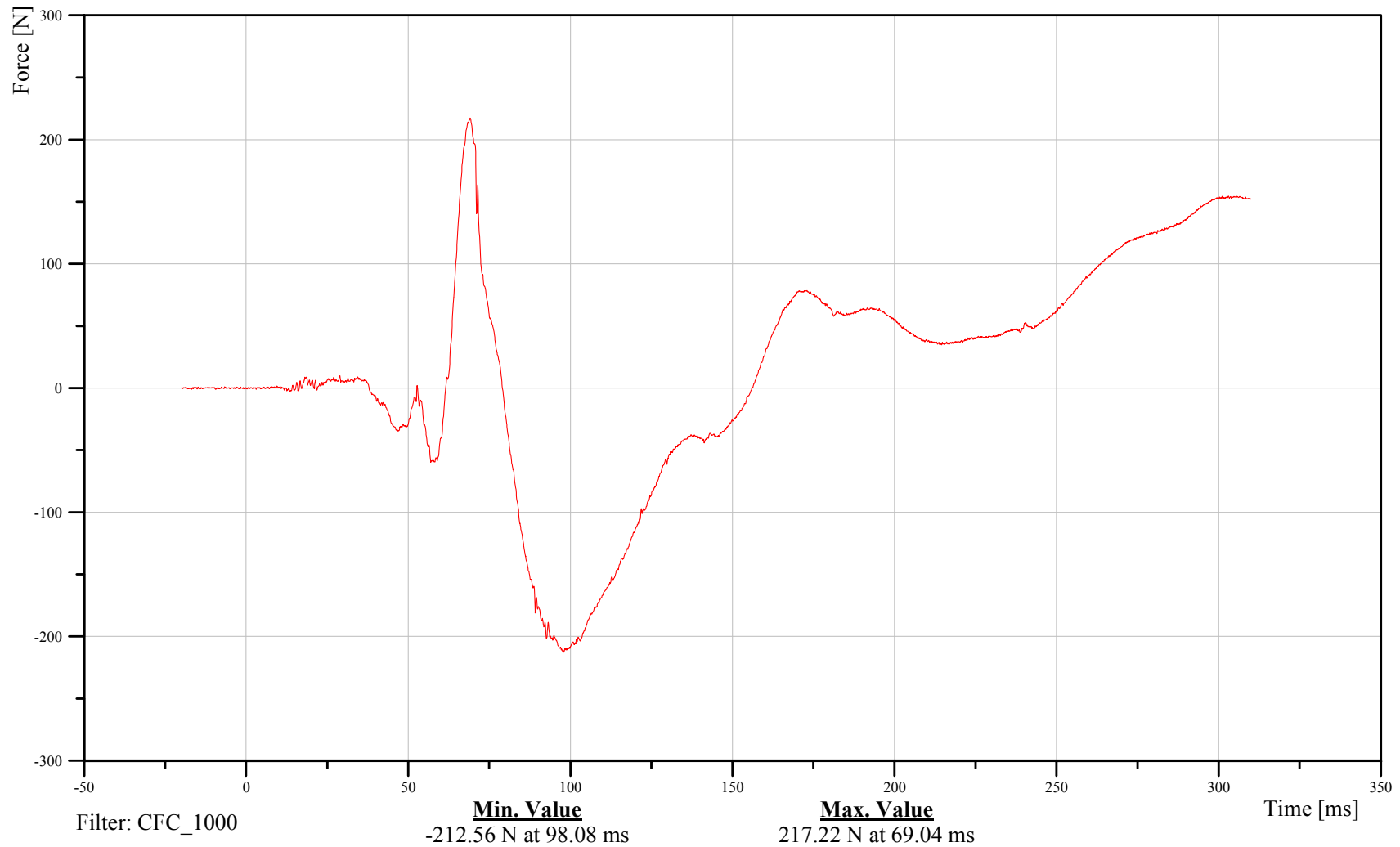
Neck Force X

Customer: VRTC

14NECKUP00E2FOXA

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

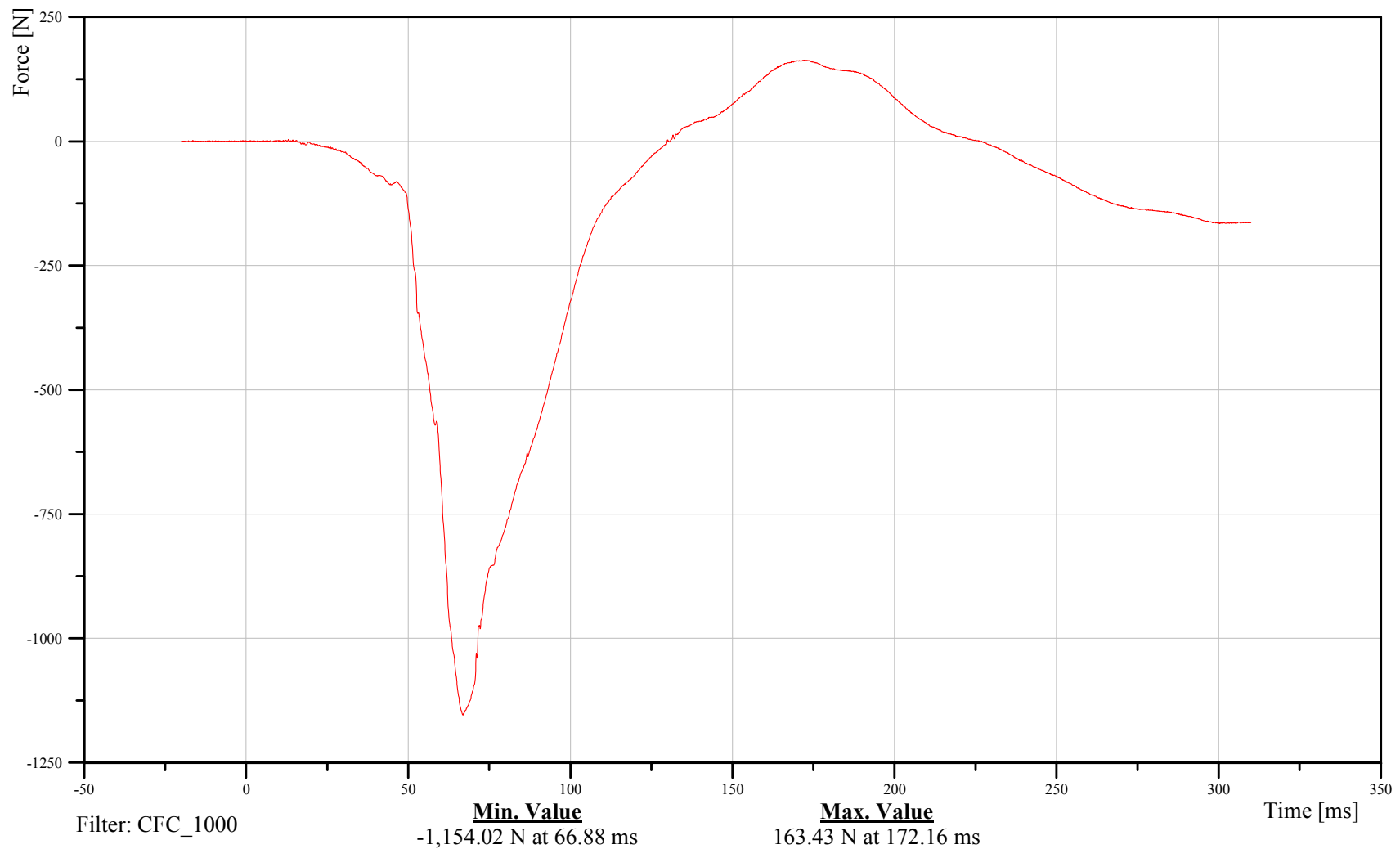
Neck Force Y

Customer: VRTC

14NECKUP00E2FOYA

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

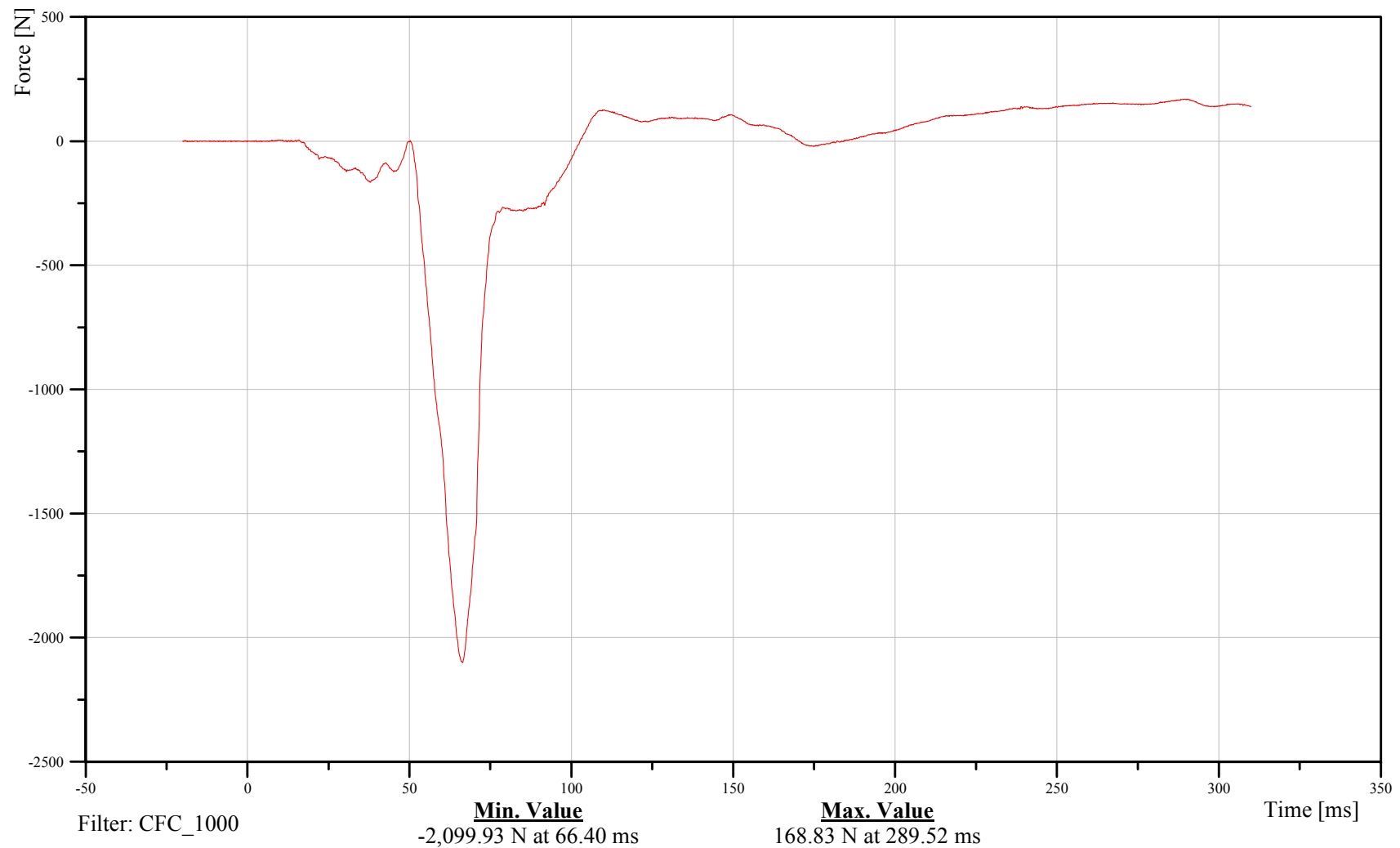
Neck Force Z

Customer: VRTC

14NECKUP00E2FOZA

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

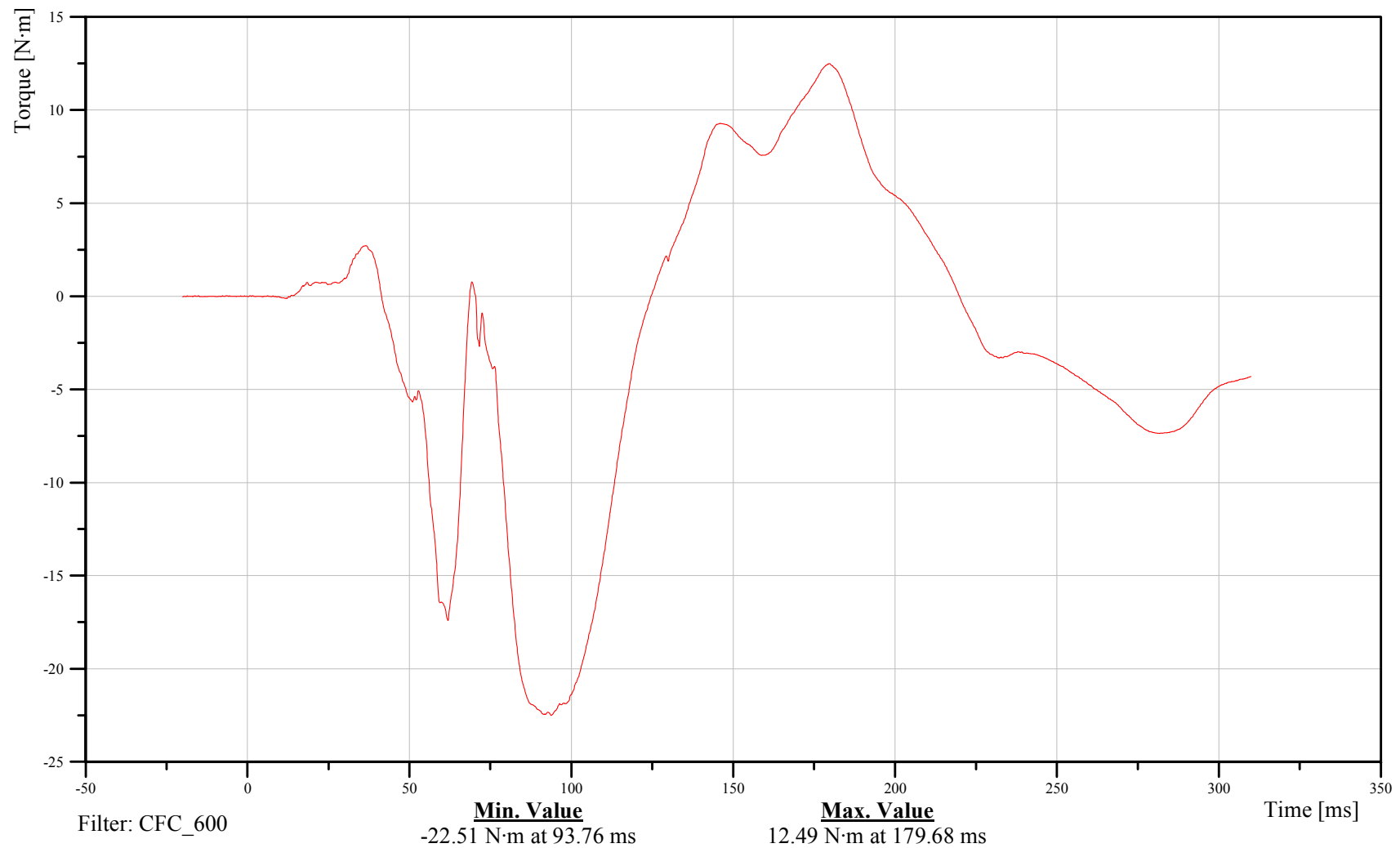
Neck Moment X

Customer: VRTC

14NECKUP00E2MOXB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

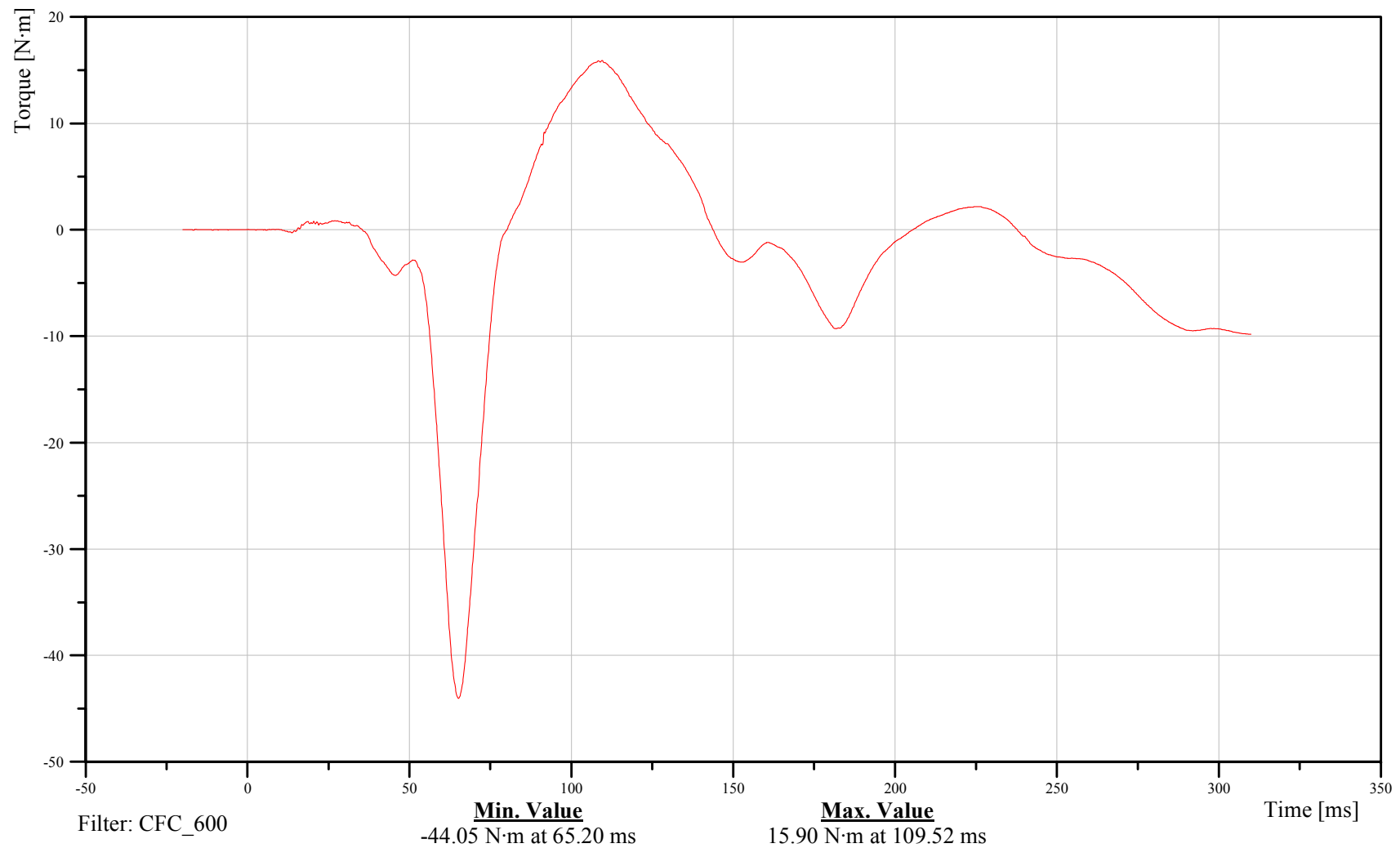
Neck Moment Y

Customer: VRTC

14NECKUP00E2MOYB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

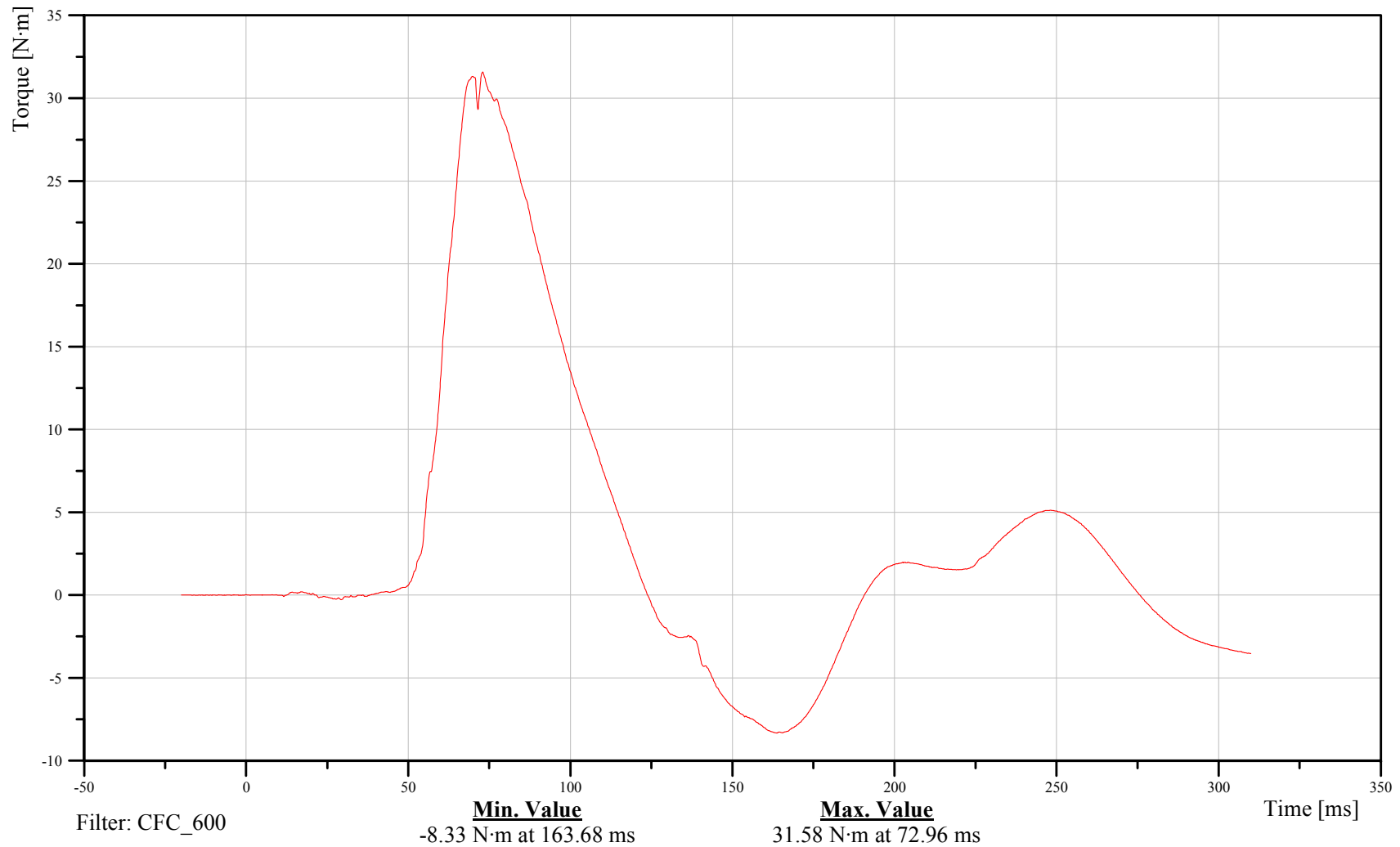
Neck Moment Z

Customer: VRTC

14NECKUP00E2MOZB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

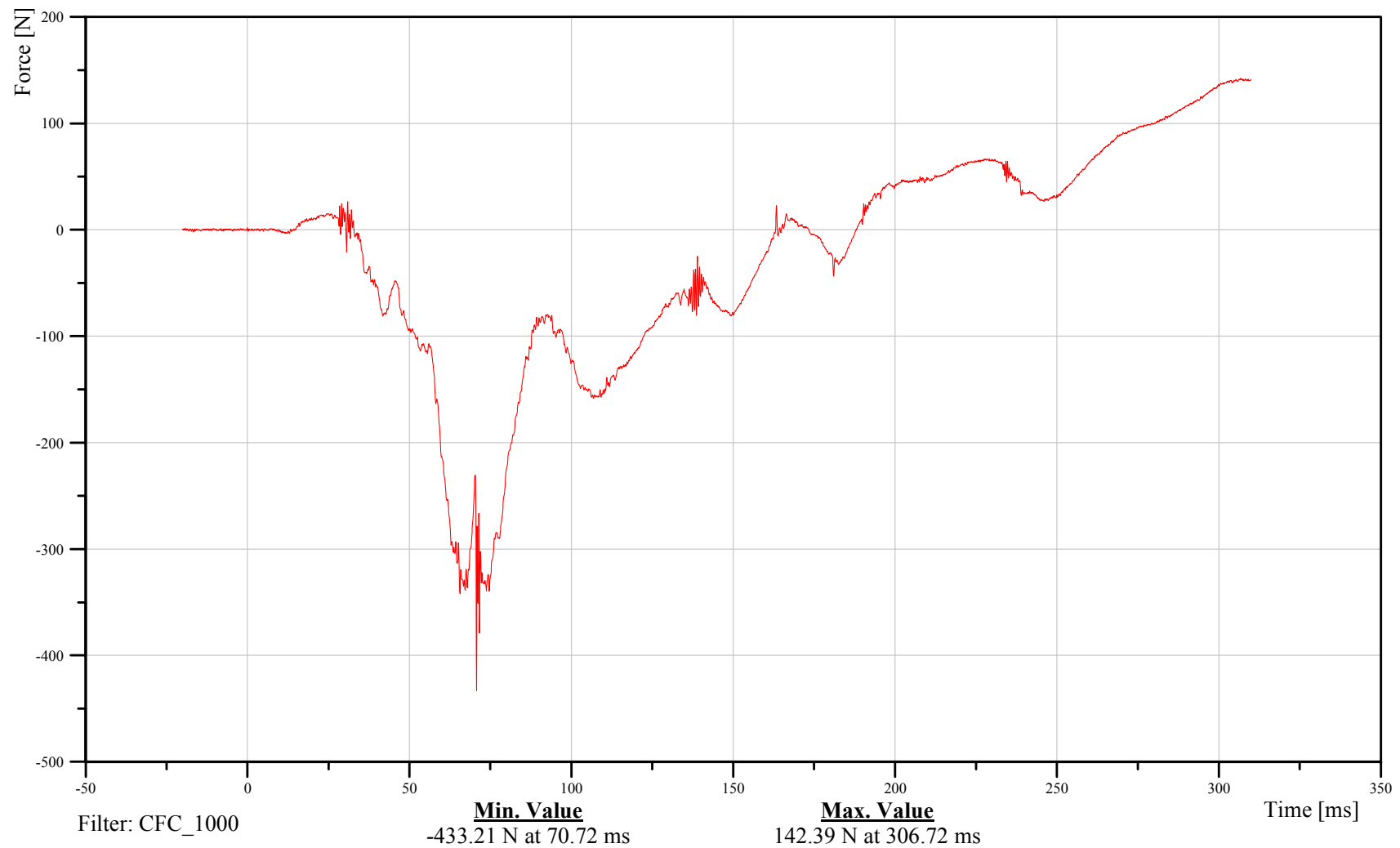
Neck Lower Force X

Customer: VRTC

14NECKLO00E2FOXA

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

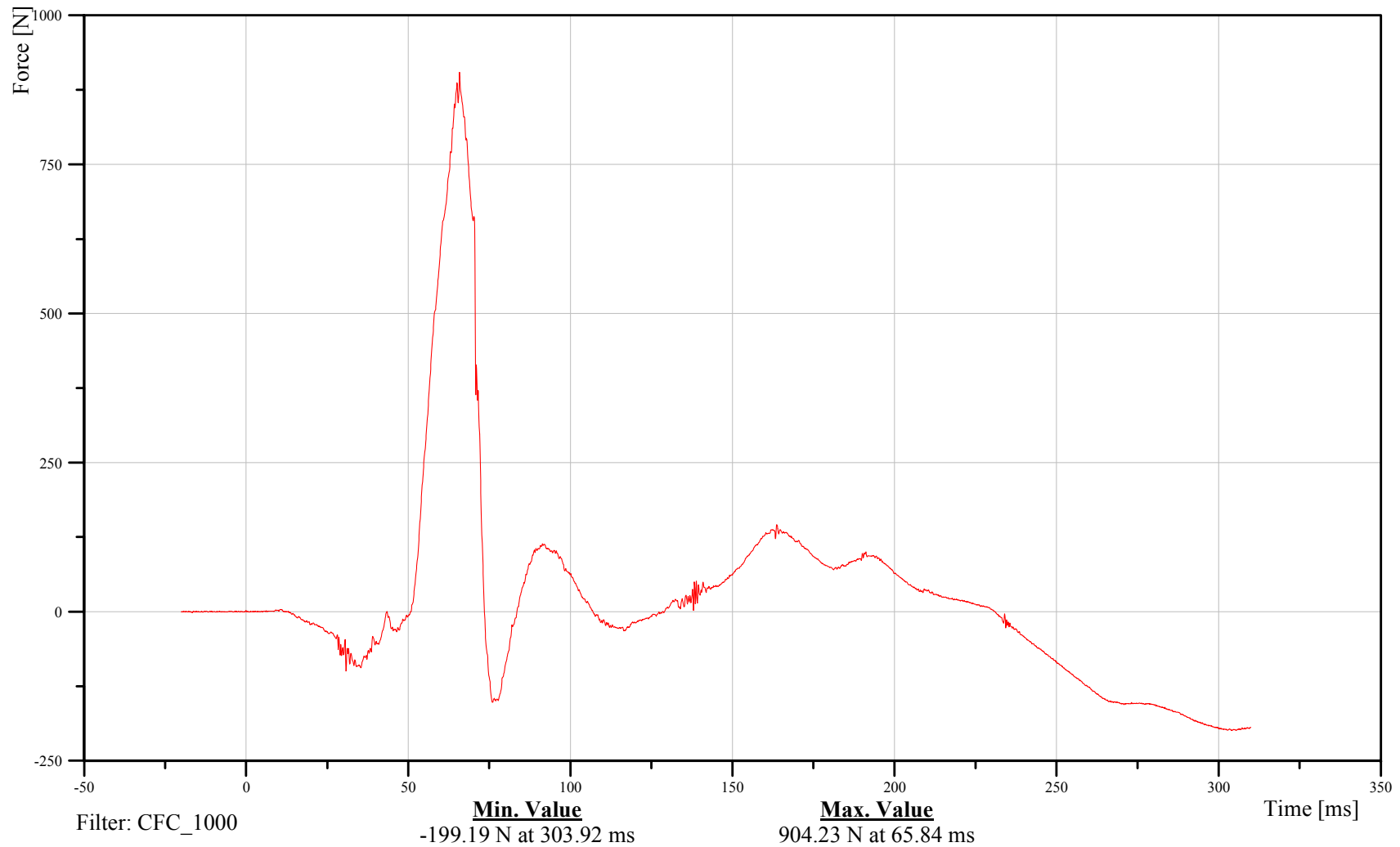
Neck Lower Force Y

Customer: VRTC

14NECKLO00E2FOYA

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

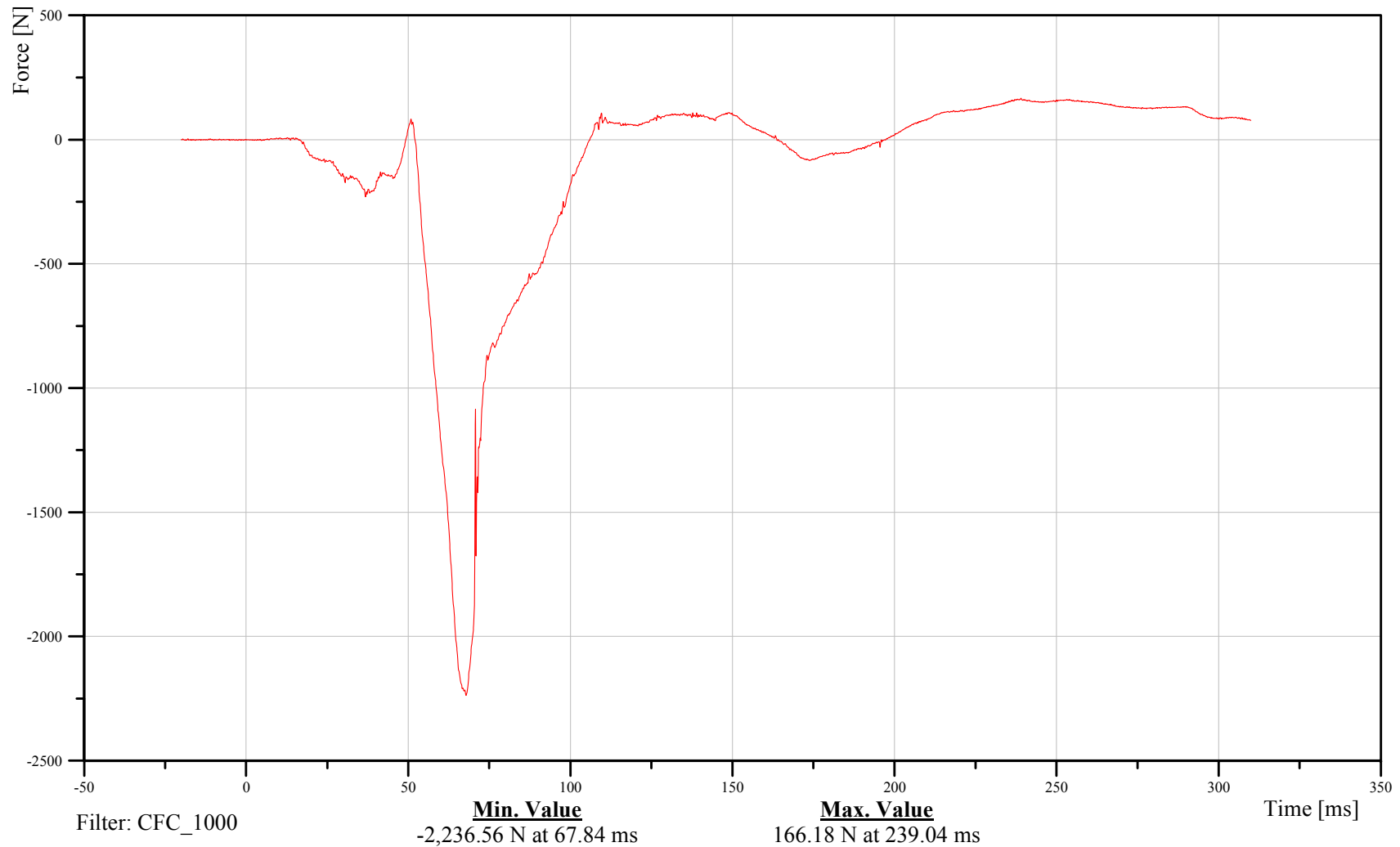
Neck Lower Force Z

Customer: VRTC

14NECKLO00E2FOZA

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

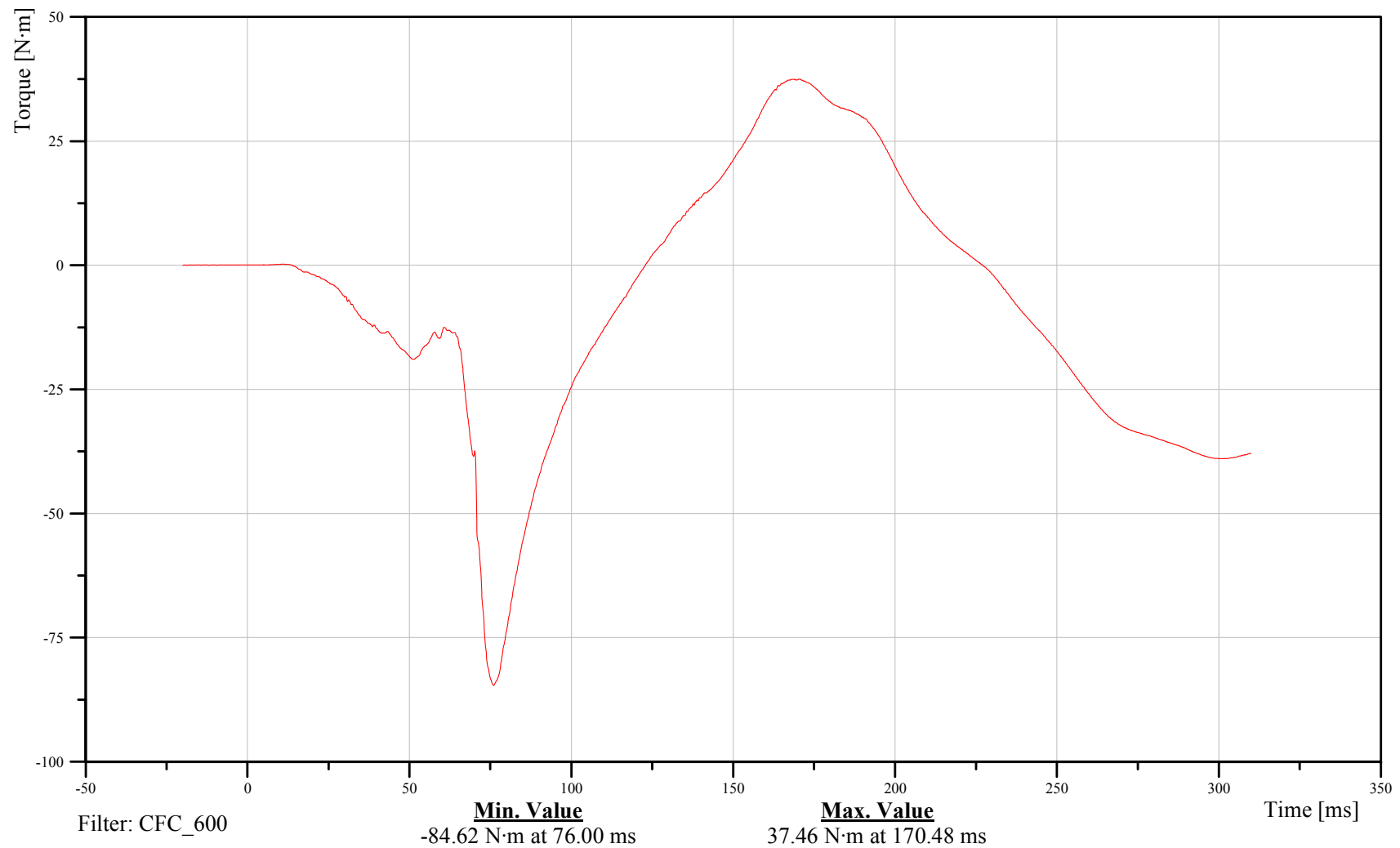
Neck Lower Moment X

Customer: VRTC

14NECKLO00E2MOXB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

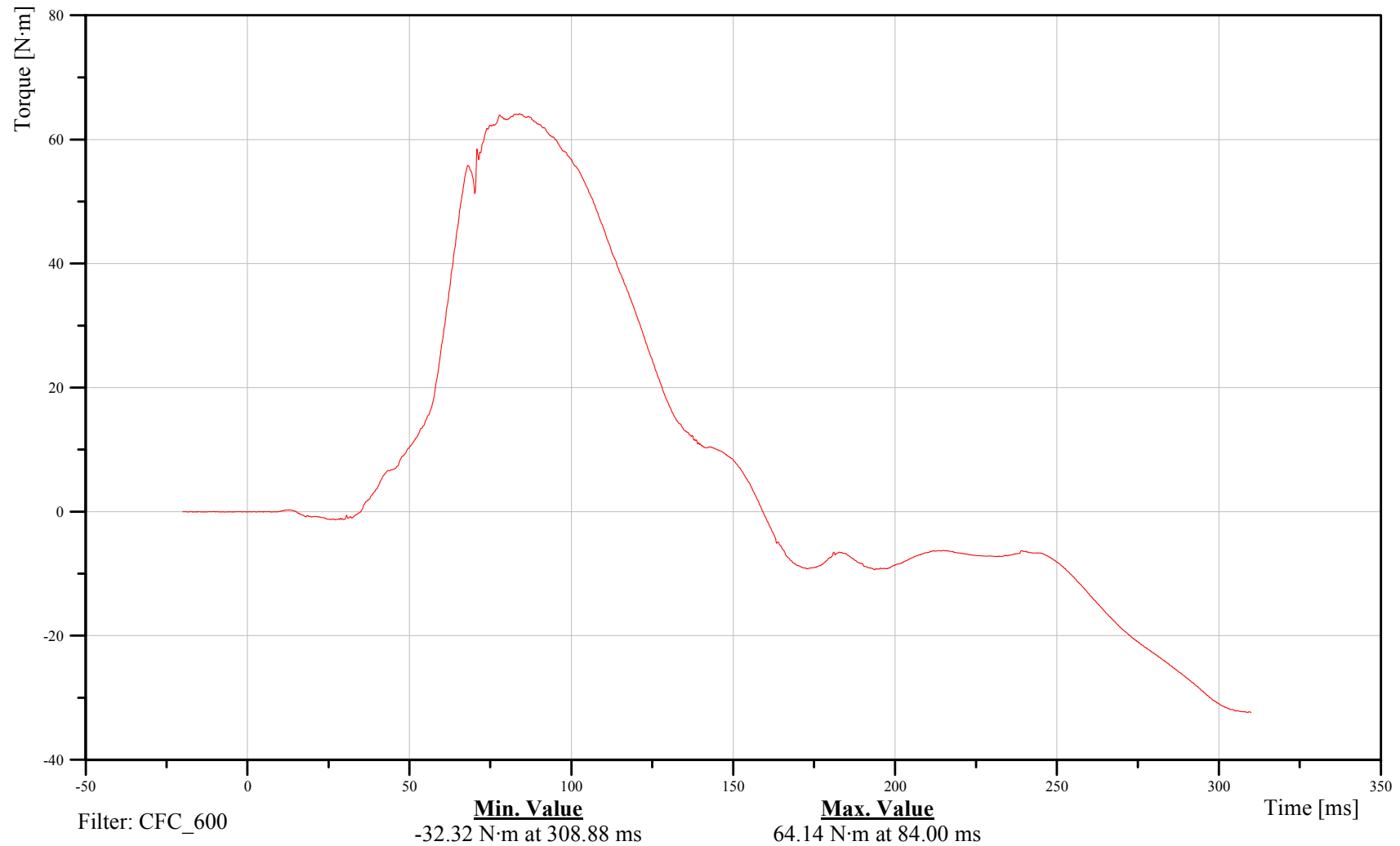
Neck Lower Moment Y

Customer: VRTC

14NECKLO00E2MOYB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

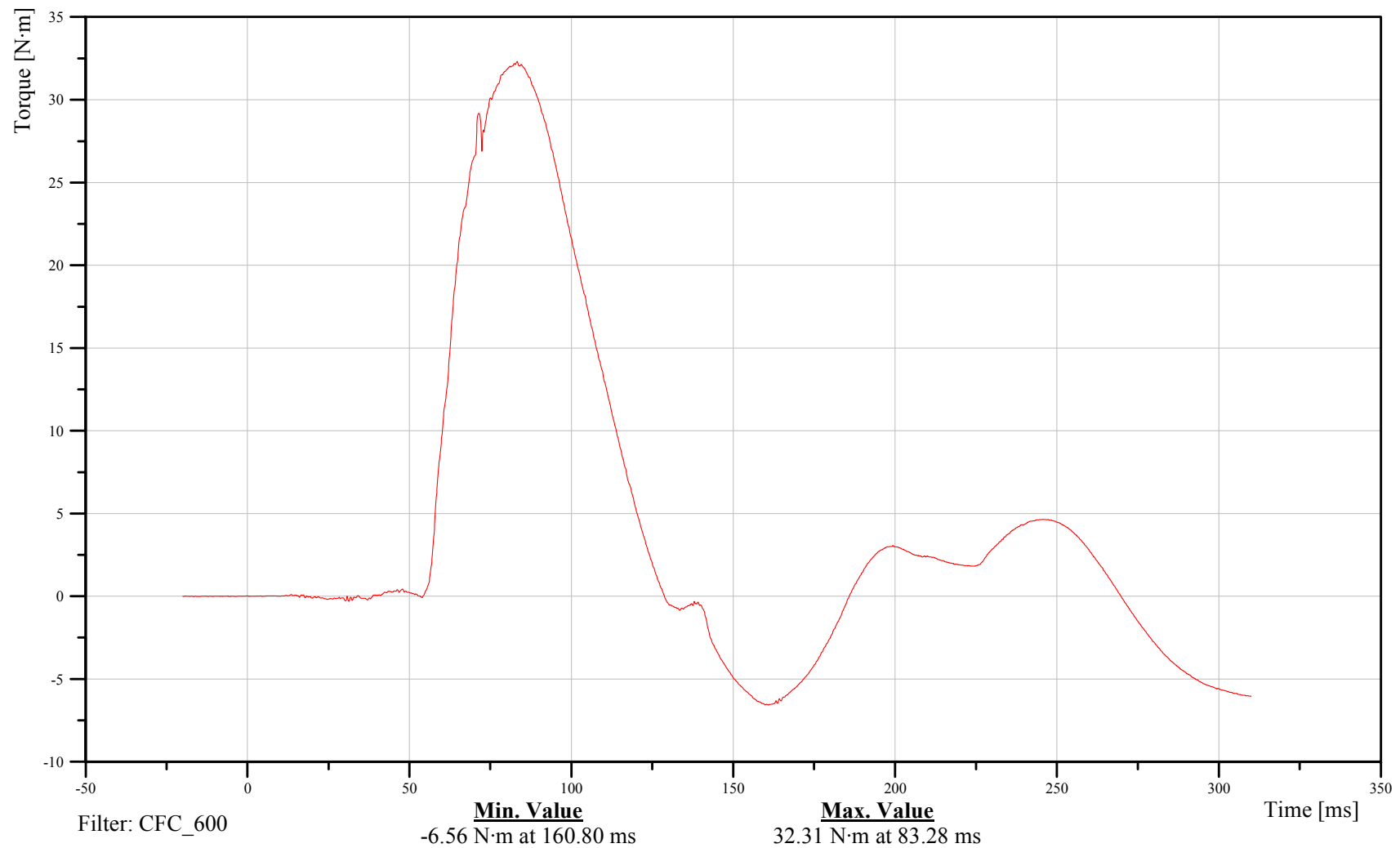
Neck Lower Moment Z

Customer: VRTC

14NECKLO00E2MOZB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Shoulder Left Force X

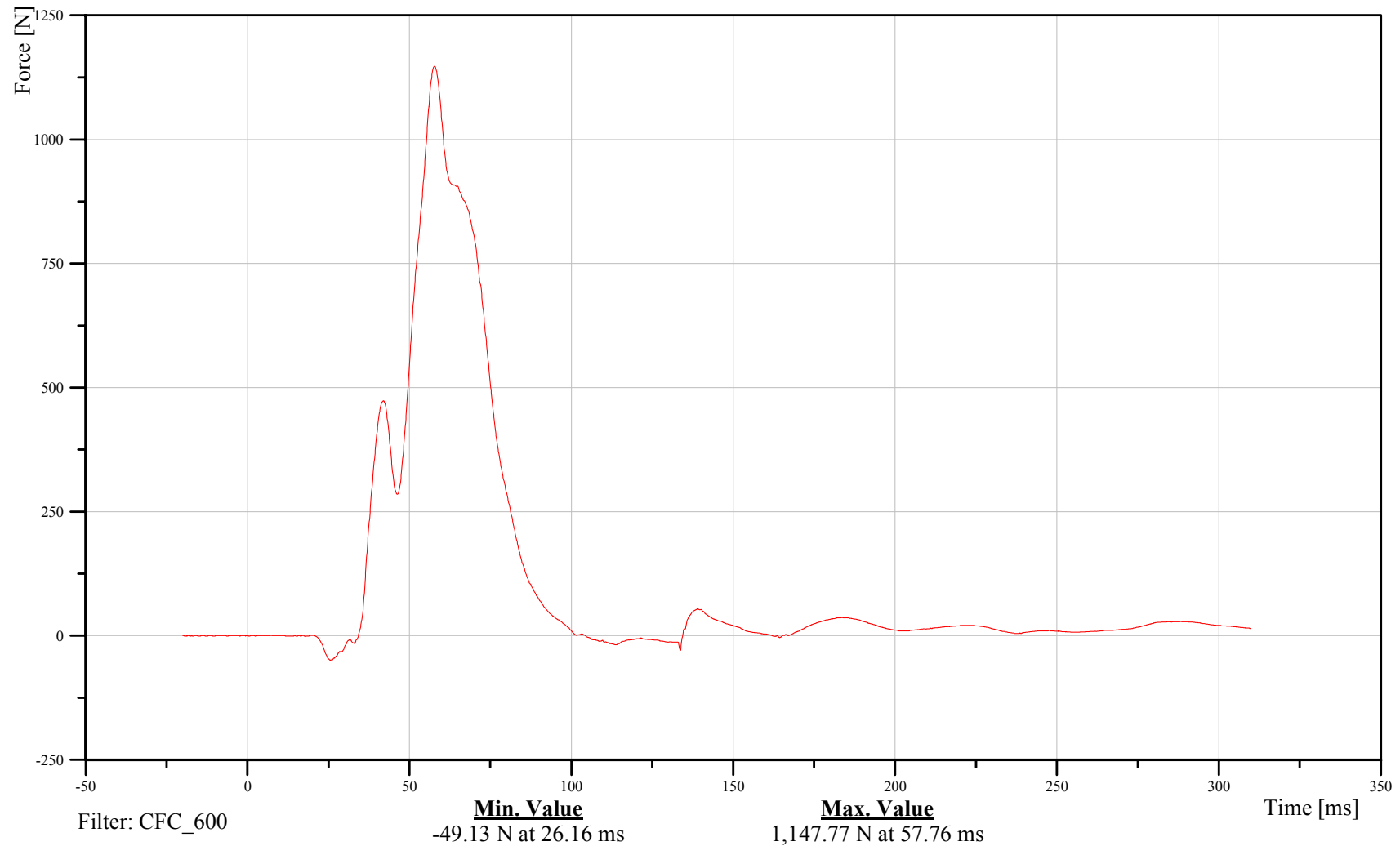
Date: 06/24/2005
Time: 12:02

Customer: VRTC

14SHLDLE00E2FOXB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

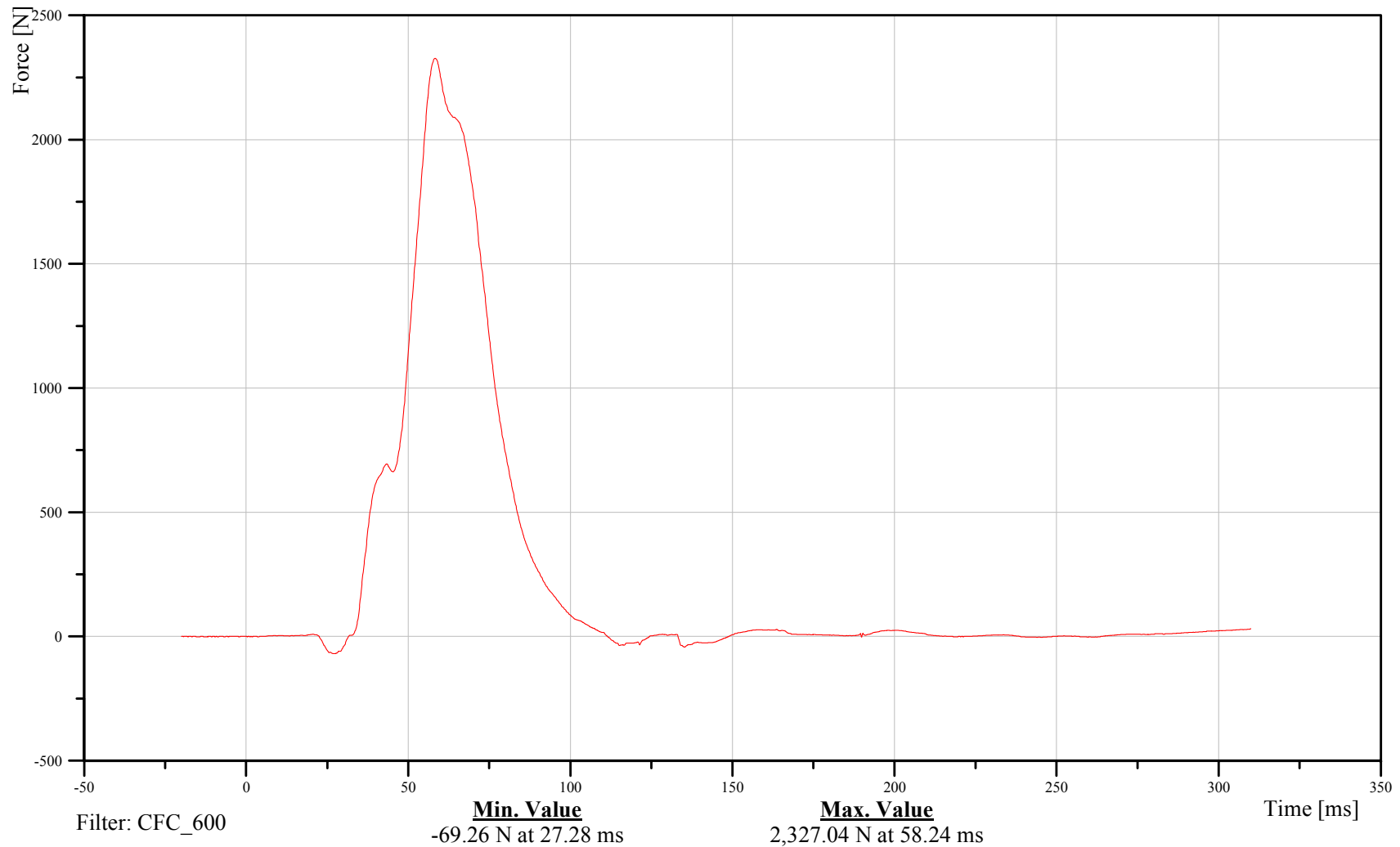
Shoulder Left Force Y

Customer: VRTC

14SHLDLE00E2FOYB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

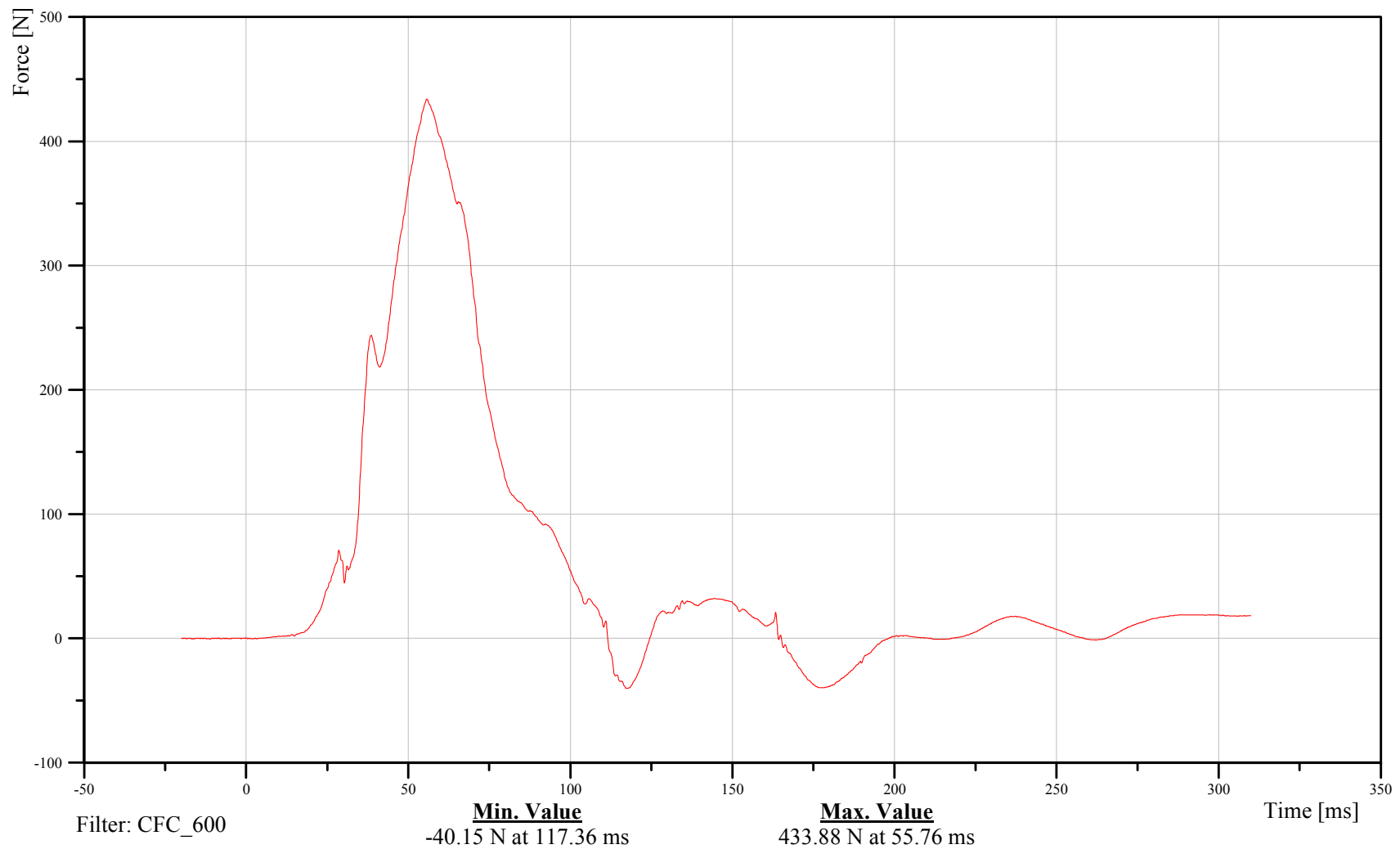
Shoulder Left Force Z

Customer: VRTC

14SHLDLE00E2FOZB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

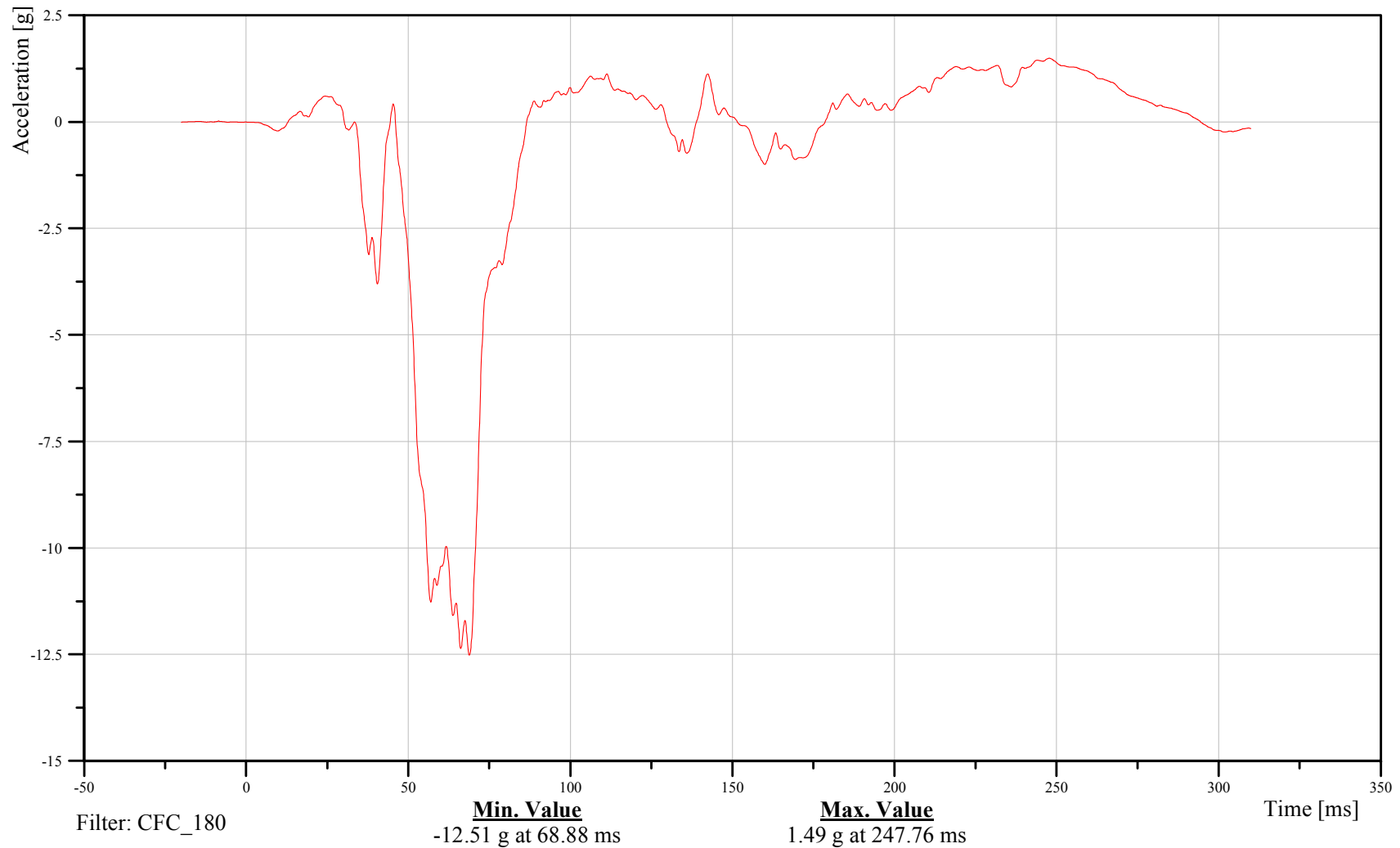
Upper Spine X

Customer: VRTC

14SPIN0100E2ACXC

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

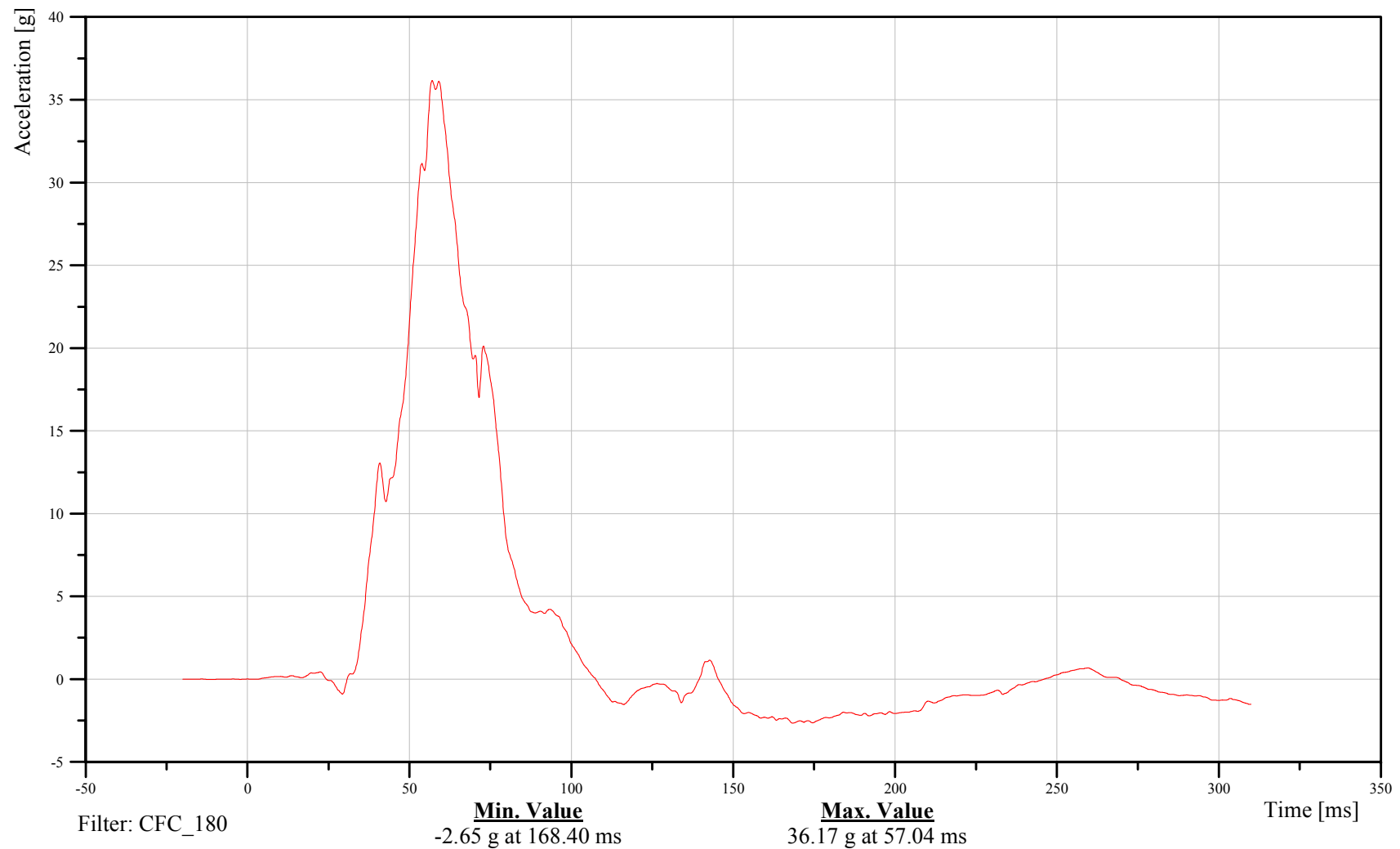
Upper Spine Y

Customer: VRTC

14SPIN0100E2ACYC

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

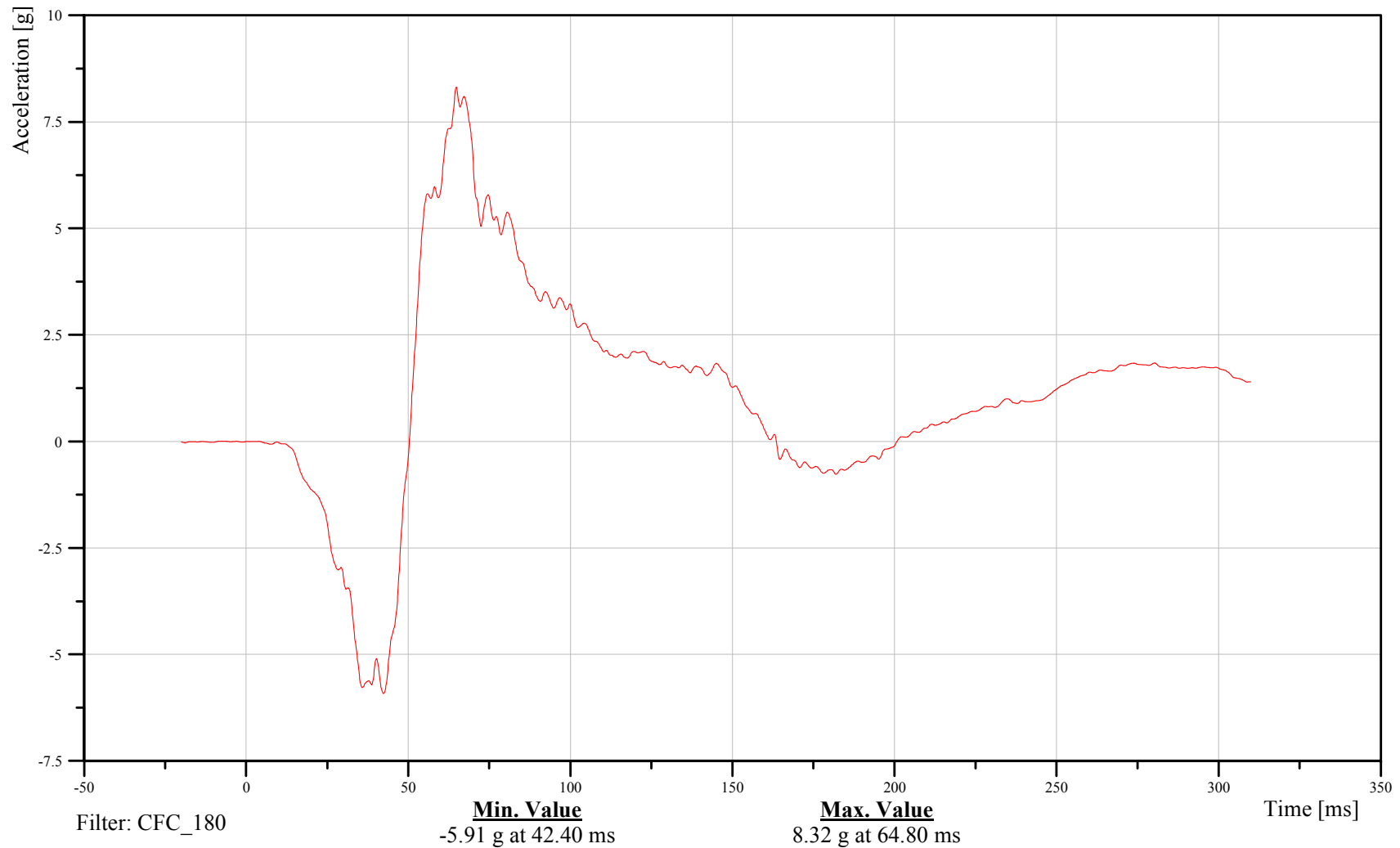
Upper Spine Z

Customer: VRTC

14SPIN0100E2ACZC

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

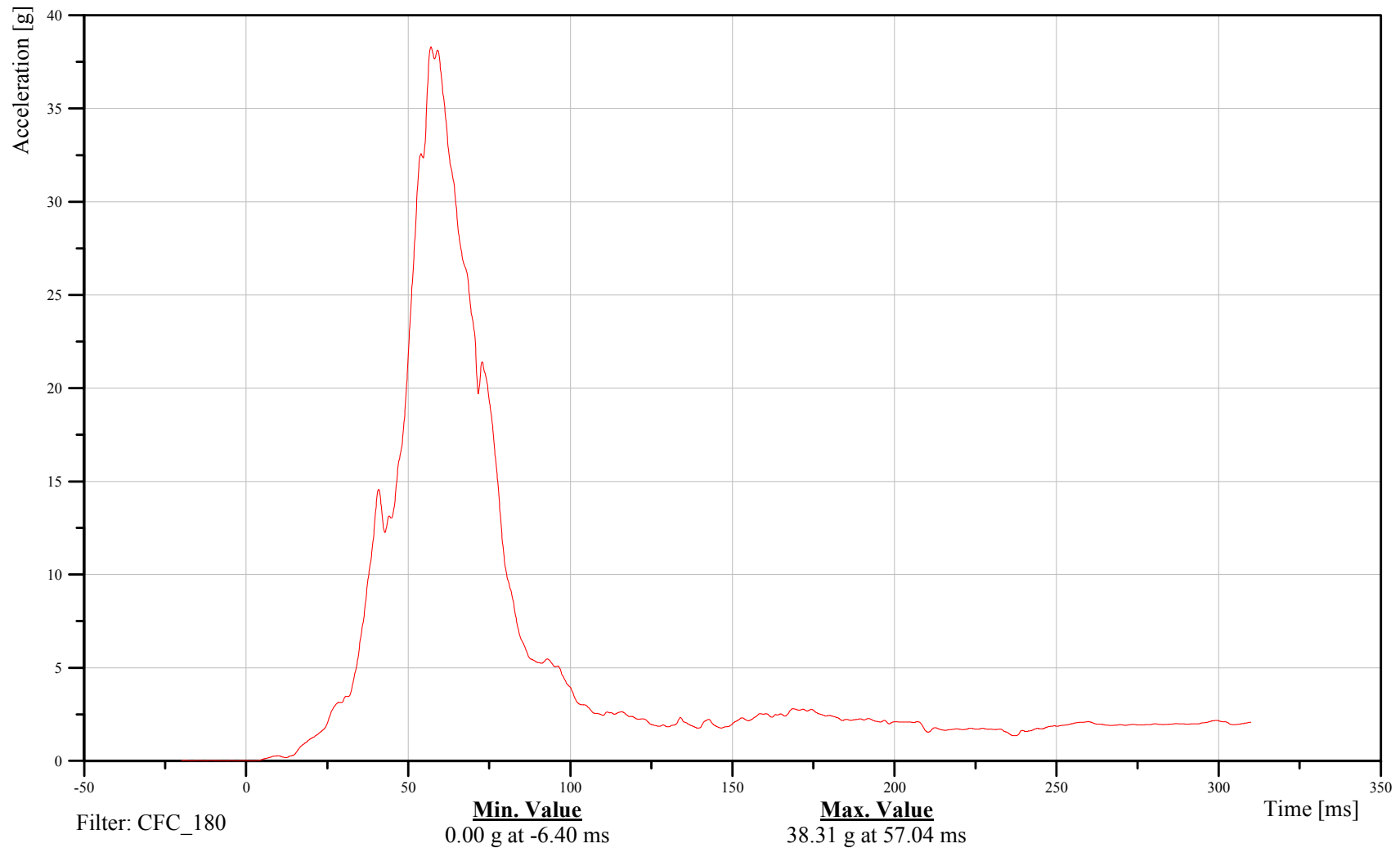
Upper Spine Resultant

Customer: VRTC

14SPIN0100E2ACRC

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

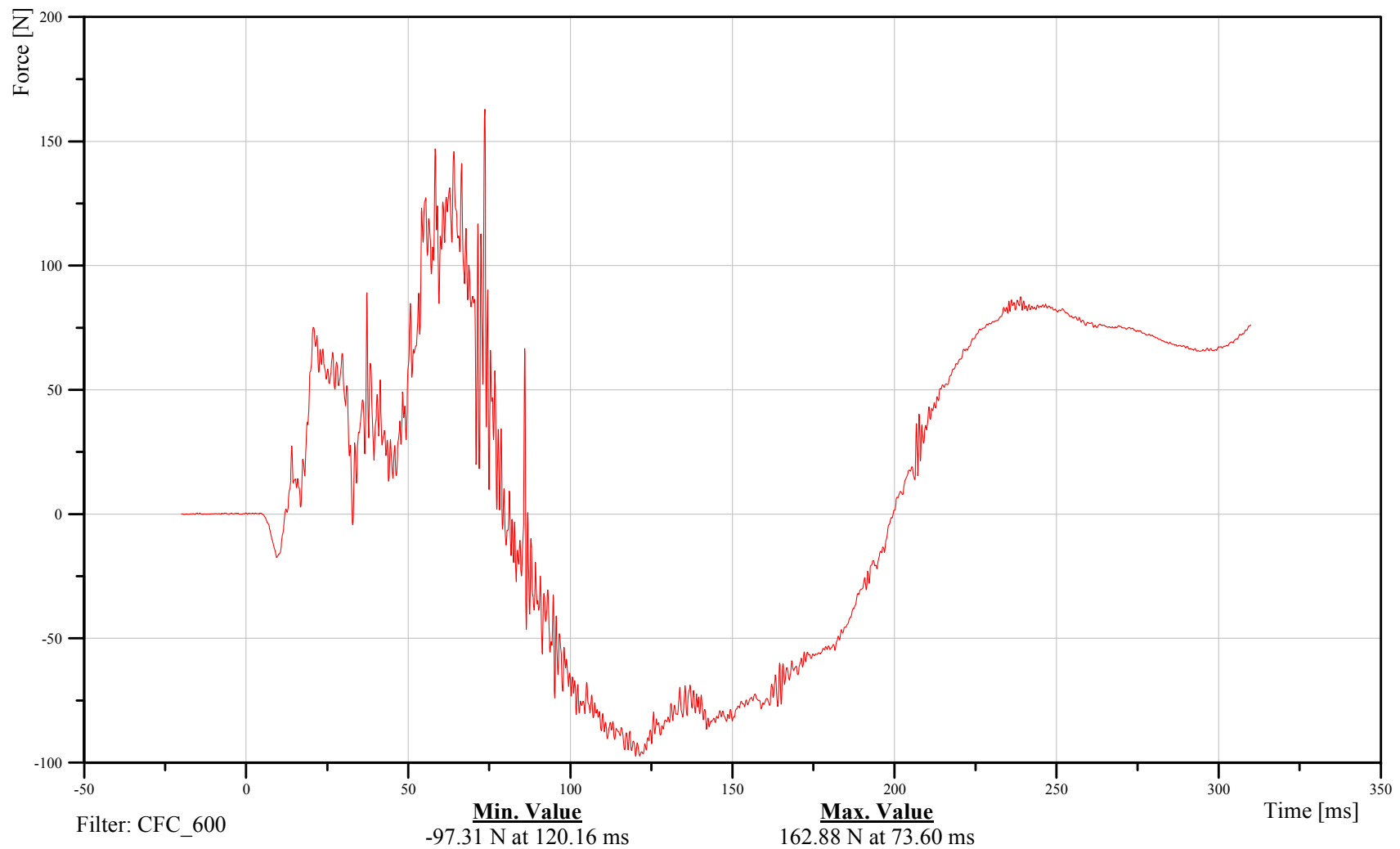
Torso Back Plate Force X

Customer: VRTC

14BAPL0000E2FOX B

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Torso Back Plate Force Y

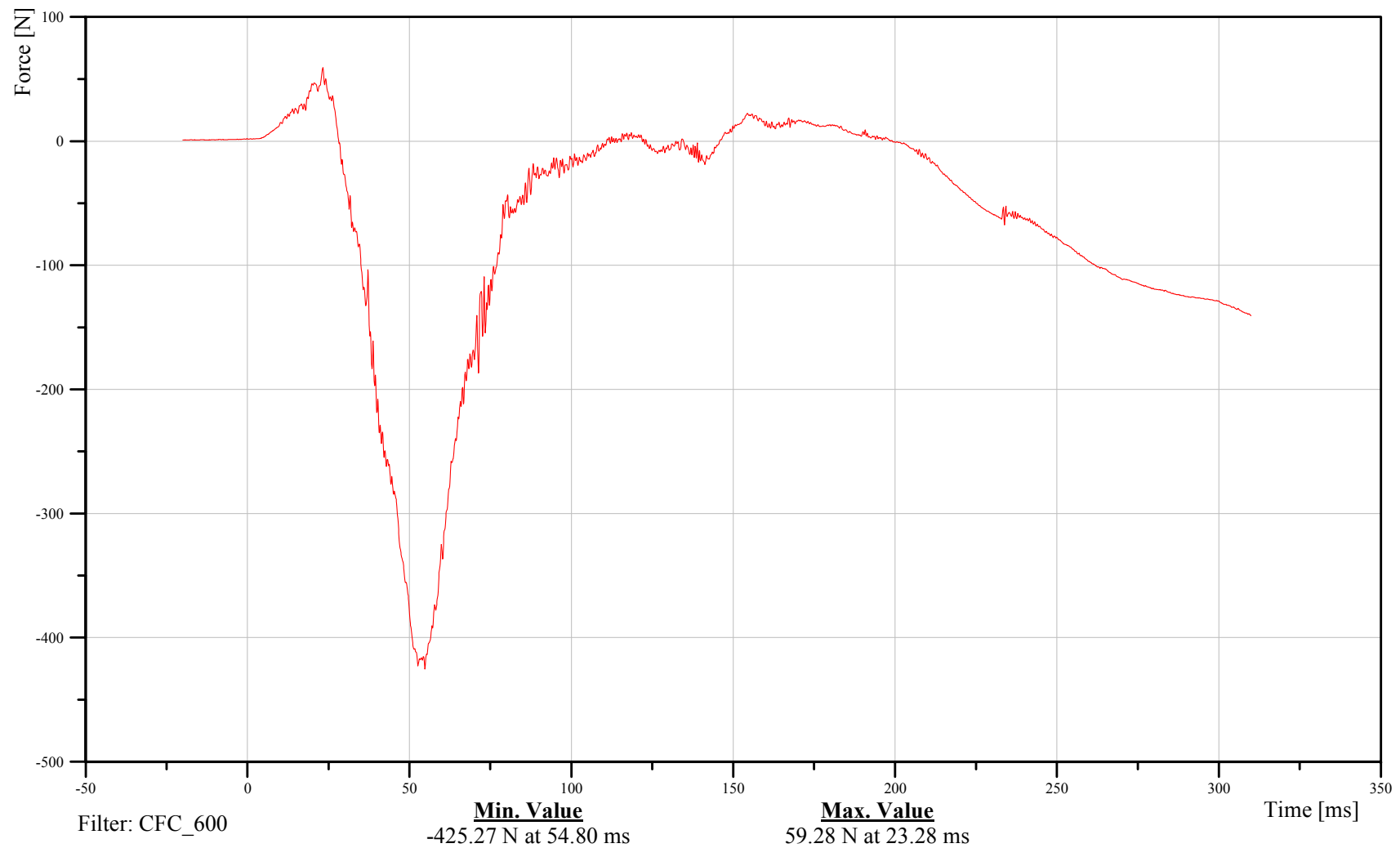
Date: 06/24/2005
Time: 12:02

Customer: VRTC

14BAPL0000E2FOYB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

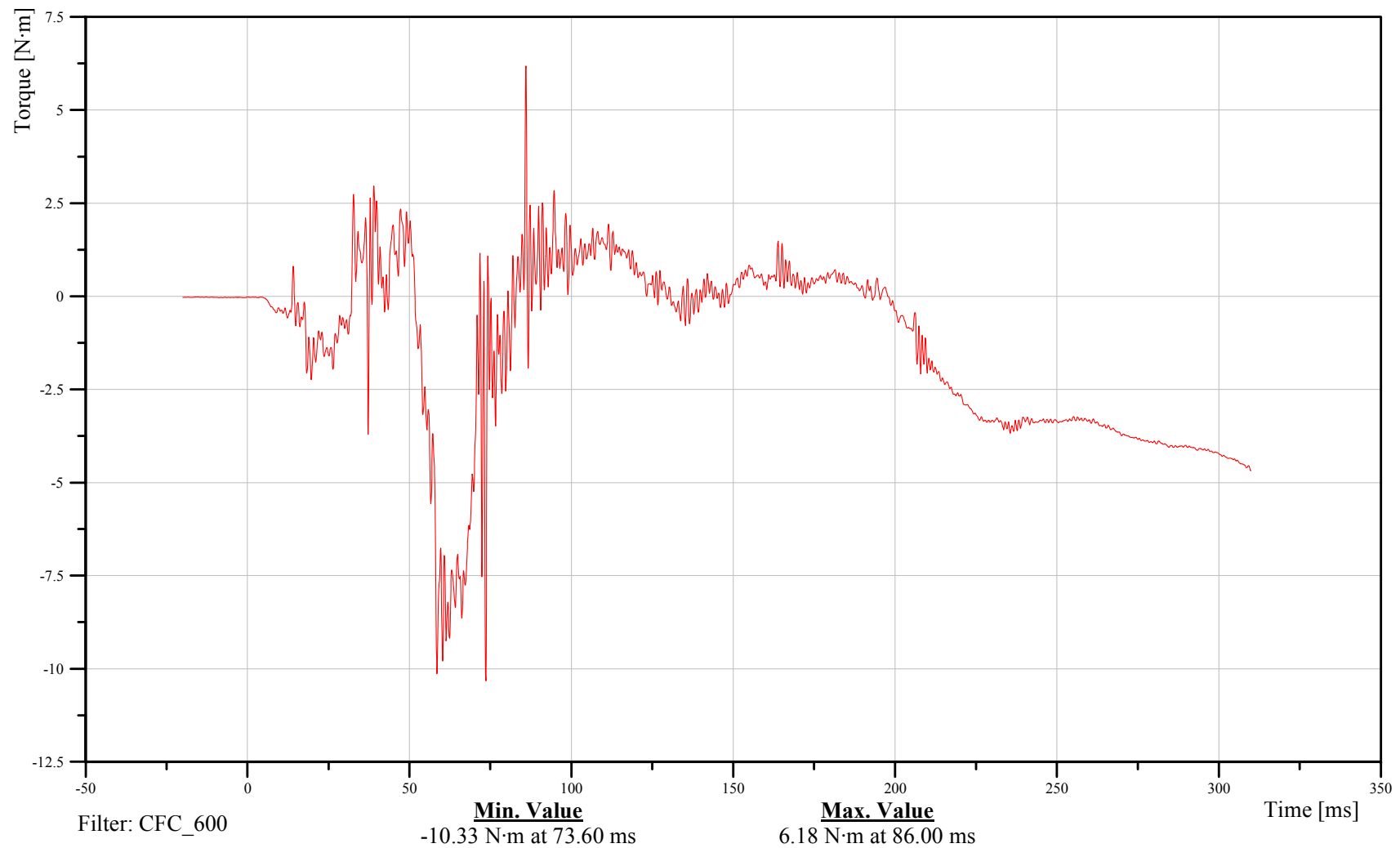
Torso Back Plate Moment Y

Customer: VRTC

14BAPL0000E2MOYB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Torso Back Plate Moment Z

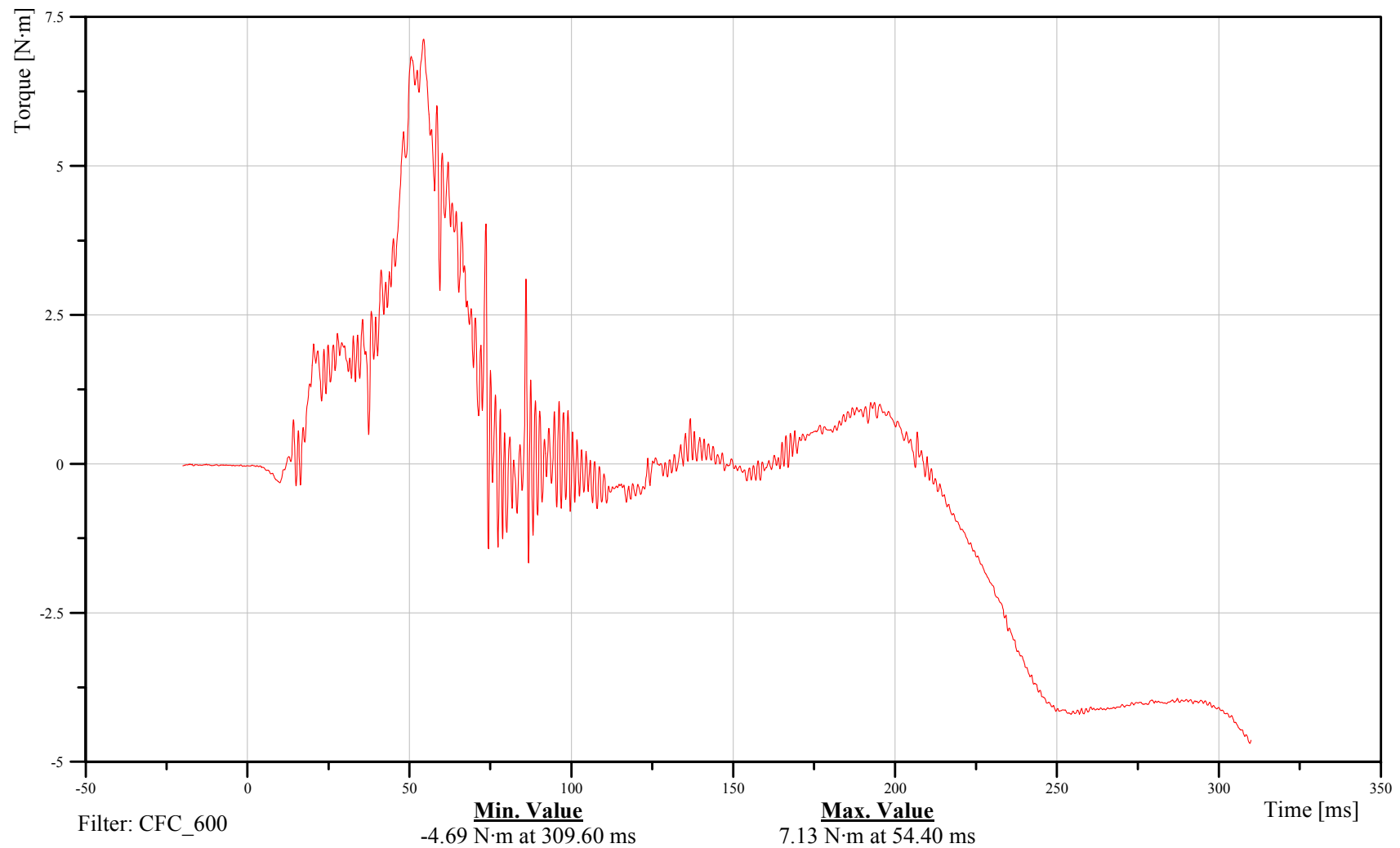
Date: 06/24/2005
Time: 12:02

Customer: VRTC

14BAPL0000E2MOZB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

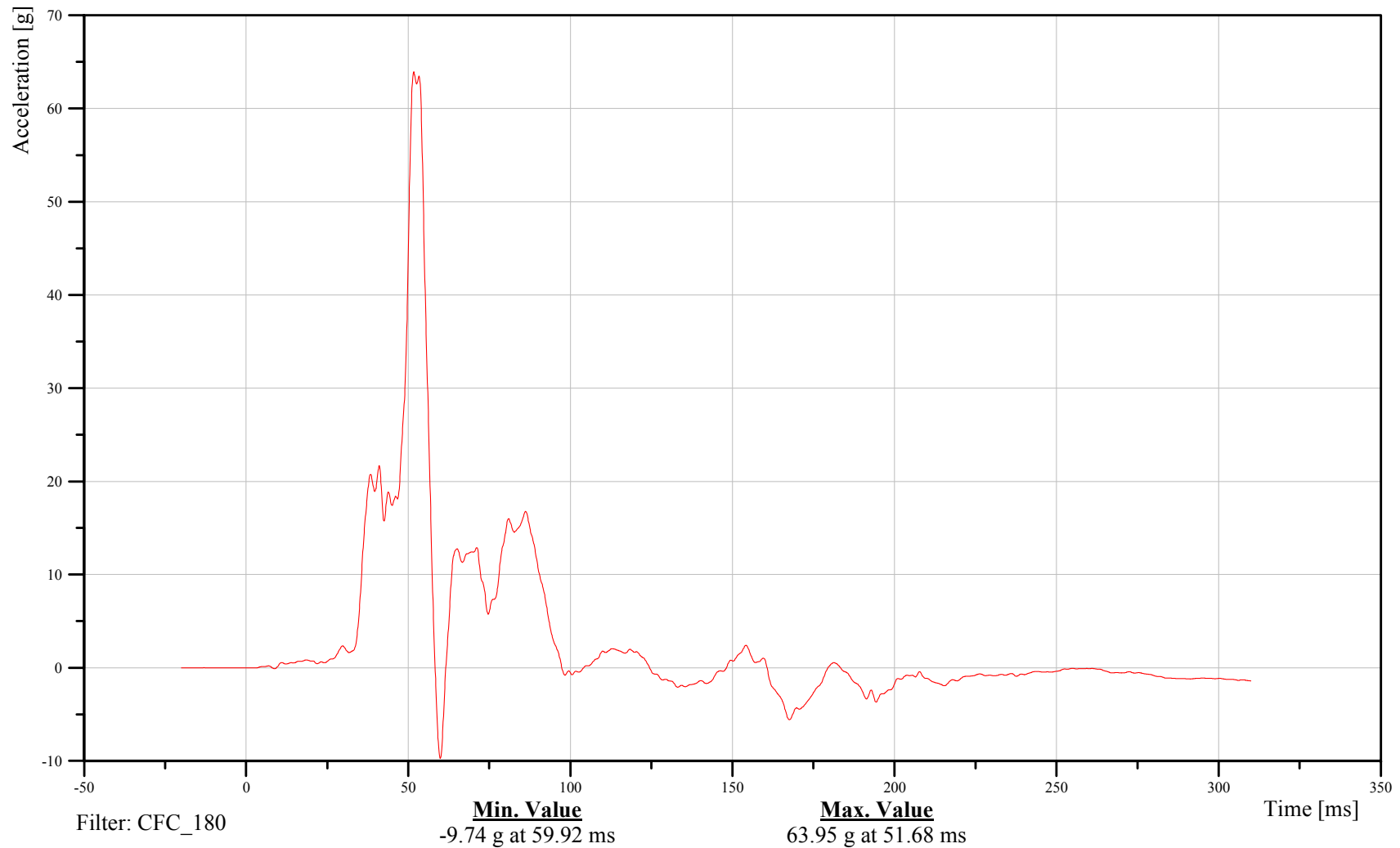
Upper Rib Accel Y

Customer: VRTC

14RIBSLU00E2ACYC

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Mid Rib Accel Y

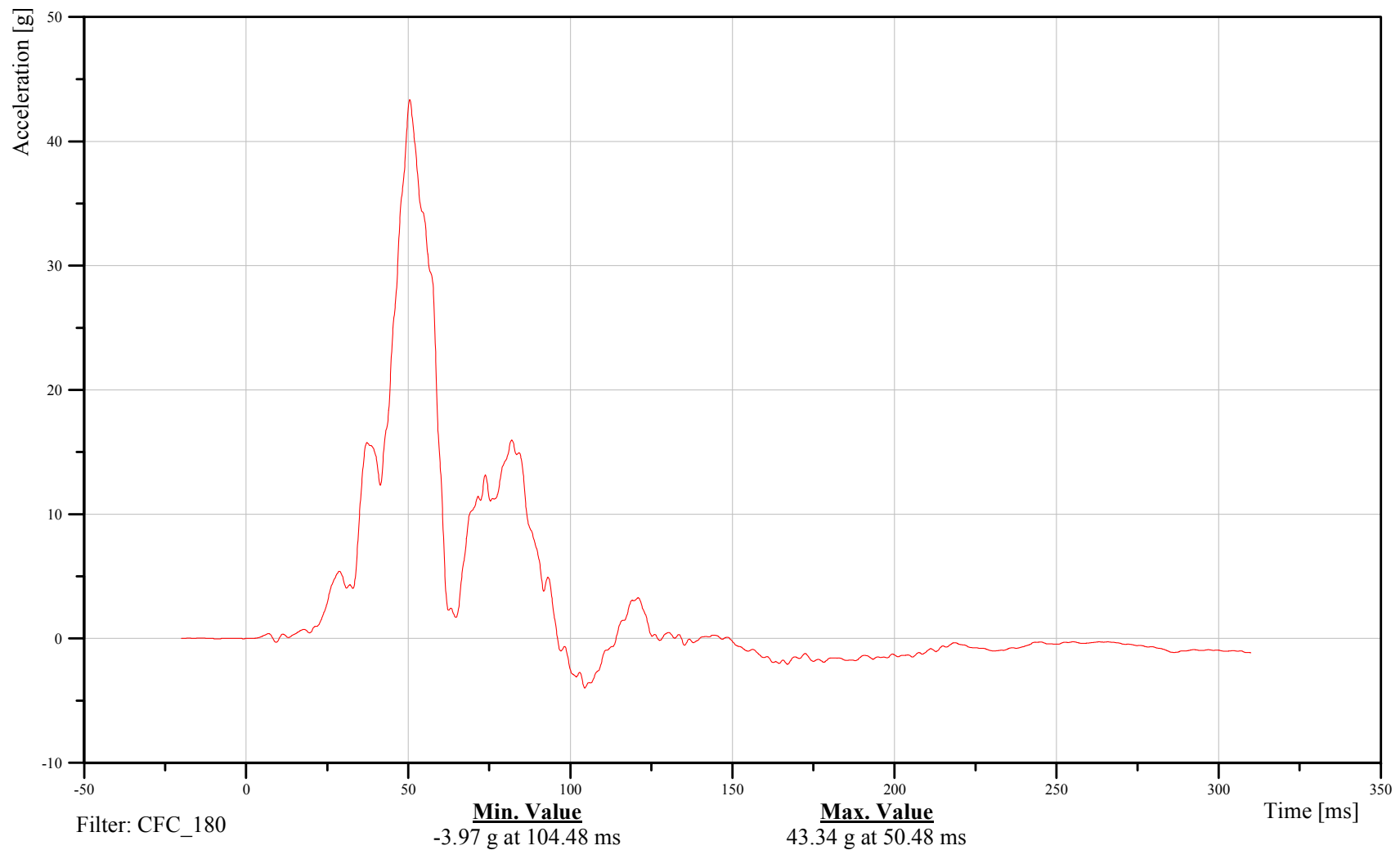
Date: 06/24/2005
Time: 12:02

Customer: VRTC

14RIBSLM00E2ACYC

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Lower Rib Accel Y

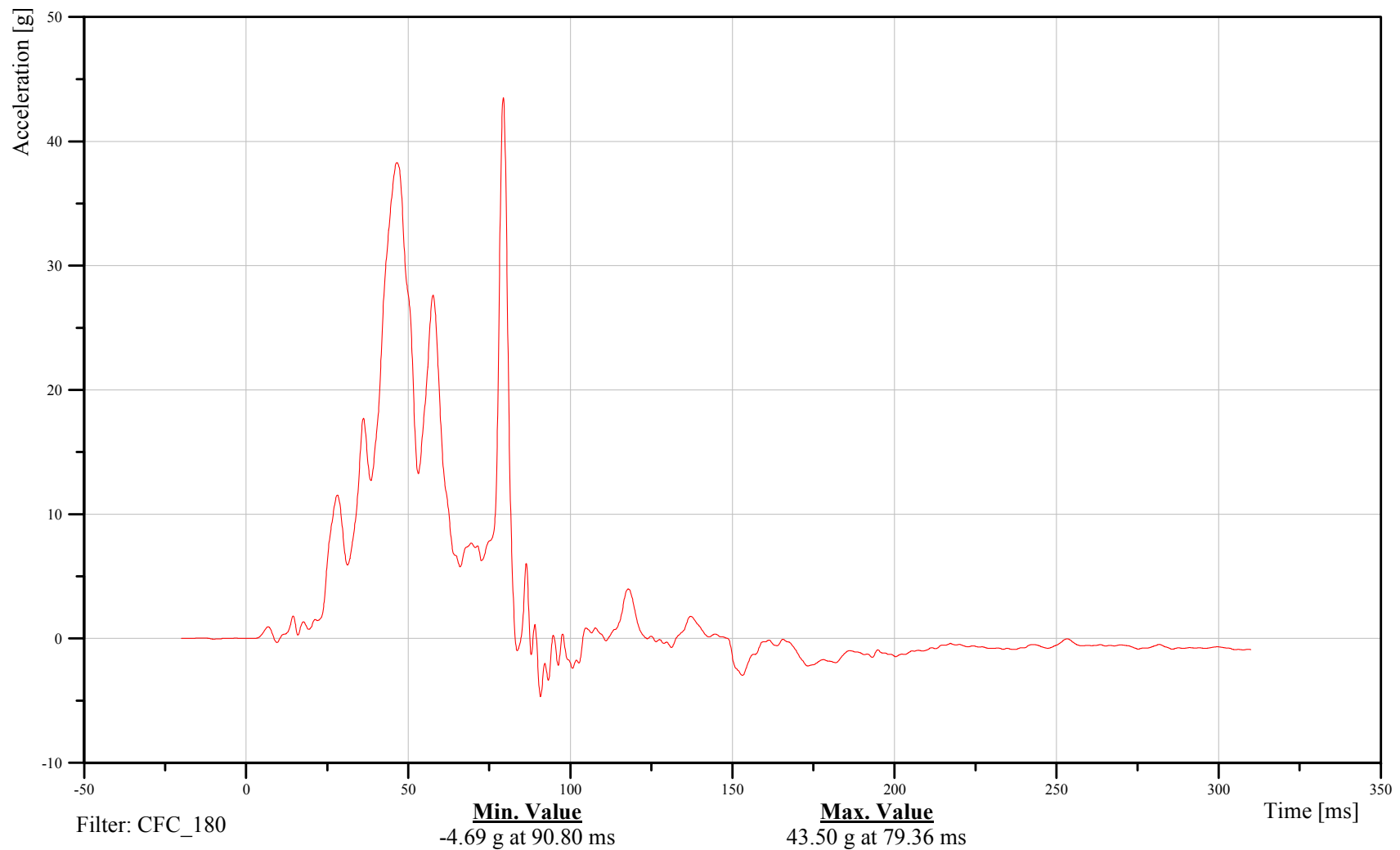
Date: 06/24/2005
Time: 12:02

Customer: VRTC

14RIBSLL00E2ACYC

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Upper Rib Disp. Y

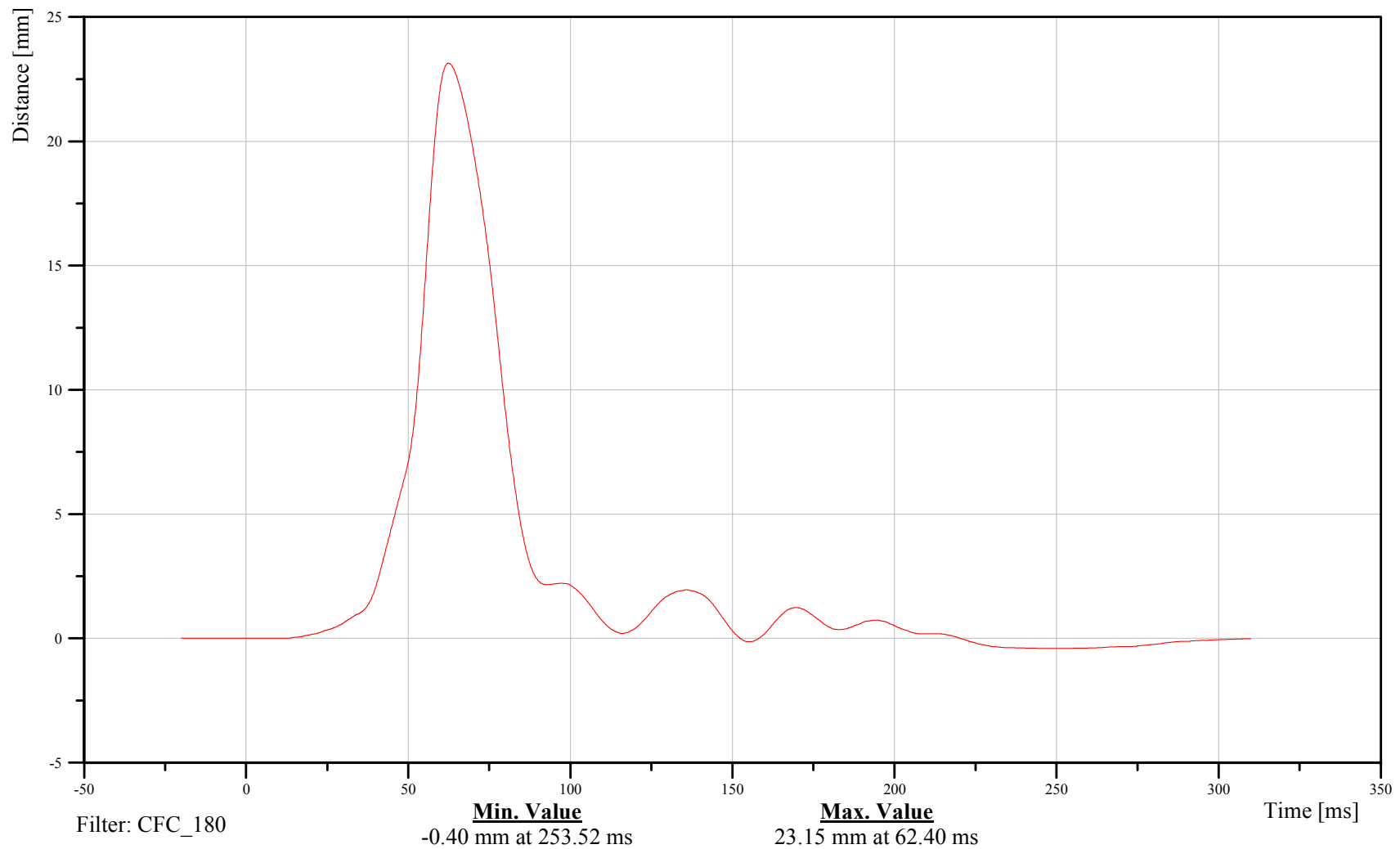
Date: 06/24/2005
Time: 12:02

Customer: VRTC

14RIBSLU00E2DSYC

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

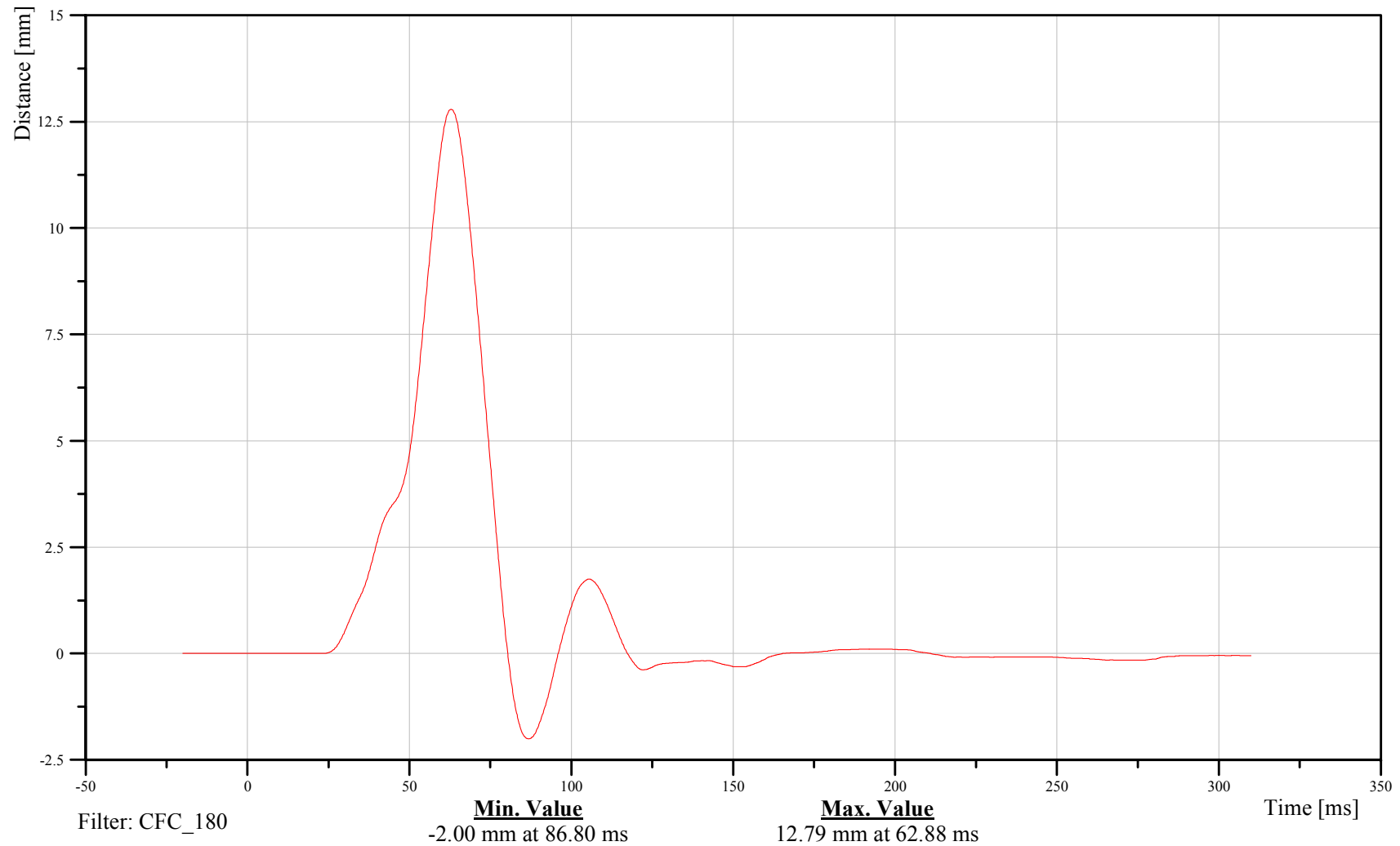
Mid Rib Disp. Y

Customer: VRTC

14RIBSLM00E2DSYC

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

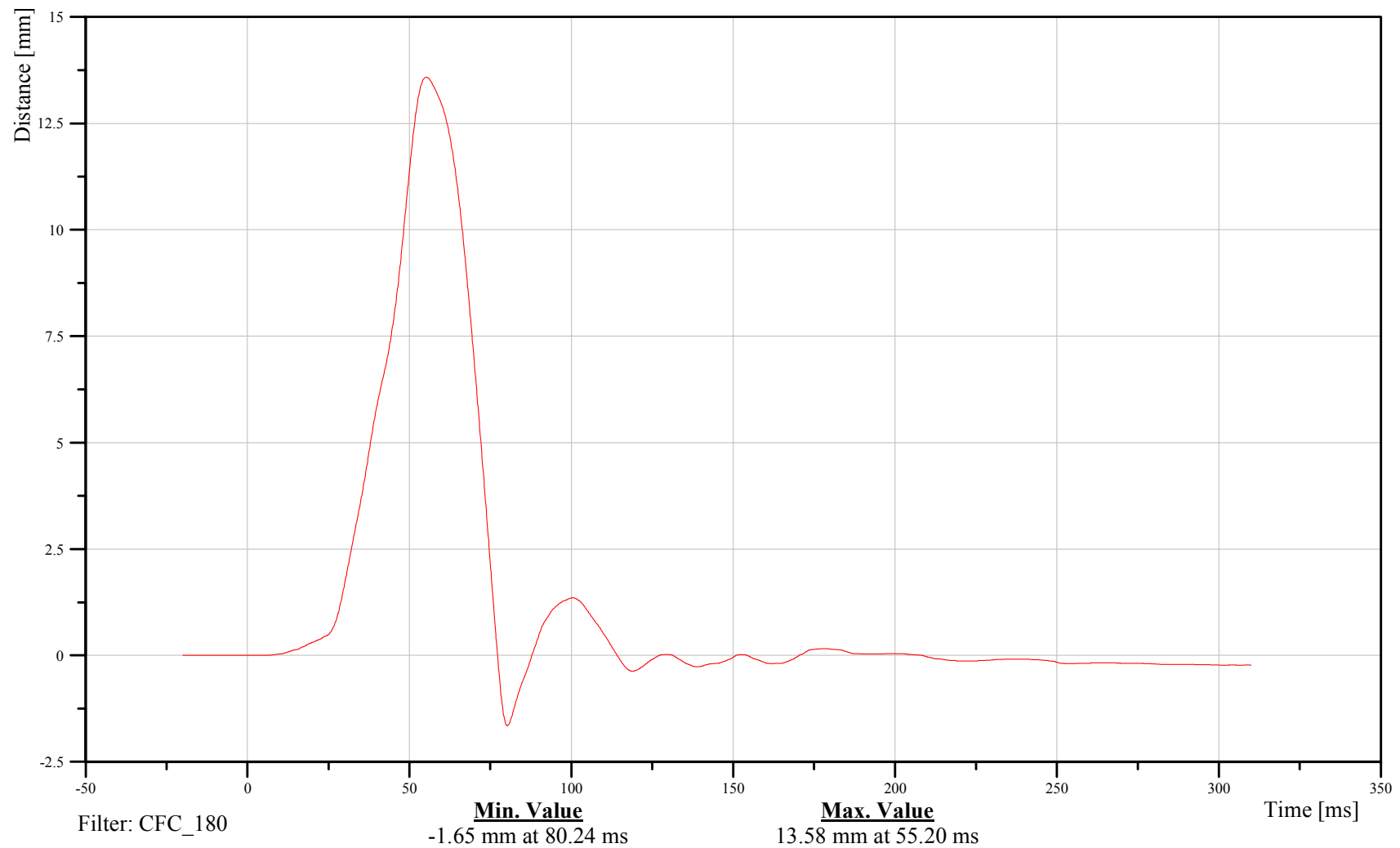
Lower Rib Disp. Y

Customer: VRTC

14RIBSLL00E2DSYC

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

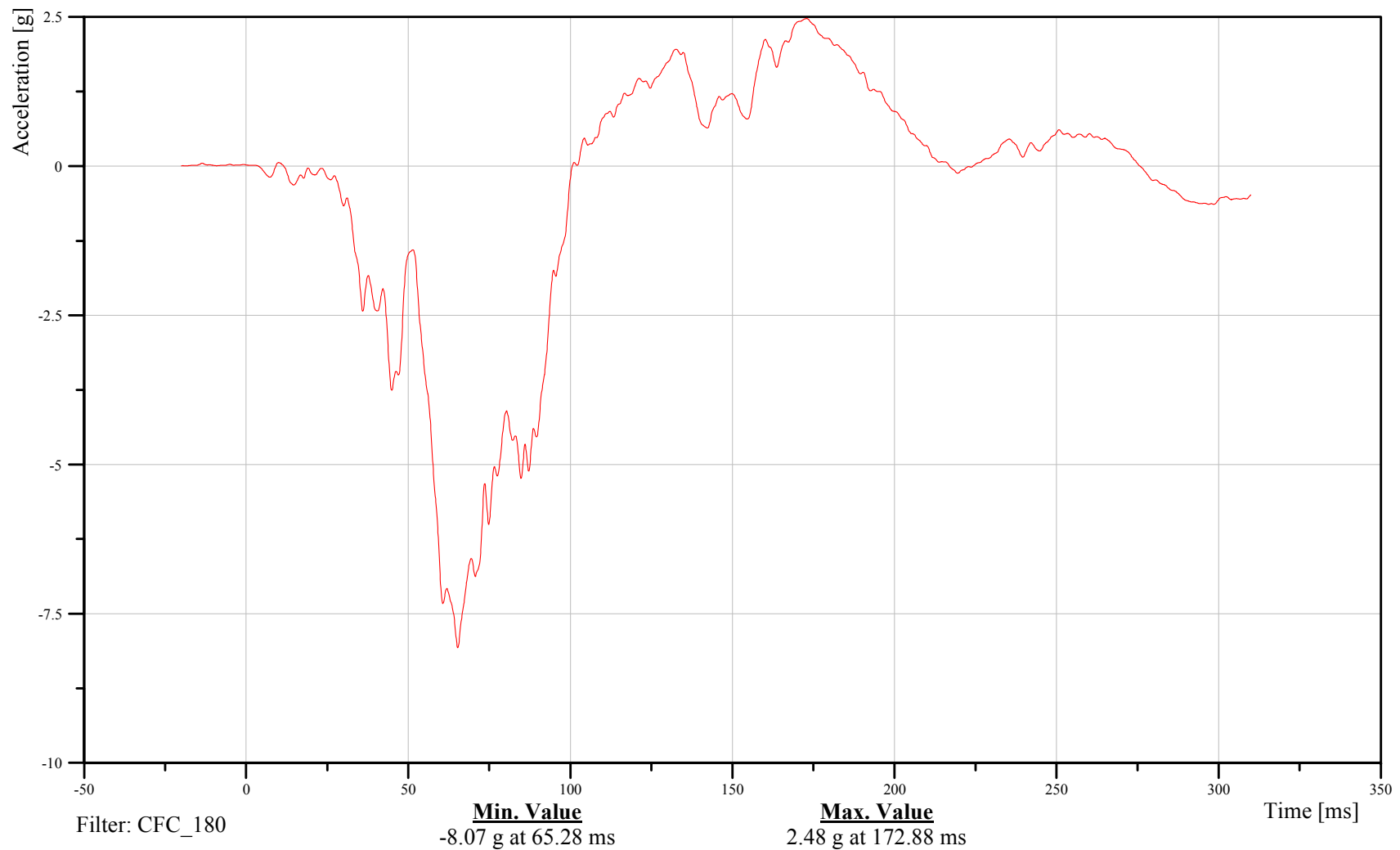
Lower Spine X

Customer: VRTC

14SPIN1200E2ACXC

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

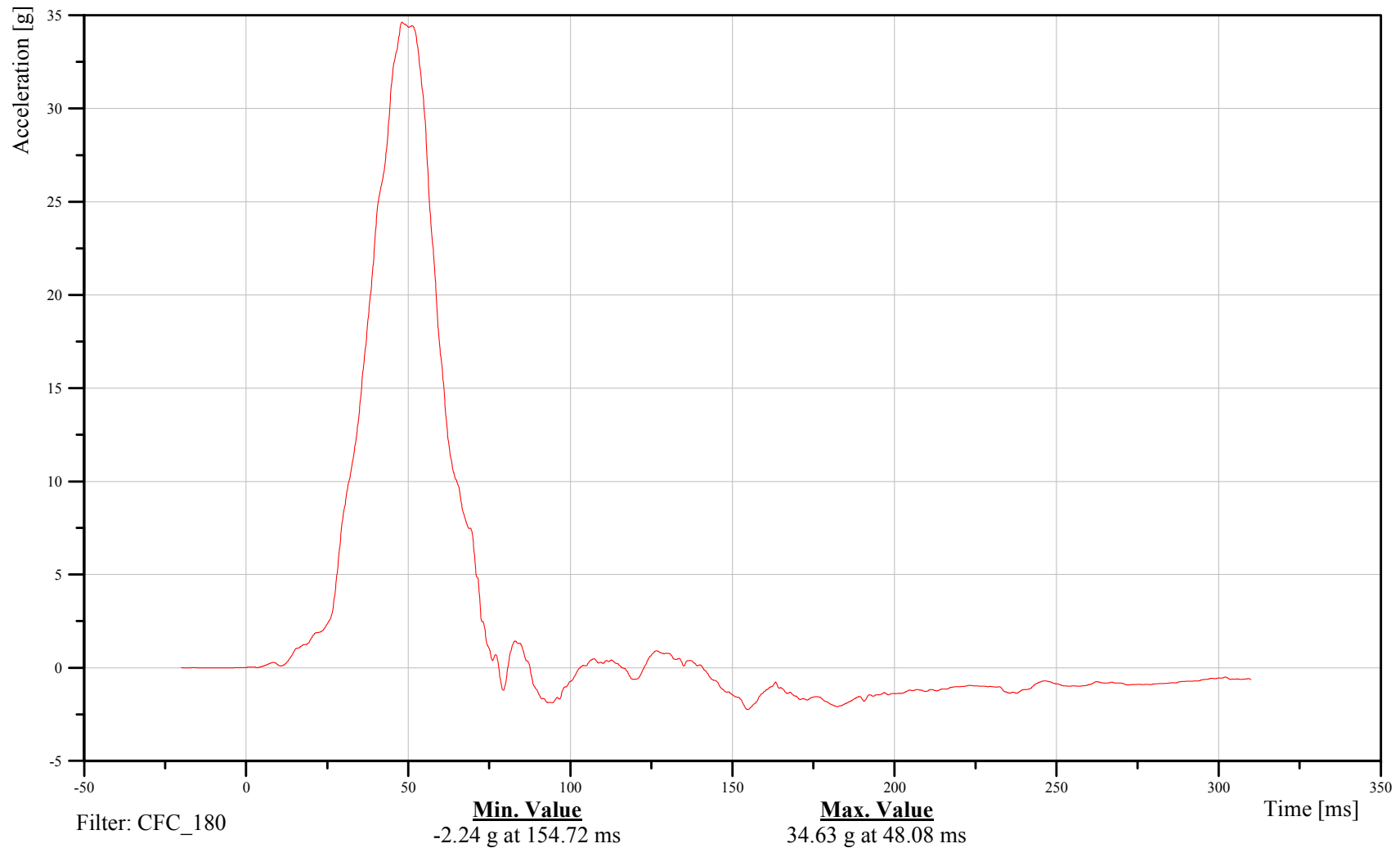
Lower Spine Y

Customer: VRTC

14SPIN1200E2ACYC

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Lower Spine Z

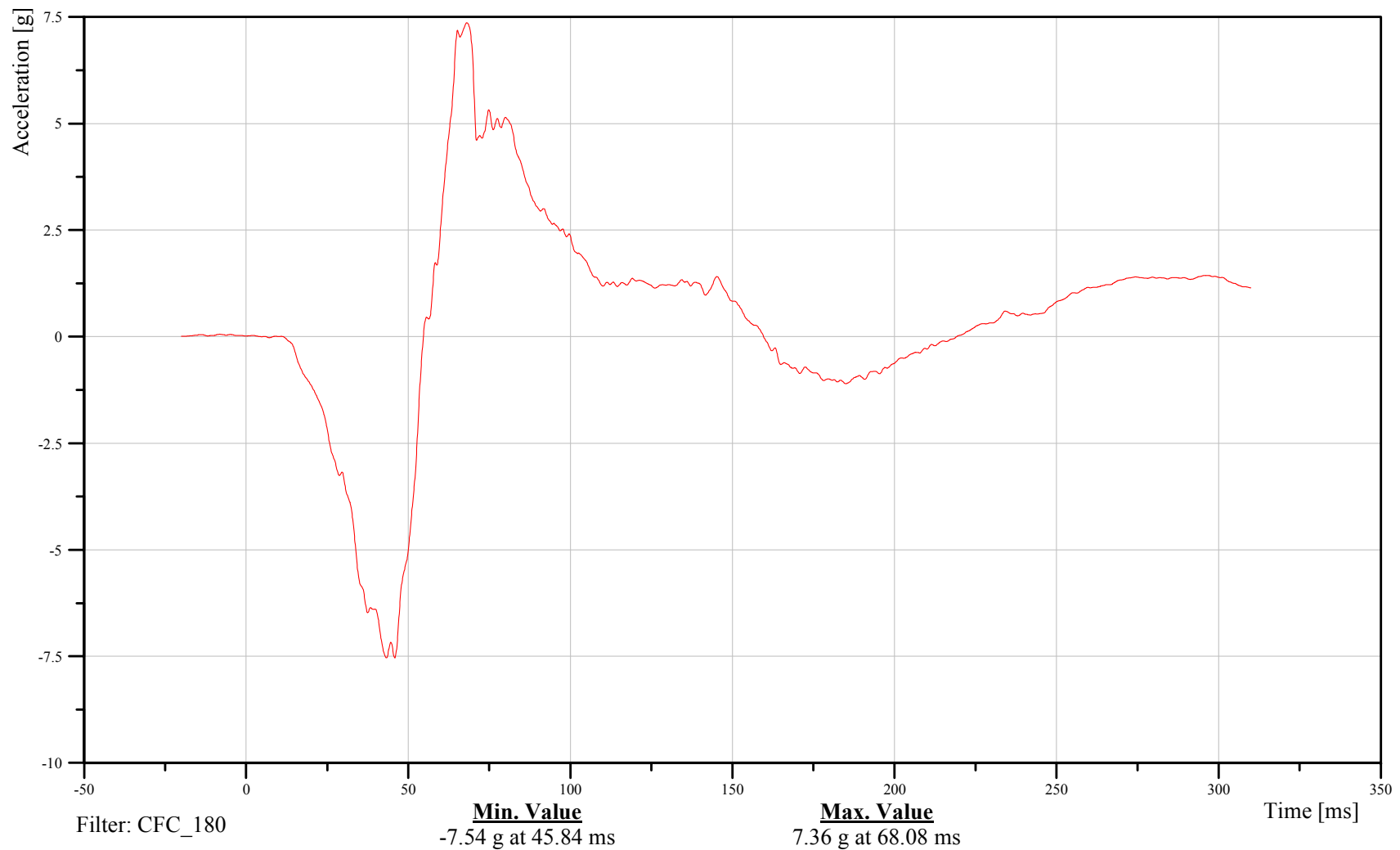
Date: 06/24/2005
Time: 12:02

Customer: VRTC

14SPIN1200E2ACZC

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

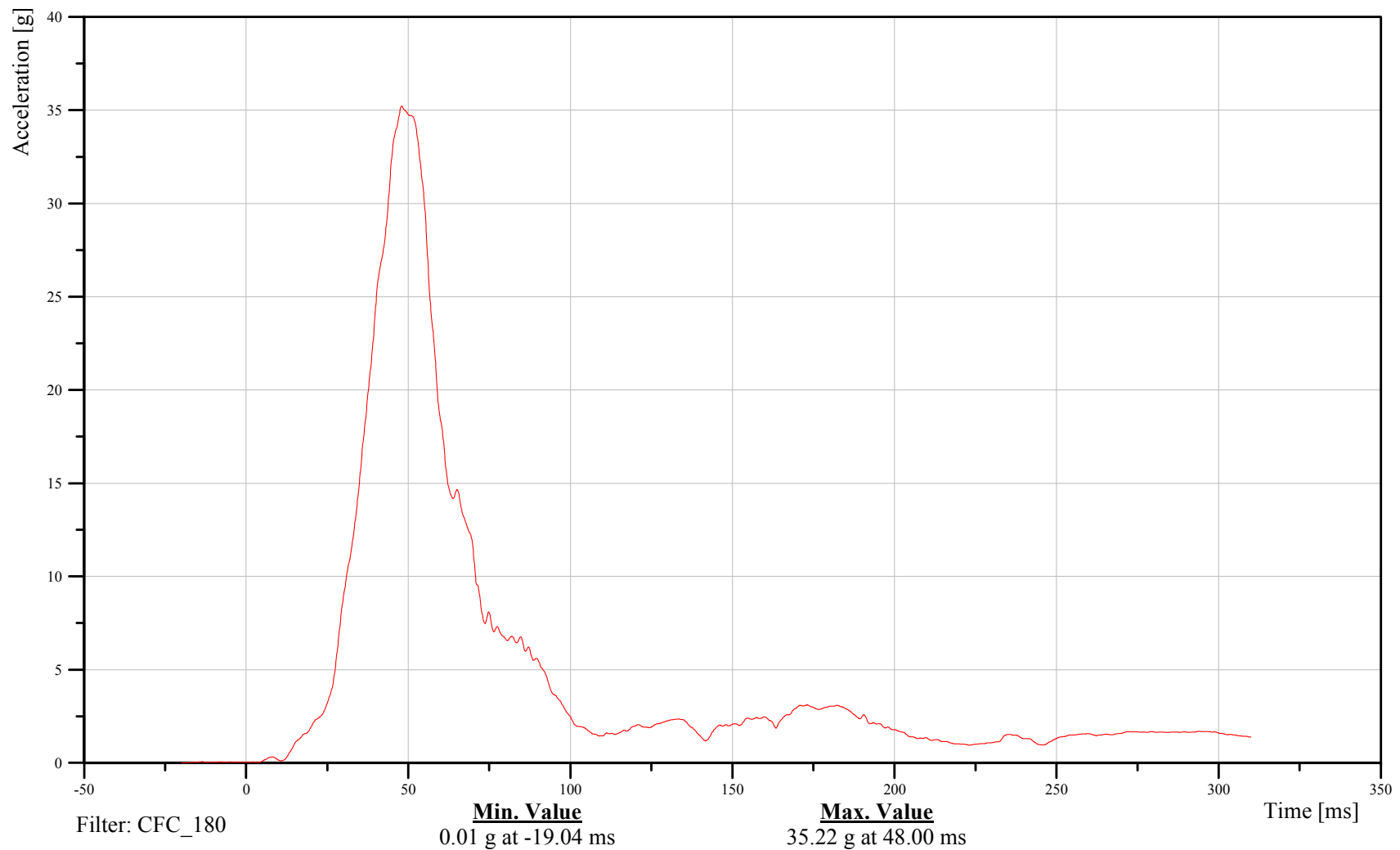
Lower Spine Resultant

Customer: VRTC

14SPIN1200E2ACRC

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

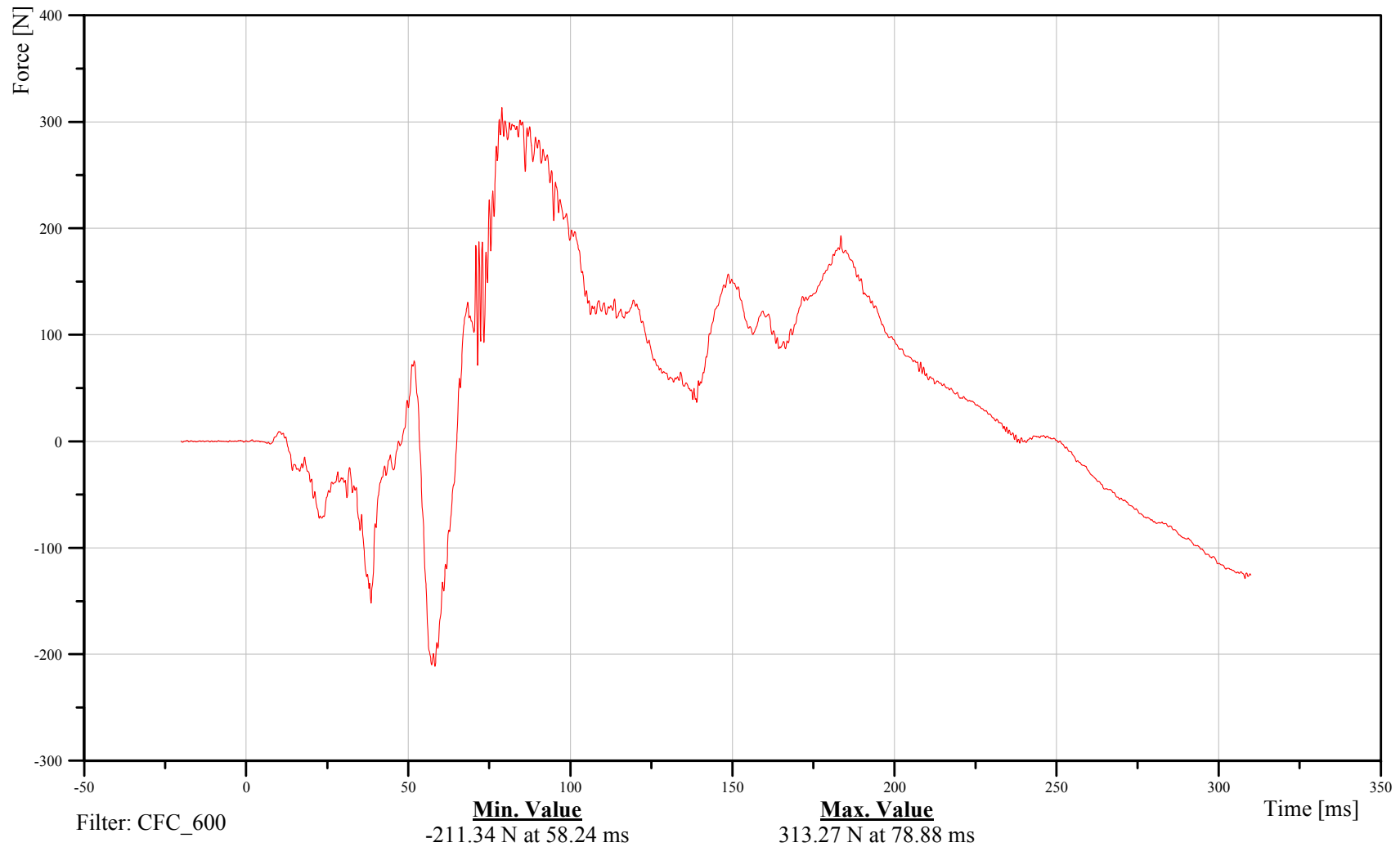
Lower Spine Force X

Customer: VRTC

14SPIN1200E2FOXB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

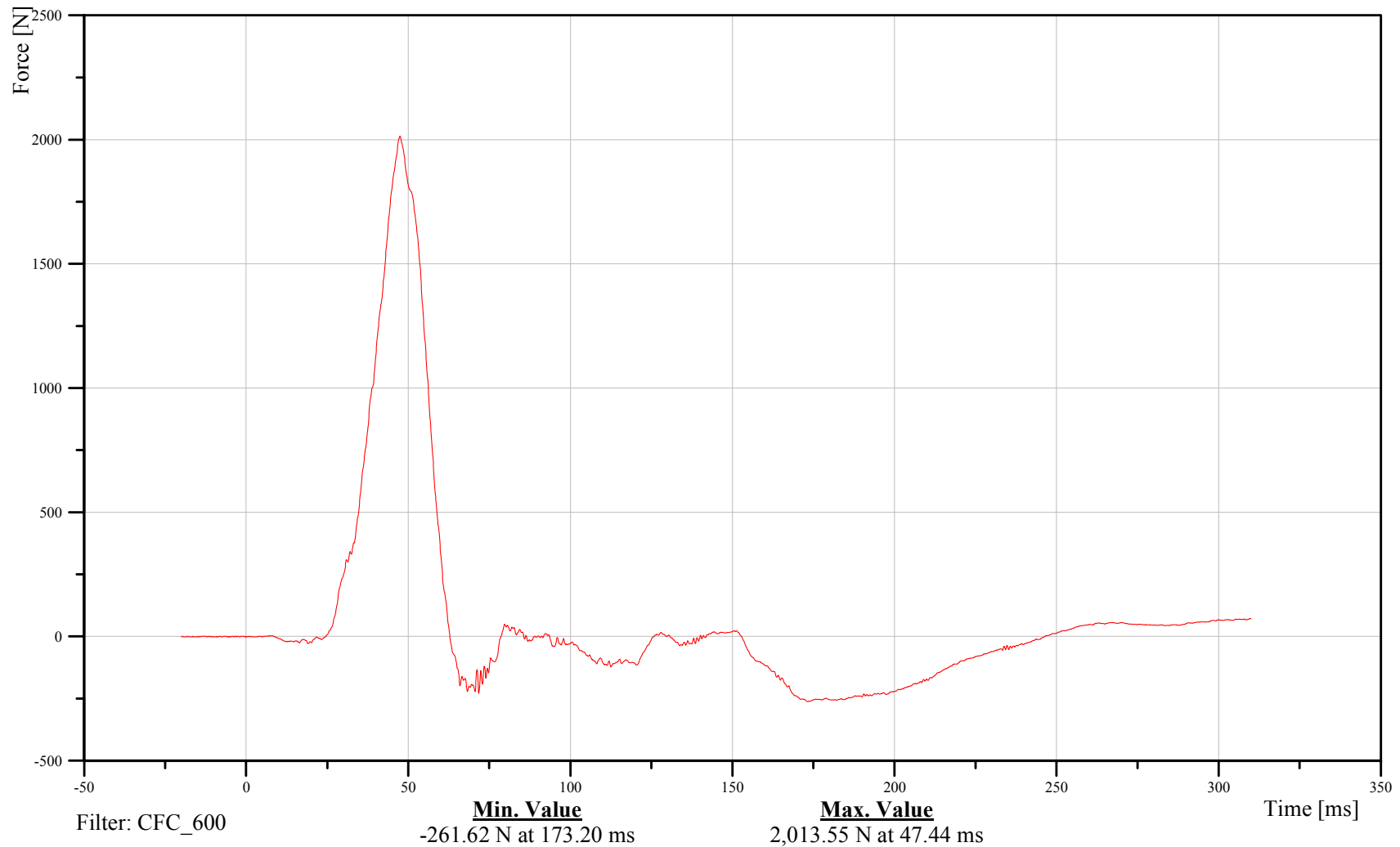
Lower Spine Force Y

Customer: VRTC

14SPIN1200E2FOYB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

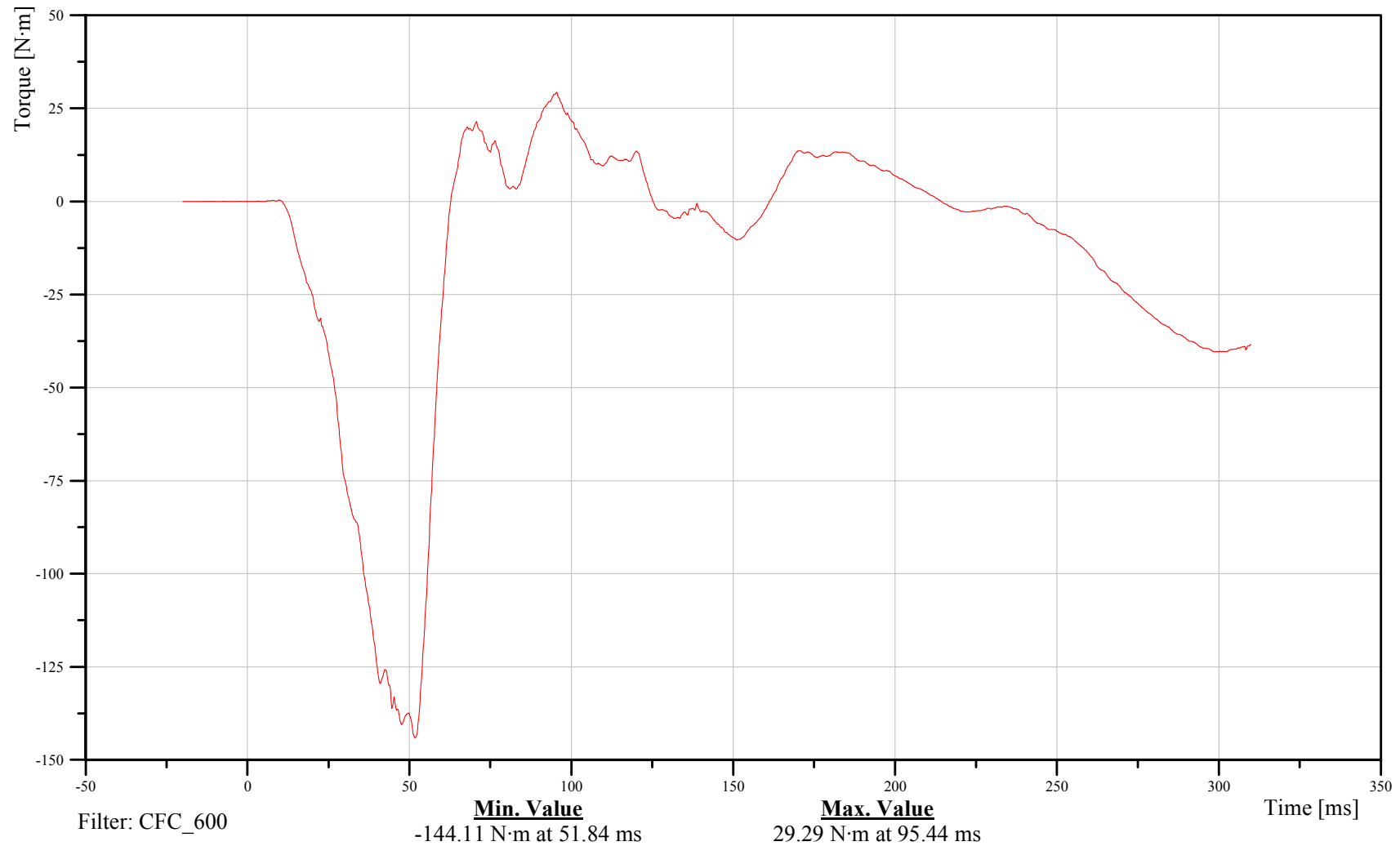
Lower Spine Moment X

Customer: VRTC

14SPIN1200E2MOXB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

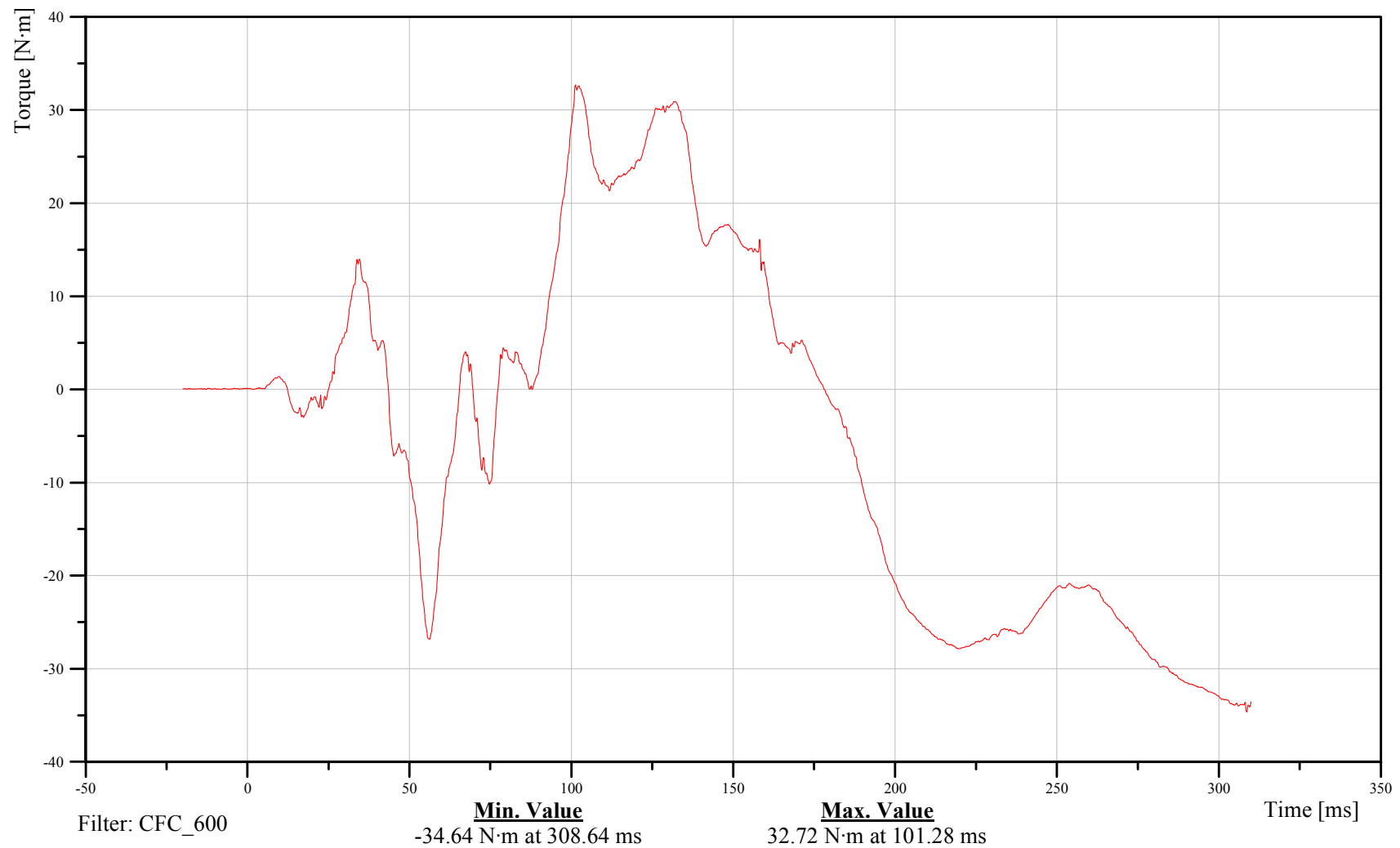
Lower Spine Moment Y

Customer: VRTC

14SPIN1200E2MOYB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

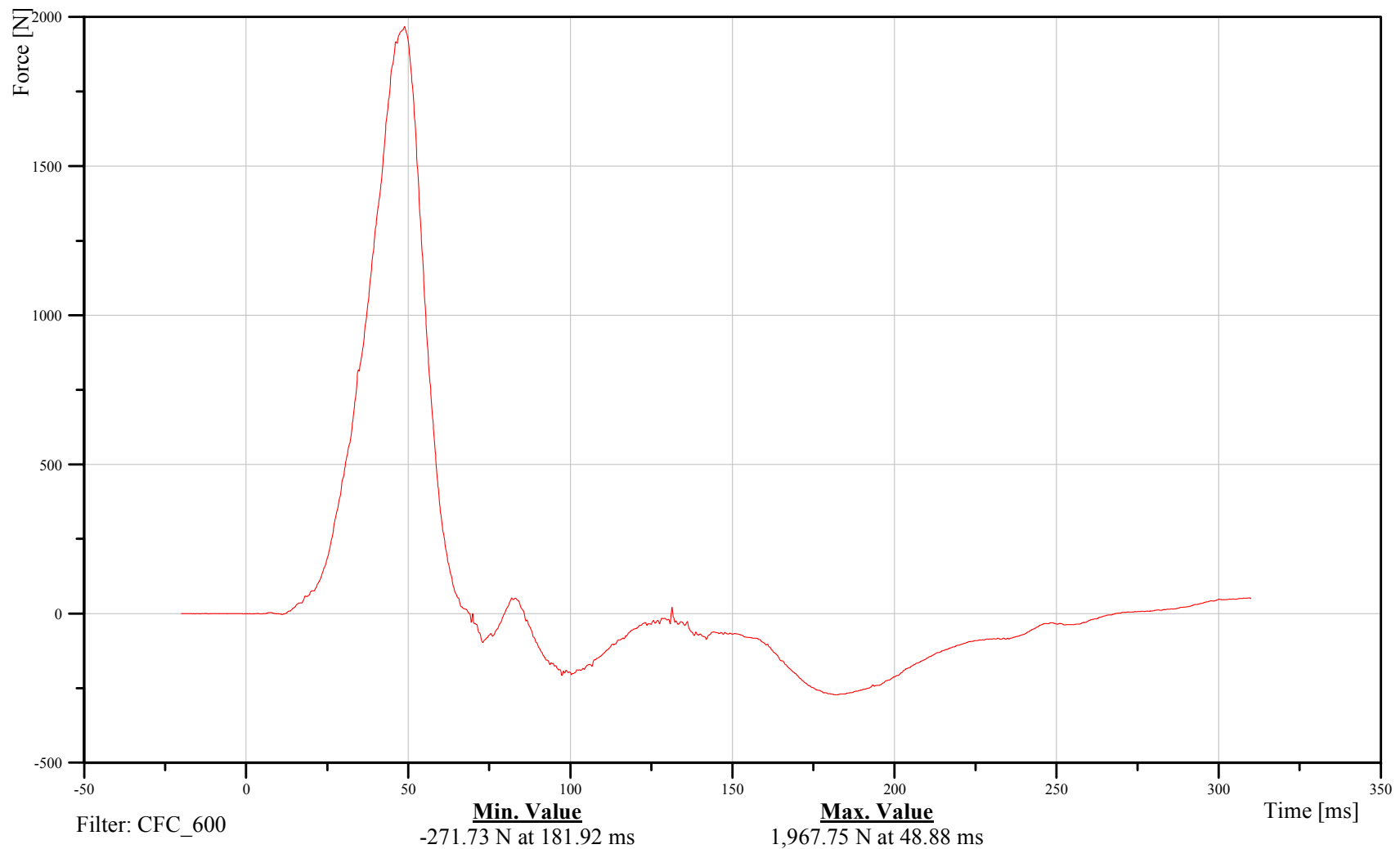
Lumbar Force Y

Customer: VRTC

14LUSP0000E2FOYB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

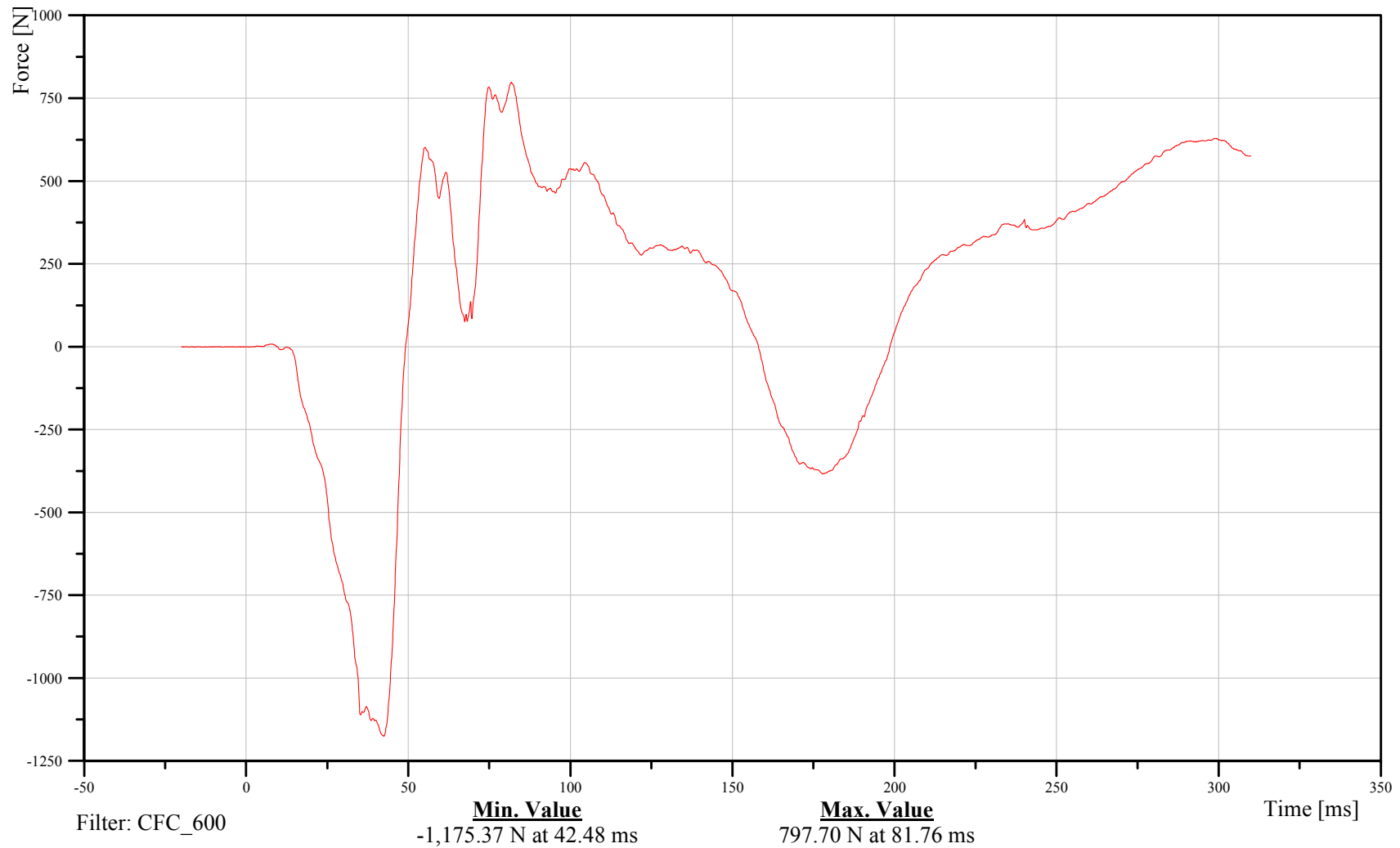
Lumbar Force Z

Customer: VRTC

14LUSP0000E2FOZB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

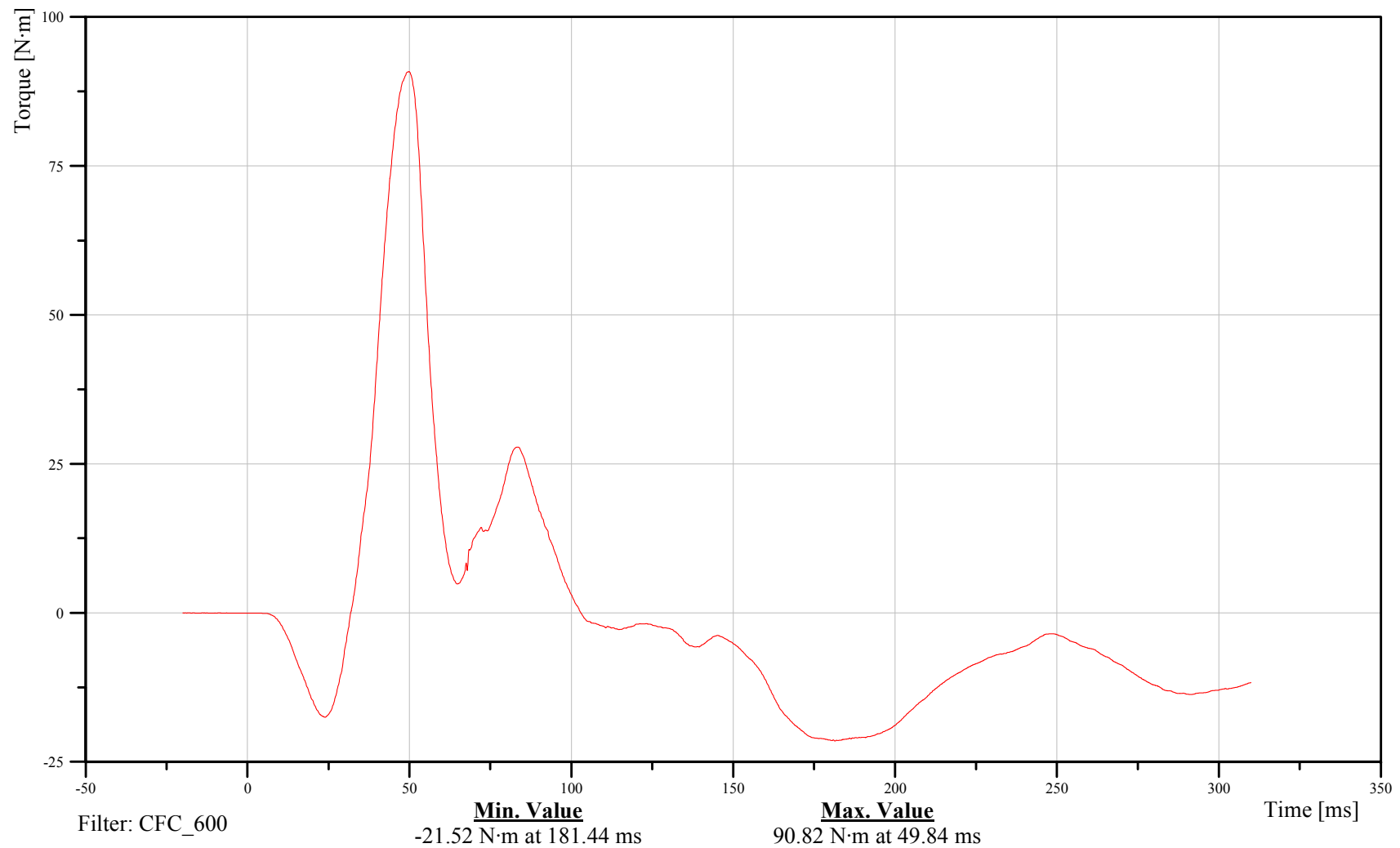
Lumbar Moment X

Customer: VRTC

14LUSP0000E2MOXB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

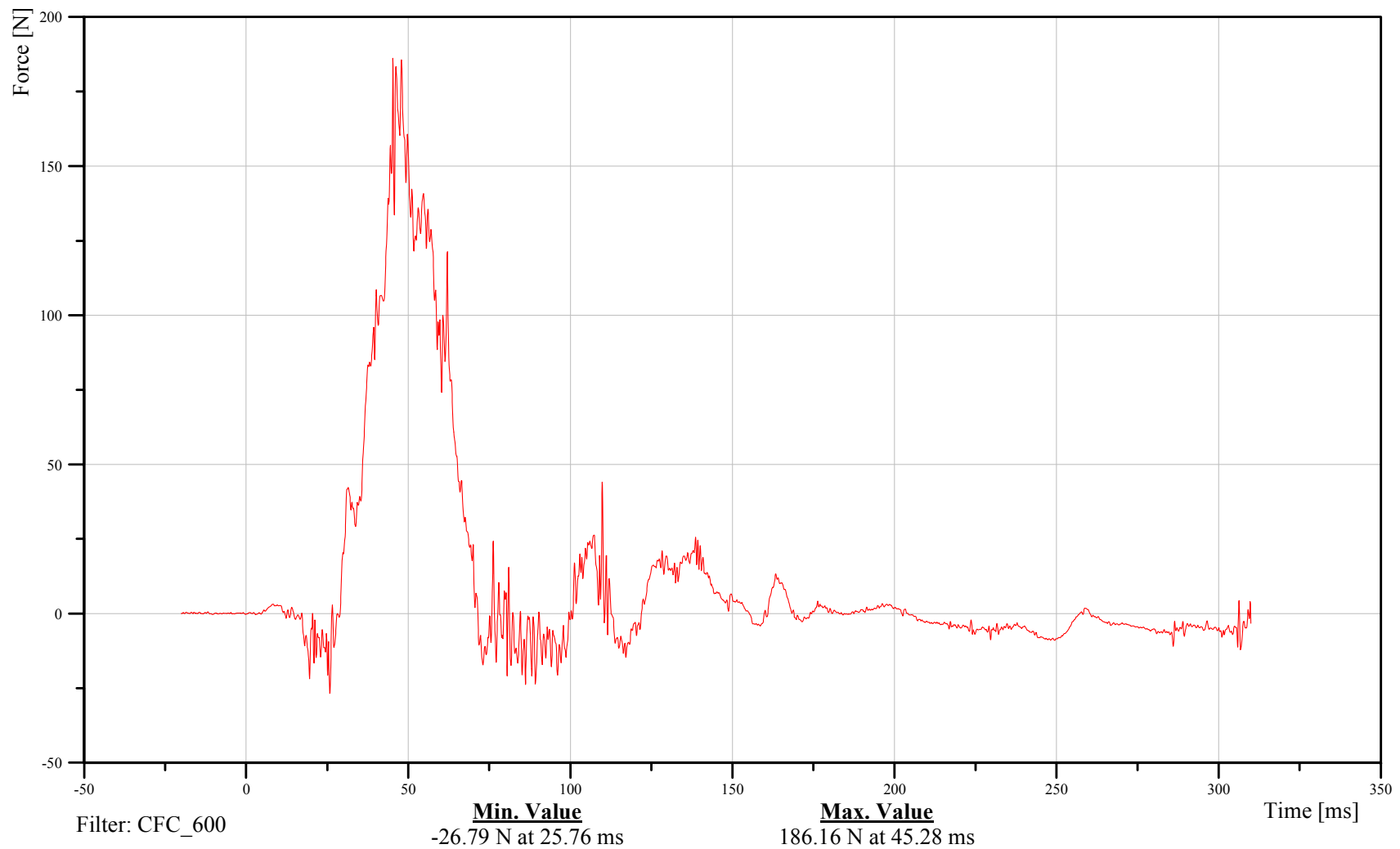
Front Abdominal Force Y

Customer: VRTC

14ABDOLEFRE2FOYB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

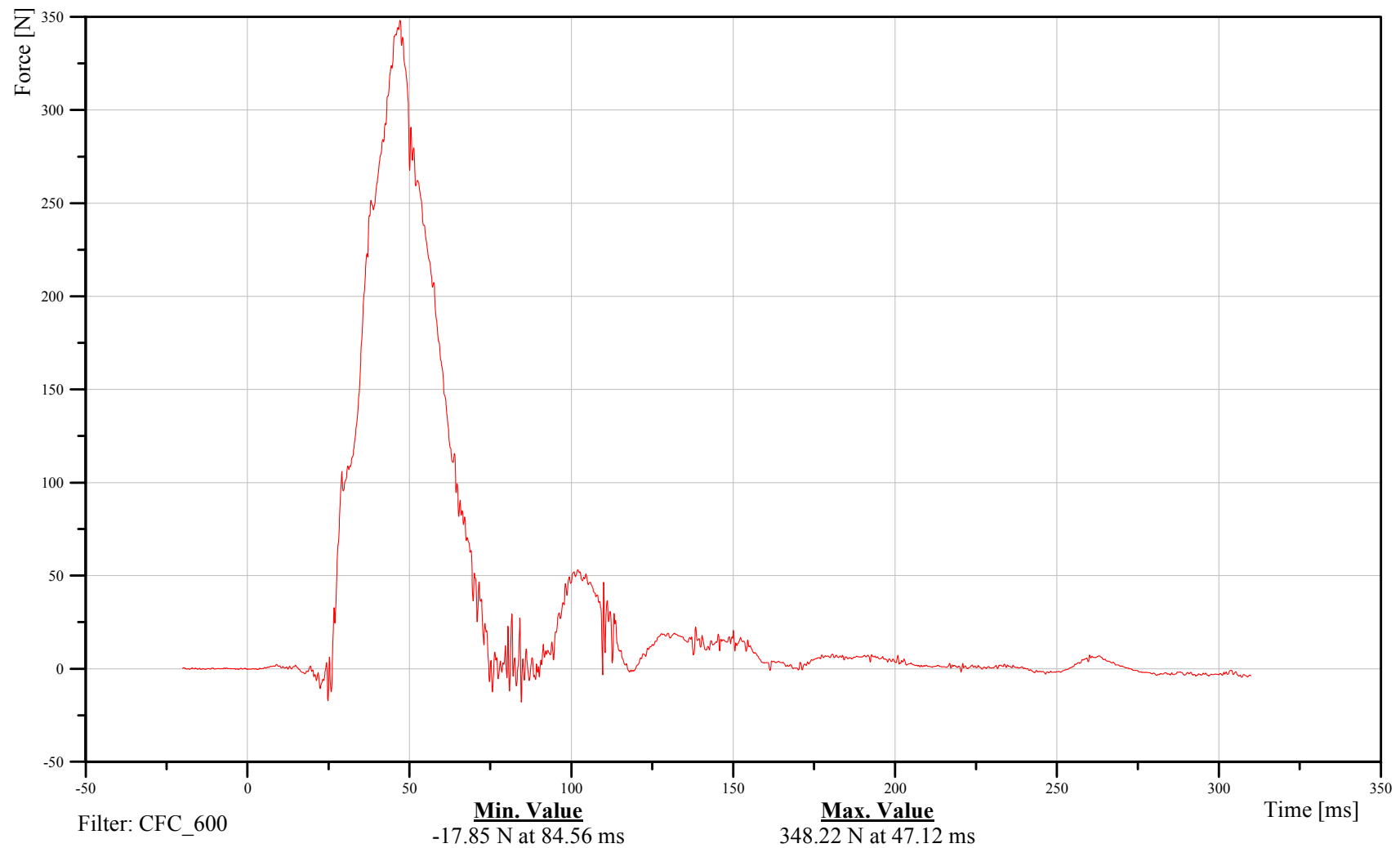
Mid Abdominal Force Y

Customer: VRTC

14ABDOLEMIE2FOYB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Rear Abdominal Force Y

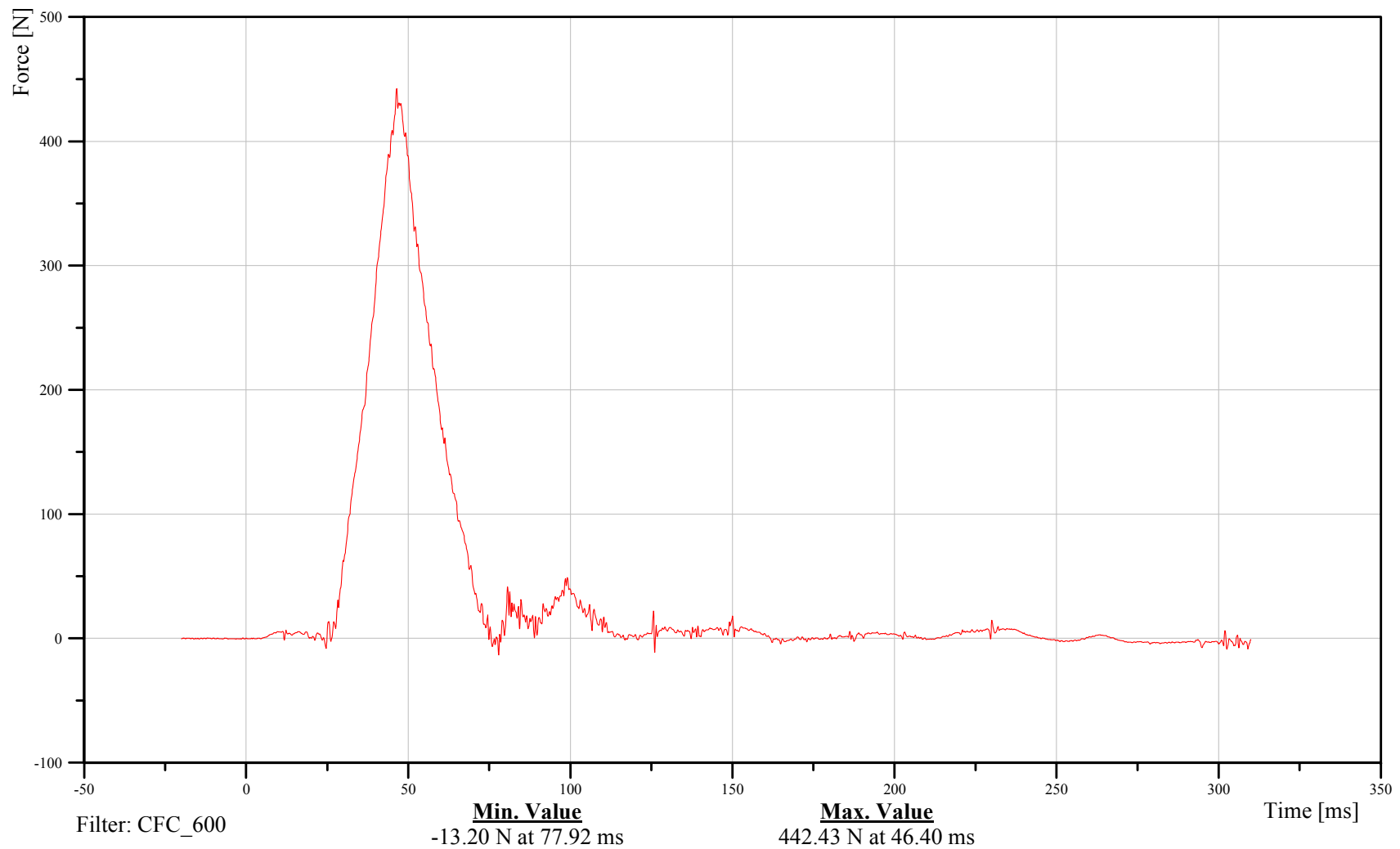
Date: 06/24/2005
Time: 12:02

Customer: VRTC

14ABDOLEREE2FOYB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

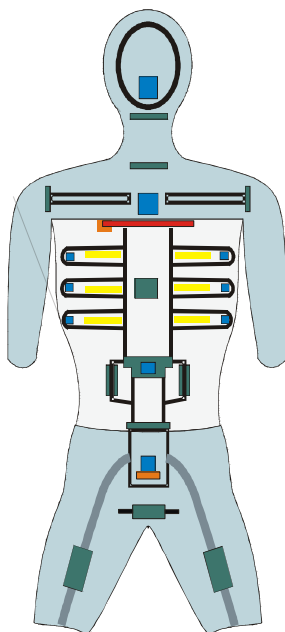
Abdominal Summation

Customer: VRTC

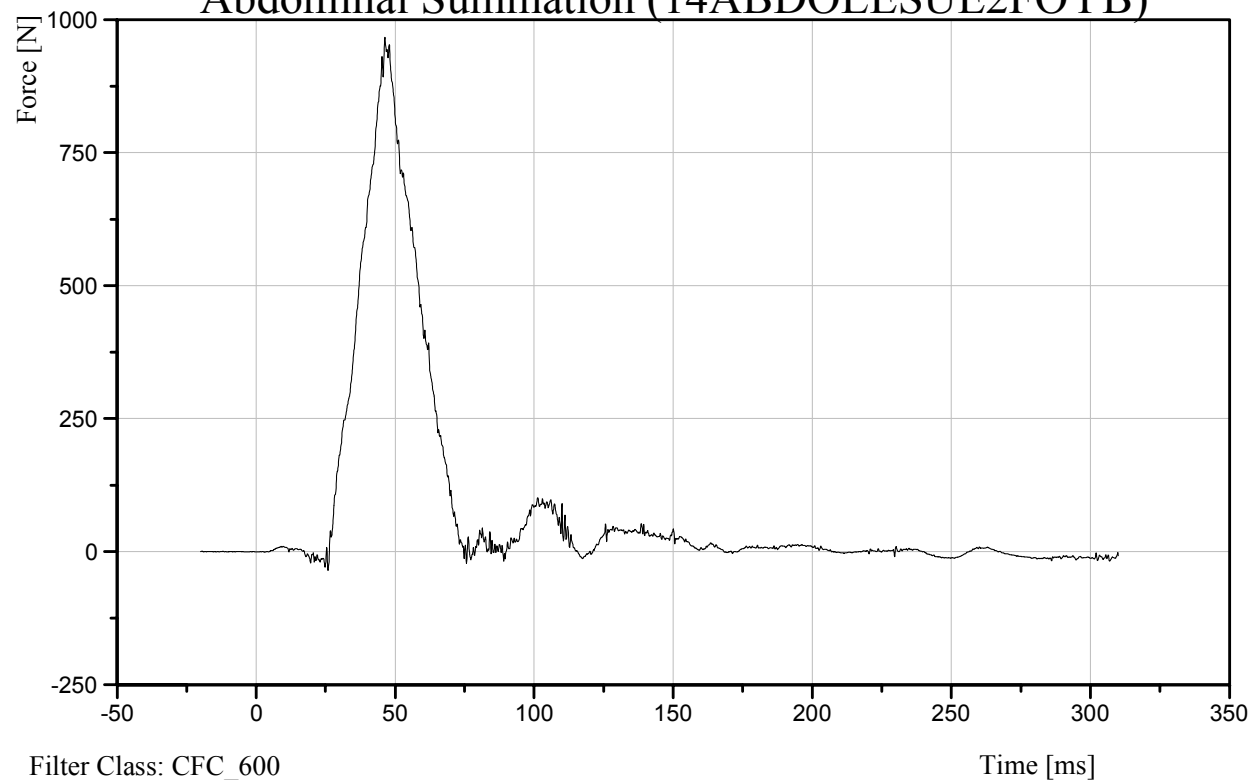
TRC Inc. Test Lab: CTF

Test Number: 050624

Test Orientation = Side



Abdominal Summation (14ABDOLESUE2FOYB)



Dummy: Euro SID II
Seating Position:
Left Rear Passenger

[Max.] 966.57 N at 46.32 ms

[Min.] -35.36 N at 25.92 ms

Abdominal Summation Source Code : Summation of Channels 14ABDOLEFRE2FOYB, 14ABDOLEMIE2FOYB, 14ABDOLEREE2FOYB



MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

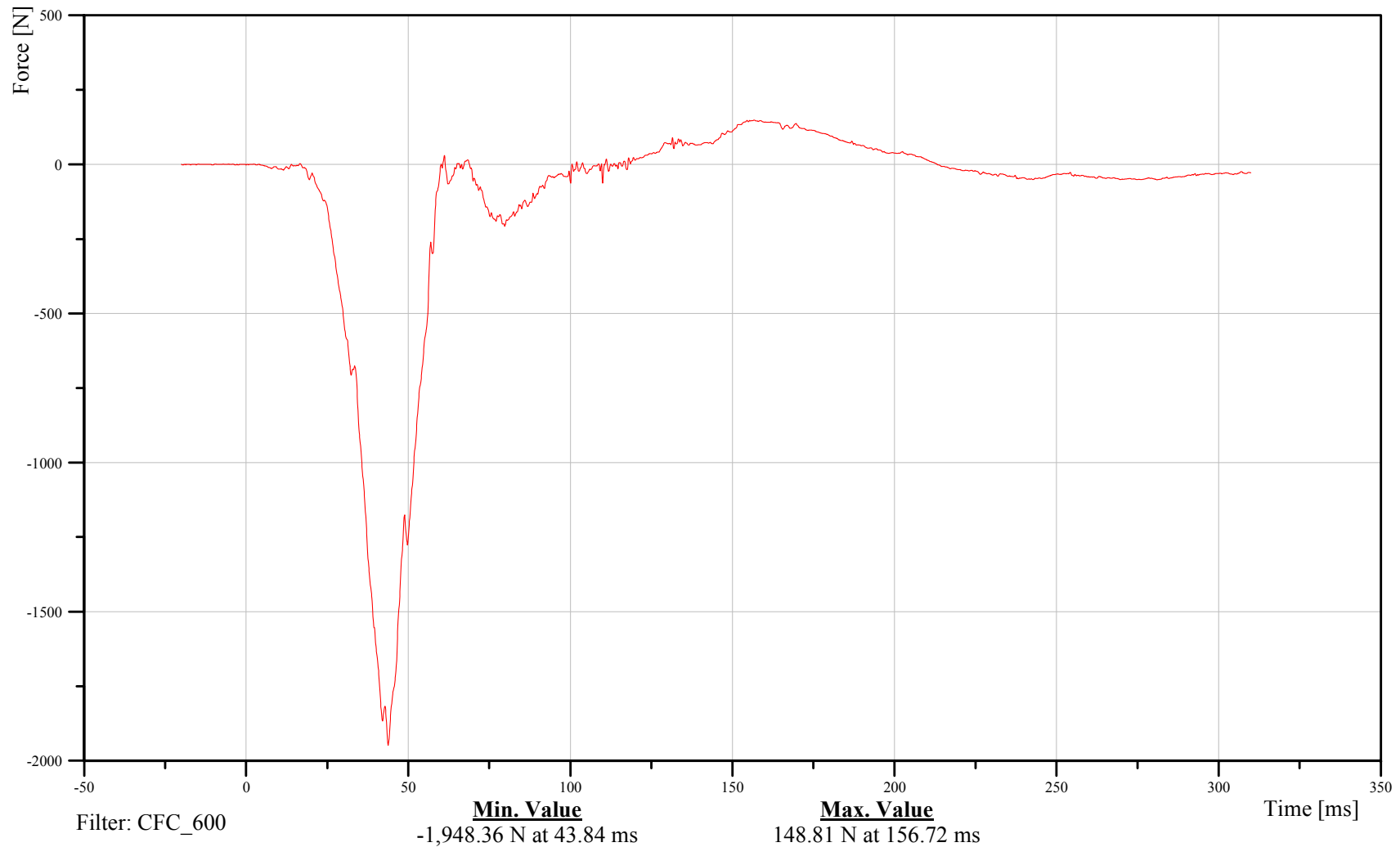
Pubic Force Y

Customer: VRTC

14PUBC0000E2FOYB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Pelvis Accel X

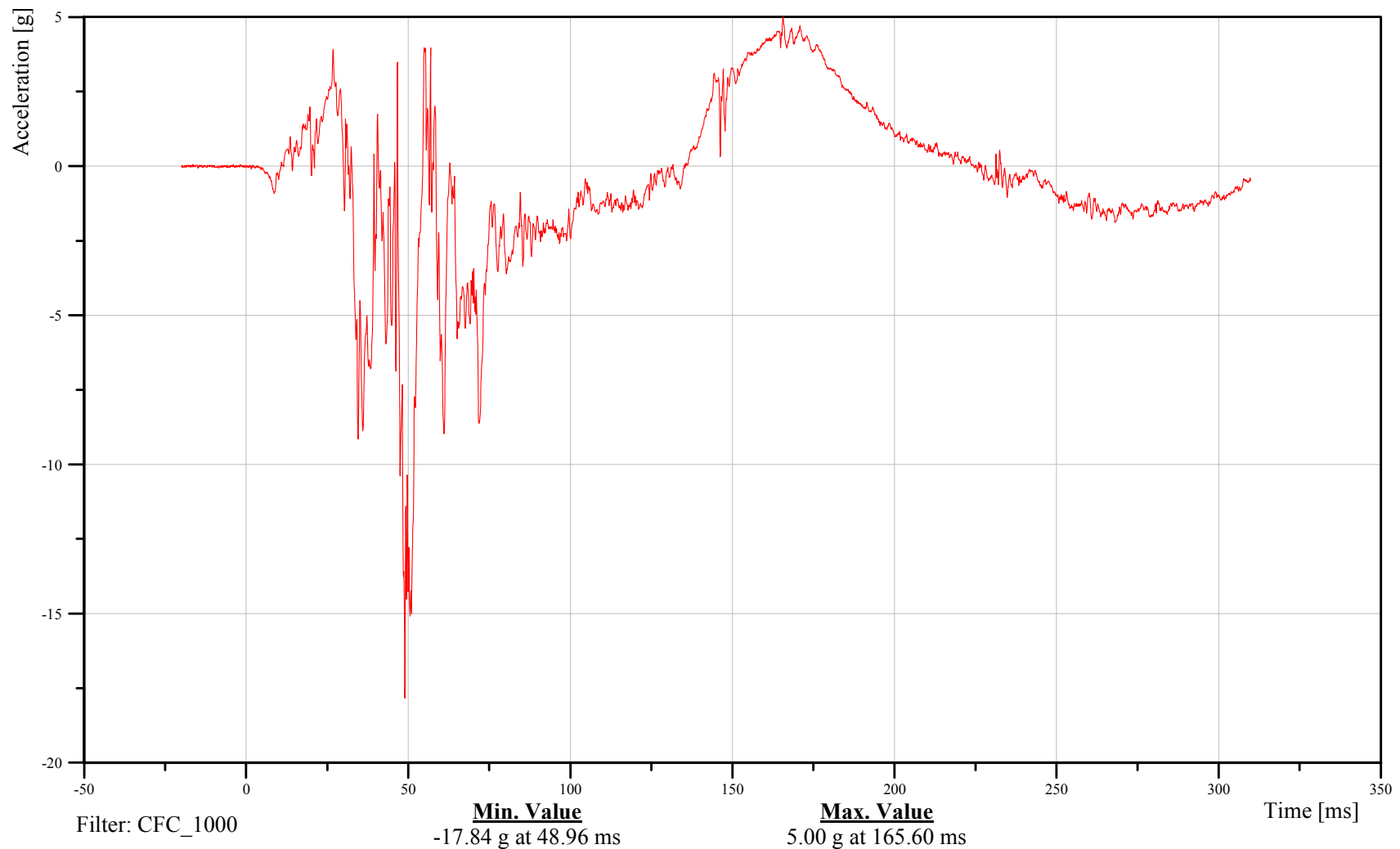
Date: 06/24/2005
Time: 12:02

Customer: VRTC

14PELVCG00E2ACXA

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

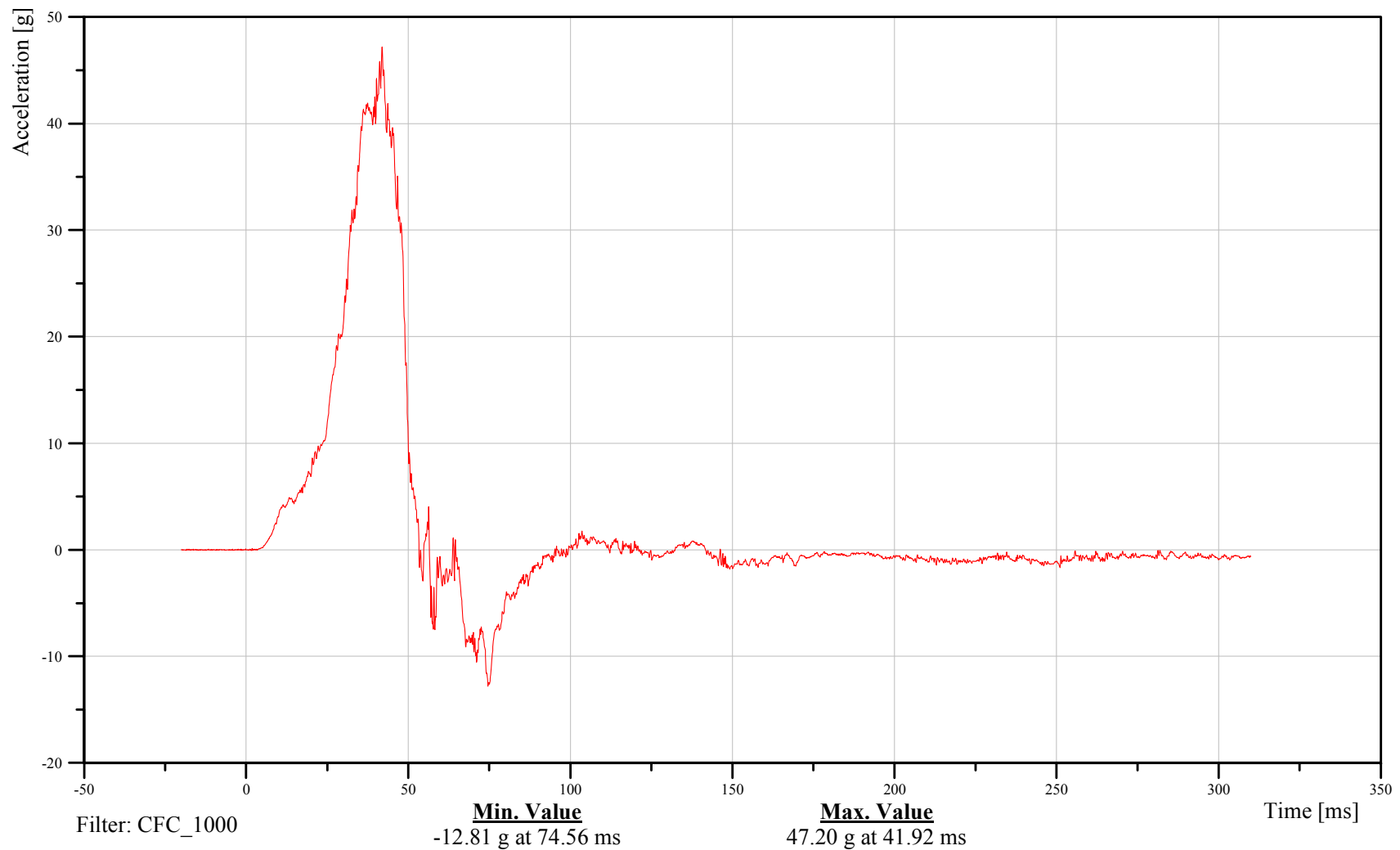
Pelvis Accel Y

Customer: VRTC

14PELVCG00E2ACYA

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Pelvis Accel Z

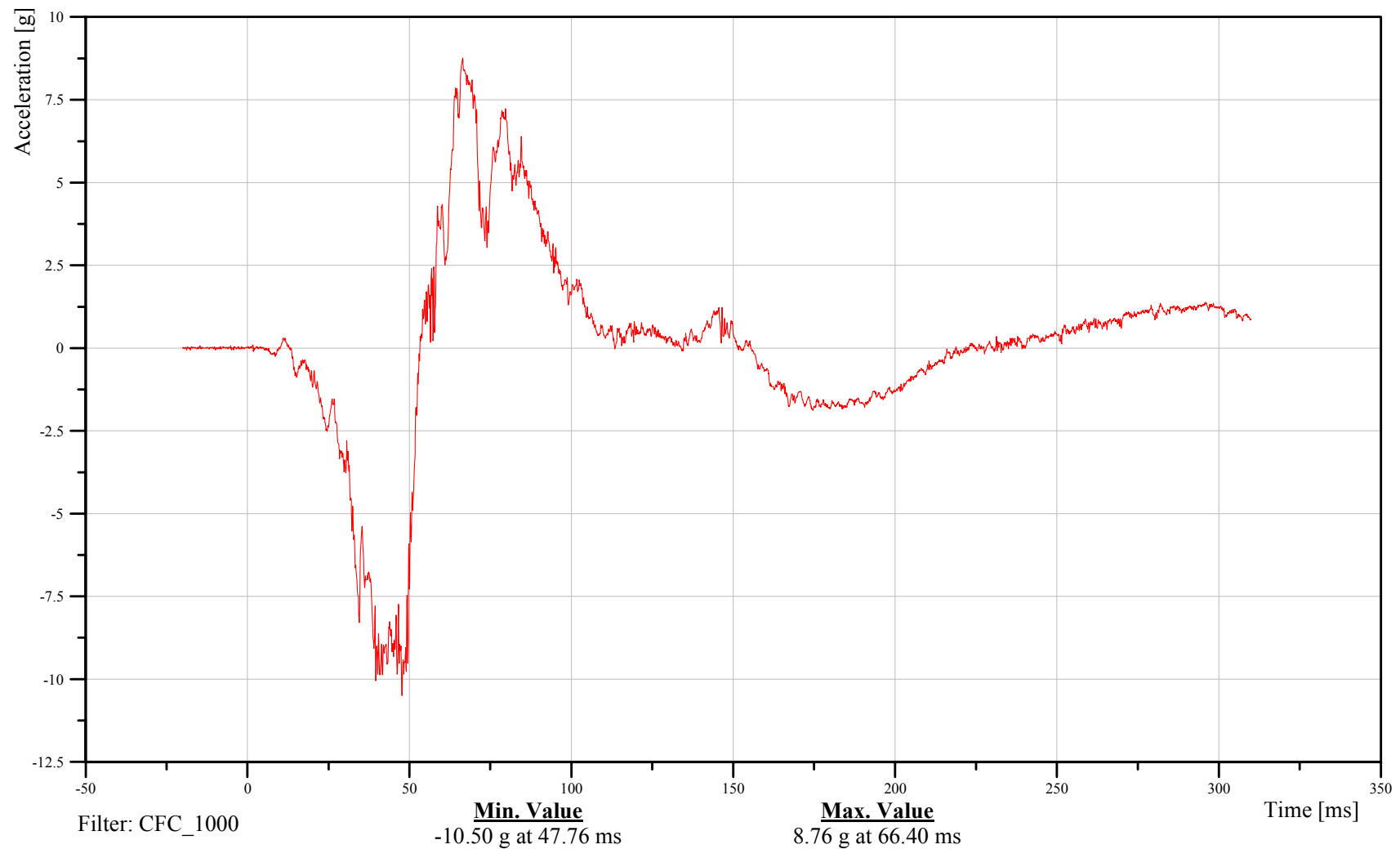
Date: 06/24/2005
Time: 12:02

Customer: VRTC

14PELVCG00E2ACZA

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

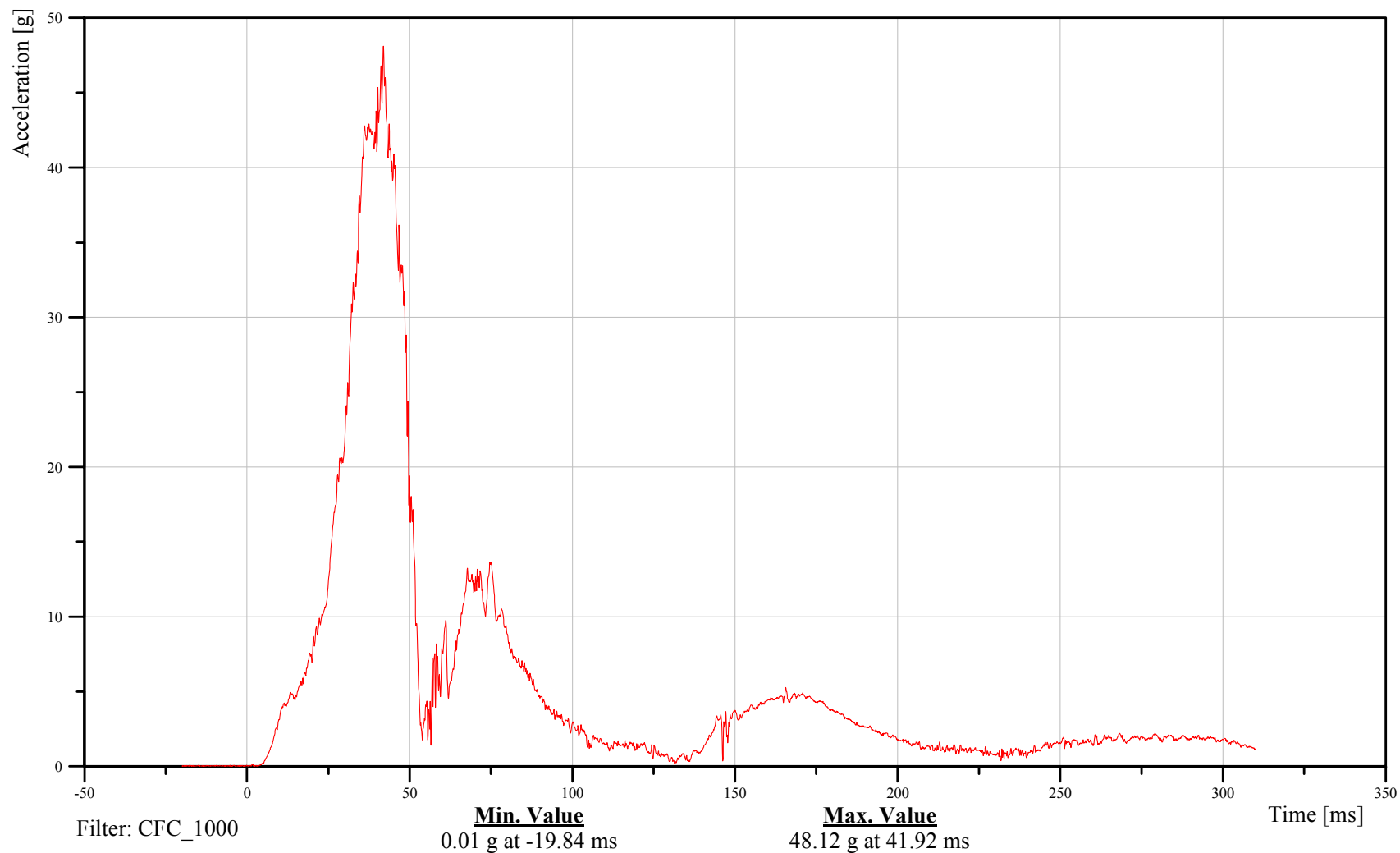
Pelvis Accel Resultant

Customer: VRTC

14PELVCG00E2ACRA

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Left Femur Force X

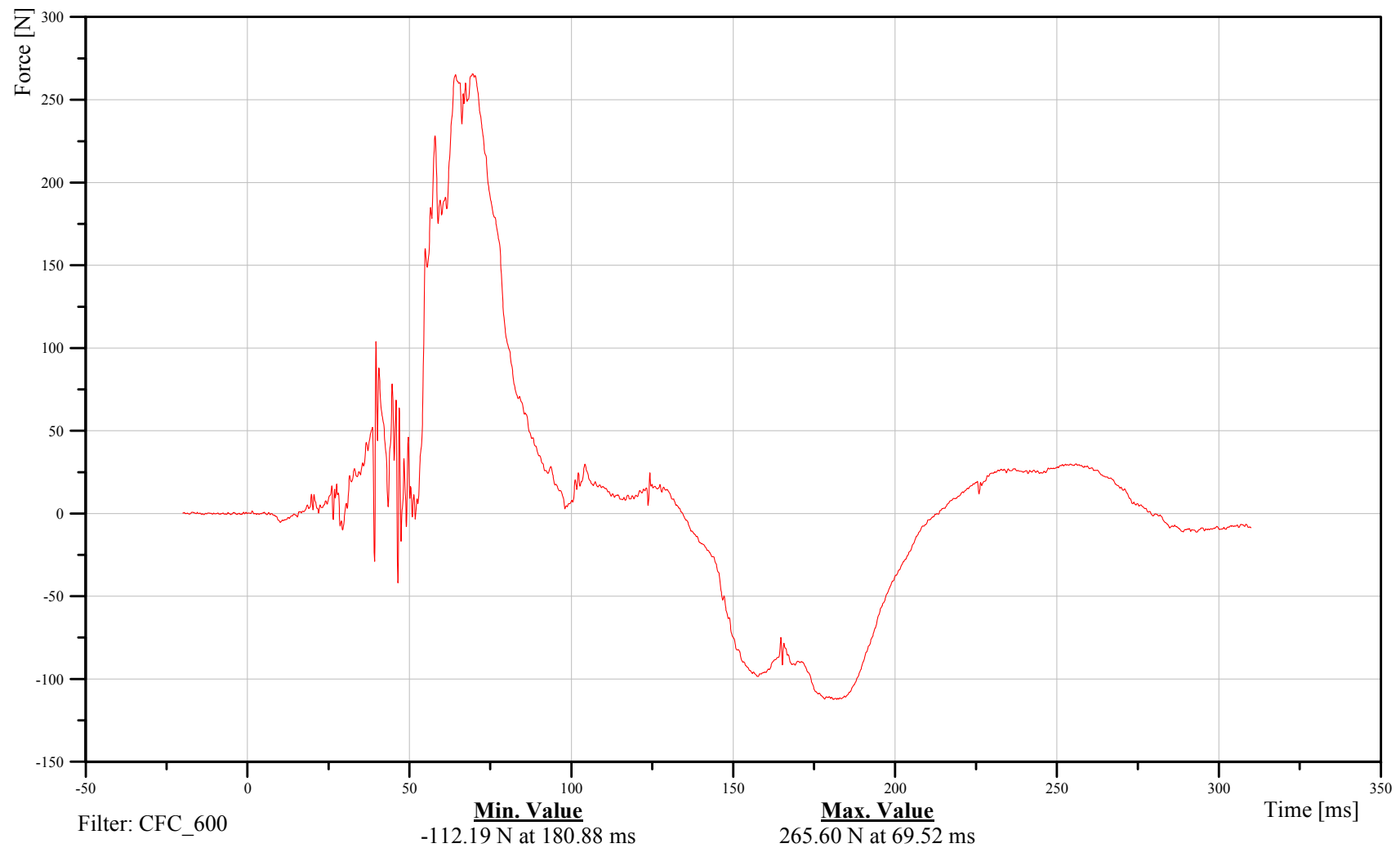
Date: 06/24/2005
Time: 12:02

Customer: VRTC

14FEMRLE00E2FOXB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Left Femur Force Y

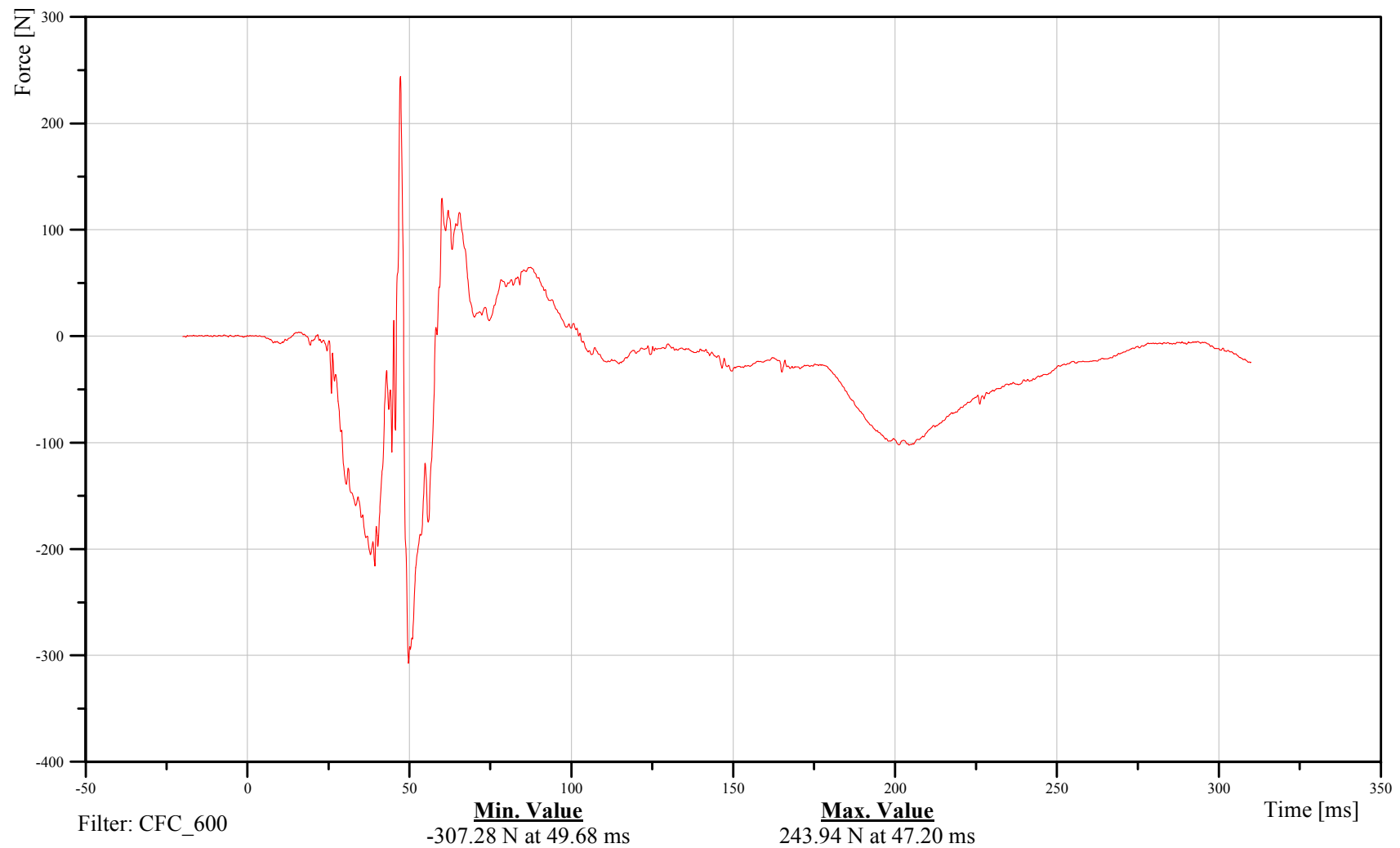
Date: 06/24/2005
Time: 12:02

Customer: VRTC

14FEMRLE00E2FOYB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

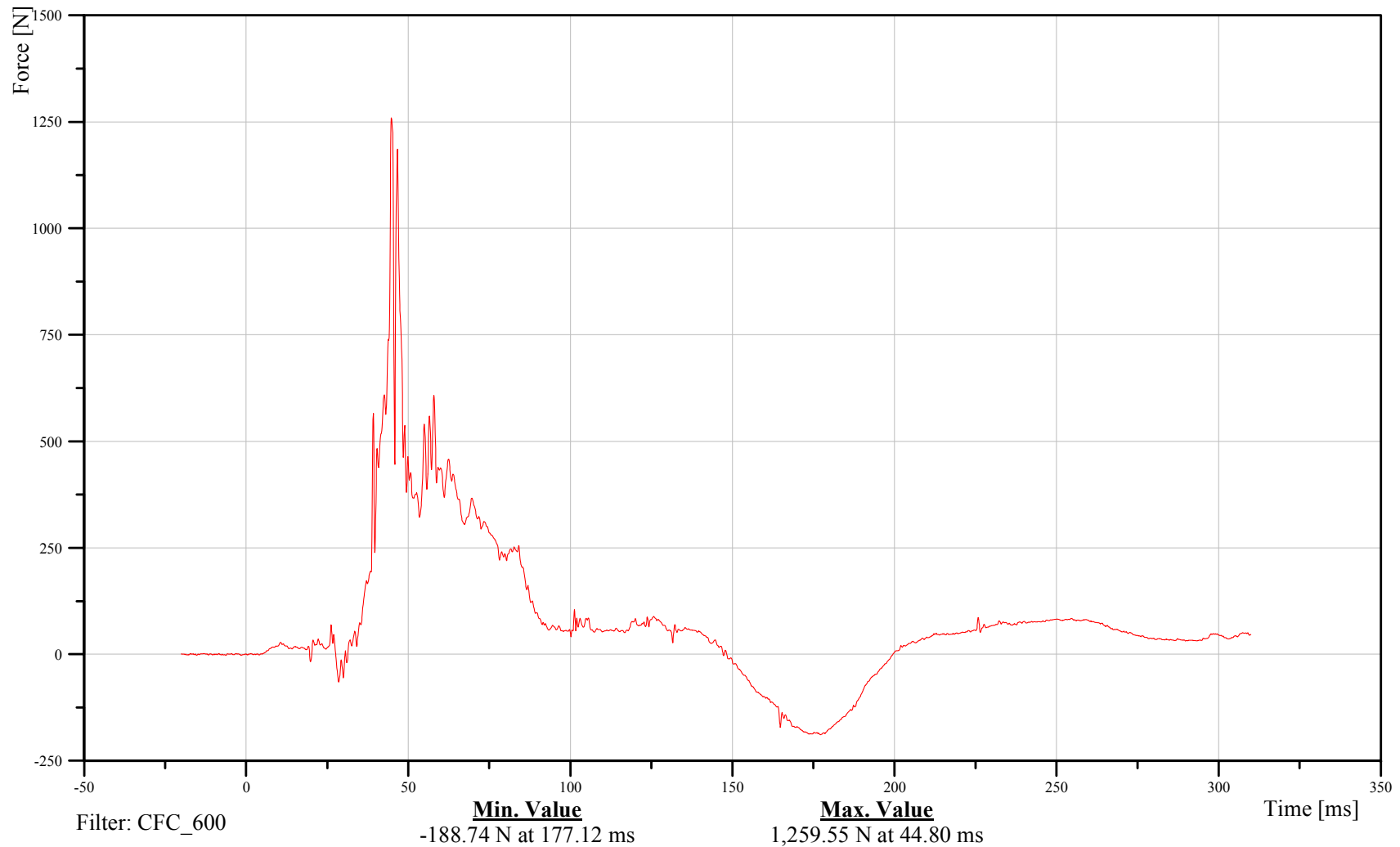
Left Femur Force Z

Customer: VRTC

14FEMRLE00E2FOZB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Left Femur Moment X

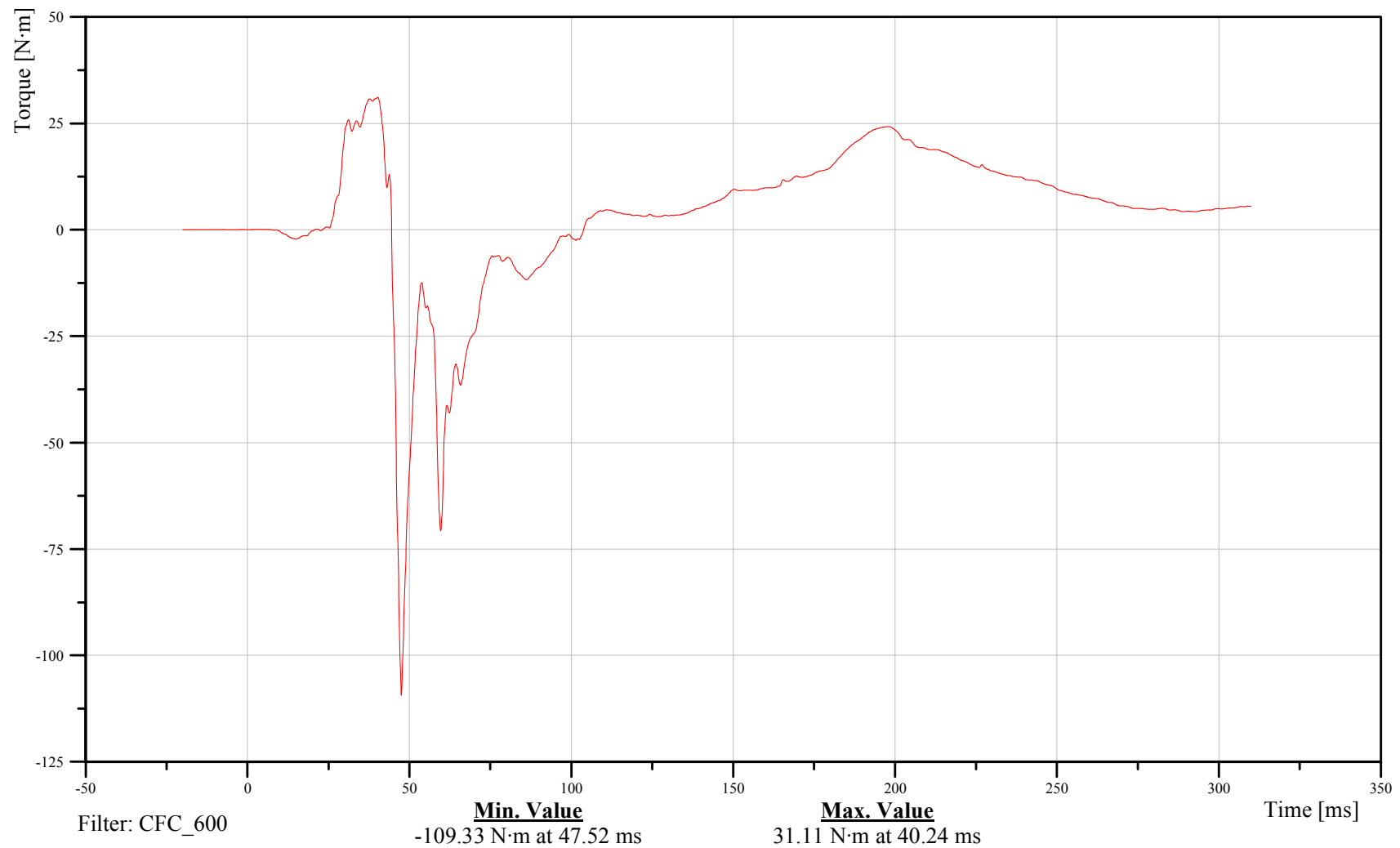
Date: 06/24/2005
Time: 12:02

Customer: VRTC

14FEMRLE00E2MOXB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Left Femur Moment Y

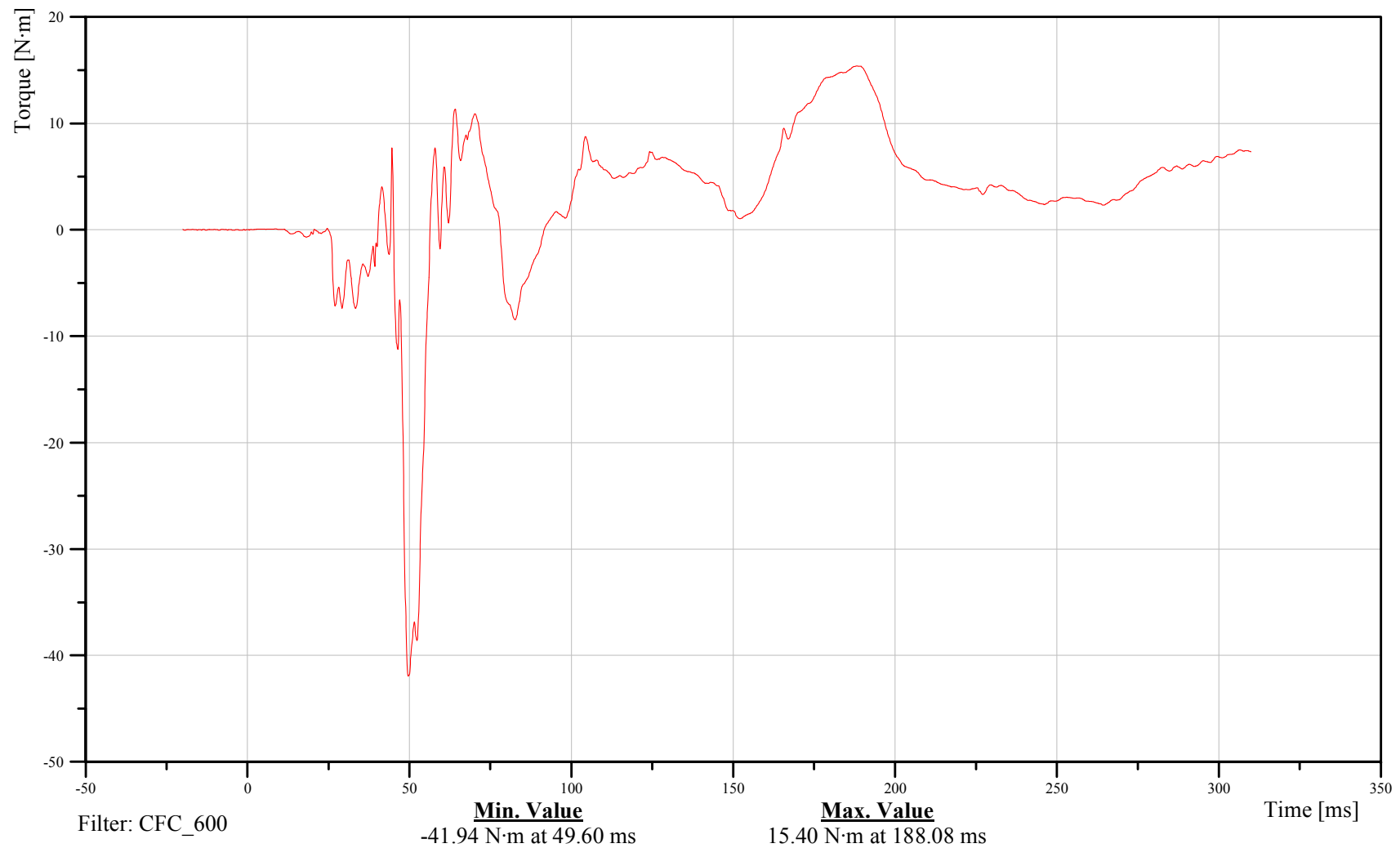
Date: 06/24/2005
Time: 12:02

Customer: VRTC

14FEMRLE00E2MOYB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Left Femur Moment Z

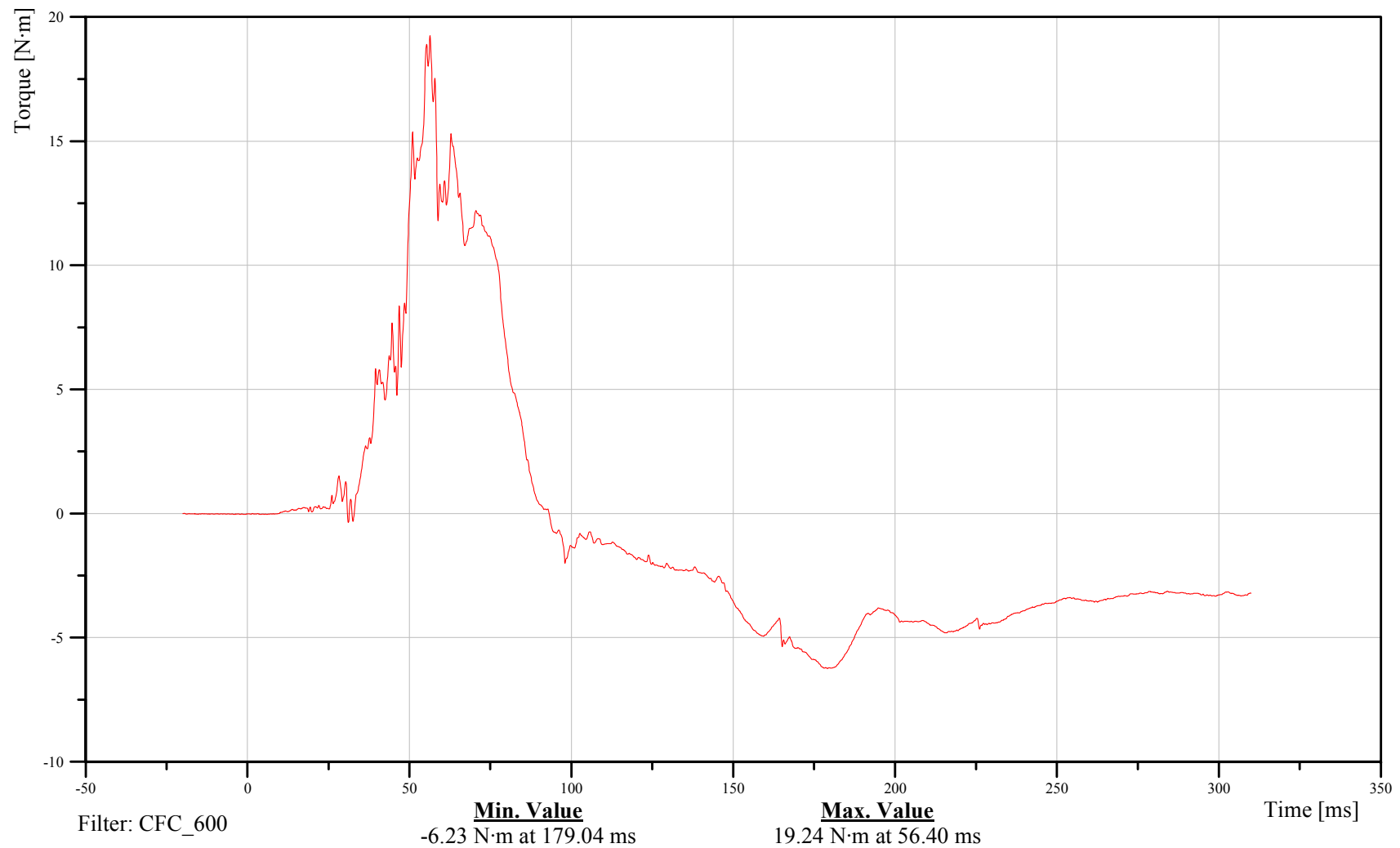
Date: 06/24/2005
Time: 12:02

Customer: VRTC

14FEMRLE00E2MOZB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

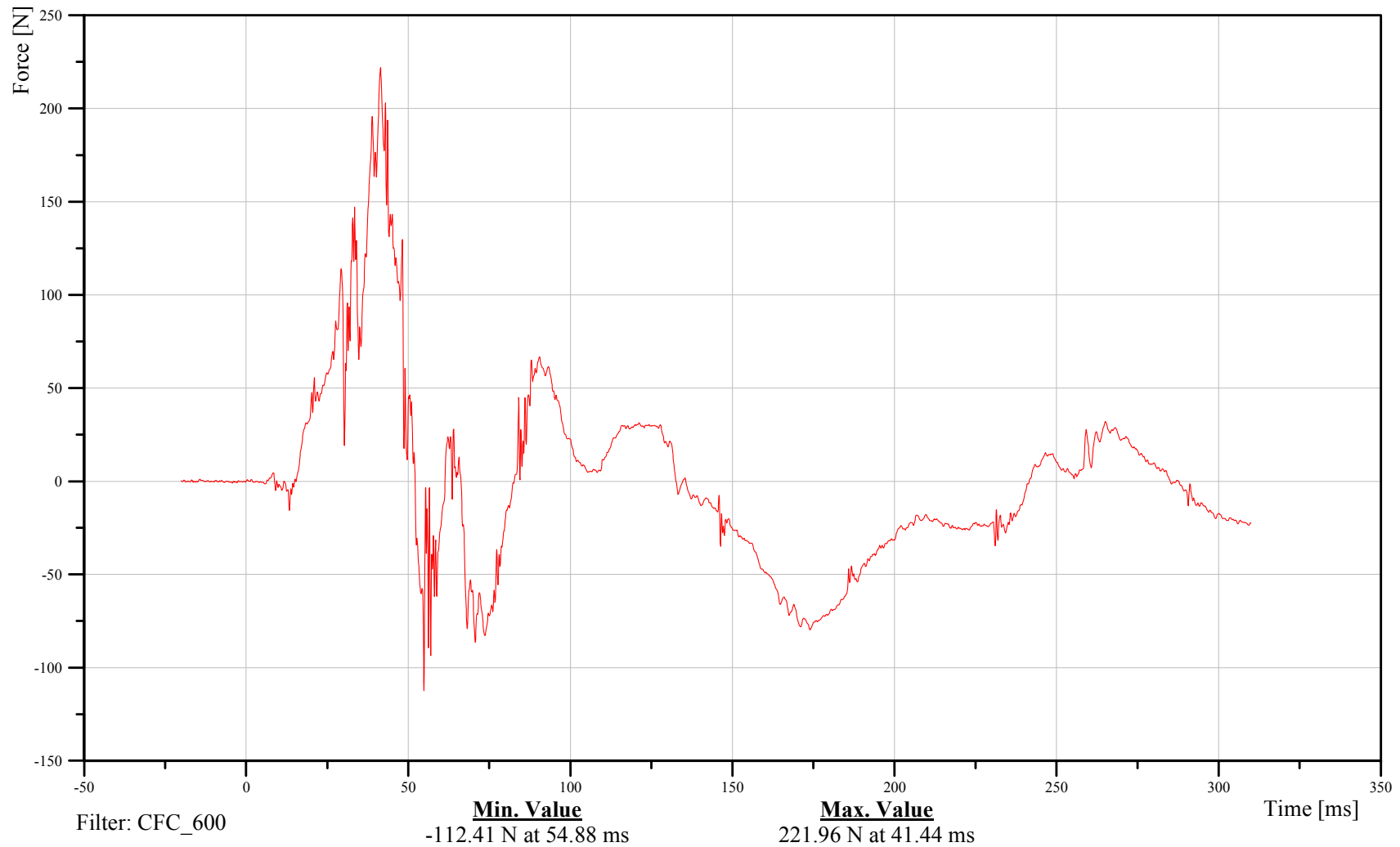
Right Femur Force X

Customer: VRTC

14FEMRRI00E2FOXB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

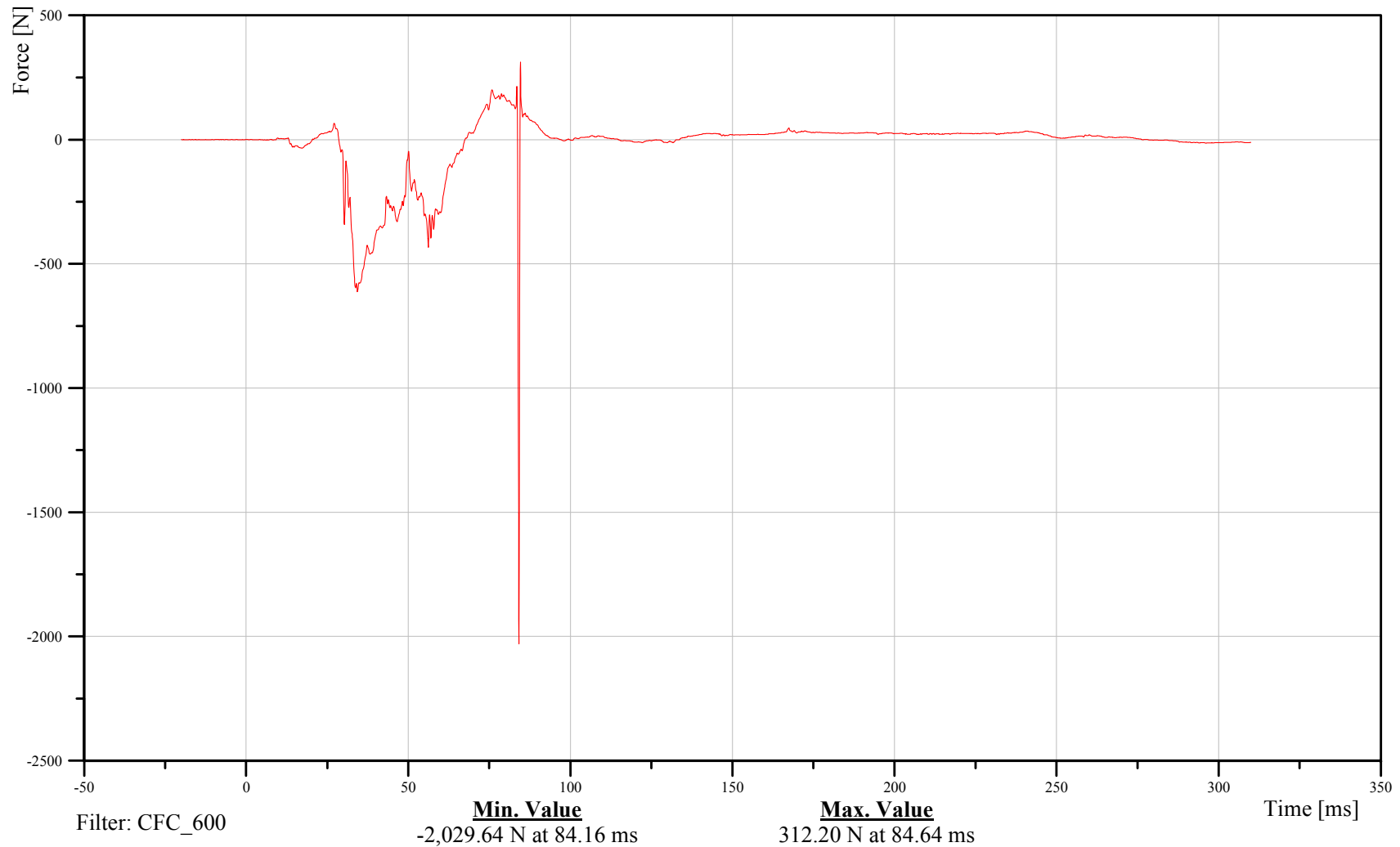
Right Femur Force Y

Customer: VRTC

14FEMRRI00E2FOYB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

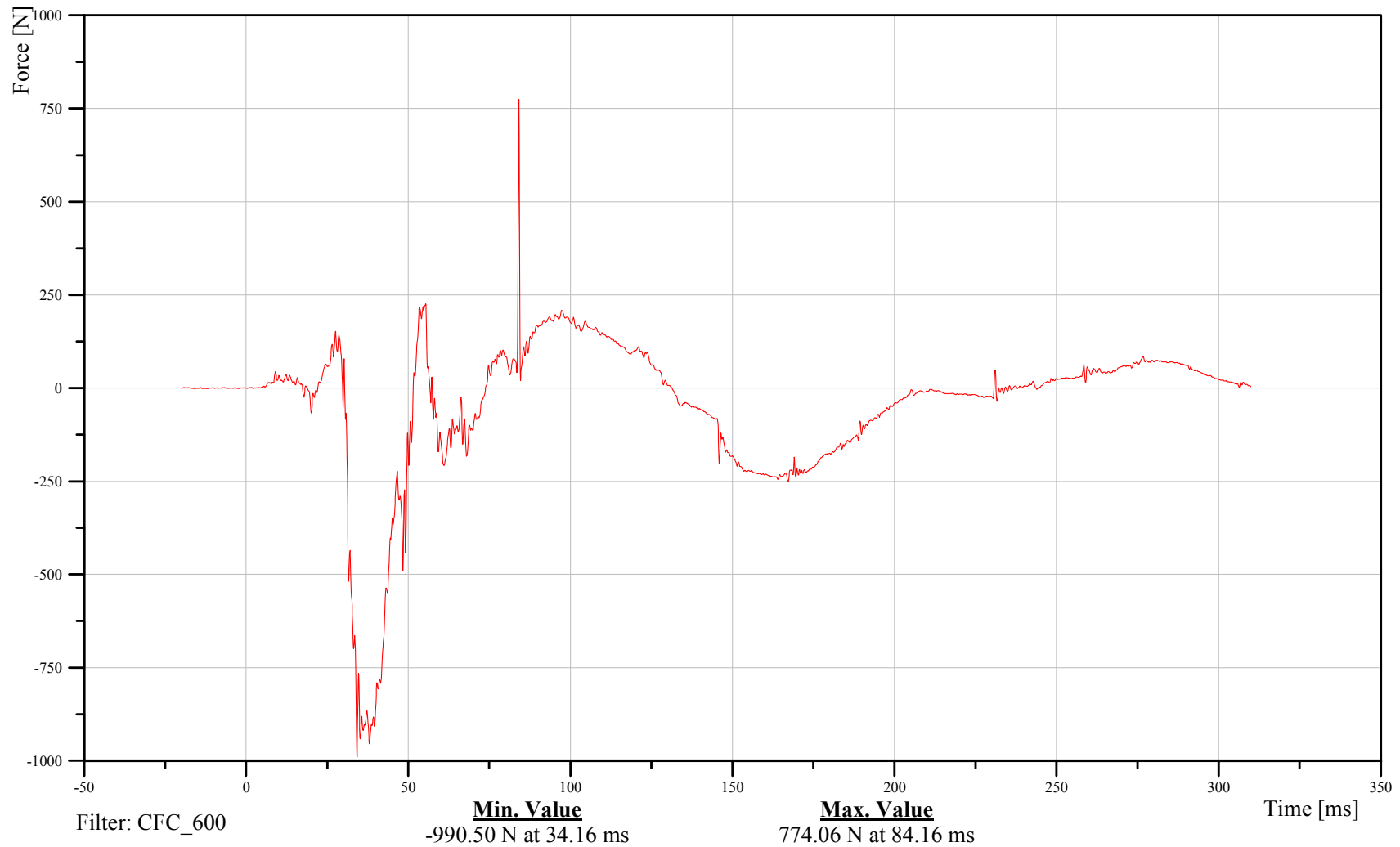
Right Femur Force Z

Customer: VRTC

14FEMRRI00E2FOZB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

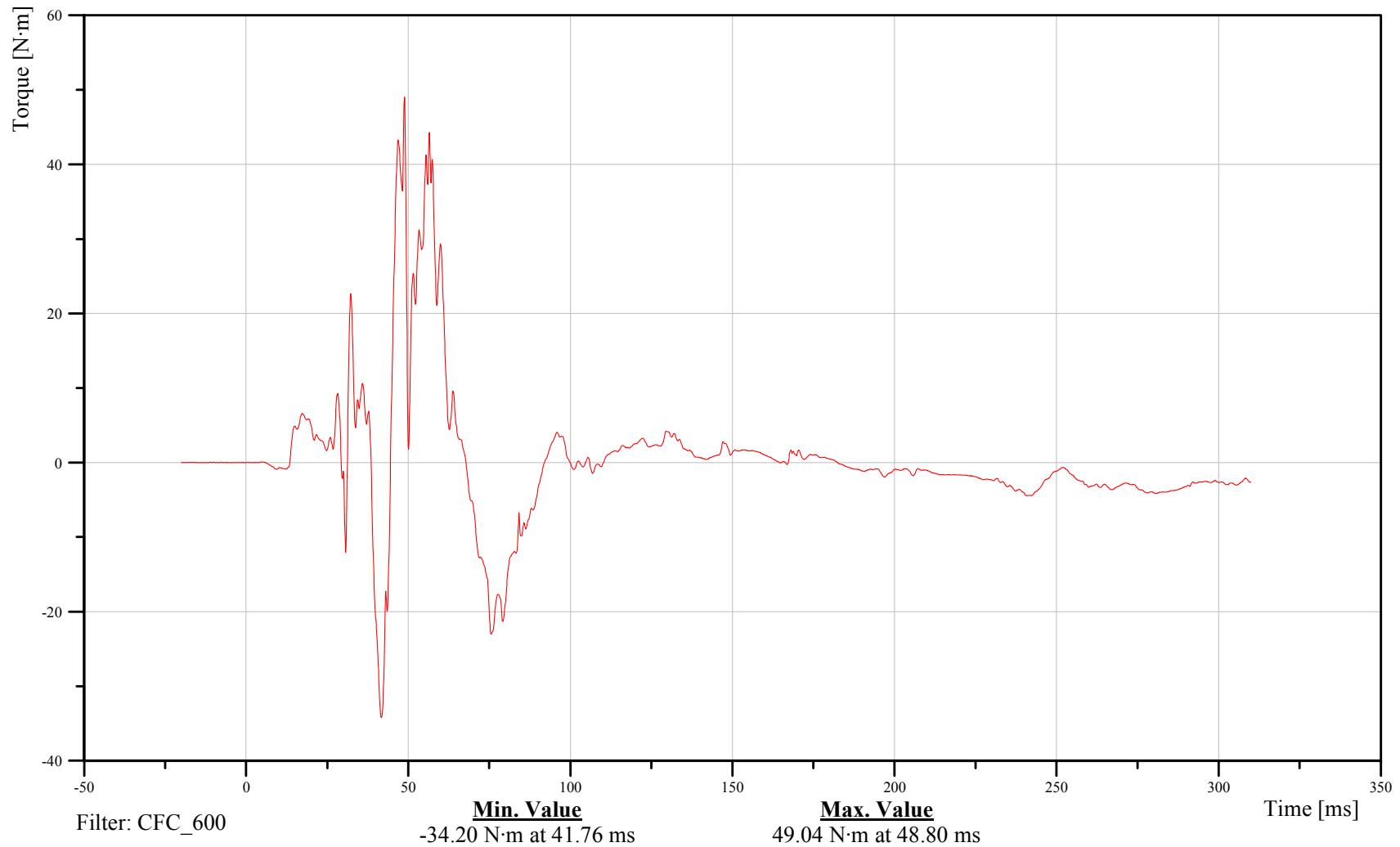
Right Femur Moment X

Customer: VRTC

14FEMRRI00E2MOXB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

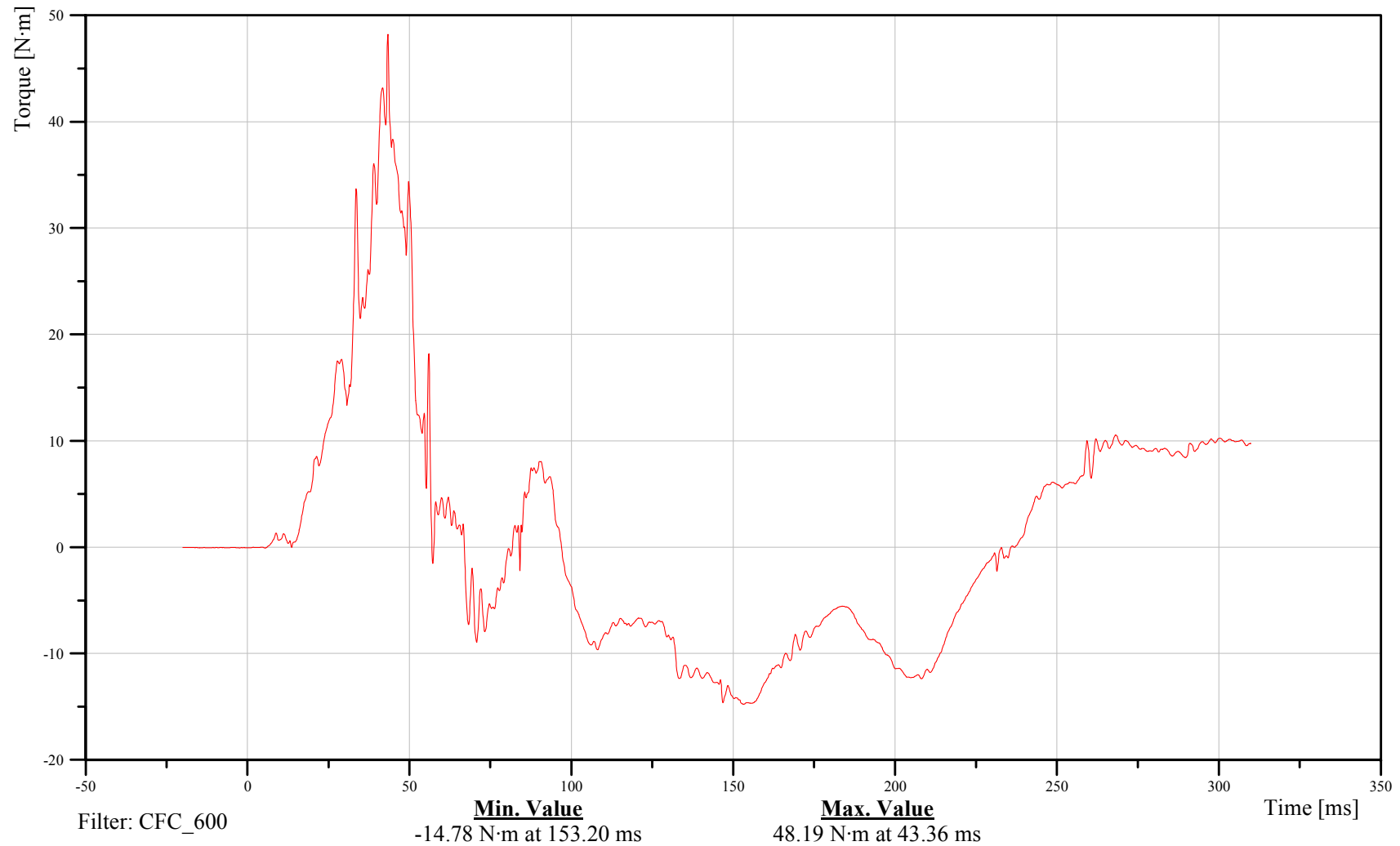
Right Femur Moment Y

Customer: VRTC

14FEMRRI00E2MOYB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

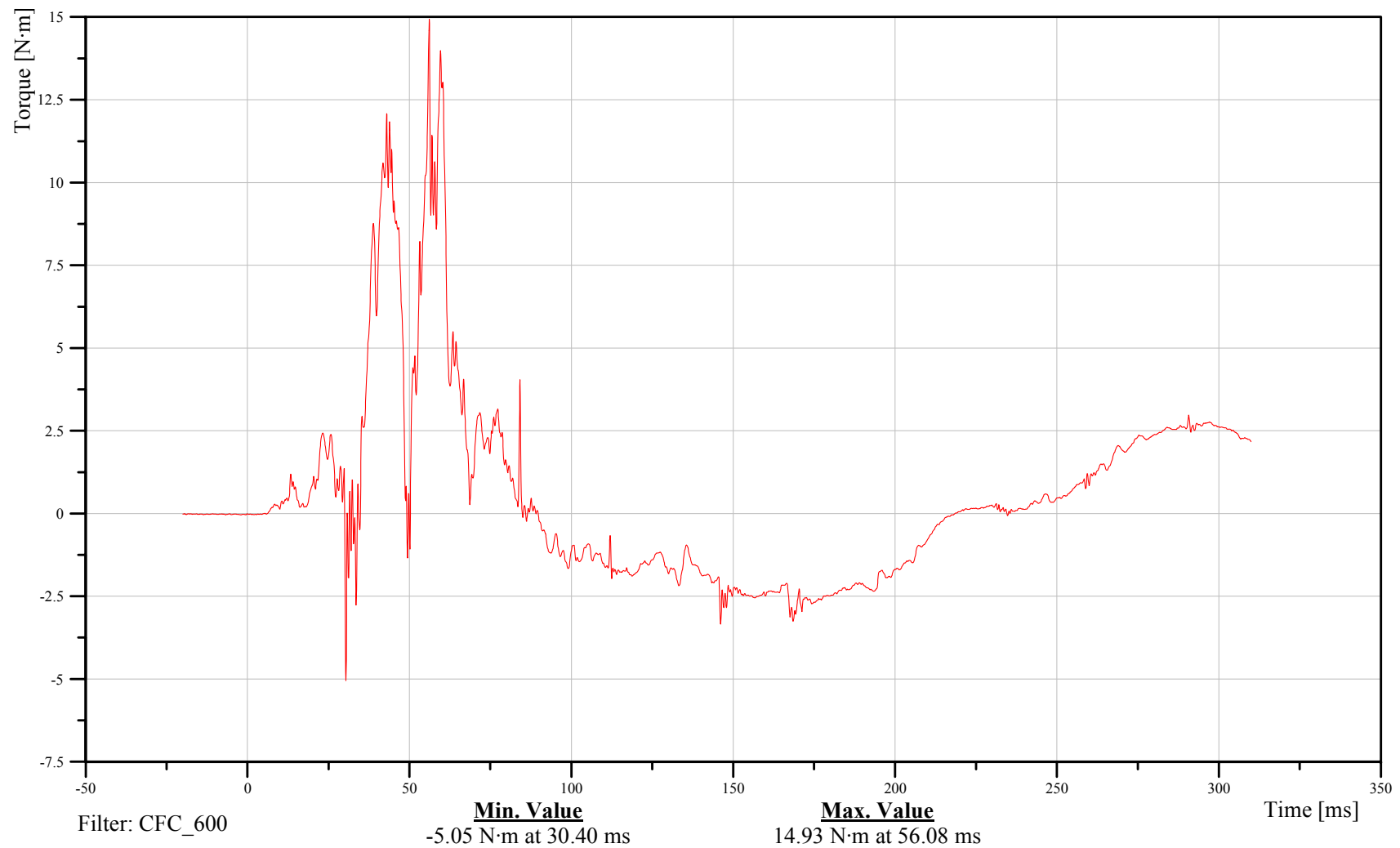
Right Femur Moment Z

Customer: VRTC

14FEMRRI00E2MOZB

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Right Side Sill at Front Seat X-axis Acceleration

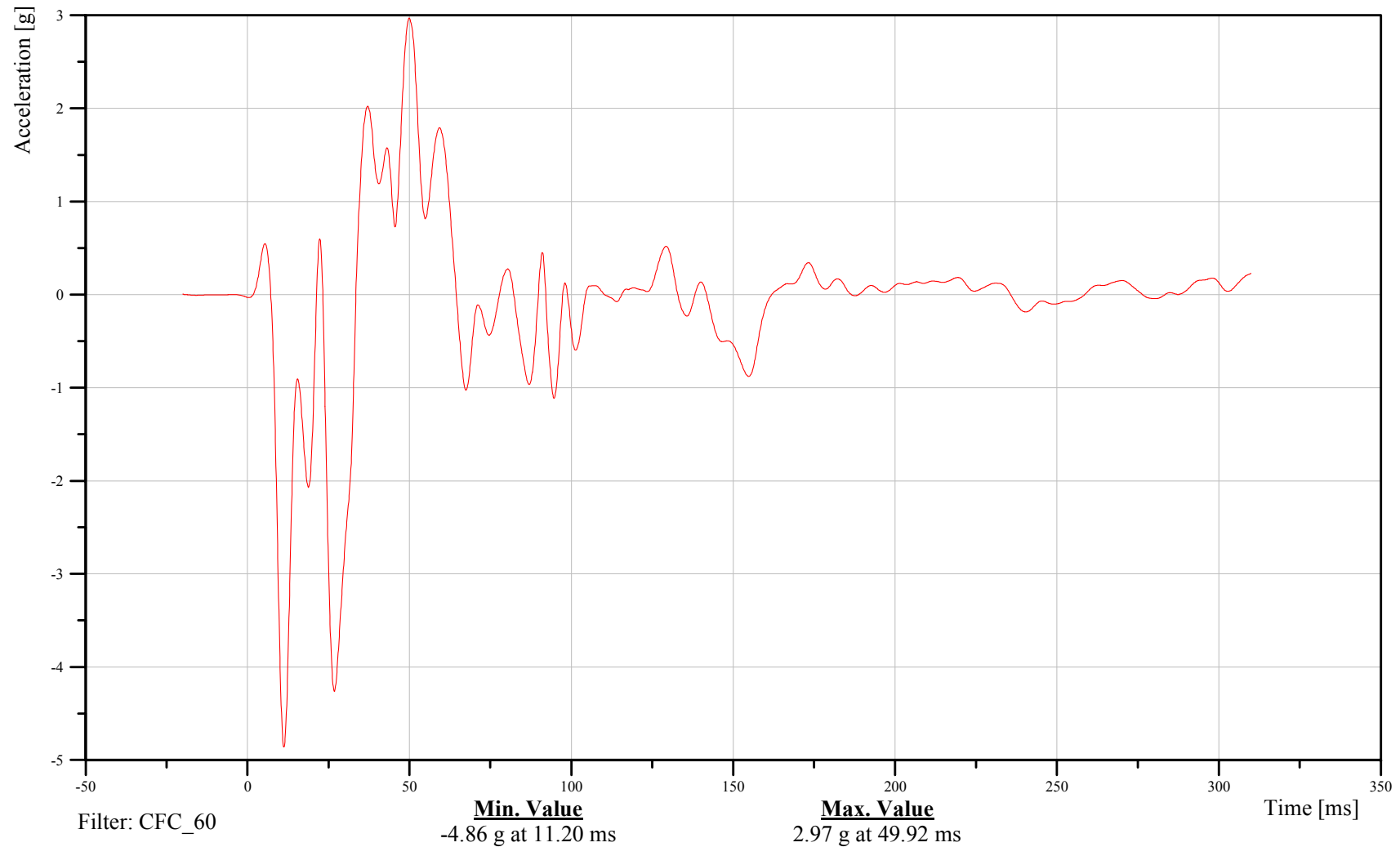
Date: 06/24/2005
Time: 12:02

Customer: VRTC

16SILBFR0000ACXD

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Right Side Sill at Front Seat Y-axis Acceleration

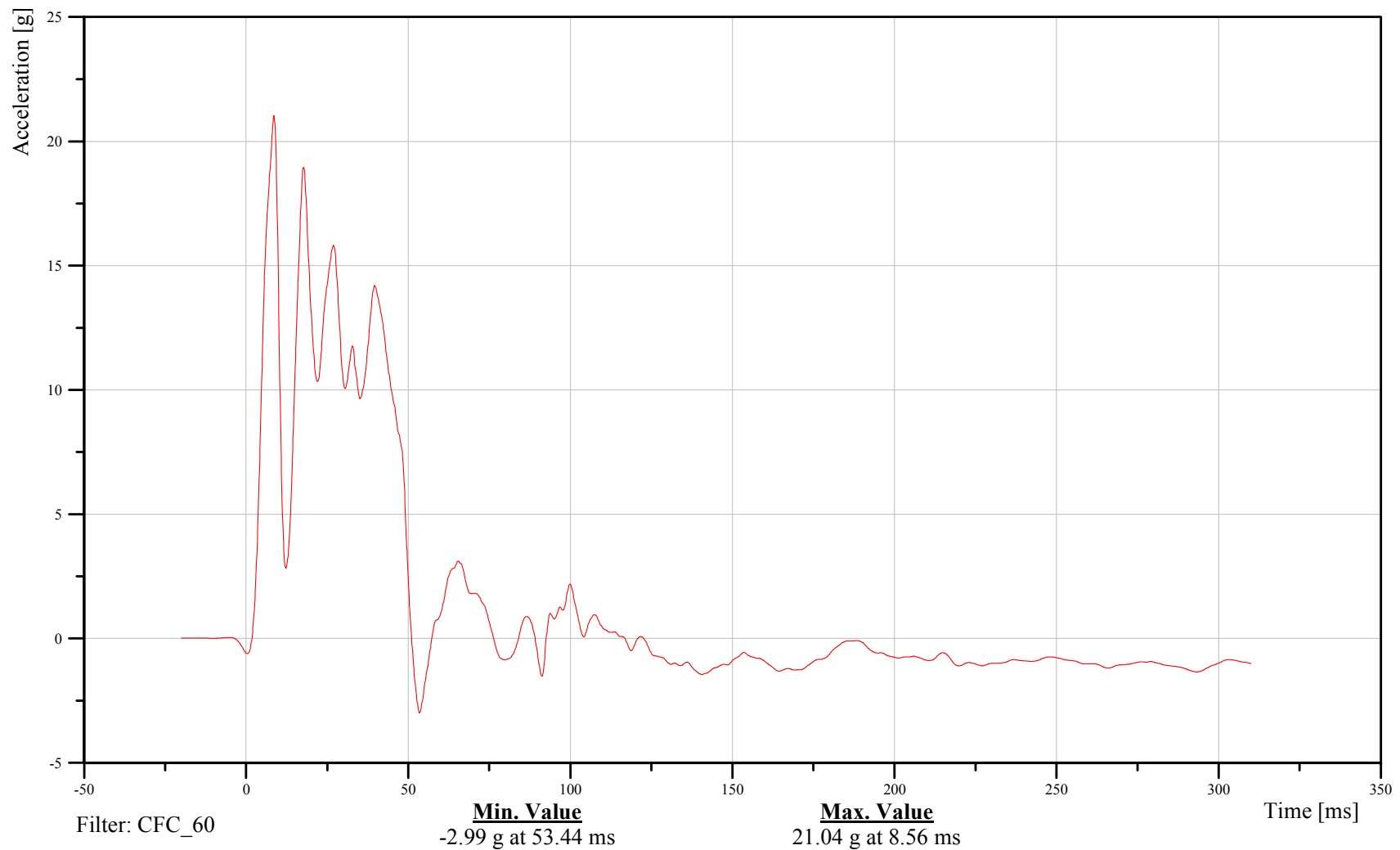
Date: 06/24/2005
Time: 12:02

Customer: VRTC

16SILBFR0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

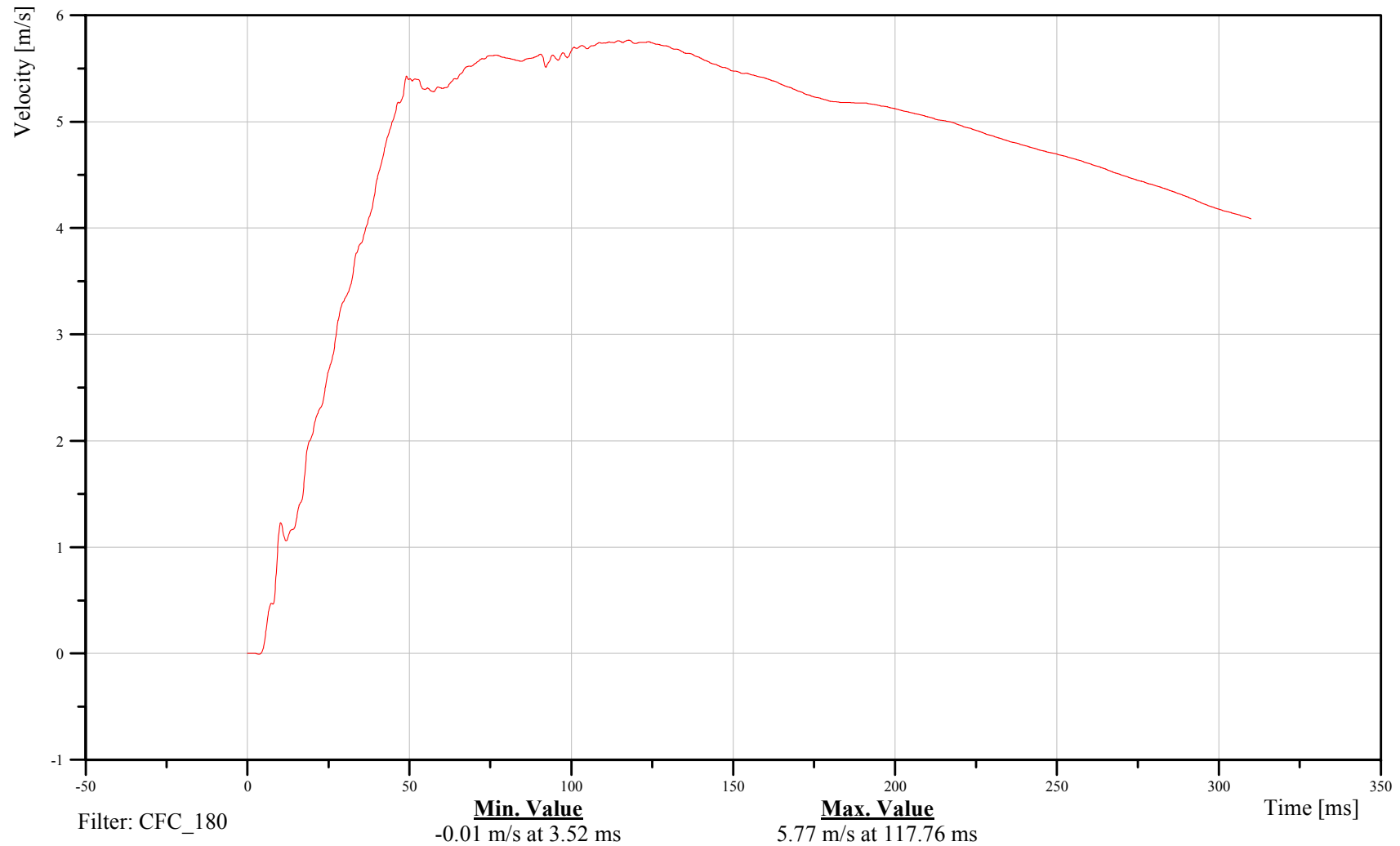
Right Side Sill at Front Seat Y-axis Velocity

Customer: VRTC

16SILBFR0000VEYC

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Right Side Sill at Front Seat Y-axis Displacement

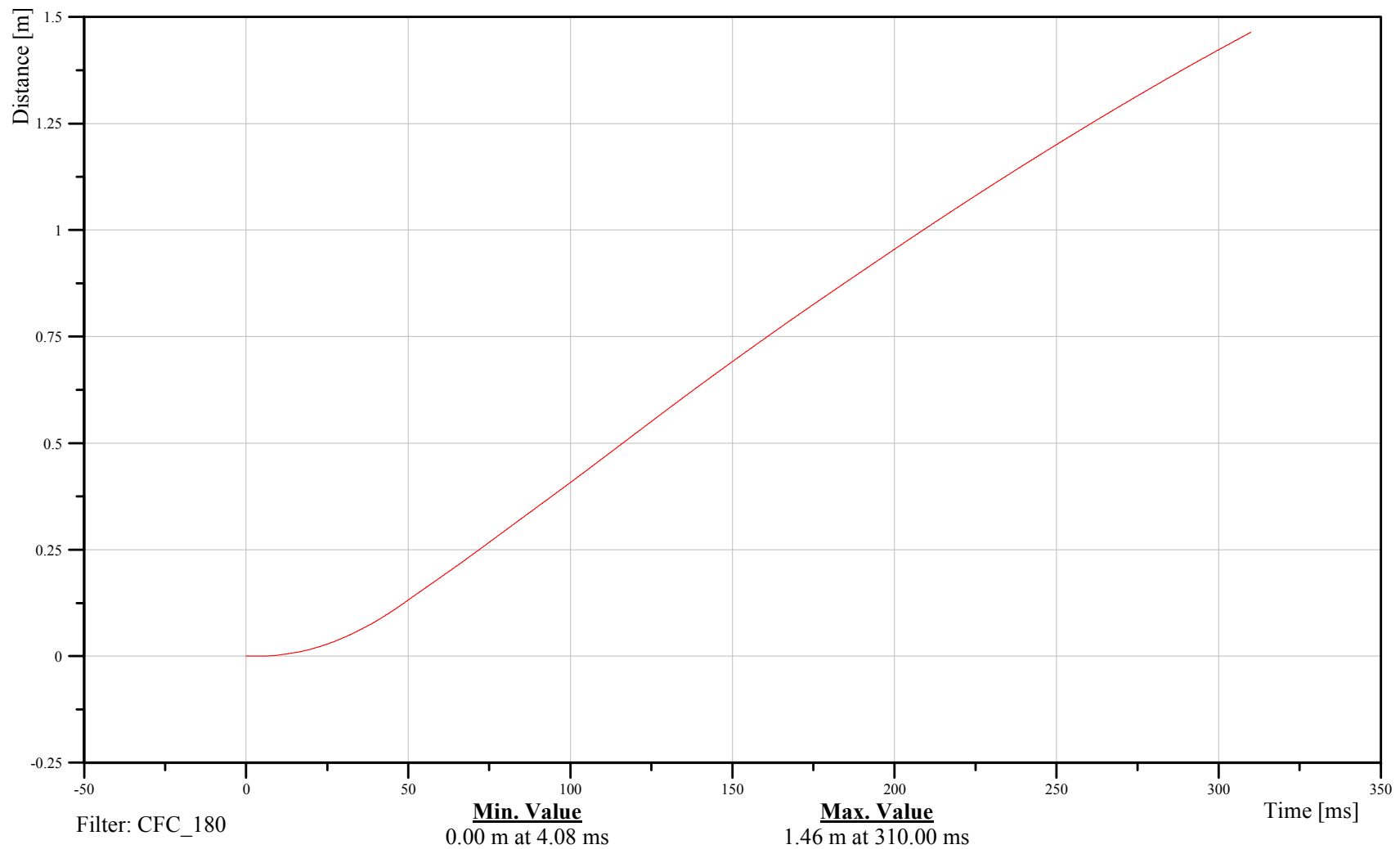
Date: 06/24/2005
Time: 12:02

Customer: VRTC

16SILBFR0000DCYC

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

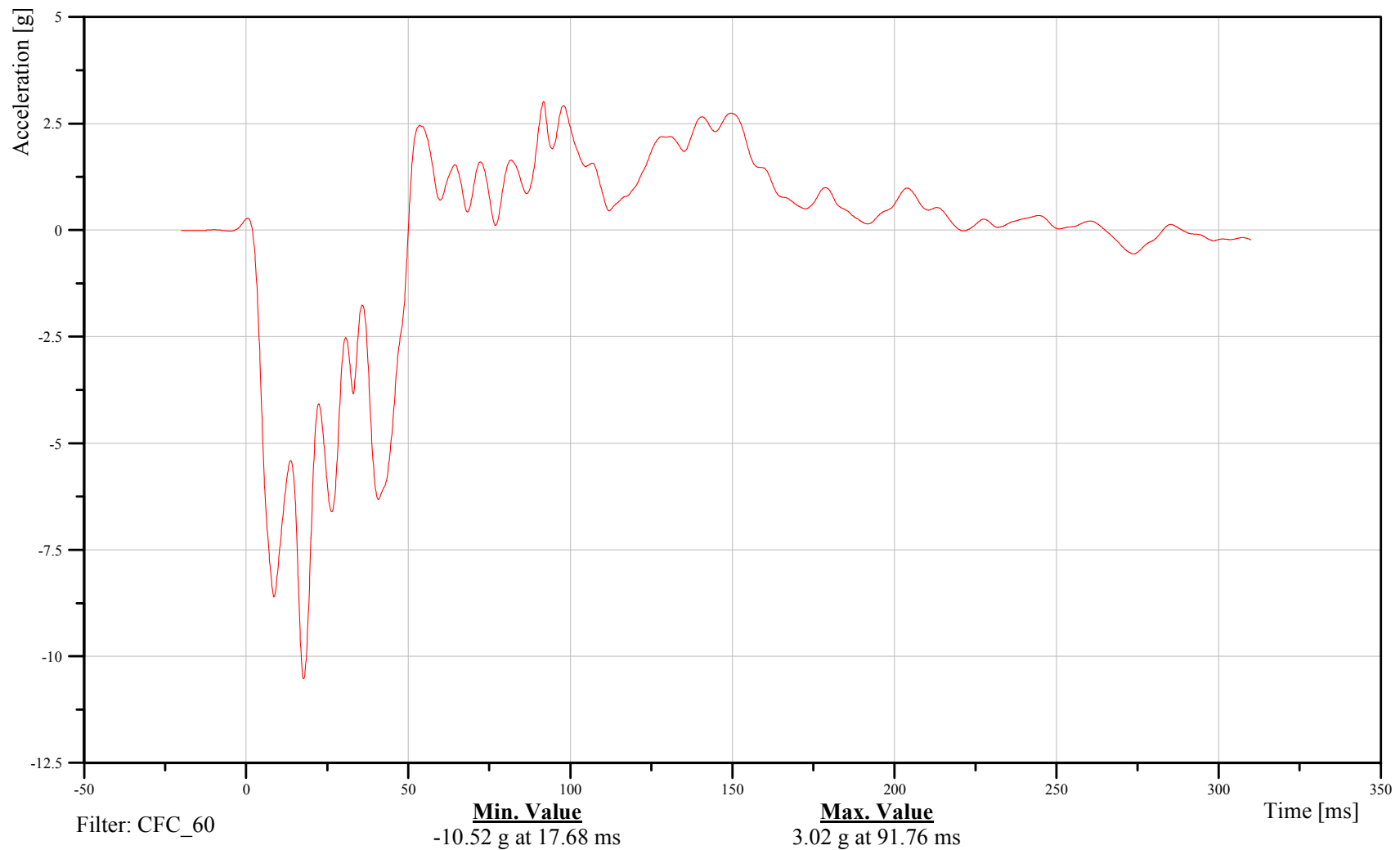
Right Side Sill at Front Seat Z-axis Acceleration

Customer: VRTC

16SILBFR0000ACZD

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

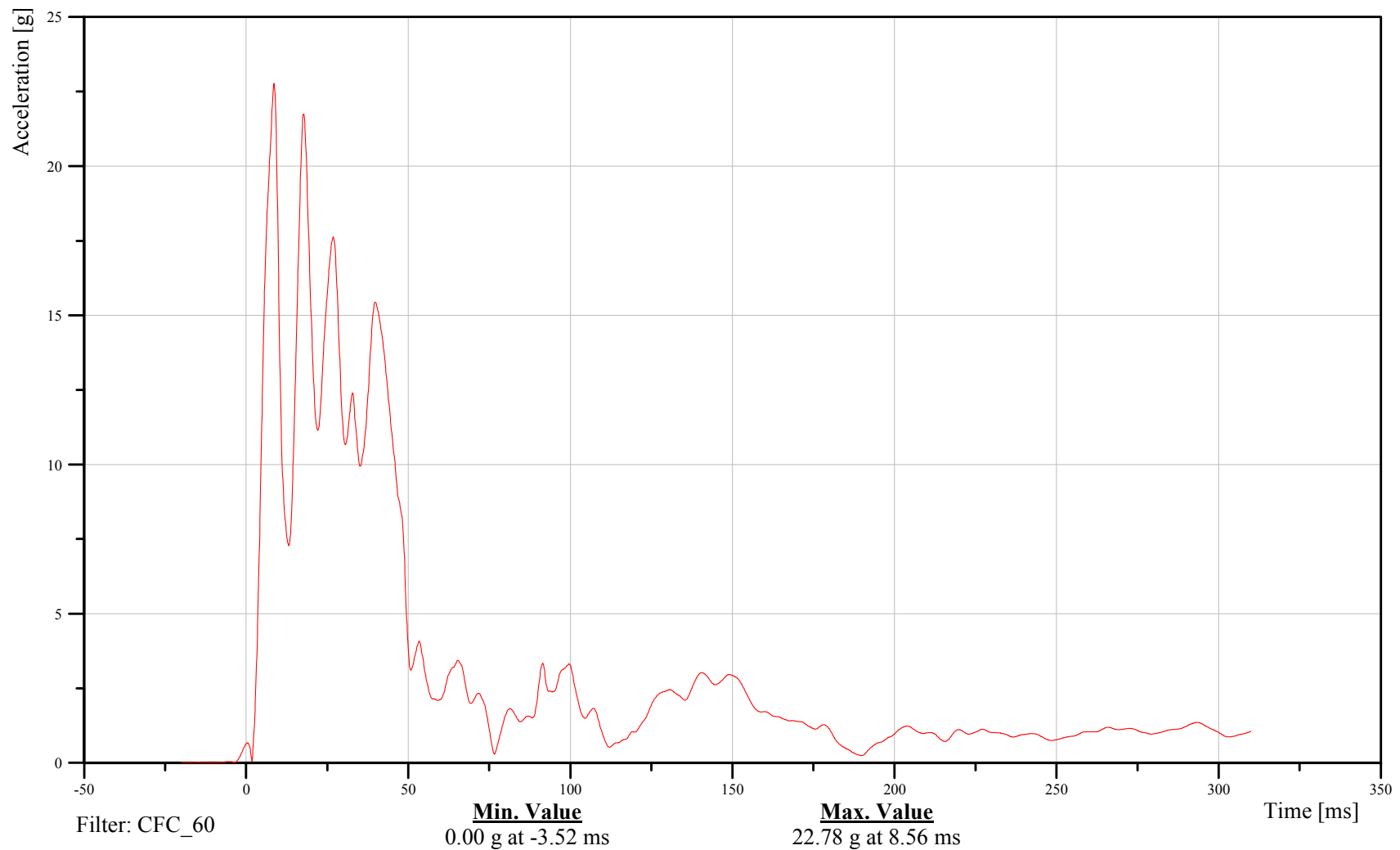
Right Side Sill at Front Seat Resultant Acceleration

Customer: VRTC

16SILBFR0000ACRD

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Right Side Sill at Rear Seat X-axis Acceleration

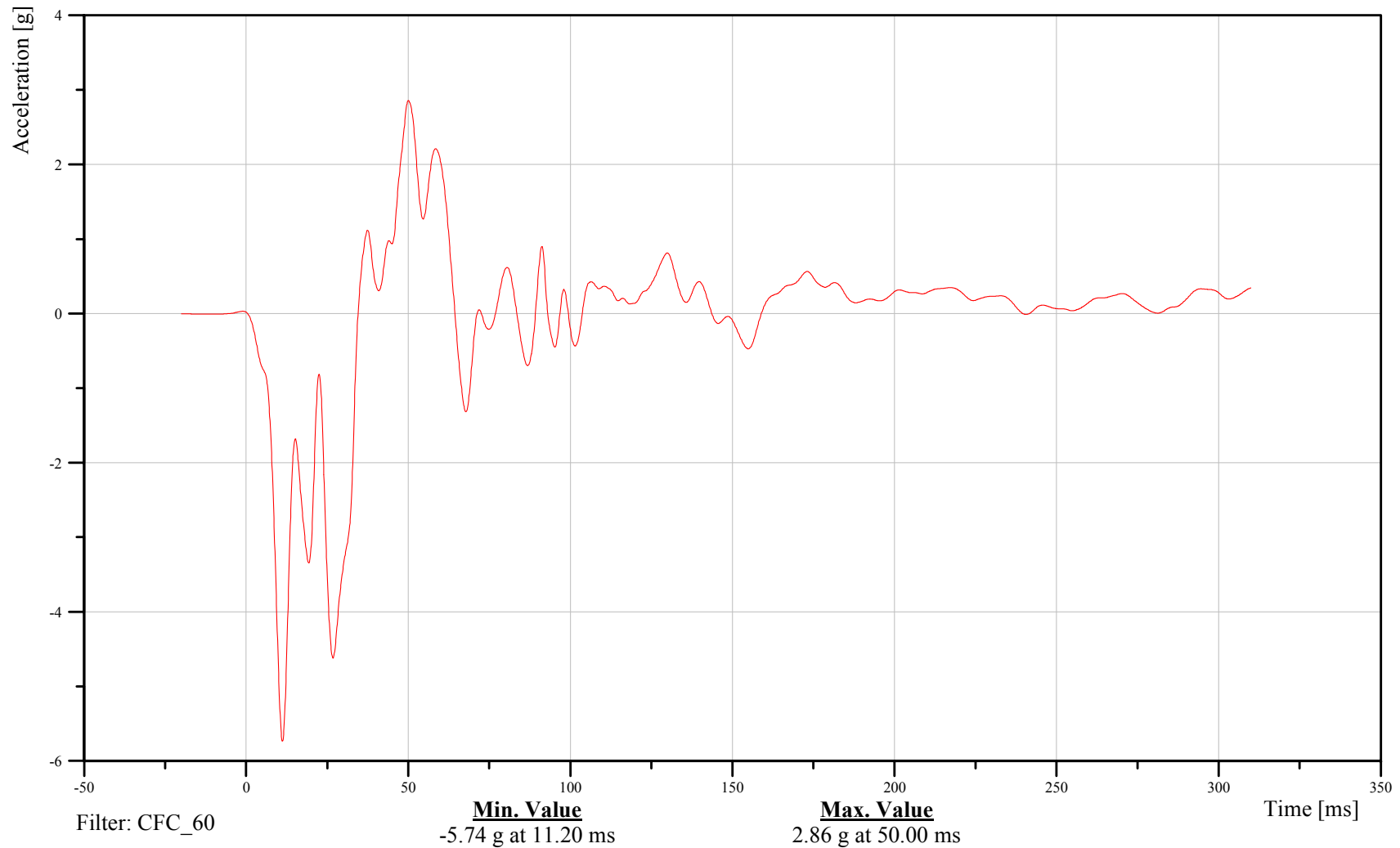
Date: 06/24/2005
Time: 12:02

Customer: VRTC

16SILBRE0000ACXD

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Right Side Sill at Rear Seat Y-axis Acceleration

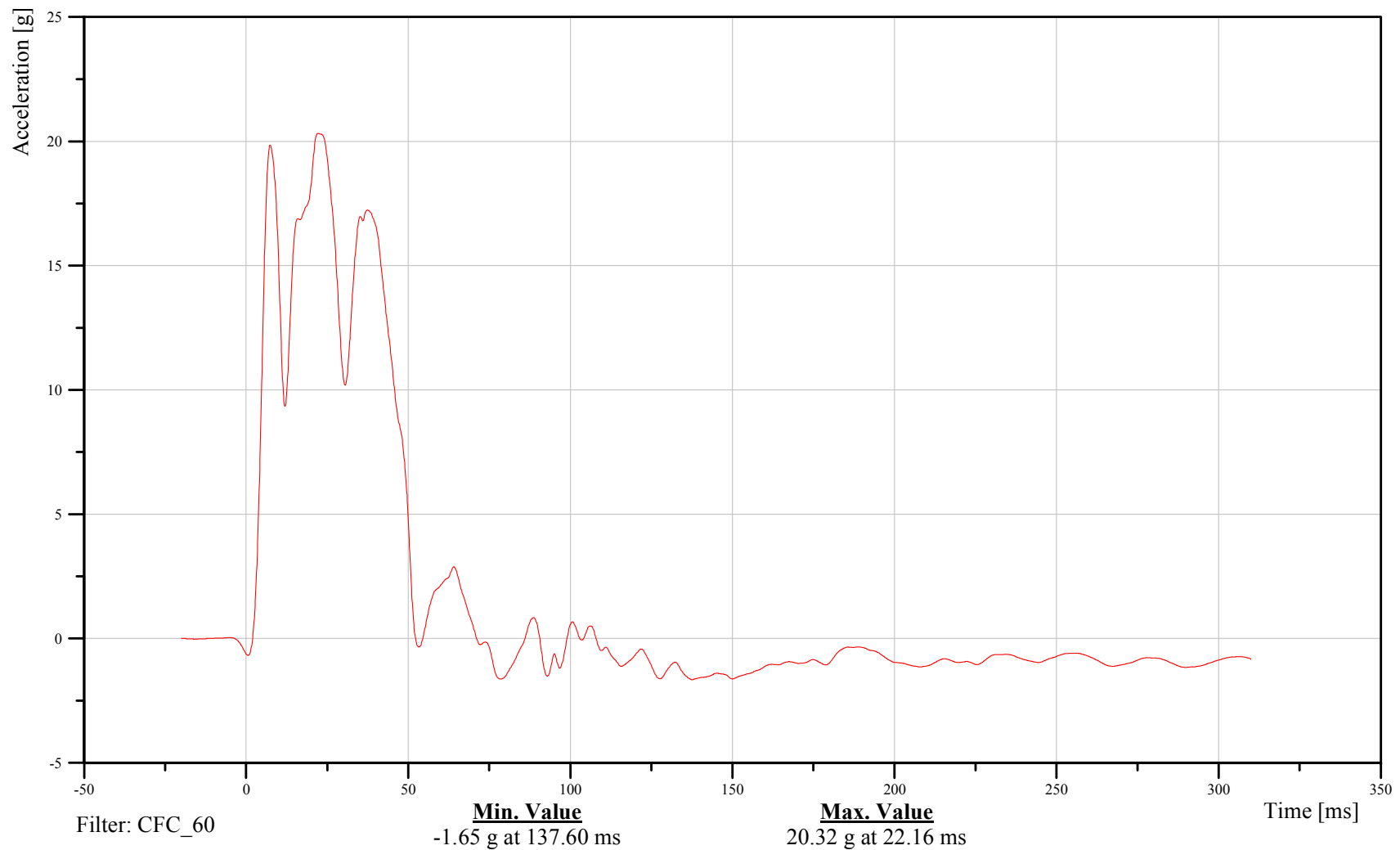
Date: 06/24/2005
Time: 12:02

Customer: VRTC

16SILBRE0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

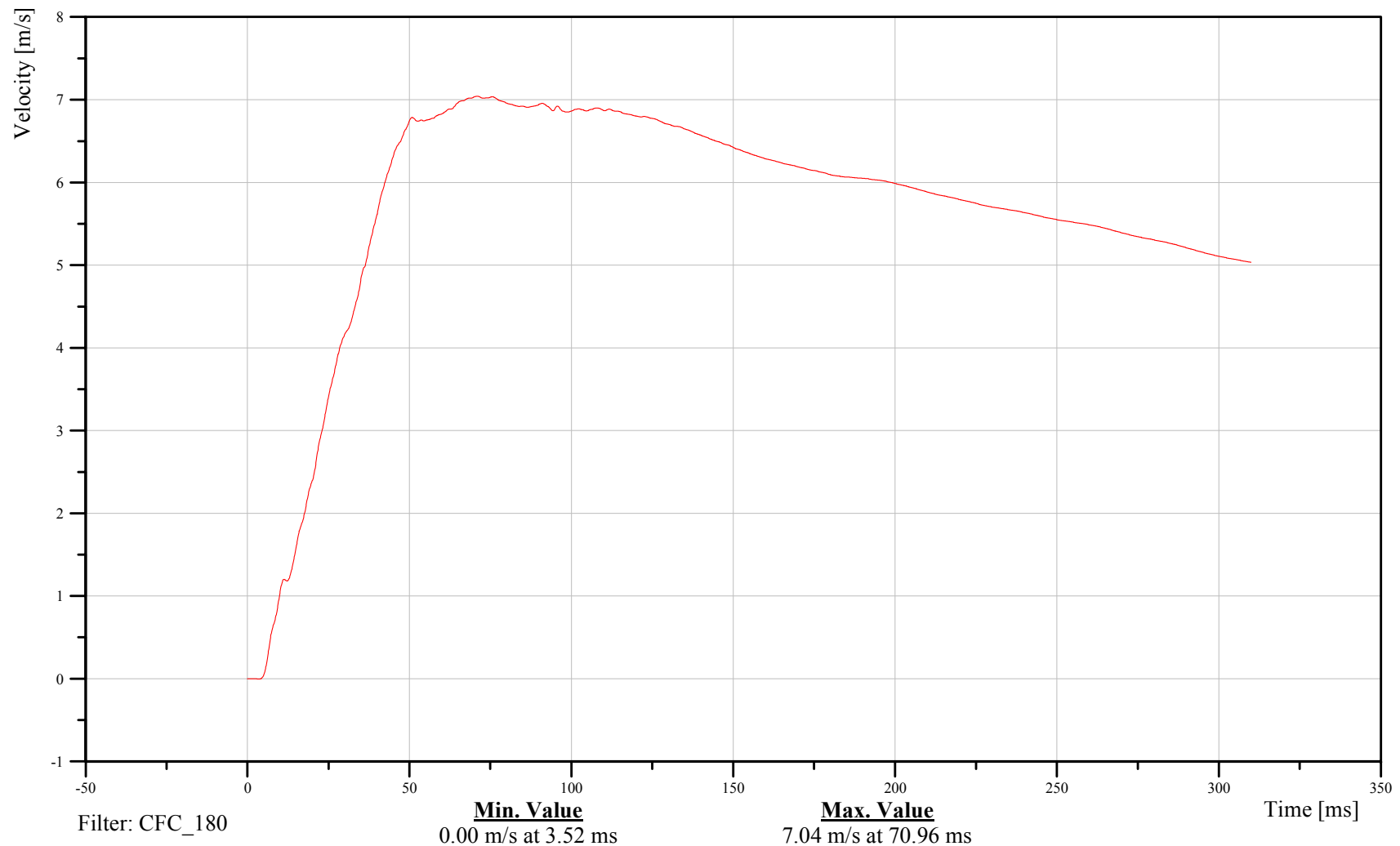
Right Side Sill at Rear Seat Y-axis Velocity

Customer: VRTC

16SILBRE0000VEYC

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Right Side Sill at Rear Seat Y-axis Displacement

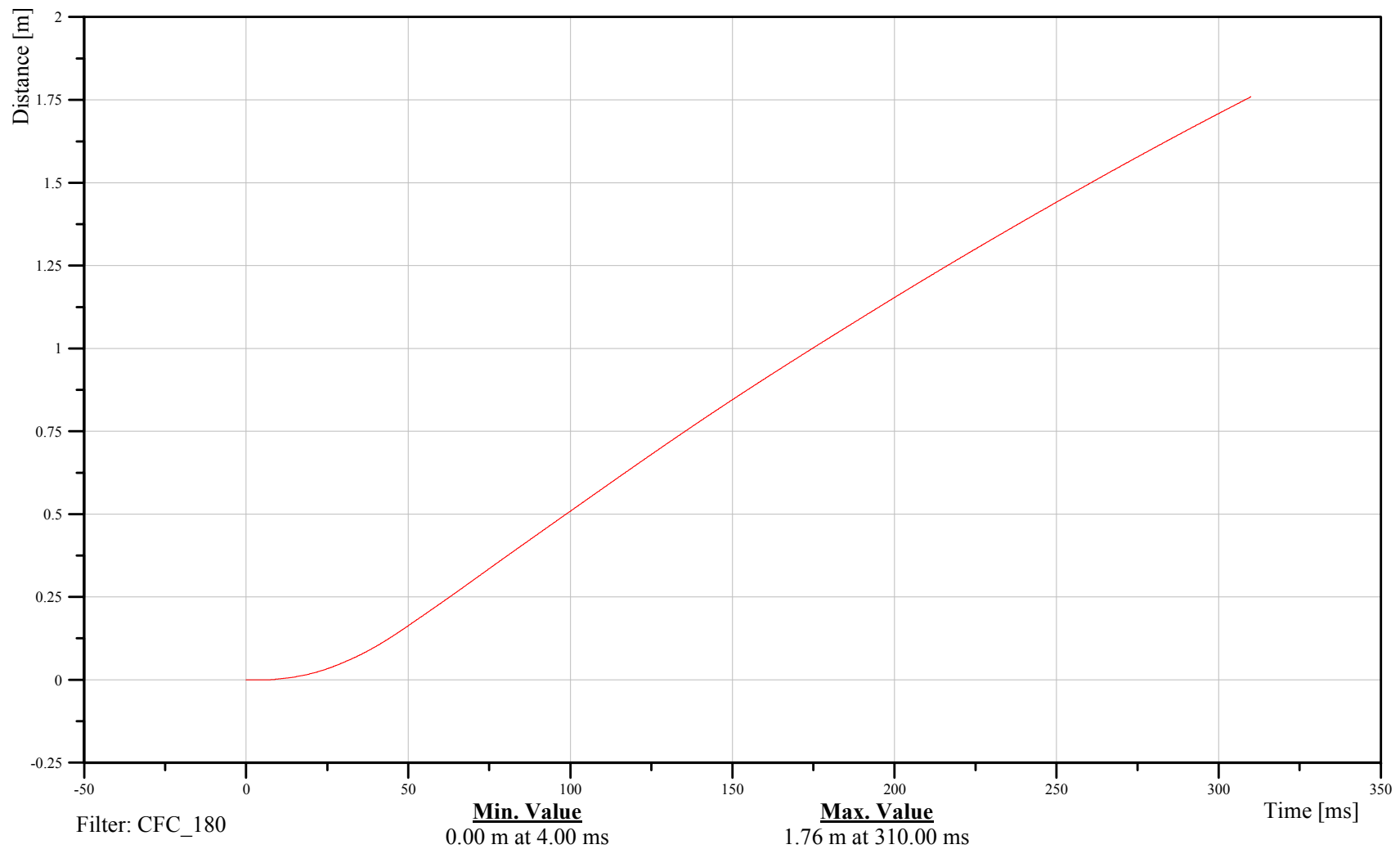
Date: 06/24/2005
Time: 12:02

Customer: VRTC

16SILBRE0000DCYC

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

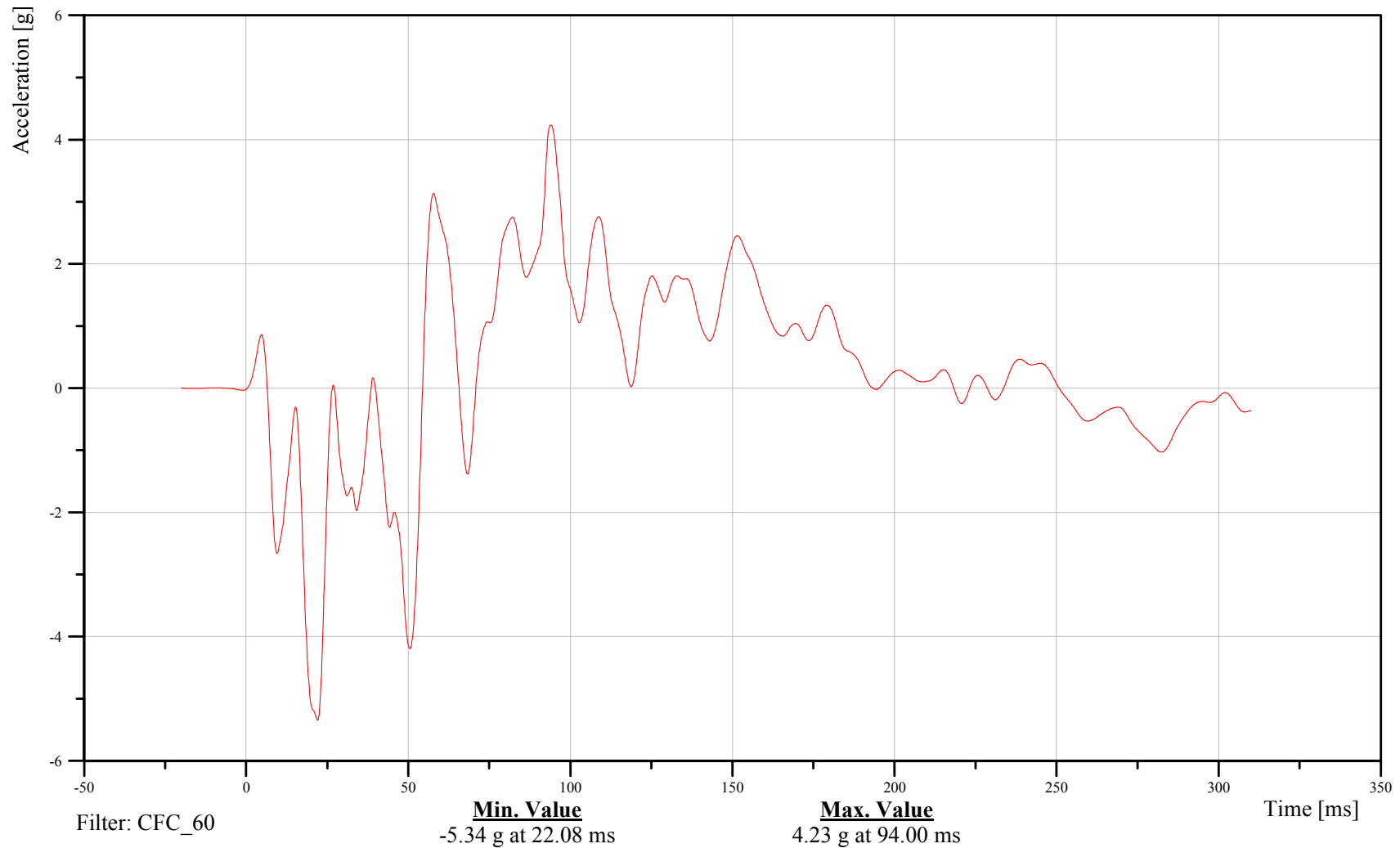
Right Side Sill at Rear Seat Z-axis Acceleration

Customer: VRTC

16SILBRE0000ACZD

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

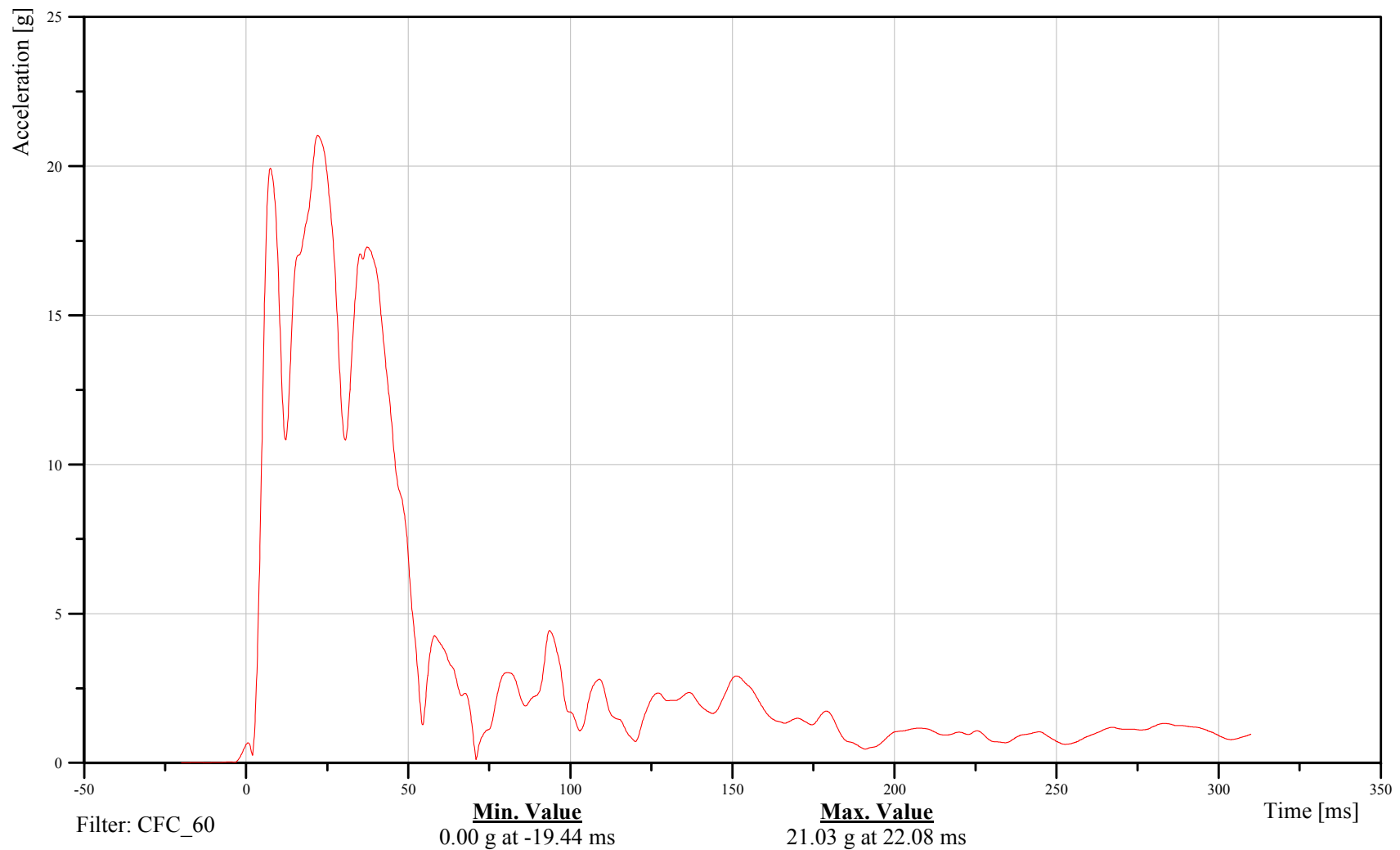
Right Side Sill at Rear Seat Resultant Acceleration

Customer: VRTC

16SILBRE0000ACRD

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Rear Floorpan Above Axle X-axis Acceleration

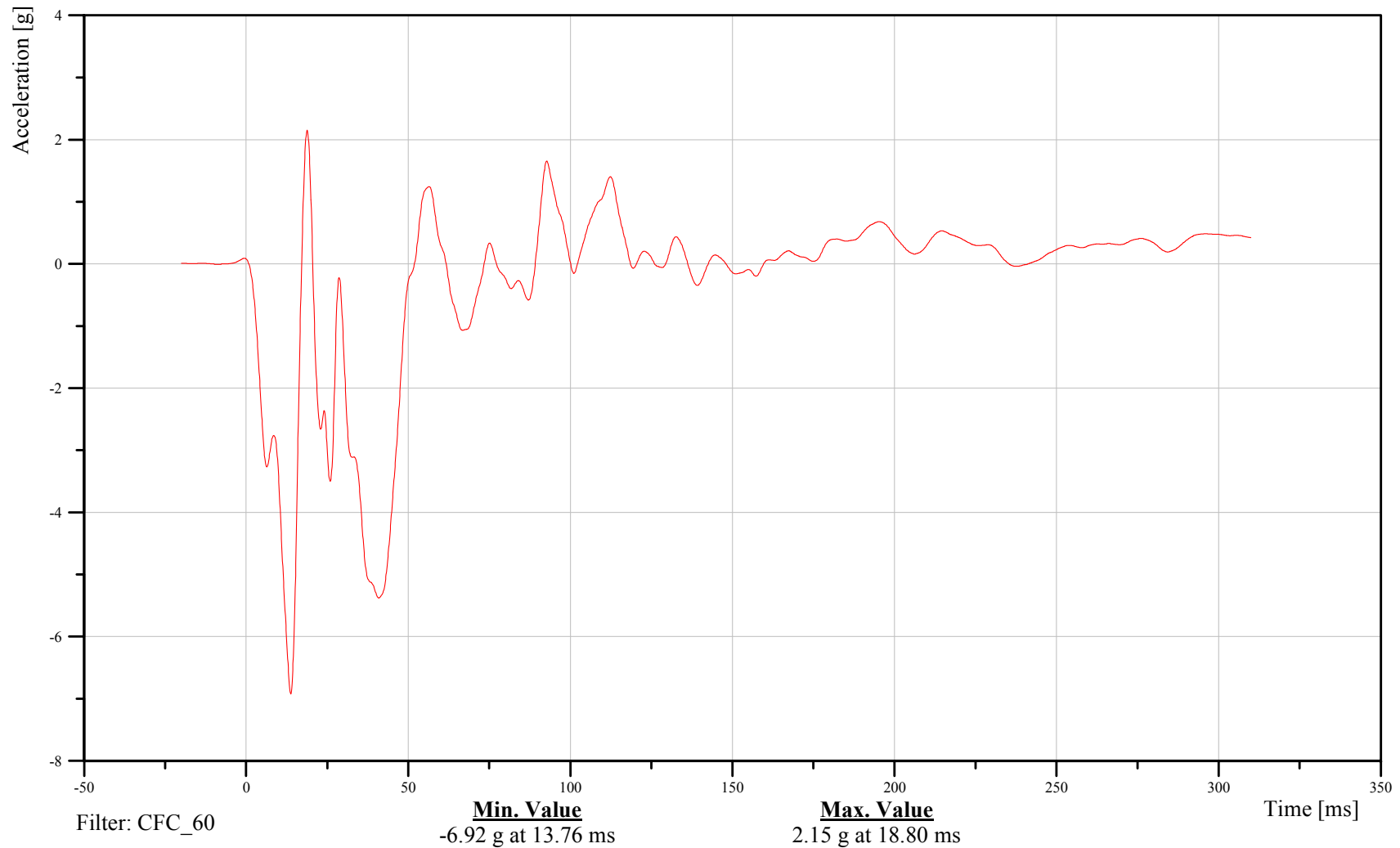
Date: 06/24/2005
Time: 12:02

Customer: VRTC

18FORA000000ACXD

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Rear Floorpan Above Axle Y-axis Acceleration

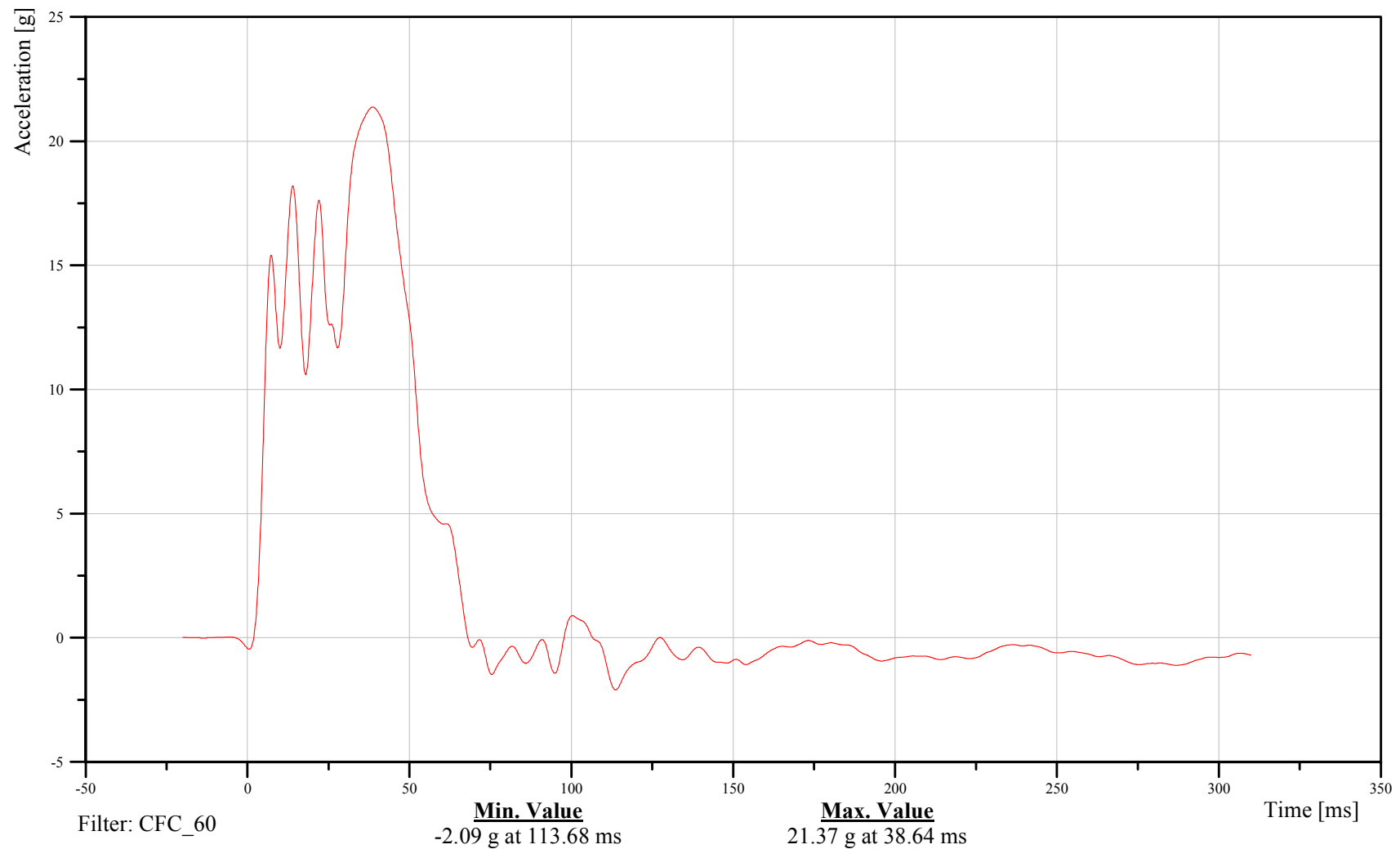
Date: 06/24/2005
Time: 12:02

Customer: VRTC

18FORA000000ACYD

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

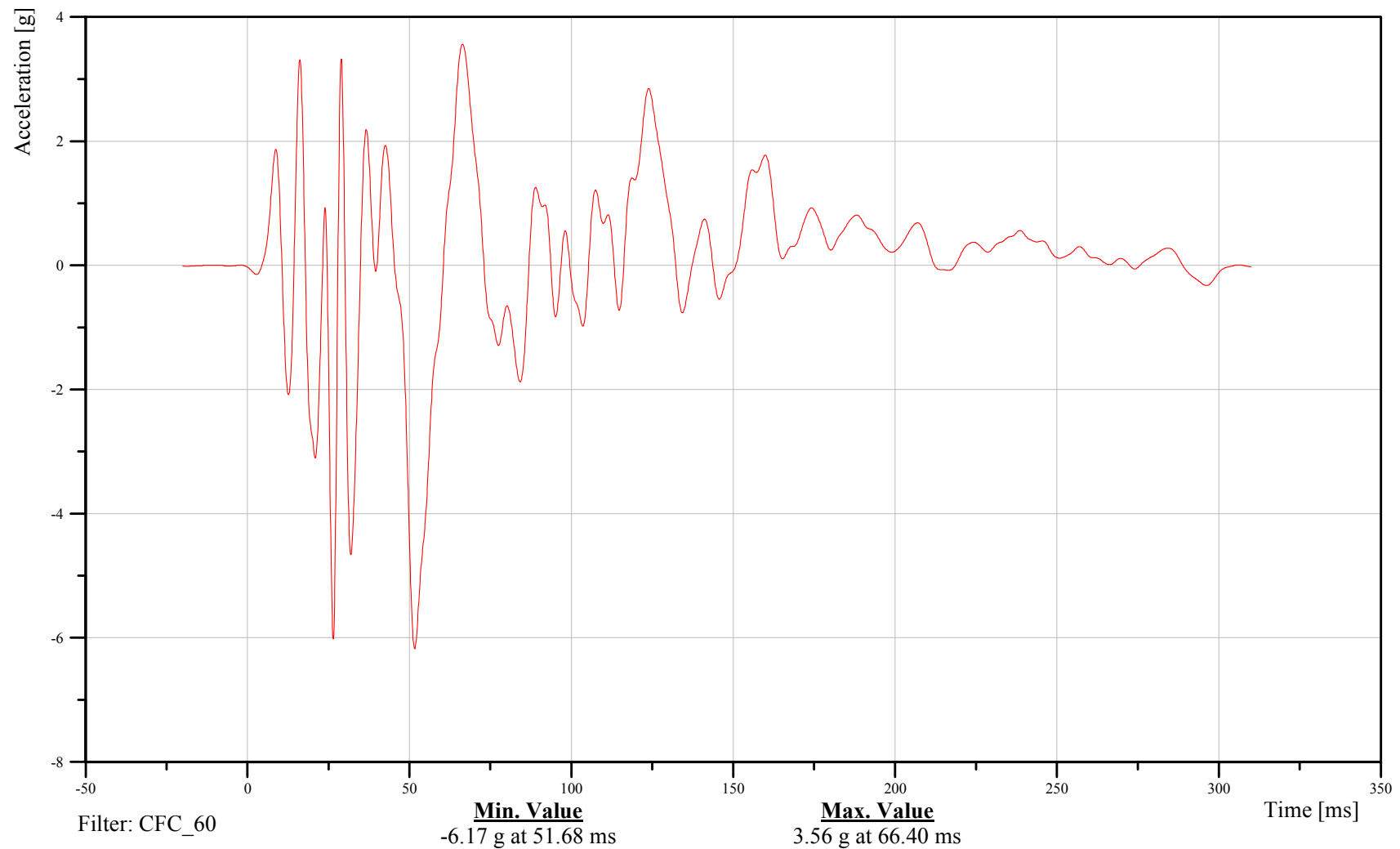
Rear Floorpan Above Axle Z-axis Acceleration

Customer: VRTC

18FORA000000ACZD

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

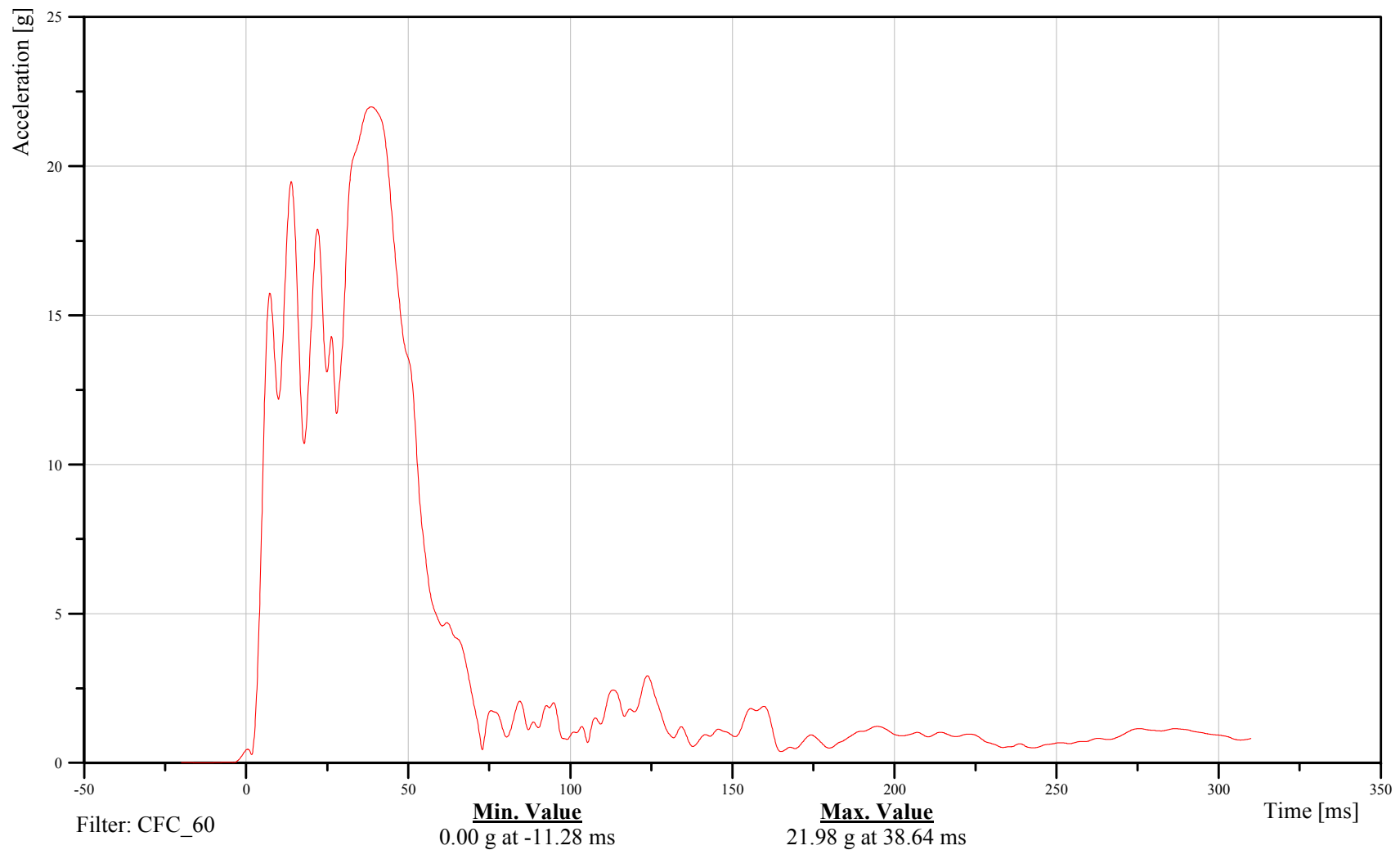
Rear Floorpan Above Axle Resultant Acceleration

Customer: VRTC

18FORA000000ACRD

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Left Side Sill at Rear Seat Y-axis Acceleration

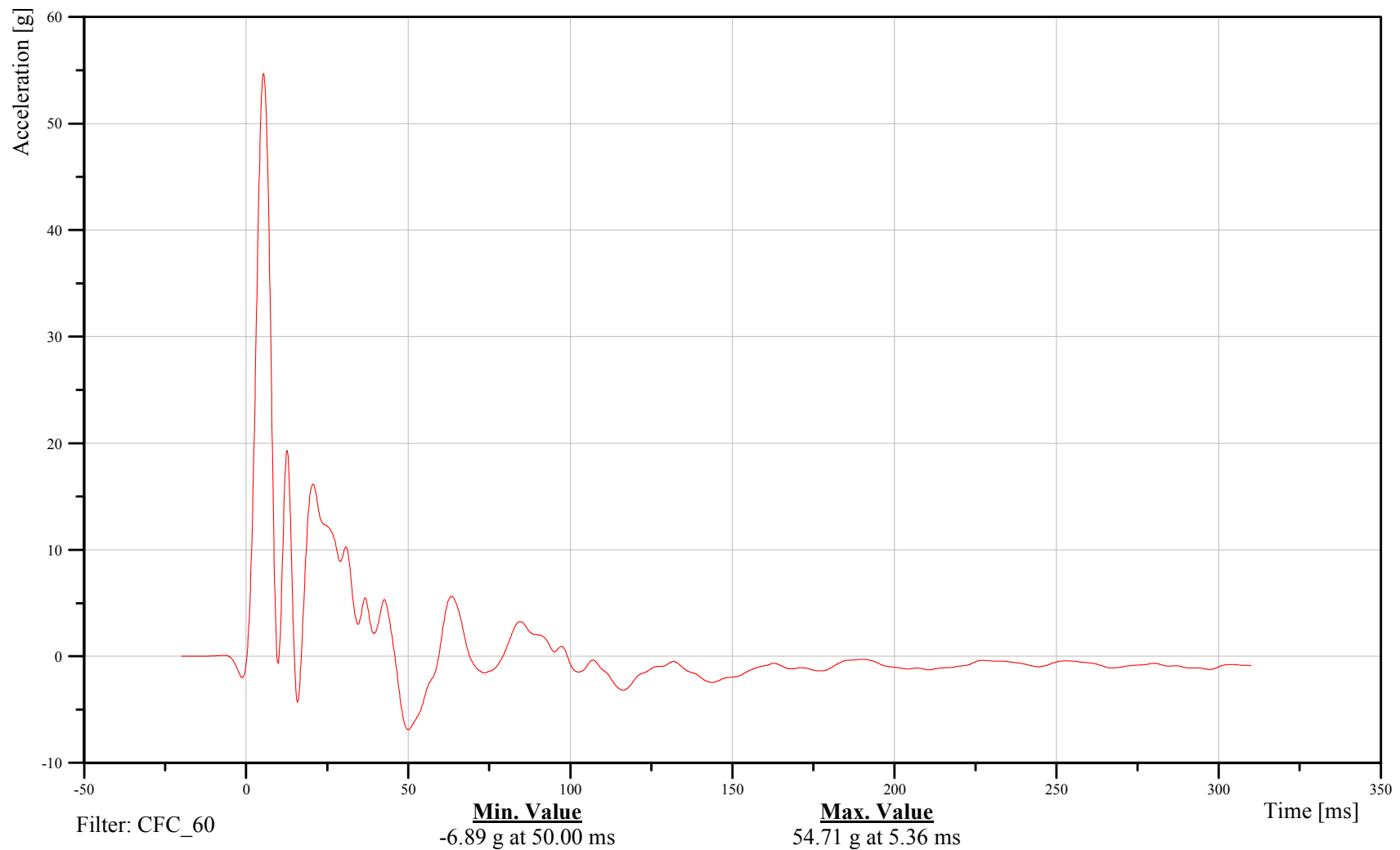
Date: 06/24/2005
Time: 12:02

Customer: VRTC

14SILBRE0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Left Side Sill at Front Seat Y-axis Acceleration

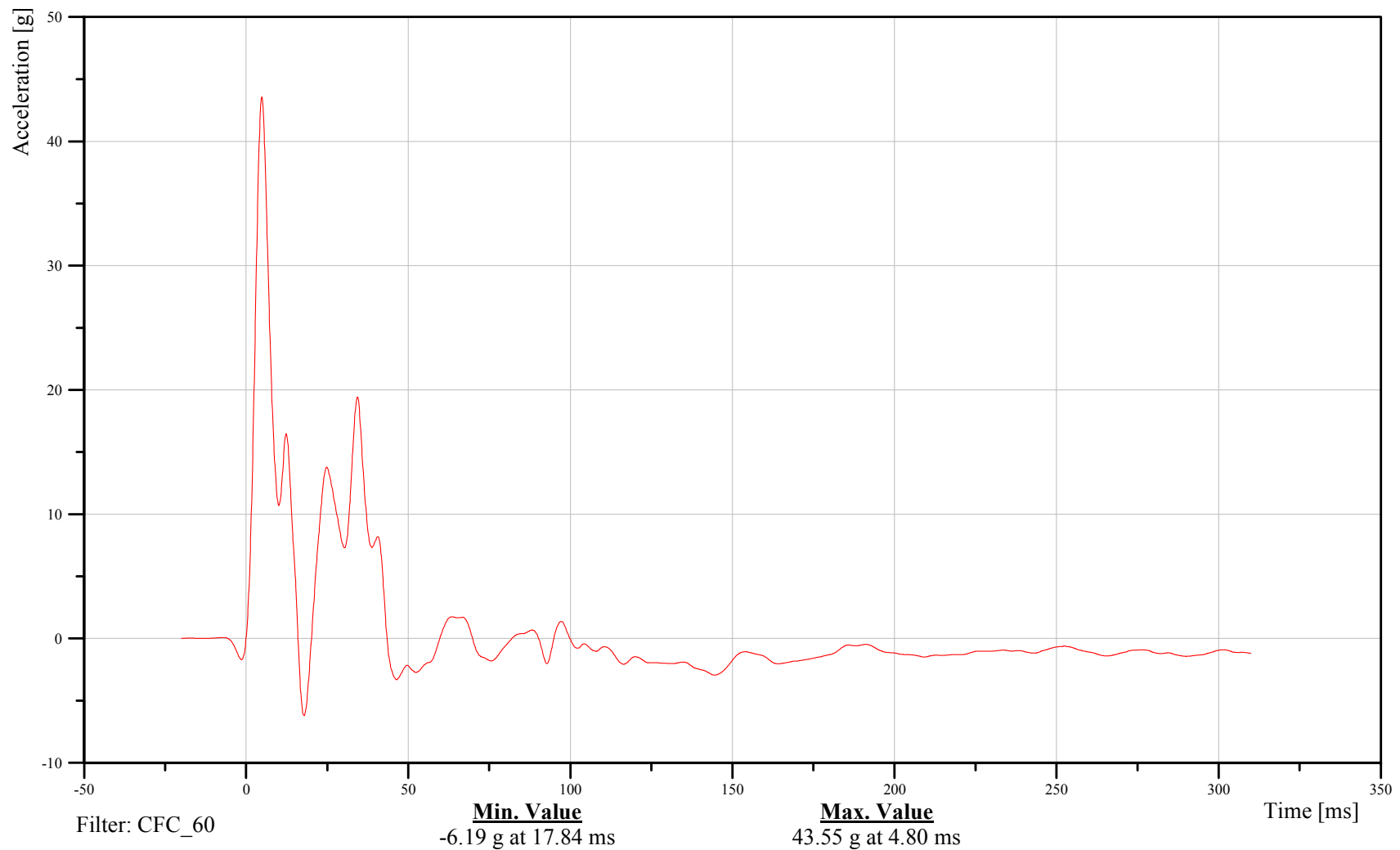
Date: 06/24/2005
Time: 12:02

Customer: VRTC

14SILBFR0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

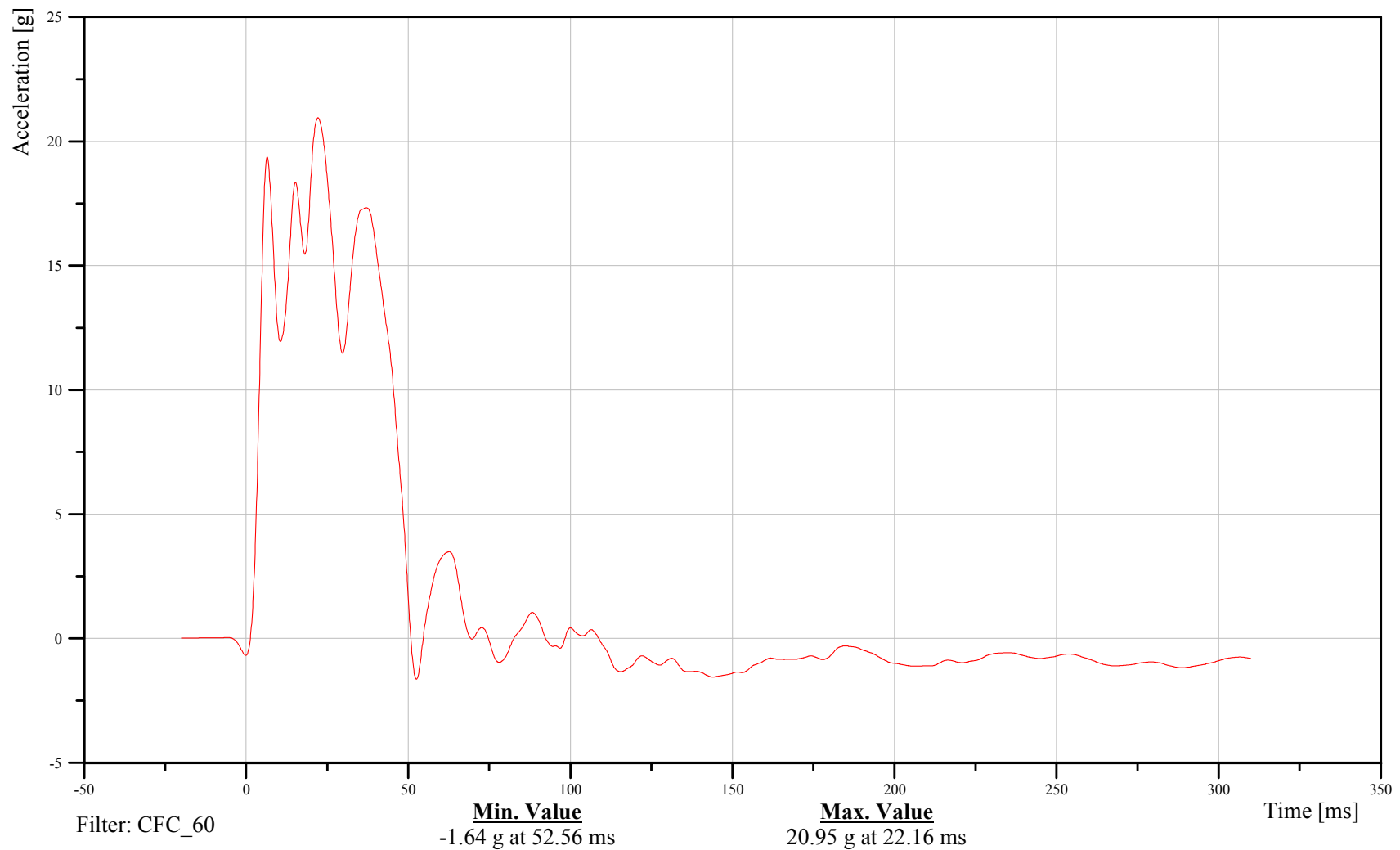
Right Rear Occupant Compartment Y-axis Accel

Customer: VRTC

16VEHCRE0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

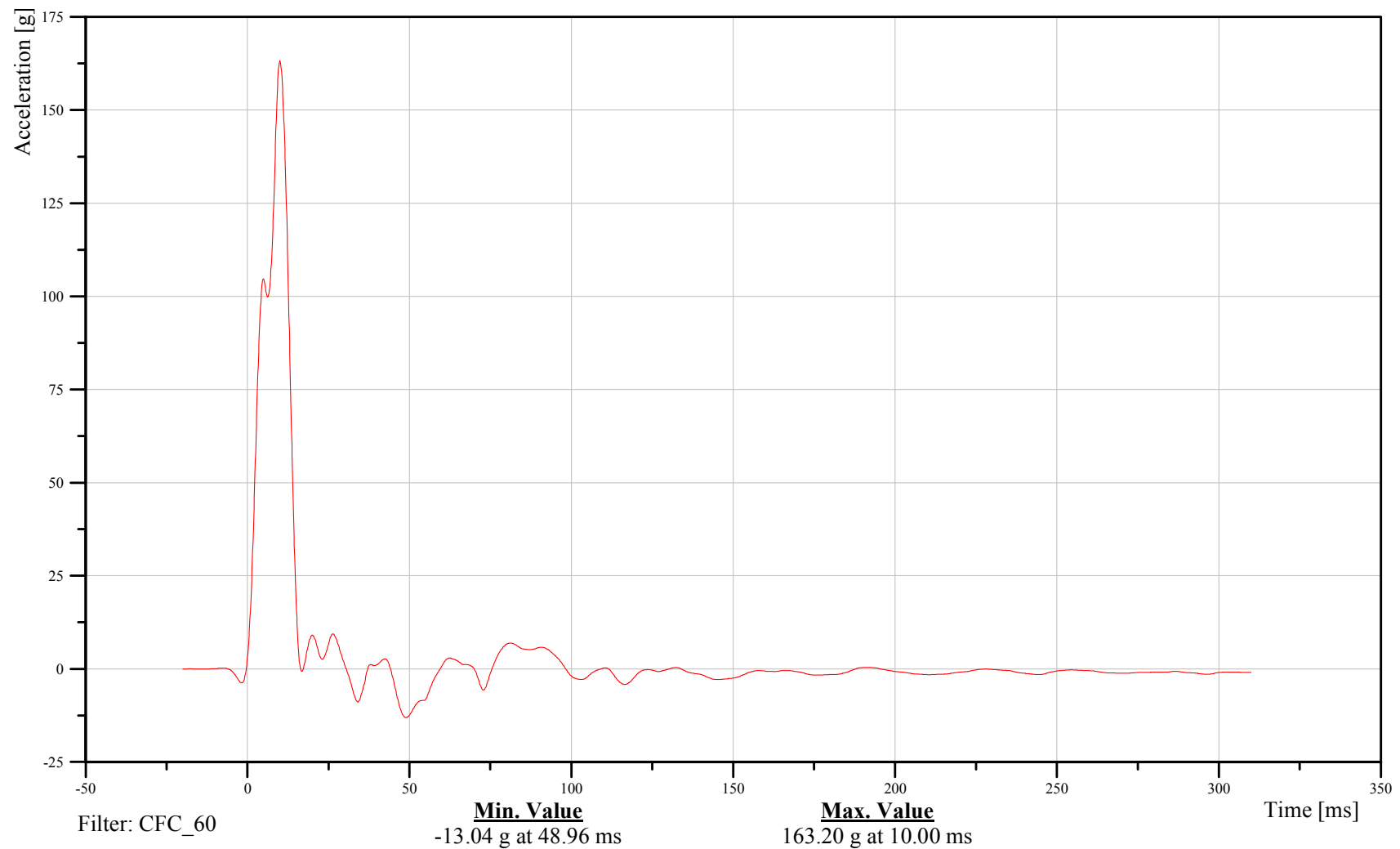
Left Lower B-Post Y-axis Accel

Customer: VRTC

14BPILLO0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

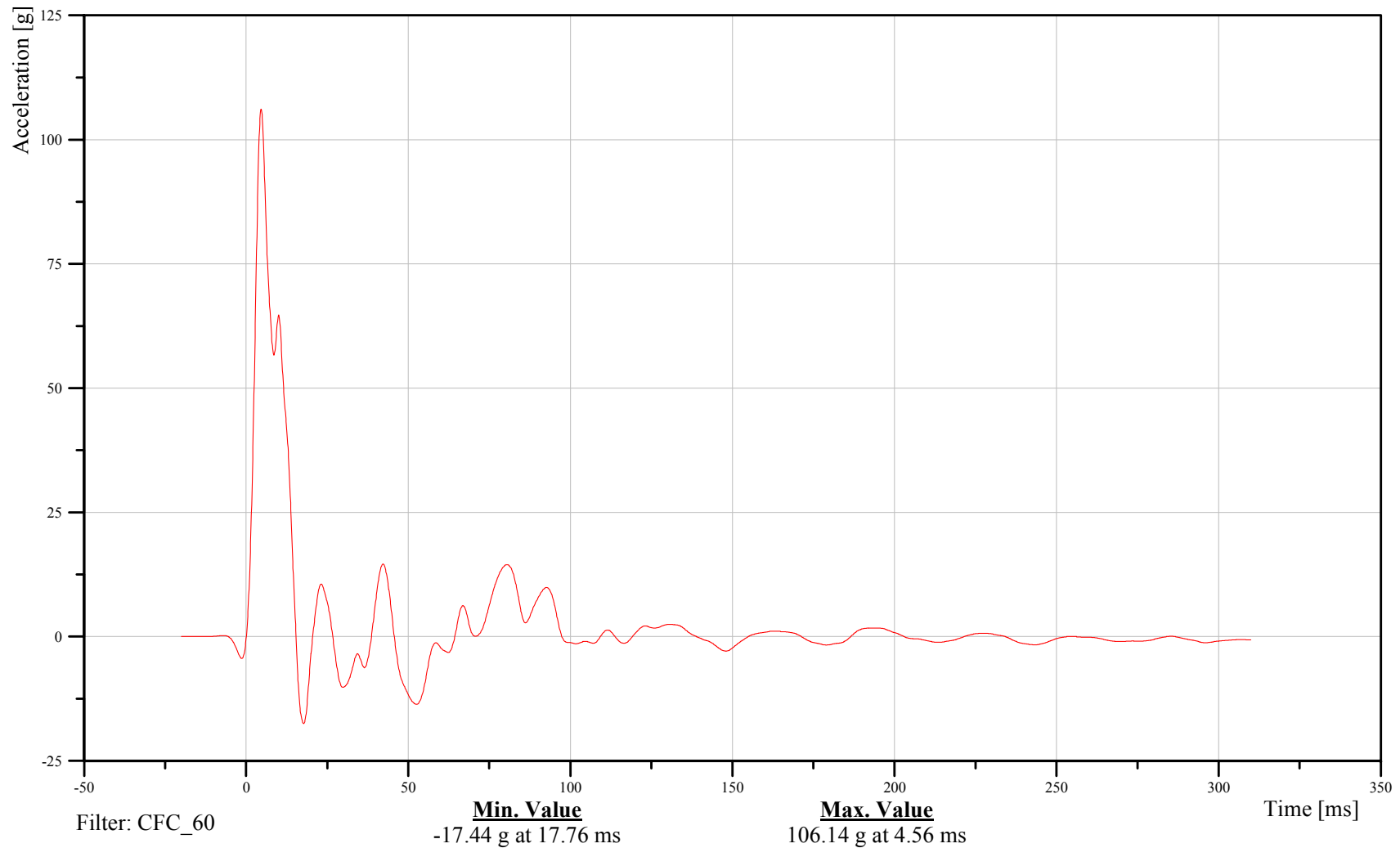
Left Middle B-Post Y-axis Accel

Customer: VRTC

14BPILMI0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

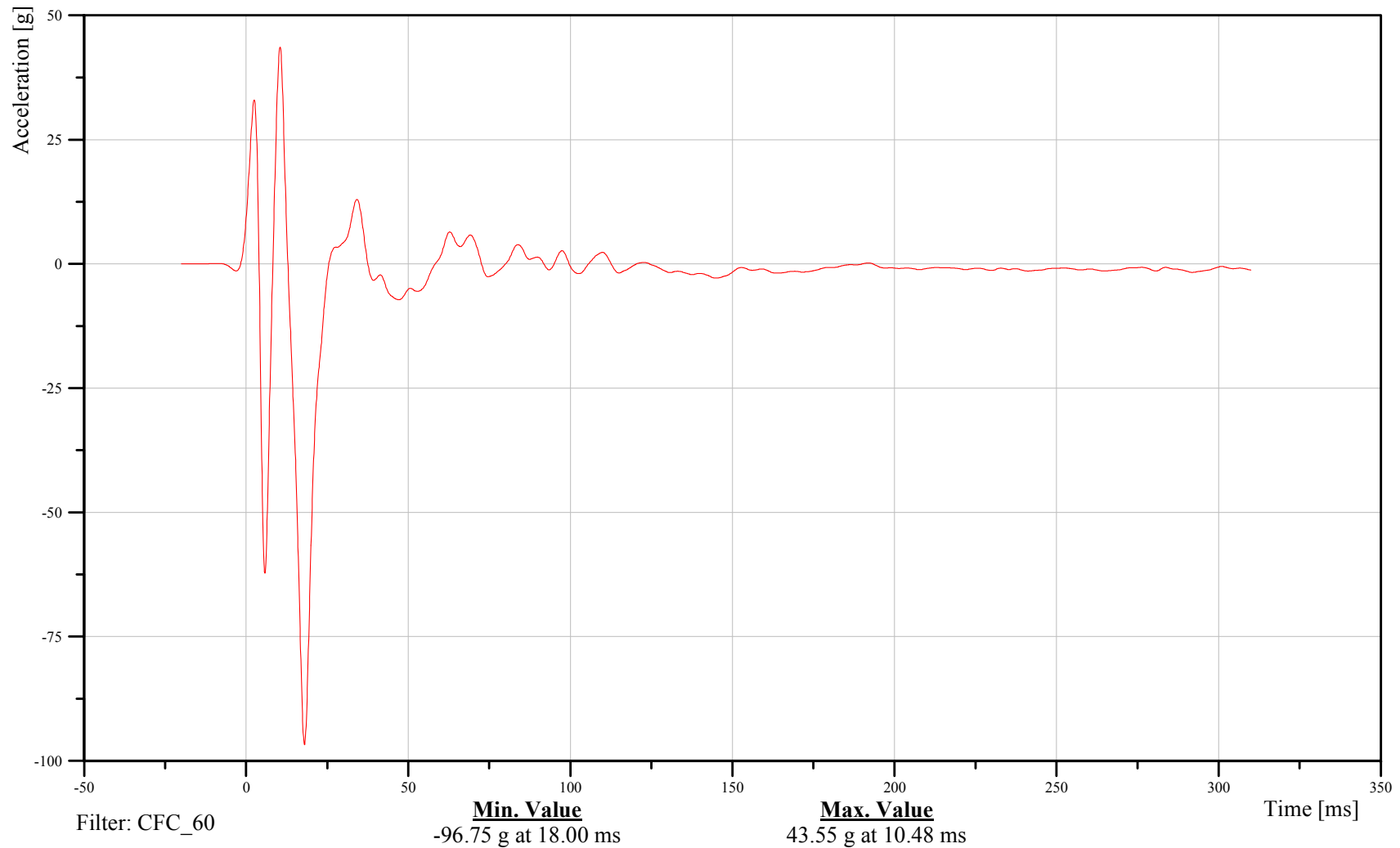
Left Lower A-Post Y-axis Accel

Customer: VRTC

11APILO0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

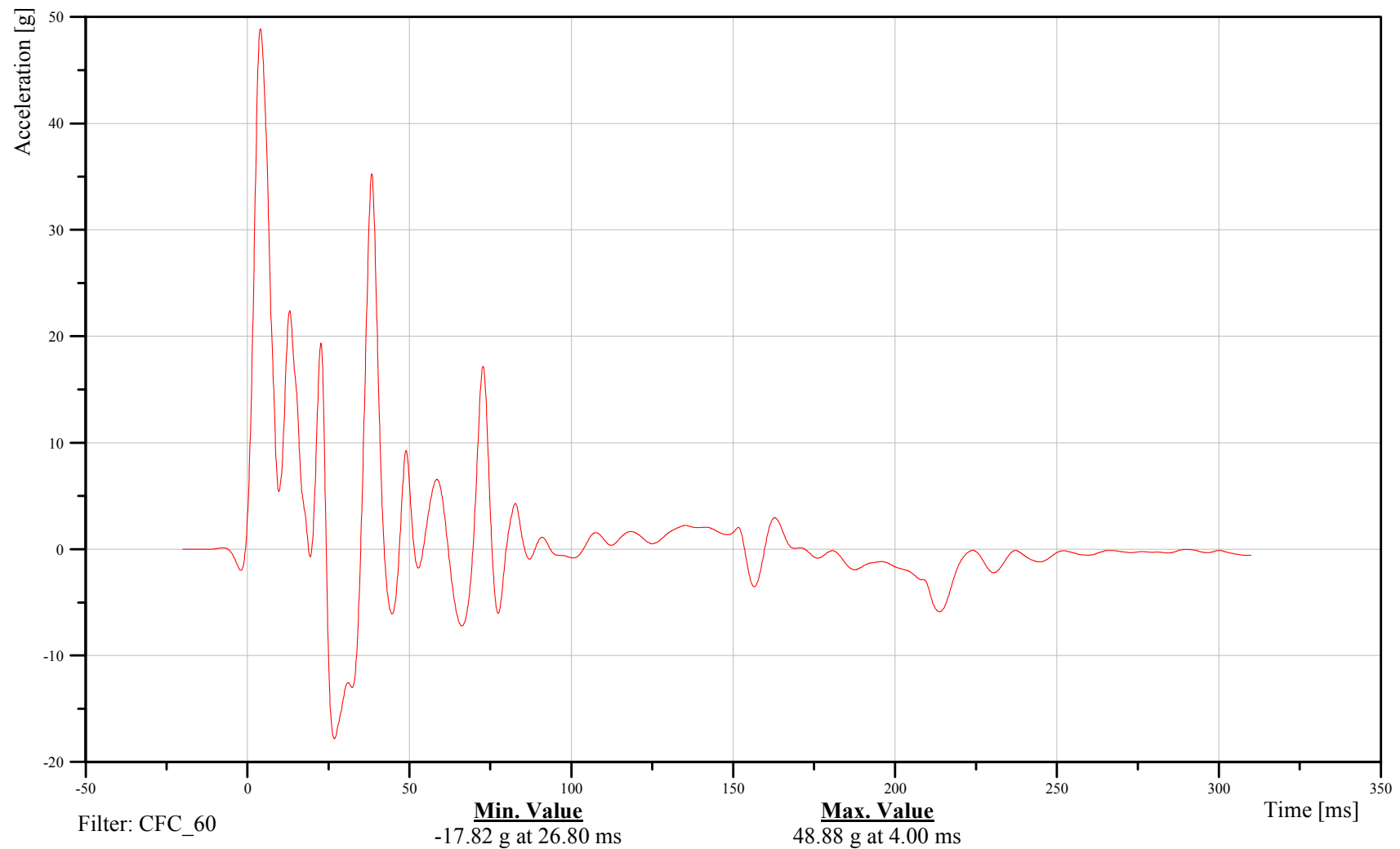
Left Middle A-Post Y-axis Accel

Customer: VRTC

11APILMI0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

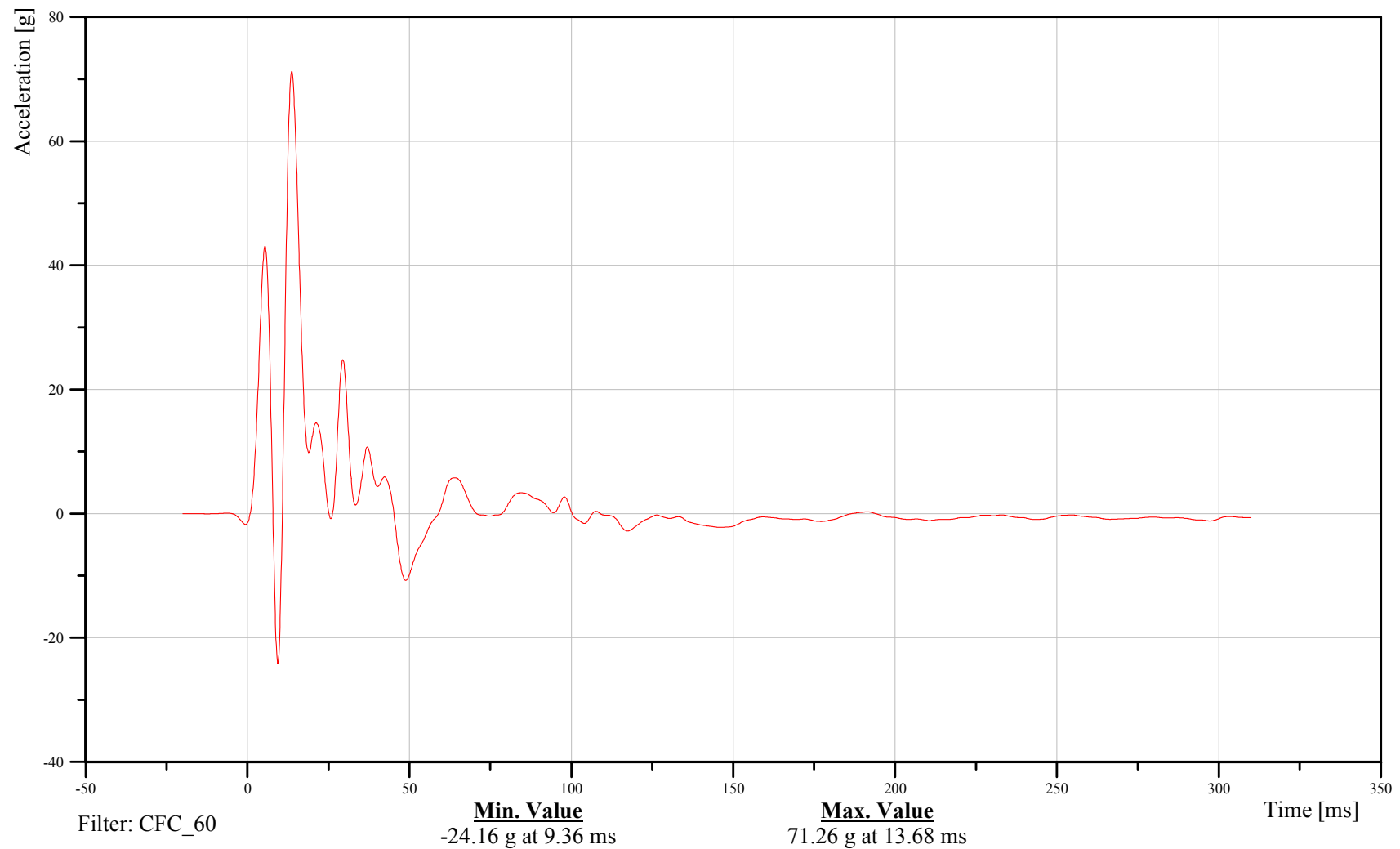
Left Front Seat Track Y-axis Acceleration

Customer: VRTC

11SETRFR0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

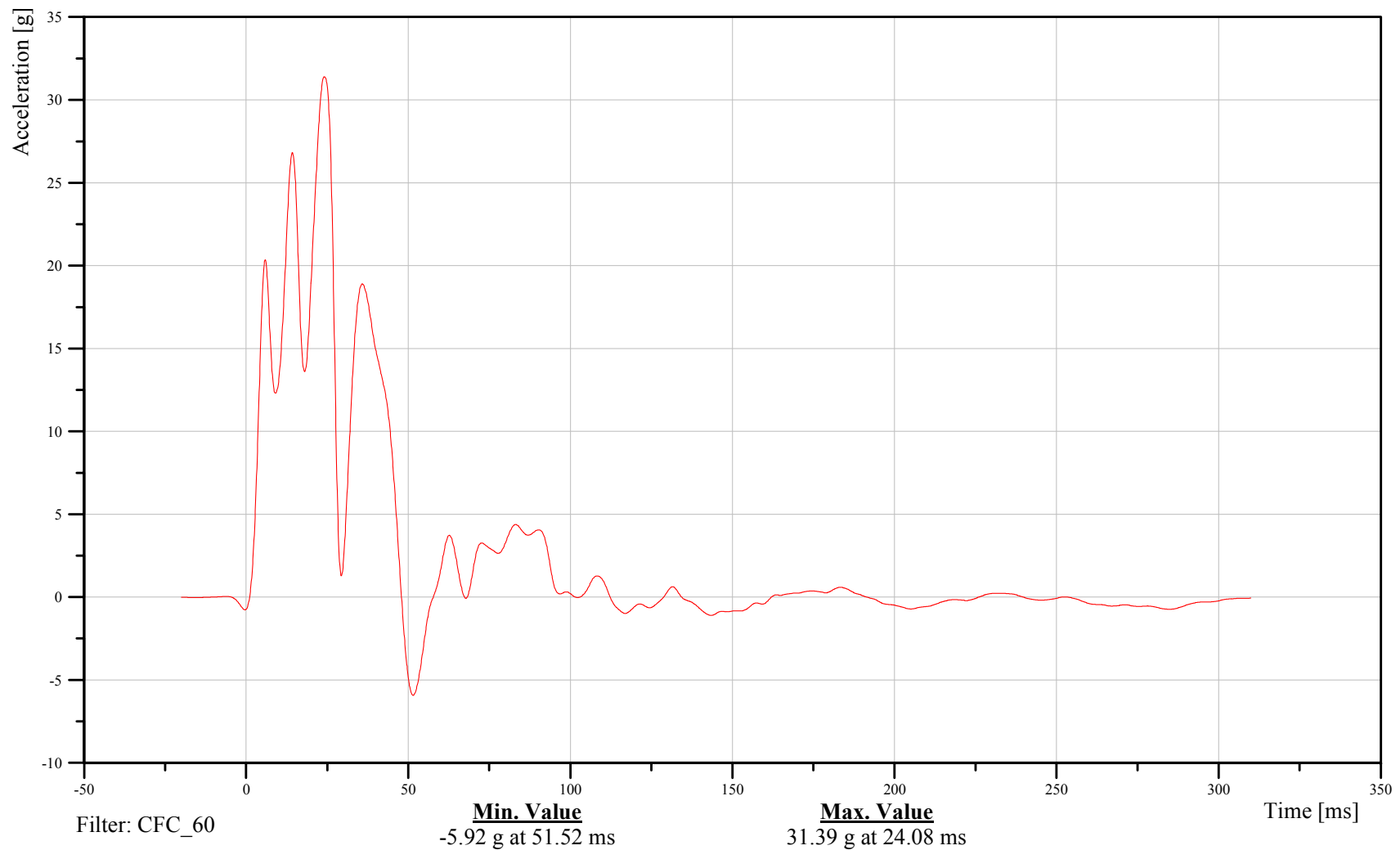
Left Rear Seat Track Y-axis Acceleration

Customer: VRTC

14SETRLERE00ACYD

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Vehicle Center of Gravity X-axis Acceleration

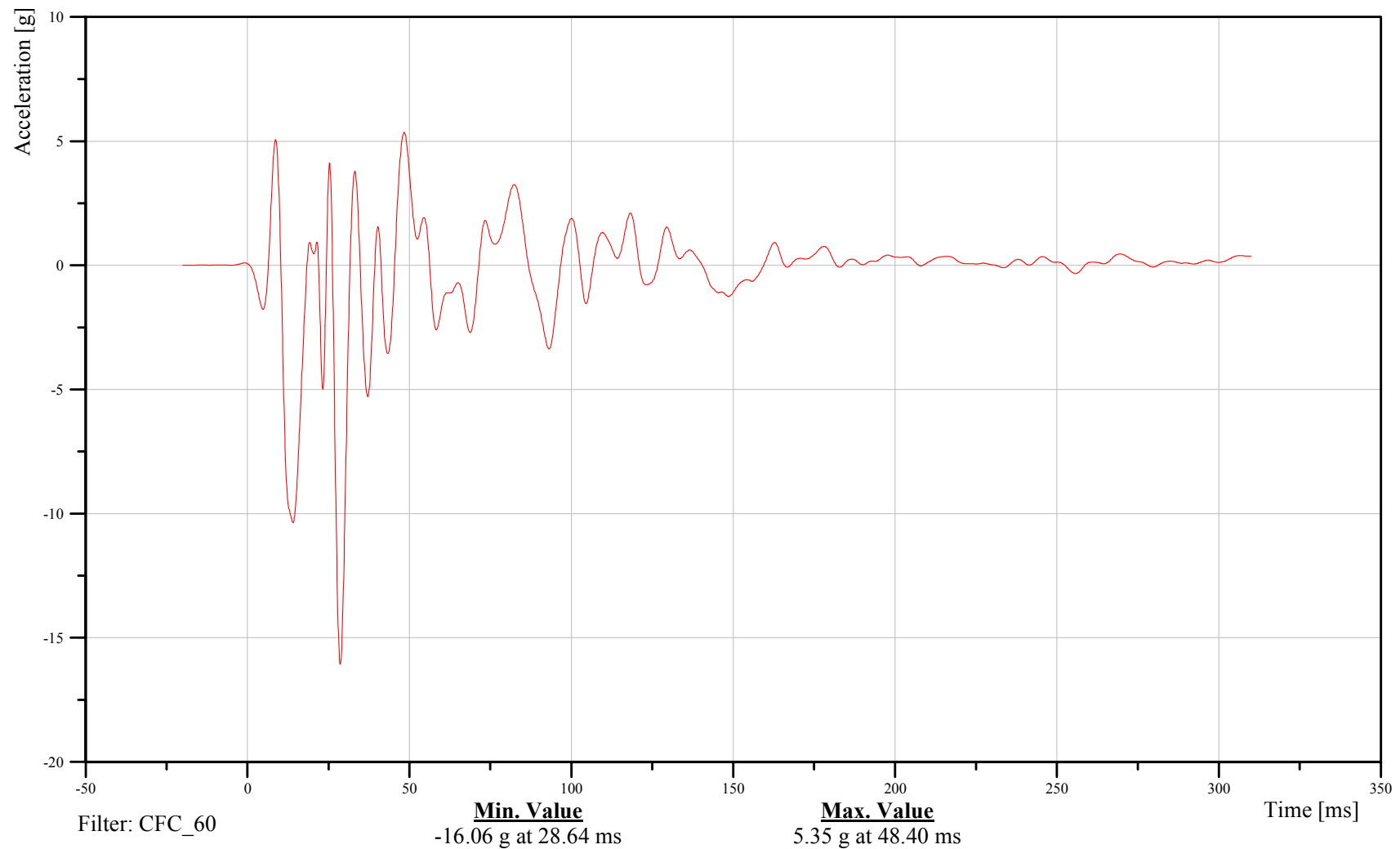
Date: 06/24/2005
Time: 12:02

Customer: VRTC

10VEHCCG0000ACXD

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Vehicle Center of Gravity Y-axis Acceleration

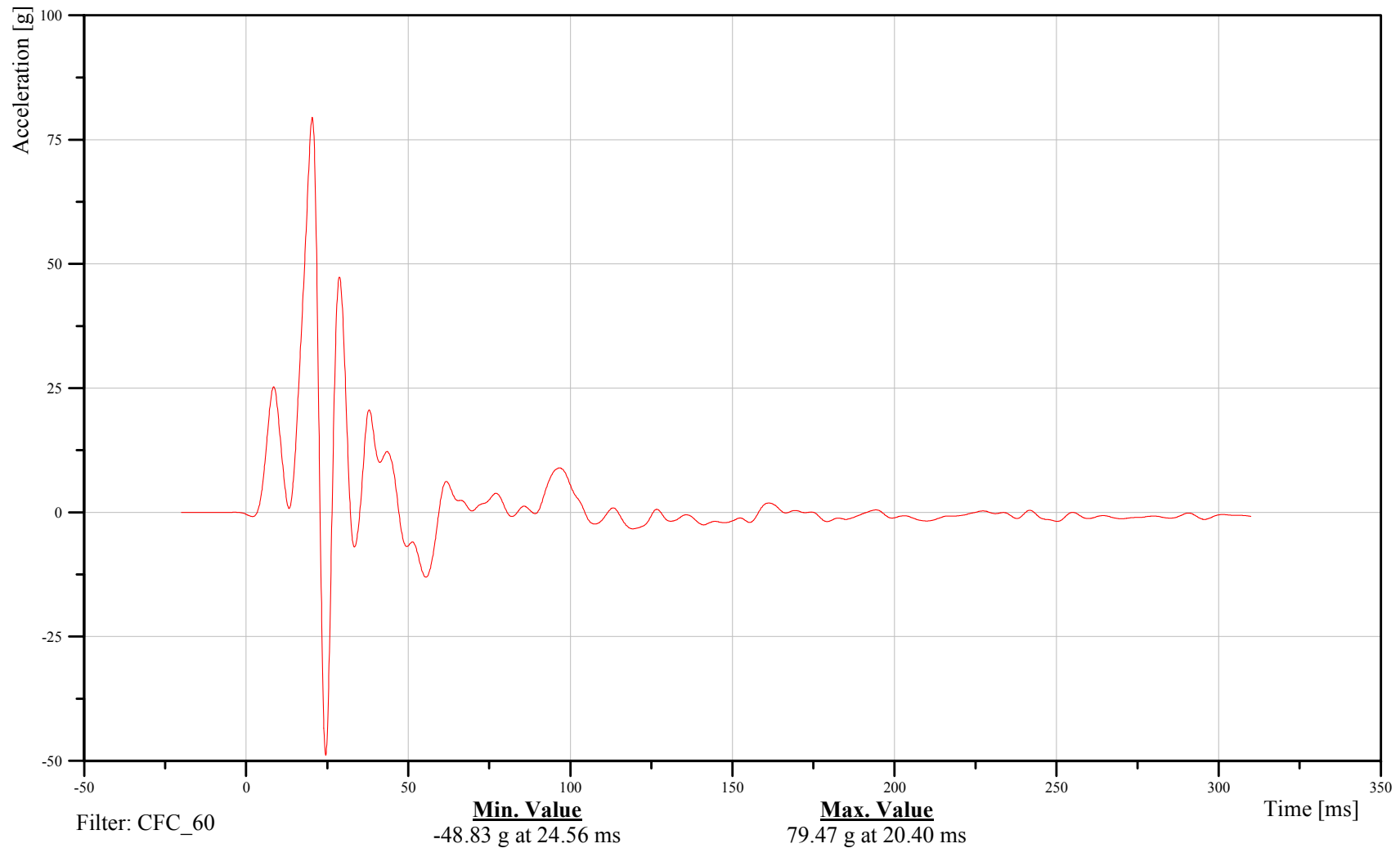
Date: 06/24/2005
Time: 12:02

Customer: VRTC

10VEHCCG0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Vehicle Center of Gravity Z-axis Acceleration

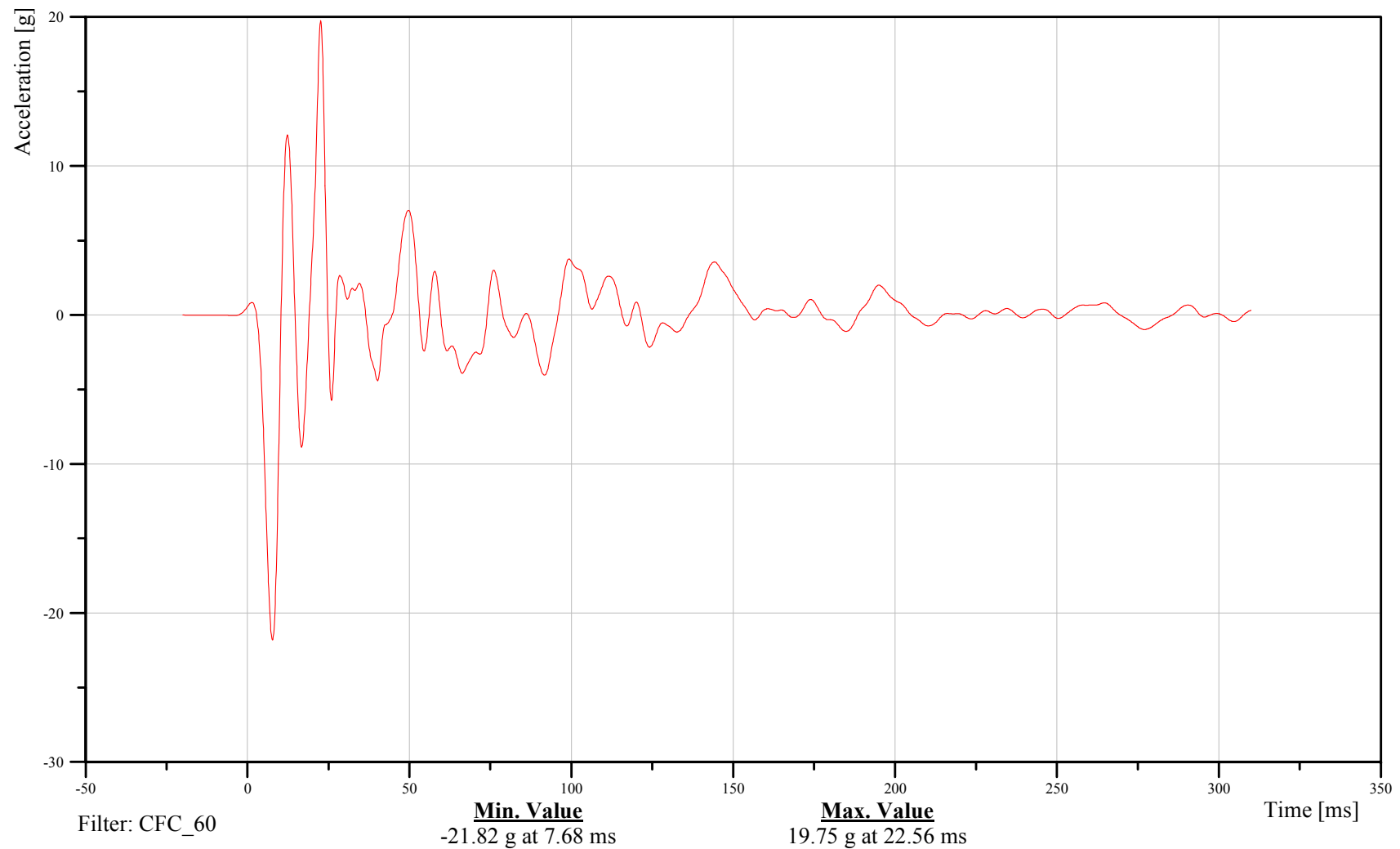
Date: 06/24/2005
Time: 12:02

Customer: VRTC

10VEHCCG0000ACZD

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

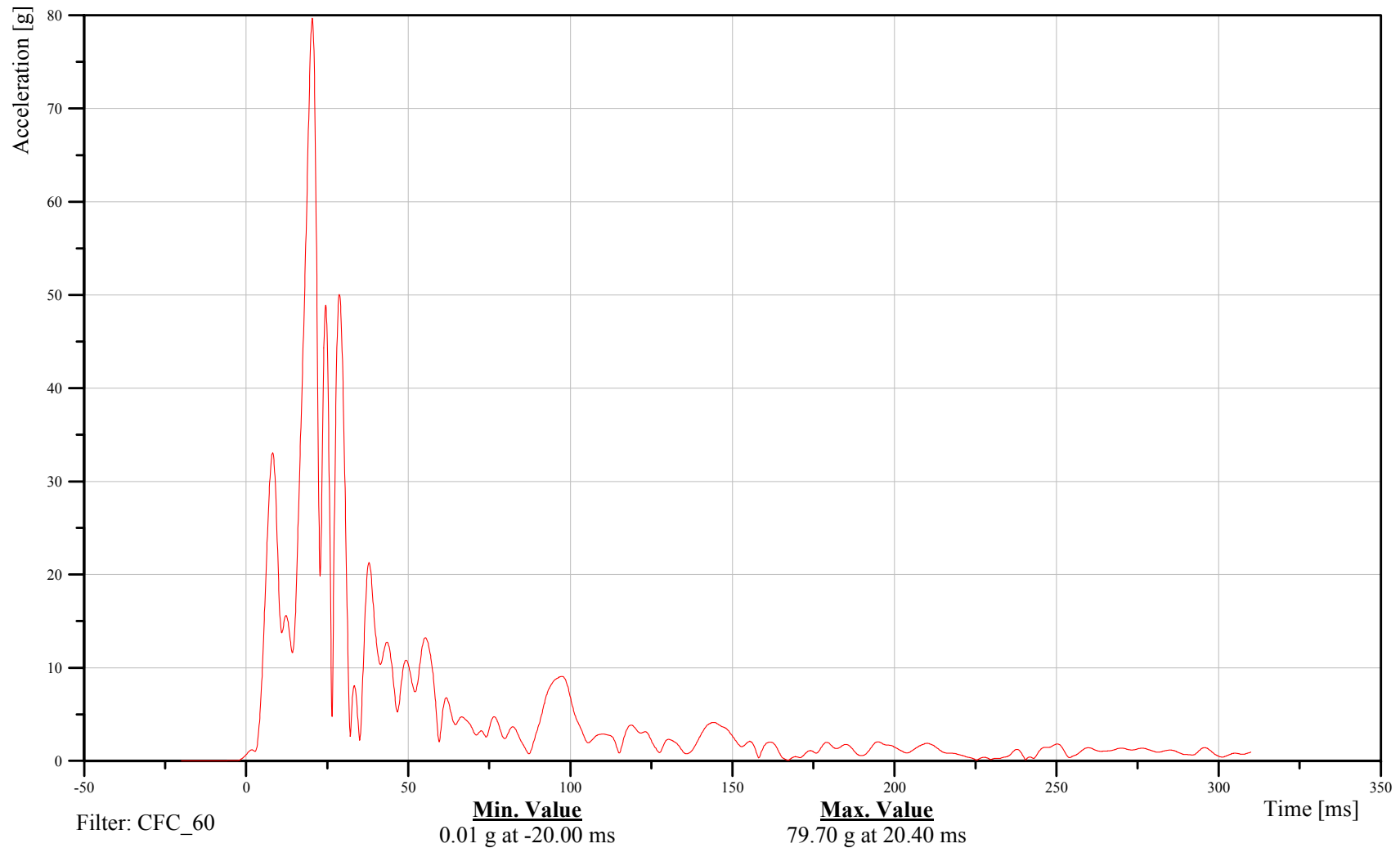
Vehicle Center of Gravity Resultant Acceleration

Customer: VRTC

10VEHCCG0000ACRD

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

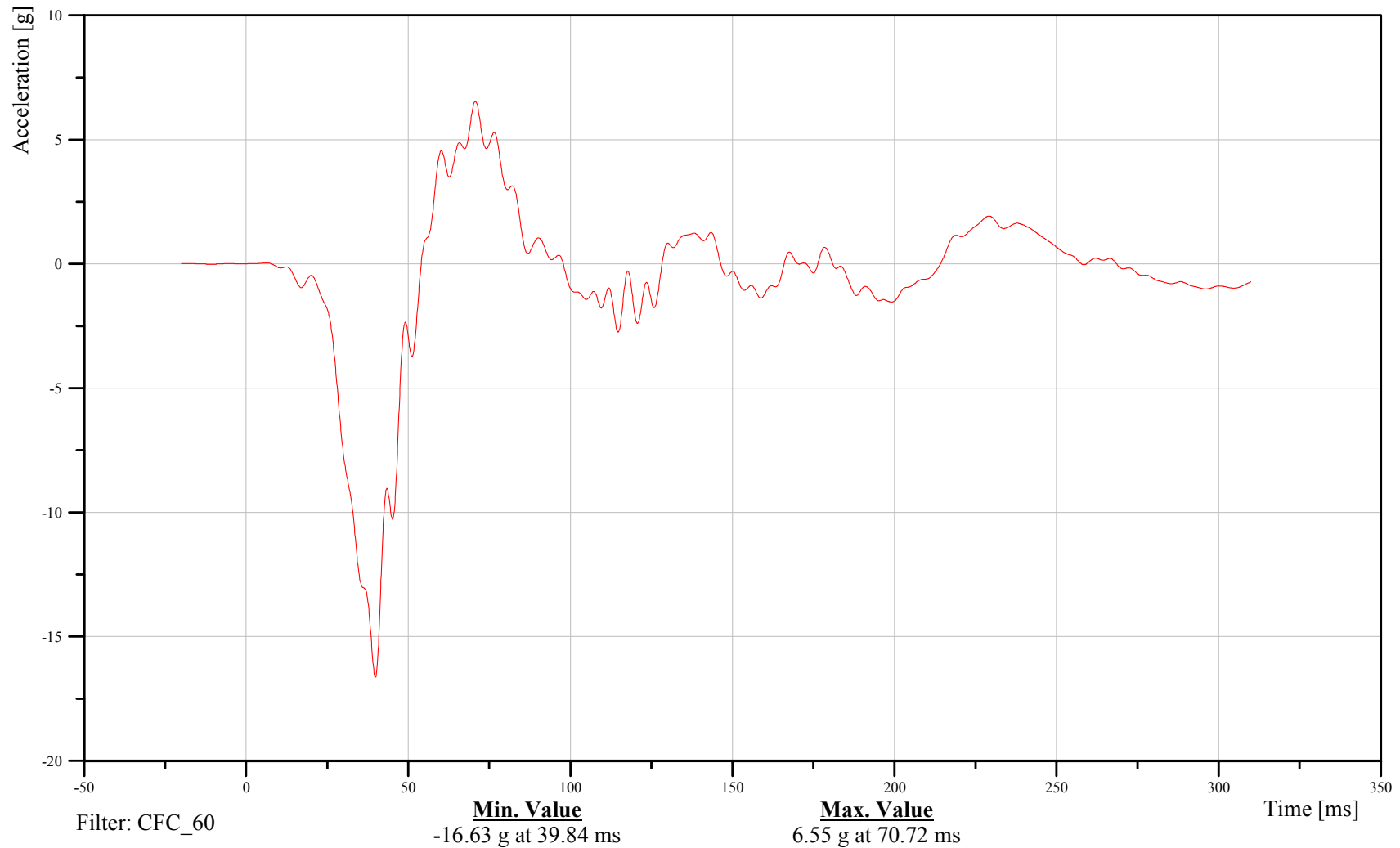
Top of Engine X-axis Acceleration

Customer: VRTC

12ENG000000ACXD

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

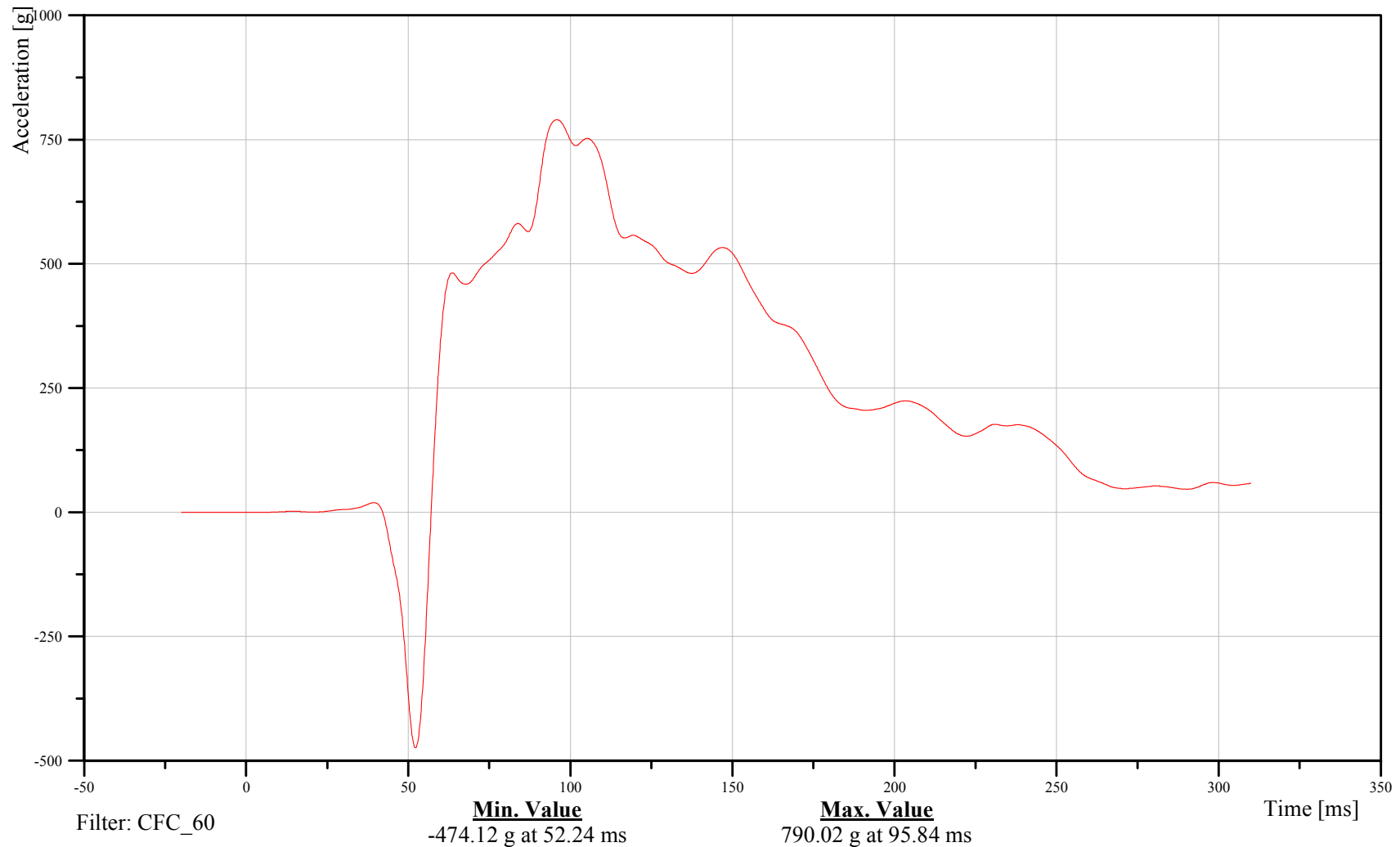
Top of Engine Y-axis Acceleration

Customer: VRTC

12ENG000000ACYD

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

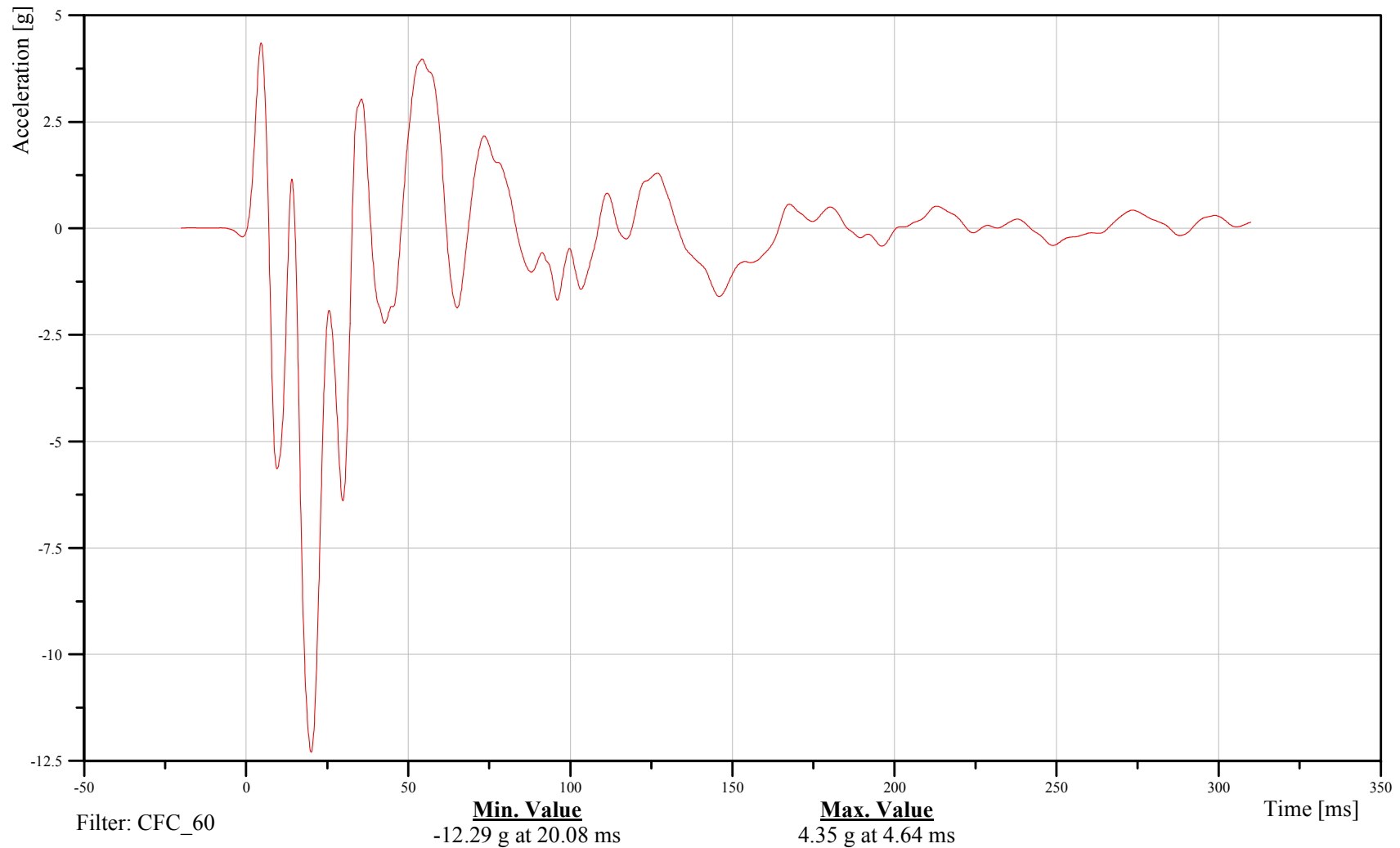
Firewall X-axis Acceleration

Customer: VRTC

12VEHC000000ACXD

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

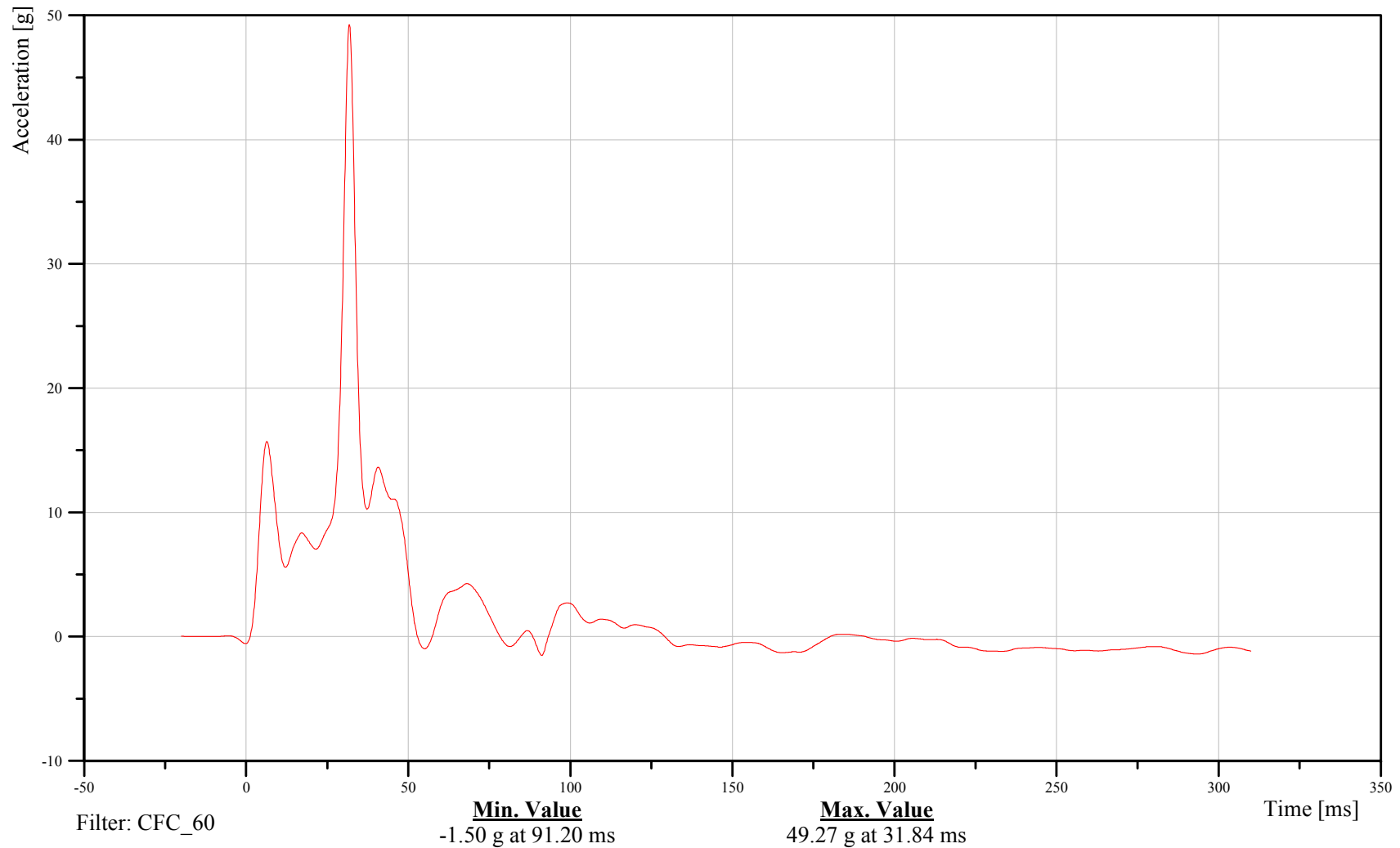
Firewall Y-axis Acceleration

Customer: VRTC

12VEHC000000ACYD

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

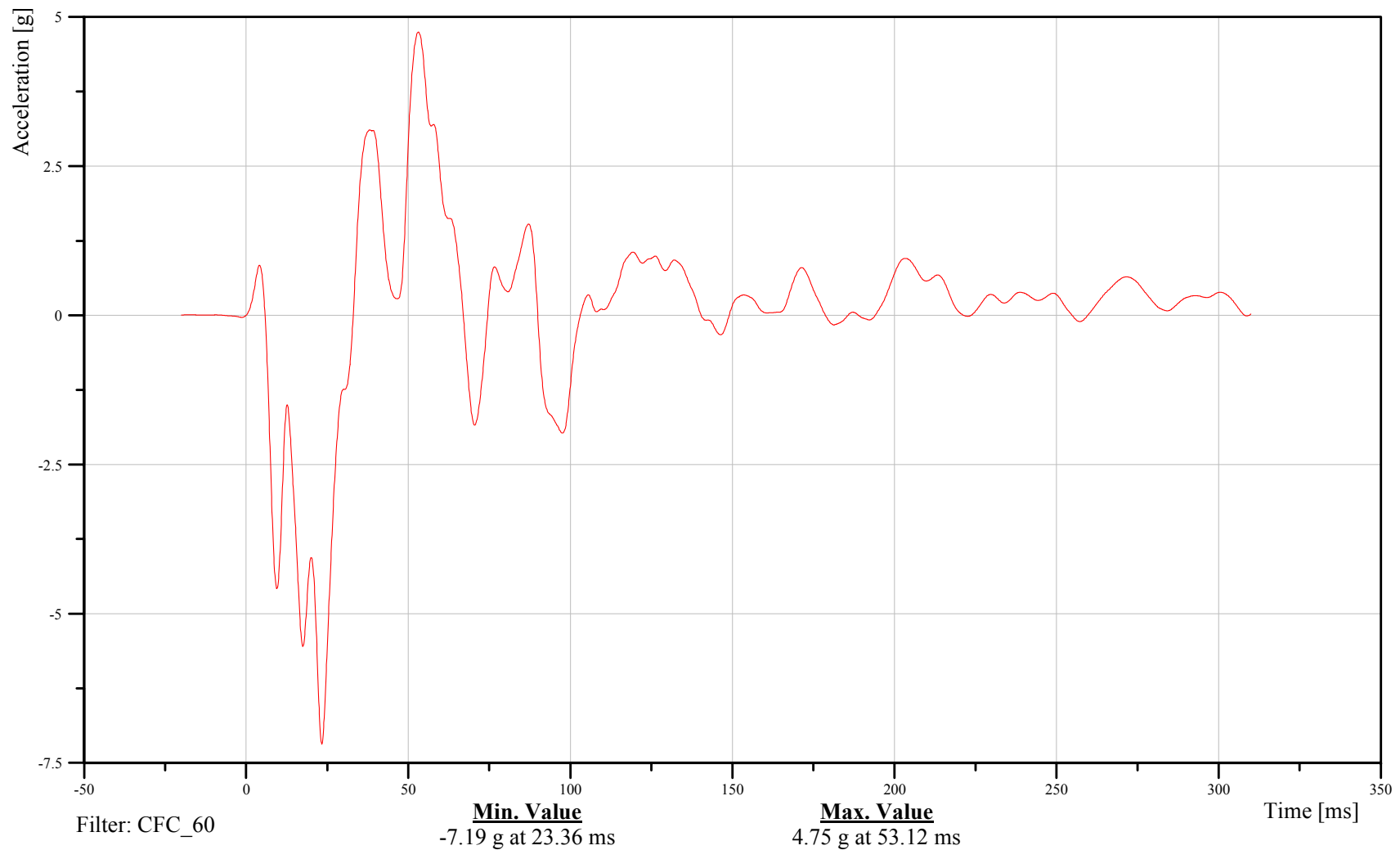
Right Roof Rail X-axis Acceleration

Customer: VRTC

13ROFR000000ACXD

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

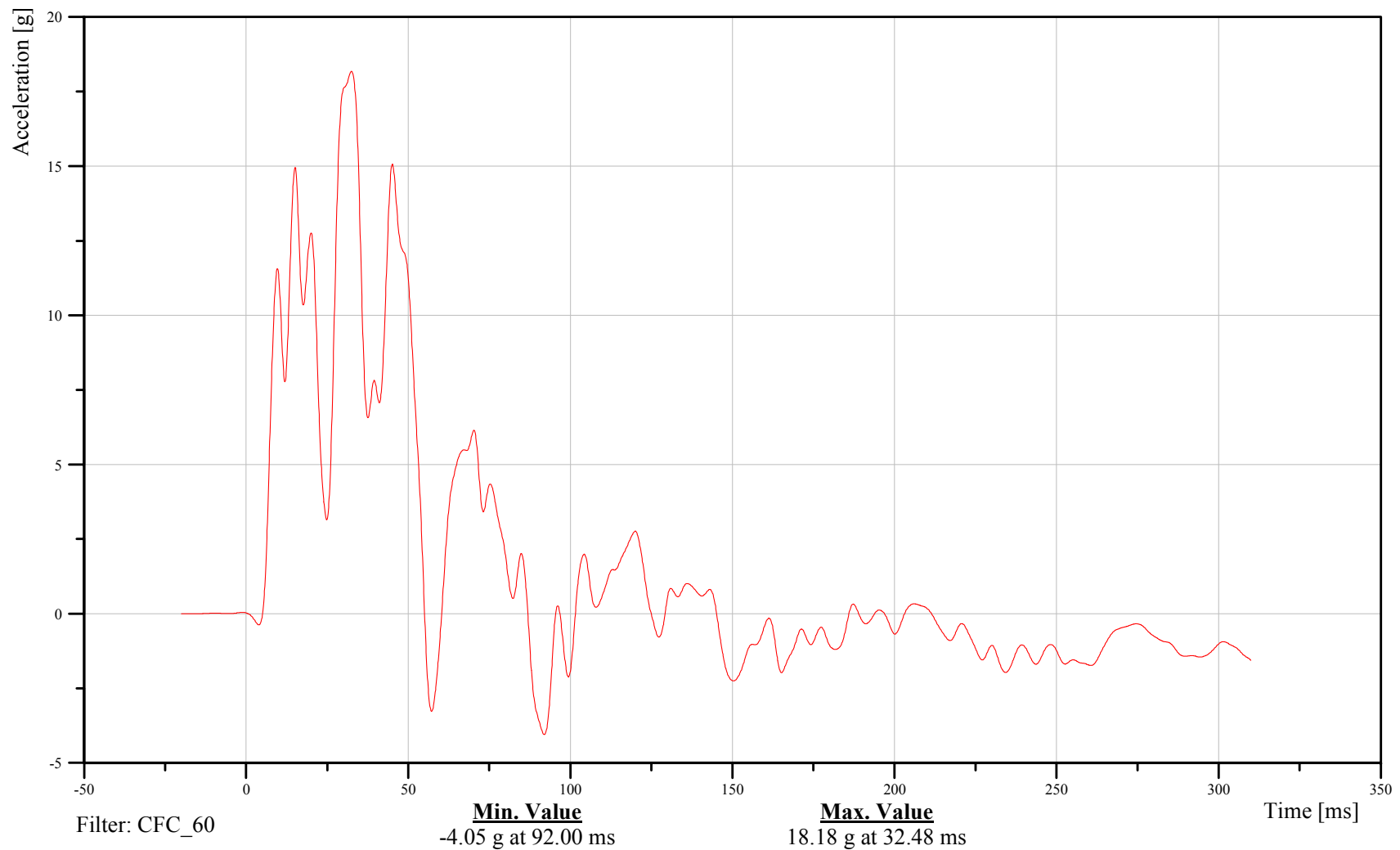
Right Roof Rail Y-axis Acceleration

Customer: VRTC

13ROFR000000ACYD

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Left Front Door centerline Y-axis accel

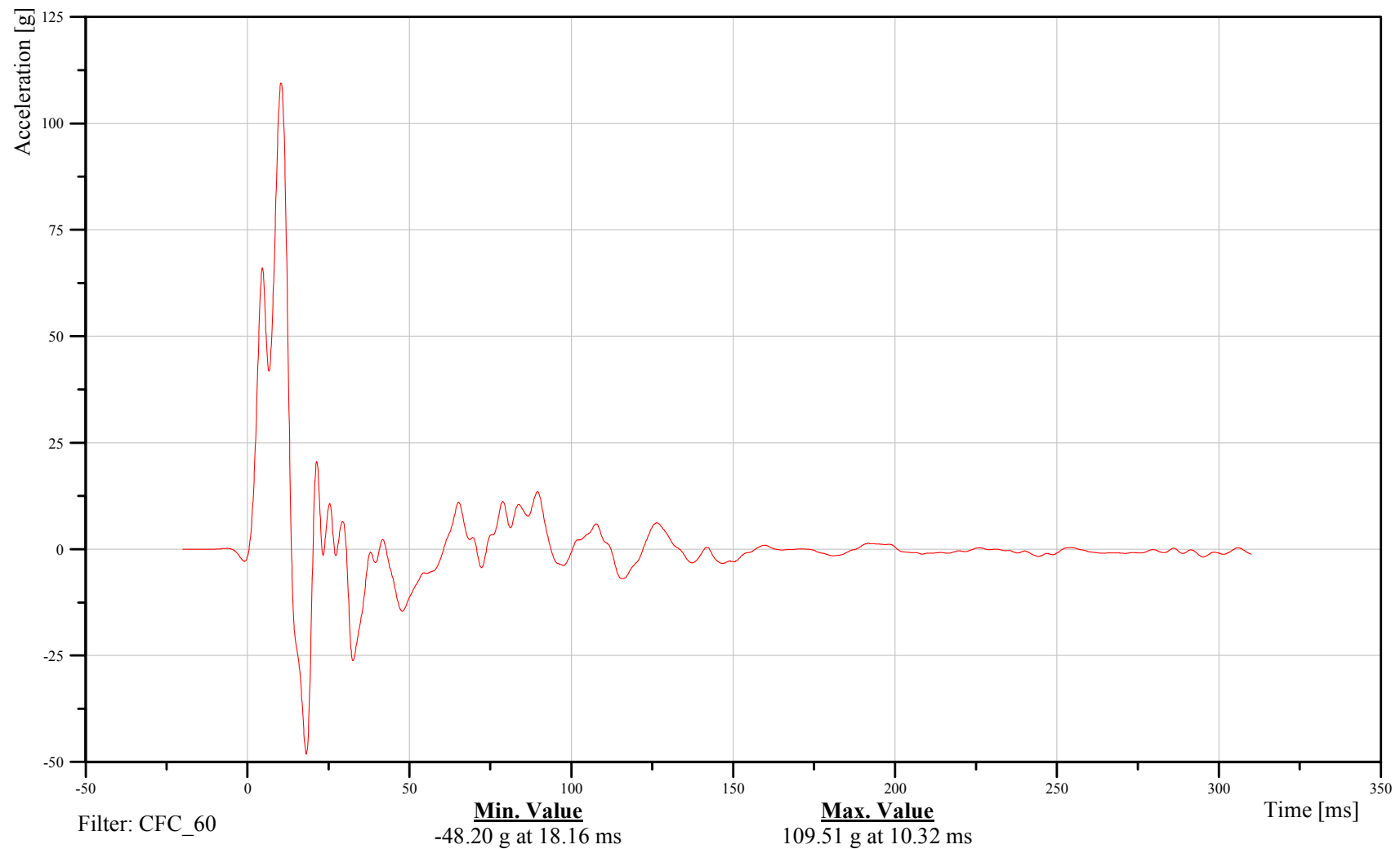
Date: 06/24/2005
Time: 12:02

Customer: VRTC

11DOOR000001ACYD

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Left Front Door mid-rear Y-axis accel

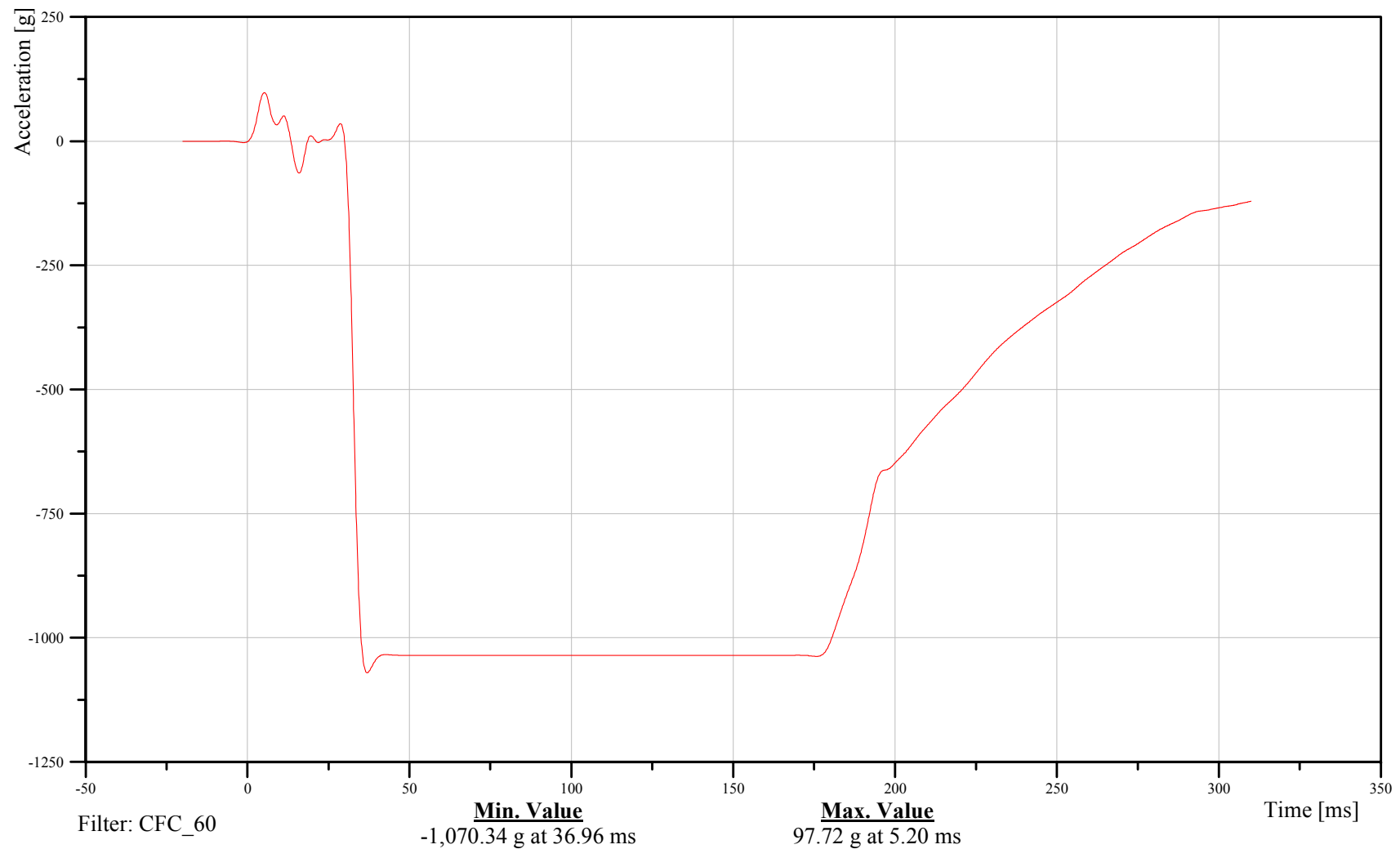
Date: 06/24/2005
Time: 12:02

Customer: VRTC

11DOOR000002ACYD

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

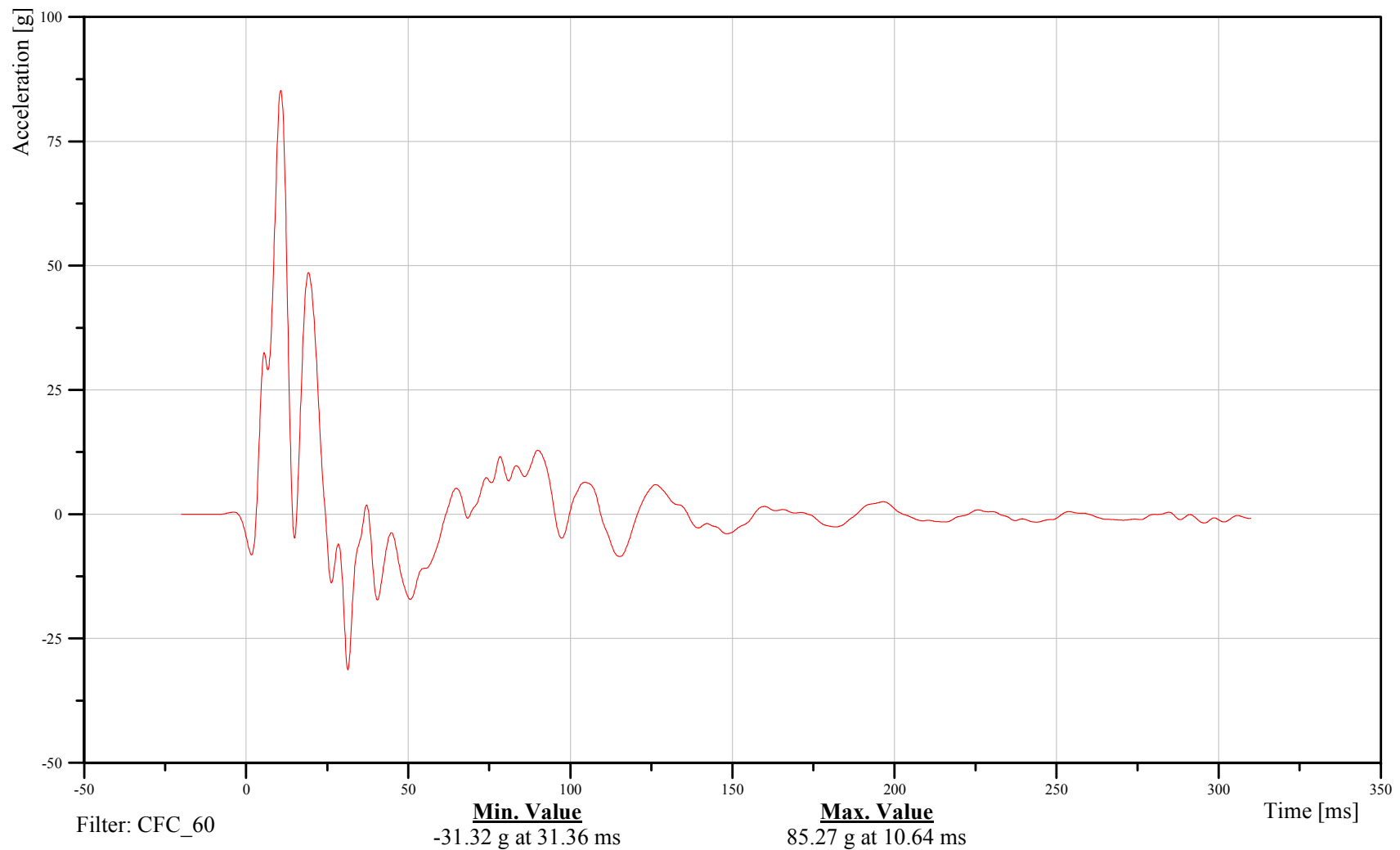
Left Front Door upper centerline Y-axis accel

Customer: VRTC

11DOOR000003ACYD

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

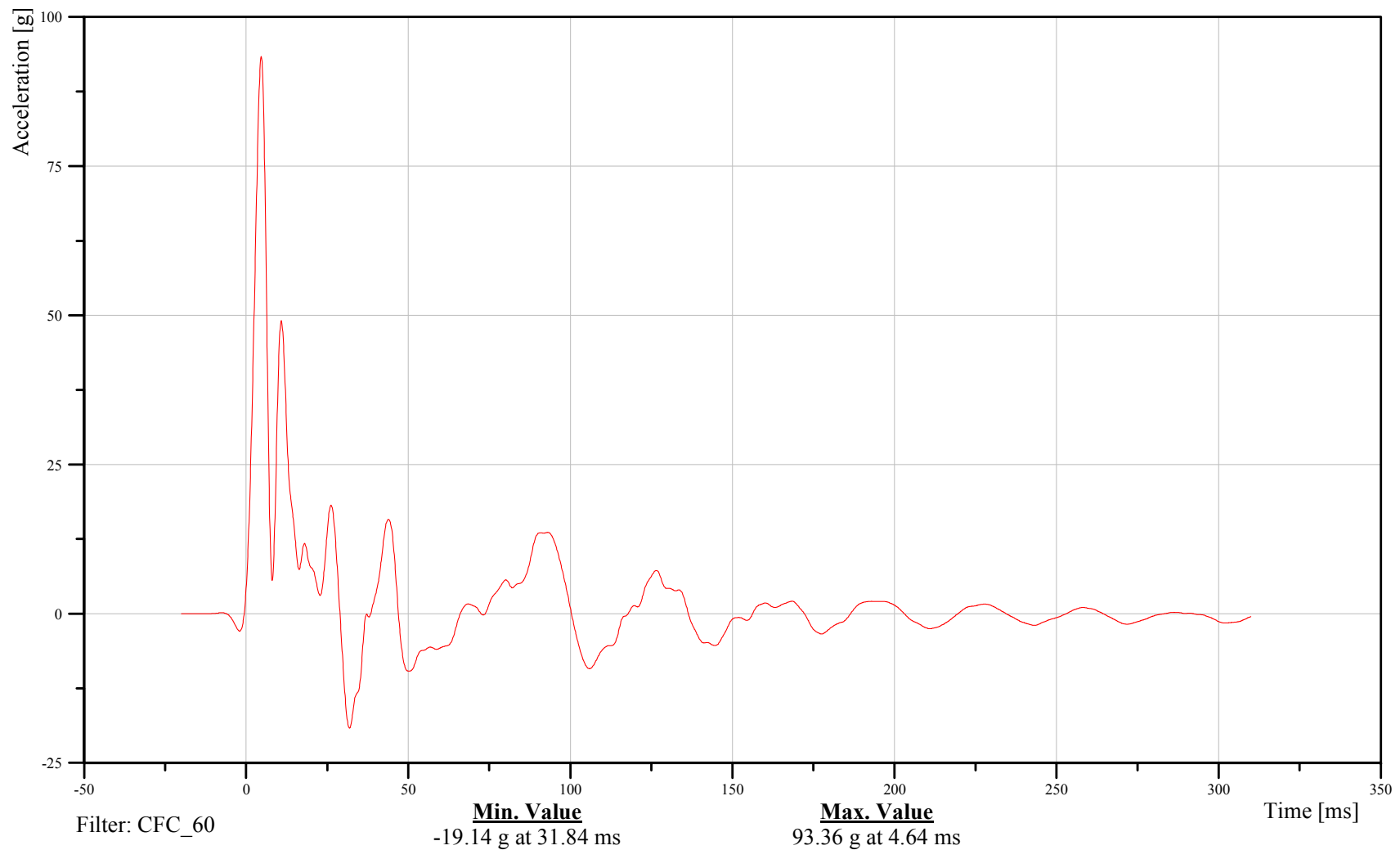
Left Rear Door mid-rear Y-axis accel

Customer: VRTC

14DOOR000001ACYD

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

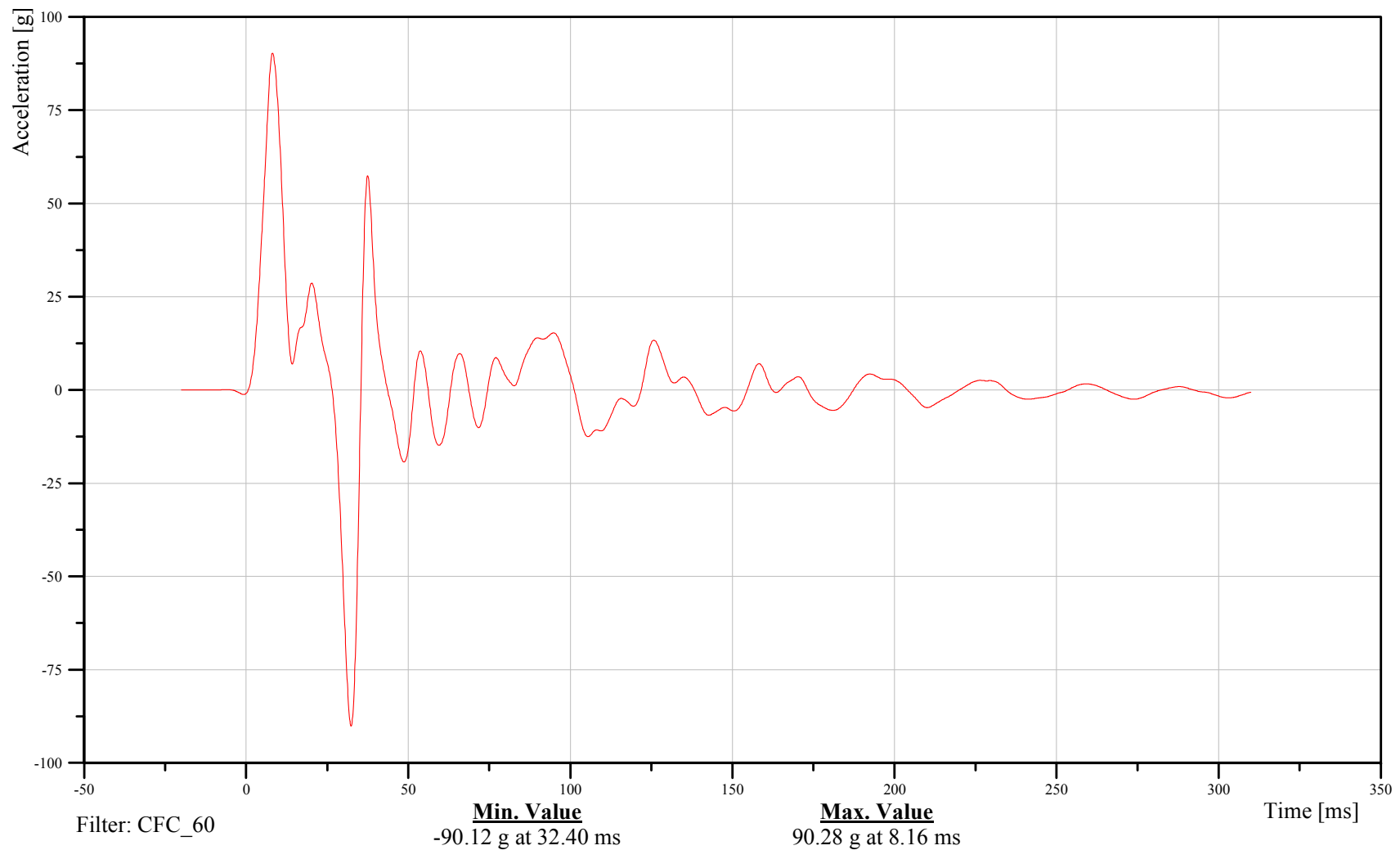
Left Rear Door upper centerline Y-axis accel

Customer: VRTC

14DOOR000002ACYD

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Side torso Airbag fire

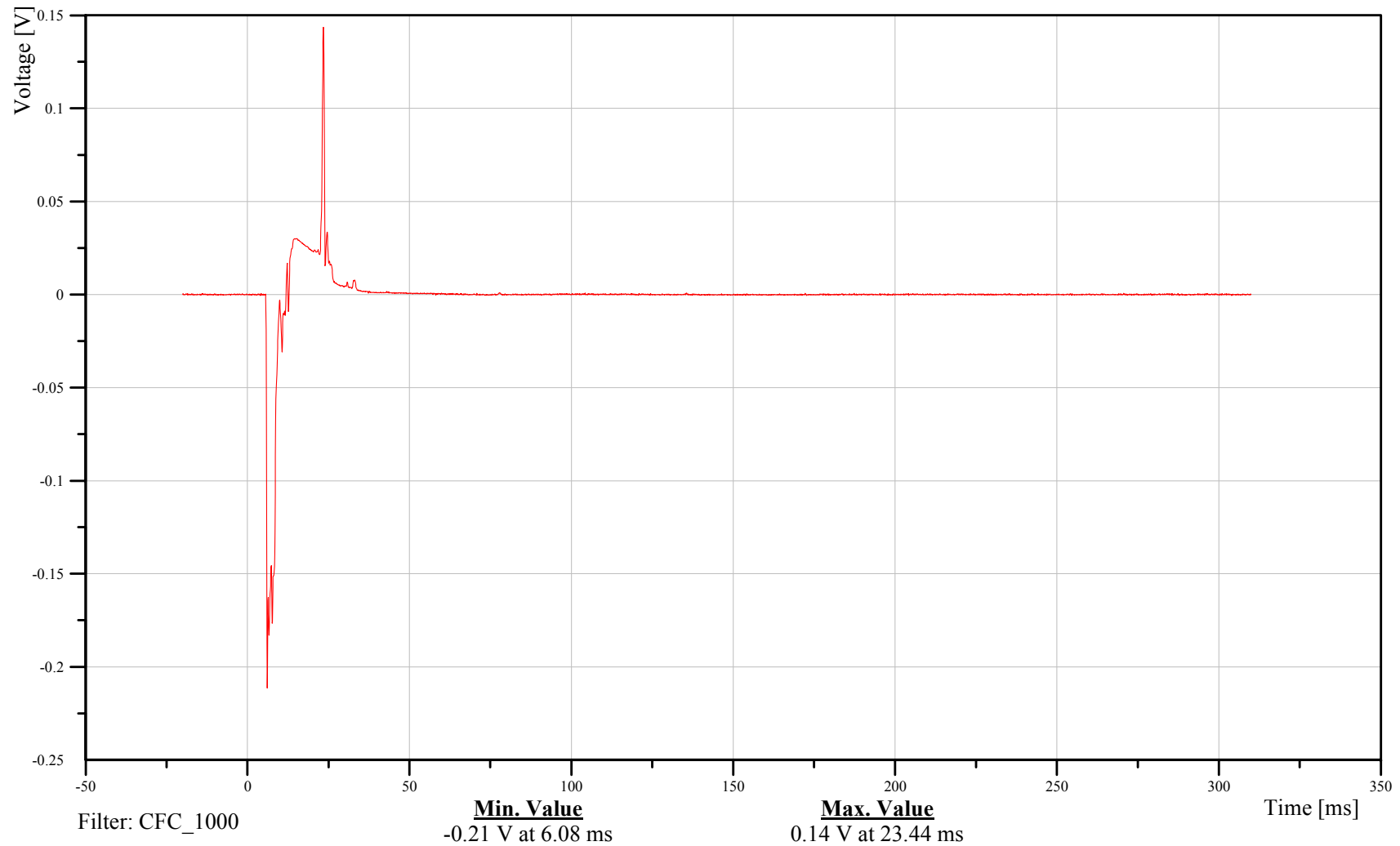
Date: 06/24/2005
Time: 12:02

Customer: VRTC

11SENS000001VO0A

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

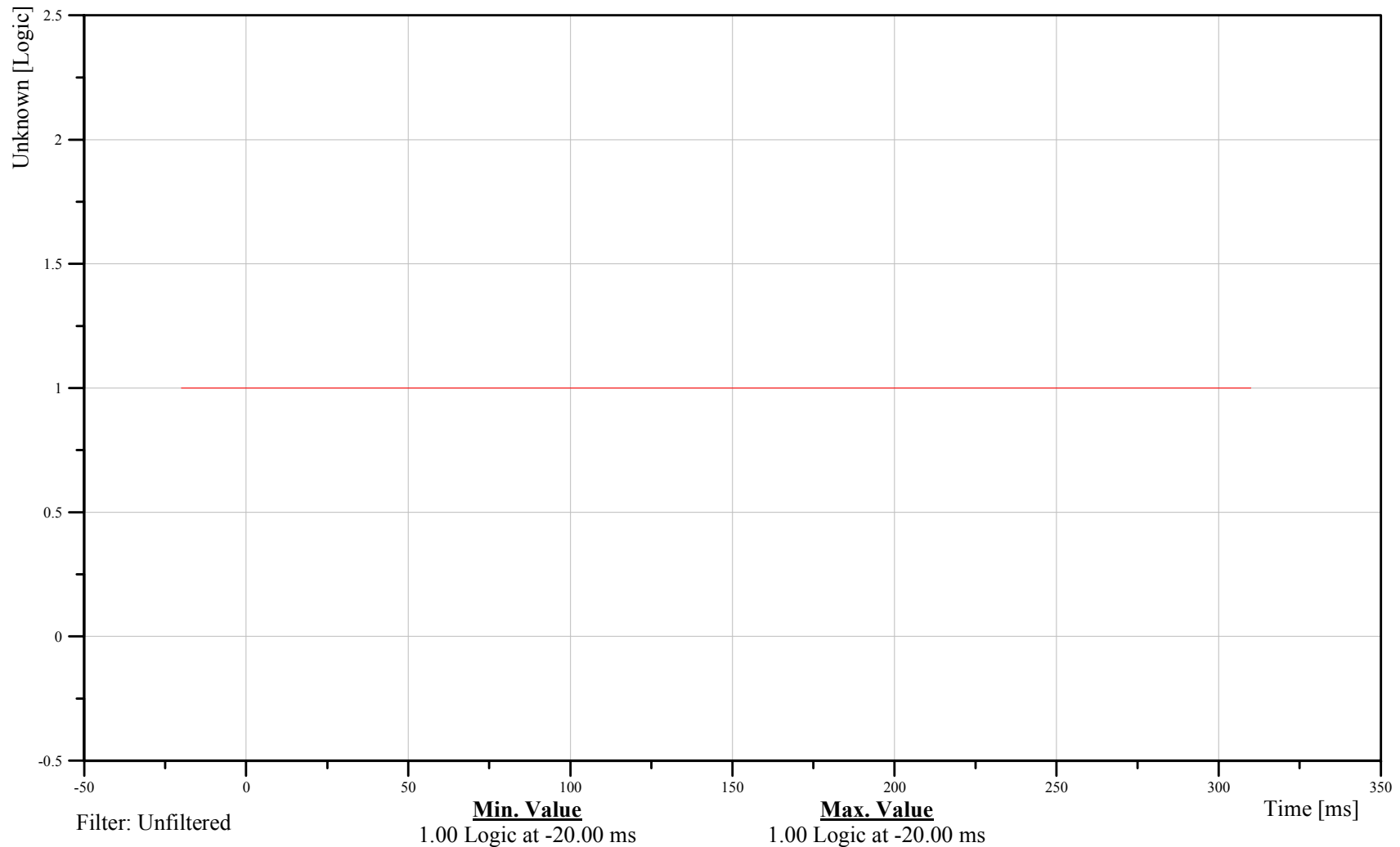
Dummy head contact

Customer: VRTC

11CONT000001EV00

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

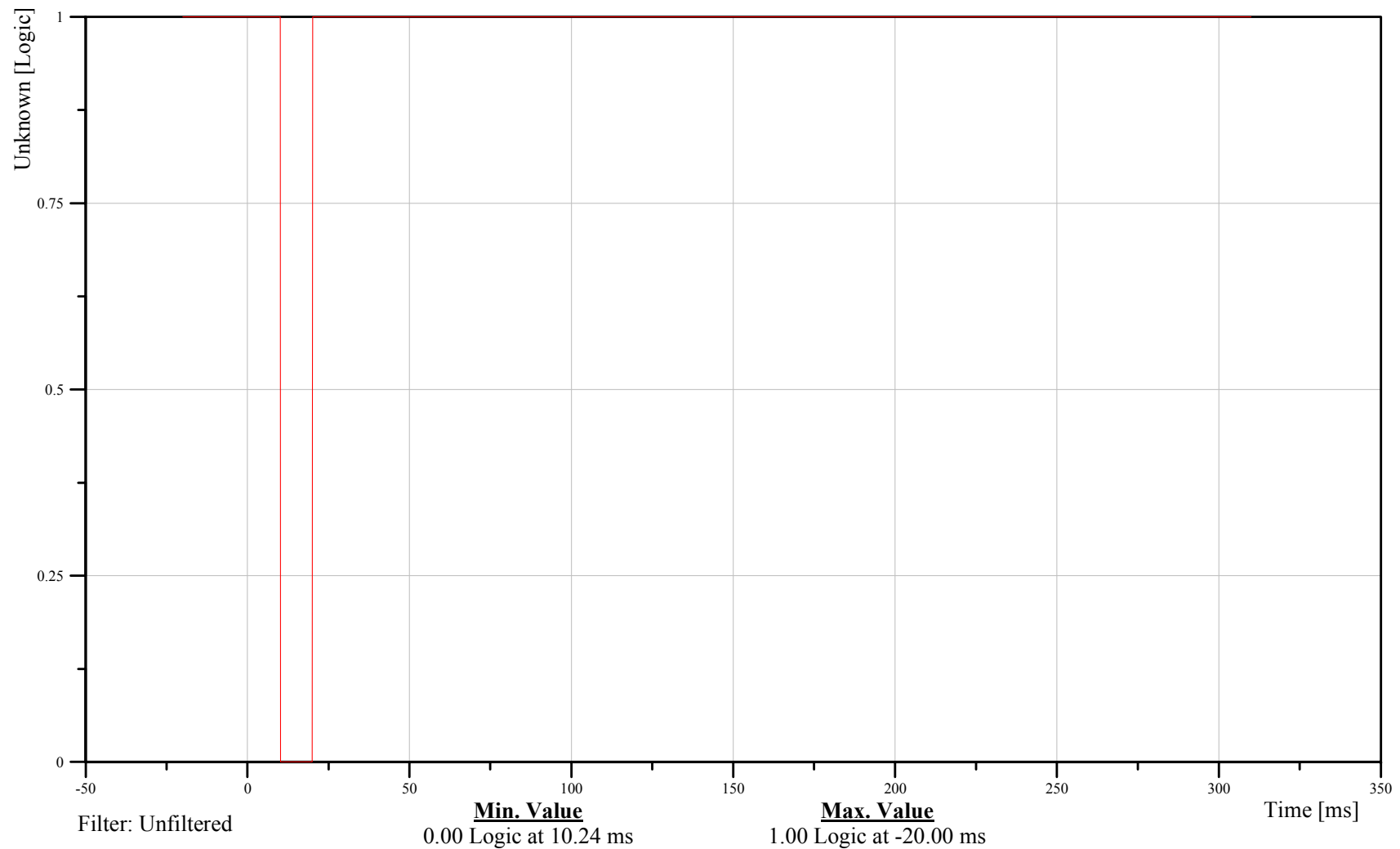
Dummy shoulder contact

Customer: VRTC

11CONT000002EV00

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

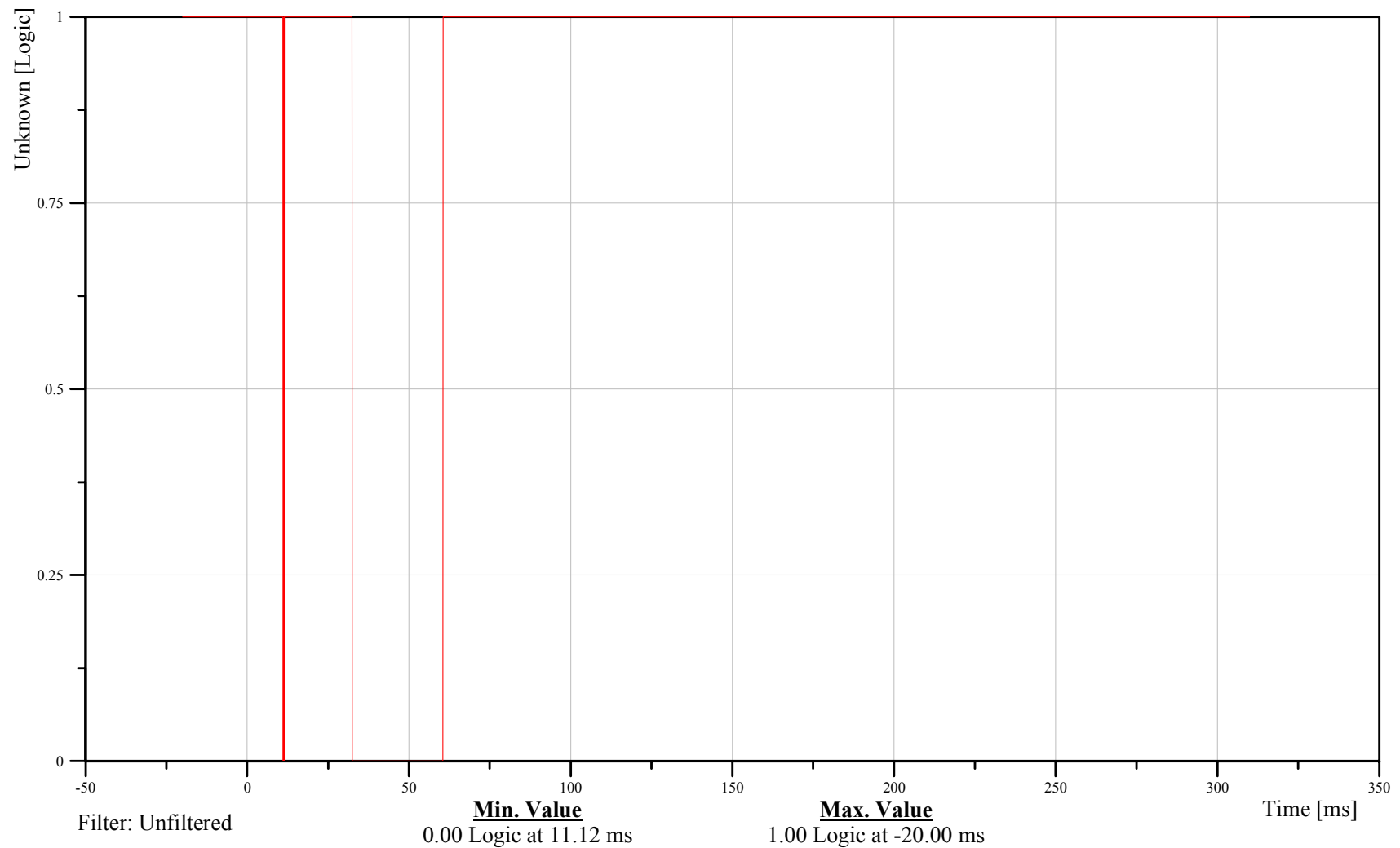
Dummy torso contact

Customer: VRTC

11CONT000003EV00

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

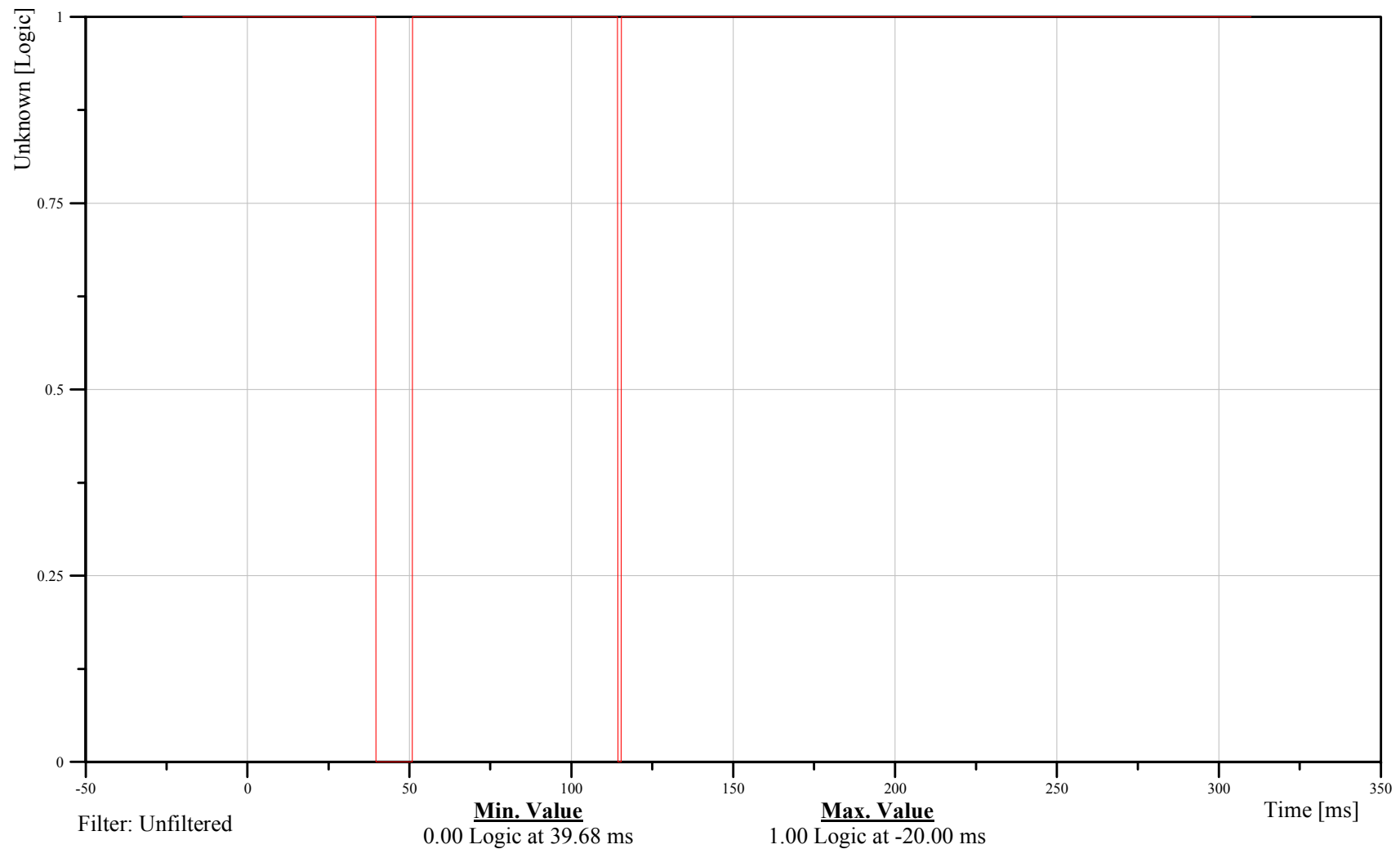
Dummy leg contact

Customer: VRTC

11CONT000004EV00

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

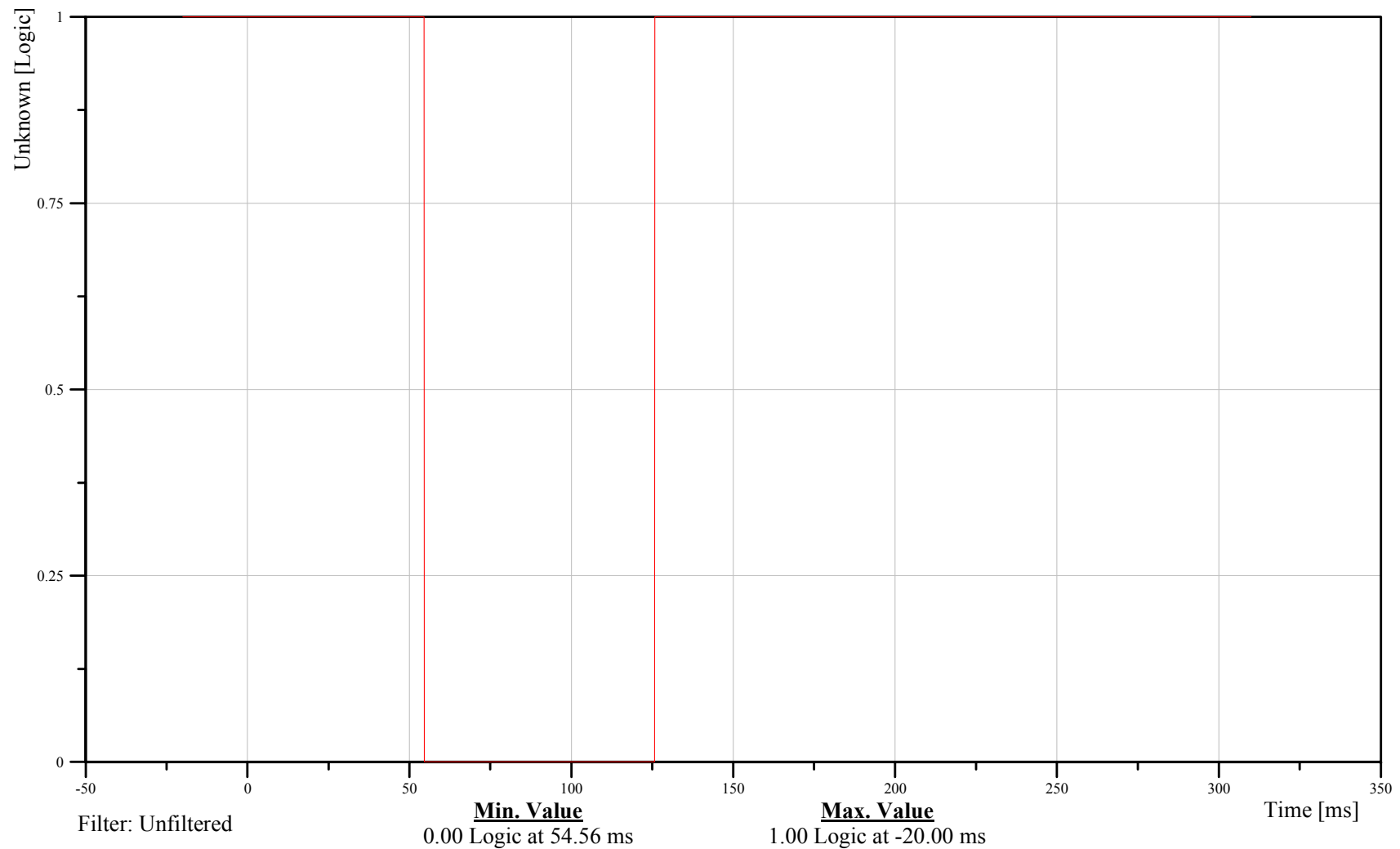
Dummy head contact

Customer: VRTC

14CONT000001EV00

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

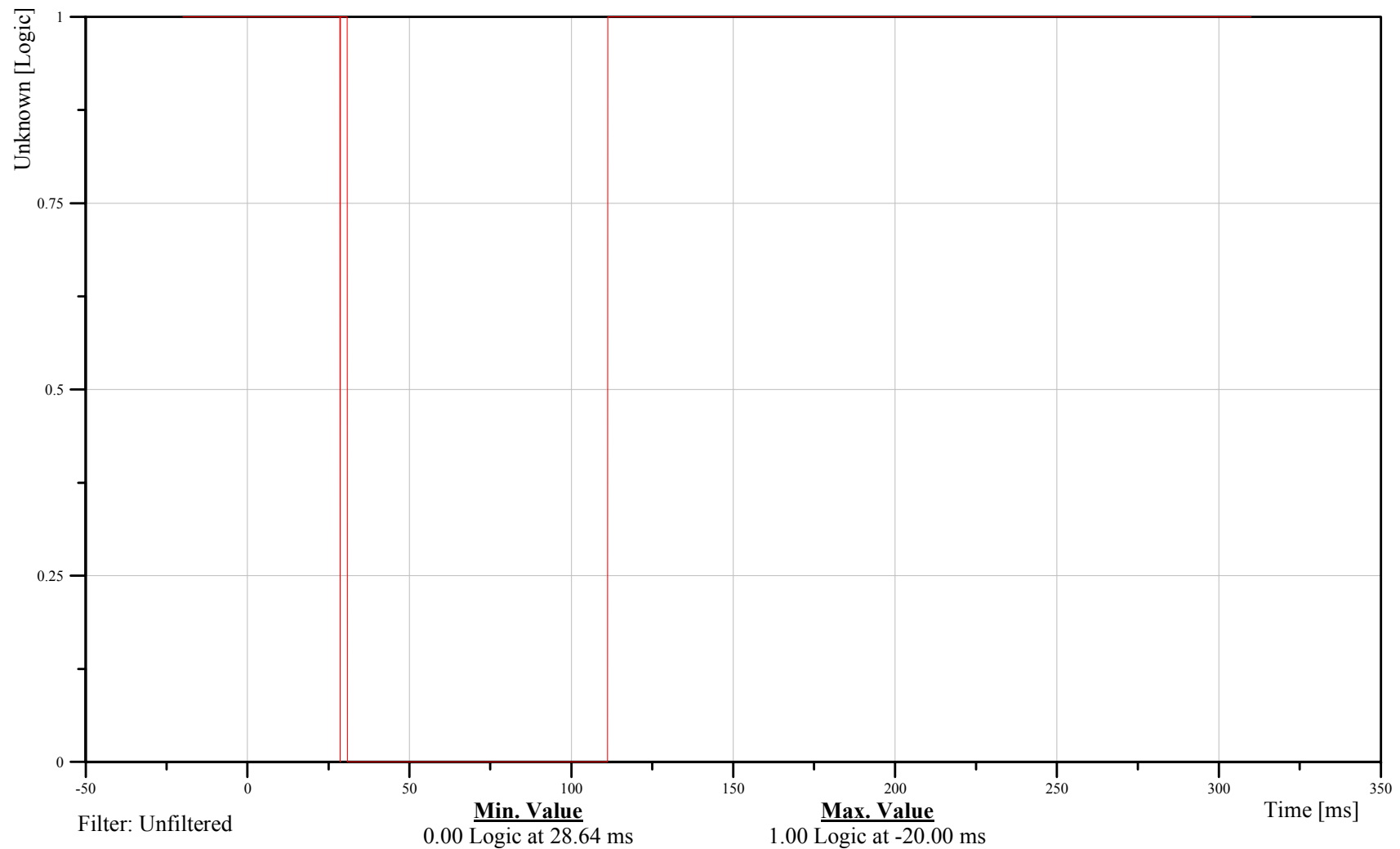
Dummy shoulder contact

Customer: VRTC

14CONT000002EV00

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

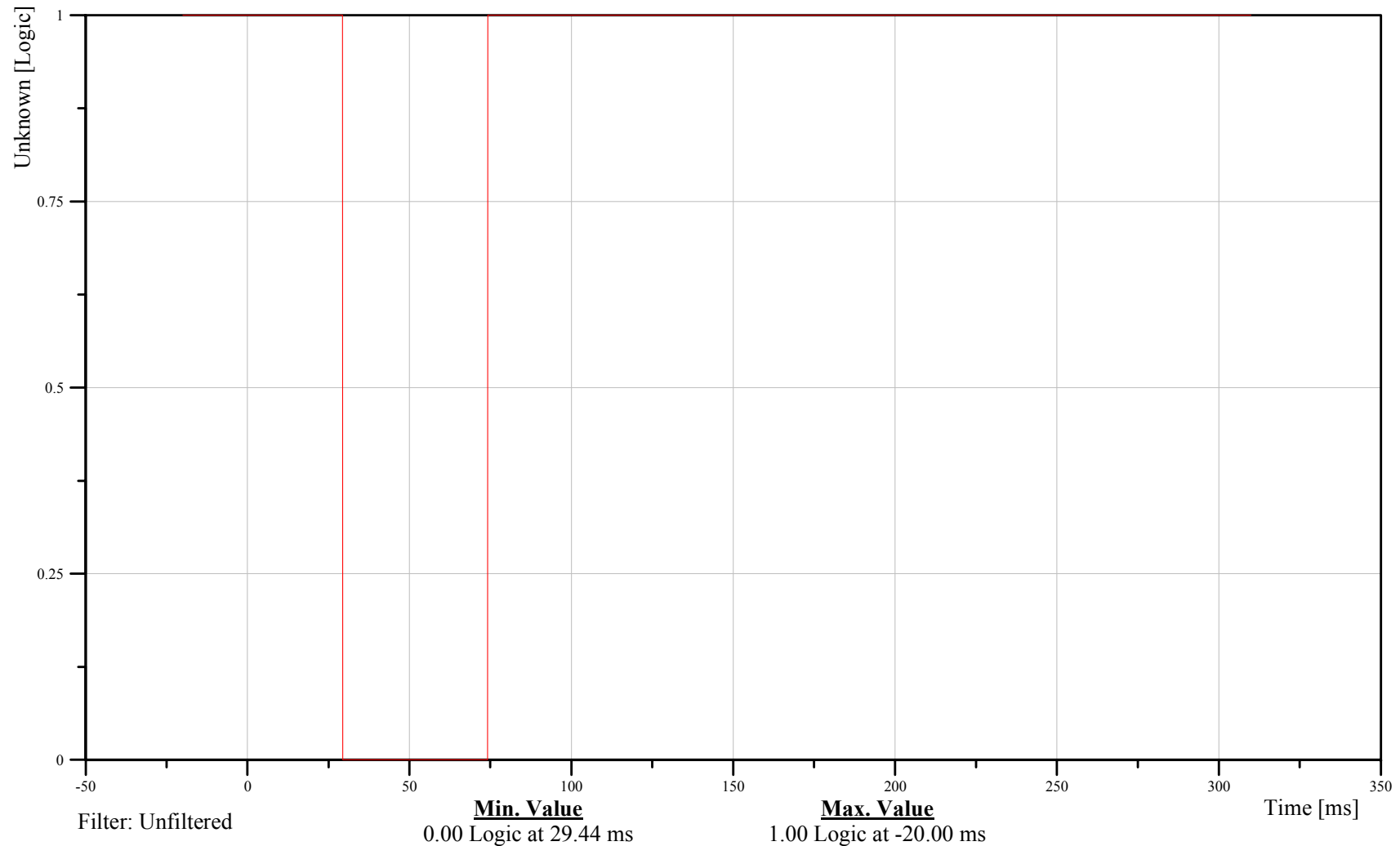
Dummy torso contact

Customer: VRTC

14CONT000003EV00

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

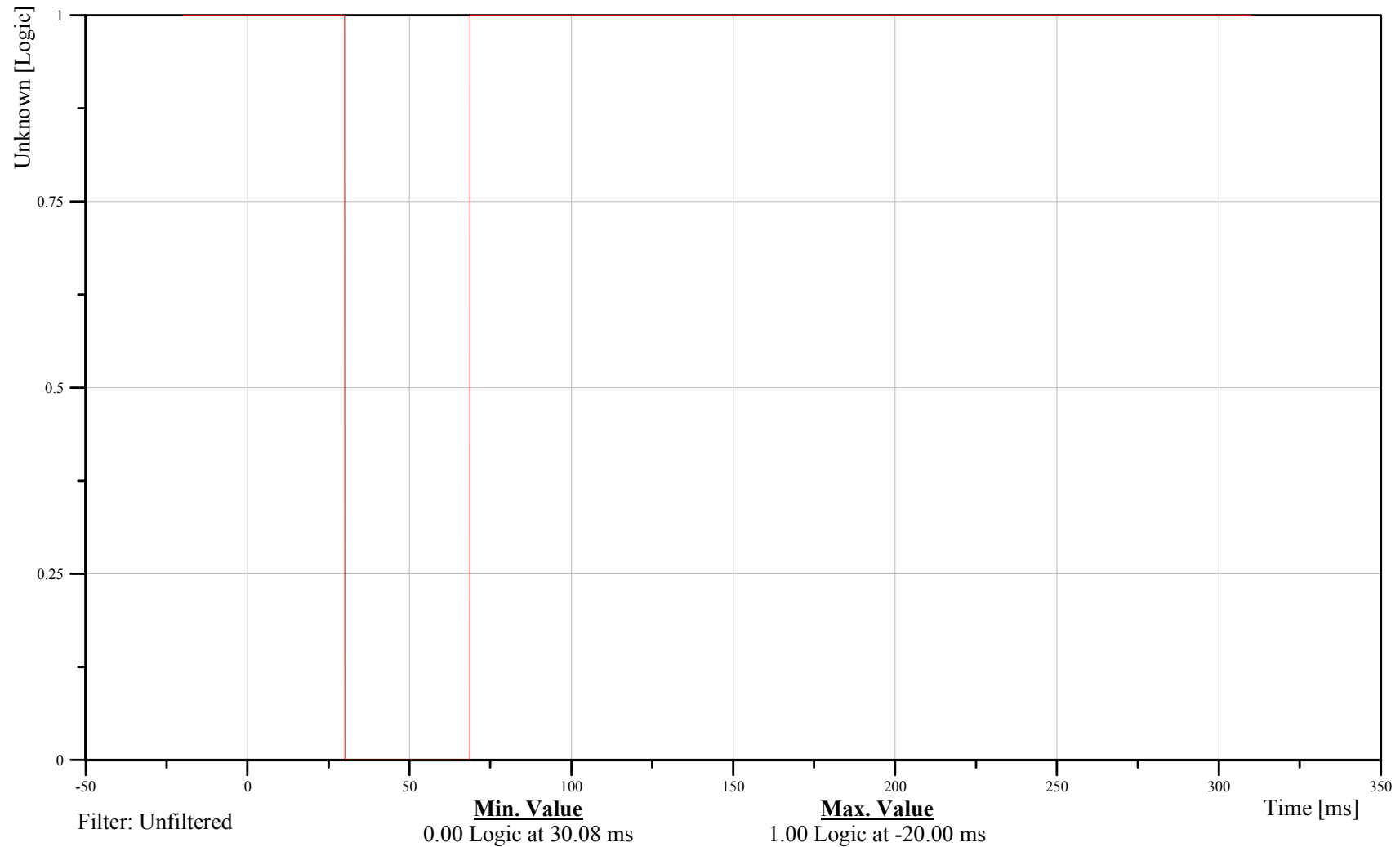
Dummy leg contact

Customer: VRTC

14CONT000004EV00

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

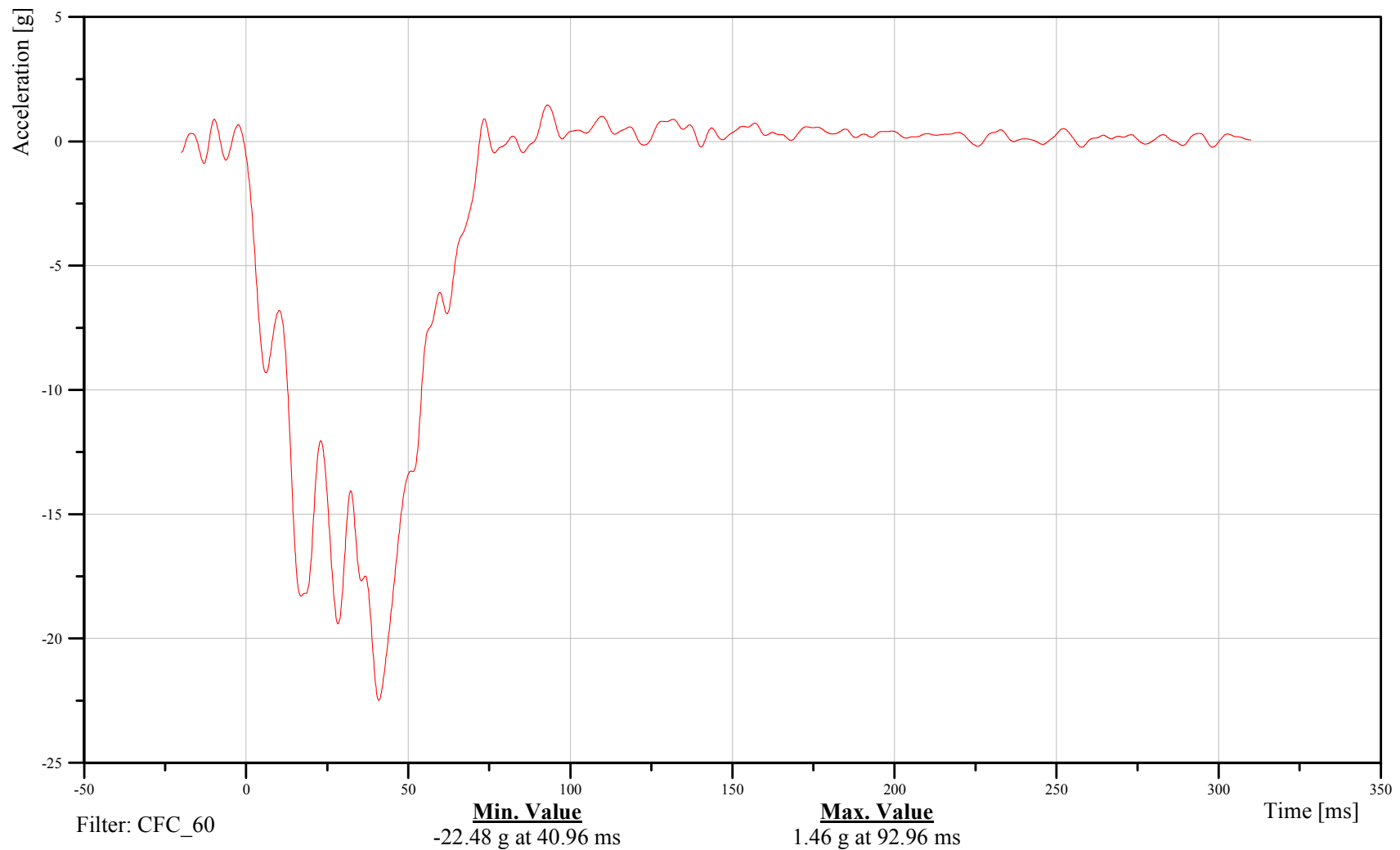
MDB Center of Gravity X-axis Acceleration

Customer: VRTC

M0VEHCCG0000ACXD

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

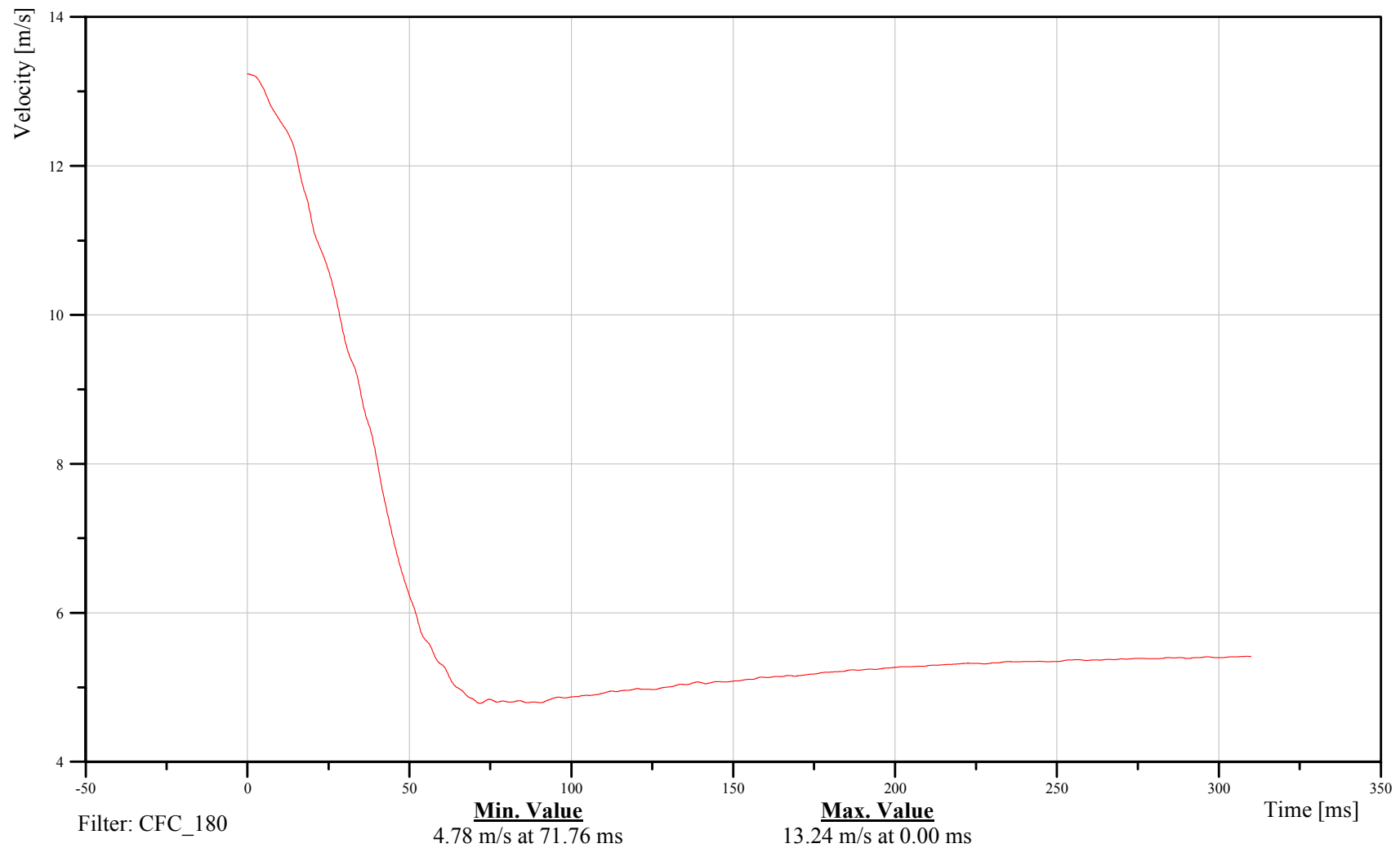
MDB Center of Gravity X-axis Velocity

Customer: VRTC

M0VEHCCG0000VEXC

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

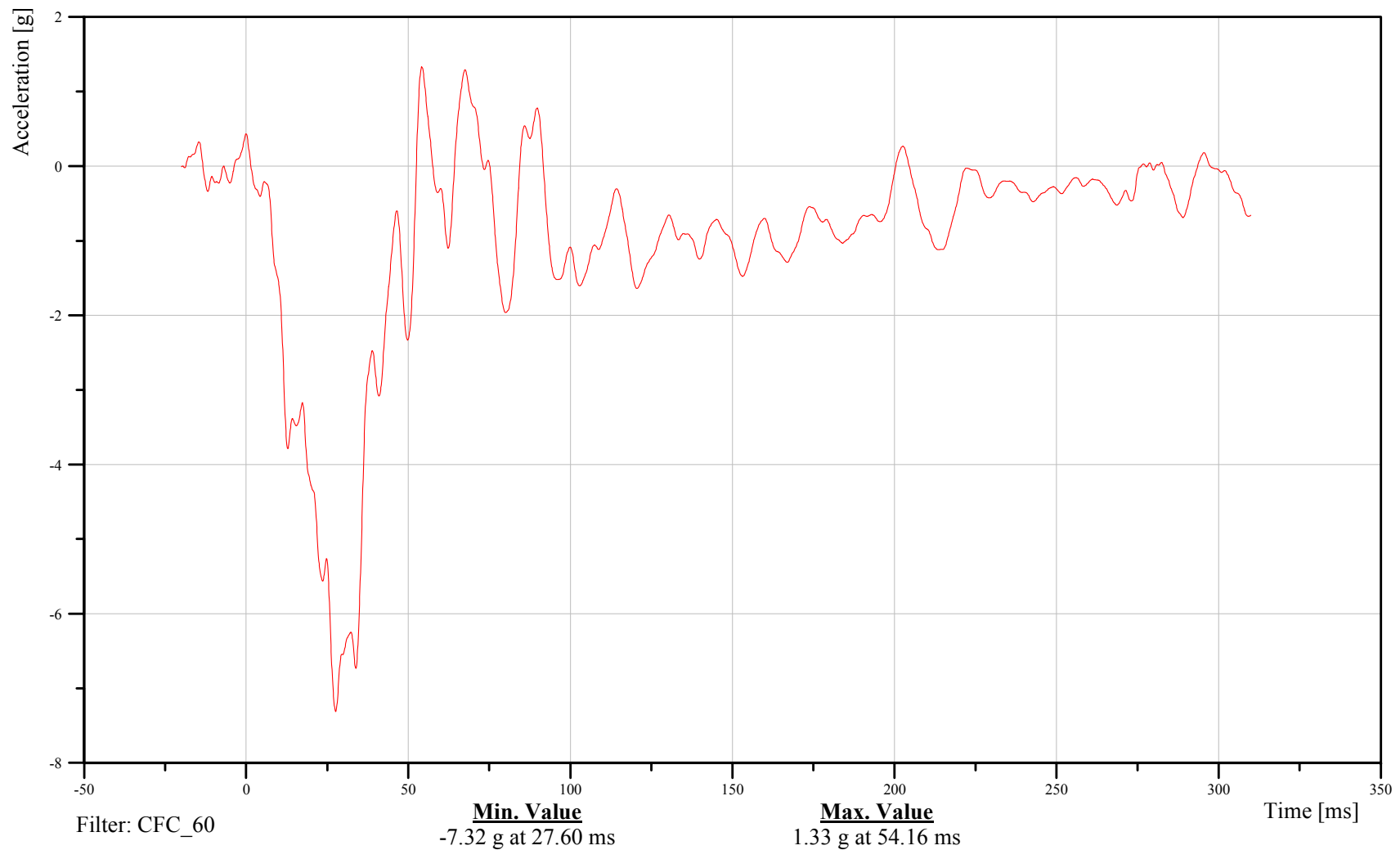
MDB Center of Gravity Y-axis Acceleration

Customer: VRTC

M0VEHCCG0000ACYD

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

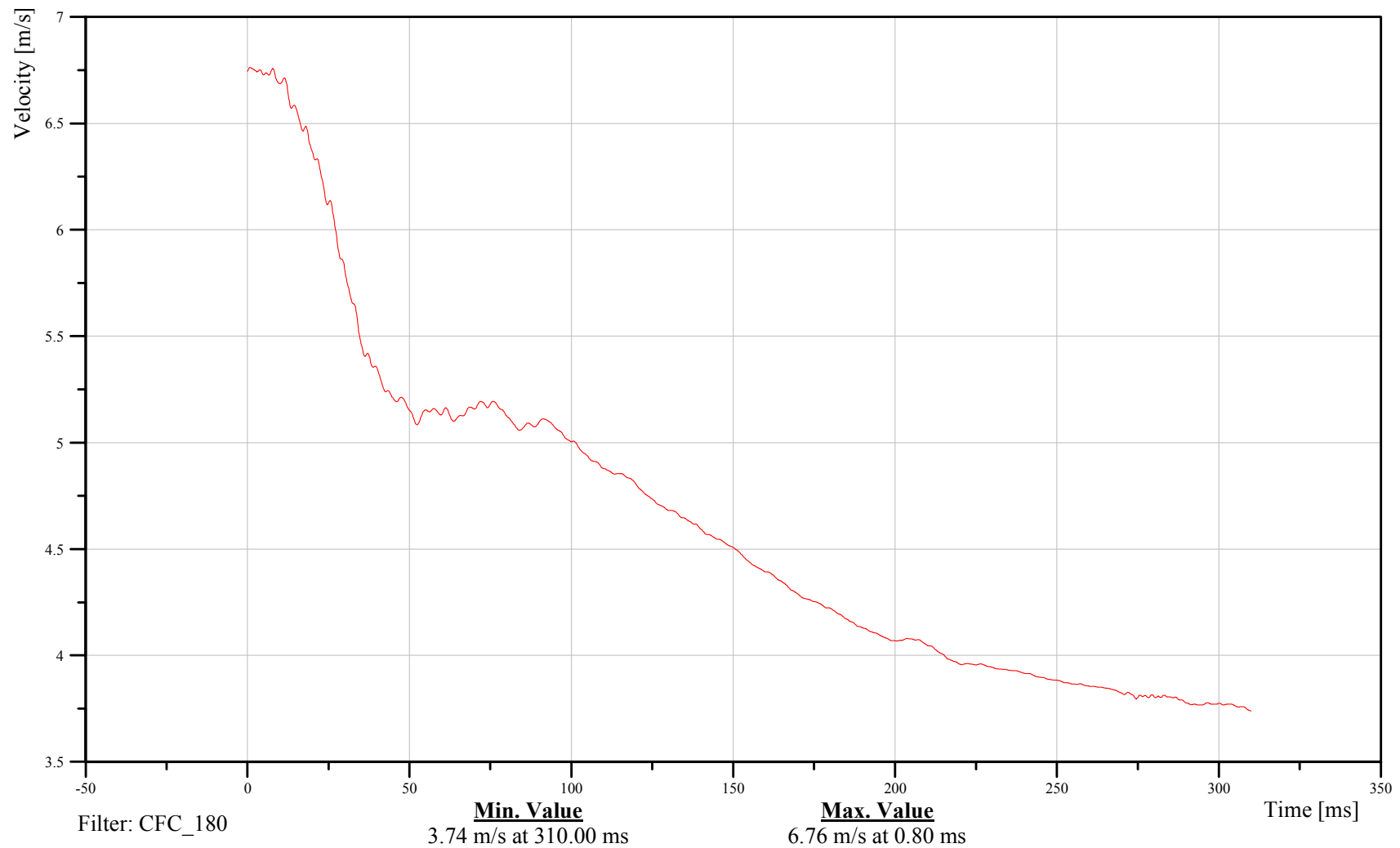
MDB Center of Gravity Y-axis Velocity

Customer: VRTC

M0VEHCCG0000VEYC

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

MDB Center of Gravity Z-axis Acceleration

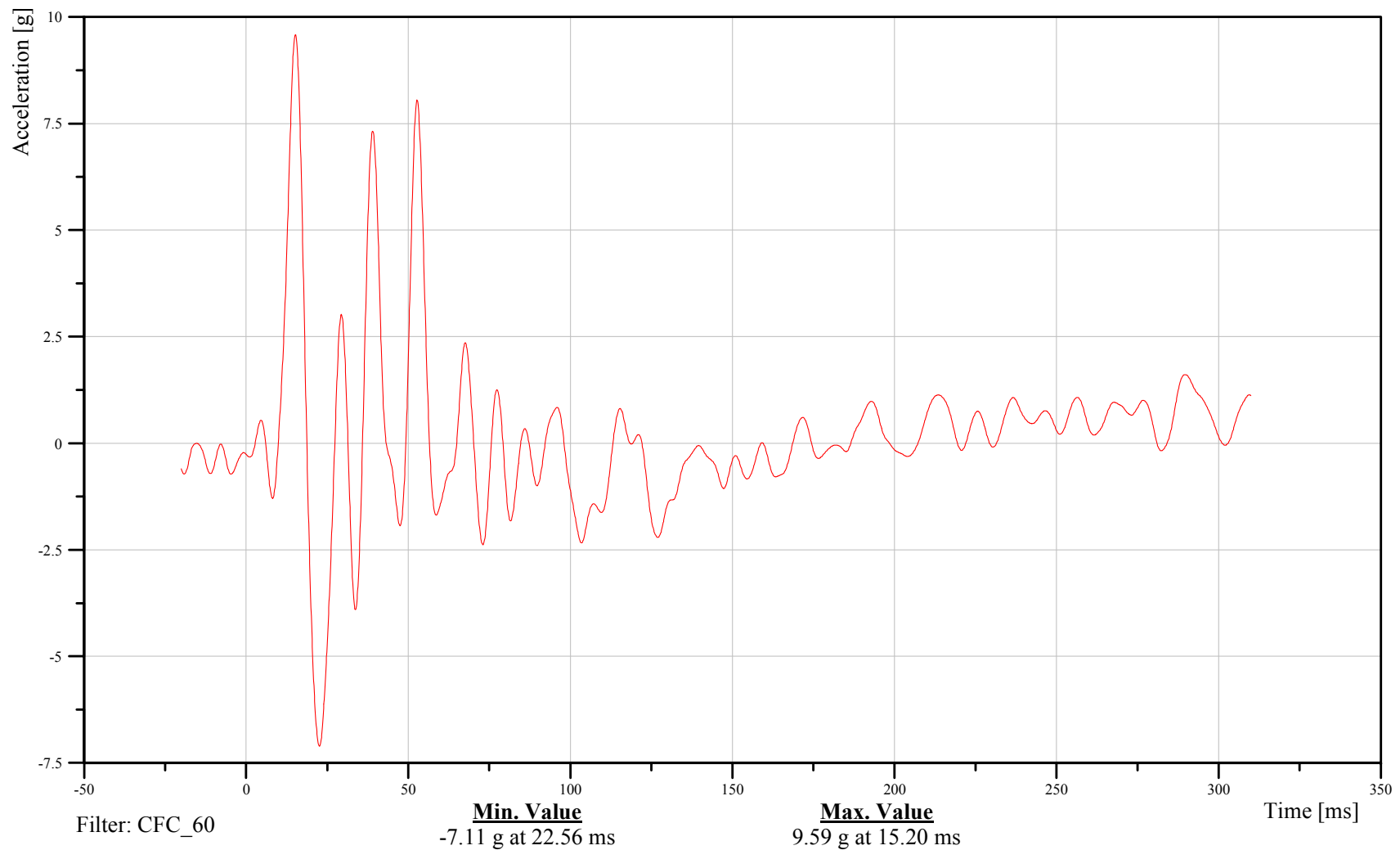
Date: 06/24/2005
Time: 12:02

Customer: VRTC

M0VEHCCG0000ACZD

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

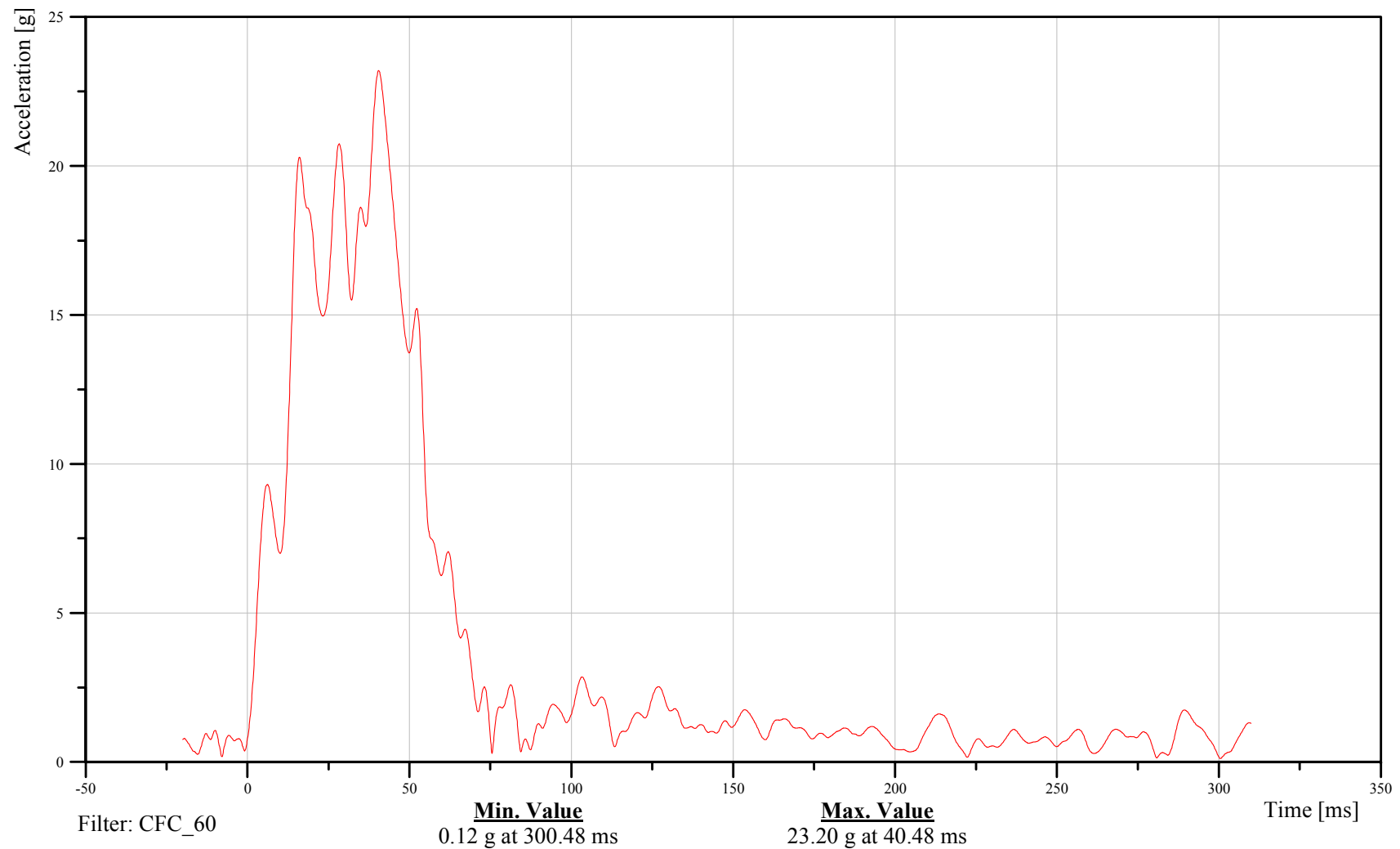
MDB Center of Gravity Resultant Acceleration

Customer: VRTC

M0VEHCCG0000ACRD

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

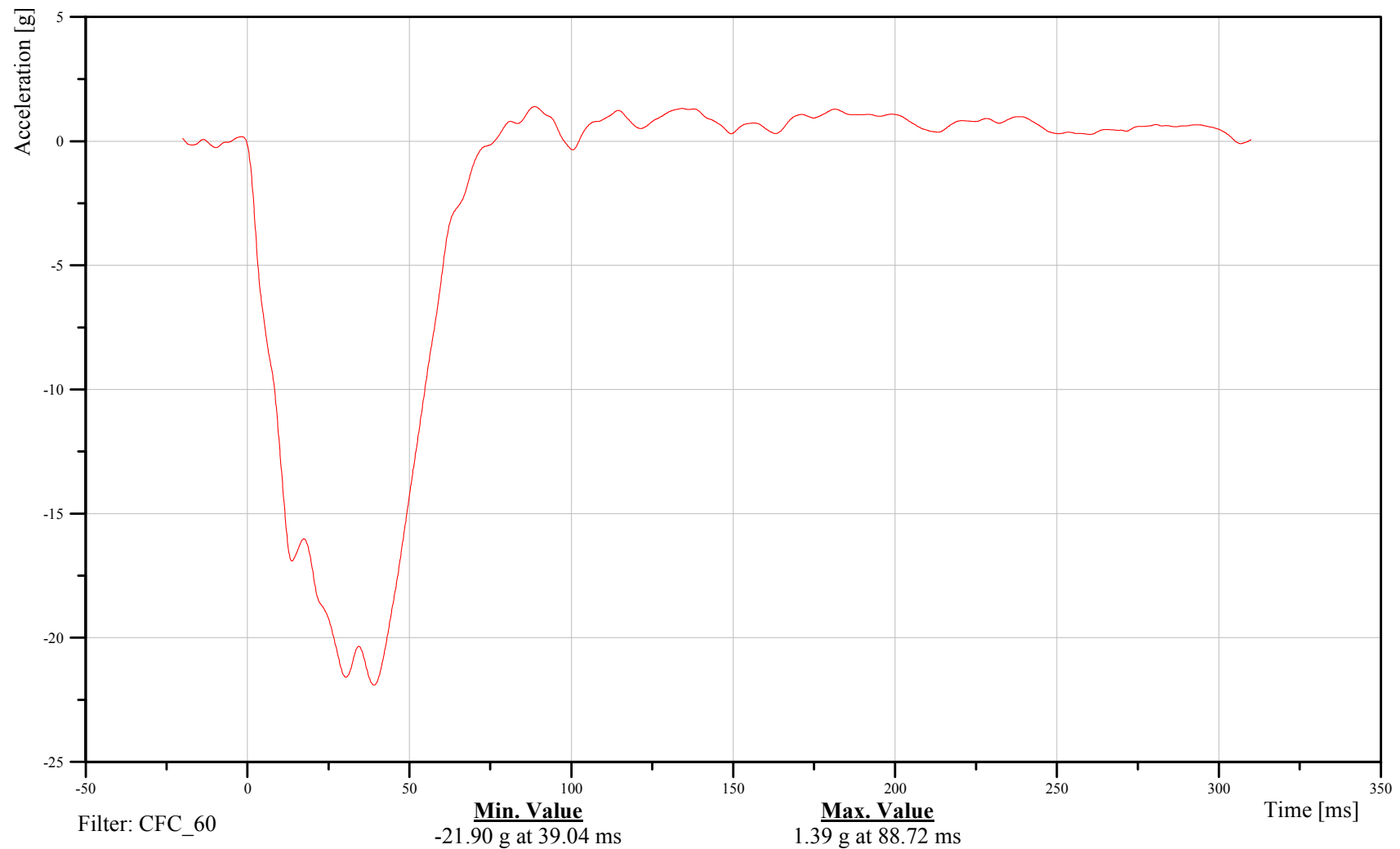
MDB Left Rear X-axis Acceleration

Customer: VRTC

M7FRAM000000ACXD

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

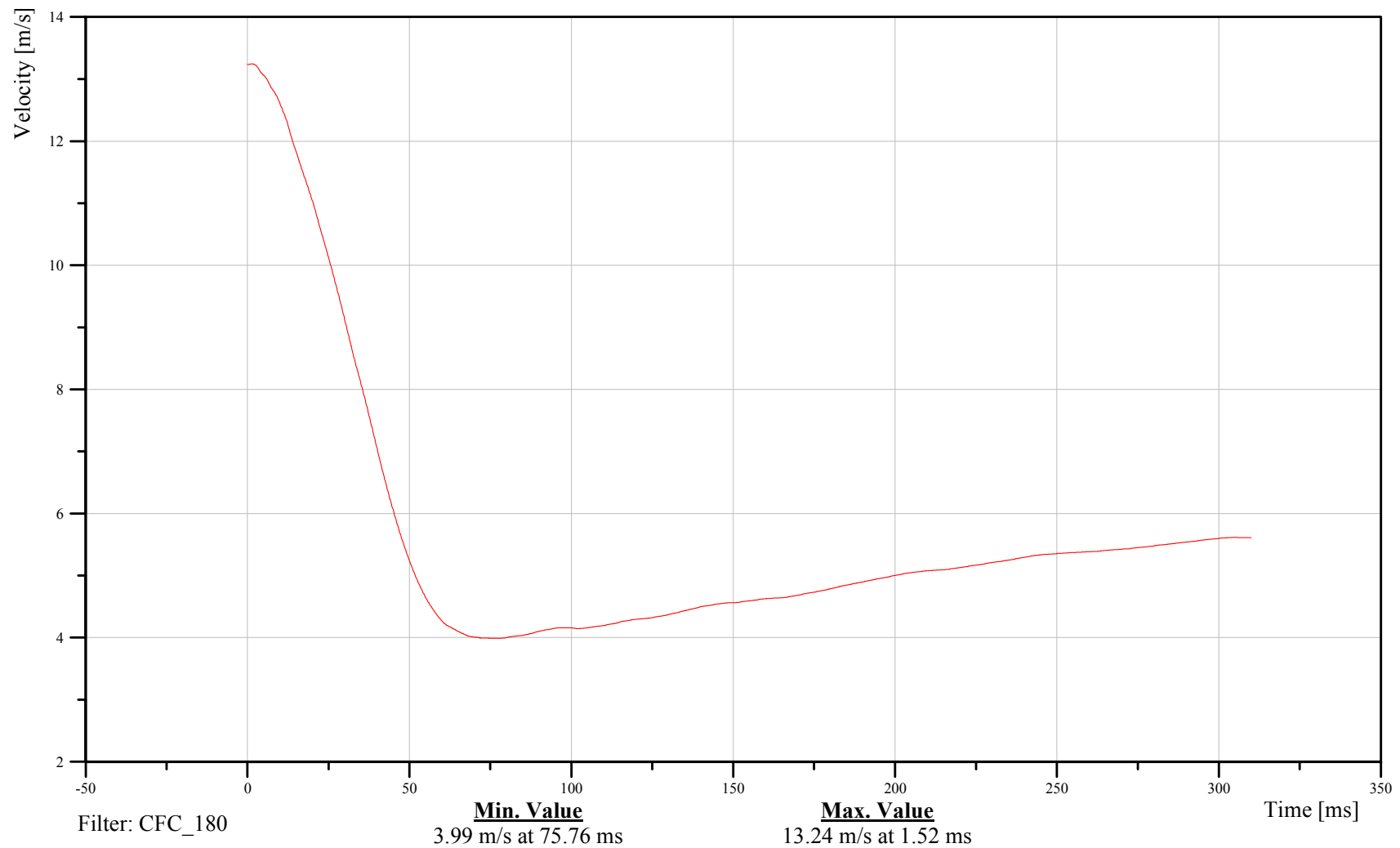
MDB Left Rear X-axis Velocity

Customer: VRTC

M7FRAM000000VEXC

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

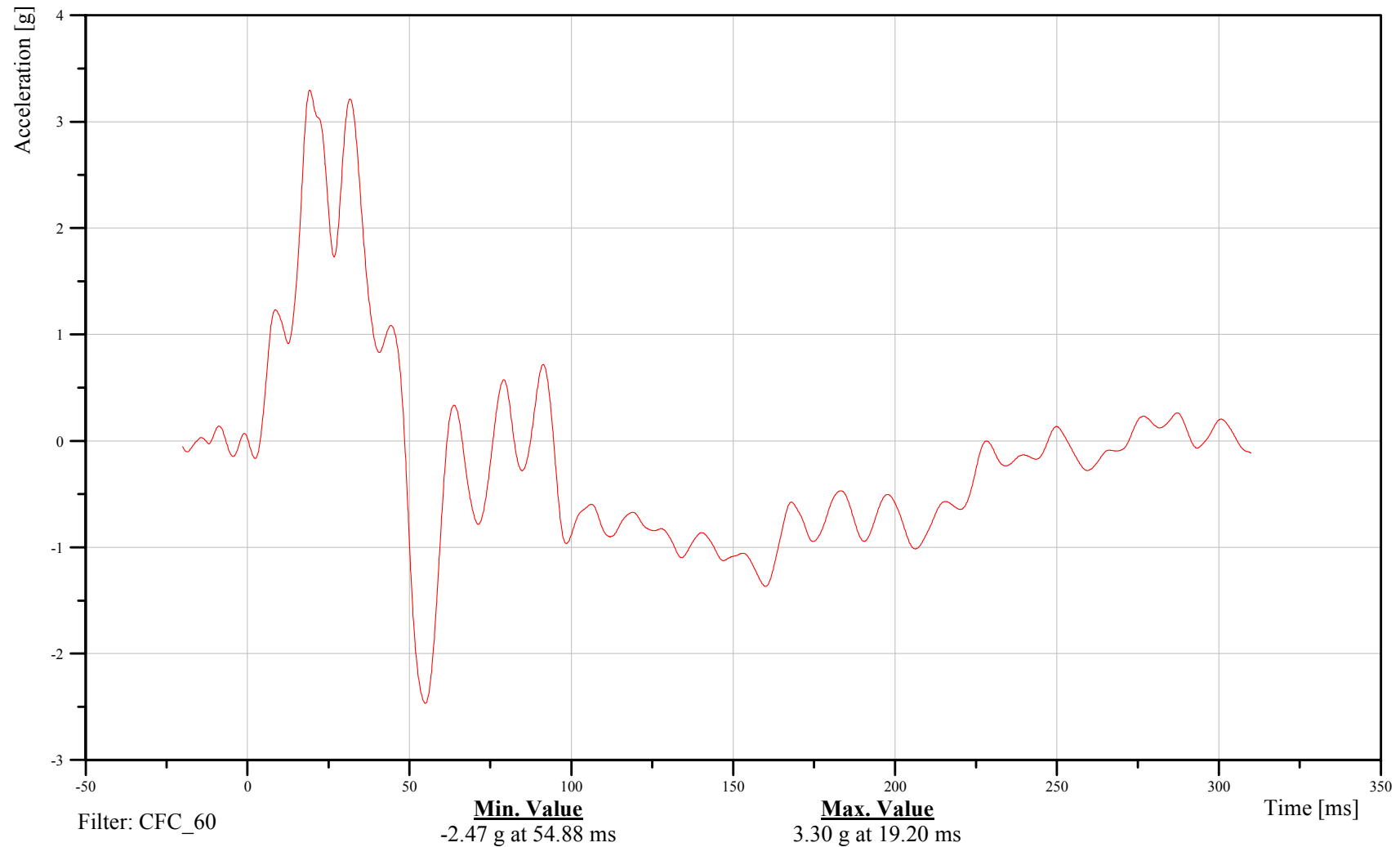
MDB Left Rear Y-axis Acceleration

Customer: VRTC

M7FRAM000000ACYD

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

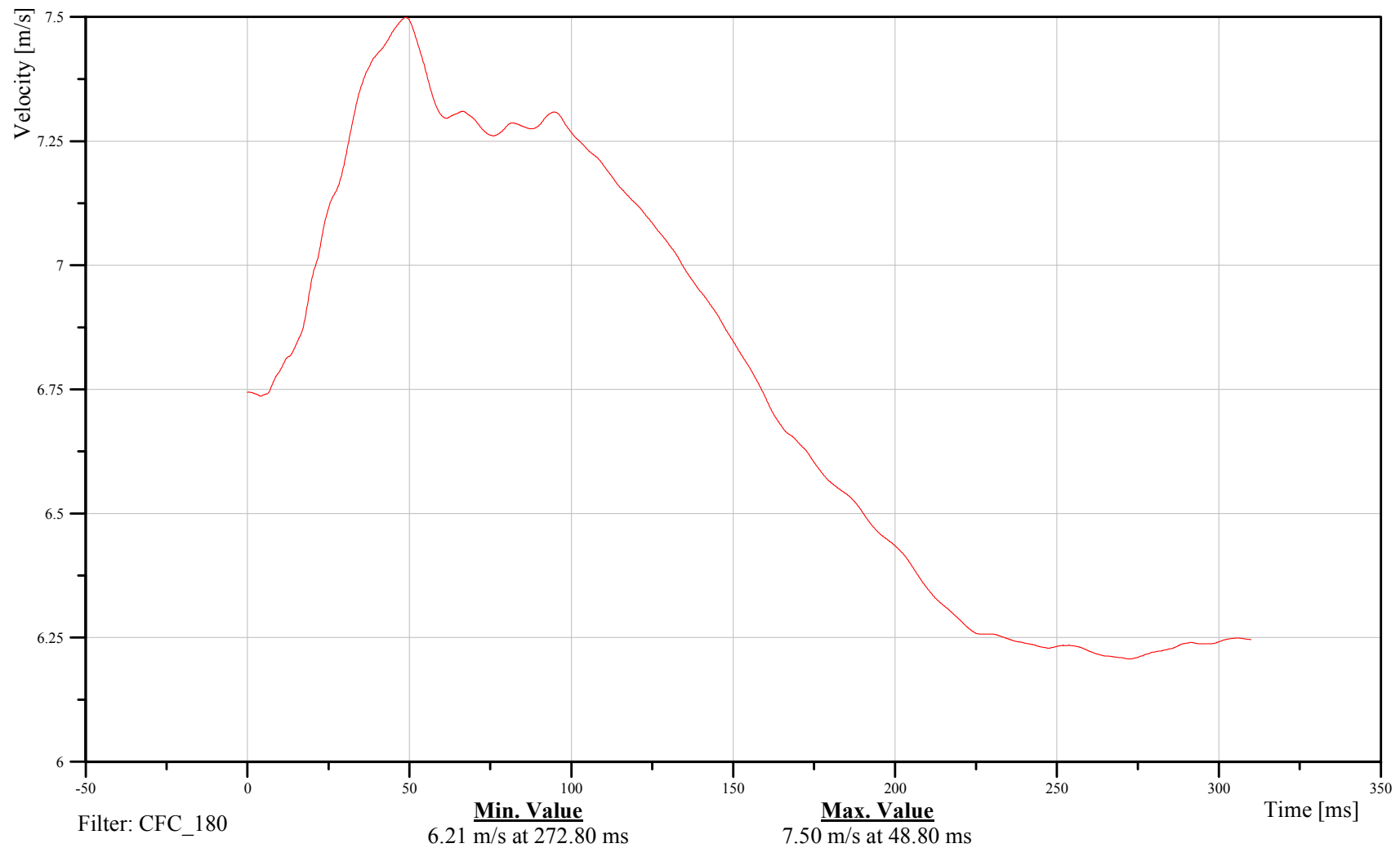
MDB Left Rear Y-axis Velocity

Customer: VRTC

M7FRAM000000VEYC

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

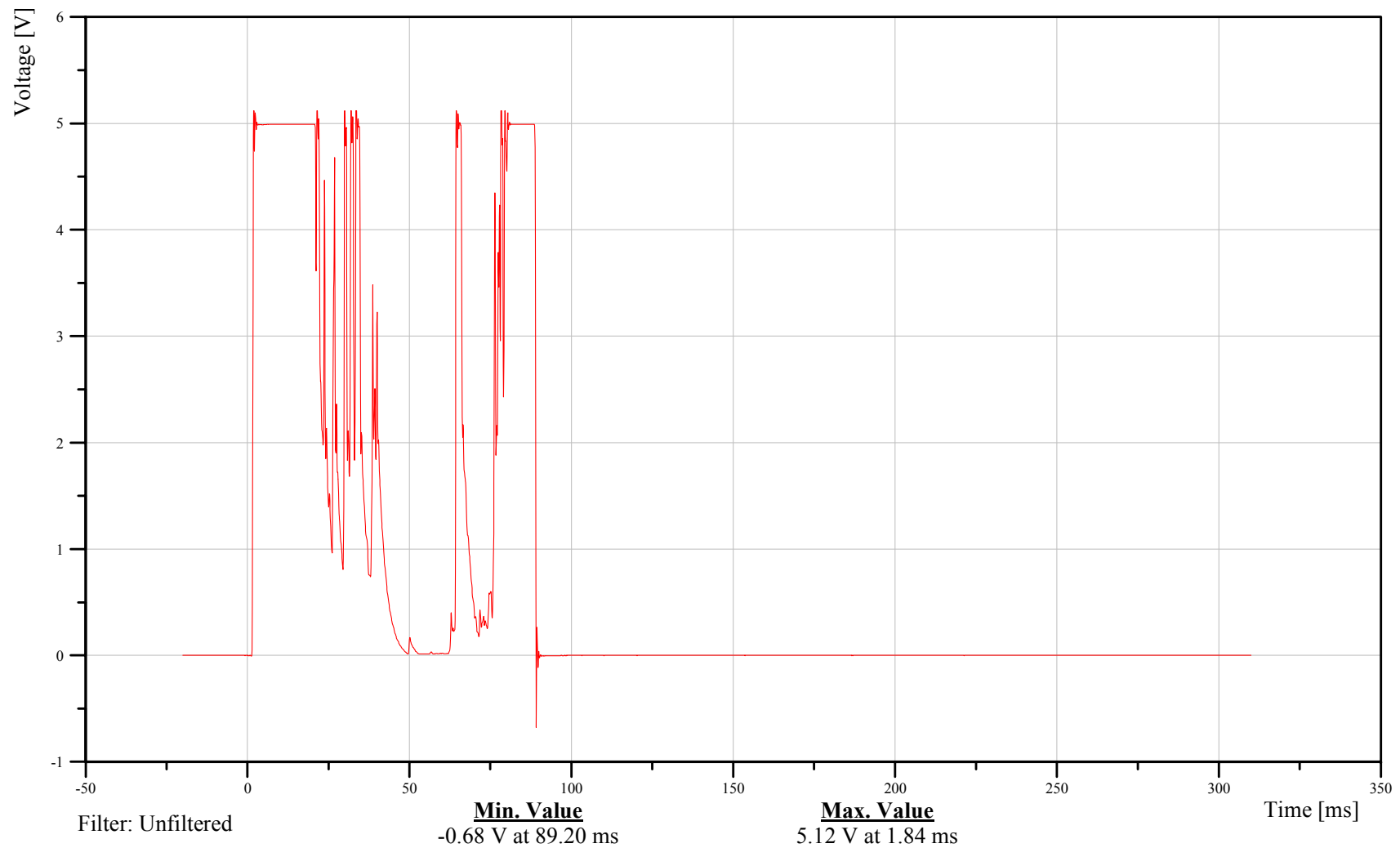
MDB Right Side Contact Switch

Customer: VRTC

M3CONT000000EV00

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

MDB Left Side Contact Switch

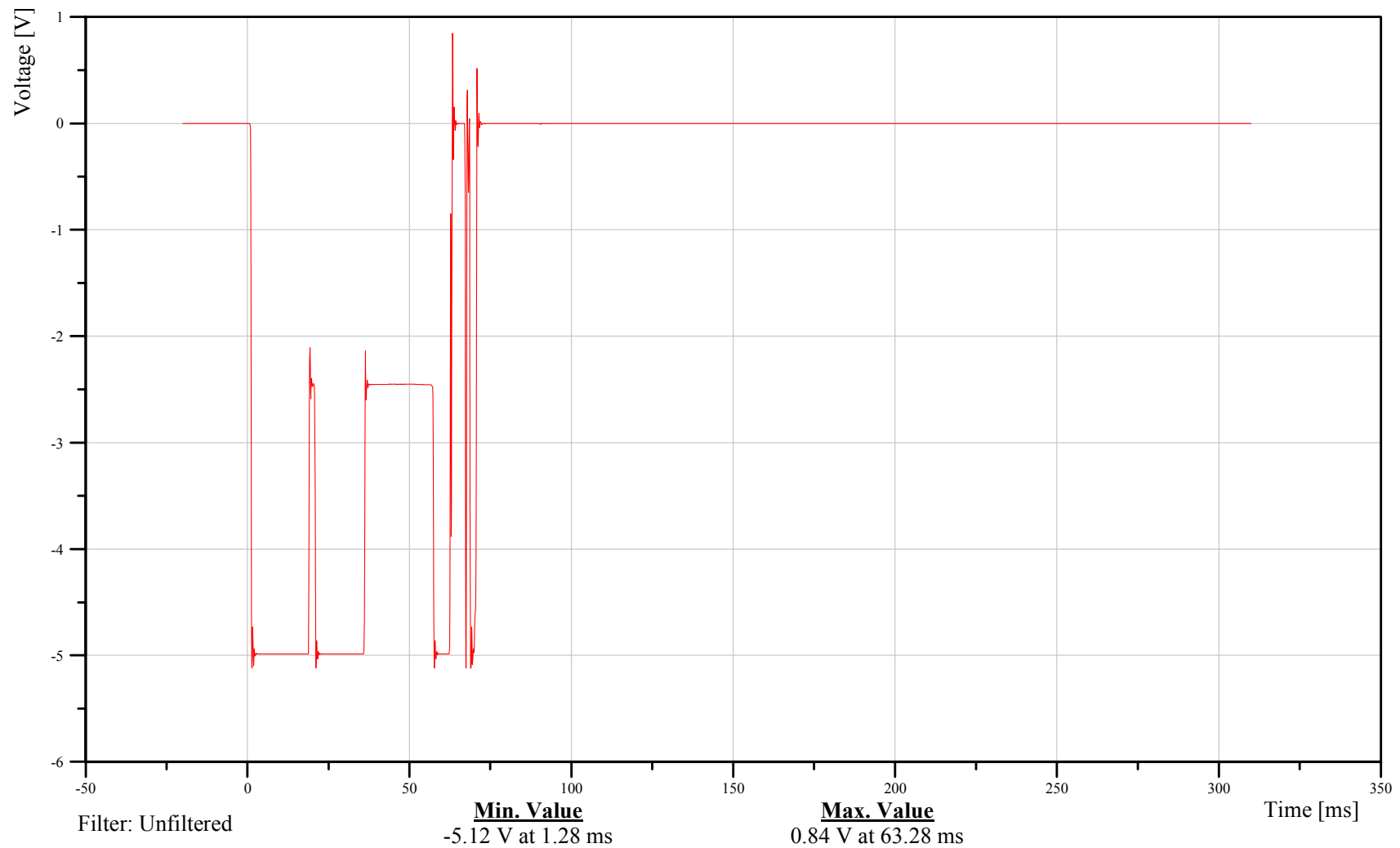
Date: 06/24/2005
Time: 12:02

Customer: VRTC

M1CONT000000EV00

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

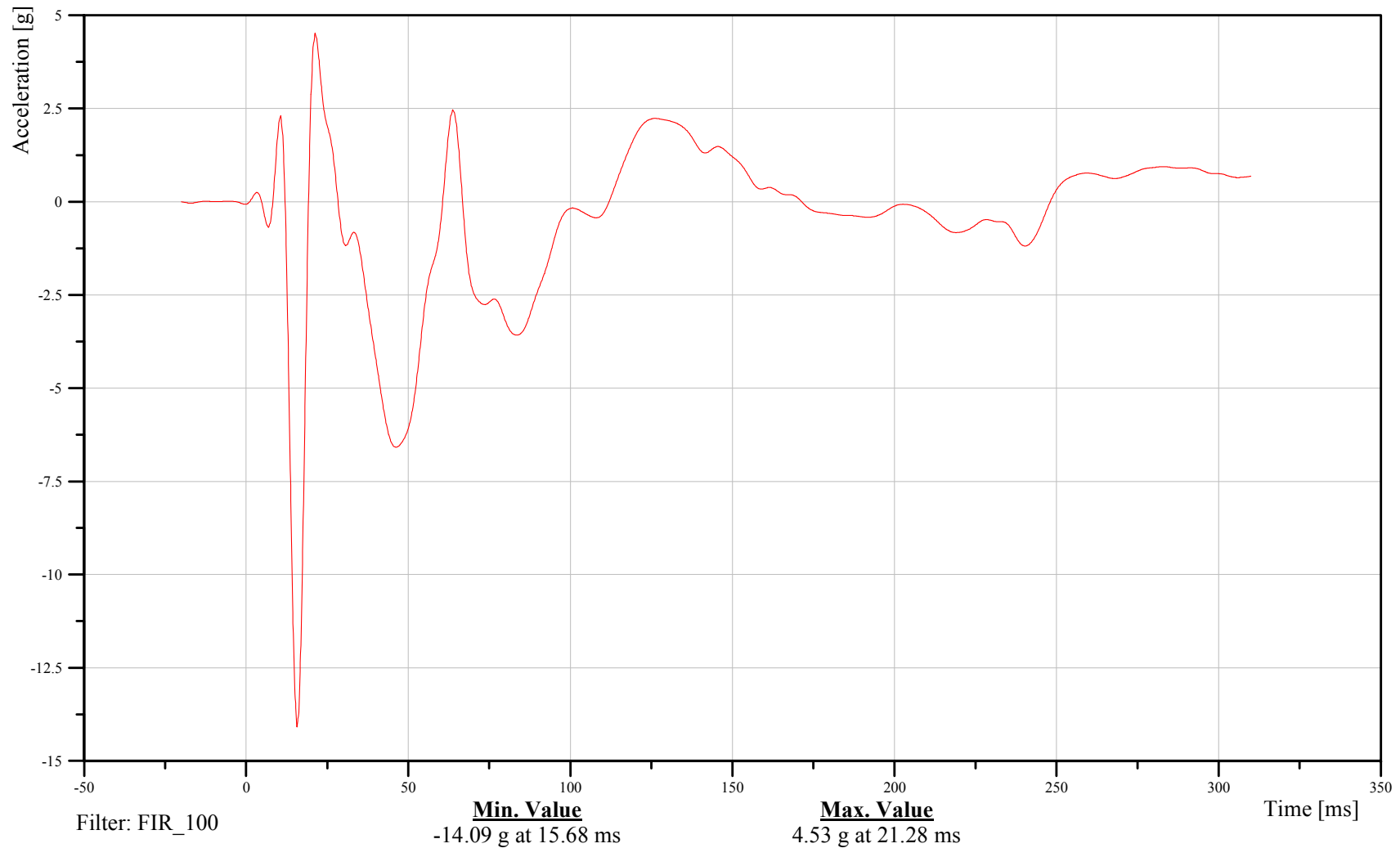
Upper Spine X

Customer: VRTC

11SPIN0100E2ACX1

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

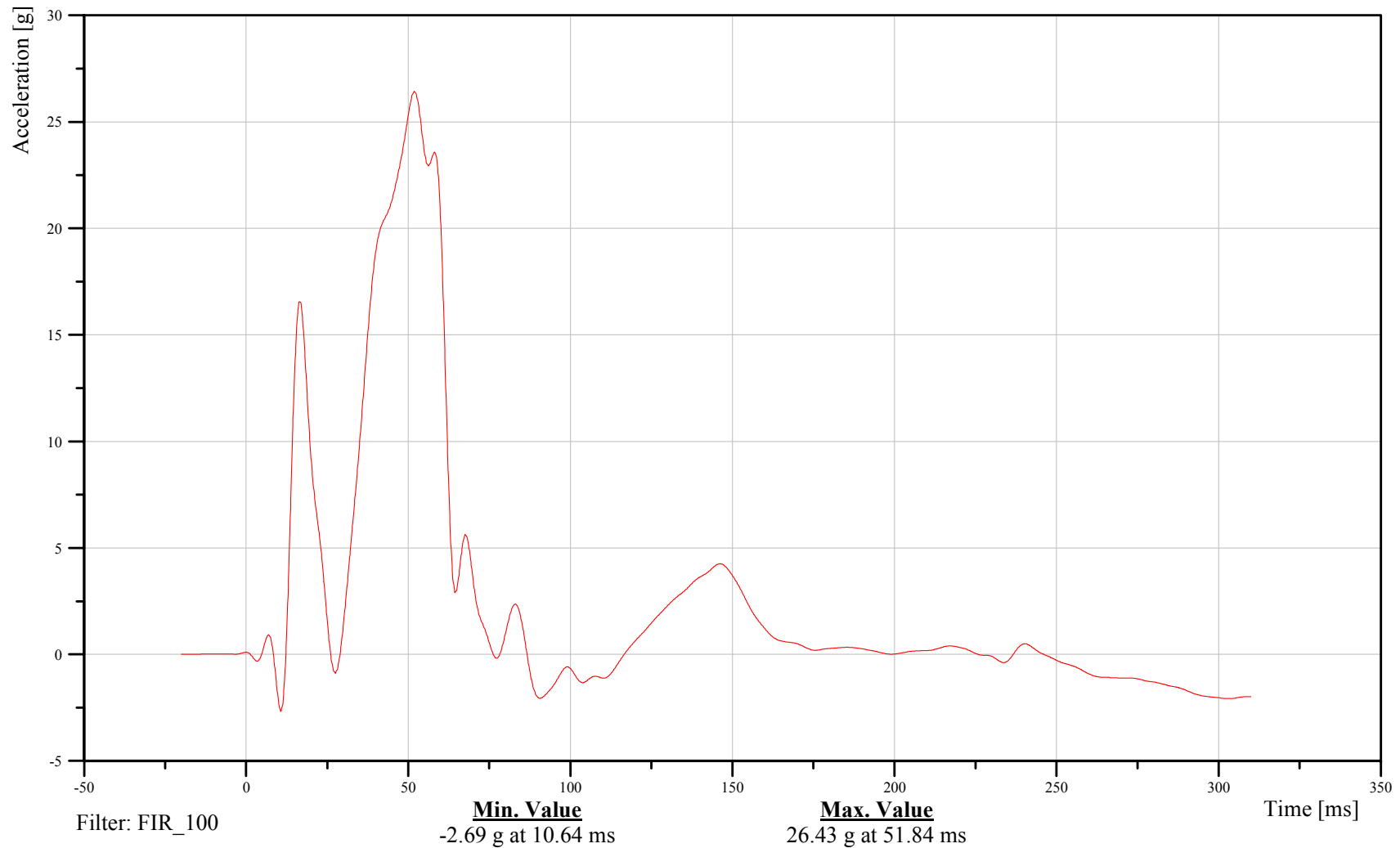
Upper Spine Y

Customer: VRTC

11SPIN0100E2ACY1

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

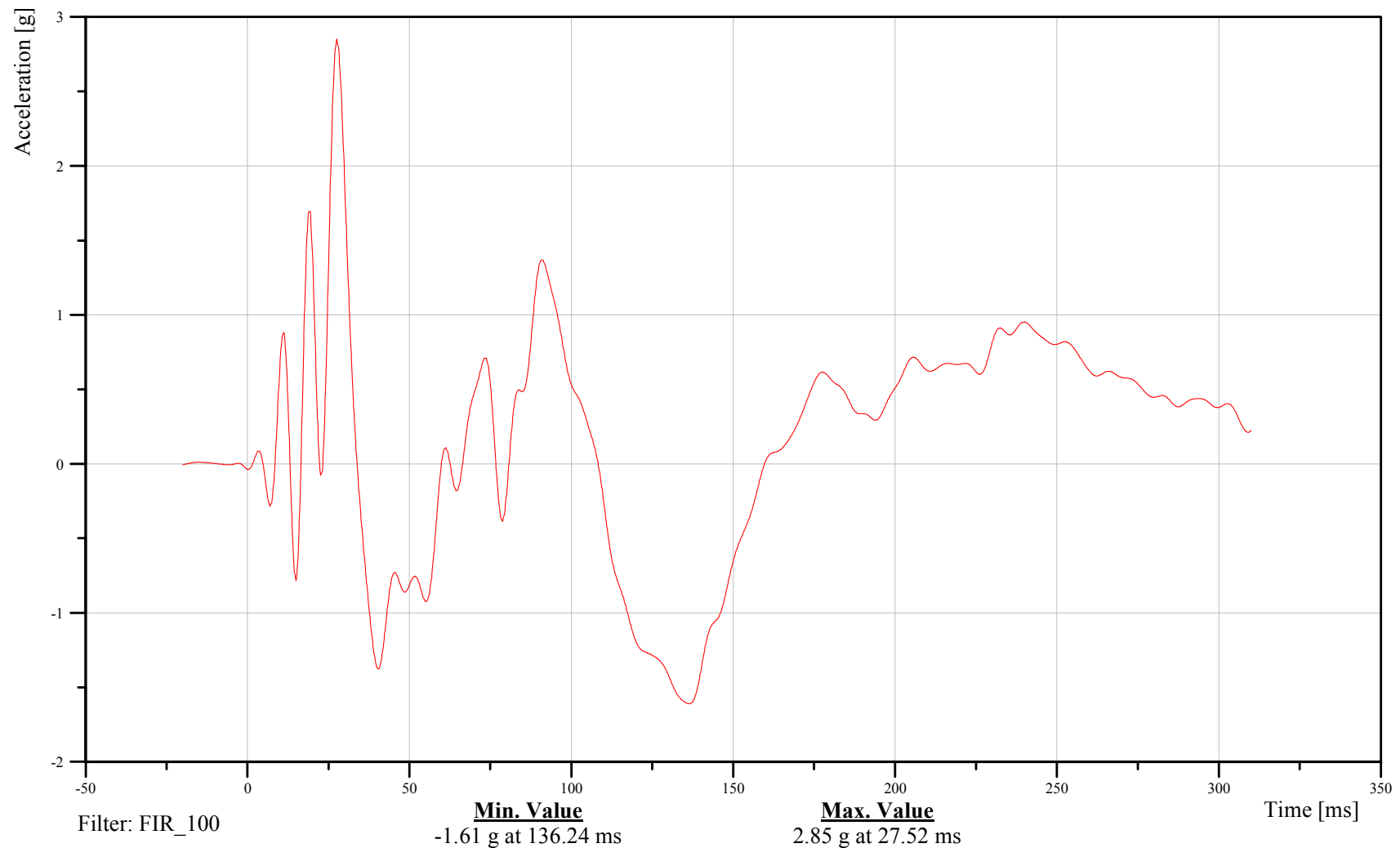
Upper Spine Z

Customer: VRTC

11SPIN0100E2ACZ1

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

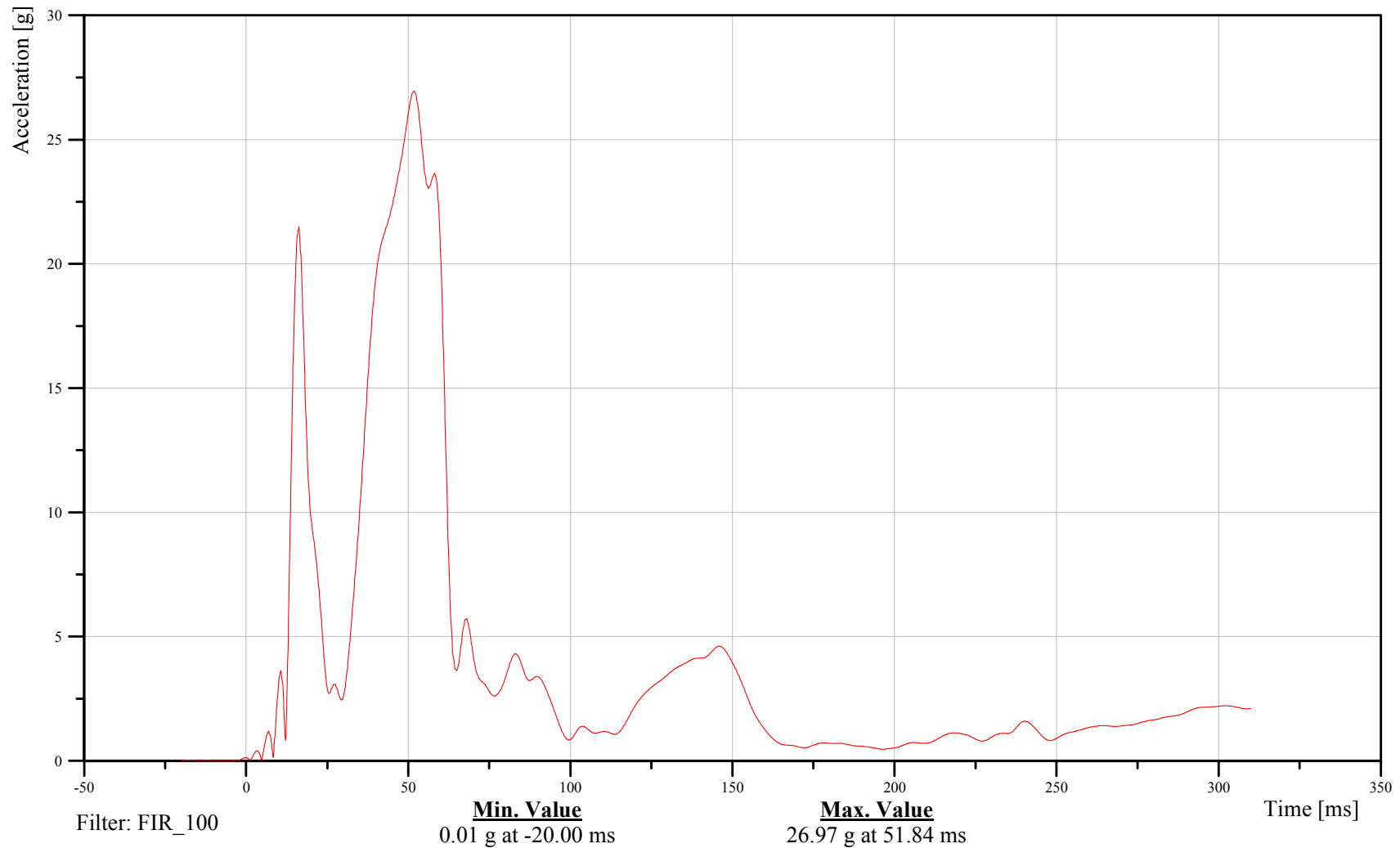
Upper Spine Resultant

Customer: VRTC

11SPIN0100E2ACR1

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

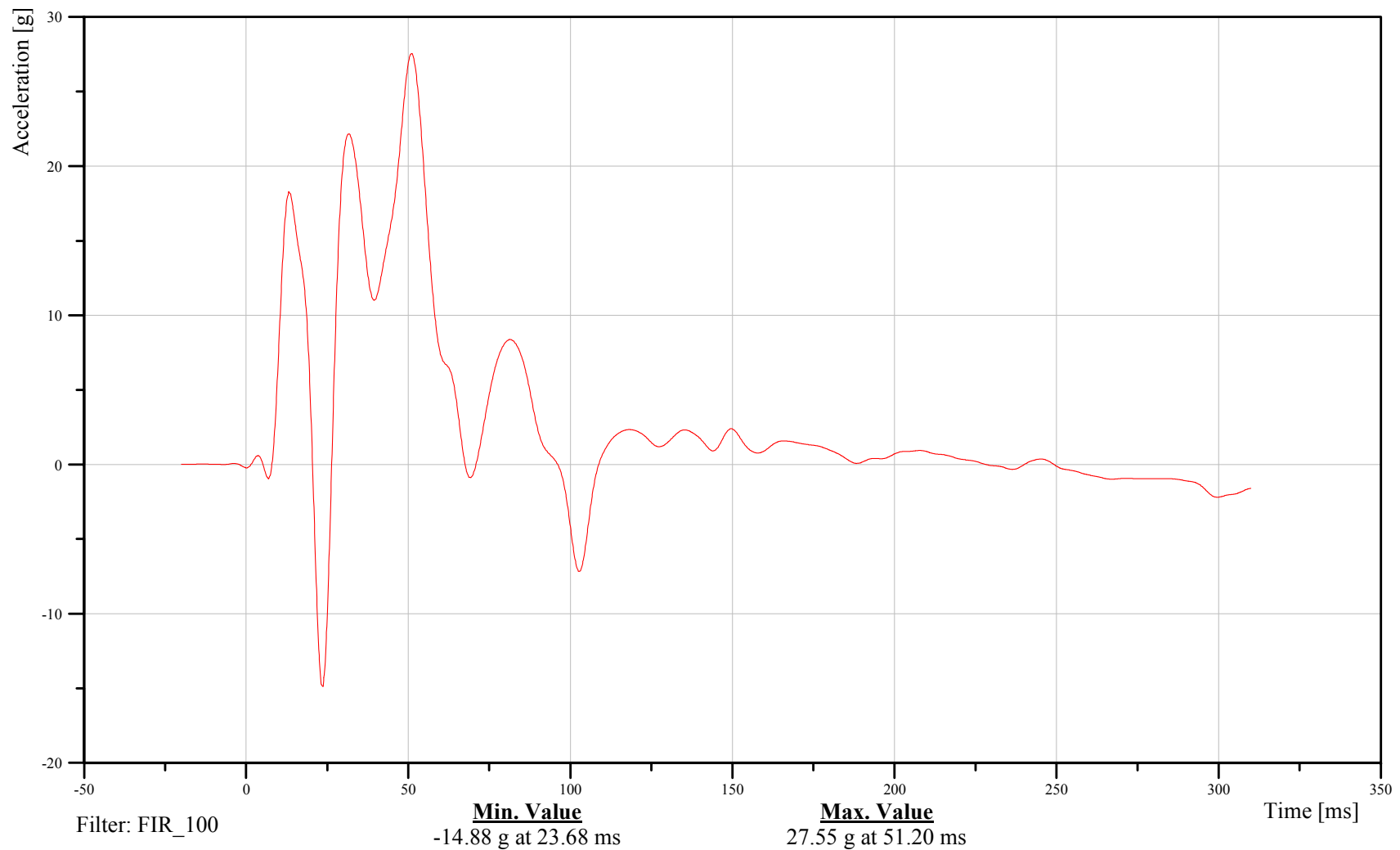
Upper Rib Accel Y

Customer: VRTC

11RIBSLU00E2ACY1

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

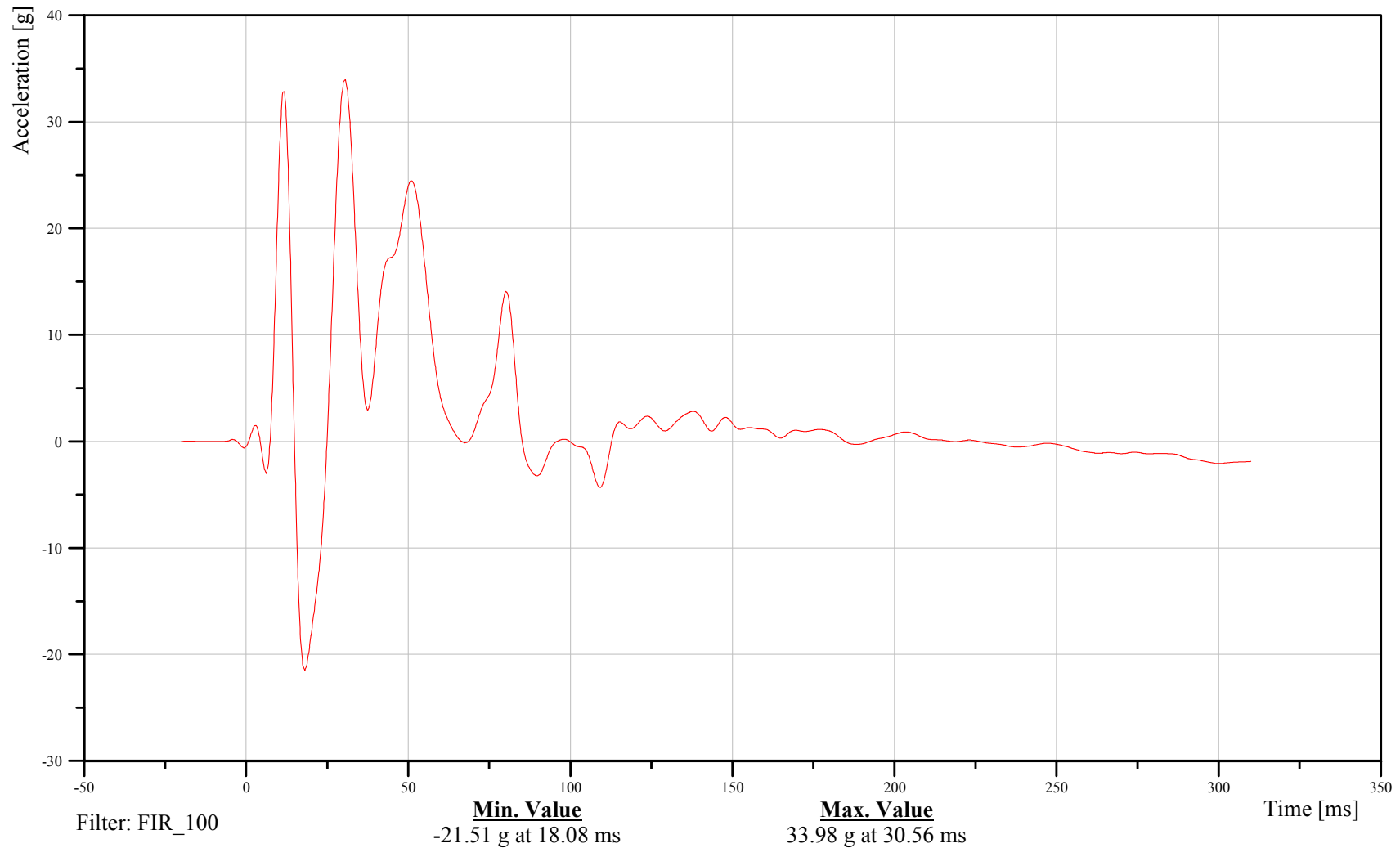
Mid Rib Accel Y

Customer: VRTC

11RIBSLM00E2ACY1

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

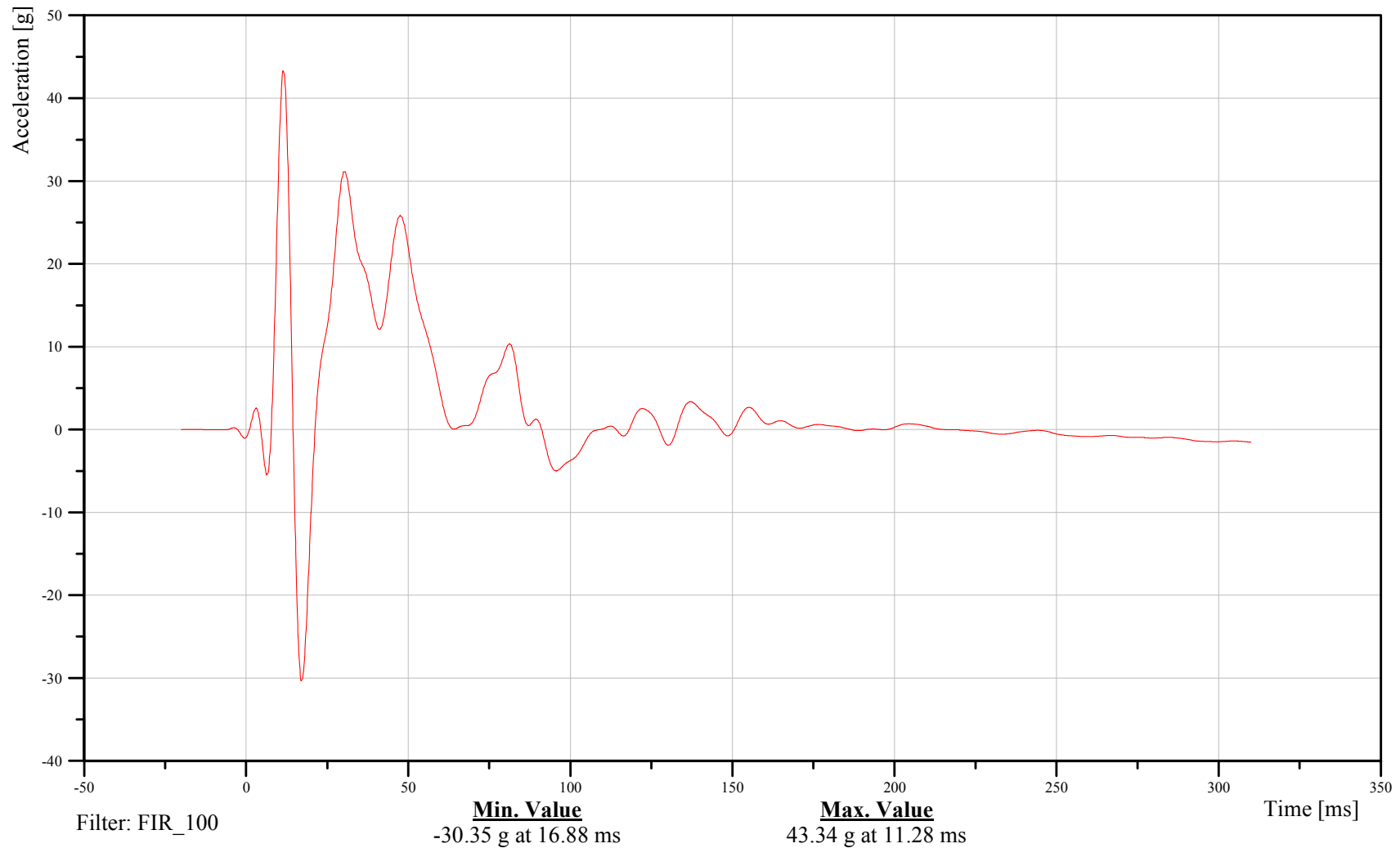
Lower Rib Accel Y

Customer: VRTC

11RIBSLL00E2ACY1

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

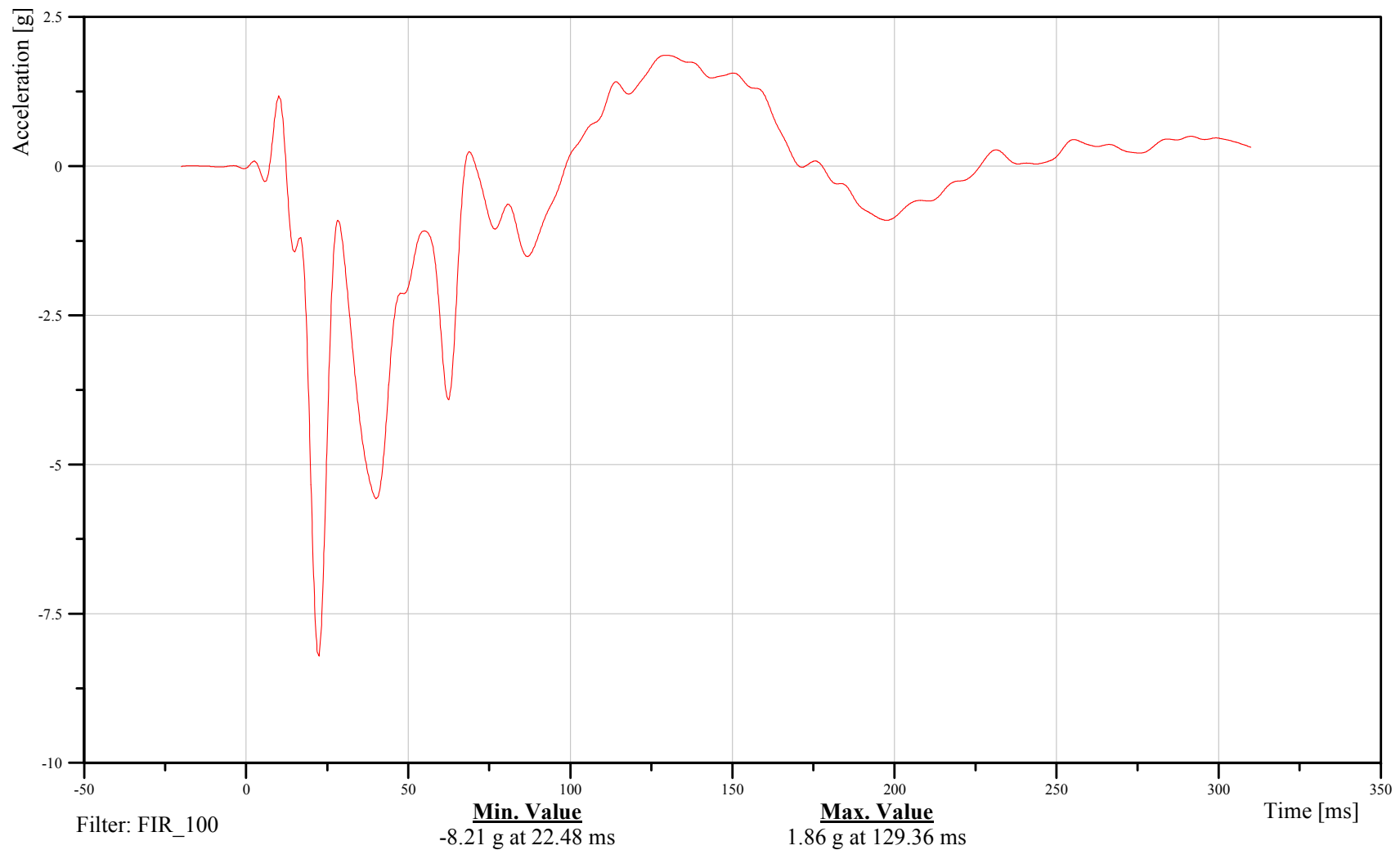
Lower Spine X

Customer: VRTC

11SPIN1200E2ACX1

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

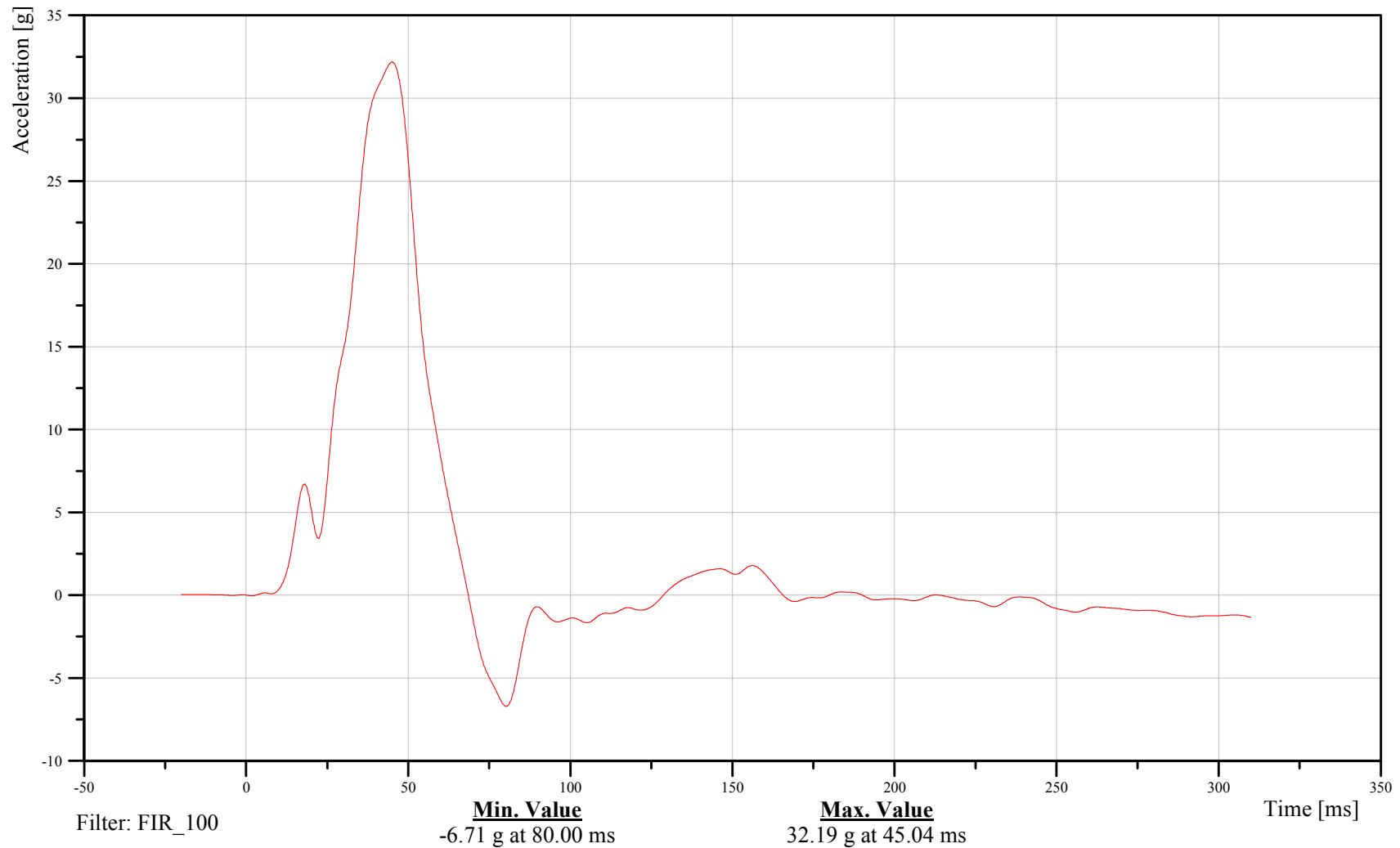
Lower Spine Y

Customer: VRTC

11SPIN1200E2ACY1

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

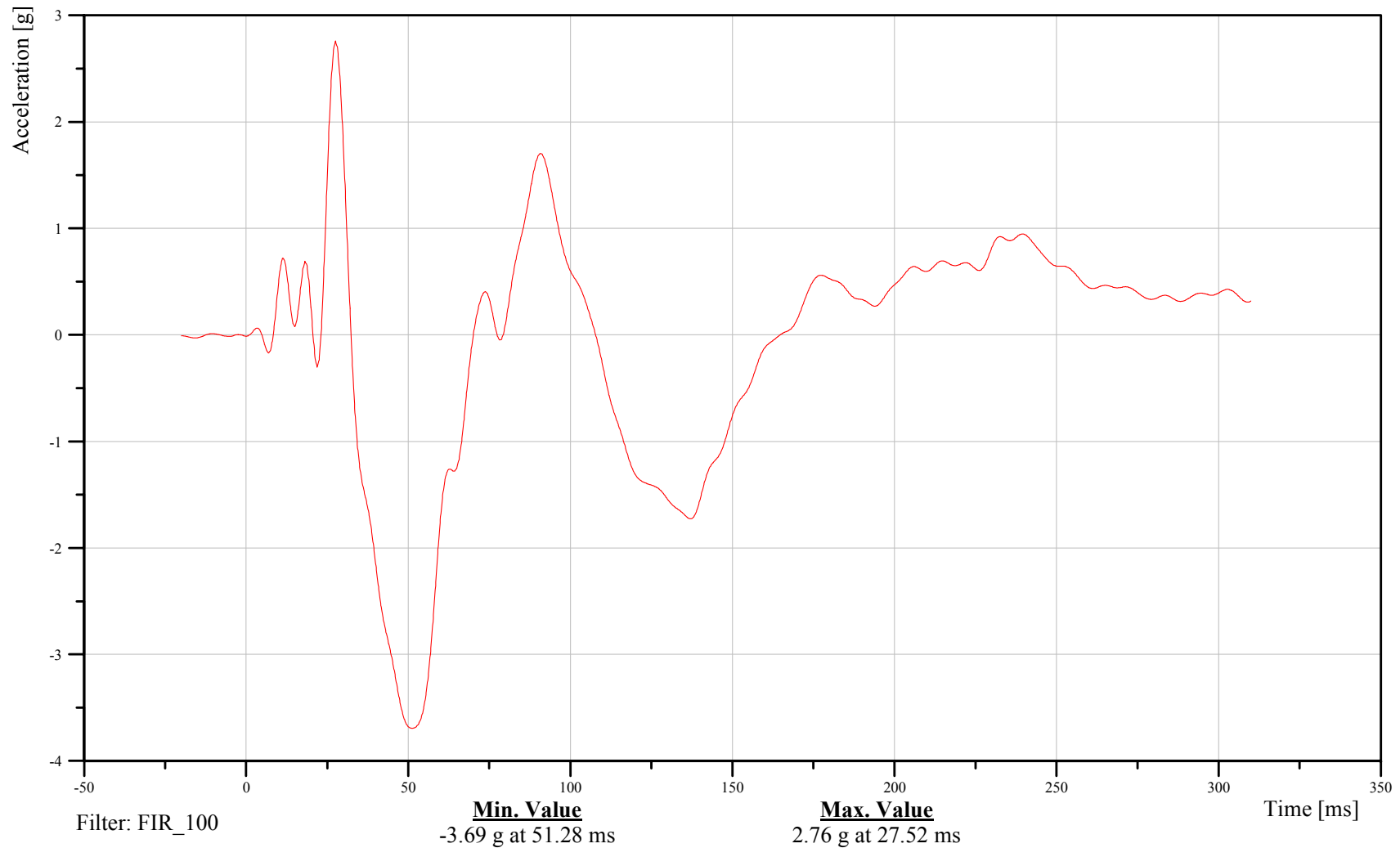
Lower Spine Z

Customer: VRTC

11SPIN1200E2ACZ1

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

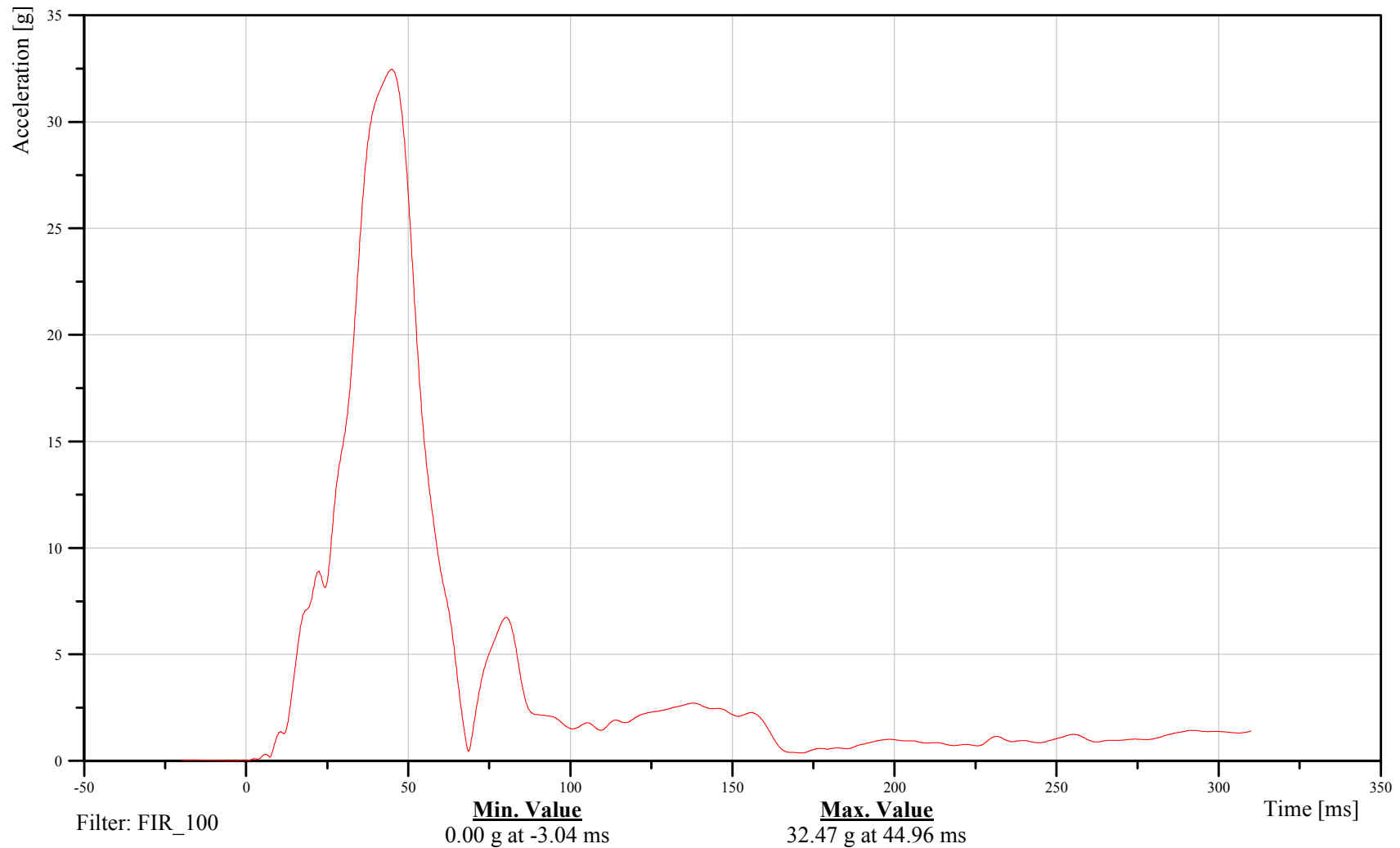
Lower Spine Resultant

Customer: VRTC

11SPIN1200E2ACR1

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

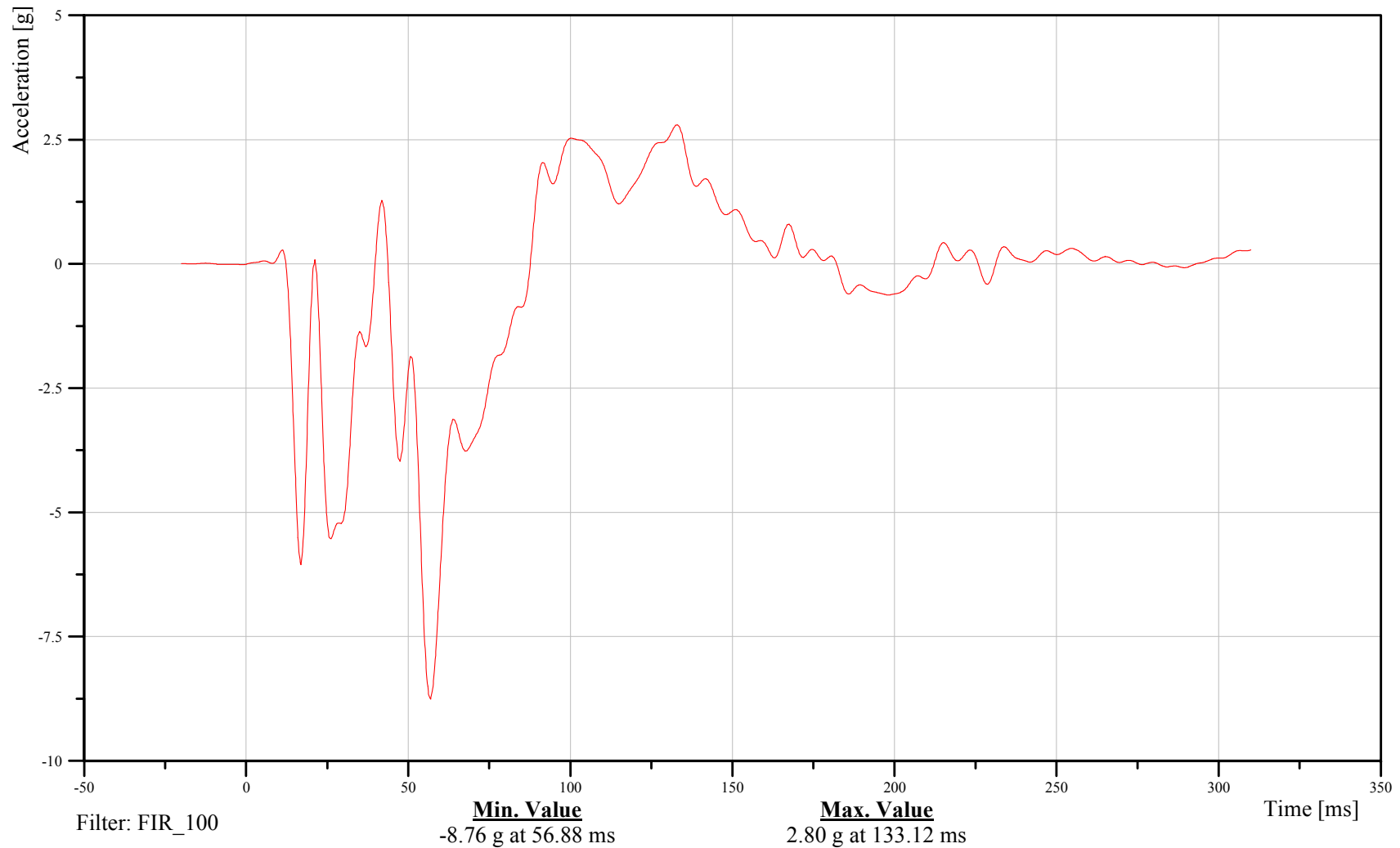
Pelvis Accel X

Customer: VRTC

11PELVCG00E2ACX1

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

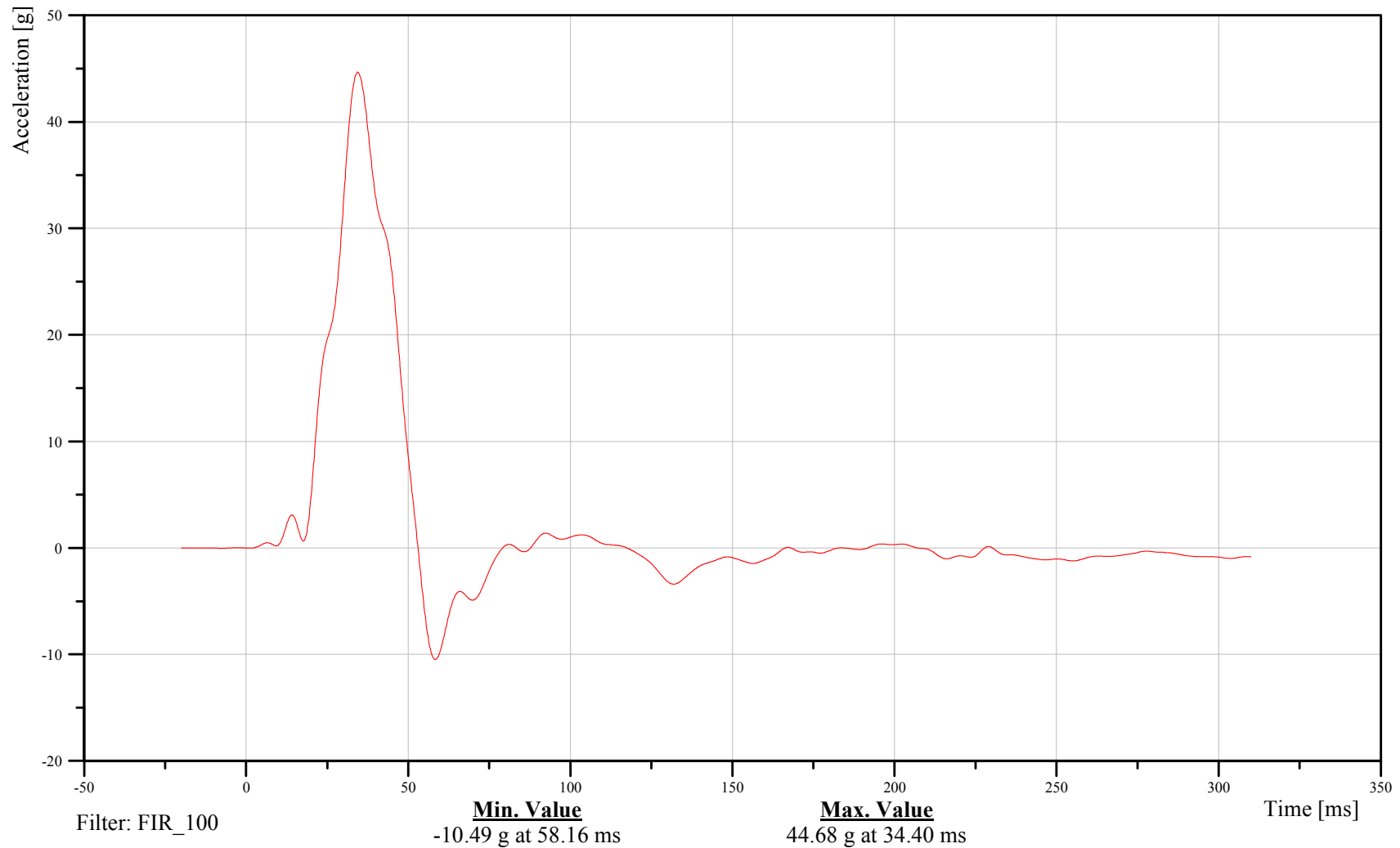
Pelvis Accel Y

Customer: VRTC

11PELVCG00E2ACY1

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

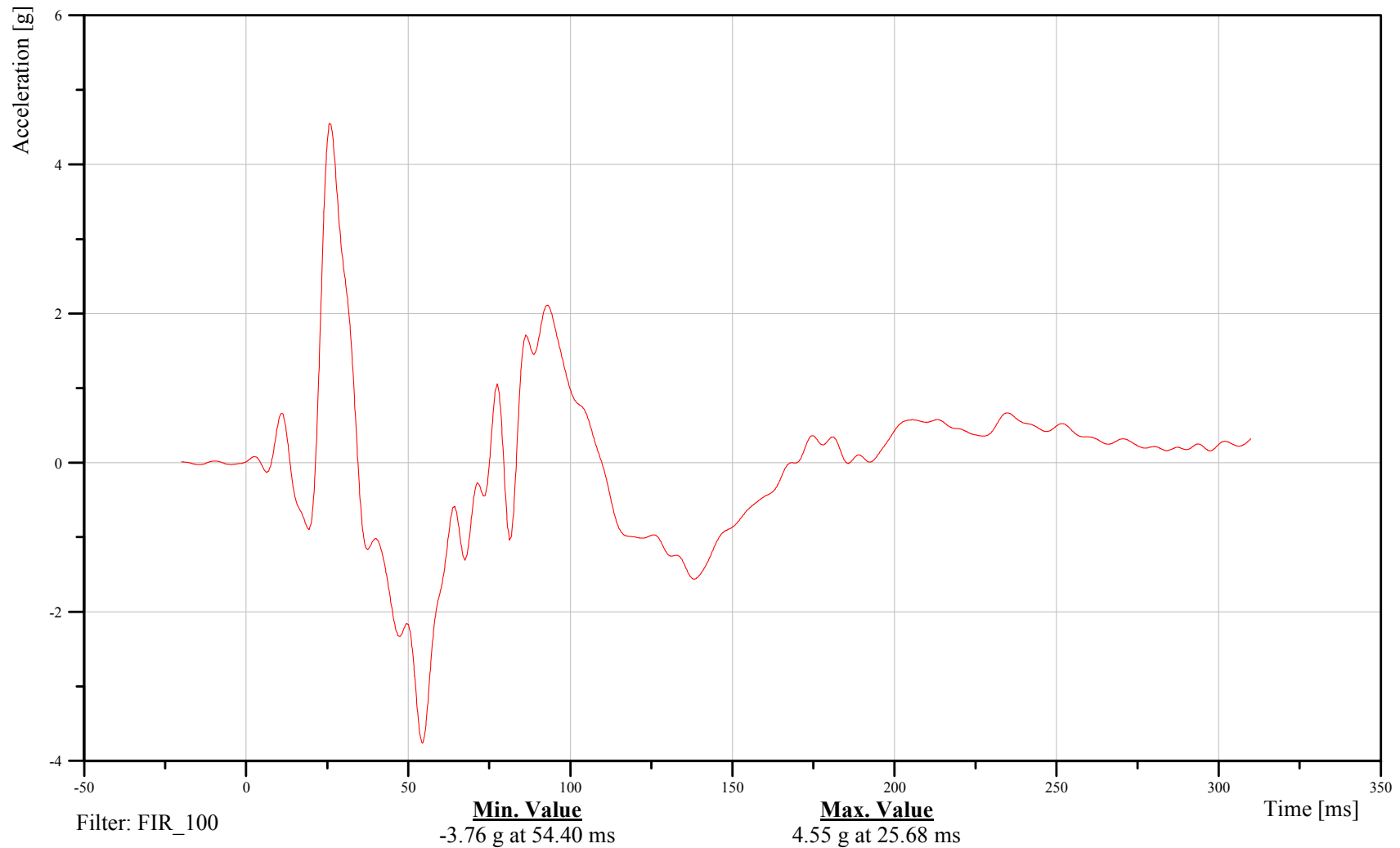
Pelvis Accel Z

Customer: VRTC

11PELVCG00E2ACZ1

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

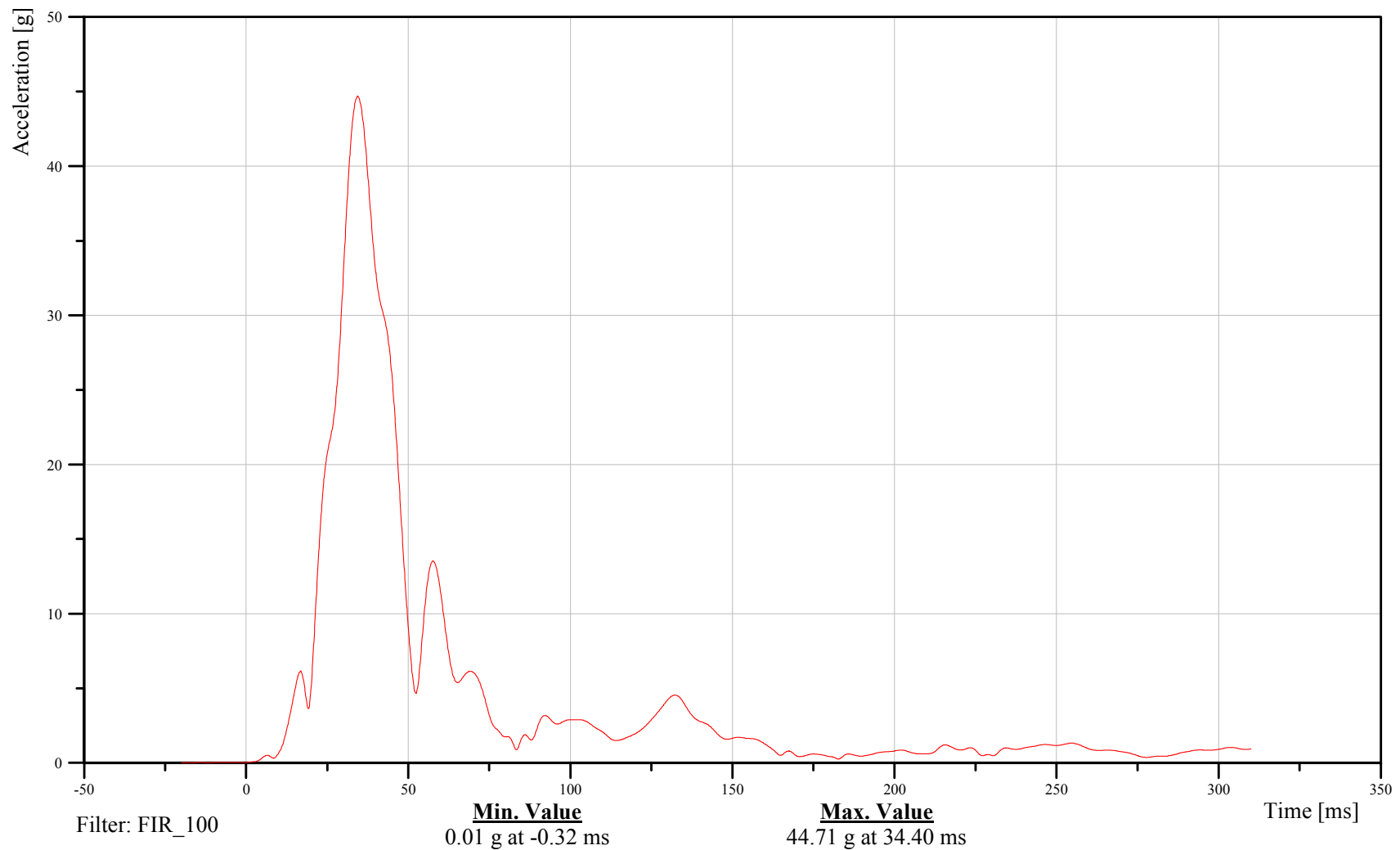
Pelvis Accel Resultant

Customer: VRTC

11PELVCG00E2ACR1

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

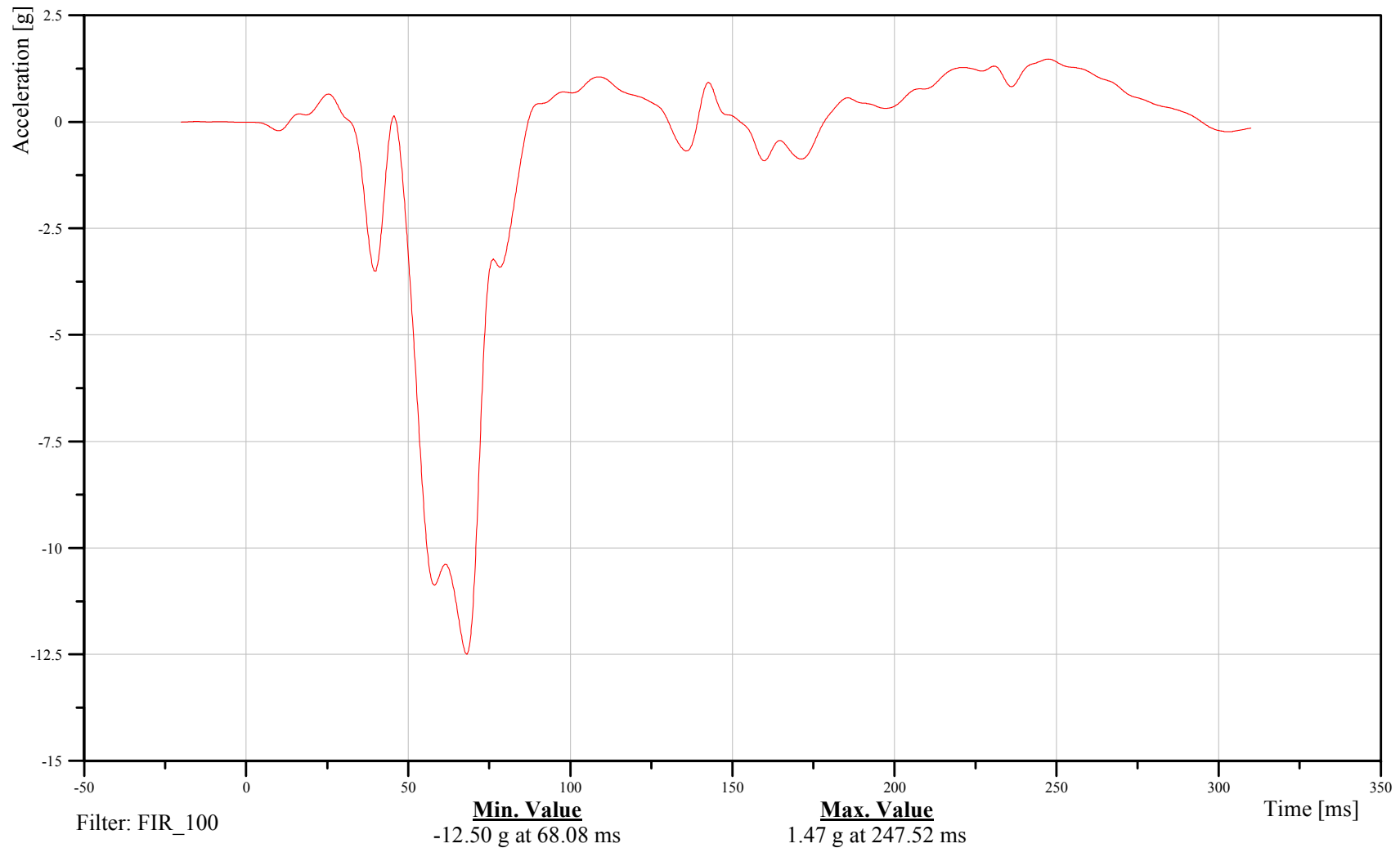
Upper Spine X

Customer: VRTC

14SPIN0100E2ACX1

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

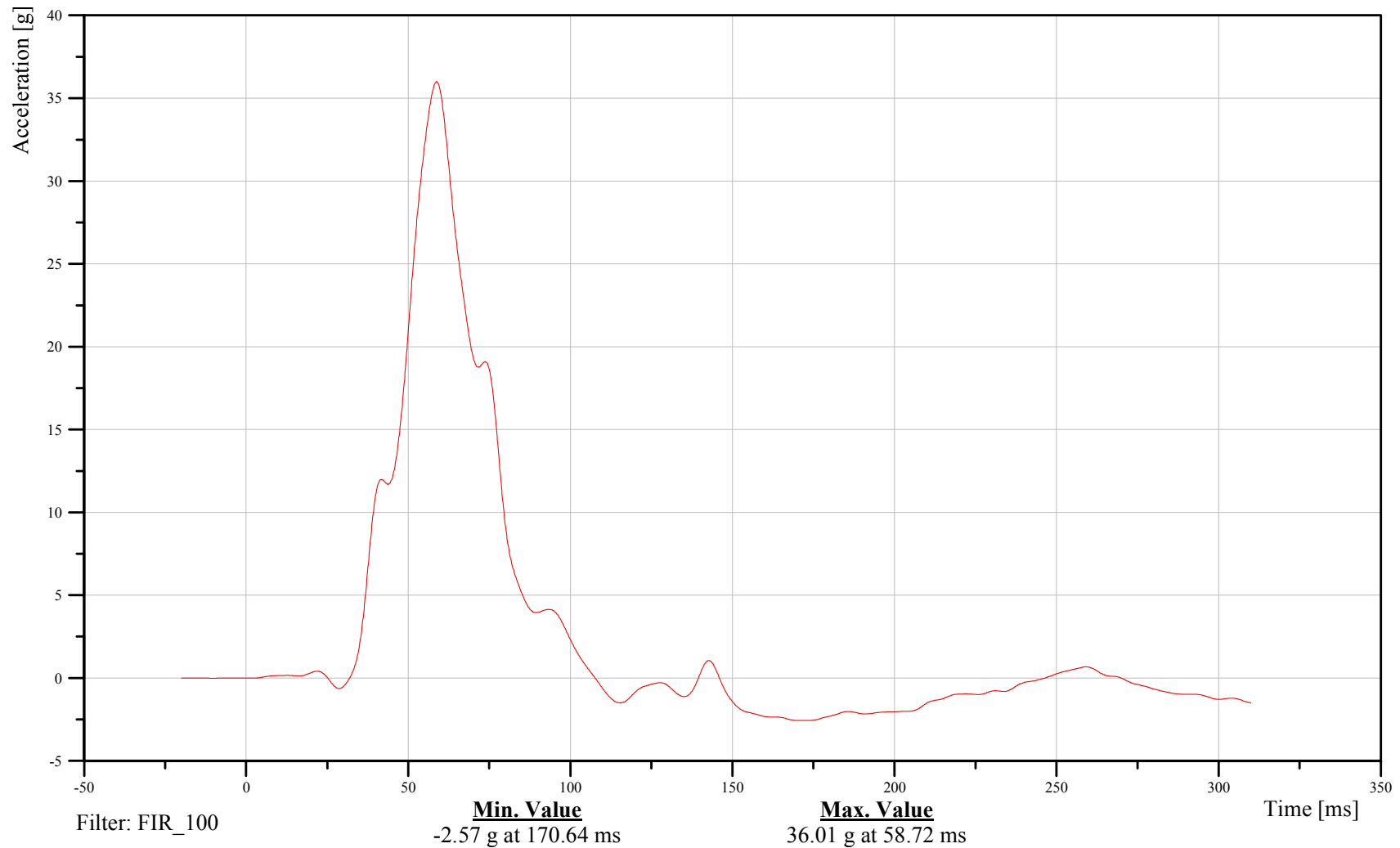
Upper Spine Y

Customer: VRTC

14SPIN0100E2ACY1

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Upper Spine Z

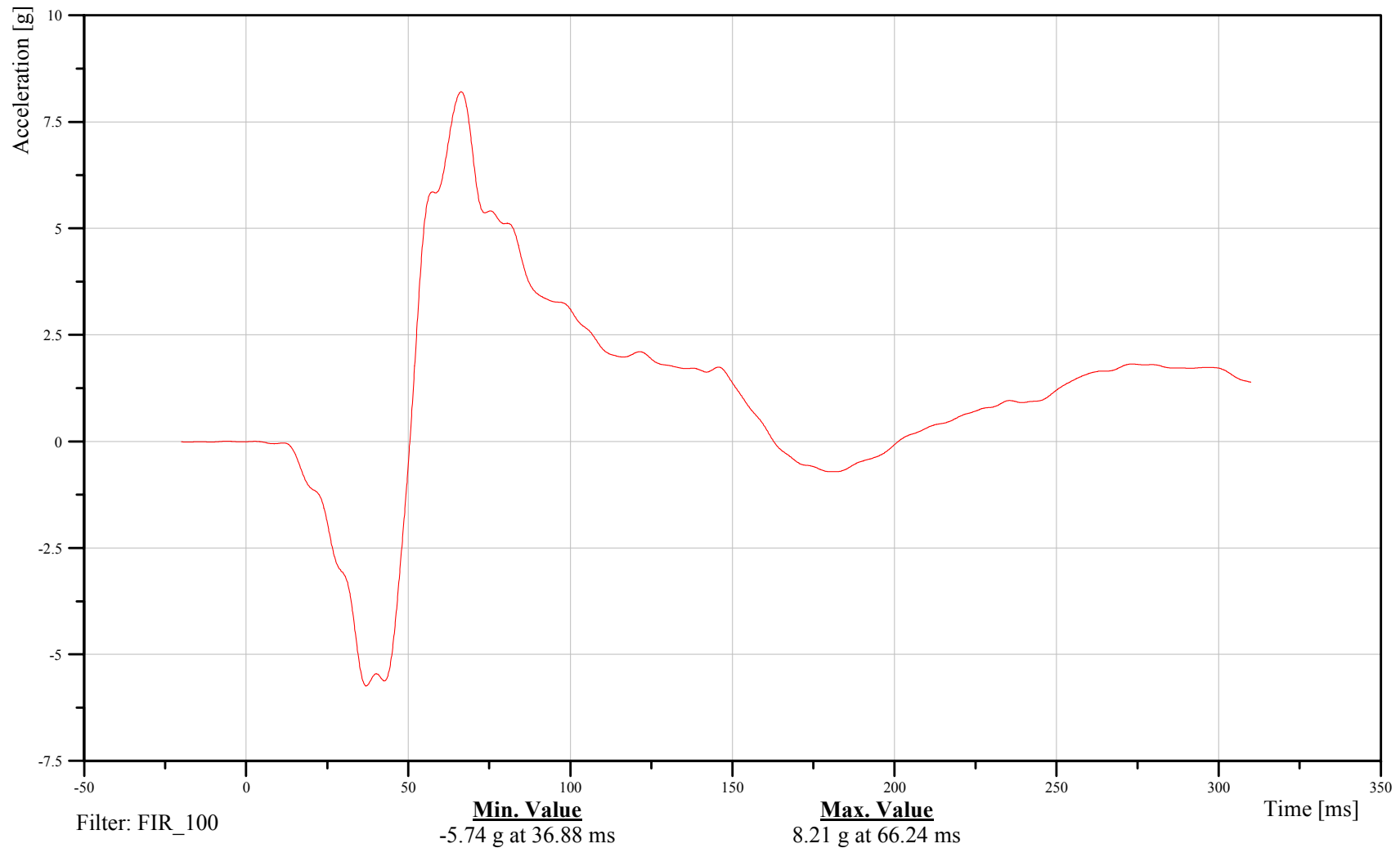
Date: 06/24/2005
Time: 12:02

Customer: VRTC

14SPIN0100E2ACZ1

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

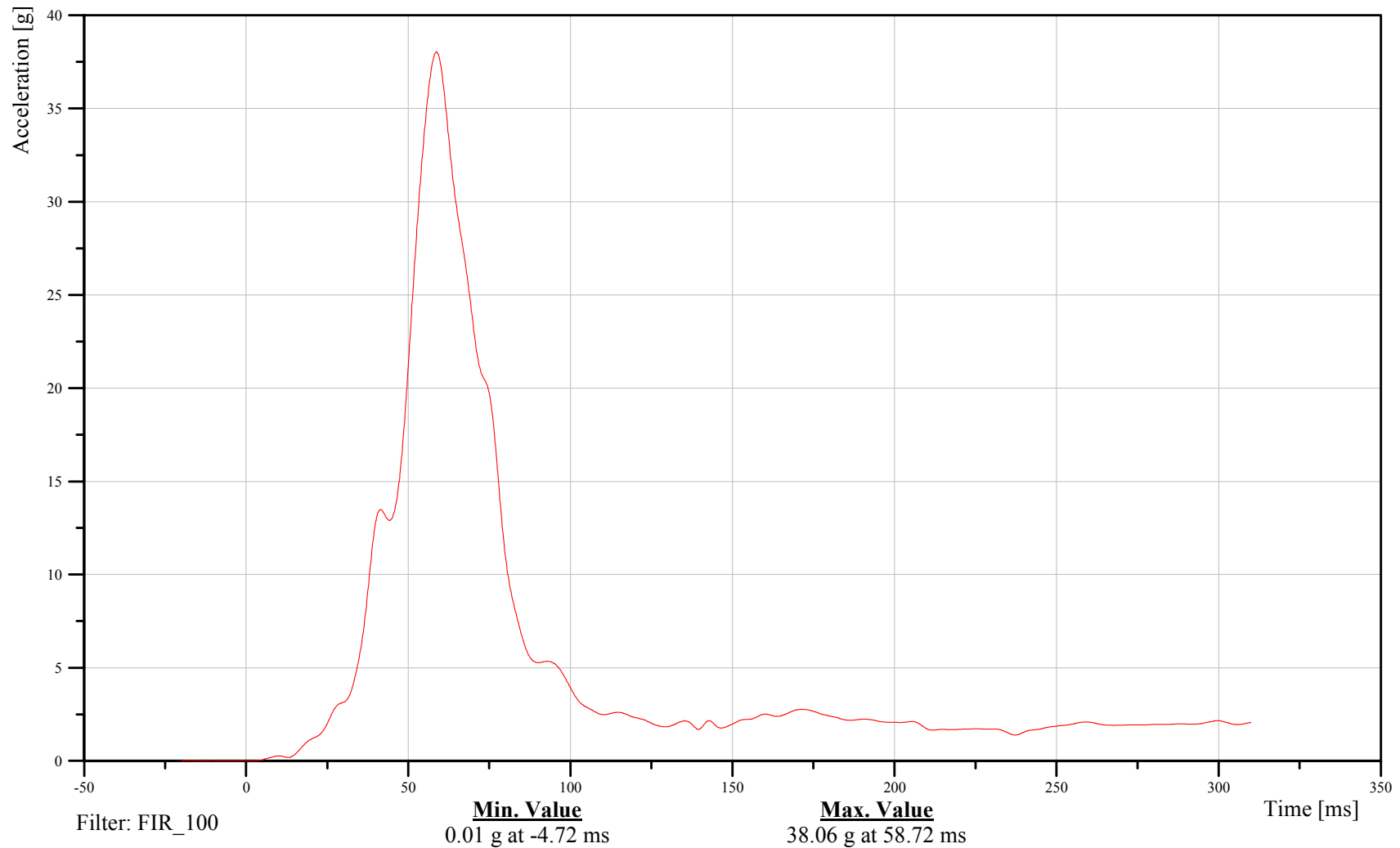
Upper Spine Resultant

Customer: VRTC

14SPIN0100E2ACR1

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

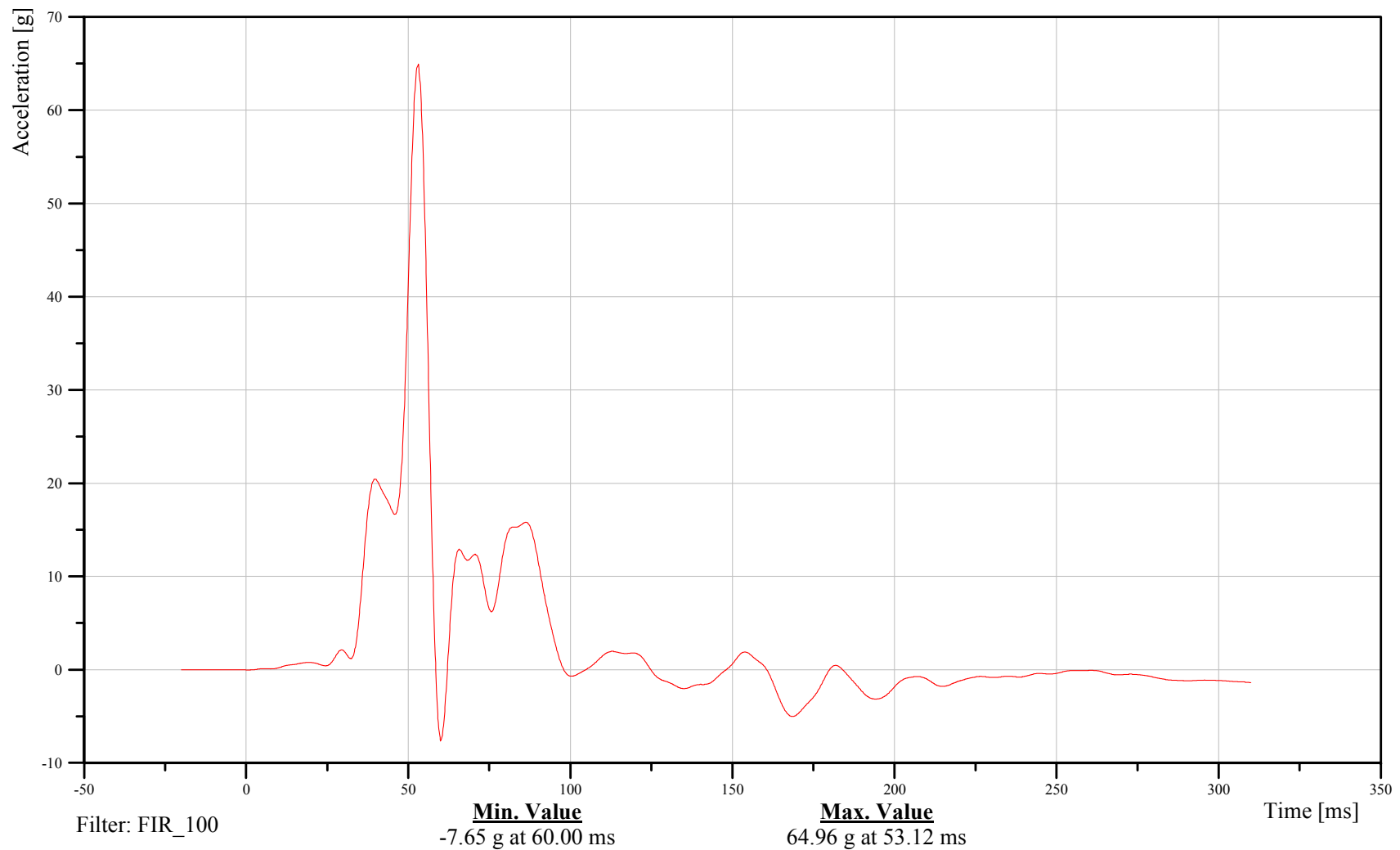
Upper Rib Accel Y

Customer: VRTC

14RIBSLU00E2ACY1

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Mid Rib Accel Y

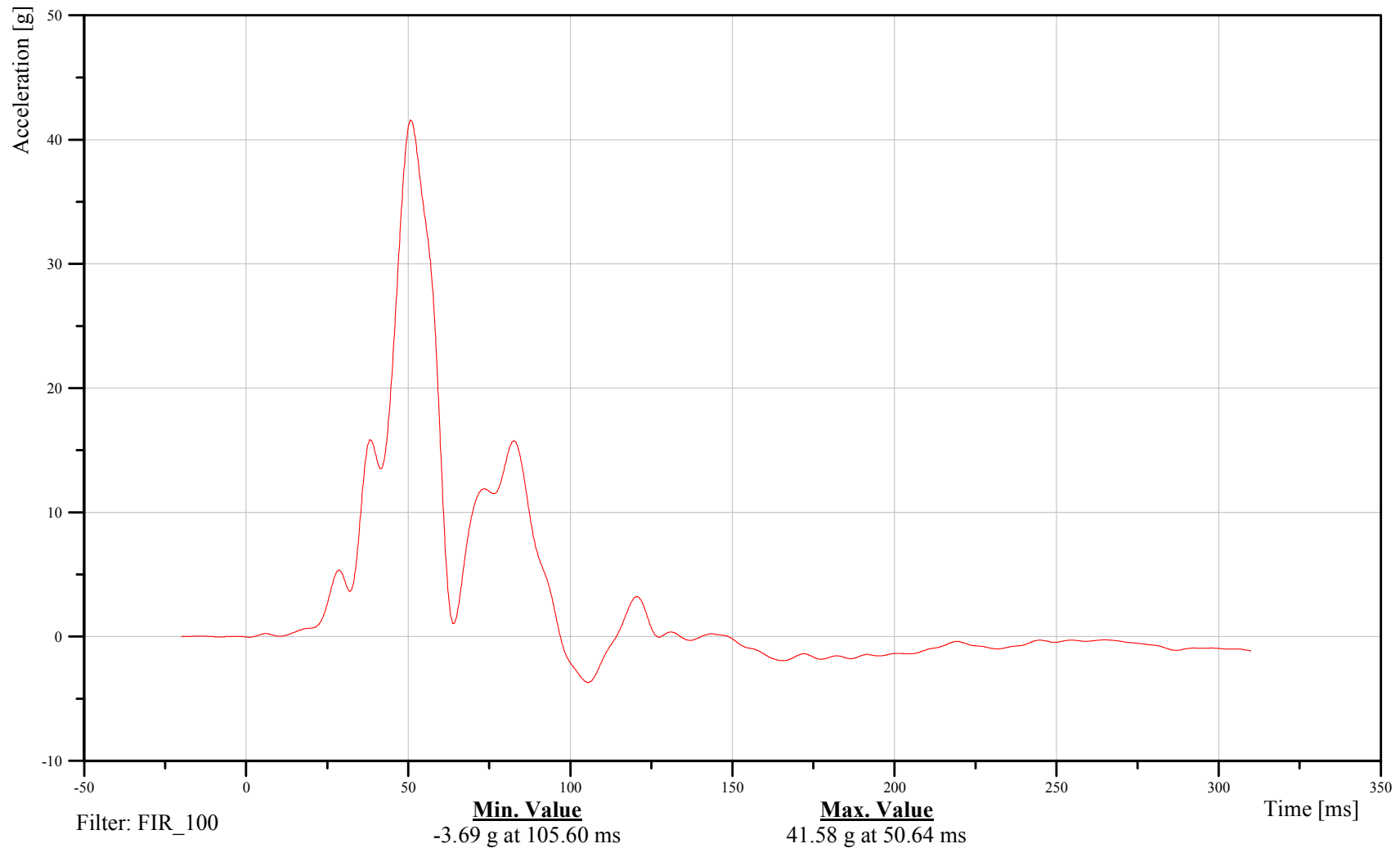
Date: 06/24/2005
Time: 12:02

Customer: VRTC

14RIBSLM00E2ACY1

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

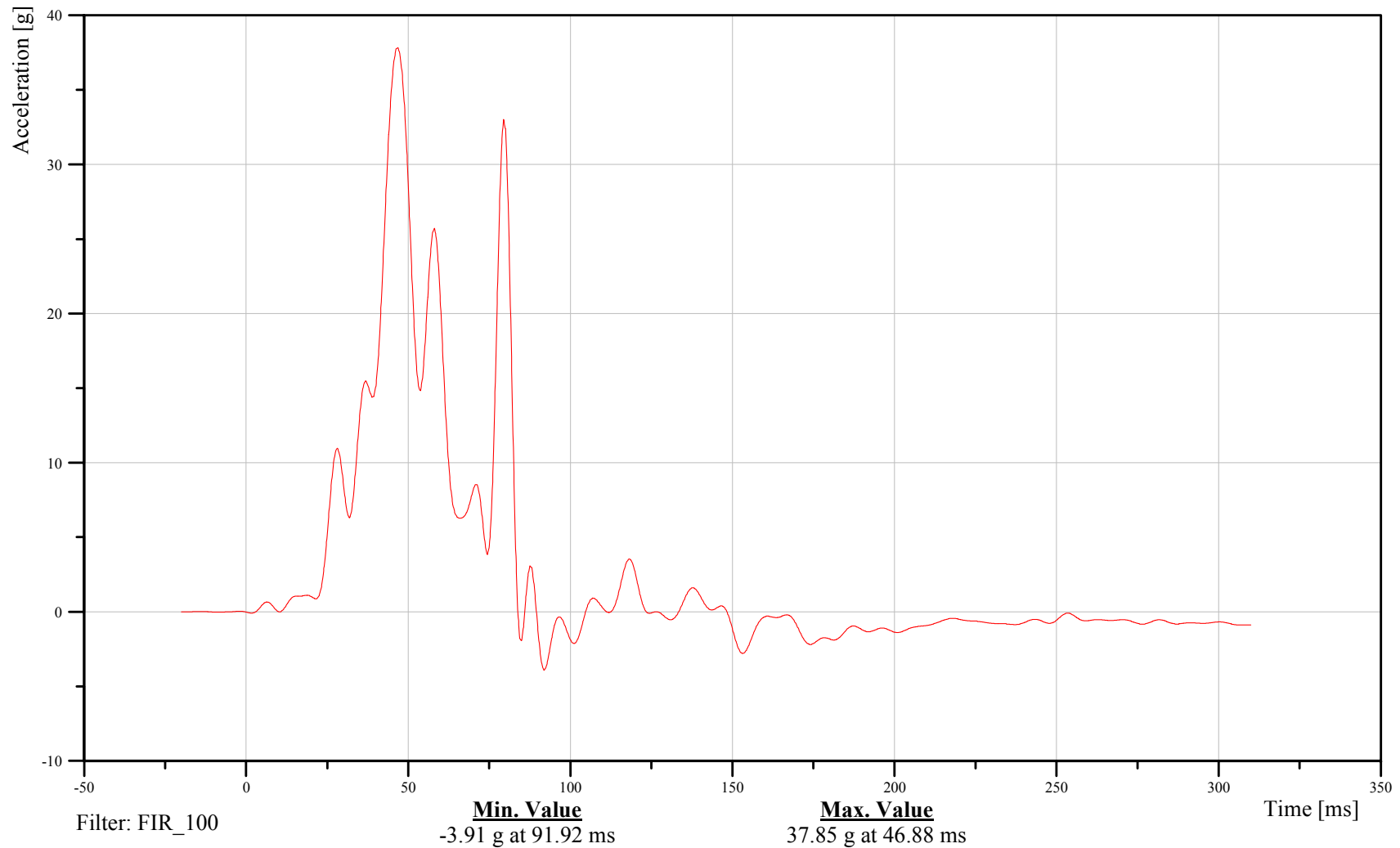
Lower Rib Accel Y

Customer: VRTC

14RIBSLL00E2ACY1

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

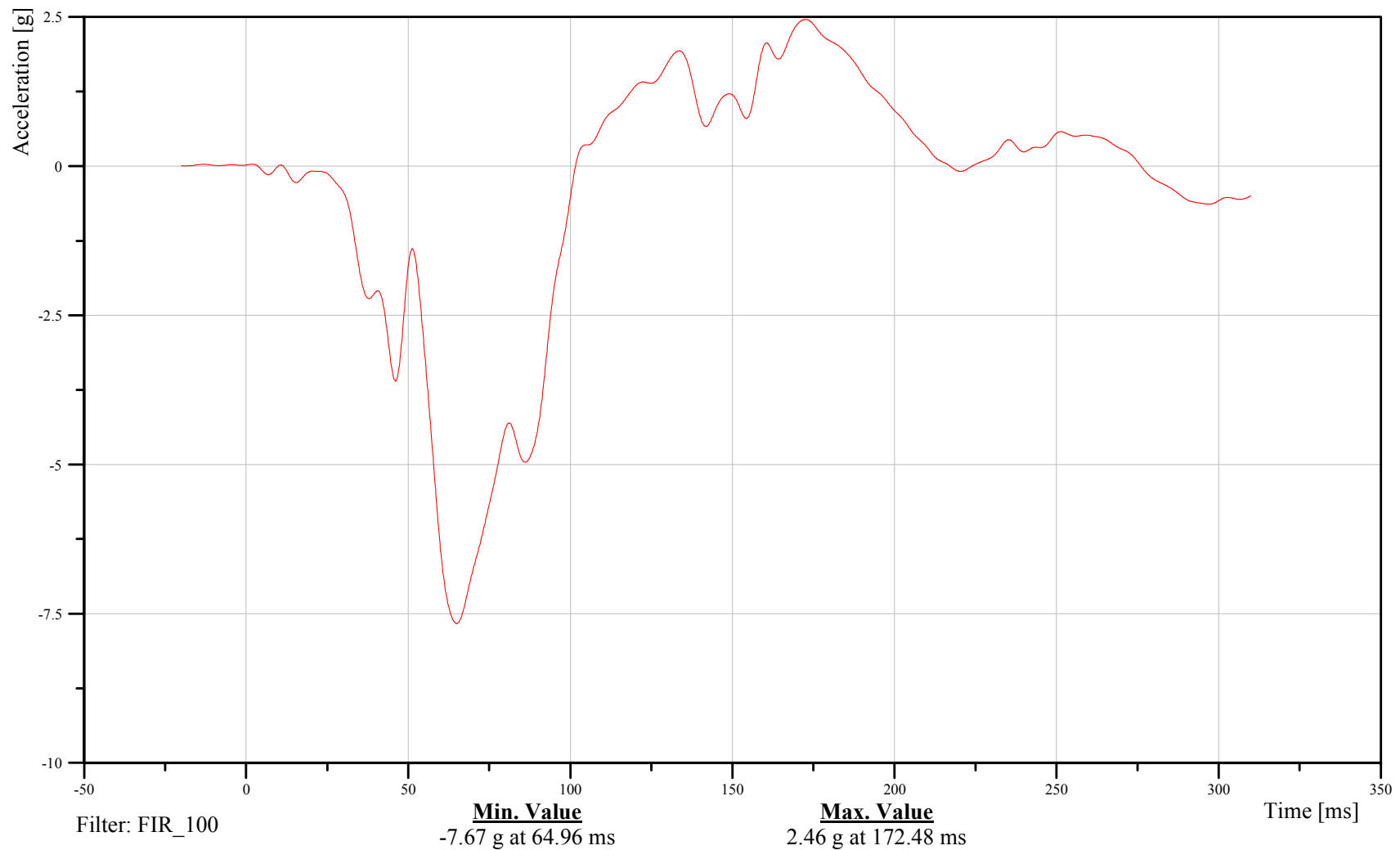
Lower Spine X

Customer: VRTC

14SPIN1200E2ACX1

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

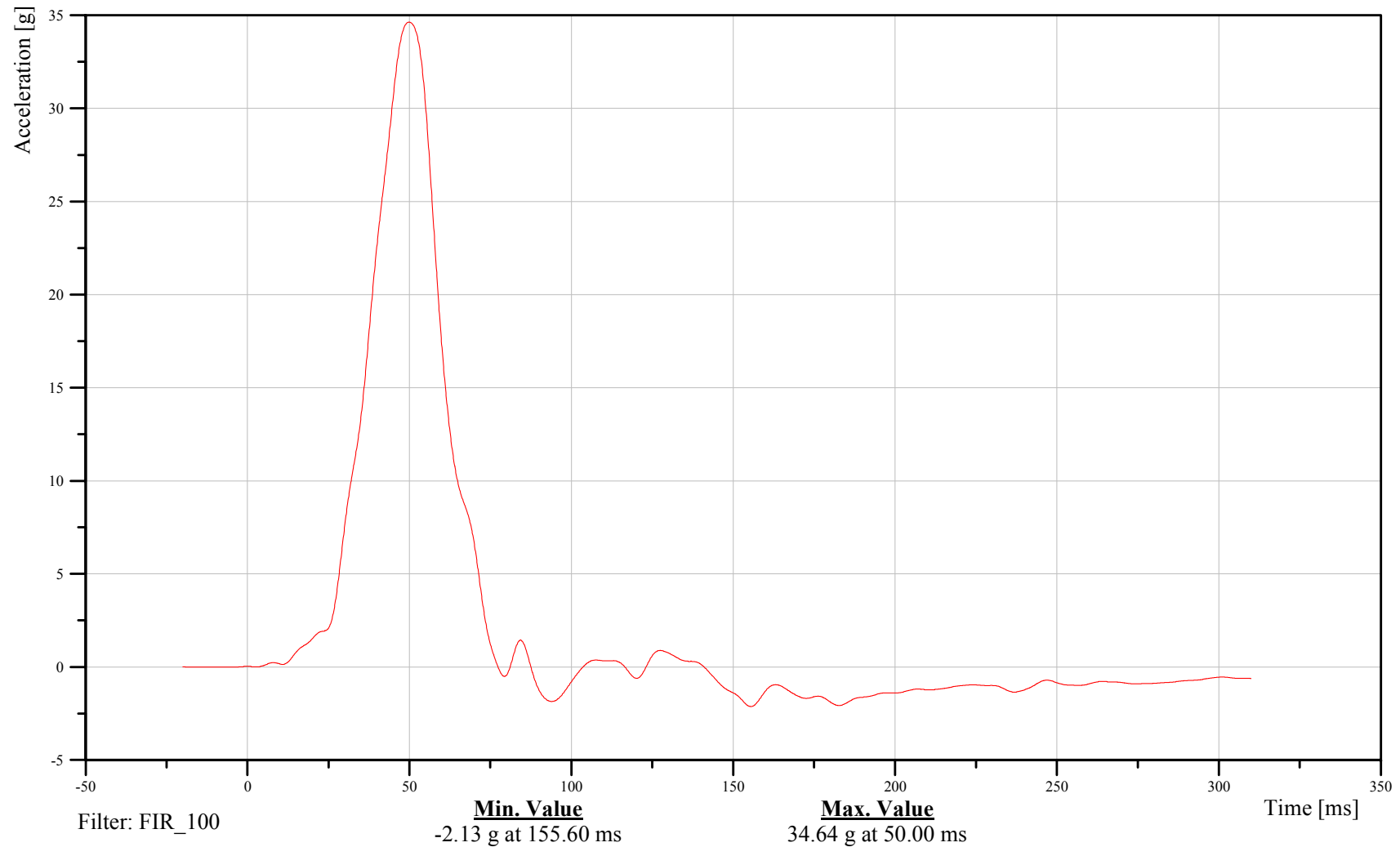
Lower Spine Y

Customer: VRTC

14SPIN1200E2ACY1

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

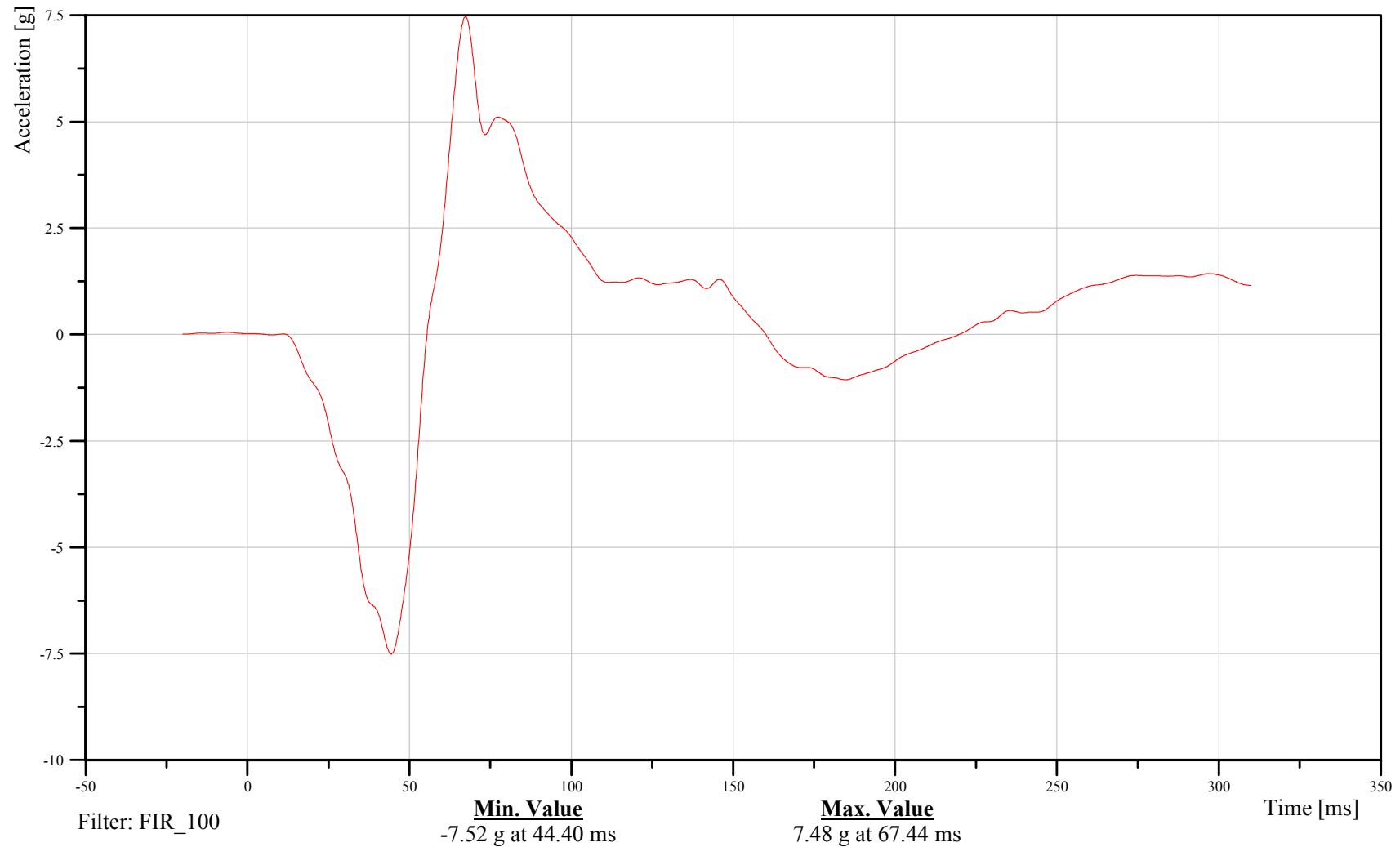
Lower Spine Z

Customer: VRTC

14SPIN1200E2ACZ1

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

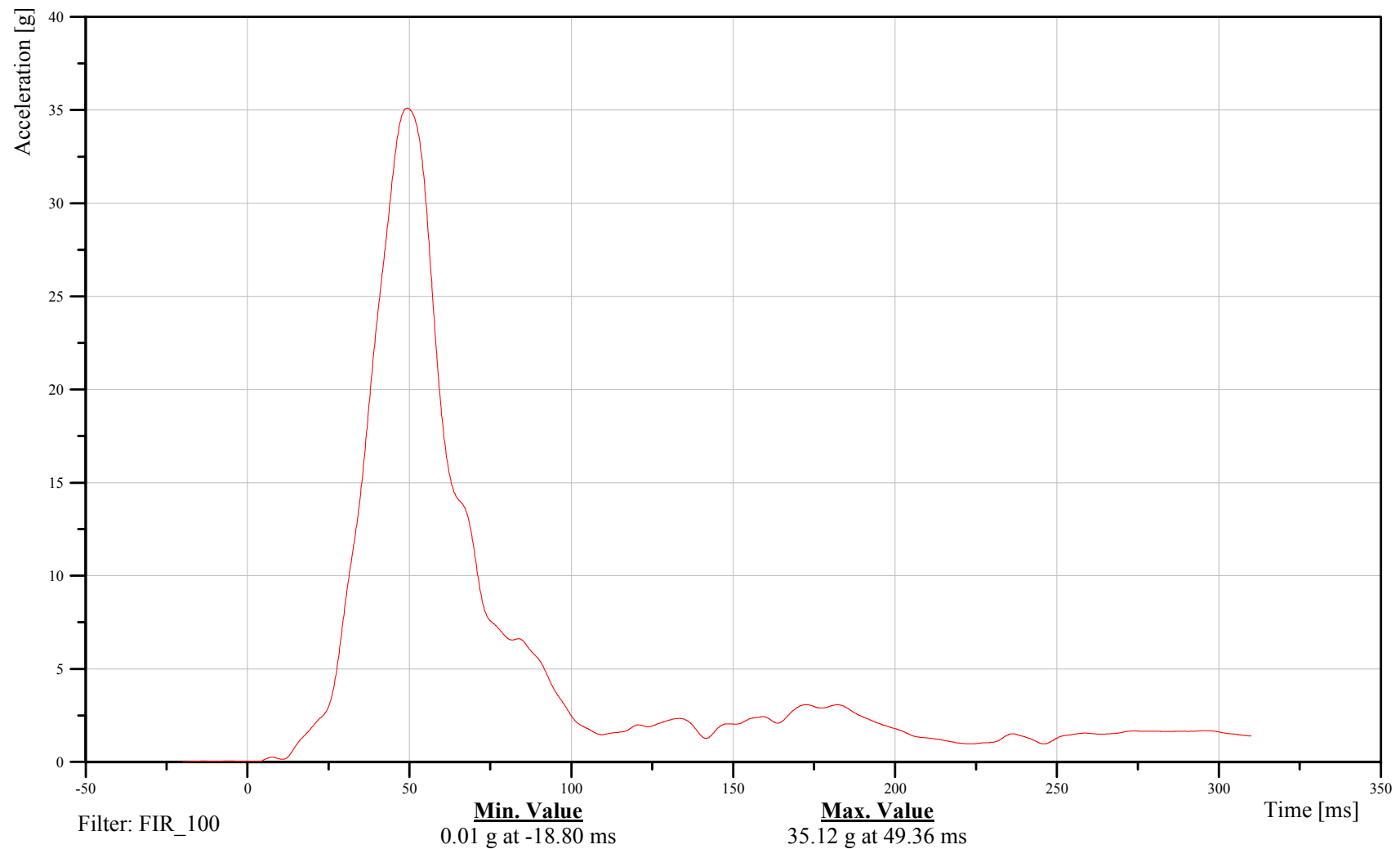
Lower Spine Resultant

Customer: VRTC

14SPIN1200E2ACR1

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

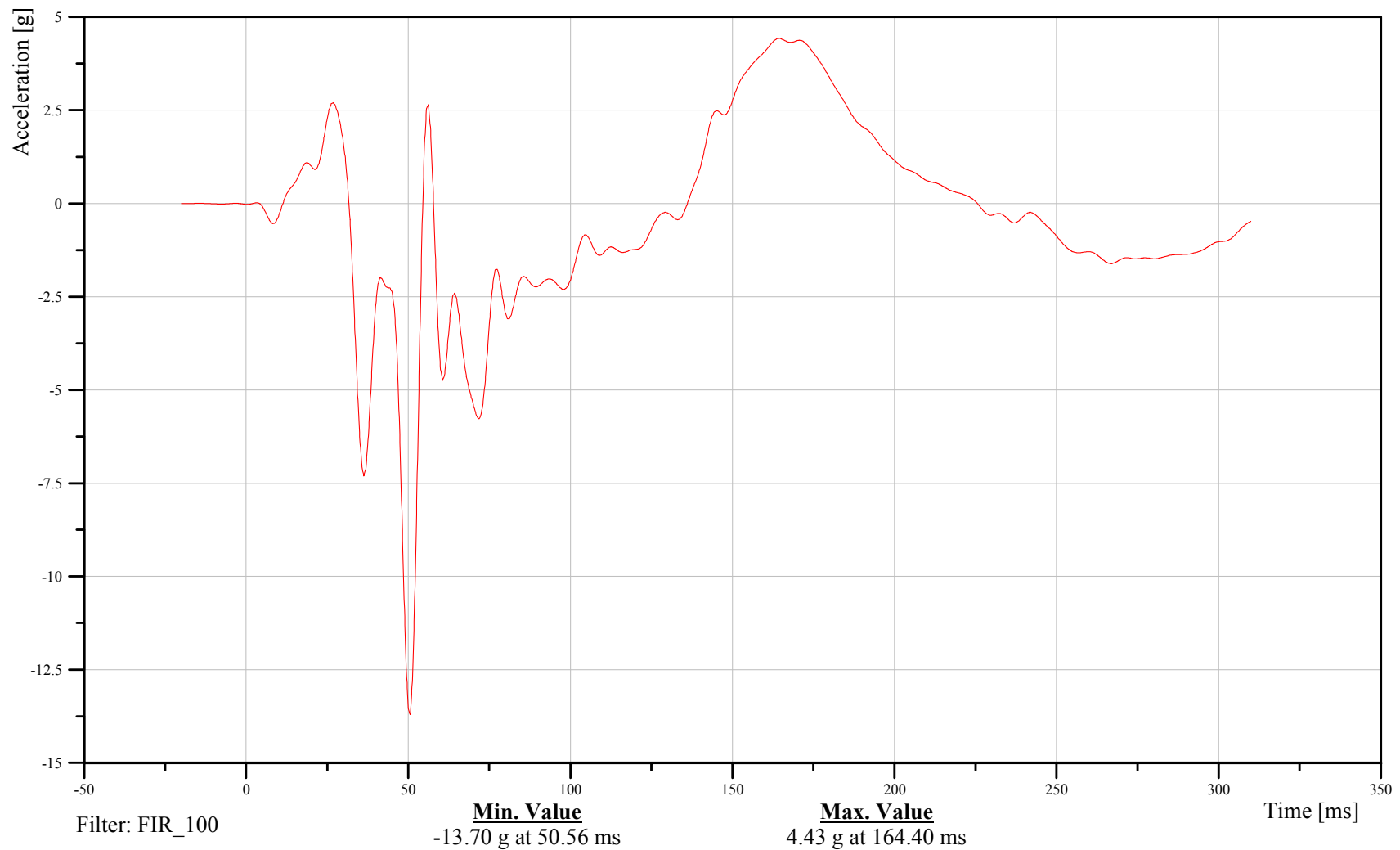
Pelvis Accel X

Customer: VRTC

14PELVCG00E2ACX1

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

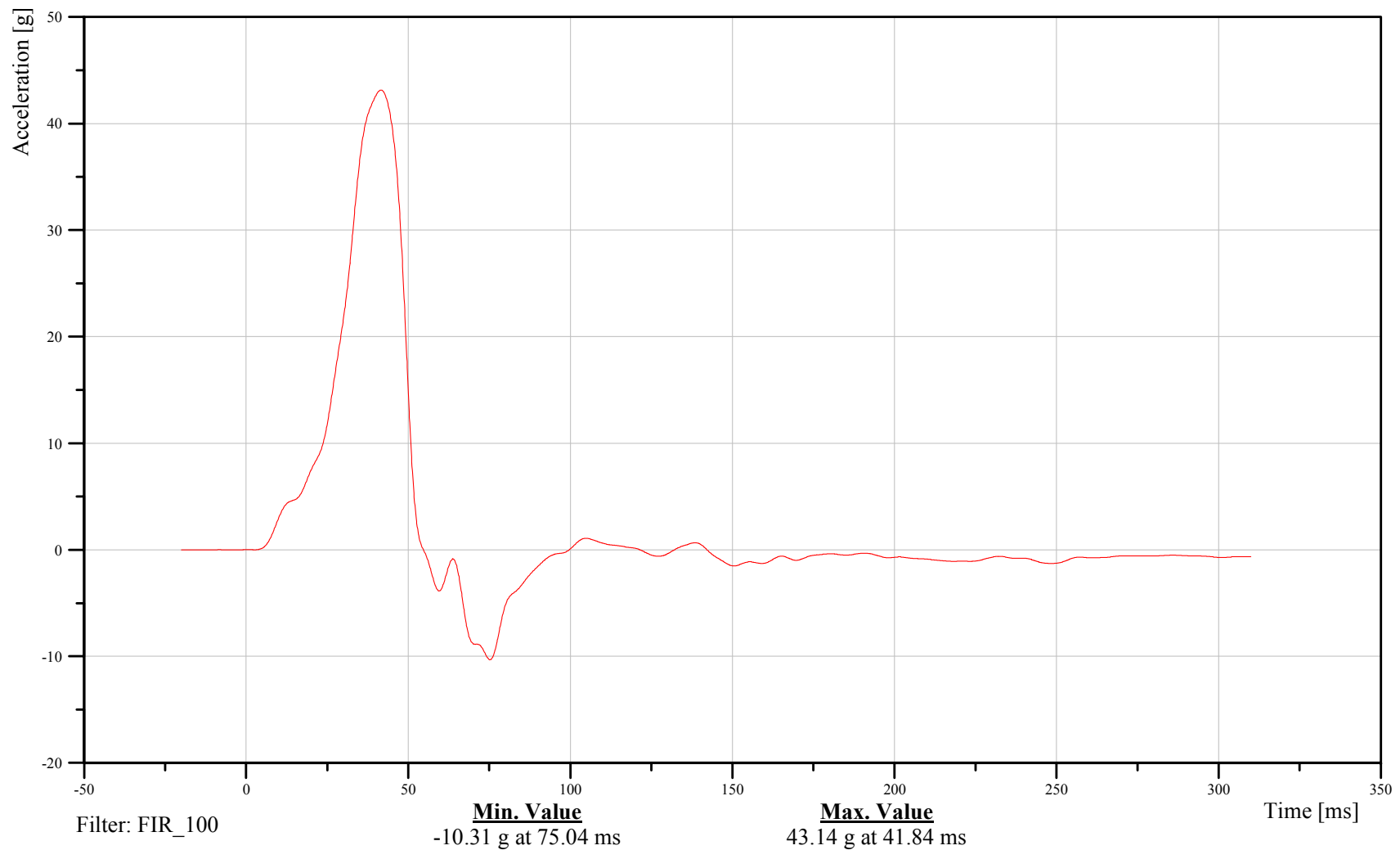
Pelvis Accel Y

Customer: VRTC

14PELVCG00E2ACY1

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Pelvis Accel Z

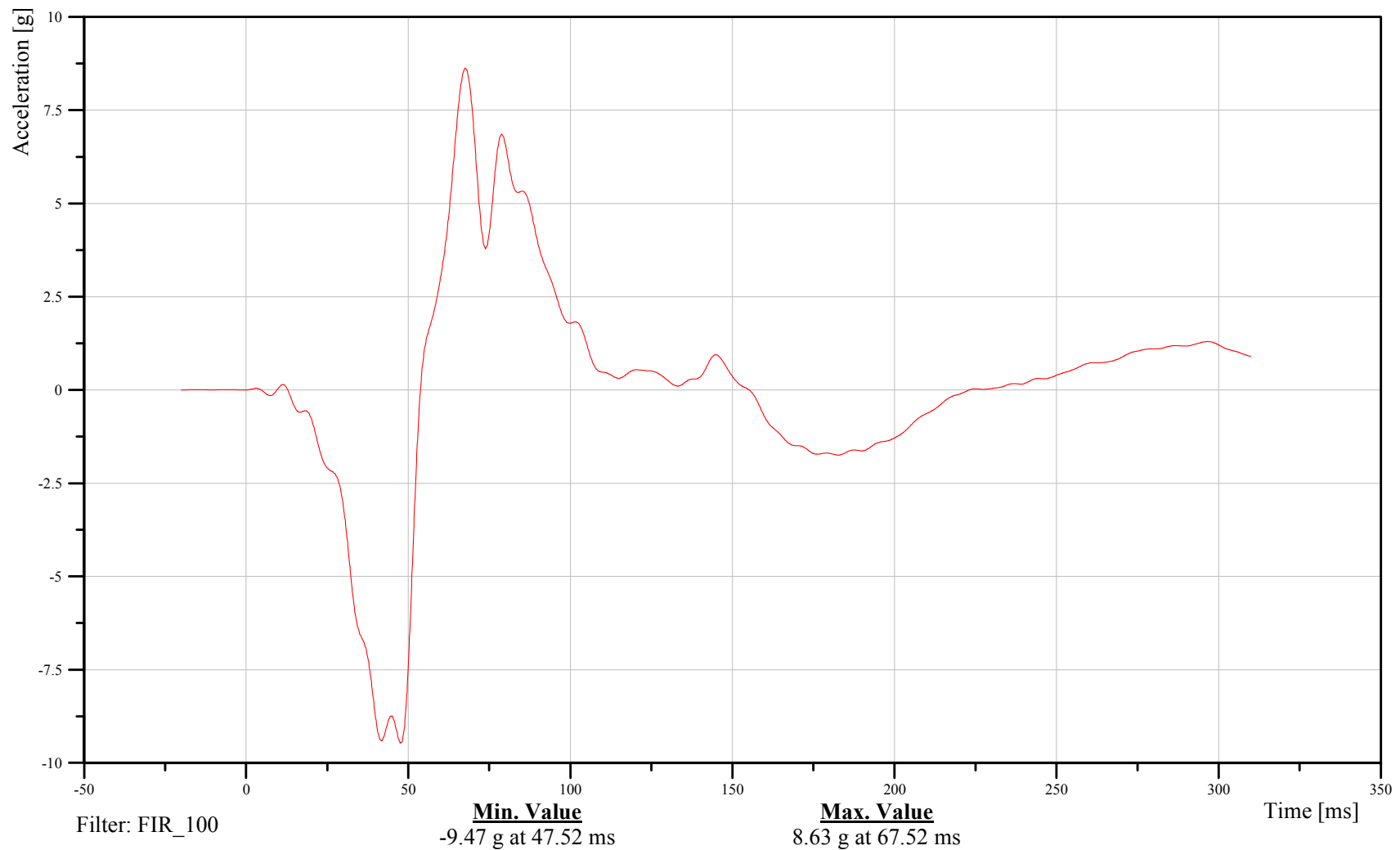
Date: 06/24/2005
Time: 12:02

Customer: VRTC

14PELVCG00E2ACZ1

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

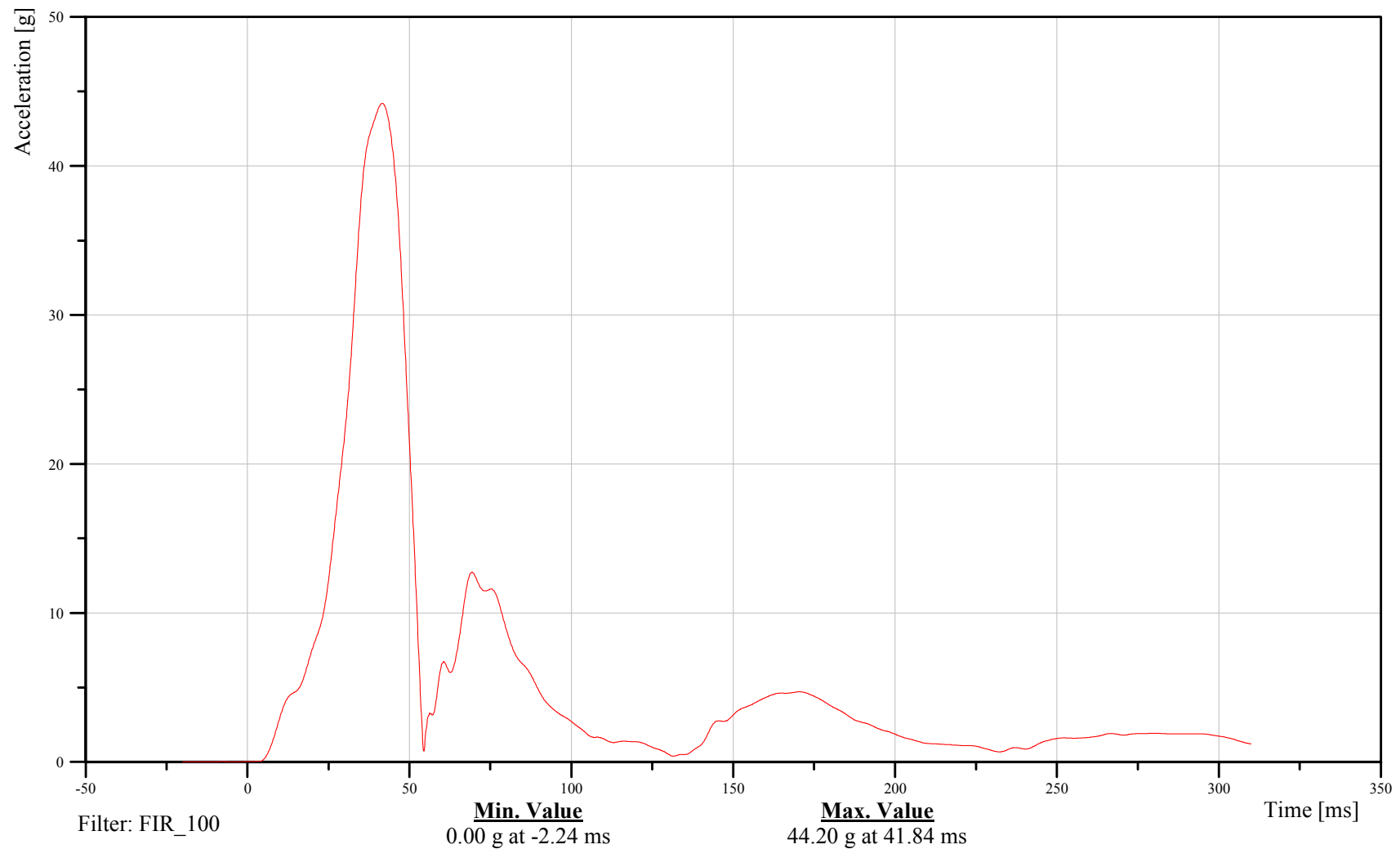
Pelvis Accel Resultant

Customer: VRTC

14PELVCG00E2ACR1

TRC Inc. Test Lab: CTF

Test Number: 050624





MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Head Injury Criterion (HIC)

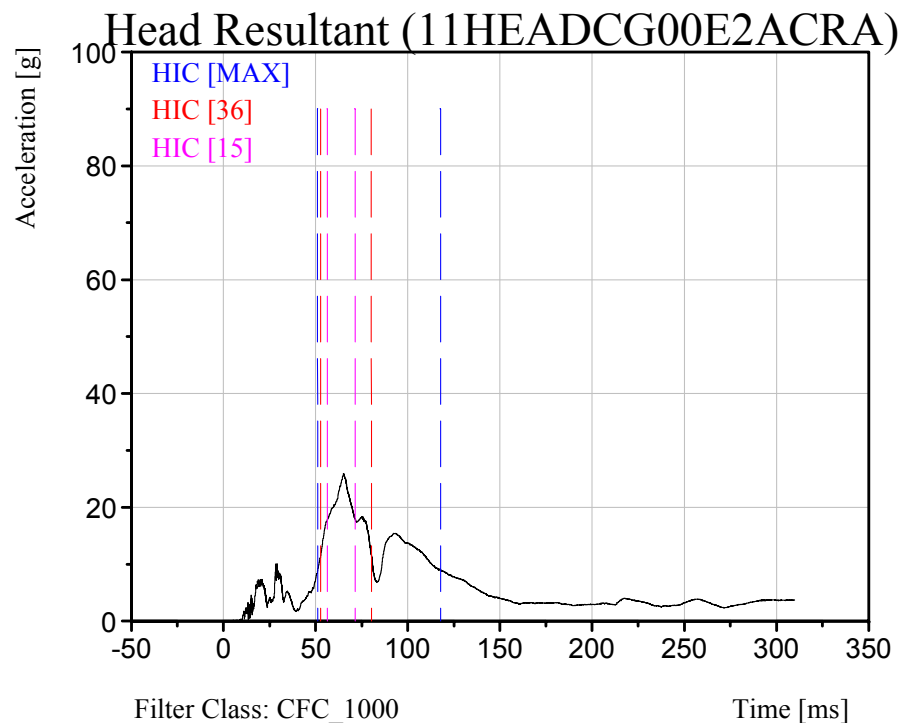
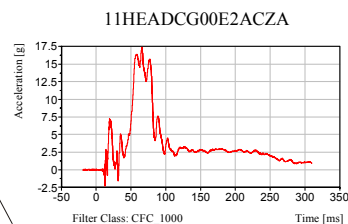
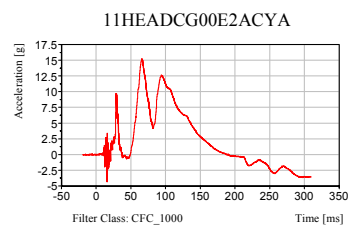
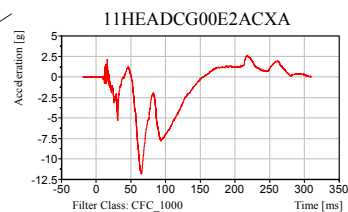
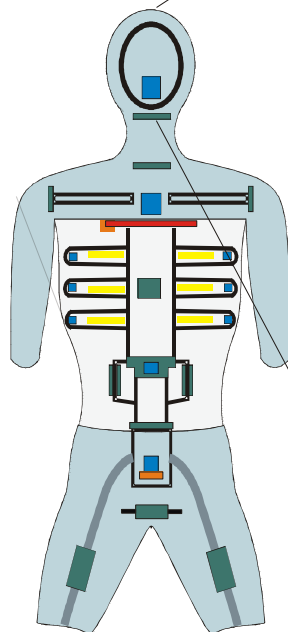
Date: 06/24/2005

Time: 12:02

Customer: VRTC

TRC Inc. Test Lab: CTF

Test Number: 050624



Dummy: Euro SID II
Seating Position:
Driver

	<u>T1</u> (Begin)	<u>T2</u> (End)	<u>Avg. g T1 to T2</u>
HIC [Max.] = 57.26	51.04 ms	117.76 ms	14.90 g
HIC [36] = 44.32	52.64 ms	80.24 ms	19.13 g
HIC [15] = 32.37	56.40 ms	71.44 ms	21.52 g

HIC Source Code: SAE J2052 ISO/TC22/SC12/WG3 N 282 (Issued 1990-03-16) 0



MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

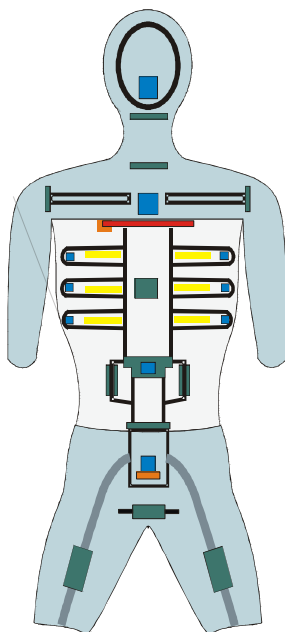
Abdominal Summation

Customer: VRTC

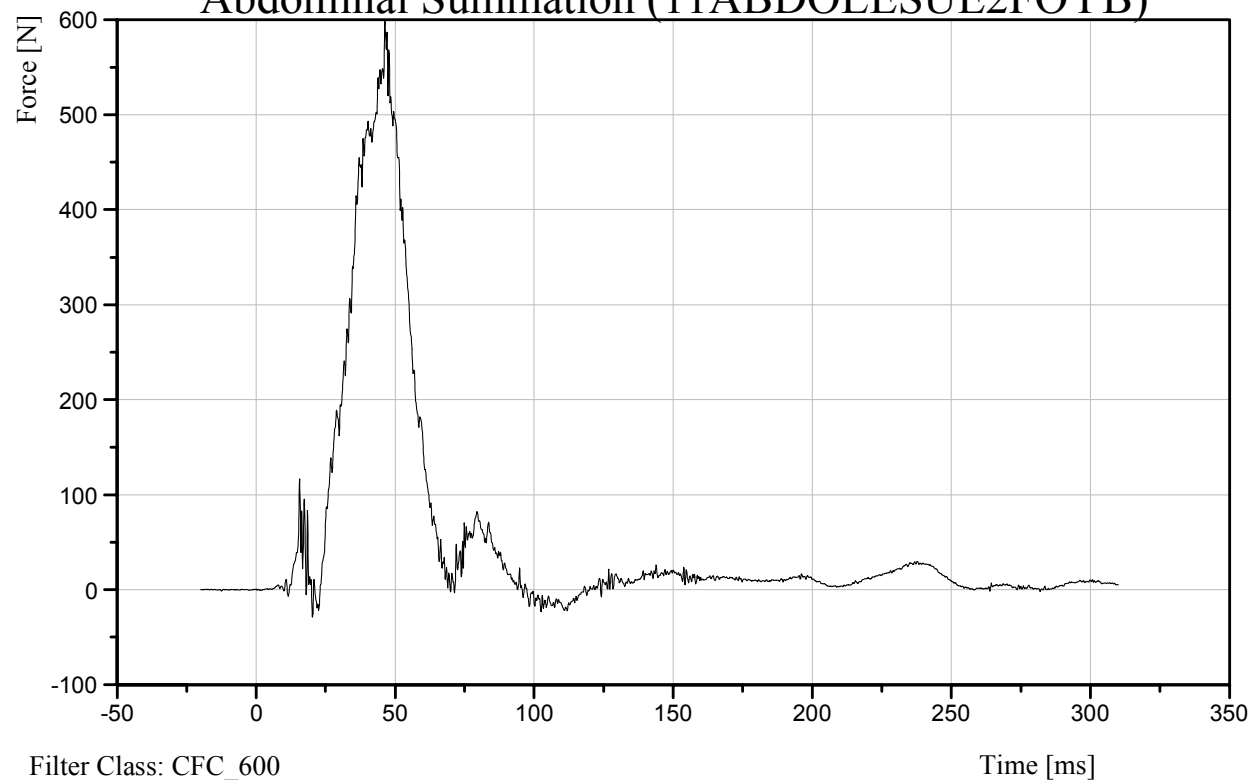
TRC Inc. Test Lab: CTF

Test Number: 050624

Test Orientation = Side



Abdominal Summation (11ABDOLESUE2FOYB)



Dummy: Euro SID II
Seating Position:
Driver

[Max.] 598.27 N at 46.32 ms

[Min.] -28.72 N at 20.32 ms

Abdominal Summation Source Code : Summation of Channels 11ABDOLEFRE2FOYB, 11ABDOLEMIE2FOYB, 11ABDOLEREE2FOYB



MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Head Injury Criterion (HIC)

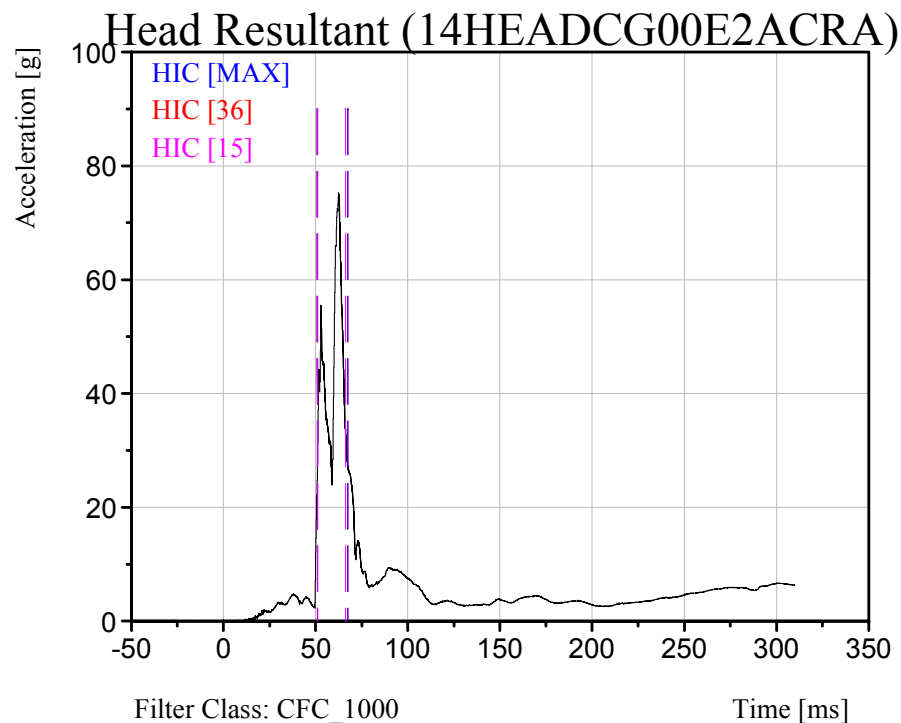
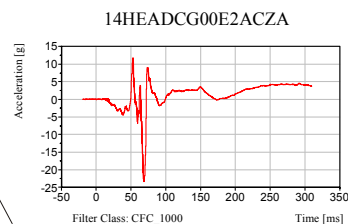
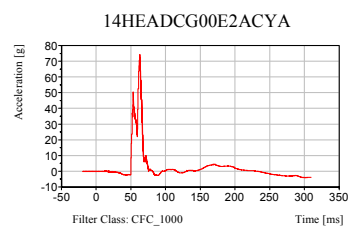
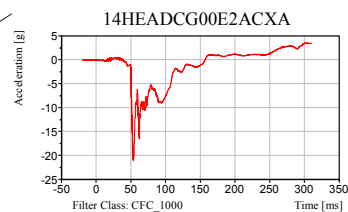
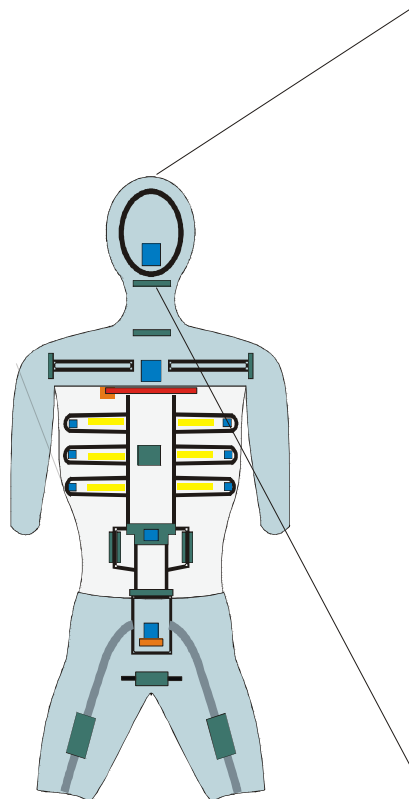
Date: 06/24/2005

Time: 12:02

Customer: VRTC

TRC Inc. Test Lab: CTF

Test Number: 050624



Dummy: Euro SID II
Seating Position:
Left Rear Passenger

	<u>T1</u> (Begin)	<u>T2</u> (End)	<u>Avg. g T1 to T2</u>
HIC [Max.] = 225.56	50.88 ms	67.60 ms	44.79 g
HIC [36] = 225.56	50.88 ms	67.60 ms	44.79 g
HIC [15] = 223.51	51.12 ms	66.16 ms	46.57 g

HIC Source Code: SAE J2052 ISO/TC22/SC12/WG3 N 282 (Issued 1990-03-16) 102



MDB into Left Side of 2005 Subaru Forester at 52.9 kph

Date: 06/24/2005
Time: 12:02

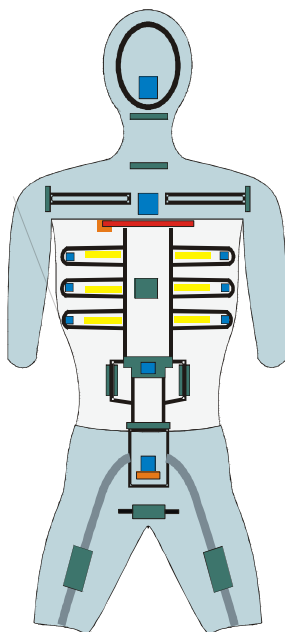
Abdominal Summation

Customer: VRTC

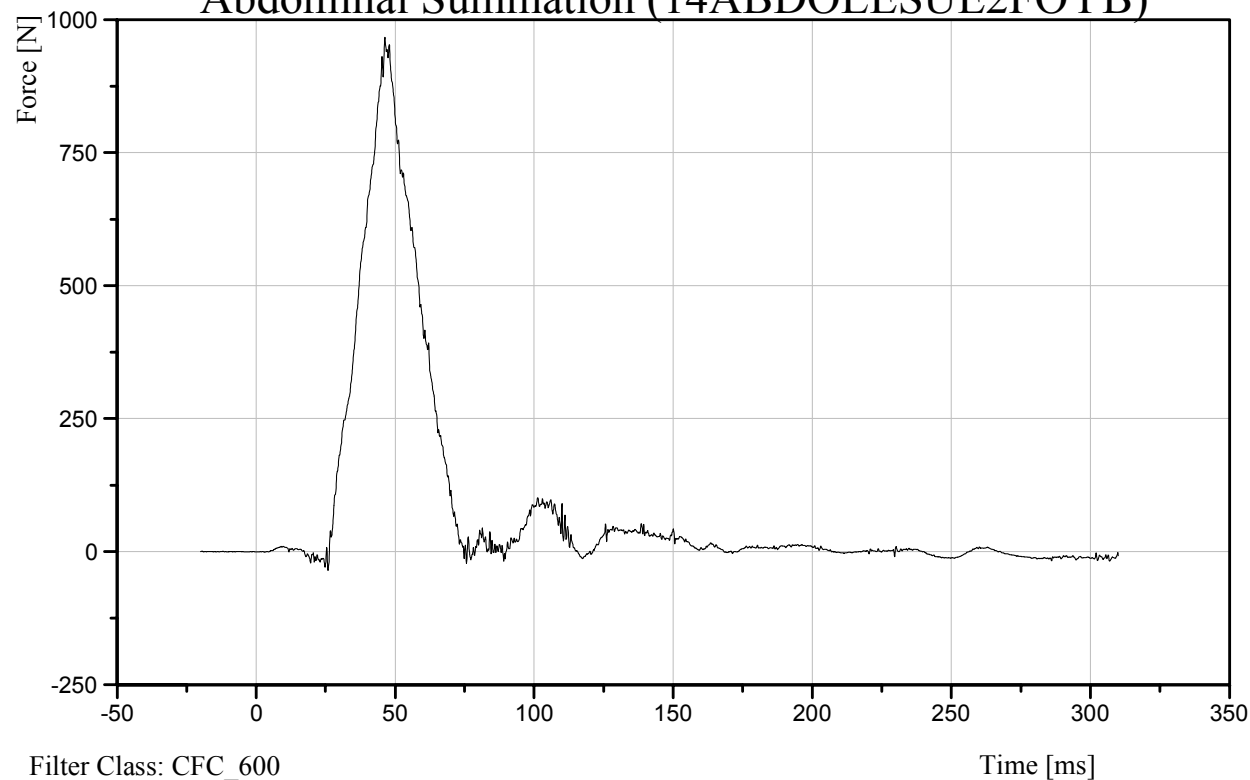
TRC Inc. Test Lab: CTF

Test Number: 050624

Test Orientation = Side



Abdominal Summation (14ABDOLESUE2FOYB)



Dummy: Euro SID II
Seating Position:
Left Rear Passenger

[Max.] 966.57 N at 46.32 ms

[Min.] -35.36 N at 25.92 ms

Abdominal Summation Source Code : Summation of Channels 14ABDOLEFRE2FOYB,14ABDOLEMIE2FOYB,14ABDOLEREE2FOYB

Appendix C

Dummy Configuration and Performance Verification Data

Pre-Test Dummy Configuration and Performance Verification Data

Driver Dummy S/N: 010

Transportation Research Center Inc.

Left Lateral Head Drop

ES-2re Serial No. 010 Certification No. 4-3

Test Date: 5/31/2005

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	48 %	Yes
Peak Resultant Acceleration	125 - 155 g	149.7 g	Yes
Peak Longitudinal Acceleration	(-15) - 15 g	9.8 g	Yes
Is Acceleration Curve Unimodal?	Yes	Yes	Yes

Test meets specifications.

Comments:

Technician

Vincent Oliveri

Approved

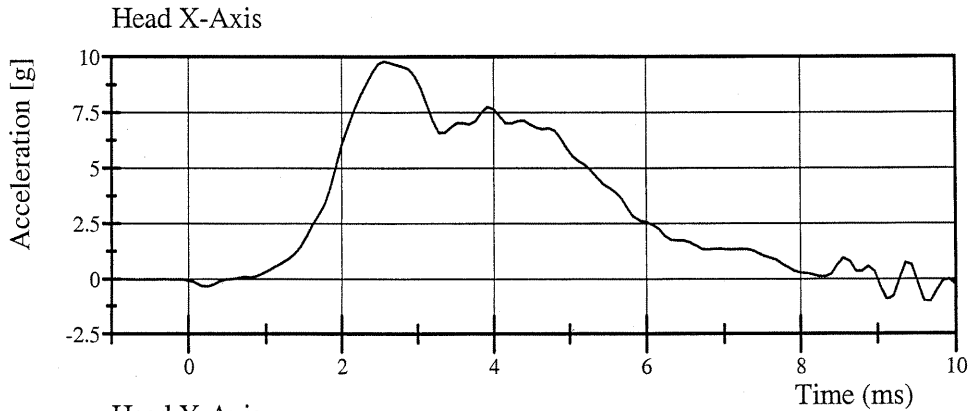
V.F. Watts

Transportation Research Center Inc.

Left Lateral Head Drop

ES-2re Serial No. 010 Certification No. 4-3

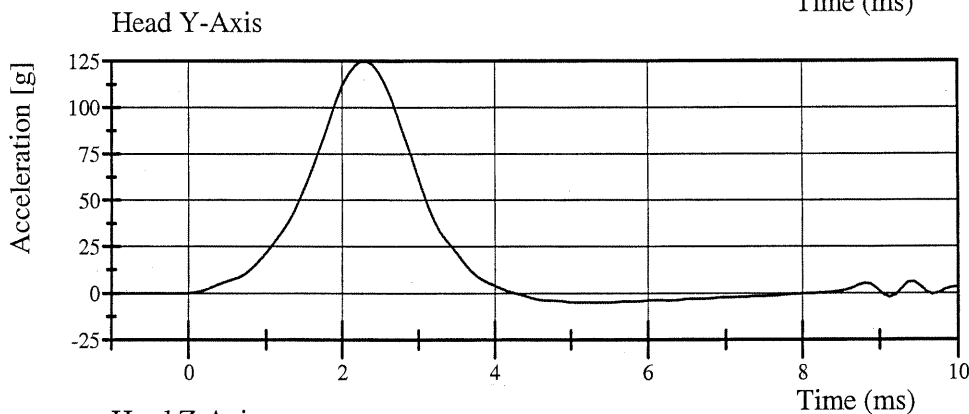
Test Date: 5/31/2005



Filter Class: CFC_1000

Max: 9.8 g at 2.6 ms

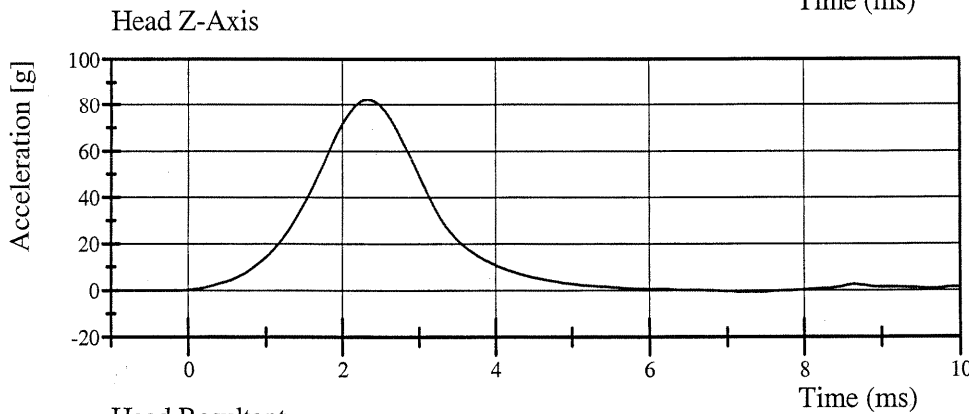
Min: -1.0 g at 9.7 ms



Filter Class: CFC_1000

Max: 124.7 g at 2.3 ms

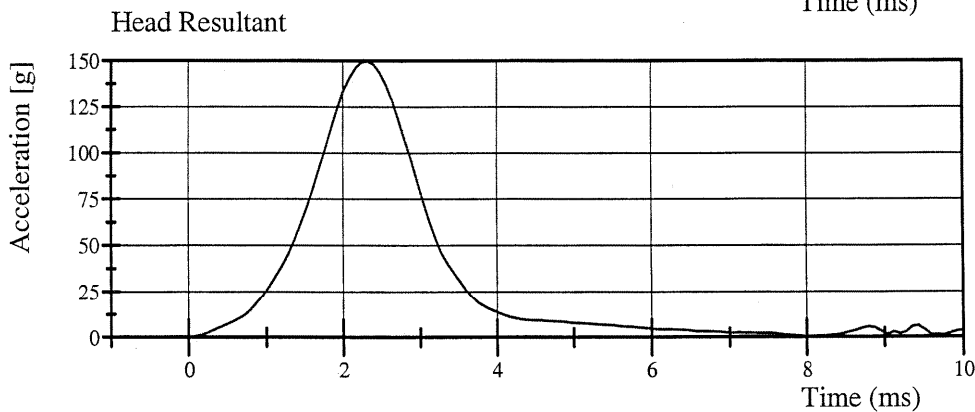
Min: -5.1 g at 5.4 ms



Filter Class: CFC_1000

Max: 82.3 g at 2.3 ms

Min: -0.6 g at 7.3 ms



Filter Class: CFC_1000

Max: 149.7 g at 2.3 ms

Min: 0.0 g at -1.0 ms

Transportation Research Center Inc.

Left Lateral Neck

ES-2re Serial No. 010 Certification No. 4-1

Test Date: 6/2/2005

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	55 %	Yes
Pendulum Acceleration within Corridor	Yes	Yes	Yes
Pendulum Velocity	3.3 - 3.5 m/s	3.45 m/s	Yes
Maximum Headform Flexion Peak	52 - 57 deg	54.4 deg	Yes
Time of Peak	54 - 64 ms	60.7 ms	Yes
Headform Flexion Decay - Peak to Zero	55 - 75 ms	58.4 ms	Yes

Test meets specifications.

Comments:

Technician

Vincent Oliver

Approved

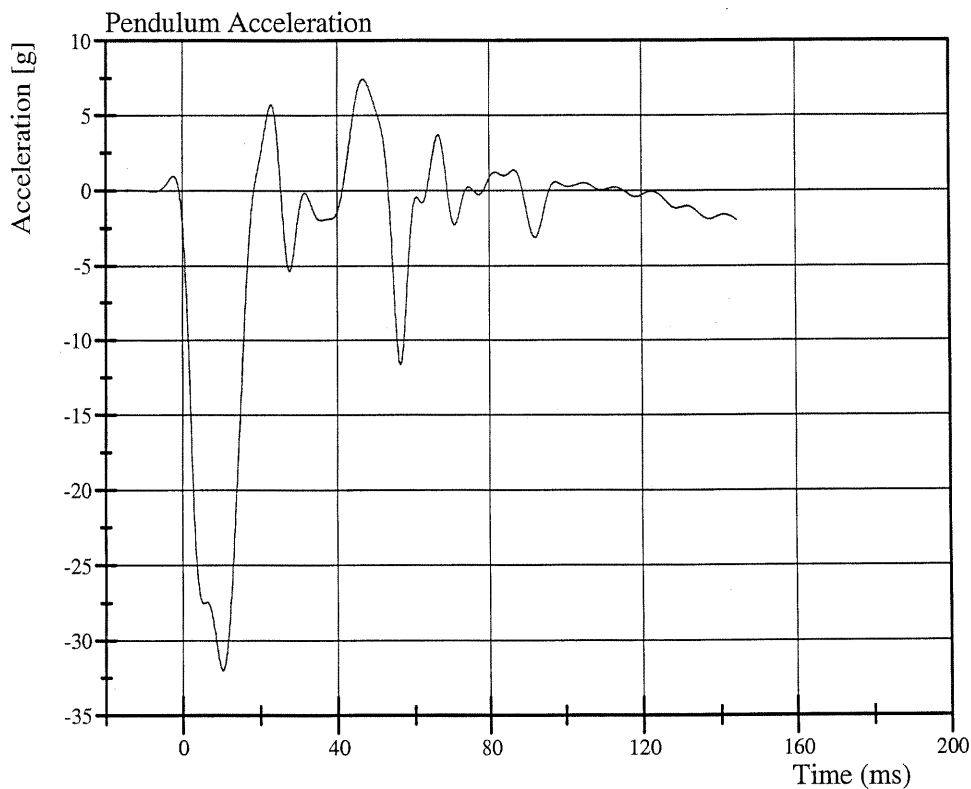
V.L. Watter

Transportation Research Center Inc.

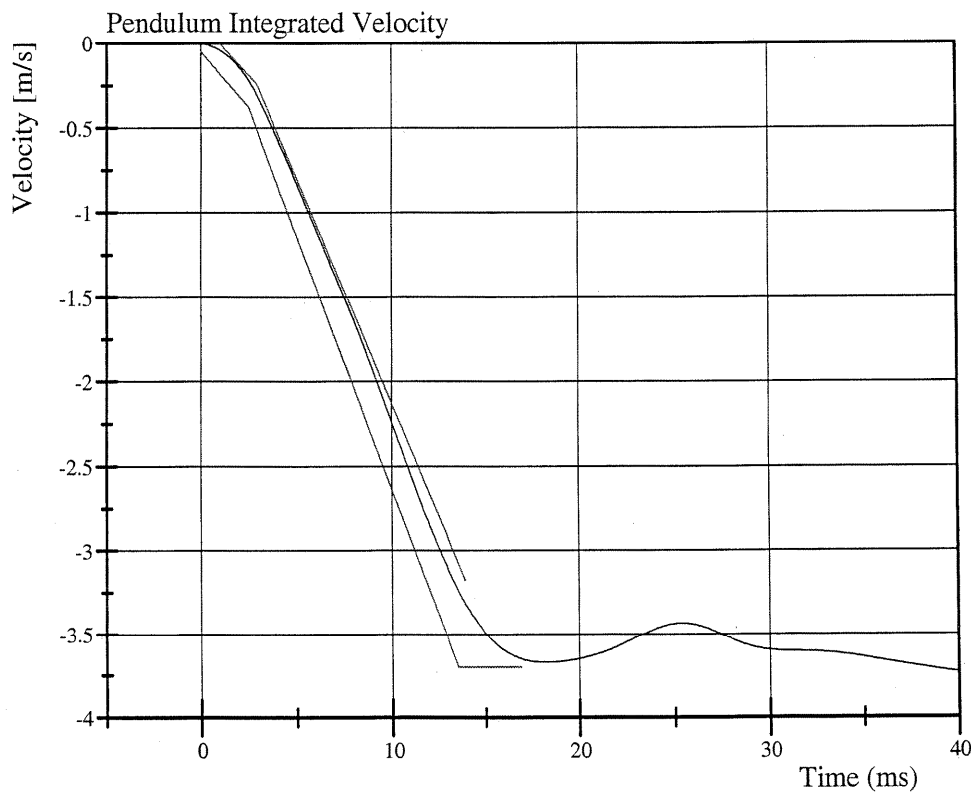
Left Lateral Neck

ES-2re Serial No. 010 Certification No. 4-1

Test Date: 6/2/2005



Filter Class: CFC_60
Max: 7.4 g at 46.6 ms
Min: -32.0 g at 10.2 ms



Filter Class: CFC_60
Max: 0.0 m/s at 0.0 ms
Min: -3.7 m/s at 40.0 ms

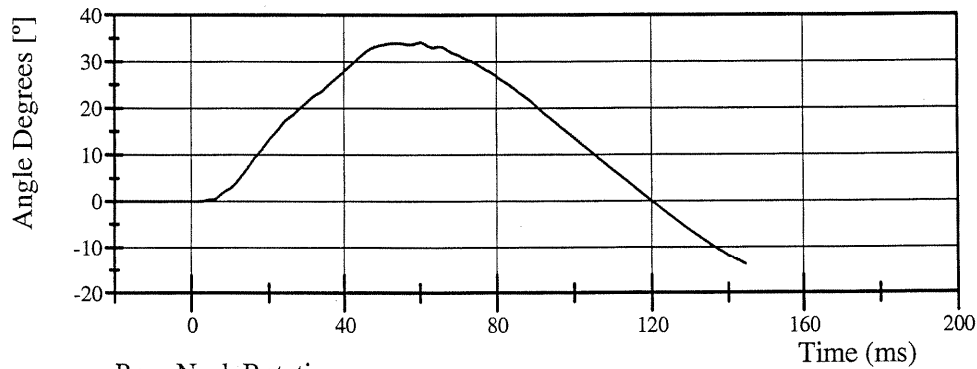
Transportation Research Center Inc.

Left Lateral Neck

ES-2re Serial No. 010 Certification No. 4-1

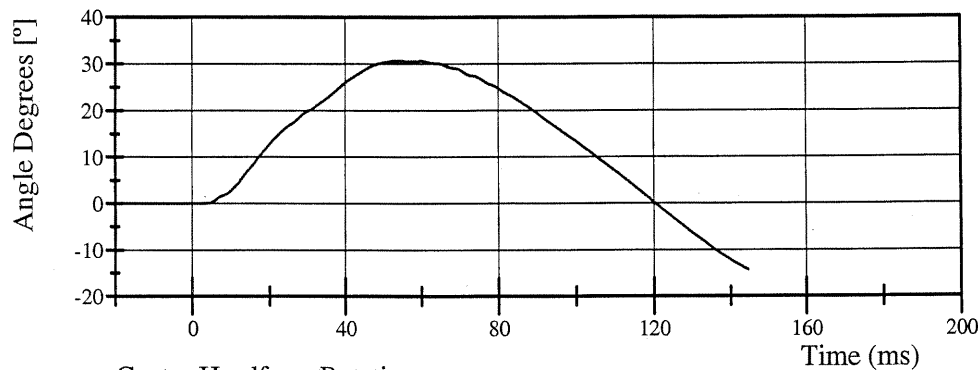
Test Date: 6/2/2005

Forward Neck Rotation



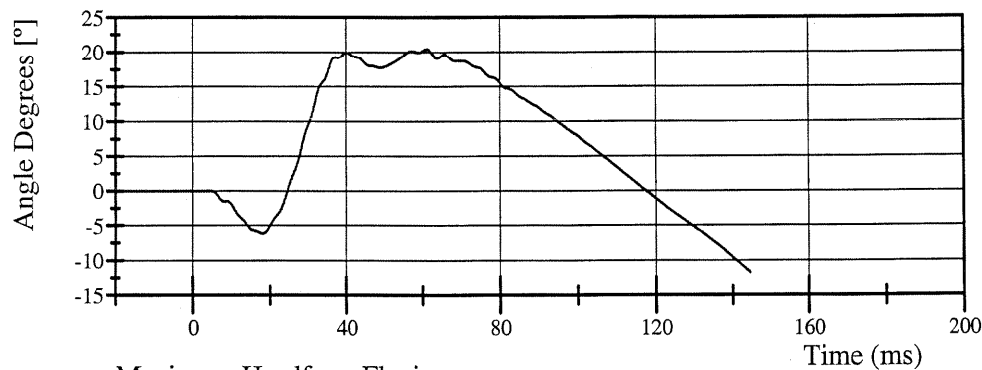
Filter Class: CFC_180
Max: 34.1 ° at 60.2 ms
Min: -13.8 ° at 144.6 ms

Rear Neck Rotation



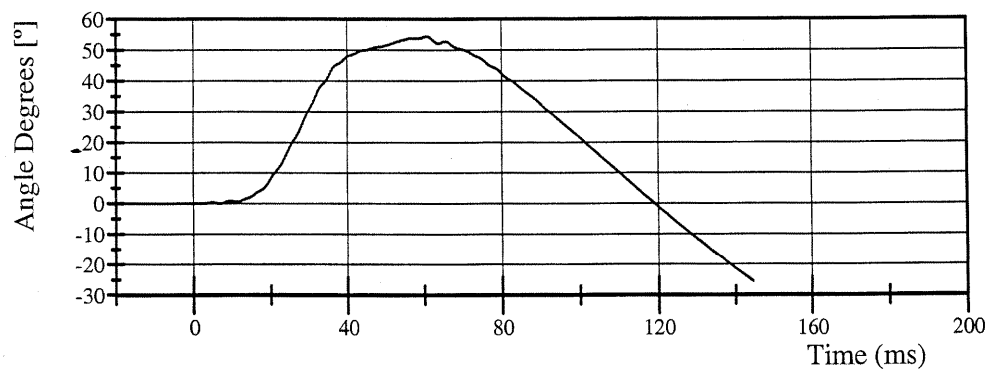
Filter Class: CFC_180
Max: 30.6 ° at 53.5 ms
Min: -14.3 ° at 144.6 ms

Center Headform Rotation



Filter Class: CFC_180
Max: 20.4 ° at 61.1 ms
Min: -11.7 ° at 144.6 ms

Maximum Headform Flexion



Filter Class: CFC_180
Max: 54.4 ° at 60.7 ms
Min: -25.5 ° at 144.6 ms

Transportation Research Center Inc.

3.0 m/s Upper Full Rib Module

ES-2re Serial No. 010 Certification No. 4-1

Test Date: 5/26/2005

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.5 °C	Yes
Relative Humidity	10 - 70 %	49 %	Yes
3.0 m/s Test Test Probe Velocity	2.9 - 3.1 m/s	3.05 m/s	Yes
3.0 m/s Test Rib Displacement	36 - 40 mm	38.7 mm	Yes

Test meets specifications.

Comments:

Technician

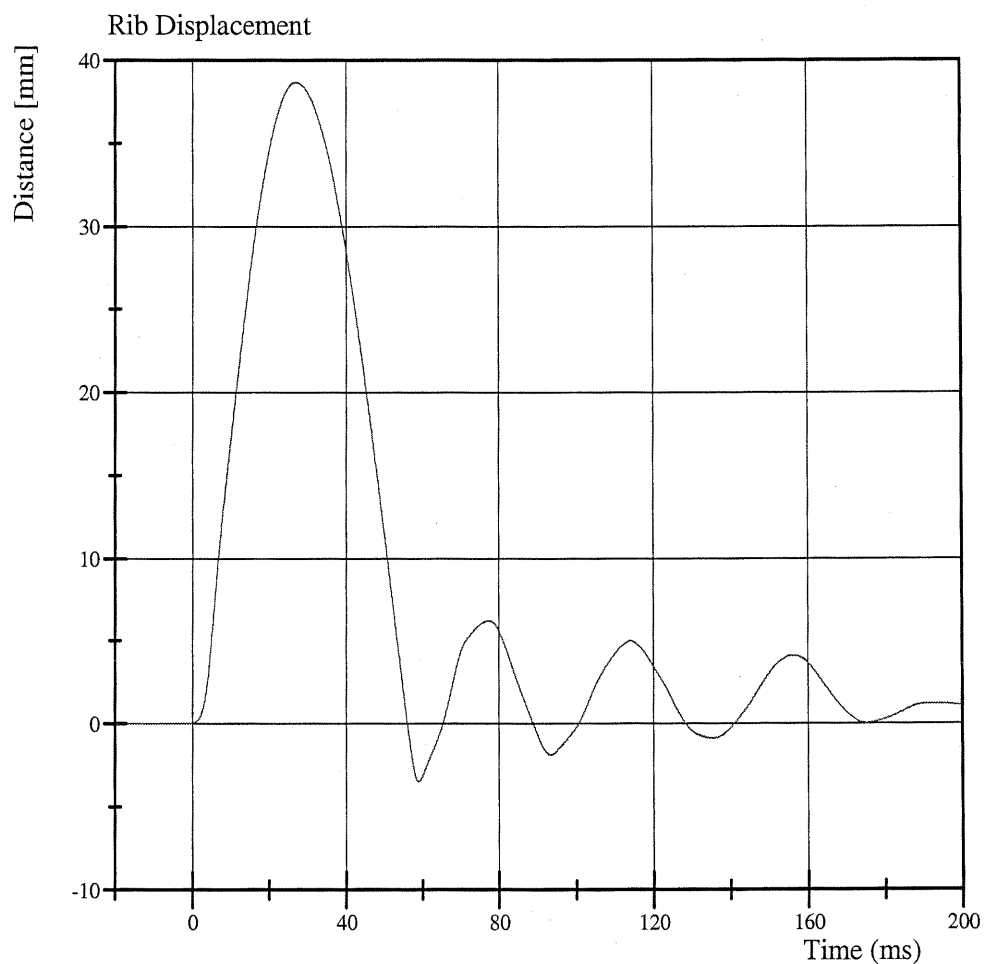
Vincenzo Oliveri

Approved

V.L. Watter

Transportation Research Center Inc.

3.0 m/s Upper Full Rib Module
ES-2re Serial No. 010 Certification No. 4-1
Test Date: 5/26/2005



Filter Class: CFC_180
Max: 38.7 mm at 27.0 ms
Min: -3.5 mm at 59.0 ms

Transportation Research Center Inc.

4.0 m/s Upper Full Rib Module

ES-2re Serial No. 010 Certification No. 4-1

Test Date: 5/26/2005

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.5 °C	Yes
Relative Humidity	10 - 70 %	49 %	Yes
4.0 m/s Test Test Probe Velocity	3.9 - 4.1 m/s	3.99 m/s	Yes
4.0 m/s Test Rib Displacement	46 - 51 mm	48.2 mm	Yes

Test meets specifications.

Comments:

Technician

Vincent D'Amico

Approved

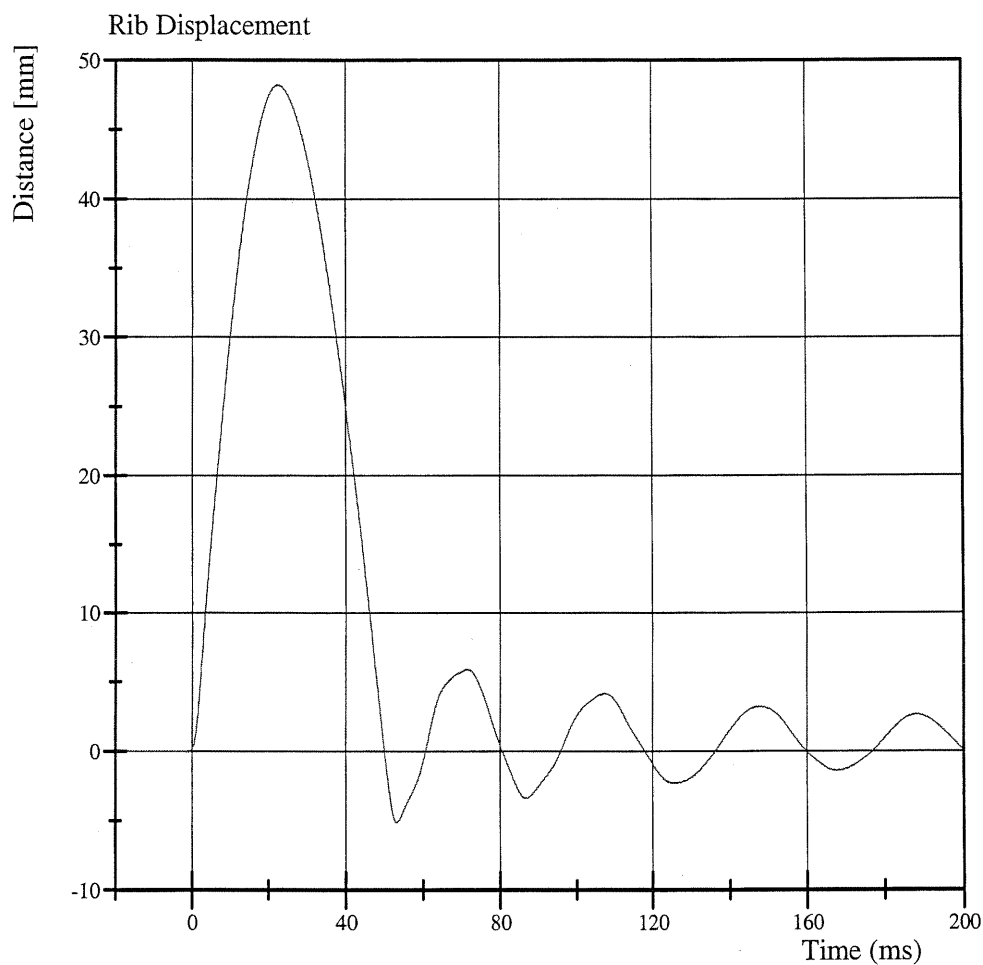
V.H. Watter

Transportation Research Center Inc.

4.0 m/s Upper Full Rib Module

ES-2re Serial No. 010 Certification No. 4-1

Test Date: 5/26/2005



Filter Class: CFC_180

Max: 48.2 mm at 22.5 ms

Min: -5.1 mm at 53.2 ms

Transportation Research Center Inc.

3.0 m/s Center Full Rib Module

ES-2re Serial No. 010 Certification No. 4-3

Test Date: 6/6/2005

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	47 %	Yes
3.0 m/s Test Test Probe Velocity	2.9 - 3.1 m/s	2.98 m/s	Yes
3.0 m/s Test Rib Displacement	36 - 40 mm	38.3 mm	Yes

Test meets specifications.

Comments:

Technician

Vincent Oliveri

Approved

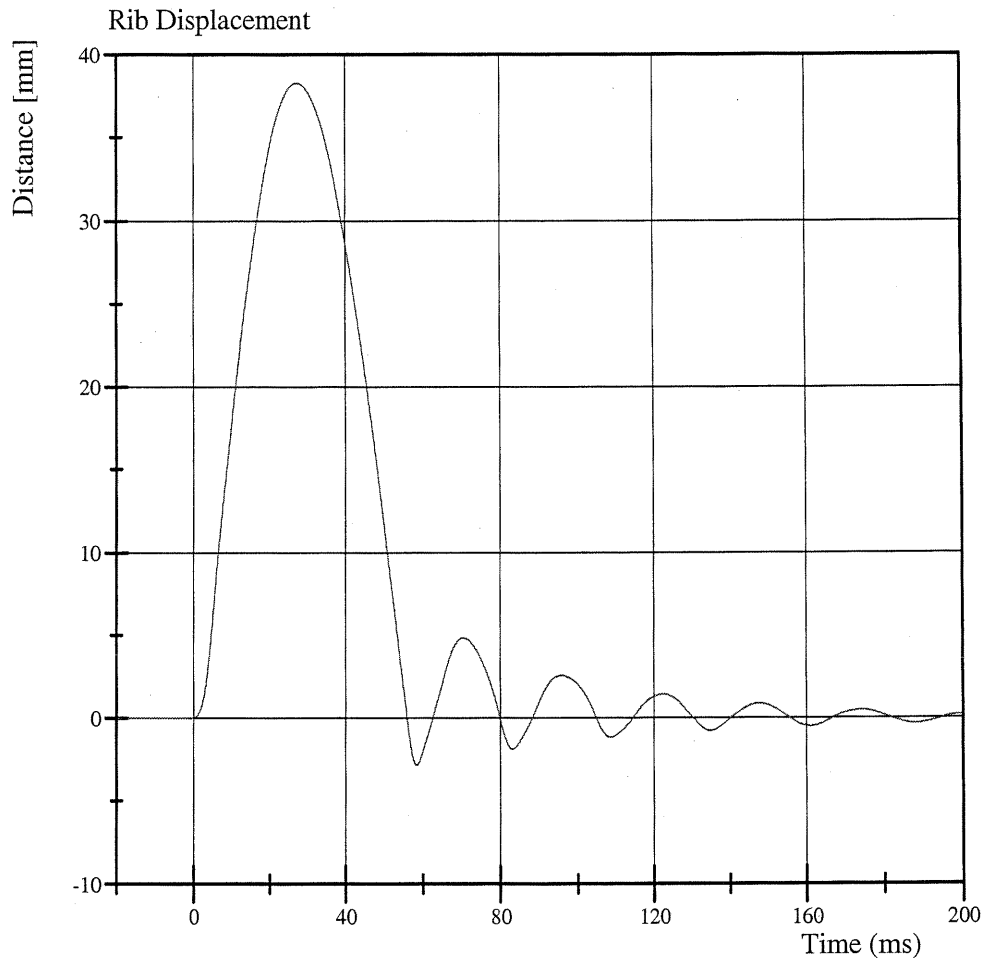
V. F. Walter

Transportation Research Center Inc.

3.0 m/s Center Full Rib Module

ES-2re Serial No. 010 Certification No. 4-3

Test Date: 6/6/2005



Filter Class: CFC_180

Max: 38.3 mm at 27.2 ms

Min: -2.9 mm at 58.3 ms

Transportation Research Center Inc.

4.0 m/s Center Full Rib Module

ES-2re Serial No. 010 Certification No. 4-4

Test Date: 6/6/2005

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	50 %	Yes
4.0 m/s Test Test Probe Velocity	3.9 - 4.1 m/s	3.99 m/s	Yes
4.0 m/s Test Rib Displacement	46 - 51 mm	49.5 mm	Yes

Test meets specifications.

Comments:

Technician

Vincent Olm

Approved

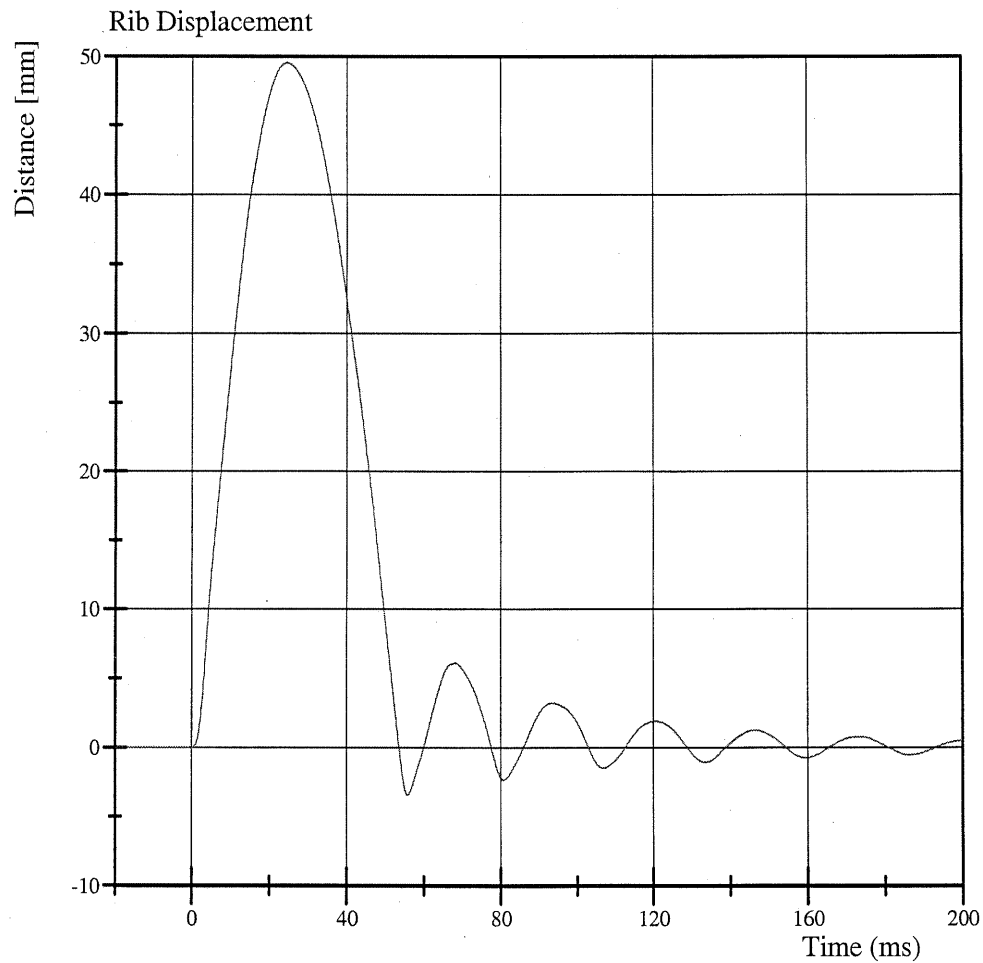
V.F. Watter

Transportation Research Center Inc.

4.0 m/s Center Full Rib Module

ES-2re Serial No. 010 Certification No. 4-4

Test Date: 6/6/2005



Filter Class: CFC_180
Max: 49.5 mm at 24.6 ms
Min: -3.4 mm at 55.7 ms

Transportation Research Center Inc.

3.0 m/s Lower Full Rib Module

ES-2re Serial No. 010 Certification No. 4-2

Test Date: 5/26/2005

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.5 °C	Yes
Relative Humidity	10 - 70 %	42 %	Yes
3.0 m/s Test Test Probe Velocity	2.9 - 3.1 m/s	2.90 m/s	Yes
3.0 m/s Test Rib Displacement	36 - 40 mm	38.4 mm	Yes

Test meets specifications.

Comments:

Technician

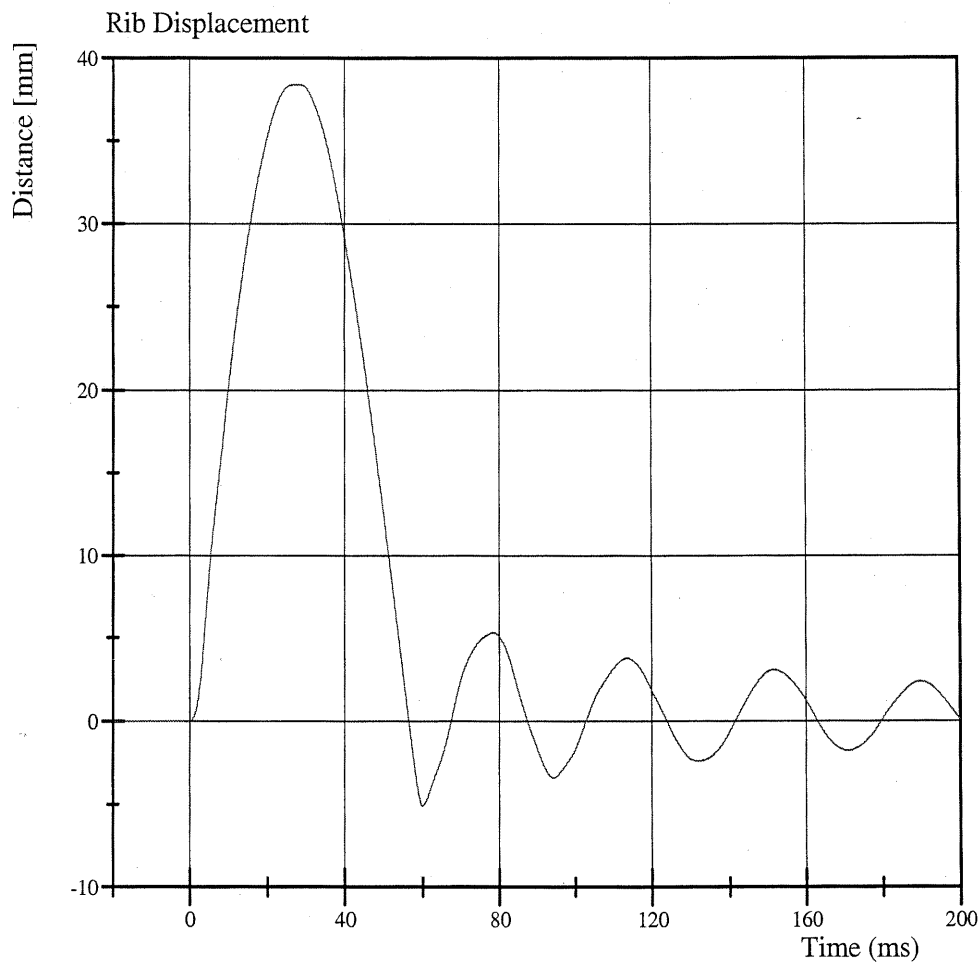
Vincent Oliver

Approved

K. L. Walter

Transportation Research Center Inc.

3.0 m/s Lower Full Rib Module
ES-2re Serial No. 010 Certification No. 4-2
Test Date: 6/3/2005



Filter Class: CFC_180
Max: 38.4 mm at 27.0 ms
Min: -5.1 mm at 60.0 ms

Transportation Research Center Inc.

4.0 m/s Lower Full Rib Module

ES-2re Serial No. 010 Certification No. 4-1

Test Date: 5/25/2005

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.1 °C	Yes
Relative Humidity	10 - 70 %	43 %	Yes
4.0 m/s Test Test Probe Velocity	3.9 - 4.1 m/s	4.08 m/s	Yes
4.0 m/s Test Rib Displacement	46 - 51 mm	48.7 mm	Yes

Test meets specifications.

Comments:

Technician

Vicente Jimenez

Approved

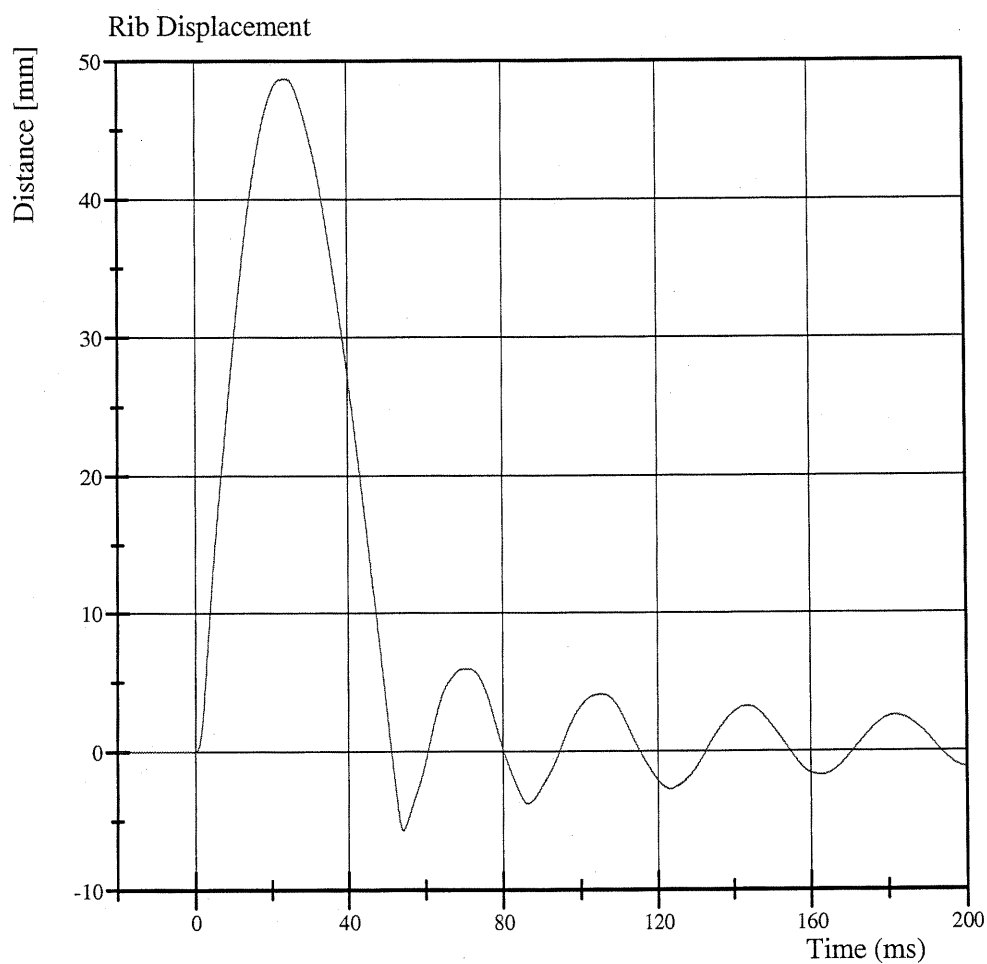
V. J. Wether

Transportation Research Center Inc.

4.0 m/s Lower Full Rib Module

ES-2re Serial No. 010 Certification No. 4-1

Test Date: 5/25/2005



Filter Class: CFC_180

Max: 48.7 mm at 24.1 ms

Min: -5.7 mm at 54.2 ms

Transportation Research Center Inc.

Left Lateral Lumbar

ES-2re Serial No. 010 Certification No. 4-5

Test Date: 6/7/2005

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	52 %	Yes
Pendulum Acceleration within Corridor	Yes	Yes	Yes
Pendulum Velocity	5.95 - 6.15 m/s	6.127 m/s	Yes
Maximum Headform Flexion			
Peak	45 - 55 deg	47.1 deg	Yes
Time of Peak	39 - 53 ms	45.4 ms	Yes
Headform Flexion Decay - Peak to Zero	40 - 65 ms	43.8 ms	Yes

Test meets specifications.

Comments:

Technician

Vincent Oliveri

Approved

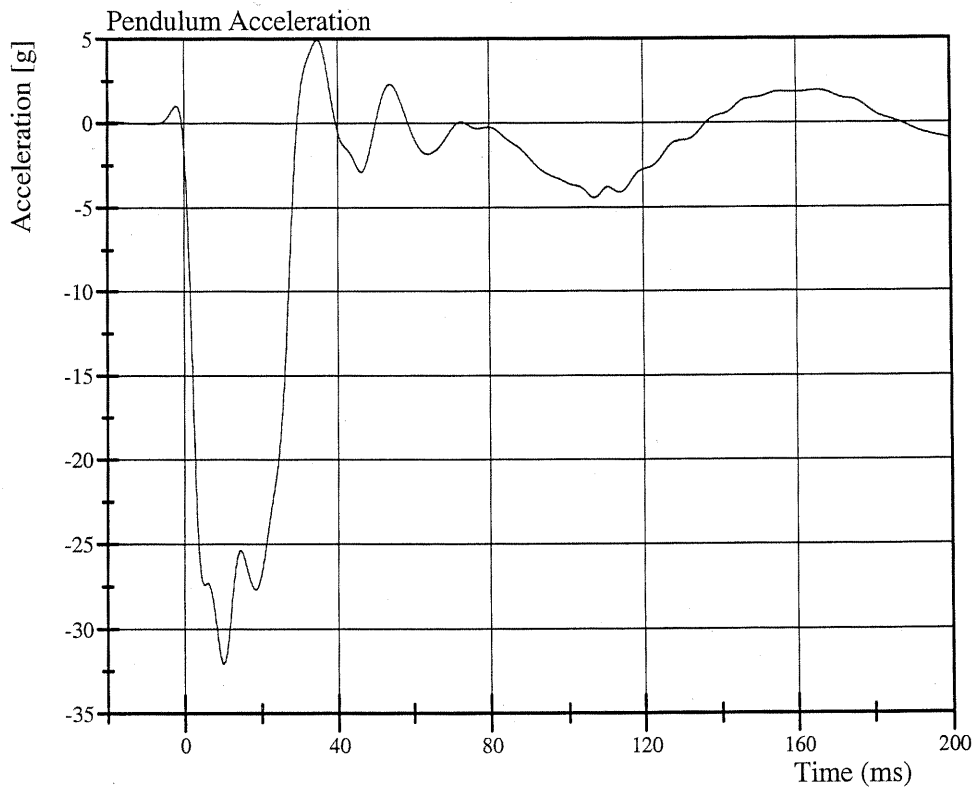
V. K. Watts

Transportation Research Center Inc.

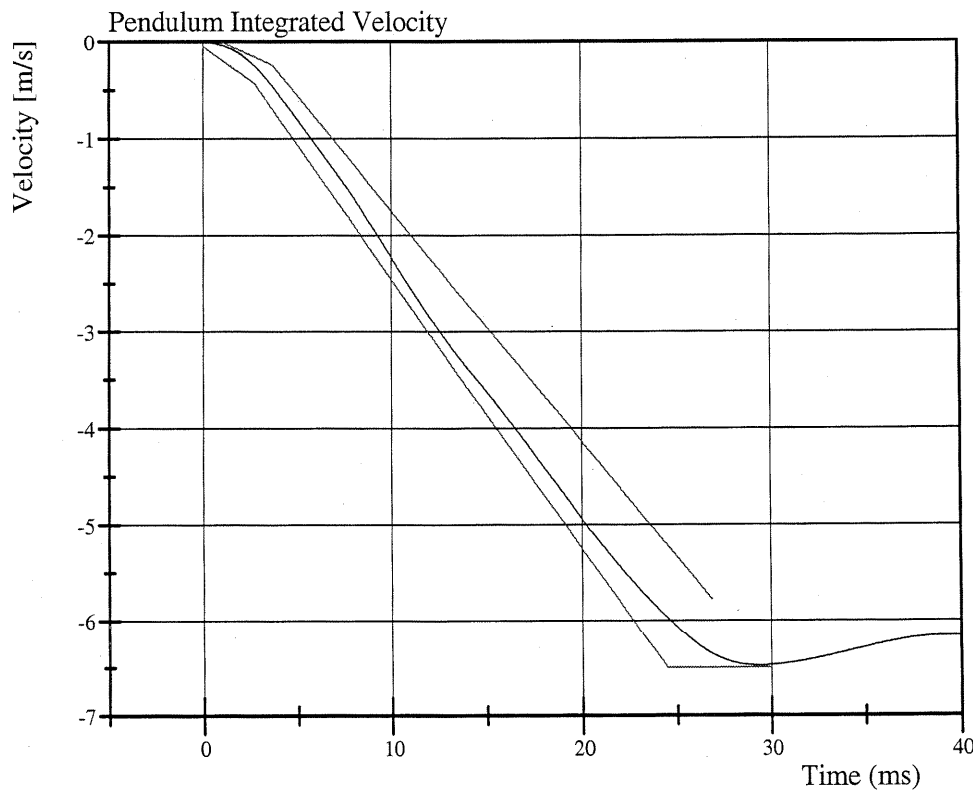
Left Lateral Lumbar

ES-2re Serial No. 010 Certification No. 4-5

Test Date: 6/7/2005



Filter Class: CFC_60
Max: 4.9 g at 34.7 ms
Min: -32.1 g at 10.0 ms



Filter Class: CFC_60
Max: 0.0 m/s at 0.0 ms
Min: -6.5 m/s at 29.4 ms

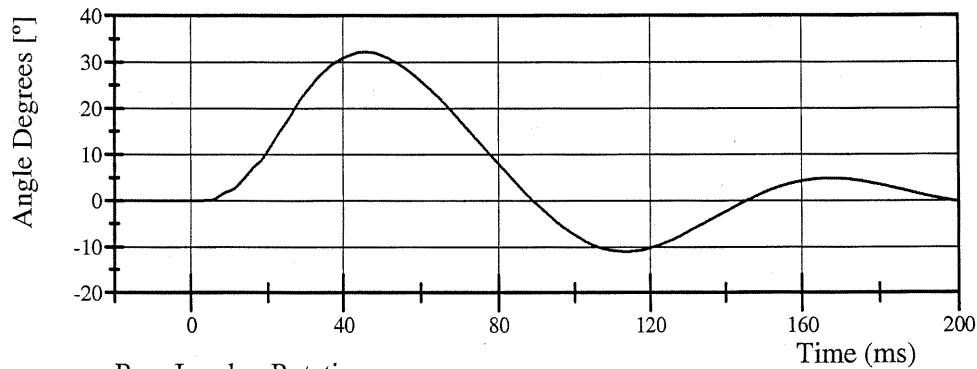
Transportation Research Center Inc.

Left Lateral Lumbar

ES-2re Serial No. 010 Certification No. 4-5

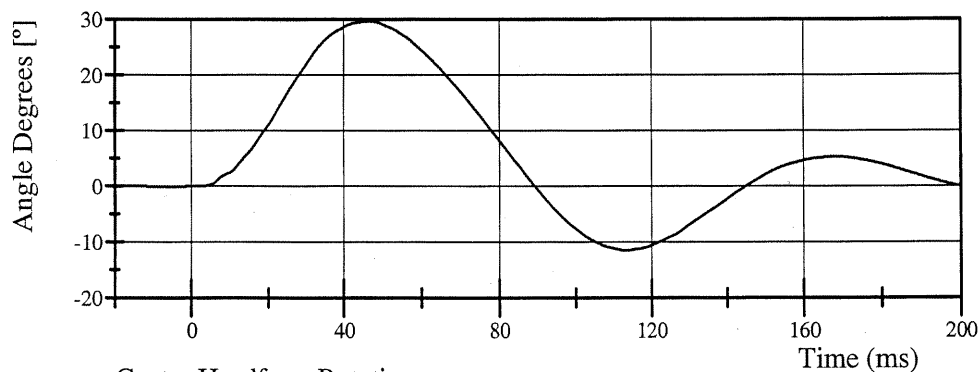
Test Date: 6/7/2005

Forward Lumbar Rotation



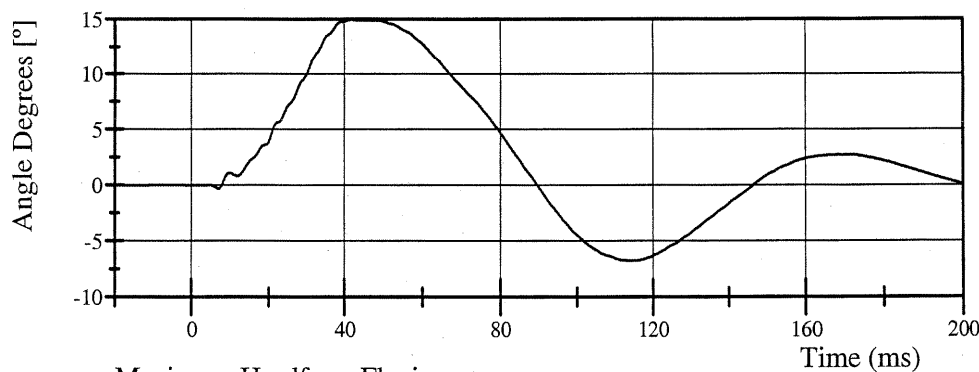
Filter Class: CFC_180
Max: 32.2 ° at 45.6 ms
Min: -10.9 ° at 113.6 ms

Rear Lumbar Rotation



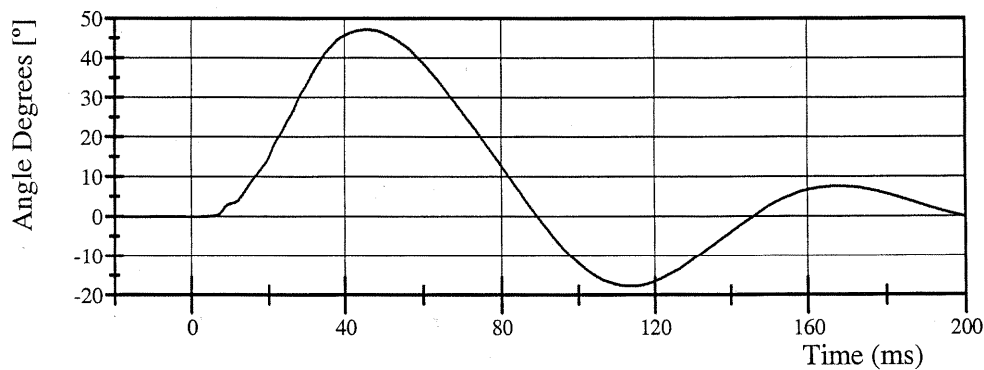
Filter Class: CFC_180
Max: 29.6 ° at 46.5 ms
Min: -11.5 ° at 113.1 ms

Center Headform Rotation



Filter Class: CFC_180
Max: 15.0 ° at 41.8 ms
Min: -6.7 ° at 115.0 ms

Maximum Headform Flexion



Filter Class: CFC_180
Max: 47.1 ° at 45.4 ms
Min: -17.7 ° at 113.8 ms

Transportation Research Center Inc.

Left Lateral Shoulder

ES-2re Serial No. 010 Certification No. 4-1

Test Date: 6/13/2005

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.7 °C	Yes
Relative Humidity	10 - 70 %	56 %	Yes
Test Probe Velocity	4.2 - 4.4 m/s	4.27 m/s	Yes
Test Probe Acceleration	(-7.5) - (-10.5) g	-8.22 g	Yes

Test meets specifications.

Comments:

Technician

Vincent Oliver

Approved

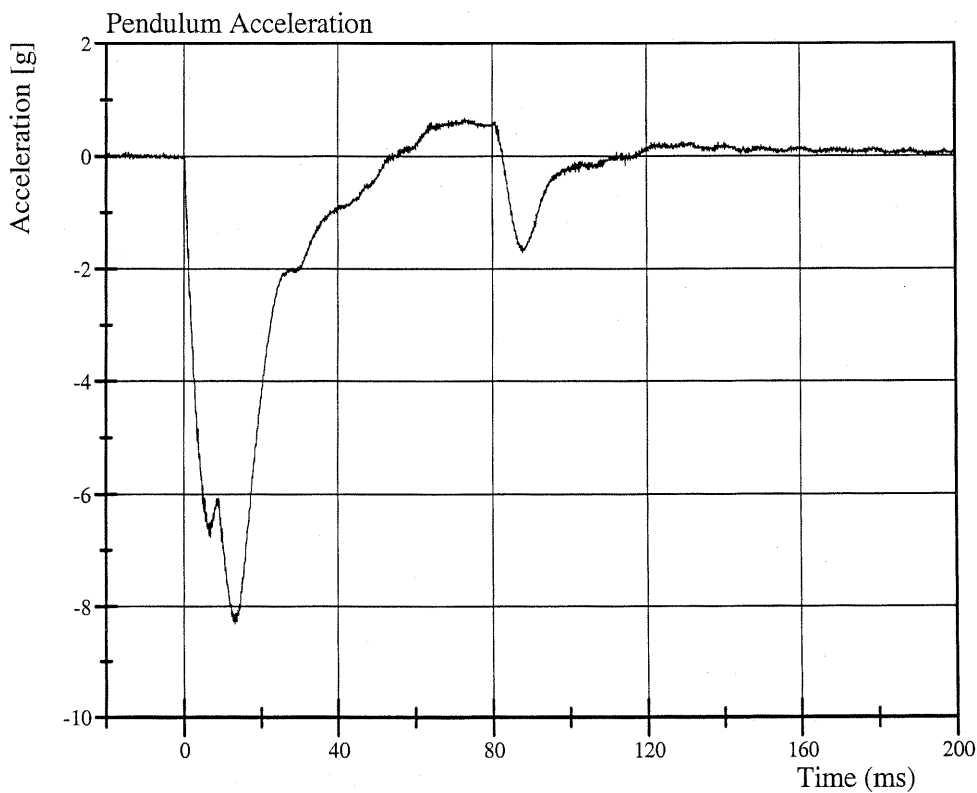
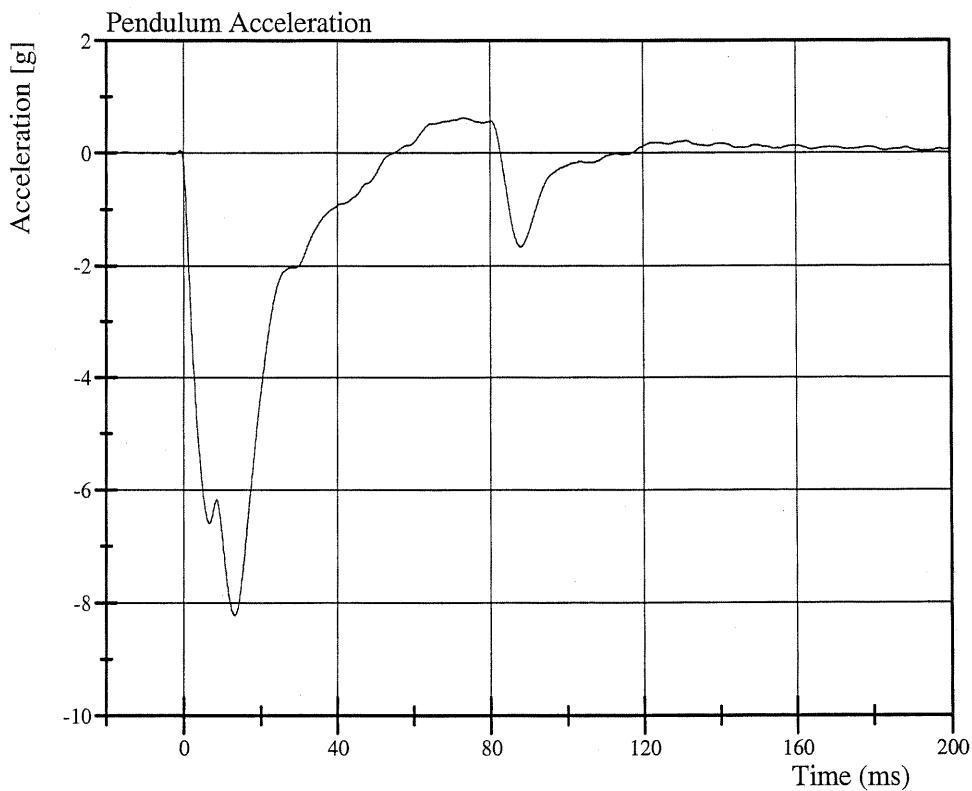
V.L. Watter

Transportation Research Center Inc.

Left Lateral Shoulder

ES-2re Serial No. 010 Certification No. 4-1

Test Date: 6/13/2005



Transportation Research Center Inc.

Left Lateral Abdomen Compression
ES-2re Serial No. 010 Certification No. 4-6
Test Date: 6/15/2005

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	47 %	Yes
Test Probe Velocity	3.9 - 4.1 m/s	3.91 m/s	Yes
Test Probe Force			
Peak	(-4000) - (-4800) N	-4,755.4 N	Yes
Time of Peak	10.6 - 13.0 ms	12.72 ms	Yes
Total Abdominal Force			
Peak	2200 - 2700 N	2,701.1 N	No
Time of Peak	10.0 - 12.3 ms	12.56 ms	No

Test does not meet specifications.

Comments:

Technician

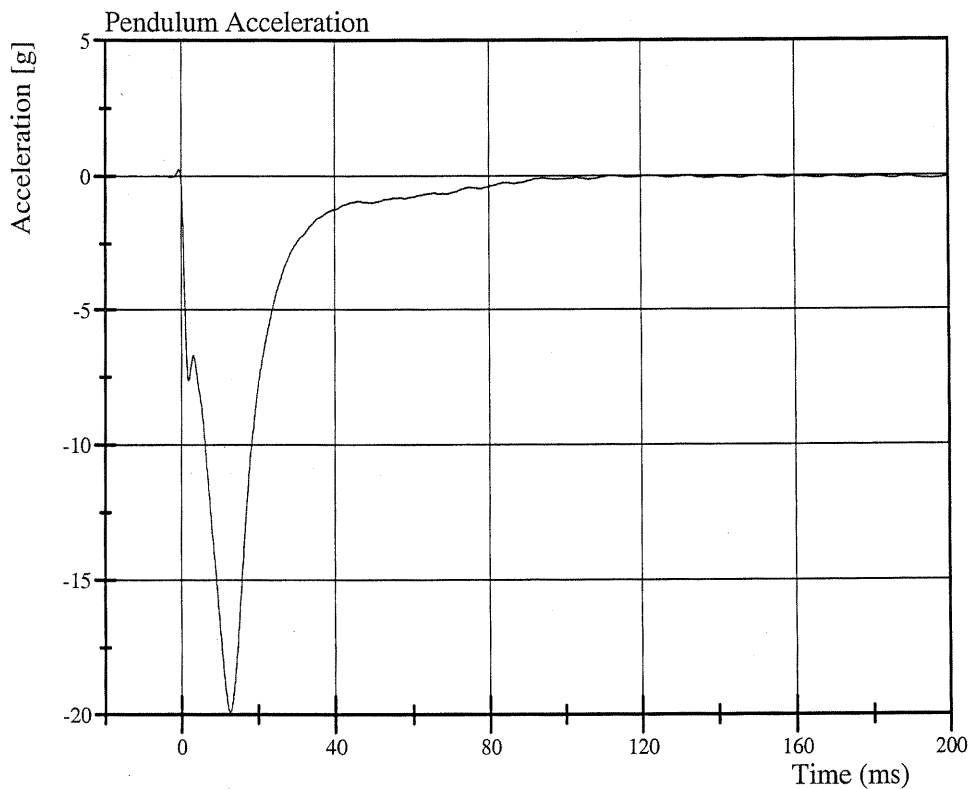
Vicent D. Dini

Approved

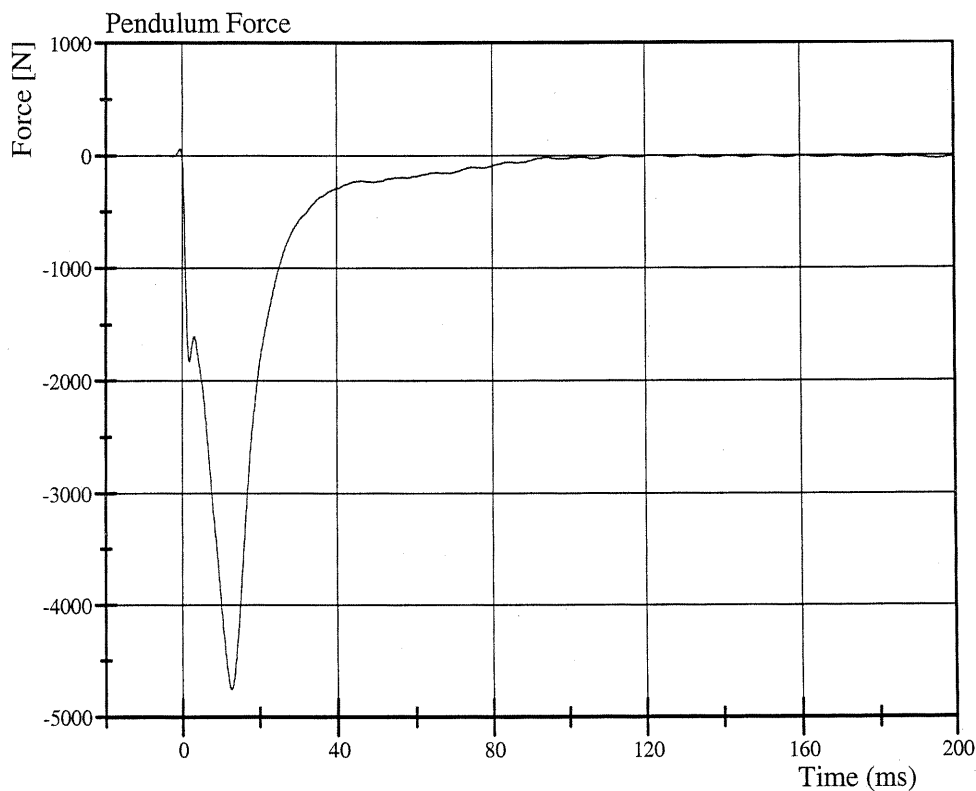
V. J. Walter

Transportation Research Center Inc.

Left Lateral Abdomen Compression
ES-2re Serial No. 010 Certification No. 4-6
Test Date: 6/15/2005



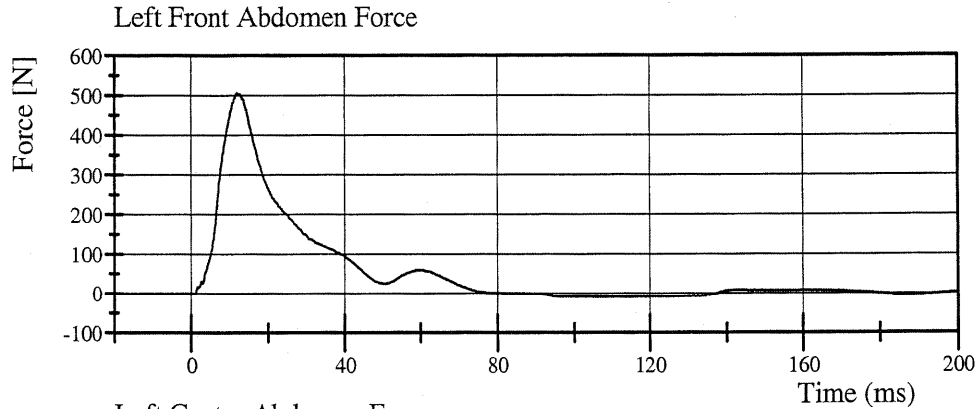
Filter Class: CFC_180
Max: 0.2 g at -0.6 ms
Min: -19.9 g at 12.7 ms



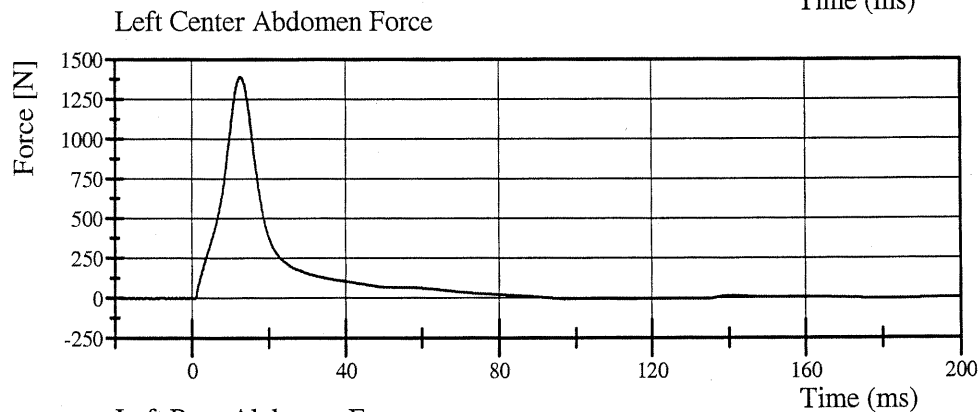
Filter Class: CFC_180
Max: 59.0 N at -0.6 ms
Min: -4,755.4 N at 12.7 ms

Transportation Research Center Inc.

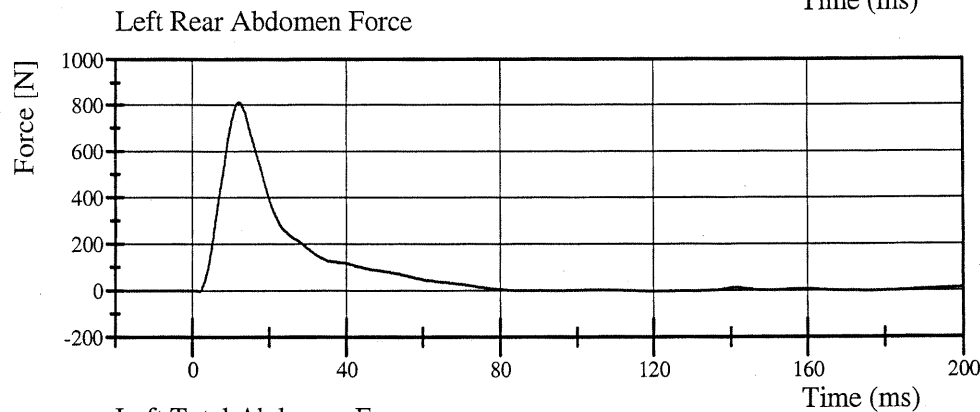
Left Lateral Abdomen Compression
ES-2re Serial No. 010 Certification No. 4-6
Test Date: 6/15/2005



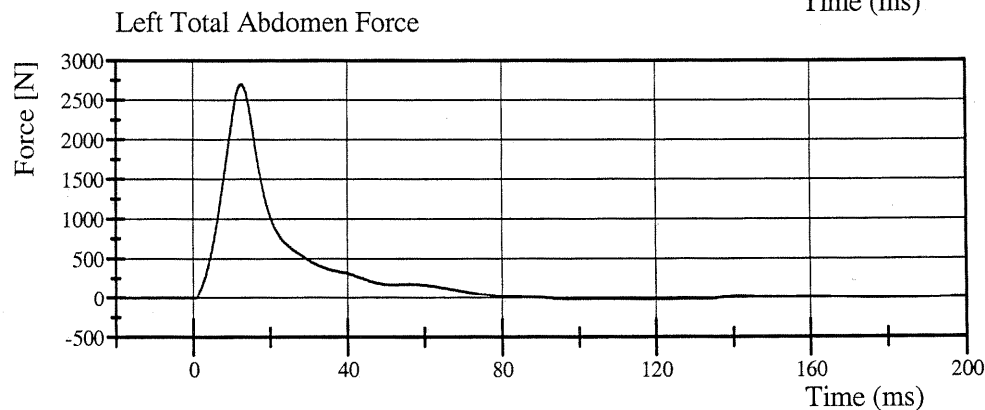
Filter Class: CFC_600
Max: 506.0 N at 12.0 ms
Min: -10.2 N at 114.8 ms



Filter Class: CFC_600
Max: 1,390.6 N at 12.6 ms
Min: -8.0 N at 96.9 ms



Filter Class: CFC_600
Max: 811.0 N at 12.1 ms
Min: -4.2 N at 1.8 ms



Filter Class: CFC_600
Max: 2,701.1 N at 12.6 ms
Min: -17.6 N at 96.9 ms

Transportation Research Center Inc.

Left Lateral Pelvis

ES-2re Serial No. 010 Certification No. 4-4

Test Date: 6/14/2005

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.4 °C	Yes
Relative Humidity	10 - 70 %	57 %	Yes
Test Probe Velocity	4.2 - 4.4 m/s	4.30 m/s	Yes
Test Probe Force			
Peak	(-4800) - (-5500) N	-4,961.9 N	Yes
Time of Peak	10.3 - 15.5 ms	14.96 ms	Yes
Pubic Symphysis Force			
Peak	(-1310) - (-1490) N	-1,405.4 N	Yes
Time of Peak	9.9 - 15.9 ms	16.00 ms	No

Test does not meet specifications.

Comments:

Technician

Vicent Oliver

Approved

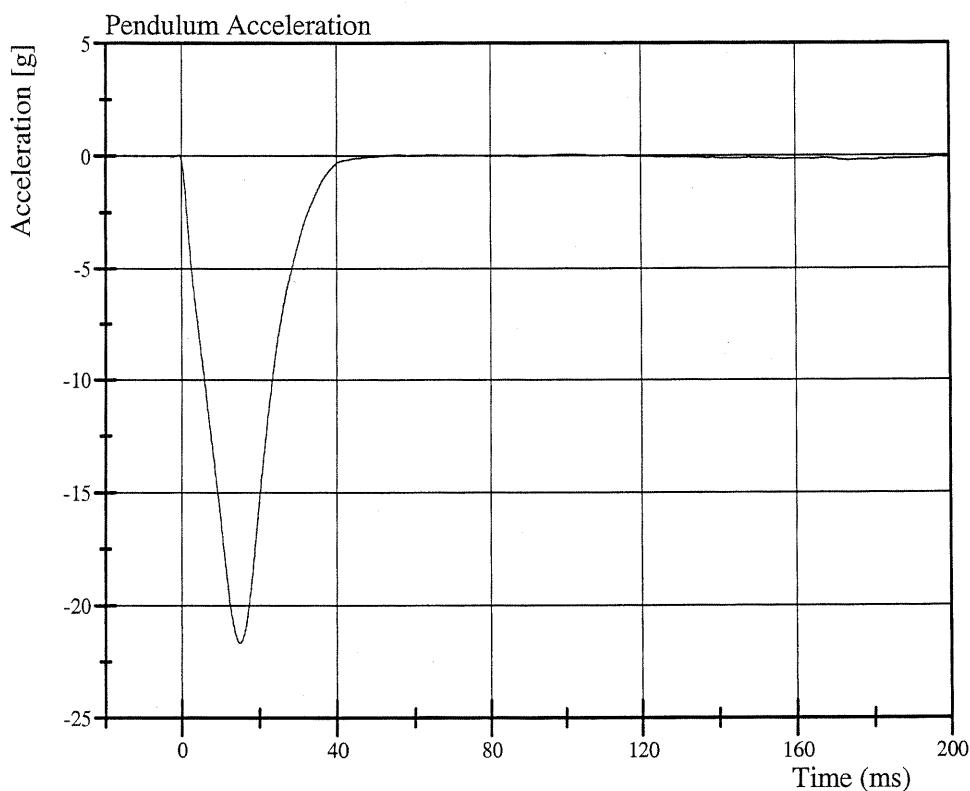
V.F. Walter

Transportation Research Center Inc.

Left Lateral Pelvis

ES-2re Serial No. 010 Certification No. 4-4

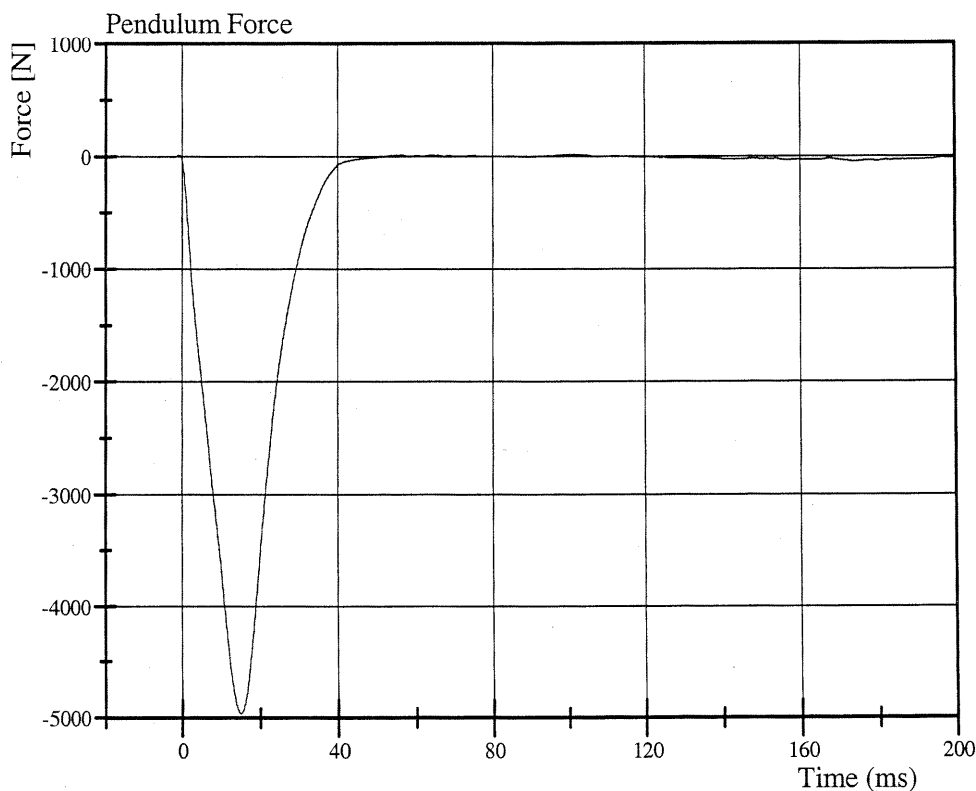
Test Date: 6/14/2005



Filter Class: CFC_180

Max: 0.1 g at 100.1 ms

Min: -21.7 g at 15.0 ms



Filter Class: CFC_180

Max: 14.8 N at 100.1 ms

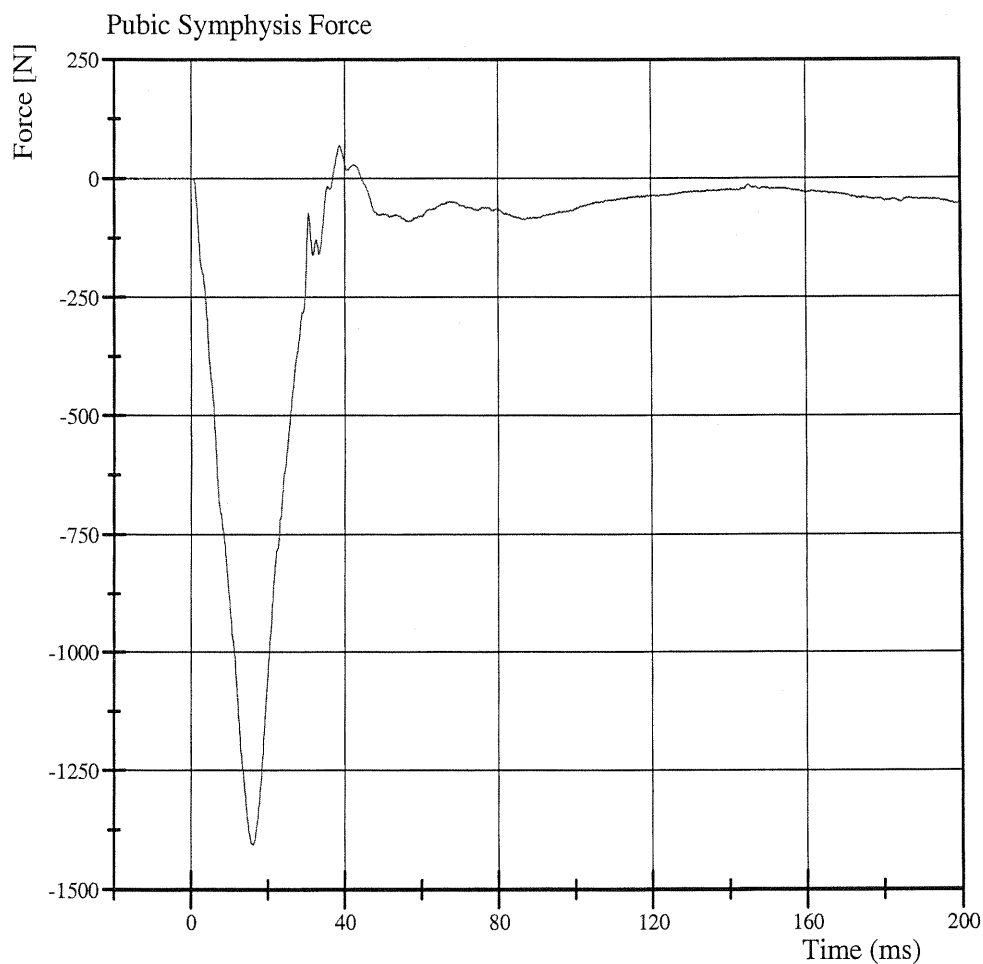
Min: -4,961.9 N at 15.0 ms

Transportation Research Center Inc.

Left Lateral Pelvis

ES-2re Serial No. 010 Certification No. 4-4

Test Date: 6/14/2005



Filter Class: CFC_600

Max: 69.1 N at 38.6 ms

Min: -1,405.4 N at 16.0 ms

Pre-Test Dummy Configuration and Performance Verification Data

Passenger Dummy S/N: 009

Transportation Research Center Inc.

Left Lateral Head Drop

ES-2re Serial No. 009 Certification No. 5-1

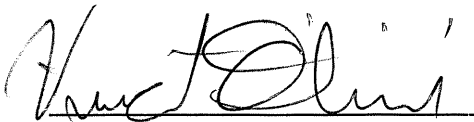
Test Date: 6/8/2005

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.5 °C	Yes
Relative Humidity	10 - 70 %	50 %	Yes
Peak Resultant Acceleration	125 - 155 g	148.7 g	Yes
Peak Longitudinal Acceleration	(-15) - 15 g	-4.5 g	Yes
Is Acceleration Curve Unimodal?	Yes	Yes	Yes

Test meets specifications.

Comments:

Technician



Approved

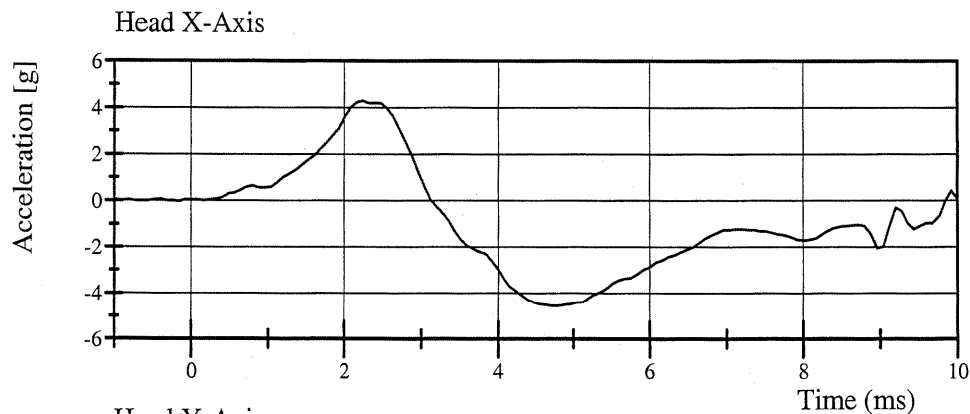


Transportation Research Center Inc.

Left Lateral Head Drop

ES-2re Serial No. 009 Certification No. 5-1

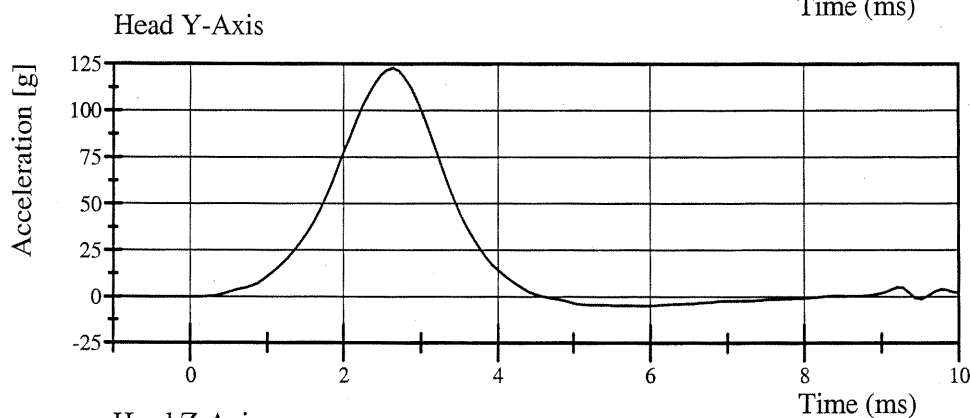
Test Date: 6/8/2005



Filter Class: CFC_1000

Max: 4.3 g at 2.2 ms

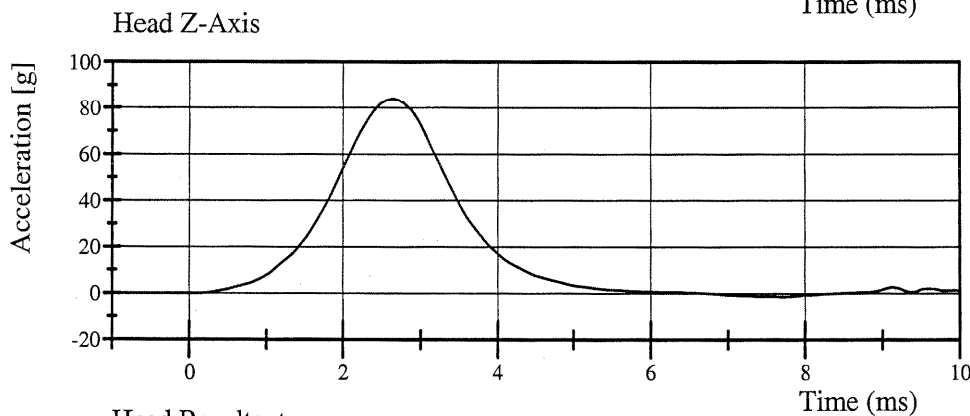
Min: -4.5 g at 4.7 ms



Filter Class: CFC_1000

Max: 122.6 g at 2.6 ms

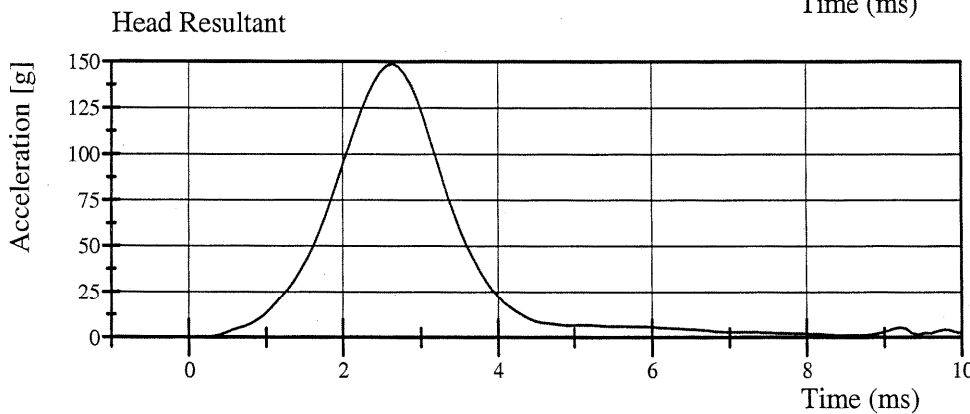
Min: -4.9 g at 6.0 ms



Filter Class: CFC_1000

Max: 84.1 g at 2.6 ms

Min: -1.4 g at 7.8 ms



Filter Class: CFC_1000

Max: 148.7 g at 2.6 ms

Min: 0.0 g at -0.6 ms

Transportation Research Center Inc.

Left Lateral Neck

ES-2re Serial No. 009 Certification No. 5-2

Test Date: 6/8/2005

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	50 %	Yes
Pendulum Acceleration within Corridor	Yes	Yes	Yes
Pendulum Velocity	3.3 - 3.5 m/s	3.47 m/s	Yes
Maximum Headform Flexion			
Peak	52 - 57 deg	52.9 deg	Yes
Time of Peak	54 - 64 ms	56.7 ms	Yes
Headform Flexion Decay - Peak to Zero	55 - 75 ms	62.4 ms	Yes

Test meets specifications.

Comments:

Technician

Vincent D'Amico

Approved

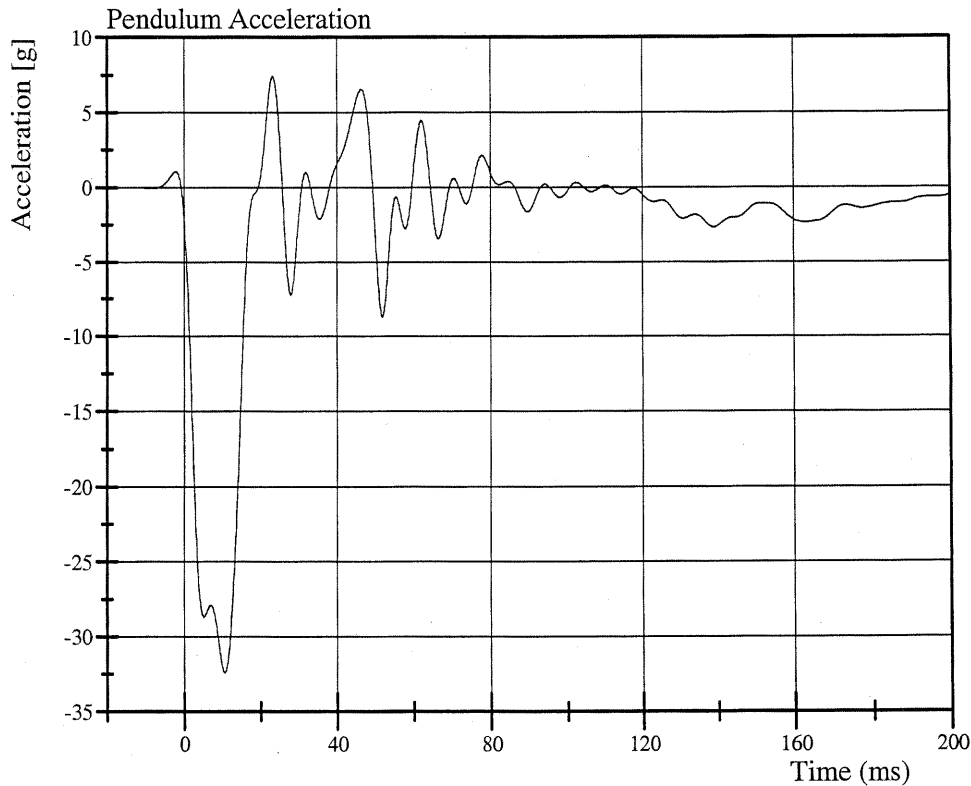
V.J. Watters

Transportation Research Center Inc.

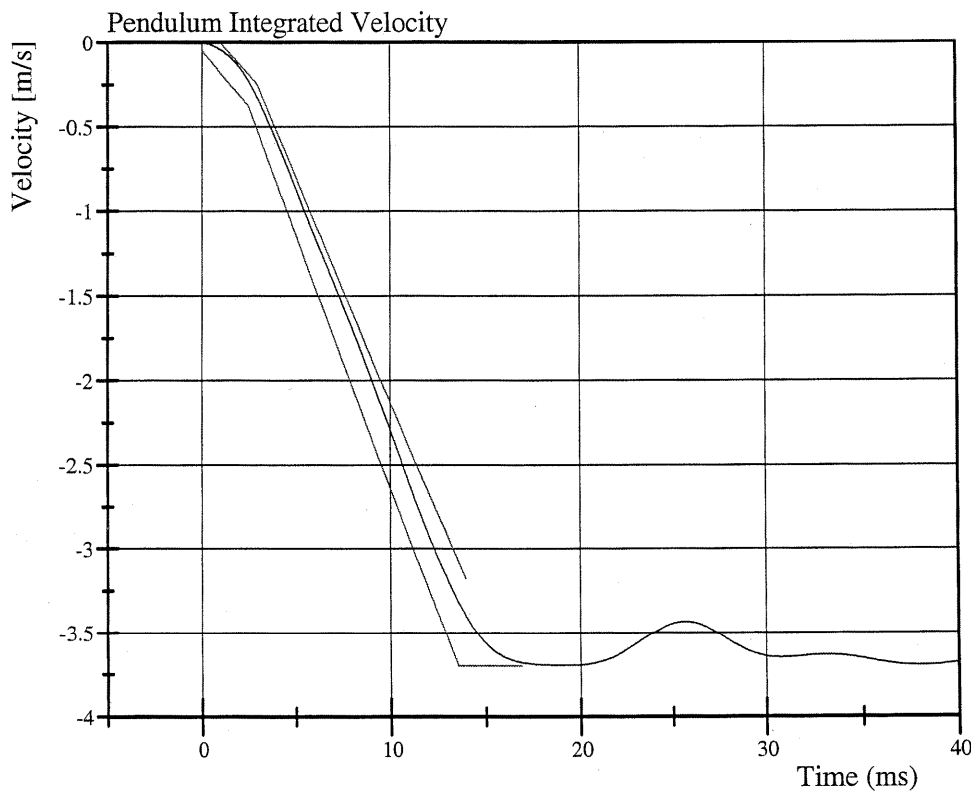
Left Lateral Neck

ES-2re Serial No. 009 Certification No. 5-2

Test Date: 6/8/2005



Filter Class: CFC_60
Max: 7.4 g at 23.3 ms
Min: -32.4 g at 10.6 ms



Filter Class: CFC_60
Max: 0.0 m/s at 0.0 ms
Min: -3.7 m/s at 38.0 ms

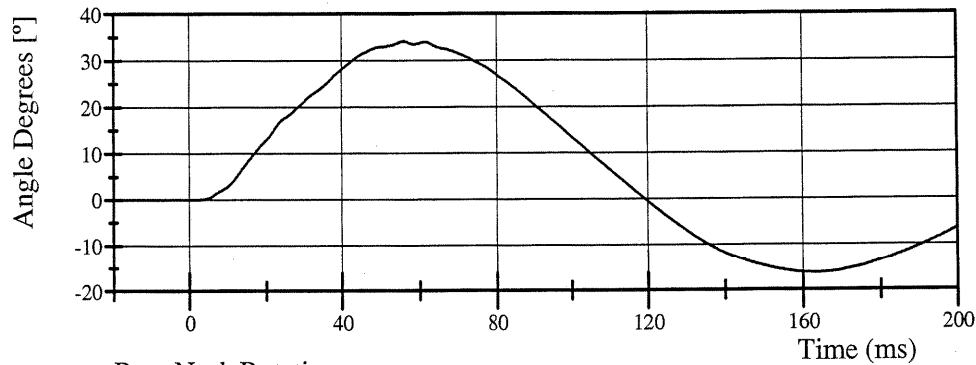
Transportation Research Center Inc.

Left Lateral Neck

ES-2re Serial No. 009 Certification No. 5-2

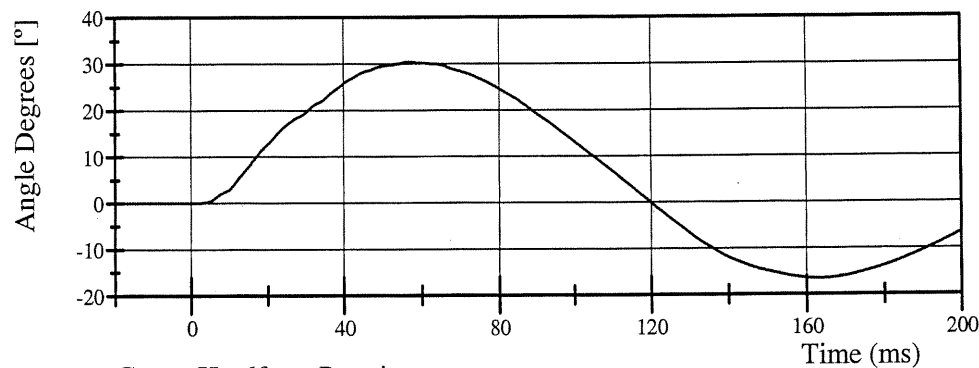
Test Date: 6/8/2005

Forward Neck Rotation



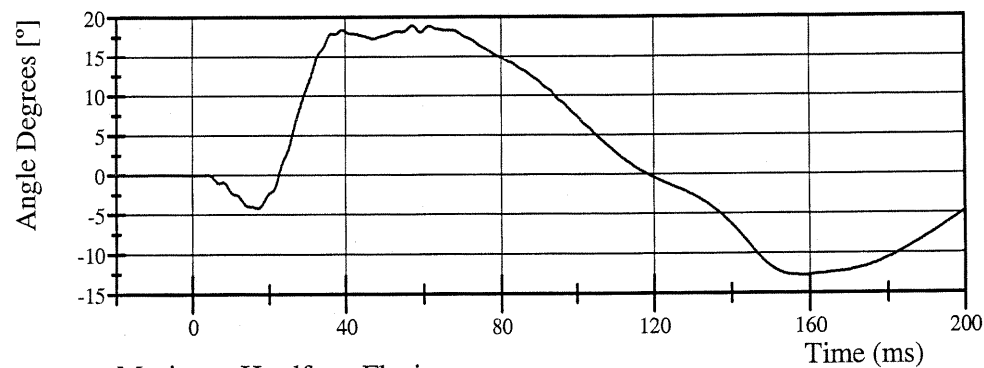
Filter Class: CFC_180
Max: 34.1 ° at 56.1 ms
Min: -16.3 ° at 163.4 ms

Rear Neck Rotation



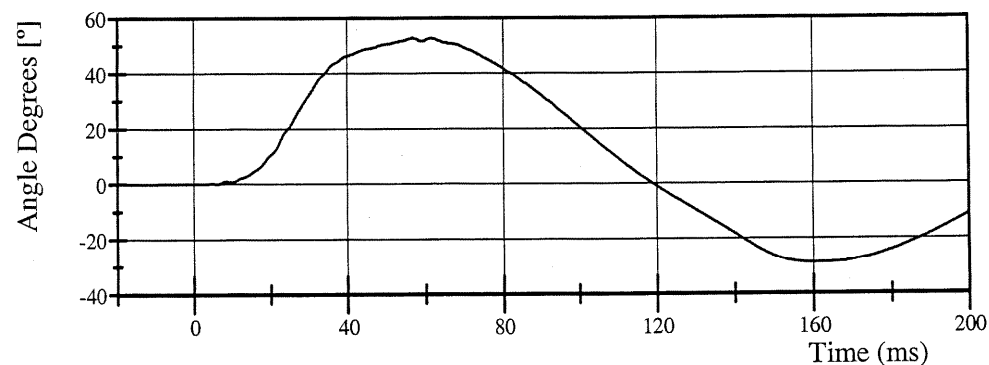
Filter Class: CFC_180
Max: 30.5 ° at 56.7 ms
Min: -16.6 ° at 163.2 ms

Center Headform Rotation



Filter Class: CFC_180
Max: 18.9 ° at 57.1 ms
Min: -12.8 ° at 158.9 ms

Maximum Headform Flexion



Filter Class: CFC_180
Max: 52.9 ° at 56.7 ms
Min: -28.9 ° at 159.7 ms

Transportation Research Center Inc.

3.0 m/s Upper Full Rib Module

ES-2re Serial No. 009 Certification No. 5-1

Test Date: 6/7/2005

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	53 %	Yes
3.0 m/s Test Test Probe Velocity	2.9 - 3.1 m/s	2.99 m/s	Yes
3.0 m/s Test Rib Displacement	36 - 40 mm	38.0 mm	Yes

Test meets specifications.

Comments:

Technician

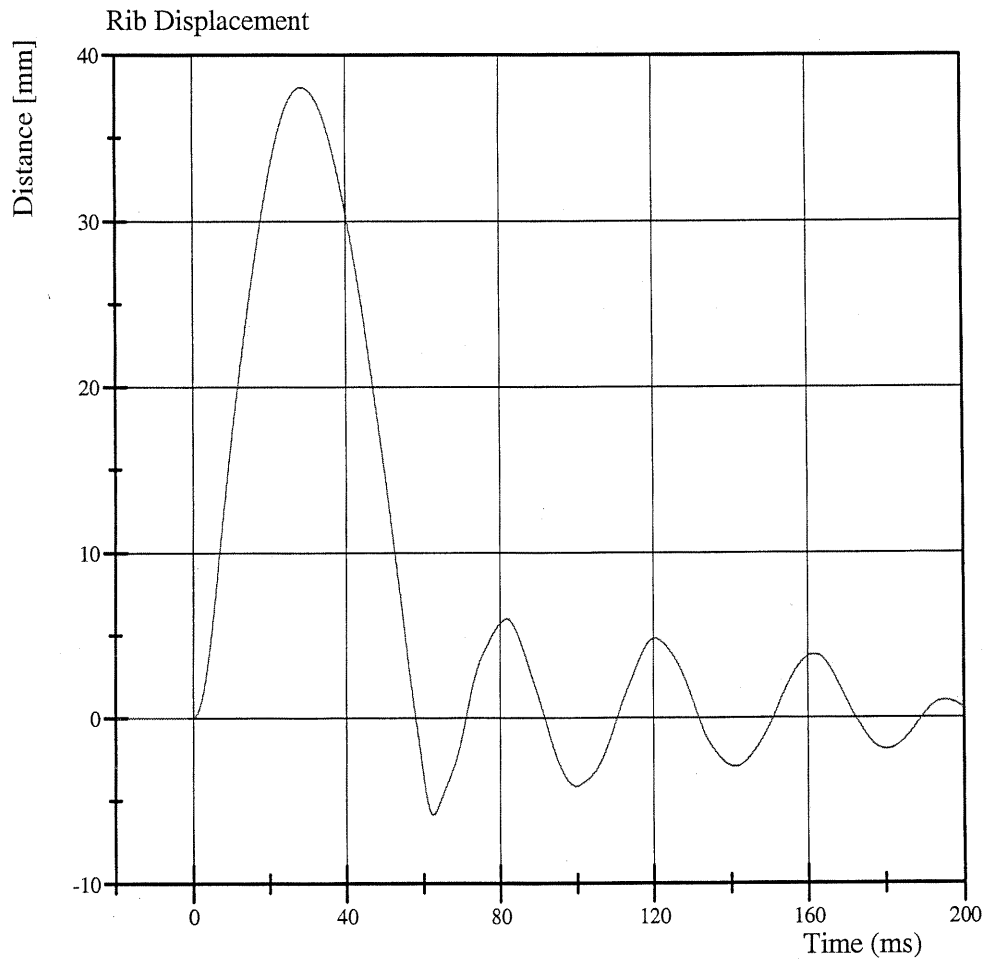
Vincent Oliver

Approved

V. L. Watts

Transportation Research Center Inc.

3.0 m/s Upper Full Rib Module
ES-2re Serial No. 009 Certification No. 5-1
Test Date: 6/7/2005



Filter Class: CFC_180
Max: 38.0 mm at 28.6 ms
Min: -5.9 mm at 62.4 ms

Transportation Research Center Inc.

4.0 m/s Upper Full Rib Module

ES-2re Serial No. 009 Certification No. 5-1

Test Date: 6/7/2005

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.5 °C	Yes
Relative Humidity	10 - 70 %	50 %	Yes
4.0 m/s Test Test Probe Velocity	3.9 - 4.1 m/s	3.99 m/s	Yes
4.0 m/s Test Rib Displacement	46 - 51 mm	47.8 mm	Yes

Test meets specifications.

Comments:

Technician

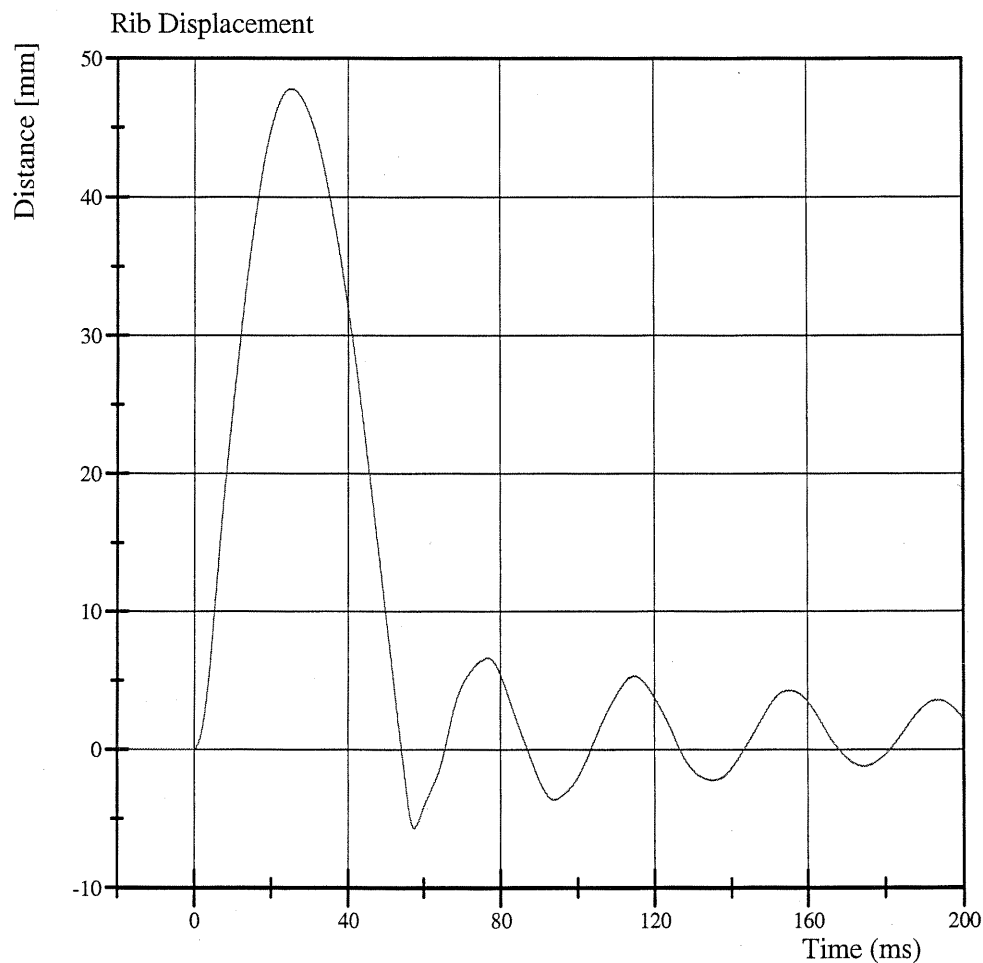
Vincent Oliver

Approved

V. H. Walter

Transportation Research Center Inc.

4.0 m/s Upper Full Rib Module
ES-2re Serial No. 009 Certification No. 5-1
Test Date: 6/7/2005



Filter Class: CFC_180
Max: 47.8 mm at 25.2 ms
Min: -5.7 mm at 57.5 ms

Transportation Research Center Inc.

3.0 m/s Center Full Rib Module

ES-2re Serial No. 009 Certification No. 5-1

Test Date: 6/7/2005

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	51 %	Yes
3.0 m/s Test Test Probe Velocity	2.9 - 3.1 m/s	2.99 m/s	Yes
3.0 m/s Test Rib Displacement	36 - 40 mm	37.7 mm	Yes

Test meets specifications.

Comments:

Technician

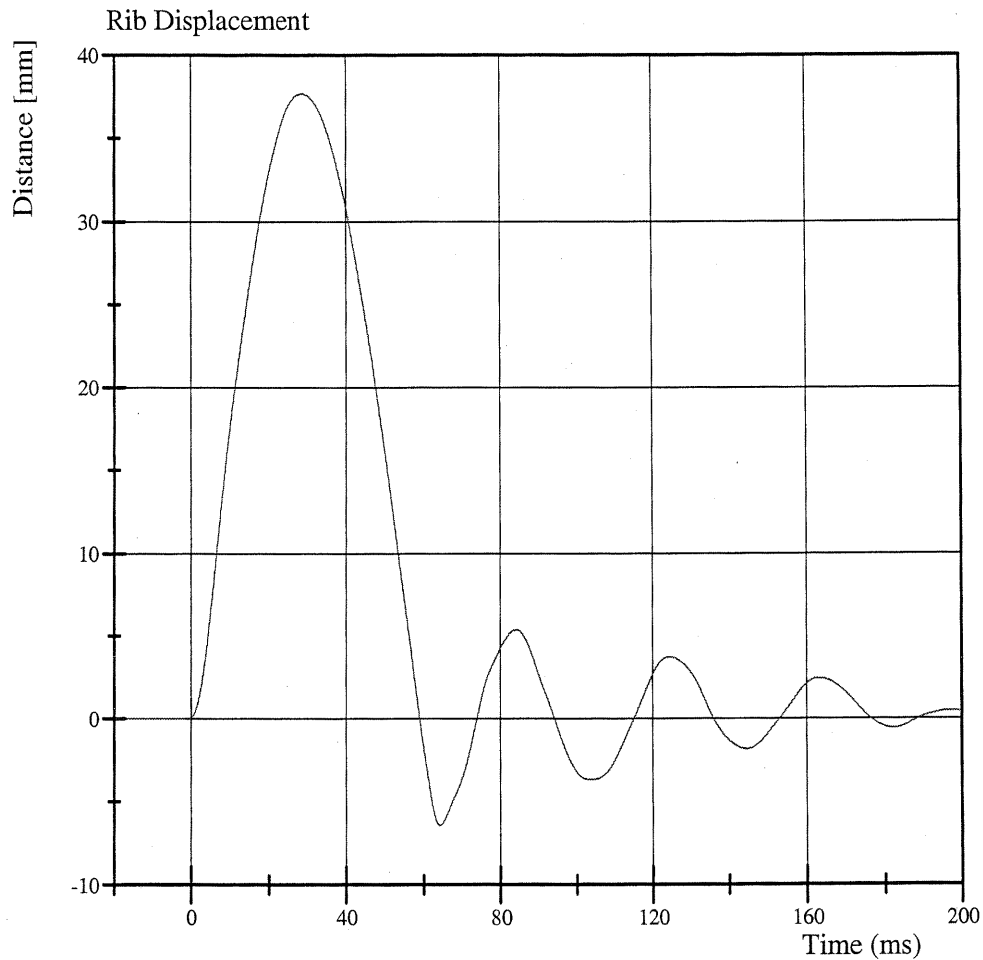
Vincent Oliveri

Approved

V. F. Watts

Transportation Research Center Inc.

3.0 m/s Center Full Rib Module
ES-2re Serial No. 009 Certification No. 5-1
Test Date: 6/7/2005



Filter Class: CFC_180
Max: 37.7 mm at 28.9 ms
Min: -6.4 mm at 64.2 ms

Transportation Research Center Inc.

4.0 m/s Center Full Rib Module

ES-2re Serial No. 009 Certification No. 5-1

Test Date: 6/7/2005

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.5 °C	Yes
Relative Humidity	10 - 70 %	50 %	Yes
4.0 m/s Test Test Probe Velocity	3.9 - 4.1 m/s	3.98 m/s	Yes
4.0 m/s Test Rib Displacement	46 - 51 mm	49.0 mm	Yes

Test meets specifications.

Comments:

Technician

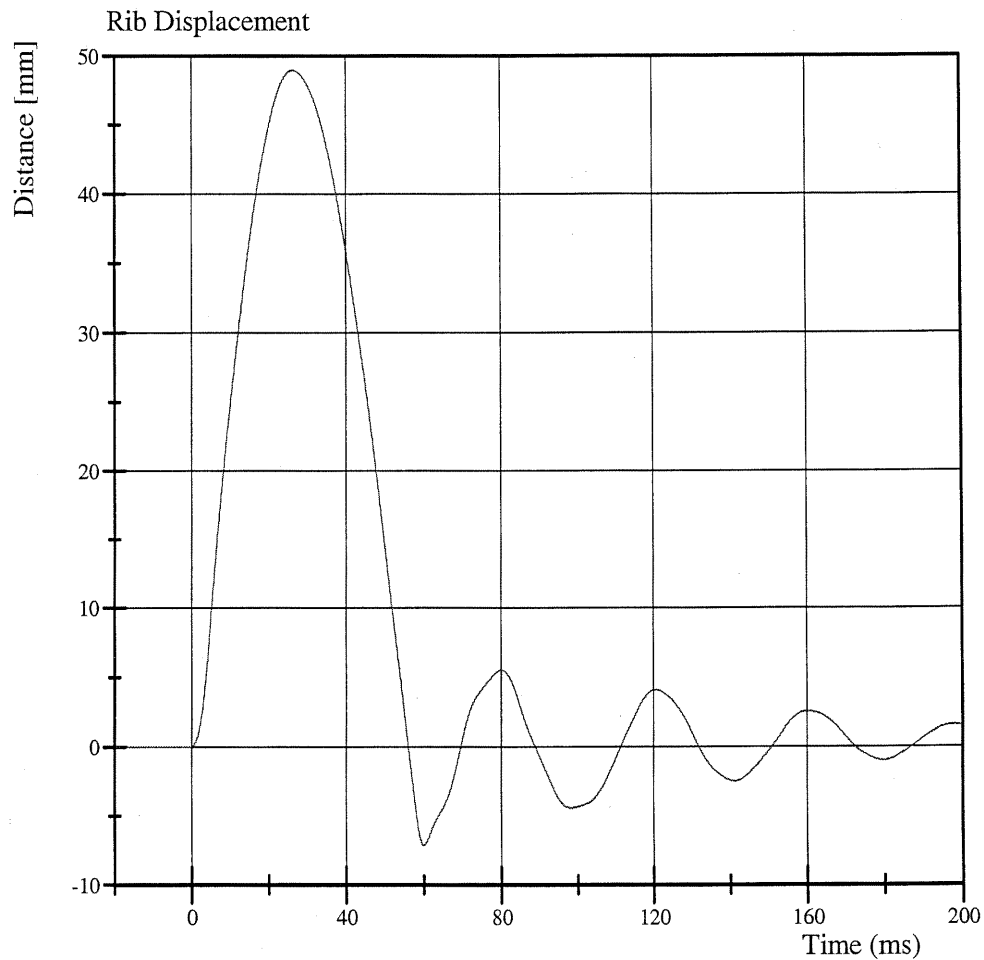
Vincent Oliveri

Approved

V. L. Watter

Transportation Research Center Inc.

4.0 m/s Center Full Rib Module
ES-2re Serial No. 009 Certification No. 5-1
Test Date: 6/7/2005



Filter Class: CFC_180
Max: 49.0 mm at 26.3 ms
Min: -7.1 mm at 59.9 ms

Transportation Research Center Inc.

3.0 m/s Lower Full Rib Module

ES-2re Serial No. 009 Certification No. 5-1

Test Date: 6/7/2005

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	49 %	Yes
3.0 m/s Test Test Probe Velocity	2.9 - 3.1 m/s	3.00 m/s	Yes
3.0 m/s Test Rib Displacement	36 - 40 mm	39.3 mm	Yes

Test meets specifications.

Comments:

Technician

Vincent Olm

Approved

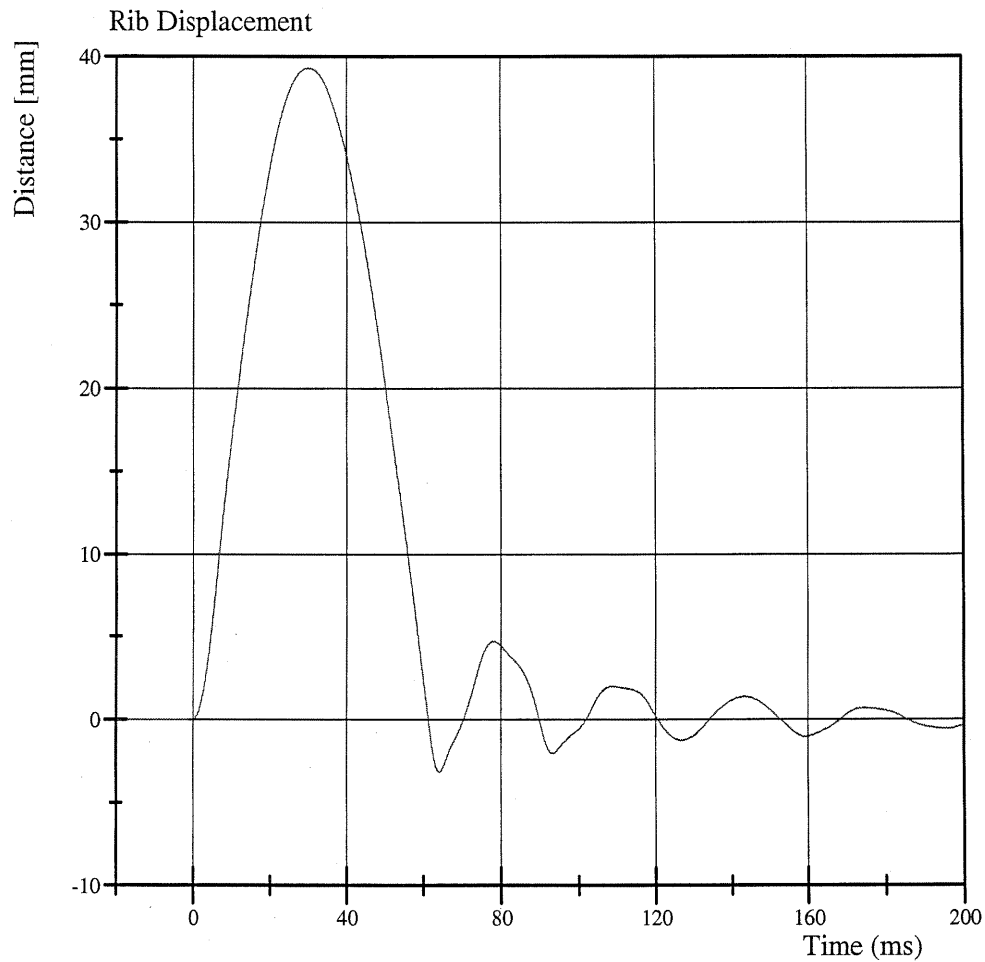
V. J. Walter

Transportation Research Center Inc.

3.0 m/s Lower Full Rib Module

ES-2re Serial No. 009 Certification No. 5-1

Test Date: 6/7/2005



Filter Class: CFC_180
Max: 39.3 mm at 30.0 ms
Min: -3.1 mm at 64.1 ms

Transportation Research Center Inc.

4.0 m/s Lower Full Rib Module

ES-2re Serial No. 009 Certification No. 5-1

Test Date: 6/7/2005

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.5 °C	Yes
Relative Humidity	10 - 70 %	50 %	Yes
4.0 m/s Test Test Probe Velocity	3.9 - 4.1 m/s	3.98 m/s	Yes
4.0 m/s Test Rib Displacement	46 - 51 mm	50.0 mm	Yes

Test meets specifications.

Comments:

Technician

Vincent Di...

Approved

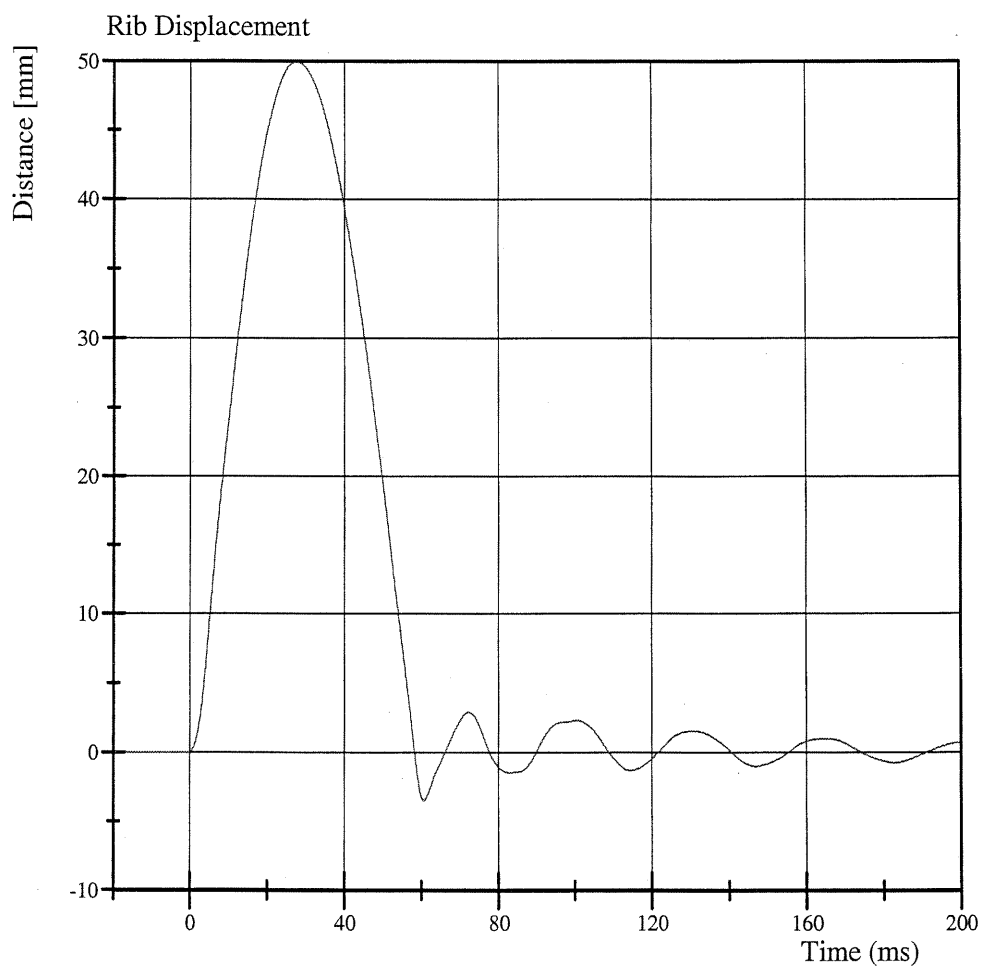
V. F. Watter

Transportation Research Center Inc.

4.0 m/s Lower Full Rib Module

ES-2re Serial No. 009 Certification No. 5-1

Test Date: 6/7/2005



Filter Class: CFC_180
Max: 50.0 mm at 27.6 ms
Min: -3.5 mm at 60.6 ms

Transportation Research Center Inc.

Left Lateral Lumbar

ES-2re Serial No. 009 Certification No. 5-5

Test Date: 6/8/2005

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	50 %	Yes
Pendulum Acceleration within Corridor	Yes	Yes	Yes
Pendulum Velocity	5.95 - 6.15 m/s	6.127 m/s	Yes
Maximum Headform Flexion			
Peak	45 - 55 deg	46.5 deg	Yes
Time of Peak	39 - 53 ms	45.5 ms	Yes
Headform Flexion Decay - Peak to Zero	40 - 65 ms	40.8 ms	Yes

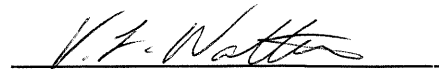
Test meets specifications.

Comments:

Technician



Approved

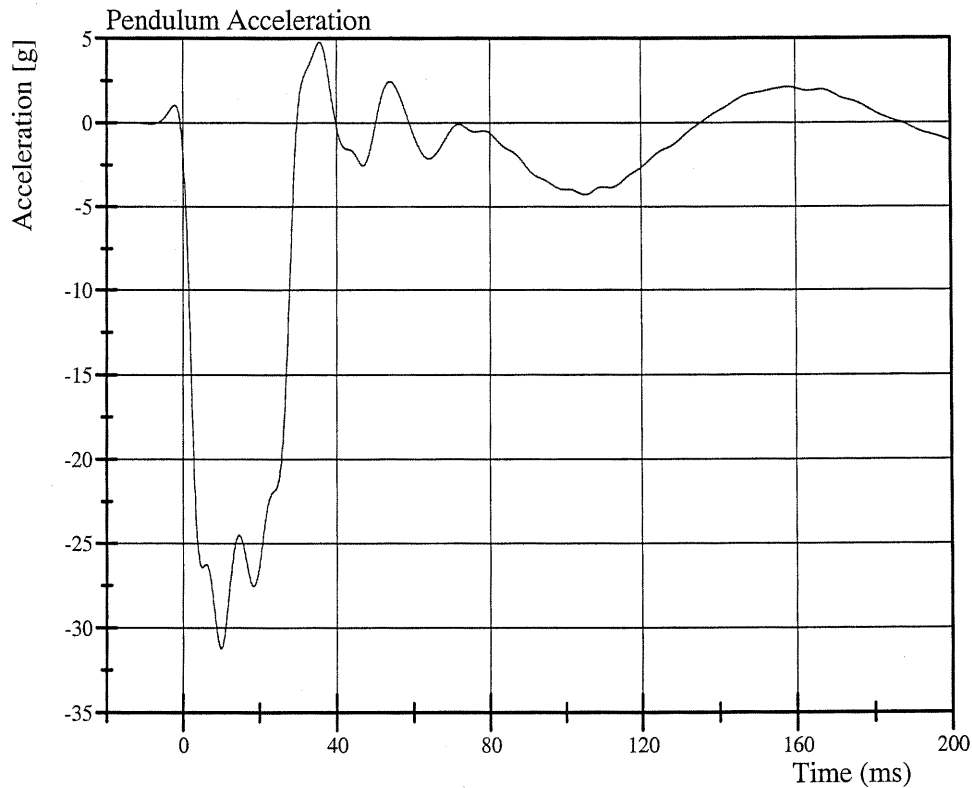


Transportation Research Center Inc.

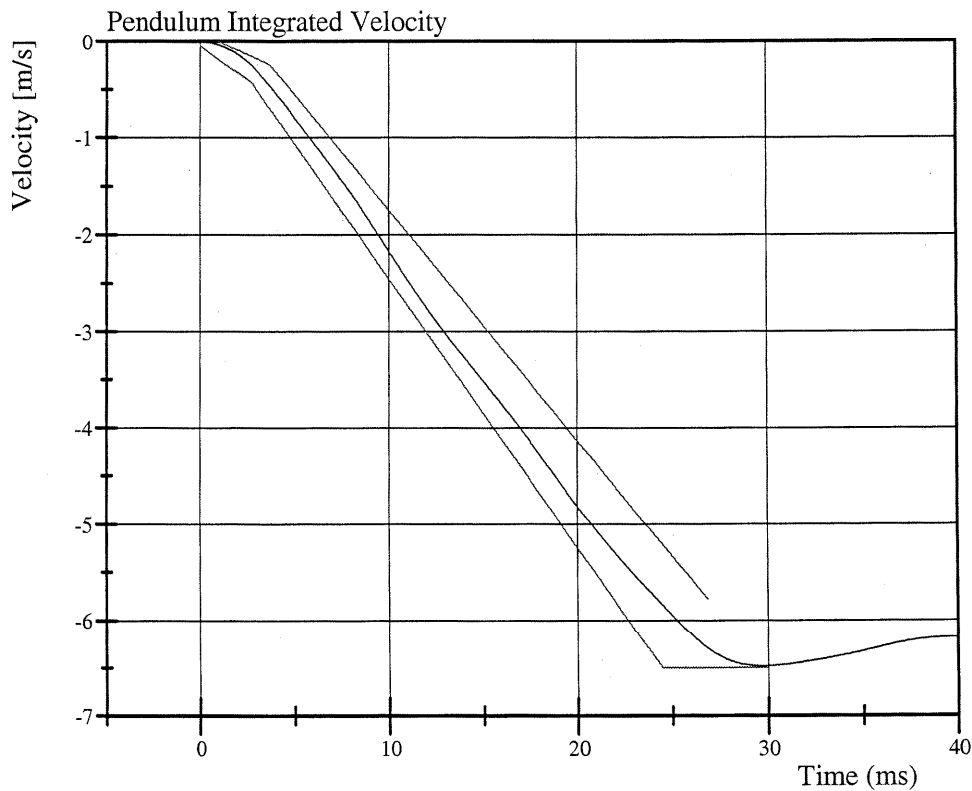
Left Lateral Lumbar

ES-2re Serial No. 009 Certification No. 5-5

Test Date: 6/8/2005



Filter Class: CFC_60
Max: 4.8 g at 35.5 ms
Min: -31.2 g at 10.0 ms



Filter Class: CFC_60
Max: 0.0 m/s at 0.0 ms
Min: -6.5 m/s at 29.7 ms



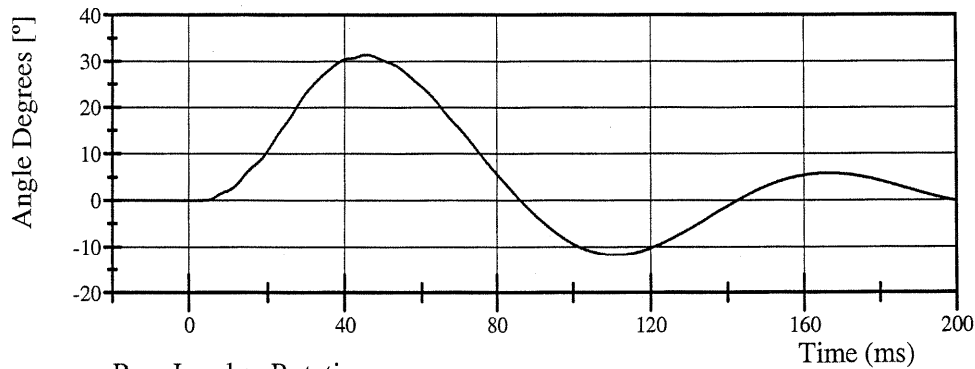
Transportation Research Center Inc.

Left Lateral Lumbar

ES-2re Serial No. 009 Certification No. 5-5

Test Date: 6/8/2005

Forward Lumbar Rotation

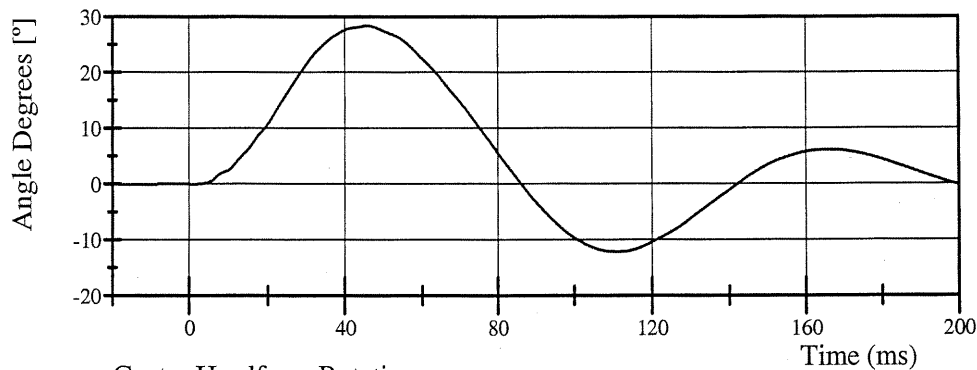


Filter Class: CFC_180

Max: 31.4 ° at 45.4 ms

Min: -11.8 ° at 110.9 ms

Rear Lumbar Rotation

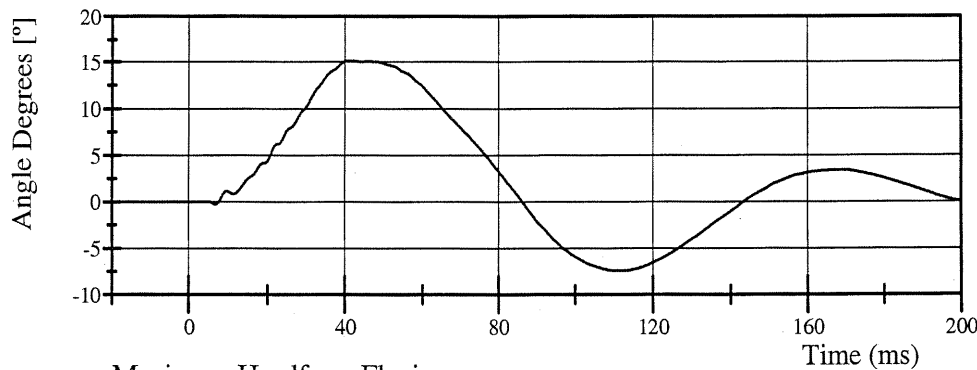


Filter Class: CFC_180

Max: 28.4 ° at 45.8 ms

Min: -12.1 ° at 111.2 ms

Center Headform Rotation

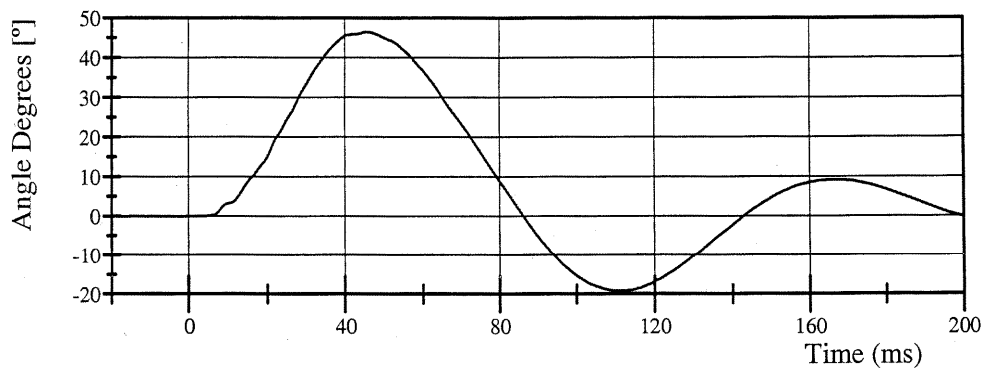


Filter Class: CFC_180

Max: 15.2 ° at 41.2 ms

Min: -7.4 ° at 111.9 ms

Maximum Headform Flexion



Filter Class: CFC_180

Max: 46.5 ° at 45.5 ms

Min: -19.2 ° at 111.0 ms

Transportation Research Center Inc.

Left Lateral Shoulder

ES-2re Serial No. 009 Certification No. 5-3

Test Date: 6/14/2005

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	53 %	Yes
Test Probe Velocity	4.2 - 4.4 m/s	4.25 m/s	Yes
Test Probe Acceleration	(-7.5) - (-10.5) g	-10.17 g	Yes

Test meets specifications.

Comments:

Technician

Vicente Duran

Approved

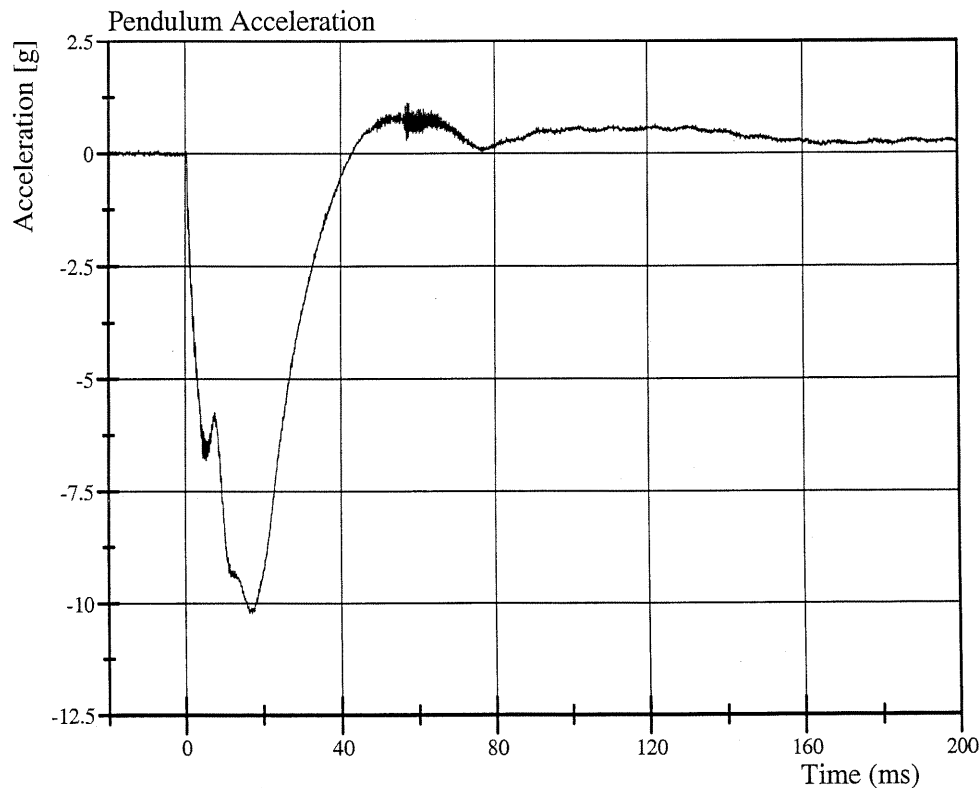
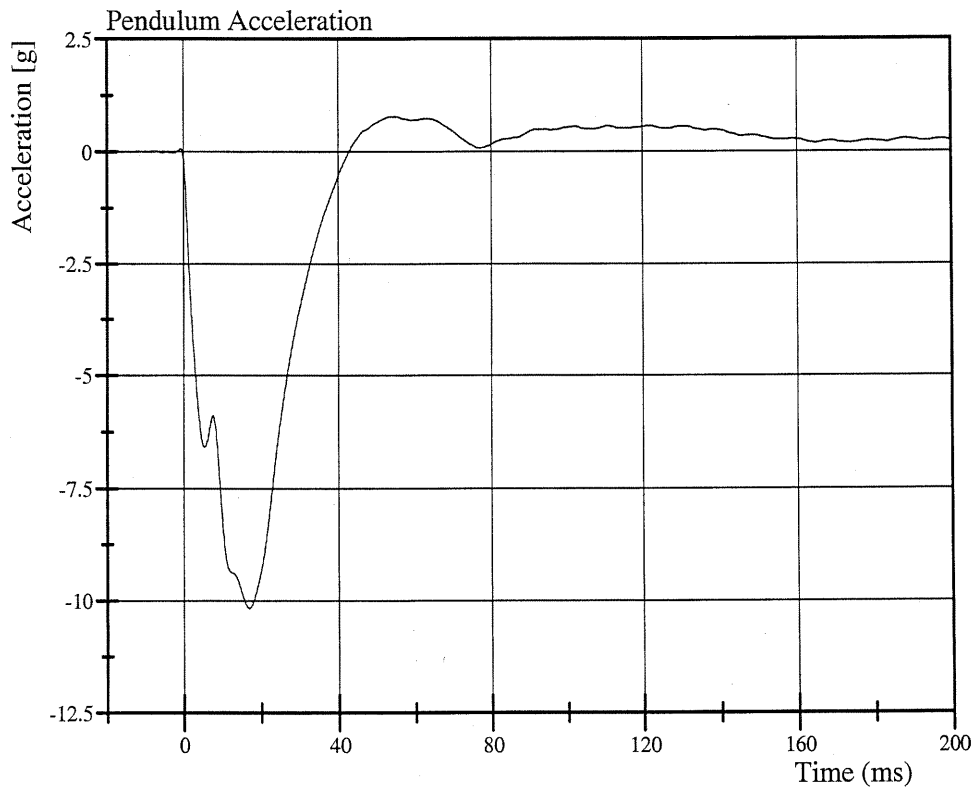
V. J. Watts

Transportation Research Center Inc.

Left Lateral Shoulder

ES-2re Serial No. 009 Certification No. 5-3

Test Date: 6/14/2005



Transportation Research Center Inc.

Left Lateral Abdomen Compression
ES-2re Serial No. 009 Certification No. 5-3
Test Date: 6/15/2005

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.6 °C	Yes
Relative Humidity	10 - 70 %	51 %	Yes
Test Probe Velocity	3.9 - 4.1 m/s	3.91 m/s	Yes
Test Probe Force			
Peak	(-4000) - (-4800) N	-4,732.0 N	Yes
Time of Peak	10.6 - 13.0 ms	11.36 ms	Yes
Total Abdominal Force			
Peak	2200 - 2700 N	2,345.5 N	Yes
Time of Peak	10.0 - 12.3 ms	11.36 ms	Yes

Test meets specifications.

Comments:

Technician

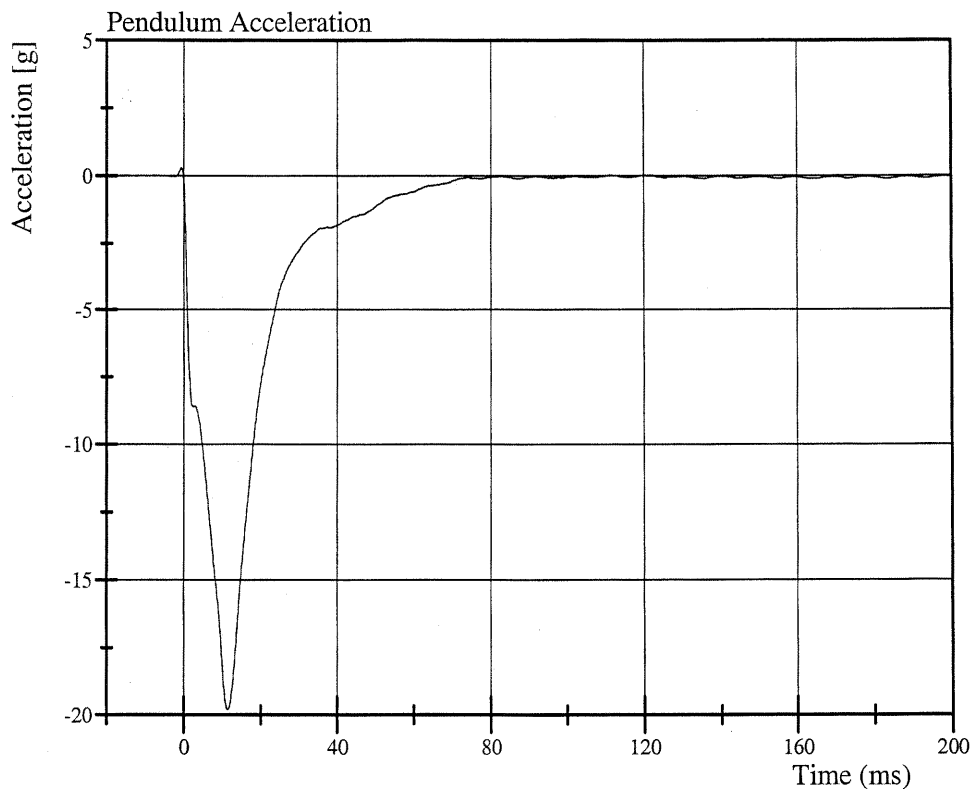
Vincent Oliveri

Approved

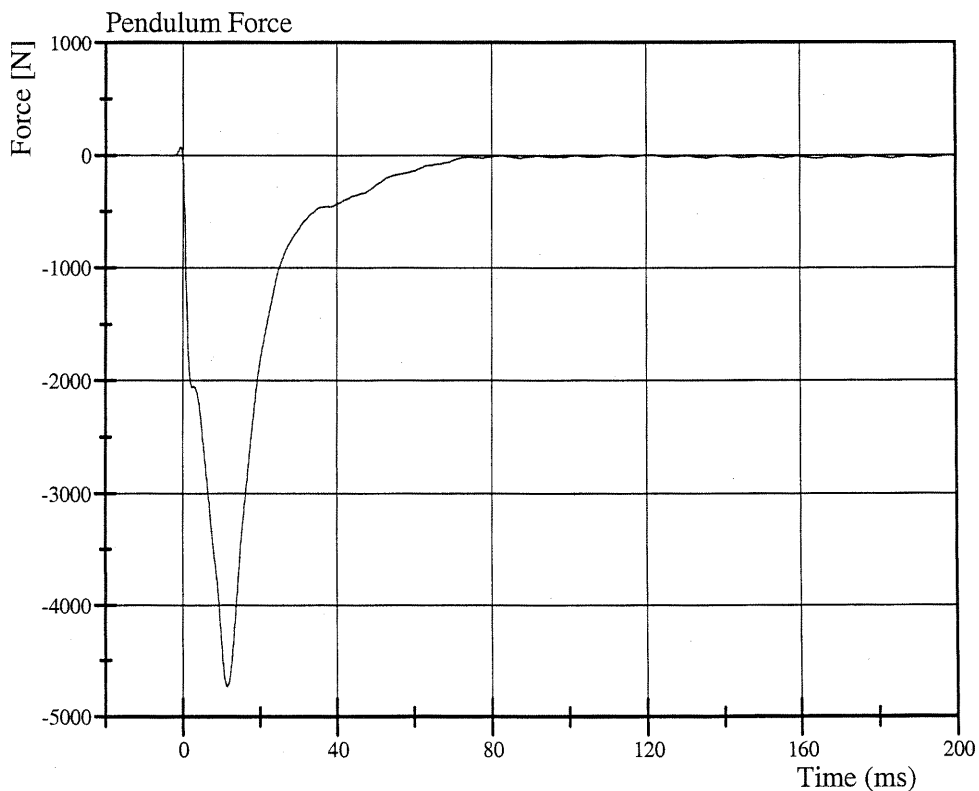
V.J. Watter

Transportation Research Center Inc.

Left Lateral Abdomen Compression
ES-2re Serial No. 009 Certification No. 5-3
Test Date: 6/15/2005



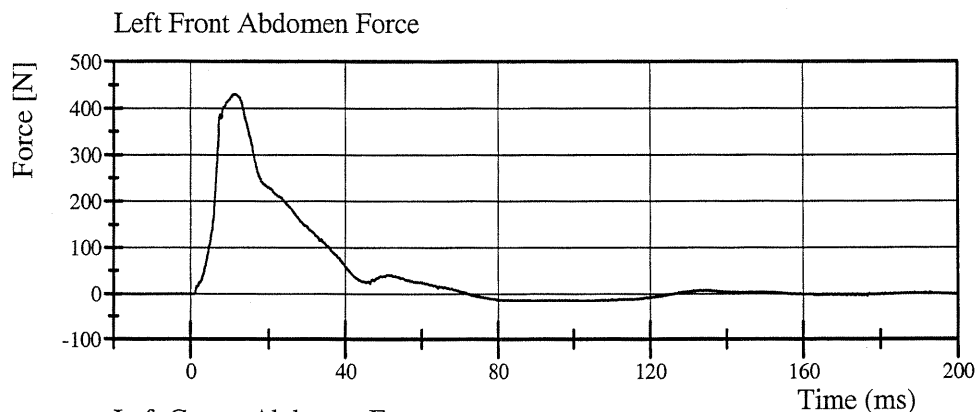
Filter Class: CFC_180
Max: 0.3 g at -0.6 ms
Min: -19.8 g at 11.4 ms



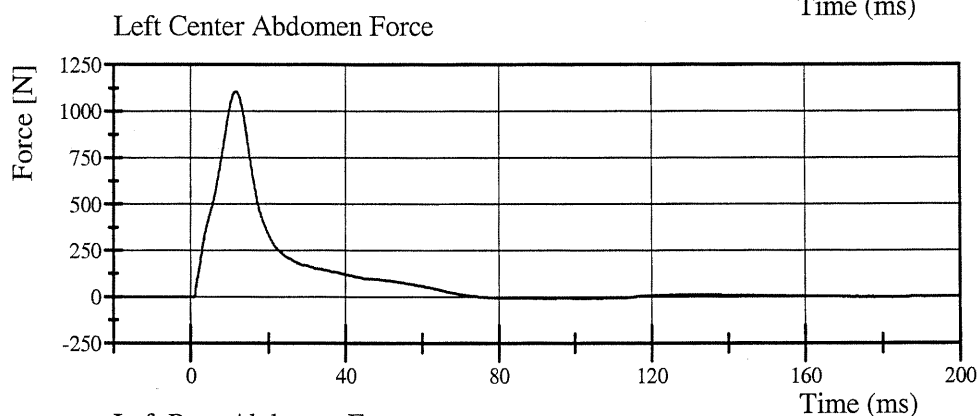
Filter Class: CFC_180
Max: 68.9 N at -0.6 ms
Min: -4,732.0 N at 11.4 ms

Transportation Research Center Inc.

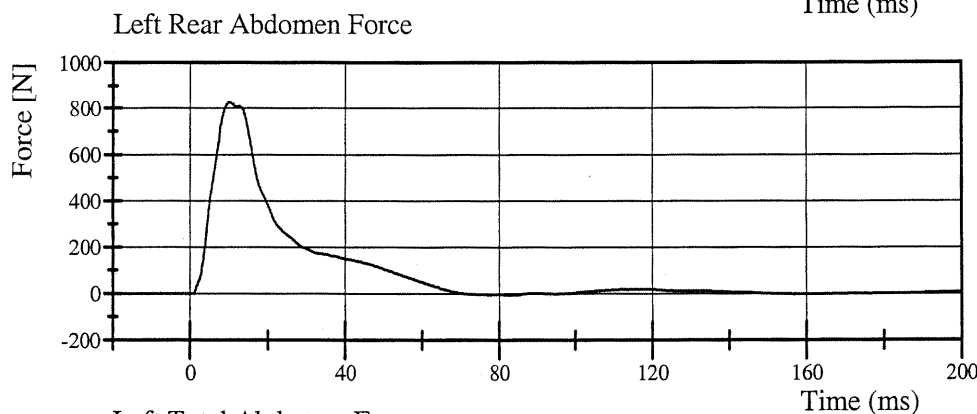
Left Lateral Abdomen Compression
ES-2re Serial No. 009 Certification No. 5-3
Test Date: 6/15/2005



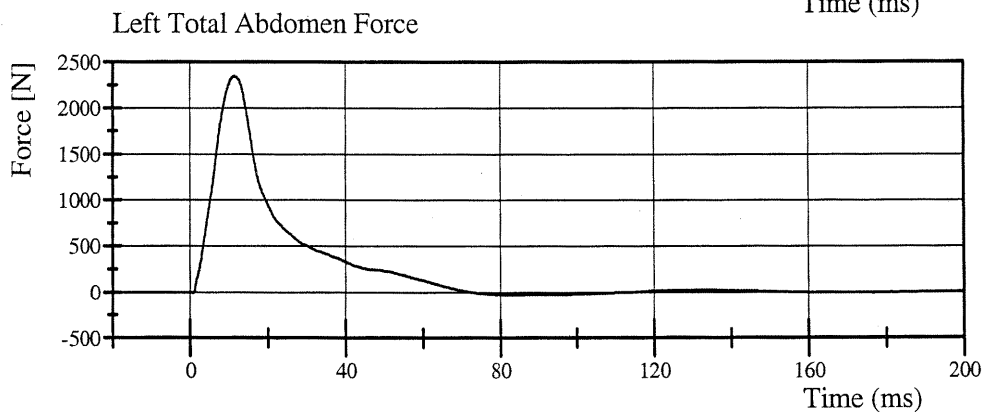
Filter Class: CFC_600
Max: 430.2 N at 11.6 ms
Min: -15.2 N at 104.2 ms



Filter Class: CFC_600
Max: 1,105.2 N at 11.5 ms
Min: -8.8 N at 103.8 ms



Filter Class: CFC_600
Max: 827.6 N at 10.1 ms
Min: -5.4 N at 83.4 ms



Filter Class: CFC_600
Max: 2,345.5 N at 11.4 ms
Min: -26.6 N at 83.4 ms

Transportation Research Center Inc.

Left Lateral Pelvis

ES-2re Serial No. 009 Certification No. 5-1

Test Date: 6/14/2005

Test Parameter	Specification	Test Results	Pass
Temperature	20.6 - 22.2 °C	21.3 °C	Yes
Relative Humidity	10 - 70 %	52 %	Yes
Test Probe Velocity	4.2 - 4.4 m/s	4.30 m/s	Yes
Test Probe Force			
Peak	(-4800) - (-5500) N	-5,013.9 N	Yes
Time of Peak	10.3 - 15.5 ms	14.96 ms	Yes
Pubic Symphysis Force			
Peak	(-1310) - (-1490) N	-1,459.9 N	Yes
Time of Peak	9.9 - 15.9 ms	15.20 ms	Yes

Test meets specifications.

Comments:

Technician

Vincent D'Amico

Approved

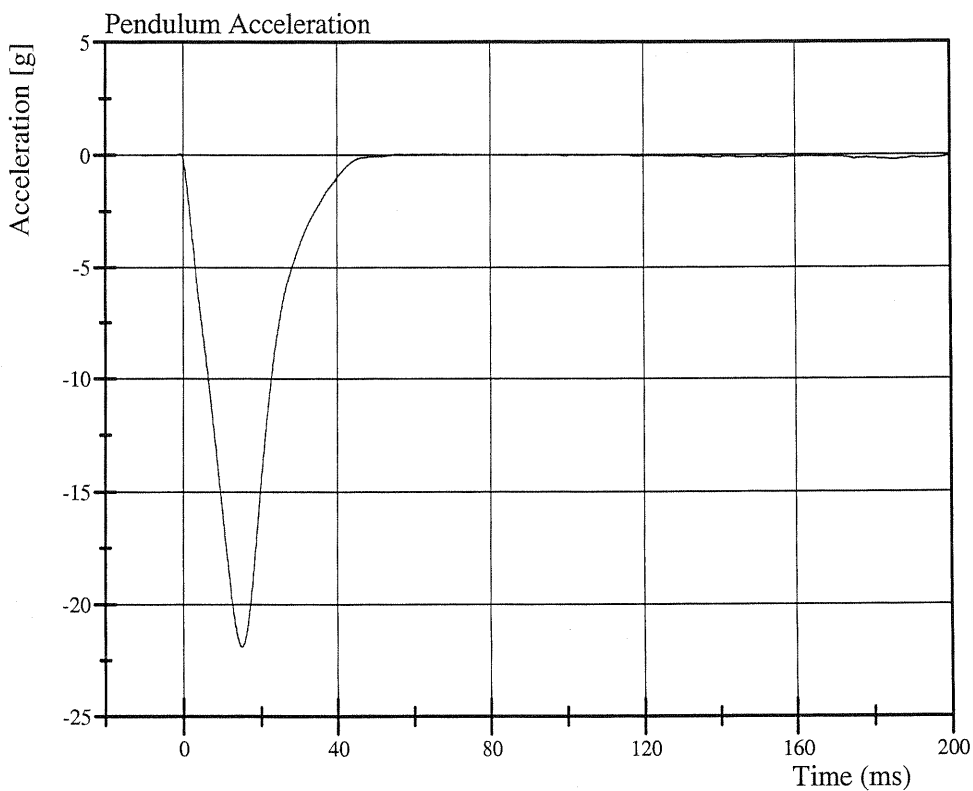
K.F. Walther

Transportation Research Center Inc.

Left Lateral Pelvis

ES-2re Serial No. 009 Certification No. 5-1

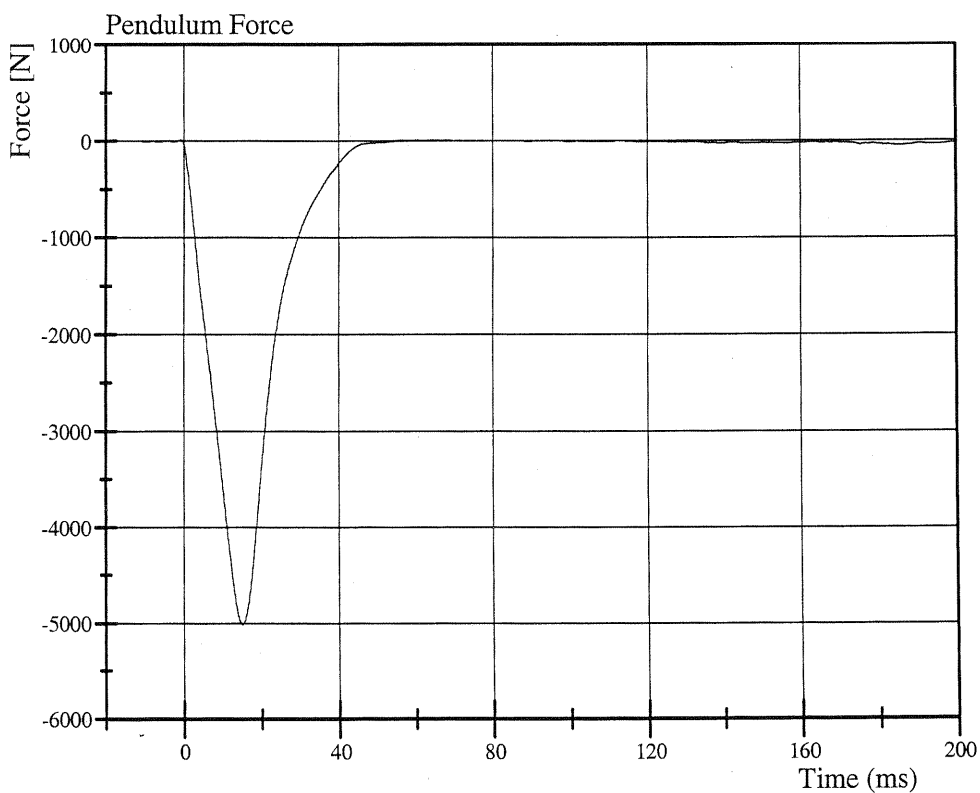
Test Date: 6/14/2005



Filter Class: CFC_180

Max: 0.1 g at -0.7 ms

Min: -21.9 g at 15.0 ms



Filter Class: CFC_180

Max: 13.9 N at -0.7 ms

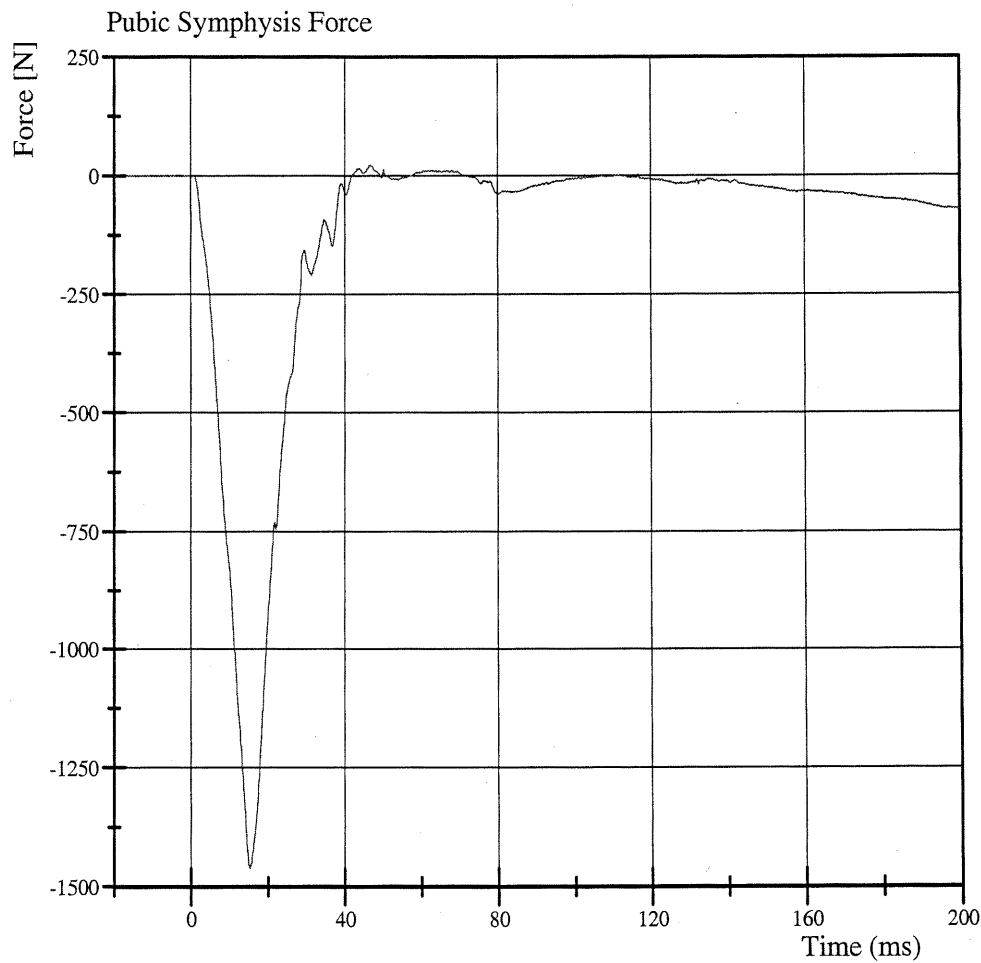
Min: -5,013.9 N at 15.0 ms

Transportation Research Center Inc.

Left Lateral Pelvis

ES-2re Serial No. 009 Certification No. 5-1

Test Date: 6/14/2005



Filter Class: CFC_600

Max: 22.2 N at 46.8 ms

Min: -1,459.9 N at 15.2 ms

Appendix D

Miscellaneous Test 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

<u>Lumbar load cells:</u>	+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
Used for 050624 Test

<u>Typical Test Measurements</u>	<u>Channel Class</u>
Vehicle Structural Accelerations for use in:	
Total vehicle comparison	60
Integration for velocity or displacement	180
Anthropomorphic Test Device	
Head accelerations	1000
Upper neck force	1000
Upper neck moment	600
Lower neck force	1000
Lower neck moment	600
Shoulder force	600
Upper spine acceleration	180
Upper rib Y-axis acceleration	180
Mid rib Y-axis acceleration	180
Lower rib Y-axis acceleration	180
Upper rib deflection	180
Middle rib deflection	180
Lower rib deflection	180
Lower spine acceleration	180
Torso force	600
Torso moment	600
T12 force	600
T12 moment	600
Abdomen front force	600
Abdomen mid force	600
Abdomen rear force	600
Pubic symphysis force	600
Right femur force	600
Right femur moment	600
Left femur force	600
Left femur moment	600
Pelvis acceleration	1000

Frequency Response Classes, Cont'd.
Used for 050624 Test

<u>Typical Test Measurements</u>	<u>Channel Class</u>
Anthropomorphic Test Device	
Upper spine acceleration	FIR
Lower spine acceleration	FIR
Upper rib acceleration	FIR
Mid rib acceleration	FIR
Lower rib acceleration	FIR
Pelvis acceleration	FIR
TTI acceleration	FIR

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 050624

Ref	Channel Name	Transducer ID	ISO Signal Identifier	Description	FScale	Units	Polarity	Filter
1	DAU3184.01	P39871	M0VEHCCG0000ACXA	MDB Center of Gravity X-axis Acceleration	600	g	Bipolar	2000
2	DAU3184.03	P35836	M0VEHCCG0000ACYA	MDB Center of Gravity Y-axis Acceleration	600	g	-Bipolar	2000
3	DAU3184.04	P40398	M0VEHCCG0000ACZA	MDB Center of Gravity Z-axis Acceleration	600	g	-Bipolar	2000
4	DAU3184.05	P34005	M7FRAM000000ACXA	MDB Left Rear X-axis Acceleration (on left frame over axle)	600	g	Bipolar	2000
5	DAU3184.06	P33556	M7FRAM000000ACYA	MDB Left Rear Y-axis Acceleration (on left frame over axle)	600	g	-Bipolar	2000
6	DAU3184.07	ASC-1	M3CONT000000EV00	MDB Right Side Contact Switch	5	V	Bipolar	2000
7	DAU3184.08	ASC-2	M1CONT000000EV00	MDB Left Side Contact Switch	5	V	Bipolar	2000

Channel Report Test Number 050624

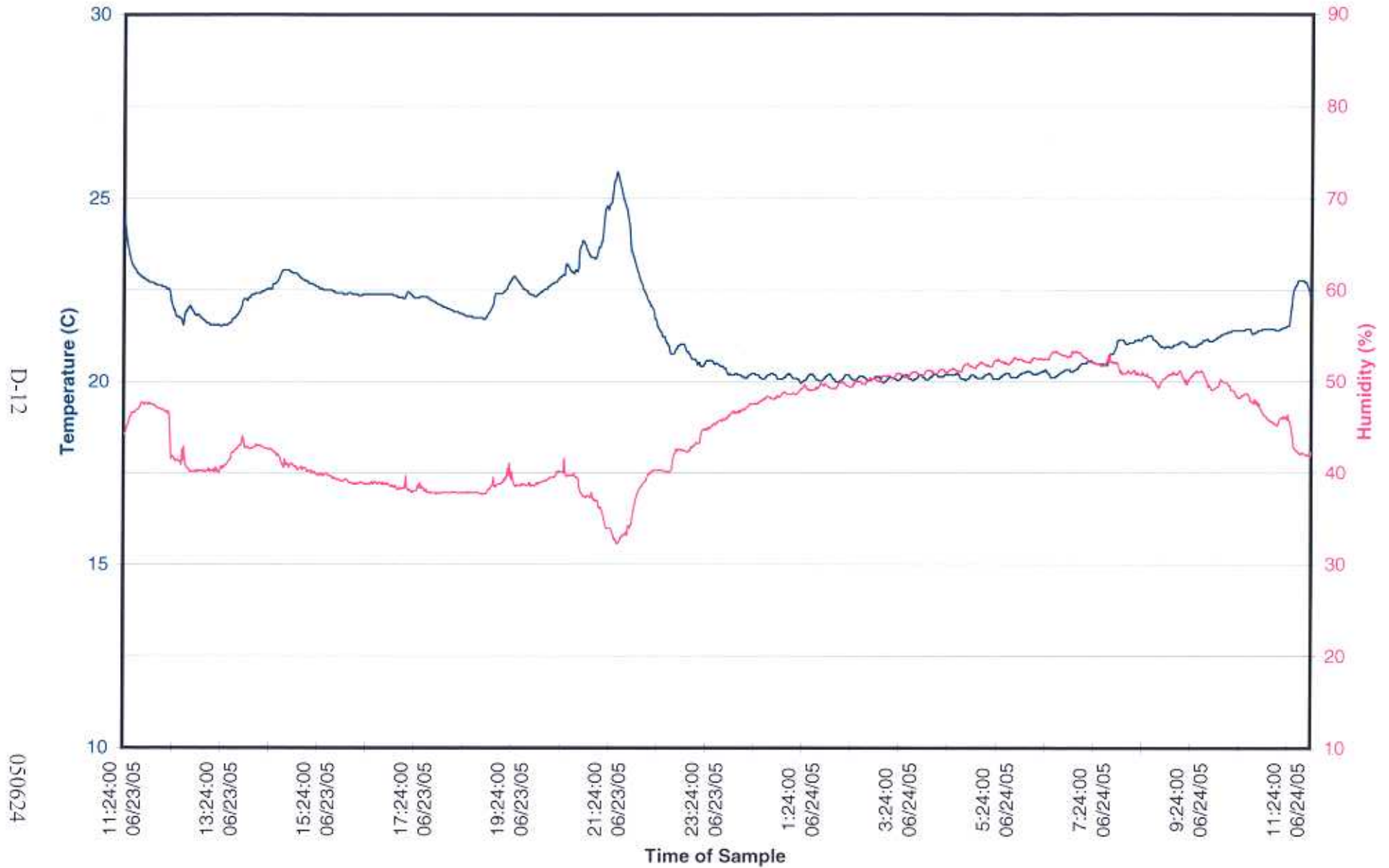
Ref	Channel Name	Transducer ID	ISO Signal Identifier	Description	Polarity	FScale	Units	Assembly
1	DAU202.01	04J04J07-M08	11HEADCG00E2ACXA	Head Accel X	-Bipolar	800	g	1-010 ES-2re FTSS.001
2	DAU202.02	03D03D16-F02	11HEADCG00E2ACYA	Head Accel Y	-Bipolar	800	g	1-010 ES-2re FTSS.002
3	DAU202.03	03F03E30-M02	11HEADCG00E2ACZA	Head Accel Z	-Bipolar	800	g	1-010 ES-2re FTSS.003
4	DAU202.04	02I02I05-F13	11HEADLE00E2ACXA	Head (LT) Accel X	Bipolar	800	g	1-010 ES-2re FTSS.004
5	DAU202.05	01G25-N07	11HEADLE00E2ACZA	Head (LT) Accel Z	-Bipolar	800	g	1-010 ES-2re FTSS.005
6	DAU202.06	02I02I05-F17	11HEADFR00E2ACYA	Head (FT) Accel Y	Bipolar	800	g	1-010 ES-2re FTSS.006
7	DAU202.07	99H12-F03	11HEADFR00E2ACZA	Head (FT) Accel Z	-Bipolar	800	g	1-010 ES-2re FTSS.007
8	DAU202.08	B02A18-N21	11HEADUP00E2ACXA	Head (TP) Accel X	Bipolar	800	g	1-010 ES-2re FTSS.008
9	DAU202.09	03D03D09-N01	11HEADUP00E2ACYA	Head (TP) Accel Y	Bipolar	800	g	1-010 ES-2re FTSS.009
10	DAU202.10	IF-240-106-FX	11NECKUP00E2FOXA	Neck Force X	Bipolar	9786	N	1-010 ES-2re FTSS.010
11	DAU202.11	IF-240-106-FY	11NECKUP00E2FOYA	Neck Force Y	Bipolar	9786	N	1-010 ES-2re FTSS.011
12	DAU202.12	IF-240-106-FZ	11NECKUP00E2FOZA	Neck Force Z	Bipolar	15124	N	1-010 ES-2re FTSS.012
13	DAU202.13	IF-240-106-MX	11NECKUP00E2MOXA	Neck Moment X	Bipolar	296.6	N-m	1-010 ES-2re FTSS.013
14	DAU202.14	IF-240-106-MY	11NECKUP00E2MOYA	Neck Moment Y	Bipolar	296.6	N-m	1-010 ES-2re FTSS.014
15	DAU202.15	IF-240-106-MZ	11NECKUP00E2MOZA	Neck Moment Z	Bipolar	296.6	N-m	1-010 ES-2re FTSS.015
16	DAU202.16	IF-221-111-FX	11NECKLO00E2FOXA	Neck Lower Force X	Bipolar	12000	N	1-010 ES-2re FTSS.016
17	DAU202.17	IF-221-111-FY	11NECKLO00E2FOYA	Neck Lower Force Y	Bipolar	12000	N	1-010 ES-2re FTSS.017
18	DAU202.18	IF-221-111-FZ	11NECKLO00E2FOZA	Neck Lower Force Z	Bipolar	14000	N	1-010 ES-2re FTSS.018
19	DAU202.19	IF-221-111-MX	11NECKLO00E2MOXA	Neck Lower Moment X	Bipolar	450	N-m	1-010 ES-2re FTSS.019
20	DAU202.20	IF-221-111-MY	11NECKLO00E2MOYA	Neck Lower Moment Y	Bipolar	450	N-m	1-010 ES-2re FTSS.020
21	DAU202.21	IF-221-111-MZ	11NECKLO00E2MOZA	Neck Lower Moment Z	Bipolar	300	N-m	1-010 ES-2re FTSS.021
22	DAU202.22	IF-317-120-FX	11SHLDLE00E2FOXA	Shoulder Left Force X	Bipolar	4000	N	1-010 ES-2re FTSS.022
23	DAU202.23	IF-317-120-FY	11SHLDLE00E2FOYA	Shoulder Left Force Y	Bipolar	8000	N	1-010 ES-2re FTSS.023
24	DAU202.24	IF-317-120-FZ	11SHLDLE00E2FOZA	Shoulder Left Force Z	Bipolar	4000	N	1-010 ES-2re FTSS.024
25	DAU202.25	02I02I16-A15	11SPIN0100E2ACXA	Upper Spine X	Bipolar	400	g	1-010 ES-2re FTSS.025
26	DAU202.26	01G25-N02	11SPIN0100E2ACYA	Upper Spine Y	Bipolar	400	g	1-010 ES-2re FTSS.026
27	DAU202.27	03E03E21-M06	11SPIN0100E2ACZA	Upper Spine Z	Bipolar	400	g	1-010 ES-2re FTSS.027
28	DAU202.28	IF-441-104-FX	11BAPL0000E2FOXA	Torso Back Plate Force X	Bipolar	2980	N	1-010 ES-2re FTSS.028
29	DAU202.29	IF-441-104-FY	11BAPL0000E2FOYA	Torso Back Plate Force Y	Bipolar	2980	N	1-010 ES-2re FTSS.029
30	DAU202.30	IF-441-104-MY	11BAPL0000E2MOYA	Torso Back Plate Moment Y	Bipolar	160	N-m	1-010 ES-2re FTSS.030
31	DAU202.31	IF-441-104-MZ	11BAPL0000E2MOZA	Torso Back Plate Moment Z	Bipolar	160	N-m	1-010 ES-2re FTSS.031
32	DAU202.32	03D03C27-N04	11RIBSLU00E2ACYA	Upper Rib Accel Y	Bipolar	800	g	1-010 ES-2re FTSS.032
33	DAU712.01	03E03D30-N01	11RIBSLM00E2ACYA	Mid Rib Accel Y	Bipolar	800	g	1-010 ES-2re FTSS.033
34	DAU712.02	03F03F09-N12	11RIBSLL00E2ACYA	Lower Rib Accel Y	Bipolar	800	g	1-010 ES-2re FTSS.034
35	DAU712.03	CST-010U	11RIBSLU00E2DSYA	Upper Rib Disp. Y	-Bipolar	75	mm	1-010 ES-2re FTSS.035
36	DAU712.04	CST-010M	11RIBSLM00E2DSYA	Mid Rib Disp. Y	-Bipolar	75	mm	1-010 ES-2re FTSS.036
37	DAU712.05	CST-010L	11RIBSLL00E2DSYA	Lower Rib Disp. Y	-Bipolar	75	mm	1-010 ES-2re FTSS.037
38	DAU712.06	00L13-F39	11SPIN1200E2ACXA	Lower Spine X	Bipolar	400	g	1-010 ES-2re FTSS.038
39	DAU712.07	02A16-A12	11SPIN1200E2ACYA	Lower Spine Y	-Bipolar	400	g	1-010 ES-2re FTSS.039
40	DAU712.08	01G25-N15	11SPIN1200E2ACZA	Lower Spine Z	-Bipolar	400	g	1-010 ES-2re FTSS.040
41	DAU712.09	IF-420-102-FX	11SPIN1200E2FOXA	Lower Spine Force X	Bipolar	13789.5	N	1-010 ES-2re FTSS.041
42	DAU712.10	IF-420-102-FY	11SPIN1200E2FOYA	Lower Spine Force Y	Bipolar	13789.5	N	1-010 ES-2re FTSS.042
43	DAU712.11	IF-420-102-MX	11SPIN1200E2MOXA	Lower Spine Moment X	Bipolar	994	N	1-010 ES-2re FTSS.043
44	DAU712.12	IF-420-102-MY	11SPIN1200E2MOYA	Lower Spine Moment Y	Bipolar	994	N	1-010 ES-2re FTSS.044
45	DAU712.13	IF-413-105-FY	11LUSP0000E2FOYA	Lumbar Force Y	Bipolar	5000	N	1-010 ES-2re FTSS.046
46	DAU712.14	IF-413-105-FZ	11LUSP0000E2FOZA	Lumbar Force Z	Bipolar	7000	N	1-010 ES-2re FTSS.047
47	DAU712.15	IF-413-105-MX	11LUSP0000E2MOXA	Lumbar Moment X	Bipolar	225	N-m	1-010 ES-2re FTSS.048

48	DAU712.16	IF-600-119-FY	11ABDOLEFRE2FOYA	Front Abdominal Force Y	Bipolar	4893 N	1-010 ES-2re FTSS.051
49	DAU712.17	IF-600-120-FY	11ABDOLEMI2FOYA	Mid Abdominal Force Y	Bipolar	4893 N	1-010 ES-2re FTSS.052
50	DAU712.18	IF-600-121-FY	11ABDOLEREE2FOYA	Rear Abdominal Force Y	Bipolar	4893 N	1-010 ES-2re FTSS.053
51	DAU712.19	IF-556-113-FY	11PUBC0000E2FOYA	Pubic Force Y	Bipolar	20000 N	1-010 ES-2re FTSS.054
52	DAU712.20	03E03E21-M08	11PELVCG00E2ACXA	Pelvis Accel X	-Bipolar	800 g	1-010 ES-2re FTSS.055
53	DAU712.21	02I02I10-N16	11PELVCG00E2ACYA	Pelvis Accel Y	-Bipolar	800 g	1-010 ES-2re FTSS.056
54	DAU712.22	02A16-A08	11PELVCG00E2ACZA	Pelvis Accel Z	Bipolar	800 g	1-010 ES-2re FTSS.057
55	DAU712.24	IF-625-109-FX	11FEMRLE00E2FOXA	Left Femur Force X	Bipolar	13344.6 N	1-010 ES-2re FTSS.058
56	DAU712.25	IF-625-109-FY	11FEMRLE00E2FOYA	Left Femur Force Y	Bipolar	13344.6 N	1-010 ES-2re FTSS.059
57	DAU712.26	IF-625-109-FZ	11FEMRLE00E2FOZA	Left Femur Force Z	Bipolar	22241 N	1-010 ES-2re FTSS.060
58	DAU712.27	IF-625-109-MX	11FEMRLE00E2MOXA	Left Femur Moment X	Bipolar	339 N-m	1-010 ES-2re FTSS.061
59	DAU712.28	IF-625-109-MY	11FEMRLE00E2MOYA	Left Femur Moment Y	Bipolar	339 N-m	1-010 ES-2re FTSS.062
60	DAU712.29	IF-625-109-MZ	11FEMRLE00E2MOZA	Left Femur Moment Z	Bipolar	339 N-m	1-010 ES-2re FTSS.063
61	DAU712.30	IF-625-137-FX	11FEMRRI00E2FOXA	Right Femur Force X	Bipolar	13344.7 N	1-010 ES-2re FTSS.064
62	DAU712.31	IF-625-137-FY	11FEMRRI00E2FOYA	Right Femur Force Y	Bipolar	13344.7 N	1-010 ES-2re FTSS.065
63	DAU712.32	IF-625-137-FZ	11FEMRRI00E2FOZA	Right Femur Force Z	Bipolar	22241 N	1-010 ES-2re FTSS.066
64	DAU732.01	IF-625-137-MX	11FEMRRI00E2MOXA	Right Femur Moment X	Bipolar	339 N-m	1-010 ES-2re FTSS.067
65	DAU732.02	IF-625-137-MY	11FEMRRI00E2MOYA	Right Femur Moment Y	Bipolar	339 N-m	1-010 ES-2re FTSS.068
66	DAU732.03	IF-625-137-MZ	11FEMRRI00E2MOZA	Right Femur Moment Z	Bipolar	339 N-m	1-010 ES-2re FTSS.069
67	DAU732.04	01G18-F01	14HEADCG00E2ACXA	Head Accel X	Bipolar	800 g	4-009 ES-2re FTSS.001
68	DAU732.05	03F03E29-N02	14HEADCG00E2ACYA	Head Accel Y	Bipolar	800 g	4-009 ES-2re FTSS.002
69	DAU732.06	01G18-F12	14HEADCG00E2ACZA	Head Accel Z	-Bipolar	800 g	4-009 ES-2re FTSS.003
70	DAU732.07	B02A25-N05	14HEADLE00E2ACXA	Head (LT) Accel X	Bipolar	800 g	4-009 ES-2re FTSS.004
71	DAU732.08	03F03F09-N04	14HEADLE00E2ACZA	Head (LT) Accel Z	-Bipolar	800 g	4-009 ES-2re FTSS.005
72	DAU732.09	03E03E21-M17	14HEADFR00E2ACYA	Head (FT) Accel Y	Bipolar	800 g	4-009 ES-2re FTSS.006
73	DAU732.10	02A18-N01	14HEADFR00E2ACZA	Head (FT) Accel Z	-Bipolar	800 g	4-009 ES-2re FTSS.007
74	DAU732.11	03D03D16-F12	14HEADUP00E2ACXA	Head (TP) Accel X	Bipolar	800 g	4-009 ES-2re FTSS.008
75	DAU732.12	03D03D16-F07	14HEADUP00E2ACYA	Head (TP) Accel Y	Bipolar	800 g	4-009 ES-2re FTSS.009
76	DAU732.13	IF-240-105-FX	14NECKUP00E2FOXA	Neck Force X	Bipolar	9786 N	4-009 ES-2re FTSS.010
77	DAU732.14	IF-240-105-FY	14NECKUP00E2FOYA	Neck Force Y	Bipolar	9786 N	4-009 ES-2re FTSS.011
78	DAU732.15	IF-240-105-FZ	14NECKUP00E2FOZA	Neck Force Z	Bipolar	15124 N	4-009 ES-2re FTSS.012
79	DAU732.16	IF-240-105-MX	14NECKUP00E2MOXA	Neck Moment X	Bipolar	296.6 N-m	4-009 ES-2re FTSS.013
80	DAU732.17	IF-240-105-MY	14NECKUP00E2MOYA	Neck Moment Y	Bipolar	296.6 N-m	4-009 ES-2re FTSS.014
81	DAU732.18	IF-240-105-MZ	14NECKUP00E2MOZA	Neck Moment Z	Bipolar	296.6 N-m	4-009 ES-2re FTSS.015
82	DAU732.19	IF-221-110-FX	14NECKLO00E2FOXA	Neck Lower Force X	Bipolar	12000 N	4-009 ES-2re FTSS.016
83	DAU732.20	IF-221-110-FY	14NECKLO00E2FOYA	Neck Lower Force Y	Bipolar	12000 N	4-009 ES-2re FTSS.017
84	DAU732.21	IF-221-110-FZ	14NECKLO00E2FOZA	Neck Lower Force Z	Bipolar	14000 N	4-009 ES-2re FTSS.018
85	DAU732.22	IF-221-110-MX	14NECKLO00E2MOXA	Neck Lower Moment X	Bipolar	450 N-m	4-009 ES-2re FTSS.019
86	DAU732.23	IF-221-110-MY	14NECKLO00E2MOYA	Neck Lower Moment Y	Bipolar	450 N-m	4-009 ES-2re FTSS.020
87	DAU732.24	IF-221-110-MZ	14NECKLO00E2MOZA	Neck Lower Moment Z	Bipolar	300 N-m	4-009 ES-2re FTSS.021
88	DAU732.25	IF-317-119-FX	14SHLDLE00E2FOXA	Shoulder Left Force X	Bipolar	4000 N	4-009 ES-2re FTSS.022
89	DAU732.26	IF-317-119-FY	14SHLDLE00E2FOYA	Shoulder Left Force Y	Bipolar	8000 N	4-009 ES-2re FTSS.023
90	DAU732.27	IF-317-119-FZ	14SHLDLE00E2FOZA	Shoulder Left Force Z	Bipolar	4000 N	4-009 ES-2re FTSS.024
91	DAU732.28	00L13-F10	14SPIN0100E2ACXA	Upper Spine X	Bipolar	400 g	4-009 ES-2re FTSS.025
92	DAU732.29	01G25-N13	14SPIN0100E2ACYA	Upper Spine Y	Bipolar	400 g	4-009 ES-2re FTSS.026
93	DAU732.30	01H02-N05	14SPIN0100E2ACZA	Upper Spine Z	Bipolar	400 g	4-009 ES-2re FTSS.027
94	DAU732.31	IF-441-102-FX	14BAPL0000E2FOXA	Torso Back Plate Force X	Bipolar	2980 N	4-009 ES-2re FTSS.028
95	DAU732.32	IF-441-102-FY	14BAPL0000E2FOYA	Torso Back Plate Force Y	Bipolar	2980 N	4-009 ES-2re FTSS.029
96	DAU3174.01	IF-441-102-MY	14BAPL0000E2MOYA	Torso Back Plate Moment Y	Bipolar	160 N-m	4-009 ES-2re FTSS.030

97	DAU3174.02	IF-441-102-MZ	14BAPL0000E2MOZA	Torso Back Plate Moment Z	Bipolar	160 N-m	4-009 ES-2re FTSS.031
98	DAU3174.03	03F03F09-N06	14RIBSLU00E2ACYA	Upper Rib Accel Y	Bipolar	800 g	4-009 ES-2re FTSS.032
99	DAU3174.04	01G25-N03	14RIBSLM00E2ACYA	Mid Rib Accel Y	Bipolar	800 g	4-009 ES-2re FTSS.033
100	DAU3174.05	01G18-F02	14RIBSLL00E2ACYA	Lower Rib Accel Y	Bipolar	800 g	4-009 ES-2re FTSS.034
101	DAU3174.06	CST-009URD	14RIBSLU00E2DSYA	Upper Rib Disp. Y	-Bipolar	75 mm	4-009 ES-2re FTSS.035
102	DAU3174.07	CST-009MRD	14RIBSLM00E2DSYA	Mid Rib Disp. Y	-Bipolar	75 mm	4-009 ES-2re FTSS.036
103	DAU3174.08	CST-009LRD	14RIBSLL00E2DSYA	Lower Rib Disp. Y	-Bipolar	75 mm	4-009 ES-2re FTSS.037
104	DAU3174.09	03E03E21-M18	14SPIN1200E2ACXA	Lower Spine X	Bipolar	400 g	4-009 ES-2re FTSS.038
105	DAU3174.10	03E03E21-M02	14SPIN1200E2ACYA	Lower Spine Y	-Bipolar	400 g	4-009 ES-2re FTSS.039
106	DAU3174.11	98H10-F17	14SPIN1200E2ACZA	Lower Spine Z	-Bipolar	400 g	4-009 ES-2re FTSS.040
107	DAU3174.12	IF-420-103-FX	14SPIN1200E2FOXA	Lower Spine Force X	Bipolar	13789.5 N	4-009 ES-2re FTSS.041
108	DAU3174.13	IF-420-103-FY	14SPIN1200E2FOYA	Lower Spine Force Y	Bipolar	13789.5 N	4-009 ES-2re FTSS.042
109	DAU3174.14	IF-420-103-MX	14SPIN1200E2MOXA	Lower Spine Moment X	Bipolar	994 N-m	4-009 ES-2re FTSS.043
110	DAU3174.15	IF-420-103-MY	14SPIN1200E2MOYA	Lower Spine Moment Y	Bipolar	994 N-m	4-009 ES-2re FTSS.044
111	DAU3174.16	IF-413-104-FY	14LUSP0000E2FOYA	Lumbar Force Y	Bipolar	5000 N	4-009 ES-2re FTSS.045
112	DAU3174.17	IF-413-104-FZ	14LUSP0000E2FOZA	Lumbar Force Z	Bipolar	7000 N	4-009 ES-2re FTSS.046
113	DAU3174.18	IF-413-104-MX	14LUSP0000E2MOXA	Lumbar Moment X	Bipolar	225 N-m	4-009 ES-2re FTSS.047
114	DAU3174.19	IF-600-122-FY	14ABDOLEFRE2FOYA	Front Abdominal Force Y	Bipolar	4893 N	4-009 ES-2re FTSS.048
115	DAU3174.20	IF-600-123-FY	14ABDOLEMIE2FOYA	Mid Abdominal Force Y	Bipolar	4893 N	4-009 ES-2re FTSS.049
116	DAU3174.21	IF-600-124-FY	14ABDOLEREE2FOYA	Rear Abdominal Force Y	Bipolar	4893 N	4-009 ES-2re FTSS.050
117	DAU3174.22	IF-556-115-FY	14PUBC0000E2FOYA	Pubic Force Y	Bipolar	20000 N	4-009 ES-2re FTSS.051
118	DAU3174.23	03E03E18-F06	14PELVCG00E2ACXA	Pelvis Accel X	-Bipolar	800 g	4-009 ES-2re FTSS.052
119	DAU3174.24	P46024	14PELVCG00E2ACYA	Pelvis Accel Y	-Bipolar	800 g	
120	DAU3174.25	03D03D16-F16	14PELVCG00E2ACZA	Pelvis Accel Z	Bipolar	800 g	4-009 ES-2re FTSS.054
121	DAU3174.26	IF-625-135-FX	14FEMRLE00E2FOXA	Left Femur Force X	Bipolar	13344.7 N	4-009 ES-2re FTSS.055
122	DAU3174.27	IF-625-135-FY	14FEMRLE00E2FOYA	Left Femur Force Y	Bipolar	13344.7 N	4-009 ES-2re FTSS.056
123	DAU3174.28	IF-625-135-FZ	14FEMRLE00E2FOZA	Left Femur Force Z	Bipolar	22241 N	4-009 ES-2re FTSS.057
124	DAU3174.29	IF-625-135-MX	14FEMRLE00E2MOXA	Left Femur Moment X	Bipolar	339 N-m	4-009 ES-2re FTSS.058
125	DAU3174.30	IF-625-135-MY	14FEMRLE00E2MOYA	Left Femur Moment Y	Bipolar	339 N-m	4-009 ES-2re FTSS.059
126	DAU3174.31	IF-625-135-MZ	14FEMRLE00E2MOZA	Left Femur Moment Z	Bipolar	339 N-m	4-009 ES-2re FTSS.060
127	DAU3174.32	IF-625-136-FX	14FEMRRI00E2FOXA	Right Femur Force X	Bipolar	13344.7 N	4-009 ES-2re FTSS.061
128	DAU3175.01	IF-625-136-FY	14FEMRRI00E2FOYA	Right Femur Force Y	Bipolar	13344.7 N	4-009 ES-2re FTSS.062
129	DAU3175.02	IF-625-136-FZ	14FEMRRI00E2FOZA	Right Femur Force Z	Bipolar	22241 N	4-009 ES-2re FTSS.063
130	DAU3175.03	IF-625-136-MX	14FEMRRI00E2MOXA	Right Femur Moment X	Bipolar	339 N-m	4-009 ES-2re FTSS.064
131	DAU3175.04	IF-625-136-MY	14FEMRRI00E2MOYA	Right Femur Moment Y	Bipolar	339 N-m	4-009 ES-2re FTSS.065
132	DAU3175.05	IF-625-136-MZ	14FEMRRI00E2MOZA	Right Femur Moment Z	Bipolar	339 N-m	4-009 ES-2re FTSS.066
133	DAU3175.Trigger	Trig D1	10ZERO000000EV00	EVENT	Bipolar	1 Logic	
134	DAU3175.07	P39873	16SILBFR0000ACXA	Right Side Sill at Front Seat X-axis Acceleration	Bipolar	400 g	
135	DAU3175.08	P39842	16SILBFR0000ACYA	Right Side Sill at Front Seat Y-axis Acceleration	-Bipolar	1000 g	
136	DAU3175.09	P34231	16SILBFR0000ACZA	Right Side Sill at Front Seat Z-axis Acceleration	-Bipolar	400 g	
137	DAU3175.10	P42070	16SILBRE0000ACXA	Right Side Sill at Rear Seat X-axis Acceleration	Bipolar	400 g	
138	DAU3175.11	P41550	16SILBRE0000ACYA	Right Side Sill at Rear Seat Y-axis Acceleration	-Bipolar	1000 g	
139	DAU3175.12	P40322	16SILBRE0000ACZA	Right Side Sill at Rear Seat Z-axis Acceleration	-Bipolar	400 g	
140	DAU3175.13	P34369	18FORA000000ACXA	Rear Floorpan Above Axle X-axis Acceleration	Bipolar	1000 g	
141	DAU3175.14	P33565	18FORA000000ACYA	Rear Floorpan Above Axle Y-axis Acceleration	-Bipolar	1000 g	
142	DAU3175.15	P30339	18FORA000000ACZA	Rear Floorpan Above Axle Z-axis Acceleration	-Bipolar	1000 g	
143	DAU3175.16	P38651	14SILBRE0000ACYA	Left Side Sill at Rear Seat Y-axis Acceleration	Bipolar	1000 g	
144	DAU3175.17	P40209	14SILBFR0000ACYA	Left Side Sill at Front Seat Y-axis Acceleration	Bipolar	1000 g	
145	DAU3175.18	P34297	16VEHCRE0000ACYA	Right Rear Occupant Compartment Y-axis Accel	Bipolar	1500 g	

146	DAU3175.19	P39868	14BPILLO0000ACYA	Left Lower B-Post Y-axis Accel	Bipolar	1500 g
147	DAU3175.20	P37710	14BPILMI0000ACYA	Left Middle B-Post Y-axis Accel	Bipolar	1500 g
148	DAU3175.21	P38616	11APILLO0000ACYA	Left Lower A-Post Y-axis Accel	-Bipolar	1500 g
149	DAU3175.22	P41701	11APILMI0000ACYA	Left Middle A-Post Y-axis Accel	-Bipolar	1500 g
150	DAU3175.23	P44312	11SETRFR0000ACYA	Left Front Seat Track Y-axis Acceleration	-Bipolar	1500 g
151	DAU3175.24	P33575	14SETRLERE00ACYA	Left Rear Seat Track Y-axis Acceleration	-Bipolar	1500 g
152	DAU3175.25	P34812	10VEHCCG0000ACXA	Vehicle Center of Gravity X-axis Acceleration	Bipolar	1000 g
153	DAU3175.26	P42044	10VEHCCG0000ACYA	Vehicle Center of Gravity Y-axis Acceleration	Bipolar	1000 g
154	DAU3175.27	P42145	10VEHCCG0000ACZA	Vehicle Center of Gravity Z-axis Acceleration	-Bipolar	1000 g
155	DAU3175.28	P27408	12ENGN000000ACXA	Top of Engine X-axis Acceleration	-Bipolar	1000 g
156	DAU3175.29	P33716	12ENGN000000ACYA	Top of Engine Y-axis Acceleration	-Bipolar	1000 g
157	DAU3175.30	P34978	12VEHC000000ACXA	Firewall X-axis Acceleration	Bipolar	1000 g
158	DAU3175.31	P39855	12VEHC000000ACYA	Firewall Y-axis Acceleration	-Bipolar	1000 g
159	DAU3175.32	P39866	13ROFR000000ACXA	Right Roof Rail X-axis Acceleration	Bipolar	1000 g
160	DAU3179.01	P40053	13ROFR000000ACYA	Right Roof Rail Y-axis Acceleration	-Bipolar	1000 g
161	DAU3179.02	P34079	11DOOR000001ACYA	Left Front Door centerline 430 mm above ground Y-axis accel (NHTSA #6)	Bipolar	1000 g
162	DAU3179.03	P39857	11DOOR000002ACYA	Left Front Door mid-rear 430 mm above ground Y-axis accel (NHTSA #8)	Bipolar	1000 g
163	DAU3179.04	P34041	11DOOR000003ACYA	Left Front Door upper centerline 685 mm above ground Y-axis accel (NHTSA #9)	Bipolar	1000 g
164	DAU3179.05	P44311	14DOOR000001ACYA	Left Rear Door mid-rear 685 mm above ground Y-axis accel (NHTSA #10)	Bipolar	1000 g
165	DAU3179.06	P39877	14DOOR000002ACYA	Left Rear Door upper centerline 685 mm above ground Y-axis accel (NHTSA #11)	Bipolar	1000 g
166	DAU3179.07	ABFire1	11SENS000001VO0A	Side torso Airbag fire	Bipolar	5 V
167	DAU202.Digital	Bit.00	11CONT000001EV00	Dummy head contact	Bipolar	1 Logic
168	DAU202.Digital	Bit.01	11CONT000002EV00	Dummy shoulder contact	Bipolar	1 Logic
169	DAU202.Digital	Bit.02	11CONT000003EV00	Dummy torso contact	Bipolar	1 Logic
170	DAU202.Digital	Bit.03	11CONT000004EV00	Dummy leg contact	Bipolar	1 Logic
171	DAU202.Digital	Bit.04	14CONT000001EV00	Dummy head contact	Bipolar	1 Logic
172	DAU202.Digital	Bit.05	14CONT000002EV00	Dummy shoulder contact	Bipolar	1 Logic
173	DAU202.Digital	Bit.06	14CONT000003EV00	Dummy torso contact	Bipolar	1 Logic
174	DAU202.Digital	Bit.07	14CONT000004EV00	Dummy leg contact	Bipolar	1 Logic

MDB INTO LEFT SIDE OF 2005 SUBARU FORESTER AT 52.9 KPH





CERTIFICATE OF CONFORMITY

Certificate No. **19882**
Serial No. **EH 310**

Cellbond Composites Ltd
5 Stukeley Business Centre
Blackstone Road
Huntingdon
Cambridgeshire
PE29 6EF
United Kingdom

Product Description	FMVSS 214 - 1750x740x550mm Spec with 1.6 3/8 5052 Painted Grey
Cellbond Part No.	70NHTSASIUS G

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	Test Results	GR No.	Blk No.
1	26849-56	P144788-A00	N/A
2	26938-45	P131911-01	N/A

Declaration.

The above moving deformable barrier has been manufactured in accordance with the provisions of FMVSS 214.

Additional Information...

company registration
England 1944904

registered office
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PE29 6EF

Cellbond Offices
United Kingdom
Germany
United States of America



050624
ISO9000
ISO9001:2000



NHTSA DEFORMABLE SIDE IMPACT BARRIER
ALUMINIUM HONEYCOMB CERTIFICATION
STATIC TEST RESULTS

MAIN BLOCK
Core: 1.6 3/8 5052

Required Crush Strength
42.5 PSI to 47.5 PSI

Test No: 26849-56

GR No: P144788 A00

Block No: N/A

	Crush Strength (PSI)			RESULT
	0.25 to 0.38 inch	0.38 to 0.52 inch	0.52 to 0.65 inch	
Sample* 1	43.319	43.763	43.817	PASS
Sample 2	44.400	44.548	45.888	PASS
Sample 3	44.012	44.392	45.224	PASS
Sample 4	43.225	44.437	44.046	PASS
Sample 5	44.182	44.639	44.890	PASS
Sample 6	46.090	46.833	47.077	PASS
Sample 7	44.439	45.337	45.387	PASS
Sample 8	45.264	45.812	45.767	PASS

Seven out of the eight samples must fulfil the crush strength
requirement in order to pass the block certification

*Sample size and location as per R94.

RESULT: PASSED

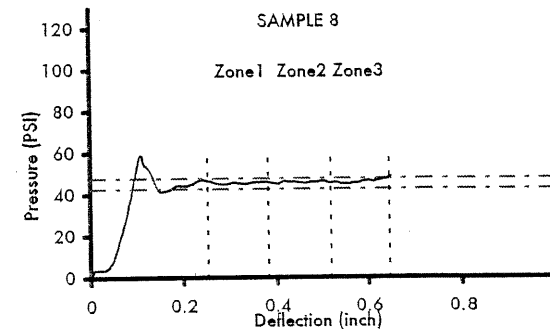
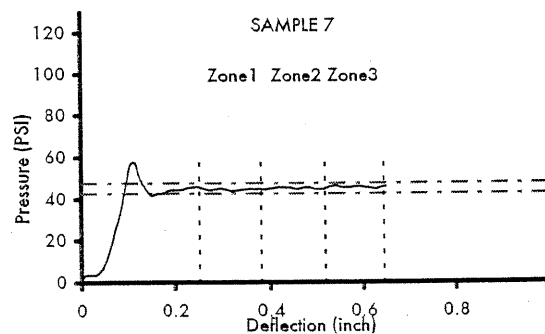
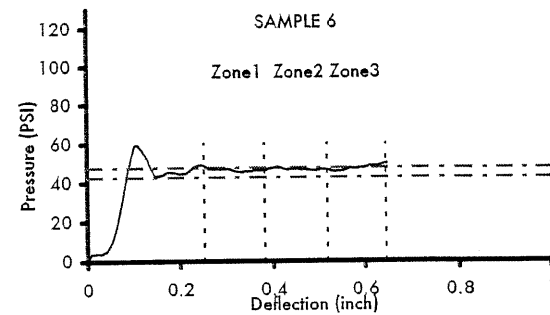
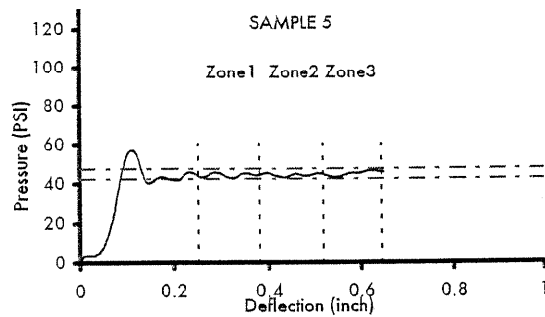
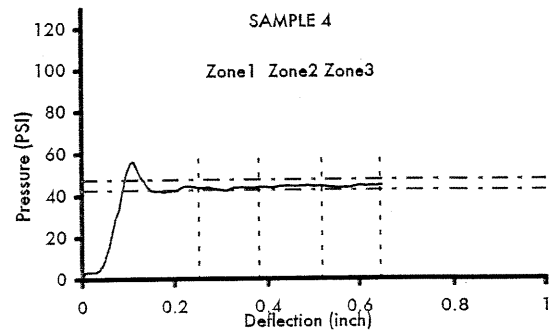
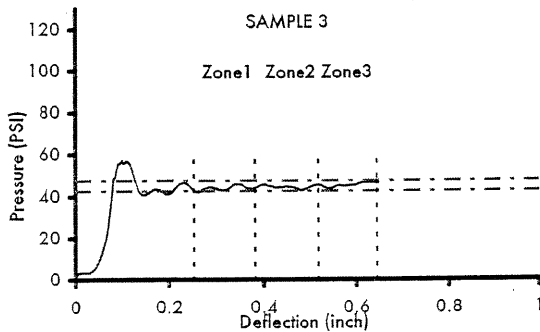
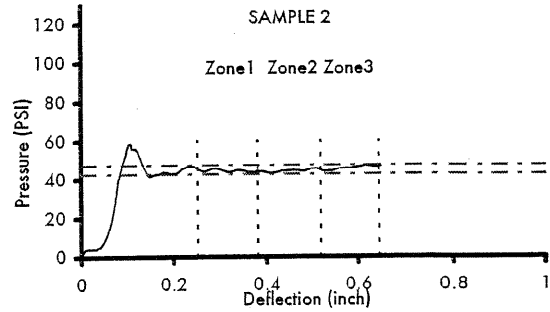
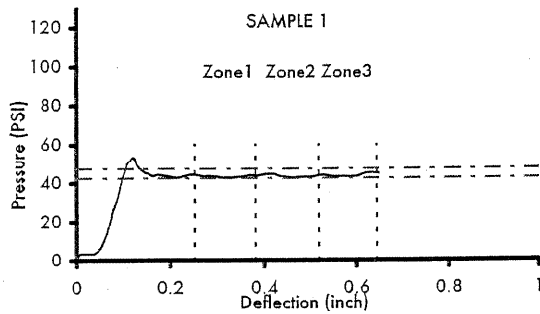
NHTSA DEFORMABLE SIDE IMPACT BARRIER
MAIN BLOCK

Honeycomb Type: 1.6 3/8 5052
Higher Acceptable Crush Strength Limit: 47.5 PSI
Lower Acceptable Crush Strength Limit: 42.5 PSI

Section 1: 0.25 - 0.38 inch
Section 2: 0.38 - 0.52 inch
Section 3: 0.52 - 0.65 inch
Speed: 0.25 inch/min
Block No: N/A

Test No: 26849-56

GR No: P144788 A00





NHTSA DEFORMABLE SIDE IMPACT BARRIER
ALUMINIUM HONEYCOMB CERTIFICATION
STATIC TEST RESULTS

BUMPER
Core: 5.2 1/4 3003

Required Crush Strength
230 PSI to 260 PSI

Test No: 26938-45

GR No: P131911-01

Block No: N/A

	Crush Strength (PSI)			RESULT
	0.25 to 0.38	0.38 to 0.52	0.52 to 0.65	
Sample* 1	253.65	250.73	249.94	PASS
Sample 2	254.15	257.02	254.84	PASS
Sample 3	258.36	258.90	257.66	PASS
Sample 4	256.46	253.19	255.54	PASS
Sample 5	258.77	255.99	253.10	PASS
Sample 6	253.66	256.18	252.31	PASS
Sample 7	254.32	255.06	251.31	PASS
Sample 8	255.55	253.47	253.21	PASS

Seven out of the eight samples must fulfil the crush strength
requirement in order to pass the block certification

*Sample size and location as per R94.

RESULT: PASSED

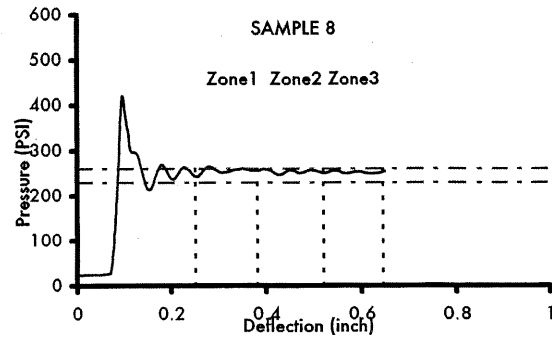
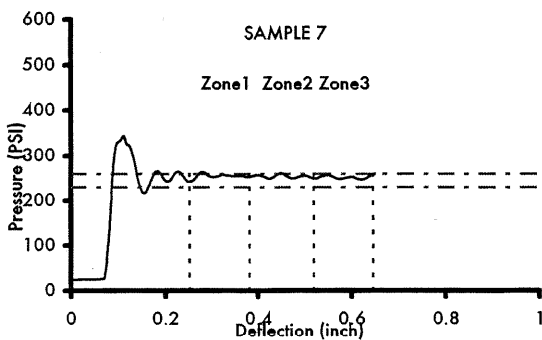
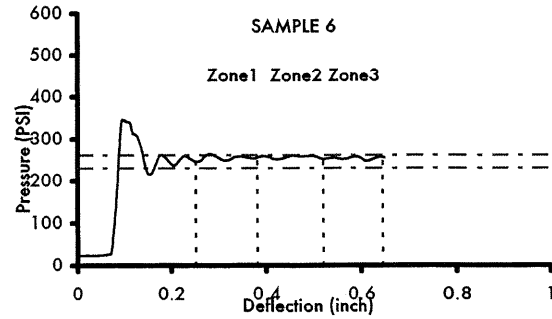
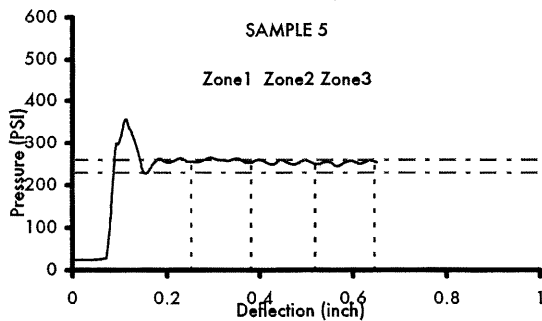
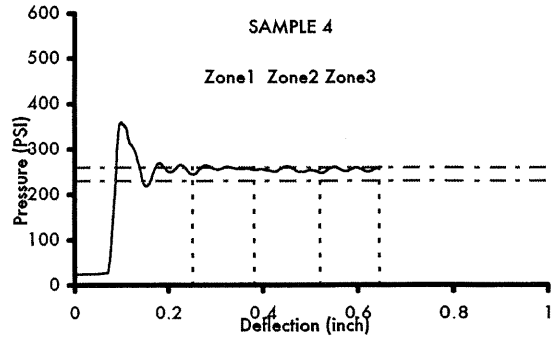
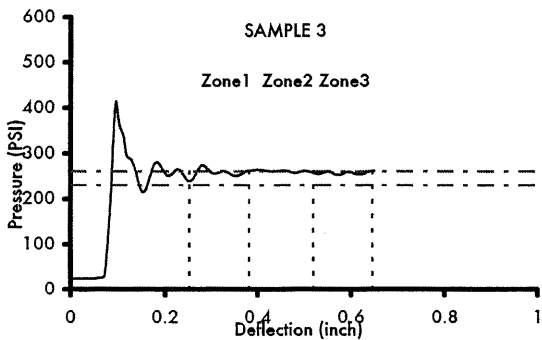
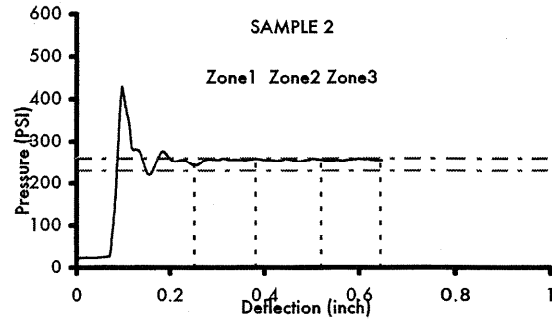
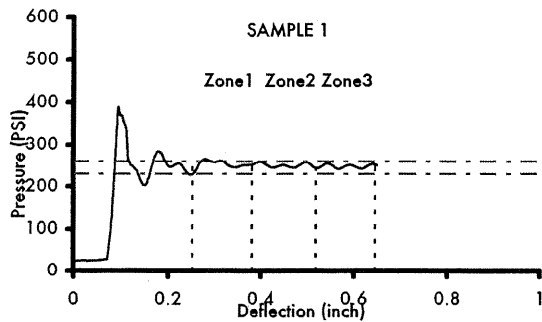
NHTSA DEFORMABLE SIDE IMPACT BARRIER
BUMPER

Honeycomb Type: 5.2 1/4 3003
Higher Acceptable Crush Strength Limit: 260 PSI
Lower Acceptable Crush Strength Limit: 230 PSI

Section 1: 0.25 - 0.38 inch
Section 2: 0.38 - 0.52 inch
Section 3: 0.52 - 0.65 inch
Speed: 0.25 inch/min
Block No: N/A

Test No: 26938-45

GR No: P131911-01



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

Structural Survey - 1

REPORT DOCUMENTATION PAGE

Title:

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

Author(s):

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28031 – Madrid – Spain

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.

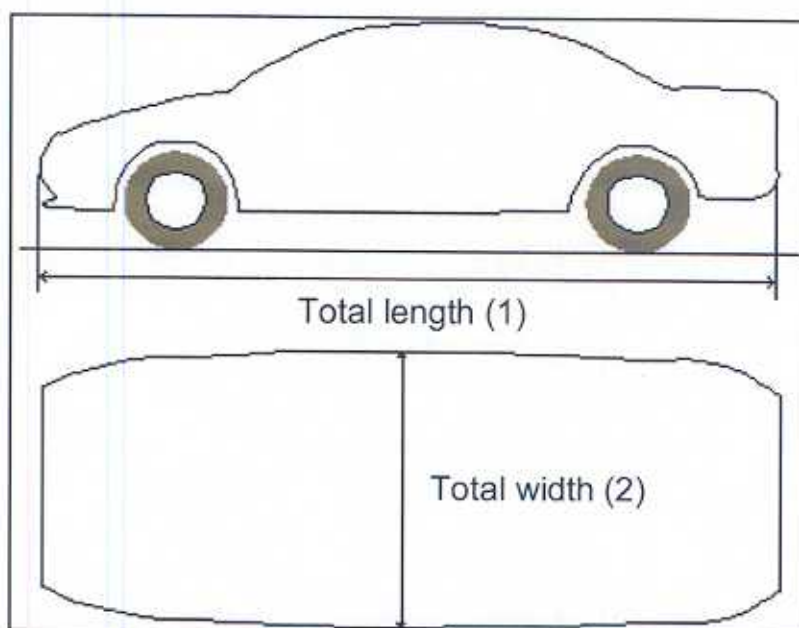


Figure 1.- Definition of the main resistant elements. General dimensions.

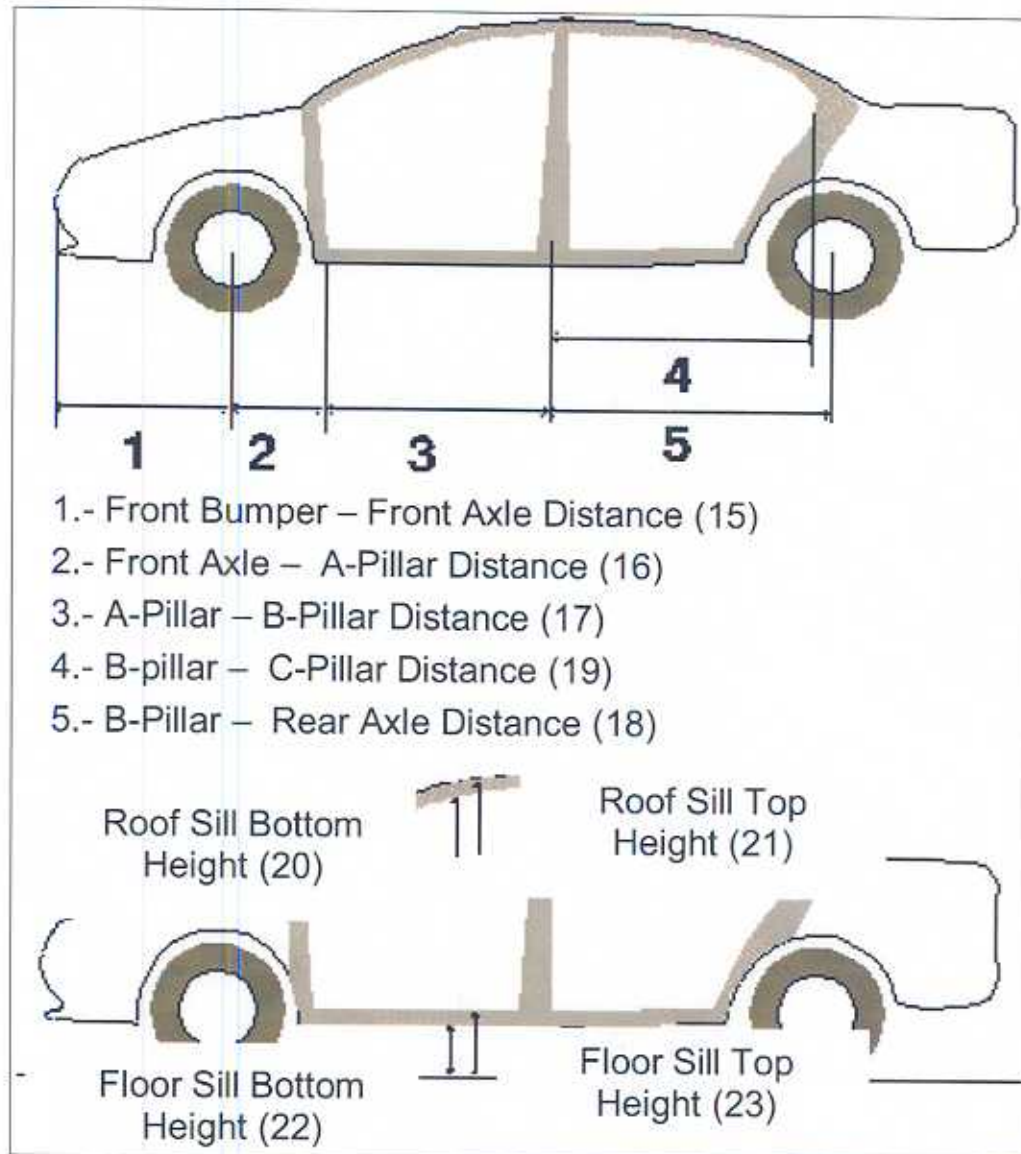


Figure 2.- Definition of the main resistant elements. Side elements.

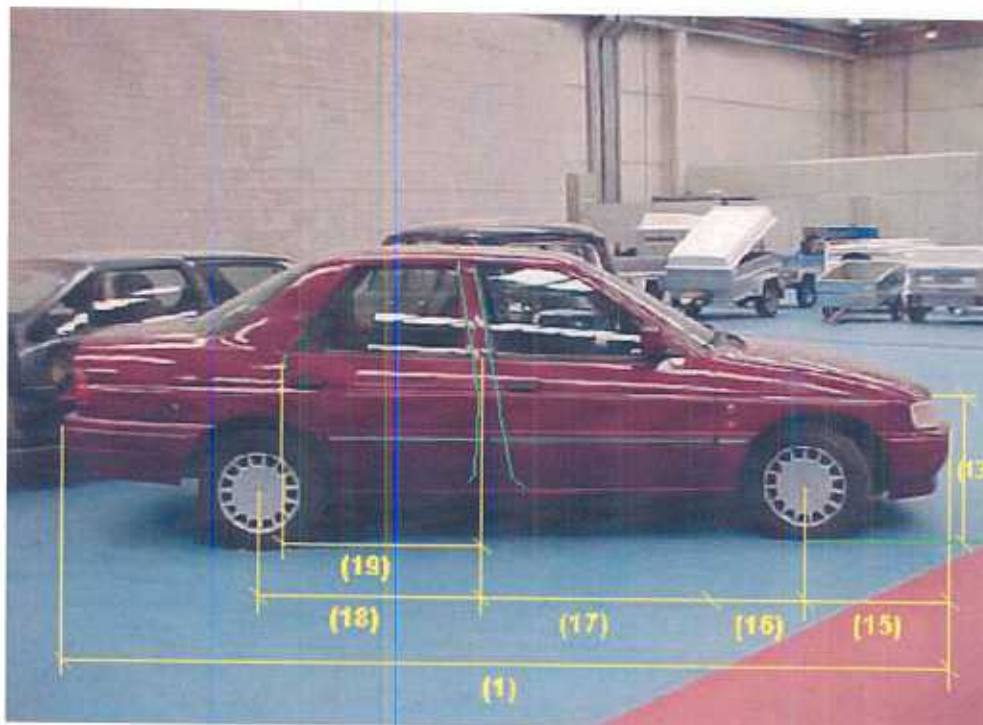


Figure 3.-
Measurements of
the side resistant
elements (outer).

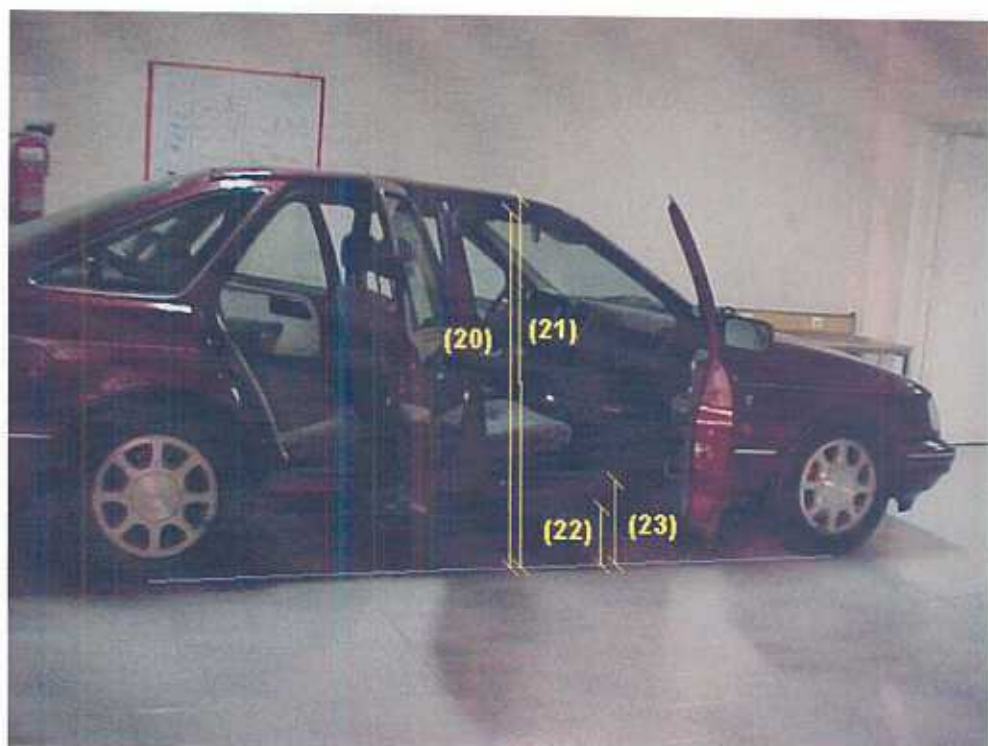


Figure 4.- Measurements
of the side resistant
elements (inner).

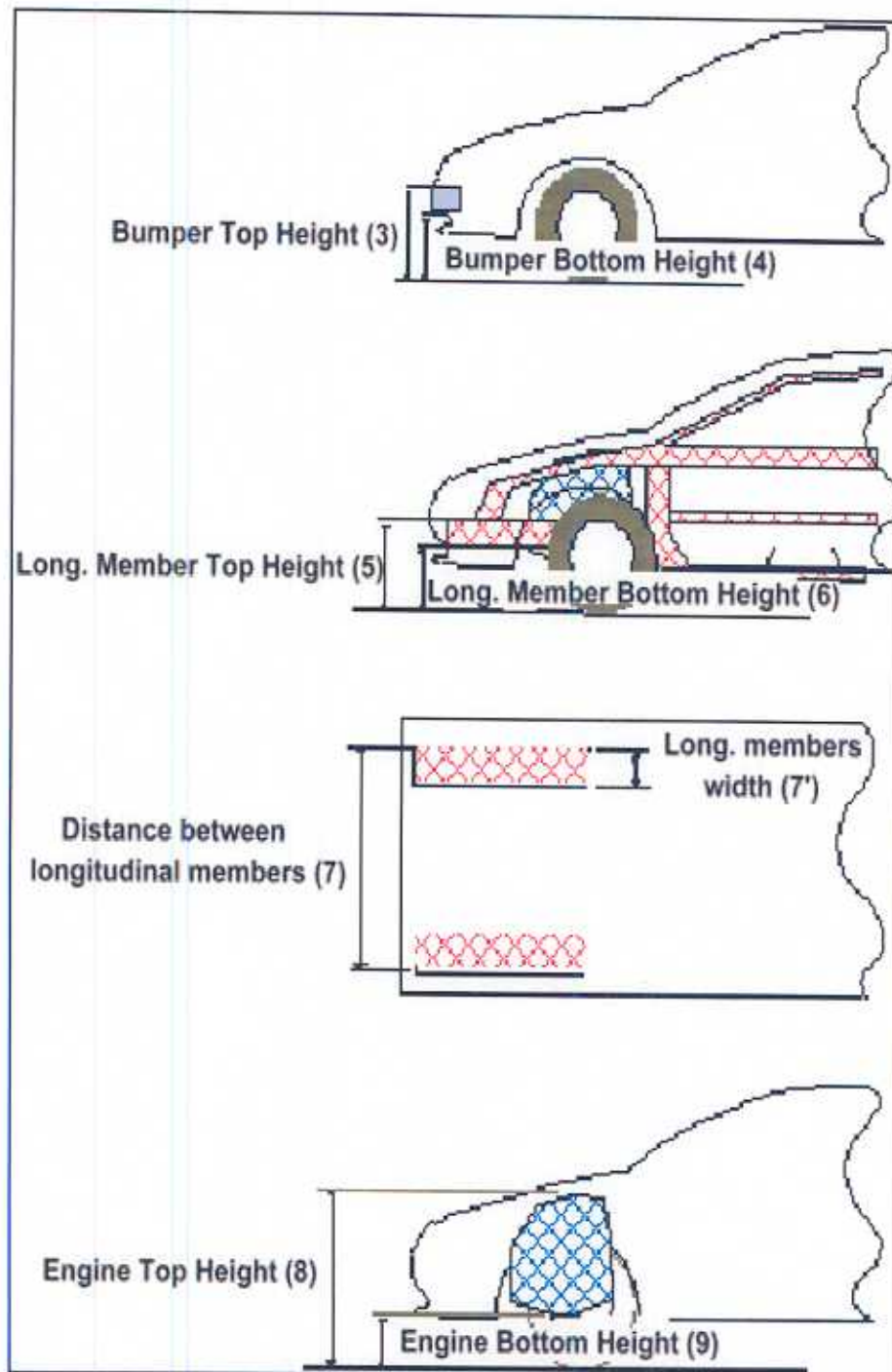


Figure 5.- Definition of the main resistant elements. Front elements.

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

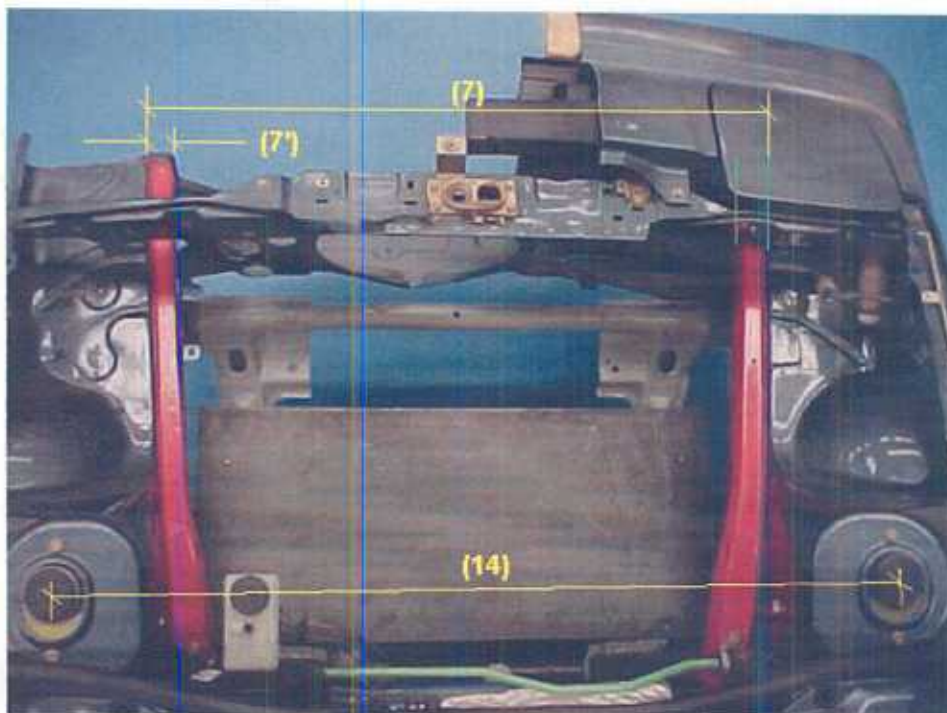
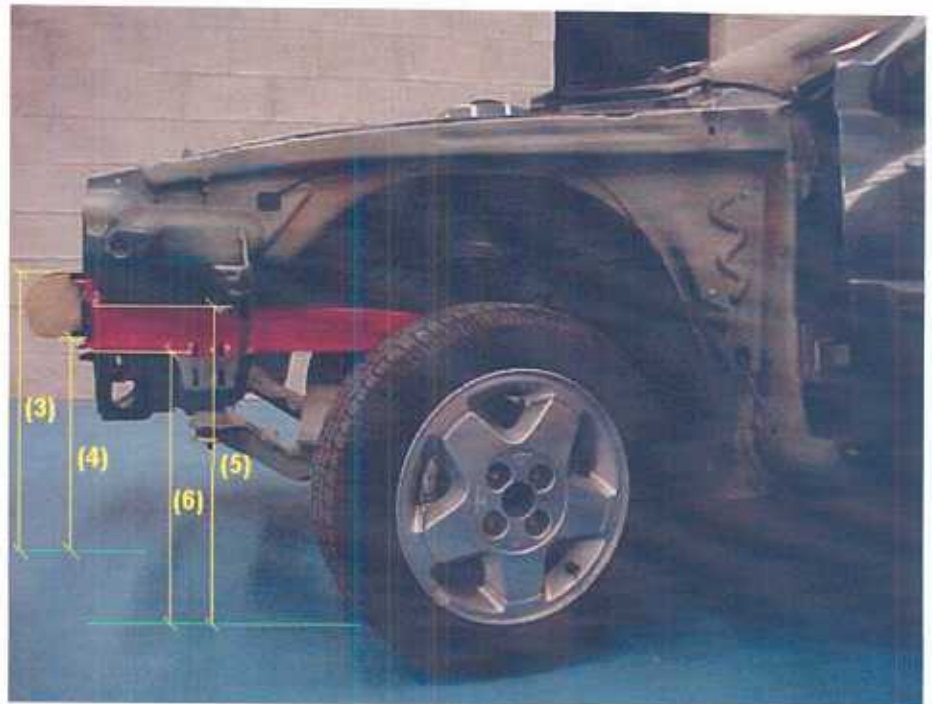


Figure 7.-
Measurements
of the main
resistant
elements. Front
elements 2.

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

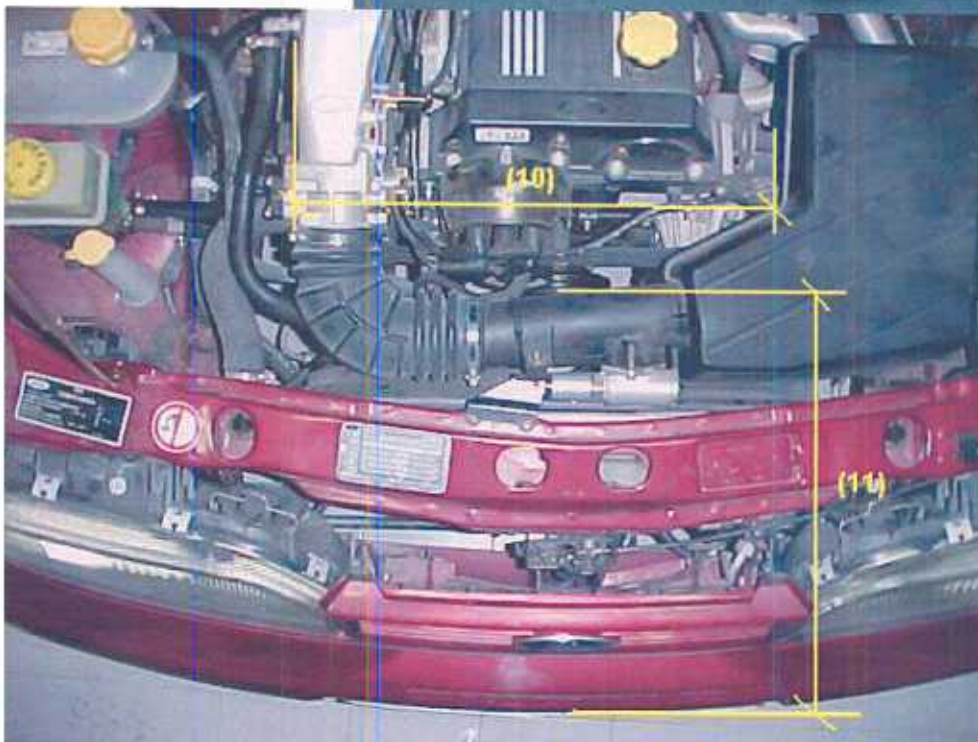


Figure 9.-
Definition of
the main
resistant
elements. Front
elements
(Longitudinal
engine).

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.